HME

DICHTUNGSSYSTEME

www.hme.de

HME

welcome

Competent, prompt and cost-effective

. . . that´s how you can handle your daily seals disposition with **HME GERMANY**

HME offers you high-qualified seals and seal systems attendanded by supporting with best educated staff and engineers.

Within th company´s chain of esteem the role of an internationally competent supplier of seals is gaining more and more in importance. A constantly positive business development and a perfect customer management are therefore stable trustful principles and the basic for **HME´s** customer relationships as equal partners.

Due to the motived efforts of our employees we accompany our regional and international business partners from the development of complete sealilng solutions through the

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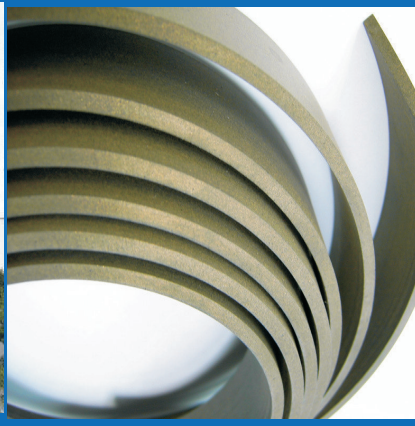
HME

welcome

the company

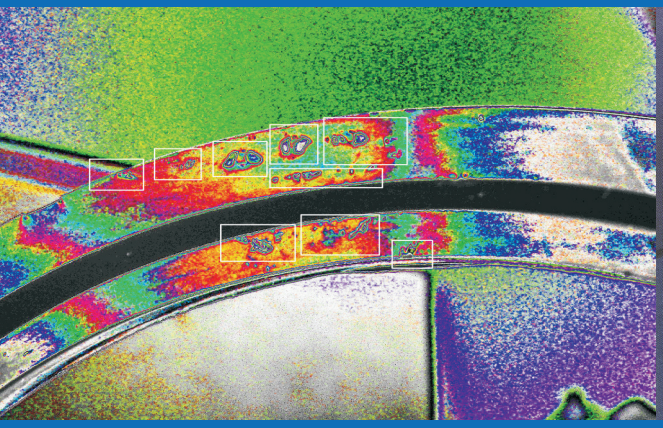


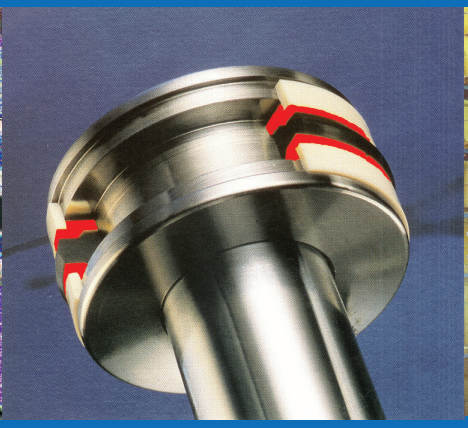
Due to many years of reliability, innovation and customer satisfaction **HME** has positioned itself internationally as an important sealing partner of the hydraulic industry as well as mechanical engineering for more than 20 years. Based on this successful presence HME has a particularly social responsibility for its customers and the domestic jobs.

The areas of application for quality seals and sealing systems released for delivery by **HME** range from hydraulic small repairs to highly complex fields of application of the big industry under extremely difficult conditions of use.

We at **HME** know that it not only depends on progressive technologies but also on innovative information networks. Our cooperations are connected with us by means of a close exchance of knowledge ensuring the business managing and technical success of our business partners. As a member of the "ASSOCIATION OF GERMAN MECHANICAL AND SYSTEM ENGINEERING (VDMA)" as well as the "Working Circle Fuild Seals" **HME** is contributing by being integraded into the extensive information network of modern

the company





HME precision seals are used expecially in high-tech areas where an optimal price / performance ratio by the company´s management is expected.

The extremely well-sorted **HME** product range comprises both - the most common standard dimensions - as well as the special designs prepared individually for every customer made of the most different basic materials. This is why **HME** is in the position to handle orders with special dimensions and large series as quickly as possible. The regional and world-wide delivery has been assigned to international logistic carriers.

HME attends to the entire range of seal users - from the small company to globally positioned industrial big concerns. This variety of attending makes **HME** a highly efficient and internationally competent supplier of seal applications for hydraulics and mechanical engineering.

HME seals and sealing systems are working within the most different areas of applications round the world of up-to-date hydraulic and engieering designs. They are confirming every day the technical reliability of **HME** as reliable partner. Due to the variety of technical dimensions please contact our customer-support-center directly regarding the missing dimensions.

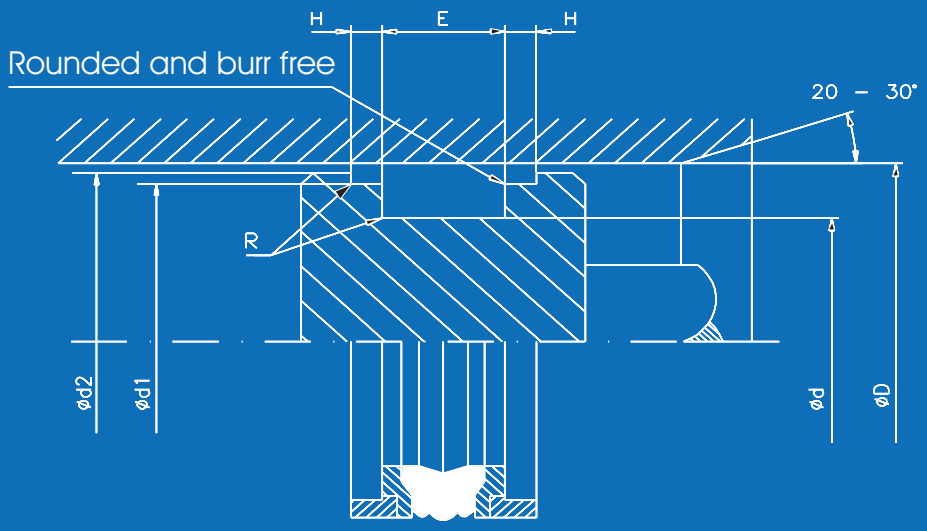
the company

HME is best positioned to provide your sealing purchase dispositon:

Extremely well-assorted delivery stock
More than 18,000 items
Prompt service by means of cooperations
Computer-aided disposition and order-administration

Developements of customer-sized seals and systems
Construktion sheets of sealing systems
Standard dimensions
World-wide-support

Technical training by **HME**



R = 0,4 for D < 100
R = 0,8 for D > 100

HME

sections

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Wipers 4

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Regarding the great variety of practice applications please ask our Customer Service Department for catalogue missing types and dimensions of HME seals

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WARRANTY

This sealing catalogue is based on decades of experience and knowledge in sealing hydraulics. Nevertheless, differences in the text or editorial misprints cannot be excluded. We would therefore recommend you to thorougly check the measured specifications indicated in our catalogue, the compatibility of the hydraulic liquids to be applied as well as the technical demands of your sealing applications. Due to the variety of practical applications no guarantee and liability can be accepted for the correctness of the cataloque specifications as well as the functioning in isolated cases by HME . Subject to change without notice.

The HME TECHNIC DEPARTMENT supports you and give answers to all your questions regarding the concept of your sealing system. If required, please contact our technical and administrative customer support.

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The function of hydraulic systems depends to a great extent on the mutual cooperation between the design and the seals applied in the hydraulic devices. The applications can be quite similar but they are influenced to a high degree by the specific working conditions.

Due to the high demands on the motive power engineering and control technique the demands on the sealings have also increased over the last few years. The users should therefore consider the various characteristics quantities of the sealing element when choosing the sealing and absolutely include the specific influence factors on the sealing process during application into their condition.

HME Seals and Systems are designed for the use at middle, high and highest pressures and have proven successful in practice under the most difficult operating conditions such as for example in mining and mobile hydraulics. They are distinguishing themselves by a maximum of operating safety and ease of assembly.

HME sealing systems offers the user a number of decidive advantages, such for example :

- an extensive and application-oriented type range
- special technical and practice-compatible solutions
- high quality standard
- low assembly costs
- high service life due to specially developed materials

Materials (sealing elements)

Materials of construction meant for use in sealing and guiding applications are expected to have outstanding mechnical and chemical characteristics.

1. lowest permanent deformation (good compression set)
2. high abrasion resistance and low wear
3. good temperature stability
4. good compatibility with pressure medium
5. excellent mechanical characteristics.

Materials used in manufacture of HME sealing systems undergo constant and stringent quality checks. This assists in enhancing the function and service life of the seals. HME seals are regularly produced from one or more of the following materials:

Fiber elastomer combinations

These materials are used in very demanding application environments. They display good pressure, abrasion and flow resistance and good anti stick slip behaviour.

Elastomer blends from natural or synthetic Rubber

These materials are used in manufacture of sealing elements that call for high elasticity and ease of assembly.

Flexible thermoplastics

These materials (polyurethane, polyester elastomers) are used in sealing elements, wipers and thrust rings with very high elasticity, abrasion resistance and compressive strength.

Rigid thermoplastics

Highly resistant materials (polyamide, polyacetal) are used in manufacture of sliding elements and thrust rings.

Fluorine containing thermoplastics with and without reinforcements

This group mainly comprises of PTFE and related coupounds. Seals, wipers and guides manufactured from these materials primarily relate to applications that require low friction and high resistance and stability.

Thermosetting plastics

These composites (phenolic resins and fabrics) are used in peripheral components of sealing systems such as supporting components and slide ways.

Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
Acetaldehyde	- -	- -	- -	+	- -	++
Acetone	- -	O	- -	++	- -	++
Acetylene	++	++	++	++	++	++
Acrylonitrile	- -	O	- -	- -	- -	++
Ethyl ester of acrzlic acid	- -	O	- -	O	- -	++
Adipic acid aqueous	++	+	++	++	++	++
Ethane	++	O	++	- -	++	++
Athanolamine	O	O	- -	++	- -	++
Essentials (Ethereal Oils)	+	- -	+	- -	+	++
Ethyl Acetate	- -	- -	- -	O	- -	++
Ethyl Acrylate	- -	O	- -	O	- -	++
Ethyl Alkohol 20° C	+	+	+	++	+	++
Ethyl Alkohol 50° C	O	O	O	++	- -	++
Ethyl Benzene	- -	- -	+	- -	- -	++
Ethyl Cellulose	++	x	- -	+	x	++
Ethyl Chloride	O	- -	+	- -	- -	++
Ethylene	+	x	+	x	x	++
Ethylene Bromide	O	- -	+	- -	- -	++
Ethylene Chlorhydrin	- -	x	+	x	x	++
Ethylene Chloride	- -	- -	+	- -	- -	++
Ethylene Diamine	+	O	- -	++	- -	++
Ethylene Dichloride	- -	- -	+	- -	- -	++
Ethylene Glykol	++	++	++	++	+	++
Ethylene Oxide	O	- -	- -	O	x	++
Ethylene Silikate	++	+	++	x	++	++
Polassium Hzdcoxide	+	O	O	++	- -	++
Sodum Hydroxide	+	O	O	++	- -	++
Accumulator acid	+	O	++	++	- -	++
Alum (aqua)	+	+	++	++	+	++
Aluminium Chloride	+	+	++	++	x	++
Aluminium Fluoride	+	+	++	++	x	++
Aluminium Sulphate	+	++	++	++	O	++
Formic Acid	- -	O	- -	+	O	++
Ammonia, gaseous, hot	O	O	O	+	- -	++
Ammonia, gaseous, cold	+	+	O	++	- -	++
Ammonia aqueous	+	O	O	++	- -	++
Ammonium Chloride aqueous	++	++	++	++	O	++
Ammonium Fluoride aqueous	++	x	++	++	O	++
Ammonium Carbonate aqueous	+	+	+	++	- -	++
Ammonium Nitrate aqueous	+	+	++	++	O	++
Ammonium Phosphate aqueous	++	++	++	++	- -	++
Ammonium Sulphate aqueous	++	+	++	++	O	++
Ammonium Sulphide aqueous	++	+	++	++	O	++
Amyl Acetate	- -	- -	- -	+	- -	++
Amyl Alcohol	+	- -	+	+	O	++
Aniline	- -	O	++	O	- -	++
Aniline Chlorhydrate	+	+	++	+	- -	++
Aniline Dye	- -	x	++	+	x	++
Anisole	- -	x	x	x	- -	++
Cyclohexanone	- -	- -	- -	O	- -	++
Antimony Chloride aqueous	++	++	++	++	- -	++
Antimony Chloride (dehydrated)	++	++	++	++	- -	++
Malic acid	++	++	++	++	O	++
ASTM Fuel No. 1	++	- -	++	x	x	++
ASTM Fuel No. 2	O	- -	++	x	x	++
ASTM Fuel No. 3	- -	- -	+	x	x	++
ASTM Oil No. 1	++	+	++	- -	++	++
ASTM Oil No. 2	++	+	++	- -	++	++

++ = highly resistant; + = resistant; O = restricted resistant; - = resticted resistant to none resistant; - - = none restistant; x = not tested

Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
ASTM Oil No. 3	+	O	++	- -	+	++
ATE-Blue Brake Fluid	- -	O	O	x	x	++
Barium Chloride	++	++	++	++	x	++
Barium Salts aqueous	++	++	++	++	O	++
Cotton Oil	++	+	++	- -	++	++
BC 48 (Drilling Oil)	+	x	++	x	x	++
Benzaldehyde	- -	- -	- -	+	x	++
Fuel	++	- -	++	- -	++	++
Fuel-Benzene-Ethanol 50/30/20	- -	- -	+	- -	- -	++
Fuel-Benzene-Mix 80/20	O	- -	+	- -	+	++
Fuel-Benzene-Mix 70/30	O	- -	+	- -	+	++
Fuel-Benzene-Mix 60/40	- -	- -	+	- -	O	++
Fuel-Benzene-Mix 50/50	- -	- -	+	- -	O	++
Benzene	- -	- -	O	- -	- -	++
Benzyl Alcohol	- -	+	++	++	- -	++
Benzyl Chloride	- -	x	+	x	x	++
Succinic Acid aqueous	+	x	+	+	- -	++
Beer	++	++	++	++	++	++
Bitumen	+	O	++	x	+	++
Hydrocyanic Acid	+	+	++	+	x	++
Lead Acetate aqueous	++	x	x	++	- -	++
Bleaching Lye	- -	x	++	++	- -	++
Lead Nitrate aqueous	++	++	++	++	O	++
Borax (aqua)	++	++	++	++	+	++
Boric acid aqueous	++	++	++	++	+	++
Branntwine	++	++	++	++	++	++
Brindi Acid	+	x	++	++	O	++
Bromine	- -	O	+	O	- -	++
Hydrobromic Acid aqueous	O	O	++	+	O	++
Butadine	O	x	+	- -	O	++
Butan gaseous	+	O	+	- -	+	++
Butanol	++	++	+	++	O	++
Butyric Acid	+	x	+	x	x	++
Butyl Acetat	- -	- -	- -	+	- -	++
Butylene, liguid	+	x	++	- -	x	++
Butylene Glykol	++	++	++	++	++	++
Butyl Phenol	- -	- -	+	- -	- -	++
Butylaldehyde	- -	- -	- -	+	x	++
Calcium Acetate aqueous	+	x	- -	++	x	++
Calcium Bisulfite aqueous	+	+	+	++	x	++
Calcium Chloride aqueous	++	++	++	++	+	++
Calcium Hydroxide aqueous	++	++	++	++	O	++
Calcium Hypochloride aqueous	- -	x	++	++	x	++
Calypsol Grease WJA	+	x	++	x	x	++
Camphor	+	x	+	- -	x	++
Camphor Oil	+	x	+	- -	x	++
Chlorine, wet	- -	O	++	O	- -	++
Chlorine, dry	- -	O	++	+	- -	++
Chloral Hydrate aqueous	- -	x	+	+	x	++
Chloramine aqueous	++	x	- -	++	x	++
Chlorobenzene	- -	- -	+	- -	- -	++
Chlorobrommethane	- -	- -	+	x	- -	++
Chloracetic Acid	O	O	- -	+	- -	++
Calcium Chloride aqueous	- -	x	+	+	- -	++
Methyl Chloride	- -	x	+	- -	+	++
O-Chloro-Naphthalene	- -	- -	+	- -	- -	++
Chloroform	- -	- -	+	- -	- -	++
Chloroprene	- -	- -	O	- -	- -	++

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Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
Chlorsulfonic Acid	- -	- -	O	- -	- -	++
Hydrogen Chloride gas	- -	x	++	++	x	++
Chromic Acid	- -	O	++	O	x	++
Citronell Oil	+	+	++	x	x	++
Chlophen A 60	O	+	++	- -	x	++
Cyclohexanone	+	O	++	- -	++	++
Cyclohexanol	+	x	+	- -	x	++
Cyclohexanone (Anone)	- -	- -	- -	O	- -	++
Desmodur T 80	- -	O	+	- -	- -	++
Desmophen 2200	++	++	++	++	- -	++
Diacetone Alcohol	O	+	- -	++	+	++
Diethyl Ether	- -	- -	- -	- -	+	++
Diethyl Amin	- -	- -	- -	-	x	++
Diethylene Glykol	++	++	++	++	++	++
Diethylene Sebacal	- -	x	+	x	x	++
Diethylene Sulfate	- -	O	- -	x	- -	++
Dibenzyl Ether	- -	- -	O	+	x	++
Dibutyl Ether	- -	- -	- -	O	+	++
Dibutyl Pthalate	- -	x	+	+	x	++
Dichloroethane	- -	- -	+	- -	- -	++
Dichloroethylene	+	x	+	x	x	++
Dichlorobenzene	- -	- -	+	- -	x	++
Dichlorobutylene	- -	- -	+	- -	x	++
Dichloroaceticacid 20/60°C	+ / O	x	+ / O	+/+	x	++
Dichloro-Hexylamine	O	x	x	x	x	++
Diesel Fuel	++	x	++	- -	++	++
Diiobutylketone	- -	x	- -	+	x	++
Dimethy Ether	- -	x	- -	O	x	++
Dimethyl Aniline	- -	x	+	+	x	++
Dimethyl Formamide	- -	+	- -	+	- -	++
Dioctyl Pthalate	- -	x	+	O	x	++
Dioxane	- -	- -	- -	O	- -	++
Dioxolan	- -	x	x	O	x	++
Dipentene	+	x	++	- -	+	++
Diphenyloxide	- -	O	+	- -	x	++
Diphyl	- -	+	+	- -	x	++
Pressure Fluids a per						
DIN 51524 a. DIN 51525:						
Group H	++	O	++	- -	++	++
Group H-L	++	O	++	- -	++	++
Group H-LP	++	O	++	- -	++	++
Ecubsol Hydrotherm 36	++	x	++	+	x	++
Ferric Chloride aqueous	+	+	++	++	O	++
Ferric Sulfat aqueous	+	+	++	++	+	++
Glacial Acetic Acid pure 50° C	- -	+	- -	+	- -	++
Natural Gas	+	+	++	- -	+	++
Natural Oil	++	+	++	- -	+	++
Actic Acid 3,5 - 5 %	+	x	+	+	x	++
Acetate Ester	- -	- -	- -	O	- -	++
Acetic Acid 10 % / 50° C	- -	- -	- -	-	- -	++
Acetic Acid 25 % / 50° C	- -	- -	- -	- -	- -	++
Acetic Acid 75 % / 50° C	- -	- -	- -	- -	- -	++
Acetic Acid-Ethylester	- -	- -	- -	O	- -	++
Acetic anhydride	- -	x	- -	+	- -	++
Acetic Alcohol	++	++	+	++	x	++
Grease mineralic origin	++	+	++	- -	x	++
Grease plant origin	++	+	++	- -	x	++
Grease animal origin	++	+	++	- -	x	++

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Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
Fatty Acids	+	+	++	x	++	++
Pine needle Oil	+	O	++	x	+	++
Motor Fuel for aircrafts:						
JP3 (MIL-J-5624)	++	- -	++	- -	+	++
JP4 (MIL-J-5624)	++	- -	++	- -	+	++
JP5 (MIL-J-5624)	++	- -	++	- -	+	++
JP6 (MIL-J-25656)	++	- -	++	- -	+	++
Fluorene, dry	- -	x	++	x	x	++
Fluorbenzene	- -	- -	+	- -	x	++
Hydrofluoric Acid, hot < 65 %	- -	x	O	O	x	++
Hydrofluoric Acid, hot > 65 %	- -	x	O	O	x	++
Hydrofluoric Acid, cold < 65 %	O	x	++	O	x	++
Hydrofluoric Acid, cold> 65 %	O	x	++	O	x	++
Formaldehyde	++	x	++	++	x	++
Formamide, pure	+	x	++	+	O	++
Freon 11	+	O	+	O	x	++
Freon 12	+	O	+	O	x	++
Freon 13	+	x	+	x	x	++
Freon 14	+	-	+	x	x	++
Freon 21	- -	- -	- -	- -	x	++
Freon 22	- -	- -	- -	x	x	++
Freon 31	- -	- -	- -	x	x	++
Freon 32	+	x	- -	x	x	++
Freon 112	+	- -	+	- -	x	++
Freon 113	+	x	+	x	x	++
Freon 114	+	x	+	x	x	++
Freon 115	+	- -	+	x	x	++
Freon C318	++	- -	+	x	x	++
Furan (Furfuran)	- -	x	- -	O	x	++
Furfurol	- -	++	- -	+	- -	++
Gasoline Oil	++	+	++	- -	x	++
Gelatine	++	++	++	++	x	++
Tannic Acid	+	+	+	+	x	++
Transmission Lubricant	++	+	++	- -	+	++
Glucose	++	++	++	++	+	++
Glycol	+	+	+	+	x	++
Glycerine	++	++	+	++	++	++
Glyzerine Chlorhydrin	- -	x	+	+	x	++
Marsh Gas	++	x	++	x	x	++
Urea aqueous	++	x	++	++	x	++
Yeast aqueous	++	x	++	++	x	++
Heating Oil mineral based	++	+	++	- -	++	++
Heating Oil (rock- and browncoal based	- -	- -	++	- -	+	++
Henkel, P-3-Solution	++	x	++	++	x	++
Heptane	++	++	++	- -	++	++
Hexachlorobutadine	- -	x	++	x	x	++
Hexane	++	+	++	- -	++	++
Hexane Triol	++	++	++	++	x	++
Furnace gas	+	+	++	x	x	++
Wood Oil	+	O	++	- -	x	++
Hydrazine	+	+	+	+	x	++
Hydrazine Hydrate	+	x	++	++	x	++
Isobutyl Alkohol	+	+	++	++	O	++
Isopropanol	+	+	++	++	O	++
Isopropylacetate	- -	- -	- -	+	- -	++
Isopropylether	O	- -	- -	O	- -	++
Isopropylchloride	- -	- -	+	- -	- -	++
Isooctane	++	- -	++	- -	+	++

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Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
Poassium-Jodide aqueous	+	+	++	++	- -	++
Jodine Tinctuxe	++	+	++	+	- -	++
Caustic Lye 50 %	++	- -	+	++	- -	++
Potassium	++	x	- -	++	++	++
Potassium bromat 20 %	++	+	++	++	- -	++
Potassium bromide aqueous	++	x	++	++	- -	++
Potassium carbonate aqueous	++	++	++	++	x	++
Potassium chlorate aqueous	- -	x	++	++	- -	++
Potassium chloride aqueous	++	++	++	++	++	++
Potassium chromate aqueous	+	x	++	++	x	++
Potassium cyanide aqueous	++	++	++	++	++	++
Potassium nitrate aqueous	++	x	++	++	x	++
Potassium perchlorate aqueous	O	x	++	++	x	++
Potassium sulfate aqueous	++	++	++	++	++	++
Lime Milk	O	x	++	- -	x	++
Carbolineum	+	- -	++	- -	+	++
Carbolic Acid	- -	x	+	- -	x	++
Kerosene (Kerosin)	+	- -	++	- -	+	++
Hexafluorosilicic Acid aqueous	++	x	++	++	x	++
Bone Fat	++	+	++	- -	++	++
Aqua Regia	- -	- -	+	- -	- -	++
Carbon dioxide wet	++	++	++	++	++	++
Carbon dioxide dry	++	++	++	++	++	++
Carbon monoxide	+	+	++	+	+	++
Carbon Acid	++	++	++	++	++	++
Coconut Oil	++	+	++	- -	++	++
Coke Oven gas	- -	x	++	x	x	++
Cresol aqueous	O	x	++	- -	x	++
Copper chloride aqueous	++	++	++	++	++	++
Copper Fluoride aqueous	+	x	++	++	x	++
Copper Nitrate aqueous	+	x	++	++	x	++
Copper Sulfate aqueous	++	x	++	++	x	++
Laughing gas	++	++	++	++	++	++
Lactame	- -	++	- -	- -	x	++
Lanolin (Wool Fat a. Lanocum	++	+	++	- -	++	++
Lauryl Alcohol	+	x	++	+	x	++
Cod Liver Oil	++	+	++	+	++	++
Adhesive Paste	++	++	++	+	++	++
Linseed Oil	++	O	++	O	+	++
Illumination gas	+	+	++	- -	++	++
Liquor	++	++	++	++	++	++
Lithium Bromide aqueous	++	++	++	++	++	++
Lithium Chloride aqueous	++	++	++	++	++	++
Magnesium Chlorid aqueous	+	++	++	++	O	++
Magnesium Hydroxide aqueous	++	++	++	++	++	++
Magnesium Sulfate aqueous aqueous	+	++	++	++	++	++
Maisol	++	+	++	O	++	++
Maleic Acid	++	++	++	++	x	++
Maleic Acid Anhydride	x	x	+	x	x	++
Margarine	++	+	++	- -	++	++
Maschine Oil, mineral	++	+	++	- -	++	++
Molasse	++	++	++	++	+	++
Methyl Ester	- -	- -	- -	-	- -	++
Methane	++	O	++	O	++	++
Methoxybutanol	++	x	++	++	x	++
Methyl Acrylate	- -	- -	- -	- -	- -	++
Methyl Ethyl Acetone	- -	- -	- -	+	- -	++

++ = highly resistant; + = resistant; O = restricted resistant; - = resticted resistant to none resistant; - - = none restistant; x = not tested

Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
Methanol	O	++	-	++	- -	++
Methylamine aqueous	- -	x	- -	++	x	++
Methyl Bromide	- -	- -	++	- -	- -	++
Methyl Enchloride	- -	- -	O	- -	- -	++
Methyl Glykol Acetate	- -	+	- -	++	- -	++
Methyl Isobutyl Ketone	- -	- -	- -	O	- -	++
Methyl Methacrylate	- -	- -	- -	-	- -	++
Methyl Pyrolidone	- -	+	- -	++	- -	++
Methyl Salicylat	- -	x	x	+	x	++
Methyl Sulfuric Acid aqueous	- -	x	O	++	x	++
Milk	++	++	++	++	++	++
Lactic Acid hot	+	x	++	++	x	++
Lactic Acid cold	+	x	++	++	x	++
Mineral Oils	++	+	++	- -	++	++
Monoethanol Amine	O	O	- -	++	- -	++
Monobrombenzene	- -	- -	+	- -	x	++
Monochloroacetic Acid	- -	- -	x	+	x	++
Monochloroacetic Methyl Esther	- -	- -	x	+	x	++
Morpholin	- -	x	++	++	x	++
Motor Oils	++	+	++	- -	++	++
Naptha	+	O	++	- -	+	++
Naphthaline	O	x	++	- -	- -	++
Naphtholen ZD	++	x	++	- -	x	++
Sodium Bicarbonate aqueous	+	+	++	++	O	++
Sodium Chlorate aqueous	O	x	++	+	x	++
Sodium Chloride aqueous	++	++	++	++	++	++
Sodium Chlorite aqueous	- -	x	++	++	x	++
Sodium Cyanide aqueous	+	+	++	++	x	++
Sodium Hypochlorite aqueous	- -	x	++	++	x	++
Sodium Carbonate aqueous	+	+	++	++	O	++
Sodium Nitrate aqueous	++	++	++	++	++	++
Sodium Phosphate aqueous	++	++	++	++	x	++
Sodium Silikate aqueous	++	++	++	++	x	++
Sodium Sulfate aqueous	++	++	++	++	x	++
Sodium Sulfide	+	x	++	++	x	++
Sodium Thiosulfate	O	+	++	++	x	++
Caustic Soda solo 10 %	O	- -	+	++	- -	++
Caustic Soda solo 25 %	- -	- -	O	++	- -	++
Caustic Soda solo 50 %	++	- -	O	++	- -	++
Nickel Acetate aqueous	+	- -	- -	++	- -	++
Nickel Chloride aqueous	++	++	++	++	++	++
Nickel Sulfate aqueous	++	++	++	++	++	++
Nitrobenzene	- -	x	O	- -	- -	++
Nitroglycerine	- -	x	++	++	x	++
Nitroglykol	- -	x	++	++	x	++
Nitromethane	- -	- -	- -	+	- -	++
Nitropropane	- -	- -	- -	+	- -	++
Nitrous Gas	- -	- -	O	O	- -	++
O-Nitrotoluene	- -	- -	O	- -	x	++
Oilic Acid	+	+	++	O	+	++
Oleum	- -	- -	++	- -	- -	++
Oleyl Alcohol	++	- -	++	++	- -	++
Olive Oil	++	+	++	- -	x	++
Oxalic Acid aqueous	++	++	++	++	x	++
Palmitic Acid	+	+	++	- -	x	++
Paraffin	++	+	++	- -	+	++
Paraffin Oil	++	+	++	- -	+	++
Pektin	++	++	++	++	++	++

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Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
Pentane	++	x	++	- -	x	++
Perchlorethylen 50° C	- -	- -	+	- -	O	++
Perchloric Acid	- -	- -	++	++	x	++
Perfekthion S	- -	x	+	x	x	++
Petroleum Ether	++	+	++	- -	++	++
Petroleum	++	+	++	- -	++	++
Vegetable Oils	++	+	++	O	++	++
Phenol	- -	O	+	- -	- -	++
Phenyl Ethyl Ether	- -	- -	- -	x	x	++
Phenyl Benzone	- -	x	+	x	- -	++
Phenyl Hydrazine	O	O	+	O	x	++
Phosgene liquided	+	x	++	+	x	++
Phosgen gaseous	+	x	++	+	x	++
Phosphorous Oxichloride	- -	x	++	++	x	++
Phosphoric Acid cold <45 %	+	+	++	++	x	++
Phosphoric Acid concentrated	++	+	++	++	x	++
Phosphoric Acid hot, concentrated	- -	- -	++	++	x	++
Phosphorous Trichloride	- -	x	++	++	x	++
Hydrogen Phosphate	- -	x	++	++	x	++
Phthalic Acid Anhydride	++	x	++	x	x	++
Picrin Acid aqueous	+	++	++	++	x	++
Piperidine	- -	- -	- -	- -	- -	++
Propane	++	- -	++	- -	+	++
Propanol (1) 50° C	+	O	+	+	O	++
Propanoic Acid	+	x	++	- -	x	++
Propylene Glykol	+	x	++	++	x	++
Propylene Oxid	- -	x	- -	++	x	++
Pyridine	- -	- -	- -	- -	- -	++
Mercury	++	++	++	++	++	++
Qercuried Chloride	++	++	++	++	++	++
Castor Oil	++	+	++	O	++	++
Gas from Roasting	- -	+	++	++	x	++
Sagrotan	+	++	++	++	++	++
Salicyl Acid	++	++	++	++	++	++
Nitric Acid 30 % at 80°C	- -	- -	- -	- -	- -	++
Nitric Acid fuming 60°C	- -	- -	- -	- -	- -	++
Hydrochloric Acid 10 % at 80°	- -	x	+	++	x	++
Hydrochloric Acid 30 %	O	x	+	++	x	++
Hydrochloric Acid 37 % fuming	O	x	+	++	x	++
Lubricating Acid	++	+	++	- -	+	++
Black Lye	+	x	+	+	+	++
Sulfur	O	x	++	+	x	++
Sulfur Dioxide aqueous	- -	x	++	++	x	++
Carbon disulfide	- -	- -	++	- -	O	++
Sulfuric Acid 10 % at 60°C	+	+	+	++	- -	++
Sulfuric Acid 25 % at 60°C	+	+	+	++	- -	++
Sulfuric Acid 50 % at 60°C	- -	- -	+	++	- -	++
Sulfuric Acid 75 % at 60°C	- -	- -	+	+	- -	++
Sulfuric Acid 96 % at 60°C	- -	- -	+	- -	- -	++
Sulfuric Acid fuming	- -	- -	++	- -	- -	++
Sulfuric Trioxide	- -	+	+	+	x	++
Hydrogen Sulfide dry	O	x	O	++	x	++
Hydrogen Sulfide dry 80°C	O	x	O	++	x	++
Hydrogen Sulfide aqueous	O	x	O	++	x	++
Hzdrogen Sulfide 80°C	O	x	O	++	x	++
Flame resistant pressure fluids of the class						
HFA	++	x	++	- -	x	++
HFB	++	x	++	- -	x	++

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Resistance of some basic materials

	NBR	MVQ	FPM	EPDM	PU	PTFE
HFC	+	+	+	+	x	++
HFD.....R	- -	+	++	+	x	++
HFD.....S	- -	+	++	- -	x	++
HFD.....T	- -	+	++	- -	x	++
Soap Solution	++	++	++	++	x	++
Silver Nitrate aqueous	++	++	++	++	++	++
Silicon Oils	++	- -	++	x	x	++
Soy bean Oil	++	+	++	- -	x	++
Stearic Acid	++	++	++	++	++	++
Styrene	- -	- -	+	- -	- -	++
Sulfury Chloride	- -	x	++	+	x	++
Talc	+	x	++	+	x	++
Tanin	+	x	++	++	x	++
Tectal	- -	- -	+	- -	- -	++
Tar	- -	x	+	- -	x	++
Terpentine	++	- -	++	- -	O	++
Terpentine Oil	+	- -	++	- -	x	++
Tetrachloroethylene	- -	- -	+	- -	- -	++
Carbon Tetrachloride	- -	- -	+	- -	- -	++
Tetrahydrofuran	- -	- -	- -	- -	- -	++
Tetraline (Tetrahydronapthaline)	O	x	++	- -	x	++
Thionyl Chloride	O	x	++	++	x	++
Thiophene	- -	x	- -	- -	x	++
Ink	++	++	++	++	++	++
Toluene 20° C	- -	- -	+	- -	- -	++
Transformer Oil	+	O	+	- -	++	++
Triethanolamine	O	x	- -	++	x	++
Triethylglycole	++	++	++	++	++	++
Tributyl Phosphate	- -	x	O	+	x	++
Trichlore Ethylene	- -	- -	+	- -	- -	++
Trichloracetic Acid	+	x	- -	+	x	++
Tricresyl Phospate	- -	x	+	+	x	++
Vaseline	++	+	++	x	+	++
Vinyl Acetate	- -	x	- -	+	x	++
Vinyl Chloride aqueous	- -	x	+	x	x	++
Sperm Oil	++	x	++	- -	x	++
Water cold	++	++	++	++	+	++
Water up to 80°C	+	++	++	++	- -	++
Water up to 100°C	+	O	++	++	- -	++
Water destilled 50°C	+	+	+	++	- -	++
Sea Water	++	++	++	++	- -	++
Hydrogen Gas cold	++	x	++	++	++	++
Hydrogen Gas hot	+	x	++	++	x	++
Hydrogen Superoxid 90 %	- -	x	+	+	x	++
Wine Acid	++	++	++	++	x	++
Wool Fat	++	+	++	- -	++	++
Xylene	- -	- -	+	- -	- -	++
Zinc Chloride aqueous	+	++	++	++	x	++
Zinc Sulfate aqueous	++	++	++	++	x	++
Tinn Chloride aqueous	++	++	++	++	x	++
Citric Acid	+	++	++	++	x	++
Sugarcane Juice	++	++	++	++	x	++

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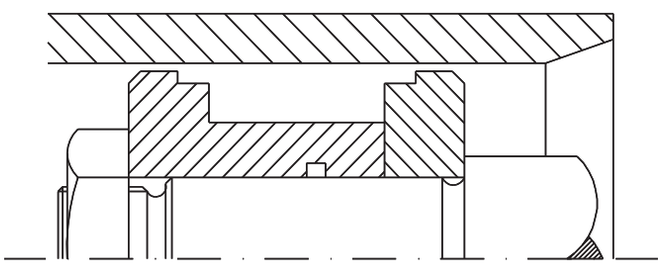
Mounting area:

The two basic types of mounting areas are:

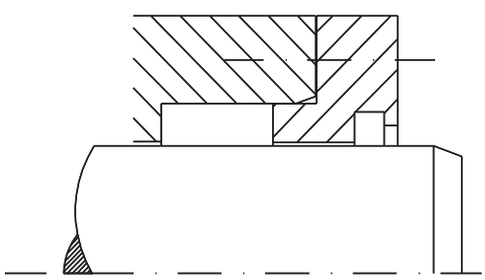
1. axial access or "open" mounting area (see fig. 1)
2. grooved slot (see fig. 2)

Both types are used on the piston side as well as on the rod side.

1) axially accessible mounting areas

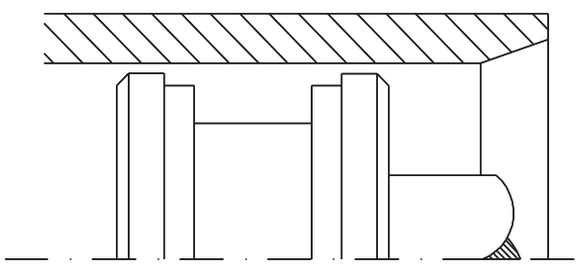


split piston construction (in parts)

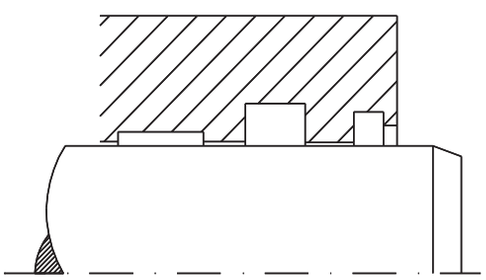


open mounting space with rod seal

2) Sticked slot



single part piston construction

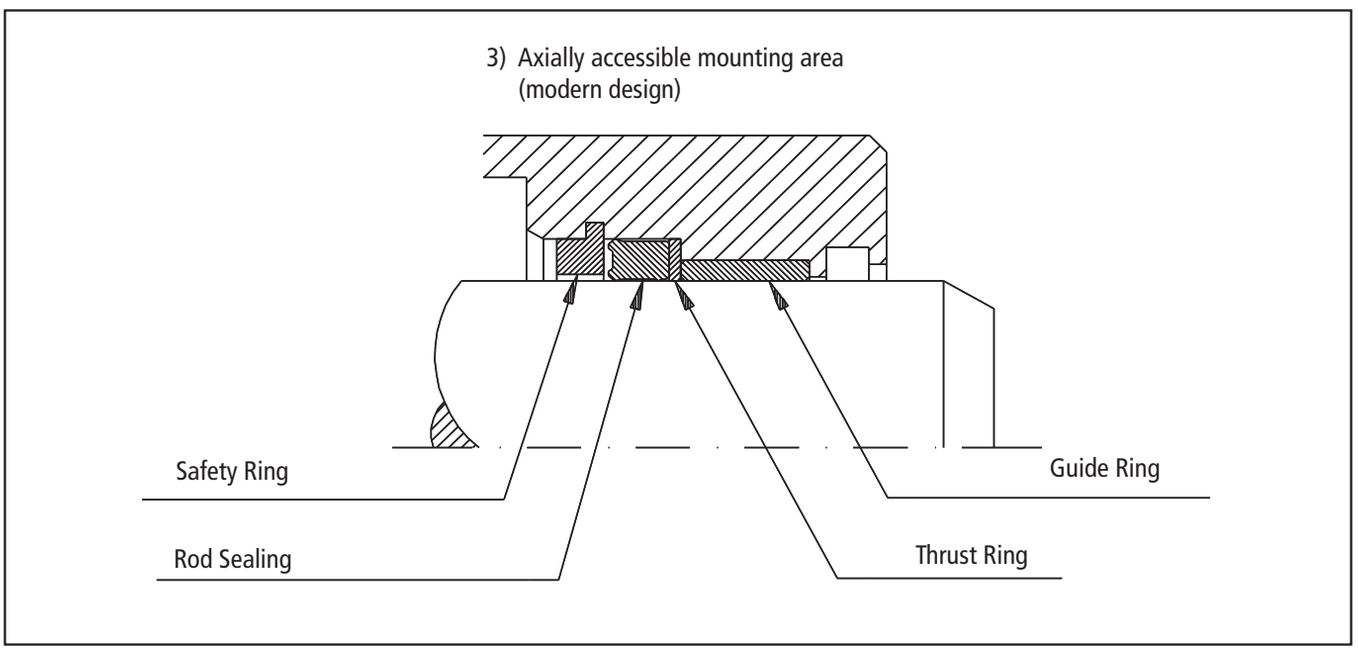


mounting space with snap assembly

Some sealing elements like glands or fiber reinforced seals with large cross sectional area basically call for an axially accessible mounting space for assembly. Axially accessible mounting spaces are also required in cases where assembly involves small diameters.

Modern design of axially accessible mounting area:

We have evolved this highly advantageous system for rod sealing and sliding in consultation with our clients (drawing N°. 3).
It is designed to aid slip-in type of assembly of all guiding and sealing parts of the rod as necessary.



This proven variation of the open mounting area offers the following advantage over the conventional design with closed groove:

- Simple and cost effective manufacture of connecting piece head
- Optimal control of surface areas at the static sealing site and component accuracy to size
- Safe and fast assembly of sealing and guiding elements without the danger of damage to sealing edges
- Automatic assembly possible
- Variable design of guide lengths
- Service friendly: some components of the sealing system can be quickly and easily replaced
- Optimal protection against split extrusion of rod sealing through additional support ring.

General assembly hints:

To avoid assembly related damage and to enhance the service life of seals, please follow the advice given below:

To avoid assembly related damage, carefully remove sharp edges, burr and all likely sources of contamination.

Adequate lead-in bevels simplify the assembly process and reduce possibility of damage. The following formula gives required lead-in bevel:

$$L = \frac{D - d}{4}$$

L: Length of lead-in bevel D: nominal external diameter d: nominal internal diameter

- During assembly over threads, insert adequate protection between the sealing and the thread.
- Preassembled seals must never be subject to unilateral loads prior to assembly since this may cause deformation.
- Moderate heating of seals up to 60°C in hydraulic oils and application of mineral fat to seals and assembly components simplifies montage.

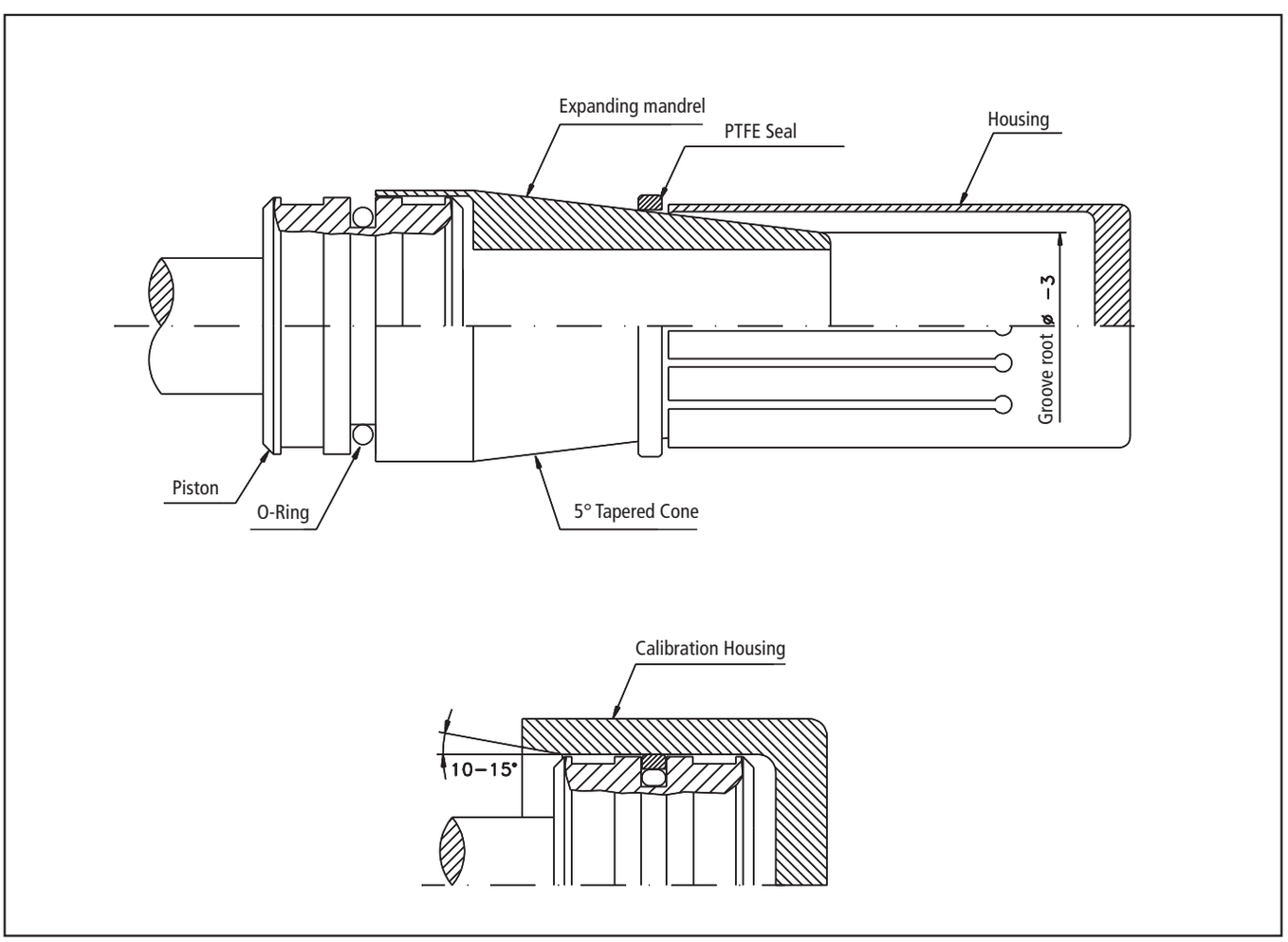
Guidelines for assembly of PTFE piston seals

To ensure a safe and proper assembly please adhere to the specified measurements, tolerances and surface areas strictly. Initially the O-ring is inserted in the groove. Piston seals of up to 100 mm nominal diameter and radial thickness of over 1.6 mm are stretched apart carefully using assembly tools and snap fit into the groove (see drawing).

Piston seals of over 100 mm nominal diameter can also be prised apart and fitted by hand taking care that the profile thickness is maintained as uniform as possible.

Lead in grooves that occur incidentally can be bridged by sheet metal or plastic strips or bands.
We recommend the use of a stretching housing to overcome assembly problems related to short lead-ins and large amount of stretching (see drawing).

Assembly tools are to be fabricated preferably from metals or polyamide.



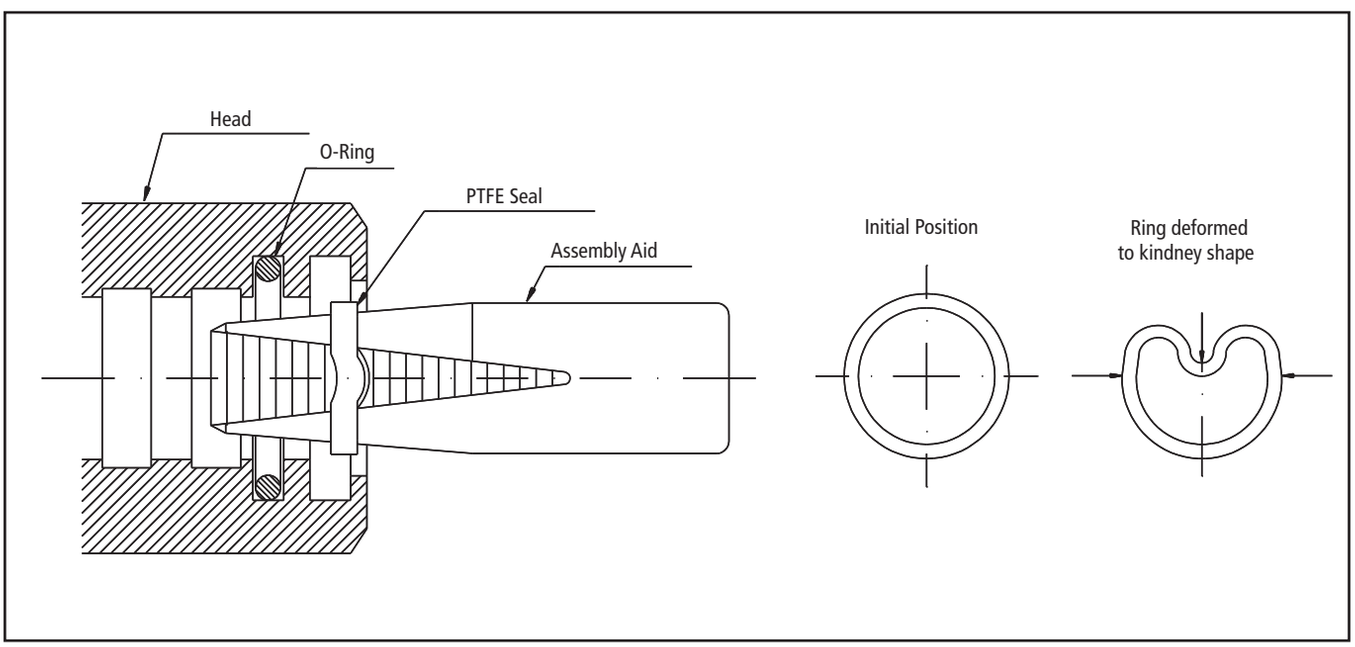
Guidelines for assembly of PTFE rod reals

To provide safe and proper assembly, please adhere to the company specified measurements, tolerances and surface areas strictly.

Initially the O-ring is inserted in the groove (for rod thicknesses up to 30 mm nominal diameter we recommend the use of axially accessible storing space).

The rod seal is now carefully bent to a kidney shape, inserted in the groove and resized with a suitable mandrel.

A metallic conical mandrel can also be used to deform the profile sealing ring. The mandrel contains a wedge shaped recess at the front end. A recess can be pre-cut into the ring. The ring can subsequently be inserted into the groove as specified above. Here, profile thickness must be resized even after removal of mandrel.



Storage of rubber products

(Also refer DIN 7716)

During storage, vulcanized rubber products tend to undergo a change in their physical characteristics subject to influence of oxygen, ozone, light, heat and/or moisture. Careless storage can damage rubber products leading to hardening, softening, cracks etc. which render the product useless. Careful compliance to the following suggestions can reduce the damage to rubber components providing improved life.

Temperature

Store room temperature may not exceed +25°C. Constant exposure to low temperatures (also below 0°C) does not harm rubber products. If rubber articles need to be taken out of the store room at sub zero temperatures, they should first be warmed to +20°C.

Oxygen - Ozone

Whenever possible, vulcanized rubber products must be protected from ambient environment using suitable packaging such as storage in air-tight foils. This specifically applies to rubber articles with larger surface area and volume. Ozone attacks rubber, therefore the storage room must never contain electrical equipment that promotes the generation of ozone.

Ambient Air

Humidity should be maintained at 65% in a preferably dust free environment.

Light

Rubber products must be protected from direct sun and artificial light sources with high UV content. If articles are not packed in opaque containers or special foils, it is essential that store room windows be coated with anti UV material.

Deformation

If possible, store these products free from pressure elongation and deformation to avoid deformation. Preferably retain these products in their original packaging.

Contact with Fluids and Semifluid Media

Rubber articles should not have contact to fluid or semifluid media during storage. Contact with solvents, oils and fats or greases should be avoided.

Contact with Metals

Metals like manganese, steel, copper and its alloys can destroy rubber products when in direct contact. A simple protective partition from paper, polyethylene sheet etc, may be used to isolate the seals.

Contact with Non-Metals

Contact with other kinds of rubber or PVC is to be avoided.

Storage Duration

Keep storage time to a minimum and follow the principle of "first-in-first-out" in using the seals.

Cleaning

Cleansing of rubber products, if necessary, can be carried out with water, soap or methanol. Organic cleaning solvents like trichloro ethylene, carbon tetrachloride or petroleum are not to be used. All parts must be dried at room temperature before use.

Storage Time

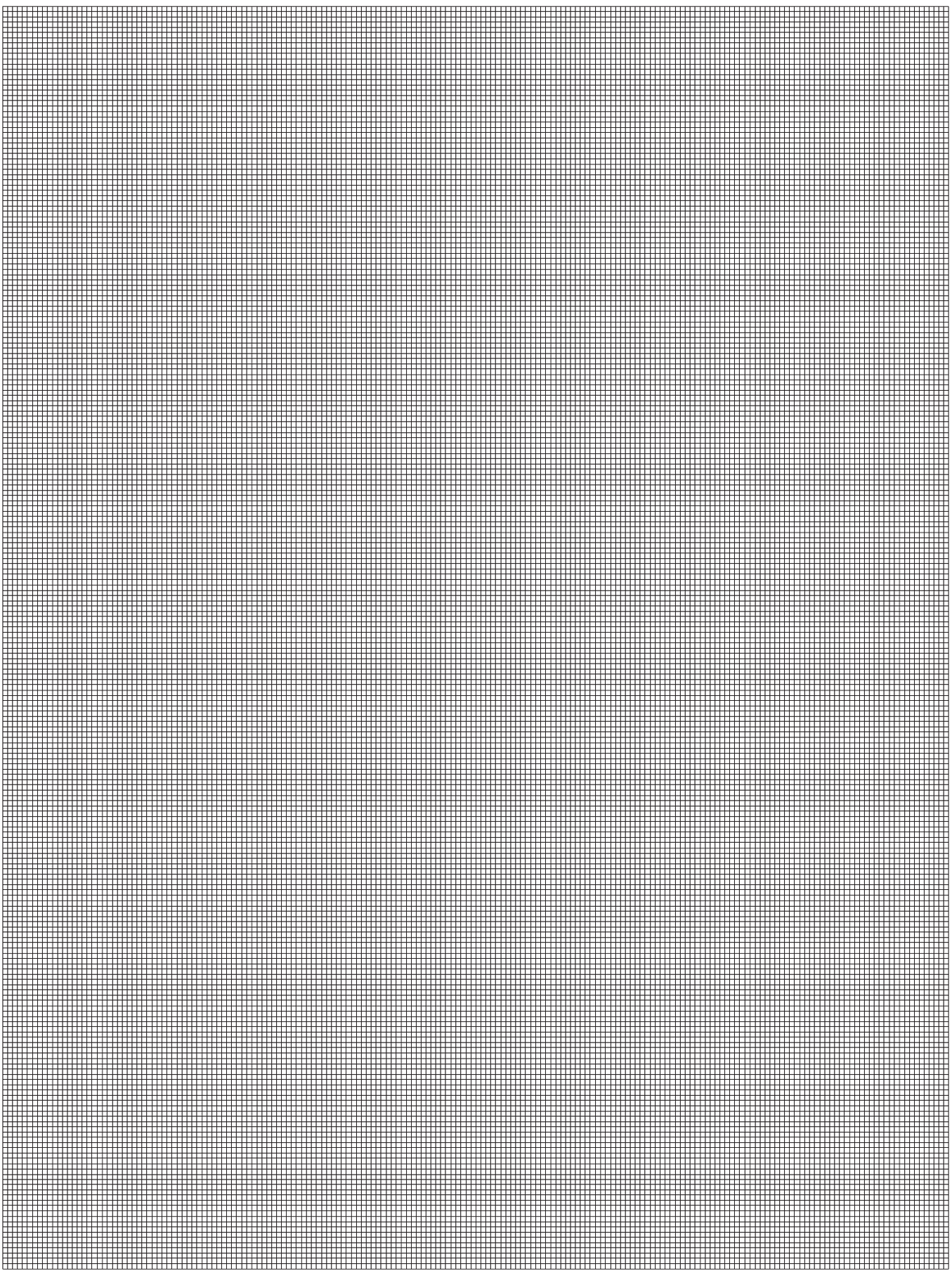
The polymer incorporated in the rubber product determines its service life. Following table gives shelf life under optimal conditions. The following criteria should be strictly checked prior to first use and after the initial storing time.

1.) recognizable mechanical destruction
2.) permanent deformations and changes
3.) check for hairline cracks or changed surface morphology
4.) check for undue softening or surface hardening.

Basic Polymer	First Time Storage	Storage after Inspection (2nd)
Fluoroelastomer /GFPM Fluorosilicones Chlorosulphonated PE	10 years	4 years
Neoprene (CR) Ethylene-Propylene-Diene (EPDM) Nitrile/PVC blend	5 years	2 years
Natural Rubber Nitrile (NBR) Butyl Rubber Polyurethan (PU) Styrol Butadiene Rubber (SBR)	3 years	2 years

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

NOTES



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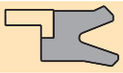
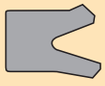
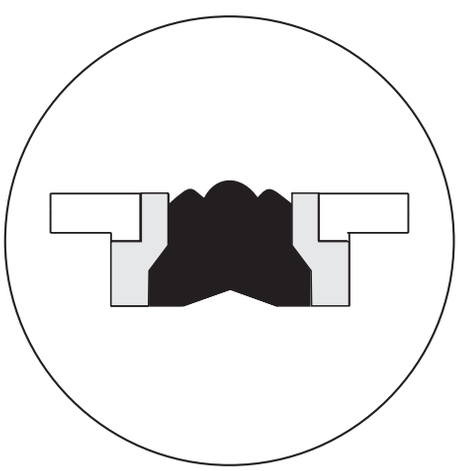
Profile	Type	Specification	Limitations of Use			Material	
			Temperature	Pressure	Velocity	Sealing element	Page
	HK 100	Compact seal - double acting (5-pieces)	-30 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	NBR	3
	HK 101	Compact seal - double acting (for ISO-housing areas) 5-pieces	-30 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	NBR	9
	HK 105	Compact seal - double acting (5-pieces)	-30 up to +110° C	up to 70 Mpa (700 bar)	up to 0,5 m/s	NBR	13
	HK 106	Compact seal - double acting (3-pieces)	-30 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	NBR fabric	17
	HK 110	Compact seal - double acting (3-pieces)	-30 up to +110° C	up to 50 Mpa (500 bar)	up to 0,5 m/s	NBR fabric	21
	HK 115	Compact seal - single acting with keeper ring (5-pieces)	-30 up to +110° C	up to40 Mpa (400 bar)	up to 0,5 m/s	NBR fabric	25
	HK 120	Compact seal - single acting with anti-extrusion ring	-30 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	NBR fabric	29
	HK 123	V - ring - single acting (3-pieces)	-30 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	NBR fabric	33
	HK 125	U - ring - single acting with anti-extrusion ring	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethan	35
	HK 130 HS 225	U - ring - single acting	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethane	37
	HK 131	U - ring - single acting with anti-extrusion ring	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethane	43
	HK 135	Compact seal - double acting (for ISO-housing areas) 3-pieces	-35 up to +110° C	up to 25 Mpa (250 bar)	up to 0,5 m/s	AU Polyurethane	47
	HK 140	Single acting (2-pieces)	-35 up to +110° C	up to 50 Mpa (500 bar)	up to 0,5 m/s	AU Polyurethane	49
	HK 146	Double acting with NBR-expander	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,8 m/s	AU Polyurethane	53
	HK 149	Double acting with O-ring	-35 up to +110° C	up to 50 Mpa (500 bar)	up to 0,5 m/s	AU Polyurethane	57
	HK 150	Double acting with O-ring	-40 up to +200° C	up to 40 Mpa (400 bar)	up to 15 m/s	PTFE Compound	61
	HK 155	Single acting with O-ring	-40 up to +200° C	up to 40 Mpa (400 bar)	up to 15 m/s	PTFE Compound	65
	HK 156 HK 157	Double acting with O-ring	-40 up to +200° C	up to 16 Mpa (160 bar)	up to 15 m/s	PTFE Compound	69
	HK 160	Compact seal - double acting	-35 up to +110° C	up to 50 Mpa (500 bar)	up to 1,5 m/s	PTFE Compound	73
	HK 170 HK 171	Single acting with spring	-150 up to +255° C	up to 35 Mpa (350 bar)	up to 20 m/s	PTFE Compound	77
	HK 174	Piston ring with special split		up to 200 Mpa (2000 bar)	up to 40 m/s	Sonderguss gas sealing	81

Regarding the great variety of practice applications please ask our customer service department personally for missing types or dimensions

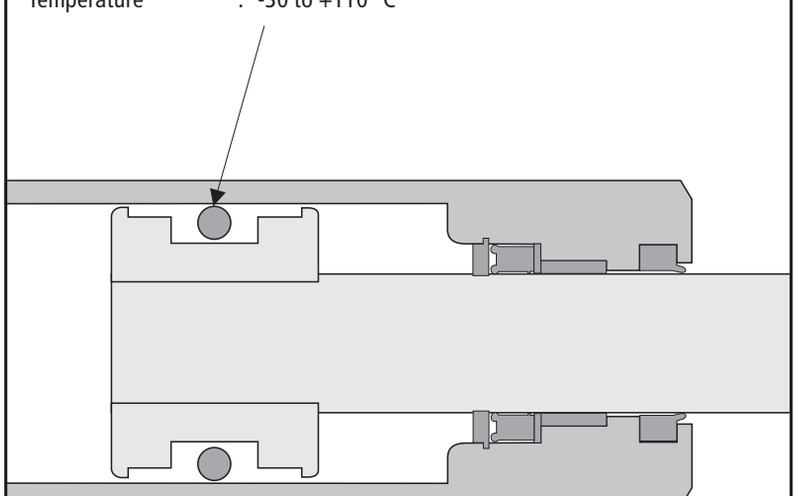
PISTON SEAL
HK 100

Double action piston seals of the HK 100 series combine sealing and guiding functions to the most confined of spaces. The special form of the sealing element also makes them suitable for use with suction or positioning cylinders.

A carefully chosen material of construction also makes it suitable for extreme service conditions.

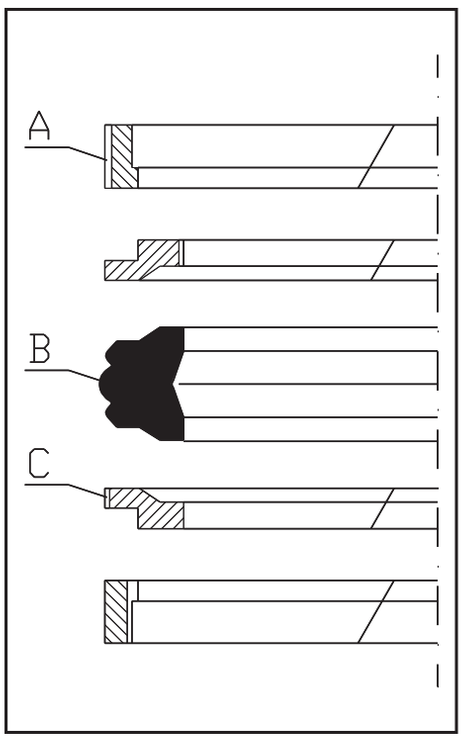


Material : modified NBR
Operating pressure : up to 40 MPa (400 bar)
Velocity : reciprocating to 0.5 m/s
Temperature : -30 to +110 °C



Special Features:

- 5 part sealing set. Snap on assembly possible with single-piece pistons
- Sealing components from heavy duty anti-wear grade NBR
- Sealing components with three sealing edges. Optimal efficiency with least friction
- Also suitable for unilateral pressure application
- Torsion resistant due to form-locking components
- Heavy duty thrust rings with pressure relief/unloading grooves
- Extensive variety of sizes available.



Angular Slide Rings - Part A

Material: filled Polyamide

Short insides of the split/partinioned slide rings guarantee considerably simple assembly on single piece pistons. The practical design facilitates optimal distribution of transverse forces/shear forces that come into play. Axial unloading grooves ensure a shorter response time of the seal in case of quick changes in load. Specially designed materials ensure high pressure stability, even in case of variable thermal conditions. Low finishing tolerances ensure better piston sliding and optimize the seal function.

Elastomeric Seal Components - Part B

Material: NBR

Sturdy sealing elements from highly wear-resistant NBR are proven to be superior due to low compression strain and high tensile strength. Out of the three sealing edges, the larger one in the middle serves as the primary seal, and the two smaller external lips serve as a pre-seal. The broad clamping area is taken up by static sealing of the groove base/root.

Specially designed angular shoulders incorporated on both sides eliminate the possibility of turning of the sealing element in the event of shocks.

Piston Seal - Part C

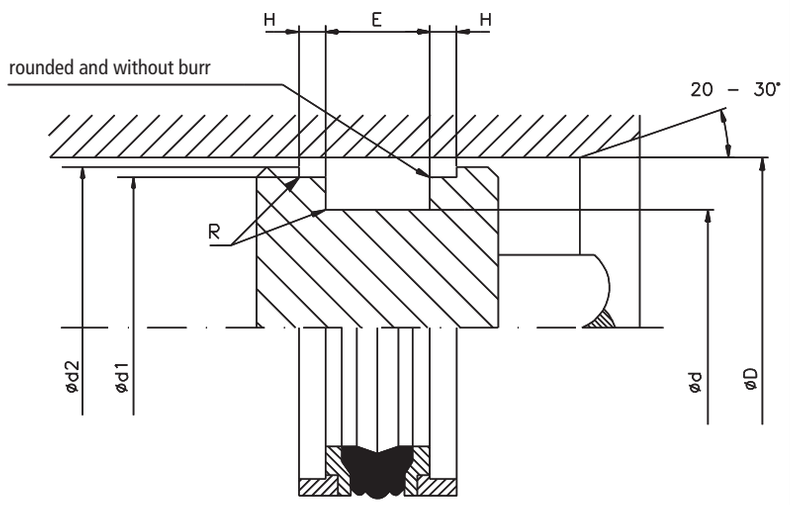
Material: Polyester-Elastomer

Both thrust rings together produce the required form and force locking arrangements between sealing element and slide ring. Special material and close tolerances prevent split extrusion of the sliding elements.

Unloading grooves/relief grooves on the dynamic side eliminate pressure concentration even with quick load variations.

Double action piston seal series HK 100 has been used as a cylinder seal for years. The universal range of application from low pressures to heavy hydraulics is a major advantage. It also has proven results in cases of unilateral pressure application.

PISTON SEAL
HK 100



R = 0,4 for D < 100
R = 0,8 for D > 100

Limitations on Use

Maximum allowable operational pressure depending on the rubbing speed and temperature range of application is given below:

Vmax [m/s]	Application Temperature [°C]		
	-30 +60	-30 +80	-30 +110
0,50	250 bar	160 bar	100 bar
0,15	400 bar	250 bar	160 bar

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks or sides	16,0 µm	10,0 µm	3,2 µm

Extensive range of inch measurement diagrams available on request.

D H9	**d** h9	**E** +0,2	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
20,00	11,00	13,50	2,10	17,00	19,00	HK100 0200-01-100
22,00	13,00	13,50	2,10	19,00	21,00	HK100 0220-01-100
25,00	15,00	12,00	4,00	21,00	23,00	HK100 0250-01-100
25,00	**15,00**	**12,50**	**4,00**	**22,00**	**24,00**	**HK100 0250-02-100**
25,00	15,00	16,40	6,35	21,45	23,50	HK100 0250-04-100
25,00	16,00	13,50	2,10	22,00	24,00	HK100 0250-05-100
25,00	**17,00**	**10,00**	**4,00**	**22,00**	**24,00**	**HK100 0250-06-100**
25,00	17,00	13,50	3,20	21,00	24,40	HK100 0250-07-100
28,00	19,00	13,50	2,10	25,00	27,00	HK100 0280-01-100
30,00	17,00	15,40	6,35	26,50	29,00	HK100 0300-01-100
30,00	21,00	13,50	2,10	27,00	29,00	HK100 0300-02-100
30,00	22,00	13,50	3,20	26,00	29,40	HK100 0300-03-100
32,00	**22,00**	**12,50**	**4,00**	**29,00**	**31,00**	**HK100 0320-01-100**
32,00	22,00	15,50	2,60	28,00	31,00	HK100 0320-02-100
32,00	22,00	16,40	6,35	28,50	30,50	HK100 0320-03-100
32,00	**24,00**	**10,00**	**4,00**	**29,00**	**31,00**	**HK100 0320-04-100**
32,00	24,00	15,50	3,20	28,00	31,40	HK100 0320-05-100
35,00	25,00	15,50	2,60	31,00	34,00	HK100 0350-01-100
35,00	25,00	16,40	6,35	31,40	33,50	HK100 0350-02-100
35,00	27,00	15,50	3,20	31,00	34,40	HK100 0350-03-100
36,00	26,00	15,50	2,60	32,00	35,00	HK100 0360-01-100
40,00	24,00	18,40	6,35	35,40	38,50	HK100 0400-01-100
40,00	26,00	15,50	2,60	36,00	39,00	HK100 0400-02-100
40,00	30,00	12,50	4,00	36,00	38,00	HK100 0400-03-100
40,00	**30,00**	**12,50**	**4,00**	**37,00**	**39,00**	**HK100 0400-04-100**
40,00	30,00	16,40	6,35	35,40	38,50	HK100 0400-05-100
40,00	**32,00**	**10,00**	**4,00**	**37,00**	**39,00**	**HK100 0400-06-100**
40,00	32,00	15,50	3,20	36,00	39,40	HK100 0400-07-100
42,00	28,00	15,50	2,60	38,00	41,00	HK100 0420-01-100
45,00	29,00	18,40	6,35	40,40	43,70	HK100 0450-01-100
45,00	31,00	15,50	2,60	41,00	44,00	HK100 0450-02-100
45,00	35,00	16,40	6,35	40,40	43,50	HK100 0450-03-100

PISTON SEAL
HK 100

D H9	**d** h9	**E** +0,2	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
45,00	37,00	15,50	3,20	41,00	44,40	HK100 0450-04-100
50,00	34,00	18,40	6,35	45,40	48,70	HK100 0500-01-100
50,00	34,00	20,50	3,10	46,00	49,00	HK100 0500-02-100
50,00	**35,00**	**20,00**	**5,00**	**46,00**	**48,50**	**HK100 0500-03-100**
50,00	38,00	20,50	4,20	46,00	49,40	HK100 0500-04-100
50,00	**40,00**	**12,50**	**4,00**	**47,00**	**49,00**	**HK100 0500-05-100**
55,00	39,00	18,40	6,35	50,36	53,50	HK100 0550-01-100
55,00	39,00	20,50	3,10	51,00	54,00	HK100 0550-02-100
55,00	43,00	20,50	4,20	51,00	54,90	HK100 0550-03-100
55,00	45,00	12,50	4,00	52,00	54,00	HK100 0550-04-100
56,00	40,00	20,50	3,10	52,00	55,00	HK100 0560-01-100
60,00	44,00	18,40	6,35	55,40	58,50	HK100 0600-01-100
60,00	44,00	20,50	3,10	56,00	59,00	HK100 0600-02-100
60,00	48,00	20,50	4,20	56,00	59,40	HK100 0600-03-100
63,00	47,00	18,40	6,35	58,40	61,50	HK100 0630-01-100
63,00	47,00	19,40	6,35	58,40	61,60	HK100 0630-02-100
63,00	47,00	20,50	3,10	59,00	62,00	HK100 0630-03-100
63,00	**48,00**	**20,00**	**5,00**	**59,00**	**61,50**	**HK100 0630-04-100**
63,00	51,00	20,50	4,20	59,00	62,40	HK100 0630-05-100
63,00	**53,00**	**12,50**	**4,00**	**60,00**	**62,00**	**HK100 0630-06-100**
65,00	49,00	20,50	3,10	61,00	64,00	HK100 0650-01-100
65,00	50,00	18,40	6,35	60,40	63,50	HK100 0650-02-100
65,00	53,00	20,50	4,20	61,00	64,90	HK100 0650-03-100
70,00	50,00	22,40	6,35	64,20	68,30	HK100 0700-01-100
70,00	54,00	20,50	3,10	66,00	69,00	HK100 0700-02-100
70,00	55,00	20,00	5,00	66,00	68,50	HK100 0700-03-100
70,00	58,00	20,50	4,20	66,00	69,40	HK100 0700-04-100
75,00	55,00	22,40	6,35	69,20	73,30	HK100 0750-01-100
75,00	59,00	20,50	3,10	71,00	74,00	HK100 0750-02-100
80,00	60,00	22,40	6,35	74,15	78,30	HK100 0800-01-100
80,00	**60,00**	**25,00**	**6,35**	**75,00**	**78,00**	**HK100 0800-02-100**
80,00	62,00	22,50	3,60	76,00	79,00	HK100 0800-03-100
80,00	**65,00**	**20,00**	**5,00**	**76,00**	**78,50**	**HK100 0800-04-100**
80,00	66,00	22,50	5,20	76,00	79,40	HK100 0800-05-100
85,00	65,00	22,40	6,35	79,15	83,30	HK100 0850-01-100
85,00	75,00	20,00	4,00	81,00	83,34	HK100 0850-02-100
90,00	70,00	22,40	6,35	84,15	88,30	HK100 0900-01-100
90,00	72,00	22,50	3,60	86,00	89,00	HK100 0900-02-100
90,00	75,00	20,00	5,00	86,00	88,50	HK100 0900-03-100
90,00	76,00	22,50	5,20	86,00	89,40	HK100 0900-04-100
95,00	75,00	22,40	6,35	89,15	93,30	HK100 0950-01-100
100,00	75,00	22,40	6,35	93,15	98,00	HK100 1000-01-100
100,00	**80,00**	**25,00**	**6,30**	**95,00**	**98,00**	**HK100 1000-02-100**
100,00	82,00	22,50	3,60	96,00	99,00	HK100 1000-03-100
100,00	**85,00**	**20,00**	**5,00**	**96,00**	**98,50**	**HK100 1000-04-100**
100,00	86,00	20,00	5,00	96,00	98,50	HK100 1000-05-100
100,00	86,00	22,50	5,20	96,00	99,40	HK100 1000-06-100
105,00	80,00	22,40	6,35	98,10	103,00	HK100 1050-01-100
110,00	85,00	22,40	6,35	103,10	108,00	HK100 1100-01-100
110,00	85,00	25,40	6,35	103,10	108,00	HK100 1100-02-100
110,00	90,00	25,30	6,40	104,10	108,30	HK100 1100-03-100
110,00	92,00	22,50	3,60	106,00	109,00	HK100 1100-04-100
110,00	95,00	20,00	5,00	105,00	108,00	HK100 1100-05-100
110,00	96,00	22,50	5,20	106,00	109,40	HK100 1100-06-100
115,00	90,00	22,40	6,35	108,10	113,00	HK100 1150-01-100
115,00	97,00	22,50	3,60	111,00	114,00	HK100 1150-02-100
120,00	95,00	22,40	6,35	113,10	118,00	HK100 1200-01-100
120,00	106,00	22,50	5,20	116,00	119,40	HK100 1200-02-100
125,00	100,00	25,40	6,35	118,10	123,00	HK100 1250-01-100
125,00	**100,00**	**32,00**	**10,00**	**119,00**	**123,00**	**HK100 1250-02-100**
125,00	103,00	26,50	5,10	121,00	124,00	HK100 1250-03-100

D H9	**d** h9	**E** +0,2	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
125,00	105,00	25,40	6,35	119,10	123,30	HK100 1250-05-100
125,00	108,00	26,50	7,20	121,00	124,40	HK100 1250-06-100
130,00	105,00	25,40	6,35	123,10	128,00	HK100 1300-01-100
130,00	105,00	25,40	9,50	122,60	127,50	HK100 1300-02-100
130,00	110,00	25,40	6,35	124,10	128,30	HK100 1300-03-100
135,00	110,00	25,40	6,35	128,10	133,00	HK100 1350-01-100
135,00	110,00	25,40	9,50	127,60	132,50	HK100 1350-02-100
140,00	115,00	25,40	6,35	133,00	138,00	HK100 1400-01-100
140,00	115,00	25,40	9,50	132,60	137,50	HK100 1400-02-100
140,00	118,00	26,50	5,10	136,00	139,00	HK100 1400-03-100
140,00	120,00	25,00	6,35	135,00	138,00	HK100 1400-04-100
140,00	123,00	26,50	7,20	136,00	139,40	HK100 1400-05-100
145,00	120,00	25,40	6,35	138,30	142,95	HK100 1450-01-100
145,00	120,00	25,40	9,50	137,60	142,50	HK100 1450-02-100
150,00	125,00	25,40	6,35	143,00	148,00	HK100 1500-01-100
150,00	125,00	25,40	9,50	142,60	147,50	HK100 1500-02-100
150,00	128,00	26,50	5,10	146,00	149,00	HK100 1500-03-100
150,00	130,00	25,40	6,35	144,10	148,30	HK100 1500-04-100
150,00	133,00	26,50	7,20	146,00	149,40	HK100 1500-05-100
155,00	130,00	25,40	6,35	148,00	153,00	HK100 1550-01-100
155,00	130,00	25,40	9,50	147,60	152,50	HK100 1550-02-100
160,00	130,00	25,40	9,50	152,60	157,50	HK100 1600-01-100
160,00	130,00	25,40	6,35	153,00	157,50	HK100 1600-02-100
160,00	135,00	25,40	9,50	152,60	157,50	HK100 1600-03-100
160,00	**135,00**	**32,00**	**10,00**	**154,00**	**158,00**	**HK100 1600-04-100**
160,00	138,00	26,50	5,10	156,00	159,00	HK100 1600-05-100
160,00	**140,00**	**25,00**	**6,30**	**155,00**	**158,00**	**HK100 1600-06-100**
160,00	143,00	26,50	7,20	156,00	159,40	HK100 1600-07-100
165,00	140,00	25,40	9,50	157,60	162,50	HK100 1650-01-100
170,00	145,00	25,40	12,70	161,70	167,10	HK100 1700-01-100
170,00	148,00	26,50	5,10	166,00	169,00	HK100 1700-02-100
175,00	150,00	25,40	12,70	166,70	172,10	HK100 1750-01-100
180,00	150,00	35,40	6,35	172,95	177,87	HK100 1800-01-100
180,00	155,00	25,40	12,70	171,70	177,10	HK100 1800-02-100
180,00	158,00	26,50	5,10	176,00	179,00	HK100 1800-03-100
180,00	163,00	26,50	7,20	176,00	179,40	HK100 1800-04-100
185,00	160,00	25,40	12,70	176,70	182,10	HK100 1850-01-100
190,00	165,00	25,40	12,70	181,70	187,00	HK100 1900-01-100
195,00	170,00	25,40	12,70	186,70	192,00	HK100 1950-01-100
200,00	170,00	35,40	6,35	193,00	198,00	HK100 2000-01-100
200,00	170,00	36,00	6,35	192,00	197,00	HK100 2000-02-100
200,00	175,00	25,40	12,70	191,60	197,00	HK100 2000-03-100
200,00	175,00	31,50	6,60	196,00	199,00	HK100 2000-04-100
200,00	180,00	31,50	9,20	196,00	199,40	HK100 2000-05-100
200,00	170,00	35,40	6,35	193,00	198,00	HK100 2000-06-100
210,00	185,00	25,40	12,70	201,60	207,00	HK100 2100-01-100
220,00	190,00	35,40	6,35	212,70	217,90	HK100 2200-01-100
220,00	195,00	25,40	12,70	211,60	217,00	HK100 2200-02-100
220,00	200,00	31,50	9,20	216,00	219,40	HK100 2200-03-100
225,00	200,00	25,40	12,70	216,62	222,00	HK100 2250-01-100
225,00	200,00	31,50	6,60	221,00	224,00	Hk100 2250-02-100
230,00	205,00	25,40	12,70	221,60	227,00	HK100 2300-01-100
240,00	215,00	25,40	12,70	231,60	237,00	HK100 2400-01-100
250,00	220,00	35,40	6,35	242,90	247,85	HK100 2500-01-100
250,00	**220,00**	**36,00**	**12,50**	**242,00**	**247,00**	**HK100 2500-02-100**
250,00	225,00	25,40	12,70	241,60	247,00	HK100 2500-03-100
250,00	225,00	31,50	6,60	246,00	249,00	HK100 2500-04-100
250,00	230,00	31,50	9,20	246,00	249,40	HK100 2500-05-100
260,00	235,00	25,40	12,70	252,90	257,00	HK100 2600-01-100

D H9	**d** h9	**E** +0,2	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
275,00	250,00	31,50	6,60	271,00	274,00	HK100 2750-01-100
280,00	250,00	35,40	9,52	272,90	277,85	HK100 2800-01-100
300,00	275,00	31,50	6,60	296,00	299,00	HK100 3000-01-100
320,00	290,00	35,40	9,52	312,40	317,50	HK100 3200-01-100
320,00	290,00	36,00	12,50	312,00	317,00	HK100 3200-02-100

Further dimensions and emperial equivalents are available on request. Dimensions in bold face correspond to DIN ISO 6547.

Example for ordering Piston Seal :

HK 100 0320 - 01 - 100 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Material Key:

Gasket
100 - NBR
120 - FPM

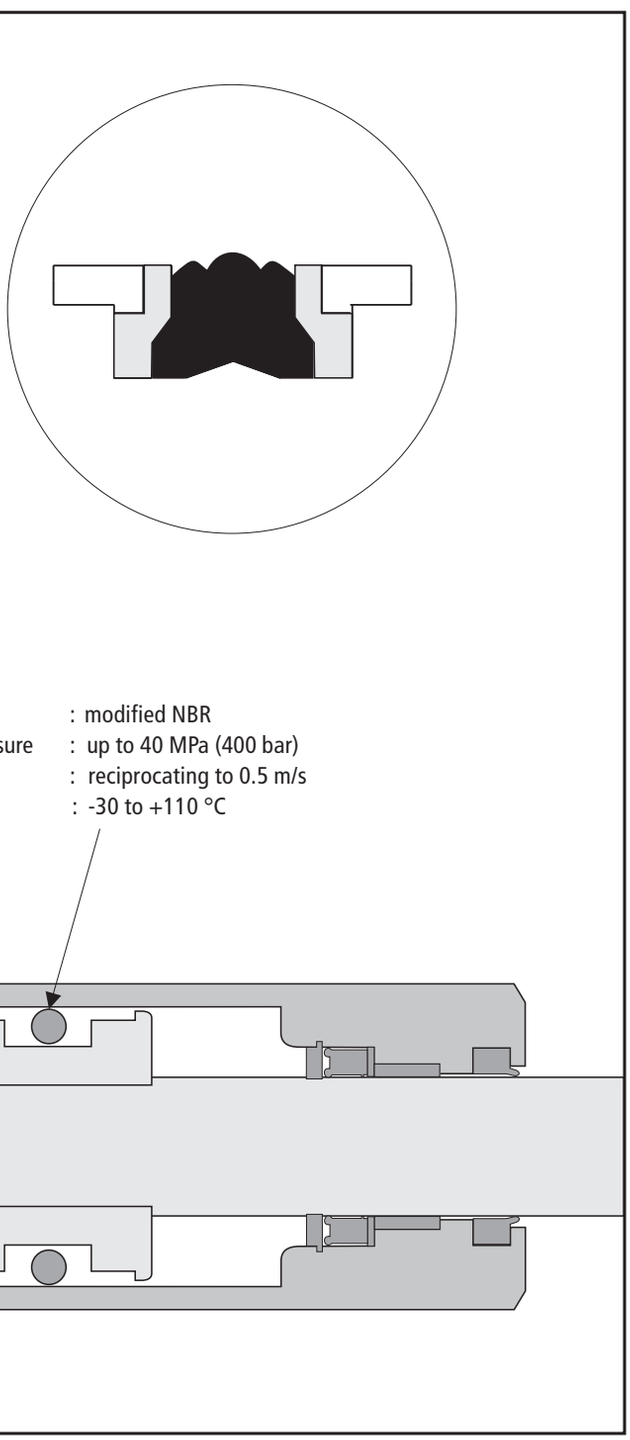
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 101

Double action piston seals of the HK 101 series have been specially manufactured for use in mounting areas as per DIN ISO 6547. Compact design allows sealing and sliding function in restricted space.

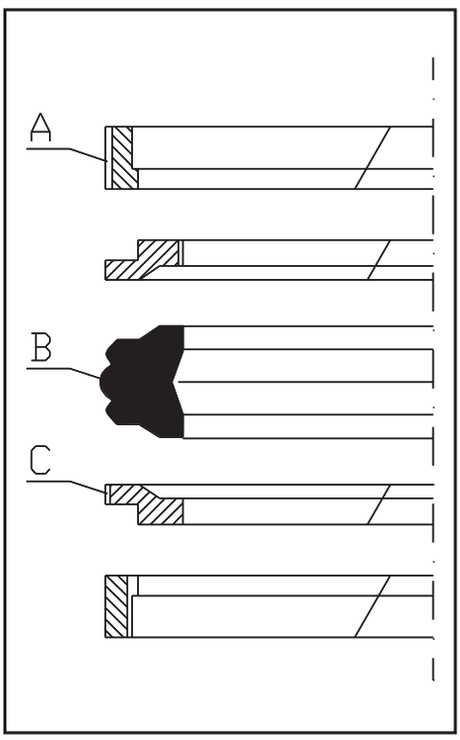
Careful choice of materials renders the product serviceable in extreme service conditions.



Material : modified NBR
Operating pressure : up to 40 MPa (400 bar)
Velocity : reciprocating to 0.5 m/s
Temperature : -30 to +110 °C

Special Features:

- Series specially meant for mounting as per DIN ISO 6547
- 5 part sealing set with single piece piston snap assembly possible
- sealing components from special anti-wear NBR
- Resistant to torsion through form locking combination of sliding-support and sealing ring (gasket)
- heavy duty slide rings with pressure relief grooves



Angular Slide Rings - Part A

Material: filled Polyamide

Short insides of the split/partinioned slide rings guarantee considerably simpler assembly on single piece pistons. The practical design facilitates optimal distribution of transverse forces/shear forces that come into play. Axial unloading grooves ensure a shorter response time of the seal in case of quick changes in load. Specially designed materials ensure high pressure stability, even in case of variable thermal conditions. Low finishing tolerances ensure better piston sliding and optimize the seal function.

Elastomeric Seal Components - Part B

Material: NBR

Sturdy sealing elements from highly wear-resistant NBR are proven to be superior due to low compression strain and high tensile strength. Out of the three sealing edges, the larger one in the middle serves as the primary seal, and the two smaller external lips serve as a pre-seal. The broad clamping area is taken up by static sealing of the groove base/root.
Specially designed angular shoulders incorporated on both sides eliminate the possibility of turning of the sealing element in the event of shocks.

Thrust Ring - Part C (backup-up-ring)

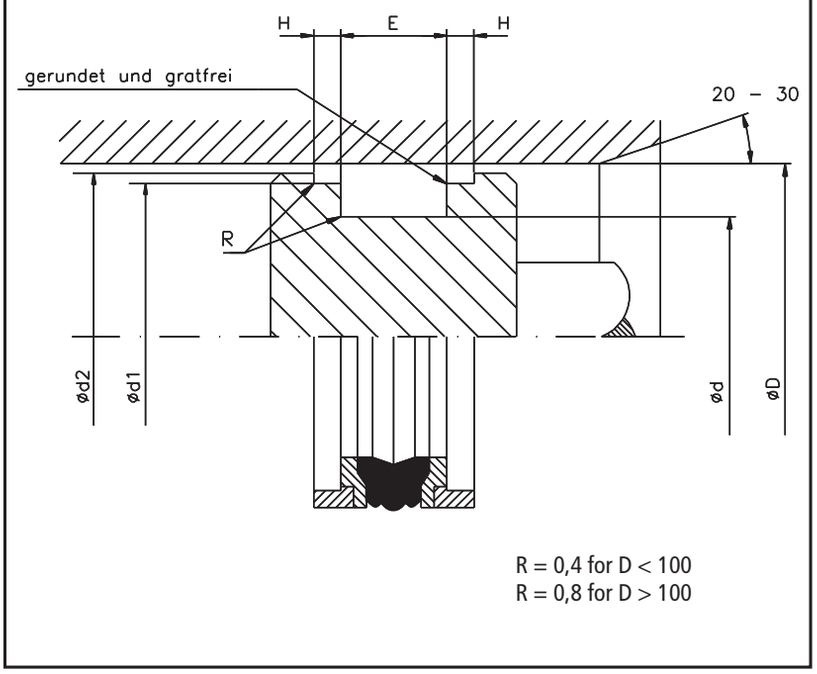
Material: Polyester-Elastomer

Both thrust rings together produce the required form and force locking arrangements between sealing element and slide ring. Special material and close tolerances prevent split extrusion of the sliding elements.

Unloading grooves/relief grooves on the dynamic side eliminate pressure concentration even with quick load variations.

Double acting piston seals of the HK 105 series are specifically manufactured for the use in applications designed as per DIN ISO 6547. Universal range of applications ranging from low pressure applications to heavy hydraulic is an advantage.

PISTON SEAL
HK 101



Limitations on Use

Maximum allowable operational pressure depending on the rubbing speed and temperature range of application as given below:

Vmax [m/s]	Application Temperature [°C]		
	-30 +60	-30 +80	-30 +110
0,50	250 bar	160 bar	100 bar
0,15	400 bar	250 bar	160 bar

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks or sides	16,0 µm	10,0 µm	3,2 µm

Extensive range of inch measurement diagrams available on request.

D H9	**d** h9	**E** +0,35	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
25,00	15,00	12,50	4,00	22,00	24,00	HK101 0250-01-100
25,00	17,00	10,00	4,00	22,00	24,00	HK101 0250-02-100
32,00	22,00	12,50	4,00	29,00	31,00	HK101 0320-01-100
32,00	24,00	10,00	4,00	29,00	31,00	HK101 0320-02-100
40,00	30,00	12,50	4,00	37,00	39,00	HK101 0400-01-100
40,00	32,00	10,00	4,00	37,00	39,00	HK101 0400-02-100
50,00	35,00	20,00	5,00	46,00	48,50	HK101 0500-01-100
50,00	40,00	12,50	4,00	47,00	49,00	HK101 0500-02-100
63,00	48,00	20,00	5,00	59,00	61,50	HK101 0630-01-100
63,00	53,00	12,50	4,00	60,00	62,00	HK101 0630-02-100
80,00	60,00	25,00	6,30	75,00	78,00	HK101 0800-01-100
80,00	65,00	20,00	5,00	76,00	78,50	HK101 0800-02-100
100,00	80,00	25,00	6,30	95,00	98,00	HK101 1000-01-100
100,00	85,00	20,00	5,00	96,00	98,50	HK101 1000-02-100
125,00	100,00	32,00	10,00	119,00	123,00	HK101 1250-01-100
125,00	105,00	25,00	6,30	120,00	123,00	HK101 1250-02-100
140,00	115,00	32,00	10,00	134,00	138,00	HK101 1400-01-100
140,00	120,00	25,00	6,30	135,00	138,00	HK101 1400-02-100
160,00	135,00	32,00	10,00	154,00	158,00	HK101 1600-01-100
160,00	140,00	25,00	6,30	155,00	158,00	HK101 1600-02-100
180,00	150,00	36,00	12,50	172,00	177,00	HK101 1800-01-100
200,00	170,00	36,00	12,50	192,00	197,00	HK101 2000-01-100
250,00	220,00	36,00	12,50	242,00	247,00	HK101 2500-01-100
320,00	290,00	36,00	12,50	312,00	317,00	HK101 3200-01-100

All forms were not available at the time of printing. Please enquire in case of difficulty.

Example for ordering Piston Seal:

HK 101 0400 - 01 - 100 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Material Key:

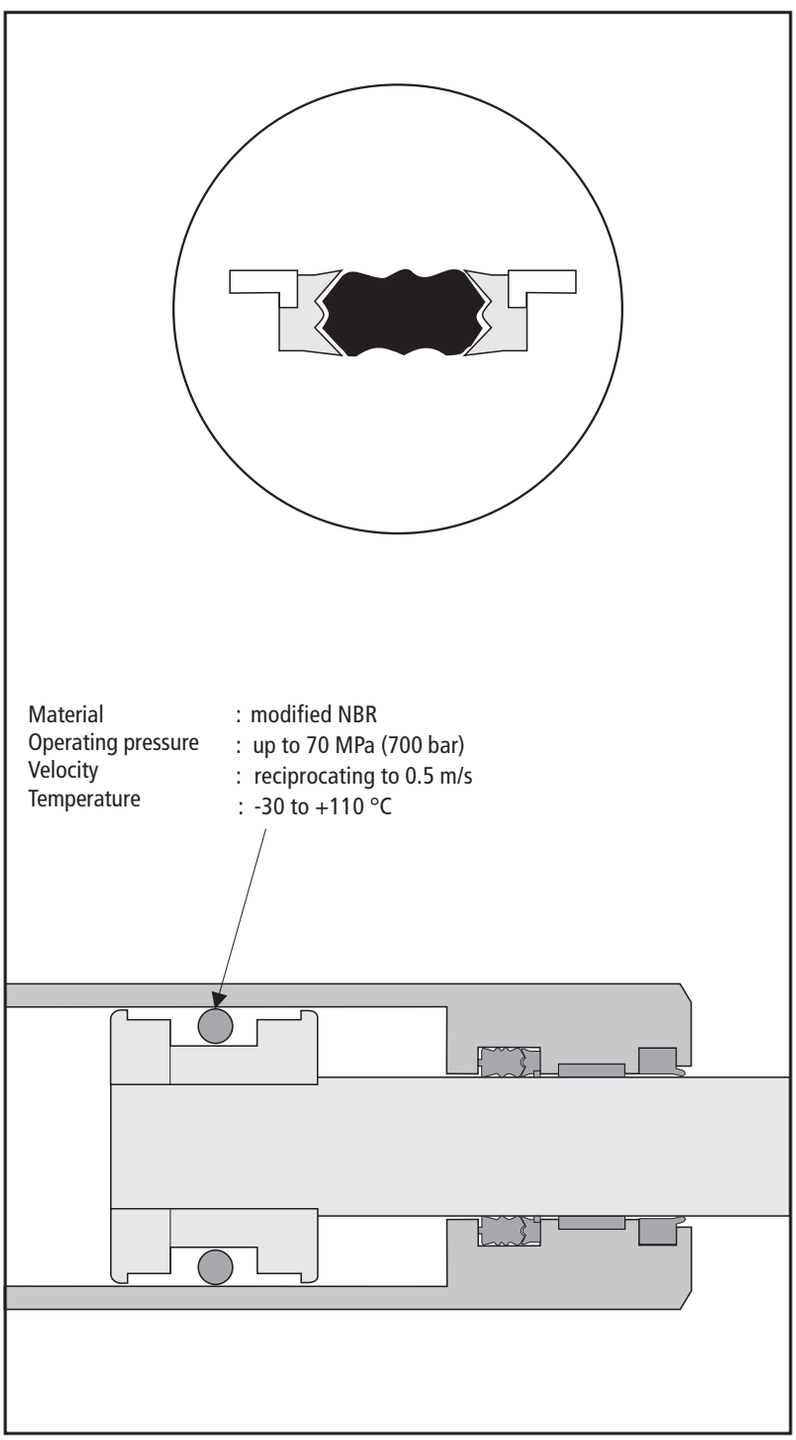
100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

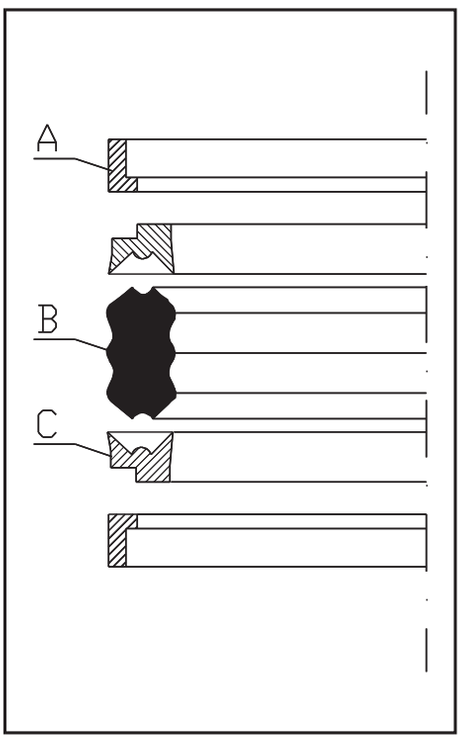
PISTON SEAL
HK 105

Piston seals of the HK 105 series are designed to automatically exhibit very good sealing characteristics and low friction at high stress values. Multiple lip type of sealing element design on the static as well as dynamic sides ensure guaranteed sealing even at low pressures.



Special Features:

- Five part construction consisting of anti-wear NBR gasket, two polyester elastomer thrust rings and two POM slide rings
- Assembly in split/multi part piston
- Special design for single part piston available
- Outstanding uptake of pressure surges and transverse loadings
- No rotation of sealing components due to form-closing combination with thrust ring
- Available for cylinder diameter up to 350 mm



Angular Slide Rings - Part A

Material: filled Polyamide

Constructive and practical design enables proper distribution of transverse forces. Relief grooves ensure short response time of the seal in case of rapid load variations. Special material ensures high resistance to compression at variable thermic conditions.

Close ring tolerances lead to better piston sliding and optimize sealing function.

Elastomer Sealing Component - Part B

Material: NBR

Robust sealing element from special anti wear NBR is characterized by low compression strain and high tensile resistance. Axial length to radial width ratio is chosen so that it is no longer possible to tilt the NBR sealing component.

The three sealing lips on the dynamic side ensure optimal sealing and good frictional behaviour even at the highest of pressures. In cases of long service life the cementing of the seal is avoided by the so called "lubricant reserve" and good frictional values are achieved.

Thrust Rings - Part C (back-up-ring)

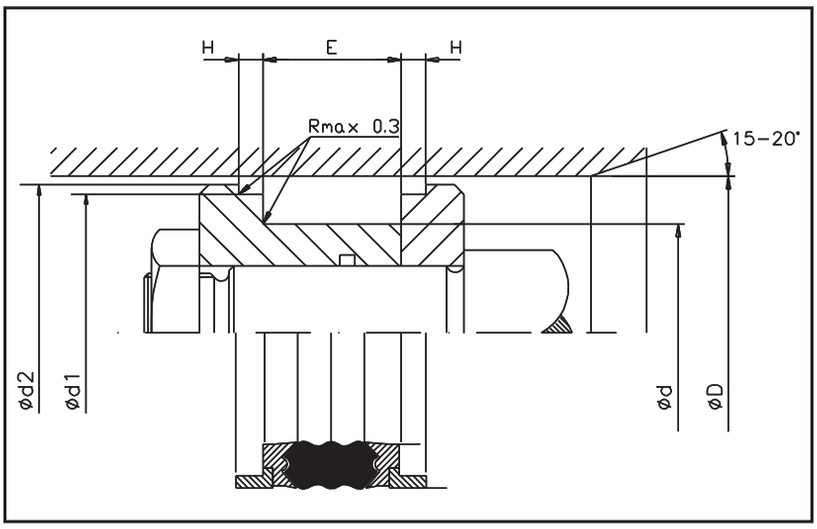
Material: Polyester Elastomer

Their form closing design with respect to slide rings and sealing components yield optimal efficiency of the multi-part piston seal. In case of an (internal) axial movement of parts themselves, displacement is not possible due to the design. Also, NBR seals are protective against dirt and the occasional diesel effect. .

HK 105 is a very safe seal for the heaviest of applications. It is specially used in mobile cranes and feed cylinders (Mining engineering). A special design of this seal also finds use in unsplit pistons.

PISTON SEAL

HK 105



Limitations on Use

Operating Pressure	:	up to 70 MPa (700 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-30 to +110 °C

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rz	Ra
Faces	2,2 µm	0,4 µm
Groove root	6,0 µm	1,6 µm
Groove flanks or sides	10,3 µm	3,2 µm

D H11	**d** h9	**E** +0,35	**H** +0,1	**d1** h8	**d2** h11	**Part N°.**
45,00	29,00	32,00	6,35	38,77	43,85	HK105 0450-01-100
50,00	34,00	32,00	6,35	43,77	47,85	HK105 0500-01-100
55,00	40,00	32,00	6,35	48,77	52,85	HK105 0550-01-100
60,00	44,00	32,00	6,35	53,80	57,80	HK105 0600-01-100
63,00	47,00	32,00	6,35	56,74	60,81	HK105 0630-01-100
65,00	49,00	32,00	6,35	58,70	62,80	HK105 0650-01-100
70,00	50,00	35,00	9,52	62,62	67,54	HK105 0700-01-100
75,00	55,00	35,00	9,52	67,70	72,54	HK105 0750-01-100
80,00	60,00	35,00	9,52	72,62	77,52	HK105 0800-01-100
80,00	64,00	32,00	9,52	72,62	77,52	HK105 0800-02-100
85,00	65,00	35,00	9,52	77,62	82,54	HK105 0850-01-100
90,00	70,00	35,00	9,52	82,58	87,79	HK105 0900-01-100
90,00	74,00	32,00	9,52	82,87	87,79	HK105 0900-02-100
95,00	75,00	35,00	9,52	87,60	92,50	HK105 0950-01-100
100,00	80,00	35,00	9,52	92,60	97,50	HK105 1000-01-100
110,00	85,00	45,00	12,70	101,82	107,33	HK105 1100-01-100
110,00	90,00	35,00	9,52	102,70	107,51	HK105 1100-02-100
115,00	90,00	45,00	12,70	106,82	112,33	HK105 1150-01-100
120,00	95,00	45,00	12,70	111,82	117,33	HK105 1200-01-100
120,00	100,00	35,00	9,52	112,80	117,51	HK105 1200-02-100
125,00	100,00	45,00	12,70	116,82	122,33	HK105 1250-01-100
130,00	105,00	45,00	12,70	121,82	127,33	HK105 1300-01-100
130,00	110,00	35,00	9,52	122,70	127,33	HK105 1300-02-100
135,00	110,00	45,00	12,70	126,82	132,33	HK105 1350-01-100
140,00	115,00	45,00	12,70	131,72	137,30	HK105 1400-01-100
140,00	120,00	35,00	9,52	132,70	137,30	HK105 1400-02-100
145,00	120,00	45,00	12,70	136,72	142,30	HK105 1450-01-100
150,00	125,00	45,00	12,70	141,72	147,30	HK105 1500-01-100
160,00	135,00	45,00	12,70	151,72	157,10	HK105 1600-01-100
170,00	140,00	45,00	12,70	163,00	167,87	HK105 1700-01-100
180,00	155,00	45,00	12,70	171,60	177,10	HK105 1800-01-100
185,00	160,00	45,00	12,70	176,72	182,10	HK105 1850-01-100
190,00	165,00	45,00	12,70	181,72	187,10	HK105 1900-01-100
200,00	175,00	45,00	12,70	191,72	197,10	HK105 2000-01-100
210,00	185,00	45,00	12,70	201,60	207,10	HK105 2100-01-100
220,00	195,00	45,00	12,70	211,60	217,10	HK105 2200-01-100
230,00	205,00	45,00	12,70	221,72	227,10	HK105 2300-01-100
240,00	215,00	45,00	12,70	231,72	237,10	HK105 2400-01-100
250,00	225,00	45,00	12,70	241,72	247,10	HK105 2500-01-100
260,00	235,00	45,00	12,70	251,72	257,10	HK105 2600-01-100
270,00	245,00	45,00	12,70	261,72	267,10	HK105 2700-01-100
280,00	255,00	45,00	12,70	271,72	277,10	HK105 2800-01-100
290,00	265,00	45,00	12,70	281,72	287,10	HK105 2900-01-100
300,00	275,00	45,00	12,70	291,72	297,10	HK105 3000-01-100
350,00	325,00	45,00	12,70	341,72	347,10	HK105 3500-01-100

Extensive range of inch measurement diagrams available on request.

Example for ordering Piston Seal:

HK 105 0700 - 01 - 100 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Material Key:

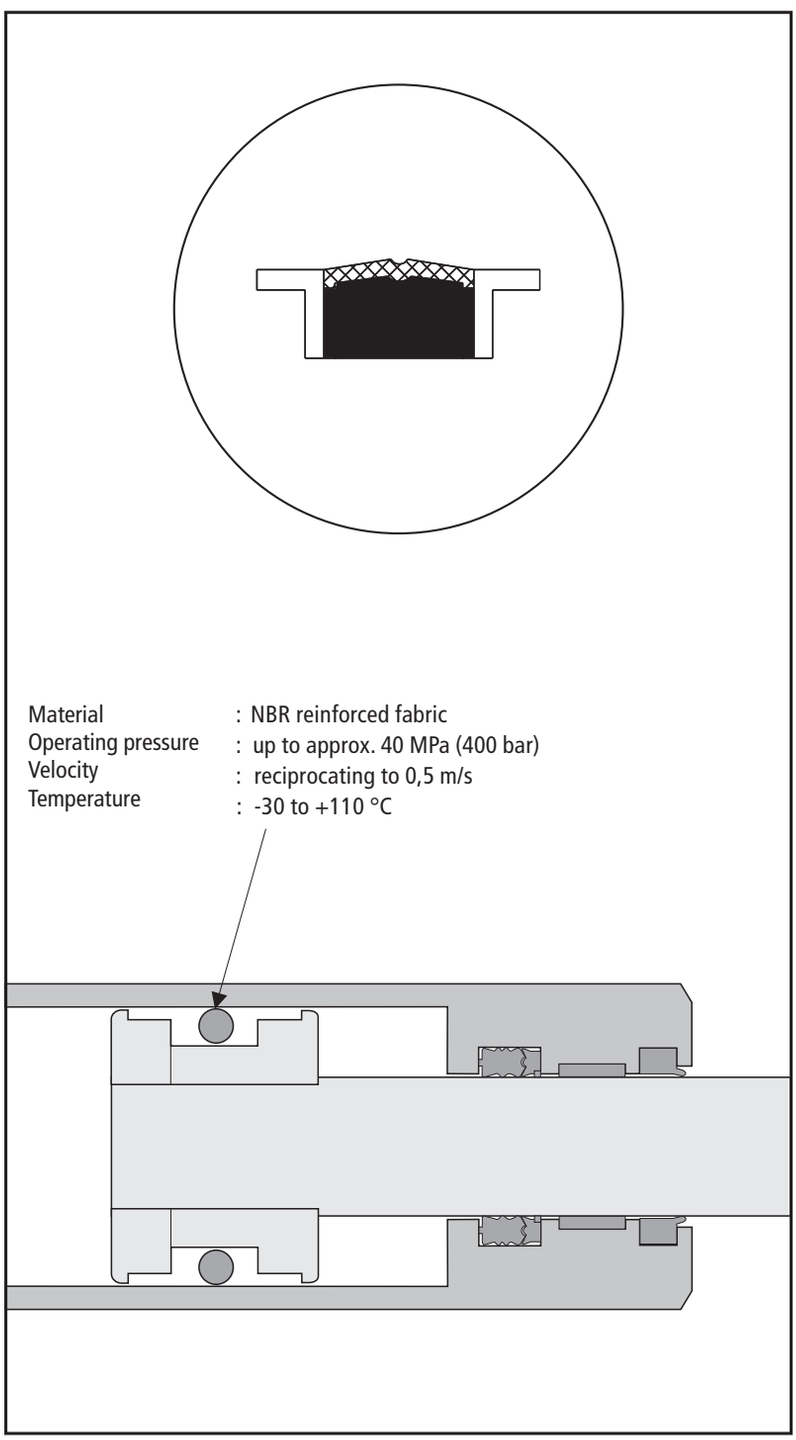
Gasket
100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 106

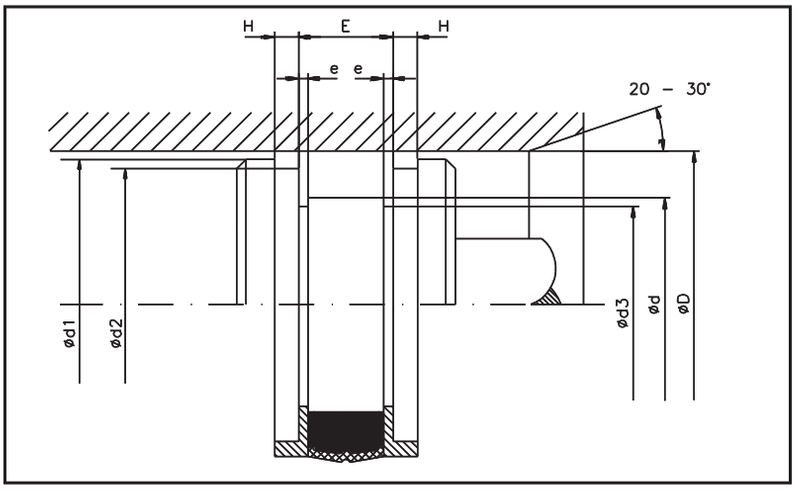
Fiber reinforced NBR compact seal HK 106 is double acting: Uses range from intermediate to high stress. Larger tolerances are possible due to radial pre-stress. Split extrusion avoided due to choice of material in combination with NBR and fabric reinforcement on dynamic side.



Special Features:

- Three part composition consisting of reinforced fabric-elastomer combination and POM slide rings
- Assembly for single part piston possible
- Reduced friction characteristic due to fabric reinforcement. Resistant to galling.
- Good uptake/absorption of impact pressure and vibrations
- Small total length
- Also available in FPM material.

PISTON SEAL
HK 106



Limitations on Use

Operating pressure	: maximum 40 MPs (400 bar)
Velocity	: reciprocating to 0,5 m/s
Temperature	: -30 to +110 °C

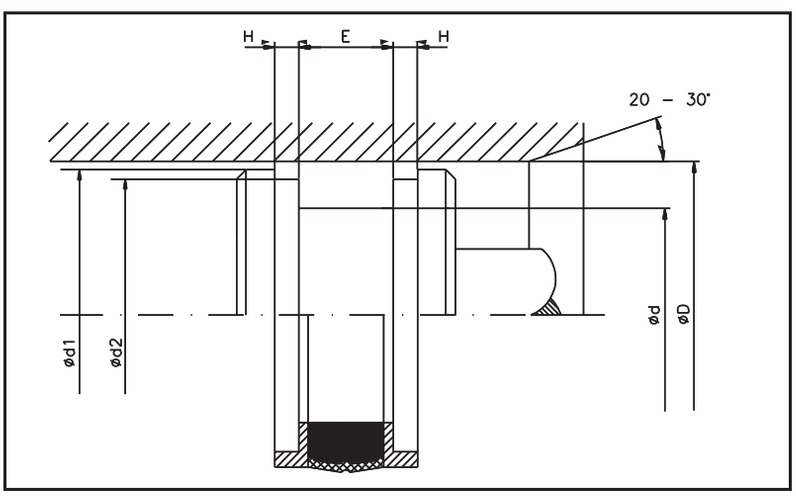
Media for Use

Mineral oil based hydraulic oil, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rz	Ra
Faces	2,2 µm	0,4 µm
Groove root	6,0 µm	1,6 µm
Groove flanks or sides	10,0 µm	3,2 µm

D H11	**d** h11	**E** +0,2	**H** +0,1	**d1** ±0,2	**d2** d9	**d3** -0,1	**e** +0,1	**Part N°.**
35,00	27,00	15,50	3,20	34,40	31,00	24,00	3,10	HK106 0350-02-100
40,00	32,00	15,50	3,20	39,40	36,00	29,00	3,10	HK106 0400-02-100
45,00	37,00	15,50	3,20	44,40	41,00	34,00	3,10	HK106 0450-02-100



Limitations on Use

Operating pressure	: maximum 40 MPs (400 bar)
Velocity	: reciprocating to 0,5 m/s
Temperature	: -30 to +110 °C

Media for Use

Mineral oil based hydraulic oil, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rz	Ra
Faces	2,2 µm	0,4 µm
Groove root	6,0 µm	1,6 µm
Groove flanks or sides	10,0 µm	3,2 µm

D H11	**d** h11	**E** +0,2	**H** +0,1	**d1** ±0,2	**d2** d9	**Part N°.**
25,00	17,00	13,50	3,20	24,40	21,00	HK106 0250-01-100
30,00	22,00	13,50	3,20	29,40	26,00	HK106 0300-01-100
32,00	24,00	15,50	3,20	31,40	28,00	HK106 0320-01-100
35,00	27,00	15,50	3,20	34,40	31,00	HK106 0350-01-100
40,00	32,00	15,50	3,20	39,40	36,00	HK106 0400-01-100
45,00	37,00	15,50	3,20	44,40	41,00	HK106 0450-01-100
50,00	38,00	20,50	4,20	49,40	46,00	HK106 0500-01-100
60,00	48,00	20,50	4,20	59,40	56,00	HK106 0600-01-100
63,00	51,00	20,50	4,20	62,40	59,00	HK106 0630-01-100
70,00	58,00	20,50	4,20	69,40	66,00	HK106 0700-01-100
80,00	66,00	22,50	5,20	79,40	76,00	HK106 0800-01-100
90,00	76,00	22,50	5,20	89,40	86,00	HK106 0900-01-100
100,00	86,00	22,50	5,20	99,40	96,00	HK106 1000-01-100
110,00	96,00	22,50	5,20	109,40	106,00	HK106 1100-01-100
120,00	106,00	22,50	5,20	119,40	116,00	HK106 1200-01-100
125,00	108,00	26,50	7,20	124,40	121,00	HK106 1250-01-100
140,00	123,00	26,50	7,20	139,40	136,00	HK106 1400-01-100
150,00	133,00	26,50	7,20	149,40	146,00	HK106 1500-01-100

Further and intermediate sizes as well as an extensive range of inch measurement diagrams available on request.

PISTON SEAL
HK 106

Example for ordering Piston Seal:

HK 106 0320 - 01 - 100 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

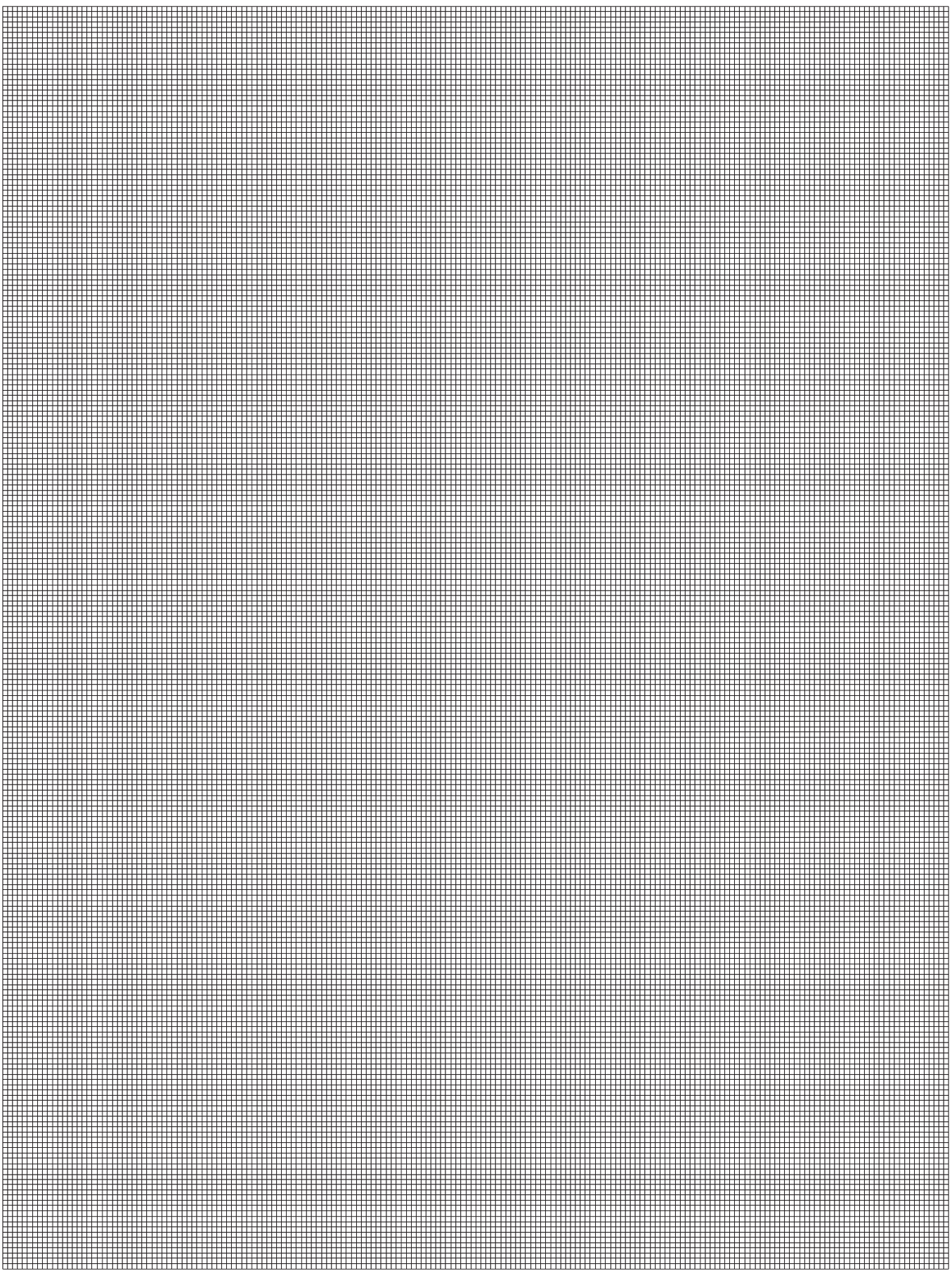
Material Key:

100 - NBR
120 - FPM

Issue
01 | 24

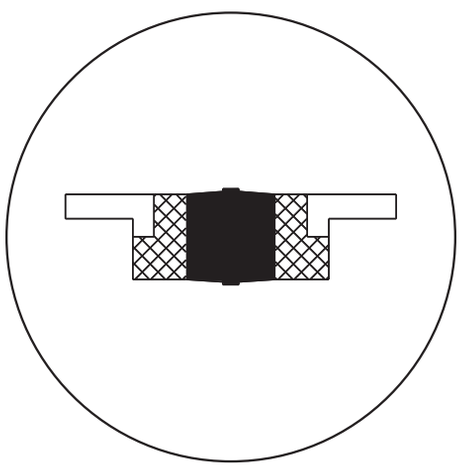
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

NOTES

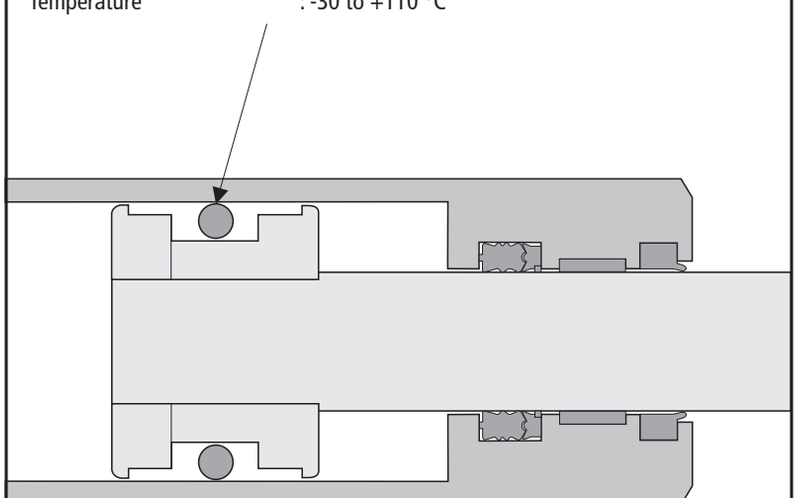


PISTON SEAL
HK 110

Double action piston seal HK 110 is traditionally produced in fabric reinforced rubber combinations used in intermediate to very high stress application. Larger tolerances can be chosen by using NBR fabric combinations on one hand and radial prestressing on the other. This material combination avoids split extrusion due to high impact pressure.



Material	: NBR fiber reinforced
Operating pressure	: up to 50 MPa (500 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C

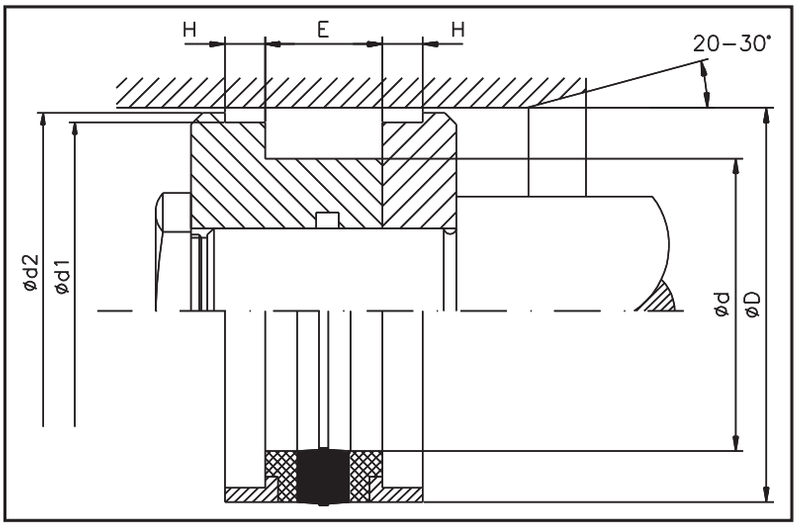


Special Features:

- Three part composition from fiber and elastomer reinforcing combination and POM slide ring
- Assembly on multiple part pistons
- Assured sliding due to form closed sealing component and slide rings on both sides
- Good absorption of impact pressure and vibration
- Reduced stick slip tendency due to fabric component on dynamic side
- Modified NBR resulting in high friction resistance
- Small total length
- Also available in FPM material

PISTON SEAL

HK 110



Limitations on Use

Operating Pressure	: maximum 50 MPa (500 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rz	Ra
Faces	2,2 µm	0,4 µm
Groove root	4,0 µm	0,8 µm
Groove flanks or sides	8,0 µm	1,8 µm

D H11	**d** js11	**E** +0,35	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
30,00	17,00	15,40	6,35	26,50	29,00	HK110 0300-01-100
35,00	22,00	15,40	6,35	31,40	33,70	HK110 0350-01-100
40,00	24,00	18,40	6,35	35,40	38,70	HK110 0400-01-100
45,00	29,00	18,40	6,35	40,40	43,70	HK110 0450-01-100
50,00	34,00	18,40	6,35	45,40	48,70	HK110 0500-01-100
55,00	39,00	18,40	6,35	50,40	53,70	HK110 0550-01-100
60,00	44,00	18,40	6,35	55,40	58,70	HK110 0600-01-100
63,00	47,00	19,40	6,35	58,40	61,70	HK110 0630-01-100
65,00	50,00	18,40	6,35	60,40	63,70	HK110 0650-01-100
70,00	50,00	22,40	6,35	64,20	68,30	HK110 0700-01-100
75,00	55,00	22,40	6,35	69,20	73,30	HK110 0750-01-100
75,00	56,00	24,40	6,35	69,20	73,30	HK110 0750-02-100
80,00	60,00	22,40	6,35	74,20	78,30	HK110 0800-01-100
83,00	63,00	22,40	6,35	76,16	81,30	HK110 0830-01-100
85,00	65,00	22,40	6,35	79,20	83,30	HK110 0850-01-100
90,00	70,00	22,40	6,35	84,15	88,30	HK110 0900-01-100
95,00	75,00	22,40	6,35	89,15	93,30	HK110 0950-01-100
100,00	75,00	22,40	6,35	93,15	98,05	HK110 1000-01-100
100,00	80,00	25,40	6,35	94,15	98,31	HK110 1000-02-100
105,00	80,00	22,40	6,35	98,10	103,00	HK110 1050-01-100
110,00	85,00	22,40	6,35	103,10	108,00	HK110 1100-01-100
110,00	85,00	25,40	6,35	103,10	108,00	HK110 1100-02-100
110,00	90,00	25,40	6,35	104,15	108,30	HK110 1100-03-100
115,00	90,00	22,40	6,35	108,10	113,00	HK110 1150-01-100
120,00	95,00	22,40	6,35	113,10	118,00	HK110 1200-01-100
120,00	100,00	25,40	6,35	114,10	118,30	HK110 1200-02-100
125,00	100,00	25,40	6,35	118,10	123,00	HK110 1250-01-100
125,00	100,00	32,40	6,35	118,10	123,00	HK110 1250-02-100
125,00	105,00	25,40	6,35	119,15	123,30	HK110 1250-03-100
130,00	105,00	25,40	6,35	123,10	128,00	HK110 1300-01-100
135,00	110,00	25,40	6,35	128,10	133,00	HK110 1350-01-100
140,00	115,00	25,40	6,35	133,00	138,00	HK110 1400-01-100
140,00	120,00	25,40	6,35	134,10	138,30	HK110 1400-02-100
145,00	120,00	25,40	6,35	138,30	142,95	HK110 1450-01-100
150,00	120,00	38,40	6,35	143,00	148,00	HK110 1500-01-100
150,00	125,00	25,40	6,35	143,00	148,00	HK110 1500-02-100
155,00	130,00	25,40	6,35	148,00	153,00	HK110 1550-01-100
160,00	130,00	25,40	6,35	153,00	157,90	HK110 1600-01-100
170,00	140,00	25,40	6,35	162,95	167,87	HK110 1700-01-100
180,00	160,00	31,40	6,35	172,95	177,87	HK110 1800-01-100
180,00	150,00	35,40	6,35	172,95	177,87	HK110 1800-02-100

PISTON SEAL

HK 110

D H11	**d** js11	**E** +0,35	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
190,00	160,00	35,40	6,35	182,93	187,87	HK110 1900-01-100
200,00	170,00	35,40	6,35	192,96	197,84	HK110 2000-01-100
210,00	180,00	32,40	6,35	202,72	207,87	HK110 2100-01-100
220,00	190,00	35,40	6,35	212,70	217,90	HK110 2200-01-100
250,00	220,00	35,40	6,35	242,90	247,86	HK110 2500-01-100

Above sizes/dimensions also available in FPM.
Further sizes/emperial units as well as an extensive range of inch measurement diagrams available on request.

Example for ordering Piston Seal :

HK 110 0700 - 01 - 100 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

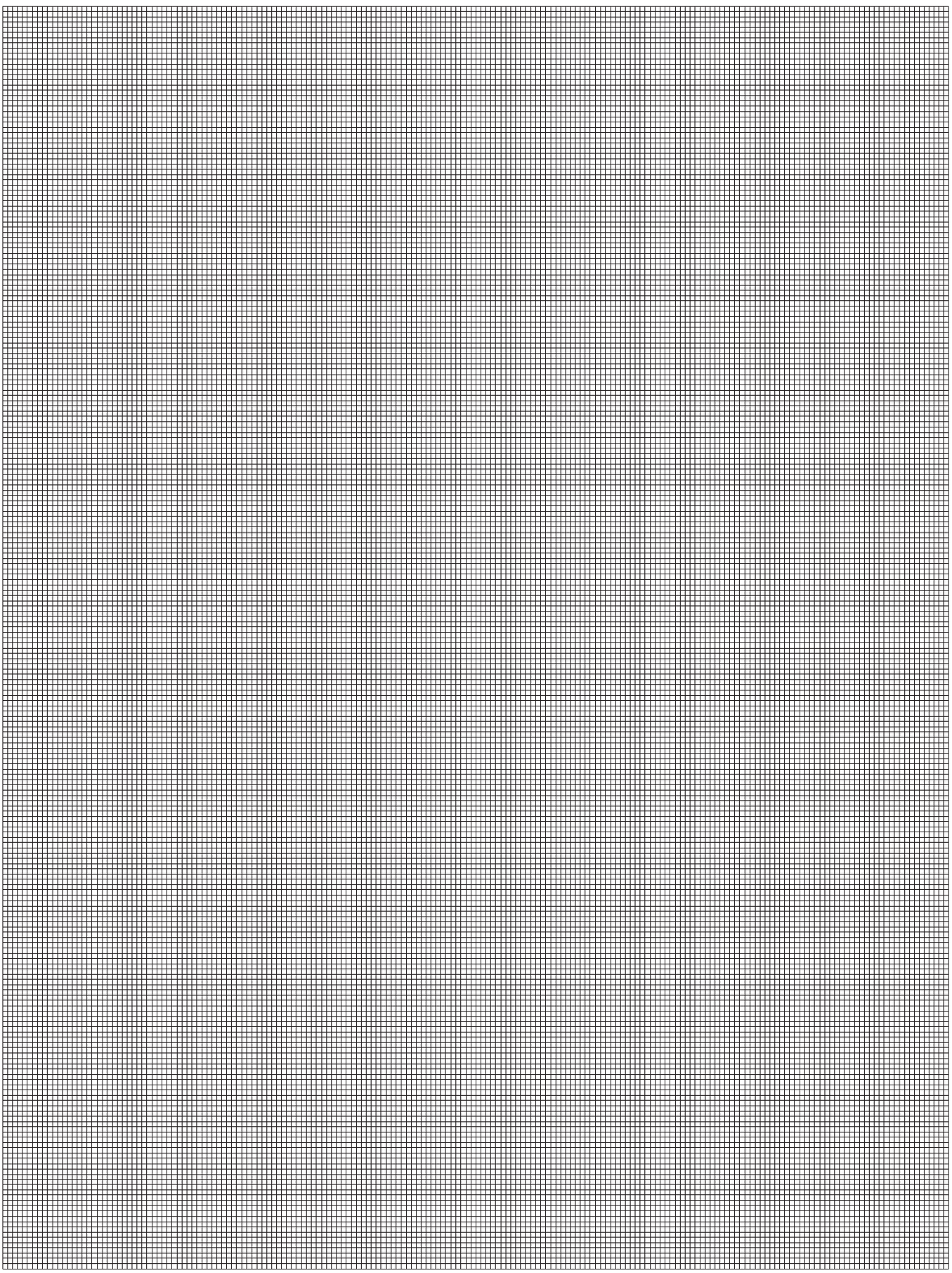
Material Key:

Gasket
100 - NBR
120 - FPM

Issue
01 | 24

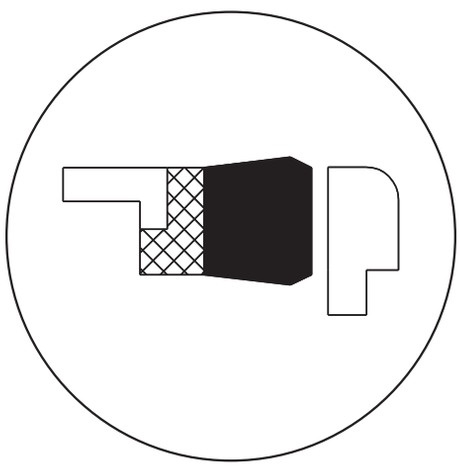
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

NOTES



PISTON SEAL
HK 115

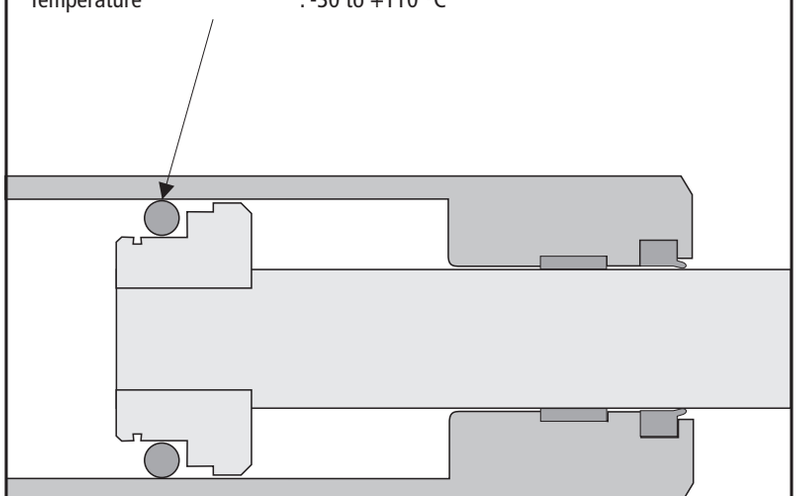
The construction of the single acting piston seal series HK 115 and the material of construction ensure reliable sealing with least friction.



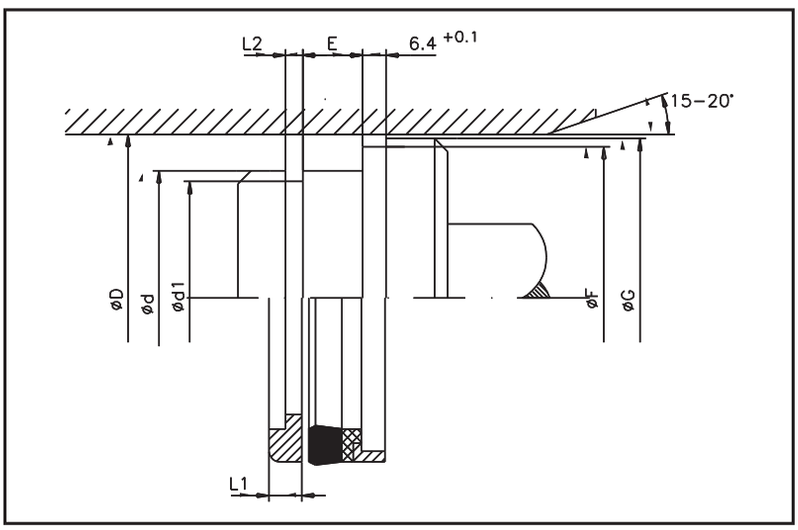
Special Features:

- Two part composition comprising of sealing element and sliding element
- Good shear characteristics due to optimal lip design
- Easy slide fit assembly
- Good abrasion resistance of the NBR fabric sealing element
- Special split safety ring for seal adjustment

Material	: NBR fiber reinforced
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C



PISTON SEAL
HK 115



Limitations on Use

Operating Pressure	: maximum 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	4,0 µm	0,8 µm
Groove flanks	8,0 µm	1,8 µm

D H10	**d** h10	**E** +0,3	**F** h8	**G** ±0,1	**d1** ±0,2	**L1**	**L2** +0,2	**Part N°.**
32,00	20,00	10,00	28,50	30,90	15,60	6,00	3,10	HK115 0320-01-100
40,00	26,00	9,50	35,40	38,70	21,60	6,00	3,10	HK115 0400-01-100
45,00	35,00	9,00	42,00	43,99	30,60	6,00	3,10	HK115 0450-01-100
50,00	30,00	14,50	44,30	48,30	25,60	6,50	3,30	HK115 0500-01-100
50,00	35,00	11,00	45,45	48,70	30,60	6,00	3,10	HK115 0500-02-100
50,00	40,00	10,50	46,20	48,70	35,60	5,00	2,60	HK115 0500-04-100
55,00	40,00	11,00	50,40	53,70	35,60	6,00	3,10	HK115 0550-01-100
60,00	40,00	14,50	54,20	58,30	35,60	6,50	3,30	HK115 0600-01-100
63,00	45,00	11,00	58,40	61,60	40,60	6,00	3,10	HK115 0630-01-100
65,00	45,00	14,50	59,20	63,40	40,60	6,50	3,30	HK115 0650-01-100
65,00	50,00	11,00	60,40	63,22	45,60	6,00	3,10	HK115 0650-02-100
70,00	50,00	14,50	64,20	68,30	45,60	6,50	3,30	HK115 0700-01-100
80,00	60,00	14,50	74,20	78,30	55,60	6,50	3,30	HK115 0800-01-100
85,00	70,00	12,50	80,30	83,60	65,60	6,00	3,10	HK115 0850-02-100
90,00	70,00	14,50	84,20	88,30	65,60	6,50	3,30	HK115 0900-01-100
95,00	75,00	14,50	89,20	93,30	70,60	6,50	3,30	HK115 0950-01-100
100,00	80,00	14,50	94,20	98,30	75,60	6,50	3,30	HK115 1000-01-100
104,50	85,00	13,00	98,70	102,80	80,60	6,00	3,10	HK115 1045-01-100
104,50	85,00	14,50	98,80	102,47	80,60	6,50	3,30	HK115 1045-02-100
105,00	85,00	13,00	99,10	103,30	80,60	6,50	3,30	HK115 1050-01-100
105,00	85,00	14,50	99,10	103,30	80,60	6,50	3,30	HK115 1050-02-100
110,00	90,00	13,00	104,10	108,30	85,60	6,50	3,30	HK115 1100-01-100
115,00	95,00	14,50	109,00	112,85	90,60	6,50	3,30	HK115 1150-01-100
120,00	100,00	13,00	114,10	118,30	95,60	6,50	3,30	HK115 1200-01-100
125,00	100,00	14,50	118,10	122,96	95,60	6,50	3,30	HK115 1250-01-100
125,00	105,00	12,50	119,30	123,31	100,60	6,50	3,30	HK115 1250-02-100
130,00	110,00	12,50	123,24	127,96	105,60	6,50	3,30	HK115 1300-01-100

Above sizes/dimensions also available in FPM.
Further sizes/emperial units as well as an extensive range of inch measurement diagrams available on request.

Example for ordering Piston Seal:

HK 115 0500 - 01 - 100 - ...

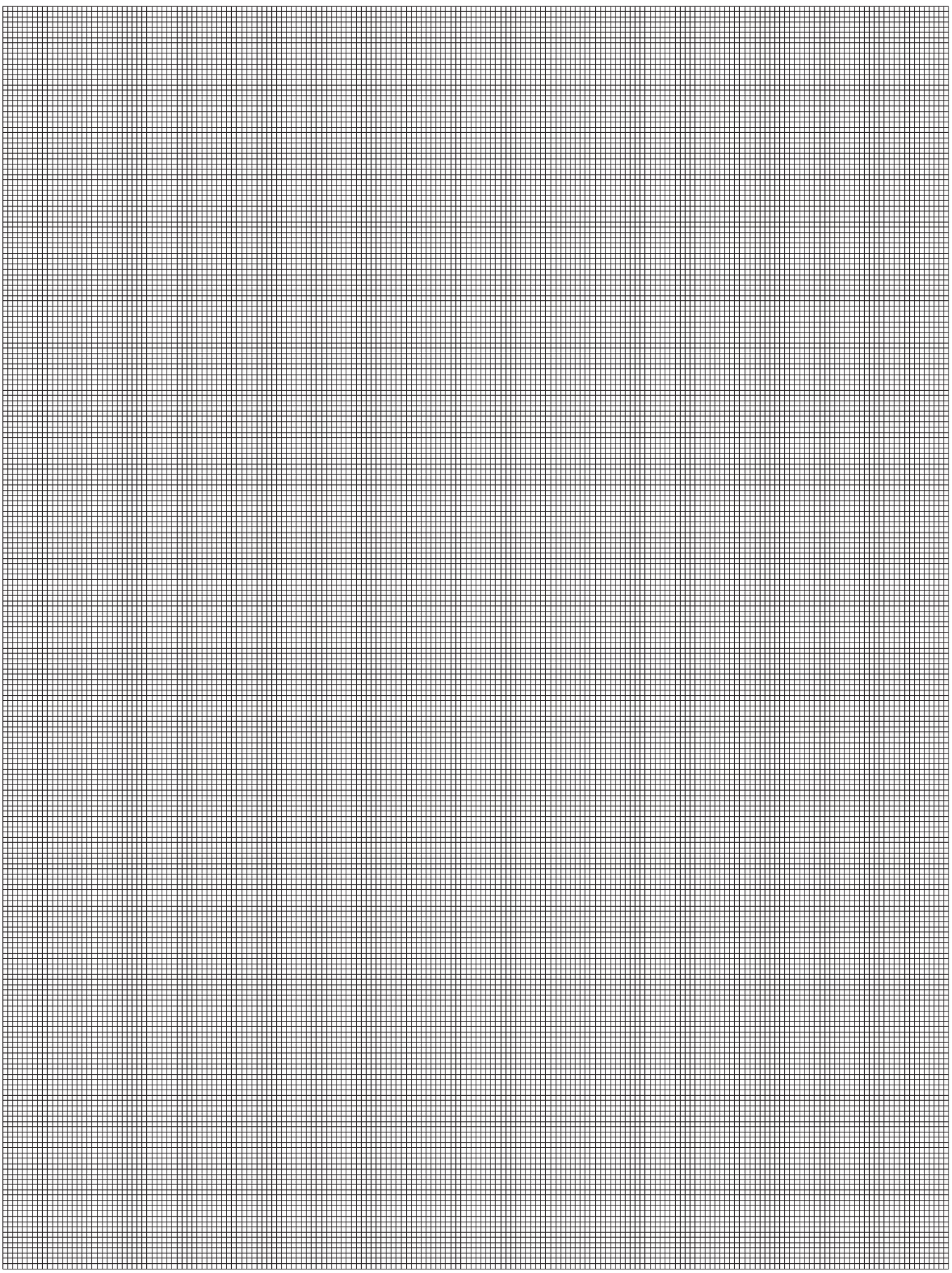
- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Material Key:

100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

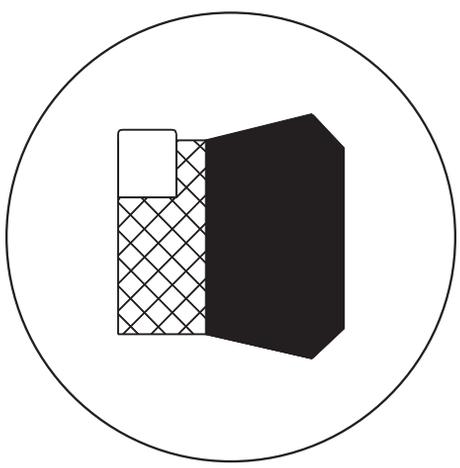


PISTON SEAL
HK 120

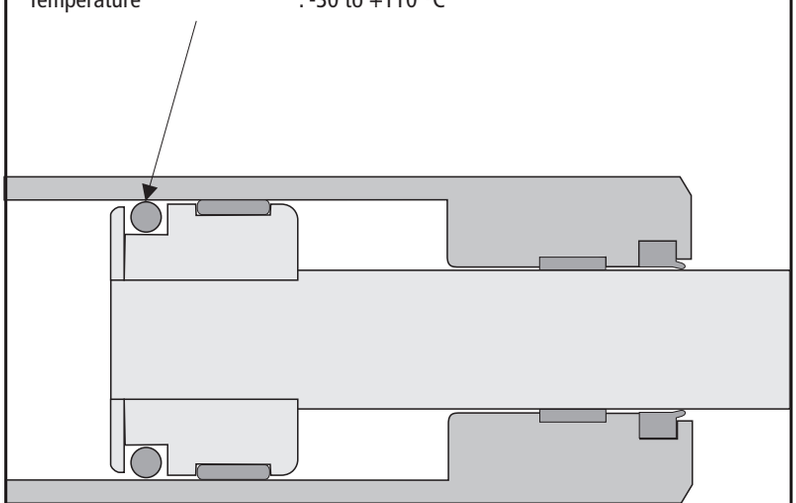
This single acting piston seal with integrated thrust ring is of use in applications involving shock and so called "cylinder breathing".

Special Features::

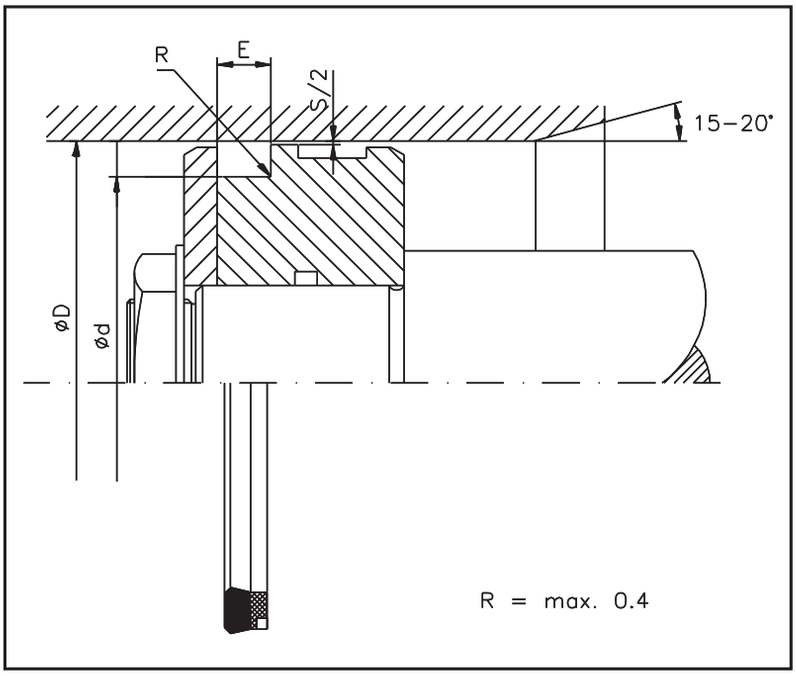
- Two part construction consisting of profile gasket with integrated fabric material and polyacetal thrust ring
- Very good shear characteristics
- Heavy duty anti-wear NBR-fabric combination
- Very good dynamic and static sealing
- Assembly in multiple part pistons
- Small assembly space
- Material as FPM with PTFE thrust ring also available.



Material	: NBR fiber reinforced
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C



PISTON SEAL
HK 120



Limitations on Use

Operating Pressure	: maximum 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), Bio Oils.

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	4,0 µm	0,8 µm
Groove flanks	8,0 µm	1,8 µm

Diameter Clearance

max. Diameter Tolerance S [mm]	Maximum Pressure [bar]
0,40	200
0,30	300
0,20	400

D H10	**d** h10	**E** +0,2	**Part N°.**
25,00	12,00	10,00	HK120 0250-01-100
40,00	26,00	9,50	HK120 0400-01-100
45,00	35,00	9,00	HK120 0450-01-100
45,00	30,00	9,50	HK120 0450-02-100
50,00	30,00	14,50	HK120 0500-01-100
50,00	38,00	9,90	HK120 0500-02-100
50,00	40,00	10,50	HK120 0500-03-100
55,00	40,00	11,00	HK120 0550-01-100
60,00	40,00	14,50	HK120 0600-01-100
65,00	45,00	14,50	HK120 0650-01-100
65,00	50,00	10,50	HK120 0650-02-100
65,00	50,00	11,00	HK120 0650-03-100
70,00	50,00	14,50	HK120 0700-01-100
75,00	60,00	12,50	HK120 0750-01-100
80,00	60,00	14,50	HK120 0800-01-100
80,00	65,00	11,50	HK120 0800-02-100
80,00	65,00	12,50	HK120 0800-03-100
85,00	70,00	12,50	HK120 0850-01-100
90,00	70,00	14,50	HK120 0900-01-100
90,00	75,00	12,50	HK120 0900-02-100
95,00	75,00	14,50	HK120 0950-01-100
95,00	80,00	12,50	HK120 0950-02-100
100,00	80,00	14,50	HK120 1000-01-100
100,00	85,00	12,50	HK120 1000-02-100

D H10	**d** h10	**E** +0,2	**Part N°.**
104,50	85,00	14,50	HK120 1045-01-100
105,00	85,00	14,50	HK120 1050-01-100
110,00	90,00	13,00	HK120 1100-01-100
110,00	95,00	12,50	HK120 1100-02-100
110,00	95,00	13,00	HK120 1100-03-100
115,00	95,00	14,50	HK120 1150-01-100
115,00	103,00	12,50	HK120 1150-02-100
120,00	100,00	13,00	HK120 1200-01-100
125,00	100,00	14,50	HK120 1250-01-100
125,00	105,00	12,50	HK120 1250-02-100
125,00	105,00	15,50	HK120 1250-03-100
130,00	110,00	12,50	HK120 1300-01-100
130,00	110,00	15,50	HK120 1300-02-100
140,00	120,00	12,50	HK120 1400-01-100
140,00	120,00	15,50	HK120 1400-02-100
145,00	130,00	9,50	HK120 1450-01-100
150,00	130,00	15,50	HK120 1500-01-100
160,00	140,00	15,50	HK120 1600-01-100
180,00	160,00	15,50	HK120 1800-01-100
200,00	180,00	15,50	HK120 2000-01-100
220,00	190,00	18,50	HK120 2200-01-100
250,00	215,00	20,50	HK120 2500-01-100
280,00	245,00	20,50	HK120 2800-01-100
320,00	280,00	23,50	HK120 3200-01-100
360,00	320,00	23,50	HK120 3600-01-100

Above sizes also available in FPM.

Further sizes and emperial measurements as well as an extensive range of inch measurement diagrams available on request.

PISTON SEAL
HK 120

Example for ordering Piston Seal:

HK 120 0700 - 01 - 100 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

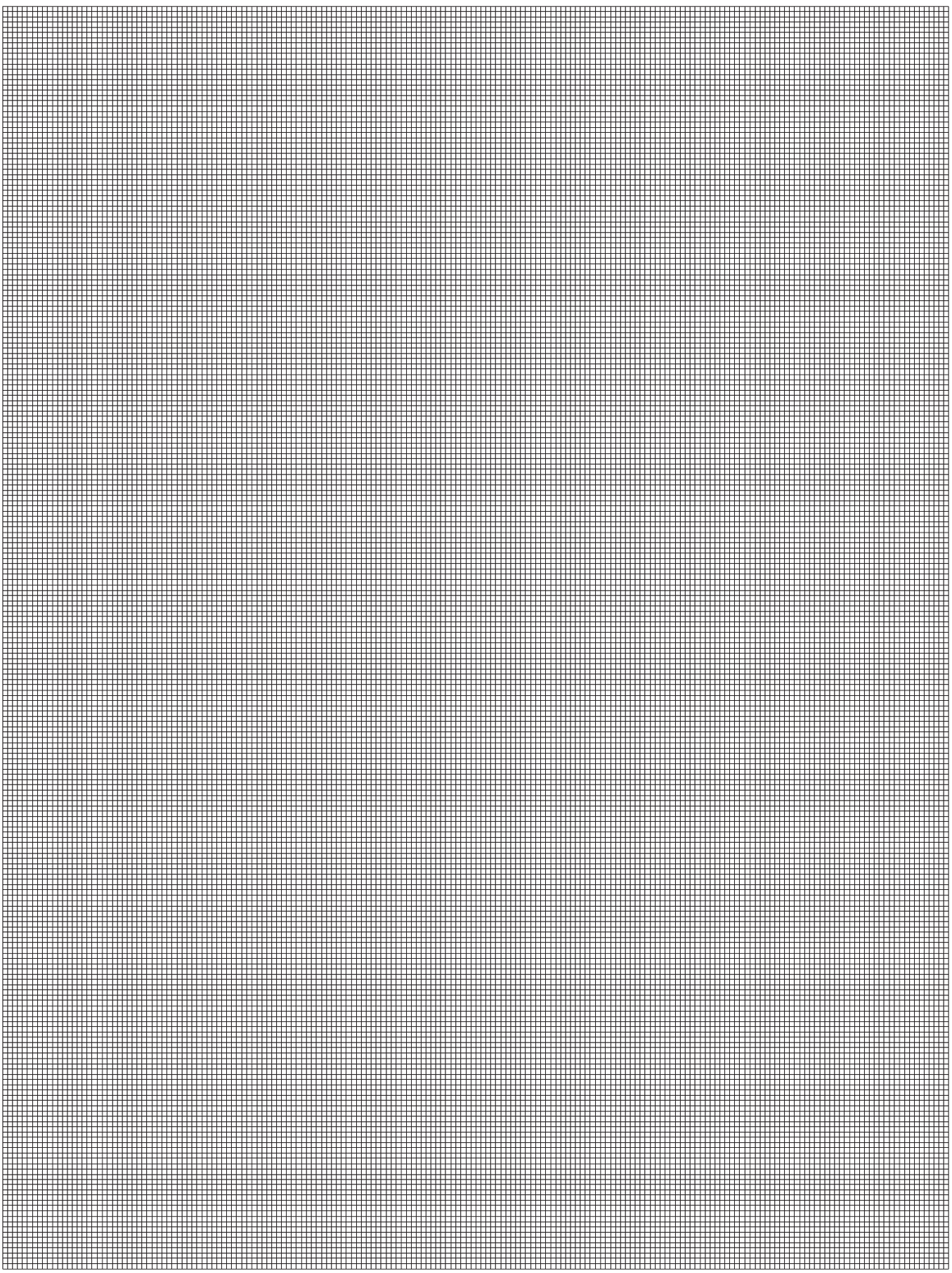
Material Key:

Gasket

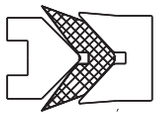
100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



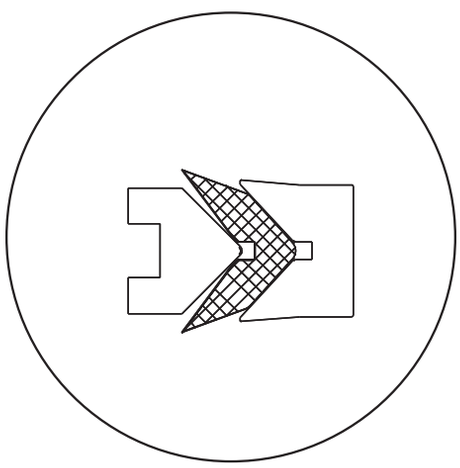
PISTON SEAL
HK 123



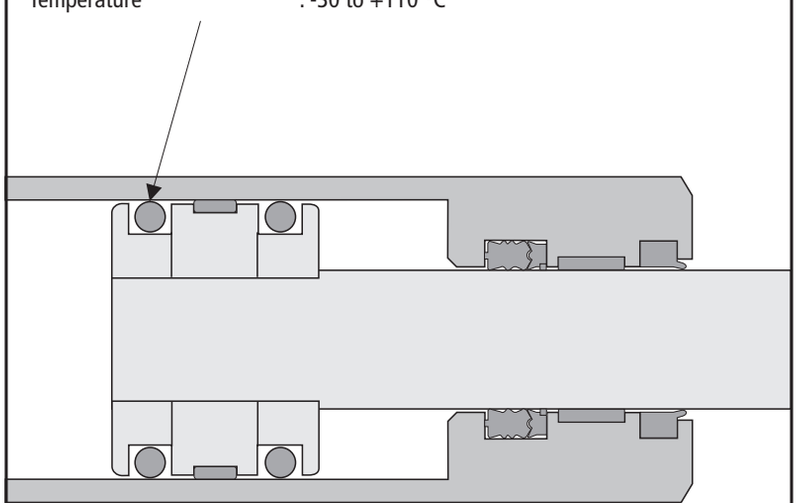
Gland-seal sets have been standard equipments for intermediate to very high stress applications for a number of years. Their robustness against dirt and impact pressures as well as their excellent endurance life render them problem-free.

Special Features:

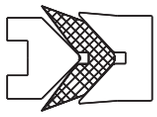
- Three part construction consisting of a pressure-seal-slider ring
- Assembly on single part piston
- Anti wear fabric design of gasket
- Assured use in case of large tolerances
- Gland-seal sets also available in FPM.

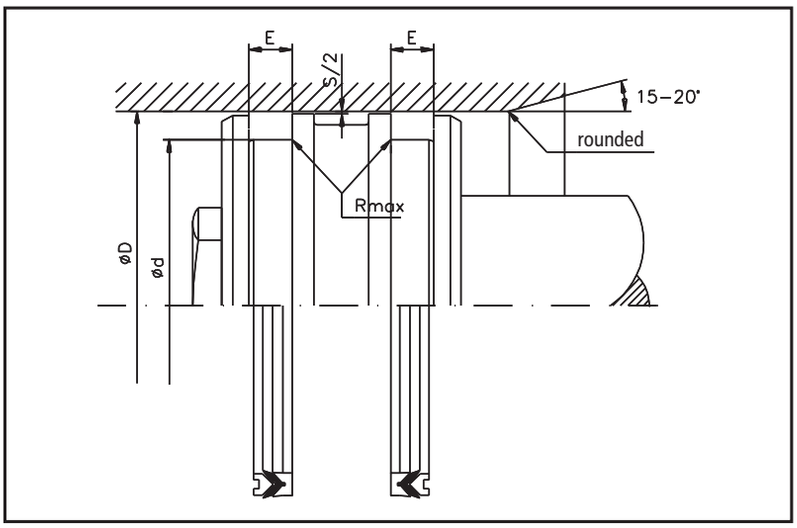


Material	: NBR fiber reinforced
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C



PISTON SEAL
HK 123





Limitations on Use

Operating pressure	:	up to 40 MPa (400 bar)
Velocity	:	reciprocating to max. 0.5 m/s
Temperature	:	-30 to +110 °C (material NBR)
	:	-10 to +150 °C ((material FPM)

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC). Bio Oils.

Surface Finish

Surfaces	Rz	Ra
Faces	1,2 µm	0,3 µm
Groove root	6,3 µm	1,8 µm
Groove flanks	10,0 µm	3,2 µm

D H10	**d** h10	**E** +0,3	**Part N°.**
20,00	10,00	9,30	HK123 0200-01-100
22,00	12,00	9,30	HK123 0220-01-100
25,00	15,00	9,30	HK123 0250-01-100
28,00	18,00	9,30	HK123 0280-01-100
30,00	20,00	9,30	HK123 0300-01-100
32,00	20,00	10,90	HK123 0320-01-100
35,00	23,00	10,90	HK123 0350-01-100
36,00	24,00	10,90	HK123 0360-01-100
40,00	25,00	11,50	HK123 0400-01-100
42,00	27,00	11,50	HK123 0420-01-100
45,00	30,00	11,50	HK123 0450-01-100
50,00	35,00	11,50	HK123 0500-01-100
55,00	40,00	11,50	HK123 0550-01-100
56,00	41,00	11,50	HK123 0560-01-100
60,00	45,00	11,50	HK123 0600-01-100
63,00	48,00	13,00	HK123 0630-01-100
70,00	50,00	15,20	HK123 0700-01-100

D H10	**d** h10	**E** +0,3	**Part N°.**
80,00	60,00	15,20	HK123 0800-01-100
90,00	70,00	21,20	HK123 0900-01-100
100,00	80,00	21,20	HK123 1000-01-100
110,00	90,00	21,20	HK123 1100-01-100
115,00	95,00	21,20	HK123 1150-01-100
125,00	100,00	25,80	HK123 1250-01-100
140,00	115,00	25,80	HK123 1400-01-100
150,00	120,00	29,00	HK123 1500-01-100
160,00	130,00	29,00	HK123 1600-01-100
180,00	150,00	31,50	HK123 1800-01-100
200,00	170,00	33,50	HK123 2000-01-100
220,00	190,00	33,50	HK123 2200-01-100
225,00	195,00	33,50	HK123 2250-01-100
250,00	220,00	33,50	HK123 2500-01-100
275,00	245,00	33,50	HK123 2750-01-100
300,00	270,00	33,50	HK123 3000-01-100

Above sizes also available in FPM.
Further sizes and emperial measurements as well as an extensive range of inch measurement diagrams available on request.

Example for ordering Piston Seal:

HK 123 0360 - 01 - 100 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Material Key:

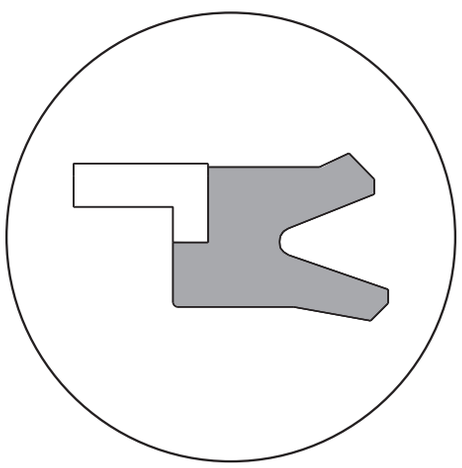
100 - NBR
120 - FPM

Issue 01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 125

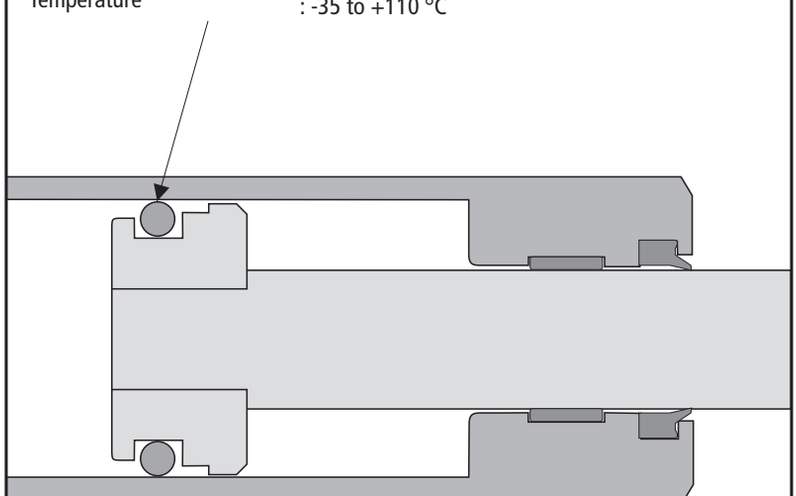
HK 125 is a single acting piston seal. Proven sealing abilities of PU groove rings combined with a form closing ring affords high functional reliability even with low total length.



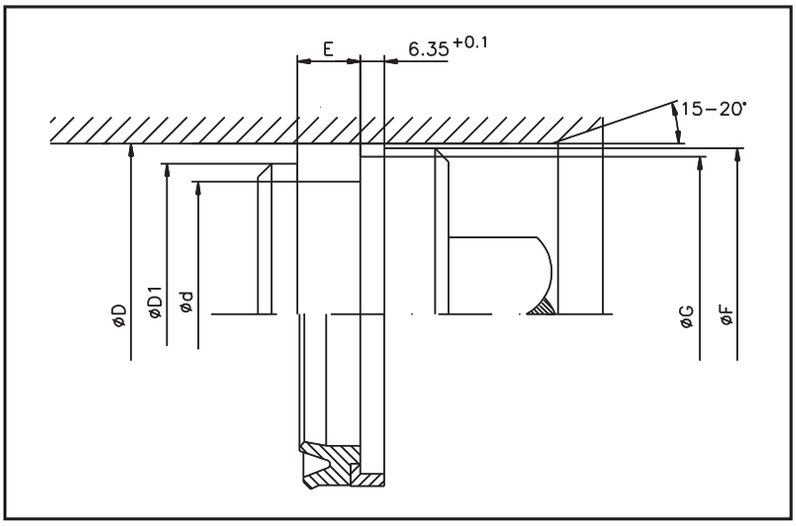
Special Features:

- Two part composition comprising of Polyurethan sealing component and a slit POM sliding ring
- Quick response even at low pressures
- Very good anti wear behavior
- Also usable with single part piston.

Material	: Polyurethane
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -35 to +110 °C



PISTON SEAL
HK 125



Limitations on Use

Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating up to 0.5 m/s
Ttemperature	: -35 to +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils as well as flame resistant pressure liquids on request

Surface Finish

Urfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	6,3 µm	1,6 µm
Groove flanks or sides	10,0 µm	3,2 µm

D H10	**d** h10	**E** +0,2	**D1**	**F** ±0,1	**G** h8	**Part N°.**
32,00	20,00	10,00	25,00	31,40	28,50	HK125 0320-01-200
35,00	22,00	10,00	25,00	34,40	31,40	HK125 0350-01-200
40,00	25,00	9,50	30,00	39,40	35,40	HK125 0400-01-200
40,00	26,00	9,50	30,00	39,40	35,40	HK125 0400-02-200
45,00	30,00	9,50	35,00	44,40	40,40	HK125 0450-01-200
45,00	35,00	9,50	39,00	44,40	40,40	HK125 0450-02-200
50,00	30,00	14,50	35,00	49,40	44,30	HK125 0500-01-200
50,00	35,00	11,00	40,00	49,40	45,35	HK125 0500-02-200
50,00	40,00	11,00	44,00	49,40	45,40	HK125 0500-03-200
55,00	40,00	11,00	45,00	54,40	50,35	HK125 0550-01-200
60,00	40,00	14,50	45,00	59,40	54,20	HK125 0600-01-200
60,00	40,00	14,50	45,00	59,40	55,40	HK125 0600-02-200
60,00	45,00	11,00	50,00	59,40	54,20	HK125 0600-03-200
60,00	45,00	11,00	50,00	59,40	55,40	HK125 0600-04-200
63,00	45,00	11,00	50,00	62,40	58,40	HK125 0630-01-200
65,00	50,00	11,00	55,00	64,40	60,40	HK125 0650-01-200
70,00	50,00	14,50	55,00	69,40	64,20	HK125 0700-01-200
80,00	60,00	13,50	65,00	79,40	74,15	HK125 0800-01-200
80,00	60,00	14,50	65,00	79,40	74,15	HK125 0800-02-200
90,00	70,00	13,00	75,00	89,40	84,15	HK125 0900-01-200
90,00	70,00	14,50	75,00	89,40	84,15	HK125 0900-02-200
100,00	80,00	14,50	85,00	99,40	93,15	HK125 1000-01-200
100,00	80,00	14,50	85,00	99,40	94,15	HK125 1000-02-200
110,00	95,00	13,00	100,00	109,40	103,10	HK125 1100-01-200
120,00	100,00	14,50	105,00	119,40	113,10	HK125 1200-01-200
120,00	100,00	14,50	105,00	119,40	114,10	HK125 1200-02-200

Example for ordering Piston Sea:

HK 125 0600 - 01 - 200 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

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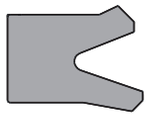
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
(HS 225) HK 130

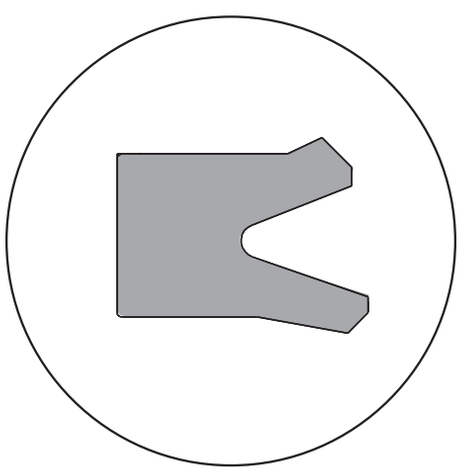


The PU-groove-ring series HK 130 is exclusively designed for use as piston seals. The profile HS 225 can be used for both: rod and piston seals.

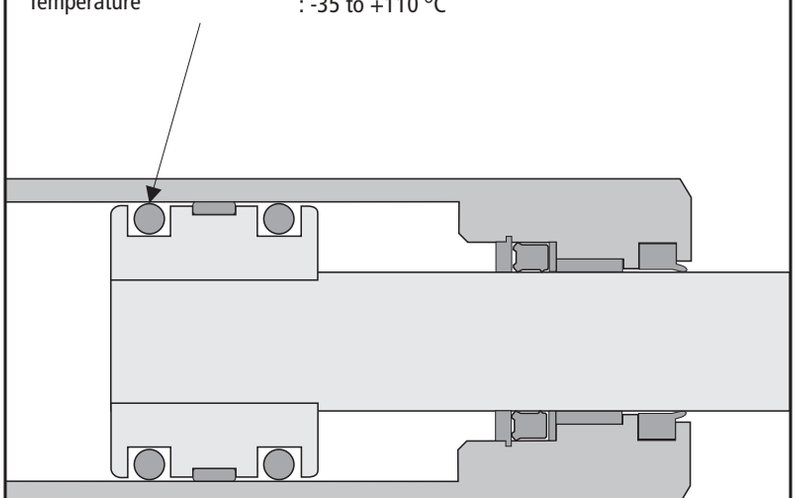
Mainly used in light to intermediate stress applications. Very good sealing characteristics and significantly longer service life as against NBR materials is a feature of this product.

Special Features:

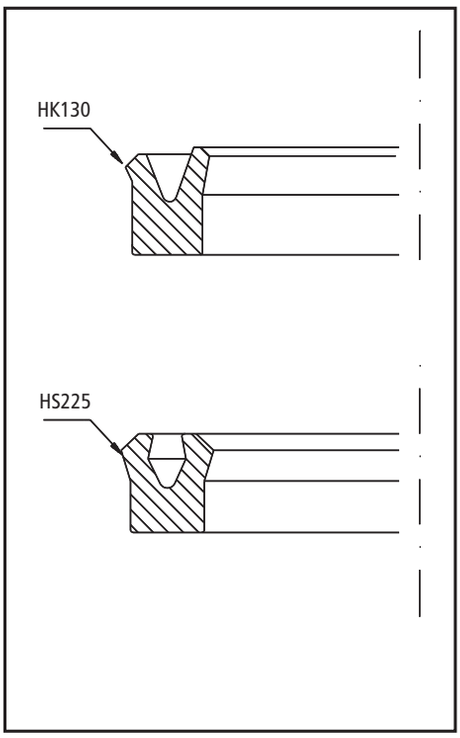
- Anti-wear modified PU mixture
- Fast and safe operation even at low temperatures due to special profile design
- Simple snap assembly in closed groove possible
- Significantly better anti extrusion behaviour compared to NBR
- Larger split measurements thus possible
- Small assembly space
- Cost effective variant
- Extensive range of available sizes.



Material	: Polyurethane
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -35 to +110 °C



PISTON SEAL
(HS 225) HK 130



Detailed Information

HK 130

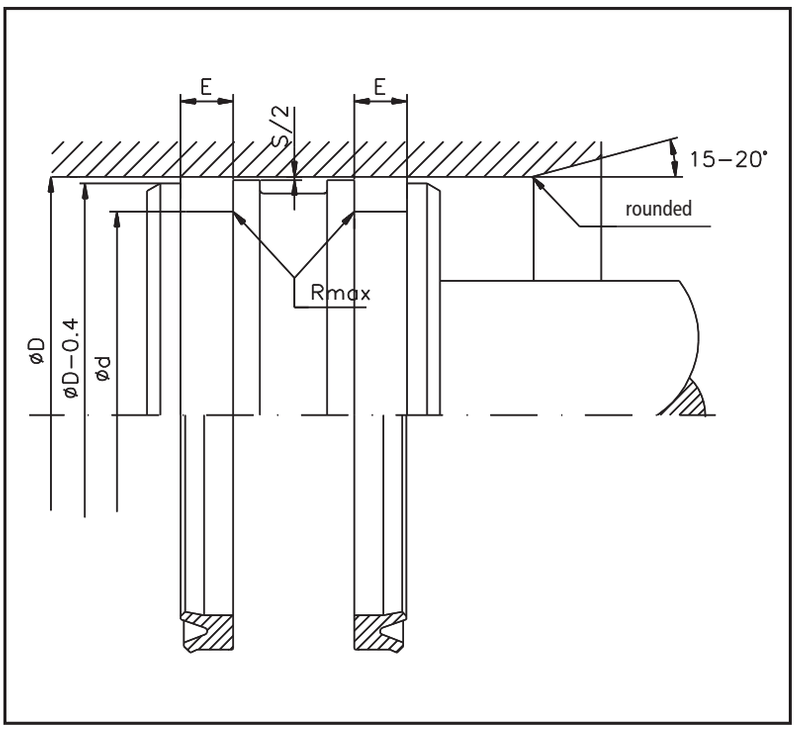
Asymmetric sealing lips with reduction on dynamic side cause much less friction. Prestressing of this seal is usually achieved through reduction of internal diameter.

HS 225

This is a standard type with characteristic groove depth. This profile is usable as both piston and rod sealing. Prestressing of sealing lip is equal on internal and external diameter.

All profiles of the series HK 130 and HS 225 offer specific advantages. Please enquire with our technical department for the variant suitable to your application. Also applicable for use of Bio Oils.

PISTON SEAL
(HS 225) HK 130



Limitations on Use

Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating up to 0.5 m/s
Ttemperature	: -35 to +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils as well as flame resistant pressure liquids on request

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	6,3 µm	1,6 µm
Groove flanks	10,0 µm	3,2 µm

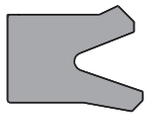
Diameter Clearance

Max. Clearance S [mm]	Max. Pressure [bar]
0,80	100
0,60	150
0,40	200
0,20	400

D H9	**d** h9	**E** +0,2	**Part N°. HK 130**	**Part N°. HS 225**
9,00	3,00	5,00		HS225 0030-01-200
10,00	4,00	4,50		HS225 0040-01-200
10,00	4,00	5,00		HS225 0040-02-200
11,00	4,50	5,50		HS225 0045-01-200
11,11	6,35	5,50		HS225 0063-01-200
12,00	5,00	5,50		HS225 0050-01-200
12,00	5,00	6,00	HK130 0120-01-200	
12,00	5,00	7,00		HS225 0050-02-200
12,00	5,00	6,50		HS225 0050-03-200
12,00	6,00	4,50		HS225 0060-01-200
12,00	6,00	6,00		HS225 0060-02-200
12,00	6,00	6,50		HS225 0060-03-200
12,00	8,00	3,50		HS225 0080-01-200
12,50	4,50	5,00		HS225 0045-02-200
12,70	5,00	9,00		HS225 0050-04-200
12,70	6,00	6,50		HS225 0060-04-200
14,00	7,00	4,20		HS225 0070-01-200
14,00	8,00	6,80	HK130 0140-01-200	
14,00	8,00	7,00		HS225 0080-02-200
15,00	6,00	9,00		HS225 0060-05-200
15,00	7,00	8,00		HS225 0070-02-200
15,00	8,00	6,30		HS225 0080-03-200
15,00	8,00	9,00		HS225 0080-04-200
15,00	9,00	9,00		HS225 0090-01-200
16,00	8,00	6,30		HS225 0080-05-200
16,00	10,00	6,50	HK130 0160-01-200	HS225 0100-01-200
16,00	10,00	9,00	HK130 0160-02-200	
17,00	5,00	10,00		HS225 0050-05-200
17,00	11,00	5,00		HS225 0110-01-200
18,00	8,00	10,00		HS225 0080-06-200
18,00	10,00	6,00		HS225 0100-02-200
18,00	10,00	7,00		HS225 0100-03-200
18,00	10,00	9,00		HS225 0100-04-200
18,00	12,00	5,50		HS225 0120-01-200

D H9	**d** h9	**E** +0,2	**Part N°. HK 130**	**Part N°. HS 225**
18,00	12,00	7,00		HS225 0120-02-200
19,00	9,00	7,00		HS225 0090-02-200
20,00	10,00	9,00		HS225 0100-05-200
20,00	12,00	7,50	HK130 0200-01-200	
20,00	12,00	8,00		HS225 0120-03-200
20,00	12,00	9,00		HS225 0120-04-200
20,00	14,00	5,30		HS225 0140-01-200
20,00	14,00	6,00	HK130 0200-02-200	
20,50	11,00	7,00		HS225 0110-02-200
22,00	8,00	9,00		HS225 0080-07-200
22,00	10,00	7,00		HS225 0100-06-200
22,00	10,00	9,00		HS225 0100-07-200
22,00	12,00	6,00		HS225 0120-05-200
22,00	12,00	8,00		HS225 0120-06-200
22,00	12,00	9,00	HK130 0220-01-200	HS225 0120-07-200
22,00	14,00	4,50		HS225 0140-02-200
22,00	14,00	7,00		HS225 0140-03-200
22,00	14,00	9,00		HS225 0140-04-200
22,00	14,00	12,00		HS225 0140-05-200
22,00	16,00	4,50		HS225 0160-01-200
22,00	16,00	5,50		HS225 0160-02-200
24,00	12,00	9,00		HS225 0120-08-200
24,00	12,00	10,00		HS225 0120-09-200
24,00	14,00	9,00		HS225 0140-06-200
24,00	16,00	6,00		HS225 0160-03-200
24,00	16,00	10,00		HS225 0160-04-200
25,00	10,00	11,00	HK130 0250-01-200	
25,00	12,00	9,00		HS225 0120-10-200
25,00	12,00	11,00		HS225 0120-11-200
25,00	15,00	9,00	HK130 0250-02-200	HS225 0150-02-200
25,00	15,00	11,00		HS225 0150-01-200
25,00	17,00	11,00		HS225 0170-01-200
25,00	18,00	5,50		HS225 0180-01-200
25,00	19,00	7,00		HS225 0190-01-200

PISTON SEAL
(HS 225) HK 130



D H9	d h9	E +0,2	Part N°. HK 130	Part N°. HS 225
26,00	16,00	6,00		HS225 0160-05-200
26,00	16,00	9,00		HS225 0160-06-200
26,00	16,00	11,00		HS225 0160-07-200
26,00	18,00	7,50		HS225 0180-02-200
26,00	18,00	9,00		HS225 0180-03-200
26,00	18,00	9,50		HS225 0180-04-200
27,00	15,00	7,00		HS225 0150-03-200
28,00	15,00	11,00		HS225 0150-04-200
28,00	16,00	7,00		HS225 0160-08-200
28,00	18,00	9,00		HS225 0180-05-200
28,00	20,00	5,00		HS225 0200-01-200
28,00	20,00	9,00		HS225 0200-02-200
28,00	22,00	9,00		HS225 0220-01-200
29,00	20,00	5,50		HS225 0200-03-200
30,00	15,00	11,00	HK130 0300-01-200	
30,00	18,00	9,00		HS225 0180-06-200
30,00	20,00	9,00	HK130 0300-02-200	HS225 0200-04-200
30,00	20,00	11,00		HS225 0200-05-200
30,00	22,00	7,00	HK130 0300-03-200	HS225 0220-02-200
30,00	23,00	7,50		HS225 0230-01-200
32,00	16,00	9,00		HS225 0160-09-200
32,00	20,00	8,50		HS225 0200-06-200
32,00	22,00	9,00	HK130 0320-01-200	HS225 0220-04-200
32,00	22,00	11,00	HK130 0320-02-200	HS225 0220-05-200
32,00	24,00	8,00		HS225 0240-01-200
32,00	26,00	6,00	HK130 0320-03-200	
34,00	22,00	9,40	HK130 0340-01-200	
34,00	22,00	10,00	HK130 0340-02-200	
35,00	20,00	11,00	HK130 0350-01-200	
35,00	20,00	13,00		HS225 0200-07-200
35,00	22,00	11,00		HS225 0220-06-200
35,00	25,00	5,50		HS225 0250-01-200
35,00	25,00	9,00	HK130 0350-02-200	HS225 0250-02-200
35,00	25,00	11,00		HS225 0250-03-200
35,00	27,00	11,00	HK130 0350-03-200	
35,00	28,00	5,50		HS225 0280-01-200
36,00	28,00	7,50		HS225 0280-02-200
36,50	24,00	7,00	HK130 0365-01-200	
37,00	30,00	7,00		HS225 0300-01-200
37,00	21,00	13,00	HK130 0370-01-200	
38,00	25,00	11,00		HS225 0250-04-200
38,00	28,00	9,00		HS225 0280-03-200
38,00	30,00	6,50		HS225 0300-02-200
38,00	31,00	5,20	HK130 0380-01-200	
39,00	20,00	11,00		HS225 0200-09-200
40,00	20,00	13,00		HS225 0200-10-200
40,00	22,00	11,00		HS225 0220-07-200
40,00	24,00	9,00		HS225 0240-02-200
40,00	25,00	11,00	HK130 0400-01-200	HS225 0250-05-200
40,00	28,00	11,00		Hs225 0280-04-200
40,00	30,00	5,50		HS225 0300-03-200
40,00	30,00	7,50	HK130 0400-02-200	
40,00	30,00	11,00	HK130 0400-03-200	HS225 0300-04-200
40,00	32,00	6,00		HS225 0320-01-200
40,00	32,00	9,00	HK130 0400-04-200	HS225 0320-02-200
40,00	33,00	9,00	HK130 0400-05-200	
42,00	30,00	10,00		HS225 0300-05-200
42,00	30,00	11,00		HS225 0300-06-200
42,00	32,00	11,00	HK130 0420-01-200	HS225 0320-03-200
42,00	34,50	4,70	HK130 0420-02-200	
43,00	25,00	10,00	HK130 0430-01-200	

D H9	d h9	E +0,2	Part N°. HK 130	Part N°. HS 225
44,00	20,00	12,00	HK130 0440-01-200	
45,00	28,50	13,00	HK130 0450-01-200	
45,00	30,00	11,00	HK130 0450-02-200	HS225 0300-07-200
45,00	32,00	11,00		HS225 0320-04-200
45,00	34,00	8,00		HS225 0340-01-200
45,00	34,00	10,00		HS225 0340-02-200
45,00	35,00	9,00		HS225 0350-01-200
45,00	35,00	11,00		HS225 0350-02-200
45,00	38,00	5,50		HS225 0380-01-200
46,00	36,00	8,00		HS225 0360-01-200
46,00	38,00	7,50		HS225 0380-02-200
48,00	35,00	11,00		HS225 0350-03-200
48,00	40,00	12,00		HS225 0400-01-200
50,00	30,00	11,00		HS225 0300-08-200
50,00	30,00	13,00	HK130 0500-01-200	HS225 0300-09-200
50,00	32,00	11,00	HK130 0500-02-200	
50,00	32,00	13,00		HS225 0320-05-200
50,00	34,00	15,00		HS225 0340-03-200
50,00	35,00	9,50	HK130 0500-03-200	
50,00	35,00	11,00	HK130 0500-04-200	HS225 0350-04-200
50,00	38,00	10,00		HS225 0380-03-200
50,00	40,00	5,50	HK130 0500-05-200	
50,00	40,00	7,50		HS225 0400-02-200
50,00	40,00	9,00		HS225 0400-03-200
50,00	40,00	11,00	HK130 0500-06-200	HS225 0400-04-200
50,00	42,00	6,00	HK130 0500-07-200	
50,00	42,00	9,00	HK130 0500-08-200	HS225 0420-01-200
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50,80	40,80	8,00	HK130 0508-01-200	
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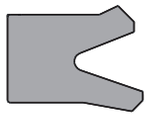
55,00	35,00	13,00		HS225 0350-06-200
55,00	38,00	11,00		HS225 0380-04-200
55,00	40,00	11,00	HK130 0550-01-200	HS225 0400-05-200
55,00	45,00	7,50		HS225 0450-01-200
55,00	45,00	11,00		HS225 0450-02-200
55,00	47,00	6,30	HK130 0550-02-200	
56,00	40,00	11,00		HS225 0400-06-200
58,00	38,00	11,00		HS225 0380-05-200
58,00	48,00	11,00		HS225 0480-01-200
60,00	40,00	11,00		HS225 0400-07-200
60,00	40,00	13,00	HK130 0600-01-200	
60,00	40,00	14,00		HS225 0400-08-200
60,00	40,00	14,50	HK130 0600-02-200	
60,00	40,00	19,00		HS225 0400-09-200
60,00	45,00	11,00	HK130 0600-03-200	HS225 0450-03-200
60,00	50,00	5,50	HK130 0600-04-200	
60,00	50,00	8,00	HK130 0600-05-200	
60,00	50,00	11,00	HK130 0600-06-200	HS225 0500-01-200
60,00	50,00	12,00		HS225 0500-02-200
60,00	52,00	9,00	HK130 0600-07-200	
62,00	42,00	13,00		HS225 0420-03-200
62,00	50,00	10,00		HS225 0500-03-200
62,00	52,00	13,00		HS225 0520-01-200
63,00	43,00	13,00	HK130 0630-01-200	
63,00	45,00	11,00	HK130 0630-02-200	HS225 0450-04-200
63,00	48,00	11,00	HK130 0630-03-200	
63,00	48,00	13,00	HK130 0630-04-200	
63,00	50,00	7,00		HS225 0500-04-200
63,00	53,00	7,50		HS225 0530-01-200

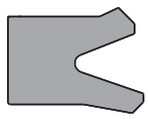
PISTON SEAL
(HS 225) HK 130



D H9	**d** h9	**E** +0,2	**Part N°. HK 130**	**Part N°. HS 225**
63,00	53,00	8,00	HK130 0630-05-200	
63,00	53,00	13,00	HK130 0630-06-200	
65,00	40,00	13,00		HS225 0400-10-200
65,00	45,00	11,00		HS225 0450-05-200
65,00	45,00	13,00	HK130 0650-01-200	HS225 0450-06-200
65,00	45,00	14,50	HK130 0650-02-200	
65,00	50,00	11,00	HK130 0650-03-200	HS225 0500-05-200
65,00	50,00	12,50	HK130 0650-04-200	
65,00	55,00	11,00	HK130 0650-05-200	HS225 0550-01-200
65,00	55,00	13,00		HS225 0550-02-200
65,00	55,00	14,50	HK130 0650-06-200	
68,00	48,00	11,00	HK130 0680-01-200	
70,00	36,00	11,00		HS225 0360-01-200
70,00	40,00	16,00		HS225 0400-11-200
70,00	50,00	11,00		HS225 0500-06-200
70,00	50,00	13,00	HK130 0700-01-200	HS225 0500-07-200
70,00	50,00	14,50	HK130 0700-02-200	
70,00	50,00	16,00	HK130 0700-03-200	
70,00	50,00	19,00		HS225 0500-08-200
70,00	55,00	10,50	HK130 0700-04-200	
70,00	55,00	13,00	HK130 0700-05-200	HS225 0550-03-200
70,00	60,00	8,00	HK130 0700-06-200	
70,00	60,00	9,00		HS225 0600-01-200
70,00	60,00	11,00		HS225 0600-02-200
70,00	60,00	13,00	HK130 0700-08-200	HS225 0600-03-200
70,00	60,00	14,50	HK130 0700-09-200	
70,00	62,00	8,50	HK130 0700-10-200	
72,00	58,00	13,00	HK130 0720-01-200	
75,00	40,00	11,00		HS225 0400-12-200
75,00	50,00	15,00	HK130 0750-01-200	
75,00	55,00	13,00		HS225 0550-04-200
75,00	55,00	14,50	HK130 0750-02-200	
75,00	60,00	11,00		HS225 0600-04-200
75,00	60,00	13,00		HS225 0600-05-200
75,00	63,00	11,00		HS225 0630-01-200
75,00	65,00	5,50	HK130 0750-03-200	
75,00	65,00	7,50	HK130 0750-04-200	
75,00	65,00	8,00	HK130 0750-05-200	
75,00	65,00	11,00	HK130 0750-06-200	
75,00	65,00	13,00		HS225 0650-01-200
75,00	65,00	14,50	HK130 0750-07-200	
76,00	66,00	9,00		HS225 0660-01-200
77,00	67,00	11,00		HS225 0670-01-200
77,00	67,00	13,00		HS225 0670-02-200
78,00	63,00	11,00		HS225 0630-02-200
80,00	55,00	13,00		HS225 0550-05-200
80,00	60,00	11,00		HS225 0600-06-200
80,00	60,00	13,00	HK130 0800-01-200	HS225 0600-07-200
80,00	60,00	14,50	HK130 0800-02-200	
80,00	60,00	19,00		HS225 0600-08-200
80,00	65,00	12,00		HS225 0650-02-200
80,00	65,00	13,00	HK130 0800-03-200	HS225 0650-03-200
80,00	66,00	11,00		HS225 0660-02-200
80,00	66,00	14,00		HS225 0660-03-200
80,00	70,00	6,00		HS225 0700-01-200
80,00	70,00	8,00	HK130 0800-04-200	
80,00	70,00	9,00		HS225 0700-02-200
80,00	70,00	11,00		HS225 0700-03-200
80,00	70,00	13,00	HK130 0800-05-200	HS225 0700-04-200
80,00	72,00	13,00	HK130 0800-06-200	
83,00	63,00	16,00		HS225 0630-03-200

D H9	**d** h9	**E** +0,2	**Part N°. HK 130**	**Part N°. HS 225**
85,00	60,00	13,50		HS225 0600-09-200
85,00	65,00	11,00		HS225 0650-04-200
85,00	65,00	13,00		HS225 0650-05-200
85,00	65,00	14,50	HK130 0850-01-200	
85,00	70,00	13,00		HS225 0700-05-200
85,00	75,00	11,00	HK130 0850-02-200	
85,00	75,00	13,00	HK130 0850-03-200	HS225 0750-01-200
90,00	60,00	16,00		HS225 0600-10-200
90,00	70,00	13,00	HK130 0900-01-200	HS225 0700-06-200
90,00	70,00	14,50	HK130 0900-02-200	
90,00	70,00	19,00		HS225 0700-07-200
90,00	75,00	8,50		HS225 0750-02-200
90,00	75,00	11,00		HS225 0750-03-200
90,00	75,00	13,00	HK130 0900-03-200	HS225 0750-04-200
90,00	80,00	5,50	HK130 0900-04-200	
90,00	80,00	11,00	HK130 0900-05-200	HS225 0800-01-200
90,00	80,00	13,00		HS225 0800-02-200
90,00	80,00	14,00	HK130 0900-06-200	
92,00	82,00	11,00		HS225 0820-01-200
93,00	78,00	11,50		HS225 0780-01-200
94,00	84,50	8,80		HS225 0845-01-200
95,00	70,00	13,00		HS225 0700-08-200
95,00	75,00	13,00		HS225 0750-05-200
95,00	75,00	14,50	HK130 0950-01-200	
95,00	80,00	13,00		HS225 0800-03-200
95,00	85,00	7,50	HK130 0950-02-200	
95,00	85,00	8,00	HK130 0950-03-200	
95,00	85,00	9,50	HK130 0950-04-200	HS225 0850-01-200
95,00	85,00	13,00		HS225 0850-02-200
95,00	85,00	14,50	HK130 0950-05-200	
100,00	80,00	11,00	HK130 1000-01-200	HS225 0800-04-200
100,00	80,00	13,00	HK130 1000-02-200	HS225 0800-05-200
100,00	80,00	14,50	HK130 1000-03-200	
100,00	85,00	12,00		HS225 0850-03-200
100,00	85,00	13,00	HK130 1000-04-200	HS225 0850-04-200
100,00	86,00	13,00	HK130 1000-05-200	
100,00	90,00	8,00	HK130 1000-06-200	HS225 0900-01-200
100,00	90,00	9,00		HS225 0900-02-200
100,00	90,00	11,50	HK130 1000-07-200	
100,00	90,00	13,00		HS225 0900-03-200
101,60	80,00	13,00	HK130 1016-01-200	
105,00	85,00	13,00		HS225 0850-05-200
105,00	90,00	13,00	HK130 1050-01-200	HS225 0900-04-200
110,00	90,00	13,00	HK130 1100-01-200	HS225 0900-05-200
110,00	90,00	19,00		HS225 0900-06-200
110,00	95,00	13,00	HK130 1100-02-200	HS225 0950-01-200
110,00	95,00	16,00		HS225 0950-02-200
110,00	100,00	8,00	HK130 1100-03-200	
110,00	100,00	14,50	HK130 1100-04-200	
112,00	95,00	12,00		HS225 0950-03-200
115,00	85,00	16,00		HS225 0850-06-200
115,00	90,00	23,00		HS225 0900-07-200
115,00	95,00	13,00		HS225 0950-04-200
115,00	95,00	19,00		HS225 0950-05-200
115,00	100,00	11,50	HK130 1150-01-200	
115,00	100,00	13,00		HS225 1000-01-200
115,00	105,00	14,50	HK130 1150-02-200	
120,00	95,00	13,00	HK130 1200-01-200	
120,00	100,00	13,00	HK130 1200-02-200	HS225 1000-02-200
120,00	100,00	14,50	HK130 1200-03-200	
120,00	103,00	17,00	HK130 1200-04-200	

PISTON SEAL
(HS 225) HK 130



D H9	**d** h9	**E** +0,2	**Part N°. HK 130**	**Part N°. HS 225**
120,00	105,00	9,00		HS225 1050-01-200
120,00	105,00	16,00		HS225 1050-02-200
120,00	106,00	9,50		HS225 1060-01-200
125,00	100,00	13,00		HS225 1000-03-200
125,00	100,00	16,00		HS225 1000-04-200
125,00	105,00	13,00	HK130 1250-01-200	HS225 1050-03-200
125,00	105,00	15,00		HS225 1050-05-200
125,00	105,00	16,00	HK130 1250-02-200	HS225 1050-04-200
125,00	110,00	13,00		HS225 1100-01-200
125,00	110,00	16,00		HS225 1100-02-200
125,00	113,00	10,50		HS225 1130-01-200
125,00	115,00	8,00	HK130 1250-03-200	
125,00	115,00	16,00	HK130 1250-04-200	
126,00	115,00	16,00		HS225 1150-01-200
130,00	100,00	13,00		HS225 1000-05-200
130,00	110,00	13,00	HK130 1300-01-200	
130,00	110,00	16,00	HK130 1300-02-200	HS225 1100-03-200
130,00	110,00	19,00		HS225 1100-04-200
130,00	120,00	14,50	HK130 1300-03-200	
130,00	120,00	15,00		HS225 1200-01-200
135,00	115,00	16,00		HS225 1150-02-200
135,00	120,00	16,00		HS225 1200-02-200
140,00	114,00	13,00	HK130 1400-01-200	
140,00	115,00	16,00		HS225 1150-03-200
140,00	115,00	23,00		HS225 1150-04-200
140,00	120,00	13,00	HK130 1400-02-200	
140,00	120,00	16,00		HS225 1200-03-200
140,00	125,00	12,00		HS225 1250-01-200
140,00	125,00	16,00		HS225 1250-02-200
145,00	125,00	16,00		HS225 1250-03-200
145,00	125,00	19,00		HS225 1250-04-200
150,00	125,00	14,50	HK130 1500-01-200	
150,00	130,00	16,00	HK130 1500-02-200	HS225 1300-01-200

D H9	**d** h9	**E** +0,2	**Part N°. HK 130**	**Part N°. HS 225**
150,00	135,00	16,00		HS225 1350-01-200
150,00	140,00	8,00	HK130 1500-03-200	
155,00	125,00	16,00		HS225 1250-05-200
155,00	135,00	16,00		HS225 1350-02-200
160,00	135,00	16,00		HS225 1350-03-200
160,00	140,00	13,00		HS225 1400-01-200
160,00	140,00	14,50	HK130 1600-01-200	
160,00	140,00	16,00		HS225 1400-02-200
160,00	148,00	7,50	HK130 1600-02-200	
165,00	145,00	16,00		HS225 1450-01-200
170,00	150,00	16,00	HK130 1700-01-200	HS225 1500-01-200
170,00	150,00	19,00		HS225 1500-02-200
174,80	165,20	7,50	HK130 1748-01-200	
180,00	160,00	14,50	HK130 1800-01-200	
180,00	160,00	16,00		HS225 1600-01-200
180,00	166,00	16,50	HK130 1800-02-200	
190,00	170,00	16,00	HK130 1900-01-200	HS225 1700-01-200
200,00	170,00	19,00		HS225 1700-02-200
200,00	175,00	16,00		HS225 1750-01-200
200,00	180,00	16,00		HS225 1800-01-200
220,00	180,00	21,00		HS225 1800-02-200
225,00	200,00	19,00		HS225 2000-01-200
245,00	225,00	16,00		HS225 2250-01-200
250,00	220,00	19,00		HS225 2200-01-200
270,00	245,00	16,00		HS225 2450-01-200
280,00	250,00	19,00	HK130 2800-01-200	
290,00	265,00	18,00		HS225 2650-01-200
290,00	270,00	18,00		HS225 2700-01-200
300,00	270,00	16,00		HS225 2700-02-200
300,00	280,00	16,00		HS225 2800-01-200
320,00	285,00	21,00	HK130 3200-01-200	
320,00	305,00	18,00		HS225 3050-01-200
390,00	360,00	23,00		HS225 3600-01-200

Further dimensions and intermediate sizes available on request.

Example for ordering Piston Seal :

HK 130 0600 - 01 - 200 - ...

- Profile
- Nominal diameter x 10*
- Dimension variant
- Standard material
- HME internal code

* = at HS 225 basic diameter of groove

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WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

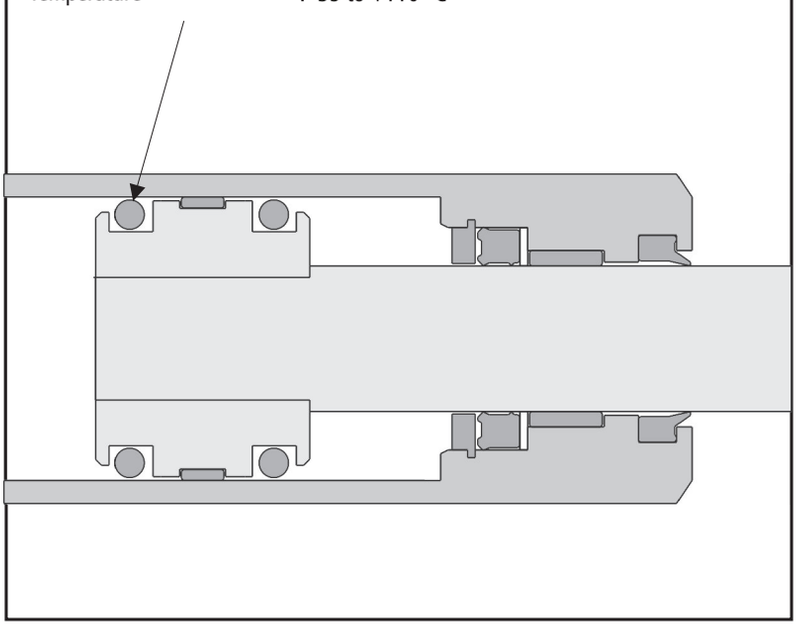
PISTON SEAL
HK 131

HK 131 is a single acting piston seal. Proven sealing abilities of PU groove rings combined with a form closing ring affords high functional reliability even with low total length

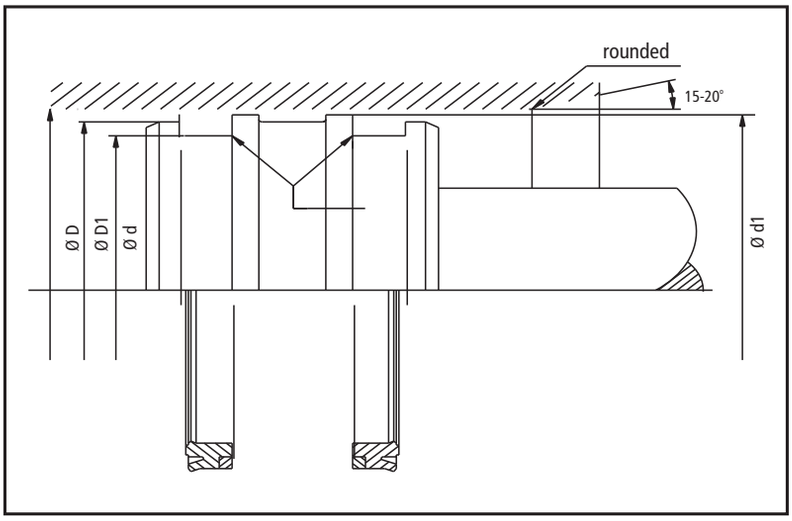
Special Features::

- Two part composition comprising of Polyurethan sealing comonent and a slit POM
- Quick response even at low pressures
- Very good anti wear behavior
- Also usable with single part piston
- Avoidance of dynamic operational pressure through pressure relief / unloading grooves (notches)
- Larger split measurements thus possible
- Recommended for assambly spaces per as ISO 5597

Material	: Polyurethane / POM
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -35 to +110 °C



PISTON SEAL
HK 131



Limitations on Use

Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating up to 0.5 m/s
Ttemperature	: -35 to +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils as well as flame resistant pressure liquids on request

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	6,3 µm	1,6 µm
Groove flanks	10,0 µm	3,2 µm

D H10	**d** f8	**E** +0,2	**D1** -05	**d1** -0,05 (200 bar)	**d1** -0,05 (400 bar)	**Part N°.**
50,00	39,00	8,60	45,00	48,80	49,20	HK131 0500-01-200
50,00	**35,00**	**9,50**	**45,00**	**48,80**	**49,20**	**HK131 0500-02-200**
50,00	40,00	11,00	45,00	48,80	49,20	HK131 0500-06-200
60,00	45,00	9,50	55,00	58,90	59,30	HK131 0600-02-200
60,00	45,00	10,00	55,00	58,90	59,30	HK131 0600-01-200
63,00	**48,00**	**9,50**	**58,00**	**61,90**	**62,30**	**Hk131 0630-01-200**
70,00	50,00	12,50	64,00	68,50	68,90	HK131 0700-01-200
80,00	**60,00**	**12,50**	**74,00**	**78,50**	**78,90**	**HK131 0800-02-200**
80,00	60,00	13,00	74,00	78,50	78,90	HK131 0800-01-200
80,00	**65,00**	**9,50**	**75,00**	**78,90**	**79,30**	**HK131 0800-04-200**
80,00	65,00	11,00	75,00	78,90	79,30	HK131 0800-03-200
90,00	70,00	12,50	84,00	88,50	88,90	HK131 0900-02-200
90,00	70,00	13,00	84,00	88,50	88,90	HK131 0900-01-200
100,00	**80,00**	**12,50**	**94,00**	**98,50**	**98,90**	**HK131 1000-01-200**
100,00	80,00	13,00	94,00	98,50	98,90	HK131 1000-02-200
100,00	**85,00**	**9,50**	**95,00**	**98,90**	**99,30**	**HK131 1000-03-200**
110,00	90,00	12,50	104,00	108,50	108,90	HK131 1100-01-200
110,00	95,00	13,00	104,00	108,50	108,90	HK131 1100-02-200
125,00	100,00	15,50	117,00	123,50	123,90	HK131 1250-02-200
125,00	**105,00**	**12,50**	**119,00**	**123,50**	**123,90**	**HK131 1250-03-200**
125,00	105,00	13,00	119,00	123,50	123,90	HK131 1250-01-200
140,00	120,00	12,50	134,00	138,50	138,90	HK131 1400-01-200
150,00	130,00	12,50	144,00	148,50	148,90	HK131 1500-01-200
160,00	130,00	19,00	150,00	158,50	158,90	HK131 1600-01-200
160,00	**140,00**	**12,50**	**154,00**	**158,50**	**158,90**	**HK131 1600-02-200**
180,00	160,00	12,50	174,00	178,50	178,90	HK131 1800-01-200
200,00	**170,00**	**20,00**	**190,00**	**198,60**	**199,00**	**HK131 2000-01-200**
200,00	**175,00**	**16,00**	**193,00**	**198,60**	**199,00**	**HK131 2000-02-200**
225,00	195,00	19,00	215,00	223,60	224,00	HK131 2250-01-200
250,00	220,00	19,00	240,00	248,60	249,00	HK131 2500-01-200
250,00	**225,00**	**16,00**	**242,00**	**248,60**	**249,00**	**HK131 2500-02-200**

Dimensions in bold face comply with DIN ISO 5597 for mounting spaces

Example for ordering Piston Seal:

HK 131 0600 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

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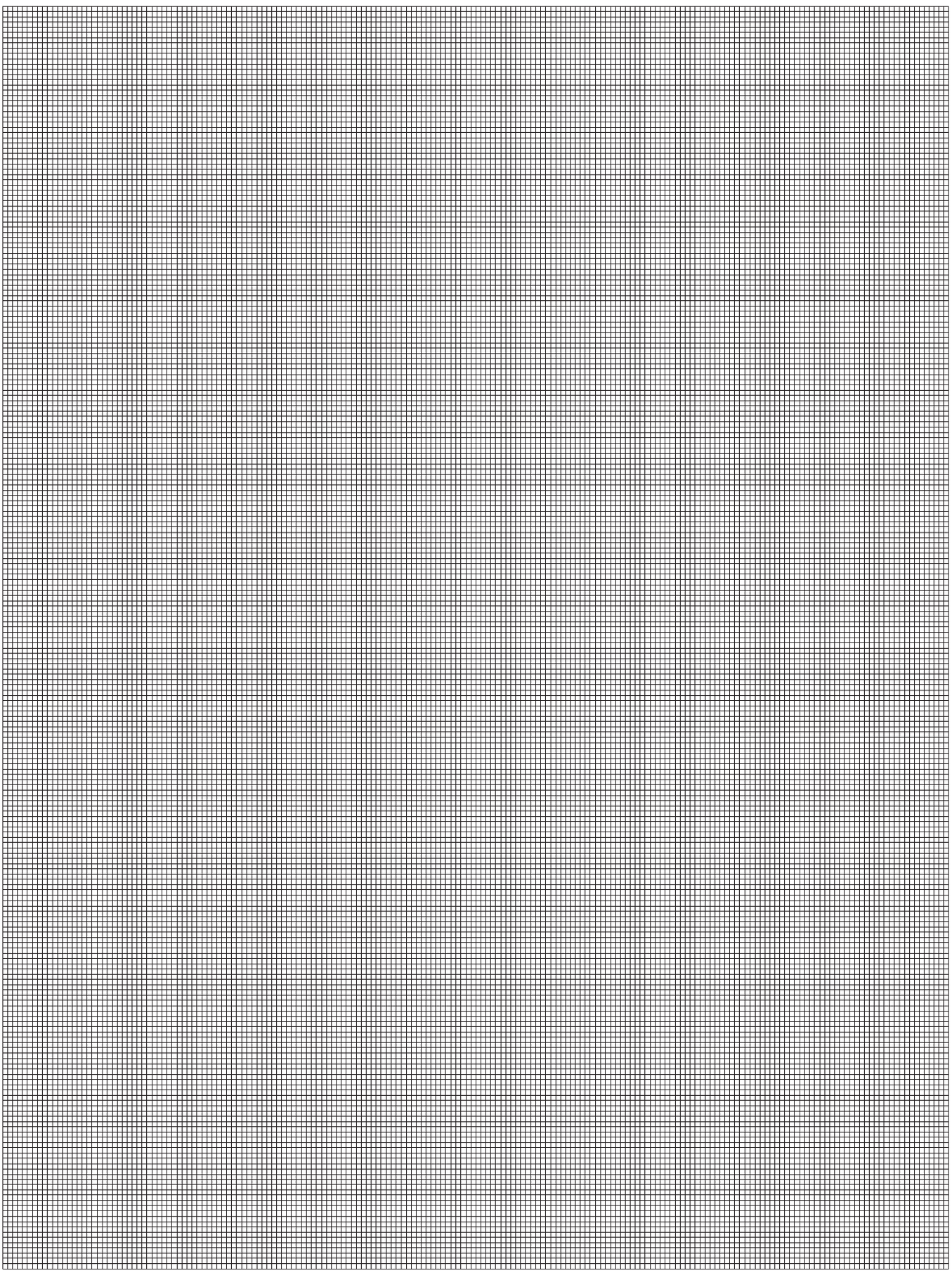
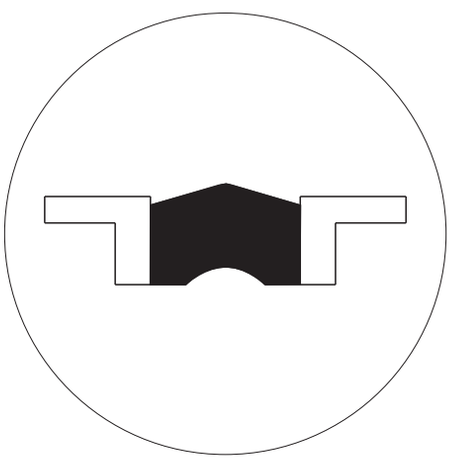
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



PISTON SEAL
HK 135

This double action piston seal of series HK 135 is designed with a high abrasive resistant Polyurethan sealing element and two bearing angle rings for safely split brigdeing.

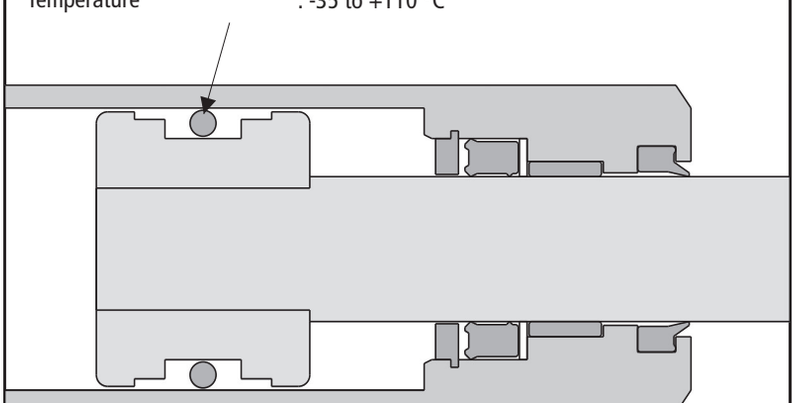
This serie specially was developed for assembly spaces as per ISO 6547



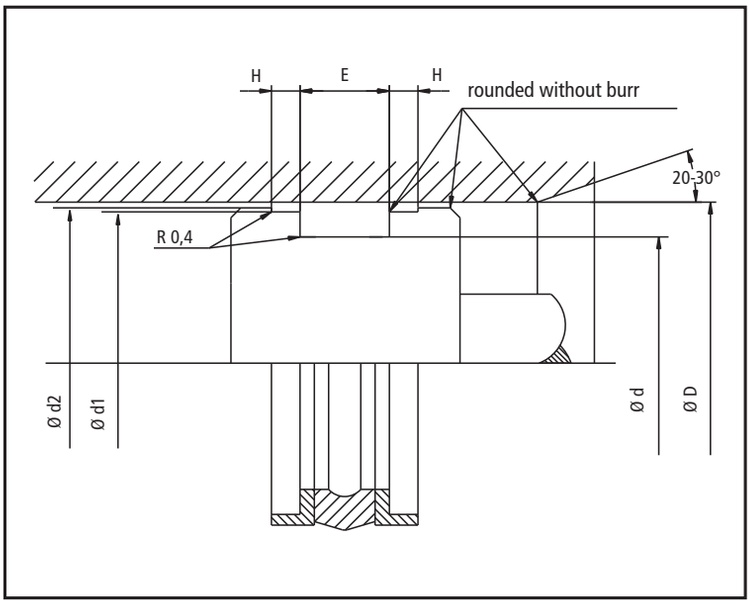
Special Features::

- Three part sealing set. Snap on assembly possible with single pease piston
- Sealing component from heavy duty anti-wear grade Polyurethan
- compact construction
- sizes per as ISO 6547
- For assembly the seal components we recommend to use mounting tools

Material	: Polyurethane
Operating pressure	: up to 25 MPa (250 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -35 to +110 °C



PISTON SEAL
HK 135



Limitations on Use

Operating pressure	:	up to 25 MPa (250 bar)
Velocity	:	reciprocating up to 0.5 m/s
Ttemperature	:	-35 to +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils as well as flame resistant pressure liquids on request

Surface Finish

Surfaces	Rz	Ra
Faces	1.6 µm	0,4 µm
Groove root	6,3 µm	1,6 µm
Groove flanks	10,0 µm	3,2 µm

D H9	**d** h9	**E** +0,2	**H** +0,1	**d1** h9	**d2** h11	**Part N°.**
25,00	**17,00**	**10,00**	**4,00**	**22,00**	**24,00**	**HK135 0250-01-200**
32,00	**24,00**	**10,00**	**4,00**	**29,00**	**31,00**	**HK135 0320-01-200**
40,00	**32,00**	**10,00**	**4,00**	**37,00**	**39,00**	**HK135 0400-01-200**
50,00	**40,00**	**12,50**	**4,00**	**47,00**	**49,00**	**HK135 0500-01-200**
63,00	**53,00**	**12,50**	**4,00**	**60,00**	**62,00**	**HK135 0630-01-200**
70,00	60,00	12,50	4,00	67,00	69,00	HK135 0700-01-200
80,00	70,00	12,50	4,00	77,00	79,00	HK135 0800-01-200
90,00	80,00	12,50	5,00	86,00	88,50	HK135 0900-01-200
100,00	90,00	12,50	5,00	96,00	98,50	HK135 1000-01-200

Dimensions in bold face comply with DIN ISO 6547 for mounting spaces

Example for ordering Piston Seal:

HK 135 0250 - 01 - 200 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

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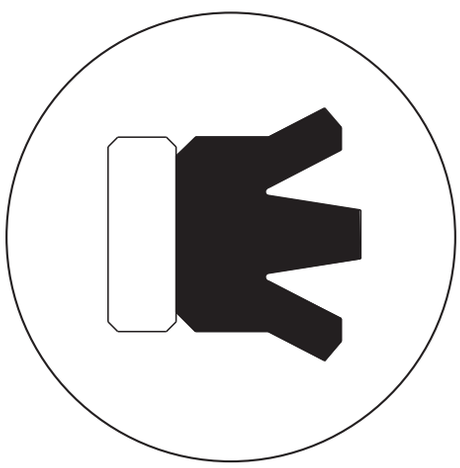
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 140

The 2-pieced single acting piston seal of series HK 140 is combinated with a high wear resistant Polyurethan seal and a surface flank totally tight-fitted back ring.

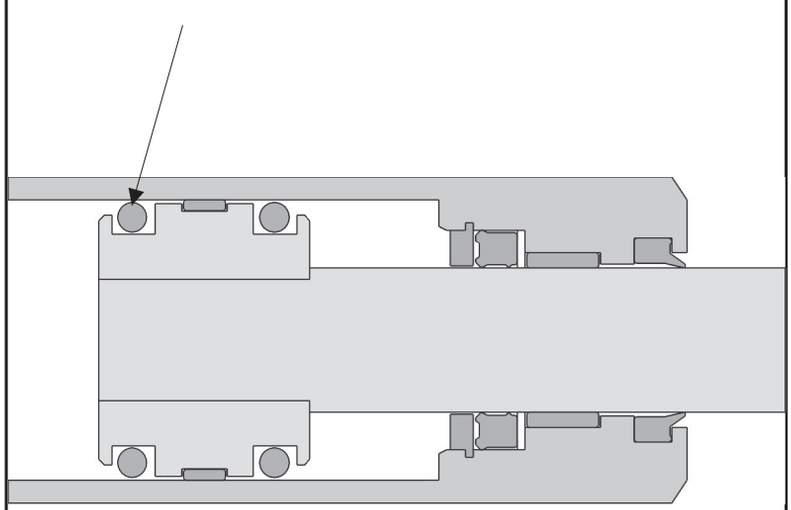
Wide seal splits or appearing pipe during high dynamic stress are safely bridged by the present back ring.



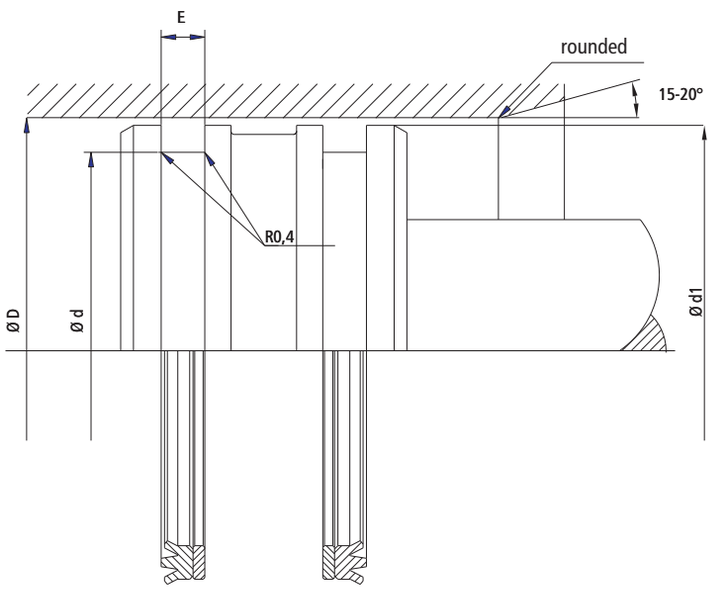
Special Features::

- Heavy duty anti-wear Polyurethan compound
- Exact position inside mounting space
- Excellent sealing conditions regarding high pressure and velocities
- Preferred using for heavy hydraulic areas

Material	: Polyurethane
Operating pressure	: up to 50 MPa (500 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -35 to +110 °C



PISTON SEAL
HK 140



Limitations on Use

Operating pressure	: up to 50 MPa (500 bar)
Velocity	: reciprocating up to 0.5 m/s
Ttemperature	: -35 to +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils as well as flame resistant pressure liquids on request

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	6,3 µm	1,6 µm
Groove flanks	10,0 µm	3,2 µm

Diameter Clearance

Max. Clearance S [mm]	Max. Pressure [bar]
0,80	150
0,60	250
0,40	350
0,20	500

D H9	**d** h9	**E** +0,2	**d1** h9			**Part N°.**
20,00	8,00	7,80	19,00			HK140 0200-01-200
22,00	10,00	7,80	21,00			HK140 0220-01-200
25,00	13,00	7,80	24,00			HK140 0250-01-200
28,00	16,00	7,80	27,00			HK140 0280-01-200
30,00	18,00	7,80	29,00			HK140 0300-01-200
32,00	20,00	7,80	31,00			HK140 0320-01-200
35,00	23,00	7,80	34,00			HK140 0350-01-200
36,00	24,00	7,80	35,00			HK140 0360-01-200
40,00	25,00	10,00	39,00			HK140 0400-01-200
42,00	27,00	10,00	41,00			HK140 0420-01-200
45,00	30,00	10,00	44,00			HK140 0450-01-200
50,00	35,00	10,00	49,00			HK140 0500-01-200
55,00	40,00	10,00	54,00			HK140 0550-01-200
56,00	41,00	10,00	55,00			HK140 0560-01-200
60,00	45,00	10,00	59,00			HK140 0600-01-200
63,00	48,00	10,00	62,00			HK140 0630-01-200
70,00	50,00	13,00	69,00			HK140 0700-01-200
80,00	60,00	13,00	79,00			HK140 0800-01-200
90,00	70,00	13,00	89,00			HK140 0900-01-200
100,00	80,00	13,00	95,00			HK140 1000-01-200
110,00	90,00	13,00	109,00			HK140 1100-01-200
115,00	95,00	13,00	119,00			HK140 1150-01-200
125,00	100,00	16,20	124,00			HK140 1250-01-200
140,00	115,00	16,20	139,00			HK140 1400-01-200
150,00	120,00	19,80	148,00			HK140 1500-01-200
160,00	130,00	19,80	158,00			HK140 1600-01-200
180,00	150,00	19,80	178,00			HK140 1800-01-200
200,00	170,00	19,80	198,00			HK140 2000-01-200
225,00	195,00	19,80	223,00			HK140 2250-01-200
250,00	220,00	19,80	248,00			HK140 2500-01-200
275,00	245,00	19,80	273,00			HK140 2750-01-200
300,00	270,00	19,80	298,00			HK140 3000-01-200

Example for ordering Piston Seal:

HK 140 0200 - 01 - 200 - ...

Profile
Nominal diameter x 10*
Dimension
Standard material
HME internal code

Issue
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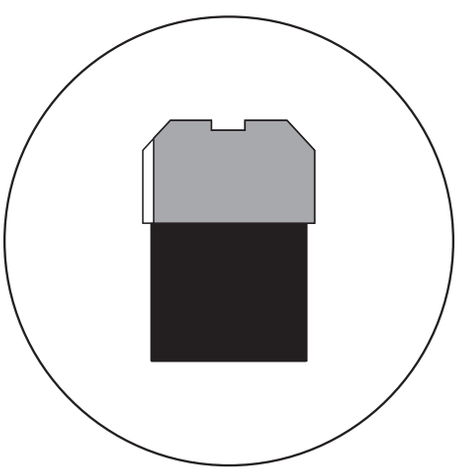
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 146

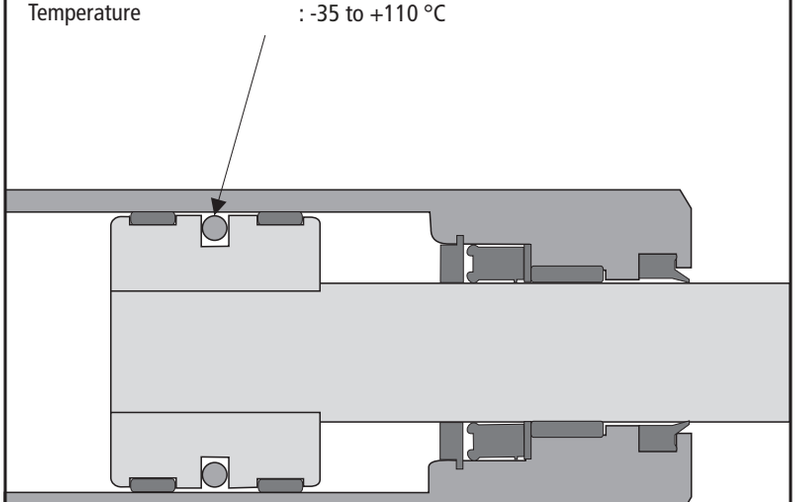
This double action series HK 146 is meant for intermediate stress hydraulic application. Polyurethan sealing element guarantees high functional reliability and life. The material choice is advantageous in anti wear behaviour and sealing function static area.



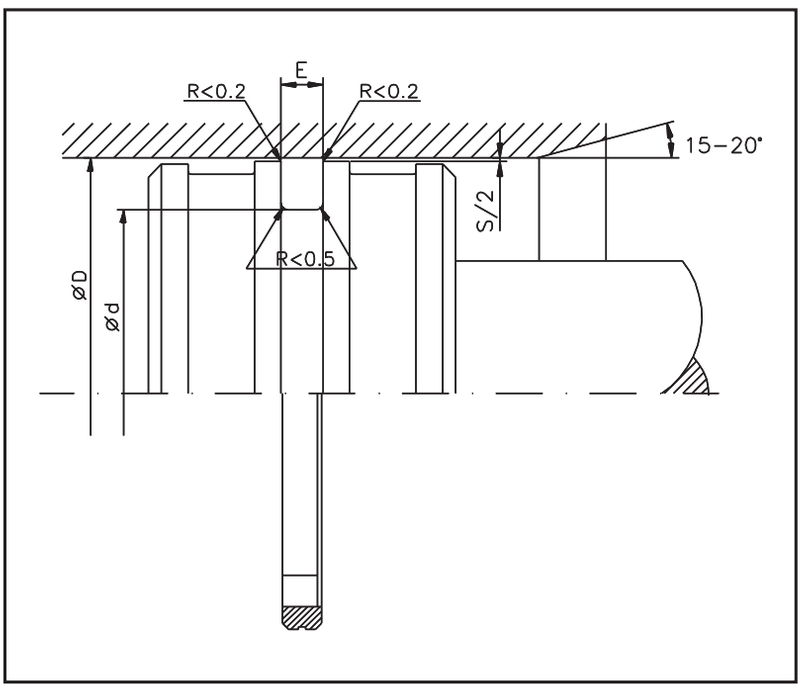
Special Features::

- Two component construction consisting of PU profile gasket and rectangular ring
- Low friction due to oil groove on sealing geometry
- Better dynamic and static sealing
- Large abrasion resistance, long life
- Low compression set, high elastic modulus
- Simple assembly in case of single part piston, no danger of damage during assembly
- Extensive range of dimensions even for assembly space as per ISO 7425-1.

Material	: Polyurethane
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.8 m/s
Temperature	: -35 to +110 °C



PISTON SEAL
HK 146



Limitations on Use

Operating pressure : up to 40 MPa (400 bar)
Velocity : reciprocating to 0.8 m/s
Temperature : -35 to +110 °C

Media for Use

Mineral oil based pressure fluids, Bio Oils and flame resistant fluids on demand.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,7 µm	0,3 µm
Groove root	5,0 µm	4,6 µm	0,8 µm
Groove flanks	10,0 µm	6,9 µm	1,6 µm

Diameter Clearance

Max. Clearance S [mm]	Max. Pressure MPa (bar)
0,70	16 (160)
0,50	25 (250)
0,40	40 (400)

D H9	**d** h9	**E** +0,2	**Part N°.**
40,00	**29,00**	**4,20**	**HK146 0400-01-200**
45,00	34,00	4,20	HK146 0450-01-200
45,00	32,00	6,30	HK146 0450-02-200
50,00	**34,50**	**6,30**	**HK146 0500-01-200**
50,00	**39,00**	**4,20**	**HK146 0500-02-200**
55,00	44,00	4,20	HK146 0550-01-200
60,00	44,50	6,30	HK146 0600-01-200
60,00	49,00	4,20	HK146 0600-02-200
63,00	**47,50**	**6,30**	**HK146 0630-01-200**
63,00	**52,00**	**4,20**	**HK146 0630-02-200**
65,00	54,00	4,20	HK146 0650-01-200
65,00	52,00	6,30	HK146 0650-02-200
70,00	59,00	4,20	HK146 0700-01-200
75,00	59,50	6,30	HK146 0750-01-200
75,00	62,00	6,30	HK146 0750-02-200
80,00	**64,50**	**6,30**	**HK146 0800-01-200**
80,00	66,50	6,30	HK146 0800-02-200
90,00	74,50	6,30	HK146 0900-01-200
100,00	**84,50**	**6,30**	**HK146 1000-01-200**
110,00	94,50	6,30	HK146 1100-01-200
120,00	104,50	6,30	HK146 1200-01-200
125,00	**109,50**	**6,30**	**HK146 1250-01-200**
130,00	109,00	8,10	HK146 1300-01-200
130,00	114,50	6,30	HK146 1300-02-200
140,00	119,00	8,10	HK146 1400-01-200
150,00	134,50	6,30	HK146 1500-01-200
160,00	**139,00**	**8,10**	**HK146 1600-01-200**
160,00	**144,50**	**6,30**	**HK146 1600-02-200**
180,00	164,50	6,30	HK146 1800-01-200
200,00	**179,00**	**8,10**	**HK146 2000-01-200**
220,00	199,00	8,10	HK146 2200-01-200
250,00	**229,00**	**8,10**	**HK146 2500-01-200**
280,00	259,00	8,10	HK146 2800-01-200
320,00	**299,00**	**8,10**	**HK146 3200-01-200**

Extensive range of inch measurement diagrams available on request.

PISTON SEAL
HK 146

Example for ordering Piston Seal:

HK 146 0500 - 01 - 200 - ...

- HK 146 — Profile
- 0500 — Nominal diameter x 10
- 01 — Dimension variant
- 200 — Standard material profile gasket
- ... — HME internal code

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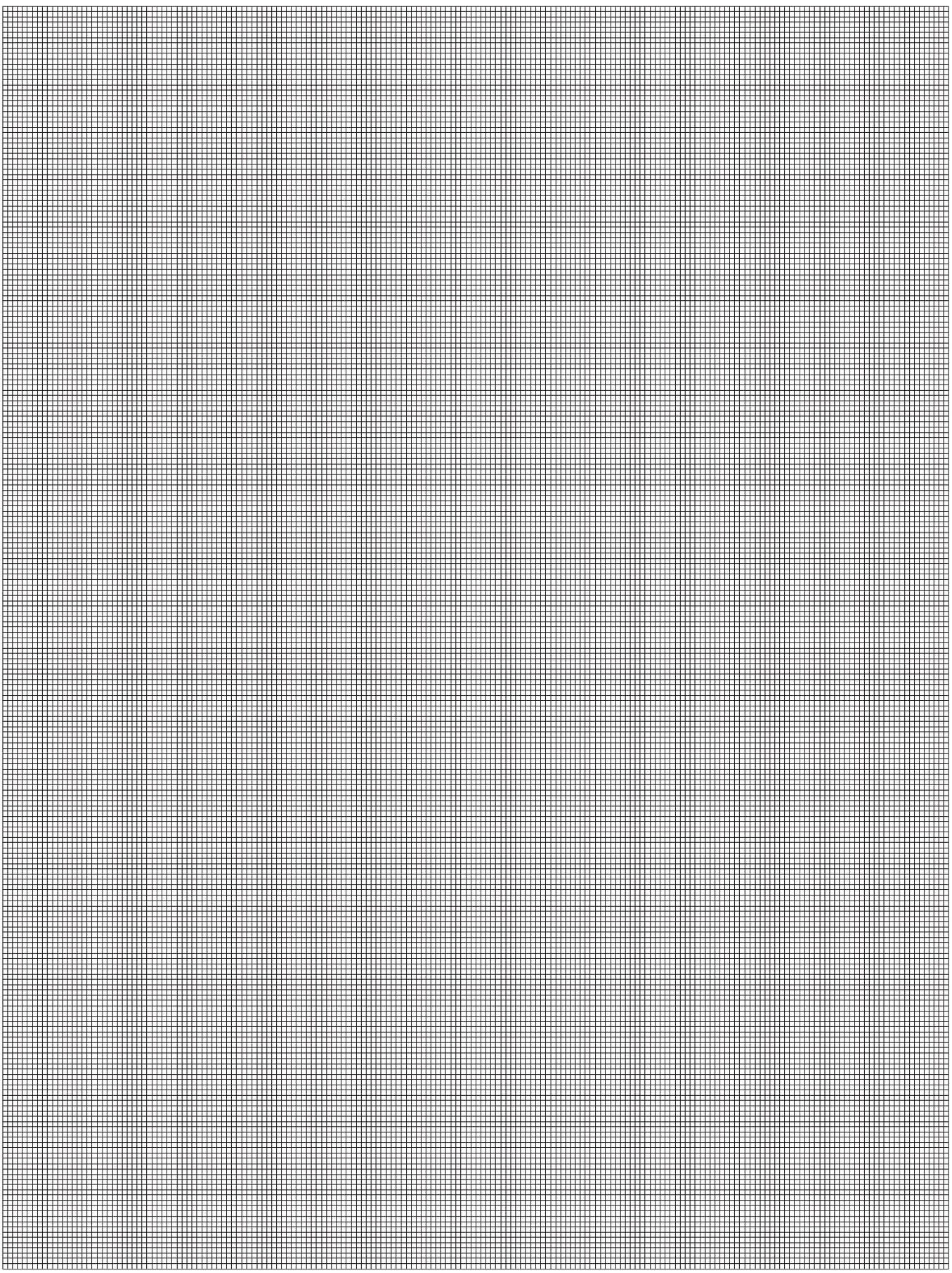
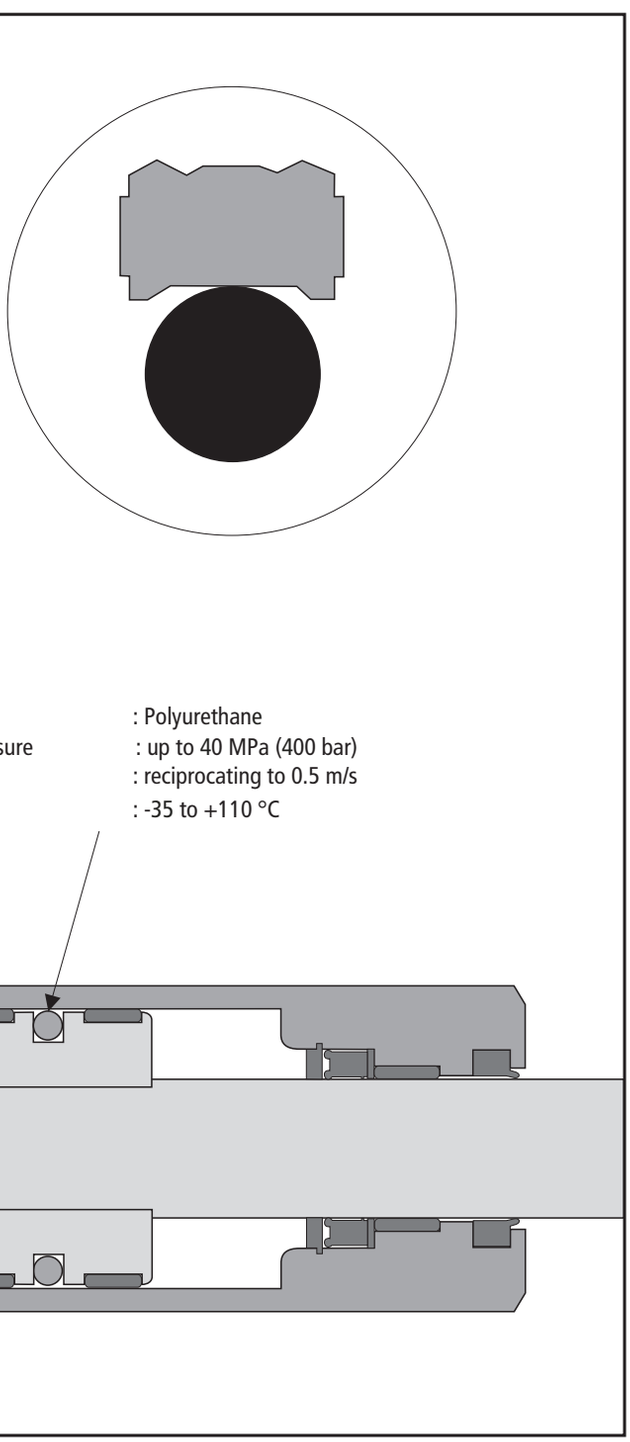
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



PISTON SEAL
HK 149

Series HK 149 is a double acting seal for intermediate stress hydraulic applications. Modified Polyurethan material and special profile ensure excellent sealing behaviour and very low frictional losses.

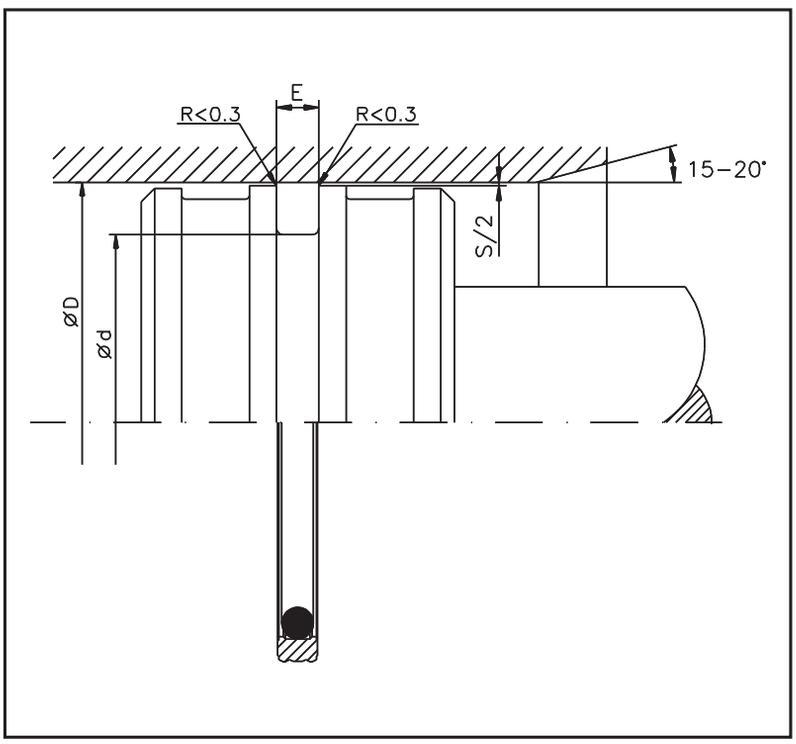


Material	: Polyurethane
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -35 to +110 °C

Special Features::

- Two component construction consisting of elastomer profile gasket and O-ring as pre stressing element
- Very good shear characteristics
- Excellent dynamic and static sealing
- Long life, good abrasion resistance
- Very good anti extrusion behaviour
- Easy assembly in case of single pieces pistons
- Price wise convenient variant as compared to PTFE material
- Extensive range of sizes, also for assembly/mounting space as per ISO 7425

PISTON SEAL
HK 149



Limitations on Use

Operating pressure	:	up to 40 MPa (400 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-35 to +110 °C

Media for Use

Mineral oil based pressure fluids, Bio Oils and flame resistant pressure fluids on demand.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	5,0 µm	4,6 µm	0,8 µm
Groove flanks	10,0 µm	6,9 µm	1,6 µm

Diameter Clearance

Max. Clearance S [mm]	Max. Pressure [bar]
0,60	100
0,40	200
0,20	400

D H9	**d** h9	**E** +0,2	O-Ring	**Part N°.**
16,00	**8,50**	**3,20**	**109**	**HK149 0160-01-215**
20,00	**12,50**	**3,20**	**112**	**HK149 0200-01-215**
25,00	**17,50**	**3,20**	**115**	**HK149 0250-01-215**
25,00	**14,00**	**4,20**	**207**	**HK149 0250-02-215**
30,00	22,50	3,20	118	HK149 0300-01-215
32,00	**24,50**	**3,20**	**119**	**HK149 0320-01-215**
32,00	**21,00**	**4,20**	**211**	**HK149 0320-02-215**
35,00	27,50	3,20	121	HK149 0350-01-215
40,00	32,50	3,20	124	HK149 0400-01-215
40,00	**29,00**	**4,20**	**216**	**HK149 0400-02-215**
40,00	24,50	6,30	318	HK149 0400-03-215
45,00	34,00	4,20	219	HK149 0450-01-215
45,00	29,50	6,30	320	HK149 0450-02-215
50,00	**39,00**	**4,20**	**222**	**HK149 0500-01-215**
50,00	**34,50**	**6,30**	**324**	**HK149 0500-02-215**
52,00	36,50	6,30	324	HK149 0520-01-215
55,00	44,00	4,20	224	HK149 0550-01-215
55,00	39,50	6,30	325	HK149 0550-02-215
60,00	49,00	4,20	225	HK149 0600-01-215
60,00	44,50	6,30	327	HK149 0600-02-215
63,00	**52,00**	**4,20**	**226**	**HK149 0630-01-215**
63,00	**47,50**	**6,30**	**328**	**HK149 0630-02-215**
65,00	54,00	4,20	227	HK149 0650-01-215
65,00	49,50	6,30	328	HK149 0650-02-215
70,00	59,00	4,20	228	HK149 0700-01-215
70,00	54,50	6,30	330	HK149 0700-02-215
75,00	64,00	4,20	230	HK149 0750-01-215
75,00	59,50	6,30	331	HK149 0750-02-215
80,00	**69,00**	**4,20**	**842**	**HK149 0800-01-215**
80,00	**64,50**	**6,30**	**333**	**HK149 0800-02-215**
85,00	69,50	6,30	335	HK149 0850-01-215
90,00	74,50	6,30	336	HK149 0900-01-215
100,00	**84,50**	**6,30**	**339**	**HK149 1000-01-215**

PISTON SEAL
HK 149

D H9	**d** h9	**E** +0,2	O-Ring	**Part N°.**
110,00	94,50	6,30	343	HK149 1100-01-215
120,00	104,50	6,30	346	HK149 1200-01-215
125,00	**109,50**	**6,30**	**347**	**HK149 1250-01-215**
130,00	114,50	6,30	349	HK149 1300-01-215
140,00	119,00	8,10	426	HK149 1400-01-215
150,00	129,00	8,10	430	HK149 1500-01-215
160,00	139,00	8,10	433	HK149 1600-01-215
170,00	149,00	8,10	436	HK149 1700-01-215
180,00	159,00	8,10	438	HK149 1800-01-215
200,00	179,00	8,10	441	HK149 2000-01-215
250,00	229,00	8,10	447	HK149 2500-01-215

Dimensions in bold face correspond to ISO 7425-1 for mounting spaces..
Further dimensions available on demand.

Example for ordering Piston Seal:

HK 149 0630 - 01 - 215 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material profile gasket
HME internal code

Issue
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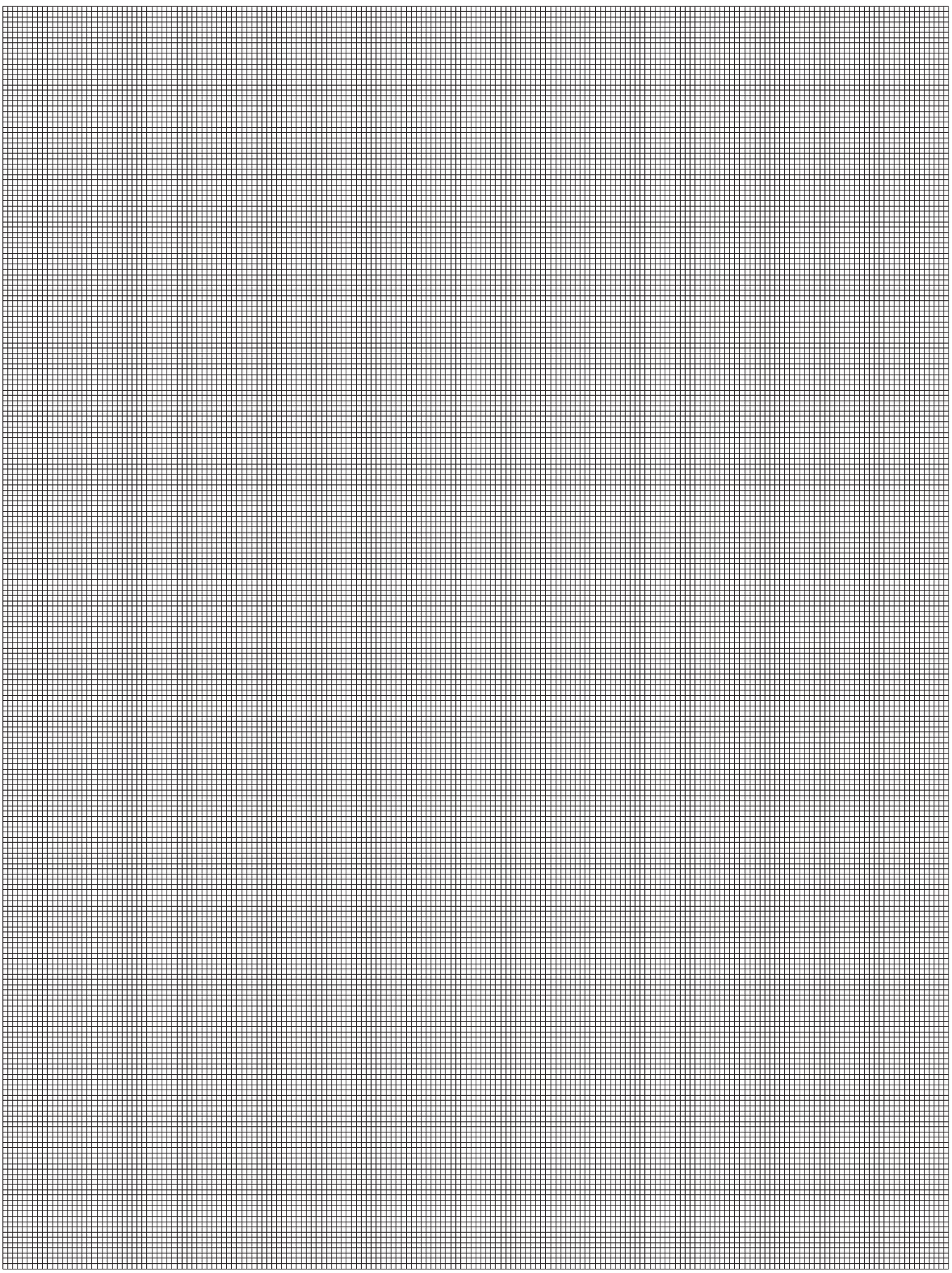
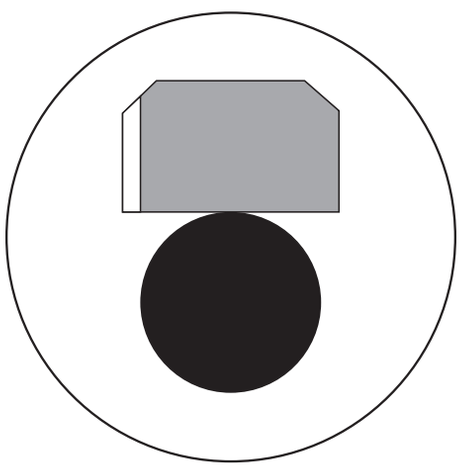
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

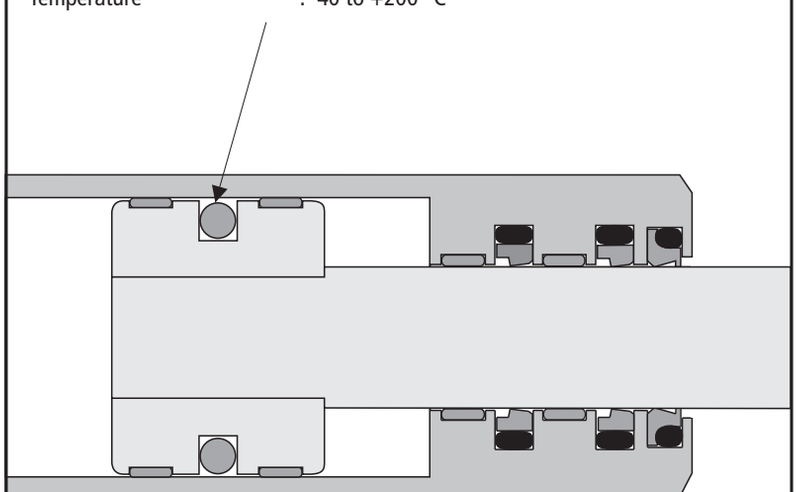


PISTON SEAL
HK 150

The double acting seal of series HK 150 can be used in most hydraulic applications. Different material combinations assure operational security and long life over the entire pressure and velocity range with low friction, at various temperatures and pressure fluids.

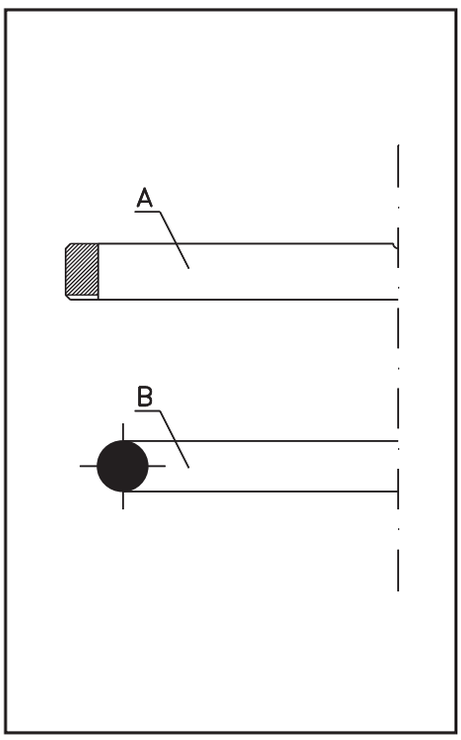


Material	: PTFE-Compound
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C



Special Features::

- Two part composition, consisting of profile gasket and O-ring
- Outstanding shear characteristics, no stick slip effect
- Good dynamic and static sealing
- Large abrasion resistance, long life
- Wide temperature range of use and better chemical resistance depending on O-ring material
- Designed for assembly on single part piston
- Available for all cylinder diameters up to 2500 mm



Profile Gasket (Part A)

Gasket section is rectangular. The outer corners have been provided with a chamfer to simplify assembly. Relief rings present on both sides of the ring prevent ramming pressure build up in cases with rapid load variation and also assure direct pressure control on the seal.

Profile gaskets are manufactured from specially modified PTFE materials. Compound 55 is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularly superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms).

Standard MOC for hydraulics applications is NBR, which guarantees particularly good resistance to hydraulic fluids.

For use with profile gaskets O-rings with hardness of 70 Shore-A are preferred.

Materials Overview: Scraper/Wiper Ring

01: Pure PTFE - outstanding chemical resistance - used in chemical, foodstuffs and pharmaceutical industry with light mechanical stress.

12: Modified PTFE - very good chemical resistance, outstanding shear characteristics, special purpose and intermediate stress applications.

25: Modified PTFE + Glass fiber - high abrasion resistance and inherent stability, good chemical resistance, used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + Carbon: good abrasion resistance and inherent stability, good chemical resistance, used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.

55: Modified PTFE + Bronze: high abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance, used in intermediate to high stress hydraulics application.

67: Modified PTFE - very high abrasion resistance and inherent stability, used in hydraulics and abrasive pressure fluid applications.

83: Modifizied Polyurethan - very high abrasion resistance and inherent stability, used primarily in intermediate stress hydraulics applications.

Materials Overview: O-Rings

N: Acrylonitrile Butadiene Rubber - used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids, and water.

F: Fluorine containing Rubbers - used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene Propylene Diene Rubbers - used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!

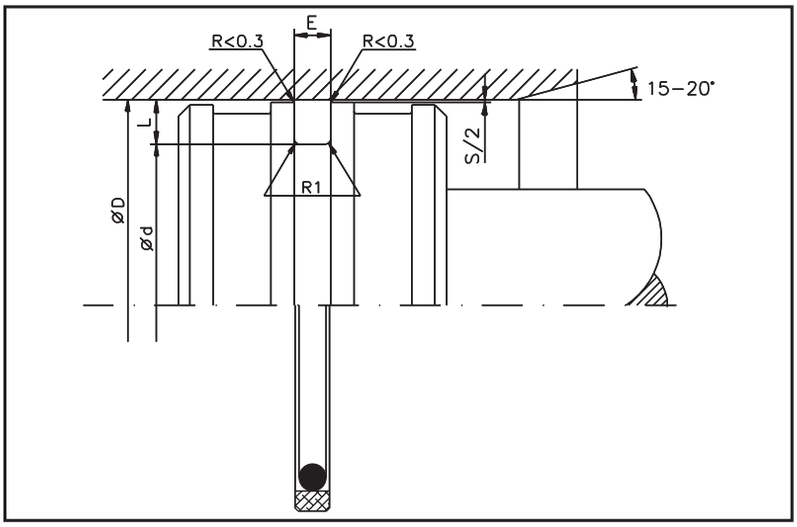
S: Silicone Rubbers

C: Chloroprene Rubbers.

Piston seals series HK 150 is being successfully used for many years in hydraulic cylinders.

The seal can be assembled in single or multiple piece pistons. For use in an undivided groove, profile ring must be carefully pried apart and subsequently calibrated in the cylinder bore.

PISTON SEAL
HK 150



Limitations on Use

Operating pressure : up to 40 MPa (400 bar)
Velocity : reciprocating to 15 m/s
Temperature : -40 to +200 °C
(depending on O-Ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), pressure fluids/Bio-Oils, water, air and other media (depending on O-ring material).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

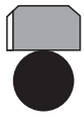
Recommended Assembly Measurements

Section	O-Ring Lace ø mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance **S** 0 - 200 bar mm	Max. Diameter Clearance **S** 200 - 400 bar mm	Radius **R1** max. mm
01	1,78	8 - 14,9	2,2	2,45	0,6 - 0,3	0,4 - 0,2	0,3
02	2,62	15 - 39,9	3,2	3,75	0,8 - 0,4	0,4 - 0,3	0,5
03	3,53	40 - 79,9	4,2	5,50	1,2 - 0,8	0,8 - 0,4	0,7
04	5,33	80 - 132,9	6,3	7,75	1,4 - 1,0	1,0 - 0,4	1,2
05	7,00	133 - 329,9	8,1	10,50	1,8 - 1,2	1,2 - 0,5	1,5
06	7,00	330 - 669,9	8,1	12,25	2,0 - 1,2	1,2 - 0,5	1,5

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
8,00	3,10	2,20	006	HK150 0080-01-55N
10,00	5,10	2,20	009	HK150 0100-01-55N
12,00	7,10	2,20	011	HK150 0120-01-55N
14,00	9,10	2,20	012	HK150 0140-01-55N
15,00	7,50	3,20	109	HK150 0150-02-55N
16,00	**11,10**	**2,20**	**013**	**HK150 0160-01-55N**
16,00	**8,50**	**3,20**	**109**	**HK150 0160-02-55N**
18,00	10,50	3,20	110	HK150 0180-02-55N
20,00	**15,10**	**2,20**	**015**	**HK150 0200-01-55N**
20,00	**12,50**	**3,20**	**112**	**HK150 0200-02-55N**
22,00	14,50	3,20	113	HK150 0220-02-55N
24,00	16,50	3,20	114	HK150 0240-02-55N
25,00	**17,50**	**3,20**	**115**	**HK150 0250-02-55N**
25,00	**14,00**	**4,20**	**207**	**HK150 0250-03-55N**
28,00	20,50	3,20	117	HK150 0280-02-55N
30,00	22,50	3,20	118	HK150 0300-02-55N
32,00	**24,50**	**3,20**	**119**	**HK150 0320-02-55N**
32,00	**21,00**	**4,20**	**211**	**HK150 0320-03-55N**
35,00	27,50	3,20	121	HK150 0350-02-55N
38,00	30,50	3,20	123	HK150 0380-02-55N
39,00	31,50	3,20	124	HK150 0390-02-55N
40,00	**32,50**	**3,20**	**124**	**HK150 0400-02-55N**
40,00	**29,00**	**4,20**	**216**	**HK150 0400-03-55N**
42,00	31,00	4,20	217	HK150 0420-03-55N
45,00	34,00	4,20	219	HK150 0450-03-55N
48,00	37,00	4,20	221	HK150 0480-03-55N
50,00	**39,00**	**4,20**	**222**	**HK150 0500-03-55N**
50,00	**34,50**	**6,30**	**324**	**HK150 0500-04-55N**

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
52,00	41,00	4,20	223	HK150 0520-03-55N
55,00	44,00	4,20	224	HK150 0550-03-55N
60,00	49,00	4,20	225	HK150 0600-03-55N
63,00	**52,00**	**4,20**	**226**	**HK150 0630-03-55N**
63,00	**47,50**	**6,30**	**328**	**HK150 0630-04-55N**
64,00	53,00	4,20	226	HK150 0640-03-55N
65,00	54,00	4,20	227	HK150 0650-03-55N
70,00	59,00	4,20	228	HK150 0700-03-55N
70,00	54,50	6,30	330	HK150 0700-04-55N
75,00	64,00	4,20	230	HK150 0750-03-55N
80,00	**69,00**	**4,20**	**231**	**HK150 0800-03-55N**
80,00	**64,50**	**6,30**	**333**	**HK150 0800-04-55N**
80,00	**59,00**	**8,10**	**58x7**	**HK150 0800-05-55N**
85,00	69,50	6,30	335	HK150 0850-04-55N
85,00	64,00	8,10	64x7	HK150 0850-05-55N
89,00	73,50	6,30	336	HK150 0890-04-55N
90,00	74,50	6,30	336	HK150 0900-04-55N
90,00	69,00	8,10	68x7	HK150 0900-05-55N
95,00	79,50	6,30	338	HK150 0950-04-55N
95,00	74,00	8,10	73x7	HK150 0950-05-55N
100,00	**84,50**	**6,30**	**339**	**HK150 1000-04-55N**
100,00	**79,00**	**8,10**	**79x7**	**HK150 1000-05-55N**
105,00	89,50	6,30	341	HK150 1050-04-55N
105,00	84,00	8,10	83x7	HK150 1050-05-55N
110,00	94,50	6,30	343	HK150 1100-04-55N
110,00	89,00	8,10	89x7	HK150 1100-05-55N
115,00	99,50	6,30	344	HK150 1150-04-55N
115,00	94,00	8,10	94x7	HK150 1150-05-55N

PISTON SEAL
HK 150



D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
120,00	104,50	6,30	346	HK150 1200-04-55N
120,00	99,00	8,10	99x7	HK150 1200-05-55N
125,00	**109,50**	**6,30**	**347**	**HK150 1250-04-55N**
125,00	**104,00**	**8,10**	**101x7**	**HK150 1250-05-55N**
127,00	111,50	6,30	348	HK150 1270-04-55N
130,00	114,50	6,30	349	HK150 1300-04-55N
130,00	109,00	8,10	106x7	HK150 1300-05-55N
132,00	116,50	6,30	350	HK150 1320-04-55N
133,00	112,00	8,10	425	HK150 1330-05-55N
135,00	114,00	8,10	425	HK150 1350-05-55N
140,00	119,00	8,10	426	HK150 1400-05-55N
145,00	124,00	8,10	428	HK150 1450-05-55N
150,00	129,00	8,10	430	HK150 1500-05-55N
154,00	133,00	8,10	431	HK150 1540-05-55N
155,00	134,00	8,10	431	HK150 1550-05-55N
160,00	**144,50**	**6,30**	**358**	**HK150 1600-04-55N**
160,00	**139,00**	**8,10**	**433**	**HK150 1600-05-55N**
165,00	144,00	8,10	434	HK150 1650-05-55N
170,00	149,00	8,10	436	HK150 1700-05-55N
175,00	154,00	8,10	437	HK150 1750-05-55N
180,00	159,00	8,10	438	HK150 1800-05-55N
190,00	169,00	8,10	439	HK150 1900-05-55N
200,00	**184,50**	**6,30**	**366**	**HK150 2000-04-55N**
200,00	**179,00**	**8,10**	**441**	**HK150 2000-05-55N**
210,00	189,00	8,10	443	HK150 2100-05-55N
220,00	199,00	8,10	444	HK150 2200-05-55N
230,00	209,00	8,10	445	HK150 2300-05-55N
240,00	219,00	8,10	446	HK150 2400-05-55N
250,00	**229,00**	**8,10**	**447**	**HK150 2500-05-55N**
250,00	**225,50**	**8,10**	**446**	**HK150 2500-06-55N**
260,00	239,00	8,10	447	HK150 2600-05-55N
270,00	249,00	8,10	448	HK150 2700-05-55N
280,00	259,00	8,10	449	HK150 2800-05-55N
290,00	269,00	8,10	450	HK150 2900-05-55N
300,00	279,00	8,10	451	HK150 3000-05-55N
310,00	289,00	8,10	451	HK150 3100-05-55N

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
320,00	**299,00**	**8,10**	**452**	**HK150 3200-05-55N**
320,00	**295,50**	**8,10**	**452**	**HK150 3200-06-55N**
330,00	305,50	8,10	453	HK150 3300-06-55N
340,00	315,50	8,10	453	HK150 3400-06-55N
350,00	325,50	8,10	454	HK150 3500-06-55N
360,00	335,50	8,10	455	HK150 3600-06-55N
370,00	345,50	8,10	456	HK150 3700-06-55N
380,00	355,50	8,10	457	HK150 3800-06-55N
390,00	365,50	8,10	457	HK150 3900-06-55N
400,00	**375,50**	**8,10**	**458**	**HK150 4000-06-55N**
410,00	385,50	8,10	459	HK150 4100-06-55N
420,00	395,50	8,10	460	HK150 4200-06-55N
430,00	405,50	8,10	461	HK150 4300-06-55N
440,00	415,50	8,10	461	HK150 4400-06-55N
450,00	425,50	8,10	462	HK150 4500-06-55N
460,00	435,50	8,10	463	HK150 4600-06-55N
470,00	445,50	8,10	464	HK150 4700-06-55N
480,00	455,50	8,10	464	HK150 4800-06-55N
490,00	465,50	8,10	ASA 93	HK150 4900-06-55N
500,00	**475,50**	**8,10**	**466**	**HK150 5000-06-55N**
510,00	485,50	8,10	467	HK150 5100-06-55N
520,00	495,50	8,10	468	HK150 5200-06-55N
530,00	505,50	8,10	468	HK150 5300-06-55N
540,00	515,50	8,10	469	HK150 5400-06-55N
550,00	525,50	8,10	469	HK150 5500-06-55N
560,00	535,50	8,10	470	HK150 5600-06-55N
570,00	545,50	8,10	ASA 100	HK150 5700-06-55N
580,00	555,50	8,10	ASA 100	HK150 5800-06-55N
590,00	565,50	8,10	471	HK150 5900-06-55N
600,00	575,50	8,10	471	HK150 6000-06-55N
610,00	585,50	8,10	472	HK150 6100-06-55N
620,00	595,50	8,10	472	HK150 6200-06-55N
630,00	605,50	8,10	ASA 104	HK150 6300-06-55N
640,00	615,50	8,10	473	HK150 6400-06-55N
650,00	625,50	8,10	473	HK150 6500-06-55N
660,00	635,50	8,10	474	HK150 6600-06-55N

Further dimensions and intermediate sizes available up to diameter 2500 mm on request.
Dimensions in bold face comply with DIN ISO 7425 for mounting spaces.

Example for ordering Piston Seal:

HK 150 0320 - 02 - 55N - ...

- HK 150 — Profile
- 0320 — Nominal diameter x 10
- 02 — Cross-section
- 55N — Standard material profile gasket
- Standard material O-ring
- HME internal code

Material Key:

Profile gasket

01 - pure PTFE
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring

N - NBR
F - FPM
E - EPDM
S - Silicon
C - Chloropren

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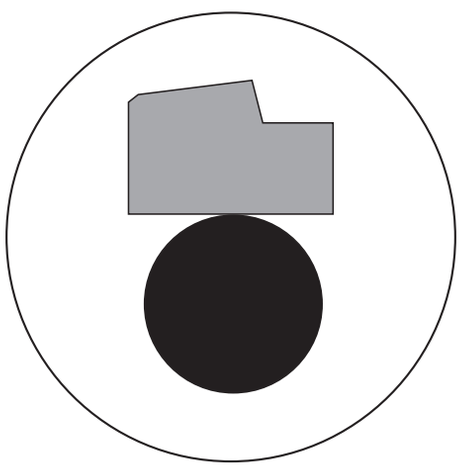
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 155

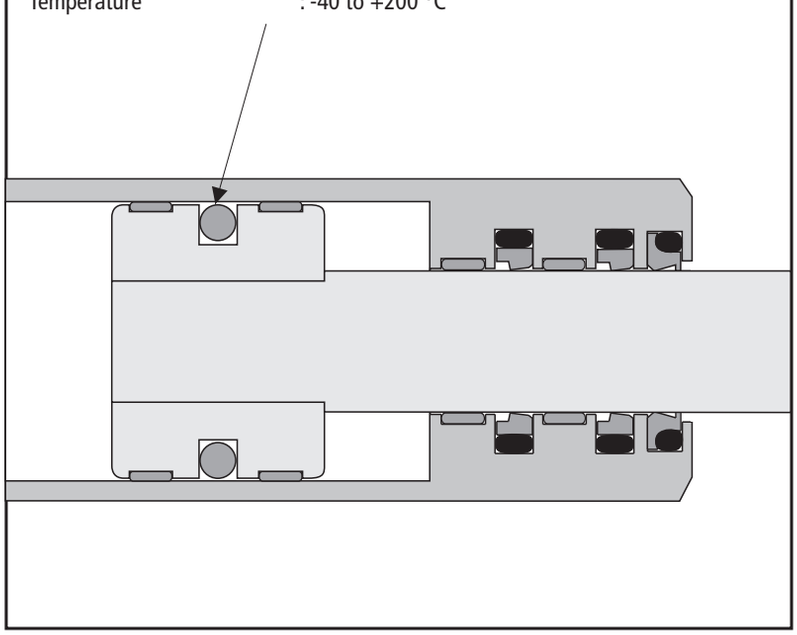
Single acting piston seals of the HK 155 series are preferentially used in hydraulic cylinders with unilateral pressure application. Various material combinations ensure high functional reliability and long life over the entire range of pressures and velocities with minimal friction, with various temperatures and pressure fluids.

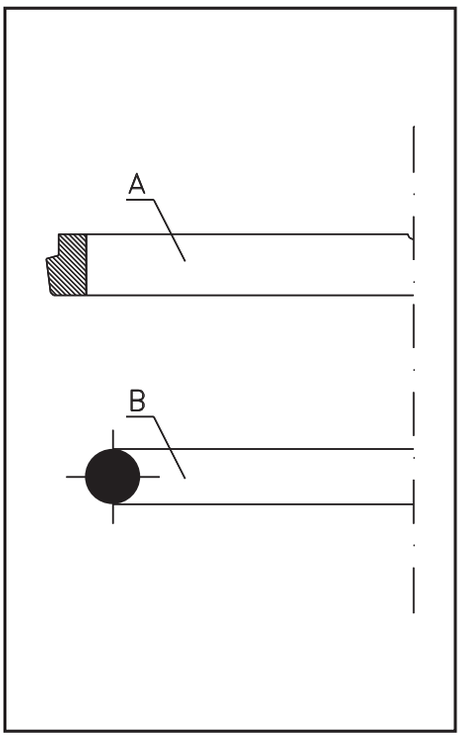


Special Features::

- Two part composition consisting of profile gasket and O-ring
- Outstanding shear characteristics, no stick-slip effect
- Good dynamic and static sealing
- Large abrasion resistance, long life
- Wide temperature range for application and high chemical resistance depending on O-ring material
- Designed for assembly on single part piston
- Available for all cylinder diameters up to 2500 mm.

Material	: PTFE-Compound
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C





Profile Gasket (Part A)

Gasket section is rectangular and is provided with a stepped sealing edge on the pressure side. On the opposite side, the profile travels under a flat wedge/angle. This special form of sealing profile helps to achieve a recovery effect. This means that the persistant oil film present on the cylinder wall during motion is conveyed back to the surge chamber.

Profile gaskets are manufactured from specially modified PTFE materials. Compound 55 is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularity superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms). Standard MOC for hydraulics applications is NBR, which guarantees particularly good resistance to hydraulic fluids.

For use with profile gaskets O-rings with hardness of 70 Shore-A are preferred.

Materials Overview: Scraper/Wiper Ring

01: Pure PTFE - Outstanding chemical resistance - used in chemical, foodstuffs and pharmaceutical industry with light mechanical stress.

12: Modified PTFE - Very good chemical resistance, outstanding shear characteristics, special purpose and intermediate stress applications.

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance, used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance, used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance, used in intermediate to high stress hydraulics applications.

67: Modified PTFE - Very high abrasion resistance and inherent stability, used in hydraulics and abrasive pressure fluid applications.

83: Modified Polyurethane - Very high abrasion resistance and inherent stability, used primarily in intermediate stress hydraulic applications.

Materials Overview: O-Rings

N: Acrylonitrile-Butadiene-Rubber - Used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids, and water.

F: Fluorine containing Rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorlz inflammable fluids.

E: Ethylene Propylene Diene Rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!

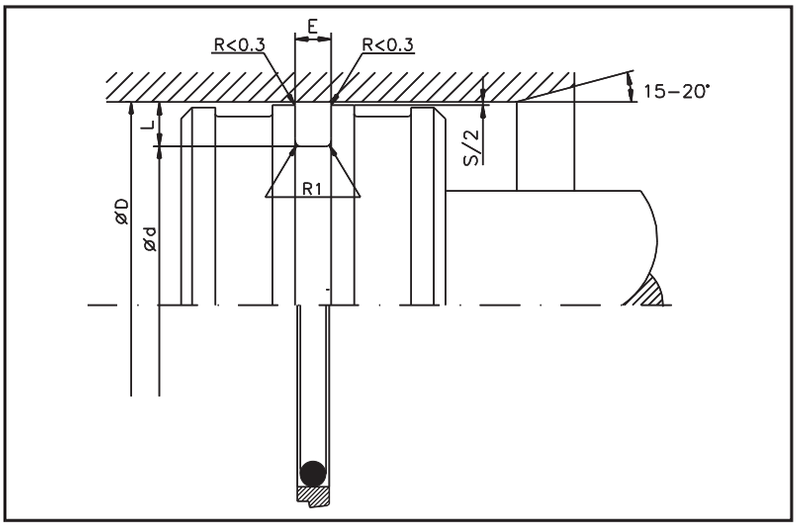
S: Silicone-Rubbers

C: Chloroprene Rubbers

Piston seals series HK 155 is being successfully used in hydraulic cylinders for many years. It can only be used in cases of unilateral pressure applications on pistons.

The seal can be assembled in split and un-split/single and multiple piece pistons. For use in an undivided groove, profile ring must be carefully pried apart and subsequently calibrated in the cylinder bore.

PISTON SEAL
HK 155



Limitations on Use

Operating pressure	:	up to 40 MPa (400 bar)
Velocity	:	reciprocating to15 m/s
Temperature	:	-40 to +200 °C (depending on O-ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio-Oils), water, air and other media (depending on O-ring material).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

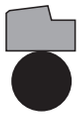
Recommended Assembly Dimensions

Section	O-Ring mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance **S** 0 - 200 bar mm	Max. Diameter Clearance **S** 200 - 400 bar mm	Radius **R1** max. mm
01	1,78	8 - 16,9	2,2	2,45	0,6 - 0,3	0,4 - 0,2	0,3
02	2,62	17 - 26,9	3,2	3,65	0,8 - 0,4	0,4 - 0,3	0,5
03	3,53	27 - 59,9	4,2	5,35	1,2 - 0,8	0,8 - 0,4	0,7
04	5,33	60 - 199,9	6,3	7,55	1,4 - 1,0	1,0 - 0,4	1,2
05	7,00	200 - 255,9	8,1	10,25	1,8 - 1,2	1,2 - 0,5	1,5
06	7,00	256 - 669,9	8,1	12,00	2,0 - 1,2	1,2 - 0,5	1,5

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
8,00	3,10	2,20	006	HK155 0080-01-55N
10,00	5,10	2,20	009	HK155 0100-01-55N
12,00	**7,10**	**2,20**	**011**	**HK155 0120-01-55N**
15,00	10,10	2,20	012	HK155 0150-01-55N
16,00	**11,10**	**2,20**	**013**	**HK155 0160-01-55N**
18,00	10,70	3,20	111	HK155 0180-02-55N
20,00	**12,70**	**3,20**	**112**	**HK155 0200-02-55N**
20,00	**15,10**	**2,20**	**015**	**HK155 0200-01-55N**
22,00	14,70	3,20	113	HK155 0220-02-55N
25,00	**14,30**	**4,20**	**207**	**HK155 0250-03-55N**
25,00	**17,70**	**3,20**	**115**	**HK155 0250-02-55N**
25,40	18,10	3,20	115	HK155 0254-02-55N
28,00	17,30	4,20	209	HK155 0280-03-55N
28,50	17,80	4,20	209	HK155 0285-03-55N
30,00	19,30	4,20	210	HK155 0300-03-55N
31,70	21,00	4,20	211	HK155 0317-03-55N
32,00	**21,30**	**4,20**	**211**	**HK155 0320-03-55N**
32,00	**24,70**	**3,20**	**119**	**HK155 0320-02-55N**
35,00	24,30	4,20	213	HK155 0350-03-55N
38,00	27,30	4,20	215	HK155 0380-03-55N
39,00	28,30	4,20	215	HK155 0390-03-55N
40,00	**29,30**	**4,20**	**216**	**HK155 0400-03-55N**
40,00	**32,70**	**3,20**	**124**	**HK155 0400-02-55N**
42,00	31,30	4,20	217	HK155 0420-03-55N
44,50	33,80	4,20	219	HK155 0445-03-55N
45,00	34,30	4,20	219	HK155 0450-03-55N
48,00	37,30	4,20	221	HK155 0480-03-55N
50,00	**34,90**	**6,30**	**324**	**HK155 0500-04-55N**

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
50,00	**39,30**	**4,20**	**222**	**HK155 0500-03-55N**
50,80	40,10	4,20	222	HK155 0508-03-55N
52,00	41,30	4,20	223	HK155 0520-03-55N
55,00	44,30	4,20	224	HK155 0550-03-55N
57,10	46,40	4,20	224	HK155 0571-03-55N
60,00	44,90	6,30	327	HK155 0600-04-55N
63,00	**47,90**	**6,30**	**328**	**HK155 0630-04-55N**
63,00	**52,30**	**4,20**	**226**	**HK155 0630-03-55N**
63,50	48,40	6,30	328	HK155 0635-04-55N
64,00	48,90	6,30	328	HK155 0640-04-55N
65,00	49,90	6,30	328	HK155 0650-04-55N
69,80	54,70	6,30	330	HK155 0698-04-55N
70,00	54,90	6,30	330	HK155 0700-04-55N
75,00	59,90	6,30	332	HK155 0750-04-55N
76,20	61,10	6,30	332	HK155 0762-04-55N
80,00	**59,50**	**8,10**	**58x7**	**HK155 0800-05-55N**
80,00	**64,90**	**6,30**	**333**	**HK155 0800-04-55N**
82,50	67,40	6,30	334	HK155 0825-04-55N
85,00	69,90	6,30	335	HK155 0850-04-55N
89,00	73,90	6,30	336	HK155 0890-04-55N
90,00	74,90	6,30	336	HK155 0900-04-55N
95,00	79,90	6,30	337	HK155 0950-04-55N
100,00	**79,50**	**8,10**	**79x7**	**HK155 1000-05-55N**
100,00	**84,90**	**6,30**	**340**	**HK155 1000-04-55N**
101,60	86,50	6,30	340	HK155 1016-04-55N
105,00	89,90	6,30	341	HK155 1050-04-55N
110,00	94,90	6,30	343	HK155 1100-04-55N
114,30	99,20	6,30	344	HK155 1143-04-55N

PISTON SEAL
HK 155



D H9	**d** h10	**E** + 0,2	O-Ring	**Part N°.**
115,00	99,90	6,30	344	HK155 1150-04-55N
120,00	104,90	6,30	346	HK155 1200-04-55N
125,00	**104,50**	**8,10**	**101x7**	**HK155 1250-05-55N**
125,00	**109,90**	**6,30**	**347**	**HK155 1250-04-55N**
127,00	111,90	6,30	348	HK155 1270-04-55N
130,00	114,90	6,30	349	HK155 1300-04-55N
132,00	116,90	6,30	349	HK155 1320-04-55N
133,00	117,90	6,30	350	HK155 1330-04-55N
135,00	119,90	6,30	351	HK155 1350-04-55N
140,00	124,90	6,30	352	HK155 1400-04-55N
145,00	129,90	6,30	353	HK155 1450-04-55N
150,00	134,90	6,30	355	HK155 1500-04-55N
154,00	138,90	6,30	356	HK155 1540-04-55N
155,00	139,90	6,30	356	HK155 1550-04-55N
160,00	**139,50**	**8,10**	**443**	**HK155 1600-05-55N**
160,00	**144,90**	**6,30**	**358**	**HK155 1600-04-55N**
165,00	149,90	6,30	360	HK155 1650-04-55N
170,00	154,90	6,30	361	HK155 1700-04-55N
175,00	159,90	6,30	362	HK155 1750-04-55N
180,00	164,90	6,30	363	HK155 1800-04-55N
190,00	174,90	6,30	364	HK155 1900-04-55N
200,00	**179,50**	**8,10**	**441**	**HK155 2000-05-55N**
200,00	**184,90**	**6,30**	**366**	**HK155 2000-04-55N**
210,00	189,50	8,10	443	HK155 2100-05-55N
220,00	199,50	8,10	444	HK155 2200-05-55N
230,00	209,50	8,10	445	HK155 2300-05-55N
240,00	219,50	8,10	446	HK155 2400-05-55N
250,00	**226,00**	**8,10**	**446A**	**HK155 2500-06-55N**
250,00	**229,50**	**8,10**	**447**	**HK155 2500-05-55N**
260,00	236,00	8,10	447	HK155 2600-06-55N
270,00	246,00	8,10	448	HK155 2700-06-55N
280,00	256,00	8,10	449	HK155 2800-06-55N
290,00	266,00	8,10	449	HK155 2900-06-55N
300,00	276,00	8,10	451	HK155 3000-06-55N
310,00	286,00	8,10	451	HK155 3100-06-55N
320,00	**296,00**	**8,10**	**452**	**HK155 3200-06-55N**

D H9	**d** h10	**E** + 0,2	O-Ring	**Part N°.**
320,00	**299,50**	**8,10**	**452**	**HK155 3200-05-55N**
330,00	306,00	8,10	453	HK155 3300-06-55N
340,00	316,00	8,10	453	HK155 3400-06-55N
350,00	326,00	8,10	454	HK155 3500-06-55N
360,00	336,00	8,10	455	HK155 3600-06-55N
370,00	346,00	8,10	456	HK155 3700-06-55N
380,00	356,00	8,10	457	HK155 3800-06-55N
390,00	366,00	8,10	457	HK155 3900-06-55N
400,00	**376,00**	**8,10**	**458**	**HK155 4000-06-55N**
410,00	386,00	8,10	459	HK155 4100-06-55N
420,00	396,00	8,10	460	HK155 4200-06-55N
430,00	406,00	8,10	461	HK155 4300-06-55N
440,00	416,00	8,10	461	HK155 4400-06-55N
450,00	426,00	8,10	462	HK155 4500-06-55N
460,00	436,00	8,10	463	HK155 4600-06-55N
470,00	446,00	8,10	464	HK155 4700-06-55N
480,00	456,00	8,10	464	HK155 4800-06-55N
490,00	466,00	8,10	ASA 93	HK155 4900-06-55N
500,00	476,00	8,10	466	HK155 5000-06-55N
510,00	486,00	8,10	467	HK155 5100-06-55N
520,00	496,00	8,10	468	HK155 5200-06-55N
530,00	506,00	8,10	468	HK155 5300-06-55N
540,00	516,00	8,10	469	HK155 5400-06-55N
550,00	526,00	8,10	469	HK155 5500-06-55N
560,00	536,00	8,10	470	HK155 5600-06-55N
570,00	546,00	8,10	ASA 100	HK155 5700-06-55N
580,00	556,00	8,10	ASA 100	HK155 5800-06-55N
590,00	566,00	8,10	471	HK155 5900-06-55N
600,00	576,00	8,10	471	HK155 6000-06-55N
610,00	586,00	8,10	472	HK155 6100-06-55N
620,00	596,00	8,10	472	HK155 6200-06-55N
630,00	606,00	8,10	ASA 104	HK155 6300-06-55N
640,00	616,00	8,10	473	HK155 6400-06-55N
650,00	626,00	8,10	473	HK155 6500-06-55N
660,00	636,00	8,10	474	HK155 6600-06-55N

Further dimensions and intermediate sizes available up to diameter 2500 mm on request.
Dimensions in bold face comply with DIN ISO 7425/1 for mounting spaces.

Example for ordering Piston Seal:

HK 155 0320 - 02 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-ring
- HME internal code

Material Key:

Profile gasket

01 - pure PTFE
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring

N - NBR
F - FPM
E - EPDM
S - Silicon
C - Chloroprene

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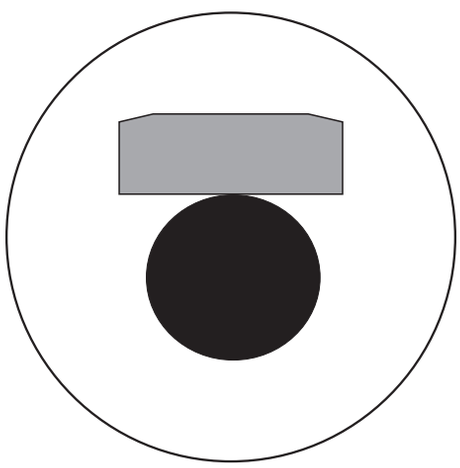
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 156 / HK 157

Piston seals from HK 156 and HK 157 series are preferred in low stress hydraulics applications.

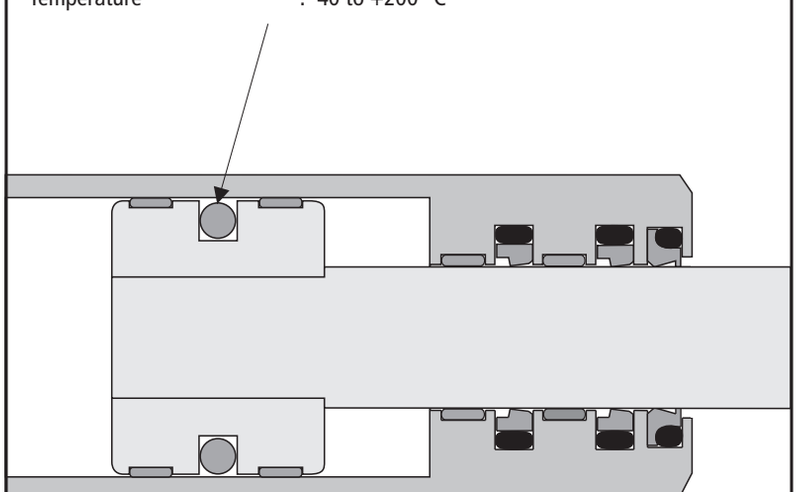
On the basis of their good shear characteristics and low friction, they also find use in pneumatic cylinders.



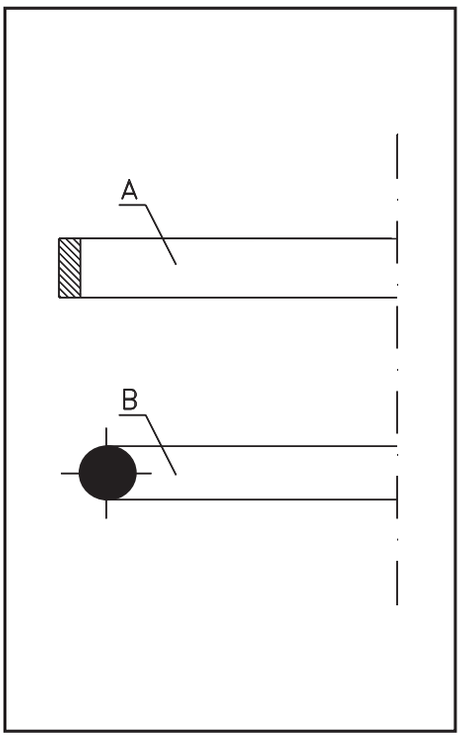
Special Features::

- Two part construction consisting of a profile gasket and on O-ring
- Outstanding shear characteristics, easy action
- Low friction, no stick-slip behaviour
- Broad temperature range of application and high chemical resistance, depending on O-ring material
- Meant for assembly on single part pistons
- Intermediate sizes available anytime.

Material	: PTFE-Compound
Operating pressure	: up to 16 MPa (160 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C



PISTON SEAL
HK 156 / HK 157



Profile Gasket (Part A)

Gasket section is rectangular. The outer corners have been provided with a chamfer to simplify assembly.

Profile gaskets are manufactured from specially modified PTFE materials. PTFE/bronze (compound 55) is the standard material of construction (MOC) that is used in hydraulics applications, for pneumatic applications it is PTFE/carbon (compound 30).

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms).

Standard MOC for hydraulics applications is NBR (Acrylonitrile Butadiene Rubber) with 70 shore A, which guarantees particularly good resistance to hydraulic fluids.

Materials Overview: Scraper/Wiper Ring

01: Pure PTFE - Outstanding chemical resistance - used in chemical, foodstuffs and pharmaceutical industry with light mechanical stress.

12: Modified PTFE - Very good chemical resistance, outstanding shear characterics, special purpose and intermediate stress applications..

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance, used in various areas of industry and intermediate-stress applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance, used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance, used in intermediate to high stress hydraulics application.

67: Modified PTFE - Very high abrasion resistance and inherent stability, used in hydraulics and abrasive pressure fluid applications.

83: Modified Polyurethane - Very high abrasion resistance and inherent stability, used primarily in intermediate stress hydraulics applications.

Materials Overview: O-Rings

N: Acrylonitrile Butadiene Rubber - Used in general machine constructio hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids, and water

F: Fluorine containing Rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluid aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene Propylene Diene Rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils.

S: Silicone Rubbers.

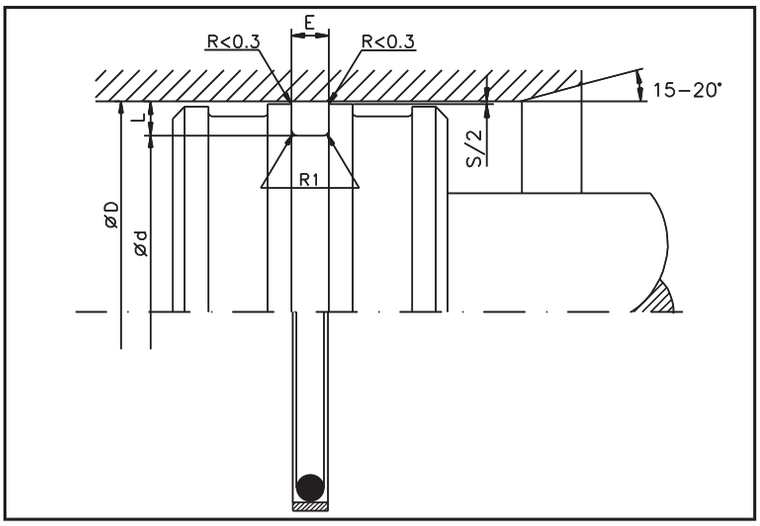
C: Chloroprene Rubbers.

Piston seals series HK 156 and HK 157 is being successfully used for many years in hydraulic cylinders where ease of motion is essential.

The seal can be assembled in single or multiple piece pistons. For use in an undivided groove, profile ring must be arefully pried apart and subsequentlz calibrated in the cylinder bore.

Please refer to our model HK 150 for newer constructions..

PISTON SEAL
HK 156 / HK 157



Limitations on Use

Operating pressure	: up to 16 MPa (160 bar)
Velocity	: reciprocating to 4 m/s
Temperature	: -40 to +200 °C (depending on O-ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending on O-ring material).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Recommended Assembly Dimensions for HK 156

Section	O-Ring Lace-ø mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance 0-160 bar **S** mm	Radius **R1** max. mm
01	1,78	7 - 15,9	2,0	2,00	0,10	0,2
02	2,62	16 - 25,9	2,8	3,00	0,10	0,2
03	3,53	26 - 49,9	3,8	3,75	0,15	0,3
04	5,33	50 - 129,9	5,6	6,25	0,15	0,3
05	7,00	130 - 179,9	7,5	7,50	0,20	0,4
06	7,00	180 - 239,9	7,5	9,00	0,20	0,4
07	7,00	240 - 410,0	7,5	12,00	0,20	0,4

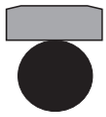
Profil HK 156

D H9	**d** h10	**E** +0,2	O-Ring	Part N°.
7,00	3,00	2,00	006	HK156 0070-01-55N
8,00	4,00	2,00	007	HK156 0080-01-55N
9,00	5,00	2,00	008	HK156 0090-01-55N
10,00	6,00	2,00	010	HK156 0100-01-55N
11,00	7,00	2,00	010	HK156 0110-01-55N
12,00	8,00	2,00	011	HK156 0120-01-55N
16,00	10,00	2,80	110	HK156 0160-02-55N
18,00	12,00	2,80	112	HK156 0180-02-55N
19,00	13,00	2,80	112	HK156 0190-02-55N
20,00	14,00	2,80	113	HK156 0200-02-55N
22,00	16,00	2,80	114	HK156 0220-02-55N
25,00	19,00	2,80	116	HK156 0250-02-55N
27,00	19,50	3,80	210	HK156 0270-03-55N
28,00	20,50	3,80	211	HK156 0280-03-55N
30,00	22,50	3,80	212	HK156 0300-03-55N
32,00	24,50	3,80	214	HK156 0320-03-55N
34,00	25,50	3,80	214	HK156 0340-03-55N
35,00	27,50	3,80	215	HK156 0350-03-55N
37,00	29,50	3,80	217	HK156 0370-03-55N
38,00	30,50	3,80	217	HK156 0380-03-55N
40,00	32,50	3,80	218	HK156 0400-03-55N
42,00	34,50	3,80	220	HK156 0420-03-55N
43,00	35,50	3,80	221	HK156 0430-03-55N
44,00	36,50	3,80	221	HK156 0440-03-55N
50,00	37,50	5,60	325	HK156 0500-04-55N

Profil HK 156

D H9	**d** h10	**E** +0,2	O-Ring	Part N°.
55,00	42,50	5,60	326	HK156 0550-04-55N
58,00	45,50	5,60	327	HK156 0580-04-55N
60,00	47,50	5,60	328	HK156 0600-04-55N
63,00	50,50	5,60	329	HK156 0630-04-55N
67,00	54,50	5,60	330	HK156 0670-04-55N
70,00	57,50	5,60	331	HK156 0700-04-55N
72,00	59,50	5,60	332	HK156 0720-04-55N
75,00	62,50	5,60	333	HK156 0750-04-55N
80,00	67,50	5,60	334	HK156 0800-04-55N
82,00	69,50	5,60	335	HK156 0820-04-55N
85,00	72,50	5,60	336	HK156 0850-04-55N
90,00	77,50	5,60	337	HK156 0900-04-55N
92,00	79,50	5,60	338	HK156 0920-04-55N
95,00	82,50	5,60	339	HK156 0950-04-55N
100,00	87,50	5,60	340	HK156 1000-04-55N
102,00	89,50	5,60	341	HK156 1020-04-55N
105,00	92,50	5,60	342	HK156 1050-04-55N
108,00	95,50	5,60	343	HK156 1080-04-55N
110,00	97,50	5,60	344	HK156 1100-04-55N
115,00	102,50	5,60	345	HK156 1150-04-55N
118,00	105,50	5,60	346	HK156 1180-04-55N
120,00	107,50	5,60	347	HK156 1200-04-55N
125,00	112,50	5,60	348	HK156 1250-04-55N
130,00	115,00	7,50	425	HK156 1300-05-55N
135,00	120,00	7,50	427	HK156 1350-05-55N

PISTON SEAL
HK 156 / HK 157



Profil HK 156

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
135,00	120,00	7,50	427	HK156 1350-05-55N
137,00	122,00	7,50	427	HK156 1370-05-55N
140,00	125,00	7,50	428	HK156 1400-05-55N
143,00	128,00	7,50	429	HK156 1430-05-55N
145,00	130,00	7,50	430	HK156 1450-05-55N
150,00	135,00	7,50	431	HK156 1500-05-55N
153,00	138,00	7,50	432	HK156 1530-05-55N
155,00	140,00	7,50	433	HK156 1550-05-55N
158,00	143,00	7,50	434	HK156 1580-05-55N
160,00	145,00	7,50	434	HK156 1600-05-55N
165,00	150,00	7,50	436	HK156 1650-05-55N
170,00	155,00	7,50	437	HK156 1700-05-55N
180,00	162,00	7,50	438	HK156 1800-06-55N
185,00	167,00	7,50	439	HK156 1850-06-55N
190,00	172,50	7,50	440	HK156 1900-06-55N
195,00	177,00	7,50	440	HK156 1950-06-55N
200,00	182,00	7,50	441	HK156 2000-06-55N
210,00	192,00	7,50	443	HK156 2100-06-55N
215,00	197,00	7,50	444	HK156 2150-06-55N
220,00	202,00	7,50	444	HK156 2200-06-55N

Profil HK 156

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°.**
230,00	212,00	7,50	445	HK156 2300-06-55N
240,00	216,00	7,50	446	HK156 2400-07-55N
250,00	226,00	7,50	446	HK156 2500-07-55N
260,00	236,00	7,50	447	HK156 2600-07-55N
270,00	246,00	7,50	448	HK156 2700-07-55N
280,00	256,00	7,50	449	HK156 2800-07-55N
290,00	266,00	7,50	450	HK156 2900-07-55N
300,00	276,00	7,50	450	HK156 3000-07-55N
310,00	286,00	7,50	451	HK156 3100-07-55N
320,00	296,00	7,50	452	HK156 3200-07-55N
330,00	306,00	7,50	453	HK156 3300-07-55N
340,00	316,00	7,50	454	HK156 3400-07-55N
350,00	326,00	7,50	454	HK156 3500-07-55N
360,00	336,00	7,50	455	HK156 3600-07-55N
370,00	346,00	7,50	456	HK156 3700-07-55N
380,00	356,00	7,50	457	HK156 3800-07-55N
390,00	366,00	7,50	457	HK156 3900-07-55N
400,00	376,00	7,50	458	HK156 4000-07-55N
410,00	386,00	7,50	459	HK156 4100-07-55N

Profil HK 157

D H8	**d** h9	**E** +0,2	O-Ring	**Part N°.**
10,0	3,9	3,2	3,3 x 2,4	HK157 0100-01-55N
12,0	5,9	3,2	5,3 x 2,4	HK157 0120-01-55N
15,0	8,9	3,2	8,3 x 2,4	HK157 0150-01-55N
16,0	9,9	3,2	9,3 x 2,4	HK157 0160-01-55N
18,0	11,9	3,2	11,3 x 2,4	HK157 0180-01-55N
20,0	13,9	3,2	13,3 x 2,4	HK157 0200-01-55N
22,0	15,9	3,2	15,3 x 2,4	HK157 0220-01-55N
25,0	17,8	4,0	17,2 x 3,0	HK157 0250-01-55N
28,0	20,8	4,0	20,2 x 3,0	HK157 0280-01-55N
30,0	22,8	4,0	22,2 x 3,0	HK157 0300-01-55N
32,0	24,8	4,0	24,2 x 3,0	HK157 0320-01-55N
35,0	27,8	4,0	28,0 x 3,0	HK157 0350-01-55N
38,0	30,8	4,0	30,2 x 3,0	HK157 0380-01-55N
40,0	32,8	4,0	32,2 x 3,0	HK157 0400-01-55N
42,0	34,8	4,0	34,2 x 3,0	HK157 0420-01-55N
45,0	37,8	4,0	38,0 x 3,0	HK157 0450-01-55N
48,0	40,8	4,0	40,2 x 3,0	HK157 0480-01-55N
50,0	42,8	4,0	42,2 x 3,0	HK157 0500-01-55N
52,0	44,8	4,0	44,2 x 3,0	HK157 0520-01-55N
55,0	47,8	4,0	48,0 x 3,0	HK157 0550-01-55N

Profil HK 157

D H8	**d** h9	**E** +0,2	O-Ring	**Part N°.**
60,0	47,8	7,5	47,2 x 5,7	HK157 0600-01-55N
63,0	50,8	7,5	49,2 x 5,7	HK157 0630-01-55N
65,0	52,8	7,5	52,2 x 5,7	HK157 0650-01-55N
70,0	57,8	7,5	57,2 x 5,7	HK157 0700-01-55N
75,0	62,8	7,5	62,2 x 5,7	HK157 0750-01-55N
80,0	67,8	7,5	67,2 x 5,7	HK157 0800-01-55N
85,0	72,8	7,5	72,2 x 5,7	HK157 0850-01-55N
90,0	77,8	7,5	77,2 x 5,7	HK157 0900-01-55N
95,0	82,8	7,5	82,2 x 5,7	HK157 0950-01-55N
100,0	87,8	7,5	87,2 x 5,7	HK157 1000-01-55N
105,0	92,8	7,5	92,2 x 5,7	HK157 1050-01-55N
110,0	97,8	7,5	97,2 x 5,7	HK157 1100-01-55N
115,0	102,8	7,5	103,0 x 6,0	HK157 1150-01-55N
120,0	107,8	7,5	106,0 x 6,0	HK157 1200-01-55N
125,0	112,8	7,5	110,0 x 6,0	HK157 1250-01-55N
130,0	117,8	7,5	114,0 x 6,0	HK157 1300-01-55N
135,0	122,8	7,5	120,0 x 6,0	HK157 1350-01-55N
140,0	127,8	7,5	128,0 x 6,0	HK157 1400-01-55N
150,0	136,8	7,5	135,0 x 6,0	HK157 1500-01-55N

Further dimensions and intermediate sizes available on request.

Example for ordering Piston Seal:

HK 156 0500 - 04 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-ring
- HME internal code

Material Key:

Profile gasket

01 - pure PTFE
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring

N - NBR
F - FPM
E - EPDM
S - Silicon
C - Chloroprene

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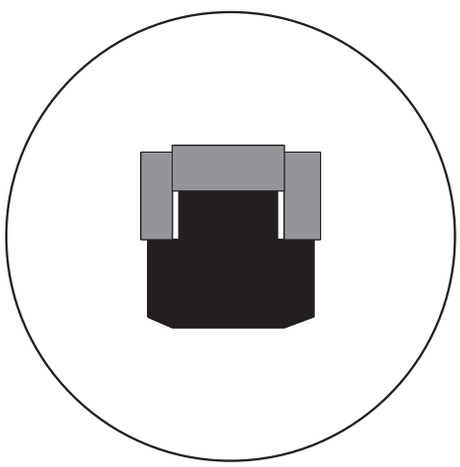
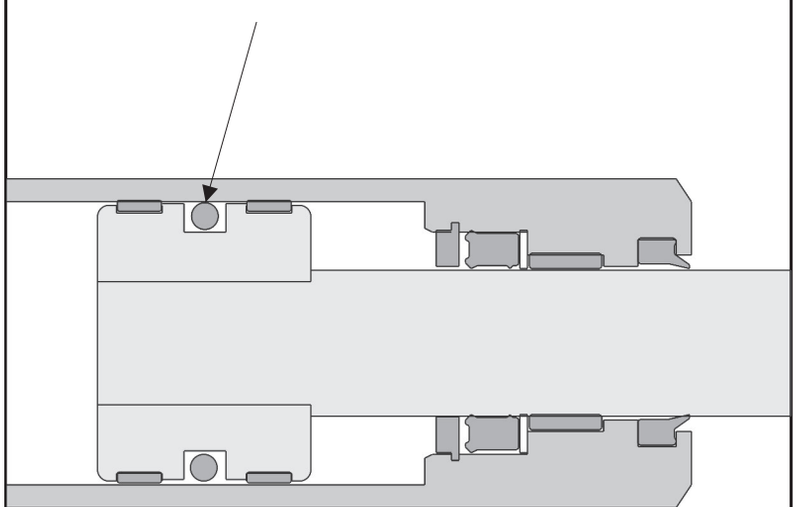
PISTON SEAL
HK 160

The compact double acting piston seal series of HK 160 was specially developed for using single parted constructions of piston.

Various combinations of materials guarantee high functional reliability and endurance life render during the totally period of pressure and velocity by low friction, various temperatures and medias.



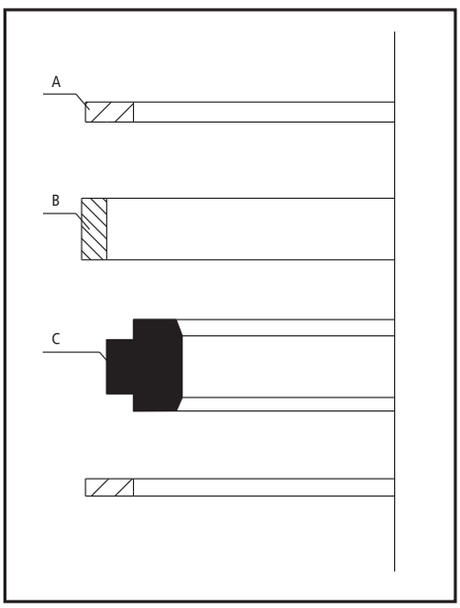
Material	: PTFE-Compound
Operating pressure	: up to 50 MPa (500 bar)
Velocity	: reciprocating to 1,5 m/s
Temperature	: -35 to +110 °C



Special Features::

- Low friction due to oil groove on sealing geometry
- Excellent shear characteristics
- Good dynamic and static sealing
- Large abrasion resitstance, long life period
- Various materials for additional temperatures available
- Best qualification to most heavy operations i.e. maschinery for buildings and constructions
- Extensive range of dimensions is aligned to international standard mounting spaces i.e. ISO 5597

PISTON SEAL
HK 160



Back Ring (Part A)

The Polyacetal back ring should save the profil gasket against split extrusion and protect the sealing system against eventuality existing dirty pieces.

Profile Gasket (Part B)

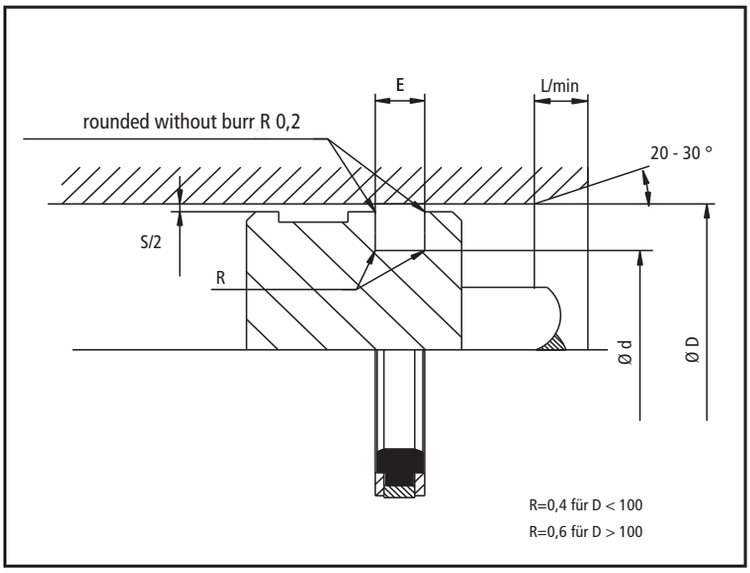
Gasket section is retangular and the profile gasket is produced since years of PTFE / bronze compound.

The profile gaset shows a absolutly high abrasion resistance, inherent stability and additional good shearing characteristics. These preferences recommending the material to demands of heavy- and construction industry. Additional we are supporting a special profile gasket of standard material Polyurethan for low and middle applications.

Energizer (Part C)

During the total period of presse the t-formed NBR energizer guarantees reliable radial pressure to the profile gasket. For applications with additional areas of temperatures there are various materials available.

PISTON SEAL
HK 160



Media for Use

Mineral oil based hydraulic oils, Bio Oils as well as flame resistant pressure liquids on request

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1.6 µm	0,4 µm
Groove root	10,0 µm	6.3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Limitations on Use

	Operating pressure	Velocity	Temperature
-55N	bis 50 Mpa (500 bar)	bis 1,5 m/s	-30 bis + 100 °C
-55H	bis 50 Mpa (500 bar)	bis 1,5 m/s	-40 bis + 130 °C
-200	bis 40 Mpa (400 bar)	bis 0,5 m/s	-35 bis + 110 °C

Diameter Clearance

-200 Smax. (mm)	p max.	-55N/55H Smax. (mm)	p max
1,00	-10 Mpa	1,00	30 MPa
0,70	-20 Mpa	0,60	50 MPa
0,50	-30 MPA		
0,30	-40 Mpa		

D H9	**d** h10	**E** +0,2	**L**min.	**Part N°.**
40,00	**30,00**	**8,00**	**5,00**	**HK160 0400-01-55N**
50,00	36,00	9,00	5,00	HK160 0500-01-55N
50,00	**40,00**	**8,00**	**5,00**	**HK160 0500-02-55N**
55,00	41,00	9,00	5,00	HK160 0550-01-55N
60,00	46,00	9,00	5,00	HK160 0600-01-55N
60,00	50,00	8,00	5,00	HK160 0600-02-55N
63,00	48,00	11,00	5,00	HK160 0630-01-55N
63,00	**53,00**	**8,00**	**5,00**	**HK160 0630-02-55N**
65,00	50,00	11,00	5,00	HK160 0650-01-55N
70,00	55,00	11,00	5,00	HK160 0700-01-55N
70,00	60,00	8,00	5,00	HK160 0700-02-55N
75,00	60,00	11,00	5,00	HK160 0750-01-55N
80,00	**65,00**	**11,00**	**5,00**	**HK160 0800-01-55N**
80,00	65,00	12,50	5,00	HK160 0800-02-55N
85,00	70,00	11,00	5,00	HK160 0850-01-55N
90,00	75,00	11,00	5,00	HK160 0900-01-55N
90,00	75,00	12,50	5,00	HK160 0900-02-55N
95,00	80,00	11,00	5,00	HK160 0950-01-55N
100,00	**85,00**	**12,50**	**5,00**	**HK160 1000-01-55N**
105,00	90,00	12,50	5,00	HK160 1050-01-55N
110,00	95,00	12,50	5,00	HK160 1100-01-55N
115,00	100,00	12,50	5,00	HK160 1150-01-55N
120,00	105,00	12,50	6,50	HK160 1200-01-55N
125,00	102,00	16,00	6,50	HK160 1250-01-55N
125,00	110,00	12,50	6,50	HK160 1250-02-55N
130,00	107,00	16,00	6,50	HK160 1300-01-55N

D H9	d h 10	**E** +0,2	**L**min.	**Part N°.**
130,00	115,00	12,50	6,50	HK160 1300-02-55N
135,00	112,00	16,00	6,50	HK160 1350-01-55N
140,00	117,00	16,00	6,50	HK160 1400-01-55N
140,00	125,00	12,50	6,50	HK160 1400-02-55N
145,00	122,00	16,00	6,50	HK160 1450-01-55N
150,00	127,00	16,00	6,50	HK160 1500-01-55N
150,00	135,00	12,50	6,50	HK160 1500-02-55N
160,00	137,00	16,00	6,50	HK160 1600-01-55N
160,00	145,00	12,50	6,50	HK160 1600-02-55N
165,00	142,00	16,00	6,50	HK160 1650-01-55N
170,00	147,00	16,00	6,50	HK160 1700-01-55N
170,00	155,00	12,50	6,50	HK160 1700-02-55N
180,00	157,00	16,00	6,50	HK160 1800-01-55N
180,00	165,00	12,50	6,50	HK160 1800-02-55N
190,00	167,00	16,00	6,50	HK160 1900-01-55N
190,00	175,00	12,50	6,50	HK160 1900-02-55N
200,00	177,00	16,00	6,50	HK160 2000-01-55N
200,00	180,00	16,00	6,50	HK160 2000-02-55N
220,00	200,00	16,00	8,00	HK160 2200-01-55N
225,00	202,00	16,00	8,00	HK160 2250-01-55N
230,00	210,00	16,00	8,00	HK160 2300-01-55N
250,00	230,00	16,00	8,00	HK160 2500-02-55N

Abmessungen in Fettdruck entsprechen Einbauräumen nach DIN ISO 5597

PISTON SEAL
HK 160

Example for ordering Piston Seal:

HK 160 0400 - 01 - 55N - ...

Profile
Nominal diameter x 10
Cross section
Standard materia profile gasket
HME internal code

Material Key:

Gasket
55N - PTFE Bronze + NBR
55H - PTFE Bronze + HNBR
200 - PU + NBR

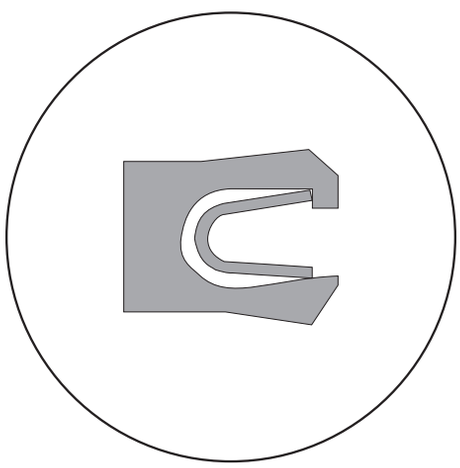
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

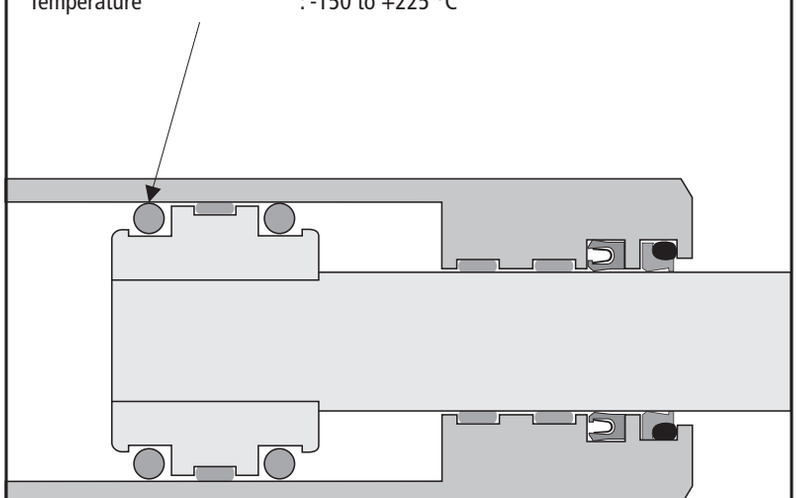
PISTON SEAL
HK 170 / HK 171

These Flexiseals provide a solution where conventional elastomer seals are inadequate due to their limited chemical and thermal characteristics.

Flexiseals HK 170 and HK 171 are spring prestressed single acting piston seals. Different materials for profile gasket and spring allow for a very wide range of applications, preferably in chemicals, pharmacy, foodstuffs, equipment and construction.



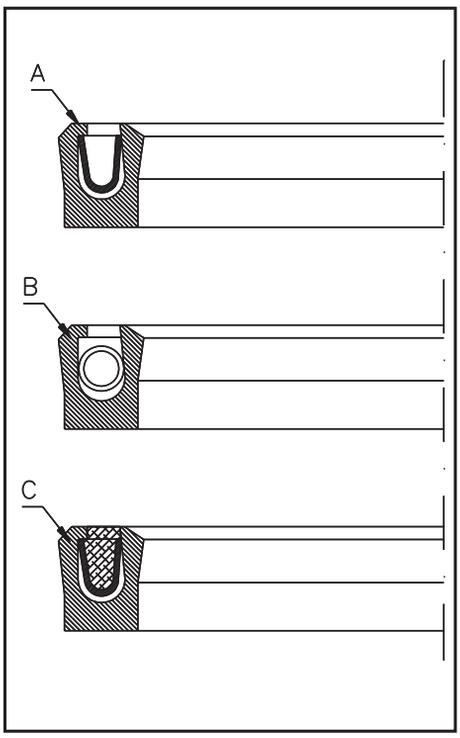
Material	: PTFE-Compound
Operating pressure	: up to 35 MPa (350 bar)
Velocity	: reciprocating to 20 m/s
Temperature	: -150 to +225 °C



Special Features::

- High chemical resistance to most fluids, gases and other chemicals
- Very good shear characteristics, no stick-slip effect
- Low friction and good resistance to galling
- Very wide temperature range of application
- Suitable to O-ring grooves as per DIN ISO 3771 and MIL-G-5514F
- Available for piston diameters up to 2500 mm

PISTON SEAL
HK 170 / HK 171



Profile Gasket with Spring

Seal consists of a U shaped profile gasket, in which a metallic spring is incorporated as a pre-stressing element. To enhance impermeability and service life, the (external) dynamic sealing lip is designed in a somewhat more robust and strengthened manner than the (internal) static one.

All profile gaskets are produced from specially modified PTFE materials. Standard material for general applications is Compound 51 in combination with a pre-loaded spring from stainless steel.

Material Overview:

31: Modified PTFE + carbon fiber- Good chemical and thermal resistance. Intermediate level applications. Also used in water-oil emulsions.

12: Modified PTFE - Outstanding shear characteristics, abrasion resistance, inherent stability. Very good chemical resistance, large tolerance to temperatures. Specialty light to medium duty applications.

67: Modified PTFE - High compression resistance, abrasion resistance, inherent stability with very good shear characteristics, good chemical and thermal resistance. Used in heavy duty applications.

Further materials can be supplied on request.

Spring Construction and Materials

0: Stainless steel for general applications (A).

1: Stainless steel for aggressive surrounding media (B).

2: Stainless steel for general applications, silicon cast (C).

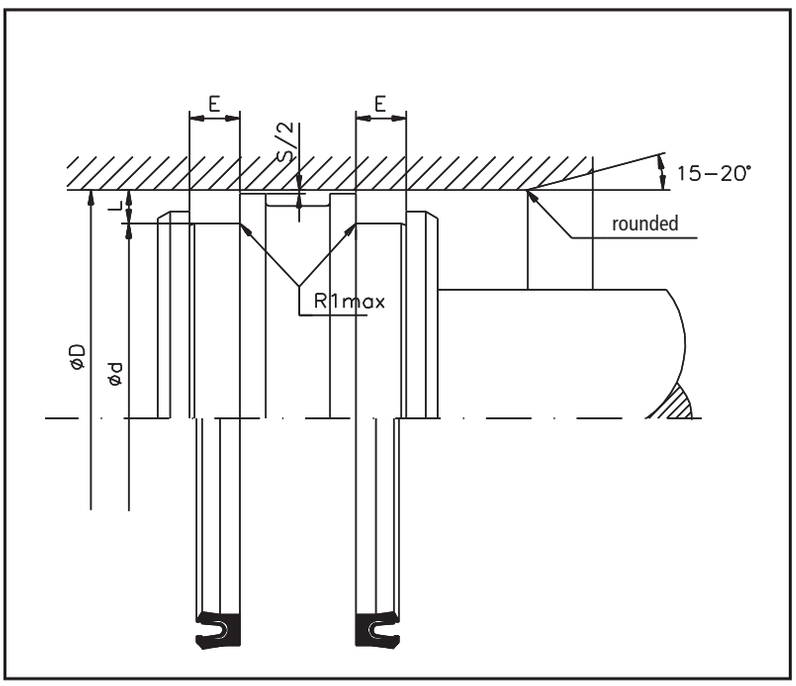
3: Stainless steel for aggressive surrounding media, silicon cast.

For cases 2 and 3, spring gap is filled with silicon. These seals can be sterilized and are therefore preferred in foodstuff industry.

In many cases the Hk170 / HK171 - seal is used in place of the O-ring. In that case, care is to be taken that an open or split groove is available for simple and safe assembly of seals.

Die Flexiseal wird in sehr vielen Fällen anstelle eines O-Ringes eingesetzt. Dabei ist zu beachten, daß zur einfachen und sicheren Montage der Dichtung grundsätzlich eine offene bzw. geteilte Nut erforderlich ist.

PISTON SEAL
HK 170 / HK 171



Limitations on Use

Operating pressure	: up to 35 MPa (350 bar)
Velocity	: reciprocating to 20 m/s
Temperature	: -150 to +255 °C

Media for Use

Mineral und synthetic pressure fluids, water, air, steam, acids, caustic solutions, various chemicals, depending on sealing and spring material.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Tolerances

Nominal diameter	D H9
Groove root diameter	d h11
Groove width	E $^{+0,2}_{-0}$

Recommended Assembly Dimensions for HK 170 (O-Ring Grooves without Thrust Ring)

Section	O-Ring Equivalent mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Allowance **S** mm	Radius **R1 max.** mm
1	1,78	6 - 13,9	2,40	1,45	0,13	0,4
2	2,62	14 - 24,9	3,60	2,25	0,13	0,4
3	3,53	25 - 45,9	4,80	3,10	0,15	0,6
4	5,33	46 - 124,9	7,10	4,70	0,17	0,8
5	7,00	125 - 700,0	9,50	6,10	0,25	0,8

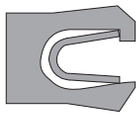
Extensive range of inch measurement diagrams available on request.

Recommended Assembly Dimensions for HK 171 (O-Ring Grooves with Thrust Ring)

Section	O-Ring Equivalent mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Allowance **S** mm	Radius **R1 max.** mm
1	1,78	6 - 13,9	3,80	1,45	0,13	0,4
2	2,62	14 - 24,9	4,65	2,25	0,13	0,4
3	3,53	25 - 45,9	5,70	3,10	0,15	0,6
4	5,33	46 - 124,9	8,50	4,70	0,17	0,8
5	7,00	125 - 700,0	11,20	6,10	0,25	0,8

Further dimensions and intermediate sizes available up to Ø 2500 mm on request.

PISTON SEAL
HK 170 / HK 171



Example for ordering Piston Seal:

HK 170 0360 - 03 - 31P - ...

- Profile
- Nominal diameter x 10
- Spring construction (standard)
- Cross-section
- Standard material profile gasket
- HME internal code

Material Key:

Profile gasket:
31 - PTFE carbon
12 - modified PTFE
67 - modified PTFE

Spring construction:
0 - Standard
1 - for aggressive media
2 - Standard silicon cast
3 - for aggressive media silicon cast

Issue
01 | 24

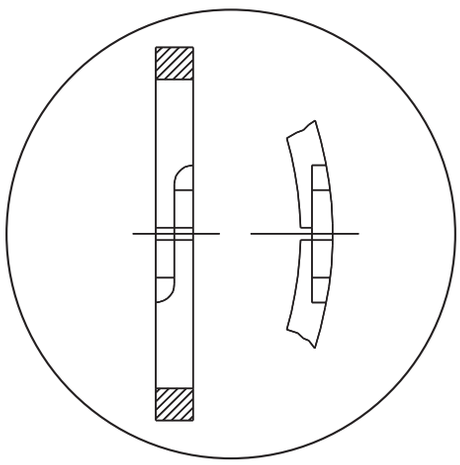
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

PISTON SEAL
HK 174

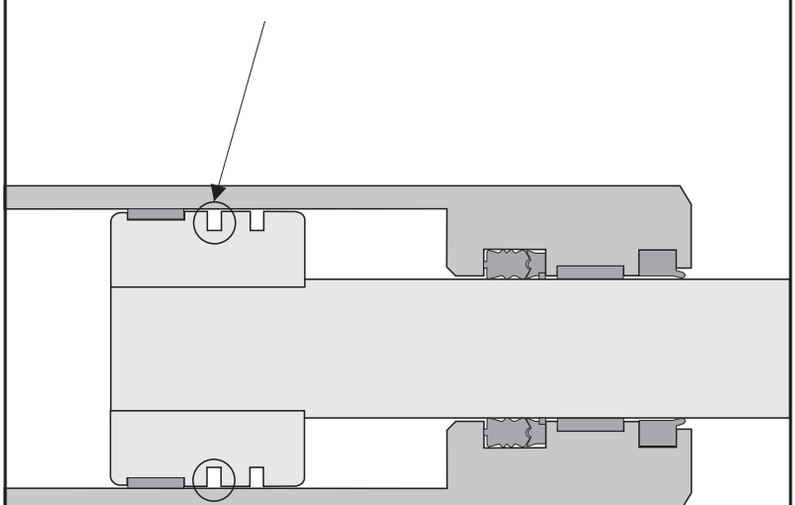
Piston rings from specially cast materials with joints empervious to medium find use in exceptionally demanding appliances in temperature and velocity. However, in contrast to other elastomer applications, they are not sensitive to impact pressures.

Special Features::

- Single part construction, with slit
- Good dynamic and static sealing through patented joint
- Good abrasion resistance, long life
- Extreme temperature range of application
- Overtravelling of cylinder bores possible without damage
- In combination with elastomer seals, this can be put to protective use against impact pressure and diesel effects



Material	: speciall cast material
Operating pressure	: up to 200 MPa (2000 bar)
Velocity	: reciprocating to 40 m/s



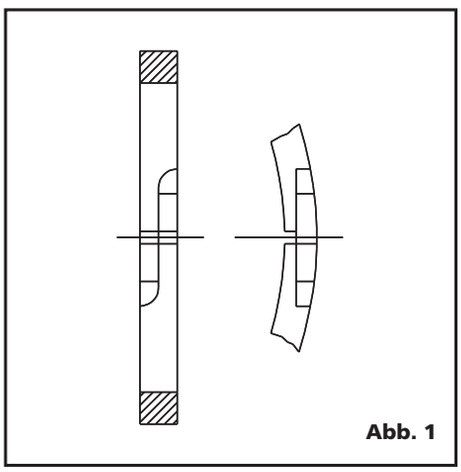


Abb. 1

Areas of Application:

Since complete static sealing is not achievable with metalic piston rings, such rings find use in cylinders where piston positions are defined using other external mechanical set up for long time. Examples of applications where even small amounts of friction and impact-free running with very slow movement assume significance are automotive engines, drives and servomechanisms. Cylinders on vehicles with container elevators and those for waste materials transport are often provided with metallic piston rings. In specific cases, these cylinders are designed as double-action telescopic cylinders. Metallic piston rings are meant moreover for cylinders of hydraulic presses that operate on intermittent compressive forces at high operational pressures. Pistons in hydro pumps and motors are normally sealed with metallic piston rings. Metallic piston rings can also serve to augment elastomer seals. In this case, they (metallic) are applied external to elastomer seals and thus serve to protect them against pressure surges, diesel effect and foreign bodies.

Method of Operation:

Metallic piston rings are a sealing element that is manufactured with high precision of dimension and form. The carefully machined outer diameter is vertically adjusted to the parallel flat finish faces to a close tolerance. Edge width is normally lower than the axial transverse dimension, so that the form is rectangular and the longer side is in contact with the cylinder area.

Piston ring is meant for use in piston groove. Normal width 25 to 200 micrometer (depending on piston size) is larger than the maximal piston ring width (see fig. 2). If axial play is too small, choking hinders advancement of oil pressure to inner diameter of piston ring. Sealing pressure against sides of the groove thus becomes very small, leading to leakage loss.

With too large a play, rapid pressure variations bring about lateral displacement of piston ring and pressure fluid is let through.

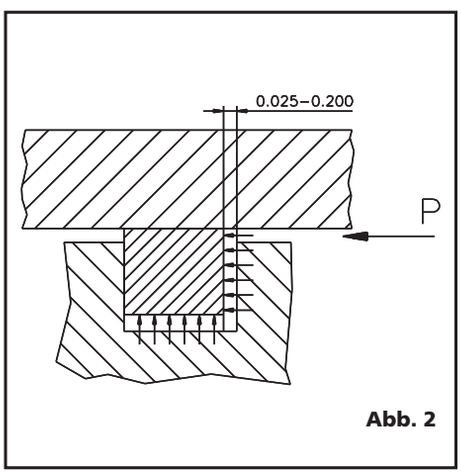


Abb. 2

HK 174 as Protection against Pressure Surge:

For use of HK 174 to protect elastomer seals against pressure surges and diesel effect (see fig. 3), piston ring must have small axial grooves, so as to avoid pressure build-up between elastomer seal and piston ring.

Number of Piston Rings per Piston:

When two piston rings are used instead of one, leakage reduces by 15%, and the incorporation of a third one causes further reduction by 10-15%.

The most important reason why a three-ring combination is most useful in case of HK 174 is, that the two outer rings protect the inner one from foreign bodies. During use of HK 174 normally used with one ring, optimal sealing capacity is achieved with two seals (two grooves).

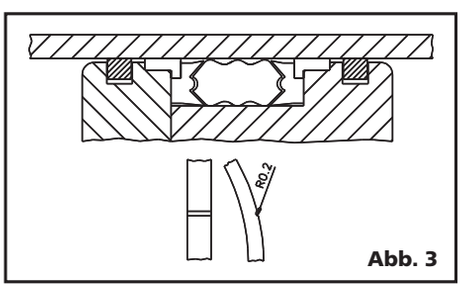
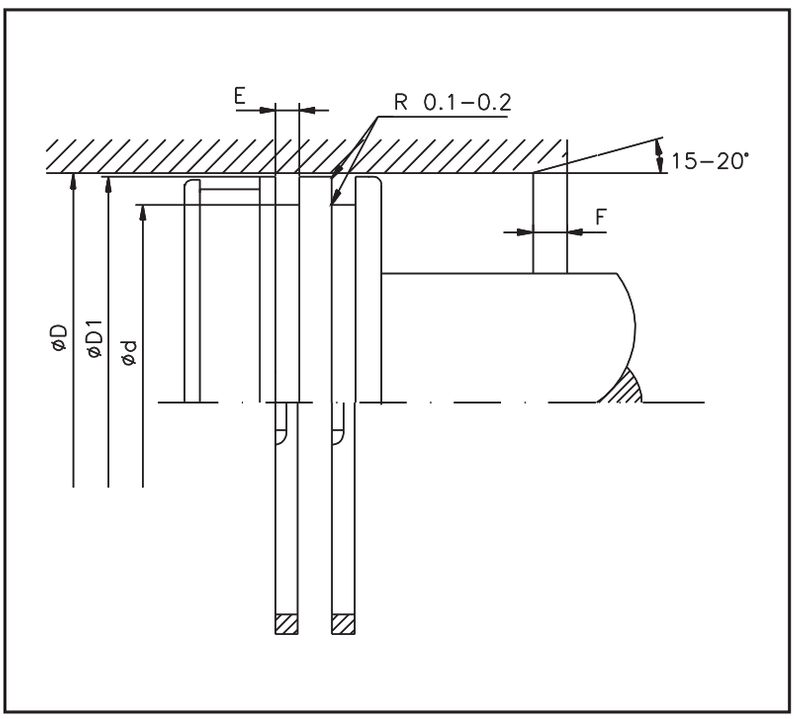


Abb. 3

For details on factors about leakage and transport of oil as well as surface finish, please write to us for our special brochure HK 174.

PISTON SEAL
HK 174



Limitations on Use

Operating pressure : up to 200 MPa (2000 bar)
Velocity : reciprocating to 40 m/s

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), Bio Oils, water, air and other materials as per O-ring materials.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	10,0 µm	6,3 µm	1,6 µm

Slide in Bevels

Nominal Diameter D [mm]	Length of Bevel F [mm]
- 60	4
61 - 120	5
121 - 250	6
181 - 250	8
251 - 400	10

D H9/H8	**d** -0,5	**E** +0,13	**D1** k11	**Part N°.**
40,00	35,00	3,20	39,50	HK174 0400-01-GGS
45,00	39,00	3,20	44,50	HK174 0450-01-GGS
50,00	44,00	3,20	49,50	HK174 0500-01-GGS
55,00	49,00	4,80	54,00	HK174 0550-01-GGS
60,00	53,00	4,80	59,00	HK174 0600-01-GGS
63,00	56,00	4,80	62,00	HK174 0630-01-GGS
65,00	58,00	4,80	64,00	HK174 0650-01-GGS
70,00	62,00	4,80	68,50	HK174 0700-01-GGS
75,00	67,00	4,80	73,50	HK174 0750-01-GGS
75,00	66,00	5,04	73,50	HK174 0750-02-GGS
80,00	72,00	4,80	78,50	HK174 0800-01-GGS
80,00	72,00	6,40	78,50	HK174 0800-02-GGS
85,00	77,00	4,80	83,50	HK174 0850-01-GGS
90,00	81,00	4,80	88,50	HK174 0900-01-GGS
90,00	80,00	3,54	88,50	HK174 0900-02-GGS
95,00	86,00	4,80	93,50	HK174 0950-01-GGS
100,00	90,00	6,40	98,50	HK174 1000-01-GGS
100,00	90,00	4,15	98,50	HK174 1000-02-GGS
105,00	95,00	6,40	103,00	HK174 1050-01-GGS
110,00	99,00	6,40	108,00	HK174 1100-01-GGS
110,00	99,00	4,15	108,00	HK174 1100-02-GGS
114,00	103,00	6,40	112,00	HK174 1140-01-GGS
115,00	104,00	6,40	113,00	HK174 1150-01-GGS
115,00	104,00	3,20	113,00	HK174 1150-02-GGS
120,00	109,00	6,40	118,00	HK174 1200-01-GGS
120,00	108,00	3,54	118,00	HK174 1200-02-GGS
125,00	113,00	6,40	123,00	HK174 1250-01-GGS
130,00	118,00	6,40	128,00	HK174 1300-01-GGS
130,00	118,00	5,05	128,00	HK174 1300-02-GGS
135,00	122,00	6,40	132,50	HK174 1350-01-GGS

D H9/H8	**d** -0,5	**E** +0,13	**D1** k11	**Part N°.**
140,00	127,00	6,40	137,50	HK174 1400-01-GGS
145,00	132,00	6,40	142,50	HK174 1450-01-GGS
150,00	137,00	6,40	147,50	HK174 1500-01-GGS
150,00	136,00	5,04	147,50	HK174 1500-02-GGS
155,00	141,00	7,95	152,00	HK174 1550-01-GGS
160,00	146,00	7,95	157,00	HK174 1600-01-GGS
165,00	151,00	7,95	162,00	HK174 1650-01-GGS
170,00	155,00	7,95	167,00	HK174 1700-01-GGS
175,00	160,00	7,95	172,00	HK174 1750-01-GGS
180,00	164,00	7,95	177,00	HK174 1800-01-GGS
180,00	164,00	6,08	177,00	HK174 1800-02-GGS
185,00	169,00	7,95	182,00	HK174 1850-01-GGS
190,00	174,00	7,95	187,00	HK174 1900-01-GGS
195,00	178,00	7,95	192,00	HK174 1950-01-GGS
200,00	183,00	7,95	196,00	HK174 2000-01-GGS
200,00	183,00	9,55	196,00	HK174 2000-02-GGS
210,00	192,00	9,60	206,00	HK174 2100-01-GGS
220,00	202,00	9,60	216,00	HK174 2200-01-GGS
230,00	211,00	9,60	226,00	HK174 2300-01-GGS
240,00	221,00	9,60	236,00	HK174 2400-01-GGS
250,00	230,00	9,60	246,00	HK174 2500-01-GGS
260,00	240,00	9,60	256,00	HK174 2600-01-GGS
270,00	249,00	9,60	266,00	HK174 2700-01-GGS
280,00	258,00	9,60	275,00	HK174 2800-01-GGS
300,00	277,00	9,60	295,00	HK174 3000-01-GGS
320,00	296,00	12,80	315,00	HK174 3200-01-GGS
330,00	306,00	12,80	325,00	HK174 3300-01-GGS
350,00	324,00	12,80	344,00	HK174 3500-01-GGS
360,00	333,00	12,80	354,00	HK174 3600-01-GGS
400,00	372,00	12,80	394,00	HK174 4000-01-GGS

Extensive range of inch measurement diagrams available on request.

Example for ordering Piston Seal:

HK 174 0800 - 02 - GGS - ...

Profile
Nominal diameter x 10
Spring construction (standard)
Cross-section
Standard material profile gasket
HME internal code

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

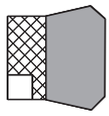
index

Profile	Type	Specification	Limitations of Use			Material	
			Temperature	Pressure	Velocity	Sealing element	Page
	HS 200	Compact seal	-30 up to +110° C	up to 30 Mpa (300 bar)	up to 0,5 m/s	NBR fabric	3
	HS 201	Comact seal with anti-extrusion ring	-30 upt to +110° C	up to 45 Mpa (450 bar)	up to 0,5 m/s	NBR fabric	3
	HS 205	Compact seal	-30 up to +110° C	up to 25 Mpa (250 bar)	up to 0,5 m/s	NBR tfabric	9
	HS 210	Compact seal (3-pieces)	-30 up to +110° C	up to 70 Mpa (700 bar)	up to 0,5 m/s	NBR	11
	HS 215 HS 217	V - ring 5-pieces (HS 215) and 7-pieces (HS 217)	-30 up to +110° C	up to 40 Mpa (400 bar) up to 50 Mpa (500 bar)	up to 0,5 m/s	NBR fabric	15
	HS 225 HS 226	U - ring symetric	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethane	21
	HS 230	U - ring asymetric	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethane	21
	HS 231 *	U - ring modified with second lip	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethane	21
	HS 232	U - ring modified with second lip and anti-extrusion ring	-35 up to +110° C	up to 50 Mpa (500 bar)	up to 0,5 m/s	AU Polyurethane	21
	HS 233 *	U - ring with second lipp	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,8 m/s	AU Polyurethane	35
	HS 240	Compact U - ring	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethane	39
	HS 241 *	Compact U - ring modified with second lip	-35 up to +110° C	up to 40 Mpa (400 bar)	up to 0,5 m/s	AU Polyurethane	39
	HS 242	Compact U - ring with second lip and anti-extrusion ring	-35 up to +110° C	up to 50 Mpa (500 bar)	up to 0,5 m/s	AU Polyurethane	39
	HS 245 *	Compact U - ring with second lip and anti-extrusion ring	-35 up to +110° C	up to 50 Mpa (500 bar)	up to 0,5 m/s	AU Polyurethane	47
	HS 250	Single acting with O - ring	-40 up to +200° C	up to 40 Mpa (400 bar)	up to 15 m/s	PTFE Compound	51
	HS 255	Double acting with O - ring	-40 up to +200° C	up to 40 Mpa (400 bar)	up to 15 m/s	PTFE Compound	55
	HS 256 HS 257	Double acting with O - ring	-40 up to +200° C	up to 16 Mpa (160 bar)	up to 15 m/s	PTFE Compound	59
	HS 270 HS 271	Single acting with spring	-150 up to +225° C	up to 35 Mpa (350 bar)	up to 20 m/s	PTFE Compound	63

* Most popular types of standard

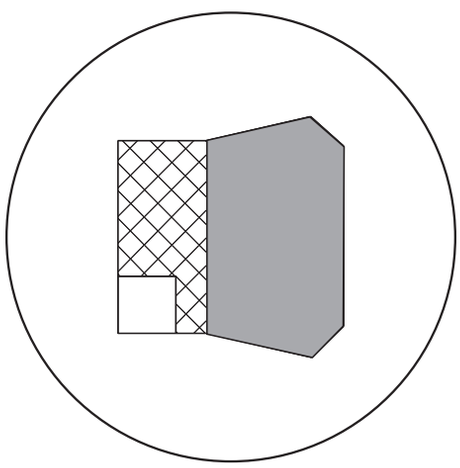
Regarding the great variety of practice applications please ask our customer service department personally for missing types or dimensions

Rod Seal
HS 200 / HS 201

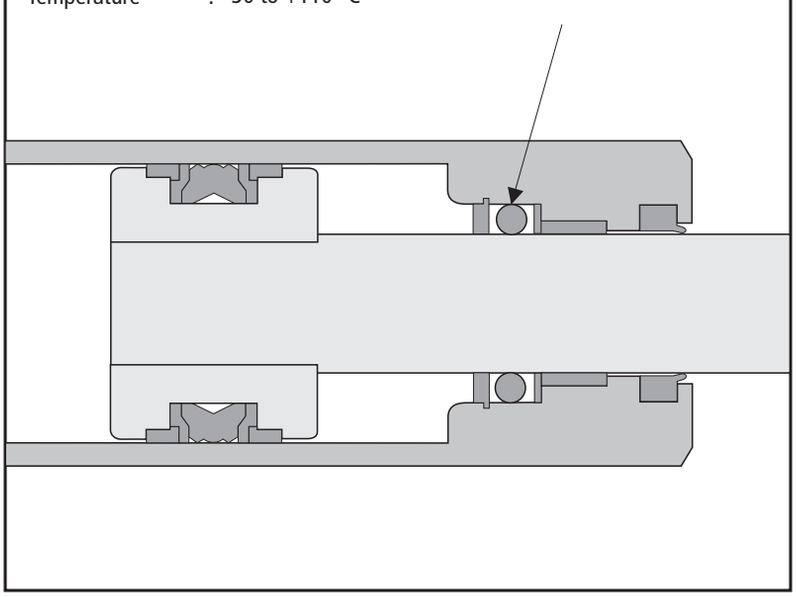


Compact rod seals in the HS 200 and HS 201 series are meant for a versatile range of hydraulics applications. The rubber-fabric combination has been successfully used for many years, specifically for Bio Oil. Radially pre-stressed sealing edges guarantee good sealing even with impact pressures and high pressure fluctuations in addition to low pressure zones.

The design HS 201 with thrust ring enhances operational security against split extrusion at high pressure surges.



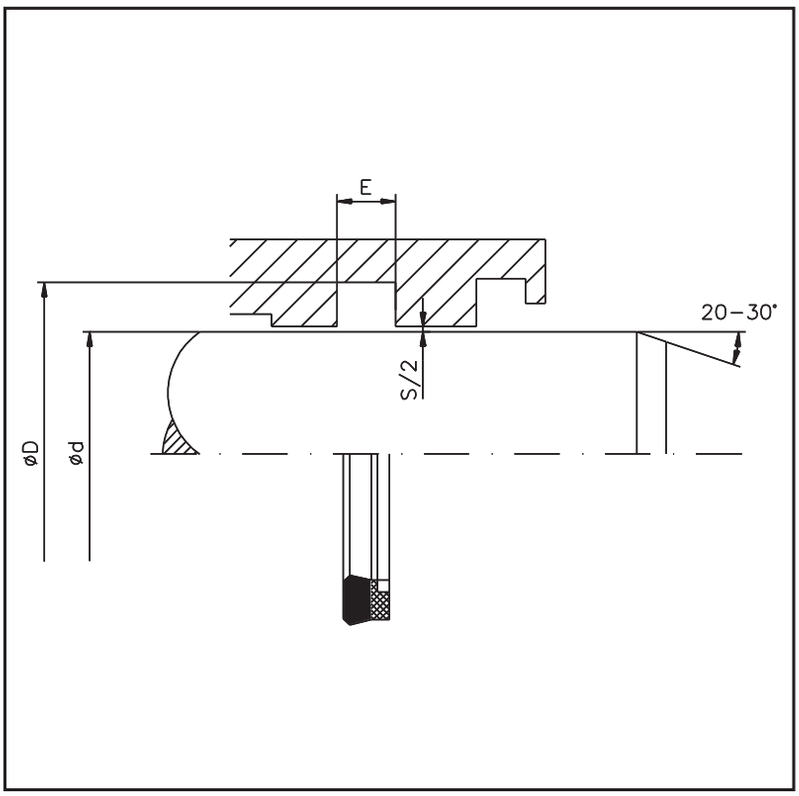
Material	:	NBR fiber reinforced
Operating pressure	:	HS 200 to 30 MPa (300 bar) HS 201 to 45 MPa (450 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-30 to +110 °C



Special Features:

- Lowest stick-slip tendency due to NBR fabric material combination
- Very good dynamic and static sealing
- Extrusion protection due to fabric reinforcement
- High pressure absorption possible due to separate thrust ring
- All dimensions (in HS 201 as 40 mm onward) in closed grooves
- Separate slide-in bands are available for the HS 201 due to larger permissible diameter clearances.

Rod Seal
HS 200 / HS 201



Limitations on Use

Operating pressure	:	HS 200 up to 30 MPa (300 bar) HS 201 up to 45 MPa (450 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-30 to +110 °C

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	4,0 µm	0,8 µm
Groove flanks	8,0 µm	1,8 µm

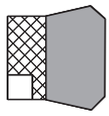
Diameter Clearance

Max. Diameter Clearance S [mm]	Max. Pressure [bar]	
	HS 200	HS 201
0,40	100	200
0,30	150	250
0,20	200	350
0,10	300	450

d f8/h9	**D** H10	**E** +0,2	**Part N°** HS 200	**Part N°** HS 201
5,00	12,00	6,50	HS200 0050-01-100	
6,00	13,00	6,50	HS200 0060-01-100	
8,00	15,00	6,50	HS200 0080-01-100	
12,00	19,00	6,50	HS200 0120-01-100	
12,00	23,00	7,50		HS201 0120-01-100
14,00	22,00	6,50	HS200 0140-01-100	
14,00	22,00	7,00	HS200 0140-02-100	
15,00	23,00	6,30	HS200 0150-01-100	
15,00	27,00	7,00	HS200 0150-02-100	HS201 0150-01-100
16,00	24,00	6,40	HS200 0160-01-100	
16,00	24,00	7,00	HS200 0160-02-100	HS201 0160-01-100
16,00	28,00	7,50		HS201 0160-02-100
18,00	25,00	6,00		HS201 0180-01-100
18,00	26,00	6,50	HS200 0180-01-100	
18,00	26,00	7,00	HS200 0180-02-100	
18,00	28,00	6,30	HS200 0180-03-100	HS201 0180-02-100
18,00	30,00	7,50		HS201 0180-03-100
20,00	27,00	6,50	HS200 0200-01-100	HS201 0200-01-100
20,00	28,00	6,30	HS200 0200-02-100	HS201 0200-02-100
20,00	28,00	7,00	HS200 0200-03-100	HS201 0200-03-100
20,00	30,00	6,50	HS200 0200-04-100	
20,00	30,00	8,50	HS200 0200-05-100	HS201 0200-04-100
20,00	32,00	9,50		HS201 0200-05-100
20,00	32,00	10,00		HS201 0200-06-100
20,00	35,00	11,50	HS200 0200-06-100	
22,00	30,00	7,00	HS200 0220-01-100	
22,00	34,00	9,50	HS200 0220-02-100	HS201 0220-01-100
22,00	35,00	10,00	HS200 0220-03-100	HS201 0220-02-100
24,00	34,00	6,50	HS200 0240-01-100	
25,00	33,00	6,40		HS201 0250-01-100
25,00	35,00	8,50		HS201 0250-02-100

d f8/h9	**D** H10	**E** +0,2	**Part N°** HS 200	**Part N°** HS 201
25,00	35,00	9,00	HS200 0250-01-100	HS201 0250-03-100
25,00	37,00	10,50		HS201 0250-04-100
25,00	38,00	10,00	HS200 0250-02-100	HS201 0250-05-100
25,00	38,00	10,50		HS201 0250-06-100
25,00	44,00	12,50	HS200 0250-03-100	
26,00	40,00	10,00	HS200 0260-01-100	
27,00	35,00	6,50	HS200 0270-01-100	
28,00	36,00	6,40	HS200 0280-01-100	
28,00	38,00	8,00	HS200 0280-02-100	HS201 0280-01-100
28,00	38,00	8,50		HS201 0280-02-100
28,00	40,00	9,50	HS200 0280-03-100	HS201 0280-03-100
28,00	41,00	10,00	HS200 0280-04-100	
30,00	38,00	6,40	HS200 0300-01-100	HS201 0300-01-100
30,00	40,00	7,50	HS200 0300-02-100	HS201 0300-02-100
30,00	40,00	9,00		HS201 0300-03-100
30,00	40,00	10,50		HS201 0300-04-100
30,00	40,00	11,00		HS201 0300-05-100
30,00	42,00	10,50		HS201 0300-06-100
30,00	45,00	9,00	HS200 0300-03-100	HS201 0300-07-100
30,00	45,00	9,50		HS201 0300-08-100
30,00	45,00	11,00		HS201 0300-09-100
30,00	50,00	14,50	HS200 0300-04-100	HS201 0300-10-100
32,00	40,00	6,40	HS200 0320-01-100	
32,00	40,00	9,00	HS200 0320-02-100	HS201 0320-01-100
32,00	42,00	8,50		HS201 0320-02-100
32,00	44,00	11,50	HS200 0320-03-100	HS201 0320-03-100
32,00	45,00	10,00		HS201 0320-04-100
32,00	46,00	10,50		HS201 0320-05-100
34,92	50,80	11,60	HS200 0349-01-100	
35,00	43,00	6,50	HS200 0350-01-100	HS201 0350-01-100
35,00	45,00	7,00		HS201 0350-02-100

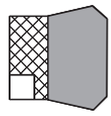
Rod Seal
HS 200 / HS 201



d f8/h9	**D** H10	**E** +0,2	**Part N°** HS 200	**Part N°** HS 201
35,00	45,00	8,00	HS200 0350-02-100	HS201 0350-03-100
35,00	45,00	10,50		HS201 0350-04-100
35,00	45,00	11,00		HS201 0350-05-100
35,00	45,00	13,50	HS200 0350-03-100	
35,00	50,00	11,00		HS201 0350-06-100
35,00	50,00	11,50	HS200 0350-04-100	
35,00	50,00	12,00		HS201 0350-07-100
36,00	43,00	6,50	HS200 0360-01-100	HS201 0360-01-100
36,00	44,00	6,50	HS200 0360-02-100	
36,00	46,00	8,50	HS200 0360-03-100	HS201 0360-02-100
36,00	48,00	9,50	HS200 0360-04-100	HS201 0360-03-100
37,72	50,80	9,00	HS200 0377-01-100	
38,00	50,00	9,50	HS200 0380-01-100	
38,00	55,00	11,00		HS201 0380-01-100
40,00	48,00	6,50		HS201 0400-01-100
40,00	50,00	8,00	HS200 0400-01-100	HS201 0400-02-100
40,00	50,00	10,00	HS200 0400-02-100	HS201 0400-03-100
40,00	50,00	10,50		HS201 0400-04-100
40,00	50,00	11,00		HS201 0400-05-100
40,00	50,00	13,50	HS200 0400-03-100	
40,00	52,00	9,50		HS201 0400-06-100
40,00	52,00	11,00		HS201 0400-07-100
40,00	55,00	7,50	HS200 0400-04-100	
40,00	55,00	8,00		HS201 0400-08-100
40,00	55,00	11,00	HS200 0400-05-100	HS201 0400-09-100
40,00	60,00	10,50		HS201 0400-10-100
40,00	60,00	11,00		HS201 0400-11-100
40,00	60,00	14,50		HS201 0400-12-100
42,00	50,00	6,50	HS200 0420-01-100	
43,00	53,00	9,00	HS200 0430-01-100	
44,45	60,32	11,60	HS200 0444-01-100	
45,00	52,00	10,50	HS200 0450-01-100	
45,00	53,00	6,50	HS200 0450-02-100	
45,00	53,00	8,50		HS201 0450-01-100
45,00	53,00	11,00		HS201 0450-02-100
45,00	55,00	8,00	HS200 0450-03-100	HS201 0450-03-100
45,00	55,00	11,00	HS200 0450-04-100	HS201 0450-04-100
45,00	60,00	10,50		HS201 0450-05-100
45,00	60,00	11,00		HS201 0450-06-100
45,00	63,00	11,00	HS200 0450-05-100	HS201 0450-07-100
45,00	65,00	14,50		HS201 0450-08-100
46,00	54,00	8,00	HS200 0460-01-100	
46,00	56,00	8,00	HS200 0460-02-100	
48,00	60,00	7,00	HS200 0480-01-100	
48,00	60,00	11,00		HS201 0480-01-100
50,00	58,00	12,50	HS200 0500-01-100	
50,00	60,00	8,00		HS201 0500-01-100
50,00	60,00	10,00		HS201 0500-02-100
50,00	60,00	10,50		HS201 0500-03-100
50,00	62,00	9,50		HS201 0500-04-100
50,00	62,00	10,00		HS201 0500-05-100
50,00	65,00	11,00		HS201 0500-06-100
50,00	70,00	14,50		HS201 0500-07-100
50,80	66,67	11,50	HS200 0508-01-100	
53,44	63,50	7,00	HS200 0534-01-100	
54,00	66,00	9,50	HS200 0540-01-100	
55,00	65,00	8,00	HS200 0550-01-100	HS201 0550-01-100
55,00	65,00	11,00	HS200 0550-02-100	HS201 0550-02-100
55,00	65,00	13,50		HS201 0550-03-100
55,00	70,00	10,50		HS201 0550-04-100
55,00	75,00	14,50		HS201 0550-05-100

d f8/h9	**D** H10	**E** +0,2	**Part N°** HS 200	**Part N°** HS 201
56,00	66,00	8,00	HS200 0560-01-100	
56,00	66,00	11,00		HS201 0560-01-100
56,00	71,00	10,50	HS200 0560-02-100	HS201 0560-02-100
56,00	71,00	12,50		HS201 0560-03-100
56,00	76,00	14,50	HS200 0560-03-100	
57,00	67,00	8,00	HS200 0570-01-100	
57,15	69,85	10,00	HS200 0571-01-100	
60,00	68,00	12,50	HS200 0600-01-100	
60,00	69,50	7,00	HS200 0600-02-100	
60,00	70,00	8,00	HS200 0600-03-100	
60,00	70,00	10,00		HS201 0600-01-100
60,00	70,00	11,00		HS201 0600-02-100
60,00	70,00	13,00		HS201 0600-03-100
60,00	72,00	10,00	HS200 0600-04-100	HS201 0600-04-100
60,00	75,00	13,00		HS201 0600-05-100
60,00	80,00	14,50		HS201 0600-06-100
61,00	69,00	8,50	HS200 0610-01-100	
63,00	75,00	11,00	HS200 0630-01-100	
63,00	78,00	10,50		HS201 0630-01-100
63,00	83,00	14,50	HS200 0630-02-100	HS201 0630-02-100
65,00	75,00	13,50	HS200 0650-01-100	HS201 0650-01-100
65,00	77,00	9,60	HS200 0650-02-100	
65,00	80,00	11,50		HS201 0650-02-100
65,00	80,00	12,50		HS201 0650-03-100
65,00	85,00	14,50		HS201 0650-04-100
68,00	79,40	10,00	HS200 0680-01-100	
70,00	80,00	8,00	HS200 0700-01-100	
70,00	80,00	13,00		HS201 0700-01-100
70,00	82,00	9,60	HS200 0700-02-100	
70,00	84,00	12,50	HS200 0700-03-100	HS201 0700-02-100
70,00	85,00	12,00		HS201 0700-03-100
70,00	85,00	12,50		HS201 0700-04-100
70,00	90,00	14,50		HS201 0700-05-100
72,00	84,00	6,00	HS200 0720-01-100	
75,00	85,00	8,00	HS200 0750-01-100	
75,00	85,00	12,50		HS201 0750-01-100
75,00	87,00	10,00	HS200 0750-02-100	
75,00	90,00	11,50	HS200 0750-03-100	HS201 0750-02-100
75,00	95,00	14,50		HS201 0750-03-100
76,00	84,00	8,50	HS200 0760-01-100	
77,00	87,00	8,00	HS200 0770-01-100	
78,00	90,00	12,00	HS200 0780-01-100	
78,00	90,00	12,50		HS201 0780-01-100
80,00	90,00	8,00	HS200 0800-01-100	
80,00	90,00	13,00		HS201 0800-01-100
80,00	92,00	9,60	HS200 0800-02-100	
80,00	95,00	10,50		HS201 0800-02-100
80,00	95,00	12,00		HS201 0800-03-100
80,00	95,00	13,00		HS201 0800-04-100
80,00	96,00	10,50	HS200 0800-03-100	HS201 0800-05-100
80,00	100,00	12,00		HS201 0800-06-100
80,00	100,00	12,50		HS201 0800-07-100
80,00	100,00	14,50		HS201 0800-08-100
84,00	94,00	8,00	HS200 0840-01-100	
85,00	95,00	8,00	HS200 0850-01-100	
85,00	97,00	9,60	HS200 0850-02-100	
85,00	100,00	12,00	HS200 0850-03-100	HS201 0850-01-100
85,00	100,00	12,50		HS201 0850-02-100
85,00	105,00	14,80		HS201 0850-03-100
85,72	104,77	14,80	HS200 0857-01-100	
88,90	107,95	12,70	HS200 0889-01-100	

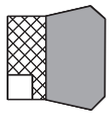
Rod Seal
HS 200 / HS 201



d f8/h9	**D** H10	**E** +0,2	**Part N°** HS 200	**Part N°** HS 201
88,90	114,30	19,50	HS200 0889-02-100	
90,00	100,00	10,50	HS200 0900-01-100	HS201 0900-01-100
90,00	102,00	9,60	HS200 0900-02-100	
90,00	105,00	12,50		HS201 0900-02-100
90,00	106,20	10,80	HS200 0900-03-100	
90,00	110,00	12,50		HS201 0900-03-100
90,00	110,00	14,50		HS201 0900-04-100
91,00	99,00	8,50	HS200 0910-01-100	
95,00	105,00	11,00	HS200 0950-01-100	HS201 0950-01-100
95,00	107,00	12,50	HS200 0950-02-100	
95,00	115,00	14,50		HS201 0950-02-100
95,25	114,30	13,50	HS200 0952-01-100	
96,00	105,00	11,50	HS200 0960-01-100	
98,00	107,50	7,00	HS200 0980-01-100	
100,00	113,00	13,50		HS201 1000-01-100
100,00	115,00	11,50	HS200 1000-01-100	
100,00	115,00	12,50		HS201 1000-02-100
100,00	120,00	12,00		HS201 1000-03-100
100,00	120,00	14,50		HS201 1000-04-100
100,00	125,00	13,30	HS200 1000-02-100	
104,00	120,00	11,20	HS200 1040-01-100	
105,00	115,00	11,00	HS200 1050-01-100	HS201 1050-01-100
105,00	120,00	12,00	HS200 1050-02-100	
105,00	120,00	13,50		HS201 1050-02-100
105,00	120,00	15,50		HS201 1050-03-100
105,00	125,00	12,50	HS200 1050-03-100	HS201 1050-04-100
107,95	133,35	19,50	HS200 1079-01-100	
110,00	120,00	11,00		HS201 1100-01-100
110,00	125,00	12,00		HS201 1100-02-100
110,00	130,00	10,50		HS201 1100-03-100
110,00	130,00	12,50		HS201 1100-04-100
110,00	130,00	15,50		HS201 1100-05-100
110,00	135,00	15,50	HS200 1100-01-100	HS201 1100-06-100
114,30	139,70	19,50	HS200 1143-01-100	
115,00	125,00	8,00	HS200 1150-01-100	
115,00	130,00	12,50	HS200 1150-02-100	
115,00	135,00	15,50		HS201 1150-01-100
115,00	135,00	16,00		HS201 1150-02-100
118,00	130,00	12,50	HS200 1180-01-100	
120,00	130,00	11,00		HS201 1200-01-100
120,00	130,00	12,50		HS201 1200-02-100
120,00	135,00	12,50	HS200 1200-01-100	
120,00	140,00	12,50		HS201 1200-03-100
120,00	140,00	16,00		HS201 1200-04-100
120,00	145,00	18,80	HS200 1200-02-100	
121,20	150,00	14,50		HS201 1212-01-100
125,00	140,00	12,50	HS200 1250-01-100	HS201 1250-01-100
125,00	150,00	14,50		HS201 1250-02-100
125,00	150,00	15,50		HS201 1250-03-100
130,00	140,00	8,00	HS200 1300-01-100	
130,00	145,00	9,50		HS201 1300-01-100
130,00	145,00	13,00		HS201 1300-02-100
130,00	145,00	15,00	HS200 1300-02-100	
130,00	150,00	16,00	HS200 1300-03-100	HS201 1300-03-100
130,00	155,00	18,80	HS200 1300-04-100	
135,00	150,00	9,50		HS201 1350-01-100

d f8/h9	**D** H10	**E** +0,2	**Part N°** HS 200	**Part N°** HS 201
140,00	150,00	10,00	HS200 1400-01-100	
140,00	150,00	11,00		HS201 1400-01-100
140,00	150,00	12,50		HS201 1400-02-100
140,00	155,00	13,00	HS200 1400-02-100	
140,00	160,00	12,50		HS201 1400-03-100
140,00	160,00	14,50		HS201 1400-04-100
140,00	160,00	16,00	HS200 1400-03-100	
140,00	165,00	15,50		HS201 1400-05-100
145,00	157,70	10,00	HS200 1450-01-100	
150,00	165,00	13,00		HS201 1500-01-100
150,00	170,00	14,50		HS201 1500-02-100
150,00	170,00	16,00	HS200 1500-01-100	
150,00	180,00	14,00	HS200 1500-02-100	
155,00	170,00	9,50	HS200 1550-01-100	
160,00	175,00	16,00	HS200 1600-01-100	
160,00	180,00	14,50		HS201 1600-01-100
160,00	180,00	16,00	HS200 1600-02-100	
160,00	185,00	15,50		HS201 1600-02-100
165,10	177,80	10,00	HS200 1651-01-100	
170,00	182,70	10,00	HS200 1700-01-100	HS201 1700-01-100
170,00	200,00	23,50	HS200 1700-02-100	
180,00	200,00	14,50		HS201 1800-01-100
180,00	200,00	16,00	HS200 1800-01-100	
180,00	210,00	20,50	HS200 1800-02-100	
184,15	215,90	25,80	HS200 1841-01-100	
188,00	203,00	13,00	HS200 1880-01-100	
190,00	210,00	14,50	HS200 1900-01-100	
190,00	210,00	15,00		HS201 1900-01-100
196,85	228,60	25,80	HS200 1968-01-100	
198,00	208,00	12,00	HS200 1980-01-100	
200,00	220,00	14,50		HS201 2000-01-100
200,00	220,00	16,00	HS200 2000-01-100	
200,00	230,00	19,50	HS200 2000-02-100	
210,00	240,00	22,50	HS200 2100-01-100	
214,00	229,00	13,00	HS200 2140-01-100	
220,00	245,00	15,50		HS201 2200-01-100
220,00	250,00	20,50	HS200 2200-01-100	
225,00	255,00	22,50	HS200 2250-01-100	
230,00	260,00	19,50	HS200 2300-01-100	
238,00	258,00	15,50	HS200 2380-01-100	
238,00	268,00	21,00	HS200 2380-02-100	
250,00	285,00	16,50	HS200 2500-01-100	
250,00	290,00	25,50	HS200 2500-01-100	
260,00	290,00	20,00	HS200 2600-01-100	
280,00	320,00	22,50	HS200 2800-01-100	
290,00	310,00	15,00	HS200 2900-01-100	
290,00	320,00	20,50	HS200 2900-02-100	
310,00	330,00	16,50	HS200 3100-01-100	
320,00	360,00	25,50	HS200 3200-01-100	
340,00	380,00	25,50		HS201 3400-01-100
350,00	385,00	25,50	HS200 3500-01-100	
360,00	400,00	33,80	HS200 3600-01-100	
381,00	419,10	38,80	HS200 3810-01-100	
400,00	425,00	19,00	HS200 4000-01-100	
535,00	580,00	40,00	HS200 5350-01-100	
558,80	609,60	45,50	HS200 5588-01-100	
630,00	678,00	60,00	HS200 6300-01-100	

These sizes also available in FPM. Futher sizes/measurements and emperial sizes available on request.



Example for ordering Rod Seal:

HS 201 0320 - 02 - 100 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Material
- HME internal code

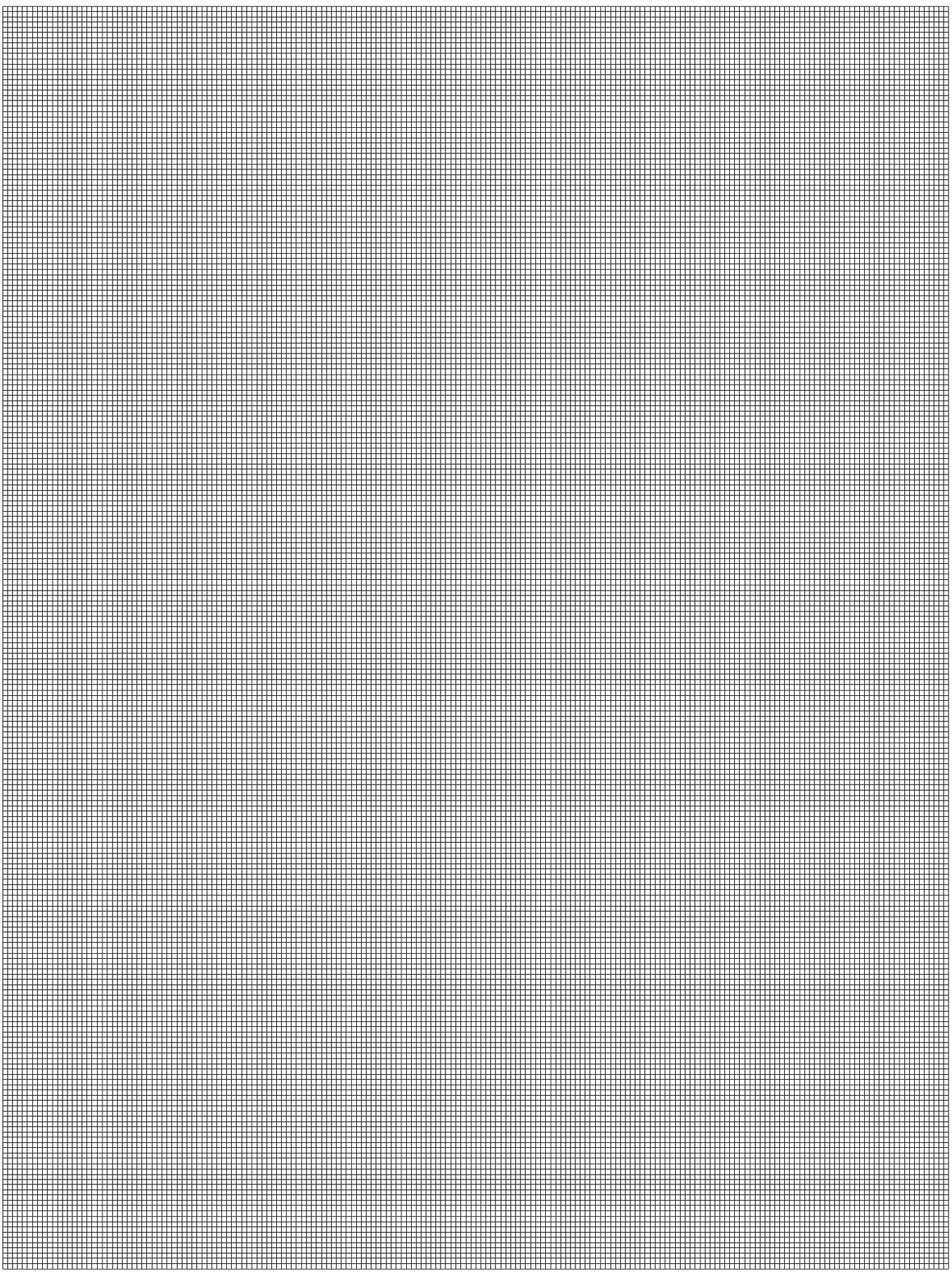
Material Key:

100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

NOTES

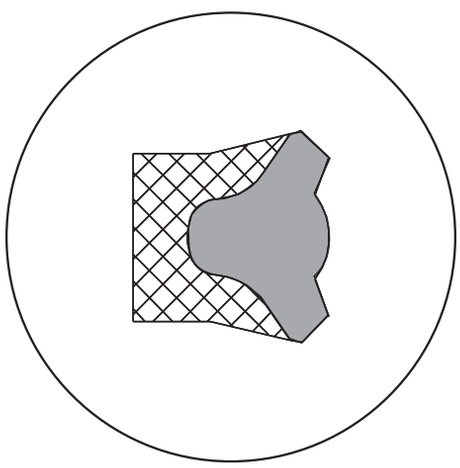


Rod Seal
HS 205

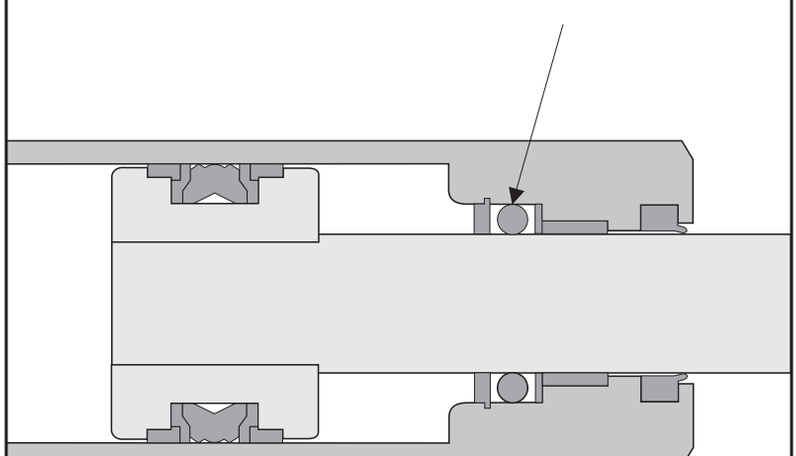
Fabric reinforced NBR rod seals from the HS 205 series have a very good anti-stick-slip tendency due to their special profile.

Special Features:

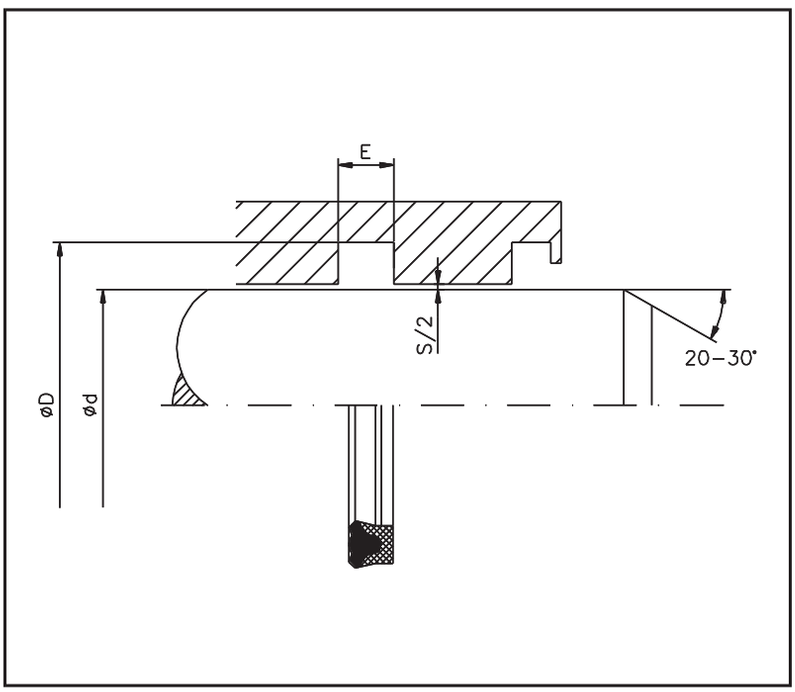
- Good dynamic and static sealing
- Long life due to high abrasion resistance
- Optimal service life and sealing due to special profile of sealing element
- Easy snap-on assembly possible in closed grooves
- Small mounting space
- All sizes available in quality FPM material



Material	:	NBR fiber reinforced
Operating pressure	:	up to 25 MPa (250 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-30 to +110 °C



Rod Seal
HS 205



Limitations on Use

Operating pressure	: up to 25 MPa (250 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	4,0 µm	0,8 µm
Groove flanks	8,0 µm	1,8 µm

Diameter Clearance

max. Diameter Clearancel S [mm]	Max. Pressure [mm]
0,40	100
0,30	150
0,20	250

d f8/h9	**D** H10	**E** +0,2	**Part N°**
5,00	12,00	6,40	HS205 0050-01-100
6,00	13,00	6,40	HS205 0060-01-100
8,00	15,00	6,40	HS205 0080-01-100
10,00	17,00	6,40	HS205 0100-01-100
12,00	19,00	6,40	HS205 0120-01-100
14,00	22,00	6,40	HS205 0140-01-100
15,00	23,00	6,40	HS205 0150-01-100
16,00	24,00	6,40	HS205 0160-01-100
18,00	26,00	6,40	HS205 0180-01-100
20,00	28,00	6,40	HS205 0200-01-100
22,00	30,00	6,40	HS205 0220-01-100
25,00	33,00	6,40	HS205 0250-01-100
28,00	36,00	6,40	HS205 0280-01-100
30,00	38,00	6,40	HS205 0300-01-100
32,00	40,00	6,40	HS205 0320-01-100
35,00	43,00	6,40	HS205 0350-01-100
36,00	44,00	6,40	HS205 0360-01-100
40,00	48,00	6,40	HS205 0400-01-100
42,00	50,00	6,40	HS205 0420-01-100
45,00	55,00	8,00	HS205 0450-01-100

d f8/h9	**D** H10	**E** +0,2	**Part N°**
50,00	60,00	8,00	HS205 0500-01-100
55,00	65,00	8,00	HS205 0550-01-100
56,00	66,00	8,00	HS205 0560-01-100
60,00	70,00	8,00	HS205 0600-01-100
63,00	75,00	9,60	HS205 0630-01-100
65,00	77,00	9,60	HS205 0650-01-100
70,00	82,00	9,60	HS205 0700-01-100
75,00	87,00	9,60	HS205 0750-01-100
80,00	92,00	9,60	HS205 0800-01-100
85,00	97,00	9,60	HS205 0850-01-100
90,00	102,00	9,60	HS205 0900-01-100
100,00	115,00	12,00	HS205 1000-01-100
110,00	125,00	12,00	HS205 1100-01-100
115,00	130,00	12,00	HS205 1150-01-100
125,00	140,00	12,00	HS205 1250-01-100
140,00	160,00	16,00	HS205 1400-01-100
150,00	170,00	16,00	HS205 1500-01-100
160,00	180,00	16,00	HS205 1600-01-100
180,00	200,00	16,00	HS205 1800-01-100
200,00	220,00	16,00	HS205 2000-01-100

These sizes also available in FPM. Futher sizes/measurements and emperial sizes available on request.

Example for ordering Rod Seal:

HS 205 0360 - 01 - 100 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Material
- HME internal code

Material Key:

100 - NBR
120 - FPM

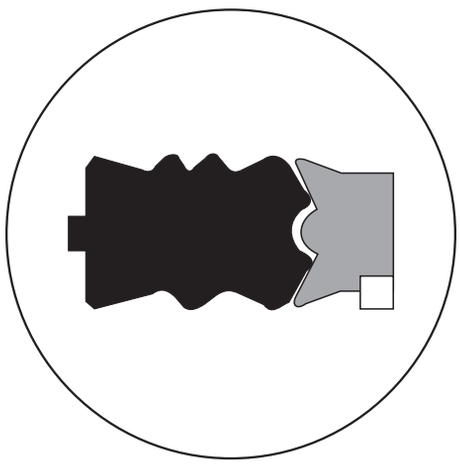
Issue 01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

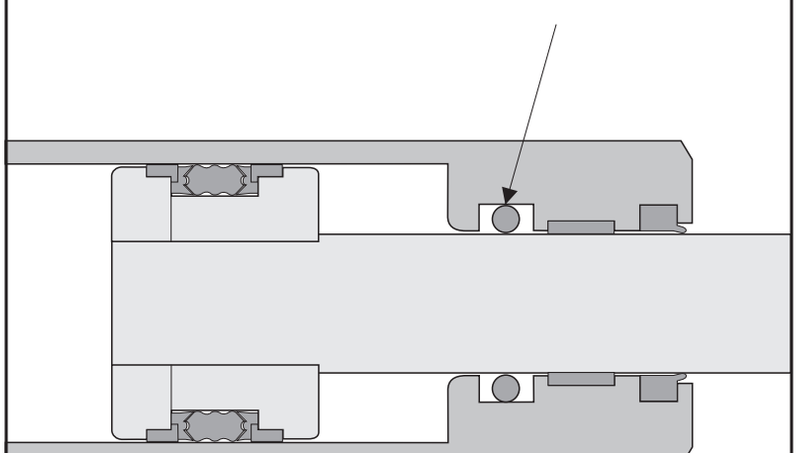
This type of rod seals as per HS 210 excels in most demanding applications such as mining or civil engineering machinery, and is practically a guarantee of operational safety in the most demanding conditions. HS 210 is the modern alternative to gland-seal sets..

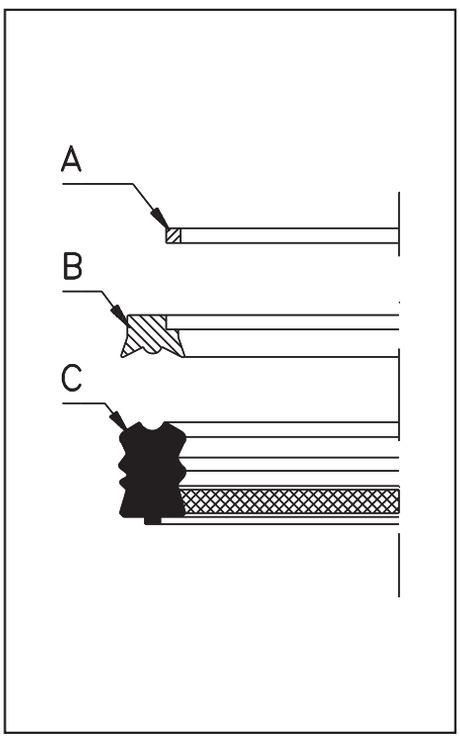
Special Features:

- Three part composition designed for use in undivided assembly space inter-lockable 60 mm onwards
- Multi-lipped sealing faces on static and dynamic sides
- Oil film breaker on dynamic side
- Modified anti-wear special NBR mixture
- Special radial pre-stressing of sealing edges is also suitable to lower pressures
- Very good sealing effect in case of axial or radial vibrations and frequent pressure variation
- Lowest stick-slip behaviour even at the highest of pressures
- The entire seal is also available as "splits" to enable snapping around the rods.



Material	: modified NBR
Operating pressure	: up to 70 MPa (700 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C





Thrust Ring (Part A)

Material: filledPOM

This anti extrusion ring from glass filled Polyacetal prevents split extrusion of the sealing element in the event of pressure surges.

Support Ring (Part B)

Material: Polyester Elastomer

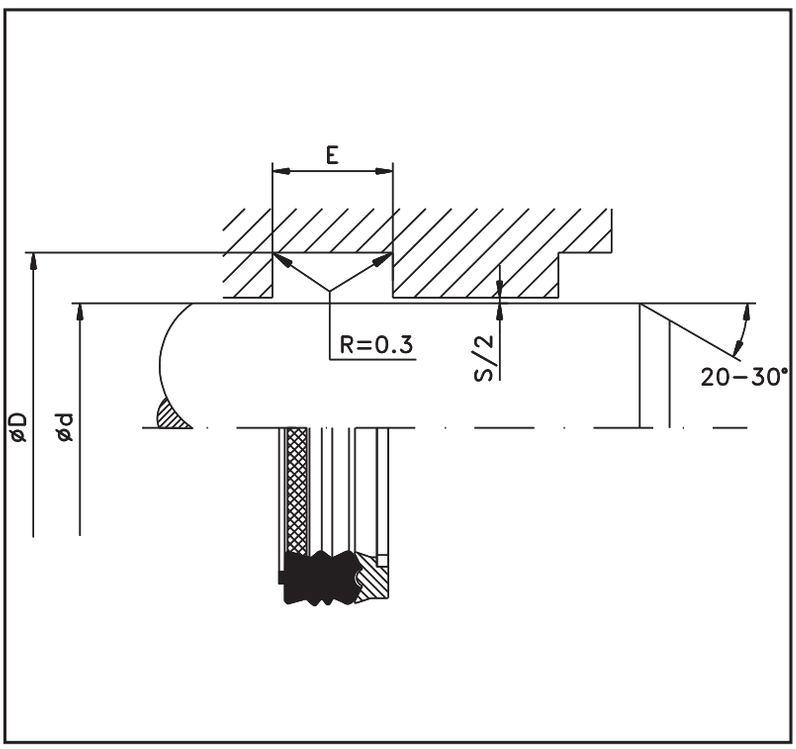
This support ring serves to absorb forces against the NBR sealing component. It causes uniform pressure distribution on the mounting flanks and its practical design works against split extrusion of the NBR sealing ring.

Elastomer Sealing Component (Part C)

Material: modified NBR approx. 80° Shore A

This sturdy sealing element from high grade anti wear NBR excels due to low compression strain as well as high tensile strength. Optimal networking of molecular structure is achieved through the special manufacturing process for the sealing element. Sealing face geometry reduces the so called "sticking" of seal to the rod surface. Assembly is easy (from d=60 mm onward).

At high shear forces, hard fabric slide rings must be provided for safety. These can be fabricated in almost all sizes.



Limitations on Use

Operating pressure	:	up to 70 MPa (700 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-30 to +110 °C

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	4,0 µm	0,8 µm
Groove flanks	8,0 µm	1,8 µm

Diameter Clearance

Max. Diameter Clearance S [mm]	Max. Pressure [bar]
0,30	250
0,25	400
0,20	500
0,10	700

d f8/h9	**D** H10	**E** +0,2	**Part N°**
15,00	27,00	20,00	HS210 0150-01-100
18,00	30,00	22,50	HS210 0180-01-100
20,00	33,00	20,00	HS210 0200-01-100
22,00	35,00	20,00	HS210 0220-01-100
25,00	37,00	22,50	HS210 0250-01-100
25,00	38,00	20,00	HS210 0250-02-100
28,00	41,00	20,00	HS210 0280-01-100
30,00	43,00	20,00	HS210 0300-01-100
32,00	47,00	22,50	HS210 0320-01-100
35,00	45,00	25,50	HS210 0350-01-100
35,00	47,00	22,50	HS210 0350-02-100
35,00	50,00	22,50	HS210 0350-03-100
36,00	51,00	22,50	HS210 0360-01-100
40,00	50,00	17,50	HS210 0400-01-100
40,00	52,00	22,50	HS210 0400-02-100
40,00	55,00	22,60	HS210 0400-03-100
40,00	60,00	30,00	HS210 0400-04-100
45,00	60,00	22,50	HS210 0450-01-100
45,00	65,00	28,00	HS210 0450-02-100
50,00	63,00	20,00	HS210 0500-01-100
50,00	65,00	22,50	HS210 0500-02-100
50,00	65,00	24,50	HS210 0500-03-100
50,00	70,00	30,00	HS210 0500-04-100
50,00	70,00	31,90	HS210 0500-05-100
55,00	70,00	22,50	HS210 0550-01-100
55,00	70,00	25,00	HS210 0550-02-100
55,00	75,00	30,00	HS210 0550-03-100
55,00	75,00	32,00	HS210 0550-04-100
56,00	71,00	25,00	HS210 0560-01-100
60,00	75,00	22,50	HS210 0600-01-100
60,00	75,00	25,00	HS210 0600-02-100
60,00	77,00	27,00	HS210 0600-03-100

d f8/h9	**D** H10	**E** +0,2	**Part N°**
60,00	80,00	32,00	HS210 0600-04-100
60,00	80,00	34,90	HS210 0600-05-100
63,00	78,00	22,50	HS210 0630-01-100
63,00	83,00	27,00	HS210 0630-02-100
63,00	83,00	29,00	HS210 0630-03-100
63,00	83,00	30,00	HS210 0630-04-100
65,00	85,00	29,00	HS210 0650-01-100
70,00	85,00	22,50	HS210 0700-01-100
70,00	85,00	25,00	HS210 0700-02-100
70,00	90,00	30,00	HS210 0700-03-100
70,00	90,00	31,90	HS210 0700-04-100
75,00	95,00	28,00	HS210 0750-01-100
75,00	95,00	30,00	HS210 0750-02-100
76,50	96,50	32,50	HS210 0765-01-100
80,00	95,00	22,50	HS210 0800-01-100
80,00	100,00	30,00	HS210 0800-02-100
85,00	100,00	22,50	HS210 0850-01-100
85,00	105,00	30,00	HS210 0850-02-100
90,00	105,00	22,50	HS210 0900-01-100
90,00	105,00	25,00	HS210 0900-02-100
90,00	105,00	33,50	HS210 0900-03-100
90,00	110,00	30,00	HS210 0900-04-100
90,00	110,00	32,50	HS210 0900-05-100
95,00	110,00	22,50	HS210 0950-01-100
95,00	115,00	28,00	HS210 0950-02-100
100,00	114,30	24,20	HS210 1000-01-100
100,00	120,00	30,00	HS210 1000-02-100
105,00	118,00	25,00	HS210 1050-01-100
105,00	120,00	34,00	HS210 1050-02-100
105,00	125,00	30,00	HS210 1050-03-100
110,00	125,00	22,50	HS210 1100-01-100
110,00	130,00	32,50	HS210 1100-02-100

d f8/h9	**D** H10	**E** +0,2	**Part N°**
115,00	130,00	22,50	HS210 1150-01-100
115,00	130,00	30,00	HS210 1150-02-100
118,00	133,00	22,50	HS210 1180-01-100
120,00	135,00	22,50	HS210 1200-01-100
120,00	140,00	30,00	HS210 1200-02-100
125,00	140,00	22,50	HS210 1250-01-100
125,00	145,00	29,60	HS210 1250-02-100
127,00	142,00	22,50	HS210 1270-01-100
130,00	150,00	28,00	HS210 1300-01-100
132,00	144,00	20,00	HS210 1320-01-100
135,00	150,00	22,50	HS210 1350-01-100
135,00	155,00	28,00	HS210 1350-02-100
140,00	155,00	22,50	HS210 1400-01-100
140,00	160,00	22,50	HS210 1400-02-100
140,00	160,00	28,00	HS210 1400-03-100
140,00	160,00	30,00	HS210 1400-04-100
145,00	165,00	22,50	HS210 1450-01-100
150,00	165,00	22,50	HS210 1500-01-100
150,00	170,00	28,00	HS210 1500-02-100
152,00	167,00	22,50	HS210 1520-01-100
155,00	175,00	22,50	HS210 1550-01-100
155,00	175,00	28,00	HS210 1550-02-100
158,50	180,00	28,00	HS210 1585-01-100
160,00	180,00	28,00	HS210 1600-01-100
160,00	180,00	30,00	HS210 1600-02-100
165,00	185,00	30,00	HS210 1650-01-100
170,00	185,00	22,50	HS210 1700-01-100
170,00	195,00	35,00	HS210 1700-02-100
175,00	195,00	22,50	HS210 1750-01-100
175,00	195,00	30,00	HS210 1750-02-100
175,00	200,00	35,00	HS210 1750-03-100
177,00	192,00	22,50	HS210 1770-01-100
180,00	195,00	22,50	HS210 1800-01-100

d f8/h9	**D** H10	**E** +0,2	**Part N°**
180,00	205,00	35,00	HS210 1800-02-100
185,00	200,00	22,50	HS210 1850-01-100
185,00	210,00	35,00	HS210 1850-02-100
187,00	202,00	22,50	HS210 1870-01-100
190,00	215,00	35,00	HS210 1900-01-100
192,00	210,00	22,50	HS210 1920-01-100
195,00	210,00	22,50	HS210 1950-01-100
200,00	215,00	22,50	HS210 2000-01-100
200,00	225,00	35,00	HS210 2000-02-100
207,00	225,00	22,50	HS210 2070-01-100
210,00	230,00	22,50	HS210 2100-01-100
212,00	230,00	22,50	HS210 2120-01-100
220,00	240,00	22,50	HS210 2200-01-100
220,00	245,00	35,00	HS210 2200-02-100
225,00	240,00	22,50	HS210 2250-01-100
225,00	250,00	35,00	HS210 2250-02-100
227,00	242,00	22,50	HS210 2270-01-100
230,00	250,00	22,50	HS210 2300-01-100
230,00	255,00	35,00	HS210 2300-02-100
235,00	255,00	22,50	HS210 2350-01-100
240,00	260,00	28,00	HS210 2400-01-100
240,00	265,00	35,00	HS210 2400-02-100
250,00	275,00	35,00	HS210 2500-01-100
260,00	280,00	22,50	HS210 2600-01-100
265,00	290,00	35,00	HS210 2650-01-100
275,00	300,00	35,00	HS210 2750-01-100
280,00	305,00	35,00	HS210 2800-01-100
283,00	303,00	22,50	HS210 2830-01-100
288,00	308,00	22,50	HS210 2880-01-100
300,00	325,00	35,00	HS210 3000-01-100
335,00	360,00	35,00	HS210 3350-01-100

These sizes also available in FPM.
Futher sizes/measurements and emperial sizes available on request.

Example for ordering Rod Seal:

HS 210 0500 - 01 - 100 - ...

Profile
Nominal diameter x 10
Cross-section
Material
HME internal code

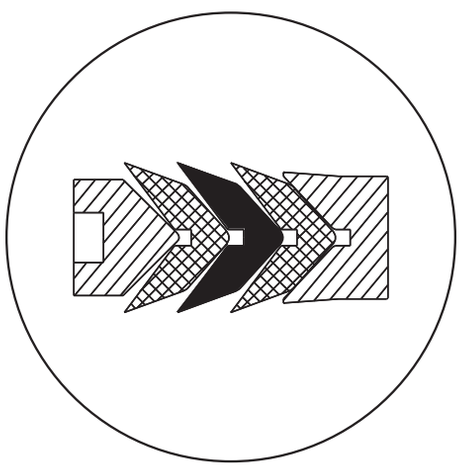
Material Key:

Sealing Part
100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

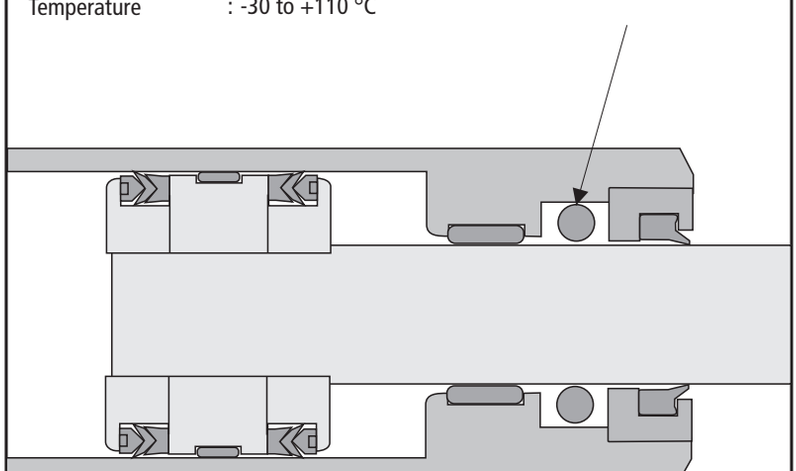
Gland seals excel in ultra-heavy duty application. Dirty pistons/rods and high temperatures are usually not a problem for them. Applications include light hydraulics where attack of dirt is involved, also heavy hydraulics such as presses and rollers.



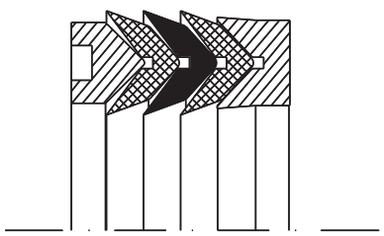
Special Features:

- Five part composition comprising of pressure ring, two fabric V-rings, one NBR V-ring and base ring
- Seven part composition comprising of one pressure ring, three fabric V-rings, two NBR V-rings and one base ring
- Highly wear resistant cotton used in V-rings
- Good results even with rod vibrations or stopping
- Can be safely used for larger tolerances
- Three or five fold sealing lips
- Sealing sets glands also available in FPM
- Many sizes interchangeable with compact seal type PSE
- Supply possible up to d = 950 mm
- Gland sealing sets also delivered in total fabric design

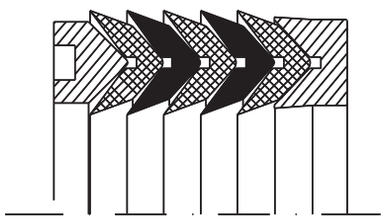
Material	: acrylic nitril rubber (NBR) fiber reinforced
Operating pressure	: HS 215 up to 40 MPa (400 bar) HS 217 up to 50 MPa (500 bar)
Velocity	: reciprocating to 0.5 m/s
Temperature	: -30 to +110 °C



HS 215



HS 217



Detailed Information

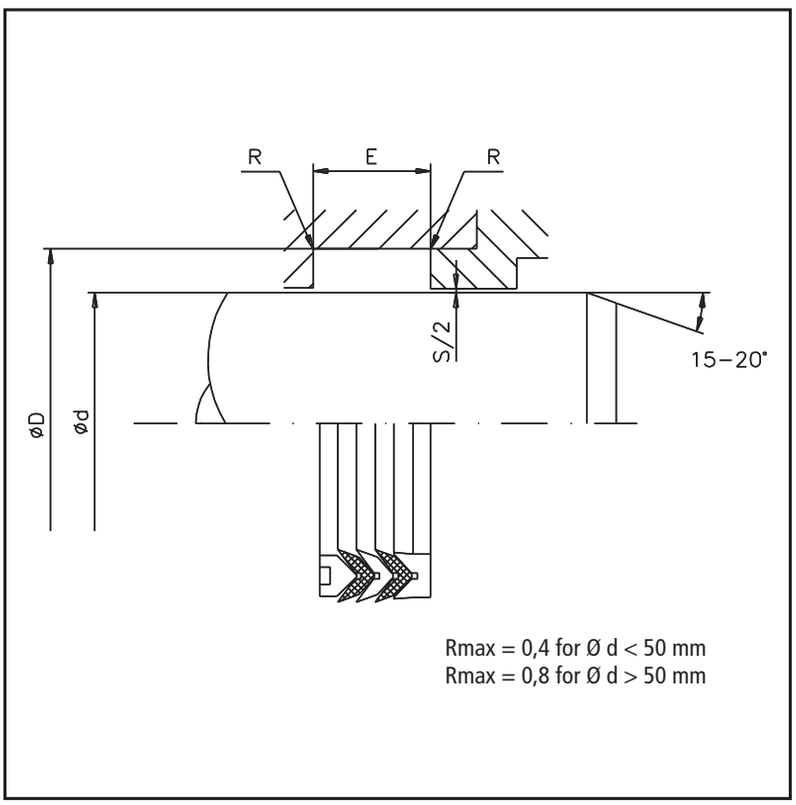
Adjoining drawing shows arrangement of various V-rings, i.e. thrust and pressure rings for the five part as well as for the seven part models.

It is also possible to increase the number of individual V-rings in fabric design or NBR if needed.

It must be noted, however, that, in contrast to the so called compact rod seals, friction between individual V-rings significantly increases under pressure.

This kind of rod seals also provide good results for water hydraulics.

All these designs and sizes are also available in FPM.



Rmax = 0,4 for Ø d < 50 mm
Rmax = 0,8 for Ø d > 50 mm

Limitations on Use

Operating pressure	: HS 215 up to 40 MPa (400 bar)
Velocity	HS 217 up to 50 MPa (500 bar)
Temperature	: reciprocating to 0.5 m/s
	: -30 to +110 °C (material NBR)
	- 10 to +150 °C (material FPM)

Media for Use

Mineral oil based hydraulic oils, flame resistant pressure media (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

Surfaces	Rz	Ra
Faces	1,2 µm	0,3 µm
Groove root	6,3 µm	1,8 µm
Groove flanks	10,0 µm	3,2 µm

Diameter Clearance

Max. Diameter Clearance S [mm]	Max. Pressure [bar] HS 215	HS 217
0,40	150	200
0,30	225	300
0,20	300	400
0,15	400	500

Construction HS 215

d f8/h9	**D** H10	**E** +0,3	**Part N°**
10,00	20,00	11,00	HS215 0100-01-100
12,00	25,00	14,35	HS215 0120-01-100
16,00	29,00	14,35	HS215 0160-01-100
18,00	31,00	14,32	HS215 0180-01-100
20,00	30,00	21,50	HS215 0200-01-100
20,00	31,50	17,50	HS215 0200-02-100
20,00	33,00	14,35	HS215 0200-03-100
22,00	32,00	18,15	HS215 0220-01-100
25,00	35,00	17,30	HS215 0250-01-100
25,00	40,00	19,85	HS215 0250-02-100
25,00	42,00	25,40	HS215 0250-03-100
26,00	45,00	29,40	HS215 0260-01-100
28,00	40,00	17,00	HS215 0280-01-100
28,00	44,00	17,65	HS215 0280-02-100
30,00	40,00	21,80	HS215 0300-01-100
30,00	42,00	20,00	HS215 0300-02-100
30,00	45,00	22,20	HS215 0300-03-100
30,00	50,00	29,37	HS215 0300-04-100
32,00	42,00	17,30	HS215 0320-01-100
35,00	45,00	21,78	HS215 0350-01-100
35,00	50,00	22,50	HS215 0350-02-100
36,00	52,00	17,60	HS215 0360-01-100
38,00	55,00	28,00	HS215 0380-01-100
40,00	50,00	17,30	HS215 0400-01-100
40,00	55,00	22,60	HS215 0400-02-100
40,00	55,00	26,20	HS215 0400-03-100
40,00	56,00	17,63	HS215 0400-04-100
40,00	60,00	30,00	HS215 0400-05-100
40,00	65,00	35,75	HS215 0400-06-100
45,00	55,00	17,50	HS215 0450-01-100

Construction HS 217

d f8/h9	**D** H10	**E** +0,3	**Part N°**
8,00	18,00	18,50	HS217 0080-01-100
10,00	20,00	18,50	HS217 0100-01-100
12,00	22,00	18,50	HS217 0120-01-100
14,00	24,00	18,50	HS217 0140-01-100
14,00	25,00	18,50	HS217 0140-02-100
16,00	26,00	18,50	HS217 0160-01-100
18,00	28,00	18,50	HS217 0180-01-100
20,00	30,00	18,50	HS217 0200-01-100
20,00	32,00	22,50	HS217 0200-02-100
22,00	32,00	18,50	HS217 0220-01-100
22,00	34,00	22,50	HS217 0220-02-100
25,00	37,00	22,50	HS217 0250-01-100
25,00	40,00	22,50	HS217 0250-02-100
28,00	40,00	22,50	HS217 0280-01-100
28,00	43,00	22,50	HS217 0280-02-100
30,00	42,00	22,50	HS217 0300-01-100
30,00	45,00	22,50	HS217 0300-02-100
32,00	44,00	22,50	HS217 0320-01-100
32,00	47,00	22,50	HS217 0320-02-100
35,00	47,00	22,50	HS217 0350-01-100
36,00	48,00	22,50	HS217 0360-01-100
36,00	51,00	22,50	HS217 0360-02-100
40,00	52,00	22,50	HS217 0400-01-100
40,00	55,00	22,50	HS217 0400-02-100
42,00	54,00	22,50	HS217 0420-01-100
42,00	57,00	22,50	HS217 0420-02-100
45,00	60,00	22,50	HS217 0450-01-100
45,00	65,00	27,50	HS217 0450-02-100
50,00	65,00	22,50	HS217 0500-01-100
50,00	70,00	30,00	HS217 0500-02-100

Construction HS 215

d f8/h9	**D** H10	**E** +0,3	**Part N°**
45,00	60,00	22,20	HS215 0450-02-100
45,00	65,00	28,00	HS215 0450-03-100
48,00	60,00	25,00	HS215 0480-01-100
48,00	62,00	22,22	HS215 0480-02-100
50,00	65,00	24,60	HS215 0500-01-100
50,00	70,00	21,95	HS215 0500-02-100
50,00	70,00	30,00	HS215 0500-03-100
51,00	69,00	28,00	HS215 0510-01-100
55,00	67,00	25,00	HS215 0550-01-100
55,00	70,00	26,50	HS215 0550-02-100
55,00	75,00	30,00	HS215 0550-03-100
55,00	75,00	38,50	HS215 0550-04-100
60,00	75,00	19,00	HS215 0600-01-100
60,00	76,00	29,00	HS215 0600-02-100
60,00	77,00	27,00	HS215 0600-03-100
60,00	80,00	32,15	HS215 0600-04-100
63,00	83,00	32,00	HS215 0630-01-100
63,50	80,00	28,00	HS215 0635-01-100
64,00	80,00	25,80	HS215 0640-01-100
65,00	77,00	21,00	HS215 0650-01-100
65,00	85,00	29,00	HS215 0650-02-100
70,00	85,00	28,00	HS215 0700-01-100
70,00	90,00	22,00	HS215 0700-02-100
70,00	90,00	30,00	HS215 0700-03-100
75,00	90,00	22,50	HS215 0750-01-100
75,00	95,00	30,00	HS215 0750-02-100
75,00	100,00	37,50	HS215 0750-03-100
80,00	95,00	17,50	HS215 0800-01-100
80,00	100,00	30,00	HS215 0800-02-100
90,00	105,00	31,75	HS215 0900-01-100
90,00	110,00	25,00	HS215 0900-02-100
90,00	110,00	26,90	HS215 0900-03-100
90,00	115,00	27,41	HS215 0900-04-100
95,00	110,00	24,00	HS215 0950-01-100
100,00	115,00	25,30	HS215 1000-01-100
100,00	120,00	28,00	HS215 1000-02-100
100,00	125,00	27,40	HS215 1000-03-100
100,00	125,00	36,90	HS215 1000-04-100
104,00	130,00	37,00	HS215 1040-01-100
105,00	120,00	25,00	HS215 1050-01-100
105,00	125,00	29,76	HS215 1050-02-100
110,00	130,00	30,00	HS215 1100-01-100
110,00	132,00	36,50	HS215 1100-02-100
114,00	130,00	25,80	HS215 1140-01-100
115,00	140,00	37,12	HS215 1150-01-100
120,00	140,00	30,00	HS215 1200-01-100
120,00	150,00	44,00	HS215 1200-02-100
125,00	145,00	29,60	HS215 1250-01-100
125,00	150,00	27,40	HS215 1250-02-100
130,00	150,00	29,76	HS215 1300-01-100
130,00	160,00	41,50	HS215 1300-02-100
135,00	155,00	30,55	HS215 1350-01-100
140,00	160,00	28,50	HS215 1400-01-100
140,00	165,00	41,95	HS215 1400-02-100
140,00	170,00	32,97	HS215 1400-03-100
145,00	170,00	38,10	HS215 1450-01-100
150,00	170,00	30,55	HS215 1500-01-100
150,00	180,00	40,00	HS215 1500-02-100
157,00	182,00	30,25	HS215 1570-01-100
160,00	190,00	33,00	HS215 1600-01-100

Construction HS 217

d f8/h9	**D** H10	**E** +0,3	**Part N°**
55,00	70,00	22,50	HS217 0550-01-100
56,00	71,00	22,50	HS217 0560-01-100
56,00	76,00	37,00	HS217 0560-02-100
60,00	75,00	22,50	HS217 0600-01-100
60,00	80,00	37,00	HS217 0600-02-100
63,00	78,00	22,50	HS217 0630-01-100
63,00	83,00	37,00	HS217 0630-02-100
65,00	80,00	22,50	HS217 0650-01-100
65,00	85,00	40,00	HS217 0650-02-100
70,00	85,00	22,50	HS217 0700-01-100
70,00	90,00	40,00	HS217 0700-02-100
75,00	90,00	22,50	HS217 0750-01-100
75,00	95,00	40,00	HS217 0750-02-100
80,00	95,00	22,50	HS217 0800-01-100
80,00	100,00	40,00	HS217 0800-02-100
85,00	100,00	22,50	HS217 0850-01-100
85,00	105,00	40,00	HS217 0850-02-100
90,00	105,00	22,50	HS217 0900-01-100
90,00	110,00	40,00	HS217 0900-02-100
100,00	115,00	30,00	HS217 1000-01-100
100,00	120,00	40,00	HS217 1000-02-100
110,00	125,00	30,00	HS217 1100-01-100
110,00	130,00	40,00	HS217 1100-02-100
115,00	130,00	30,00	HS217 1150-01-100
115,00	140,00	46,00	HS217 1150-02-100
125,00	140,00	34,00	HS217 1250-01-100
125,00	150,00	46,00	HS217 1250-02-100
140,00	155,00	34,00	HS217 1400-01-100
140,00	165,00	46,00	HS217 1400-02-100
150,00	170,00	40,00	HS217 1500-01-100
150,00	180,00	60,00	HS217 1500-02-100
160,00	180,00	40,00	HS217 1600-01-100
160,00	190,00	60,00	HS217 1600-02-100
170,00	200,00	60,00	HS217 1700-01-100
180,00	200,00	40,00	HS217 1800-01-100
180,00	210,00	60,00	HS217 1800-02-100
190,00	220,00	60,00	HS217 1900-01-100
200,00	220,00	40,00	HS217 2000-01-100
200,00	230,00	60,00	HS217 2000-02-100
220,00	250,00	66,00	HS217 2200-01-100
240,00	270,00	64,00	HS217 2400-01-100

Construction HS 215

d f8/h9	**D** H10	**E** +0,3	**Part N°**
170,00	195,00	37,50	HS215 1700-01-100
175,00	200,00	42,00	HS215 1750-01-100
180,00	210,00	33,00	HS215 1800-01-100
200,00	220,00	30,00	HS215 2000-01-100
200,00	230,00	32,97	HS215 2000-02-100
205,00	225,00	19,50	HS215 2050-01-100
210,00	240,00	42,10	HS215 2100-01-100
220,00	250,00	52,00	HS215 2200-01-100
224,00	254,00	32,97	HS215 2240-01-100
240,00	270,00	45,00	HS215 2400-01-100
250,00	280,00	33,00	HS215 2500-01-100
280,00	315,00	38,45	HS215 2800-01-100
290,00	320,00	50,80	HS215 2900-01-100
300,00	320,00	32,00	HS215 3000-01-100
310,00	330,00	30,00	HS215 3100-01-100
315,00	350,00	38,45	HS215 3150-01-100
320,00	360,00	54,00	HS215 3200-01-100
320,00	365,00	55,00	HS215 3200-02-100
340,00	380,00	60,00	HS215 3400-01-100
350,00	390,00	60,00	HS215 3500-01-100
360,00	400,00	60,00	HS215 3600-01-100
369,00	400,00	45,00	HS215 3690-01-100
400,00	440,00	54,00	HS215 4000-01-100
463,00	500,00	55,00	HS215 4630-01-100

These sizes also available in FPM.
Futher sizes/measurements and emperial sizes available on request.

Example for ordering Rod Seal:

HS 215 0500 - 01 - 100 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

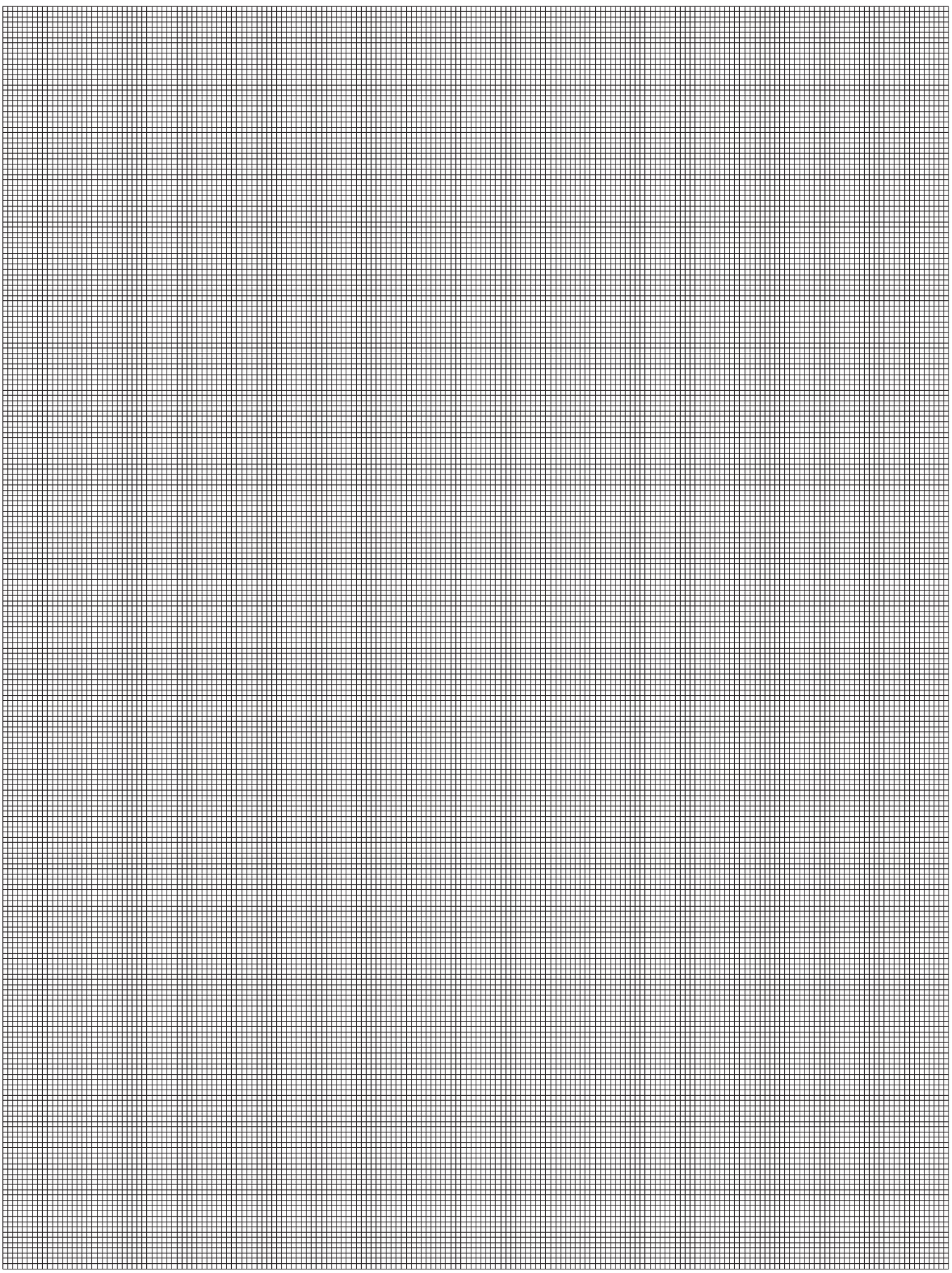
Material Key:

100 - NBR
120 - FPM

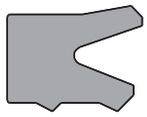
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

NOTES



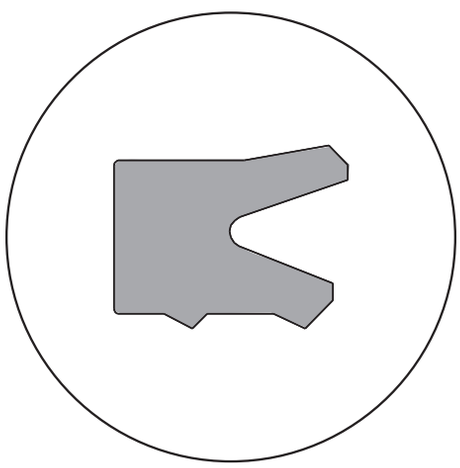
Rod Seal
HS 225 to HS 232



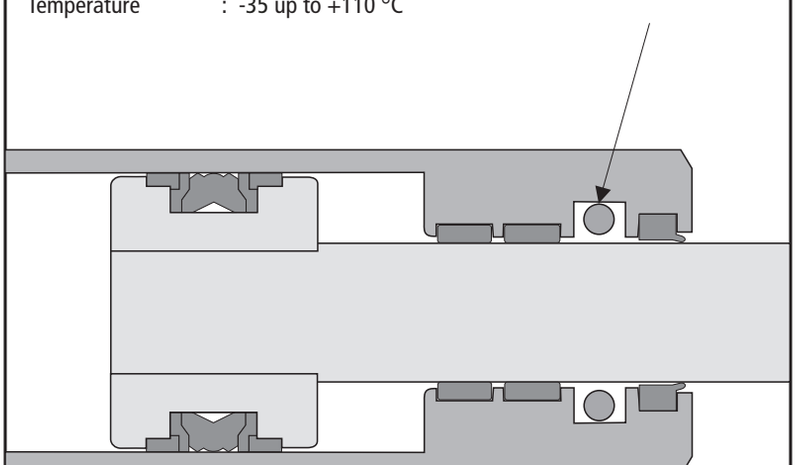
Polyurethane rod seals HS 225 to HS 232 and the associated groove rings have been used for years in light and intermediate duty applications providing very good sealing behaviour and significantly longer life compared to NBR materials.

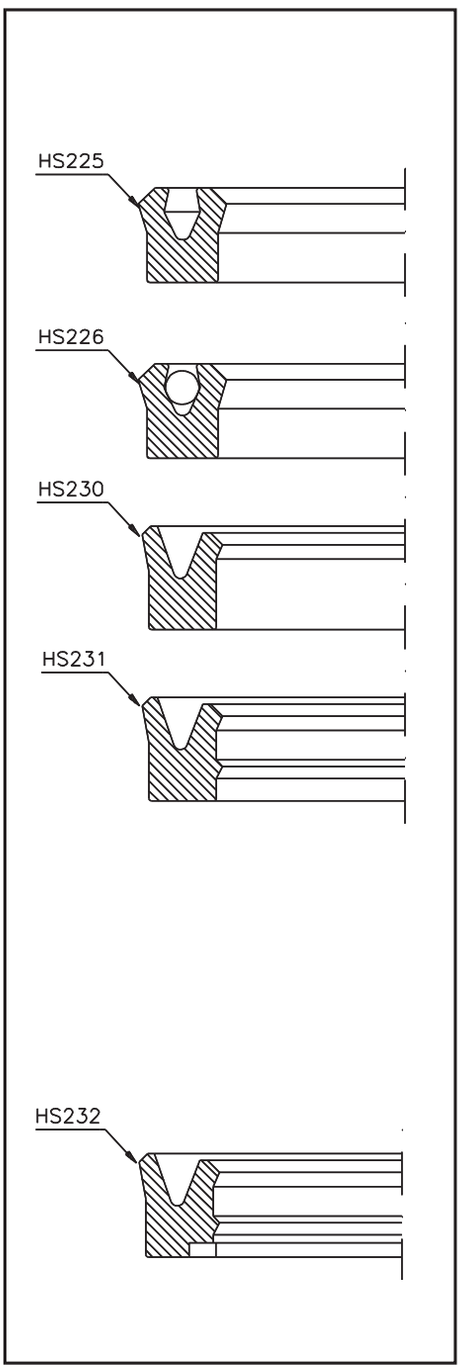
Special Features:

- Highly wear resistant modified Polyurethane mixture
- Quick and assured response event at lower temperature due to special profile design
- Simple snap assembly in closed grooves possible
- Improved anti/extrusion behaviour over NBR
- Larger splits are therefore possible
- Small mounting space
- Cost conveniant variants
- Extensive range of sizes available



Material	: Polyurethane	
Operational pressure	: HS 225, HS 230 and HS 231	up to 40 MPa (400 bar)
	HS 232	up to 50 MPa (500 bar)
Velocity	: reciprocating to 0,5 m/s	
Temperature	: -35 up to +110 °C	





Detailled information

Polyurethane rod seals of the HS 225 to HS 232 series exhibit faster response on accaount of the special groove to the pressure side.

HS 225

This relates to the so called standard type with symetric lip form and special groove depth. This profile can be used as piston as well as rod seal. Sealing lips are equally prestressed on inner and outer diameters. Many of the HS 225 models can also be supplied in the HS 226 design.

HS 226

This type is pre-stressed through an integrated NBR O-ring. This is advantageous at static low pressures and low temperatures. It can be used as piston seal and also as rod seal.

HS 230

Asymmetric sealing lips with reduction on the dynamic side significantly reduce friction. Pre-stressing of this seal is mainly done by increasing the outer diameter.

HS 231

The main difference when compared to all other types is the so called SECONDARY LIP on the dynamic side. The advantages are:

- Reduced fristion due to lubricant depositon
- Significant stick slip improvement
- Temperature reduction at the dynamic sealing lip, thus longer life
- Fixation of rod seal at external diameter, so no tilting at high velocity
- Low wear due to exact positioning within housing
- Exact stabilisation in housing at low temperatur

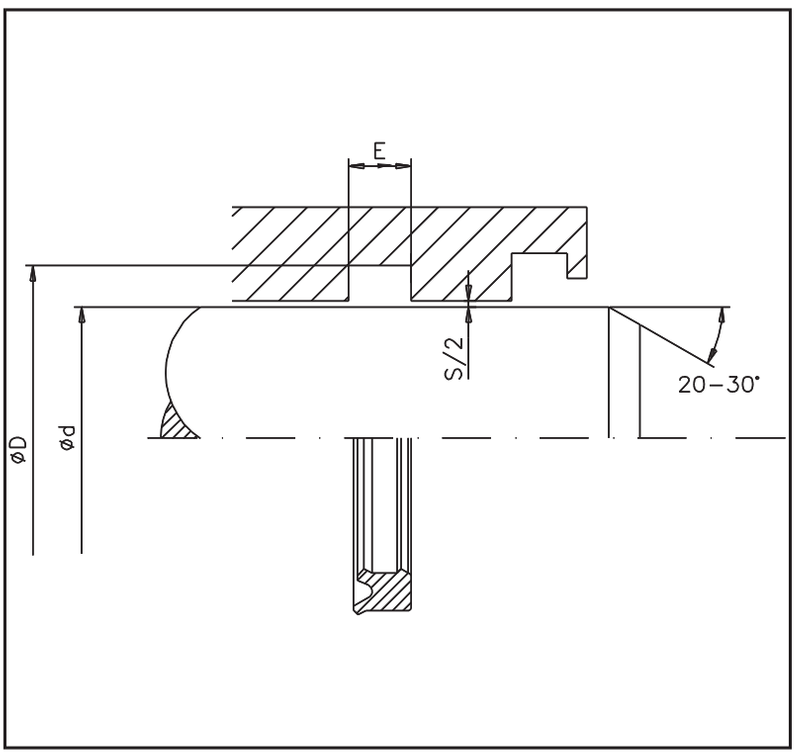
Type HS 231 mainly contains various sizes for telescopic cylinders

HS 232

All advantages mentioned for HS 231 are applicable to the variant type HS 232. The special advantage is that higher split sizes and pressures can operate through the aviailable extrusion ring.

All illustrated rod seals from HS 225 to HS 232 offer special advantages to the user. Please enquire with the technical services as to which variant is the best for your application. We welcome your enquires with respect to us with bio oils.

Rod Seal
HS 225 to HS 232



Limitations of Use

Operating pressure	: HS 225 - 231	up to 40 MPa (400 bar)
	HS 232	up to 50 MPa (500 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-35 bis +110 °C

Media for Use

Mineral oil based hydraulic oils. Bio Oils as well as flame resistant pressure fluids on request.

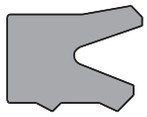
Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	6,3 µm	1,6 µm
Groove flanks	10,0 µm	3,2 µm

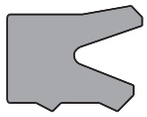
Diameter Clearance

Max. diameter clearance S [mm]	Max. pressure [bar] HS 225, HS 230, HS231	HS 232
0,80	100	200
0,60	150	250
0,40	200	350
0,20	400	500

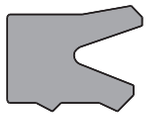
d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N°. HS 232**
3,00	9,00	5,00	HS225 0030-01-200			
4,00	10,00	4,50	HS225 0040-01-200			
4,00	10,00	5,00	HS225 0040-02-200			
4,50	11,00	5,50	HS225 0045-01-200			
4,50	12,50	5,00	HS225 0045-02-200			
5,00	12,00	5,50	HS225 0050-01-200			
5,00	12,00	7,00	HS225 0050-02-200			
5,00	12,00	6,50	HS225 0050-03-200			
5,00	12,70	9,00	HS225 0050-04-200			
5,00	17,00	10,00	HS225 0050-05-200			
6,00	12,00	4,50	HS225 0060-01-200			
6,00	12,00	5,80		HS230 0060-01-200		
6,00	12,00	6,00	HS225 0060-02-200			
6,00	12,00	6,50	HS225 0060-03-200			
6,00	12,70	6,50	HS225 0060-04-200			
6,00	**14,00**	**6,30**		**HS230 0060-02-200**		
6,00	15,00	9,00	HS225 0060-05-200			
6,35	11,11	5,50	HS225 0063-01-200			
7,00	14,00	4,20	HS225 0070-01-200			
7,00	15,00	8,00	HS225 0070-02-200			
8,00	12,00	3,50	HS225 0080-01-200			
8,00	14,00	7,00	HS225 0080-02-200			
8,00	14,40	10,50		HS230 0080-01-200		
8,00	15,00	6,30	HS225 0080-03-200			
8,00	15,00	9,00	HS225 0080-04-200			
8,00	**16,00**	**6,30**	**HS225 0080-05-200**	**HS230 0080-02-200**		
8,00	18,00	9,00		HS230 0080-03-200		
8,00	18,00	10,00	HS225 0080-06-200			
8,00	22,00	9,00	HS225 0080-07-200			
9,00	15,00	9,00	HS225 0090-01-200			
9,00	19,00	7,00	HS225 0090-02-200			
10,00	16,00	6,50	HS225 0100-01-200			



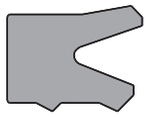
d f8/h9	D H10	E +0,2	Part N° HS 225	Part N° HS 230	Part N° HS 231	Part N° HS 232
10,00	18,00	6,00	HS225 0100-02-200			
10,00	**18,00**	**6,30**		**HS230 0100-01-200**		
10,00	18,00	7,00	HS225 0100-03-200			
10,00	18,00	9,00	HS225 0100-04-200			
10,00	**20,00**	**8,00**		**HS230 0100-02-200**		
10,00	20,00	9,00	HS225 0100-05-200	HS230 0100-03-200		
10,00	22,00	7,00	HS225 0100-06-200			
10,00	22,00	9,00	HS225 0100-07-200			
11,00	17,00	5,00	HS225 0110-01-200			
11,00	20,50	7,00	HS225 0110-02-200			
12,00	18,00	5,50	HS225 0120-01-200			
12,00	18,00	7,00	HS225 0120-02-200			
12,00	20,00	6,40		HS230 0120-01-200		
12,00	20,00	8,00	HS225 0120-03-200			
12,00	20,00	9,00	HS225 0120-04-200			
12,00	22,00	6,00	HS225 0120-05-200			
12,00	**22,00**	**8,00**	**HS225 0120-06-200**	**HS230 0120-02-200**		
12,00	22,00	9,00	HS225 0120-07-200	HS230 0120-03-200		
12,00	24,00	9,00	HS225 0120-08-200			
12,00	24,00	10,00	HS225 0120-09-200			
12,00	25,00	9,00	HS225 0120-10-200			
12,00	25,00	11,00	HS225 0120-11-200			
14,00	20,00	5,30	HS225 0140-01-200			
14,00	22,00	4,50	HS225 0140-02-200			
14,00	**22,00**	**6,30**		**HS230 0140-01-200**		
14,00	22,00	7,00	HS225 0140-03-200			
14,00	22,00	9,00	HS225 0140-04-200			
14,00	22,00	12,00	HS225 0140-05-200			
14,00	**24,00**	**8,00**		**HS230 0140-02-200**	**HS231 0140-01-200**	
14,00	24,00	9,00	HS225 0140-06-200	HS230 0140-03-200		
15,00	23,00	6,30		HS230 0150-01-200		
15,00	25,00	11,00	HS225 0150-01-200			
15,00	25,00	9,00	HS225 0150-02-200	HS230 0150-02-200		
15,00	26,00	8,00			HS231 0150-01-200	
15,00	27,00	7,00	HS225 0150-03-200			
15,00	28,00	11,00	HS225 0150-04-200			
15,40	25,50	7,40			HS231 0154-01-200	
16,00	20,60	3,60		HS230 0160-01-200		
16,00	22,00	4,50	HS225 0160-01-200			
16,00	22,00	5,50	HS225 0160-02-200			
16,00	24,00	6,00	HS225 0160-03-200			
16,00	24,00	6,30		HS230 0160-02-200		
16,00	24,00	7,00		HS230 0160-03-200		
16,00	24,00	10,00	HS225 0160-04-200			
16,00	26,00	6,00	HS225 0160-05-200			
16,00	**26,00**	**8,00**		**HS230 0160-04-200**		
16,00	26,00	9,00	HS225 0160-06-200	HS230 0160-05-200		
16,00	26,00	10,00		HS230 0160-06-200		
16,00	26,00	11,00	HS225 0160-07-200			
16,00	28,00	7,00	HS225 0160-08-200			
16,00	32,00	9,00	HS225 0160-09-200			
17,00	25,00	11,00	HS225 0170-01-200			
18,00	24,00	5,20		HS230 0180-01-200		
18,00	25,00	5,50	HS225 0180-01-200			
18,00	**26,00**	**6,30**		**HS230 0180-02-200**		
18,00	26,00	7,00			HS231 0180-01-200	
18,00	26,00	7,50	HS225 0180-02-200			
18,00	26,00	9,00	HS225 0180-03-200	HS230 0180-03-200	HS231 0180-02-200	
18,00	26,00	9,50	HS225 0180-04-200			
18,00	**28,00**	**8,00**		**HS230 0180-04-200**		
18,00	28,00	9,00	HS225 0180-05-200	HS230 0180-05-200		



d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N° HS 232**
18,00	30,00	9,00	HS225 0180-06-200			
19,00	25,00	7,00	HS225 0190-01-200			
19,50	27,50	9,00			HS231 0195-01-200	
20,00	26,00	5,50		HS230 0200-01-200		
20,00	**28,00**	**5,00**	**HS225 0200-01-200**			
20,00	**28,00**	**6,30**		**HS230 0200-02-200**		
20,00	28,00	7,00		HS230 0200-03-200		
20,00	28,00	8,00		HS230 0200-04-200		
20,00	28,00	9,00	HS225 0200-02-200			
20,00	29,00	5,50	HS225 0200-03-200			
20,00	**30,00**	**8,00**		**HS230 0200-05-200**		
20,00	30,00	9,00	HS225 0200-04-200	HS230 0200-06-200		
20,00	30,00	11,00	HS225 0200-05-200	HS230 0200-07-200		
20,00	32,00	8,50	HS225 0200-06-200			
20,00	35,00	11,00		HS230 0200-08-200		
20,00	35,00	13,00	HS225 0200-07-200			
20,00	39,00	11,00	HS225 0200-08-200			
20,00	40,00	11,00	HS225 0200-09-200			
20,00	40,00	13,00	HS225 0200-10-200			
22,00	28,00	9,00	HS225 0220-01-200			
22,00	**30,00**	**6,30**		**HS230 0220-01-200**		
22,00	30,00	7,00	HS225 0220-02-200		HS231 0220-01-200	
22,00	30,00	11,00	HS225 0220-03-200			
22,00	**32,00**	**8,00**		**HS230 0220-02-200**		
22,00	32,00	9,00	HS225 0220-04-200	HS230 0220-03-200		
22,00	32,00	11,00	HS225 0220-05-200	HS230 0220-04-200		
22,00	35,00	11,00	HS225 0220-06-200			
22,00	40,00	11,00	HS225 0220-07-200			
23,00	30,00	7,50	HS225 0230-01-200			
24,00	32,00	8,00	HS225 0240-01-200			
24,00	34,00	8,00		HS230 0240-01-200		
24,00	34,00	9,50		HS230 0240-02-200		
24,00	40,00	9,00	HS225 0240-02-200			
25,00	**33,00**	**6,30**		**HS230 0250-01-200**		
25,00	33,00	7,00		HS230 0250-02-200	HS231 0250-01-200	
25,00	33,00	7,50			HS231 0250-02-200	
25,00	33,00	8,00		HS230 0250-03-200	HS231 0250-03-200	
25,00	33,00	11,00		HS230 0250-04-200		
25,00	35,00	5,50	HS225 0250-01-200			
25,00	**35,00**	**8,00**		**HS230 0250-05-200**		
25,00	35,00	9,00	HS225 0250-02-200	HS230 0250-06-200		
25,00	35,00	11,00	HS225 0250-03-200	HS230 0250-07-200		
25,00	38,00	10,00		HS230 0250-08-200		
25,00	38,00	11,00	HS225 0250-04-200			
25,00	40,00	11,00	HS225 0250-05-200	HS230 0250-09-200		
28,00	35,00	5,50	HS225 0280-01-200			
28,00	36,00	6,30		HS230 0280-01-200		
28,00	36,00	7,50	HS225 0280-02-200			
28,00	**38,00**	**8,00**		**HS230 0280-02-200**		
28,00	38,00	8,50			HS231 0280-01-200	
28,00	38,00	9,00	HS225 0280-03-200	HS230 0280-03-200		
28,00	38,00	11,00		HS230 0280-04-200		
28,00	40,00	9,50		HS230 0280-05-200		
28,00	40,00	11,00	HS225 0280-04-200			
28,00	43,00	12,50		HS230 0280-06-200		
29,00	35,00	6,30		HS230 0290-01-200		
30,00	37,00	7,00	HS225 0300-01-200			
30,00	38,00	6,30		HS230 0300-01-200		
30,00	38,00	6,50	HS225 0300-02-200			
30,00	38,00	9,00		HS230 0300-02-200		
30,00	40,00	5,50	HS225 0300-03-200			

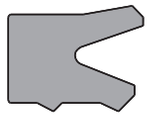


d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N° HS 232**
30,00	40,00	6,30		HS230 0300-03-200		
30,00	40,00	7,50			HS231 0300-01-200	
30,00	40,00	8,00		HS230 0300-04-200	HS231 0300-02-200	
30,00	40,00	10,50		HS230 0300-05-200		
30,00	40,00	11,00	HS225 0300-04-200	HS230 0300-06-200		
30,00	42,00	10,00	HS225 0300-05-200			
30,00	42,00	11,00	HS225 0300-06-200			
30,00	43,00	10,00		HS230 0300-07-200		
30,00	45,00	9,00		HS230 0300-08-200		
30,00	45,00	11,00	HS225 0300-07-200	HS230 0300-09-200		
30,00	50,00	11,00	HS225 0300-08-200			
30,00	50,00	13,00	HS225 0300-09-200			
32,00	40,00	6,00	HS225 0320-01-200			
32,00	40,00	6,30		HS230 0320-01-200		
32,00	40,00	7,70			HS231 0320-01-200	
32,00	40,00	9,00	HS225 0320-02-200	HS230 0320-02-200		
32,00	41,50	8,90			HS231 0320-02-200	
32,00	**42,00**	**8,00**		**HS230 0320-03-200**		
32,00	42,00	11,00	HS225 0320-03-200	HS230 0320-04-200		
32,00	42,53	9,00		HS230 0320-05-200		
32,00	45,00	10,50		HS230 0320-06-200		
32,00	45,00	11,00	HS225 0320-04-200			
32,00	47,00	11,00		HS230 0320-07-200		
32,00	50,00	13,00	HS225 0320-05-200			
33,00	43,00	11,00		HS230 0330-01-200		
34,00	45,00	8,00	HS225 0340-01-200			
34,00	45,00	10,00	HS225 0340-02-200			
34,00	50,00	15,00	HS225 0340-03-200			
35,00	43,00	6,30		HS230 0350-01-200		
35,00	43,00	8,00			HS231 0350-01-200	
35,00	43,00	9,00		HS230 0350-02-200		
35,00	45,00	8,00		HS230 0350-03-200		
35,00	45,00	9,00	HS225 0350-01-200			
35,00	45,00	11,00	HS225 0350-02-200	HS230 0350-04-200		
35,00	45,00	13,50		HS230 0350-05-200		
35,00	46,00	9,00		HS230 0350-06-200		
35,00	46,00	10,00		HS230 0350-07-200		
35,00	48,00	11,00	HS225 0350-03-200			
35,00	50,00	11,00	HS225 0350-04-200	HS230 0350-08-200		
35,00	55,00	11,00	HS225 0350-05-200			
35,00	55,00	13,00	HS225 0350-06-200	HS230 0350-09-200		
36,00	44,00	7,00			HS231 0360-01-200	
36,00	**46,00**	**8,00**	**HS225 0360-01-200**	**HS230 0360-01-200**		
36,00	46,00	8,50			HS231 0360-02-200	
36,00	46,00	11,00		HS230 0360-02-200		
36,00	48,00	8,00		HS230 0360-03-200		
36,00	48,00	9,00		HS230 0360-04-200		
36,00	51,00	11,00		HS230 0360-05-200		
36,00	51,00	12,50		HS230 0360-06-200		
36,00	70,00	11,00	HS225 0360-02-200			
37,00	45,00	6,30		HS230 0370-01-200		
38,00	44,50	5,30		HS230 0380-01-200		
38,00	45,00	5,50	HS225 0380-01-200	HS230 0380-02-200		
38,00	45,00	7,00		HS230 0380-03-200		
38,00	46,00	7,50	HS225 0380-02-200			
38,00	50,00	10,00	HS225 0380-03-200			
38,00	55,00	11,00	HS225 0380-04-200			
38,00	58,00	11,00	HS225 0380-05-200			
40,00	48,00	6,30		HS230 0400-01-200		
40,00	48,00	12,00	HS225 0400-01-200			
40,00	49,52	10,50		HS230 0400-02-200	HS231 0400-01-200	

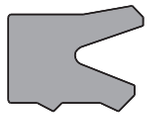


d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N° HS 232**
40,00	50,00	7,50	HS225 0400-02-200			
40,00	**50,00**	**8,00**		**HS230 0400-03-200**	**HS231 0400-02-200**	
40,00	50,00	9,00	HS225 0400-03-200			
40,00	50,00	11,00	HS225 0400-04-200	HS230 0400-04-200		
40,00	50,00	13,50		HS230 0400-05-200		
40,00	52,00	9,00		HS230 0400-06-200		
40,00	55,00	11,00	HS225 0400-05-200	HS230 0400-07-200	HS231 0400-03-200	HS232 0400-01-200
40,00	**55,00**	**12,50**		**HS230 0400-08-200**		
40,00	56,00	11,00	HS225 0400-06-200			
40,00	60,00	11,00	HS225 0400-07-200			
40,00	60,00	13,00		HS230 0400-09-200		
40,00	60,00	14,00	HS225 0400-08-200			
40,00	60,00	19,00	HS225 0400-09-200			
40,00	65,00	13,00	HS225 0400-10-200			
40,00	70,00	16,00	HS225 0400-11-200			
40,00	75,00	11,00	HS225 0400-12-200			
42,00	50,00	9,00	HS225 0420-01-200			
42,00	50,00	12,50			HS231 0420-01-200	
42,00	51,00	11,00				HS232 0420-01-200
42,00	52,00	10,00	HS225 0420-02-200			
42,00	53,00	10,00			HS231 0420-02-200	
42,00	62,00	11,00		HS230 0420-01-200		
42,00	62,00	13,00	HS225 0420-03-200	HS230 0420-02-200		
45,00	52,00	14,00				HS232 0450-01-200
45,00	53,00	6,30		HS230 0450-01-200		
45,00	53,00	11,00		HS230 0450-02-200		
45,00	53,00	12,50			HS231 0450-01-200	
45,00	53,00	13,00		HS230 0450-03-200		
45,00	55,00	7,50	HS225 0450-01-200			
45,00	**55,00**	**8,00**		**HS230 0450-04-200**		
45,00	55,00	11,00	HS225 0450-02-200	HS230 0450-05-200		
45,00	55,00	12,50			HS231 0450-02-200	
45,00	57,70	10,50		HS230 0450-06-200	HS231 0450-03-200	
45,00	58,00	10,00		HS230 0450-07-200		
45,00	60,00	11,00	HS225 0450-03-200	HS230 0450-08-200		
45,00	**60,00**	**12,50**		**HS230 0450-09-200**		
45,00	63,00	11,00	HS225 0450-04-200			
45,00	65,00	11,00	HS225 0450-05-200	HS230 0450-10-200		
45,00	65,00	13,00	HS225 0450-06-200	HS230 0450-11-200		
45,00	65,00	14,50		HS230 0450-12-200		
46,00	56,00	8,00		HS230 0460-01-200		
48,00	56,00	12,50			HS231 0480-01-200	
48,00	56,00	13,00			HS231 0480-02-200	
48,00	58,00	11,00	HS225 0480-01-200			
50,00	57,00	11,00			HS231 0500-01-200	
50,00	58,00	12,50			HS231 0500-02-200	
50,00	59,00	11,00				HS232 0500-01-200
50,00	**60,00**	**8,00**		**HS230 0500-01-200**		**HS232 0500-02-200**
50,00	60,00	11,00	HS225 0500-01-200	HS230 0500-02-200		
50,00	60,00	12,00	HS225 0500-02-200			
50,00	60,00	13,00		HS230 0500-03-200		
50,00	62,00	9,00		HS230 0500-04-200		
50,00	62,00	10,00	HS225 0500-03-200			
50,00	62,70	10,50		HS230 0500-05-200	HS231 0500-03-200	
50,00	63,00	7,00	HS225 0500-04-200			
50,00	65,00	11,00	HS225 0500-05-200	HS230 0500-06-200	HS231 0500-04-200	HS232 0500-03-200
50,00	**65,00**	**12,50**		**HS230 0500-07-200**		
50,00	65,00	16,50			HS231 0500-05-200	
50,00	68,00	10,00		HS230 0500-08-200		
50,00	70,00	11,00	HS225 0500-06-200	HS230 0500-09-200		
50,00	70,00	13,00	HS225 0500-07-200	HS230 0500-10-200		HS232 0500-04-200

Rod Seal
HS 225 to HS 232



d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N° HS 232**
50,00	70,00	14,50		HS230 0500-11-200		
50,00	70,00	15,00			HS231 0500-06-200	
50,00	70,00	19,00	HS225 0500-08-200			
52,00	62,00	13,00	HS225 0520-01-200			
53,00	63,00	7,50	HS225 0530-01-200			
55,00	62,50	10,00			HS231 0550-01-200	
55,00	63,00	12,50			HS231 0550-02-200	
55,00	63,00	13,00		HS230 0550-01-200		
55,00	65,00	8,00		HS230 0550-02-200		
55,00	65,00	9,50			HS231 0550-03-200	
55,00	65,00	11,00	HS225 0550-01-200	HS230 0550-03-200	HS231 0550-04-200	
55,00	65,00	13,00	HS225 0550-02-200	HS230 0550-04-200		
55,00	65,00	14,50		HS230 0550-05-200		
55,00	67,00	11,00		HS230 0550-06-200		
55,00	70,00	11,00		HS230 0550-07-200		
55,00	70,00	13,00	HS225 0550-03-200	HS230 0550-08-200		
55,00	75,00	13,00	HS225 0550-04-200	HS230 0550-09-200		
55,00	75,00	14,50		HS230 0550-10-200		
55,00	80,00	13,00	HS225 0550-05-200			
56,00	66,00	11,00		HS230 0560-01-200		
56,00	71,00	11,00		HS230 0560-02-200		
56,00	**71,00**	**12,50**		**HS230 0560-03-200**		
56,00	76,00	13,00		HS230 0560-04-200		
56,00	76,00	14,50		HS230 0560-05-200		
56,00	**76,00**	**16,00**		**HS230 0560-06-200**		
57,10	66,70	10,50			HS231 0571-01-200	
57,10	69,80	10,50			HS231 0571-02-200	
58,00	68,00	12,50			HS231 0580-01-200	
60,00	68,00	12,50			HS231 0600-01-200	
60,00	68,00	14,00				HS232 0600-01-200
60,00	69,00	11,00				HS232 0600-02-200
60,00	70,00	8,00		HS230 0600-01-200		
60,00	70,00	9,00	HS225 0600-01-200			
60,00	70,00	11,00	HS225 0600-02-200	HS230 0600-02-200		
60,00	70,00	12,50			HS231 0600-02-200	
60,00	70,00	13,00	HS225 0600-03-200	HS230 0600-03-200	HS231 0600-03-200	
60,00	72,00	9,00		HS230 0600-04-200		
60,00	72,00	10,00		HS230 0600-05-200		
60,00	75,00	11,00	HS225 0600-04-200	HS230 0600-06-200	HS231 0600-04-200	
60,00	75,00	13,00	HS225 0600-05-200	HS230 0600-07-200		
60,00	75,00	16,50			HS231 0600-05-200	
60,00	77,00	12,00		HS230 0600-08-200		
60,00	80,00	11,00	HS225 0600-06-200			
60,00	80,00	13,00	HS225 0600-07-200	HS230 0600-09-200		HS232 0600-03-200
60,00	80,00	14,50		HS230 0600-10-200		
60,00	80,00	19,00	HS225 0600-08-200			
60,00	85,00	13,50	HS225 0600-09-200			
60,00	90,00	16,00	HS225 0600-10-200			
61,00	69,00	8,50		HS230 0610-01-200		
62,00	74,00	14,00		HS230 0620-01-200		
63,00	73,00	11,00		HS230 0630-01-200		
63,00	73,00	13,00		HS230 0630-02-200		
63,00	75,00	11,00	HS225 0630-01-200		HS231 0630-01-200	
63,00	78,00	11,00	HS225 0630-02-200	HS230 0630-03-200		
63,00	**78,00**	**12,50**		**HS230 0630-04-200**		
63,00	78,00	13,00		HS230 0630-05-200		
63,00	83,00	13,00		HS230 0630-06-200		HS232 0630-01-200
63,00	83,00	14,50		HS230 0630-07-200	HS231 0630-02-200	
63,00	**83,00**	**16,00**	**HS225 0630-03-200**	**HS230 0630-08-200**		
63,50	76,20	10,50			HS231 0635-01-200	
65,00	73,00	12,50			HS231 0650-01-200	



d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N° HS 232**
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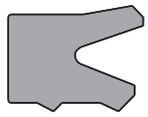
65,00	75,00	11,00		HS230 0650-01-200	HS231 0650-02-200	
65,00	75,00	13,00	HS225 0650-01-200	HS230 0650-02-200		
65,00	75,00	14,50		HS230 0650-03-200		
65,00	77,00	10,00		HS230 0650-04-200		
65,00	77,70	10,50			HS231 0650-03-200	
65,00	80,00	11,00		HS230 0650-05-200		
65,00	80,00	12,00	HS225 0650-02-200			
65,00	80,00	13,00	HS225 0650-03-200	HS230 0650-06-200		
65,00	85,00	11,00	HS225 0650-04-200			
65,00	85,00	13,00	HS225 0650-05-200	HS230 0650-07-200		
65,00	85,00	14,50		HS230 0650-08-200		
66,00	76,00	9,00	HS225 0660-01-200			
66,00	80,00	11,00	HS225 0660-02-200		HS231 0660-01-200	
66,00	80,00	14,00	HS225 0660-03-200			
67,00	75,00	12,50			HS231 0670-01-200	
67,00	77,00	11,00	HS225 0670-01-200			
67,00	77,00	13,00	HS225 0670-02-200			
69,80	82,50	10,50			HS231 0698-01-200	
69,85	88,90	12,70	HS225 0698-01-200			
70,00	77,50	10,00			HS231 0700-01-200	
70,00	79,00	14,00			HS231 0700-03-200	
70,00	80,00	6,00	HS225 0700-01-200			
70,00	80,00	6,50		HS230 0700-01-200		
70,00	80,00	8,00		HS230 0700-02-200		HS232 0700-01-200
70,00	80,00	9,00	HS225 0700-02-200			
70,00	80,00	11,00	HS225 0700-03-200	HS230 0700-03-200		
70,00	80,00	12,50			HS231 0700-04-200	
70,00	80,00	13,00	HS225 0700-04-200	HS230 0700-04-200	HS231 0700-05-200	
70,00	85,00	11,00		HS230 0700-05-200		
70,00	**85,00**	**12,50**		**HS230 0700-06-200**	**HS231 0700-06-200**	**HS232 0700-02-200**
70,00	85,00	13,00	HS225 0700-05-200	HS230 0700-07-200		
70,00	90,00	13,00	HS225 0700-06-200	HS230 0700-08-200	HS231 0700-07-200	
70,00	90,00	14,50		HS230 0700-09-200		
70,00	**90,00**	**16,00**		**HS230 0700-10-200**		
70,00	90,00	19,00	HS225 0700-07-200			
70,00	95,00	13,00	HS225 0700-08-200			
73,00	82,40	7,80			HS231 0730-01-200	
73,00	82,50	8,00		HS230 0730-01-200		
75,00	83,00	12,50			HS231 0750-01-200	
75,00	85,00	8,00		HS230 0750-01-200		
75,00	85,00	9,50			HS231 0750-02-200	
75,00	85,00	11,00			HS231 0750-03-200	
75,00	85,00	12,50			HS231 0750-04-200	
75,00	85,00	13,00	HS225 0750-01-200	HS230 0750-02-200		
75,00	90,00	8,50	HS225 0750-02-200			
75,00	90,00	11,00	HS225 0750-03-200	HS230 0750-03-200		
75,00	90,00	13,00	HS225 0750-04-200	HS230 0750-04-200		
75,00	95,00	13,00	HS225 0750-05-200	HS230 0750-05-200		
75,00	95,00	14,50		HS230 0750-06-200		
76,00	84,00	8,50		HS230 0760-01-200		
76,20	88,90	10,50			HS231 0762-01-200	
77,00	86,00	15,00			HS231 0770-01-200	
78,00	86,00	12,50			HS231 0780-01-200	
78,00	86,00	14,00				HS232 0780-01-200
78,00	86,00	14,50			HS231 0780-02-200	
78,00	88,00	13,00			HS231 0780-03-200	
78,00	90,00	13,00			HS231 0780-04-200	
78,00	93,00	11,50	HS225 0780-01-200			
79,40	88,90	10,50			HS231 0794-01-200	
80,00	88,00	12,50			HS231 0800-01-200	



d f8/h9	D H10	E +0,2	Part N° HS 225	Part N° HS 230	Part N° HS 231	Part N° HS 232
80,00	90,00	11,00	HS225 0800-01-200			
80,00	90,00	13,00	HS225 0800-02-200	HS230 0800-02-200		
80,00	90,00	15,00		HS230 0800-03-200		
80,00	95,00	11,00		HS230 0800-04-200		
80,00	**95,00**	**12,50**		**Hs230 0800-05-200**		**HS232 0800-01-200**
80,00	95,00	13,00	HS225 0800-03-200	HS230 0800-06-200		
80,00	100,00	11,00	HS225 0800-04-200			
80,00	100,00	13,00	HS225 0800-05-200	HS230 0800-07-200		
80,00	100,00	14,50		HS230 0800-08-200		
80,00	**100,00**	**16,00**		**HS230 0800-09-200**		
82,00	92,00	11,00	HS225 0820-01-200			
82,50	97,50	13,00			HS231 0825-01-200	
84,50	94,00	8,80	HS225 0845-01-200			
85,00	92,50	10,00			HS231 0850-01-200	
85,00	93,00	12,50			HS231 0850-02-200	
85,00	95,00	8,00		HS230 0850-01-200		
85,00	95,00	9,50	HS225 0850-01-200			
85,00	95,00	13,00	HS225 0850-02-200			
85,00	100,00	12,00	HS225 0850-03-200	HS230 0850-02-200		
85,00	100,00	12,50		HS230 0850-03-200		
85,00	100,00	13,00	HS225 0850-04-200	HS230 0850-04-200		
85,00	105,00	13,00	HS225 0850-05-200	HS230 0850-05-200		
85,00	105,00	14,50		HS230 0850-06-200		
85,00	115,00	16,00	HS225 0850-06-200			
88,90	101,60	10,50			HS231 0889-01-200	
90,00	98,00	12,50			HS231 0900-01-200	
90,00	100,00	8,00	HS225 0900-01-200			
90,00	100,00	9,00	HS225 0900-02-200			
90,00	100,00	12,50		HS230 0900-01-200	HS231 0900-02-200	
90,00	100,00	13,00	HS225 0900-03-200			
90,00	105,00	9,50		HS230 0900-02-200		
90,00	105,00	10,50		HS230 0900-03-200		
90,00	**105,00**	**12,50**		**HS230 0900-04-200**	**HS231 0900-03-200**	
90,00	105,00	13,00	HS225 0900-04-200	HS230 0900-05-200		
90,00	110,00	13,00	HS225 0900-05-200	HS230 0900-06-200	HS231 0900-04-200	
90,00	**110,00**	**16,00**		**HS230 0900-07-200**		
90,00	110,00	19,00	HS225 0900-06-200			
90,00	115,00	23,00	HS225 0900-07-200			
91,00	99,00	8,50		HS230 0910-01-200		
93,00	101,00	12,50			HS231 0930-01-200	
93,00	104,00	11,00		HS230 0930-01-200		
95,00	103,00	12,50			HS231 0950-01-200	
95,00	105,00	9,50			HS231 0950-02-200	
95,00	105,00	11,00		HS230 0950-01-200		
95,00	105,00	13,00			HS231 0950-03-200	
95,00	110,00	13,00	HS225 0950-01-200			
95,00	110,00	16,00	HS225 0950-02-200			
95,00	112,00	12,00	HS225 0950-03-200			
95,00	115,00	13,00	HS225 0950-04-200	HS230 0950-02-200		
95,00	115,00	19,00	HS225 0950-05-200			
97,00	105,00	12,50			HS231 0970-01-200	
97,00	105,00	14,00				HS232 0970-01-200
97,00	105,00	14,50			HS231 0970-02-200	
97,00	106,00	15,00			HS231 0970-03-200	
99,00	109,00	13,00			HS231 0990-01-200	
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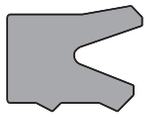
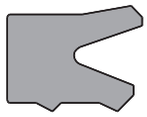
100,00	110,00	11,00			HS231 1000-02-200	
100,00	110,00	12,50			HS231 1000-03-200	
100,00	110,00	15,00		HS230 1000-01-200		
100,00	113,00	13,50		HS230 1000-02-200		
100,00	115,00	11,50		HS230 1000-03-200		

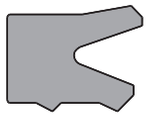


d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N° HS 232**
100,00	115,00	13,00	HS225 1000-01-200	HS230 1000-04-200		
100,00	120,00	13,00	HS225 1000-02-200	HS230 1000-05-200		
100,00	120,00	14,50		HS230 1000-06-200		HS232 1000-01-200
100,00	**120,00**	**16,00**		**Hs230 1000-07-200**		
100,00	125,00	13,00	HS225 1000-03-200			
100,00	125,00	16,00	HS225 1000-04-200			
100,00	125,00	20,00		HS230 1000-08-200		
100,00	130,00	13,00	HS225 1000-05-200			
105,00	113,00	12,50			HS231 1050-01-200	
105,00	113,00	14,50			HS231 1050-02-200	
105,00	115,00	11,00		HS230 1050-01-200		
105,00	115,00	12,50		HS230 1050-02-200	HS231 1050-03-200	
105,00	115,00	14,50		HS230 1050-03-200		
105,00	120,00	9,00	HS225 1050-01-200			
105,00	120,00	16,00	HS225 1050-02-200			
105,00	125,00	13,00	HS225 1050-03-200	HS230 1050-04-200		HS232 1050-01-200
105,00	125,00	16,00	HS225 1050-04-200			
106,00	120,00	9,50	HS225 1060-01-200			
110,00	118,00	12,50			HS231 1100-01-200	
110,00	125,00	12,00		HS230 1100-01-200		
110,00	125,00	13,00	HS225 1100-01-200			
110,00	125,00	16,00	HS225 1100-02-200	HS230 1100-02-200		
110,00	130,00	13,00		HS230 1100-03-200		
110,00	**130,00**	**16,00**	**HS225 1100-03-200**	**HS230 1100-04-200**		
110,00	130,00	19,00	HS225 1100-04-200			
110,00	**135,00**	**20,00**		**HS230 1100-05-200**		
112,00	122,00	11,00			HS231 1120-01-200	
113,00	123,00	9,50			HS231 1130-01-200	
113,00	125,00	10,50	HS225 1130-01-200			
115,00	123,00	12,50			HS231 1150-01-200	
115,00	125,00	13,00			HS231 1150-02-200	
115,00	125,00	15,00			HS231 1150-03-200	
115,00	126,00	16,00	HS225 1150-01-200			
115,00	130,00	11,00			HS231 1150-04-200	
115,00	135,00	13,00		HS230 1150-01-200		
115,00	135,00	16,00	HS225 1150-02-200			
115,00	140,00	16,00	HS225 1150-03-200			
115,00	140,00	23,00	HS225 1150-04-200			
117,00	126,00	15,00			HS231 1170-01-200	
118,00	126,00	12,50			HS231 1180-01-200	
118,00	126,00	14,00				HS232 1180-01-200
118,00	126,00	14,50			HS231 1180-02-200	
120,00	128,00	12,50			HS231 1200-01-200	
120,00	130,00	8,00		HS230 1200-01-200		
120,00	130,00	12,50		HS230 1200-02-200	HS231 1200-02-200	
120,00	130,00	13,00			HS231 1200-03-200	
120,00	130,00	15,00	HS225 1200-01-200			
120,00	132,00	11,00		HS230 1200-03-200		
120,00	135,00	12,50		HS230 1200-04-200		
120,00	135,00	16,00	HS225 1200-02-200	HS230 1200-05-200		
120,00	140,00	13,00		HS230 1200-06-200		HS232 1200-01-200
120,00	140,00	16,00	HS225 1200-03-200	HS230 1200-07-200		
121,00	135,00	10,00			HS231 1210-01-200	
125,00	133,00	12,50			HS231 1250-01-200	
125,00	135,00	11,00			HS231 1250-02-200	
125,00	140,00	12,00	HS225 1250-01-200			
125,00	140,00	16,00	HS225 1250-02-200			
125,00	145,00	13,00		HS230 1250-01-200		HS232 1250-01-200
125,00	**145,00**	**16,00**	**HS225 1250-03-200**	**HS230 1250-02-200**		
125,00	145,00	19,00	HS225 1250-04-200			
125,00	150,00	15,00		HS230 1250-03-200		



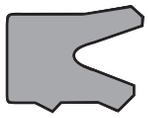
d f8/h9	D H10	E +0,2	Part N° HS 225	Part N° HS 230	Part N° HS 231	Part N° HS 232
125,00	**150,00**	**20,00**		**HS230 1250-04-200**		
125,00	155,00	16,00	HS225 1250-05-200			
125,00	155,00	19,00		HS230 1250-05-200		
127,00	139,70	10,00		HS230 1270-01-200		
127,00	140,00	12,50			HS231 1270-01-200	
128,00	136,00	12,50			HS231 1280-01-200	
130,00	138,00	12,50			HS231 1300-01-200	
130,00	140,00	8,00		HS230 1300-01-200		
130,00	145,00	13,00		HS230 1300-02-200		
130,00	145,00	15,00		HS230 1300-03-200		
130,00	145,00	16,00		HS230 1300-04-200		
130,00	150,00	13,00		HS230 1300-05-200		
130,00	150,00	16,00	HS225 1300-01-200	HS230 1300-06-200		
131,00	150,00	14,00			HS231 1310-01-200	
132,00	142,00	9,50			HS231 1320-01-200	
135,00	143,00	12,50			HS231 1350-01-200	
135,00	150,00	12,50			HS231 1350-02-200	
135,00	150,00	16,00	HS225 1350-01-200		HS231 1350-03-200	
135,00	155,00	16,00	HS225 1350-02-200			
135,00	160,00	16,00	HS225 1350-03-200			
137,00	146,00	15,00			HS231 1370-01-200	
140,00	148,00	12,50			HS231 1400-01-200	
140,00	150,00	12,50		HS230 1400-01-200	HS231 1400-02-200	
140,00	155,00	13,00		HS230 1400-02-200		
140,00	160,00	13,00	HS225 1400-01-200	HS230 1400-03-200		
140,00	**160,00**	**16,00**	**HS225 1400-02-200**	**HS230 1400-04-200**		
140,00	**165,00**	**20,00**		**HS230 1400-05-200**		
141,00	151,00	13,00			HS231 1410-01-200	
143,00	151,00	12,50			HS231 1430-01-200	
143,00	151,00	14,00				HS232 1430-01-200
143,00	151,00	14,50			HS231 1430-02-200	
145,00	155,00	13,00			HS231 1450-01-200	
145,00	157,70	10,00		HS230 1450-01-200		
145,00	160,00	13,00			HS231 1450-02-200	
145,00	165,00	16,00	HS225 1450-01-200			
147,00	160,00	13,00		HS230 1470-01-200		
148,00	160,00	13,00			HS231 1480-01-200	
150,00	170,00	13,00		HS230 1500-01-200		
150,00	170,00	14,50		HS230 1500-02-200		
150,00	170,00	16,00	HS225 1500-01-200	HS230 1500-03-200		
150,00	170,00	19,00	HS225 1500-02-200			
152,00	160,00	12,50			HS231 1520-01-200	
152,00	162,00	11,00			HS231 1520-02-200	
152,00	171,00	12,50			HS231 1520-03-200	
152,50	160,50	15,00			HS231 1525-01-200	
155,00	163,00	12,50			HS231 1550-01-200	
160,00	168,00	12,50			HS231 1600-01-200	
160,00	170,00	12,50			HS231 1600-02-200	
160,00	180,00	13,00		HS230 1600-01-200		
160,00	180,00	16,00	HS225 1600-01-200	HS230 1600-02-200		
160,00	185,00	20,00		HS230 1600-03-200		
162,00	172,00	13,00			HS231 1620-01-200	
165,00	184,00	14,00			HS231 1650-01-200	
165,00	195,00	21,00		HS230 1650-01-200		
170,00	178,00	12,50			HS231 1700-01-200	
170,00	180,00	13,00			HS231 1700-02-200	
170,00	190,00	13,00		HS230 1700-01-200		
170,00	190,00	16,00	HS225 1700-01-200	HS230 1700-02-200		
170,00	200,00	19,00	HS225 1700-02-200			
171,00	179,00	12,50			HS231 1710-01-200	
171,00	179,00	14,00				HS232 1710-01-200

Rod Seal
HS 225 to HS 232



d f8/h9	**D** H10	**E** +0,2	**Part N° HS 225**	**Part N° HS 230**	**Part N° HS 231**	**Part N° HS 232**
175,00	185,00	13,00			HS231 1750-01-200	
175,00	200,00	16,00	HS225 1750-01-200			
177,00	205,00	20,00			HS231 1770-01-200	
180,00	188,00	14,50			Hs231 1800-01-200	
180,00	190,00	11,00			HS231 1800-02-200	
180,00	195,00	13,50			HS231 1800-03-200	
180,00	200,00	13,00		HS230 1800-01-200		
180,00	200,00	16,00	HS225 1800-01-200	HS230 1800-02-200		
180,00	200,00	20,00		HS230 1800-03-200		
180,00	220,00	21,00	HS225 1800-02-200			
185,00	193,00	12,50			HS231 1850-01-200	
190,00	210,00	13,00		HS230 1900-01-200		
190,00	210,00	16,00		HS230 1900-02-200		
198,00	207,60	7,50		HS230 1980-01-200		
200,00	208,00	12,50			HS231 2000-01-200	
200,00	212,00	16,00		HS230 2000-01-200		
200,00	220,00	13,00		HS230 2000-02-200		
200,00	220,00	16,00		HS230 2000-03-200		
200,00	225,00	19,00	HS225 2000-01-200			
200,00	**225,00**	**20,00**		**HS230 2000-04-200**		
205,00	220,00	13,50			HS231 2050-01-200	
209,00	228,00	14,00			HS231 2090-01-200	
210,00	230,00	13,00		HS230 2100-01-200		
210,00	230,00	16,00		HS230 2100-02-200		
210,00	235,00	26,00		HS230 2100-03-200		
212,00	220,00	14,50			HS231 2120-01-200	
220,00	240,00	13,00		HS230 2200-01-200		
220,00	240,00	16,00		HS230 2200-02-200		
220,00	250,00	19,00	HS225 2200-01-200	HS230 2200-03-200		
225,00	245,00	16,00	HS225 2250-01-200			
230,00	250,00	13,00		HS230 2300-01-200		
230,00	260,00	25,00		HS230 2300-02-200		
232,00	246,00	13,00			HS231 2320-01-200	
240,00	260,00	13,00		HS230 2400-01-200		
240,00	260,00	16,00		HS230 2400-02-200		
240,00	270,00	19,00		HS230 2400-03-200		
245,00	270,00	16,00	HS225 2450-01-200			
250,00	270,00	13,00		HS230 2500-01-200		
250,00	270,00	16,00		HS230 2500-02-200		
250,00	280,00	23,00		HS230 2500-03-200		
265,00	290,00	18,00	HS225 2650-01-200			
270,00	290,00	18,00	HS225 2700-01-200			
270,00	300,00	16,00	HS225 2700-02-200			
270,00	300,00	19,00		HS230 2700-01-200		
280,00	300,00	16,00	HS225 2800-01-200			
280,00	305,00	16,00		HS230 2800-01-200		
280,00	310,00	25,00		HS230 2800-02-200		
305,00	320,00	18,00	HS225 3050-01-200			
360,00	390,00	23,00	HS225 3600-01-200			

These sizes also available in FPM.
Futher sizes/measurements and emperial sizes available on request.



Example for ordering Rod Seal:

HS 225 0600 - 01 - 200 - ...

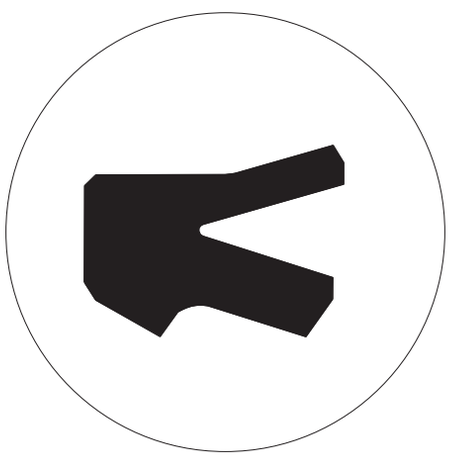
Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

The rod seals of series HS 233 are a consequent forwarded development of our long period range of rod seals.

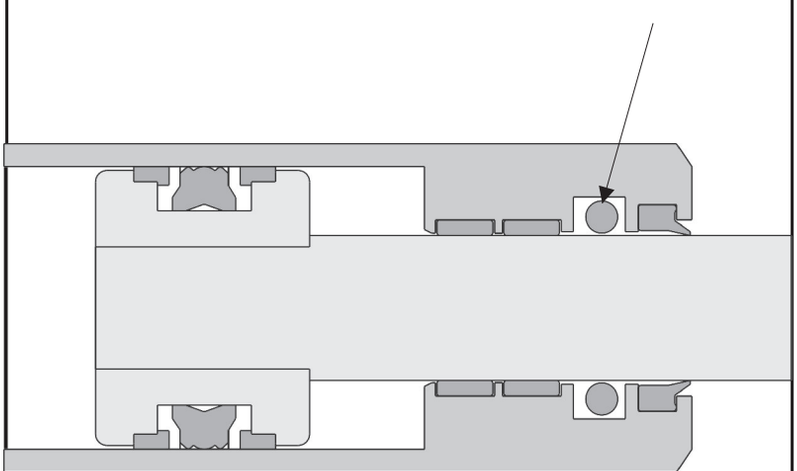
The strong designed dynamic sealing lips guarantee a high sealing with clear reduced friction in the totally pressure section.

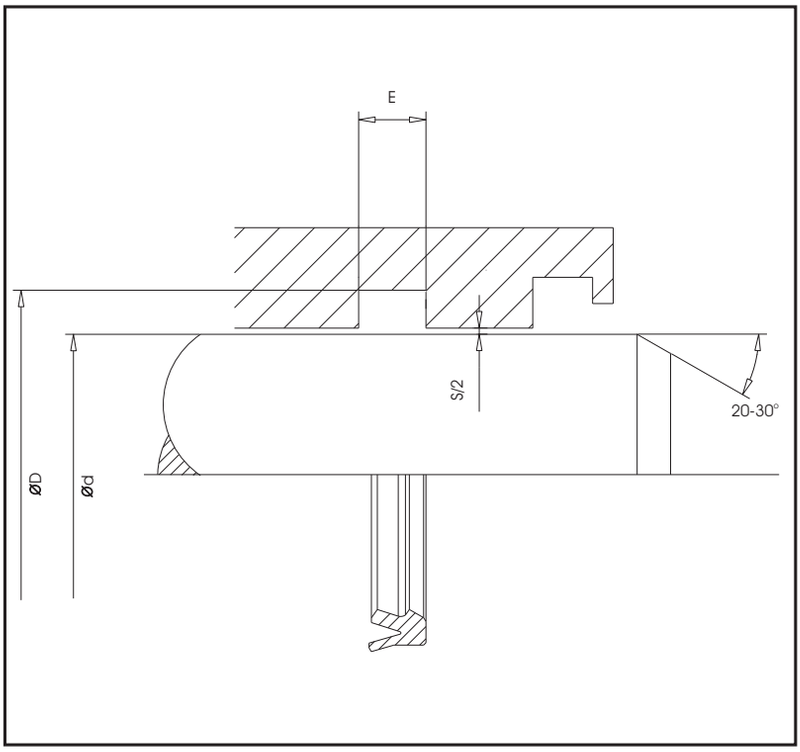


Special Features:

- Anti-wear modified Polyurethan mixture
- High restistance of extrusion
- Higher pre-stressing is resultating very good sealing conditions also in static applications
- Easy snap-on assembly possible in closed grooves
- Compact assembly spaces
- Assembly spaces as per ISO 5597

Material	:Polyurethane
Operational pressure	:to 40 MPa (400 bar)
Velocity	: recoprocating up to 0,8 m/s
Temperature	: -35 up to +110 °C





Limitations on Use

Operational pressure	: to 40 MPa (400 bar)
Velocity	: reciprocating up to 0.8 m/s
Temperature	: -35 up to +110 °C

Media of Use

Mineral oil based hydraulic oils, flame resistant pressure media and bio oils on request

Surfacing Finish

Surface	Rz	Ra
faces	2,0 µm	0,3 µm
groove root	6,3 µm	1,6 µm
groove flank	10,0 µm	3,2 µm

Diameter Clearance

Max. diameter clearance S [mm]	pressure [bar]
1,00	100
0,80	150
0,60	200
0,40	400

d f8/h9	**D** H10	**E** +0,2	**Part N°**		
18,00	26,00	6,30	HS233 0180-01-200		
20,00	28,00	6,30	HS233 0200-01-200		
22,00	32,00	8,00	HS233 0220-01-200		
25,00	**33,00**	**6,30**	**HS233 0250-01-200**		
25,00	35,00	8,00	HS233 0250-02-200		
28,00	36,00	6,30	HS233 0280-01-200		
30,00	38,00	6,30	HS233 0300-01-200		
30,00	40,00	8,00	HS233 0300-02-200		
32,00	42,00	8,00	HS233 0320-01-200		
32,00	40,00	8,00	HS233 0320-02-200		
35,00	45,00	8,00	HS233 0350-01-200		
35,00	43,00	6,30	HS233 0350-02-200		
36,00	44,00	6,30	HS233 0360-01-200		
36,00	46,00	8,00	HS233 0360-02-200		
40,00	48,00	6,30	HS233 0400-01-200		
40,00	50,00	8,00	HS233 0400-02-200		
45,00	53,00	8,00	HS233 0450-01-200		
45,00	55,00	8,00	HS233 0450-02-200		
50,00	**60,00**	**8,00**	**HS233 0500-01-200**		
50,00	**65,00**	**9,50**	**HS233 0500-02-200**		
50,00	65,00	12,50	HS233 0500-03-200		
55,00	63,00	9,00	HS233 0550-01-200		
55,00	65,00	8,00	HS233 0550-02-200		
55,00	**70,00**	**9,50**	**HS233 0550-03-200**		
56,00	71,00	12,50	HS233 0560-01-200		
56,00	66,00	8,00	HS233 0560-02-200		
60,00	68,00	8,00	HS233 0600-02-200		
60,00	70,00	8,00	HS233 0600-01-200		
60,00	**75,00**	**9,50**	**HS233 0600-03-200**		
60,00	75,00	12,50	HS233 0600-04-200		
61,00	69,00	8,00	HS233 0610-01-200		
63,00	**78,00**	**9,50**	**HS233 0630-01-200**		

Dimensions in bold correspond to mounting space as per DIN ISO 5597

d f8/h9	**D** H10	**E** +0,2	**Part N°**		
63,00	78,00	11,00	HS233 0630-02-200		
63,00	78,00	12,50	HS233 0630-03-200		
65,00	73,00	9,00	HS233 0650-01-200		
65,00	77,00	9,50	HS233 0650-02-200		
65,00	**80,00**	**9,50**	**HS233 0650-03-200**		
65,00	80,00	12,50	HS233 0650-04-200		
65,00	**85,00**	**12,50**	**HS233 0650-05-200**		
68,00	76,00	8,00	HS233 0680-01-200		
70,00	80,00	8,00	HS233 0700-01-200		
70,00	82,00	9,50	HS233 0700-02-200		
70,00	85,00	9,50	HS233 0700-03-200		
70,00	85,00	12,50	HS233 0700-04-200		
70,00	90,00	12,50	HS233 0700-05-200		
75,00	83,00	8,00	HS233 0750-01-200		
75,00	87,00	9,50	HS233 0750-02-200		
75,00	**90,00**	**9,50**	**HS233 0750-03-200**		
75,00	90,00	12,50	HS233 0750-04-200		
75,00	**95,00**	**12,50**	**HS233 0750-05-200**		
80,00	90,00	8,00	HS233 0800-01-200		
80,00	92,00	9,50	HS233 0800-02-200		
80,00	**95,00**	**9,50**	**HS233 0800-03-200**		
80,00	95,00	12,50	HS233 0800-04-200		
85,00	95,00	9,50	HS233 0850-01-200		
85,00	93,00	9,00	HS233 0850-02-200		
85,00	97,00	9,50	HS233 0850-03-200		
85,00	**100,00**	**9,50**	**HS233 0850-04-200**		
85,00	100,00	12,50	HS233 0850-05-200		
85,00	**105,00**	**12,50**	**HS233 0850-06-200**		
90,00	98,00	8,00	HS233 0900-01-200		
90,00	102,00	9,50	HS233 0900-02-200		
90,00	**105,00**	**9,50**	**HS233 0900-03-200**		
90,00	105,00	12,50	HS233 0900-04-200		
90,00	**110,00**	**12,50**	**HS233 0900-05-200**		
95,00	110,00	12,50	HS233 0950-01-200		
95,00	115,00	12,50	HS233 0600-04-200		
100,00	**115,00**	**9,50**	**HS233 1000-01-200**		
100,00	115,00	12,50	HS233 1000-02-200		
100,00	**120,00**	**12,50**	**HS233 1000-03-200**		
105,00	113,00	8,00	HS233 1050-01-200		
105,00	113,00	9,00	HS233 1050-02-200		
105,00	**125,00**	**12,50**	**HS233 1050-03-200**		
105,00	125,00	16,00	HS233 1050-04-200		
110,00	**125,00**	**9,50**	**HS233 1100-01-200**		
110,00	125,00	12,50	HS233 1100-02-200		
110,00	**130,00**	**12,50**	**HS233 1100-03-200**		
110,00	**130,00**	**16,00**	**HS233 1100-04-200**		
120,00	128,00	8,00	HS233 1200-01-200		
120,00	**140,00**	**12,50**	**HS233 1200-02-200**		
120,00	140,00	16,00	HS233 1200-03-200		
125,00	133,00	9,00	HS233 1250-01-200		
130,00	**150,00**	**12,50**	**HS233 1300-01-200**		
130,00	150,00	16,00	HS233 1300-02-200		
135,00	143,00	9,00	HS233 1350-01-200		
140,00	**148,00**	**8,00**	**HS233 1400-01-200**		
140,00	160,00	16,00	HS233 1400-02-200		
160,00	180,00	16,00	HS233 1600-01-200		
200,00	220,00	12,50	HS233 2000-01-200		
280,00	**330,00**	**12,50**	**HS233 2800-01-200**		

Dimensions in bold correspond to mounting space as per DIN ISO 5597.
Further sizes available on request

Example for ordering Rod Seal:

HS 233 0260 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension varant
Standard material
HME internal code

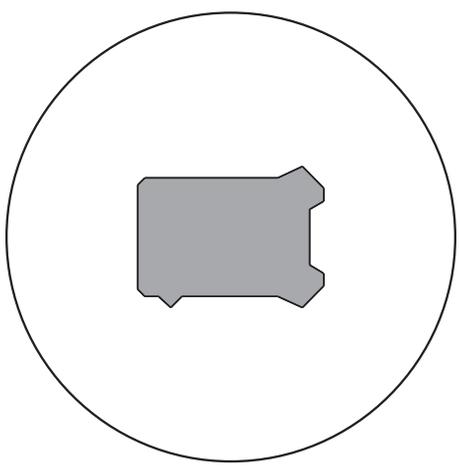
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

Rod Seal
HS 240 bis HS 242

Polyurethane rod seals of the HS 240 to HS 242 series cover a majority of applications due to outstanding sealing properties.

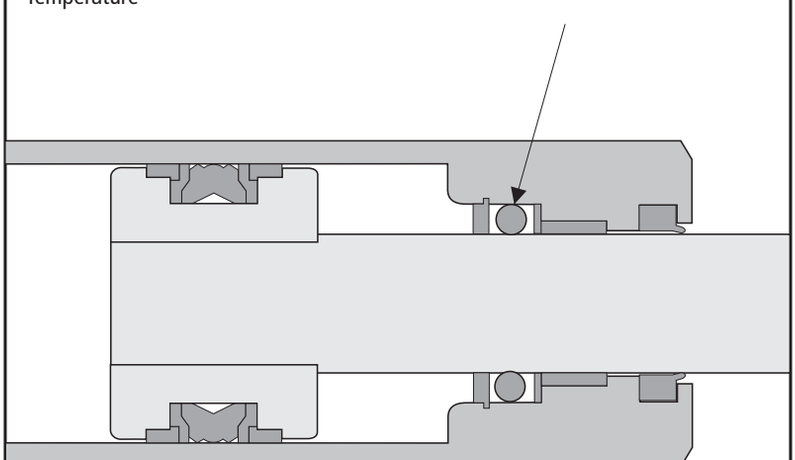
They are specifically designed for intermediate and heavy duty and show excellent sealing properties and much longer life span in comparison to NBR.

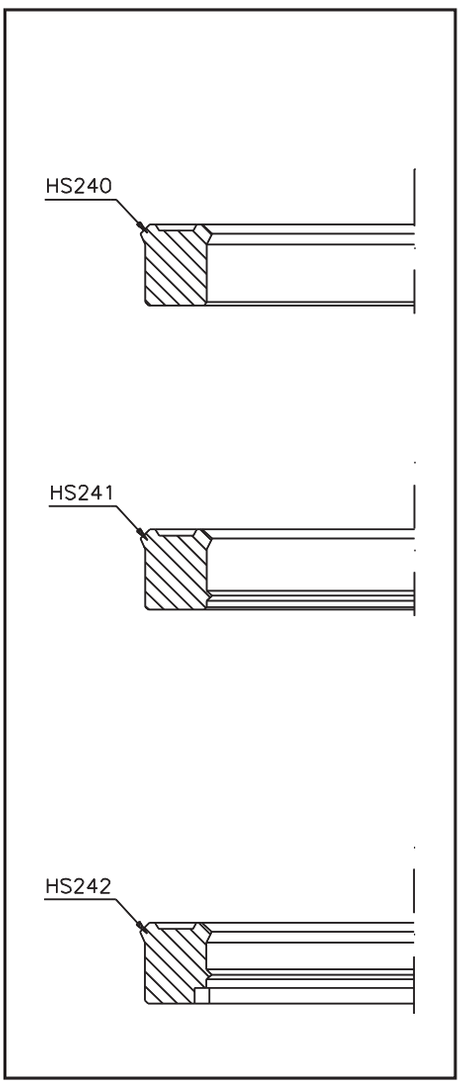


Material	:	Polyurethane
Operating pressure	:	HS 240 und HS 241bis 40 MPa (400 bar) HS 242bis 50 MPa (500 bar)
Velocity	:	reciprocating to 0.5 m/s
Temperature	:	-35 to +110 °C

Special Features:

- Anti-wear modified Polyurethane
- Good wiper action even at low pressure due to compact profile
- Enhanced pre-stressing yields very good sealing effect even under static requirement
- Simple snap assembly in closed groove possible
- Much better anti-extrusion behaviour than NBR
- Larger split size therefore possible
- Small mounting space
- Cost conveniant variant
- Extensive size range available.





Detailed Information

Polyurethane rod seals of the series HS 240 to HS 242 basically offer a "compact construction".

HS 240

This profile is the normal design in compact construction with outstanding sealing behaviour and secure wiper action. Pre-stressing of seal is done by increasing external diameter.

HS 241

This modern compact design has the so called "secondary lip" on the dynamic side. The advantages are:

- Reduced friction due to lubricant deposition
- Significant stick slip improvement
- Temperature reduction at the dynamic sealing lip, thus longer life
- Fixation of rod seal at external diameter, therefore no tilting at high velocity
- Low wear due to exact positioning within housing
- Exact stabilisation in housing at low temperatures

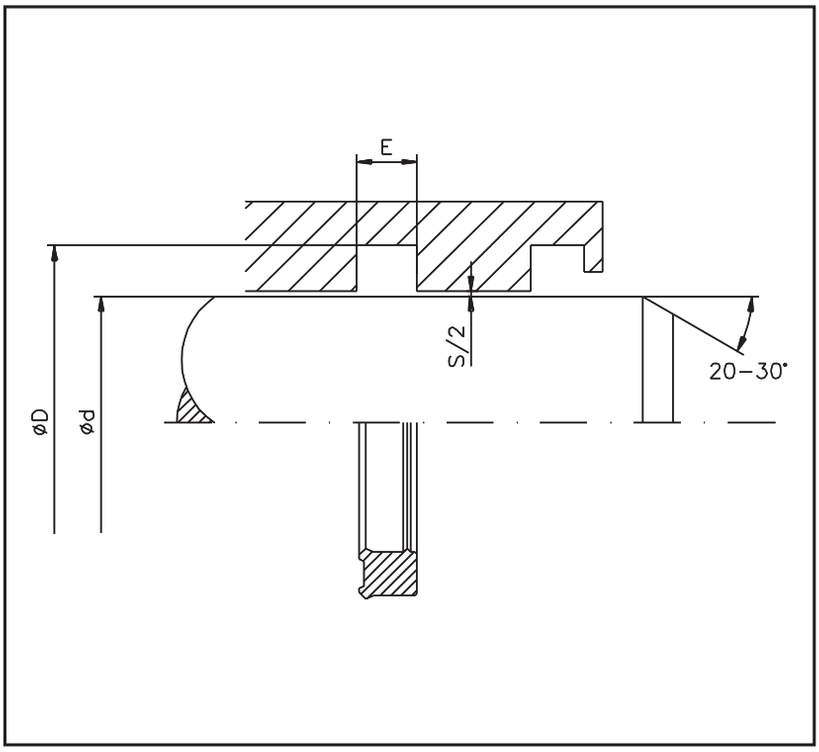
By virtue of its profile form, HS 241 is the series which works well in most applications with improved life.

HS 242

All advantages mentioned for profiles 240 and 241also apply to the 242. A special advantage of this design is that higher split sizes and pressures can also operate through the available extrusion ring.

All illustrated rod seals from HS 240 to HS 242 offer special advantages to the user. Please enquire with our technical services as to which variant is the best for your application. We welcome your enquiries for use with Bio Oils.

Rod Seal
HS 240 bis HS 242



Limitations on Use

Operating pressure	: HS 240 / 241	up to 40 MPa (400 bar)
	HS 242	up to 50 MPa (500 bar)
Velocity	: reciprocating to 0.5 m/s	
Temperature	: -35 bis +110 °C	

Media for Use

Mineral oil based hydraulic oils, non-polluting pressure fluids (Bio Oils) on request.

Surface Finish

Surfaces	Rz	Ra
Faces	2,0 µm	0,3 µm
Groove root	6,3 µm	1,6 µm
Groove flanks	10,0 µm	3,2 µm

Diameter Clearance

Max. Diameter Clearance S [mm]	Max. Pressure [bar] HS 240 / HS 241	HS 242
0,80	100	200
0,60	150	250
0,40	200	350
0,20	400	500

d f8/h9	**D** H10	**E** +0,2	Part N° HS 240	Part N° HS 241	Part N° HS 242
6,00	**14,00**	**6,30**		**HS241 0060-01-200**	
6,35	14,30	7,00		HS241 0063-01-200	
8,00	**16,00**	**6,30**		**HS241 0080-01-200**	
10,00	16,00	5,40		HS241 0100-01-200	
10,00	**18,00**	**6,30**		**HS241 0100-02-200**	
12,00	18,00	5,00	HS240 0120-01-200		
12,00	19,00	6,30		HS241 0120-01-200	
12,00	**20,00**	**6,30**	**HS240 0120-02-200**	**HS241 0120-02-200**	
12,00	23,00	7,50		HS241 0120-03-200	
14,00	20,00	5,30		HS241 0140-01-200	
14,00	**22,00**	**6,30**		**HS241 0140-02-200**	
15,00	21,50	5,00		HS241 0150-01-200	
15,40	25,50	7,40		HS241 0154-01-200	
16,00	22,00	4,50	HS240 0160-01-200		
16,00	24,00	7,00	HS240 0160-02-200		
16,00	24,00	6,30	HS240 0160-03-200	HS241 0160-01-200	
18,00	25,00	5,70	HS240 0180-01-200		
18,00	**26,00**	**6,30**		**HS241 0180-01-200**	
18,00	26,00	7,00	HS240 0180-02-200	HS241 0180-02-200	
18,00	26,00	9,00		HS241 0180-03-200	
18,00	28,00	6,30	HS240 0180-03-200	HS241 0180-04-200	
18,00	**28,00**	**8,00**	**HS240 0180-04-200**		
19,50	27,50	9,00		HS241 0195-01-200	
20,00	25,00	3,50	HS240 0200-01-200		
20,00	25,00	4,50	HS240 0200-02-200		
20,00	26,00	6,00	HS240 0200-03-200	HS241 0200-01-200	
20,00	27,00	6,50	HS240 0200-04-200		
20,00	**28,00**	**6,30**	**HS240 0200-05-200**	**HS241 0200-02-200**	
20,00	28,00	8,00	HS240 0200-06-200		
20,00	30,00	5,00		HS241 0200-03-200	
20,00	**30,00**	**8,00**	**HS240 0200-07-200**	**HS241 0200-04-200**	
20,00	30,00	9,00	HS240 0200-08-200		

Rod Seal
HS 240 bis HS 242

d f8/h9	**D** H10	**E** +0,2	**Part N° HS 240**	**Part N° HS 241**	**Part N° HS 242**
20,00	30,00	11,00	HS240 0200-09-200		
21,00	27,00	5,00	HS240 0210-01-200		
22,00	28,00	5,50	HS240 0220-01-200		
22,00	29,00	5,60	HS240 0220-02-200		
22,00	**30,00**	**6,30**		**HS241 0220-01-200**	
22,00	30,00	7,00	HS240 0220-03-200		
22,00	30,00	8,00	HS240 0220-04-200		
22,00	**32,00**	**8,00**	**HS240 0220-05-200**		
22,00	32,00	9,00	HS240 0220-06-200		
24,00	30,00	5,00	HS240 0240-01-200		
24,00	34,00	6,50	HS240 0240-02-200		
25,00	32,00	5,00	HS240 0250-01-200		
25,00	**33,00**	**6,30**	**HS240 0250-02-200**	**HS241 0250-01-200**	
25,00	33,00	7,50		HS241 0250-02-200	
25,00	33,00	8,00		HS241 0250-03-200	
25,00	33,00	9,00	HS240 0250-03-200		
25,00	35,00	6,00	HS240 0250-04-200		
25,00	35,00	6,30		HS241 0250-04-200	
25,00	**35,00**	**8,00**	**HS240 0250-05-200**	**HS241 0250-05-200**	
25,00	35,00	9,00	HS240 0250-06-200	HS241 0250-06-200	
25,00	35,00	10,00	HS240 0250-07-200		
25,00	35,00	11,00	HS240 0250-08-200		
25,00	36,00	6,00	HS240 0250-09-200		
25,00	38,00	11,00	HS240 0250-10-200		
28,00	34,20	6,00		HS241 0280-01-200	
28,00	36,00	6,30	HS240 0280-01-200	HS241 0280-02-200	
28,00	36,00	9,00	HS240 0280-02-200		
28,00	**38,00**	**6,30**		**HS241 0280-03-200**	
28,00	**38,00**	**8,00**	**HS240 0280-03-200**	**HS241 0280-04-200**	
30,00	38,00	6,30	HS240 0300-01-200	HS241 0300-01-200	
30,00	38,00	8,00		HS241 0300-02-200	
30,00	38,00	9,00	HS240 0300-02-200		
30,00	40,00	7,50		HS241 0300-03-200	
30,00	40,00	8,00	HS240 0300-03-200		
30,00	40,00	11,00	HS240 0300-04-200	HS241 0300-04-200	
32,00	40,00	6,30	HS240 0320-01-200	HS241 0320-01-200	
32,00	40,00	7,70		HS241 0320-02-200	
32,00	40,00	9,00	HS240 0320-02-200	HS241 0320-03-200	
32,00	41,50	8,90		HS241 0320-04-200	
32,00	**42,00**	**8,00**	**HS240 0320-03-200**		
32,00	42,00	9,00	HS240 0320-04-200		
32,00	42,00	11,00	HS240 0320-05-200		
32,00	42,53	9,00		HS241 0320-05-200	
32,00	45,00	10,50			HS242 0320-01-200
35,00	43,00	6,30		HS241 0350-01-200	
35,00	43,00	7,00	HS240 0350-01-200	HS241 0350-02-200	
35,00	43,00	9,00	HS240 0350-02-200		
35,00	45,00	8,00	HS240 0350-03-200		
35,00	45,00	11,00	HS240 0350-04-200	HS241 0350-03-200	
35,00	45,00	13,50		HS241 0350-04-200	
35,00	50,00	11,00		HS241 0350-05-200	
36,00	44,00	6,30	HS240 0360-01-200	HS241 0360-01-200	
36,00	44,00	7,00	HS240 0360-02-200		
36,00	44,00	9,00	HS240 0360-03-200		
36,00	**46,00**	**8,00**	**HS240 0360-04-200**		**HS242 0360-01-200**
36,00	46,00	11,00	HS240 0360-05-200		
38,00	45,00	7,00	HS240 0380-01-200		
38,00	50,00	9,50		HS241 0380-01-200	
40,00	48,00	6,30	HS240 0400-01-200	HS241 0400-01-200	
40,00	48,00	9,00	HS240 0400-02-200	HS241 0400-02-200	HS242 0400-01-200

Rod Seal
HS 240 bis HS 242

d f8/h9	**D** H10	**E** +0,2	**Part N° HS 240**	**Part N° HS 241**	**Part N° HS 242**
40,00	49,52	10,50		HS241 0400-03-200	
45,00	53,00	7,00	HS240 0450-02-200		
45,00	53,00	9,00	HS240 0450-03-200	HS241 0450-02-200	
45,00	53,00	11,00	HS240 0450-04-200		
45,00	**55,00**	**8,00**	**HS240 0450-05-200**	**HS241 0450-03-200**	
45,00	55,00	11,00	HS240 0450-06-200	HS241 0450-04-200	HS242 0450-01-200
45,00	57,70	10,50		HS241 0450-05-200	
45,00	60,00	11,00			HS242 0450-02-200
46,00	54,00	9,00	HS240 0460-01-200		
48,00	60,00	7,00		HS241 0480-01-200	
49,50	65,30	11,00		HS241 0495-01-200	
50,00	58,00	9,00	HS240 0500-01-200		
50,00	**60,00**	**8,00**	**HS240 0500-02-200**	**HS241 0500-01-200**	
50,00	60,00	10,00		HS241 0500-02-200	
50,00	60,00	11,00	HS240 0500-03-200	HS241 0500-03-200	HS242 0500-01-200
50,00	62,00	9,00	HS240 0500-04-200		
50,00	62,00	11,00	HS240 0500-05-200		
50,00	62,70	10,50		HS241 0500-04-200	
50,00	65,00	11,00	HS240 0500-06-200	HS241 0500-05-200	HS242 0500-02-200
50,00	70,00	13,00			HS242 0500-03-200
50,00	70,00	14,50		HS241 0500-06-200	
55,00	63,00	9,00	HS240 0550-01-200	HS241 0550-01-200	
55,00	65,00	8,00	HS240 0550-02-200		
55,00	65,00	11,00	HS240 0550-03-200	HS241 0550-02-200	HS242 0550-01-200
55,00	65,00	13,00	HS240 0550-04-200	HS241 0550-03-200	
56,00	66,00	7,50	HS240 0560-01-200		
56,00	66,00	11,00	HS240 0560-02-200		
56,00	**71,00**	**12,50**		**HS241 0560-01-200**	**HS242 0560-01-200**
57,10	66,70	10,50		HS241 0571-01-200	
57,10	69,80	10,50		HS241 0571-02-200	
60,00	68,00	9,00	HS240 0600-01-200	HS241 0600-01-200	
60,00	68,00	12,50		HS241 0600-02-200	
60,00	68,00	14,00	HS240 0600-02-200		
60,00	70,00	8,00	HS240 0600-03-200		
60,00	70,00	11,00	HS240 0600-04-200		
60,00	70,00	12,50		HS241 0600-03-200	
60,00	70,00	13,00	HS240 0600-05-200		
60,00	70,00	13,50			HS242 0600-01-200
60,00	71,00	9,00		HS241 0600-04-200	
60,00	72,00	10,00	HS240 0600-06-200	HS241 0600-05-200	
60,00	75,00	11,00		HS241 0600-06-200	
60,00	75,00	13,00			HS242 0600-02-200
60,00	80,00	13,00			HS242 0600-03-200
61,00	69,00	9,00	HS240 0610-01-200	HS241 0610-01-200	
63,00	71,00	9,00	HS240 0630-01-200		
63,00	75,00	11,00	HS240 0630-02-200		
63,00	75,00	13,00			HS242 0630-01-200
63,00	**78,00**	**12,50**			**HS242 0630-02-200**
63,00	78,00	13,50			HS242 0630-03-200
63,00	83,00	13,00			HS242 0630-04-200
63,00	83,00	14,50			HS242 0630-05-200
63,50	76,20	10,50		HS241 0635-01-200	
65,00	75,00	13,00	HS240 0650-01-200		HS242 0650-01-200
65,00	75,00	13,50		HS241 0650-01-200	
65,00	77,70	10,50		HS241 0650-02-200	
65,00	79,20	12,50		HS241 0650-03-200	
65,00	80,00	12,50			HS242 0650-02-200
66,00	80,00	11,00	HS240 0660-01-200		
66,70	76,20	10,50		HS241 0667-01-200	
68,00	76,00	9,00	HS240 0680-01-200		

Rod Seal
HS 240 bis HS 242

d f8/h9	**D** H10	**E** +0,2	**Part N° HS 240**	**Part N° HS 241**	**Part N° HS 242**
69,80	82,50	10,50		HS241 0698-01-200	
70,00	80,00	7,50	HS240 0700-01-200		
70,00	80,00	8,00	HS240 0700-02-200		
70,00	80,00	11,00	HS240 0700-03-200		
70,00	80,00	13,00	HS240 0700-04-200		
70,00	82,00	10,00	HS240 0700-05-200		
70,00	**85,00**	**12,50**		**HS241 0700-01-200**	
70,00	85,00	13,00			HS242 0700-01-200
70,00	90,00	13,00			HS242 0700-02-200
70,00	90,00	14,50			HS242 0700-03-200
72,00	78,00	7,00	HS240 0720-01-200		
73,00	82,40	8,00		HS241 0730-01-200	
75,00	83,00	9,00		HS241 0750-01-200	
75,00	85,00	8,00	HS240 0750-01-200	HS241 0750-02-200	
75,00	85,00	13,00	HS240 0750-02-200	HS241 0750-03-200	HS242 0750-01-200
75,00	90,00	11,50		HS241 0750-04-200	
75,00	90,00	13,00			HS242 0750-02-200
75,00	95,00	14,50			HS242 0750-03-200
76,00	84,00	9,00	HS240 0760-01-200		
76,20	88,90	10,50		HS241 0762-01-200	
76,20	91,20	13,00		HS241 0762-02-200	
78,00	86,00	14,00	HS240 0780-01-200		
78,00	93,00	11,50	HS240 0780-02-200		
79,40	88,90	10,50		HS241 0794-01-200	
80,00	88,00	10,00			HS242 0800-01-200
80,00	88,00	12,50		HS241 0800-01-200	
80,00	90,00	8,00	HS240 0800-01-200		
80,00	90,00	13,00	HS240 0800-02-200	HS241 0800-02-200	
80,00	90,00	15,00	HS240 0800-03-200		
80,00	92,00	9,60		HS241 0800-03-200	
80,00	95,00	12,00		HS241 0800-04-200	
80,00	95,00	12,50		HS241 0800-05-200	HS242 0800-02-200
80,00	96,00	10,50		HS241 0800-06-200	HS242 0800-03-200
80,00	100,00	12,50			HS242 0800-04-200
80,00	100,00	14,50			HS242 0800-05-200
82,50	97,50	13,00		HS241 0825-01-200	
85,00	93,00	12,50		HS241 0850-01-200	
85,00	95,00	8,00	HS240 0850-01-200		
85,00	95,00	13,00		HS241 0850-02-200	
85,00	97,00	9,50	HS240 0850-02-200		
85,00	105,00	13,00			HS242 0850-01-200
85,00	105,00	14,50			HS242 0850-02-200
86,00	92,00	7,00	HS240 0860-01-200		
86,00	101,00	13,00		HS241 0860-01-200	
88,00	96,00	9,00	HS240 0880-01-200	HS241 0880-01-200	
88,90	101,60	10,50		HS241 0889-01-200	
90,00	96,00	5,50	HS240 0900-01-200		
90,00	100,00	7,50	HS240 0900-02-200		
90,00	102,00	10,00		HS241 0900-01-200	
90,00	105,00	9,50			HS242 0900-01-200
90,00	**105,00**	**12,50**		**HS241 0900-02-200**	
90,00	105,00	13,00			HS242 0900-02-200
90,00	110,00	12,50			HS242 0900-03-200
90,00	110,00	13,00			HS242 0900-04-200
90,00	110,00	15,00		HS241 0900-03-200	
91,00	99,00	9,00	HS240 0910-01-200	HS241 0910-01-200	
95,00	112,00	12,50	HS240 0950-01-200		
95,00	115,00	14,50			HS242 0950-01-200
97,00	105,00	14,00	HS240 0970-01-200		
100,00	108,00	12,50		HS241 1000-01-200	

d f8/h9	**D** H10	**E** +0,2	**Part N° HS 240**	**Part N° HS 241**	**Part N° HS 242**
100,00	110,00	13,50			HS242 1000-01-200
100,00	113,00	13,50			HS242 1000-02-200
100,00	115,00	13,00		HS241 1000-02-200	
100,00	120,00	14,50			HS242 1000-03-200
105,00	125,00	13,00			HS242 1050-01-200
107,00	115,00	9,00	HS240 1070-01-200		
108,00	116,00	9,00		HS241 1080-01-200	
110,00	120,00	14,50			HS242 1100-01-200
110,00	125,00	12,00		HS241 1100-01-200	
110,00	125,00	13,00			HS242 1100-02-200
110,00	130,00	13,00			HS242 1100-03-200
112,00	127,00	13,00		HS241 1120-01-200	
115,00	130,00	17,00			HS242 1150-01-200
118,00	126,00	14,00	HS240 1180-01-200		
120,00	128,00	12,50		HS241 1200-01-200	
120,00	135,00	16,00	HS240 1200-01-200		
120,00	140,00	12,50			HS242 1200-01-200
126,00	134,00	9,00	HS240 1260-01-200	HS241 1260-01-200	
127,00	140,00	13,50			HS242 1270-01-200
130,00	145,00	16,00		HS241 1300-01-200	
130,00	155,00	16,00		HS241 1300-02-200	
135,00	150,00	12,50		HS241 1350-01-200	
137,00	152,00	13,00		HS241 1370-01-200	
140,00	150,00	12,50		HS241 1400-01-200	
140,00	160,00	15,00			HS242 1400-01-200
140,00	165,00	19,00			HS242 1400-02-200
143,00	151,00	14,00	HS240 1430-01-200		
145,00	153,00	9,00	HS240 1450-01-200		
146,00	156,00	11,00		HS241 1460-01-200	
147,00	155,00	11,00	HS240 1470-01-200		
160,00	185,00	19,00			HS242 1600-01-200
163,00	178,00	13,00		HS241 1630-01-200	
170,00	180,00	11,00	HS240 1700-01-200	HS241 1700-01-200	
188,00	203,00	13,00		HS241 1880-01-200	
197,00	209,00	13,00		HS241 1970-01-200	
218,00	237,00	17,00		HS241 2180-01-200	
228,00	240,00	13,00		HS241 2280-01-200	
300,00	325,00	25,00		HS241 3000-01-200	

Bold figures correspond to mounting spaces as per DIN ISO 5597.
Further sizes available on request.

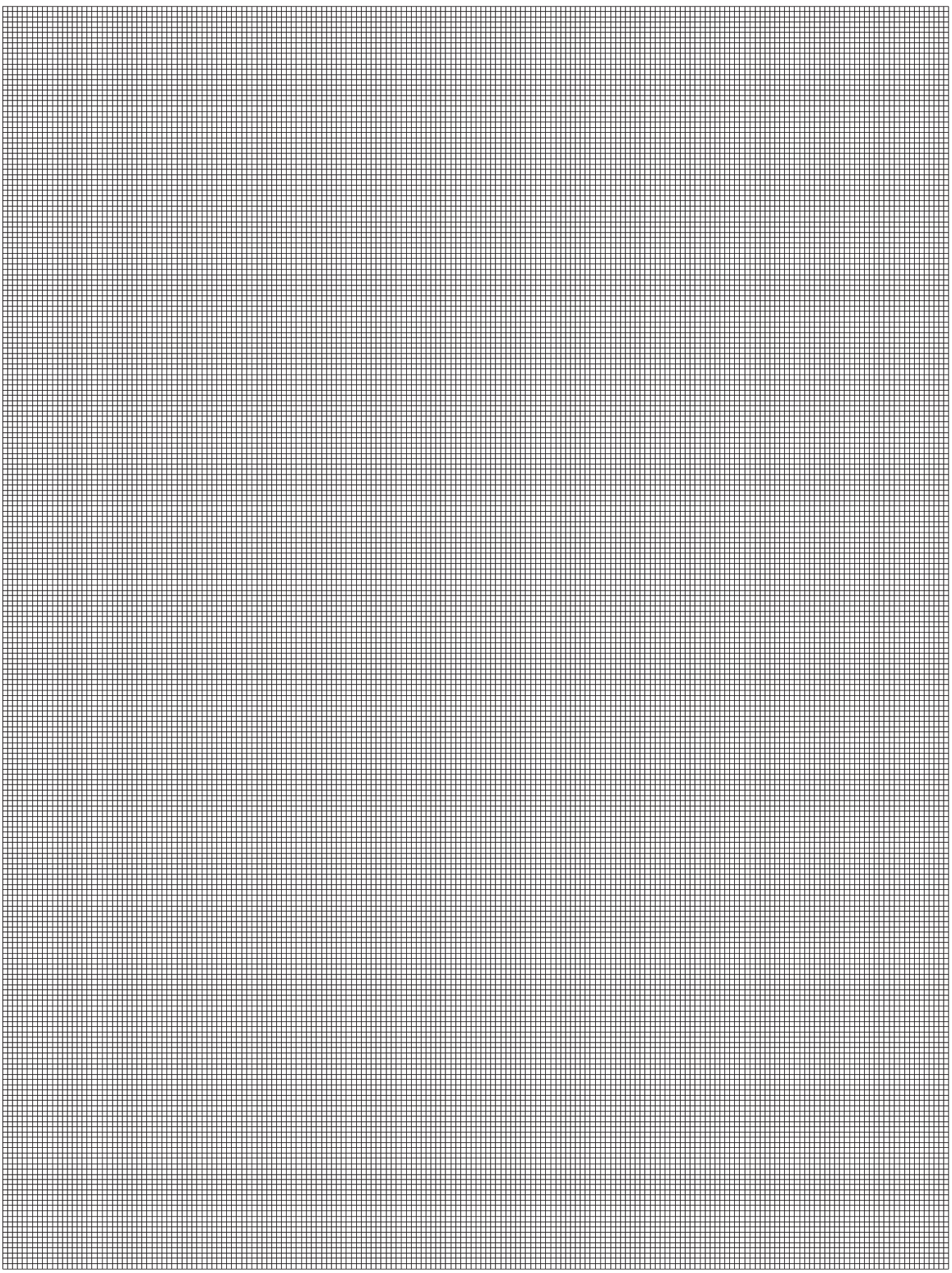
Example for ordering Rod Seal:

HS 240 0500 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

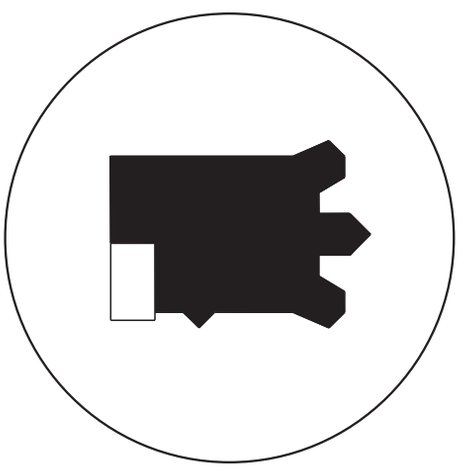


Rod Seal
HS 245

The sturdy seals of series HS 245 are designed for a versatile range of applications in mobile hydraulics and for operating in heavy operational zylinders.

Additional to the second sealing lip on the dynamic face the rod seal is exact positioned in the assambly space by the profile design.

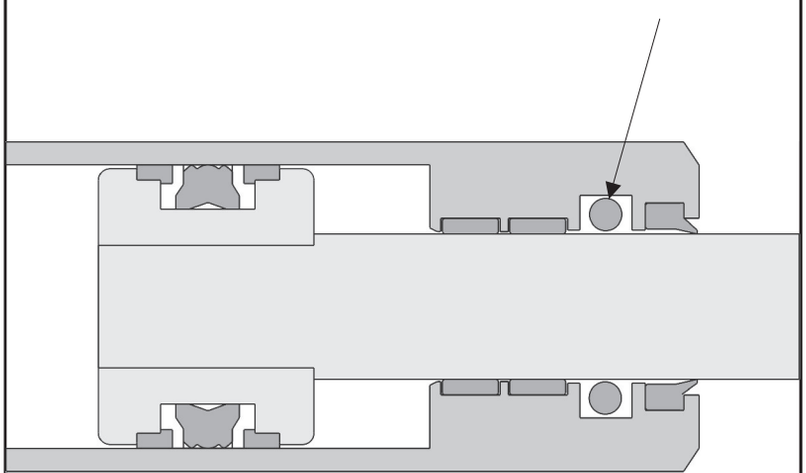
Large splits or appearing tube breathing with high dynamic loads will be safely brigded trough the containing back ring.

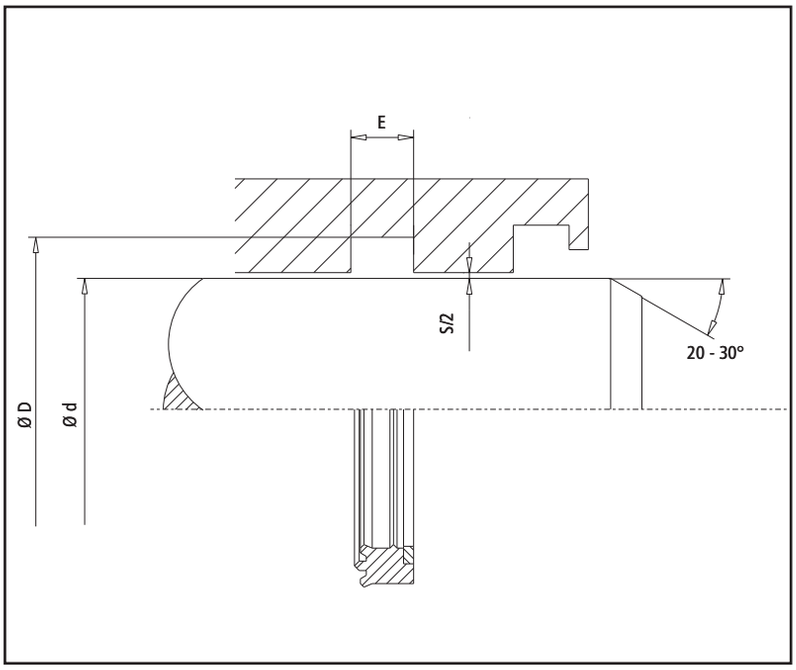


Special Features:

- Highly wear resistant modified Polyurethane mixture
- Excellent wipering effect by compact profile form also in low pressure areas.
- Exact positioning in assembly space thru optimal anti-wear behavior
- Higher pre-stressing is resultating very good sealing conditions also in static applications
- Simple snap assembly in closed grooves possible
- Absolutly usable for heavy mobil hydraulic applications
- Sizes for assembly spaces per as ISO 5597

Material	: Polyurethane
Operational pressure	: to 50 MPa (500 bar)
Velocity	: reciprocating up to 0,5 m/s
Temperature	: -35 up to +110 °C





Limitations on Use

Operational pressure	: to 50 MPa (500 bar)
Velocity	: reciprocating up to 0.5 m/s
Temperature	: -35 up to +110 °C

Media of Use

Mineral oil based hydraulic oils, non-polluting pressure fluids (Bio Oils) on request.

Surface Finish

Surface	Rz	Ra
faces	2,0 µm	0,3 µm
groove root	6,3 µm	1,6 µm
groove flank	10,0 µm	3,2 µm

Diameter Clearance

Maximal. Diameter Clear.l	Maximal Pressure [bar]			
D	250	320	400	500
≤80	1,2	1,1	0,9	0,7
>80	1,3	1,2	1,2	0,8

d f8/h9	**D** H10	**E** +0,2	**Part N°**		
32,00	42,00	8,00	HS245 0320-01-200		
40,00	**50,00**	**8,00**	**HS245 0400-01-200**		
45,00	**55,00**	**8,00**	**HS245 0450-01-200**		
50,00	**65,00**	**12,50**	**HS245 0500-01-200**		
56,00	**71,00**	**12,50**	**HS245 0560-01-200**		
56,00	66,00	10,00	HS245 0560-02-200		
60,00	75,00	13,00	HS245 0600-01-200		
63,00	78,00	6,30	HS245 0630-01-200		
63,00	**78,00**	**12,50**	**HS245 0630-02-200**		
65,00	80,00	13,00	HS245 0650-01-200		
70,00	**85,00**	**12,50**	**HS245 0700-01-200**		
75,00	90,50	6,30	HS245 0750-01-200		
75,00	90,00	13,00	HS245 0750-02-200		
80,00	95,00	6,30	HS245 0800-01-200		
80,00	**95,00**	**12,50**	**HS245 0800-02-200**		
82,55	98,20	13,00	HS245 0825-01-200		
85,00	100,50	6,30	HS245 0850-01-200		
85,00	100,00	13,00	HS245 0850-02-200		
90,00	105,00	6,30	HS245 0900-01-200		
90,00	105,00	13,00	HS245 0900-02-200		
90,00	105,00	12,50	HS245 0900-03-200		
95,00	110,00	13,00	HS245 0950-01-200		
100,00	**120,00**	**16,00**	**HS245 1000-01-200**		
106,00	121,50	6,30	HS245 1060-01-200		
110,00	**130,00**	**16,00**	**HS245 1100-01-200**		
115,00	130,00	13,00	HS245 1150-01-200		
117,00	132,00	10,00	HS245 1170-01-200		
120,00	135,00	16,00	HS245 1200-01-200		
125,00	140,50	6,30	HS245 1250-01-200		
125,00	**145,00**	**16,00**	**HS245 1250-02-200**		
130,00	150,60	7,90	HS245 1300-01-200		
140,00	**160,00**	**16,00**	**HS245 1400-01-200**		

d f8/h9	**D** H10	**E** +0,2	**Part N°**		
145,00	165,60	7,90	HS245 1450-01-200		
160,00	180,50	7,50	HS245 1600-01-200		
160,00	185,00	20,00	HS245 1600-02-200		
180,00	205,00	20,00	HS245 1800-01-200		
200,00	225,00	20,00	HS245 2000-01-200		

Dimensions in bold correspond to mounting spaces as per ISO 5597

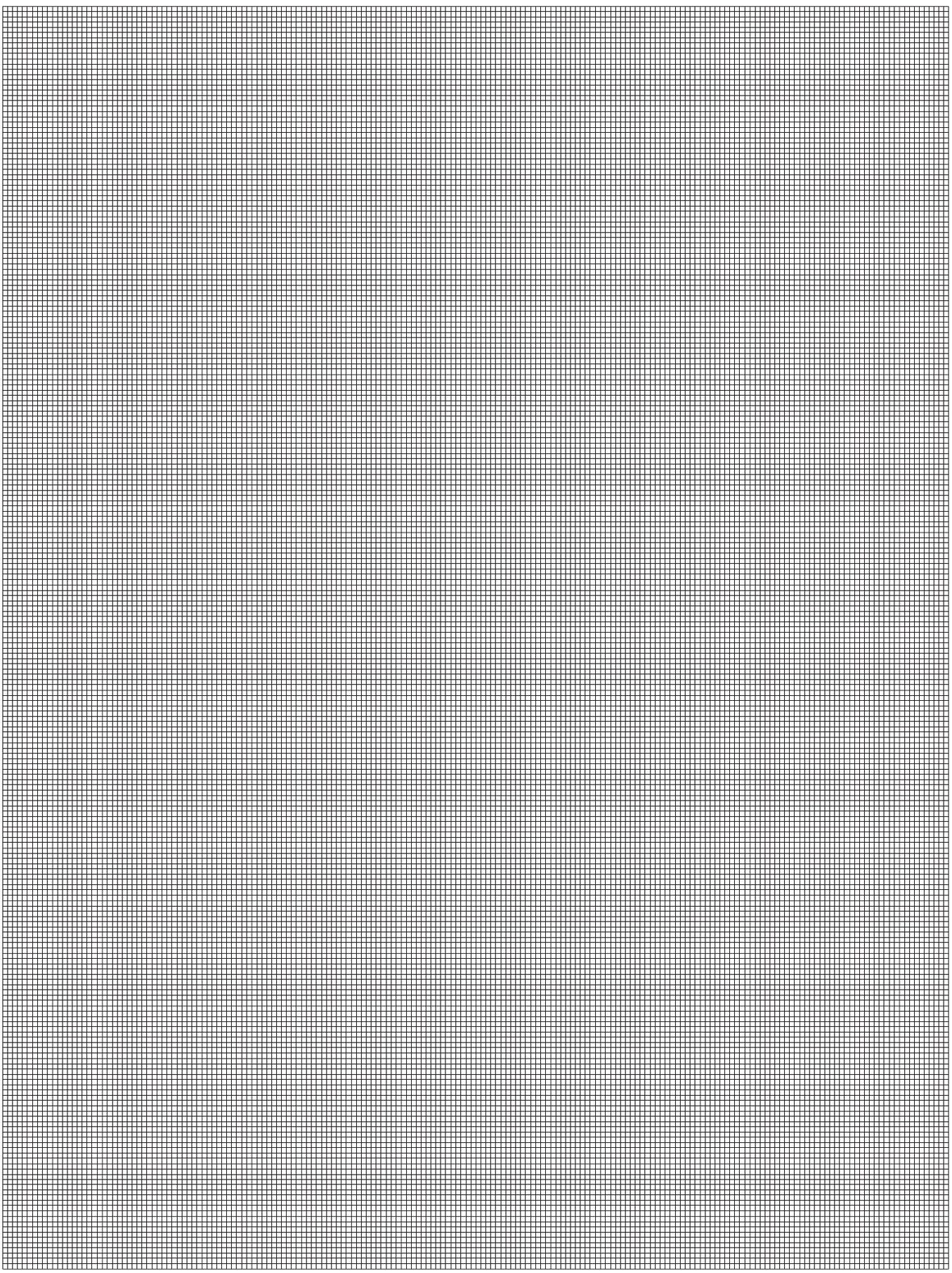
Example for ordering Rod Seal:

HS 245 0400 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension
Standard material
HME internal code

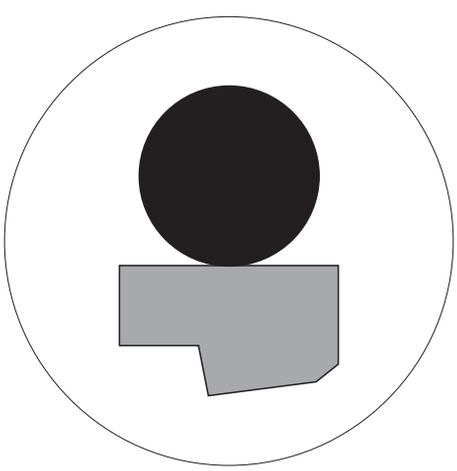
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



Rod Seal
HS 250

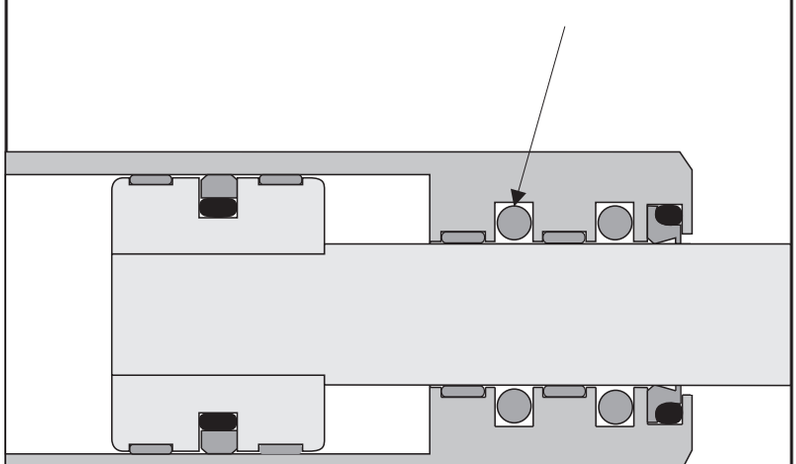
Simple acting rod seals from the HS 250 series can be used for most hydraulic applications. Different material combinations guarantee high functional security and long life over the entire pressure and velocity range, even at low friction, considering various temperatures and pressure fluids.

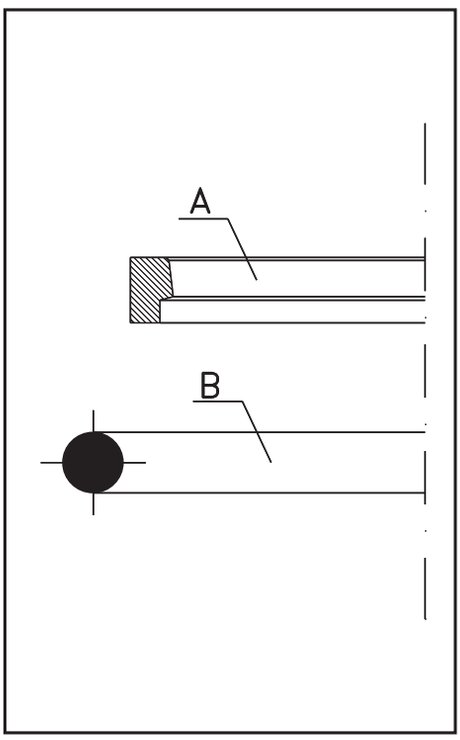


Special Features:

- Two part composition comprising of profile gasket and O-ring
- Outstanding shear characteristics, no stick-slip effect
- Good dynamic and static sealing
- Good abrasion resistance, long life
- Wide temperature range and chemical resistance, depending on O-ring material
- Designed for mounting in undivided grooves
- Available for all rod diameters up to 2500 mm

Material	: PTFE-Compound or polyurethane
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C





Profile Gasket (Part A)

Gasket section is rectangular and is provided with a stepped sealing edge on the pressure side. On the opposite side, the profile travels under a flat wedge. This special form of sealing profile helps to achieve a recovery effect. This means that the persistent oil film present on the piston rod during motion is conveyed back to the surge chamber in course of the in-movement.

Profile gaskets are manufactured from specially modified PTFE materials. Compound 55 is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularity superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms).

Standard MOC for hydraulics applications is NBR, which guarantees particularly good resistance to hydraulic fluids. For use with profile gaskets O-rings with hardness of 70 Shore A are preferred.

Materials Overview: Profile Gasket

01: Pure PTFE - Outstanding chemical resistance - used in chemical, foodstuffs and pharmaceutical industry with light mechanical stress.

12: Modified PTFE - Very good chemical resistance, outstanding shear characteristics, special purpose and intermediate stress applications.

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance, used in various areas of industry and intermediate stress hydraulic applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance, used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance, used in intermediate to high stress hydraulics applications.

67: Modified PTFE - Very high abrasion resistance and inherent stability, used in hydraulics and abrasive pressure fluid applications.

83: Modified Polyurethan - Very high abrasion resistance and inherent stability, used primarily in intermediate stress hydraulic applications.

Rod seals HS 250 have been successfully used for many years in hydraulic cylinders. To optimize rod sealing, we recommend the incorporation of two HS 250 seals followed by a single dual wiper HA 355. This seal and wiper combination affords nearly leak-free rod sealing even with heavily loaded hydraulic cylinders in demanding environments.

The seal can be used in divided and un-divided profile grooves; for use in an un-divided groove, the gasket must be carefully bent to a kidney shape. The ring is then further stretched apart through the chamfered piston rod.

Materials Overview: O-Ring

N: Acrylonitrile Butadiene Rubber - Used in general machine construction, hydraulics, pneumatics - Resistant to mineral oil based pressure fluids, HFA-, HFB- und HFC fluids and water.

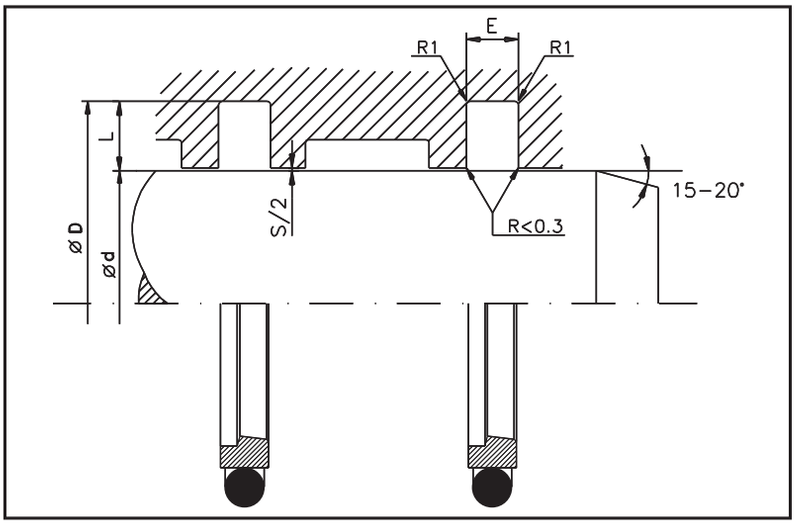
F: Fluorine containing Rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene Propylene Diene Rubbers - Used in armature and pump industry.Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils.

S: Silicon Rubbers.

C: Chloroprene Rubbers.

Rod Seal
HS 250



Limitations on Use

Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-Ring material)

Media for Use

Mineral oil based hydraulic fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending on O-Ring material).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Recommended Sizes for Installation

Section	O-Ring Cord-ø mm	Recommended Diameter Standard **d** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance **S** 0 - 200 bar mm	Max. Diameter Clearance **S** 200 - 400 bar mm	Radius **R1** max. mm
01	1,78	3 - 7,9	2,2	2,45	0,4 - 0,2	0,3 - 0,1	0,3
02	2,62	8 - 18,9	3,2	3,65	0,4 - 0,2	0,3 - 0,1	0,5
03	3,53	19 - 37,9	4,2	5,35	0,6 - 0,3	0,4 - 0,2	0,7
04	5,33	38 - 199,9	6,3	7,55	0,8 - 0,4	0,4 - 0,2	1,2
05	7,00	200 - 255,9	8,1	10,25	1,0 - 0,5	0,5 - 0,3	1,5
06	7,00	256 - 649,9	8,1	12,00	1,0 - 0,5	0,5 - 0,3	1,5

d f8/h9	**D** H9	**E** +0,2	O-Ring	**Part N°**
3,00	7,90	2,20	008	HS250 0030-01-55N
4,00	8,90	2,20	010	HS250 0040-01-55N
5,00	9,90	2,20	011	HS250 0050-01-55N
6,00	**10,90**	**2,20**	**011**	**HS250 0060-01-**55N
7,00	11,90	2,20	012	HS250 0070-01-55N
8,00	**12,90**	**2,20**	**012**	**HS250 0080-01-**55N
8,00	**15,30**	**3,20**	**011**	**HS250 0080-02-**55N
10,00	**14,90**	**2,20**	**013**	**HS250 0100-01-**55N
10,00	**17,30**	**3,20**	**113**	**HS250 0100-02-**55N
12,00	**16,90**	**2,20**	**015**	**HS250 0120-01-**55N
12,00	**19,30**	**3,20**	**114**	**HS250 0120-02-**55N
14,00	**18,90**	**2,20**	**016**	**HS250 0140-01-**55N
14,00	**21,30**	**3,20**	**115**	**HS250 0140-02-**55N
15,00	19,90	2,20	016	HS250 0150-01-55N
15,00	22,30	3,20	116	HS250 0150-02-55N
16,00	20,90	2,20	017	HS250 0160-01-55N
16,00	**23,30**	**3,20**	**116**	**HS250 0160-02-55N**
18,00	22,90	2,20	018	HS250 0180-01-55N
18,00	**25,30**	**3,20**	**118**	**HS250 0180-02-55N**
20,00	**27,30**	**3,20**	**118**	**HS250 0200-02-55N**
20,00	**30,70**	**4,20**	**214**	**HS250 0200-03-55N**
22,00	**29,30**	**3,20**	**120**	**HS250 0220-02-55N**
22,00	**32,70**	**4,20**	**215**	**HS250 0220-03-55N**
25,00	**32,30**	**3,20**	**122**	**HS250 0250-02-55N**
25,00	**35,70**	**4,20**	**217**	**HS250 0250-03-55N**
28,00	35,30	3,20	124	HS250 0280-02-55N
28,00	**38,70**	**4,20**	**219**	**HS250 0280-03-55N**

d f8/h9	**D** H9	**E** +0,2	O-Ring	**Part N°**
30,00	37,30	3,20	125	HS250 0300-02-55N
30,00	40,70	4,20	220	HS250 0300-03-55N
32,00	39,30	3,20	126	HS250 0320-02-55N
32,00	**42,70**	**4,20**	**221**	**HS250 0320-03-55N**
35,00	42,30	3,20	128	HS250 0350-02-55N
35,00	45,70	4,20	222	HS250 0350-03-55N
36,00	43,30	3,20	129	HS250 0360-02-55N
36,00	**46,70**	**4,20**	**223**	**HS250 0360-03-55N**
38,00	48,70	4,20	224	HS250 0380-03-55N
38,00	53,10	6,30	327	HS250 0380-04-55N
40,00	**50,70**	**4,20**	**224**	**HS250 0400-03-55N**
40,00	**55,10**	**6,30**	**328**	**HS250 0400-04-55N**
42,00	52,70	4,20	225	HS250 0420-03-55N
42,00	57,10	6,30	328	HS250 0420-04-55N
45,00	**55,70**	**4,20**	**226**	**HS250 0450-03-55N**
45,00	**60,10**	**6,30**	**329**	**HS250 0450-04-55N**
48,00	58,70	4,20	226	HS250 0480-03-55N
48,00	63,10	6,30	330	HS250 0480-04-55N
50,00	**60,70**	**4,20**	**227**	**HS250 0500-03-55N**
50,00	**65,10**	**6,30**	**331**	**HS250 0500-04-55N**
52,00	62,70	4,20	228	HS250 0520-03-55N
52,00	67,10	6,30	331	HS250 0520-04-55N
55,00	65,70	4,20	229	HS250 0550-03-55N
55,00	70,10	6,30	333	HS250 0550-04-55N
56,00	**66,70**	**4,20**	**229**	**HS250 0560-03-55N**
56,00	**71,10**	**6,30**	**333**	**HS250 0560-04-55N**
60,00	70,70	4,20	230	HS250 0600-03-55N

d f8/h9	**D** H9	**E** +0,2	O-Ring	**Part N°**
60,00	75,10	6,30	334	HS250 0600-04-55N
63,00	**73,70**	**4,20**	**231**	**HS250 0630-03-55N**
63,00	**78,10**	**6,30**	**335**	**HS250 0630-04-55N**
65,00	80,10	6,30	336	HS250 0650-04-55N
70,00	**85,10**	**6,30**	**337**	**HS250 0700-04-55N**
75,00	90,10	6,30	339	HS250 0750-04-55N
80,00	**95,10**	**6,30**	**340**	**HS250 0800-04-55N**
85,00	100,10	6,30	342	HS250 0850-04-55N
90,00	**105,10**	**6,30**	**343**	**HS250 0900-04-55N**
95,00	110,10	6,30	345	HS250 0950-04-55N
100,00	**115,10**	**6,30**	**347**	**HS250 1000-04-55N**
105,00	120,10	6,30	348	HS250 1050-04-55N
110,00	**125,10**	**6,30**	**350**	**HS250 1100-04-55N**
115,00	130,10	6,30	351	HS250 1150-04-55N
120,00	135,10	6,30	353	HS250 1200-04-55N
125,00	**140,10**	**6,30**	**355**	**HS250 1250-04-55N**
130,00	145,10	6,30	356	HS250 1300-04-55N
135,00	150,10	6,30	358	HS250 1350-04-55N
140,00	**155,10**	**6,30**	**359**	**HS250 1400-04-55N**
150,00	165,10	6,30	362	HS250 1500-04-55N
160,00	**175,10**	**6,30**	**363**	**HS250 1600-04-55N**
160,00	**180,50**	**8,10**	**439**	**HS250 1600-05-55N**
170,00	185,10	6,30	365	HS250 1700-04-55N
180,00	**195,10**	**6,30**	**366**	**HS250 1800-04-55N**
180,00	**200,50**	**8,10**	**442**	**HS250 1800-05-55N**
190,00	205,10	6,30	368	HS250 1900-04-55N
200,00	**220,50**	**8,10**	**445**	**HS250 2000-05-55N**
210,00	230,50	8,10	446	HS250 2100-05-55N
220,00	**240,50**	**8,10**	**447**	**HS250 2200-05-55N**
230,00	250,50	8,10	448	HS250 2300-05-55N
240,00	260,50	8,10	449	HS250 2400-05-55N
250,00	**270,50**	**8,10**	**449**	**HS250 2500-05-55N**
260,00	284,00	8,10	450	HS250 2600-06-55N
270,00	294,00	8,10	451	HS250 2700-06-55N
280,00	**304,00**	**8,10**	**452**	**HS250 2800-06-55N**
290,00	314,00	8,10	453	HS250 2900-06-55N

d f8/h9	**D** H9	**E** +0,2	O-Ring	**Part N°**
300,00	324,00	8,10	454	HS250 3000-06-55N
310,00	334,00	8,10	454	HS250 3100-06-55N
320,00	**344,00**	**8,10**	**455**	**HS250 3200-06-55N**
330,00	354,00	8,10	456	HS250 3300-06-55N
340,00	364,00	8,10	457	HS250 3400-06-55N
350,00	374,00	8,10	458	HS250 3500-06-55N
360,00	**384,00**	**8,10**	**458**	**HS250 3600-06-55N**
370,00	394,00	8,10	459	HS250 3700-06-55N
380,00	404,00	8,10	460	HS250 3800-06-55N
390,00	414,00	8,10	461	HS250 3900-06-55N
400,00	424,00	8,10	461	HS250 4000-06-55N
410,00	434,00	8,10	462	HS250 4100-06-55N
420,00	444,00	8,10	463	HS250 4200-06-55N
430,00	454,00	8,10	464	HS250 4300-06-55N
440,00	464,00	8,10	464	HS250 4400-06-55N
450,00	474,00	8,10	465	HS250 4500-06-55N
460,00	484,00	8,10	466	HS250 4600-06-55N
470,00	494,00	8,10	467	HS250 4700-06-55N
480,00	504,00	8,10	468	HS250 4800-06-55N
490,00	514,00	8,10	469	HS250 4900-06-55N
500,00	524,00	8,10	469	HS250 5000-06-55N
510,00	534,00	8,10	469	HS250 5100-06-55N
520,00	544,00	8,10	470	HS250 5200-06-55N
530,00	554,00	8,10	470	HS250 5300-06-55N
540,00	564,00	8,10	471	HS250 5400-06-55N
550,00	574,00	8,10	471	HS250 5500-06-55N
560,00	584,00	8,10	471	HS250 5600-06-55N
570,00	594,00	8,10	472	HS250 5700-06-55N
580,00	604,00	8,10	472	HS250 5800-06-55N
590,00	614,00	8,10	473	HS250 5900-06-55N
600,00	624,00	8,10	473	HS250 6000-06-55N
610,00	634,00	8,10	473	HS250 6100-06-55N
620,00	644,00	8,10	474	HS250 6200-06-55N
630,00	654,00	8,10	474	HS250 6300-06-55N
640,00	664,00	8,10	475	HS250 6400-06-55N

Further sizes up to Ø 2500 mm available on request.
Dimensions in bold correspond to mounting spaces as per DIN ISO 7425/2.

Example for ordering Rod Seal:

HS 250 0360 - 02 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Profile gasket
01 - pure PTFE
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring
N -NBR
F - FPM
E - EPDM
S - Silikon
C - Chloropren

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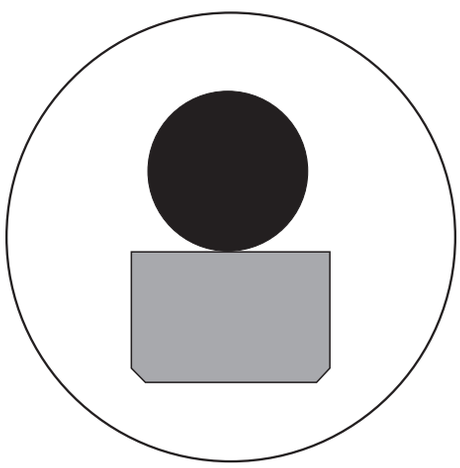
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

Rod Seal
HS 255

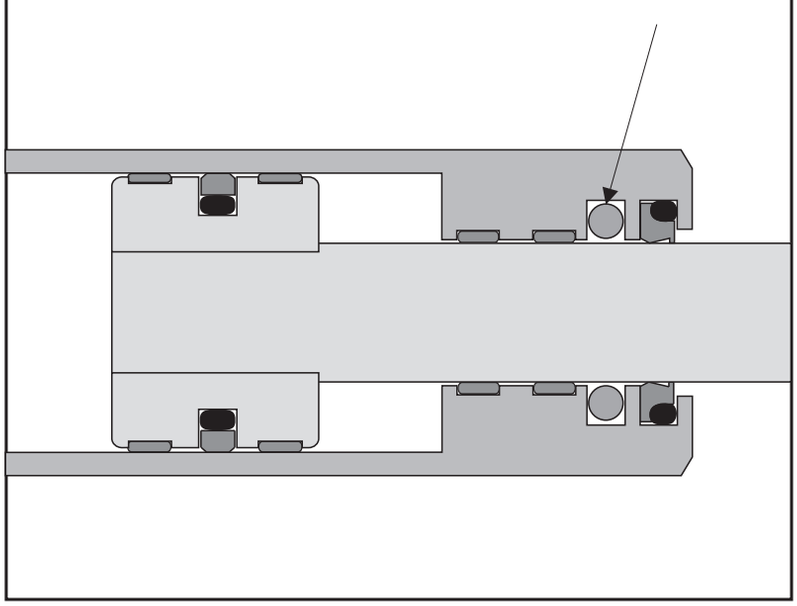
Double acting rod seals of the HS 255 series can be used in all hydraulics applications. Different materials combinations guarantee high functional reliability and long life over the entire pressure and velocity range at low friction considering various temperatures and pressure of fluids.

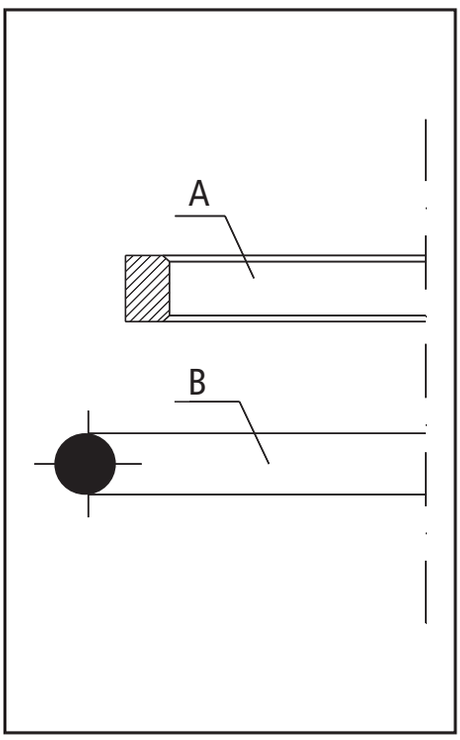


Special Features:

- Two part composition comprising of profile gasket and O-ring
- Outstanding shear characteristics, no stick-slip effect
- Good dynamic and static sealing
- Good abrasion resistance, long life
- Wide temperature range and chemical resistance depending on choice of O-ring material
- Suitable for mounting into undivided grooves
- Available for all rod diameters up to approx. 2500 mm.

Material	: PTFE-Compound
Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C





Profile Gasket (Part A)

Gasket section is rectangular and is provided with a chamfer on the dynamic side so as to simplify mounting.

Profile gaskets are manufactured from specially modified PTFE materials. Compound 55 is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularly superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms). Standard MOC for hydraulics applications is NBR (Acrylonitrile Butadiene Rubber) which guarantees particularly good resistance to hydraulic fluids.

For use with profile gaskets O-rings with hardness of 70 Shore A are preferred.

Materials Overview: Profile Gasket

01: Pure PTFE - Outstanding chemical resistance - used in chemical, foodstuffs and pharmaceutical industry with light mechanical stress.

12: Modified PTFE - Very good chemical resistance, outstanding shear characteristics - used for special purpose and intermediate-stress applications.

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance - used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance - used in water and water-oil emulsions with intermediate-stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance - used in intermediate- to high-stress hydraulics applications.

67: Modified PTFE - Very high abrasion resistance and inherent stability - used in hydraulics and abrasive pressure fluid applications.

83: Modified Polyurethane - Very high abrasion resistance and inherent stability - used primarily in intermediate-stress hydraulics applications.

Materials Overview: O-Ring

N: Acrylonitrile-Butadiene-Rubber - Used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.

F: Fluorine containing Rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene Propylene Diene Rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!

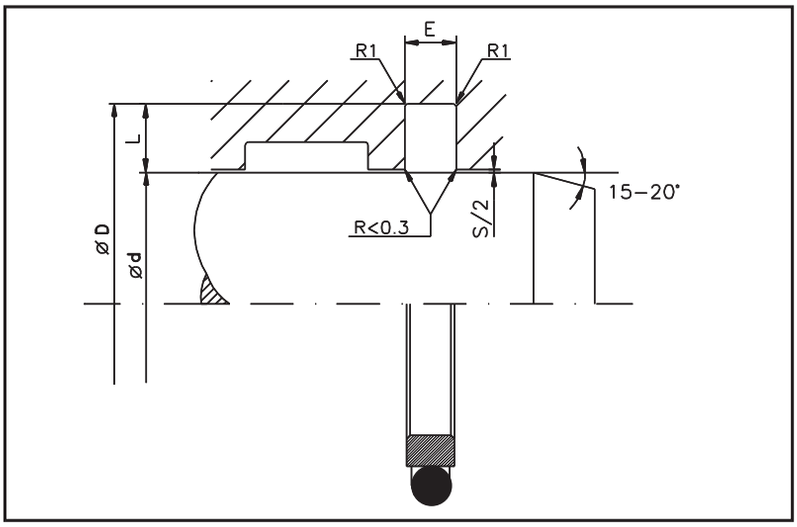
S: Silicon Rubbers.

C: Chloroprene Rubbers.

The HS 255 rod seal has been used for many years in hydraulic cylinders. It can be used for unilateral or variable pressure application on the rod.

The seal can be mounted in divided and undivided grooves (from ø 30 mm onwards). For use in an undivided groove, the profile ring must be carefully bent to a kidney shape. The ring is then further stretched apart through the chamfered piston rod.

Rod Seal
HS 255



Limitations on Use

Operating pressure	: up to 40 MPa (400 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-Ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending on O-ring material).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Recommended Sizes for Installation

Section	O-Ring Cord-ø mm	Recommended Diameter Standard **d** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance **S** 0 - 200 bar mm	Max. Diameter Clearance **S** 200 - 400 bar mm	Radius **R1** max. mm
01	1,78	3 - 7,9	2,2	2,45	0,4 - 0,2	0,3 - 0,1	0,3
02	2,62	8 - 18,9	3,2	3,65	0,4 - 0,2	0,3 - 0,1	0,5
03	3,53	19 - 37,9	4,2	5,35	0,6 - 0,3	0,4 - 0,2	0,7
04	5,33	38 - 199,9	6,3	7,55	0,8 - 0,4	0,4 - 0,2	1,2
05	7,00	200 - 255,9	8,1	10,25	1,0 - 0,5	0,5 - 0,3	1,5
06	7,00	256 - 649,9	8,1	12,00	1,0 - 0,5	0,5 - 0,3	1,5

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
4,00	8,90	2,20	010	HS255 0040-01-55N
5,00	9,90	2,20	011	HS255 0050-01-55N
6,00	10,90	2,20	011	HS255 0060-01-55N
7,00	11,90	2,20	012	HS255 0070-01-55N
8,00	**12,90**	**2,20**	**012**	**HS255 0080-01-55N**
8,00	15,30	3,20	111	HS255 0080-02-55N
10,00	**14,90**	**2,20**	**014**	**HS255 0100-01-55N**
10,00	17,30	3,20	113	HS255 0100-02-55N
12,00	**16,90**	**2,20**	**015**	**HS255 0120-01-55N**
12,00	**19,30**	**3,20**	**114**	**HS255 0120-02-55N**
14,00	**18,90**	**2,20**	**016**	**HS255 0140-01-55N**
14,00	**21,30**	**3,20**	**115**	**HS255 0140-02-55N**
15,00	22,30	3,20	115	HS255 0150-02-55N
16,00	20,90	2,20	017	HS255 0160-01-55N
16,00	**23,30**	**3,20**	**116**	**HS255 0160-02-55N**
18,00	22,90	2,20	019	HS255 0180-01-55N
18,00	**25,30**	**3,20**	**118**	**HS255 0180-02-55N**
20,00	**27,30**	**3,20**	**119**	**HS255 0200-02-55N**
20,00	**30,70**	**4,20**	**214**	**HS255 0200-03-55N**
22,00	**29,30**	**3,20**	**120**	**HS255 0220-02-55N**
22,00	**32,70**	**4,20**	**215**	**HS255 0220-03-55N**
25,00	**32,20**	**3,20**	**122**	**HS255 0250-02-55N**
25,00	**35,70**	**4,20**	**217**	**HS255 0250-03-55N**
28,00	**38,70**	**4,20**	**219**	**HS255 0280-03-55N**
30,00	37,30	3,20	125	HS255 0300-02-55N
30,00	40,70	4,20	220	HS255 0300-03-55N
32,00	39,30	3,20	126	HS255 0320-02-55N
32,00	**42,70**	**4,20**	**221**	**HS255 0320-03-55N**

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
35,00	45,70	4,20	222	HS255 0350-03-55N
36,00	43,30	3,20	129	HS255 0360-02-55N
36,00	**46,70**	**4,20**	**223**	**HS255 0360-03-55N**
40,00	**50,70**	**4,20**	**224**	**HS255 0400-03-55N**
40,00	55,10	6,30	328	HS255 0400-04-55N
45,00	**55,70**	**4,20**	**226**	**HS255 0450-03-55N**
45,00	60,10	6,30	329	HS255 0450-04-55N
50,00	**60,70**	**4,20**	**227**	**HS255 0500-03-55N**
50,00	65,10	6,30	331	HS255 0500-04-55N
56,00	**66,70**	**4,20**	**229**	**HS255 0560-03-55N**
56,00	**71,10**	**6,30**	**333**	**HS255 0560-04-55N**
60,00	70,70	4,20	230	HS255 0600-03-55N
60,00	75,10	6,30	334	HS255 0600-04-55N
63,00	**73,70**	**4,20**	**842**	**HS255 0630-03-55N**
63,00	**78,10**	**6,30**	**335**	**HS255 0630-04-55N**
65,00	80,10	6,30	336	HS255 0650-04-55N
70,00	**85,10**	**6,30**	**337**	**HS255 0700-04-55N**
75,00	90,10	6,30	339	HS255 0750-04-55N
80,00	**95,10**	**6,30**	**340**	**HS255 0800-04-55N**
85,00	100,10	6,30	342	HS255 0850-04-55N
90,00	**105,10**	**6,30**	**343**	**HS255 0900-04-55N**
95,00	110,10	6,30	345	HS255 0950-04-55N
100,00	**115,10**	**6,30**	**347**	**HS255 1000-04-55N**
105,00	120,10	6,30	348	HS255 1050-04-55N
110,00	**125,10**	**6,30**	**350**	**HS255 1100-04-55N**
115,00	130,10	6,30	351	HS255 1150-04-55N
120,00	135,10	6,30	353	HS255 1200-04-55N
125,00	**140,10**	**6,30**	**355**	**HS255 1250-04-55N**

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
130,00	145,10	6,30	356	HS255 1300-04-55N
135,00	150,10	6,30	358	HS255 1350-04-55N
140,00	**155,10**	**6,30**	**359**	**HS255 1400-04-55N**
150,00	165,10	6,30	362	HS255 1500-04-55N
160,00	**175,10**	**6,30**	**363**	**HS255 1600-04-55N**
160,00	**180,50**	**8,10**	**440**	**HS255 1600-05-55N**
170,00	185,10	6,30	365	HS255 1700-04-55N
180,00	**195,10**	**6,30**	**366**	**HS255 1800-04-55N**
180,00	**200,50**	**8,10**	**443**	**HS255 1800-05-55N**
190,00	205,10	6,30	368	HS255 1900-04-55N
200,00	**220,50**	**8,10**	**445**	**HS255 2000-05-55N**
210,00	230,50	8,10	446	HS255 2100-05-55N
220,00	**240,50**	**8,10**	**447**	**HS255 2200-05-55N**
230,00	250,50	8,10	448	HS255 2300-05-55N
240,00	260,50	8,10	449	HS255 2400-05-55N
250,00	**270,50**	**8,10**	**449**	**HS255 2500-05-55N**
260,00	284,00	8,10	450	HS255 2600-06-55N
270,00	294,00	8,10	451	HS255 2700-06-55N
280,00	**304,00**	**8,10**	**452**	**HS255 2800-06-55N**
290,00	314,00	8,10	453	HS255 2900-06-55N
300,00	324,00	8,10	454	HS255 3000-06-55N

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
310,00	334,00	8,10	454	HS255 3100-06-55N
320,00	**344,00**	**8,10**	**455**	**HS255 3200-06-55N**
330,00	354,00	8,10	456	HS255 3300-06-55N
340,00	364,00	8,10	457	HS255 3400-06-55N
350,00	374,00	8,10	458	HS255 3500-06-55N
360,00	**384,00**	**8,10**	**458**	**HS255 3600-06-55N**
370,00	394,00	8,10	459	HS255 3700-06-55N
380,00	404,00	8,10	460	HS255 3800-06-55N
390,00	414,00	8,10	461	HS255 3900-06-55N
400,00	424,00	8,10	461	HS255 4000-06-55N
410,00	434,00	8,10	462	HS255 4100-06-55N
420,00	444,00	8,10	463	HS255 4200-06-55N
430,00	454,00	8,10	464	HS255 4300-06-55N
440,00	464,00	8,10	464	HS255 4400-06-55N
450,00	474,00	8,10	465	HS255 4500-06-55N
460,00	484,00	8,10	466	HS255 4600-06-55N
470,00	494,00	8,10	467	HS255 4700-06-55N
480,00	504,00	8,10	468	HS255 4800-06-55N
490,00	514,00	8,10	469	HS255 4900-06-55N
500,00	524,00	8,10	469	HS255 5000-06-55N

Further sizes up to Ø 2500 mm available on request.
Dimensions in bold correspond to mounting spaces as per DIN ISO 7425/2.

Example for ordering Rod Seal:

HS 255 0360 - 02 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Profile gasket
01 - PTFE pure
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring
N -NBR
F - FPM
E - EPDM
S - Silikon
C - Chloropren

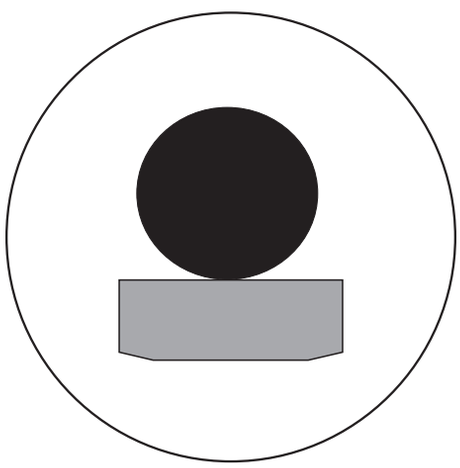
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

Rod Seal
HS 256 / HS 257

Rod seals of series HS 256 and HS 257 are preferably used in light duty hydraulic cylinders.

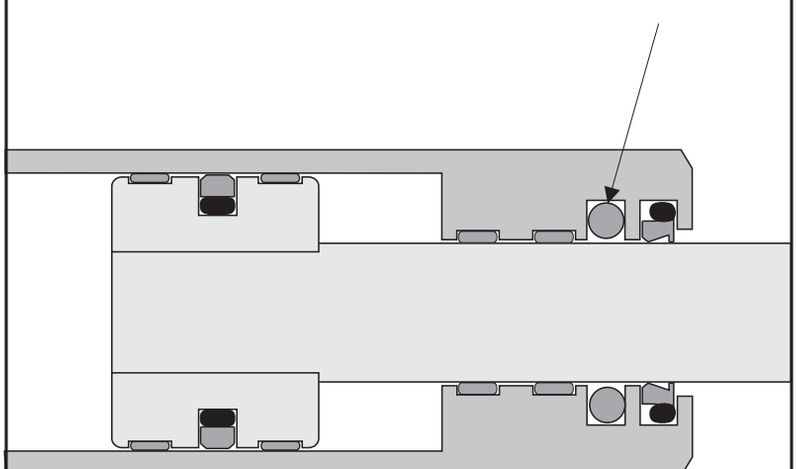
Due to their good shear characteristics and low friction, they can also be used for pneumatic cylinders.

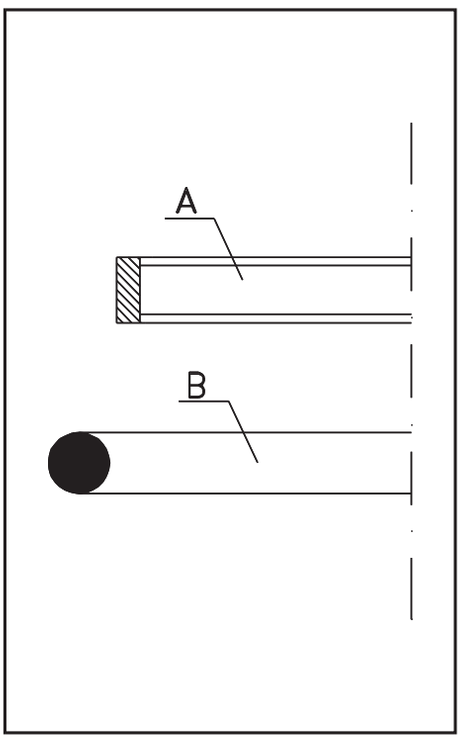


Special Features:

- Two part composition comprising of profile gasket and O-ring
- Outstanding shear characteristics, easy moving
- Low friction, no stick-slip effect
- Good dynamic and static safety
- Wide temperature range and chemical resistance depending on choice of O-ring material
- Designed for use in undivided grooves
- Available for all rod diameters up to approx. 2500mm.

Material	: PTFE-Compound
Operating pressure	: up to 16 MPa (160 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C





Profile Gasket (Part A)

Gasket section is rectangular and is provided with a chamfer on the dynamic side so as to simplify mounting.

Profile gaskets are manufactured from specially modified PTFE materials. PTFE bronze (compound N°. 55) is the standard material of construction that is used in hydraulics applications whereas PTFE carbon (compound N°. 30) is preferred in pneumatics applications.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms). Standard material of construction for hydraulics applications is NBR (Acrylonitrile Butadiene Rubber) which guarantees particularly good resistance to hydraulic fluids. O-rings with hardness of 70 Shore A are preferred.

Materials Overview: Profile Gasket

01: Pure PTFE - Outstanding chemical resistance - used in chemical, foodstuffs and pharmaceutical industry with light mechanical stress.

12: Modified PTFE - Very good chemical resistance, outstanding shear characteristics - used for special purpose and intermediate-stress applications.

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance - used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance - used in water and water-oil emulsions with intermediate-stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance - used in intermediate- to high-stress hydraulics applications.

67: Modified PTFE - Very high abrasion resistance and inherent stability - used in hydraulics and abrasive pressure fluid applications.

83: Modified Polyurethane - Very high abrasion resistance and inherent stability - used primarily in intermediate-stress hydraulics applications.

Materials Overview: O-Ring

N: Acrylonitrile-Butadiene-Rubber - Used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.

F: Fluorine containing Rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene Propylene Diene Rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!

S: Silicon Rubbers.

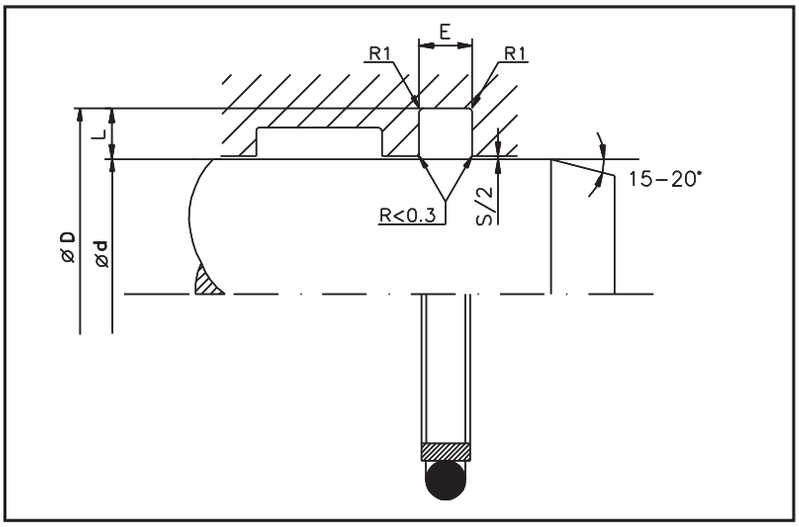
C: Chloroprene Rubbers.

Rod seals of the series HS 256 and HS 257 have been used for years in hydraulic cylinders that call for easy mobility in use.

The seal can be used in divided and undivided (from approx. 20 mm onwards) grooves. For use in an undivided groove, the profile ring must be carefully bent to a kidney shape and subsequently calibrated.

For later designs, please use our models HS 255.

Rod Seal
HS 256 / HS 257



Limitations on Use

Operating pressure	: up to 16 MPa (160 bar)
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-Ring material)

Media for Use

Mineral oil based hydraulic fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending on O-ring material).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Recommended Sizes of Installation for Profile HS 256

Section	O-Ring Cord-ø mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance 0 - 160 bar **S** mm	Radius **R1 max.** mm
01	1,78	3,0 - 10	2,00	1,95	0,10	0,2
02	2,62	10,1 - 18	2,80	2,90	0,10	0,2
03	3,53	18,1 - 38	3,80	3,65	0,15	0,3
04	5,33	38,1 - 110	5,60	6,00	0,15	0,3
05	7,00	115 - 150	7,55	7,30	0,20	0,4
06	7,00	151 - 239	7,55	8,70	0,20	0,4
07	7,00	240 - 380	7,55	11,70	0,20	0,4

Profil HS 256

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
3,00	6,90	2,00	007	HS256 0030-01-55N
4,00	7,90	2,00	008	HS256 0040-01-55N
5,00	8,90	2,00	010	HS256 0050-01-55N
6,00	9,90	2,00	011	HS256 0060-01-55N
8,00	11,90	2,00	012	HS256 0080-01-55N
10,00	13,90	2,00	013	HS256 0100-01-55N
10,00	15,80	2,80	111	HS256 0100-02-55N
11,00	16,80	2,80	112	HS256 0110-02-55N
12,00	17,80	2,80	113	HS256 0120-02-55N
14,00	19,80	2,80	114	HS256 0140-02-55N
15,00	20,80	2,80	115	HS256 0150-02-55N
16,00	21,80	2,80	115	HS256 0160-02-55N
18,00	23,80	2,80	116	HS256 0180-02-55N
18,00	25,30	3,80	211	HS256 0180-03-55N
20,00	27,30	3,80	212	HS256 0200-03-55N
22,00	29,30	3,80	213	HS256 0220-03-55N
23,00	30,30	3,80	214	HS256 0230-03-55N
25,00	32,30	3,80	215	HS256 0250-03-55N
26,00	33,30	3,80	215	HS256 0260-03-55N
28,00	35,30	3,80	217	HS256 0280-03-55N
30,00	37,30	3,80	218	HS256 0300-03-55N
32,00	39,30	3,80	219	HS256 0320-03-55N
33,00	40,30	3,80	220	HS256 0330-03-55N
35,00	42,30	3,80	221	HS256 0350-03-55N
36,00	43,30	3,80	222	HS256 0360-03-55N
38,00	45,30	3,80	222	HS256 0380-03-55N
38,00	50,00	5,60	326	HS256 0380-04-55N

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
40,00	52,00	5,60	327	HS256 0400-04-55N
44,00	56,00	5,60	328	HS256 0440-04-55N
45,00	57,00	5,60	328	HS256 0450-04-55N
50,00	62,00	5,60	330	HS256 0500-04-55N
53,00	65,00	5,60	331	HS256 0530-04-55N
56,00	68,00	5,60	332	HS256 0560-04-55N
60,00	72,00	5,60	333	HS256 0600-04-55N
63,00	75,00	5,60	334	HS256 0630-04-55N
65,00	77,00	5,60	334	HS256 0650-04-55N
68,00	80,00	5,60	335	HS256 0680-04-55N
70,00	82,00	5,60	336	HS256 0700-04-55N
75,00	87,00	5,60	338	HS256 0750-04-55N
80,00	92,00	5,60	339	HS256 0800-04-55N
85,00	97,00	5,60	341	HS256 0850-04-55N
88,00	100,00	5,60	342	HS256 0880-04-55N
90,00	102,00	5,60	342	HS256 0900-04-55N
95,00	107,00	5,60	344	HS256 0950-04-55N
98,00	110,00	5,60	345	HS256 0980-04-55N
100,00	112,00	5,60	345	HS256 1000-04-55N
105,00	117,00	5,60	347	HS256 1050-04-55N
107,00	119,00	5,60	348	HS256 1070-04-55N
110,00	122,00	5,60	349	HS256 1100-04-55N
115,00	129,60	7,55	426	HS256 1150-05-55N
117,00	131,60	7,55	427	HS256 1170-05-55N
120,00	134,60	7,55	428	HS256 1200-05-55N
123,00	137,60	7,55	429	HS256 1230-05-55N
125,00	139,60	7,55	429	HS256 1250-05-55N

Profil HS 256

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
130,00	144,60	7,55	431	HS256 1300-05-55N
133,00	147,60	7,55	432	HS256 1330-05-55N
135,00	149,60	7,55	432	HS256 1350-05-55N
140,00	154,60	7,55	434	HS256 1400-05-55N
142,00	156,60	7,55	435	HS256 1420-05-55N
145,00	159,60	7,55	436	HS256 1450-05-55N
150,00	164,60	7,55	437	HS256 1500-05-55N
155,00	172,40	7,55	438	HS256 1550-06-55N
160,00	177,40	7,55	439	HS256 1600-06-55N
165,00	182,40	7,55	440	HS256 1650-06-55N
170,00	187,40	7,55	441	HS256 1700-06-55N
175,00	192,40	7,55	441	HS256 1750-06-55N
180,00	197,40	7,55	442	HS256 1800-06-55N
190,00	207,40	7,55	444	HS256 1900-06-55N
195,00	212,40	7,55	445	HS256 1950-06-55N

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
200,00	217,40	7,55	445	HS256 2000-06-55N
220,00	237,40	7,55	447	HS256 2200-06-55N
230,00	247,40	7,55	447	HS256 2300-06-55N
240,00	263,40	7,55	448	HS256 2400-07-55N
250,00	273,40	7,55	449	HS256 2500-07-55N
270,00	293,40	7,55	451	HS256 2700-07-55N
280,00	303,40	7,55	451	HS256 2800-07-55N
290,00	313,40	7,55	452	HS256 2900-07-55N
300,00	323,40	7,55	453	HS256 3000-07-55N
320,00	343,40	7,55	454	HS256 3200-07-55N
330,00	353,40	7,55	455	HS256 3300-07-55N
340,00	363,40	7,55	456	HS256 3400-07-55N
360,00	383,40	7,55	458	HS256 3600-07-55N
370,00	393,40	7,55	458	HS256 3700-07-55N
380,00	403,40	7,55	459	HS256 3800-07-55N

Further sizes up to Ø 2500 mm available on request.

Profil HS 257

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
10,00	16,20	3,20	12,3 x 2,4	HS257 0100-01-55N
12,00	18,20	3,20	14,3 x 2,4	HS257 0120-01-55N
14,00	20,20	3,20	16,3 x 2,4	HS257 0140-01-55N
15,00	21,20	3,20	17,3 x 2,4	HS257 0150-01-55N
16,00	22,20	3,20	18,3 x 2,4	HS257 0160-01-55N
18,00	24,20	3,20	20,3 x 2,4	HS257 0180-01-55N
20,00	26,20	3,20	22,3 x 2,4	HS257 0200-01-55N
22,00	28,20	3,20	23,3 x 2,4	HS257 0220-01-55N
25,00	32,20	4,00	27,0 x 3,0	HS257 0250-01-55N
28,00	35,20	4,00	30,2 x 3,0	HS257 0280-01-55N
30,00	37,20	4,00	32,2 x 3,0	HS257 0300-01-55N
32,00	39,20	4,00	32,2 x 3,0	HS257 0320-01-55N
35,00	42,20	4,00	36,2 x 3,0	HS257 0350-01-55N
36,00	43,20	4,00	38,0 x 3,0	HS257 0360-01-55N
38,00	45,20	4,00	40,2 x 3,0	HS257 0380-01-55N
40,00	47,20	4,00	42,2 x 3,0	HS257 0400-01-55N
42,00	49,20	4,00	44,2 x 3,0	HS257 0420-01-55N

d f8/h9	**D** H 9	**E** +0,2	O-Ring	**Part N°**
45,00	52,20	4,00	46,2 x 3,0	HS257 0450-01-55N
48,00	55,20	4,00	50,2 x 3,0	HS257 0480-01-55N
50,00	57,20	4,00	52,0 x 3,0	HS257 0500-01-55N
52,00	59,20	4,00	54,2 x 3,0	HS257 0520-01-55N
55,00	62,20	4,00	57,2 x 3,0	HS257 0550-01-55N
56,00	63,20	4,00	58,0 x 3,0	HS257 0560-01-55N
60,00	72,20	7,50	62,2 x 5,7	HS257 0600-01-55N
63,00	75,20	7,50	64,2 x 5,7	HS257 0630-01-55N
65,00	77,20	7,50	67,2 x 5,7	HS257 0650-01-55N
70,00	82,20	7,50	71,2 x 5,7	HS257 0700-01-55N
75,00	87,20	7,50	77,2 x 5,7	HS257 0750-01-55N
80,00	92,20	7,50	81,2 x 5,7	HS257 0800-01-55N
85,00	97,20	7,50	87,2 x 5,7	HS257 0850-01-55N
90,00	102,20	7,50	92,2 x 5,7	HS257 0900-01-55N
95,00	107,20	7,50	97,2 x 5,7	HS257 0950-01-55N
100,00	112,20	7,50	100,0 x 5,7	HS257 1000-01-55N

Example for ordering Rod Seal:

HS 256 0360 - 02 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Profile gasket
01 - PTFE pure
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring
N -NBR
F - FPM
E - EPDM
S - Silicon
C - Chloropren

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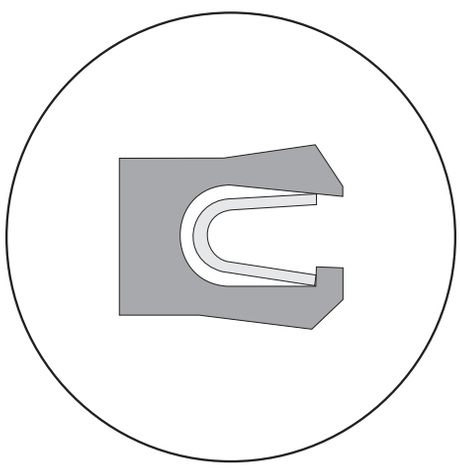
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

Rod Seal
HS 270 / HS 271

In applications where normal elastomer materials fail to be acceptable due to limited thermal and chemical resistance, Flexi seals provide a solution to the selection of seals.

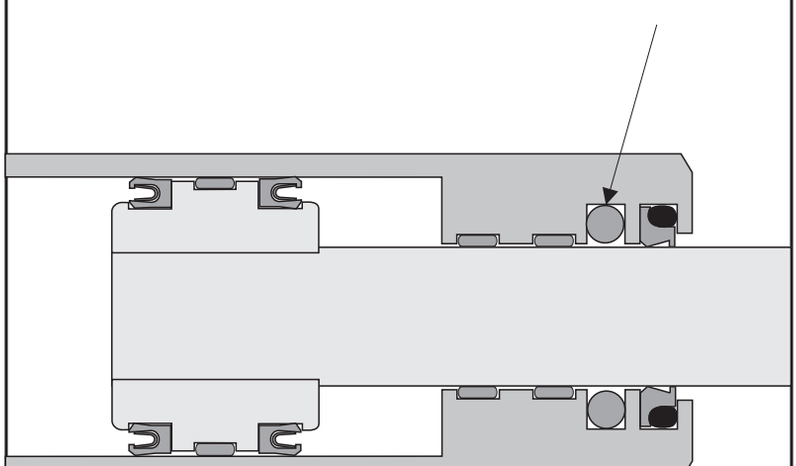
Flexiseal HS 270 and HS 271 is a spring prestressed single acting rod seal. Different materials for profile gasket and spring widen the range of application to cover the chemical, pharmaceutical, foodstuffs and equipment constructing industries.

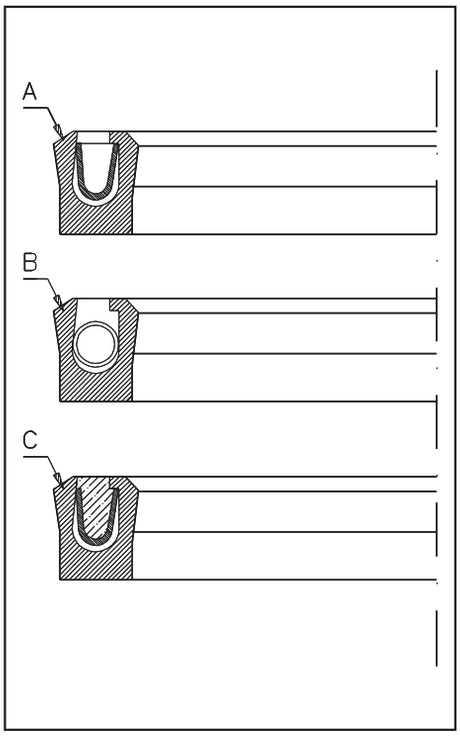


Special Features:

- High chemical resistance to most fluids, gases and other chemicals
- Very good shear characteristics, no stick-slip effect
- Low frictional values and good anti-galling behaviour
- Very wide temperature range
- Suitable to O-ring grooves as per DIN ISO 3771 and MIL-G-5514F
- Available for every rod diameter up to approx. 2500 mm.

Material	: PTFE-Compound
Operating pressure	: up to 35 MPa (350 bar)
Velocity	: reciprocating to 20 m/s
Temperature	: -150 to +225 °C





Profile Gasket with Spring

The seal consists of a U-shaped profile gasket in which a metallic ring is incorporated as a pre-stressing element. To enhance sealing characteristics and service life, the (internal) dynamic sealing lip is designed as somewhat more robust than the (external) static sealing lip.

All profile gaskets are made from modified PTFE materials. The standard material for all applications is compound 31 in combination with a pre-stressing spring from stainless steel.

Materials Overview - Profile Gasket:

31: Modified PTFE + carbon fiber - Good chemical and thermal resistance. Used in intermediate-stress applications against hard surfaces. Also used in water-oil emulsions.

12: Modified PTFE - Very good chemical resistance, abrasion resistance, inherent stability, outstanding shear characteristics, special purpose and intermediate-stress applications.

67: Modified PTFE - High abrasion resistance, very good shear characteristics and inherent stability, high compressive strength, good chemical and thermal resistance, used in hydraulics and demanding applications. Other materials available on request.

Andere Werkstoffe werden auf Anfrage geliefert.

Spring Construction

0: Stainless steel for general applications (A).

1: Stainless steel for aggressive media (B).

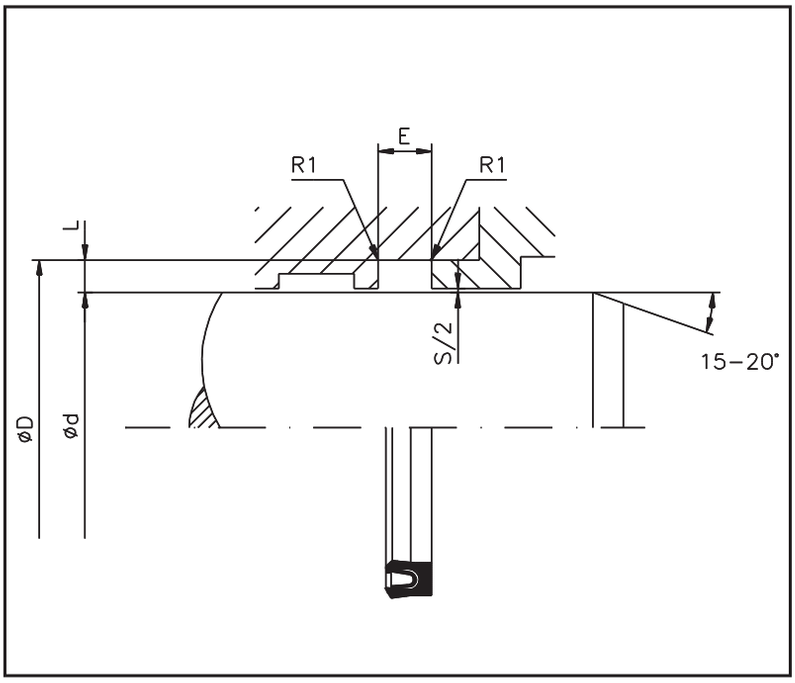
2: Stainless steel for general applications, but cast in silicon (C).

3: Stainless steel for aggressive media, but cast in silicon.

In types 2 and 3, the space around the spring is filled with silicon. Since the seals can be sterilized, they are preferentially used in the foodstuffs industry.

Flexiseal is often used instead of O-rings. In this case care must be taken to ensure that an open resp. undivided groove is available for ease and security of mounting.

Rod Seal
HS 270 / HS 271



Limitations on Use

Operating pressure	: up to 35 MPa (350 bar)
Velocity	: reciprocating to 20 m/s
Temperature	: -150 to +255 °C

Media for Use

Mineral and synthetic pressure fluids, water, air, steam, acids, caustic solutions, various chemicals, depending on sealing and spring material.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Tolerances

Nominal diameter	d	f8/h9
Groove root diameter	D	H11
Groove width	E	+0,2 / -0

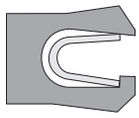
Recommended Sizes of Installation for HS 270 (O-Ring Grooves without Thrust Ring)

Section	O-Ring Equivalent mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance **S** mm	Radius **R1** max. mm
1	1,78	4 - 9,9	2,40	1,45	0,13	0,4
2	2,62	10 - 19,9	3,60	2,25	0,13	0,4
3	3,53	20 - 39,9	4,80	3,10	0,15	0,6
4	5,33	40 - 119,9	7,10	4,70	0,17	0,8
5	7,00	120 - 700,0	9,50	6,10	0,25	0,8

Recommended Sizes of Installation for HS 271 (O-Ring Grooves with Thrust Ring)

Section	O-Ring Equivalent mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearance **S** mm	Radius **R1** max. mm
1	1,78	4 - 9,9	3,80	1,45	0,13	0,4
2	2,62	10 - 19,9	4,65	2,25	0,13	0,4
3	3,53	20 - 39,9	5,70	3,10	0,15	0,6
4	5,33	40 - 119,9	8,50	4,70	0,17	0,8
5	7,00	120 - 700,0	11,20	6,10	0,25	0,8

Further sizes available up to Ø 2500 mm on request.



Example for ordering Rod Seal:

HS 270 0360 - 03 - 31P - ...

- Profile
- Nominal diameter x 10
- Spring construction (Standard)
- Cross-section
- Material profile gasket (Standard)
- HME internal code

Material Key:

Profile Gasket:
31 - PTFE carbon
12 - modified PTFE
67 - modified PTFE

Spring construction:
0 - Standard
1 - for aggressive media
2 - standard silicon cast
3 - for aggressive media silicon cast

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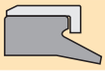
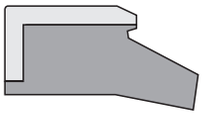
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

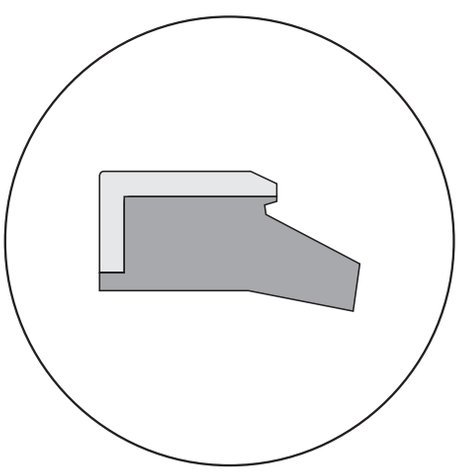
Profile	Type	Specification	Limitations of Use		Material	
			Temperature	Velocity	Sealing element	Page
	HA 300	Single acting metal caged	-30 up to +110° C	up to 1 m/s	NBR	3
	HA 305	Single acting metal caged	-30 up to +110° C	up to 1 m/s	NBR	7
	HA 310	Single acting	-30 up to +110° C	up to 1 m/s	NBR	11
	HA 315	Single acting	-30 up to +110° C	up to 1 m/s	NBR	15
	HA 325	Single acting	-35 up to +110° C	up to 1 m/s	AU Polyurethane	19
	HA 326	Single acting	-40 up to +120° C	up to 1 m/s	TPE Polyurethane	23
	HA 328	Single acting	-35 up to +110° C	up to 1 m/s	AU Polyurethane	25
	HA 330	Single acting	-35 up to +110° C	up to 1 m/s	AU Polyurethane	29
	HA 331	Double acting	-35 up to +110° C	up to 1 m/s	AU Polyurethane	33
	HA 335	Double acting	-35 up to +110° C	up to 1 m/s	AU Polyurethane	37
	HA 340	Discontinued item Replacement article HA341			AU Polyurethan	41
	HA 341	Single acting metal caged	-35 up to +110° C	up to 1 m/s	AU Polyurethane	45
	HA 342	Single acting - metal caged without additional slip off lip	-35 up to +110° C	up to 1 m/s	AU Polyurethane	45
	HA 350	Single acting with O - ring	-40 up to +200° C	up to 15 m/s	PTFE Compound	51
	HA 355	Double acting with O - ring	-40 up to +200° C	up to 15 m/s	PTFE Compound	57
	HA 356	Double acting with O - ring	-40 up to +200° C	up to 15 m/s	PTFE Compound	63
	HA 360	Rip seal as special wiper	-60 up to +200° C	up to 15 m/s	Stainless steel	69



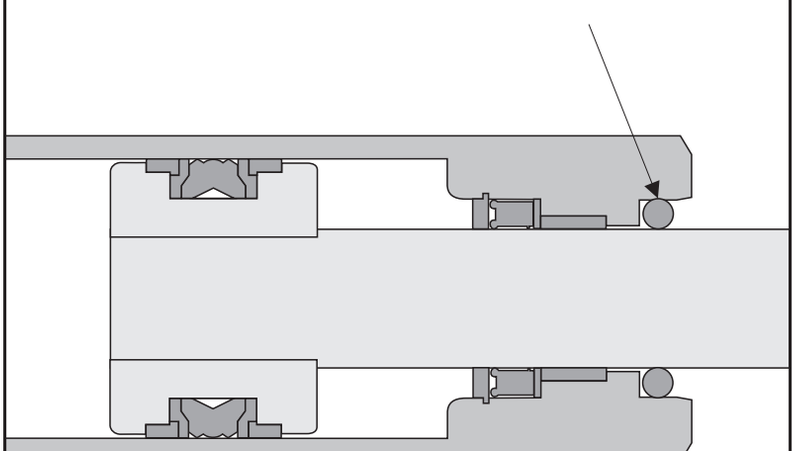
The single acting wiper HA 300 which has been in use for a long time excels in terms of high wiper action and easy assembly. It reliably blocks the entry of dirt-particles into the system, thus enhancing service life of rod seals and slides.

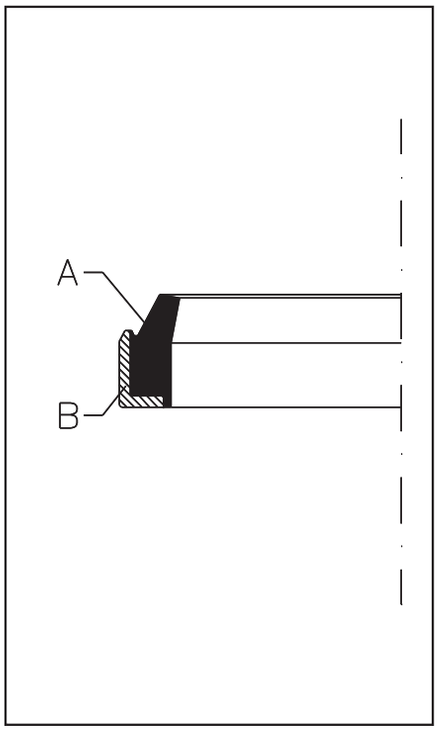
Special Features:

- Excellent wiper action at low friction
- Low wear even under demanding conditions
- Form vulcanised elastomer and metal combination
- Easy assembly in open grooves; secure sealing of wiper
- Groove geometry is easy to produce
- Elastomeric parts available in FPM for special applications
- Extensive size series also for ISO mounting spaces.



Material : elastomer-metal-combination
Velocity : reciprocating to 1 m/s
Temperature : -30 to +110 °C





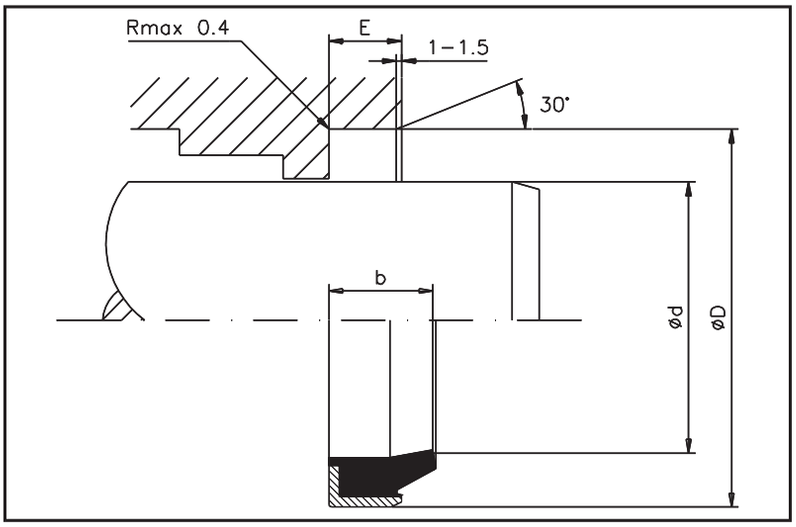
Wiper Ring (Part A)

Material: Acrylonitrile Rubber (NBR)
Special materials and practical design of the robust wiper lip ensure good wiper action at low friction. Entry of contaminants into the system is reliably prevented, thus enhancing the life of rod seals and slides. Wiper ring is inseparably vulcanized into the metallic ring.

Metal Cage (Part B)

Material: Steel
The precision metal cage is finished to an oversize at the external diameter and close manufacturing tolerances guarantee a secure hold and precise press-fit in the housing. This cage is also available in high grade steel on request.

WIPER
HA 300



Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -30 to +110 ° C

Media for Use

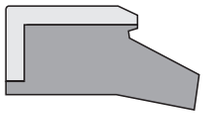
Mineral oil based hydraulic oil, flame resistant pressure media and emulsions (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H8	**E** +0,2	**b**	**Part N°.**
10,00	**16,00**	**3,00**	**4,50**	**HA300 0100-01-100**
10,00	**20,00**	**5,00**	**8,00**	**HA300 0100-02-100**
12,00	**20,00**	**4,00**	**6,00**	**HA300 0120-01-100**
12,00	**22,00**	**5,00**	**8,00**	**HA300 0120-02-100**
14,00	**19,80**	**3,00**	**4,50**	**HA300 0140-01-100**
14,00	**20,00**	**3,50**	**5,00**	**HA300 0140-02-100**
14,00	**22,00**	**3,00**	**4,00**	**HA300 0140-03-100**
15,00	25,00	5,00	8,00	HA300 0150-01-100
16,00	**22,00**	**3,00**	**4,00**	**HA300 0160-01-100**
16,00	**24,00**	**3,00**	**4,00**	**HA300 0160-02-100**
16,00	**26,00**	**5,00**	**8,00**	**HA300 0160-03-100**
18,00	**28,00**	**5,00**	**7,00**	**HA300 0180-01-100**
18,00	**28,00**	**7,00**	**10,00**	**HA300 0180-02-100**
18,00	**28,00**	**7,00**	**12,00**	**HA300 0180-03-100**
18,00	**32,00**	**5,00**	**9,00**	**HA300 0180-04-100**
20,00	**28,00**	**3,50**	**5,00**	**HA300 0200-01-100**
20,00	**28,00**	**5,00**	**8,00**	**HA300 0200-02-100**
20,00	**30,00**	**4,00**	**6,00**	**HA300 0200-03-100**
20,00	**30,00**	**5,00**	**8,00**	**HA300 0200-04-100**
20,00	**30,00**	**7,00**	**10,00**	**HA300 0200-05-100**
20,00	**35,00**	**7,00**	**10,00**	**HA300 0200-06-100**
21,00	28,00	3,50	5,00	HA300 0210-01-100
22,00	**28,00**	**5,00**	**9,00**	**HA300 0220-01-100**
22,00	**32,00**	**5,00**	**7,00**	**HA300 0220-02-100**
22,00	**32,00**	**7,00**	**10,00**	**HA300 0220-03-100**
22,00	**35,00**	**5,00**	**8,00**	**HA300 0220-04-100**
24,00	32,00	5,00	7,00	HA300 0240-01-100
25,00	**31,00**	**5,00**	**7,00**	**HA300 0250-01-100**
25,00	**33,00**	**4,00**	**7,00**	**HA300 0250-02-100**
25,00	**35,00**	**5,00**	**8,00**	**HA300 0250-03-100**
25,00	**35,00**	**7,00**	**10,00**	**HA300 0250-04-100**
28,00	**38,00**	**5,00**	**8,00**	**HA300 0280-01-100**
28,00	**38,00**	**7,00**	**10,00**	**HA300 0280-02-100**
28,00	**40,00**	**7,00**	**10,00**	**HA300 0280-03-100**
30,00	40,00	5,00	8,00	HA300 0300-01-100
30,00	40,00	7,00	10,00	HA300 0300-02-100
30,00	45,00	5,00	8,00	HA300 0300-03-100
32,00	**40,00**	**4,00**	**7,00**	**HA300 0320-01-100**
32,00	**40,00**	**7,00**	**10,00**	**HA300 0320-02-100**

d f8/h9	**D** H8	**E** +0,2	**b**	**Part N°.**
32,00	**42,00**	**5,00**	**7,00**	**HA300 0320-03-100**
32,00	**42,00**	**7,00**	**10,00**	**HA300 0320-04-100**
32,00	**45,00**	**4,00**	**8,00**	**HA300 0320-05-100**
32,00	**45,00**	**5,00**	**7,00**	**HA300 0320-06-100**
32,00	**45,00**	**7,00**	**10,00**	**HA300 0320-07-100**
35,00	45,00	5,00	8,00	HA300 0350-01-100
35,00	45,00	7,00	10,00	HA300 0350-02-100
35,00	52,00	7,00	10,00	HA300 0350-03-100
36,00	45,00	7,00	10,00	HA300 0360-01-100
36,00	46,00	7,00	10,00	HA300 0360-02-100
38,00	48,00	7,00	10,00	HA300 0380-01-100
40,00	**50,00**	**5,00**	**8,00**	**HA300 0400-01-100**
40,00	**50,00**	**7,00**	**10,00**	**HA300 0400-02-100**
40,00	**52,00**	**5,00**	**8,00**	**HA300 0400-03-100**
40,00	**52,00**	**7,00**	**10,00**	**HA300 0400-04-100**
42,00	52,00	7,00	10,00	HA300 0420-01-100
42,00	55,00	7,00	10,00	HA300 0420-02-100
45,00	**55,00**	**7,00**	**10,00**	**HA300 0450-01-100**
45,00	**60,00**	**7,00**	**10,00**	**HA300 0450-02-100**
48,00	60,00	7,00	10,00	HA300 0480-01-100
50,00	**56,00**	**5,00**	**7,00**	**HA300 0500-01-100**
50,00	**56,00**	**5,00**	**8,00**	**HA300 0500-02-100**
50,00	**60,00**	**5,00**	**7,00**	**HA300 0500-03-100**
50,00	**60,00**	**7,00**	**10,00**	**HA300 0500-04-100**
50,00	**65,00**	**7,00**	**10,00**	**HA300 0500-05-100**
52,00	62,00	7,00	10,00	HA300 0520-01-100
55,00	63,00	7,00	10,00	HA300 0550-01-100
55,00	65,00	7,00	10,00	HA300 0550-02-100
56,00	**65,00**	**7,00**	**10,00**	**HA300 0560-01-100**
56,00	**66,00**	**7,00**	**10,00**	**HA300 0560-02-100**
60,00	70,00	7,00	10,00	HA300 0600-01-100
60,00	80,00	7,00	10,00	HA300 0600-03-100
63,00	**75,00**	**7,00**	**10,00**	**HA300 0630-01-100**
65,00	75,00	7,00	10,00	HA300 0650-01-100
70,00	**80,00**	**7,00**	**10,00**	**HA300 0700-01-100**
75,00	85,00	7,00	10,00	HA300 0750-01-100
75,00	87,00	5,00	7,00	HA300 0750-02-100
78,00	88,00	7,00	10,00	HA300 0780-01-100
80,00	90,00	7,00	10,00	HA300 0800-01-100



d f8/h9	**D** H8	**E** +0,2	**b**	**Part N°.**
85,00	95,00	7,00	10,00	HA300 0850-01-100
90,00	100,00	7,00	10,00	HA300 0900-01-100
95,00	105,00	7,00	10,00	HA300 0950-01-100
100,00	**110,00**	**7,00**	**10,00**	**HA300 1000-01-100**
105,00	115,00	7,00	10,00	HA300 1050-01-100
110,00	**120,00**	**7,00**	**10,00**	**HA300 1100-01-100**
115,00	125,00	7,00	10,00	HA300 1150-01-100
120,00	130,00	7,00	10,00	HA300 1200-01-100
125,00	**140,00**	**9,00**	**12,00**	**HA300 1250-01-100**
130,00	145,00	9,00	12,00	HA300 1300-01-100
135,00	145,00	7,00	10,00	HA300 1350-01-100
135,00	150,00	9,00	12,00	HA300 1350-02-100
140,00	**150,00**	**7,00**	**10,00**	**HA300 1400-01-100**
140,00	155,00	9,00	12,00	HA300 1400-02-100

d f8/h9	**D** H8	**E** +0,2	**b**	**Part N°.**
145,00	160,00	9,00	12,00	HA300 1450-01-100
150,00	165,00	9,00	12,00	HA300 1500-01-100
160,00	**175,00**	**9,00**	**12,00**	**HA300 1600-01-100**
163,00	175,00	7,00	10,00	HA300 1630-01-100
170,00	185,00	10,00	14,00	HA300 1700-01-100
180,00	**195,00**	**10,00**	**14,00**	**HA300 1800-01-100**
200,00	**220,00**	**12,00**	**16,00**	**HA300 2000-01-100**
210,00	230,00	12,00	16,00	HA300 2100-01-100
220,00	**240,00**	**9,00**	**12,00**	**HA300 2200-01-100**
310,00	340,00	16,00	22,00	HA300 3100-01-100
320,00	**340,00**	**12,00**	**16,00**	**HA300 3200-01-100**
360,00	**380,00**	**15,00**	**18,00**	**HA300 3600-01-100**
390,00	420,00	16,00	22,00	HA300 3900-01-100
490,00	520,00	16,00	22,00	HA300 4900-01-100

Dimensions in bold correspond to rod diameter as per ISO 3320.
Further sizes also available in FPM on request.

Example for ordering Wipers:

HA 300 0320 - 01 - 100 - ...

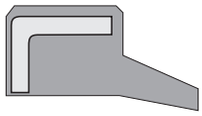
- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Material Key:

Wiper
100 - NBR
120 - FPM

Issue
01 | 24

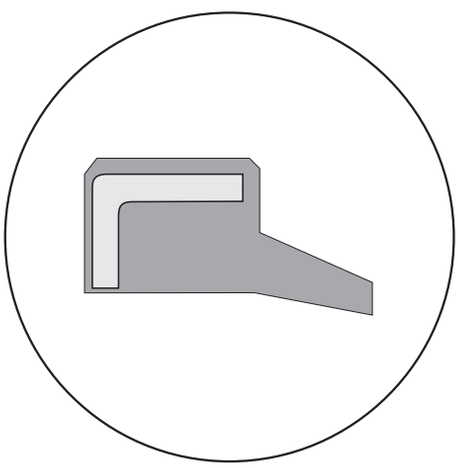
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



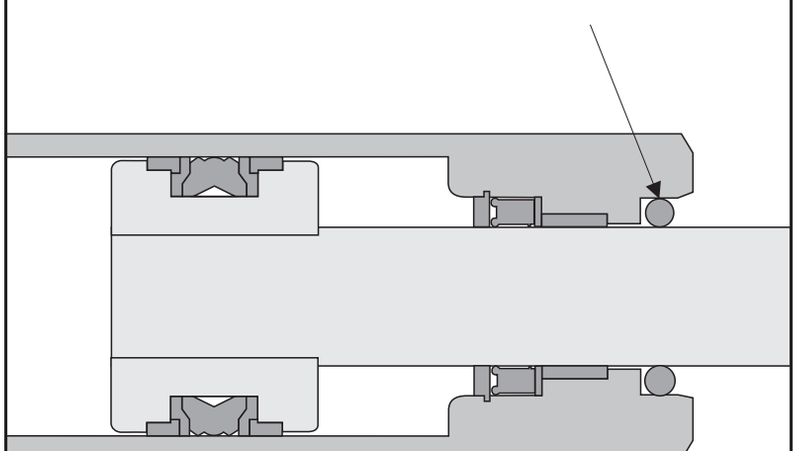
Single acting wiper HA 305 guarantees good wiper action. This system reliably protects the rod slide from entry by dirt-particles and water, thereby enhancing service life of rod seals and slides.

Special Features:

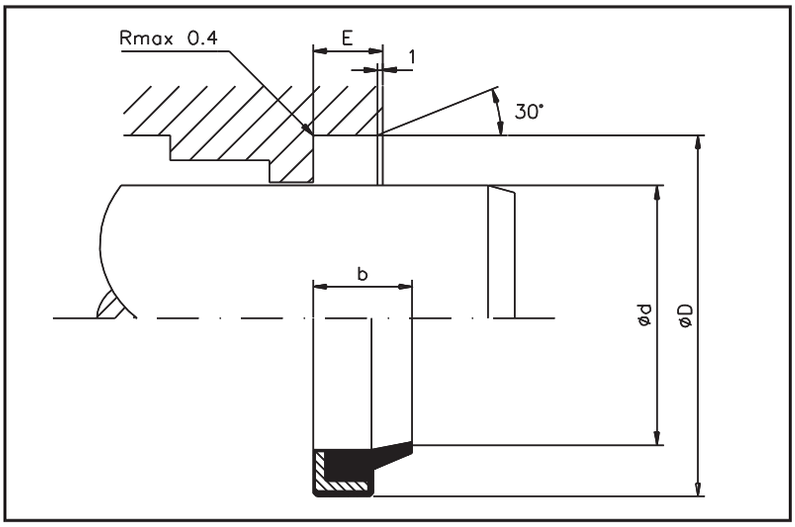
- Very good wiping action at low friction
- Low wear even under rough service conditions
- Fully vulcanized metal angle ring
- Internal metal cage - no chance for corrosion
- Easy assembly in open groove, secure wiper position
- Easy assembly of groove geometry
- Elastomer components available in FPM for special applications.



Material : rubber elastomer/metall combination
Velocity : reciprocating to 1 m/s
Temperature : -30 to +110 °C



WIPER
HA 305



Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -30 bis +110 °C

Media for Use

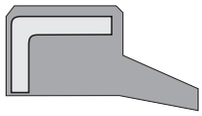
Mineral oil based hydraulic oil, flame resistant pressure media and emulsions (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

	Rmax	Rz	Ra
Surfaces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H8	**E** +0,2	**b**	**Part N°.**
8,00	**14,00**	**3,50**	**5,00**	**HA305 0080-01-100**
10,00	**16,00**	**3,50**	**5,00**	**HA305 0100-01-100**
12,00	**18,00**	**3,50**	**5,00**	**HA305 0120-01-100**
14,00	**20,00**	**3,50**	**5,00**	**HA305 0140-01-100**
15,00	21,00	3,50	5,00	HA305 0150-01-100
16,00	**22,00**	**3,50**	**5,00**	**HA305 0160-01-100**
18,00	**28,00**	**5,00**	**7,00**	**HA305 0180-01-100**
20,00	**30,00**	**5,00**	**7,00**	**HA305 0200-01-100**
22,00	**32,00**	**5,00**	**7,00**	**HA305 0220-01-100**
25,00	**35,00**	**5,00**	**7,00**	**HA305 0250-01-100**
28,00	**38,00**	**5,00**	**7,00**	**HA305 0280-01-100**
30,00	40,00	5,00	7,00	HA305 0300-01-100
32,00	**42,00**	**5,00**	**7,00**	**HA305 0320-01-100**
35,00	45,00	7,00	10,00	HA305 0350-01-100
36,00	**46,00**	**5,00**	**7,00**	**HA305 0360-01-100**
40,00	**50,00**	**5,00**	**8,00**	**HA305 0400-01-100**
42,00	52,00	5,00	7,00	HA305 0420-01-100
45,00	**55,00**	**5,00**	**7,00**	**HA305 0450-01-100**
50,00	**60,00**	**5,00**	**7,00**	**HA305 0500-01-100**
55,00	65,00	5,00	7,00	HA305 0550-01-100
56,00	**66,00**	**5,00**	**7,00**	**HA305 0560-01-100**
60,00	70,00	5,00	7,00	HA305 0600-01-100
63,00	**73,00**	**5,00**	**7,00**	**HA305 0630-01-100**
65,00	75,00	5,00	7,00	HA305 0650-01-100
70,00	**80,00**	**5,00**	**7,00**	**HA305 0700-01-100**
75,00	83,00	7,00	10,00	HA305 0750-01-100
80,00	**88,00**	**7,00**	**10,00**	**HA305 0800-01-100**

Sizes also available in FPM. Extensive range of inch measurement diagrams available on request.
Bold figures correspond to rod diameters as per ISO 3320.



Example for ordering Wipers:

HA 305 0300 - 01 - 100 - ...

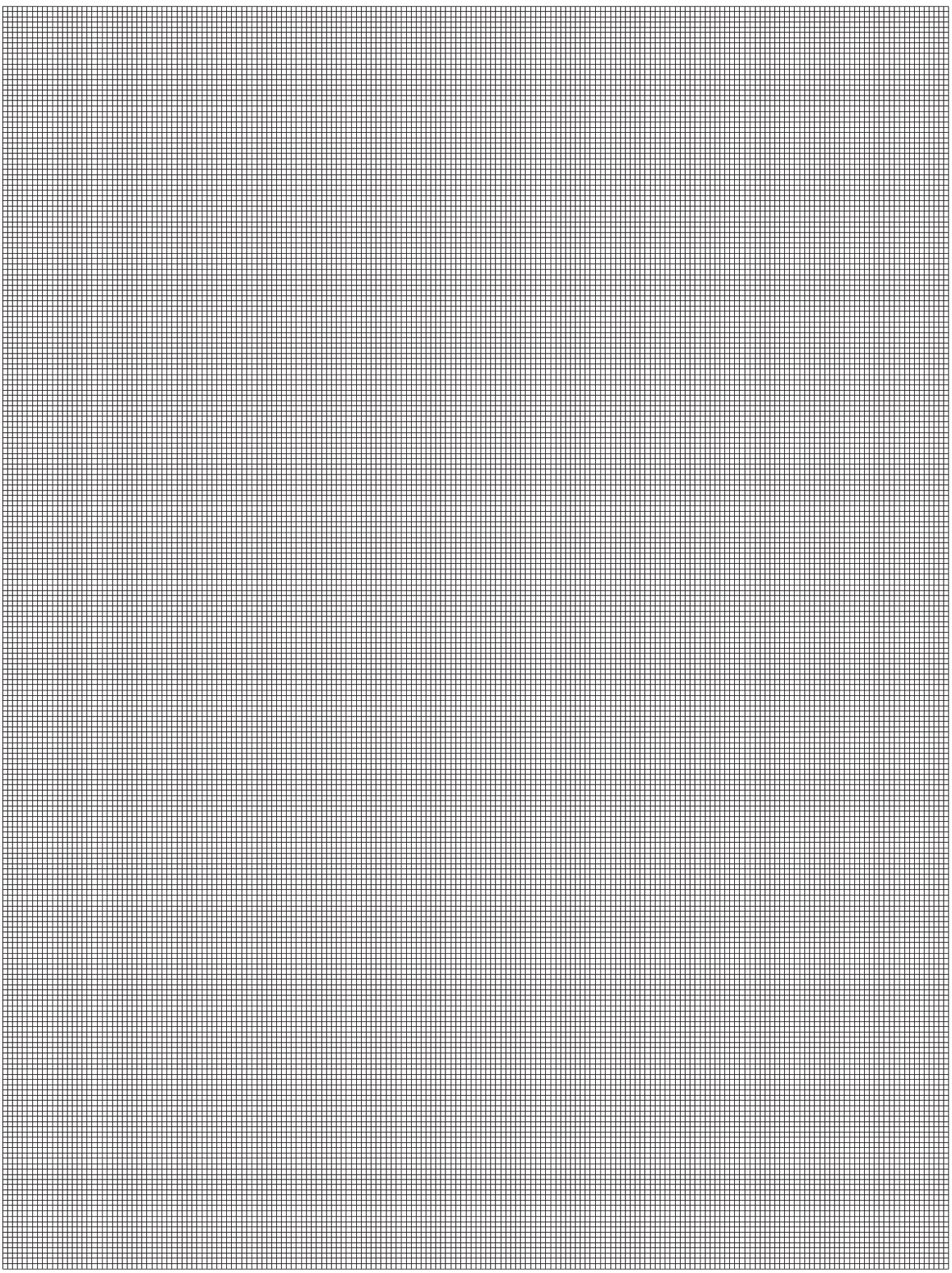
- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Material Key:

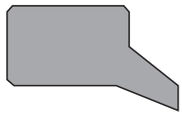
100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



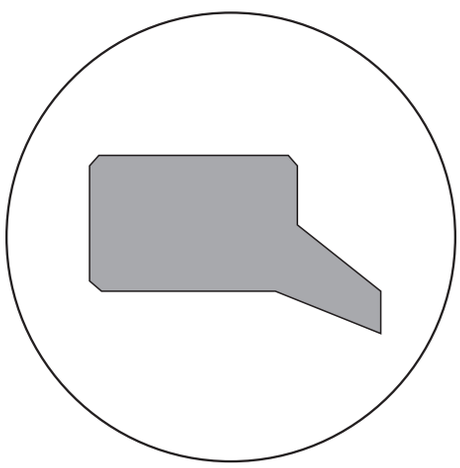
WIPER
HA 310



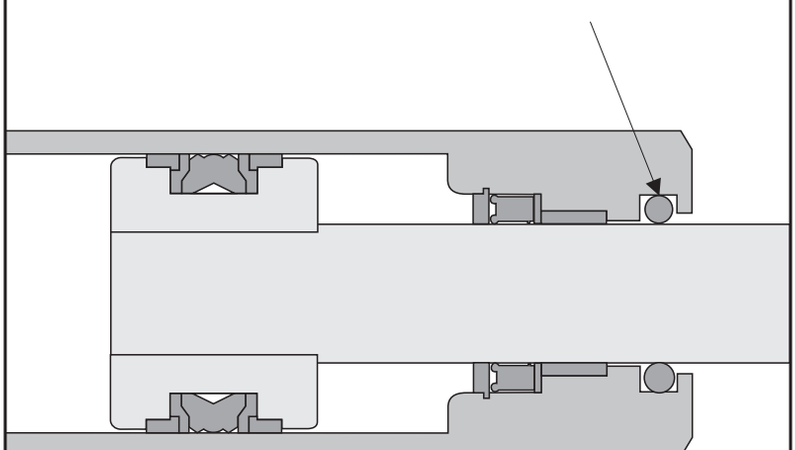
Single acting wiper HA 310 reliably blocks entry of dirt-particles and water into the hydraulic cylinder. Usable in hydraulics and also pneumatics.

Special Features:

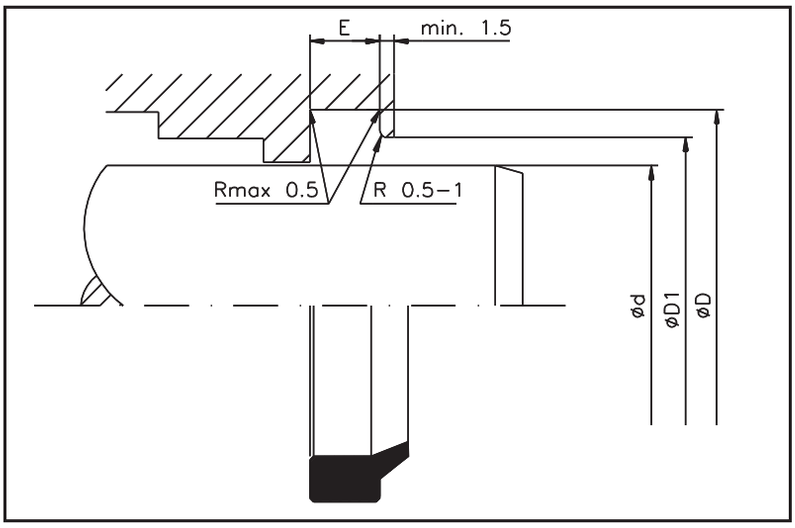
- Very good wiper action
- Anti-wear NBR material
- Form closing, secure fit
- Easy snap assembly in groove
- Also available in FPM for special application.



Material : acrylonitrile rubber (NBR)
Velocity : reciprocating to 1 m/s
Temperature : -30 to +110 °C



WIPER
HA 310



Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -30 bis +110 °C

Media for Use

Mineral oil based hydraulic oil, flame resistant pressure media and emulsions (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

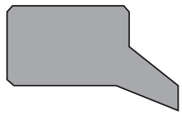
Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H11	**E** +0,2	**D1** +0,2	**Part N°.**
12,00	**18,60**	**3,80**	**15,00**	**HA310 0120-01-100**
13,00	19,60	3,80	16,00	HA310 0130-01-100
15,00	21,60	3,80	18,00	HA310 0150-01-100
16,00	**22,60**	**3,50**	**19,00**	**HA310 0160-01-100**
16,00	**24,00**	**5,00**	**19,00**	**HA310 0160-02-100**
17,00	23,60	3,80	20,00	HA310 0170-01-100
18,00	**24,60**	**3,80**	**21,00**	**HA310 0180-01-100**
19,00	28,60	5,30	22,00	HA310 0190-01-100
20,00	**28,60**	**5,30**	**23,00**	**HA310 0200-01-100**
22,00	**30,60**	**5,30**	**25,00**	**HA310 0220-01-100**
24,00	32,60	5,30	27,00	HA310 0240-01-100
25,00	**33,60**	**5,30**	**28,00**	**HA310 0250-01-100**
26,00	34,60	5,30	29,00	HA310 0260-01-100
28,00	**36,60**	**5,30**	**31,00**	**HA310 0280-01-100**
30,00	38,60	5,30	33,00	HA310 0300-01-100
32,00	**40,60**	**5,30**	**35,00**	**HA310 0320-01-100**
35,00	43,60	5,30	38,00	HA310 0350-01-100
36,00	**44,60**	**5,30**	**39,00**	**HA310 0360-01-100**
38,00	46,60	5,30	41,00	HA310 0380-01-100
40,00	**48,60**	**5,30**	**43,00**	**HA310 0400-01-100**
42,00	50,60	5,30	45,00	HA310 0420-01-100
45,00	**53,60**	**5,30**	**48,00**	**HA310 0450-01-100**
45,00	**55,60**	**5,30**	**48,00**	**HA310 0450-02-100**
46,00	54,60	5,30	49,00	HA310 0460-01-100
48,00	56,60	5,30	51,00	HA310 0480-01-100
50,00	**58,60**	**5,30**	**53,00**	**HA310 0500-01-100**
50,00	**60,60**	**5,30**	**53,00**	**HA310 0500-02-100**
53,00	61,60	5,30	56,00	HA310 0530-01-100
55,00	63,60	5,30	58,00	HA310 0550-01-100
55,00	65,60	5,30	58,00	HA310 0550-02-100
56,00	**66,60**	**5,30**	**59,00**	**HA310 0560-01-100**
60,00	68,60	5,30	63,00	HA310 0600-01-100
60,00	70,60	5,30	63,00	HA310 0600-02-100
63,00	**71,60**	**5,30**	**66,00**	**HA310 0630-01-100**
63,00	**73,60**	**5,30**	**66,00**	**HA310 0630-02-100**
65,00	73,60	5,30	68,00	HA310 0650-01-100

d f8/h9	**D** H11	**E** +0,2	**D1** +0,2	**Part N°.**
65,00	75,60	5,30	68,00	HA310 0650-02-100
70,00	**78,60**	**5,30**	**73,00**	**HA310 0700-01-100**
70,00	**80,60**	**5,30**	**73,00**	**HA310 0700-02-100**
70,00	**82,60**	**7,10**	**76,00**	**HA310 0700-03-100**
75,00	83,60	5,30	78,00	HA310 0750-01-100
75,00	87,20	7,10	81,00	HA310 0750-02-100
80,00	**88,60**	**5,30**	**83,00**	**Ha310 0800-01-100**
80,00	**92,20**	**7,10**	**86,00**	**HA310 0800-02-100**
85,00	93,60	5,30	88,00	HA310 0850-01-100
85,00	97,20	7,10	91,00	HA310 0850-02-100
90,00	**98,60**	**5,30**	**93,00**	**HA310 0900-01-100**
90,00	**102,20**	**7,10**	**96,00**	**HA310 0900-02-100**
95,00	107,20	7,10	101,00	HA310 0950-01-100
100,00	**112,20**	**7,10**	**106,00**	**HA310 1000-01-100**
105,00	117,20	7,10	111,00	HA310 1050-01-100
110,00	**122,20**	**7,10**	**116,00**	**HA310 1100-01-100**
115,00	127,20	7,10	121,00	HA310 1150-01-100
120,00	132,20	7,10	126,00	HA310 1200-01-100
125,00	**137,20**	**7,10**	**131,00**	**HA310 1250-01-100**
125,00	**140,00**	**10,10**	**132,60**	**HA310 1250-02-100**
130,00	142,20	7,10	136,00	HA310 1300-01-100
135,00	147,20	7,10	141,00	HA310 1350-01-100
140,00	**152,20**	**7,10**	**146,00**	**HA310 1400-01-100**
140,00	**155,20**	**10,10**	**147,60**	**HA310 1400-02-100**
145,00	157,20	7,10	151,00	HA310 1450-01-100
150,00	162,20	7,10	156,00	HA310 1500-01-100
150,00	165,00	10,10	157,60	HA310 1500-02-100
160,00	**175,00**	**10,10**	**167,60**	**HA310 1600-01-100**
170,00	185,20	10,10	178,00	HA310 1700-01-100
180,00	**195,20**	**10,10**	**188,00**	**HA310 1800-01-100**
180,00	**200,00**	**10,20**	**190,00**	**HA310 1800-02-100**
200,00	**220,00**	**10,20**	**210,00**	**HA310 2000-01-100**
230,00	250,00	10,20	240,00	HA310 2300-01-100
280,00	**300,00**	**10,20**	**290,00**	**HA310 2800-01-100**
300,00	320,00	10,20	310,00	HA310 3000-01-100
310,00	330,00	10,20	320,00	HA310 3100-01-100

Sizes also available in FPM. Extensive range of inch measurement diagrams available on request.
Bold figures correspond to rod diameters as per ISO 3320.



Example for ordering Wipers:

HA 310 0360 - 01 - 100 - ...

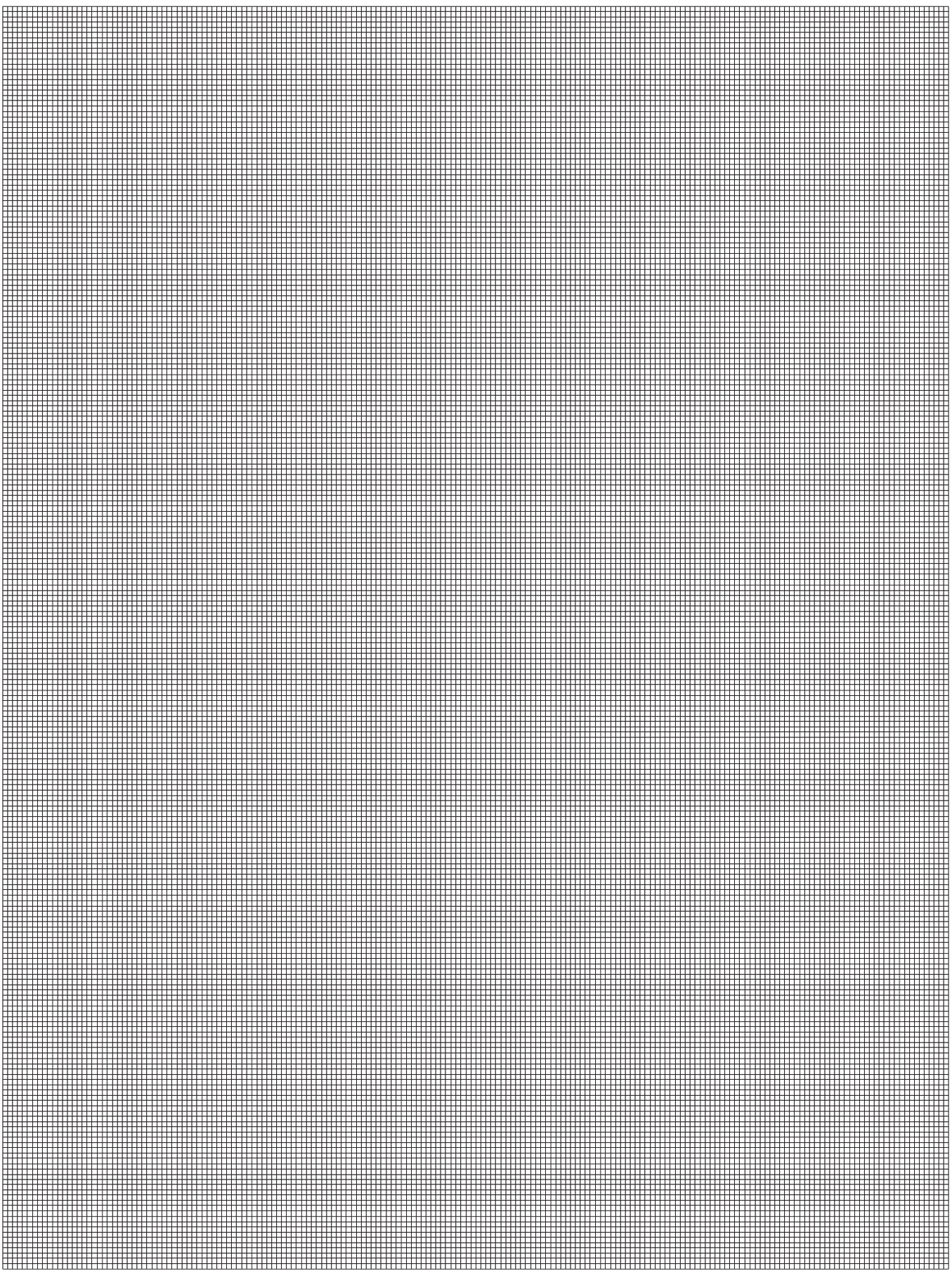
- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Material Key:

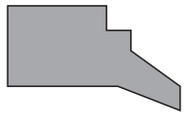
100 - NBR
120 - FPM

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



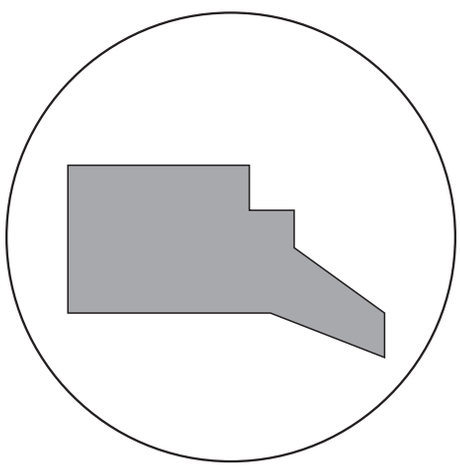
WIPER
HA 315



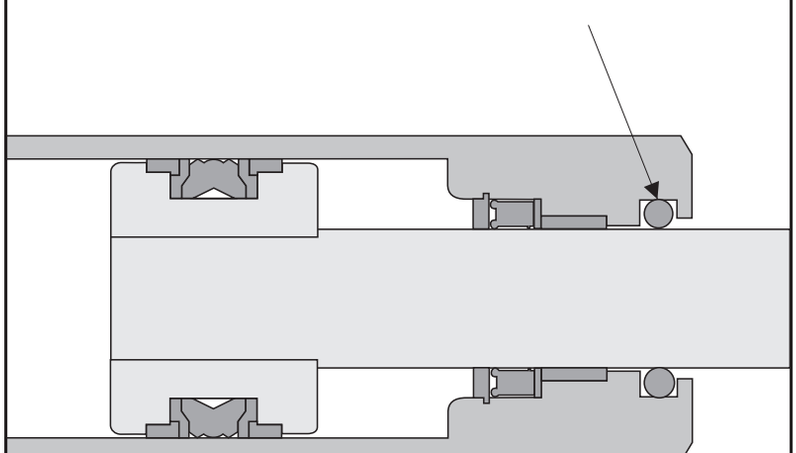
Single acting wiper HA 315 reliably blocks entry of dust particles and water in the hydraulic cylinder. It can be used both in hydraulics and pneumatics.

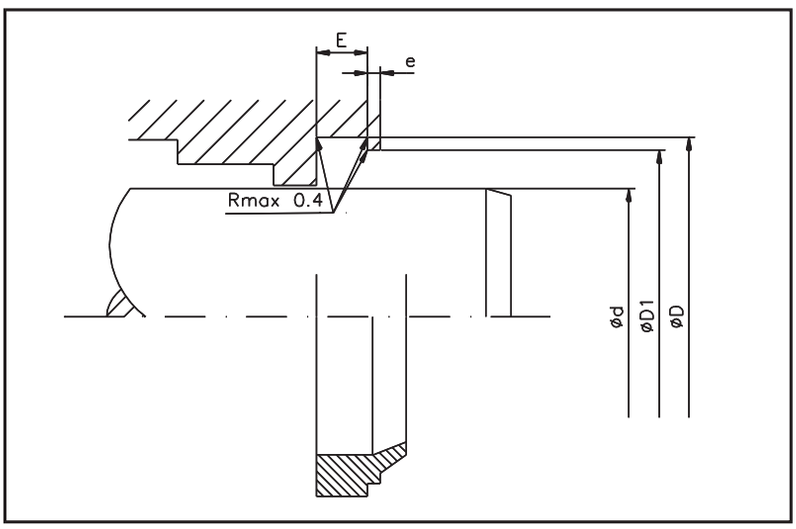
Special Features:

- Very good wiper action
- Anti-wear NBR material
- Special form-closing in the housing achieved by steps on outer diameter
- Easy snap assembly in groove
- Also available in FPM for special applications.



Material : acrylonitrile rubber (NBR)
Velocity : reciprocating to 1 m/s
Temperature : -30 to +110 °C





Limitations on Use

Velocity	:	reciprocating to 1 m/s
Temperature	:	-30 bis +110 °C

Media for Use

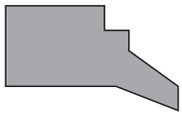
Mineral oil based hydraulic oils, flame resistant pressure media and emulsions (HFA,HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H 11	**E** +0,2	**D1** +0,2	**e** min	**Part N°.**
8,00	**16,00**	**4,00**	**14,00**	**1,00**	**HA315 0080-01-100**
10,00	**18,00**	**4,00**	**16,00**	**1,00**	**HA315 0100-01-100**
12,00	**20,00**	**4,00**	**18,00**	**1,00**	**HA315 0120-01-100**
14,00	**22,00**	**4,00**	**20,00**	**1,00**	**HA315 0140-01-100**
16,00	**24,00**	**4,00**	**22,00**	**1,00**	**HA315 0160-01-100**
18,00	**26,00**	**4,00**	**24,00**	**1,00**	**HA315 0180-01-100**
20,00	**28,00**	**4,00**	**26,00**	**1,00**	**HA315 0200-01-100**
22,00	**30,00**	**4,00**	**28,00**	**1,00**	**HA315 0220-01-100**
25,00	**33,00**	**4,00**	**31,00**	**1,00**	**HA315 0250-01-100**
28,00	**36,00**	**4,00**	**34,00**	**1,00**	**HA315 0280-01-100**
30,00	38,00	4,00	36,00	1,00	HA315 0300-01-100
32,00	**40,00**	**4,00**	**38,00**	**1,00**	**HA315 0320-01-100**
35,00	43,00	4,00	41,00	1,00	HA315 0350-01-100
36,00	**44,00**	**4,00**	**42,00**	**1,00**	**HA315 0360-01-100**
40,00	**48,00**	**4,00**	**46,00**	**1,00**	**HA315 0400-01-100**
42,00	50,00	4,00	48,00	1,00	HA315 0420-01-100
45,00	**53,00**	**4,00**	**51,00**	**1,00**	**HA315 0450-01-100**
50,00	**58,00**	**4,00**	**56,00**	**1,00**	**HA315 0500-01-100**
55,00	63,00	4,00	61,00	1,00	HA315 0550-01-100
56,00	**64,00**	**4,00**	**62,00**	**1,00**	**HA315 0560-01-100**
60,00	68,00	4,00	66,00	1,00	HA315 0600-01-100
63,00	**71,00**	**4,00**	**69,00**	**1,00**	**HA315 0630-01-100**
70,00	**78,00**	**4,00**	**76,00**	**1,00**	**HA315 0700-01-100**
80,00	**88,00**	**4,00**	**86,00**	**1,00**	**HA315 0800-01-100**
90,00	**98,00**	**4,00**	**96,00**	**1,00**	**HA315 0900-01-100**
95,00	103,00	4,00	101,00	1,00	HA315 0950-01-100
100,00	**108,00**	**4,00**	**106,00**	**1,00**	**HA315 1000-01-100**
110,00	**122,00**	**5,50**	**119,00**	**1,50**	**HA315 1100-01-100**
120,00	132,00	5,50	129,00	1,50	HA315 1200-01-100
125,00	**137,00**	**5,50**	**134,00**	**1,50**	**HA315 1250-01-100**
140,00	**152,00**	**5,50**	**149,00**	**1,50**	**HA315 1400-01-100**
160,00	**172,00**	**5,50**	**169,00**	**1,50**	**HA315 1600-01-100**
180,00	**192,00**	**5,50**	**189,00**	**1,50**	**HA315 1800-01-100**
200,00	**212,00**	**5,50**	**209,00**	**1,50**	**HA315 2000-01-100**
220,00	**235,00**	**6,50**	**231,00**	**2,00**	**HA315 2200-01-100**
250,00	**265,00**	**6,50**	**261,00**	**2,00**	**HA315 2500-01-100**

Sizes also available in FPM. Extensive range of inch measurement diagrams available on request.
Bold figures correspond to rod diameters as per ISO 3320.



Example for ordering Wipers:

HA 315 0360 - 01 - 100 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Material Key:

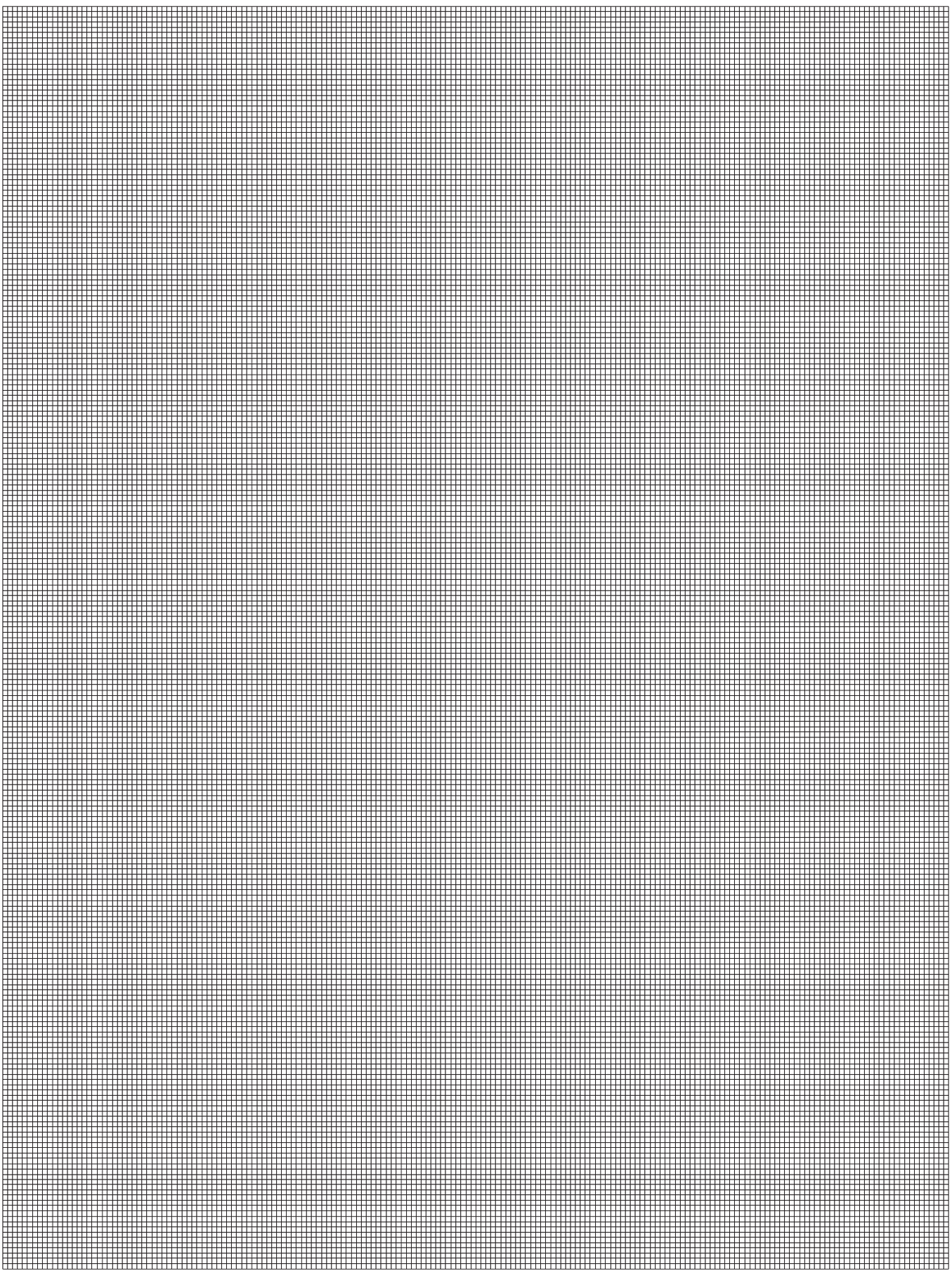
Wiper ring

100 - NBR
120 - FPM

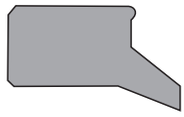
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

NOTES



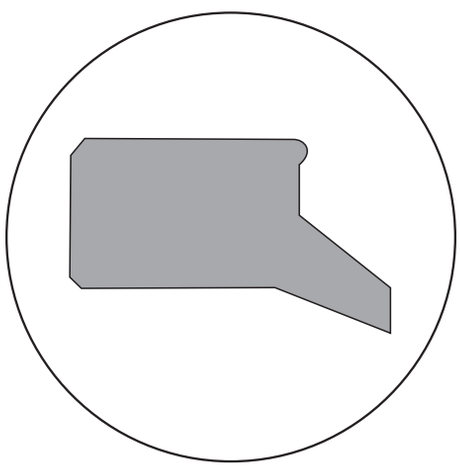
WIPER
HA 325



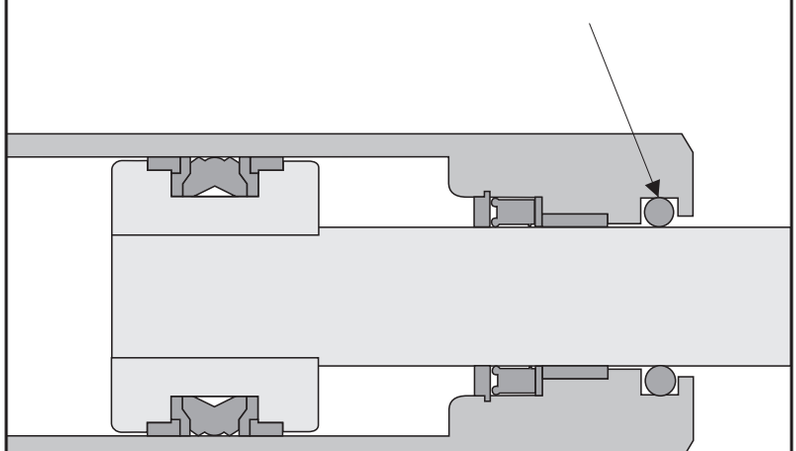
Single acting wiper HA 325 reliably prevents entry of dirt and water into the hydraulic cylinder. It can be usded in both hydraulics and pneumatics.

Special Features:

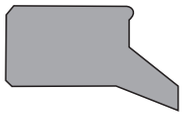
- Outstanding wiper action
- Anti wear polyurethane material
- Form closed secure fit
- Easy snap assembly in groove
- Lip on external diameter prevents entry of water

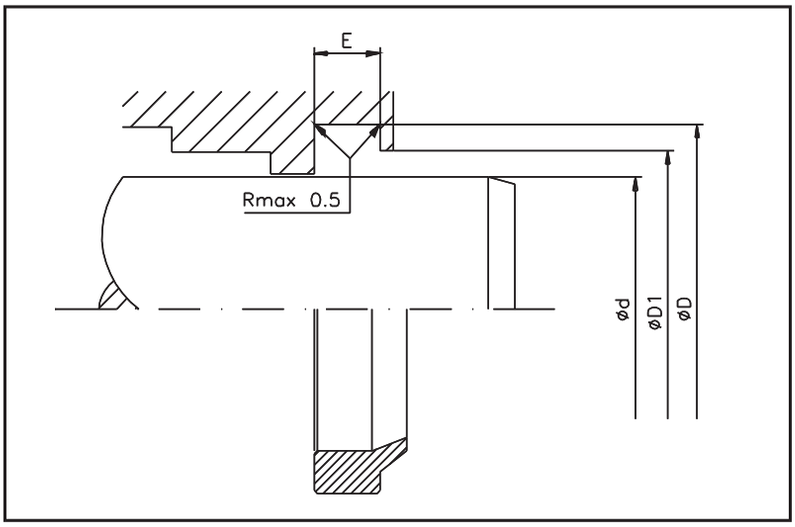


Material : polyurethane
Velocity : reciprocating to 1 m/s
Temperature : -35 to +110 °C



WIPER
HA 325





Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -35 bis +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils and flame resistant pressure fluids on request.

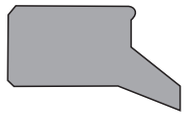
Surface Finish

	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H11	**E** +0,2	**D1** H11	**Part N°.**
4,00	**12,00**	**3,00**	**9,00**	**HA325 0040-01-200**
5,00	**12,00**	**2,80**	**9,00**	**HA325 0050-01-200**
6,00	**12,00**	**3,00**	**9,00**	**HA325 0060-01-200**
8,00	**14,60**	**3,80**	**11,00**	**HA325 0080-01-200**
9,00	13,00	2,50	12,00	HA325 0090-01-200
10,00	**15,00**	**1,00**	**13,00**	**HA325 0100-01-200**
10,00	**16,60**	**3,80**	**13,80**	**HA325 0100-02-200**
12,00	**18,60**	**3,80**	**15,00**	**HA325 0120-01-200**
14,00	**20,60**	**3,80**	**17,00**	**HA325 0140-01-200**
15,00	21,60	3,80	18,00	HA325 0150-01-200
15,00	27,00	5,00	24,00	HA325 0150-02-200
16,00	**22,50**	**3,00**	**19,00**	**HA325 0160-01-200**
16,00	**22,60**	**3,80**	**19,00**	**HA325 0160-02-200**
18,00	**24,60**	**3,80**	**21,00**	**HA325 0180-01-200**
20,00	**26,00**	**3,40**	**23,00**	**HA325 0200-01-200**
20,00	**28,60**	**5,30**	**23,00**	**HA325 0200-02-200**
20,00	**30,00**	**5,40**	**27,00**	**HA325 0200-03-200**
22,00	**30,60**	**2,20**	**25,00**	**HA325 0220-01-200**
22,00	**30,60**	**5,30**	**25,00**	**HA325 0220-02-200**
24,00	32,60	5,30	27,00	HA325 0240-01-200
24,00	32,60	2,20	27,00	HA325 0240-02-200
25,00	**33,60**	**5,30**	**28,00**	**HA325 0250-01-200**
28,00	**36,60**	**5,30**	**31,00**	**HA325 0280-01-200**
30,00	38,60	5,30	33,00	HA325 0300-01-200
30,00	40,00	3,00	34,50	HA325 0300-02-200
32,00	**40,00**	**3,70**	**35,00**	**HA325 0320-01-200**
32,00	**40,60**	**5,30**	**35,00**	**HA325 0320-02-200**
35,00	40,00	3,70	37,00	HA325 0350-01-200
35,00	43,60	5,00	38,00	HA325 0350-02-200
35,00	43,60	5,30	38,00	HA325 0350-03-200
35,00	45,00	4,00	39,00	HA325 0350-04-200
36,00	**44,60**	**5,30**	**39,00**	**HA325 0360-01-200**
38,00	46,60	5,30	41,00	HA325 0380-01-200
38,00	48,50	4,80	41,00	HA325 0380-02-200
40,00	**48,60**	**5,30**	**43,00**	**HA325 0400-01-200**
42,00	50,60	5,30	45,00	HA325 0420-01-200
45,00	**53,60**	**5,30**	**48,00**	**HA325 0450-01-200**
45,00	**55,60**	**5,30**	**48,00**	**HA325 0450-02-200**
45,00	**60,00**	**4,20**	**53,00**	**HA325 0450-03-200**
46,00	54,60	5,30	49,00	HA325 0460-01-200

d f8/h9	**D** H11	**E** +0,2	**D1** H11	**Part N°.**
50,00	**58,60**	**5,30**	**53,00**	**HA325 0500-01-200**
50,00	**60,60**	**5,30**	**53,00**	**HA325 0500-02-200**
50,00	**65,50**	**4,20**	**58,00**	**HA325 0500-03-200**
53,00	61,60	5,30	56,00	HA325 0530-01-200
55,00	63,60	5,30	58,00	HA325 0550-01-200
55,00	65,60	5,30	58,00	HA325 0550-02-200
56,00	**64,60**	**5,30**	**59,00**	**HA325 0560-01-200**
56,00	**66,60**	**5,30**	**59,00**	**HA325 0560-02-200**
60,00	68,60	5,30	63,00	HA325 0600-01-200
60,00	70,60	5,30	66,50	HA325 0600-02-200
63,00	**71,60**	**5,30**	**66,00**	**HA325 0630-01-200**
65,00	73,60	5,30	68,00	HA325 0650-01-200
65,00	76,60	6,00	71,50	HA325 0650-02-200
67,00	76,60	5,50	71,00	HA325 0670-01-200
70,00	**78,60**	**5,30**	**73,00**	**HA325 0700-01-200**
70,00	**80,00**	**5,00**	**74,00**	**HA325 0700-02-200**
70,00	**80,00**	**7,00**	**74,00**	**HA325 0700-03-200**
70,00	**82,60**	**7,10**	**76,00**	**HA325 0700-04-200**
73,00	81,60	5,30	76,00	HA325 0730-01-200
73,00	83,60	7,30	76,00	HA325 0730-02-200
75,00	83,60	5,30	78,00	HA325 0750-01-200
75,00	87,20	7,10	81,00	HA325 0750-02-200
78,00	86,00	5,00	81,00	HA325 0780-01-200
78,00	88,60	5,50	84,50	HA325 0780-02-200
78,00	92,20	7,10	85,00	HA325 0780-03-200
80,00	**88,60**	**5,30**	**83,00**	**HA325 0800-01-200**
80,00	**92,60**	**7,10**	**86,00**	**HA325 0800-02-200**
85,00	93,60	5,30	88,00	HA325 0850-01-200
85,00	97,20	7,10	91,00	HA325 0850-02-200
90,00	**100,00**	**7,00**	**94,00**	**HA325 0900-01-200**
90,00	**102,00**	**6,00**	**94,00**	**HA325 0900-02-200**
90,00	**102,20**	**7,10**	**96,00**	**HA325 0900-03-200**
92,00	103,60	5,50	97,00	HA325 0920-01-200
93,00	101,00	5,00	96,00	HA325 0930-01-200
93,00	123,00	5,00	115,00	HA325 0930-02-200
95,00	105,00	10,00	99,00	HA325 0950-01-200
95,00	107,20	7,10	101,00	HA325 0950-02-200
97,00	105,00	5,00	100,00	HA325 0970-01-200
99,00	109,60	5,50	105,50	HA325 0990-01-200
100,00	**112,20**	**6,00**	**104,00**	**HA325 1000-01-200**

Extensive range of inch measurement diagrams available on request.



d f8/h9	**D** H11	**E** +0,2	**D1** H11	**Part N°.**
100,00	**112,20**	**7,10**	**106,00**	**HA325 1000-02-200**
105,00	117,20	7,10	111,00	HA325 1050-01-200
110,00	**122,20**	**7,10**	**116,00**	**HA325 1100-01-200**
112,00	124,20	7,10	118,00	HA325 1120-01-200
115,00	127,00	10,00	121,00	HA325 1150-01-200
115,00	127,20	7,10	121,00	HA325 1150-02-200
118,00	126,00	5,00	121,00	HA325 1180-01-200
120,00	130,60	5,50	126,50	HA325 1200-01-200
120,00	132,20	7,10	126,00	HA325 1200-02-200
125,00	**137,20**	**7,10**	**131,00**	**HA325 1250-01-200**
128,00	140,20	7,10	134,00	HA325 1280-01-200
130,00	142,20	7,10	136,00	HA325 1300-01-200
135,00	147,20	7,10	141,00	HA325 1350-01-200
140,00	**148,60**	**6,00**	**143,00**	**HA325 1400-01-200**
140,00	**152,20**	**7,10**	**146,00**	**HA325 1400-02-200**
140,00	**155,00**	**9,00**	**147,00**	**HA325 1400-03-200**
141,00	151,60	5,50	147,50	HA325 1410-01-200
143,00	151,00	5,50	146,00	HA325 1430-01-200
145,00	157,20	7,10	151,00	HA325 1450-01-200
145,00	160,00	8,00	152,00	HA325 1450-02-200
148,00	160,00	7,00	152,00	HA325 1480-01-200
150,00	162,20	7,10	156,00	HA325 1500-01-200

d f8/h9	**D** H11	**E** +0,2	**D1** H11	**Part N°.**
150,00	165,00	7,50	156,00	HA325 1500-02-200
160,00	**172,20**	**7,10**	**166,00**	**HA325 1600-01-200**
160,00	**175,20**	**10,10**	**168,00**	**HA325 1600-02-200**
162,00	172,60	5,50	168,00	HA325 1620-01-200
163,00	175,20	7,10	169,00	HA325 1630-01-200
170,00	178,60	5,30	173,00	HA325 1700-01-200
170,00	185,20	10,10	178,00	HA325 1700-02-200
180,00	**195,20**	**10,10**	**188,00**	**HA325 1800-01-200**
180,00	**200,00**	**7,00**	**188,00**	**HA325 1800-02-200**
183,00	193,60	5,50	189,00	HA325 1830-01-200
188,00	200,20	7,10	194,00	HA325 1880-01-200
190,00	205,20	10,10	198,00	HA325 1900-01-200
190,00	210,00	10,10	200,00	HA325 1900-02-200
200,00	**215,20**	**10,10**	**208,00**	**HA325 2000-01-200**
210,00	225,20	10,10	218,00	HA325 2100-01-200
220,00	**235,20**	**10,10**	**228,00**	**HA325 2200-01-200**
220,00	**240,00**	**10,10**	**228,00**	**HA325 2200-02-200**
230,00	245,20	10,10	238,00	HA325 2300-01-200
240,00	255,20	10,10	248,00	HA325 2400-01-200
250,00	**265,20**	**10,10**	**258,00**	**HA325 2500-01-200**
257,00	267,60	5,50	264,00	HA325 2570-01-200
280,00	**300,00**	**10,20**	**290,00**	**HA325 2800-01-200**

Dimensions in bold correspond to ISO 3320.
Further dimensions available on request.

Example for ordering Wipers:

HA 325 0200 - 02 - 200 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Issue
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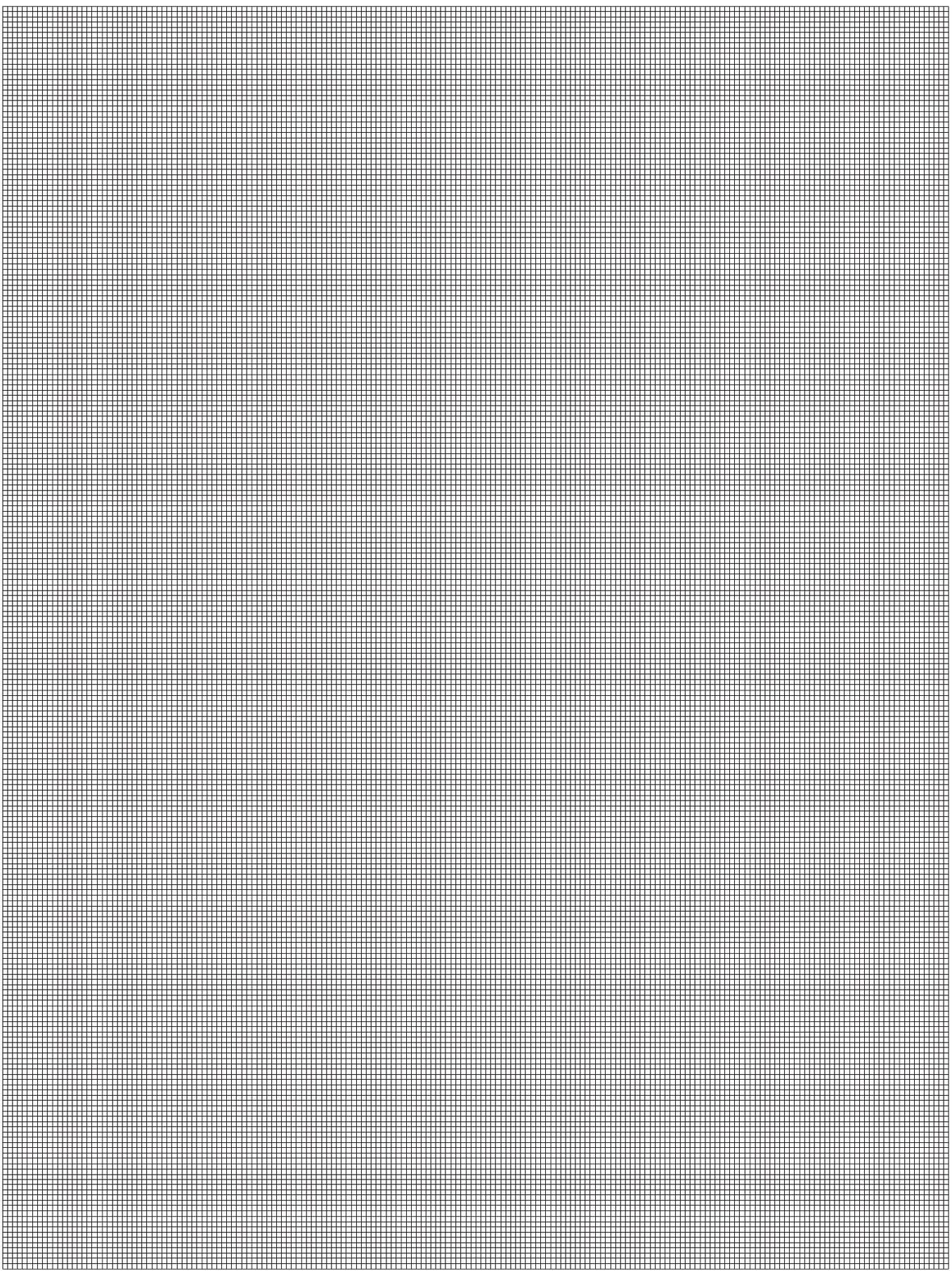
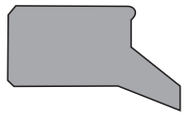
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



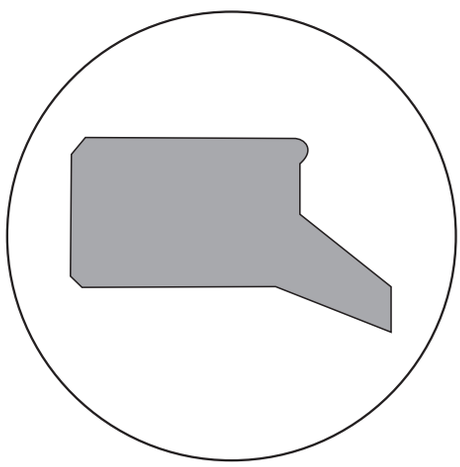
WIPER
HA 326



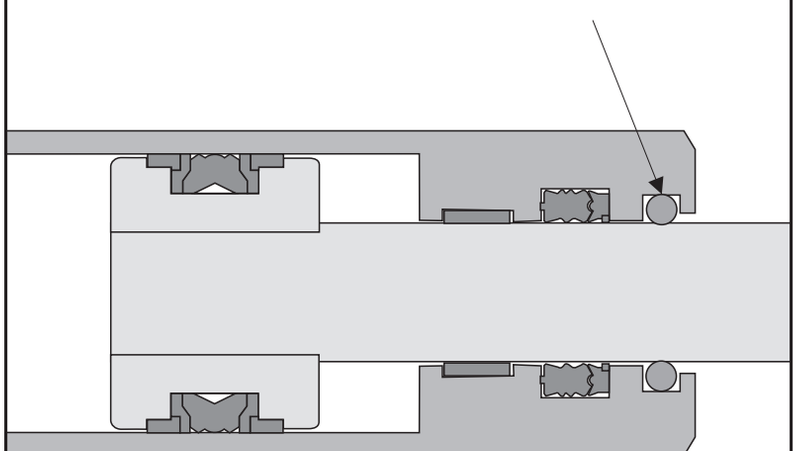
Single acting wiper HA 326 reliably prevents entry of dirt and water into the hydraulic cylinder. The special choice of material makes this wiper suitable for extreme working conditions of the cylinder, e.g. Mining.

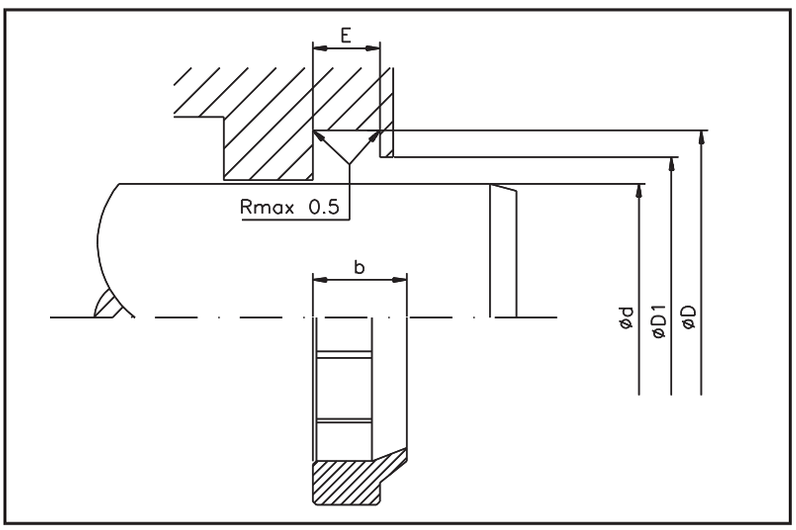
Special Features:

- Outstanding wiper action
- Anti wear polyester elastomer
- Form closed secure fit
- Easy snap assembly in groove
- Relief on internal diameter.



Material : polyester elastomer
Velocity : reciprocating to 1 m/s
Temperature : -40 to +120 °C





Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -40 bis +120 °C

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils).

Surface Finish

	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** +0,2	**b**	**D1** +0,2	**E** +0,2	**Part N°.**
50,00	58,00	8,00	55,50	5,00	HA326 0500-01-300
70,00	82,20	12,00	76,00	7,20	HA326 0700-01-300
75,00	87,20	12,00	81,00	7,20	HA326 0750-01-300
80,00	92,50	12,00	86,00	7,20	HA326 0800-01-300
90,00	105,00	12,00	100,00	7,20	HA326 0900-01-300
115,00	127,00	11,00	119,00	7,20	HA326 1150-01-300
115,00	127,20	12,00	121,00	7,20	HA326 1150-02-300
120,00	132,20	12,00	126,00	7,20	HA326 1200-01-300
135,00	147,00	12,00	141,00	7,20	HA326 1350-01-300
140,00	155,00	14,00	150,00	9,50	HA326 1400-01-300
170,00	182,00	12,00	176,00	7,60	HA326 1700-01-300
170,00	185,00	14,00	175,00	10,20	HA326 1700-02-300
175,00	190,00	14,00	185,00	9,50	HA326 1750-01-300
185,00	200,00	14,00	195,00	9,50	HA326 1850-01-300
185,00	200,00	16,00	193,00	10,20	HA326 1850-02-300
192,00	207,00	12,00	199,00	8,00	HA326 1920-01-300
200,00	215,00	14,00	205,00	10,20	HA326 2000-01-300
210,00	225,00	16,00	218,00	10,20	HA326 2100-01-300
212,00	227,00	12,00	220,00	7,50	HA326 2120-01-300
212,00	232,00	18,00	225,50	12,50	HA326 2120-02-300
220,00	240,00	18,00	233,50	10,00	HA326 2200-01-300
220,00	240,00	18,00	233,50	12,50	HA326 2200-02-300
235,00	252,00	12,00	244,00	7,60	HA326 2350-01-300
260,00	280,00	15,00	270,00	10,20	HA326 2600-01-300

Further sizes and an extensive range of inch measurement diagrams available on request.

Example for ordering Wipers:

HA 326 2000 - 01 - 300 - ...

- HA 326 — Profile
- 2000 — Nominal diameter x 10
- 01 — Dimension variant
- 300 — Standard material
- ... — HME internal code

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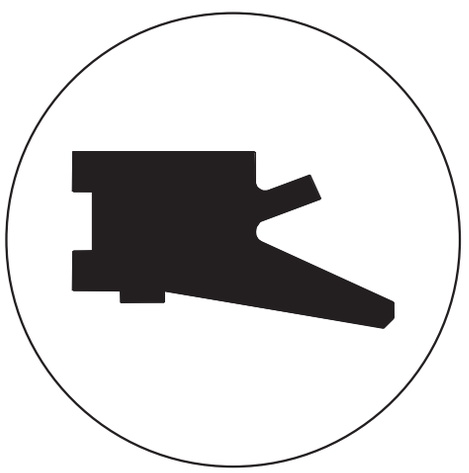
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

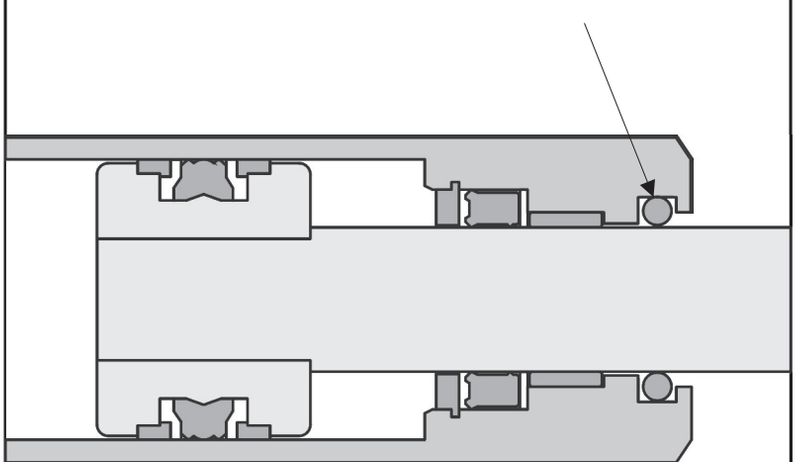
Single acting wiper HA 328 reliably prevents entry of dirt and water in hydraulic cylinder and can be used in hydraulics as well as in pneumatics.

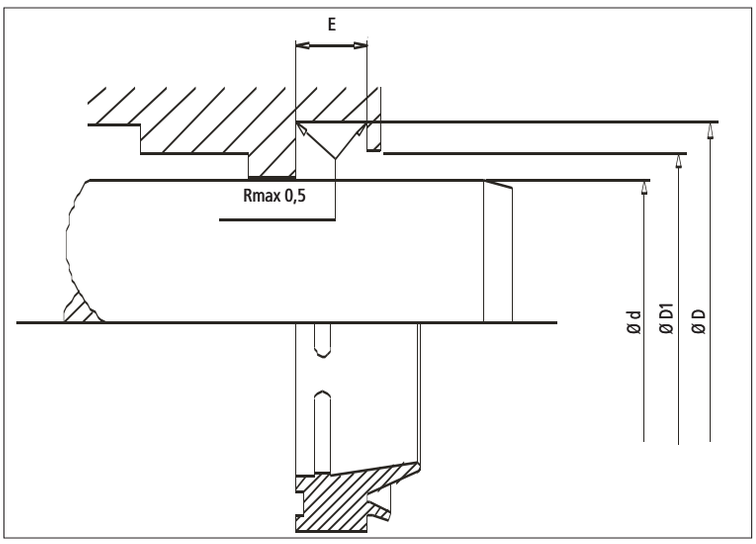
Special Features:

- Very good wiper action
- Anti-wear polyurethane material
- Long life
- Special form closing on housing due to step on external diameter
- Easy snap assembly in groove
- Sealing edge on external diameter prevents entry of dirt over groove base.



Material : polyurethane
Velocity : reciprocating to 1 m/s
Temperature : -35 to +110 °C





Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -35 bis +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils and flame resistant pressure fluids on request.

Surface Finish

	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H11	**E** +0,2	**D1** H11	**Part N°.**
16,00	**24,00**	**5,00**	**21,50**	**HA328 0160-01-200**
18,00	**26,00**	**5,00**	**23,50**	**HA328 0180-01-200**
20,00	**28,00**	**5,00**	**25,50**	**HA328 0200-01-200**
22,00	**30,00**	**5,00**	**27,50**	**HA328 0220-01-200**
25,00	**33,00**	**5,00**	**30,50**	**HA328 0250-01-200**
28,00	**36,00**	**5,00**	**33,50**	**HA328 0280-01-200**
30,00	38,00	5,00	35,50	HA328 0300-02-200
32,00	**40,00**	**5,00**	**37,50**	**HA328 0320-01-200**
35,00	43,00	5,00	40,50	HA328 0350-01-200
35,00	43,00	4,00	40,50	HA328 0350-02-200
36,00	**44,00**	**5,00**	**41,50**	**HA328 0360-01-200**
40,00	**48,00**	**5,00**	**45,50**	**HA328 0400-01-200**
45,00	53,00	4,00	50,50	HA328 0450-01-200
45,00	**53,00**	**5,00**	**50,50**	**HA328 0450-02-200**
50,00	**58,00**	**5,00**	**55,50**	**HA328 0500-01-200**
55,00	63,00	4,00	60,50	HA328 0550-01-200
56,00	64,00	4,00	61,50	HA328 0560-01-200
56,00	**66,00**	**6,30**	**63,00**	**HA328 0560-02-200**
60,00	68,00	4,00	65,50	HA328 0600-01-200
60,00	70,00	6,30	67,00	HA328 0600-02-200
63,00	**73,00**	**6,30**	**70,00**	**HA328 0630-01-200**
65,00	73,00	4,00	70,50	HA328 0650-01-200
70,00	**80,00**	**6,30**	**77,00**	**HA328 0700-01-200**
80,00	**90,00**	**6,30**	**87,00**	**HA328 0800-01-200**
85,00	95,00	6,30	92,00	HA328 0850-01-200
90,00	**100,00**	**6,30**	**97,00**	**HA328 0900-01-200**
100,00	**115,00**	**9,50**	**110,00**	**HA328 1000-01-200**
110,00	**125,00**	**9,50**	**120,00**	**HA328 1100-01-200**
125,00	**140,00**	**9,50**	**135,00**	**HA328 1250-01-200**
140,00	150,00	4,00	147,00	HA328 1400-01-200
140,00	**155,00**	**9,50**	**150,00**	**HA328 1400-02-200**
160,00	**175,00**	**9,50**	**170,00**	**HA328 1600-01-200**
180,00	**195,00**	**9,50**	**190,00**	**HA328 1800-01-200**
200,00	**215,00**	**9,50**	**210,00**	**HA328 2000-01-200**

Sizes also available in FPM. Extensive range of inch measurement diagrams available on request.
Bold figures correspond to rod diameters as per ISO 3320.

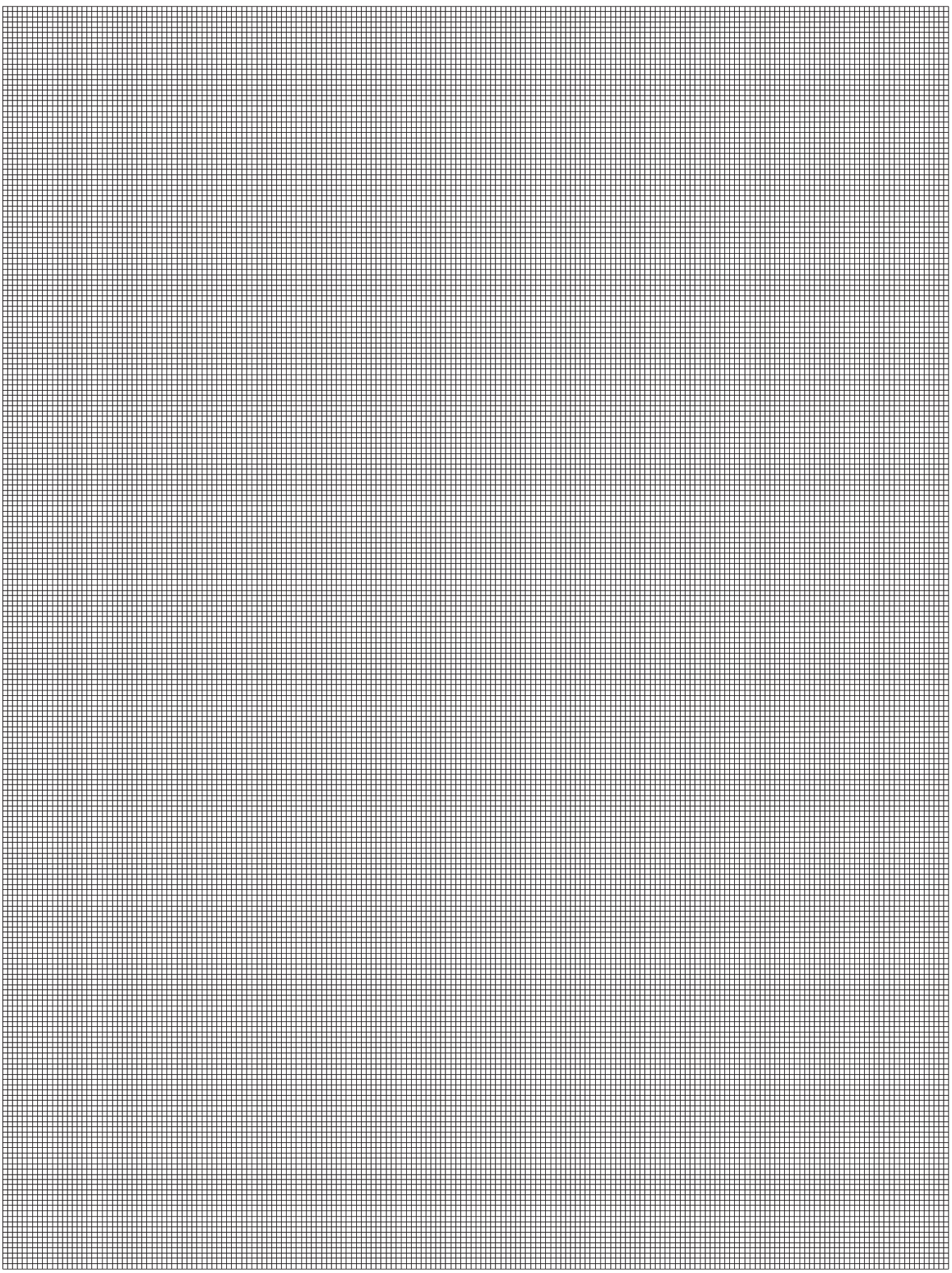
Example for ordering Wipers:

HA 328 0160 - 01 - 200 - ...

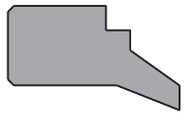
- Profile
- Nominal diameter x 10
- Dimension variant
- Standard material
- HME internal code

Issue
01 | 24

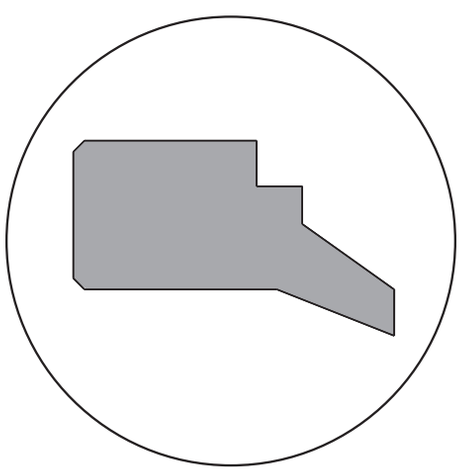
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



WIPER
HA 330



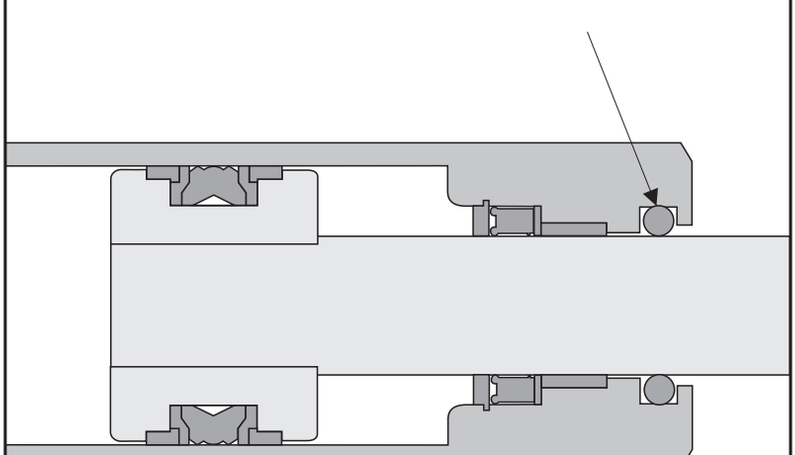
Single acting wiper HA 330 reliably prevents entry of dirt and water in hydraulic cylinder and can be used in hydraulics as well as in pneumatics.

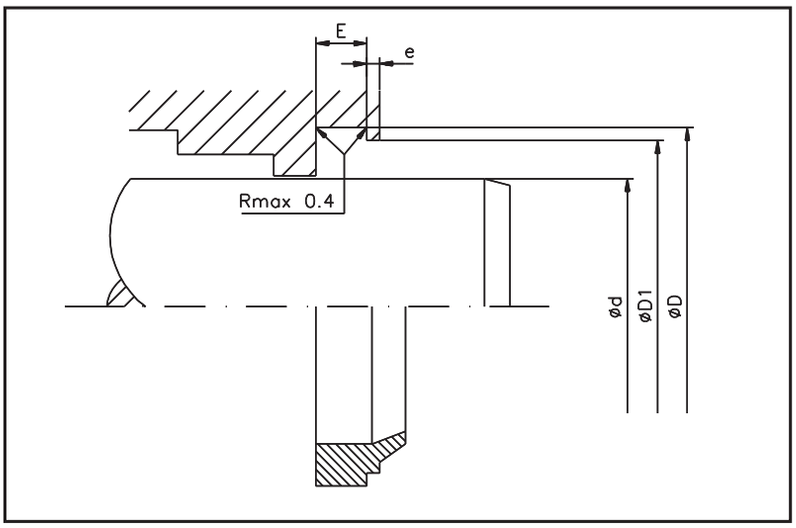


Special Features:

- Very good wiper action
- Anti-wear polyurethane material
- Long life
- Special form closing on housing due to step on external diameter
- Easy snap assembly in groove
- Sealing edge on external diameter prevents entry of dirt over groove base.

Material : polyurethane
Velocity : reciprocating to 1 m/s
Temperature : -35 to +110 °C





Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -35 bis +110 °C

Media for Use

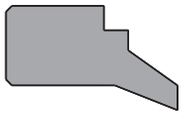
Mineral oil based hydraulic oils, Bio Oils and flame resistant pressure fluids on request.

Surface Finish

	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H11	**E** +0,2	**D1** H11	**e**	**Part N°.**
16,00	**24,00**	**4,00**	**22,00**	**1,00**	**HA330 0160-01-200**
20,00	**28,00**	**4,00**	**26,00**	**1,00**	**HA330 0200-01-200**
22,00	**30,00**	**4,00**	**28,00**	**1,00**	**HA330 0220-01-200**
25,00	**33,00**	**4,00**	**31,00**	**1,00**	**HA330 0250-01-200**
28,00	**36,00**	**4,00**	**34,00**	**1,00**	**HA330 0280-01-200**
30,00	38,00	4,00	36,00	1,00	HA330 0300-01-200
32,00	**40,00**	**4,00**	**38,00**	**1,00**	**HA330 0320-01-200**
35,00	43,00	4,00	41,00	1,00	HA330 0350-01-200
36,00	**44,00**	**4,00**	**42,00**	**1,00**	**HA330 0360-01-200**
40,00	**48,00**	**4,00**	**46,00**	**1,00**	**HA330 0400-01-200**
42,00	50,00	4,00	48,00	1,00	HA330 0420-01-200
45,00	**53,00**	**4,00**	**51,00**	**1,00**	**HA330 0450-01-200**
50,00	**58,00**	**4,00**	**56,00**	**1,00**	**HA330 0500-01-200**
55,00	63,00	4,00	61,00	1,00	HA330 0550-01-200
56,00	**64,00**	**4,00**	**62,00**	**1,00**	**HA330 0560-01-200**
60,00	68,00	4,00	66,00	1,00	HA330 0600-01-200
63,00	**71,00**	**4,00**	**69,00**	**1,00**	**HA330 0630-01-200**
65,00	73,00	4,00	71,00	1,00	HA330 0650-01-200
70,00	**78,00**	**4,00**	**76,00**	**1,00**	**HA330 0700-01-200**
75,00	83,00	4,00	81,00	1,00	HA330 0750-01-200
80,00	**88,00**	**4,00**	**86,00**	**1,00**	**HA330 0800-01-200**
85,00	93,00	4,00	91,00	1,00	HA330 0850-01-200
90,00	**98,00**	**4,00**	**96,00**	**1,00**	**HA330 0900-01-200**
100,00	**108,00**	**4,00**	**106,00**	**1,00**	**HA330 1000-01-200**
106,00	118,00	5,50	115,00	1,50	HA330 1060-01-200
110,00	**122,00**	**5,50**	**119,00**	**1,50**	**HA330 1100-01-200**
117,00	129,00	5,50	126,00	1,50	HA330 1170-01-200
125,00	**137,00**	**5,50**	**134,00**	**1,50**	**HA330 1250-01-200**

Sizes also available in FPM. Extensive range of inch measurement diagrams available on request.
Bold figures correspond to rod diameters as per ISO 3320.



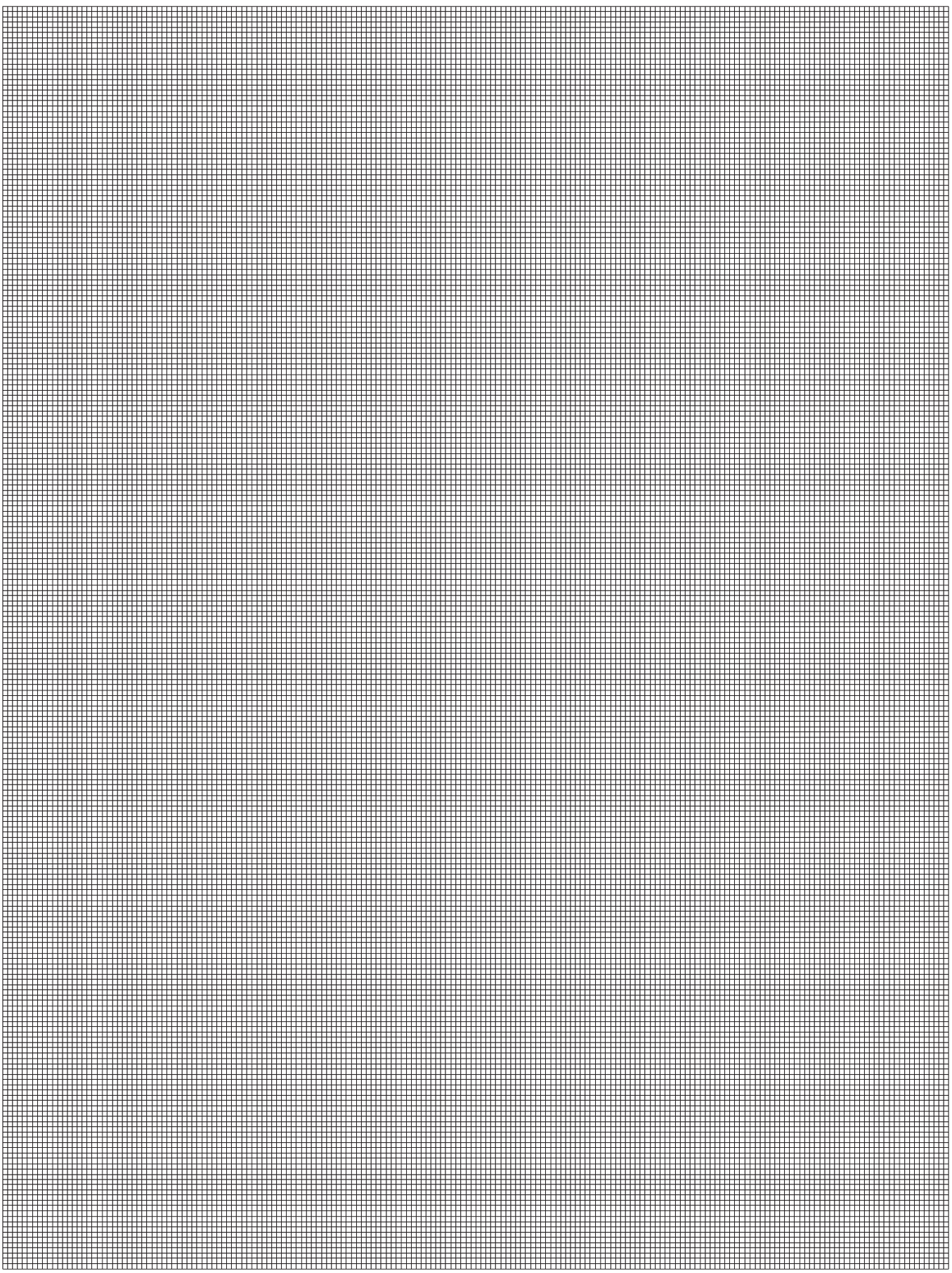
Example for ordering Wipers:

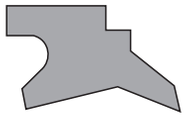
HA 330 0200 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension variant
Material number
HME internal code

Issue
01 | 24

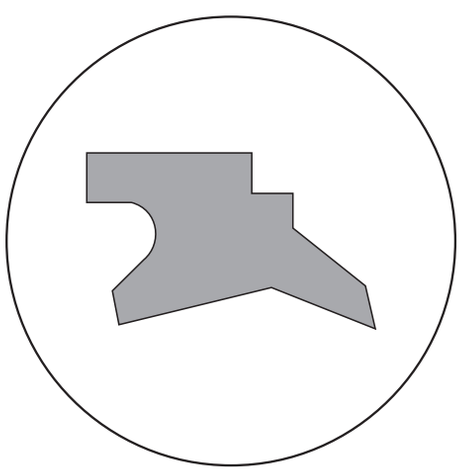
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.





Double acting wiper HA 331 is primarily meant for all applications that need absolute sealing on the rod side. The lip that shows on the outside works like a normal wiper, and the inner part works like a groove ring, eliminating leakage.

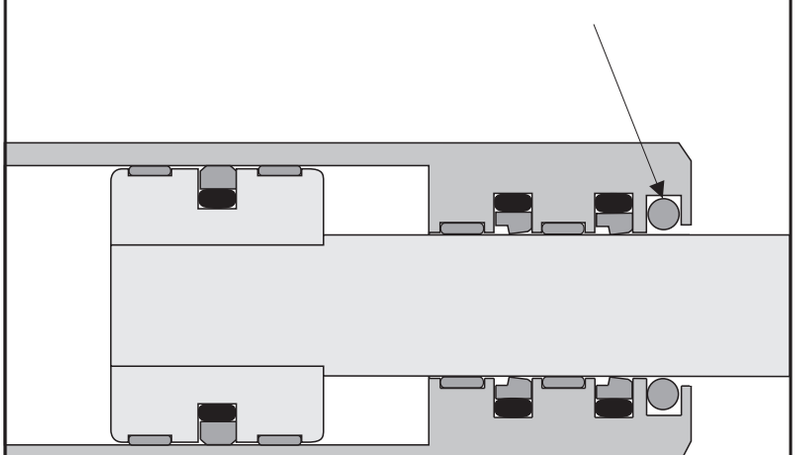
This wiper system can withstand maximum pressure up to 15 bar.



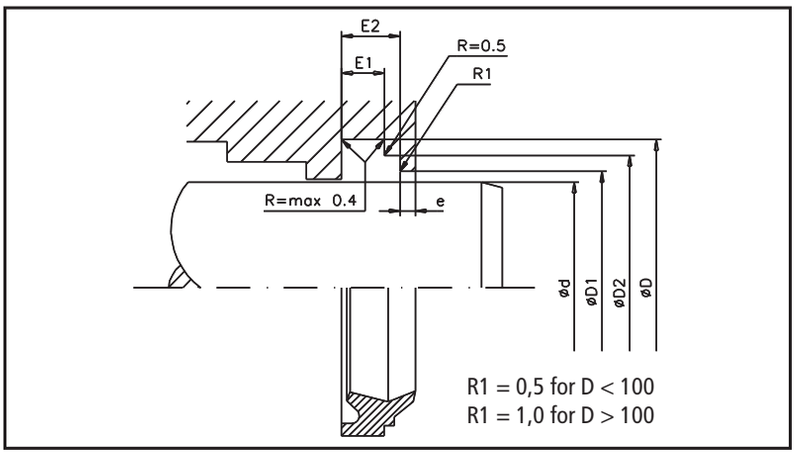
Special Features:

- Anti wear polyurethane material
- Very good frictional resistance, long life
- Easy snap assembly in closed groove possible
- Form closed secure fit through special profile
- Supporting sealing action by groove ring profile on pressure side.

Material : polyurethane
Velocity : reciprocating to 1 m/s
Temperature : -35 to +110 °C



WIPER
HA 331



Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -35 bis +110 °C

Media for Use

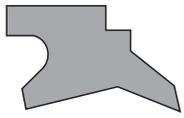
Mineral oil based hydraulic oils, Bio Oils and flame resistant pressure fluids on request.

Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H9	**D1** H11	**D2** H11	**E1** +0,2	**E2** +0,2	**e**	**Part N°.**
10,00	**18,00**	**13,50**	**16,00**	**4,00**	**6,00**	**2,00**	**HA331 0100-01-200**
12,00	**20,00**	**15,50**	**18,00**	**4,00**	**6,00**	**2,00**	**HA331 0120-01-200**
14,00	**22,00**	**17,50**	**20,00**	**4,00**	**6,00**	**2,00**	**HA331 0140-01-200**
15,00	23,00	18,50	21,00	4,00	6,00	2,00	HA331 0150-01-200
16,00	**24,00**	**19,50**	**22,00**	**4,00**	**6,00**	**2,00**	**HA331 0160-01-200**
18,00	**26,00**	**21,50**	**24,00**	**4,00**	**6,00**	**2,00**	**HA331 0180-01-200**
20,00	**28,00**	**23,50**	**26,00**	**4,00**	**6,00**	**2,00**	**HA331 0200-01-200**
22,00	**30,00**	**25,50**	**28,00**	**4,00**	**6,00**	**2,00**	**HA331 0220-01-200**
25,00	**33,00**	**28,50**	**31,00**	**4,00**	**6,00**	**2,00**	**HA331 0250-01-200**
28,00	**36,00**	**31,50**	**34,00**	**4,00**	**6,00**	**2,00**	**HA331 0280-01-200**
30,00	38,00	33,50	36,00	4,00	6,00	2,00	HA331 0300-01-200
32,00	**40,00**	**35,50**	**38,00**	**4,00**	**6,00**	**2,00**	**HA331 0320-01-200**
35,00	43,00	38,50	41,00	4,00	6,00	2,00	HA331 0350-01-200
36,00	**44,00**	**39,50**	**42,00**	**4,00**	**6,00**	**2,00**	**HA331 0360-01-200**
40,00	**48,00**	**43,50**	**46,00**	**4,00**	**6,00**	**2,00**	**HA331 0400-01-200**
42,00	50,00	45,50	48,00	4,00	6,00	2,00	HA331 0420-01-200
45,00	**53,00**	**48,50**	**51,00**	**4,00**	**6,00**	**2,00**	**HA331 0450-01-200**
50,00	**58,00**	**53,50**	**56,00**	**4,00**	**6,00**	**2,00**	**HA331 0500-01-200**
55,00	63,00	58,50	61,00	4,00	6,00	2,00	HA331 0550-01-200
56,00	**64,00**	**59,50**	**62,00**	**4,00**	**6,00**	**2,00**	**HA331 0560-01-200**
60,00	68,00	63,50	66,00	4,00	6,00	2,00	HA331 0600-01-200
63,00	**71,00**	**66,50**	**69,00**	**4,00**	**6,00**	**2,00**	**HA331 0630-01-200**
65,00	73,00	68,50	71,00	4,00	6,00	2,00	HA331 0650-01-200
70,00	**78,00**	**73,50**	**76,00**	**4,00**	**6,00**	**2,00**	**HA331 0700-01-200**
75,00	83,00	78,50	81,00	4,00	6,00	2,00	HA331 0750-01-200
80,00	**88,00**	**83,50**	**86,00**	**4,00**	**6,00**	**2,00**	**HA331 0800-01-200**
85,00	93,00	88,50	91,00	4,00	6,00	2,00	HA331 0850-01-200
90,00	**98,00**	**93,50**	**96,00**	**4,00**	**6,00**	**2,00**	**HA331 0900-01-200**
100,00	**108,00**	**103,50**	**106,00**	**4,00**	**6,00**	**2,00**	**HA331 1000-01-200**
105,00	117,00	110,00	114,00	5,50	8,20	3,00	HA331 1050-01-200
110,00	**122,00**	**115,00**	**119,00**	**5,50**	**8,20**	**3,00**	**HA331 1100-01-200**
115,00	127,00	120,00	124,00	5,50	8,20	3,00	HA331 1150-01-200
120,00	132,00	125,00	129,00	5,50	8,20	3,00	HA331 1200-01-200
125,00	**137,00**	**130,00**	**134,00**	**5,50**	**8,20**	**3,00**	**HA331 1250-01-200**
130,00	142,00	135,00	139,00	5,50	8,20	3,00	HA331 1300-01-200
135,00	147,00	140,00	144,00	5,50	8,20	3,00	HA331 1350-01-200
140,00	**152,00**	**145,00**	**149,00**	**5,50**	**8,20**	**3,00**	**HA331 1400-01-200**
150,00	162,00	155,00	159,00	5,50	8,20	3,00	HA331 1500-01-200
160,00	**172,00**	**165,00**	**169,00**	**5,50**	**8,20**	**3,00**	**HA331 1600-01-200**
170,00	182,00	175,00	179,00	5,50	8,20	3,00	HA331 1700-01-200
180,00	**192,00**	**185,00**	**189,00**	**5,50**	**8,20**	**3,00**	**HA331 1800-01-200**
200,00	**212,00**	**205,00**	**209,00**	**5,50**	**8,20**	**3,00**	**HA331 2000-01-200**

Sizes in bold correspond to rod diameters as per ISO 3320. (Please enquire for further forms.)
Extensive range of inch measurement diagrams available on request.



Example for ordering Wipers:

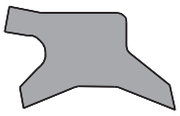
HA 331 0400 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension variant
Material number
HME internal code

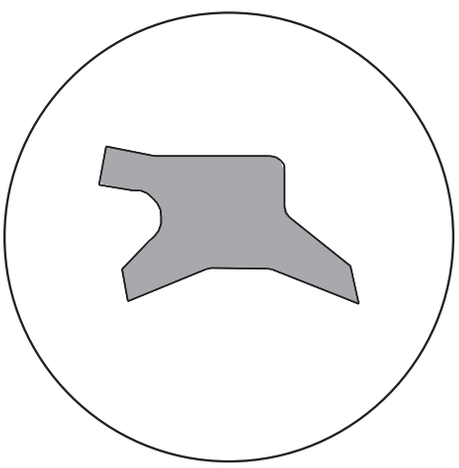
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

WIPER
HA 335



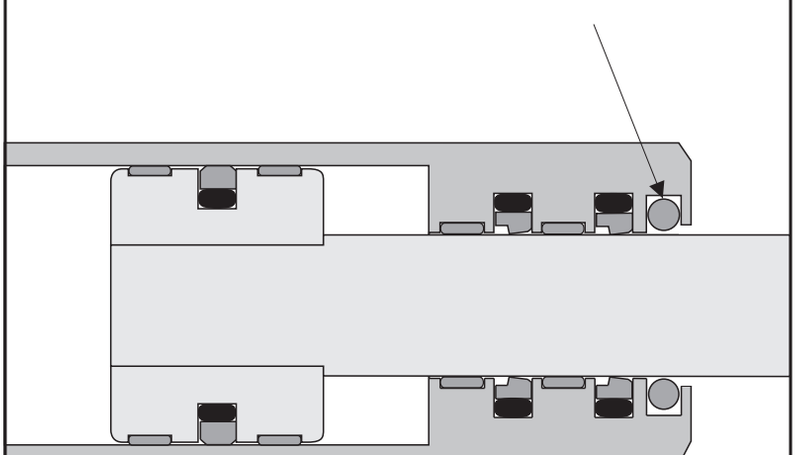
Double acting wiper HA 335 reliably prevents entry of water and dirt particles into the hydraulic cylinder. The special profile - wiper lip on the one side and a groove ring on the other side - achieve special sealing at the side under pressure.



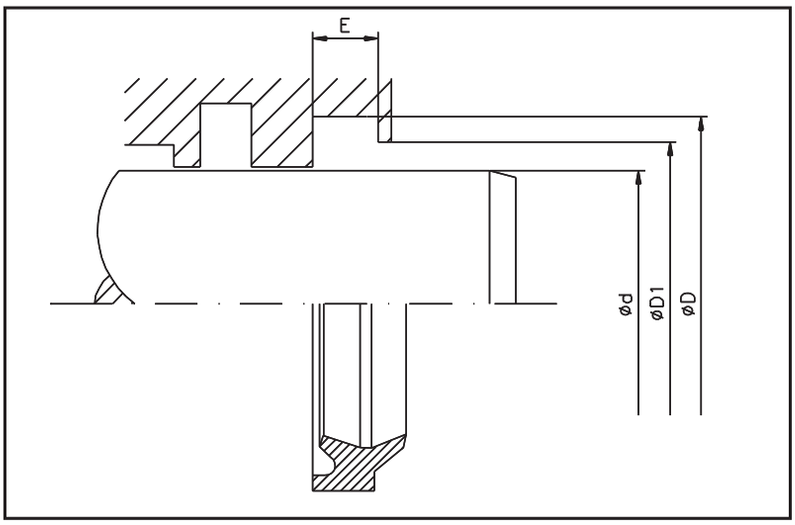
Special Features:

- Outstanding wiper action
- Anti wear polyurethane material
- Excellent wiper action in case of oils on pressure side (medium recycling to be ensured)
- Easy snap assembly in groove.

Material : polyurethane
Velocity : reciprocating to 1 m/s
Temperature : -35 to +110 °C



WIPER
HA 335



Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -35 bis +110 °C

Media for Use

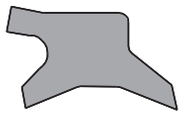
Mineral oil based hydraulic oils, Bio Oils and flame resistant pressure fluids on request.

Surface Finish

	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H11	**E** +0,2	**D1** H11	**Part N°.**
12,00	**18,60**	**3,80**	**15,00**	**HA335 0120-01-200**
14,00	**20,60**	**3,80**	**17,00**	**HA335 0140-01-200**
18,00	**24,60**	**3,80**	**21,00**	**HA335 0180-01-200**
20,00	**28,60**	**5,30**	**23,00**	**HA335 0200-01-200**
22,00	**30,60**	**5,30**	**25,00**	**HA335 0220-01-200**
24,00	32,60	5,30	27,00	HA335 0240-01-200
25,00	**33,60**	**5,30**	**28,00**	**HA335 0250-01-200**
28,00	**36,60**	**5,30**	**31,00**	**HA335 0280-01-200**
30,00	38,60	5,30	33,00	HA335 0300-01-200
32,00	**40,60**	**5,30**	**35,00**	**HA335 0320-01-200**
35,00	43,60	5,30	38,00	HA335 0350-01-200
36,00	**44,60**	**5,30**	**39,00**	**HA335 0360-01-200**
40,00	**48,60**	**5,30**	**43,00**	**HA335 0400-01-200**
45,00	**53,60**	**5,30**	**48,00**	**HA335 0450-01-200**
50,00	**58,60**	**5,30**	**53,00**	**HA335 0500-01-200**
55,00	63,60	5,30	58,00	HA335 0550-01-200
56,00	**64,60**	**5,30**	**59,00**	**HA335 0560-01-200**
60,00	68,60	5,30	63,00	HA335 0600-01-200
63,00	**71,60**	**5,30**	**66,00**	**HA335 0630-01-200**
65,00	73,60	5,30	68,00	HA335 0650-01-200
70,00	**78,60**	**5,30**	**73,00**	**HA335 0700-01-200**
75,00	83,60	5,30	78,00	HA335 0750-01-200
80,00	**88,60**	**5,30**	**83,00**	**HA335 0800-01-200**
85,00	97,20	7,10	91,00	HA335 0850-01-200
90,00	**102,20**	**7,10**	**96,00**	**HA335 0900-01-200**
100,00	**112,20**	**7,10**	**106,00**	**HA335 1000-01-200**
110,00	**122,20**	**7,10**	**116,00**	**HA335 1100-01-200**

Further sizes and an extensive range of inch measurement diagrams available on request.
Bold figures correspond to rod diameters as per ISO 3320.



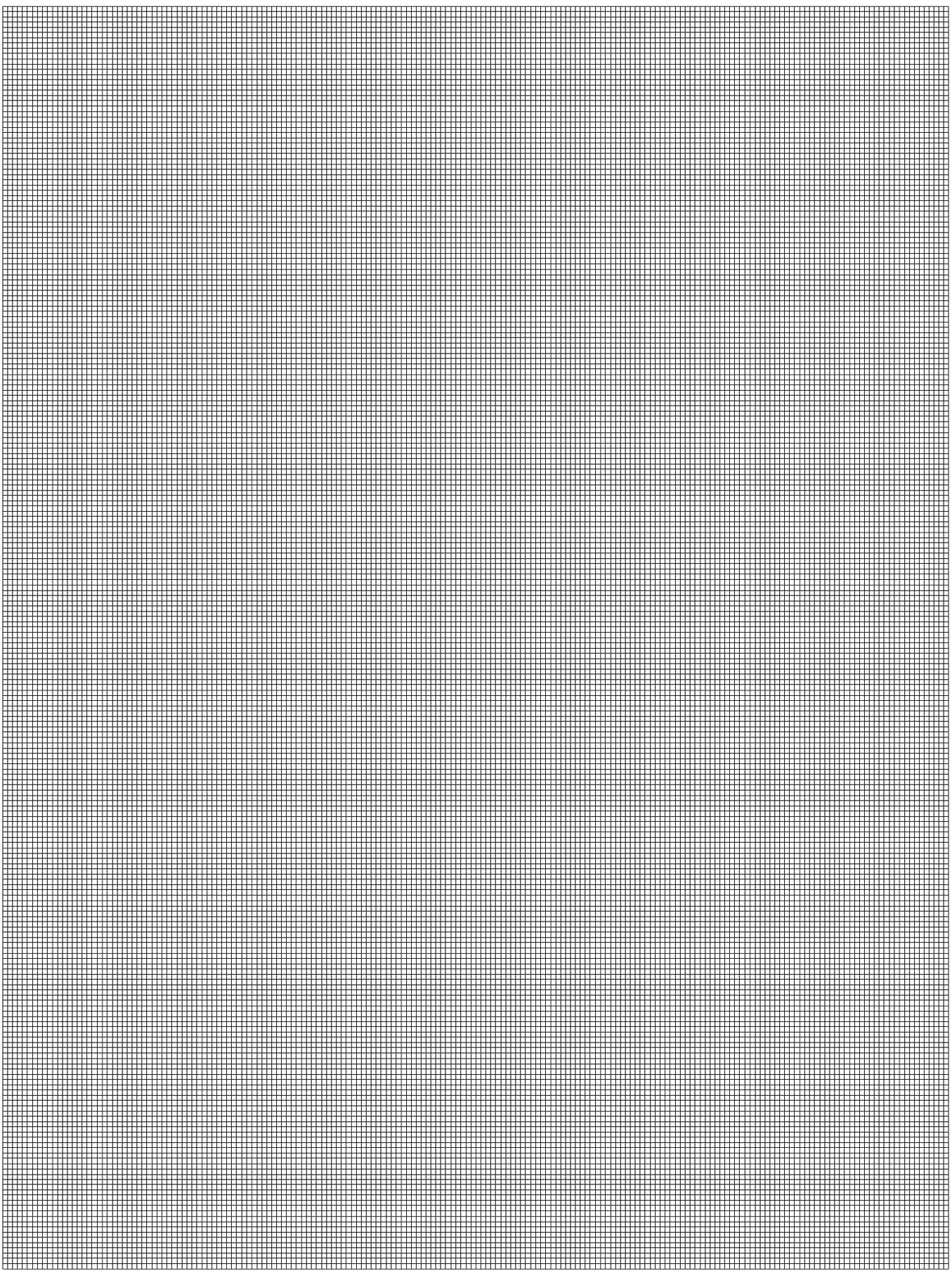
Example for ordering Wipers:

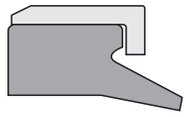
HA 335 0400 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension variant
Material number
HME internal code

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

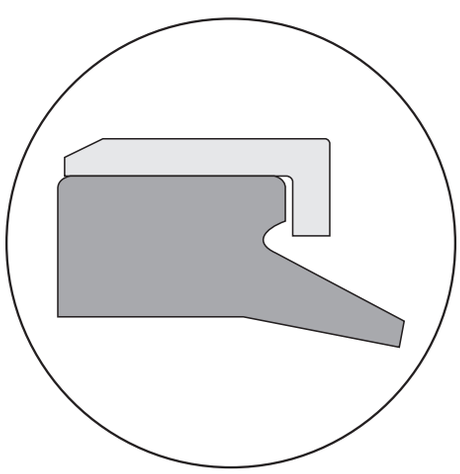




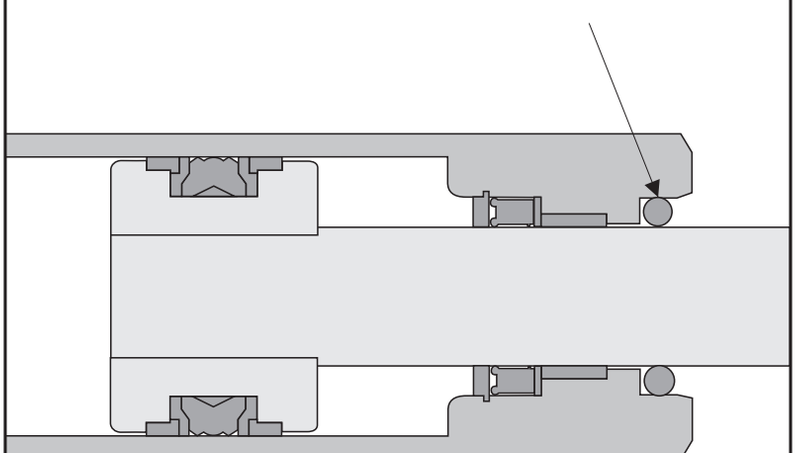
Single acting polyurethane wiper HA 340 offers very good wiper action even at low temperatures due to metal reinforcement at the external diameter.

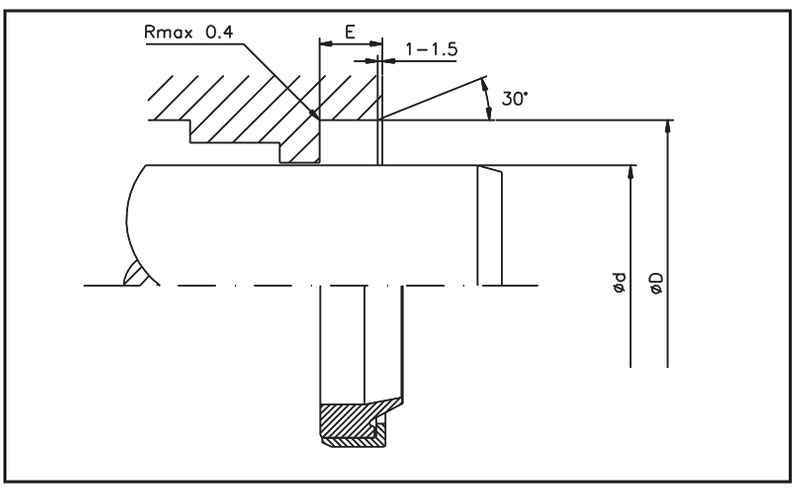
Special Features:

- Very good wiper action at low friction
- Corrosion protected metal ring on external diameter
- Easy press fit assembly
- Extensive series of sizes.



Discontinued item - Replacement article HA341





Limitations on Use

Media for Use

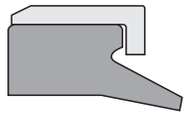
Mineral oil based hydraulic oils, Bio Oils and flame resistant pressure fluids on request.

Surface Finish

	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

d f8/h9	**D** H8	**E** +0,3	**Part N°.**
8,00	14,00	3,50	HA340 0080-01-200
10,00	16,00	3,50	HA340 0100-01-200
10,00	20,00	5,00	HA340 0100-02-200
12,00	18,00	3,50	HA340 0120-01-200
12,00	20,00	4,00	HA340 0120-02-200
12,00	20,00	4,50	HA340 0120-03-200
12,00	22,00	5,00	HA340 0120-04-200
14,00	20,00	3,50	HA340 0140-01-200
14,00	22,00	4,50	HA340 0140-02-200
14,00	25,00	5,00	HA340 0140-03-200
15,00	21,00	3,50	HA340 0150-01-200
15,00	25,00	5,00	HA340 0150-02-200
16,00	22,00	3,00	HA340 0160-01-200
16,00	22,00	3,50	HA340 0160-02-200
16,00	24,00	4,50	HA340 0160-03-200
16,00	26,00	5,00	HA340 0160-04-200
18,00	26,00	4,50	HA340 0180-01-200
18,00	28,00	5,00	HA340 0180-02-200
18,00	28,00	7,00	HA340 0180-03-200
20,00	30,00	4,00	HA340 0200-01-200
20,00	30,00	5,00	HA340 0200-02-200
20,00	30,00	6,00	HA340 0200-03-200
20,00	30,00	7,00	HA340 0200-04-200
22,00	28,00	5,00	HA340 0220-01-200
22,00	32,00	5,00	HA340 0220-02-200
22,00	32,00	6,00	HA340 0220-03-200
22,00	32,00	7,00	HA340 0220-04-200
25,00	32,00	5,00	HA340 0250-01-200
25,00	35,00	5,00	HA340 0250-02-200
25,00	35,00	6,00	HA340 0250-03-200
25,00	35,00	7,00	HA340 0250-04-200
28,00	38,00	5,00	HA340 0280-01-200
28,00	38,00	6,00	HA340 0280-02-200
28,00	38,00	7,00	HA340 0280-03-200
28,00	40,00	7,00	HA340 0280-04-200
30,00	40,00	5,00	HA340 0300-01-200
30,00	40,00	6,00	HA340 0300-02-200
30,00	40,00	7,00	HA340 0300-03-200
30,00	45,00	5,00	HA340 0300-04-200
32,00	42,00	5,00	HA340 0320-01-200
32,00	42,00	6,00	HA340 0320-02-200

d f8/h9	**D** H8	**E** +0,3	**Part N°.**
32,00	42,00	7,00	HA340 0320-03-200
32,00	45,00	4,00	HA340 0320-04-200
32,00	45,00	7,00	HA340 0320-05-200
33,00	43,00	7,00	HA340 0330-01-200
35,00	45,00	6,00	HA340 0350-01-200
35,00	45,00	7,00	HA340 0350-02-200
36,00	45,00	7,00	HA340 0360-01-200
36,00	46,00	5,00	HA340 0360-02-200
36,00	46,00	6,00	HA340 0360-03-200
38,00	48,00	7,00	HA340 0380-01-200
40,00	50,00	5,00	HA340 0400-01-200
40,00	50,00	6,00	HA340 0400-02-200
40,00	50,00	7,00	HA340 0400-03-200
42,00	52,00	5,00	HA340 0420-01-200
42,00	52,00	7,00	HA340 0420-02-200
45,00	55,00	5,00	HA340 0450-01-200
45,00	55,00	6,00	HA340 0450-02-200
45,00	55,00	7,00	HA340 0450-03-200
45,00	60,00	7,00	HA340 0450-04-200
50,00	60,00	5,00	HA340 0500-01-200
50,00	60,00	6,00	HA340 0500-02-200
50,00	60,00	7,00	HA340 0500-03-200
55,00	65,00	5,00	HA340 0550-01-200
55,00	65,00	6,00	HA340 0550-02-200
55,00	65,00	7,00	HA340 0550-03-200
56,00	66,00	5,00	HA340 0560-01-200
56,00	66,00	6,00	HA340 0560-02-200
56,00	66,00	7,00	HA340 0560-03-200
60,00	70,00	5,00	HA340 0600-01-200
60,00	70,00	6,00	HA340 0600-02-200
60,00	70,00	7,00	HA340 0600-03-200
60,00	74,00	5,00	HA340 0600-04-200
60,00	80,00	7,00	HA340 0600-05-200
63,00	73,00	5,00	HA340 0630-01-200
63,00	73,00	6,00	HA340 0630-02-200
63,00	75,00	7,00	HA340 0630-03-200
65,00	75,00	5,00	HA340 0650-01-200
65,00	75,00	6,00	HA340 0650-02-200
65,00	75,00	7,00	HA340 0650-03-200
70,00	80,00	5,00	HA340 0700-01-200
70,00	80,00	6,00	HA340 0700-02-200



d f8/h9	D H8	E +0,2	Part N°.
70,00	80,00	7,00	HA340 0700-03-200
73,00	85,60	8,50	HA340 0730-01-200
75,00	83,00	7,00	HA340 0750-01-200
75,00	85,00	6,00	HA340 0750-02-200
75,00	85,00	7,00	HA340 0750-03-200
80,00	88,00	7,00	HA340 0800-01-200
80,00	90,00	6,00	HA340 0800-02-200
80,00	90,00	7,00	HA340 0800-03-200
85,00	95,00	7,00	HA340 0850-01-200
90,00	100,00	7,00	HA340 0900-01-200
90,00	104,00	8,00	HA340 0900-02-200

d f8/h9	D H8	E +0,2	Part N°.
95,00	105,00	7,00	HA340 0950-01-200
100,00	110,00	7,00	HA340 1000-01-200
100,00	114,00	8,00	HA340 1000-02-200
105,00	115,00	7,00	HA340 1050-01-200
110,00	120,00	7,00	HA340 1100-01-200
110,00	124,00	8,00	HA340 1100-02-200
115,00	125,00	7,00	HA340 1150-01-200
120,00	130,00	7,00	HA340 1200-01-200
125,00	139,00	8,00	HA340 1250-01-200
125,00	140,00	9,00	HA340 1250-02-200
160,00	177,00	11,00	HA340 1600-01-200

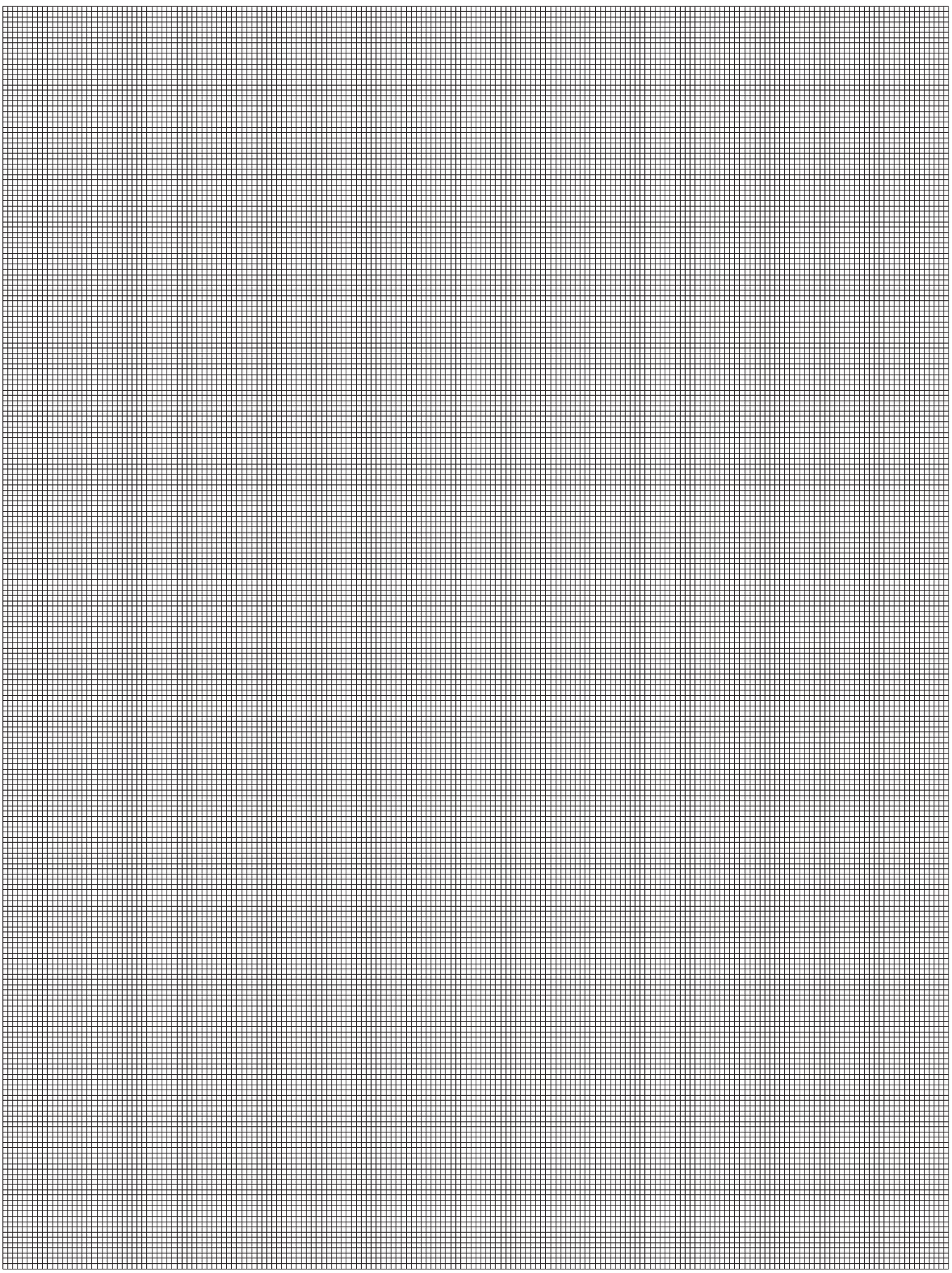
Example for ordering Wipers:

HA 340 0300 - 01 - 200 - ...

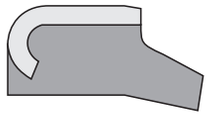
Profile
Nominal diameter x 10
Dimension variant
Material number
HME internal code

Issue
01 | 24

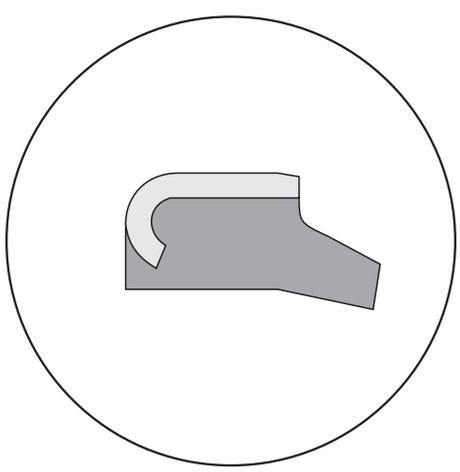
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



WIPER
HA 341 / HA 342



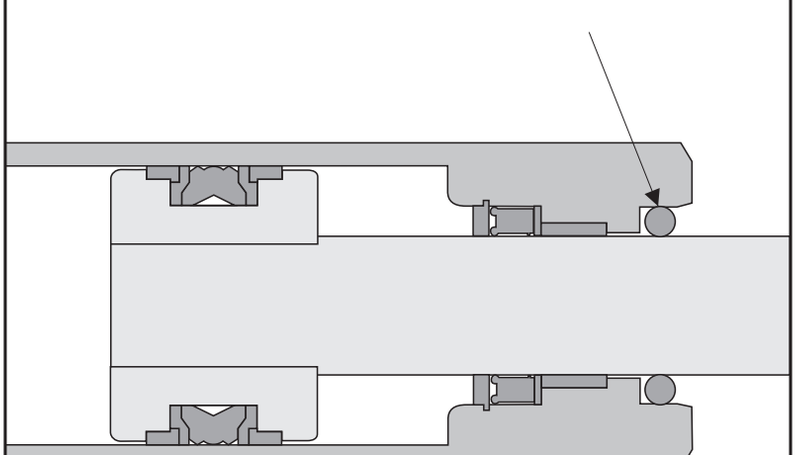
Single acting polyurethane wipers HA 341 and HA 342 ensure safe and secure wiper action under extreme conditions, especially in low temperature application.



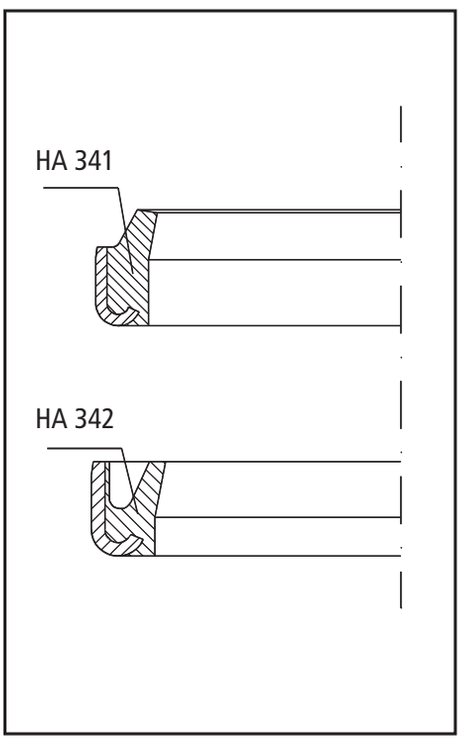
Special Features:

- Anti wear polyurethane
- Good abrasion resistance, long life
- Stability due to polyurethane and metal cage combination
- Easy slide in assembly for press fit.

Material : polyurethane
Velocity : reciprocating to 1 m/s
Temperature : -35 to +110 °C



WIPER
HA 341 / HA 342



The designs HA 341 resp. HA 342 are optimal with respect to wear of NBR metal wipers. They have proven their superiority,especially in low temperature applications.

Description

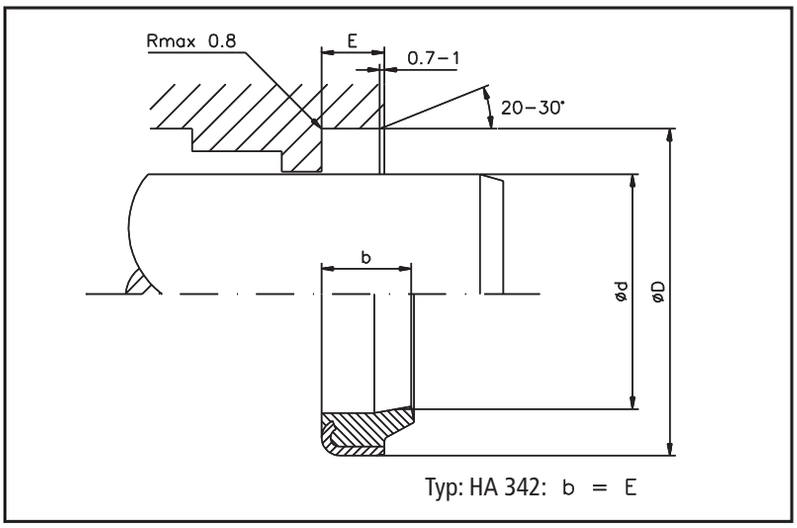
Wipers HA 341 and HA 342 provide exceptional wiper action even for very contaminated piston rods and at very low temperatures.

In comparison to designs in NBR, polyurethane wipers display much higher resistance to wear and corrosion, better anti ageing behaviour and therefore a much longer service life of the rod seal.

Stick slip behaviour is improved due to optimisation of sealing lip design. The integrated and specially formed metal cage ensures high stability of the wiper by itself. "Fatigue" or "tilting" of wiper is not possible with these designs.

In case of wipers without or only with an inserted cage, the wiper lip can touch against the rod and thus corrode prematurely.

The drawing to the left shows various designs of both types of wipers: HA 341 with a protruding wiper lip and HA 342 without a protruding wiper lip. The advantage of HA 342 is that it is better protected and that it allows for a better length of stroke.



Typ: HA 342: b = E

Limitations on Use

Velocity	: reciprocating to 1 m/s
Temperature	: -35 bis +110 °C

Media for Use

Mineral oil based hydraulic oils, Bio Oils and flame resistant pressure fluids on request.

Surface Finish

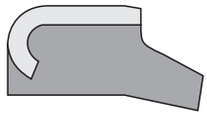
	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Diameter/groove root	16,0 µm	10,0 µm	3,2 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Typ HA 341

d f8/h9	**D** H8	**E** +0,2	**b**	**Part N°.**
16,00	**22,00**	**4,00**	**6,00**	**HA341 0160-01-200**
20,00	**30,00**	**7,00**	**10,00**	**HA341 0200-01-200**
25,00	**35,00**	**7,00**	**10,00**	**HA341 0250-01-200**
28,00	**38,00**	**7,00**	**10,00**	**HA341 0280-01-200**
30,00	40,00	5,50	10,00	HA341 0300-01-200
30,00	40,00	7,00	10,00	HA341 0300-02-200
32,00	**42,00**	**7,00**	**10,00**	**HA341 0320-01-200**
32,00	**45,00**	**7,00**	**10,00**	**HA341 0320-02-200**
35,00	45,00	7,00	10,00	HA341 0350-01-200
36,00	**45,00**	**7,00**	**10,00**	**HA341 0360-01-200**
36,00	**46,00**	**7,00**	**10,00**	**HA341 0360-02-200**
38,10	50,80	7,00	10,00	HA341 0381-01-200
40,00	**50,00**	**5,50**	**10,00**	**HA341 0400-01-200**
40,00	**50,00**	**7,00**	**10,10**	**HA341 0400-02-200**
45,00	**55,00**	**7,00**	**10,00**	**HA341 0450-01-200**
45,00	**60,00**	**7,00**	**10,00**	**HA341 0450-02-200**
50,00	**60,00**	**7,00**	**10,00**	**HA341 0500-01-200**
50,00	**65,00**	**7,00**	**10,00**	**HA341 0500-02-200**
50,80	63,50	7,00	10,00	HA341 0508-01-200
55,00	65,50	7,00	10,00	HA341 0550-01-200
55,00	70,00	7,00	10,00	HA341 0550-02-200
56,00	**66,00**	**7,00**	**10,00**	**HA341 0560-01-200**
57,15	70,00	7,00	10,00	HA341 0571-01-200
60,00	70,00	7,00	10,00	HA341 0600-01-200
63,00	**73,00**	**7,00**	**10,00**	**HA341 0630-01-200**
63,00	**75,00**	**7,00**	**10,00**	**HA341 0630-02-200**
63,00	**78,00**	**7,00**	**10,00**	**HA341 0630-03-200**
63,50	76,20	7,00	10,00	HA341 0635-01-200
65,00	75,00	7,00	10,00	HA341 0650-01-200
70,00	**80,00**	**7,00**	**10,00**	**HA341 0700-01-200**
75,00	83,00	7,00	10,00	HA341 0750-01-200
75,00	85,00	7,00	10,00	HA341 0750-02-200
80,00	**90,00**	**7,00**	**10,00**	**HA341 0800-01-200**
85,00	95,00	7,00	10,00	HA341 0850-01-200
90,00	**100,00**	**7,00**	**10,00**	**HA341 0900-01-200**
95,00	105,00	7,00	10,00	HA341 0950-01-200
100,00	**110,00**	**7,00**	**10,00**	**HA341 1000-01-200**
110,00	**120,00**	**7,00**	**10,00**	**HA341 1100-01-200**
105,00	115,00	7,00	10,00	HA341 1050-01-200
120,00	130,00	7,00	12,00	HA341 1200-01-200
125,00	**140,00**	**9,00**	**12,00**	**HA341 1250-01-200**

Typ HA 342

d f8/h9	**D** H8	**E** +0,2	**Part N°.**
12,00	**20,00**	**4,00**	**HA342 0120-01-200**
15,00	21,00	5,00	HA342 0150-01-200
15,90	23,00	5,00	HA342 0159-01-200
20,00	**28,00**	**5,00**	**HA342 0200-01-200**
25,00	**32,00**	**7,00**	**HA342 0250-01-200**
25,00	**35,00**	**7,00**	**HA342 0250-02-200**
30,00	40,00	4,00	HA342 0300-01-200
30,00	40,00	4.50	HA342 0300-02-200
30,00	43,00	7,50	HA342 0300-03-200
35,00	45,00	4,00	HA342 0350-01-200
35,00	45,00	4.50	HA342 0350-02-200
35,00	50,00	7,50	HA342 0350-03-200
36,00	**46,00**	**7,00**	**HA342 0360-01-200**
36,00	**48,00**	**6,00**	**HA342 0360-02-200**
38,00	50,00	7,50	HA342 0380-01-200
40,00	**50,00**	**4,00**	**HA342 0400-01-200**
40,00	**50,00**	**4.50**	**HA342 0400-02-200**
40,00	**52,00**	**6.00**	**HA342 0400-03-200**
45,00	**55,00**	**4,00**	**HA342 0450-01-200**
45,00	**55,00**	**5.00**	**HA342 0450-02-200**
45,00	**55,00**	**3.20**	**HA342 0450-03-200**
45,00	**60,00**	**7,50**	**HA342 0450-04-200**
50,00	**60,00**	**4,00**	**HA342 0500-01-200**
50,00	**60,00**	**5,00**	**HA342 0500-02-200**
50,00	**62,00**	**7,00**	**HA342 0500-03-200**
50,00	**60,00**	**7,00**	**HA342 0500-04-200**
50,00	**63,00**	**4,00**	**HA342 0500-05-200**
50,00	**65,00**	**7,50**	**HA342 0500-06-200**
50,80	63,50	7,92	HA342 0508-01-200
55,00	65,00	3.20	HA342 0550-01-200
55,00	68,00	4.00	HA342 0550-02-200
55,00	70,00	7.50	HA342 0550-03-200
56,00	**70,00**	**7.50**	**HA342 0560-01-200**
57,15	69,85	6,35	HA342 0571-01-200
60,00	70,00	7,00	HA342 0600-01-200
60,00	75,00	7,50	HA342 0600-02-200
60,00	75,00	4,00	HA342 0600-03-200
63,00	**78,00**	**7,50**	**HA342 0630-01-200**
63,50	76,50	7,92	HA342 0635-01-200
65,00	75,00	7,00	HA342 0650-01-200
65,00	75,00	7,00	HA342 0650-02-200



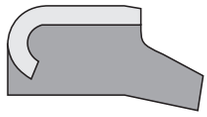
Typ HA 341

d f8/h9	**D** H8	**E** +0,2	**b**	**Part N°.**
140,00	**155,00**	**9,00**	**12,00**	**HA341 1400-01-200**
180,00	**195,00**	**9,00**	**12,00**	**HA341 1800-01-200**

Typ HA 342

d f8/h9	**D** H8	**E** +0,2	**Part N°.**
65,00	80,00	7,50	HA342 0650-03-200
65,00	80,00	5,00	HA342 0650-04-200
66,60	79,30	7,37	HA342 0666-01-200
70,00	**80,00**	**4,50**	**HA342 0700-01-200**
70,00	**80,00**	**5,00**	**HA342 0700-02-200**
70,00	**80,00**	**7,00**	**HA342 0700-03-200**
70,00	**84,00**	**8,00**	**HA342 0700-04-200**
70,00	**85,00**	**7,50**	**HA342 0700-05-200**
71,00	86,00	5,00	HA342 0710-01-200
75,00	90,00	4,50	HA342 0750-01-200
75,00	90,00	7,50	HA342 0750-02-200
75,00	95,00	10,00	HA342 0750-03-200
76,50	96,50	10,00	HA342 0765-01-200
80,00	**90,00**	**4,50**	**HA342 0800-01-200**
80,00	**90,00**	**7,00**	**HA342 0800-02-200**
80,00	**95,00**	**6,00**	**HA342 0800-03-200**
80,00	**95,00**	**7,00**	**HA342 0800-04-200**
80,00	**95,00**	**7,50**	**HA342 0800-05-200**
80,00	**95,00**	**7,50**	**HA342 0800-06-200**
80,00	**95,00**	**5,00**	**HA342 0800-07-200**
80,00	**100,00**	**10,00**	**HA342 0800-08-200**
85,00	95,00	7,00	HA342 0850-01-200
85,00	100,00	6,00	HA342 0850-02-200
85,00	100,00	10,00	HA342 0850-03-200
85,00	100,00	4,00	HA342 0850-04-200
85,00	105,00	10,00	HA342 0850-05-200
89,00	76,20	7,92	HA342 0890-01-200
90,00	**100,00**	**4,50**	**HA342 0900-01-200**
90,00	**100,00**	**7,00**	**HA342 0900-02-200**
90,00	**104,00**	**8,00**	**HA342 0900-03-200**
90,00	**105,00**	**6,00**	**HA342 0900-04-200**
90,00	**105,00**	**6,00**	**HA342 0900-05-200**
90,00	**110,00**	**10,00**	**HA342 0900-06-200**
92,03	79,20	5,85	HA342 0920-01-200
95,00	115,00	10,00	HA342 0950-01-200
100,00	**110,00**	**4,50**	**HA342 1000-01-200**
100,00	**110,00**	**7,00**	**HA342 1000-02-200**
100,00	**115,00**	**7,50**	**HA342 1000-03-200**
100,00	**115,00**	**6,50**	**HA342 1000-04-200**
100,00	**115,00**	**4,00**	**HA342 1000-05-200**
100,00	**120,00**	**10,00**	**HA342 1000-06-200**
105,00	120,00	7,50	HA342 1050-01-200
110,00	**120,00**	**7,00**	**HA342 1100-01-200**
110,00	**125,00**	**7,00**	**HA342 1100-02-200**
110,00	**125,00**	**9,00**	**HA342 1100-03-200**
110,00	**130,00**	**10,00**	**HA342 1100-04-200**
115,00	130,00	7,50	HA342 1150-01-200
120,00	130,00	7,00	HA342 1200-01-200
120,00	140,00	10,00	HA342 1200-02-200
130,00	140,00	7,00	HA342 1300-01-200
130,00	145,00	7,50	HA342 1300-02-200
140,00	155,00	7,00	HA342 1400-01-200
140,00	155,00	9,00	HA342 1400-02-200
150,00	160,00	7,00	HA342 1500-01-200
160,00	175,00	10,00	HA342 1600-01-200
170,00	185,00	7,00	HA342 1700-01-200
190,00	210,00	10,00	HA342 1900-01-200

Dimensions in bold correspond to rod diameter ISO 3320.
Extensive range of inch measurement diagrams available on request.



Example for ordering Wipers:

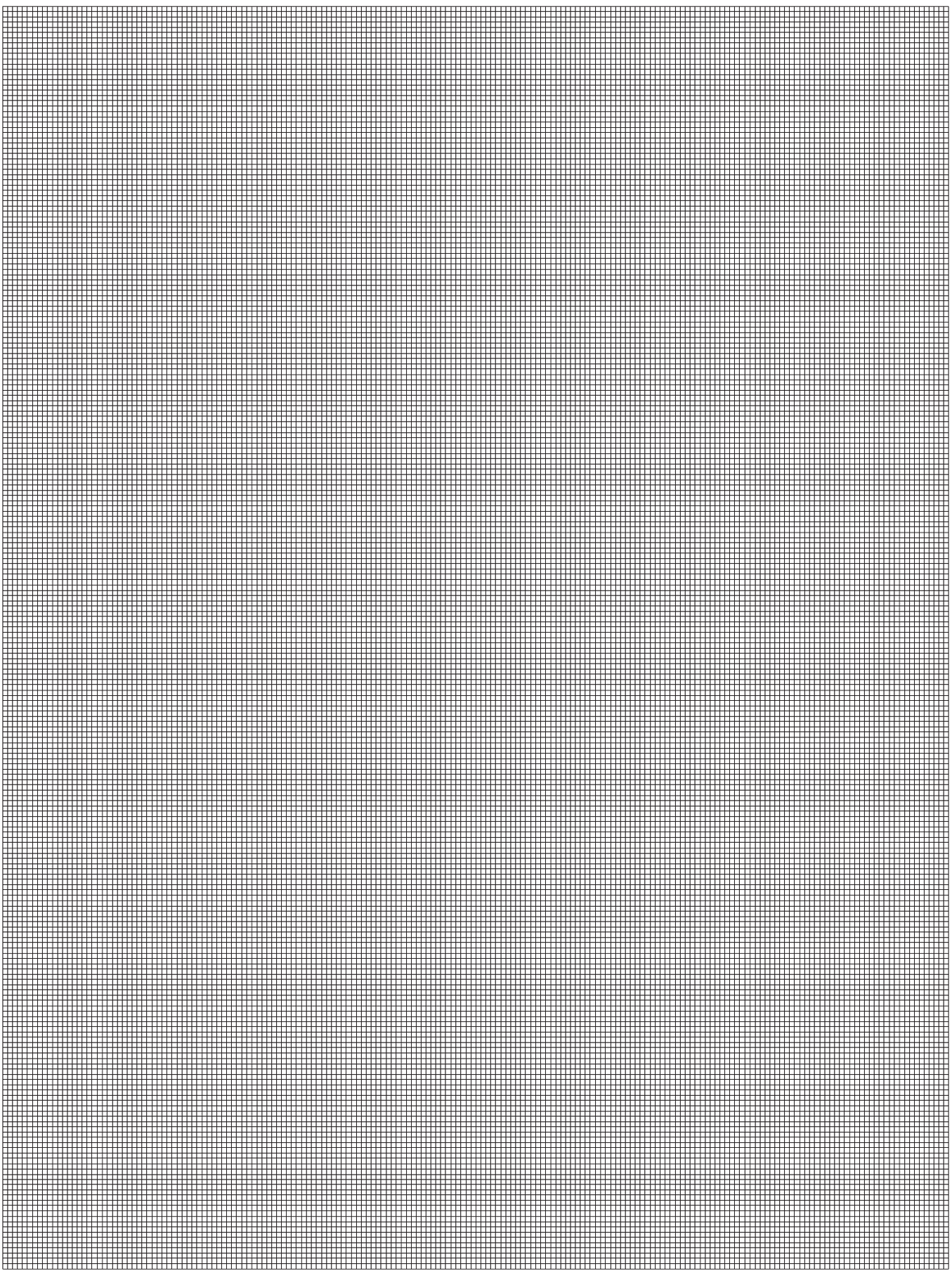
HA 341 0320 - 01 - 200 - ...

- Profile
- Nominal diameter x 10
- Dimension variant
- Material number
- HME internal code

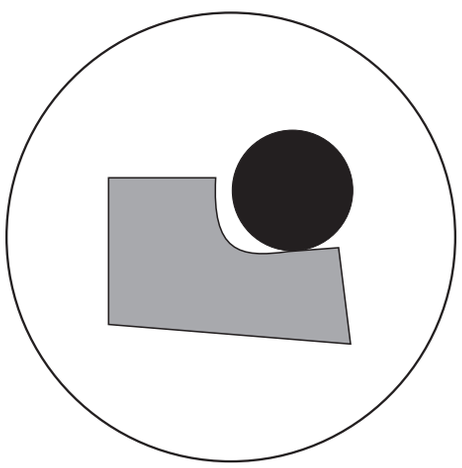
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

NOTES



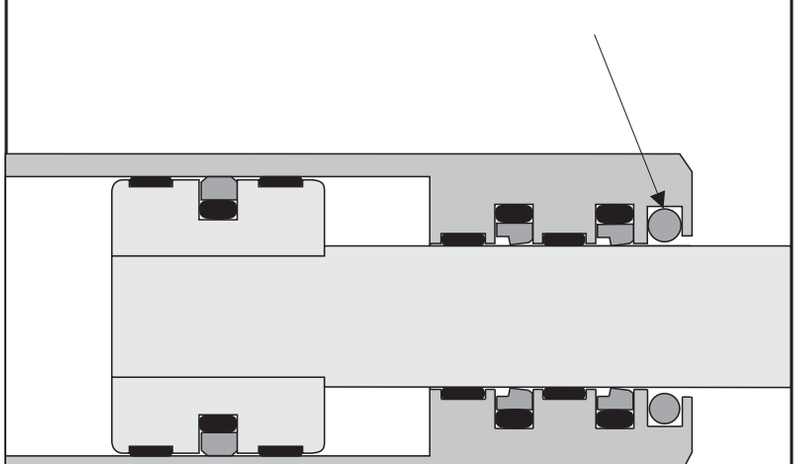
The wiper HA 350 is used in hydraulic cylinders to wipe the incoming piston rod clean of dirt. Various material combinations ensure high functional security and service life over the entire velocity range at low friction, various temperatures and media.

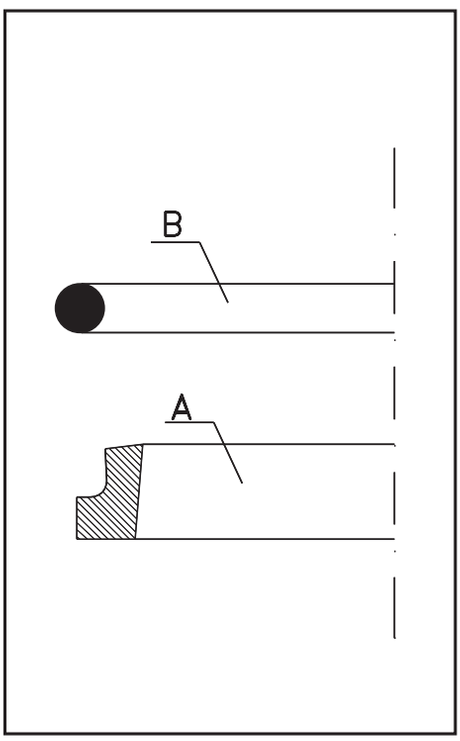


Special Features:

- Two part composition comprising of wiper ring and O-ring
- Very good wiper action against external and quickly adhering dirt
- Outstanding shear characteristics, no stick slip effect
- High abrasion resistance, long life
- Wide temperature range and high chemical resistance depending on O-ring material
- Available for every rod diameter up to approx. 2500 mm.

Material : polyester elastomer
Velocity : reciprocating to 15 m/s
Temperature : -40 to + 200 °C





Wiper Ring (Part A)

The wiper possesses a sturdy profile with a wiper lip protruding on one side. There exists a recess on the outermost circumference in order to be able to incorporate O-ring.

Wiper rings are manufactured from specially modified PTFE materials. Compound 55 (PTFE bronze) is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularly superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norm).

Standard MOC for hydraulics is NBR (acrylonitrile butadiene rubber) with 70 Shore A, which guarantees particularly good resistance to hydraulic fluids.

Materials Overview: Wiper Ring

01: Pure PTFE - Outstanding chemical resistance - Used in chemical, foodstuffs and pharmaceutical industry with mechanical stress.

12: Modified PTFE - Very good chemical resistance, outstanding shear characteristics - Used for special purpose and intermediate stress applications.

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance - Used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance - Used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance - Used in intermediate to high stress hydraulics application.

67: Modified PTFE - Very high abrasion resistance and inherent stability - Used in hydraulics and abrasive pressure fluids.

83: Modified polyurethane - Very high abrasion resistance and inherent stability - Used primarily in intermediate-stress hydraulics applications.

Materials Overview: O-Ring

N: Acrylonitrile butadiene rubber - Used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.

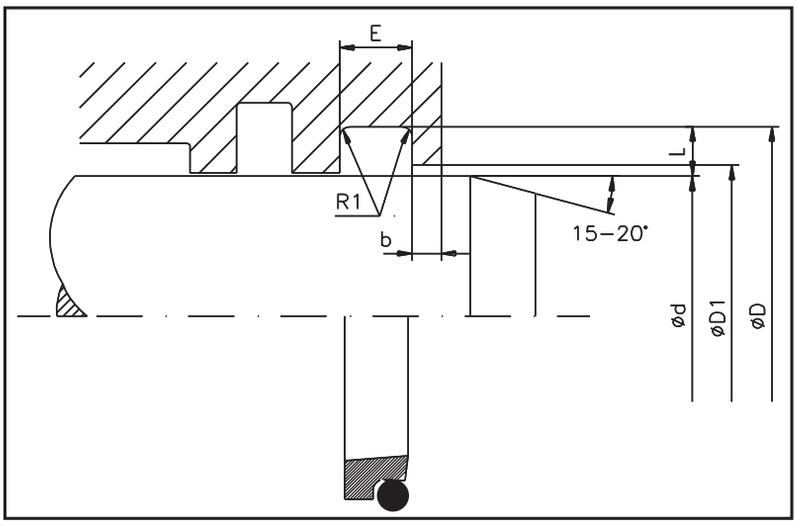
F: Fluorine containing rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene propylene diene rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!

S: Silicon rubbers.

C: Chloroprene rubbers.

The wiper series HA 350 has been used for many years in hydraulic cylinders. It is meant for particularly robust applications like civil engineering and construction machinery, where high degree of dust attack is encountered.
The wiper can be used in divided andundivided grooves (rod diameter over 30 mm for undivided grooves). For use in an undivided groove, the profile ring must be carefully bent to a kidney shape. The ring is then further prised apart through the chamfered piston rod.



Limitations on Use

Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending O-ring material).

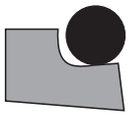
Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Recommended Sizes for Installation

Section	O-Ring Cord-ø mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Radius **R1 max.** mm	Bar Width **b** mm
01	1,78	6 - 11,9	3,7	2,4	0,2	2,0
02	2,62	12 - 64,9	5,0	3,4	0,2	2,0
03	3,53	65 - 250,9	6,0	4,4	0,2	3,0
04	5,33	251 - 420,9	8,4	6,1	0,2	4,0
05	7,00	421 - 650,9	11,0	8,0	0,2	5,0

d f8/h9	**D** H10	**E** +0,2	**D1** +0,2	O-Ring	**Part N°.**
6,00	**10,80**	**3,70**	**8,70**	**011**	**HA350 0060-01-55N**
8,00	**12,80**	**3,70**	**10,70**	**012**	**HA350 0080-01-55N**
10,00	**14,80**	**3,70**	**12,70**	**013**	**HA350 0100-01-55N**
12,00	**18,80**	**5,00**	**15,50**	**113**	**HA350 0120-02-55N**
14,00	**20,80**	**5,00**	**17,50**	**115**	**HA350 0140-02-55N**
15,00	21,80	5,00	18,50	115	HA350 0150-02-55N
16,00	**22,80**	**5,00**	**19,50**	**116**	**HA350 0160-02-55N**
18,00	**24,80**	**5,00**	**21,50**	**117**	**HA350 0180-02-55N**
20,00	**26,80**	**5,00**	**23,50**	**118**	**HA350 0200-02-55N**
22,00	**28,80**	**5,00**	**25,50**	**120**	**HA350 0220-02-55N**
25,00	**31,80**	**5,00**	**28,50**	**121**	**HA350 0250-02-55N**
26,00	32,80	5,00	29,50	122	HA350 0260-02-55N
28,00	**34,80**	**5,00**	**31,50**	**123**	**HA350 0280-02-55N**
30,00	36,80	5,00	33,50	125	HA350 0300-02-55N
32,00	**38,80**	**5,00**	**35,50**	**126**	**HA350 0320-02-55N**
35,00	41,80	5,00	38,50	127	HA350 0350-02-55N
36,00	**42,80**	**5,00**	**39,50**	**129**	**HA350 0360-02-55N**
37,00	43,80	5,00	40,50	129	HA350 0370-02-55N
38,00	44,80	5,00	41,50	130	HA350 0380-02-55N
40,00	**46,80**	**5,00**	**43,50**	**131**	**HA350 0400-02-55N**
42,00	48,80	5,00	45,50	132	HA350 0420-02-55N
45,00	**51,80**	**5,00**	**48,50**	**134**	**HA350 0450-02-55N**
48,00	54,80	5,00	51,50	136	HA350 0480-02-55N
50,00	**56,80**	**5,00**	**53,50**	**137**	**HA350 0500-02-55N**
52,00	58,80	5,00	55,50	138	HA350 0520-02-55N
55,00	61,80	5,00	58,50	140	HA350 0550-02-55N
56,00	**62,80**	**5,00**	**59,50**	**141**	**HA350 0560-02-55N**
58,00	64,80	5,00	61,50	142	HA350 0580-02-55N



d f8/h9	**D** H10	**E** +0,2	**D1** +0,2	O-Ring	**Part N°.**
60,00	66,80	5,00	63,50	143	HA350 0600-02-55N
63,00	**69,80**	**5,00**	**66,50**	**145**	**HA350 0630-02-55N**
65,00	73,80	6,00	69,00	231	HA350 0650-03-55N
70,00	**78,80**	**6,00**	**74,00**	**233**	**HA350 0700-03-55N**
75,00	83,80	6,00	79,00	235	HA350 0750-03-55N
80,00	**88,80**	**6,00**	**84,00**	**236**	**HA350 0800-03-55N**
85,00	93,80	6,00	89,00	238	HA350 0850-03-55N
90,00	**98,80**	**6,00**	**94,00**	**239**	**HA350 0900-03-55N**
95,00	103,80	6,00	99,00	241	HA350 0950-03-55N
100,00	**108,80**	**6,00**	**104,00**	**243**	**HA350 1000-03-55N**
105,00	113,80	6,00	109,00	244	HA350 1050-03-55N
110,00	**118,80**	**6,00**	**114,00**	**246**	**HA350 1100-03-55N**
115,00	123,80	6,00	119,00	247	HA350 1150-03-55N
120,00	128,80	6,00	124,00	249	HA350 1200-03-55N
125,00	**133,80**	**6,00**	**129,00**	**250**	**HA350 1250-03-55N**
130,00	138,80	6,00	134,00	252	HA350 1300-03-55N
135,00	143,80	6,00	139,00	253	HA350 1350-03-55N
140,00	**148,80**	**6,00**	**144,00**	**255**	**HA350 1400-03-55N**
150,00	158,80	6,00	154,00	258	HA350 1500-03-55N
155,00	163,80	6,00	159,00	259	HA350 1550-03-55N
160,00	**168,80**	**6,00**	**164,00**	**260**	**HA350 1600-03-55N**
170,00	178,80	6,00	174,00	261	HA350 1700-03-55N
175,00	183,80	6,00	179,00	262	HA350 1750-03-55N
180,00	**188,80**	**6,00**	**184,00**	**263**	**HA350 1800-03-55N**
185,00	193,80	6,00	189,00	263	HA350 1850-03-55N
190,00	198,80	6,00	194,00	264	HA350 1900-03-55N
195,00	203,80	6,00	199,00	265	HA350 1950-03-55N
200,00	**208,80**	**6,00**	**204,00**	**266**	**HA350 2000-03-55N**
210,00	218,80	6,00	214,00	267	HA350 2100-03-55N
220,00	**228,80**	**6,00**	**224,00**	**269**	**HA350 2200-03-55N**
225,00	233,80	6,00	229,00	270	HA350 2250-03-55N
230,00	238,80	6,00	234,00	271	HA350 2300-03-55N
240,00	248,80	6,00	244,00	272	HA350 2400-03-55N
250,00	**258,80**	**6,00**	**254,00**	**274**	**HA350 2500-03-55N**
260,00	272,20	8,40	264,50	377	HA350 2600-04-55N
270,00	282,20	8,40	274,50	378	HA350 2700-04-55N
280,00	**292,20**	**8,40**	**284,50**	**379**	**HA350 2800-04-55N**
290,00	302,20	8,40	294,50	380	HA350 2900-04-55N
300,00	312,20	8,40	304,50	381	HA350 3000-04-55N
310,00	322,20	8,40	314,50	381	HA350 3100-04-55N
320,00	**332,20**	**8,40**	**324,50**	**382**	**HA350 3200-04-55N**
330,00	342,20	8,40	334,50	382	HA350 3300-04-55N
340,00	352,20	8,40	344,50	382	HA350 3400-04-55N
350,00	362,20	8,40	354,50	383	HA350 3500-04-55N
360,00	**372,20**	**8,40**	**364,50**	**383**	**HA350 3600-04-55N**
370,00	382,20	8,40	374,50	383	HA350 3700-04-55N
380,00	392,20	8,40	384,50	384	HA350 3800-04-55N
390,00	402,20	8,40	394,50	384	HA350 3900-04-55N
400,00	412,20	8,40	404,50	385	HA350 4000-04-55N
410,00	422,20	8,40	414,50	385	HA350 4100-04-55N
420,00	432,20	8,40	424,50	386	HA350 4200-04-55N
430,00	446,00	11,00	435,20	463	HA350 4300-05-55N
440,00	456,00	11,00	445,20	464	HA350 4400-05-55N
450,00	466,00	11,00	455,20	465	HA350 4500-05-55N
460,00	476,00	11,00	465,20	466	HA350 4600-05-55N
470,00	486,00	11,00	475,20	466	HA350 4700-05-55N
480,00	496,00	11,00	485,20	467	HA350 4800-05-55N
490,00	506,00	11,00	495,20	468	HA350 4900-05-55N
500,00	516,00	11,00	505,20	469	HA350 5000-05-55N

Further sizes up to Ø 2500 mm available on request.
Sizes in bold correspond to rod diameter as per DIN ISO 3320.

Example for ordering Wipers:

HA 350 0360 - 02 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Wiper Ring
01 - pure PTFE
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring
N -NBR
F - FPM
E - EPDM
S - Silicon
C -Chloropren

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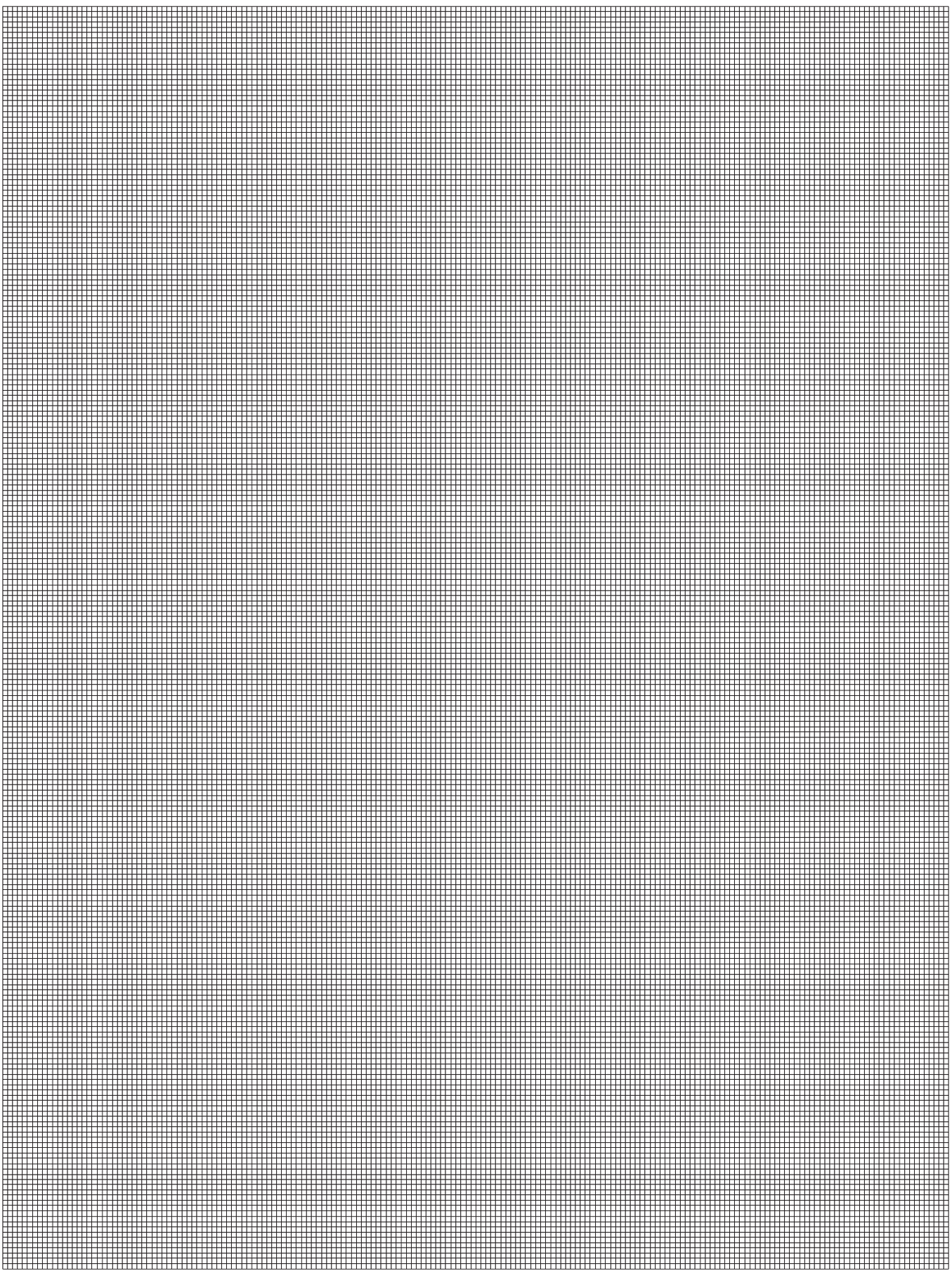
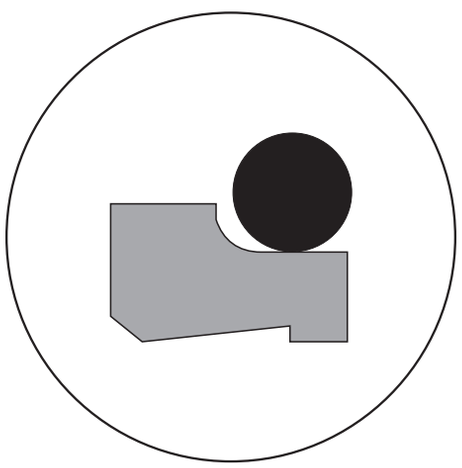


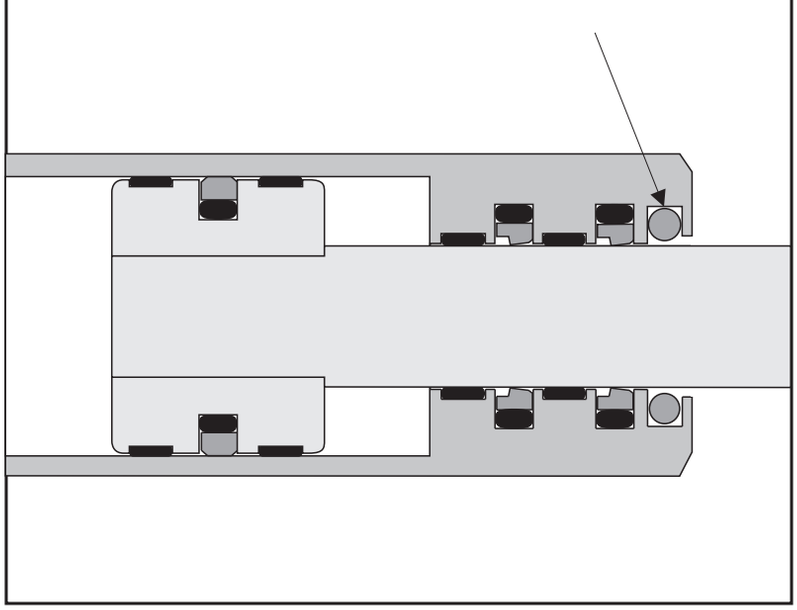
Double acting wiper HA 355 is used in hydraulic cylinders to wipe the incoming piston rod clean of dirt. Various material combinations guarantee a high functional security and service life over the entire velocity range at low friction, various temperatures and media.

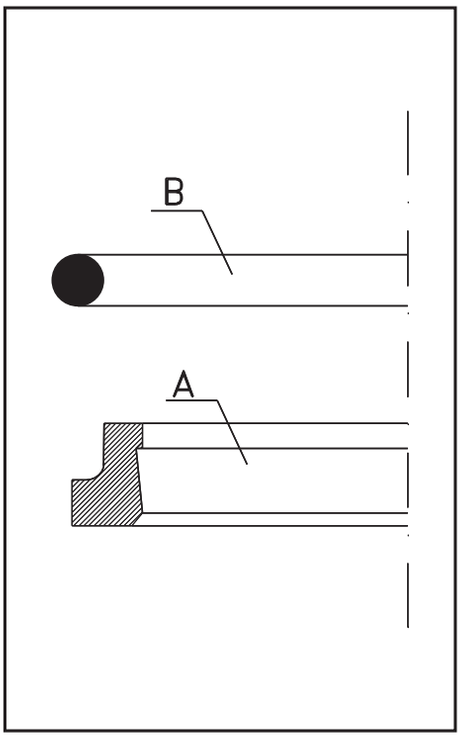


Special Features:

- Two part composition consisting of wiper ring and O-ring
- Very good external wiper action, even with adhering dirt
- Very good internal wiper action on the residual oil film that accumulates on the piston rod
- Outstanding shear characteristics, no stick slip effect
- Large abrasion resistance, long life
- Wide temperature range and chemical resistance depending on O-ring material
- Available for all rod diameters up to approx. 2500 mm.

Material : PTFE-Compound
Velocity : reciprocating to 15 m/s
Temperature : -40 to + 200 °C





Wiper Ring (Part A)

The wiper possesses a sturdy profile with a wiper lip protruding on one side. There exists a recess on the outermost circumference in order to be able to incorporate O-ring.

Wiper rings are manufactured from specially modified PTFE materials. Compound 55 (PTFE bronze) is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularly superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norm). Standard MOC for hydraulics applications is NBR with 70 Shore A, which guarantees particularly good resistance to hydraulic fluids.

Materials Overview: Wiper Ring

01: Pure PTFE - Outstanding chemical resistance - Used in chemical, foodstuffs and pharmaceutical industry with mechanical stress.

12: Modified PTFE - Very good chemical resistance, outstanding shear characteristics - Used for special purpose and intermediate stress applications.

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance - Used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance - Used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance - Used in intermediate to high stress hydraulics application.

67: Modified PTFE - Very high abrasion resistance and inherent stability - Used in hydraulics and abrasive pressure fluids.

83: Modified polyurethane - Very high abrasion resistance and inherent stability - Used primarily in intermediate-stress hydraulics applications.

The wiper series HA 355 has been used for many years in hydraulic cylinders. On the basis of its double function as a wiper both on the inside and on the outside, it is basically used on the rod seal HS 250.

The sealing and wiper function allows a nearly leakage free rod sealing, even in the case of highly loaded hydraulic cylinders and rough service environments.

The wiper can be used in divided and undivided (rod diameter approx. 30 mm onwards) grooves. For use in an undivided groove, the profile ring must be carefully bent to a kidney shape. The ring is then further prised apart through the chamfered piston rod.

Materials Overview: O-Ring

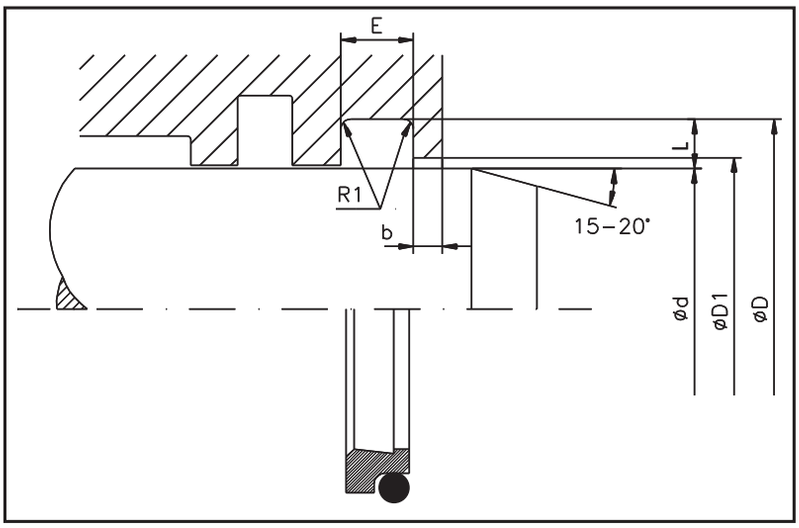
N: Acrylonitrile butadiene rubber - Used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.

F: Fluorine containing rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene propylene diene rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!

S: Silicon rubbers.

C: Chloroprene rubbers.



Limitations on Use

Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending O-ring material).

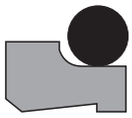
Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Recommended Sizes for Installation

Section	O-Ring Cord-ø mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Radius **R1 max.** mm	Bar Width **b** mm
01	1,78	6 - 11,9	3,7	2,4	0,2	2,0
02	2,62	12 - 64,9	5,0	3,4	0,2	2,0
03	3,53	65 - 250,9	6,0	4,4	0,2	3,0
04	5,33	251 - 420,9	8,4	6,1	0,2	4,0
05	7,00	421 - 650,9	11,0	8,0	0,2	5,0

d f8/h9	**D** H10	**E** +0,2	**D1** +0,2	O-Ring	**Part N°.**
6,00	**10,80**	**3,70**	**7,50**	**011**	**HA355 0060-01-55N**
8,00	**12,80**	**3,70**	**9,50**	**012**	**HA355 0080-01-55N**
10,00	**14,80**	**3,70**	**11,50**	**013**	**HA355 0100-01-55N**
12,00	**18,80**	**5,00**	**13,50**	**113**	**HA355 0120-02-55N**
14,00	**20,80**	**5,00**	**15,50**	**115**	**HA355 0140-02-55N**
15,00	21,80	5,00	16,50	115	HA355 0150-02-55N
16,00	**22,80**	**5,00**	**17,50**	**116**	**HA355 0160-02-55N**
18,00	**24,80**	**5,00**	**19,50**	**117**	**HA355 0180-02-55N**
20,00	**26,80**	**5,00**	**21,50**	**118**	**HA355 0200-02-55N**
22,00	**28,80**	**5,00**	**23,50**	**120**	**HA355 0220-02-55N**
25,00	**31,80**	**5,00**	**26,50**	**121**	**HA355 0250-02-55N**
26,00	32,80	5,00	27,50	122	HA355 0260-02-55N
28,00	**34,80**	**5,00**	**29,50**	**123**	**HA355 0280-02-55N**
30,00	36,80	5,00	31,50	125	HA355 0300-02-55N
32,00	**38,80**	**5,00**	**33,50**	**126**	**HA355 0320-02-55N**
35,00	41,80	5,00	36,50	128	HA355 0350-02-55N
36,00	**42,80**	**5,00**	**37,50**	**129**	**HA355 0360-02-55N**
37,00	43,80	5,00	38,50	129	HA355 0370-02-55N
38,00	44,80	5,00	39,50	130	HA355 0380-02-55N
40,00	**46,80**	**5,00**	**41,50**	**131**	**HA355 0400-02-55N**
42,00	48,80	5,00	43,50	132	HA355 0420-02-55N
45,00	**51,80**	**5,00**	**46,50**	**134**	**HA355 0450-02-55N**
48,00	54,80	5,00	49,50	136	HA355 0480-02-55N
50,00	**56,80**	**5,00**	**51,50**	**137**	**HA355 0500-02-55N**
52,00	58,80	5,00	53,50	138	HA355 0520-02-55N
55,00	61,80	5,00	56,50	140	HA355 0550-02-55N
56,00	**62,80**	**5,00**	**57,50**	**141**	**HA355 0560-02-55N**
58,00	64,80	5,00	59,50	142	HA355 0580-02-55N



d f8/h9	**D** H10	**E** +0,2	**D1** +0,2	O-Ring	**Part N°.**
60,00	66,80	5,00	61,50	143	HA355 0600-02-55N
63,00	**69,80**	**5,00**	**64,50**	**145**	**HA355 0630-02-55N**
65,00	73,80	6,00	66,50	231	HA355 0650-03-55N
70,00	**78,80**	**6,00**	**71,50**	**233**	**HA355 0700-03-55N**
75,00	83,80	6,00	76,50	235	HA355 0750-03-55N
80,00	**88,80**	**6,00**	**81,50**	**236**	**HA355 0800-03-55N**
85,00	93,80	6,00	86,50	238	HA355 0850-03-55N
90,00	**98,80**	**6,00**	**91,50**	**239**	**HA355 0900-03-55N**
95,00	103,80	6,00	96,50	241	HA355 0950-03-55N
100,00	**108,80**	**6,00**	**101,50**	**243**	**HA355 1000-03-55N**
105,00	113,80	6,00	106,50	244	HA355 1050-03-55N
110,00	**118,80**	**6,00**	**111,50**	**246**	**HA355 1100-03-55N**
115,00	123,80	6,00	116,50	247	HA355 1150-03-55N
120,00	128,80	6,00	121,50	249	HA355 1200-03-55N
125,00	**133,80**	**6,00**	**126,50**	**250**	**HA355 1250-03-55N**
130,00	138,80	6,00	131,50	252	HA355 1300-03-55N
135,00	143,80	6,00	136,50	253	HA355 1350-03-55N
140,00	**148,80**	**6,00**	**141,50**	**255**	**HA355 1400-03-55N**
150,00	158,80	6,00	151,50	258	HA355 1500-03-55N
155,00	163,80	6,00	156,50	259	HA355 1550-03-55N
160,00	**168,80**	**6,00**	**161,50**	**260**	**HA355 1600-03-55N**
170,00	178,80	6,00	171,50	261	HA355 1700-03-55N
175,00	183,80	6,00	176,50	262	HA355 1750-03-55N
180,00	**188,80**	**6,00**	**181,50**	**263**	**HA355 1800-03-55N**
185,00	193,80	6,00	186,50	263	HA355 1850-03-55N
190,00	198,80	6,00	191,50	264	HA355 1900-03-55N
195,00	203,80	6,00	196,50	265	HA355 1950-03-55N
200,00	**208,80**	**6,00**	**201,50**	**266**	**HA355 2000-03-55N**
210,00	218,80	6,00	211,50	267	HA355 2100-03-55N
220,00	**228,80**	**6,00**	**221,50**	**269**	**HA355 2200-03-55N**
225,00	233,80	6,00	226,50	270	HA355 2250-03-55N
230,00	238,80	6,00	231,50	271	HA355 2300-03-55N
240,00	248,80	6,00	241,50	272	HA355 2400-03-55N
250,00	**258,80**	**6,00**	**251,50**	**274**	**HA355 2500-03-55N**
260,00	272,20	8,40	262,00	378	HA355 2600-04-55N
270,00	282,20	8,40	272,00	378	HA355 2700-04-55N
280,00	**292,20**	**8,40**	**282,00**	**379**	**HA355 2800-04-55N**
290,00	302,20	8,40	292,00	380	HA355 2900-04-55N
300,00	312,20	8,40	302,00	381	HA355 3000-04-55N
310,00	322,20	8,40	312,00	381	HA355 3100-04-55N
320,00	**332,20**	**8,40**	**322,00**	**382**	**HA355 3200-04-55N**
330,00	342,20	8,40	332,00	382	HA355 3300-04-55N
340,00	352,20	8,40	342,00	382	HA355 3400-04-55N
350,00	362,20	8,40	352,00	383	HA355 3500-04-55N
360,00	**372,20**	**8,40**	**362,00**	**383**	**HA355 3600-04-55N**
370,00	382,20	8,40	372,00	383	HA355 3700-04-55N
380,00	392,20	8,40	382,00	384	HA355 3800-04-55N
390,00	402,20	8,40	392,00	384	HA355 3900-04-55N
400,00	412,20	8,40	402,00	385	HA355 4000-04-55N
410,00	422,20	8,40	412,00	385	HA355 4100-04-55N
420,00	432,20	8,40	422,00	386	HA355 4200-04-55N
430,00	446,00	11,00	432,00	463	HA355 4300-05-55N
440,00	456,00	11,00	442,00	464	HA355 4400-05-55N
450,00	466,00	11,00	452,00	465	HA355 4500-05-55N
460,00	476,00	11,00	462,00	466	HA355 4600-05-55N
470,00	486,00	11,00	472,00	466	HA355 4700-05-55N
480,00	496,00	11,00	482,00	467	HA355 4800-05-55N
490,00	506,00	11,00	492,00	468	HA355 4900-05-55N
500,00	516,00	11,00	502,00	469	HA355 5000-05-55N

Further sizes up to Ø 2500 mm available on request.
Sizes in bold correspond to rod diameter as per DIN ISO 3320.

Example for ordering Wipers:

HA 355 0360 - 02 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Wiper Ring

01 - pure PTFE
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring

N -NBR
F - FPM
E - EPDM
S - Silicon
C -Chloropren

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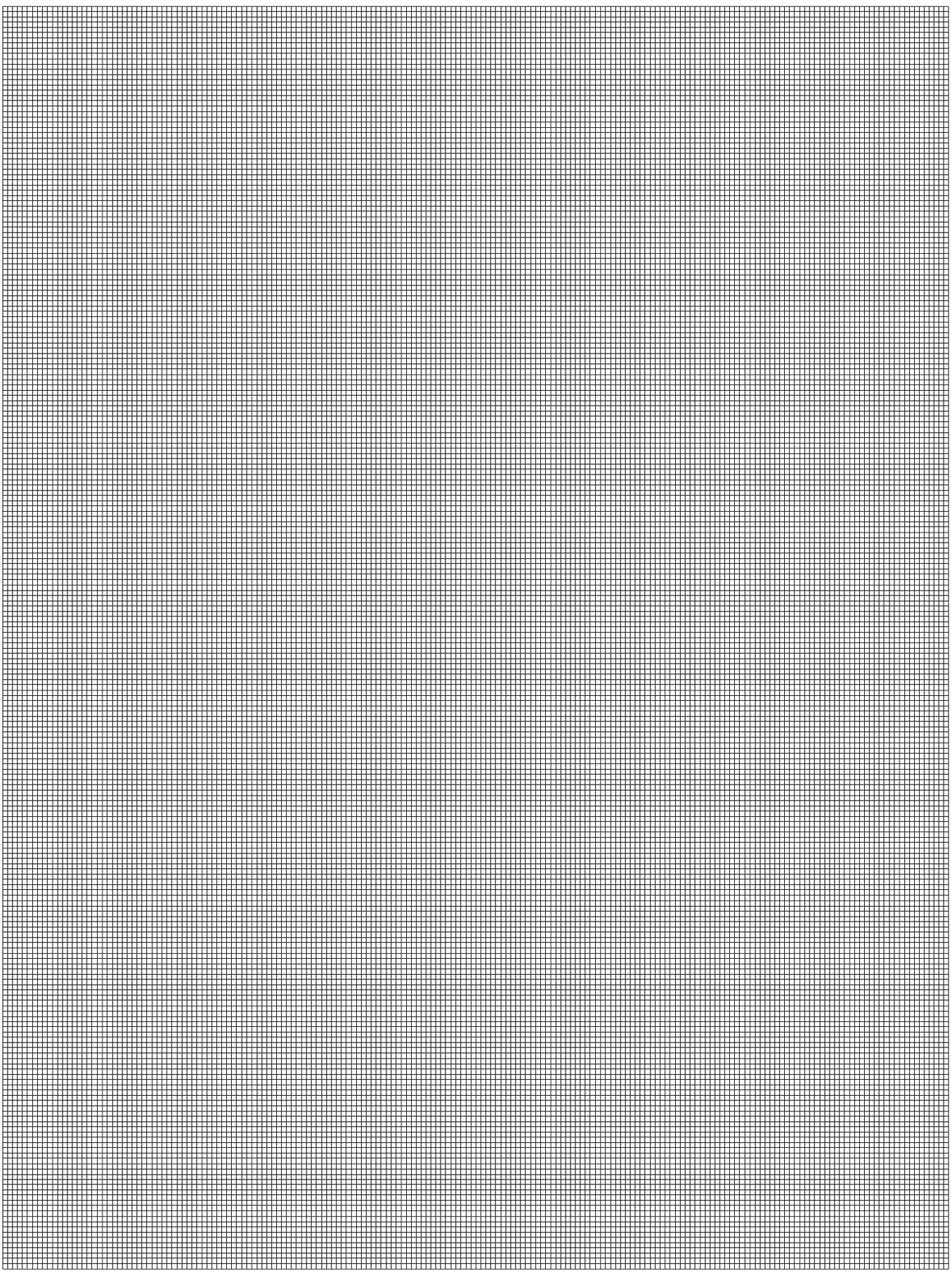
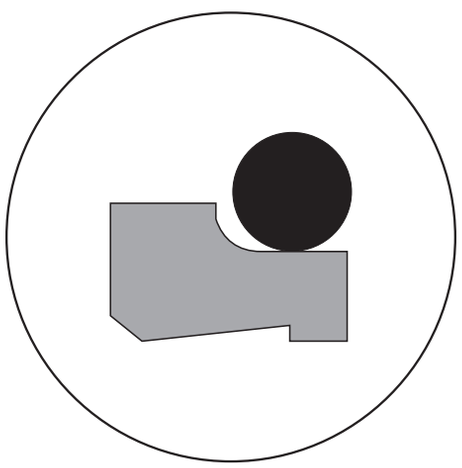
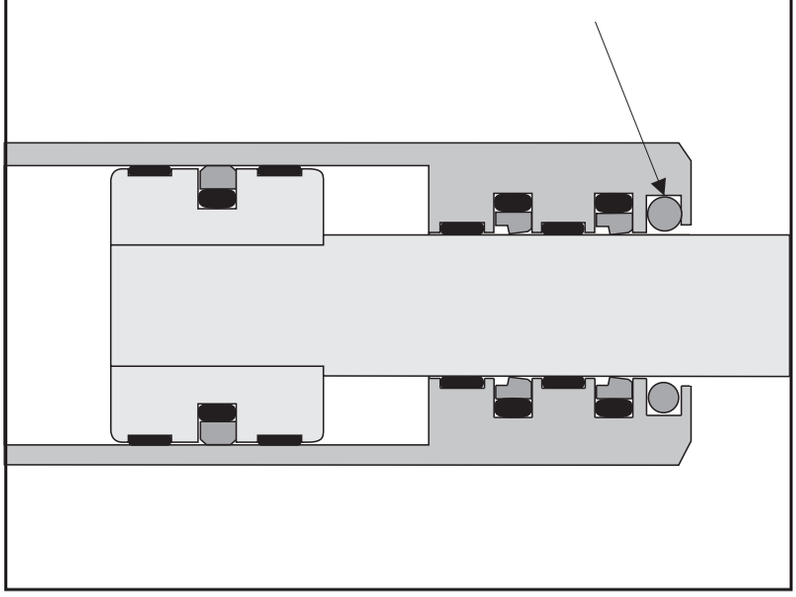
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



Double acting wiper HA 356 is used in hydraulic cylinders to wipe the incoming piston rod clean of dirt. It also holds back the residual oil film on the outgoing piston rod. Various material combinations guarantee a high functional security and service life over the entire velocity range at low friction, various temperatures and media..



Material : PTFE-Compound
Velocity : reciprocating to 15 m/s
Temperature : -40 to + 200 °C



Special Features:

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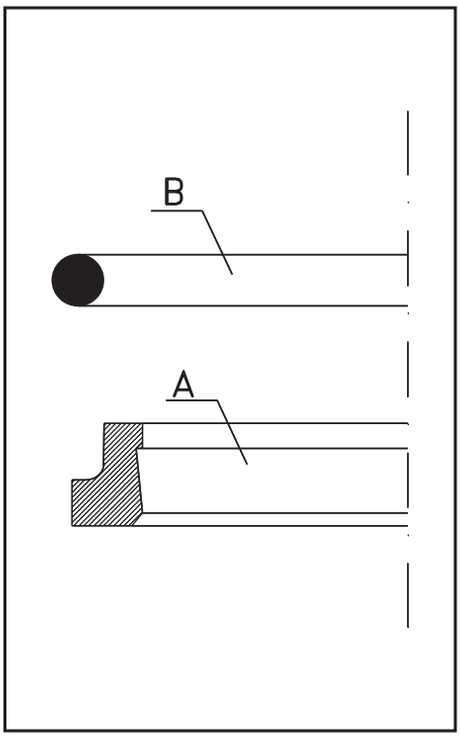
- Very good external wiper action, even with adhering dirt
- Very good internal wiper action on the residual oil film that accumulates on the piston rod
- Outstanding shear characteristics, no stick slip effect
- Large abrasion resistance, long life
- Wide temperature range and chemical resistance depending on O-ring material
- Available for all rod diameters up to approx. 2500 mm.



Wiper Ring (Part A)

The wiper possess two geometrically different wiper lips which are arranged in an opposite way. There exists a recess on the outermost circumference inorder to be able to incorporate O-ring.

Wiper rings are manufactured from specially modified PTFE materials. Compound 55 (PTFE bronze) is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularly superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norm). Standard MOC for hydraulics applications is NBR with 70 Shore A, which guarantees particularly good resistance to hydraulic fluids.

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12: Modified PTFE - Very good chemical resistance, outstanding shear characteristics - Used for special purpose and intermediate stress applications.

25: Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance - Used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance - Used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.

55: Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance - Used in intermediate to high stress hydraulics application.

67: Modified PTFE - Very high abrasion resistance and inherent stability - Used in hydraulics and abrasive pressure fluids.

83: Modified polyurethane - Very high abrasion resistance and inherent stability - Used primarily in intermediate-stress hydraulics applications.

The wiper series HA 355 has been used for many years in hydraulic cylinders. On the basis of its double function as a wiper both on the inside and on the outside, it is basically used on the rod seal HS 250.

The sealing and wiper function allows a nearly leakage free rod sealing, even in the case of highly loaded hydraulic cylinders and rough service environments.

The wiper can be used in divided and undivided (rod diameter approx. 30 mm onwards) grooves. For use in an undivided groove, the profile ring must be carefully bent to a kidney shape. The ring is then further prised apart through the chamfered piston rod.

Materials Overview: O-Ring

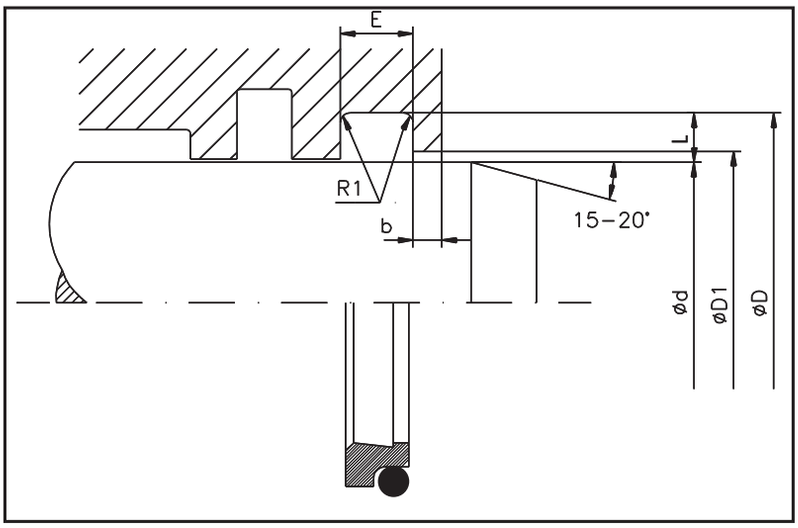
N: Acrylonitrile butadiene rubber - Used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.

F: Fluorine containing rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene propylene diene rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!

S: Silicon rubbers.

C: Chloroprene rubbers



Limitations on Use

Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending O-ring material).

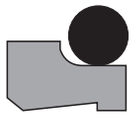
Surface Finish

Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Recommended Sizes for Installation

Section	O-Ring Cord-ø mm	Recommended Diameter Standard **D** mm	Groove Width **E** mm	Groove Depth **L** mm	Radius **R1 max.** mm	Bar Width **b** mm
01	2,62	19 - 39,9	4,2	3,8	0,8	3,0
02	2,62	40 - 69,9	6,3	4,4	0,8	3,0
03	3,53	70 - 139,9	8,1	6,1	1,5	4,0
04	5,33	140 - 399,9	9,5	8,0	1,5	5,0
05	7,00	400 - 649,9	14,0	12,0	1,5	8,0

d f8/h9	**D** H9	**E** +0,2	**D1** H11	**O-Ring**	**Part N°.**
20,00	**27,60**	**4,20**	**21,50**	**118**	**HA356 0200-01-55N**
22,00	**29,60**	**4,20**	**23,50**	**120**	**HA356 0220-01-55N**
25,00	**32,60**	**4,20**	**26,50**	**122**	**HA356 0250-01-55N**
26,00	33,60	4,20	27,50	122	HA356 0260-01-55N
28,00	**35,60**	**4,20**	**29,50**	**123**	**HA356 0280-01-55N**
30,00	37,60	4,20	31,50	125	HA356 0300-01-55N
32,00	**39,60**	**4,20**	**33,50**	**126**	**HA356 0320-01-55N**
35,00	42,60	4,20	36,50	128	HA356 0350-01-55N
36,00	**43,60**	**4,20**	**37,50**	**129**	**HA356 0360-01-55N**
37,00	44,60	4,20	38,50	129	HA356 0370-01-55N
38,00	45,60	4,20	39,50	130	HA356 0380-01-55N
40,00	**48,80**	**6,30**	**41,50**	**132**	**HA356 0400-02-55N**
42,00	50,80	6,30	43,50	133	HA356 0420-02-55N
45,00	**53,80**	**6,30**	**46,50**	**135**	**HA356 0450-02-55N**
48,00	56,80	6,30	49,50	137	HA356 0480-02-55N
50,00	**58,80**	**6,30**	**51,50**	**138**	**HA356 0500-02-55N**
52,00	60,80	6,30	53,50	139	HA356 0520-02-55N
55,00	63,80	6,30	56,50	141	HA356 0550-02-55N
56,00	**64,80**	**6,30**	**57,50**	**142**	**HA356 0560-02-55N**
58,00	66,80	6,30	59,50	143	HA356 0580-02-55N
60,00	68,80	6,30	61,50	144	HA356 0600-02-55N
63,00	**71,80**	**6,30**	**64,50**	**146**	**HA356 0630-02-55N**
65,00	73,80	6,30	66,50	147	HA356 0650-02-55N
70,00	**82,20**	**8,10**	**72,00**	**234**	**HA356 0700-03-55N**
75,00	87,20	8,10	77,00	235	HA356 0750-03-55N
80,00	**92,20**	**8,10**	**82,00**	**237**	**HA356 0800-03-55N**
85,00	97,20	8,10	87,00	239	HA356 0850-03-55N



d f8/h9	**D** H9	**E** +0,2	**D1** H11	**O-Ring**	**Part N°.**
90,00	**102,20**	**8,10**	**92,00**	**240**	**HA356 0900-03-55N**
95,00	107,20	8,10	67,00	242	HA356 0950-03-55N
100,00	**112,20**	**8,10**	**102,00**	**243**	**HA356 1000-03-55N**
105,00	117,20	8,10	107,00	245	HA356 1050-03-55N
110,00	**122,20**	**8,10**	**112,00**	**246**	**HA356 1100-03-55N**
115,00	127,20	8,10	117,00	248	HA356 1150-03-55N
120,00	132,20	8,10	122,00	249	HA356 1200-03-55N
125,00	**137,20**	**8,10**	**127,00**	**251**	**HA356 1250-03-55N**
130,00	142,20	8,10	132,00	253	HA356 1300-03-55N
135,00	147,20	8,10	137,00	254	HA356 1350-03-55N
140,00	**156,00**	**9,50**	**142,50**	**359**	**HA356 1400-04-55N**
150,00	166,00	9,50	152,50	361	HA356 1500-04-55N
155,00	171,00	9,50	157,50	362	HA356 1550-04-55N
160,00	**176,00**	**9,50**	**162,50**	**363**	**HA356 1600-04-55N**
170,00	186,00	9,50	172,50	365	HA356 1700-04-55N
175,00	191,00	9,50	177,50	365	HA356 1750-04-55N
180,00	**196,00**	**9,50**	**182,50**	**366**	**HA356 1800-04-55N**
185,00	201,00	9,50	187,50	366	HA356 1850-04-55N
190,00	206,00	9,50	192,50	368	HA356 1900-04-55N
195,00	211,00	9,50	197,50	368	HA356 1950-04-55N
200,00	**216,00**	**9,50**	**202,50**	**369**	**HA356 2000-04-55N**
210,00	226,00	9,50	212,50	371	HA356 2100-04-55N
220,00	**236,00**	**9,50**	**222,50**	**373**	**HA356 2200-04-55N**
225,00	241,00	9,50	227,50	374	HA356 2250-04-55N
230,00	246,00	9,50	232,50	374	HA356 2300-04-55N
240,00	256,00	9,50	242,50	376	HA356 2400-04-55N
250,00	**266,00**	**9,50**	**252,50**	**377**	**HA356 2500-04-55N**
260,00	276,00	9,50	262,50	378	HA356 2600-04-55N
270,00	286,00	9,50	272,50	379	HA356 2700-04-55N
280,00	**296,00**	**9,50**	**282,50**	**379**	**HA356 2800-04-55N**
290,00	306,00	9,50	292,50	380	HA356 2900-04-55N
300,00	316,00	9,50	302,50	381	HA356 3000-04-55N
310,00	326,00	9,50	312,50	381	HA356 3100-04-55N
320,00	**336,00**	**9,50**	**322,50**	**382**	**HA356 3200-04-55N**
330,00	346,00	9,50	332,50	382	HA356 3300-04-55N
340,00	356,00	9,50	342,50	383	HA356 3400-04-55N
350,00	366,00	9,50	352,50	383	HA356 3500-04-55N
360,00	**376,00**	**9,50**	**362,50**	**383**	**HA356 3600-04-55N**
370,00	386,00	9,50	372,50	384	HA356 3700-04-55N
380,00	396,00	9,50	382,50	384	HA356 3800-04-55N
390,00	406,00	9,50	392,50	385	HA356 3900-04-55N
400,00	424,00	14,00	402,50	461	HA356 4000-05-55N
410,00	434,00	14,00	412,50	462	HA356 4100-05-55N
420,00	444,00	14,00	422,50	463	HA356 4200-05-55N
430,00	454,00	14,00	432,50	463	HA356 4300-05-55N
440,00	464,00	14,00	442,50	464	HA356 4400-05-55N
450,00	474,00	14,00	452,50	465	HA356 4500-05-55N
460,00	484,00	14,00	462,50	466	HA356 4600-05-55N
470,00	494,00	14,00	472,50	467	HA356 4700-05-55N
480,00	504,00	14,00	482,50	468	HA356 4800-05-55N
490,00	514,00	14,00	492,50	469	HA356 4900-05-55N
500,00	524,00	14,00	502,50	469	HA356 5000-05-55N

Further sizes up to Ø 2500 mm available on request.
Sizes in bold correspond to rod diameter as per DIN ISO 3320.

Example for ordering Wipers:

HA 356 0360 - 01 - 55N - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Wiper Ring

01 - pure PTFE
12 - modified PTFE
25 - PTFE glass fiber
30 - PFTE carbon
55 - PTFE bronze
67 - modified PTFE
83 - modified PU

O-Ring

N -NBR
F - FPM
E - EPDM
S - Silicon
C - Chloropren

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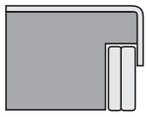
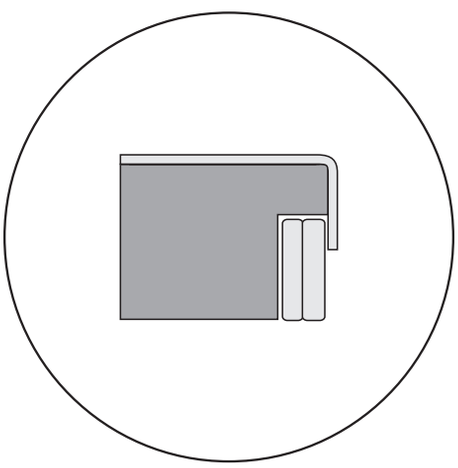
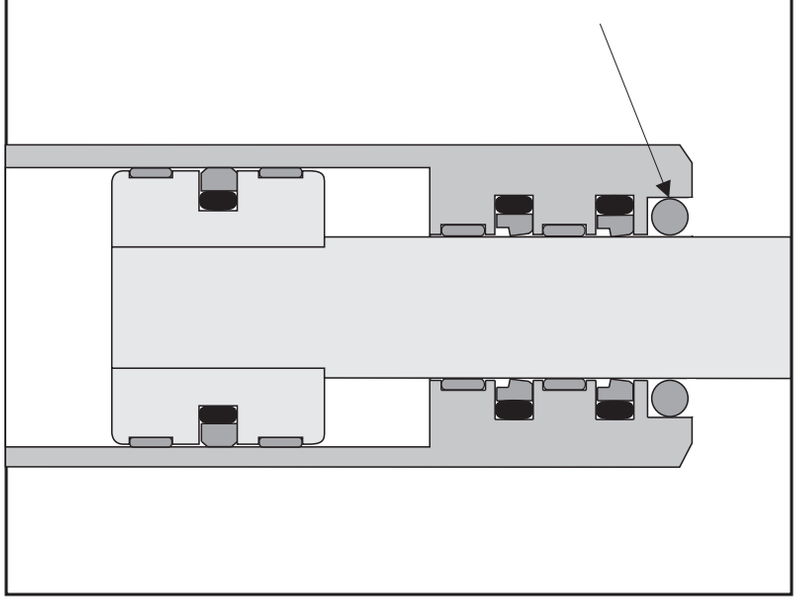


The variable lamella wiper system HA 360 has been specially developed for those applications where conventional wiper designs fail to offer adequate protection to the sealing system. Damage may occur due to influx of foreign bodies. Using different materials, this system can also be used under extreme conditions of operation. .

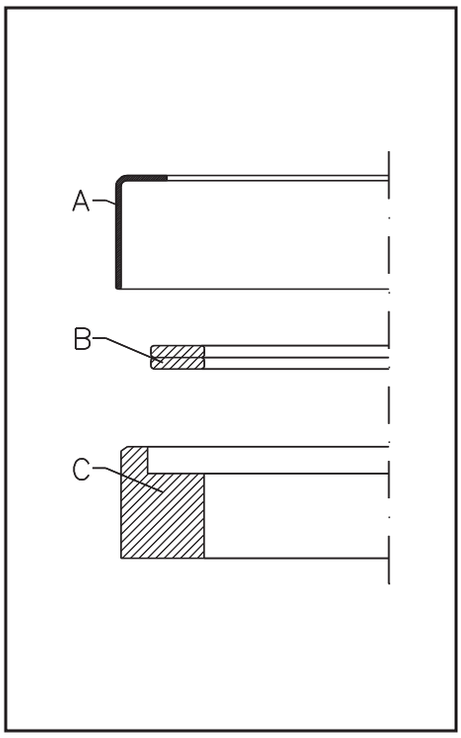


Material : chrome-nickel steel
Velocity : reciprocating to 15 m/s
Temperature : -60 to + 200 °C
(depending on support ring material)



Special Features:

- Maximum security in the most demanding of operational conditions through integrated "lamella ring". Environments include:
  - Low and high temperatures
  - hard and crystalline contaminants
  - ice attack
  - abrasive or aggressive media
  - high velocity
- Extended life of seals and slides through auto-polishing of rod surface area
- Additional absorption of transverse forces through supporting ring
- Easy slide fit assembly
- Choice of various materials for support ring.



Metal Cage (Part A)

The corrosion-resistant metal cage is used for the taking up of support and lamella ring. Due to the small oversize at the external diameter, easy assembly and a secure fit in the open wiper groove are possible.

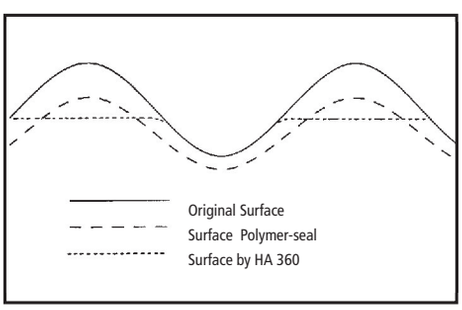
Lamella Ring (Part B)

Material: Chrome-Nickel Steel

The lamella ring is the essential wiper part. The low-stress position and the ball-shaped inner edges guarantee a reliable and secure mode of operation also on chromium-plated piston rods. Possibly appearing slipping out of the rod can be by-passed by the radial play at the outside diameter. Tests have shown that processing tips which appear during the manufacturing of the piston rod are polished by the so called polishing effect (auto-polishing). The so achieved improvement of the rod surface allows a remarkably longer life of the rod seals and the guide elements.

Support and Guide Ring (Part C)

The variable wiper system makes it possible to choose the material of the support ring in a way that the existing conditions of operation are kept under control.



Materials Overview (Support and Guide Ring):

550: PTFE/bronze compound - Standard design for hydraulic applications. Specifically used at high temperatures and aggressive media as well as upon high travel speed.

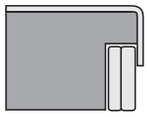
520: Polyamid - Special design for intermediate applications.

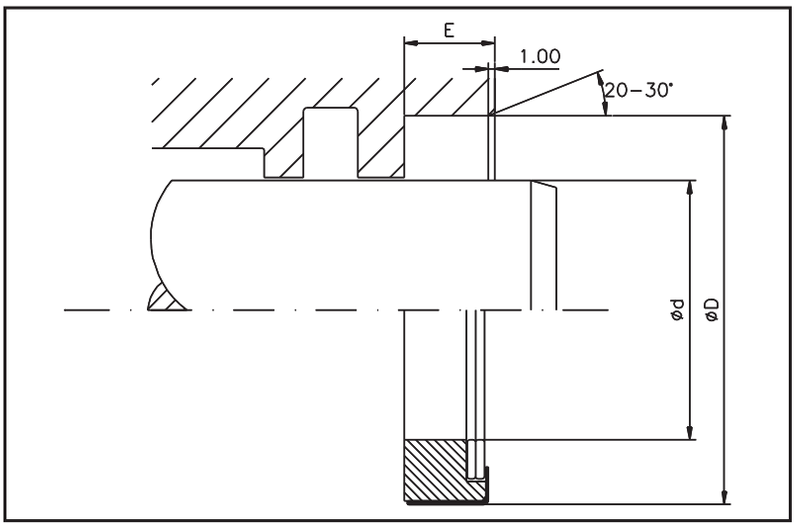
400: Phenoplast fiber - Special design for hydraulic cylinders applications. The gap-free support ring additionally serves as a guide for the taking up of transverse power.

The variable wiper system HA 360 is characterized by a secure wiper effect where normal wipers are not usable any more.

A further advantage is the easy assembly and an extensive range of sizes which is identical with the conventional measurements of metal equipped NBR resp. PU wipers.

WIPER
HA 360





Limitations on Use

Supporting ring material	Temperature range (°C)
PTFE compound (550)	-60 +200
Polyamid (520)	-60 +100
Phenoplast fiber (400)	-60 +120

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media.

Surface Finish

	Ra max.	Rt max.
Faces	0,6 µm	6 µm
Groove root	2,5 µm	16 µm
Groove flanks	4,0 µm	20 µm

d f8/h9	**D** H8	**E** +0,2	**Part N°.**
18,00	**28,00**	**7,00**	**HA360 0180-01-550**
20,00	**30,00**	**7,00**	**HA360 0200-01-550**
22,00	**32,00**	**7,00**	**HA360 0220-01-550**
25,00	**35,00**	**7,00**	**HA360 0250-01-550**
28,00	38,00	7,00	HA360 0280-01-550
28,00	40,00	7,00	HA360 0280-02-550
30,00	40,00	7,00	HA360 0300-01-550
32,00	42,00	7,00	HA360 0320-01-550
32,00	45,00	7,00	HA360 0320-02-550
33,00	43,00	7,00	HA360 0330-01-550
35,00	45,00	7,00	HA360 0350-01-550
36,00	45,00	7,00	HA360 0360-01-550
38,00	48,00	7,00	HA360 0380-01-550
40,00	**50,00**	**7,00**	**HA360 0400-01-550**
42,00	52,00	7,00	HA360 0420-01-550
45,00	**55,00**	**7,00**	**HA360 0450-01-550**
45,00	60,00	7,00	HA360 0450-02-550
50,00	**60,00**	**7,00**	**HA360 0500-01-550**
55,00	65,00	7,00	HA360 0550-01-550
56,00	66,00	7,00	HA360 0560-01-550
60,00	70,00	7,00	HA360 0600-01-550

d f8/h9	**D** H8	**E** +0,2	**Part N°.**
60,00	80,00	7,00	HA360 0600-02-550
63,00	75,00	7,00	HA360 0630-01-550
65,00	75,00	7,00	HA360 0650-01-550
70,00	**80,00**	**7,00**	**HA360 0700-01-550**
73,00	85,60	8,50	HA360 0730-01-550
75,00	85,00	7,00	HA360 0750-01-550
80,00	**90,00**	**7,00**	**HA360 0800-01-550**
85,00	95,00	7,00	HA360 0850-01-550
90,00	**100,00**	**7,00**	**HA360 0900-01-550**
90,00	104,00	8,00	HA360 0900-02-550
95,00	105,00	7,00	HA360 0950-01-550
100,00	110,00	7,00	HA360 1000-01-550
100,00	114,00	8,00	HA360 1000-02-550
105,00	115,00	7,00	HA360 1050-01-550
110,00	120,00	7,00	HA360 1100-01-550
110,00	124,00	8,00	HA360 1100-02-550
115,00	125,00	7,00	HA360 1150-01-550
120,00	130,00	7,00	HA360 1200-01-550
125,00	139,00	8,00	HA360 1250-01-550
125,00	**140,00**	**9,00**	**HA360 1250-01-550**
160,00	177,00	11,00	HA360 1600-01-550

Further sizes and as well as an extensive range of inch measurement diagrams available on request.
Dimensions in bold correspond to mounting spaces as per DIN ISO 6195 type B.

Example for ordering Wipers:

HA 360 0400 - 01 - 550 - ...

- Profile
- Nominal diameter x 10
- Cross-section
- Standard material support ring
- HME internal code

Material Key:

Support Ring

550 - PTFE bronze
520 - POM
400 - Phenoplast hard fiber

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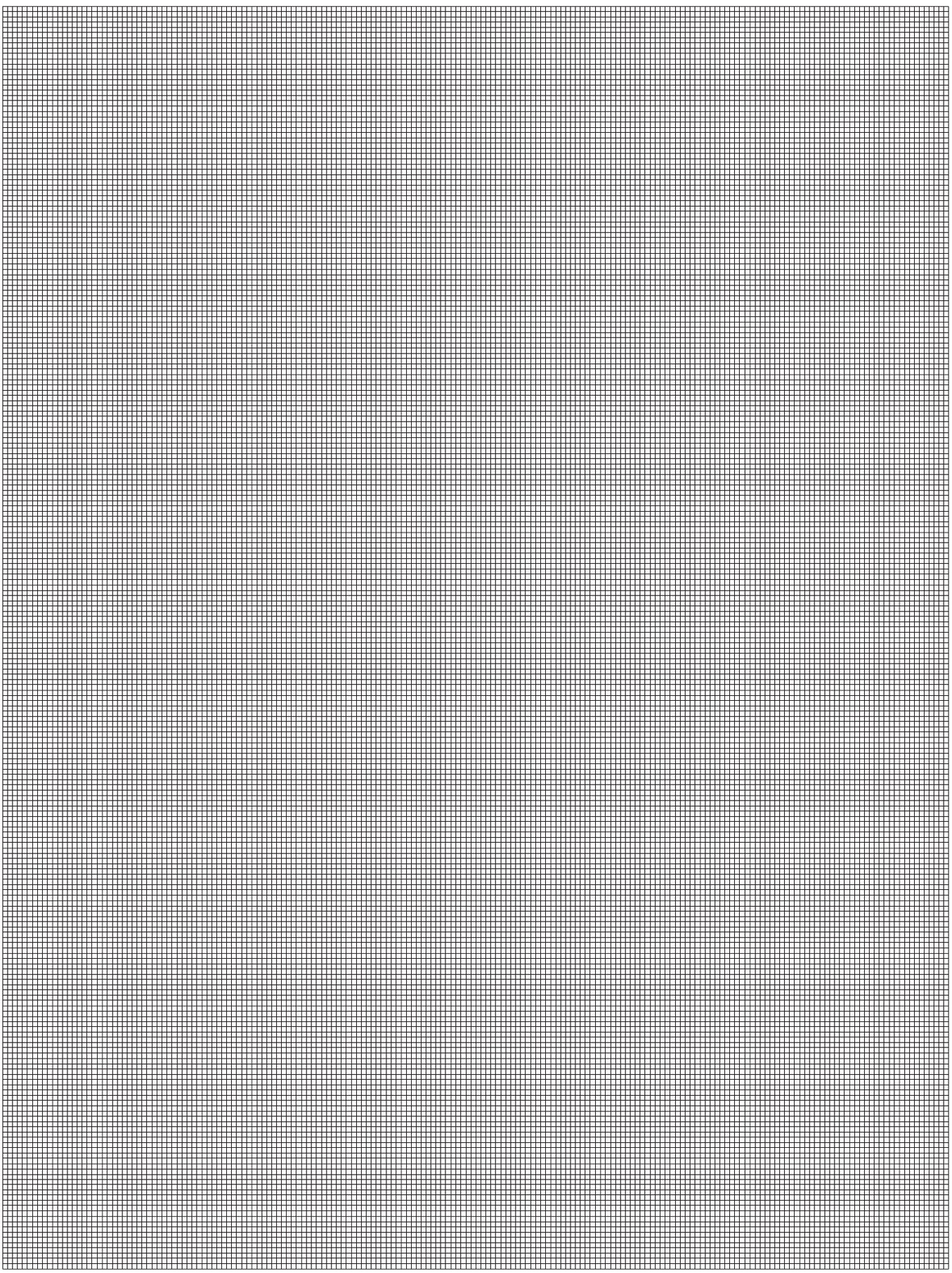
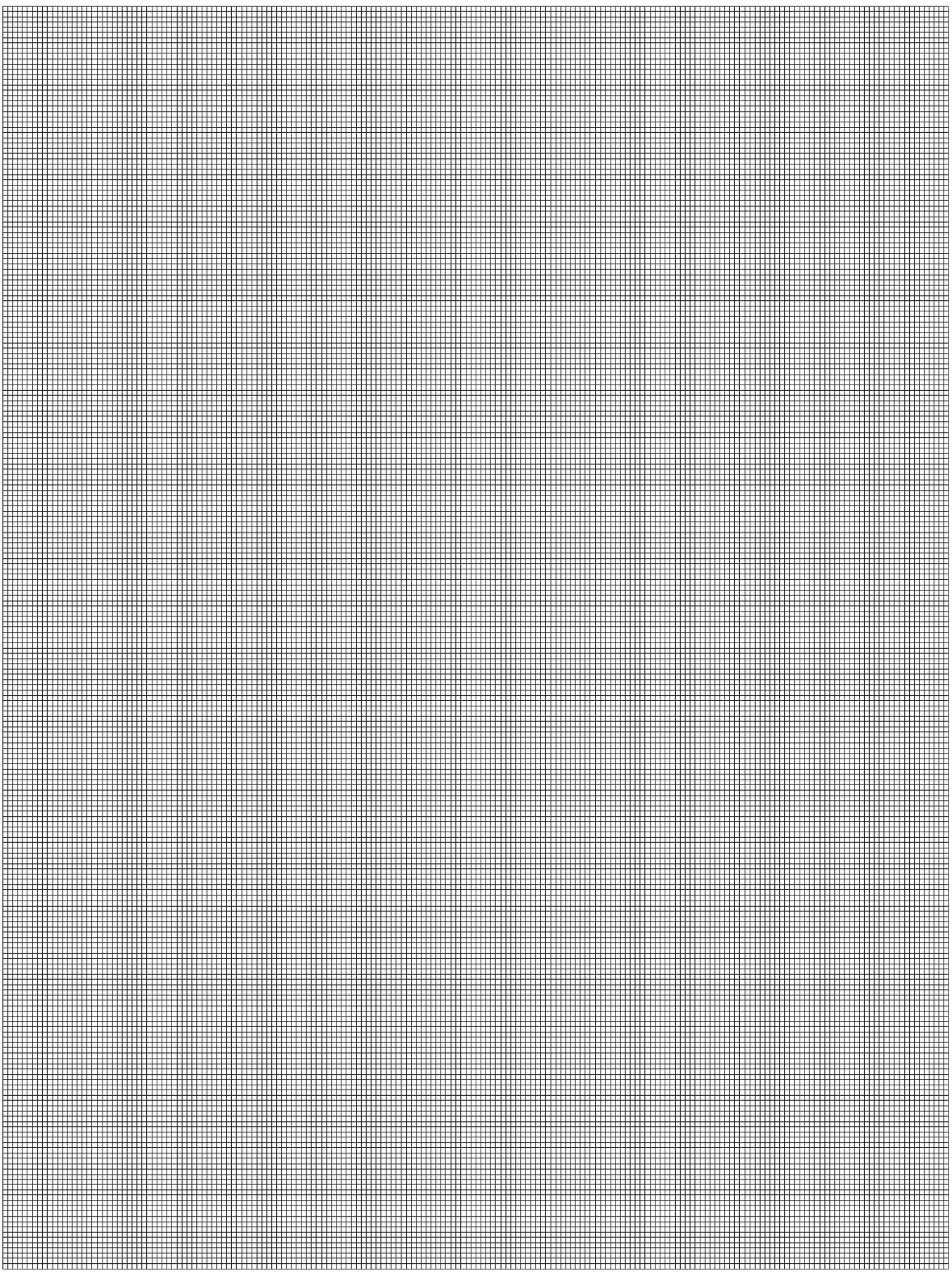
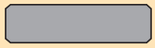
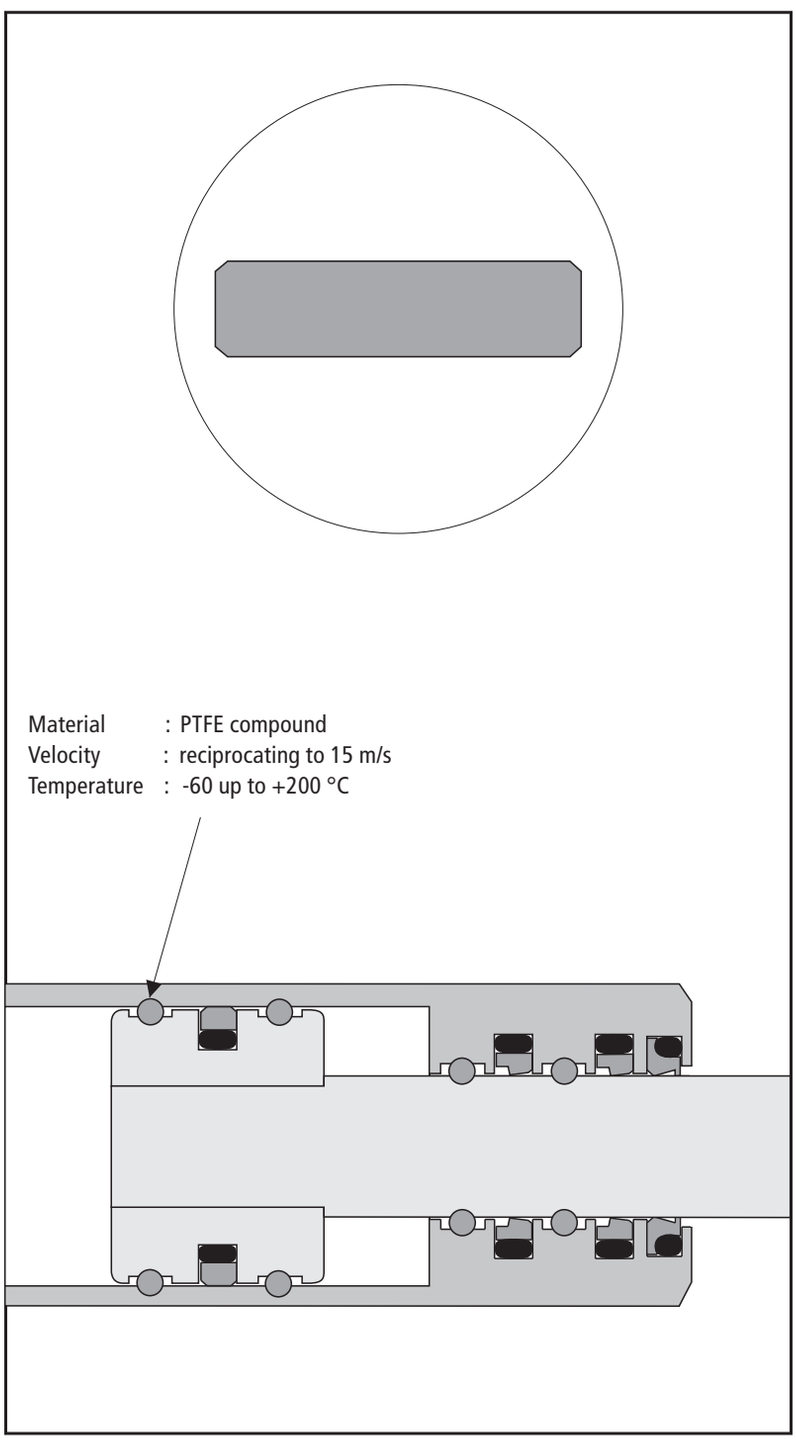




Profile	Type	Specification	Limitations of Use			Material	
			Temperature	Pressure	Velocity	Sealing element	Page
	HF 410 HF 440	Endless or cutted bearing elements	-60 upt to +200° C	a) up to 25 N/mm² b) up to 15 N/mm²	up to 15 m/s	PTFE Compound	3
	HF 450 HF 453	Splitted rings mounting fitted	-40 up to +110° C	a) up to 40 N/mm² b) up to 20 N/mm²	up to 0,8 m/s	Polyacetal glass filled	7
	HF 455	Splitted rings - mounting fitted specialized for single acting cylinders	-40 up to +110° C	a) up to 40 N/mm² b) up to 20 N/mm²	up to 0,8 m/s	Polyacetal glass filled	13
	HF 460	Splitted rings - mounting fitted with specialized profiles	-40 up to +110° C	a) up to 5 N/mm² b) up to 2,5 N/mm²	up to 0,8 m/s	POM	17
	HF 470 HF 474	Splitted rings - mounting fitted (available as cut out pieces variantations)	-50 up to +150° C	a) up to 300 N/mm² b) up to 110 N/mm²	up to 1 m/s	Phenolic resin impregnated cotton	21

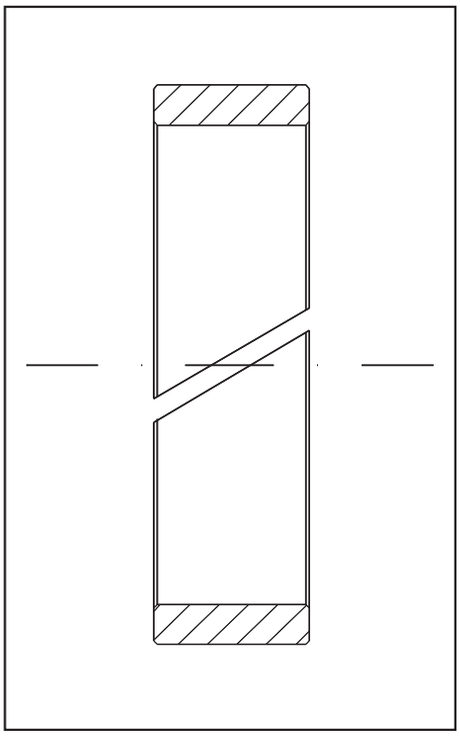
Note: **a) static**
b) dynamic

Slide bands are preferentially used in hydraulic and pneumatic cylinders. They assist sliding of pistons and rods, avoid metallic contact between sliding parts, and absorb transverse forces. Sliding bands from PTFE materials excel in their outstanding glide characteristics and high thermal and chemical resistance. Their use enhances service life and functional reliability of seals and cylinders.



Special Features:

- Very good frictional behaviour
- No stick slip effect even at low velocities
- Potting of dirt particles possible
- Good damping of mechanical vibrations
- Good wiper action
- No metallic contact due to plastic/metal material combination
- Available as cut out pieces or ready for assembly sizes
- Extensive sizes range



Slide Band

The slide band has a rectangular cross section and is provided with a chamfer on all edges. Thus, non-permissible edge pressures in the groove corners are avoided. The chamfer also serves to simplify assembly.

Slide bands are produced in various cross-sections as cut-out pieces. They are also available as cuttings (elongated lengths), suitable to every piston and rod diameter. The gap (m) is to be specially taken into account to ensure safe function and undisturbed operation of the seal. As a rule, the ends are provided with bevel cut. A straight cut or Z- cut are also possible.

Materials Overview

55: Modified PTFE + bronze - Good compression resistance, very high anti wear characteristic and inherent stability, outstanding shear characteristic, good thermal and chemical resistance. Used in hydraulics for intermediate to very heavy loads.

30: Modified PTFE + carbon - Good thermal and chemical resistance. Used in hydraulics for intermediate applications and also in pneumatics.

Material Data						
Compound	55			30		
Temperature [°C]	30	90	150	30	90	150
Max. compress. resist. dynamic	15	10	7	8	6	4

Calculations

Designing and sizing of slide ring for dynamic applications is dependent to a large extent on the radial force and the associated deformation of the slide material, slide gap and the service temperature. The value of dynamic compressive strength is to be considered taking the above factors into account. In practice, it is advantageous to include a factor of safety.

$$B_{min} \geq \frac{F_R \cdot S}{\sigma_{zul.\,dyn.} \cdot D_n} \quad [mm]$$

Where:

B_{min} = min. width of slide ring [mm]
F_R = max. radial load [N]
$\sigma_{zul.dyn}$ = permissible dynamic compression strength [N/mm²]
S = safety factor

Example:

$$B_{min} \geq \frac{4000 \cdot 2}{15 \cdot 63} \approx 8{,}5$$

Rod diameter	D_n	=	63 mm
Max. radial load	F_R	=	4 kN
dyn. compress. strength	$\sigma_{zul.dyn}$	=	15 N/mm²
Safety factor	S	=	2

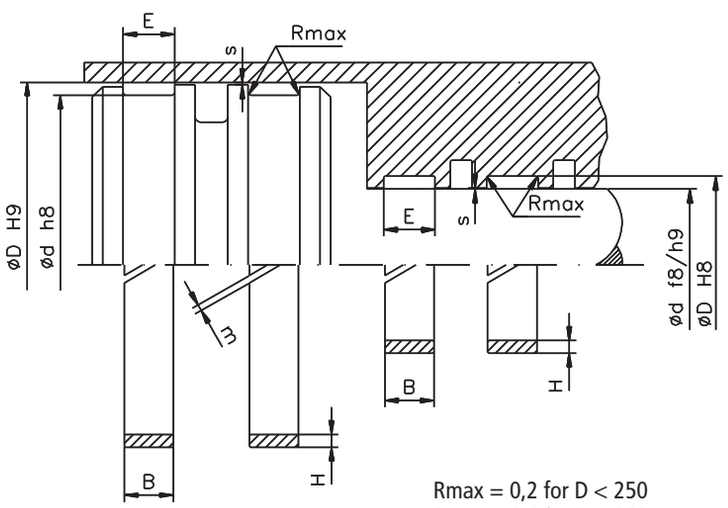
In accordance with above calculations, a choice can be made as
1 Sliding band for groove width of 9.7 mm (part N°. HF425 0630-16-55P)
2 Sliding bands for groove width of 5.6 mm (part N°. HF425 0630-14-55P)
To achieve as much of a slide in length as possible, incorporation of two slide in bands is recommended.

PTFE slide bands have proven their superiority for use in pistons and piston rods for hydraulic and pneumatic cylinders. Particularly in the case of cylinders under variable loads, very small or large stroke speeds and fluctuating temperatures, these slide bands are preferentially used (e.g. mobile hydraulics, machine tool and presses manufacturing, agricultural machinery, vehicle and trucks industry etc.).

Good mechanical characteristics of slide materials coupled with their ability to absorb dirt particles present in the pressure medium and good frictional behaviour guarantee long service life even in tough and demanding service conditons.

BEARING ELEMENTS

HF 410 TO HF 440



Rmax = 0,2 for D < 250
Rmax = 0,4 for D > 250

Limitations on Use

Velocity	: reciprocating to 15 m/s
Temperature	: -60 to +200 °C
Compr. strength, dyn.	: comp. 55 max. 15 N/mm²
	comp. 30 max. 8 N/mm²

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air, etc.

Split Sizes

Split size "s" is dependent on the included sealing variant.
Recommended ring split "m" as per the follow. Table:

Bore diameter mm	Rod diameter mm	Ring split m mm
≤ - 24,9	≤ - 19,9	1,0 - 1,5
25 - 44,9	20 - 39,9	1,5 - 2,0
45 - 79,9	40 - 74,9	2,0 - 4,0
80 - 129,9	75 - 124,9	3,0 - 5,0
130 - 349,9	125 - 299,9	4,0 - 6,0
350 - 1000,0	300 - 1000,0	5,0 - 8,0

H -0,05	**B** -0,2	**E** +0,1	Length per roll/approx. meters	**Part N°.**
1,00	10,00	10,20	30	HF410 0000-38-55P
1,50	2,40	2,50	20	HF415 0000-10-55P
1,50	3,90	4,00	20	HF415 0000-12-55P
1,50	5,50	5,60	20	HF415 0000-14-55P
1,50	5,80	6,00	20	HF415 0000-64-55P
1,50	6,00	6,30	20	HF415 0000-66-55P
1,50	9,50	9,70	20	HF415 0000-16-55P
1,50	10,00	10,20	20	HF415 0000-38-55P
1,50	12,70	13,00	20	HF415 0000-76-55P
1,50	14,80	15,00	20	HF415 0000-18-55P
1,50	15,00	15,20	20	HF415 0000-42-55P
1,55	2,40	2,50	19	HF416 0000-10-55P
1,55	3,90	4,00	19	HF416 0000-12-55P
1,55	4,90	5,00	19	HF416 0000-62-55P
2,00	4,90	5,00	15	HF420 0000-62-55P
2,00	5,00	5,20	15	HF420 0000-32-55P
2,00	5,40	5,50	15	HF420 0000-34-55P
2,00	8,00	8,20	15	HF420 0000-36-55P
2,00	10,00	10,20	15	HF420 0000-38-55P
2,00	12,00	12,20	15	HF420 0000-40-55P
2,00	15,00	15,20	15	HF420 0000-42-55P
2,00	20,00	20,30	15	HF420 0000-44-55P
2,00	25,00	25,40	15	HF420 0000-46-55P
2,00	30,00	30,30	15	HF420 0000-48-55P
2,00	40,00	40,50	15	HF420 0000-50-55P
2,00	45,00	45,60	15	HF420 0000-52-55P
2,00	50,00	50,60	15	HF420 0000-54-55P
2,00	60,00	60,60	15	HF420 0000-56-55P
2,50	4,00	4,20	12	HF425 0000-30-55P
2,50	4,90	5,00	12	HF425 0000-62-55P

H -0,05	**B** -0,2	**E** +0,1	Length per roll/approx. meters	**Part N°.**
2,50	5,50	5,60	12	HF425 0000-14-55P
2,50	6,10	6,30	12	HF425 0000-66-55P
2,50	7,90	8,10	12	HF425 0000-68-55P
2,50	9,50	9,70	12	HF425 0000-16-55P
2,50	12,00	12,10	12	HF425 0000-72-55P
2,50	12,50	12,70	12	HF425 0000-74-55P
2,50	14,80	15,00	12	HF425 0000-18-55P
2,50	19,50	20,00	12	HF425 0000-78-55P
2,50	24,50	25,00	12	HF425 0000-20-55P
2,50	29,50	30,00	12	HF425 0000-79-55P
2,50	34,50	35,00	12	HF425 0000-82-55P
2,50	39,50	40,00	12	HF425 0000-84-55P
2,50	40,00	40,20	12	HF425 0000-85-55P
2,50	59,50	60,00	12	HF425 0000-86-55P
3,00	4,60	4,80	9	HF430 0000-60-55P
3,00	9,50	9,70	9	HF430 0000-16-55P
3,00	11,80	12,00	9	HF430 0000-70-55P
3,00	12,60	12,80	9	HF430 0000-75-55P
3,00	14,80	15,00	9	HF430 0000-18-55P
3,00	20,00	20,30	9	HF430 0000-44-55P
3,00	24,50	25,00	9	HF430 0000-20-55P
3,00	25,00	25,30	9	HF430 0000-46-55P
3,00	30,00	30,20	9	HF430 0000-80-55P
3,00	39,50	40,00	9	HF430 0000-84-55P
3,50	15,00	15,20	8	HF435 0000-42-55P
3,50	30,00	30,20	8	HF435 0000-80-55P
4,00	7,80	8,00	8	HF440 0000-68-55P
4,00	9,50	9,70	8	HF440 0000-16-55P
4,00	20,00	20,30	8	HF440 0000-44-55P

Further sizes and an extensive range of inch measurement diagrams available on request.

Example for ordering Cut out Pieces:

e.g.: slide band cut out in PTFE/bronze 2.5 x 9.5 mm

HF 425 0000 - 16 - 55P - ...

Profile
Cut out piece
Code for axial width
Standard material
HME internal code

Material Key:

Slide band
30P - PTFE carbon
55P - PTFE bronze

Example for ordering Ready to use cut outs:

e.g.: piston slide band 2.5 mm for cylinder Ø 63 mm; groove width 9.7 mm

HF 425 0580 - 16 - 55P - ...

Profile
Groove diameter x 10
Code for axial width
Standard material
HME internal code

Material Key:

Slide band
30P - PTFE carbon
55P - PTFE bronze

e.g..: Rod slide band 2.5 mm for rod Ø 50 mm; groove width 9.7 mm

HF 425 0500 - 16 - 55P - ...

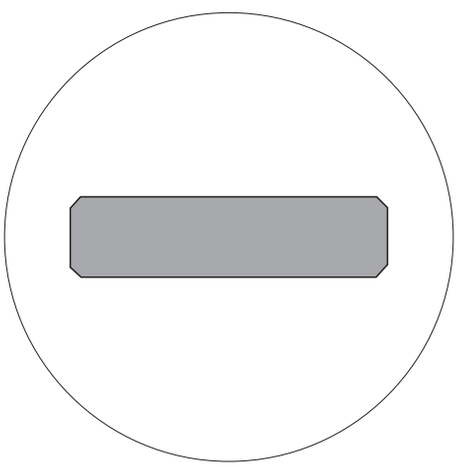
Profile
Rod diameter x 10
Code for axial width
Standard material
HME internal code

Note: Standard ready to use cut outs are delivered by factory with bevel cut (standard) with due consideration to split "m".

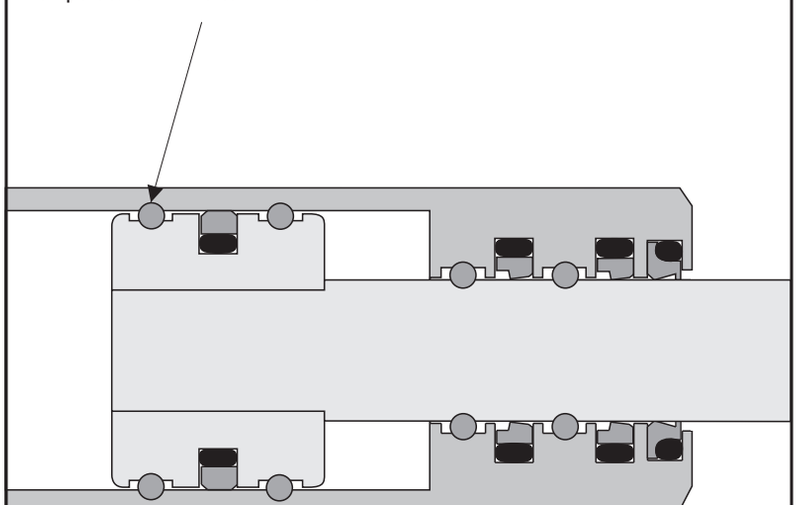
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

Slide rings HF 450 to HF 453 from filled polyacetal successfully reduce metallic contact between sliding parts, i.e. rod and cylinder walls or connecting piece. For the case of intermediate duty applications, they represent an alternative to hard fabric slide rings.

They are supplied in open design with slanted slot.

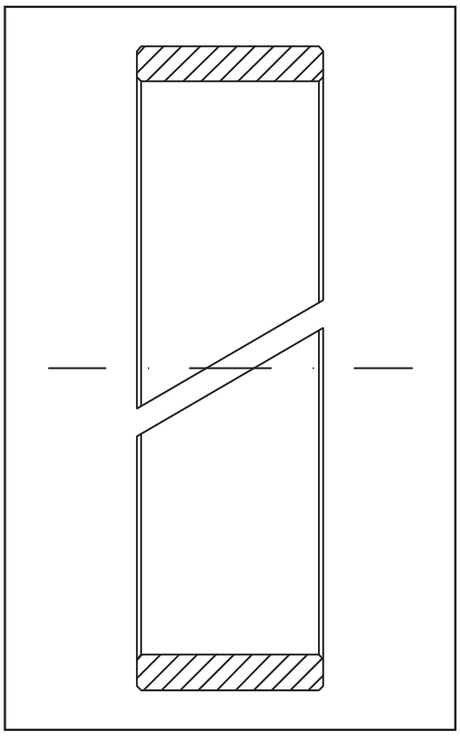


Material : polyacetal glass fiber reinforced
Velocity : reciprocating to 0.8 m/s
Temperature : -40 to +110 °C



Special Features:

- Very good shear characteristics, no stick slip effect
- Exact tolerances through injection process
- No swelling
- Avoids metallic contact of sliding parts
- Easy to manufacture groove geometry
- Easy snap-on assembly in the groove
- Alternative to PTFE and hard fabric slide rings on a price basis.



Slide Ring

The slide ring has a rectangular cross-section and is provided with a chamfer on all edges. Thus non-permissible edge pressures in the groove corners are avoided. The chamfer also serves to simplify assembly.

Slide rings are basically preformed with a bevel cut. The split "m" is specially taken into account to ensure safe function and undisturbed operation of the seal.

Materials Overview

The material Wearite (fiber glass reinforced polyacetal) excels in wear resistance and high load bearing capacity over the entire temperature range of application. Good media compatibility and low frictional coefficient of the material make it suitable for both hydraulics and pneumatics.

Material Data

Max. compressive strength static	[N/mm²]	40
Max. compressive strength dynamic	[N/mm²]	20

Calculation

Designing and sizing of slide ring for dynamic applications is dependent to a large extent on the radial force and the associated deformation of the slide material, slide gap and service temperature. The value of the dynamic compressive strength is to be considered, taking the above factors into account. In practise, it is advantageous to include a factor of safety.

$$B_{min} \geq \frac{F_R \cdot S}{\sigma_{zul.\,dyn.} \cdot D_n} \quad [mm]$$

Where:

B_{min} = min. width of slide ring [mm]
F_R = max. radial load [N]
$\sigma_{zul.dyn}$ = permissible dynamic compression strength [N/mm²]
S = safety factor

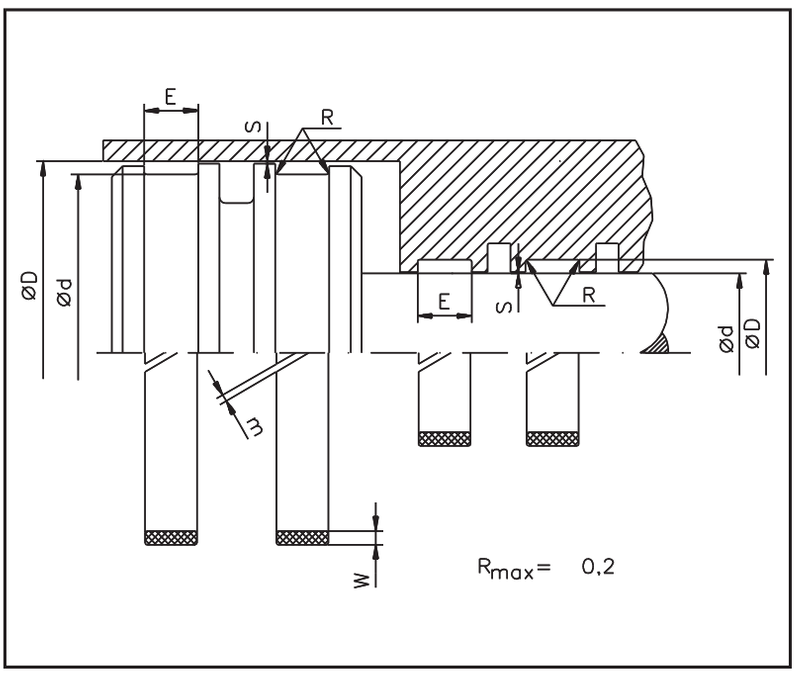
Example:

$$B_{min} \geq \frac{5000 \cdot 2}{20 \,.\, 63} \approx 8$$

Rod diameter	D_n	=	63 mm
Max. radial load	F_R	=	4 kN
dyn. compress. strength	$\sigma_{zul.dyn}$	=	15 N/mm²
Safety factor	S	=	2

In accordance with above calculations, a choice can be made as
1 Slide ring for groove width of 9.7 mm (part N°. HF450 0630-16-520)
2 Slide rings for groove width of 5.6 mm (part N°. HF450 0630-14-520)
To achieve as much of a slide in length as possible, incorporation of two slide rings is recommended.

For the use of plunger cylinders, please also consider our slide rings of series HF 455 from the same material.



Limitations on Use

Velocity	: reciprocating to 0.8 m/s
Temperature	: -40 to +110 °C
Compress. strength, dyn.	: up to 20 N/mm²

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air, etc.

Split Sizes

Radial split "s" is dependent on the included sealing variant.

Recommended ring split "m" as per following table:

Bore diameter mm	Rod diameter mm	Ring split m mm
≤ 45	≤ 50	1,5
50 - 145	55 - 150	2,0
150 - 220	155 - 230	2,5
230 - 300	240 - 300	3,0

Piston Slides

D H9	**d** h8	**E** +0,2	**Part N°.**
16,0	12,0	9,6	HF452 0120-69-520
18,0	14,0	9,6	HF452 0140-69-520
20,0	16,0	9,6	HF452 0160-69-520
22,0	18,0	9,6	HF452 0180-69-520
24,0	20,0	9,6	HF452 0200-69-520
25,0	21,0	9,6	HF452 0210-69-520
25,0	**20,0**	**5,6**	**HF450 0200-14-520**
25,0	20,0	9,7	HF450 0200-16-520
27,0	22,0	5,6	HF450 0220-14-520
27,0	22,0	9,7	HF450 0220-16-520
27,0	23,0	9,6	HF452 0230-69-520
28,0	24,0	9,6	HF452 0240-69-520
30,0	25,0	5,6	HF450 0250-14-520
30,0	25,0	9,7	HF450 0250-16-520
30,0	26,0	9,6	HF452 0260-69-520
32,0	**27,0**	**5,6**	**HF450 0270-14-520**
32,0	27,0	9,7	HF450 0270-16-520
32,0	28,0	9,6	HF452 0280-69-520
35,0	30,0	5,6	HF450 0300-14-520
35,0	30,0	9,7	HF450 0300-16-520
35,0	31,0	9,6	HF452 0310-69-520
36,0	32,0	9,6	HF452 0320-69-520
37,0	32,0	5,6	HF450 0320-14-520
37,0	32,0	9,7	HF450 0320-16-520
38,0	34,0	9,6	HF452 0340-69-520
40,0	**35,0**	**5,6**	**HF450 0350-14-520**
40,0	35,0	9,7	HF450 0350-16-520
40,0	36,0	9,6	HF452 0360-69-520
42,0	38,0	9,6	HF452 0380-69-520
45,0	40,0	5,6	HF450 0400-14-520
45,0	40,0	9,7	HF450 0400-16-520
45,0	41,0	9,6	HF452 0410-69-520
50,0	44,0	9,6	Hf453 0440-69-520

Rod Slides

d f8/h9	**D** H8	**E** +0,2	**Part N°.**
12,0	16,0	9,6	HF452 0120-69-520
14,0	18,0	9,6	HF452 0140-69-520
15,0	19,0	9,6	HF452 0150-69-520
16,0	20,0	9,6	HF452 0160-69-520
18,0	22,0	9,6	HF452 0180-69-520
20,0	24,0	9,6	HF452 0200-69-520
20,0	25,0	5,6	HF450 0200-14-520
20,0	25,0	9,7	HF450 0200-16-520
22,0	26,0	9,6	HF452 0220-69-520
24,0	28,0	9,6	HF452 0240-69-520
25,0	29,0	9,6	HF452 0250-69-520
25,0	**30,0**	**5,6**	**HF450 0250-14-520**
25,0	30,0	9,7	HF450 0250-16-520
28,0	32,0	9,6	HF452 0280-69-520
30,0	34,0	9,6	HF452 0300-69-520
30,0	35,0	5,6	HF450 0300-14-520
30,0	35,0	9,7	HF450 0300-16-520
32,0	36,0	9,6	HF452 0320-69-520
32,0	**37,0**	**5,6**	**HF450 0320-14-520**
32,0	**37,0**	**9,7**	**HF450 0320-16-520**
34,0	38,0	9,6	HF452 0340-69-520
35,0	39,0	9,6	HF452 0350-69-520
35,0	40,0	5,6	HF450 0350-14-520
35,0	40,0	9,7	HF450 0350-16-520
36,0	40,0	9,6	HF452 0360-69-520
36,0	**41,0**	**5,6**	**HF450 0360-14-520**
36,0	**41,0**	**9,7**	**HF450 0360-16-520**
37,0	41,0	9,6	HF452 0370-69-520
38,0	42,0	9,6	HF452 0380-69-520
40,0	44,0	9,6	HF452 0400-69-520
40,0	**45,0**	**5,6**	**HF450 0400-14-520**
40,0	**45,0**	**9,7**	**HF450 0400-16-520**
42,0	46,0	9,6	Hf452 0420-69-520

Piston Slides

D H9	**d** h8	**E** +0,2	**Part N°.**
50,0	**45,0**	**5,6**	**HF450 0450-14-520**
50,0	45,0	9,7	HF450 0450-16-520
52,0	46,0	12,8	HF453 0460-75-520
55,0	49,0	12,8	HF453 0490-75-520
55,0	50,0	5,6	HF450 0500-14-520
55,0	50,0	9,7	HF450 0500-16-520
60,0	54,0	12,8	HF453 0540-75-520
60,0	55,0	5,6	HF450 0550-14-520
60,0	55,0	9,7	HF450 0550-16-520
62,0	56,0	12,8	HF453 0560-75-520
63,0	57,0	12,8	HF453 0570-75-520
63,0	**58,0**	**5,6**	**HF450 0580-14-520**
63,0	**58,0**	**9,7**	**HF450 0580-16-520**
65,0	59,0	12,8	HF453 0590-75-520
68,0	63,0	5,6	HF450 0630-14-520
68,0	63,0	9,7	HF450 0630-16-520
70,0	64,0	12,8	HF453 0640-75-520
70,0	65,0	9,7	HF450 0650-16-520
75,0	69,0	12,8	HF453 0690-75-520
75,0	70,0	5,6	HF450 0700-14-520
75,0	70,0	9,7	HF450 0700-16-520
80,0	74,0	12,8	HF453 0740-75-520
80,0	**75,0**	**5,6**	**HF450 0750-14-520**
80,0	**75,0**	**9,7**	**HF450 0750-16-520**
85,0	79,0	12,8	HF453 0790-75-520
85,0	80,0	5,6	HF450 0800-14-520
85,0	80,0	9,7	HF450 0800-16-520
90,0	84,0	12,8	HF453 0840-75-520
90,0	85,0	5,6	HF450 0850-14-520
90,0	85,0	9,7	HF450 0850-16-520
93,0	87,0	12,8	HF453 0870-75-520
95,0	89,0	12,8	HF453 0890-75-520
95,0	90,0	5,6	HF450 0900-14-520
95,0	90,0	9,7	HF450 0900-16-520
100,0	**95,0**	**5,6**	**HF450 0950-14-520**
100,0	**95,0**	**9,7**	**HF450 0950-16-520**
105,0	99,0	12,8	HF453 0990-75-520
105,0	100,0	5,6	HF450 1000-14-520
105,0	100,0	9,7	HF450 1000-16-520
110,0	104,0	12,8	HF453 1040-75-520
110,0	105,6	5,6	HF450 1050-14-520
110,0	105,0	9,7	HF450 1050-16-520
115,0	109,0	12,8	HF453 1090-75-520
115,0	110,0	5,6	HF450 1100-14-520
115,0	110,0	9,7	HF450 1100-16-520
120,0	114,0	12,8	HF453 1140-75-520
125,0	119,0	12,8	HF453 1190-75-520
125,0	**120,0**	**5,6**	**HF450 1200-14-520**
125,0	**120,0**	**9,7**	**HF450 1200-16-520**
130,0	124,0	12,8	HF453 1240-75-520
135,0	129,0	12,8	HF453 1290-75-520
140,0	134,0	12,8	HF453 1340-75-520
140,0	135,0	5,6	HF450 1350-14-520
140,0	**135,0**	**9,7**	**HF450 1350-16-520**
145,0	139,0	12,8	HF453 1390-75-520
150,0	144,0	12,8	HF453 1440-75-520
155,0	149,0	19,2	HF453 1490-77-520
160,0	154,0	19,2	HF453 1540-77-520
165,0	159,0	19,2	HF453 1590-77-520

Rod Slides

d f8/h9	**D** H8	**E** +0,2	**Part N°.**
45,0	**50,0**	**5,6**	**HF450 0450-14-520**
45,0	**50,0**	**9,7**	**HF450 0450-16-520**
45,0	51,0	9,6	HF453 0450-69-520
46,0	52,0	9,6	HF453 0460-69-520
50,0	**55,0**	**5,6**	**HF450 0500-14-520**
50,0	**55,0**	**9,7**	**HF450 0500-16-520**
50,0	56,0	9,6	HF453 0500-69-520
52,0	58,0	9,6	HF453 0520-69-520
55,0	60,0	5,6	HF450 0550-14-520
55,0	60,0	9,7	HF450 0550-16-520
55,0	61,0	9,6	HF453 0550-69-520
56,0	**61,0**	**5,6**	**HF450 0560-14-520**
56,0	**61,0**	**9,7**	**HF450 0560-16-520**
56,0	62,0	12,8	HF453 0560-75-520
60,0	66,0	12,8	HF453 0600-75-520
61,0	67,0	12,8	HF453 0610-75-520
62,0	68,0	12,8	HF453 0620-75-520
63,0	**68,0**	**5,6**	**HF450 0630-14-520**
63,0	**68,0**	**9,7**	**HF450 0630-16-520**
63,0	69,0	12,8	HF453 0630-75-520
65,0	70,0	5,6	HF450 0650-14-520
65,0	70,0	9,7	HF450 0650-16-520
65,0	71,0	12,8	HF453 0650-75-520
70,0	**75,0**	**5,6**	**HF450 0700-14-520**
70,0	**75,0**	**9,7**	**HF450 0700-16-520**
70,0	76,0	12,8	HF453 0700-75-520
72,0	78,0	12,8	HF453 0720-75-520
73,0	79,0	12,8	HF453 0730-75-520
75,0	80,0	5,6	HF450 0750-14-520
75,0	80,0	9,7	HF450 0750-16-520
75,0	81,0	12,8	HF453 0750-75-520
76,0	82,0	12,8	HF453 0760-75-520
78,0	84,0	12,8	HF453 0780-75-520
80,0	85,0	5,6	HF450 0800-14-520
80,0	86,0	12,8	HF453 0800-75-520
85,0	91,0	12,8	HF453 0850-75-520
86,0	92,0	12,8	HF453 0860-75-520
90,0	95,0	5,6	HF450 0900-14-520
90,0	**95,0**	**9,7**	**HF450 0900-16-520**
90,0	96,0	12,8	HF453 0900-75-520
91,0	97,0	12,8	HF453 0910-75-520
95,0	100,0	5,6	HF450 0950-14-520
95,0	100,0	9,7	HF450 0950-16-520
95,0	101,0	12,8	HF453 0950-75-520
100,0	105,0	5,6	HF450 1000-14-520
100,0	**105,0**	**9,7**	**HF450 1000-16-520**
100,0	106,0	12,8	HF453 1000-75-520
105,0	111,0	12,8	HF453 1050-75-520
110,0	116,0	12,8	HF453 1100-75-520
115,0	121,0	12,8	HF453 1150-75-520
120,0	125,0	5,6	HF450 1200-14-520
120,0	125,0	9,7	HF450 1200-16-520
120,0	126,0	12,8	HF453 1200-75-520
125,0	131,0	12,8	HF453 1250-75-520
130,0	136,0	12,8	HF453 1300-75-520
135,0	140,0	5,6	HF450 1350-14-520
135,0	140,0	9,7	HF450 1350-16-520
135,0	141,0	12,8	HF453 1350-75-520
140,0	146,0	12,8	HF453 1400-75-520

Piston Slides

D H9	**d** h8	**E** +0,2	**Part N°.**
170,0	164,0	19,2	HF453 1640-77-520
175,0	169,0	19,2	HF453 1690-77-520
180,0	174,0	19,2	HF453 1740-77-520
185,0	179,0	19,2	HF453 1790-77-520
190,0	184,0	19,2	HF453 1840-77-520
195,0	189,0	19,2	HF453 1890-77-520
200,0	194,0	19,2	HF453 1940-77-520
205,0	199,0	19,2	HF453 1990-77-520
210,0	204,0	19,2	HF453 2040-77-520
220,0	214,0	19,2	HF453 2140-77-520
230,0	224,0	19,2	HF453 2240-77-520
240,0	234,0	19,2	HF453 2340-77-520
250,0	244,0	19,2	HF453 2440-77-520
260,0	254,0	19,2	HF453 2540-77-520
270,0	264,0	19,2	HF453 2640-77-520
280,0	274,0	19,2	HF453 2740-77-520
290,0	284,0	19,2	HF453 2840-77-520
300,0	294,0	19,2	HF453 2940-77-520

Dimensions in bold correspond to mounting spaces as per ISO/DIN 10766.

Rod Slides

d f8/h9	**D** H8	**E** +0,2	**Part N°.**
141,0	147,0	12,8	HF453 1410-75-520
143,0	149,0	12,8	HF453 1430-75-520
145,0	151,0	12,8	HF453 1450-75-520
150,0	156,0	12,8	HF453 1500-75-520
154,0	160,0	19,2	HF453 1540-77-520
160,0	166,0	19,2	HF453 1600-77-520
162,0	168,0	19,2	HF453 1620-77-520
170,0	176,0	19,2	HF453 1700-77-520
180,0	186,0	19,2	HF453 1800-77-520
190,0	196,0	19,2	HF453 1900-77-520
200,0	206,0	19,2	HF453 2000-77-520
210,0	216,0	19,2	HF453 2100-77-520
220,0	226,0	19,2	HF453 2200-77-520
230,0	236,0	19,2	HF453 2300-77-520
240,0	246,0	19,2	HF453 2400-77-520
250,0	256,0	19,2	HF453 2500-77-520
260,0	266,0	19,2	HF453 2600-77-520
270,0	276,0	19,2	HF453 2700-77-520
280,0	286,0	19,2	HF453 2800-77-520
290,0	296,0	19,2	HF453 2900-77-520

Example for ordering :

HF 450 0630 - 16 - 520 - ...

- Profile
- Internal diameter x 10
- Code for groove width
- Material
- HME internal code

Profile:

HF 450 - 2.5 mm radial strength
HF 452 - 2.0 mm radial strength
HF 453 - 3.0 mm radial strength

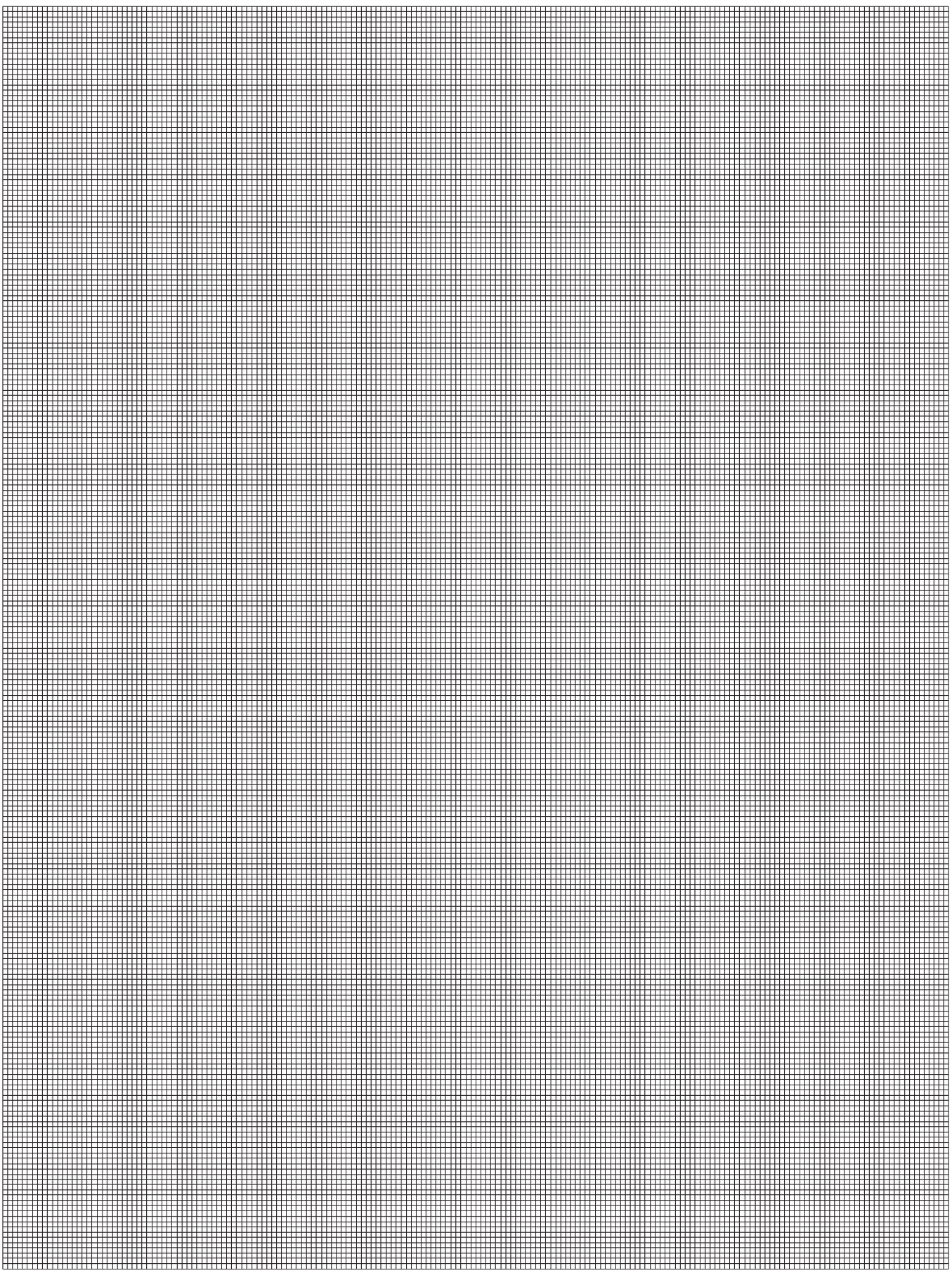
Code Groove Width:

14 - 5.6 mm
16 - 9.7 mm
69 - 9.6 mm
75 - 12.8 mm
77 - 19.2 mm

Issue

01	24

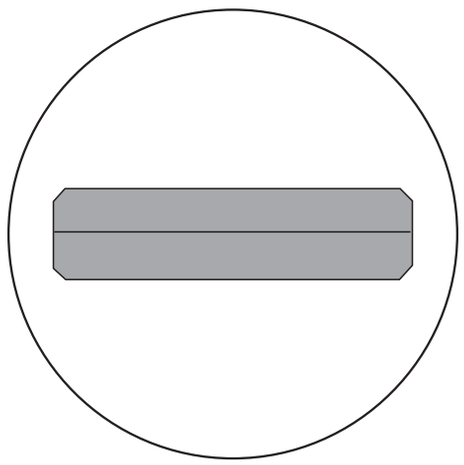
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



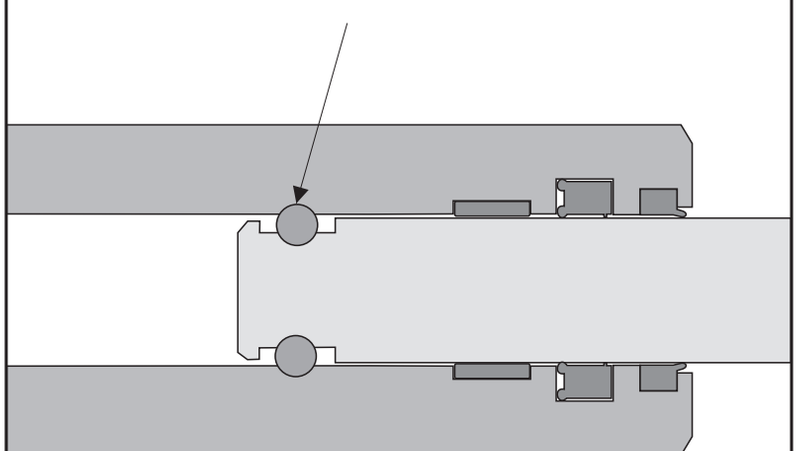
Slide ring HF 455 is ideally suited for so called plunger cylinders.

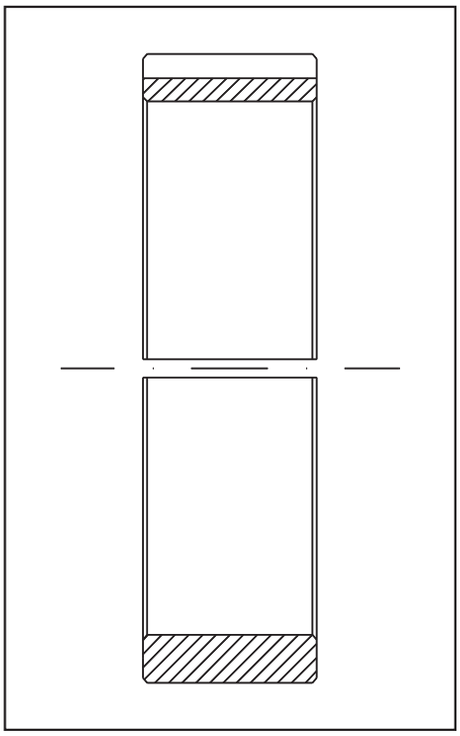
Special Features:

- Highly wear resistant material from glass reinforced polyacetal
- Easy snap-on assembly through slanted slotting
- Smooth flow-over of hydraulic medium through multiple channels is guaranteed
- Special sizes possible.



Material	:	polyacetal glass fiber reinforced
Velocity	:	reciprocating to 0.8 m/s
Temperature	:	-40 to +110 °C





Slide Ring

Slide ring has a rectangular cross-section and multiple oil grooves on the dynamic surface to simplify the return flow of the pressure medium. All edges are chamfered to avoid build up of edge pressure and simplify assembly.

Slide rings are fundamentally produced as preformed rings.

Materials Overview

Fiber glass reinforced polyacetal excels in wear resistance and high load bearing capacity over the entire temperature range of application. Good media compatibility and low frictional coefficient of the material make it suitable for both hydraulics and pneumatics.

Material Data

Max. compression strength static	[N/mm²]	40
Max. compression strength dynamic	[N/mm²]	20

Calculation

Designing and sizing of slide ring for dynamic application is dependent to a large extent on the radial force and the associated deformation of slide ring, slide gap and service temperature. The value of the dynamic compression strength is to be considered, taking the above factors into account. In practise, it is advantageous to include a factor of safety.

The approximate width of slide which is necessary can be calculated in accordance with the following formula:

$$B_{min} \geq \frac{F_R \cdot S}{\sigma_{zul.\,dyn.} \cdot D_n} \quad [mm]$$

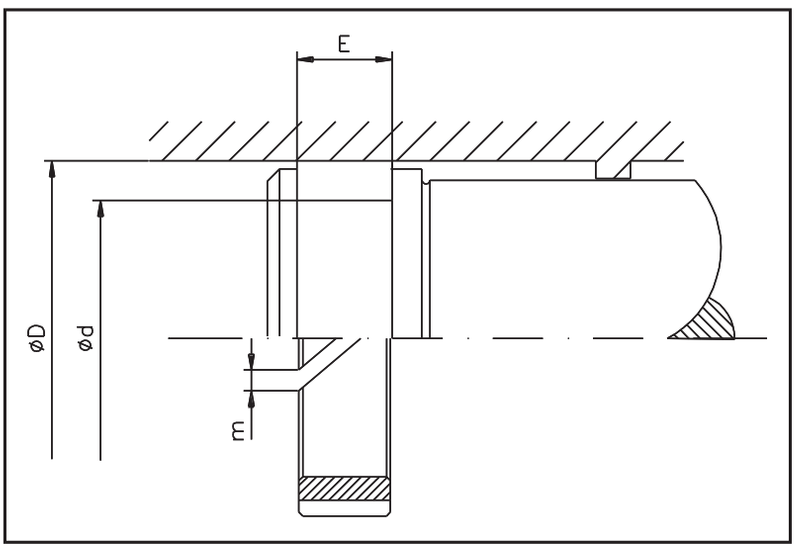
Where:

B_{min} = min. width of slide ring [mm]
F_R = max. radial load [N]
$\sigma_{zul.dyn}$ = permissible dynamic compression strength [N/mm²]
S = safety factor

Example:

$$B_{min} \geq \frac{5000 \cdot 2}{20 \cdot 63} \approx 8{,}3$$

Piston diameter	D_n	=	63 mm
Max. radial load	F_R	=	4 kN
dyn. compress. strength	$\sigma_{zul.dyn}$	=	15 N/mm²
Safety factor	S	=	2



Limitations on Use

Velocity	: reciprocating to 0.8 m/s
Temperature	: -40 to +110 °C
Compress. strength, dyn.	: up to 20 N/mm²
Compress. strength, stat.	: up to 40 N/mm²

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air etc.

Surface Finish

Surfaces	Rz	Ra
Faces	4,0 µm	0,8 µm
Groove root	10,0 µm	3,2 µm
Groove flanks	10,0 µm	3,2 µm

D H9	**d** h9	**E** +0,2	m	**Part N°.**
30,00	20,00	12,00	2,00	HF455 0300-01-520
35,00	25,00	12,00	2,00	HF455 0350-01-520
40,00	30,00	12,00	2,00	HF455 0400-01-520
45,00	35,00	12,00	2,00	HF455 0450-01-520
55,00	45,00	15,00	2,00	HF455 0550-01-520
60,00	50,00	15,00	2,00	HF455 0600-01-520
60,00	51,00	12,00	2,00	HF455 0600-02-520
65,00	55,00	15,00	2,00	HF455 0650-01-520
65,00	56,00	12,00	2,00	HF455 0650-02-520
70,00	60,00	15,00	2,00	HF455 0700-01-520
75,00	65,00	15,00	2,00	HF455 0750-01-520
80,00	70,00	24,00	0,50	HF455 0800-01-520
85,00	76,00	15,00	2,00	HF455 0850-01-520

The series of dimensions is constantly being extended. Please enquire for additional informations.
Extensive range of inch measurement diagrams available on request.

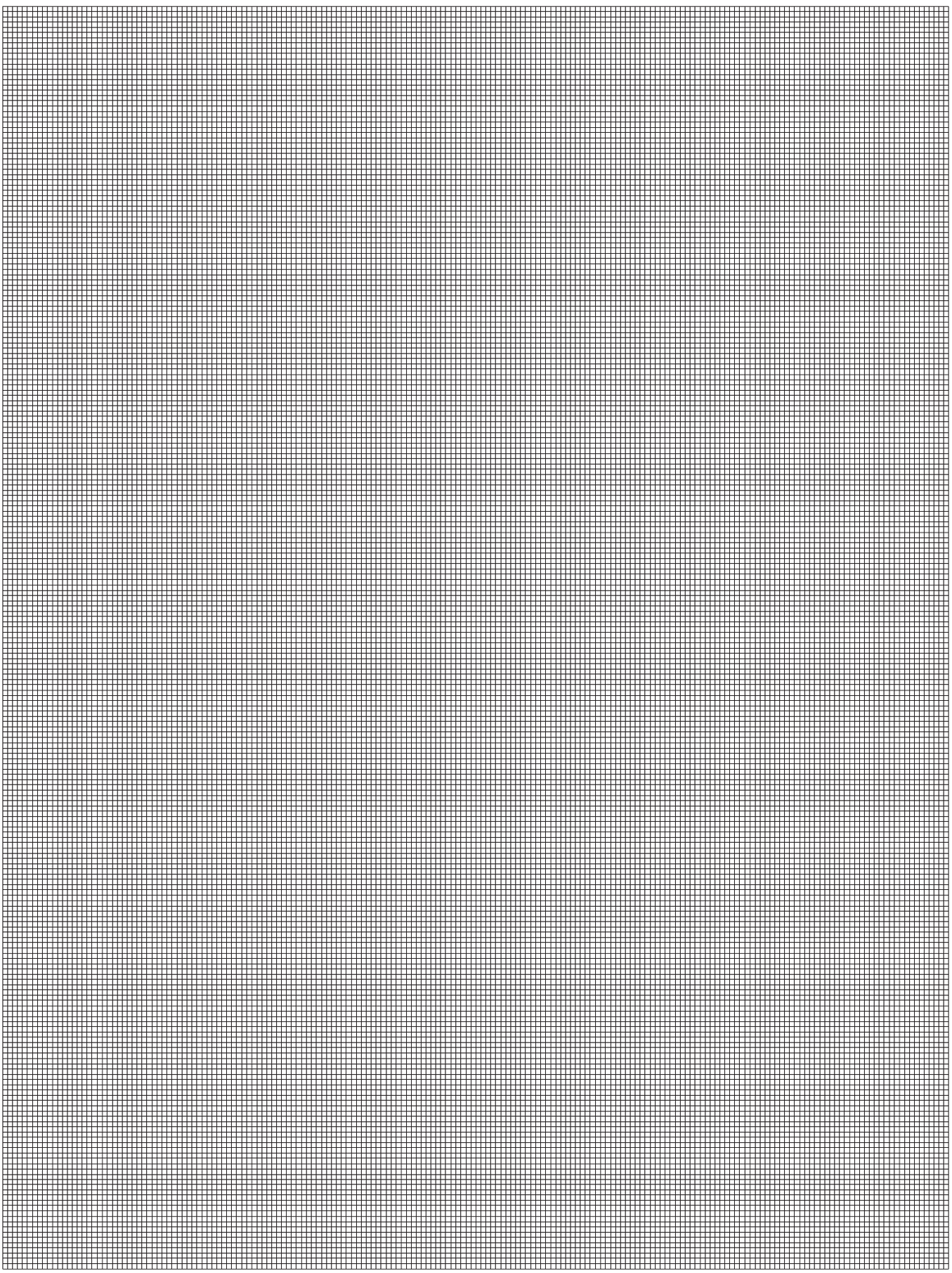
Example for ordering:

HF 455 0600 - 01 - 520 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Issue
01 | 24

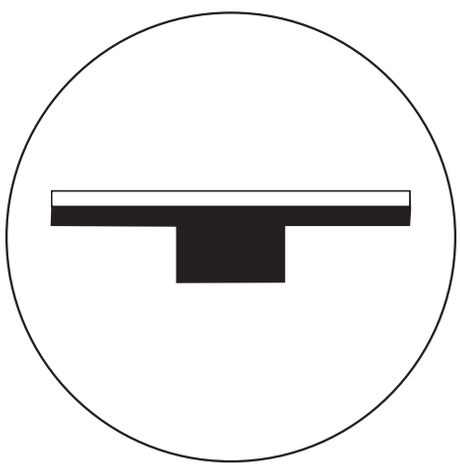
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



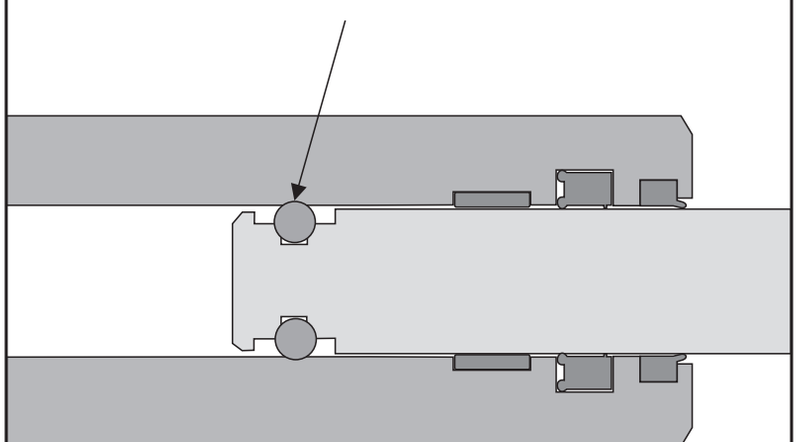
Slide ring type HF 460 is ideally suited for so called plunger cylinders.

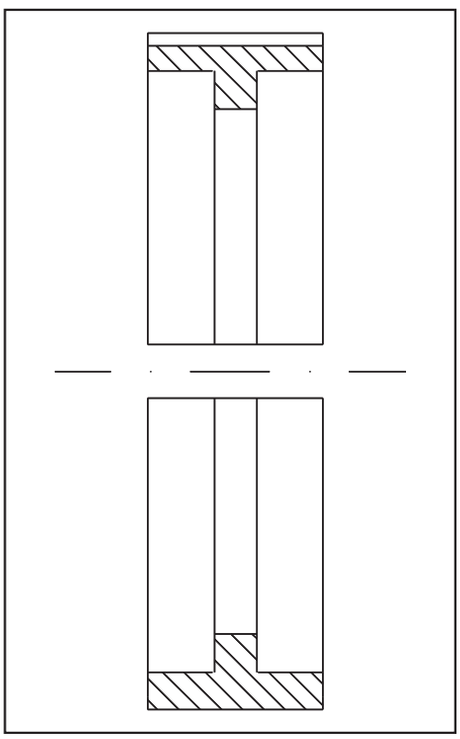
Special Features:

- Highly wear resistant material
- Easy snap assembly through slanted slotting
- Smooth flow over of hydraulic medium through multiple channels is guaranteed
- Rod stop at inner diameter.



Material	:	polyacetal
Velocity	:	reciprocating to 0.8 m/s
Temperature	:	-40 to +110 °C





Slide Ring

Slide ring has a rectangular cross-section and multiple oil grooves on the dynamic interface to simplify the return flow of the pressure medium. The internal diameter is provided with a retaining flange. This also makes a "chambered" assembly possible and therefore a larger slit size between cylinders wall and piston.

These sliding rings are fundamentally produced as preformed rings.

Materials Overview

The material polyacetal excels in wear resistance and high load bearing capacity over the entire temperature range of application. Good media compatibility and low frictional coefficient of the material make it suitable for both hydraulics and pneumatics (oiled compressed air).

Material Data

Max. compression strength static	[N/mm²]	5
Max. compression strength dynamic	[N/mm²]	2.5

Calculation

Dimensioning and sizing of slide ring for dynamic application is dependent to a large extent on the radial force and the associated deformation of the slide ring, slide gap and service temperature. The value of dynamic compressive strength is to be considered, taking the above factors into account. In practise, it is advantageous to include a factor of safety.

The following formula provides the requisite width of slide:

$$B_{min} \geq \frac{F_R \cdot S}{\sigma_{zul.\,dyn.} \cdot D_n} \quad [mm]$$

Where:

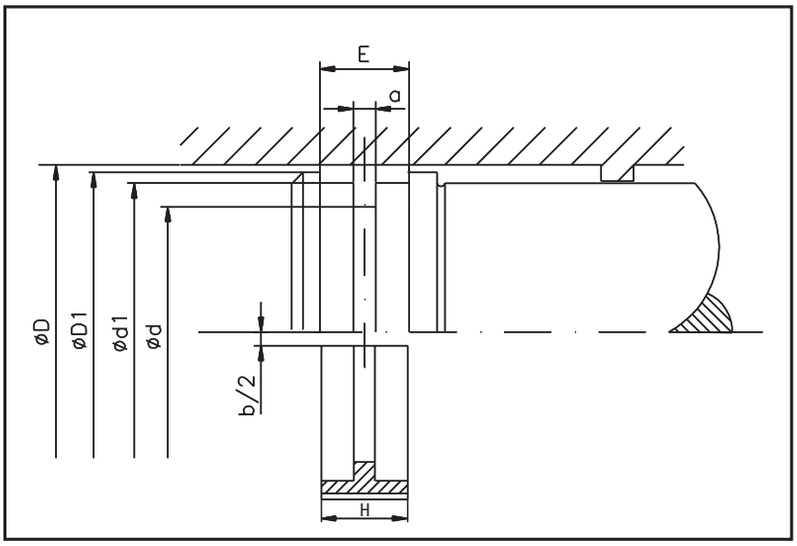
B_{min} = min. width of slide ring [mm]
F_R = max. radial load [N]
$\sigma_{zul.dyn}$ = permissible dynamic compression Strength [N/mm²]
S = safety factor

Example:

$$B_{min} \geq \frac{1000 \cdot 2}{2{,}5 \cdot 63} \approx 12{,}7$$

Rod diameter	D_n	=	63 mm
Max. radial load	F_R	=	4 kN
dyn. compress. strength	$\sigma_{zul.dyn}$	=	15 N/mm²
Safety factor	S	=	2

For taking up of larger transverse forces, please use our plunger slide rings Hf455.



Limitations on Use

Velocity	: reciprocating to 0.8 m/s
Temperature	: -40 to +110 °C
Compress. strength, dyn.	: up to 2,5 N/mm²
Compress. strength, stat.	: up to 5 N/mm²

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media.

Media for Use

Surfaces	Rz	Ra
Faces	2,0 µm	0,4 µm
Groove root	10,0 µm	3,2 µm
Groove flanks	10,0 µm	3,2 µm

D H9	**H**	**D1** h11	**d** -0,4	**d1** f8	**E** +0,2	**a**	**b**	**Part N°.**
20,00	7,80	19,65	14,00	17,20	8,50	3,00 +0,1	2,00	HF460 0200-01-500
22,00	7,80	21,65	16,00	19,20	8,50	3,00 +0,1	2,00	HF460 0220-01-500
25,00	7,80	24,65	19,00	22,20	8,50	3,00 +0,1	2,00	HF460 0250-01-500
28,00	7,80	27,65	22,00	25,20	8,50	3,00 +0,1	2,00	HF460 0280-01-500
30,00	7,80	29,65	24,00	27,20	8,50	3,00 +0,1	2,00	HF460 0300-01-500
32,00	7,80	31,65	26,00	29,20	8,50	3,00 +0,1	2,00	HF460 0320-01-500
35,00	7,80	34,65	29,00	32,20	8,50	3,00 +0,1	2,00	HF460 0350-01-500
36,00	7,80	35,65	30,00	33,20	8,50	3,00 +0,1	2,00	HF460 0360-01-500
40,00	9,80	39,60	32,50	36,80	10,50	3,50 +0,1	3,00	HF460 0400-01-500
42,00	9,80	41,60	34,50	38,80	10,50	3,50 +0,1	3,00	HF460 0420-01-500
45,00	9,80	44,60	37,50	41,80	10,50	3,50 +0,1	3,00	HF460 0450-01-500
50,00	9,80	49,60	42,50	46,80	10,50	3,50 +0,1	3,00	HF460 0500-01-500
55,00	9,80	54,60	47,50	51,90	10,50	3,50 +0,1	4,00	HF460 0550-01-500
56,00	9,80	55,60	48,50	52,90	10,50	3,50 +0,1	4,00	HF460 0560-01-500
58,00	9,80	57,60	50,50	54,90	10,50	3,50 +0,1	4,00	HF460 0580-01-500
60,00	9,80	59,60	52,50	56,90	10,50	3,50 +0,1	4,00	HF460 0600-01-500
63,00	14,30	62,50	54,00	59,50	15,00	5,00 -0,1	5,00	HF460 0630-01-500
65,00	14,30	64,50	56,00	61,50	15,00	5,00 -0,1	5,00	HF460 0650-01-500
70,00	14,30	69,50	61,00	66,50	15,00	5,00 -0,1	5,00	HF460 0700-01-500
75,00,	14,30	74,50	66,00	71,50	15,00	5,00 -0,1	5,00	HF460 0750-01-500
80,00	14,30	79,50	71,00	76,50	15,00	5,00 -0,1	5,00	HF460 0800-01-500
85,00	14,30	84,50	76,00	81,50	15,00	5,00 -0,1	5,00	HF460 0850-01-500
90,00	14,30	89,50	81,00	86,50	15,00	5,00 -0,1	5,00	HF460 0900-01-500
95,00	14,30	94,40	86,00	91,50	15,00	5,00 -0,1	8,00	HF460 0950-01-500
100,00	14,30	99,40	91,00	96,50	15,00	5,00 -0,1	8,00	HF460 1000-01-500
105,00	14,30	104,40	96,00	101,50	15,00	5,00 -0,1	8,00	HF460 1050-01-500
110,00	14,30	109,40	101,00	106,50	15,00	5,00 -0,1	8,00	HF460 1100-01-500
115,00	14,30	114,40	106,00	111,50	15,00	5,00 -0,1	8,00	HF460 1150-01-500
120,00	14,30	119,40	111,00	116,50	15,00	5,00 -0,1	8,00	HF460 1200-01-500
125,00	14,30	124,40	116,00	121,50	15,00	5,00 -0,1	8,00	HF460 1250-01-500
130,00	14,30	129,40	121,00	126,50	15,00	5,00 -0,1	8,00	HF460 1300-01-500
135,00	14,50	134,40	126,00	131,50	15,00	5,00 -0,1	8,00	HF460 1350-01-500
140,00	14,30	139,40	131,00	136,50	15,00	5,00 -0,1	8,00	HF460 1400-01-500
150,00	14,30	149,40	141,00	146,50	15,00	5,00 -0,1	8,00	HF460 1500-01-500
160,00	19,80	159,30	144,00	152,90	20,30	8,00 -0,1	10,00	HF460 1600-01-500
170,00	19,80	169,30	154,00	162,90	20,30	8,00 -0,1	10,00	HF460 1700-01-500
180,00	19,80	179,30	164,00	172,90	20,30	8,00 -0,1	10,00	HF460 1800-01-500
190,00	19,80	189,30	174,00	182,90	20,30	8,00 -0,1	10,00	HF460 1900-01-500
200,00	19,80	199,30	184,00	192,90	20,30	8,00 -0,1	10,00	HF460 2000-01-500
210,00	24,50	209,20	193,00	202,50	25,00	8,00 +0,1	12,00	HF460 2100-01-500

D H9	**H**	**D1** h11	**d** -0,4	**d1** f8	**E** +0,2	**a**	**b**	**Part N°.**
220,00	24,50	219,20	203,00	212,50	25,00	8,00 +0,1	12,00	HF460 2200-01-500
225,00	24,50	224,20	208,00	217,50	25,00	8,00 +0,1	12,00	HF460 2250-01-500
230,00	24,50	229,20	213,00	222,50	25,00	8,00 +0,1	12,00	HF460 2300-01-500
240,00	24,50	239,20	223,00	232,50	25,00	8,00 +0,1	12,00	HF460 2400-01-500
250,00	24,50	249,20	233,00	242,50	25,00	8,00 +0,1	12,00	HF460 2500-01-500
255,00	24,50	254,20	238,00	247,50	25,00	8,00 +0,1	12,00	HF460 2550-01-500

Further sizes available on request.

Example for placing an order:

HF 460 0630 - 01 - 500 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

BEARING ELEMENTS

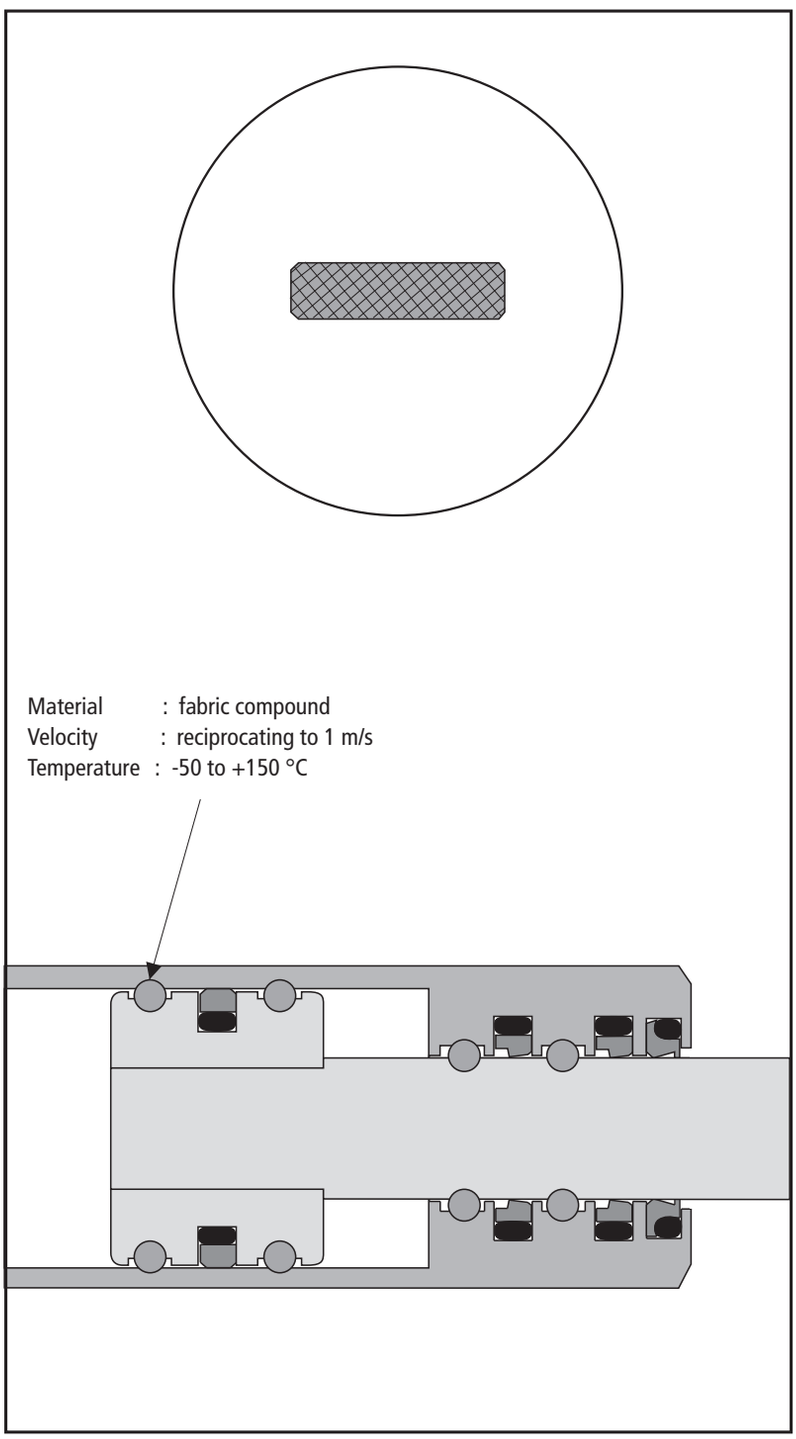
HF 470 TO HF 474

Slide rings are used in hydraulic and pneumatic cylinders. They serve for sliding between piston and rod, reduce metallic contact between sliding parts and absorb transverse forces. Metallic slides are being replaced by non-metallic slides (various plastics).

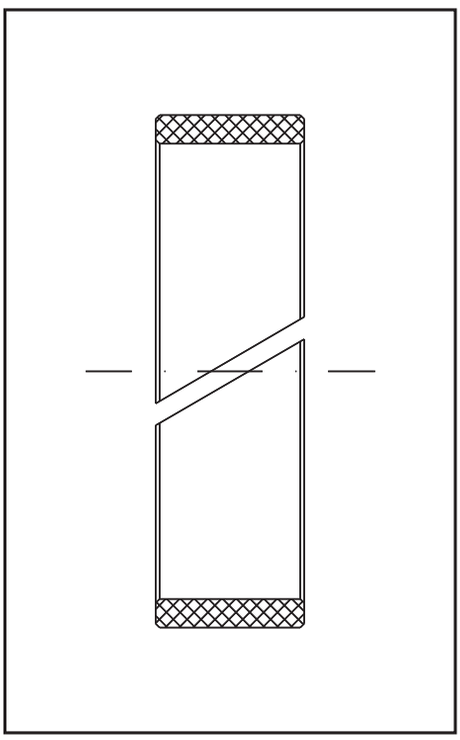
Non-metallic slides offer a series of advantages that contribute to and enhance functional security and service life.

Special Features:

- High compression strength, absorption of higher transverse forces
- High anti wear properties, long life
- No corrosion, plastic/metal combination
- Low friction, good resistance to galling
- Damping of mechanical vibrations
- Easy to assemble
- Cost convenient and available for all diameters.



Material : fabric compound
Velocity : reciprocating to 1 m/s
Temperature : -50 to +150 °C



Slide Ring

Slide rings have a rectangular cross-section and are chamfered at the corners to avoid excess edge pressures at groove corners. The chamfers also serve to simplify assembly.

The standard design has a bevel cut at the ring end. Slide rings can be used for every piston and rod diameter. The slit "m" is especially necessary for that function.

Materials Overview

400: Preformed slide ring from fabric cotton and phenolic resin reinforcement without auxilliary lubricant. Good shear characteristics, high compression and wear resistance. Meant for high loads in foodstuffs and pharmaceutical industry.

420: Preformed slide ring from fabric cotton and phenolic resin reinforcement with graphite as additional lubricant. Good shear characteristics and resistance to galling, high compression and wear resistance. Meant for heavy duty hydraulics and pneumatics.

440: Slide band from fine plastics fiber with additional lubricant. Very high compression resistance, high wear resistance and good shear characteristics. Meant for heavy duty hydraulics.

Material Data

		Type 440	Type 400 and 420
Compress. strength, stat.	N/mm²	400	300
Compress. strength, dyn.	N/mm²	110	90
Temperature range	°C	-50 to +150	-40 to +120
Water uptake	%	< 0,1	< 1,2

Calculations

Designing and sizing of slide ring for dynamic applications is dependent to a large extent on the radial force and the associated deformation of the slide material, slide gap and the service temperature. The value of dynamic compressive strength is to be considered taking the above factors into account. In practice, it is advantageous to include a factor of safety..

$$B_{min} \geq \frac{F_R \cdot S}{\sigma_{zul.\,dyn.} \cdot D_n} \quad [mm]$$

Where:

B_{min} = min. width of slide ring [mm]
F_R = max. radial load [N]
$\sigma_{zul.dyn}$ = permissible dynamic compression strength [N/mm²]
S = safety factor

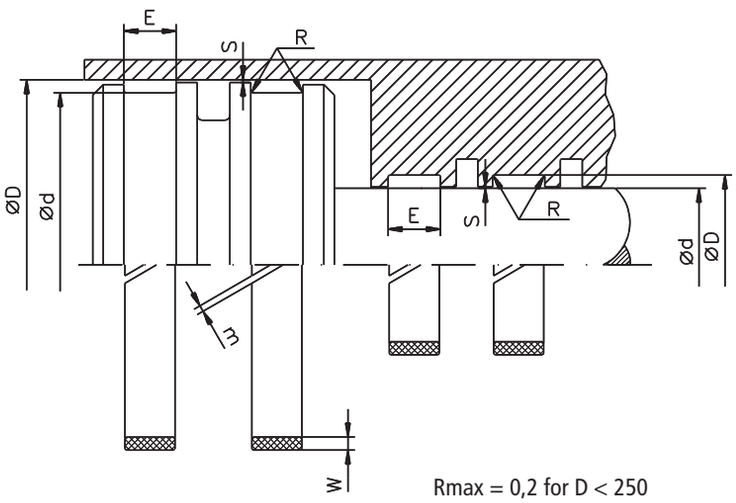
Example:

$$B_{min} \geq \frac{40000 \cdot 2}{90 \cdot 63} \approx 14{,}1$$

Rod diameter	D_n	=	63	mm
max. radial load	F_R	=	40000	N
dyn. compr. strength (material 400)	$S_{zul.dyn}$	≙	90	N/mm²
Safety factor	S	=	2	

In accordance with above calculations, a choice can be made as:
1 slide ring for groove width of 15.0 mm.
2 slide rings for groove width of 9.7 mm.
To achieve as much of a slide length as possible, incorporation of two slide rings is recommended.

Non metallic materials are preferred to metals for use in slides for pistons and piston rods of hydraulic and pneumatic cylinders. This is specially true of applications like mining, building and heavy machinery engineering where exceptionally high or inadequately defined radial forces come into play.



Rmax = 0,2 for D < 250
Rmax = 0,4 for D > 250

Limitations on Use

Velocity	:	reciprocating to 1m/s
Temperature	:	-50 to +150 °C (440)
		-40 to +120 °C (400 and 420)
Compress. strength, dyn.:		110 N/mm² (440)
		90 N/mm² (400 and 420)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air etc.

Split Sizes

Radial split "s" is dependent on the included sealing variant.

Ring split "m" for diameter	m
12 - 45	2 - 4 mm
50 - 145	3 - 6 mm
150 - 220	4 - 10 mm
über 230	15 - 45 mm

Piston Slides

D H9	**d** h8	**E** +0,2	**W**	Material 400 **Part N°.**	Material 420 **Part N°.**	Material 440 **Part N°.**
16,00	12,90	4,00	1,55	HF471 0129-12-400	HF471 0129-12-420	
16,00	11,00	5,60	2,50	HF470 0110-14-400	HF470 0110-14-420	HF470 0110-14-440
20,00	16,90	4,00	1,55	HF471 0169-12-400	HF471 0169-12-420	
20,00	15,00	5,60	2,50	HF470 0150-14-400	HF470 0150-14-420	HF470 0150-14-440
22,00	17,00	5,60	2,50	HF470 0170-14-400	HF470 0170-14-420	HF470 0170-14-440
25,00	21,90	4,00	1,55	HF471 0219-12-400	HF471 0219-12-420	
25,00	20,00	5,60	2,50	HF470 0200-14-400	HF470 0200-14-420	HF470 0200-14-440
32,00	28,90	4,00	1,55	HF471 0289-12-400	HF471 0289-12-420	
32,00	27,00	5,60	2,50	HF470 0270-14-400	HF470 0270-14-420	HF470 0270-14-440
40,00	35,00	5,60	2,50	HF470 0350-14-400	HF470 0350-14-420	HF470 0350-14-440
50,00	45,00	5,60	2,50	HF470 0450-14-400	HF470 0450-14-420	HF470 0450-14-440
63,00	58,00	5,60	2,50	HF470 0580-14-400	HF470 0580-14-420	HF470 0580-14-440
63,00	58,00	9,70	2,50	HF470 0580-16-400	HF470 0580-16-420	HF470 0580-16-440
80,00	75,00	5,60	2,50	HF470 0750-14-400	HF470 0750-14-420	HF470 0750-14-440
80,00	75,00	9,70	2,50	HF470 0750-16-400	HF470 0750-16-420	HF470 0750-16-440
100,00	95,00	5,60	2,50	HF470 0950-14-400	HF470 0950-14-420	HF470 0950-14-440
100,00	95,00	9,70	2,50	HF470 0950-16-400	HF470 0950-16-420	HF470 0950-16-440
125,00	120,00	5,60	2,50	HF470 1200-14-400	HF470 1200-14-420	HF470 1200-14-440
125,00	120,00	9,70	2,50	HF470 1200-16-400	HF470 1200-16-420	HF470 1200-16-440
140,00	135,00	9,70	2,50	HF470 1350-16-400	HF470 1350-16-420	HF470 1350-16-440
140,00	135,00	15,00	2,50	HF470 1350-18-400	HF470 1350-18-420	HF470 1350-18-440
160,00	155,00	9,70	2,50	HF470 1550-16-400	HF470 1550-16-420	HF470 1550-16-440
160,00	155,00	15,00	2,50	HF470 1550-18-400	HF470 1550-18-420	HF470 1550-18-440
180,00	175,00	9,70	2,50	HF470 1750-16-400	HF470 1750-16-420	HF470 1750-16-440
180,00	175,00	15,00	2,50	HF470 1750-18-400	HF470 1750-18-420	HF470 1750-18-440
200,00	195,00	9,70	2,50	HF470 1950-16-400	HF470 1950-16-420	HF470 1950-16-440
200,00	195,00	15,00	2,50	HF470 1950-18-400	HF470 1950-18-420	HF470 1950-18-440
220,00	215,00	9,70	2,50	HF470 2150-16-400	HF470 2150-16-420	HF470 2150-16-440
220,00	215,00	15,00	2,50	HF470 2150-18-400	HF470 2150-18-420	HF470 2150-18-440
250,00	245,00	9,70	2,50	HF470 2450-16-400	HF470 2450-16-420	HF470 2450-16-440
250,00	245,00	15,00	2,50	HF470 2450-18-400	HF470 2450-18-420	HF470 2450-18-440
280,00	275,00	9,70	2,50	HF470 2750-16-400	HF470 2750-16-420	HF470 2750-16-440
280,00	275,00	15,00	2,50	HF470 2750-18-400	HF470 2750-18-420	HF470 2750-18-440

Piston Slides

D H9	**d** h8	**E** +0,2	**W**	Material 400 **Part N°.**	Material 420 **Part N°.**	Material 440 **Part N°.**
280,00	272,00	25,00	4,00	HF474 2720-20-400	HF474 2720-20-420	
320,00	315,00	15,00	2,50	HF470 3150-18-400	HF470 3150-18-420	HF470 3150-18-440
320,00	315,00	25,00	2,50	HF470 3150-20-400	HF470 3150-20-420	HF470 3150-20-440
320,00	312,00	25,00	4,00	HF474 3120-20-400	HF474 3120-20-420	
360,00	355,00	15,00	2,50	HF470 3550-18-400	HF470 3550-18-420	HF470 3550-18-440
360,00	355,00	25,00	2,50	HF470 3550-18-400	HF470 3550-18-420	HF470 3550-18-440
360,00	352,00	25,00	4,00	HF474 3520-20-400	HF474 3520-20-420	
400,00	395,00	15,00	2,50	HF470 3950-18-400	HF470 3950-18-420	HF470 3950-18-440
400,00	395,00	25,00	2,50	HF470 3950-20-400	HF470 3950-20-420	HF470 3950-20-440
400,00	392,00	25,00	4,00	HF474 3920-20-400	HF474 3920-20-420	
450,00	445,00	15,00	2,50			HF470 4450-18-440
450,00	445,00	25,00	2,50			HF470 4450-20-440
500,00	495,00	15,00	2,50			HF470 4950-18-440
500,00	495,00	25,00	2,50			HF470 4950-20-440

Rod Slides

d f8/h9	**D** H8	**E** +0,2	**W**	Material 400 **Part N°.**	Material 420 **Part N°.**	Material 440 **Part N°.**
12,00	15,10	4,00	1,55	HF471 0120-12-400	HF471 0120-12-420	
14,00	17,10	4,00	1,55	HF471 0140-12-400	HF471 0140-12-420	
16,00	19,10	4,00	1,55	HF471 0160-12-400	HF471 0160-12-420	
18,00	21,10	4,00	1,55	HF471 0180-12-400	HF471 0180-12-420	
20,00	23,10	4,00	1,55	HF471 0200-12-400	HF471 0200-12-420	
22,00	25,10	4,00	1,55	HF471 0220-12-400	HF471 0220-12-420	
25,00	28,10	4,00	1,55	HF471 0250-12-400	HF471 0250-12-420	
25,00	30,00	5,60	2,50	HF470 0250-14-400	HF470 0250-14-420	HF470 0250-14-440
28,00	31,10	4,00	1,55	HF471 0280-12-400	HF471 0280-12-420	
28,00	33,00	5,60	2,50	HF470 0280-14-400	HF470 0280-14-420	HF470 0280-14-440
32,00	37,00	5,60	2,50	HF470 0320-14-400	HF470 0320-14-420	HF470 0320-14-440
32,00	37,00	9,70	2,50	HF470 0320-16-400	HF470 0320-16-420	HF470 0320-16-440
36,00	41,00	5,60	2,50	HF470 0360-14-400	HF470 0360-14-420	HF470 0360-14-440
36,00	41,00	9,70	2,50	HF470 0360-16-400	HF470 0360-16-420	HF470 0360-16-440
40,00	45,00	5,60	2,50	HF470 0400-14-400	HF470 0400-14-420	HF470 0400-14-440
40,00	45,00	9,70	2,50	HF470 0400-16-400	HF470 0400-16-420	HF470 0400-16-440
45,00	50,00	5,60	2,50	HF470 0450-14-400	HF470 0450-14-420	HF470 0450-14-440
45,00	50,00	9,70	2,50	HF470 0450-16-400	HF470 0450-16-420	HF470 0450-16-440
50,00	55,00	5,60	2,50	HF470 0500-14-400	HF470 0500-14-420	HF470 0500-14-440
50,00	55,00	9,70	2,50	HF470 0500-16-400	HF470 0500-16-420	HF470 0500-16-440
56,00	61,00	5,60	2,50	HF470 0560-14-400	HF470 0560-14-420	HF470 0560-14-440
56,00	61,00	9,70	2,50	HF470 0560-16-400	HF470 0560-16-420	HF470 0560-16-440
63,00	68,00	5,60	2,50	HF470 0630-14-400	HF470 0630-14-420	HF470 0630-14-440
63,00	68,00	9,70	2,50	HF470 0630-16-400	HF470 0630-16-420	HF470 0630-16-440
70,00	75,00	5,60	2,50	HF470 0700-14-400	HF470 0700-14-420	HF470 0700-14-440
70,00	75,00	9,70	2,50	HF470 0700-16-400	HF470 0700-16-420	HF470 0700-16-440
80,00	85,00	9,70	2,50	HF470 0800-16-400	HF470 0800-16-420	HF470 0800-16-440
80,00	85,00	15,00	2,50	HF470 0800-18-400	HF470 0800-18-420	HF470 0800-18-440
90,00	95,00	9,70	2,50	HF470 0900-16-400	HF470 0900-16-420	HF470 0900-16-440
90,00	95,00	15,00	2,50	HF470 0900-18-400	HF470 0900-18-420	HF470 0900-18-440
100,00	105,00	9,70	2,50	HF470 1000-16-400	HF470 1000-16-420	HF470 1000-16-440
100,00	105,00	15,00	2,50	HF470 1000-18-400	HF470 1000-18-420	HF470 1000-18-440
110,00	115,00	9,70	2,50	HF470 1100-16-400	HF470 1100-16-420	HF470 1100-16-440
110,00	115,00	15,00	2,50	HF470 1100-18-400	HF470 1100-18-420	HF470 1100-18-440
125,00	130,00	9,70	2,50	HF470 1250-16-400	HF470 1250-16-420	HF470 1250-16-440
125,00	130,00	15,00	2,50	HF470 1250-18-400	HF470 1250-18-420	HF470 1250-18-440
140,00	145,00	9,70	2,50	HF470 1400-16-400	HF470 1400-16-420	HF470 1400-16-440
140,00	145,00	15,00	2,50	HF470 1400-18-400	HF470 1400-18-420	HF470 1400-18-440
160,00	165,00	9,70	2,50	HF470 1600-16-400	HF470 1600-16-420	HF470 1600-16-440
160,00	165,00	15,00	2,50	HF470 1600-18-400	HF470 1600-18-420	HF470 1600-18-440
180,00	185,00	9,70	2,50	HF470 1800-16-400	HF470 1800-16-420	HF470 1800-16-440
180,00	185,00	15,00	2,50	HF470 1800-18-400	HF470 1800-18-420	HF470 1800-18-440
200,00	205,00	15,00	2,50	HF470 2000-18-400	HF470 2000-18-420	HF470 2000-18-440
200,00	205,00	25,00	2,50	HF470 2000-20-400	HF470 2000-20-420	HF470 2000-20-440

Further sizes available up to Ø 2500 mm on request

Example for ordering:

HF 470 0580 - 16 - 400 - ...

Profile
Internal diameter x 10
Code for groove width
Standard material
HME internal code

Profile Key:

470 - radial strength 2.50 mm
471 - radial strength 1.55 mm
472 - radial strength .00 mm
473 - radial strength 3.00 mm
474 - radial strength 4.00 mm

Codes for Groove Width:

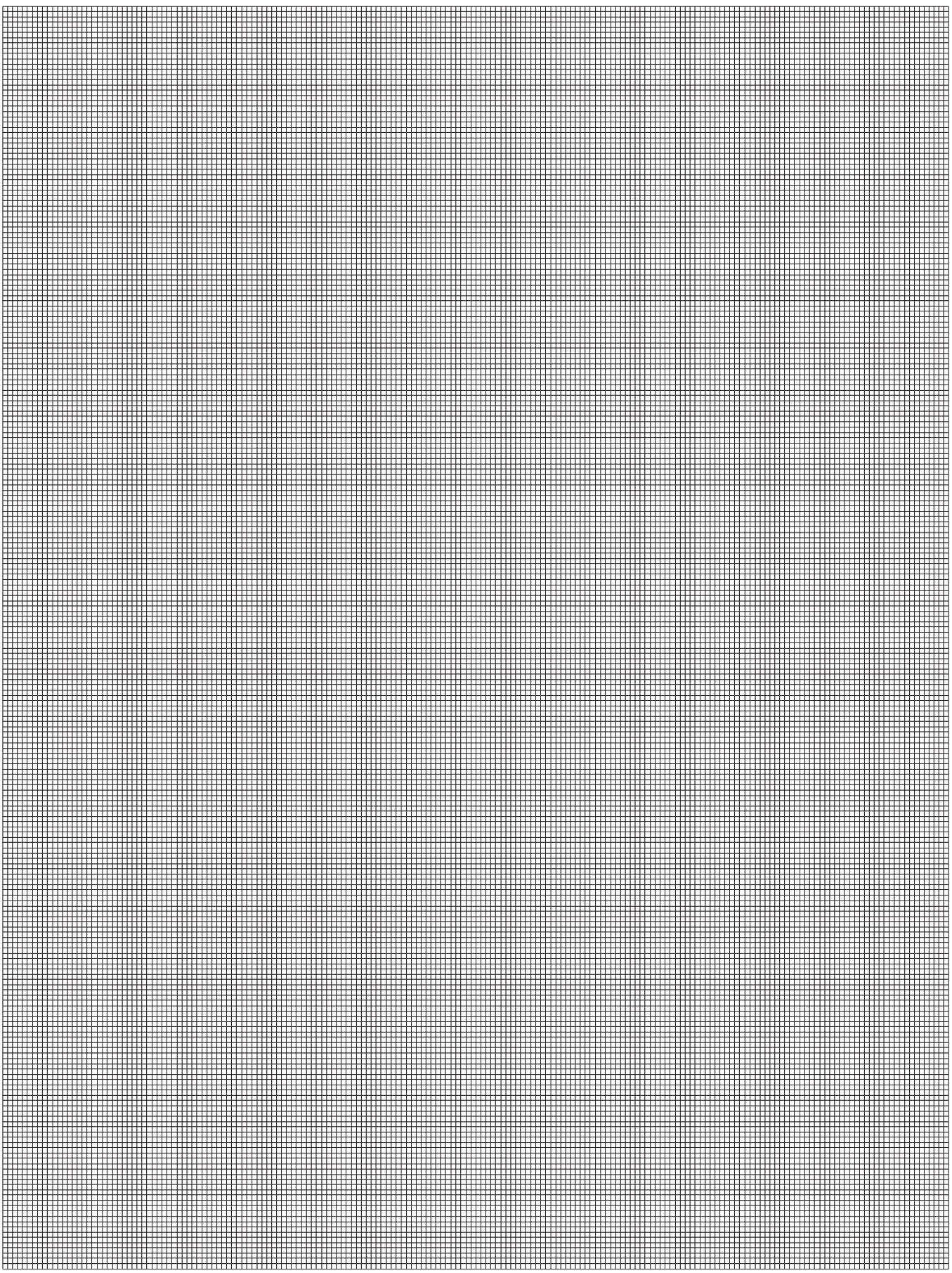
12 - Groove width for mounting space 4.00 mm
14 - Groove width for mounting space 5.60 mm
16 - Groove width for mounting space 9.70 mm
18 - Groove width for mounting space 15.00 mm
20 - Groove width for mounting space 25.00 mm

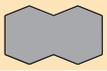
Material Key:

400 - Cotton hard fabric
420 - Cotton hard fabric graphitized
440 - Synthetic fiber

Note: The rings are delivered by us with bevel cut (standard). The split "m" necessary for sealing function is duly considered herein.

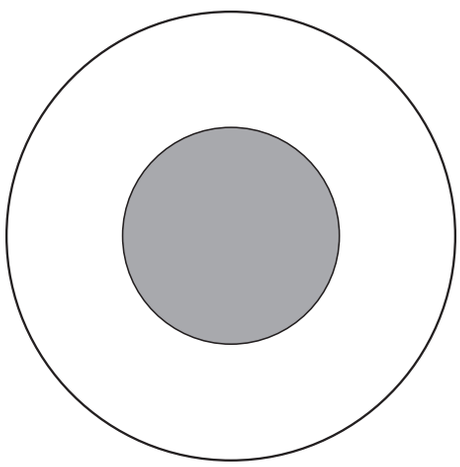
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



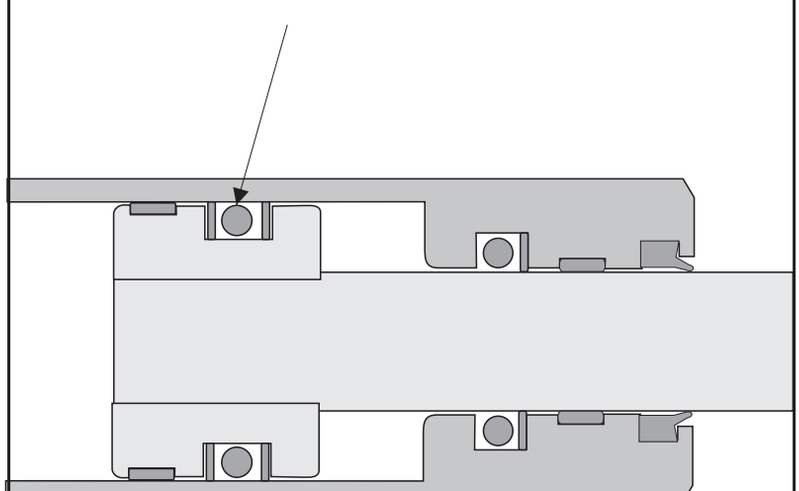
Profile	Type	Specification	Limitations of Use		Material	
			Temperature	Pressure	Sealing element	Seite
	OR 550	O-Ring metric measurements	-60 up to +280° C		Rubber Elastomere	3
	OR 568	O-Ring ASA 568A measurements	-60 up to +280° C		Rubber Elastomere	3
	OR 575	O-Ring metric measurements	-35 up to +110° C	up to 50 Mpa (500 bar)	AU Polyurethane	47

O - RING
OR 550 / OR 568

The O-ring is the most cost effective and convenient sealing element available to the user. Due to its simple form, i.e. a closed gasket with a circular cross section and a multitude of usable materials of construction, it finds use in almost all static and dynamic (with thrust ring) areas of application. When choosing the cord diameter, a reasonable thickness value must be chosen, particularly for dynamic applications.



Pressure of operation :	static	to	20 Mpa (200 bar) without back ring
		to	40 Mpa (400 bar) with back ring
		to	200 Mpa (2000 bar) with special back ring
	dynamic	over	5Mpa (50 bar) with back ring
Speed	: dynamic	0,5 m/s max.	
	rotational	2,0 m/s max.	
Temperature	: depending on material -60° C up to +280° C		



Special Features:

- Cost effective groove geometry
- Economic construction
- Double acting
- High pressure and tempereature range
- Low on space requirements
- Extensive series of sizes
- Expansion / Dialation of 0-ring up to max. 6%
- Compression of O-ring up to max. 3%

O-Ring materials - main types

Due to the wide variety of synthetic elastomers that are available in the market, O-rings can be manufactured to withstand temperature from -60 C up to +280 C and a range of fluid environments. Oviously, all combinations of material do not behave alike. Therefore we include a tabe below that provides an overview of the standard materials and the proper diameter data with reference to relevant applications.

It is not unusual to develop non-standard-materials to cater for the influence of some factors that might influence conditions of use. We draw your attention to the fact, that most materials of construction have been certified by i.e.

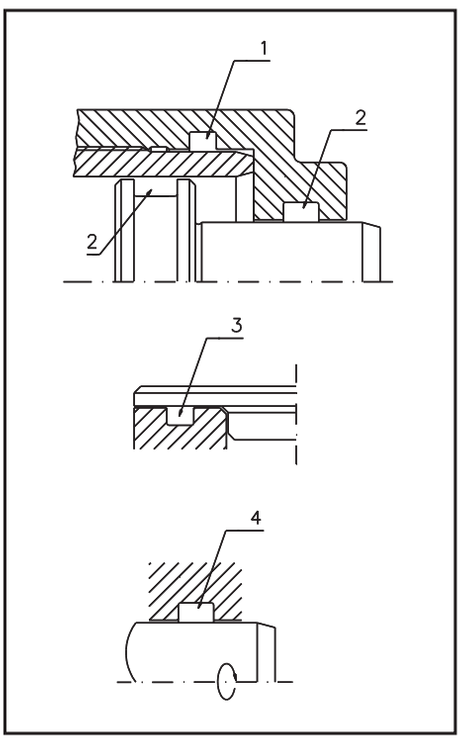
Deutscher Verein des Gas- und Wasserfaches e.V. DVGW (Germany)

Unterwriters Laboratories inc. (USA)

Water Research Council WRC (GB)

Material Code HME	Hardness Shore A	Temperature °C	Resistant to / Application use	Specification as per ASTM 2000 D
N55	55 ± 5	-30 - +130	Standard material in pneumatics and hydraulics	
N60	60 ± 5	-30 - +130	resistant to mineral oils, native and animal origin oils,	
N70	70 ± 5	-30 - +130	silicone oils and greases, petrol, natural gas,	2BG715 B34 EO14 EO34 EF11 EF21 F16 EA14
N80	80 ± 5	-25 - +130	water up to 70° C,	
N85	85 ± 5	-25 - +130	flame resistant fluids	7BG915 B14 EO14 EO34 EF11 EF21 EA14
N90	90 ± 5	-25 - +130	- HFA (oil in water emulsion) - HFB (water in oil emulsion) - HFC (aqueous solutions of polyalkylene glykols)	
NB7	75 ± 5	-30 - +130	as above / low swelling in fuels	2BG715 B14Z_1 Z_1 - in Benzin (48h à 23 °C) ×V = 2 %
NA6	60 ± 5	-30 - +130	For drinking water and food stuffs	
NA7	70 ± 5	-30 - +130		2BG715 B14 EO14 EO34 EA14
NF7	70 ± 5	-42 - +130	optimal antifreezing quality	2BG715 B14 EO14 EO34 F17 EA14
NP7	70 ± 5	-30 - +130	Low compression strain (peroxide cross-linked)	3BG715 B14 EO14 EO34 Z_1 Z_1 - Druckverf.rest (70 h à 100 °C) = 5 %
E60	60 ± 5	-50 - +150	Outstanding resistance to atmospheric conditions	2DA615 A26 B36 B32
E70	70 ± 5	-50 - +150	effetive substances, hot water, steam up to 150 C, good resistance to ozone, phosphate ester bases, and brake fluids. Not resistant to mineral oil products	3DA715 A26 B36 C32 F19 EA14
C60	60 ± 5	-30 - +120	Outstanding longterm resistance to atmospheric conditions	2BC620 A14 EO14 EO34 F17
C70	70 ± 5	-25 - +120	even effective factors in combination with saline-water and UV rays. Good restistance to chemicals and freezying mixtures.	2BC720 A14 EO14 EO34 F17
S50	50 ± 5	-60 - +220	Normally used for static seals, outstanding resistance behaviour	
S60	60 ± 5	-60 - +220	even up to high temperature and in hot dry air, in combination	
S70	70 ± 5	-50 - +220	with ozone.	7GE707 A19 B37 EO16 EO36 F19 EA14
S80	80 ± 5	-50 - +220	Designed for food stuffs	
F60	60 ± 5	-30 - +240	For static and dynamic sealing in combination with aliphatic and	
F75	75 ± 5	-25 - +240	aromatic hydrocarbons except Ketones an ozone itself at hight	2HK715 A1-10 B38 EF31 EO78
F80	80 ± 5	-25 - +240	temperatures.	
	Shore D			
01P	52 ± 2	-60 - +200	Pure PTFE outstanding chemical restistance / Applications in fluid, chemical and medical industry	

Many more material combinations are available for special requirements



Mounting methods:

1. radial static

2. radial dynamic
In this method, take care that the internal diameter of O-ring nearly corresponds to the rod diameter (internally sealing) or the groove root diameter (externally sealing) as the case may be.

3. axial statisch
Direction of pressure is important. If the pressure acts from the inside , the O-ring must fit in with the external diameter of groove, or may need to be compressed by 1 - 3 %. If pressure acts from outside the O-ring is to fit in with internal diameter of groove or O-ring may need stretched by 6 %

4. rotary internal sealing
To reduce centrifugal forces, the O-ring is to be incorporated in the resting parts / static part of the housing. Then, the internal diameter of O-ring must be 2 - 5 % larger than the shaft and should be arranged as near as possible to the medium to sealed (heat dissipation)

Tolerances for O-rings

O-rings supplied conform to the following norms AS 568 A, BS 1806, ISO 3601/1, DIN 3771
Tolerance value informations hold good only for O-rings in NBR 70 Shore A.

Diameter: up	to	Tol. ± mm.
1,00	3,00	0,13
3,10	4,90	0,14
5,00	6,90	0,15
7,00	8,00	0,16
8,10	10,00	0,17
10,10	14,00	0,18
14,10	16,00	0,20
16,10	18,00	0,21
18,10	20,00	0,22
20,10	25,00	0,25
25,10	30,00	0,28
30,10	35,00	0,33
35,10	40,00	0,38
40,10	50,00	0,42
50,10	60,00	0,54
60,10	80,00	0,65
80,10	100,00	0,84
100,10	120,00	0,95
120,10	150,00	1,20
150,10	180,00	1,40
180,10	250,00	1,80
250,10	300,00	2,10
300,10	350,00	2,50
350,10	400,00	2,80
400,10	500,00	3,40
500,10	600,00	4,00

cord strength: up	to	Tol. ± mm.
1,00	1,80	0,08
1,81	2,65	0,09
2,66	3,55	0,10
3,56	5,35	0,13
5,36	7,00	0,15
7,01	8,00	0,17
8,01	10,00	0,20
10,01	15,00	0,25

Pre - stressing of O-rings: dynamic 8%-20%, static 15%-30%
Min. value in hydraulics 8%.
These values dependent on respective cord strength

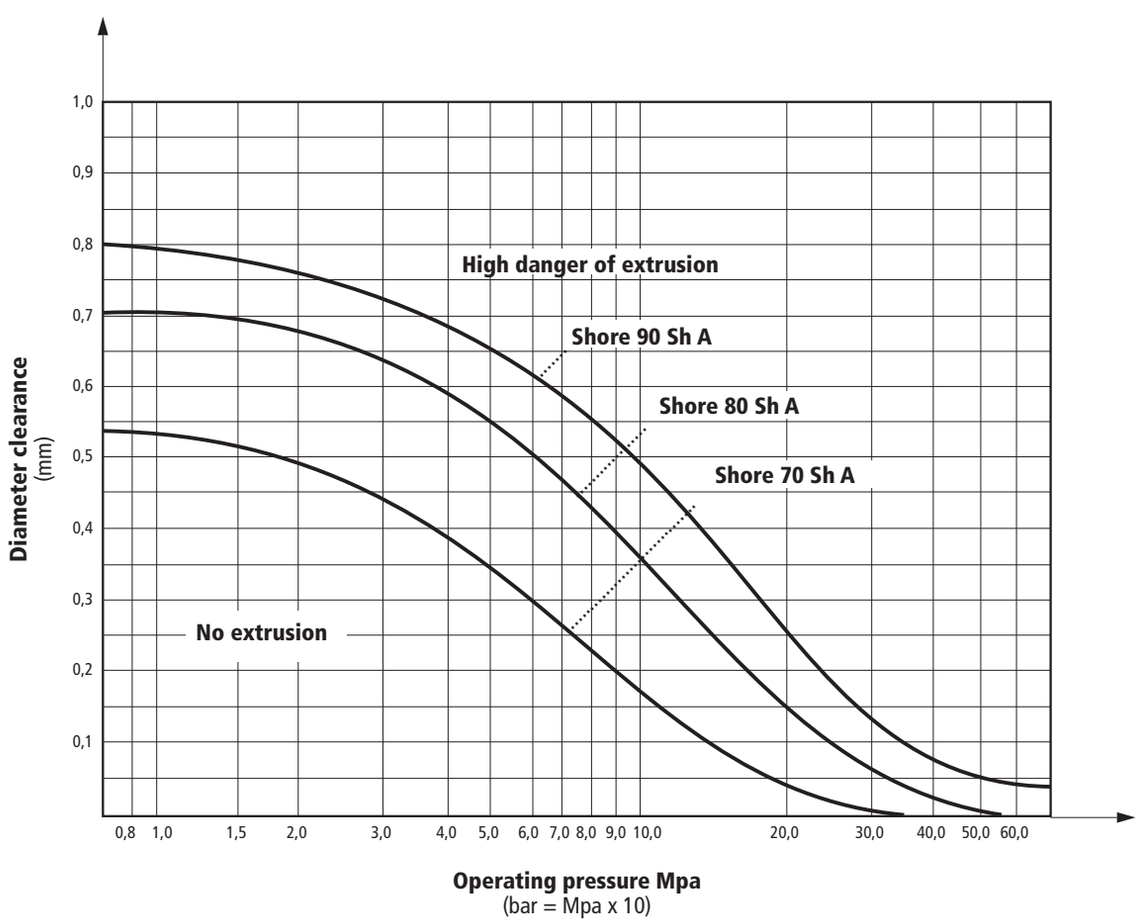
For operational pressure > 50 bar (dynamic) or for larger sealing splits, we recommend the use of thrust rings / back up rings.

Surface Finish:

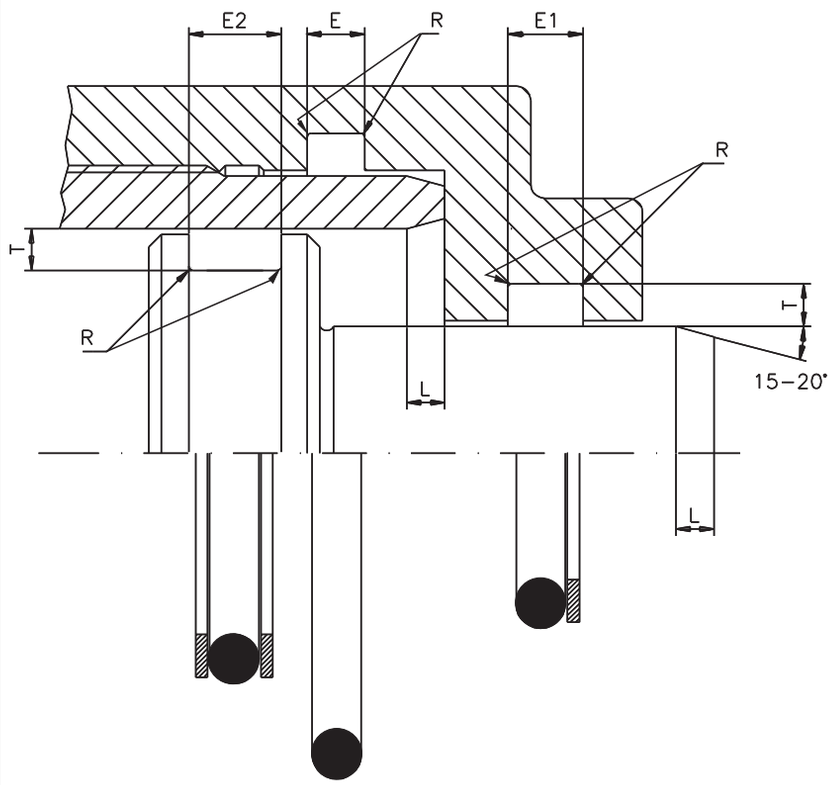
Application	Surface	R max µm	Rz µm	Ra µm
radial dynamic	face	1,0-2,5	0,63-1,60	0,10-0,40
rotary	groove root	≤10,00	≤6,30	≤1,60
	groove flank	≤10,00	≤6,30	≤1,60
rotary static	face	≤10,00	≤6,30	≤1,60
axial static	groove root	≤16,00	≤10,00	≤1,60
	groove flank	≤16,00	≤10,00	≤3,20
	pulsating pressure:			
	face	≤6,30	≤4,00	≤0,80
	groove root	≤10,00	≤6,30	≤1,60
	groove flank	≤10,00	≤6,30	≤1,60

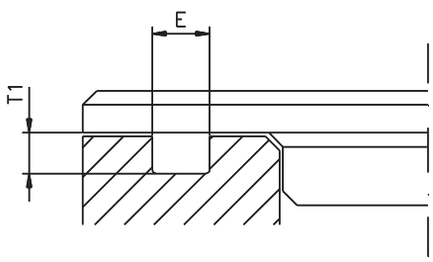
Fit tolerances for static and dynamic applications:

pressure	O-ring hardness	Fit tolerances
≤ 2 Mpa (20 bar)	min. 70 SH A	H8/f7
≤ 7 Mpa (70 bar)	min. 70 SH A	H8/f7
≤ 10 Mpa (100 bar)	min. 70 SH A + thrust ring	H8/f7
≤ 10 Mpa (100 bar)	min. 70 SH A	H7/g6
≤ 35 Mpa (350 bar)	min. 70 SH A + thrust ring	H7/g6



O - RING
OR 550 / OR 568





All edges burr-free

Groove sizes

O-Ring cord	dynamic	static	without back ring	1 back ring	2 back ring	Radius	Slide in bevel
S	**T** ±0,05	**T1** ±0,05	**E** ±0,2	**E1** ±0,2	**E2** ±0,2	**R** (max)	**L** (min)
1,00	0,75	0,65	1,40			0,20	1,10
1,50	1,25	1,10	2,00	3,00	4,00	0,20	1,50
1,60	1,30	1,20	2,10	3,10	4,10	0,20	1,50
1,78	1,50	1,30	2,50	4,00	5,50	0,20	1,50
1,90	1,55	1,40	2,60	4,10	5,60	0,20	1,50
2,00	1,70	1,60	2,70	4,20	5,70	0,20	1,50
2,40	2,00	1,90	3,20	4,70	6,20	0,20	1,50
2,50	2,15	1,95	3,30	4,80	6,30	0,20	1,50
2,62	2,25	2,10	3,50	5,00	6,50	0,20	1,50
2,70	2,40	2,10	3,60	5,10	6,60	0,20	1,50
3,00	2,50	2,40	3,90	5,50	7,00	0,30	1,80
3,50/3,53	3,05	2,95	4,50	6,00	7,50	0,40	1,80
3,60	3,15	2,95	4,70	6,20	7,70	0,40	1,80
4,00	3,50	3,30	5,00	6,50	8,00	0,40	1,80
4,50	4,00	3,60	5,80	7,60	9,40	0,40	2,70
5,00	4,40	4,10	6,50	8,30	10,10	0,50	2,70
5,33	4,70	4,50	7,00	8,80	10,60	0,50	2,70
5,70	5,00	4,85	7,30	9,10	10,90	0,50	2,70
6,00	5,40	4,90	7,50	9,30	11,10	0,60	3,60
6,99/7,00	6,10	5,90	9,50	12,00	14,50	0,60	3,60
8,00	7,10	6,40	10,40	12,90	15,40	0,60	4,20
8,40	7,50	7,25	11,00	13,50	16,00	0,60	4,20
9,00	8,10	7,60	11,70	14,20	16,70	0,60	10,00
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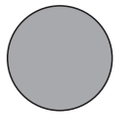

Standard sizes

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4,48	1,78	008	OR568 0008-00-N70
4,76	1,78	802	OR568 0802-00-N70
5,28	1,78	009	OR568 0009-00-N70
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6,35	1,78	803	OR568 0803-00-N70
6,75	1,78	610	OR568 0610-00-N70
7,66	1,78	011	OR568 0011-00-N70
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14,00	1,78	015	OR568 0015-00-N70
15,60	1,78	016	OR568 0016-00-N70
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di	s	AS 568A BS 1806	**Part N°.**
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123,44	1,78	546	OR568 0546-00-N70
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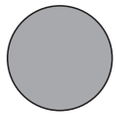

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di	s	AS 568A BS 1806	Part N°.
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59,92	3,53	229	OR568 0229-00-N70
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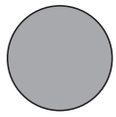

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78,74	5,33	338	OR568 0338-00-N70
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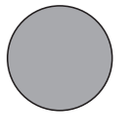
155,00	5,33	361A	OR568 0644-00-N70
158,12	5,33	362	OR568 0362-00-N70
161,30	5,33	362A	OR568 0645-00-N70
164,47	5,33	363	OR568 0363-00-N70
167,70	5,33	646	OR568 0646-00-N70
170,82	5,33	364	OR568 0364-00-N70
177,17	5,33	365	OR568 0365-00-N70
183,52	5,33	366	OR568 0366-00-N70
189,87	5,33	367	OR568 0367-00-N70
196,22	5,33	368	OR568 0368-00-N70
202,57	5,33	369	OR568 0369-00-N70
208,92	5,33	370	OR568 0370-00-N70
215,27	5,33	371	OR568 0371-00-N70
221,62	5,33	372	OR568 0372-00-N70
227,97	5,33	373	OR568 0373-00-N70
234,32	5,33	374	OR568 0374-00-N70
240,67	5,33	375	OR568 0375-00-N70
247,02	5,33	376	OR568 0376-00-N70
253,37	5,33	377	OR568 0377-00-N70
266,07	5,33	378	OR568 0378-00-N70
278,77	5,33	379	OR568 0379-00-N70
291,47	5,33	380	OR568 0380-00-N70
304,17	5,33	381	OR568 0381-00-N70
329,57	5,33	382	OR568 0382-00-N70
354,97	5,33	383	OR568 0383-00-N70
380,37	5,33	384	OR568 0384-00-N70
405,26	5,33	385	OR568 0385-00-N70
430,66	5,33	386	OR568 0386-00-N70
456,06	5,33	387	OR568 0387-00-N70
481,41	5,33	388	OR568 0388-00-N70



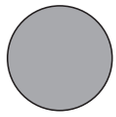
di	s	AS 568A BS 1806	Part N°.
506,81	5,33	389	OR568 0389-00-N70
532,21	5,33	390	OR568 0390-00-N70
113,67	6,99	425	OR568 0425-00-N70
114,70	6,99	624	OR568 0624-00-N70
116,84	6,99	426	OR568 0426-00-N70
120,02	6,99	427	OR568 0427-00-N70
123,19	6,99	428	OR568 0428-00-N70
124,60	6,99	625	OR568 0625-00-N70
126,37	6,99	429	OR568 0429-00-N70
129,54	6,99	430	OR568 0430-00-N70
132,72	6,99	431	OR568 0431-00-N70
134,50	6,99	626	OR568 0626-00-N70
135,80	6,99	432	OR568 0432-00-N70
139,07	6,99	433	OR568 0433-00-N70
142,24	6,99	434	OR568 0434-00-N70
145,42	6,99	435	OR568 0435-00-N70
148,59	6,99	436	OR568 0436-00-N70
151,77	6,99	437	OR568 0437-00-N70
155,60	6,99	872	OR568 0872-00-N70
158,12	6,99	438	OR568 0438-00-N70
159,50	6,99	627	OR568 0627-00-N70
161,90	6,99	874	OR568 0874-00-N70
164,47	6,99	439	OR568 0439-00-N70
166,70	6,99	628	OR568 0628-00-N70
168,30	6,99	876	OR568 0876-00-N70
170,82	6,99	440	OR568 0440-00-N70
174,60	6,99	878	OR568 0878-00-N70
177,17	6,99	441	OR568 0441-00-N70
181,00	6,99	441A	OR568 0880-00-N70
183,52	6,99	442	OR568 0442-00-N70
187,30	6,99	442A	OR568 0882-00-N70
189,87	6,99	443	OR568 0443-00-N70
193,70	6,99	443A	OR568 0884-00-N70
196,22	6,99	444	OR568 0444-00-N70
199,80	6,99	444A	OR568 0886-00-N70
202,57	6,99	445	OR568 0445-00-N70

di	s	AS 568A BS 1806	Part N°.
208,92	6,99	445A	OR568 0674-00-N70
215,27	6,99	446	OR568 0446-00-N70
221,62	6,99	446A	OR568 0676-00-N70
227,97	6,99	447	OR568 0447-00-N70
240,67	6,99	448	OR568 0448-00-N70
247,00	6,99	448A	OR568 0680-00-N70
253,57	6,99	449	OR568 0449-00-N70
259,70	6,99	449A	OR568 0682-00-N70
266,07	6,99	450	OR568 0450-00-N70
272,40	6,99	450A	OR568 0684-00-N70
278,77	6,99	451	OR568 0451-00-N70
285,10	6,99	451A	OR568 0686-00-N70
291,47	6,99	452	OR568 0452-00-N70
297,80	6,99	452A	OR568 0688-00-N70
304,17	6,99	453	OR568 0453-00-N70
310,50	6,99	648	OR568 0648-00-N70
316,87	6,99	454	OR568 0454-00-N70
323,20	6,99	649	OR568 0649-00-N70
329,57	6,99	455	OR568 0455-00-N70
335,90	6,99	650	OR568 0650-00-N70
342,27	6,99	456	OR568 0456-00-N70
354,97	6,99	457	OR568 0457-00-N70
367,67	6,99	458	OR568 0458-00-N70
380,37	6,99	459	OR568 0459-00-N70
393,07	6,99	460	OR568 0460-00-N70
405,26	6,99	461	OR568 0461-00-N70
417,96	6,99	462	OR568 0462-00-N70
430,66	6,99	463	OR568 0463-00-N70
443,36	6,99	464	OR568 0464-00-N70
456,06	6,99	465	OR568 0465-00-N70
468,76	6,99	466	OR568 0466-00-N70
481,46	6,99	467	OR568 0467-00-N70
494,16	6,99	468	OR568 0468-00-N70
506,86	6,99	469	OR568 0469-00-N70
532,26	6,99	470	OR568 0470-00-N70

Standard sizes of series 900

di	s	AS 568A BS 1806	Part N°.
4,70	1,42	901	OR568 0901-00-N70
6,07	1,63	902	OR568 0902-00-N70
7,65	1,63	903	OR568 0903-00-N70
8,92	1,83	904	OR568 0904-00-N70
10,52	1,83	905	OR568 0905-00-N70
11,89	1,98	906	OR568 0906-00-N70
13,46	2,08	907	OR568 0907-00-N70
16,36	2,21	908	OR568 0908-00-N70
17,93	2,46	909	OR568 0909-00-N70
19,18	2,46	910	OR568 0910-00-N70

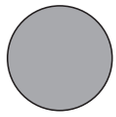
di	s	AS 568A BS 1806	Part N°.
21,92	2,95	911	OR568 0911-00-N70
23,47	2,95	912	OR568 0912-00-N70
25,04	2,95	913	OR568 0913-00-N70
26,59	2,95	914	OR568 0914-00-N70
29,74	2,95	916	OR568 0916-00-N70
34,32	2,95	918	OR568 0918-00-N70
37,47	3,00	920	OR568 0920-00-N70
43,69	3,00	924	OR568 0924-00-N70
53,09	3,00	928	OR568 0928-00-N70
59,36	3,00	932	OR568 0932-00-N70



Metrische Abmessungen nach BS 4518 und schwedische Norm (SMS 1586)

di	s	Part N°.
3,10	1,60	OR550 0031-16-N70
3,30	2,40	OR550 0033-24-N70
3,60	2,40	OR550 0036-24-N70
4,10	1,60	OR550 0041-16-N70
4,30	2,40	OR550 0043-24-N70
4,60	2,40	OR550 0046-24-N70
5,10	1,60	OR550 0051-16-N70
5,30	2,40	OR550 0053-24-N70
5,60	2,40	OR550 0056-24-N70
6,10	1,60	OR550 0061-16-N70
6,30	2,40	OR550 0063-24-N70
6,60	2,40	OR550 0066-24-N70
7,10	1,60	OR550 0071-16-N70
7,30	2,40	OR550 0073-24-N70
7,60	2,40	OR550 0076-24-N70
8,10	1,60	OR550 0081-16-N70
8,30	2,40	OR550 0083-24-N70
8,60	2,40	OR550 0086-24-N70
9,10	1,60	OR550 0091-16-N70
9,30	2,40	OR550 0093-24-N70
9,60	2,40	OR550 0096-24-N70
10,10	1,60	OR550 0101-16-N70
10,30	2,40	OR550 0103-24-N70
10,60	2,40	OR550 0106-24-N70
11,10	1,60	OR550 0111-16-N70
11,30	2,40	OR550 0113-24-N70
11,60	2,40	OR550 0116-24-N70
12,10	1,60	OR550 0121-16-N70
12,30	2,40	OR550 0123-24-N70
12,60	2,40	OR550 0126-24-N70
13,10	1,60	OR550 0131-16-N70
13,30	2,40	OR550 0133-24-N70
13,60	2,40	OR550 0136-24-N70
14,10	1,60	OR550 0141-16-N70
14,30	2,40	OR550 0143-24-N70
14,60	2,40	OR550 0146-24-N70
15,10	1,60	OR550 0151-16-N70
15,30	2,40	OR550 0153-24-N70
15,60	2,40	OR550 0156-24-N70
16,10	1,60	OR550 0161-16-N70
16,30	2,40	OR550 0163-24-N70
16,60	2,40	OR550 0166-24-N70
17,10	1,60	OR550 0171-16-N70
17,30	2,40	OR550 0173-24-N70
17,60	2,40	OR550 0176-24-N70
18,10	1,60	OR550 0181-16-N70
18,30	2,40	OR550 0183-24-N70
18,60	2,40	OR550 0186-24-N70
19,10	1,60	OR550 0191-16-N70
19,20	3,00	OR550 0192-30-N70
19,30	2,40	OR550 0193-24-N70
19,60	2,40	OR550 0196-24-N70
20,10	1,60	OR550 0201-16-N70
20,30	2,40	OR550 0203-24-N70
20,60	2,40	OR550 0206-24-N70
21,10	1,60	OR550 0211-16-N70
21,30	2,40	OR550 0213-24-N70
21,60	2,40	OR550 0216-24-N70
22,10	1,60	OR550 0221-16-N70

di	s	Part N°.
22,20	3,00	OR550 0222-30-N70
22,30	2,40	OR550 0223-24-N70
23,30	2,40	OR550 0233-24-N70
24,20	3,00	OR550 0242-30-N70
24,30	2,40	OR550 0243-24-N70
24,60	2,40	OR550 0246-24-N70
25,10	1,60	OR550 0251-16-N70
25,30	2,40	OR550 0253-24-N70
25,60	2,40	OR550 0256-24-N70
26,20	3,00	OR550 0262-30-N70
27,10	1,60	OR550 0271-16-N70
27,30	2,40	OR550 0273-24-N70
27,60	2,40	OR550 0276-24-N70
29,10	1,60	OR550 0291-16-N70
29,20	3,00	OR550 0292-30-N70
29,60	2,40	OR550 0296-24-N70
30,30	2,40	OR550 0303-24-N70
32,10	1,60	OR550 0321-16-N70
32,20	3,00	OR550 0322-30-N70
33,30	2,40	OR550 0333-24-N70
34,20	3,00	OR550 0342-30-N70
35,10	1,60	OR550 0351-16-N70
35,20	3,00	OR550 0352-30-N70
36,20	3,00	OR550 0362-30-N70
37,10	1,60	OR550 0371-16-N70
39,20	3,00	OR550 0392-30-N70
39,20	5,70	OR550 0392-57-N70
42,20	3,00	OR550 0422-30-N70
44,20	3,00	OR550 0442-30-N70
44,20	5,70	OR550 0442-57-N70
49,20	5,70	OR550 0492-57-N70
49,50	3,00	OR550 0495-30-N70
54,20	5,70	OR550 0542-57-N70
54,50	3,00	OR550 0545-30-N70
59,20	5,70	OR550 0592-57-N70
59,50	3,00	OR550 0595-30-N70
64,20	5,70	OR550 0642-57-N70
64,50	3,00	OR550 0645-30-N70
69,20	5,70	OR550 0692-57-N70
69,50	3,00	OR550 0695-30-N70
74,20	5,70	OR550 0742-57-N70
74,50	3,00	OR550 0745-30-N70
79,20	5,70	OR550 0792-57-N70
79,50	3,00	OR550 0795-30-N70
84,10	5,70	OR550 0841-57-N70
84,50	3,00	OR550 0845-30-N70
89,10	5,70	OR550 0891-57-N70
89,50	3,00	OR550 0895-30-N70
94,10	5,70	OR550 0941-57-N70
94,50	3,00	OR550 0945-30-N70
99,10	5,70	OR550 0991-57-N70
99,50	3,00	OR550 0995-30-N70
104,10	5,70	OR550 1041-57-N70
104,50	3,00	OR550 1045-30-N70
109,10	5,70	OR550 1091-57-N70
109,50	3,00	OR550 1095-30-N70
114,10	5,70	OR550 1141-57-N70
114,50	3,00	OR550 1145-30-N70
119,30	5,70	OR550 1193-57-N70



di	s	Part N°.
119,50	3,00	OR550 1195-30-N70
124,30	5,70	OR550 1243-57-N70
124,50	3,00	OR550 1245-30-N70
129,30	5,70	OR550 1293-57-N70
129,50	3,00	OR550 1295-30-N70
134,30	5,70	OR550 1343-57-N70
134,50	3,00	OR550 1345-30-N70
139,50	3,00	OR550 1395-30-N70
144,30	5,70	OR550 1443-57-N70
144,50	3,00	OR550 1445-30-N70
149,30	5,70	OR550 1493-57-N70
154,30	5,70	OR550 1543-57-N70
159,30	5,70	OR550 1593-57-N70
164,30	5,70	OR550 1643-57-N70
169,30	5,70	OR550 1693-57-N70
174,30	5,70	OR550 1743-57-N70
179,30	5,70	OR550 1793-57-N70
184,30	5,70	OR550 1843-57-N70
189,30	5,70	OR550 1893-57-N70
194,30	5,70	OR550 1943-57-N70

di	s	Part N°.
199,30	5,70	OR550 1993-57-N70
209,30	5,70	OR550 2093-57-N70
219,30	5,70	OR550 2193-57-N70
229,30	5,70	OR550 2293-57-N70
239,30	5,70	OR550 2393-57-N70
249,30	5,70	OR550 2493-57-N70
259,30	5,70	OR550 2593-57-N70
269,30	5,70	OR550 2693-57-N70
279,30	5,70	OR550 2793-57-N70
289,30	5,70	OR550 2893-57-N70
299,30	5,70	OR550 2993-57-N70
319,30	5,70	OR550 3193-57-N70
329,30	5,70	OR550 3293-57-N70
359,30	5,70	OR550 3593-57-N70
379,30	5,70	OR550 3793-57-N70
399,30	5,70	OR550 3993-57-N70
419,30	5,70	OR550 4193-57-N70
439,30	5,70	OR550 4393-57-N70
444,30	5,70	OR550 4443-57-N70
479,30	5,70	OR550 4793-57-N70
499,30	5,70	OR550 4993-57-N70

Metric sizes as per French Norm

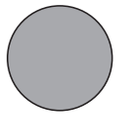
di	s	Part-N°.
2,60	1,90	OR550 0026-19-N70
3,40	1,90	OR550 0034-19-N70
4,20	1,90	OR550 0042-19-N70
4,90	1,90	OR550 0049-19-N70
5,70	1,90	OR550 0057-19-N70
6,40	1,90	OR550 0064-19-N70
7,20	1,90	OR550 0072-19-N70
8,00	1,90	OR550 0080-19-N70
8,90	1,90	OR550 0089-19-N70
8,90	2,70	OR550 0089-27-N70
10,50	2,70	OR550 0105-27-N70
12,10	2,70	OR550 0121-27-N70
13,60	2,70	OR550 0136-27-N70
15,10	2,70	OR550 0151-27-N70
16,90	2,70	OR550 0169-27-N70

di	s	Part-N°.
18,40	2,70	OR550 0184-27-N70
18,30	3,60	OR550 0183-36-N70
19,80	3,60	OR550 0198-36-N70
21,30	3,60	OR550 0213-36-N70
23,00	3,60	OR550 0230-36-N70
24,60	3,60	OR550 0246-36-N70
26,20	3,60	OR550 0262-36-N70
27,80	3,60	OR550 0278-36-N70
29,30	3,60	OR550 0293-36-N70
30,80	3,60	OR550 0308-36-N70
32,50	3,60	OR550 0325-36-N70
34,10	3,60	OR550 0341-36-N70
35,60	3,60	OR550 0356-36-N70
37,20	3,60	OR550 0372-36-N70

European and international metric sizes

di	s	Part-N°.
2,00	1,00	OR550 0020-10-N70
2,00	1,10	OR550 0020-11-N70
2,00	1,50	OR550 0020-15-N70
2,50	1,00	OR550 0025-10-N70
2,50	1,50	OR550 0025-15-N70
2,60	1,20	OR550 0026-12-N70
3,00	1,00	OR550 0030-10-N70
3,00	1,20	OR550 0030-12-N70
3,00	1,50	OR550 0030-15-N70
3,00	2,00	OR550 0030-20-N70
3,30	1,00	OR550 0033-10-N70

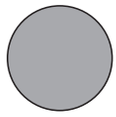
di	s	Part-N°.
3,50	1,00	OR550 0035-10-N70
3,50	1,20	OR550 0035-12-N70
3,50	1,50	OR550 0035-15-N70
3,80	1,25	OR550 0038-12-N70
3,80	1,30	OR550 0038-13-N70
3,80	2,10	OR550 0038-21-N70
4,00	1,00	OR550 0040-10-N70
4,00	1,20	OR550 0040-12-N70
4,00	1,50	OR550 0040-15-N70
4,00	2,00	OR550 0040-20-N70
4,00	3,00	OR550 0040-30-N70



di	s	Part N°.
4,50	1,50	OR550 0045-15-N70
4,50	2,50	OR550 0045-25-N70
4,60	2,00	OR550 0046-20-N70
4,90	3,20	OR550 0049-32-N70
5,00	1,00	OR550 0050-10-N70
5,00	1,20	OR550 0050-12-N70
5,00	1,50	OR550 0050-15-N70
5,00	2,00	OR550 0050-20-N70
5,00	2,50	OR550 0050-25-N70
5,00	3,00	OR550 0050-30-N70
5,00	5,00	OR550 0050-50-N70
6,00	1,00	OR550 0060-10-N70
6,00	1,40	OR550 0060-14-N70
6,00	1,50	OR550 0060-15-N70
6,00	2,00	OR550 0060-20-N70
6,00	2,20	OR550 0060-22-N70
6,00	2,50	OR550 0060-25-N70
6,00	3,00	OR550 0060-30-N70
6,50	1,50	OR550 0065-15-N70
6,50	3,00	OR550 0065-30-N70
7,00	1,50	OR550 0070-15-N70
7,00	2,00	OR550 0070-20-N70
7,00	2,50	OR550 0070-25-N70
7,00	4,00	OR550 0070-40-N70
7,50	1,50	OR550 0075-15-N70
8,00	1,00	OR550 0080-10-N70
8,00	1,50	OR550 0080-15-N70
8,00	2,00	OR550 0080-20-N70
8,00	2,50	OR550 0080-25-N70
8,00	3,00	OR550 0080-30-N70
8,00	3,50	OR550 0080-35-N70
8,00	4,00	OR550 0080-40-N70
8,00	5,00	OR550 0080-50-N70
8,50	1,50	OR550 0085-15-N70
8,50	2,50	OR550 0085-25-N70
8,90	1,25	OR550 0089-12-N70
9,00	1,00	OR550 0090-10-N70
9,00	1,50	OR550 0090-15-N70
9,00	1,80	OR550 0090-18-N70
9,00	2,00	OR550 0090-20-N70
9,00	2,50	OR550 0090-25-N70
9,00	3,00	OR550 0090-30-N70
9,50	1,00	OR550 0095-10-N70
9,50	2,00	OR550 0095-20-N70
9,50	2,50	OR550 0095-25-N70
9,50	2,90	OR550 0095-29-N70
9,70	1,30	OR550 0097-13-N70
10,00	1,00	OR550 0100-10-N70
10,00	1,30	OR550 0100-13-N70
10,00	1,50	OR550 0100-15-N70
10,00	2,00	OR550 0100-20-N70
10,00	2,20	OR550 0100-22-N70
10,00	2,50	OR550 0100-25-N70
10,00	3,00	OR550 0100-30-N70
10,00	3,50	OR550 0100-35-N70
10,00	5,00	OR550 0100-50-N70
10,50	1,50	OR550 0105-15-N70
10,50	2,00	OR550 0105-20-N70
11,00	1,00	OR550 0110-10-N70
11,00	1,30	OR550 0110-13-N70
11,00	1,50	OR550 0110-15-N70

di	s	Part N°.
11,00	2,00	OR550 0110-20-N70
11,00	2,50	OR550 0110-25-N70
11,00	3,00	OR550 0110-30-N70
11,00	3,50	OR550 0110-35-N70
11,00	4,00	OR550 0110-40-N70
11,50	3,00	OR550 0115-30-N70
12,00	1,00	OR550 0120-10-N70
12,00	1,50	OR550 0120-15-N70
12,00	1,70	OR550 0120-17-N70
12,00	2,00	OR550 0120-20-N70
12,00	2,50	OR550 0120-25-N70
12,00	3,00	OR550 0120-30-N70
12,00	3,50	OR550 0120-35-N70
12,00	5,00	OR550 0120-50-N70
12,50	1,50	OR550 0125-15-N70
12,50	2,50	OR550 0125-25-N70
12,50	2,00	OR550 0125-20-N70
13,00	1,00	OR550 0130-10-N70
13,00	1,50	OR550 0130-15-N70
13,00	2,00	OR550 0130-20-N70
13,00	2,50	OR550 0130-25-N70
13,00	3,00	OR550 0130-30-N70
13,00	3,50	OR550 0130-35-N70
14,00	1,00	OR550 0140-10-N70
14,00	1,50	OR550 0140-15-N70
14,00	2,00	OR550 0140-20-N70
14,00	2,50	OR550 0140-25-N70
14,00	3,00	OR550 0140-30-N70
14,00	3,50	OR550 0140-35-N70
14,00	4,00	OR550 0140-40-N70
15,00	1,00	OR550 0150-10-N70
15,00	1,50	OR550 0150-15-N70
15,00	2,00	OR550 0150-20-N70
15,00	3,00	OR550 0150-30-N70
15,00	3,50	OR550 0150-35-N70
15,00	6,00	OR550 0150-60-N70
15,40	1,30	OR550 0154-13-N70
16,00	1,00	OR550 0160-10-N70
16,00	1,25	OR550 0160-12-N70
16,00	2,00	OR550 0160-20-N70
16,00	2,50	OR550 0160-25-N70
16,00	3,00	OR550 0160-30-N70
16,00	4,00	OR550 0160-40-N70
16,00	5,00	OR550 0160-50-N70
17,00	1,00	OR550 0170-10-N70
17,00	1,50	OR550 0170-15-N70
17,00	2,00	OR550 0170-20-N70
17,00	2,50	OR550 0170-25-N70
17,00	3,00	OR550 0170-30-N70
17,00	4,00	OR550 0170-40-N70
17,50	2,00	OR550 0175-20-N70
18,00	1,50	OR550 0180-15-N70
18,00	2,00	OR550 0180-20-N70
18,00	2,50	OR550 0180-25-N70
18,00	3,00	OR550 0180-30-N70
18,00	3,50	OR550 0180-35-N70
18,00	4,00	OR550 0180-40-N70
18,00	5,00	OR550 0180-50-N70
18,00	6,00	OR550 0180-60-N70
19,00	1,50	OR550 0190-15-N70
19,00	2,00	OR550 0190-20-N70

O - RING
OR 550 / OR 568



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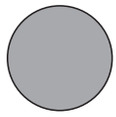
19,00	3,00	OR550 0190-30-N70
19,00	3,50	OR550 0190-35-N70
19,00	5,00	OR550 0190-50-N70
19,50	1,50	OR550 0195-15-N70
19,50	1,78	OR550 0195-17-N70
20,00	1,00	OR550 0200-10-N70
20,00	1,30	OR550 0200-13-N70
20,00	1,50	OR550 0200-15-N70
20,00	2,00	OR550 0200-20-N70
20,00	2,50	OR550 0200-25-N70
20,00	3,00	OR550 0200-30-N70
20,00	3,50	OR550 0200-35-N70
20,00	4,00	OR550 0200-40-N70
20,00	5,00	OR550 0200-50-N70
20,00	6,00	OR550 0200-60-N70
20,00	8,00	OR550 0200-80-N70
21,00	1,50	OR550 0210-15-N70
21,00	2,00	OR550 0210-20-N70
21,00	3,00	OR550 0210-30-N70
21,00	3,50	OR550 0210-35-N70
21,00	4,00	OR550 0210-40-N70
21,00	4,50	OR550 0210-45-N70
21,00	6,00	OR550 0210-60-N70
22,00	1,00	OR550 0220-10-N70
22,00	1,50	OR550 0220-15-N70
22,00	2,00	OR550 0220-20-N70
22,00	2,50	OR550 0220-25-N70
22,00	3,00	OR550 0220-30-N70
22,00	4,00	OR550 0220-40-N70
22,00	5,00	OR550 0220-50-N70
22,00	6,00	OR550 0220-60-N70
22,50	2,00	OR550 0225-20-N70
22,50	3,00	OR550 0225-30-N70
23,00	1,50	OR550 0230-15-N70
23,00	2,50	OR550 0230-25-N70
23,00	3,00	OR550 0230-30-N70
23,00	3,50	OR550 0230-35-N70
23,00	5,00	OR550 0230-50-N70
23,50	3,00	OR550 0235-30-N70
24,00	1,50	OR550 0240-15-N70
24,00	2,00	OR550 0240-20-N70
24,00	3,00	OR550 0240-30-N70
24,00	3,50	OR550 0240-35-N70
24,00	4,00	OR550 0240-40-N70
24,00	5,00	OR550 0240-50-N70
24,50	4,50	OR550 0245-45-N70
25,00	1,00	OR550 0250-10-N70
25,00	1,50	OR550 0250-15-N70
25,00	2,00	OR550 0250-20-N70
25,00	2,50	OR550 0250-25-N70
25,00	3,00	OR550 0250-30-N70
25,00	3,50	OR550 0250-35-N70
25,00	5,00	OR550 0250-50-N70
25,00	6,00	OR550 0250-60-N70
25,00	6,50	OR550 0250-65-N70
26,00	1,20	OR550 0260-12-N70
26,00	2,00	OR550 0260-20-N70
26,00	2,50	OR550 0260-25-N70
26,00	5,00	OR550 0260-50-N70
27,00	1,50	OR550 0270-15-N70

di	s	Part N°.
27,00	2,00	OR550 0270-20-N70
27,00	2,50	OR550 0270-25-N70
27,00	3,00	OR550 0270-30-N70
27,00	4,00	OR550 0270-40-N70
27,00	5,00	OR550 0270-50-N70
27,00	6,00	OR550 0270-60-N70
27,50	4,50	OR550 0275-45-N70
28,00	2,00	OR550 0280-20-N70
28,00	3,00	OR550 0280-30-N70
28,00	4,00	OR550 0280-40-N70
28,00	5,00	OR550 0280-50-N70
28,00	8,00	OR550 0280-80-N70
29,00	2,00	OR550 0290-20-N70
29,00	3,00	OR550 0290-30-N70
29,00	3,50	OR550 0290-35-N70
29,50	1,50	OR550 0295-15-N70
29,50	2,30	OR550 0295-23-N70
30,00	2,00	OR550 0300-20-N70
30,00	2,50	OR550 0300-25-N70
30,00	3,00	OR550 0300-30-N70
30,00	4,00	OR550 0300-40-N70
30,00	6,00	OR550 0300-60-N70
30,00	8,00	OR550 0300-80-N70
31,00	2,50	OR550 0310-25-N70
31,00	3,00	OR550 0310-30-N70
31,00	4,00	OR550 0310-40-N70
31,00	4,50	OR550 0310-45-N70
31,30	2,00	OR550 0313-20-N70
31,50	3,00	OR550 0315-30-N70
31,80	1,50	OR550 0318-15-N70
32,00	1,00	OR550 0320-10-N70
32,00	2,00	OR550 0320-20-N70
32,00	2,50	OR550 0320-25-N70
32,00	3,00	OR550 0320-30-N70
32,00	4,00	OR550 0320-40-N70
32,00	4,50	OR550 0320-45-N70
32,00	5,00	OR550 0320-50-N70
32,00	7,00	OR550 0320-70-N70
32,70	1,30	OR550 0327-13-N70
33,00	2,00	OR550 0330-20-N70
33,00	2,50	OR550 0330-25-N70
33,00	3,00	OR550 0330-30-N70
33,00	3,50	OR550 0330-35-N70
33,00	5,00	OR550 0330-50-N70
33,60	1,78	OR550 0336-17-N70
34,00	2,00	OR550 0340-20-N70
34,00	2,50	OR550 0340-25-N70
34,00	3,00	OR550 0340-30-N70
34,00	3,50	OR550 0340-35-N70
34,00	4,00	OR550 0340-40-N70
34,00	5,00	OR550 0340-50-N70
35,00	1,20	OR550 0350-12-N70
35,00	2,00	OR550 0350-20-N70
35,00	3,00	OR550 0350-30-N70
35,00	3,20	OR550 0350-32-N70
35,00	3,50	OR550 0350-35-N70
35,00	4,00	OR550 0350-40-N70
35,00	5,00	OR550 0350-50-N70
35,00	6,00	OR550 0350-60-N70
35,20	3,00	OR550 0352-30-N70
35,20	5,70	OR550 0352-57-N70



di	s	Part N°.
36,00	1,50	OR550 0360-15-N70
36,00	2,00	OR550 0360-20-N70
36,00	2,50	OR550 0360-25-N70
36,00	3,00	OR550 0360-30-N70
36,00	4,00	OR550 0360-40-N70
36,00	5,00	OR550 0360-50-N70
36,40	2,00	OR550 0364-20-N70
37,00	4,00	OR550 0370-40-N70
38,00	2,00	OR550 0380-20-N70
38,00	2,50	OR550 0380-25-N70
38,00	3,00	OR550 0380-30-N70
38,00	4,00	OR550 0380-40-N70
38,00	4,50	OR550 0380-45-N70
38,00	5,00	OR550 0380-50-N70
38,90	1,45	OR550 0389-14-N70
39,00	2,00	OR550 0390-20-N70
39,00	2,50	OR550 0390-25-N70
39,00	3,00	OR550 0390-30-N70
40,00	1,00	OR550 0400-10-N70
40,00	2,00	OR550 0400-20-N70
40,00	2,50	OR550 0400-25-N70
40,00	3,00	OR550 0400-30-N70
40,00	3,50	OR550 0400-35-N70
40,00	4,00	OR550 0400-40-N70
40,00	4,50	OR550 0400-45-N70
40,00	5,00	OR550 0400-50-N70
41,00	1,50	OR550 0410-15-N70
41,00	2,00	OR550 0410-20-N70
41,00	2,50	OR550 0410-25-N70
41,00	3,00	OR550 0410-30-N70
41,20	5,70	OR550 0412-57-N70
41,60	1,78	OR550 0416-17-N70
42,00	1,50	OR550 0420-15-N70
42,00	2,00	OR550 0420-20-N70
42,00	2,50	OR550 0420-25-N70
42,00	3,00	OR550 0420-30-N70
42,00	3,50	OR550 0420-35-N70
42,00	4,00	OR550 0420-40-N70
42,00	5,00	OR550 0420-50-N70
42,20	3,00	OR550 0422-30-N70
43,00	1,50	OR550 0430-15-N70
43,00	3,00	OR550 0430-30-N70
43,00	4,00	OR550 0430-40-N70
43,00	5,00	OR550 0430-50-N70
44,00	2,00	OR550 0440-20-N70
44,00	3,00	OR550 0440-30-N70
44,00	4,00	OR550 0440-40-N70
44,50	3,00	OR550 0445-30-N70
45,00	1,50	OR550 0450-15-N70
45,00	2,00	OR550 0450-20-N70
45,00	2,50	OR550 0450-25-N70
45,00	3,00	OR550 0450-30-N70
45,00	3,50	OR550 0450-35-N70
45,00	4,00	OR550 0450-40-N70
45,00	4,50	OR550 0450-45-N70
45,00	5,00	OR550 0450-50-N70
45,00	5,50	OR550 0450-55-N70
45,20	5,70	OR550 0452-57-N70
45,70	1,50	OR550 0457-15-N70
46,00	2,00	OR550 0460-20-N70
46,00	3,00	OR550 0460-30-N70

di	s	Part N°.
46,00	4,00	OR550 0460-40-N70
47,00	1,60	OR550 0470-16-N70
47,00	2,00	OR550 0470-20-N70
47,00	3,00	OR550 0470-30-N70
47,00	4,00	OR550 0470-40-N70
48,00	1,50	OR550 0480-15-N70
48,00	2,00	OR550 0480-20-N70
48,00	3,00	OR550 0480-30-N70
48,00	4,00	OR550 0480-40-N70
48,00	5,00	OR550 0480-50-N70
48,00	6,00	OR550 0480-60-N70
49,00	1,50	OR550 0490-15-N70
49,00	3,00	OR550 0490-30-N70
49,00	4,00	OR550 0490-40-N70
50,00	1,00	OR550 0500-10-N70
50,00	2,00	OR550 0500-20-N70
50,00	3,00	OR550 0500-30-N70
50,00	3,50	OR550 0500-35-N70
50,00	4,00	OR550 0500-40-N70
50,00	5,00	OR550 0500-50-N70
50,00	6,00	OR550 0500-60-N70
51,00	3,00	OR550 0510-30-N70
51,20	5,70	OR550 0512-57-N70
52,00	1,50	OR550 0520-15-N70
52,00	2,00	OR550 0520-20-N70
52,00	3,00	OR550 0520-30-N70
52,00	3,50	OR550 0520-35-N70
52,00	4,00	OR550 0520-40-N70
52,00	6,00	OR550 0520-60-N70
52,20	5,70	OR550 0522-57-N70
53,00	1,50	OR550 0530-15-N70
53,00	2,00	OR550 0530-20-N70
53,00	2,50	OR550 0530-25-N70
53,00	4,50	OR550 0530-45-N70
54,00	2,00	OR550 0540-20-N70
54,00	2,50	OR550 0540-25-N70
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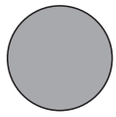
55,00	2,50	OR550 0550-25-N70
55,00	3,00	OR550 0550-30-N70
55,00	3,50	OR550 0550-35-N70
55,00	4,00	OR550 0550-40-N70
55,00	5,00	OR550 0550-50-N70
55,20	5,70	OR550 0552-57-N70
56,00	2,00	OR550 0560-20-N70
56,00	3,00	OR550 0560-30-N70
57,00	1,50	OR550 0570-15-N70
57,00	2,00	OR550 0570-20-N70
57,00	2,50	OR550 0570-25-N70
57,00	3,00	OR550 0570-30-N70
57,00	4,00	OR550 0570-40-N70
57,00	5,00	OR550 0570-50-N70
57,20	5,70	OR550 0572-57-N70
58,00	2,50	OR550 0580-25-N70
58,00	3,00	OR550 0580-30-N70
58,00	3,50	OR550 0580-35-N70
58,00	4,00	OR550 0580-40-N70
58,00	8,00	OR550 0580-80-N70



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60,00	1,50	OR550 0600-15-N70
60,00	2,50	OR550 0600-25-N70
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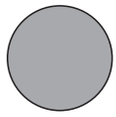
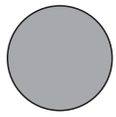
60,00	3,50	OR550 0600-35-N70
60,00	4,00	OR550 0600-40-N70
60,00	5,00	OR550 0600-50-N70
61,00	6,00	OR550 0610-60-N70
61,20	5,70	OR550 0612-57-N70
61,50	7,50	OR550 0615-75-N70
61,60	1,00	OR550 0616-10-N70
62,00	1,50	OR550 0620-15-N70
62,00	2,00	OR550 0620-20-N70
62,00	2,50	OR550 0620-25-N70
62,00	3,00	OR550 0620-30-N70
62,00	4,00	OR550 0620-40-N70
62,00	4,50	OR550 0620-45-N70
62,00	5,00	OR550 0620-50-N70
62,00	8,00	OR550 0620-80-N70
63,00	2,00	OR550 0630-20-N70
63,00	2,50	OR550 0630-25-N70
63,00	4,00	OR550 0630-40-N70
63,00	6,00	OR550 0630-60-N70
64,00	2,00	OR550 0640-20-N70
64,00	3,00	OR550 0640-30-N70
64,00	4,00	OR550 0640-40-N70
65,00	1,50	OR550 0650-15-N70
65,00	1,65	OR550 0650-16-N70
65,00	2,00	OR550 0650-20-N70
65,00	2,50	OR550 0650-25-N70
65,00	3,00	OR550 0650-30-N70
65,00	4,00	OR550 0650-40-N70
65,00	5,00	OR550 0650-50-N70
65,00	7,50	OR550 0650-75-N70
66,00	2,00	OR550 0660-20-N70
66,00	3,00	OR550 0660-30-N70
67,00	2,00	OR550 0670-20-N70
67,00	2,50	OR550 0670-25-N70
67,00	3,00	OR550 0670-30-N70
67,00	4,00	OR550 0670-40-N70
67,00	8,00	OR550 0670-80-N70
67,20	5,70	OR550 0672-57-N70
68,00	2,00	OR550 0680-20-N70
68,00	2,50	OR550 0680-25-N70
68,00	3,00	OR550 0680-30-N70
68,00	4,00	OR550 0680-40-N70
68,00	5,00	OR550 0680-50-N70
68,00	6,00	OR550 0680-60-N70
68,00	7,00	OR550 0680-70-N70
69,00	3,00	OR550 0690-30-N70
70,00	1,78	OR550 0700-17-N70
70,00	2,00	OR550 0700-20-N70
70,00	2,50	OR550 0700-25-N70
70,00	3,50	OR550 0700-35-N70
70,00	4,00	OR550 0700-40-N70
70,00	5,00	OR550 0700-50-N70
70,00	6,00	OR550 0700-60-N70
70,00	7,00	OR550 070070-N70
71,00	3,00	OR550 0710-30-N70
71,50	1,50	OR550 0715-15-N70

di	s	Part N°.
72,00	2,50	OR550 0720-25-N70
72,00	3,00	OR550 0720-30-N70
72,00	5,00	OR550 0720-50-N70
72,20	5,70	OR550 0722-57-N70
73,00	2,50	OR550 0730-25-N70
73,00	3,00	OR550 0730-30-N70
73,00	4,00	OR550 0730-40-N70
73,00	5,00	OR550 0730-50-N70
74,00	2,00	OR550 0740-20-N70
74,00	3,00	OR550 0740-30-N70
74,00	4,00	OR550 0740-40-N70
75,00	2,00	OR550 0750-20-N70
75,00	2,50	OR550 0750-25-N70
75,00	3,00	OR550 0750-30-N70
75,00	3,50	OR550 0750-35-N70
75,00	4,00	OR550 0750-40-N70
75,00	5,00	OR550 0750-50-N70
75,00	6,00	OR550 0750-60-N70
75,00	8,00	OR550 0750-80-N70
76,00	2,00	OR550 0760-20-N70
76,00	2,50	OR550 0760-25-N70
76,00	3,00	OR550 0760-30-N70
76,00	4,00	OR550 0760-40-N70
77,20	5,70	OR550 0772-57-N70
78,00	1,20	OR550 0780-12-N70
78,00	2,00	OR550 0780-20-N70
78,00	2,50	OR550 0780-25-N70
78,00	3,00	OR550 0780-30-N70
78,00	4,00	OR550 0780-40-N70
78,00	4,30	OR550 0780-43-N70
78,00	5,00	OR550 0780-50-N70
79,00	3,00	OR550 0790-30-N70
79,00	5,00	OR550 0790-50-N70
79,40	6,10	OR550 0794-61-N70
80,00	2,00	OR550 0800-20-N70
80,00	2,50	OR550 0800-25-N70
80,00	3,00	OR550 0800-30-N70
80,00	3,50	OR550 0800-35-N70
80,00	4,00	OR550 0800-40-N70
80,00	4,30	OR550 0800-43-N70
80,00	5,00	OR550 0800-50-N70
81,00	1,10	OR550 0810-11-N70
82,00	3,00	OR550 0820-30-N70
82,00	5,00	OR550 0820-50-N70
82,50	2,00	OR550 0825-20-N70
83,00	3,00	OR550 0830-30-N70
84,00	3,00	OR550 0840-30-N70
84,00	4,00	OR550 0840-40-N70
85,00	2,00	OR550 0850-20-N70
85,00	2,50	OR550 0850-25-N70
85,00	3,00	OR550 0850-30-N70
85,00	5,00	OR550 0850-50-N70
86,00	2,50	OR550 0860-25-N70
86,00	3,00	OR550 0860-30-N70
86,00	4,00	OR550 0860-40-N70
87,00	2,50	OR550 0870-25-N70
87,00	4,00	OR550 0870-40-N70
87,20	5,70	OR550 0872-57-N70
88,00	2,00	OR550 0880-20-N70
88,00	3,00	OR550 0880-30-N70
88,00	4,00	OR550 0880-40-N70



di	s	Part N°.
88,00	4,50	OR550 0880-45-N70
88,00	5,00	OR550 0880-50-N70
89,50	2,50	OR550 0895-25-N70
90,00	1,50	OR550 0900-15-N70
90,00	2,50	OR550 0900-25-N70
90,00	3,00	OR550 0900-30-N70
90,00	3,50	OR550 0900-35-N70
90,00	4,00	OR550 0900-40-N70
90,00	5,00	OR550 0900-50-N70
91,00	3,00	OR550 0910-30-N70
91,00	4,00	OR550 0910-40-N70
92,00	2,50	OR550 0920-25-N70
92,00	3,00	OR550 0920-30-N70
92,00	3,50	OR550 0920-35-N70
92,00	4,00	OR550 0920-40-N70
92,00	5,00	OR550 0920-50-N70
92,50	2,00	OR550 0925-20-N70
93,00	3,00	OR550 0930-30-N70
93,00	4,00	OR550 0930-40-N70
94,00	1,00	OR550 0940-10-N70
94,00	2,00	OR550 0940-20-N70
94,00	2,50	OR550 0940-25-N70
94,00	3,00	OR550 0940-30-N70
94,00	4,00	OR550 0940-40-N70
95,00	1,50	OR550 0950-15-N70
95,00	2,00	OR550 0950-20-N70
95,00	2,50	OR550 0950-25-N70
95,00	3,00	OR550 0950-30-N70
95,00	4,50	OR550 0950-45-N70
95,00	5,00	OR550 0950-50-N70
96,00	3,00	OR550 0960-30-N70
96,00	4,00	OR550 0960-40-N70
96,00	6,00	OR550 0960-60-N70
97,00	1,60	OR550 0970-16-N70
97,00	5,00	OR550 0970-50-N70
97,50	3,00	OR550 0975-30-N70
98,00	3,00	OR550 0980-30-N70
98,00	4,00	OR550 0980-40-N70
98,00	5,00	OR550 0980-50-N70
99,00	3,00	OR550 0990-30-N70
100,00	1,50	OR550 1000-15-N70
100,00	2,00	OR550 1000-20-N70
100,00	3,00	OR550 1000-30-N70
100,00	3,50	OR550 1000-35-N70
100,00	4,00	OR550 1000-40-N70
100,00	5,00	OR550 1000-50-N70
100,00	6,00	OR550 1000-60-N70
100,00	7,00	OR550 1000-70-N70
100,00	8,00	OR550 1000-80-N70
100,50	4,50	OR550 1005-45-N70
101,50	3,00	OR550 1015-30-N70
102,00	3,00	OR550 1020-30-N70
102,00	4,00	OR550 1020-40-N70
102,00	5,00	OR550 1020-50-N70
103,00	2,00	OR550 1030-20-N70
103,00	6,00	OR550 1030-60-N70
103,90	2,18	OR550 1039-21-N70
104,00	2,50	OR550 1040-25-N70
104,00	4,00	OR550 1040-40-N70
104,20	5,70	OR550 1042-57-N70
105,00	3,00	OR550 1050-30-N70

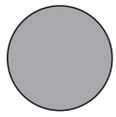
di	s	Part N°.
105,00	4,00	OR550 1050-40-N70
105,00	5,00	OR550 1050-50-N70
106,00	2,00	OR550 1060-20-N70
106,00	3,00	OR550 1060-30-N70
107,00	2,50	OR550 1070-25-N70
107,00	5,00	OR550 1070-50-N70
108,00	4,00	OR550 1080-40-N70
108,00	5,00	OR550 1080-50-N70
108,00	7,00	OR550 1080-70-N70
109,00	2,00	OR550 1090-20-N70
109,50	2,00	OR550 1095-20-N70
110,00	1,00	OR550 1100-10-N70
110,00	2,00	OR550 1100-20-N70
110,00	3,00	OR550 1100-30-N70
110,00	4,00	OR550 1100-40-N70
110,00	5,00	OR550 1100-50-N70
110,00	6,00	OR550 1100-60-N70
110,00	7,00	OR550 1100-70-N70
110,00	8,00	OR550 1100-80-N70
112,00	2,50	OR550 1120-25-N70
112,00	3,00	OR550 1120-30-N70
112,00	4,00	OR550 1120-40-N70
114,00	2,00	OR550 1140-20-N70
114,00	3,00	OR550 1140-30-N70
114,00	4,00	OR550 1140-40-N70
114,00	6,00	OR550 1140-60-N70
114,20	5,70	OR550 1142-57-N70
115,00	2,00	OR550 1150-20-N70
115,00	2,30	OR550 1150-23-N70
115,00	2,50	OR550 1150-25-N70
115,00	3,00	OR550 1150-30-N70
115,00	4,00	OR550 1150-40-N70
115,00	4,50	OR550 1150-45-N70
115,00	5,00	OR550 1150-50-N70
115,00	6,00	OR550 1150-60-N70
115,00	9,00	OR550 1150-90-N70
118,00	2,50	OR550 1180-25-N70
118,00	3,00	OR550 1180-30-N70
118,00	4,00	OR550 1180-40-N70
120,00	2,00	OR550 1200-20-N70
120,00	2,20	OR550 1200-22-N70
120,00	3,00	OR550 1200-30-N70
120,00	4,00	OR550 1200-40-N70
120,00	5,00	OR550 1200-50-N70
120,00	7,00	OR550 1200-70-N70
122,00	4,00	OR550 1220-40-N70
123,00	2,00	OR550 1230-20-N70
123,00	6,00	OR550 1230-60-N70
124,00	4,00	OR550 1240-40-N70
125,00	2,00	OR550 1250-20-N70
125,00	2,50	OR550 1250-25-N70
125,00	3,00	OR550 1250-30-N70
125,00	4,00	OR550 1250-40-N70
125,00	5,00	OR550 1250-50-N70
126,00	3,00	OR550 1260-30-N70
126,00	4,00	OR550 1260-40-N70
126,50	3,00	OR550 1265-30-N70
128,00	3,00	OR550 1280-30-N70
128,00	4,00	OR550 1280-40-N70
129,00	4,00	OR550 1290-40-N70
130,00	2,50	OR550 1300-25-N70



di	s	Part N°.
130,00	4,00	OR550 1300-40-N70
130,00	5,00	OR550 1300-50-N70
132,00	3,00	OR550 1320-30-N70
132,00	5,00	OR550 1320-50-N70
134,00	3,00	OR550 1340-30-N70
134,00	4,00	OR550 1340-40-N70
135,00	1,50	OR550 1350-15-N70
135,00	2,50	OR550 1350-25-N70
135,00	3,00	OR550 1350-30-N70
135,00	4,00	OR550 1350-40-N70
135,00	5,00	OR550 1350-50-N70
135,00	6,00	OR550 1350-60-N70
137,00	3,00	OR550 1370-30-N70
138,00	2,10	OR550 1380-21-N70
138,00	4,00	OR550 1380-40-N70
139,00	4,20	OR550 1390-42-N70
140,00	2,00	OR550 1400-20-N70
140,00	3,00	OR550 1400-30-N70
140,00	4,00	OR550 1400-40-N70
140,00	5,00	OR550 1400-50-N70
140,00	8,00	OR550 1400-80-N70
142,00	3,00	OR550 1420-30-N70
142,00	4,00	OR550 1420-40-N70
142,00	6,00	OR550 1420-60-N70
143,00	2,00	OR550 1430-20-N70
144,00	3,00	OR550 1440-30-N70
144,00	4,00	OR550 1440-40-N70
145,00	2,50	OR550 1450-25-N70
145,00	5,00	OR550 1450-50-N70
146,00	3,00	OR550 1460-30-N70
146,00	4,00	OR550 1460-40-N70
148,00	2,50	OR550 1480-25-N70
148,00	3,00	OR550 1480-30-N70
148,00	5,00	OR550 1480-50-N70
150,00	2,00	OR550 1500-20-N70
150,00	3,00	OR550 1500-30-N70
150,00	4,00	OR550 1500-40-N70
150,00	4,50	OR550 1500-45-N70
150,00	5,00	OR550 1500-50-N70
150,00	6,00	OR550 1500-60-N70
152,50	2,50	OR550 1525-25-N70
154,00	6,00	OR550 1540-60-N70
154,10	8,40	OR550 1541-84-N70
154,50	3,00	OR550 1545-30-N70
155,00	3,00	OR550 1550-30-N70
155,00	4,00	OR550 1550-40-N70
155,00	5,00	OR550 1550-50-N70
156,00	2,50	OR550 1560-25-N70
156,00	3,00	OR550 1560-30-N70
157,00	6,55	OR550 1570-65-N70
158,00	4,00	OR550 1580-40-N70
158,00	8,00	OR550 1580-80-N70
159,50	3,00	OR550 1595-30-N70
160,00	2,00	OR550 1600-20-N70
160,00	2,50	OR550 1600-25-N70
160,00	3,00	OR550 1600-30-N70
160,00	4,00	OR550 1600-40-N70
160,00	5,00	OR550 1600-50-N70
160,00	6,00	OR550 1600-60-N70
162,00	3,00	OR550 1620-30-N70
162,00	4,00	OR550 1620-40-N70

di	s	Part N°.
162,00	8,00	OR550 1620-80-N70
164,00	3,00	OR550 1640-30-N70
164,50	3,00	OR550 1645-30-N70
165,00	3,00	OR550 1650-30-N70
165,00	4,00	OR550 1650-40-N70
165,00	5,00	OR550 1650-50-N70
165,00	6,00	OR550 1650-60-N70
168,00	5,70	OR550 1680-57-N70
169,50	3,00	OR550 1695-30-N70
170,00	3,00	OR550 1700-30-N70
170,00	3,50	OR550 1700-35-N70
170,00	4,00	OR550 1700-40-N70
172,00	3,00	OR550 1720-30-N70
172,00	4,00	OR550 1720-40-N70
172,00	6,00	OR550 1720-60-N70
174,00	3,00	OR550 1740-30-N70
174,00	3,20	OR550 1740-32-N70
174,50	3,00	OR550 1745-30-N70
175,00	4,00	OR550 1750-40-N70
175,00	5,00	OR550 1750-50-N70
175,00	6,00	OR550 1750-60-N70
177,00	3,00	OR550 1770-30-N70
177,00	4,00	OR550 1770-40-N70
179,00	3,00	OR550 1790-30-N70
179,50	3,00	OR550 1795-30-N70
180,00	3,00	OR550 1800-30-N70
180,00	4,00	OR550 1800-40-N70
180,00	5,00	OR550 1800-50-N70
180,00	6,00	OR550 1800-60-N70
182,00	3,00	OR550 1820-30-N70
185,00	3,00	OR550 1850-30-N70
185,00	4,00	OR550 1850-40-N70
185,00	5,00	OR550 1850-50-N70
186,00	3,50	OR550 1860-35-N70
188,00	3,00	OR550 1880-30-N70
188,00	4,00	OR550 1880-40-N70
190,00	3,00	OR550 1900-30-N70
190,00	5,00	OR550 1900-50-N70
190,00	6,00	OR550 1900-60-N70
190,00	8,00	OR550 1900-80-N70
192,00	3,00	OR550 1920-30-N70
192,00	4,00	OR550 1920-40-N70
194,00	2,00	OR550 1940-20-N70
194,00	3,00	OR550 1940-30-N70
194,00	5,00	OR550 1940-50-N70
194,10	8,40	OR550 1941-84-N70
195,00	3,50	OR550 1950-35-N70
195,00	5,00	OR550 1950-50-N70
198,00	4,00	OR550 1980-40-N70
199,30	3,00	OR550 1993-30-N70
199,50	3,00	OR550 1995-30-N70
200,00	3,50	OR550 2000-35-N70
200,00	4,00	OR550 2000-40-N70
200,00	5,00	OR550 2000-50-N70
200,00	6,00	OR550 2000-60-N70
200,00	8,00	OR550 2000-80-N70
203,00	3,00	OR550 2030-30-N70
205,00	3,00	OR550 2050-30-N70
205,00	4,00	OR550 2050-40-N70
205,00	5,00	OR550 2050-50-N70
209,50	3,00	OR550 2095-30-N70

O - RING
OR 550 / OR 568



di	s	Part N°.
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210,00	4,00	OR550 2100-40-N70
210,00	5,00	OR550 2100-50-N70
210,00	8,00	OR550 2100-80-N70
214,00	5,00	OR550 2140-50-N70
216,00	4,00	OR550 2160-40-N70
218,00	4,00	OR550 2180-40-N70
220,00	3,00	OR550 2200-30-N70
220,00	4,00	OR550 2200-40-N70
220,00	5,00	OR550 2200-50-N70
225,00	3,00	OR550 2250-30-N70
225,00	5,00	OR550 2250-50-N70
228,00	4,00	OR550 2280-40-N70
229,50	3,00	OR550 2295-30-N70
230,00	5,00	OR550 2300-50-N70
230,00	8,00	OR550 2300-80-N70
233,00	3,00	OR550 2330-30-N70
235,00	5,00	OR550 2350-50-N70
237,00	6,00	OR550 2370-60-N70
238,00	5,00	OR550 2380-50-N70
238,00	6,00	OR550 2380-60-N70
239,50	3,00	OR550 2395-30-N70
240,00	3,00	OR550 2400-30-N70
240,00	4,00	OR550 2400-40-N70
242,00	4,00	OR550 2420-40-N70
242,00	5,00	OR550 2420-50-N70
242,00	6,00	OR550 2420-60-N70
245,00	4,50	OR550 2450-45-N70
248,00	5,00	OR550 2480-50-N70
249,50	3,00	OR550 2495-30-N70
250,00	3,00	OR550 2500-30-N70
250,00	4,00	OR550 2500-40-N70
250,00	5,00	OR550 2500-50-N70
250,00	6,00	OR550 2500-60-N70
255,00	4,00	OR550 2550-40-N70
257,00	3,00	OR550 2570-30-N70
258,00	8,00	OR550 2580-80-N70
259,30	3,00	OR550 2593-30-N70
260,00	3,00	OR550 2600-30-N70
260,00	4,00	OR550 2600-40-N70
260,00	5,00	OR550 2600-50-N70
260,00	6,00	OR550 2600-60-N70
260,00	8,00	OR550 2600-80-N70
261,00	5,33	OR550 2610-53-N70
264,00	8,40	OR550 2640-84-N70
265,00	2,00	OR550 2650-20-N70
265,00	4,00	OR550 2650-40-N70
269,00	3,00	OR550 2690-30-N70
270,00	3,00	OR550 2700-30-N70
270,00	5,00	OR550 2700-50-N70
275,00	5,00	OR550 2750-50-N70
276,00	3,00	OR550 2760-30-N70
278,00	8,00	OR550 2780-80-N70
280,00	3,00	OR550 2800-30-N70

di	s	Part N°.
280,00	5,00	OR550 2800-50-N70
281,00	5,00	OR550 2810-50-N70
285,00	4,00	OR550 2850-40-N70
290,00	8,00	OR550 2900-80-N70
294,00	6,00	OR550 2940-60-N70
296,00	5,33	OR550 2960-53-N70
297,00	4,00	OR550 2970-40-N70
299,10	8,40	OR550 2991-84-N70
300,00	3,00	OR550 3000-30-N70
300,00	6,00	OR550 3000-60-N70
301,00	6,00	OR550 3010-60-N70
302,00	5,00	OR550 3020-50-N70
305,00	3,00	OR550 3050-30-N70
305,00	4,50	OR550 3050-45-N70
305,00	5,00	OR550 3050-50-N70
310,00	2,50	OR550 3100-25-N70
310,00	3,00	OR550 3100-30-N70
310,00	5,00	OR550 3100-50-N70
310,00	8,00	OR550 3100-80-N70
315,00	4,00	OR550 3150-40-N70
315,00	5,00	OR550 3150-50-N70
320,00	5,00	OR550 3200-50-N70
325,00	4,00	OR550 3250-40-N70
325,00	7,50	OR550 3250-75-N70
328,00	2,50	OR550 3280-25-N70
330,00	4,00	OR550 3300-40-N70
330,00	5,00	OR550 3300-50-N70
330,00	6,00	OR550 3300-60-N70
335,00	4,00	OR550 3350-40-N70
338,00	4,00	OR550 3380-40-N70
340,00	5,00	OR550 3400-50-N70
340,00	6,00	OR550 3400-60-N70
355,00	5,00	OR550 3550-50-N70
366,00	2,50	OR550 3660-25-N70
370,00	5,00	OR550 3700-50-N70
372,50	2,00	OR550 3725-20-N70
380,00	4,00	OR550 3800-40-N70
380,00	8,00	OR550 3800-80-N70
386,00	6,00	OR550 3860-60-N70
388,00	7,00	OR550 3880-70-N70
390,00	4,00	OR550 3900-40-N70
399,00	4,00	OR550 3990-40-N70
400,00	6,00	OR550 4000-60-N70
410,00	4,00	OR550 4100-40-N70
425,00	8,00	OR550 4250-80-N70
430,00	4,00	OR550 4300-40-N70
441,00	8,00	OR550 4410-80-N70
445,00	5,00	OR550 4450-50-N70
465,00	5,30	OR550 4650-53-N70
465,00	9,00	OR550 4650-90-N70
478,00	6,00	OR550 4780-60-N70
480,00	6,00	OR550 4800-60-N70
500,00	5,00	OR550 5000-50-N70
500,00	8,00	OR550 5000-80-N70

Example for ordering O-Ring AS 568A:

OR 568 - 0360 - 00 - N70 - ...

Profile
AS 568A No.
Standard Material
HME Internal Code

Example for ordering O-Ring metric:

OR 550 1000 - 30 - N70 - ...

Profile
Nominal Diameter x 10
Cord strenght x 10
Standard Material
HME Internal Code

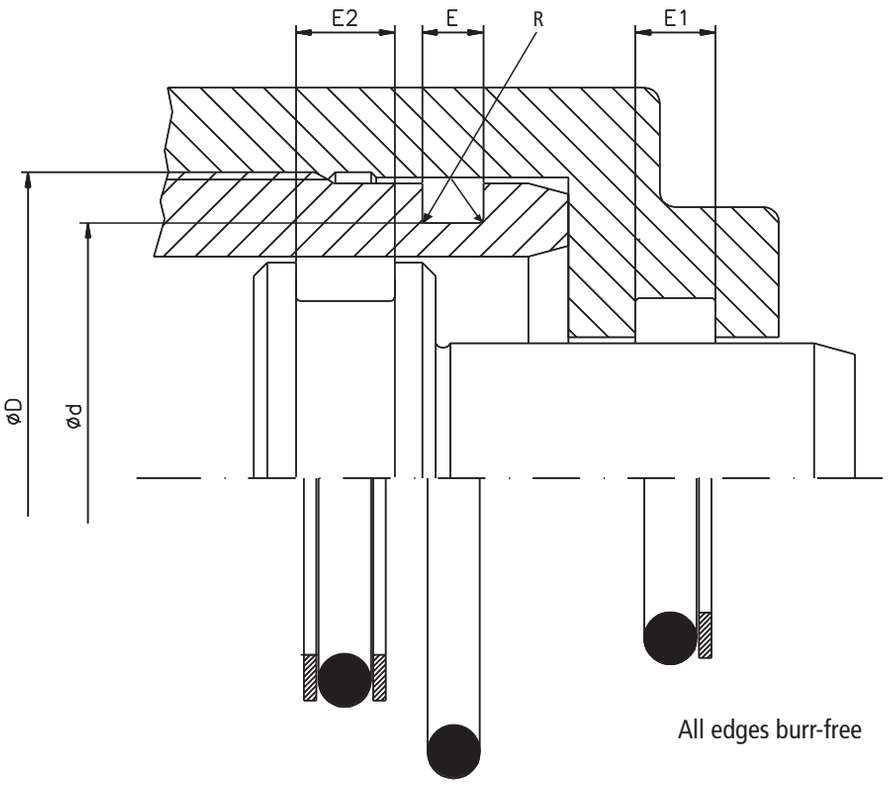
Material Key:

O-Ring

N70 - NBR	70 Shore A
N80 - NBR	80 Shore A
N90 - NBR	90 Shore A
F70 - FPM	70 Shore A
F80 - FPM	80 Shore A
E70 - EPDM	70 Shore A
S70 - Silcon	70 Shore A

Issue
01 | 24

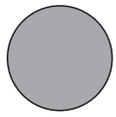
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



Groove sizes for external sealing applications

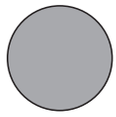
Nutmaße						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
8,00	4,20	3,20	4,70	6,20	0,20	3,30 x 2,40	OR550 0033-24-N70	HY600 0040-20-300
8,00	4,20	3,20	4,70	6,20	0,20	3,60 x 2,40	OR550 0036-24-N70	HY600 0040-20-300
9,00	5,20	3,20	4,70	6,20	0,20	4,30 x2 ,40	OR550 0043-24-N70	HY600 0050-20-300
9,00	5,20	3,20	4,70	6,20	0,20	4,60 x 2,40	OR550 0046-24-N70	HY600 0050-20-300
10,00	6,20	3,20	4,70	6,20	0,20	5,30 x 2,40	OR550 0053-24-N70	HY600 0060-20-300
10,00	6,20	3,20	4,70	6,20	0,20	5,60 x 2,40	OR550 0056-24-N70	HY600 0060-20-300
11,00	7,20	3,20	4,70	6,20	0,20	6,30 x 2,40	OR550 0063-24-N70	HY600 0070-20-300
11,00	7,20	3,20	4,70	6,20	0,20	6,60 x 2,40	OR550 0066-24-N70	HY600 0070-20-300
12,00	8,20	3,20	4,70	6,20	0,20	7,30 x 2,40	OR550 0073-24-N70	HY600 0080-20-300
12,00	8,20	3,20	4,70	6,20	0,20	7,60 x 2,40	OR550 0076-24-N70	HY600 0080-20-300
12,00	9,40	2,50	4,00	5,50	0,20	8,73 x 1,78	OR568 0611-00-N70	HY603 0611-00-300
13,00	9,20	3,20	4,70	6,20	0,20	8,30 x 2,40	OR550 0083-24-N70	HY600 0090-20-300
13,00	9,20	3,20	4,70	6,20	0,20	8,60 x 2,40	OR550 0086-24-N70	HY600 0090-20-300
14,00	10,20	3,20	4,70	6,20	0,20	9,30 x 2,40	OR550 0093-24-N70	HY600 0100-20-300
14,00	10,20	3,20	4,70	6,20	0,20	9,60 x 2,40	OR550 0096-24-N70	HY600 0100-20-300
14,00	11,40	2,50	4,00	5,50	0,20	10,82 x 1,78	OR568 0013-00-N70	HY630 0013-00-01P
15,00	11,20	3,20	4,70	6,20	0,20	10,30 x 2,40	OR550 0103-24-N70	HY600 0110-20-300
15,00	11,20	3,20	4,70	6,20	0,20	10,60 x 2,40	OR550 0106-24-N70	HY600 0110-20-300
15,00	10,80	3,50	5,00	6,50	0,20	9,92 x 2,62	OR568 0613-00-N70	HY603 0613-00-300
16,00	12,20	3,20	4,70	6,20	0,20	11,30 x 2,40	OR550 0113-24-N70	HY600 0120-20-300
16,00	12,20	3,20	4,70	6,20	0,20	11,60 x 2,40	OR550 0116-24-N70	HY600 0120-20-300

O - RING
OR 550 / OR 568



Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
17,00	13,20	3,20	4,70	6,20	0,20	12,30 x 2,40	OR550 0123-24-N70	HY600 0130-20-300
17,00	13,20	3,20	4,70	6,20	0,20	12,60 x 2,40	OR550 0126-24-N70	HY600 0130-20-300
17,00	12,80	3,50	5,00	6,50	0,20	11,91 x 2,62	OR568 0614-00-N70	HY603 0614-00-300
18,00	14,20	3,20	4,70	6,20	0,20	13,30 x 2,40	OR550 0133-24-N70	HY600 0140-20-300
18,00	14,20	3,20	4,70	6,20	0,20	13,60 x 2,40	OR550 0136-24-N70	HY600 0140-20-300
18,50	14,30	3,50	5,00	6,50	0,20	13,95 x 2,62	OR568 0113-00-N70	HY603 0113-00-300
19,00	15,20	3,20	4,70	6,20	0,20	14,30 x 2,40	OR550 0143-24-N70	HY600 0150-20-300
19,00	15,20	3,20	4,70	6,20	0,20	14,60 x 2,40	OR550 0146-24-N70	HY600 0150-20-300
19,00	14,80	3,50	5,00	6,50	0,20	13,95 x 2,62	OR568 0113-00-N70	HY603 0113-00-300
19,00	16,40	2,50	4,00	5,50	0,20	15,60 x 1,78	OR568 0016-00-N70	HY630 0016-00-01P
20,00	16,20	3,20	4,70	6,20	0,20	15,30 x 2,40	OR550 0153-24-N70	HY600 0160-20-300
20,00	16,20	3,20	4,70	6,20	0,20	15,60 x 2,40	OR550 0156-24-N70	HY600 0160-20-300
20,00	15,80	3,50	5,00	6,50	0,20	15,08 x 2,62	OR568 0616-00-N70	HY603 0616-00-300
21,00	17,20	3,20	4,70	6,20	0,20	16,30 x 2,40	OR550 0163-24-N70	HY600 0170-20-300
21,00	17,20	3,20	4,70	6,20	0,20	16,60 x 2,40	OR550 0166-24-N70	HY600 0170-20-300
21,00	16,80	3,50	5,00	6,50	0,20	15,88 x 2,62	OR568 0809-00-N70	HY603 0809-00-300
22,00	18,20	3,20	4,70	6,20	0,20	17,30 x 2,40	OR550 0173-24-N70	HY600 0180-20-300
22,00	18,20	3,20	4,70	6,20	0,20	17,60 x 2,40	OR550 0176-24-N70	HY600 0180-20-300
22,00	17,80	3,50	5,00	6,50	0,20	17,13 x 2,62	OR568 0115-00-N70	HY603 0115-00-300
24,00	19,80	3,50	5,00	6,50	0,20	18,72 x 2,62	OR568 0116-00-N70	HY603 0116-00-300
24,00	21,40	2,50	4,00	5,50	0,20	20,35 x 1,78	OR568 0019-00-N70	HY630 0019-00-01P
25,00	20,20	3,90	5,50	7,00	0,30	19,20 x 3,00	OR550 0192-30-N70	HY600 0200-25-300
25,00	20,80	3,50	5,00	6,50	0,20	20,29 x 2,62	OR568 0117-00-N70	HY603 0117-00-300
26,00	21,80	3,50	5,00	6,50	0,20	20,62 x 2,62	OR568 0812-00-N70	HY603 0812-00-300
27,00	22,80	3,50	5,00	6,50	0,20	21,89 x 2,62	OR568 0118-00-N70	HY603 0118-00-300
27,00	22,80	3,50	5,00	6,50	0,20	22,22 x 2,62	OR568 0813-00-N70	HY603 0813-00-300
28,00	23,20	3,90	5,50	7,00	0,30	22,20 x 3,00	OR550 0222-30-N70	HY600 0230-25-300
29,00	24,80	3,50	5,00	6,50	0,20	23,47 x 2,62	OR568 0119-00-N70	HY603 0119-00-300
29,00	23,10	4,50	6,00	7,50	0,40	21,82 x 3,53	OR568 0212-00-N70	HY603 0212-00-300
29,00	24,80	3,50	5,00	6,50	0,20	23,81 x 2,62	OR568 0814-00-N70	HY603 0814-00-300
30,00	25,20	3,90	5,50	7,00	0,30	24,20 x 3,00	OR550 0242-30-N70	HY600 0250-25-300
30,00	25,80	3,50	5,00	6,50	0,20	25,07 x 2,62	OR568 0120-00-N70	HY603 0120-00-300
30,00	24,10	4,50	6,00	7,50	0,40	23,39 x 3,53	OR568 0213-00-N70	HY603 0213-00-300
32,00	27,20	3,90	5,50	7,00	0,30	26,20 x 3,00	OR550 0262-30-N70	HY600 0270-25-300
32,00	27,80	3,50	5,00	6,50	0,20	26,64 x 2,62	OR568 0121-00-N70	HY603 0121-00-300
32,00	26,10	4,50	6,00	7,50	0,40	24,99 x 3,53	OR568 0214-00-N70	HY603 0214-00-300
33,00	28,80	3,50	5,00	6,50	0,20	28,24 x 2,62	OR568 0122-00-N70	HY603 0122-00-300
33,00	27,10	4,50	6,00	7,50	0,40	25,80 x 3,53	OR568 0618-00-N70	HY603 0618-00-300
34,00	28,10	4,50	6,00	7,50	0,40	26,58 x 3,53	OR568 0215-00-N70	HY603 0215-00-300
35,00	30,20	3,90	5,50	7,00	0,30	29,20 x 3,00	OR550 0292-30-N70	HY600 0300-25-300
35,00	30,80	3,50	5,00	6,50	0,20	29,82 x 2,62	OR568 0123-00-N70	HY603 0123-00-300
35,00	29,10	4,50	6,00	7,50	0,40	28,17 x 3,53	OR568 0216-00-N70	HY603 0216-00-300
35,00	32,40	2,50	4,00	5,50	0,20	31,47 x 1,78	OR568 0026-00-N70	HY630 0026-00-01P
37,00	32,80	3,50	5,00	6,50	0,20	31,42 x 2,62	OR568 0124-00-N70	HY603 0124-00-300
37,00	31,10	4,50	6,00	7,50	0,40	29,75 x 3,53	OR568 0217-00-N70	HY603 0217-00-300
38,00	33,20	3,90	5,50	7,00	0,30	32,20 x 3,00	OR550 0322-30-N70	HY600 0330-25-300
38,00	33,80	3,50	5,00	6,50	0,20	32,99 x 2,62	OR568 0125-00-N70	HY603 0125-00-300
38,00	32,10	4,50	6,00	7,50	0,40	31,34 x 3,53	OR568 0218-00-N70	HY603 0218-00-300
40,00	35,20	3,90	5,50	7,00	0,30	34,20 x 3,00	OR550 0342-30-N70	HY600 0350-25-300
40,00	35,80	3,50	5,00	6,50	0,20	34,59 x 2,62	OR568 0126-00-N70	HY603 0126-00-300
40,00	34,10	4,50	6,00	7,50	0,40	32,92 x 3,53	OR568 0219-00-N70	HY603 0219-00-300
41,00	36,80	3,50	5,00	6,50	0,20	36,17 x 2,62	OR568 0127-00-N70	HY603 0127-00-300
41,00	38,40	2,50	4,00	5,50	0,20	37,82 x 1,78	OR568 0029-00-N70	HY630 0029-00-01P
42,00	37,20	3,90	5,50	7,00	0,30	36,20 x 3,00	OR550 0362-30-N70	HY600 0370-25-300
42,00	36,10	4,50	6,00	7,50	0,40	34,52 x 3,53	OR568 0220-00-N70	HY603 0220-00-300
43,00	38,80	3,50	5,00	6,50	0,20	37,77 x 2,62	OR568 0128-00-N70	HY603 0128-00-300
43,00	37,10	4,50	6,00	7,50	0,40	36,10 x 3,53	OR568 0221-00-N70	HY603 0221-00-300
45,00	40,20	3,90	5,50	7,00	0,30	39,20 x 3,00	OR550 0392-30-N70	HY600 0400-25-300
45,00	40,80	3,50	5,00	6,50	0,20	39,34 x 2,62	OR568 0129-00-N70	HY603 0129-00-300

O - RING
OR 550 / OR 568



Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
45,00	39,10	4,50	6,00	7,50	0,40	37,70 x 3,53	OR568 0222-00-N70	HY603 0222-00-300
45,00	42,40	2,50	4,00	5,50	0,20	41,00 x 1,78	OR568 0030-00-N70	HY630 0030-00-01P
46,00	41,80	3,50	5,00	6,50	0,20	40,94 x 2,62	Or568 0130-00-N70	HY603 0130-00-300
46,00	40,10	4,50	6,00	7,50	0,40	39,69 x 3,53	OR568 0824-00-N70	HY603 0824-00-300
48,00	43,20	3,90	5,50	7,00	0,30	42,20 x 3,00	OR550 0422-30-N70	HY600 0430-25-300
48,00	43,80	3,50	5,00	6,50	0,20	42,52 x 2,62	OR568 0131-00-N70	HY603 0131-00-300
48,00	42,10	4,50	6,00	7,50	0,40	40,87 x 3,53	OR568 0223-00-N70	HY603 0223-00-300
48,00	39,00	7,00	8,80	11,00	0,50	37,47 x 5,33	OR568 0325-00-N70	HY603 0325-00-300
48,00	42,10	4,50	6,00	7,50	0,40	41,28 x 3,53	OR568 0825-00-N70	HY603 0825-00-300
49,00	44,80	3,50	5,00	6,50	0,20	44,12 x 2,62	OR568 0132-00-N70	HY603 0132-00-300
50,00	40,30	7,30	9,10	11,00	0,50	39,20 x 5,70	OR550 0392-57-N70	HY600 0400-50-300
50,00	45,20	3,90	5,50	7,00	0,30	44,20 x 3,00	OR550 0442-30-N70	HY600 0450-25-300
50,00	44,10	4,50	6,00	7,50	0,40	42,86 x 3,53	OR568 0826-00-N70	HY603 0826-00-300
51,00	46,80	3,50	5,00	6,50	0,20	45,69 x 2,62	OR568 0133-00-N70	HY603 0133-00-300
51,00	45,10	4,50	6,00	7,50	0,40	44,04 x 3,53	OR568 0224-00-N70	HY603 0224-00-300
51,00	45,10	4,50	6,00	7,50	0,40	44,45 x 3,53	OR568 0827-00-N70	HY603 0827-00-300
52,00	43,00	7,00	8,80	11,00	0,50	40,64 x 5,33	OR568 0326-00-N70	HY603 0326-00-300
53,00	48,80	3,50	5,00	6,50	0,20	47,29 x 2,62	OR568 0134-00-N70	HY603 0134-00-300
53,00	47,10	4,50	6,00	7,50	0,40	46,04 x 3,53	OR568 0828-00-N70	HY603 0828-00-300
54,00	49,80	3,50	5,00	6,50	0,20	48,90 x 2,62	OR568 0135-00-N70	HY603 0135-00-300
54,00	48,10	4,50	6,00	7,50	0,40	47,22 x 3,53	OR568 0225-00-N70	HY603 0225-00-300
54,00	48,10	4,50	6,00	7,50	0,40	47,63 x 3,53	OR568 0829-00-N70	HY603 0829-00-300
55,00	45,30	7,30	9,10	11,00	0,50	44,20 x 5,70	OR550 0442-57-N70	HY600 0450-50-300
55,00	50,20	3,90	5,50	7,00	0,30	49,50 x 3,00	OR550 0495-30-N70	HY600 0500-25-300
55,00	46,00	7,00	8,80	11,00	0,50	43,82 x 5,33	OR568 0327-00-N70	HY603 0327-00-300
56,00	51,80	3,50	5,00	6,50	0,20	50,47 x 2,62	OR568 0136-00-N70	HY603 0136-00-300
56,00	50,10	4,50	6,00	7,50	0,40	49,22 x 3,53	OR568 0830-00-N70	HY603 0830-00-300
57,00	52,80	3,50	5,00	6,50	0,20	52,07 x 2,62	OR568 0137-00-N70	HY603 0137-00-300
58,00	52,10	4,50	6,00	7,50	0,40	50,39 x 3,53	OR568 0226-00-N70	HY603 0226-00-300
58,00	49,00	7,00	8,80	11,00	0,50	46,99 x 5,33	OR568 0328-00-N70	HY603 0328-00-300
58,00	52,10	4,50	6,00	7,50	0,40	50,80 x 3,53	OR568 0831-00-N70	HY603 0831-00-300
59,00	54,80	3,50	5,00	6,50	0,20	53,64 x 2,62	OR568 0138-00-N70	HY603 0138-00-300
60,00	50,30	7,30	9,10	11,00	0,50	49,20 x 5,70	OR550 0492-57-N70	HY600 0500-50-300
60,00	55,20	3,90	5,50	7,00	0,30	54,50 x 3,00	OR550 0545 30-N70	HY600 0550-25-300
60,00	54,10	4,50	6,00	7,50	0,40	52,39 x 3,53	OR568 0832-00-N70	HY603 0832-00-300
61,00	56,80	3,50	5,00	6,50	0,20	55,25 x 2,62	OR568 0139-00-N70	HY603 0139-00-300
61,00	55,10	4,50	6,00	7,50	0,40	53,57 x 3,53	OR568 0227-00-N70	HY603 0227-00-300
61,00	52,00	7,00	8,80	11,00	0,50	50,17 x 5,33	OR568 0329-00-N70	HY603 0329-00-300
62,00	57,80	3,50	5,00	6,50	0,20	56,82 x 2,62	OR568 0140-00-N70	HY603 0140-00-300
62,00	56,10	4,50	6,00	7,50	0,40	55,56 x 3,53	OR568 0834-00-N70	HY603 0834-00-300
63,00	53,30	7,30	9,10	11,00	0,50	52,20 x 5,70	OR550 0522-57-N70	HY600 0530-50-300
63,00	58,20	3,90	5,50	7,00	0,30	57,20 x 3,00	OR550 0572 30-N70	HY600 0580-25-300
64,00	59,80	3,50	5,00	6,50	0,20	58,42 x 2,62	OR568 0141-00-N70	HY603 0141-00-300
64,00	58,10	4,50	6,00	7,50	0,40	56,70 x 3,53	OR568 0228-00-N70	HY603 0228-00-300
64,00	55,00	7,00	8,80	11,00	0,50	53,34 x 5,33	OR568 0330-00-N70	HY603 0330-00-300
64,00	58,10	4,50	6,00	7,50	0,40	57,15 x 3,53	OR568 0835-00-N70	HY603 0835-00-300
65,00	55,30	7,30	9,10	11,00	0,50	54,20 x 5,70	OR550 0542-57-N70	HY600 0500-50-300
65,00	60,20	3,90	5,50	7,00	0,30	59,50 x 3,00	OR550 0595-30-N70	HY600 0600-25-300
65,00	60,80	3,50	5,00	6,50	0,20	59,99 x 2,62	OR568 0142-00-N70	HY603 0142-00-300
65,00	59,10	4,50	6,00	7,50	0,40	58,74 x 3,53	OR568 0836-00-N70	HY603 0836-00-300
67,00	62,80	3,50	5,00	6,50	0,20	61,60 x 2,62	OR568 0143-00-N70	HY603 0143-00-300
67,00	61,10	4,50	6,00	7,50	0,40	59,92 x 3,53	OR568 0229-00-N70	HY603 0229-00-300
67,00	61,10	4,50	6,00	7,50	0,40	60,30 x 3,53	OR568 0837-00-N70	HY603 0837-00-300
68,00	63,80	3,50	5,00	6,50	0,20	63,17 x 2,62	OR568 0144-00-N70	HY603 0144-00-300
68,00	59,00	7,00	8,80	11,00	0,50	56,52 x 5,33	OR568 0331-00-N70	HY603 0331-00-300
69,00	63,10	4,50	6,00	7,50	0,40	61,90 x 3,53	OR568 0838-00-N70	HY603 0838-00-300
70,00	60,30	7,30	9,10	11,00	0,50	59,20 x 5,70	OR550 0592-57-N70	HY600 0600-50-300
70,00	65,20	3,90	5,50	7,00	0,30	64,50 x 3,00	OR550 0645-30-N70	HY600 0650-25-300
70,00	65,80	3,50	5,00	6,50	0,20	64,77 x 2,62	OR568 0145-00-N70	HY603 0145-00-300

O - RING
OR 550 / OR 568

Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
70,00	64,10	4,50	6,00	7,50	0,40	63,09 x 3,53	OR568 0230-00-N70	HY603 0230-00-300
70,00	61,00	7,00	8,80	11,00	0,50	59,69 x 5,33	OR568 0332-00-N70	HY603 0332-00-300
70,00	64,10	4,50	6,00	7,50	0,40	63,50 x 3,53	OR568 0839-00-N70	HY603 0839-00-300
72,00	67,80	3,50	5,00	6,50	0,20	66,34 x 2,62	OR568 0146-00-N70	HY603 0146-00-300
72,00	66,10	4,50	6,00	7,50	0,40	65,09 x 3,53	OR568 0840-00-N70	HY603 0840-00-300
73,00	68,80	3,50	5,00	6,50	0,20	67,95 x 2,62	OR568 0147-00-N70	HY603 0147-00-300
73,00	67,10	4,50	6,00	7,50	0,40	66,27 x 3,53	OR568 0231-00-N70	HY603 0231-00-300
73,00	64,00	7,00	8,80	11,00	0,50	62,87 x 5,33	OR568 0333-00-N70	HY603 0333-00-300
73,00	67,10	4,50	6,00	7,50	0,40	66,68 x3,53	OR568 0841-00-N70	HY603 0841-00-300
75,00	65,30	7,30	9,10	11,00	0,50	64,20 x 5,70	OR550 0642-57-N70	HY600 0650-50-300
75,00	70,20	3,90	5,50	7,00	0,30	69,50 x 3,00	OR550 0695-30-N70	HY600 0700-25-300
75,00	70,80	3,50	5,00	6,50	0,20	69,52 x 2,62	OR568 0148-00-N70	HY603 0148-00-300
75,00	69,10	4,50	6,00	7,50	0,40	68,26 x 3,53	OR568 0842-00-N70	HY603 0842-00-300
76,00	71,80	3,50	5,00	6,50	0,20	71,12 x 2,62	OR568 0149-00-N70	HY603 0149-00-300
77,00	71,10	4,50	6,00	7,50	0,40	69,44 x 3,53	OR568 0232-00-N70	HY603 0232-00-300
77,00	68,00	7,00	8,80	11,00	0,50	66,04 x 5,33	OR568 0334-00-N70	HY603 0334-00-300
77,00	71,10	4,50	6,00	7,50	0,40	69,85 x 3,53	OR568 0843-00-N70	HY603 0843-00-300
78,00	72,10	4,50	6,00	7,50	0,40	71,44 x 3,53	OR568 0844-00-N70	HY603 0844-00-300
80,00	70,30	7,30	9,10	11,00	0,50	69,20 x 5,70	OR550 0692-57-N70	HY600 0700-50-300
80,00	75,20	3,90	5,50	7,00	0,30	74,50 x 3,00	OR550 0745-30-N70	HY600 0750-25-300
80,00	74,10	4,50	6,00	7,50	0,40	72,62 x 3,53	OR568 0233-00-N70	HY603 0233-00-300
80,00	71,00	7,00	8,80	11,00	0,50	69,22 x 5,33	OR568 0335-00-N70	HY603 0335-00-300
80,00	74,10	4,50	6,00	7,50	0,40	73,03 x 3,53	OR568 0845-00-N70	HY603 0845-00-300
81,00	75,10	4,50	6,00	7,50	0,40	74,61 x 3,53	OR568 0846-00-N70	HY603 0846-00-300
83,00	77,10	4,50	6,00	7,50	0,40	75,79 x 3,53	OR568 0234-00-N70	HY603 0234-00-300
83,00	74,00	7,00	8,80	11,00	0,50	72,40 x 5,33	OR568 0336-00-N70	HY603 0336-00-300
85,00	75,30	7,30	9,10	11,00	0,50	74,20 x 5,70	OR550 0742-57-N70	HY600 0750-50-300
85,00	80,20	3,90	5,50	7,00	0,30	79,50 x 3,00	OR550 0795-30-N70	HY600 0800-25-300
85,00	76,00	7,00	8,80	11,00	0,50	74,63 x 5,33	OR568 0619-00-N70	HY603 0619-00-300
86,00	80,10	4,50	6,00	7,50	0,40	78,90 x 3,53	OR568 0235-00-N70	HY603 0235-00-300
86,00	77,00	7,00	8,80	11,00	0,50	75,57 x 5,33	OR568 0337-00-N70	HY603 0337-00-300
89,00	83,10	4,50	6,00	7,50	0,40	82,14 x 3,53	OR568 0236-00-N70	HY603 0236-00-300
90,00	80,30	7,30	9,10	11,00	0,50	79,20 x 5,70	OR550 0792-57-N70	HY600 0800-50-300
90,00	85,20	3,90	5,50	7,00	0,30	84,50 x 3,00	OR550 0845-30-N70	HY600 0850-25-300
90,00	81,00	7,00	8,80	11,00	0,50	78,74 x 5,33	OR568 0338-00-N70	HY603 0338-00-300
90,00	81,00	7,00	8,80	11,00	0,50	79,77 x 5,33	OR568 0620-00-N70	HY603 0620-00-300
92,00	86,10	4,50	6,00	7,50	0,40	85,32 x 3,53	OR568 0237-00-N70	HY603 0237-00-300
92,00	83,00	7,00	8,80	11,00	0,50	81,92 x 5,33	OR568 0339-00-N70	HY603 0339-00-300
94,00	89,80	3,50	5,00	6,50	0,20	88,57 x 2,62	OR568 0153-00-N70	HY603 0153-00-300
95,00	90,20	3,90	5,50	7,00	0,30	89,50 x 3,00	OR550 0895-30-N70	HY600 0900-25-300
95,00	85,30	7,30	9,10	11,00	0,50	84,10 x 5,70	OR550 0841-57-N70	HY600 0850-50-300
95,00	89,10	4,50	6,00	7,50	0,40	88,49 x 3,53	OR568 0238-00-N70	HY603 0238-00-300
95,00	86,00	7,00	8,80	11,00	0,50	85,09 x 5,33	OR568 0340-00-N70	HY603 0340-00-300
98,00	89,00	7,00	8,80	11,00	0,50	88,27 x 5,33	OR568 0341-00-N70	HY603 0341-00-300
99,00	93,10	4,50	6,00	7,50	0,40	91,67 x 3,53	OR568 0239-00-N70	HY603 0239-00-300
100,00	95,20	3,90	5,50	7,00	0,30	94,50 x 3,00	OR550 0945-30-N70	HY600 0950-25-300
100,00	90,30	7,30	9,10	11,00	0,50	89,10 x 5,70	OR550 0891-57-N70	HY600 0900-50-300
100,00	91,00	7,00	8,80	11,00	0,50	89,69 x 5,33	OR568 0621-00-N70	HY603 0621-00-300
101,00	96,80	3,50	5,00	6,50	0,20	94,92 x 2,62	OR568 0154-00-N70	HY603 0154-00-300
102,00	96,10	4,50	6,00	7,50	0,40	94,84 x 3,53	OR568 0240-00-N70	HY603 0240-00-300
102,00	93,00	7,00	8,80	11,00	0,50	91,44 x 5,33	OR568 0342-00-N70	HY603 0342-00-300
105,00	95,30	7,30	9,10	11,00	0,50	94,10 x 5,70	OR550 0941-57-N70	HY600 0950-50-300
105,00	100,20	3,90	5,50	7,00	0,30	99,50 x 3,00	OR550 0995-30-N70	HY600 1000-25-300
105,00	99,10	4,50	6,00	7,50	0,40	98,02 x 3,53	OR568 0241-00-N70	HY603 0241-00-300
105,00	96,00	7,00	8,80	11,00	0,50	94,62 x 5,33	OR568 0343-00-N70	HY603 0343-00-300
108,00	102,10	4,50	6,00	7,50	0,40	101,19 x 3,53	OR568 0242-00-N70	HY603 0242-00-300
108,00	99,00	7,00	8,80	11,00	0,50	97,79 x 5,33	OR568 0344-00-N70	HY603 0344-00-300
110,00	100,30	7,30	9,10	11,00	0,50	99,10 x 5,70	OR550 0991-57-N70	HY600 1000-50-300
110,00	105,20	3,90	5,50	7,00	0,30	104,50 x 3,00	OR550 1045-30-N70	HY600 1050-25-300

O - RING
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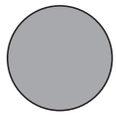
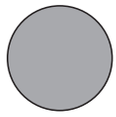


Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
110,00	101,00	7,00	8,80	11,00	0,50	100,00 x 5,33	OR568 0622-00-N70	HY603 0622-00-300
111,00	105,10	4,50	6,00	7,50	0,40	104,37 x 3,53	OR568 0243-00-N70	HY603 0243-00-300
111,00	102,00	7,00	8,80	11,00	0,50	100,97 x 5,33	OR568 0345-00-N70	HY603 0345-00-300
114,00	108,10	4,50	6,00	7,50	0,40	107,54 x 3,53	OR568 0244-00-N70	HY603 0244-00-300
115,00	105,30	7,30	9,10	11,00	0,50	104,10 x 5,70	OR550 1041-57-N70	HY600 1050-50-300
115,00	110,20	3,90	5,50	7,00	0,30	109,50 x 3,00	OR550 1095-30-N70	HY600 1100-25-300
115,00	106,00	7,00	8,80	11,00	0,50	104,14 x 5,33	OR568 0346-00-N70	HY603 0346-00-300
118,00	112,10	4,50	6,00	7,50	0,40	110,72 x 3,53	OR568 0245-00-N70	HY603 0245-00-300
118,00	109,00	7,00	8,80	11,00	0,50	107,32 x 5,33	OR568 0347-00-N70	HY603 0347-00-300
120,00	110,30	7,30	9,10	11,00	0,50	109,10 x 5,70	OR550 1091-57-N70	HY600 1100-50-300
120,00	115,20	3,90	5,50	7,00	0,30	114,50 x 3,00	OR550 1145-30-N70	HY600 1150-25-300
120,00	115,80	3,50	5,00	6,50	0,20	113,97 x 2,62	OR568 0157-00-N70	HY603 0157-00-300
120,00	111,00	7,00	8,80	11,00	0,50	109,54 x 5,33	OR568 0623-00-N70	HY603 0623-00-300
121,00	115,10	4,50	6,00	7,50	0,40	113,90 x 3,53	OR568 0246-00-N70	HY603 0246-00-300
121,00	112,00	7,00	8,80	11,00	0,50	110,49 x 5,33	OR568 0348-00-N70	HY603 0348-00-300
124,00	118,10	4,50	6,00	7,50	0,40	117,07 x 3,53	OR568 0247-00-N70	HY603 0247-00-300
125,00	115,30	7,30	9,10	11,00	0,50	114,10 x 5,70	OR550 1141-57-N70	HY600 1150-50-300
125,00	120,20	3,90	5,50	7,00	0,30	119,50 x 3,00	OR550 1195-30-N70	HY600 1200-25-300
125,00	116,00	7,00	8,80	11,00	0,50	113,67 x 5,33	OR568 0349-00-N70	HY603 0349-00-300
127,00	121,10	4,50	6,00	7,50	0,40	120,24 x 3,53	OR568 0248-00-N70	HY603 0248-00-300
127,00	115,20	9,50	12,00	15,00	0,60	113,67 x 6,99	OR568 0425-00-N70	HY603 0425-00-300
128,00	119,00	7,00	8,80	11,00	0,50	116,84 x 5,33	OR568 0350-00-N70	HY603 0350-00-300
128,00	119,00	7,00	8,80	11,00	0,50	117,48 x 5,33	OR568 0860-00-N70	HY603 0860-00-300
130,00	120,30	7,30	9,10	11,00	0,50	119,30 x 5,70	OR550 1193-57-N70	HY600 1200-50-300
130,00	125,20	3,90	5,50	7,00	0,30	124,50 x 3,00	OR550 1245-30-N70	HY600 1250-25-300
130,00	124,10	4,50	6,00	7,50	0,40	123,42 x 3,53	OR568 0249-00-N70	HY603 0249-00-300
130,00	118,20	9,50	12,00	15,00	0,60	116,84 x 6,99	OR568 0426-00-N70	HY603 0426-00-300
132,00	123,00	7,00	8,80	11,00	0,50	120,02 x 5,33	OR568 0351-00-N70	HY603 0351-00-300
132,00	123,00	7,00	8,80	11,00	0,50	120,70 x 5,33	OR568 0861-00-N70	HY603 0861-00-300
133,00	127,10	4,50	6,00	7,50	0,40	126,60 x 3,53	OR568 0250-00-N70	HY603 0250-00-300
135,00	125,30	7,30	9,10	11,00	0,50	124,30 x 5,70	OR550 1243-57-N70	HY600 1250-50-300
135,00	130,20	3,90	5,50	7,00	0,30	129,50 x 3,00	OR550 1295-30-N70	HY600 1300-25-300
135,00	126,00	7,00	8,80	11,00	0,50	123,80 x 5,33	OR568 0862-00-N70	HY603 0862-00-300
135,00	123,20	9,50	12,00	15,00	0,60	120,02 x 6,99	OR568 0427-00-N70	HY630 0427-00-01P
136,00	130,10	4,50	6,00	7,50	0,40	129,77 x 3,53	OR568 0251-00-N70	HY603 0251-00-300
137,00	128,00	7,00	8,80	11,00	0,50	126,37 x 5,33	OR568 0353-00-N70	HY603 0353-00-300
137,00	125,20	9,50	12,00	15,00	0,60	123,19 x 6,99	OR568 0428-00-N70	HY603 0428-00-300
137,00	128,00	7,00	8,80	11,00	0,50	127,00 x 5,33	OR568 0863-00-N70	HY603 0863-00-300
140,00	130,30	7,30	9,10	11,00	0,50	129,30 x 5,70	OR550 1293-57-N70	HY600 1300-50-300
140,00	135,20	3,90	5,50	7,00	0,30	134,50 x 3,00	OR550 1345-30-N70	HY600 1350-25-300
140,00	134,10	4,50	6,00	7,50	0,40	132,94 x 3,53	OR568 0252-00-N70	HY603 0252-00-300
140,00	131,00	7,00	8,80	11,00	0,50	129,54 x 5,33	OR568 0354-00-N70	HY603 0354-00-300
140,00	128,20	9,50	12,00	15,00	0,60	126,37 x 6,99	OR568 0429-00-N70	HY603 0429-00-300
140,00	131,00	7,00	8,80	11,00	0,50	130,20 x 5,33	OR568 0864-00-N70	HY603 0864-00-300
143,00	137,10	4,50	6,00	7,50	0,40	136,12 x 3,53	OR568 0253-00-N70	HY603 0253-00-300
143,00	134,00	7,00	8,80	11,00	0,50	132,72 x 5,33	OR568 0355-00-N70	HY603 0355-00-300
145,00	135,30	7,30	9,10	11,00	0,50	134,30 x 5,70	OR550 1343-57-N70	HY600 1350-50-300
145,00	140,20	3,90	5,50	7,00	0,30	139,50 x 3,00	OR550 1395-30-N70	HY600 1400-25-300
145,00	136,00	7,00	8,80	11,00	0,50	133,35 x 5,33	OR568 0865-00-N70	HY603 0865-00-300
146,00	140,10	4,50	6,00	7,50	0,40	139,30 x 3,53	OR568 0254-00-N70	HY603 0254-00-300
146,00	134,20	9,50	12,00	15,00	0,60	132,72 x 6,99	OR568 0431-00-N70	HY603 0431-00-300
147,00	138,00	7,00	8,80	11,00	0,50	135,90 x 5,33	OR568 0356-00-N70	HY603 0356-00-300
147,00	138,00	7,00	8,80	11,00	0,50	136,53 x 5,33	OR568 0866-00-N70	HY603 0866-00-300
149,00	143,10	4,50	6,00	7,50	0,40	142,47 x 3,53	OR568 0255-00-N70	HY603 0255-00-300
150,00	140,30	7,30	9,10	11,00	0,50	139,30 x 5,70	OR550 1393-57-N70	HY600 1400-50-300
150,00	145,20	3,90	5,50	7,00	0,30	144,50 x 3,00	OR550 1445-30-N70	HY600 1450-25-300
150,00	141,00	7,00	8,80	11,00	0,50	139,07 x 5,33	OR568 0357-00-N70	HY603 0357-00-300
150,00	138,20	9,50	12,00	15,00	0,60	135,80 x 6,99	OR568 0432-00-N70	HY603 0432-00-300
150,00	141,00	7,00	8,80	11,00	0,50	139,70 x 5,33	OR568 0867-00-N70	HY603 0867-00-300

O - RING
OR 550 / OR 568



Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
153,00	144,00	7,00	8,80	11,00	0,50	142,24 x 5,33	OR568 0358-00-N70	HY603 0358-00-300
153,00	141,20	9,50	12,00	15,00	0,60	139,07 x 6,99	OR568 0433-00-N70	HY603 0433-00-300
153,00	144,00	7,00	8,80	11,00	0,50	142,88 x 5,33	OR568 0868-00-N70	HY603 0868-00-300
155,00	145,30	7,30	9,10	11,00	0,50	144,30 x 5,70	OR550 1443-57-N70	HY600 1450-50-300
155,00	149,10	4,50	6,00	7,50	0,40	148,82 x 3,53	OR568 0257-00-N70	HY603 0257-00-300
159,00	153,10	4,50	6,00	7,50	0,40	151,99 x 3,53	OR568 0258-00-N70	HY603 0258-00-300
160,00	150,30	7,30	9,10	11,00	0,50	149,30 x 5,70	OR550 1493-57-N70	HY600 1500-50-300
160,00	151,00	7,00	8,80	11,00	0,50	148,59 x 5,33	OR568 0360-00-N70	HY603 0360-00-300
160,00	148,20	9,50	12,00	15,00	0,60	145,42 x 6,99	OR568 0435-00-N70	HY603 0435-00-300
160,00	151,00	7,00	8,80	11,00	0,50	149,23 x 5,33	OR568 0870-00-N70	HY603 0870-00-300
165,00	155,30	7,30	9,10	11,00	0,50	154,30 x 5,70	OR550 1543-57-N70	HY600 1550-50-300
165,00	153,20	9,50	12,00	15,00	0,60	151,77 x 6,99	OR568 0437-00-N70	HY630 0437-00-01P
169,00	160,00	7,00	8,80	11,00	0,50	158,12 x 5,33	OR568 0362-00-N70	HY603 0362-00-300
170,00	160,30	7,30	9,10	11,00	0,50	159,30 x 5,70	OR550 1593-57-N70	HY600 1600-50-300
170,00	158,20	9,50	12,00	15,00	0,60	155,60 x 6,99	OR568 0872-00-N70	HY603 0872-00-300
175,00	165,30	7,30	9,10	11,00	0,50	164,30 x 5,70	OR550 1643-57-N70	HY600 1650-50-300
175,00	166,00	7,00	8,80	11,00	0,50	164,47 x 5,33	OR568 0363-00-N70	HY603 0363-00-300
175,00	163,20	9,50	12,00	15,00	0,60	161,90 x 6,99	OR568 0874-00-N70	HY630 0874-00-01P
180,00	170,30	7,30	9,10	11,00	0,50	169,30 x 5,70	OR550 1693-57-N70	HY600 1700-50-300
180,00	168,20	9,50	12,00	15,00	0,60	166,70 x 6,99	OR568 0628-00-N70	HY603 0628-00-300
182,00	173,00	7,00	8,80	11,00	0,50	170,82 x 5,33	OR568 0364-00-N70	HY603 0364-00-300
185,00	175,30	7,30	9,10	11,00	0,50	174,30 x 5,70	OR550 1743-57-N70	HY600 1750-50-300
188,00	179,00	7,00	8,80	11,00	0,50	177,17 x 5,33	OR568 0365-00-N70	HY603 0365-00-300
190,00	180,30	7,30	9,10	11,00	0,50	179,30 x 5,70	OR550 1793-57-N70	HY600 1800-50-300
190,00	184,10	4,50	6,00	7,50	0,40	183,75 x 3,53	OR568 0263-00-N70	HY603 0263-00-300
195,00	185,30	7,30	9,10	11,00	0,50	184,30 x 5,70	OR550 1843-57-N70	HY600 1850-50-300
195,00	183,20	9,50	12,00	15,00	0,60	181,00 x 6,99	OR568 0880-00-N70	HY603 0880-00-300
195,00	186,00	7,00	8,80	11,00	0,50	183,52 x 5,33	OR568 0366-00-N70	HY630 0366-00-01P
197,00	185,20	9,50	12,00	15,00	0,60	183,52 x 6,99	OR568 0442-00-N70	HY603 0442-00-300
200,00	190,30	7,30	9,10	11,00	0,50	189,30 x 5,70	OR550 1893-57-N70	HY600 1900-50-300
200,00	191,00	7,00	8,80	11,00	0,50	189,87 x 5,33	OR568 0367-00-N70	HY603 0367-00-300
200,00	188,20	9,50	12,00	15,00	0,60	187,30 x 6,99	OR568 0882-00-N70	HY630 0882-00-01P
203,00	191,20	9,50	12,00	15,00	0,60	189,87 x 6,99	OR568 0443-00-N70	HY603 0443-00-300
205,00	195,30	7,30	9,10	11,00	0,50	194,30 x 5,70	OR550 1943-57-N70	HY600 1950-50-300
207,00	198,00	7,00	8,80	11,00	0,50	196,22 x 5,33	OR568 0368-00-N70	HY603 0368-00-300
207,00	195,20	9,50	12,00	15,00	0,60	193,70 x 6,99	OR568 0884-00-N70	HY603 0884-00-300
210,00	200,30	7,30	9,10	11,00	0,50	199,30 x 5,70	OR550 1993-57-N70	HY600 2000-50-300
210,00	204,10	4,50	6,00	7,50	0,40	202,80 x 3,53	OR568 0266-00-N70	HY603 0266-00-300
210,00	198,20	9,50	12,00	15,00	0,60	196,20 x 6,99	OR568 0444-00-N70	HY603 0444-00-300
220,00	210,30	7,30	9,10	11,00	0,50	209,30 x 5,70	OR550 2093-57-N70	HY600 2100-50-300
220,00	211,00	7,00	8,80	11,00	0,50	208,92 x 5,33	OR568 0370-00-N70	HY603 0370-00-300
230,00	220,30	7,30	9,10	11,00	0,50	219,30 x 5,70	OR550 2193-57-N70	HY600 2200-50-300
230,00	218,20	9,50	12,00	15,00	0,60	215,27 x 6,99	OR568 0446-00-N70	HY603 0446-00-300
232,00	223,00	7,00	8,80	11,00	0,50	221,62 x 5,33	OR568 0372-00-N70	HY603 0372-00-300
235,00	223,20	9,50	12,00	15,00	0,60	221,62 x 6,99	OR568 0676-00-N70	HY630 0676-00-01P
239,00	230,00	7,00	8,80	11,00	0,50	227,97 x 5,33	OR568 0373-00-N70	HY603 0373-00-300
240,00	230,30	7,30	9,10	11,00	0,50	229,30 x 5,70	OR550 2293-57-N70	HY600 2300-50-300
242,00	230,20	9,50	12,00	15,00	0,60	227,97 x 6,99	OR568 0447-00-N70	HY603 0447-00-300
245,00	236,00	7,00	8,80	11,00	0,50	234,32 x 5,33	OR568 0374-00-N70	HY630 0374-00-01P
250,00	240,30	7,30	9,10	11,00	0,50	239,30 x 5,70	OR550 2393-57-N70	HY600 2400-50-300
255,00	243,20	9,50	12,00	15,00	0,60	240,67 x 6,99	OR568 0448-00-N70	HY630 0448-00-01P
260,00	250,30	7,30	9,10	11,00	0,50	249,30 x 5,70	OR550 2493-57-N70	HY600 2500-50-300
260,00	248,20	9,50	12,00	15,00	0,60	247,00 x 6,99	OR568 0680-00-N70	HY630 0680-00-01P
265,00	256,00	7,00	8,80	11,00	0,50	253,37 x 5,33	OR568 0377-00-N70	HY630 0377-00-01P
270,00	258,20	9,50	12,00	15,00	0,60	253,57 x 6,99	OR568 0449-00-N70	HY630 0449-00-01P
270,00	260,30	7,30	9,10	11,00	0,50	259,30 x 5,70	OR550 2593-57-N70	HY630 2700-50-01P
275,00	263,20	9,50	12,00	15,00	0,60	259,70 x 6,99	OR568 0682-00-N70	HY630 0682-00-01P
280,00	270,30	7,30	9,10	11,00	0,50	269,30 x 5,70	OR550 2693-57-N70	HY600 2700-50-300
280,00	268,20	9,50	12,00	15,00	0,60	266,07 x 6,99	OR568 0450-00-N70	HY630 0450-00-01P

Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
286,00	274,20	9,50	12,00	15,00	0,60	272,40 x 6,99	OR568 0684-00-N70	HY603 0684-00-300
290,00	281,00	7,00	8,80	11,00	0,50	278,77 x 5,33	OR568 0379-00-N70	HY630 0379-00-01P
290,00	280,30	7,30	9,10	11,00	0,50	279,30 x 5,70	OR550 2793-57-N70	HY630 2900-50-01P
295,00	283,20	9,50	12,00	15,00	0,60	278,77 x 6,99	OR568 0451-00-N70	HY630 0451-00-01P
300,00	290,30	7,30	9,10	11,00	0,50	289,30 x 5,70	OR550 2893-57-N70	HY630 3000-50-01P
300,00	288,20	9,50	12,00	15,00	0,60	285,10 x 6,99	OR568 0686-00-N70	HY630 0686-00-01P

Example for ordering O-Ring AS 568A:

OR 568 - 0360 - 00 - N70 - ...

Profile
AS 568A No.
Standard Material
HME internal Code

Example for ordering O-Ring metric:

OR 550 - 0360 - 30 - N70 - ...

Profile
Nominal diameter x 10
Cord strength x 10
Standard material
HME internal code

Material Key:

O-Ring

N70 - NBR 70 Shore A
N80 - NBR 80 Shore A
N90 - NBR 90 Shore A
F70 - FPM 70 Shore A
F80 - FPM 80 Shore A
E70 - EPDM 70 Shore A
S70 - Silicon 70 Shore A

Example for ordering Back Ring :

HY 600 2000 - 50 - 300 - ...

Profile (endless)
Nominal diameter x 10
Groove depth
Standard material
HME internal code

Material Key:

Thrust ring design

HY600 (endless)
HY603 (endless)

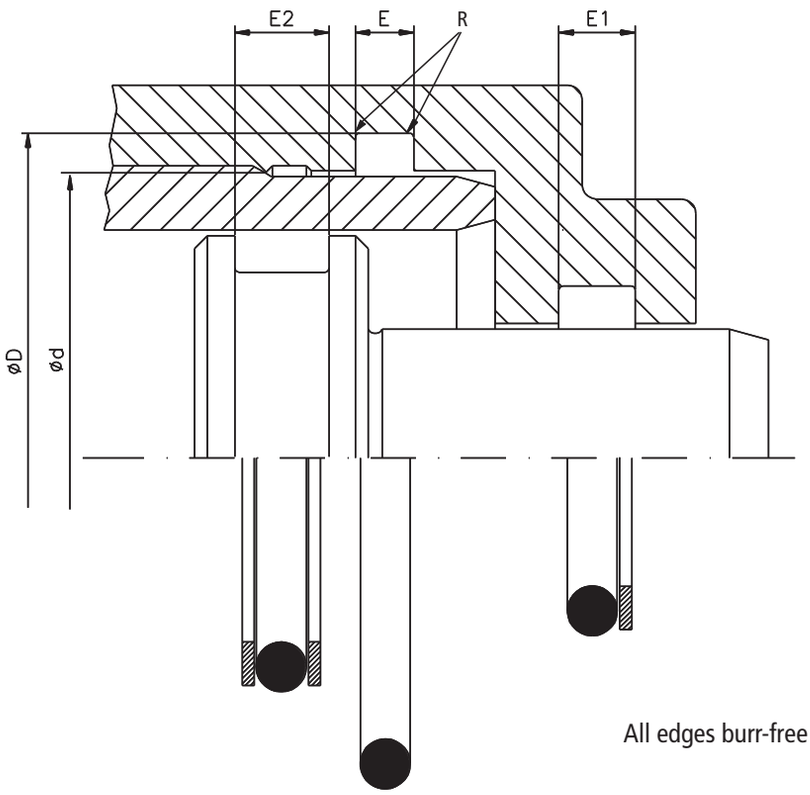
HY630 (slotted)
HY637 (spiral)
HY639 (concave slotted)

Standard material

Back Ring
300 - Polyester elastomer

01P - PTFE pure
25P - PTFE glass filled
30P - PTFE carbon
55P - PTFE bronze

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



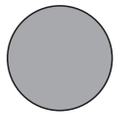
Groove sizes for static internal sealing applications

Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
2,50	5,10	2,50	4,00	5,50	0,20	2,57 x 1,78	OR568 0005-00-N70	HY610 0005-00-01P
4,00	7,80	3,20	4,70	6,20	0,20	3,30 x 2,40	OR550 0033-24-N70	HY600 0040-20-300
5,00	8,80	3,20	4,70	6,20	0,20	4,30 x 2,40	OR550 0043-24-N70	HY600 0050-20-300
6,00	9,80	3,20	4,70	6,20	0,20	5,30 x 2,40	OR550 0053-24-N70	HY600 0060-20-300
6,00	8,60	2,50	4,00	5,50	0,20	6,07 x 1,78	OR568 0010-00-N70	HY610 0010-00-01P
7,00	10,80	3,20	4,70	6,20	0,20	6,30 x 2,40	OR550 0063-24-N70	HY600 0070-20-300
7,00	9,60	2,50	4,00	5,50	0,20	6,75 x 1,78	OR568 0610-00-N70	HY603 0610-00-300
8,00	11,80	3,20	4,70	6,20	0,20	7,30 x 2,40	OR550 0073-24-N70	HY600 0080-20-300
8,00	10,60	2,50	4,00	5,50	0,20	7,66 x 1,78	OR568 0011-00-N70	HY610 0011-00-01P
9,00	12,80	3,20	4,70	6,20	0,20	8,30 x 2,40	OR550 0083-24-N70	HY600 0090-20-300
9,00	13,20	3,50	5,00	6,50	0,20	7,60 x 2,62	OR568 0109-00-N70	HY603 0109-00-300
9,00	13,20	3,50	5,00	6,50	0,20	9,19 x 2,62	OR568 0110-00-N70	HY603 0110-00-300
9,00	11,60	2,50	4,00	5,50	0,20	8,73 x 1,78	OR568 0611-00-N70	HY603 0611-00-300
9,00	11,60	2,50	4,00	5,50	0,20	9,25 x 1,78	OR568 0012-00-N70	HY610 0012-00-01P
10,00	13,80	3,20	4,70	6,20	0,20	9,30 x 2,40	OR550 0093-24-N70	HY600 0100-20-300
10,00	14,20	3,50	5,00	6,50	0,20	9,92 x 2,62	OR568 0613-00-N70	HY603 0613-00-300
11,00	14,80	3,20	4,70	6,20	0,20	10,30 x 2,40	OR550 0103-24-N70	HY600 0110-20-300
11,00	15,20	3,50	5,00	6,50	0,20	10,78 x 2,62	OR568 0111-00-N70	HY603 0111-00-300
11,00	13,60	2,50	4,00	5,50	0,20	11,11 x 1,78	OR568 0806-00-N70	HY603 0806-00-300
11,00	13,60	2,50	4,00	5,50	0,20	10,82 x 1,78	OR568 0013-00-N70	HY610 0013-00-01P
12,00	15,80	3,20	4,70	6,20	0,20	11,30 x 2,40	OR550 0113-24-N70	HY600 0120-20-300

O - RING
OR 550 / OR 568

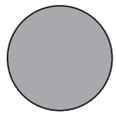
Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E1** ±0,2	**E2** ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
12,00	16,20	3,50	5,00	6,50	0,20	11,91 x 2,62	OR568 0614-00-N70	HY603 0614-00-300
12,50	16,70	3,50	5,00	6,50	0,20	12,37 x 2,62	OR568 0112-00-N70	HY603 0112-00-300
13,00	16,80	3,20	4,70	6,20	0,20	12,30 x 2,40	OR550 0123-24-N70	HY600 0130-20-300
13,00	15,60	2,50	4,00	5,50	0,20	12,42 x 1,78	OR568 0014-00-N70	HY610 0014-00-01P
14,00	17,80	3,20	4,70	6,20	0,20	13,30 x 2,40	OR550 0133-24-N70	HY600 0140-20-300
14,00	18,20	3,50	5,00	6,50	0,20	13,95 x 2,62	OR568 0113-00-N70	HY603 0113-00-300
14,00	16,60	2,50	4,00	5,50	0,20	14,00 x 1,78	OR568 0015-00-N70	HY610 0015-00-01P
15,00	18,80	3,20	4,70	6,20	0,20	14,30 x 2,40	OR550 0143-24-N70	HY600 0150-20-300
15,00	19,20	3,50	5,00	6,50	0,20	15,08 x 2,62	OR568 0616-00-N70	HY603 0616-00-300
15,50	19,70	3,50	5,00	6,50	0,20	15,54 x 2,62	OR568 0114-00-N70	HY603 0114-00-300
16,00	19,80	3,20	4,70	6,20	0,20	15,30 x 2,40	OR550 0153-24-N70	HY600 0160-20-300
16,00	20,20	3,50	5,00	6,50	0,20	15,88 x 2,62	OR568 0809-00-N70	HY603 0809-00-300
16,00	18,60	2,50	4,00	5,50	0,20	15,60 x 1,78	OR568 0016-00-N70	HY610 0016-00-01P
17,00	20,80	3,20	4,70	6,20	0,20	16,30 x 2,40	OR550 0163-24-N70	HY600 0170-20-300
17,00	21,20	3,50	5,00	6,50	0,20	17,13 x 2,62	OR568 0115-00-N70	HY603 0115-00-300
17,00	19,60	2,50	4,00	5,50	0,20	17,17 x 1,78	OR568 0017-00-N70	HY610 0017-00-01P
18,00	21,80	3,20	4,70	6,20	0,20	17,30 x 2,40	OR550 0173-24-N70	HY600 0180-20-300
18,00	22,20	3,50	5,00	6,50	0,20	17,86 x 2,62	OR568 0617-00-N70	HY603 0617-00-300
19,00	23,20	3,50	5,00	6,50	0,20	18,72 x 2,62	OR568 0116-00-N70	HY603 0116-00-300
19,00	24,90	4,50	6,00	7,50	0,40	18,64 x 3,53	OR568 0210-00-N70	HY603 0210-00-300
20,00	24,80	3,90	5,50	7,00	0,30	19,20 x 3,00	OR550 0192-30-N70	HY600 0200-25-300
20,00	24,20	3,50	5,00	6,50	0,20	20,29 x 2,62	OR568 0117-00-N70	HY603 0117-00-300
20,00	25,90	4,50	6,00	7,50	0,40	20,22 x 3,53	OR568 0211-00-N70	HY603 0211-00-300
21,00	25,20	3,50	5,00	6,50	0,20	20,62 x 2,62	OR568 0812-00-N70	HY603 0812-00-300
21,00	23,60	2,50	4,00	5,50	0,20	20,35 x 1,78	OR568 0019-00-N70	HY610 0019-00-01P
22,00	26,20	3,50	5,00	6,50	0,20	21,89 x 2,62	OR568 0118-00-N70	HY603 0118-00-300
22,00	27,90	4,50	6,00	7,50	0,40	21,82 x 3,53	OR568 0212-00-N70	HY603 0212-00-300
22,00	26,20	3,50	5,00	6,50	0,20	22,22 x 2,62	OR568 0813-00-N70	HY603 0813-00-300
23,00	27,80	3,90	5,50	7,00	0,30	22,20 x 3,00	OR550 0222-30-N70	HY600 0230-25-300
23,00	28,90	4,50	6,00	7,50	0,40	23,39 x 3,53	OR568 0213-00-N70	HY603 0213-00-300
24,00	28,20	3,50	5,00	6,50	0,20	23,47 x 2,62	OR568 0119-00-N70	HY603 0119-00-300
24,00	28,20	3,50	5,00	6,50	0,20	23,81 x 2,62	OR568 0814-00-N70	HY603 0814-00-300
25,00	29,80	3,90	5,50	7,00	0,30	24,20 x 3,00	OR550 0242-30-N70	HY600 0250-25-300
25,00	29,20	3,50	5,00	6,50	0,20	25,07 x 2,62	OR568 0120-00-N70	HY603 0120-00-300
25,00	30,90	4,50	6,00	7,50	0,40	24,99 x 3,53	OR568 0214-00-N70	HY603 0214-00-300
26,00	31,90	4,50	6,00	7,50	0,40	25,80 x 3,53	OR568 0618-00-N70	HY603 0618-00-300
27,00	31,80	3,90	5,50	7,00	0,30	26,20 x 3,00	OR550 0262-30-N70	HY600 0270-25-300
27,00	32,90	4,50	6,00	7,50	0,40	26,58 x 3,53	OR568 0215-00-N70	HY603 0215-00-300
28,00	32,20	3,50	5,00	6,50	0,20	26,64 x 2,62	OR568 0121-00-N70	HY603 0121-00-300
28,00	32,20	3,50	5,00	6,50	0,20	28,24 x 2,62	OR568 0122-00-N70	HY603 0122-00-300
28,00	33,90	4,50	6,00	7,50	0,40	28,17 x 3,53	OR568 0216-00-N70	HY603 0216-00-300
30,00	34,80	3,90	5,50	7,00	0,30	29,20 x 3,00	OR550 0292-30-N70	HY600 0300-25-300
30,00	34,20	3,50	5,00	6,50	0,20	29,82 x 2,62	OR568 0123-00-N70	HY603 0123-00-300
30,00	35,90	4,50	6,00	7,50	0,40	29,75 x 3,53	OR568 0217-00-N70	HY603 0217-00-300
31,00	36,90	4,50	6,00	7,50	0,40	31,34 x 3,53	OR568 0218-00-N70	HY603 0218-00-300
32,00	36,20	3,50	5,00	6,50	0,20	31,42 x 2,62	OR568 0124-00-N70	HY603 0124-00-300
32,00	34,60	2,50	4,00	5,50	0,20	31,47 x 1,78	OR568 0026-00-N70	HY610 0026-00-01P
33,00	37,80	3,90	5,50	7,00	0,30	32,20 x 3,00	OR550 0322-30-N70	HY600 0330-25-300
33,00	37,20	3,50	5,00	6,50	0,20	32,99 x 2,62	OR568 0125-00-N70	HY603 0125-00-300
33,00	38,90	4,50	6,00	7,50	0,40	32,92 x 3,53	OR568 0219-00-N70	HY603 0219-00-300
35,00	39,80	3,90	5,50	7,00	0,30	34,20 x 3,00	OR550 0342-30-N70	HY600 0350-25-300
35,00	39,20	3,50	5,00	6,50	0,20	34,59 x 2,62	OR568 0126-00-N70	HY603 0126-00-300
35,00	40,90	4,50	6,00	7,50	0,40	34,52 x 3,53	OR568 0220-00-N70	HY603 0220-00-300
36,00	40,20	3,50	5,00	6,50	0,20	36,17 x 2,62	OR568 0127-00-N70	HY603 0127-00-300
36,00	41,90	4,50	6,00	7,50	0,40	36,10 x 3,53	OR568 0221-00-N70	HY603 0221-00-300
37,00	41,80	3,90	5,50	7,00	0,30	36,20 x 3,00	OR550 0362-30-N70	HY600 0370-25-300
38,00	42,20	3,50	5,00	6,50	0,20	37,77 x 2,62	OR568 0128-00-N70	HY603 0128-00-300
38,00	43,90	4,50	6,00	7,50	0,40	37,70 x 3,53	OR568 0222-00-N70	HY603 0222-00-300
38,00	47,00	7,00	8,80	11,00	0,50	37,47 x 5,33	OR568 0325-00-N70	HY603 0325-00-300

Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
38,00	40,60	2,50	4,00	5,50	0,20	37,82 x 1,78	OR568 0029-00-N70	HY610 0029-00-01P
40,00	44,80	3,90	5,50	7,00	0,30	39,20 x 3,00	OR550 0392-30-N70	Hy600 0400-25-300
40,00	49,70	7,30	9,10	11,00	0,50	39,20 x 5,70	OR550 0392-57-N70	HY600 0400-50-300
40,00	44,20	3,50	5,00	6,50	0,20	39,34 x 2,62	OR568 0129-00-N70	HY603 0129-00-300
40,00	45,90	4,50	6,00	7,50	0,40	39,69 x 3,53	OR568 0824-00-N70	HY603 0824-00-300
41,00	45,20	3,50	5,00	6,50	0,20	40,94 x 2,62	OR568 0130-00-N70	HY603 0130-00-300
41,00	50,00	7,00	8,80	11,00	0,50	40,64 x 5,33	OR568 0326-00-N70	HY603 0326-00-300
41,00	43,60	2,50	4,00	5,50	0,20	41,00 x 1,78	OR568 0030-00-N70	HY610 0030-00-01P
42,00	47,90	4,50	6,00	7,50	0,40	40,87 x 3,53	OR568 0223-00-N70	HY603 0223-00-300
42,00	47,90	4,50	6,00	7,50	0,40	41,28 x 3,53	OR568 0825-00-N70	HY603 0825-00-300
43,00	47,80	3,90	5,50	7,00	0,30	42,20 x 3,00	OR550 0422-30-N70	HY600 0430-25-300
43,00	47,20	3,50	5,00	6,50	0,20	42,52 x 2,62	OR568 0131-00-N70	HY603 0131-00-300
43,00	48,90	4,50	6,00	7,50	0,40	42,86 x 3,53	OR568 0826-00-N70	HY603 0826-00-300
44,00	48,20	3,50	5,00	6,50	0,20	44,12 x 2,62	OR568 0132-00-N70	HY603 0132-00-300
44,00	53,00	7,00	8,80	11,00	0,50	43,82 x 5,33	OR568 0327-00-N70	HY603 0327-00-300
45,00	49,80	3,90	5,50	7,00	0,30	44,20 x 3,00	OR550 0442-30-N70	HY600 0450-25-300
45,00	54,70	7,30	9,10	11,00	0,50	44,20 x 5,70	OR550 0442-57-N70	HY600 0450-50-300
45,00	50,90	4,50	6,00	7,50	0,40	44,04 x 3,53	OR568 0224-00-N70	HY603 0224-00-300
45,00	50,90	4,50	6,00	7,50	0,40	44,45 x 3,53	OR568 0827-00-N70	HY603 0827-00-300
46,00	50,20	3,50	5,00	6,50	0,20	45,69 x 2,62	OR568 0133-00-N70	HY603 0133-00-300
46,00	51,90	4,50	6,00	7,50	0,40	46,04 x 3,53	OR568 0828-00-N70	HY603 0828-00-300
47,00	56,00	7,00	8,80	11,00	0,50	46,99 x 5,33	OR568 0328-00-N70	HY603 0328-00-300
48,00	52,20	3,50	5,00	6,50	0,20	47,29 x 2,62	OR568 0134-00-N70	HY603 0134-00-300
48,00	53,90	4,50	6,00	7,50	0,40	47,22 x 3,53	OR568 0225-00-N70	HY603 0225-00-300
48,00	53,90	4,50	6,00	7,50	0,40	47,63 x 3,53	OR568 0829-00-N70	HY603 0829-00-300
49,00	53,20	3,50	5,00	6,50	0,20	48,90 x 2,62	OR568 0135-00-N70	HY603 0135-00-300
49,00	54,90	4,50	6,00	7,50	0,40	49,22 x 3,53	OR568 0830-00-N70	HY603 0830-00-300
50,00	54,80	3,90	5,50	7,00	0,30	49,50 x 3,00	OR550 0495-30-N70	HY600 0500-25-300
50,00	59,70	7,30	9,10	11,00	0,50	49,20 x 5,70	OR550 0492-57-N70	HY600 0500-50-300
50,00	59,00	7,00	8,80	11,00	0,50	50,17 x 5,33	OR568 0329-00-N70	HY603 0329-00-300
51,00	55,20	3,50	5,00	6,50	0,20	50,47 x 2,62	OR568 0136-00-N70	HY603 0136-00-300
51,00	56,90	4,50	6,00	7,50	0,40	50,39 x 3,53	OR568 0226-00-N70	HY603 0226-00-300
51,00	56,90	4,50	6,00	7,50	0,40	50,80 x 3,53	OR568 0831-00-N70	HY603 0831-00-300
52,00	56,20	3,50	5,00	6,50	0,20	52,07 x 2,62	OR568 0137-00-N70	HY603 0137-00-300
52,00	57,90	4,50	6,00	7,50	0,40	52,39 x 3,53	OR568 0832-00-N70	HY603 0832-00-300
53,00	62,70	7,30	9,10	11,00	0,50	52,20 x 5,70	OR550 0522-57-N70	HY600 0530-50-300
53,00	62,00	7,00	8,80	11,00	0,50	53,34 x 5,33	OR568 0330-00-N70	HY603 0330-00-300
54,00	58,20	3,50	5,00	6,50	0,20	53,64 x 2,62	OR568 0138-00-N70	HY603 0138-00-300
54,00	59,90	4,50	6,00	7,50	0,40	53,57 x 3,53	OR568 0227-00-N70	HY603 0227-00-300
55,00	59,80	3,90	5,50	7,00	0,30	54,50 x 3,00	OR550 0545-30-N70	HY600 0550-25-300
55,00	64,70	7,30	9,10	11,00	0,50	54,20 x 5,70	OR550 0542-57-N70	HY600 0550-50-300
55,00	59,20	3,50	5,00	6,50	0,20	55,25 x 2,62	OR568 0139-00-N70	HY603 0139-00-300
56,00	61,90	4,50	6,00	7,50	0,40	55,56 x 3,53	OR568 0834-00-N70	HY603 0834-00-300
57,00	61,20	3,50	5,00	6,50	0,20	56,82 x 2,62	OR568 0140-00-N70	HY603 0140-00-300
57,00	62,90	4,50	6,00	7,50	0,40	56,70 x 3,53	OR568 0228-00-N70	HY603 0228-00-300
57,00	66,00	7,00	8,80	11,00	0,50	56,52 x 5,33	OR568 0331-00-N70	HY603 0331-00-300
57,00	62,90	4,50	6,00	7,50	0,40	57,15 x 3,53	OR568 0835-00-N70	HY603 0835-00-300
58,00	62,80	3,90	5,50	7,00	0,30	57,20 x 3,00	OR550 0572-30-N70	HY600 0580-25-300
59,00	63,20	3,50	5,00	6,50	0,20	58,42 x 2,62	OR568 0141-00-N70	HY603 0141-00-300
59,00	64,90	4,50	6,00	7,50	0,40	58,74 x 3,53	OR568 0836-00-N70	HY603 0836-00-300
60,00	64,80	3,90	5,50	7,00	0,30	59,50 x 3,00	OR550 0595-30-N70	HY600 0600-25-300
60,00	69,70	7,30	9,10	11,00	0,50	59,20 x 5,70	OR550 0592-57-N70	HY600 0600-50-300
60,00	64,20	3,50	5,00	6,50	0,20	59,99 x 2,62	OR568 0142-00-N70	HY603 0142-00-300
60,00	65,90	4,50	6,00	7,50	0,40	59,92 x 3,53	OR568 0229-00-N70	HY603 0229-00-300
60,00	69,00	7,00	8,80	11,00	0,50	59,69 x 5,33	OR568 0332-00-N70	HY603 0332-00-300
60,00	65,90	4,50	6,00	7,50	0,40	60,30 x 3,53	OR568 0837-00-N70	HY603 0837-00-300
62,00	66,20	3,50	5,00	6,50	0,20	61,60 x 2,62	OR568 0143-00-N70	HY603 0143-00-300
62,00	67,90	4,50	6,00	7,50	0,40	61,90 x 3,53	OR568 0838-00-N70	HY603 0838-00-300
63,00	67,20	3,50	5,00	6,50	0,20	63,17 x 2,62	OR568 0144-00-N70	HY603 0144-00-300

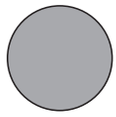


Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
63,00	72,00	7,00	8,80	11,00	0,50	62,87 x 5,33	OR568 0333-00-N70	HY603 0333-00-300
64,00	69,90	4,50	6,00	7,50	0,40	63,09 x 3,53	OR568 0230-00-N70	HY603 0230-00-300
64,00	69,90	4,50	6,00	7,50	0,40	63,50 x 3,53	OR568 0839-00-N70	HY603 0839-00-300
65,00	69,80	3,90	5,50	7,00	0,30	64,50 x 3,00	OR550 0645-30-N70	HY600 0650-25-300
65,00	74,70	7,30	9,10	11,00	0,50	64,20 x 5,70	OR550 0642-57-N70	HY600 0650-50-300
65,00	69,20	3,50	5,00	6,50	0,20	64,77 x 2,62	OR568 0145-00-N70	HY603 0145-00-300
65,00	70,90	4,50	6,00	7,50	0,40	65,09 x 3,53	OR568 0840-00-N70	HY603 0840-00-300
66,00	75,00	7,00	8,80	11,00	0,50	66,04 x 5,33	OR568 0334-00-N70	HY603 0334-00-300
67,00	71,20	3,50	5,00	6,50	0,20	66,34 x 2,62	OR568 0146-00-N70	HY603 0146-00-300
67,00	72,90	4,50	6,00	7,50	0,40	66,27 x 3,53	OR568 0231-00-N70	HY603 0231-00-300
67,00	72,90	4,50	6,00	7,50	0,40	66,68 x 3,53	OR568 0841-00-N70	HY603 0841-00-300
68,00	72,20	3,50	5,00	6,50	0,20	67,95 x 2,62	OR568 0147-00-N70	HY603 0147-00-300
68,00	73,90	4,50	6,00	7,50	0,40	68,26 x 3,53	OR568 0842-00-N70	HY603 0842-00-300
69,00	78,00	7,00	8,80	11,00	0,50	69,22 x 5,33	OR568 0335-00-N70	HY603 0335-00-300
70,00	74,80	3,90	5,50	7,00	0,30	69,50 x 3,00	OR550 0695-30-N70	HY600 0700-25-300
70,00	79,70	7,30	9,10	11,00	0,50	69,20 x 5,70	OR550 0692-57-N70	HY600 0700-50-300
70,00	74,20	3,50	5,00	6,50	0,20	69,52 x 2,62	OR568 0148-00-N70	HY603 0148-00-300
70,00	75,90	4,50	6,00	7,50	0,40	69,44 x 3,53	OR568 0232-00-N70	HY603 0232-00-300
70,00	75,90	4,50	6,00	7,50	0,40	69,85 x 3,53	OR568 0843-00-N70	HY603 0843-00-300
71,00	75,20	3,50	5,00	6,50	0,20	71,12 x 2,62	OR568 0149-00-N70	HY603 0149-00-300
72,00	77,90	4,50	6,00	7,50	0,40	71,44 x 3,53	OR568 0844-00-N70	HY603 0844-00-300
73,00	78,90	4,50	6,00	7,50	0,40	72,62 x 3,53	OR568 0233-00-N70	HY603 0233-00-300
73,00	82,00	7,00	8,80	11,00	0,50	72,40 x 5,33	OR568 0336-00-N70	HY603 0336-00-300
73,00	78,90	4,50	6,00	7,50	0,40	73,03 x 3,53	OR568 0845-00-N70	HY603 0845-00-300
75,00	79,80	3,90	5,50	7,00	0,30	74,50 x 3,00	OR550 0745-30-N70	HY600 0750-25-300
75,00	84,70	7,30	9,10	11,00	0,50	74,20 x 5,70	OR550 0742-57-N70	HY600 0750-50-300
75,00	84,00	7,00	8,80	11,00	0,50	74,63 x 5,33	OR568 0619-00-N70	HY603 0619-00-300
75,00	80,90	4,50	6,00	7,50	0,40	74,61 x 3,53	OR568 0846-00-N70	HY603 0846-00-300
76,00	81,90	4,50	6,00	7,50	0,40	75,79 x 3,53	OR568 0234-00-N70	HY603 0234-00-300
76,00	85,00	7,00	8,80	11,00	0,50	75,57 x 5,33	OR568 0337-00-N70	HY603 0337-00-300
79,00	84,90	4,50	6,00	7,50	0,40	78,97 x 3,53	OR568 0235-00-N70	HY603 0235-00-300
79,00	88,00	7,00	8,80	11,00	0,50	78,74 x 5,33	OR568 0338-00-N70	HY603 0338-00-300
80,00	84,80	3,90	5,50	7,00	0,30	79,50 x 3,00	OR550 0795-30-N70	HY600 0800-25-300
80,00	89,70	7,30	9,10	11,00	0,50	79,20 x 5,70	OR550 0792-57-N70	HY600 0800-50-300
80,00	89,00	7,00	8,80	11,00	0,50	79,77 x 5,33	OR568 0620-00-N70	HY603 0620-00-300
82,00	87,90	4,50	6,00	7,50	0,40	82,14 x 3,53	OR568 0236-00-N70	HY603 0236-00-300
82,00	91,00	7,00	8,80	11,00	0,50	81,92 x 5,33	OR568 0339-00-N70	HY603 0339-00-300
85,00	89,80	3,90	5,50	7,00	0,30	84,50 x 3,00	OR550 0845-30-N70	HY600 0850-25-300
85,00	94,70	7,30	9,10	11,00	0,50	84,10 x 5,70	OR550 0841-57-N70	HY600 0850-50-300
85,00	90,90	4,50	6,00	7,50	0,40	85,32 x 3,53	OR568 0237-00-N70	HY603 0237-00-300
85,00	94,00	7,00	8,80	11,00	0,50	85,09 x 5,33	OR568 0340-00-N70	HY603 0340-00-300
88,00	97,00	7,00	8,80	11,00	0,50	88,27 x 5,33	OR568 0341-00-N70	HY603 0341-00-300
89,00	93,20	3,50	5,00	6,50	0,20	88,57 x 2,62	OR568 0153-00-N70	HY603 0153-00-300
89,00	94,90	4,50	6,00	7,50	0,40	88,49 x 3,53	OR568 0238-00-N70	HY603 0238-00-300
90,00	94,80	3,90	5,50	7,00	0,30	89,50 x 3,00	OR550 0895-30-N70	HY600 0900-25-300
90,00	99,70	7,30	9,10	11,00	0,50	89,10 x 5,70	OR550 0891-57-N70	HY600 0900-50-300
90,00	99,00	7,00	8,80	11,00	0,50	89,69 x 5,33	OR568 0621-00-N70	HY603 0621-00-300
92,00	97,90	4,50	6,00	7,50	0,40	91,67 x 3,53	OR568 0239-00-N70	HY603 0239-00-300
92,00	101,00	7,00	8,80	11,00	0,50	91,44 x 5,33	OR568 0342-00-N70	HY603 0342-00-300
95,00	99,80	3,90	5,50	7,00	0,30	94,50 x 3,00	OR550 0945-30-N70	HY600 0950-25-300
95,00	104,70	7,30	9,10	11,00	0,50	94,10 x 5,70	OR550 0941-57-N70	HY600 0950-50-300
95,00	99,20	3,50	5,00	6,50	0,20	94,92 x 2,62	OR568 0154-00-N70	HY603 0154-00-300
95,00	100,90	4,50	6,00	7,50	0,40	94,84 x 3,53	OR568 0240-00-N70	HY603 0240-00-300
95,00	104,00	7,00	8,80	11,00	0,50	94,62 x 5,33	OR568 0343-00-N70	HY603 0343-00-300
98,00	103,90	4,50	6,00	7,50	0,40	98,02 x 3,53	OR568 0241-00-N70	HY603 0241-00-300
98,00	107,00	7,00	8,80	11,00	0,50	97,79 x 5,33	OR568 0344-00-N70	HY603 0344-00-300
100,00	104,80	3,90	5,50	7,00	0,30	99,50 x 3,00	OR550 0995-30-N70	HY600 1000-25-300
100,00	109,70	7,30	9,10	11,00	0,50	99,10 x 5,70	OR550 0991-57-N70	HY600 1000-50-300
100,00	109,00	7,00	8,80	11,00	0,50	100,00 x 5,33	OR568 0622-00-N70	HY603 0622-00-300

O - RING
OR 550 / OR 568



Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
101,00	106,90	4,50	6,00	7,50	0,40	101,19 x 3,53	OR568 0242-00-N70	HY603 0242-00-300
101,00	110,00	7,00	8,80	11,00	0,50	100,97 x 5,33	OR568 0345-00-N70	HY603 0345-00-300
105,00	109,80	3,90	5,50	7,00	0,30	104,50 x 3,00	OR550 1045-30-N70	HY600 1050-25-300
105,00	114,70	7,30	9,10	11,00	0,50	104,10 x 5,70	OR550 1041-57-N70	HY600 1050-50-300
105,00	110,90	4,50	6,00	7,50	0,40	104,37 x 3,53	OR568 0243-00-N70	HY603 0243-00-300
105,00	114,00	7,00	8,80	11,00	0,50	104,14 x 5,33	OR568 0346-00-N70	HY603 0346-00-300
107,00	116,00	7,00	8,80	11,00	0,50	107,32 x 5,33	OR568 0347-00-N70	HY603 0347-00-300
108,00	113,90	4,50	6,00	7,50	0,40	107,54 x 3,53	OR568 0244-00-N70	HY603 0244-00-300
110,00	114,80	3,90	5,50	7,00	0,30	109,50 x 3,00	OR550 1095-30-N70	HY600 1100-25-300
110,00	119,70	7,30	9,10	11,00	0,50	109,10 x 5,70	OR550 1091-57-N70	HY600 1100-50-300
110,00	119,00	7,00	8,80	11,00	0,50	109,54 x 5,33	OR568 0623-00-N70	HY603 0623-00-300
111,00	116,90	4,50	6,00	7,50	0,40	110,72 x 3,53	OR568 0245-00-N70	HY603 0245-00-300
111,00	120,00	7,00	8,80	11,00	0,50	110,49 x 5,33	OR568 0348-00-N70	HY603 0348-00-300
114,00	118,20	3,50	5,00	6,50	0,20	113,97 x 2,62	OR568 0157-00-N70	HY603 0157-00-300
114,00	119,90	4,50	6,00	7,50	0,40	113,90 x 3,53	OR568 0246-00-N70	HY603 0246-00-300
114,00	123,00	7,00	8,80	11,00	0,50	113,67 x 5,33	OR568 0349-00-N70	HY603 0349-00-300
114,00	125,80	9,50	12,00	15,00	0,60	113,67 x 6,99	OR568 0425-00-N70	HY603 0425-00-300
115,00	119,80	3,90	5,50	7,00	0,30	114,50 x 3,00	OR550 1145-30-N70	HY600 1150-25-300
115,00	124,70	7,30	9,10	11,00	0,50	114,10 x 5,70	OR550 1141-57-N70	HY600 1150-50-300
115,00	126,80	9,50	12,00	15,00	0,60	114,70 x 6,99	OR568 0624-00-N70	HY610 0624-00-01P
117,00	122,90	4,50	6,00	7,50	0,40	117,07 x 3,53	OR568 0247-00-N70	HY603 0247-00-300
117,00	126,00	7,00	8,80	11,00	0,50	116,84 x 5,33	OR568 0350-00-N70	HY603 0350-00-300
117,00	128,80	9,50	12,00	15,00	0,60	116,84 x 6,99	OR568 0426-00-N70	HY603 0426-00-300
118,00	127,00	7,00	8,80	11,00	0,50	117,48 x 5,33	OR568 0860-00-N70	HY603 0860-00-300
120,00	124,80	3,90	5,50	7,00	0,30	119,50 x 3,00	OR550 1195-30-N70	HY600 1200-25-300
120,00	129,70	7,30	9,10	11,00	0,50	119,30 x 5,70	OR550 1193-57-N70	HY600 1200-50-300
120,00	125,90	4,50	6,00	7,50	0,40	120,24 x 3,53	OR568 0248-00-N70	HY603 0248-00-300
120,00	131,80	9,50	12,00	15,00	0,60	120,02 x 6,99	OR568 0427-00-N70	HY610 0427-00-01P
121,00	130,00	7,00	8,80	11,00	0,50	120,02 x 5,33	OR568 0351-00-N70	HY603 0351-00-300
121,00	130,00	7,00	8,80	11,00	0,50	120,70 x 5,33	OR568 0861-00-N70	HY603 0861-00-300
123,00	128,90	4,50	6,00	7,50	0,40	123,42 x 3,53	OR568 0249-00-N70	HY603 0249-00-300
123,00	134,80	9,50	12,00	15,00	0,60	123,19 x 6,99	OR568 0428-00-N70	HY603 0428-00-300
124,00	133,00	7,00	8,80	11,00	0,50	123,80 x 5,33	OR568 0862-00-N70	HY603 0862-00-300
125,00	129,80	3,90	5,50	7,00	0,30	124,50 x 3,00	OR550 1245-30-N70	HY600 1250-25-300
125,00	134,70	7,30	9,10	11,00	0,50	124,30 x 5,70	OR550 1243-57-N70	HY600 1250-50-300
125,00	136,80	9,50	12,00	15,00	0,60	124,60 x 6,99	OR568 0625-00-N70	HY610 0625-00-01P
126,00	137,80	9,50	12,00	15,00	0,60	126,37 x 6,99	OR568 0429-00-N70	HY603 0429-00-300
127,00	132,90	4,50	6,00	7,50	0,40	126,60 x 3,53	OR568 0250-00-N70	HY603 0250-00-300
127,00	136,00	7,00	8,80	11,00	0,50	126,37 x 5,33	OR568 0353-00-N70	HY603 0353-00-300
127,00	136,00	7,00	8,80	11,00	0,50	127,00 x 5,33	OR568 0863-00-N70	HY603 0863-00-300
130,00	134,80	3,90	5,50	7,00	0,30	129,50 x 3,00	OR550 1295-30-N70	HY600 1300-25-300
130,00	139,70	7,30	9,10	11,00	0,50	129,30 x 5,70	OR550 1293-57-N70	HY600 1300-50-300
130,00	135,90	4,50	6,00	7,50	0,40	129,77 x 3,53	OR568 0251-00-N70	HY603 0251-00-300
130,00	139,00	7,00	8,80	11,00	0,50	129,54 x 5,33	OR568 0354-00-N70	HY603 0354-00-300
130,00	139,00	7,00	8,80	11,00	0,50	130,20 x 5,33	OR568 0864-00-N70	HY603 0864-00-300
130,00	141,80	9,50	12,00	15,00	0,60	129,54 x 6,99	OR568 0430-00-N70	HY610 0430-00-01P
133,00	138,90	4,50	6,00	7,50	0,40	132,94 x 3,53	OR568 0252-00-N70	HY603 0252-00-300
133,00	142,00	7,00	8,80	11,00	0,50	132,72 x 5,33	OR568 0355-00-N70	HY603 0355-00-300
133,00	144,80	9,50	12,00	15,00	0,60	132,72 x 6,99	OR568 0431-00-N70	HY603 0431-00-300
134,00	143,00	7,00	8,80	11,00	0,50	133,35 x 5,33	OR568 0865-00-N70	HY603 0865-00-300
135,00	139,80	3,90	5,50	7,00	0,30	134,50 x 3,00	OR550 1345-30-N70	HY600 1350-25-300
135,00	144,70	7,30	9,10	11,00	0,50	134,30 x 5,70	OR550 1343-57-N70	HY600 1350-50-300
135,00	146,80	9,50	12,00	15,00	0,60	134,50 x 6,99	OR568 0626-00-N70	HY610 0626-00-01P
136,00	141,90	4,50	6,00	7,50	0,40	136,12 x 3,53	OR568 0253-00-N70	HY603 0253-00-300
136,00	147,80	9,50	12,00	15,00	0,60	135,80 x 6,99	OR568 0432-00-N70	HY603 0432-00-300
137,00	146,00	7,00	8,80	11,00	0,50	135,90 x 5,33	OR568 0356-00-N70	HY603 0356-00-300
137,00	146,00	7,00	8,80	11,00	0,50	136,53 x 5,33	OR568 0866-00-N70	HY603 0866-00-300
139,00	150,80	9,50	12,00	15,00	0,60	139,07 x 6,99	OR568 0433-00-N70	HY603 0433-00-300
140,00	144,80	3,90	5,50	7,00	0,30	139,50 x 3,00	OR550 1395-30-N70	HY600 1400-25-300



Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
140,00	149,70	7,30	9,10	11,00	0,50	139,30 x 5,70	OR550 1393-57-N70	HY600 1400-50-300
140,00	145,90	4,50	6,00	7,50	0,40	139,30 x 3,53	OR568 0254-00-N70	HY603 0254-00-300
140,00	149,00	7,00	8,80	11,00	0,50	139,07 x 5,33	OR568 0357-00-N70	HY603 0357-00-300
140,00	149,00	7,00	8,80	11,00	0,50	139,70 x 5,33	OR568 0867-00-N70	HY603 0867-00-300
143,00	148,90	4,50	6,00	7,50	0,40	142,47 x 3,53	OR568 0255-00-N70	HY603 0255-00-300
143,00	152,00	7,00	8,80	11,00	0,50	142,24 x 5,33	OR568 0358-00-N70	HY603 0358-00-300
143,00	152,00	7,00	8,80	11,00	0,50	142,88 x 5,33	OR568 0868-00-N70	HY603 0868-00-300
145,00	149,80	3,90	5,50	7,00	0,30	144,50 x 3,00	OR550 1445-30-N70	HY600 1450-25-300
145,00	154,70	7,30	9,10	11,00	0,50	144,30 x 5,70	OR550 1443-57-N70	HY600 1450-50-300
145,00	156,80	9,50	12,00	15,00	0,60	145,42 x 6,99	OR568 0435-00-N70	HY603 0435-00-300
149,00	154,90	4,50	6,00	7,50	0,40	148,82 x 3,53	OR568 0257-00-N70	HY603 0257-00-300
150,00	159,70	7,30	9,10	11,00	0,50	149,30 x 5,70	OR550 1493-57-N70	HY600 1500-50-300
150,00	159,00	7,00	8,80	11,00	0,50	148,59 x 5,33	OR568 0360-00-N70	HY603 0360-00-300
150,00	159,00	7,00	8,80	11,00	0,50	149,23 x 5,33	OR568 0870-00-N70	HY603 0870-00-300
152,00	157,90	4,50	6,00	7,50	0,40	151,99 x 3,53	OR568 0258-00-N70	HY603 0258-00-300
155,00	164,70	7,30	9,10	11,00	0,50	154,30 x 5,70	OR550 1543-57-N70	HY600 1550-50-300
156,00	167,80	9,50	12,00	15,00	0,60	155,60 x 6,99	OR568 0872-00-N70	HY603 0872-00-300
158,00	167,00	7,00	8,80	11,00	0,50	158,12 x 5,33	OR568 0362-00-N70	HY603 0362-00-300
160,00	169,70	7,30	9,10	11,00	0,50	159,30 x 5,70	OR550 1593-57-N70	HY600 1600-50-300
160,00	171,80	9,50	12,00	15,00	0,60	159,50 x 6,99	OR568 0627-00-N70	HY610 0627-00-01P
165,00	174,70	7,30	9,10	11,00	0,50	164,30 x 5,70	OR550 1643-57-N70	HY600 1650-50-300
165,00	174,00	7,00	8,80	11,00	0,50	164,47 x 5,33	OR568 0363-00-N70	HY603 0363-00-300
165,00	176,80	9,50	12,00	15,00	0,60	164,47 x 6,99	OR568 0439-00-N70	HY610 0439-00-01P
167,00	178,80	9,50	12,00	15,00	0,60	166,70 x 6,99	OR568 0628-00-N70	HY603 0628-00-300
170,00	179,70	7,30	9,10	11,00	0,50	169,30 x 5,70	OR550 1693-57-N70	HY600 1700-50-300
170,00	181,80	9,50	12,00	15,00	0,60	170,82 x 6,99	OR568 0440-00-N70	HY610 0440-00-01P
171,00	180,00	7,00	8,80	11,00	0,50	170,82 x 5,33	OR568 0364-00-N70	HY603 0364-00-300
175,00	184,70	7,30	9,10	11,00	0,50	174,30 x 5,70	OR550 1743-57-N70	HY600 1750-50-300
175,00	186,80	9,50	12,00	15,00	0,60	174,60 x 6,99	OR568 0878-00-N70	HY610 0878-00-01P
178,00	187,00	7,00	8,80	11,00	0,50	177,17 x 5,33	OR568 0365-00-N70	HY603 0365-00-300
180,00	189,70	7,30	9,10	11,00	0,50	179,30 x 5,70	OR550 1793-57-N70	HY600 1800-50-300
180,00	191,80	9,50	12,00	15,00	0,60	181,00 x 6,99	OR568 0880-00-N70	HY603 0880-00-300
184,00	189,90	4,50	6,00	7,50	0,40	183,75 x 3,53	OR568 0263-00-N70	HY603 0263-00-300
184,00	195,80	9,50	12,00	15,00	0,60	183,52 x 6,99	OR568 0442-00-N70	HY603 0442-00-300
185,00	194,70	7,30	9,10	11,00	0,50	184,30 x 5,70	OR550 1843-57-N70	HY600 1850-50-300
190,00	199,70	7,30	9,10	11,00	0,50	189,30 x 5,70	OR550 1893-57-N70	HY600 1900-50-300
190,00	199,00	7,00	8,80	11,00	0,50	189,87 x 5,33	OR568 0367-00-N70	HY603 0367-00-300
190,00	201,80	9,50	12,00	15,00	0,60	189,87 x 6,99	OR568 0443-00-N70	HY603 0443-00-300
194,00	205,80	9,50	12,00	15,00	0,60	193,70 x 6,99	OR568 0884-00-N70	HY603 0884-00-300
195,00	204,70	7,30	9,10	11,00	0,50	194,30 x 5,70	OR550 1943-57-N70	HY600 1950-50-300
196,00	205,00	7,00	8,80	11,00	0,50	196,22 x 5,33	OR568 0368-00-N70	HY603 0368-00-300
196,00	207,80	9,50	12,00	15,00	0,60	196,22 x 6,99	OR568 0444-00-N70	HY603 0444-00-300
200,00	209,70	7,30	9,10	11,00	0,50	199,30 x 5,70	OR550 1993-57-N70	HY600 2000-50-300
200,00	211,80	9,50	12,00	15,00	0,60	199,80 x 6,99	OR568 0886-00-N70	HY610 0886-00-01P
203,00	208,90	4,50	6,00	7,50	0,40	202,80 x 3,53	OR568 0266-00-N70	HY603 0266-00-300
209,00	218,00	7,00	8,80	11,00	0,50	208,92 x 5,33	OR568 0370-00-N70	HY603 0370-00-300
210,00	219,70	7,30	9,10	11,00	0,50	209,30 x 5,70	OR550 2093-57-N70	HY600 2100-50-300
210,00	221,80	9,50	12,00	15,00	0,60	208,92 x 6,99	OR568 0674-00-N70	HY610 0674-00-01P
215,00	226,80	9,50	12,00	15,00	0,60	215,27 x 6,99	OR568 0446-00-N70	HY603 0446-00-300
220,00	229,70	7,30	9,10	11,00	0,50	219,30 x 5,70	OR550 2193-57-N70	HY600 2200-50-300
222,00	231,00	7,00	8,80	11,00	0,50	221,62 x 5,33	OR568 0372-00-N70	HY603 0372-00-300
228,00	237,00	7,00	8,80	11,00	0,50	227,97 x 5,33	OR568 0373-00-N70	HY603 0373-00-300
230,00	239,70	7,30	9,10	11,00	0,50	229,30 x 5,70	OR550 2293-57-N70	HY600 2300-50-300
230,00	241,80	9,50	12,00	15,00	0,60	227,97 x 6,99	OR568 0447-00-N70	HY603 0447-00-300
240,00	249,70	7,30	9,10	11,00	0,50	239,30 x 5,70	OR550 2393-57-N70	HY600 2400-50-300
240,00	251,80	9,50	12,00	15,00	0,60	240,67 x 6,99	OR568 0448-00-N70	HY610 0448-00-01P
250,00	259,70	7,30	9,10	11,00	0,50	249,30 x 5,70	OR550 2493-57-N70	HY600 2500-50-300
255,00	266,80	9,50	12,00	15,00	0,60	253,57 x 6,99	OR568 0449-00-N70	HY610 0449-00-01P
260,00	271,80	9,50	12,00	15,00	0,60	259,70 x 6,99	OR568 0682-00-N70	HY610 0682-00-01P

Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
260,00	269,70	7,30	9,10	11,00	0,50	259,30 x 5,70	OR550 2593-57-N70	HY610 2600-50-01P
265,00	276,80	9,50	12,00	15,00	0,60	266,07 x 6,99	OR568 0450-00-N70	HY610 0450-00-01P
270,00	279,70	7,30	9,10	11,00	0,50	269,30 x 5,70	OR550 2693-57-N70	HY600 2700-50-300
273,00	284,80	9,50	12,00	15,00	0,60	272,40 x 6,99	OR568 0684-00-N70	HY603 0684-00-300
280,00	291,80	9,50	12,00	15,00	0,60	278,77 x 6,99	OR568 0451-00-N70	HY610 0451-00-01P
280,00	289,70	7,30	9,10	11,00	0,50	279,30 x 5,70	OR550 2793-57-N70	HY610 2800-50-01P
285,00	296,80	9,50	12,00	15,00	0,60	285,10 x 6,99	OR568 0686-00-N70	HY610 0686-00-01P
290,00	299,70	7,30	9,10	11,00	0,50	289,30 x 5,70	OR550 2893-57-N70	HY610 2900-50-01P
300,00	311,80	9,50	12,00	15,00	0,60	297,80 x 6,99	OR568 0688-00-N70	HY610 0688-00-01P
300,00	309,70	7,30	9,10	11,00	0,50	299,30 x 5,70	OR550 2993-57-N70	HY610 3000-50-01P

Example for ordering O-Ring AS 568A:

OR 568 - 0360 - 00 - N70 - ...

- Profile
- AS 568A No.
- Standard material
- HME internal code

Example for ordering O-Ring metric:

OR 550 - 0360 - 30 - N70 -...

- Profile
- Nominal diameter x 10
- Cord strength x 10
- Standard material
- HME internal code

Material Key:

O-Ring

N70 - NBR	70 Shore A
N80 - NBR	80 Shore A
N90 - NBR	90 Shore A
F70 - FPM	70 Shore A
F80 - FPM	80 Shore A
E70 - EPDM	70 Shore A
S70 - Silicon	70 Shore A

Example for ordering Back Ring:

HY 600 2000 - 50 - 300 - ...

- Profile (endless)
- Nominal diameter x 10
- Groove depth
- Standard material
- HME internal code

Material Key:

Back ring design	**Standard material for Back ring**
HY600 (endless)	300 - Polyester elastomer
HY603 (endless)	
HY610 (endless)	01P - PTFE pure
HY615 (slotted)	25P - PTFE glass filled
HY617 (spiral)	30P - PTFE carbon
HY619 (concave endless)	55P - PTFE bronze

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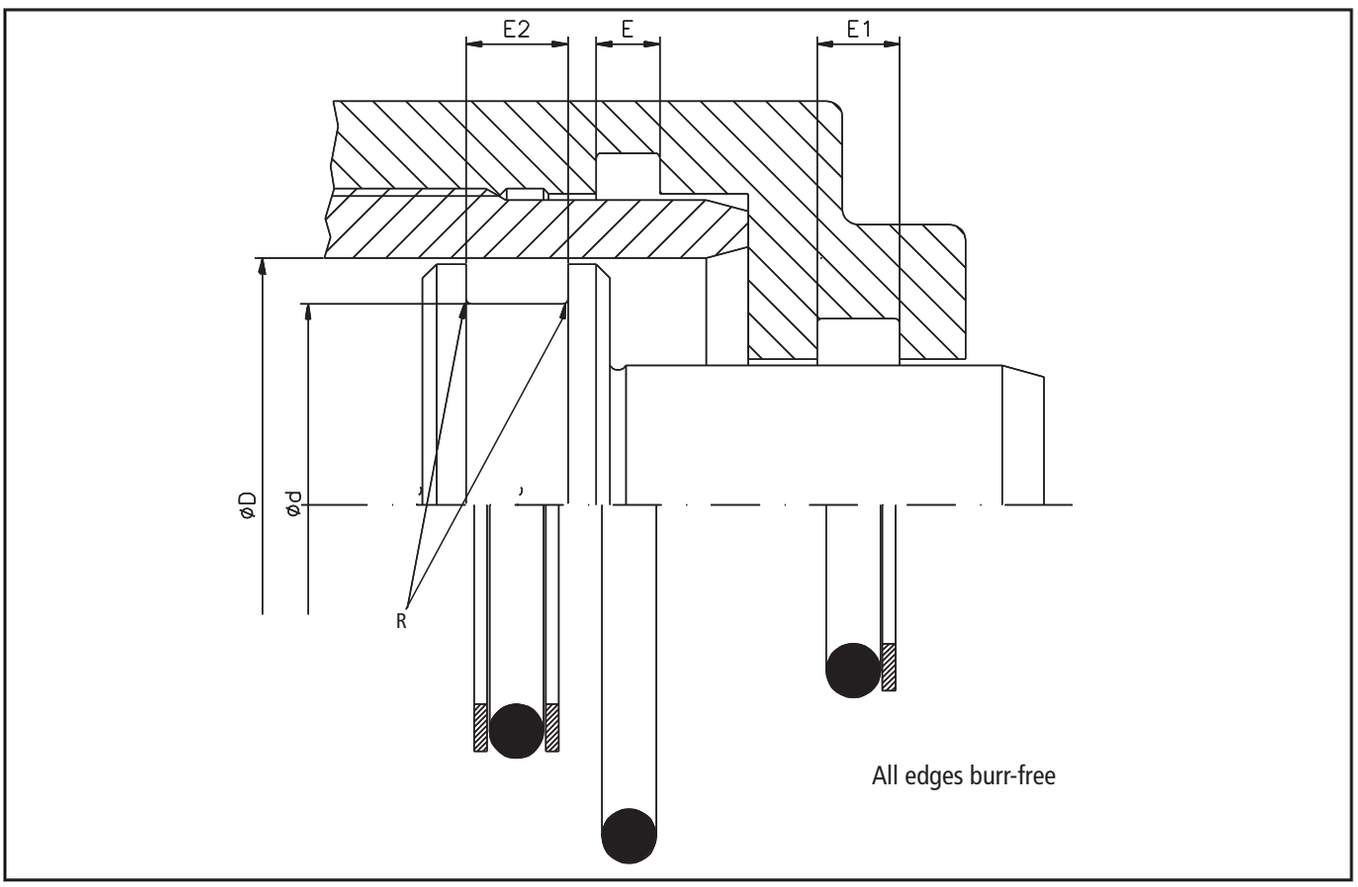
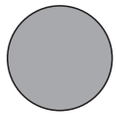
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



Groove sizes for dynamic external sealing applications

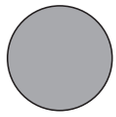
Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Thrust ring Part N°.
8,00	4,00	3,20	4,70	6,20	0,20	3,30 x 2,40	OR550 0033-24-N70	HY600 0040-20-300
9,00	5,00	3,20	4,70	6,20	0,20	4,30 x 2,40	OR550 0043-24-N70	HY600 0050-20-300
10,00	6,00	3,20	4,70	6,20	0,20	5,30 x 2,40	OR550 0053-24-N70	HY600 0060-20-300
11,00	7,00	3,20	4,70	6,20	0,20	6,30 x 2,40	OR550 0063-24-N70	HY600 0070-20-300
12,00	8,00	3,20	4,70	6,20	0,20	7,30 x 2,40	OR550 0073-24-N70	HY600 0080-20-300
13,00	9,00	3,20	4,70	6,20	0,20	8,30 x 2,40	OR550 0083-24-N70	HY600 0090-20-300
14,00	10,00	3,20	4,70	6,20	0,20	9,30 x 2,40	OR550 0093-24-N70	HY600 0100-20-300
15,00	11,00	3,20	4,70	6,20	0,20	10,30 x 2,40	OR550 0103-24-N70	HY600 0110-20-300
15,00	10,50	3,50	5,00	6,50	0,20	9,92 x 2,62	OR568 0613-00-N70	HY603 0613-00-300
16,00	12,00	3,20	4,70	6,20	0,20	11,30 x 2,40	OR550 0113-24-N70	HY600 0120-20-300
16,00	11,50	3,50	5,00	6,50	0,20	10,78 x 2,62	OR568 0111-00-N70	HY603 0111-00-300
17,00	13,00	3,20	4,70	6,20	0,20	12,30 x 2,40	OR550 0123-24-N70	HY600 0130-20-300
17,00	12,50	3,50	5,00	6,50	0,20	11,91 x 2,62	OR568 0614-00-N70	HY603 0614-00-300
18,00	14,00	3,20	4,70	6,20	0,20	13,30 x 2,40	OR550 0133-24-N70	HY600 0140-20-300
18,50	14,00	3,50	5,00	6,50	0,20	13,95 x 2,62	OR568 0113-00-N70	HY603 0113-00-300
19,00	15,00	3,20	4,70	6,20	0,20	14,30 x 2,40	OR550 0143-24-N70	HY600 0150-20-300
19,00	14,50	3,50	5,00	6,50	0,20	13,95 x 2,62	OR568 0113-00-N70	HY603 0113-00-300
20,00	16,00	3,20	4,70	6,20	0,20	15,30 x 2,40	OR550 0153-24-N70	HY600 0160-20-300
20,00	15,50	3,50	5,00	6,50	0,20	15,08 x 2,62	OR568 0616-00-N70	HY603 0616-00-300
21,00	17,00	3,20	4,70	6,20	0,20	16,30 x 2,40	OR550 0163-24-N70	HY600 0170-20-300
21,00	16,50	3,50	5,00	6,50	0,20	15,88 x 2,62	OR568 0809-00-N70	HY603 0809-00-300

O - RING
OR 550 / OR 568

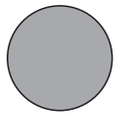


Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
22,00	18,00	3,20	4,70	6,20	0,20	17,30 x 2,40	OR550 0173-24-N70	HY600 0180-20-300
22,00	17,50	3,50	5,00	6,50	0,20	17,13 x 2,62	OR568 0115-00-N70	HY603 0115-00-300
24,00	19,50	3,50	5,00	6,50	0,20	18,72 x 2,62	OR568 0116-00-N70	HY603 0116-00-300
25,00	20,00	3,90	5,50	7,00	0,30	19,20 x 3,00	OR550 0192-30-N70	HY600 0200-25-300
25,00	20,50	3,50	5,00	6,50	0,20	20,29 x 2,62	OR568 0117-00-N70	HY603 0117-00-300
26,00	21,50	3,50	5,00	6,50	0,20	20,62 x 2,62	OR568 0812-00-N70	HY603 0812-00-300
27,00	22,50	3,50	5,00	6,50	0,20	21,89 x 2,62	OR568 0118-00-N70	HY603 0118-00-300
27,00	22,50	3,50	5,00	6,50	0,20	22,22 x 2,62	OR568 0813-00-N70	HY603 0813-00-300
28,00	23,00	3,90	5,50	7,00	0,30	22,20 x 3,00	OR550 0222-30-N70	HY600 0230-25-300
29,00	22,90	4,50	6,00	7,50	0,40	21,82 x 3,53	OR568 0212-00-N70	HY603 0212-00-300
29,00	24,50	3,50	5,00	6,50	0,20	23,81 x 2,62	OR568 0814-00-N70	HY603 0814-00-300
30,00	25,00	3,90	5,50	7,00	0,30	24,20 x 3,00	OR550 0242-30-N70	HY600 0250-25-300
30,00	25,50	3,50	5,00	6,50	0,20	25,07 x 2,62	OR568 0120-00-N70	HY603 0120-00-300
30,00	23,90	4,50	6,00	7,50	0,40	23,39 x 3,53	OR568 0213-00-N70	HY603 0213-00-300
32,00	27,00	3,90	5,50	7,00	0,30	26,20 x 3,00	OR550 0262-30-N70	HY600 0270-25-300
32,00	27,50	3,50	5,00	6,50	0,20	26,64 x 2,62	OR568 0121-00-N70	HY603 0121-00-300
32,00	25,90	4,50	6,00	7,50	0,40	24,99 x 3,53	OR568 0214-00-N70	HY603 0214-00-300
33,00	28,50	3,50	5,00	6,50	0,20	28,24 x 2,62	OR568 0122-00-N70	HY603 0122-00-300
33,00	26,90	4,50	6,00	7,50	0,40	25,80 x 3,53	OR568 0618-00-N70	HY603 0618-00-300
35,00	30,00	3,90	5,50	7,00	0,30	29,20 x 3,00	OR550 0292-30-N70	HY600 0300-25-300
35,00	30,50	3,50	5,00	6,50	0,20	29,82 x 2,62	OR568 0123-00-N70	HY603 0123-00-300
35,00	28,90	4,50	6,00	7,50	0,40	28,17 x 3,53	OR568 0216-00-N70	HY603 0216-00-300
37,00	32,50	3,50	5,00	6,50	0,20	31,42 x 2,62	OR568 0124-00-N70	HY603 0124-00-300
37,00	30,90	4,50	6,00	7,50	0,40	29,75 x 3,53	OR568 0217-00-N70	HY603 0217-00-300
38,00	33,00	3,90	5,50	7,00	0,30	32,20 x 3,00	OR550 0322-30-N70	HY600 0330-25-300
38,00	33,50	3,50	5,00	6,50	0,20	32,99 x 2,62	OR568 0125-00-N70	HY603 0125-00-300
38,00	31,90	4,50	6,00	7,50	0,40	31,34 x 3,53	OR568 0218-00-N70	HY603 0218-00-300
40,00	35,00	3,90	5,50	7,00	0,30	34,20 x 3,00	OR550 0342-30-N70	HY600 0350-25-300
40,00	35,50	3,50	5,00	6,50	0,20	34,59 x 2,62	OR568 0126-00-N70	HY603 0126-00-300
40,00	33,90	4,50	6,00	7,50	0,40	32,92 x 3,53	OR568 0219-00-N70	HY603 0219-00-300
41,00	36,50	3,50	5,00	6,50	0,20	36,17 x 2,62	OR568 0127-00-N70	HY603 0127-00-300
42,00	37,00	3,90	5,50	7,00	0,30	36,20 x 3,00	OR550 0362-30-N70	HY600 0370-25-300
42,00	35,90	4,50	6,00	7,50	0,40	34,52 x 3,53	OR568 0220-00-N70	HY603 0220-00-300
43,00	38,50	3,50	5,00	6,50	0,20	37,77 x 2,62	OR568 0128-00-N70	HY603 0128-00-300
43,00	36,90	4,50	6,00	7,50	0,40	36,10 x 3,53	OR568 0221-00-N70	HY603 0221-00-300
45,00	40,00	3,90	5,50	7,00	0,30	39,20 x 3,00	OR550 0392-30-N70	HY600 0400-25-300
45,00	40,50	3,50	5,00	6,50	0,20	39,34 x 2,62	OR568 0129-00-N70	HY603 0129-00-300
45,00	38,90	4,50	6,00	7,50	0,40	37,70 x 3,53	OR568 0222-00-N70	HY603 0222-00-300
46,00	39,90	4,50	6,00	7,50	0,40	39,69 x 3,53	OR568 0824-00-N70	HY603 0824-00-300
48,00	43,00	3,90	5,50	7,00	0,30	42,20 x 3,00	OR550 0422-30-N70	HY600 0430-25-300
48,00	38,60	7,00	8,80	11,00	0,50	37,47 x 5,33	OR568 0325-00-N70	HY603 0325-00-300
48,00	41,90	4,50	6,00	7,50	0,40	41,28 x 3,53	OR568 0825-00-N70	HY603 0825-00-300
50,00	40,00	7,30	9,10	11,00	0,50	39,20 x 5,70	OR550 0392-57-N70	HY600 0430-25-300
50,00	45,00	3,90	5,50	7,00	0,30	44,20 x 3,00	OR550 0442-30-N70	HY600 0450-25-300
50,00	43,90	4,50	6,00	7,50	0,40	42,86 x 3,53	OR568 0826-00-N70	HY603 0826-00-300
51,00	44,90	4,50	6,00	7,50	0,40	44,45 x 3,53	OR568 0827-00-N70	HY603 0827-00-300
52,00	42,60	7,00	8,80	11,00	0,50	40,64 x 5,33	OR568 0326-00-N70	HY603 0326-00-300
53,00	46,90	4,50	6,00	7,50	0,40	46,04 x 3,53	OR568 0828-00-N70	HY603 0828-00-300
54,00	47,90	4,50	6,00	7,50	0,40	47,22 x 3,53	OR568 0225-00-N70	HY603 0225-00-300
55,00	45,00	7,30	9,10	11,00	0,50	44,20 x 5,70	OR550 0442-57-N70	HY600 0450-50-300
55,00	50,00	3,90	5,50	7,00	0,30	49,50 x 3,00	OR550 0495-30-N70	HY600 0500-25-300
55,00	45,60	7,00	8,80	11,00	0,50	43,82 x 5,33	OR568 0327-00-N70	HY603 0327-00-300
56,00	49,90	4,50	6,00	7,50	0,40	49,22 x 3,53	OR568 0830-00-N70	HY603 0830-00-300
58,00	51,90	4,50	6,00	7,50	0,40	50,39 x 3,53	OR568 0226-00-N70	HY603 0226-00-300
58,00	48,60	7,00	8,80	11,00	0,50	46,99 x 5,33	OR568 0328-00-N70	HY603 0328-00-300
59,00	54,50	3,50	5,00	6,50	0,20	53,64 x 2,62	OR568 0138-00-N70	HY603 0138-00-300
60,00	50,00	7,30	9,10	11,00	0,50	49,20 x 5,70	OR550 0492-57-N70	HY600 0500-50-300
60,00	55,00	3,90	5,50	7,00	0,30	54,50 x 3,00	OR550 0545 30-N70	HY600 0550-25-300
60,00	53,90	4,50	6,00	7,50	0,40	52,39 x 3,53	OR568 0832-00-N70	HY603 0832-00-300

O - RING
OR 550 / OR 568



Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
61,00	54,90	4,50	6,00	7,50	0,40	53,57 x 3,53	OR568 0227-00-N70	HY603 0227-00-300
61,00	51,60	7,00	8,80	11,00	0,50	50,17 x 5,33	OR568 0329-00-N70	HY603 0329-00-300
62,00	55,90	4,50	6,00	7,50	0,40	55,56 x 3,53	OR568 0834-00-N70	HY603 0834-00-300
63,00	53,00	7,30	9,10	11,00	0,50	52,20 x 5,70	OR550 0522-57-N70	HY600 0530-50-300
63,00	58,00	3,90	5,50	7,00	0,30	57,20 x 3,00	OR550 0572 30-N70	HY600 0580-25-300
64,00	57,90	4,50	6,00	7,50	0,40	56,70 x 3,53	OR568 0228-00-N70	HY603 0228-00-300
64,00	54,60	7,00	8,80	11,00	0,50	53,34 x 5,33	OR568 0330-00-N70	HY603 0330-00-300
65,00	55,00	7,30	9,10	11,00	0,50	54,20 x 5,70	OR550 0542-57-N70	HY600 0550-50-300
65,00	60,00	3,90	5,50	7,00	0,30	59,50 x 3,00	OR550 0595-30-N70	HY600 0600-25-300
65,00	58,90	4,50	6,00	7,50	0,40	58,74 x 3,53	OR568 0836-00-N70	HY603 0836-00-300
67,00	60,90	4,50	6,00	7,50	0,40	59,92 x 3,53	OR568 0229-00-N70	HY603 0229-00-300
68,00	58,60	7,00	8,80	11,00	0,50	56,52 x 5,33	OR568 0331-00-N70	HY603 0331-00-300
69,00	62,90	4,50	6,00	7,50	0,40	61,90 x 3,53	OR568 0838-00-N70	HY603 0838-00-300
70,00	60,00	7,30	9,10	11,00	0,50	59,20 x 5,70	OR550 0592-57-N70	HY600 0600-50-300
70,00	63,90	4,50	6,00	7,50	0,40	63,09 x 3,53	OR568 0230-00-N70	HY603 0230-00-300
70,00	60,60	7,00	8,80	11,00	0,50	59,69 x 5,33	OR568 0332-00-N70	HY603 0332-00-300
72,00	65,90	4,50	6,00	7,50	0,40	65,09 x 3,53	OR568 0840-00-N70	HY603 0840-00-300
73,00	66,90	4,50	6,00	7,50	0,40	66,27 x 3,53	OR568 0231-00-N70	HY603 0231-00-300
73,00	63,60	7,00	8,80	11,00	0,50	62,87 x 5,33	OR568 0333-00-N70	HY603 0333-00-300
75,00	65,00	7,30	9,10	11,00	0,50	64,20 x 5,70	OR550 0642-57-N70	HY600 0650-50-300
75,00	68,90	4,50	6,00	7,50	0,40	68,26 x 3,53	OR568 0842-00-N70	HY603 0842-00-300
77,00	70,90	4,50	6,00	7,50	0,40	69,44 x 3,53	OR568 0232-00-N70	HY603 0232-00-300
77,00	67,60	7,00	8,80	11,00	0,50	66,04 x 5,33	OR568 0334-00-N70	HY603 0334-00-300
78,00	71,90	4,50	6,00	7,50	0,40	71,44 x 3,53	OR568 0844-00-N70	HY603 0844-00-300
80,00	70,00	7,30	9,10	11,00	0,50	69,20 x 5,70	OR550 0692-57-N70	HY600 0700-50-300
80,00	70,60	7,00	8,80	11,00	0,50	69,22 x 5,33	OR568 0335-00-N70	HY603 0335-00-300
83,00	73,60	7,00	8,80	11,00	0,50	72,40 x 5,33	OR568 0336-00-N70	HY603 0336-00-300
85,00	75,00	7,30	9,10	11,00	0,50	74,20 x 5,70	OR550 0742-57-N70	HY600 0750-50-300
85,00	75,60	7,00	8,80	11,00	0,50	74,63 x 5,33	OR568 0619-00-N70	HY603 0619-00-300
86,00	76,60	7,00	8,80	11,00	0,50	75,57 x 5,33	OR568 0337-00-N70	HY603 0337-00-300
90,00	80,00	7,30	9,10	11,00	0,50	79,20 x 5,70	OR550 0792-57-N70	HY600 0800-50-300
90,00	80,60	7,00	8,80	11,00	0,50	78,74 x 5,33	OR568 0338-00-N70	HY603 0338-00-300
92,00	85,90	4,50	6,00	7,50	0,40	85,32 x 3,53	OR568 0237-00-N70	HY603 0237-00-300
92,00	82,60	7,00	8,80	11,00	0,50	81,92 x 5,33	OR568 0339-00-N70	HY603 0339-00-300
95,00	85,00	7,30	9,10	11,00	0,50	84,10 x 5,70	OR550 0841-57-N70	HY600 0850-50-300
95,00	85,60	7,00	8,80	11,00	0,50	85,09 x 5,33	OR568 0340-00-N70	HY603 0340-00-300
98,00	88,60	7,00	8,80	11,00	0,50	88,27 x 5,33	OR568 0341-00-N70	HY603 0341-00-300
99,00	92,90	4,50	6,00	7,50	0,40	91,67 x 3,53	OR568 0239-00-N70	HY603 0239-00-300
100,00	90,00	7,30	9,10	11,00	0,50	89,10 x 5,70	OR550 0891-57-N70	HY600 0900-50-300
100,00	90,60	7,00	8,80	11,00	0,50	89,69 x 5,33	OR568 0621-00-N70	HY603 0621-00-300
102,00	92,60	7,00	8,80	11,00	0,50	91,44 x 5,33	OR568 0342-00-N70	HY603 0342-00-300
105,00	95,00	7,30	9,10	11,00	0,50	94,10 x 5,70	OR550 0941-57-N70	HY600 0950-50-300
105,00	95,60	7,00	8,80	11,00	0,50	94,62 x 5,33	OR568 0343-00-N70	HY603 0343-00-300
108,00	98,60	7,00	8,80	11,00	0,50	97,79 x 5,33	OR568 0344-00-N70	HY603 0344-00-300
110,00	100,00	7,30	9,10	11,00	0,50	99,10 x 5,70	OR550 0991-57-N70	HY600 1000-50-300
110,00	100,60	7,00	8,80	11,00	0,50	100,00 x 5,33	OR568 0622-00-N70	HY603 0622-00-300
111,00	101,60	7,00	8,80	11,00	0,50	100,97 x 5,33	OR568 0345-00-N70	HY603 0345-00-300
115,00	105,00	7,30	9,10	11,00	0,50	104,10 x 5,70	OR550 1041-57-N70	HY600 1050-50-300
115,00	105,60	7,00	8,80	11,00	0,50	104,14 x 5,33	OR568 0346-00-N70	HY603 0346-00-300
118,00	108,60	7,00	8,80	11,00	0,50	107,32 x 5,33	OR568 0347-00-N70	HY603 0347-00-300
120,00	110,00	7,30	9,10	11,00	0,50	109,10 x 5,70	OR550 1091-57-N70	HY600 1100-50-300
120,00	110,60	7,00	8,80	11,00	0,50	109,54 x 5,33	OR568 0623-00-N70	HY603 0623-00-300
121,00	111,60	7,00	8,80	11,00	0,50	110,49 x 5,33	OR568 0348-00-N70	HY603 0348-00-300
125,00	115,00	7,30	9,10	11,00	0,50	114,10 x 5,70	OR550 1141-57-N70	HY600 1150-50-300
125,00	115,60	7,00	8,80	11,00	0,50	113,67 x 5,33	OR568 0349-00-N70	HY603 0349-00-300
127,00	114,80	9,50	12,00	15,00	0,60	113,67 x 6,99	OR568 0425-00-N70	HY603 0425-00-300
128,00	118,60	7,00	8,80	11,00	0,50	116,84 x 5,33	OR568 0350-00-N70	HY603 0350-00-300
128,00	118,60	7,00	8,80	11,00	0,50	117,48 x 5,33	OR568 0860-00-N70	HY603 0860-00-300
130,00	120,00	7,30	9,10	11,00	0,50	119,30 x 5,70	OR550 1193-57-N70	HY600 1200-50-300



Groove sizes						O-Ring	**Part N°.**	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
130,00	117,90	9,50	12,00	15,00	0,60	116,84 x 6,99	OR568 0426-00-N70	HY603 0426-00-300
132,00	122,60	7,00	8,80	11,00	0,50	120,02 x 5,33	OR568 0351-00-N70	HY603 0351-00-300
132,00	122,60	7,00	8,80	11,00	0,50	120,70 x 5,33	OR568 0861-00-N70	HY603 0861-00-300
135,00	125,00	7,30	9,10	11,00	0,50	124,30 x 5,70	OR550 1243-57-N70	HY600 1250-50-300
135,00	125,60	7,00	8,80	11,00	0,50	123,80 x 5,33	OR568 0862-00-N70	HY603 0862-00-300
135,00	122,90	9,50	12,00	15,00	0,60	120,02 x 6,99	OR568 0427-00-N70	HY640 0427-00-01P
137,00	127,60	7,00	8,80	11,00	0,50	126,37 x 5,33	OR568 0353-00-N70	HY603 0353-00-300
137,00	124,90	9,50	12,00	15,00	0,60	123,19 x 6,99	OR568 0428-00-N70	HY603 0428-00-300
137,00	127,60	7,00	8,80	11,00	0,50	127,00 x 5,33	OR568 0863-00-N70	HY603 0863-00-300
140,00	130,00	7,30	9,10	11,00	0,50	129,30 x 5,70	OR550 1293-57-N70	HY600 1300-50-300
140,00	130,60	7,00	8,80	11,00	0,50	129,54 x 5,33	OR568 0354-00-N70	HY603 0354-00-300
140,00	127,90	9,50	12,00	15,00	0,60	126,37 x 6,99	OR568 0429-00-N70	HY603 0429-00-300
140,00	130,60	7,00	8,80	11,00	0,50	130,20 x 5,33	OR568 0864-00-N70	HY603 0864-00-300
143,00	133,60	7,00	8,80	11,00	0,50	132,72 x 5,33	OR568 0355-00-N70	HY603 0355-00-300
145,00	135,00	7,30	9,10	11,00	0,50	134,30 x 5,70	OR550 1343-57-N70	HY600 1350-50-300
145,00	135,60	7,00	8,80	11,00	0,50	133,35 x 5,33	OR568 0865-00-N70	HY603 0865-00-300
146,00	133,90	9,50	12,00	15,00	0,60	132,72 x 6,99	OR568 0431-00-N70	HY603 0431-00-300
147,00	137,60	7,00	8,80	11,00	0,50	135,90 x 5,33	OR568 0356-00-N70	HY603 0356-00-300
147,00	137,60	7,00	8,80	11,00	0,50	136,53 x 5,33	OR568 0866-00-N70	HY603 0866-00-300
150,00	140,00	7,30	9,10	11,00	0,50	139,30 x 5,70	OR550 1393-57-N70	HY600 1400-50-300
150,00	140,60	7,00	8,80	11,00	0,50	139,07 x 5,33	OR568 0357-00-N70	HY603 0357-00-300
150,00	137,90	9,50	12,00	15,00	0,60	135,80 x 6,99	OR568 0432-00-N70	HY603 0432-00-300
150,00	140,60	7,00	8,80	11,00	0,50	139,70 x 5,33	OR568 0867-00-N70	HY603 0867-00-300
153,00	143,60	7,00	8,80	11,00	0,50	142,24 x 5,33	OR568 0358-00-N70	HY603 0358-00-300
153,00	140,90	9,50	12,00	15,00	0,60	139,07 x 6,99	OR568 0433-00-N70	HY603 0433-00-300
153,00	143,60	7,00	8,80	11,00	0,50	142,88 x 5,33	OR568 0868-00-N70	HY603 0868-00-300
155,00	145,00	7,30	9,10	11,00	0,50	144,30 x 5,70	OR550 1443-57-N70	HY600 1450-50-300
160,00	150,00	7,30	9,10	11,00	0,50	149,30 x 5,70	OR550 1493-57-N70	HY600 1500-50-300
160,00	150,60	7,00	8,80	11,00	0,50	148,59 x 5,33	OR568 0360-00-N70	HY603 0360-00-300
160,00	147,90	9,50	12,00	15,00	0,60	145,42 x 6,99	OR568 0435-00-N70	HY603 0435-00-300
160,00	150,60	7,00	8,80	11,00	0,50	149,23 x 5,33	OR568 0870-00-N70	HY603 0870-00-300
165,00	155,00	7,30	9,10	11,00	0,50	154,30 x 5,70	OR550 1543-57-N70	HY600 1550-50-300
165,00	152,90	9,50	12,00	15,00	0,60	151,77 x 6,99	OR568 0437-00-N70	HY640 0437-00-01P
169,00	159,60	7,00	8,80	11,00	0,50	158,12 x 5,33	OR568 0362-00-N70	HY603 0362-00-300
170,00	160,00	7,30	9,10	11,00	0,50	159,30 x 5,70	OR550 1593-57-N70	HY600 1600-50-300
170,00	157,90	9,50	12,00	15,00	0,60	155,60 x 6,99	OR568 0872-00-N70	HY603 0872-00-300
175,00	165,00	7,30	9,10	11,00	0,50	164,30 x 5,70	OR550 1643-57-N70	HY600 1650-50-300
175,00	165,60	7,00	8,80	11,00	0,50	164,47 x 5,33	OR568 0363-00-N70	HY603 0363-00-300
175,00	162,90	9,50	12,00	15,00	0,60	161,90 x 6,99	OR568 0874-00-N70	HY640 0874-00-01P
180,00	170,00	7,30	9,10	11,00	0,50	169,30 x 5,70	OR550 1693-57-N70	HY600 1700-50-300
180,00	167,90	9,50	12,00	15,00	0,60	166,70 x 6,99	OR568 0628-00-N70	HY603 0628-00-300
182,00	172,60	7,00	8,80	11,00	0,50	170,82 x 5,33	OR568 0364-00-N70	HY603 0364-00-300
185,00	175,00	7,30	9,10	11,00	0,50	174,30 x 5,70	OR550 1743-57-N70	HY600 1750-50-300
188,00	178,60	7,00	8,80	11,00	0,50	177,17 x 5,33	OR568 0365-00-N70	HY603 0365-00-300
190,00	180,00	7,30	9,10	11,00	0,50	179,30 x 5,70	OR550 1793-57-N70	HY600 1800-50-300
195,00	185,00	7,30	9,10	11,00	0,50	184,30 x 5,70	OR550 1843-57-N70	HY600 1850-50-300
195,00	182,90	9,50	12,00	15,00	0,60	181,00 x 6,99	OR568 0880-00-N70	HY603 0880-00-300
195,00	185,60	7,00	8,80	11,00	0,50	183,52 x 5,33	OR568 0366-00-N70	HY640 0366-00-01P
197,00	184,90	9,50	12,00	15,00	0,60	183,52 x 6,99	OR568 0442-00-N70	HY603 0442-00-300
200,00	190,00	7,30	9,10	11,00	0,50	189,30 x 5,70	OR550 1893-57-N70	HY600 1900-50-300
200,00	190,60	7,00	8,80	11,00	0,50	189,87 x 5,33	OR568 0367-00-N70	HY603 0367-00-300
200,00	187,90	9,50	12,00	15,00	0,60	187,30 x 6,99	OR568 0882-00-N70	HY640 0882-00-01P
203,00	190,90	9,50	12,00	15,00	0,60	189,87 x 6,99	OR568 0443-00-N70	HY603 0443-00-300
205,00	195,00	7,30	9,10	11,00	0,50	194,30 x 5,70	OR550 1943-57-N70	HY600 1950-50-300
207,00	197,60	7,00	8,80	11,00	0,50	196,22 x 5,33	OR568 0368-00-N70	HY603 0368-00-300
207,00	194,90	9,50	12,00	15,00	0,60	193,70 x 6,99	OR568 0884-00-N70	HY603 0884-00-300
210,00	200,00	7,30	9,10	11,00	0,50	199,30 x 5,70	OR550 1993-57-N70	HY600 2000-50-300
210,00	197,90	9,50	12,00	15,00	0,60	196,22 x 6,99	OR568 0444-00-N70	HY603 0444-00-300
220,00	210,00	7,30	9,10	11,00	0,50	209,30 x 5,70	OR550 2093-57-N70	HY600 2100-50-300

Groove sizes						O-Ring	Part N°.	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
220,00	210,60	7,00	8,80	11,00	0,50	208,9 2x 5,33	OR568 0370-00-N70	HY603 0370-00-300
230,00	220,00	7,30	9,10	11,00	0,50	219,30 x 5,70	OR550 2193-57-N70	HY600 2200-50-300
230,00	217,80	9,50	12,00	15,00	0,60	215,27 x 6,99	OR568 0446-00-N70	HY603 0446-00-300
232,00	222,60	7,00	8,80	11,00	0,50	221,62 x 5,33	OR568 0372-00-N70	HY603 0372-00-300
235,00	222,80	9,50	12,00	15,00	0,60	221,62 x 6,99	OR568 0676-00-N70	HY640 0676-00-01P
239,00	229,60	7,00	8,80	11,00	0,50	227,97 x 5,33	OR568 0373-00-N70	HY603 0373-00-300
240,00	230,00	7,30	9,10	11,00	0,50	229,30 x 5,70	OR550 2293-57-N70	HY600 2300-50-300
242,00	229,80	9,50	12,00	15,00	0,60	227,9 7x 6,99	OR568 0447-00-N70	HY603 0447-00-300
245,00	235,60	7,00	8,80	11,00	0,50	234,32 x 5,33	OR568 0374-00-N70	HY640 0374-00-01P
250,00	240,00	7,30	9,10	11,00	0,50	239,30 x 5,70	OR550 2393-57-N70	HY600 2400-50-300
255,00	242,80	9,50	12,00	15,00	0,60	240,67 x 6,99	OR568 0448-00-N70	HY640 0448-00-01P
260,00	250,00	7,30	9,10	11,00	0,50	249,30 x 5,70	OR550 2493-57-N70	HY600 2500-50-300
260,00	247,80	9,50	12,00	15,00	0,60	247,00 x 6,99	OR568 0680-00-N70	HY640 0680-00-01P
265,00	255,60	7,00	8,80	11,00	0,50	253,37 x 5,33	OR568 0377-00-N70	HY640 0377-00-01P
270,00	257,80	9,50	12,00	15,00	0,60	253,57 x 6,99	OR568 0449-00-N70	HY640 0449-00-01P
270,00	260,00	7,30	9,10	11,00	0,50	259,30 x 5,70	OR550 2593-57-N70	HY640 2700-50-01P
275,00	262,80	9,50	12,00	15,00	0,60	259,70 x 6,99	OR568 0682-00-N70	HY640 0682-00-01P
280,00	270,00	7,30	9,10	11,00	0,50	269,30 x 5,70	OR550 2693-57-N70	HY600 2700-50-300
280,00	267,80	9,50	12,00	15,00	0,60	266,07 x 6,99	OR568 0450-00-N70	HY640 0450-00-01P
286,00	273,80	9,50	12,00	15,00	0,60	272,40 x 6,99	OR568 0684-00-N70	HY603 0684-00-300
290,00	280,60	7,00	8,80	11,00	0,50	278,77 x 5,33	OR568 0379-00-N70	HY640 0379-00-01P
290,00	280,00	7,30	9,10	11,00	0,50	279,30 x 5,70	OR550 2793-57-N70	HY640 2900-50-01P
295,00	282,80	9,50	12,00	15,00	0,60	278,77 x 6,99	OR568 0451-00-N70	HY640 0451-00-01P
300,00	287,80	9,50	12,00	15,00	0,60	285,10 x 6,99	OR568 0686-00-N70	HY640 0686-00-01P
300,00	290,00	7,30	9,10	11,00	0,50	289,30 x 5,70	OR550 2893-57-N70	HY640 3000-50-01P

Example for ordering O-Ring AS 568A:

OR 568 - 0360 - 00 - N70 - ...

Profile
AS 568A No.
Standard material
HME internal code

Example for ordering O-Ring metric:

OR 550 - 0360 - 30 - N70 - ...

Profile
Internal diameter x 10
Cord thickness x 10
Standard material
HME internal code

Material Key:

O-Ring

N70 - NBR 70 Shore A
N80 - NBR 80 Shore A
N90 - NBR 90 Shore A
F70 - FPM 70 Shore A
F80 - FPM 80 Shore A
E70 - EPDM 70 Shore A
S70 - Silicon 70 Shore A

Example for ordering Back Ring :

HY 600 2000 - 50 - 300 - ...

Profil
Nomial diameter x 10
Groove depth
Standard material
HME internal code

Material Key:

Back Ring design

HY600 (endless)
HY603 (endless)

HY640 (slotted)
HY647 (spiral)
HY649 (concave slotted)

Standard material Back ring

300 - Polyester elastomer

01P - PTFE pure
25P - PTFE glass filled
30P - PTFE carbon
55P - PTFE bronze

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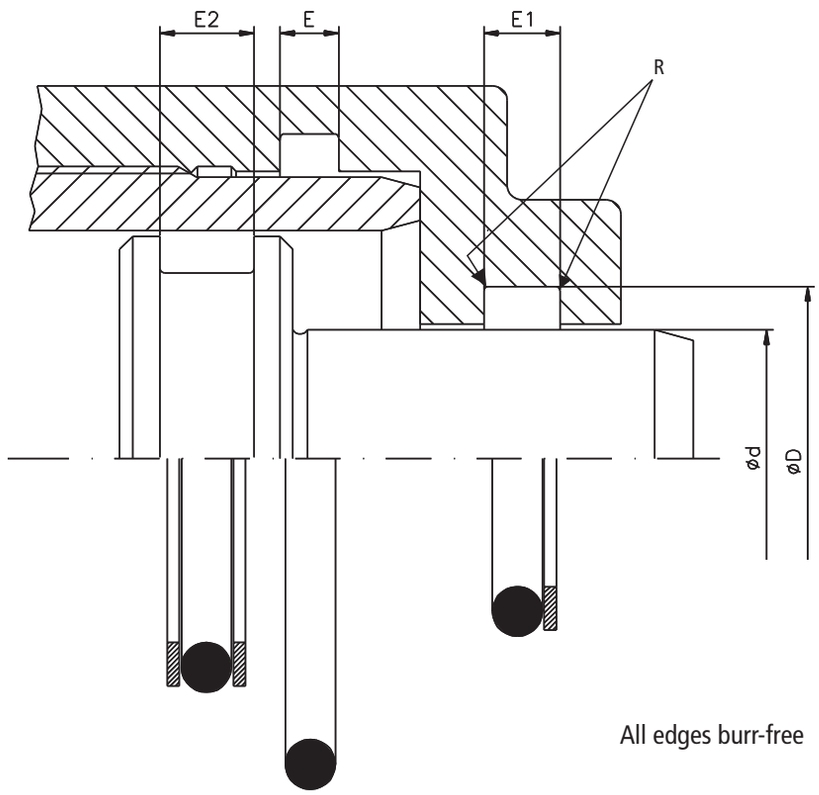
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



All edges burr-free

Groove sizes for dynamic internal sealing applications

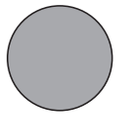
Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Thrust ring Part N°.
6,00	9,00	2,50	4,00	5,50	0,20	6,07 x 1,78	OR568 0010-00-N70	HY603 0010-00-300
8,00	11,00	2,50	4,00	5,50	0,20	7,66 x 1,78	OR568 0011-00-N70	HY603 0011-00-300
9,00	13,50	3,50	5,00	6,50	0,20	9,19 x 2,62	OR568 0110-00-N70	HY603 0110-00-300
9,00	12,00	2,50	4,00	5,50	0,20	8,73 x 1,78	OR568 0611-00-N70	HY603 0611-00-300
10,00	14,50	3,50	5,00	6,50	0,20	9,92 x 2,62	OR568 0613-00-N70	HY603 0613-00-300
11,00	14,00	2,50	4,00	5,50	0,20	10,82 x 1,78	OR568 0013-00-N70	HY603 0013-00-300
11,00	15,50	3,50	5,00	6,50	0,20	10,78 x 2,62	OR568 0111-00-N70	HY603 0111-00-300
12,00	16,50	3,50	5,00	6,50	0,20	11,91 x 2,62	OR568 0614-00-N70	HY603 0614-00-300
12,50	17,00	3,50	5,00	6,50	0,20	12,37 x 2,62	OR568 0112-00-N70	HY603 0112-00-300
14,00	17,00	2,50	4,00	5,50	0,20	14,00 x 1,78	OR568 0015-00-N70	HY603 0015-00-300
14,00	18,50	3,50	5,00	6,50	0,20	13,95 x 2,62	OR568 0113-00-N70	HY603 0113-00-300
15,00	19,50	3,50	5,00	6,50	0,20	15,08 x 2,62	OR568 0616-00-N70	HY603 0616-00-300
15,50	20,00	3,50	5,00	6,50	0,20	15,54 x 2,62	OR568 0114-00-N70	HY603 0114-00-300
16,00	20,50	3,50	5,00	6,50	0,20	15,88 x 2,62	OR568 0809-00-N70	HY603 0809-00-300
17,00	21,50	3,50	5,00	6,50	0,20	17,13 x 2,62	OR568 0115-00-N70	HY603 0115-00-300
18,00	22,50	3,50	5,00	6,50	0,20	17,86 x 2,62	OR568 0617-00-N70	HY603 0617-00-300
19,00	23,50	3,50	5,00	6,50	0,20	18,72 x 2,62	OR568 0116-00-N70	HY603 0116-00-300
19,00	25,10	4,50	6,00	7,50	0,40	18,64 x 3,53	OR568 0210-00-N70	HY603 0210-00-300
20,00	24,50	3,50	5,00	6,50	0,20	20,29 x 2,62	OR568 0117-00-N70	HY603 0117-00-300
20,00	26,10	4,50	6,00	7,50	0,40	20,22 x 3,53	OR568 0211-00-N70	HY603 0211-00-300
22,00	26,50	3,50	5,00	6,50	0,20	21,89 x 2,62	OR568 0118-00-N70	HY603 0118-00-300

O - RING
OR 550 / OR 568

Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
22,00	28,10	4,50	6,00	7,50	0,40	21,82 x 3,53	OR568 0212-00-N70	HY603 0212-00-300
24,00	28,50	3,50	5,00	6,50	0,20	23,81 x 2,62	OR568 0814-00-N70	HY603 0814-00-300
25,00	30,00	3,90	5,50	7,00	0,30	24,20 x 3,00	OR550 0242-30-N70	HY600 0250-25-300
25,00	29,50	3,50	5,00	6,50	0,20	25,07 x 2,62	OR568 0120-00-N70	HY603 0120-00-300
25,00	31,10	4,50	6,00	7,50	0,40	24,99 x 3,53	OR568 0214-00-N70	HY603 0214-00-300
26,00	32,10	4,50	6,00	7,50	0,40	25,80 x 3,53	OR568 0618-00-N70	HY603 0618-00-300
27,00	32,00	3,90	5,50	7,00	0,30	26,20 x 3,00	OR550 0262-30-N70	HY600 0270-25-300
27,00	33,10	4,50	6,00	7,50	0,40	26,58 x 3,53	OR568 0215-00-N70	HY603 0215-00-300
28,00	32,50	3,50	5,00	6,50	0,20	28,24 x 2,62	OR568 0122-00-N70	HY603 0122-00-300
28,00	34,10	4,50	6,00	7,50	0,40	28,17 x 3,53	OR568 0216-00-N70	HY603 0216-00-300
30,00	35,00	3,90	5,50	7,00	0,30	29,20 x 3,00	OR550 0292-30-N70	HY600 0300-25-300
30,00	34,50	3,50	5,00	6,50	0,20	29,82 x 2,62	OR568 0123-00-N70	HY603 0123-00-300
30,00	36,10	4,50	6,00	7,50	0,40	29,75 x 3,53	OR568 0217-00-N70	HY603 0217-00-300
31,00	37,10	4,50	6,00	7,50	0,40	31,34 x 3,53	OR568 0218-00-N70	HY603 0218-00-300
32,00	36,50	3,50	5,00	6,50	0,20	31,42 x 2,62	OR568 0124-00-N70	HY603 0124-00-300
33,00	38,00	3,90	5,50	7,00	0,30	32,20 x 3,00	OR550 0322-30-N70	HY600 0330-25-300
33,00	37,50	3,50	5,00	6,50	0,20	32,99 x 2,62	OR568 0125-00-N70	HY603 0125-00-300
33,00	39,10	4,50	6,00	7,50	0,40	32,92 x 3,53	OR568 0219-00-N70	HY603 0219-00-300
35,00	40,00	3,90	5,50	7,00	0,30	34,20 x 3,00	OR550 0342-30-N70	HY600 0350-25-300
35,00	39,50	3,50	5,00	6,50	0,20	34,59 x 2,62	OR568 0126-00-N70	HY603 0126-00-300
35,00	41,10	4,50	6,00	7,50	0,40	34,52 x 3,53	OR568 0220-00-N70	HY603 0220-00-300
36,00	40,50	3,50	5,00	6,50	0,20	36,17 x 2,62	OR568 0127-00-N70	HY603 0127-00-300
36,00	42,10	4,50	6,00	7,50	0,40	36,10 x 3,53	OR568 0221-00-N70	HY603 0221-00-300
37,00	42,00	3,90	5,50	7,00	0,30	36,20 x 3,00	OR550 0362-30-N70	HY600 0370-25-300
38,00	42,50	3,50	5,00	6,50	0,20	37,77 x 2,62	OR568 0128-00-N70	HY603 0128-00-300
38,00	44,10	4,50	6,00	7,50	0,40	37,70 x 3,53	OR568 0222-00-N70	HY603 0222-00-300
38,00	47,40	7,00	8,80	11,00	0,50	37,47 x 5,33	OR568 0325-00-N70	HY603 0325-00-300
40,00	45,00	3,90	5,50	7,00	0,30	39,20 x 3,00	OR550 0392-30-N70	HY600 0400-25-300
40,00	50,00	7,30	9,10	11,00	0,50	39,20 x 5,70	OR550 0392-57-N70	HY600 0400-50-300
40,00	44,50	3,50	5,00	6,50	0,20	39,34 x 2,62	OR568 0129-00-N70	HY603 0129-00-300
40,00	46,10	4,50	6,00	7,50	0,40	39,69 x 3,53	OR568 0824-00-N70	HY603 0824-00-300
41,00	45,50	3,50	5,00	6,50	0,20	40,94 x 2,62	OR568 0130-00-N70	HY603 0130-00-300
41,00	50,40	7,00	8,80	11,00	0,50	40,64 x 5,33	OR568 0326-00-N70	HY603 0326-00-300
42,00	48,10	4,50	6,00	7,50	0,40	41,28 x 3,53	OR568 0825-00-N70	HY603 0825-00-300
43,00	48,00	3,90	5,50	7,00	0,30	42,20 x 3,00	OR550 0422-30-N70	HY600 0430-25-300
43,00	47,50	3,50	5,00	6,50	0,20	42,52 x 2,62	OR568 0131-00-N70	HY603 0131-00-300
43,00	49,10	4,50	6,00	7,50	0,40	42,86 x 3,53	OR568 0826-00-N70	HY603 0826-00-300
44,00	48,50	3,50	5,00	6,50	0,20	44,12 x 2,62	OR568 0132-00-N70	HY603 0132-00-300
44,00	53,40	7,00	8,80	11,00	0,50	43,82 x 5,33	OR568 0327-00-N70	HY603 0327-00-300
45,00	50,00	3,90	5,50	7,00	0,30	44,20 x 3,00	OR550 0442-30-N70	HY600 0450-25-300
45,00	55,00	7,30	9,10	11,00	0,50	44,20 x 5,70	OR550 0442-57-N70	HY600 0450-50-300
45,00	51,10	4,50	6,00	7,50	0,40	44,04 x 3,53	OR568 0224-00-N70	HY603 0224-00-300
45,00	51,10	4,50	6,00	7,50	0,40	44,45 x 3,53	OR568 0827-00-N70	HY603 0827-00-300
46,00	52,10	4,50	6,00	7,50	0,40	46,04 x 3,53	OR568 0828-00-N70	HY603 0828-00-300
47,00	56,40	7,00	8,80	11,00	0,50	46,99 x 5,33	OR568 0328-00-N70	HY603 0328-00-300
48,00	54,10	4,50	6,00	7,50	0,40	47,63 x 3,53	OR568 0829-00-N70	HY603 0829-00-300
49,00	55,10	4,50	6,00	7,50	0,40	49,22 x 3,53	OR568 0830-00-N70	HY603 0830-00-300
50,00	55,00	3,90	5,50	7,00	0,30	49,50 x 3,00	OR550 0495-30-N70	HY600 0500-25-300
50,00	60,00	7,30	9,10	11,00	0,50	49,20 x 5,70	OR550 0492-57-N70	HY600 0500-50-300
50,00	59,40	7,00	8,80	11,00	0,50	50,17 x 5,33	OR568 0329-00-N70	HY603 0329-00-300
51,00	57,10	4,50	6,00	7,50	0,40	50,39 x 3,53	OR568 0226-00-N70	HY603 0226-00-300
52,00	58,10	4,50	6,00	7,50	0,40	52,39 x 3,53	OR568 0832-00-N70	HY603 0832-00-300
53,00	63,00	7,30	9,10	11,00	0,50	52,20 x 5,70	OR550 0522-57-N70	HY600 0530-50-300
53,00	62,40	7,00	8,80	11,00	0,50	53,34 x 3,53	OR568 0330-00-N70	HY603 0330-00-300
54,00	60,10	4,50	6,00	7,50	0,40	53,57 x 3,53	OR568 0227-00-N70	HY603 0227-00-300
55,00	60,00	3,90	5,50	7,00	0,30	54,50 x 3,00	OR550 0545-30-N70	HY600 0550-25-300
55,00	65,00	7,30	9,10	11,00	0,50	54,20 x 5,70	OR550 0542-57-N70	HY600 0550-50-300
56,00	62,10	4,50	6,00	7,50	0,40	55,56 x 3,53	OR568 0834-00-N70	HY603 0834-00-300
57,00	63,10	4,50	6,00	7,50	0,40	56,70 x 3,53	OR568 0228-00-N70	HY603 0228-00-300

Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
57,00	66,40	7,00	8,80	11,00	0,50	56,52 x 5,33	OR568 0331-00-N70	HY603 0331-00-300
58,00	63,00	3,90	5,50	7,00	0,30	57,20 x 3,00	OR550 0572-30-N70	HY600 0580-25-300
59,00	65,10	4,50	6,00	7,50	0,40	58,74 x 3,53	OR568 0836-00-N70	HY603 0836-00-300
60,00	65,00	3,90	5,50	7,00	0,30	59,50 x 3,00	OR550 0595-30-N70	HY600 0600-25-300
60,00	70,00	7,30	9,10	11,00	0,50	59,20 x 5,70	OR550 0592-57-N70	HY600 0600-50-300
60,00	66,10	4,50	6,00	7,50	0,40	59,92 x 3,53	OR568 0229-00-N70	HY603 0229-00-300
60,00	69,40	7,00	8,80	11,00	0,50	59,69 x 5,33	OR568 0332-00-N70	HY603 0332-00-300
62,00	68,10	4,50	6,00	7,50	0,40	61,90 x 3,53	OR568 0838-00-N70	HY603 0838-00-300
63,00	72,40	7,00	8,80	11,00	0,50	62,87 x 5,33	OR568 0333-00-N70	HY603 0333-00-300
64,00	70,10	4,50	6,00	7,50	0,40	63,50 x 3,53	OR568 0839-00-N70	HY603 0839-00-300
65,00	70,00	3,90	5,50	7,00	0,30	64,50 x 3,00	OR550 0645-30-N70	HY600 0650-25-300
65,00	75,00	7,30	9,10	11,00	0,50	64,20 x 5,70	OR550 0642-57-N70	HY600 0650-50-300
65,00	71,10	4,50	6,00	7,50	0,40	65,09 x 3,53	OR568 0840-00-N70	HY603 0840-00-300
66,00	75,40	7,00	8,80	11,00	0,50	66,04 x 5,33	OR568 0334-00-N70	HY603 0334-00-300
67,00	73,10	4,50	6,00	7,50	0,40	66,68 x 3,53	OR568 0841-00-N70	HY603 0841-00-300
68,00	74,10	4,50	6,00	7,50	0,40	68,26 x 3,53	OR568 0842-00-N70	HY603 0842-00-300
69,00	78,40	7,00	8,80	11,00	0,50	69,22 x 5,33	OR568 0335-00-N70	HY603 0335-00-300
70,00	75,00	3,90	5,50	7,00	0,30	69,50 x 3,00	OR550 0695-30-N70	HY600 0700-25-300
70,00	80,00	7,30	9,10	11,00	0,50	69,20 x 5,70	OR550 0692-57-N70	HY600 0700-50-300
70,00	76,10	4,50	6,00	7,50	0,40	69,85 x 3,53	OR568 0843-00-N70	HY603 0843-00-300
72,00	78,10	4,50	6,00	7,50	0,40	71,44 x 3,53	OR568 0844-00-N70	HY603 0844-00-300
73,00	79,10	4,50	6,00	7,50	0,40	72,62 x 3,53	OR568 0233-00-N70	HY603 0233-00-300
73,00	82,40	7,00	8,80	11,00	0,50	72,40 x 5,33	OR568 0336-00-N70	HY603 0336-00-300
75,00	80,00	3,90	5,50	7,00	0,30	74,50 x 3,00	OR550 0745-30-N70	HY600 0750-25-300
75,00	85,00	7,30	9,10	11,00	0,50	74,20 x 5,70	OR550 0742-57-N70	HY600 0750-50-300
75,00	84,40	7,00	8,80	11,00	0,50	74,63 x 5,33	OR568 0619-00-N70	HY603 0619-00-300
75,00	81,10	4,50	6,00	7,50	0,40	74,61 x 3,53	OR568 0846-00-N70	HY603 0846-00-300
76,00	82,10	4,50	6,00	7,50	0,40	75,79 x 3,53	OR568 0234-00-N70	HY603 0234-00-300
76,00	85,40	7,00	8,80	11,00	0,50	75,57 x 5,33	OR568 0337-00-N70	HY603 0337-00-300
79,00	85,10	4,50	6,00	7,50	0,40	78,97 x 3,53	OR568 0235-00-N70	HY603 0235-00-300
79,00	88,40	7,00	8,80	11,00	0,50	78,74 x 5,33	OR568 0338-00-N70	HY603 0338-00-300
80,00	90,00	7,30	9,10	11,00	0,50	79,20 x 5,70	OR550 0792-57-N70	HY600 0800-50-300
80,00	89,40	7,00	8,80	11,00	0,50	79,77 x 5,33	OR568 0620-00-N70	HY603 0620-00-300
82,00	91,40	7,00	8,80	11,00	0,50	81,92 x 5,33	OR568 0339-00-N70	HY603 0339-00-300
85,00	95,00	7,30	9,10	11,00	0,50	84,10 x 5,70	OR550 0841-57-N70	HY600 0850-50-300
85,00	94,40	7,00	8,80	11,00	0,50	85,09 x 5,33	OR568 0340-00-N70	HY603 0340-00-300
88,00	97,40	7,00	8,80	11,00	0,50	88,27 x 5,33	OR568 0341-00-N70	HY603 0341-00-300
90,00	100,00	7,30	9,10	11,00	0,50	89,10 x 5,70	OR550 0891-57-N70	HY600 0900-50-300
90,00	99,40	7,00	8,80	11,00	0,50	89,69 x 5,33	OR568 0621-00-N70	HY603 0621-00-300
92,00	101,40	7,00	8,80	11,00	0,50	91,44 x 5,33	OR568 0342-00-N70	HY603 0342-00-300
95,00	105,00	7,30	9,10	11,00	0,50	94,10 x 5,70	OR550 0941-57-N70	HY600 0950-50-300
95,00	104,40	7,00	8,80	11,00	0,50	94,62 x 5,33	OR568 0343-00-N70	HY603 0343-00-300
98,00	107,40	7,00	8,80	11,00	0,50	97,79 x 5,33	OR568 0344-00-N70	HY603 0344-00-300
100,00	110,00	7,30	9,10	11,00	0,50	99,10 x 5,70	OR550 0991-57-N70	HY600 1000-50-300
100,00	109,40	7,00	8,80	11,00	0,50	100,00 x 5,33	OR568 0622-00-N70	HY603 0622-00-300
101,00	110,40	7,00	8,80	11,00	0,50	100,97 x 5,33	OR568 0345-00-N70	HY603 0345-00-300
105,00	115,00	7,30	9,10	11,00	0,50	104,10 x 5,70	OR550 1041-57-N70	HY600 1050-50-300
105,00	114,40	7,00	8,80	11,00	0,50	104,14 x 5,33	OR568 0346-00-N70	HY603 0346-00-300
107,00	116,40	7,00	8,80	11,00	0,50	107,32 x 5,33	OR568 0347-00-N70	HY603 0347-00-300
110,00	120,00	7,30	9,10	11,00	0,50	109,10 x 5,70	OR550 1091-57-N70	HY600 1100-50-300
110,00	119,40	7,00	8,80	11,00	0,50	109,54 x 5,33	OR568 0623-00-N70	HY603 0623-00-300
111,00	120,40	7,00	8,80	11,00	0,50	110,49 x 5,33	OR568 0348-00-N70	HY603 0348-00-300
114,00	123,40	7,00	8,80	11,00	0,50	113,67 x 5,33	OR568 0349-00-N70	HY603 0349-00-300
114,00	126,20	9,50	12,00	15,00	0,60	113,67 x 6,99	OR568 0425-00-N70	HY603 0425-00-300
115,00	125,00	7,30	9,10	11,00	0,50	114,10 x 5,70	OR550 1141-57-N70	HY600 1150-50-300
115,00	127,20	9,50	12,00	15,00	0,60	114,70 x 6,99	OR568 0624-00-N70	HY620 0624-00-01P
117,00	126,40	7,00	8,80	11,00	0,50	116,84 x 5,33	OR568 0350-00-N70	HY603 0350-00-300
117,00	129,20	9,50	12,00	15,00	0,60	116,84 x 6,99	OR568 0426-00-N70	HY603 0426-00-300
118,00	127,40	7,00	8,80	11,00	0,50	117,48 x 5,33	OR568 0860-00-N70	HY603 0860-00-300

O - RING
OR 550 / OR 568



Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
120,00	130,00	7,30	9,10	11,00	0,50	119,30 x 5,70	OR550 1193-57-N70	HY600 1200-50-300
120,00	132,20	9,50	12,00	15,00	0,60	120,02 x 6,99	OR568 0427-00-N70	HY620 0427-00-01P
121,00	130,40	7,00	8,80	11,00	0,50	120,02 x 5,33	OR568 0351-00-N70	HY603 0351-00-300
121,00	130,40	7,00	8,80	11,00	0,50	120,70 x 5,33	OR568 0861-00-N70	HY603 0861-00-300
123,00	135,20	9,50	12,00	15,00	0,60	123,19 x 6,99	OR568 0428-00-N70	HY603 0428-00-300
124,00	133,40	7,00	8,80	11,00	0,50	123,80 x 5,33	OR568 0862-00-N70	HY603 0862-00-300
125,00	135,00	7,30	9,10	11,00	0,50	124,30 x 5,70	OR550 1243-57-N70	HY600 1250-50-300
125,00	137,20	9,50	12,00	15,00	0,60	124,60 x 6,99	OR568 0625-00-N70	HY620 0625-00-01P
126,00	138,20	9,50	12,00	15,00	0,60	126,37 x 6,99	OR568 0429-00-N70	HY603 0429-00-300
127,00	133,10	4,50	6,00	7,50	0,40	126,60 x 3,53	OR568 0250-00-N70	HY603 0250-00-300
127,00	136,40	7,00	8,80	11,00	0,50	126,37 x 5,33	OR568 0353-00-N70	HY603 0353-00-300
127,00	136,40	7,00	8,80	11,00	0,50	127,00 x 5,33	OR568 0863-00-N70	HY603 0863-00-300
130,00	140,00	7,30	9,10	11,00	0,50	129,30 x 5,70	OR550 1293-57-N70	HY600 1300-50-300
130,00	139,40	7,00	8,80	11,00	0,50	129,54 x 5,33	OR568 0354-00-N70	HY603 0354-00-300
130,00	139,40	7,00	8,80	11,00	0,50	130,20 x 5,33	OR568 0864-00-N70	HY603 0864-00-300
130,00	142,20	9,50	12,00	15,00	0,60	129,54 x 6,99	OR568 0430-00-N70	HY620 0430-00-01P
133,00	142,40	7,00	8,80	11,00	0,50	132,72 x 5,33	OR568 0355-00-N70	HY603 0355-00-300
133,00	145,20	9,50	12,00	15,00	0,60	132,72 x 6,99	OR568 0431-00-N70	HY603 0431-00-300
134,00	143,40	7,00	8,80	11,00	0,50	133,35 x 5,33	OR568 0865-00-N70	HY603 0865-00-300
135,00	145,00	7,30	9,10	11,00	0,50	134,30 x 5,70	OR550 1343-57-N70	HY600 1350-50-300
135,00	147,20	9,50	12,00	15,00	0,60	134,50 x 6,99	OR568 0626-00-N70	HY620 0626-00-01P
136,00	148,20	9,50	12,00	15,00	0,60	135,80 x 6,99	OR568 0432-00-N70	HY603 0432-00-300
137,00	146,40	7,00	8,80	11,00	0,50	135,90 x 5,33	OR568 0356-00-N70	HY603 0356-00-300
137,00	146,40	7,00	8,80	11,00	0,50	136,53 x 5,33	OR568 0866-00-N70	HY603 0866-00-300
139,00	151,20	9,50	12,00	15,00	0,60	139,07 x 6,99	OR568 0433-00-N70	HY603 0433-00-300
140,00	150,00	7,30	9,10	11,00	0,50	139,30 x 5,70	OR550 1393-57-N70	HY600 1400-50-300
140,00	149,40	7,00	8,80	11,00	0,50	139,07 x 5,33	OR568 0357-00-N70	HY603 0357-00-300
140,00	149,40	7,00	8,80	11,00	0,50	139,70 x 5,33	OR568 0867-00-N70	HY603 0867-00-300
143,00	152,40	7,00	8,80	11,00	0,50	142,24 x 5,33	OR568 0358-00-N70	HY603 0358-00-300
143,00	152,40	7,00	8,80	11,00	0,50	142,88 x 5,33	OR568 0868-00-N70	HY603 0868-00-300
145,00	155,00	7,30	9,10	11,00	0,50	144,30 x 5,70	OR550 1443-57-N70	HY600 1450-50-300
145,00	157,20	9,50	12,00	15,00	0,60	145,42 x 6,99	OR568 0435-00-N70	HY603 0435-00-300
150,00	160,00	7,30	9,10	11,00	0,50	149,30 x 5,70	OR550 1493-57-N70	HY600 1500-50-300
150,00	159,40	7,00	8,80	11,00	0,50	148,59 x 5,33	OR568 0360-00-N70	HY603 0360-00-300
150,00	159,40	7,00	8,80	11,00	0,50	149,23 x 5,33	OR568 0870-00-N70	HY603 0870-00-300
155,00	165,00	7,30	9,10	11,00	0,50	154,30 x 5,70	OR550 1543-57-N70	HY600 1550-50-300
156,00	168,20	9,50	12,00	15,00	0,60	155,60 x 6,99	OR568 0872-00-N70	HY603 0872-00-300
158,00	167,40	7,00	8,80	11,00	0,50	158,12 x 5,33	OR568 0362-00-N70	HY603 0362-00-300
160,00	170,00	7,30	9,10	11,00	0,50	159,30 x 5,70	OR550 1593-57-N70	HY600 1600-50-300
160,00	172,20	9,50	12,00	15,00	0,60	159,50 x 6,99	OR568 0627-00-N70	HY620 0627-00-01P
165,00	175,00	7,30	9,10	11,00	0,50	164,30 x 5,70	OR550 1643-57-N70	HY600 1650-50-300
165,00	174,40	7,00	8,80	11,00	0,50	164,47 x 5,33	OR568 0363-00-N70	HY603 0363-00-300
165,00	177,20	9,50	12,00	15,00	0,60	164,47 x 6,99	OR568 0439-00-N70	HY620 0439-00-01P
167,00	179,20	9,50	12,00	15,00	0,60	166,70 x 6,99	OR568 0628-00-N70	HY603 0628-00-300
170,00	180,00	7,30	9,10	11,00	0,50	169,30 x 5,70	OR550 1693-57-N70	HY600 1700-50-300
170,00	182,20	9,50	12,00	15,00	0,60	170,82 x 6,99	OR568 0440-00-N70	HY620 0440-00-01P
171,00	180,40	7,00	8,80	11,00	0,50	170,82 x 5,33	OR568 0364-00-N70	HY603 0364-00-300
175,00	185,00	7,30	9,10	11,00	0,50	174,30 x 5,70	OR550 1743-57-N70	HY600 1750-50-300
175,00	187,20	9,50	12,00	15,00	0,60	174,60 x 6,99	OR568 0878-00-N70	HY620 0878-00-01P
178,00	187,40	7,00	8,80	11,00	0,50	177,17 x 5,33	OR568 0365-00-N70	HY603 0365-00-300
180,00	190,00	7,30	9,10	11,00	0,50	179,30 x 5,70	OR550 1793-57-N70	HY600 1800-50-300
180,00	192,20	9,50	12,00	15,00	0,60	181,00 x 6,99	OR568 0880-00-N70	HY603 0880-00-300
184,00	196,20	9,50	12,00	15,00	0,60	183,52 x 6,99	OR568 0442-00-N70	HY603 0442-00-300
185,00	195,00	7,30	9,10	11,00	0,50	184,30 x 5,70	OR550 1843-57-N70	HY600 1850-50-300
190,00	200,00	7,30	9,10	11,00	0,50	189,30 x 5,70	OR550 1893-57-N70	HY600 1900-50-300
190,00	199,40	7,00	8,80	11,00	0,50	189,87 x 5,33	OR568 0367-00-N70	HY603 0367-00-300
190,00	202,10	9,50	12,00	15,00	0,60	189,87 x 6,99	OR568 0443-00-N70	HY603 0443-00-300
194,00	206,20	9,50	12,00	15,00	0,60	193,70 x 6,99	OR568 0884-00-N70	HY603 0884-00-300
195,00	205,00	7,30	9,10	11,00	0,50	194,30 x 5,70	OR550 1943-57-N70	HY600 1950-50-300

Groove sizes						O-Ring	**Part N°.**	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	O-Ring Part N°.	Trust ring Part N°.
196,00	205,40	7,00	8,80	11,00	0,50	196,22 x 5,33	OR568 0368-00-N70	HY603 0368-00-300
196,00	208,20	9,50	12,00	15,00	0,60	196,22 x 6,99	OR568 0444-00-N70	HY603 0444-00-300
200,00	210,00	7,30	9,10	11,00	0,50	199,30 x 5,70	OR550 1993-57-N70	HY600 2000-50-300
200,00	212,20	9,50	12,00	15,00	0,60	199,80 x 6,99	OR568 0886-00-N70	HY620 0886-00-01P
209,00	218,40	7,00	8,80	11,00	0,50	208,92 x 5,33	OR568 0370-00-N70	HY603 0370-00-300
210,00	220,00	7,30	9,10	11,00	0,50	209,30 x 5,70	OR550 2093-57-N70	HY600 2100-50-300
210,00	222,20	9,50	12,00	15,00	0,60	208,92 x 6,99	OR568 0674-00-N70	HY620 0674-00-01P
215,00	227,20	9,50	12,00	15,00	0,60	215,27 x 6,99	OR568 0446-00-N70	HY603 0446-00-300
220,00	230,00	7,30	9,10	11,00	0,50	219,30 x 5,70	OR550 2193-57-N70	HY600 2200-50-300
222,00	231,40	7,00	8,80	11,00	0,50	221,62 x 5,33	OR568 0372-00-N70	HY603 0372-00-300
228,00	237,40	7,00	8,80	11,00	0,50	227,97 x 5,33	OR568 0373-00-N70	HY603 0373-00-300
230,00	240,00	7,30	9,10	11,00	0,50	229,30 x 5,70	OR550 2293-57-N70	HY600 2300-50-300
230,00	242,20	9,50	12,00	15,00	0,60	227,97 x 6,99	OR568 0447-00-N70	HY603 0447-00-300
240,00	250,00	7,30	9,10	11,00	0,50	239,30 x 5,70	OR550 2393-57-N70	HY600 2400-50-300
240,00	252,20	9,50	12,00	15,00	0,60	240,67 x 6,99	OR568 0448-00-N70	HY620 0448-00-01P
250,00	260,00	7,30	9,10	11,00	0,50	249,30 x 5,70	OR550 2493-57-N70	HY600 2500-50-300
255,00	267,20	9,50	12,00	15,00	0,60	253,57 x 6,99	OR568 0449-00-N70	HY620 0449-00-01P
260,00	272,20	9,50	12,00	15,00	0,60	259,70 x 6,99	OR568 0682-00-N70	HY620 0682-00-01P
260,00	270,00	7,30	9,10	11,00	0,50	259,30 x 5,70	OR550 2593-57-N70	HY620 2600-50-01P
265,00	277,20	9,50	12,00	15,00	0,60	266,07 x 6,99	OR568 0450-00-N70	HY620 0450-00-01P
270,00	280,00	7,30	9,10	11,00	0,50	269,30 x 5,70	OR550 2693-57-N70	HY600 2700-50-300
273,00	285,20	9,50	12,00	15,00	0,60	272,40 x 6,99	OR568 0684-00-N70	HY603 0684-00-300
280,00	292,20	9,50	12,00	15,00	0,60	278,77 x 6,99	OR568 0451-00-N70	HY620 0451-00-01P
280,00	290,00	7,30	9,10	11,00	0,50	279,30 x 5,70	OR550 2793-57-N70	HY620 2800-50-01P
285,00	297,20	9,50	12,00	15,00	0,60	285,10 x 6,99	OR568 0686-00-N70	HY620 0686-00-01P
290,00	300,00	7,30	9,10	11,00	0,50	289,30 x 5,70	OR550 2893-57-N70	HY620 2900-50-01P
300,00	312,20	9,50	12,00	15,00	0,60	297,80 x 6,99	OR568 0688-00-N70	HY620 0688-00-01P
300,00	310,00	7,30	9,10	11,00	0,50	299,30 x 5,70	OR550 2993-57-N70	HY620 3000-50-01P

Example for ordering O-Ring metric:

OR 550 - 0360 - 30 - N70 - ...

- Profile
- Internal diameter x 10
- Cord thickness x 10
- Standard material
- HME internal code

Example for ordering O-Ring AS 568A:

OR 568 - 0360 - 00 - N70 - ...

- Profile
- AS568A No.
- Standard material
- HME internal code

Material - Key:

O-Ring

N70 - NBR	70 Shore A
N80 - NBR	80 Shore A
N90 - NBR	90 Shore A
F70 - FPM	70 Shore A
F80 - FPM	80 Shore A
E70 - EPDM	70 Shore A
S70 - Silicon	70 Shore A

Example for ordering Back Ring:

HY 600 2000 - 50 - 300 - ...

- Profile
- Nominal diameter x 10
- Groove depth
- Standard material
- HME internal code

Material Key:

Back ring design

HY600 (endless)
HY603 (endless)

HY620 (endless)
HY625 (slotted)
HY627 (spiral)
HY629 (concave, slotted)

Standard material Back ring

300 - Polyester elastomer

01P - PTFE pure
25P - PTFE glass filled
30P - PTFE carbon
55P - PTFE bronze

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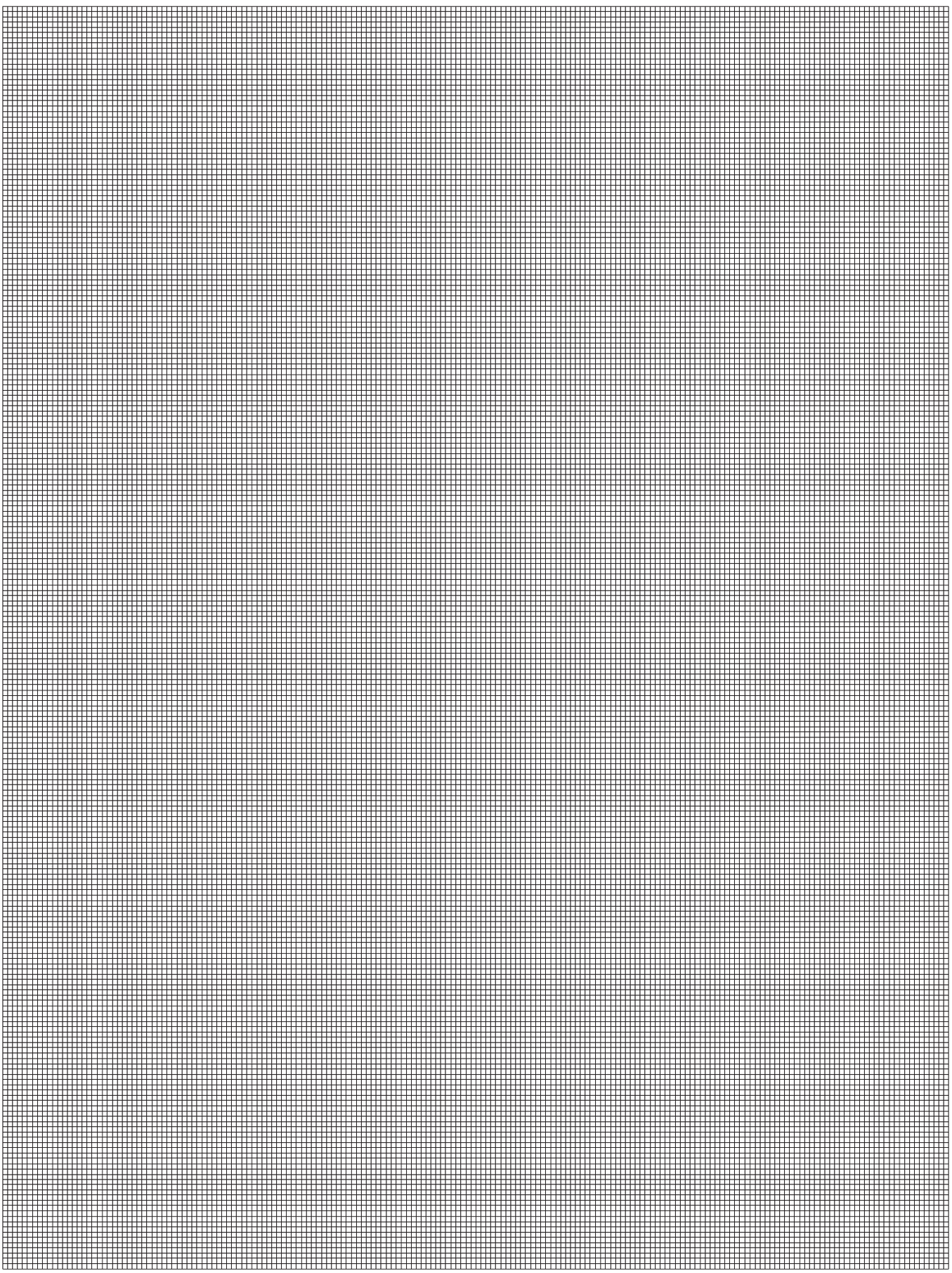
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

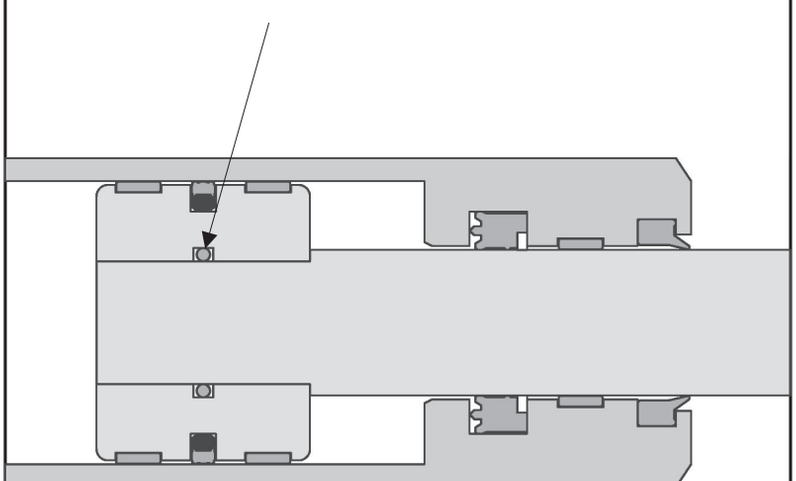


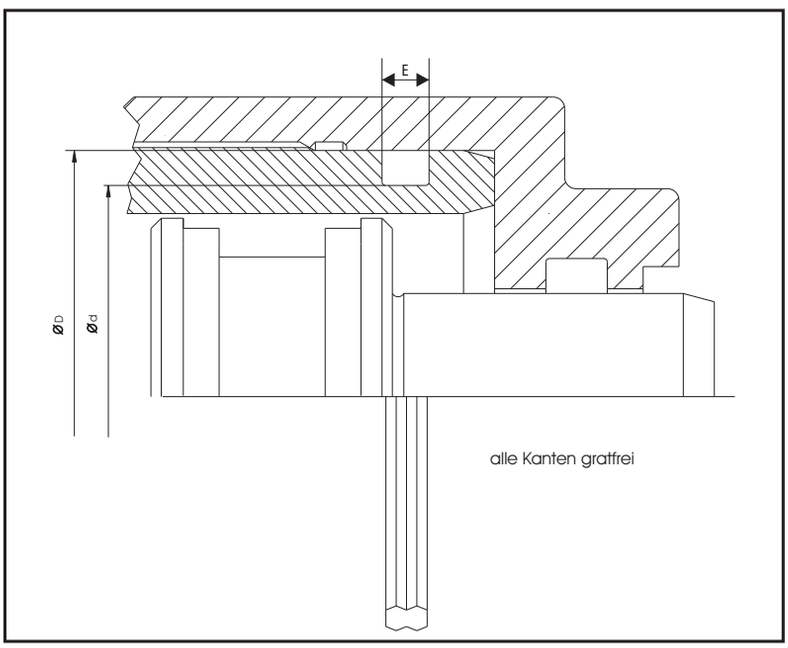
The static seal OR 575 is produced of heavy wear out restistant Polyurethane. The profile of seals guaranteed a simple and ..... mounting. The material of polyurethan served an essential higher extrusion-firmness against normal O-ring sealings.

Pressure of operating : static up to 50 Mpa (500 bar)
Temperature : -35° C up to +110° C

Special Facts:

- Very hight resistance of extrusion
- Low rest of pressure deformation
- High rubbing off restistance
- Low costs of groove geometrie
- economic constructions
- resistance of twisting
- Small mounting area
- Simply mounting





Limits of application

Pressure of operation	:	static up to 50 MPa (500 bar)
Temperature	:	-35 up to +110 °C

Media of use

Hydraulic oils mineral oil basised
Natural pressure fluids (bio-oils) please ask for.

Surface finish

Surface	Rz	Ra
Groove root	6,3 µm	1,6 µm
Groove flank	10,0 µm	3,2 µm

Standard sizes

D H8	**d** h9	**E**	**Part N°.**
16,60	12,00	3,10	OR575 0120-01-200
17,00	14,60	3,40	OR575 0146-01-200
18,00	14,00	5,80	OR575 0140-01-200
19,00	15,60	4,40	OR575 0156-01-200
20,00	16,00	5,80	OR575 0160-01-200
20,50	17,20	5,00	OR575 0172-01-200
24,00	20,00	4,80	OR575 0200-01-200
26,80	22,00	5,40	OR575 0220-01-200
30,00	25,40	5,40	OR575 0254-01-200
36,00	32,00	6,20	OR575 0320-01-200
40,00	35,20	5,40	OR575 0352-01-200
40,00	35,40	5,40	OR575 0354-01-200
42,80	38,00	6,80	OR575 0380-01-200
45,00	35,80	9,60	OR575 0358-01-200
45,00	40,00	5,40	OR575 0400-01-200
50,00	40,80	9,60	OR575 0408-01-200
50,00	44,60	6,20	OR575 0446-01-200
55,00	49,60	6,20	OR575 0496-01-200
55,00	49,90	5,30	OR575 0499-01-200
55,00	51,00	3,50	OR575 0510-01-200
57,00	52,20	4,10	OR575 0522-01-200
60,00	54,40	5,80	OR575 0544-01-200
60,00	54,60	6,20	OR575 0546-01-200
63,00	53,80	9,60	OR575 0538-01-200
63,00	56,60	6,40	OR575 0566-01-200
63,00	57,40	4,80	OR575 0574-01-200
63,00	57,60	6,20	OR575 0576-01-200
65,00	59,40	5,00	OR575 0594-01-200
65,00	59,60	6,20	OR575 0596-01-200
65,00	60,00	5,00	OR575 0600-01-200
68,00	62,70	5,00	OR575 0627-01-200
70,00	64,60	6,20	OR575 0646-01-200
70,00	65,00	5,00	OR575 0650-01-200
72,00	66,40	5,00	OR575 0664-01-200
75,00	69,40	5,30	OR575 0694-01-200
75,00	69,60	6,20	OR575 0696-01-200
76,60	72,00	4,80	OR575 0720-01-200
78,00	73,00	5,00	OR575 0730-01-200
80,00	70,80	9,60	OR575 0708-01-200
80,00	73,60	6,40	OR575 0736-01-200
80,00	73,80	6,90	OR575 0738-01-200
80,00	74,40	5,30	OR575 0744-01-200
85,00	79,40	5,30	OR575 0794-01-200
90,00	81,40	9,00	OR575 0814-01-200
90,00	83,00	6,50	OR575 0830-01-200
90,00	84,40	4,80	OR575 0844-01-200
100,00	90,80	9,60	OR575 0908-01-200
100,00	91,60	8,50	OR575 0916-01-200
100,00	91,40	9,00	OR575 0914-01-200
100,00	93,80	6,90	OR575 0938-01-200
110,00	101,40	9,00	OR575 1014-01-200
125,00	115,80	9,60	OR575 1158-01-200
125,00	116,40	9,00	OR575 1164-01-200
125,00	116,60	8,50	OR575 1166-01-200

D H8	**d** h9	**E**	**Part N°.**
140,00	128,40	12,30	OR575 1284-01-200
140,00	131,60	8,50	OR575 1316-01-200
150,00	138,40	12,30	Or575 1384-01-200
160,00	148,40	12,30	OR575 1484-01-200
165,00	153,40	12,30	OR575 1534-01-200
165,00	156,60	8,50	OR575 1566-01-200
170,00	158,40	12,30	OR575 1584-01-200
170,00	160,80	9,60	OR575 1608-01-200
180,00	168,40	12,30	OR575 1684-01-200
180,00	171,60	8,50	OR575 1716-01-200
200,00	188,40	12,30	OR575 1884-01-200
225,00	213,00	10,70	OR575 2130-01-200
250,00	238,00	10,70	OR575 2380-01-200
250,00	238,40	12,30	OR575 2384-01-200
270,00	258,40	12,30	OR575 2584-01-200
280,00	268,00	10,70	OR575 2680-01-200
300,00	288,00	10,70	OR575 2880-01-200

Example for ordering O-Ring AS 568A:

OR 575 - 0120 - 01 - 200 - ...

Profile
Nominal diameter x 10
Dimension variant.
Standard material
HME internal code

Issue
01 | 24

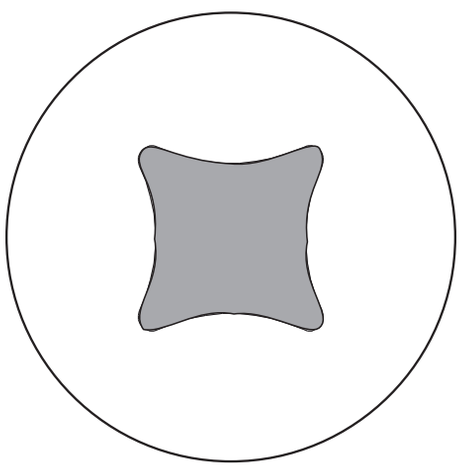
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

Profile	Type	Specification	Limitations of Use	Material	
			Temperature	Sealing element	Page
	HX 568	X-Seals ASA 568A measurements	-50 up to +240° C	Rubber Elastomere	3

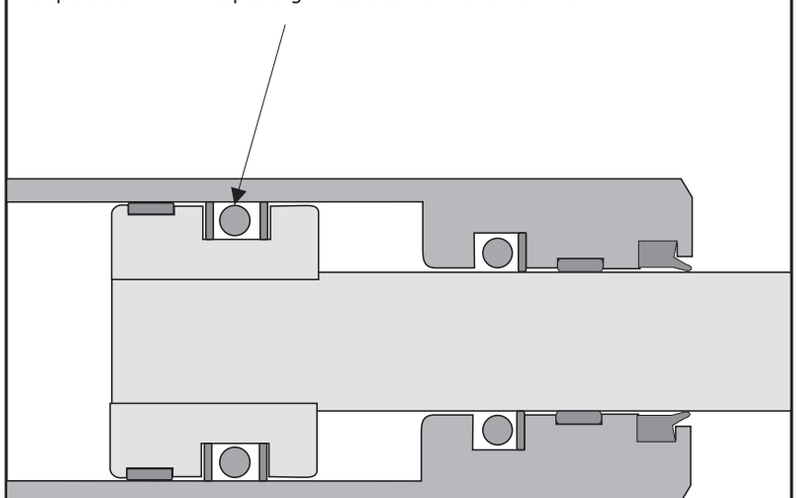
Content

Mainly types of X-seal material / Tolerances
Surface finish
Fit tolerances for static and dynamic application
Methodes of Mounting
Groove sizes
Standard sizes

Groove sizes-dynamic external sealing
Groove sizes-dynamic internal sealing



Pressure of operation	:static	to	20 Mpa (200 bar) without back ring
		to	40 Mpa (400 bar) with back ring
		to	200 Mpa (2000 bar) with special back ring
	dynamic	off	5 Mpa (50 bar) with back ring
Slpeed	: dynamic		0,5 m/s max.
	rotaric		1,0 m/s max.
Temperature	: depending of material		-50° C bis +240° C



X-seal as a further development on the O-ring has a quatratic cross section and is provided with sealing lips on the corners. The X-seal sealing effect result through the 4 sealing lips and not due to deformation of the total cross section. The wide range of differenting quality of materials is will possible to unse different gas and fluids.

Special Features:

- Safe for twisting during mounting and operation
- Barr-free sealing lips
- Cost convenient groove geometry
- Economic constructions
- Double activ
- High temperature and pressure range
- Low on space requirement
- Extensive series of sizes

X-SEAL materials / Main types

Due to the wide range of syntetic elastomers that are available on the market, X-seal material can be made to withstand temperatures from minus 50 C up to plus 240 C. to serve a wide range on fluid environments.

Nevertheless all combinations of material do not behave alike. Therefore, we enclude a table to provide an overview of standard materials and the proper diameter datas with reference to relevant applications.

It is not unusual to develop non standard material to cater the influence of some factors that might affect conditions of use.

Material HME	Hardness Shore A	Temperature °C	Standard material and relevant application
N70	70 ± 5	-30 - +130	Standardmaterial in pneumatic and hydraulic
N80	80 ± 5	-30 - +130	Resistant to mineral oils, native and animal origin, water up to plus 70 C, flame resistant fluids - HFA (Oil in water- emulsion) - HFB (water in Oil-emulsion) - HFC (aquerous solotion of polyalkylenglykols)
E80	80 ± 5	-50 - +150	Outstanding resistance to atmospheric effective substances, hot water steam up to 150° C. Good resistane to ozone, phosphae ester bases and brake fluids Not resistant to petrolean production.
F75	75 ± 5	-30 - +240	For static and dynamic sealing in combination with aliphatic and aromatic hydrocarbons, exept entones and ozone at higher temperature.

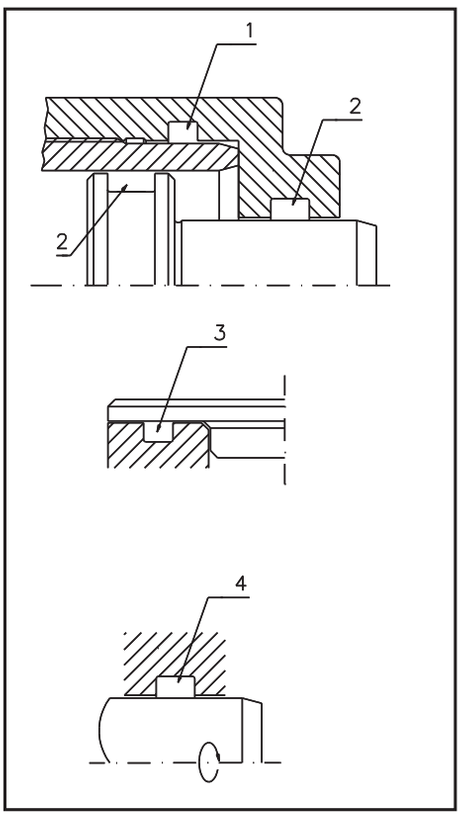
A multitude of other mixtures is available for special purpose applications.

Surface finish:

Applications	Surface	R max µm	Rz µm	Ra µm
radial dynamic	Face	1,0-2,5	0,63-1,60	0,10-0,40
rotary	groove root	≤10,00	≤6,30	≤1,60
	groove flank	≤10,00	≤6,30	≤1,60
radial static	Face	≤10,00	≤6,30	≤1,60
axial static	groove root	≤16,00	≤10,00	≤1,60
	groove flank	≤16,00	≤10,00	≤3,20
	Pulsatic pressure			
	Face	≤6,30	≤4,00	≤0,80
	groove root	≤10,00	≤6,30	≤1,60
	groove flank	≤10,00	≤6,30	≤1,60

Fit Tolerances for static and dynamic applications:

Pressure	X-SEAL-Hardness	Fit tolerance
≤ 2 Mpa (20 bar)	min. 70 SH A	H8/f7
≤ 7 Mpa (70 bar)	min. 70 SH A	H8/f7
≤ 10 Mpa (100 bar)	min. 70 SH A + back ring	H8/f7
≤ 10 Mpa (100 bar)	min. 70 SH A	H7/g6
≤ 35 Mpa (350 bar)	min. 70 SH A + Stützring	H7/g6



Mounting methods:

1. Radial static

2. Radial dynamic
In this method, take care that the internal diameter of X-seal nearly corresponding to the rod diameter (internally sealing) or the groove root diameter (externally sealing) as the case may be.

3. Axial static
Please notice that the direction of pressure is important. If the presssure acts from the inside, the X-seal must fit in with the outer-diameter of the groove, or may need to be compressed by 1 - 3 %. If pressure acts from the outside, the X-seal is to fit in with the internal diameter of the groove, or X-seal maz need dialation by 6 %.

4. Rotary Internal Sealing

To reduce centrifugal forces, the X-seal is to be incorporated in the resting static parts of the housing. Then the internal diameter must be 2 - 5 % larger than the shaft and should be arranged as near as possible to the medium to be sealed. (heat purgation)

Pre stessing of X-SEAL:

dynamic 8% - 20%, static 10% - 30 %
Min. value in hydraulics 8%.
These values are dependent on respective cord strength for lager sealing splits.

We recommend the use of thrust rings if are more than 5 Mpa (50 Bar) pressure of operation dinamic or in the case of great Seal splits.

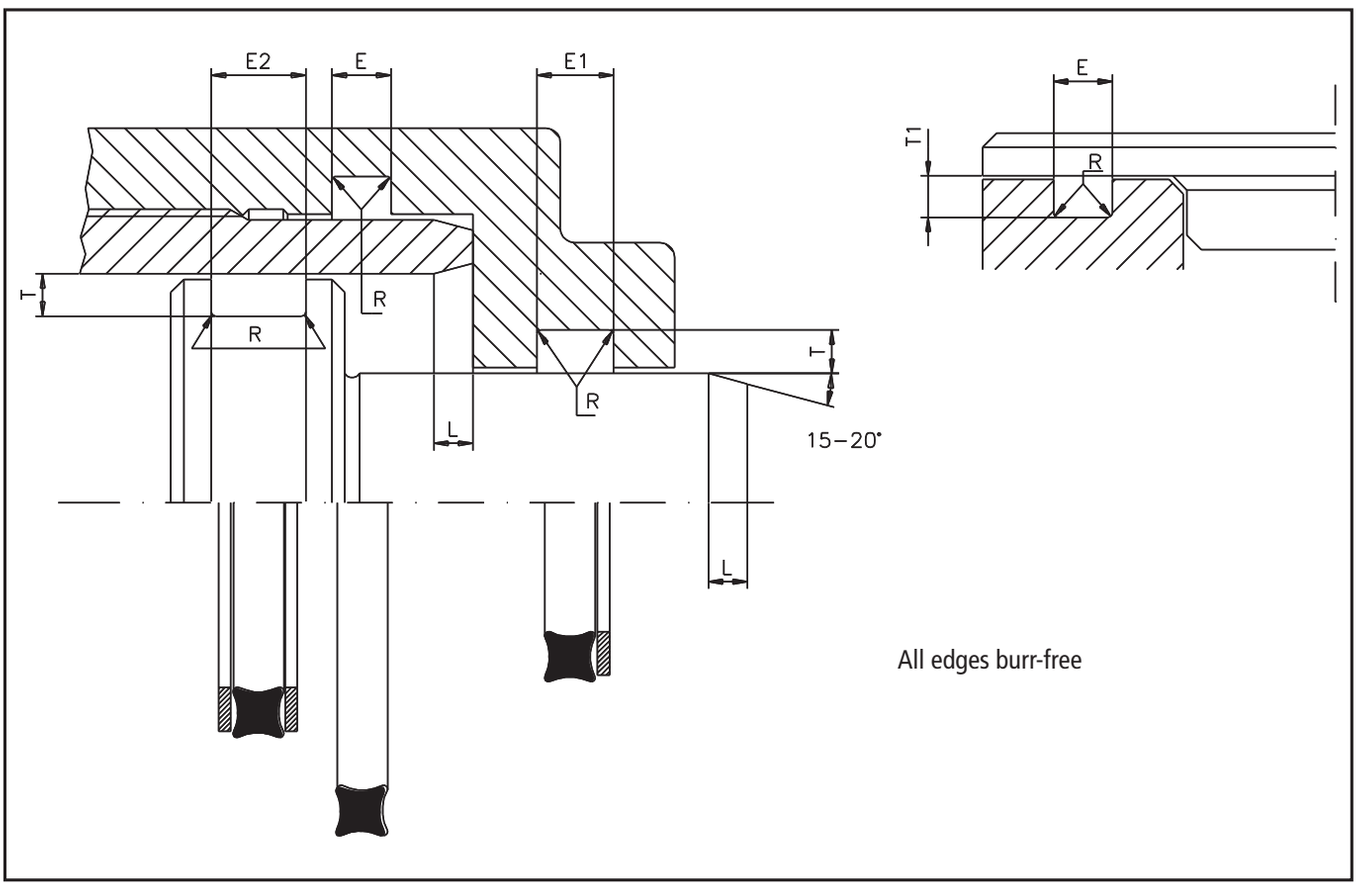


Table of Groove Sizes

	dynamic	static	without Thrust ring	1 Thrust ring	2 Thrust ring	Radius	Slide in bevel
S	**T** ±0,05	**T1** ±0,05	**E** ±0,2	**E1** ±0,2	**E2** ±0,2	**R** (max)	**L** (min)
1,78	1,50	1,40	2,15	3,65	5,15	0,20	1,50
2,62	2,25	2,10	3,15	4,65	6,15	0,20	1,50
3,50/3,53	3,20	3,00	4,10	5,60	7,10	0,40	1,80
5,33	4,80	4,60	6,40	8,20	10,00	0,50	2,70
6,99/7,00	6,40	6,00	8,40	10,90	13,40	0,60	3,60

Standard Sizes

di	s	Part N°.
2,90	1,78	HX568 4006-00-N80
3,68	1,78	HX568 4007-00-N80
4,48	1,78	HX568 4008-00-N80
4,62	1,78	HX568 4008-01-N80
5,28	1,78	HX568 4009-00-N80
5,70	1,78	HX568 4009-01-N80
6,07	1,78	HX568 4010-00-N80
6,65	1,78	HX568 4010-01-N80
7,66	1,78	HX568 4011-00-N80
8,70	1,78	HX568 4011-01-N80
9,25	1,78	HX568 4012-00-N80
9,70	1,78	HX568 4012-01-N80
12,42	1,78	HX568 4014-00-N80
14,00	1,78	HX568 4015-00-N80
15,60	1,78	HX568 4016-00-N80
17,17	1,78	HX568 4017-00-N80
18,77	1,78	HX568 4018-00-N80
20,35	1,78	HX568 4019-00-N80
21,95	1,78	HX568 4020-00-N80
9,19	2,62	HX568 4110-00-N80
9,80	2,62	HX568 4110-01-N80
10,78	2,62	HX568 4111-00-N80
11,70	2,62	HX568 4111-01-N80
12,37	2,62	HX568 4112-00-N80
12,80	2,62	HX568 4112-01-N80
13,70	2,62	HX568 4112-02-N80
13,95	2,62	HX568 4113-00-N80
14,80	2,62	HX568 4114-01-N80
15,54	2,62	HX568 4114-00-N80
17,13	2,62	HX568 4115-00-N80
17,75	2,62	HX568 4115-01-N80
18,72	2,62	HX568 4116-00-N80
19,60	2,62	HX568 4116-01-N80
20,29	2,62	HX568 4117-00-N80
21,89	2,62	HX568 4118-00-N80
23,47	2,62	HX568 4119-00-N80
25,07	2,62	HX568 4120-00-N80
26,64	2,62	HX568 4121-00-N80
28,24	2,62	HX568 4122-00-N80
66,34	2,62	HX568 4146-00-N80
18,64	3,53	HX568 4210-00-N80
20,22	3,53	HX568 4211-00-N80
20,90	3,53	HX568 4211-01-N80
21,82	3,53	HX568 4212-00-N80
23,39	3,53	HX568 4213-00-N80
23,99	3,53	HX568 4213-01-N80
24,99	3,53	HX568 4214-00-N80
25,90	3,53	HX568 4214-01-N80
26,58	3,53	HX568 4215-00-N80
27,57	3,53	HX568 4215-01-N80
28,17	3,53	HX568 4216-00-N80
29,75	3,53	HX568 4217-00-N80
31,34	3,53	HX568 4218-00-N80
32,04	3,53	HX568 4218-01-N80
32,92	3,53	HX568 4219-00-N80
33,80	3,53	HX568 4219-01-N80
34,52	3,53	HX568 4220-00-N80
36,10	3,53	HX568 4221-00-N80
37,70	3,53	HX568 4222-00-N80

di	s	Part N°.
40,87	3,53	HX568 4223-00-N80
44,04	3,53	HX568 4224-00-N80
47,22	3,53	HX568 4225-00-N80
50,39	3,53	HX568 4226-00-N80
53,57	3,53	HX568 4227-00-N80
56,75	3,53	HX568 4228-00-N80
59,92	3,53	HX568 4229-00-N80
63,09	3,53	HX568 4230-00-N80
37,47	5,33	HX568 4325-00-N80
39,64	5,33	HX568 4325-01-N80
40,64	5,33	HX568 4326-00-N80
41,80	5,33	HX568 4326-01-N80
43,82	5,33	HX568 4327-00-N80
45,04	5,33	HX568 4327-01-N80
45,84	5,33	HX568 4327-02-N80
46,99	5,33	HX568 4328-00-N80
47,80	5,33	HX568 4328-01-N80
50,17	5,33	HX568 4329-00-N80
52,00	5,33	HX568 4329-01-N80
53,34	5,33	HX568 4330-00-N80
54,50	5,33	HX568 4330-01-N80
56,52	5,33	HX568 4331-00-N80
57,52	5,33	HX568 4331-01-N80
59,69	5,33	HX568 4332-00-N80
61,54	5,33	HX568 4332-01-N80
62,87	5,33	HX568 4333-00-N80
64,59	5,33	HX568 4333-01-N80
66,04	5,33	HX568 4334-00-N80
67,64	5,33	HX568 4334-01-N80
69,22	5,33	HX568 4335-00-N80
70,64	5,33	HX568 4335-01-N80
72,40	5,33	HX568 4336-00-N80
73,84	5,33	HX568 4336-01-N80
75,57	5,33	HX568 4336-02-N80
78,74	5,33	HX568 4338-00-N80
80,09	5,33	HX568 4338-01-N80
81,92	5,33	HX568 4339-00-N80
83,39	5,33	HX568 4339-02-N80
85,09	5,33	HX568 4340-00-N80
86,64	5,33	HX568 4340-01-N80
88,27	5,33	HX568 4341-00-N80
89,59	5,33	HX568 4341-01-N80
91,44	5,33	HX568 4342-00-N80
94,62	5,33	HX568 4343-00-N80
97,99	5,33	HX568 4343-01-N80
100,97	5,33	HX568 4345-00-N80
102,34	5,33	HX568 4345-01-N80
104,14	5,33	HX568 4346-00-N80
105,80	5,33	HX568 4346-01-N80
107,32	5,33	HX568 4347-00-N80
110,49	5,33	HX568 4348-00-N80
113,67	5,33	HX568 4349-00-N80
113,67	6,99	HX568 4425-00-N80
115,84	6,99	HX568 4425-01-N80
116,84	6,99	HX568 4426-00-N80
120,02	6,99	HX568 4427-00-N80
123,19	6,99	HX568 4428-00-N80
126,37	6,99	HX568 4429-00-N80
129,54	6,99	HX568 4430-00-N80

di	s	Part N°.
132,72	6,99	HX568 4431-00-N80
135,89	6,99	HX568 4432-00-N80
139,07	6,99	HX568 4433-00-N80
142,24	6,99	HX568 4434-00-N80
145,42	6,99	HX568 4435-00-N80
148,59	6,99	HX568 4436-00-N80
151,77	6,99	HX568 4437-00-N80
155,02	6,99	HX568 4437-01-N80
158,12	6,99	HX568 4438-00-N80
161,02	6,99	HX568 4438-01-N80
164,47	6,99	HX568 4439-00-N80
167,02	6,99	HX568 4439-01-N80
170,82	6,99	HX568 4440-00-N80
173,52	6,99	HX568 4440-01-N80
177,17	6,99	HX568 4441-00-N80
180,52	6,99	HX568 4441-01-N80
183,52	6,99	HX568 4442-00-N80
186,02	6,99	HX568 4442-01-N80
189,87	6,99	HX568 4443-00-N80
192,02	6,99	HX568 4443-01-N80
196,22	6,99	HX568 4444-00-N80
199,02	6,99	HX568 4444-01-N80
202,57	6,99	HX568 4445-00-N80
206,80	6,99	HX568 4445-01-N80
211,02	6,99	HX568 4445-02-N80
215,27	6,99	HX568 4446-00-N80
219,02	6,99	HX568 4446-01-N80
223,50	6,99	HX568 4446-02-N80
227,97	6,99	HX568 4447-00-N80
231,02	6,99	HX568 4447-01-N80

di	s	Part N°.
235,00	6,99	HX568 4447-02-N80
240,67	6,99	HX568 4448-00-N80
243,02	6,99	HX568 4448-01-N80
248,00	6,99	HX568 4448-02-N80
253,57	6,99	HX568 4449-00-N80
259,00	6,99	HX568 4449-01-N80
266,07	6,99	HX568 4450-00-N80
273,10	6,99	HX568 4450-01-N80
278,77	6,99	HX568 4451-00-N80
284,00	6,99	HX568 4451-01-N80
287,50	6,99	HX568 4451-02-N80
291,47	6,99	HX568 4452-00-N80
298,00	6,99	HX568 4452-01-N80
304,17	6,99	HX568 4453-00-N80
310,00	6,99	HX568 4453-01-N80
316,87	6,99	HX568 4454-00-N80
323,50	6,99	HX568 4454-01-N80
329,57	6,99	HX568 4455-00-N80
336,50	6,99	HX568 4455-01-N80
342,27	6,99	HX568 4456-00-N80
348,50	6,99	HX568 4456-01-N80
354,97	6,99	HX568 4457-00-N80
362,50	6,99	HX568 4457-01-N80
367,67	6,99	HX568 4458-00-N80
374,00	6,99	HX568 4458-01-N80
380,37	6,99	HX568 4459-00-N80
387,50	6,99	HX568 4459-01-N80
393,07	6,99	HX568 4460-00-N80
401,00	6,99	HX568 4460-01-N80

Example for ordering X-Seal:

HX 568 4325 - 00 - N80 - ...

- Profile
- X-SEAL Nr.
- Dimension variant
- Standard material
- HME internal code

Material Key:

X-SEAL

N80 - NBR 80 Shore A
F75 - FPM 75 Shore A
E80 - EPDM 80 Shore A

Issue
01 | 24

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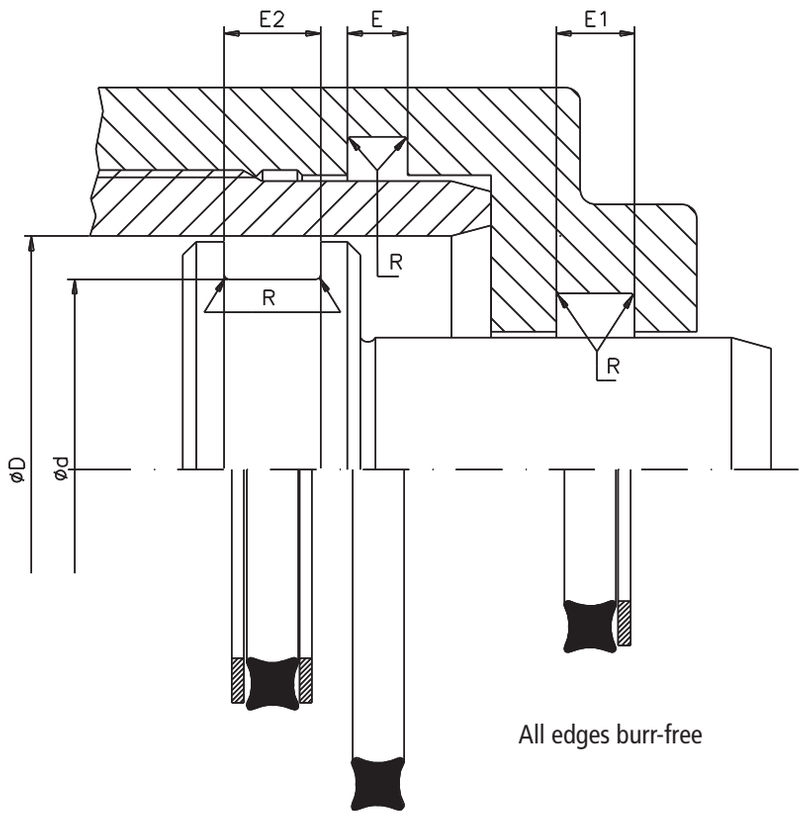

All edges burr-free

Groove sizes for dynamic external sealing applications

Groove size							Part N.°	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	X-SEAL Part N.°	Thrust ring Part N.°
7,00	4,00	2,15	3,65	5,15	0,20	3,68 x 1,78	HX568 4007-00-N80	HY655 0007-00-01P
8,00	5,00	2,15	3,65	5,15	0,20	4,48 x 1,78	HX568 4008-00-N80	HY655 0008-00-01P
10,00	7,00	2,15	3,65	5,15	0,20	6,07 x 1,78	HX568 4010-00-N80	HY603 0010-00-300
12,00	9,00	2,15	3,65	5,15	0,20	8,70 x 1,78	HX568 4011-01-N80	HY603 0611-00-300
14,00	9,50	3,15	4,65	6,15	0,20	9,19 x 2,62	HX568 4110-00-N80	HY603 0110-00-300
15,00	10,50	3,15	4,65	6,15	0,20	9,80 x 2,62	HX568 4110-01-N80	HY603 0613-00-300
18,00	13,50	3,15	4,65	6,15	0,20	12,80 x 2,62	HX568 4112-01-N80	HY655 0112-01-01P
19,00	14,50	3,15	4,65	6,15	0,20	13,95 x 2,62	HX568 4113-00-N80	HY603 0113-00-300
20,00	15,50	3,15	4,65	6,15	0,20	14,70 x 2,62	HX568 4113-01-N80	HY655 0113-01-01P
22,00	17,50	3,15	4,65	6,15	0,20	17,13 x 2,62	HX568 4115-00-N80	HY603 0115-00-300
24,00	19,50	3,15	4,65	6,15	0,20	18,72 x 2,62	HX568 4116-00-N80	HY603 0116-00-300
25,00	20,50	3,15	4,65	6,15	0,20	19,60 x 2,62	HX568 4116-01-N80	HY655 0116-01-01P
26,00	19,60	4,10	5,60	7,10	0,40	18,64 x 3,53	HX568 4210-00-N80	HY655 0210-00-01P
28,00	21,60	4,10	5,60	7,10	0,40	20,90 x 3,53	HX568 4211-01-N80	HY655 0211-01-01P
30,00	23,60	4,10	5,60	7,10	0,40	23,39 x 3,53	HX568 4213-00-N80	HY655 0213-00-01P
32,00	25,60	4,10	5,60	7,10	0,40	24,99 x 3,53	HX568 4214-00-N80	HY655 0214-00-01P
35,00	28,60	4,10	5,60	7,10	0,40	28,17 x 3,53	HX568 4216-00-N80	HY655 0216-00-01P
40,00	33,60	4,10	5,60	7,10	0,40	32,92 x 3,53	HX568 4219-00-N80	HY655 0219-00-01P
42,00	35,60	4,10	5,60	7,10	0,40	34,52 x 3,53	HX568 4220-00-N80	HY655 0220-00-01P
45,00	38,60	4,10	5,60	7,10	0,40	37,70 x 3,53	HX568 4222-00-N80	HY655 0222-00-01P
48,00	38,40	6,40	8,20	10,00	0,50	37,47 x 3,53	HX568 4325-00-N80	HY603 0325-00-300

Groove size							Part N.°	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	X-SEAL Part N.°	Thrust ring Part N.°
50,00	40,40	6,40	8,20	10,00	0,50	39,64 x 5,33	HX568 4325-01-N80	HY655 0325-01-01P
52,00	42,40	6,40	8,20	10,00	0,50	40,64 x 5,33	HX568 4326-00-N80	HY603 0326-00-300
55,00	45,40	6,40	8,20	10,00	0,50	43,82 x 5,33	HX568 4327-00-N80	HY603 0327-00-300
56,00	46,40	6,40	8,20	10,00	0,50	45,04 x 5,33	HX568 4327-01-N80	HY655 0327-01-01P
58,00	48,40	6,40	8,20	10,00	0,50	46,99 x 5,33	HX568 4328-00-N80	HY603 0328-00-300
60,00	50,40	6,40	8,20	10,00	0,50	47,80 x 5,33	HX568 4328-01-N80	HY655 0328-01-01P
62,00	52,40	6,40	8,20	10,00	0,50	50,17 x 5,33	HX568 4329-00-N80	HY603 0329-00-300
63,00	53,40	6,40	8,20	10,00	0,50	52,00 x 5,33	HX568 4329-01-N80	HY655 0329-01-01P
65,00	55,40	6,40	8,20	10,00	0,50	53,34 x 5,33	HX568 4330-00-N80	HY603 0330-00-300
68,00	58,40	6,40	8,20	10,00	0,50	56,52 x 5,33	HX568 4331-00-N80	HY603 0331-00-300
70,00	60,40	6,40	8,20	10,00	0,50	59,69 x 5,33	HX568 4332-00-N80	HY603 0332-00-300
72,00	62,40	6,40	8,20	10,00	0,50	61,54 x 5,33	HX568 4332-01-N80	HY655 0332-01-01P
75,00	65,40	6,40	8,20	10,00	0,50	64,59 x 5,33	HX568 4333-01-N80	HY655 0333-01-01P
78,00	68,40	6,40	8,20	10,00	0,50	67,64 x 5,33	HX568 4334-01-N80	HY655 0334-01-01P
80,00	70,40	6,40	8,20	10,00	0,50	69,22 x 5,33	HX568 4335-00-N80	HY603 0335-00-300
82,00	72,40	6,40	8,20	10,00	0,50	70,64 x 5,33	HX568 4335-01-N80	HY655 0335-01-01P
85,00	75,40	6,40	8,20	10,00	0,50	73,84 x 5,33	HX568 4336-01-N80	HY655 0336-01-01P
88,00	78,40	6,40	8,20	10,00	0,50	75,57 x 5,33	HX568 4336-02-N80	HY655 0336-02-01P
90,00	80,40	6,40	8,20	10,00	0,50	78,74 x 5,33	HX568 4338-00-N80	HY603 0338-00-300
92,00	82,40	6,40	8,20	10,00	0,50	80,09 x 5,33	HX568 4338-01-N80	HY655 0338-01-01P
95,00	85,40	6,40	8,20	10,00	0,50	85,09 x 5,33	HX568 4340-00-N80	HY603 0340-00-300
98,00	88,40	6,40	8,20	10,00	0,50	86,64 x 5,33	HX568 4340-01-N80	HY655 0340-01-01P
100,00	90,40	6,40	8,20	10,00	0,50	88,27 x 5,33	HX568 4341-00-N80	HY603 0341-00-300
102,00	92,40	6,40	8,20	10,00	0,50	91,44 x 5,33	HX568 4342-00-N80	HY603 0342-00-300
105,00	95,40	6,40	8,20	10,00	0,50	94,62 x 5,33	HX568 4343-00-N80	HY603 0343-00-300
110,00	100,40	6,40	8,20	10,00	0,50	97,99 x 5,33	HX568 4343-01-N80	HY655 0343-01-01P
112,00	102,40	6,40	8,20	10,00	0,50	100,97 x 5,33	HX568 4345-00-N80	HY603 0345-00-300
115,00	105,40	6,40	8,20	10,00	0,50	104,14 x 5,33	HX568 4346-00-N80	HY603 0346-00-300
118,00	108,40	6,40	8,20	10,00	0,50	105,80 x 5,33	HX568 4346-01-N80	HY655 0346-01-01P
120,00	110,40	6,40	8,20	10,00	0,50	107,32 x 5,33	HX568 4347-00-N80	HY603 0623-00-300
122,00	112,40	6,40	8,20	10,00	0,50	110,49 x 5,33	HX568 4348-00-N80	HY603 0348-00-300
125,00	115,40	6,40	8,20	10,00	0,50	113,67 x 5,33	HX568 4349-00-N80	HY603 0349-00-300
128,00	115,20	8,40	10,90	13,40	0,60	113,67 x 6,99	HX568 4425-00-N80	HY655 0425-00-01P
130,00	117,20	8,40	10,90	13,40	0,60	116,84 x 6,99	HX568 4426-00-N80	HY655 0426-00-01P
135,00	122,20	8,40	10,90	13,40	0,60	120,02 x 6,99	HX568 4427-00-N80	HY655 0427-00-01P
138,00	125,20	8,40	10,90	13,40	0,60	123,19 x 6,99	HX568 4428-00-N80	HY655 0428-00-01P
140,00	127,20	8,40	10,90	13,40	0,60	126,37 x 6,99	HX568 4429-00-N80	HY655 0429-00-01P
145,00	132,20	8,40	10,90	13,40	0,60	129,54 x 6,99	HX568 4430-00-N80	HY655 0430-00-01P
148,00	135,20	8,40	10,90	13,40	0,60	132,72 x 6,99	HX568 4431-00-N80	HY655 0431-00-01P
150,00	137,20	8,40	10,90	13,40	0,60	135,89 x 6,99	HX568 4432-00-N80	HY655 0432-00-01P
155,00	142,20	8,40	10,90	13,40	0,60	139,07 x 6,99	HX568 4433-00-N80	HY655 0433-00-01P
160,00	147,20	8,40	10,90	13,40	0,60	145,42 x 6,99	HX568 4435-00-N80	HY655 0435-00-01P
165,00	152,20	8,40	10,90	13,40	0,60	148,59 x 6,99	HX568 4436-00-N80	HY655 0436-00-01P
170,00	157,20	8,40	10,90	13,40	0,60	155,02 x 6,99	HX568 4437-01-N80	HY655 0437-01-01P
175,00	162,20	8,40	10,90	13,40	0,60	158,12 x 6,99	HX568 4438-01-N80	HY655 0438-01-01P
180,00	167,20	8,40	10,90	13,40	0,60	164,47 x 6,99	HX568 4439-00-N80	HY655 0439-00-01P
185,00	172,20	8,40	10,90	13,40	0,60	167,02 x 6,99	HX568 4439-01-N80	HY655 0439-01-01P
190,00	177,20	8,40	10,90	13,40	0,60	173,52 x 6,99	HX568 4440-01-N80	HY655 0440-01-01P
195,00	182,20	8,40	10,90	13,40	0,60	180,52 x 6,99	HX568 4441-01-N80	HY655 0441-01-01P
200,00	187,20	8,40	10,90	13,40	0,60	183,52 x 6,99	HX568 4442-00-N80	HY655 0442-00-01P
205,00	192,20	8,40	10,90	13,40	0,60	189,87 x 6,99	HX568 4443-00-N80	HY655 0443-00-01P
210,00	197,20	8,40	10,90	13,40	0,60	196,22 x 6,99	HX568 4444-00-N80	HY655 0444-00-01P
215,00	202,20	8,40	10,90	13,40	0,60	199,02 x 6,99	HX568 4444-01-N80	HY655 0444-01-01P
220,00	207,20	8,40	10,90	13,40	0,60	202,57 x 6,99	HX568 4445-00-N80	HY655 0445-00-01P
225,00	212,20	8,40	10,90	13,40	0,60	206,80 x 6,99	HX568 4445-01-N80	HY655 0445-01-01P
230,00	217,20	8,40	10,90	13,40	0,60	215,27 x 6,99	HX568 4446-00-N80	HY655 0446-00-01P
235,00	222,20	8,40	10,90	13,40	0,60	219,02 x 6,99	HX568 4446-01-N80	HY655 0446-01-01P
240,00	227,20	8,40	10,90	13,40	0,60	223,50 x 6,99	HX568 4446-02-N80	HY655 0446-02-01P
245,00	232,20	8,40	10,90	13,40	0,60	227,97 x 6,99	HX568 4447-00-N80	HY655 0447-00-01P

Nutmaße							Part N.°	
D H8	**d** h9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	X-SEAL Part N.°	Thrust ring Part N.°
250,00	237,20	8,40	10,90	13,40	0,60	235,00 x 6,99	HX568 4447-02-N80	HY655 0447-02-01P
255,00	242,20	8,40	10,90	13,40	0,60	240,67 x 6,99	HX568 4448-00-N80	HY655 0448-00-01P
260,00	247,20	8,40	10,90	13,40	0,60	243,02 x 6,99	HX568 4448-01-N80	HY655 0448-01-01P
265,00	252,20	8,40	10,90	13,40	0,60	248,00 x 6,99	HX568 4448-02-N80	HY655 0448-02-01P
270,00	257,20	8,40	10,90	13,40	0,60	253,57 x 6,99	HX568 4449-00-N80	HY655 0449-00-01P
280,00	267,20	8,40	10,90	13,40	0,60	266,07 x 6,99	HX568 4450-00-N80	HY655 0450-00-01P
290,00	277,20	8,40	10,90	13,40	0,60	273,10 x 6,99	HX568 4450-01-N80	HY655 0450-01-01P
300,00	287,20	8,40	10,90	13,40	0,60	284,00 x 6,99	HX568 4451-01-N80	HY655 0451-01-01P
310,00	297,20	8,40	10,90	13,40	0,60	291,47 x 6,99	HX568 4452-00-N80	HY655 0452-00-01P
320,00	307,20	8,40	10,90	13,40	0,60	304,17 x 6,99	HX568 4453-00-N80	HY655 0453-00-01P
330,00	317,20	8,40	10,90	13,40	0,60	316,87 x 6,99	HX568 4454-00-N80	HY655 0454-00-01P
340,00	327,20	8,40	10,90	13,40	0,60	323,50 x 6,99	HX568 4454-01-N80	HY655 0454-01-01P
350,00	337,20	8,40	10,90	13,40	0,60	329,57 x 6,99	HX568 4455-00-N80	HY655 0455-00-01P
360,00	347,20	8,40	10,90	13,40	0,60	342,27 x 6,99	HX568 4456-00-N80	HY655 0456-00-01P
370,00	357,20	8,40	10,90	13,40	0,60	354,97 x 6,99	HX568 4457-00-N80	HY655 0457-00-01P
380,00	367,20	8,40	10,90	13,40	0,60	362,50 x 6,99	HX568 4457-01-N80	HY655 0457-01-01P
390,00	377,20	8,40	10,90	13,40	0,60	374,00 x 6,99	HX568 4458-01-N80	HY655 0458-01-01P
400,00	387,20	8,40	10,90	13,40	0,60	380,37 x 6,99	HX568 4459-00-N80	HY655 0459-00-01P

Example for ordering X-SEAL:

HX 568 - 4325 - 00 - N80 - ...

- Profile
- X-SEAL No.
- Dimension variant
- Standard material
- HME internal code

Material Key:

X-SEAL

N80 - NBR 80 Shore A
F75 - FPM 75 Shore A
E80 - EPDM 80 Shore A

Example for ordering Back Ring:

HY 647 0730 - 32 - 01P - ...

- Profile (spiral)
- D x 10
- Groove depth x 10
- Standard material
- HME internal code

Material Key:

Thrust ring construction

HY603 (endless)

HY647 (spiral)

Thrust ring construction

300 - Polyesterelastomer

01P - PTFE pure
25P - PTFE glass filled
30P - PTFE carbon
55P - PTFE bronze

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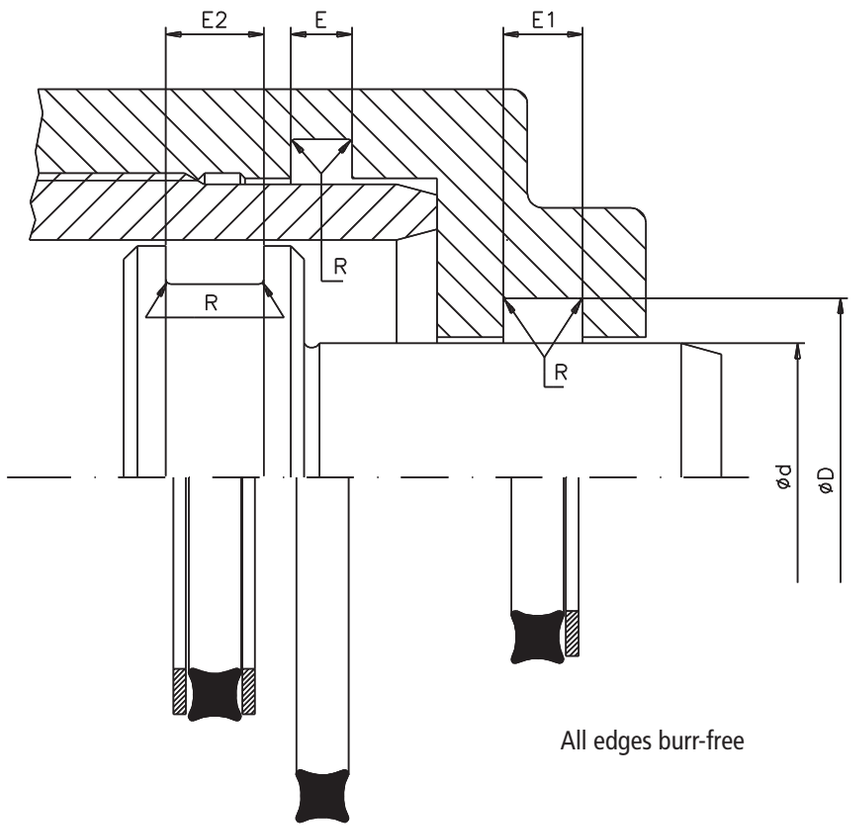
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



Groove sizes for dynamic internal sealing applications

Groove size							Part N.°	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	X-SEAL Part N.°	Thrust ring Part N.°
3,00	6,00	2,15	3,65	5,15	0,20	2,90 x 1,78	HX568 4006-00-N80	HY650 0006-00-01P
5,00	8,00	2,15	3,65	5,15	0,20	5,28 x 1,78	HX568 4009-00-N80	HY650 0009-00-01P
6,00	9,00	2,15	3,65	5,15	0,20	6,07 x 1,78	HX568 4010-00-N80	HY603 0010-00-300
8,00	11,00	2,15	3,65	5,15	0,20	7,66 x 1,78	HX568 4011-00-N80	HY603 0011-00-300
9,00	12,00	2,15	3,65	5,15	0,20	9,25 x 1,78	HX568 4012-00-N80	HY603 0012-00-300
9,00	13,50	3,15	4,65	6,15	0,20	9,19 x 2,62	HX568 4110-00-N80	HY603 0110-00-300
10,00	14,50	3,15	4,65	6,15	0,20	9,80 x 2,62	HX568 4110-01-N80	HY603 0110-00-300
12,00	16,50	3,15	4,65	6,15	0,20	12,37 x 2,62	HX568 4112-00-N80	HY603 0112-00-300
14,00	18,50	3,15	4,65	6,15	0,20	13,95 x 2,62	HX568 4113-00-N80	HY603 0113-00-300
15,00	19,50	3,15	4,65	6,15	0,20	14,70 x 2,62	HX568 4113-01-N80	HY603 0616-00-300
16,00	19,00	2,15	3,65	5,15	0,20	15,60 x 1,78	HX568 4016-00-N80	HY603 0016-00-300
17,00	21,50	3,15	4,65	6,15	0,20	17,13 x 2,62	HX568 4115-00-N80	HY603 0115-00-300
18,00	22,50	3,15	4,65	6,15	0,20	17,75 x 2,62	HX568 4115-01-N80	HY603 0617-00-300
20,00	24,50	3,15	4,65	6,15	0,20	20,29 x 2,62	HX568 4117-00-N80	HY603 0117-00-300
22,00	26,50	3,15	4,65	6,15	0,20	21,89 x 2,62	HX568 4118-00-N80	HY603 0118-00-300
23,00	27,50	3,15	4,65	6,15	0,20	23,47 x 2,62	HX568 4119-00-N80	HY603 0119-00-300
25,00	29,50	3,15	4,65	6,15	0,20	25,07 x 2,62	HX568 4120-00-N80	HY603 0120-00-300
25,00	31,40	4,10	5,60	7,10	0,40	24,99 x 3,53	HX568 4214-00-N80	HY650 0214-00-01P
26,00	32,40	4,10	5,60	7,10	0,40	25,90 x 3,53	HX568 4214-01-N80	HY650 0214-01-01P
27,00	31,50	3,15	4,65	6,15	0,20	26,64 x 2,62	HX568 4121-00-N80	HY603 0121-00-300
28,00	32,50	3,15	4,65	6,15	0,20	28,24 x 2,62	HX568 4122-00-N80	HY603 0122-00-300

Nutmaße							Part N.°	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	X-SEAL Part N.°	Thrust ring Part N.°
30,00	36,40	4,10	5,60	7,10	0,40	29,75 x 3,53	HX568 4217-00-N80	HY650 0217-00-01P
32,00	38,40	4,10	5,60	7,10	0,40	32,04 x 3,53	HX568 4218-01-N80	HY650 0218-01-01P
34,00	40,40	4,10	5,60	7,10	0,40	33,80 x 3,53	HX568 4219-01-N80	HY650 0219-01-01P
35,00	41,40	4,10	5,60	7,10	0,40	34,52 x 3,53	HX568 4220-00-N80	HY650 0220-00-01P
36,00	42,40	4,10	5,60	7,10	0,40	36,10 x 3,53	HX568 4221-00-N80	HY650 0221-00-01P
38,00	44,40	4,10	5,60	7,10	0,40	37,70 x 3,53	HX568 4222-00-N80	HY650 0222-00-01P
40,00	46,40	4,10	5,60	7,10	0,40	40,87 x 3,53	HX568 4223-00-N80	HY650 0223-00-01P
40,00	49,60	6,40	8,20	10,00	0,50	40,64 x 5,33	HX568 4326-00-N80	HY603 0326-00-300
42,00	51,60	6,40	8,20	10,00	0,50	41,80 x 5,33	HX568 4326-01-N80	HY650 0326-01-01P
45,00	54,60	6,40	8,20	10,00	0,50	45,04 x 5,33	HX568 4327-01-N80	HY650 0327-01-01P
46,00	55,60	6,40	8,20	10,00	0,50	45,84 x 5,33	HX568 4327-02-N80	HY650 0327-02-01P
47,00	56,60	6,40	8,20	10,00	0,50	46,99 x 5,33	HX568 4328-00-N80	HY603 0328-00-300
48,00	57,60	6,40	8,20	10,00	0,50	47,80 x 5,33	HX568 4328-01-N80	HY650 0328-01-01P
50,00	59,60	6,40	8,20	10,00	0,50	50,17 x 5,33	HX568 4329-00-N80	HY603 0329-00-300
52,00	61,60	6,40	8,20	10,00	0,50	52,00 x 5,33	HX568 4329-01-N80	HY650 0329-01-01P
55,00	64,60	6,40	8,20	10,00	0,50	54,50 x 5,33	HX568 4330-01-N80	HY603 0330-00-300
56,00	65,60	6,40	8,20	10,00	0,50	56,52 x 5,33	HX568 4331-00-N80	HY603 0331-00-300
58,00	67,60	6,40	8,20	10,00	0,50	57,52 x 5,33	HX568 4331-01-N80	HY650 0331-01-01P
60,00	69,60	6,40	8,20	10,00	0,50	59,69 x 5,33	HX568 4332-00-N80	HY603 0332-00-300
63,00	72,60	6,40	8,20	10,00	0,50	62,87 x 5,33	HX568 4333-00-N80	HY603 0333-00-300
65,00	74,60	6,40	8,20	10,00	0,50	64,59 x 5,33	HX568 4333-01-N80	HY650 0333-01-01P
70,00	79,60	6,40	8,20	10,00	0,50	69,22 x 5,33	HX568 4335-00-N80	HY603 0335-00-300
75,00	84,60	6,40	8,20	10,00	0,50	75,57 x 5,33	HX568 4336-02-N80	HY650 0336-02-01P
80,00	89,60	6,40	8,20	10,00	0,50	80,09 x 5,33	HX568 4338-01-N80	HY603 0338-00-300
85,00	94,60	6,40	8,20	10,00	0,50	85,09 x 5,33	HX568 4340-00-N80	HY603 0340-00-300
90,00	99,60	6,40	8,20	10,00	0,50	89,59 x 5,33	HX568 4341-01-N80	HY603 0621-00-300
95,00	104,60	6,40	8,20	10,00	0,50	94,62 x 5,33	HX568 4343-00-N80	HY603 0343-00-300
100,00	109,60	6,40	8,20	10,00	0,50	100,97 x 5,33	HX568 4345-00-N80	HY603 0622-00-300
105,00	114,60	6,40	8,20	10,00	0,50	105,80 x 5,33	HX568 4346-01-N80	HY603 0346-00-300
110,00	119,60	6,40	8,20	10,00	0,50	110,49 x 5,33	HX568 4348-00-N80	HY603 0623-00-300
115,00	127,80	8,40	10,90	13,40	0,60	115,84 x 6,99	HX568 4425-01-N80	HY650 0425-01-01P
120,00	132,80	8,40	10,90	13,40	0,60	120,02 x 6,99	HX568 4427-00-N80	HY650 0427-00-01P
125,00	137,80	8,40	10,90	13,40	0,60	126,37 x 6,99	HX568 4429-00-N80	HY650 0429-00-01P
130,00	142,80	8,40	10,90	13,40	0,60	129,54 x 6,99	HX568 4430-00-N80	HY650 0430-00-01P
135,00	147,80	8,40	10,90	13,40	0,60	135,89 x 6,99	HX568 4432-00-N80	HY650 0432-00-01P
140,00	152,80	8,40	10,90	13,40	0,60	139,07 x 6,99	HX568 4433-00-N80	HY650 0433-00-01P
145,00	157,80	8,40	10,90	13,40	0,60	145,42 x 6,99	HX568 4435-00-N80	HY650 0435-00-01P
150,00	162,80	8,40	10,90	13,40	0,60	151,77 x 6,99	HX568 4437-00-N80	HY650 0437-00-01P
155,00	167,80	8,40	10,90	13,40	0,60	155,02 x 6,99	HX568 4437-01-N80	HY650 0437-01-01P
158,00	170,80	8,40	10,90	13,40	0,60	158,12 x 6,99	HX568 4438-00-N80	HY650 0438-00-01P
160,00	172,80	8,40	10,90	13,40	0,60	161,02 x 6,99	HX568 4438-01-N80	HY650 0438-01-01P
165,00	177,80	8,40	10,90	13,40	0,60	164,47 x 6,99	HX568 4439-00-N80	HY650 0439-00-01P
170,00	182,80	8,40	10,90	13,40	0,60	170,82 x 6,99	HX568 4440-00-N80	HY650 0440-00-01P
175,00	187,80	8,40	10,90	13,40	0,60	173,52 x 6,99	HX568 4440-01-N80	HY650 0440-01-01P
180,00	192,80	8,40	10,90	13,40	0,60	180,52 x 6,99	HX568 4441-01-N80	HY650 0441-01-01P
185,00	197,80	8,40	10,90	13,40	0,60	186,02 x 6,99	HX568 4442-01-N80	HY650 0442-01-01P
190,00	202,80	8,40	10,90	13,40	0,60	189,87 x 6,99	HX568 4443-00-N80	HY650 0443-00-01P
195,00	207,80	8,40	10,90	13,40	0,60	196,22 x 6,99	HX568 4444-00-N80	HY650 0444-00-01P
200,00	212,80	8,40	10,90	13,40	0,60	199,02 x 6,99	HX568 4444-01-N80	HY650 0444-01-01P
205,00	217,80	8,40	10,90	13,40	0,60	206,80 x 6,99	HX568 4445-01-N80	HY650 0445-01-01P
210,00	222,80	8,40	10,90	13,40	0,60	211,02 x 6,99	HX568 4445-02-N80	HY650 0445-02-01P
215,00	227,80	8,40	10,90	13,40	0,60	215,27 x 6,99	HX568 4446-00-N80	HY650 0446-00-01P
220,00	232,80	8,40	10,90	13,40	0,60	219,02 x 6,99	HX568 4446-01-N80	HY650 0446-01-01P
230,00	242,80	8,40	10,90	13,40	0,60	227,97 x 6,99	HX568 4447-00-N80	HY650 0447-00-01P
240,00	252,80	8,40	10,90	13,40	0,60	240,67 x 6,99	HX568 4448-00-N80	HY650 0448-00-01P
250,00	262,80	8,40	10,90	13,40	0,60	248,00 x 6,99	HX568 4448-02-N80	HY650 0448-02-01P
260,00	272,80	8,40	10,90	13,40	0,60	259,00 x 6,99	HX568 4449-01-N80	HY650 0449-01-01P
270,00	282,80	8,40	10,90	13,40	0,60	266,07 x 6,99	HX568 4450-00-N80	HY650 0450-00-01P
280,00	292,80	8,40	10,90	13,40	0,60	278,77 x 6,99	HX568 4451-00-N80	HY650 0451-00-01P

Nutmaße							Part N.°	
d f7	**D** H9	**E** ±0,2	**E**1 ±0,2	**E**2 ±0,2	R (max)	di x S	X-SEAL Part N.°	Thrust ring Part N.°
290,00	302,80	8,40	10,90	13,40	0,60	291,47 x 6,99	HX568 4452-00-N80	HY650 0452-00-01P
300,00	312,80	8,40	10,90	13,40	0,60	298,00 x 6,99	HX568 4452-01-N80	HY650 0452-01-01P
310,00	322,80	8,40	10,90	13,40	0,60	310,00 x 6,99	HX568 4453-01-N80	HY650 0453-01-01P
320,00	332,80	8,40	10,90	13,40	0,60	316,87 x 6,99	HX568 4454-00-N80	HY650 0454-00-01P
330,00	342,80	8,40	10,90	13,40	0,60	329,57 x 6,99	HX568 4455-00-N80	HY650 0455-00-01P
340,00	352,80	8,40	10,90	13,40	0,60	336,50 x 6,99	HX568 4455-01-N80	HY650 0455-01-01P
350,00	362,80	8,40	10,90	13,40	0,60	348,50 x 6,99	HX568 4456-01-N80	HY650 0456-01-01P
360,00	372,80	8,40	10,90	13,40	0,60	362,50 x 6,99	HX568 4457-01-N80	HY650 0457-01-01P
370,00	382,80	8,40	10,90	13,40	0,60	367,67 x 6,99	HX568 4458-00-N80	HY650 0458-00-01P
380,00	392,80	8,40	10,90	13,40	0,60	380,37 x 6,99	HX568 4459-00-N80	HY650 0459-00-01P
390,00	402,80	8,40	10,90	13,40	0,60	393,07 x 6,99	HX568 4460-00-N80	HY650 0460-00-01P
400,00	412,80	8,40	10,90	13,40	0,60	401,00 x 6,99	HX568 4460-01-N80	HY650 0460-01-01P

Example for ordering X-SEAL:

HX 568 - 4325 - 00 - N80 - ...

- Profile
- X-SEAL No.
- Dimension variant
- Standard material
- HME internal code

Material Key:

X-SEAL

N80 - NBR 80 Shore A
F75 - FPM 75 Shore A
E80 - EPDM 80 Shore A

Example for ordering Back Ring:

HY 620 0730 - 32 - 01P - ...

- Profile (endless)
- d x 10
- Groove depth x 10
- Standard material
- HME internal code

Material Key:

Back ring construction

HY603 (endless)

HY620 (endless)
HY625 (splitted)

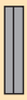
Standard material Back Ring

300 - Polyester elastomer

01P - PTFE pure
25P - PTFE glass filled
30P - PTFE carbon
55P - PTFE bronze

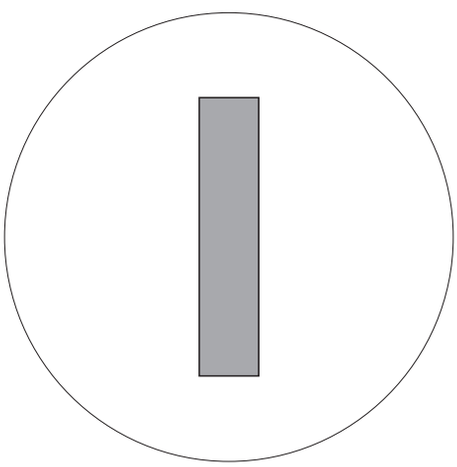
Issue
01 | 24

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

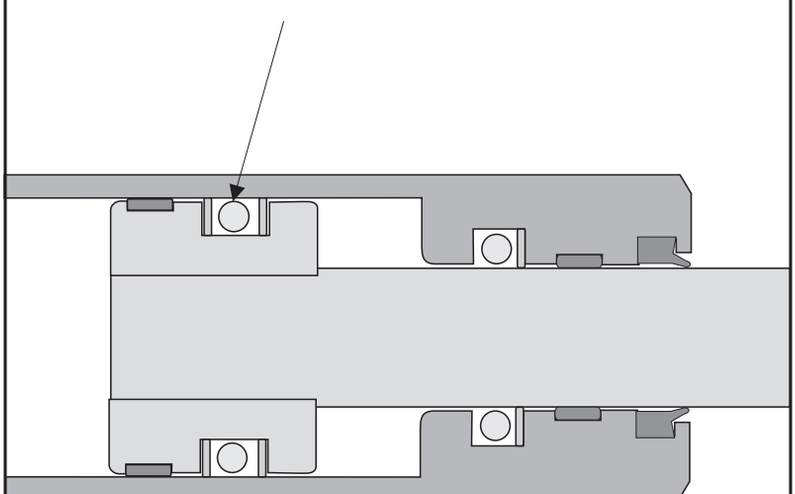
Profile	Type	Specification	Limitations of Use	Material	
			Temperature	Sealing element	Page
	HY 600	Back ring Single solid	-40 up to +150° C	Polyesterelastomere	3
	HY 603	Back ring Single solid (for ASA 568 O-rings)	-40 up to +150° C	Polyesterelastomere	3
	HY 610 HY 620	Back ring Single solid	-60 up to +280° C	PTFE Compound	3
	HY 615 HY 625 HY 630 HY 640	Splitted back ring	-60 up to +280° C	PTFE Compound	3
	HY 617 HY 627 HY 637 HY 647	Spiralized back ring	-60 up to +280° C	PTFE Compound	3
	HY 619 HY 629 HY 639 HY 649	Back ring Single solid	-60 up to +280° C	PTFE Compound	3

BACK RING
HY 600 TO 649

Back up rings - also called thrust rings - are used with static as well dynamic applications. However, they have no sealing function. Extrucion of O-rings or X-seal under the influence of presssure should be avoided. Manufacture of back up rings in various materials is possible.

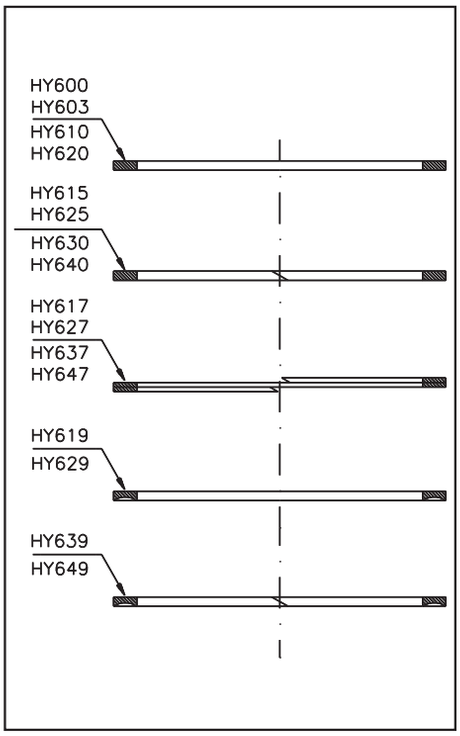


Operational pressure : bis 200 MPa (2000 bar)
Temperature : depending on material -60 °C bis +280 °C



Special Features:

- Simple groove geometry
- Easy assembly
- Multitude of materials of construction
- Individual sizes possible
- Bridging of large sealing gaps
- High areas of temperature
- Neutral to temperature fluctuations



We recommend use of back up rings for one ore more of following conditions in service:

- pressure over 5 Mpa (50 bar)
- larger sealing splits
- higher stroke frequency
- high temperature fluctuations
- pulsating pressures

HY600, HY603 (recommended assembly / mounting sizes for O-rings)

Back up rings of the HY 600, HY 603 series are produced from special polyester elastomer by injection process. The material - hardness 55 shore D - has excellent extrusion resistance. It is, however, possible to use endlessly manufactured back up rings for external sealing applications due to their Memory effect. These back up rings are meant for automatic assembly. Special antiageing additives in the material are also effective in dry air and oil.

HY610 bis HY649

Rings of this series are produced by turning, and we recommend specific explanations according to specific applications (see table)

Part	design	application
HY610	endless	internal sealing static
HY620	endless	internal sealing dynamic
HY615	slotted	internal sealing static
HY625	slotted	internal sealing dynamic
HY630	slotted	external sealing static
HY640	slotted	external sealing dynamic
HY617	spiral	internal sealing static
HY627	spiral	internal sealing dynamic
HY637	spiral	external sealing static
HY647	spiral	external sealing dynamic
HY619	concave (endless)	internal sealing static
HY629	concave (endless)	internal sealing dynamic
HY639	concave (slotted)	external sealing static
HY649	concave (slotted)	external sealing dynamic

Material overview back up rings

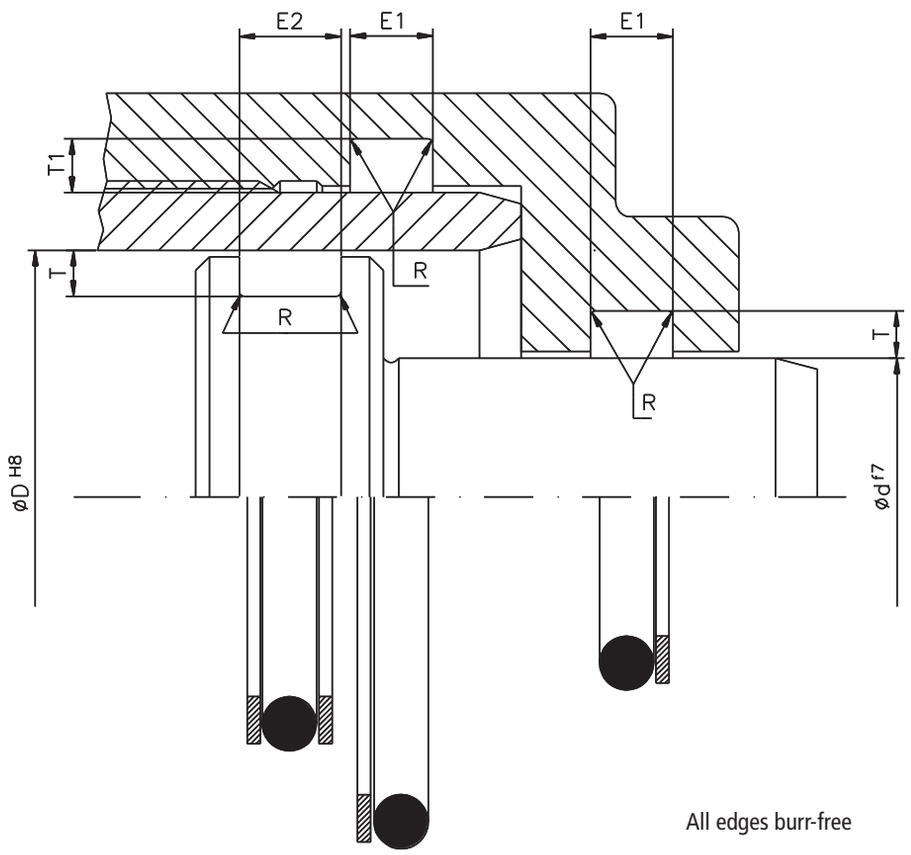
01: PTFE pure

12: PTFE modified

25: PTFE modified + Fiber glass

30: PTFE modified + carbon fiber

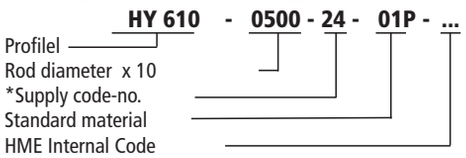
55: PTFE modified + bronze



Groove sizes for back up rings from PTFE

O-Ring cord	dynamic	static	1 back ring	2 back ring	Radius
S	**T** ±0,05	**T1** ±0,05	**E1** ±0,2	**E2** ±0,2	**R** (max)
1,50	1,25	1,10	3,00	4,00	0,20
1,60	1,30	1,20	3,10	4,10	0,20
1,78	1,50	1,30	4,00	5,50	0,20
1,90	1,55	1,40	4,10	5,60	0,20
2,00	1,70	1,60	4,20	5,70	0,20
2,40	2,00	1,90	4,70	6,20	0,20
2,50	2,15	1,95	4,80	6,30	0,20
2,62	2,25	2,10	5,00	6,50	0,20
2,70	2,40	2,10	5,10	6,60	0,20
3,00	2,50	2,40	5,50	7,00	0,30
3,50/3,53	3,05	2,95	6,00	7,50	0,40
3,60	3,15	2,95	6,20	7,70	0,40
4,00	3,50	3,30	6,50	8,00	0,40
4,50	4,00	3,60	7,60	9,40	0,40
5,00	4,40	4,10	8,30	10,10	0,50
5,33	4,70	4,50	8,80	10,60	0,50
5,70	5,00	4,85	9,10	10,90	0,50
6,00	5,40	4,90	9,30	11,10	0,60
6,99/7,00	6,10	5,90	12,00	14,50	0,60
8,00	7,10	6,90	12,90	15,40	0,60
8,40	7,50	7,25	13,50	16,00	0,60
9,00	8,10	7,60	14,20	16,70	0,60
10,00	9,00	8,00	15,50	18,00	0,60

Example for ordering Internal static Back Ring (endless):



Material Key:
Back ring

HY 600 to HY 603:
300 - Polyester elastomer (see O-rings)

HY 610 to HY 649:
01P - PTFE pure
25P - PTFE glass filled
30P - PTFE carbon
55P - PTFE bronze

Example for ordering external static Back Ring (concav-splitted):

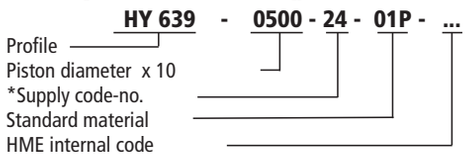


***Table for Supply Code-no.**

O-ring cord	Code dynamic	static
1,50	12	11
1,60	13	12
1,78	15	13
1,90	16	14
2,00	17	16
2,40	20	19
2,50	21	20
2,62	22	21
2,70	24	21
3,00	25	24
3,50/3,53	30	30
3,60	31	30
4,00	35	33
4,50	40	36
5,00	44	41
5,33	47	45
5,70	50	48
6,00	54	49
6,99/7,00	61	59
8,00	71	69
8,40	75	72
9,00	81	76
10,00	90	80

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

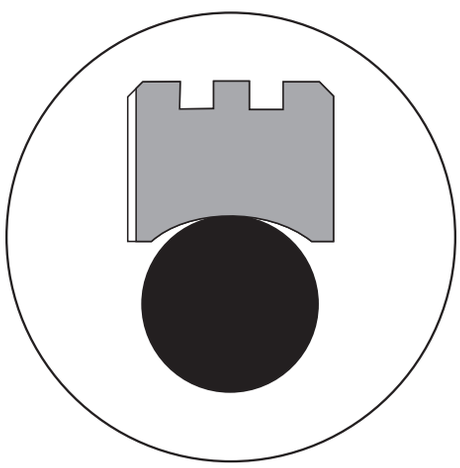
Profile	Type	Specification	Limitations of Use			Material	
			Temperature	Pressure	Velocity	Sealing element	Page
	HR 180	Double acting outside with O-ring	-40 up to +200° C	up to 40 Mpa (400 bar)	up to 2 m/s	PTFE Compound	3
	HR 185	Double acting inside with O-ring	-40 up to +200° C	up to 40 Mpa (400 bar)	up to 2 m/s	PTFE Compound	7
	HR 187	Single acting inside with spring	-150 up to +225° C	up to 10 Mpa (100 bar)	up to 4 m/s	PTFE Compound	11
	HV 280	V - ring outside axial	-60 up to +220° C		up to 8 m/s	NBR	15
	HW 400	Radial seal	-60 up to +220° C	up to 0,05 Mpa (0,5 bar)	up to 14 m/s	NBR	25
	HW 410	Radial seal with lip	-60 up to +220° C	up to 0,05 Mpa (0,5 bar)	up to 14 m/s	NBR	25
	HW 420	Radial seal metal caged outside	-60 up to +220° C	up to 0,05 Mpa (0,5 bar)	up to 14 m/s	NBR	25
	HW 430	Radial seal with lip and metal caged outside	-60 up to +220° C	up to 0,05 Mpa (0,5 bar)	up to 14 m/s	NBR	25
	HW 440	Radial seal	-60 up to +220° C	up to 0,05 Mpa (0,5 bar)	up to 14 m/s	NBR	25
	HW 450	Radial seal with lip	-60 up to +220° C	up to 0,05 Mpa (0,5 bar)	up to 14 m/s	NBR	25
	HW 460	Radial seal with lip	-60 up to +220° C	up to 0,8 Mpa (8 bar)	up to 14 m/s	NBR	25
	HW 470	Radial seal	-60 up to +220° C		up to 14 m/s	NBR	25
	HW 480	Radial seal double acting	-60 up to +220° C	up to 0,05 Mpa (0,5 bar)	up to 14 m/s	NBR	25
	HW 500	Radial wiper	-60 up to +220° C		up to 14 m/s	NBR	25

Regarding the great variety of practice applications please ask our customer service department personally for missing types or dimensions

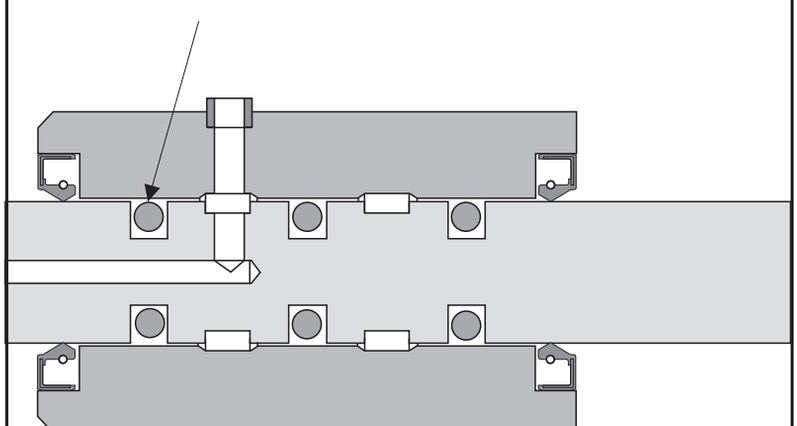
The seal HR 180 has been specially designed for sealing of swivel or rotary transmissions. This double acting sealing system is used in cases of external sealing. It has a particularly versatile range of materials to serve respecitve applications.

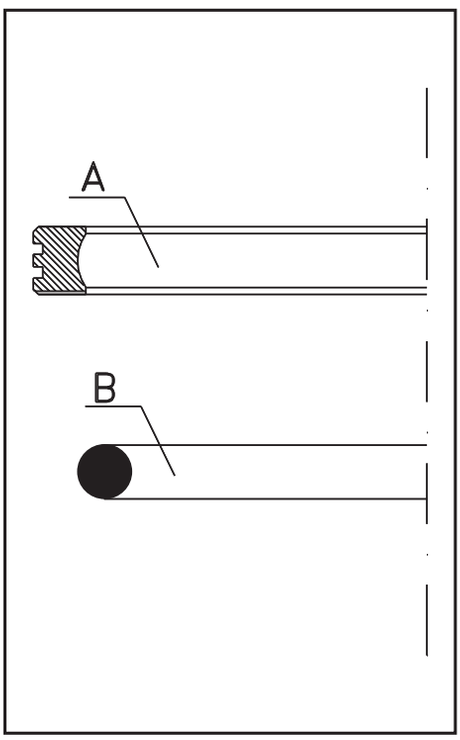
Special Features:

- low friction and very low wear
- reduced stick slip tendency even at low velocity
- high extrusion durability
- very high resistance of temperature
- small assembly dimensions
- suitability to almost all medias concerning the PTFE part and a possibility of variation with O-ring



Material	: PTFE-Compound
Operational pressure	: up to 40 MPa (400 bar)
Velocity	: rotary to 2 m/s
Temperature	: -40 up to +200 °C





Profile Gasket (Part A)

Profile gasket cross section has been specially designed taking into account the turning action. The dynamic side is provided with a small chamfer to simplify assembly. The circumventing / surrounding groove on the dynamic side yields a high specific surface pressure. The radius on the inner diameter ensures a central and secure fit for the pre-stressing element. The expanded frictional area between O-ring and the profile ring also curtails relative movement with respect to each other. Depending on the section of the seal, there may be one or two grooves incorporated on the dynamic side.

The response behavior of the pre-stressing element is improved by providing for grooves on the lateral plane faces as a standard feature.

O-ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms). Standard MOC for hydraulics applications is NBR, which guarantees particularly good restistance to hydraulic fluids. For use with profile gaskets O-rings with hardness of 70 Shore A are preferred.

Material overview: Profile Gaskets

25: Modified PTFE + Glass fiber - High abrasion resistance and inherent stability, good chemical restistance, used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + Carbon - Good abrasion resistance and inherent stability, good chemical resistance, used in water- and water-oil emulsions with intermediate stress. Also designed for dry runs.

67: Modified PTFE - Very high abrasion resistance and inherent stability, used in hydraulics and abrasive pressure fluid applications. .

74: Modified PTFE + Carbon fiber - Very good abrasion resistance and inherent stability. Used in hydraulics and also intended for dry runs.

Material overview: O-Rings

N: Acrylnitrile-Butadiene-Rubber - Used in general maschine constructions, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.

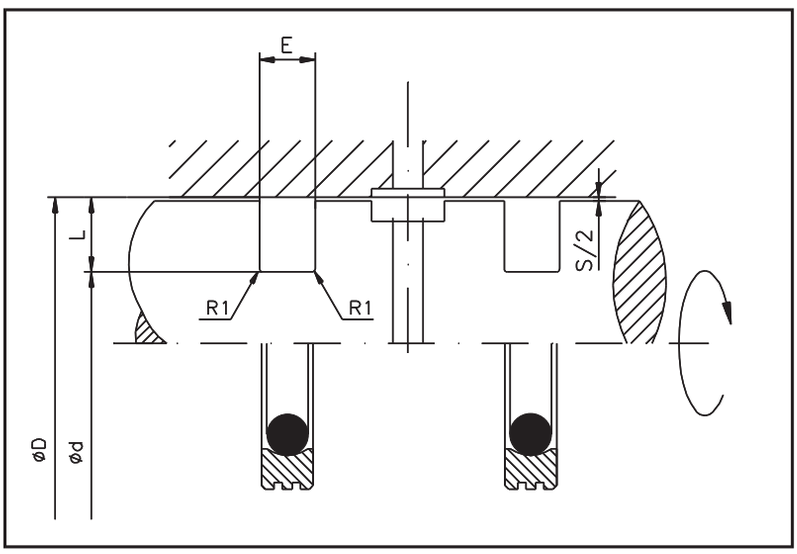
F: Fluorine-containing Rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

E: Ethylene-Propylene-Diene Rubbers - Used in valve and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids , but is not resistant to mineral oils.

S: Silicone-Rubbers

C: Chloroprene-Rubbers

ROTATION SEALS
HR 180



Limitations of Use

Operational pressure	: up to 40 MPa (400 bar)
Velocity	: rotary to 2 m/s
Temperature	: -40 up to +200 °C (depending on O-ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC,) bio oils, water, air and other media depending on O-ring material

Surface Finish

Surface	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Surface hardness ≥ 55 HRC; Depth of hardness ≥ 0,3 mm

Preferred assembly dimensions

Section	O-Ring Cord-ø mm	Recommend Diameter Standard **d** mm	Groove Width **E** mm	Groove Depth **L** mm	Max.Diameter Clearance **S** 0 - 150 bar mm	Max.Diameter Clearance **S** 150 - 300 bar mm	Radius **R1 max.** mm
01	1,78	8,0 - 39,9	2,2	2,45	0,4 - 0,2	0,2 - 0,1	0,5
02	2,62	40,0 - 79,9	3,2	3,75	0,6 - 0,3	0,3 - 0,2	0,7
03	3,53	80,0 - 132,9	4,2	5,50	0,8 - 0,4	0,4 - 0,2	1,2
04	5,33	133,0 - 329,9	6,3	7,75	1,0 - 0,5	0,5 - 0,3	1,5
05	7,00	330,0 - 669,9	8,1	10,50	1,0 - 0,5	0,5 - 0,3	1,5
06	8,40	670,0 - 999,9	9,5	14,00	1,0 - 0,5	0,5 - 0,3	2,0

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°**
8,00	3,10	2,20	006	HR180 0080-01-74N
10,00	5,10	2,20	009	HR180 0100-01-74N
12,00	7,10	2,20	011	HR180 0120-01-74N
14,00	9,10	2,20	012	HR180 0140-01-74N
15,00	10,10	2,20	012	HR180 0150-01-74N
16,00	11,10	2,20	013	HR180 0160-01-74N
18,00	13,10	2,20	014	HR180 0180-01-74N
20,00	15,10	2,20	016	HR180 0200-01-74N
22,00	17,10	2,20	017	HR180 0220-01-74N
24,00	19,10	2,20	018	HR180 0240-01-74N
25,00	20,10	2,20	019	HR180 0250-01-74N
28,00	23,10	2,20	021	HR180 0280-01-74N
30,00	25,10	2,20	022	HR180 0300-01-74N
32,00	27,10	2,20	023	HR180 0320-01-74N
35,00	30,10	2,20	025	HR180 0350-01-74N
38,00	33,10	2,20	027	HR180 0380-01-74N
39,00	34,10	2,20	027	HR180 0390-01-74N
40,00	32,50	3,20	125	HR180 0400-02-74N
42,00	34,50	3,20	126	HR180 0420-02-74N
45,00	37,50	3,20	128	HR180 0450-02-74N
48,00	40,50	3,20	130	HR180 0480-02-74N
50,00	42,50	3,20	131	HR180 0500-02-74N
52,00	44,50	3,20	132	HR180 0520-02-74N
55,00	47,50	3,20	134	HR180 0550-02-74N
60,00	52,50	3,20	137	HR180 0600-02-74N

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°**
63,00	55,50	3,20	139	HR180 0630-02-74N
64,00	56,50	3,20	140	HR180 0640-02-74N
65,00	57,50	3,20	140	HR180 0650-02-74N
70,00	62,50	3,20	144	HR180 0700-02-74N
75,00	67,50	3,20	147	HR180 0750-02-74N
80,00	69,00	4,20	232	HR180 0800-03-74N
85,00	74,00	4,20	233	HR180 0850-03-74N
89,00	78,00	4,20	235	HR180 0890-03-74N
90,00	79,00	4,20	235	HR180 0900-03-74N
95,00	84,00	4,20	236	HR180 0950-03-74N
100,00	89,00	4,20	238	HR180 1000-03-74N
105,00	94,00	4,20	240	HR180 1050-03-74N
110,00	99,00	4,20	241	HR180 1100-03-74N
115,00	104,00	4,20	243	HR180 1150-03-74N
120,00	109,00	4,20	244	HR180 1200-03-74N
125,00	114,00	4,20	246	HR180 1250-03-74N
127,00	116,00	4,20	246	HR180 1270-03-74N
130,00	119,00	4,20	247	HR180 1300-03-74N
132,00	121,00	4,20	248	HR180 1320-03-74N
135,00	119,50	6,30	351	HR180 1350-04-74N
140,00	124,50	6,30	352	HR180 1400-04-74N
145,00	129,50	6,30	354	HR180 1450-04-74N
150,00	134,50	6,30	355	HR180 1500-04-74N
154,00	138,50	6,30	356	HR180 1540-04-74N
155,00	139,50	6,30	357	HR180 1550-04-74N

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°**
160,00	144,50	6,30	358	HR180 1600-04-74N
165,00	149,50	6,30	359	HR180 1650-04-74N
170,00	154,50	6,30	361	HR180 1700-04-74N
175,00	159,50	6,30	362	HR180 1750-04-74N
180,00	164,50	6,30	363	HR180 1800-04-74N
190,00	174,50	6,30	364	HR180 1900-04-74N
200,00	184,50	6,30	366	HR180 2000-04-74N
210,00	194,50	6,30	367	HR180 2100-04-74N
220,00	204,50	6,30	369	HR180 2200-04-74N
230,00	214,50	6,30	370	HR180 2300-04-74N
240,00	224,50	6,30	372	HR180 2400-04-74N
250,00	234,50	6,30	374	HR180 2500-04-74N
260,00	244,50	6,30	375	HR180 2600-04-74N
270,00	254,50	6,30	377	HR180 2700-04-74N
280,00	264,50	6,30	377	HR180 2800-04-74N
290,00	274,50	6,30	378	HR180 2900-04-74N
300,00	284,50	6,30	379	HR180 3000-04-74N
310,00	294,50	6,30	380	HR180 3100-04-74N
320,00	304,50	6,30	381	HR180 3200-04-74N
330,00	309,00	8,10	453	HR180 3300-05-74N
340,00	319,00	8,10	454	HR180 3400-05-74N
350,00	329,00	8,10	455	HR180 3500-05-74N
360,00	339,00	8,10	456	HR180 3600-05-74N
370,00	349,00	8,10	456	HR180 3700-05-74N
380,00	359,00	8,10	457	HR180 3800-05-74N
390,00	369,00	8,10	458	HR180 3900-05-74N
400,00	379,00	8,10	458	HR180 4000-05-74N

D H9	**d** h10	**E** +0,2	O-Ring	**Part N°**
410,00	389,00	8,10	459	HR180 4100-05-74N
420,00	399,00	8,10	460	HR180 4200-05-74N
430,00	409,00	8,10	461	HR180 4300-05-74N
440,00	419,00	8,10	462	HR180 4400-05-74N
450,00	429,00	8,10	463	HR180 4500-05-74N
460,00	439,00	8,10	463	HR180 4600-05-74N
470,00	449,00	8,10	464	HR180 4700-05-74N
480,00	459,00	8,10	465	HR180 4800-05-74N
490,00	469,00	8,10	466	HR180 4900-05-74N
500,00	479,00	8,10	467	HR180 5000-05-74N
510,00	489,00	8,10	467	HR180 5100-05-74N
520,00	499,00	8,10	468	HR180 5200-05-74N
530,00	509,00	8,10	469	HR180 5300-05-74N
540,00	519,00	8,10	469	HR180 5400-05-74N
550,00	529,00	8,10	470	HR180 5500-05-74N
560,00	539,00	8,10	470	HR180 5600-05-74N
570,00	549,00	8,10	470	HR180 5700-05-74N
580,00	559,00	8,10	471	HR180 5800-05-74N
590,00	569,00	8,10	471	HR180 5900-05-74N
600,00	579,00	8,10	471	HR180 6000-05-74N
610,00	589,00	8,10	472	HR180 6100-05-74N
620,00	599,00	8,10	472	HR180 6200-05-74N
630,00	609,00	8,10	473	HR180 6300-05-74N
640,00	619,00	8,10	473	HR180 6400-05-74N
650,00	629,00	8,10	473	HR180 6500-05-74N
660,00	639,00	8,10	474	HR180 6600-05-74N

Further and intermediate sizes up to Ø 2500 mm available on request.

Example for ordering:

HR 180 0360 - 03 - 74N - ...

- Profile
- Nominal diameter x 10
- Cross section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Profile gasket

25 - PTFE glass fiber
30 - PTFE carbon
67 - modified PTFE
74 - PTFE carbon fiber

O-Ring

N - NBR
F - FPM
E - EPDM
S - Silicon
C - Chloroprene

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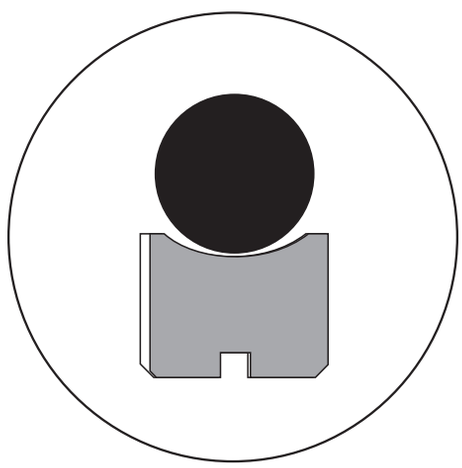
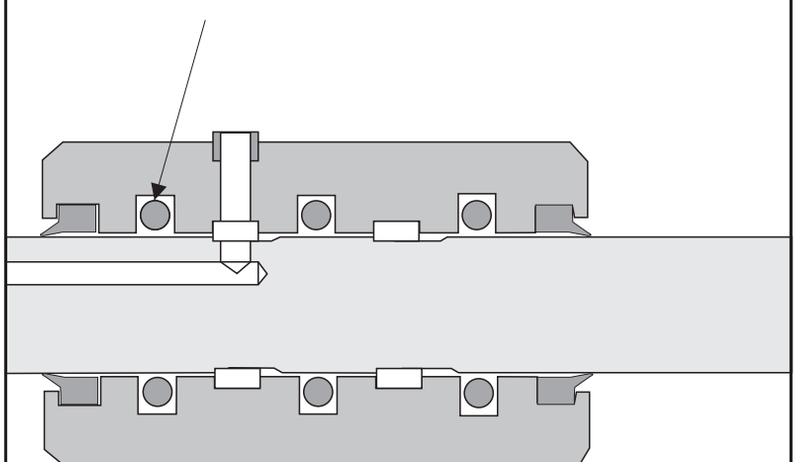
HR 185 series has been specially designed for use in sealing of swivel or rotary transmissions.This double acting sealing system is used in cases of internal sealing. It has a particularly versatile range of materials to serve respective applications.

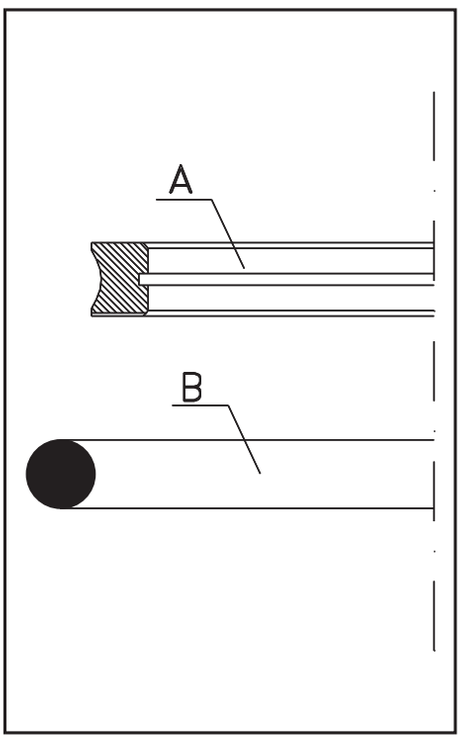
Special Features:

- low friction and very low wear
- reduced stick slip tendency even at low velocity
- high extrusion durability
- small assembly dimensions
- suitability to almost all medias concerning the PTFE part and a possibility of variation with O-ring



Material : PTFE-Compound
Operational pressure : upt to 40 MPa (400 bar)
Velocity : rotary to 2 m/s
Temperature : -40 up to +200 °C





Profile Gasket (Part A)

Profile gasket cross section has been specially designed taking into account the turning action. The dynamic side is provided with a small chamfer to simplify assembly. The circumventing / surrounding groove on the dynamic side yields a high specific surface pressure. The radius on the inner diameter ensures a central and secure fit for the pre-stressing element. The expanded frictional area between O-ring and the profile ring also curtails relative movement with respect to each other. Depending on the section of the seal, there may be one or two grooves incorporated on the dynamic side.

The response behavior of the pre-stressing element is improved by providing for grooves on the lateral plane faces as a standard feature.

O-ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norms). Standard MOC for hydraulics applications is NBR, which guarantees particularly good restistance to hydraulic fluids. For use with profile gaskets O-rings with hardness of 70 Shore A are preferred.

Material overview: Profile Gaskets

25: Modified PTFE + Glass fiber - High abrasion resistance and inherent stability, good chemical restistance, used in various areas of industry and intermediate-stress hydraulic applications.

30: Modified PTFE + Carbon - Good abrasion resistance and inherent stability, good chemical resistance, used in water- and water-oil emulsions with intermediate stress. Also designed for dry runs.

67: Modified PTFE - Very high abrasion resistance and inherent stability, used in hydraulics and abrasive pressure fluid applications. .

74: Modified PTFE + Carbon fiber - Very good abrasion resistance and inherent stability. Used in hydraulics and also intended for dry runs.

Material overview: O-Rings

N: Acrylnitrile-Butadiene-Rubber - Used in general maschine constructions, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.

F: Fluorine-containing Rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.

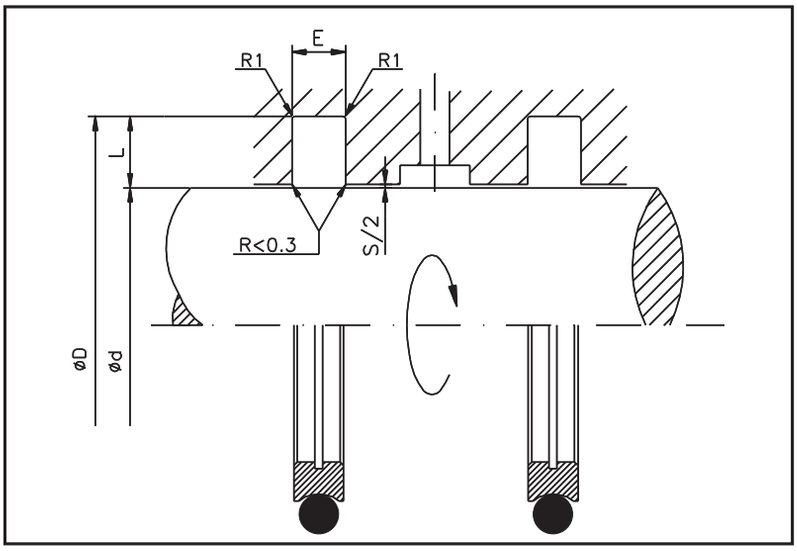
E: Ethylene-Propylene-Diene Rubbers - Used in valve and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids , but is not resistant to mineral oils.

S: Silicone-Rubbers

C: Chloroprene-Rubbers

HR 185 can be assembled in divided and undivided grooves: devided < 20 mm, closed > 20 mm.

ROTATION SEALS
HR 185



Limitations of Use

Operational pressure	: bis 40 MPa (400 bar)
Velocity	: rotary to 2 m/s
Temperature	: -40 up to +200 °C
	(depending on O-ring material)

Media for Use

Mineral oil based pressure fluids, flame resistant fluids, (HFA, HFB, HFC,) bio oils, water, air and other media depending on O-ring material

Surface Finish

Surface	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Surface hardness $\geq$ 55 HRC; Depth of hardness $\geq$ 0,3 mm

Preferred assembly dimensions

Section	O-Ring Cord-ø mm	Recommend Diameter Standard **d** mm	Groove Width **E** mm	Groove Depth **L** mm	Max. Diameter Clearancel **S** 0 - 150 bar mm	Max. Diameter Clearancel **S** 150 - 300 bar mm	Radius **R1 max.** mm
01	1,78	4,0 - 7,9	2,2	2,45	0,4 - 0,2	0,2 - 0,1	0,5
02	2,62	8,0 - 18,9	3,2	3,75	0,4 - 0,2	0,2 - 0,1	0,5
03	3,53	19,0 - 37,9	4,2	5,50	0,6 - 0,3	0,3 - 0,2	0,5
04	5,33	38,0 - 199,9	6,3	7,75	0,8 - 0,4	0,4 - 0,2	0,9
05	7,00	200,0 - 255,9	8,1	10,50	1,0 - 0,5	0,5 - 0,3	0,9
06	7,00	256,0 - 649,9	8,1	12,25	1,0 - 0,5	0,5 - 0,3	0,9
07	8,40	650,0 - 999,9	9,5	14,00	1,0 - 0,5	0,5 - 0,3	0,9

d f8/h9	**D** H10	**E** +0,2	O-Ring	**Part N°**
3,00	7,90	2,20	008	HR185 0030-01-74N
4,00	8,90	2,20	010	HR185 0040-01-74N
5,00	9,90	2,20	011	HR185 0050-01-74N
6,00	10,90	2,20	011	HR185 0060-01-74N
7,00	11,90	2,20	012	HR185 0070-01-74N
8,00	12,90	2,20	012	HR185 0080-01-74N
8,00	15,50	3,20	111	HR185 0080-02-74N
10,00	14,90	2,20	013	HR185 0100-01-74N
10,00	17,50	3,20	112	HR185 0100-02-74N
12,00	16,90	2,20	015	HR185 0120-01-74N
12,00	19,50	3,20	114	HR185 0120-02-74N
14,00	18,90	2,20	016	HR185 0140-01-74N
14,00	21,50	3,20	115	HR185 0140-02-74N
15,00	19,90	2,20	016	HR185 0150-01-74N
15,00	22,50	3,20	116	HR185 0150-02-74N
16,00	20,90	2,20	017	HR185 0160-01-74N
16,00	23,50	3,20	116	HR185 0160-02-74N
18,00	22,90	2,20	018	HR185 0180-01-74N
18,00	25,50	3,20	117	HR185 0180-02-74N
20,00	27,50	3,20	118	HR185 0200-02-74N
20,00	31,00	4,20	214	HR185 0200-03-74N
22,00	29,50	3,20	120	HR185 0220-02-74N
22,00	33,00	4,20	215	HR185 0220-03-74N
25,00	32,50	3,20	122	HR185 0250-02-74N
25,00	36,00	4,20	217	HR185 0250-03-74N

d f8/h9	**D** H10	**E** +0,2	O-Ring	**Part N°**
28,00	35,50	3,20	124	HR185 0280-02-74N
28,00	39,00	4,20	219	HR185 0280-03-74N
30,00	37,50	3,20	125	HR185 0300-02-74N
30,00	41,00	4,20	220	HR185 0300-03-74N
32,00	39,50	3,20	126	HR185 0320-02-74N
32,00	43,00	4,20	221	HR185 0320-03-74N
35,00	42,50	3,20	128	HR185 0350-02-74N
35,00	46,00	4,20	222	HR185 0350-03-74N
36,00	43,50	3,20	129	HR185 0360-02-74N
36,00	47,00	4,20	223	HR185 0360-03-74N
38,00	49,00	4,20	224	HR185 0380-03-74N
38,00	53,50	6,30	327	HR185 0380-04-74N
40,00	51,00	4,20	224	HR185 0400-03-74N
40,00	55,50	6,30	328	HR185 0400-04-74N
42,00	53,00	4,20	224	HR185 0420-03-74N
42,00	57,50	6,30	328	HR185 0420-04-74N
45,00	56,00	4,20	226	HR185 0450-03-74N
45,00	60,50	6,30	329	HR185 0450-04-74N
48,00	59,00	4,20	226	HR185 0480-03-74N
48,00	63,50	6,30	330	HR185 0480-04-74N
50,00	61,00	4,20	227	HR185 0500-03-74N
50,00	65,50	6,30	331	HR185 0500-04-74N
52,00	63,00	4,20	228	HR185 0520-03-74N
52,00	67,50	6,30	331	HR185 0520-04-74N
55,00	66,00	4,20	229	HR185 0550-03-74N

d f8/h9	**D** H10	**E** +0,2	O-Ring	**Part N°**
55,00	70,50	6,30	332	HR185 0550-04-74N
56,00	67,00	4,20	229	HR185 0560-03-74N
56,00	71,50	6,30	333	HR185 0560-04-74N
60,00	71,00	4,20	230	HR185 0600-03-74N
60,00	75,50	6,30	334	HR185 0600-04-74N
63,00	74,00	4,20	231	HR185 0630-03-74N
63,00	78,50	6,30	335	HR185 0630-04-74N
65,00	80,50	6,30	335	HR185 0650-04-74N
70,00	85,50	6,30	337	HR185 0700-04-74N
75,00	90,50	6,30	339	HR185 0750-04-74N
80,00	95,50	6,30	340	HR185 0800-04-74N
85,00	100,50	6,30	342	HR185 0850-04-74N
90,00	105,50	6,30	343	HR185 0900-04-74N
95,00	110,50	6,30	345	HR185 0950-04-74N
100,00	115,50	6,30	346	HR185 1000-04-74N
105,00	120,50	6,30	348	HR185 1050-04-74N
110,00	125,50	6,30	350	HR185 1100-04-74N
115,00	130,50	6,30	351	HR185 1150-04-74N
120,00	135,50	6,30	353	HR185 1200-04-74N
125,00	140,50	6,30	354	HR185 1250-04-74N
130,00	145,50	6,30	356	HR185 1300-04-74N
135,00	150,50	6,30	358	HR185 1350-04-74N
140,00	155,50	6,30	359	HR185 1400-04-74N
150,00	165,50	6,30	361	HR185 1500-04-74N
160,00	175,50	6,30	363	HR185 1600-04-74N
160,00	181,00	8,10	439	HR185 1600-05-74N
170,00	185,50	6,30	365	HR185 1700-04-74N
180,00	195,50	6,30	366	HR185 1800-04-74N
180,00	201,00	8,10	442	HR185 1800-05-74N
190,00	205,50	6,30	368	HR185 1900-04-74N

d f8/h9	**D** H10	**E** +0,2	O-Ring	**Part N°**
200,00	221,00	8,10	445	HR185 2000-05-74N
210,00	231,00	8,10	446	HR185 2100-05-74N
220,00	241,00	8,10	447	HR185 2200-05-74N
230,00	251,00	8,10	448	HR185 2300-05-74N
240,00	261,00	8,10	448	HR185 2400-05-74N
250,00	271,00	8,10	449	HR185 2500-05-74N
260,00	284,50	8,10	450	HR185 2600-06-74N
270,00	294,50	8,10	451	HR185 2700-06-74N
280,00	304,50	8,10	452	HR185 2800-06-74N
290,00	314,50	8,10	453	HR185 2900-06-74N
300,00	324,50	8,10	453	HR185 3000-06-74N
310,00	334,50	8,10	454	HR185 3100-06-74N
320,00	344,50	8,10	455	HR185 3200-06-74N
330,00	354,50	8,10	456	HR185 3300-06-74N
340,00	364,50	8,10	457	HR185 3400-06-74N
350,00	374,50	8,10	457	HR185 3500-06-74N
360,00	384,50	8,10	458	HR185 3600-06-74N
370,00	394,50	8,10	459	HR185 3700-06-74N
380,00	404,50	8,10	460	HR185 3800-06-74N
390,00	414,50	8,10	461	HR185 3900-06-74N
400,00	424,50	8,10	461	HR185 4000-06-74N
410,00	434,50	8,10	462	HR185 4100-06-74N
420,00	444,50	8,10	463	HR185 4200-06-74N
430,00	454,50	8,10	464	HR185 4300-06-74N
440,00	464,50	8,10	464	HR185 4400-06-74N
450,00	474,50	8,10	465	HR185 4500-06-74N
460,00	484,50	8,10	466	HR185 4600-06-74N
470,00	494,50	8,10	467	HR185 4700-06-74N
480,00	504,50	8,10	468	HR185 4800-06-74N
490,00	514,50	8,10	469	HR185 4900-06-74N
500,00	524,50	8,10	469	HR185 5000-06-74N

Further and intermediate sizes up to Ø 2500 mm available on request.

Example for ordering:

HR 185 0360 - 03 - 74N - ...

- Profile
- Nominal diameter x 10
- Cross section
- Standard material profile gasket
- Standard material O-Ring
- HME internal code

Material Key:

Profile gasket

25 - PTFE glass fiber
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67 - modifiziertes PTFE
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O - Ring

N - NBR
F - FPM
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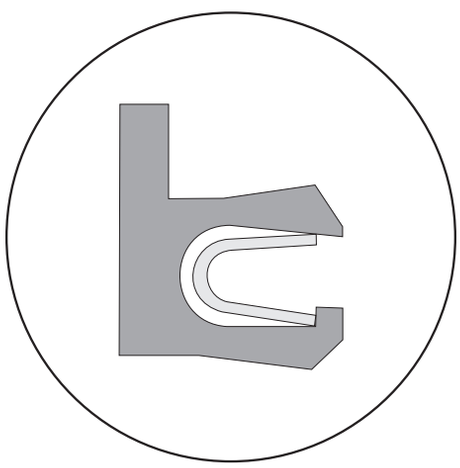
This is meant for applications where conventional elastomer seals cannot be used due to their limited thermal and chemical resistance. Here the HR 187 type offers an optimal solution to the sealing problem.

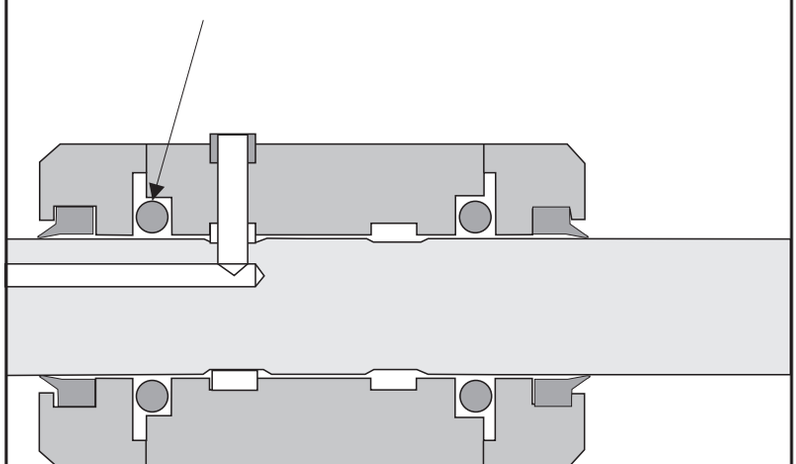
HR 187 is a single acting rotary seal with spring prestressing and collar for resistance to torsion. Different materials for profile gasket and spring make the range of applications as wide as chemicals, pharmaceuticals, foodstuffs and equipment constructin.

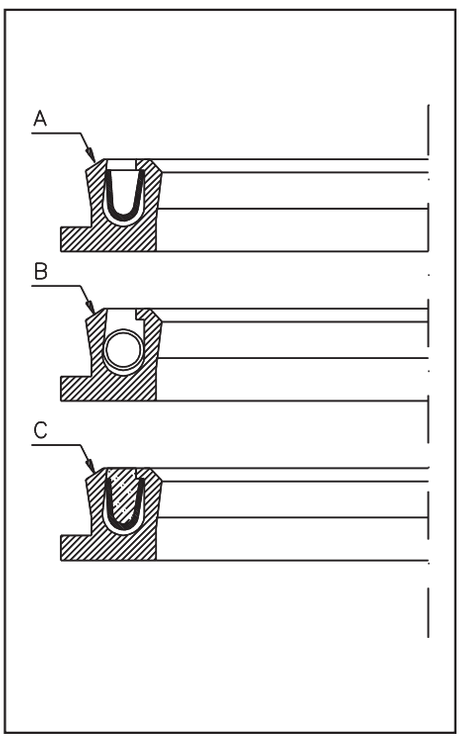
Special Features:

- High chemical resistance, and resistance to most fluid gases and other chemicals
- Very good shear characteristics, no stick slip effekt
- Low frictional values and good resistance to galling.
- Very wide temperature range of application
- Available for all shaft diameters up to 2500 mm



Material	: PTFE-Compound
Operational pressure	: up to 10 MPa (100 bar)
Velocity	: rotary to bis 4 m/s
Temperature	: -150 up to +225 °C





Profile Gasket with spring:

The seal consists of a U-shaped profile gasket in which a metallic ring is incorporated as a prestressing element. To enhance sealing characteristics and service life, the (internal) dynamic sealing lip is designed as somewhat more robust than the (external) static lip. The presence of a collar on the outer edge prevents the seal from rotating along with the shaft. A

All profile gaskets are made form modified PTFE materials. The standard material for all general purpose applications is Compound 31 in comination with a pre-stressing spring from stainless steel.

Material - overwiew: Profile gaskets

31: Modified PTFE and Carbon fiber: Good chemical and thermal resistance. Used in intermediate stress applications against hard surfaces. Also used in water-oil emulsions.

12: Modified PTFE: Very good chemical resistance, abrasion resistance, inherent stability, outstanding shear characteristics, can withstand a large range of temperatures special purpose light to medium stress applications.

67: Modified PTFE: Very high abrasion resistance, very good shear characteristics and inherent stability, high compressive strenght, good chemical and thermal resistance, used in very heavy duty applications.

Spring constructions:

0: Stainless Steel for general applications (A).

1: Stainless Steel for aggressive media (B).

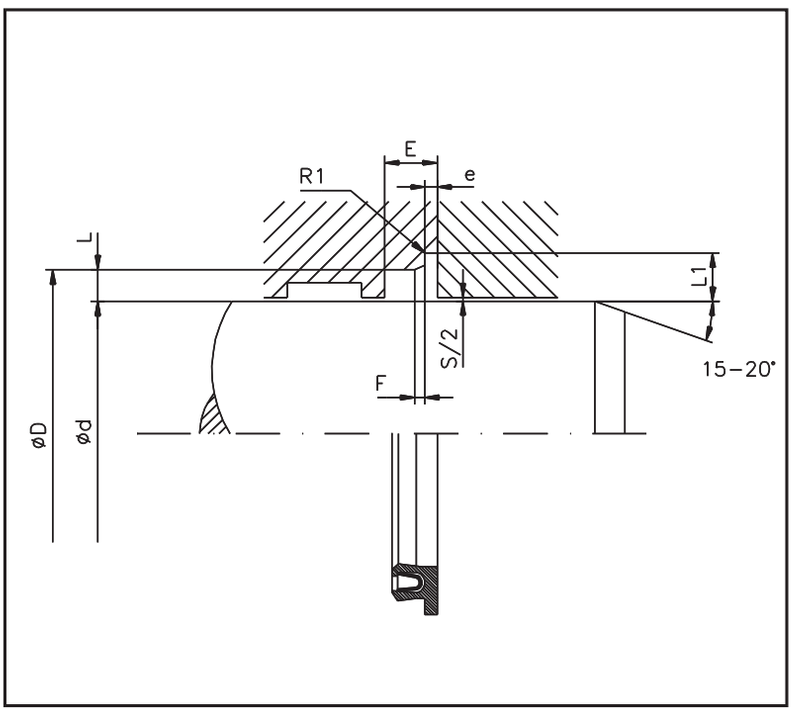
2: Stainless Steel for general applications, but cast in silicon (C).

3: Stainless Steel for aggressive media, but cast in silicon.

In types 2 and 3, the space around the spring (spring groove or slot) is filled with silicon. Since the seals can be sterilized, they are preferentiallz used in the foodstuffs industry.

ROTATION SEALS

HR 187



Limitations of Use

Operational pressure	: up to 10 MPa (100 bar)
Velocity	: rotary to 4 m/s
Temperature	: -150 up to +255 °C

Media for Use

Mineral based and synthetic pressure fluids, water, air, steam, acids and various chemicals depending on sealing and O-ring material

Surface Finish

Surface	Rmax	Rz	Ra
Faces	1,5 µm	0,8 µm	0,2 µm
Groove root	5,0 µm	3,2 µm	0,8 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

Tolerances

Nominal diameter	d	f8/h9
Groove root diameter	D	H11
Groove width	E	+0,2 / -0

Preferred assembly dimensions

Section	O-Ring Äquivalent mm	Recommend Diameter Standard **d** mm	Groove Width **E** mm	Groove Depth **L** mm	Flange Width **e** mm	Flange Depth **L1** mm	Phase **F** mm	Max. Diameter Clearancel **S** mm	Radius **R1** max. mm
2	2,62	8 - 19,9	3,60	2,50 + 0,05	0,85 - 0,10	4,50 + 0,08	0,80	0,13	0,3
3	3,53	20 - 39,9	4,80	3,50 + 0,08	1,35 - 0,15	6,25 + 0,10	1,10	0,15	0,4
4	5,33	40 - 399,9	7,10	5,25 + 0,10	1,80 - 0,20	8,75 + 0,15	1,40	0,17	0,5
5	6,99	400 - 699,9	9,50	7,00 + 0,10	2,80 - 0,20	11,00 + 0,15	1,60	0,25	0,5

Futher and intermediate sizes upt to Ø 2500 mm available on request.

Example for ordering:

HR 187 0360 - 03 - 31P - ...

- Profile
- Nominal diameter x 10
- spring design (Standard)
- Cross section
- Material profile gasket (Standard)
- HME internal code

Material Key:

Profile gasket :
31 - PTFE carbon
12 - modifiziertes PTFE
67 - modifiziertes PTFE

spring construction:
0 - Standard
1 - for aggressive media
2 - Standard silicon cast
3 - for aggressive Medien silicon cast

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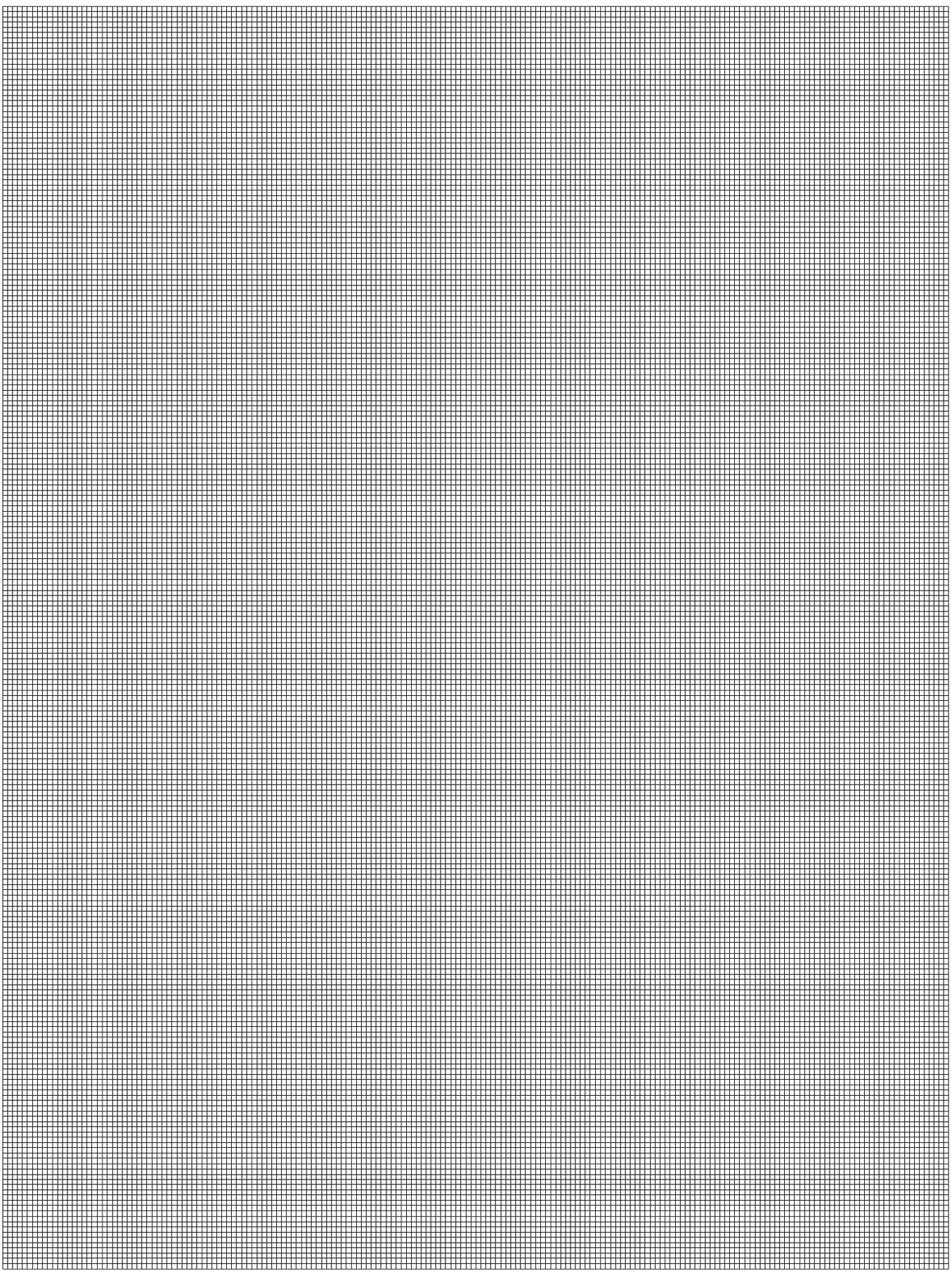
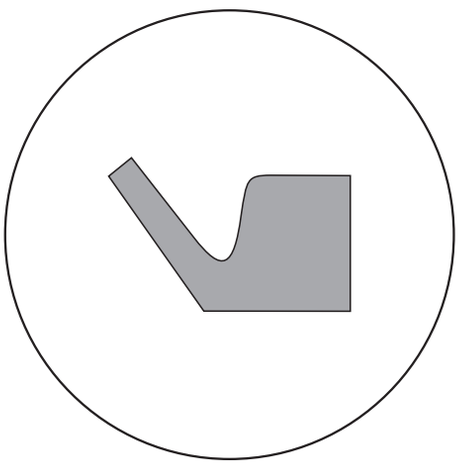
WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.



Rotation seals of the HV 280 series have been in use for years in machine construction as elastomeric seals for shafts and bearings. They effectively and reliably provide sealing against attack by dust, dirt, oil and water splashes etc for axial sealing areas.



Special Features:

- Reliable and convenient axial sealing
- No wear (erosion) of shaft
- Safe function even for slightly tilled opposite (running) face or low shaft eccentricily
- Simple slide assembly in small mounting space
- Lower storage costs because of suitability to various shaft diameters
- Increases life of maschine components due to protection of bearings
- Lower starting torque and friction in operation
- No sticking at the sealing lip even after long periods of stand stills.
- Highly wear resistant of elastomer material
- Also available in FPM

Material : Rubber elastomere
Velocity : peripheral velocity (rotary) to 8 m/s
Temperature : -60 up to +220 °C (je nach Werkstoff)

Design Variations:

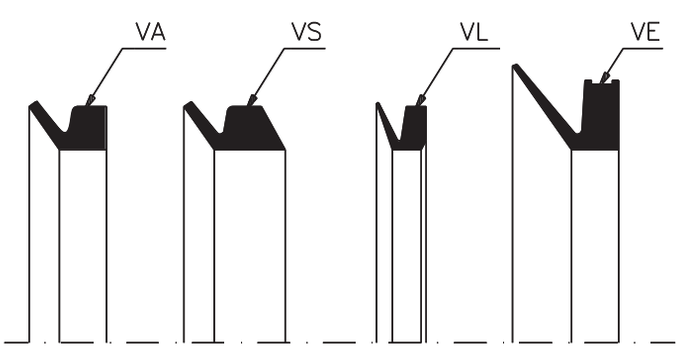
HV 280 is available in four design variations:

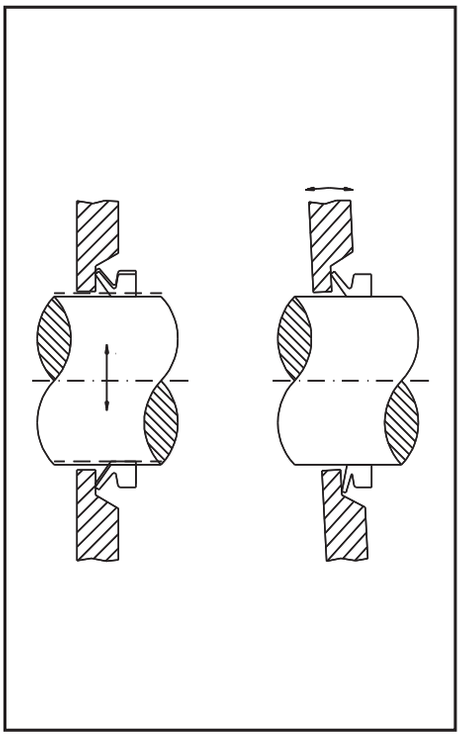
VA (01): Standard profile with vertical backside. Large range of sizes (3 mm up to 2020 mm) shaft diameter.

VS (02): Wider body, designed to take higher radial force than the design VA. Available for shaft diameters from 5 mm up to 310 mm.

VL (03): Special profile for small mounting spaces. Available for 135 mm up to 165 mm shaft diameters.

VE (04): For heavy duty application and large diameter. Normal commercial tightening strap can be used to improve axial fit.





Use in shaft eccentricity or misalignment cases:

Die V-Form des Profiles sichert eine wirksame und zuverlässige Dichtfunktion selbst bei ovalem Querschnitt oder exzentrischen Wellen. Die Dichtwirkung wird auch durch eine leicht gekippte Gegenlauffläche nicht beeinträchtigt.

Surface:

Surface characteristics of the (opposite) running face determines the serive life of the sealing lip to a larage extent. It should be designed for RA $\leq$ 0,4 and should be free of sharp edges and scratches.

Choice of material

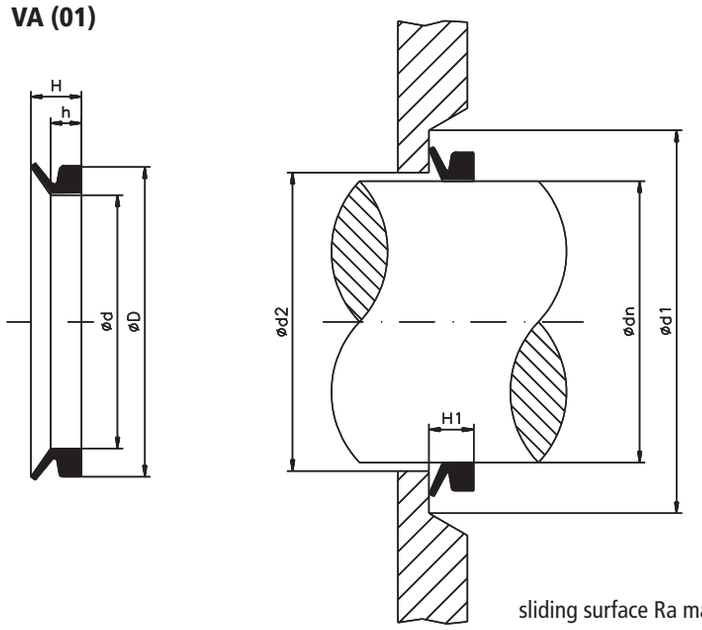
NBR (100) - Standard for most applications from -40°C bis +120°C (+90°C in water) - good resistance to mineral oils, water, lubricants and radiator fluids, - high tencile strength. Not resistant to glycol based truck brake fluids. Low resistance to aromatic solvents and carbon tetrachloride, trichloroethylene (chlorine containing hydrocarbons)

FPM (120) - Recommended for high temperature applications (- 30 up to +200 °C) , good chemical resistance, outstanding resistance to mineral oils, acids. Good resistance to aromatic and chlorine containing hzdrocarbons, ageing, weathering influences, ozone. Low temperature flexibility restriction, Low resistance to polare fluids like kentone, ether, ester.

SIL (180) -Recommended for fluctuating service temperatures (- 60 up to +220 °C) at low rotational velocities. Resists continuous heating even at higher temperatures without hardening. Remains flexible even at very low temperatures. Resistant to mineral oils, lubricants and alkaloids. Outstanding resistance to ageing, weathering influences and ozone. Not recommended for use with hzdrocarbons, fuels and paraffins or light mineral oils. Not resistant to hot water, oils and non mineral based brake fluids for trucks.

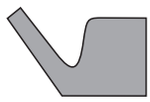
CR (185) - Application range (- 40 up to +80 °C) High tensile strength up to 15 Mpa, outstanding resistance to ageing, weathering and ozone. Limited resistance to mineral oils and lubricants. Not resistant to non mineral bases brake fluids for trucks.

VA (01)



Typ VA (01)

dn	d	D	h	H	d2 max	d1 min	H1	Part N°.
2,7 - 3,5	2,50	5,50	2,10	3,00	dn + 1	dn + 4	2,5 + 0,3	HV280 0003-01-100
3,5 - 4,5	3,20	7,20	2,40	3,70	dn + 1	dn + 6	3,0 + 0,4	HV280 0004-01-100
4,5 - 5,5	4,00	8,00	2,40	3,70	dn + 1	dn + 6	3,0 + 0,4	HV280 0005-01-100
5,5 - 6,5	5,00	9,00	2,40	3,70	dn + 1	dn + 6	3,0 + 0,4	HV280 0006-01-100
6,5 - 8,0	6,00	10,00	2,40	3,70	dn + 1	dn + 6	3,0 + 0,4	HV280 0007-01-100
8,0 - 9,5	7,00	11,00	2,40	3,70	dn + 1	dn + 6	3,0 + 0,4	HV280 0008-01-100
9,5 - 11,5	9,00	15,00	3,40	5,50	dn + 2	dn + 9	4,5 + 0,6	HV280 0010-01-100
11,5 - 13,5	10,50	16,50	3,40	5,50	dn + 2	dn + 9	4,5 + 0,6	HV280 0012-01-100
13,5 - 15,5	12,50	18,50	3,40	5,50	dn + 2	dn + 9	4,5 + 0,6	HV280 0014-01-100
15,5 - 17,5	14,00	20,00	3,40	5,50	dn + 2	dn + 9	4,5 + 0,6	HV280 0016-01-100
17,5 - 19,0	16,00	22,00	3,40	5,50	dn + 2	dn + 9	4,5 + 0,6	HV280 0018-01-100
19,0 - 21,0	18,00	26,00	4,70	7,50	dn + 2	dn + 12	6,0 + 0,8	HV280 0020-01-100
21,0 - 24,0	20,00	28,00	4,70	7,50	dn + 2	dn + 12	6,0 + 0,8	HV280 0022-01-100
24,0 - 27,0	22,00	30,00	4,70	7,50	dn + 2	dn + 12	6,0 + 0,8	HV280 0025-01-100
27,0 - 29,0	25,00	33,00	4,70	7,50	dn + 3	dn + 12	6,0 + 0,8	HV280 0028-01-100
29,0 - 31,0	27,00	35,00	4,70	7,50	dn + 3	dn + 12	6,0 + 0,8	HV280 0030-01-100
31,0 - 33,0	29,00	37,00	4,70	7,50	dn + 3	dn + 12	6,0 + 0,8	HV280 0032-01-100
33,0 - 36,0	31,00	39,00	4,70	7,50	dn + 3	dn + 12	6,0 + 0,8	HV280 0035-01-100
36,0 - 38,0	34,00	42,00	4,70	7,50	dn + 3	dn + 12	6,0 + 0,8	HV280 0038-01-100
38,0 - 43,0	36,00	46,00	5,50	9,00	dn + 3	dn + 15	7,0 + 1,0	HV280 0040-01-100
43,0 - 48,0	40,00	50,00	5,50	9,00	dn + 3	dn + 15	7,0 + 1,0	HV280 0045-01-100
48,0 - 53,0	45,00	55,00	5,50	9,00	dn + 3	dn + 15	7,0 + 1,0	HV280 0050-01-100
53,0 - 58,0	49,00	59,00	5,50	9,00	dn + 3	dn + 15	7,0 + 1,0	HV280 0055-01-100
58,0 - 63,0	54,00	64,00	5,50	9,00	dn + 3	dn + 15	7,0 + 1,0	HV280 0060-01-100
63,0 - 68,0	58,00	68,00	5,50	9,00	dn + 3	dn + 15	7,0 + 1,0	HV280 0065-01-100
68,0 - 73,0	63,00	75,00	6,80	11,00	dn + 4	dn + 18	9,0 + 1,2	HV280 0070-01-100
73,0 - 78,0	67,00	79,00	6,80	11,00	dn + 4	dn + 18	9,0 + 1,2	HV280 0075-01-100
78,0 - 83,0	72,00	84,00	6,80	11,00	dn + 4	dn + 18	9,0 + 1,2	HV280 0080-01-100
83,0 - 88,0	76,00	88,00	6,80	11,00	dn + 4	dn + 18	9,0 + 1,2	HV280 0085-01-100
88,0 - 93,0	81,00	93,00	6,80	11,00	dn + 4	dn + 18	9,0 + 1,2	HV280 0090-01-100
93,0 - 98,0	85,00	97,00	6,80	11,00	dn + 4	dn + 18	9,0 + 1,2	HV280 0095-01-100
98,0 -105,0	90,00	102,00	6,80	11,00	dn + 4	dn + 18	9,0 + 1,2	HV280 0100-01-100
105,0 -115,0	99,00	113,00	7,90	12,80	dn + 4	dn + 21	10,5 + 1,5	HV280 0110-01-100



Typ VA (01)

dn	d	D	h	H	d2 max	d1 min	H1	Part N°.
115 - 125	108,00	122,00	7,90	12,80	dn + 4	dn + 21	10,5 ± 1,5	HV280 0120-01-100
125 - 135	117,00	131,00	7,90	12,80	dn + 4	dn + 21	10,5 ± 1,5	HV280 0130-01-100
135 - 145	126,00	140,00	7,90	12,80	dn + 4	dn + 21	10,5 ± 1,5	HV280 0140-01-100
145 - 155	135,00	149,00	7,90	12,80	dn + 4	dn + 21	10,5 ± 1,5	HV280 0150-01-100
155 - 165	144,00	160,00	9,00	14,50	dn + 5	dn + 24	12,0 ± 1,8	HV280 0160-01-100
165 - 175	153,00	169,00	9,00	14,50	dn + 5	dn + 24	12,0 ± 1,8	HV280 0170-01-100
175 - 185	162,00	178,00	9,00	14,50	dn + 5	dn + 24	12,0 ± 1,8	HV280 0180-01-100
185 - 195	171,00	187,00	9,00	14,50	dn + 5	dn + 24	12,0 ± 1,8	HV280 0190-01-100
195 - 210	180,00	196,00	9,00	14,50	dn + 5	dn + 24	12,0 ± 1,8	HV280 0199-01-100
190 - 210	180,00	210,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0200-01-100
210 - 235	198,00	228,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0220-01-100
235 - 265	225,00	255,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0250-01-100
265 - 290	247,00	277,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0275-01-100
290 - 310	270,00	300,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0300-01-100
310 - 335	292,00	322,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0325-01-100
335 - 365	315,00	345,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0350-01-100
365 - 390	337,00	367,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0375-01-100
390 - 430	360,00	390,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0400-01-100
430 - 480	405,00	435,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0450-01-100
480 - 530	450,00	480,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0500-01-100
530 - 580	495,00	525,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0550-01-100
580 - 630	540,00	570,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0600-01-100
630 - 665	600,00	630,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0650-01-100
665 - 705	630,00	660,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0700-01-100
705 - 745	670,00	700,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0725-01-100
745 - 785	705,00	735,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0750-01-100
785 - 830	745,00	775,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0800-01-100
830 - 875	785,00	815,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0850-01-100
875 - 920	825,00	855,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 0900-01-100
965 -1015	910,00	940,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1000-01-100
1015 -1065	955,00	985,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1050-01-100
1065 -1115	1000,00	1030,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1100-01-100
1115 -1165	1045,00	1075,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1150-01-100
1165 -1215	1090,00	1120,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1200-01-100
1215 -1270	1135,00	1165,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1250-01-100
1270 -1320	1180,00	1210,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1300-01-100
1320 -1370	1225,00	1255,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1350-01-100
1370 -1420	1270,00	1300,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1400-01-100
1420 -1470	1315,00	1345,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1450-01-100
1470 -1520	1360,00	1390,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1500-01-100
1520 -1570	1405,00	1435,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1550-01-100
1570 -1620	1450,00	1480,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1600-01-100
1620 -1670	1495,00	1525,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1650-01-100
1670 -1720	1540,00	1570,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1700-01-100
1720 -1770	1585,00	1615,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1750-01-100
1770 -1820	1630,00	1660,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1800-01-100
1820 -1870	1675,00	1705,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1850-01-100
1870 -1920	1720,00	1750,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1900-01-100
1920 -1970	1765,00	1795,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 1950-01-100
1970 -2020	1811,00	1840,00	14,30	25,00	dn + 10	dn + 45	20,0 ± 4,0	HV280 2000-01-100

These izes also available in FPM, Silicone and CR.

Example for ordering:

HV 280 0035 - 01 - 100 - ...

- Profile
- Nominal diameter
- Design code
- Standard material
- HME internal code

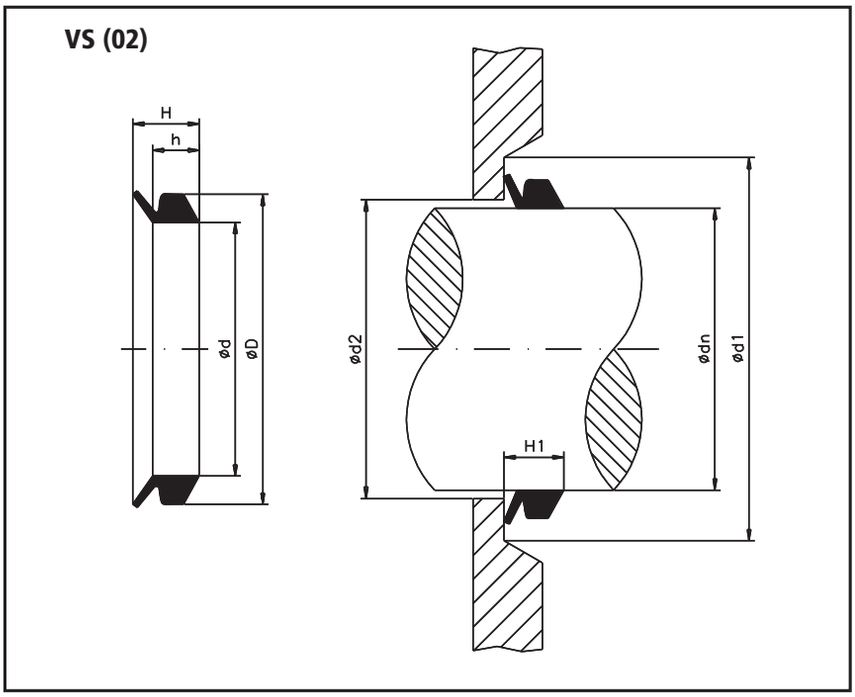
Material Key:

100 - NBR
120 - FPM
180 - Silicon
185 - CR

Design Key:

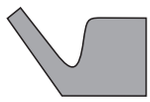
01 - VA
02 - VS
03 - VL
04 - VE

VS (02)



Typ VS (02)

dn	d	D	h	H	d2 max	d1 min	H1	Part N°.
4,5 - 5,5	4,00	8,00	3,90	5,20	dn + 1	dn + 6	4,5 ± 0,4	HV280 0005-02-100
5,5 - 6,5	5,00	9,00	3,90	5,20	dn + 1	dn + 6	4,5 ± 0,4	HV280 0006-02-100
6,5 - 8,0	6,00	10,00	3,90	5,20	dn + 1	dn + 6	4,5 ± 0,4	HV280 0007-02-100
8,0 - 9,5	7,00	11,00	3,90	5,20	dn + 1	dn + 6	4,5 ± 0,4	HV280 0008-02-100
9,5 - 11,5	9,00	15,00	5,60	7,70	dn + 2	dn + 9	6,7 ± 0,6	HV280 0010-02-100
11,5 - 13,5	10,50	16,50	5,60	7,70	dn + 2	dn + 9	6,7 ± 0,6	HV280 0012-02-100
13,5 - 15,5	12,50	18,50	5,60	7,70	dn + 2	dn + 9	6,7 ± 0,6	HV280 0014-02-100
15,5 - 17,5	14,00	20,00	5,60	7,70	dn + 2	dn + 9	6,7 ± 0,6	HV280 0016-02-100
17,5 - 19,0	16,00	22,00	5,60	7,70	dn + 2	dn + 9	6,7 ± 0,6	HV280 0018-02-100
19,0 - 21,0	18,00	26,00	7,90	10,50	dn + 2	dn + 12	9,0 ± 0,8	HV280 0020-02-100
21,0 - 24,0	20,00	28,00	7,90	10,50	dn + 2	dn + 12	9,0 ± 0,8	HV280 0022-02-100
24,0 - 27,0	22,00	30,00	7,90	10,50	dn + 2	dn + 12	9,0 ± 0,8	HV280 0025-02-100
27,0 - 29,0	25,00	33,00	7,90	10,50	dn + 3	dn + 12	9,0 ± 0,8	HV280 0028-02-100
29,0 - 31,0	27,00	35,00	7,90	10,50	dn + 3	dn + 12	9,0 ± 0,8	HV280 0030-02-100
31,0 - 33,0	29,00	37,00	7,90	10,50	dn + 3	dn + 12	9,0 ± 0,8	HV280 0032-02-100
33,0 - 36,0	31,00	39,00	7,90	10,50	dn + 3	dn + 12	9,0 ± 0,8	HV280 0035-02-100
36,0 - 38,0	34,00	42,00	7,90	10,50	dn + 3	dn + 12	9,0 ± 0,8	HV280 0038-02-100
38,0 - 43,0	36,00	46,00	9,50	13,00	dn + 3	dn + 15	11,0 ± 1,0	HV280 0040-02-100
43,0 - 48,0	40,00	50,00	9,50	13,00	dn + 3	dn + 15	11,0 ± 1,0	HV280 0045-02-100
48,0 - 53,0	45,00	55,00	9,50	13,00	dn + 3	dn + 15	11,0 ± 1,0	HV280 0050-02-100
53,0 - 58,0	49,00	59,00	9,50	13,00	dn + 3	dn + 15	11,0 ± 1,0	HV280 0055-02-100
58,0 - 63,0	54,00	64,00	9,50	13,00	dn + 3	dn + 15	11,0 ± 1,0	HV280 0060-02-100
63,0 - 68,0	58,00	68,00	9,50	13,00	dn + 3	dn + 15	11,0 ± 1,0	HV280 0065-02-100
68,0 - 73,0	63,00	75,00	11,30	15,50	dn + 4	dn + 18	13,5 ± 1,2	HV280 0070-02-100
73,0 - 78,0	67,00	79,00	11,30	15,50	dn + 4	dn + 18	13,5 ± 1,2	HV280 0075-02-100
78,0 - 83,0	72,00	84,00	11,30	15,50	dn + 4	dn + 18	13,5 ± 1,2	HV280 0080-02-100
83,0 - 88,0	76,00	88,00	11,30	15,50	dn + 4	dn + 18	13,5 ± 1,2	HV280 0085-02-100
88,0 - 93,0	81,00	93,00	11,30	15,50	dn + 4	dn + 18	13,5 ± 1,2	HV280 0090-02-100
93,0 - 98,0	85,00	97,00	11,30	15,50	dn + 4	dn + 18	13,5 ± 1,2	HV280 0095-02-100
98,0 - 105,0	90,00	102,00	11,30	15,50	dn + 4	dn + 18	13,5 ± 1,2	HV280 0100-02-100
105,0 - 115,0	99,00	113,00	13,10	18,00	dn + 4	dn + 21	15,5 ± 1,5	HV280 0110-02-100
115,0 - 125,0	108,00	122,00	13,10	18,00	dn + 4	dn + 21	15,5 ± 1,5	HV280 0120-02-100
125,0 - 135,0	117,00	131,00	13,10	18,00	dn + 4	dn + 21	15,5 ± 1,5	HV280 0130-02-100



Typ VS (02)

dn	d	D	h	H	d2 max	d1 min	H1	Part N°.
135 - 145	126,00	140,00	13,10	18,00	dn + 4	dn + 21	15,5 ± 1,5	HV280 0140-02-100
145 - 155	135,00	149,00	13,10	18,00	dn + 4	dn + 21	15,5 ± 1,5	HV280 0150-02-100
155 - 165	144,00	160,00	15,00	20,50	dn + 5	dn + 24	18,0 ± 1,8	HV280 0160-02-100
165 - 175	153,00	169,00	15,00	20,50	dn + 5	dn + 24	18,0 ± 1,8	HV280 0170-02-100
175 - 185	162,00	178,00	15,00	20,50	dn + 5	dn + 24	18,0 ± 1,8	HV280 0180-02-100
185 - 195	171,00	187,00	15,00	20,50	dn + 5	dn + 24	18,0 ± 1,8	HV280 0190-02-100
195 - 210	180,00	196,00	15,00	20,50	dn + 5	dn + 24	18,0 ± 1,8	HV280 0199-02-100

These sizes also available in FPM, Silcon und CR.

Example for ordering :

HV 280 0035 - 02 - 100 - ...

Profile
Nominal diameter
Design code
Standard material
HME internal code

Material Key:

100 - NBR
120 - FPM
180 - Silicon
185 - CR

Design Key:

01 - VA
02 - VS
03 - VL
04 - VE

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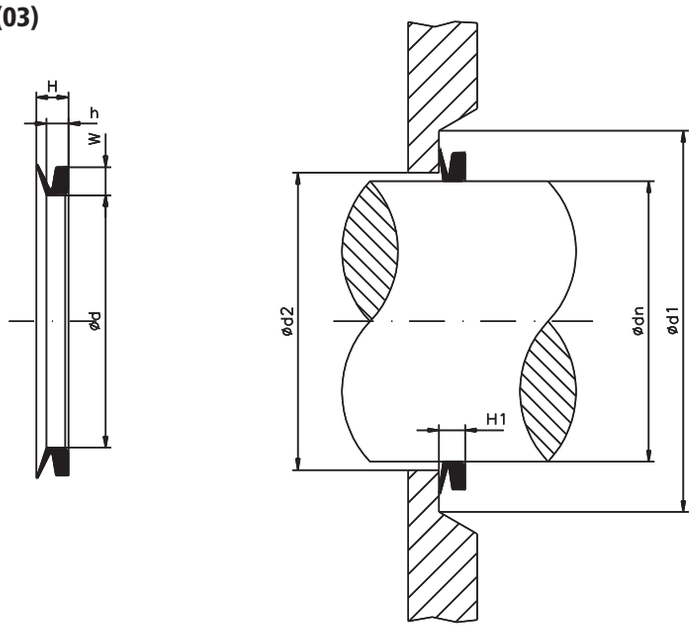
VL (03)



Ring dimensions:

H	=	10,5
h	=	6,0
W	=	6,5

Assembly dimensions:

H1	=	8 ± 1,5
d2 max	=	dn + 5,0
d1 min	=	dn + 20,0

Typ VL (03)

dn	d	Part N°.
135 - 145	126,00	HV280 0140-03-100
145 - 155	135,00	HV280 0150-03-100
155 - 165	144,00	HV280 0160-03-100
165 - 175	153,00	HV280 0170-03-100
175 - 185	162,00	HV280 0180-03-100
185 - 195	171,00	HV280 0190-03-100
190 - 210	180,00	HV280 0200-03-100
210 - 235	198,00	HV280 0220-03-100
235 - 265	225,00	HV280 0250-03-100
265 - 290	247,00	HV280 0275-03-100

dn	d	Part N°.
290 - 310	270,00	HV280 0300-03-100
310 - 335	292,00	HV280 0325-03-100
335 - 365	315,00	HV280 0350-03-100
365 - 390	337,00	HV280 0375-03-100
390 - 430	360,00	HV280 0400-03-100
410 - 440	425,00	HV280 0425-03-100
430 - 480	405,00	HV280 0450-03-100
480 - 530	450,00	HV280 0500-03-100
530 - 580	495,00	HV280 0550-03-100
580 - 630	540,00	HV280 0600-03-100

These sizes also available in FPM, Silcon und CR.

Example of ordering :

HV 280 0220 - 03 - 100 - ...

Profile
Nominal diameter
Design code
Standard material
HME internal code

Material Key:

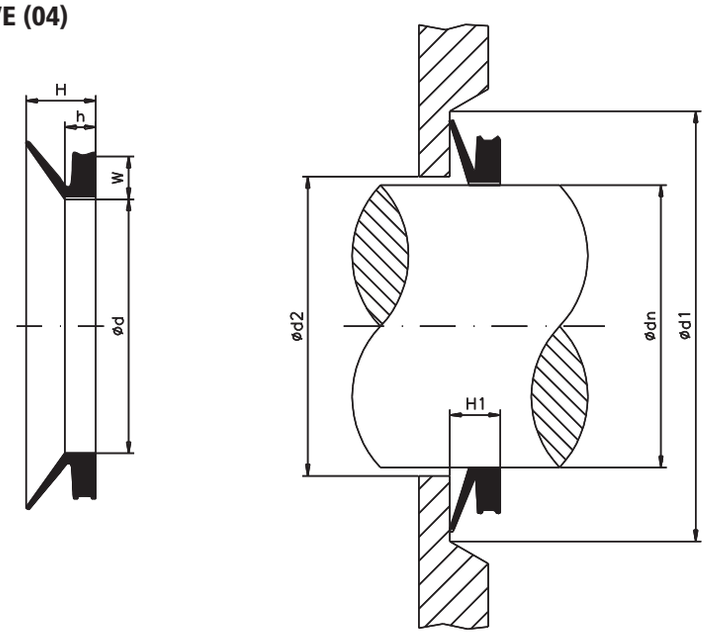
100 - NBR
120 - FPM
180 - Silicon
185 - CR

Design Key:

01 - VA
02 - VS
03 - VL
04 - VE

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simutaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

VE (04)



Ring dimensions:

H	=	65,0
h	=	32,0
W	=	30,0

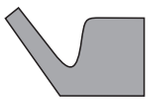
Assembly dimensions:

H1	=	50 ± 12,0
d2 max	=	dn + 24,0
d1 min	=	dn + 115,0

Typ VE (04)

dn	d	Part N°.
450 - 455	439,00	HV280 0450-04-100
455 - 460	444,00	HV280 0455-04-100
460 - 465	448,00	HV280 0460-04-100
465 - 470	453,00	HV280 0465-04-100
470 - 475	458,00	HV280 0470-04-100
475 - 480	463,00	HV280 0475-04-100
480 - 485	468,00	HV280 0480-04-100
485 - 490	473,00	HV280 0485-04-100
490 - 495	478,00	HV280 0490-04-100
495 - 500	483,00	HV280 0495-04-100
500 - 505	488,00	HV280 0500-04-100
505 - 510	493,00	HV280 0505-04-100
510 - 515	497,00	HV280 0510-04-100
515 - 520	502,00	HV280 0515-04-100
520 - 525	507,00	HV280 0520-04-100
525 - 530	512,00	HV280 0525-04-100
530 - 535	517,00	HV280 0530-04-100
535 - 540	521,00	HV280 0535-04-100
540 - 545	526,00	HV280 0540-04-100
545 - 550	531,00	HV280 0545-04-100
550 - 555	536,00	HV280 0550-04-100
555 - 560	541,00	HV280 0555-04-100
560 - 565	546,00	HV280 0560-04-100
565 - 570	550,00	HV280 0565-04-100
570 - 575	555,00	HV280 0570-04-100
575 - 580	560,00	HV280 0575-04-100
580 - 585	565,00	HV280 0580-04-100
585 - 590	570,00	HV280 0585-04-100
590 - 600	575,00	HV280 0590-04-100
600 - 610	582,00	HV280 0600-04-100
610 - 620	592,00	HV280 0610-04-100
620 - 630	602,00	HV280 0620-04-100

dn	d	Part N°.
630 - 640	612,00	HV280 0630-04-100
640 - 650	621,00	HV280 0640-04-100
650 - 660	631,00	HV280 0650-04-100
660 - 670	640,00	HV280 0660-04-100
670 - 680	650,00	HV280 0670-04-100
680 - 690	660,00	HV280 0680-04-100
690 - 700	670,00	HV280 0690-04-100
700 - 710	680,00	HV280 0700-04-100
710 - 720	689,00	HV280 0710-04-100
720 - 730	699,00	HV280 0720-04-100
730 - 740	709,00	HV280 0730-04-100
740 - 750	718,00	HV280 0740-04-100
750 - 758	728,00	HV280 0750-04-100
758 - 766	735,00	HV280 0760-04-100
766 - 774	743,00	HV280 0770-04-100
774 - 783	751,00	HV280 0780-04-100
783 - 792	759,00	HV280 0790-04-100
792 - 801	768,00	HV280 0800-04-100
801 - 810	777,00	HV280 0810-04-100
810 - 821	786,00	HV280 0820-04-100
821 - 831	796,00	HV280 0830-04-100
831 - 841	805,00	HV280 0840-04-100
841 - 851	814,00	HV280 0850-04-100
851 - 861	824,00	HV280 0860-04-100
861 - 871	833,00	HV280 0870-04-100
871 - 882	843,00	HV280 0880-04-100
882 - 892	853,00	HV280 0890-04-100
892 - 912	871,00	HV280 0900-04-100
912 - 922	880,00	HV280 0920-04-100
922 - 933	890,00	HV280 0930-04-100
933 - 944	900,00	HV280 0940-04-100
944 - 955	911,00	HV280 0950-04-100



Typ VE (04)

dn	d	Part N°
955 - 966	921,00	HV280 0960-04-100
966 - 977	932,00	HV280 0970-04-100
977 - 988	942,00	HV280 0980-04-100
988 - 999	953,00	HV280 0990-04-100
999 - 1010	963,00	HV280 1000-04-100
1010 - 1025	973,00	HV280 1020-04-100
1025 - 1045	990,00	HV280 1040-04-100
1045 - 1065	1008,00	HV280 1060-04-100
1065 - 1085	1027,00	HV280 1080-04-100
1085 - 1105	1045,00	HV280 1100-04-100
1105 - 1125	1065,00	HV280 1120-04-100
1125 - 1145	1084,00	HV280 1140-04-100
1145 - 1165	1103,00	HV280 1160-04-100
1165 - 1185	1121,00	HV280 1180-04-100
1185 - 1205	1139,00	HV280 1200-04-100
1205 - 1225	1157,00	HV280 1220-04-100
1225 - 1245	1176,00	HV280 1240-04-100
1245 - 1270	1195,00	HV280 1260-04-100
1270 - 1295	1218,00	HV280 1280-04-100
1296 - 1315	1240,00	HV280 1300-04-100

dn	d	Part N°
1315 - 1340	1259,00	HV280 1325-04-100
1340 - 1365	1281,00	HV280 1350-04-100
1365 - 1390	1305,00	HV280 1375-04-100
1390 - 1415	1328,00	HV280 1400-04-100
1415 - 1440	1350,00	HV280 1425-04-100
1440 - 1465	1374,00	HV280 1450-04-100
1465 - 1490	1397,00	HV280 1475-04-100
1490 - 1515	1419,00	HV280 1500-04-100
1515 - 1540	1443,00	HV280 1525-04-100
1540 - 1570	1467,00	HV280 1550-04-100
1570 - 1600	1495,00	HV280 1575-04-100
1600 - 1640	1524,00	HV280 1600-04-100
1640 - 1680	1559,00	HV280 1650-04-100
1680 - 1720	1596,00	HV280 1700-04-100
1720 - 1765	1632,00	HV280 1750-04-100
1765 - 1810	1671,00	HV280 1800-04-100
1810 - 1855	1714,00	HV280 1850-04-100
1855 - 1905	1753,00	HV280 1900-04-100
1905 - 1955	1794,00	HV280 1950-04-100
1955 - 2010	1844,00	HV280 2000-04-100

These sizes also available in FPM, Silcon und CR.

Example of ordering :

HV 280 0770 - 03 - 100 - ...

Profile
Nominal diameter
Design code
Standard material
HME internal code

Material Key:

100 - NBR
120 - FPM
180 - Silicon
185 - CR

Design Key:

01 - VA
02 - VS
03 - VL
04 - VE

Issue
01 | 24

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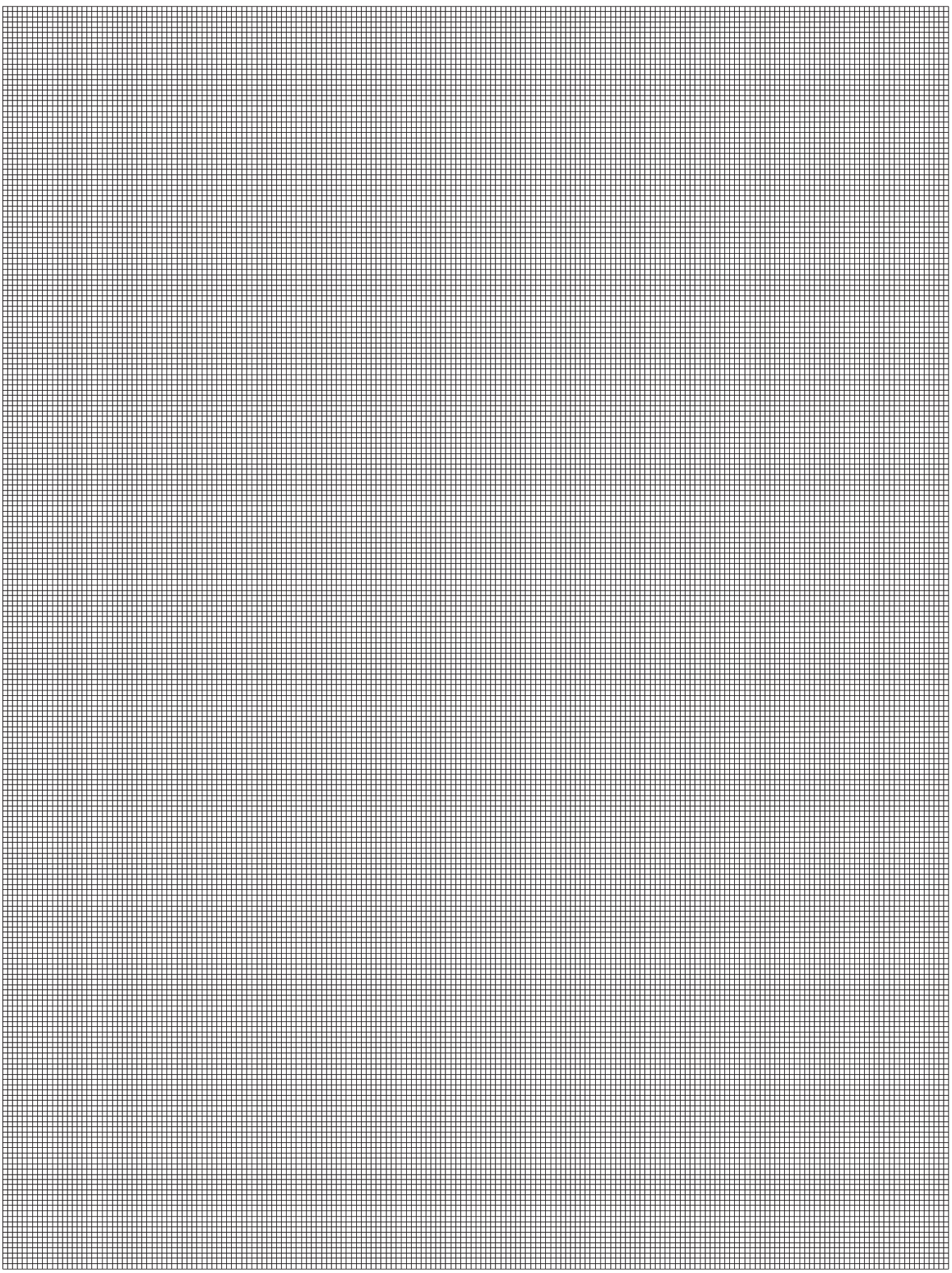

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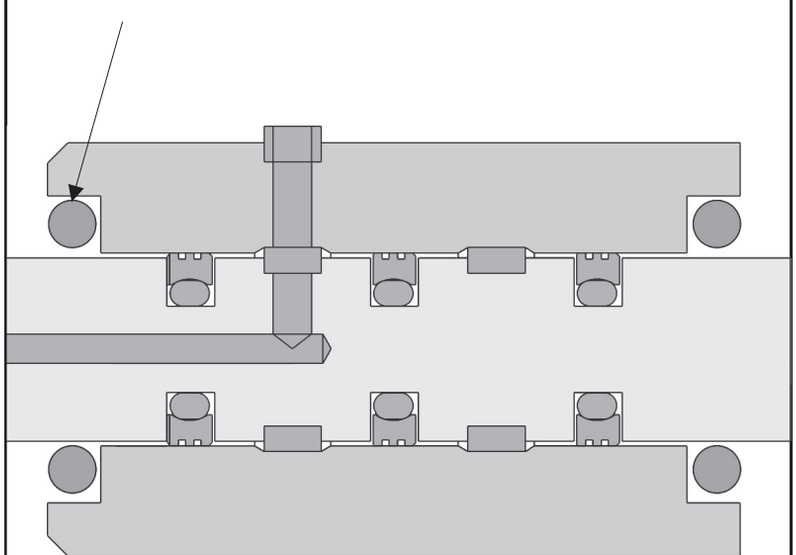
Standard types of shaft seals
Technical data:
- Description of rotary shaft seals
- Functional principle
- Metallic housing
- Draw spring
- Elastomeric sealing materials
Mounting and operation:
- Shaft
- Housing bore
- Lubrication
- Temperature
- Pressure
Manufacturing and Quality assureance:
- Press fit allowance and permissible eccentricity
- Final inspection standard
Dina Seal (HW 500)
Storage and Handling
Table of sizes
Example for ordering

Shaft seal is an indespensable component for packing / sealing of rotary shafts in many maschine construction applications. A careful choice with regards to the proper form and suitable material ensures long service life and safe functioning of the component.

Special Features:

- Good wear resistance, low friction
- small housings and easy to produce
- Wide choice of sizes and forms
- High rotational velocity possible
- Many sizes also available in FPM and silicones
- Niro Steel springs for special applications also available

Material : Rubber elastomer / metal combination
Operational pressure : up to 0.8 Mpa (8 bar) as per construction
Velocity : rotary to 38 m/s (depending on material)
Temperature : -60° C up to +220° C (depending on material)



Standard Types of shaft seals (as per DIN 3760)

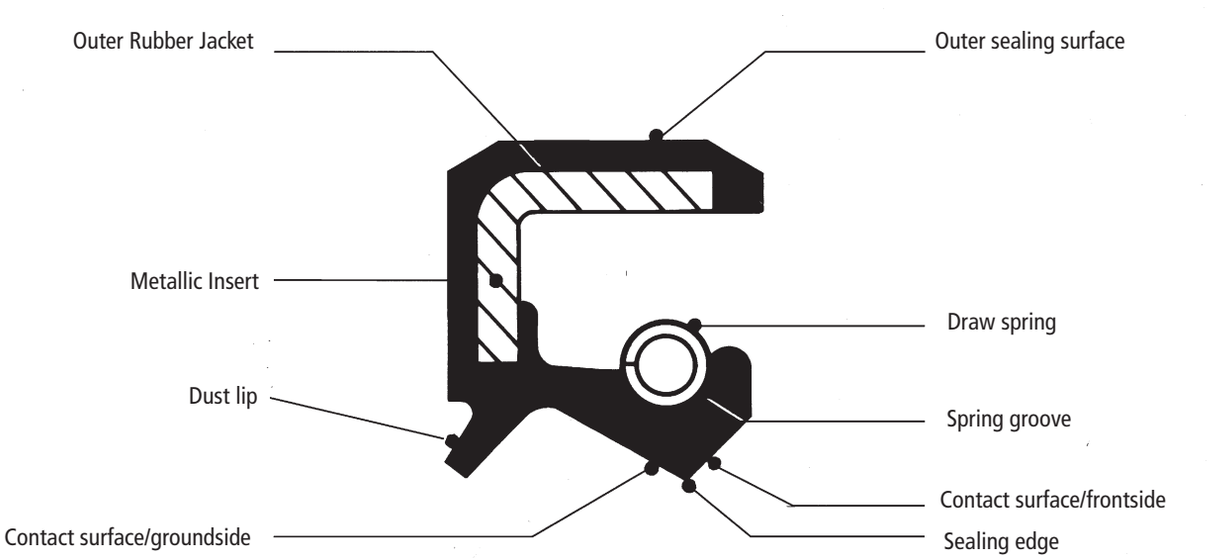
HW 400		A (HW400)	Vulcanised metal cage sealing lip with draw spring
HW 410		AS (HW410)	Vulcanised metal cage sealing lip with draw spring and additional dust lip
HW 420		C (HW420)	Metallic housing with reinforcing / stiffening cover / cap sealing lip with draw spring
HW 430		CS (HW430)	Metallic housing with reinforcing / stiffening cover / cap sealing lip with draw spring and additional dust lip
HW 440		B (HW440)	Metallic housing sealing lip with draw spring
HW 450		BS (HW450)	Metallic housing sealing lip with draw spring and additional dust lip
HW 460		P (HW460)	Vulcanised metal cage reinforced sealing lip for excess pressure and additional dust lip
HW 470		O (HW470)	Vulcanised metal cage sealing lip without draw spring
HW 480		DUO (HW480)	Vulcanised metal cage twin sealing lip with draw springs
HW 500		DINA (HW500)	Radial wiper / shaft seal without draw spring

Further Types ----------:

For special purpose applications, radial shaft seals with hydrodynamic right, left or variable twist / turn on the sealing lip can also be supplied. Please enquire our customer support department to assistent you.

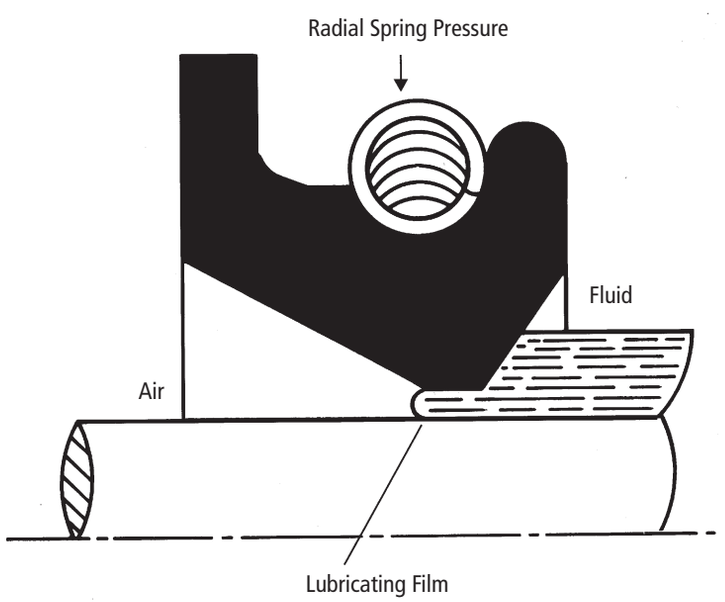
2. Technical Data

2.1. Description of Rotary Shaft Seals



2.2 Functional Principle

The space between the sealing kip and the shaft is very important. Sealing effect is achieved through pre/stressing of the sealing lip, in that the internal diameter of the sealing lip is chosen to be slightly smaller than the shaft diameter. The draw spring provides for constant pressure maintains radial pressure on the shaft thus the sealing edge is flattened to a certain width. A thin fluid films builds up under the flattened area, obtained. Its thickness (film) should be 1 to 3 um to avoid leakage. The lubricating film works as an interface between eht external air and the fluid. A fissure in this film of lubricant leads to leakage. Thus can occur if the shaft causes cracks in sealng surface / area (see drawing)



2.3. Metallic Housing

Metal inserts or the housing are used to impart stability and strength to the seal. They are usually made from cold rolled steel as per DIN 1624.

To avoid rusting and chemical attack, stainless steel can be used.
- Chromium-Nickel AISI 304 (DIN 1.4301 - V2A)
- Chromium-Nickel-Molybdän AISI 316 TI (DIN 1.4401 - V4A)

2.4. Draw Spring

This serves to maintain the radial force that is exercising by the sealing lip on the shaft surface. It is usually made from harmonic spring steel wire C 72 or stainless Chromium/Nickel steel wire AISI 302 (DIN 1.4300)

For special purpose applications, stainless steel springs in AISI 316 TI (DIN 1.401 - V4A) are also supplied.

All our standard shaft seals produced from FPM (Viton) material are provided with stainless steel springs as per AISI 302

2.5. Elastomeric Sealants

2.5.1 Nitrile Rubber NBR (HME-material-no. 100)

This elastomer is a copolymer of butadiene and acrylonitrile and is used in conventional applications.

Physical data:
- Operational temperature : -40 °C up to +120 °C (+90 °C in water)
- Tensile strength : to 15 Mpa
- Standard colour : black

Advantages:
- Good resistance to mineral oils and lubicating greases
- Good resistance to water and coolants
- High resistance to cracking

Limitations:
- Low resistance to mixed hypoid oils
- Low resistance to oxygen, weathering and sunlight
- Low resistance to polar fluids like Kentone, Ethers and Esters
- Low resistance to chlorine containing hydro carbons like Tetrachloride, Trichlorethylene)
- Low resistance to aromatic solvents
- No resistance to truck brake oils (based with glycol)

2.5.2 Fluoro elastomers / Rubber FPM (HME-material-no. 120)

Mainly known by trade names such as VITON from DUPONT, TECHNOFLON from MONTEDISON an FLUOREL from 3M. It posseses good chemical resistance and is recommended for high temperature use.

Physical data:
- Operational temperature : -30 °C up to +200 °C
- Tensile strength : to 15 Mpa
- Standar colour : brown

Advantages:
- Outstanding resistance to mineral oils and strongly mixed hypoid oils
- Outstanding resistance to acids

- Outstanding resistance to aromatic and chlorine containing hydrocarbons.
- Outstanding resistance to ageing, oxygen and weathering.

Limitations**:**
- Restricted low temperature flexibility
- Low resistance to polar fluids such as Ketones, Ethers, Esters)

2.5.3 Silicone Rubber SIL (HME-material-no. 180)
Also known as MVQ

Physical data:
- Operational temperature : -60 °C up to +220 °C
- Tensile strength : to 3-7 Mpa
- Standard colour : red

Advantages:
- Retains flexibility even at low (very low) temperatures
- Withstands contiued haeating even at very high temperatures without hardening
- Restistant to mineral oils and lubricant greases
- Outstanding resistance to ageing, weathering and oxygen
- Good alkali resistance

Limitations:
- Not recommended for use with hydrocarbons such as fuels or paraffins, light petroleum oils and steam pressure above 3,5 bar.
- Not resistand to hot water, acids and non mineral truck brake fluids
- Low tensile and cracking resistance
- Poor resistance to wear an tear

3. Mounting and Operating

3.1. Shaft

Shaft surface finish is extremely important for effective sealing and longer service life. Basically, surface hardness of the (running) face must increase with increasing peripheral velocity of shaft.

As per DIN 3760 the requisite minimal hardness should be 45 HRC. This hardness should be 55 HRC at 4 m/s and 60 HRC at 10 m/s. Lubrication is also very important. This is discussed further part 3.3 of this catalogue. As specified by DIN 3760, surface finish must be friction and cause higher temperatures. Errors in workmanship and fabrication, scrathes on shaft must be avoided.

Even small defects may contibute to increase in lubricant film thickness, causing leakage. It is a important to avoid parallel chamfering. This can cause pump effect and leakage.

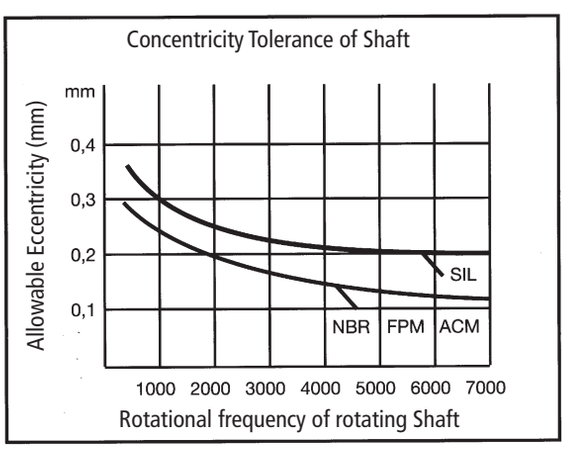
.

Hardened stell is most commonly used for shafts. Process tolerance is h11 in accordance with ISO STANDARD UNI-6388-68 (see table).

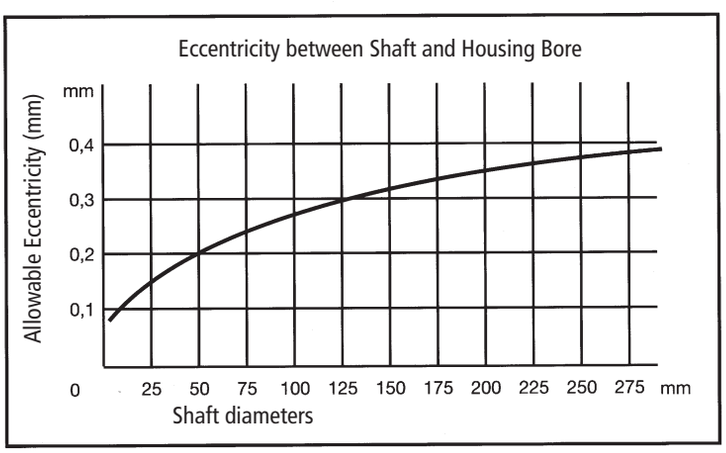
Shaft diameter from (mm)	to (mm)	Tolerance h11
6	10	0,000 - 0,090
10	18	0,000 - 0,110
18	30	0,000 - 0,130
30	50	0,000 - 0,160
50	80	0,000 -0,190

Shaft diameter from (mm)	to (mm)	Tolerance h11
80	120	0,000 -0,220
120	180	0,000 -0,250
180	250	0,000 -0,290
250	315	0,000 - 0,320
315	400	0,000 - 0,360

The most convencent operational conditions are those, when the shaft is perfectly centered and concentric with respect to the axis of the radial shaft seal, while turning. Naturally, this does not always occur and some radial run-out is inevitable. This should be minimized since there is a danger, paarticularly at hight temperaturs, that the sealing edge cannot follow the shaft on account of its inertia.



It is therefore important to place the shaft seal in immediate XXXXXX of the bearing and to keep the bearing clearance as small as possible. Eccentricity betwenn shaft and housing bor should be as low as possible. This significantly reduces unilateral loading / stress (wear) of the sealing lip.



3.2. Housing Bore

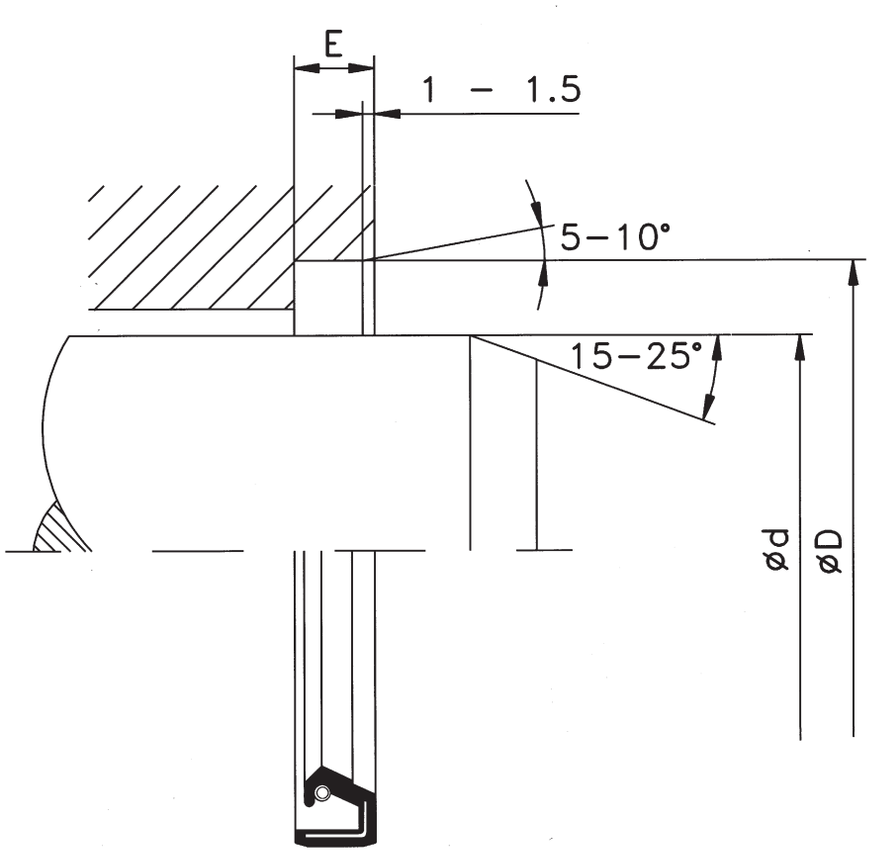
Good pressfit of shaft seal in the housing bore ist of extreme importance.

For bore diameter, the tolerance zone / clearance space H8 is preferred as per ISO Standard UNI-6388-68 (See table)

Bore diameter from (mm)	to (mm)	Tolerance H 8
10	18	+0,027 0,000
18	30	+0,033 0,000
30	50	+0,039 0,000
50	80	+0,046 0,000
80	120	+0,054 0,000

Bore diameter von (mm)	bis (mm)	Tolerance H 8
120	180	+0,063 0,000
180	250	+0,072 0,000
250	315	+0,081 0,000
315	400	+0,081 0,000

As per DIN 3760, maximal surface roughness (peak to valley distance) Rt = 16 µm. We recommend a stopper or safety ring, against which the seal can be fixed. If this is not possible, care should be taken that the seal is in alignment with the axis of shaft. To simplify assembly, the housing should be bevelled between 5° und 10° on the front face - with a depth of 1 mm for rings up to 10 mm thickness - and a depth between 1.2 - 1.5 mm for rings than 10 mm. On the front face, the shaft must also exhibit a bevel with an angle of l15° - 25° with rounded and polished transition.

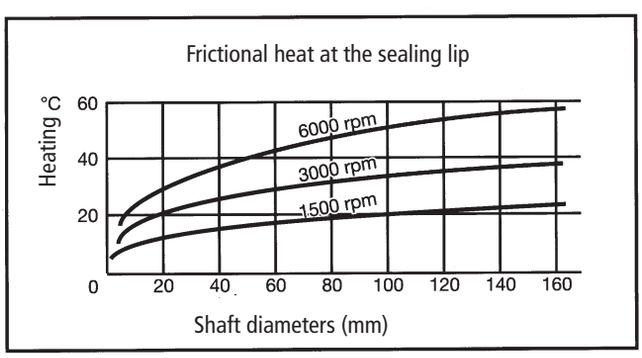


3.3 Lubrication

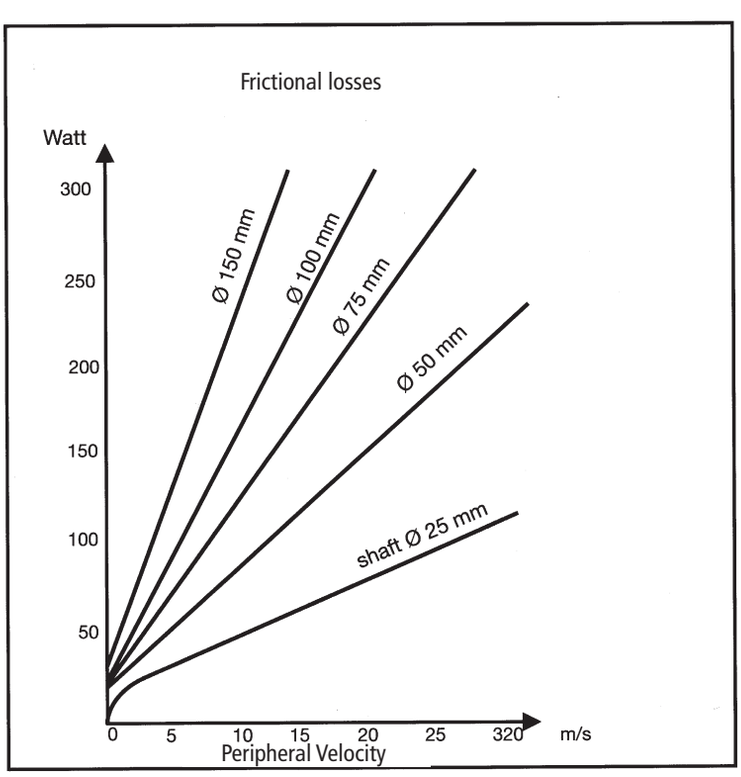
Lubrication is very important for proper functioning of the seal. Actually, the sealing lip does not move directly on the sealing surface but it moves on a so called lubricating film. (see par. 2.2) Film thickness usually is 1-3 µm thought it is influenced by various factors such as oil viscocity, surface finish of shaft and pre-stressing of seal. The first few hours of operation (run in operation) are important from the view point of lubricant film build up and also the flattening of the sealing edge that occurs.

Certain amount of leakage is possible during this period of time.

An adequate lubicatin film strongly reduces the friction between sealing lip and shaft and also acts as coolant against the resulting heat. The lower this temperature, the longer the life of the seal and its endurance. If the liquid possesses merely a low lubricity (like water and aqueous solutions) a shaft sealing system with dust lip (AS, BS, or CS) needs to be used. In this case, take care that the space between the two lips is filled with lubricating greace.



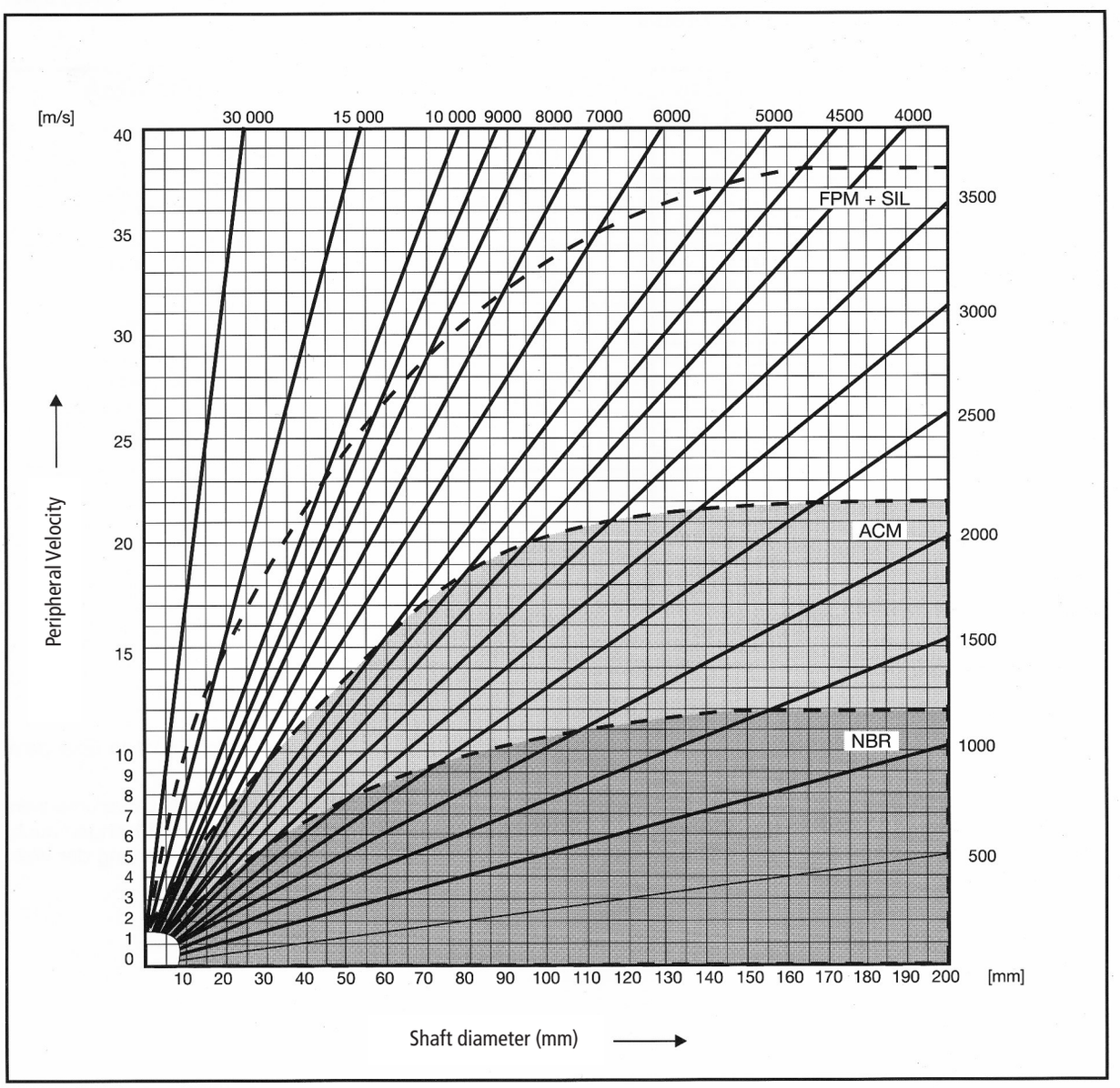
Frictional heat also depends on peripheral velocity of shaft. Friction will not merely harm the sealing lip material but can also lead to frictional losses. When only small forces are being transmitted, this can have an adverse effect.



3.4. Temperature

Temperature at the sealing lip is the temperature of the medium due to frictional heat. The higher the actual service temperature, the faster the ageing process of the elastomer which also influencees the function of the sealing lip and shaft surface.

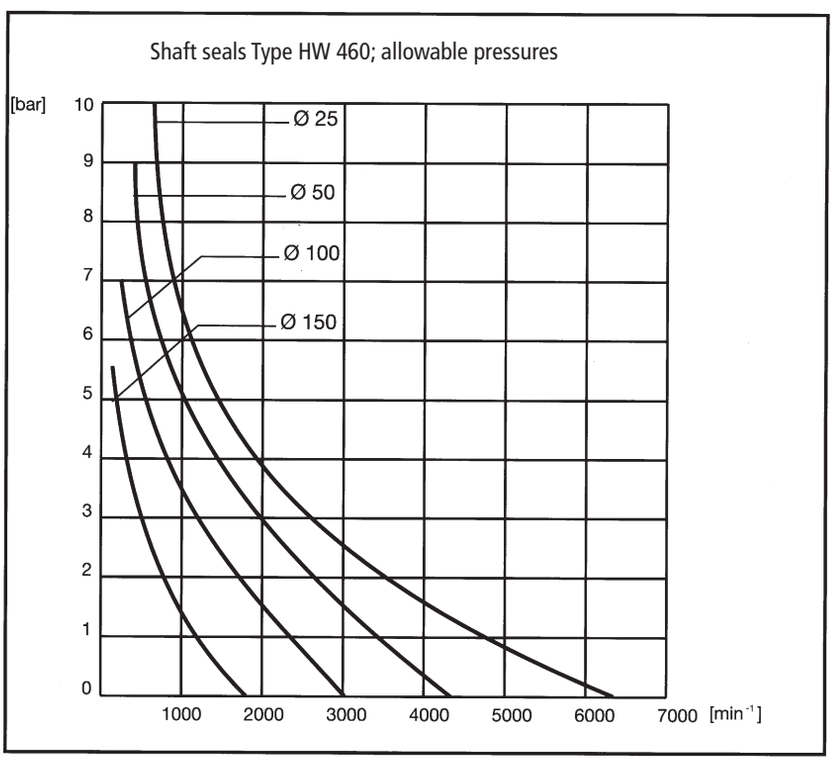
Frictional heat depends on peripheral velocity, pre-stressing on the sealing lip, surface finish of shaft, lubricant medium etc. The graph below shows allowable values with reference to various materials. (Depressurised operation, mineral oil with good lubricity and good thermal dissipation.)



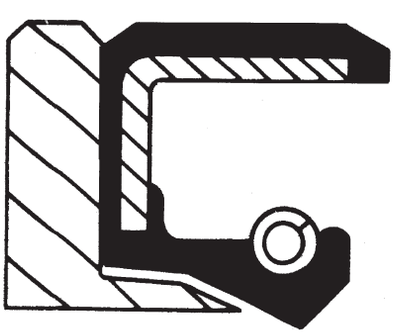
3.5 Pressure

Differential pressure is zero or minimal for most applications. Where the radial shaft seals is subject to pressure, the sealing lip is pressed against the shaft leading to increased temperature. In most cases, incrase in temperature can cause the sealing lip to turn around on axis.

At over 0.2 bar and high RPM or at over 0.5 bar and low RPM , back rings or specially developed radial shaft seals with thick duet lips and supported metal inserts need to be used. In the last case, we refer to our P-typ (HW 460) Inspite of this and the shaft seals of type P, the allowable excess presssure is limited.



On inquiry, we can supply shaft seals that have a specially reinforced sealing lip. These can withstand presssures above the allowable limit given. Standard sizes of radial shaft seals can be used when back rings are assembled. Back rings are costly and the necessary mounting space may not be always available. Many times, back rings cannot be used since they require very careful assembly and a very low radial run out.



Specially develeoped radial shaft seals (P-types) are prefered here, when a more careful assembly and a lower radial run-out than the normal is required.

4. Production and Quality Assurance

Radial rotary shaft seals are manufactured according to German Standard DIN 3760 and Quality assurance standards ISO 9000 ff.

All production phases are checked and all measurements are recorded and stored for eventual tracing.

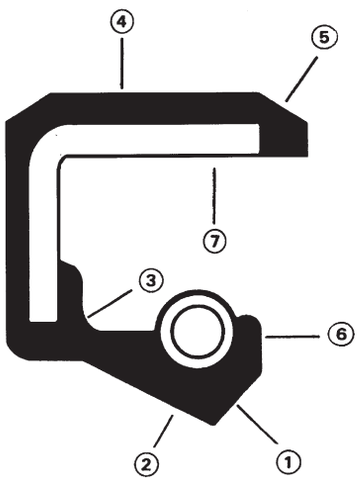
4.1 Press fit allowance and Permissible eccentricity

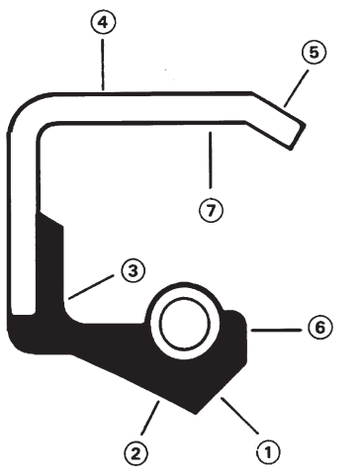
in accordance with German Standard DIN 3760

Outer diameter (mm)		**Press fit allowance** HW400 HW410	HW420 - HW460	**Permissible eccentricity** HW420 - HW460
up	to 50	+0,30 +0,15	+0,20 +0,10	0,25
over 50	to 80	+0,35 +0,20	+0,23 +0,13	0,35
over 80	to 120	+0,35 +0,20	+0,25 +0,15	0,50
over 120	to 180	+0,45 +0,25	+0,28 +0,20	0,65
over 180	to 300	+0,45 +0,25	+0,30 +0,20	0,80
over 300	to 500	+0,55 +0,30	+0,35 +0,23	1,00

4.2 Final Inspection Standard

In accordance with our production standard and DIN 3761 Part 4.





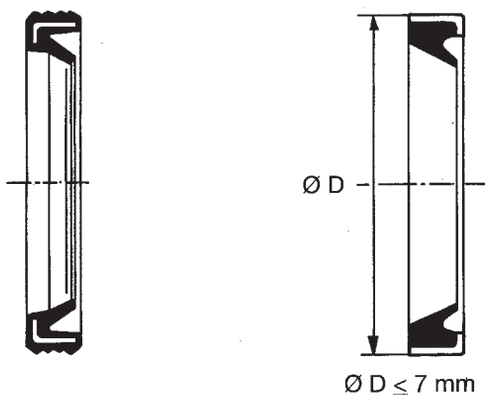
	Zone	Not permitted	Permitted
1 + 2	Sealing Edge 1 = Front side 2 = Back side	Cracks in Sealing Edge	No faults permitted
3	Radius of vulcanisation	Vulcanisation defectsl	
4	External diameter of shaft	faults that may influence seal at its outer diameter	Kleinere Mängel, vorausgesetzt, dass mindestens 2/3 des Außendurchmessers an diesem Punkt in Ordnung sind.
5	Chamfer	faults that adversely influence seal assembly process	
6	Spring retention lip	Contactions that may initiate a split	Small contractions
7	Inner wall	Loose splinters	Splinters that are firmly attached to the inner wall

The contact surface of sealing lip is defined according to DIN 3761 part 4. as follows:

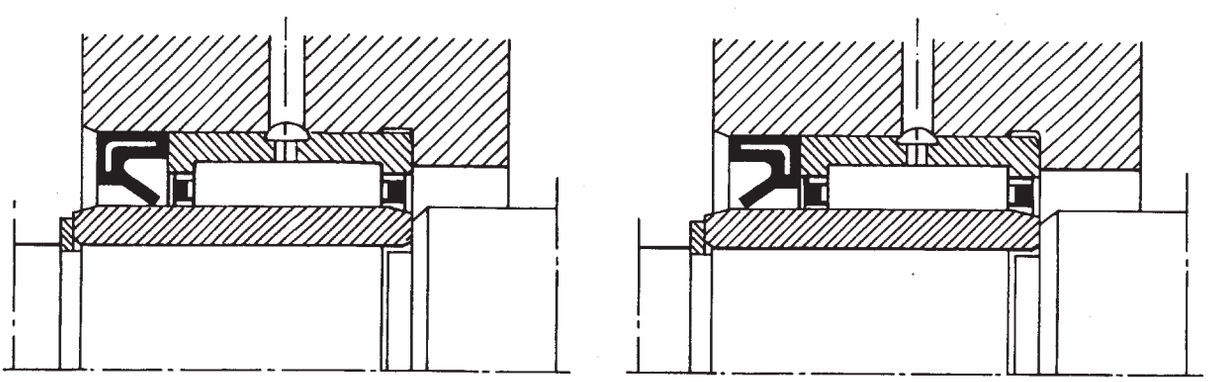
Shaft diameter	Front face width	Back side width
up to 50 mm	0,5 mm	1,2 mm
51 to 120 mm	0,8 mm	1,5 mm
over 121 mm	1,0 mm	2,0 mm

5. DINA SEAL (HW 500)

This specially developed radial shaft seal is meant for use with needle clearings. The DINA SEAL is reinforced with a steel insert and has a single thin sealing lip without spring, which has low frictional losses due to minimal pre-stressing. To ensure a better fit in the bore, the DINA SEAL has a rubber coated outer diameter with the exception of smaller seals up to 7 mm external diameter. These seals have smooth metallic outer diameters.



Standard DINA ring materials are NBR elastomer and carbon steel inserts. For special applications FPM and sil-elastomers and / or stainless steel inserts are available on demand. The DINA SEAL avoids leakage, when it is assembled with the front face towards the needle bearing. It protects the bearing from duet dust and dirty attack if it is used / assembled with the ground side towards the bearing.



6. Storage and Handling

Certain pre-caution must be exercised during storage to avoid material damage. Radial shaft seals must be stored in a dust free and dry environment, and they must remain in their original packaging. This should be opened just before assembly. Specimens should be re-packed after inspection. Excess humidity adversely affects some elastomers and may also initiate corrosion of metal housing and spring.

Do not throw radial shaft seals on shelves, or into boxes, or hang them on wires, hooks or nails. The sealing lip is likely to be damaged. Seals are to be stacked horizontally.

We recommend that seals are stored as per -FIRST IN - FINAL OUT - principle, to avoid ageing on the shelf itself. Avoid storage them in the vicinity of heat sources or electric equipments that can emit ozone. Protect from direct sunlight.

7. Sizes:

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	Part N°.
4,00	8,00	2,00										x	HW..... 0040-01-100
4,00	12,00	6,00	x										HW..... 0040-02-100
5,00	9,00	2,00										x	HW..... 0050-01-100
5,00	10,00	2,00										x	HW..... 0050-02-100
5,00	15,00	6,00	x										HW..... 0050-03-100
5,00	16,00	6,00	x										HW..... 0050-04-100
6,00	10,00	2,00										x	HW..... 0060-01-100
6,00	11,00	4,50				x							HW..... 0060-02-100
6,00	12,00	2,00										x	HW..... 0060-03-100
6,00	12,00	4,50	x										HW..... 0060-04-100
6,00	14,00	6,00	x										HW..... 0060-05-100
6,00	15,00	4,00	x										HW..... 0060-06-100
6,00	16,00	5,00		x									HW..... 0060-07-100
6,00	16,00	7,00	x										HW..... 0060-08-100
6,00	18,00	8,00									x		HW..... 0060-09-100
6,00	19,00	5,00	x										HW..... 0060-10-100
6,00	19,00	6,00	x										HW..... 0060-11-100
6,00	19,00	7,00	x										HW..... 0060-12-100
6,00	22,00	7,00	x										HW..... 0060-13-100
7,00	11,00	2,00										x	HW..... 0070-01-100
7,00	14,00	2,00										x	HW..... 0070-02-100
7,00	14,00	5,00	x										HW..... 0070-03-100
7,00	15,00	5,00	x										HW..... 0070-04-100
7,00	16,00	7,00	x										HW..... 0070-05-100
7,00	18,00	8,00		x									HW..... 0070-06-100
7,00	22,00	7,00	x										HW..... 0070-07-100
7,80	13,70	2,50								x			HW..... 0078-01-100
8,00	12,00	3,00										x	HW..... 0080-01-100
8,00	15,00	3,00										x	HW..... 0080-02-100
8,00	16,00	3,50								x			HW..... 0080-03-100
8,00	16,00	5,00				x	x						HW..... 0080-04-100
8,00	16,00	7,00	x	x									HW..... 0080-05-100
8,00	16,00	10,00									x		HW..... 0080-06-100
8,00	18,00	5,00	x										HW..... 0080-07-100
8,00	18,00	6,00	x	x									HW..... 0080-08-100
8,00	22,00	7,00	x	x									HW..... 0080-09-100
8,00	22,00	8,00	x										HW..... 0080-10-100
8,00	24,00	7,00	x										HW..... 0080-11-100
8,00	25,00	7,00	x										HW..... 0080-12-100
8,50	18,00	7,00	x										HW..... 0085-01-100
9,00	13,00	3,00										x	HW..... 0090-01-100
9,00	16,00	3,00										x	HW..... 0090-02-100
9,00	18,00	7,00		x									HW..... 0090-03-100
9,00	18,00	8,00		x									HW..... 0090-04-100
9,00	20,00	6,00							x				HW..... 0090-05-100
9,00	22,00	7,00	x										HW..... 0090-06-100
9,00	24,00	7,00	x										HW..... 0090-07-100
9,00	26,00	7,00	x										HW..... 0090-08-100
10,00	14,00	3,00										x	HW..... 0100-01-100
10,00	16,00	5,00	x										HW..... 0100-02-100
10,00	16,50	4,00	x										HW..... 0100-03-100
10,00	17,00	3,00										x	HW..... 0100-04-100
10,00	18,00	4,00	x										HW..... 0100-05-100
10,00	18,00	4,80		x									HW..... 0100-06-100
10,00	18,00	6,00	x										HW..... 0100-07-100
10,00	19,00	7,00	x	x									HW..... 0100-08-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
10,00	19,00	9,00		x									HW..... 0100-09-100
10,00	21,00	4,00								x			HW..... 0100-10-100
10,00	22,00	3,00										x	HW..... 0100-11-100
10,00	22,00	6,00	x	x					x				HW..... 0100-12-100
10,00	22,00	7,00	x										HW..... 0100-13-100
10,00	24,00	7,00	x										HW..... 0100-14-100
10,00	26,00	5,50	x										HW..... 0100-15-100
10,00	26,00	7,00	x	x					x				HW..... 0100-16-100
10,00	30,00	7,00	x										HW..... 0100-17-100
11,00	17,00	4,00	x										HW..... 0110-01-100
11,00	22,00	7,00	x										HW..... 0110-02-100
11,00	26,00	7,00	x										HW..... 0110-03-100
11,00	30,00	7,00		x									HW..... 0110-04-100
12,00	16,00	3,00								x		x	HW..... 0120-01-100
12,00	18,00	3,00										x	HW..... 0120-02-100
12,00	18,00	4,00								x			HW..... 0120-03-100
12,00	18,00	4,50		x									HW..... 0120-04-100
12,00	18,35	3,00								x			HW..... 0120-05-100
12,00	19,00	3,00								x		x	HW..... 0120-06-100
12,00	19,00	4,00					x						HW..... 0120-07-100
12,00	19,00	5,00	x										HW..... 0120-08-100
12,00	20,00	4,50					x						HW..... 0120-09-100
12,00	20,00	5,00		x									HW..... 0120-10-100
12,00	22,00	4,00	x										HW..... 0120-11-100
12,00	22,00	5,00	x										HW..... 0120-12-100
12,00	22,00	6,50							x				HW..... 0120-13-100
12,00	22,00	7,00	x	x									HW..... 0120-14-100
12,00	22,00	7,50							x				HW..... 0120-15-100
12,00	24,00	4,50	x										HW..... 0120-16-100
12,00	24,00	6,00	x										HW..... 0120-17-100
12,00	24,00	7,00	x	x									HW..... 0120-18-100
12,00	24,00	10,00									x		HW..... 0120-19-100
12,00	25,00	4,50	x										HW..... 0120-20-100
12,00	25,00	8,00	x										HW..... 0120-21-100
12,00	26,00	8,00	x										HW..... 0120-22-100
12,00	28,00	5,00	x										HW..... 0120-23-100
12,00	28,00	7,00	x	x									HW..... 0120-24-100
12,00	30,00	7,00	x	x			x						HW..... 0120-25-100
12,00	32,00	7,00	x										HW..... 0120-26-100
12,00	35,00	7,00	x										HW..... 0120-27-100
12,50	19,00	5,00	x										HW..... 0125-01-100
12,50	20,00	5,00	x										HW..... 0125-02-100
12,50	20,00	6,00	x										HW..... 0125-03-100
12,50	22,00	4,50	x										HW..... 0125-04-100
12,50	22,00	5,00	x										HW..... 0125-05-100
12,70	22,23	6,35		x									HW..... 0127-01-100
12,70	26,00	6,00	x										HW..... 0127-02-100
12,80	19,40	2,50								x			HW..... 0128-01-100
13,00	19,00	3,00								x		x	HW..... 0130-01-100
13,00	20,00	4,00					x	x					HW..... 0130-02-100
13,00	22,00	4,00	x										HW..... 0130-03-100
13,00	22,00	5,00	x										HW..... 0130-04-100
13,00	22,00	7,00		x									HW..... 0130-05-100
13,00	26,00	5,00	x										HW..... 0130-06-100
13,00	30,00	7,00	x										HW..... 0130-07-100
13,00	35,00	10,00	x										HW..... 0130-08-100
14,00	20,00	3,00										x	HW..... 0140-01-100
14,00	21,00	3,00										x	HW..... 0140-02-100
14,00	22,00	3,00										x	HW..... 0140-03-100
14,00	22,00	4,00	x										HW..... 0140-04-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
14,00	22,00	5,00		x									HW..... 0140-05-100
14,00	24,00	5,00		x									HW..... 0140-06-100
14,00	24,00	6,00					x						HW..... 0140-07-100
14,00	24,00	7,00	x	x									HW..... 0140-08-100
14,00	28,00	7,00	x	x									HW..... 0140-09-100
14,00	30,00	7,00	x										HW..... 0140-10-100
14,00	30,00	8,00	x										HW..... 0140-11-100
14,00	30,00	10,00		x									HW..... 0140-12-100
14,00	35,00	7,00	x										HW..... 0140-13-100
14,00	35,00	10,00	x										HW..... 0140-14-100
15,00	21,00	2,00										x	HW..... 0150-01-100
15,00	21,00	3,00								x		x	HW..... 0150-02-100
15,00	21,00	5,00	x										HW..... 0150-03-100
15,00	22,00	5,00						x					HW..... 0150-04-100
15,00	23,00	3,00										x	HW..... 0150-05-100
15,00	24,00	5,00	x										HW..... 0150-06-100
15,00	24,00	6,00		x									HW..... 0150-07-100
15,00	24,00	7,00	x	x					x				HW..... 0150-08-100
15,00	25,00	3,00								x			HW..... 0150-09-100
15,00	25,00	5,00	x										HW..... 0150-10-100
15,00	25,00	7,00	x										HW..... 0150-11-100
15,00	25,40	5/7		x									HW..... 0150-12-100
15,00	25,50	4,60	x										HW..... 0150-13-100
15,00	26,00	7,00	x	x				x					HW..... 0150-14-100
15,00	27,00	7,00	x	x									HW..... 0150-15-100
15,00	28,00	4,00	x										HW..... 0150-16-100
15,00	28,00	6,00	x										HW..... 0150-17-100
15,00	28,00	7,00									x		HW..... 0150-18-100
15,00	30,00	4,50	x										HW..... 0150-19-100
15,00	30,00	7,00	x										HW..... 0150-20-100
15,00	30,00	10,00	x	x									HW..... 0150-21-100
15,00	32,00	7,00	x										HW..... 0150-22-100
15,00	32,00	7,00		x									HW..... 0150-23-100
15,00	35,00	6/7						x					HW..... 0150-24-100
15,00	35,00	5,00	x										HW..... 0150-25-100
15,00	35,00	6,00						x	x				HW..... 0150-26-100
15,00	35,00	7,00	x	x									HW..... 0150-27-100
15,00	35,00	8,00	x										HW..... 0150-28-100
15,00	35,00	10,00	x										HW..... 0150-29-100
15,00	40,00	10,00	x										HW..... 0150-30-100
15,00	42,00	7,00	x										HW..... 0150-31-100
15,00	42,00	10,00									x		HW..... 0150-32-100
15,00	50,00	7,00	x										HW..... 0150-33-100
16,00	22,00	3,00										x	HW..... 0160-01-100
16,00	22,20	4,00	x										HW..... 0160-02-100
16,00	22,70	2,00								x			HW..... 0160-03-100
16,00	24,00	3,00								x		x	HW..... 0160-04-100
16,00	24,00	5,00	x										HW..... 0160-05-100
16,00	25,00	3,00										x	HW..... 0160-06-100
16,00	26,00	7,00	x										HW..... 0160-07-100
16,00	28,00	7,00	x	x					x				HW..... 0160-08-100
16,00	30,00	5,00	x										HW..... 0160-09-100
16,00	30,00	6,00	x										HW..... 0160-10-100
16,00	30,00	6,60	x										HW..... 0160-11-100
16,00	30,00	7,00	x										HW..... 0160-12-100
16,00	32,00	7,00	x										HW..... 0160-13-100
16,00	32,00	9,00	x										HW..... 0160-14-100
16,00	35,00	6/8									x		HW..... 0160-15-100
16,00	35,00	7,00	x										HW..... 0160-16-100
16,00	35,00	10,00	x										HW..... 0160-17-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
16,00	40,00	10,00	x										HW..... 0160-18-100
17,00	23,00	3,00										x	HW..... 0170-01-100
17,00	25,00	3,00										x	HW..... 0170-02-100
17,00	25,00	4,00	x										HW..... 0170-03-100
17,00	26,00	6,00	x										HW..... 0170-04-100
17,00	28,00	6,00	x										HW..... 0170-05-100
17,00	28,00	7,00	x	x			x		x				HW..... 0170-06-100
17,00	28,00	7,30	x										HW..... 0170-07-100
17,00	28,00	8,00	x								x		HW..... 0170-08-100
17,00	30,00	5,00	x	x									HW..... 0170-09-100
17,00	30,00	7,00	x	x									HW..... 0170-10-100
17,00	32,00	5,00	x										HW..... 0170-11-100
17,00	32,00	7,00	x										HW..... 0170-12-100
17,00	35,00	7,00	x	x					x				HW..... 0170-13-100
17,00	35,00	8,00	x	x									HW..... 0170-14-100
17,00	37,00	4,00	x										HW..... 0170-15-100
17,00	40,00	7/7,5							x				HW..... 0170-16-100
17,00	40,00	7,00	x	x									HW..... 0170-17-100
17,00	40,00	8,50	x										HW..... 0170-18-100
17,00	40,00	10,00	x										HW..... 0170-19-100
17,00	47,00	7,00	x										HW..... 0170-20-100
17,46	23,81	3,18								x			HW..... 0175-01-100
17,46	31,75	7,93									x		HW..... 0175-02-100
17,80	26,20	3,50	x										HW..... 0178-01-100
18,00	24,00	3,00										x	HW..... 0180-01-100
18,00	24,00	4,00								x		x	HW..... 0180-02-100
18,00	26,00	4,00										x	HW..... 0180-03-100
18,00	27,00	4,00										x	HW..... 0180-04-100
18,00	28,00	7,00	x	x									HW..... 0180-05-100
18,00	30,00	5,00	x										HW..... 0180-06-100
18,00	30,00	7,00	x	x									HW..... 0180-07-100
18,00	30,00	8,00									x		HW..... 0180-08-100
18,00	32,00	7,00	x	x									HW..... 0180-09-100
18,00	32,00	8,00	x								x		HW..... 0180-10-100
18,00	35,00	7,00	x										HW..... 0180-11-100
18,00	35,00	8,00	x										HW..... 0180-12-100
18,00	35,00	10,00	x										HW..... 0180-13-100
18,00	40,00	7,00	x										HW..... 0180-14-100
19,00	27,00	4,00										x	HW..... 0190-01-100
19,00	27,00	6,00	x										HW..... 0190-02-100
19,00	27,20	5,00							x				HW..... 0190-03-100
19,00	30,00	7,00		x			x						HW..... 0190-04-100
19,00	30,50	8,5/11,5		x									HW..... 0190-05-100
19,00	32,00	7,00	x	x									HW..... 0190-06-100
19,00	32,00	10,00	x	x									HW..... 0190-07-100
19,00	35,00	10,00	x										HW..... 0190-08-100
19,00	42,00	7,00	x										HW..... 0190-09-100
19,00	47,00	10,00	x										HW..... 0190-10-100
20,00	26,00	4,00								x		x	HW..... 0200-01-100
20,00	28,00	4,00	x							x		x	HW..... 0200-02-100
20,00	28,00	6,00	x					x					HW..... 0200-03-100
20,00	28,00	7,00	x										HW..... 0200-04-100
20,00	30,00	4,00	x										HW..... 0200-05-100
20,00	30,00	5,00	x	x									HW..... 0200-06-100
20,00	30,00	6,00	x										HW..... 0200-07-100
20,00	30,00	7,00	x	x									HW..... 0200-08-100
20,00	31,00	7,00					x						HW..... 0200-09-100
20,00	32,00	7,00	x	x			x						HW..... 0200-10-100
20,00	34,10	10/13		x									HW..... 0200-11-100
20,00	35,00	7/7,5							x				HW..... 0200-12-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
20,00	35,00	5,00	x										HW..... 0200-13-100
20,00	35,00	6,00		x					x				HW..... 0200-14-100
20,00	35,00	7,00	x	x									HW..... 0200-15-100
20,00	35,00	8,00	x										HW..... 0200-16-100
20,00	35,00	10,00	x										HW..... 0200-17-100
20,00	37,00	8,00	x										HW..... 0200-18-100
20,00	38,00	7,00	x										HW..... 0200-19-100
20,00	38,00	8,00	x	x									HW..... 0200-20-100
20,00	40,00	8/13						x					HW..... 0200-21-100
20,00	40,00	6,00		x									HW..... 0200-22-100
20,00	40,00	7,00	x	x									HW..... 0200-23-100
20,00	40,00	8,00	x										HW..... 0200-24-100
20,00	40,00	10,00	x										HW..... 0200-25-100
20,00	42,00	6,00	x	x									HW..... 0200-26-100
20,00	42,00	7,00	x	x									HW..... 0200-27-100
20,00	42,00	10,00	x	x									HW..... 0200-28-100
20,00	45,00	7,00		x									HW..... 0200-29-100
20,00	47,00	7,00	x	x									HW..... 0200-30-100
20,00	47,00	8,00	x										HW..... 0200-31-100
20,00	47,00	10,00	x		x			x					HW..... 0200-32-100
20,00	48,40	7,00	x										HW..... 0200-33-100
20,00	52,00	7,00	x										HW..... 0200-34-100
20,00	52,00	10,00	x	x									HW..... 0200-35-100
20,00	72,00	10,00	x										HW..... 0200-36-100
20,40	27,15	2,00								x			HW..... 0204-01-100
21,00	29,00	4,00										x	HW..... 0210-01-100
21,00	40,00	7,00		x									HW..... 0210-02-100
21,80	38,10	6,35	x										HW..... 0218-01-100
22,00	28,00	4,00										x	HW..... 0220-01-100
22,00	30,00	4,00										x	HW..... 0220-02-100
22,00	32,00	7/9						x					HW..... 0220-03-100
22,00	32,00	5,50	x										HW..... 0220-04-100
22,00	32,00	7,00	x	x					x				HW..... 0220-05-100
22,00	35,00	10/13		x									HW..... 0220-06-100
22,00	35,00	6/6,5							x				HW..... 0220-07-100
22,00	35,00	7,00	x	x									HW..... 0220-08-100
22,00	35,00	8,00	x										HW..... 0220-09-100
22,00	35,00	10,00	x	x									HW..... 0220-10-100
22,00	40,00	8/11,5		x									HW..... 0220-11-100
22,00	40,00	7,00	x	x									HW..... 0220-12-100
22,00	40,00	8,00	x										HW..... 0220-13-100
22,00	42,00	10,00			x								HW..... 0220-14-100
22,00	45,00	7,00	x										HW..... 0220-15-100
22,00	47,00	7,00	x	x									HW..... 0220-16-100
22,00	47,00	10,00	x										HW..... 0220-17-100
22,00	62,00	7,00	x										HW..... 0220-18-100
22,20	34,90	6,35	x										HW..... 0222-01-100
22,23	38,10	6,35	x										HW..... 0222-02-100
22,70	47,00	7,00	x										HW..... 0227-01-100
23,00	30,00	4,00								x			HW..... 0230-01-100
23,00	47,00	10,00	x	x									HW..... 0230-02-100
23,70	45,00	8,00					x						HW..... 0237-01-100
23,81	36,51	6,35	x										HW..... 0238-01-100
24,00	32,00	4,00										x	HW..... 0240-01-100
24,00	35,00	7,00	x				x						HW..... 0240-02-100
24,00	36,00	7,00	x	x									HW..... 0240-03-100
24,00	37,00	7,00	x										HW..... 0240-04-100
24,00	40,00	7,00	x	x					x				HW..... 0240-05-100
24,00	40,00	8,00		x									HW..... 0240-06-100
24,00	40,00	10,00	x										HW..... 0240-07-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
24,00	42,00	8,00	x										HW..... 0240-08-100
24,00	45,00	7,00		x									HW..... 0240-09-100
24,00	47,00	7,00	x										HW..... 0240-10-100
24,00	48,00	10,00	x										HW..... 0240-11-100
24,00	50,00	10,00	x										HW..... 0240-12-100
24,00	52,00	10,00	x										HW..... 0240-13-100
24,50	33,00	5,00	x										HW..... 0245-01-100
24,50	40,00	8,50	x										HW..... 0245-02-100
24,90	45,00	6,50	x										HW..... 0249-01-100
25,00	32,00	4,00										x	HW..... 0250-01-100
25,00	32,00	5,00					x						HW..... 0250-02-100
25,00	32,00	6,00	x										HW..... 0250-03-100
25,00	33,00	4,00	x									x	HW..... 0250-04-100
25,00	35,00	6/6,5							x				HW..... 0250-05-100
25,00	35,00	4,00								x		x	HW..... 0250-06-100
25,00	35,00	5,00	x										HW..... 0250-07-100
25,00	35,00	6,00	x						x				HW..... 0250-08-100
25,00	35,00	7,00	x	x									HW..... 0250-09-100
25,00	35,00	8,50	x										HW..... 0250-10-100
25,00	37,00	5,00	x										HW..... 0250-11-100
25,00	37,00	7,00	x	x									HW..... 0250-12-100
25,00	38,00	7,00	x	x									HW..... 0250-13-100
25,00	40,00	10/9,5									x		HW..... 0250-14-100
25,00	40,00	7,00	x	x			x						HW..... 0250-15-100
25,00	40,00	8,00	x	x							x		HW..... 0250-16-100
25,00	42,00	6,00	x										HW..... 0250-17-100
25,00	42,00	7,00	x	x									HW..... 0250-18-100
25,00	42,00	8,50	x	x									HW..... 0250-19-100
25,00	42,00	10,00	x	x									HW..... 0250-20-100
25,00	42,00	14,00									x		HW..... 0250-21-100
25,00	43,00	9,00	x										HW..... 0250-22-100
25,00	45,00	10,00	x										HW..... 0250-23-100
25,00	46,00	7,00	x										HW..... 0250-24-100
25,00	47,00	8/11,5		x									HW..... 0250-25-100
25,00	47,00	7,00	x	x									HW..... 0250-26-100
25,00	47,00	8,00	x										HW..... 0250-27-100
25,00	47,00	8,70		x									HW..... 0250-28-100
25,00	47,00	10,00	x	x	x								HW..... 0250-29-100
25,00	47,00	12,00									x		HW..... 0250-30-100
25,00	49,00	10/15		x									HW..... 0250-31-100
25,00	50,00	10,00	x	x									HW..... 0250-32-100
25,00	52,00	5,00	x										HW..... 0250-33-100
25,00	52,00	7,00	x	x									HW..... 0250-34-100
25,00	52,00	8,00	x	x									HW..... 0250-35-100
25,00	52,00	10,00	x	x	x								HW..... 0250-36-100
25,00	62,00	7,00		x									HW..... 0250-37-100
25,00	62,00	10,00	x	x									HW..... 0250-38-100
25,40	35,00	7,00		x									HW..... 0254-01-100
25,40	36,52	6,35						x					HW..... 0254-02-100
25,40	38,18	6,50					x						HW..... 0254-03-100
25,40	41,35	6,35					x						HW..... 0254-04-100
25,40	44,45	9,53	x										HW..... 0254-05-100
25,40	52,00	7,00		x									HW..... 0254-06-100
25,70	35,00	7/9						x					HW..... 0257-01-100
26,00	34,00	4,00										x	HW..... 0260-01-100
26,00	35,00	7,00	x	x			x						HW..... 0260-02-100
26,00	36,00	7,00	x	x									HW..... 0260-03-100
26,00	37,00	7/8		x									HW..... 0260-04-100
26,00	37,00	7,00	x										HW..... 0260-05-100
26,00	42,00	7,00	x										HW..... 0260-06-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
26,00	47,00	7,00	x										HW..... 0260-07-100
26,00	50,00	10,00	x										HW..... 0260-08-100
26,00	50,00	12,00			x								HW..... 0260-09-100
26,00	52,00	8,00	x										HW..... 0260-10-100
26,00	52,00	10,00		x									HW..... 0260-11-100
26,50	47,00	7,00	x										HW..... 0265-01-100
27,00	37,00	7,00	x										HW..... 0270-01-100
27,00	41,00	10,00	x										HW..... 0270-02-100
27,00	47,00	10/12		x									HW..... 0270-03-100
27,00	47,00	6,00	x										HW..... 0270-04-100
27,00	47,00	7,00	x	x									HW..... 0270-05-100
27,00	51,00	10,00		x									HW..... 0270-06-100
28,00	35,00	4,00										x	HW..... 0280-01-100
28,00	37,00	4,00										x	HW..... 0280-02-100
28,00	38,00	6,00	x										HW..... 0280-03-100
28,00	38,00	7,00	x	x									HW..... 0280-04-100
28,00	40,00	8/8,5							x				HW..... 0280-05-100
28,00	40,00	7,00	x	x					x				HW..... 0280-06-100
28,00	40,00	10,00	x										HW..... 0280-07-100
28,00	42,00	7,00	x				x						HW..... 0280-08-100
28,00	42,00	10,00	x										HW..... 0280-09-100
28,00	43,00	10,00	x										HW..... 0280-10-100
28,00	47,00	7,00	x	x									HW..... 0280-11-100
28,00	47,00	8,00	x										HW..... 0280-12-100
28,00	47,00	10,00	x										HW..... 0280-13-100
28,00	50,00	10,00	x										HW..... 0280-14-100
28,00	52,00	5,00	x										HW..... 0280-15-100
28,00	52,00	6,00	x										HW..... 0280-16-100
28,00	52,00	7,00	x										HW..... 0280-17-100
28,00	52,00	10,00	x	x									HW..... 0280-18-100
28,00	57,00	12,00	x										HW..... 0280-19-100
28,00	62,00	12,00	x										HW..... 0280-20-100
28,45	38,10	6,35	x										HW..... 0285-01-100
28,57	45,24	6,35		x									HW..... 0286-01-100
28,58	38,10	6,35	x										HW..... 0286-02-100
28,58	41,28	9,52		x									HW..... 0286-03-100
29,00	38,00	4,00										x	HW..... 0290-01-100
29,00	40,00	7,00	x										HW..... 0290-02-100
29,00	45,00	9,50	x										HW..... 0290-03-100
30,00	37,00	4,00										x	HW..... 0300-01-100
30,00	38,00	5,00					x						HW..... 0300-02-100
30,00	40,00	4,00	x							x		x	HW..... 0300-03-100
30,00	40,00	5,00	x										HW..... 0300-04-100
30,00	40,00	7,00	x	x									HW..... 0300-05-100
30,00	42,00	6,00		x									HW..... 0300-06-100
30,00	42,00	7,00	x	x					x				HW..... 0300-07-100
30,00	42,00	8,00		x									HW..... 0300-08-100
30,00	43,00	8,00					x						HW..... 0300-09-100
30,00	44,00	10,00	x	x									HW..... 0300-10-100
30,00	45,00	5,00	x										HW..... 0300-11-100
30,00	45,00	8,00	x										HW..... 0300-12-100
30,00	47,00	5,00	x										HW..... 0300-13-100
30,00	47,00	6,00	x										HW..... 0300-14-100
30,00	47,00	7,00	x	x					x				HW..... 0300-15-100
30,00	47,00	8,00	x	x									HW..... 0300-16-100
30,00	47,00	10,00	x	x									HW..... 0300-17-100
30,00	48,00	8,00	x										HW..... 0300-18-100
30,00	50,00	5,00	x										HW..... 0300-19-100
30,00	50,00	7,00	x						x				HW..... 0300-20-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
30,00	50,00	8,00	x	x									HW..... 0300-21-100
30,00	50,00	10,00	x	x	x								HW..... 0300-22-100
30,00	50,00	12,00			x								HW..... 0300-23-100
30,00	52,00	10/12		x									HW..... 0300-24-100
30,00	52,00	4,00	x										HW..... 0300-25-100
30,00	52,00	7,00	x	x				x					HW..... 0300-26-100
30,00	52,00	10,00	x	x									HW..... 0300-27-100
30,00	53,50	12/17,5		x									HW..... 0300-28-100
30,00	53,50	10/14		x									HW..... 0300-29-100
30,00	55,00	7/9							x				HW..... 0300-30-100
30,00	55,00	7,00	x										HW..... 0300-31-100
30,00	55,00	10,00	x	x									HW..... 0300-32-100
30,00	55,00	12,00					x						HW..... 0300-33-100
30,00	56,00	10,00	x										HW..... 0300-34-100
30,00	56,00	12,00			x								HW..... 0300-35-100
30,00	60,00	10,00	x										HW..... 0300-36-100
30,00	62,00	7,00	x	x									HW..... 0300-37-100
30,00	62,00	10,00	x	x	x								HW..... 0300-38-100
30,00	68,00	7,00	x										HW..... 0300-39-100
30,00	72,00	10,00	x										HW..... 0300-40-100
30,00	43,64	13,90						x					HW..... 0300-41-100
30,20	50,70	6,35	x										HW..... 0302-01-100
31,00	47,00	7,00	x										HW..... 0310-01-100
31,00	52,00	7,00	x	x									HW..... 0310-02-100
31,00	62,00	4/5	x										HW..... 0310-03-100
31,50	47,00	7,00	x										HW..... 0310-04-100
31,75	40,00	7,00		x									HW..... 0318-01-100
31,75	41,27	6,35		x									HW..... 0318-02-100
31,75	44,60	6,35	x										HW..... 0318-03-100
31,75	47,75	9,6/10,7	x										HW..... 0318-04-100
31,75	50,80	10,00									x		HW..... 0318-05-100
31,75	62,00	7,00		x									HW..... 0318-06-100
32,00	42,00	4,00										x	HW..... 0320-01-100
32,00	42,00	7,00	x	x									HW..... 0320-02-100
32,00	45,00	4,00										x	HW..... 0320-03-100
32,00	45,00	7,00	x	x									HW..... 0320-04-100
32,00	47,00	7,00	x				x	x					HW..... 0320-05-100
32,00	47,00	8,00	x										HW..... 0320-06-100
32,00	47,00	12,00									x		HW..... 0320-07-100
32,00	48,00	7,00		x									HW..... 0320-08-100
32,00	50,00	8,00	x		x								HW..... 0320-09-100
32,00	50,00	10,00	x										HW..... 0320-10-100
32,00	52,00	10/12		x									HW..... 0320-11-100
32,00	52,00	5,00	x										HW..... 0320-12-100
32,00	52,00	7,00	x	x			x						HW..... 0320-13-100
32,00	52,00	7,50	x										HW..... 0320-14-100
32,00	52,00	10,00	x										HW..... 0320-15-100
32,00	52,00	12,00	x										HW..... 0320-16-100
32,00	56,00	10,00	x										HW..... 0320-17-100
32,00	62,00	6/7	x										HW..... 0320-18-100
32,00	62,00	10,00	x	x									HW..... 0320-19-100
32,00	70,00	8,00	x										HW..... 0320-20-100
33,00	45,00	10,00		x									HW..... 0330-01-100
33,00	47,00	11,00	x										HW..... 0330-02-100
33,00	50,00	6,00		x									HW..... 0330-03-100
33,00	50,00	10,00		x									HW..... 0330-04-100
33,00	52,00	6,00	x										HW..... 0330-05-100
33,00	72,00	12,00			x								HW..... 0330-06-100
33,50	50,00	6,00		x									HW..... 0335-01-100
34,00	46,00	10,00	x										HW..... 0340-01-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
34,00	50,00	10.00	x										HW..... 0340-02-100
34,00	52,00	10/12		x									HW..... 0340-03-100
34,00	52,00	8,00	x										HW..... 0340-04-100
34,00	52,00	10,00	x										HW..... 0340-05-100
34,00	62,00	10,00	x										HW..... 0340-06-100
34,90	46,50	7,00					x						HW..... 0349-01-100
34,90	50,80	11,10		x									HW..... 0349-02-100
34,90	53,90	7,90	x										HW..... 0349-03-100
34,90	60,30	12,70	x										HW..... 0349-04-100
35,00	42,00	4,00										x	HW..... 0350-01-100
35,00	42,00	5,00					x						HW..... 0350-02-100
35,00	45,00	4,00										x	HW..... 0350-03-100
35,00	45,00	6,00	x										HW..... 0350-04-100
35,00	45,00	7,00	x	x									HW..... 0350-05-100
35,00	45,00	10,00	x										HW..... 0350-06-100
35,00	47,00	4,50	x										HW..... 0350-07-100
35,00	47,00	6,00	x										HW..... 0350-08-100
35,00	47,00	7,00	x	x									HW..... 0350-09-100
35,00	47,00	10,00	x	x									HW..... 0350-10-100
35,00	50,00	7,00	x						x				HW..... 0350-11-100
35,00	50,00	8,00	x	x									HW..... 0350-12-100
35,00	50,00	10,00	x	x									HW..... 0350-13-100
35,00	52,00	6,00		x					x				HW..... 0350-14-100
35,00	52,00	7,00	x	x									HW..... 0350-15-100
35,00	52,00	8,00	x	x									HW..... 0350-16-100
35,00	52,00	10,00	x	x									HW..... 0350-17-100
35,00	52,00	12,00									x		HW..... 0350-18-100
35,00	53,00	8,00	x										HW..... 0350-19-100
35,00	55,00	8,00	x										HW..... 0350-20-100
35,00	55,00	9,00		x									HW..... 0350-21-100
35,00	55,00	10,00	x										HW..... 0350-22-100
35,00	55,00	10,00		x									HW..... 0350-23-100
35,00	55,50	9,00	x										HW..... 0350-24-100
35,00	56,00	10,00	x	x									HW..... 0350-25-100
35,00	58,00	10,00	x	x									HW..... 0350-26-100
35,00	60,00	10,00	x	x									HW..... 0350-27-100
35,00	62,00	7,00	x	x					x				HW..... 0350-28-100
35,00	62,00	8,00	x	x									HW..... 0350-29-100
35,00	62,00	10,00	x	x									HW..... 0350-30-100
35,00	62,00	12,00		x									HW..... 0350-31-100
35,00	65,00	10,00	x										HW..... 0350-32-100
35,00	67,00	7,00	x										HW..... 0350-33-100
35,00	68,00	10,00	x	x									HW..... 0350-34-100
35,00	70,00	10,00	x										HW..... 0350-35-100
35,00	72,00	7,00		x									HW..... 0350-36-100
35,00	72,00	10,00	x	x									HW..... 0350-37-100
35,00	72,00	12,00	x	x	x								HW..... 0350-38-100
35,00	80,00	10,00	x	x									HW..... 0350-39-100
35,00	80,00	12,00	x										HW..... 0350-40-100
35.20	57,30	12,70			x								HW..... 0352-01-100
36,00	45,00	6,00	x										HW..... 0360-01-100
36,00	47,00	7,00	x	x									HW..... 0360-02-100
36,00	50,00	7,00	x										HW..... 0360-03-100
36,00	50,00	10,00	x										HW..... 0360-04-100
36,00	52,00	7,00	x										HW..... 0360-05-100
36,00	52,00	10,00		x									HW..... 0360-06-100
36,00	54,00	7,50	x										HW..... 0360-07-100
36,00	58,00	10,00	x										HW..... 0360-08-100
36.00	62,00	7,00	x										HW..... 0360-09-100
36,00	63,00	12,00				x							HW..... 0360-10-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	**400**	**410**	**420**	**430**	**440**	**450**	**460**	**470**	**480**	**500**	**Part N°.**
36,00	68,00	10,00	x										HW..... 0360-11-100
36,51	52,58	7,93		x									HW..... 0365-01-100
37,00	47,00	4,00										x	HW..... 0370-01-100
38,00	48,00	4,00										x	HW..... 0370-02-100
38,00	50,00	7,00	x										HW..... 0380-01-100
38,00	52,00	7,00	x	x									HW..... 0380-02-100
38,00	52,00	10,00					x						HW..... 0380-03-100
38,00	54,00	5,00	x										HW..... 0380-04-100
38,00	54,00	10,00	x	x									HW..... 0380-05-100
38,00	55,00	7,00	x										HW..... 0380-06-100
38,00	55,00	10,00	x	x									HW..... 0380-07-100
38,00	56,00	10,00	x										HW..... 0380-08-100
38,00	62,00	7,00	x	x					x				HW..... 0380-09-100
38,00	62,00	10,00	x										HW..... 0380-10-100
38,00	72,00	10,00	x	x									HW..... 0380-11-100
38,10	50,29	12,70	x										HW..... 0381-01-100
38,10	60,32	9,52		x									HW..... 0381-02-100
40,00	47,00	4,00										x	HW..... 0400-01-100
40,00	48,00	4,00										x	HW..... 0400-02-100
40,00	50,00	4,00										x	HW..... 0400-03-100
40,00	50,00	7,00		x									HW..... 0400-04-100
40,00	52,00	5,00							x			x	HW..... 0400-05-100
40,00	52,00	7,00	x	x									HW..... 0400-06-100
40,00	52,00	10,00		x									HW..... 0400-07-100
40,00	54,00	7,00	x										HW..... 0400-08-100
40,00	55,00	7,00	x	x					x				HW..... 0400-09-100
40,00	55,00	8,00	x	x									HW..... 0400-10-100
40,00	55,00	10,00	x										HW..... 0400-11-100
40,00	56,00	6,00							x				HW..... 0400-12-100
40,00	56,00	8,00	x	x									HW..... 0400-13-100
40,00	56,00	8,50								x			HW..... 0400-14-100
40,00	56,00	10,00	x										HW..... 0400-15-100
40,00	58,00	10,00	x	x									HW..... 0400-16-100
40,00	60,00	7,00	x										HW..... 0400-17-100
40,00	60,00	10,00	x	x					x				HW..... 0400-18-100
40,00	62,00	6,00							x				HW..... 0400-19-100
40,00	62,00	7,00	x	x									HW..... 0400-20-100
40,00	62,00	10,00	x	x		x		x					HW..... 0400-21-100
40,00	63,00	10,00	x										HW..... 0400-22-100
40,00	63,50	12,50			x								HW..... 0400-23-100
40,00	65,00	10,00	x										HW..... 0400-24-100
40,00	65,00	12,00	x										HW..... 0400-25-100
40,00	68,00	8,00	x										HW..... 0400-26-100
40,00	68,00	10,00	x	x									HW..... 0400-27-100
40,00	70,00	10,00	x										HW..... 0400-28-100
40,00	72,00	7,00	x	x									HW..... 0400-29-100
40,00	72,00	10,00	x										HW..... 0400-30-100
40,00	80,00	7,00		x									HW..... 0400-31-100
40,00	80,00	10,00	x	x									HW..... 0400-32-100
40,00	82,57	13,00			x								HW..... 0400-33-100
40,00	90,00	9,00			x								HW..... 0400-34-100
40,00	90,00	10,00	x										HW..... 0400-35-100
40,00	90,00	12,00	x	x									HW..... 0400-36-100
40,00	95,00	10,00			x								HW..... 0400-37-100
40,08	50,85	4,10	x										HW..... 0401-01-100
41,27	66,67	9,52	x										HW..... 0413-01-100
41,27	60,33	9,52		x									HW..... 0413-02-100
42,00	52,00	4,00										x	HW..... 0420-01-100
42,00	52,00	8,00		x									HW..... 0420-02-100
42,00	55,00	7,00	x										HW..... 0420-03-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
42.00	55.00	8.00	x										HW..... 0420-04-100
42.00	55.00	10.00		x									HW..... 0420-05-100
42.00	56.00	7.00	x	x									HW..... 0420-06-100
42.00	58.00	10.00	x										HW..... 0420-07-100
42.00	60.00	12.00	x										HW..... 0420-08-100
42.00	62.00	7/7,5							x				HW..... 0420-09-100
42.00	62.00	7.00	x	x									HW..... 0420-10-100
42.00	62.00	8.00	x	x									HW..... 0420-11-100
42.00	62.00	10.00	x	x									HW..... 0420-12-100
42.00	65.00	8.00			x								HW..... 0420-13-100
42.00	65.00	10.00	x										HW..... 0420-14-100
42.00	72.00	8.00	x										HW..... 0420-15-100
42.00	72.00	10.00	x										HW..... 0420-16-100
42.00	72.00	12.00			x								HW..... 0420-17-100
43.00	53.00	4.00										x	HW..... 0430-01-100
43.00	54.00	9.00		x									HW..... 0430-02-100
43.00	55.00	9.00		x									HW..... 0430-03-100
43.00	55.00	10.00		x									HW..... 0430-04-100
43.00	60.00	10.00	x										HW..... 0430-05-100
44.00	55.00	10.00									x		HW..... 0440-01-100
44.00	62.00	10.00		x									HW..... 0440-02-100
44.00	72.00	12.00	x										HW..... 0440-03-100
44.40	68.26	15/19	x										HW..... 0444-01-100
44.45	68.32	19.40									x		HW..... 0445-01-100
44.50	63.65	9.50					x						HW..... 0445-02-100
45.00	52.00	4.00										x	HW..... 0450-01-100
45.00	55.00	4.00										x	HW..... 0450-02-100
45.00	55.00	6.00	x										HW..... 0450-03-100
45.00	55.00	7.00	x										HW..... 0450-04-100
45.00	56.00	7.00	x										HW..... 0450-05-100
45.00	57.00	10.00		x									HW..... 0450-06-100
45.00	58.00	7.00		x									HW..... 0450-07-100
45.00	60.00	10/13		x									HW..... 0450-08-100
45.00	60.00	7/8		x									HW..... 0450-09-100
45.00	60.00	7.00	x	x									HW..... 0450-10-100
45.00	60.00	8.00	x	x									HW..... 0450-11-100
45.00	60.00	10.00	x										HW..... 0450-12-100
45.00	62.00	7.00	x						x				HW..... 0450-13-100
45.00	62.00	8.00	x							x			HW..... 0450-14-100
45.00	62.00	10.00	x	x	x								HW..... 0450-15-100
45.00	62.00	12.00	x										HW..... 0450-16-100
45.00	64.00	12.00				x							HW..... 0450-17-100
45.00	65.00	10/12		x									HW..... 0450-18-100
45.00	65.00	7.00							x				HW..... 0450-19-100
45.00	65.00	8.00	x	x					x				HW..... 0450-20-100
45.00	65.00	10.00	x	x	x			x					HW..... 0450-21-100
45.00	66.00	6.00	x										HW..... 0450-22-100
45.00	66.00	10.00	x										HW..... 0450-23-100
45.00	68.00	10.00	x										HW..... 0450-24-100
45.00	70.00	10.00	x										HW..... 0450-25-100
45.00	72.00	7.00	x										HW..... 0450-26-100
45.00	72.00	8.00	x	x									HW..... 0450-27-100
45.00	72.00	10.00	x										HW..... 0450-28-100
45.00	73.00	12.00	x										HW..... 0450-29-100
45.00	75.00	8.00	x	x									HW..... 0450-30-100
45.00	75.00	10.00	x	x									HW..... 0450-31-100
45.00	80.00	7.00		x									HW..... 0450-32-100
45.00	80.00	10.00	x	x									HW..... 0450-33-100
45.00	80.00	13.00	x										HW..... 0450-34-100
45.00	85.00	10.00	x	x									HW..... 0450-35-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
45.00	90.00	8.00	x										HW..... 0450-36-100
45.00	90.00	10.00	x	x	x								HW..... 0450-37-100
45.00	100.00	10.00	x										HW..... 0450-38-100
46.00	64.00	8.00	x										HW..... 0460-01-100
46.00	64.00	14.00		x									HW..... 0460-02-100
46.00	65.00	10.00	x										HW..... 0460-03-100
46.80	61.30	4.00	x										HW..... 0468-01-100
47.00	58.00	6.00	x										HW..... 0470-01-100
47.00	65.00	10.00							x				HW..... 0470-02-100
47.00	67.00	10.00		x									HW..... 0470-03-100
47.00	70.00	10.00	x										HW..... 0470-04-100
47.00	75.00	12.00			x								HW..... 0470-05-100
47.00	77.00	8.00	x										HW..... 0470-06-100
48.00	62.00	8.00	x	x									HW..... 0480-01-100
48.00	65.00	10.00	x	x			x						HW..... 0480-02-100
48.00	67.00	10.00		x									HW..... 0480-03-100
48.00	68.00	10.00		x									HW..... 0480-04-100
48.00	68.00	12.00	x										HW..... 0480-05-100
48.00	68.00	14.00		x									HW..... 0480-06-100
48.00	72.00	8.00	x										HW..... 0480-07-100
48.00	72.00	10.00	x										HW..... 0480-08-100
48.00	72.00	15.00									x		HW..... 0480-09-100
48.00	80.00	10.00	x										HW..... 0480-10-100
49.00	65.00	10.00	x										HW..... 0490-01-100
49.20	79.38	9.65			x								HW..... 0492-01-100
49.50	60.00	8.00	x										HW..... 0495-01-100
50.00	58.00	4.00										x	HW..... 0500-01-100
50.00	58.00	5.00					x						HW..... 0500-02-100
50.00	62.00	5.00										x	HW..... 0500-03-100
50.00	65.00	8.00	x	x					x				HW..... 0500-04-100
50.00	65.00	10.00	x										HW..... 0500-05-100
50.00	68.00	8.00	x	x					x				HW..... 0500-06-100
50.00	68.00	8.50								x			HW..... 0500-07-100
50.00	68.00	10.00	x	x									HW..... 0500-08-100
50.00	70.00	8.00	x										HW..... 0500-09-100
50.00	70.00	10.00	x	x	x								HW..... 0500-10-100
50.00	70.00	12.00	x										HW..... 0500-11-100
50.00	72.00	8/10		x					x				HW..... 0500-12-100
50.00	72.00	6.00	x										HW..... 0500-13-100
50.00	72.00	7.00							x				HW..... 0500-14-100
50.00	72.00	8.00	x	x									HW..... 0500-15-100
50.00	72.00	10.00	x	x									HW..... 0500-16-100
50.00	72.00	12.00	x	x									HW..... 0500-17-100
50.00	72.00	14.00									x		HW..... 0500-18-100
50.00	75.00	10.00	x										HW..... 0500-19-100
50.00	75.00	12.00		x									HW..... 0500-20-100
50.00	80.00	8.00	x	x									HW..... 0500-21-100
50.00	80.00	10.00	x	x	x								HW..... 0500-22-100
50.00	80.00	13.00	x	x									HW..... 0500-23-100
50.00	80.00	15.00									x		HW..... 0500-24-100
50.00	85.00	10.00	x										HW..... 0500-25-100
50.00	90.00	10.00	x	x									HW..... 0500-26-100
50.00	90.00	13.00			x								HW..... 0500-27-100
50.00	95.00	10.00			x								HW..... 0500-28-100
50.00	110.00	12.00	x										HW..... 0500-29-100
50.40	76.20	12.70				x							HW..... 0504-01-100
50.80	69.85	12.70			x								HW..... 0508-01-100
50.80	69.93	12.70						x					HW..... 0508-02-100
50.80	76.20	10.00									x		HW..... 0508-03-100
50.80	76.20	12.70			x								HW..... 0508-04-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
50,80	76,30	9,50	x										HW..... 0508-05-100
51,60	67,85	9,50	x										HW..... 0516-01-100
52,00	68,00	8.00	x										HW..... 0520-01-100
52,00	70,00	7.00	x										HW..... 0520-02-100
52,00	72,00	8.00	x										HW..... 0520-03-100
52,00	73,30	10,60	x										HW..... 0520-04-100
52,00	75,00	12.00	x										HW..... 0520-05-100
52,00	76,00	13.00	x										HW..... 0520-06-100
52,00	80,00	10.00	x	x									HW..... 0520-07-100
52,00	80,00	13.00			x								HW..... 0520-08-100
52,00	85,00	10.00	x	x									HW..... 0520-09-100
52,00	87,00	8.00	x										HW..... 0520-10-100
52,38	80,96	11,43	x										HW..... 0524-01-100
53,00	79,00	10.00	x										HW..... 0530-01-100
53,00	80,00	10.00	x										HW..... 0530-02-100
53,97	72,93	12,70		x									HW..... 0539-01-100
54,00	72,00	10.00		x									HW..... 0540-01-100
54,00	80,00	10.00			x								HW..... 0540-02-100
54,00	85,00	10.00	x	x									HW..... 0540-03-100
54,00	90,00	13.00	x										HW..... 0540-04-100
54,80	70,00	9/9,5							x				HW..... 0548-01-100
54,86	82,57	12.70	x										HW..... 0548-02-100
55,00	63,00	5.00										x	HW..... 0550-01-100
55,00	68,00	8.00	x										HW..... 0550-02-100
55,00	70,00	8.00	x						x				HW..... 0550-03-100
55,00	70,00	10.00	x	x									HW..... 0550-04-100
55,00	72,00	8/8,5							x				HW..... 0550-05-100
55,00	72,00	8.00	x	x									HW..... 0550-06-100
55,00	72,00	10.00	x	x									HW..... 0550-07-100
55,00	75,00	8.00	x										HW..... 0550-08-100
55,00	75,00	9.00	x										HW..... 0550-09-100
55,00	75,00	10.00	x	x									HW..... 0550-10-100
55,00	75,00	12.00	x										HW..... 0550-11-100
55,00	78,00	10.00	x										HW..... 0550-12-100
55,00	80,00	5.00	x										HW..... 0550-13-100
55,00	80,00	6.00	x										HW..... 0550-14-100
55,00	80,00	8.00	x	x	x								HW..... 0550-15-100
55,00	80,00	10.00	x	x		x							HW..... 0550-16-100
55,00	80,00	13.00			x								HW..... 0550-17-100
55,00	85,00	8.00	x										HW..... 0550-18-100
55,00	85,00	10.00	x	x									HW..... 0550-19-100
55,00	85,00	14.00		x									HW..... 0550-20-100
55,00	90,00	8.00	x	x									HW..... 0550-21-100
55,00	90,00	10.00	x	x									HW..... 0550-22-100
55,00	100,00	10.00		x									HW..... 0550-23-100
55,00	100,00	12.00	x										HW..... 0550-24-100
55,00	100,00	13.00	x										HW..... 0550-25-100
56,00	70,00	8.00	x										HW..... 0560-01-100
56,00	72,00	8.00	x										HW..... 0560-02-100
56,00	80,00	8.00	x										HW..... 0560-03-100
56,00	85,00	8.00	x										HW..... 0560-04-100
56,00	90,00	10.00		x									HW..... 0560-05-100
57,00	85,00	13.00	x										HW..... 0570-01-100
57,10	76,20	12.70						x					HW..... 0571-01-100
57,94	84,93	7.93	x										HW..... 0579-01-100
58,00	72,00	8.00	x										HW..... 0580-01-100
58,00	72,00	10.00	x	x									HW..... 0580-02-100
58,00	75,00	12.00			x								HW..... 0580-03-100
58,00	80,00	8.00	x										HW..... 0580-04-100
58,00	80,00	9.00		x									HW..... 0580-05-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
58.00	80.00	10.00		x									HW..... 0580-06-100
58.00	80.00	12.00	x										HW..... 0580-07-100
58.00	85.00	10.00	x										HW..... 0580-08-100
58.00	90.00	10.00	x										HW..... 0580-09-100
58.00	90.00	13.00			x								HW..... 0580-10-100
60.00	70.00	7.00	x										HW..... 0600-01-100
60.00	70.00	10.00								x			HW..... 0600-02-100
60.00	75.00	7/7,5							x				HW..... 0600-03-100
60.00	75.00	8.00	x	x	x				x				HW..... 0600-04-100
60.00	80.00	7.00		x					x				HW..... 0600-05-100
60.00	80.00	8.00	x	x	x	x							HW..... 0600-06-100
60.00	80.00	10.00	x	x				x			x		HW..... 0600-07-100
60.00	80.00	12.00	x		x								HW..... 0600-08-100
60.00	85.00	8.00	x										HW..... 0600-09-100
60.00	85.00	10.00	x	x	x								HW..... 0600-10-100
60.00	85.00	13.00			x								HW..... 0600-11-100
60.00	85.10	12.00			x								HW..... 0600-12-100
60.00	90.00	7.00							x				HW..... 0600-13-100
60.00	90.00	8.00	x	x									HW..... 0600-14-100
60.00	90.00	10.00	x	x									HW..... 0600-16-100
60.00	110.00	13.00	x		x								HW..... 0600-17-100
60.33	88.90	12.70		x									HW..... 0603-01-100
62.00	70.00	10.00								x			HW..... 0620-01-100
62.00	80.00	12.00			x								HW..... 0620-03-100
62.00	82.00	10.00			x								HW..... 0620-04-100
62.00	85.00	7.00							x				HW..... 0620-05-100
62.00	85.00	10.00	x										HW..... 0620-06-100
62.00	90.00	10.00	x	x									HW..... 0620-07-100
62.00	100.00	12.00	x										HW..... 0620-08-100
63.00	80.00	9.00		x									HW..... 0630-01-100
63.00	85.00	10.00	x		x	x							HW..... 0630-02-100
63.00	90.00	10.00	x										HW..... 0630-03-100
63.00	90.00	13.00			x								HW..... 0630-04-100
63.50	85.72	6.35		x									HW..... 0635-01-100
63.50	85.72	12.70				x							HW..... 0635-02-100
64.00	80.00	8.00	x										HW..... 0640-01-100
64.00	85.00	13.00			x								HW..... 0640-02-100
65.00	75.00	8.00		x									HW..... 0650-01-100
65.00	80.00	8.00	x										HW..... 0650-02-100
65.00	80.00	10.00		x									HW..... 0650-03-100
65.00	85.00	8.00	x										HW..... 0650-04-100
65.00	85.00	10.00	x	x	x								HW..... 0650-05-100
65.00	90.00	10.00	x	x	x				x				HW..... 0650-06-100
65.00	90.00	12.00			x	x							HW..... 0650-07-100
65.00	95.00	10.00	x										HW..... 0650-08-100
65.00	100.00	10.00		x		x		x					HW..... 0650-09-100
65.00	125.00	12.00	x										HW..... 0650-10-100
65.09	88.90	12.70		x									HW..... 0651-01-100
66.00	90.00	10.00			x								HW..... 0660-01-100
68.00	90.00	10.00	x		x	x							HW..... 0680-01-100
68.00	95.00	13.00	x										HW..... 0680-02-100
68.00	97.00	8.00	x										HW..... 0680-03-100
68.00	100.00	10.00	x	x									HW..... 0680-04-100
68.00	100.00	12.00			x								HW..... 0680-05-100
68.00	100.00	13.00	x										HW..... 0680-06-100
68.00	110.00	13.00			x								HW..... 0680-07-100
70.00	78.00	5.00										x	HW..... 0700-01-100
70.00	81.50	6.00								x			HW..... 0700-02-100
70.00	85.00	7.00	x										HW..... 0700-03-100
70.00	85.00	8.00	x	x									HW..... 0700-04-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
70,00	85,00	10,00	x	x									HW..... 0700-05-100
70,00	90,00	7,00							x				HW..... 0700-06-100
70,00	90,00	10,00	x	x	x	x			x		x		HW..... 0700-07-100
70,00	90,00	12,00	x										HW..... 0700-08-100
70,00	90,00	13,00			x						x		HW..... 0700-09-100
70,00	95,00	10,00	x										HW..... 0700-10-100
70,00	95,00	12,00		x									HW..... 0700-11-100
70,00	95,00	13,00	x			x							HW..... 0700-12-100
70,00	100,00	10,00	x	x	x				x				HW..... 0700-13-100
70,00	100,00	12,00	x										HW..... 0700-14-100
70,00	105,00	10,00	x										HW..... 0700-15-100
70,00	110,00	10,00	x	x									HW..... 0700-16-100
70,00	110,00	12,00	x	x									HW..... 0700-17-100
70,00	120,00	12,00	x										HW..... 0700-18-100
70,00	120,00	13,00	x		x								HW..... 0700-19-100
70,00	150,00	12,00	x										HW..... 0700-20-100
72,00	85,00	10,00	x										HW..... 0720-01-100
72,00	90,00	10,00	x	x		x							HW..... 0720-02-100
72,00	95,00	10,00	x		x								HW..... 0720-03-100
72,00	95,00	12,00	x										HW..... 0720-04-100
72,00	95,00	13,00			x								HW..... 0720-05-100
72,00	100,00	10,00	x	x									HW..... 0720-06-100
72,00	101,60	12,50	x										HW..... 0720-07-100
72,00	110,00	12,00	x										HW..... 0720-08-100
72,00	130,00	12,00	x										HW..... 0720-09-100
75,00	90,00	8,00	x	x									HW..... 0750-01-100
75,00	90,00	10,00	x	x					x				HW..... 0750-02-100
75,00	90,00	12,00	x										HW..... 0750-03-100
75,00	95,00	9,00		x									HW..... 0750-04-100
75,00	95,00	10,00	x	x					x				HW..... 0750-05-100
75,00	95,00	12,00	x										HW..... 0750-06-100
75,00	100,00	10,00	x	x	x								HW..... 0750-07-100
75,00	100,00	13,00				x					x		HW..... 0750-08-100
75,00	105,00	12,00	x			x							HW..... 0750-09-100
75,00	107,00	10,00	x										HW..... 0750-10-100
75,00	110,00	12,00	x	x									HW..... 0750-11-100
75,00	115,00	13,00				x							HW..... 0750-12-100
75,00	120,00	12,00	x										HW..... 0750-13-100
75,00	130,00	13,00	x										HW..... 0750-14-100
76,00	100,00	16,00		x									HW..... 0760-01-100
76,20	98,43	11,11			x								HW..... 0760-02-100
76,20	104,78	12,70									x		HW..... 0762-01-100
78,00	90,00	8,00	x										HW..... 0780-01-100
78,00	95,00	13,00			x								HW..... 0780-02-100
78,00	95,50	12,70	x										HW..... 0780-03-100
78,00	100,00	10,00	x	x									HW..... 0780-04-100
78,00	110,00	12,00	x										HW..... 0780-05-100
80,00	90,00	5,00								x		x	HW..... 0800-01-100
80,00	90,00	6,00								x			HW..... 0800-02-100
80,00	90,00	12,00								x			HW..... 0800-03-100
80,00	95,00	5,00					x						HW..... 0800-05-100
80,00	95,00	8,00	x										HW..... 0800-06-100
80,00	100,00	7,00							x				HW..... 0800-07-100
80,00	100,00	10,00	x	x	x	x							HW..... 0800-08-100
80,00	100,00	12,00									x		HW..... 0800-09-100
80,00	100,00	13,00	x	x	x								HW..... 0800-10-100
80,00	105,00	10,00	x										HW..... 0800-11-100
80,00	105,00	13,00	x										HW..... 0800-12-100
80,00	108,00	10,00				x							HW..... 0800-13-100
80,00	110,00	10,00	x	x									HW..... 0800-14-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
80,00	110,00	12,00	x	x									HW..... 0800-15-100
80,00	110,00	13,00				x							HW..... 0800-16-100
80,00	110,00	14,00			x								HW..... 0800-17-100
80,00	120,00	13,00	x										HW..... 0800-18-100
80,00	125,00	10,00		x									HW..... 0800-19-100
80,00	125,00	12,00	x	x									HW..... 0800-20-100
80,00	150,50	13,00	x										HW..... 0800-21-100
82,00	105,00	10/12		x									HW..... 0820-01-100
82,00	105,00	12,00	x	x									HW..... 0820-02-100
82,00	105,00	13,00			x								HW..... 0820-03-100
82,00	110,00	12,00	x										HW..... 0820-04-100
83,50	105,00	13,00			x								HW..... 0835-01-100
84,00	105,00	13,00			x								HW..... 0840-01-100
84,00	110,00	12,00			x								HW..... 0840-02-100
85,00	100,00	9,00	x										HW..... 0850-01-100
85,00	102,00	13,00	x										HW..... 0850-02-100
85,00	105,00	12,00					x		x				HW..... 0850-03-100
85,00	105,00	13,00	x										HW..... 0850-04-100
85,00	110,00	12,00	x	x		x							HW..... 0850-05-100
85,00	110,00	13,00	x	x	x								HW..... 0850-06-100
85,00	110,00	15,00			x								HW..... 0850-07-100
85,00	115,00	15,00	x										HW..... 0850-08-100
85,00	120,00	7,50							x				HW..... 0850-09-100
85,00	120,00	12,00	x	x	x								HW..... 0850-10-100
85,00	120,00	13,00	x	x									HW..... 0850-11-100
85,00	120,00	15,00			x								HW..... 0850-12-100
85,00	125,00	13,00			x								HW..... 0850-13-100
85,00	130,00	12,00	x	x									HW..... 0850-14-100
85,00	140,00	12,00	x	x									HW..... 0850-15-100
87,00	110,00	10,00			x	x							HW..... 0870-01-100
88,00	105,00	12,00	x										HW..... 0880-01-100
88,00	110,00	12,00	x										HW..... 0880-02-100
88,00	113,00	8,00	x										HW..... 0880-03-100
88,00	120,00	10,00			x								HW..... 0880-04-100
88,00	120,00	13,00			x								HW..... 0880-05-100
88,00	140,00	12,00	x										HW..... 0880-06-100
88,00	150,00	13,00	x										HW..... 0880-07-100
88,80	114,28	12,70		x									HW..... 0888-01-100
88,90	114,30	11,90			x								HW..... 0889-01-100
88,90	120,70	10,00			x								HW..... 0889-02-100
88,90	127,00	12,70	x										HW..... 0889-03-100
89,00	120,00	13,00			x								HW..... 0890-01-100
89,70	105,00	6,00	x										HW..... 0897-01-100
90,00	105,00	10,00	x										HW..... 0900-01-100
90,00	110,00	7,50		x									HW..... 0900-02-100
90,00	110,00	8,00	x		x								HW..... 0900-03-100
90,00	110,00	10,00	x										HW..... 0900-04-100
90,00	110,00	12,00	x	x					x				HW..... 0900-05-100
90,00	110,00	13,00	x		x								HW..... 0900-06-100
90,00	115,00	9,00	x										HW..... 0900-07-100
90,00	115,00	13,00	x		x								HW..... 0900-08-100
90,00	118,00	12,00				x							HW..... 0900-09-100
90,00	120,00	12,00	x		x								HW..... 0900-10-100
90,00	120,00	13,00	x	x									HW..... 0900-11-100
90,00	120,00	15,00			x	x							HW..... 0900-12-100
90,00	125,00	12,00							x				HW..... 0900-13-100
90,00	130,00	12,00	x	x									HW..... 0900-14-100
90,00	130,00	13,00	x			x							HW..... 0900-15-100
90,00	160,00	12,00	x										HW..... 0900-16-100
92,00	120,00	10,00				x							HW..... 0920-01-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
92,00	120,00	13,00	x	x	x								HW..... 0920-02-100
92,08	111,13	11,10		x									HW..... 0921-01-100
92,20	126,70	11,60			x								HW..... 0922-01-100
93,00	130,20	10,00			x								HW..... 0930-01-100
95,00	110,00	10,00	x										HW..... 0950-01-100
95,00	110,00	12,00	x										HW..... 0950-02-100
95,00	115,00	9,00			x								HW.....0950-03-100
95,00	115,00	10,00			x								HW..... 0950-04-100
95,00	115,00	13,00			x								HW..... 0950-05-100
95,00	120,00	8,00		x									HW..... 0950-06-100
95,00	120,00	12,00	x	x	x								HW..... 0950-07-100
95,00	120,00	13,00	x			x							HW..... 0950-08-100
95,00	120,00	15,00			x								HW..... 0950-09-100
95,00	125,00	10,00		x									HW..... 0950-10-100
95,00	125,00	12,00	x	x		x							HW..... 0950-11-100
95,00	130,00	13,00		x									HW..... 0950-12-100
95,00	133,00	14,00			x								HW..... 0950-13-100
95,25	127,00	11,00			x								HW..... 0953-01-100
96,00	112,00	10,00	x										HW..... 0960-01-100
98,00	120,00	12,00			x								HW..... 0980-01-100
98,00	125,00	10,00	x										HW..... 0980-02-100
98,00	125,00	13,00			x								HW..... 0980-03-100
98,40	125,00	13,00			x								HW..... 0984-01-100
100,00	115,00	9,00		x									HW..... 1000-01-100
100,00	120,00	10,00					x						HW..... 1000-02-100
100,00	120,00	12,00	x	x	x						x		HW..... 1000-03-100
100,00	120,00	13,00	x										HW..... 1000-04-100
100,00	120,00	14,00									x		HW..... 1000-05-100
100,00	125,00	12,00	x										HW..... 1000-06-100
100,00	125,00	13,00				x							HW..... 1000-07-100
100,00	130,00	12,00	x	x							x		HW..... 1000-08-100
100,00	130,00	13,00	x		x						x		HW..... 1000-09-100
100,00	130,00	14,00	x										HW..... 1000-10-100
100,00	136,53	12,70			x								HW..... 1000-11-100
100,00	140,00	13,00	x										HW..... 1000-12-100
100,00	150,00	13,00		x									HW..... 1000-13-100
100,00	160,00	12,00	x										HW..... 1000-14-100
100,00	160,00	15,00			x								HW..... 1000-15-100
100,00	180,00	13,00	x										HW..... 1000-16-100
101,60	127,00	12,70			x								HW..... 1016-01-100
101,60	127,10	12,70				x							HW..... 1016-02-100
101,60	136,68	11,13			x								HW..... 1016-03-100
101,60	139,70	12,70				x							HW..... 1016-04-100
101,60	139,70	14,29			x								HW..... 1016-05-100
101,60	146,05	14,28			x								HW..... 1016-06-100
102,00	115,00	10,00		x									HW..... 1020-01-100
102,00	125,00	13,00			x								HW..... 1020-02-100
102,00	130,00	13,00			x								HW..... 1020-03-100
104,00	130,00	10,00	x										HW..... 1040-01-100
105,00	125,00	13,00	x	x									HW..... 1050-01-100
105,00	130,00	12,00	x	x									HW..... 1050-02-100
105,00	130,00	13,00		x	x								HW..... 1050-03-100
105,00	130,00	15,00	x		x								HW..... 1050-04-100
105,00	135,00	15,00		x									HW..... 1050-05-100
105,00	140,00	12,00	x						x				HW..... 1050-06-100
105,00	150,00	15,00	x										HW..... 1050-07-100
105,00	150,00	15,00			x								HW..... 1050-08-100
105,00	160,00	12,00	x										HW..... 1050-09-100
106,40	130,00	10,00			x								HW..... 1064-01-100
107,95	136,45	12,70	x										HW..... 1079-01-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
108,00	130,00	13,00			x								HW..... 1080-01-100
108,00	133,40	13,00			x								HW..... 1080-02-100
108,00	140,00	13,00			x								HW..... 1080-03-100
110,00	130,00	8,00	x										HW.....1100-01-100
110,00	130,00	12,00	x	x	x				x				HW..... 1100-02-100
110,00	130,00	13,00	x										HW..... 1100-03-100
110,00	130,00	14,50	x										HW..... 1100-04-100
110,00	135,00	12,00	x										HW..... 1100-05-100
110,00	140,00	10,00	x										HW..... 1100-06-100
110,00	140,00	12,00	x	x	x								HW..... 1100-07-100
110,00	140,00	13,00	x										HW..... 1100-08-100
110,00	140,00	13,00			x	x							HW..... 1100-09-100
110,00	140,00	15,00			x								HW..... 1100-10-100
110,00	150,00	13,00			x								HW..... 1100-11-100
110,00	150,00	15,00			x								HW..... 1100-12-100
110,00	152,00	15,00			x								HW..... 1100-13-100
112,00	140,00	13,00			x								HW..... 1120-01-100
112,00	200,00	10,00			x								HW..... 1120-02-100
113,00	140,00	13,00			x								HW..... 1130-01-100
114,30	139,70	12,70			x								HW..... 1143-01-100
115,00	140,00	10,00	x										HW..... 1150-01-100
115,00	140,00	12,00	x	x									HW..... 1150-02-100
115,00	140,00	13,00	x	x	x								HW..... 1150-03-100
115,00	145,00	16,00				x							HW..... 1150-04-100
115,00	150,00	12,00	x	x									HW..... 1150-05-100
115,00	150,00	13,00			x								HW..... 1150-06-100
115,00	150,00	16,00			x								HW..... 1150-07-100
118,00	150,00	12,00				x							HW..... 1180-01-100
118,00	150,00	15,00									x		HW..... 1180-02-100
119,00	140,00	15,00			x								HW..... 1190-01-100
120,00	140,00	10,00			x								HW..... 1200-01-100
120,00	140,00	13,00	x		x	x			x				HW..... 1200-02-100
120,00	150,00	10/12		x									HW..... 1200-03-100
120,00	150,00	10,00	x										HW..... 1200-04-100
120,00	150,00	12,00	x	x					x				HW..... 1200-05-100
120,00	150,00	13,00	x		x								HW..... 1200-06-100
120,00	150,00	15,00		x	x				x				HW..... 1200-07-100
120,00	152,00	16,00			x								HW..... 1200-08-100
120,00	155,00	12,00	x										HW..... 1200-09-100
120,00	155,00	16,00				x							HW..... 1200-10-100
120,00	160,00	12,00	x										HW..... 1200-11-100
120,00	160,00	13,00	x		x								HW..... 1200-12-100
120,00	160,00	15,00	x										HW..... 1200-13-100
120,00	200,00	15,00	x										HW..... 1200-14-100
122,00	150,00	12,00	x										HW..... 1220-01-100
122,00	150,00	15,00			x								HW..... 1220-02-100
124,00	150,00	15,00			x								HW..... 1240-01-100
125,00	140,00	10,00	x										HW..... 1250-01-100
125,00	143,00	13,00		x									HW..... 1250-02-100
125,00	150,00	10,00				x							HW..... 1250-03-100
125,00	150,00	12,00	x	x	x								HW..... 1250-04-100
125,00	150,00	13,00			x								HW..... 1250-05-100
125,00	155,00	12,00	x	x									HW..... 1250-06-100
125,00	160,00	12,00	x										HW..... 1250-07-100
125,00	160,00	15,00		x									HW..... 1250-08-100
125,00	162,00	12,00				x							HW..... 1250-09-100
125,00	162,00	15,00			x								HW..... 1250-10-100
126,00	158,00	10,00	x										HW..... 1260-01-100
127,00	152,40	12,70	x		x								HW..... 1270-01-100
128,00	146,00	13,50		x									HW..... 1280-01-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
128,00	150,00	13,00	x										HW..... 1280-02-100
128,00	150,00	15,00			x								HW..... 1280-03-100
128,00	158,00	20,00	x										HW..... 1280-04-100
128,00	160,00	13,00	x										HW.....1280-05-100
130,00	150,00	10,00	x										HW..... 1300-01-100
130,00	150,00	12,00		x									HW..... 1300-02-100
130,00	150,00	14,00			x								HW..... 1300-03-100
130,00	150,00	15,00		x									HW..... 1300-04-100
130,00	155,00	12,00			x								HW..... 1300-05-100
130,00	160,00	12,00	x	x					x				HW..... 1300-06-100
130,00	160,00	13,00	x		x								HW..... 1300-07-100
130,00	160,00	14,00		x									HW..... 1300-08-100
130,00	160,00	15,00	x	x	x	x							HW..... 1300-09-100
130,00	170,00	12,00	x	x									HW..... 1300-10-100
130,00	170,00	13,00	x										HW..... 1300-11-100
130,00	170,00	15,00			x								HW..... 1300-12-100
130,00	170,00	16,00			x								HW..... 1300-13-100
132,50	155,60	13,00	x										HW..... 1325-01-100
133,30	158,70	12,70	x										HW..... 1333-01-100
134,50	155,50	9,52	x										HW..... 1345-01-100
135,00	160,00	12,00	x										HW..... 1350-01-100
135,00	160,00	13,00			x								HW..... 1350-02-100
135,00	160,00	15,00	x	x									HW..... 1350-03-100
135,00	170,00	12,00	x										HW..... 1350-04-100
135,00	170,00	15,00			x								HW..... 1350-05-100
135,00	180,00	15,00	x										HW..... 1350-06-100
138,00	160,00	15,00	x		x								HW..... 1350-07-100
139,70	165,10	12,70			x	x							HW..... 1397-01-100
139,70	171,60	15,87	x										HW..... 1397-02-100
139,70	174,60	14,28			x								HW..... 1397-03-100
140,00	160,00	12,00		x									HW..... 1400-01-100
140,00	160,00	13,00				x							HW..... 1400-02-100
140,00	165,00	12,00	x		x								HW..... 1400-03-100
140,00	165,00	12,50			x								HW..... 1400-04-100
140,00	165,00	15,00	x	x									HW..... 1400-05-100
140,00	170,00	8,00	x	x									HW..... 1400-06-100
140,00	170,00	12,00	x	x	x	x							HW..... 1400-07-100
140,00	170,00	14,00		x									HW..... 1400-08-100
140,00	170,00	15,00	x	x					x				HW..... 1400-09-100
140,00	180,00	12,00	x	x									HW..... 1400-10-100
140,00	180,00	13,00	x										HW..... 1400-11-100
140,00	180,00	15,00	x										HW..... 1400-12-100
140,00	190,00	15,00			x								HW..... 1400-13-100
143,00	170,00	10,00			x								HW..... 1430-01-100
144,00	160,00	12,00	x										HW..... 1440-01-100
144,80	175,00	12,00			x								HW..... 1448-01-100
145,00	165,00	15,00			x								HW..... 1450-01-100
145,00	167,00	13,00		x									HW..... 1450-02-100
145,00	170,00	10,00			x								HW..... 1450-03-100
145,00	170,00	13,00			x								HW..... 1450-04-100
145,00	170,00	15,00	x	x									HW..... 1450-05-100
145,00	180,00	12,00	x										HW..... 1450-06-100
145,00	180,00	13,00	x										HW..... 1450-07-100
145,00	180,00	14,00	x										HW..... 1450-08-100
145,00	180,00	15,00	x		x	x							HW..... 1450-09-100
146,00	163,00	7,00	x										HW..... 1460-01-100
146,00	170,00	15,00			x								HW..... 1460-02-100
148,00	170,00	14,50	x										HW..... 1480-01-100
149,00	170,00	14,50				x							HW..... 1480-02-100
149,00	180,00	15,00			x								HW..... 1490-01-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
150,00	168,00	12,00	x										HW..... 1500-01-100
150,00	170,00	12,00	x										HW..... 1500-02-100
150,00	170,00	15,00			x								HW..... 1500-03-100
150,00	178,00	12,00		x									HW.....1500-04-100
150,00	180,00	8/8,5							x				HW..... 1500-05-100
150,00	180,00	12,00	x										HW..... 1500-06-100
150,00	180,00	13,00	x	x									HW..... 1500-07-100
150,00	180,00	14,00	x										HW..... 1500-08-100
150,00	180,00	15,00	x	x	x	x							HW..... 1500-09-100
150,00	180,00	20,00		x									HW..... 1500-10-100
150,00	195,00	15,00			x								HW..... 1500-11-100
150,81	178,05	12,70	x										HW..... 1508-01-100
152,00	190,00	15,00			x								HW..... 1520-01-100
152,00	195,00	15,00			x								HW..... 1520-02-100
152,40	182,56	19,05			x								HW..... 1524-01-100
152,40	187,32	19,00		x									HW..... 1524-02-100
152,40	190,70	15,00			x								HW..... 1524-03-100
155,00	175,00	12,00	x										HW..... 1550-01-100
155,00	180,00	15,00			x								HW..... 1550-02-100
155,00	185,00	15,00		x									HW..... 1550-03-100
155,00	193,90	15,50			x								HW..... 1550-04-100
155,00	200,00	15,00			x								HW..... 1550-05-100
157,00	190,50	16,00			x								HW..... 1570-01-100
158,00	180,00	13,00	x										HW..... 1580-01-100
158,80	190,00	12,00			x								HW..... 1588-01-100
159,00	185,00	16,00			x								HW..... 1590-01-100
160,00	180,00	10,00		x									HW..... 1600-01-100
160,00	180,00	12,00		x									HW..... 1600-02-100
160,00	180,00	15,00			x								HW..... 1600-03-100
160,00	185,00	10,00	x										HW..... 1600-04-100
160,00	190,00	8,00							x				HW..... 1600-05-100
160,00	190,00	13,00	x	x	x								HW..... 1600-06-100
160,00	190,00	15,00	x	x									HW..... 1600-07-100
160,00	190,00	15,00			x	x							HW..... 1600-08-100
160,00	200,00	12,00	x	x									HW..... 1600-09-100
160,00	200,00	14,00			x								HW..... 1600-10-100
162,00	190,00	10,00			x								HW..... 1620-01-100
162,00	190,00	12,00	x										HW..... 1620-02-100
165,00	190,00	8,00		x									HW..... 1650-01-100
165,00	190,00	13,00	x										HW..... 1650-02-100
165,00	190,00	15,00				x							HW..... 1650-03-100
165,00	200,00	15,00	x	x									HW..... 1650-04-100
165,10	190,50	14,29			x								HW..... 1651-01-100
165,10	234,95	19,05				x							HW..... 1651-02-100
135,20	203,30	19,05	x										HW..... 1652-01-100
168,00	200,00	12,00			x								HW..... 1680-01-100
168,00	200,00	15,00	x										HW..... 1680-02-100
169,00	190,00	10,00			x								HW..... 1690-01-100
170,00	190,00	15,00	x	x	x								HW..... 1700-01-100
170,00	200,00	12,00	x										HW..... 1700-02-100
170,00	200,00	13,00			x								HW..... 1700-03-100
170,00	200,00	15,00	x	x									HW..... 1700-04-100
170,00	200,00	16,00	x			x							HW..... 1700-05-100
170,00	225,00	16,00			x								HW..... 1700-06-100
170,00	245,00	16,00			x								HW..... 1700-07-100
171,40	209,50	15,80			x								HW..... 1714-01-100
175,00	200,00	10,00	x										HW..... 1750-01-100
175,00	200,00	15,00	x	x	x								HW..... 1750-02-100
175,00	200,00	16,00	x										HW..... 1750-03-100
175,00	210,00	14,00	x										HW..... 1750-04-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
175,00	210,00	15,00			x	x							HW..... 1750-05-100
177,80	203,20	15,88			x								HW..... 1778-01-100
177,80	222,25	19,05			x								HW..... 1778-02-100
178,00	200,00	12,00			x								HW..... 1780-01-100
180,00	200,00	13,00	x										HW..... 1800-01-100
180,00	200,00	15,00	x		x								HW..... 1800-02-100
180,00	200,00	16,00		x									HW..... 1800-03-100
180,00	210,00	15,00	x	x	x								HW..... 1800-04-100
180,00	215,00	15,00	x	x	x	x							HW..... 1800-05-100
180,00	215,00	16,00	x	x									HW..... 1800-06-100
180,00	220,00	15,00	x			x							HW..... 1800-07-100
184,15	222,25	14,50	x										HW..... 1842-01-100
185,00	210,00	13,00	x	x	x								HW..... 1850-01-100
185,00	210,00	15,00	x										HW..... 1850-02-100
185,00	215,00	15,00	x		x								HW..... 1850-03-100
185,00	215,00	16,00	x										HW..... 1850-04-100
185,00	220,00	15,00	x										HW..... 1850-05-100
185,00	230,00	16,00			x								HW..... 1850-06-100
186,00	215,90	12,00			x								HW..... 1860-01-100
186,00	216,00	12,00			x								HW..... 1860-02-100
188,00	215,00	16,00			x								HW..... 1880-01-100
190,00	215,00	15,00		x	x								HW..... 1900-01-100
190,00	215,00	16,00	x	x	x								HW..... 1900-02-100
190,00	220,00	12,00			x	x							HW..... 1900-03-100
190,00	220,00	15,00	x	x	x								HW..... 1900-04-100
190,00	220,00	16,00	x		x								HW..... 1900-05-100
190,00	225,00	16,00	x	x									HW..... 1900-06-100
190,00	230,00	15,00	x			x							HW..... 1900-07-100
190,00	230,00	16,00	x	x									HW..... 1900-08-100
190,50	215,90	15,75			x								HW..... 1905-01-100
190,50	222,25	15,00			x								HW..... 1905-02-100
190,50	228,60	19,05			x								HW..... 1905-03-100
192,00	210,00	10,00	x										HW..... 1920-01-100
193,70	219,10	12,70			x								HW..... 1937-01-100
194,00	222,00	12,00			x								HW..... 1940-01-100
195,00	215,00	15,00		x									HW..... 1950-01-100
195,00	220,00	16,00			x								HW..... 1950-02-100
195,00	230,00	15,00			x								HW..... 1950-03-100
195,00	230,00	16,00			x								HW..... 1950-04-100
196,85	241,30	19,05			x								HW..... 1971-01-100
200,00	225,00	12,50			x								HW..... 2000-01-100
200,00	225,00	15,00	x										HW..... 2000-02-100
200,00	230,00	13,00	x	x									HW..... 2000-03-100
200,00	230,00	15,00	x	x	x	x							HW..... 2000-04-100
200,00	230,00	16,00			x								HW..... 2000-05-100
200,00	230,00	18,00				x							HW..... 2000-06-100
200,00	235,00	15,00	x										HW..... 2000-07-100
200,00	240,00	15,00	x		x		x						HW..... 2000-08-100
200,00	240,00	20,00				x							HW..... 2000-09-100
200,00	250,00	15,00	x		x								HW..... 2000-10-100
200,00	250,00	16,00	x										HW..... 2000-11-100
203,00	230,00	12,00				x							HW..... 2030-01-100
203,00	230,00	14,00			x								HW..... 2030-02-100
203,20	241,30	19,05			x								HW..... 2032-01-100
203,20	254,00	15,87				x							HW..... 2032-02-100
205,00	230,00	15,00			x								HW..... 2050-01-100
205,00	230,00	16,00	x		x								HW..... 2050-02-100
205,00	250,00	16,00			x								HW..... 2050-03-100
207,00	240,00	16,00		x									HW..... 2070-01-100
209,60	235,00	12,70			x								HW..... 2096-01-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
210,00	230,00	16,00			x								HW..... 2100-01-100
210,00	235,00	12,00			x								HW..... 2100-02-100
210,00	240,00	13,00	x										HW..... 2100-03-100
210,00	240,00	15,00	x	x									HW..... 2100-04-100
210,00	240,00	16,00			x								HW..... 2100-05-100
210,00	250,00	15,00	x		x	x							HW..... 2100-06-100
210,00	250,00	16,00			x								HW..... 2100-07-100
210,00	250,00	20,00				x							HW..... 2100-08-100
210,00	260,00	15,00	x		x								HW..... 2100-09-100
210,00	260,00	25,00			x								HW..... 2100-10-100
210,00	290,00	20,00	x	x									HW..... 2100-11-100
214,00	241,50	15,00			x								HW..... 2140-01-100
215,00	240,00	12,00	x		x								HW..... 2150-01-100
215,00	245,00	16,00			x								HW..... 2150-02-100
215,00	248,00	15,00	x										HW..... 2150-03-100
215,00	250,00	15,00			x								HW..... 2150-04-100
215,00	250,00	16,00			x								HW..... 2150-05-100
215,90	241,30	12,70			x								HW..... 2159-01-100
215,90	247,65	19,05			x								HW..... 2159-02-100
215,90	254,10	14,28		x									HW..... 2159-03-100
215,90	254,10	19,05		x									HW..... 2159-04-100
219,10	244,50	12,70			x								HW..... 2191-01-100
220,00	250,00	12,00	x										HW..... 2200-01-100
220,00	250,00	15,00	x	x	x	x							HW..... 2200-02-100
220,00	250,00	16,00	x			x					x		HW..... 2200-03-100
220,00	250,00	18,00				x							HW..... 2200-03-100
220,00	255,00	16,00	x										HW..... 2200-04-100
220,00	255,00	18,00	x										HW..... 2200-05-100
220,00	260,00	15,00	x										HW..... 2200-06-100
220,00	260,00	16,00	x										HW..... 2200-07-100
220,00	260,00	18,00			x								HW..... 2200-08-100
220,00	260,00	22,00			x	x							HW..... 2200-09-100
220,00	270,00	15,00			x								HW..... 2200-10-100
220,00	280,00	20,00	x										HW..... 2200-11-100
225,00	250,00	12,50			x								HW..... 2250-01-100
225,00	250,00	16,00			x								HW..... 2250-02-100
228,60	254,00	19,05			x								HW..... 2286-01-100
229,00	255,00	15,00			x								HW..... 2290-01-100
230,00	260,00	12,50	x										HW..... 2300-01-100
230,00	260,00	15,00	x	x	x								HW..... 2300-02-100
230,00	270,00	15,00	x		x								HW..... 2300-03-100
230,00	270,00	16,00			x	x							HW..... 2300-04-100
230,00	280,00	15,00	x										HW..... 2300-05-100
230,00	280,00	16,00	x		x								HW..... 2300-06-100
230,00	285,00	23,00			x								HW..... 2300-07-100
235,00	265,00	15,00	x										HW..... 2350-01-100
235,00	270,00	15,00			x								HW..... 2350-02-100
235,00	270,00	16,00			x								HW..... 2350-03-100
240,00	270,00	15,00	x	x	x	x							HW..... 2400-01-100
240,00	270,00	16,00			x								HW..... 2400-02-100
240,00	270,00	18,50							x				HW..... 2400-03-100
240,00	275,00	16,00	x										HW..... 2400-04-100
240,00	280,00	15,00	x										HW..... 2400-05-100
240,00	280,00	16,00	x		x								HW..... 2400-06-100
240,00	280,00	18,50							x				HW..... 2400-07-100
240,00	280,00	20,00				x							HW..... 2400-08-100
240,00	290,00	16,00			x								HW..... 2400-09-100
241,30	292,30	25,40	x										HW..... 2413-01-100
241,30	317,70	20,60			x								HW..... 2413-02-100
245,00	270,00	16,00			x								HW..... 2450-01-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
245,00	285,00	16,50			x								HW..... 2450-02-100
250,00	280,00	15,00	x	x	x	x							HW..... 2500-01-100
250,00	280,00	16,00			x								HW..... 2500-02-100
250,00	285,00	18,00		x									HW..... 2500-03-100
250,00	290,00	15,00			x								HW..... 2500-04-100
250,00	290,00	16,00	x		x								HW..... 2500-05-100
250,00	310,00	25,00			x								HW..... 2500-06-100
254,00	279,40	12,70			x								HW..... 2540-01-100
254,00	292,10	19,05			x								HW..... 2540-02-100
254,00	304,80	15,88			x								HW..... 2540-03-100
255,00	290,00	16,00			x								HW..... 2550-01-100
260,00	300,00	20,00									x		HW..... 2600-01-100
260,00	280,00	16,00			x								HW..... 2600-02-100
260,00	290,00	15,00	x										HW..... 2600-03-100
260,00	290,00	16,00	x		x	x							HW..... 2600-04-100
260,00	290,00	20,00			x								HW..... 2600-05-100
260,00	300,00	16,00			x								HW..... 2600-06-100
260,00	300,00	20,00	x		x	x							HW..... 2600-07-100
260,00	310,00	16,00			x								HW..... 2600-08-100
260,00	320,00	25,00			x	x							HW..... 2600-09-100
265,00	290,00	16,00	x		x								HW..... 2650-01-100
265,00	300,00	16,00			x								HW..... 2650-02-100
265,00	310,00	16,00			x								HW..... 2650-03-100
266,70	304,80	19,05			x	x							HW..... 2667-01-100
266,70	317,50	15,88			x								HW..... 2667-02-100
267,00	300,00	20,00			x								HW..... 2670-01-100
267,00	318,00	19,00		x									HW..... 2670-02-100
268,00	300,00	16,00			x								HW..... 2680-01-100
270,00	300,00	15,00	x										HW..... 2700-01-100
270,00	310,00	16,00	x		x								HW..... 2700-02-100
270,00	330,00	25,00			x								HW..... 2700-03-100
272,00	310,00	16,00			x								HW..... 2720-01-100
275,00	310,00	16,00			x								HW..... 2750-01-100
275,00	320,00	15,00	x										HW..... 2750-02-100
279,40	304,80	12,70			x								HW..... 2794-01-100
279,40	304,80	16,66	x										HW..... 2794-02-100
279,40	330,00	19,05				x							HW..... 2794-03-100
280,00	210,00	15,00	x										HW..... 2800-01-100
280,00	310,00	16,00	x	x	x	x							HW..... 2800-02-100
280,00	315,00	15,00		x									HW..... 2800-11-100
280,00	315,00	16,00	x										HW..... 2800-03-100
280,00	316,00	18,00			x								HW..... 2800-04-100
280,00	320,00	15,00	x										HW..... 2800-05-100
280,00	320,00	16,00	x		x	x							HW..... 2800-06-100
280,00	320,00	20,00	x	x	x	x							HW..... 2800-07-100
280,00	324,00	25,00			x								HW..... 2800-08-100
280,00	380,00	20,00			x								HW..... 2800-09-100
280,00	400,00	15,00			x								HW..... 2800-10-100
285,00	310,00	16,00			x								HW..... 2850-01-100
285,00	320,00	16,00			x								HW..... 2850-02-100
285,00	325,00	15,00			x								HW..... 2850-03-100
285,00	325,00	16,00			x								HW..... 2850-04-100
285,00	330,00	20,00			x								HW..... 2850-05-100
285,75	336,55	23,81	x										HW..... 2857-01-100
290,00	320,00	15,00	x										HW..... 2900-01-100
290,00	321,00	19,00	x										HW..... 2900-02-100
290,00	330,00	15,00			x								HW..... 2900-03-100
290,00	330,00	16,00			x								HW..... 2900-04-100
290,00	330,00	18,00	x	x	x								HW..... 2900-05-100
290,00	334,00	20,00			x								HW..... 2900-06-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
290,00	350,00	25,00			x								HW..... 2900-07-100
295,00	335,00	16,00			x								HW..... 2950-01-100
295,00	335,00	18,00			x								HW..... 2950-02-100
300,00	332,00	16,00	x		x	x							HW..... 3000-01-100
300,00	335,00	18,00			x								HW..... 3000-02-100
300,00	340,00	16,00	x		x								HW..... 3000-03-100
300,00	340,00	18,00	x	x	x								HW..... 3000-04-100
300,00	340,00	20,00	x	x	x	x							HW..... 3000-05-100
300,00	342,00	16,00			x								HW..... 3000-06-100
300,00	344,00	20,50			x								HW..... 3000-07-100
300,00	350,00	18,00			x								HW..... 3000-08-100
300,00	350,00	19,00			x								HW..... 3000-09-100
300,00	350,00	20,00			x								HW..... 3000-10-100
300,00	360,00	18,00			x								HW..... 3000-11-100
300,00	400,00	18,00			x								HW..... 3000-12-100
300,00	420,00	20,00			x								HW..... 3000-13-100
304,80	330,20	12,70			x								HW..... 3048-01-100
304,80	355,60	25,40			x								HW..... 3048-02-100
305,00	340,00	18,00			x								HW..... 3050-01-100
305,00	345,00	20,00			x								HW..... 3050-02-100
310,00	340,00	15,00		x									HW..... 3100-01-100
310,00	350,00	18,00			x								HW..... 3100-02-100
310,00	350,00	20,00	x										HW..... 3100-03-100
310,00	370,00	28,00			x								HW..... 3100-04-100
315,00	355,00	16,50			x								HW..... 3150-01-100
315,00	355,00	18,00			x								HW..... 3150-02-100
315,00	365,00	20,00			x								HW..... 3150-03-100
316,00	360,00	20,00	x										HW..... 3160-01-100
317,10	368,30	18,00		x									HW..... 3171-01-100
317,50	349,25	19,50			x								HW..... 3175-01-100
320,00	350,00	16,00			x								HW..... 3200-01-100
320,00	350,00	18,00			x								HW..... 3200-02-100
320,00	360,00	15,00			x								HW..... 3200-03-100
320,00	360,00	18,00	x		x								HW..... 3200-04-100
320,00	360,00	20,00	x		x	x							HW..... 3200-05-100
320,00	360,00	25,00			x								HW..... 3200-06-100
320,00	360,00	32,00			x								HW..... 3200-07-100
320,00	363,00	20,00	x										HW..... 3200-08-100
320,00	380,00	20,00			x								HW..... 3200-09-100
320,00	380,00	25,00			x								HW..... 3200-10-100
325,00	360,00	16,00			x								HW..... 3250-01-100
325,00	365,00	16,00			x								HW..... 3250-02-100
325,00	365,00	20,00									x		HW..... 3250-03-100
330,00	360,00	15,00			x								HW..... 3300-01-100
330,00	370,00	18,00	x		x	x							HW..... 3300-02-100
330,00	370,00	20,00	x		x								HW..... 3300-03-100
330,00	380,00	20,00			x								HW..... 3300-04-100
330,00	385,00	18,00			x								HW..... 3300-05-100
330,20	381,00	23,79			x								HW..... 3302-01-100
340,00	370,00	20,00	x										HW..... 3400-01-100
340,00	372,00	16,00	x		x								HW..... 3400-02-100
340,00	380,00	15,00	x										HW..... 3400-03-100
340,00	380,00	16,00			x								HW..... 3400-04-100
340,00	380,00	18,00	x		x								HW..... 3400-05-100
340,00	380,00	20,00	x	x	x								HW..... 3400-06-100
340,00	390,00	20,00			x								HW..... 3400-07-100
340,00	400,00	25,00			x								HW..... 3400-08-100
342,90	368,30	12,70				x							HW..... 3429-01-100
350,00	380,00	15,00	x										HW..... 3500-01-100
350,00	380,00	16,00			x								HW..... 3500-02-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
350,00	390,00	18,00	x		x	x							HW..... 3500-03-100
350,00	390,00	20,00				x							HW..... 3500-04-100
355,00	395,00	32,00			x								HW..... 3550-01-100
355,00	405,00	15,00			x								HW..... 3550-02-100
360,00	390,00	15,00		x									HW..... 3600-01-100
360,00	390,00	20,00			x								HW..... 3600-02-100
360,00	392,00	20,00			x	x							HW..... 3600-03-100
360,00	400,00	18,00			x								HW..... 3600-04-100
360,00	400,00	20,00	x		x	x							HW..... 3600-05-100
360,00	404,00	20,00	x										HW..... 3600-06-100
360,00	425,00	20,00			x								HW..... 3600-07-100
365,00	395,00	15,00			x								HW..... 3650-01-100
365,00	405,00	18,00			x								HW..... 3650-02-100
365,00	410,00	20,00			x								HW..... 3650-03-100
368,30	406,40	17,45	x										HW..... 3683-01-100
370,00	400,00	10,00			x								HW..... 3700-01-100
370,00	410,00	15,00	x		x								HW..... 3700-02-100
370,00	410,00	20,00			x	x							HW..... 3700-03-100
370,00	415,00	15,00			x								HW..... 3700-04-100
375,00	420,00	18,00			x								HW..... 3750-01-100
375,00	430,00	18,00			x								HW..... 3750-02-100
380,00	420,00	18,00			x								HW..... 3800-01-100
380,00	420,00	20,00	x	x	x								HW..... 3800-02-100
380,00	430,00	19,00			x								HW..... 3800-03-100
381,00	431,80	25,40			x								HW..... 3810-01-100
381,00	438,15	22,22			x								HW..... 3810-02-100
385,00	430,00	25,00	x										HW..... 3850-01-100
390,00	425,00	18,00				x							HW..... 3900-01-100
390,00	430,00	16,00	x										HW..... 3900-02-100
390,00	430,00	18,00			x								HW..... 3900-03-100
390,00	430,00	20,00	x										HW..... 3900-04-100
390,00	435,00	18,00				x							HW..... 3900-05-100
390,00	440,00	25,00			x								HW..... 3900-06-100
393,70	444,50	20,57			x								HW..... 3937-01-100
394,00	420,00	16,00	x	x	x								HW..... 3940-01-100
395,00	430,00	15,00			x								HW..... 3950-01-100
395,00	430,00	18,00			x								HW..... 3950-02-100
400,00	430,00	26,00			x								HW..... 4000-01-100
400,00	438,50	17,00			x								HW..... 4000-02-100
400,00	440,00	15,00			x								HW..... 4000-03-100
400,00	440,00	18,00			x								HW..... 4000-04-100
400,00	440,00	20,00	x		x								HW..... 4000-05-100
400,00	450,00	18,00			x								HW..... 4000-06-100
400,00	450,00	20,00			x								HW..... 4000-07-100
400,00	450,00	25,00				x							HW..... 4000-08-100
400,00	451,00	17,45	x		x								HW..... 4000-09-100
400,00	470,00	20,00			x								HW..... 4000-10-100
400,00	500,00	25,00			x								HW..... 4000-11-100
404,00	438,00	19,05	x										HW..... 4040-01-100
410,00	454,00	20,50			x								HW..... 4100-01-100
410,00	460,00	15,00			x								HW..... 4100-02-100
410,00	460,00	22,00			x								HW..... 4100-03-100
420,00	460,00	15,00			x								HW..... 4200-01-100
420,00	460,00	16,00	x										HW..... 4200-02-100
420,00	460,00	18,00	x		x								HW..... 4200-03-100
420,00	460,00	20,00	x		x								HW..... 4200-04-100
420,00	470,00	20,00		x									HW..... 4200-05-100
420,00	480,00	15,00			x								HW..... 4200-06-100
425,00	475,00	22,00			x								HW..... 4250-01-100
425,00	480,00	15,00			x								HW..... 4250-02-100

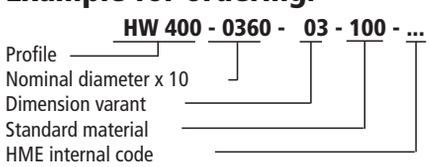
ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
430,00	480,00	22,00			x								HW..... 4300-01-100
430,00	480,00	25,00			x								HW..... 4300-02-100
430,00	495,00	25,00			x								HW..... 4300-03-100
431,80	469,90	19,05				x							HW..... 4318-01-100
435,00	485,00	17,45	x										HW..... 4350-01-100
440,00	470,00	20,00			x								HW..... 4400-01-100
440,00	480,00	20,00	x	x	x								HW..... 4400-02-100
440,00	490,00	17,00			x								HW..... 4400-03-100
440,00	490,00	20,00			x								HW..... 4400-04-100
445,00	480,00	16,00		x	x								HW..... 4450-01-100
445,00	480,00	18,00			x								HW..... 4450-02-100
448,00	480,00	15,00			x								HW..... 4480-01-100
450,00	490,00	18,00			x								HW..... 4500-01-100
450,00	490,00	20,00			x								HW..... 4500-02-100
450,00	500,00	22,00	x										HW..... 4500-03-100
450,00	500,00	25,00			x								HW..... 4500-04-100
455,00	495,00	20,00			x								HW..... 4550-01-100
457,00	508,00	25,40			x								HW..... 4570-01-100
457,20	495,30	19,05			x								HW..... 4572-01-100
460,00	500,00	20,00	x		x								HW..... 4600-01-100
460,00	510,00	25,00			x								HW..... 4600-02-100
460,00	520,00	26,00			x								HW..... 4600-03-100
461,00	500,00	20,00			x								HW..... 4610-01-100
467,00	510,00	20,00			x								HW..... 4670-01-100
470,00	510,00	20,00			x								HW..... 4700-01-100
470,00	520,00	18,00			x								HW..... 4700-02-100
470,00	520,00	20,00			x								HW..... 4700-03-100
470,00	520,00	22,00			x								HW..... 4700-04-100
475,00	530,00	18,00			x								HW..... 4750-01-100
480,00	520,00	20,00	x	x	x	x							HW..... 4800-01-100
480,00	530,00	25,00	x										HW..... 4800-02-100
480,00	550,00	25,00			x								HW..... 4800-03-100
490,00	530,00	20,00			x								HW..... 4900-01-100
490,00	540,00	25,00	x										HW..... 4900-02-100
500,00	520,00	12,00			x								HW..... 5000-01-100
500,00	535,00	12,00			x								HW..... 5000-02-100
500,00	540,00	20,00	x	x	x								HW..... 5000-03-100
500,00	550,00	20,00			x								HW..... 5000-04-100
500,00	550,00	22,00	x		x								HW..... 5000-05-100
500,00	560,00	20,00			x								HW..... 5000-06-100
508,00	558,80	25,40	x		x								HW..... 5080-01-100
510,00	550,00	20,00			x								HW..... 5100-01-100
510,00	572,00	20,00			x								HW..... 5100-02-100
520,00	580,00	20,00			x								HW..... 5207-01-100
520,70	571,50	22,50			x								HW..... 5207-02-100
525,00	575,00	25,00	x										HW..... 5250-01-100
530,00	565,00	20,00			x								HW..... 5300-01-100
530,00	570,00	20,00			x								HW..... 5300-02-100
530,00	580,00	20,00			x								HW..... 5300-03-100
533,40	584,20	22,22			x								HW..... 5334-01-100
540,00	580,00	20,00			x								HW..... 5400-01-100
540,00	590,00	22,00			x								HW..... 5400-02-100
540,00	590,00	25,50			x								HW..... 5400-03-100
546,00	596,90	19,05			x								HW..... 5460-01-100
550,00	590,00	20,00			x								HW..... 5500-01-100
550,00	600,00	22,00			x								HW..... 5500-02-100
555,00	600,00	20,00			x								HW..... 5550-01-100
560,00	610,00	20,00	x		x								HW..... 5600-01-100
560,00	620,00	20,00			x								HW..... 5600-02-100
560,00	620,00	25,00			x								HW..... 5600-03-100

ROTATION SEALS
HW 400 TO HW 500

Ø **d** h11	Ø **D** H8	**E** +0,3	400	410	420	430	440	450	460	470	480	500	**Part N°.**
565,00	630,00	20,00			x								HW..... 5650-01-100
570,00	620,00	22,00			x								HW..... 5700-01-100
570,00	630,00	25,00			x								HW..... 5700-02-100
580,00	615,00	20,00			x								HW..... 5800-01-100
580,00	630,00	20,00			x								HW..... 5800-02-100
580,00	636,00	25,00			x								HW..... 5800-03-100
580,00	640,00	25,00			x								HW..... 5800-04-100
580,00	640,00	30,00			x								HW..... 5800-05-100
590,50	628,60	15,87			x								HW..... 5905-01-100
595,00	635,00	20,00			x								HW..... 5950-01-100
600,00	640,00	20,00	x		x								HW..... 6000-01-100
600,00	640,00	22,00			x	x							HW..... 6000-02-100
600,00	650,00	25,00			x								HW..... 6000-03-100
609,60	660,40	22,23			x								HW..... 6096-01-100
610,00	650,00	20,00			x								HW..... 6100-01-100
610,00	660,00	20,00			x								HW..... 6100-02-100
620,00	660,00	20,00			x								HW..... 6200-01-100
620,00	670,00	25,00			x								HW..... 6200-02-100
620,00	680,00	25,00			x								HW..... 6200-03-100
628,00	655,00	20,00			x								HW..... 6280-01-100
630,00	670,00	20,00			x								HW..... 6300-01-100
630,00	680,00	20,00			x								HW..... 6300-02-100
630,00	690,00	30,00			x								HW..... 6300-03-100
630,00	700,00	20,00			x								HW..... 6300-04-100
632,00	672,00	20,00			x								HW..... 6320-01-100
640,00	680,00	20,00			x								HW..... 6400-01-100
640,00	690,00	25,00			x								HW..... 6400-02-100
645,00	677,00	16,00			x								HW..... 6450-01-100
650,00	690,00	18,00			x								HW..... 6500-01-100
650,00	690,00	20,00			x								HW..... 6500-02-100
650,00	700,00	20,00			x								HW..... 6500-03-100
650,00	710,00	25,00			x								HW..... 6500-04-100
660,00	700,00	18,00			x								HW..... 6600-01-100
660,00	704,00	20,50			x								HW..... 6600-02-100
670,00	710,00	20,00	x		x								HW..... 6700-01-100
670,00	730,00	25,00	x		x								HW..... 6700-02-100
695,00	740,00	20,00			x								HW..... 6950-01-100
700,00	740,00	20,00			x								HW..... 7000-01-100
710,00	760,00	20,00			x								HW..... 7100-01-100
740,00	780,00	20,00			x								HW..... 7400-01-100
750,00	790,00	23,00			x								HW..... 7500-01-100
750,00	800,00	25,00			x								HW..... 7500-02-100
790,00	830,00	23,00			x								HW..... 7900-01-100
840,00	880,00	20,00			x								HW..... 8400-01-100
850,90	914,40	22,20			x								HW..... 8509-01-100
860,00	900,00	20,00			x								HW..... 8600-01-100
950,00	1000,00	20,00			x								HW..... 9500-01-100

Example for ordering:



Material Key:

Profile overview

HW400 - Form A
HW410 - Form AS
HW420 - Form C
HW430 - Form CS
HW440 - Form B
HW450 - Form BS
HW460 - Form P
HW470 - Form O
HW480 - Form DUO
HW500 - Form DINA

Material overview

100 - NBR
120 - FPM
180 - Silicon

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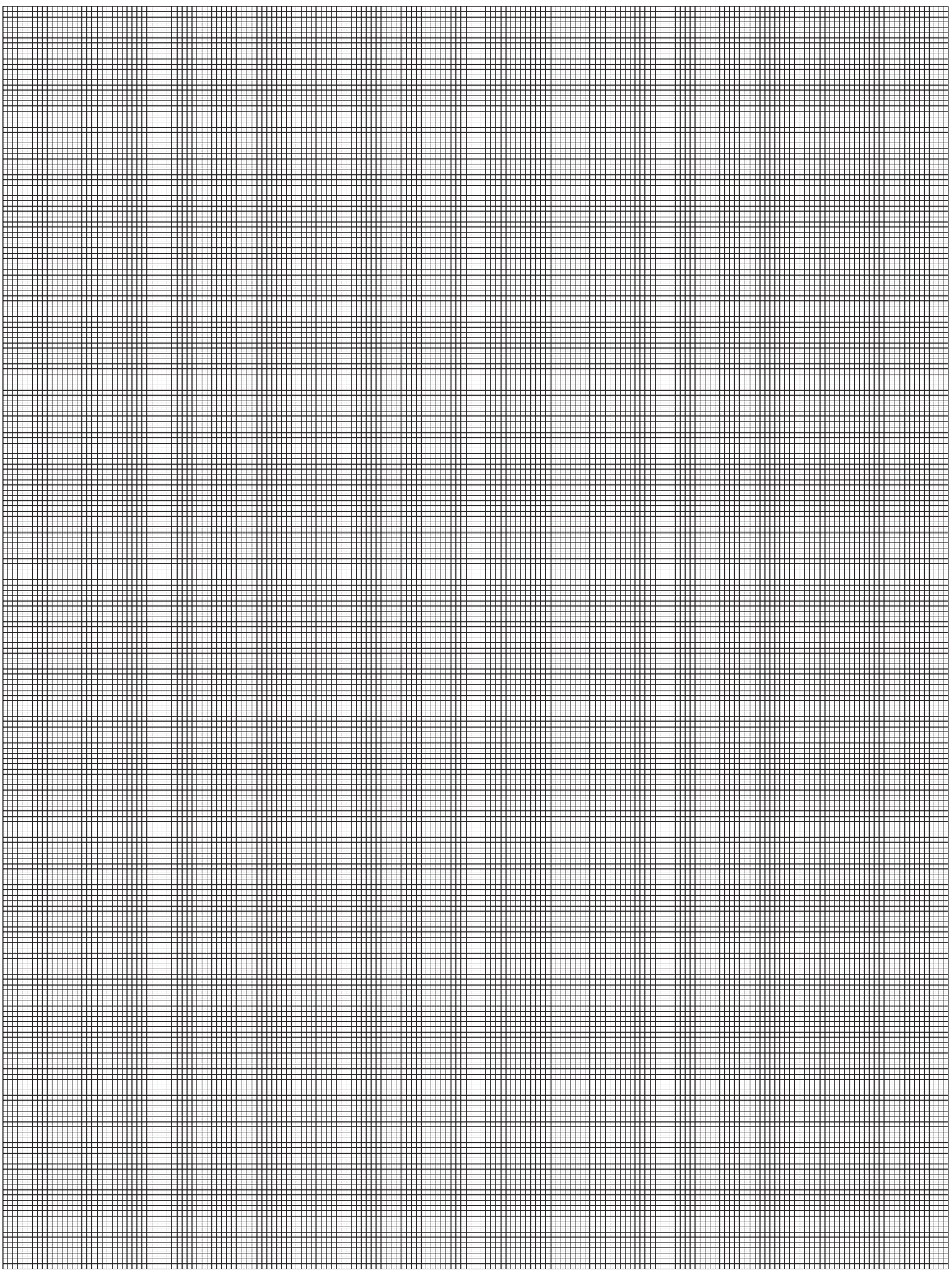


Profile	Type	Specificaton	Limitations of Use	Material	
			Temperature	Sealing element	Page
	HL 910 HL 920	External stressed laminar-ring-set	up to +450° C	Spring band steel	3
	HL 950 HL 960	Internal stressed laminar-ring-set	up to +450° C	Spring band steel	3
	HY 660 HY 661	Safety ring and back ring for open housing	-40 up to +110° C	POM	7

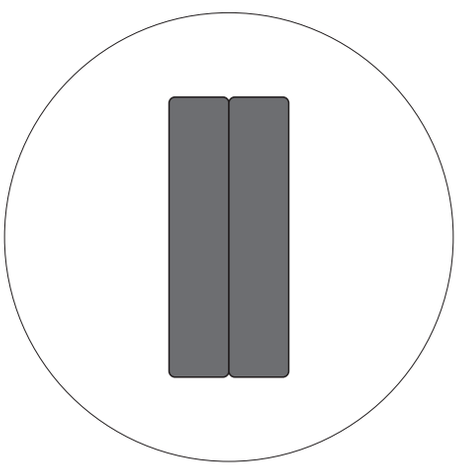
Regarding the great variety of practice applications please ask our customer service department personally for missing types or dimensions

LAMINAR RING
HL 910 TO HL 960

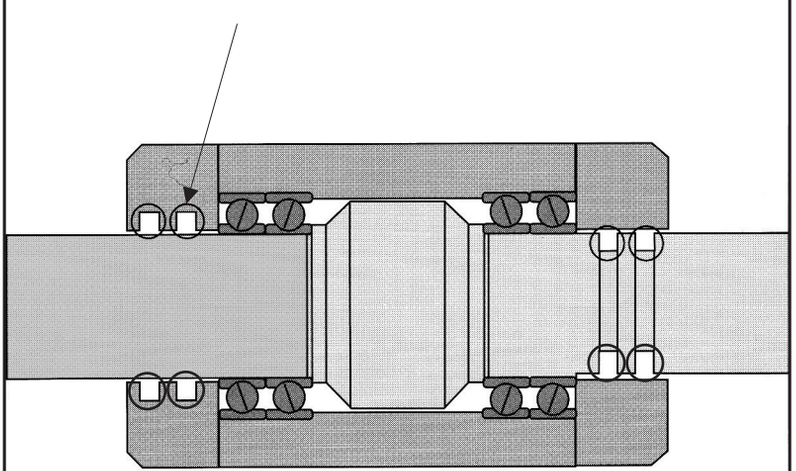
Double laminar rings of the series HL 910 to HL 960 are meant for gap seals to be used in vehicles and machine constructions. They have proven superiority in sealing for grease lubricated rolling and sliding contact bearings and also at very high velocities. These rings have been used for many years as protective rings against external dirt attack on sealing system.

Special Features:

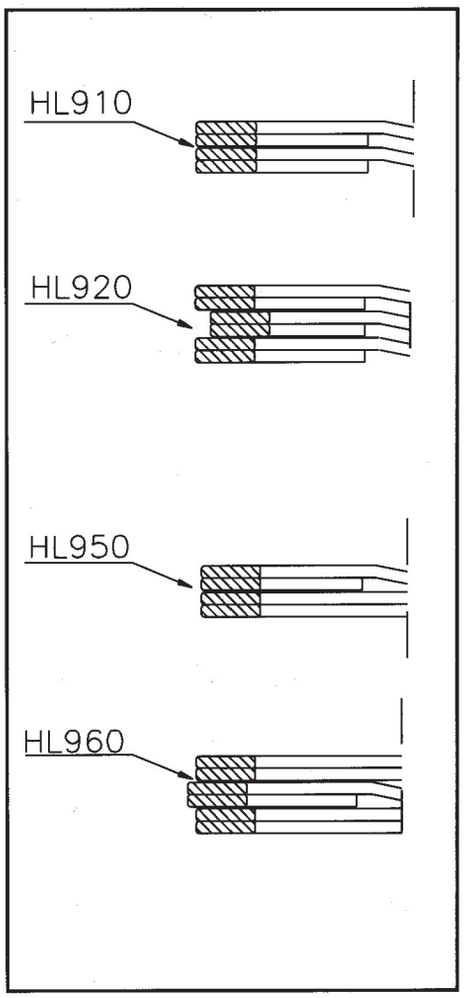
- Sealing through labyrinth effect
- Elevated service life of downstream compontents like shaft seals, gaskets, roller and sliding contact bearings
- Minimal frictional losses in rotational applications
- Available in low-stress designs, also for oscillating applications like wiper-systems (see type HA 360)
- Laminar rings included on the pressure side reduce the consequences of the gradual Diesel effect
- Small equipment parts
- Very high service life period of operation
- Large range of temperature
- Sizes available up to Ø = 1300 mm



Material	:	Spring band steel
Velocity	:	rotary up to 10 m/s (as per-designed) (HL 910 independent of spm)
Temperature	:	up to +450 °C (dependent on material)



LAMINAR RING
HL 910 TO HL 960



Profile Overview

HL 910: Externally stressed double ring - two HL external-rings stretch against a housing bore. If the housing moves, the rings also move along with them. If the spindle/shaft moves, rings remain stationary.

Application: For grease sealing against splached water and dirt. Also for special purpose seals (a.s. spindle sealing)
2 HL external rings = 1 Set HL 910

HL 920: Externally stressed combined double ring - two HL external rings stretch against a housing bore, and one HL internal ring stretches against gloove root of the shaft or a special ring support. If the housing moves, both HL external rings move and the inner one remains stationary. If the shaft or ring support moves, the procedure is reversed.

Application: For grease sealing against heavy splached water.
2 HL external rings + 1 HL internal rings = 1 Set HL 920

HL 950: Internally stressed double ring - two HL internal rings stretch against a shaft / spindle. If the shaft moves, the rings move along. If the grooved housing moves, rings remain stationary.

Application: For grease sealing against heavy splached water and dirt .
2 HL internal rings = 1 Set HL 950

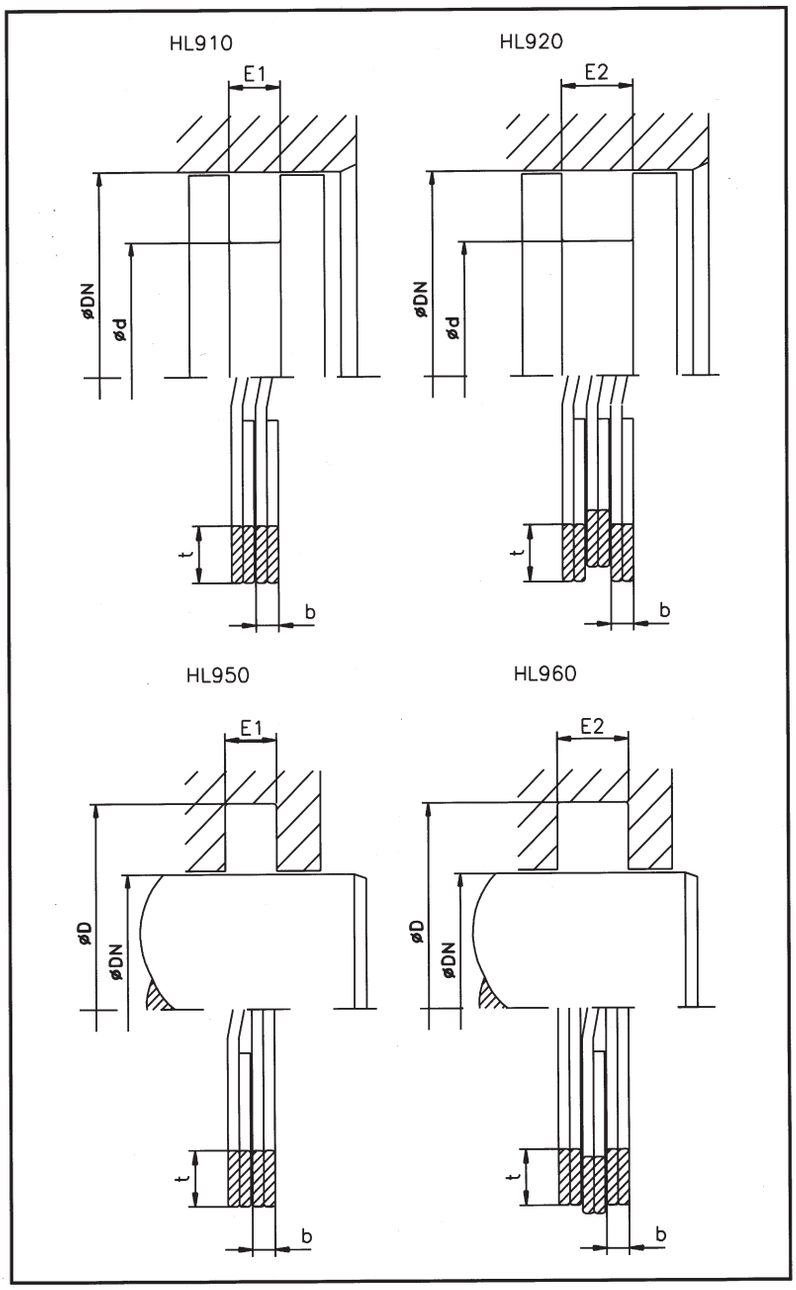
HL 960: Internally stressed combined double ring - two HL internal rings stretch against a shaft and one HL internal ring stretches against the groove root of the housing. If the shaft moves, the two HL internal rings move along and the external HL ring remains stationary. If the housing moves, the procedure is reversed.

Application: For grease sealing against heavy splached water and dirt.
2 HL- internal rings + 1 HL- external ring = 1 Set HL 960

Material Overview:

FBS - Spring band steel C 75 or similar
CNS - Chrome nickel steel 1.4310 for special applications

LAMINAR RING
HL 910 TO HL 960



Limitations on Use

Velocity	: HL 910 (independent of spm)
	HL 920 6 m/s
	HL 950 10 m/s
	HL 960 6 m/s
Temperature	: material FBS up to + 300°C
	material CNS up to + 450°C

Media for Use

Grease, mineral oils, flame resistant fluids (HFA, HFB, HFC), bio oils, water, air and other media depending on material

Surface Finish

Face	Rmax	Rz	Ra
Contakt face	20,0 µm	16,0 µm	3,2 µm
Groove root	20,0 µm	16,0 µm	3,2 µm
Groove flank	20,0 µm	16,0 µm	3,2 µm

Tolerances

Ø DN	15-104,5 (mm)	105-149,5 (mm)	150-439 (mm)	440-1000 (mm)
t	+ 0,10 - 0,20	+ 0,10 - 0,20	+0,15 - 0,30	+0,20 - 0,40
b	+ 0,08 - 0,00	+0,10 - 0,00	+ 0,12 - 0,00	+ 0,14 - 0,00
E1/E2	+ 0,10 - 0,00	+ 0,15 - 0,00	+ 0,20 - 0,00	+ 0,25 - 0,00
Ø d	+ 0,00 - 0,20	+ 0,00 - 0,25	+ 0,00 - 0,30	+ 0,00 - 0,40
Ø D	+ 0,20 - 0,00	+ 0,25 - 0,00	+ 0,30 - 0,00	+ 0,40 - 0,00

LAMINAR RING
HL 910 TO HL 960

Ø DN	t	b	E1	E2	Ø d	Ø D
15,00 - 24,50	1,00	1,30	2,90	4,30	DN - 2,60	DN + 2,60
25,00 - 29,50	1,20	1,30	2,90	4,30	DN - 3,00	DN + 3,00
30,00 - 35,50	1,50	1,30	2,90	4,30	DN - 3,60	DN + 3,60
36,00 - 42,50	1,80	1,30	2,90	4,30	DN - 4,20	DN + 4,20
43,00 - 48,50	2,20	1,45	3,20	4,80	DN - 5,00	DN + 5,00
49,00 - 51,50	2,40	1,45	3,20	4,80	DN - 5,40	DN + 5,40
52,00 - 59,50	2,60	1,45	3,20	4,80	DN - 5,80	DN + 5,80
60,00 - 69,50	2,80	1,65	3,60	5,40	DN - 6,20	DN + 6,20
70,00 - 74,50	3,10	1,65	3,60	5,40	DN - 6,80	DN + 6,80
75,00 - 79,50	3,30	1,65	3,60	5,40	DN - 7,20	DN + 7,20
80,00 - 89,50	3,50	1,65	3,60	5,40	DN - 7,60	DN + 7,60
90,00 - 99,50	3,80	1,65	3,60	5,40	DN - 8,20	DN + 8,20
100,00 - 104,50	4,10	1,65	3,60	5,40	DN - 8,80	DN + 8,80
105,00 - 109,50	4,30	1,96	4,30	6,40	DN - 9,20	DN + 9,20
110,00 - 119,50	4,60	1,96	4,30	6,40	DN - 9,80	DN + 9,80
120,00 - 129,50	5,00	1,96	4,30	6,40	DN - 10,80	DN + 10,80
130,00 - 149,50	5,50	1,96	4,30	6,40	DN - 11,80	DN + 11,80
150,00 - 170,00	6,00	2,00	4,40	6,50	DN - 13,00	DN + 13,00
150,00 - 170,00*	6,00	3,00	6,40	9,60	DN - 13,00	DN + 13,00
171,00 - 199,00	7,00	2,00	4,40	6,50	DN - 15,00	DN + 15,00
171,00 - 199,00*	7,00	3,00	6,40	9,60	DN - 15,00	DN + 15,00
200,00 - 259,00	8,00	2,40	5,30	7,80	DN - 18,00	DN + 18,00
200,00 - 259,00*	8,00	3,00	6,40	9,60	DN - 18,00	DN + 18,00
260,00 - 319,00	9,00	3,00	6,40	9,60	DN - 20,00	DN + 20,00
320,00 - 399,00	10,00	3,00	6,60	9,80	DN - 22,00	DN + 22,00
400,00 - 439,00	11,00	3,00	6,60	9,80	DN - 24,00	DN + 24,00
440,00 - 600,00	12,00	3,00	6,60	9,80	DN - 26,00	DN + 26,00
440,00 - 600,00*	12,00	5,00	10,60	15,90	DN - 26,00	DN + 26,00
601,00 - 699,00	14,00	5,00	10,80	16,20	DN - 32,00	DN + 32,00
700,00 - 799,00	16,00	5,00	10,80	16,20	DN - 36,00	DN + 36,00
800,00 - 899,00	18,00	5,00	11,00	16,50	DN - 40,00	DN + 40,00
900,00 - 999,00	20,00	5,00	11,00	16,50	DN - 44,00	DN + 44,00

* = reforced design (dimension var. 01)

Standard Diameter Increase

0,50 mm	Ø	15,00 -	149,50 mm
1,00 mm	Ø	150,00 -	439,00 mm
5,00 mm	Ø	440,00 -	1300,00 mm

Example for ordering Laminar Ring:

HL 910 0360 - 00 - FBS - ...

Profile
Nominal diameter
Dimension variant x 10
Standard material
HME internal code

Profile Key:

HL910 - external stressed double ring
HL920 - external stressed combined double ring
HL950 - internal stressed double ring
HL960 - internal stressed combined double ring

Dimension Variant.:

00 - standard design
01 - reforced design

Material Key:

FBS - spring band steel C 75
CNS - Chrome Nickel Steel 1.4310

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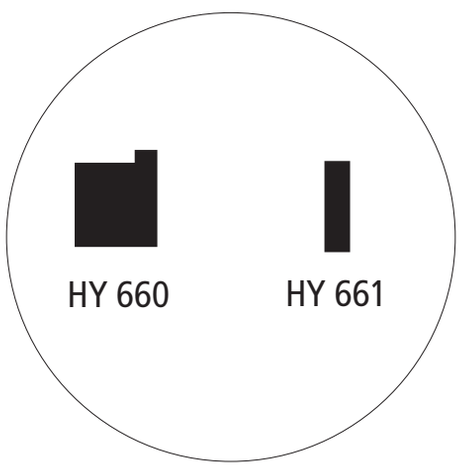
SAFETY RING
HY 660 / 661

HY 660 HY 661

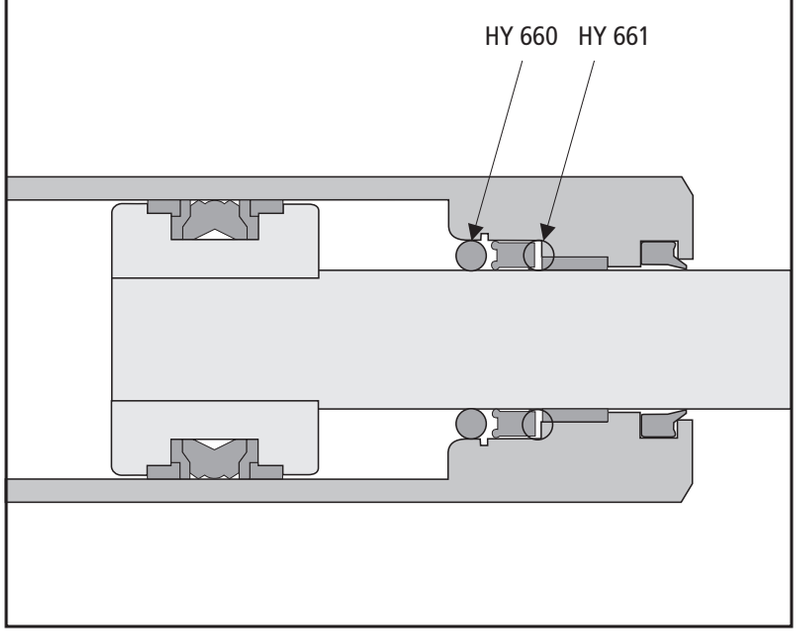
The ring HY 660 and the related model back ring HY 661 contain special parts that are essential to the so called - modern open assembly space - and the resultant sealing system.

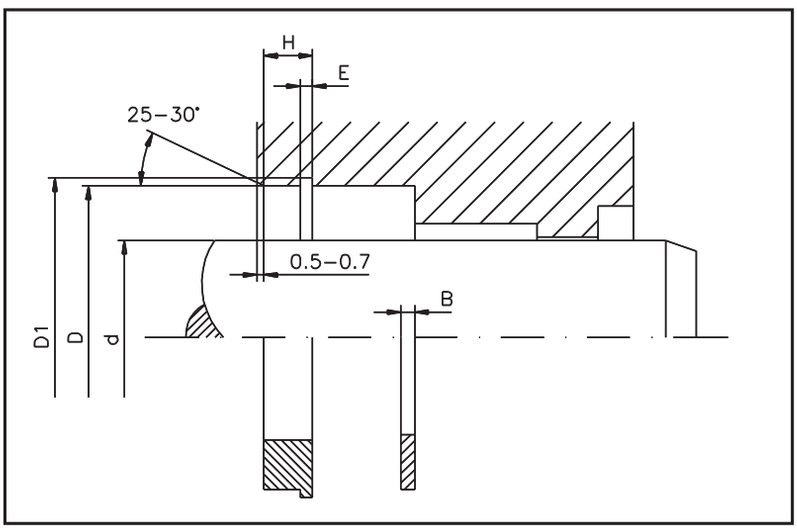


Special Features:

- Slotted / split design of safety ring for easy snap on assembly in groove.
- Two holes near the place of cut considerably simple assembly.
- Longitudinal grooves on periphery provide quick responce of sealing
- Back ring from un-splitted POM also provide a simple assembly.
- Split extrusion avoided because of the sealing variant introduced corresponding to the demand
- Support of slide element on return stroke to the seal / gasket.
- As a whole exceptionally assembly friendly, safe and price-worthy compared to conventional closed mounting spaces.

Material : POM
Temperature : -40 up to +110 °C





Limitations on Use

Temperature : -40 up to +110 °C

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC,) bio oils, water, air and other media on enquiry

Tolenrances for Mounting space HY 660

Ø D	< 47	48 - 76	77 - 100	101 - 115	116 - 175
Ø D 1	+ 0,25 - 0,00	+ 0,30 - 0,00	+ 0,35 - 0,00	+ 0,54 - 0,00	+ 0,63 - 0,00
E	+ 0,14 - 0,00	+ 0,14 - 0,00	+ 0,18 - 0,00	+ 0,18 - 0,00	+ 0,20 - 0,00

d f8/h9	**D** H10	**D1**	**E**	**H**	**B**	**Part No.** Safety ring	**Part No.** Back ring
12,00	20,00	21,20	1,30	4,50	2,00	HY660 0120-01-500	HY661 0120-01-500
16,00	24,00	25,20	1,30	4,50	2,00	HY660 0160-01-500	HY661 0160-01-500
20,00	30,00	31,40	1,30	4,50	2,00	HY660 0200-01-500	HY661 0200-01-500
20,00	45,00	47,50	1,85	5,00	2,00	HY660 0200-02-500	HY661 0200-02-500
22,00	30,00	31,40	1,30	4,50	2,00	HY660 0220-01-500	HY661 0220-01-500
25,00	35,00	37,00	1,60	5,00	2,00	HY660 0250-01-500	HY661 0250-01-500
28,00	38,00	40,00	1,60	5,00	2,00	HY660 0280-01-500	HY661 0280-01-500
28,00	45,00	47,50	1,85	5,00	2,00	HY660 0280-02-500	HY661 0280-02-500
30,00	40,00	42,50	1,85	5,00	2,00	HY660 0300-01-500	HY661 0300-01-500
32,00	40,00	42,50	1,85	5,00	2,00	HY660 0320-01-500	HY661 0320-01-500
32,00	42,00	44,50	1,85	5,00	2,00	HY660 0320-02-500	HY661 0320-02-500
35,00	45,00	47,50	1,85	5,00	2,00	HY660 0350-01-500	HY661 0350-01-500
35,00	50,00	53,00	2,15	5,00	2,00	HY660 0350-02-500	HY661 0350-02-500
36,00	46,00	48,50	1,85	5,00	2,00	HY660 0360-01-500	HY661 0360-01-500
40,00	50,00	53,00	2,15	5,00	2,00	HY660 0400-01-500	HY661 0400-01-500
40,00	55,00	58,00	2,15	5,00	2,00	HY660 0400-02-500	HY661 0400-02-500
45,00	55,00	58,00	2,15	5,00	2,00	HY660 0450-01-500	HY661 0450-01-500
45,00	65,00	68,00	2,65	6,00	2,00	HY660 0450-02-500	HY661 0450-02-500
50,00	60,00	63,00	2,15	5,00	2,00	HY660 0500-01-500	HY661 0500-01-500
50,00	65,00	68,00	2,65	6,00	2,00	HY660 0500-02-500	HY661 0500-02-500
50,00	70,00	73,00	2,65	6,00	2,00	HY660 0500-03-500	HY661 0500-03-500
56,00	66,00	69,00	2,65	6,00	2,00	HY660 0560-01-500	HY661 0560-01-500
56,00	71,00	74,00	2,65	6,00	2,00	HY660 0560-02-500	HY661 0560-02-500
60,00	75,00	78,00	2,65	6,00	2,00	HY660 0600-01-500	HY661 0600-01-500
60,00	80,00	83,00	2,65	6,00	2,00	HY660 0600-02-500	HY661 0600-02-500
63,00	78,00	81,00	2,65	6,00	2,00	HY660 0630-01-500	HY661 0630-01-500
63,00	83,00	86,00	2,65	6,00	2,00	HY660 0630-02-500	HY661 0630-02-500
70,00	85,00	88,50	3,15	7,50	2,00	HY660 0700-01-500	HY661 0700-01-500
75,00	90,00	93,50	3,15	7,50	2,00	HY660 0750-01-500	HY661 0750-01-500

SAFETY RING
HY 660 / 661

HY 660 HY 661

d f8/h9	**D** H10	**D1**	**E**	**H**	**B**	**Part No.** Safety ring	**Part No.** Back ring
80,00	95,00	98,50	3,15	7,50	2,00	HY660 0800-01-500	HY661 0800-01-500
80,00	100,00	103,50	3,15	6,00	2,00	HY660 0800-02-500	HY661 0800-02-500
90,00	105,00	109,00	4,15	7,50	2,00	HY660 0900-01-500	HY661 0900-01-500
100,00	120,00	124,00	4,15	6,00	2,00	HY660 1000-01-500	HY661 1000-02-500
110,00	125,00	129,00	4,15	10,00	2,00	HY660 1100-01-500	HY661 1100-01-500
110,00	130,00	134,00	4,15	10,00	2,00	HY660 1100-02-500	HY661 1100-02-500
125,00	145,00	149,00	4,15	10,00	2,00	HY660 1250-01-500	HY661 1250-01-500
140,00	160,00	164,00	4,15	10,00	2,00	HY660 1400-01-500	HY661 1400-01-500

Further dimensions and intermediate sizes available on request.

Example for ordering Safety Ring:

HY 660 0500 - 01 - 500 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

Example for ordering Back Ring:

HY 661 0500 - 01 - 500 - ...

Profile
Nominal diameter x 10
Dimension variant
Standard material
HME internal code

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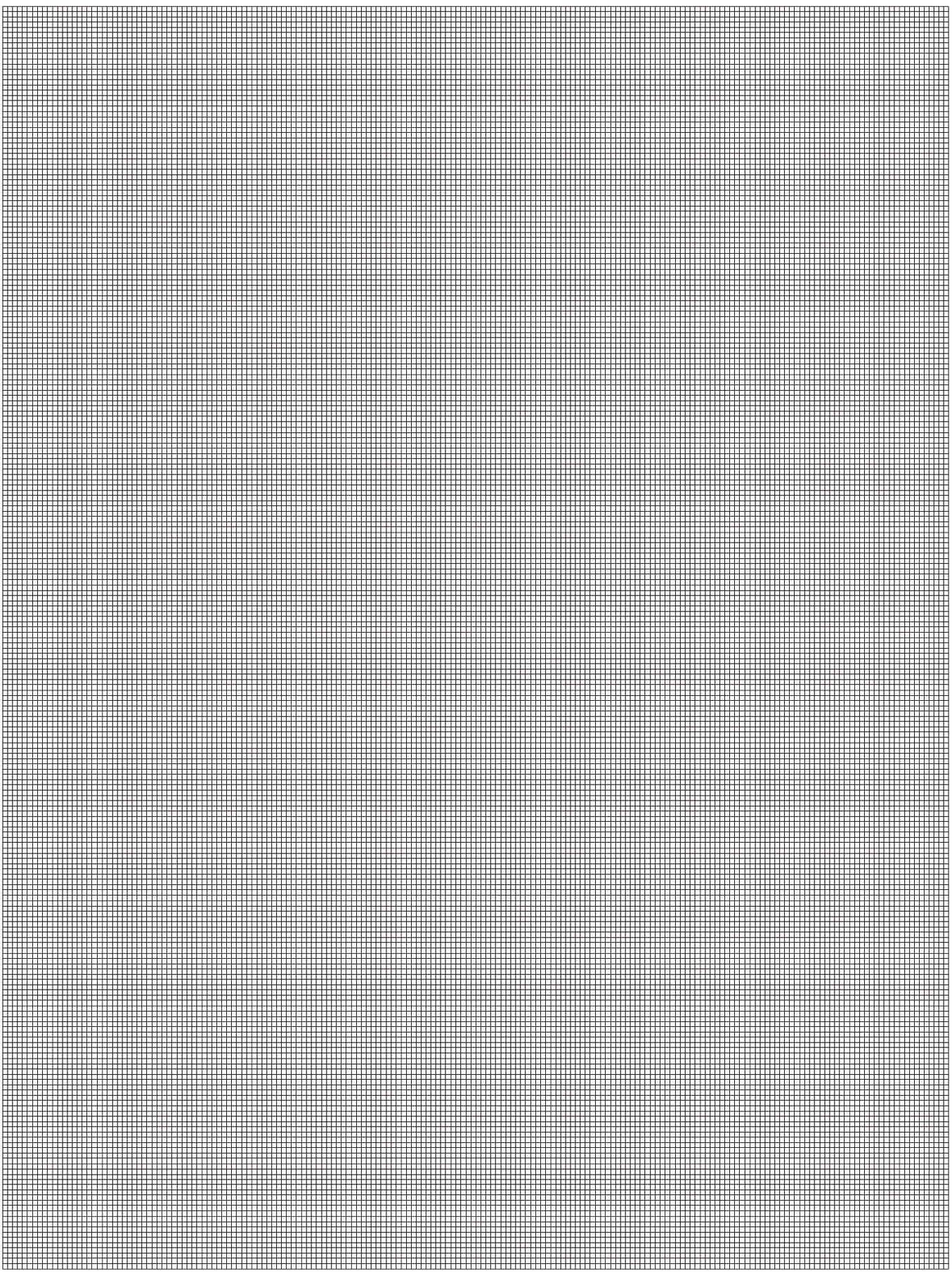
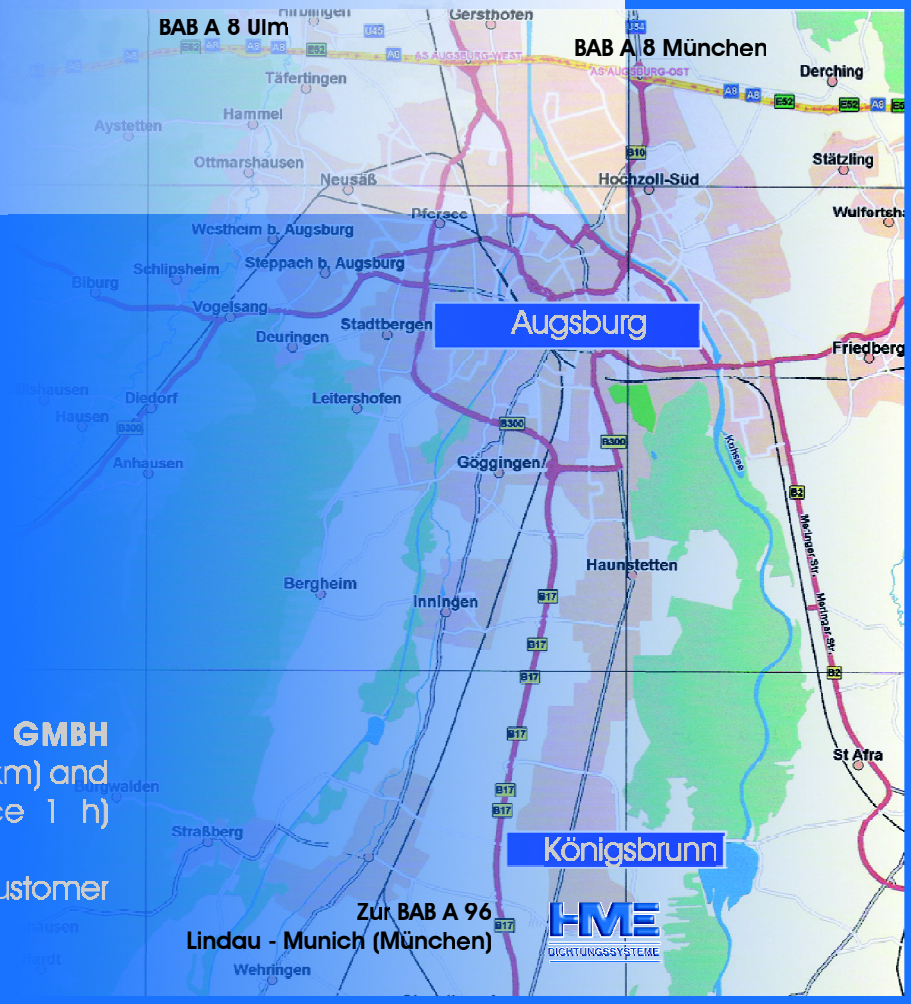


visit HME in Germany and are welcome



HME DICHTUNGSSYSTEME GMBH
near by Munich / Bavaria (60 km) and the Munich Airport (distance 1 h)

Please take our special customer guide assistance

HME

DICHTUNGSSYSTEME

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