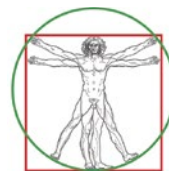


General Catalogue



ITALIAN QUALITY MADE



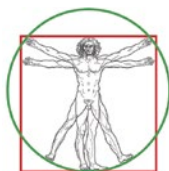
ETTER
GUARNIZIONI INDUSTRIALI



Etter provides a complete set of seals for gasket in various types of materials. Next to the historical production of O -Rings and to design rubber items, there are a wide range of customized products pleased to satisfy the most varied requirements.

Real benefits, such as costs reduction, the guarantee of continuity in the supply of the products, and especially the support expert counselling and specialist consolidated, makes ETTER the real and reliable partner.

ETTER is able to activate a chain of processes complex and diversified production, which allow obtaining products that express the real essence of Made in Italy.



ETTER
GUARNIZIONI INDUSTRIALI

Strengths

Experience

Experience and constant technical research enable it to offer excellent customized solutions. The wide knowledge of materials used in the world of seals, gaskets profiles and the basic dynamics, complete our profile.



Expertise

For over fifteen years, thanks to constant contact with the technical departments of our customers we have increased our expertise in various industrial applications, to provide quality, reliability and competence.

Technical assistance

From design to installation, we are engaged in research of advanced sealing solutions. By partnering with industry companies, design studios and laboratories university, we can offer the most extensive technical skills.

ITALIAN QUALITY MADE

Production flexibility

Our staff it is composed of subjective highly qualified technical able to design articles, molds and precise manufacturing processes, flexible and with maximum optimization of the time's production.

Ratio quality/price

Years of experience and continuous modifications have enabled the optimization of the productive cycles that (thanks to the use of high quality raw materials) they have allowed us to create an excellent quality/price ratio of our products.

Wide range of products

The availability of a wide range of products for different industries and a large stock of raw materials and standard items allow us to meet the multiple needs of our customers.




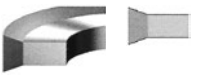
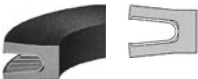
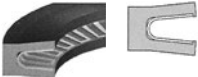
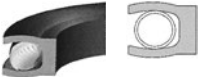
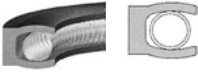
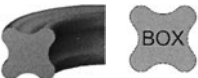

Materials

| PRODUCT | TYPE | TEMP. (°C) | | SHORE | | DESCRIPTION |
|---|---------|------------|------|-------|-----|--|
| | | min | max | min | max | |
| NITRILE RUBBER, BUNA | NBR | -40 | +130 | 30 | 92 | Excellent resistance to oil, heat and aging. Good mechanical properties and low permanent deformation. Solid Nitrile Rubber is not resistant to weathering and ozone.. |
| FLUORINATED RUBBER, VITON | FKM FPM | -20 | +280 | 55 | 80 | Viton is a synthetic rubber used to manufacture gaskets. Viton can withstand temperatures up to 250°C, and is a very inert but expensive rubber. Viton gaskets are typically used in extreme environments, in the presence of acids and corrosives. |
| ETHYLENE-PROPYLENE RUBBER, DUTRAL | EPDM | -90 | +140 | 40 | 90 | They are a synthetic rubber which offers excellent resistance to Ozone, Ageing and UV light, but is not resistant to oil or fuels |
| SILICON RUBBER | VMQ | -50 | +300 | 30 | 80 | Silicone rubbers resist to high temperatures, ozone, atmospheric agents and they show good dielectric characteristics. |
| CHLOROPRENE RUBBER, NEOPRENE | CR | -20 | +120 | 40 | 85 | Their processing characteristics and performance are able to fulfil most needs of the rubber industry. Items made of polychloroprene are highly resistant against atmospheric agents, ozone, flame. |
| HYDROGENATED NITRILE-RUBBER | HNBR | -20 | +150 | 60 | 92 | Excellent resistance to oils and heat. It is used when the temperatures are too high for the NBR. Good resistance to abrasion and compression set. |
| POLYACRYLATE RUBBER, EUROPRENE AR, CYANACRYL | ACM | -20 | +180 | 45 | 82 | Polyacrylic elastomers represent a class of polymeric materials with elevated performances in terms of: - resistance to the heat, working temperature up to 175°C (peaks up to 200°C). High lubricating oils resistance and good sealing characteristics. |
| FLUROSILICONE RUBBER | FVMQ | -55 | +200 | 25 | 85 | VMQ resists to oils, flame, high and low temperatures and shows good elasticity. Fields of use: automotive, electric and electronic industries, health care and food sectors and aerospace. |
| RUBBER PERFLUORORATA, KALREZ, SIMRIZ | FFKM | -20 | +315 | 65 | 95 | Main features: very low permeability, fire-resistance and heat stability. Pefluoroelastomers show good chemical resistance to aliphatic and aromatic hydrocarbons, polar solvents, water, steam, organic and inorganic acids. |
| THERMOPLASTIC POLYURETHANE, DESMOPAN | TPU | -100 | +180 | 65 | 82 | High elasticity and excellent resistance to abrasion, excellent impact resistance both at high and at low temperature. Excellent thermoformability good weldability and resistance to weathering. |
| POLYOXYMETHYLENE, DELRIN, ACETAL | POM | -140 | +135 | 60 | 85 | High elasticity and excellent resistance to abrasion, excellent Both impact resistance at high and at low temperatures. excellent thermoformability good weldability and resistance to weathering. |
| POLYTETRAFLUOROETHYLENE, TEFLON, HOSTAFLO | PTFE | -200 | +260 | 60 | 85 | It has excellent die electric properties, this is particularly true at high radio frequency, making it suitable as an insulator for cable and connector assemblies. Combined with its high melting temperature this material is a good choice for high performance applications. |
| FLURO ETHYLENE PROPYLENE, NEOFLO | FEP | -200 | +205 | 55 | 100 | Fluorinated thermoplastic with excellent thermal, Excellent electrical and chemical inertness. used in for its corrosion resistance fi no to temperatures of 200 ° C. |
| POLYURETHANE, ADIPRENE, VULKOLLAN, UREPAN | AU | -30 | +100 | 60 | 100 | Polyurethane elastomers are special rubbers whose performance and characteristics of processability have been designed to satisfy particular technical. |
| BUTADIENE RUBBER, STYRENE | SBR | -40 | +100 | 42 | 92 | SBR resists to shear, tear, permanent deformation and usury. while it shows. It has good dielectric properties and good chemical resistance to silicone oils, cold, water, brake fluids while it shows bad resistance to UV rays, ozone, oxygen and oxidant agents. |
| LIQUID SILICONE RUBBER | VMQL | -60 | +250 | 20 | 80 | Thanks to its properties VMQL is widely used in food and health care industries. |

Static seals

| PRODUCT | DESCRIPTION | TYPE | MATERIALS (various Shore hardness) | DIMENSIONS | REMARKS |
|---|------------------------------|--------------------|--|---|---------------------------|
|  | O-Ring | OR-10 | NBR, FKM, EPDM, VMQ, HNBR, FFKM, FVMQ, FEPM, ACM, CR, SBR, CSM, ECO, BR, IIR, IR, AU, EU, NR | DIN 3771-1, ISO 3601-1, SMS 1586, JIS B 2401, AS 568, BS 1806, BS 4518, NF T47-501, R 0 to R 88 | |
|  | O-Ring | FEP- encapsulated | OR-11 | FKM / FEP encapsulated VMQ/ FEP encapsulated | |
|  | O-Ring | PTFE- encapsulated | OR-12 | PTFE Elastomer core | |
|  | O-Ring made from O-Ring cord | glued | OR-13 | NBR, FKM, EPDM, VMQ | |
|  | O-Ring made from O-Ring cord | vulcanised | OR-14 | NBR, FKM, EPDM, VMQ | |
|  | X-Ring | | XR-10 | NBR, FKM, ... | AS 568 |
|  | Back up ring | concave | BR-10 | NBR, FKM, ... | |
|  | Back up ring | solid | BR-11 | PTFE, POM, PEEK, NBR, FKM, AU, ... | |
|  | Back up ring | split | BR-12 | PTFE, POM, PEEK, NBR, FKM, AU, ... | |
|  | Back up ring | spiral | BR-13 | PTFE | |
|  | Flat ring / washer | moulded | WR-10 | NBR, FKM, EPDM, VMQ ... | |
|  | Flat ring / washer | tube cut | WR-11 | NBR, FKM, EPDM, VMQ ... | |
|  | Flat ring / washer | stamped | WR-12 | NBR, FKM, EPDM, VMQ ... | |
|  | Flat ring / washer | lathe cut | WR-13 | NBR, FKM, EPDM, VMQ ... | |
|  | D-Ring | | WR-14 | NBR, FKM, EPDM, VMQ ... | |
| | Profile seal | acc. to DIN 3869 | WR-15 | NBR, FKM ... | DIN 3869 |
| | Square ring | | SR-10 | NBR, FKM, EPDM, VMQ ... | |
| | Hygienic seal | standard design | HS-10 | NBR, FKM, EPDM, VMQ, HNBR, PTFE ... | DIN 11851 FDA 177.2600 |
| | Hygienic seal | high version | HS-11 | NBR, FKM, EPDM, VMQ, HNBR, PTFE ... | FDA 177.2600 |
| | Hygienic seal | with flange | HS-12 | NBR, FKM, EPDM, VMQ, HNBR, PTFE ... | FDA 177.2600 |

Static seals

| PRODUCT | DESCRIPTION | TYPE | MATERIALS (various Shore hardness) | DIMENSIONS | REMARKS |
|--|--|-------|---|------------|---------|
|  | O-Ring cord extruded | EP-10 | NBR, FKM, EPDM, VMQ ... | | |
| | Profile cord extruded - profile acc. to drawing | EP-13 | NBR, FKM, EPDM, VMQ ... | | |
|  | Bonded seal standard design | BS-10 | NBR, FKM ... | | |
|  | Bonded seal self centring | BS-11 | NBR, FKM ... | | |
|  | Bonded seal outside sealing | BS-13 | NBR, FKM ... | | |
| | Bonded seal design acc. to drawing | BS-12 | NBR, FKM ... | | |
|  | Flange seal outside sealing | FS-10 | PTFE compounds V-spring stainless steel | | |
|  | Flange seal inside sealing | FS-11 | PTFE compounds V-spring stainless steel | | |
|  | Flange seal outside sealing | FS-12 | PTFE compound helical spring stainless steel | | |
|  | Flange seal inside sealing | FS-13 | PTFE compound helical spring stainless steel | | |
| | Moulded part acc. to drawing customer specific | CP-10 | all established materials and combinations | | |
|  | X-Ring Service box | SK-40 | NBR, FKM, EPDM, VMQ, ... | | |
|  | Service box special contents | SK-50 | NBR, FKM, EPDM, VMQ, ... | | |

Kit

These O-Ring kit is a must have around for seemingly endless supply of O-Rings. Ideal for hobby, plumbing or machine shop work where variety of O-Rings are needed, but not in bulk quantity. The O-Rings are made of 70 durometer Nitrile material suitable for most sealing applications. The kit contains 382 O-Rings in 30 popular sizes.



COMPOUND AVAILABLE

NBR 70 sh and 90 sh, FKM 80 sh, Silicone 70 sh, EPDM 70 sh and CR 70 sh.





























DIMENSION AVAILABLE

IN 3771-1, ISO 3601-1, SMS 1586, JIS B 2401, AS 568, BS 1806, BS 4518, NF T47-501, R 0 to R 27, R 28 to R 88





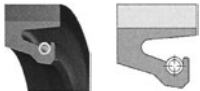

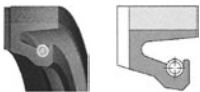



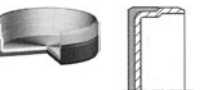
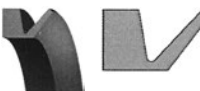
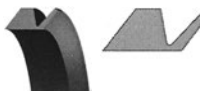

Rotary seals

| PRODUCT | | TYPE | MATERIALS | TEMP. (°c) | | SPEED (m/s) | PRESSURE (MPa) | RANGE (mm) | | REMARKS | |
|---|---|----------|-----------|--|------------|-------------|----------------|--------------|----|---------|--|
| | | | | min | max | max | max | from | to | | |
|  |  | Oil seal | OS-A10 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 4 | 1000 | standard design acc. to DIN 3760 |
|  |  | Oil seal | OS-A11 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 4 | 1000 | standard design acc. to DIN 3760 with protective lip |
|  |  | Oil seal | OS-A12 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 3 | | without spring |
|  |  | Oil seal | OS-A13 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 4 | | without spring with protective lip |
|  |  | Oil seal | OS-F10 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -30 -40 | 200 100 | 35 12 | 0.05 0.05 | 4 | 1000 | case fully covered spring 1.4301 standard design for FKM material |
|  |  | Oil seal | OS-F11 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -30 -40 | 200 100 | 35 12 | 0.05 0.05 | 4 | 1000 | case fully covered spring 1.4301 stand. design with protective lip for FKM material |
|  |  | Oil seal | OS-N21 | NBR FKM | -40 -30 | 100 170 | 12 35 | 1 1 | 8 | 300 | pressure resistant with protective lip standard design |
|  |  | Oil seal | OS-N34 | NBR FKM | -40 -30 | 100 170 | 12 35 | 1 1 | 8 | 300 | pressure resistant |
|  |  | Oil seal | OS-G10 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 4 | 1000 | ribbed rubber OD |
|  |  | Oil seal | OS-G11 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 4 | 1000 | ribbed rubber OD with protective lip |
|  |  | Oil seal | OS-G12 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 3 | | ribbed rubber OD without spring |
|  |  | Oil seal | OS-G13 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 4 | | ribbed rubber OD without spring with protective lip |
|  |  | Oil seal | OS-B10 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 6 | 1000 | standard design metal housing |
|  |  | Oil seal | OS-B11 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 6 | 1000 | metal housing with protective lip |



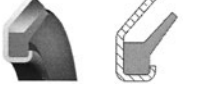




Rotary seals

| PRODUCT | | TYPE | MATERIALS | TEMP. (°C) | | SPEED (m/s) max | PRESSURE (MPa) max | RANGE (mm) | | REMARKS |
|--|---|----------|-----------|--|------------|-----------------|--------------------|--------------|------|--|
| | | | | min | max | | | from | to | |
|  |  | Oil seal | OS-B12 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 4 | metal housing without spring |
|  |  | Oil seal | OS-B13 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 4 | metal housing without spring with protective lip |
|  |  | Oil seal | OS-BG10 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 4 | 1000 metal + rubber OD |
|  |  | Oil seal | OS-BG11 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 4 | 1000 metal + rubber OD with protective lip |
|  |  | Oil seal | OS-C10 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 6 | 1000 standard design metal housing + reinforcement cap |
|  |  | Oil seal | OS-C11 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 12 35 | 0.05 0.05 | 6 | 1000 standard design metal housing + reinforcement cap with protective lip |
|  |  | Oil seal | OS-C12 | NBR FKM VMQ, ACM, EPDM, HNBR, .. | -40 -30 | 100 200 | 6 10 | 0 0 | 6 | metal housing + reinforcement cap without spring |
|  |  | Oil seal | OS-C13 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 6 | metal housing + reinforcement cap without spring with protective lip |
|  |  | Oil seal | OS-D10 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0 0 | 1000 | two sealing lips for separating two media |
|  |  | Oil seal | OS-D15 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 6 10 | 0.03 0.03 | 1000 | two sealing lips for separating two media |
|  |  | Oil seal | OS-018 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 100 200 | 10 10 | 0.05 0.05 | 1000 | outside sealing |
|  |  | Oil seal | OS-ST18 | NBR FKM VMQ, ACM, EPDM, HNBR, ... | -40 -30 | 80 100 | 7 9 | 0.05 0.05 | 300 | cassette seal other designs available |
|  |  | Oil seal | OS-PA30 | PTFE compounds stainless steel | -90 | 250 | 40 | 0.5 | 20 | 1200 clamped sealing lip pressure resistant non-mould production |
|  |  | Oil seal | OS-PA31 | PTFE compounds stainless steel | -90 | 250 | 40 | 1 | 31 | 1200 clamped sealing lip pressure resistant non-mould production |





Rotary seals

| PRODUCT | TYPE | MATERIALS | TEMP. (°c) | | SPEED (m/s) max | PRESSURE (MPa) max | RANGE (mm) | | REMARKS | | |
|---|------------|-----------|--|------------|-----------------|--------------------|---------------|----|---------|--|--------|
| | | | min | max | | | from | to | | | |
|  | Oil seal | OS-PA32 | PTFE compounds stainless steel | -90 | 250 | 40 | 2.5 | 31 | 1200 | clamped sealing lip pressure resistant non-mould production | |
|  | Oil seal | OS-W10 | NBR FKM Case: stainless steel | -40 -30 | 100 | 12 15 | 0.5 1 | | 1200 | clamped sealing lip pressure resistant non-mould production | |
|  | Oil seal | OS-W11 | NBR FKM Case: stainless steel | -40 -30 | 100 | 12 15 | 0.5 1 | | 1200 | clamped sealing lip pressure resistant non-mould production | |
|  | Oil seal | OS-W50 | PTFE carbon / graphite Oring: FKM Spring: 1.4571 | -20 | 200 | 15 | 1 | | 300 | chemical resistant pressure resistant non-mould production | |
|  | Oil seal | OS-Q10 | NBR + NBR-Fabric FKM + FKM-Fabric | -30 -20 | 100 | 20 25 | 0.05 0.05 | | 1200 | OD made of rubber fabric for large-scale machines split versione possible | |
|  | Oil seal | OS-Q11 | NBR + NBR-Fabric FKM + FKM-Fabric | -30 -20 | 100 | 20 25 | 0.05 0.05 | | 1200 | OD made of rubber fabric for large-scale machines split versione possible | |
|  | Oil seal | OS-Q12 | NBR + NBR-Fabric FKM + FKM-Fabric | -30 -20 | 100 | 20 25 | 0.05 0.05 | | 1200 | OD made of rubber fabric for large-scale machines split versione possible | |
|  | Oil seal | OS-Q13 | NBR + NBR-Fabric FKM + FKM-Fabric | -30 -20 | 100 | 20 25 | 0.05 0.05 | | 1200 | OD made of rubber fabric for large-scale machines split versione possible | |
|  | Cover seal | CS-10 | NBR FKM | -30 -20 | 100 | | 0.05 0.05 | | | | |
|  | Cover seal | CS-11 | NBR FKM | -30 -20 | 100 | | 0.05 0.05 | | | | |
|  | Cover seal | CS-12 | NBR FKM | -30 -20 | 100 | | 0.05 0.05 | | | | |
|  | V-Ring | VR-A10 | NBR FKM ... | -40 -20 | 100 | 8 (12) | 0 6.5 (10) | 0 | 3 | 1000 | Type A |
|  | V-Ring | VR-S10 | NBR FKM ... | -40 -20 | 100 | 8 (12) | 0 6.5 (10) | 0 | 5 | 199 | Type S |
|  | V-Ring | VR-E10 | NBR FKM ... | -40 -20 | 100 | 8 (12) | 0 6.5 (10) | 0 | 300 | 2000 | Type E |

Rotary seals

| PRODUCT | TYPE | MATERIALS | TEMP. (°C) | | SPEED (m/s) | PRESSURE (MPa) | RANGE (mm) | | REMARKS | |
|--|---------|--|------------|-----|-------------|----------------|------------|------|--|--|
| | | | min | max | | | from | to | | |
|  | VR-L10 | NBR | -40 | 100 | 8 (12) | 0 | 110 | 600 | Type L | |
| | | FKM | -20 | 200 | 6.5 (10) | 0 | | | | |
| | | ... | | | | | | | | |
|  | VR-AX10 | NBR | -40 | 100 | 8 (12) | 0 | 200 | 2000 | Type AX | |
| | | FKM | -20 | 200 | 6.5 (10) | 0 | | | | |
| | | ... | | | | | | | | |
|  | AS-10 | NBR | -40 | 100 | 12 (20) | 0 | 10 | 135 | standard design | |
| | | FKM | -30 | 180 | 12 (20) | 0 | | | | |
| | | ... | | | | | | | | |
|  | AS-11 | NBR | -40 | 100 | 12 (20) | 0 | 15 | 100 | version with extended metal case | |
| | | FKM | -30 | 180 | 12 (20) | 0 | | | | |
| | | ... | | | | | | | | |
|  | RD-10 | PTFE carbon/graphite | | | 5 | 30 | | 2500 | for rotating and oscillating movements inside sealing | |
| | | Oring: NBR | -30 | 100 | | | | | | |
| | | Oring: FKM | -15 | 200 | | | | | | |
|  | RD-11 | PTFE carbon/graphite | | | 5 | 30 | | 2500 | for rotating and oscillating movements outside sealing | |
| | | Oring: NBR | -30 | 100 | | | | | | |
| | | Oring: FKM | -15 | 200 | | | | | | |
|  | RD-14 | PTFE carbon/graphite V-spring: 1.4310 | -100 | 200 | 2 | 15 | | 2500 | with clamp flange high thermal and chemical resistance | |

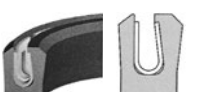
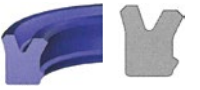
Guiding elements

| PRODUCT | TYPE | MATERIALS | TEMP. (°C) | | SPEED (m/s) | PRESSURE (MPa) | RANGE (mm) | | REMARKS |
|--|--------|------------------|------------|-----|-------------|----------------|------------|----|---|
| | | | min | max | | | from | to | |
|  | GR-P10 | PTFE bronze | -60 | 200 | 15 | 15 | | | piston guide ring |
| | | laminated fabric | -50 | 130 | 1 | 350 | | | |
| | | POM-glass | -30 | 110 | 1 | 35 | | | |
|  | GR-R10 | PTFE bronze | -60 | 200 | 15 | 15 | | | rod giude ring |
| | | laminated fabric | -50 | 130 | 1 | 350 | | | |
| | | POM-glass | -30 | 110 | 1 | 35 | | | |
|  | GS-10 | PTFE bronze | -60 | 200 | 15 | 15 | | | special surface structure chamfered edges |
|  | GS-11 | PTFE bronze | -60 | 200 | 15 | 15 | | | Precut shapes: diagonal (30°) straight (90°) Z-cut |









Hydraulic seals

| | PRODUCT | TYPE | MATERIALS | TEMP. (°c) | | SPEED (m/s) max | PRESSURE (MPa) max | RANGE (mm) from to | REMARKS |
|---|-------------|-------|--|-------------------|-------------------|-----------------|--------------------|--------------------|---------------------------------|
| | | | | min | max | | | | |
|  | Piston seal | PS-10 | PTFE bronze + OR NBR PTFE bronze + OR FKM TPU + OR NBR | -30 -15 -30 | 100 200 100 | 15 15 2 | 40 40 | 2500 | double acting |
|  | Piston seal | PS-11 | PTFE bronze + OR NBR PTFE bronze + OR FKM TPU + OR NBR | -30 -15 -30 | 100 200 100 | 15 15 2 | 40 40 | 2500 | single acting |
|  | Piston seal | PS-12 | PTFE bronze + OR NBR PTFE bronze + OR FKM | -30 -15 | 100 200 | 2 2 | 16 16 | 2500 | double acting |
|  | Piston seal | PS-13 | PTFE compounds + OR NBR PTFE compounds + OR FKM | -30 -15 | 100 200 | 15 15 | 35 35 | 2500 | double acting |
|  | Piston seal | PS-19 | PTFE bronze + OR NBR PTFE bronze + OR FKM | -30 -15 | 100 200 | 2 2 | 40 40 | 700 | double acting |
|  | Piston seal | PS-87 | PTFE carbon/graphite V-spring: 1.4310 | -150 | 250 | 15 | 35 | 2500 | single acting |
|  | Piston seal | PS-88 | PTFE compounds Spring: 1.4310 | -150 | 250 | 10 | 25/45 | 2500 | single acting |
|  | Piston seal | PS-89 | PTFE compounds Spring: 1.4310 | -150 | 250 | 5 | 30 | 2500 | single acting |
|  | Piston seal | PS-20 | NBR / Fabric + POM FKM / Fabric | -30 -15 | 100 150 | 0.5 0.5 | 40 40 | 1200 | single actiong |
|  | Piston seal | PS-72 | TPU NBR | -40 -30 | 100 100 | 0.5 0.5 | 40 8 | 250 360 | single acting |
|  | Piston seal | PS-40 | NBR + PE + POM | -30 | 100 | 0.5 | 40 | 300 | double acting |
|  | Piston seal | PS-44 | NBR + NBR/Fabric + POM | -30 | 100 | 0.5 | 40 | 250 | double acting |
|  | Piston seal | PS-50 | NBR | -30 | 100 | 0.5 | 1.6 | 300 | double acting |
|  | Piston seal | PS-51 | NBR | -30 | 100 | 1 | 1.6 | 400 | pneumatic seal double acting |
|  | Rod seal | RS-10 | PTFE bronze + OR NBR PTFE bronze + OR FKM TPU + OR NBR | -30 -15 -30 | 100 200 100 | 15 15 2 | 40 40 | 2500 | double acting |




Hydraulic seals

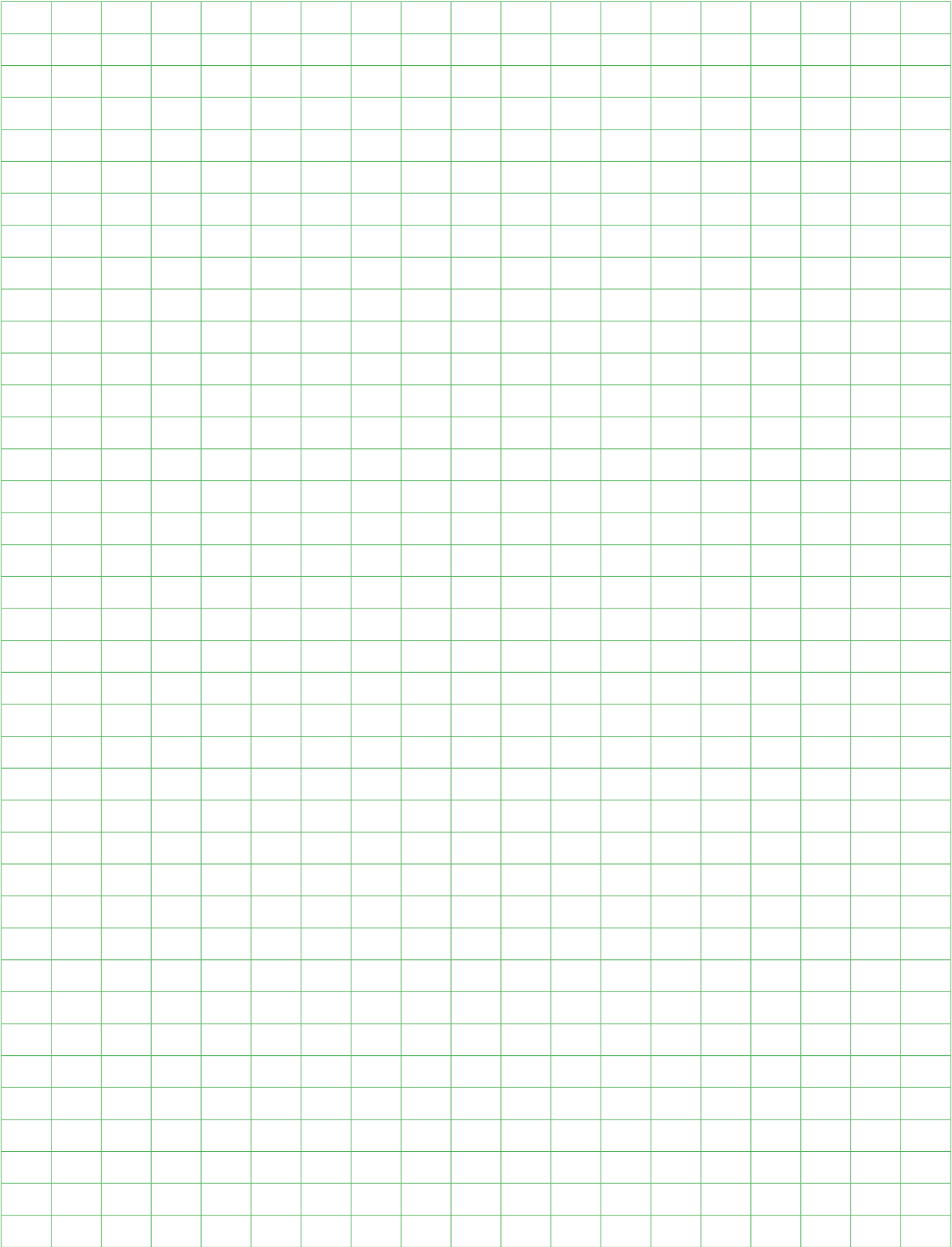
| PRODUCT | TYPE | MATERIALS | TEMP. (°C) | | SPEED (m/s) | PRESSURE (MPa) | RANGE (mm) | | REMARKS |
|--|---------------------|---|------------|-----|-------------|----------------|------------|----|---------------|
| | | | min | max | | | from | to | |
|  | Rod seal | RS-11 PTFE bronze + OR NBR PTFE bronze + OR FKM TPU + OR NBR | -30 | 100 | 15 | 40 | 2500 | | single acting |
| | | | -15 | 200 | 15 | 40 | | | |
| | | | -30 | 100 | 2 | | | | |
|  | Rod seal | RS-12 PTFE bronze + OR NBR PTFE bronze + OR FKM | -30 | 100 | 2 | 16 | 2500 | | double acting |
| | | | -15 | 200 | 2 | 16 | | | |
|  | Rod seal | RS-13 PTFE compound + OR NBR PTFE compound + OR FKM | -30 | 100 | 15 | 40 | 2500 | | double acting |
| | | | -15 | 200 | 15 | 40 | | | |
| | | | -30 | 100 | 2 | | | | |
|  | Rod seal | RS-87 PTFE carbon/graphite V-spring: 1.4310 | -150 | 250 | 15 | 35 | 2500 | | single acting |
|  | Rod seal | RS-88 PTFE compounds Spring: 1.4310 | -150 | 250 | 10 | 25 | 2500 | | single acting |
|  | Rod seal | RS-89 PTFE compounds Spring: 1.4310 | -150 | 250 | 5 | 30 | 2500 | | single acting |
|  | Rod seal | RS-20 NBR / Fabric + NBR + POM FKM / Fabric + FKM + POM | -30 | 100 | 0.5 | 40 | 500 | | single acting |
| | | | -15 | 150 | 0.5 | 40 | | | |
|  | Rod seal | RS-72 TPU NBR | -40 | 100 | 0.5 | 40 | 250 | | single acting |
| | | | -30 | 100 | 0.5 | 16 | | | |
|  | Rod seal | RS-73 TPU | -40 | 100 | 0.5 | 40 | 250 | | single acting |
|  | Rod seal | RS-76 TPU | -40 | 100 | 0.5 | 40 | 250 | | single acting |
|  | Rod seal | RS-31 NBR + NBR/Fabric + POM | -30 | 100 | 0.5 | 40 | 250 | | single acting |
|  | Rod and Piston seal | RP-70 TPU NBR | -40 | 100 | 0.5 | 30 | 250 | | single acting |
| | | | -30 | 100 | 0.5 | 16 | 500 | | |
|  | Rod and Piston seal | RP-75 TPU | -40 | 100 | 0.5 | 40 | 250 | | single acting |
|  | Rod and Piston seal | RP-30 NBR + NBR/Fabric | -30 | 100 | 0.5 | 20 | 140 | | single acting |

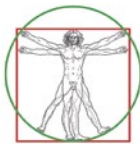
Wipers

| PRODUCT | TYPE | MATERIALS | TEMP. (°c) | | SPEED (m/s) max | PRESSURE (MPa) max | RANGE (mm) from to | REMARKS |
|---|-------|-----------|----------------------|-----|-----------------|--------------------|--------------------|-------------------------------|
| | | | min | max | | | | |
|  | Wiper | WS-10 | NBR | -40 | 100 | 4 | 350 | single acting |
| | | | TPU | -40 | 100 | 2 | 250 | |
|  | Wiper | WS-11 | NBR | -40 | 100 | 4 | 250 | single acting |
| | | | TPU | -40 | 100 | 2 | 180 | |
|  | Wiper | WS-D14 | NBR | -40 | 100 | 1 | 500 | double wiper |
|  | Wiper | WS-D15 | NBR | -40 | 100 | 1 | 300 | double wiper |
| | | | TPU | -40 | 100 | 1 | 250 | |
|  | Wiper | WS-20 | NBR | -40 | 100 | 1 | 300 | single acting with metal case |
|  | Wiper | WS-21 | NBR | -40 | 100 | 1 | 300 | single acting with metal case |
|  | Wiper | WS-22 | TPU | -40 | 100 | 2 | 250 | single acting with metal case |
|  | Wiper | WS-23 | TPU | -40 | 100 | 1 | 250 | single acting with metal case |
|  | Wiper | WS-D24 | TPU | -40 | 100 | 2 | 250 | single acting with metal case |
|  | Wiper | WS-30 | PTFE bronze + OR NBR | -30 | 100 | 15 | 2500 | single acting |
| | | | PTFE bronze + OR FKM | -15 | 200 | 15 | | |
| | | | TPU + OR NBR | -30 | 100 | 2 | | |
|  | Wiper | WS-D31 | PTFE bronze + OR NBR | -30 | 100 | 15 | 2500 | double wiper |
| | | | PTFE bronze + OR FKM | -15 | 200 | 15 | | |
| | | | TPU + OR NBR | -30 | 100 | 2 | | |
|  | Wiper | WS-D32 | PTFE bronze + OR NBR | -30 | 100 | 15 | 2500 | double wiper |
| | | | PTFE bronze + OR FKM | -15 | 200 | 15 | | |
| | | | TPU + OR NBR | -30 | 100 | 2 | | |
|  | Wiper | WS-D33 | PTFE bronze + OR NBR | -30 | 100 | 5 | 2500 | double wiper |
| | | | PTFE bronze + OR FKM | -15 | 200 | 5 | | |

Dumpers

| PRODUCT | | TYPE | MATERIALS | HARDNESSES | RANGE (Kg) | | REMARKS |
|---|---|-------------------------------------|-----------|------------|-------------------|----------|---------|
| | | | | | comp. | cut | |
|  |  | Antivibrations cylinders | MM | NBR | Shore-A: 45/65 | 16/700 | 3/100 |
|  |  | Antivibrations cylinders | MF | NBR | Shore-A: 45/65 | 20/850 | 4/100 |
|  |  | Antivibrations cylinders | FF | NBR | Shore-A: 45/65 | 20/850 | 4/100 |
|  |  | Antivibrations cylinders bumpers | PM | NBR | Shore-A: 45/65 | 5/650 | |
|  |  | Antivibrations bumpers | PF | NBR | Shore-A: 45/65 | 5/650 | |
|  |  | Antivibrations bumpers | PS-10 | NBR | Shore-A: 45/65 | 40/100 | |
|  |  | Antivibrations bumpers | PS-11 | NBR | Shore-A: 45/65 | 20/30 | |
|  |  | Antivibrations bumpers waisted | PS-12 | NBR | Shore-A: 45/65 | 2/30 | |
|  |  | Cones | PS-13 | NBR | Shore-A: 45/65 | 30/200 | |
|  |  | Antivibrations bushes | SIL | NBR | Shore-A: 65 | | |
|  |  | Impact plates | BAR | NBR | Shore-A: 65 | | |
|  |  | Antivibrations washers | AC-10 | NBR | Shore-A: 55 | 200/800 | |
|  |  | Antivibrations mounts | AC-11 | NBR | Shore-A: 60 | 500/1600 | |
|  |  | Antivibrations mounts | AC-12 | NBR | Shore-A: 60 | 650/950 | |





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