

deutschland australia canada
österreich italia france
united kingdom u.s.a. schweiz

Large diameter seals

A man in a Vitruvian Man pose is centered within a large red circular seal. The seal is set against a black background. The man is standing with his arms and legs extended, fitting within a square frame. The red seal is a thick, solid line.

ECONOMOS®

quality sealing solutions



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General



Economos designates seals in excess of 500mm diameter as 'large diameter' seals. These seals are subject to different principles and conditions than seals of smaller diameters.

Generally speaking large diameter seals are mostly used in large and heavy machinery applications. Most of these machines are special purpose and are produced in small volumes and it follows that the seals fitted are not necessarily standard, either in size, section or profile.

For the original equipment manufacturer (OEM) designer Economos offers the possibility of specifying the optimum seals and associated ancillary items without compromise due to the cost, delivery and range limitations of conventional moulding processes.

For the maintenance repair and overhaul (MRO) of large equipment Economos offers major advantages. Such machinery is often reworked due the expense and difficulty of manufacturing new components, it is far cheaper for instance to recut housings, strip and replate rods than make anew.

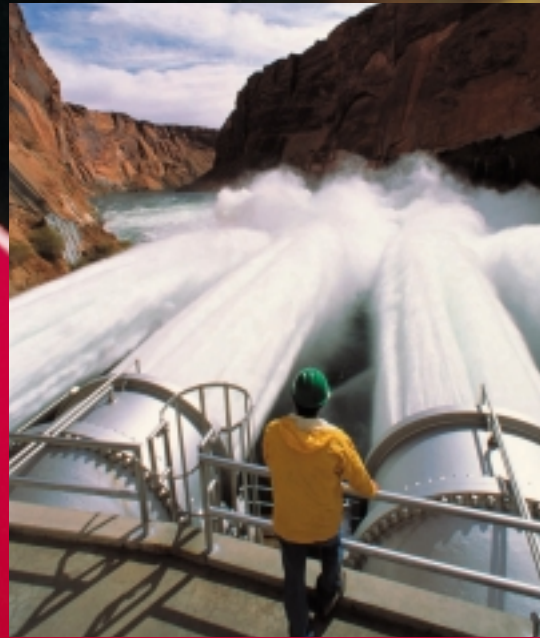
This is where Economos has gained its worldwide reputation in sealing technology. We have a production process available that meets these demands exactly in the **seal-jet** concept. Using this process we can machine, via our in house developed cnc equipment, virtually any profile of seal and ancillary item to suit the application and metalwork. There are no mould tools involved therefore there are no costs, no waiting for processing, and no requirement to use a so-called standard size or profile.

We are able to supply large diameter seals and components made from our class leading polyurethane with a diameter of up to 4.000 mm within a few days.

If required for installation reasons we can supply seals in a cut, glued or welded format.

The Economos quality assurance system allows us to produce a test certificate for every component, both for the material used and the profile and dimensions manufactured. Acceptance inspection by the customer or representative is also available if required.

This brochure outlines the Economos standard offerings for large diameter seals and components, if there is a special requirement then contact your local Economos company who will be pleased to provide a complete engineered sealing solution.



Main applications of large diameter seals

HYDROPOWER

Seals for

- Guide blades of Kaplan and Francis turbines
- Moving blades of Kaplan turbines
- Nozzle control of Pelton turbines
- Servo-motors and slides

HEAVY HYDRAULICS

Seals for

- Oil and water hydraulics in press construction
- Shears
- Shredders
- Manipulators
- Body presses
- Plate chuck press

STEEL WORKS

Seals for

- Ladle tilting and plugging cylinders
- Various roller cylinders
- Stripper cranes
- Shears
- Manipulators
- Forging presses and forging hammers



SHIPBUILDING

Seals for

- Rudder spindles
- Ship stabilisers
- Ship hydraulics
- Steering gear
- Fuel supply

Material data for large diameter seals

The most vital development work in sealing technology is done in optimising the geometry and improving the characteristics of the materials. ECONOMOS offers an extraordinarily wide variety of materials for large diameter seals, in order to meet any operating demands. Only the standard materials are listed in this brochure. All other material solutions will be provided by ECONOMOS upon request:

- G-ECOPUR** a polyurethane elastomer (CPU) developed by ECONOMOS, with extraordinarily high pressure resistance and abrasion resistance, hydrolysis-resistant;
- ECORUBBER 1** NBR material for seals and pre-load elements;
- ECORUBBER-H** H-NBR material for high thermal and chemical stress, good mechanical properties and suitable for a wider temperature range than ECORUBBER 1;
- ECORUBBER 2** FPM (FKM, viton) material with very high chemical and thermal resistance; outstanding ozone, weathering and ageing resistance;
- ECORUBBER 3** EPDM material for mineral oil-free, aqueous media;
- ECOFLAS** TFE/P (Aflas) material with high thermal and chemical resistance, even in aqueous and amine-containing hydraulic fluids and hot steam;
- ECOMID** PA6G material for guide and back-up elements
- ECOPE** UHMW-PE material for guide and back-up elements; very good gliding properties in water; low moisture absorption.
- ECOFLON 1** PTFE-pure material for static support elements and subordinated guide parts; only partly useable for seals; practically resistant to chemical attacks. Very low coefficient of friction;
- ECOFLON 2** PTFE with 15% glass-fibre + 5% molybdenum disulphide (MoS₂); for back-up and guide elements; for gliding components of compound seals; Further PTFE filler combinations upon request;
- ECOTEX** Fabric composite material on polyester resin basis; its specific surface structure ensures very good gliding and emergency running properties; suitable for guide rings and bearing bushes;

All Profiles

Standard materials, working conditions and applications

standard materials		working conditions				applications		
		hardness	temperature [°C]	pressure	sliding speed [m/sec]	oil- hydraulic	oil-/H ₂ O hydraulic	pneumatic
1	G-Ecopur	95 ShoreA	-30 up to + 110	400	0,5	+	up to 40° C	+
2	Ecorubber 1	85 ShoreA	-30 up to + 110	160	0,5	+	+	+
2	Ecorubber-H	85 ShoreA	-25 up to + 150	160	0,5	+	+	+
3	Ecorubber 2	85 ShoreA	-20 up to + 200	160	0,5	+	+	+
4	Ecorubber 3	85 ShoreA	-50 up to + 150	160	0,5	not mineral-oil resistant		
6	Ecoflon 1	57 ShoreD	-200 up to + 260	160	4	+	+	+
7	Ecoflon 2	60 ShoreD	-200 up to + 260	400	4	+	+	+
8	Ecomid	77 ShoreD	-40 up to + 100		1	+	+	+
8	Ecope	67 ShoreD	-200 up to + 80		1	+	+	+
9	Ecoflon 4	60 ShoreD	-200 up to + 260			rotating applications		
10	Ecotex		-40 up to + 140		1	+	+	+
11	Ecoflas	85 ShoreA	-20 up to + 200	160	0,5	+	+	+

The quoted working conditions are a general reference. For some profiles, certain conditions may be exceeded, others should not be used to its maximum. In any case, if in doubt please contact your local ECONOMOS Subsidiary or ECONOMOS Austria.

+ = suitable

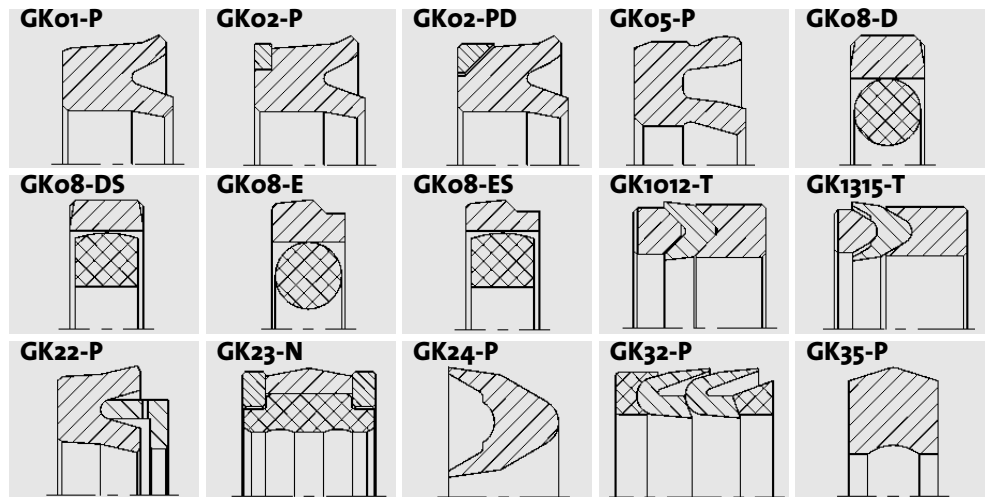
Availability of materials depending on diameter

standard materials		maximum diameter currently [mm]	maximum diameter under development
1	G-Ecopur	4.000	
2	Ecorubber 1	1.100	1.500
2	Ecorubber-H	1.100	1.500
3	Ecorubber 2	1.100	1.500
4	Ecorubber 3	1.100	1.500
6	Ecoflon 1	1.500	
7	Ecoflon 2	1.500	
8	Ecomid	2.000	
8	Ecope	990	
9	Ecoflon 4	1.500	
10	Ecotex	1.500	3.000
11	Ecoflas	1.100	1.500

Selection of standard profiles

Piston seals

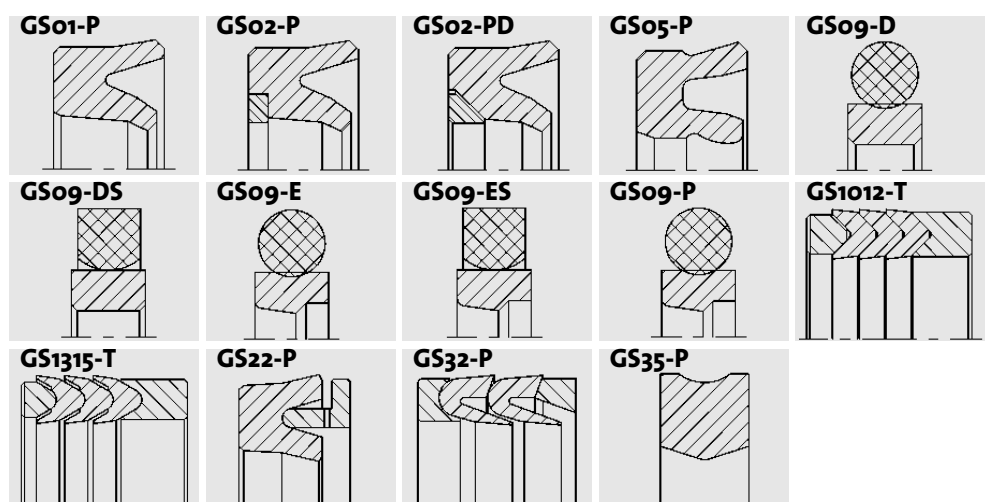
	Recommended Materials					
GK01	1	2	3	4	11	
GK02	1+6	2+8	2+7	3+7	11+7	
GK05	1	2	3	4	11	
GK08	7+1	7+2	7+3	7+11		
GK1012	1+8	2+8	3+7	11+7		
GK1315	1+8	2+8	3+7	11+7		
GK22	1+8	2+8	3+7	11+7		
GK23	1+2+8					
GK24	1	2	3	11		
GK32	1+8	2+8	3+7	11+7		
GK35	1	2	3	4	11	



A.m. material code is referring to the table on page 9

Rod seals

	Recommended Materials					
GS01	1	2	3	4	11	
GS02	1+8	2+8	2+7	3+7	11+7	
GS05	1	2	3	4	11	
GS09	7+1	7+2	7+3	7+11		
GS1012	1+8	2+8	3+7	11+7		
GS1315	1+8	2+8	3+7	11+7		
GS22	1+8	2+8	3+7	11+7		
GS32	1+8	2+8	3+7	11+7		
GS35	1	2	3	4	11	

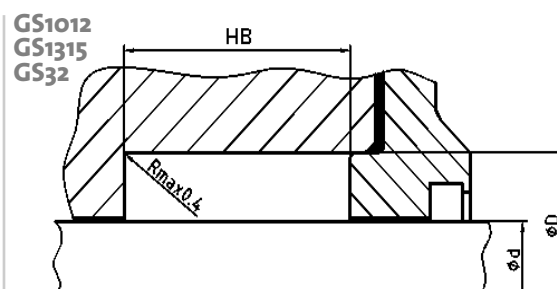
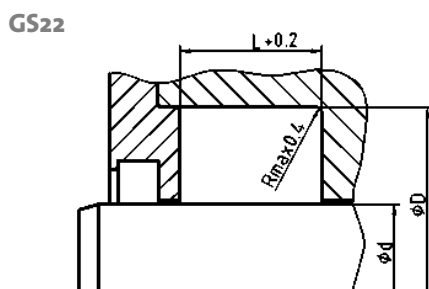
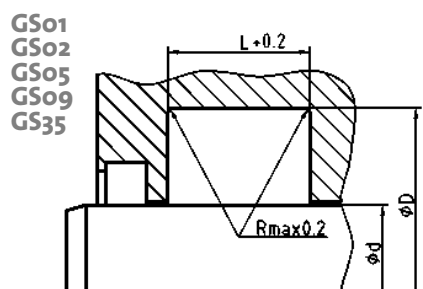
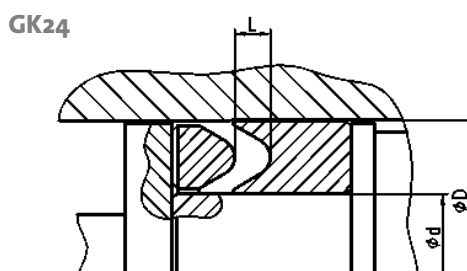
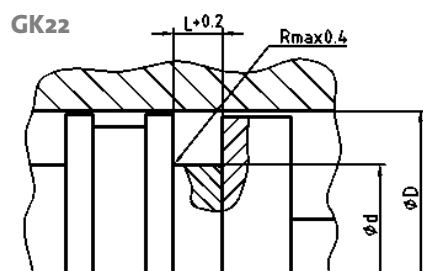
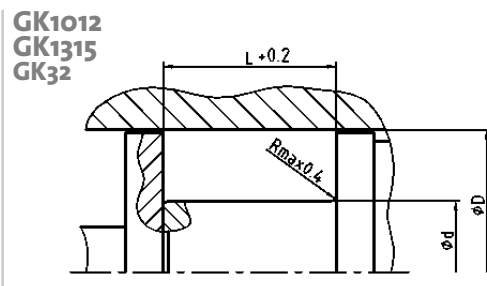
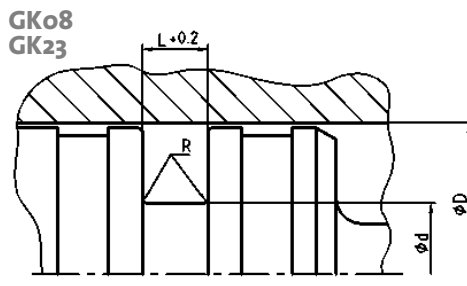
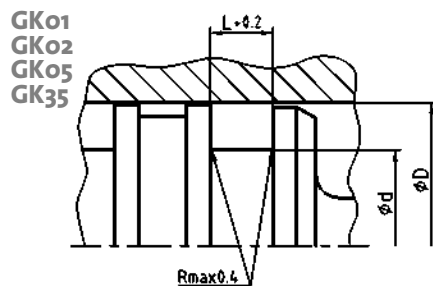


A.m. material code is referring to the table on page 9

Additional profiles upon request

Housing detail

Standard materials, working conditions and applications

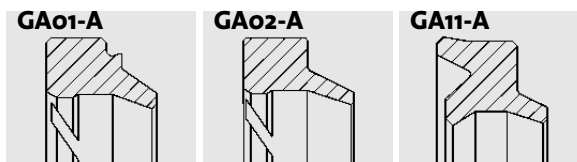


Indicated dimensions are required to process an order

φD outside diameter
φd inside diameter
L groove length
HB clamp length

Selection of standard profiles

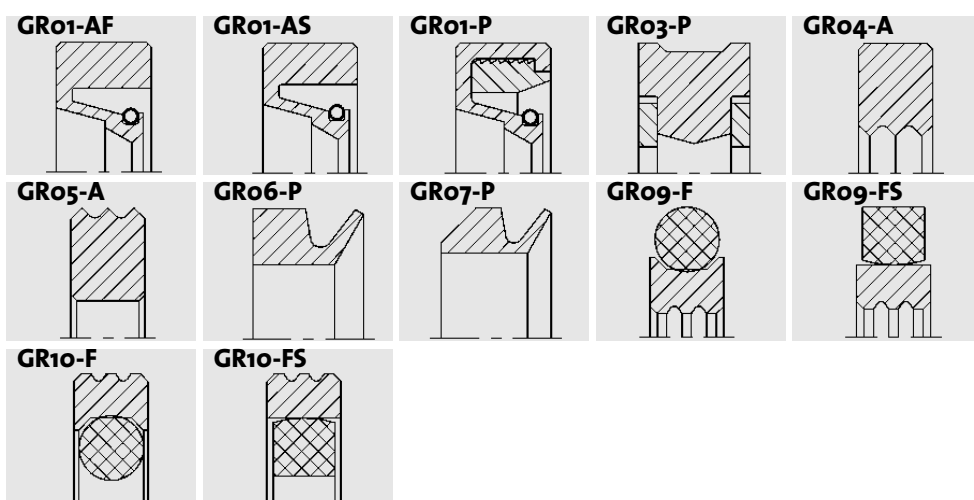
Wipers



	Recommended Materials					
GA01	1	2	3	4	11	
GA02	1	2	3	4	11	
GA03	1	2	3	4	11	

A.m. material code is referring to the table on page 9

Rotary seals



	Recommended Materials									
GR01-A	1+Spring	2+Spring	3+Spring	4+Spring	11+Spring					
GR01	1+8+Spring	1+8+Spring	1+Metal+Spring	2+Metal+Spring						
GR03	1+8	1+7	2+8	2+7	3+7	11+7				
GR04	1	2	3	4	11					
GR05	1	2	3	4	11					
GR06	1	2	3	4	11					
GR07	1	2	3	4	11					
GR09	9+2	9+3	9+11							
GR10	9+2	9+3	9+11							

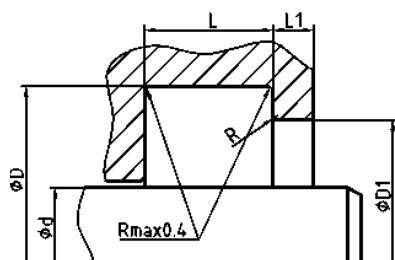
A.m. material code is referring to the table on page 9

Additional profiles upon request

Housing detail

Standard materials, working conditions and applications

GA01
GA02
GA11



Indicated dimensions are required to process an order

ϕD outside diameter

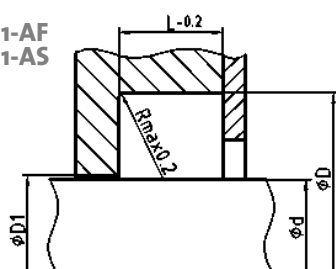
ϕd inside diameter

L housing length

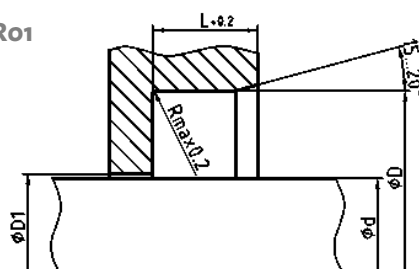
H total wiper length

HB clamp length

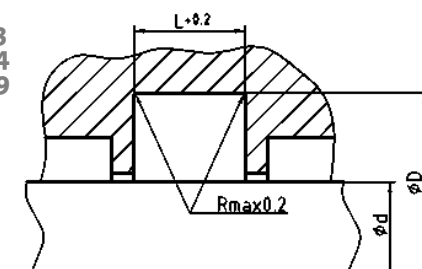
GR01-AF
GR01-AS



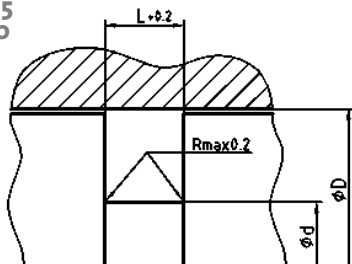
GR01



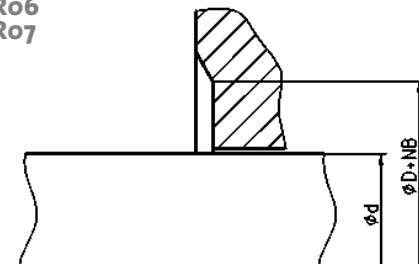
GR03
GR04
GR09



GR05
GR10



GR06
GR07



Indicated dimensions are required to process an order

ϕD outside diameter

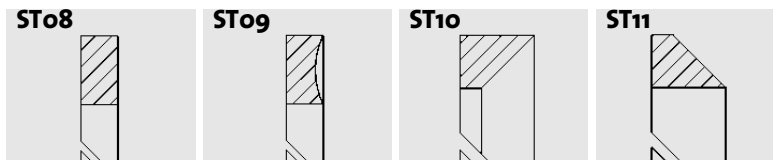
ϕd inside diameter

L housing length

$L1$ clamp length

Selection of standard profiles

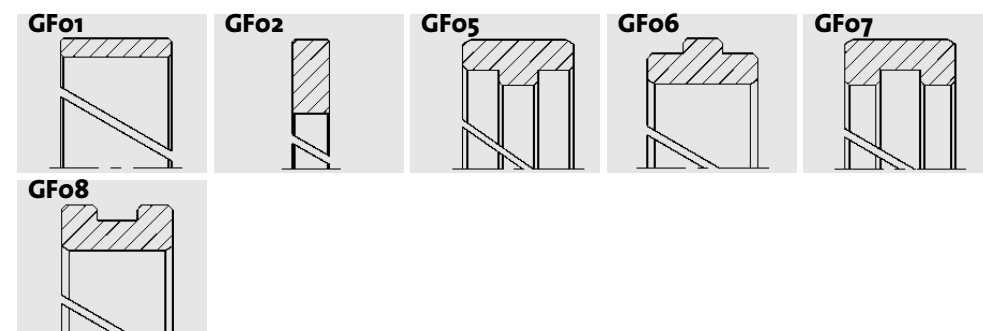
Back-up rings



	Recommended Materials		
ST08	8	6	
ST09	1		
ST10	8	6	
ST11	8	6	

A.m. material code is referring to the table on page 9

Guide rings



	Recommended Materials			
GF01	8	7	10	
GF02	8	7	6	10
GF05	8	7	10	
GF06	8	7	10	
GF07	8	7	10	
GF08	8	7	10	

standard materials		working conditions			applications		
		temperature	admissible specific load	sliding speed	oil hydraulic	oil/H ₂ O hydraulic	pneumatic
		[°C]	[N/mm ²]	[m/sec]			
6	Ecoflon 1	200	1,5	4	+	+	+
7	Ecoflon 2	200	3	4	+	+	+
8	Ecotal	100	25	4	+	+	+
8	Ecomid	100	25	4	+		+
8	Ecopel	80	10	1	+	+	+
10	Ecotex	140	90	1	+	+	+

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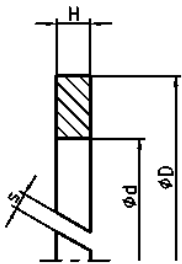
+ = suitable

Additional profiles upon request

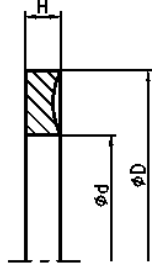
Housing detail

Standard materials, working conditions and applications

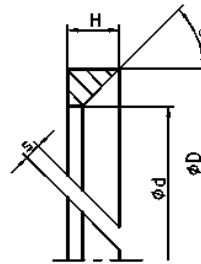
STo8



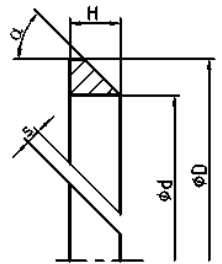
STo9



STo10



STo11



Indicated dimensions are required to process an order

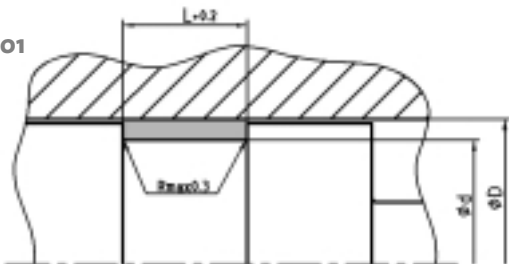
ϕD outside diameter

ϕd inside diameter

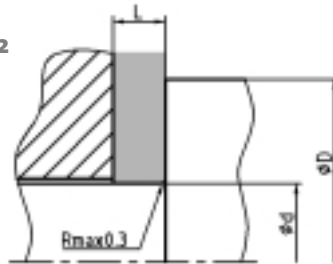
H final height

S cutting gap

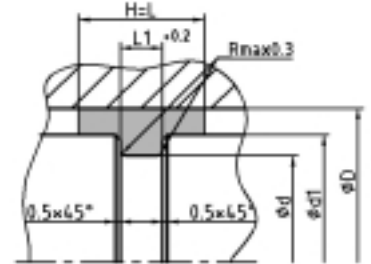
GFo1



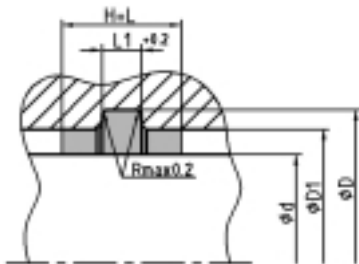
GFo2



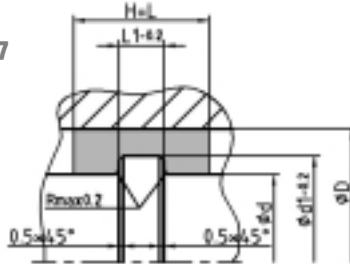
GFo5



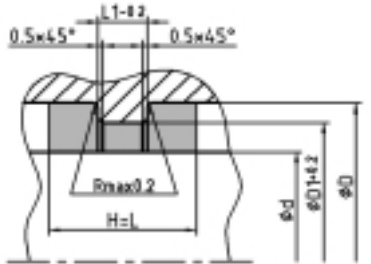
GFo6



GFo7



GFo8



Indicated dimensions are required to process an order

ϕD outside diameter

$\phi D1$ contact line diameter

ϕd inside diameter

$\phi d1$ contact line diameter

L housing length

L1 retaining ring length

cutting gap width

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A man in a dynamic, athletic pose is captured inside a large, glowing orange hula hoop. He is leaning forward, with one leg bent and the other extended, holding the hoop with both hands. The background is dark, making the hoop and the man stand out.

ECONOMOS®



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quality sealing solutions