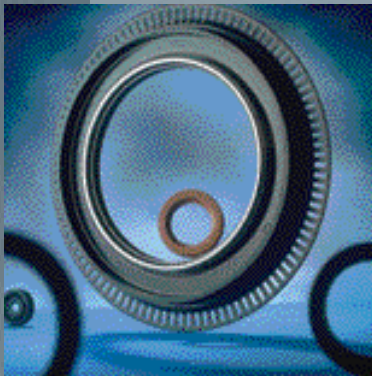


- New range with bare outer ring reinforced : CSEL® SEALS



DYNAMIC SEALING

PAULSTRA



HUTCHINSON®
WORLDWIDE



DYNAMIC SEALING

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See current price list for availability of items.
We reserve the right to modify the design and manufacture of the products and materials described in this catalogue.

The pictures of the products are supplied for information only.

The order comprises :

- the contract signed by both parties, or the purchase order and the acknowledgement of receipt,
- eventually, special or specific additional conditions,
- sale general conditions, available upon request are part of the order.

I - GENERAL

I.1 - WHAT IS A SEAL ?

An element forms a sealing function when it prevents the passage of a fluid from a one enclosure to another. Such elements are called "Seals".

If the object is to prevent the flow of a fluid from an enclosure into a neighbouring enclosure, **the seal is called a single seal**. If the seal must prevent the flow of another fluid which may be in the second enclosure into the first, **the seal is called a double seal**.

If the two mechanical parts between which the leakage is likely to occur are fixed with relation to each other, **the seal is called a static seal**. If one or both of these parts is moving relative to the other, **the seal is called a dynamic seal**.

In this document, we will only be dealing with **dynamic seals**.

In practice, we only meet two sorts of relative movement, which may or may not be combined :

- linear translation (such as the sliding of a piston in a cylinder),
- rotation (the relative rotation about a common axis of a shaft in a hub or a crank case).



I.2 - TYPES OF SEALS

Many different methods have been or are still used for sealing, such as :

- labyrinth glands,
- stuffing-boxes,
- O-rings,
- lip seals,
- surface seals.

- **Labyrinth glands**, are frictionless seals. They do not provide total sealing and do not seal if completely immersed in the fluid.
- **Stuffing-boxes** work by packing fibrous material which may or may not be braided, tightly around a shaft by means of axial pressure applied by a screw cap or a flange tightened by a bolt, for many years they have been the most common type of seals used. They produce a high frictional torque and absorb a relatively high amount of power. Although for many applications they have been replaced by lip seals or “surface” seals , they are still used a great deal, especially in the case of fluids under high pressure.
- **O-rings** are rings of synthetic elastomer of various cross-sections, most often circular (hence the name), but sometimes in the form of an X or a cross. They are most often used for static seals, but can also be used in some cases as seals for rotating shafts, particularly at low speeds. They also give rise to a high frictional torque.
- **Lip seals for rotating shafts.** Lip seals first appeared about fifty years ago. They consisted of a leather cuff (which could be chromed) whose lip was kept in contact with the rotating shaft by an annular spring. In order to keep both the spring and the leather cuff in position, the parts were encased in a set of metallic collars and rings (normally at least three) which were crimped into each other. The external collar would usually be ground to size and “hard” mounted in a fixed hub.

This type of seal was used a great deal, but its life was restricted, as the leather wore out, particularly in high temperatures. Nowadays the leather has been replaced by synthetic elastomers, which appeared on the market some forty years ago and gradually took over the role of the leather.

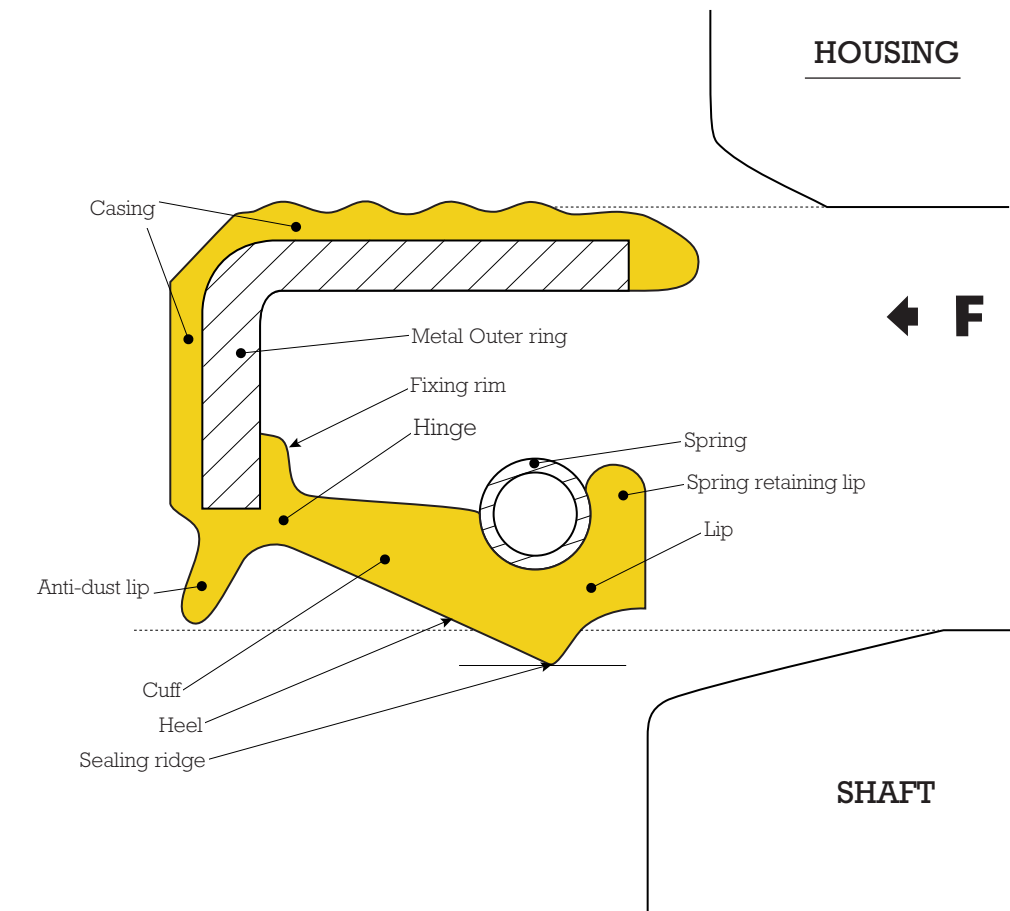
The first of these elastomers to appear is today known as N.B.R. (Nitrile Butadiene Rubber), and was noted for its resistance to organic solvents, in particular liquid fuels and lubricating oils, even at high temperatures. The first seals manufactured had the same structure as the leather seal with its three crimped metal rings. The development of processes which ensure a very good bonding of N.B.R. to metal has enabled the structure of the seal to be simplified and has given it its present classic general shape.

The discovery of new elastomers enables us to offer the user an increasingly varied range of seals, which are capable of solving increasingly difficult problems.



Segré's Plant
(Maine-et-Loire)
ISO 9001

I.3 - DESCRIPTION OF LIP SEALS



In outline, a seal for a rotating shaft consists of three essential parts :

- The Outer ring.
- The elastomer.
- The spring.

- **The Outer ring** usually consists of a metal ring in stamped steel with a right-angled cross-section.

- **The elastomer** is itself made up of 3 parts :

- The casing.
- The cuff.
- The lip.

- The casing (from the front surface to the back of the seal) is the part of the elastomer which is bonded to the Outer ring. It can cover it more or less entirely on the interior and/or the exterior.

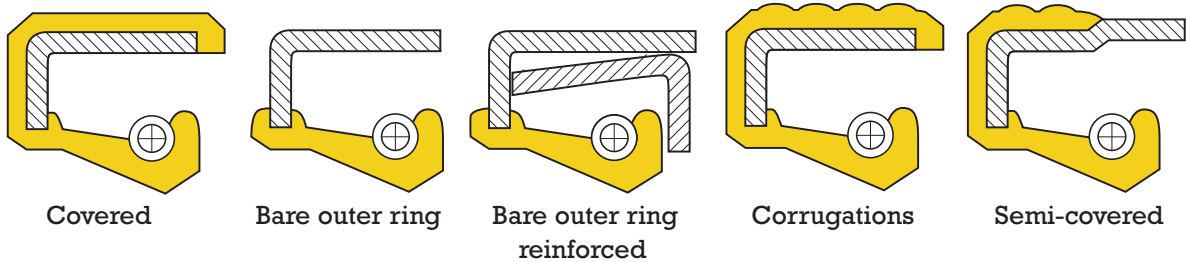
- The cuff is cylindrical or slightly conical in shape, and joins the Outer ring and the casing to the lip. It ensures a static seal, and due to its elasticity - which is greater as it is longer - it allows slight movement of the lip, due to movement of the shaft other than rotation.

- The lip is the element which ensures the dynamic seal by direct frictional contact with the shaft. It is made up of an annular beading including a double bevel forming a sharp ridge which is concentric with the perpendicular axis of the seal. The inclination of the surfaces of the bevel is designed to ensure the seal against leakage of a fluid situated on the side marked **F**.

- **The spring** is a spiral prestressed spring. It forms an annular ring. The join is usually effected by screwing into one end the conical spiral parts of the other end. The spring is fitted by light pressure into a groove in the beading of the lip.

II - SEAL CROSS SECTIONS

II.1 - EXTERNAL SHAPES AND THEIR EVOLUTION



Bare outer ring reinforced

- Good resistance to deformation which is important for large diameters.
- Good resistance to backing out and accurate positioning in the housing.
- Easy assembly for large diameters.
- Protects the seal during pulsating pressures.

Corrugations

- Create a reserve of lubricant and by so doing they make fitting easier.
- Greatly reduce the risk of backing out after fitting.
- An insertion force the same as a smooth shape with a much higher extraction force.

Semi-covered

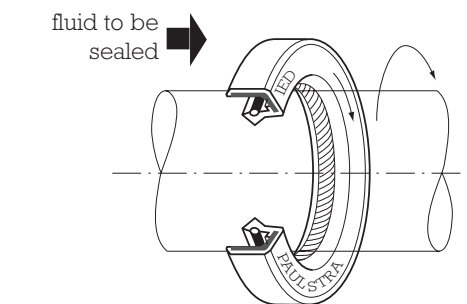
This form combines the qualities of the bare outer ring, that is to say :

- **no backing out.**
- **better positioning.**
- **higher extraction force.**

with that of covered outer ring, which is :

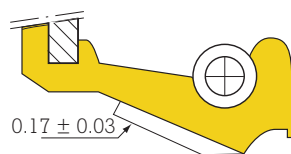
- **good static sealing.**

II.2 - RIDGED SEALS

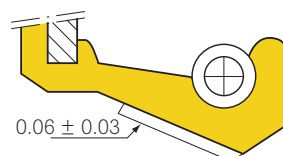


Rear view of the seal :

- Direction of the arrow = direction of rotation of the shaft.
- Ridges to the right (letter D) = clockwise.
- Ridges to the left (letter G) = anticlockwise.
- Bi-directional ridges (letter V).



Truncated ridge



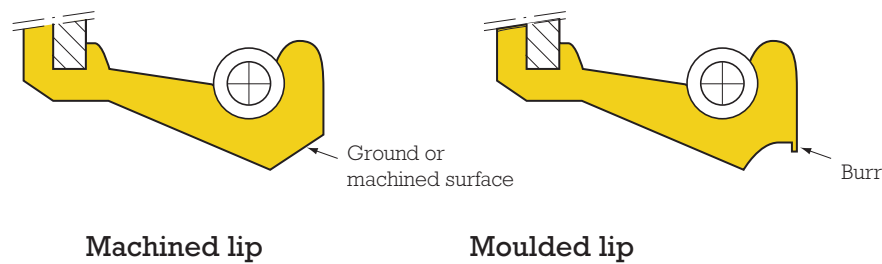
Salient ridge

The efficiency of the ridge increases with its size.

A salient ridge is limited in height by the requirement for continuous contact between the shaft and the lip, which is obtained by the radial load compressing the rubber.

The dimensional limits of a truncated ridge depend essentially on the capability to machine it after moulding. Its manufacture demands much more precision than that of the salient ridge.

II.3 - MOULDED LIP SEALS



A moulded lip guarantees a **better geometrical fit of the sealing lip** by eliminating the machining tolerances on :

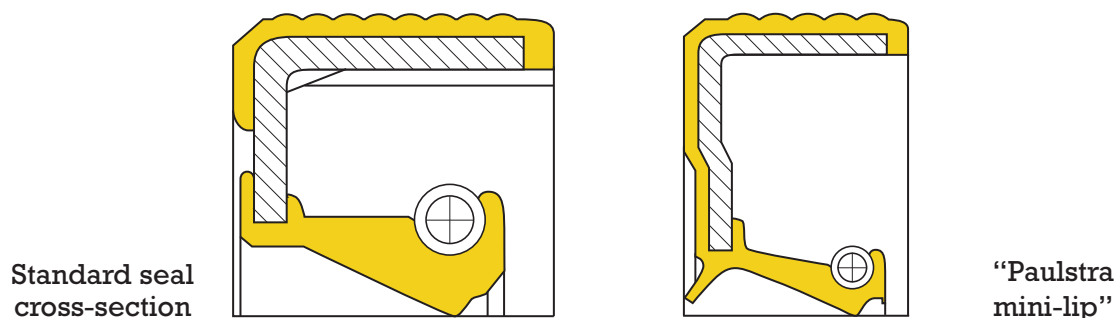
- the lip angle on the fluid side,
- the distance between the edge of the lip and the axis of the spring,
- the length of the lip (i.e. the distance between the fixing rim and the sealing edge).

It **avoids “irregularities” in the sealing ridge** which could be caused by the machine tool.

Nowadays, the moulded lip has become a standard technique, thanks to :

- more accurate machining of the mould,
- suitable means of testing,
- improved vacuum moulding techniques.

II.4 - SEALS WITH MINI-LIPS



The mini-lip has many advantages :

- Reduced dimensions

The decrease in height and the difference between the internal and external diameters allow type IE seals to be used for applications where only type IO used to be possible. The reduced dimensions also mean less weight.

- Less energy loss due to friction

The radial load is smaller, which leads to a decrease of about 30% of the friction torque, which results in :

- a gain in power for the prime mover.
- less heating.

- Increased life

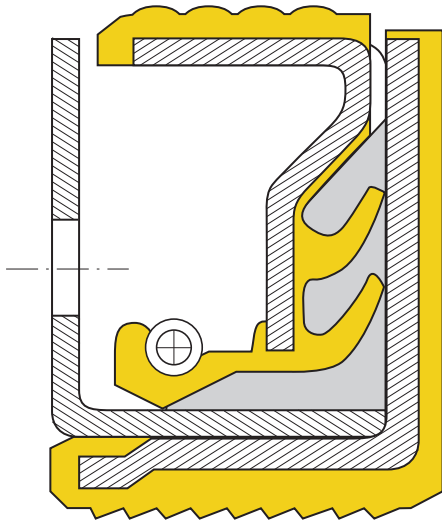
The decrease in heating due to friction results in a lower temperature, which :

- improves the life of the elastomer.
- slow carbonisation, which causes leaks by producing irregularities and stiffening the lip.

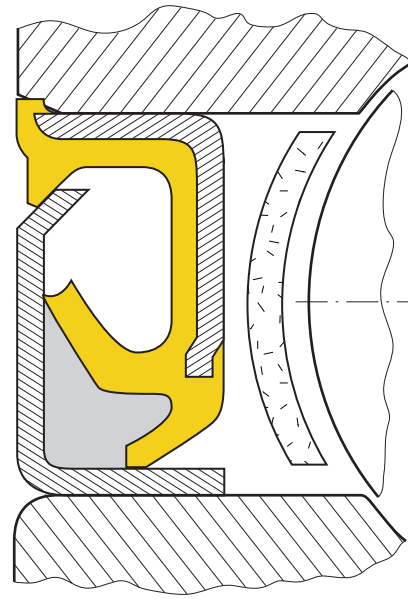
In addition, the reduction of both temperature and carbonisation leads to less wear of the shaft and the seal.

The life of a seal with a mini-lip is thus increased by about 30%.

II.5 - SEALS WITH AN INTEGRATED TRACK



Seal with an
integrated track



Car wheel seal

This type of seal has its own friction track.

Its main advantages are :

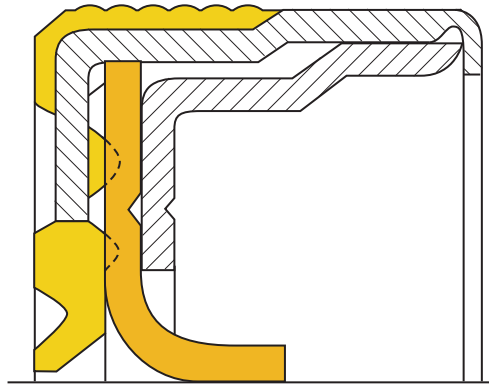
- **reduces the need to grind the shaft,**
- **treatment of only one part,**
- **no shaft wear,**
- **protection of the lip** in storage and handling,
- in a bearing, it can serve as a supporting element until it is fitted in the unit.

The use of this seal is limited by the rotating speed. At present, it is used at up to about 5 m/s.



Integrated track seal
with
Anti-Lock Brakes
detection ring.

II.6 - SEALS WITH TEFLON LIPS



Teflon has the following advantages :

- a very low coefficient of friction.
- resistance to aggressive products.

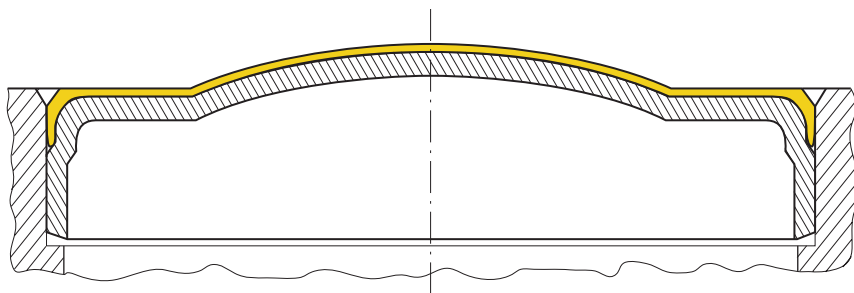
The life of this type of seal is much longer than that of elastomer lip seals.

As teflon does not have elastomeric properties, the seal is ensured by the hydrodynamic effect of the ridges.

The static seal is ensured by the pressure of the teflon on a beading of elastomer. The use of this type of seal is limited to applications which do not need to be sealed at rest.

II.7 - OTHER PAULSTRA SEALING PRODUCTS

COVERS



In a crankcase, it is sometimes necessary to have temporary access in order to :

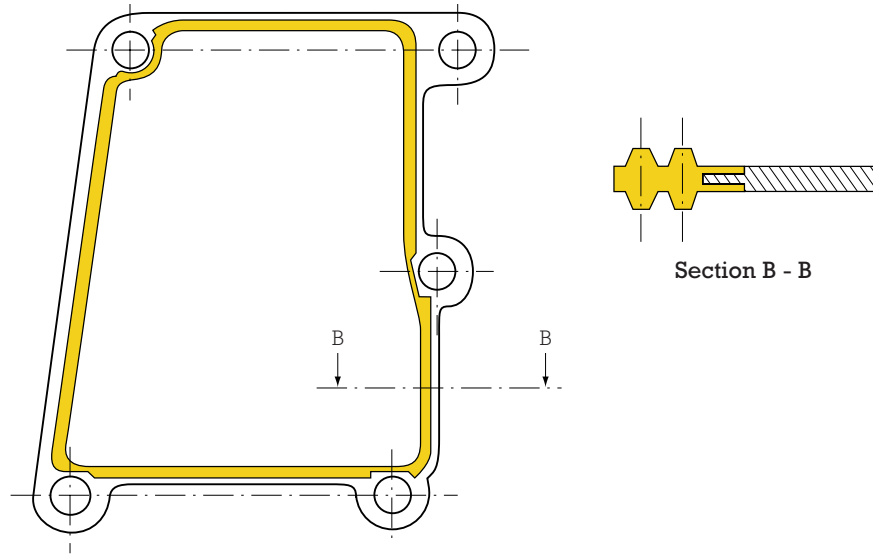
- machine an internal shape which is otherwise inaccessible.
- carry out a mechanical adjustment at the time of assembly.

This type of temporary passage is usually closed by a screwed plate with a flat seal or an O-ring.

Instead of the metal plate, Paulstra offers a rubberised cover which has the following advantages :

- only a simple shape needs to be machined in the crankcase.
- only one part needs to be fitted to ensure the closure of the crankcase with a perfect seal.

FLAT SEALS



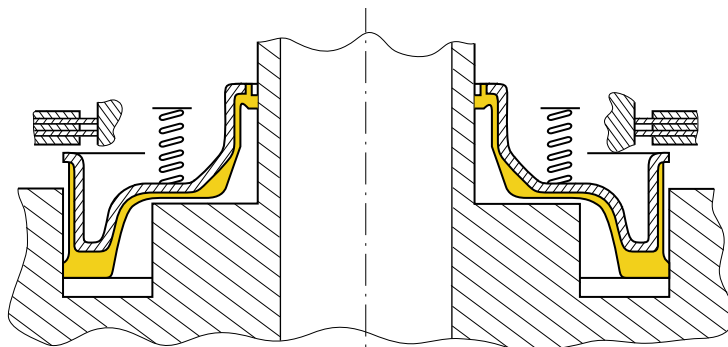
When the fixing screws of a crankcase are being tightened, the reaction of the sealing element (paste or paper) can cause a deformation of the flatness of the seal. This deterioration of flatness often causes leaks when expansion occurs.

To solve this problem, Paulstra offers a metallic-elastomeric seal.

The metal part consists of a thin sheet. The fixing screws which act on this rigid material have no effect on the flatness of the crankcase.

The seal is assured by a beading of elastomer fitted to the inside or the outside of the sheet. The shape of the beading and its attachment to the sheet are designed in such a way that the compression of the elastomer absorbs the faults in the flatness and deformation due to expansion while remaining within acceptable stress constraints.

PISTONS FOR AUTOMATIC GEARBOXES



In an automatic gearbox, the setting in motion and the changing of gears are done by clutches on which pistons, moved by oil pressure, act.

Up to the present, these pistons were in moulded aluminium alloy or steel. The sealing for aluminium pistons was done by elastomer seals of various shapes fitted into the grooves or, for steel pistons, kept in position by outer rings.

Since the seal had to be both interior and exterior, each piston was made up of from 3 to 5 parts, which meant high stocks along with fitting problems, quite apart from being of mediocre efficiency under pressures of 10 to 20 bars.

The type of piston produced by PAULSTRA consists of only one piece of stamped steel onto which are bonded 2 sealing lips. The shape of these lips is adapted to ensure a good seal with little friction and to avoid extrusion.

III - MATERIALS USED

III.1 - ARMATURE

Standard material : sheet steel of XE quality (AFNOR standard A 36 401)
 Special outer rings can be produced using other materials for special applications.

III.2 - SPRING

Standard : Stabilised XC 70 steel
 On request: Z10 CN 18-09 stainless steel (AFNOR standard A 35 586).

NOTA : All the PAULSTRA range of fluorinated elastomer seals fluorocarbon (FKM) are equipped with stainless steel springs.

III.3 - ELASTOMER

	Mixes	Symbols	Temperature range*
STANDARD MIXES	NITRILE (acrylo-nitrile butadiene) This material is particularly resistant to the action of mineral oils and grease. Suitable in most other cases.	NBR	- 30°C to + 110°C
	FLUOROCARBON ELASTOMER This elastomer has the best chemical and heat resistant characteristics. The new fluorocarbon formula offers very low abrasion and : - low shaft and lip wear. - resistance to ageing.	FKM	- 20°C to + 200°C

	Mixes	Symbols	Temperature range*
OTHERS MIXES	POLYACRYLATE Polyacrylate based elastomers have a good temperature resistance, even in the presence of EP oils.	ACM	- 20°C to + 170°C
	SILICONE Covers a very wide temperature range with acceptable mechanical characteristics. Silicone seals must : - be fitted with care ; - not be used in the presence of EP oils ; - be used with care in ATF and hydraulic oils.	MVQ	- 60°C to + 200°C

* Temperatures on samples
 Other mixes can be used on request :
 • Styrene - butadiene (SBR)

• Ethylene - propylene (EPDM)
 • Ethylene - acrylique (EA) (for example Vamac)
 • Nitrile hydrogene (HNBR) (for example Therban)

IV - THE SELECTION OF A SEAL FOR A ROTATING SHAFT*

IV.1 - THE TYPE OF FLUID TO BE SEALED

The fluids in contact with each face of the seal can be gases or liquids which are more or less viscous, even pasty (in the case of greases). They must not have too aggressive an action on the materials which make up the seal (the outer ring, spring and elastomer).

IV.1.1 - ARMATURE AND SPRING

The armature and spring of standard seals are steel, so they have a good resistance to all the chemical solvents which are currently used in industry, with the exception of water and aqueous liquids which can cause rust and corrosion.

For any other kind of material, please consult our Technical Services.

IV.1.2 - ELASTOMER

Chemical resistance

The standard seals made from a nitrile elastomer based mix have been designed to resist most current lubricating oils.

For more aggressive fluids, a formula based on fluorinated elastomer fluorocarbon (FKM) would be more appropriate.

FLUIDS	ELASTOMERS				FLUIDS	ELASTOMERS			
	Nitrile	Fluoro-carbon elastomer	Poly-acrylate	Silicone		Nitrile	Fluoro-carbon elastomer	Poly-acrylate	Silicone
Acetone	D	D	D	B	ASTM3 oil at 100°C	A	A	C	D
Acetic acid	A	D	D	A	ASTM3 oil at 150°C	D	A	C	D
10% Hydrochloric acid	A	A	D	C	Gear oil at 100°C	A	A	A	D
Concentrated Hydrochloric acid	D	A	D	D	Gear oil at 130°C	D	A	A	D
20% Nitric acid	D	A	C	B	EP hypoid oil at 100°C	A	A	A	D
10% Sulphuric acid	A	A	D	D	EP hypoid oil at 130°C	D	A	A	D
Concentrated Sulphuric acid	D	A	D	D	ATF oil at 100°C	A	A	A	B
Atmospheric air at 100°C	C	A	A	A	ATF oil at 150°C	D	A	A	D
Atmospheric air at 200°C	D	A	D	A	Mineral motor oil at 100°C	A	A	A	A
Concentrated Ethyl alcohol	A	B	D	A	Mineral motor oil at 150°C	D	A	A	C
Methyl alcohol	A	B	D	A	Synthetic motor oil at 100°C	A	A	A	A
Propyl alcohol	A	B	D	D	Synthetic motor oil at 150°C	D	A	A	D
Ammonia	C	A	C	B	Silicone oil	A	A	A	D
Benzene	D	B	C	D	Isooctane fuel (Fuel A)	A	A	C	C
Butter	A	A	D	A	Isooctane-toluene (Fuel B)	B	A	C	C
Butane	A	A	A	C	Kerosene JP 1	A	A	A	D
Petrol	A	A	D	D	Milk	A	A	D	A
Super petrol	C	A	D	D	Antifreeze (water + glycol)	B	B	D	C
Chlorine	B	A	D	D	Brake fluid (Lockheed)	D	C	D	A
Cyclohexane	B	A	B	D	Brake fluid (Lockheed) at 50°C	D	D	D	A
Water	A	A	C	A	Ozone	D	A	A	A
Sewage	A	B	C	A	Paraffin	A	A	A	C
Concentrated Eau de Javel	C	A	C	B	Propane	A	A	D	C
Sea water	A	A	D	A	Saline aluminium solutions	A	A	D	A
Freon	C	C	D	D	Magnesium salt solutions	A	A	D	A
Freon 12	B	B	C	D	Sodium chloride solutions	A	A	D	A
Carbonic gas	A	A	A	A	Soda	C	A	C	B
Smoke	C	A	D	C	Toluene	C	A	C	D
Diesel oil	A	A	C	C	Trichlorethylene	D	A	C	D
Diesel oil at 100°C	C	A	D	D					
Glycerine	A	A	D	A					
Cereal oils	A	A	C	C					
ASTM1 oil at 100°C	A	A	A	A					
ASTM1 oil at 150°C	D	A	A	A					
ASTM2 oil at 100°C	A	A	B	C					
ASTM2 oil at 150°C	D	A	B	C					

A: Good chemical resistance B: Average performance C: Acceptable (depending on conditions of use) D: Unsuitable

* For rotating housing applications consult us.

Mechanical resistance

The new brown colored fluorocarbon (FKM) formula presents a very low abrasivity and :

- low shaft and lip wear ;
- resistance to ageing.

Heat resistance

For good performance an elastomeric seal must be used within its operating temperature range. The standard elastomeric mix is not only sensitive to high temperatures which harden it, causing cracks and fissures, but also to intense cold which makes it hard and hardens it. The temperature which must be considered is that at the contact lip. It must be borne in mind that this gets much hotter than the ambient fluid, due to friction. For example, the temperature of the lip of a seal which seals the motor oil of a crankcase, where the shaft is rotating at high velocity (more than 8 m/s), can increase by about fifty degrees after a few minutes of service, whereas the oil, even next to the seal, will only warm up by a few degrees in the same period. The temperature displayed by a thermometer dipped into the crankcase oil is not therefore a determining factor.

In addition to the shaft speed, which is the most important factor, other parameters influence the heating of the lip, such as the condition of the shaft surface, the tightness of the seal, the ventilation of the crankcase, and so on, so that it is very difficult to know the temperature of the lip in continuous operation.

The temperatures indicated in the table below are only valid if the fluid being sealed is not degraded at these temperatures.

Where high temperatures exceed the values shown in the table below, use seals in fluorinated elastomer.

Our technical services are at your disposal to reply to your questions about the properties of various mixes.

		NBR		FKM		ACM		MVQ	
Low temperature in °C (1)		- 40		- 30		- 30		- 50	
Temperature in °C		Av. (2)	Max (3)	Av. (2)	Max (3)	Av. (2)	Max (3)	Av. (2)	Max (3)
Products to be sealed									
Mineral oil based	Motor oils	100	120	150	175	130	150	-	
	Gear box oils	90	110	130	150	120	150	--	
	Hypoid gear oils	90	110	130	150	120	150	--	
	ATF oils	100	120	150	175	130	150	-	
	Hydraulic oils	100	120	150	175	130	150	-	
	EL and L diesel oils	90	100	+		+		+	
	Greases	100	120	150	175	130	150	-	
Hydraulic liquids hard to ignite	HSB oil/water emulsion	80	100	-		--		-	
	HSC aqueous solution	80	100	-		--		-	
	HSD non-aqueous solution	--		130	150	--		-	
Other products	Water	80	100	+		--		-	
	Detergents	80	100	+		--		-	
	Brake fluid	--		--		--		--	

(1) Temperature at which the seal continues to function.

(2) Average operating temperature.

(3) Maximum permissible temperature for not more than 10 hours over the life of the seal.

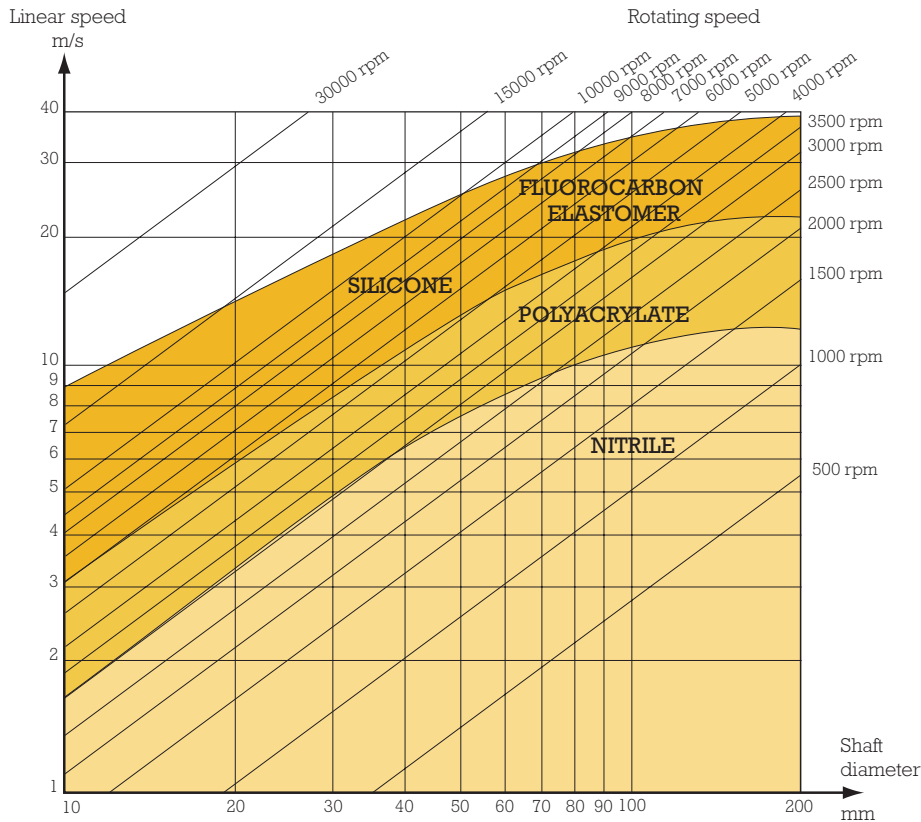
+ Resistant, but normally not used.

- Resistant, under certain conditions.

-- Does not resist.

IV.2 - SHAFT SPEED

The graph below gives an indication of the rotary or linear velocity of the shaft in relation to various elastomers which are permissible under normal conditions of use.

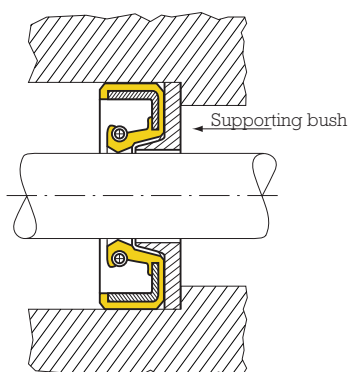


IV.3 - PRESSURE

The effective pressure to which a seal is submitted is the difference between the pressures of the fluids on each of its two sides (one of which is often the atmosphere). It is clear that the sealing lip should be found on the side which has the higher pressure. In theory, the lip seal for rotary shafts is not a pressure seal.

However, most PAULSTRA seals will resist pressures of the order of 0.5 bars without special precautions, if the velocities do not exceed 3 m/s. At higher pressures, there is a risk that the lip may be turned back on itself or pressed onto the shaft with a force which gives rise to an unacceptable tightness and frictional torque. At low velocities most PAULSTRA seals will bear pressures of up to 3 or 4 bars with the addition of a supporting bush. This is not provided by PAULSTRA, but it can be made up by the customer according to PAULSTRA's drawings.

The effective pressure is not necessarily constant. If the variations are slow and remain within the limits above, this is not a big problem. On the other hand, if they pulsate rapidly they can interfere with the performance of the seal.



You are advised to consult our Technical Services for any application which involves an effective pressure greater than 0.5 bars or a pulsating pressure.

V - CONDITIONS FOR GOOD OPERATION

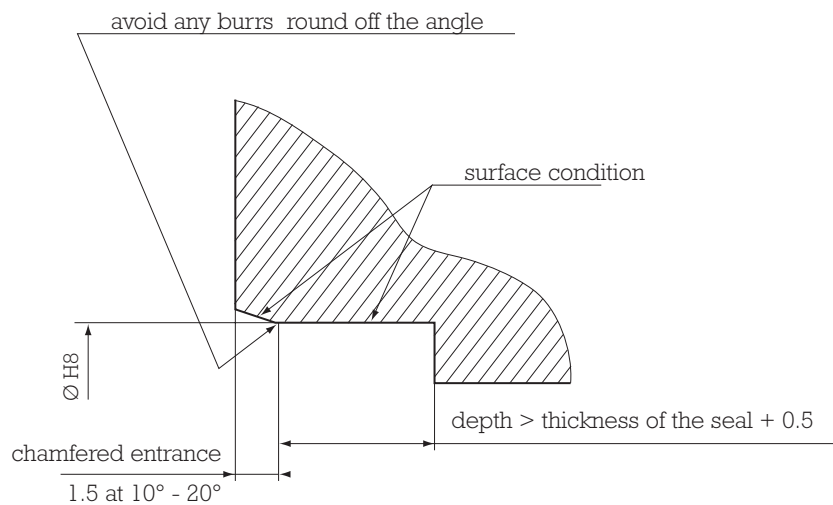
V.1 - THE HOUSING

It is extremely important that there be no sharp edges.

Our recommendations are shown on the figure below:

recommended shape of the housing:

- for a covered seal: $R = 4$ to 12.5μ
 $Ra = 1.6$ to 4μ
- for an external outer ring: $R = 3$ to 8μ
 $Ra = 1.2$ to 2.5μ



Note: if the housing is made of a material with a high coefficient of expansion, this must be taken into consideration when defining the interference (tightness) with the seal.

The lack of a chamfer, or too small a chamfer can cause:

- A deterioration of the exterior of the seals (cutting of the elastomer or stripping of the sealing lacquer).
- A big increase in the force of insertion, which could cause deformation of the outer ring.
- A defective axial positioning.

A surface with a very rough finish can cause the same problems and can therefore also be the reason for a leak. On the other hand, if the finish is too smooth the extraction force may be too low.

V.2 - THE SHAFT

The PAULSTRA recommendations are as follows :

- **Tolerance on the diameter** : h 11.
- **Surface state** : R = 0.4 to 1.2 ED (so $R_a \approx 0.2$ to 0.5).
- **Hardness** : if $V \leq 4$ m/s : 45 HRC minimum (say 455 HV or 155 kg/mm²),
if $V > 4$ m/s : 55 HRC minimum (say 625 HV or 195 kg/mm²).
- **Thickness of the treated zone** : 0.3 mm minimum.
- **Circularity** : 5 microns.
- **Neutrality** : All machined surfaces have grooves from the machining process. If these grooves are inclined in relation to the axis of the shaft, they form a helix which will produce a hydrodynamic action.

The bearing surfaces of a seal must be neutral (i.e. there must be no orientation of the machining grooves).

It is possible to orient the machine grooves deliberately to produce pumping from the exterior to the interior of the mechanism. However, **we advise against this as there will be increased wear of the seal.**

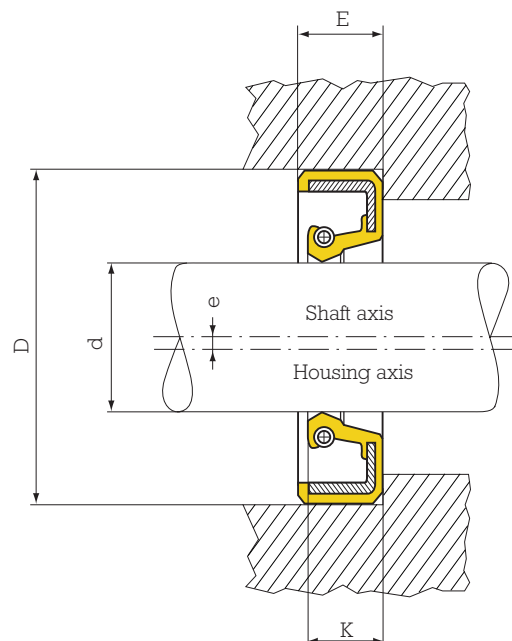
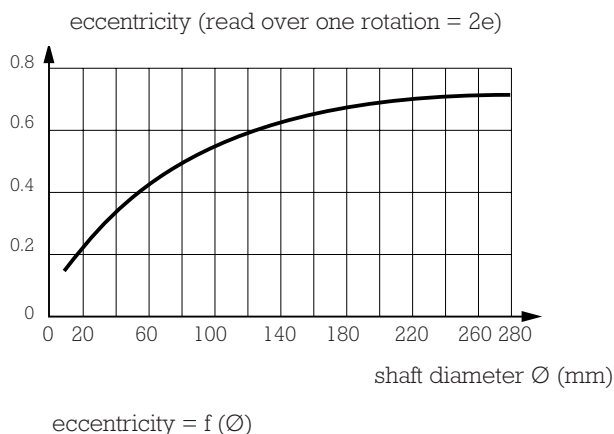
Hard chroming is also not to be recommended, unless it is of sufficient thickness and quality.

V.3 - ECCENTRICITY BETWEEN THE HOUSING AND THE SHAFT

The housing and the shaft should be centred on one another as precisely as possible. If there is a radial displacement between the axis of the seal and the axis of the shaft, the suppleness of the rubber lip enables assembly without "yawning" within certain limits.

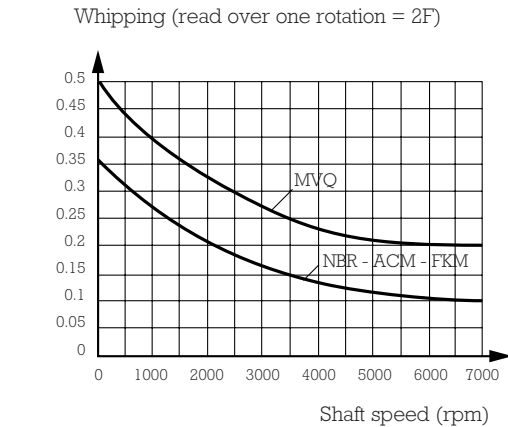
The eccentricity is the distance between the axis of the seal housing and the axis of the shaft, the two axes being parallel to each other.

The curve below shows the maximum permitted eccentricities as a function of the shaft diameter.

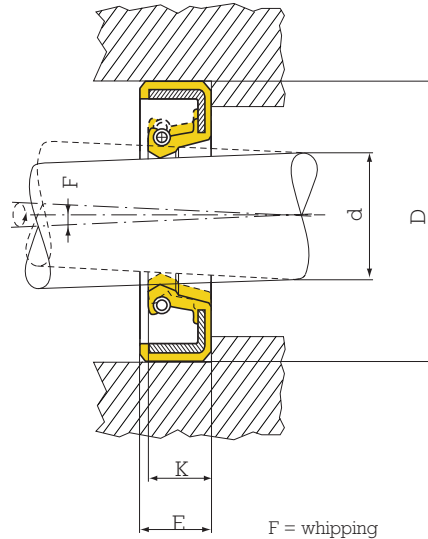


V.4 - WHIPPING OR OUT OF TRUE

This phenomenon occurs when the geometric axis of the shaft does not coincide exactly with the rotational axis. This can be the result, for example, of a worn bearing or the bending of the shaft. The amplitude of whipping increases with distance from a bearing, so the seal should be placed as near as possible to the bearings. Whipping is measured in mm, by the radius of the circle described by a point on the axis of the shaft which is in the same plane as the lip. The curve below shows the maximum whipping permissible as a function of the rotational velocity of the shaft.

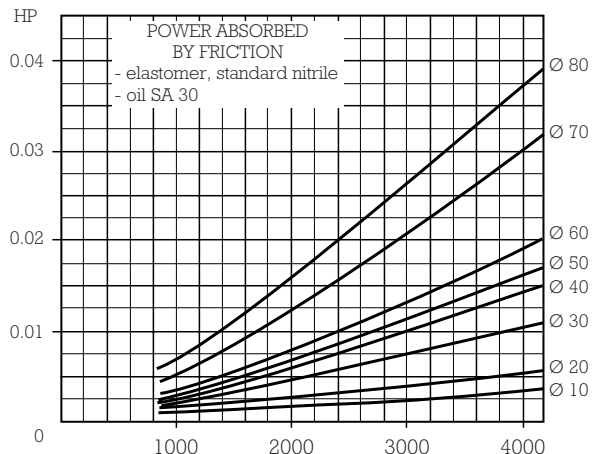
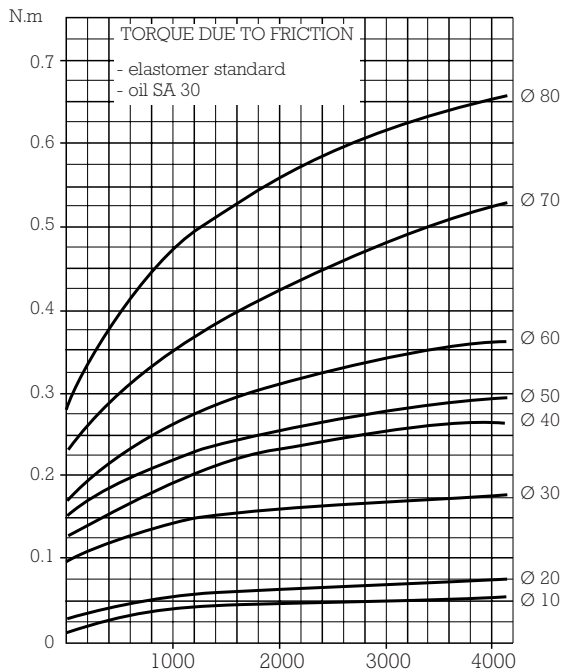


whipping = f (v)



V.5 - ABSORBED POWER - TORQUE DUE TO FRICTION

Due to its design, a lip seal produces friction which will provide some resistance to the rotation of the shaft. For a chosen speed, the resisting torque is function of : the shape of the seal, the friction coefficient and other environment factors such as (materials, tightness of the seal on the shaft, roughness of the shaft, wear, lubrication, temperature ...).



The curves above gives a first indication for the standard Nitrile elastomer. They were plotted under average working conditions using a standard seal with little wear and a lubricated shaft with good surface finish and running temperature of less than 100°C.

VI - THE ASSEMBLY OF SEALS

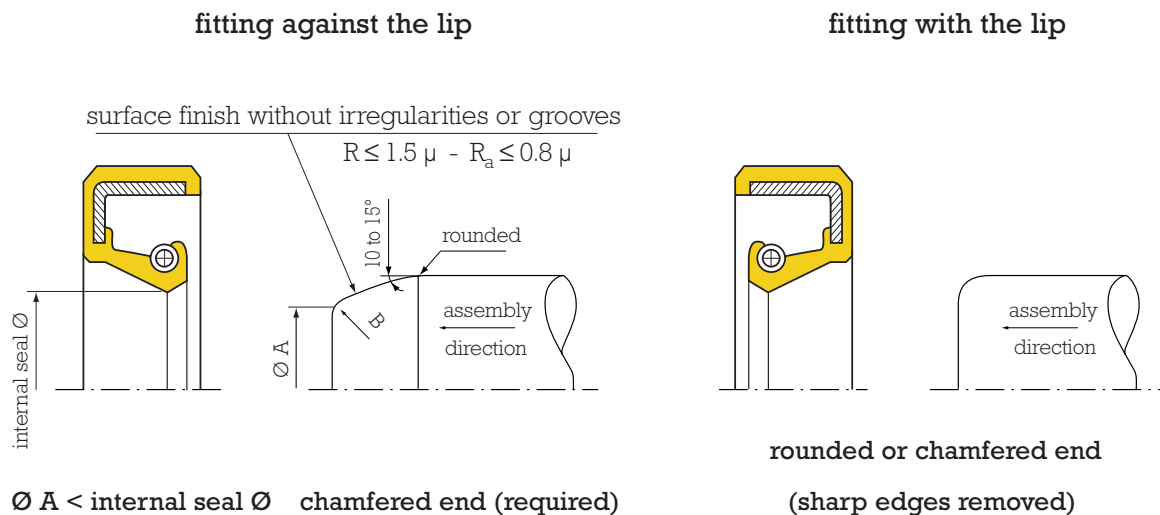
The assembly of seals is a very delicate operation which can ruin the efficiency of a very good product if it is not done properly.

The assembly of a seal must be done in accordance with the following rules:

- Avoid damage to the lip.
- Avoid damage to the cover of the external diameter.
- Lubricate the sealing ridge to avoid damage at the first start-up.
- Position the seal correctly:
 - misalignment (the seal must be perpendicular in relation to the axis).
 - axial position.

The information given below should help constructors to put these rules into practice.

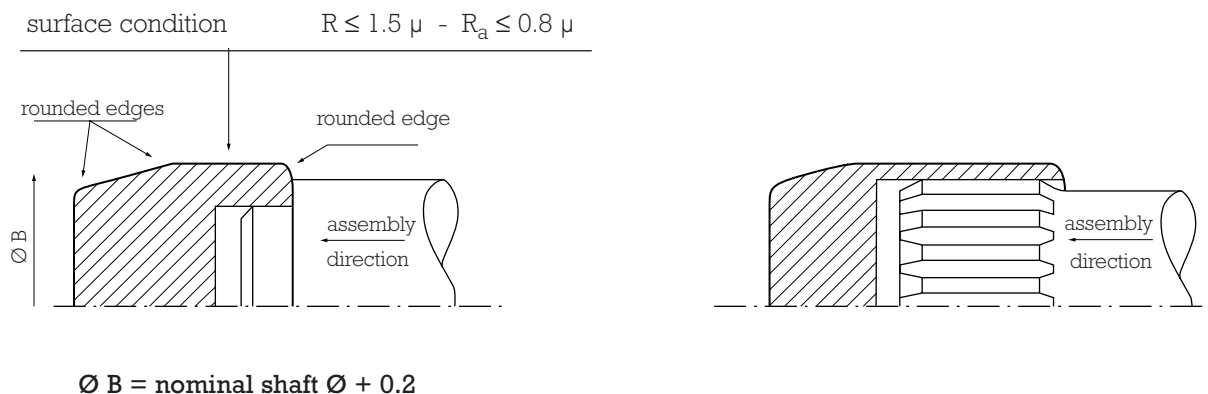
VI.1 - ASSEMBLY ON A SHAFT WITHOUT SPLINES



VI.2 - ASSEMBLY ON A SHAFT WITH SPLINES OR A SHOULDER

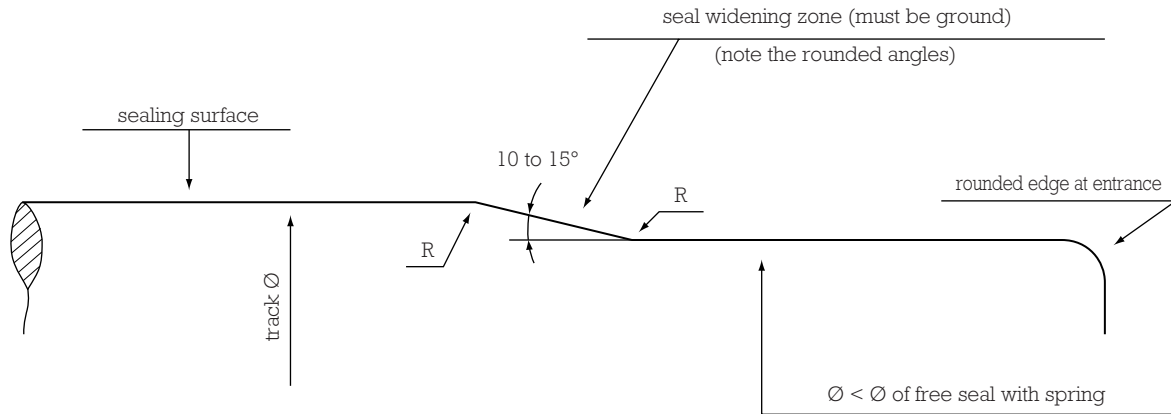
assembly tool for shouldered shaft

assembly tool for splined shaft



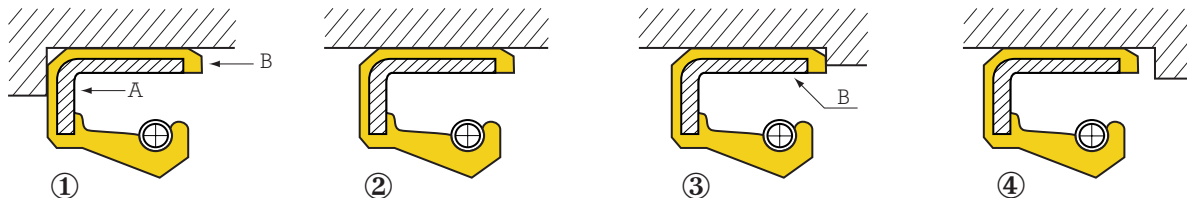
The use of these assembly tools is helpful. However, we recommend the use of a lead-in on the shaft whenever possible.

VI.3 - OUR RECOMMENDATIONS FOR THE SHAPE OF THE SHAFT



mounting sleeves are unnecessary, as the shaft has a lead-in

VI.4 - AXIAL POSITIONING AND ALIGNMENT



- ① The seal is mounted against a stop on the rear side. This presents no particular problem, provided that pressure is applied at "A" to insert it and not at "B".
- ② Here there is no axial stop. The mounting tool positions the seal both axially and perpendicularly.
- ③ The seal is mounted against a stop on the front side. This should be avoided as the elastomer at B could be compressed and the seal will tend to move out of position.
- ④ the housing has a shoulder as in ③, but the seal is positioned by the mounting tool. This case is preferable to case ③.

The mounting tool should be designed to position the seal correctly both axially and perpendicularly, but its shape should be such as to allow deformation of the elastomer covering the outer ring towards the rear, thus avoiding cutting the covering at the time of insertion. In some cases, the bead "C" does not get cut off and sticks between the housing and the assembly mandrel, in which case it is impossible to locate the seal, when the seals have an anti-dust lip, care should be taken that the mounting tools do not turn it back on itself.

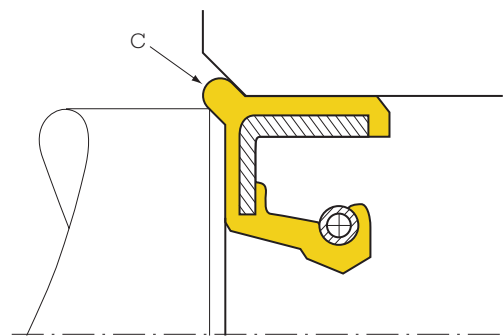
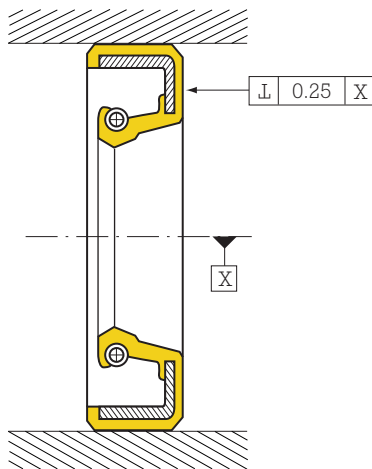
While it is true that modern seal design (corrugations on the outside, pre-centred shape, chamfers without burrs, etc.) tends to reduce problems during assembly, the comments made are still worth noting.

Also, the elastomer part of a semi-covered seal behaves in the same way as a fully covered seal.

- Time should be allowed during assembly to allow in order to allow the elastomer time to settle.
- The seal must be held in position for a few seconds once mounted, to avoid too large a return movement.

We recommend the following :

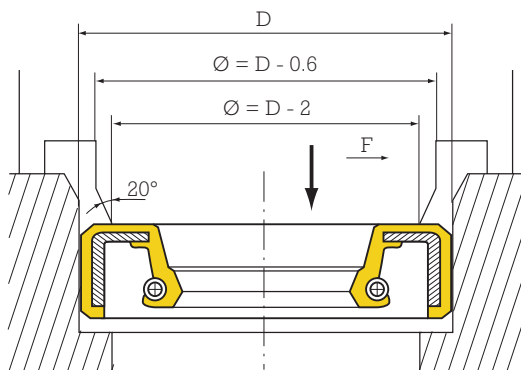
- $V = 1200 \text{ mm/mn}$ (maximum : 1500 mm/mn),
- time held in position: 5 seconds (minimum 2 seconds).



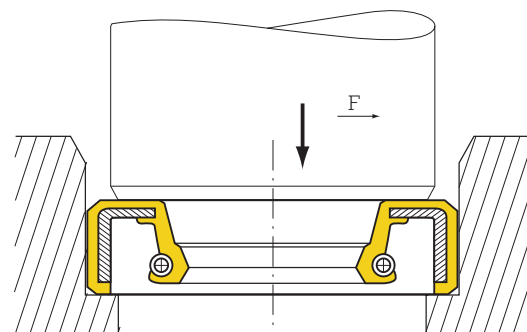
Formation of the bead

Perpendicular tolerance

VI.5 - RECOMMENDATIONS FOR THE ASSEMBLY TOOL



GOOD



TO BE AVOIDED

VI.6 - LUBRICATION AT ASSEMBLY

While the first means of avoiding damage to the outside of the seal is **to pay attention to the housing characteristics**, the second means, which is just as important, is **lubrication** :

- be it of the housing,
- or the outside of the seals,
- or both at the same time.

This not only avoids damage to the seal, but also ensures a better axial positioning.

A seal whose outside diameter is not lubricated will certainly be damaged on the outside when it is mounted in a dry housing (elastomer cover cut or ripped, sealing lacquer removed).

Also, when the unit is started up, the oil will always take some time before it reaches the lip of the seal (from a few seconds to a few tenths of seconds depending to the application).

If it is the first start, and if the lip has not been lubricated at assembly, it will function "dry" dynamically, which will lead to great wear and the risk of total deterioration.

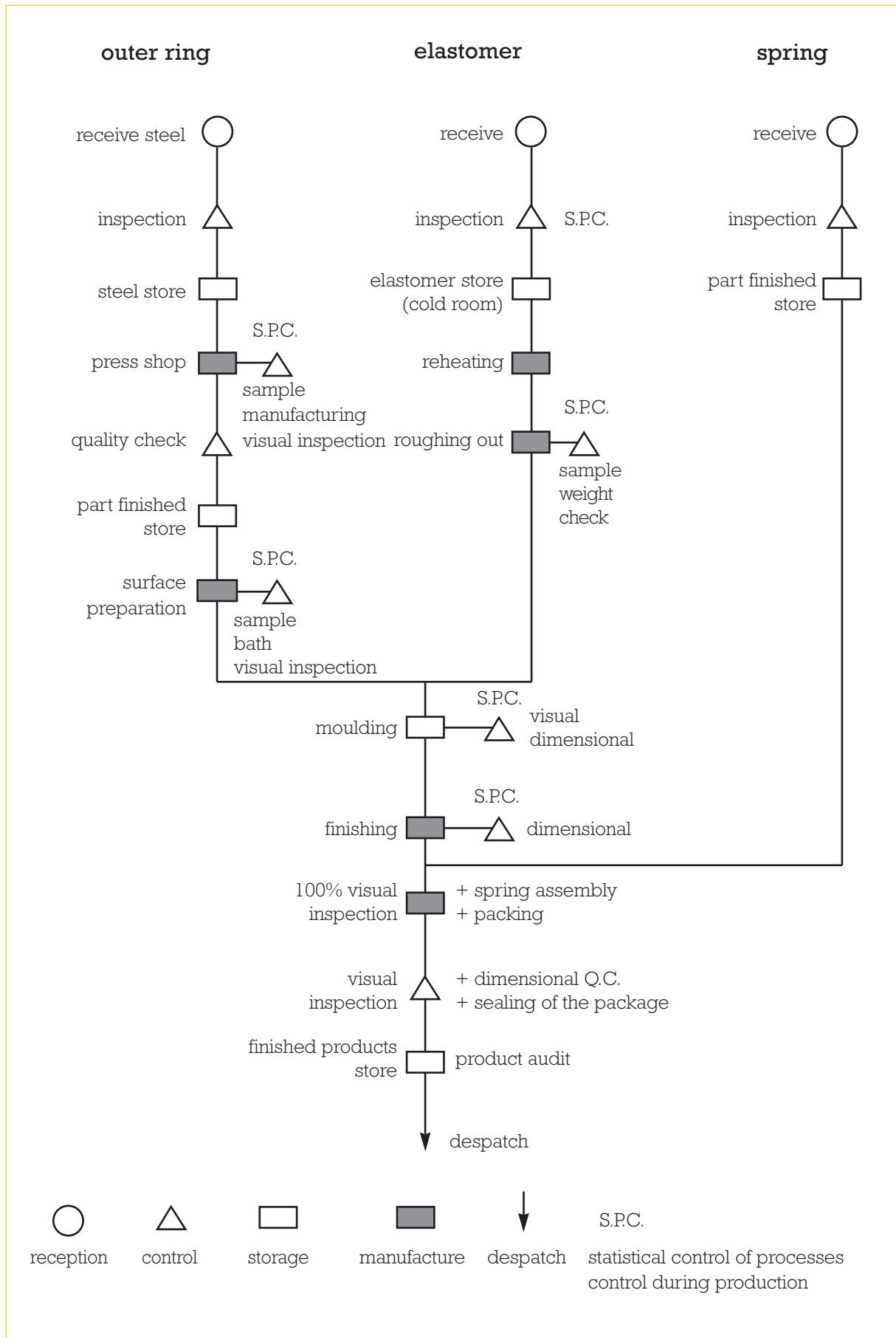
It is therefore essential to lubricate the sealing ridge.

For later starts, the problem is different, because a film of oil will be retained under the lip by capillarity action.

VI.7 - REMINDER OF THE MAIN PRINCIPLES OF ASSEMBLY

- Protect the lip and the outside of the seal by paying attention to the recommendations for the shaft and the housing.
- Apply the insertion force to the rigid part of the outer ring.
- Centre the seal correctly in relation to the housing and/or the shaft.
- Lubricate the outside diameter and/or the housing.
- Lubricate the sealing ridge.

VII - MANUFACTURE AND TESTING



VIII - CLASSIFICATION OF THE MAIN PROFILES OF LIP SEALS

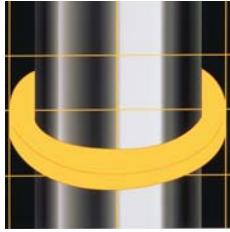
	SPRING			CORRU-GATED COVER (W)	ANTI-DUST LIP		RIDGES		
	embedded (I)	visible (E)	none (O)		WITHOUT SPRING (L)	WITH SPRING (R)	to the left (G)	to the right (D)	bi-direct. (V)
I Covered outer ring	II 	IE 	IO 	IEW 	IEL 	IELR 	IEG 	IED 	IEV
E Bare outer ring	-	EE 	EO 	-	EEL 	EELR 	EEG 	EED 	EEV
CS Bare outer ring reinforced	-	-	-	-	CSEL 	-	-	-	-
M Semi-covered outer ring	-	ME 	MO 	MEW 	MEWL 	MEWLR 	MEG 	MED 	MEV

Note : other cases are available
 X = exterior lip
 S = special cross-section
 P = protector

New range :
CSEL
 seals with bare outer ring reinforced

CLASSIFICATION EXAMPLE

M Semi-covered	M Semi-covered	M Semi-covered
E Spring visible	E Spring visible	O No spring
W With corrugations	W With corrugations	W With corrugations
LR Anti-dust lip with spring	G Ridges to the left	L Anti-dust lip

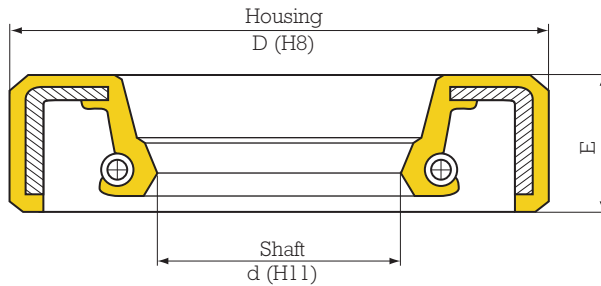


SEALS FOR ROTATING SHAFTS



**New !
CSEL Seals**

SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER



- The part numbers indicated in bold type are normally kept in stock.
- Special elastomers are available on request.

Part numbers ending in 81 are fitted with a STAINLESS STEEL SPRING.

Due to low demand we have now stopped making the II/III range of seals (with moulded in spring). Please refer to our cost effective standard range of seals (IE/IEL or CSEL type in both Nitrile or Fluorocarbon elastomer) to find the nearest equivalent. Our Technical support service is at your disposal to help you.

d mm	D (mm)	E (mm)	Type	Elastomer	Reference
5	15	6	IE	NBR	722034
	15	6	IEL	NBR	792593
	16	5	IO	NBR	723218
5.5	16	7	IE	FKM	772145
6	12	3.5	IE	NBR	772315
	15	7	IE	NBR	772309
	16	7	IE	NBR	722987
	22	7	IE	NBR	722196
	22	7	IOS	NBR	726167
6.3	19	5	IEW	NBR	772402
	19	6.3	IE	NBR	722416
	19	6.3	IE	FKM	772122
7	16	7	IE	NBR	722290
	19	6	IE	NBR	722399
	22	7	IE	NBR	722721
8	11.5	2.5	OOS	NBR	727093
	14	3	IO	NBR	723227
	14	3	IO	NBR	723250
	14	3	IO	NBR	723279
	15	5	IE	NBR	772233
	16	6.5	IE	NBR	722455
	16	6.5	IO	NBR	723216
	18	5	IE	NBR	722477
	18	5	IE	FKM	722477
	18	5	IEL	NBR	795694
	22	6	IEWL	NBR	725696
	22	7	IE	NBR	772023
	22	7	IEL	NBR	792595
	22	8	IE	NBR	722211
	22	8	IE	FKM	722907
24	7	IE	NBR	772024	
8.4	16	6.5	IE	NBR	722061
9	22	7	IE	NBR	722981
	24	7	IE	NBR	772026
	25	8	IE	NBR	722273
	26	7	IE	NBR	772028
	28	8	IE	NBR	772330
9.2	19	5.3	IE	NBR	722003
9.8	18	5	IOS	NBR	726787

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
10	16	5	IE	FKM	722393
	18	5	IE	NBR	722495
	19	7	IE	NBR	722164
	22	7	IE	NBR	722940
	22	7x8	IELS	NBR	725331
	22	8	IE	NBR	722294
	25	8	IE	NBR	722267
	26	7	IE	NBR	722983
	28.5	8	IE	NBR	722783
	35	8	IE	NBR	722784
	10.3	22	8	IE	NBR
10.8	22.2	6.3	IE	NBR	722417
11	17	4	IE	NBR	772379
	17	4	IEWL	NBR	725694
	22	7	IE	NBR	772010
	24	8	IEL	NBR	725183
	25	8	IE	NBR	722065
	26	7	IE	NBR	772027
	26.9	8	IE	NBR	722007
	28.5	8	IE	NBR	722785
12	18	4	IOS	NBR	726024
	18.2	4	IOS	NBR	726072
	19	5	IE	NBR	792700
	20	5x6	EELS	NBR	725519
	22	4	IE	NBR	722372
	22	4	IE	NBR	772314
	22	4	IE	NBR	792701
	22	4	IEL	NBR	792596
	22	4.5	IE	NBR	722303
	22	7	IE	NBR	722660
	22	7	IE	FKM	722660/81
	22	7	IEL	NBR	792507
	22	8	IE	NBR	722295
	24	6.5	IE	NBR	722395
	24	6.5	IEL	NBR	792597
	24	7	IE	NBR	772204
	24	7	IE	FKM	772204/81
26	8	IE	NBR	722109	
26	8	IEL	NBR	725352	
26	8x13	IES	NBR	726223	
26	10	IELRS	NBR	725735	
28	7	IE	NBR	722992	
28	7	IE	NBR	772346	
28	8	IE	NBR	722268	

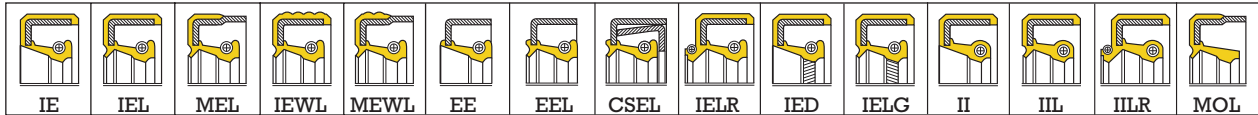
The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.

The part numbers indicated in bold type are kept in stock.

**Stainless steel spring.

Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.





d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
12	28	8	IEL	NBR	725589
	28.5	8	IE	NBR	722786
	30	7	IE	NBR	772011
	30	8	IE	NBR	722189
	30	8x13	IELS	NBR	725492
	30	8x13	IOS	NBR	726342
	32	8x13	IES	NBR	726594
	32	8	IE	NBR	722320
	32	10	IE	NBR	792702
	32.9	5	EOS	NBR	726407
	35.9	5	EOS	NBR	726397
12.5	22	4.5	IE	NBR	722810
	22	8	IE	NBR	722545
13	24	7	IEL	NBR	725330
	25	8x14	IELS	NBR	725134
	26	6	IE	NBR	792703
	26	9	IEL	NBR	725297
	26	9	IOS	NBR	726075
	30	8	IE	NBR	722013
	35	10	IE	NBR	772345
14	22	4	IE	NBR	722234
	22	4	IE	NBR	772308
	22	4	IEL	NBR	792598
	22	4	IOS	NBR	726385
	22	7	IE	NBR	722453
	24	6	IEL	FKM	725628
	24	7	IE	NBR	722659
	24	7	IE	FKM	722659/81
	26	8	IE	NBR	722177
	26	8x10	IELS	NBR	725342
	28	7	IE	NBR	722986
	30	7	IE	NBR	772029
	30	8	IE	NBR	722451
	30	10	IEL	NBR	725140
	35	7	IE	NBR	772030
	43	10	IELS	NBR	725566
	45.9	10	IELS	NBR	725512
14.5	24	7	IE	NBR	722249
15	21	4	IO	NBR	723412
	21	4.4	EEL	NBR	725333
	23	4	IEWL	NBR	725691
	24	4.5	IE	NBR	772303
	24	4.5x5.5	IELS	NBR	725611
	24	7	IE	NBR	722266
	24	7	IE	FKM	722266/81
	24	7	IE	FKM	772289
	24	7	IEL	FKM	725658
	24	7	IEL	NBR	792599
	25	5	IE	NBR	792704
	25.5	4.6	IE	NBR	722494
	25.5	4.6	IE	NBR	772344
	25.5	4.6	IE	FKM	772344
	26	6	EEL	NBR	725483
	26	7	IE	NBR	722616
	26	7	IE	NBR	722832
	26	7	IE	FKM	722616/81
	26	9	EEL	NBR	725443
	26.5	4.6	IE	FKM	772326/81
	28	4	IE	NBR	722001
	28	4	IEL	NBR	792600
	28	9	IE	NBR	792706
	30	4.5	IE	NBR	722257
	30	6	IE	NBR	722780
	30	7	IE	NBR	722106
	30	7	IE	FKM	722106/81
	30	7	IEL	NBR	792601
	30	8	IE	NBR	722788
	32	7	IE	FKM	772130
	32	7	IEL	NBR	792508
	33	5.5	IE	NBR	722787
	33	7	IE	NBR	722042
	33	8	IE	NBR	722347
	33	10	IEL	NBR	725669
	35	7	IE	NBR	772007
	35	7	IE	FKM	772007/81
	35	7	IEL	NBR	792602

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
15	35	8	IE	NBR	722316
	35	10	IE	NBR	722300
	35	10	IEL	NBR	725739
	42	8	IE	NBR	722296
15.2	30	4.6	IOS	NBR	726188
15.6	25	7	IE	NBR	722006
15.7	25.5	4.6	IE	NBR	722021
15.8	28.5	9.5	IE	NBR	722104
	28.5	9.5	IEL	NBR	725045
15.9	28.6	9.5	IE	NBR	722150
	35	8x11.5	IOIS	NBR	723260
16	22	3	IOS	NBR	726280
	22	3	IOS	NBR	726303
	22	4	EE	NBR	720047
	22	4	EEL	NBR	726353
	22.7	4.2	IE	NBR	772278
	24	6	IEL	NBR	725659
	24	7	IE	NBR	722769
	26	7	IEL	NBR	725811
	28	7	IEL	NBR	792603
	28	7	IE	NBR	772012
	28	8	IE	NBR	722613
	28	8	IE	NBR	722742
	28.5	6.3	IE	NBR	722256
	28.7	9.5	IE	NBR	722141
	30	4.5	IE	NBR	722184
	30	7	IE	NBR	772021
	30	7	IE	FKM	772021/81
	30	10	IE	FKM	772291
	32	7	IE	NBR	772031
	32	7	IE	FKM	772031/81
	33	8	IE	NBR	722717
	35	6x6.5	IES	NBR	726339
	35	7	IE	NBR	722043
	35	7	IEL	NBR	792604
	35	10	IEL	NBR	725141
	38	4	IE	NBR	722593
16.8	24	4	IO	NBR	723801
	47	7	IE	NBR	722798
17	26	6	IE	NBR	792707
	27	6	IEL	NBR	725668
	28	6	IE	NBR	772288
	28	6	IEL	NBR	792830
	28	6x6.3	IELV	FKM	704020
	28	7	IE	NBR	722969
	28	7	IE	FKM	722969/81
	28	7	IEL	NBR	725602
	28	7x13	EESD	NBR	702224
	28	8	IELR	FKM	725649
	28	8	IELR	FKM	725661
	29	7x13	EESG	NBR	702225
	30	7	IE	NBR	722726
	30	7	IEL	NBR	792509
	30	7	IE	FKM	722726/81
	32	7	IE	NBR	722123
	32	7	IE	FKM	722123/81
	32	9	IE	NBR	722696
	34	4	IE	NBR	722603
	35	7	IE	NBR	722989
	35	7	IE	NBR	772385
	35	7	IE	FKM	722989/81
	35	7	IEL	NBR	792605
	35	8	IE	NBR	722201
	35	8	IEL	NBR	725351
	35	8	IED	NBR	702003
	35	8x13	IESG	NBR	702012
	35	8x13	IESD	NBR	702066
	40	7	IE	NBR	722735
	40	7	IEL	NBR	792606
	40	8	IE	NBR	722315
	40	10	IE	NBR	722314
	47	8	IE	NBR	722674

The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.
 The part numbers indicated in bold type are kept in stock. Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.
 **Stainless steel spring.



SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

New !
CSEL Seals

d mm	D mm	E mm	Type	Elastomer	Reference	d mm	D mm	E mm	Type	Elastomer	Reference						
17.5	34	8x15	IESD	NBR	702051	20	40	7	IES	NBR	726104						
17.7	30	5	IO	NBR	723264	40	7	EES	NBR	NBR	726139						
17.9	35.5	8.2	IEL	NBR	725652	40	8	IE	NBR	NBR	722226						
18	25	7	IE	NBR	722628	40	8	IEL	NBR	NBR	725682						
						40	10	IE	NBR	NBR	722119						
						40	10	IELS	NBR	NBR	725455						
						42	6	IE	NBR	NBR	722772						
						42	6	IEL	NBR	NBR	792609						
						43	8.5	II	NBR	NBR	721250						
						45	10	IELS	NBR	NBR	725503						
						46	10	EELS	NBR	NBR	725535						
						46.4	10	EELS	NBR	NBR	725541						
						46.4	10	EELS	NBR	NBR	725561						
						46.5	10	IELS	NBR	NBR	725328						
						47	7	IE	NBR	NBR	722671						
						47	7	IE	FKM	FKM	722671/81						
						47	7	IEL	NBR	NBR	792513						
						47	10	IE	NBR	NBR	722083						
						52	10	IE	NBR	NBR	722155						
						52	10	IEL	NBR	NBR	792610						
						52	10	IE	FKM	FKM	772432/81						
57	6.5	EES	NBR	NBR	726963												
62	6.5	IES	NBR	NBR	726134												
18.6	30	4.7	IOS	NBR	726461	20.5	35	8x13	IEL	NBR	725286						
19	27	6	IE	NBR	722384	20.8	32	8	IE	NBR	722419						
						30	7	IEL	NBR	725648	21	31	3.5x4.5	IES	FKM	726380	
											31	3.5x4.5	IES	NBR	726309		
											31	8	IE	NBR	722360		
											35	8	IE	NBR	772121		
											34.9	6	IE	NBR	722143	21.9	47
36	8	IE	NBR	722009													
40	8	IE	NBR	722346	22	32	4.6	IEL	NBR	725614							
43	8	IEL	NBR	725681	32	4.6	IOS	NBR	NBR	726017							
19.3	30	4.7	IOS	NBR	726462	32	7	IE	NBR	722850							
19.6	31.1	8	IE	NBR	722244	32	7	IE	NBR	772310							
19.8	38	9.9	IE	NBR	722600	32	7	IE	FKM	722850/81							
19.9	28	5	IEW	NBR	772408	32	7	IE	NBR	772123							
20	28	4	IE	NBR	792709	32	7	IE	NBR	NBR	792514						
						32	7	IE	NBR	NBR	792710						
						33	7	IE	NBR	NBR	792710						
						35	5	IE	NBR	NBR	722732						
						35	5	IEL	NBR	NBR	792611						
						35	7	IE	FKM	FKM	722727						
						35	7	IEL	NBR	NBR	792515						
						35	7	II	NBR	NBR	721676						
						35	8	IE	NBR	NBR	722675						
						35	8	IEL	NBR	NBR	725027						
						35	10	IE	NBR	NBR	722285						
						38	8	IE	NBR	NBR	792500						
						40	7	IE	FKM	FKM	772179						
						40	7	IE	FKM	FKM	772338/81						
						40	7	IE	FKM	FKM	772366						
						40	7	IEL	NBR	NBR	725438						
						40	7	II	NBR	NBR	721404						
						40	8	IE	NBR	NBR	722519						
						40	8	IE	FKM	FKM	722519/81						
						40	8	IEL	NBR	NBR	725421						
						40	8	II	NBR	NBR	721165						
						40	8x10	IELS	NBR	NBR	725191						
						40	13x15.5	IES	NBR	NBR	726142						
						43	8	IE	NBR	NBR	722699						
						45	7	IEWL	FKM	FKM	702623						
						45	8	IOS	NBR	NBR	726168						
						47	7	IE	NBR	NBR	772033						
						47	10	IE	NBR	NBR	792711						
						22.2	38.2	9.7	IE	NBR	722920	23	33	4.8	IOS	NBR	726143
						23	36	6.5	EED	FKM	732373	36.5	8	II	NBR	NBR	721173
40	10	IE	NBR	NBR	792712												
23.5	29.5	3.3	IO	NBR	723283												
24	30	4	IOS	NBR	726050												
24	30	5.4	IOLS	NBR	726288	34.4	5	IES	NBR	NBR	726079						
						40	7	IE	NBR	NBR	722506						
						35	8	II	NBR	NBR	721220						
35	10	IE	NBR	NBR	722521												
35	10	II	NBR	NBR	721182												
36.5	8x15	IESPD	NBR	NBR	702254	37	8	IE	NBR	NBR	722789						
38	6	IE	NBR	NBR	722773	38	8	IE	NBR	NBR	722163						
38	8	IE	NBR	NBR	725476	38	8	IEL	NBR	NBR	725476						
40	6x10	IELS	NBR	NBR	725120	40	7	IE	NBR	NBR	722642						
40	7	IE	NBR	NBR	722642	40	7	IE	NBR	NBR	722642/81						
40	7	IE	FKM	FKM	722642/81	40	7	IEL	NBR	NBR	792512						

The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.

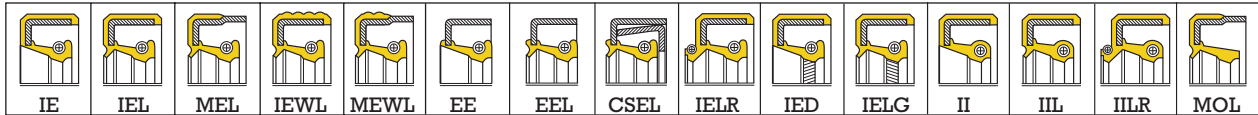
The part numbers indicated in bold type are kept in stock.

Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate;

**Stainless steel spring.

EPD = EPDM; S (in "Type" column) = special shape.





d mm	D mm	E mm	Type	Elastomer	Reference
24	34.6	14.3x19.5	EES	NBR	726472
	35	7	IE	NBR	772034
	35	7	IEL	NBR	792612
	36	7	IE	NBR	772328
	36	8x12	IESD	NBR	702028
	37	7	IE	NBR	722909
	37	7	IE	FKM	722909/81
	38.5	7	IIL	NBR	724028
	38.5	10	IE	NBR	722227
	38.5	10	IED	NBR	702005
	40	7	IE	NBR	772035
	40	8	IEL	NBR	725406
	42	8	IE	NBR	792713
	46	10	IE	NBR	722028
	47	7	IE	NBR	722977
	47	7	IE	FKM	772367
	47	10	IE	NBR	722176
	50	10	IE	NBR	792714
	50.5	11	II	NBR	721151
24.5	40	8.4	IEWD	FKM	702565
	42	6	IED	FKM	702598
24.7	35	4.8	IOS	NBR	726313
	40	7	IEL	NBR	725205
	40	7	II	NBR	721009
24.8	42	8	IE	NBR	722584
24.9	40	8	IELD	NBR	702231
25	33	7	IE	NBR	722132
	35	5	IE	NBR	722401
	35	5	IE	FKM	722702
	35	6	IE	NBR	722771
	35	7	IE	NBR	722670
	35	7	IE	FKM	722670/81
	35	7	IEL	NBR	725301
	35	7	IEL	NBR	725638
	35	5	IEL	NBR	792613
	35	7	IELR	NBR	725703
	35	7	IELR	FKM	725705
	35	10	IE	NBR	722161
	35	10.5	IEDP	NBR	702275
	36	7	IE	NBR	792715
	36	8	IOS	NBR	726123
	36	8	OOS	NBR	727034
	36	10	IE	NBR	722588
	37	6	IE	NBR	792716
	38	7	IE	NBR	722259
	38	7	IEL	NBR	792614
	38.3	10	IE	NBR	722147
	40	6	IE	NBR	722761
	40	7	IE	NBR	722799
	40	7	IE	FKM	722799/81
	40	7	IEL	NBR	725767
	40	8	IE	NBR	722508/81
	40	8	IE	FKM	722505/81
	40	8	IEL	NBR	725067
	40	8	II	NBR	721174
	40	10	IE	NBR	792717
	40	5x7.5	IELS	NBR	725650
	42	7.5	IE	NBR	722439
	42	7	IE	NBR	772201
	42	7	IEL	NBR	792615
	42	7	IEWLD	FKM	702621
	42	8	IE	NBR	722517
	42	8	IE	FKM	722517/81
	42	8	IEL	NBR	725621
	42	8	IED	FKM	702410
	42	10	IEL	NBR	792501
	42	10.3x11	IELS	NBR	725466
	43	7	IE	NBR	722091
	43	8	IE	NBR	722683
	45	7	IE	NBR	722310
	45	11	IE	NBR	722866
	45	11	II	NBR	721898
	46	7	IE	NBR	792718
	46	7.5	II	NBR	721153
	47	7	IE	NBR	722523
	47	7	IE	FKM	772339/81

d mm	D mm	E mm	Type	Elastomer	Reference
25	47	7	IEL	NBR	792517
	47	7	II	NBR	721353
	47	10	IE	NBR	722524
	47	13.5	IELS	NBR	725400
	49	10	IE	NBR	722117
	50	10	IE	NBR	722260
	52	7	IE	NBR	722910
	52	7	IEL	NBR	792518
	52	7	IEL	NBR	792616
	52	7	IE	FKM	722910/81
	52	8	IEL	NBR	725037
	52	10	IE	NBR	792719
	62	10	IE	NBR	792720
25.4	41.2	11	II	NBR	721657
	42.9	5	IE	NBR	772220
	44.4	5	IE	NBR	722094
26	36	7	IE	NBR	792721
	37	7	IE	NBR	722990
	37	7	IE	FKM	722990/81
	42	8	IE	NBR	722411
	42	8	IEL	NBR	725080
	42	8	IEWLD	FKM	702554
	47	7	IE	NBR	772037
	52	8	IE	NBR	792722
26.7	46.5	11.3	IE	NBR	722757
	46.5	11.3	II	NBR	721172
27	37	7	IE	NBR	722171
	42	10	IEL	NBR	725733
	42	10x13	IED	NBR	702014
	45	6	IE	NBR	722790
	47	7	IE	NBR	722797
	47	8	IE	NBR	722509
	47	8	II	NBR	723104
27.5	34	4	IO	NBR	723800
	35	4	IO	NBR	723277
28	36	8	IE	NBR	722031
	36	8	IEL	NBR	792617
	37	7	IEWL	NBR	725685
	38	7	IE	NBR	772164
	38	7	IE	NBR	792723
	38	7	IEWG	FKM	702549
	40	7	IE	NBR	722212
	40	7	IE	NBR	772312
	40	7	IE	FKM	722212/81
	40	7	IEL	NBR	792519
	40	7	IEWD	NBR	702497
	42	8	IE	NBR	722193
	43	8	II	NBR	721456
	43	10	IE	NBR	792724
	43	10	IEL	NBR	725131
	45	8	IE	NBR	722967
	45	8	IE	FKM	722967/81
	45	8	IEL	NBR	792618
	45	11.5	EESF	NBR	726348
	47	7	IE	NBR	722911
	47	7	IED	NBR	702257
	47	7	IEL	NBR	792619
	47	10	IE	NBR	722490
	47	10	IEL	NBR	725606
	47	10	II	NBR	721194
	47	10	IIL	NBR	724229
	50	10	IE	NBR	792725
	52	7	IE	NBR	772038
	52	10	IEL	NBR	79281901
	52	10	II	NBR	721222
	52	10	IOS	NBR	726323
	52	10x11	IELS	NBR	725377
	65	10	IE	NBR	772286
28.5	45	8.5	IE	NBR	725062
28.6	38.1	6.3	IE	NBR	722305
	39.6	4.7	IOS	NBR	726311
28.8	46.5	11.2	IE	NBR	722959

The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.

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**Stainless steel spring.

Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.



SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

New ! CSEL Seals

d mm	D mm	E mm	Type	Elastomer	Reference	d mm	D mm	E mm	Type	Elastomer	Reference	
28.8	46.5	11.2	II	NBR	725950	31	47	7	IE	NBR	722672	
	46.5	11.2	II	NBR	721022		55	10	II	NBR	721156	
	46.5	11.2	IE	NBR	724215	31.7	42.9	4.7	IOS	NBR	726463	
29	46	10	IE	NBR	722966		32	42	7	IEW	FKM	702498
	46	10	II	NBR	721183			45	6	IE	NBR	792732
	46.4	12	II	NBR	721148	45		7	IE	NBR	722913	
	50	10	IE	NBR	722066	45		7	IEL	NBR	792528	
29.8	47	9.9	IEL	NBR	725631	45		10	IE	NBR	722409	
	47	9.9	ESWLD	NBR	702686	45		10	IEG	NBR	702240	
29.9	48.4	6.3	IOS	NBR	726566	46		7	IEL	NBR	725208	
						46		7x9.7	IELS	NBR	725563	
30	40	7	IE	NBR	722623	47	7	IE	NBR	772013		
	40	7	IE	FKM	722623/81	47	7	FKM	772013/81			
	40	7	IEL	NBR	792520	47	7	IEL	NBR	792625		
	40	7	IED	FKM	702409	47	8	IE	NBR	722617		
	40	7	IEWLD	FKM	702622	47	8	IEL	NBR	792626		
	41	4.7	IOS	NBR	726312	47	8	II	NBR	721046		
	42	5.7	IE	NBR	722583	47	12	IELR	NBR	724851		
	42	6	IEWL	NBR	725637	48	8	IE	NBR	792734		
	42	6x6.5	IELV	NBR	704033	50	8	IE	FKM	722518/81		
	42	7	IE	NBR	722737	50	8	IE	NBR	722518		
	42	7	IE	FKM	722737/81	50	8	IEL	NBR	792529		
	42	7	IEL	NBR	792521	50	8	II	NBR	721067		
	42	7	IEW	FKM	772409	50	9	IOS	NBR	726015		
	42	8	IE	NBR	722722	50	10	IE	NBR	722607		
	42	8	IEL	NBR	725143	50	10	II	NBR	721185		
	42	8	IEG	NBR	702107	50	10	IELS	NBR	725408		
	42	8	IELD	NBR	702408	52	7	IE	NBR	772202		
	42	8	IOS	NBR	726236	52	7	IEL	NBR	792628		
	45	8	IE	NBR	722402	52	7.5	IE	FKM	772202/81		
	45	8	IEL	NBR	792620	52	7.5	IE	NBR	722478		
	45	8	IE	NBR	722684	52	7.5	II	NBR	721154		
	45	8	IE	NBR	722684	52	7.5x13.5	IELR	NBR	725897		
	45	8	IEL	NBR	792621	52	10	IEL	NBR	725565		
	45	10	IE	NBR	722541	52	10	IEL	NBR	792627		
	45	10	II	NBR	721175	52	10	IEG	NBR	702342		
	45	13	IEL	NBR	725085	52	12	IE	NBR	722557		
	47	6	IEWD	FKM	702522	54	8	IE	NBR	722039		
	47	7	IE	NBR	772039	54	8	II	NBR	721068		
	47	7	IE	FKM	772039/81	55	10	IE	NBR	792735		
	47	7	IEL	NBR	792522	55	10	IEL	NBR	79281801		
	47	8	IE	NBR	722204	56	10	II	NBR	721162		
	47	8	IEL	NBR	725293	56	12	IE	NBR	722038		
	47	10	IE	NBR	792726	56	12	II	NBR	721096		
	48	8	IE	NBR	722500	62	10	IE	NBR	792736		
	48	8	IE	NBR	72250001	33	45	7	IE	NBR	792737	
	48	8	IE	NBR	722901		48	8	IE	NBR	722971	
	48	8	IE	FKM	722500/81		48	8	II	NBR	721145	
	48	8	IEL	NBR	792523	33.5	47	4	IO	NBR	723252	
	48	10	IE	NBR	792727		34	46	8	IE	NBR	792738
	50	7	IEW	FKM	772410	50		10	IE	NBR	792739	
50	7	MEWLD	FKM	702540	52	7		IE	NBR	792814		
50	10	IE	NBR	722836	52	7.5		II	NBR	721279		
50	10	IEL	NBR	792524	54	9		IE	NBR	722092		
50	10	II	NBR	721184	54	10		IE	NBR	722685		
50	11	II	NBR	721149	34.8	50	7	IE	FKM	772400		
52	7	IE	NBR	722912		34.9	54	11	IE	NBR	722023	
52	7	IE	FKM	722912/81			55.8	9.3	IELG	NBR	702299	
52	7	IEL	NBR	792525			57.2	12.7	IE	NBR	722985	
52	10	IE	NBR	792728			57.2	12.7	II	NBR	721468	
52	10	IEL	NBR	792622			58	9.8	IE	NBR	772276	
55	7	IE	NBR	772342			63.5	12.5	IELG	NBR	702183	
55	10	IE	NBR	722892			35	45	6	IE	NBR	722400
55	10	IEL	NBR	792526				45	6	IE	FKM	722400/81
55	10	II	NBR	721102				45	7	IEL	NBR	792629
56	10	IEL	NBR	792623	47			6	IEWLD	FKM	702535	
60	10	IE	NBR	792729	47	7		IE	NBR	722915		
62	7	IE	NBR	772040	47	7		IE	FKM	722915/81		
62	7	IE	FKM	772040/81	47	7		IEL	NBR	725411		
62	7	IEL	NBR	792527	47	8		IE	NBR	722554		
62	8	IES	NBR	726113	50	5		IE	NBR	722266		
62	10	IE	NBR	792730	50	5.8		IE	NBR	722484		
62	10	IEL	NBR	792624	50	7	IE	NBR	722022			
72	10	IE	NBR	792731								
30.1	50.7	11	II	NBR	721329							
31	42	8	IE	NBR	722691							

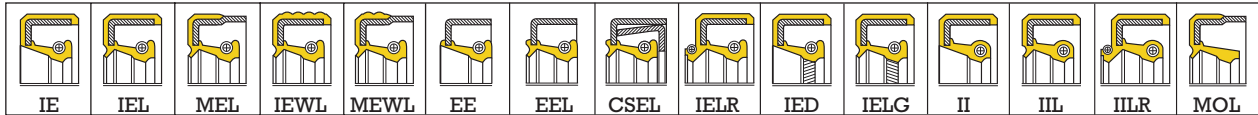
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**Stainless steel spring.

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d mm	D mm	E mm	Type	Elastomer	Reference
35	50	7	IE	FKM	722022/81
	50	7	IEL	NBR	792530
	50	7	MEWD	FKM	702371
	50	8	IE	NBR	722389
	50	8	IEL	NBR	725489
	50	8	IED	NBR	702239
	50	10	IIL	NBR	724001
	50	10	IEL	NBR	792630
	50	12	IE	NBR	722525
	50	12	II	NBR	721069
	52	7	IE	NBR	772014
	52	7	IE	FKM	772014/81
	52	7	IEL	NBR	792531
	52	8	IE	NBR	722778
	52	8	IEL	NBR	792532
	52	8	IES	NBR	726705
	52	10	IE	NBR	722526
	52	10	IEL	NBR	725026
	52	10	IEL	NBR	725747
	52	10	IELR	NBR	792504
	52	10	II	NBR	721008
	52	10	IIL	NBR	724198
	52	10.5	IIS	NBR	726640
	54	10	IE	NBR	722893
	54	10	II	NBR	721195
	55	8	IE	NBR	792740
	55	10	IE	NBR	722192
	55	10	IE	NBR	792741
	55	10	IEL	NBR	792631
	56	10	IE	NBR	722499
	56	10	II	NBR	721192
	56	10	IEWLG	FKM	702496
	59	12x14	IES	NBR	726718
	60.3	12.5	II	NBR	721206
	62	7	IE	NBR	722918
	62	7	IEL	NBR	792934
	62	7	IE	FKM	722918/81
	62	10	IE	NBR	792742
	62	10	IEL	NBR	792632
	62	12	IE	NBR	722493
	62	12	IEL	NBR	792633
	64	7	IEWLD	FKM	702531
	65	10	IE	NBR	722288
	68	6	IE	NBR	722815
	68	6	IE	NBR	792634
	68	10	IE	FKM	772244
	68	10x12	IEL	NBR	725608
	72	7	IE	NBR	722245
	72	7	IE	NBR	792635
	72	10	IE	NBR	722170
	72	10	IEL	NBR	792636
	72	10	IEL	NBR	79263601
	72	12	IE	NBR	792743
	72	12	IEL	NBR	792637
35.1	58	11.5	IE	NBR	722560
	58	11.5	II	NBR	721457
36	47	7	IE	NBR	722950
	48	10	IE	NBR	722084
	50	7	IE	NBR	772041
	50	7	IEWLD	FKM	702659
	52	4	IOX	NBR	726394
	52	7	IE	NBR	722991
	52	7	IE	FKM	722991/81
	52	7	IEL	NBR	792638
	52	10	II	NBR	721309
	54	7.5	IE	NBR	722496
	54	7.5	IE	NBR	722895
	54	7.5	II	NBR	721278
	54	11	EESF	NBR	726349
	58	15	IEL	NBR	725494
	62	7	IE	NBR	722404
	62	12	II	NBR	721117
	62	12.5	II	NBR	721076
	68	10	IEL	NBR	792639
	83	12	II	NBR	721129
37	50	10	IE	NBR	792744
	58	13	IE	NBR	792745
	58	13	IEL	NBR	725568

d mm	D mm	E mm	Type	Elastomer	Reference
37	58	13	II	NBR	721444
	70	13	IE	NBR	722804
	70	13	IE	FKM	722904
38	50	7	IE	NBR	792746
	52	7	IE	NBR	722338
	52	7	IE	FKM	722338/81
	52	7	IEL	NBR	792640
	52	8	IE	NBR	722791
	54	5	IE	NBR	722293
	54	10	II	NBR	721212
	55	7	IE	NBR	721103
	55	10	IE	NBR	722641
	55	10	IE	FKM	722641/81
	55	10	IEL	NBR	725486
	55	10	II	NBR	721029
	55	12	IE	NBR	772226
	56	10	IE	NBR	792747
	56	10	II	NBR	721142
	60	10	IEL	NBR	792641
	61	12	IE	NBR	722606
	62	7	IE	NBR	772042
	62	7	IE	FKM	772042/81
	62	10	IE	NBR	722556
	62	10	IEL	NBR	792642
	65	8	IE	NBR	772368
38.1	52.5	11.1	IE	NBR	722921
	60.3	19	IEL	NBR	725212
	63.5	12.7	IE	NBR	722251
	73	11	IE	NBR	722558
	78	11	IE	NBR	722667
38.7	50.8	6.4	IES	NBR	726073
39	55	8	IE	NBR	722665
	61	12	II	NBR	721134
39.3	63.7	12.8	II	NBR	721140
39.7	63.6	12.7	IE	NBR	722151
39.8	65	8	IEW	FKM	772406
	65	8	IEWD	FKM	702504
40	46	4	IOS	NBR	726098
	48	4	EO	NBR	727124
	52	7	IE	NBR	722325
	52	7	IE	FKM	722325/81
	52	7	IEL	NBR	792505
	52	7	IEL	NBR	725363
	52	7	IED	FKM	702546
	52	7	IEWLD	FKM	702511
	52	9	IEWLG	FKM	702532
	55	6.5	IE	NBR	722746
	55	7	IE	NBR	722919
	55	7	IE	FKM	722919/81
	55	7	IEL	NBR	792535
	55	8	IE	NBR	722792
	55	8	IEL	NBR	725355
	55	10	IE	NBR	722166
	55	10	IE	NBR	772364
	55	10	II	NBR	721070
	55	10	IEWG	NBR	702298
	56	8	IE	NBR	792748
	56	8	IEL	NBR	792644
	56	10	IE	NBR	722152
	56	10	IEL	NBR	792643
	58	10	IE	NBR	72250101
	58	10	IE	NBR	722501
	58	10	IE	FKM	722501/81
	58	10	IEL	NBR	725123
	58	10	IELV	NBR	704031
	58	10	IELWG	FKM	702476
	58	10x14	IESPD	NBR	702222
	58	15	IELR	NBR	725745
	58	15	IILR	NBR	724087
	60	7	IE	NBR	792749
	60	7	IEWLG	FKM	702536
	60	10	IE	NBR	792750
	60	10	IEL	NBR	792645

The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.
 The part numbers indicated in bold type are kept in stock. Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; **Stainless steel spring. EPD = EPDM; S (in "Type" column) = special shape.



SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

New !
CSEL Seals

d mm	D mm	E mm	Type	Elastomer	Reference	d mm	D mm	E mm	Type	Elastomer	Reference
40	60	12	II	NBR	721301	42	67	10	IEL		725435
	61	12	IE	NBR	722498		71.5	13	II	NBR	721143
	61	12	II	NBR	721100		72	8	IE	NBR	772046
	62	7	IE	NBR	772043		72	8	IEL	NBR	792541
	62	7	IE	FKM	772043/81	42.1	63.6	14.4	II	NBR	721018
	62	7	IEL	NBR	792536	42.8	69.9	12.7	II	NBR	721469
	62	8	IE	NBR	722454	43	58	7	MEWD	FKM	702370
	62	10	IE	NBR	722505		58	13.5	IE	NBR	722522
	62	10	IE	FKM	722505/81		58	13.5	II	NBR	721204
	62	10	IE	FKM	722828		60	10	IE	NBR	722136
	62	10	IEL	NBR	725802		60	10	IE	NBR	792754
	62	10	IELR	NBR	792503		60	10	IEL	NBR	725975
	62	10	II	NBR	721031		65	10	IE	NBR	722958
	62	10	MEWLG	NBR	702369		65	10	II	NBR	721440
	62	10x11	IELS	NBR	725467		66	10	IEL	NBR	792650
	62	12	IE	NBR	722972		75	10	II	NBR	721441
	62	12	II	NBR	721168	44	59.2	12	IEL	NBR	725642
	62	11x13.5	IELS	NBR	725401		62	10	IE	NBR	792755
	62	10.25x13	IELS	NBR	725600		72	12	IE	NBR	722741
	65	12	II	NBR	721123		78	7	IE	NBR	722190
	68	7	IEL	NBR	792537	44.4	54	4.8	IE	NBR	722036
	68	8	IE	NBR	722174	44.5	62	8	IEL	NBR	725442
	68	10	IE	NBR	792751		81	10	IE	NBR	722210
	70	12	IE	NBR	722203		81	11.1	IE	NBR	722022
	70	12	II	NBR	721251	44.7	54	6x7.9	EOLS	NBR	727111
	71.5	12	II	NBR	721144		54	6x8.5	IOLS	NBR	723258
	72	7	IE	NBR	772044	44.8	61.4	11.7	II	NBR	721201
	72	7	IEL	NBR	792538	45	57	7	IEWLD	FKM	702567
	72	7	IE	FKM	772044/81		58	7	IE	NBR	792756
	72	8	IE	NBR	722169		58	7	IEWD	FKM	702775
	72	10	IEL	NBR	792646		60	5	IE	NBR	722185
	72	12	II	NBR	721467		60	6.5	IE	NBR	722121
	80	10	IE	NBR	792752		60	6.5	IEL	NBR	792651
	80	10	IEL	NBR	792647		60	6.5x8.1	IOB	NBR	729009
	85	13	IEL	NBR	725376		60	7	IE	NBR	722306
	90	8	IEL	NBR	792648		60	8	IE	NBR	772115
41	54	12	EEL	NBR	725615		60	8	IE	FKM	772115/81
	63.4	6	IE	NBR	722550		60	8	IEL	NBR	792542
	63.6	14	II	NBR	721108		60	10	IE	NBR	722516
	70	13	IE	NBR	722647		60	10	IE	FKM	722516/81
41.2	60.3	9.5	IEL	NBR	725204		60	10	IE	FKM	722988
	63.5	12.7	IE	NBR	772317		60	10	IEL	NBR	792543
41.3	62.1	19	IE	NBR	725042		60	10	IEWLD	FKM	702614
41.4	57.1	6.5	IE	NBR	722723		60	12	II	NBR	721071
	57.1	12.2	IES	NBR	726744		62	7	IEL	NBR	725459
	62	12.2	IES	NBR	726115		62	7	EEL	NBR	725547
42	52	4	IOS	NBR	726151		62	8	IE	NBR	772018
	55	7	IED	FKM	702223		62	8	IE	FKM	772018/81
	55	7	IEWLD	FKM	702545		62	8	IEL	NBR	725407
	55	8	IE	NBR	772045		62	8	EEL	NBR	725549
	55	8	IE	FKM	772045/81		62	8	IE	NBR	725549
	55	8	IEL	NBR	792539		62	8	IEWLD	FKM	702465
	56	7	IE	NBR	772386		62	10	IE	NBR	722621
	56	7	IE	NBR	792753		62	10	IEL	NBR	725748
	58	7	IEL	NBR	725387		62	10	IEL	FKM	725315
	58	7	EEL	NBR	725543		62	10	IEL	NBR	72574801
	58	9	IE	FKM	772265		62	10	IEL	NBR	724011
	58	10x11.5	IELS	NBR	725184		62	12	IE	NBR	722504
	58	11	IESF	FKM	726483		62	12	IEL	NBR	792544
	60	10	IE	NBR	722682		62	12	II	NBR	721020
	60	12	IE	NBR	722763		62	12	IE	NBR	772019
	60	14	IEL	NBR	725919		62	12	IEL	NBR	772019/81
	60	14	III	NBR	724121		62	12	II	NBR	792652
	62	7	IEL	NBR	725552		65	8	IE	NBR	721101
	62	7	EEL	NBR	725544		65	8	IE	FKM	726157
	62	8	IE	NBR	722931		65	8	IEL	NBR	702508
	62	8	IE	FKM	722931/81		65	8	II	NBR	722764
	62	8	IEL	NBR	792540		65	8	IE	NBR	702251
	62	8	IELD	FKM	702406		65	9	IEWLD	FKM	702508
	62	10	IE	NBR	722057		65	10	IE	NBR	722764
	63	8	IEWLG	FKM	702526		65	10	EELD	FKM	702251
	64	7	IE	NBR	722640		65	12	IE	NBR	722858
	65	8.3x13	IELR	NBR	725016		65	12	II	NBR	721217
	65	10	IE	NBR	722064		65	15	III	NBR	724449
	65	10	IEL	NBR	792649		66	6	IE	NBR	792757
	65	10	II	NBR	721093		66	9	IEWL	FKM	702478

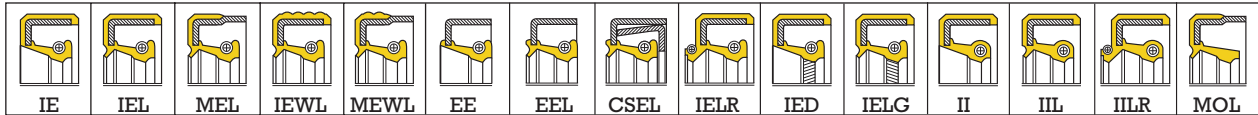
The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.

The part numbers indicated in bold type are kept in stock.

**Stainless steel spring.

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d mm	D mm	E mm	Type	Elastomer	Reference
45	67	8	IEWLD	FKM	702467
	68	10	IE	NBR	792758
	70	12	IE	NBR	792760
	70	12.5	II	NBR	721341
	70	12.5	IEL	NBR	79282801
	70	12.5	IELS	NBR	725794
	72	8	IE	NBR	772104
	72	8	IEL	NBR	792653
	72	8	IE	FKM	772104/81
	72	8.3x9	IELS	NBR	725468
	72	10	IE	NBR	792761
	75	9	IEWLD	FKM	702515
	75	10	IE	NBR	792762
	75	10	IELD	NBR	702126
	75	10	EELD	FKM	702250
	80	10	IE	NBR	792763
	80	10	IEL	NBR	792654
	85	8	IEL	NBR	792655
	100	8	IEL	NBR	792656
46	60	10X16	IES	NBR	726378
	64	8	IE	NBR	792764
	65	10	IE	NBR	722793
	65	10	IEL	NBR	792657
	65.5	9x13.5	IELS	NBR	725306
	78	9	IELS	FKM	725590
46.9	62	8	IE	NBR	722271
47	62	6	IE	NBR	792765
47.2	60.3	6.3	IE	NBR	772120
47.5	60.5	10	IEL	NBR	725220
47.6	58.8	9.6	IE	NBR	722292
	66.7	9.3	IED	NBR	702245
	69.8	16.7	IEL	NBR	725006
	69.8	19	IIL	NBR	724003
	69.8	19	IIL	NBR	724428
	70	8	IEWLD	FKM	702544
	70.2	15	II	NBR	721082
	71.5	9.5	IE	NBR	772316
	73.5	16.7	IEL	NBR	725100
48	58	4	IOS	NBR	726046
	62	7	IE	NBR	772322
	62	8	IE	NBR	722899
	62	8	IE	FKM	722899/81
	62	8	IEL	NBR	725263
	62	8	IEWG	FKM	702587
	63.5	12	II	NBR	721072
	65	10	IE	NBR	722513
	65	10	IEL	NBR	792545
	65	10	IELS	NBR	725118
	65	10	IOS	NBR	726010
	65.1	10	IOS	NBR	726286
	68	8	IEL	NBR	792658
	68	12	IE	NBR	722873
	68	12	II	NBR	721166
	68	12x15	IELS	NBR	725092
	68	14	IEL	NBR	725890
	70	10	IE	NBR	792767
	72	7	IE	NBR	722272
	72	8	IE	NBR	722200
	72	8	IEL	NBR	792659
	72	10	IE	NBR	722209
	72	10	IED	FKM	702364
	72.2	12.5	IE	NBR	722656
	72.2	12.5	II	NBR	721146
	72.5	10	IEL	NBR	725369
	75	8	EED	FKM	702334
	80	10	IE	NBR	792768
49	65	10	IE	NBR	792769
49.7	65	10	IE	NBR	722960
	65	10	IE	FKM	722725
50	62	10	IE	NBR	792770
	65	8	IE	NBR	722710

d mm	D mm	E mm	Type	Elastomer	Reference
50	65	8	IE	FKM	722710/81
	65	8	IEL	NBR	792546
	65	10	IE	NBR	722887
	65	10	IEL	NBR	792547
	65	10	II	NBR	721073
	65	10	IEX	NBR	726357
	67.5	13.5	EEL	NBR	725572
	68	8	IE	NBR	772047
	68	8	IE	FKM	772047/81
	68	8	IEL	NBR	792548
	68	8	IEWLD	FKM	702620
	68	10	IE	NBR	792771
	68	10	IEL	NBR	792660
	70	10	IE	NBR	722219
	70	10	IE	NBR	792772
	70	10	IEL	NBR	792661
	70	10	IEL	NBR	79266101
	70	12	IEL	NBR	79282001
	70	13.5	EEL	NBR	725473
	72	6	IE	NBR	722287
	72	8	IE	NBR	772199
	72	8	IE	FKM	772199/81
	72	8	IEL	NBR	792549
	72	10	IE	NBR	722756
	72	10	IEL	NBR	792662
	72	12	IE	NBR	722503
	72	12	IE	FKM	722503/81
	72	12	IEL	NBR	792551
	72	12	EELD	FKM	702387
	72	15	IELR	NBR	725003
	72	15	II	NBR	721322
	72	15	IILR	NBR	724088
	74	10	IE	NBR	722906
	75	8	IEWLG	FKM	702521
	75	10	IE	NBR	772337
	75	10	IE	FKM	772337/81
	76.2	12.2	IE	NBR	722650
	78	10	IE	NBR	792773
	80	8	IE	NBR	772048
	80	8	IEL	NBR	792552
	80	8	IE	FKM	772048/81
	80	9	IEWLD	FKM	702530
	80	9	MEWLD	FKM	702624
	80	10	IE	NBR	792774
	80	10	IEL	NBR	792663
	80	13	IE	NBR	722512
	80	13	IEL	NBR	725779
	80	13	EELD	FKM	702263
	80	13	IEWLD	FKM	702477
	80	16	IELR	NBR	725612
	80	16	IIL	NBR	724089
	87	10	IE	NBR	722447
	90	8	IEL	NBR	792664
	90	10	IE	NBR	722888
	90	10	IEL	NBR	792665
	90	10x14	IES	FKM	726460
50.7	69.8	9.5	IE	NBR	722596
	76.1	17.5	II	NBR	721209
50.8	69.8	12.7	IE	NBR	722035
	70	12.7	IE	NBR	722206
	73.4	17	IIL	NBR	724308
	81	11.9	II	NBR	721355
50.9	101.8	11.5	II	NBR	721171
51	65	6.5	IEWD	FKM	702491
	76	19	II	NBR	721208
51.4	69	10	IEL	NBR	725373
52	68	7	IEL	NBR	725412
	68	8	IE	NBR	722236
	68	8	IE	FKM	722236/81
	68	8	IEL	NBR	792553
	68	8	II	NBR	721047
	68	8	IEWLG	FKM	702552
	69	10	IEL	NBR	725064
	69	10	IEL	FKM	725064
	69	10	IELS	NBR	725119

The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.
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 **Stainless steel spring.



SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

New !
CSEL Seals

d mm	D mm	E mm	Type	Elastomer	Reference	d mm	D mm	E mm	Type	Elastomer	Reference
52	69	10	IOS	NBR	726009	55	75.4	12	II	NBR	721253
	69	10	IOS	NBR	726269		76	6.5x8.1	IOB	NBR	729008
	72	8	IE	NBR	722049		76	8	IEWLD	FKM	702534
	72	8	IEWD	FKM	702588		76	11	IE	NBR	722649
	72	10	IE	NBR	722281		76	12	IE	NBR	722712
	72	12	IE	NBR	722611		76	12	IELS	NBR	725713
	72	12	IE	FKM	772137		76	12	IELS	FKM	725713/81
	72	12	IEL	NBR	792666		78	10	IE	FKM	722392/81
	72	12	II	NBR	721199		80	8	IE	NBR	722008
	75	12	IE	NBR	722502		80	8	IE	FKM	722008/81
	75	12	IE	FKM	772345		80	8	IEL	NBR	792557
	75	12	II	NBR	721015		80	8	II	NBR	721013
	75	15	IEL	NBR	725673		80	10	IE	NBR	792778
	75	16	III	NBR	724562		80	10	IEL	NBR	792668
	78	15	IELR	NBR	725610		80	12	IE	NBR	726711
	78	15	III	NBR	724261		82	12	IE	NBR	722655
	80	8	IE	NBR	792506		85	8	IE	NBR	772050
	80	10	IE	NBR	722824		85	10	IE	NBR	792779
	80	10	II	NBR	721048		85	12	IE	NBR	722222
	80	13	IE	NBR	722514		90	10	IE	NBR	792780
80	13	II	NBR	721176	90	10	IEL	NBR	792669		
85	10	IE	NBR	792775	90	13	IEL	NBR	725061		
52.5	72.7	8.5	II	NBR	721019	90	13	II	NBR	721318	
	80	11	IE	NBR	722652	90	13	IEL	NBR	79282201	
53	60	4	IEL	NBR	725679	56	66	8.5	EOLS	NBR	727120
	68	10.5	IE	NBR	722605		69	10	IOS	NBR	726255
	68	10.5	II	NBR	721128		70	8	IE	NBR	772051
	68	13	IEL	NBR	725048		72	7	IEL	NBR	725338
	68	13	III	NBR	724284		72	8	IE	NBR	772052
	97	10	IE	NBR	772281		72	8	IE	FKM	772052/81
53.6	73.1	19	IEL	NBR	725043	80	12	IE	NBR	722615	
	77.8	13	IEL	NBR	725108	85	8	IE	NBR	772054	
54	68	10.5	IE	NBR	722167	57	73	8	IEWL	FKM	702561
	70	10	IE	NBR	792776		75.6	12	II	NBR	721247
	70	12	IE	NBR	722874		80	12	IE	NBR	722067
	72	5	IE	NBR	722738		85	15	IELR	NBR	725625
	72	5x12.5	IES	NBR	726643		85	15	III	NBR	724306
	72	10	IE	NBR	722448		90	13	IE	NBR	722728
	72	10	IEL	NBR	725202	90	13	IEL	NBR	725760	
	72	10	IED	FKM	702363	57.1	73	12.7	II	NBR	721259
	72.5	9	IEL	NBR	725499		76.2	12.7	IEL	NBR	725127
	72.5	9	EELS	NBR	725509	58	72	8	IE	NBR	722359
	72.5	9	EELS	NBR	725592		72	8	IE	FKM	722359/81
	72.5	9	EELS	NBR	725604		72	8	IEL	NBR	792558
	75	7	IEL	NBR	725559		75	5	IE	NBR	722622
	76.2	12.5	II	NBR	721307		75	10	IE	NBR	792783
	77.7	12.7	IE	NBR	722025		80	5	IE	NBR	722707
	81	10	IEL	NBR	725651		80	8	IE	NBR	722939
85	10	IEL	NBR	725501	80		8	IEL	NBR	792559	
54.2	73.1	6	IE	NBR	726158		80	10	IE	NBR	722200
							80	10	IE	NBR	792784
55	68	4	IOS	NBR	726285		80	10	II	NBR	721437
	68	8	IE	NBR	792777		80	10	IEL	NBR	79282501
	68	8	IEL	NBR	792667		80	12	IE	NBR	722005
	70	7	IEWV	FKM	704039		80	12	IE	FKM	722005/81
	70	8	IE	NBR	722938	80	12	IEL	NBR	792670	
	70	8	IE	FKM	722938/81	80	12	II	NBR	721059	
	70	8	IEL	NBR	792554	80	12	IE	NBR	722254	
	70	8x14	IELR	NBR	725896	81	5	IE	NBR	721210	
	70	10	IE	NBR	722528	83.2	17	II	NBR	721210	
	70	10	EEL	FKM	702381	85	10	IE	NBR	722559	
	71.5	10	II	NBR	721349	85	10	II	NBR	721135	
	72	8	IE	NBR	772015	85	12	II	NBR	721124	
	72	8	IE	FKM	772015/81	90	10	IEL	NBR	792672	
	72	8	IEL	NBR	792555	102	10	IE	NBR	772282	
	72	8	EEL	NBR	725550	59	72	12	MEWL	NBR	725588
	72	10	IE	NBR	722808		72	7	EELS	NBR	725358
	72	10	IEL	NBR	792556		80	12x13	IE	NBR	792785
	72	10	IEWLD	FKM	702615	59.5	75	8	IE	NBR	722587
	72	13	II	NBR	721138		60	71.5	8	IE	NBR
	75	10	IEL	NBR	725102	75		8	IE	NBR	722997
75	12	IE	NBR	722749	75	8		IE	NBR	72299701	
75	12	IE	FKM	722749/81	75	8		IE	NBR	72299701	
75	12	IEL	NBR	725072	75	8		IE	FKM	722997/81	
75	12	II	NBR	721081							
75	16	III	NBR	724448							

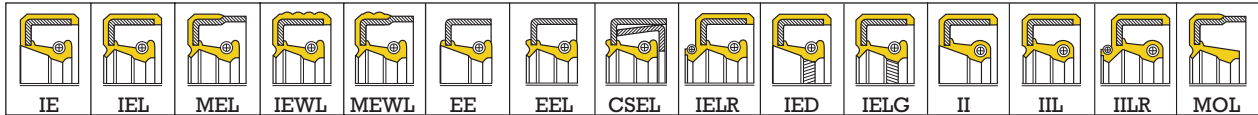
The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.

The part numbers indicated in bold type are kept in stock.

**Stainless steel spring.

Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.





d mm	D mm	E mm	Type	Elastomer	Reference
60	75	8	IEL	NBR	792560
	75	10	II	NBR	721221
	78	8.8	EEL	NBR	725307
	78	10	IE	NBR	792786
	78	10	IEWLG	FKM	702502
	80	8	IE	NBR	772016
	80	8	IE	FKM	772016/81
	80	8	IEL	NBR	725361
	80	8	IEWLG	FKM	702564
	80	10	EEL	NBR	725545
	80	10	IE	NBR	722213
	80	10	IEL	NBR	725163
	80	10	IEL	FKM	725163/81
	80	12	IE	NBR	722459
	80	12	IE	FKM	722459/81
	80	12	IEL	NBR	792671
	80	12	IIL	NBR	724540
	80	12	IEEX	NBR	726262
	80	13	IE	NBR	722686
	80	13	II	NBR	721275
	82	12	IEEX	NBR	726498
	85	8	IE	NBR	772055
	85	8	IEL	NBR	792561
	85	8	IEWLD	FKM	702555
	85	12	II	NBR	721244
	85	12	IEL	NBR	725107
	86	13	IEL	NBR	79282101
	90	8	IE	NBR	772056
	90	8	IEL	NBR	792562
	90	8	IE	FKM	772056/81
	90	13	IE	NBR	722876
	90	13	II	NBR	721238
	95	8	IE	FKM	772259
	95	10	IE	NBR	792787
	95	10	IEL	NBR	792673
	96	13	IEL	NBR	725106
	100	10	IE	NBR	792788
	110	13	IEL	NBR	792674
60.3	88.5	12.7	II	NBR	721480
60.4	97	12	IE	NBR	722175
61	74	6	IOS	NBR	726743
62	80	10	IE	NBR	792789
	81	6	IE	NBR	722540
	85	10	IE	NBR	722144
	85	10	IE	FKM	722144/81
	85	12	IE	NBR	722750
	85	12	IEL	NBR	725762
	85	12	II	NBR	721033
	85	12	IIL	NBR	724543
	90	10	IE	NBR	722941
	90	13	II	NBR	721034
	100	12	IE	NBR	722877
	110	13	II	NBR	721115
63	83	12	IE	NBR	772375
	85	10	IE	NBR	772057
	85	10	IE	FKM	772057/81
	90	10	IE	NBR	772105
	90	12	IE	NBR	722648
63.5	80	5.5	IOS	NBR	726816
	90	11.5	II	NBR	721207
64	80	13	IE	NBR	722984
	80	13	II	NBR	721097
	85	16	IEL	NBR	725891
	85	16	IIL	NBR	724090
	90	12	II	NBR	721125
64	90	13	IE	NBR	792791
65	73.5	4	IOS	NBR	726049
	80	8	IE	NBR	722507
	80	8	IE	FKM	722507/81
	80	8	IE	FKM	772119
	80	8	IEL	NBR	792675
	80	8	II	NBR	721049
	80	10	IEL	NBR	725434

d mm	D mm	E mm	Type	Elastomer	Reference
65	80	12	IE	NBR	722093
	82	10	II	NBR	721319
	85	10	IE	NBR	722591
	85	10	IE	FKM	722591/81
	85	10	IEL	NBR	725575
	85	12	IE	NBR	722770
	85	12	IE	FKM	722770/81
	85	12	IEL	NBR	725709
	85	12	II	NBR	721064
	85	13	IEL	NBR	792676
	85	16	IEL	NBR	725598
	85	16	IIL	NBR	724561
	85.2	8	IEL	NBR	725513
	90	10	IE	NBR	772017
	90	10	IEL	NBR	792563
	90	10	IE	FKM	772017/81
	90	12	IE	NBR	722859
	90	12	II	NBR	721126
	95	10	IE	NBR	792792
	100	10	IE	NBR	722794
	100	10	IEL	NBR	792564
	100	10	IE	FKM	722794/81
	100	12	II	NBR	721483
66	88.5	12.5	II	NBR	721202
66.5	102	11	IE	NBR	722651
66.7	92	11.9	IE	NBR	722027
67	85	8	IEWLD	FKM	702529
68	90	10	IE	NBR	722751
	90	10	IE	FKM	722751/81
	90	10	IEL	NBR	792565
	90	10	II	NBR	721050
	90	13	IELD	FKM	702211
	100	10	IE	NBR	772059
	100	10	IEL	NBR	792777
	117	10	IE	NBR	772283
68.3	80	4.8x8.4	EOLS	NBR	723271
69	85	8	IE	NBR	722900
69.8	100	13	II	NBR	721274
70	85	8	IE	FKM	722317/81
	90	10	IE	NBR	722458
	90	10	IE	FKM	722458/81
	90	10	IEL	NBR	792566
	90	12	IE	NBR	722639
	90	12	IEL	NBR	725758
	90	12	IELR	NBR	725634
	90	12	II	NBR	721051
	90	12	IIL	NBR	724544
	95	10	IE	NBR	792794
	95	13	IE	NBR	792795
	100	10	IE	NBR	722497
	100	10	IEL	NBR	792678
	100	10	II	NBR	721158
	100	10	IE	FKM	722497/81
	100	13	IEL	NBR	792679
	100	13	II	NBR	721079
	110	12	IE	NBR	792796
	110	13	IE	NBR	792797
70.5	85	10	IELS	NBR	725335
72	86	7	IEL	NBR	725367
	88	7	IEL	NBR	725337
	95	10	IE	NBR	722942
	95	10	IE	FKM	722942/81
	95	10	IEL	NBR	725444
	95	13	IE	NBR	722004
	95	13	II	NBR	721181
	100	10	IE	NBR	722944
	100	12	IE	NBR	722861
	100	12	IEL	NBR	725653
	100	12	II	NBR	721104
	100	12	IIL	NBR	724485

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 **Stainless steel spring.



SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

New !
CSEL Seals

d mm	D mm	E mm	Type	Elastomer	Reference
72	101.6	12.5	IE	NBR	722298
72.5	100.5	14	IE	NBR	722604
74	90	13	IE	NBR	722618
	90	13	II	NBR	721074
	90	15	IEL	NBR	725251
	90	15	ILR	NBR	724453
74.6	101.8	13	II	NBR	721150
75	90	8	IE	NBR	722053
	90	8	IEL	NBR	792680
	90	8	II	NBR	721393
	90	10	IED	FKM	702365
	95	8	IE	NBR	722902
	95	10	IE	NBR	722379
	95	10	IE	FKM	722379/81
	95	10	IEL	NBR	792567
	95	12	IE	NBR	722333
	95	12	IE	FKM	722333/81
	95	12	IE	FKM	722470
	95	12	II	NBR	721219
	100	10	IE	NBR	722943
	100	10	IE	FKM	722943/81
	100	10	IEL	NBR	792568
	100	12	IE	NBR	722585
	100	13	IE	NBR	722687
	100	13	IE	FKM	722687/81
	100	13	IEL	NBR	792569
	100	13	II	NBR	721190
	100	16	III	NBR	724446
	102	15	IE	NBR	722698
	110	13	IE	NBR	722752
	110	13	IEL	NBR	792681
	110	13	II	NBR	721152
	115	10	IEL	NBR	792682
	120	15	IE	NBR	722221
	120	15	IE	NBR	792798
76	100	16	III	NBR	724245
76.2	101.6	17.4	III	NBR	724291
78	100	10	IE	NBR	772060
	100	10	IEL	NBR	725445
	100	13	IE	NBR	772020
	100	13	IE	NBR	772313
80	95	6.5	IOS	NBR	726125
	95	8	IE	NBR	722776
	95	8	IEL	NBR	792683
	95	8	II	NBR	721012
	98	10	MEWLG	FKM	702569
	100	10	CSEL	NBR	793100
	100	10	IE	NBR	722186
	100	10	IE	FKM	722847/81
	100	10	IEL	NBR	792570
	100	10	IEL	FKM	725662
	100	13	IE	NBR	722819
	100	13	IE	FKM	722819/81
	100	13	IE	FKM	772304
	100	13	IEL	NBR	725021
	100	14	III	NBR	724466
	100	14	IEL	NBR	79282901
	105	13	IE	NBR	792799
	110	13	CSEL	NBR	793101
	110	10	IE	NBR	772061
	110	10	IEL	NBR	792571
	110	10	IE	FKM	772061/81
	110	13	IELR	NBR	725704
	115	10	IE	NBR	792800
	125	12	IE	NBR	792802
	125	13	IE	NBR	792803
82	102	13	IE	NBR	722195
	102	13	II	NBR	721036
	105	13	IE	NBR	722862
	105	13	II	NBR	721359
84	100	13	IE	NBR	722680

d mm	D mm	E mm	Type	Elastomer	Reference
84	110	16	IE	NBR	722565
	110	16	IEL	NBR	725597
	112	14	IELX	NBR	725281
85	100	9	IE	NBR	722973
	100	13	IE	NBR	722102
	102	13	IE	NBR	722552
	102	13	II	NBR	721591
	102	13	IEL	NBR	79282601
	105	8	IEWLG	FKM	702619
	105	10	EE	FKM	720037
	105	10	EEG	FKM	702333
	105	12	IEWLG	FKM	702596
	105	13	IE	NBR	792804
	110	13	CSEL	NBR	793102
	110	12	IE	NBR	722413
	110	12	IE	FKM	722413/81
	110	12	IEL	NBR	792572
	110	12	IE	FKM	722413/81
	110	12x6	IIS	NBR	726637
	110	13	IE	NBR	722510
	110	13	IE	FKM	722510/81
	110	13	IEL	NBR	725884
	110	13	II	NBR	721037
	110	13	IELG	FKM	702404
	110	13	IEX	NBR	726076
	120	13	CSEL	NBR	793103
	120	12	IE	NBR	772062
	130	17	EELD	FKM	702379
	130	13	IEL	NBR	792684
88.9	114.3	15.9	IE	NBR	722631
89.7	105	6	IE	NBR	722807
90	105	10	IE	NBR	792805
	105	10	II	NBR	721410
	105	10	IEL	NBR	79282301
	105	13	IE	NBR	722720
	110	13	CSEL	NBR	793104
	110	10	IEWLG	FKM	702389
	110	11	IEWG	FKM	702486
	110	12	IE	NBR	772063
	110	12	IE	FKM	772063/81
	110	12	IEL	NBR	792573
	110	13	IE	NBR	722719
	110	13	IE	FKM	722719/81
	110	13	IEL	NBR	792574
	110	13	II	NBR	721236
	110	13	IEX	NBR	726500
	110	15	IELG	FKM	702317
	110	16	ILR	NBR	724091
	115	9	IE	NBR	722975
	115	9	IE	NBR	772302
	115	13	IE	NBR	722703
	115	13	IEL	NBR	725695
	115	13	II	NBR	721127
	115	13	IEL	NBR	72569501
	120	13	CSEL	NBR	793105
	120	12	IE	NBR	772064
	120	12	IE	FKM	772064
	120	12	IEL	NBR	792575
	140	13	CSEL	NBR	793106
	140	13	IEL	NBR	792685
	150	12	IE	NBR	772343
92	107	12	IE	NBR	722970
	110	7	IEWLG	FKM	702644
	110	10	MEWLG	FKM	702518
	112	10	IE	NBR	722654
	120	13	IEL	NBR	725044
	120.6	16	II	NBR	721203
	139	12x30	IES	NBR	726173
	140	14x25	IELS	NBR	725225
93	114	13	IEWLG	FKM	702350
95	109.2	7	IOLS	NBR	723263
	109.5	7	IEW	NBR	772390
	115	13	IE	NBR	792815

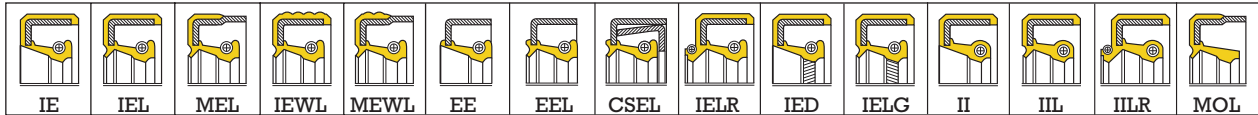
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**Stainless steel spring.

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d mm	D mm	E mm	Type	Elastomer	Reference
95	120	13	CSEL	NBR	793107
	120	11.3	IELG	NBR	702355
	120	12	IE	NBR	772065
	120	12	IE	FKM	772065/81
	120	12	IEL	NBR	792576
	120	13	IE	NBR	722088
	120	13	IE	FKM	722088/81
	120	13	IEL	NBR	725410
	120	13	IEL	FKM	725410
	120	13	IELR	NBR	725697
	125	12	IE	NBR	772066
	125	12	IEL	NBR	792686
	130	13	IE	NBR	792808
	130	13	II	NBR	721213
	140	10x18	IIS	NBR	726452
95.2	127.1	11.9	IE	NBR	722924
96	112	10	IE	NBR	722633
	112	10	II	NBR	721320
98	110	7	IEWLG	FKM	702533
100	114	8	IEWLG	FKM	702578
	120	13	CSEL	NBR	793108
	120	10	IE	NBR	792809
	120	10	IE	FKM	722704
	120	12	IE	NBR	722993
	120	12	IE	FKM	722993/81
	120	12	IEL	NBR	792577
	120	12	IEX	NBR	726258
	120	13	IE	NBR	722957
	120	13	IE	FKM	722957/81
	120	13	IE	FKM	772148
	120	13	IELG	FKM	702338
	120	14	IELR	NBR	725231
	120	17	IEL	NBR	725599
	125	13	CSEL	NBR	793109
	125	12	IE	NBR	772067
	125	12	IEL	NBR	792578
	125	13	IE	NBR	722949
	125	13	IEL	NBR	792579
	125	13	II	NBR	721080
	130	13	CSEL	NBR	793110
	130	12	IE	NBR	772068
	130	12	IE	FKM	772068/81
	130	12	IEL	NBR	792580
	130	14	IE	NBR	722464
	130	14	II	NBR	721241
	150	12	IE	NBR	792810
	150	13	IEL	NBR	792687
101.6	130.2	14.3	IE	NBR	722168
102	120	12	IE	NBR	722546
	122	14	IELD	FKM	702136
	130	13	CSEL	NBR	793111
	135	14	II	NBR	721130
104	120	13	IE	NBR	722688
105	122	13	IE	NBR	772150
	122	13	II	NBR	721321
	125	13	IEX	NBR	726274
	130	13	CSEL	NBR	793112
	130	12	IE	NBR	772069
	130	12	IE	FKM	772069/81
	130	12	IEL	NBR	725617
	130	12	IELR	NBR	792502
	130	13	IE	NBR	722689
	130	13	IE	NBR	72268901
	130	13	IE	FKM	722689/81
	130	13	IEL	NBR	725103
	130	13	IELD	FKM	702174
	132	13	II	NBR	721458
	140	13	CSEL	NBR	793113
	140	12	IE	NBR	772070
107.9	152.6	17.3	IEL	NBR	725478
109	122	7	IEW	NBR	772391

d mm	D mm	E mm	Type	Elastomer	Reference
109	122.2	7	IOLS	NBR	723262
110	130	12	IE	NBR	772071
	130	13	CSEL	NBR	793114
	130	12	IE	FKM	772071/81
	130	12	IEL	NBR	792581
	130	13	IE	NBR	722465
	130	13	IEL	NBR	725114
	140	13	CSEL	NBR	793115
	140	10.2	IE	NBR	772357
	140	12	IE	NBR	772072
	140	12	IE	FKM	772072/81
	140	12	IEL	NBR	792688
	140	13	IE	NBR	722708
	140	13	IEL	NBR	792582
112	130	13	IE	NBR	722553
	130	13	II	NBR	721592
	130	13	IEL	NBR	79282701
	140	13	CSEL	NBR	793116
	140	13	IE	NBR	722820
	140	13	IEL	NBR	725353
113	160	12	II	NBR	721098
	160	13	IE	NBR	722730
114	140	13	IE	NBR	722753
115	140	13	CSEL	NBR	793117
	140	12	IE	NBR	772073
	140	12	IE	FKM	772073/81
	140	12	IEL	NBR	792689
	140	13	IE	NBR	722374
	140	13	IEL	NBR	725101
	140	13	IELG	FKM	702176
	140	13	IEX	NBR	726260
	140	14	II	NBR	721232
	140	15	IEL	NBR	725054
	140	15	IELRG	FKM	702260
	150	13	CSEL	NBR	793118
	150	12	IE	NBR	772074
	150	13	II	NBR	721053
	150	13x24	IELS	NBR	725063
116	150	13	II	NBR	721237
119.1	152.7	11	II	NBR	721214
120	140	13	CSEL	NBR	793119
	140	13	IE	NBR	722690
	140	13	IE	FKM	722690/81
	140	13	IE	FKM	772133
	140	13x14.3	IEL	NBR	725644
	140	16	IELR	NBR	725706
	150	13	CSEL	NBR	793120
	150	12	IE	NBR	772075
	150	12	IE	FKM	772075/81
	150	12	IEL	NBR	792583
	150	13	IE	NBR	722573
	150	13	IEL	NBR	792584
	150	13	IEX	NBR	726627
	160	13	CSEL	NBR	793121
	160	12	IE	NBR	772076
	160	15	IEL	FKM	725654
120.6	158.9	15	II	NBR	721482
122	150	13	CSEL	NBR	793122
	150	12	IILR	NBR	724454
	150	13	II	NBR	721063
122.2	152.4	6	IE	NBR	722548
122.3	152.4	6	II	NBR	721298
125	145	13	IEX	NBR	726257
	150	13	CSEL	NBR	793123
	150	12	IE	NBR	772077
126	150	12	IE	FKM	772077/81
	150	12	IEL	NBR	792585

The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.
 The part numbers indicated in bold type are kept in stock. Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.
 **Stainless steel spring.



SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

New !
CSEL Seals

d mm	D mm	E mm	Type	Elastomer	Reference
126	150	12	IELG	FKM	702064
	150	14	II	NBR	721252
	160	13	CSEL	NBR	793124
	160	12	IE	NBR	772078
	160	12	IE	FKM	772078/81
	160	13	II	NBR	721133
	160	15	IE	NBR	722279
	160	15	IEL	NBR	792690
127	158.7	14.3	II	NBR	721358
	158.7	18.5	IELS	NBR	725005
	158.9	15.9	IE	NBR	722232
130	145	7	IE	NBR	772270
	150	12	IEEX	NBR	726259
	160	13	CSEL	NBR	793125
	160	12	IE	NBR	772079
	160	12	IE	FKM	772079/81
	160	15	IE	NBR	722881
	160	15	IE	FKM	722881/81
	160	15	IEL	NBR	725115
	160	15	IEEX	NBR	726077
	170	13	CSEL	NBR	793126
	170	12	IE	NBR	772080
132	150	13	IE	NBR	722134
	150	13	II	NBR	721328
135	160	13	CSEL	NBR	793127
	160	14	IE	NBR	722270
	165	15	IE	NBR	722261
	165	15	IEEX	NBR	726320
	170	12	IE	NBR	772081
	170	12	IE	FKM	772081/81
	170	15	IE	NBR	722280
	170	15	IE	FKM	722280/81
	170	16	IEL	NBR	725055
139.7	171.4	21	IELR	NBR	725542
	171.6	15.9	IE	NBR	722914
140	160	13	IE	NBR	772252
	170	13	CSEL	NBR	793128
	170	15	IE	NBR	722700
	170	15	IE	FKM	722700/81
	170	15	IEL	NBR	725716
	170	15	IEL	NBR	724766
	170	15	IEL	NBR	72571601
	175	15	IE	NBR	772082
	180	14	IE	NBR	722662
144	160	12	IE	NBR	722113
	180	12	II	NBR	721116
145	170	15 x 20	EELS	NBR	725596
	175	13	CSEL	NBR	793129
	175	14	EEL	NBR	725593
	175	15	IE	NBR	772114
	180	13	CSEL	NBR	793130
	180	14	IE	NBR	722956
	180	14	IE	NBR	721054
146	177.9	15.9	IE	NBR	722563
148	170	14.5	IELR	NBR	725630
	170	14.5	IEL	NBR	724260
	170	14.5	IELG	NBR	702099
150	168	12	II	NBR	721187
	170	15	CSEL	NBR	793131
	172	14	EELSG	FKM	702301
	175	16	IEEX	NBR	726261
	180	15	CSEL	NBR	793132
	180	15	IE	NBR	722731
	180	15	IE	FKM	722731/81
	180	15	IEL	NBR	792586
	180	15	II	NBR	721230
152	190	15	IE	FKM	772195
155	180	15	CSEL	NBR	793133

d mm	D mm	E mm	Type	Elastomer	Reference
155	180	15	IE	NBR	722754
	180	15	IEL	NBR	792587
	180	15	II	NBR	721415
	180	15	MEWLG	NBR	702457
	190	15	CSEL	NBR	793134
	190	15	IE	NBR	772083
	190	15	IEL	NBR	792691
157.1	190.5	6	IE	NBR	722547
	190.5	6	II	NBR	721299
158	180	16	IEL	NBR	725232
160	190	15	CSEL	NBR	793135
	190	15	IE	NBR	722313
	190	15	IEL	NBR	725715
	190	15	IEL	NBR	724765
	190	15	IE	FKM	722313/81
165	190	13	CSEL	NBR	793136
	190	15	IE	NBR	772321
	190	15	IE	NBR	792811
	200	15	CSEL	NBR	793137
	200	15	IE	NBR	772084
170	200	15	CSEL	NBR	793138
	200	15	IE	NBR	722377
	200	15	IE	FKM	722377/81
	200	15	IE	NBR	792588
175	200	13	IE	NBR	722979
	200	13	II	NBR	721122
	200	15	IEL	NBR	792692
	210	15	IE	NBR	722085
	210	15	IEL	NBR	792693
	230	10	IIS	NBR	726200
177.8	209.5	16	IEL	NBR	725018
180	210	15	CSEL	NBR	793139
	210	15	IE	NBR	772086/81
	210	15	IEL	NBR	792589
	210	15	IEL	FKM	725655
	215	15	CSEL	NBR	793140
	215	16	IE	NBR	722661
185	215	15	CSEL	NBR	793141
	215	16	IE	NBR	722863
	215	16	II	NBR	721280
190	220	15	CSEL	NBR	793142
	220	15	IE	NBR	772088/81
	220	15	IE	FKM	772088
	220	15	IEL	NBR	792694
	230	16	CSEL	NBR	793143
	230	17	IE	NBR	722860
	230	17	II	NBR	721235
190.5	228.6	16	IEL	NBR	725017
195	230	15	CSEL	NBR	793144
	230	15	IE	NBR	772089
	230	17	IE	NBR	722759
	230	17	II	NBR	721362
196.8	228.6	16	IEL	NBR	725019
200	230	15	CSEL	NBR	793145
	230	15	IE	NBR	772090
	230	15	IE	FKM	772090/81
	230	15	IEL	NBR	792695
205	230	16	IEL	NBR	79282401
210	240	15	CSEL	NBR	793146
	240	15	IE	NBR	772091
	240	15	IE	FKM	772091/81
220	250	15	CSEL	NBR	793147
	250	15	IE	NBR	772092
	250	15	IE	FKM	772092/81
	250	15	IEL	NBR	792696

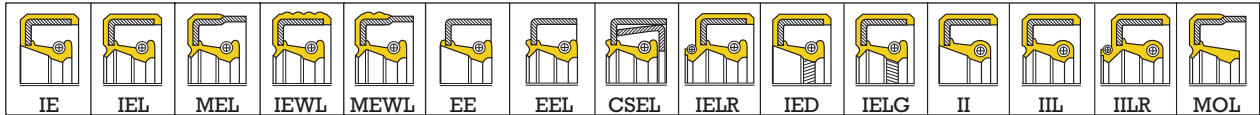
The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.

The part numbers indicated in bold type are kept in stock.

**Stainless steel spring.

Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.



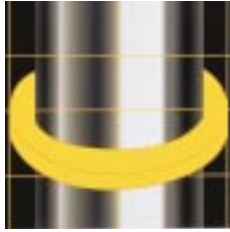


d mm	D mm	E mm	Type	Elastomer	Reference
230	260	15	IE	NBR	772093
240	270	15	IE	NBR	772094
	270	15	IE	FKM	772094/81
250	280	15	IE	NBR	772095
260	300	20	IE	NBR	772096
260.3	298.4	22	IEL	NBR	725009
265	290	16	IE	NBR	722782
280	320	20	IE	NBR	772097
300	340	20	IE	NBR	772098

d mm	D mm	E mm	Type	Elastomer	Reference
320	360	20	IE	NBR	772099
340	380	20	IE	NBR	772100
380	420	20	IE	NBR	772203
400	440	20	IE	NBR	772108
420	460	20	IE	NBR	772109
440	480	20	IE	NBR	772110
460	500	20	IE	NBR	772111
480	520	20	IE	NBR	772112

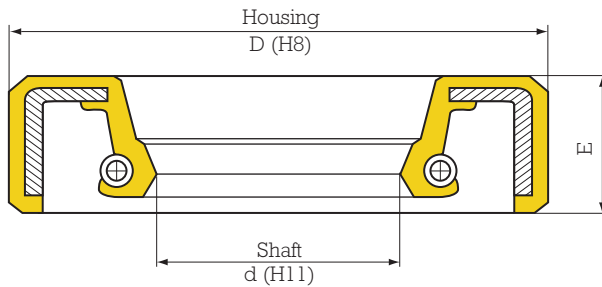
The fluorocarbon seals previously with the suffix 83 now have the suffix 81. Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.
 The part numbers indicated in bold type are kept in stock. Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.
 **Stainless steel spring.





SEALS FOR ROTATING SHAFTS

SEALS WITH OTHER ELASTOMERS



- The part numbers indicated in bold type are normally kept in stock.
- Special elastomers are available on request.

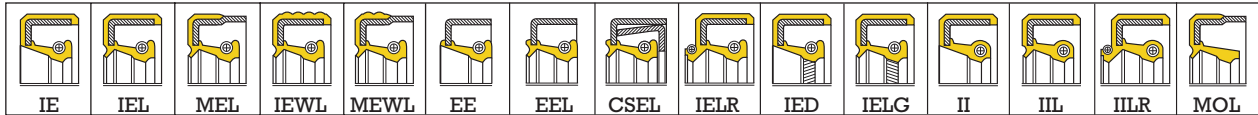
d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
4.5	11.3	3.5	IO	SIL	723298
7.9	16	6	IEWLD	POL	702493
8	14	3	IO	SIL	723268
	16	6.5	IE	POL	772178
8.4	16	4x13	IES	POL	726325
	16	6	IE	POL	772293
8.5	16	6.5	IED	POL	702347
	16	6.5	IES	POL	726421
9	17	5	IEWL	POL	725683
11	17	4	IE	SIL	772381
11.8	26	7.5	IEWG	SIL	702553
12	25	8	IE	POL	772181
13	21	5	IEL	POL	725671
14	30	8	IE	EPD	772377
15	21	6	IO	POL	723305
	30	6.8	EEL	POL	725487
	35	7	MEW	POL	772405
16	24	6	IED	POL	702419
	28	8	IE	POL	772307
17	28	6	IED	POL	702274
	28	4x13	IESD	POL	702009
	29	4x13	IESG	POL	702065
	34	4	IE	POL	772221
	40	7	EED	POL	702243
18	24	3	EED	POL	702105
	28	6	IEWL	POL	725670
	28	7	IED	POL	702403
19	34	7	IELD	POL	702399

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
20	30	6x10	IESD	POL	702139
	30	8	EED	POL	702232
	32	7	IE	POL	772176
	32	8	IED	POL	702253
	47	7	IEG	POL	702235
21.9	47	8	IED	POL	702234
22	35	6.5	IED	POL	702426
	35	7	IE	POL	772290
	38	8	IED	POL	702228
	40	7	IELD	POL	702400
24	37	7	IELD	POL	702407
	38.5	10x12	IESD	POL	702007
	47	10	EED	SIL	720067
24.5	38	5x6.5	IED	POL	702392
	38.7	6x7	IED	POL	702392
	43.1	6.5	IED	POL	702382
24.7	40	8.5	IED	POL	702277
25	35	10.5	IESPD	POL	702275
	35	10.5	IEDP	POL	702383
	36	7	IEG	SIL	702313
	38.1	9.9	EED	SIL	720068
	40	8	IEWD	POL	702341
	41	8	MEWD	POL	702520
	42	8	IELG	POL	702414
	47	7	EESD	POL	702087
	55	7	IE	SIL	772331
	26	38	6	IE	POL
47		7	IEWD	POL	702519
26.5	45	7	IEWD	POL	702500
27	37	7	IEL	POL	725497
	42	10	IEL	POL	725498
27.9	70	10	IEWLD	POL	702431

The part numbers indicated in bold type are kept in stock.

Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.





d mm	D mm	E mm	Type	Elastomer	Reference
28	40	8	IEWLD	POL	702494
	42	10	IED	POL	702376
	47	7	IED	POL	702192
	52	12	IE	POL	772229
	56	10	IED	POL	702420
	56	10	IELV	POL	704016
	70	10	IELD	POL	702431
29	46	10	IEG	POL	702270
	46	10	IED	POL	702375
	50	10	EEL	SIL	725640
	50	10	MEWLG	POL	702455
30	40	7	IED	POL	702158
	42	7	IED	POL	702203
	42	7	IEWD	SIL	702443
	42	8	IEV	POL	704000
	45	7	IED	POL	702124
	48	10	IED	POL	702201
	52	8	IEWLG	POL	702445
31.7	76.1	12.7x15.7	EELSD	POL	702199
32	47	9.5	EES	POL	726465
	47	10	IEWD	POL	702241
	50	10	IED	POL	702212
	52	7	IEG	POL	702300
	52	7	IEG	SIL	702294
34	54	9	IE	POL	772325
34.7	50	7	IEW	POL	772394
35	47	7	IED	SIL	702217
	47	7	IELD	SIL	702282
	47	7	IELD	SIL	702487
	47	8	IEWG	POL	702608
	50	8	IE	SIL	722456
	50	8	IEV	POL	704027
	50	10	IE	POL	772129
	52	10	IEWL	POL	725675
	54	9.5x15	EES	POL	720055
	55	12	IEWD	POL	702205
	58	8	IED	POL	702412
	62	10	IELG	POL	702464
	65	10	IEWLV	POL	704030
36	46	7	IEWLG	POL	702641
	50	8	IED	POL	702405
	54	7.5	IELV	POL	704025
	58	10	IEWLR	POL	725711
37	47	5.5	IOB	POL	729005
38	50	7	IED	POL	702278
	50	7.5	IEWLG	POL	702444
38.1	60.3	12	IED	POL	702332
38.2	60.3	7	IEWLG	POL	702589
40	49.6	5.5	IOB	SIL	729006
	52	7	IED	SIL	702293
	55	8	IELG	POL	702204
	55	8	IEWG	POL	702386
	55	8	MEWLG	POL	702542
	55	10	EWG	POL	702290
	58	8	IED	POL	702181
	58	10	IE	POL	772207
	58	10	IEL	SIL	725502
	58	10	IED	POL	702328
	60	8	IEWLG	POL	702523
	60	8	IEWLD	POL	702480
	60	8	IEWLV	POL	704044
	62	8	IEWLD	POL	702524
	62	10	IE	POL	772243
	65	10	IE	POL	772236

d mm	D mm	E mm	Type	Elastomer	Reference
42	54	8	IED	POL	702418
	55	7	IEWLD	POL	702492
	58	10x13	IESF	POL	726396
	60	10	IE	POL	772336
	60	10	IEL	SIL	725500
	61.9	10	IED	SIL	702357
	62	8	IELD	POL	702402
	62	10	IED	POL	702085
	62	10	IED	SIL	702396
	62	12	IELD	POL	702227
	66	8	IEWD	POL	702432
	66	23	EES	POL	726484
44	67	10	IEWL	POL	725664
	67	10	MEWLV	POL	704040
45	50	7	IED	SIL	702413
	60	7	IEG	POL	702036
	60	10	IED	POL	702132
	60.2	8	IEWLV	POL	704019
	62	7	IED	POL	702424
	62	8	IEWLG	POL	702438
	62	10	IEL	SIL	725491
	62	12	IE	SIL	722811
	64	8	IEWLG	POL	702547
	64	8	IEWLD	POL	702439
46	73	9	IEWLD	POL	702437
47.5	65	10	IELR	POL	792591
48	58	4	IOS	POL	726433
	66.6	8	IELD	SIL	702302
	68	12	IED	POL	702137
	68	12	IED	SIL	702037
48.8	58	6.1x8.5	IOLS	POL	723265
	58	6.1x8.5	EOLS	POL	727110
50	65	10	IEWL	POL	725657
	65	10	IEWLV	POL	704041
	76	10	IEWLV	POL	704046
	76	12	IEL	POL	725493
50.8	73.4	17	IELR	SIL	725177
52	68	10	IED	SIL	702218
	68	10	IELD	SIL	702283
	68	10	IELD	SIL	702488
53	68	13	IELR	POL	792590
55	75	9	IE	SIL	772118
	75	12	IE	SIL	772353
57.5	70	10	IEG	SIL	702295
	120	10	IE	POL	772139
58	72	9	IE	SIL	722531
	80	12	IE	SIL	722843
60	80	12	IEG	POL	702143
60.4	97	12	IELD	POL	702160
60.5	78	9	ie	SIL	722602
	78	9	ied	SIL	702002
62	80	8	IEWLD	POL	702525
	100	12x13	IELD	POL	702144
63.5	89	12.7	IEL	POL	725562
	89	19	EEL	POL	725569
69.8	98.5	19	EEL	POL	725570
70	90	10	IEG	POL	702318
	90	10	IEG	POL	702130

The part numbers indicated in bold type are kept in stock.

Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.



SEALS WITH OTHER ELASTOMERS

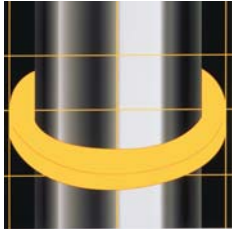
d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
70	90	10	IEG	SIL	722127
	90	12	IELD	POL	702029
72	95	12	IE	SIL	772107
75	95	12	IE	POL	772318
	95	12	IE	SIL	722632
	112	12	IELG	SIL	702197
	120	14x15	IELD	POL	702094
78.7	96.4	9	IEG	POL	702303
80	100	10	IEG	SIL	702189
	100	13	IE	SIL	722476
	100	13	IEG	SIL	702030
82	105	12	IEG	SIL	702141
85	110	13	IE	SIL	722837
	110	13	IED	SIL	702207

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
90	105	10	IEG	SIL	702374
	110	10	IEWLG	POL	702389
	110	12	IEG	SIL	702031
	110	13	IE	SIL	722814
	110	13	IED	SIL	702092
	110	15	IEWLG	SIL	702125
92	110	10	IEG	SIL	702219
	110	10	IELG	SIL	702284
95	120	13	IELG	POL	702115
110	130	13	IE	SIL	722536
115	140	13	IE	SIL	722844
155	174	15	IEL	SIL	725609
158	180	14x15	IELG	SIL	702140
165	190	13	IE	POL	772330

The part numbers indicated in bold type are kept in stock.

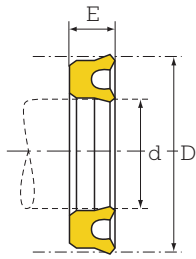
Abbreviations: NBR = Nitrile; FKM = Fluorocarbon; SIL = Silicone; POL = Polyacrylate; EPD = EPDM; S (in "Type" column) = special shape.



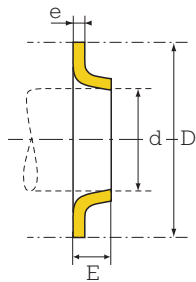


SEALS FOR SLIDING SHAFTS

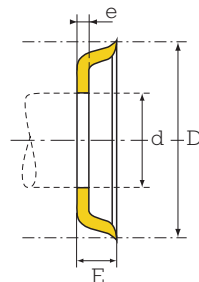
DIMENSIONS



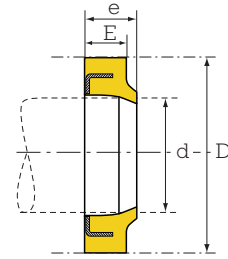
Type DL



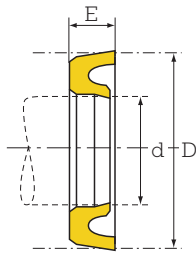
Type LIO



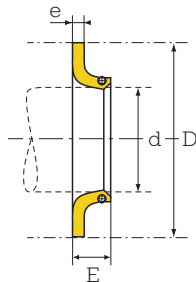
Type LEO



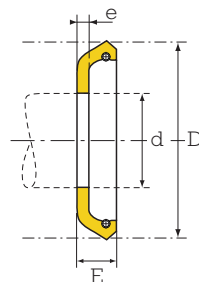
Type DRT



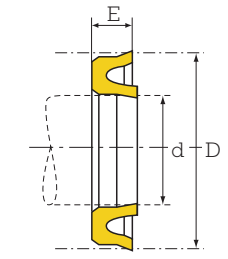
Type DLI



Type LIR



Type LER



Type DLE / DLES

• Width of the groove: $E + 1$ mm (for DL).

• Operating parameters:

Maximum admissible pressure: 150 bars (for DL) ; 30 bars (for LIO, LEO).

Linear speed admissible: up to 0.3 m/sec depending on the operating conditions.

d mm	D mm	E (x e) mm	Type	Elastomer	Reference
4	14	12	DL	NBR	710093
6	14	11.5	DL	NBR	710620
	32	10	LEO	NBR	714057
8	14	3.5x5	DRT	NBR	711700
	14	4	DLI	NBR	716501
	17.9	5.5x1.5	LEO	NBR	714432
9	20	4	DLS	NBR	710678
10	16	3.5x5	DRT	NBR	711701
	17.9	5.5	LEO	NBR	714045
	20	7	DLP	NBR	711001
11	28	7x2.5	LIO	NBR	712094
	36	12	LEO	NBR	714020
12	18	3.5x5	DRT	NBR	711702
	22	5	DLS	NBR	710679
	22	5	DLI	NBR	716502
	22	5x1.5	LIO	NBR	712350
	25	5.5	DL	NBR	710062
25	6.5	DLS	NBR	710233	
13	21	5x2	LIO	NBR	712414
14	20	3.5x5	DRT	NBR	711703

d mm	D mm	E (x e) mm	Type	Elastomer	Reference
14	26	8	LIR	NBR	713653
	38.1	10	DL	NBR	710132
15	21	3.5x5	DRT	NBR	711704
	25	8	DLT	NBR	711404
	25	10x3	LEO	NBR	714178
	30	10x3	LEO	NBR	714179
16	22	3.5x5	DRT	NBR	711705
	24	9	DL	NBR	710129
	25	6.5	DLE	NBR	716506
	26	8	DLT	NBR	711405
	28	9.6	DL	NBR	710218
	35	10	LER	NBR	715402
	35	10x3	LEO	NBR	714418
	36	8x2.5	LIO	NBR	712095
	38	12	LEO	NBR	714442
40	10	DL	NBR	710343	
40	12x3	LEO	NBR	714864	
18	28	5x7	DRT	NBR	711706
	30	8	DLES	NBR	716531
	30	10	DL	NBR	710290
	32.9	7.2	DL	NBR	710431
	36	6x2	LEO	NBR	714006
	36	7x2.5	LIO	NBR	712005
	38	10	LIR	NBR	713613
	40	6x2	LEO	NBR	714538

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DIMENSIONS

d mm	D mm	E (x e) mm	Type	Elastomer	Reference
18	45	6x2	LEO	NBR	714645
	52	8x2	LEO	NBR	714013
	55	10x3	LEO	NBR	714471
19	37	12	LEO	NBR	714817
19.6	49	10.5	LEO	NBR	714486
20	28	4.8	DL	NBR	710777
	30	5	DLI	NBR	716503
	30	5x7	DRT	NBR	711707
	30	8	DLT	NBR	711407
	32	8	DL	NBR	710555
	35	6.5	DLS	NBR	710091
	35	12	DL	NBR	710795
	40	8x3	LIO	NBR	721572
	40	12	DL	NBR	710111
	40	10x3	LEO	NBR	714472
	21	40	12	DL	NBR
45		12	DL	NBR	710344
22	28	5x9	DRT	NBR	711742
	32	5x7	DRT	NBR	711708
	32	7	DLP	NBR	711004
	32	8	DLT	NBR	711408
	32	12	DLES	NBR	716588
	40	12	DL	NBR	710527
	44	10x4	LIO	NBR	712533
22.2	38	6x2.5	LIO	NBR	712701
	38	10	LIR	NBR	713702
24	36	8x2.5	LIO	NBR	712348
	36	9.6	DL	NBR	710289
25	35	5x7	DRT	NBR	711709
	40	9	DLP	NBR	711005
	45	11	DL	NBR	710061
	49	10.8	DL	NBR	710060
	25	8x2.5	LIO	NBR	712012
	60	10x5	LEO	NBR	714110
25.4	38.1	8	DLE	NBR	716560
26	41	8.4	DL	NBR	710144
27	40	10	DLE	NBR	716507
28	38	5x7	DRT	NBR	711710
	46	10	DL	NBR	710528
	47.5	4x3	LEO	NBR	714047
	49	13x4	LIO	NBR	712534
29	41	10	DL	NBR	710570
30	40	5x7	DRT	NBR	711711
	40	12	DLES	NBR	716589
	42	8x2.5	LIO	NBR	712092
	45	8	DLI	NBR	716629
	46	12	DL	NBR	710433
	48	10	DLES	NBR	716532
	95	14x4	LEO	NBR	714539
32	42	5x7	DRT	NBR	711712
	47	10	DLT	NBR	711412
	50	9x3	LIO	NBR	712535
	50	12	DL	NBR	710470
34	44	12	DLES	NBR	716596
	50	14.4	DL	NBR	710073
	52	12x3.5	LIO	NBR	712694
35	45	7x10	DRT	NBR	711713
	50	9	DLP	NBR	711006
	51	9.6	DL	NBR	710354
36	46	5x7	DRT	NBR	711714
	50	8	DLI	NBR	716536
	55	12	DL	NBR	710490
	60	10x4	LIO	NBR	712492
40	50	5	DL	NBR	710190
	50	5x8	DRT	NBR	711715
	55	10	DLT	NBR	711415

d mm	D mm	E (x e) mm	Type	Elastomer	Reference
40	60	12	DL	NBR	710422
	62	14.5	DL	NBR	710489
	65	10x5	LIO	NBR	712491
42	52	5x7	DRT	NBR	711716
	52	12	DLES	NBR	716590
45	55	5x7	DRT	NBR	711717
	63	12	DL	NBR	710529
	65	10x4	LIO	NBR	712536
	74	17x5	LIO	NBR	712737
48	63	9	DLP	NBR	711008
	63.5	10	DLE	NBR	716561
	65	3.5x5	LEOS	NBR	714093
50	56	5x7	DRT	NBR	711746
	60	5x7	DRT	NBR	711718
	65	7x10	DRT	NBR	711745
	65	10	DLT	NBR	711417
	70	10x3	LIO	NBR	712571
	70	12	DL	NBR	710530
	74	15	DL	NBR	710078
76	17	DL	NBR	710056	
50.5	66.5	12	DL	NBR	710196
52	68	10	LIR	NBR	713809
	55	63	7x10	DRT	NBR
55	65	5x7	DRT	NBR	711719
	65	12	DLES	NBR	716591
	71	12	DL	NBR	710629
	75	10	DLS	NBR	710057
	80	12x3	LIO	NBR	712822
	56	66	5x7	DRT	NBR
56	72	12	DLES	NBR	716533
	80	12x3	LIO	NBR	712475
	80	14.5	DL	NBR	710474
	57	73	9.6	DL	NBR
58	78	10	DLS	NBR	710058
	60	70	5x7	DRT	NBR
80		10	DL	NBR	710423
80		12	LIR	NBR	713611
85		7x2.5	LEO	NBR	714421
89.5		20x5	LIO	NBR	712823
62	85	12x3	LIO	NBR	712131
	63	73	5x7	DRT	NBR
93		18	DL	NBR	710531
63.5	203.2	28.5x8.7	LEO	NBR	714497
64	80	12	DL	NBR	710434
	82.5	13	DLE	NBR	716562
65	75	5x7	DRT	NBR	711723
	83	12	DL	NBR	710729
	90	10	LER	NBR	715403
	90	10x5	LIO	NBR	712624
70	80	5x7	DRT	NBR	711724
	80	12	DLES	NBR	716592
	86	12	DL	NBR	710635
	95	15	DL	NBR	710025
75	83	7x10	DRT	NBR	711725
	91	12	DL	NBR	710413
	100	10x3	LIO	NBR	712022
76.2	107.8	26.5	DL	NBR	710569
78	94	12	DL	NBR	710632
80	88	7x10	DRT	NBR	711726
	90	7x10	DRT	NBR	711744
	94	9	DLE	NBR	716335
	100	12	DLT	NBR	711425
	100	17	DL	NBR	710169
	117	14	LIR	NBR	713796

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DIMENSIONS

d mm	D mm	E (x e) mm	Type	Elastomer	Reference
85	95 103	7x10 13x3	DRT LIO	NBR NBR	711743 712981
86	117	14	LIR	NBR	713740
88	110	8x3.5	LIO	NBR	712430
90	100 130	7x10 10x4	DRT LIO	NBR NBR	711727 712821
92	112	12.6	DL	NBR	710068
94	112	12	DL	NBR	710079
98	114	12	DL	NBR	710724
100	110 116	7x10 7	DRT LER	NBR NBR	711728 715666
104	120	11	DLE	NBR	716549
106	122	12	DL	NBR	710805

d mm	D mm	E (x e) mm	Type	Elastomer	Reference
110	120 126	7x10 7	DRT LER	NBR NBR	711729 715667
115	130.2	6.5	LEOS	NBR	714008
116	202	20	LEOS	NBR	714004
120	136	7	LER	NBR	715668
125	140	9x12	DRT	NBR	711735
130	160	18	DLP	NBR	711013
140	160 160 170	18 18 18	DL DL DLT	NBR NBR NBR	710002 710047 711433
150	209	25	LEO	NBR	714781
196	228	24	DL	NBR	710001
196.3	232	21	DL	NBR	710004
278	304.8	24	DL	NBR	710564

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OTHER PAULSTRA DOCUMENTATION

Available upon request



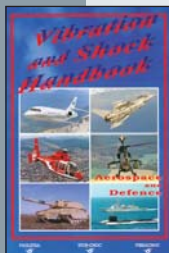
FLEXIBLE MOUNTINGS CATALOG



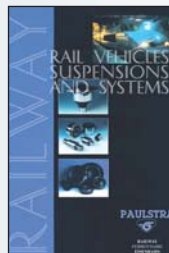
METAL MOUNTINGS VIBRATION RANGE CATALOG



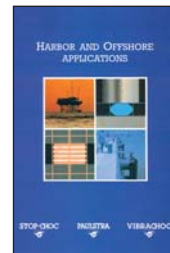
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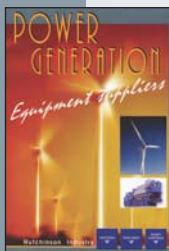
AEROSPACE AND DEFENCE CATALOG



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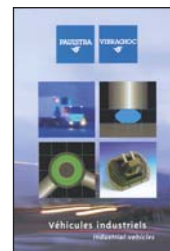
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POWER GENERATION CATALOG



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