DYNAMIC SEALING

HUTCHINSON®
PAULSTRA

DYNAMIC SEALING

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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 Although for many applications they have been replaced by lip seals or "surface" seals, they are still used a great deal, especially in the case of fluids under high pressure.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.

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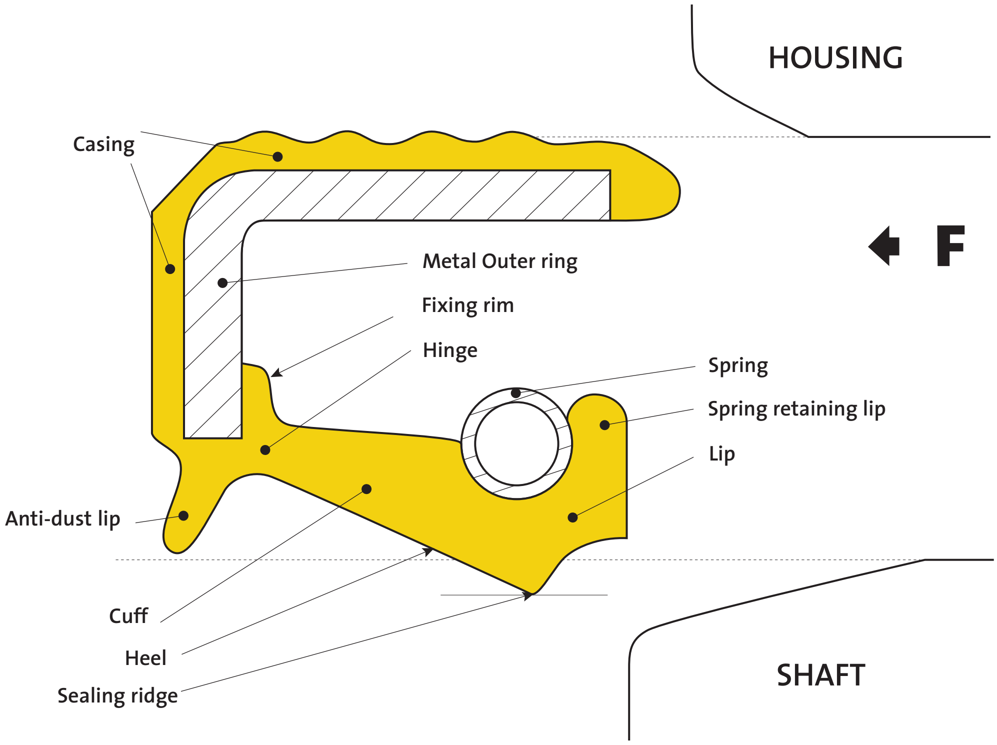
I.3 - DESCRIPTION OF LIP SEALS



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 - MATERIALS USED

II.1 - ARMATURES

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

II.2 - SPRINGS

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 equiped with stainless steel springs.

II.3 - ELASTOMERS

	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
STANDARD MIXES	**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

* Temperatures on samples

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III - THE SELECTION OF A SEAL FOR A ROTATING SHAFT

III.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 actions on the materials which make up the seal (the outer ring, spring and elastomer).

III.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.

III.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	
	Nitrile (NBR)	Fluoro-carbon elastomer (FKM)
Acetone	D	D
Acetic acid	A	D
10 % Hydrochloric acid	A	A
Concentrated Hydrochloric acid	D	A
20 % Nitric acid	D	A
10 % Sulphuric acid	A	A
Concentrated Sulphuric acid	D	A
Atmospheric air at 100 °C	C	A
Atmospheric air at 200 °C	D	A
Concentrated Ethyl alcohol	A	B
Methyl alcohol	A	B
Propyl alcohol	A	B
Ammonia	C	A
Benzene	D	B
Butter	A	A
Butane	A	A
Petrol	A	A
Super petrol	C	A
Chlorine	B	A
Cyclohexane	B	A
Water	A	A
Sewage	A	B
Concentrated Eau de Javel	C	A
Sea water	A	A
Freon	C	C
Freon 12	B	B
Carbonic gas	A	A
Smoke	C	A
Diesel oil	A	A
Diesel oil at 100 °C	C	A
Glycerine	A	A
Cereal oils	A	A
ASTM1 oil at 100 °C	A	A
ASTM1 oil at 150 °C	D	A
ASTM2 oil at 100 °C	A	A
ASTM2 oil at 150 °C	D	A

FLUIDS	ELASTOMERS	
	Nitrile (NBR)	Fluoro-carbon elastomer (FKM)
ASTM3 oil at 100 °C	A	A
ASTM3 oil at 150 °C	D	A
Gear oil at 100 °C	A	A
Gear oil at 130 °C	D	A
EP hypoid oil at 100 °C	A	A
EP hypoid oil at 130 °C	D	A
ATF oil at 100 °C	A	A
ATF oil at 150 °C	D	A
Mineral motor oil at 100 °C	A	A
Mineral motor oil at 150 °C	D	A
Synthetic motor oil at 100 °C	A	A
Synthetic motor oil at 150 °C	D	A
Silicone oil	A	A
Isooctane fuel (Fuel A)	A	A
Isooctane-toluene (Fuel B)	B	A
Kerosene JP 1	A	A
Milk	A	A
Antifreeze (water + glycol)	B	B
Brake fluid (Lockheed)	D	C
Brake fluid (Lockheed) at 50 °C	D	D
Ozone	D	A
Paraffin	A	A
Propane	A	A
Saline aluminium solutions	A	A
Magnesium salt solutions	A	A
Sodium chloride solutions	A	A
Soda	C	A
Toluene	C	A
Trichlorethylene	D	A

A: Good chemical resistance B: Average performance
C: Acceptable (depending on conditions of use) D: Unsuitable
* For rotating housing applications please consult us

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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.

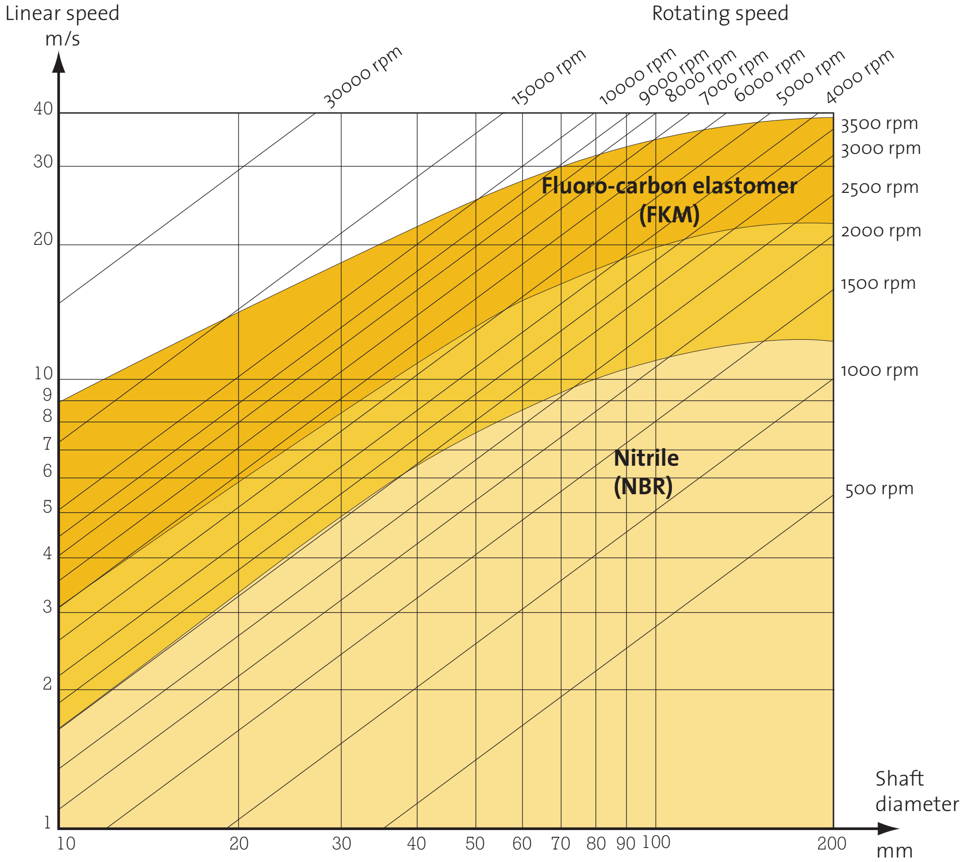
Our technical services are at your disposal to reply to your questions about the properties of various mixes.

		Nitrile (NBR)		Fluoro-carbon elastomer (FKM)	
	Low temperature in °C (1)	- 40		- 30	
	Temperature in °C	Av.. (2)	Max (3)	Av. (2)	Max (3)
Products to be sealed					
Mineral oil based	Motor oils	100	120	150	175
	Gear box oils	90	110	130	150
	Hypoid gear oils	90	110	130	150
	ATF oils	100	120	150	175
	Hydraulic oils	100	120	150	175
	EL and L diesel oils	90	100	+	
	Greases	100	120	150	175
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.

III.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.

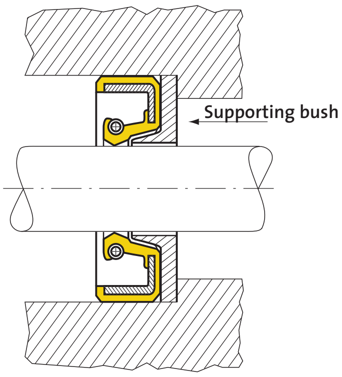


III.3 - PRESSURE

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.

III - CONDITIONS FOR GOOD OPERATION

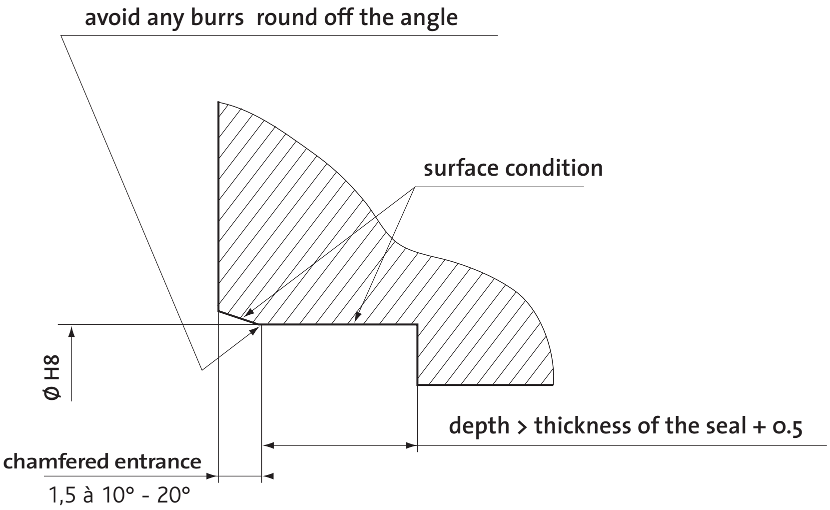
IV.1 - THE HOUSING

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 12,5 µ Ra = 1,6 to 4 µ
- for an external outer ring :	R = 3 to 8 µ Ra = 1,2 to 2,5 µ



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.

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IV.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 Ra ≃0.2 to 0.5).
- **Hardness** : if V ≤ 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).

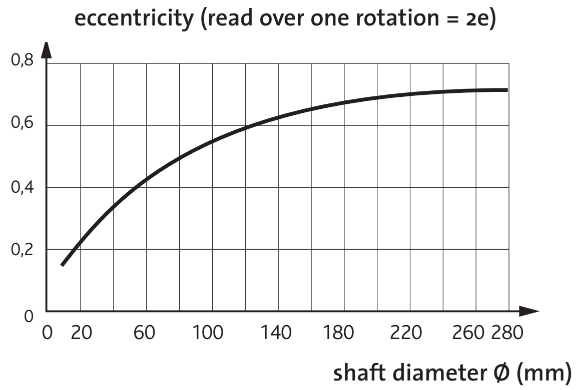
It is possible to orient the machine grooves deliberately to produce pumping from the exterior to the interior of the mechanism. However, **we advise against this as there will be increased wear of the seal.**

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

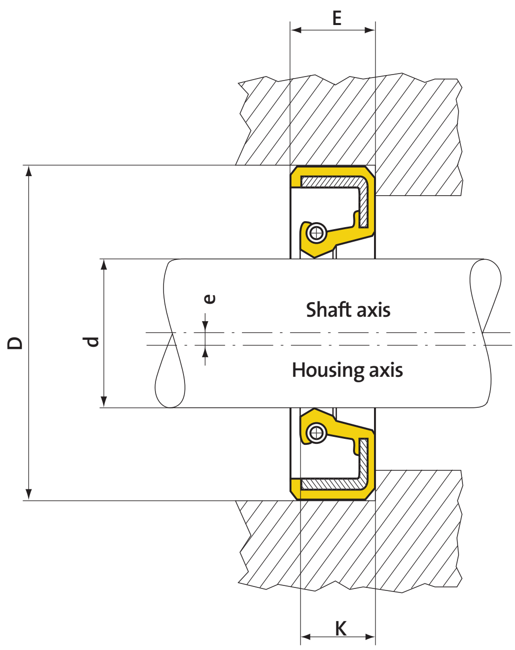
IV.3 - ECCENTRICITY BETWEEN THE HOUSING AND THE SHAFT

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.

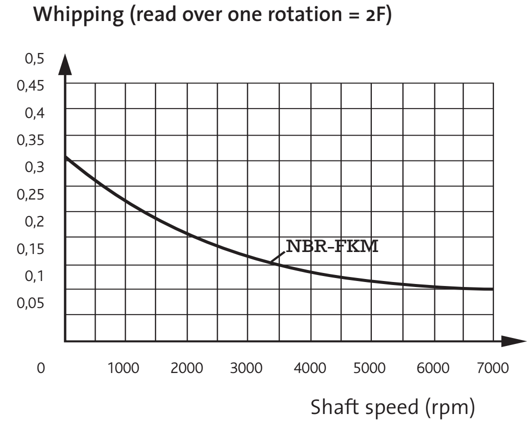


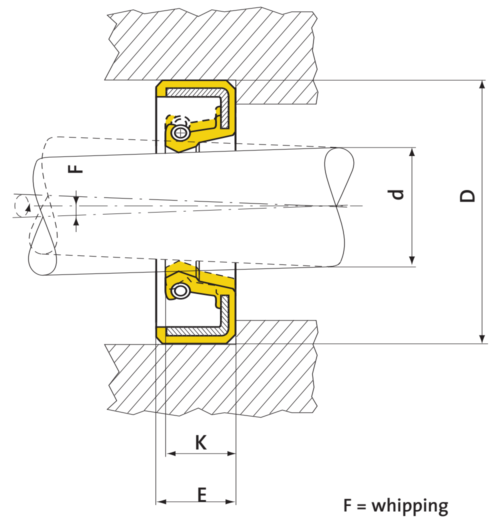
eccentricity = f (Ø)



IV.4 - WHIPPING AND 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.



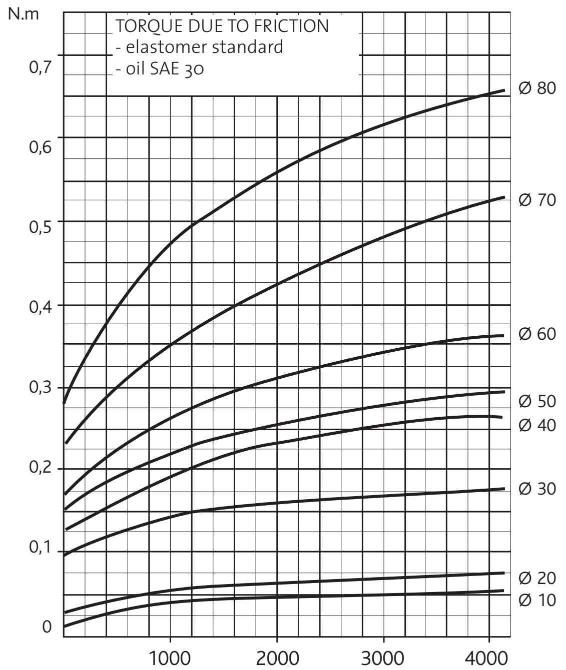


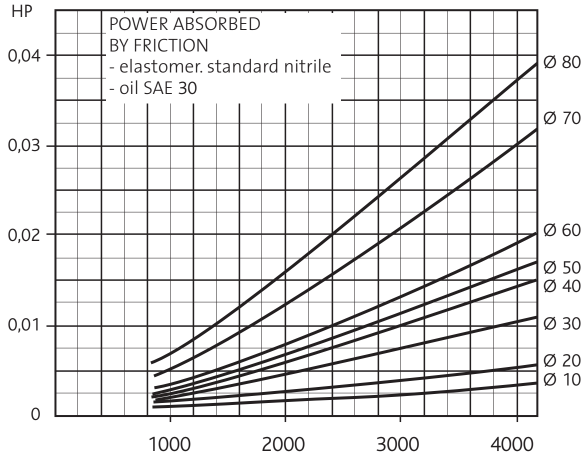
Whipping = f (V)

F = whipping

IV.5 - POWER ABSORBED DUE FRICTION

Due to it's 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.

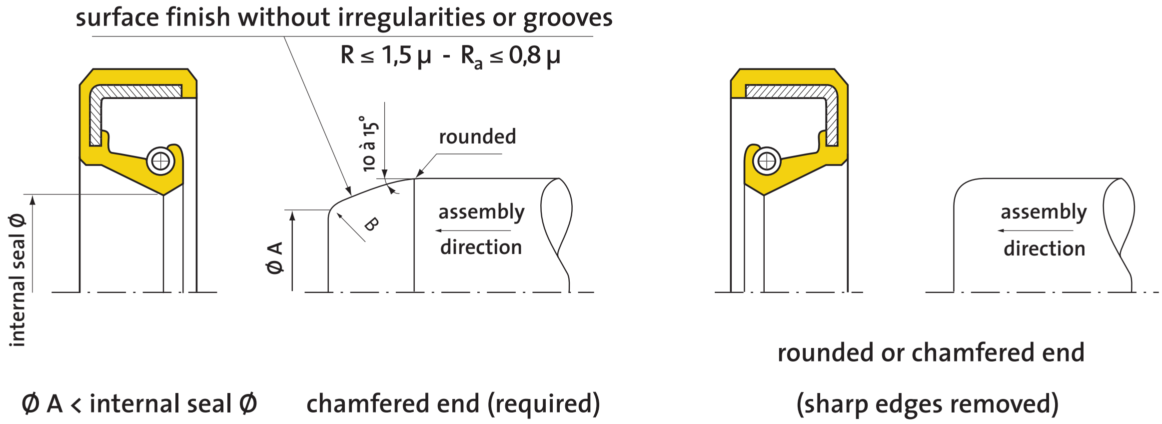
V - THE ASSEMBLY OF SEALS

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 :

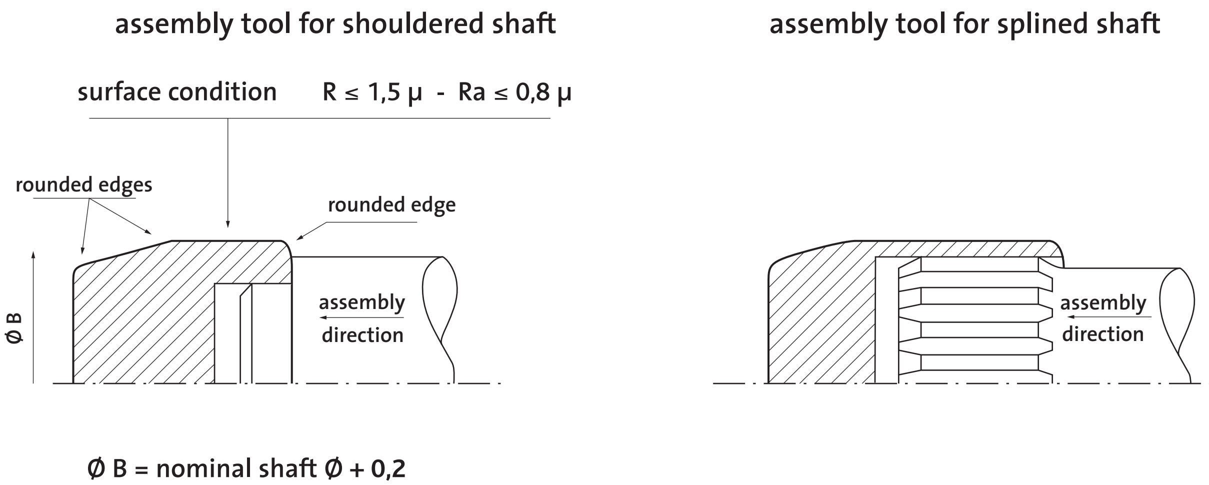
- Avoid damage to the lip.
- Avoid damage to the cover of the external diameter.
- Lubricate the sealing ridge to avoid damage at the first start-up.
- Position the seal correctly :
  - misalignment (the seal must be perpendicular in relation to the axis).
  - axial position.

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

V.I - ASSEMBLY ON A SHAFT WITHOUT SPLINES

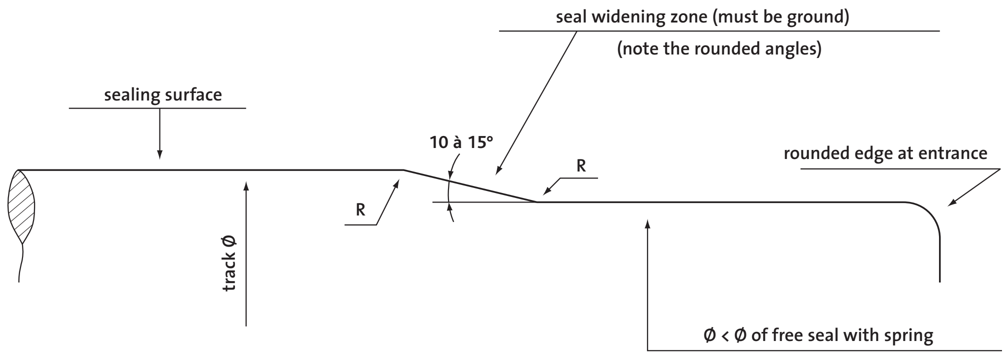


V.2 - ASSEMBLY ON A SHAFT WITH SPLINES OR A SHOULDER



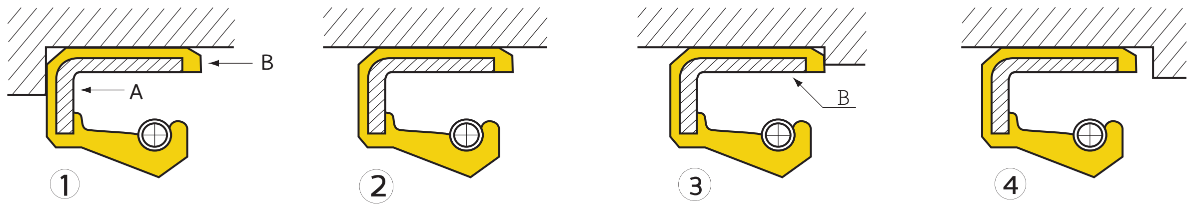
The use of these assembly tools is helpful. However, we recommend the use of a lead-in on the shaft whenever possible.

V.3 - PAULSTRA RECOMMENDATIONS FOR THE SHAPE OF THE SHAFT



Mounting sleeves are unnecessary as the shaft has a lead-in

V.4 - AXIAL POSITIONNING AND ALIGNEMENT



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.

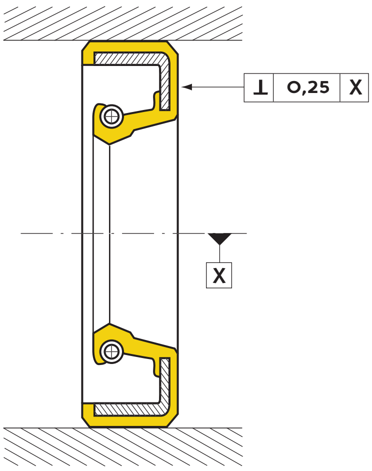
④ The housing has a shoulder as in ③,but the seal is positioned by the mounting tool. This case joint is preferable to case③.

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.

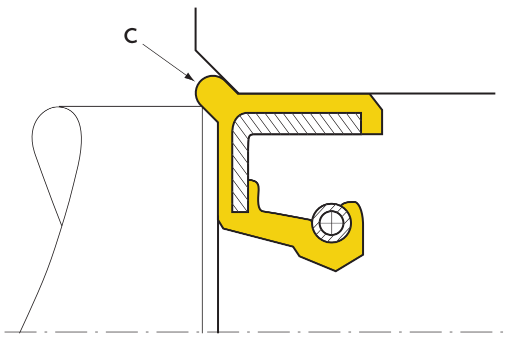
While it is true that modern seal design (corrugations on the outside, pre-centred shape chamfers without burrs, etc.) tends to reduce problems during assembly, the comments made are still worth noting.
Also, the elastomer part of a semi-covered seal behaves in the same way as a fully covered seal.

- 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 mm/mn (maximum : 1500 mm/mn).
- time held in position: 5 seconds (minimum 2 seconds).

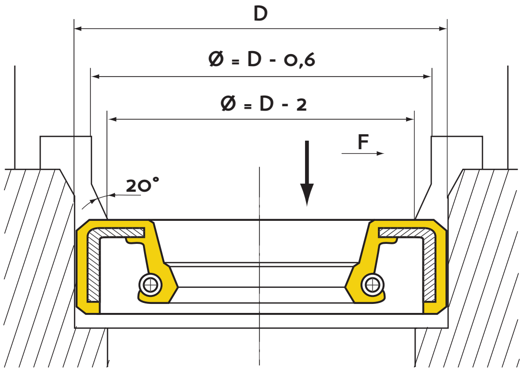


Perpendicular tolerance

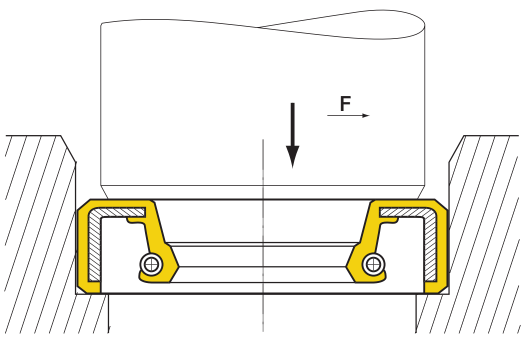


Formation of the bead

V.5 - RECOMMENDATIONS FOR THE ASSEMBLY TOOL



GOOD



TO BE AVOIDED

V.6 - LUBRICATION DURING 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.

V.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.**

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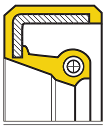
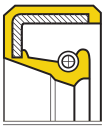
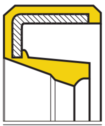
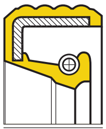
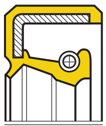
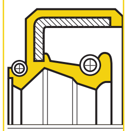
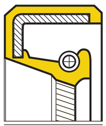
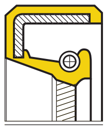
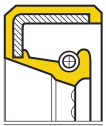
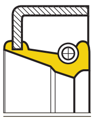
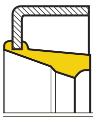
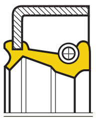
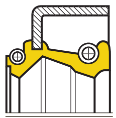
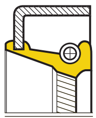
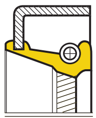
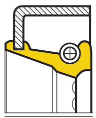
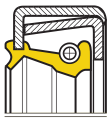
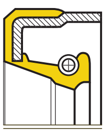
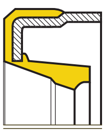
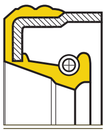
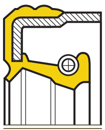
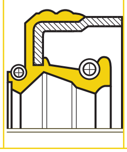
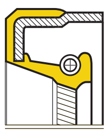
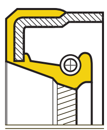
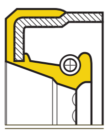
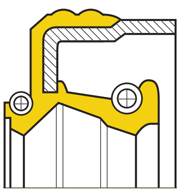
V - CLASSIFICATION OF THE MAIN PROFILES OF LIP SEALS

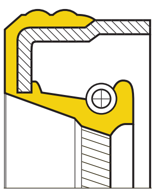
	SPRING			CORRU-GATED COVER (W)	ANTI-DUST LIP		RIDGES		
	embedded (I)	visible (E)	none (O)		WITHOUT SPRING (L)	WITH SPRING (R)	on the left (G)	to the right (D)	bi-direct. (V)
I Covered outer ring	II 	IE 	IO 	IEW 	IEL 	IELR 	IEG 	IED 	IEV 
E Bare outer ring	-	EE 	EO 	-	EEL 	EELR 	EEG 	EED 	EEV 
CS Bare 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

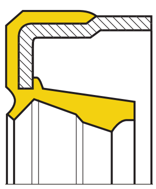
CLASSIFICATION EXAMPLE



MEWLR



MEWG

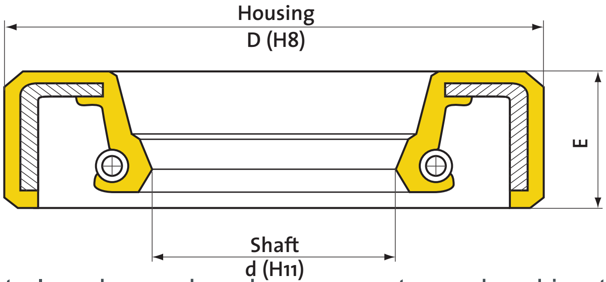


MOWL

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

CATALOGUE OF SEALS FOR ROTATING SHAFTS

SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER



- The part numbers indicated in bold type are normally kept in stock.
- All important orders or special elastomers are available on request. Part numbers ending in “01” include a STAINLESS STEEL SPRING.

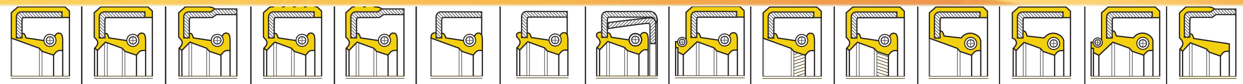
Due to low demand we have now stopped making the II/IIL range of seals (with moulded in spring). Please refer to our cost effective standard rangeof seals (IE/IEL or CSEL type in both Nitrile or Fluorocarbon elastomer) to find the nearest equivalent. Our Technical support service is at your disposal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

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
5	15	6	IE	NBR	**722034**
	15	6	IE	FKM	**722034/81**
	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	**792594**
	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
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

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
9,2	19	5,3	IE	NBR	**722003**
9,8	18	5	IOS	NBR	726787
	16	5	IE	FKM	722393
10	18	5	IE	NBR	**722495**
	19	7	IE	NBR	**722164**
	22	7	IE	NBR	**722940**
	22	7x8	IEL	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	772311
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
	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	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**
	26	8	IE	NBR	**722109**
	26	8	IEL	NBR	**725352**
	26	8x13	IES	NBR	726223

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon



IE	IEL	MEL	IEWL	MEWL	EE	EEL	CSEL	IELR	IED	IELG	II	IIL	IILR	MOL

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
12	26	10	IELRS	NBR	725735
	28	7	IE	NBR	**722992**
	28	7	IE	NBR	772346
	28	8	IE	NBR	**722268**
	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	**725628/81**
	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	7	IEL	NBR	725140
	35	10	IE	NBR	**772030**
	43	10	IELS	NBR	725566
	45,9		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	**772344/81**
	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	NBR	**722165**

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
15	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**
	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	IOLS	NBR	**723260**
16	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	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**

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.
Abreviations : NBR = Nitrile; FKM = Fluorocarbon
****Stainless steel spring**

SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
17	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	10	IE	NBR	**722314**
	47	8	IE	NBR	**722674**
17,5	34	8x15	IESD	NBR	702051
17,7	30	5	IO	NBR	723264
17,9	35,5	8,2	IEL	NBR	725652
18	25	7	IE	NBR	**722628**
	26	4,5	IE	NBR	772389
	28	6	IE	NBR	**722774**
	28	7	IEL	NBR	**792607**
	30	5	IELD	NBR	702177
	30	5	IOS	NBR	726302
	30	7	IE	NBR	**722107**
	32	5	IE	NBR	**722663**
	32	7	IE	NBR	**722105**
	32	7	IE	FKM	**722105/81**
	33	8	IE	NBR	**722120**
	35	7	IE	NBR	**772102**
	35	8	IE	NBR	**722026**
	35	10	IE	NBR	722252
	40	7	IE	NBR	**772032**
	40	10	IEL	NBR	725142
	43	8,5	IE	NBR	722015
	43	9,5	IES	NBR	726140
18,6	30	4,7	IOS	NBR	726461
19	27	6	IE	NBR	722384
	27	6	IE	NBR	**792708**
	30	7	IEL	NBR	725648
	34,9	6	IE	NBR	**722143**
	36	8	IE	NBR	**722009**
	40	8	IE	NBR	**722346**
	43	8	IEL	NBR	725681
19,3	30	4,7	IOS	NBR	726462
19,6	31,1	8	IE	NBR	722244
19,8	38	9,9	IE	NBR	722600
19,9	28	5	IEW	NBR	772408
20	28	4	IE	NBR	**792709**
	28	7	IE	NBR	**722133**
	30	3	IO	NBR	723551
	30	4,5	IES	NBR	726304
	30	4,6	IOS	NBR	726187
	30	4,7	IE	NBR	**722342**
	30	4,7	IE	NBR	722146
	30	5	IEL	NBR	725349
	30	5	IEL	NBR	**792608**
	30	7	IE	NBR	**722258**
	30	7	IE	FKM	**722258/81**
	30	7	IEL	NBR	**792510**
	30	7	IEL	FKM	725660
	31	8	IEWLD	FKM	702416
	32	7	IE	NBR	**722479**
	32	7	IE	FKM	**722479/81**
	32	7	IEL	NBR	**725280**
	33	8	IE	NBR	**722002**
	33	8	IEWLG	FKM	702415
	33,2	8	EOS	NBR	726155
	35	6	IO	NBR	723626
	35	7	IE	NBR	**722952**

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
20	35	7	IE	FKM	**722952/81**
	35	7	IEL	NBR	**792511**
	35	8	IE	NBR	**722506**
	35	8	II	NBR	**721220**
	35	10	IE	NBR	**722521**
	35	10	II	NBR	721182
	36,5	8x15	IESPD	NBR	702254
	37	8	IE	NBR	**722789**
	38	6	IE	NBR	722773
	38	8	IE	NBR	**722163**
	38	8	IEL	NBR	**725476**
	40	6x10	IELS	NBR	725120
	40	7	IE	NBR	**722642**
	40	7	IE	NBR	772185
	40	7	IE	FKM	**722642/81**
	40	7	IEL	NBR	**792512**
	40	7	IES	NBR	726104
	40	7	EES	NBR	726139
	40	8	IE	NBR	**722226**
	40	8	IEL	NBR	725682
	40	10	IE	NBR	**722119**
	40	10	IELS	NBR	725455
	42	6	IE	NBR	**722772**
	42	6	IEL	NBR	**792609**
	43	8,5	II	NBR	721250
	45	10	IELS	NBR	725503
	46	10	EELS	NBR	725535
	46,4	10	EELS	NBR	725541
	46,4	10	EELS	NBR	725561
	46,5	10	IELS	NBR	725328
	47	7	IE	NBR	**722671**
	47	7	IE	FKM	**722671/81**
	47	7	IEL	NBR	**792513**
	47	10	IE	NBR	**722083**
	52	10	IE	NBR	**722155**
	52	10	IEL	NBR	**792610**
	52	10	IE	FKM	**772432/81**
	57	6,5	EES	NBR	726963
	62	6,5	IES	NBR	726134
20,5	35	8x13	IEL	NBR	725286
20,8	32	8	IE	NBR	**722419**
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
21,9	47	8	EED	FKM	702356
22	32	4,6	IEL	NBR	725614
	32	4,6	IOS	NBR	726017
	32	7	IE	NBR	**722850**
	32	7	IE	NBR	772310
	32	7	IE	FKM	722850/81
	32	7	IE	NBR	772123
	32	7	IEL	NBR	**792514**
	33	7	IE	NBR	**792710**
	35	5	IE	NBR	**722732**
	35	5	IEL	NBR	**792611**
	35	7	IE	NBR	**722727**
	35	7	IEL	NBR	**792515**
	35	8	IE	NBR	722675
	35	8	IEL	NBR	**725027**
	35	10	IE	NBR	**722285**
	38	8	IE	NBR	**792500**
	40	7	IE	FKM	772179
	40	7	IE	FKM	**772338/81**
	40	7	IE	FKM	772366
	40	7	IEL	NBR	725438
	40	7	II	NBR	**721404**
	40	8	IE	NBR	**722519**
	40	8	IE	FKM	**722519/81**
	40	8	IEL	NBR	**725421**
	40	8	II	NBR	**721165**

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

d (mm)	D (mm)	E (mm)	Type	Elastomère	Référence
22	40	8x10	IEL	NBR	**725191**
	40	13x15,5	IES	NBR	726142
	43	8	IE	NBR	**722699**
	45	7	IEWLG	FKM	702623
	45	8	IOS	NBR	726168
	47	7	IE	NBR	**772033**
	47	10	IE	NBR	**792711**
22,2	38,2	9,7	IE	NBR	722920
23	33	4,8	IOS	NBR	726143
	36	6,5	EED	FKM	732373
	38,5	8	II	NBR	**721173**
	40	10	IE	NBR	**792712**
23,5	29,5	3,3	IO	NBR	723283
24	30	4	IOS	NBR	726050
	30	5,4	IOLS	NBR	726288
	34,4	5	IES	NBR	726079
	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**
25	40	8	IE	NBR	**722508**
	40	8	IE	NBR	**722508/81**
	40	8	IEL	NBR	**725067**
	40	8	II	NBR	**721174**
	40	10	IE	NBR	**792717**
	42	5x75	IELS	NBR	725650
	42	6,5	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	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**
	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
	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**

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
28	43		IE	NBR	**792724**
	43		IEL	NBR	725131
	45	10	IE	NBR	**722967**
	45	10	IE	FKM	**722967/81**
	45	888	IEL	NBR	**792618**
	45	11,5	EESF	NBR	726348
	47	777	IE	NBR	**722911**
	47	10	IED	NBR	702257
	47	10	IEL	NBR	**792619**
	47	10	IE	NBR	722490
	47	10	IEL	NBR	725606
	47	10	II	NBR	**721194**
	47	7	IIL	NBR	**724229**
	50	10	IE	NBR	**792725**
	52	10	IE	NBR	**772038**
	52	10	IEL	NBR	**79281901**
	52	10x11	II	NBR	721222
	52	10	IOS	NBR	726323
	52		IELS	NBR	725377
	65		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
	46,5	11,2	II	NBR	725950
	46,5	11,2	II	NBR	721022
	46,5	11,2	IE	NBR	724215
29	46	10	IE	NBR	**722966**
	46	10	II	NBR	721183
	46,4	12	II	NBR	721148
29,8	50	10	IE	NBR	**722066**
	47	9,9	IEL	NBR	725631
	47	9,9	ESWLD	NBR	702686
29,9	48,4	6,3	IOS	NBR	726566
30	40	7	IE	NBR	**722623**
	40	7	IE	FKM	**722623/81**
	40	7	IEL	NBR	**792520**
	40	7	IED	FKM	702409
	40	7	IEWLD	FKM	702622
	41	4,7	IOS	NBR	726312
	42	5,7	IE	NBR	722583
	42	6	IEWL	NBR	725637
	42	6x6,5	IELV	NBR	704033
	42	7	IE	NBR	**722737**
	42	7	IE	FKM	**722737/81**
	42	7	IEL	NBR	**792521**
	42	7	IEW	FKM	772409
	42	8	IE	NBR	**722722**
	42	8	IEL	NBR	**725143**
	42	8	IEG	NBR	702107
	42	8	IELD	NBR	702408
	42	8	IOS	NBR	**726236**
	45	5	IEL	NBR	**792620**
	45	5	IE	NBR	**722402**
	45	8	IE	NBR	**722684**
	45	8	IEL	NBR	**792621**
	45	10	IE	NBR	**722541**
	45	10	II	NBR	**721175**
	45	13	IEL	NBR	**725085**
	47	6	IEWD	FKM	702522
	47	7	IE	NBR	**772039**
	47	7	IE	FKM	**772039/81**
	47	7	IEL	NBR	**792522**
	47	8	IE	NBR	**722204**
	47	8	IEL	NBR	**725293**
	47	10	IE	NBR	**792726**
	48	8	IE	NBR	**722500**
	48	8	IE	NBR	**72250001**

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
30	48	8	IE	NBR	722901
	48	8	IE	FKM	**722500/81**
	48	8	IEL	NBR	**792523**
	48	10	IE	NBR	**792727**
	50	7	IEW	FKM	772410
	50	7	MEWLD	FKM	702540
	50	10	IE	NBR	**722836**
	50	10	IEL	NBR	**792524**
	50	10	II	NBR	**721184**
	50	11	II	NBR	**721149**
	52	7	IE	NBR	**722912**
	52	7	IE	FKM	**722912/81**
	52	7	IEL	NBR	**792525**
	52	10	IE	NBR	**792728**
	52	10	IEL	NBR	**792622**
	55	7	IE	NBR	772342
	55	10	IE	NBR	**722892**
	55	10	IEL	NBR	**792526**
	55	10	II	NBR	**721102**
	56	10	IEL	NBR	**792623**
	60	10	IE	NBR	**792729**
	62	7	IE	NBR	**772040**
	62	7	IE	FKM	**772040/81**
	62	7	IEL	NBR	**792527**
	62	8	IES	NBR	726113
	62	10	IE	NBR	**792730**
	62	10	IEL	NBR	**792624**
	72	10	IE	NBR	**792731**
30,1	50,7	11	II	NBR	721329
31	42	8	IE	NBR	**722691**
	47	7	IE	NBR	**722672**
	55	10	II	NBR	721156
31,7	42,9	4,7	IOS	NBR	726463
32	42	7	IEW	NBR	702498
	45	6	IE	NBR	**792732**
	45	7	IE	NBR	**722913**
	45	7	IEL	NBR	**792528**
	45	10	IE	NBR	**722409**
	45	10	IEG	NBR	702240
	46	7	IEL	NBR	725208
	46	7x9,7	IELS	NBR	725563
	47	7	IE	NBR	**772013**
	47	7	IE	FKM	**772013/81**
	47	7	IEL	NBR	**792625**
	47	8	IE	NBR	**722617**
	47	8	IEL	NBR	**792626**
	47	12	IILR	NBR	**724851**
	48	8	IE	NBR	**792734**
	50	8	IE	FKM	**722518/81**
	50	8	IE	NBR	**722518**
	50	8	IEL	NBR	**792529**
	50	9	IOS	NBR	726015
	50	10	IE	NBR	**722607**
	50	10	II	NBR	721185
	50	10	IELS	NBR	**725408**
	52	7	IE	NBR	**772202**
	52	7	IEL	NBR	**792628**
	52	7	IE	FKM	**772202/81**
	52	7,5	IE	NBR	**722478**
	52	7,5	II	NBR	721154
	52	7,5x13,5	IELR	NBR	725897
	52	10	IEL	NBR	725565
	52	10	IEL	NBR	**792627**
	52	10	IEG	NBR	702342
	54	8	IE	NBR	**722039**
	54	8	II	NBR	721068
	55	10	IE	NBR	**792735**
	55	10	IEL	NBR	79281801
	56	10	II	NBR	**721162**
	56	12	IE	NBR	722038
	56	12	II	NBR	**721096**
	62	10	IE	NBR	**792736**

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
33	45	7	IE	NBR	**792737**
	48	8	IE	NBR	**722971**
	48	8	II	NBR	721145
33,5	47	4	IO	NBR	723252
34	46	8	IE	NBR	**792738**
	50	10	IE	NBR	**792739**
	52	7 7,5	IE	NBR	**792814**
	52	9	II	NBR	**721279**
	54	10	IE	NBR	**722092**
	54		IE	NBR	**722685**
34,8	50	7	IE	FKM	772400
34,9	54	11	IE	NBR	722023
	55,8	9,3	IELG	NBR	702299
	57,2	12,7	IE	NBR	722985
	57,2	12,7	II	NBR	721468
	58	9,8	IE	NBR	772276
	63,5	12,5	IELG	NBR	702183
35	45	6	IE	NBR	**722400**
	45	6	IE	FKM	**722400/81**
	45	7	IEL	NBR	**792629**
	47	6	IEWLD	FKM	702535
	47	7	IE	NBR	**722915**
	47	7	IE	FKM	**722915/81**
	47	7	IEL	NBR	**725411**
	47	8	IE	NBR	**722554**
	50	5,8	IE	NBR	**722484**
	50	7	IE	NBR	**772022**
	50	7	IE	FKM	**772022/81**
	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	**792534**
	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**

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
35	68	6	IEL	NBR	**792634**
	68	10	IE	FKM	772244
	68	10x12	IEL	NBR	725608
	72	77	IE	NBR	**722245**
	72	10	IEL	NBR	**792635**
	72	10	IE	NBR	722170
	72	10	IEL	NBR	**792636**
	72	12	IEL	NBR	**79263601**
	72	12	IE	NBR	**792743**
	72		IEL	NBR	**792637**
35,1	58	11,5	IE	NBR	722560
	58	11,5	II	NBR	721457
36	47	7	IE	NBR	**722950**
	50	7	IE	NBR	**772041**
	50	7	IEWLD	FKM	702659
	52	4	IOX	NBR	726394
	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**
	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	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

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
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	EIWLD	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	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**
	60	12	II	NBR	**721301**
	61	12	IE	NBR	**722498**
	61	12	II	NBR	721100
	62	7	IE	NBR	**772043**
	62	7	IE	FKM	**772043/81**
	62	7	IEL	NBR	**792536**
	62	10	IE	NBR	**722505**
	62	10	IE	FKM	722505/81
	62	10	IE	FKM	722828
	62	10	IEL	NBR	**725802**
	62	10	IELR	NBR	**792503**
	62	10	II	NBR	**721031**
	62	10	MEWLG	NBR	702369
	62	10x11	IELS	NBR	725467
	62	12	IE	NBR	**722972**
	62	12	II	NBR	**721168**
	62	11x13,5	IELS	NBR	725401
	62	10,25x13	IELS	NBR	725600
	65	12	II	NBR	**721123**
	68	7	IEL	NBR	792537
	68	8	IE	NBR	722174
	68	10	IE	NBR	**792751**
	70	12	IE	NBR	**722203**
	70	12	II	NBR	**721251**
	71,5	12	II	NBR	721144
	72	7	IE	NBR	**772044**
	72	7	IEL	NBR	**792538**
	72	7	IE	FKM	**772044/81**
	72	8	IE	NBR	**722169**
	72	10	IEL	NBR	**792646**
	72	12	II	NBR	**721467**
	80	10	IE	NBR	**792752**
	80	10	IEL	NBR	**792647**
	85	13	IEL	NBR	725376
	90	8	IEL	NBR	**792648**
41	54	12	EEL	NBR	725615
	63,4	6	IE	NBR	722550

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
41	63,6	14	II	NBR	721108
	70	13	IE	NBR	722647
41,2	60,3	9,5	IEL	NBR	725204
	63,5	12,7	IE	NBR	772317
41,3	62,1	19	IE	NBR	725042
41,4	57,1	6,5	IE	NBR	**722723**
	57,1	12,2	IES	NBR	726744
	62	12,2	IES	NBR	726115
42	52	4	IOS	NBR	**726151**
	55	7	IED	FKM	702223
	55	7	IEWLD	FKM	702545
	55	8	IE	NBR	**772045**
	55	8	IE	FKM	**772045/81**
	55	8	IEL	NBR	**792539**
	56	7	IE	NBR	772386
	56	7	IE	NBR	**792753**
	58	7	IEL	NBR	725387
	58	7	EEL	NBR	725543
	58	9	IE	FKM	772265
	58	10x11,5	IELS	NBR	725184
	58	11	IESF	FKM	726483
	60	10	IE	NBR	**722682**
	60	12	IE	NBR	**722763**
	60	14	IEL	NBR	**725919**
	60	14	IIL	NBR	**724121**
	62	7	IEL	NBR	725552
	62	7	EEL	NBR	725544
	62	8	IE	NBR	**722931**
	62	8	IE	FKM	**722931/81**
	62	8	IEL	NBR	**792540**
	62	8	IELD	FKM	702406
	62	10	IE	NBR	**722057**
	63	8	IEWLG	FKM	702526
	64	7	IE	NBR	**722640**
	65	8,3x13	IELR	NBR	725016
	65	10	IE	NBR	**722064**
	65	10	IEL	NBR	**792649**
	65	10	II	NBR	721093
	67	10	IEL	NBR	725435
	71,5	13	II	NBR	721143
	72	8	IE	NBR	**772046**
	72	8	IEL	NBR	**792541**
42,1	63,6	14,6	II	NBR	721018
42,8	69,9	12,7	II	NBR	721469
43	58	7	MEWD	FKM	702370
	58	13,5	IE	NBR	722522
	58	13,5	II	NBR	721204
	60	10	IE	NBR	722136
	60	10	IE	NBR	**792754**
	60	10	IEL	NBR	**725975**
	65	10	IE	NBR	**722958**
	66	10	IEL	NBR	**792650**
	75	10	II	NBR	721441
44	59,2	12	IEL	NBR	725642
	62	10	IE	NBR	**792755**
	72	12	IE	NBR	**722741**
	78	7	IE	NBR	722190
44,4	54	4,8	IE	NBR	722036
44,5	62	8	IEL	NBR	725442
	62	10	IE	NBR	**722210**
	81	11,1	IE	NBR	722022
44,7	54	6x7,9	EOLS	NBR	727111
	54	6x8,5	IOLS	NBR	723258
44,8	61,4	11,7	II	NBR	721201

The fluorocarbon seals previously with the suffix 83 now have the suffix 81.
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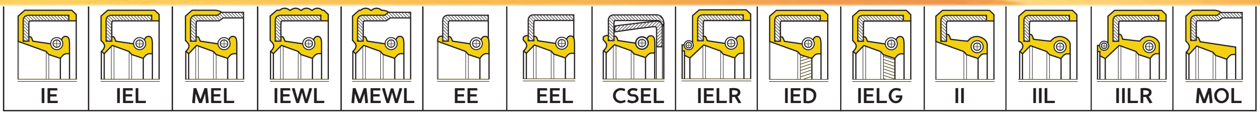
The part numbers indicated in bold type are kept in stock.
****Stainless steel spring**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon



d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
45	57	7	IEWLD	FKM	702567
	58	7	IE	NBR	**792756**
	58	7	IEWD	FKM	702775
	60	5	IE	NBR	722185
	60	6,5	IE	NBR	**722121**
	60	6,5	IEL	NBR	**792651**
	60	6,5x8,1	IOB	NBR	729009
	60	7	IE	NBR	722306
	60	8	IE	NBR	**772115**
	60	8	IE	FKM	**772115/81**
	60	8	IEL	NBR	**792542**
	60	10	IE	NBR	**722516**
	60	10	IE	FKM	**722516/81**
	60	10	IE	FKM	722988
	60	10	IEL	NBR	**792543**
	60	10	IEWLD	FKM	702614
	60	12	II	NBR	721071
	62	7	IEL	NBR	725459
	62	7	EEL	NBR	725547
	62	8	IE	NBR	**772018**
	62	8	IE	FKM	**772018/81**
	62	8	IEL	NBR	**725407**
	62	8	EEL	NBR	725549
	62	8	IEWLD	FKM	702465
	62	10	IE	NBR	**722621**
	62	10	IEL	NBR	**725748**
	62	10	IEL	FKM	725315
	62	10	IEL	NBR	**72574801**
	62	12	IE	NBR	**722504**
	62	12	IEL	NBR	**792544**
	65	8	IE	NBR	**772019**
	65	8	IE	FKM	**772019/81**
	65	8	IEL	NBR	**792652**
	65	8	IEX	NBR	726157
	65	9	IEWLD	FKM	702508
	65	10	IE	NBR	**722764**
	65	10	EELD	FKM	702251
	65	12	IE	NBR	**722858**
	65	12	II	NBR	**721217**
	65	15	IIL	NBR	724449
	66	6	IE	NBR	**792757**
	66	9	IEWL	FKM	702478
	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	65	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	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	12	IE	NBR	**722873**
	68	12	IEL	NBR	**792658**
	68	12	II	NBR	**721166**
	68	12x15	IELS	NBR	725092
	68	14	IEL	NBR	725890
	70	10	IE	NBR	**792767**
	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**
	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**

The fluorocarbon seals previously with the suffix 83 now have the suffix 81.
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****Stainless steel spring**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
50	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
	69	10	IOS	NBR	726009
	69	10	IOS	NBR	726269
	72	8	IE	NBR	**772049**
	72	8	IEWD	FKM	702588
	72	10	IE	NBR	**722281**
	72	12	IE	NBR	**722611**
	72	12	IE	FKM	772137
	72	12	IEL	NBR	**792666**
	72	12	II	NBR	721199
	75	12	IE	NBR	**722502**
	75	12	IE	FKM	772345
	75	12	II	NBR	**721015**
	75	15	IEL	NBR	**725673**
	75	16	IIL	NBR	724562
	78	15	IELR	NBR	725610
	78	15	IIL	NBR	724261
	80	8	IE	NBR	**792506**
	80	10	IE	NBR	**722824**
	80	10	II	NBR	721048
	80	13	IE	NBR	722514
	80	13	II	NBR	721176
	85	10	IE	NBR	**792775**
52,5	72,7	8,5	IE	NBR	721019
	80	11	II	NBR	722652
53	60	4	IEL	NBR	725679
53	68	10,5	IE	NBR	**722605**
	68	10,5	II	NBR	721128
	68	13	IEL	NBR	**725048**
	68	13	IIL	NBR	724284
	97	10	IE	NBR	772281
53,6	73,1	19	IEL	NBR	725043
	77,8	13	IEL	NBR	725108
54	68	10,5	IE	NBR	**722167**
	70	10	IE	NBR	**792776**
	70	12	IE	NBR	722874
	72	5	IE	NBR	722738
	72	5x12,5	IES	NBR	726643
	72	10	IE	NBR	**722448**
	72	10	IEL	NBR	**725202**
	72	10	IED	FKM	702363
	72,5	9	IEL	NBR	725499
	72,5	9	EELS	NBR	725509
	72,5	9	EELS	NBR	725592
	72,5	9	EELS	NBR	725604
	75	7	IEL	NBR	725559
	76,2	12,5	II	NBR	721307
	77,7	12,7	IE	NBR	722025
	81	10	IEL	NBR	725651
	85	10	IEL	NBR	725501
54,2	73,1	6	IEX	NBR	726158
55	68	4	IOS	NBR	726285
	68	8	IE	NBR	**792777**
	68	8	IEL	NBR	**792667**
	70	7	IEWV	FKM	704039
	70	8	IE	NBR	**722938**
	70	8	IE	FKM	**722938/81**
	70	8	IEL	NBR	**792554**
	70	8x14	IELR	NBR	725896
	70	10	IE	NBR	722528
	70	10	EEL	FKM	702381
	71,5	10	II	NBR	**721349**
	72	8	IE	NBR	**772015**
	72	8	IE	FKM	**772015/81**
	72	8	IEL	NBR	**792555**
	72	8	EEL	NBR	725550
	72	10	IE	NBR	**722808**
	72	10	IEL	NBR	**792556**
	72	10	IEWLD	FKM	702615
	72	13	II	NBR	**721138**
	75	10	IEL	NBR	725102
	75	12	IE	NBR	**722749**
	75	12	IE	FKM	**722749/81**
	75	12	IEL	NBR	**725072**
	75	12	II	NBR	**721081**
	75	16	IIL	NBR	**724448**
	75,4	12	II	NBR	721253
	76	6,5x8,1	IOB	NBR	729008
	76	8	IEWLD	FKM	702534
	76	11	IE	NBR	722649
	76	12	IE	NBR	**722712**
	76	12	IEL	NBR	**725713**
	76	12	IEL	FKM	725713/81
	78	10	IE	FKM	**722392/81**
	80	8	IE	NBR	**722008**
	80	8	IE	FKM	**722008/81**
	80	8	IEL	NBR	**792557**
	80	8	II	NBR	721013
	80	10	IE	NBR	**792778**
	80	10	IEL	NBR	**792668**
	80	12	IEX	NBR	726711
	82	12	IE	NBR	**722655**
	85	8	IE	NBR	**772050**
	85	10	IE	NBR	**792779**
	85	12	IE	NBR	722222
	90	10	IE	NBR	**792780**
	90	10	IEL	NBR	**792669**

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
55	90	13	IEL	NBR	725061
	90	13	IEL	NBR	**79282201**
	100	13	IE	NBR	**792781**
56	66	8,5	EOLS	NBR	727120
	69	10	IOS	NBR	726255
	70	8	IE	NBR	**772051**
	72	7	IEL	NBR	725338
	72	8	IE	NBR	**772052**
	72	8	IE	FKM	**772052/81**
	80	12	IE	NBR	**722615**
	85	8	IE	NBR	**772054**
	86	12	IE	NBR	**722033**
57	73	8	IEWLG	FKM	702561
	75,6	12	II	NBR	**721247**
	80	12	IE	NBR	722067
	85	15	IELR	NBR	**725625**
	85	15	IIL	NBR	**724306**
	90	13	IE	NBR	**722728**
	90	13	IEL	NBR	725760
57,1	73	12,7	II	NBR	721259
	76,2	12,7	IEL	NBR	725127
58	72	8	IE	NBR	**722359**
	72	8	IE	FKM	**722359/81**
	72	8	IEL	NBR	**792558**
	75	5	IE	NBR	**722622**
	75	10	IE	NBR	**792783**
	80	5	IE	NBR	**722707**
	80	8	IE	NBR	**722939**
	80	8	IEL	NBR	**792559**
	80	10	IE	NBR	722200
	80	10	IE	NBR	**792784**
	80	10	II	NBR	**721437**
	80	10	IEL	NBR	**79282501**
	80	12	IE	NBR	**722005**
	80	12	IE	FKM	**722005/81**
	80	12	IEL	NBR	**792670**
	80	12	II	NBR	**721059**
	81	5	IE	NBR	722254
	83,2	17	II	NBR	721210
	85	10	IE	NBR	**722559**
	85	10	II	NBR	**721135**
	85	12	II	NBR	**721124**
	90	10	IEL	NBR	**792672**
	102	10	IE	NBR	772282
59	72	12	MEWL	NBR	725588
	72	7	EELS	NBR	725358
	80	7	IE	NBR	**792785**
59,5	75	8	IE	NBR	722587
60	71,5	8	IE	NBR	772365
	75	8	IE	NBR	**722997**
	75	8	IE	NBR	**72299701**
	75	8	IE	FKM	**722997/81**
	75	10	IEL	NBR	**792560**
	75	8,8	II	NBR	721221
	78	10	EEL	NBR	**725307**
	78	10	IE	NBR	**792786**
	78	8	IEWLG	FKM	702502
	80	8	IE	NBR	**772016**
	80	8	IE	FKM	**772016/81**
	80	8	IEL	NBR	**725361**
	80	10	IEWLG	FKM	702564
	80	10	EEL	NBR	725545
	80	10	IE	NBR	**722213**
	80	10	IEL	NBR	**725163**
	80	12	IEL	FKM	**725163/81**
	80	12	IE	NBR	**722459**
	80	12	IE	FKM	**722459/81**
	80	12	IEL	NBR	**792671**
	80	13	IEX	NBR	726262
60	80	13	IE	NBR	722686
	80	13	II	NBR	**721275**
	82	12	IEX	NBR	726498
	85	8	IE	NBR	**772055**
	85	8	IEL	NBR	**792561**
	85	8	IEWLD	FKM	702555
	85	12	IEL	NBR	725107
	85	12	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**
60,4	88,5	12,7	II	NBR	721480
61	97	12	IE	NBR	722175
62	74	6	IOS	NBR	726743
	80	10	IE	NBR	**792789**
	81	6	IE	NBR	722540
	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
63	83	12	IE	NBR	**772375**
	85	12	IE	NBR	**772057**
	85	10	IE	FKM	**772057/81**
	90	10	IE	FKM	**772105**
	90	12	IE	NBR	**722648**
	110	13	II	NBR	721115
63,5	80	5,5	IOS	NBR	726816
	90	11,5	II	NBR	**721207**
64	80	13	IE	NBR	**722984**
	85	16	IEL	NBR	**725891**
	85	16	IIL	NBR	**724090**
	90	12	II	NBR	721125
	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	10	IEL	NBR	725434
	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**
	85,2	16	IIL	NBR	**724561**
	90	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**
	95	12	II	NBR	721126

The fluorocarbon seals previously with the suffix 83 now have the suffix 81.
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The part numbers indicated in bold type are kept in stock.
****Stainless steel spring**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
65	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	**792677**
	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**
	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
	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	IILR	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**

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
75	90	10	IED	FKM	702365
	95	8	IE	NBR	722902
	95	10	IE	NBR	**722379**
	95	10	IE	FKM	**722333/81**
	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
	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	IIL	NBR	**724245**
76,2	102	17,4	IIL	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	SIL	**722476**
	100	13	IE	FKM	772304
	100	13	IEL	NBR	725021
	100	14	IEL	NBR	**79282901**
	105	13	IE	NBR	**792799**
	110	10	IE	NBR	**772061**
	110	10	IEL	NBR	**792571**
	110	10	IE	FKM	**772061/81**
	110	13	CSEL	NBR	**793101**
	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**
	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	IEL	NBR	**79282601**
	105	8	IEWLG	FKM	702619
	105	10	EE	FKM	720037
	105	10	EEG	FKM	702333
	105	12	IEWLG	FKM	702596

The fluorocarbon seals previously with the suffix 83 now have the suffix 81.
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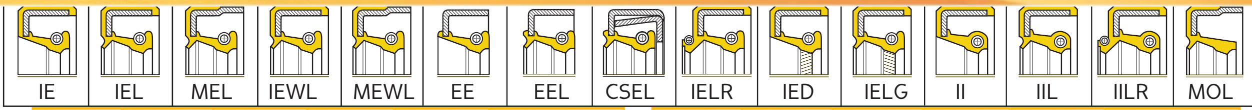
The part numbers indicated in bold type are kept in stock.
****Stainless steel spring**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon



d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
85	105	13	IE	NBR	**792804**
	110	12	IEL	NBR	**792572**
	110	12x6	IIS	NBR	726637
	110	13	CSEL	NBR	**793102**
	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	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	CSEL	NBR	**793104**
	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	IILR	NBR	724091
	115	9	IE	NBR	722975
	115	9	IE	NBR	772302
	115	13	IE	NBR	**722703**
	115	13	IEL	NBR	**725695**
	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
	121	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**
	120	11,3	IELG	NBR	702355
	120	12	IE	NBR	**772065**
	120	12	IE	FKM	**772065/81**
	120	12	IEL	NBR	**792576**
	120	13	CSEL	NBR	**793107**
	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**

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
95	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	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	CSEL	NBR	**793108**
	120	13	IE	NBR	**722957**
	120	13	IE	FKM	772148
	120	13	IELG	FKM	702338
	120	14	IELR	NBR	725231
	120	17	IEL	NBR	725599
	125	12	IEL	NBR	**792578**
	125	13	CSEL	NBR	**793109**
	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
	125	13	IEX	NBR	726274
	130	12	IE	NBR	**772069**
	130	12	IE	FKM	**772069/81**
	130	12	IEL	NBR	725617
	130	12	IELR	NBR	**792502**
	130	13	CSEL	NBR	**793112**
	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	12	IE	NBR	**772070**
	140	13	CSEL	NBR	**793113**
107,9	152,6	17,3	IEL	NBR	725478
109	122	7	IEW	NBR	772391
	122,2	7	IOLS	NBR	723262
110	130	12	IE	NBR	**772071**
	130	12	IE	FKM	**772071/81**
	130	12	IEL	NBR	**792581**
	130	13	CSEL	NBR	**793114**
	130	13	IE	NBR	**722465**
	130	13	IEL	NBR	**725114**
	140	10,2	IE	NBR	772357
	140	12	IE	NBR	**772072**
	140	12	IE	FKM	**772072/81**
	140	12	IEL	NBR	**792688**

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

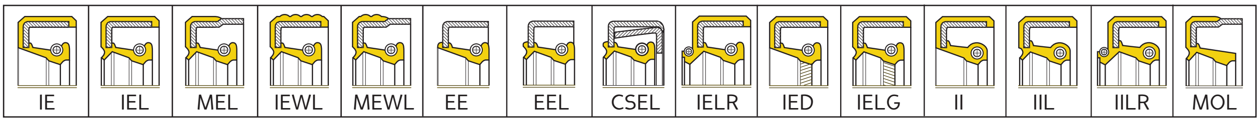
SEALS WITH NITRILE AND FLUOROCARBON ELASTOMER

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
110	140	13	CSEL	NBR	**793115**
	140	13	IE	NBR	722708
	140	13	IEL	NBR	**792582**
112	130	13	IE	NBR	**722553**
	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
115	140	12	IE	NBR	**772073**
	140	12	IE	FKM	**772073/81**
	140	12	IEL	NBR	**792689**
	140	13	CSEL	NBR	**793117**
	140	13	IE	NBR	722374
	140	13	IEL	NBR	**725101**
	140	13	IELG	FKM	702176
	140	13	IEX	NBR	726260
	140	15	IEL	NBR	725054
	140	15	IELRG	FKM	702260
	150	12	IE	NBR	**772074**
	150	13	CSEL	NBR	**793118**
	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	12	IE	FKM	**772075/81**
	150	12	IEL	NBR	**792583**
	150	13	CSEL	NBR	**793120**
	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	12	IILR	NBR	724454
	150	13	CSEL	NBR	**793122**
	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	12	IE	NBR	772077
	150	12	IEL	NBR	**792585**
	150	13	CSEL	NBR	**793123**
	150	12	IE	FKM	**772077/81**
	150	12	IELG	FKM	702064
	150	14	II	NBR	721252
	160	12	IE	FKM	**772078/81**
	160	13	CSEL	NBR	**793124**
	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
130	145	7	IE	NBR	772270
	150	12	IEX	NBR	726259

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
130	158,9	15,9	IE	NBR	722232
	160	12	IE	NBR	**772079**
	160	12	IE	FKM	**772079/81**
	160	13	CSEL	NBR	**793125**
	160	15	IE	NBR	**722881**
	160	15	IE	FKM	**722881/81**
	160	15	IEL	NBR	725115
	160	15	IEX	NBR	726077
	170	13	CSEL	NBR	**793126**
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	IEX	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	72571601
	175	15	IE	NBR	**772082**
	180	14	IE	NBR	**722662**
144	160	12	IE	NBR	**722113**
	180	12	II	NBR	721116
145	170	15x20	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	IIL	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	IEX	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**
	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

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**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon



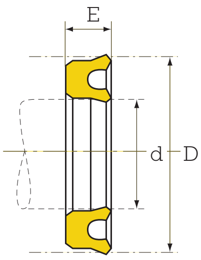
d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
158	180	16	IEL	NBR	725232
160	190	15	CSEL	NBR	**793135**
	190	15	IEL	NBR	**725715**
	190	15	IIL	NBR	724765
	190	15	IE	FKM	**722313/81**
165	190	13	CSEL	NBR	**793136**
	190	15	IE	NBR	772321
	190	15	IE	NBR	**792811**
	200	15	CSEL	NBR	**793137**
	200	15	IE	NBR	**772084**
170	200	15	CSEL	NBR	**793138**
	200	15	IE	NBR	**722377**
	200	15	IE	FKM	**722377/81**
	200	15	IEL	NBR	**792588**
175	200	13	II	NBR	**721122**
	200	13	IE	NBR	722979
	200	15	IEL	NBR	**792692**
	210	15	IE	NBR	**772085**
	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	FKM	**772086/81**
	210	15	IEL	FKM	725655
	210	15	IEL	NBR	**792589**
	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	FKM	**772088/81**
	220	15	IE	NBR	**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**

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
195	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**
20	250	15	CSEL	NBR	**793147**
	250	15	IE	FKM	**772092/81**
	250	15	IEL	NBR	**792696**
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
320	360	20	IE	NBR	**772099**
340	380	20	IE	NBR	**772100**
380	420	20	IE	NBR	772203
440	480	20	IE	NBR	772110
460	500	20	IE	NBR	772111
480	520	20	IE	NBR	772112

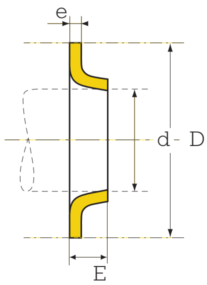
The fluorocarbon seals previously with the suffix 83 now have the suffix 81.
Suffix 83 parts may be delivered until stocks are replaced with parts having the suffix 81.
The part numbers indicated in bold type are kept in stock.
****Stainless steel spring**

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

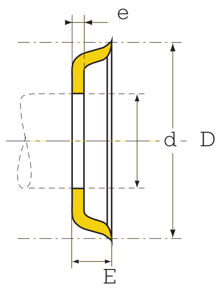
CATALOGUE OF SEALS FOR SLIDING SHAFTS



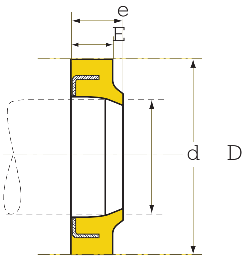
Type DL



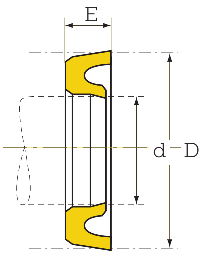
Type LIO



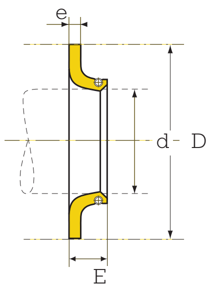
Type LEO



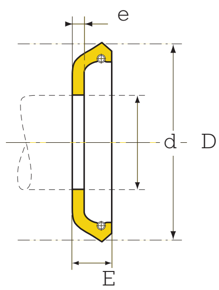
Type DRT



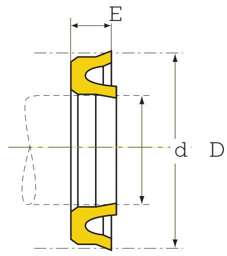
Type DLI



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 (mm)	Type	Elastomer	Reference
4	14	12	DL	NBR	710093
6	14 32	11,5 10	DL LEO	NBR NBR	**710620** 714057
8	14 14 17,9	3,5x5 4 5,5x1,5	DRT DLI LEO	NBR NBR NBR	711700 716501 714432
9	20	4	DLS	NBR	710678
10	16 17,9 20	3,5x5 5,5 7	DRT LEO DLP	NBR NBR NBR	711701 714045 711001
11	28 36	7x2,5 12	LIO LEO	NBR NBR	712094 714020
12	18 22 22 22 25	3,5x5 55 5x1,5 6,5	DRT DLS DLI LIO DLS	NBR NBR NBR NBR NBR	711702 710679 716502 712350 710233
13	21	5x2	LIO	NBR	712414
14	20	3,5x5	DRT	NBR	711703

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
14	26 38,1	8 10	LIR DL	NBR NBR	713653 710132
15	21 25 25 30	3,5x5 8 10x3 10x3	DRT DLT LEO LEO	NBR NBR NBR NBR	711704 711404 **714178** **714179**
16	22 24 25 26 28 35 35 36 38 40 40	3,5x5 9 6,5 8 9,6 10 10x3 8x2,5 12 10 12x3	DRT DL DLE DLT DL LER LEO LIO LEO DL LEO	NBR NBR NBR NBR NBR NBR NBR NBR NBR NBR NBR	711705 710129 716506 711405 710218 715402 714418 712095 714442 710343 714864
18	28 30 30 32,9 36 36 38	5x7 8 10 7,2 6x2 7x2,5 10	DRT DLES DL DL LEO LIO LIR	NBR NBR NBR NBR NBR NBR NBR	711706 716531 710290 710431 714006 **712005** 713613

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

Abreviations : NBR = Nitrile; FKM = Fluorocarbon

DIMENSIONS

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
	45	6x2	LEO	NBR	**714645**
	52	8x2	LEO	NBR	714013
	55	10x3	LEO	NBR	714471
	37	12	LEO	NBR	714817
	49	10,5	LEO	NBR	714486
	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	**712572**
	40	12	DL	NBR	710111
	65	10x3	LEO	NBR	**714472**
	40	12	DL	NBR	710023
	45	12	DL	NBR	710344
	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**
	38	6x2,5	LIO	NBR	712701
	38	10	LIR	NBR	713702
	36	8x2,5	LIO	NBR	**712348**
	36	9,6	DL	NBR	710289
	25	8x2,5	LIO	NBR	712012
	40	9	DLP	NBR	711005
	45	11	DL	NBR	**710061**
	49	10,8	DL	NBR	710060
	35	5x7	DRT	NBR	**711709**
	60	10x5	LEO	NBR	**714110**
	38,1	8	DLE	NBR	716560
	41	8,4	DL	NBR	710144
	40	10	DLE	NBR	716507
	38	5x7	DRT	NBR	711710
	46	10	DL	NBR	710528
	47,5	4x3	LEO	NBR	714047
	49	13x4	LIO	NBR	712534
	41	10	DL	NBR	710570
	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
	42	5x7	DRT	NBR	711712
	47	10	DLT	NBR	711412
	50	9x3	LIO	NBR	712535
	50	12	DL	NBR	710470
	44	12	DLES	NBR	716596
	50	14,4	DL	NBR	710073
	52	12x3,5	LIO	NBR	712694
	45	7x10	DRT	NBR	711713
	50	9	DLP	NBR	711006
	51	9,6	DL	NBR	**710354**
	46	5x7	DRT	NBR	711714
	50	8	DLI	NBR	716536
	55	12	DL	NBR	710490
	60	10x4	LIO	NBR	**712492**
	50	5	DL	NBR	710190
	50	5x8	DRT	NBR	711715
	55	10	DLT	NBR	711415

d (mm)	D (mm)	E (mm)	Type	Elastomer	Reference
40	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**
	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	711747
	65	12	DLES	NBR	716591
	71	12	DL	NBR	710629
	75	10	DLS	NBR	710057
56	66	5x7	DRT	NBR	711720
	72	12	DLES	NBR	716533
	80	12x3	LIO	NBR	712475
	80	14,5	DL	NBR	710474
57	73	9,6	DL	NBR	710086
58	78	10	DLS	NBR	710058
60	70	5x7	DRT	NBR	711721
	80	10	DL	NBR	710423
	80	12	LIR	NBR	713611
	85	7x2,5	LEO	NBR	714421
	89,5	20x5	LIO		712823
62	85	12x3	LIO	NBR	712131
63	73	5x7	DRT	NBR	711722
	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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Abreviations : NBR = Nitrile; FKM = Fluorocarbon

DIMENSIONS

d (mm)	D (mm)	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	130	10x4	LIO	NBR	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 (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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