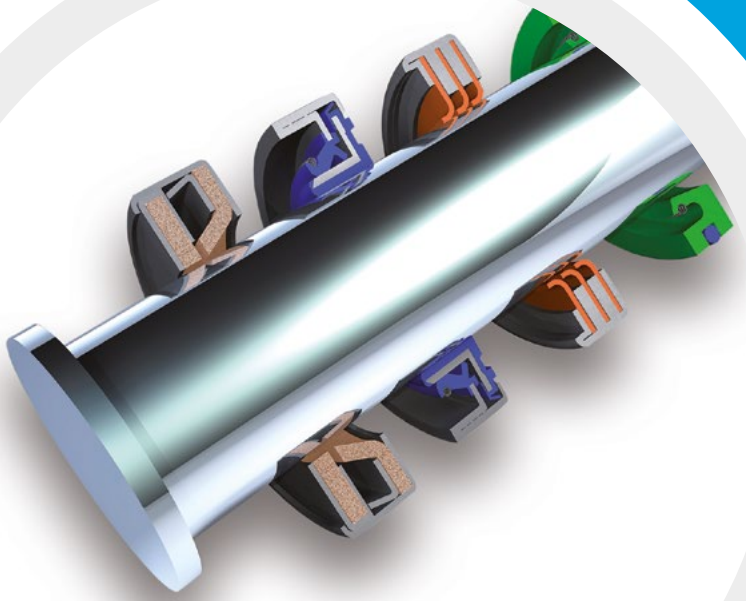
EXPERT IN
SEALING SOLUTIONS

SEAL FRANCE
SEALING SOLUTIONS
Efire Group



ROTARY SEALING

A WIDE RANGE

ROTARY
HYDRAULIC
PNEUMATIC
ASEPTIC
MACHINED PARTS

EXPRESS DELIVERY

24/48H

TECHNICAL SUPPORT

ADVISES, HELPS AND PROVIDES YOU TECHNICAL ASSISTANCE!

SUMMARY

SEAL MANUFACTURER AND SUPPLIER FOR ALL INDUSTRIES

EXPERT IN SEALING PRODUCTS FOR MORE THAN 25 YEARS

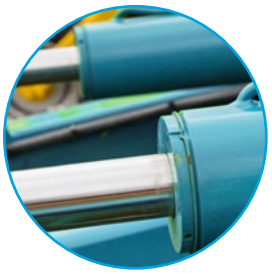
SEAL France has specialised in the manufacture and marketing of standard sealing and custom-made products.
SEAL France is present in France and abroad. Expertise and technical skills are our strength that we want to put at the service of our customers.

MARKET EXPERTISE

FOOD AND BEVERAGE

PHARMACEUTICAL

HYDRAULIC



PETROCHEMISTRY

AEROSPACE

ENERGY

5 RANGES

+ 70 000 REFERENCES

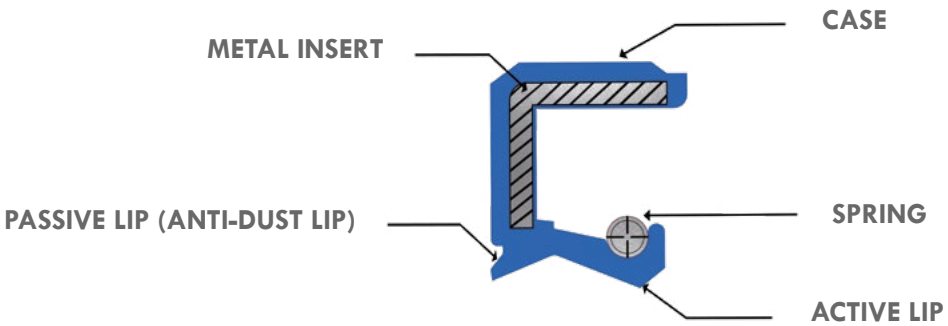
FOR ANY TYPE OF SEALING

OIL SEALS

DESCRIPTION

- Designed to ensure the sealing between a dynamic shaft and fixed housing.
- Particularly used in the transmissions field.
- Mainly used with mineral and synthetic based oils and grease.
- The different profiles and material allow to cover a wide range of issues.

OIL SEAL SCHEMA



STORAGE

Depending on the use of the oil seal, we can easily find the right designation to meet your requirements for the components to be sealed, the oil seals are packed according to their size.
It is recommended to leave these oil seals in their packets aimed to protect the lip, until use.
The life span and the use are subjected to the storage conditions according to DIN 7716.
It is strongly advised to not use sharp tools during opening.

A shaft seal has 3 main elements: case, spring, active and passive lip.
The essential conditions for using it and ensuring a good efficiency of the component to be sealed, are:

- Fluids in contact
- Linear speed of the shaft (m/s or tours/mn)
- Temperature (T c°)
- Pressure (1Mpa = 10 bars)

External pollution have to be taken into account.

MATERIAL

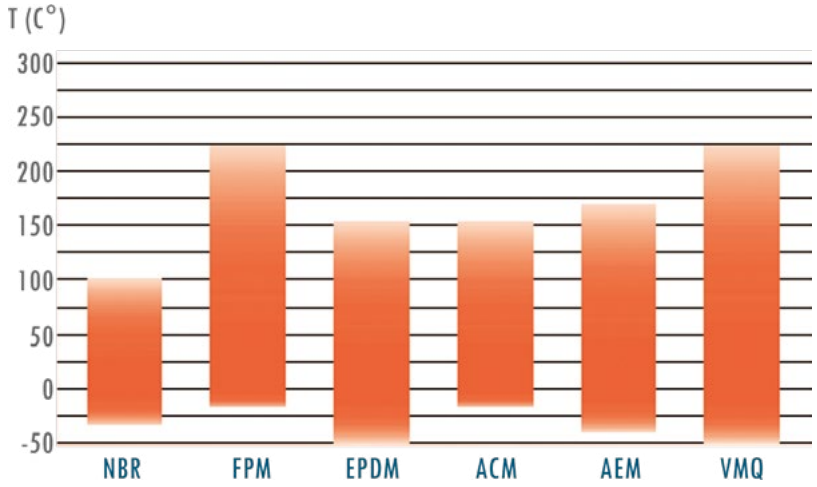
Depending on different criteria and conditions of use defined by the user, the most adapted material will be recommended.

A good technical diagnostic will ensure optimum seal tightness.

COMPOSITION

- Metal case: Steel (stainless steel on request)
- Rubber: NBR, FPM, EPDM, ACM et VMQ, PTFE (other on request)
- Spring: Steel (stainless steel on request)

RUBBERS



These values should be considered as indicative. It will depend on several criteria and it is necessary to take into account the fact that the lip can cause a temperature rise of about 20°C.

For working temperature very high or low, consult our technical support.

NBR - NITRILE BUTADIENE RUBBER

- Good resistance towards oils and greases.
- Good gas impermeability.
- Work with most basic mechanical applications.

FPM – FLUOR RUBBER

- Good chemical and thermal resistance.
- Excellent resistance to oils and greases even in high temperature.
- Recommended in sealing applications that are under vacuum.

(FDA approved on request)

EPDM – ETHYLENE-PROPYLENE-DIENE RUBBER

- Excellent UV, water and steam resistance recommended in most exterior and aquatic applications.
- Not recommended in oils and greases applications.

(FDA approved on request)

ACM/AEM - POLYACRYLATE / ETYLENE ACRYLATE

- Essentially used in the automotive construction (part of transmissions, engines, gear box).
- Better o-zone resistance than NBR

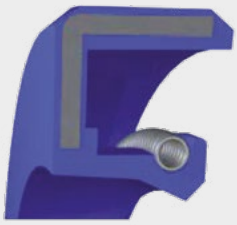
VMQ - SILICONE

- Because of its important temperature range, silicone is often used in extreme working conditions (cold temperatures).
- Excellent chemical resistance, resistant to oxidation and hydrolysis.
- Often used in the food and medical industries.
- Does not resist well to chemical attacks, oils and greases.

(FDA approved on request)

FEATURES (ACCORDING TO DIN 3760/3761)

A



- Case covered with smooth rubber.
- Easy mounting and good sealing in gas and liquid substances.

AS

- Same as A, with an extra passive anti-dust lip.

APPLICATION

A and AS rings are used in most rotary applications. The sealing will be assured even if the housing has an important roughness or is subjected to high thermal dilatation.

B

- External case made in steel.
- Allows a more precise mounting and a stronger hold in the housing.

BS

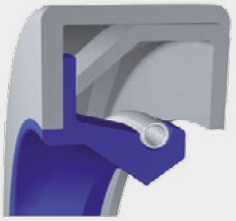
- Same as B, with an extra passive anti-dust lip.

APPLICATION

B and BS rings are used in most rotary applications recommended in case of strong hold and coaxially. Fully metal case allows a good heat dissipation.

FEATURES (ACCORDING TO DIN 3760/3761)

C



- Double steel case.
- Recommended for a precise fitting.
- Strong hold in the housing.

CS

- Same as C, with an extra passive anti-dust lip.

APPLICATION

C and CS rings are used in most rotary applications.
The robustness of the double cases makes the mounting easier for big dimensions and when the mounting is difficult.

AX

- Case covered with ribbed rubber.

ASX

- Same as AX, with an extra passive anti-dust lip.

APPLICATION

AX and ASX rings are used most in rotary applications.
The ribbed case improves the mounting of the oil seals on damaged housings. AX and ASX rings are also recommended in housings that are subjected to a lot of thermal dilatation.

FEATURES (ACCORDING TO DIN 3760/3761)

ADUO

- Case covered with rubber with two active lips, working in opposition.
- Allow to separate two fluids.

APPLICATION

ADUO rings are suitable most in rotary applications.
Recommended and adapted in fluid separation or in case of strong external pollutions, particularly in farming applications and tool machinery…

AP

- Case covered with rubber.
- Sealing lip is short and reinforced allowing to withstand pressure up to 10 bars max.

(For information on rotation speed and shaft diameter, see table n°2)

ASP

- Same as AP, with an extra passive anti-dust lip.
- Encourage pressure changes and vacuum from the outside.

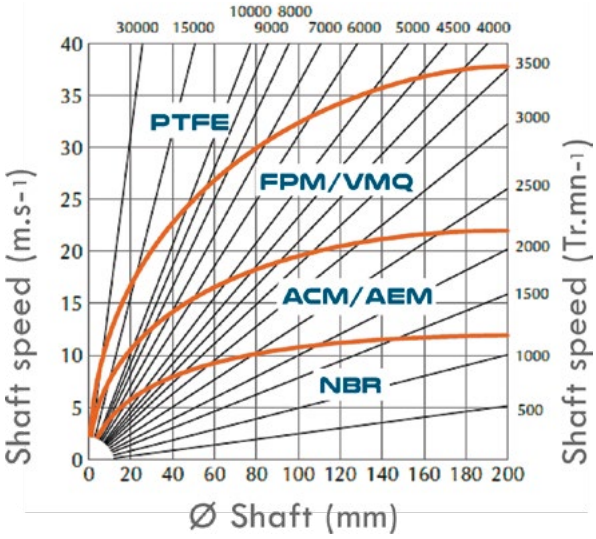
APPLICATION

AP and ASP are highly used in engines, pumps, and vacuum applications.

LINEAR SPEED CALCULATION

$$V\ (m.s) = \frac{\text{Shaft (mm)} \times \text{Speed (tr/mm)} \times \pi}{60\ 000}$$

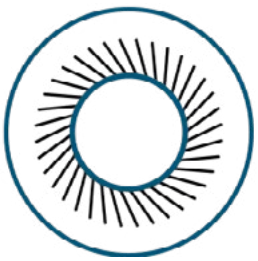
SHAFT SPEED



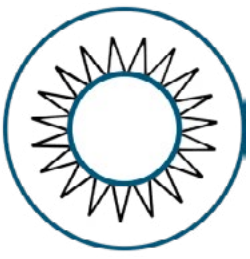
HELIX

When the oil seal is close to a bearing, gears or any device that uses most of the oil, the lips get hot and might damage the shaft. In order to avoid this problem, it is recommended to use the helixes, on the lip according to the sense of rotation.

ARD
RIGHT HELIX



ARG
LEFT HELIX



A2S
BI-DIRECTIONAL HELIX

SPECIAL DESIGNS ON REQUEST

Stressed mechanisms often located in polluted environments, need a more complex sealing than a standard oil seal. Seal France proposes special design to meet the customer's requirements.

For every request, please consult our technical support.

BPT

FEATURES

- PTFE lip crimped between two metal or stainless steel cases.
- Excellent resistance to chemical attacks.
- Can be used in alimentary (FDA approved on request).
- PTFE lip is sealed thanks to static elastomer seal.
- Machined outer diameter for a precise fit.

MATERIALS

The choice of the material depends on the condition of use.

- Virgin PTFE *(FDA on request)*
- PTFE + Glass fiber+ MoS2 *(High speed and resistance)*
- PTFE + Carbon
- PTFE + Carbon + Graphite
- Case and steel: stainless steel AISI 304 *(AISI 316 on request)*
- Rubber: NBR or FPM

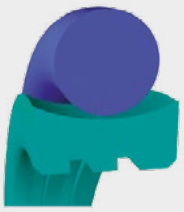
LIMITS OF USE

Depending on the type, pressure resistant up to 25 bars and 25 m/s.

APPLICATION

BPT are often used in engines, gear boxes, in alimentary machinery.

CST



CSP

FEATURES

- Excellent resistance to pressure.
- Seal combining elasticity of the O-ring and the low friction and resistance of chemical PTFE.
- Also withstands small translations.

MATERIALS

The choice of the material depends on the conditions of the use.

- Virgin PTFE (FDA on request)
- PTFE + Glass fiber+ MoS2
- PTFE + Carbon
- PTFE + Carbon + Graphite
- POM
- PA6, PA6.6
- PU
- PEEK
- O-ring : NBR, FPM, EPDM, HNBR, VMQ, FFKM

APPLICATION

CST and CSP are often used in high pressure hydraulics systems such as injection moulding or public work machinery.

CASSETTE K7

FEATURES

- Special design on request.
- Oil seal with integrated sliding ring.
- No need to grind or harden the shaft.
- Better protection from dust and dirt. Less maintenance needed.

LIMITS OF USE

- Speed linear: 3.5 m.s-1
- Pressure: 0.5 bars

APPLICATION

K7 oil seals are mostly used in heavy machinery (hubs and shafts of transmission, harrows, tractors, building machinery…).

SÉRIE BT

FEATURES

- Special design on request, (See our different types).
- Fabric reinforced case, excellent wear resistance.
- Can be delivered either split ''F'' or ready to cut ''C'', (Avoid disassembling).
- A back-up ring can be added, for higher pressure (On request).
- BT6 and BT7 must be mounted in pairs and in opposition.
- Design compatible with big sizes, (Without case or metal insert).

MATERIALS

NBR + Fabric, FPM + Fabric.

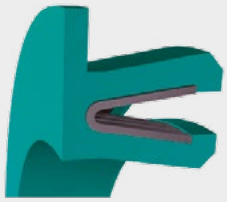
LIMITS OF USE

- Speed linear: 20 m.s-1
- Pressure: 0.5 bars

APPLICATION

BT oil seals are particularly used in mills, steel industry, navy.

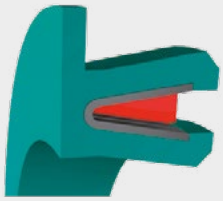
VRC



FEATURES

- Excellent resistance to chemical attacks.
- Use in food industry (VARC).
- Seal sanitization by adding silicone.
- Flexibility created by flat spring.
- Collar crimped between the two parts of the housing, stopping the rotation.

VARC



MATERIALS

The choice of the material depends on the conditions of the use.

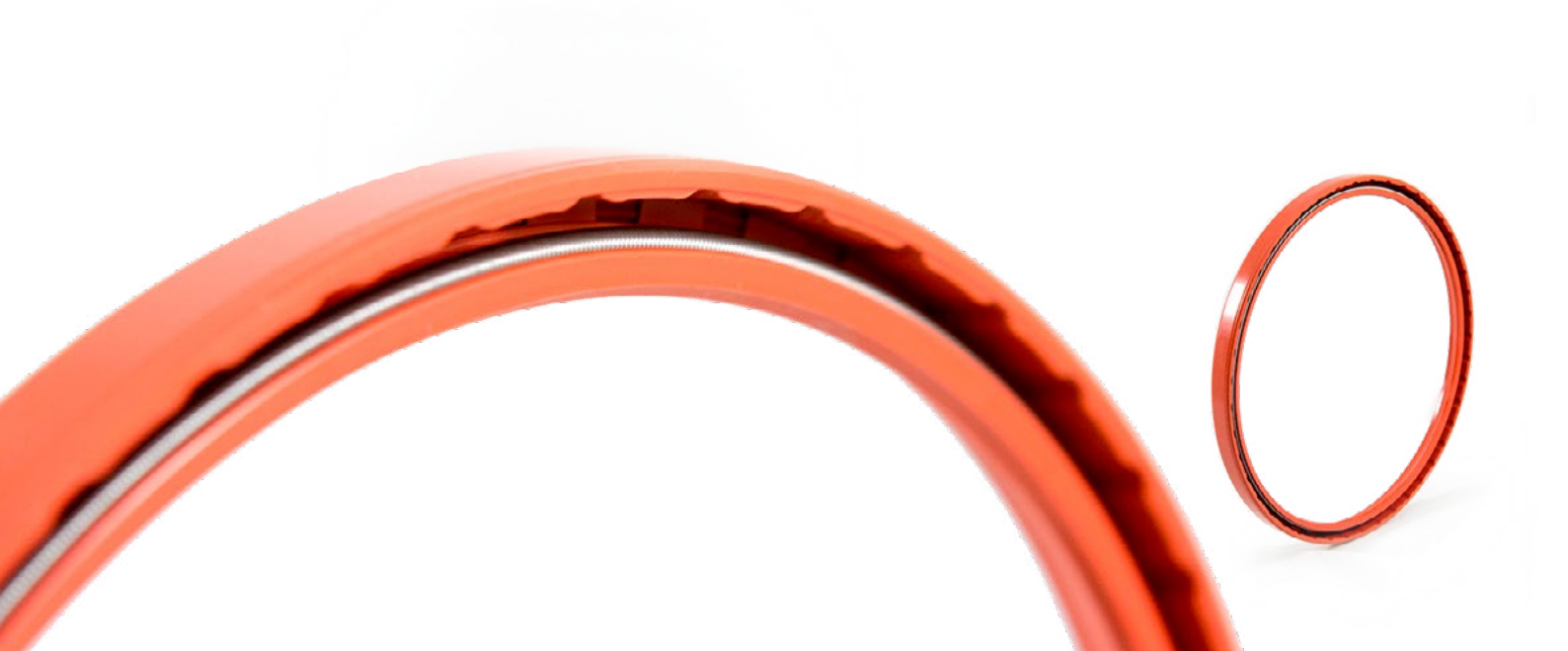
- Virgin PTFE *(FDA and medical USP class VI approved on request)*
- PTFE + Glass fiber + MoS2
- PTFE + Carbon
- PTFE + Carbon + Graphite
- POM
- PA6, PA6.6
- PU
- PEEK
- Spring: Stainless steel AISI 304

LIMITS OF USE

- Speed linear: 10 m/s.
- Pressure: 50 bars.

APPLICATION

VRC and VARC rings are often used in vibrating mechanism or subjected to shocks. This seal is particularly used in farming industry and winery sector.



SHAFT

The design and fabrication of the rotary shaft are very important for a good sealing and a good reliability of the oil seal.

SHAFT MATERIALS

Usually, the shaft must be built in common steel, in mechanism construction (ex. C35).
Stainless steel is recommended in aquatic environment.

SHAFT HARDNESS

The shaft hardness depends on the rotary speed and its environment.

SPEED	HARDNESS
Less 4 $m.s^{-1}$	45 HRc
4 to 10 $m.s^{-1}$	55 HRc
Above 10 $m.s^{-1}$	60 HRc

When the sealing is in a very abrasive environment (ex: building machinery), the hardness will be at least 60HRc. It is possible to avoid the grinding and the hardening of the shaft by installing a shaft repair sleeve. ***(For more details see Shaft repair sleeve description p.13).***

ROUGHNESS OF THE SHAFT

- 0.2 µm < Ra < 0.8 µm
- 1 µm < Rz < 5 µm
- It is not advised to use a low roughness because the shaft could be deteriorated by the lip. As well as with a high roughness, the lip will get damaged or even cut by the asperities.

SHAFT TOLERANCES

The shaft must respect the tolerance h11 according to the ISO 286-2, ***(Tolerances valid for metal housing).***

HOUSING

The design and fabrication of the housing are essential for a good sealing and a good reliability of the oil seal.

HOUSING MATERIAL

The housing must be made out with a material having the smallest dilation coefficient possible and does not warp because of the temperature.

ROUGHNESS

For standard oil seals (A or AS and AX or ASX):

- 16 µm < Rmax < 25 µm 1.6 µm < Ra < 6.3 µm
- 10 µm < Rz < 25 µm

B and BS:

- 10 µm < Rmax < 16 µm
- 0.8 µm < Ra < 3.2 µm
- 6.3 µm < Rz < 16 µm

HOUSINGS TOLERANCES

The housing must respect the tolerance H8 according to the ISO 286-2, ***(Tolerances valid for metal housing).***

LUBRICATION

- Good lubrication will ensure less wear, a longer life span for the oil seal and better performance.
- Before mounting the oil seal, make sure everything is cleaned up from shavings and dust in the housing. The lubrication of the shaft and housing are well recommended.
- The lip of the oil seal and its outer diameter must be lubricated to ease the fitting.
- If the oil seal has two lips (AS), it is recommended to grease the space in between the two lips. Do not fill the cavity completely because the grease may cause an oozing at the passive lip.
- Placing a few drops of grease will be the most efficient way to lubricate the oil seal.
- When two oil seals are mounted together, you must fill the space between the two oil seals with grease.
- Provide a greasing borehole for further lubrication.

OIL SEAL FITTING

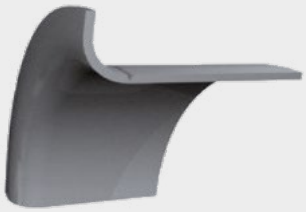
Outer diameter of oil seals from Seal France is according to DIN 3760 (ISO 6194).

TOLERANCE OF OUTER DIAMETERS OF RINGS

Ø Outer diameter (mm)	Standard case (smooth rubber)	AX (With ribs)	B or C (Apparent case)
< 50	+0.30 +0.15	+0.40 +0.20	+0.20 +0.10
50 - 80	+0.35 +0.20	+0.45 +0.25	+0.23 +0.13
80 - 120	+0.35 +0.20	+0.45 +0.25	+0.25 +0.15
120 - 180	+0.45 +0.25	+0.55 +0.30	+0.28 +0.18
180 - 300	+0.45 +0.25	+0.55 +0.30	+0.30 +0.20
300 - 400	+0.55 +0.33	+0.65 +0.35	+0.35 +0.23
400 - 500	+0.55 +0.33	+0.65 +0.35	+0.35 +0.23
500 - 630	+0.65 +0.35	+0.75 +0.40	+0.43 +0.28
630 - 800	+0.75 +0.40	+0.85 +0.45	+0.48 +0.33
800 - 1000	+0.85 +0.45	+0.95 +0.50	+0.53 +0.38
1000 - 1250	+1.00 +0.55	+1.10 +0.60	+0.60 +0.45

SHAFT REPAIR SLEEVES

(ON REQUEST)



FEATURES

- Sleeve thickness ~0.28mm.
- Mounting flange.
- Groove easily to remove the flange after assembly.

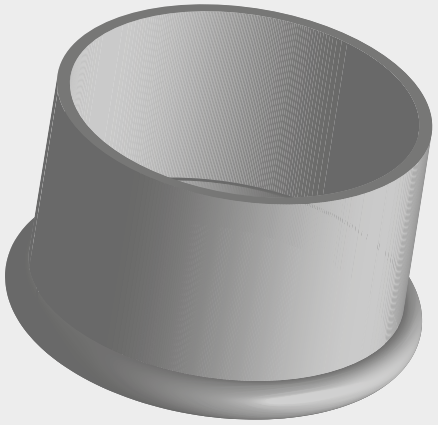
APPLICATION

- If striations appear on the shaft near the lip, sealing won't be assured. Changing the oil seal won't be enough, the shaft must be grinded.
- An alternative is to place a shaft repair sleeve on the shaft. In most cases, it allows to not dismantle the shaft by installing a new oil seal without altering the surface.
- Shaft repair sleeve is a worthwhile option to the hardening and grinding of the shaft.

MATERIALS

Stainless steel

- Steel AISI 304
- Steel AISI 316
  (on request)



IMPERIAL AND METRIC DIMENSIONS

- Ra : 0.20 à 0.80 µm
- Rz : 1 à 5 µm
- Rmax : 6.3 µm max

MOUNTING TOOL

For shafts from Ø12 to Ø200

AXIAL FACE SEALS

VA

VS

V-SEAL - PRINCIPLE

- V-seals are sealing elements working axially.
- Protect the mechanism form dust and dirt.
- Very low friction because of the contact section.
- V-seals are mounted tight on the shaft, and also withstand all types of run-outs and misalignment.
- Can be used as grease or oil reserve behind a bearing.

FEATURES

Seal without case equipped with a facial lip and an external envelope in rubber.

CURRENT PROFILES

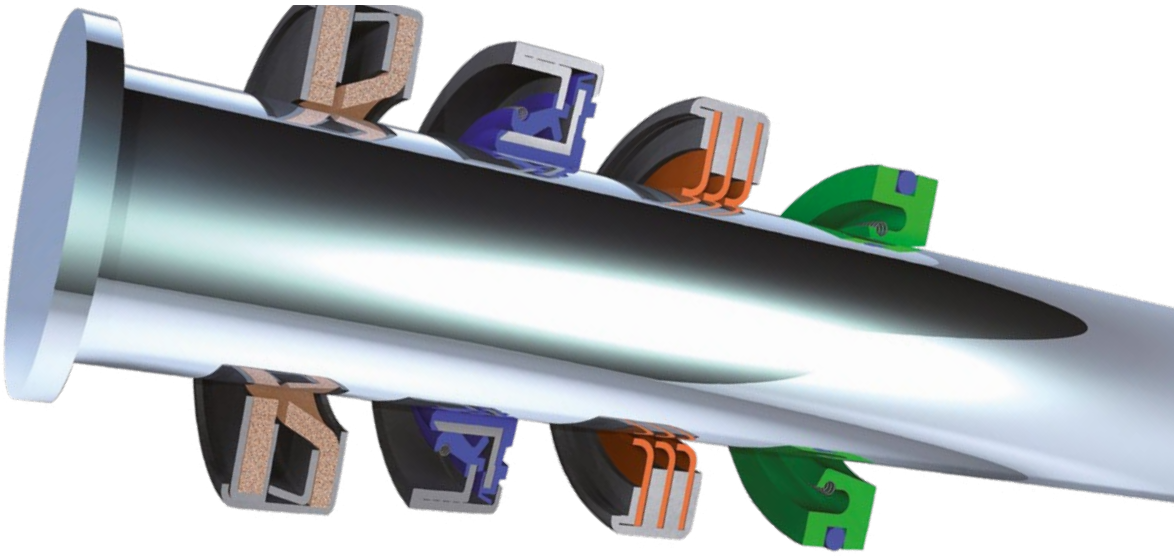
- **VA:** works in most case.
- **VS:** recommended for small dimensions.
- **VL:** design for limited space.
- **VE:** recommended for big dimensions. Can be fitted to a shaft by a strapping on the outer diameter.

MATERIALS

NBR, FPM, EPDM, VMQ, other materials on request, ***(FDA approved on request)***.
On request, we can propose you a surface treatment on V-seal range, in order to improve the coefficient of friction.

ASSEMBLY: ROUGHNESS

- Sealing surface: Ra 0,4 0,8 µm.
- Housing: Ra 2 à 4 µm.
- The seal must be greased a little before mounting.



RB

PRINCIPLE

- RB and RB9, are axial seals which protect from dust and dirt, water or other external pollution.
- For low speed to 12 ms and non-application pressure, it is possible to use RB as principal sealing. Beyond, the centrifugal force will lift the lip and no longer acts as deflector.

RB9

FEATURES

- Axial face seal with a protective case.
- Good resistance to mildly environments pollution.
- Support important axial run-outs.
- Max speed: 20m.s-1 (without pressure).
- From Ø 10 to Ø 225.
- RB9 has a bent case on the external diameter which will protect from stones and dirt.

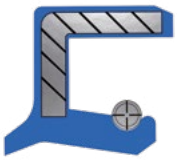
MATERIALS

- Case: steel + anti-corrosion treatment.
- Stainless steel AISI 304 (on request).
- Rubber: NBR, FPM.

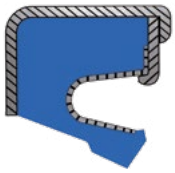
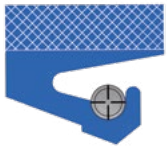
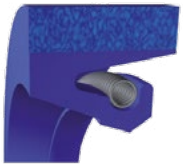
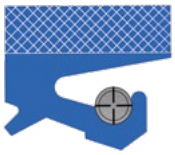
MOUNTING

- Does not need any axial fitting because RB and 9RB are well-fitted onto the shaft.
- The shaft must respect a tolerance of ISO h9.
- Its roughness Rz must be between 1 & 5 µm.
- It must have a chamfer of 20° at its beginning°.
- The contact zone must contain a roughness RZ btw 1 and 5 µm.
- The oil seal must be a little bit lubricated before mounting.

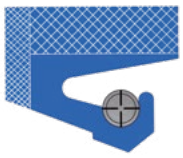
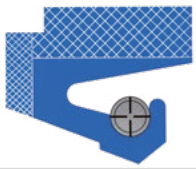
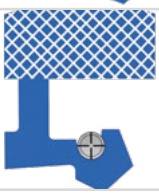
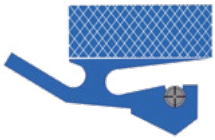
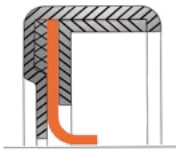
2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	**A**	Type A - DIN 3760 Elastomer outer coating and internal metal case, single lip.	0,5 bars	
	**AX**	Same description as type A but the outer surface has a ribbed design.	0,5 bars	
	**ARN**	Type A - Elastomer outer coating and internal metal case, spring embedded in rubber, single lip.	0,5 bars	
	**ARD**	Same description as type A. Direction of rotation: Right.	0,5 bars	
	**ARG**	Same description as type A. Direction of rotation: Left.	0,5 bars	
	**A2S**	Same description as type A. Direction of rotation: bi-directional.	0,5 bars	
	**AP**	Type A - Elastomer outer coating and internal metal case, single lip, good resistance up to 10 bars max.	Up to 10 bars max	
	**APT**	Made with solid filled PTFE, O-ring groove which encourages sealing.	8 bars 5m/s	
	**AS**	Type AS - DIN 3760 Same description as type A with anti-dust lip avoiding the ingress of dirt, dust...	0,5 bars	
	**ASRN**	Same description as type AS - Elastomer outer coating and internal metal case, spring embedded in rubber, with anti-dust lip.	0,5 bars	

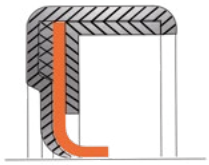
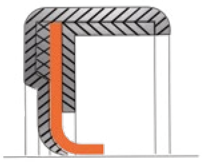
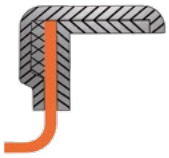
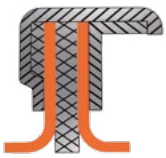
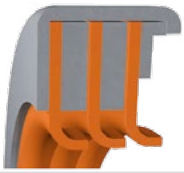
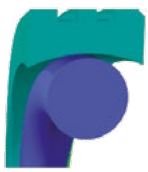
2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	**ASP**	Type AS - Elastomer outer coating and internal metal case, double lips, good resistance up 10 bars max.	Up to 10 bars max	
	**ASVR**	Elastomer outer coating and internal case, double lips.	0,5 bars	
	**ASX**	Same as AS, but the outer surface has a ribbed design.	0,5 bars	
	**AOST**	Elastomer outer coating with internal metal case, anti-dust lip without spring.	0,5 bars	
	**AO**	Type AO - DIN 3760 Elastomer outer coating and internal metal case, single lip without spring.	0,5 bars	
	**AOX**	Similar as AO, but the outer surface has a ribbed design.	0,5 bars	
	**BOD**	Apparent metal case (open), single lip, profile specially designed for needle bearings, (this design will limit the interferences related to the rotation).	0,5 bars	
	**BO**	Type BO - DIN 3760 Apparent metal case (open), single lip, without spring.	0,5 bars	
	**B**	Type B - DIN 3760 Apparent metal case (open), single lip.	0,5 bars	
	**BS**	Type BS - DIN 3760 Same as B, with anti-dust lip.	0,5 bars	

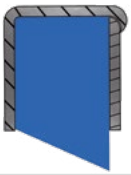
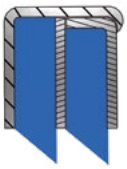
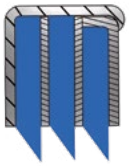
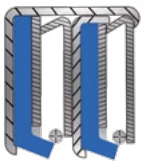
2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	**BOS**	Apparent metal case (open), with anti-dust lip, without spring.	0,5 bars	
	**AB**	Apparent metal case (designed by stamping and crimping methods).	0,5 bars	
	**ABS**	External metal case with anti-dust lip (designed by stamping and crimping methods).	0,5 bars	
	**C**	C - DIN 3760 Apparent metal case in two parts, single lip.	0,5 bars	
	**CS**	CS - DIN 3760 Apparent metal case in two parts, with anti-dust lip.	0,5 bars	
	**AOJ***	Internal metal case, without spring, coated with rubber, with external lip.	0,5 bars	
	**AJ***	Same as AOJ, with spring.	0,5 bars	
	**AJS**	External lip with elastomer outer coating and internal metal case, with anti-dust lip.	0,5 bars	
	**BJ***	Same as AJ, with apparent metal case (open).	0,5 bars	
	**BJS***	Same as BJ, with anti-dust lip.	0,5 bars	

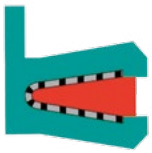
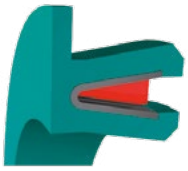
2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	**ABJ***	External sealing with external metal case (designed by stamping and crimping methods).	0,5 bars	
	**ADUO**	Elastomer outer coating and internal metal case, two acting lips, two springs.	0,5 bars	
	**CDUO**	Apparent metal case, two acting lips, two springs.	0,5 bars	
	**ABDUO**	Apparent metal case, two acting lips, two springs (designed by stamping and crimping methods).	0,5 bars	
	**C5600**	Apparent metal case, single lip with strip spring.	3,5 bars V 20 m/s	
	**C6400**	Apparent metal case, with strip spring and coil spring associated.	3,5 bars V 20 m/s	
	**COMBI**	Apparent metal case, with lip in rubber, two anti-dust lips where one is made from PU material used as anti-pollution deflector for reliability and lifespan of the system.	0,5 bars V 4 m/s	
	**K7**	Apparent metal case, multilips, ensures excellent sealing in environments with heavy-duty applications, anti-pollution.	0,5 bars V 4 m/s	
	**BT5**	Fabric ring, without metal case, single lip.	0,5 bars V 20 m/s	
	**BT5S**	Same as BT5, with anti-dust lip.	0,5 bars V 20 m/s	

** The J serie defines an external sealing.*

2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	**BT6**	Fabric ring, without metal case, single lip with lubrication notches.	0,5 bars V 20 m/s	
	**BT7**	Fabric ring, without metal case, single lip with lubrication notches.	0,5 bars V 20 m/s	
	**BTX7**	Fabric ring, without metal case, single lip (special design).	0,5 bars V 20 m/s	
	**BTVT**	Fabric ring, without metal case, single lip (special design).	0,5 bars V 20 m/s	
	**BTS**	No fabric flexible ring, without metal case, single lip.	0,5 bars V 20 m/s	
	**BT3M**	No fabric ring, without metal case, single lip with metal reinforcement embedded in rubber.	0,5 bars V 20 m/s	
	**BT3ML**	No fabric ring, without metal case, single lip with metal reinforcement embedded in rubber.	0,5 bars V 20 m/s	
	**BT7M**	No fabric ring, without metal case, single lip with metal reinforcement embedded in rubber (special design).	0,5 bars V 20 m/s	
	**BTGL**	No fabric ring, without metal case, single lip with metal reinforcement embedded in rubber (special design).	0,5 bars V 20 m/s	
	**BPTHP1**	Apparent metal case in stainless steel with Filled or not PTFE lip (*) 5 bars max and FPM insert.	HP1 - 5 bars 25 m/s	

2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	**BPTHP2**	Apparent metal case in stainless steel with Filled or not PTFE lip (*) 10 bars max and FPM insert.	HP2 - 10 bars 25 m/s	
	**BPTHP3**	Apparent metal case in stainless steel with Filled or not PTFE lip (*) 25 bars max and fpm insert.	HP3 - 25 bars 25 m/s	
	**BPT D3**	Apparent metal case in stainless steel with Filled or not PTFE anti-dust lip (*) 5 bars max.	5 bars 25 m/s	
	**BPT RL**	Apparent metal case in stainless steel with filled or not PTFE inverted lip (*) 5 bars max and FPM insert.	5 bars 20 m/s	
	**BPTD1 HP1**	Apparent metal case in stainless steel with two filled or not PTFE inverted lips (*) 5 bars max et FPM insert.	HP1 - 5 bars 25 m/s	
	**BPTD1 HP2**	Apparent metal case in stainless steel with two filled or not PTFE inverted lips (*) 10 bars max and FPM insert.	HP2 - 10 bars 25 m/s	
	**BT3**	Apparent metal case in stainless steel with three filled or not PTFE lips (*) 5 bars max.	5 bars 25 m/s	
	**BPTD2**	Apparent metal case in stainless steel with two filled or not PTFE anti-dust lips (*) and FPM insert.	HP1 - 5 bars HP2 - 10 bars HP3 - 25 bars 25 m/s	
	**CSP**	Rotary composite including composite bushing in PTFE with O-ring expander in rubber for rod.	400 bars 10 m/s	
	**CST**	Rotary composite including composite bushing in PTFE with O-ring expander in rubber for piston.	400 bars 10 m/s	

2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	**ABOF**	External metal case with lip in felt, without spring. Wiping ring (designed by stamping and crimping methods).	...	
	**ABO**	External metal case with lip in rubber, without spring. Wiping ring.	...	
	**ABO2**	External metal case with two lips in rubber, without spring. Wiping ring (designed by stamping and crimping methods).	...	
	**ABO3**	External metal case with triple lips in rubber, without spring. Wiping ring (designed by stamping and crimping methods).	...	
	**ABD2**	Apparent metal case with double lips in tandem in the same direction (designed by stamping and crimping methods).	0,5 bars	
	**AB3AY**	External metal case with anti-dust lip (designed by stamping and crimping methods).	0,5 bars	
	**AB64**	Apparent metal case with strip spring and coil spring.	3,5 bars 15 m/s	
	**ABRD**	Apparent metal case with strip spring in thermoplastic.	45 m/s	
	**AB2AY**	Apparent metal case with anti-dust lip made in felt (designed by stamping and crimping methods).	0,5 bars	
	**AB8AY**	Apparent metal case with anti-dust lip made in felt (designed by stamping and crimping methods).	0,5 bars	

2D PROFILE	TYPE	DESCRIPTION	PRESSURE & V (m/s)	3D PROFILE
	VRC	Dynamic and alternative movements, in virgin or filled PTFE with stop collar and strip spring.	10 m/s 50 bars	
	VARC	Same description as type VRC but with silicone insert for seal sanitization.	10 m/s 50 bars	
	VA	Rubber facial effect V'Ring, for standard application.	12 m/s max 0,03 bars max	
	VS	Rubber facial effect V'Ring, recommended for small dimensions.	12 m/s max 0,03 bars max	
	VL	Rubber facial effect V'Ring, recommended for limited space.	12 m/s max 0,03 bars max	
	VE	Rubber facial effect V'Ring, recommended for big sizes.	12 m/s max 0,03 bars max	
	RB	Facial effect V-ring composed with one part in rubber and stainless steel case.	12 m/s max	
	RB9	Same description as type RB with case extension encouraging residual protection and avoiding external pollution.	12 m/s max	
	MR	Shaft repair sleeves or repair clamp to use on worn shafts.	...	

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