AUTOMOTIVE | AEROSPACE | FOOD & BEVERAGE | FLUID TECHNOLOGIES | MOBILE MACHINERY

FRANCEJOINT

SEALING SYSTEMS

CASSETTE SEALS

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CASSETTE SEALS

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SEALING SYSTEMS

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FRANCEJOINT
SEALING SYSTEMS

Since 1981, FRANCE JOINT – SEALING SYSTEMS has been designing, manufacturing and distributing seals and precision rubber parts for its customers for whom quality is a determining factor.

Faced with tough competition among the big decision-makers of the industrial world, FRANCE JOINT has responded with innovation, research and development, experience in Best-Cost manufacturing, and a consistently high level of quality, thanks to certificates ISO 9001, IATF 16949, EN/AS 9100 and ISO 14001.

Today, FRANCE JOINT is working in close collaboration with its customers, meeting challenges head on with success. Automotive, Aeronautics, Mobile hydraulics, Beverages & Foods, Fluid engineering industries... every solution emerges from a uniquely individual partnership, constantly fostered and renewed.

Our prime objective, based on unrivalled quality, is to find the most suitable solutions for ensuring that you will stand out in what has become an extremely competitive domain. Our position of excellence has led us since the birth of our company to acquire the tools necessary to anticipate and prevent risks and maximize our service; the ultimate objective being of course to help you keep ahead of developments in this more and more technological market.

- AUTOMOTIVE
- AERONAUTICS
- BEVERAGES & FOODS
- FLUID ENGINEERING
- MOBILE HYDRAULICS


Compression molding


Injection molding


Machining / Tooling

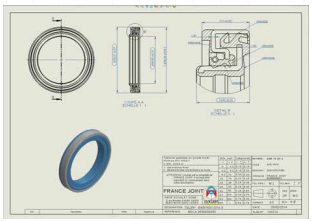

Logistics / Packaging

RESEARCH & **DEVELOPMENT**

Innovation, reliability, safety, minimization of risk: your expectations are our daily concern. To get from the idea to the finished product demands firm managerial control over a wide range of projects in addition to expertise in manufacturing.

FRANCE JOINT's contributors, who are as much inventors as technicians, get the best of fully automated, state-of-the-art technology that takes them from drawing-board to prototype and finally to assembly line. From writing specifications to putting on a major technical event through designing (3D Solidwrks software) and testing for validation and compliance, FRANCE JOINT engineering works hand in hand with you to find the best solutions guaranteeing the level of expected performance.

More than 1000 compounds integrating elastomers, PTFE materials, Polyurethane, or even thermoplastics, as many solutions vis-a-vis the new most complex requirements which will put you in pole position today so that we can all be winners tomorrow. FRANCE JOINT puts in place qualifications in order to examine the behavior of its seals according to various parameters intervening on frictions, pressures, temperatures, speeds, strokes, leakages…



QUALITY **IN OUR CONCERNS**

Several certificates obtained, ISO 9001, IATF 16949, EN/AS 9100 and ISO 14001, testify to the quality department's commitment to constant progress at every level of the company, at all stages of the realization, particularly where continual improvement is what has made FRANCE JOINT the name it is today.

Ambitious with customer satisfaction a priority, FRANCE JOINT has thus obtained the most powerful methods (PPAP, AMDEC, value analysis, Audits, MRP, 8D analysis, SPC, R&R ...) in order to optimize simultaneously the capacity of machines and processes, operational manpower performances, organizational methods, and finally, product and financial results.

FRANCE JOINT guarantees the best technology and pursues its daily objectives of a "Zero defects" production, through physico chemical controls (rheometer, spectrometer, durometer…), through dimensional and final aspects (unit controlling equipment, 3D camera ...). This is because the search for competitiveness is as important as the search for continuous improvement.

3D test device

CERTIFIÉ ISO 9001 CERTIFIED

CERTIFIÉ ISO 14001 CERTIFIED

CERTIFIÉ IATF 16949 CERTIFIED

CERTIFIÉ EN 9100 CERTIFIED

CASSETTE SEALS

1. Introduction

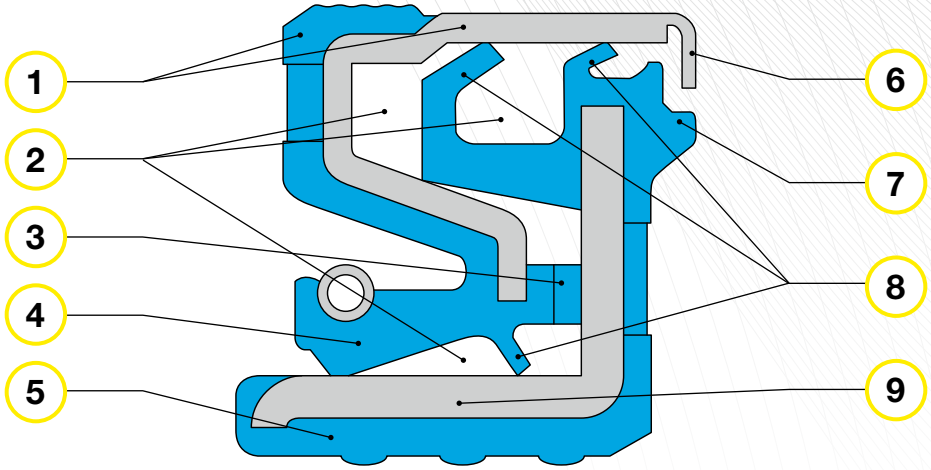
Cassette seals are reliable rotary sealing solutions that are effective against multiple heavy-duty pollutants, such as dust, jets of water, mud and stones, UV rays, aggressive fluids, etc. FRANCE JOINT meets these constraints with a specific range of cassette seals.

1.1 CHARACTERISTICS

- Development of specific materials (ACM, FKM, HNBR, NBR, PTFE, special coatings)
- Optimised primary sealing lip
- Additional radial and axial anti-pollution lips
- Integrated pumping leads
- Ground steel sleeve
- Polyurethane or rubber bumpers
- Metal reinforcement
- Different options for static sealing, i.e. grooves

1.2 ADVANTAGES

- Materials of superior quality for excellent resistance to temperatures, contact fluids and corrosion
- Optimised dynamic sealing whatever the pollution level
- Improved static sealing through special coatings
- Better pumping effect between the primary sealing lip and the ground sleeve during friction
- Solid and precise positioning in its housing
- Excellent heat dissipation



1 Metal/rubber outside diameter

The cassette seal's outside diameter design provides better static sealing against low- or high-viscosity fluids, limited bounce-back effect, accurate positioning and a solid foundation for the seal in its housing, as well as better heat dispersion.

2 Pre-lubricated areas

Depending on the application, a compatible lubricant is applied to different areas inside the cassette seal, which enables better heat dispersion, lubricates additional sealing lips during friction and prevents the entry of external pollutants.

3 Rubber bumpers

Rubber bumpers correctly position the sleeve with the primary sealing lip. They also ensure an appropriate level of restriction or interference using various additional barriers, and reduce the entry of external pollutants into the system.

4 Primary sealing lip

The primary sealing lip is pre-stressed by a spring, which guarantees optimal sealing against media when in rotation, whilst compensating for potential shaft run-out and eccentricity faults. The sealing lip's optimised geometries ensure reduced friction and longer product lifespan.

5 Metal/rubber inside diameter

The cassette seal's inside diameter interior is designed to offer better static sealing against low- and high-viscosity fluids, and reduce installation effort during assembly.

6 Curved metal part

The curved metal cage on the outside of the cassette seal allows for easy assembly and disassembly, and prevents the seal from coming apart during transport or maintenance operations.

7 Contactless barrier

The rubber baffle is a contactless barrier that limits the entry of external pollutants.

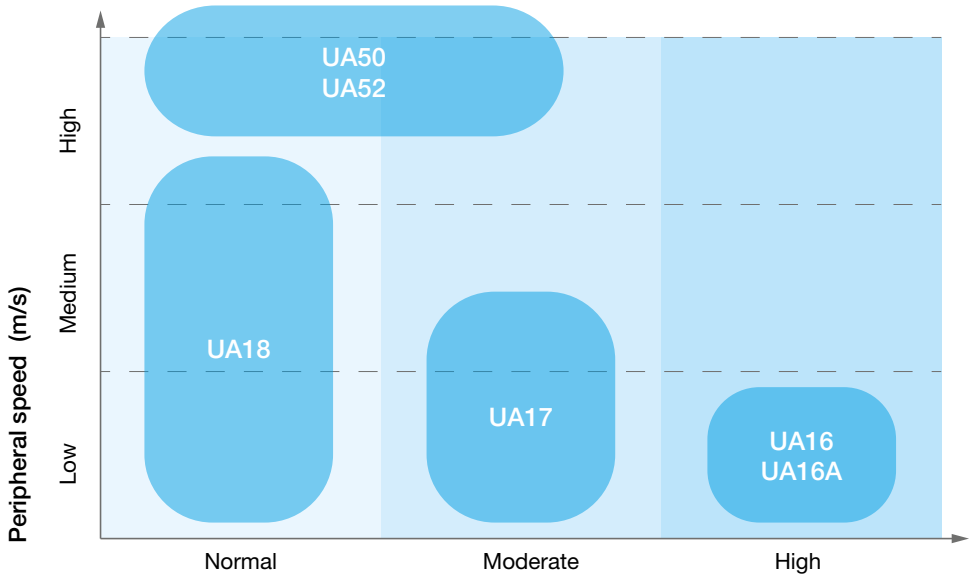
8 Additional anti-pollution sealing lips

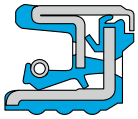
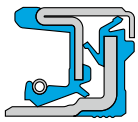
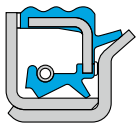
Additional sealing lips can be radial or axial, depending on the cassette seal profiles and additional barriers against external pollutants.

9 Ground metal cage

The metal part of the cage that is in contact with the sealing lip(s) is ground in order to improve surface roughness, reduce friction and increase the seal's lifespan.

The chart below sets out the most suitable standard cassette seal profiles for rotating shafts, depending on the environment contamination level and rotation speed.



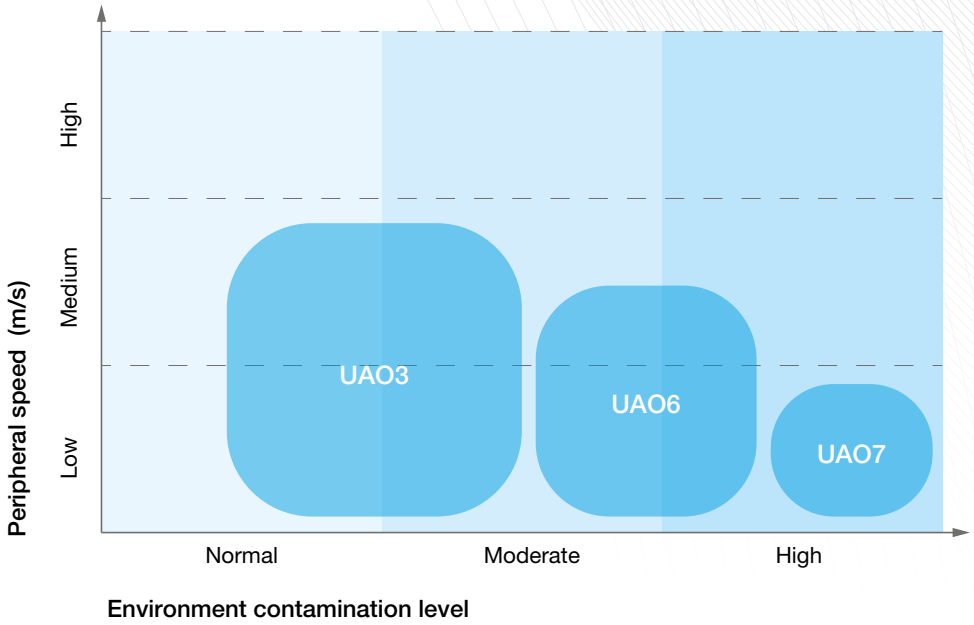
TYPE		UA16	UA16A	UA17	UA18	UA50	UA52
							
Fluids	Mineral oils < +100°C	●	●	●	●	●	●
	Mineral oils > +100°C	●	●	●	●	●	●
	Synthetic oils < +80°C	●	●	●	●	●	●
	Synthetic oils > +80°C	●	●	●	●	●	●
	Greases	●	●	●	●	●	●
	Aggressive fluids	●	●	●	●	●	●
Conditions for use	Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
	Speed	4 m/s*	4 m/s*	5 m/s*	7 m/s*	12 m/s**	15 m/s**
	Level of pollution	Raised	Raised	Moderate	Normal	Normal - Moderate	Normal - Moderate

● Recommended use
● Use only with specific materials
● Can be used

* use only with NBR-based materials, as speeds may be too great for other materials (ACM – FKM – HNBR)

** use only with FKM-based materials

The chart below sets out the most suitable standard cassette seal profiles for rotating hubs, depending on the environment contamination level and rotation speed.



TYPE		UA01	UA03	UA06	UA07
					
Fluids	Mineral oils < +100°C	●	●	●	●
	Mineral oils > +100°C	●	●	●	●
	Synthetic oils < +80°C	●	●	●	●
	Synthetic oils > +80°C	●	●	●	●
	Greases	●	●	●	●
	Aggressive fluids	●	●	●	●
Conditions for use	Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
	Speed	5 m/s*	8 m/s*	6 m/s*	2 m/s*
	Level of pollution	Normal - Moderate	Moderate	Moderate - High	High

● Recommended use

● Use only with specific materials

* use only with NBR-based materials, as speeds may be too great for other materials (ACM – FKM – HNBR)

2. Materials

2.1 METAL CAGE - SPRING

The table below shows the materials that we can offer for metal cages and springs.

Application	Material	Standard	Characteristics
Metal cage	Non-alloy standard steel	AISI 1010 (DIN 1624)	Cold rolled steel
Metal cage	Nickel chrome steel	AISI 304 (DIN 1.4301 - V2A)	Standard stainless steel
Metal cage and spring	Chrome-nickel-molybdenum steel	AISI 316 (DIN 1.4401 - V4A)	Stainless steel highly resistant to corrosion
Spring	Steel for springs	AISI 1070 - 1090 DIN 17223	Cold drawn carbon steel wire
Spring	Nickel chrome steel	AISI 302 (DIN 1.4300)	Stainless steel for springs with a high carbon content

2.2 RUBBERS

ACM (Polyacrylate)

Polymers containing ethyl acrylate (or butyl acrylate) have a small amount of monomer, which is necessary for cross-linking; ACM is a material with better heat resistance than NBR. It is often used for automatic gearboxes.

Chemical resistance
Mineral oils (motor oils, gear box oils, ATF oils)
Atmospheric and ozone agents

Compatibility issue
Glycol-based brake fluids (Dot 3 & 4)
Aromatic and chlorinated hydrocarbons
Water and steam
Acids, alkalis and amines

Temperature range
-25°C to + 150°C (short-term peak at +160°C)
-35°C / +150°C with special ACMs

FKM (fluorinated rubber)

Depending on their structure and fluorine content, fluoroelastomers can vary in terms of chemical resistance and resistance to cold. This FKM-based rubber is very often used for high-temperature hydraulics and pneumatics, for industrial valves, injection/fuel systems, motor seals and high-vacuum systems.

Resistance to chemicals
Mineral oils and greases, ASTM n°1, IRM 902 and IRM 903 oils.
Fire-resistant liquids (HFD)
Silicone oils and greases
Mineral and vegetable oils and greases
Aliphatic hydrocarbons (propane, butane, petroleum)
Aromatic hydrocarbons (benzene, toluene)
Chlorinated hydrocarbons (trichlorethylene)
Petrol (including high alcohol content)
Atmospheric and ozone agents

Compatibility issue
Glycol-based brake fluids
Ammoniac gas
Organic acids with a low molecular weight (formic and acetic acids)

Temperature range
-20°C / +200°C (short-term peak at +230°C)
-40°C / +200°C with special FKMs

HNBR (Hydrogenated Nitrile Butadiene Rubber)

This HNBR-based elastomer is obtained through selective hydrogenation of the NBR's butadiene groups. It is commonly used for power-assisted steering and for air conditioning.

Chemical resistance	Aliphatic hydrocarbons Mineral and vegetable oils and greases Fire-resistant fluids (HFA, HFB and HFC) Diluted acids, saline solutions and bases for low temperatures Water and steam up to +150°C Atmospheric and ozone agents
Compatibility issue	Chlorinated hydrocarbons Polar solvents (ketones, esters and ethers) Strong acids
Temperature range	-30°C / +150°C (short-term peak at +160°C) -40°C / +150°C with special HNBRs

NBR (Nitrile Butadiene Rubber)

Nitrile rubber (NBR) is the general term for acrylonitrile-butadiene copolymer. The ACN content can vary between 18% and 50%. While the acrylonitrile content is important, the resistance to oil and fuel is more so. Conversely, the elasticity and compression set are not as good. The NBR has good mechanical properties and good wear resistance. However, its resistance to atmospheric agents and the ozone is relatively low.

Resistance to chemicals	Aliphatic hydrocarbons (propane, butane, petroleum, diesel fuel) Mineral oils and greases Fire-resistant fluids (HFA, HFB and HFC) Diluted acids, alkaline and saline solutions for low temperatures Water (up to +100°C max)
Compatibility issue	Fuels with a high aromatic content Aromatic hydrocarbons (benzene) Chlorinated hydrocarbons (trichlorethylene) Polar solvents (ketone, acetone, acetic acid, ethylene-ester) Strong acids Glycol-based brake fluids Atmospheric and ozone agents
Temperature range	-30°C / +100°C (short-term peak at +120°C) -40°C / +100°C with special NBRs

The table below gives an overview of the physical, chemical and mechanical characteristics for each of the materials.

Characteristics/Materials	ACM	FKM	HNBR	NBR
Abrasion-resistant	●	●	●	●
Acid resistant	●	●	●	●
Resistance to chemicals	●	●	●	●
Resistance to cold	●	●	●	●
Dynamic properties	●	●	●	●
Electrical properties	●	●	●	●
Resistance to fire	●	●	●	●
Resistance to heat	●	●	●	●
Sealing water	●	●	●	●
Oil-resistant	●	●	●	●
Ozone-resistant	●	●	●	●
Resistance to tearing	●	●	●	●
Tensile strength	●	●	●	●
Resistance to water/steam	●	●	●	●
Resistance to atmospheric agents	●	●	●	●

● Excellent properties / ● Good properties / ● Average properties / ● Poor properties

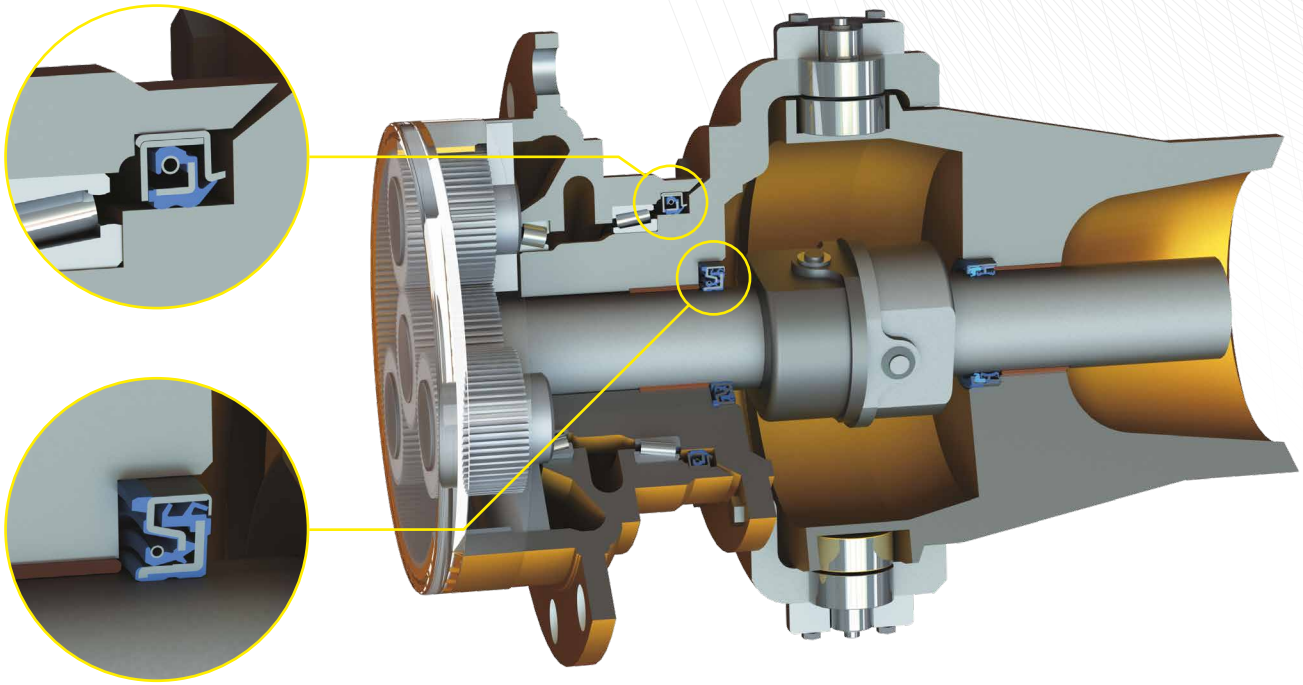
2.3 CHEMICAL COMPATIBILITY

A "Chemical compatibility guide" catalogue can be downloaded from the Literature section. You can also use our online "Chemical compatibility" tool free of charge.

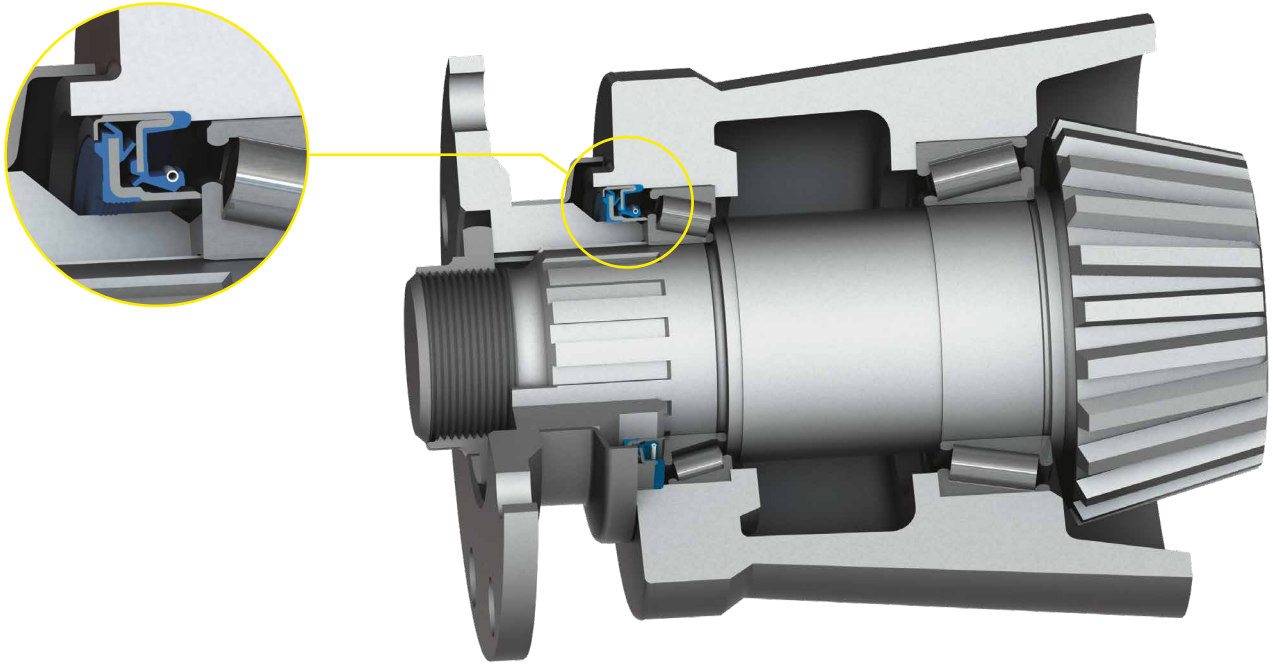
These two tools enable you to measure the behaviour of our materials that come into contact with the majority of existing fluids. The data displayed is the result of rigorous testing at the ambient temperature and takes previous publications into consideration. Test results are not fully representative because of the specific features of your application. The tests performed actually do not consider additives and impurities that may exist under actual conditions of use, nor the potential elevation of temperatures. Other parameters can also alter the behaviour of our materials, such as the hardness, compression set, abrasion, etc. We therefore recommend performing your own tests to verify the compatibility of our materials depending on your specific application. Our technical team can provide you with any additional information.

3. Examples of applications

3.1 DRIVEN AXLE



3.2 PINION AXLE



4. Assembly recommendations

Several essential rules must be followed before fitting the cassette seals.

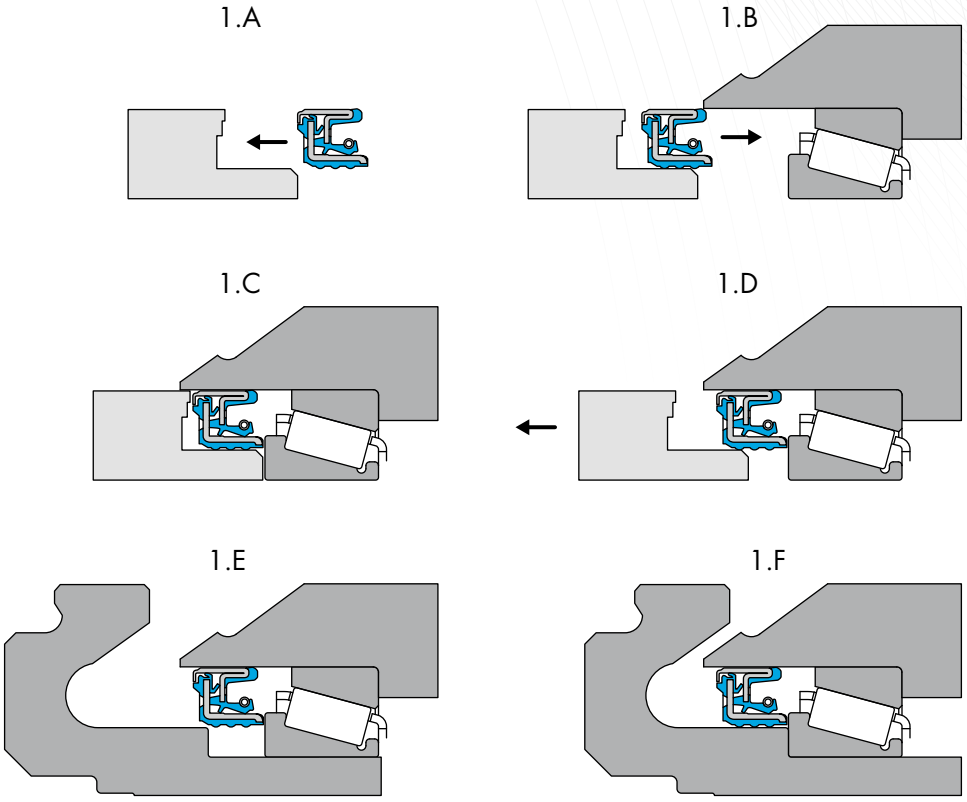
- Check that the mechanical parts (shaft and housing) have an inlet chamfer.
- Flash and chamfer or round off the sharp edges; cover the threaded parts.
- Remove the machining shavings and all impurities and other foreign bodies. Clean all mechanical parts carefully.
- Grease or oil the seal (rubber only) and shaft to facilitate assembly. Only use clean grease or oil to do this.
- Ensure beforehand that the lubricants are compatible with the seal's materials. Avoid greases containing solid additives (molybdenum disulphide or zinc sulphide).
- If using installation tools, check that they are clean and do not have sharp edges.
- Do not try to open the cassette seal.
- Do not remove the spring.

Type	Assembly 1	Assembly 2	Assembly 3
UA16	●		
UA16A	●		
UA17	●		
UA18	●		
UA50		●	
UA52			●
UAO1	●		
UAO3	●		
UAO6	●		
UAO7	●		

4.1 ASSEMBLY 1
CASSETTE SEAL PRESS-FITTED ONTO THE OUTSIDE DIAMETER

Using the assembly tool:

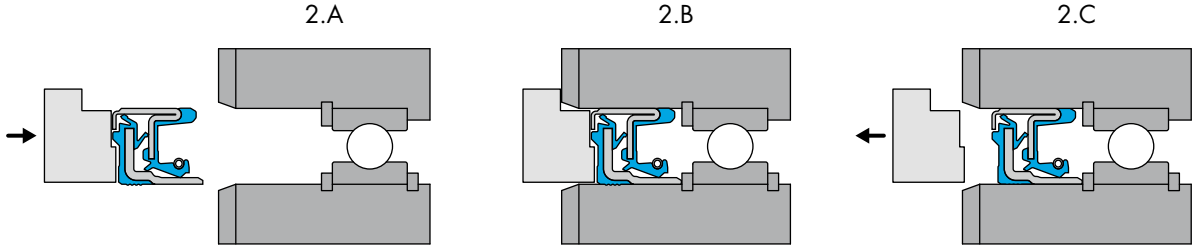
- Position the cassette seal on the assembly tool (image 1.A)
- Press-fit the cassette seal in the bore (image 1.B and 1.C)
- Remove the assembly tool (image 1.D)
- Fit the shaft (image 1.E and 1.F)



4.2 ASSEMBLY 2
CASSETTE SEAL PARALLEL PRESS-FITTED

Using the assembly tool:

- Centre the cassette seal between the shaft and the housing (image 2.A)
- Press-fit the cassette seal until it is correctly positioned (image 2.B)
- Remove the assembly tool (image 2.C)

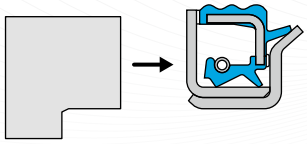


4.3 ASSEMBLY 3
CASSETTE SEAL PRESS-FITTED ONTO THE INSIDE DIAMETER

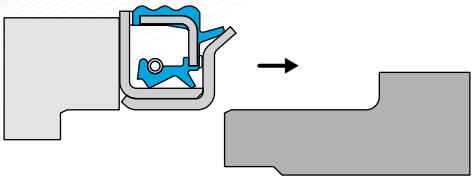
Using the assembly tool:

- Position the cassette seal on the assembly tool (image 3.A)
- Press-fit the cassette seal onto the shaft (image 3.B and 3.C)
- Remove the assembly tool (image 3.D)
- Insert the housing (image 3.E and 3.F)

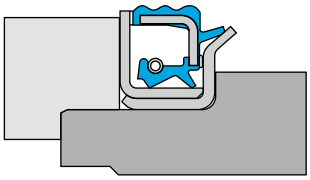
3.A



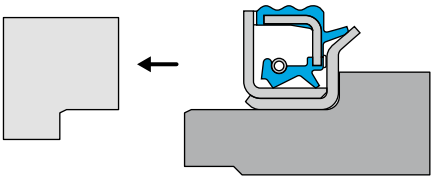
3.B



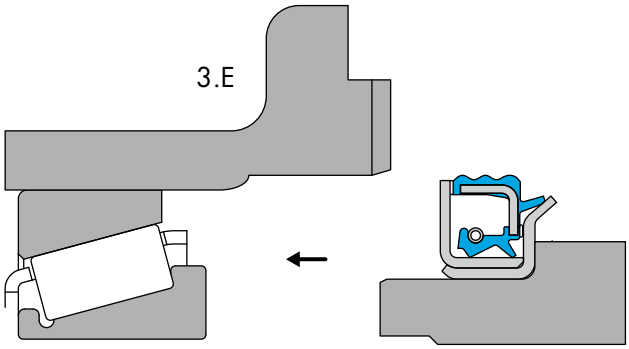
3.C



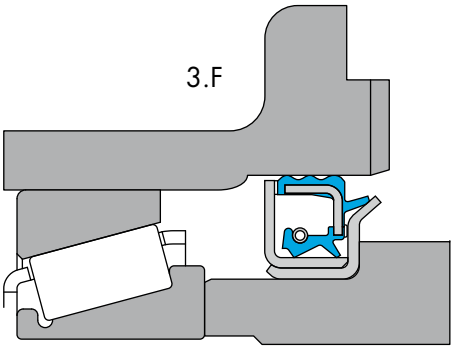
3.D



3.E



3.F



5. Storage recommendations and lifespan

Seals, which are regularly used as spare parts, can be stored over a long-term period. During storage, rubbers are subject to physical alterations, meaning that they can sometimes become unusable due to deformation, hardening, softening or cracking when they are exposed to oxygen and ozone, light, heat, moisture, oils and solvents.

ISO Standard 2230: 2002 "Rubber Products - Guidelines for Storage" sets out the storage recommendations and length of storage for rubbers depending on material classification, in order to ensure optimal preservation of the physical and chemical features of parts.

Temperature

The temperature in the storage area must preferably be between +5°C and +25°C. If the temperature exceeds +25°C, the rubber seals may undergo physical changes, no longer retaining their original technical features, and may break down prematurely. All heat sources (radiators, lamps, sunlight, etc.) must be controlled so that the temperature does not exceed +25°C.
On the other hand, if the temperature in the storage area is below +5°C, the seals may become more rigid, which will not necessarily alter their chemical and physical features. Returning them to +20°C is advised before putting them into operation.

Humidity

Generally speaking, the relative humidity of the storage area should not exceed 70% for rubber seals (65% for polyurethane seals). Avoid humid areas, as well as areas that are prone to condensation.

Light

Rubber seals must not come into contact with sunlight or artificial light with a high UV ray content. Using normal incandescent lighting is recommended, as is covering windows in the storage area with a protective red or orange paint. Using special anti-UV bags will ensure that seals are better protected.

Radiation

Precautions must be taken to protect stored parts from all sources of ionising radiation.

Ozone

As ozone is very damaging to rubber seals, the storage area must not contain ozone-producing equipment, such as mercury-vapour lamps, high-voltage electrical equipment, electric motors or other products likely to produce soundless electrical charges or sparks. No combustible gases or organic vapours must be present, as their photochemical processes may lead to ozone production.

Distortion

Seals must preferably be stored where they are not subjected to constraints, pressures or any other force that could cause them to become misshapen. Seals should be kept in their original packaging as far as possible.

Contact with liquids and semi-liquids

Seals must not be stored in contact with liquids (acids, disinfectants, oils, greases, etc.) or other semi-liquid materials, unless packaged in this way by the manufacturer.

Contact with metals

Certain metals, such as manganese, iron, copper, brass and other compounds are damaging to rubbers. Seals must not be stored in contact with such metals unless the rubber parts are affixed to them, in which case a rolled packaging would be preferable.

Contact with other materials

Rubber seals must not be stored in contact with PVC due to the risk of potentially transferring plasticiser or other ingredients. Rubbers with different compositions must be separated from one another.

Cleaning

If necessary, clean seals with soap and water, or denatured alcohol. Cleaning with water should particularly be avoided for seals with textile fibre, and steel-rubber (corrosion problems) or polyurethane seals. Parts must be dried at ambient temperature and not near a heat source. Seals must not come into contact with wire brushes or sharp objects.

Storage and control

Storage duration largely depends on the type of material, rubbers being particularly sensitive to storage. The table below sets out the initial storage period.

Type of materials	Initial storage period	Extension period
NR - PU	5 years	2 years
ACM - AEM - CR - HNBR - NBR	7 years	3 years
EPDM - FFKM - FKM - FVMQ - VMQ	10 years	5 years
PTFE - PA6 - POM	Unlimited	-

Quality control is carried out at the end of this period. An extension may be possible, depending on the results.

6. The cassette seals

UA16 P. 20
Materials: Rubber + Steel
Temperature: < 100°C
Pressure: 0.05 MPa
Speed: 6 m/s
Environment contamination level: High

UA16A P. 22
Materials: Rubber + Steel
Temperature: < 100°C
Pressure: 0.05 MPa
Speed: 6 m/s
Environment contamination level: High

UA17 P. 26
Materials: Rubber + Steel
Temperature: < 100°C
Pressure: 0.05 MPa
Speed: 7 m/s
Environment contamination level: Moderate

UA18 P. 28
Materials: Rubber + Steel
Temperature: < 100°C
Pressure: 0.05 MPa
Speed: 9 m/s
Environment contamination level: Normal

UA50 P. 30
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.03 MPa
Speed: 12 m/s
Environment contamination level: Normal - Moderate

UA52 P. 32
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.03 MPa
Speed: 15 m/s
Environment contamination level: Normal - Moderate

QA P. 34
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.05 MPa
Speed: 7 m/s
Environment contamination level: Normal

QLF P. 36
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.05 MPa
Speed: 7 m/s
Environment contamination level: Normal

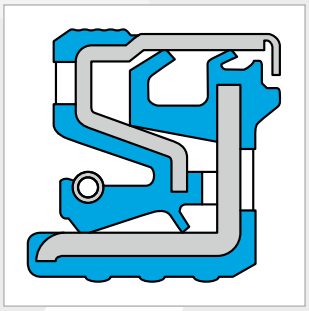
UAO1 P. 38
Materials: Rubber + Steel
Temperature: < 100°C
Pressure: 0.05 MPa
Speed: 7 m/s
Environment contamination level: Normal - Moderate

UAO2 P. 40
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.05 MPa
Speed: -
Environment contamination level: Normal

UAO3 P. 42
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.05 MPa
Speed: 10 m/s
Environment contamination level: Moderate

UAO6 P. 46
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.05 MPa
Speed: 8 m/s
Environment contamination level: Moderate - High

UAO7 P. 48
Materials: Rubber + Steel
Temperature: < 120°C
Pressure: 0.05 MPa
Speed: 4 m/s
Environment contamination level: High



CASSETTE SEALS
UA16

DESCRIPTION

The UA16 profile is a cassette seal, where the sealing is through a 3-barrier labyrinth system. The upper part is static with the housing and the lower part is designed to operate in rotation with the shaft.

ADVANTAGES

High friction coefficient

Better protection against fouling using a labyrinth system

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

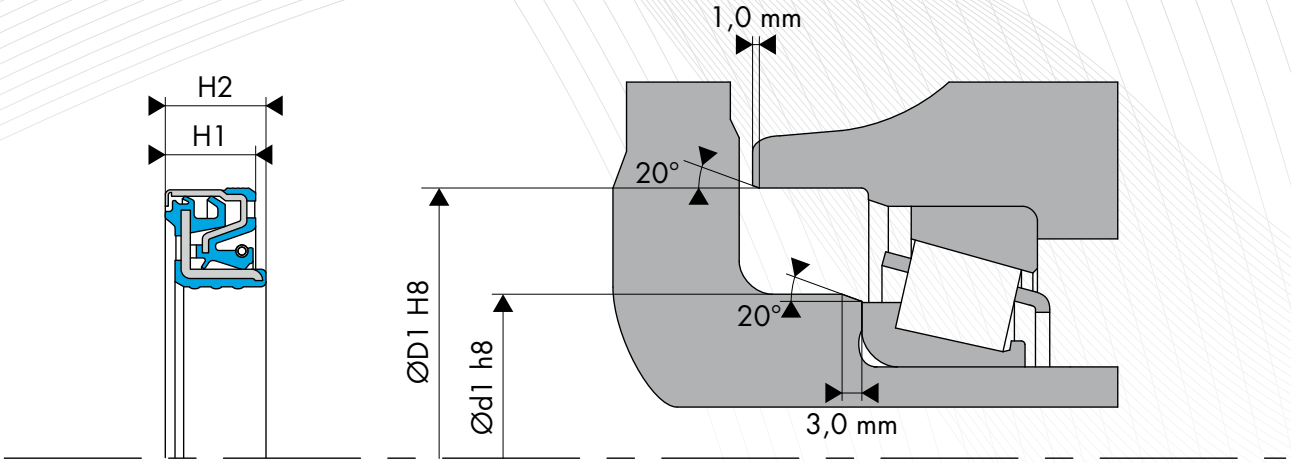
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+100°C	-25°C/+90°C	-30°C/+90°C
Speed	4 m/s	6 m/s	5 m/s	5 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	High	High	High	High

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

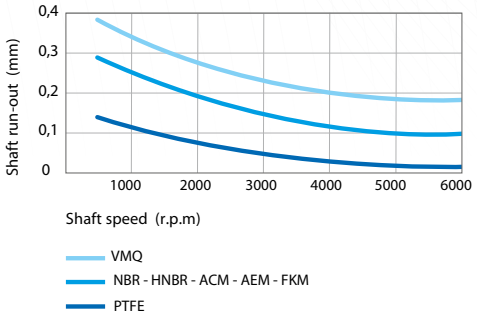
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

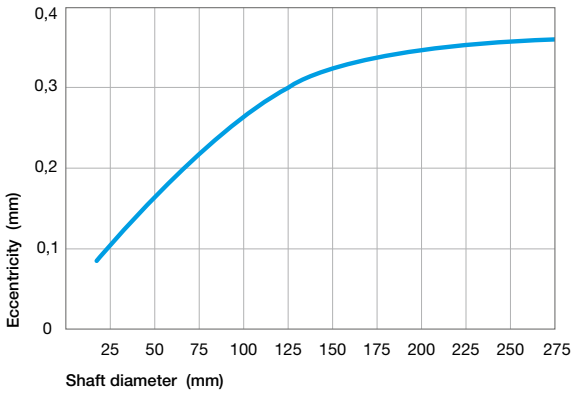
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out



Eccentricity

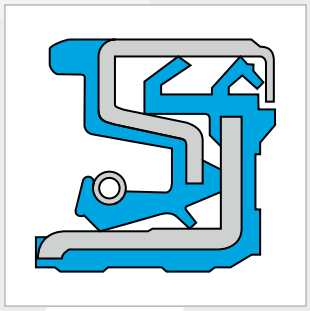


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Housing	20° (+/-5°) x 1 mm



CASSETTE SEALS
UA16A

DESCRIPTION

The UA16A profile is a cassette seal, where the sealing is through a 3-barrier labyrinth system. The upper part is static with the housing and the lower part is designed to operate in rotation with the shaft.

ADVANTAGES

High friction coefficient

Better protection against fouling using a labyrinth system

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

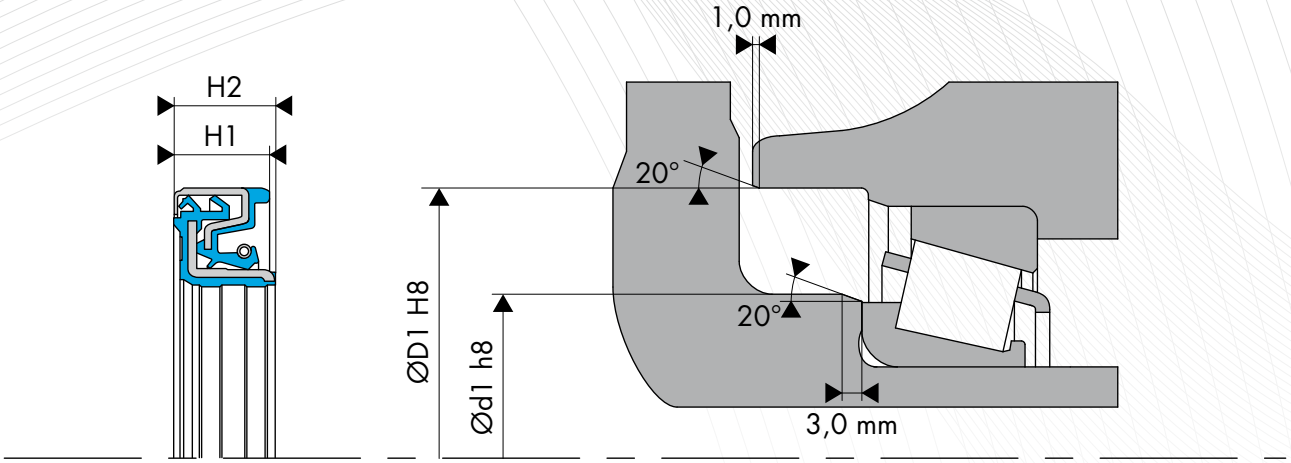
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+100°C	-25°C/+90°C	-30°C/+90°C
Speed	4 m/s	6 m/s	5 m/s	5 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	High	High	High	High

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

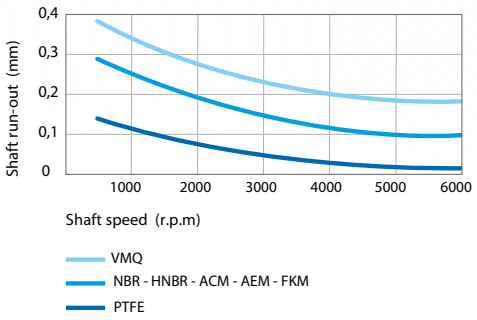
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

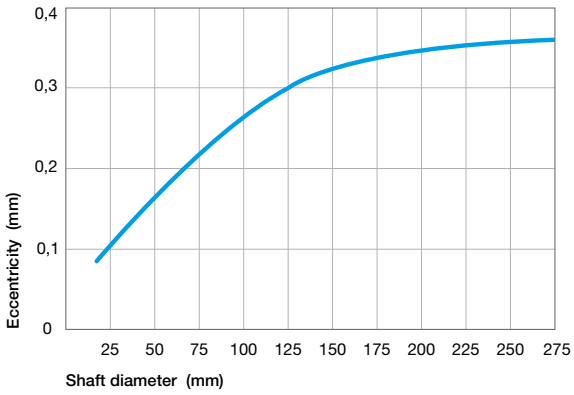
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out



Eccentricity



Axial movement

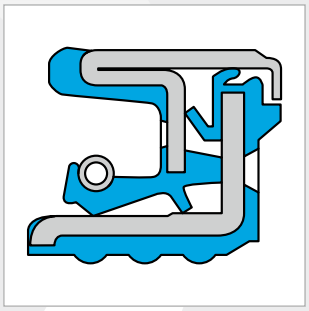
The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

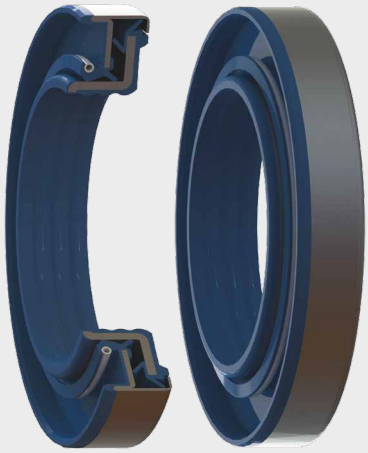
Shaft	20° (+/-5°) x 3 mm
Housing	20° (+/-5°) x 1 mm

DIMENSIONS

Part number	Shaft diameter Ød1 h8	Bore diameter ØD1 H8	Seal height H1	Seal height H2
UA16A 25 x 52 x 12 x 13.5	25.00	52.00	12.00	13.50
UA16A 35 x 60 x 13 x 14.5	35.00	60.00	13.00	14.50
UA16A 35 x 65 x 14.5 x 16	35.00	65.00	14.50	16.00
UA16A 45 x 70 x 14 x 17	45.00	70.00	14.00	17.00
UA16A 48 x 75 x 14 x 17	48.00	75.00	14.00	17.00
UA16A 56 x 80 x 13 x 14.5	56.00	80.00	13.00	14.50
UA16A 60 x 84 x 13 x 14.5	60.00	84.00	13.00	14.50
UA16A 60 x 90 x 13.5 x 15	60.00	90.00	13.50	15.00
UA16A 65 x 90 x 13 x 14.5	65.00	90.00	13.00	14.50
UA16A 76 x 101 x 12 x 13.5	76.00	101.00	12.00	13.50
UA16A 85 x 110 x 13 x 14.5	85.00	110.00	13.00	14.50
UA16A 85 x 140 x 15 x 17	85.00	140.00	15.00	17.00
UA16A 110 x 140 x 13.5 x 15	110.00	140.00	13.50	15.00
UA16A 120 x 150 x 14 x 15.5	120.00	150.00	14.00	15.50
UA16A 127 x 160 x 15.5 x 17.5	127.00	160.00	15.50	17.50
UA16A 130 x 160 x 14.5 x 16	130.00	160.00	14.50	16.00
UA16A 140 x 170 x 14.5 x 16	140.00	170.00	14.50	16.00
UA16A 145 x 175 x 14.5 x 16	145.00	175.00	14.50	16.00
UA16A 150 x 180 x 14.5 x 16	150.00	180.00	14.50	16.00
UA16A 155 x 195 x 16.5 x 18	155.00	195.00	16.50	18.00
UA16A 165 x 195 x 16.5 x 18	165.00	195.00	16.50	18.00
UA16A 170 x 200 x 15 x 16	170.00	200.00	15.00	16.00
UA16A 178 x 208 x 16 x 18	178.00	208.00	16.00	18.00
UA16A 190 x 220 x 16 x 18	190.00	220.00	16.00	18.00
UA16A 210 x 240 x 16 x 18	210.00	240.00	16.00	18.00
UA16A 220 x 265 x 19 x 21	220.00	265.00	19.00	21.00



CASSETTE SEALS
UA17



DESCRIPTION

The UA17 profile is a cassette seal, where the sealing is through a 2-barrier labyrinth system. The upper part is static with the housing and the lower part is designed to operate in rotation with the shaft.

ADVANTAGES

Moderate friction coefficient

Moderate protection against dirt

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

Commercial vehicles

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

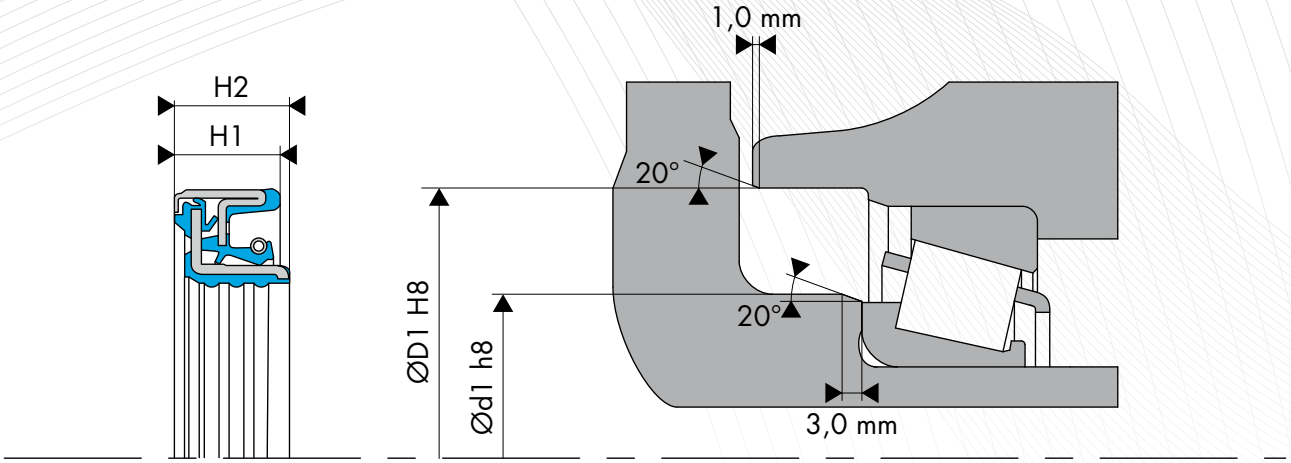
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+100°C	-25°C/+90°C	-30°C/+90°C
Speed	5 m/s	7 m/s	6 m/s	6 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Moderate	Moderate	Moderate	Moderate

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

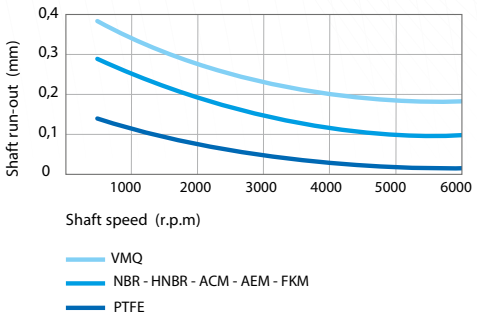
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

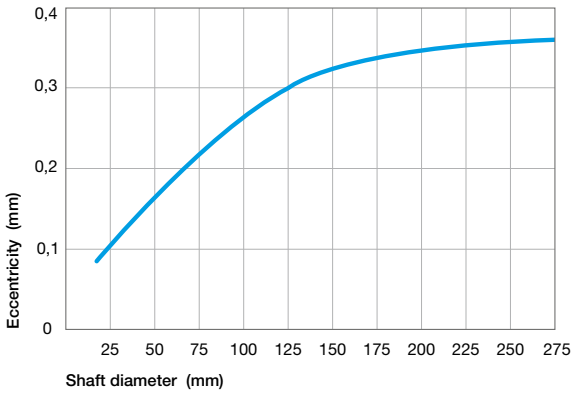
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out



Eccentricity

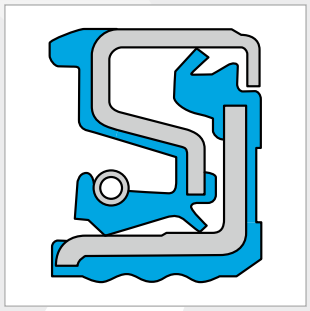


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Housing	20° (+/-5°) x 1 mm



CASSETTE SEALS
UA18

DESCRIPTION

The UA18 is a cassette seal, where the sealing is through a simplified labyrinth system. The upper part is static with the housing and the lower part is designed to operate in rotation with the shaft.

ADVANTAGES

Low friction coefficient

Standard protection against fouling

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

Commercial vehicles

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

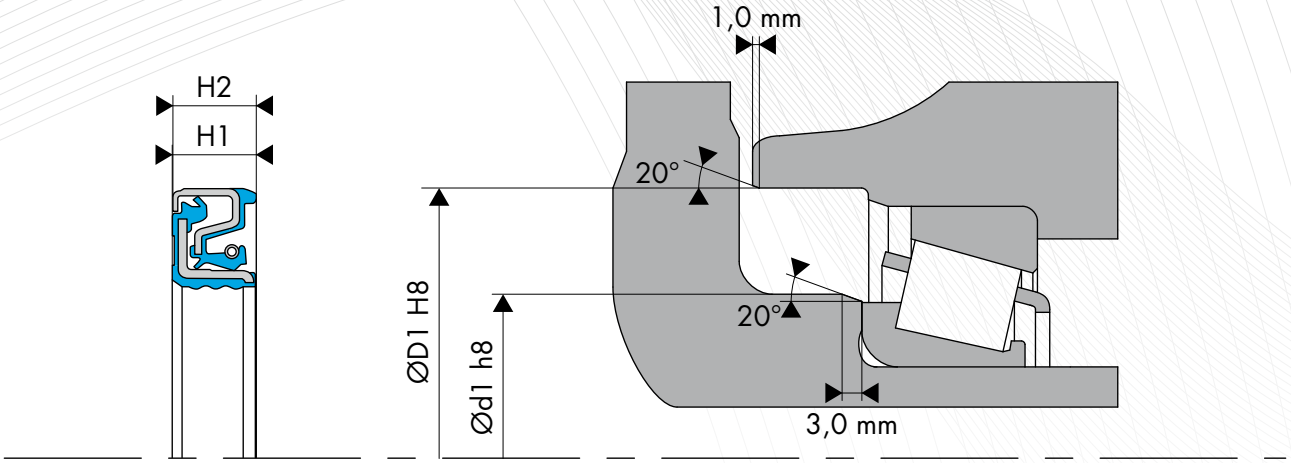
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+100°C	-25°C/+90°C	-30°C/+90°C
Speed	7 m/s	9 m/s	8 m/s	8 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Normal	Normal	Normal	Normal

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

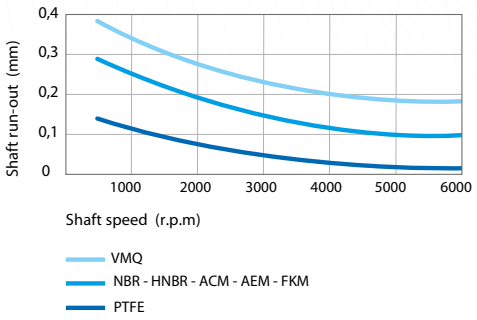
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

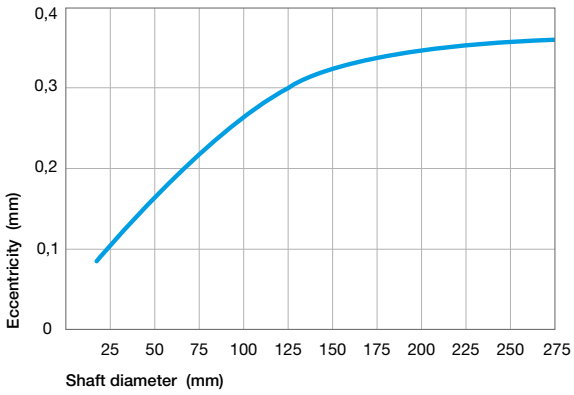
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out



Eccentricity

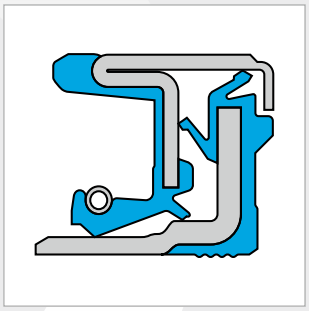


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Housing	20° (+/-5°) x 1 mm



CASSETTE SEALS
UA50

DESCRIPTION

The UA50 profile is a cassette seal in which the inner metal part is fitted tightened on the rotating shaft. The upper part is fixed and is characterised by a primary sealing lip with an integrated spring, radial anti-pollution lip and special axial anti-pollution lip. A metal reinforcement is built in to offer additional protection in the dynamic sealing area when faced with a moderate pollution level.

ADVANTAGES

Moderate friction coefficient

Moderate protection against dirt

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

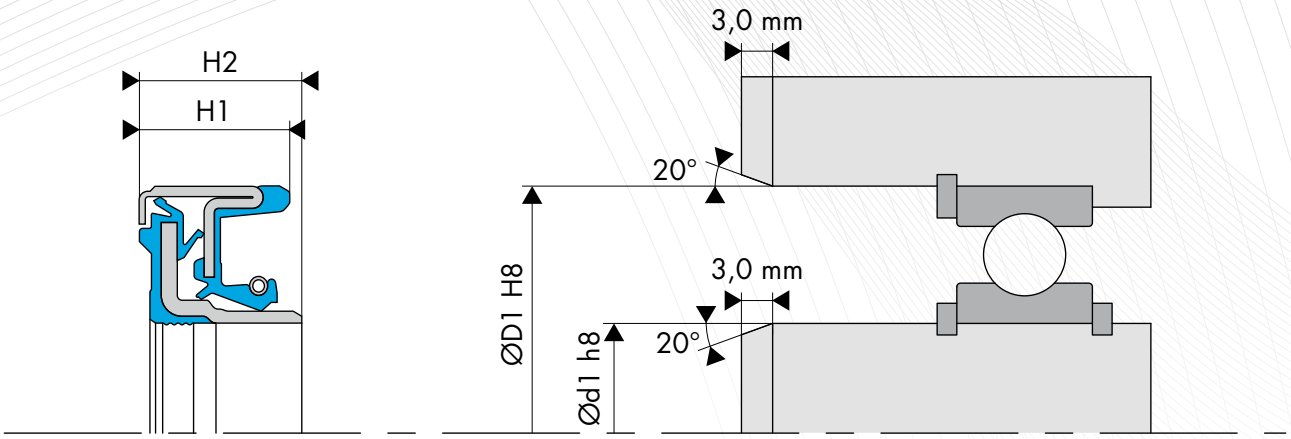
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+120°C	-25°C/+100°C	-30°C/+100°C
Speed	-	12 m/s	-	-
Pressure	max. 0.03 MPa	max. 0.03 MPa	max. 0.03 MPa	max. 0.03 MPa
Level of pollution	Normal - Moderate	Normal - Moderate	Normal - Moderate	Normal - Moderate

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

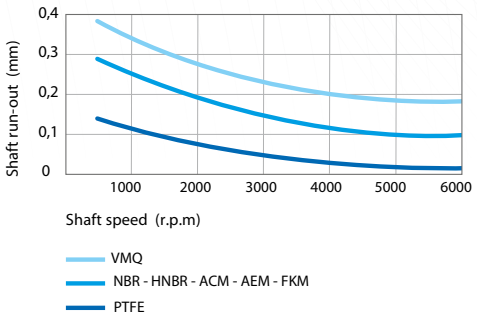
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

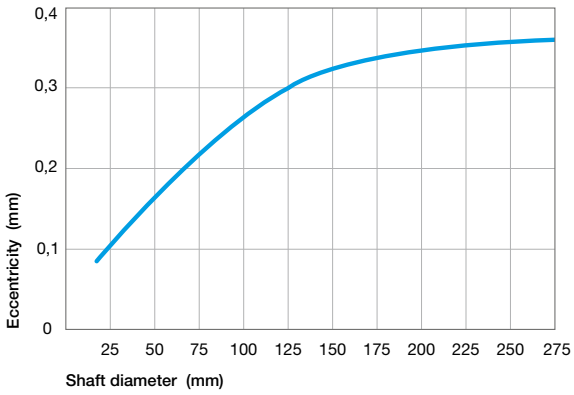
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out



Eccentricity

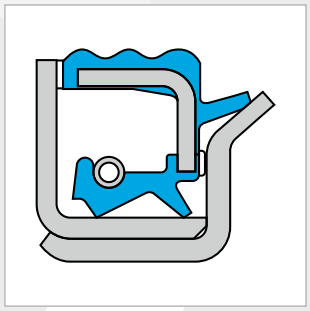


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Housing	20° (+/-5°) x 3 mm



CASSETTE SEALS
UA52

DESCRIPTION

The UA52 profile is a cassette seal, where sealing is through a labyrinth system with very low friction, which supports significant speeds.

ADVANTAGES

Low friction coefficient
Standard protection against fouling
Easy to fit with low risk of seal deterioration
Better heat dissipation
Higher rotation speed
Optimised static sealing

APPLICATIONS

Agriculture
Differentials
Gearbox pinions
Transmissions
Utility vehicles

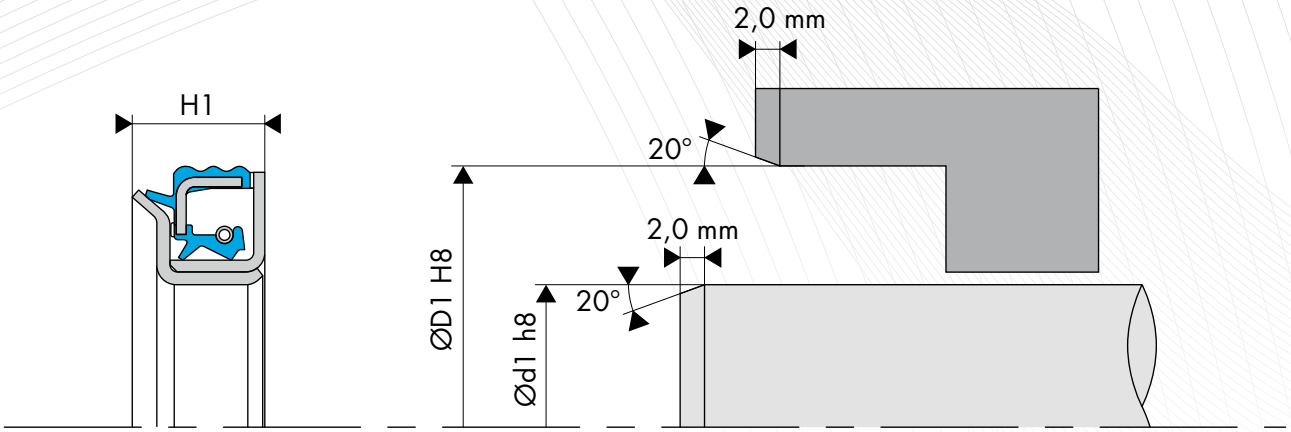
MATERIALS

Rubber
ACM 70 - 75 Shore A
FKM 70 - 75 Shore A
HNBR 70 - 75 Shore A
NBR 70 - 75 Shore A
Metal cage
Steel - AISI 1010
Stainless steel - AISI 304
Stainless steel - AISI 316
Spring
Steel - AISI 1070 - 1090
Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+120°C	-25°C/+100°C	-30°C/+100°C
Speed	-	15 m/s	-	-
Pressure	max. 0.03 MPa	max. 0.03 MPa	max. 0.03 MPa	max. 0.03 MPa
Level of pollution	Normal - Moderate	Normal - Moderate	Normal - Moderate	Normal - Moderate

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

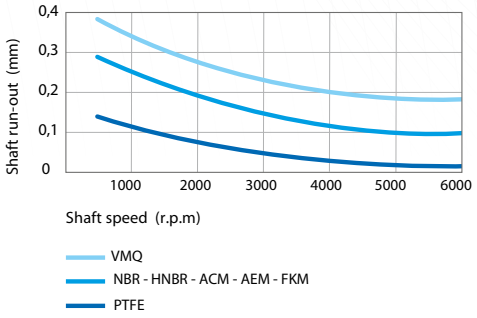
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

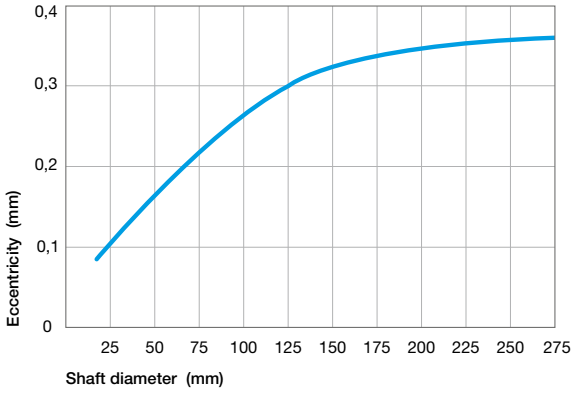
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out



Eccentricity

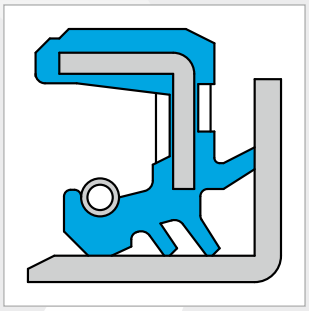


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 2 mm
Housing	20° (+/-5°) x 2 mm



CASSETTE SEALS
QA

DESCRIPTION

The QA profile is a modular rotating joint composed of a rubber TC9 shaft seal and a metal sleeve. It is possible to separate the 2 elements for assembly.

ADVANTAGES

Fit the 2 elements separately if necessary

APPLICATIONS

Axles
Pinions
Hubs
Construction
Agriculture

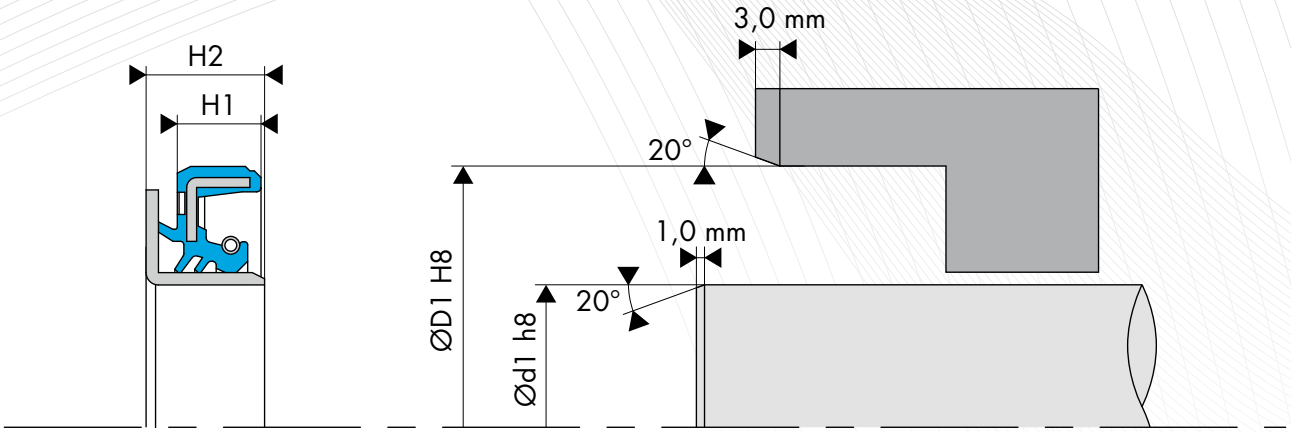
MATERIALS

Rubber
ACM 70 - 75 Shore A
FKM 70 - 75 Shore A
HNBR 70 - 75 Shore A
NBR 70 - 75 Shore A
Metal cage
Steel - AISI 1010
Stainless steel - AISI 304
Stainless steel - AISI 316
Spring
Steel - AISI 1070 - 1090
Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+120°C	-25°C/+110°C	-30°C/+110°C
Speed	5 m/s	7 m/s	6 m/s	6 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Normal	Normal	Normal	Normal

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

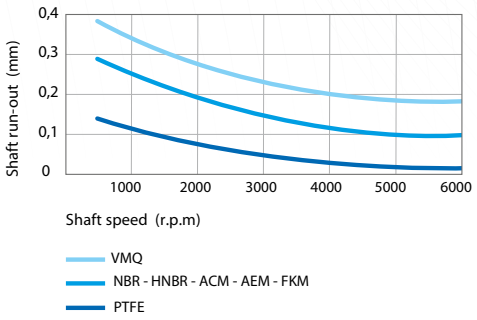
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

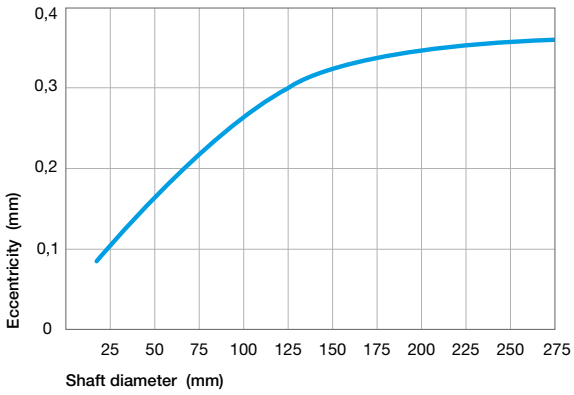
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out

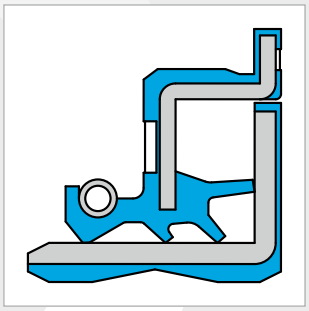


Eccentricity



Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Housing	20° (+/-5°) x 1 mm



CASSETTE SEALS
QLF

DESCRIPTION

The QLF profile is a modular rotary seal composed of a TC9 shaft seal with rubber external stop and a metal sleeve with a rubber coating. It is possible to separate the 2 elements for assembly.

ADVANTAGES

Fit the 2 elements separately if necessary

APPLICATIONS

Axles
Pinions
Hubs
Construction
Agriculture

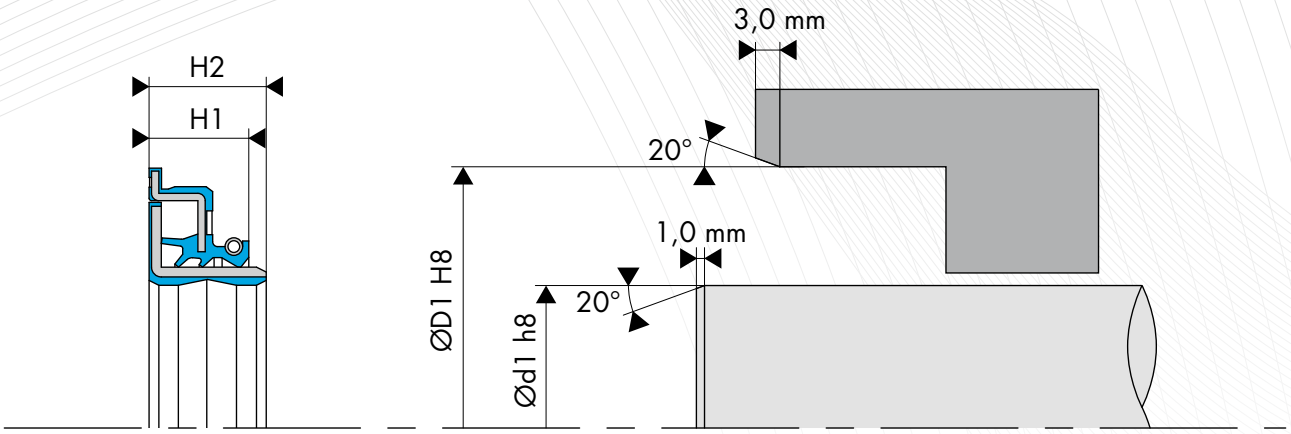
MATERIALS

Rubber
ACM 70 - 75 Shore A
FKM 70 - 75 Shore A
HNBR 70 - 75 Shore A
NBR 70 - 75 Shore A
Metal cage
Steel - AISI 1010
Stainless steel - AISI 304
Stainless steel - AISI 316
Spring
Steel - AISI 1070 - 1090
Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+120°C	-25°C/+110°C	-30°C/+110°C
Speed	5 m/s	7 m/s	6 m/s	6 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Normal	Normal	Normal	Normal

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Shaft hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Shaft tolerance

Shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

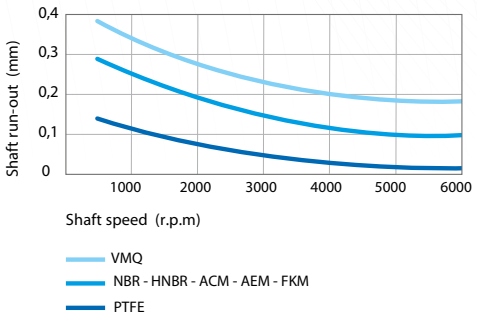
Housing tolerance

Bore diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

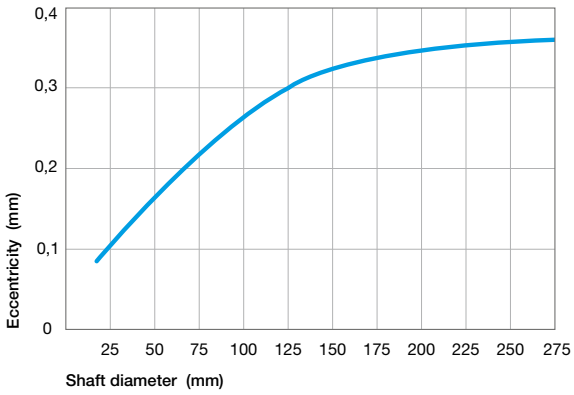
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Shaft run out

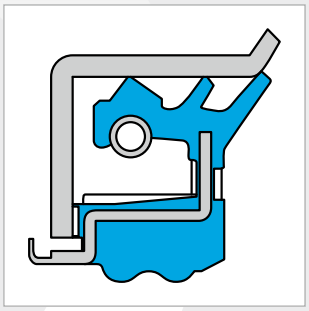


Eccentricity



Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Housing	20° (+/-5°) x 1 mm



CASSETTE SEALS
UAO1

DESCRIPTION

The UAO1 profile is an inverted cassette seal where the upper part is fitted and tightened on the rotating hub. The lower part is fitted onto the fixed shaft and is composed of a primary lip with an integrated spring and 2 anti-pollution lips. A metal reinforcement is built in to offer additional protection in the dynamic sealing area when faced with a higher pollution level.

ADVANTAGES

Moderate friction coefficient

Moderate protection against dirt

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

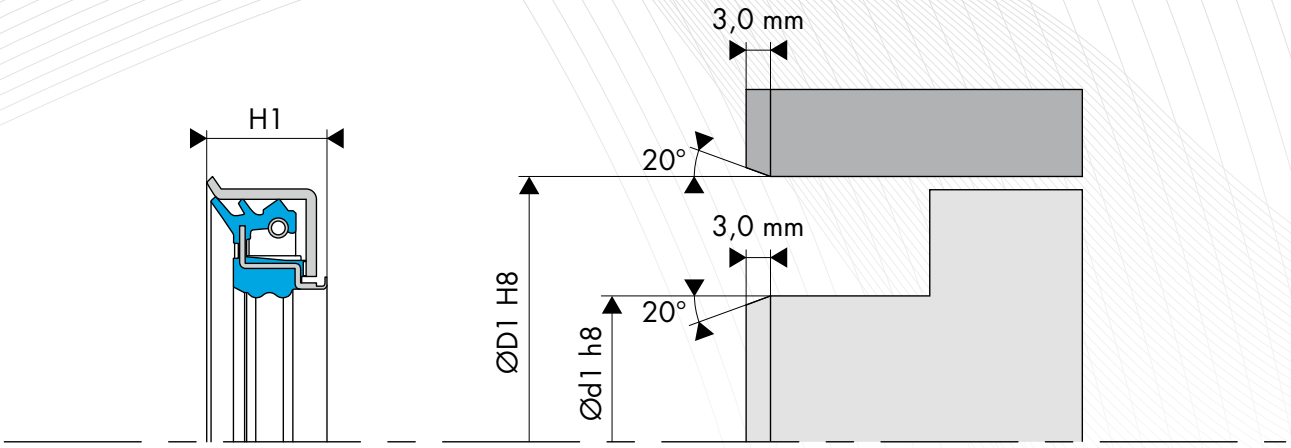
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+100°C	-25°C/+90°C	-30°C/+90°C
Speed	5 m/s	7 m/s	8 m/s	8 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Normal - Moderate	Normal - Moderate	Normal - Moderate	Normal - Moderate

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Rotating hub hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Rotating hub tolerance

Rotating hub diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

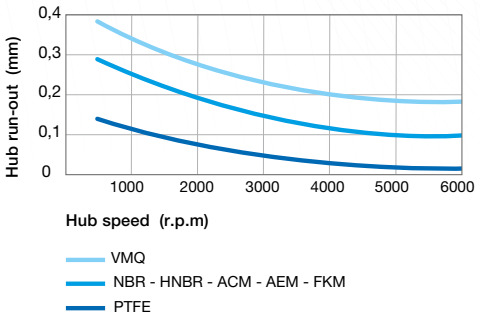
Fixed shaft tolerance

Fixed shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

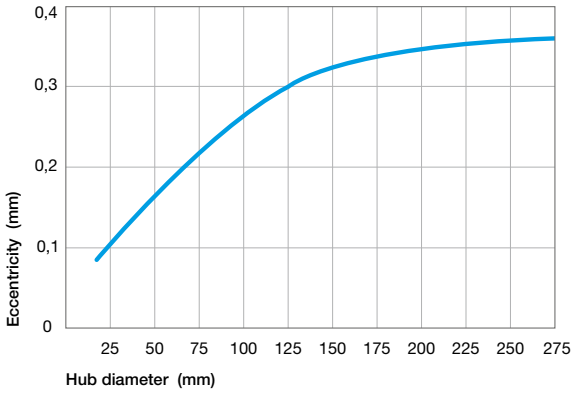
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Rotating hub run out



Eccentricity

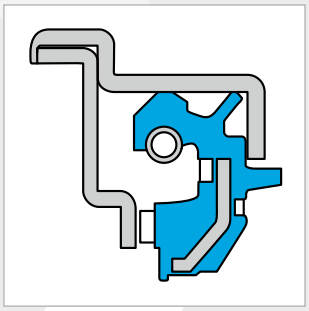


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Hub	20° (+/-5°) x 3 mm



CASSETTE SEALS
UAO2

DESCRIPTION

The UAO2 profile is an inverted cassette seal where the upper part is fitted and tightened on the rotating hub. The lower part is fitted onto the fixed shaft and is composed of a primary lip with an integrated spring and an anti-pollution lip. A metal reinforcement is built in to offer additional protection in the dynamic sealing area when faced with a moderate pollution level.

ADVANTAGES

Moderate friction coefficient

Moderate protection against dirt

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

HGVs

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

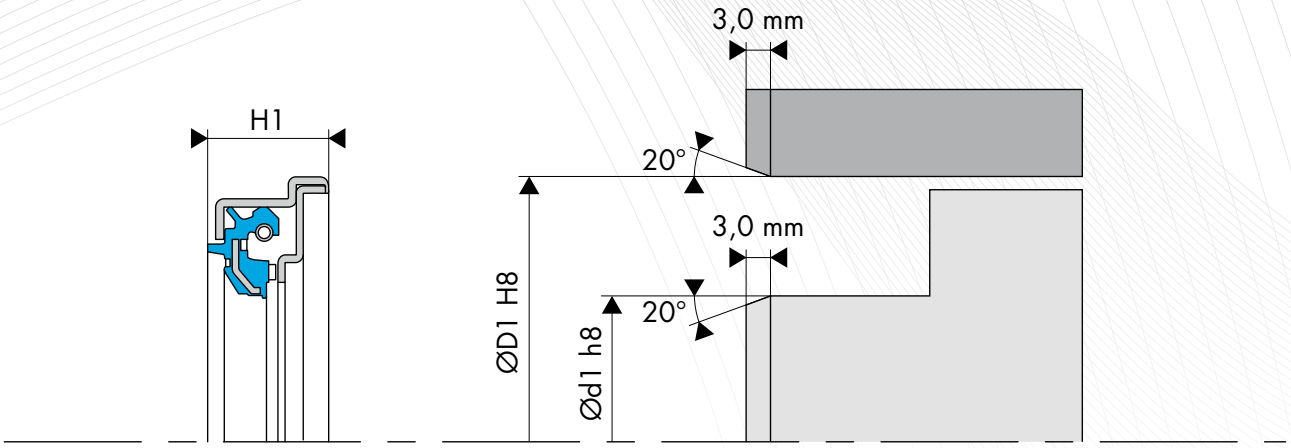
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+100°C	-30°C/+90°C
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Normal	Normal	Normal

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Rotating hub hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Rotating hub tolerance

Rotating hub diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

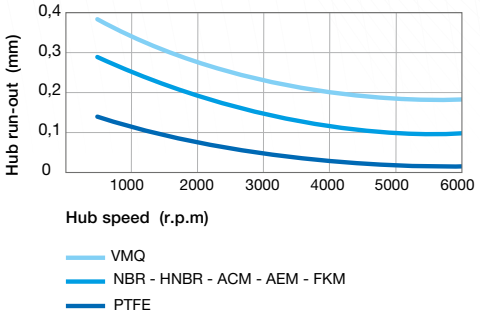
Fixed shaft tolerance

Fixed shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

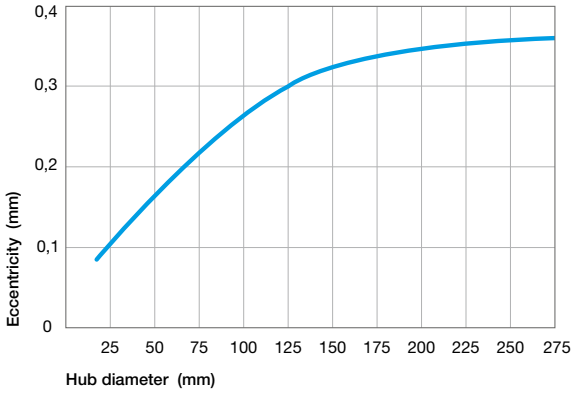
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Rotating hub run out



Eccentricity

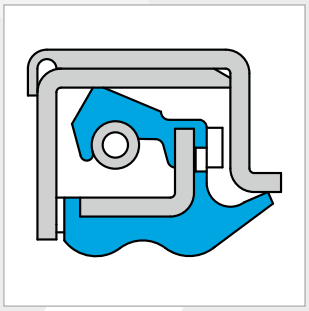


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 3 mm
Hub	20° (+/-5°) x 3 mm



CASSETTE SEALS
UAO3

DESCRIPTION

The UAO3 profile is an inverted cassette seal, where the upper part is fitted on the rotating hub. The lower part is fitted onto the fixed shaft and is composed of a primary lip with an integrated spring and an anti-pollution lip. A metal reinforcement is built in to offer additional protection in the dynamic sealing area when faced with a moderate pollution level.

ADVANTAGES

Low friction coefficient

Standard protection against fouling

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

Commercial vehicles

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

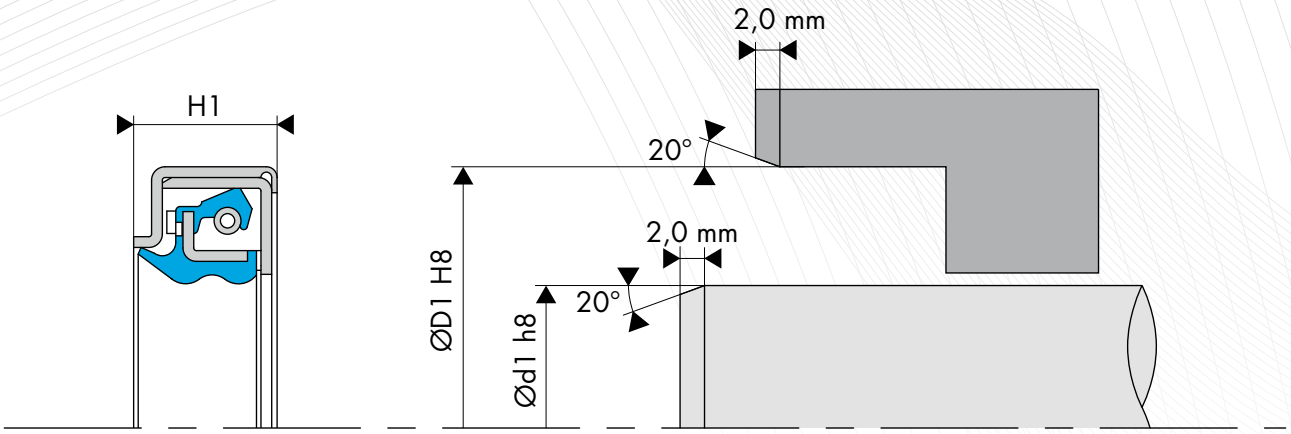
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+120°C	-25°C/+100°C	-30°C/+100°C
Speed	8 m/s	10 m/s	9 m/s	9 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Moderate	Moderate	Moderate	Moderate

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Rotating hub hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Rotating hub tolerance

Rotating hub diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

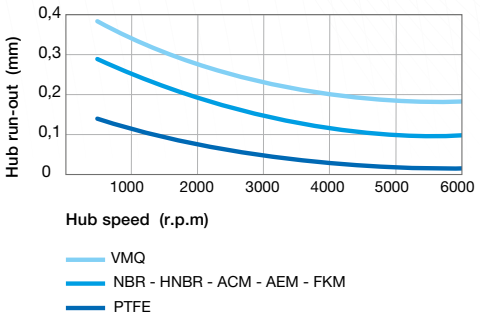
Fixed shaft tolerance

Fixed shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

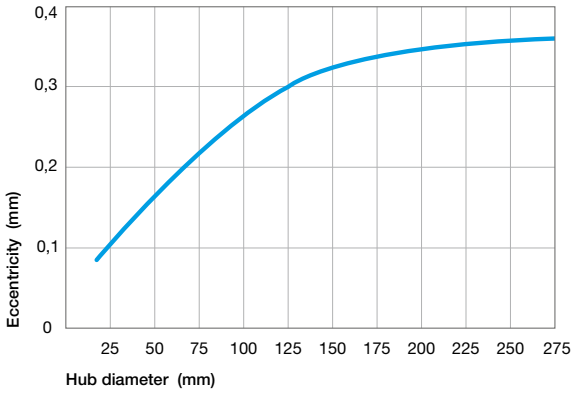
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Rotating hub run out



Eccentricity



Axial movement

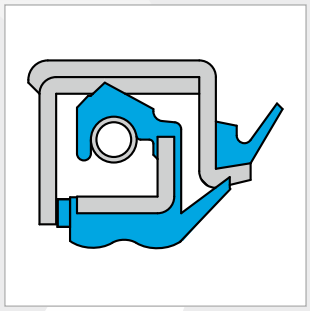
The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 2 mm
Hub	20° (+/-5°) x 2 mm

DIMENSIONS

Part number	Shaft diameter Ød1 h8	Bore diameter ØD1 H7/H8	Seal height H1
UAO3 85 x 140 x 17	85.00	140.00	17.00
UAO3 90 x 130 x 17	90.00	130.00	17.00
UAO3 100 x 130 x 17	100.00	130.00	17.00
UAO3 100 x 140 x 17	100.00	140.00	17.00
UAO3 110 x 140 x 17	110.00	140.00	17.00
UAO3 111 x 146 x 17	111.00	146.00	17.00
UAO3 120 x 160 x 17	120.00	160.00	17.00
UAO3 125 x 160 x 17	125.00	160.00	17.00
UAO3 128 x 164 x 17	128.00	164.00	17.00
UAO3 130 x 160 x 17	130.00	160.00	17.00
UAO3 130 x 170 x 17	130.00	170.00	17.00
UAO3 135 x 165 x 17	135.00	165.00	17.00
UAO3 140 x 170 x 17	140.00	170.00	17.00
UAO3 145 x 175 x 17	145.00	175.00	17.00
UAO3 150 x 180 x 17	150.00	180.00	17.00
UAO3 155 x 190 x 17	155.00	190.00	17.00
UAO3 160 x 196 x 17	160.00	196.00	17.00
UAO3 178 x 205 x 17	178.00	205.00	17.00
UAO3 187 x 230 x 17	187.00	230.00	17.00
UAO3 190 x 230 x 17	190.00	230.00	17.00
UAO3 320 x 360 x 19	320.00	360.00	19.00



CASSETTE SEALS
UAO6

DESCRIPTION

The UAO6 profile is an inverted cassette seal in which the upper part is fitted on the rotating hub. The lower part is fitted onto the fixed shaft and is composed of a primary lip with an integrated spring and an anti-pollution lip. A metal reinforcement is built in to offer additional protection in the dynamic sealing area when faced with a moderate pollution level. An axial seal is obtained through the adhesion of a V'Ring to the external stop of the BECA UAO3 profile.

ADVANTAGES

Moderate friction coefficient

Moderate protection against dirt

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

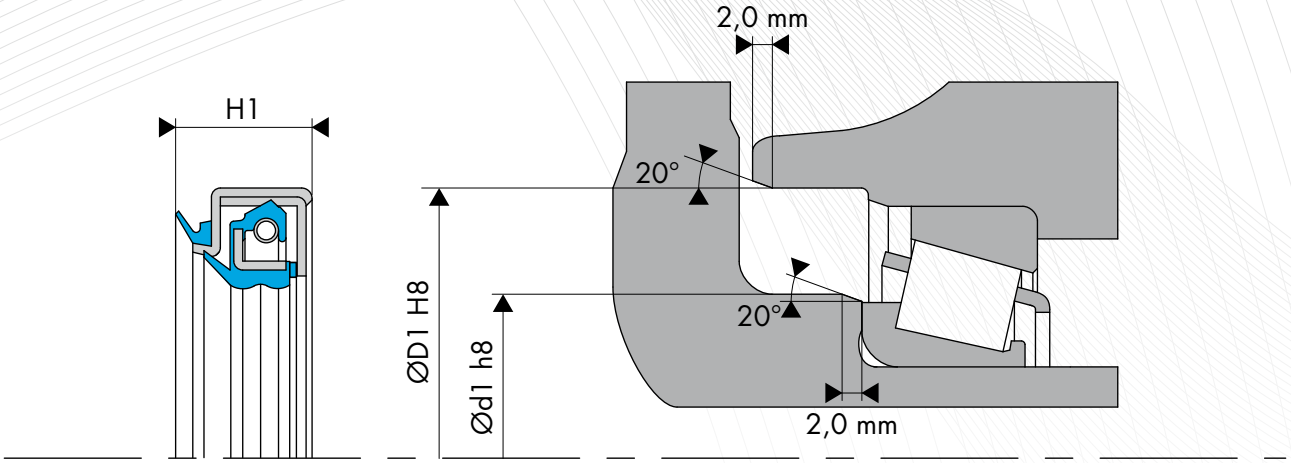
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+120°C	-25°C/+100°C	-30°C/+100°C
Speed	6 m/s	8 m/s	7 m/s	7 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	Moderate - High	Moderate - High	Moderate - High	Moderate - High

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Rotating hub hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Rotating hub tolerance

Rotating hub diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

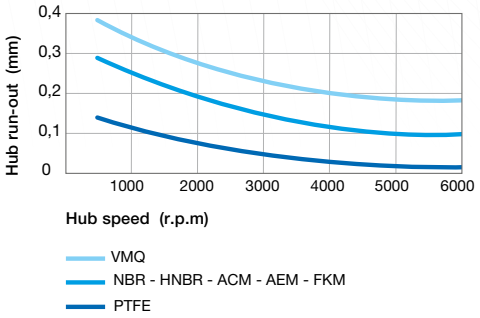
Fixed shaft tolerance

Fixed shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

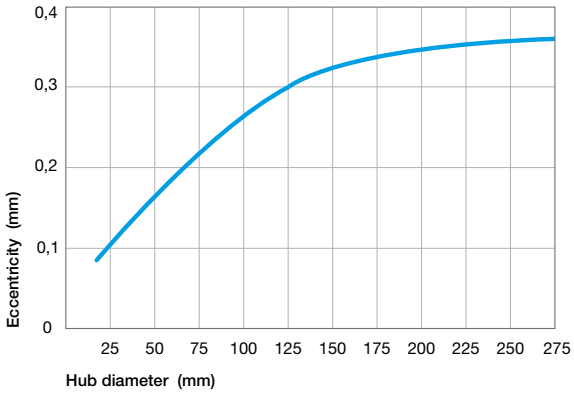
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Rotating hub run out



Eccentricity

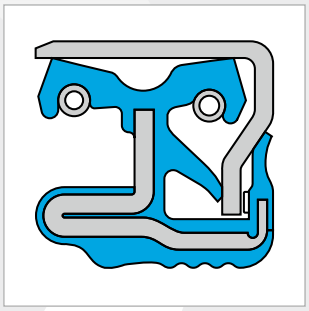


Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 2 mm
Hub	20° (+/-5°) x 2 mm



CASSETTE SEALS
UAO7

DESCRIPTION

The UAO7 profile is an inverted cassette seal in which the upper part is fitted and tightened on the rotating hub. The lower part is fitted onto the fixed shaft and is composed of two primary lips with integrated springs and an axial anti-pollution lip. A metal reinforcement is built in to offer additional protection in the dynamic sealing area when faced with a higher pollution level.

ADVANTAGES

High friction coefficient

Better protection against fouling using a labyrinth system

Reduced need for maintenance

Easy to fit with low risk of seal deterioration

APPLICATIONS

Axles

Pinions

Hubs

Construction

Agriculture

MATERIALS

Rubber

ACM 70 - 75 Shore A

FKM 70 - 75 Shore A

HNBR 70 - 75 Shore A

NBR 70 - 75 Shore A

Metal cage

Steel - AISI 1010

Stainless steel - AISI 304

Stainless steel - AISI 316

Spring

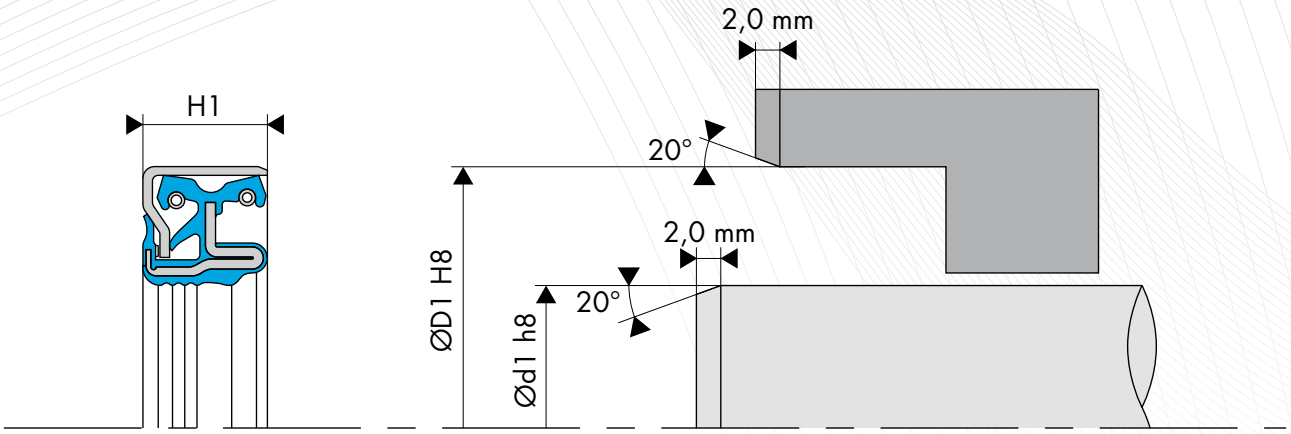
Steel - AISI 1070 - 1090

Stainless steel - AISI 316

TECHNICAL DATA

Technical data	NBR 70 - 75 Shore A	FKM 70 - 75 Shore A	ACM 70 - 75 Shore A	HNBR 70 - 75 Shore A
Temperature	-30°C / +80°C	-20°C/+120°C	-25°C/+100°C	-30°C/+100°C
Speed	2 m/s	4 m/s	3 m/s	3 m/s
Pressure	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa	0.02 - 0.05 MPa
Level of pollution	High	High	High	High

The figures above indicate the maximum values and may not be cumulated. They may be developed, depending on the materials used.



DESIGN RECOMMENDATIONS

Rotating hub hardness

Rotation speed	Hardness in HRC
s ≤ 4.0 m/sec	45 HRC
4.0 < s ≤ 10.0 m/s	55 HRC
s > 10.0 m/sec	60 HRC

Rotating hub tolerance

Rotating hub diameter ØD1 (mm)	Tolerance H8 (mm)
3.0 < ØD1 ≤ 6.0	0 / +0.018
6.0 < ØD1 ≤ 10.0	0 / +0.022
10.0 < ØD1 ≤ 18.0	0 / +0.027
18.0 < ØD1 ≤ 30.0	0 / +0.033
30.0 < ØD1 ≤ 50.0	0 / +0.039
50.0 < ØD1 ≤ 80.0	0 / +0.046
80.0 < ØD1 ≤ 120.0	0 / +0.054
120.0 < ØD1 ≤ 180.0	0 / +0.063
180.0 < ØD1 ≤ 250.0	0 / +0.072
250.0 < ØD1 ≤ 315.0	0 / +0.081
315.0 < ØD1 ≤ 400.0	0 / +0.089
400.0 < ØD1 ≤ 500.0	0 / +0.097
500.0 < ØD1 ≤ 630.0	0 / +0.110

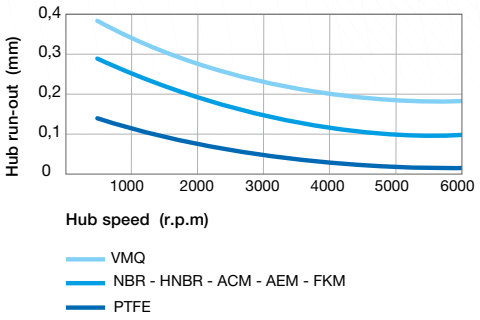
Fixed shaft tolerance

Fixed shaft diameter Ød1 (mm)	Tolerance h8 (mm)
Ød1 ≤ 3.0	-0.014 / 0
3.0 < Ød1 ≤ 6.0	-0.018 / 0
6.0 < Ød1 ≤ 10.0	-0.022 / 0
10.0 < Ød1 ≤ 18.0	-0.027 / 0
18.0 < Ød1 ≤ 30.0	-0.033 / 0
30.0 < Ød1 ≤ 50.0	-0.039 / 0
50.0 < Ød1 ≤ 80.0	-0.046 / 0
80.0 < Ød1 ≤ 120.0	-0.054 / 0
120.0 < Ød1 ≤ 180.0	-0.063 / 0
180.0 < Ød1 ≤ 250.0	-0.072 / 0
250.0 < Ød1 ≤ 315.0	-0.081 / 0
315.0 < Ød1 ≤ 400.0	-0.089 / 0
400.0 < Ød1 ≤ 500.0	-0.097 / 0

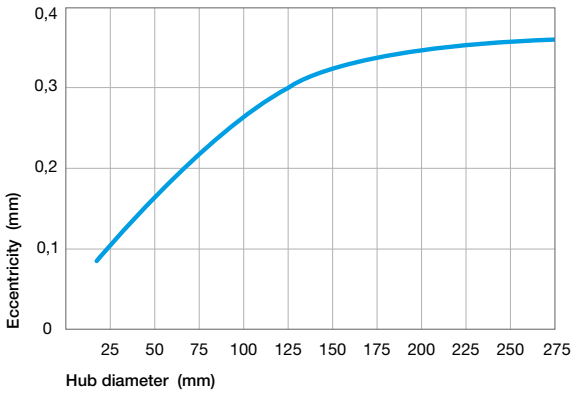
Surface roughness

Ra	0.8 to 3.2 µm
Rmax	10.0 to 16.0 µm

Rotating hub run out



Eccentricity



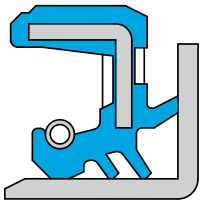
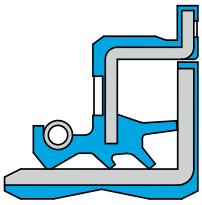
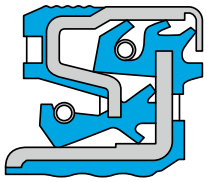
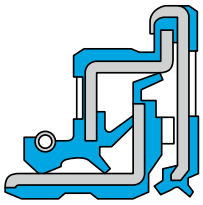
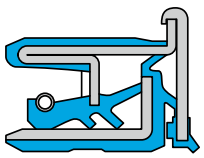
Axial movement

The cassette seals can tolerate axial movements greater than +/- 0.1 mm. However, this can lead to premature wear in the system.

Chamfers and radius

Shaft	20° (+/-5°) x 2 mm
Hub	20° (+/-5°) x 2 mm

OTHER SPECIFIC CASSETTE SEAL PROFILES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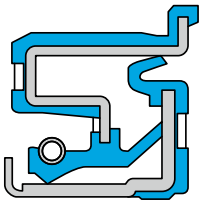	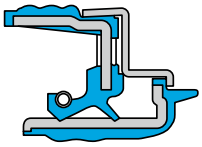	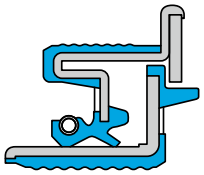	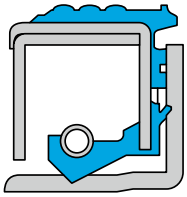	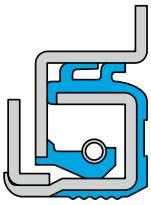
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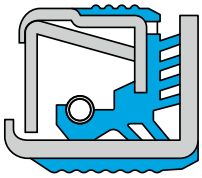	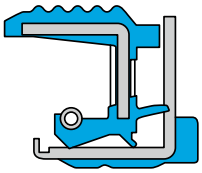	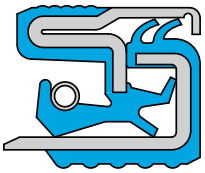	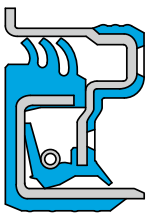	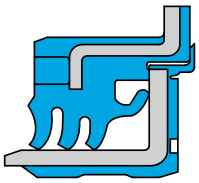
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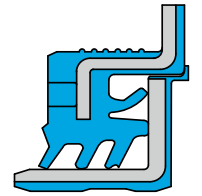	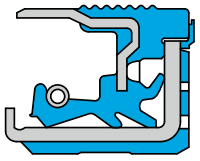	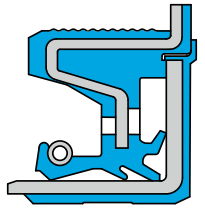	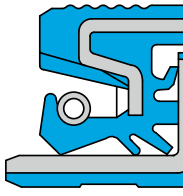	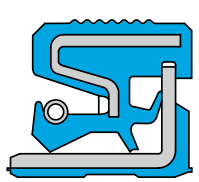
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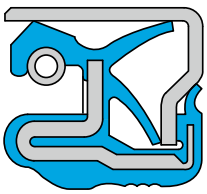	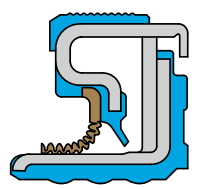	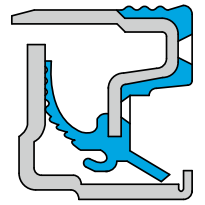	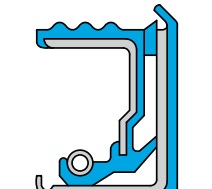	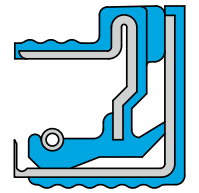
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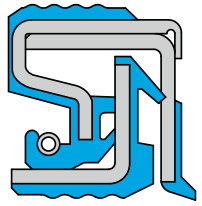	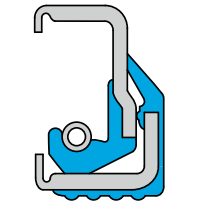	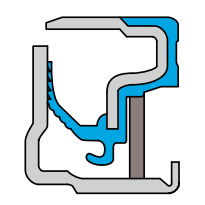		
UA74	UA75	UA76		

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