Thanks for your interest

Go to www.ngi-global.com/products/certified-hygienic-bearing-houses

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reddot winner 2022

Technical data

Certified hygienic bearing houses

Product assortment bearing houses

Certified hygienic

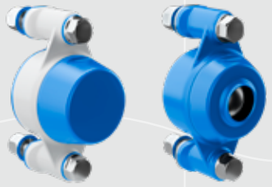
Minimized cleaning time

Minimized water usage

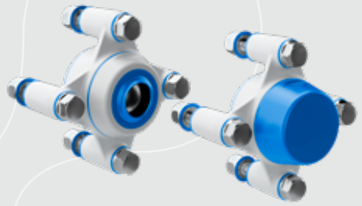
The Bearing House is extremely easy to clean because the cleaning water can easily reach all surfaces behind, around and all the way in and around the shaft.

The house itself is drop shaped and is connected via triangular arms to the fastening leg and the sealed foot. The smooth double curved surfaces combined with the triangular design with no blind angles, help water and detergents to clean all parts of the Bearing House. A well-thought-out open machine design combined with our bearing houses ensures the opportunity to clean places where it was not possible to get before.

2-hole flange - type XB2FC
Shaft Ø 20 mm - 40 mm
/ 3/4 in - 1 1/2 in



4-hole flange - type XB4FC
Shaft Ø 20 mm - 40 mm
/ 3/4 in - 1 1/2 in

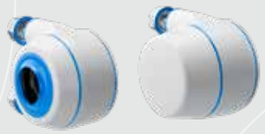


APPROVED

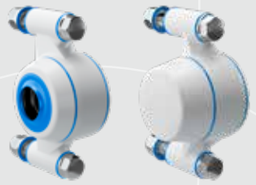
IP69k RPSCQC USDA CERTIFIED CHEDC

3-hole flange - type XB3FC
Shaft Ø 20 mm - 30 mm
/ 3/4 in - 1 1/4 in

Tapped base - type XBTBC
Shaft Ø 25 mm / 1 in



Pillow block - type XBPBC
Shaft Ø 20 mm - 30 mm
/ 3/4 in - 1 1/4 in



Installation bearings

Installation manual
We refer to our installation manual which can be found online and which is enclosed each time, you purchase a bearing house.

The installation manual contains step by step instructions of installation of our bearing houses.

Prior to mounting a bearing house, follow the below instructions:

- Make sure that the shaft is clean and chamfered at the end. If not, remove any burrs with an emery cloth or a fine file. Wipe the shaft clean.
- Especially for bearings that use grub (set) screws, we always recommend to use a solid lubricating paste applied on the inside of the inner ring in the bearing house before mounting to reduce risk of fretting corrosion*.
- Clean the support surface for the unit and check that the recommended flatness is within IT7 tolerance grade.
- If the unit is used again after removal, make sure that the bearing bore, shaft and contact areas between machine and bearing are clean.
- As for tightening torque of bolts and nuts, please follow our recommendation in our product catalogue where we have stated the tightening torque for the various models.
- Bearing units should not be removed from their original packaging until immediately before they are to be mounted; this protects the units from contaminants, especially in harsh environments.

Fretting corrosion

Fretting corrosion is movements between two metal surfaces. In this way, metal particles are worn free and oxidize immediately. Oxidized iron particles can destroy shape tolerances on the shaft or housing, which can lead to serious damage to the bearing.

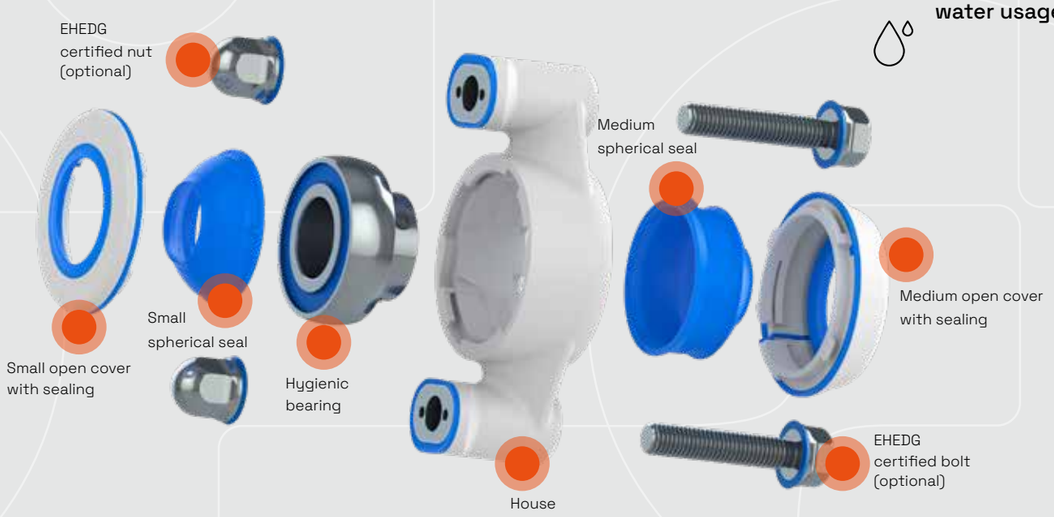
To ensure that the bearing assembly is carried out optimally in the first instance, NGI recommends that before assembly you must be very careful with cleaning the shaft, avoid dirt on the bearing itself and to use an assembly paste between the shaft and the bearing.

Product part names bearing houses

Certified hygienic

Minimized cleaning time

Minimized water usage



The bearing houses are certified according to EHEDG, 3-A and USDA rules and guidelines and has a patented waterproof encasement that seals the bearing blocking out dirt and bacteria as well as extending the lifetime of the bearing.

To provide proper bearing performance and prevent premature failure, skill and cleanliness are necessary when mounting the bearing houses. As precision components, they should be handled carefully when mounting. It is also important to choose the appropriate method of mounting and to use the correct tools.

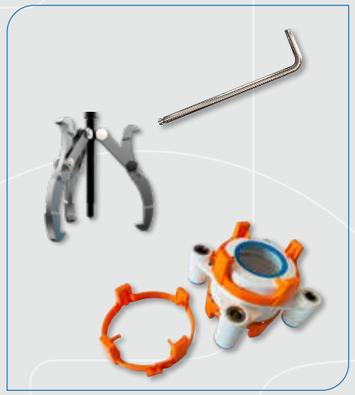
The method used for mounting a bearing houses depends on the:

- Overall machine design
- Housing design
- Method used to attach the bearing to the shaft

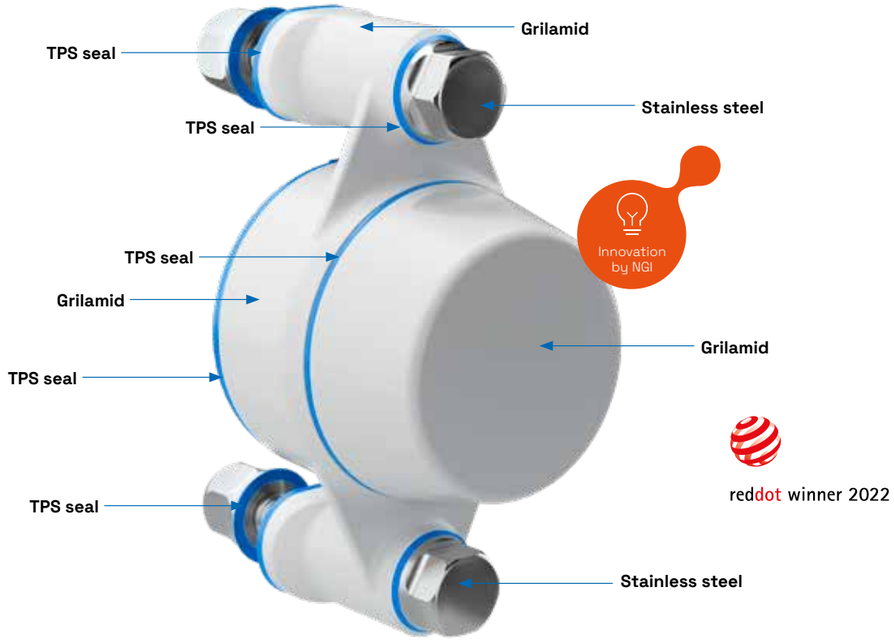
Also download our installation manual at ngi-global.com. NGI bearing houses should not be removed from their original packaging until immediately before they are mounted.

Tools

- A hexagonal key or torque key to tighten the grub (set) screws in the inner ring or the locking collar
- A torque wrench or hexagonal key to tighten the attachment screws, bolts or nuts.
- A bearing puller can be neccesary, if the bearing is stuck on the shaft!
- Assembly paste - anti-fretting agent to protect against fretting corrosion
- A bearing cover tool. The cover hand tool is a tool which makes the replacement of covers and spherical seals much easier. The tool is included in all shipments and orders for bearing houses.



Cleaning & maintenance bearing houses



CLEANING

1. Rinse with water, (max. temp. ~40°C on proteins).
2. Distribute and cover all surfaces with foaming alkaline detergent for minimum 10 min. All usual products within the industry can be used. Follow suppliers recommendations for temperature and concentration (max. 100°C and concentration depending on foaming product).
3. Rinse with hot water (max. 100°C) with low-medium pressure (approx. 8-12 bar) until visible cleanability is obtained. Cleaning of the foot assembly including sealings and domed nuts can normally be done with a spraying nozzle pointing in a downwards direction approx. 45° from above. For more heavy polluted surfaces, a more direct oriented nozzle can be necessary.
4. NB: Be careful not to damage sealings if high pressure cleaning is used. Keep nozzle at min. 200-300 mm distance.
5. If mechanical cleaning is necessary because of severe dirt, cleaning must be executed by a soft brush or soft plastic scraper together with a more direct pointing nozzle spray.
6. NB: Steel scraper, steel brush or other sharp metallic tools are strictly prohibited, since rubber sealings can be severe damaged and the steel surfaces will be scratched.

MATERIALS

The complete hygenic bearing houses are to be considered non-toxic, non-absorbent and migration-free.

All materials are food graded and compliant with the stringent requirements of FDA, 3-A, USDA and European Food Contact regulations and EHEDG.

MAINTENANCE

1. There is no ongoing service on the bearing houses, however we recommend to tighten the screws on the bearing with the following intervals: 24 hours after installation, 1 week later and every month after installation until a suitable interval is found for sealing performance.
2. There are two wear parts in an NGI bearing housing, the bearing itself and the spherical seal. They can both be changed relatively easily, but as this happens significantly less often than for standard bearing houses, you can also change the whole house.
3. If the sealings are damaged, the product involved must be replaced. Always use original spare parts from NGI.

Lubrication is crucial during mounting

Certified hygienic

Minimized cleaning time

Minimized water usage

Fretting can occur between the shaft and the inner ring for stainless bearings especially when they are mounted dry (without lubricant in between).
A high viscosity lubricating paste is the most important thing.
Other things that increase the risk of fretting are a loose fit and not properly tightened set screws, misaligned bearings, and internal forces from poor mounting.

In the following, you can learn about problems and solutions and find our recommendations.

Lubrication:
When the bearing and shaft are mounted without lubrication, there is an increased risk of fretting. This results in dust causing damage to the spherical seal and the seal of the bearing and ultimately cause the bearing to break down. Any lubrication can be used, but we recommend the following.

SKF Anti-Fretting Agent LGAF 3E
The LGAF 3E anti-fretting agent from SKF has been designed to prevent fretting corrosion caused by slight oscillations and vibrations.

Bearings are made easier to dismount after applying the smooth paste made from a mineral and synthetic base oil type. The anti-fretting agent also assists with the removal of general components such as, nuts, bolts, flanges, studs.


1) Lubricate the inside of the inner ring


2) Insert the bearing house over the shaft


3) Remove any large lumps of grease


4) Tighten set screws

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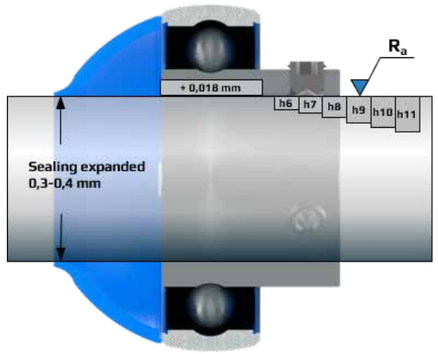
Shaft tolerances bearing houses

We see an increased risk of fretting when there is a loose fit. The desired fit is h7 and if this is higher, you must pay extra attention to tighten and check the set screws, have lubrication between the axle and inner ring and have a correct alignment. The recommended fits for NGI hygienic bearing houses are listed below.



Shaft tolerances:	
Lower or h9	No problem and good for the bearing
Higher than h9	Ok. But can have a negative effect on the sealing effect and therefore the lifetime of the bearing.

Shaft Surface roughness Ra:	
Ra Less than 0,8 µm	Required by EHEDG and recommended by NGI
Ra Between 0,8 µm and 1,6 µm	Will have some affect the service life of the sealing
Ra More than1,6 µm	**Have an impact on the service life and sealing effect**

Shaft diameter tolerances are not as important for the spherical seal as for the inserts bearings, but for tolerances greater than h9 there is a greater risk of leakage over time.

However, the hygienic bearing house is typically used for conveyors with relatively low speed (under 1000 r/min) where the housing creates clean surroundings and with a standard 304 Stainless shaft with a surface roughness Ra between 0,8 µm and 1,6 µm and h9 tolerance or lower.

The recommended fits for NGI hygienic bearing houses are listed below.

Recommended fits	
Operating conditions	Tolerance class [1]
P > 0,05 C and/or high speeds	h6
0.035 C < P _ 0,05 C and/or low speeds	h7
0,02 C < P _ 0,035 C and/or low speeds	h8
Simple bearing arrangement or P _ 0,02 C	h9–h11

[1] All ISO tolerance classes are valid with the envelope requirements (such as h7 E) in accordance with ISO 14405-1.

- For moderate loads (0,035 C < P _ 0,05 C), the shaft seats should be machined to an h7 tolerance.
- For light loads and low speeds, an h8 shaft tolerance is enough, and for very simple applications, h9 to h11 shaft tolerances may be used.
- Shafts are machined normally to h9 or better.
- For non-demanding applications up to h11

Locking of the bearing on the shaft

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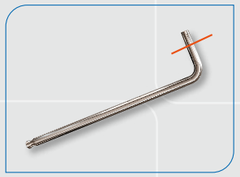
Minimized cleaning time

Minimized water usage

Set screws on our models are a little difficult to get to due to the hygienic design of the housing, but they are important to tighten as much as possible without damaging them.
If a set screw is damaged, it is typically in the 6 hex flats engagement with the allen key, which means that it is important that the allen key is fully engaged when the screw is tightened and that the allen key is not excessively worn.
You can also shorten the short part so that it can be inserted into the housing.
If necessary, use an already worn allen key.

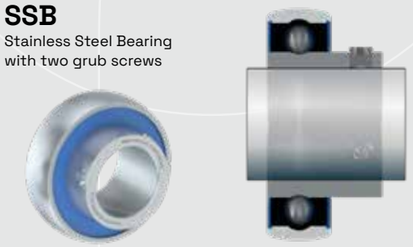


Grub screws

This method enables very easy mounting and dismounting, even if space is limited. This locking method is typically used in applications where the shaft alternates direction of rotation. The bearing inner ring is extended on one side and is locked on the shaft with two stainless steel grub screws that are positioned at 120°, minimizing inner ring distortion while maintaining good gripping strength.

SIZE [mm]	POS. 6 THREAD	TIGHTENIG TORQUE [Nm]	KEY SIZE SW [mm]
47	M6x0,75	4	3
52	M6x0,75	6	3
62	M6x0,75	6	3
72	M8x1,00	12	4
80	M8x1,00	12	4

SSB
Stainless Steel Bearing
with two grub screws

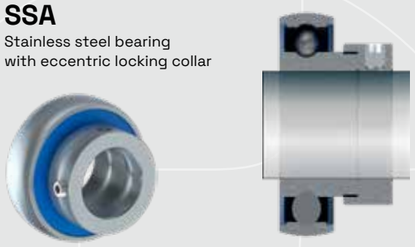


Eccentric locking collar

This locking method is typically used for applications where the shaft rotates in one direction only. It can be used for alternating directions when loads and speeds are low.
Bearings with an eccentric locking collar are intended primarily for use in applications where the direction of rotation is constant. On one side of the bearing inner ring is an eccentric extension that fits the locking collar. Turning the locking collar on the inner ring extension in the direction of rotation locks the collar and bearing on the shaft. A single grub screw further secures the collar to the shaft.
When mounting the bearing to the shaft, place the eccentric locking collars on the inner ring extension of the bearing and snug tighten them in the main direction of rotation. Tighten the locking collars to their final position using a hook spanner with a stud engaging the hole in the circumference of the collar.

SIZE [mm]	POS. 7 THREAD	TIGHTENIG TORQUE [Nm]	KEY SIZE SW [mm]
47	M5x0,8	4	2,5
52	M5x0,8	4	2,5
62	M6x1,0	6	3
72	M6x1,0	6	3
80	M8x1,0	12	4

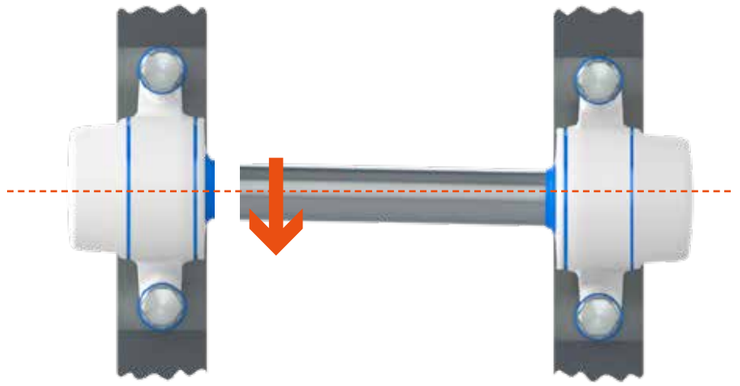
SSA
Stainless steel bearing
with eccentric locking collar



Adjustment and misalignment bearing houses

Adjustment and misalignment under 4mm

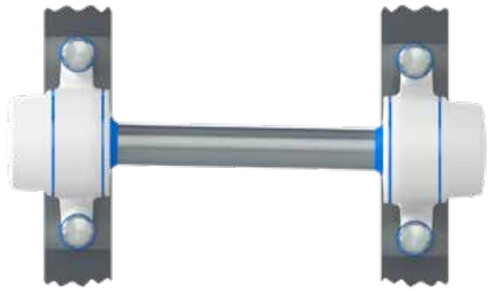
The shaft insertion into the bearing house has a new groundbreaking patented design that enables a waterproof seal to the shaft despite an installation angle of up to 3 degrees misalignment. The sealing simply moves with the shaft.



The advantage of an insert bearing is that it can be adapted to angle misalignment in the construction at maximum of 3 degrees.

It's the hole meaning of the design, but sometimes the shaft does not point directly into the opposite bearing house. If so, the bearing must be aligned in both bearing houses so that they each point directly into the opposite one.
It is also possible to use a rubber hammer to align the bearing housing or shaft. When the bearings both are aligned will you be able to move it freely without resistance in the axial direction. The last thing to tighten is the set screws.

If this alignment is not correct the shaft will try to move in the axial direction and the inner ring of the bearing will wobble around the shaft and that can result in fretting and reduced life of the bearing.



Loads bearings

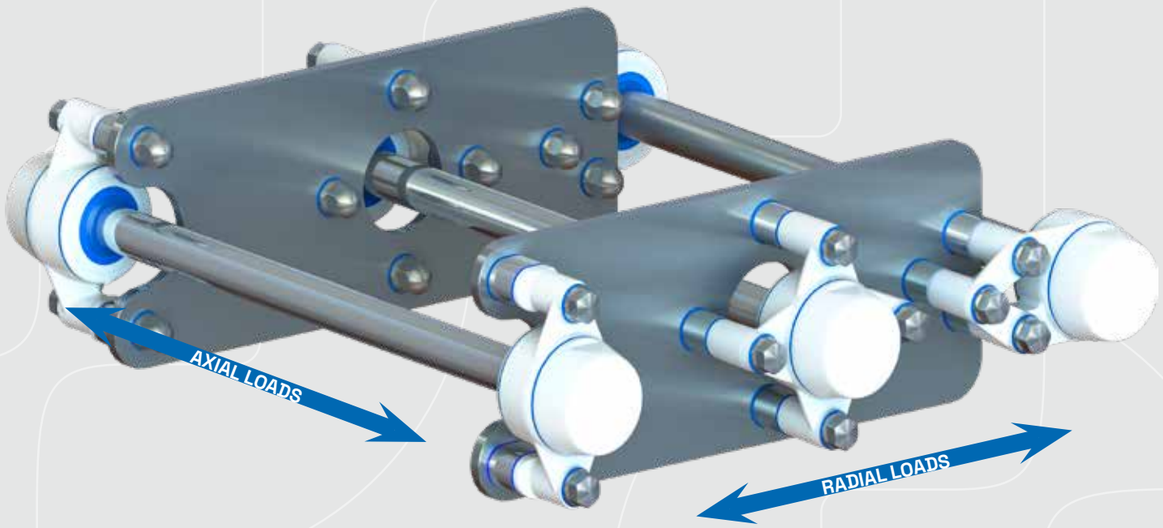
The magnitude of the load is the factor that usually determines the size of the shaft and the bearing house to be used. Generally, units with housings made from stainless steel can withstand heavier loads than units in composite material. But We are using the grilamid material for our bearing houses and hereby making them nearly as strong as stainless houses and then they can withstand at least the same dynamic and static loads as their insert bearings and are less sensitive to shock loads.

Radial loads

In applications where normal to heavy loads occur, only steel bearing house should be used. These can withstand at least the same dynamic and static loads as their insert bearings and are less sensitive to shock loads.
Composite bearing houses are designed to withstand moderate to normal loads and can accommodate shock loads and even dampen them to a point.
Please notice that the static load C_0 is 20% lower for the hybrid bearings.

Axial loads

The axial load carrying capacity of a bearing house depends not as much on its internal design as its outside design and of the way it is locked onto the. In general, units with housings made from stainless steel can withstand heavier loads than units in composite material.



Speeds sealings in the bearings

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Certified hygienic

Minimized cleaning time

Minimized water usage

The speed at which a bearing can operate depends mainly on the quality of the bearing and the seal that is used. Method used to lock the bearing onto the shaft, do make a difference, but not with the methods NGI is providing.

The permissible operating speed also depends on the shaft tolerance, when using bearings on shafts with wider tolerances than h6.

The maximum speed is also influenced by many other things like, operating temperature, load during operation, shaking, pulsating movements, oil/grease in the bearing, but normally the seal have the main influence. Therefore, you can see our recommendations below!

Many sealed bearing houses use an oil sealing ring in soft NBR rubber and that's fine when grease is used to keep it lubricated but when a hygienic solution demands that no grease is used the sealing creates friction against the shaft and gets hot and worn out.

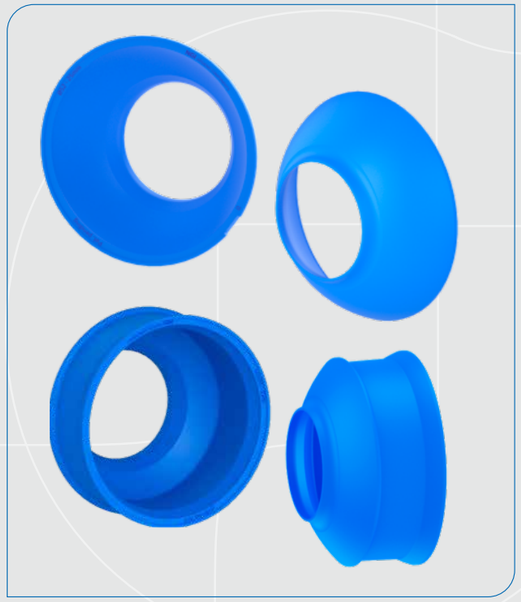
Maximum speed of sealings in the bearings

Shaft diameter [mm]	Maximum speed sealing* [R/MIN.]
20	1875
25	1500
30	1250
35	1070
40	940

Spherical sealings bearing houses

The spherical seal is unique in the way that it always moves together with the spherical bearing and shaft. Outwardly its held in place and sealed with a spherical cover. The design allows for large angular misalignment without sealing and sliding resistance is being affected. The material is compliant with FDA and EU regulations for chemicals and food:

- Compliant with EU regulation 10/2011
- FDA-compliant
- High media resistance
- Lubrication- and maintenance-free



The bearings are characterized by extreme media resistance and are tribologically optimized, the material can be used in the below temperatures and conforms to demands of the food processing sector.

Sealing temperature:	
Highest long-term service temperature	90°C
Highest short-term service temperature	100°C
Highest short-term ambient temperature	120°C
Lowest service temperature	-20°C

The range of properties is completed by the material's optical detectability or blue color, often required in the industry.

Spare part - spherical seals

All according to use, we recommend replacing the spherical seal as needed, depending on local conditions and applications. Our spherical seal is unique and patented and follows the shaft and bearing. It is sealed even when misaligned up to 3 degrees.

Even though our spherical seal has a longer lifetime than equivalent products, this is a wearing part and eventually this part will need to be changed. Please note that our spherical seals are lubrication-free. We have two types of spherical seals, a small seal and a medum seal, and a range of sizes.

The small seal is used for small open covers and the medium seal is used for open medium covers.