



ASSEMBLY INSTRUCTIONS

E-series

ES / ESF / ED / EDF

General Information

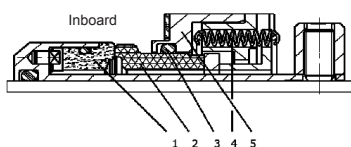
Huhnseal ES is a single balanced cartridge seal. This seal has an excellent axial movement capability ($\pm 2\text{mm}$) combined with a large angular tolerance. Additionally, it has a robust spring package consisting of tension springs located away from the product.

Huhnseal ED is a double balanced cartridge seal. This seal has an excellent axial movement capability ($\pm 2\text{mm}$) combined with a large angular tolerance. Additionally, it has a robust spring package consisting of compression springs which are located away from both the product and buffer media.

Mechanical seals are precision machine components which require extreme cleanliness and care during handling and assembly.

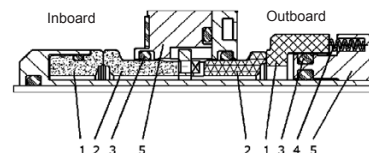
- Avoid impacts and direct hits on the seal
- Avoid direct hammering on the seal itself
- Do not drop it on the floor or workbench, this will lead to immediate seal damage

Material designation key for single and double cartridge seals



Type	Size	Inboard side							Outboard side					
ED	070	Z	Z	6	0	7	/	C	8	6	8	7		
Position		1	2	3	4	5	/	2	1	3	4	5		

Position	Description
1: Rotor	Z=Sintered Silicon Carbide, C=Carbon, 8=Tungsten Carbide
2: Stator	Z=Sintered Silicon Carbide, C=Carbon, 8=Tungsten Carbide
3: Elastomers	4=FFPM, 5=FPM, 6=EPDM
4: Springs	0=ingen, 7=EN 1.4436, 8=Hastelloy C
5: Steel parts	7=EN 1.4436 / 1.4301



Example: ES-070-ZZ687 = SiC/SiC/EPDM/Hastelloy C/EN 1.4436
 ED-070-ZZ607/C8677 = SiC/SiC/EPDM/EN 1.4436 // Carbon/Tungsten Carbide/EPDM/EN 1.4301

Delivery control

Technician's signature: _____	Date: _____	ID number: _____
Assembly: Test-mounted on shaft <input type="checkbox"/> Axial movement checked <input type="checkbox"/>	Pressure test: (Double seals only) Seal pressure tested <input type="checkbox"/> Pressure: _____ bar Media: _____	Test run: (Diamond coated seals faces only) Seal test run <input type="checkbox"/> Pressure: _____ bar Speed: _____ rpm Time: _____ hrs Media: _____

Preparations

1. Equipment

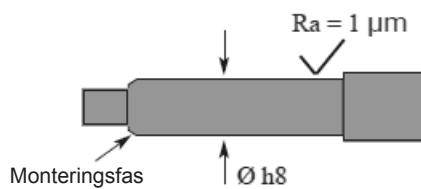
- Check that the equipment is clean and in good condition.
- Check that the bearing unit is in good condition and that there is no noticeable axial gap.
- Check that there is no noise from the bearings during rotation of the shaft.

2. Housing and Stuffing Box

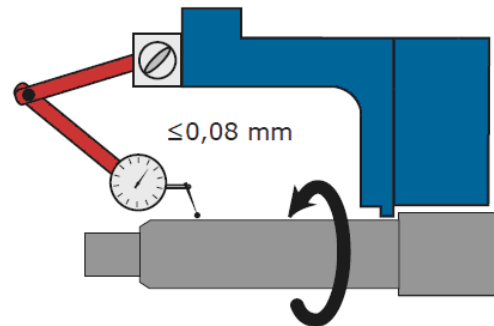
- Check that the stuffing box is clean.
- Check that all surfaces in contact with O-rings and gaskets are clean and free from sharp edges, scratches or burrs.
- Check that the mounting dimensions match those indicated in the product dimension sheet or drawing provided with the seal.

3. Shaft condition

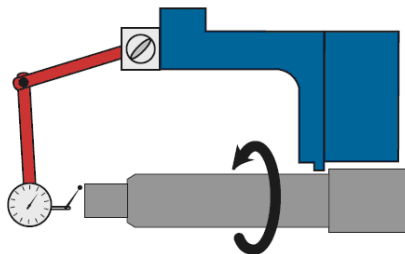
- Check that the shaft surface is clean and free from sharp edges, scratches or burrs.
- Check surface condition and diameter tolerance
- Check that there is a mounting chamfer.



4. Radial runout



5. Axial runout



≤1000 rpm	0,15 mm
1000-1500 rpm	0,08 mm
1500-3000 rpm	0,025 mm

6. General

- Mechanical seals are precision components. High cleanliness and considerable care are required when handling them.
- Avoid impacts and direct hits on the seal.
- Avoid direct hammering on the seal itself.
- All necessary services such as quenching and flushing should be in place before starting up.
- Never run a seal dry unless it was specifically designed for that purpose. Dry-running will immediately damage the seal and lead to failure.

Assembly

1. Check that built-in dimensions are in agreement with those on the product sheet (or drawing if special seal).
 - Shaft diameter (dimension "d" tolerance h8)
 - Stuffing box diameter (Dmin/Dmax)
 - Stuffing box depth (dimension "B")
 - Axial distance from seal flange mounting face to nearest obstruction (dimension "A" – "B")
 - Bolt circle and bolt size (dimension "E", "F" and "H")
2. Lubricate shaft with product and elastomer compatible grease.

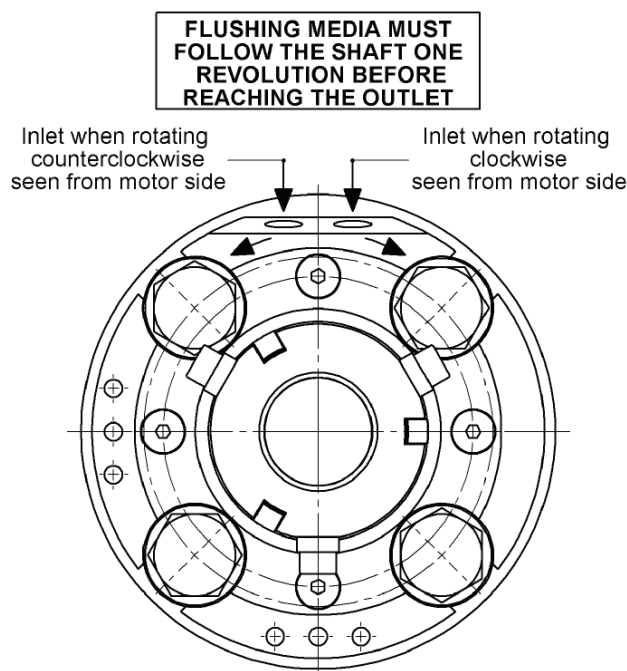
NOTE! For elastomers in EPDM, do not use mineral oil based grease. Use the grease supplied.

3. Check that O-ring (pos. 9) and gasket (pos. 14 for ES and 17 for ED) are intact and in place.
4. Lubricate the O-ring (pos. 9).
5. Slide the complete cartridge over the shaft until it reaches the pump casing and tighten the bolts crosswise.
6. Check that the mounting spacers (pos. 18) are in place.
7. Tighten the set screws (pos. 11) on the shaft, secure them with Loctite 243 or equivalent.
8. Remove spacers (pos. 18). Store these by using the threaded holes provided on the flange. These spacers will be used again when the seal is disassembled or when maintenance work is carried out on the bearing or coupling.
9. Rotate the shaft and check that it rotates freely and without noise.

Additional assembly steps for ESF, ED and EDF

10. Connect the piping for cooling media

NOTE! For ED, which inlet is used depends on the direction of rotation, see drawing below.



11. Open cooling media and let it flow through seal for a couple of minutes in order to vent the circuit before the pump is started.
12. Adapt flow rate to media temperature and pressure/speed. See recommendations on the next page.

NOTE! Never run the seal dry.

Maintenance

If required the seal may be returned for repair. Alternatively, spare kits may be ordered if repair on-site becomes necessary.

Recommendations for cooling of seal

It is absolutely essential for proper functioning of the mechanical seal that there is a lubricating and cooling film between the seal faces. Depending on the application, there are several methods to ensure that the seal is supplied with an appropriate media in order to build this film. Basic instructions are given below. For special applications, please contact Huhnseal for advice.

Dual seal cooling (ED) basics

Make sure that cooling media is connected to the seal and that the media flows through the seal before startup. This is necessary to ensure that the seal faces on the outboard side are cooled and lubricated. Use hoses dimensioned for this pressure.

Dual seal (ED) with high pressure cooling ($P_{\text{cooling}} > P_{\text{stuffing box}}$)

Used when sealing abrasive liquids containing small abrasive particles in the 1-5 μm size range. These can come in between the faces and damage them. Cooling media pressure must be 1-1,5 bar over the stuffing box pressure (max. 10 bar).

Dual seal (ED) with low pressure cooling ($P_{\text{cooling}} < P_{\text{stuffing box}}$)

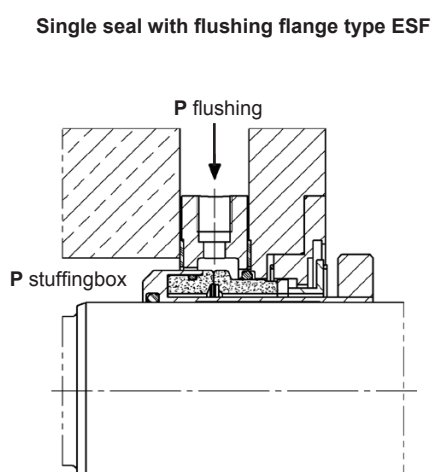
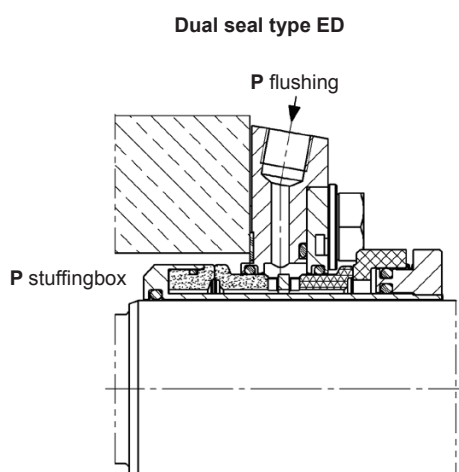
Used when sealing in general applications requiring a dual seal, e.g. crystallising, sticky or quick-drying liquids which can build layers. This should also be used for applications which require cooling (product temperatures over 80-90°C). For usual applications a cooling media pressure of 2-4 bar is recommended.

Cooling media flow

Media pressure and flow through the seal can be adjusted by using a flowmeter and 2 regulator valves. Flow must be adapted to heat generation on the seal, which is dependent on pressure, rotational speed and media temperature. Adjust this flow so that outlet temperature does not exceed 40-45 °C. It is recommended that flow does not go under 1 l/min. For additional optimisation of cooling water consumption please contact Huhnseal AB.

Single seal with flushing flange (ESF)

For sealing applications with a single seal a flushing flange can be used. Suitable hose or tube can be connected to it in order to keep the area around the seal faces clean with pressurized water. It is important that the pressure in the flushing system is higher than the inboard pressure.



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