EagleBurgmann

OPERATING MANUAL

EagleBurgmann Mechanical Seal (M.S.)

H75S2/dw-00

(dw = specified shaft diameter)

applies to all mechanical seals of the same series

These instructions are intended for the assembly, operating and supervising personnel and should be kept at hand on site.

PLEASE READ this manual carefully and OBSERVE the information contained as to:

- **Safety**
- **Installation**
- **Transport / Storage**
- **Operation**
- **Information about the product**
- **Servicing**

If there are any unclear points please contact EagleBurgmann by all means!

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Keywords and Symbols

Following symbols for particularly important information are used:

"Attention, please pay special attention to these sections of text"

DANGER! Draws attention to a direct hazard that will lead to injury or death of persons

WARNING! Draws attention to the risk that a hazard could lead to serious injury or death of persons

CAUTION! Draws attention to a hazard or unsafe method of working that could lead to personal injury or damage to equipment

ATTENTION! Identifies a potentially dangerous situation. If it is not avoided the product or something in its vicinity could be damaged

IMPORTANT! Identifies tips for use and other particularly useful information.

GENERAL SAFETY NOTES

Any person being involved in assembly, disassembly, start-up, operation and maintenance of the mechanical seal must have read and understood this operating manual and in particular the safety notes. We recommend the user having this confirmed.

EagleBurgmann mechanical seals are manufactured to a high quality level and they have a high working reliability. Yet, if they are not operated within their intended purpose or handled inexpertly they may create risks.

The machine has to be set up in such a way that seal leakage can be led off and disposed of properly and that any personal injury caused by spurting product in the event of a seal failure is avoided.

Any operation mode that affects the **operational safety** of the mechanical seal is not permitted.

Unauthorised modifications or alterations of the mechanical seal are **not permitted**.

Mechanical seals must be installed, operated, maintained and removed by **authorised**, **trained and supervised qualified personnel only**. In case the personnel has no long years of experience in handling with and operating of mechanical seals and their supply systems, for this purpose EagleBurgmann offers corresponding seminars for achieving of the required knowledge.

The **responsibilities** for the respective jobs to be done **have to be determined clearly and observed** in order to prevent ambiguous competencies from the point of **security**.

Any work to be done on the mechanical seal is **generally** only **permitted** when the seal is **neither operating nor pressurised**. The machine must be protected against accidental start-up.

WARNING! Seals that have been used with **hazardous substances must be properly cleaned** so that there is no possible **danger** to people or to the environment.

Apart from the notes given in this manual the general **regulations for worker's protection and those for prevention of accidents** have to be observed.

Instructions for worker's protection

WARNING! If the **medium to be sealed** and/or the **supply liquid** is subject to the **Hazardous Substances Regulation** (GefStoffV), the **instructions for handling dangerous substances** (safety data sheets to EU Directive 91/155/EEC) and the **accident prevention regulations** have be observed.

Medium to be sealed and/or **supply medium may escape** if the seal **fails**. Injury of persons and environment may be **prevented by the user** providing for splash protection and wearing of safety goggles. Care has to be taken by the user for **proper disposal** of the leakage. The user has to control these measures.

The **user** has to **check** what **effects a failure** of the mechanical seal might have and what safety measures have to be taken to prevent **personal** injury or damage to the environment.

Notes on explosion protection

Mechanical seals are **mechanical parts**, which are put in circulation for general technical purposes. They are not components within the meaning of Directive 2014/34/EU.

The respective probation as to explosion protection for the provided temperature class must be carried out during the conformity assessment of the machine, into which the mechanical seal is installed, by the machine manufacturer.

In case the assessment is carried out by the end user, the respective additional operating manual has to be requested from EagleBurgmann.

TRANSPORT / STORAGE

Transport

If not specified differently by contract the EagleBurgmann standard packaging is used which is suitable for dry transport by truck, train or plane. The warning signs and notes on the packaging must be observed.

In addition seaworthy packaging may become necessary.

Notes for income inspection:

- Check packaging for visible damage.
- Open packaging carefully. Do not damage or lose parts supplied separately.
- Check if consignment is complete (delivery note). Inform the supplier immediately in writing if parts are damaged or missing.

The mechanical seal has to be protected from damage during transport and storage. The transport case in which the seal is supplied is well suited for this purpose and should be kept for a possible return transport.

ATTENTION! If the machine as well as the mechanical seal installed into the machine are transported together, the shaft must be protected from deflection at all times, shocks and axial displacement by means of a suitable machine support.
Damage at the M.S. caused by insufficient protection during transport is excluded from the warranty.

Storage, "mothballing" (long term storage)

The following recommendations apply to all mechanical seals which have been supplied and stored in their **undamaged original packaging**, as well as to seals which have been installed in a machine (e.g. pump, compressor, agitator, etc.) but have not yet been put into operation.

Mechanical seals and spare parts are super finished and repeatedly tested machine elements. For storage special conditions have to be followed.

Sliding materials and secondary sealing elements are subject to material-specific and time-based alterations (distortion, ageing) which might reduce the full efficiency of the mechanical seals. Hence, this may be avoided by observing the storage instructions.

For the stock keeping of elastomers special conditions are required. For all rubber-elastic parts the rules of DIN 7716 resp. of ISO 2230-1973 (E) are valid.

Optimum conditions for storing of mechanical seals
- dust free
- moderately ventilated
- constant temperature
  - relative air humidity below 65 %,
  - temperature between 15 °C and 25 °C.

Protect the mechanical seal from
- direct exposure to heat (sun, heating)
- **ultraviolet light** (halogen or fluorescent lamps, sunlight, arc welding)
- presence or development of **ozone** (arc welding, mercury vapour lamps, high-voltage devices, electric motors)

➢ **risk of embrittlement** of elastomeric materials

It must be recognised that a difference exists between:
- **M.S. stored** in the stock room
- **M.S. installed** in the machine, but not yet in operation.

☐ **M.S. in the stock**

IMPORTANT! Store the **seal in the original packaging** lying on a **flat surface**.

- Check the packaging periodically for damage.
- Sealings packed in plastic-foil with humidity indicators have to be checked every 8 weeks. The check has to be recorded.

➢ Packagings **exceeding 50 % rel. humidity** values have to be sent to the manufacturer or the **nearest EagleBurgmann service centre** for inspection and new packaging.

Unused stored mechanical seal under optimum conditions:

- For reasons of safety, after 3 years from delivery of the mechanical seal the M.S. should be returned to EagleBurgmann resp. nearest EagleBurgmann Service centre for

➢ Exchange of all secondary seals and springs
➢ Verification of the flatness of the faces
➢ Perhaps static pressure test.

☐ **M.S. installed into the machine:**

ATTENTION! **”Mothballing”** (long term storage) of the mechanical seals is **not allowed**.

In case of a "mothballing" (long term storage) of complete machines with mechanical seals installed EagleBurgmann has to be contacted.

- **Do not** use corrosion protection agents.

➢ Risk of deposition and possibly chemical attack of the secondary seals.

Due to longer erecting times of newly designed plant the period between delivery of the mechanical seal and its installation and start-up in the machine may exceed a period of 2-3 years.

After 3 years at the latest and in good time before the planned start-up of the plant the seal has to be dismantled sent to the manufacturer or the nearest EagleBurgmann service centre where it can be checked and reconditioned, if necessary.

EagleBurgmann do **not accept any warranty** for damage caused by **improper** storage.

INFORMATION ABOUT THE PRODUCT

All technical information given is based on the results of extensive testing and on our long term practical experience. However, in view of the great diversity of possible applications the technical data can only be taken as being of approximate nature. We can only guarantee the safe and efficient functioning in individual cases if we have been comprehensively informed of the operating conditions to which they will be subject, and if this has been confirmed in a separate written agreement.

Manufacturer and country of origin

EagleBurgmann Germany GmbH & Co. KG
Äußere Sauerlacher Str. 6-10
D - 82515 Wolfratshausen

Germany

Type designation

Mechanical Seal **H75S2/dw-00**

dw = specified shaft diameter

Materials

The materials of the mechanical seal depend on the application and are bound to the customer order. They can be found on the drawing, and/or in the parts lists attached to the documentation.

Designated use

This mechanical seal is **exclusively** designed for the use in the specified application. A **different utilisation** or usage of the seal going beyond the specification is considered **contrary to its designated use** and excludes a liability for possible consequences by the manufacturer.

Operation of the seal under conditions lying **outside** the limits stated in paragraph **"Operating limits"** is considered **contrary to its designated use**.

Should the mechanical seal be operated under different conditions or in a different application EagleBurgmann has to confirm that such a change is safe in advance of subsequent operation.

- **Changes** to operating conditions **have to** be documented.

Operating limits

ATTENTION! Operating limits depending on the materials used.

Temperature to be sealed	(t1)	:	-50 ... +220 °C [1) 2)]
Sliding speed	(vg)	:	20 m/s
Material combination		**:**	**Carbon graphite / SiC**
Shaft diameter	(dw)	:	14 ... 100 mm
Pressure to be sealed	(p1)	:	40 bar g
Shaft diameter	(dw)	:	>100 ... 200 mm
Pressure to be sealed	(p1)	:	25 bar g
Shaft diameter	(dw)	:	>200 ... 250 mm
Pressure to be sealed	(p1)	:	16 bar g
Material combination		**:**	**SiC / SiC**
Shaft diameter	(dw)	:	14 ... 100 mm
Pressure to be sealed	(p1)	:	25 bar g
Shaft diameter	(dw)	:	>100 ... 200 mm
Pressure to be sealed	(p1)	:	16 bar g
Shaft diameter	(dw)	:	>200 ... 250 mm
Pressure to be sealed	(p1)	:	12 bar g

Temperature to be sealed	(t1)	:	-50 ... +100 °C [1) 2)]
Sliding speed	(vg)	:	20 m/s
Material combination		**:**	**Carbon graphite / SiC**
Shaft diameter	(dw)	:	14 ... 60 mm
Pressure to be sealed	(p1)	:	80 bar g

[1)] depending on the sliding materials
[2)] depending on the elastomer materials

Please observe that the given operating limits interact, and therefore not all extreme values can be called on simultaneously.

Beyond that, the range of application of the respective product depends on the diameter, the materials used, the operation mode and the media to be sealed.

If there are any unclear points please contact EagleBurgmann.

Operating conditions

The exact operating data for the respective application, e.g. medium to be sealed, operating pressure, operating temperature, speed, etc., are listed in the operating manuals and the specification sheets of the machine manufacturer and/or the end user.

The **selection** of the mechanical seal (type, suitability, materials) should be done **by EagleBurgmann staff** or other **authorised** persons. A wrong selection by unauthorised persons is **not covered by** EagleBurgmann's **warranty**.

Drawings, diagrams

Assembly drawing H75S2/dw-00

dw = specified shaft diameter

The original assembly drawing in its latest edition (latest revision) only is decisive for both the design of M.S. as well as the utilisation of this manual.

In the following description all figures in parentheses, e.g. (2) define the respective part item no. in fig. 1. The part item no. may vary from those stated on the corresponding assembly drawing.

Description

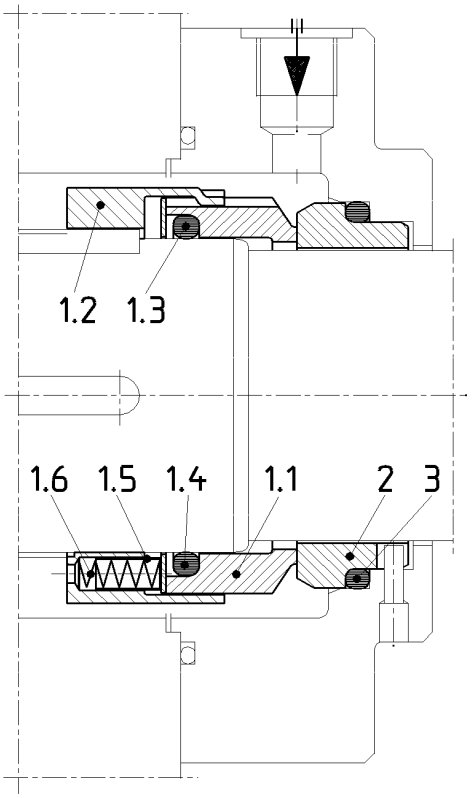


Fig. 1

- **single seal**
- **balanced**
- **bi-directional**
- **rotating seal face** (1.1)
- **stationary seat** (2)
- **multiple springs** (1.6) in guide sleeves (1.5)
- **axial movability**
  dw < 55 mm : ±2 mm
  dw ≥ 55 mm : ±3 mm
  dw > 100 mm : ±4 mm
- **torque transmission** from the mechanical seal to the shaft by means of a parallel key

Required space, connecting dimensions

The required installation space for the mechanical seal is decisive for the design of the housing parts by the machine manufacturer. The connecting dimensions have to be checked by the machine manufacturer by means of the EagleBurgmann drawing before mounting the mechanical seal.

Versions

The seal types mentioned before are also usable as **multiple** mechanical seals in **tandem arrangement** together with a pressureless supply (buffer) fluid system **(API, plan 52)** or as dual mechanical seals (back-to-back / face-to-face) together with a pressurised supply (barrier) fluid system **(API, plan 53)** (also in combination with seal types of other series). **Consultation** with the EagleBurgmann company is recommended.

Supply of M.S.

The mechanical seal has to be constantly wetted by liquid medium. The medium to be sealed must not damage the M.S. neither chemically (e.g. corrosion, embrittlement) nor physically (e.g. erosion, abrasion).

For a safe operation of the mechanical seal we recommend applying **at inboard** the most suitable **type of circulation** described in **API 610 / 682**. This measure protects the seal cavity from deposition of solids.

To operate multiple seals special supply systems are required. Please contact EagleBurgmann.

Emissions

A mechanical seal is a **dynamic seal** that **cannot be free of leakage** due to physical and technical reasons. Seal design, manufacture tolerances, operating conditions, running quality of the machine, etc. mainly define the leakage value. In fact, compared to other sealing systems there is **few leakage**.

During the running-in phase of the M.S. an increased leakage may occur.

If the leakage amount does not decrease or if there are other malfunctions the mechanical seal has to be shut down, removed and checked for reasons of safety.

The leakage can be liquid or gaseous. Its aggressiveness corresponds to that of the medium to be sealed.

Leakage of the M.S. at outboard side has to be drained and disposed of properly.

IMPORTANT! Components which may have contact with the leakage have to be corrosion-resistant or have to be adequately protected.

WARNING! If the **medium to be sealed** and/or the **supply liquid** is subject to the **Hazardous Substances Regulation** (GefStoffV), the **instructions for handling dangerous substances** (safety data sheets to EU Directive 91/155/EEC) and the **accident prevention regulations** have be observed.

INSTALLATION

General notes dealing with assembly utilities

For cleaning:
- ethyl alcohol
- cellulose-tissue (no rag, no cloth!)

For applications free from silicone:
- cotton-tissue (no rag, no cloth!)
- clean cotton gloves

For lubricating:
- suitable lubricants
- Lubricants must be compatible with all media (e.g. medium to be sealed, supply, flushing and/or cooling medium etc.), with those they get into contact with, and they must not corrode the secondary sealing elements.

ATTENTION! Secondary sealing elements made of **EP-rubber** must **never** come into contact **with mineral oil-based lubricants** (swelling, possibly decomposition).
- suitable synthetic lubricant for dynamic elastomeric secondary sealing elements e.g. **"TURMOPOL GREASE SH 2 D"** make: Lubricant Consult (LUBCON).
- suitable lubricants (conform with FDA)
  e.g. **"TURMSILON LMI 5000"** make: Lubricant Consult (LUBCON).
- chloride-free surfactants (e.g. sodium dodecyl sulphate (SDS)) or low-surface-tension water for elastomeric bellows seals and static elastomeric secondary sealing elements of seats

ATTENTION! For applications free from silicone:
- Lubricants must be free of silicones, fluorinated compounds which are able to migrate, and tensides.

For installation:
- set of hexagon keys
- set of open end or ring spanners
- torque wrench

Additional for single seals:
- o-ring lifter
- cardboard discs to cover the sliding faces during installation
- hand screw press (compulsory for shaft diameter ≥80 mm)
- press-in tool (as usual for radial rotary shaft seals)

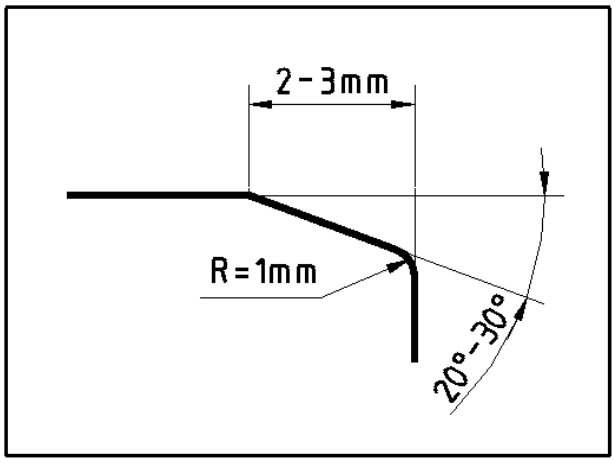
For sealing:
- Sealing agents for threads for pipe connections, e.g. **"LOCTITE® Nr. 266"** make: LOCTITE Corporation

For securing:
- for bolts, set screws etc. use liquid screw retention, e.g. **"LOCTITE® Nr. 243"** make: LOCTITE Corporation

Preparation for assembly

ATTENTION! To prevent **damage** to the seal, **do not remove it from its packaging** until all the work described below has been **completed**.

Check the parts of the machine for:



- **connecting dimensions**, if available tolerances of position and shape for the connecting parts (see drawing)
- **chamfered edges** (sliding cones i.e. 2 mm / 30° or in accordance with EN 12756)
- **radiused transitions**
- **mating fits** fine finished: **Rz 10 µm** (= N7 = CLA 63)
- **shaft surface** in the area of the mechanical seal: **Ra = 0,8 µm** (= N6 = CLA 32)
- **surface** in the area of the dynamically loaded o-ring roughness: **Rmax 5 µm** (= N6 = CLA 32)
- **surfaces** for:
  - static secondary sealing elements fine finished: **Rz = 10 µm** (= N7 = CLA 63)
  - PTFE secondary sealing elements fine finished: **Rz = 5 µm** (= N6 = CLA 32)

- **Keyway** in the shaft for torque transmission of M.S.
- **Shoulder** or stop device for the driver of the M.S. to take up axial forces

Check on the machine:
- damage of connecting surfaces to the M.S.
- mating dimensions, rectangularity and concentricity to the shaft axis.

- Fix the machine shaft in centric and axial position.

Type and quality of the shaft bearing have a major influence on the well-functioning and the service life of the M.S.

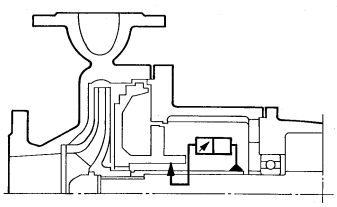
Before the M.S. is installed both the
- concentricity accuracy of the shaft
- and the run-out accuracy between shaft and machine housing

have to be checked.

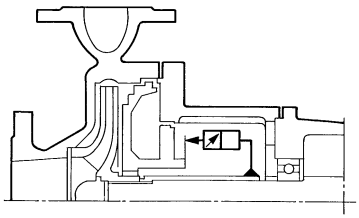
The maximum permitted axial displacements have to be considered, and the instructions of the manufacturer have to be observed.

Concentricity accuracy of the shaft (acc. to DIN ISO 5199):
- Shaft diameters up to 50 mm: max. 0.05 mm
- Shaft diameters 50 mm - 100 mm: max. 0.08 mm
- Shaft diameters exceeding 100 mm: max. 0.10 mm

Eccentricity and **run out** as specified by EagleBurgmann!



Eccentricity of the inner surface of the seal chamber to the shaft:
- max. 0.1 mm for seals **with** pumping screw
- max. 0.2 mm for seals **without** pumping screw



Run-out accuracy of the vertical contacting surface between seal chamber and shaft axis:
- Shaft speed ≤ 750 rpm: max. 0.2 mm
- Shaft speed 1000 rpm: max. 0.15 mm
- Shaft speed 1500 rpm: max. 0.08 mm
- Shaft speed 3000 rpm: max. 0.025 mm

In case of installation into other machines the shown values apply as directive.

- Prepare the assembly place, take away any un-required tool, cuttings, dirty cleaning wool etc.

- Cover the work bench with a piece of clean, non-fibrous cardboard.

Assembly / installation

Mechanical seals are super-finished and repeatedly tested machine elements whose handling during assembly requires special care during certain procedures, particularly when dealing with sliding materials and elastomers.

For installation the assembly drawing has to be observed.

- Unpack the seal.
- ➢ If necessary, use suitable auxiliaries (e.g. crane, elevating machinery, lifting device, eye bolts etc.).

ATTENTION! The **regulations for the prevention of accidents** have to be followed.

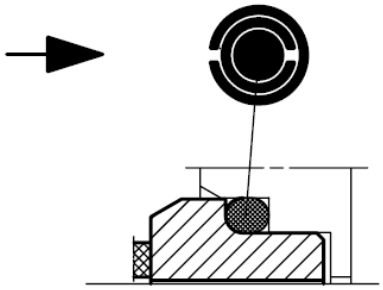
After having unpacked the mechanical seal:
- remove the protective covers from the sliding faces
- clean the sliding faces with ethyl alcohol and paper tissues
- check the parts for possible damage.
- ➢ Never place the seal faces or seats on their sliding faces without having covered them adequately.
- Clean all parts thoroughly.

- Check before starting assembly:
  - complete availability of all components by means of the drawing
  - all components have to be clean and in perfect condition.

The order of assembly to install the mechanical seal into the machine depends on the design of the machine and has to be determined by the machine manufacturer.

➢ If the machine manufacturer specified auxiliaries (jigs and fixtures) they have to be used in accordance with the specifications of the manufacturer.

- The mechanical seal has to be installed under the cleanest conditions and very carefully.
- Avoid unnecessary rotation of the shaft (damage of the sliding faces is possible).
- Never use force during installation.
- Avoid knocking! Damage to mechanical seals has an adverse effect on their safe operation.
- When fitting the PTFE-sealing elements in no case widen or compress them. Otherwise, their sealing function cannot be ensured.
- Observe the notes on the current drawing if necessary please contact EagleBurgmann.



- When using double-PTFE-wrapped o-rings care has to be taken that the joint on the outer wrapping faces against the assembly direction. Otherwise there is a risk of the wrapping opening and being pulled off, possibly resulting in seal leakage.

IMPORTANT! For the assembly of o-rings made of **solid PTFE considerable assembly forces** are required to compress them. Yet, these forces may result in permanent **deformations** of seal components, in particular of the assembly fixtures. To compress o-rings made of PTFE **little force over an extended period of time** has to be applied (force x time = constant). If necessary, the fastening screws have to be retightened several times.

ATTENTION! Sealing elements made of PTFE have to be used **only once**.

Possible installation order:

- Make sure that all sealing elements have been installed which contact the surrounding machine parts.

If not described otherwise, the following parts have to be moistened slightly with suitable lubricant during installation:
  - o-rings in sliding contact with other parts when mounting the mechanical seal,
  - shafts in the area of the mechanical seal,
  - centring seats (centring diameters) for housing parts.

➢ Lubricants must be compatible with the medium to be sealed, and they must not corrode the secondary sealing elements.
➢ Sealing elements made of **EP-rubber** must **never** come into contact **with mineral oil-based lubricants** (swelling, possibly decomposition).

- Feed the **degreased** o-ring onto the seat.

If available:
- Mark the position of the rear slot at the seat, namely at the front side beside the sliding face.
- Align the seat with the torque transmission pin.

- Cover the sliding face of the seat with a cardboard washer.
- Press the seat slowly and without interruption into its position.
  ➢ Use plenty of water or alcohol as lubricant.
  ➢ Use a mounting sleeve, if necessary.
- Remove the cardboard washer from the sliding face.
- Check the rectangular position of the seat.

- Insert the parallel key into the groove provided.

- Feed the rotating unit onto the shaft against the shaft shoulder.
➢ The parallel key in the shaft has to engage into the groove in the drive collar.
➢ Stick to the dimensions on the assembly drawing!

- Clean the sliding faces thoroughly with ethyl alcohol and paper tissues (**no cloth, no rags!**).
➢ In case of material **"BUKO"** (carbon graphite) wipe it until the paper tissues stay clean.
➢ Do not touch the sliding faces any longer with bare fingers.
➢ Do not lubricate the sliding faces but mount them in a clean and dry state.

- Mount the seal cover with the seat installed before.

- Any further assembly of the machine must be in accordance with the instructions of the machine manufacturer.

Supply connections

ATTENTION! Sealing agents for threads (PTFE-tape, etc.) endanger the safe function of the mechanical seal if they enter the seal chamber. When screwed connections are opened take care by all means that sealing agents **cannot** enter the mechanical seal.

Supply piping:

- Use pipes of stainless steel or resistant material with a sufficient cross-section.
  - Supply piping for liquids: min. 18x1.5 mm
  - Supply piping for gases: min. 12x1.5 mm
  - Impulse piping: min. 12x1.5 mm
- Clean the piping **thoroughly**.
- Fasten all pipe connections **pressure-sealed**.
- Install the pipes **continuously rising**, as **short** and as **convenient** as possible for the flow to ensure **self-venting**.
- **Avoid air inclusions** and provide for venting connections, if necessary.
- For turns use pipe bends
- **Fasten** the pipes with appropriate pipe clips.

ATTENTION! If shutoffs in the piping to the seal are required, ball valves with torsion lock have to be used.

OPERATION

Safe operation

ATTENTION! If during an interruption of operation values deviating from the operating conditions / operating limits the mechanical seal must be removed and checked either at the manufacturer's or at the nearest service centre.

For a single mechanical seal the **pressure in the seal chamber** (stuffing box pressure) has to be **higher** than the ambient pressure at the machine at any time. Otherwise the machine will **suck in air** via the sliding faces, which will result in **dry-running** and consequent **failure** of the mechanical seal.

During every state of operation the mechanical seal has to be constantly wetted by the **medium** to be sealed **in its liquid form**, in particular when the machine is **started** or **stopped**. The machine design has to be such to take this necessity into consideration.

Damage due to dry-running is excluded from the warranty.

IMPORTANT! If the medium to be sealed builds deposits or tends to solidify during cooling down or standstill of the machine the stuffing box has to be flushed with suitable clean liquid. The flow rate and the liquid should be determined by the user considering the chemical resistance of the seal materials.

If the operation limit values and the instructions given in this manual are followed a trouble-free operation of the mechanical seal can be expected.

Start-up

Safety checks before start-up

- Torque transmission between mechanical seal and shaft duly installed
- Supply connections tightened and pressure-sealed
- Disposal connections installed environmentally safe

For a safe operation of the mechanical seal we recommend applying **at inboard** the most suitable **type of circulation** described in **API 610 / 682**. This measure protects the seal cavity from deposition of solids.

- Fill and vent the machine by all means in accordance with the instructions of the machine manufacturer.

▫ Now the seal is ready for operation.

To operate multiple seals special supply systems are required. Please contact EagleBurgmann.

SERVICING

Maintenance

The correctly operated mechanical seal needs **low maintenance**. Wear parts, however, have to be replaced, if necessary.

A duly operation includes a regular check of the following parameters:
- Temperature
- Leakage (drainage) of the mechanical seal

An inspection of the mechanical seal should be carried out along with a revision of the complete plant. We recommend having this inspection performed by EagleBurgmann.

If the mechanical seal is removed during a revision of the plant the sliding faces should be refinished at the manufacturer and both, elastomeric seal rings and springs should be replaced.

Directives in case of failure

Try to define the kind of failure and document it.

- ▫ In the event of **excessive leakage** changes in the leakage amount **must** be monitored. If necessary the machine has to be switched off.
- ➢ If a constant amount is leaking in a steady flow the mechanical seal is damaged.
- ▫ In the event of an **inadmissible temperature rise** the machine **has to** be stopped for safety reasons.

If there is a **malfunction** which you cannot correct on your own, or if the cause of malfunction is not clearly recognisable please immediately contact the nearest **EagleBurgmann agency**, a EagleBurgmann service centre or the EagleBurgmann headquarters.

During the **warranty period** the mechanical seal must only be disassembled with approval of the manufacturer or when a representative is present.

After-sales service by EagleBurgmann

EagleBurgmann's customer service department offers a comprehensive service package covering consultancy, engineering, standardisation, installation, commissioning as well as damage analysis right through to seminars on sealing technology.

Addresses are listed in various EagleBurgmann brochures as well as under **www.eagleburgmann.com**.

Reconditioning (repair)

If **reconditioning** is necessary, the complete **seal** should be sent **to the manufacturer**, as this is the best way to find out which components can be reconditioned or which parts must be replaced in order to ensure an optimum tightness.

If, **for compelling reasons**, **a reconditioning** has to be carried out **on site** (e.g. no. spare seal on stock, long transport, problems with customs) the seal may be repaired in a clean room by **trained** personnel of the user under the direction of **EagleBurgmann mechanics**.

Disassembly / removal

- **Stop the machine** as instructed, allow to cool, depressurise it and ensure that pressure cannot build up again!
- **Work** on the M.S. **is only permitted** when the machine is at a **standstill** and **depressurised**.
- Depressurise and shut off (or drain) the **supply** of the M.S.
- **There must be no product in the M.S.** ⇒ if necessary drain the machine and rinse it out!
- **Isolate the machine** to prevent it starting up unexpectedly!
- **Observe the safety notes** (safety data sheets)!

IMPORTANT! When removing, please observe **by all means**:

- current accident prevention regulations
- regulations for handling hazardous substances

WARNING! Seals that have been used with **hazardous substances must be properly cleaned** so that there is no possible **danger** to people or to the environment.

IMPORTANT! The packaging used to transport the seal must

- be **identified** with the relevant **hazard symbol** and
- **include** the **safety data sheet** for the product and/or supply medium.

IMPORTANT! If the medium to be sealed builds deposits or tends to solidify during cooling down or standstill of the machine the stuffing box has to be flushed with suitable clean liquid. The flow rate and the liquid should be determined by the user considering the chemical resistance of the seal materials.

The order of disassembly to remove the mechanical seal out of the machine depends on the design of the machine and should be determined by the machine manufacturer.

➢ If the machine manufacturer specified auxiliaries (jigs and fixtures) they have to be used in accordance with the specifications of the manufacturer.

- Remove the supply piping to the mechanical seal. Collect drained liquid and dispose of properly.
- Drain the mechanical seal. Collect the drained liquid and dispose of properly.
- Remove the mechanical seal in the reverse sequence as described for assembly (set up).

ATTENTION! Sealing elements made of PTFE have to be used **only once**.

Spare parts

- Only EagleBurgmann original spare parts must be used. Otherwise
  - **Risks** of a failure of the mechanical seal, **endangering** persons and environment.
  - The EagleBurgmann guarantee for the seal **lapses**.
- For a quick exchange a complete **spare seal** should be on stock.

Required details for enquiries and orders

For enquiries and orders the following details are required:

- EagleBurgmann commission no.
- Drawing no. of M.S. **H75S2/dw-00**
  dw = specified shaft diameter
- Part item no., designation, material, number of pieces with reference to the drawing.

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Disposal of the mechanical seal

Usually, the mechanical seals can be easily disposed of after a thorough cleaning.

- Metal parts (steels, stainless steels, non-ferrous heavy metals) divided into the different groups and sent to scrap metal waste.
- Ceramic sliding materials (synthetic carbons, ceramics, carbides) belong to waste products. They can be separated from their housing materials, as are physiologically recognised as safe.
- Synthetic materials/plastics (elastomers, PTFE) belong to special waste.

CAUTION! Material containing fluorine must not be burnt.

IMPORTANT! Some of the synthetic materials, divided into the different groups can be recycled.

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