



## Split Plummer Block Housings

Series SES

Mounting manual



# Split plummer block housings SES

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# Split plumber block housings SES

## About the mounting manual

The purpose of this mounting manual is to assist the fitter in mounting split plumber block housings SES safely and correctly.

It contains important information on mounting with the following objectives:

- to prevent personal injury or damage to property that may be caused by errors in mounting
- to facilitate, through correct mounting, a long operating life of the housing and the bearing mounted therein

The original language of the manual is German.

All other languages are translations from the German language.

## Availability

A current electronic version (PDF) of this manual can be found at <https://www.schaeffler.de/std/1F87>



The Safety Officer must ensure that this mounting manual is always complete and legible and that any persons mounting, dismantling or maintaining the plumber block housing have the mounting manual available.

Keep the manual in a safe place for immediate reference.

## Legal guidelines

The information in this manual reflects the status as of October 2022.

Unauthorised modifications to or improper use of the product are not permitted. Schaeffler does not assume any liability in this respect.

## Symbols

The warning and hazard symbols are defined in accordance with ANSI Z535.6-2011.



In case of non-compliance, death or serious injury may occur. ◀





In case of non-compliance, minor or moderate injury may occur. ◀





In case of non-compliance, damage or malfunctions in the product or the adjacent construction may occur. ◀

<b>Images</b>	The images in this manual are examples and may differ from the delivered product.
<b>Further information</b>	Please direct any mounting-related questions to your local Schaeffler contact or to one of our certified sales partners.
<b>General safety guidelines</b> <b>Usage for the intended purpose</b>	<p>The purpose of split plummer block housings SES is to support rolling bearings. The function of the seals and covers available as accessories is the sealing of the bearing position.</p> <p>Functionality can be expanded through the connection of systems for condition monitoring and for automatic relubrication.</p> <p>Usage for any other purpose is not permissible.</p>
<b>Selection and qualification of personnel</b>	<p>Mounting of split plummer block housings SES must be carried out by qualified personnel only.</p> <p>A person defined as qualified personnel:</p> <ul style="list-style-type: none"> <li>■ is authorised to perform mounting of the housings</li> <li>■ has all the knowledge necessary for mounting of the housings</li> <li>■ is familiar with the safety regulations</li> </ul>
<b>Personal protective equipment</b>	<p>Personal protective equipment is intended to protect personnel against health hazards. This comprises safety shoes, safety gloves and protective goggles and must be used in the interests of personal safety.</p> <p>Depending on the mounting location and on the machine or equipment in which the housings are to be mounted, it may be necessary to use additional personal protective equipment. The applicable regulations relating to occupational safety must be observed.</p>

# Split plumber block housings SES

<b>Safety regulations</b>	In order to prevent personal injury or damage to property, the following safety regulations must be observed during mounting.
<b>Fundamental specifications</b>	<p>Secure heavy components such as upper and lower housing sections, seals, covers and rolling elements against toppling or falling. Pay particular attention to limbs when setting down or fitting heavy components together, in order to prevent crushing.</p> <p>Mounting and maintenance work of all types should only be carried out when the machine or equipment is stationary.</p>
<b>Environmental hazards</b>	<p>Depending on the ambient conditions, safety risks may be present at the mounting location that are not associated with the housing but must be taken into consideration in mounting of the housing.</p> <p>Consult a local safety engineer before starting mounting work. Observe all safety regulations that are applicable to the mounting location and to the machine or equipment affected by the mounting work.</p>
<b>Seal assembly</b>	When fitting O rings, use rounded tools only, such as a screwdriver with rounded edges. A tool with sharp edges may damage the O ring.
<b>Grease</b>	Lubricating greases must not be mixed. Use the same grease for relubrication as for initial lubrication.
 <b>CAUTION</b>	<p>Hazard in case of contact with the skin or eyes, or if swallowed. The grease contains components that are hazardous to health.</p> <p>Avoid direct bodily contact and wear protective gloves.</p> <p>Observe the safety data sheet for the grease. ◀</p>
<b>Cleaning</b>	<p>We recommend using volatile solvents to clean the housing components since these allow cleaning without leaving a residue. In this case, pay attention to the compatibility of the solvent used with the paint coating of the housing. If compatibility is inadequate, the paint coating may be damaged with the result that protection of the housing against corrosion is no longer ensured.</p>
 <b>WARNING</b>	<p>Risk of injury due to volatile solvents. Hazard through ignition of vapours or in the case of skin or eye contact, inhalation or swallowing.</p> <p>Avoid direct bodily contact and wear protective gloves.</p> <p>Observe the safety information provided by the manufacturer. ◀</p>

<b>Disposal</b>	Dispose of any cloths soaked with grease or solvents, as well as excess grease, packaging material and any other waste generated in connection with mounting, by environmentally acceptable methods, observing the respective legal regulations.
<b>Transport specifications</b>	In order to prevent the occurrence of personal injury or damage to property during transport, observe the following transport specifications.
 <b>WARNING</b>	Swivelling out or falling apart of rolling bearings. Severe personal injury or damage to property as a result of falling components. Before transport, secure rolling bearings against swivelling out or falling apart. ◀
<b>Lifting of heavy components</b>	Use suitable technical accessories to lift heavy components. Familiarise yourself with correct usage of the accessories and observe all safety regulations relating to the handling of suspended loads.
<b>Securing for transport after prior mounting</b>	When transporting a premounted unit comprising a shaft, bearings and housing, we recommend using a transport restraint. The shaft should be radially clamped against the housing. Securing for transport assists in preventing transport damage such as standstill marks on the rolling bearing.
<b>Attachment point</b>	In the case of housings of size SES524-620 and larger, the upper housing section has an eye bolt in accordance with DIN 580. This is intended as an attachment point for mounting and dismantling the housing. The load carrying capacity of the eye bolt allows the housing, complete with a bearing fitted in the housing, to be lifted.
 <b>WARNING</b>	Rupture of the eye bolt in case of overload. Severe personal injury or damage to property as a result of falling housing. Always screw the eye bolt all the way into the housing. Only use the eye bolt to lift the housing complete with fitted bearing. During lifting by means of the eye bolt, no other machine or plant components should be connected to the housing. ◀

# Split plumber block housings SES

<b>Scope of delivery</b>	<ul style="list-style-type: none"><li>■ Split plumber block housing SES</li><li>■ Grease nipples with dust caps:<ul style="list-style-type: none"><li>– taper type lubrication nipples in accordance with DIN 71412</li><li>– button head lubrication nipples in accordance with DIN 3404</li></ul></li></ul>
Accessories	<p>The following accessories are available to order:</p> <ul style="list-style-type: none"><li>■ Seals:<ul style="list-style-type: none"><li>– double lip seals EDH</li><li>– felt seals EFS</li><li>– labyrinth seals ETS</li><li>– V ring seals EDV</li><li>– Taconite seals ETC</li></ul></li><li>■ Covers:<ul style="list-style-type: none"><li>– cover EDK made from plastic</li><li>– cover EDKT made from steel and FKM</li></ul></li><li>■ Locating rings FRM</li></ul>
Not included in the scope of delivery	<p>The scope of delivery does not include the following:</p> <ul style="list-style-type: none"><li>■ Foot screws and associated support washers for fastening the housing to the locating surface. For the required foot screw size, see page 32.</li><li>■ Spacer sleeves</li><li>■ Lubricating grease. The choice of lubricating grease is determined by the application. Suitable rolling bearing greases: TPI 168, Arcanol rolling bearing greases, <a href="https://www.schaeffler.de/std/1F66">https://www.schaeffler.de/std/1F66</a></li></ul>
<b>Further information</b>	<p>Ordering examples and detailed information on combinations and the appropriate bearings:</p> <ul style="list-style-type: none"><li>■ TPI 247, Split plumber block housings SES, <a href="https://www.schaeffler.de/std/1F92">https://www.schaeffler.de/std/1F92</a></li></ul>

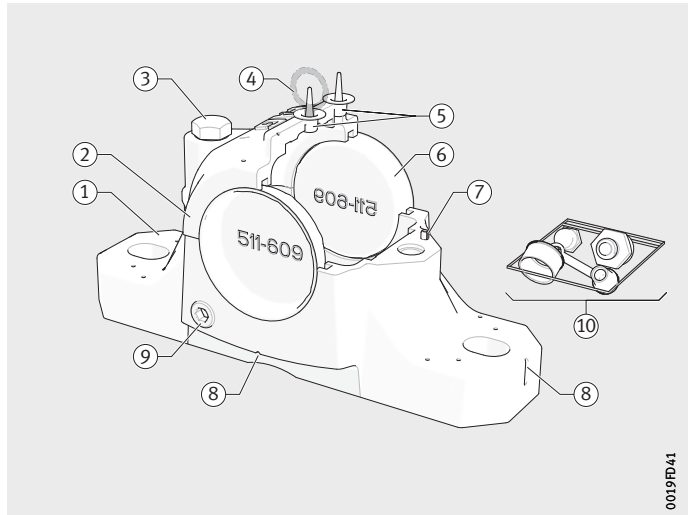


## Product description

The housings are designed in accordance with a modular concept. Each housing can be fitted with rolling bearings of various diameter and width series if they have the correct outside diameter for the housing.

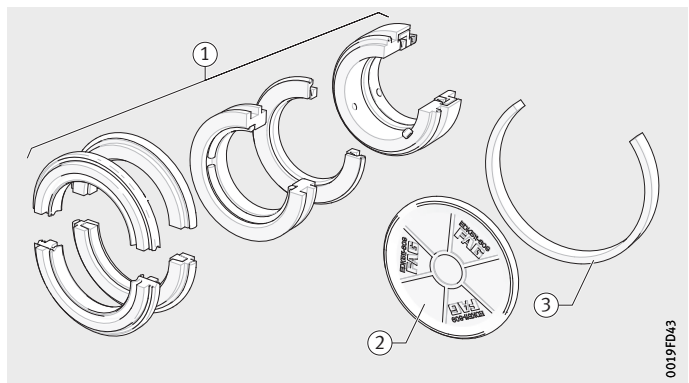
Depending on their design, the bearings can be located either directly on the shaft or by means of an adapter sleeve. This gives different shaft diameters for the same bearing size. The spacings between the shaft and housing body are compensated by means of appropriately matched seals.

- ① Lower housing section
- ② Upper housing section
- ③ Connecting screws
- ④ Eye bolt  
(from housing size SES524 and larger)
- ⑤ Lubrication holes with closing plugs
- ⑥ Dust cap
- ⑦ Cylindrical pins
- ⑧ Indentations
- ⑨ Grease outlet hole
- ⑩ Grease nipples with dust caps



*Figure 1*  
Split plummer block housing SES

- ① Seals
- ② Cover
- ③ Locating ring



*Figure 2*  
Accessories  
for plummer block housing SES

# Split plummer block housings SES

## Preparation for mounting

### Preparing the locating surface

The locating surface on which the housing will be mounted must be checked before mounting.

The requirements for the locating surface are as follows:

- sufficiently robust to withstand the static and dynamic loads occurring in operation over the long term
- surface roughness  $R_a \leq 12,5$
- flatness tolerance to IT7, measured across the diagonal
- free from colouration
- compensation of differences in level between locating surfaces

### Level of mounting surfaces

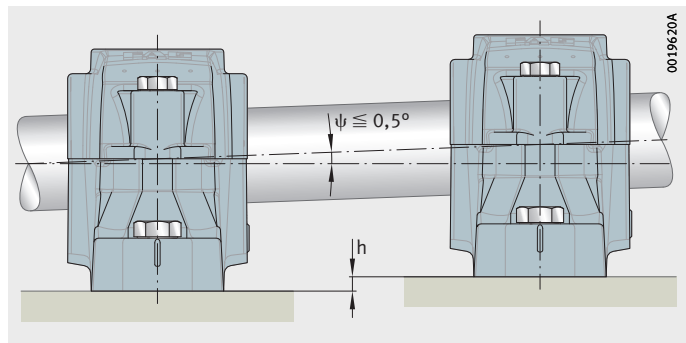
A difference in level between the locating surfaces of bearing housings will lead to misalignment of the shaft, *Figure 3*. The seals in SES plummer block housings allow misalignments of up to  $0,5^\circ$  in both directions.

Differences in level must therefore be compensated such that the misalignment of the shaft is not greater than  $0,5^\circ$ . Levelling shims can be used for this purpose.

In addition, it must be ensured that the bearings mounted can compensate the misalignments present.

$\psi$  = misalignment of the shaft  
 $h$  = difference in level between locating surfaces

*Figure 3*  
Misalignment of the shaft  
(schematic)



## Checking the bearing seats on the shaft

The bearing seats on the shaft must be free from impact marks and burrs and must have adequate dimensional and geometrical accuracy.

The requirements for dimensional and geometrical accuracy of the bearing seats for a tapered bearing bore and location by adapter sleeve are as follows:

- diameter in tolerance class h9
- cylindricity tolerance within IT5/2

The requirements for dimensional and geometrical accuracy of the bearing seats for a cylindrical bearing bore and direct seating of the bearing on the shaft are dependent on the operating conditions. They are generally defined for the specific application by the designer.

## Checking the requirement for horizontal location

In addition to the foot screws, horizontal location of the housing is necessary if one of the following conditions is fulfilled:

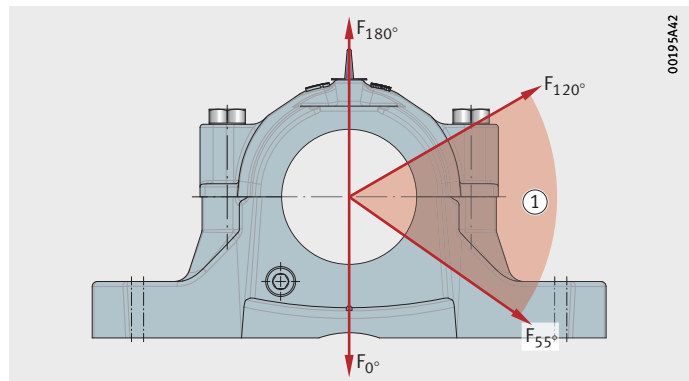
- The load angle is between  $55^\circ$  and  $120^\circ$ , *Figure 4*.
- An axial load is present.

The designer of the machine or equipment should check whether horizontal location of the housing is necessary.

Horizontal location can be achieved by means of pins or preferably stops in the load direction.

① Load angle range within which horizontal location of the housing is necessary

*Figure 4*  
Load directions in plummer block housing SES



# Split plumber block housings SES

## Cleanliness

### NOTICE

Contaminants and residues from cleaning agents can shorten the operating life of rolling bearings.

Ensure that no foreign bodies can enter the bearing housing during the mounting process.

Only use volatile solvents and lint-free cloths for cleaning. <

### Ensure cleanliness

- ▶ Keep the mounting area and tools clean.
- ▶ Clean the locating surface.
- ▶ Clean the housing, seals and cover, paying particular attention to any machining or moulding sand residues.
- ▶ Do not remove rolling bearings and adapter sleeves from their packaging until immediately before mounting.
- ▶ Remove excess anti-corrosion protection using a lint-free cloth.

### Additional measures

- ▶ Dispose of the dust caps.

## Mounting housings with split seals

The procedure for mounting housings with split seals is described using the example of double lip seals EDH. If individual mounting procedures deviate from this for other seal types (EFS), only these special features are shown below.

### Mounting with double lip seals EDH Locating and greasing the lower housing section

#### ⚠ WARNING

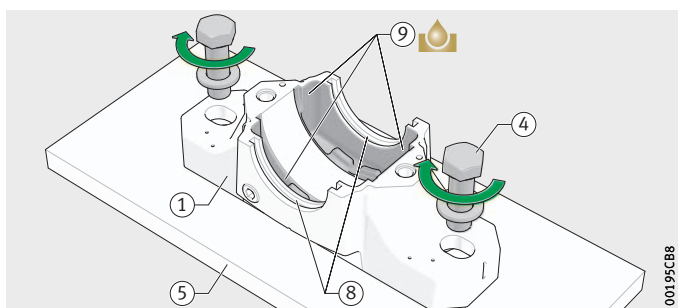
Rupture of the eye bolt in case of overload. Severe personal injury or damage to property possible as a result of falling housing.

Always screw the eye bolt fully into the upper housing section. Only lift the housing and bearing with the eye bolt. ◀

- ▶ Place the lower housing section in the correct mounting position on the locating surface. The complete housing can first be set down and the upper housing section can then be lifted off again.
- ▶ Insert the foot screws with one support washer each in the lower housing section and tighten until finger tight.
- ▶ Introduce a portion of the grease to be used for initial greasing into the lower housing section on both sides of the ultimate bearing position.  
Grease quantity for initial greasing, see page 35.

- ① Lower housing section
- ④ Foot screws with support washers
- ⑤ Locating surface
- ⑧ Annular slot
- ⑨ Area for grease (in bearing position)

*Figure 5*  
Locating and greasing the lower housing section



## Split plummer block housings SES

### Inserting the lower halves of double lip seals EDH

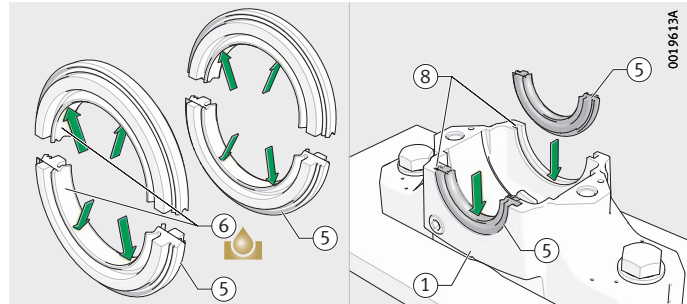
The mounting procedure for felt seals EFS differs, see section *Inserting the lower halves of felt seals EFS*, page 16.

- ▶ For all double lip seals, fill the area between the two seal lips with grease.
- ▶ Insert one half of the seal into each of the two annular slots in the lower housing section. In housings closed on one side, insert one half of the seal into one annular slot only and leave the other annular slot free for the cover.

- ① Lower housing section
- ⑤ Double lip seal
- ⑥ Area between the seal lips
- ⑧ Annular slot

*Figure 6*  
Inserting the lower halves of the double lip seals

### Mounting and greasing the bearings



Bearings with a tapered bore can be mounted on a cylindrical shaft using an adapter sleeve.

Bearings with a cylindrical bore are mounted on a stepped shaft. If this is a continuous shaft, a spacer sleeve is necessary on the side with the smaller shaft diameter. The outside diameter of the spacer sleeve must be identical to the larger shaft diameter. In the case of a housing closed on one side, a spacer sleeve is not used.

Detailed information on the mounting of rotary bearings:  
MH 1, Mounting handbook,  
<https://www.schaeffler.de/std/1F86>

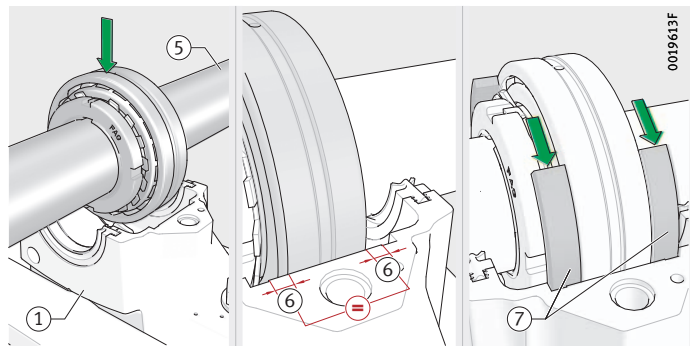
- ▶ Mount the bearing on the shaft as per the instructions.
- ▶ With the outer ring swivelled out, fill the free cavities of the bearing fully with grease.

### Inserting the shaft and bearing into the housing

- ▶ Insert the subassembly, comprising the shaft and bearing (and spacer sleeve where applicable), into the lower housing section.
  - ▶ For a non-locating bearing arrangement:  
Position the bearing centrally on the bearing seating surface of the housing. As a result, the drive-up distance of the bearing in the housing is equally large on both sides.
  - ▶ For a locating bearing arrangement:  
Insert the locating rings into the housing, using equal numbers on both sides of the bearing, and position them so that their opening faces upwards.
- For the number of locating rings required:  
TPI 247, Split plummer block housings SES,  
<https://www.schaeffler.de/std/1F92>

- ① Lower housing section
- ⑤ Shaft
- ⑥ Drive-up distance of bearing in housing
- ⑦ Locating ring

*Figure 7*  
Inserting the shaft  
(and locating rings)

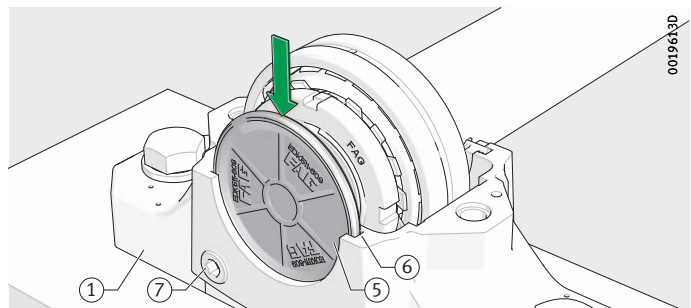


### For a housing closed on one side: Inserting the cover

- ▶ Insert the cover from above into the free annular slot in the lower housing section. For easier maintenance access, we recommend placing the cover on the side of the housing which has the grease outlet hole.

- ① Lower housing section
- ⑤ Cover
- ⑥ Annular slot
- ⑦ Grease outlet hole

*Figure 8*  
Inserting the cover



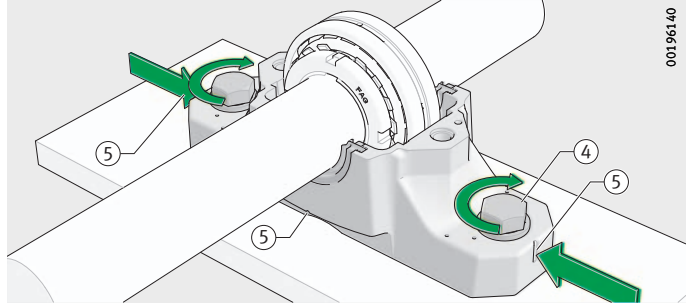
# Split plummer block housings SES

## Aligning the housing

- ▶ Align the housing. Use the indentations in the lower housing section, which indicate the shaft and bearing centres in the housing, as a guide.
- ▶ Tighten the foot screws finger tight.

- ④ Foot screws
- ⑤ Alignment by means of indentations

Figure 9  
Aligning the housing



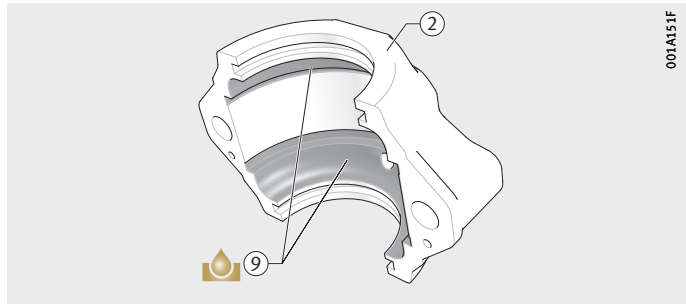
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## Greasing the upper housing section

- ▶ Introduce a portion of the grease to be used for initial greasing into the upper housing section on both sides of the ultimate bearing position.  
Grease quantity for initial greasing, see page 35.

- ② Upper housing section
- ⑨ Area for grease (in bearing position)

Figure 10  
Greasing the upper housing section



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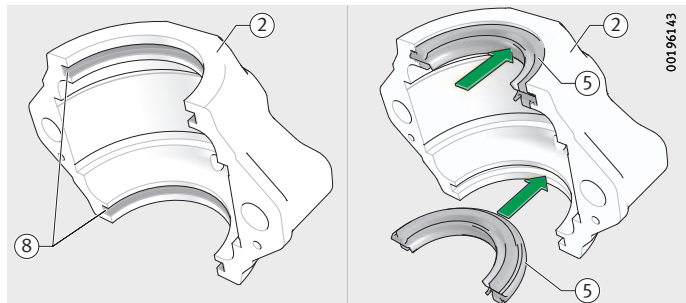
## Inserting the upper halves of double lip seals EDH

The mounting procedure for felt seals differs, see section *Inserting the upper halves of felt seals EFS*, page 16.

- ▶ Insert one half of the double lip seal into each of the two annular slots in the upper housing section. In housings closed on one side, insert one half of the seal into one annular slot only and leave the other annular slot free for the cover.

- ② Upper housing section
- ⑤ Double lip seal
- ⑧ Annular slot

Figure 11  
Inserting the upper halves of the double lip seals



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### Mounting the upper housing section

- ▶ Check whether the serial numbers on the upper and lower housing sections match.

#### **⚠ WARNING**

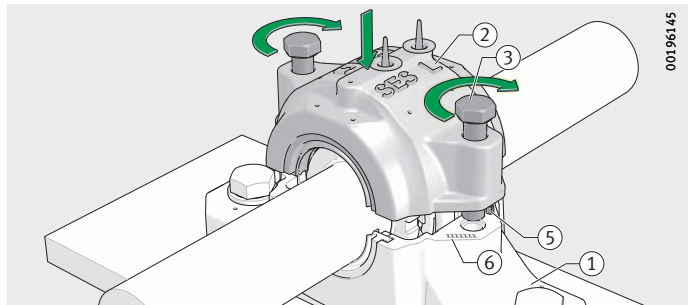
Rupture of the eye bolt in case of overload. Severe personal injury or damage to property possible as a result of falling housing.

Always screw the eye bolt fully into the upper housing section. Only lift the housing and bearing with the eye bolt. ◀

- ▶ Drive in the cylindrical pins to connect the upper and lower housing sections.
- ▶ Place the upper housing section on the lower housing section.
- ▶ Check the alignment of the housing and adjust if necessary.
- ▶ Tighten the connecting screws to the recommended tightening torque, see page 33.

- ① Lower housing section
- ② Upper housing section
- ③ Connecting screws
- ⑤ Cylindrical pins
- ⑥ Serial number

*Figure 12*  
Mounting the upper housing section



### Screw mounting the housing on the locating surface

- ▶ Tighten the foot screws to the recommended tightening torque, in a crosswise sequence for 4 foot screws.

### Checking the tightening torques

Settling of screw connections leads to a reduction in screw preload.

- ▶ Check the tightening torques of the foot screws after 24 operating hours, see page 32.
- ▶ Check the tightening torques of the connecting screws after 24 operating hours, see page 33.
- ▷ Mounting of the housing is now complete.

# Split plummer block housings SES

## Special features of felt seals EFS

The procedure for mounting housings with split seals is described using the example of double lip seals EDH. Only individual deviating mounting procedures for felt sealing rings EFS are shown below.

- ▶ Follow the mounting instructions for double lip seals EDH, page 11, and note the deviations from the mounting procedure for felt ring seals EFS.

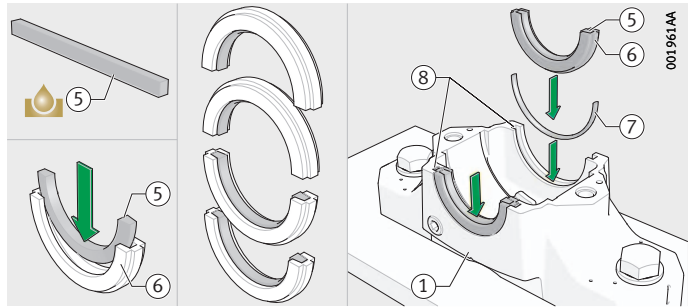
### Inserting the lower halves of felt seals EFS

In housings closed on one side, insert one seal into one annular slot and leave the other annular slot free for the cover.

- ▶ Ensure that all felt strips are soaked with oil.
- ▶ Press the oil-soaked felt strips into the slots in the adapter halves.
- ▶ Insert the halves of the O ring into the two annular slots in the lower housing section.
- ▶ Insert the adapter halves with the felt strips into the two annular slots.

- ① Lower housing section
- ⑤ Felt strip
- ⑥ Adapter
- ⑦ O ring
- ⑧ Annular slot

**Figure 13**  
Inserting the lower halves of the felt seals



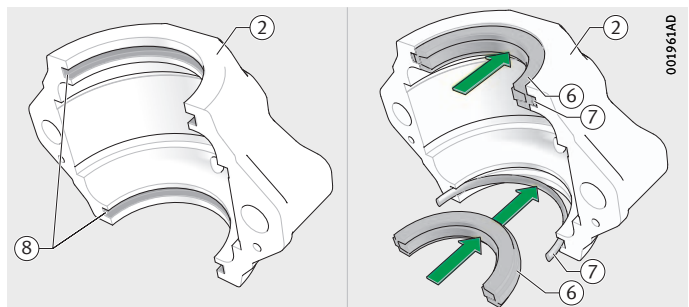
- ▷ The lower halves of the felt seals are mounted.
- ▶ Continue with section *Mounting and greasing the bearings*, page 12.

### Inserting the upper halves of felt seals EFS

- ▶ Insert the O rings and the adapters with the felt strips into the two annular slots in the upper housing section. In housings closed on one side, insert these into one annular slot only and leave the other annular slot free for the cover.

- ② Upper housing section
- ⑥ Adapter with felt strip
- ⑦ O ring
- ⑧ Annular slot

**Figure 14**  
Inserting the upper halves of the felt seals



- ▷ The upper halves of the felt seals are mounted.
- ▶ Continue with section *Mounting the upper housing section*, page 15.

## Mounting housings with unsplit seals

The procedure for mounting housings with unsplit seals is described using the example of labyrinth seals ETS. If individual mounting procedures differ from this for other seal types (EDV, ETC), only these special features are shown below.

### Mounting with labyrinth seals ETS

The labyrinth seal comprises the labyrinth ring and the mating contour, which is located in the upper and lower housing section.

#### Locating and greasing the lower housing section

##### **⚠ WARNING**

Rupture of the eye bolt in case of overload. Severe personal injury or damage to property possible as a result of falling housing.

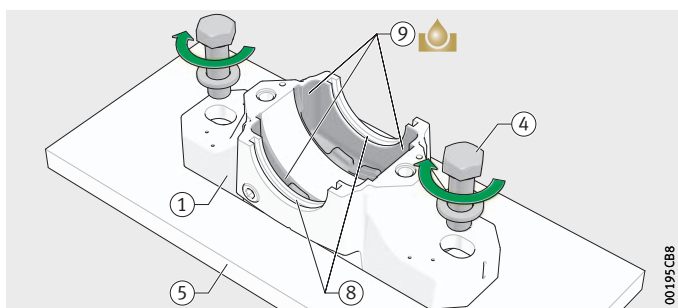
Always screw the eye bolt fully into the upper housing section.

Only lift the housing and bearing with the eye bolt. ◀

- ▶ Place the lower housing section in the correct mounting position on the locating surface. The complete housing can first be set down and the upper housing section can then be lifted off again.
- ▶ Insert the foot screws with one support washer each in the lower housing section and tighten until finger tight.
- ▶ Introduce a portion of the grease to be used for initial greasing into the lower housing section on both sides of the ultimate bearing position.  
Grease quantity for initial greasing, see page 35.
- ▶ For labyrinth seals:  
Introduce grease additionally into the annular slots in the lower housing section.

- ① Lower housing section
- ④ Foot screws with support washers
- ⑤ Locating surface
- ⑧ Annular slot
- ⑨ Area for grease (in bearing position)

*Figure 15*  
Locating and greasing the lower housing section



# Split plummer block housings SES

## Mounting inner labyrinth seal ETS

The mounting procedure for V ring seal EDV differs, see section *Mounting inner V ring seal EDV*, page 23.

The mounting procedure for Taconite seal ETC differs, see section *Mounting inner Taconite seal ETC*, page 24.

- ▶ Lightly coat the labyrinth ring with grease.
- ▶ Slide the labyrinth ring onto the shaft or (in the case of a stepped shaft) the larger diameter of the shaft so that the slot for the O ring is on the side facing away from the bearing.

The O ring is only fitted in the slot of the labyrinth ring at a later stage, see section *Final mounting of labyrinth seals ETS*, page 22. As a result, the labyrinth ring can initially still be displaced on the shaft.

- ① Shaft (not stepped)
- ② Stepped shaft
- ③ Planned bearing location
- ④ Labyrinth ring
- ⑤ Slot for O ring

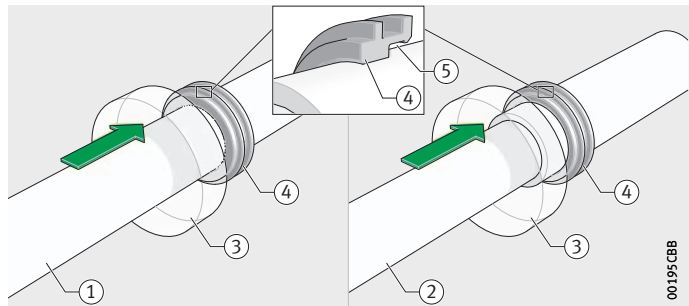


Figure 16  
Mounting the inner labyrinth seal

## Mounting and greasing the bearings

Bearings with a tapered bore can be mounted on a cylindrical shaft using an adapter sleeve.

Bearings with a cylindrical bore are mounted on a stepped shaft. If this is a continuous shaft, a spacer sleeve is necessary on the side with the smaller shaft diameter. The outside diameter of the spacer sleeve must be identical to the larger shaft diameter. In the case of a housing closed on one side, a spacer sleeve is not used.

Detailed information on the mounting of rotary bearings:

MH 1, Mounting handbook,  
<https://www.schaeffler.de/std/1F86>

- ▶ Mount the bearing on the shaft as per the instructions.
- ▶ For stepped shaft:  
Slide on the spacer sleeve.
- ▶ With the outer ring swivelled out, fill the free cavities of the bearing fully with grease.

## Mounting outer labyrinth seal ETS

In the case of a continuous shaft, a second seal is mounted on the shaft. In the case of a housing closed on one side, this operation is omitted.

The mounting procedure for V ring seal EDV differs, see section *Mounting outer V ring seal EDV*, page 23.

The mounting procedure for Taconite seal ETC differs, see section *Mounting outer Taconite seal ETC*, page 24.

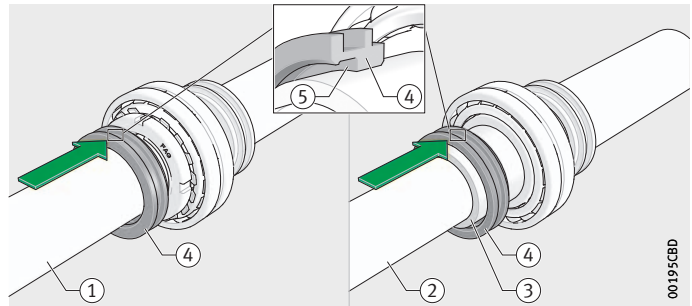
► Lightly coat the labyrinth ring with grease.

► Slide the labyrinth ring onto the shaft or (in the case of a stepped shaft) onto the spacer sleeve so that the slot for the O ring is on the side facing away from the bearing.

The O ring is only fitted in the slot of the labyrinth ring at a later stage, see section *Final mounting of labyrinth seals ETS*, page 22. As a result, the labyrinth ring can initially still be displaced on the shaft.

- ① Shaft (not stepped)
- ② Stepped shaft
- ③ Spacer sleeve
- ④ Labyrinth ring
- ⑤ Slot for O ring

Figure 17  
Mounting the outer labyrinth seal



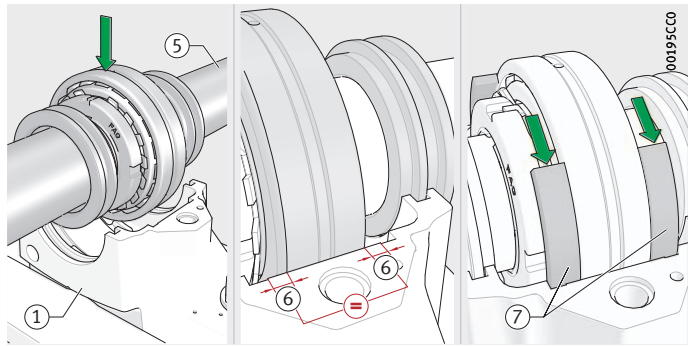
# Split plummer block housings SES

## Inserting the shaft and bearing into the housing

- ▶ Insert the subassembly, comprising the shaft, bearing and seals, into the lower housing section, ensuring that the sealing rings are positioned in the annular slots.
  - ▶ For a non-locating bearing arrangement: Position the bearing centrally on the bearing seating surface of the housing. As a result, the drive-up distance of the bearing in the housing is equally large on both sides.
  - ▶ For a locating bearing arrangement: Insert the locating rings into the housing, using equal numbers on both sides of the bearing, and position them so that their opening faces upwards.
- For the number of locating rings required:  
TPI 247, Split plummer block housings SES,  
<https://www.schaeffler.de/std/1F92>

- ① Lower housing section
- ⑤ Shaft
- ⑥ Drive-up distance of bearing in housing
- ⑦ Locating ring

Figure 18  
Inserting the shaft  
(and locating rings)

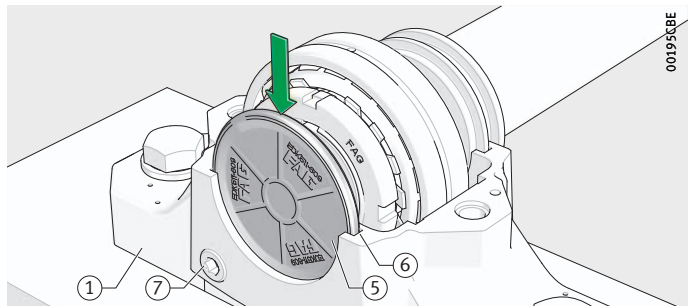


## For a housing closed on one side: Inserting the cover

- ▶ Insert the cover from above into the free annular slot in the lower housing section. For easier maintenance access, we recommend placing the cover on the side of the housing which has the grease outlet hole.

- ① Lower housing section
- ⑤ Cover
- ⑥ Annular slot
- ⑦ Grease outlet hole

Figure 19  
Inserting the cover

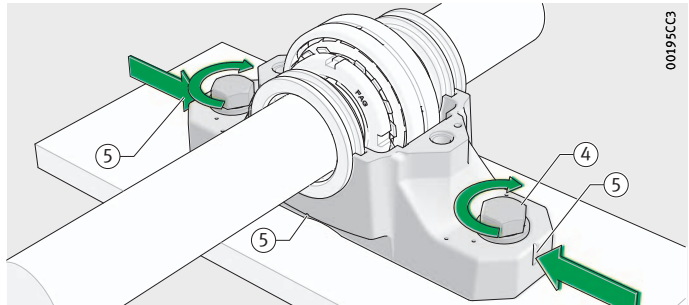


## Aligning the housing

- ▶ Align the housing. Use the indentations in the lower housing section, which indicate the shaft and bearing centres in the housing, as a guide.
- ▶ Tighten the foot screws finger tight.

- ④ Foot screws
- ⑤ Alignment by means of indentations

Figure 20  
Aligning the housing



### Greasing and mounting the upper housing section

- ▶ Introduce a portion of the grease to be used for initial greasing into the upper housing section on both sides of the ultimate bearing position.  
Grease quantity for initial greasing, see page 35.
- ▶ For labyrinth seals:  
Introduce grease additionally into the annular slots in the upper housing section.
- ▶ Check whether the serial numbers on the upper and lower housing sections match.

#### **⚠ WARNING**

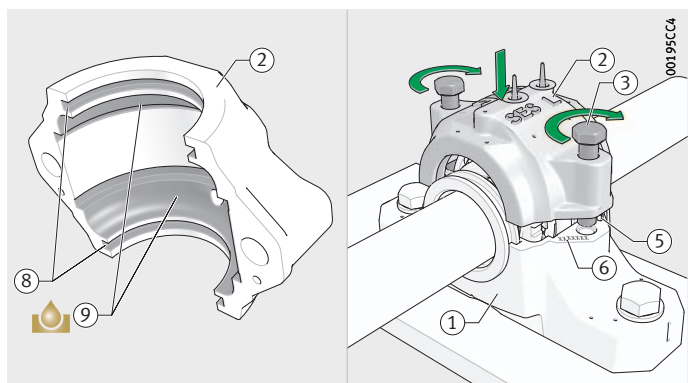
Rupture of the eye bolt in case of overload. Severe personal injury or damage to property possible as a result of falling housing.

Always screw the eye bolt fully into the upper housing section. Only lift the housing and bearing with the eye bolt. ◀

- ▶ Drive in the cylindrical pins to connect the upper and lower housing sections.
- ▶ Place the upper housing section on the lower housing section.
- ▶ Check the alignment of the housing and adjust if necessary.
- ▶ Tighten the connecting screws to the recommended tightening torque, see page 33.

- ① Lower housing section
- ② Upper housing section
- ③ Connecting screws
- ④ Cylindrical pin
- ⑤ Serial number
- ⑥ Annular slot
- ⑦ Area for grease (in bearing position)

Figure 21  
Greasing and mounting the upper housing section



# Split plummer block housings SES

## Screw mounting the housing on the locating surface

- ▶ Tighten the foot screws to the recommended tightening torque, in a crosswise sequence for 4 foot screws.

## Final mounting of labyrinth seals ETS

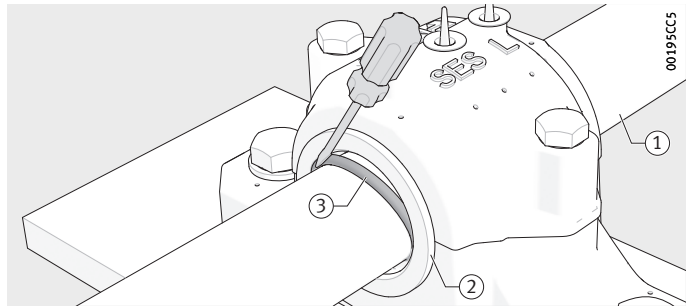
In the case of V ring seals EDV, this operation is omitted.

The mounting procedure for Taconite seal ETC differs, see section *Final mounting of Taconite seals ETC*, page 25.

- ▶ Position the labyrinth ring on the shaft such that it is seated centrally in the appropriate annular slot in the housing.
- ▶ Insert the O ring into the slot in the labyrinth ring. To do this, rotate the shaft and carefully press the O ring into the slot using a rounded screwdriver.

- ① Shaft
- ② Labyrinth ring
- ③ O ring

*Figure 22*  
Inserting the O ring in the slot in the labyrinth ring



- ▷ The mounting of the seal on the first side is complete.
- ▶ Repeat the process for the seal on the other side.

## Checking the tightening torques

Settling of screw connections leads to a reduction in screw preload.

- ▶ Check the tightening torques of the foot screws after 24 operating hours, see page 32.
- ▶ Check the tightening torques of the connecting screws after 24 operating hours, see page 33.
- ▷ Mounting of the housing is now complete.

## Special features of V ring seals EDV

The procedure for mounting housings with unsplit seals is described using the example of labyrinth seals ETS. Only individual deviating mounting procedures for V ring seals EDV are shown below.

- ▶ Follow the mounting instructions for labyrinth seals ETS, page 17, and note the deviations from the mounting procedure for V ring seals EDV.



### Mounting inner V ring seal EDV

- ▶ Draw the O ring onto the thrust washer.
- ▶ Slide the V ring onto the shaft or (in the case of a stepped shaft) onto the larger diameter of the shaft such that the lip points towards the bearing position.
- ▶ Coat the V ring and thrust washer generously with grease.
- ▶ Slide the thrust washer onto the shaft or (in the case of a stepped shaft) onto the larger diameter of the shaft.

- ① Shaft (not stepped)
- ② Stepped shaft
- ③ Planned bearing location
- ④ Thrust washer with O ring
- ⑤ V ring

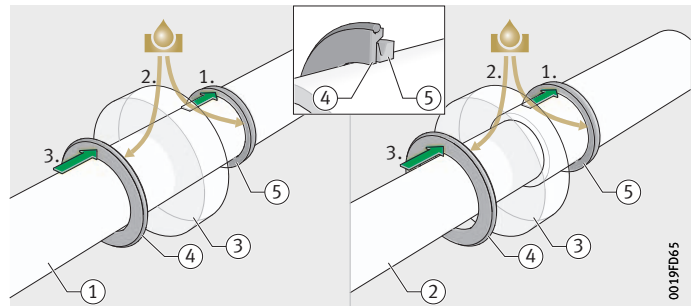


Figure 23  
Mounting the inner V ring seal

- ▷ The inner seal is mounted.
- ▶ Continue with section *Mounting and greasing the bearings*, page 18.

### Mounting outer V ring seal EDV

- ▶ Draw the O ring onto the thrust washer.
- ▶ Slide the thrust washer onto the shaft or (in the case of a stepped shaft) onto the spacer sleeve.
- ▶ Coat the V ring and thrust washer generously with grease.
- ▶ Slide the V ring onto the shaft or (in the case of a stepped shaft) onto the spacer sleeve such that the lip points towards the bearing position.

- ① Shaft (not stepped)
- ② Stepped shaft
- ③ Spacer sleeve
- ④ Thrust washer with O ring
- ⑤ V ring

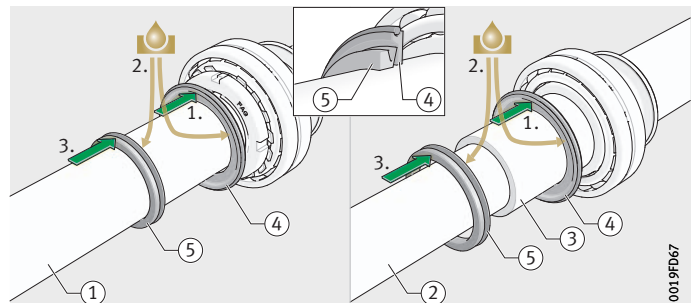


Figure 24  
Mounting the outer V ring seal

- ▷ The outer seal is mounted.
- ▶ Continue with section *Inserting the shaft and bearing into the housing*, page 20.

# Split plummer block housings SES

## Special features of Taconite seals ETC

The procedure for mounting housings with unsplit seals is described using the example of labyrinth seals ETS. Only individual deviating mounting procedures for Taconite seals ETC are shown below.

- ▶ Follow the mounting instructions for labyrinth seals ETS, page 17, and note the deviations from the mounting procedure for Taconite seals ETC.

### Mounting inner Taconite seal ETC

- ▶ Draw the O ring onto the housing ring.
- ▶ Slide the shaft ring onto the shaft or (in the case of a stepped shaft) onto the larger diameter of the shaft. Do not fully tighten the grub screws at this point.
- ▶ Slide the V ring onto the shaft or (in the case of a stepped shaft) onto the larger diameter of the shaft such that the lip points towards the bearing position.
- ▶ Coat the V ring and labyrinth area of the shaft ring generously with grease.
- ▶ Slide the housing ring onto the shaft or (in the case of a stepped shaft) onto the larger diameter of the shaft.

- ① Shaft (not stepped)
- ② Stepped shaft
- ③ Planned bearing location
- ④ Shaft ring with grub screws
- ⑤ V ring
- ⑥ Housing ring with O ring

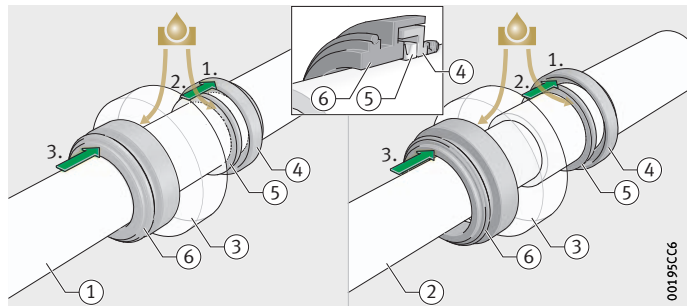


Figure 25  
Mounting the inner Taconite seal

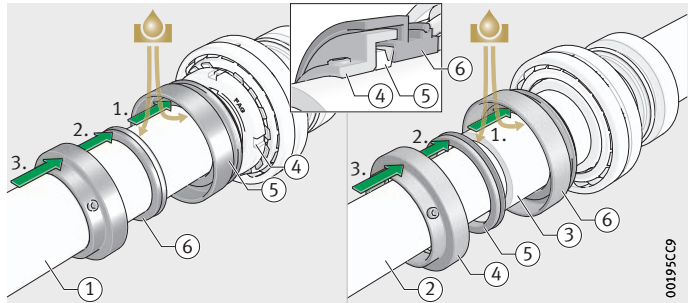
- ▶ The inner seal is mounted.
- ▶ Continue with section *Mounting and greasing the bearings*, page 18.

### Mounting outer Taconite seal ETC

- ▶ Draw the O ring onto the housing ring.
- ▶ Slide the housing ring onto the shaft or (in the case of a stepped shaft) onto the spacer sleeve.
- ▶ Slide the V ring onto the shaft or (in the case of a stepped shaft) onto the spacer sleeve such that the lip points towards the bearing position.
- ▶ Coat the V ring and labyrinth area of the housing ring generously with grease.
- ▶ Slide the shaft ring onto the shaft or (in the case of a stepped shaft) onto the spacer sleeve. Do not fully tighten the grub screws at this point.

- ① Shaft (not stepped)
- ② Stepped shaft
- ③ Spacer sleeve
- ④ Shaft ring with grub screws
- ⑤ V ring
- ⑥ Housing ring with O ring

**Figure 26**  
Mounting the outer taconite seal

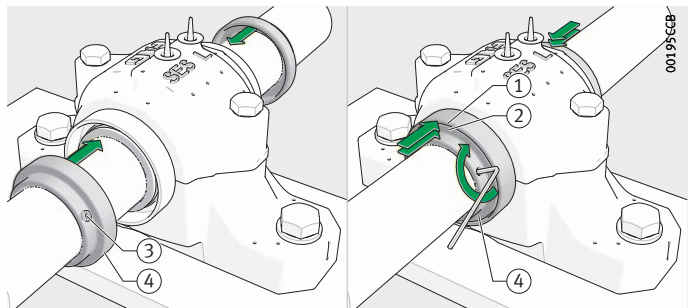


- ▷ The outer seal is mounted.
- ▶ Continue with section *Inserting the shaft and bearing into the housing*, page 20.
- ▶ Position the shaft ring of the Taconite seal axially such that the end faces of the shaft ring and the housing are flush.
- ▶ Fully screw tighten the shaft ring on the shaft using the grub screws provided.

**Final mounting of Taconite seals ETC**

- ① End face of housing ring
- ② End face of shaft ring
- ③ Grub screw
- ④ Shaft ring

**Figure 27**  
Setting the position of the shaft ring of the Taconite seal



- ▷ The mounting of the seal on the first side is complete.
- ▶ Repeat the process for the seal on the other side.
- ▶ Continue with section *Checking the tightening torques*, page 22.

**In case of repair: Dismounting and mounting with split seals**

In case of repair, split seals are fitted. If unsplit seals were fitted on initial assembly, these are replaced by split seals when the repair work is carried out.

**Application in combination with a split bearing**

In case of repair, the work involved in mounting can be significantly reduced if the unsplit bearing originally fitted is replaced by a split bearing and split seals are fitted at the same time.

# Split plummer block housings SES

- Dismounting** ▶ Loosen the connecting screws between the upper and lower housing section.

**⚠ WARNING**

Rupture of the eye bolt in case of overload. Severe personal injury or damage to property possible as a result of falling housing.

Always screw the eye bolt fully into the upper housing section. Only lift the housing and bearing with the eye bolt. ◀

- ▶ Detach the upper housing section.  
▶ Raise the shaft until a gap appears between the bearing and housing. Ensure that the raised shaft is reliably supported at both ends.

Alternatively, lower the lower housing section until a gap appears between the bearing and housing, ensuring that the shaft is reliably supported at both ends.

- ▶ Dismount the old bearing and the seals. If the seals are unsplit, use an angle grinder to cut up the bearing, adapter sleeve and seals, ensuring that the shaft and housing are not damaged in the process.

- ① Upper housing section
- ② Connecting screws
- ③ Shaft
- ④ Angle grinder

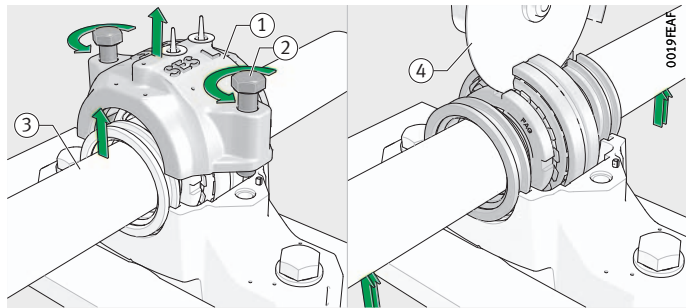


Figure 28  
Dismounting

- ▶ Clean the bearing seat and annular slots in the upper and lower housing section as well as the housing contact surfaces.

**NOTICE**

The operating life of the new bearing will be shortened if the grease is contaminated.

Completely remove any contaminants, especially residues generated from using the angle grinder. ◀

- ▶ For locating bearing arrangements:  
Check the condition of the locating rings and replace if necessary.

## Mounting with split seals

### Mounting and greasing the bearings

- ▶ Mount the bearing in accordance with the bearing mounting instructions. We recommend using a split bearing.

For Schaeffler split spherical roller bearings:  
MON 90, Mounting instructions for FAG split spherical roller bearings lubricated with grease and plummer block housings, <https://www.schaeffler.de/std/1F91>

### Mounting the lower halves of the seals

In housings closed on one side, insert one seal into one annular slot only and leave the other annular slot free for the cover.

- ▶ Unpack and dismantle the seals.
- ▶ Introduce grease into the annular slots in the lower housing section.
- ▶ For double lip seals, see also section *Inserting the lower halves of double lip seals EDH*, page 12:  
Fill the area between the two seal lips in each seal half with grease. Insert one seal half into each of the annular slots in the lower housing section.

For felt seals, see also section *Inserting the lower halves of felt seals EFS*, page 16:

Press the oil-soaked felt strips into the slots in the adapter halves. Insert the halves of the O ring into the two annular slots in the lower housing section. Insert the adapter halves with the felt strips into the two annular slots.

- ▶ Lower the shaft or raise the lower housing section until the bearing is repositioned in the lower housing section.

- ① (Split) bearing
- ② Annular slots
- ③ Lower seal halves
- ④ Shaft

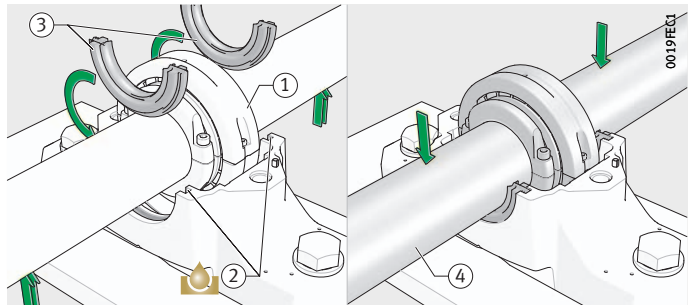


Figure 29  
Mounting the lower halves of the seals

### Completing the mounting procedure

- ▶ Continue mounting the upper housing section, see instructions from section *Greasing the upper housing section*, page 14.

# Split plumber block housings SES

## Operating guidelines

Careful maintenance of the housing in conjunction with monitoring of the operating condition of the bearing position makes a significant contribution towards achieving a long operating life and reliable operation.

## Maintenance

Carry out maintenance work regularly, basing the intervals for the various maintenance operations on the ambient and operating conditions.



Danger of death if maintenance operations are carried out on a machine that is still running.

Only carry out maintenance operations when the machine is at a standstill. Take precautions to prevent unintentional startup of the machine. ◀

## Regular maintenance work

- Check the alignment of the housing.
- Retightening of the foot screws and connecting screws. This should be carried out more frequently at first after commissioning and at longer intervals later.
- Inspect the housing for damage. Any indications such as conspicuous noise or unusual grease escape must also be noted.
- Relubrication of the seals. Taconite seals are equipped with lubrication nipples for this purpose. If the ambient air contains high levels of dust, the seals must be relubricated more frequently.
- Carry out a grease change. The housing must be opened and the used grease replaced by new grease.
- As an alternative to a grease change, relubrication can be carried out. A lubrication nipple is provided in the upper housing section for this purpose. The grease outlet hole in the lower housing section must be open during relubrication.
- Clean the housing to remove baked-on material and other coarse contaminants.

## Relubrication

The grease quantities required for relubrication of the bearing can be calculated using the electronic product selection and advisory system **medias** at <http://medias.schaeffler.de>.

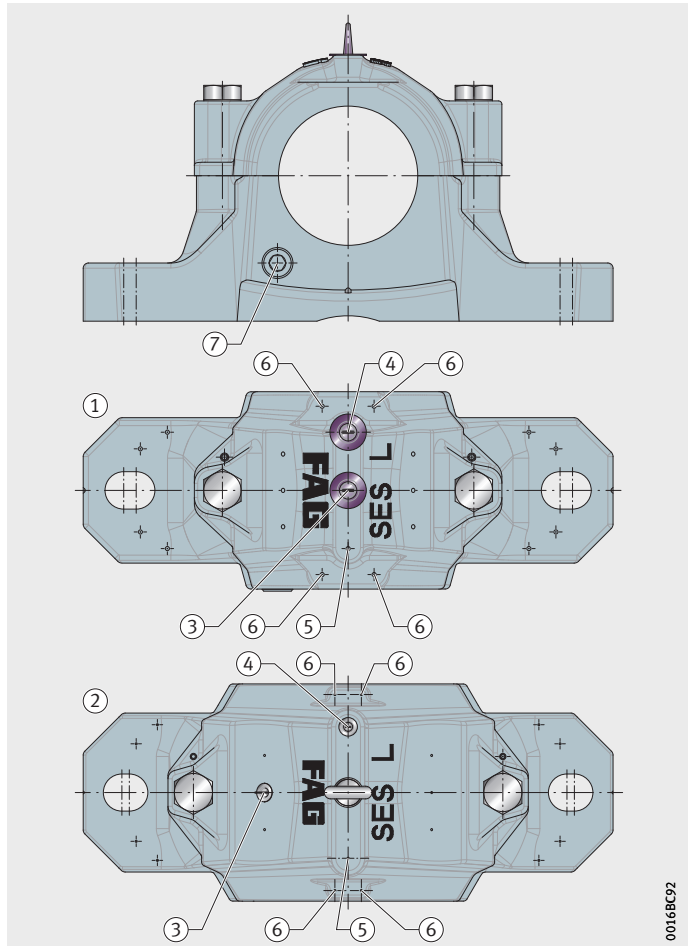
Lubricating greases should not be mixed. The grease used for relubrication must be the same as that used in initial lubrication.

When relubricating bearings with a circumferential lubrication groove, the grease is introduced into the housing via the central lubrication hole, *Figure 30*, page 29, ③. In this type of relubrication, the grease acts directly on the bearing raceway.

Where relubrication is carried out on bearings without a lubrication groove, the grease is introduced laterally into the housing, *Figure 30*, ④. In this case, the housing cavities on the side with the lubrication nipple must be filled completely with grease so that the relubrication grease can act immediately on the bearing.

- ① SES505 to SES522-619 and SES205 to SES218
- ② SES524-620 to SES532
- ③ Central lubrication hole, for bearings with lubrication groove
- ④ Lateral lubrication hole, for bearings without lubrication groove
- ⑤ Marked positions for further lubrication holes for lubrication of the bearing
- ⑥ Marked positions for lubrication holes for lubrication of seals
- ⑦ Grease outlet hole

*Figure 30*  
Positions for relubrication



In both cases, the lubrication hole present (threaded hole M10×1) is prepared by removing the closing plug and permanently inserting one of the lubrication nipples supplied at this point. As an alternative to the lubrication holes already present, lubrication holes may be introduced at other positions as indicated by the cast-in pilot holes, *Figure 30*, ⑤.

Lubrication holes can be introduced at further marked positions for the relubrication of labyrinth seals, *Figure 30*, ⑥.

# Split plumber block housings SES

## Grease outlet hole

### NOTICE

If unfavourable environmental conditions are present, there is therefore a risk of contaminant ingress into the housing when the grease outlet holes are opened.

Ensure a clean working environment. <

In order to prevent overgreasing, the closing plug must be removed from the grease outlet hole in the lower housing section for the duration of the relubrication process, *Figure 30*, page 29, ⑦. This allows superfluous grease to escape. This must be observed in particular when using double lip seals EDH. Otherwise, there is a risk that the double lip seal will be pressed out of the housing.

The grease outlet hole must then be closed off again using the screw plug.

## Dimensions

The grease outlet hole is sealed with a screw plug to DIN 906.

The size of the grease outlet hole is dependent on the size of the housing, see *table*.

## Dimensions of the grease outlet hole and relubrication holes

Housing		Thread for	
		Grease outlet hole	Relubrication hole
SES505	SES205	M10×1	M10×1
SES506-605	SES206-305		
SES507-606	SES207		
SES508-607	SES208-307		
SES509	SES209		
SES510-608	SES210		
SES511-609	SES211	M14×1,5	M10×1
SES512-610	SES212		
SES513-611	SES213		
–	SES214		
SES515-612	SES215	M20×1,5	M10×1
SES516-613	SES216		
SES517	SES217		
SES518-615	SES218		
SES519-616	–		
SES520-617	–		
SES618-318	–		
SES522-619	–		
SES524-620	–		
SES526	–		
SES622-322	–		
SES528	–		
SES624-324	–		
SES530	–		
SES532	–		



**Automatic relubrication** For automatic relubrication, Schaeffler offers a range of lubrication systems and lubricators. These supply lubrication points with fresh lubricant automatically, in the defined quantity and at the defined time.

**Further information** ■ TPI 252, Lubricators for grease and oil lubrication, <https://www.schaeffler.de/std/1F84>

### Cleaning

#### **NOTICE**

If cleaning is not carried out correctly, contamination or moisture may enter the housing.

In the area of the seals in particular, do not use compressed air, steam cleaners or comparable cleaning methods. <

**Replacement parts** Seals and other individual parts can be ordered separately as replacement parts. Information on the selection and ordering designation of seals can be found in the dimension tables in TPI 247. If you have any questions, please contact our Engineering Offices.

**Further information** ■ TPI 247, Split plummer block housings SES, <https://www.schaeffler.de/std/1F92>

# Split plumber block housings SES

## Appendix Nominal screw sizes and tightening torques for foot screws

Foot screws are used for screw mounting the housings to the locating surface. They are not included in the scope of delivery of the housings.

The following table contains tightening torques for metric coarse pitch threads in accordance with DIN 13, DIN 962 and DIN ISO 965-2 as well as head contact dimensions in accordance with DIN EN ISO 4014, DIN EN ISO 4017, DIN EN ISO 4032, DIN EN ISO 4762, DIN 6912, DIN 7984, DIN 7990 and DIN EN ISO 8673.

The maximum tightening torques are valid with 90% utilisation of the yield stress of the screw material 8.8 and with a friction factor of 0,14. We recommend tightening the foot screws to approx. 70% of these values, see *table*.

Tightening screws  
for foot screws with metric thread  
in accordance with DIN 13,  
DIN ISO 962 and DIN ISO 965-2

Housing		Nominal screw size	Maximum tightening torque Nm	Recommended tightening torque Nm
SES505	SES205	M12	93	65
SES506-605	SES206-305			
SES507-606	SES207			
SES508-607	SES208-307			
SES509	SES209			
SES510-608	SES210			
SES511-609	SES211	M16	230	160
SES512-610	SES212			
SES513-611	SES213			
–	SES214			
SES515-612	SES215			
SES516-613	SES216			
SES517	SES217	M20	464	325
SES518-615	SES218			
SES519-616	–			
SES520-617	–			
SES618-318	–			
SES522-619	–			
SES524-620	–	M24	798	550
SES526	–			
SES622-322	–			
SES528	–			
SES624-324	–			
SES530	–			
SES532	–	M30	1 597	1 100
SES530	–			
SES530	–			
SES532	–			

### Tightening torques for connecting screws

Connecting screws are used for screw mounting the upper housing section to the lower housing section. They are included in the scope of delivery of the housing.

#### Tightening torques for connecting screws

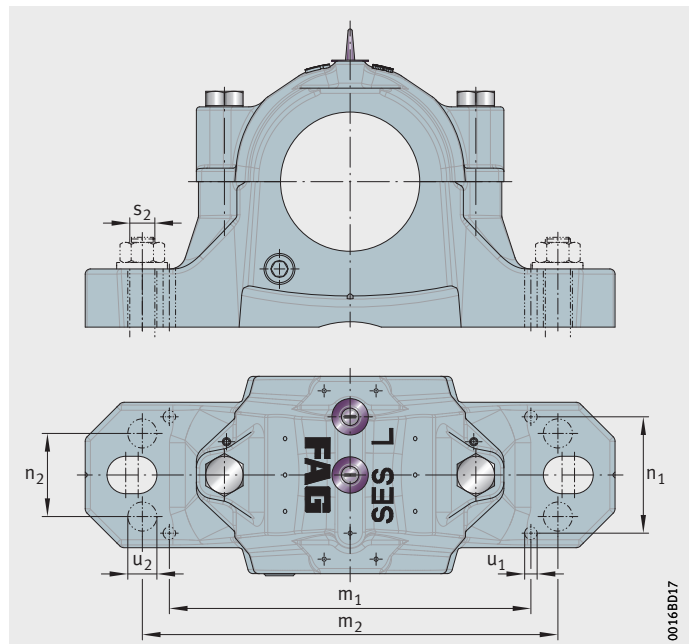
Screws to DIN EN ISO 4014 Material 8.8	Recommended tightening torque Nm
M10	51
M12	87
M16	215
M20	430
M24	740

### Additional holes for foot screws and pins

Split plummer housings SES are generally fixed in place using two foot screws. The housing base has two extended slots for this purpose, to enable good alignment during assembly.

For location on T profiles, four foot screws are required. The points for additional holes are marked by cast-in pilot holes, *Figure 31* and *table*, page 34.

Further markings indicate the locations at which holes can be produced for pins to secure the position, *Figure 31* and *table*, page 34.



*Figure 31*  
Additional holes  
for foot screws and pins

## Split plumber block housings SES

Additional holes  
for pins and foot screws

Housing		Dimensions for						
		Pins			Screws			
		m <sub>1</sub> mm	n <sub>1</sub> mm	u <sub>1</sub> mm	m <sub>2</sub> mm	n <sub>2</sub> mm	u <sub>2</sub> mm	s <sub>2</sub>
SES505	SES205	95	32	4	115	25	–	–
SES506-605	SES206-305	115	36	4	130	25	–	–
SES507-606	SES207	115	37	4	135	25	–	–
SES508-607	SES208-307	135	43	4	160	34	11	M10
SES509	SES209	135	40	4	160	34	11	M10
SES510-608	SES210	135	44	6	160	34	11	M10
SES511-609	SES211	170	51	6	200	40	14	M12
SES512-610	SES212	170	52	6	200	40	14	M12
SES513-611	SES213	190	58	6	220	48	14	M12
–	SES214	190	52	4	220	48	14	M12
SES515-612	SES215	190	60	8	220	48	14	M12
SES516-613	SES216	210	65	8	252	52	18	M16
SES517	SES217	210	66	8	252	52	18	M16
SES518-615	SES218	240	72	8	280	58	18	M16
SES519-616	–	240	74	8	280	58	18	M16
SES520-617	–	261	80	8	300	66	18	M16
SES618-318	–	276	84	8	300	66	18	M16
SES522-619	–	291	88	8	320	74	18	M16
SES524-620	–	297	91	8	330	74	18	M16
SES526	–	325	97	10	370	80	22	M20
SES622-322	–	338	96	10	370	80	22	M20
SES528	–	342	109	12	400	92	26	M24
SES624-324	–	378	120	12	430	100	26	M24
SES530	–	372	116	12	430	100	26	M24
SES532	–	392	120	12	450	100	26	M24

## Grease quantities for initial greasing

For initial greasing, the basic rule is that the bearing should be filled with grease to 100% and the free volume of the housing to 60%. The free volume is the space that remains in the housing once the bearing, adapter sleeve, shaft and seals have been fitted.

The recommended grease quantity can also be stated in grams once the density of the grease has been taken into consideration, see *table*.

The recommended grease quantity in the table takes account of:

- filling of the free volume to 60%
- grease with a density of 0,9 g/cm<sup>3</sup>

### Recommended grease quantity for initial greasing

Housing			Recommended grease quantity	
Designation		Free volume cm <sup>3</sup>	Volume ≈ cm <sup>3</sup>	Mass ≈ g
SES505	SES205	72	43	39
SES506-605	SES206-305	118	71	64
SES507-606	SES207	145	87	78
SES508-607	SES208-307	164	98	89
SES509	SES209	184	110	99
SES510-608	SES210	211	127	114
SES511-609	SES211	263	158	142
SES512-610	SES212	388	233	210
SES513-611	SES213	474	284	256
–	SES214	537	322	290
SES515-612	SES215	605	363	327
SES516-613	SES216	816	490	441
SES517	SES217	961	577	519
SES518-615	SES218	1 250	750	675
SES519-616	–	1 421	853	767
SES520-617	–	1 855	1 113	1 002
SES618-318	–	1 759	1 055	950
SES522-619	–	2 513	1 508	1 357
SES524-620	–	2 974	1 784	1 606
SES526	–	3 289	1 973	1 776
SES622-322	–	3 148	1 889	1 700
SES528	–	4 211	2 527	2 274
SES624-324	–	3 704	2 222	2 000
SES530	–	5 132	3 079	2 771
SES532	–	6 053	3 632	3 268

Information on the recommended grease quantity for other housing/bearing combinations is available by agreement.

## Split plummer block housings SES

### Grease quantities for relubrication

The grease quantities required for relubrication of the bearing can be calculated using the electronic product selection and information system *medias* under <https://medias.schaeffler.de>.



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