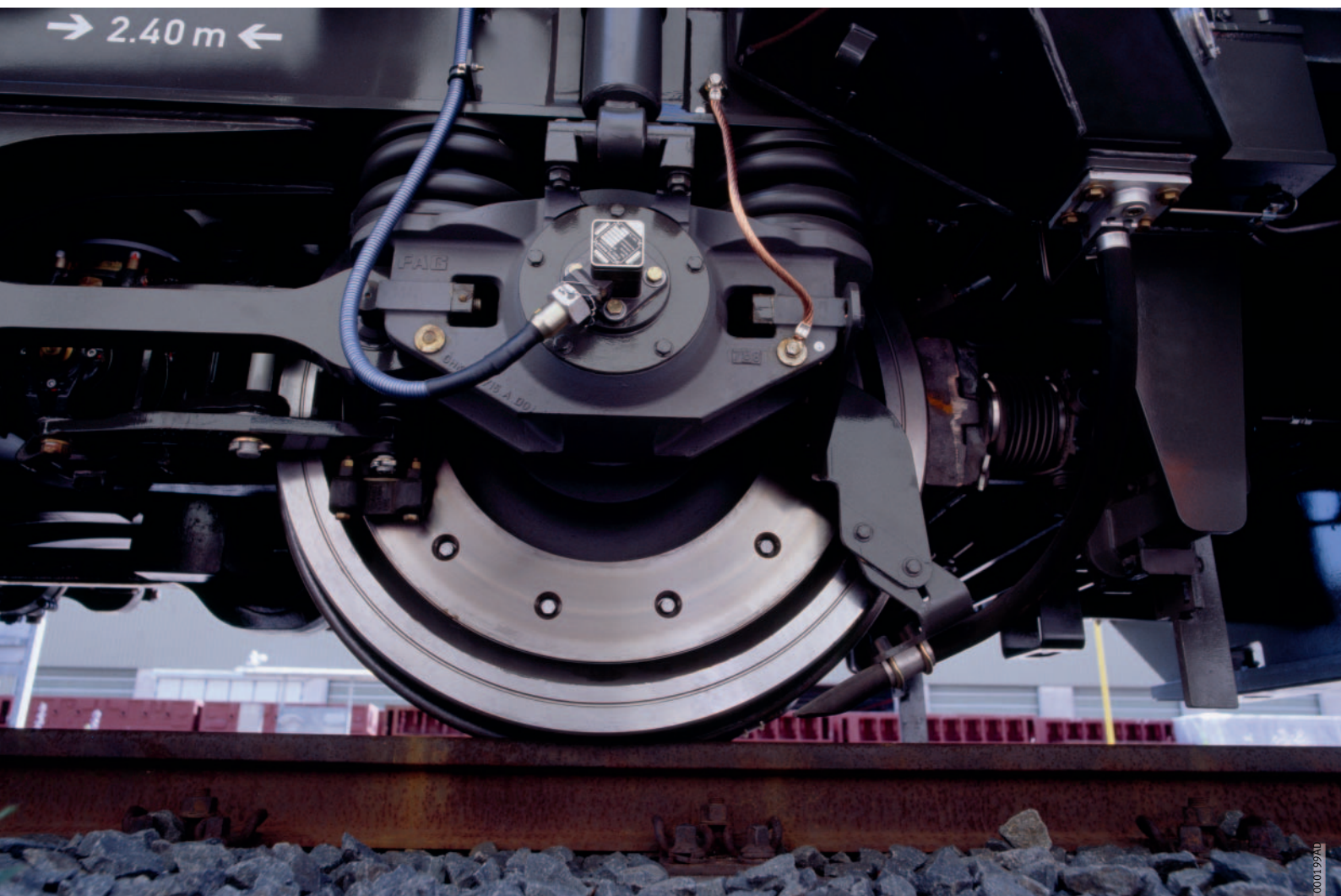


# Axlebox Bearing Seals in Rail Applications



**FAG**



In order that an axlebox bearing remains functionally capable, it is necessary to prevent the ingress of contaminant particles or liquids and the escape of lubricant. The shaft seal makes a very important contribution to maintaining the function of the axlebox bearing.

The term “protective seal” covers all types of seals that protect rotational bearings against the ingress of contaminant and loss of lubricant.

These seal types are differentiated into contact seals and non-contact seals.

Based on the existing operating conditions, the seal type most suitable for the application is then determined.

For example, contact seals are not used in the high speed sector in very many cases due to the high circumferential speeds and the resulting generation of heat.

In contrast, contact seals are necessary in the urban sector where circumferential speeds are lower and the tracks may become flooded. In order to cover the whole spectrum of operating conditions, there is a wide range of seal variants.

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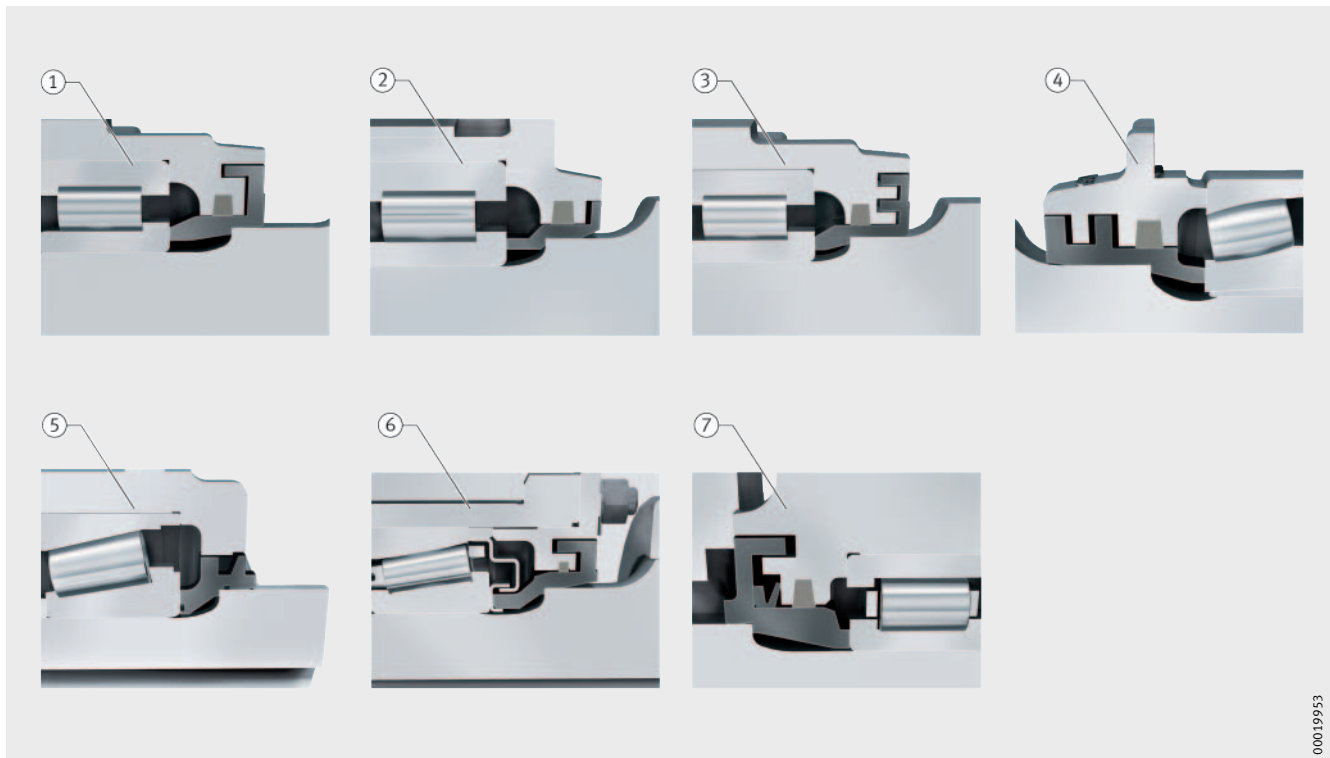


Figure 1 - Overview of seals (grease lubrication)

The following sections present the seal variants used in the field of axlebox bearings, *Figure 1*.

① Single axial labyrinth seal:

- little space required
- non-contact type
- improved sealing in combination with a felt seal, in this case no longer a non-contact type.

② Single radial labyrinth seal:

- little space required
- also possible with split housings
- non-contact type
- improved sealing in combination with a felt seal, in this case no longer a non-contact type.

③ Double axial labyrinth seal:

- larger space required
- better labyrinth sealing action
- non-contact type
- improved sealing in combination with a felt seal, in this case no longer a non-contact type.

④ Double radial labyrinth seal:

- larger space required
- better labyrinth sealing action
- also possible with split housings
- non-contact type
- improved sealing in combination with a felt seal, in this case no longer a non-contact type.

⑤ Splash ring seal:

- simple design
- use only possible in combination with sealed bearings
- suitable for use with split and unsplit housings
- non-contact type.

⑥ Labyrinth seal with stuffing box:

- also suitable for high circumferential speeds
- little space required
- contact type.

⑦ Combined seal comprising labyrinth ring, felt ring and vee-ring seal

- very good sealing action against ingress of foreign matter from outside
- contact type.

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