SCHAEFFLER

Press-Fitting Device for Sealing Caps on Tapered Roller Bearings TAROL

TOOL-RAILWAY-SEALCAP-PRESS-2

User Manual

Contents

1 About the manual 5
1.1 Symbols 5
1.2 Signs 5
1.3 Availability 5
1.4 Legal guidelines 6
1.5 Images 6
2 General safety regulations 6
2.1 Intended use 6
2.2 Qualified personnel 6
2.3 Protective equipment 7
2.4 Safety regulations 7
2.4.1 Transport and storage 7
2.4.2 Operation 7
2.4.3 Maintenance and repair 7
2.5 Hazards 8
2.5.1 Danger of death 8
2.5.2 Risk of injury 8
2.5.3 Material damage 9
3 Scope of delivery 9
3.1 Check for defects 10
3.2 Check for transport damage 10
4 Product description 11
5 Transport and storage 12
5.1 Transport 12
5.2 Storage 12
6 Mounting 12
6.1 Unpacking and installation 12
7 Commissioning 12
7.1 Establishing the hose connection 12
7.2 Establishing the hydraulic connection 13
7.3 Performing a test run 13
8 Operation 13
8.1 Carrying out protective measures 13
8.2 Operating the press-fitting device 14
8.2.1 Extending the piston 14
8.2.2 Retracting the piston 14
8.3 Required tools 14
8.4 Carrying out the pressing operation 14
8.4.1 Pressing out the sealing cap 14
8.4.2 Pressing in the sealing cap 15

9 Troubleshooting 17
10 Maintenance 17
10.1 Maintenance plan 17
10.2 Bleeding the oil circuit 18
11 Decommissioning 18
12 Disposal 18
13 Technical data 18
13.1 Ambient conditions 19
13.2 CE Declaration of Conformity 20
14 Replacement parts and accessories 21
14.1 Hydraulic cylinder 21
14.2 Hose couplings 22
14.3 Hydraulic oil 22
14.4 Hydraulic pump 23
14.5 Sealing cap tools 23
14.6 Service 24

1 About the manual

This manual is part of the product and contains important information. Read the manual thoroughly prior to use and follow the instructions precisely.

The original language of the manual is German. All other languages are translations from the original language.

1.1 Symbols

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

1 Warning and hazard symbols

Signs and descriptions	
⚠ DANGER	In case of non-compliance, death or serious injury will occur.
⚠ WARNING	In case of non-compliance, death or serious injury may occur.
⚠ CAUTION	In case of non-compliance, minor or moderate injury may occur.
NOTICE	In case of non-compliance, damage or malfunctions in the product or the adjacent construction may occur.

1.2 Signs

The warning, prohibition and mandatory signs are defined in accordance with DIN EN ISO 7010 or DIN 4844-2.

2 Warning, prohibition and mandatory signs

Signs and descriptions	
	General warning
	Heavy load warning
	Crush warning
	Observe the manual
	Wear safety gloves
	Wear safety shoes
	Wear eye protection
	Wear head protection
	General mandatory sign

1.3 Availability

A current version of this manual can be found at:
https://www.schaeffler.de/std/2018

Ensure that this manual is always complete and legible and is available to all persons engaged in transporting, fitting, dismantling, commissioning, operating or maintaining the product.

Keep the manual in a safe place for immediate reference.

1.4 Legal guidelines

The information in this manual reflects the status at the time of publication.

Unauthorised modifications to or improper use of the product are not permitted. Schaeffler Smart Maintenance Tools accepts no liability in these cases.

1.5 Images

The images in this manual may be schematic representations and may differ from the delivered device.

2 General safety regulations

2.1 Intended use

Operate the press-fitting device exclusively for the purpose of fitting and removing sealing caps on the axlebox bearings of rail vehicles.

The press-fitting device must only be used in conjunction with an application-specific sealing cap tool.

Operate the press-fitting device strictly in accordance with the technical data.

Only use original spare parts and accessories supplied by Schaeffler.

2.2 Qualified personnel

Obligations of the operator:

- Ensure that only qualified and authorised personnel perform the activities described in this manual.
- Ensure that personal protective equipment is used.

Qualified personnel must:

- Ensure adequate product knowledge, e.g. through training on proper handling and use of the product
- be fully familiar with the contents of this manual, particularly all safety instructions
- be aware of any relevant country-specific regulations

2.3 Protective equipment

For certain work on the product, suitable protective equipment must be worn. Personal protective equipment consists of:

3 Required personal protective equipment

Personal protective equipment	Mandatory signs in accordance with DIN EN ISO 7010
Protective gloves	
Safety shoes	
Eye protection	
Head protection	

2.4 Safety regulations

Keep safety instructions, warning information and operating instructions on the device in a legible condition. Replace any damaged or obliterated signs or labels on the device immediately.

When handling hydraulic oil, observe the information and regulations provided in the corresponding safety data sheet.

2.4.1 Transport and storage

In transport, the relevant safety and accident prevention regulations must be observed.

Only use suitable lifting equipment for transportation.

Use the eye bolt provided to transport the device.

2.4.2 Operation

Only operate the device under the environmental conditions provided.

Observe the pump manufacturer's specifications.

Avoid remaining in the hazard area of a 1 m radius around the device.

Do not reach between the plates during operation.

Wear personal protective equipment.

2.4.3 Maintenance and repair

Maintenance work and repairs may only be carried out by qualified personnel.

Deactivate the device before performing maintenance work or repairs.

2.5 Hazards

2.5.1 Danger of death

Danger of death from exceeding the maximum permissible pressure

1. Monitor the manometer display during operation.
2. Do not exceed a hydraulic pressure of 700 bar.

2.5.2 Risk of injury

Risk of injury from flying components

1. Use a safety blanket.

Risk of crushing injuries during the pressing operation

1. Ensure that no persons are within a 1 m radius of the device.
2. Do not reach between the base plate and the pressure plate during the pressing operation.

Risk of crushing injuries during retraction of the pressure plate

1. Ensure that no persons are within a 1 m radius of the device.
2. Do not reach between the pressure plate and the mounting plate during retraction of the pressure plate.

Risk of injury from hydraulic pressure

1. Wear personal protective equipment.
2. Check the hydraulic hoses for signs of wear and damage before each use.
3. Replace any damaged hoses immediately.
4. Observe the minimum bending radius for hydraulic hoses as specified by the manufacturer.
5. Do not touch pressurised hydraulic hoses.
6. Use hose protection.

Risk of injury from leaking hydraulic oil

1. Wear personal protective equipment.
2. Remove any leaking hydraulic oil immediately.

Risk of injury from hydraulic oil

1. Wear personal protective equipment.
2. Observe the safety instructions provided in the safety data sheet for the hydraulic oil.

Risk of injury from hydraulic oil

1. Remove any leaking hydraulic oil to reduce the risk of slipping.
2. Remove any leaking hydraulic oil to prevent environmental damage.
3. Remove any leaking hydraulic oil; this is a flammable liquid.

2.5.3 Material damage

Material damage caused by improper use of hoses

1. Observe the specifications provided by the hose manufacturer.
2. Check the hydraulic hoses for signs of wear and damage before each use.
3. Replace any damaged hoses immediately.
4. Never expose hydraulic hoses to open fire, sharp components, severe impacts, extreme heat or extreme cold.
5. Do not kink, twist or bend hydraulic hoses.
6. Observe the minimum bending radius for the hydraulic hoses.
7. Do not allow hydraulic hoses to come into contact with corrosive materials or paints.
8. Do not apply any colour to hoses and couplings.
9. Never pull on hoses or cables to disconnect them from attached devices.

Material damage to seal due to excessive press-in pressure

1. When pressing in the seal, observe the maximum permissible press-in pressure specified by the bearing manufacturer.

Material damage to components due to incorrect use of the sealing cap tool

1. Use a sealing cap tool suitable for the components.
2. Do not exceed a maximum pressure of 700 bar.
3. Do not apply maximum pressure when the piston is fully extended.

3 Scope of delivery

1 Scope of delivery TOOL-RAILWAY-SEALCAP-PRESS-2

1	Press-fitting device (1×)	2	User manual

The hydraulic pump, hoses, manometer and sealing cap tools are not included in the scope of delivery and must be ordered separately.

3.1 Check for defects

1. Check the product immediately upon delivery for any visible defects.
2. Report any defects promptly to the distributor of the product.
3. Do not put damaged products into operation.

3.2 Check for transport damage

1. Check the product immediately upon delivery for any damage during transit.
2. Report any damage during transit promptly as a complaint to the carrier.

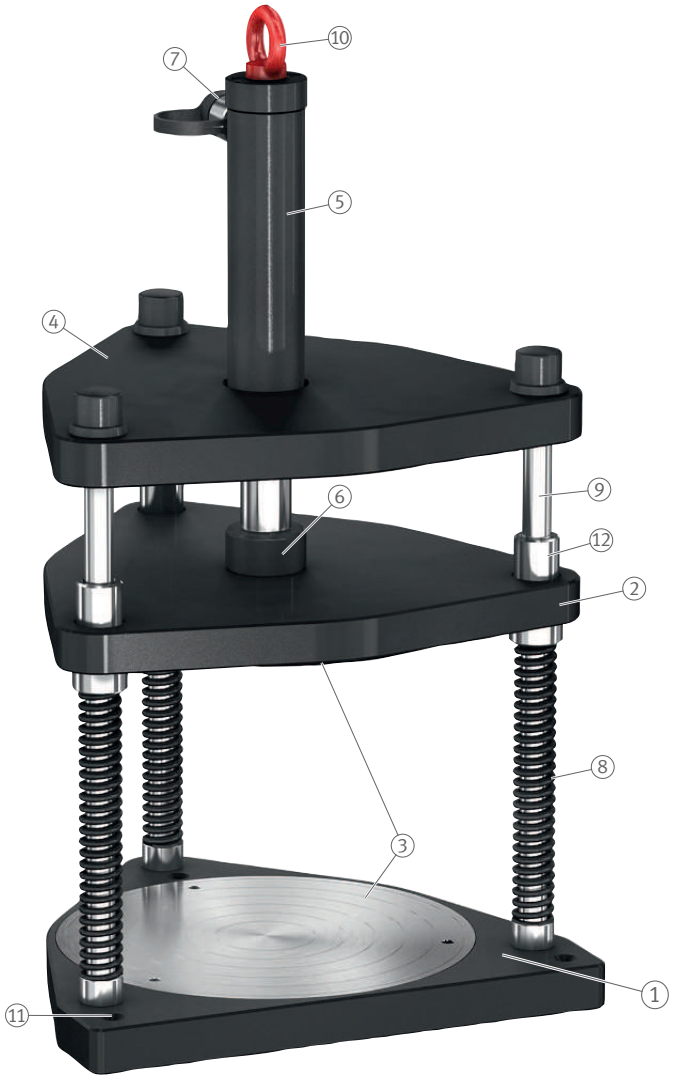
4 Product description

The press-fitting device is used to fit and remove sealing caps on the axlebox bearings of rail vehicles.

A bearing-specific sealing cap tool is required for both fitting and removal.

The device can be operated using either a manual hydraulic pump or an electric hydraulic pump.

2 Components TOOL-RAILWAY-SEALCAP-PRESS-2



001B6D72

1	Base plate	2	Pressure plate
3	Centring disc	4	Mounting plate
5	Hydraulic cylinder with piston	6	Pressure part
7	Hose connector	8	Compression spring
9	Tie rod	10	Eye bolt
11	Mounting holes	12	Guide sleeve

5 Transport and storage

5.1 Transport

The safety regulations for transport must be observed.

1. Decommission the device ➤18|11.
2. Use the eye bolt to lift the device.
3. Pack the device in a crate, adding sufficient filling material, and secure against tipping.
4. Protect the device against corrosion.
5. Fix the crate to a pallet and secure against slipping.
6. Transport the pallet using a suitable lifting tool.

5.2 Storage

The safety regulations for storage must be observed.

1. Decommission the device ➤18|11.
2. Lubricate the tie rods and guide sleeves.
3. Store the device in a dry, clean environment.
4. For extended storage periods, use a plastic cover to protect the device from dust.
5. When the hydraulic connection is disconnected, protect the hose connection from contamination.

6 Mounting

6.1 Unpacking and installation

Ensure an ergonomic working height is maintained.

✓ Suitable operating location selected ➤19|13.1.

1. Set down the pallet.
2. Remove the packaging.
3. Use the eye bolt to lift the device.
4. Carefully place the device in the operating location.
5. Secure the device against slipping by inserting screws through the mounting holes and fixing the device in place on the base.

7 Commissioning

7.1 Establishing the hose connection

1. Observe the specifications provided by the hose manufacturer.
2. Observe the pump manufacturer's specifications.
3. Check the hydraulic hoses for signs of wear and damage before each use.

4. Replace any damaged hoses immediately.
5. Observe the minimum bending radius for the hydraulic hoses.
6. Never expose hydraulic hoses to open fire, sharp components, severe impacts, extreme heat or extreme cold.
7. Do not kink, twist or bend hydraulic hoses.
8. Do not allow hydraulic hoses to come into contact with corrosive materials or paints.
9. Do not touch pressurised hydraulic hoses.

7.2 Establishing the hydraulic connection

✓ Use a hydraulic hand pump with manometer.

✓ Hose connection established ➤12|7.1.

1. Connect the manometer, observing the technical data ➤19|▦7.
2. Connect the hydraulic pump, observing the technical data ➤19|▦7.
3. Connect the hose coupling to the hose connector.
4. Hand-tighten the union nut on the hose coupling.
5. If necessary, secure the hydraulic pump mechanically.
6. Check all connection points for secure fit and tightness.

7.3 Performing a test run

✓ Hydraulic connection established ➤13|7.2

‣ Bleeding the oil circuit ➤18|10.2.

» The device is now ready for operation.

8 Operation

8.1 Carrying out protective measures

1. Wear personal protective equipment.
2. Ensure that the ambient conditions are appropriate.
3. Check the hydraulic hoses for signs of wear and damage before each use.
4. Replace any damaged hoses immediately.
5. The use of a safety blanket is recommended. Place the safety blanket around the component.

8.2 Operating the press-fitting device

8.2.1 Extending the piston

✓ The device is operational.

✓ The operating manual for the connected hydraulic pump has to be observed.

‣ Operate the connected hydraulic pump.

› Hydraulic pressure builds up in the hydraulic cylinder.

» The piston of the hydraulic cylinder extends and the pressure plate moves downwards.

Do not exceed a maximum pressure of 700 bar.

8.2.2 Retracting the piston

✓ The device is operational.

✓ The operating manual for the connected hydraulic pump has to be observed.

✓ The piston of the hydraulic cylinder is extended.

‣ Release the pressure on the connected hydraulic pump.

» The piston of the hydraulic cylinder retracts and the pressure plate moves upwards, returning to its starting position.

8.3 Required tools

A sealing cap tool appropriate for the bearing is required for fitting and removing the sealing caps. Sealing cap tools are available in various designs ➤23|14.5.

8.4 Carrying out the pressing operation

DANGER

Danger from exceeding the maximum permissible pressure

Danger of death from flying parts caused by damage to the hydraulic hose

‣ Do not exceed a pressure of 700 bar.

8.4.1 Pressing out the sealing cap

✓ The device is suitable for the component's dimensions.

✓ The device is operational.

✓ All protective measures have been carried out.

1. Select a sealing cap tool appropriate for the bearing.
2. Mount the sealing cap tool according to the manufacturer's specifications.
3. Position the bearing with the sealing cap tool centrally on the base plate.
4. Slowly move the pressure plate towards the component by actuating the hydraulic cylinder.
5. Fix the component in place using light contact pressure.
6. Check that the component is in the correct position.

⚠ WARNING

High force during the pressing operation

Risk of crushing injuries

- Ensure that no persons are within a 1 m radius of the device.
- Do not reach between the base plate and the pressure plate during the pressing operation.

7. If necessary, place a safety blanket around the component.
8. Carry out the pressing operation. Do not exceed the maximum pressure of 700 bar.

› The pressing process is complete when the hydraulic pressure drops or the sealing cap falls out in an audible manner..

⚠ WARNING

High force during retraction of the pressure plate

Risk of crushing injuries

- Ensure that no persons are within a 1 m radius of the device.
- Do not reach between the pressure plate and the mounting plate during retraction of the pressure plate.

9. Retract the piston.
10. Remove the safety blanket, if used.
11. Remove the bearing and sealing cap tool.

8.4.2 Pressing in the sealing cap

✓ The device is suitable for the component's dimensions.

✓ The device is operational.

✓ All protective measures have been carried out.

1. Select a sealing cap tool appropriate for the bearing.
2. Mount the sealing cap tool according to the manufacturer's specifications.
3. Position the bearing, with sealing cap in place and the sealing cap tool, centrally on the base plate.
4. Slowly move the pressure plate towards the component by actuating the hydraulic cylinder.
5. Fix the component in place using light contact pressure.
6. Check that the component is in the correct position.
7. If necessary, place a safety blanket around the component.

⚠ WARNING

High force during the pressing operation

Risk of crushing injuries

- Ensure that no persons are within a 1 m radius of the device.
- Do not reach between the base plate and the pressure plate during the pressing operation.

8. Carry out the pressing operation. Do not exceed the maximum pressure of 700 bar.

› When pressing in the seal, a brief drop in pressure may occur with the shifting of the sealing cap.

9. Continue the pressing-in operation until the press-in pressure specified by the manufacturer is reached.

› Ensure that the sealing cap is in the correct position.

› The pressing operation is now complete.

⚠ WARNING

High force during retraction of the pressure plate

Risk of crushing injuries

- Ensure that no persons are within a 1 m radius of the device.
- Do not reach between the pressure plate and the mounting plate during retraction of the pressure plate.

10. Retract the piston.
11. Remove the safety blanket, if used.
12. Remove the bearing and sealing cap tool.

Performing the pressing-in operation at a pressure higher than specified by the manufacturer may cause damage to the seal.

9 Troubleshooting

Maintenance work and repairs may only be carried out by qualified personnel.

Deactivate the device before performing any maintenance or repair work ➤18|11.

4 Malfunctions

Malfunction	Possible cause	Remedy
Piston does not extend or only partially extends	Usable oil quantity in the hydraulic pump is insufficient	Use a hydraulic pump with a sufficient usable oil quality.
	No pressure build-up	Refer to the pump manufacturer's user manual.
	Low oil level in the hydraulic pump	Replenish the hydraulic oil in the hydraulic pump.
	Hydraulic cylinder and hydraulic pump are not connected properly	Ensure that the hose connection is properly established ➤12|7.1.
	Air in the oil circuit	Bleed the oil circuit ➤18|10.2.
Piston extends unevenly	Air in the oil circuit	Bleed the oil circuit ➤18|10.2.
Piston extends slowly	Increased friction due to inadequate centring of the component	1. Check component centring. 2. Re-centre the component.
	Hydraulic cylinder seal leaking	In the event of leaking hydraulic oil, replace the hydraulic cylinder seal.
	Hydraulic pump not suitable	Select a suitable hydraulic pump.
	Hydraulic pump malfunction	1. Refer to the pump manufacturer's user manual. 2. Replace the hydraulic pump.
	Hydraulic connection leaking	1. Deactivate the device. 2. Check the hydraulic connection for leakage and replace if necessary. 3. Reactivate the device.
Hydraulic oil leaking from the hydraulic cylinder	Seals damaged or worn	Replace the hydraulic cylinder seal.
	Hydraulic cylinder defective	Replace hydraulic cylinder.
Piston does not retract or only retracts slowly	Restricted flow due to narrow hose	Choose a hose with a larger diameter.
	Return spring broken or weak	1. Check return spring for damage. 2. Replace the return spring if necessary.
	Hydraulic cylinder defective	Replace hydraulic cylinder.
Piston does not fully retract	Return spring broken or weak	1. Check return spring for damage. 2. Replace the return spring if necessary.
	Increased friction on tie rods and guide sleeves	1. Check the tie rod surfaces for corrosion. 2. Lubricate the tie rods and guide sleeves.

10 Maintenance

Maintenance work and repairs may only be carried out by qualified personnel.

Deactivate the device before performing any maintenance or repair work ➤18|11.

10.1 Maintenance plan

5 Maintenance plan

Activity	Annually	Every 2 a (years)	Every 4 a (years)
Check hydraulic cylinder for damage	✓		
Check hydraulic cylinder for leakage	✓		
Check the hydraulic cylinder's screw connection	✓		
Check piston rod for damage	✓		
Check tie rods and guide sleeves for damage	✓		
Lubricate tie rods and guide sleeves	✓		

Activity	Annually	Every 2 a (years)	Every 4 a (years)
Check all screw connections for secure fit	✓		
Replace hydraulic hoses			✓
Change oil	Observe the pump manufacturer's specifications		

10.2 Bleeding the oil circuit

Air bubbles can enter the system when the pressure source is changed. To remove these air bubbles, the oil circuit must be bled.

✓ Observe the pump manufacturer's specifications.

1. Bleed the oil circuit prior to initial use and after each change of pressure source.
2. Extend and retract the hydraulic cylinder piston several times.

» The oil circuit has now been bled.

11 Decommissioning

1. Retract the piston.

› The system is depressurised.

2. Disconnect the hydraulic system, if required.
3. Seal the hose connection with a cap.

» The device is out of operation

12 Disposal

1. Decommission the device ➤18|11.
2. Drain hydraulic oil from the system.
3. Dispose of the device in accordance with locally applicable regulations.

13 Technical data

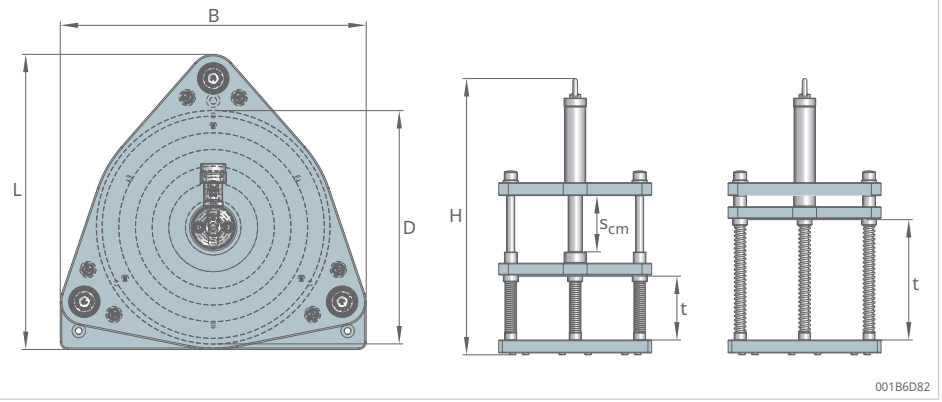
▦6 Available models

Model	Ordering designation	
	Schaeffler Technologies [1]	SMT [2]
TOOL-RAILWAY-SEALCAP-PRESS-2	304411477-0000-10	7550100

[1] ordering via Schaeffler Technologies AG & Co. KG

[2] ordering via Schaeffler Smart Maintenance Tools B.V.

3 Dimensions



7 Technical data

Parameter			TOOL-RAILWAY-SEALCAP-PRESS-2
D	max.	mm	310
t	min.	mm	172,5
t	max.	mm	325
F	–	kN	111
s_{cm}	max.	mm	152
L	–	mm	398,5
B	–	mm	413
H	–	mm	746
m	–	kg	45
p	max.	bar	700
V	–	cm^3	242
Thread for hose connection		inch	$^3/_8$ NPT
Hose coupling, hydraulic cylinder			PUMP.COUPLER-F-3/8
Required hose coupling, hydraulic hose			PUMP.COUPLER-M-3/8

t	mm	Clear height
s_{cm}	mm	Stroke
L	mm	Length
B	mm	Width
H	mm	Height
m	kg	Mass
p	bar	Pressure
V	cm^3	Hydraulic cylinder volume
D	mm	Outside diameter
F_P	kN	Extraction force

13.1 Ambient conditions

Only operate the device under the following ambient conditions.

8 Ambient conditions

Designation	Value
Ambient temperature	0 °C ... +50 °C
Humidity	5 % ... 80 %, non-condensing
Operating location	• clean environment • flat, stable surface • in closed rooms and outdoors

Observe the manufacturer's specifications for hoses, pumps and manometer.

13.2 CE Declaration of Conformity

Declaration of incorporation of partly completed machinery

Manufacturer's name:	Schaeffler Smart Maintenance Tools BV
Manufacturer's address:	Schorsweg 15, 8171 ME Vaassen, NL www.schaeffler-smart-maintenance-tools.com

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Brand:	BETEX
Product description:	Sealcap press
Product name/type:	• TOOL-RAILWAY-SEALCAP-PRESS-2
Comply with the requirements of:	• Machine Directive 2006/42/EC • Machine Regulation (EU) 2023/1230
Applicable harmonized standards:	• ISO 12100:2010 • ISO 16092-1:2018 • ISO 16092-3:2018

Please note that it is not permitted to use the machine containing the above-mentioned product until it has been checked and approved as complying with the provisions of the most recent version of the Machinery Directive.

H. van Essen
Managing Director
Schaeffler Smart Maintenance Tools BV

Place, Date:
Vaassen, 10-11-2025

CE

14 Replacement parts and accessories

Replacement parts can be obtained via various distribution channels by quoting the relevant order designation.

Schaeffler Technologies

- ordering via Schaeffler Technologies AG & Co. KG
- online product catalogue: medias.schaeffler.com

SMT

- ordering via Schaeffler Smart Maintenance Tools B.V.
- online product catalogue: schaeffler-smart-maintenance-tools.com

14.1 Hydraulic cylinder

4 Hydraulic cylinder

001B643C

9 Hydraulic cylinder

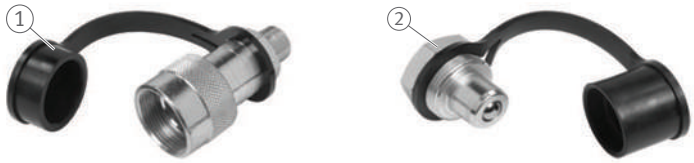
Description	Ordering designation	
	Schaeffler Technologies [1]	SMT [2]
Hydraulic cylinder, 700 bar	NSSS-106	8230106

1) ordering via Schaeffler Technologies AG & Co. KG

2) ordering via Schaeffler Smart Maintenance Tools B.V.

14.2 Hose couplings

5 Hose couplings



1	Hose coupling, female	2	Hose coupling, male

10 Hose couplings

Description	Ordering designation	
	Schaeffler Technologies [1]	SMT [2]
Hose coupling, female	PUMP.COUPLER-F-3/8	7299131
Hose coupling, male	PUMP.COUPLER-M-3/8	7299132

1) ordering via Schaeffler Technologies AG & Co. KG

2) ordering via Schaeffler Smart Maintenance Tools B.V.

14.3 Hydraulic oil

6 Hydraulic oil

11 Hydraulic oil LPS 78 ISO 15

Quantity	Ordering designation	
l	Schaeffler Technologies [1]	SMT [2]
1	PUMP.HYDOIL-LPS78-1L	789106
2	PUMP.HYDOIL-LPS78-2L	789107
4	PUMP.HYDOIL-LPS78-4L	789108
5	PUMP.HYDOIL-LPS78-5L	789109

1) ordering via Schaeffler Technologies AG & Co. KG

2) ordering via Schaeffler Smart Maintenance Tools B.V.

14.4 Hydraulic pump

7 Hydraulic pump set

12 Hydraulic pump set

Description	Ordering designation	
	Schaeffler Technologies [1]	SMT [2]
Hydraulic pump, 700 bar	AHP-701-SET	7265501

1) ordering via Schaeffler Technologies AG & Co. KG

2) ordering via Schaeffler Smart Maintenance Tools B.V.

14.5 Sealing cap tools

Schaeffler offers various bearing-specific sealing cap tools under the product designation TOOL-RAILWAY-SEALCAP depending on bearing size, bearing type and bearing design.

For further information, please contact our External Sales force or an authorised sales partner.

8 Example of a bearing in a sealing cap tool

000B507A

To select the appropriate sealing cap tool, provide the exact bearing designation.

9 Bearing designation TAROL

000B9C8F

Further information

TPI 156 | Tapered Roller Bearing Units TAROL |
https://www.schaeffler.de/std/21F6

14.6 Service

Schaeffler service portal:
https://www.schaeffler.de/std/21F3

Service Smart Maintenance Tools:
service.smt@schaeffler.com

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