

# REPAIR INSTRUCTIONS

3 WG 94 2WD  
Repair stage 1

CONSTRUCTION EQUIPMENT



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# 1 Preface

This documentation was developed for specialized staff trained in the operation of ZF products by ZF Friedrichshafen AG (hereinafter referred to as "ZF").

Object of documentation is a ZF product. State of design acc. to date of issue.

The figures serve to illustrate the operation or the workflow and may deviate from your ZF product. Illustrations and figures are not drawn to scale; therefore, no conclusions about size and weight can be drawn.

The work described below may be performed by authorized, trained, and instructed specialized staff only. It is the responsibility of the company that performs repair, assembly, or maintenance tasks to ensure that their specialized staff is properly trained and that current documents are made available.

ZF Friedrichshafen AG

## 1.1 Document overview

The specifications listed in these documents must be observed, because they are a prerequisite for fault-free operation of the product and for the warranty granted by ZF Friedrichshafen AG. Please get in touch with your contact if you need binding documents.

Document no.	Designation	Technical information
4661.758.101	Operating Instructions	3 WG 94

Tab. 1

## 2 Safety

### 2.1 Signal words and symbols

This document contains particularly highlighted safety instructions which are marked with one of the following signal words depending on the severity of the danger.

#### **DANGER**

##### **DANGER**

The signal word **DANGER** indicates a dangerous situation that, if not prevented, will lead to a severe injury or death.

⇒ Information as to how the danger can be prevented.

#### **WARNING**

##### **WARNING**

The signal word **WARNING** indicates a dangerous situation that, if not prevented, can lead to a severe injury or death.

⇒ Information as to how the danger can be prevented.

#### **CAUTION**

##### **CAUTION**

The signal word **CAUTION** indicates a dangerous situation that, if not prevented, can lead to a slight or moderate injury.

⇒ Information as to how the danger can be prevented.

#### **NOTICE**

The signal word **NOTICE** indicates a situation that, if not prevented, can lead to property damage.

⇒ Information as to how the property damage can be prevented.

The following symbols are additionally used:



This symbol refers to additional, safety-relevant information.



This symbol indicates information concerning special workflows, methods, application of aids, etc.

## 2.2 General safety instructions

Read all safety instructions and information. Failure to comply with safety instructions and information may lead to property damage, serious injuries or death.

### Intended use

The ZF product is exclusively intended for the application as defined in the contract and as agreed on the time of delivery. Any other or extended form of use does not comply with this definition of intended use. The intended use includes compliance with this documentation and other applicable documents, in order to avoid malfunctions and damage in operation.

The ZF product is designed and produced in line with state-of-the-art technology. The ZF product in its delivery status is safe to operate. However, the ZF product may pose dangers if improperly used by unauthorized, untrained and uninstructed staff or if not used according to its intended use.

Figures might deviate from the ZF product and are not drawn to scale. No conclusions can be drawn with regard to size and weight.

### Installation, commissioning, maintenance and repair

Perform assembly, commissioning, maintenance and repair work exclusively according to this documentation and other applicable documents.

Observe the following points:

- Employ authorized, trained and instructed staff.
- Observe technical provisions.
- Only use genuine ZF spare parts.
- Only use genuine ZF accessories.
- Only use genuine ZF special tools.
- Unauthorized changes and modifications lead to the expiry of the operator's license, warranty or guarantee.

In case of damage, contact ZF and have the following information on the product ready:

- Type
- Parts list [BoM] number
- Serial number
- Operating hours
- Description of damage

Observe safety instructions, valid safety regulations and legal conditions to prevent malfunctions and damage.

The country-specific safety regulations, accident prevention regulations and environmental protection provisions apply additionally.

Wear safety-relevant workwear for all work. Depending on the work, also wear personal protective equipment.

After completing the work, check correct function and functional security.

## Handling of ZF product

Unauthorized changes and modifications might impair functional security. Changes, modifications and applications are only permissible upon written approval by ZF Friedrichshafen AG.

Observe the following when working on the ZF product:

- Secure workspace.
- Only carry out work at the unit when in a voltage-free state.
- Protect unit against being started accidentally. Attach instruction plate where it is clearly visible.
- Perform work when engine is switched off.
- Protect engine against being started accidentally. Attach instruction plate where it is clearly visible.
- Do not stand beneath a suspended load.
- Do not work on a suspended load.
- Only use permitted means of transport and lifting devices with sufficient load-bearing capacity.
- Close open tubings and hoses and avoid damage.
- Observe tightening torques.
- Protect cables against mechanical damage.

## Noise

Noise might cause irreversible damage to hearing.

The perception of acoustic signals, warning calls or sounds warning of impending danger is impaired by noise.

Observe the following when working on the ZF product:

- Avoid noise.
- Wear ear protection.

## Operating supplies and aids

Operating supplies and aids might cause permanent damage to health and environmental damage.

Observe the following when selecting operating supplies and aids:

- Health risks
- Environmental compatibility
- Material safety data sheets

Observe the following when handling operating supplies and aids:

- Store operating supplies and aids in suitable and correctly labeled containers.
- Seek medical help in case of injuries due to hot, cold or caustic operating supplies or aids.

Observe the following to protect the environment:

- Collect leaking operating supplies and aids in sufficiently large containers.
- Observe disposal regulations.
- Observe material safety data sheets.



### 3 Notes on Repairs and Assembly

#### 3.1 General notes

- Please read this documentation prior to starting repair or assembly work.
- Prior to starting repair or assembly work, please find out whether ZF Service Information on the ZF product is available. ZF Service Information may contain tests or supplements to the product or to repair processes, which may not be included in this documentation. ZF Service Information is available from all ZF Services Partner or from the ZF-ServiceLine.
- In cases of doubt, always contact the relevant expert departments of ZF Services.
- Please ensure that all work on the ZF product is performed expertly and under clean conditions.
- Use the specified special tools and equipment intended for the working procedures described.
- Please perform all work according to the working procedure described.
- Cover opened ZF products to prevent entry of foreign matter.
- Cover parts that have been removed and that are reusable, and protect them against dirt and damage.
- After completion of work and inspections, specialized staff must ensure that the ZF product is again functioning perfectly and is safe to operate.

#### 3.2 Cleaning the ZF product

Clean the ZF product with an appropriate cleaning agent prior to repair or assembly works.

##### **NOTICE**

Possible damage to ZF product due to water infiltration.

⇒ Be careful when using a pressure washer on the ZF product.

#### 3.3 Dismantling the ZF product

- To avoid mixing up parts, the parts must be clearly assigned to the disassembled ZF product. In particular, this applies to gear parts, reusable spacer washers or shims, electronic components, etc.
- Assemblies which must not be disassembled or are only available as spare parts assembly are described accordingly. Please refer to the spare parts catalog for the ZF product.
- Inspect the parts during disassembly in order to find a potential cause of damage.

#### 3.4 Assembling the ZF product

Assemble the ZF product at a clean workplace. The order of work steps, configuration data, and tightening torques must be retained. Use the special tools specified in the work steps.

##### **Bearings**

The provisions for assembly of the bearings are described in the respective work step. Each bearing integrated must be lubricated with operating oil after assembly.

### Sealing compound

Sealing compound is only to be used when described as such in the work step (*refer to section Operating supplies and auxiliary materials*). Please observe the manufacturer guidelines and processing instructions. Apply the sealing compound thinly and evenly. Keep oil ducts and oil bores free of sealing compound. When assembling the parts, no sealing compound must enter the oil ducts or oil bores.

### Retaining agents

Retaining agents are only to be used when described as such in the work step (*refer to section Operating supplies and auxiliary materials*). Please observe the manufacturer guidelines and processing instructions.

### Oil

Fill the ZF product with oil before operation. For the procedure and approved oil grades, refer to the document valid for the ZF product, the type plate, and/or the latest List of Lubricants TE-ML. These documents are available at all ZF Services Partner and here [www.zf.com](http://www.zf.com).

## 3.5 Cleaning parts

- Clean all reusable parts.
- Remove sealing compound residue on sealing faces or retaining agent residue, e.g. in tapped holes or on splines.
- Clean joining surfaces.
- Clean blind holes and blind hole threads.
- Lubricating bores, oil bores, oil ducts, bores for oil press fits, and lubricating grooves must be free from dirt, preservative, and foreign matter. Check for free passage.
- Hose assemblies, tubes, and joining elements must be free from dirt, oil, and damage. Clean dirty or oily parts. Check for free passage. Replace damaged parts.
- Clean all cavities and reliefs.
- Remove preservative from new parts.

## 3.6 Reusing parts

Authorized, specialized staff assess whether parts can be reused. Replace parts

- if they are damaged
- if they are worn, e. g. bearings, multidisks, thrust washers, etc.
- if they have a permanent deformation
- if they have been overheated during operation or during disassembly.

Only replace with original ZF parts or ZF-approved parts. Please refer to the spare parts catalog for the ZF product.

## 3.7 Replacing parts

The following parts must always be replaced:

- Bolts with reduced shank and seals
- Single-use parts

- Sealing rings
- Safety plates
- Shaft sealing rings

Only replace with original ZF parts or ZF-approved parts. Please refer to the spare parts catalog for the ZF product.

### **3.8 Reworking parts**

Authorized, specialized staff assess whether parts need to be reworked.

Minor damage on reusable components can be removed and reworked with suitable special tools if the component's function is not impaired.

Minor damage includes:

- Indentation marks on sealing faces
- Score marks or burs caused by the disassembly of the ZF product
- Frictional corrosion
- Damage caused by paint or corrosion

If rework is needed on spacer washers or shims because of clearance settings, ensure that the reworked surface is level with the starting face and has the same surface quality.

Debur all edges that can cause chip formation during the assembly process or represent a risk of injury for the fitter. Remove burs or other similar rough surfaces.

### 4 Technical Data

#### 4.1 Oil

##### 4.1.1 Oil filter

Only use original ZF-oil filters.

##### 4.1.2 Oil grade

#### **NOTICE**

**Damage to ZF product due to incorrect oil possible.**

⇒ Only use oils listed in the valid ZF List of Lubricants.



Observe the information on the type plate.

Oils approved and listed in the ZF List of Lubricants are binding: **TE-ML 03**.

The latest ZF List of Lubricants can be obtained from all ZF Service Centers and viewed at [www.zf.com](http://www.zf.com).

#### 4.2 Type plate

##### 4.2.1 Type plate

The type plate contains the key transmission data.



- 1 Serial number
- 2 Parts list number
- 3 Customer number

The following data should be quoted when making inquiries or undertaking repairs: 1, 2

Fig. 1 Type plate

## 6 Tightening Torques


Designation	Tightening torque	Measuring instrument	Comment Chapter/Section
Screw plug M22 x 1.5	60 Nm	Torque wrench	■ Installing main pressure valve, page 29
Tappet switch	30 Nm	Torque wrench	■ Installing filter bypass valve, page 30
Screw plug M38 x 1.5	46 Nm	Torque wrench	■ Installing converter safety valve, page 30
Breather	12 Nm	Torque wrench	■ Installing temperature sensor and breather, page 31
Temperature sensor	25 Nm	Torque wrench	■ Installing temperature sensor and breather, page 31
Inductive sensor	30 Nm	Torque wrench	■ Installing inductive sensors and speed sensor, page 32
Cap screw M6 - 8.8	9.5 Nm	Torque wrench	■ Installing inductive sensors and speed sensor, page 32 ■ Installing the pressure regulators, page 32
Cap screw M8 - 8.8	23 Nm	Torque wrench	■ Mounting the pressure filter, page 33
Pressure filter	18 Nm	Torque wrench	■ Mounting the pressure filter, page 33
Oil drain screw plug	30 Nm	Torque wrench	■ Adding oil, page 34

## 7 Workshop Equipment

### 7.1 Special tools

The required quantity is listed. Please inquire as to packaging unit before ordering.

Figure	Order no. Designation Chapter/Section	Qty.	Comment
 <p>40_011555_01</p>	<b>5870.350.136</b>  <b>Fixture</b> <ul style="list-style-type: none"> <li>▪ Mounting transmission on assembly trolley, page 21</li> </ul>	1	
 <p>40_010340_01</p>	<b>5870.350.063</b>  <b>Clamping plate</b> <ul style="list-style-type: none"> <li>▪ Mounting transmission on assembly trolley, page 21</li> </ul>	1	
 <p>40_010032_01</p>	<b>5870.350.000</b>  <b>Assembly truck</b> <ul style="list-style-type: none"> <li>▪ Mounting transmission on assembly trolley, page 21</li> </ul>	1	
 <p>40_010570_01</p>	<b>AA02.205.420</b>  <b>Driver tool</b> <ul style="list-style-type: none"> <li>▪ Installing the output flange, page 28</li> </ul>	1	

Figure	Order no. Designation Chapter/Section	Qty.	Comment
 40_010993_01	5870.705.012  Press-in mandrel  ■ Installing converter safety valve, page 30	1	

## 7.2 Standard tools and fixtures

To repair this ZF product use the following standard tools and fixtures.

Standard tools:

Figure 2	Order no. Designation	Comment
 40_020001_01 Fig. 2	5870.203.030 Torque wrench	0.6 Nm to 6.0 Nm
	5870.203.031 Torque wrench	1.0 Nm to 12 Nm
	5870.203.032 Torque wrench	3.0 Nm to 23 Nm
	5870.203.033 Torque wrench	5.0 Nm to 45 Nm
	5870.203.034 Torque wrench	10 Nm to 90 Nm
	5870.203.039 Torque wrench	80 Nm to 400 Nm
	5870.203.016 Torque wrench	140 Nm to 800 Nm
	5870.203.011 Torque wrench	750 Nm to 2,000 Nm
	5870.203.048 Torque wrench	1,500 Nm to 3,000 Nm
 40_020016_01 Fig. 3	5870.900.013 Set of internal pliers	Contains the sizes: I1, I2, I3, I4

Figure 2	Order no. Designation	Comment
 <p>40_020017_01</p> <p>Fig. 4</p>	5870.900.014 Set of internal pliers	90° angled, contains the sizes: I11, I21, I31, I41
 <p>40_020002_01</p> <p>Fig. 5</p>	5870.900.015 Set of external pliers	Contains the sizes: A1, A2, A3, A4
 <p>40_020003_01</p> <p>Fig. 6</p>	5870.900.016 Set of external pliers	90° angled, contains the sizes: A11, A21, A31, A41
 <p>40_020004_01</p> <p>Fig. 7</p>	5870.970.001 Two-armed extractor	Jaw width 80 mm Throat depth 100 mm
	5870.970.002 Two-armed extractor	Jaw width 120 mm Throat depth 125 mm
	5870.970.003 Two-armed extractor	Jaw width 170 mm Throat depth 125 mm
	5870.970.004 Two-armed extractor	Jaw width 200 mm Throat depth 175 mm
	5870.970.006 Two-armed extractor	Jaw width 350 mm Throat depth 250 mm
	5870.970.007 Two-armed extractor	Jaw width 520 mm Throat depth 300 mm to 500 mm
	5870.970.026 Two-armed extractor	Jaw width 250 mm Throat depth 200 mm
	5870.970.028 Two-armed extractor	Jaw width 380 mm Throat depth 200 mm



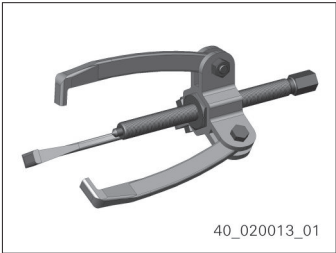



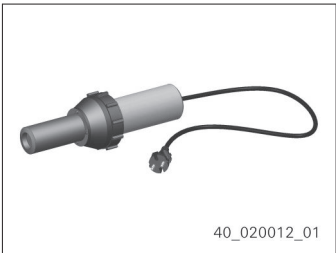
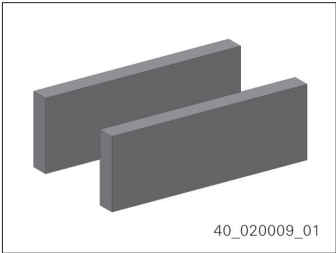
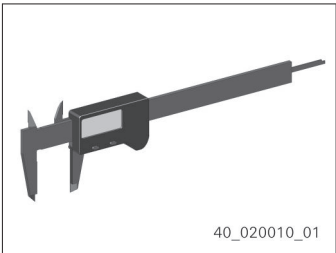
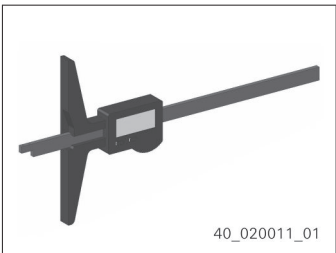
Figure 2	Order no. Designation	Comment
 <p>40_020013_01</p> <p>Fig. 8</p>	5870.971.001 Three-armed extractor	Jaw width 85 mm Throat depth 65 mm
	5870.971.002 Three-armed extractor	Jaw width 130 mm Throat depth 105 mm
	5870.971.003 Three-armed extractor	Jaw width 230 mm Throat depth 150 mm
	5870.971.004 Three-armed extractor	Jaw width 295 mm Throat depth 235 mm
	5870.971.005 Three-armed extractor	Jaw width 390 mm Throat depth 270 mm
	5870.971.006 Three-armed extractor	Jaw width 640 mm Throat depth 300 mm
 <p>40_020018_01</p> <p>Fig. 9</p>	5870.281.026 Lifting strap	Load-bearing capacity 500 kg Effective length 4 m
 <p>40_020019_01</p> <p>Fig. 10</p>	AA02,000,695 Round sling	Load-bearing capacity 2,000 kg Effective length 2 m
 <p>40_020005_02</p> <p>Fig. 11</p>	5870.281.047 Lifting chain	
 <p>40_020012_01</p> <p>Fig. 12</p>	5870.221.500 Hot-air blower	230V
	5870.221.501 Hot-air blower	115V

Figure 2	Order no. Designation	Comment
 <p>40_020014_01</p> <p>Fig. 13</p>	5870.345.071 Pry bar	
 <p>40_020006_01</p> <p>Fig. 14</p>	5870.280.004 Plastic hammer	
	5870.280.006 Nylon insert	Spare part
 <p>40_020015_01</p> <p>Fig. 15</p>	5870.650.004 Striker	
 <p>40_020007_01</p> <p>Fig. 16</p>	5870.200.055 Magnetic holder	
 <p>40_020008_01</p> <p>Fig. 17</p>	5870.200.057 Dial gage	

Figure 2	Order no. Designation	Comment
 <p>40_020009_01</p> <p>Fig. 18</p>	5870.200.066 Set of parallel gage blocks	Consisting of two pieces Height 70 mm
	5870.200.067 Set of parallel gage blocks	Consisting of two pieces Height 100 mm
 <p>40_020010_01</p> <p>Fig. 19</p>	5870.200.109 Digital caliper gage	Length 150 mm
 <p>40_020011_01</p> <p>Fig. 20</p>	5870.200.072 Digital depth gage	Length 200 mm
	5870.200.114 Digital depth gage	Length 300 mm

Tab. 2

Fixture	Comment	Requirement
Crane with precision hoist		Load-bearing capacity min. 1,500 kg
Arbor press	Manual operation	Press force max. 30 kN
Hydraulic press	Hydraulic actuation	

Tab. 3

Other Equipment	Comment	Requirement
Socket wrenches, open-end wrenches, box wrenches, hammers, screw drivers, pliers, front cutting pliers	Various sizes, respectively in a set	Commercial
Sand paper	In different grit sizes to clean surfaces	
Flat scraper	For removal of sealing compound	
Whetstone	For removal of minor damage and smoothing of plane faces	
Polishing cloth	For smoothing and cleaning of surfaces	
Foam roller	When applying sealing compound	

Tab. 4

### 7.3 Operating supplies and auxiliary materials

Order no. Designation	Manufacturer name	Comment Chapter/Section
0666.690.191 Spirit	Phoenix spirit	■ Installing the output flange, page 28

## 8 Dismantling

### 8.1 Mounting transmission on assembly trolley

Special tools:

- 5870.350.136 Fixture
- 5870.350.063 Clamping plate
- 5870.350.000 Assembly truck

1.

#### **WARNING**

**Risk of injury due to uncontrolled motion of the load.**

**Death or serious injury possible.**

- ⇒ Only use the suspension points intended for transportation purposes.
- ⇒ Only use secure, permitted, and tested means of transport, chain hoist, and lifting equipment with sufficient load capacity and suitable lifting technology.
- ⇒ Ensure that lifting equipment such as ropes and belts are not in contact with sharp edges and are not knotted or twisted.
- ⇒ Properly attach lifting appliances to load.
- ⇒ Observe the load's center of gravity! The crane hook must be located above the load's center of gravity.
- ⇒ Lift load slowly and observe whether the load tilts or swivels out laterally. If required, immediately put down load and modify attachment.
- ⇒ Keep distance.
- ⇒ Do not walk under suspended loads.
- ⇒ Only ever move load under supervision.

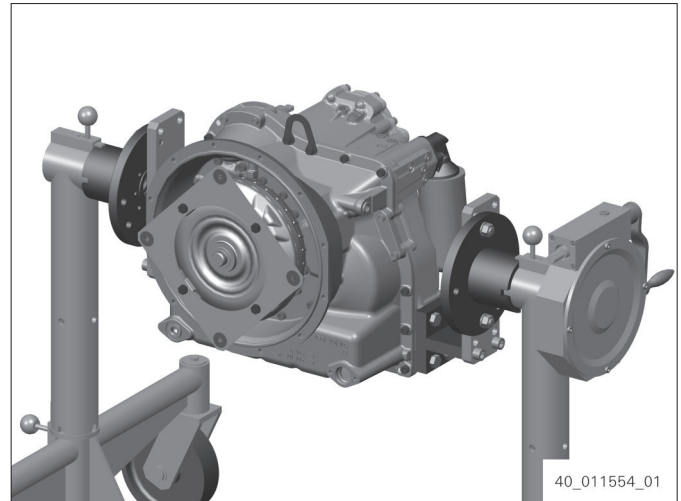


Fig. 21

Use 5870.350.136 [Fixture] and 5870.350.063 [Clamping plate] to fix transmission to 5870.350.000 [Assembly truck].

### 8.2 Draining oil



Observe the environmental regulations (*see General safety instructions*).

## Dismantling

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1. Loosen screw plug (1) and drain oil from the transmission.

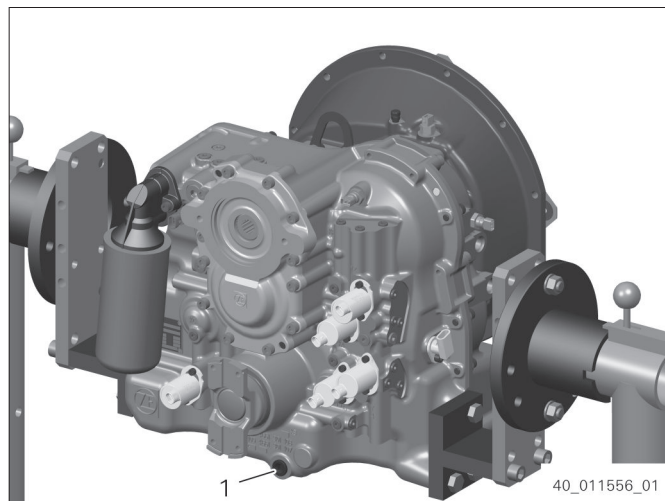


Fig. 22

### 8.3 Removing the pressure filter

1. Loosen pressure filter (1).

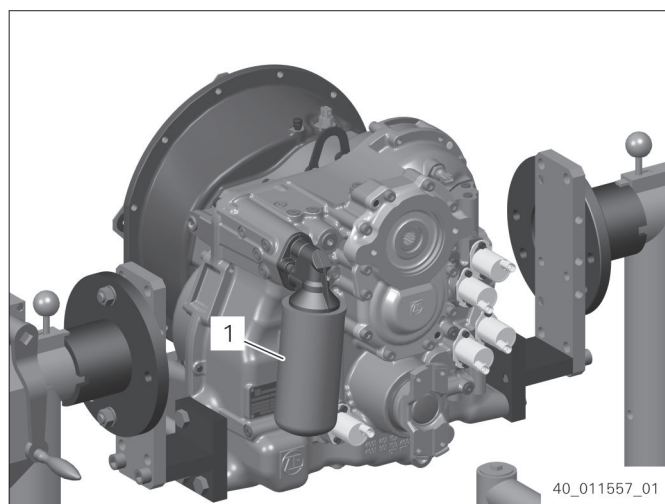


Fig. 23

2. Loosen cap screws and remove filter head (1).

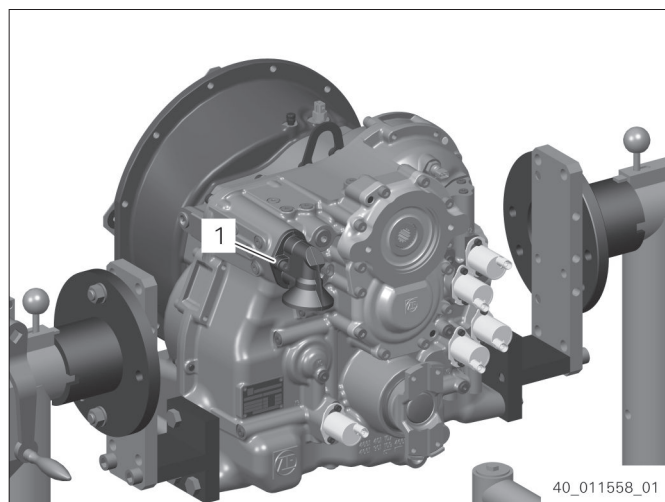


Fig. 24

#### 8.4 Removing the pressure regulators

1. Loosen cap screws and pull out pressure regulators (1).

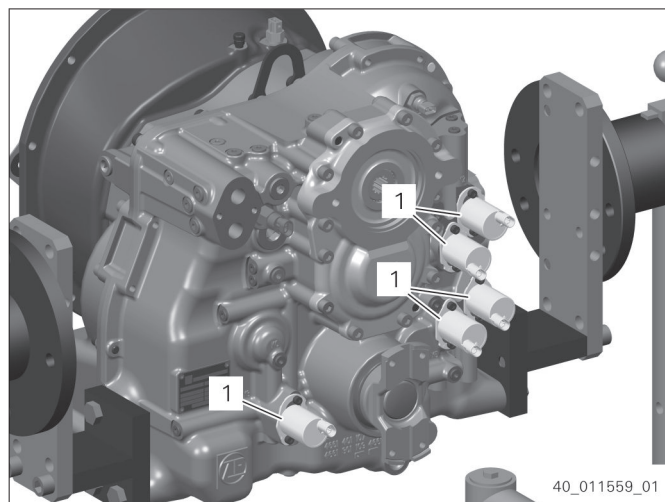


Fig. 25

#### 8.5 Removing inductive sensors and speed sensor

1. Loosen the inductive sensors (1).
2. Loosen cap screw and pull out speed sensor (2).

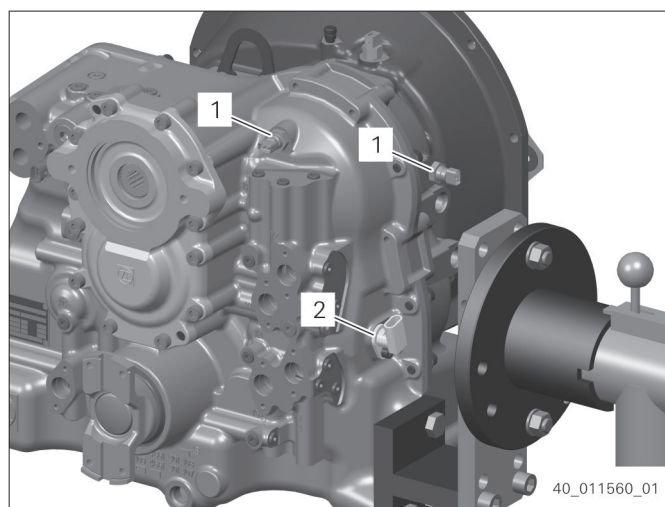


Fig. 26

### 8.6 Removing temperature sensor and breather

1. Loosen breather (1).
2. Loosen temperature sensor (2).

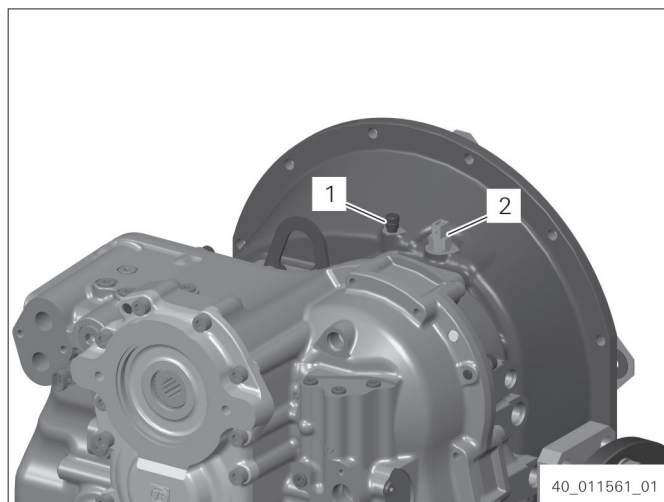


Fig. 27

### 8.7 Removing converter safety valve

1. Loosen screw plug (1).

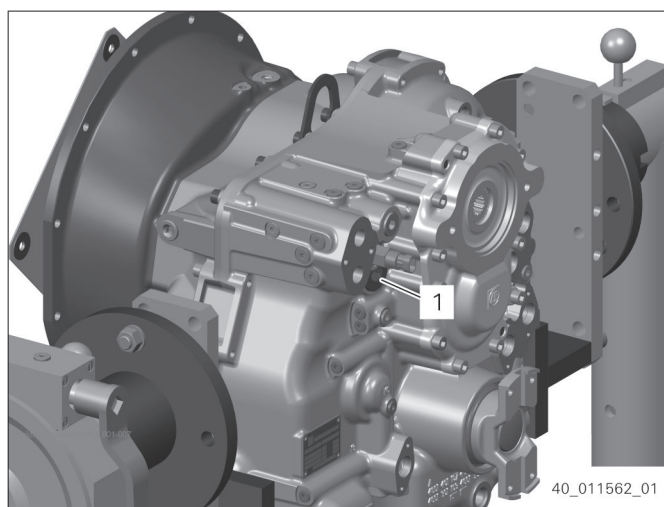


Fig. 28



2. Remove compression spring (2) and valve (1) from housing hole.

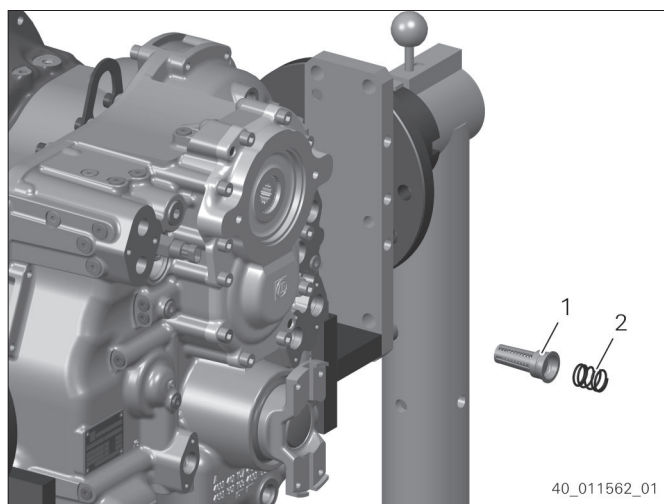


Fig. 29

## 8.8 Removing filter bypass valve

1. Loosen tappet switch (1).

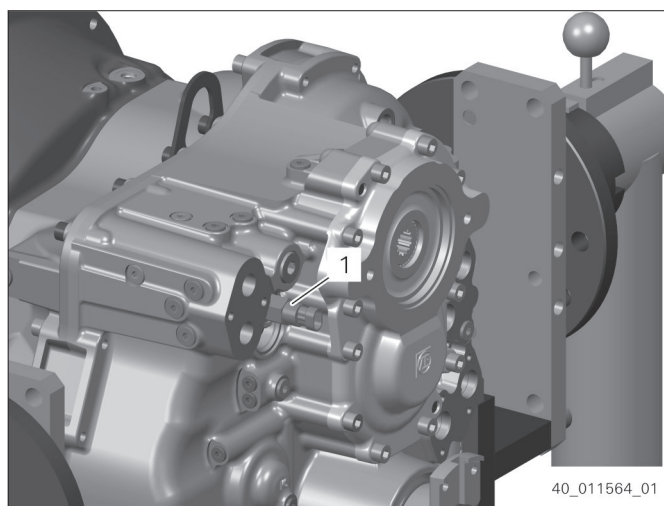


Fig. 30

2. Remove piston (2) and compression spring (1) from housing hole.

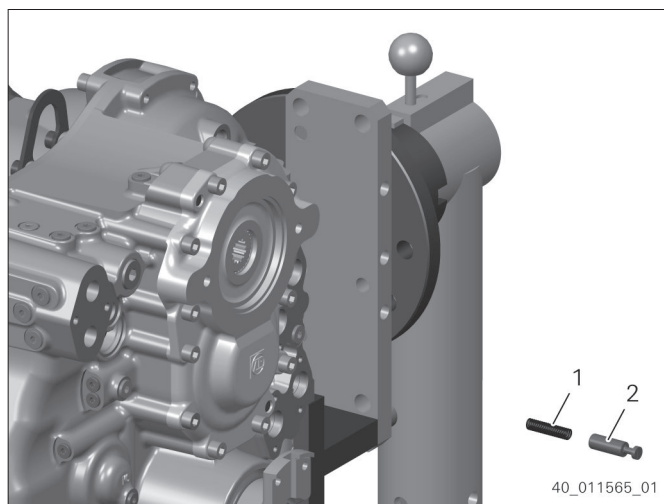


Fig. 31

### 8.9 Removing main pressure valve

1. Loosen screw plug (1).

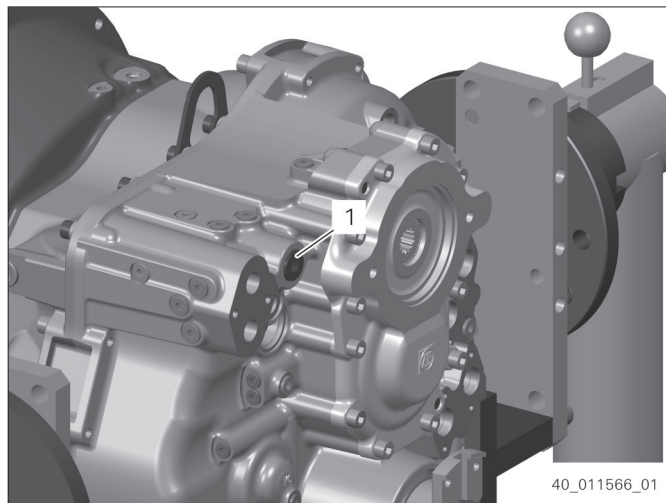


Fig. 32

2. Remove piston (3), spacer rings (2) and compression spring (1) from housing hole.

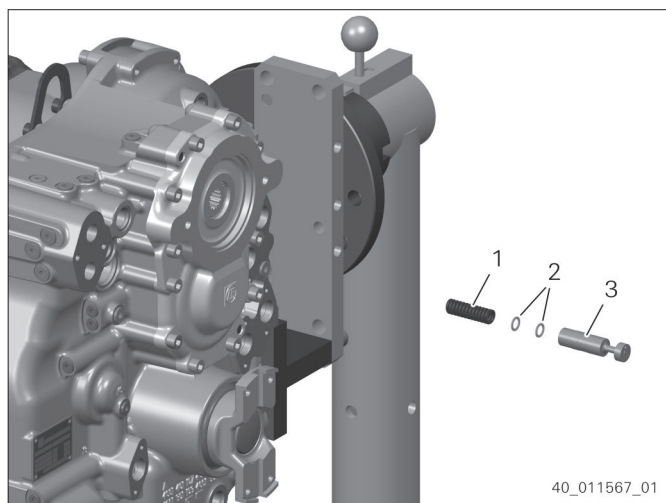


Fig. 33

## 8.10 Removing the output flange

1. Pull off output flange (1).

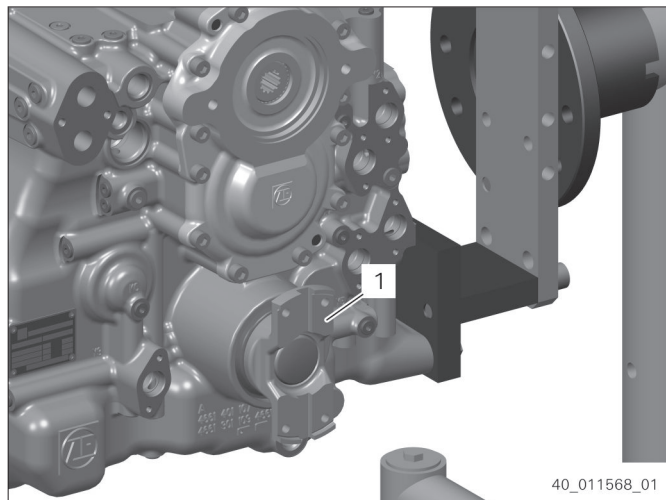


Fig. 34

2. Remove shaft seal ring (1) from housing hole.

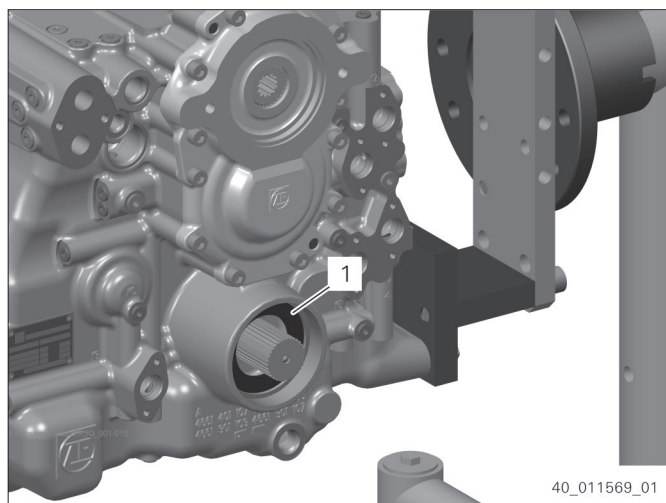


Fig. 35

## 9 Assembly


### 9.1 Installing the output flange

Special tools:


- AA02.205.420 Driver tool

Operating supplies and auxiliary materials:

- 0666.690.191 Spirit

1.  Carry out the following two work steps immediately one after the other.

Apply 0666.690.191 [Spirit] to the outer diameter of the shaft seal.

2.  Insert shaft seal with the seal lip facing the oil chamber.

Insert shaft seal ring with AA02.205.420 [Driver tool].

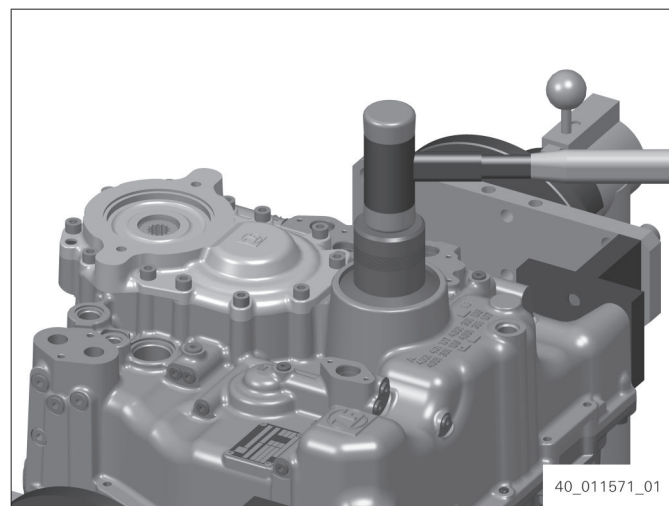


Fig. 36

3. Press screening plate (1) onto the output flange (2) until contact is obtained.

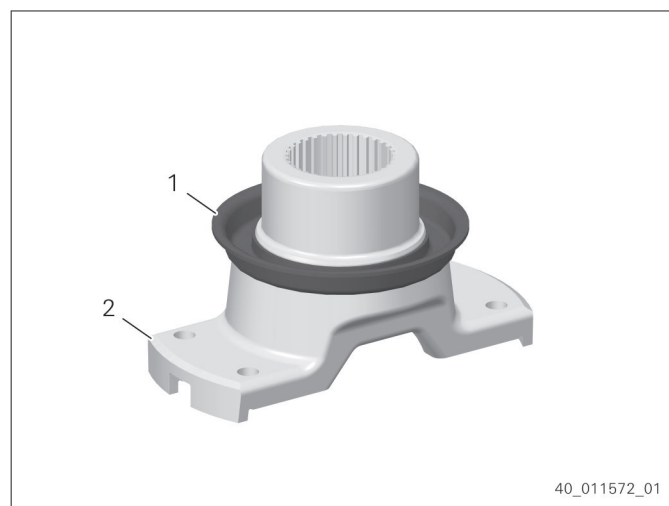


Fig. 37

4. Push output flange onto output shaft until contact is obtained.

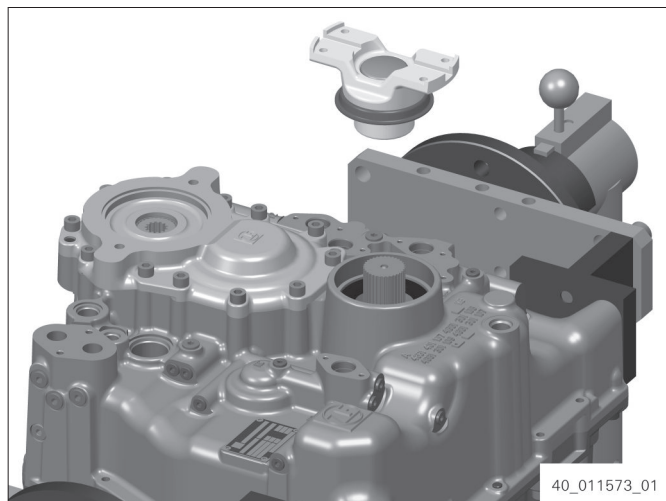



Fig. 38

## 9.2 Installing main pressure valve

1.  Main pressure is set with spacer rings.

Insert compression spring (1), spacer rings (2) and piston (3) into the housing hole.

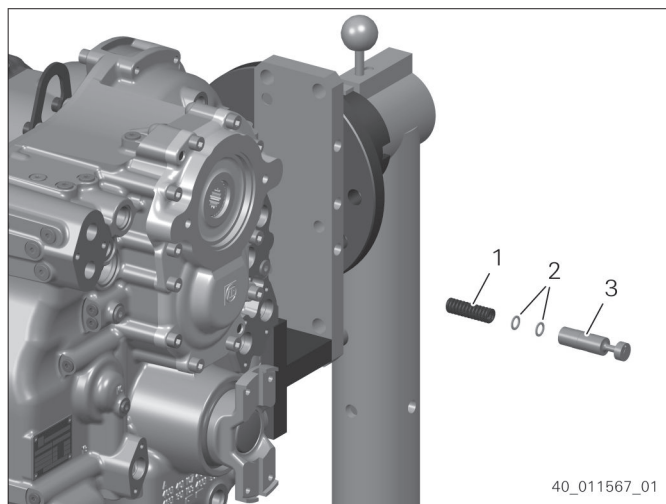


Fig. 39

2. Bolt in screw plug with O-ring (1) and tighten.  
Tightening torque: **60 Nm**

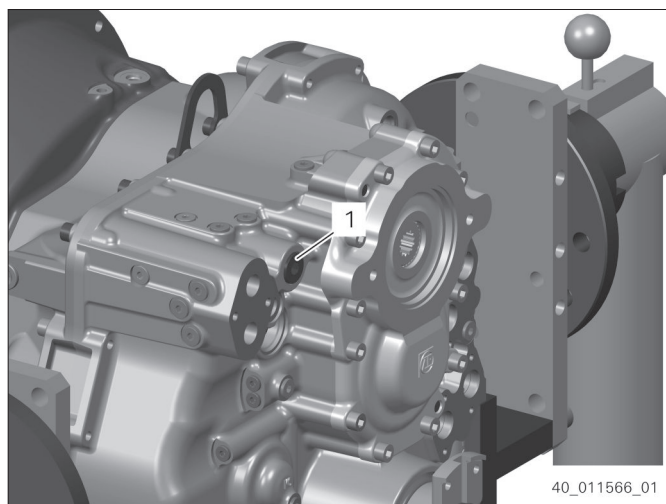


Fig. 40

## 9.3 Installing filter bypass valve

1. Insert compression spring (1) and piston (2) into the housing hole.

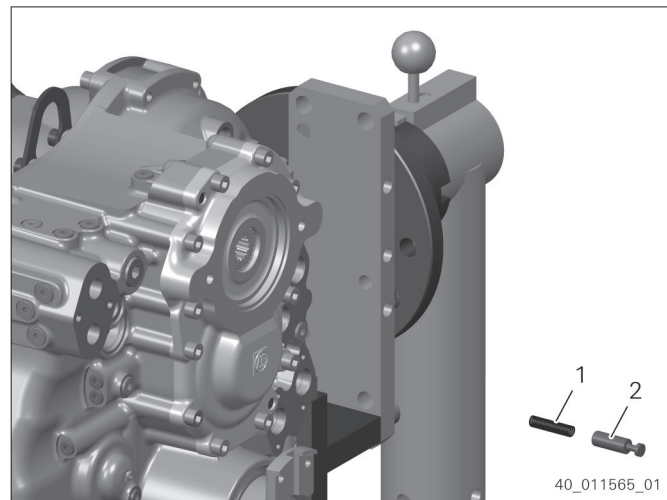


Fig. 41

2. Screw in tappet switch with O-ring (1) and tighten.  
Tightening torque: **30 Nm**

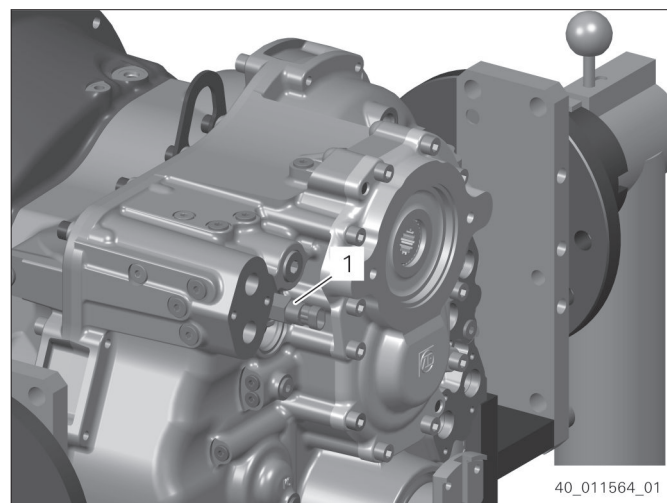


Fig. 42

## 9.4 Installing converter safety valve

Special tools:

- 5870.705.012 Press-in mandrel



1. Insert valve (1) with 5870.705.012 [Press-in mandrel] into the transmission hole until contact is obtained.
2. Fit compression spring (2).

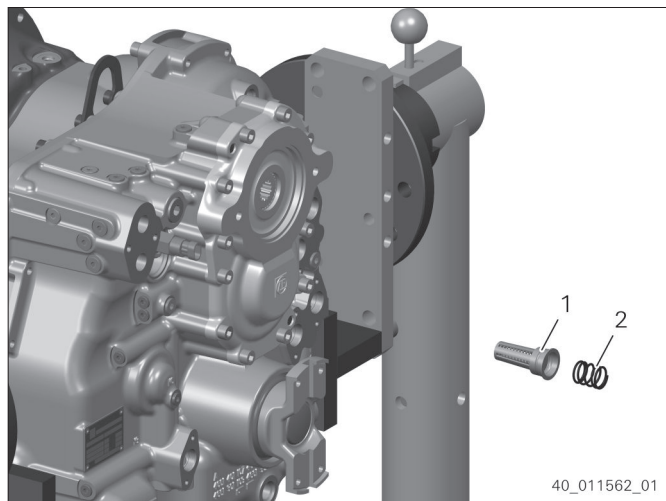


Fig. 43

3. Bolt in screw plug with O-ring (1) and tighten.  
Tightening torque: **46 Nm**

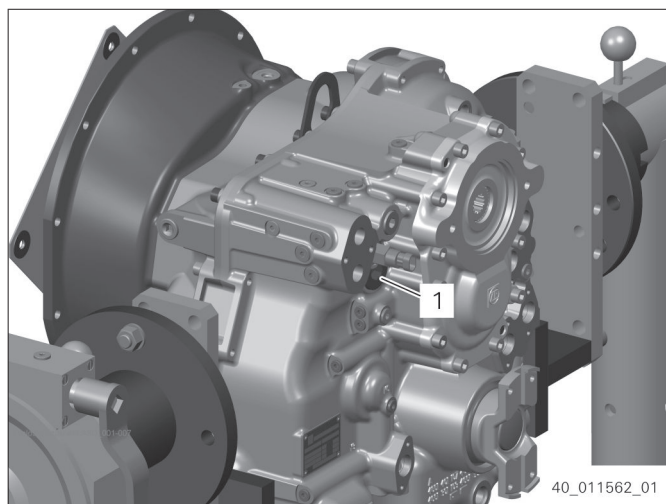


Fig. 44

## 9.5 Installing temperature sensor and breather

1. Bolt in breather (1) and tighten.  
Tightening torque: **12 Nm**
2. Turn in temperature sensor with O-ring (2) and tighten.  
Tightening torque: **25 Nm**

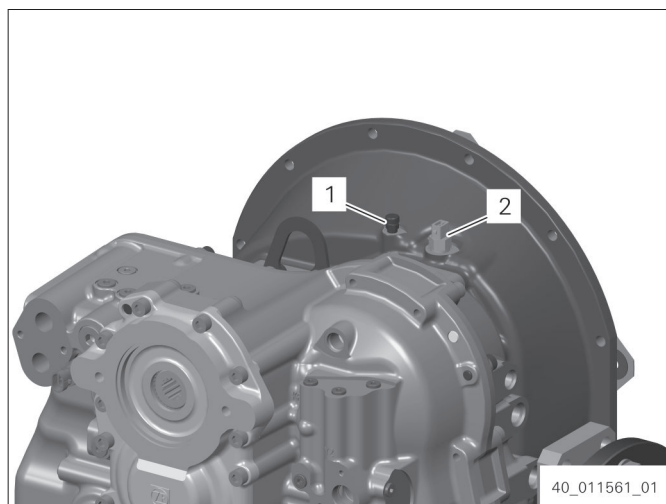


Fig. 45

### 9.6 Installing inductive sensors and speed sensor

1. Screw in inductive sensors with O-ring (1) and tighten.  
Tightening torque: **30 Nm**
2. Insert speed sensor with O-ring (2) into the housing.
3. Bolt in cap screw and tighten.  
Tightening torque: **9.5 Nm**

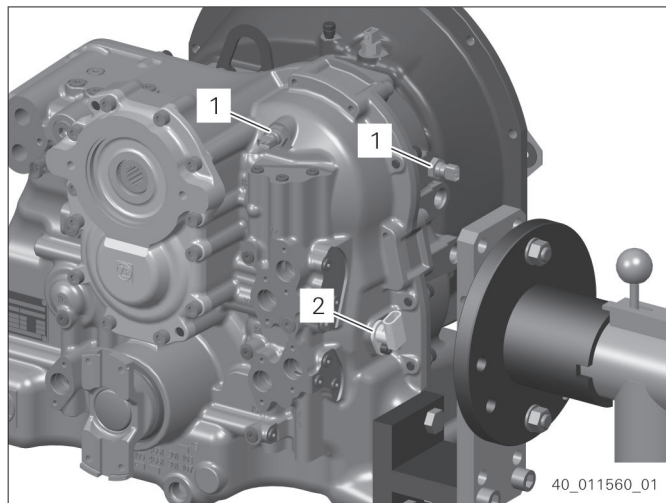


Fig. 46

### 9.7 Installing the pressure regulators

1. Insert pressure regulators with O-ring (1) into the housing.
2. Bolt in and tighten cap screws.  
Tightening torque: **9.5 Nm**

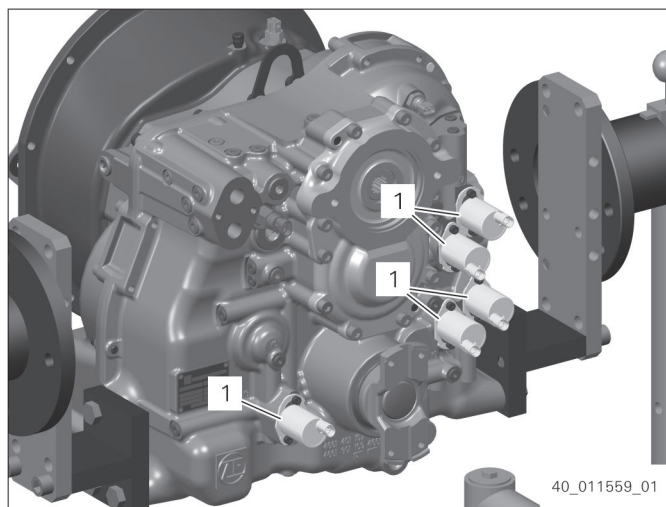


Fig. 47



## 9.8 Mounting the pressure filter

1. Oil O-rings (1) and insert them into the annular grooves of the filter head.

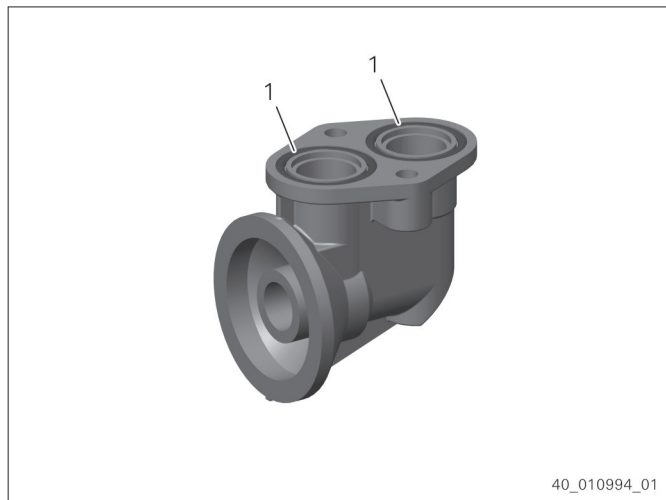


Fig. 48

2. Fix filter head (1) with cap screws.  
Tightening torque: **23 Nm**

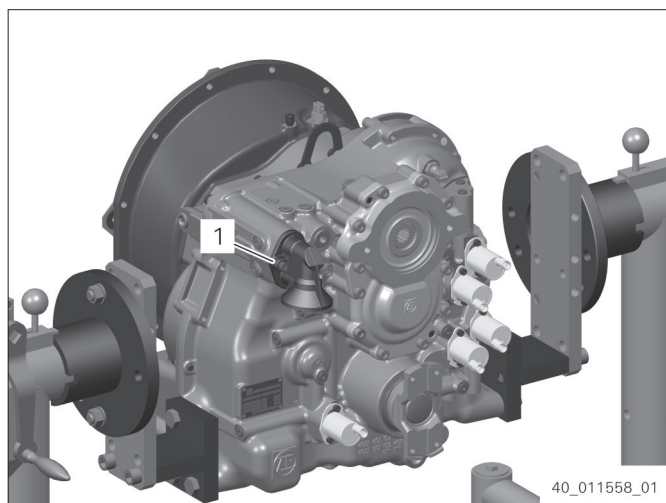


Fig. 49

3. Screw pressure filter (1) onto the filter head and tighten.  
Tightening torque: **18 Nm**

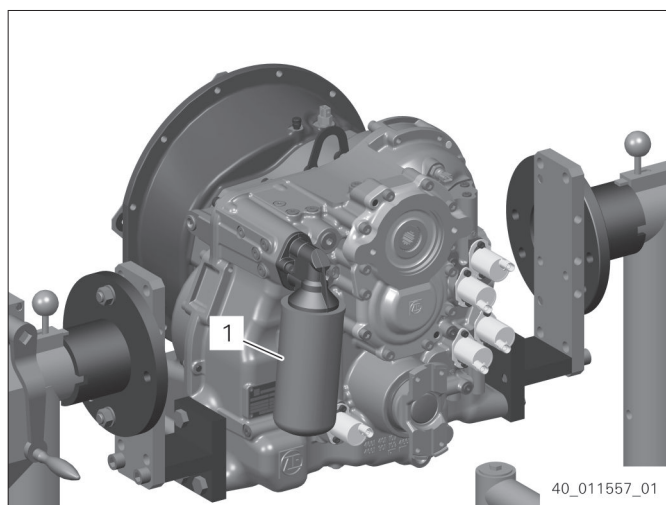


Fig. 50

### 9.9 Adding oil

1. Bolt in screw plug with O-ring (1) and tighten.  
Tightening torque: **30 Nm**
2. Prior to operation, fill transmission with oil according to Operating Instructions.

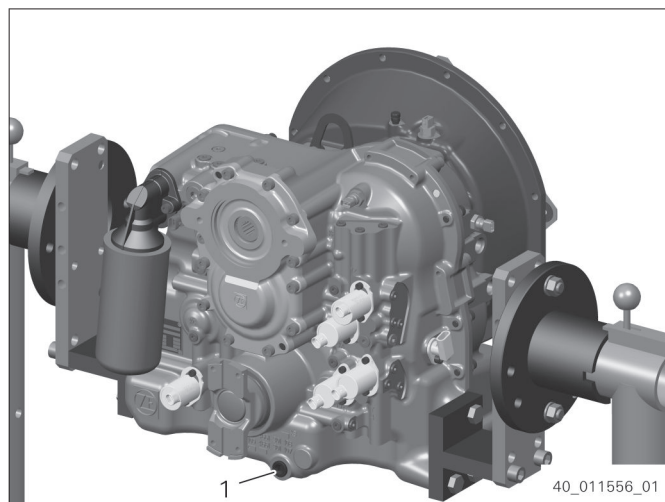


Fig. 51

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## 10 Annex

### 10.1 Overview of revisions

index	Date of issue	Initiator	Chapter/Section	Comment
—	10.2017	—	—	First version

Tab. 5





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