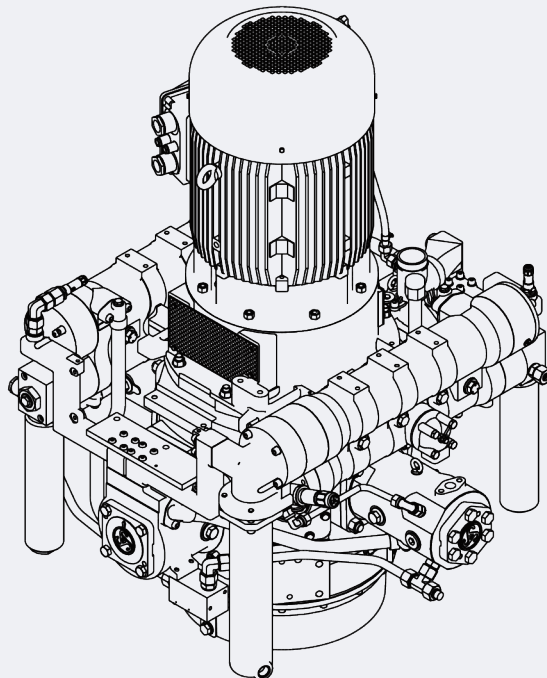




Sauer Compressors



- *High pressure compressor*
- *Sea-water-cooled*

MAINTENANCE INSTRUCTIONS

Sauer-Compressors

Type: WP5000N

Order no. 41013675 | Series: WP5000

Dependable up to 500 bar – anywhere, anytime, anygas.



Sauer Compressors

Original maintenance instructions

Edition: 16 / 09 / 2019

Edited by: Sauer USA – Technical Documentation

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Sauer Compressors

1

1.1

General

Foreword

These maintenance instructions describe how to maintain the Sauer-Compressor WP5000 and provide maintenance personnel with the following essential information:

- Performing maintenance
- Checking components
- Replacing components



These maintenance instructions and the associated operating instructions cover proper use and maintenance. Any other work must be carried out by specialist personnel authorized by Sauer USA.



More detailed information about the technical documentation and safety-related information can be found in the operating instructions for the WP5000.

1.2

Target group

These maintenance instructions are aimed at all personnel who perform work with or on the Sauer-Compressor, e. g.:

- Servicing work
- Inspection
- Maintenance
- Care

Personnel who carry out this work must have read and understood the maintenance instructions first.



Actions or activities that are not described in this documentation may only be carried out by Sauer-Service or by specialist personnel authorized by Sauer USA.



Sauer Compressors

2

Sauer-Service

In case of technical questions and any queries regarding spare parts orders, maintenance and repairs, contact Sauer-Service.

For any enquiries to Sauer-Service, have the following specifications for the Sauer-Compressor to hand:

- Compressor type
- Serial number
- Year of construction

These specifications can be found on the nameplate on the crankcase of the Sauer-Compressor.

Contact

Postal address:	Sauer Compressors USA 245 Log Canoe Circle Stevensville, MD 21666
Telephone (international):	410-604-3142
E-mail:	service@sauerusa.com
Web:	www.sauerusa.com



Sauer Compressors

3 Preparing for maintenance

This chapter summarises the general preparations that are necessary before any maintenance work.

3.1 Installation conditions

The following conditions must be met:

- The installation location must be dry and free from dust.
- Ensure that the installation location is ventilated in such a way that the heat generated during operation can be extracted.
- The room temperature must be within the range defined in the technical data. ↪ Operating Instructions, "Technical data" chapter
- The Sauer-Compressor must be easily accessible at all times.

3.2 Requirements for maintenance work

Personnel qualification:

Service personnel

Personnel authorised to service the compressor must be trained technical specialists employed by the operator and the manufacturer.

Required personal protective equipment



Hearing protection

Wear protective equipment to protect the hearing against damage, predominantly caused by excessively loud noises.



Protective gloves

Wear protective gloves.



Safety boots

Wear safety boots.



Safety goggles

Wear protective equipment to protect the eyes against harmful influences.



Work clothing

Wear clothing to prevent against harmful influences.



Sauer Compressors

Required tools:

Crane and lifting gear

Crane and appropriate lifting gear (e. g. chains, cross beam) with sufficient load bearing capacity.

Measuring beaker

Measuring beaker for measuring out operating materials, e.g. oil.

Oil injector

Oil injector for feeding in small quantities of operating materials, e.g. preservation oil.

Required material:

Preservation oil

In line with the specifications in the oil recommendations for Sauer-Compressors.

Table of tightening torques

Specification	Tightening torque
Connecting rod bolts	90 Nm
Cylinder foot nuts	175 Nm
Hexagon head screws for valve cover of compression stages 1, 2 and 3	115 Nm
Hexagon head screws for valve cover of compression stage 4	250 Nm
Socket head cap screws on the cooler	110 Nm
Safety valve for compression stage 1, 2 , 3 and 4	160 Nm
Bursting disc flange screws	75 Nm
Sacrificial zinc anodes	150 Nm

3.3

Ordering spare parts

Order the Sauer spare parts or Sauer maintenance kits required for the maintenance work from Sauer-Service. Specify the following information in the order:

- Part number
The part number for Sauer spare parts can be found in the spare parts catalogue.
- Main specifications of the Sauer-Compressor
The main specifications for the Sauer-Compressor are shown on the nameplate.
- Number of operating hours

PREPARING FOR MAINTENANCE



The spare parts catalogue and operating instructions are also available on CD. To save time, you can fill out the order form contained therein, print it and send it off.

Compressor type:	
Serial number:	
Year of construction:	



Only genuine Sauer spare parts

- are subject to continuous quality assurance and ongoing development. conform to the latest technical developments.*
- guarantee the long service life of your Sauer-Compressor.*
- meet the conditions of warranty by Sauer USA.*

3.4

Basic activities



WARNING!

Risk of injury when working on the Sauer-Compressor

If the Sauer-Compressor is not shut down, depressurised and secured against being restarted, there is a significant risk of injury when working on it.

- Before starting any work, shut down the Sauer-Compressor and secure it against being restarted.
- Make sure that the system is depressurised.



WARNING!

Danger when working on live parts

There is a significant risk of injury when working on electrical connections and the live parts of the Sauer-Compressor.

- Only carry out work on live parts of the Sauer-Compressor when the power supply is disconnected and secured against being reconnected.
- All work on the electrical system may only be carried out by specialist electricians.
- Secure live cables against direct contact.
- Install live cables in line with the applicable standards and directives.



WARNING!

Risk of injury due to electric fault currents

Electrical faults such as short-circuits can result in significant injuries.

- Make sure that safety equipment to detect short circuits and disconnect all connection phases are properly installed.
- Ensure that the operator network has the required level of protection.



WARNING!

Hazard due to missing or incorrectly assembled safety equipment

Missing or incorrectly assembled safety equipment can result in serious injuries.

- During maintenance work, safety equipment may only be removed and re-assembled by trained and authorised personnel.
- Before recommissioning after maintenance, assemble all covers, unions and safety equipment in line with the specifications.
- After assembly, check the function of covers, unions and safety equipment.

Before starting any maintenance work:

- Turn off the Sauer-Compressor power supply and secure against being turned on again.
- Put up “Attention! Maintenance work!” sign on the power supply.
- Mark the cylinders and cylinder heads to ensure they are in the same installation position when assembled.

During maintenance work:

- All gaskets and sealing rings that are touched, exposed or removed during maintenance work must be replaced and disposed of in an environmentally friendly manner.
- Clean all exposed sealing surfaces.
- For unions, lubricate the threads with Innotec Ceramic Grease assembly paste.
- Tighten unions with no specified tightening torques as follows:
 - Tighten the union until there is a perceptible increase in force, then mark the position of the union.
 - Securely tighten the union by a further 30° (use the marking as a guide).

PREPARING FOR MAINTENANCE



In addition, for cutting ring unions:

After tightening the cutting ring union, a visible gap must remain between the union nut and the adaptor fitting. This gap becomes smaller every time the cutting ring union is loosened and tightened again. If a gap is no longer visible during tightening of the cutting ring union, the union can no longer be sufficiently tightened and will leak. The cutting ring union and the pipeline must then be replaced.

After completion of all maintenance work:

- Remove "Attention! Maintenance work!" sign.
- Turn on the power supply to the Sauer-Compressor.
- Perform an inspection **50 operating hours after all maintenance work**. Check all screws affected by maintenance work to see if they are tight.

3.5

Draining and refilling cooling water



Some maintenance measures require the cooling water to be drained. This process and the refilling will be described in the following section.



Draining the cooling water

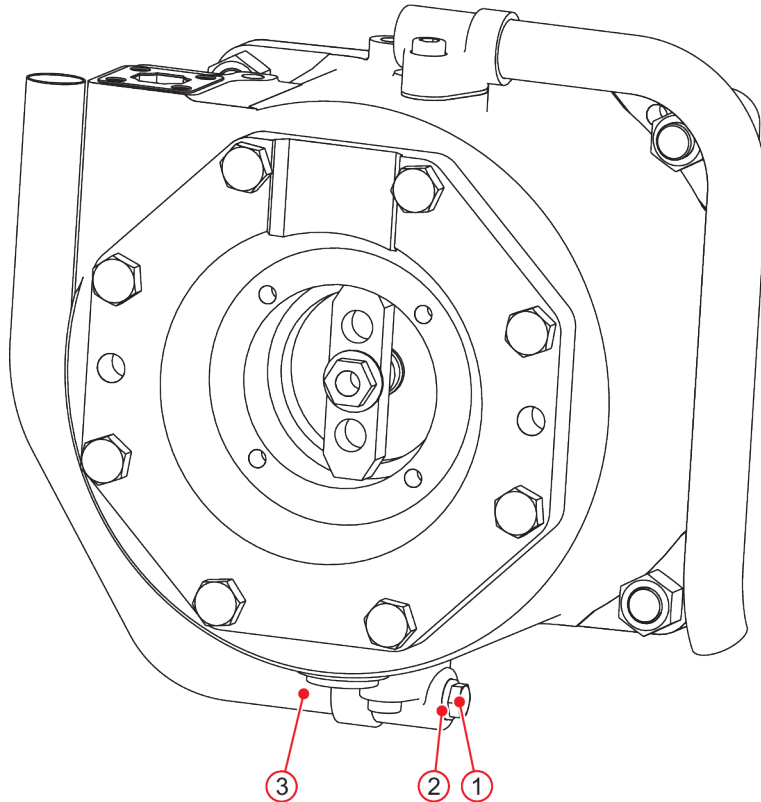


Fig. 1: Cooling water piping compression stage 1

- 1 Plug
- 2 Ring gasket
- 3 Cooling water piping

The cooling system for the compressor consists of 4 sets of cooling water piping, which connect the cylinders and the cooler. An angle flange is located on both ends of each cooling water piping. Two sets of cooling water piping are fitted with a plug at both ends, and two are fitted with a plug at one end only. To drain the cooling water, it is sufficient to unscrew the bottom plug in each cooling water piping.

- 1.** ➤ Provide collection containers with sufficient capacity or a suitable outlet for the cooling water (up to 50 litres).
- 2.** ➤ Close cooling water inlet and outlet and secure against being opened again.
- 3.** ➤ Use the pressure gauge to make sure that the cooling system is depressurised.
- 4.** ➤ Unscrew the lower plugs on all four sets of cooling water piping and allow the cooling water to drain into the containers provided or the outlet.
- 5.** ➤ Remove old ring gaskets and dispose of in an environmentally sound manner
- 6.** ➤ Clean all sealing surfaces.
- 7.** ➤ Screw all plugs in again with new ring gaskets.

PREPARING FOR MAINTENANCE

Fill with cooling water

1. ▶ Open the cooling water supply.
⇒ The cooling circuit fills up with cooling water.
2. ▶ Open the cooling water outlet.
3. ▶ Unscrew the upper plugs in the cooling water piping and allow the water to flow until no bubbles are in the escaping water.
4. ▶ Screw the upper plugs back in using new ring gaskets.



Sauer Compressors

4 Maintenance

These maintenance instructions describe the necessary maintenance work involved in preventive servicing of the Sauer-Compressor.

The maintenance schedule provides you with an overview of the successive maintenance intervals, the maintenance work to be carried out and the required SauerEasyCare maintenance kits.

The maintenance work is explained step by step in the following sections of the maintenance instructions.

4.1 Maintenance schedule

The maintenance schedule is used as a guideline and to document the maintenance work. **Please refer to maintenance schedule provided with package from Sauer USA.**

1. Use the maintenance schedule as a template to be copied, or save it as a digital document in an appropriate format.
2. Compare the regular operating hours of the Sauer-Compressor with the maintenance intervals. The maintenance intervals can be found in the header of the maintenance schedule.
3. Determine the maintenance routine (scheduled maintenance work at the maintenance interval). The maintenance work appears in the header column.
4. Carry out the maintenance routine and document this in the maintenance schedule by entering the number of operating hours, date and signature.

When beginning a new maintenance schedule

- **enter:**
 - Main specifications
 - Date of commissioning
 - Maintenance schedule number
 - Date
 - Number of operating hours completed
- **tick:** Start after initial commissioning/major overhaul



NOTICE!

Always check the compressor after **50 hours** following any maintenance work. Check all screws and nuts affected by maintenance to see if they are tight.



NOTICE!

Sauer offers maintenance kits that include all of the necessary equipment needed for each overhaul. For more information, please contact ***parts@sauerusa.com***.



Sauer Compressors

4.1.1

Changing the oil and cleaning the oil strainer

Personnel: ■ Service personnel

Protective equipment: ■ Safety goggles
■ Protective gloves
■ Work clothing
■ Safety boots

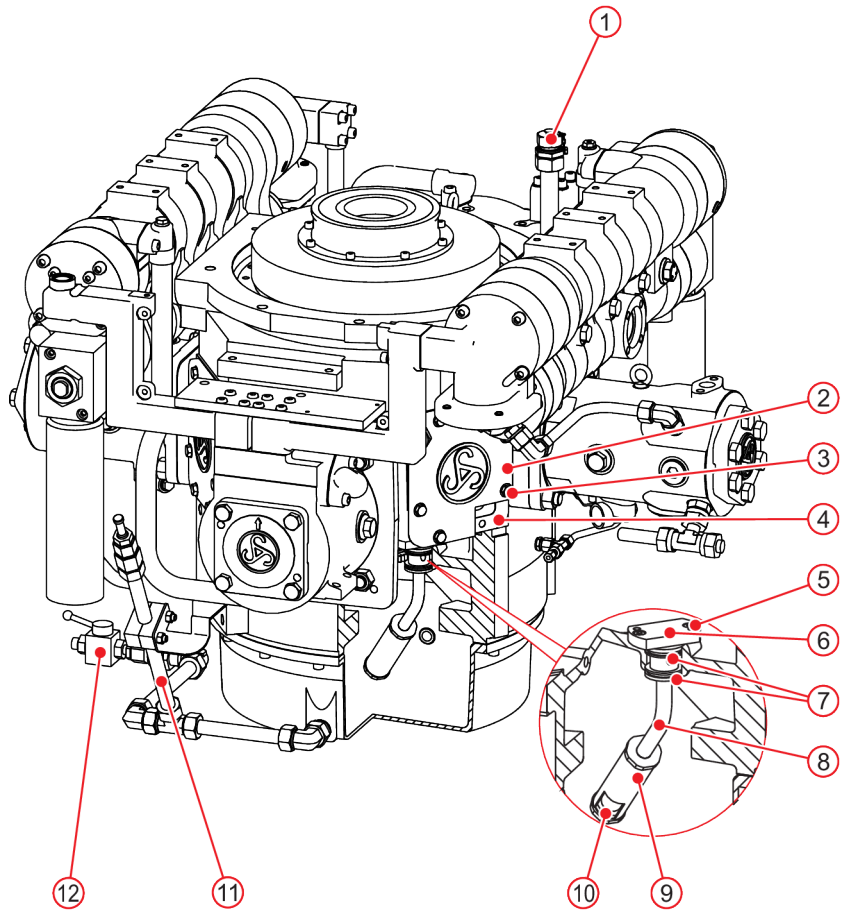


Fig. 2: oil change

- 1 Oil filler
- 2 Crankcase inspection cover
- 3 Hexagon head screw
- 4 Gasket
- 5 Pressure test threading
- 6 Tube
- 7 Tube o-ring
- 8 Oil pipe
- 9 Thread fitting
- 10 Oil strainer
- 11 Oil dipstick
- 12 Oil drain valve

Draining the oil

1. ➤ Place an oil spill pan with sufficient capacity (↘ Technical data in the operating instructions) under the oil drain valve in the crankcase.
2. ➤ Unscrew the oil filler cap to ventilate.
3. ➤ Loosen the union nut and remove the locking cone.
4. ➤ Open the oil drain valve.
 - ⇒ Oil drains into the oil spill pan provided
5. ➤ Drain the oil completely.
6. ➤ Close the oil drain valve.

7. ► Dispose of oil in an environmentally sound manner.
8. ► Insert the locking cone and tighten the union nut.
9. ► Screw the oil filler cap shut.

Cleaning the oil strainer

1. ► Unscrew the hexagon head screws on the crankcase inspection cover between compression stages 2 and 4 and remove the crankcase inspection cover.
2. ► Dispose of the gasket in an environmentally sound manner.
3. ► Clean the sealing surface on the crankcase.
4. ► Unscrew the socket head cap screws M8 on the tube.
5. ► In the tube there are two forcing threads M8. Two M8 screws are turned evenly into these threads. This releases the tube from the crankcase.
6. ► Take the tube together with the oil strainer, the oil pipe and the thread fitting out through the open inspection hole.
7. ► Remove the gaskets from the tube and dispose of in an environmentally sound manner.
8. ► Unscrew and remove the oil strainer from the thread fitting.
9. ► Wash the oil strainer using an oil-dissolving fluid (e. g., kerosene or petrol).
10. ► Clean the oil strainer by blowing through with compressed air from the inside out.
11. ► Wipe the oil strainer with a lint-free cloth.
12. ► Dip the oil strainer in fresh oil as indicated in the oil recommendation and let it drip for 20 to 30 minutes. Catch the dripping oil and dispose of in an environmentally sound manner.
13. ► Screw the oil strainer into the thread fitting on the oil pipe.
14. ► Assemble the oil strainer with the tube and new gaskets in the crankcase through the inspection hole.
15. ► Screw in and tighten the tube fixing screws.
16. ► Assemble the crankcase inspection cover with a new gasket.
17. ► Screw in the hexagon head screws.

Filling with oil

1. ► Unscrew the oil filler cap.
2. ► Pour in oil according to the oil recommendation and check the oil level with the dipstick. The level must be between the upper and lower marks.
3. ► Replace the dipstick and screw the oil filler cap back on.



4.1.2

Replacing air filter inserts

- Personnel: ■ Service personnel
- Protective equipment: ■ Protective gloves
■ Work clothing
■ Safety boots

Replacing the damper air filter insert

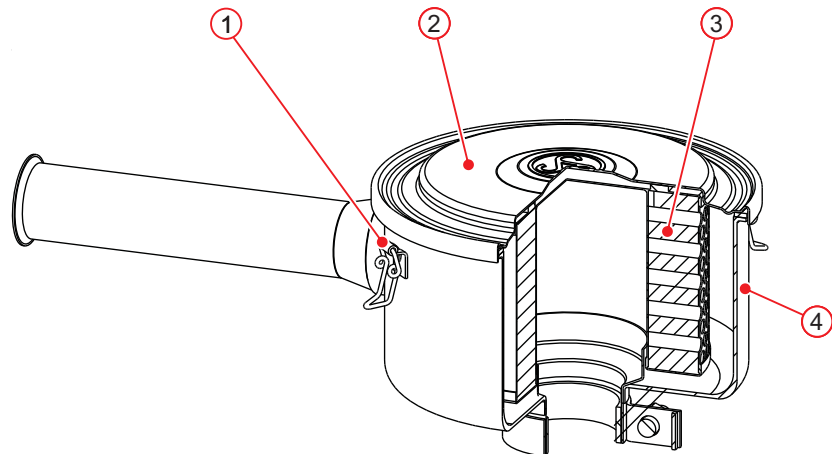


Fig. 3: Air filter

- 1 Clamp
- 2 Air filter cap
- 3 Air filter insert
- 4 Air filter housing

- 1.** ➤ Loosen clamps and remove the air filter cover.
- 2.** ➤ Remove the air filter insert from the air filter housing.
- 3.** ➤ Clean the air filter housing with a lint-free cloth.
- 4.** ➤ Fit a new air filter insert in the air filter housing.
- 5.** ➤ Attach the air filter cap and close the clamps.

Replacing the dry air filter insert

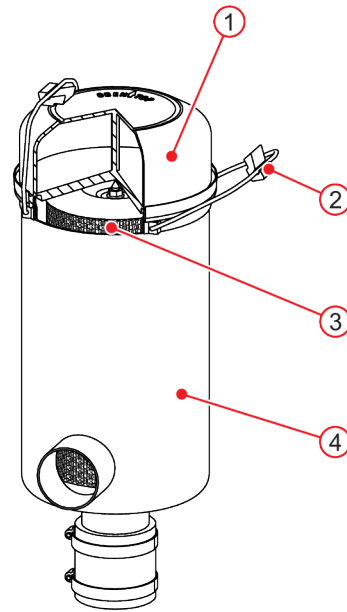


Fig. 4: Intake air filter

- 1 Air filter cap
- 2 Clamp
- 3 Air filter insert
- 4 Air filter housing

- 1.** Loosen clamps and remove the air filter cover.
- 2.** Remove the air filter insert from the air filter housing.
- 3.** Clean the air filter housing with a lint-free cloth.
- 4.** Fit a new air filter insert in the air filter housing.
- 5.** Attach the air filter cap and close the clamps.
- 6.** Fit the intake air filter.



4.1.3

Checking the valves of compression stages 1 and 2

- Personnel: ■ Service personnel
- Protective equipment: ■ Safety goggles
■ Protective gloves
■ Work clothing
■ Safety boots



NOTICE!

Damage due to faulty gaskets

Do not continue using used gaskets. Doing this will lead to leakages within a short period of time.

- Only re-install valves, cylinder heads and cylinders with new gaskets.



NOTICE!

Damage due to low quality spare parts

Installation of low quality spare parts may lead to leakages and may cause substantial damage to the compressor.

- Use only genuine Sauer spare parts. They are precision parts specially designed for these installation situations with defined and tested dimensions and material characteristics.



NOTICE!

Damage due to faulty valves

Do not repair used valves. Valves that have reached the end of their service life must be replaced and disposed of.

- Use only genuine Sauer spare parts.



Valves are exposed to the greatest loads of all the parts of a piston compressor. In order to achieve the guaranteed maintenance intervals, these valves are high-quality precision parts, specially adapted to the individual compression stages and their function carefully checked before delivery.

If necessary, contact Sauer-Service.

Compression stage 1 valve

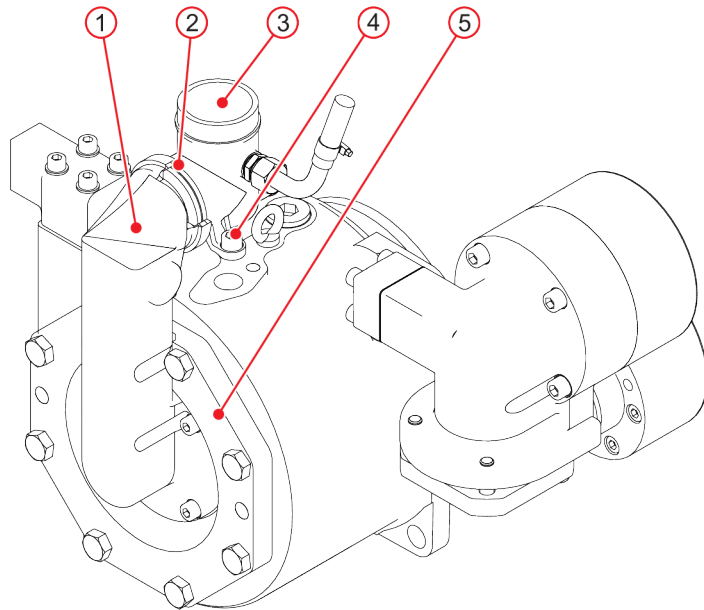


Fig. 5: Compression stage 1

- 1 Inlet pressure manifold
- 2 O-ring
- 3 Filter flange
- 4 Membrane dryer union
- 5 Socket head cap screw
- 6 Valve cover

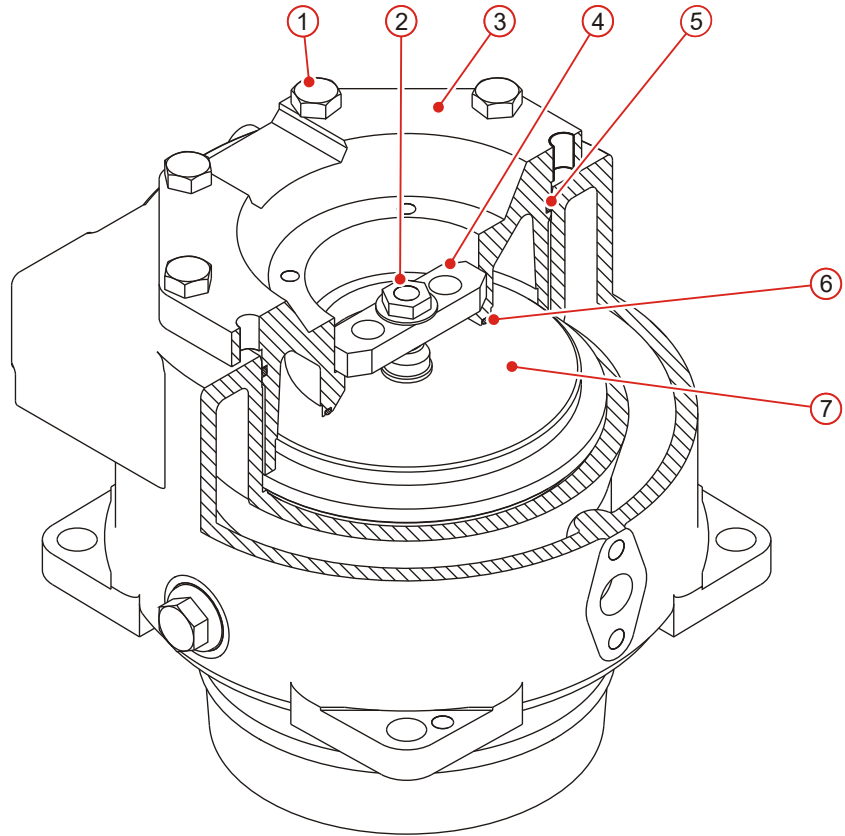


Fig. 6: Compression stage 1 valve

- 1 Hexagon head screws
- 2 Thread fitting
- 3 Valve cover
- 4 Stand
- 5 O-ring
- 6 O-ring
- 7 Valve

Compression stage 2 valve

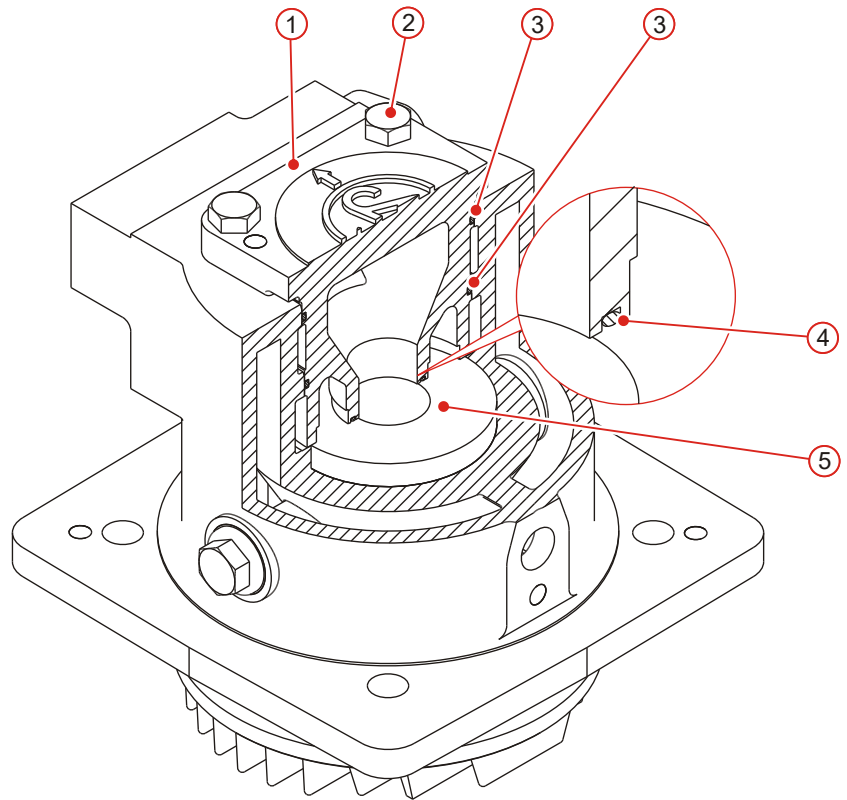


Fig. 7: Compression stage 2 valve

- 1 Valve cover
- 2 Hexagon head screws
- 3 O-ring
- 4 O-ring
- 5 Valve



Sauer Compressors

Removing the compression stage 1 valve

1. ➤ Unscrew the socket head cap screws and disassemble the inlet pressure manifold. Dispose of the ring gasket in an environmentally sound manner.
2. ➤ Unscrew the hexagon head screws and remove the valve cover with the valve. Dispose of the o-rings in an environmentally sound manner.
3. ➤ Unscrew the thread fitting.
4. ➤ Remove the spring washer and holder.
5. ➤ Remove the valve from the valve cover.
6. ➤ Clean all sealing surfaces.

Removing the compression stage 2 valve

1. ➤ Unscrew the hexagon head screws and remove the valve cover with the valve. Dispose of the o-rings in an environmentally sound manner.
2. ➤ Remove the valve from the valve cover.
3. ➤ Clean all sealing surfaces.

Checking the valves

1. ➤ Check the exterior of the valves for:
 - damage
 - coking
 - oiling
 - corrosion
 - moisture
2. ➤ Valves that are damaged, heavily coked or corroded must be replaced with new valves.
3. ➤ If necessary, establish the cause of the fault.

Installing the compression stage 1 valve

1. ➤ Assemble the new valve with stand, thread fitting and spring washer on the valve cover.
2. ➤ Assemble the valve cover with new o-rings. Observe the tightening torque: ↻ *Chapter 3.2 'Requirements for maintenance work' on page 9*



When fitting the valve cover for compression stage 1, ensure it is positioned correctly. The recess in the valve cover for the air filter suction connector must be at the top.

3. ➤ Screw in the hexagon head screws.
4. ➤ Assemble the inlet pressure manifold.
5. ➤ Screw in the socket head cap screws.

Installing the compression stage 2 valve

1. ▶ Insert new valve with new o-ring in the valve cover.
2. ▶ Assemble the valve cover with new o-rings. Observe the tightening torque: ↪ *Chapter 3.2 'Requirements for maintenance work' on page 9*



When fitting the valve cover for compression stage 2, ensure it is positioned correctly. The arrow on the valve cover must point upwards.

3. ▶ Screw in the hexagon head screws.

4.1.4

Replacing the valves for compression stages 1 and 2

Remove and install the valves as described in ↪ *Chapter 4.1.3 'Checking the valves of compression stages 1 and 2' on page 24*. Make sure you replace the valves completely.



4.1.5

Replacing the valves for compression stages 3 and 4

- Personnel: ■ Service personnel
- Protective equipment: ■ Safety goggles
■ Protective gloves
■ Work clothing
■ Safety boots



NOTICE!

Damage due to faulty gaskets

Do not continue using used gaskets. Doing this will lead to leakages within a short period of time.

- Only re-install valves, cylinder heads and cylinders with new gaskets.



NOTICE!

Damage due to low quality spare parts

Installation of low quality spare parts may lead to leakages and may cause substantial damage to the compressor.

- Use only genuine Sauer spare parts. They are precision parts specially designed for these installation situations with defined and tested dimensions and material characteristics.



NOTICE!

Damage due to faulty valves

Do not repair used valves. Valves that have reached the end of their service life must be replaced and disposed of.

- Use only genuine Sauer spare parts.



Valves are exposed to the greatest loads of all the parts of a piston compressor. In order to achieve the guaranteed maintenance intervals, these valves are high-quality precision parts, specially adapted to the individual compression stages and their function carefully checked before delivery.

If necessary, contact Sauer-Service.

Removing the compression stage 3 valve

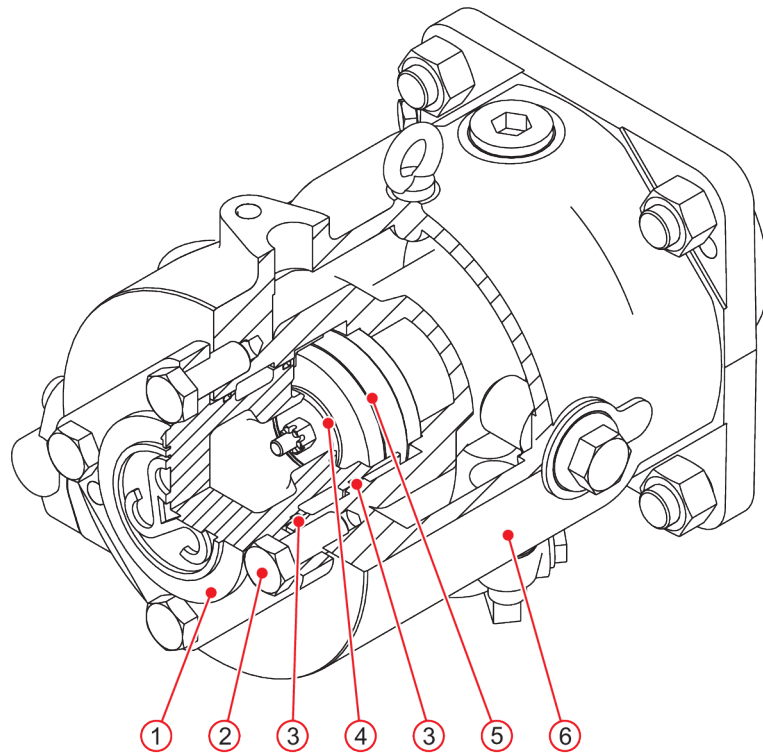


Fig. 8: Compression stage 3 valve

- 1 Valve cover
- 2 Hexagon head screw
- 3 O-ring
- 4 Ring gasket
- 5 Valve
- 6 Cylinder

1. ➤ Unscrew the hexagon head screws and remove the valve cover.
2. ➤ Carefully remove the valve from the cylinder.
3. ➤ Remove the o-rings and gasket.
4. ➤ Clean all sealing surfaces.

Installing the compression stage 3 valve

1. ➤ Carefully insert the new valve in the cylinder.
2. ➤ Fit a gasket between the valve and valve cover.
3. ➤ Insert the valve cover together with new o-rings into the cylinder.



When fitting the valve cover for compression stage 3, ensure it is positioned correctly. The Sauer symbol on the valve cover must point upwards.

4. ➤ Screw in the hexagon head screws hand tight.



5. ➤ Securely tighten the hexagon head screws crosswise. Observe the tightening torque: ↪ Chapter 3.2 'Requirements for maintenance work' on page 9.

Removing the compression stage 4 valve

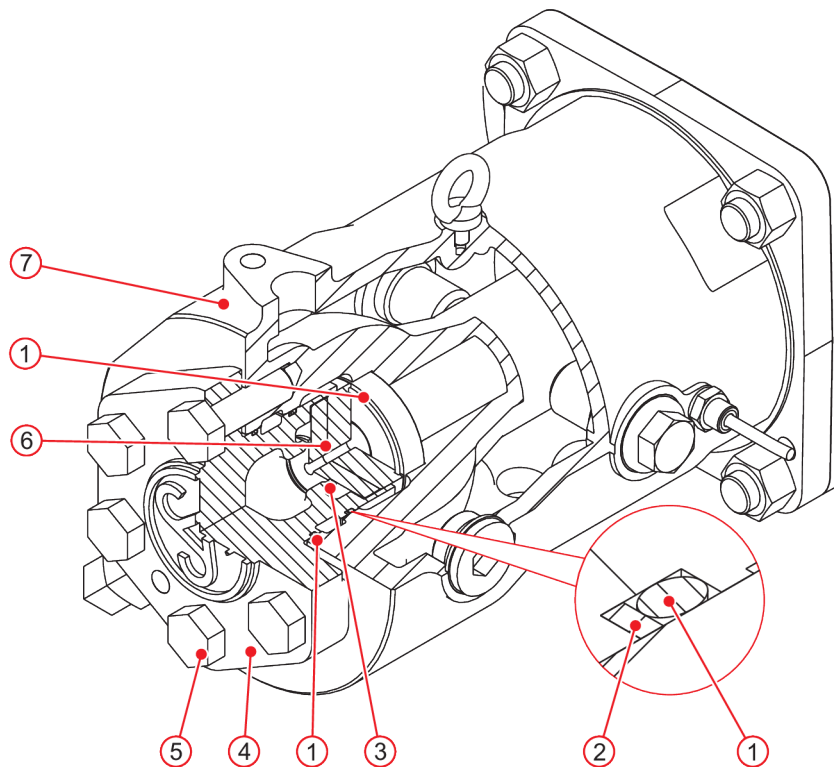


Fig. 9: Compression stage 4 valve

- 1 O-ring
- 2 Back-up ring
- 3 Ring gasket
- 4 Valve cover
- 5 Hexagon head screw
- 6 Valve
- 7 Cylinder

1. ➤ Unscrew the hexagon head screws and remove the valve cover.
2. ➤ Carefully remove the valve from the cylinder.
3. ➤ Remove the o-rings and gasket.
4. ➤ Clean all sealing surfaces.

Installing the compression stage 4 valve

1. ➤ Carefully insert the valve into the cylinder.
2. ➤ Fit a gasket between the valve and valve cover.

3. Insert the valve cover together with new o-rings and a new back-up ring.



When fitting the valve cover for compression stage 4, ensure it is positioned correctly. The Sauer symbol on the valve cover must point upwards. The back-up ring must be located on the o-ring.

4. Screw in the hexagon head screws hand tight.
5. Securely tighten the hexagon head screws crosswise. Observe the tightening torque: ↪ Chapter 3.2 'Requirements for maintenance work' on page 9.

4.1.6

Replacing the piston rings, gudgeon pins and gudgeon pin bearings

- Personnel: ■ Service personnel
- Protective equipment: ■ Safety goggles
 ■ Protective gloves
 ■ Work clothing
 ■ Safety boots
- Tool: ■ Crane and lifting gear



NOTICE!

Damage to the piston

The piston may be damaged if it strikes against the crankcase while work is carried out on the cylinder or connecting rod.

- Always support or hold the piston while work is carried out.

Preparatory work

1. Drain the cooling water as described in ↪ Chapter 4.1.3 'Checking the valves of compression stages 1 and 2' on page 24.
2. Remove all valve covers and valves as described in ↪ Chapter 4.1.3 'Checking the valves of compression stages 1 and 2' on page 24 and ↪ Chapter 4.1.4 'Replacing the valves for compression stages 1 and 2' on page 29.
3. Unscrew the socket head cap screws on the guard plate over the cylinder of compression stage 2 and remove the whole guard plate.
4. Loosen the hexagon nuts on the crankcase inspection cover and remove the crankcase inspection cover. Dispose of the gasket in an environmentally sound manner.



The following procedure applies to all installed piston rings, gudgeon pins and gudgeon pin bearings.

Removing cylinders

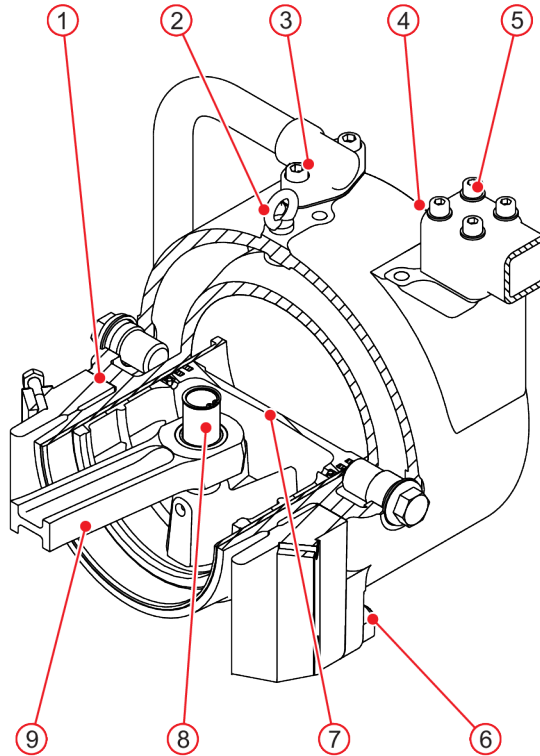


Fig. 10: Removing cylinders (example)

- 1 Cylinder foot gasket
- 2 Lifting eye
- 3 Pipeline
- 4 Cylinder
- 5 Socket head cap screw
- 6 Cylinder foot nut
- 7 Piston
- 8 Gudgeon pin
- 9 Upper part of the connecting rod

1. ➤ Disassemble the pipelines from each cylinder. Dispose of gaskets and ring gaskets in an environmentally sound manner.
2. ➤ Support the cylinder for disassembly with a crane by the lifting eye.

3. ➤ Unscrew the cylinder foot nuts and pull the cylinder away from the crankcase. Hold the piston by the connecting rod to prevent it from striking against the crankcase.



NOTICE!

Damage to the piston

The piston may be damaged if it strikes against the crankcase while work is carried out on the cylinder or connecting rod.

- Always support or hold the piston while work is carried out.

4. ➤ Carefully support the piston on the crankcase.
5. ➤ Remove the gasket between the cylinder and the crankcase.

Removing the piston



The pistons must be removed in the following order of compression stages: 1 - 4 - 3 - 2.

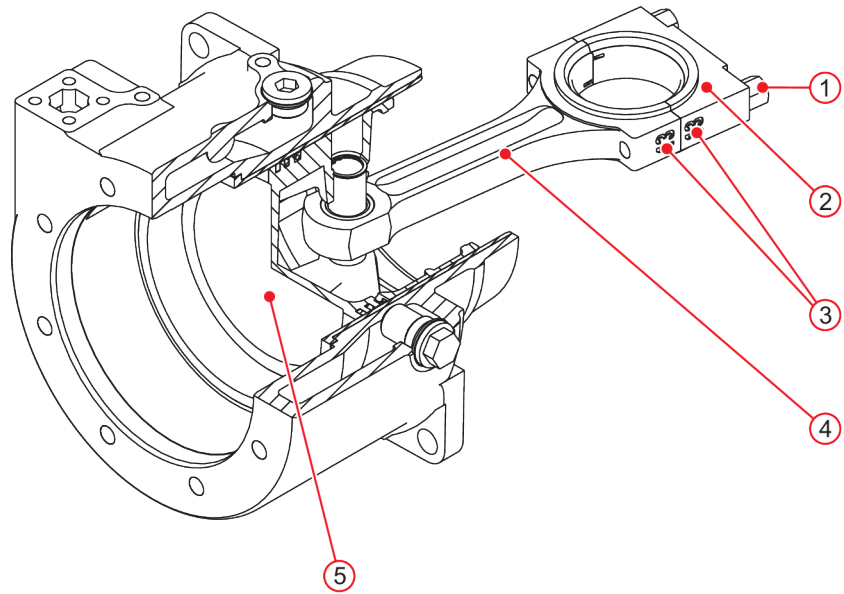


Fig. 11: Pistons and connecting rods (example with compression stage 1)

- 1 Connecting rod bolts
- 2 Lower part of the connecting rod
- 3 Numerical markings
- 4 Upper part of the connecting rod
- 5 Piston

1. ➤ Unscrew the connecting rod bolts through the opposite opening in the crankcase.
2. ➤ Remove the upper section of the connecting rod together with the piston from the crankcase. Leave the lower half of the connecting rod on the crankshaft as a spacer block.

Replacing the gudgeon pins and gudgeon pin bearings

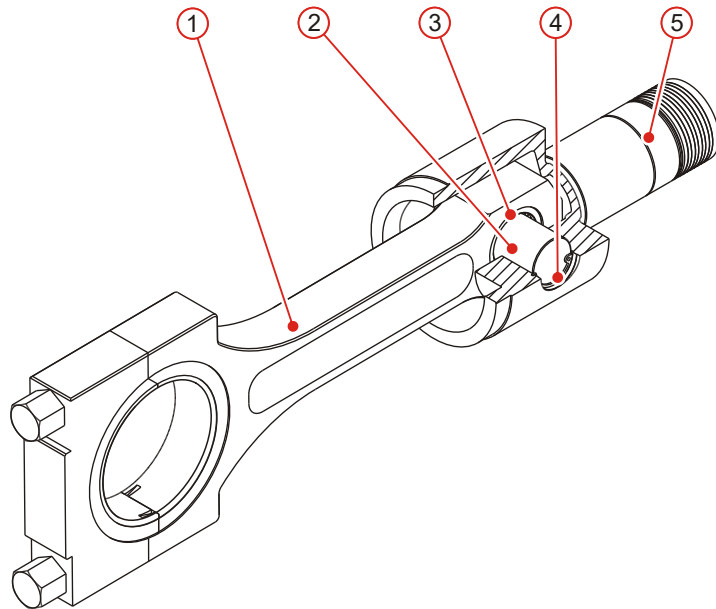


Fig. 12: Gudgeon pin and gudgeon pin bearing (example)

- 1 Connecting rod
- 2 Gudgeon pin
- 3 Gudgeon pin bearing
- 4 Circlip
- 5 Piston

1. ➤ Remove the gudgeon pin circlips and press the gudgeon pin out of the gudgeon pin bearing.
2. ➤ Remove the piston.
3. ➤ Carefully press the gudgeon pin bearing out of the connecting rod eye using a bearing press.
4. ➤ Clean and lubricate the connecting rod eye.
5. ➤ Clean the hole for the gudgeon pin in the piston.
6. ➤ Lubricate the hole for the gudgeon pin in the piston and the gudgeon pin itself.
7. ➤ Press the new gudgeon pin bearing into the connecting rod eye and lubricate the gudgeon pin bearing.
8. ➤ Assemble the first circlip in the piston.
9. ➤ Mount the piston on the connecting rod.
10. ➤ Push the gudgeon pin through the piston and the gudgeon pin bearing as far as the circlip.
11. ➤ Assemble the second circlip.
12. ➤ Check that the circlips are secure.



13. Check to ensure that the gudgeon pin can be turned easily by hand. If the gudgeon pin cannot be turned easily, assemble the gudgeon pin again.

Replacing the piston rings



NOTICE!

Damage due to faulty piston rings

Do not continue using used piston rings. Doing so will lead to damage to the piston and cylinder liner within a short period of time.

- Only re-install pistons with new piston rings.

1. Remove all piston rings from the piston using piston ring pliers.
2. Clean the pistons thoroughly using an oil-dissolving fluid (e.g., kerosene).
3. Measure the cylinder liners and cylinder wear as described in [Chapter 4.1.6.1 'Checking pistons and cylinders' on page 40](#).
4. Insert new piston rings in the grooves on the piston.



Note the correct position of the piston rings. [Figures in the spare parts catalogue](#).

Piston rings with an asymmetrical cross-section have a marking on one side. This marking must point to the cylinder head during installation.

5. Position the piston rings so that the joint gaps are offset.



The piston rings can be secured in position using grease.

Installing cylinder with piston and connecting rod upper sections

1. Thoroughly clean the sealing surfaces on the cylinder foot.
2. Insert a new cylinder foot gasket.
3. Clean the connecting rod and crankshaft pins with a lint-free cloth.
4. Lubricate the piston, cylinder, crankshaft and connecting rod.
5. Position the cylinder with the cylinder foot side facing upwards.
6. Carefully slide the piston into the cylinder from above.



Do not tilt the piston.

If there is too much resistance on insertion, check the position of the piston rings.



NOTICE!

Damage to the piston

The piston may be damaged if it strikes against the crankcase while work is carried out on the cylinder or connecting rod.

- Always support or hold the piston while work is carried out.

7. ▶ Secure the cylinders with appropriate lifting gear (load-bearing capacity min. 50 kg).
8. ▶ Lower the cylinder onto the cylinder flange surface on the crankcase. When mounting, guide the connecting rod with the hand.



Ensure that the upper and lower sections of the connecting rod are in the correct installation position. The numerical markings on the upper and lower sections of the connecting rod must match.

The thrust washer of the connecting rod compression stage 2 must be underneath.

9. ▶ Screw the connecting rod bolts in fully by hand and tighten to the specified tightening torque. ↪ *Chapter 3.2 'Requirements for maintenance work' on page 9*



NOTICE!

Damage caused by incorrect positioning of the connecting rod

After tightening, connecting rods should rotate easily on the crankshaft.

If the connecting rod tilts, re-assemble it.

10. ▶ Screw on the cylinder foot nuts hand tight.
11. ▶ Tighten the cylinder foot nuts crosswise to the specified tightening torque. ↪ *Chapter 3.2 'Requirements for maintenance work' on page 9*
12. ▶ Rotate the crankshaft one full revolution by hand, to check free movement. If the connecting rod tilts during this operation, re-assemble it.

Follow-up work

1. ▶ Assemble the crankcase inspection cover with a new gasket.
2. ▶ Assemble the pipelines with new gaskets and ring gaskets to each cylinder.
3. ▶ Install all valve covers and valves as described in ↪ *Chapter 4.1.3 'Checking the valves of compression stages 1 and 2' on page 24* and ↪ *Chapter 4.1.4 'Replacing the valves for compression stages 1 and 2' on page 29*.
4. ▶ Assemble the complete guard plate over the cylinder of compression stage 2 and screw in the socket head cap screws.
5. ▶ Fill with cooling water as described in ↪ *Chapter 3.5 'Draining and refilling cooling water' on page 13*.



4.1.6.1

Checking pistons and cylinders

- Personnel: ■ Service personnel
- Protective equipment: ■ Protective gloves
■ Work clothing
■ Safety boots

The term cylinder as used here also includes cylinder liners.

Compression unit has already been removed. Piston has already been disassembled. ↪ see "Replacing the piston rings, gudgeon pins and gudgeon pin bearings"

1. ➤ Check the piston and cylinder for scoring marks and excessive wear.
2. ➤ If there is excessive wear, replace the parts.

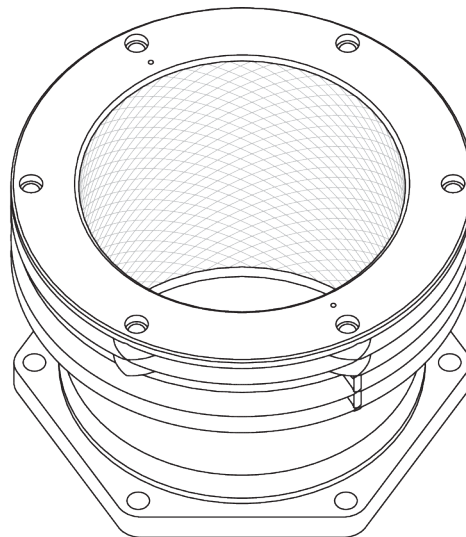


Fig. 13: Cylinder surface in unused condition



Contact the Sauer-Service department of Sauer USA if cylinders or pistons need to be replaced.

Measuring cylinder wear



This measurement can be made with used or new piston rings.

- 1.** ▶ 1st measurement:
Push the piston ring into the cylinder about 5 mm below the upper edge of the cylinder and above the visible running surface of the piston rings. Measure the end gap with a feeler gauge.
- 2.** ▶ 2nd measurement:
Push the piston ring into the cylinder about 50 mm below the upper edge of the cylinder and within the visible running surface of the piston rings. Measure the end gap with a feeler gauge.
- 3.** ▶ Calculate the difference between the end gaps from the 1st and 2nd measurements, and compare this with the values in the permitted end gap differences table.

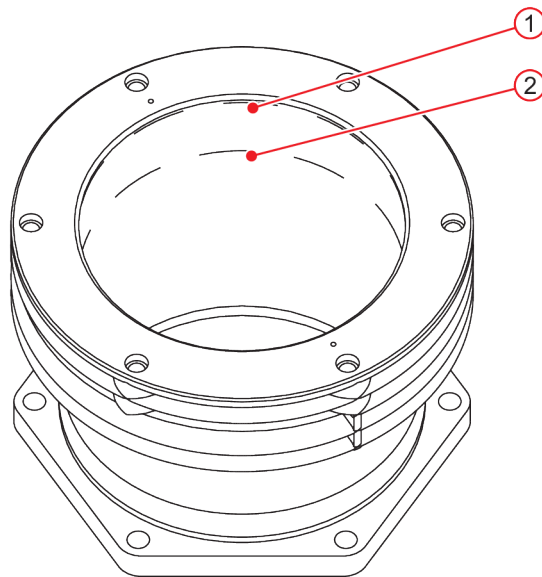


Fig. 14: Cylinder wear measurement



Sauer Compressors

- 1 approx. 5 mm below the upper edge of the cylinder
- 2 approx. 50 mm below the upper edge of the cylinder

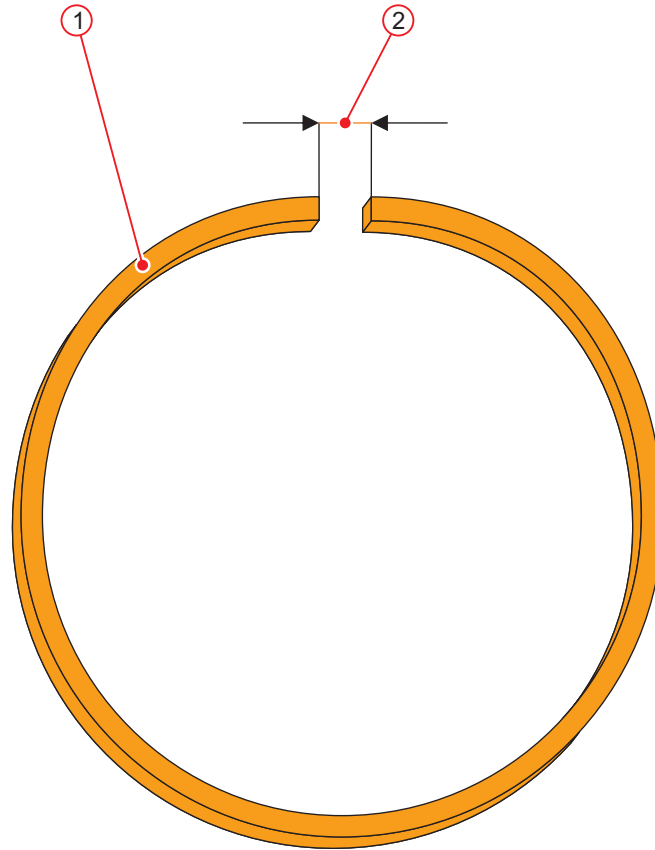


Fig. 15: End gap

- 1 Piston ring
- 2 End gap

Piston diameter	Permissible gap clearance difference
≥ 100 mm	0.45 mm
< 100 mm	0.30 mm



Contact the Sauer-Service of Sauer USA if the mechanical seal needs to be replaced.

4.1.7

Servicing the solenoid drain valve compression stage 1

- Personnel: ■ Service personnel
- Protective equipment: ■ Protective gloves
■ Work clothing
■ Safety boots



The following spare parts are required for maintenance work on the compression stage 1 solenoid drain valve:

- Spare parts kit, part number 042145

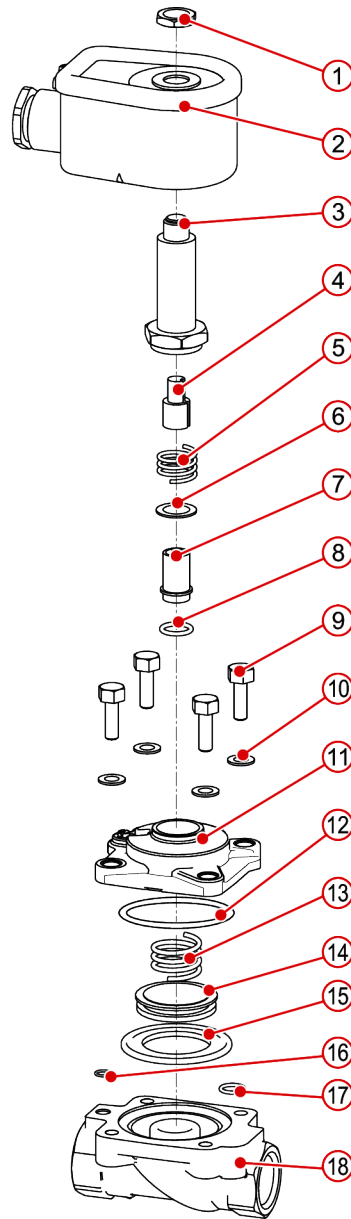


Fig. 16: Servicing the solenoid drain valve

- | | |
|--------------------------------|------------------------------|
| 1 Hexagon nut | 10 Washers |
| 2 Coil | 11 Housing upper part |
| 3 Solenoid armature tube | 12 O-ring |
| 4 Solenoid armature upper part | 13 Membrane spring |
| 5 Solenoid armature spring | 14 Membrane socket |
| 6 Spring washer | 15 Membrane |
| 7 Solenoid armature lower part | 16 Compensating jet o-ring |
| 8 O-ring | 17 Housing lower part O-ring |
| 9 Hexagon head screws | 18 Housing lower part |

To maintain the solenoid drain valve:

1. ➔ Unscrew the hexagon nut.

2. ▶ Carefully lift off the coil with an appropriate tool (e.g. screwdriver).
3. ▶ Unscrew the solenoid armature tube.
4. ▶ Remove the o-ring from the housing upper part and replace with a new o-ring.
5. ▶ Replace the following parts in the solenoid armature tube:
 - Solenoid armature upper part
 - Solenoid armature spring
 - Spring washer
 - Solenoid armature lower part
6. ▶ Screw in the solenoid armature tube.
7. ▶ Unscrew the hexagon head screws
8. ▶ Remove the housing upper part.
9. ▶ Replace the following parts in the housing:
 - Membrane spring
 - Membrane socket
 - Membrane
 - Compensating jet o-ring
 - Housing lower part O-ring
10. ▶ Place the housing cover in position.
11. ▶ Screw in the hexagon head screws.
12. ▶ Fit the coil
13. ▶ Screw the hexagon nut tight.

4.1.8

Servicing the solenoid drain valve compression stage 2

- Personnel:
 - Service personnel
- Protective equipment:
 - Protective gloves
 - Work clothing
 - Safety boots



The following spare parts are required for maintenance work on the compression stage 2 solenoid drain valve:

- Spare parts kit, part number 035668

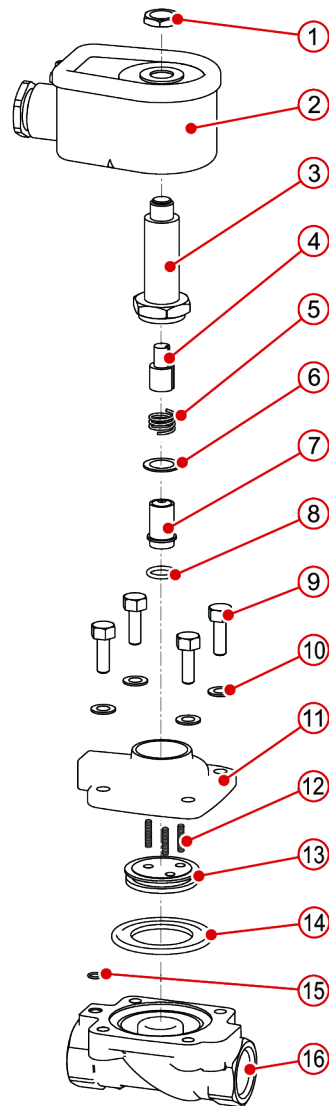


Fig. 17: Servicing the solenoid drain valve

- | | |
|--------------------------------|------------------------------|
| 1 Hexagon nut | 9 Hexagon head screws |
| 2 Coil | 10 Washers |
| 3 Solenoid armature tube | 11 Housing upper part |
| 4 Solenoid armature upper part | 12 Membrane springs |
| 5 Solenoid armature spring | 13 Membrane socket |
| 6 Spring washer | 14 Diaphragm |
| 7 Solenoid armature lower part | 15 Housing lower part O-ring |
| 8 O-ring | 16 Housing lower part |



NOTICE!

Cleaning the sealing surfaces

Leaks can lead to damage or can impair correct functioning of the compressed air system.

- Carefully remove any gasket residue with an appropriate tool.
- Clean the sealing surfaces carefully before fitting new gaskets or o-rings.

To maintain the solenoid drain valve:

1. ► Unscrew the hexagon nut.
2. ► Carefully lift off the coil with an appropriate tool (e.g. screwdriver).
3. ► Unscrew the solenoid armature tube.
4. ► Remove the o-ring from the housing upper part and replace with a new o-ring.
5. ► Replace the following parts in the solenoid armature tube:
 - Solenoid armature upper part
 - Solenoid armature spring
 - Spring washer
 - Solenoid armature lower part
6. ► Screw in the solenoid armature tube.
7. ► Unscrew the hexagon head screws
8. ► Remove the housing upper part.
9. ► Replace the following parts in the housing:
 - Membrane springs
 - Membrane socket
 - Membrane
 - Housing lower part O-ring
10. ► Place the housing cover in position.
11. ► Screw in the hexagon head screws.
12. ► Fit the coil
13. ► Screw the hexagon nut tight.

4.1.9

Servicing pneumatic drain valves

- Personnel:
 - Service personnel
- Protective equipment:
 - Protective gloves
 - Work clothing
 - Safety boots



The spare parts kit with part number 063633 is required for this maintenance work.

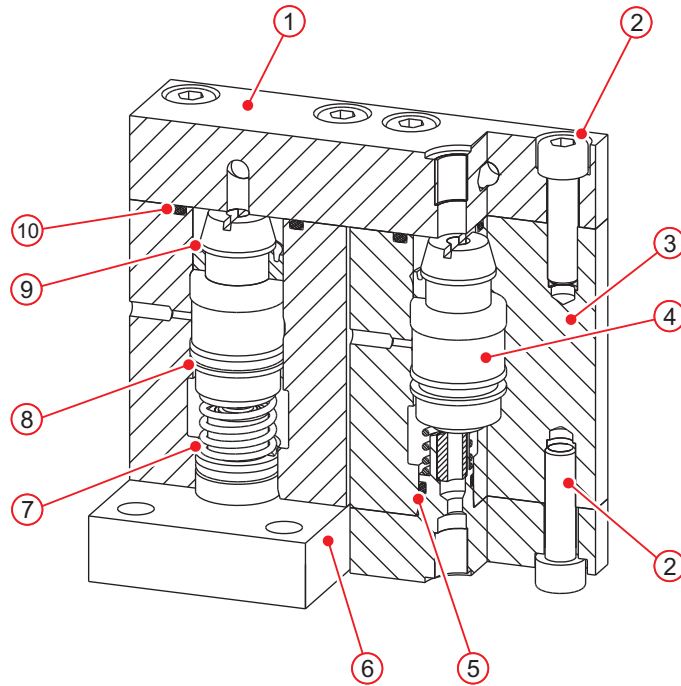


Fig. 18: Pneumatic drain valve

- 1 Housing cover
- 2 Socket head cap screw
- 3 Valve body
- 4 Valve piston
- 5 O-ring
- 6 Housing flange
- 7 Spring
- 8 O-ring
- 9 Gasket
- 10 O-ring

1. ➤ Disconnect all pipelines from the pneumatic drain valve.
2. ➤ Remove the pneumatic drain valve.
3. ➤ Unscrew the socket head cap screws on the housing flange and remove the housing flange. Replace the O-rings. Check the surface of the valve seat on the housing flange.
4. ➤ Unscrew the socket head cap screws on the housing cover and remove the housing cover from the valve body. Replace the O-rings.
5. ➤ Screw the M 6 screw into the thread on the valve piston and remove the valve piston from the valve body. Replace the o-rings and ring gaskets.
6. ➤ Check the surface of the valve seat at the base of the valve piston for damage, clean and lubricate. Replace damaged valve pistons.
7. ➤ Lubricate the valve piston and insert in the valve body.
8. ➤ Fit the top housing cover on the valve body with socket head cap screws and new ring gaskets.
9. ➤ Fit the lower housing flange on the valve body with socket head cap screws and new o-rings.
10. ➤ Reinstall the pneumatic drain valve.

- 11.**▶ Connect the drain lines for compression stages 3 and 4. Make sure that the correct channels are connected to the lines for compression stages 3 and 4. The diameter of the channel for compression stage 4 is smaller.
- 12.**▶ Connect the pipelines to the pneumatic drain valve and tighten the union nuts at both ends.

4.1.10

Servicing the cooling water solenoid valve

- Personnel: ■ Service personnel
- Protective equipment: ■ Protective gloves
■ Work clothing
■ Safety boots



The following spare parts are required for maintenance work on the cooling water solenoid valve:

- Spare parts kit, part number 039740

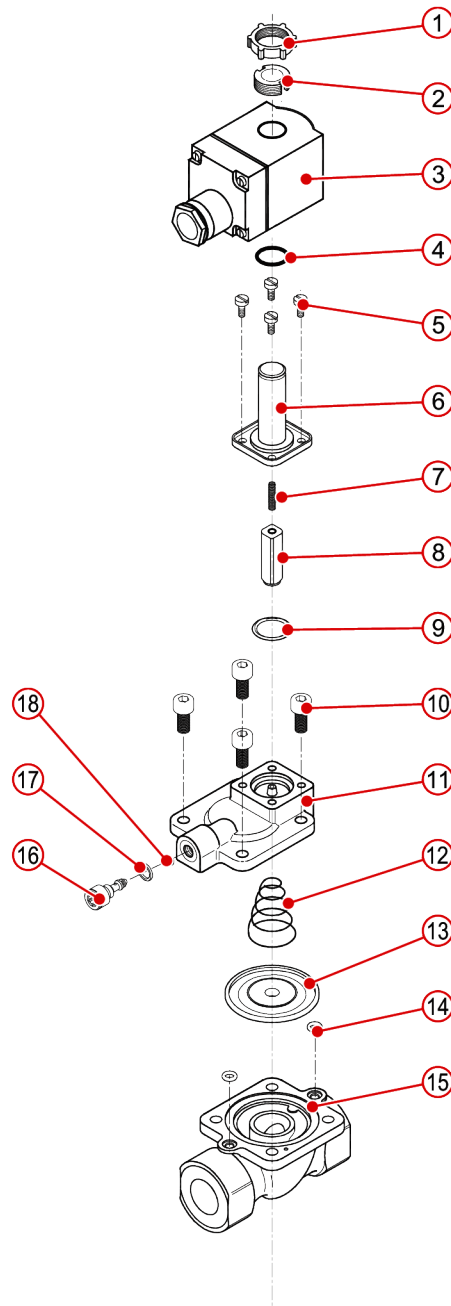


Fig. 19: Servicing the cooling water solenoid valve

- | | | | |
|---|--------------------------|----|----------------------------------|
| 1 | Lock nut | 10 | Inner hexagon socket head screws |
| 2 | External thread cap | 11 | Housing upper part |
| 3 | Coil | 12 | Membrane spring |
| 4 | O-ring | 13 | Membrane |
| 5 | Screws | 14 | Housing lower part O-ring |
| 6 | Solenoid armature tube | 15 | Housing lower part |
| 7 | Solenoid armature spring | 16 | Compensating jet |
| 8 | Solenoid armature | 17 | O-ring |
| 9 | O-ring | 18 | O-ring |



NOTICE!

Cleaning the sealing surfaces

Leaks can lead to damage or can impair correct functioning of the compressed air system.

- Carefully remove any gasket residue with an appropriate tool.
- Clean the sealing surfaces carefully before fitting new gaskets or o-rings.

To maintain the cooling water solenoid valve:

1. ► Unscrew the circlip.
2. ► Lift off the external thread cap.
3. ► Carefully lift off the coil with an appropriate tool (e.g. screwdriver).
4. ► Remove the o-ring from the solenoid armature tube.
5. ► Unscrew the fixing screws for the solenoid armature tube.
6. ► Remove the solenoid armature tube.
7. ► Remove the o-ring from the housing upper part and replace with a new o-ring.
8. ► Remove the solenoid armature spring and solenoid armature from the solenoid armature tube and replace with new parts.
9. ► Position the solenoid armature tube at the installation location.
10. ► Screw in and tighten the solenoid armature tube fixing screws.
11. ► Mark the screw-in depth of the compensating jet (e.g. with a waterproof pen) and unscrew the compensating jet.
12. ► Remove the o-ring from the compensating jet and replace with new o-rings.
13. ► Screw in the compensating jet as far as the marking made before unscrewing.
14. ► Unscrew the hexagon socket head screws in the housing upper part and detach the housing upper part.
15. ► Replace the following parts in the housing:
 - Membrane spring
 - Diaphragm
 - O-rings in housing lower part
16. ► Fit the housing upper part.
17. ► Screw in the hexagon socket head screws in the housing upper part.
18. ► Position a new o-ring on the solenoid armature tube.
19. ► Fit the coil
20. ► Fit the external thread cap.
21. ► Screw on and tighten the lock nut.



4.1.11

Cleaning the cooler inserts

- Personnel: ■ Service personnel
- Protective equipment: ■ Safety goggles
■ Protective gloves
■ Work clothing
■ Safety boots



NOTICE!

Damage caused by bending

The pipelines of the cooler inserts can be bent during installation and removal.

- Do not tilt cooler inserts.
- Always turn cooler inserts very carefully.
- Support cooler inserts.



The cooler inserts are removed from the cooler housings towards the cylinder for compression stage 1.

4.1.11.1

Preparatory work

1. ➤ Drain the cooling water as described in [Chapter 3.5 'Draining and refilling cooling water'](#) on page 13.
2. ➤ Unscrew the socket head cap screws on the guard plate over the cylinder of compression stage 2 and remove the whole guard plate.
3. ➤ Unscrew the socket head cap screws on the pressure duct of compression stage 1 and remove the pressure duct. Dispose of the gasket in an environmentally sound manner.
4. ➤ On the gauge panel side: Unscrew the socket head cap screws and remove the holder plate.
5. ➤ Unscrew socket head cap screws from suction channel and pressure duct, compression stage 2, and remove suction channel and pressure duct, compression stage 2.
6. ➤ Loosen the unions of the pipelines and safety valves on the cooler inserts.
7. ➤ Disassemble condensate separators compression stages 1 and 2:
8. ➤ Loosen the union for the drainage line on the bottom of the condensate separator.
9. ➤ Remove the gasket and dispose of in an environmentally sound manner.
10. ➤ Unscrew the socket head cap screws on the separator head.
11. ➤ Remove the condensate separator from the cooler housing.
12. ➤ Disassemble condensate separators compression stages 3 and 4:

- 13.▶ Loosen the union for the drainage line on the bottom of the condensate separator.
- 14.▶ Remove the o-ring and dispose of in an environmentally sound manner.
- 15.▶ Disassemble pipelines on the separator heads.
- 16.▶ Remove the o-rings and dispose of in an environmentally sound manner.
- 17.▶ Unscrew the hexagon nut.
- 18.▶ Unscrew the socket head cap screws on the separator head.
- 19.▶ Pull the condensate separator away from the cooler insert.
- 20.▶ Remove all gaskets, ring gaskets and o-rings and dispose of in an environmentally sound manner.

4.1.11.2

Remove and clean the cooler inserts.

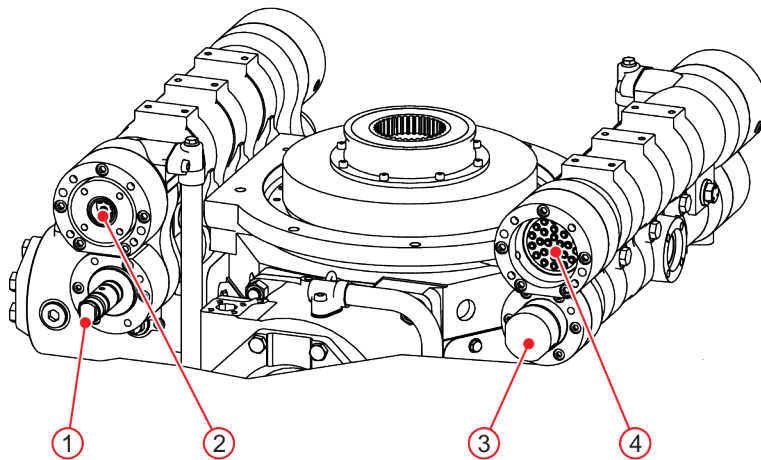


Fig. 20: Extracting cooler inserts towards the compression stage 1 cylinder

- 1 Cooler insert compression stage 1
- 2 Cooler insert compression stage 4
- 3 Cooler insert compression stage 3
- 4 Cooler insert compression stage 2



Always turn cooler inserts clockwise when installing and removing them.



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Removing the cooler inserts

1. ➤ **Cooler insert compression stage 1:** Screw socket head cap screws M10 into the threads in the cooler insert and pull the cooler insert out of the cooler housing.
2. ➤ **Cooler insert compression stage 4:** Screw the hexagon nut of the separator head of compression stage 4 onto the cooler insert of compression stage 4.
3. ➤ On the hexagon nut, press the cooler insert out of the cooler housing.
4. ➤ **Cooler insert compression stage 2:** On the side of the gauge panel, screw M10 screws into the threads on the cooler insert.
5. ➤ With a soft-faced mallet, drive the cooler insert at the M10 screws out of the cooler housing towards the compression stage 1 cylinder.
6. ➤ **Cooler insert compression stage 3:** On the side of the gauge panel: Screw the hexagon nut of the separator head of compression stage 3 onto the cooler insert of compression stage 3.
7. ➤ With a soft-faced mallet, drive the cooler insert out of the cooler housing towards the gauge panel on the hexagon nut.
8. ➤ Remove all o-rings and dispose of in an environmentally sound manner

Cleaning the cooler housing and cooler inserts

1. ➤ Clean the inside of the cooler housing with a steel brush.
2. ➤ Place cooler inserts in a vinegar solution (5%) and allow the solution to work for about 4 - 5 hours.
3. ➤ Remove all cleaning agent residues from the cooler inserts.

Installing the cooler inserts

- Slide cooler inserts into the cooler housing. Use new o-rings.

4.1.11.3

Follow-up work

Always use new gaskets, ring gaskets and o-rings for installation.

1. ➤ Assemble the pressure duct of compression stage 1 and screw in the socket head cap screws.
2. ➤ Screw the pipeline unions and safety valves onto the cooler inserts.
3. ➤ On the gauge panel side: Assemble the holder plate and screw in the socket head cap screws.
4. ➤ Assemble suction channel and pressure duct compression stage 2. Screw in socket head cap screws on suction channel and pressure duct, compression stage 2.

5. ▶ Assemble the complete guard plate over the cylinder of compression stage 2 and screw in the socket head cap screws. Each socket head cap screw must be screwed in together with a washer, an insulating washer and a spacer bush.
6. ▶ Assemble condensate separators compression stages 1 and 2
7. ▶ Assemble the condensate separator on the cooler housing.
8. ▶ Screw in the socket head cap screws on the separator head.
9. ▶ Screw in the socket head cap screws on the pressure line flange. Use new gasket.
10. ▶ Assemble and tighten the union for the drainage line on the bottom of the condensate separator.
11. ▶ Assemble condensate separators compression stages 3 and 4
12. ▶ Assemble the condensate separator on the cooler insert.
13. ▶ Screw in the socket head cap screws on the separator head.
14. ▶ Screw the hexagon nut tight.
15. ▶ Tighten the unions on the separator head. Use new ring gaskets when doing this.
16. ▶ Assemble and tighten the union for the drainage line on the bottom of the condensate separator.
17. ▶ Assemble pipelines on the separator heads.
18. ▶ Fill with cooling water as described in ↗ *Chapter 3.5 'Draining and refilling cooling water' on page 13.*

4.1.12

Replacing the sacrificial zinc anode

- Personnel: ■ Service personnel
- Protective equipment: ■ Safety goggles
- Protective gloves
- Work clothing
- Safety boots

There are 2 sacrificial zinc anodes on each cylinder and on each cooler.

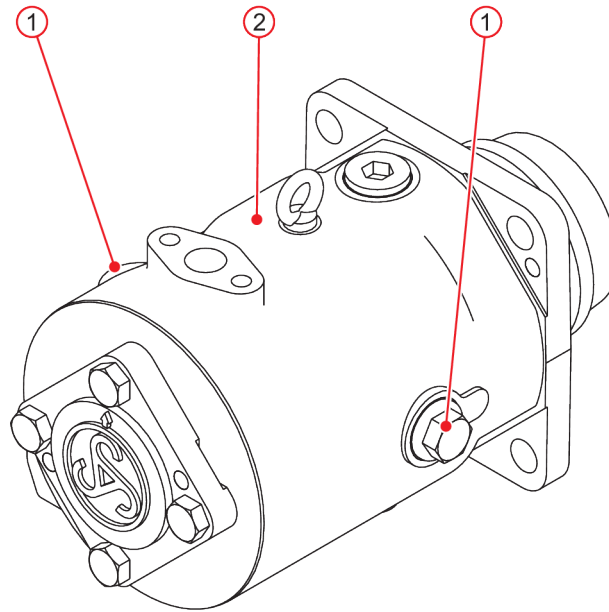


Fig. 21: Example of sacrificial zinc anodes on the cylinder

- 1 Sacrificial zinc anode
- 2 Cylinder

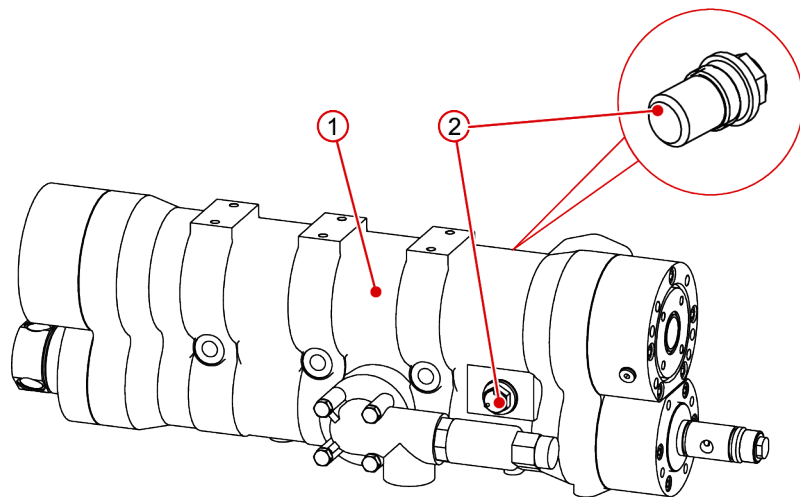


Fig. 22: Example of sacrificial zinc anodes on the cooler housing

- 1 Cooler housing for compression stage 1/4
- 2 Sacrificial zinc anode

Replacing the sacrificial zinc anodes

The following procedure applies to all sacrificial zinc anodes.

1. ► Drain the cooling water as described in [Chapter 3.5 'Draining and refilling cooling water'](#) on page 13.
2. ► Unscrew the sacrificial zinc anode and the ring gasket and dispose of in an environmentally sound manner.
3. ► Screw in a new sacrificial zinc anode with a new ring gasket.
4. ► Fill with cooling water as described in [Chapter 3.5 'Draining and refilling cooling water'](#) on page 13.

4.1.13

Replacing the bursting discs

- Personnel: ■ Service personnel
- Protective equipment: ■ Safety goggles
■ Protective gloves
■ Work clothing
■ Safety boots

A bursting disc is located on each cooler housing.

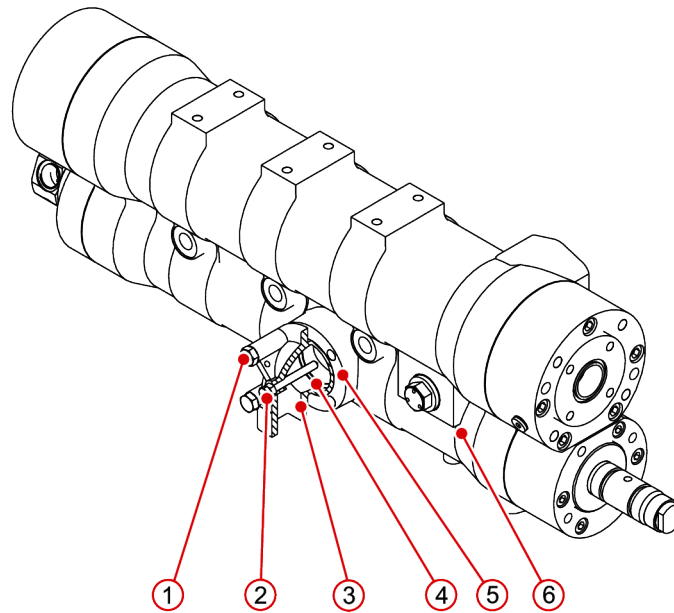


Fig. 23: Replacing the bursting discs

- 1 Hexagon head screw
- 2 Spacer bolt
- 3 Bursting disc flange
- 4 Bursting disc
- 5 Gasket
- 6 Cooler housing

- 1. ➔ Drain the cooling water as described in [Chapter 3.5 'Draining and refilling cooling water'](#) on page 13.
- 2. ➔ Loosen the hexagon head screws and remove the bursting disc together with the gasket.



Do not adjust the spacer bolt. The spacer bolt is pre-adjusted and sealed according to the burst pressure.

- 3. ➔ Dispose of the bursting disc and its gasket in an environmentally sound manner.
- 4. ➔ Clean the sealing surface on the cooler housing. Do not damage the sealing surface.
- 5. ➔ Install a new bursting disc with a new gasket. First install the gasket and then the bursting disc on the cooler housing.
- 6. ➔ Tighten the bursting disc flange with four hexagon head screws. Observe the tightening torque: [Chapter 3.2 'Requirements for maintenance work'](#) on page 9
- 7. ➔ Fill with cooling water as described in [Chapter 3.5 'Draining and refilling cooling water'](#) on page 13.

4.1.14

Checking the safety valves



DANGER!

Risk of excess pressure build-up

Faulty or manipulated safety valves may lead to excess pressure build-up. Excess pressure build-up may destroy the system. There is then a serious risk of death in the vicinity of the system due to flying parts and escaping hot gas, hot air or hot cooling water in the case of water-cooled compressors.

- Check the safety valves regularly and replace if faulty.
- Do not adjust, disable or remove safety valves.



CAUTION!

Risk of injury from safety equipment

Direct contact with safety valves can result in injury. When blowing off a safety valve, hot air or hot gas escapes at high pressure.

- Wear the specified personal protective equipment to minimise the risk of injury.
- Avoid direct contact with the safety valves and maintain a safe distance from them.

The safety valves are sealed by the manufacturer to prevent tampering. The construction of the safety valves means that they cannot be tested for function.

The operator must check and replace the safety valves in accordance with country-specific guidelines and laws.



Sauer USA offers a professional and qualified safety valve replacement service and corresponding training for maintenance personnel. Please contact Sauer-Service.

Carry out the following checks to detect any damage to safety valves:

- Check the safety valve and seal for signs of external damage.
- Check threaded connections for proper seating.
- Check attached parts and lines for damage.

Have damage to safety valves, attached parts and lines repaired immediately by the Sauer-Service department.



Sauer Compressors

5 Preservation

This chapter describes the preservation work that is required before and after storing the Sauer-Compressor for a long period.

5.1 Preservation for decommissioning of longer than 12 weeks

If the Sauer-Compressor is scheduled to be decommissioned for longer than 12 weeks, Sauer USA recommends preservation with a preservation oil. If this preservation is carried out, periodic test runs are not needed.



Use one of the preservation oils specified in the "Oil recommendation for Sauer-Compressors".

- | | |
|-----------------------|----------------------|
| Personnel: | ■ Service personnel |
| Protective equipment: | ■ Hearing protection |
| | ■ Safety goggles |
| | ■ Protective gloves |
| | ■ Work clothing |
| | ■ Safety boots |
| Tool: | ■ Measuring beaker |
| | ■ Oil injector |
| Material: | ■ Preservation oil |

1. ▶ Open any closed stop valves on the pressure line so that the pressure to the pressure reservoir can escape safely.
2. ▶ Disconnect the power supply for the solenoid drain valves from the compressor control. Open the manual drain valves.
⇒ The solenoid drain valves remain open.
3. ▶ Run the compressor for around 5 minutes with the solenoid drain valves and pressure line open.
⇒ Any existing condensate is blown out.
4. ▶ Stop the compressor.
5. ▶ Drain the oil and dispose of in an environmentally sound manner.
↪ *Chapter 4.1.1 'Changing the oil and cleaning the oil strainer' on page 19*
6. ▶ Fill the compressor with preservation oil up to 3/4 of the regular oil sump capacity.
7. ▶ Run the compressor for around 5 minutes with the solenoid drain valves and pressure line open.
⇒ The preservation oil disperses in the oil circuit.
8. ▶ Stop the compressor.



Sauer Compressors

- 9.** ▶ Make sure that the Sauer-Compressor is depressurised. To do this, check the pressure displays for the compression stages.
If there is any residual pressure, check whether the solenoid drain valves are open.
- 10.** ▶ Loosen the union of the crankcase vent condensate separator from the filter flange of compression stage 1.
- 11.** ▶ Using the oil injector, spray around 150 ml preservation oil into the filter flange of compression stage 1.
- 12.** ▶ Tighten the union of the crankcase vent condensate separator to the filter flange of compression stage 1.
- 13.** ▶ Unscrew the plug on the pressure line compression stage 2 (suction side).
- 14.** ▶ Using the oil injector, spray around 100 ml preservation oil into the pressure line for compression stage 2.
- 15.** ▶ Screw in the plug on the pressure line compression stage 2 (suction side).
- 16.** ▶ Unscrew the plug on the pressure line compression stage 3 (suction side).
- 17.** ▶ Using the oil injector, spray around 70 ml preservation oil into the compression chamber for compression stage 3.
- 18.** ▶ Screw in the plug on the pressure line compression stage 3 (suction side).
- 19.** ▶ Unscrew the plug on the pressure line compression stage 4 (suction side).
- 20.** ▶ Using the oil injector, spray around 20 ml preservation oil into the compression chamber for compression stage 4.
- 21.** ▶ Screw in the plug on the pressure line compression stage 4 (suction side).
- 22.** ▶ Run the compressor for around 15 seconds with the solenoid drain valves and the pressure line open.
⇒ The preservation oil spreads through the compressor unit.
- 23.** ▶ Turn off the Sauer-Compressor and secure against being turned on again.
Switch off the main switch to shut off the power to the Sauer-Compressor and the compressor control.
- 24.** ▶ Reconnect the power supply for the solenoid drain valves to the compressor control.
- 25.** ▶ Drain the preservation oil. ↪ *Chapter 4.1.1 'Changing the oil and cleaning the oil strainer' on page 19*
Ensure that the oil is disposed of or treated in an environmentally sound manner.
- 26.** ▶ Drain the cooling water. ↪ *Chapter 3.5 'Draining and refilling cooling water' on page 13*
- 27.** ▶ Attach a warning sign to prevent the preserved compressor from being started accidentally.

5.2

Commissioning after storage

If the maximum storage time is exceeded, the Sauer-Compressor must be inspected for possible damage before commissioning.



NOTICE!

Damage to the Sauer-Compressor

The following work should be carried out independently with the authorisation of Sauer USA.

Otherwise, contact the Sauer-Service department.

- Personnel: ■ Service personnel
- Protective equipment: ■ Hearing protection
■ Work clothing
■ Protective gloves
■ Safety boots

Requirement: The Sauer-Compressor has been properly preserved and stored.

1. ▶ Connect the power supply.
2. ▶ Fill the compressor with a specified oil. ↪ Oil recommendation
3. ▶ Perform commissioning according to the operating instructions.
4. ▶ Watch out for abnormal operating noise.
5. ▶ Compare the values displayed on the pressure gauges for each compression stage with the specified setpoints in the technical data: ↪ Operating Instructions



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