



**INSTRUCTION MANUAL  
LW 570 D  
DIESEL  
BREATHING AIR COMPRESSOR**



## Lenhardt & Wagner

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### Solid Growth

Lenhardt & Wagner is one of the leading and renowned companies in the high-pressure applications market. A worldwide network of L&W agencies and service centres ensures the steady growth of the company. Our customer-oriented corporate structure allows us to identify weaknesses and rectify them immediately. Such personal approach and having direct line to our customers are essential.

Over three decades the range of L&W products have advanced consistently and new markets were created. This is mainly due to our investment in the development and optimization of our product range and collaboration with our distributors.

In addition to Breathing Air Compressors and related peripheral equipment we also offer compressors, storage and filter for the high pressure which is required for natural gas filling stations. High-pressure inert gases such as argon, helium

or nitrogen for industrial applications including welding and laser cutting and for general laboratory use are among our other expertise.

Our balanced growth is based on long term and strategic planning that allows us great freedom to quickly react in any cases of need. With our new agencies in Singapore and China, they represent our continuing expansion into the Asian market. This market penetration will significantly increase our sales and further improve our services.



Trust the experts, trust in L&W.

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## 1. Specification

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Technical Data	LW 570 D
Delivery Capacity:	570 l/min
Max. Pressure:	350 bar
RPM Compressor:	1,100 min <sup>-1</sup>
No of Pressure Stages:	4
Cylinder Bore 1st Stage:	Ø 105 mm
Cylinder Bore 2nd Stage:	Ø 50 mm
Cylinder Bore 3rd Stage:	Ø 25 mm
Cylinder Bore 4th Stage:	Ø 14 mm
Stroke:	84 mm
Medium:	Air
Intake Pressure:	atmospheric
Oil Pressure:	+2.0 bar (+/- 0.5 bar)
Oil Capacity:	2.5 ltr
Intake Temperature:	0 < + 45°C
Ambient Temperature:	+ 5 < + 45°C
Cooling Air Requirement:	> 5,500 m <sup>3</sup> /h
Drive Motor	Yanmar Diesel 3TNM68
Motor Power:	18.3 kW
RPM Motor:	3,000 min <sup>-1</sup>
Fuel Capacity	15.7 ltr.
<b>Dimensions:</b>	
Depth:	800 mm (31.5")
Length:	1,460 mm (57.48")
Height:	970 mm (38.19")
Weight:	approx. 560 kg



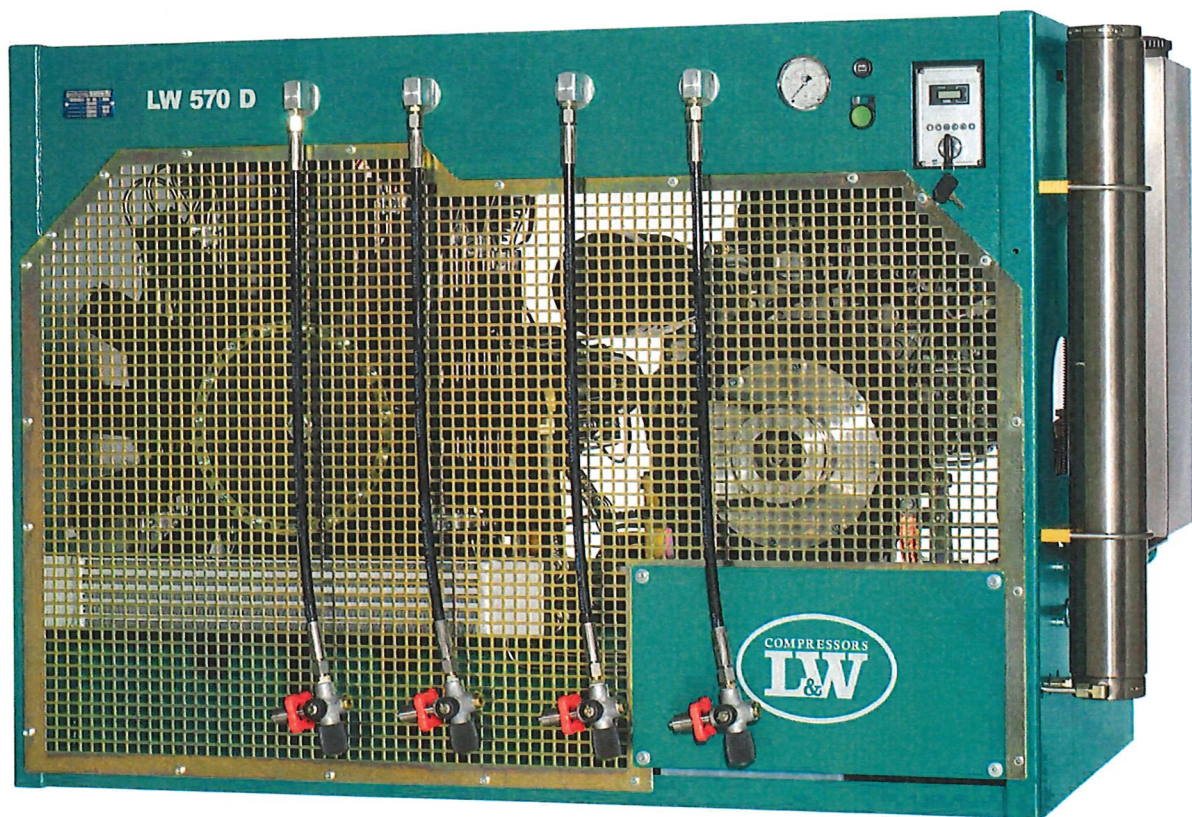
## 1. Specification

### Application:

Breathing air and industrial air applications. Large capacity, slow running stationary compressor ideal for professional applications. Highly economical Diesel engine.

### Specifications:

- Ready to connect, fully wired with pneumatic/electric compressor control and start/delta start cycle, automatic stop and automatic condensation drain
- Sturdy steel frame, powder coated in RAL 6026
- Stainless steel fuel tank
- All compression pistons with cast iron rings
- Low pressure oil pump
- Oil/water separators after each stage, safety valve for each stage
- Water cooled Diesel engine with starter, generator & battery
- Breathing air purification in accordance with EN 12021
- Pressure maintaining and non-return valve
- Filling module in the front panel, 4 filling valves, hoses and connections



## 2. Warning and Mandatory Signs

Importance of warning and mandatory signs that are affixed to the compressor according to the application or its equipment.



**Warning Sign**



**Warning Sign**

Safety precautions and manual must be read before using!



**Warning Sign**

Caution, risk of electric shock!



**Mandatory Sign**

Manual must be read!



**Warning Sign**

Hot surface!



**Mandatory Sign**

Hearing protection must be worn in this area!



**Warning Sign**

Motor starts/stops!



**Mandatory Sign**

Eye protection must be worn in this area!



**Warning Sign**

Battery charging no smoking or open flames!



**Prohibition Sign**

No naked flame!



**Warning Sign**

Acid!



**Reference**

Ensure correct rotation!



**Warning Sign**

Risk of explosion!



## 3. Safety Precautions

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### 3.1 Intended Use

- \* The machine / system is built according to the state of the art and recognized safety rules. Nevertheless, their use can result in hazards to life and limb of the user or cause damage to the machine and other equipment.
  - \* Machine / system in just perfect condition for its intended purpose, safety and intended use and follow the operating instructions! In particular, disorders that may affect the safety remove, immediately!
  - \* The machine / system is exclusively for compacting the chapter "Technical Data" above medium (air or gas) is determined. A different or additional use is considered improper. Shall not be liable for any damages resulting from the manufacturer / supplier. Such risk lies entirely with the user. Intended use also includes observance of operating instructions and compliance with the inspection and maintenance conditions.
- 

### 3.2 Organizational measures

- \* The operating instructions stored permanently on the machine / system in the space provided and appropriately marked box or container handy.
- \* Generally observe applicable statutory and other binding regulations for accident prevention and environmental protection and the instruction manual. Excerpts see chapter 3.4. Such obligations may also e.g. the handling of hazardous materials or make available to the / affect wearing of personal protective equipment.
- \* Manual for instructions, including regulatory and reporting requirements to take account of operational features, such as complementary in terms of work organization, work processes, personnel employed.
- \* The responsible staff must work on the machine before starting work, the manual, and read especially the chapter Safety instructions. During the labor input, it is too late. This is especially true for only occasionally, for example during maintenance on the machine personnel who only work.
- \* At least occasionally, and safety-conscious risk-control personnel work in compliance with the operating instructions.
- \* Staff should not wear long hair, loose clothing or jewelry, including rings. It is related injury, for example by pulling or stay.
- \* Where necessary or required by the regulations, use personal protective equipment.
- \* Note all the safety instructions and warnings on the machine / system.
- \* All the safety instructions and warnings on the machine / system to keep complete and perfectly legible.
- \* In safety-related changes in the machine / system or its operating performance machine / system shut down immediately and report the malfunction to the competent authority / person.
- \* No modifications, additions or modifications to the machine / system, which could affect safety without permission of the manufacturer. This also applies to the installation and adjustment of safety devices and valves as well as for welding of pipes and tanks.



### 3. Safety Precautions

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- \* Spare parts must meet the technical requirements specified by the manufacturer. This is guaranteed in the original L & W replacement parts are used.
  - \* Hoses have to be checked by the operator (pressure and visual inspection) at reasonable intervals, even if no safety-related defects have been detected.
  - \* Prescribed or deadlines specified in the instructions for periodic testing / inspections.
  - \* To carry out maintenance work of an appropriate workshop equipment is essential.
  - \* Location and operation of fire extinguishers to make known.
  - \* Note the fire alarm and fire fighting instructions.
- 

#### 3.3 Qualification / basic responsibilities

- \* Only trained or instructed personnel. Responsibilities of personnel for operation, maintenance and repair determine.
  - \* Work on / with the machine / system may only be performed by reliable staff. To minimum statutory notice.
  - \* Ensure that only authorized personnel to operate the machine.
  - \* Operator's responsibility to set and enable him to rejecting adverse safety instructions of third parties.
  - \* Take action to trained, to be taught, instructed or as part of a general education personnel must only under constant supervision of an experienced person at the machine / system can be.
  - \* Work on electrical equipment of the machine / system should only be undertaken by a qualified electrician or by instructed persons under the supervision of a qualified electrician in accordance with the electrical rules.
  - \* Work on gas technical equipment may only perform this skilled personnel.
- 

#### 3.4 Operating safety

- \* Omit any work that could jeopardize your safety.
  - \* Is operated measures to ensure that the machine / system only in a safe and functional condition. Operate machine only when all protective devices and safety-related equipment, for example detachable protective equipment, emergency stop devices, sound insulation, are present and functioning.
  - \* Check at least once per day machine / system for obvious damage and defects. Report any changes (including the performance) immediately to the competent authority / person. Machine shut down immediately if necessary and ensure.
  - \* In case of malfunction, stop the machine / system immediately and lock it. Malfunctions repaired immediately.
  - \* Starts / stops and indicators in accordance with the operating instructions.
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### 3. Safety Precautions

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- \* Before switching / starting the machine / system that no one can be threatened by incipient machine / system.
- \* In the operating instructions prescribed adjustment, maintenance and inspection activities and keep appointments, including information on replacement parts / equipment. These activities must be done by qualified personnel.
- \* Before the beginning of special and maintaining work inform the operators. Appoint a supervisor.
- \* In all work pertaining to the operation, production adjustment, upgrading or setting the machine / system and their safety-related equipment and inspection, maintenance and repair, consider switching on and off according to instructions and hints for maintenance work.
- \* Maintenance area adequately secured wide area.
- \* Is the machinery / equipment during maintenance and repair work off completely, it must be protected against unexpected restart. Main control devices and remove the key and / or warning sign at the main switch.
- \* Individual parts and major assemblies are attached to the exchange of carefully lifting and secure, so that cannot pose a danger. Only appropriate and technically correct lifting gear and lifting devices used with sufficient capacity. Do not stand or work under suspended loads.
- \* Engage with the fastening of loads and supervision of crane operators experienced persons only. The instructor must be within sight of the operator or stand in voice contact with him.
- \* Use in assembly work on the body height or other space provided for safe descent and working platforms. Machine parts not used as a climbing aid. Contribute to maintenance work at height safety rails.
- \* Machine, and clean here, especially connections and fittings at the beginning of the maintenance / repair of oil, fuel and maintenance products. Do not use aggressive cleaning agents. Fibre-free cleaning cloths.
- \* Cover before cleaning the machine with water or steam (high pressure cleaner) or other cleaning agents or seal all openings into which may enter from the safety and / or functional reasons, no water / steam / detergent. Particularly at risk are electric motors and electrical cabinets.
- \* Look for when cleaning the engine room that temperature sensors of the fire warning and extinguishing systems do not come into contact with hot detergent in order to prevent activation of the extinguishing system.
- \* After cleaning, the covers / bonding should be removed completely.
- \* After cleaning, examine all lines for leaks, loose connections, chafing and damage. Any defects repaired immediately.
- \* During maintenance and repair work always tighten screw loosened.
- \* If the dismantling of security installations in the maintenance and repair required, immediately after completion of the maintenance and repair of replacement and inspection of safety equipment has to be made.
- \* Provide for safe and environmentally sound disposal of supplies and replacement parts.



### 3. Safety Precautions

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#### 3.5 Special hazards

- \* Use only original fuses with the specified current. Off when disturbances in the electrical energy supply machine / system immediately.
- \* Work on electrical systems or equipment must only be used by a skilled electrician or by instructed persons under the supervision of a qualified electrician in accordance with the electrical engineering rules.
- \* Machinery and plant units, where inspection of, maintenance and repair work must be carried out must - be switched off - if required. First check the unlocked parts of the absence of voltage, then earth and short circuit as well as adjacent to isolate live parts.
- \* The electrical equipment of a machine / equipment should be checked regularly. Defects such as loose connections or scorched cables must be rectified immediately.
- \* If work on live components it is necessary to use a second person who operated in an emergency the emergency stop and the main switch. Delimit the work area with a red and white safety chain and a warning sign. Only insulated tools.
- \* Welding, burning or grinding work on the machine / system to perform only if expressly permitted. For example, risk of fire or explosion.
- \* Cleaned before welding, burning and grinding machine / system and its surroundings from dust and flammable materials and ensure adequate ventilation (explosion).
- \* Observed when working in confined spaces if existing national regulations.
- \* Work on pneumatic systems may perform only those persons with special knowledge and experience in pneumatics.
- \* All cables, hoses and fittings regularly for leaks and obvious damage. Damage repaired immediately. Escaping compressed air or gases can cause injury and fire.
- \* Depressurize the make-to-open system and the discharge pipe sections before beginning the repair work.
- \* Compressed air lines must be mounted and installed professionally. Connections are not confused. Fittings, hose length and quality of the hoses have to meet the requirements.
- \* Noise control equipment on the machine / system must be safety devices in place during operation.
- \* Wear personal hearing protection.
- \* When handling with fats, oils and other chemical agents, the note for the product-related safety.
- \* In loading operations only lifting tools and lifting equipment used with sufficient capacity.
- \* Knowledgeable referrers delegate for the lifting process.
- \* Only lift machines professionally with lifting equipment.
- \* Only suitable transport vehicle with sufficient capacity to use.



### 3. Safety Precautions

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- \* Secure load reliably. Use appropriate lifting points.
  - \* For transport, machinery / system if necessary provided with transport safety.
  - \* Attach relevant information. Transport blocks before start / re-commissioning properly removed.
  - \* Attached for shipping purposes degraded parts carefully before re-commissioning.
  - \* Also separate from minor relocation machinery / system of any external energy supply. Connect before restarting the machine back to the network properly.
  - \* Process when restarting the operating manual.
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#### 3.6 Safety Rules

Prior to commissioning and operation of compressor systems as filling in the Federal Republic of Germany, the following regulations have to be observed:

- a) **97/23/EC Pressure Equipment Directive**
- b) **Ordinance on Industrial Safety and Health (BetrSichV), 18.12.2008**
- c) **Equipment Safety Law (GSG), 11.05.2001**
- d) **14. Ordinance to the Equipment Safety Law (14. GSGV – Pressure Equipment Ordinance) , 03.10.2002**
- e) **Technical Rules for compressed Gas (TRG 400, 401, 402 (without manufacturing facility) and TRG 790)**

Is an industrial compressor or as a filling for the supply of pneumatic systems are applied, for commissioning and operation of the Federal Republic of Germany:

- c) **the statutory accident prevention regulations (UVV), the professional associations, especially BGV A1 from 01.01.2004.**

The above regulations are available on the trade regulation, for example:

**Carl Heymanns Verlag  
Luxemburger Str. 449  
50939 Köln**

**Beuth – Vertrieb GmbH  
Burggrafenstr 4 - 7  
10787 Berlin**

By the manufacturer are considered for all applicable regulations and the manufacturer made the equipment accordingly. Upon request we offer in our work is a part of acceptance testing by TÜV § 28 (1). Please contact us in this regard.

As filling compressor systems must be subjected at the site before the start of an acceptance test by the experts. Be filled with the compressor pressure gas container (bottle) for delivery to another, the system shall require the testing of the permission of the competent authority. In general, these are the inspectorates. The approval procedure is according to TRG 730, perform the procedure guideline for the permission to establish and operate from filling stations. They're in the delivery of the compressor supplied certificates and documents and important documents submitted as application forms for permission to process. In addition, the documents belonging to the plant for periodic inspections and therefore important to carefully store.

Tests according the accident prevention rules are implemented by the manufacturer or by expert. For damage caused by disregard of these regulations or favors, no warranty can be granted. We are strongly advised to these rules.



### 3. Safety Precautions

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Following above mentioned regulations are reproduced in part:

Certain pressure vessels are subject to periodic inspections:

- (1) A pressure vessel of the groups IV & V is to undergo within the recurrent in paragraphs 4 to 9, certain deadlines for audits by the experts.
- (2) A pressure vessel in Group 1, unless it is used for flammable, corrosive or toxic gases, vapors or liquids, as well as in groups II, III and VI is the date to be determined by the outcome of operation and charging material by the operator, periodic inspections be subjected to by the expert.
- (3) Periodic inspections consist of internal inspections and pressure tests. ...Internal audits in accordance with sentence 1 must be pressure tests or by other appropriate tests to supplement or replace, if not internal inspections may be conducted on the scale required. Pressure tests in accordance with sentence 1 shall be replaced by non-destructive testing, pressure testing because if the type of pressure vessel or not possible because of the operation are not appropriate.
- (4) Internal inspections of pressure vessels of groups IV and VII, every five years, pressure tests every 10 years, external audits are conducted every two years. The supervisory authority may in individual cases, these deadlines  
*1st to extend as far as safety is ensured by other means, or  
2nd to shorten the extent required by the protection of workers or third parties.*
- (5) Unless mentioned in the traffic regulation for the non-cross-border traffic inspection intervals for pressure vessel inspection periods apply instead of this paragraph 4 sentence 1.
- (6) The periods of internal inspections and pressure tests run from the date of first acceptance test, and when changing the site from the date of re-inspection. The tests must be carried out within six months after the expiry of the due month. Notwithstanding sentence 1, the periods run longer than two years.  
*1st from the date of construction test, if on the date of the first acceptance test, structural test,  
2nd from the date of the last internal inspection if on the date of re-acceptance testing, the last internal audit*
- (7) The deadline for the external test is met if the test is performed during the calendar year in which the deadline expires.
- (8) If the pressure tank shut down on the due date of the examination, then the periodic tests be performed before restarting the system.
- (9) Is an extraordinary examination has been carried out, the period for a periodic inspection with the completion of the exceptional test if this corresponds to the periodic inspection.
- (10) A pressure vessel of the group IV or VII may only be operated on after the limitation period for the periodic inspection period, if the tests are conducted on time and if the expert has agreed that the pressure vessel according to the results of the examination within the framework of these tests as alternate end requirements.
- (11) If the experts found that the pressure vessel is not in proper condition, the decision to request the competent authority.
- (12) § 9 Abs.9 find appropriate application.



### 3. Safety Precautions

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*According 402nd TRG Operation of filling follows:*

#### 2. Employees and their instruction

2.1 Filling stations can be operated and maintained by persons who

1. the 18th Years of age have
2. possess the required expertise
3. suggest that they do their job reliably.

2.2 Gainful work may be performed by persons who meet the conditions in point 2.1 paragraph 1 and 2 are not met.

2.3 The employees are on before work and repeatedly at appropriate intervals and at least annually, to instruct them in reference

1. the special hazards associated with compressed gases,
2. the safety rules, in particular, the present TRG,
3. the measures for failures, incidents and accidents,
4. the handling of fire fighting equipment and protective equipment,
5. operation and maintenance of the filling and by reference to the operating instructions a) (see Section 3.1).

2.4 About the instruction according to point 2.3 shall be conducted. The employees have to confirm the instruction of their signatures.

2.5 The numbers 2.3 and 2.4 also apply to persons who are employed only temporarily.

#### 3.0 Operation

3.1 For each filling system operation instructions have to be created, received in an intelligible form, all the necessary safety information. Reprints and translations required the employees must be accessible at all times.

3.2 Particularly hazardous work (for example in connection with repair work) that can not be controlled in the operating instructions in accordance with 3.1 shall be performed only on special and written instruction from the employer or his representative in the oversight is governed.

3.3 And has operating facilities may soon fill the empty tank and filled containers are immediately available for shipment (see TRG 401 No. 3.2 clause 2).

3.4 Empty or filled containers shall be provided so that escape routes are not concentrated. In particular, the provision in passageways, corridors and stairwells is prohibited.

#### 4.0 Filling

4.1 A compressed gas tank may be filled with the compressed gas that is given to him and only in the quantity resulting from the information on the container by pressure, weight or volume.

#### 5.0 Measures after filling

##### 5.1 Leak testing of vessels

After filling, the stop-valve and its connection with the vessels in a suitable manner, for example to consider with a foaming medium or under water (test bell or diving) Internal leakage at the valve and closed



### 3. Safety Precautions

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without locking nut.

#### 5.2 Defects in gas-filled vessels

To be a gas-filled pressure vessel at the check in No. 3.12 leaks detected that cannot be eliminated immediately, or has the gas-filled pressure vessel other defects, by employees or third parties may be at risk, the vessel must be drained immediately and safely.

#### 6.0 Checking and maintaining of filling systems

##### 6.1 Checking for leaks by filling systems

6.1.1 Filling systems or system section may be taken for the first time or after a major change after a repair or operate only if accompanied by a competent person or on behalf of the entrepreneur by an expert on leaks have been tested. If the check carried out by an expert, so this should only be done under the supervision of the contractor or his representative.

6.1.2 As test equipment, a compressed gas is used, which is gaseous under the test conditions.

6.1.3 The pressure is increasing gradually and in stages, up to the highest operating pressure of the system.

6.1.4 About the testing protocol is to perform. The testing protocol have to be store.  
A testing protocol must include:

1. Test date
2. Supervision leader
3. Qualified person
4. Designation of the tested system or system section
5. Test Equipment
6. Description of the test method
7. Any defects and comments to for elimination the defects

##### 6.2 Testing of mobile pipes

6.2.1 Mobile pipes (hoses and pipes joints), before their first use and also need to be checked at intervals of at least one year, on their safe condition (integrity and tightness) and through the manufacturer or an expert of the filling operations.

6.2.2 The check in point 6.2.1 includes the following individual tests:

1. Examination (by inspection) the outside and as far as possible, on the inside of her condition,
2. Pressure test at 1.5 times the maximum working pressure.

6.2.3 The pressure test shall be conducted for hoses with water. The test pressure has to remain at least 10 minutes. Hoses are first examined in a stretched state and then rolled up (drum diameter is about 30 times tube diameter).

6.2.4 Available about the testing before commissioning the manufacturer must have a certificate and a certificate on subsequent testing of the expert of the filling operations. The certificates should be revoked. From a certificate must demonstrate:

1. Test date
2. Examiner
3. Type and characteristics of the tested hose



### 3. Safety Precautions

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4. Test Equipment
5. Description of the test method
6. Any defects and comments for elimination the defects

Certificate of need from the manufacturer should state the material and the nominal pressure. As well as hoses in the confirmation that they are suitable for the compressed gas.

#### 6.3 Maintaining

6.3.1 Rarely used pressure block devices should be checked in adequate periods of time.

#### 7.0 Decommissioning, Showing of accidents and damage cases

7.1 If a filling system is not in proper condition and thus are employees or third parties, it is immediately taken out of service.

7.2 Anyone who operates a filling system, has any accident in connection with the operation of the filling station, killing one person or a person's health is injured, notify the supervisory authority, the competent technical inspection organization and the competent institutions for statutory accident insurance immediately.

7.3 Section 7.2 applies if the filling system in or outside a pressurized gas tank with a capacity of more than 1.0 l tearing or bursting.

#### 8.0 Tests

The filling systems should be serviced at regular intervals.  
This results in internal inspections every 5 years, Pressure tests every 10 years and external audits every 2 years, which must be carried out by competent TÜV.

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### 3.7 Testing of pressure gas vessels

#### According to TÜV Darmstadt

State: 2005-12-10

**Subject pressure gas vessels with a product permissible operating pressure [bar] x contents volume [l] up to 999**

#### For example:

Maximum operating pressure: 350 bar

Contents Volume: 1.7 liters

350 bar x 1.7 Litres: **595**

595 < 999 -> **Test is necessary !!**

**The pressure gas vessel has to be tested as follows:**

#### 1. Examination after 5 years by a qualified person

Internal and visual inspection

#### 2. Testing after 10 years

Internal and visual inspection

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### 3. Safety Precautions

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In addition, a water pressure test carried out at 1.3 times of the rated working pressure of the vessel.

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#### 3.8 Spare parts order

Please specify for all spare parts orders:

- Type
- Serial number / block number
- Date of manufacture





## 4. Funktion and Operation

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### 4.1 General Notice

This operation manual contains the operating and maintenance procedures necessary to safely run your L&W compressor. We strongly recommend that you read this manual thoroughly prior to operation and follow all the safety precautions precisely. Damage resulting from any deviation from these instructions is excluded from warranty and liability for this product. Be sure to pay attention to the following points:

- Fill only tanks with a valid hydrostatic test date
- Never exceed the working-pressure rating indicated on the tank
- Do proper maintenance of the filtration system
- Do regular drainage of the condensate system
- Avoid contaminated air to reach the air intake
- Do not exceed maximum rpm
- Read the operation manuals of your compressor and its drive engine carefully
- Allow only qualified person to run the compressor
- Do not place any objects on compressor while in operation
- Make sure no person or object can accidentally touch any moving parts while running
- Take care that the intake-air is pure and free of toxic gases and exhaust fumes
- All work on the compressor must be carried out with compressor shut down and depressurized
- Check regularly for leaks by brushing all fittings and couplings with a soap solution
- Never weld high-pressure tubing
- Filling-hoses must be in perfect condition; special attention should be paid to the connecting fittings, check rubber jacket for damage, immediately replace hoses in case of any faults
- Make sure no person is within one meter of the drain-hoses before draining the condensate
- Do not touch the exhaust while the engine is running and within 15 minutes after shut-down (on engine-driven units)
- On units with an electric motor disconnect the power-cable prior to any work
- The operator should wear ear protection if exposed to the noise of the running compressor for extended periods of time

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### 4.2 Installation

Make sure that the compressor always has sufficient amount of cooling air available. To prevent serious damage don't place the unit closer than 0.5 m to anything which can restrict the cooling air flow.

Always ensure good ventilation.

Use air intake hose if necessary (max. length 3 mtr @ inner Ø30mm)



**NOTE: Pure intake air is very important!**

Operation temperatures: min. +5°C to max. +50 °C

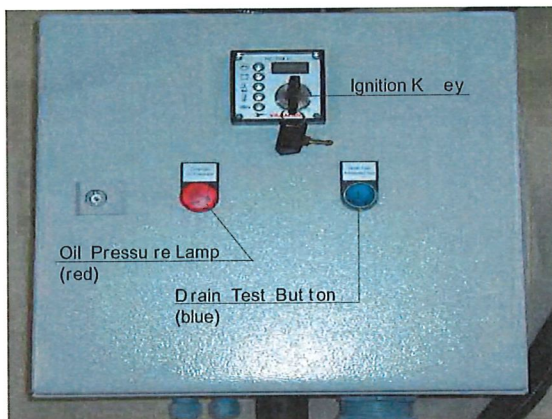


## 4. Funktion and Operation

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### 4.3 Starting the Compressor for the first Time

- Place the compressor in a distance of at least 50 cm to anything restricting the cooling air flow (air Temperature min. +5°C / max. +50°C)
- Check compressor oil level
- Check if air filter cartridge is in place (order no. 000003)
- Make sure all filling valves are open
- Start compressor by starter key (position 2)
- Run compressor for about 2 minutes
- Close all filling valves
- Run compressor to max. pressure
- Check if end-pressure switch works at max. pressure
- Check compressor unit for air leaks
- Check if auto dump valves are working by pushing the blue push button
- Turn off compressor by turning the ignition key anticlockwise
- Turn the ignition key on (position 1) for about 10 seconds. (Releasing the pressure of the System)
- Release pressure by filling valves



*Operating Panel*

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## 4. Funktion and Operation

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### 4.4 Filling Process

Fill only air tanks which are:

- suitable for final pressure
- have been hydro static tested (check last testing date)
- The automatic switch off, or safety valve, has to be checked before tanks can be filled
- Close filling valves
- Start compressor by rotating the ignition key (position 2)
- Connect tank to compressor - Filling valve and tank are still closed -
- First slowly open filling valve
- Open tank valve
- Fill tank to desired pressure
- Close tank valve
- Close filling valve
- Vent filling valve (by turning the small black rubber hand wheel)
- Disconnect tank from filling connection
- Turn off compressor by turning the ignition key anticlockwise
- Turn the ignition key on (position 1) for about 10 seconds. (Releasing the pressure of the System)

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### 4.5 Switch off the compressor

The compressor can be switched off at any time during the filling process. This is done by turning the key switch anticlockwise.

For bleeding the system you have to turn on the ignition key in position 1 for about 10 seconds.

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### 4.6 Diesel Engine

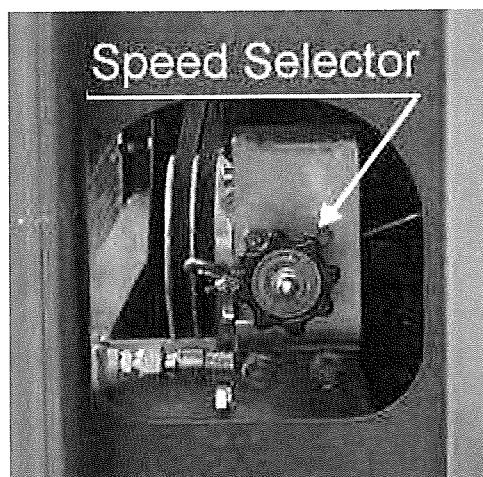
Standard specification:

Yanmar Diesel 3TNE68, power output 12.9 kW @ 3000 rpm.

Engine speed has to be adjusted by the speed selector, see picture below.

Basically the compressor unit is designed to run on either idle or full speed (full load).

**For service informations please see Yanmar instruction manual**



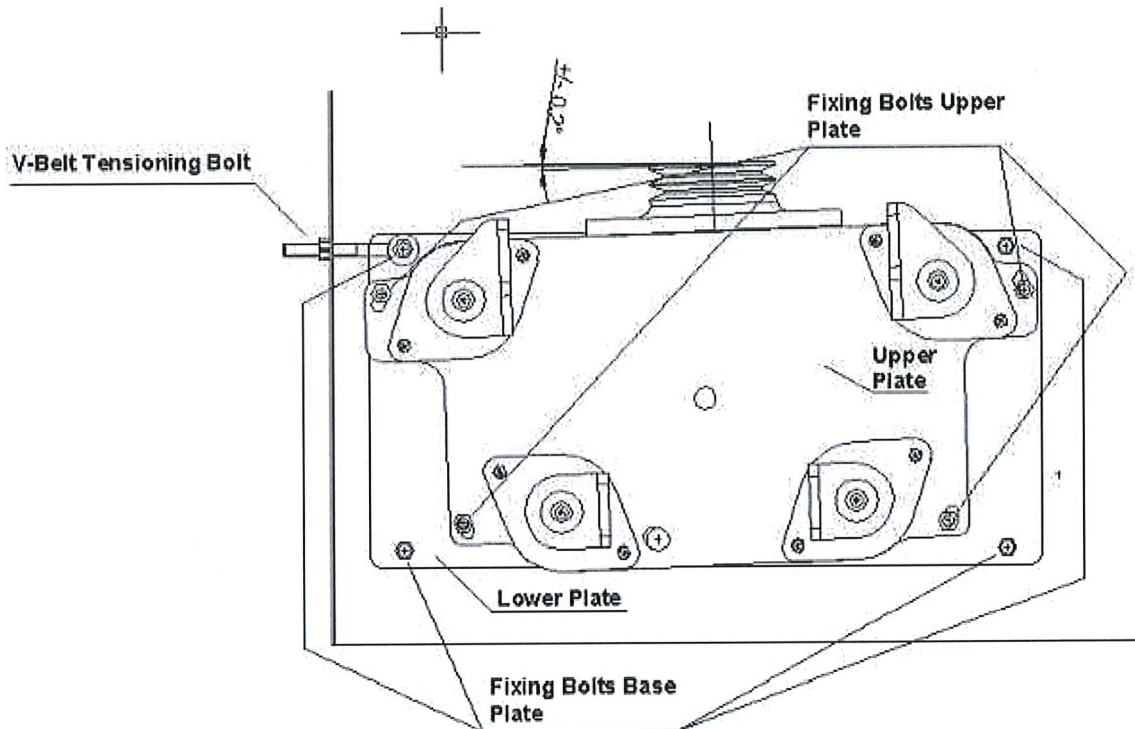


## 4. Funktion and Operation

### 4.7 How to adjust the V-Belts

The engine's rubber bearings are mounted on a rotating upper plate which is fixed on the sliding base plate to the compressor chassis.

To get the drive pulley aligned to the compressors flywheel it is necessary to rotate the upper plate anti-clockwise on the base plate before the v-belts have been tensioned.

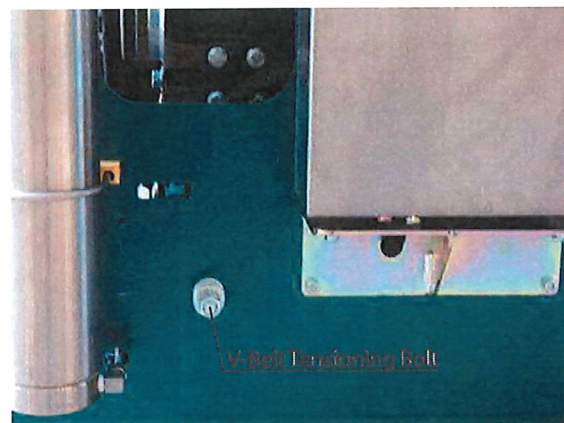


To tension the v-belts slacken the 4 fixing bolts that secure the base plate to the chassis. Thereafter turn the v-belt tensioning bolt until correct v-belt tension has been achieved. Tighten the chassis bolts and re-check alignment of the v-belts.

If necessary rotate upper plate on base plate until correct v-belt alignment is achieved.

Correctly adjusted V-belts do not slip when starting the compressor. Over tightening of the V-belt can cause damage to both the engine and compressor bearings.

We recommend to use a v-belt tension gauge.





## 4. Funktion and Operation

### 4.8 Automatic Condensation Dump System

The LW 620 D comes as standard with an auto dump system. Solenoids automatically drain all four condensate separators about every 15 minutes.

For testing the system press the blue push button on the switch box.

In standard use the button has to be in the off position (not pushed in).

We recommend to operate the blue push button - mounted on the switch box - every 5 to 10 hours, to check if all auto dump valves are in working order (check if condensate is coming out of the condensate hoses).

### 4.9 Intake Filter

A micro filter cartridge is used as an air intake filter. We recommend that the filter cartridge should be replaced every 60 to 100 working hours, depending on pollution.



**Note:** A dirty, contaminated filter restricts the air intake flow, reduces the compressor's capacity and causes overheating.



*Intake filter housing*

### 4.10 Cylinder Heads and Valves

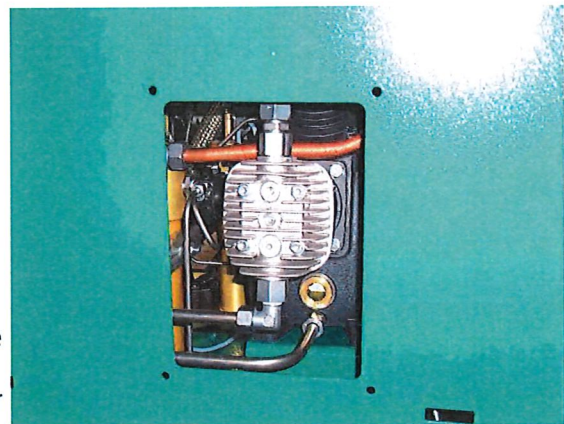
Inlet and outlet valves are located inside the cylinder heads.

The inlet valve opens on the down stroke.

The outlet valve opens on the upstroke.

All valves should be replaced after 2000 working hours due to normal wear and tear. To replace valves the cylinder heads have to be removed. All four valves are combined in- & outlet valves. The first and second stage valves are of plate valve design. The third and fourth stage valves use spring operated pistons which act inside of bronze cylinders. These valves sit loose inside the cylinder heads, alloy gasket rings are used as high temperature seals.

There are no special tools required to replace any of these valves.



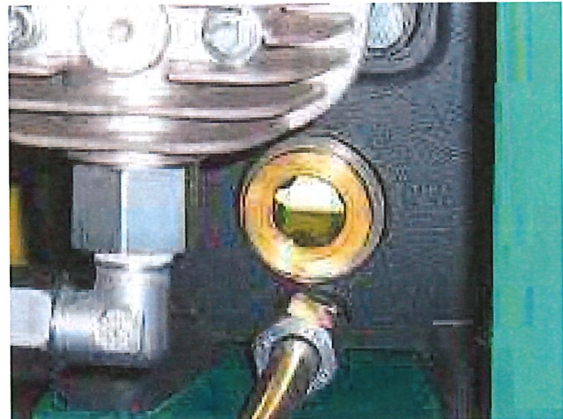
*2<sup>nd</sup> Stage Cylinder Head*

## 4. Funktion and Operation

### 4.11 Lubrication

Crankshaft bearings get lubrication by an oil slinger.  
1st and 2nd stage are lubricated by spray oil.  
3rd & 4th stage are lubricated by a mechanical oil pump

2.5 litre of synthetic oil (order no. L&W 000001) is required for an oil change.



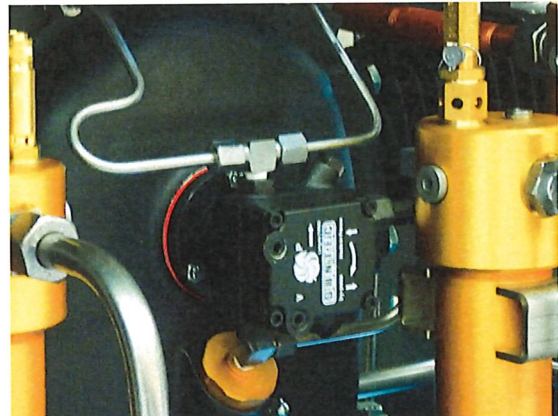
*Low pressure oil pump*

### 4.12 Check Oil Level

Before each operation of the system, you have to check the oil!



**NOTE:** The oil level should be between the middle and upper end of the oil sight glass.



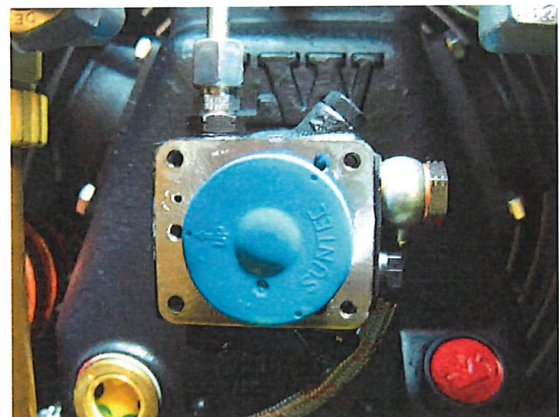
*Oil sight glass (minimum oil level)*

### 4.13 How to change the oil sieve

Unscrew the 4 cover screws. Remove the cover, the cover gasket and the oil sieve. Clean the oil sieve and the gasket. Replace the

Oil sieve and the gasket if they are damaged.

Caution: Be sure to position the arrow in the "up" position (opposite to inlet and return ports of the pump). Soak the gasket with oil before you place it (be careful of the mounting direction!). Place the cover. Screw the 4 cover screws (tightness 0.45 to 0.8 m.daN).



*Correct oil sieve position*

## 4. Funktion and Operation

### 4.14 Safety Valves

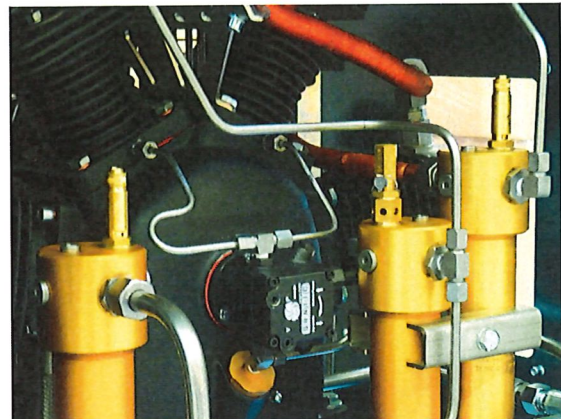
Every pressure-stage is equipped with its own safety valve. They protect the unit from over -pressure / load. Safety valves are adjusted to:

- 1st Stage: 8 bar**
- 2nd Stage: 22 bar**
- 3rd Stage: 70 bar**
- 4th stage: final pressure**

If a safety valve blows it indicates problems with either inlet or outlet valve of the following stage.



**NOTE: Faulty safety valves should always be replaced!**



*Safety valves fitted on water separators*



*Safety valve final pressure*

### 4.15 Oil / Water Separators

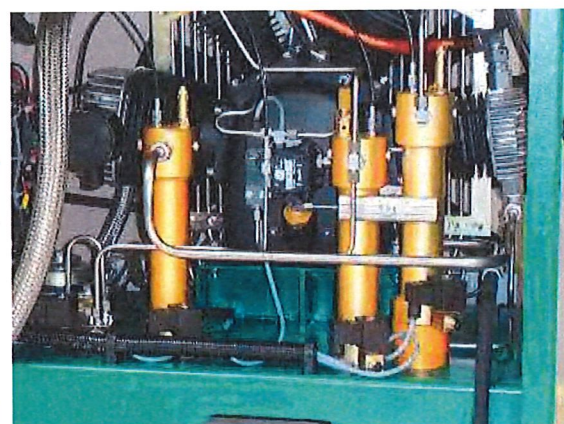
Condensate will be separated after every stage of compression. All four separators have magnetic valves which were controlled by an electronic timer. The timer is located in the electro box compartment and activates the dump valves about every 15 minutes. To release the condensate through the black poly hoses we recommend to use at least a 20 litre container to collect all condensate. It can then be disposed of like discarded oil.

The drain noise of the high pressure stage is kept to a minimum by using a silencer.

All condensate separators have an integrated sinter filter which needs to be replaced in regular intervals (see maintenance list)

We do recommend that they should be cleaned every 1000 working hours.

Replace O-rings if necessary.

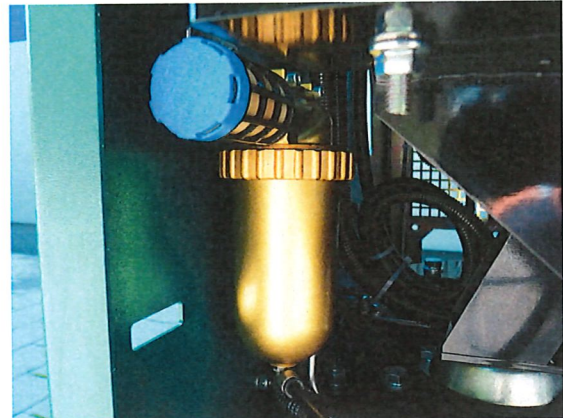


*Water separators*



## 4. Funktion and Operation

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Oil separator

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### 4.16 Final Air Purifier (Mole Carbon Filter)

The mole carbon filter housing is mounted on the right hand side of the compressor housing - capacity: 2.3 litre, order no of cartridge: 000003 (standard breathing air).

Inside the filter housing a jet blows air on to the housing wall. Oil and water mist condenses and flows to the bottom of the housing. Air then flows through the mole carbon filter cartridge, which purifies the air from moisture and odours. Cartridges should be changed at periods of 38 hours (@ +20°C) or more often, depending on humidity and ambient temperature. All cartridges are vacuum sealed. We recommend that they should be opened just before they will be fitted to the compressor, as they could be saturated with moisture just by being exposed to high humidity.

---

### 4.17 How to change the filter cartridge:

- Run the compressor until pressure gauge shows about 100 bar
- Stop the compressor
- Push in the blue condensate button (position ON)
- Turn the ignition key to ON position (do not restart the compressor)
- Wait for about 30 seconds until all the pressure has been released by the auto drain system
- Open filling valve to release the filling pressure (gauge now shows 0 bar)

- Unscrew top filter housing by using the special filter tool

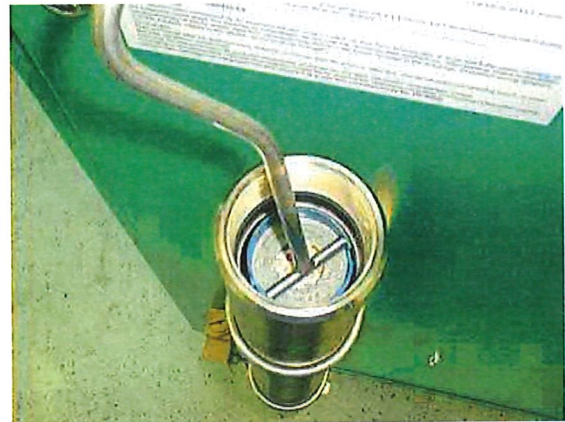






## 4. Funktion and Operation

- Place the T-piece end of the filter key in the top of the filter cartridge



- Unscrew the filter cartridge anti-clockwise and pull the cartridge out of the housing



- Open the packing of the new filter cartridge and place it with the cartridge key in the filter housing
- Screw in the new filter cartridge hand tight by using the filter tool
- Refit the cap of the filter housing clockwise, first by hand and then with the filter key
- After it has been completely screwed in, turn it anticlockwise for 90°

The filter cartridge change is now completed.

Ensure that the old filter cartridge is disposed of correctly at an approved waste point.

### 4.18 Fuel Supply

Compressor comes as standard with a stainless steel fuel tank, capacity 15.7 litres.

Do only use proper Diesel fuel to run the engine.

Check in-line fuel filter every 1000 hours and replace if necessary



*Fuel tank*

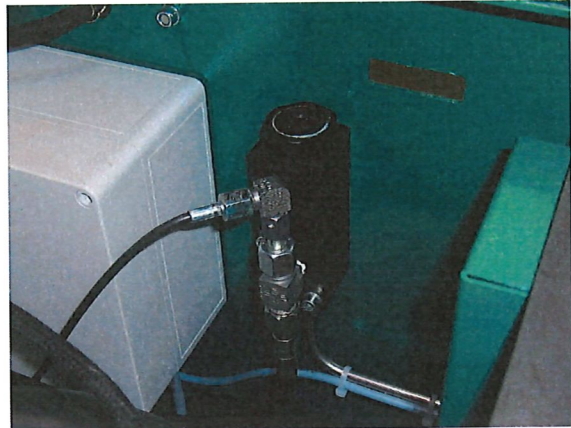


## 4. Funktion and Operation

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### 4.19 Pressure Maintaining / Non Return Valve

A pressure maintaining / non return valve is fitted after of the mole carbon filter housing. It maintains a pressure of at least 150 bar inside the filter housing - optimising the effectiveness of the filter.



*Pressure maintaining-/non-return valve*



## 5. Conservation

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### 5.1 Service, Repair and Maintenance

All repair, service and maintenance work is to be carried out when the compressor is stopped, isolated from the power supply and pressure free.

The unit is to be regularly checked for leaks of air/oil, air leaks can be localised using a leak detector or spray

It is recommended that only authorised L&W service technicians carry out repair and service on the bearing of the compressor (crankshaft and connecting rods)

### 5.2 Conservation / storage of the compressor:

If the compressor is not to be used for an extended period of time, we recommend the following conservation work is carried out before the storage:

- Run the compressor at 200 bar for approx ten minutes (control the flow with the filling valve to maintain the pressure).
- Replace oil.
- Open filling valve(s) and run the compressor for a few minutes.
- Stop the compressor and open the drain valves.
- Close the filling valves.
- Open the final filter housing and lubricate the O-Ring with a food grade grease or silicone grease.
- Store the compressor in a cool dry place free from dust and contamination. A cover is recommended as long as condensation can be avoided.
- Fuel Driven Units only: Fill up fuel tank to top level to avoid corrosion.

### 5.3 De-conservation, commissioning:

*After the compressor has been stored, the following steps are to be taken:*

- If the compressor has been stored for more than 12 Months, we recommend replacing the oil before use.
- Replace the final purification filter.
- Check oil level.
- Inspect the condition of the vee belts, replace if necessary
- Inspect the filling hoses visually for signs of deterioration, replace as necessary.
- Open the filling valves and run the compressor for approx 10 minutes with the filling valves open.
- Close the filling valves and allow the compressor to build up to working pressure.
- Check the correct safety valve setting and/or pressure switch setting (option).
- Check all connections and pipe work for leaks.

Once the above steps are completed to satisfaction, the unit is ready to use.



## 6. Fault diagnosis

Symptom	Problem	Trouble Shooting
<b>Final pressure is not reached</b>	Connections leaking	Re-tighten, clean and/or replace
	Condensation drain block	Check tightness, clean and/or replace
	Final pressure safety valve leaking	Replace
	Cooling pipe leaking	Replace
	Condensation drain valves	Check tightness, clean and/or replace
	Final pressure switch cuts off (option)	Re-set final pressure cut off
<b>Compressor vibrates excessively</b>	V-Belt tension insufficient	Tighten V-Belts
	Compressor block and/or prime mover mounting screws loose	Re-tighten
	Shock absorbing feet worn down	Replace
	Uneven surface	Move compressor accordingly
<b>Compressor overheats</b>	Inlet filter cartridge blocked	Replace
	Ambient temperature too high	Improve ambient conditions or run for shorter periods
	Cooling air feed/exhaust not sufficient	Adhere to the installation data
	Inlet hose too long	Reduce the length and/or increase the diameter
	Inlet hose diameter too small	Increase diameter
	Compressor turning in the wrong direction	Ensure correct rotation (phase)
	Suction/pressure valve blocked	Clean and/or replace
<b>Safety valve blows off</b>	Suction / pressure valve in the following stage defect	Clean and/or replace
	Sinter filter in the following stage blocked	Replace
	Safety valve leaks	Replace (do not tamper)
<b>Air tastes of oil</b>	Molecular carbon filter needs replacing	Replace
	Incorrect compressor oil	Use only authorised oil type
	Non conform type of filter	Replace with correct filter
	Cylinders and / or piston rings worn	Replace
<b>Delivery rate too low</b>	Suction/pressure valve blocked	Clean and/or replace
	Cylinder / piston rings worn	Replace
	Also see section „final pressure is not reached“	
<b>Automatic condensation drain not functioning (Option)</b>	Solenoids defect	Replace
	Cable/wiring defect	Repair
	Timer defect	Replace
	Sinter filter from pneumatic valve blocked	Replace
	Piston in the pneumatic valve blocking	Dismantle pneumatic valve



## 6. Fault diagnosis

Symptom	Problem	Trouble Shooting
<b>Automatic condensation drain operates between cycles (Option)</b>	Pilot pressure for pneumatic valve too low	Replace suction/pressure valve / safety valve
	Piston seat in the pneumatic valve damaged/contaminated	Clean / Replace
	Timer settings incorrect	Set default settings
	Timer defective	Replace
<b>Compressor switches off before final pressure is reached (Option)</b>	Final pressure switch not properly set	Reset
	Pressure maintaining valve set too high	Reset
	Fuse/breaker tripped	Refer to the correct fuse ratings for the supply
<b>Filter cartridges times too short</b>	Pressure maintain valve set too low	Reset to 170 bar
	Non conform type of filter	Use only correct filters
	Shelf life exceeded	Adhere to date of expiry
	Packing damaged and / or filter packing opened too long before use	Store properly and open immediately before use
	Ambient temperature too high	Ensure correct and sufficient cooling air feed and exhaust
	Cylinder / piston rings worn	Replace
<b>Excessive oil consumption</b>	Cylinder / piston rings worn	Replace
	Incorrect compressor oil	Use only authorised oil type
	Operating temperature too high	Adhere to operating parameters
	Oil leak in the compressor block	Check relevant components especially shaft seal and replace/re-tighten

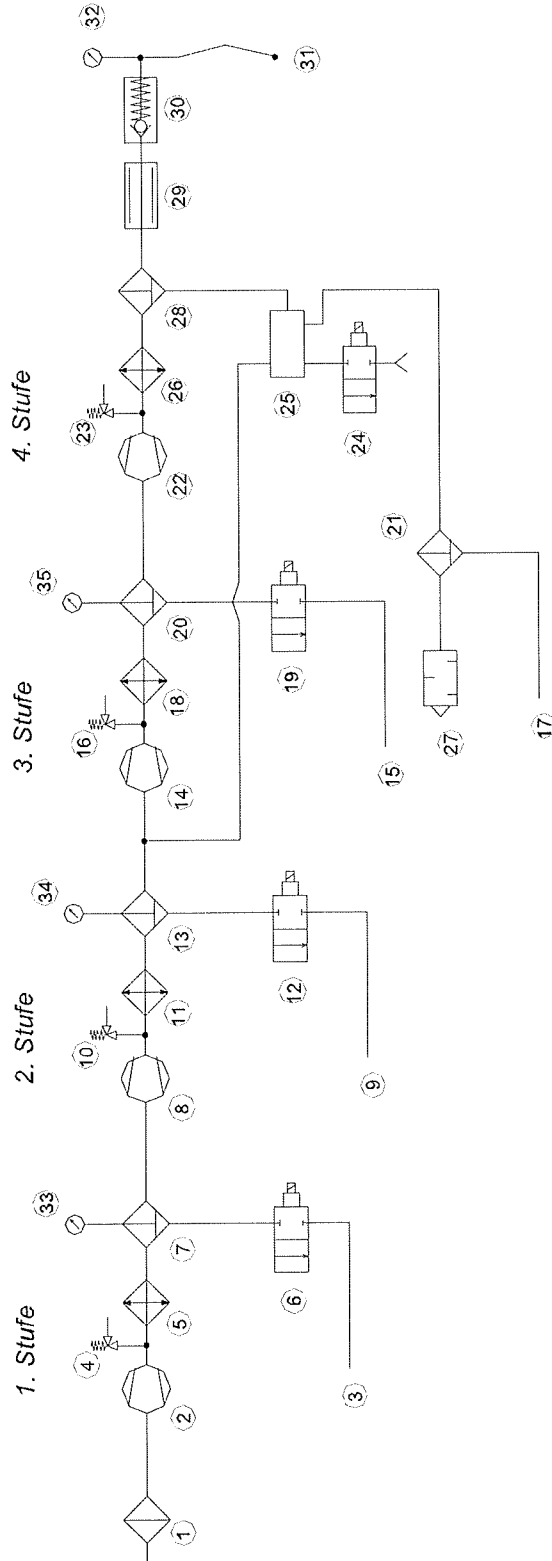


## 7. Maintenance

Routine Service	Intervals	Qty.	Order No.
Replace final purifier filter cartridge	every 32 working hours (@ +20 °C)	1	000003
Check oil level	before each day of use		
Oil changes	1st after 25 working hours (the first oil charge is a running-in oil) thereafter every 1000 working hours - but at least once a year	2500 ml	000001 (1 litre)
Replace air inlet filter	Depends on degree of pollution - but at least every 1000 working hours	1	000170
Check V-belts and replace if necessary	every 200 working hours	2	000408
Replace in- & outlet valves	every 2000 working hours	1st stage: 1 2nd stage: 1 3rd stage: 1 4th stage: 1	000369 000256 010346 010347
Check pressure maintaining / non-return valve and re-adjust if required	every 200 working hours		
Check safety devices	once a year (to be performed only by trained and experienced specialists!)		
Check pressure pipes for air leaks	every 200 working hours		
Clean pressure pipes	Depends on degree of pollution - but at least once a year		
Check filling hoses for damage	before each use - once a year by an expert		
Clean oil pump sieve	every 1000 working hours		
Replace sintered filter of condensate valve	every 1000 working hours	1	000188
Replace sintered filter of water separators	every 1000 working hours	1 1	000184 000173
Clean oil / water separator and check for corrosion	every 1000 working hours		
Check connections and fittings and re-torque if required	after 15 working hours - thereafter every 500 working hours		
Replace silencer	every 1000 hours		000178
Replace small end con-rod bearings	every 4000 hours	3	003281

## 8. Fließdiagramm / Flow Diagramme

**MSA 620 E LN / MSA 620 E LN / MSA 620 D**





## 8. Fließdiagramm / Flow Diagramme

### FLIESSDIAGRAMM - FLOW DIAGRAMME

- |  |   |
|--|---|
| 1 Ansaug filter / Air Intake Filter                    | 15 Kondensatablaßschlauch / Condensate Release Hose           |
| 2 1. Verdichterstufe / 1st Pressure Stage              | 16 Sicherheitsventil 3. Stufe / Safety Valve 3rd Stage        |
| 3 Kondensatablaßschlauch / Condensate Release Hose     | 17 Kondensatablaßschlauch / Condensate Release Hose           |
| 4 Sicherheitsventil 1. Stufe / Safety Valve 1st Stage  | 18 Wärmetauscher / Heat Exchanger                             |
| 5 Wärmetauscher / Heat Exchanger                       | 19 Kondensatventil / Condensate Valve                         |
| 6 Kondensatventil / Condensate Valve                   | 20 Öl-/Wasserabscheider / Oil-/Water Separator                |
| 7 Öl-/Wasserabscheider / Oil-/Water Separator          | 21 Kondensatabscheider / Condensate Separator                 |
| 8 2. Verdichterstufe / 2nd Pressure Stage              | 22 4. Verdichterstufe / 4th Pressure Stage                    |
| 9 Kondensatablaßschlauch / Condensate Release Hose     | 23 Sicherheitsventil 4. Stufe / Safety Valve 4th Stage        |
| 10 Sicherheitsventil 2. Stufe / Safety Valve 2nd Stage | 24 Kondensatventil / Condensate Valve                         |
| 11 Wärmetauscher / Heat Exchanger                      | 25 Pneumatisches Kondensatventil                              |
| 12 Kondensatventil / Condensate Valve                  | 26 Wärmetauscher / Heat Exchanger                             |
| 13 Öl-/Wasserabscheider / Oil-/Water Separator         | 27 Schalldämpfer Kondensatablaß / Silencer Condensate Release |
| 14 3. Verdichterstufe / 3rd Pressure Stage             | 28 Öl-/Wasserabscheider / Oil-/Water Separator                |
|  | 29 Druckhalteventil / Pressure Maintaining Valve              |
|  | 30 Rückschlagventil / Non-Return Valve                        |
|  | 31 Hochdruckschlauch / HP-Hose                                |
|  | 32 Fülldruckmanometer / Filling Pressure Gauge                |
|  | 33 Druckmanometer 1. Stufe / Pressure Gauge 1st Stage         |
|  | 34 Druckmanometer 2. Stufe / Pressure Gauge 2nd Stage         |
|  | 35 Druckmanometer 3. Stufe / Pressure Gauge 3rd Stage         |





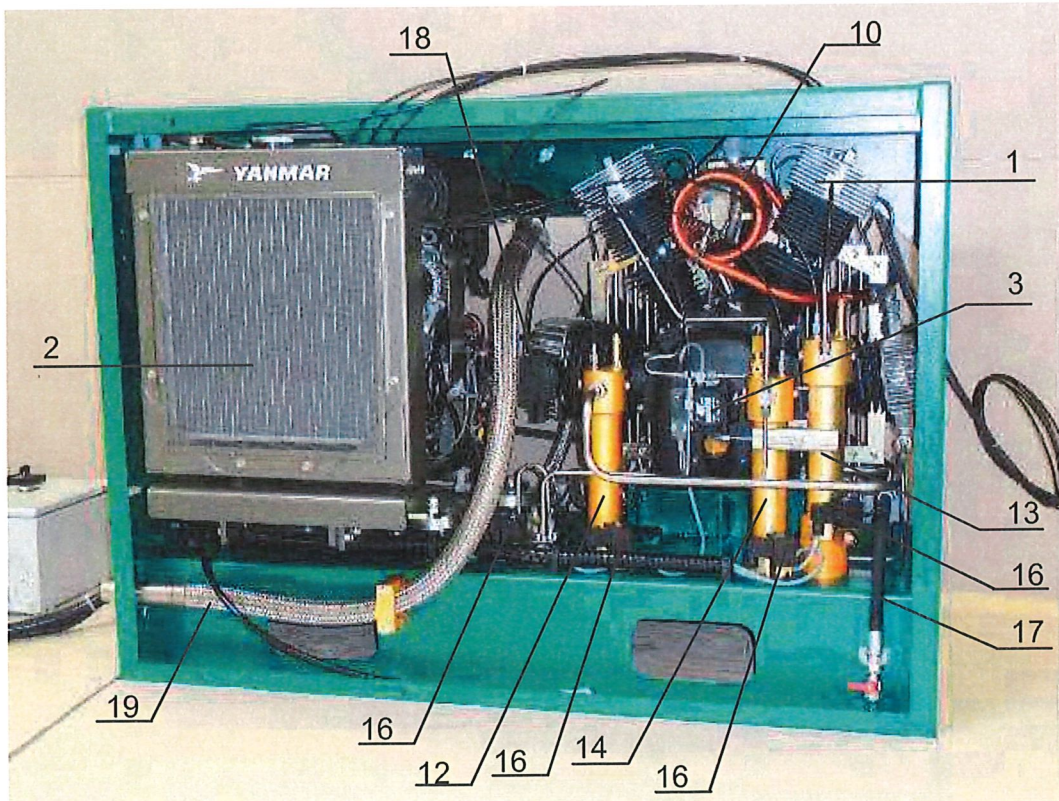
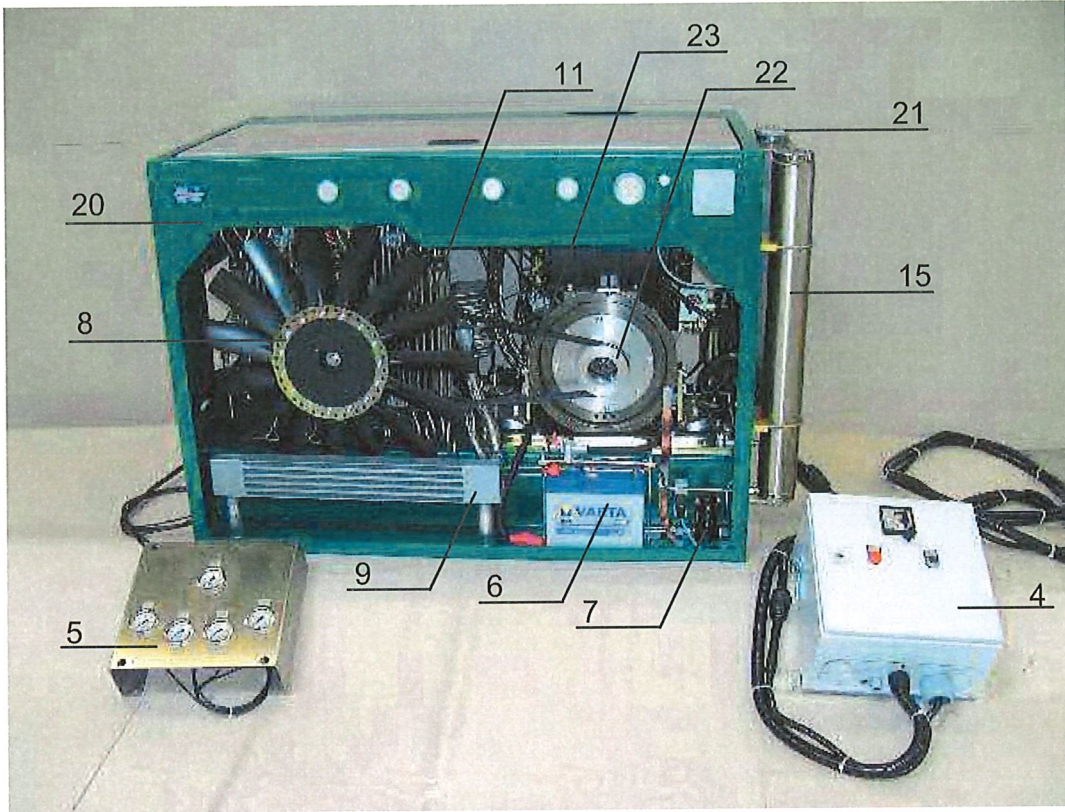
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: LW 620 D ohne Schutzgitter / Spare Part List: LW 620 D without Guard

Pos.	Benennung	Description
1	Baugruppe Kompressor	Assembly Compressor
2	Baugruppe Diesel Motor	Assembly Diesel Engine
3	Baugruppe Ölpumpe	Assembly Oil Pump
4	Baugruppe Schaltkasten AT 1380 500	Assembly Switchbox AT 1380 500
5	Baugruppe Konsole	Assembly Console
6	Baugruppe Batterie	Assembly Battery
7	Baugruppe Sicherheitsventil	Assembly Safety Valve
8	Baugruppe Lüfterrad	Assembly Cooling Fan
9	Baugruppe Kühler 1. Stufe	Assembly Radiator 1st Stage
10	Baugruppe Kühler 2. Stufe	Assembly Cooling Pipe 2nd Stage
11	Baugruppe Kühler 3. u. 4. Stufe	Assembly Cooling Pipe 3rd and 4th Stage
12	Baugruppe Wasserabscheider 1. Stufe	Assembly Water Separator 1st Stage
13	Baugruppe Wasserabscheider 2. Stufe	Assembly Water Separator 2nd Stage
14	Baugruppe Wasserabscheider 3. Stufe	Assembly Water Separator 3rd Stage
15	Baugruppe Filtergehäuse	Assembly Filterhousing
16	Baugruppe Magnetventil	Assembly Solenoid
17	Baugruppe Ölablass-Schlauch	Assembly Oil Drain Hose
18	Baugruppe Luftfilter	Assembly Air Intake Filter
19	Baugruppe Auspuffrohr	Assembly Exhaust Pipe
20	Baugruppe Gehäuse	Assembly Housing
21	Baugruppe Tank	Assembly Tank
22	Motorriemenscheibe (Bestell-Nr.: 005634)	Pulley, Drive Engine (Order No: 005634)
23	Keilriemen (2x) (Bestell-Nr.: 000408)	V-Belt (2 pieces), Order No: 000408)

## 9. Ersatzteilliste / Spare Part List

Baugruppe: LW 620 D ohne Schutzgitter / Assembly: LW 620 D without Guard





## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Kompressor / Spare Part List: Compressor

Bestell-Nr. / Order No.	Benennung	Description
000180	Ölschlauchstutzen	Oil hose clip
000200	Ölpumpenhalteflansch	Adapter Flange Oil Pump
000201	Einschraubverschraubung Ansaugfilter	Adapter Inlet Filter Housing
000204	Ölpumpe, kompl	Oil Pump compl.
000208	Ölpumpenantriebsflansch	Drive Flange Oil Pump
000239	Kugellager	Ball Bearing
000240	Papierdichtung Zylinderflansch / Block	Paper Gasket Cylinder Flange
000241	Dichtung Lagerflansch	Gasket Bearing Flange
000243	Lagerring	Bearing Bush
000244	Wellendichtung	Shaft Seal
000253	Untere Ventildichtung für Ventil 2. Stufe, Ø71mm, Kupfer (Copper)	Lower Valve Gasket, Ø71mm, Kupfer (Copper)
000254	Obere Ventildichtung für Ventil 2. Stufe, Papier	Upper Valve Gasket, Paper, 2nd
000270	Ventilkopf für Ventil, 2. Stufe Ø71mm	Valve Head for Valve 2nd Stage Ø 71mm
000273	Lagerdeckel	Main Bearing Flange
000343	Zylinder 3. Stufe Ø25mm	Cylinder 3rd Stage Ø25mm
000344	Führungszylinder, 3. + 4. Stufe Ø50mm	Guide Cylinder 3rd/4th Stage, Ø50mm
000346	Zylinder 4. Stufe Ø14mm	Cylinder 4th Stage Ø14mm
000349	Obere Ventildichtung für Ventil, Ø122mm	Upper Valve Gasket, Ø122mm
000350	Untere Ventildichtung 1. Stufe, Kupfer	Lower Valve Gasket, 1st Stage, Copper
000351	Zylinder, 1. Stufe Ø105 mm	Cylinder 1st Stage Ø105 mm
000353	Sicherungsring I 90 DIN472	Circlip 90 DIN472
000355	Rohrleitung 6mm Edelstahl	Pipe 6mm s/s
000356	Rohrleitung 6mm Edelstahl	Pipe 6mm s/s
000357	Rohrleitung 15mm Edelstahl	Pipe 6mm s/s
000358	Kurbelgehäuse LW 570	Crankcase LW 570



## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Kompressor / Spare Part List: Compressor

Bestell-Nr. / Order No.	Benennung	Description
000376	Ölansaugschlauch	Oil Hose
000409	O-Ring, 1. Stufe, Zylinderflansch	O-Ring - 1st Stage
000410	Pleuel, 2., 3. & 4. Stufe	Conrod, 2nd, 3rd. & 4th. Stage
000411	Pleuel, 1. Stufe	Conrod 1st Stage
000412	O-Ring, Oelsaugschraube	O-Ring
000413	Sicherungsring AL40	Circlip AL40
000498	U-Scheibe A6	Washer A6
000738	Verschraubung GE 08 PLR 1/4"	Connection GE 08 PLR 1/4"
000739	Verschraubung GE 08 L/1/4"	Connection GE 08 L/1/4"
000761	Verschraubung WE 08 PLR CFX 1/4"	Elbow Connection WE 08 PLR CFX 1/4"
000815	Verschraubung G 15L	Connection G 15L
000818	Verschraubung GE 15L R1/2"	Connection GE 15L R1/2"
000839	Verschlusstopfen VSTI R3/8" ED	Plug VSTI R3/8" ED
000863	Verschraubung WE 18L R A3C	Elbow Connection WE 18L R A3C
000879	Verschraubung WEE 28L R	Connection WEE 28L R
000919	Reduzierung/Reducer RI 3/4"-1/2"	Reducer RI 3/4"-1/2"
000952	Sechskantschraube M6X20mm, DIN933, 8.8	Hexagon Bolt M6X20mm, DIN933, 8.8
000961	Stiftschraube M8x25mm DIN939	Threaded Stud M8x25mm DIN939
001029	Zylinderschraube M6x20mm DIN912 8.8 ZN	Allen Bolt M6x20mm DIN912 8.8 ZN
001041	Zylinderschraube M8X25mm DIN912 8.8ZN	Allen Bolt M8X25mm DIN912 8.8ZN
001056	Zylinderschraube M8x60mm DIN912 8.8 ZN	Allen Bolt M8x60mm DIN912 8.8 ZN
001058	Zylinderschraube M8x70mm DIN912 8.8 ZN	Allen Bolt M8x70mm DIN912 8.8 ZN
001060	Zylinderschraube M8x80mm DIN912 8.8 ZN	Allen Bolt M8x80mm DIN912 8.8 ZN
001085	Sechskantschraube M10x45mm DIN912 8.8 ZN	Hexagon Screw M10x45mm DIN912 8.8 ZN



## 9. Ersatzteilliste / Spare Part List

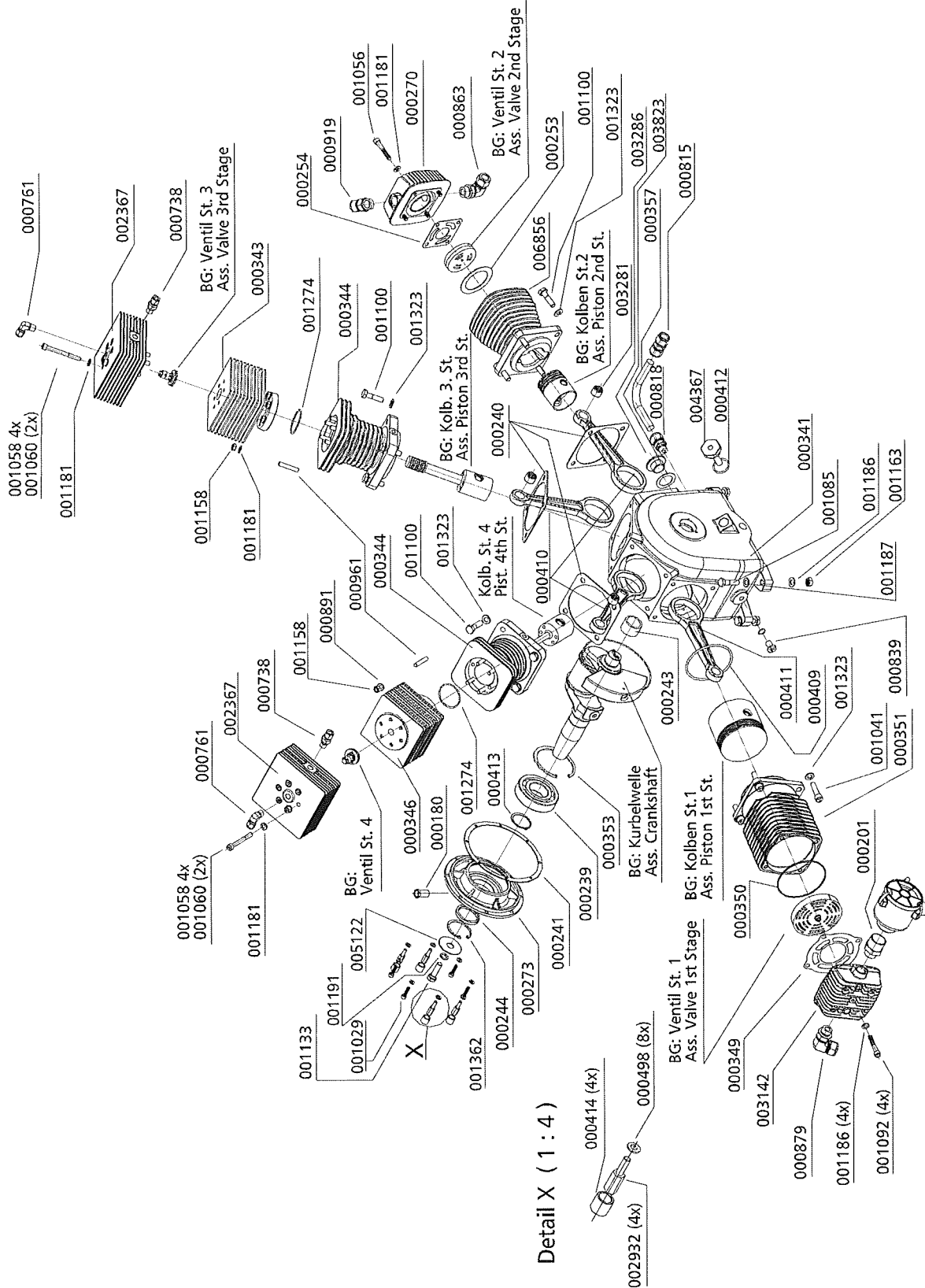
### Ersatzteilliste: Kompressor / Spare Part List: Compressor

Bestell-Nr. / Order No.	Benennung	Description
001092	Zylinderschraube M10x80mm DIN912 8.8 ZN	Allen Bolt M10x80mm DIN912 8.8 ZN
001100	Sechskant Schraube M10x25mm DIN933 8.8 ZN	Hexagon Screw M10x32mm DIN933 8.8 ZN
001101	Sechskant Schraube M10x35mm DIN933 8.8 ZN	Hexagon Screw M10x35mm DIN933 8.8 ZN
001133	Sechskantschraube M12x30mm DIN933 8.8 ZN	Hexagon Screw M12x30mm DIN933 8.8 ZN
001158	Mutter M8 DIN934 ZN	Nut M8 DIN934 ZN
001163	Mutter M10 DIN934 ZN	Nut M10 DIN934 ZN
001181	U-Scheibe A8 DIN125 ZN	Washer A8 DIN125 ZN
001186	U-Scheibe A10 DIN125 ZN	Washer A10 DIN125 ZN
001187	U-Scheibe A10 DIN7349 ZN	Washer A10 DIN7349 ZN
001191	U-Scheibe A12 DIN125 ZN	Washer A12 DIN125 ZN
001274	O-Ring	O-Ring
001323	Cu-Ring Ø10 x 16 x 2mm DIN7603A	Copper Seal Ring Ø10 x 16 x 2mm DIN7603A
001362	Sicherungsring I 72 DIN472	Circlip I 72 DIN472
002154	T-Stück mit Düse (lang)	T-piece with injector (long)
002367	Ventilkopf LW 450 (3. Stufe) / LW 570 (4. Stufe)	Valve head LW 450 (3rd Stage), LW 570 (4th Stage)
002932	Distanzbolzen mit M6 Gewinde	Spacer
003142	Ventilkopf 1. Stufe	Valve head, 1st stage
003281	Nadellager Pleuel, 2., 3. & 4. Stufe	Needle bearing, con-rod, 3rd. & 4th. Stage
003286	Oelschauglas LW 450 / LW 570 / LW 1300	Oil gauge glass LW 450 / LW 570 / LW 1300
003823	Spezial Dichtung Ölschauglas	Special gasket,oil gauge glass
004367	Ölansaugstopfen	Oil intake plug
004628	Führungszylinder 2. Stufe Ø70 mm	Guide cylinder 2nd stage Ø70 mm
005122	U-Scheibe 12,5x34,5mm, Kurbelwelle	Washer, crank shaft
006856	Zylinder Ø50 mm, 2. Stufe	Cylinder Ø50 mm, 2nd Stage



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kompressor / Assembly: Piston Compressor





## 9. Ersatzteilliste / Spare Part List

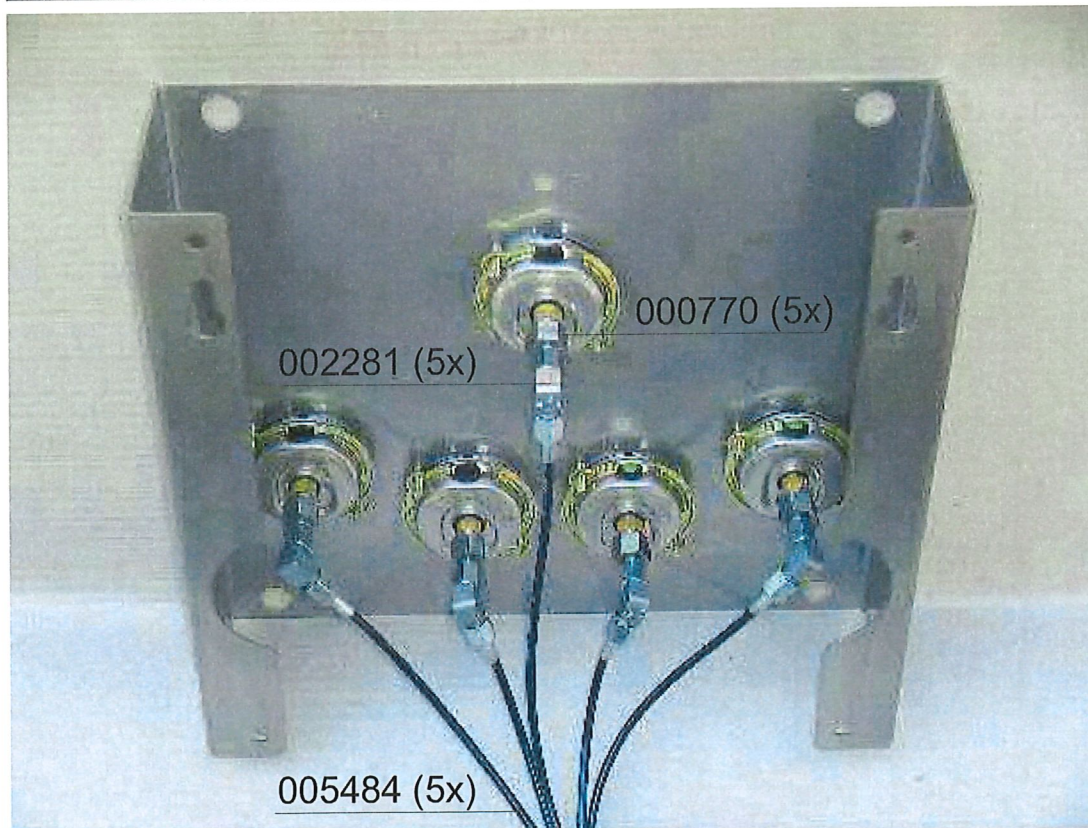
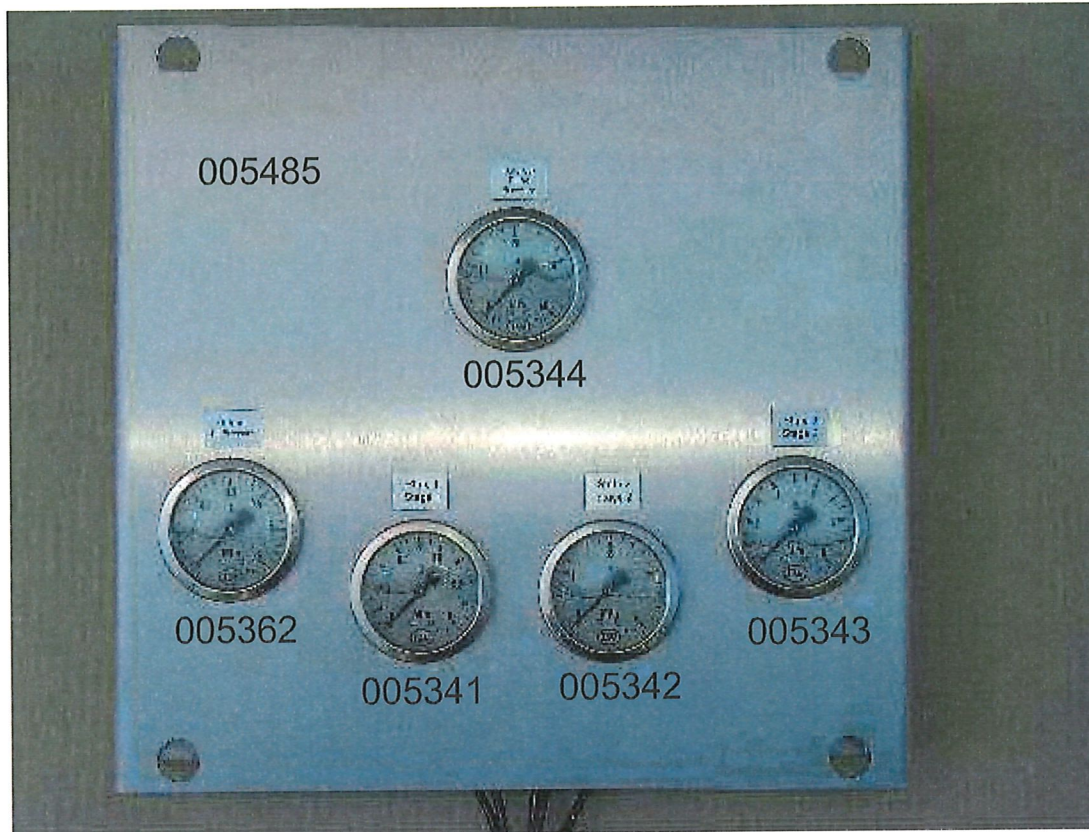
### Ersatzteilliste: Wandkonsole / Spare Part List: Console

Bestell-Nr. / Order No.	Benennung	Description
000770	Verschraubung MAV 06 LR IG 1/4"	Connection Pressure Gauge MAV 06 LR IG 1/4"
002281	Verschraubung, mit fester Mutter	Connection with fixed nut
005341	Manometer 0-1 MPa Ø 63mm	Pressure Gauge 0-1 MPa Ø63mm
005342	Manometer 0-4 MPa Ø 63mm	Pressure Gauge 0-4 MPa Ø63mm
005343	Manometer 0-10 MPa Ø 63mm	Pressure Gauge 0-10 MPa Ø63mm
005344	Manometer 0-40 MPa Ø 63mm	Pressure Gauge 0-40 MPa Ø63mm
005484	Minimessschlauch 5000mm 2x6 L	Pressure Gauge Hose 5000mm 2x6 L
005485	Wandkonsole Edelstahl	Wall Console s/s
005362	Manometer 0-0,6 MPa, Ø 63mm	Pressure Gauge 0-0,6 MPa Ø63mm



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Wandkonsole / Assembly: Console







## 9. Ersatzteilliste / Spare Part List

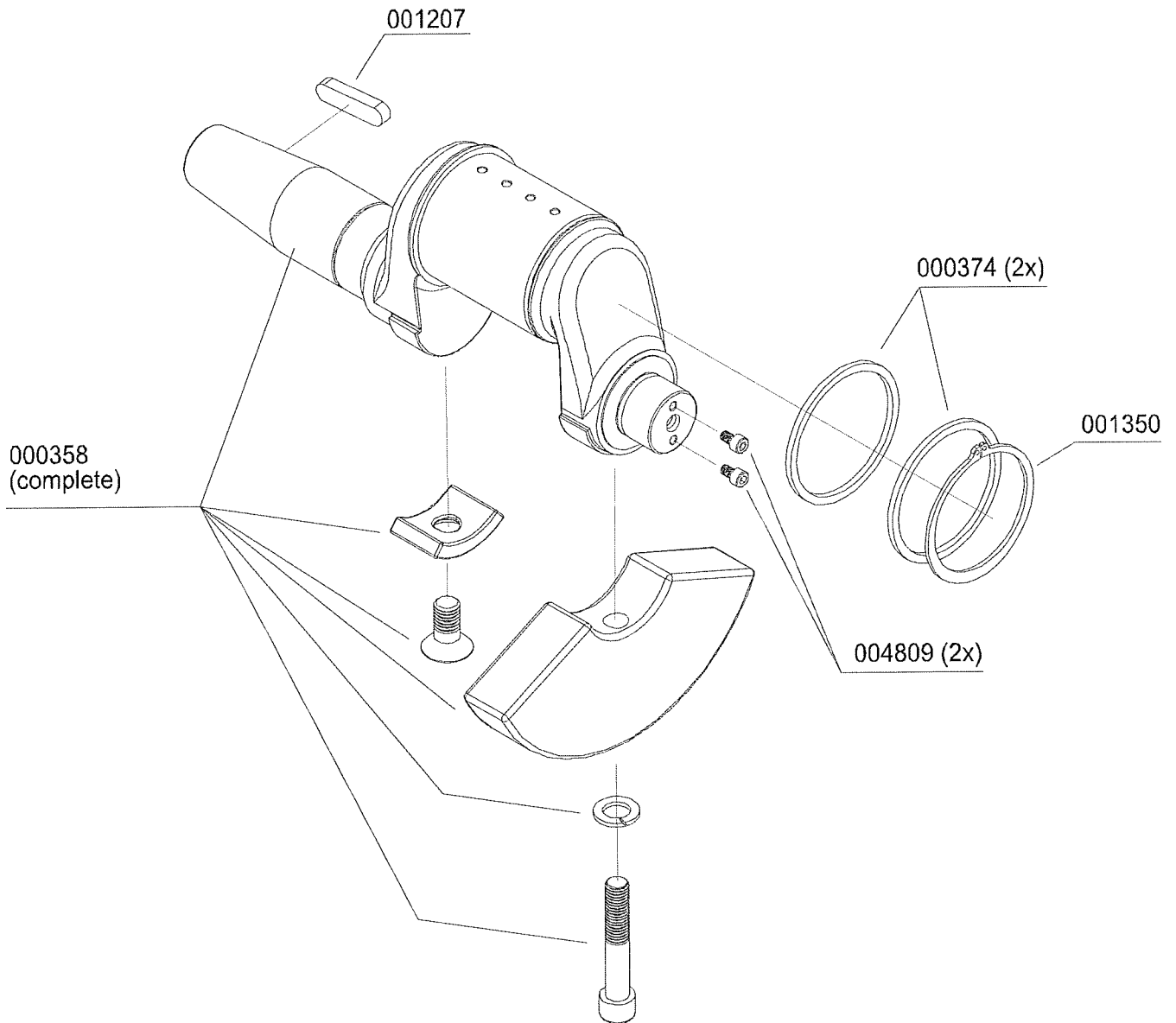
### Ersatzteilliste: Kurbelwelle / Spare Part List: Crankshaft

Bestell-Nr. / Order No.	Benennung	Description
000358	Kurbelwelle, komplett inkl. Gegengewicht	Crankshaft c/w Counter Weight
000374	Anlaufscheiben Kurbelwelle, 1 Paar	Thrust Washer Crankshaft pair
001207	Passfeder DIN6885	Woodruff Key DIN6885
001350	Sicherungsring, A65 DIN471	Circlip A65, DIN471
004809	Ölpumpenmitnehmerschraube	Drive bolt



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kurbelwelle / Assembly: Crankshaft





## 9. Ersatzteilliste / Spare Part List

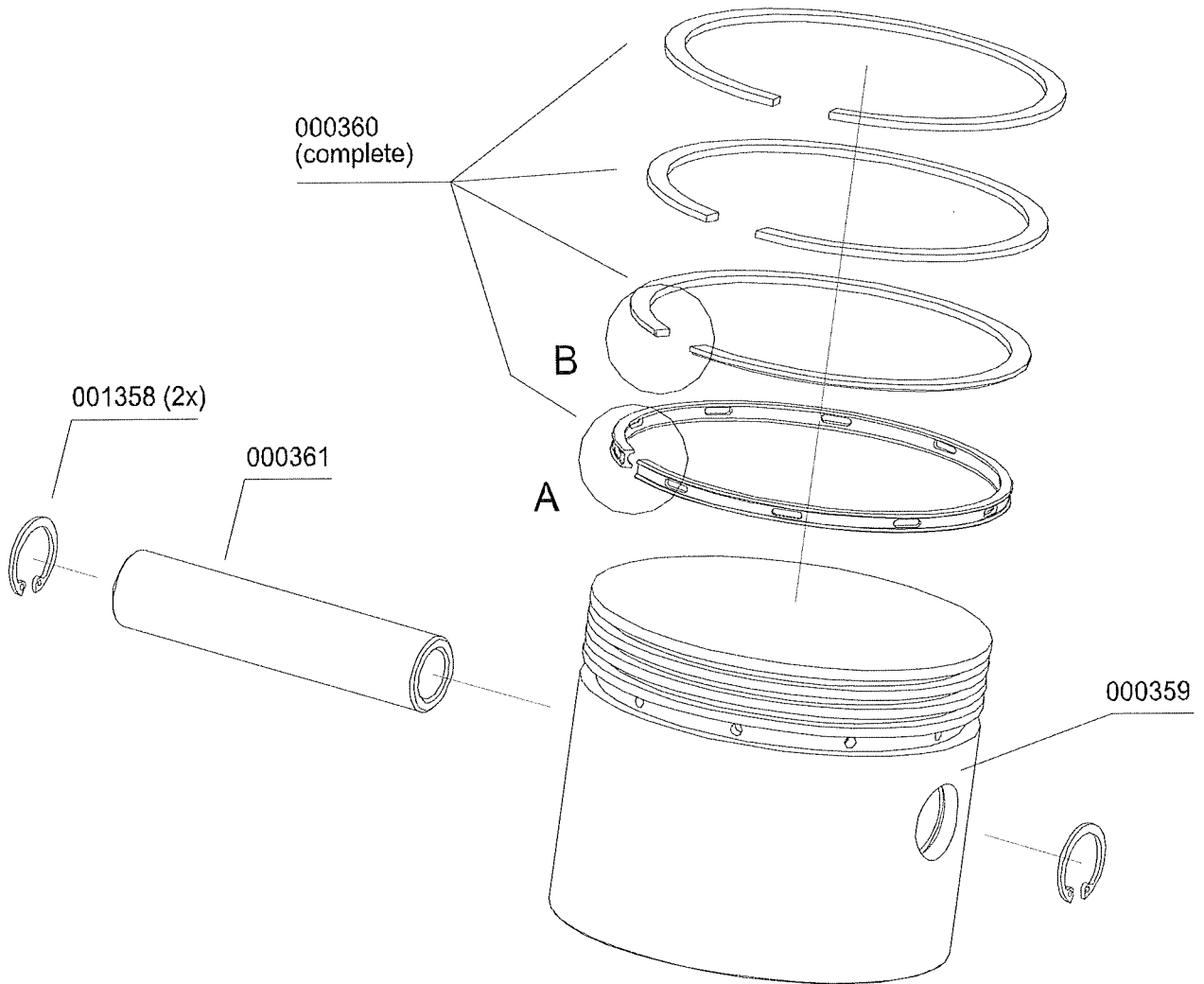
### Ersatzteilliste: Kolben 1. Stufe / Spare Part List: Piston 1st Stage

Bestell-Nr. / Order No.	Benennung	Description
000359	Kolben, 1. Stufe, Ø105mm	Piston 1st Stage Ø105 mm
000360	Kolbenringsatz 1. Stufe Ø105mm	Set Piston Rings 1st Stage Ø105mm
000361	Kolbenbolzen, 1. Stufe Ø25x90 mm	Piston Pin Ø25x90mm
001358	Sicherungsring I 25 DIN472	Circlip I 25 DIN472

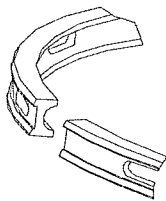


## 9. Ersatzteilliste / Spare Part List

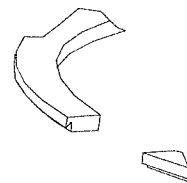
Baugruppe: Kolben 1. Stufe / Assembly: Piston 1st Stage



A (1:1)



B (1:1)





## 9. Ersatzteilliste / Spare Part List

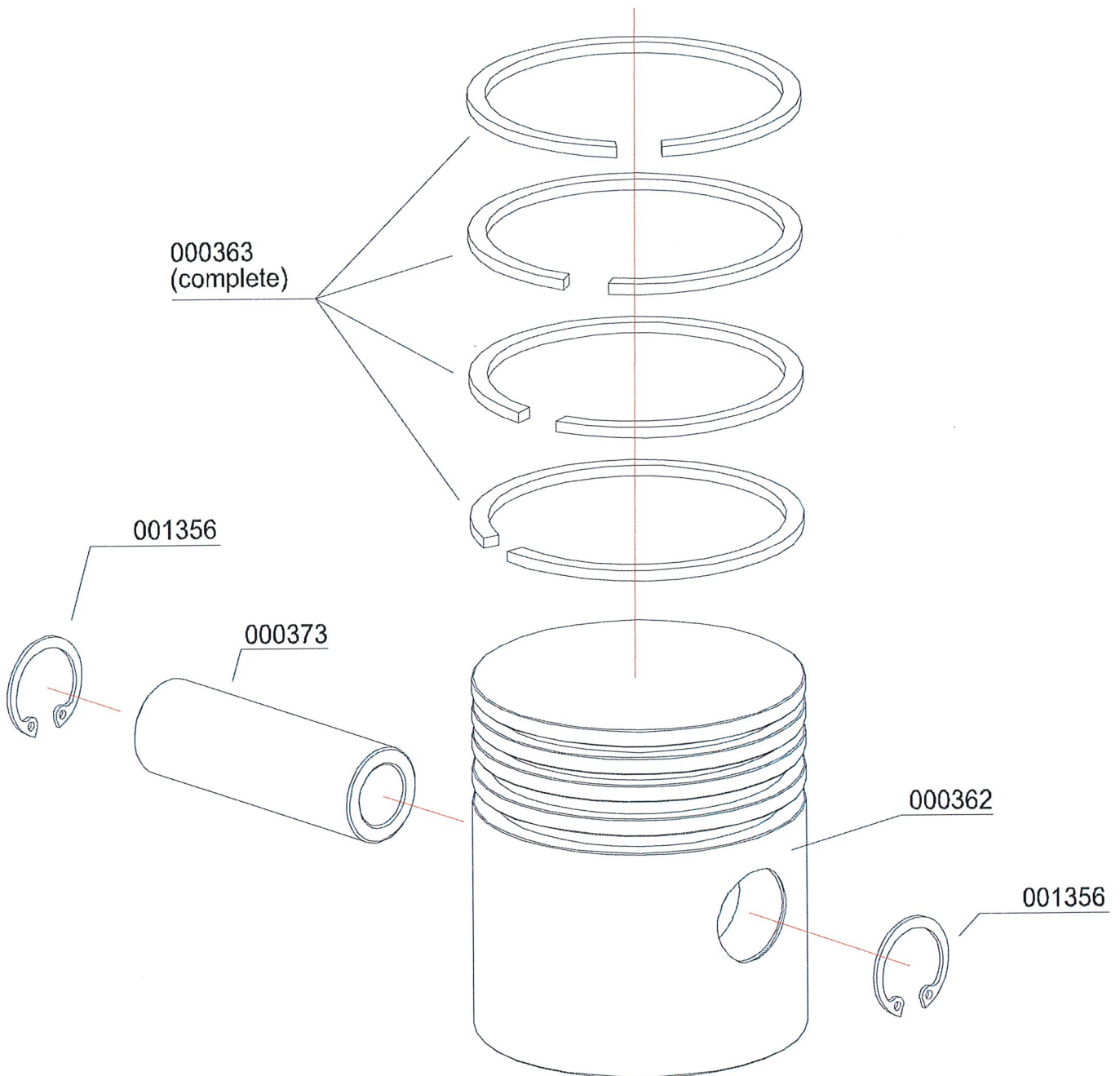
### Ersatzteilliste: Kolben 2. Stufe / Spare Part List: Piston 2nd Stage

Bestell-Nr. / Order No.	Benennung	Description
000362	Kolben, 2. Stufe	Piston 2nd Stage
000363	Kolbenringsatz 2. Stufe, Ø50mm	Set Piston Rings 2 <sup>nd</sup> Stage Ø50mm
000373	Kolbenbolzen, 2. / 3. / 4. Stufe	Piston Pin, 2 <sup>nd</sup> Stage
001356	Sicherungsring, I 22 DIN472	Circlip I22 DIN472



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kolben 2. Stufe / Assembly: Piston 2nd Stage





## 9. Ersatzteilliste / Spare Part List

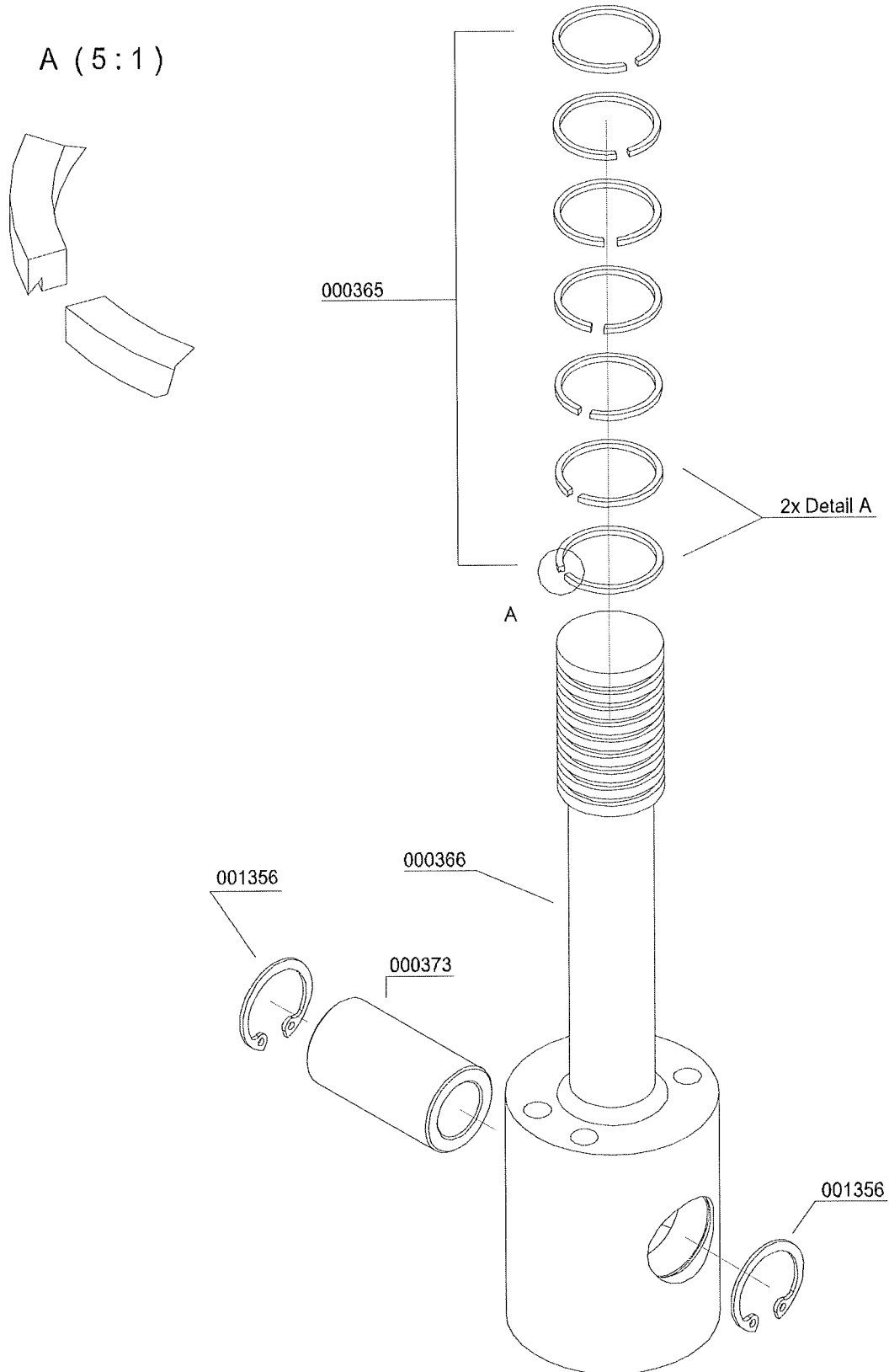
### Ersatzteilliste: Kolben 3. Stufe / Spare Part List: Piston 3rd Stage

Bestell-Nr. / Order No.	Benennung	Description
000365	Kolbenringsatz 3. Stufe	Set Piston Rings 3rd Stage
000366	Kolben, 3. Stufe	Piston 3rd Stage
000373	Kolbenbolzen, 2. / 3. / 4. Stufe	Piston Pin, 2nd Stage
001356	Sicherungsring, I 22 DIN472	Circlip I22 DIN472



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kolben 3. Stufe / Assembly: Piston 3rd Stage







## 9. Ersatzteilliste / Spare Part List

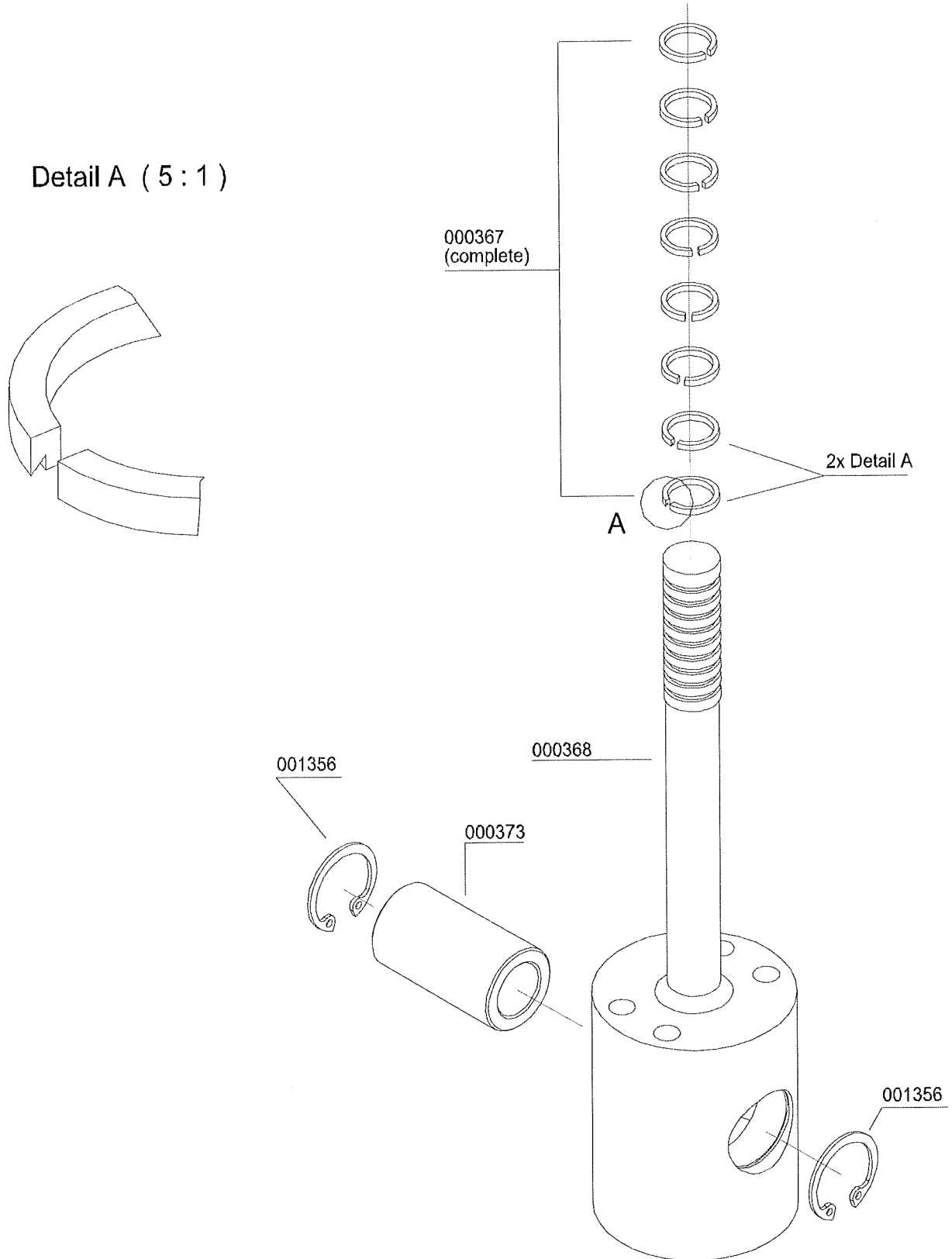
### Ersatzteilliste: Kolben 4. Stufe / Spare Part List: Piston 4th Stage

Bestell-Nr. / Order No.	Benennung	Description
000367	Kolbenringsatz 4. Stufe	Set Piston Rings 4th Stage
000368	Kolben, Stufe 4	Piston 4th Stage
000373	Kolbenbolzen, 2. / 3. / 4. Stufe	Piston Pin, 2nd Stage
001356	Sicherungsring, I 22 DIN472	Circlip I22 DIN472



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kolben 4. Stufe / Assembly: Piston 4th Stage





## 9. Ersatzteilliste / Spare Part List

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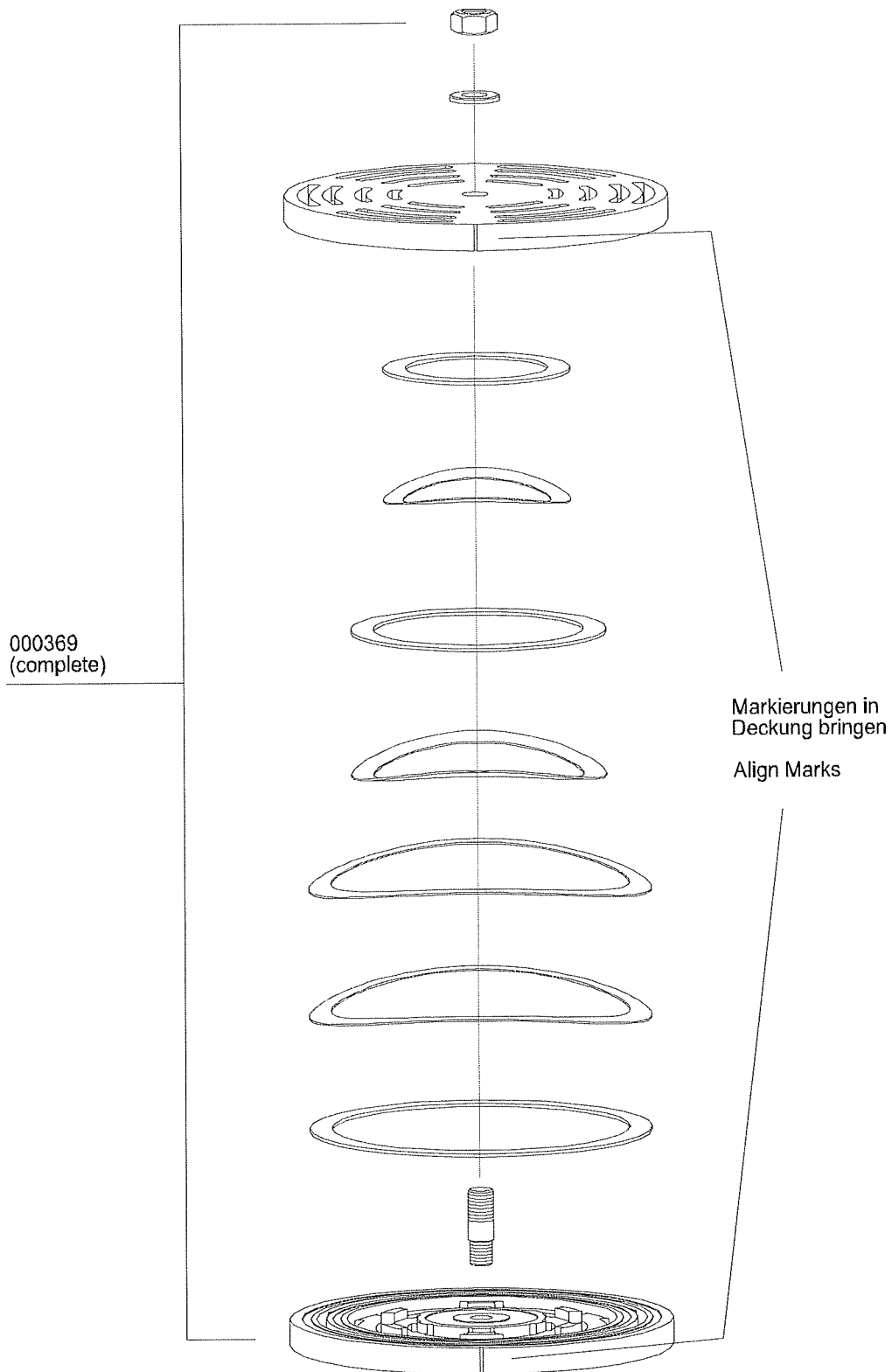
### Ersatzteilliste: Ventil 1. Stufe / Spare Part List: Valve 1st Stage

Bestell-Nr. / Order No.	Benennung	Description
000369	Saug- Druckventil, 1. Stufe	In-&Outlet Valve, 1st Stage



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Ventil 1. Stufe / Assembly: Valve 1st Stage





## 9. Ersatzteilliste / Spare Part List

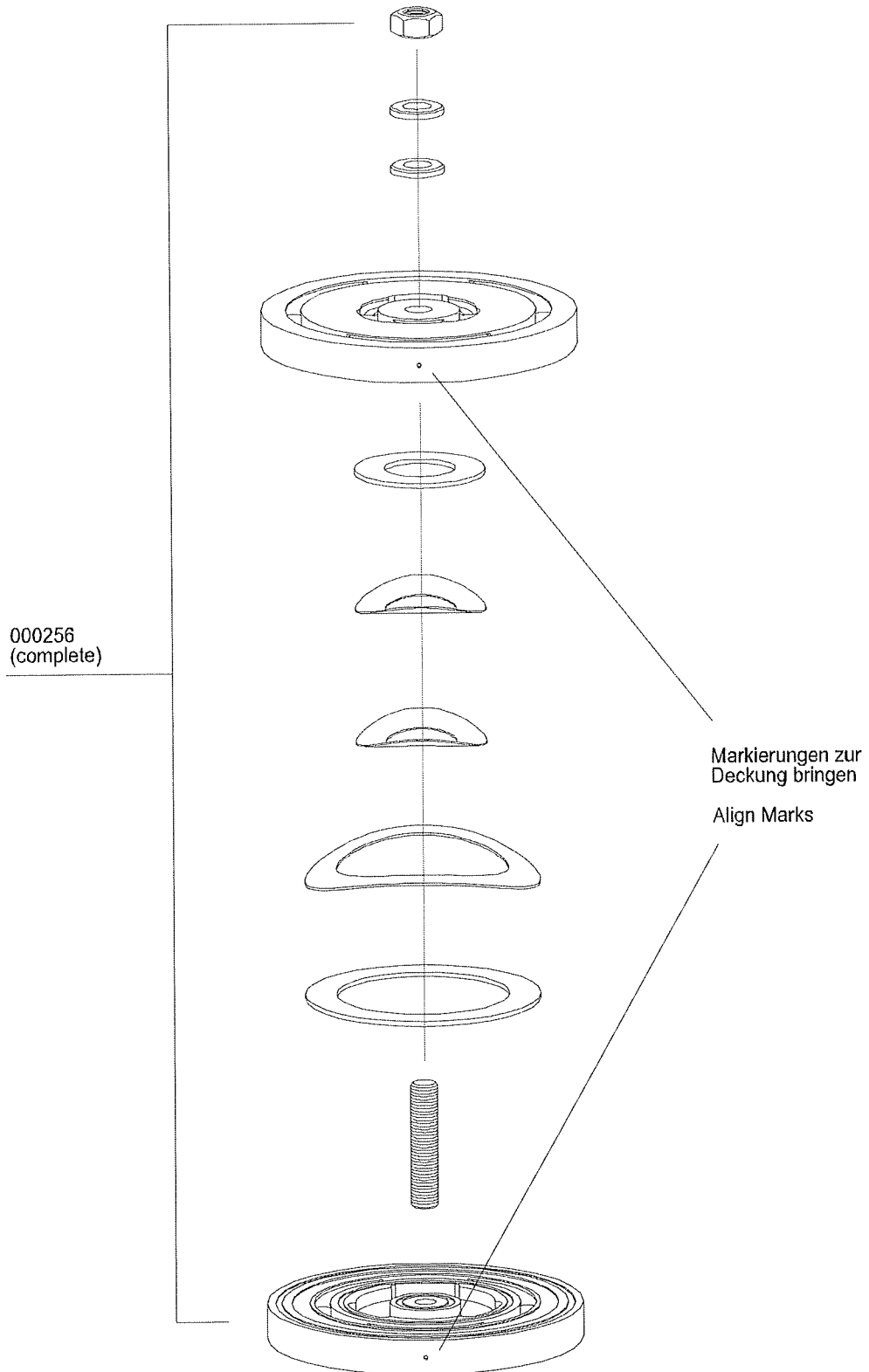
### Ersatzteilliste: Ventil 2. Stufe / Spare Part List: Valve 2nd Stage

Bestell-Nr. / Order No.	Benennung	Description
000256	Saug- und Druckventil 2. Stufe	In-&Outlet Valve comp.2nd Stage



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Ventil 2. Stufe / Assembly: Valve 2nd Stage





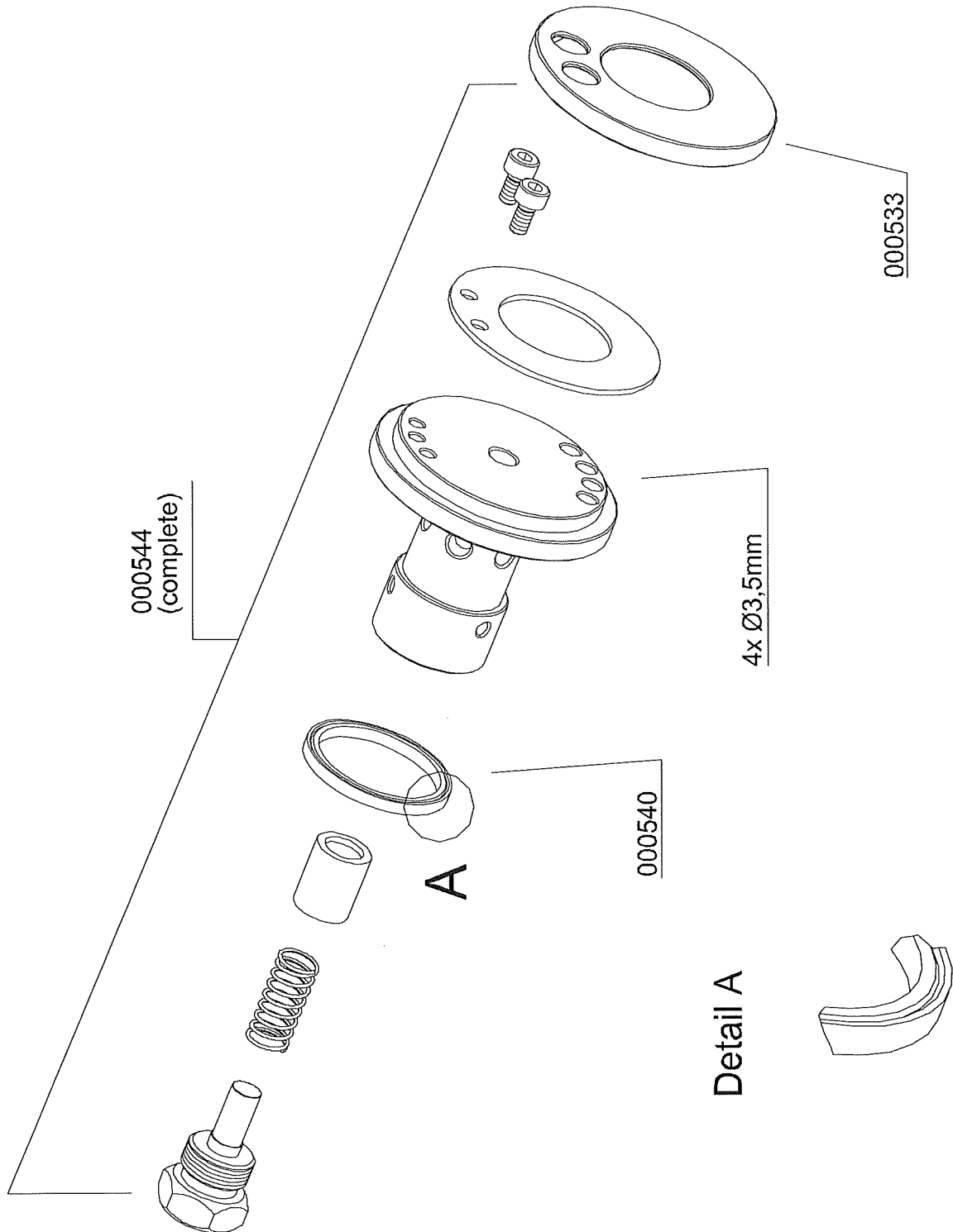
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Ventil 3. Stufe / Spare Part List: Valve 3rd Stage

Bestell-Nr. / Order No.	Benennung	Description
000533	Ventildichtung, Saug-& Druckventil unten	Lower Valve Gasket, 3rd Stage
000540	Dichtring / Dichtung, 3. Stufe	Upper Alloy Seal Ring, 3rd Stage
000544	Saug-Druckventil, 3. Stufe, Komplett	In- & Outlet Valve, 3rd Stage

## 9. Ersatzteilliste / Spare Part List

Baugruppe: Ventil 3. Stufe / Assembly: Valve 3rd Stage







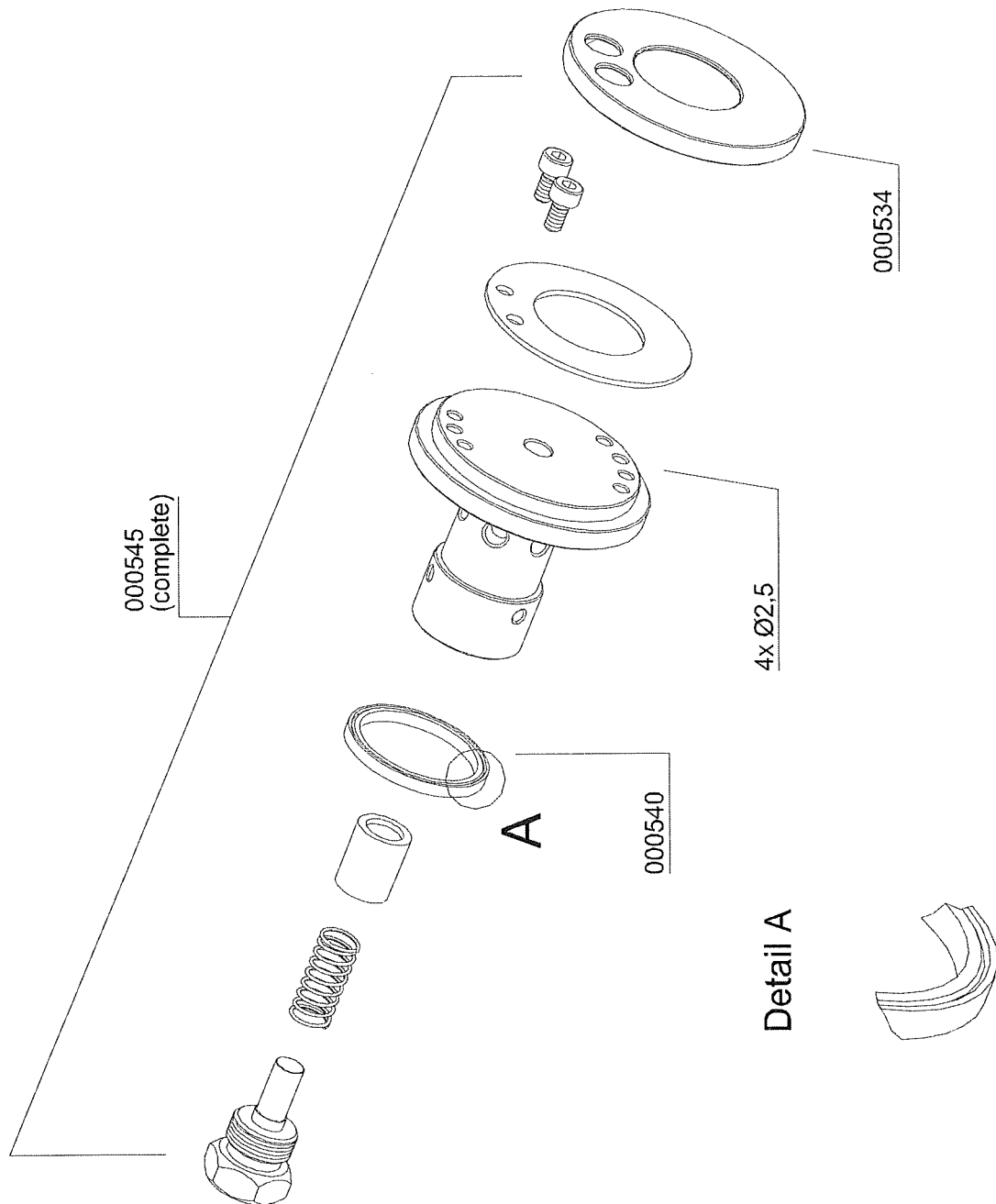
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Ventil 4. Stufe / Spare Part List: Valve 4th Stage

Bestell-Nr. / Order No.	Benennung	Description
000534	Ventildichtung, Saug- & Druckventil	Lower Valve Gasket 4th Stage
000540	Dichtring / Dichtung, 3. Stufe	Upper Alloy Seal Ring, 3rd Stage
000545	Saug-Druckventil, 4. Stufe, Komplett	In- & Outlet Valve, 4th Stage

## 9. Ersatzteilliste / Spare Part List

Baugruppe: Ventil 4. Stufe / Assembly: Valve 4th Stage





## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Ölpumpe / Spare Part List: Oil Pump

Bestell-Nr. / Order No.	Benennung	Description
000200	Ölpumpenhalteflansch	Adapter Flange Oil Pump
000204	Oelpumpe, kompl.	Oil Pump compl.
000208	Oelpumpenantriebsflansch	Drive Flange Oil Pump
000250	CU-Ring Ø6,2 x 10 x 1,5mm DIN7603A	Copper Washer Ø6,2 x 10 x 1,5mm DIN7603A
000355	Rohrleitung Ø6	Pipe Ø6
000356	Rohrleitung Ø6	Pipe Ø6
000710	Verschraubung ohne Mutter & Schneidring GE 06 PLR 1/8" ED X	Connection w/o nut& olive seal GE 06 PLR 1/8" ED X
000712	Verschraubung ohne Mutter & Schneidring GE 06PLR 1/4" ED	Connection w/o nut& olive seal GE 06PLR 1/4" ED
000716	Verschraubung ohne Mutter & Schneidring TE G1/8" / 6L	Connection w/o nut& olive seal TE G1/8" / 6L
000732	Mutter 06L	Nut 06L
000733	Schneidring SR 06	Olive Seal SR 06
000739	Verschraubung GE 08 L/1/4"	Connection GE 08 L/1/4"
000759	Verschraubung, mit Mutter & Schneidring WE 08 LL R 1/8"	Elbow connection c/w nut&olive WE 08 LL R 1/8"
000765	Schneidring PSR 08 LX	Olive Seal PSR 08 LX
000766	Mutter 08L	Nut 08L
000952	Sechskantschraube M6X20mm, DIN933, 8.8	Hexagon Bolt M6X20mm DIN933, 8.8
000958	Gewindestift M8x16mm DIN914, 5.8 ZN	Worm Screw M8x16mm DIN914 5.8 ZN
001014	Gewindestift mit Zapfen M6X16mm DIN915	Allen Screw with Pin M6X16mm DIN915
001021	Zylinderschraube M5x40mm DIN912 8.8 ZN	Allen Bolt M5x40mm DIN912 8.8 ZN
001151	Mutter M5 DIN934 ZN	Nut M5 M5 DIN934 ZN
001176	U-Scheibe A5 DIN125 ZN	Washer A5 DIN125 ZN
002340	O-Ring Ölpumpenflansch 32,2x3 NBR70	O-Ring, oil pump flange 32,2x3 NBR70
002395	Verschlusskegel 06mm	Locking cone 06mm



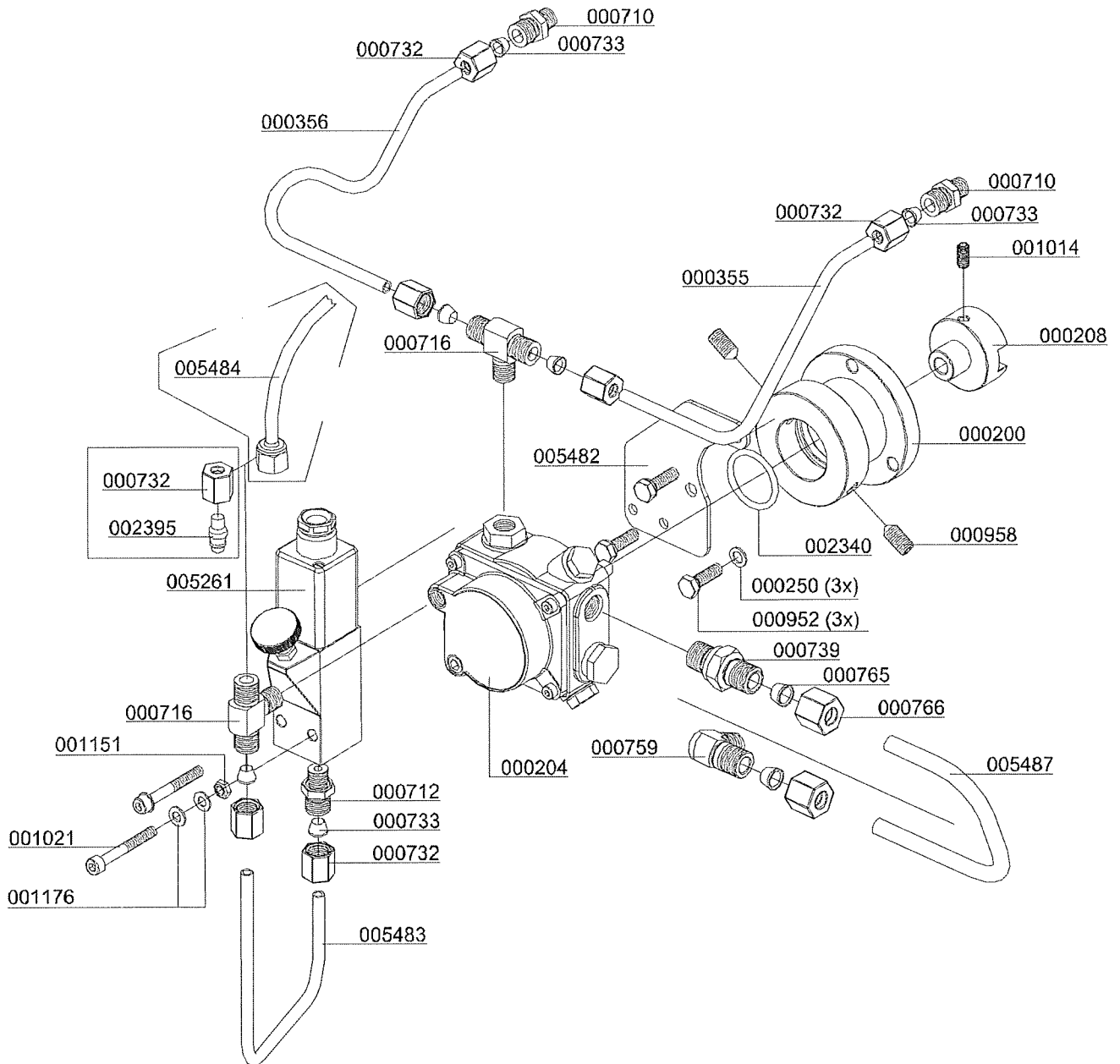
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Ölpumpe / Spare Part List: Oil Pump

Bestell-Nr. / Order No.	Benennung	Description
005261	Öldruckschalter 0,2 - 2 bar	Oil Pressure Switch 0.2-2 bar
005482	Halteblech Öldruckschalter	Bracket Oil Pressure Switch
005483	Rohrleitung Ø6	Pipe Ø6
005487	Rohrleitung Ø8	Pipe Ø8

## 9. Ersatzteilliste / Spare Part List

### Baugruppe: Ölpumpe / Assembly: Oil Pump





## 9. Ersatzteilliste / Spare Part List

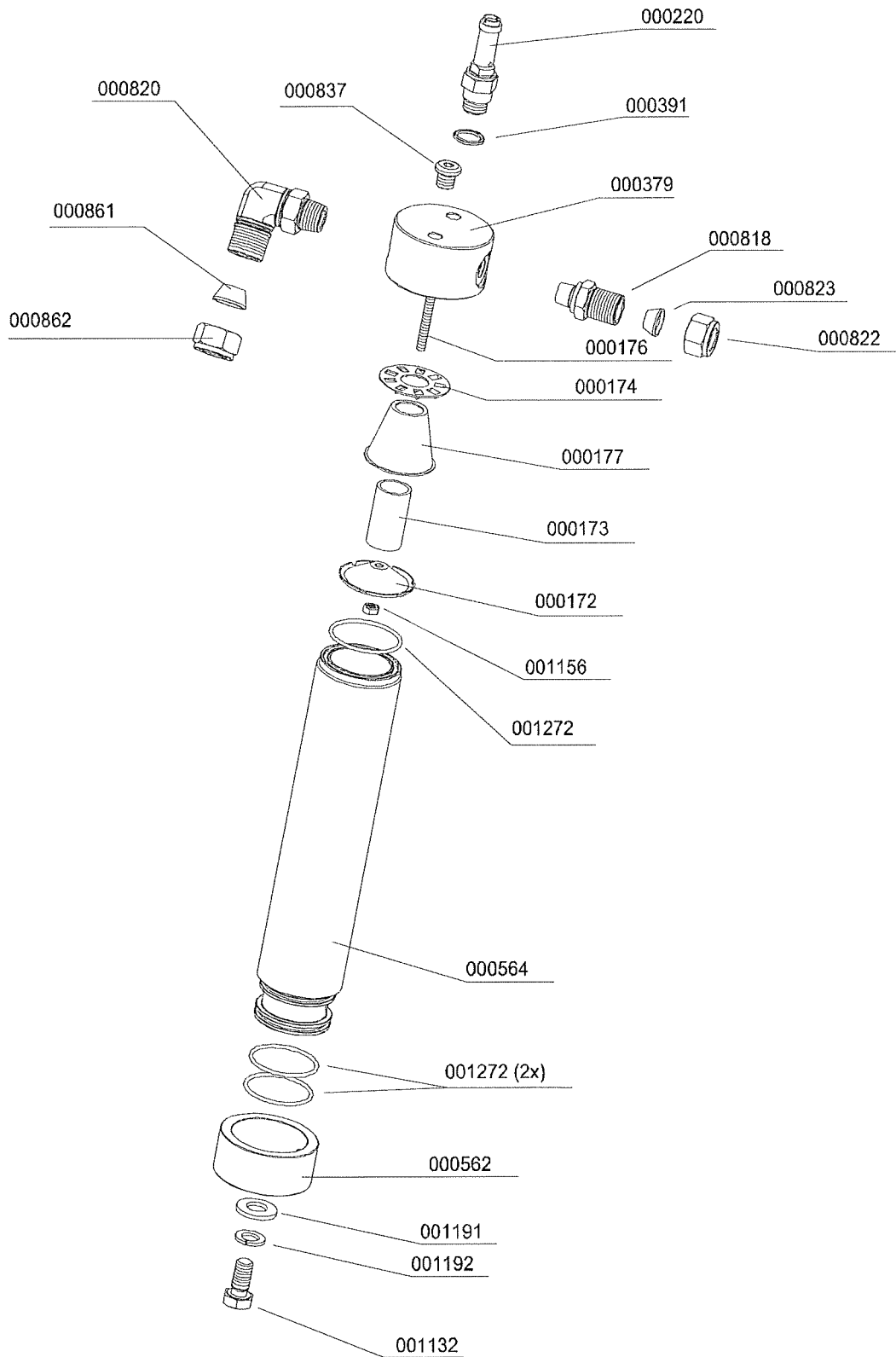
### Ersatzteilliste: Wasserabscheider 1. Stufe / Spare Part List: Water Separator 1st Stage

Bestell-Nr. / Order No.	Benennung	Description
000220	Sicherheitsventil G3/8" 8 bar	Safety Valve G3/8" 8 bar
000172	Halteteller Wasserabscheider	Plastic Air Deflector water separator
000173	Sinterfilter Wasserabscheider LW 570, LW 720 1.,2.,3. Stufe	Sintered Filter Water separat. LW 570, LW 720 1st,2nd,3rd Stage
000174	Drallscheibe, Wasserabscheider	Twist Disk, Water separator
000176	Stiftschraube, Wasserabscheider	Threaded Stud, Water separator
000177	Wasserabweiser, Wasserabscheider	Water Deflector, Plastic
000379	Wasserabscheider - Oberteil	Top Cap Water Separator
000391	U-Sit Ring, Ø16,7XØ24X1,5mm	Seal Ring U-Sit, Ø16,7XØ24X1,5mm
000562	Wasserabscheider - Ring, 2. Stufe	Ring Water Separator, 2nd St.
000564	Wasserabscheider - Behälter, 2. Stufe	Container Water Separ. 2nd St.
000818	Verschraubung GE 15L R1/2"	Connection GE 15L R1/2"
000820	Verschraubung WE 15L R X	Elbow-Connection WE 15L R X
000822	Mutter 15L	Union Nut 15L
000823	Schneidring	Olive Seal
000837	Verschraubung GE 22L R1/2"	Connection GE 22L R1/2"
000861	Schneidring PSR 18LX	Olive Seal PSR 18LX
000862	Mutter 18L	Union Nut 18L
001132	Sechskant Schraube M12x25mm DIN933 8.8 ZN	Hexagon Screw M12x25mm DIN933 8.8 ZN
001156	Stopfmutter M6 DIN985 ZN	Lock Nut M6 M6 DIN985 ZN
001191	U-Scheibe A12	Washer A12
001192	Federring A12	Spring Washer A12
001272	O-Ring Wasserabscheider	O-Ring Water separator



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Wasserabscheider 1. Stufe / Assembly: Water Separator 1st Stage





## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Wasserabscheider 2. Stufe / Spare Part List: Water Separator 2nd Stage

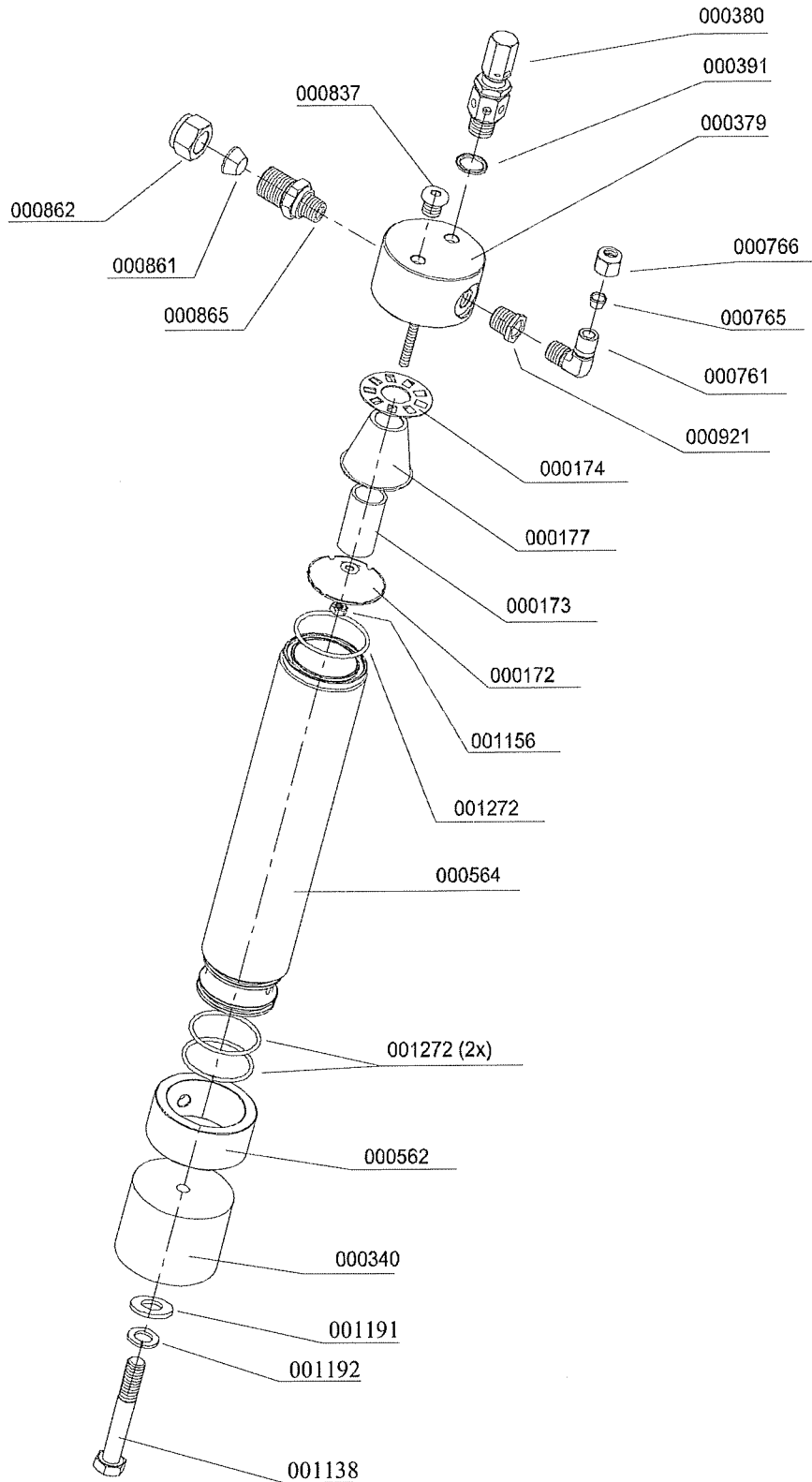
Bestell-Nr. / Order No.	Benennung	Description
000172	Halteteller Wasserabscheider	Plastic Air Deflector water separator
000173	Sinterfilter Wasserabscheider LW 570, LW 720 1.,2.,3. Stufe	Sintered Filter Water separat. LW 570, LW 720 1st,2nd,3rd Stage
000174	Drallscheibe, Wasserabscheider	Twist Disk, Water separator
000177	Wasserabweiser, Wasserabscheider	Water Deflector, Plastic
000340	Erhöhung für Wasserabscheider h=60mm	Push Up for Water Separator
000379	Wasserabscheider - Oberteil	Top Cap Water Separator
000380	Sicherheitsventil G3/8" 22 bar	Safety Valve G3/8" 22 bar
000391	U-Sit Ring, Ø16,7XØ24X1,5mm	Seal Ring U-Sit, Ø16,7XØ24X1,5mm
000562	Wasserabscheider - Ring, 2. Stufe	Ring Water Separator, 2nd St.
000564	Wasserabscheider - Behälter, 2. Stufe	Container Water Separ. 2nd St.
000761	Verschraubung WE 08 PLR CFX 1/4"	Elbow Connection WE 08 PLR CFX 1/4"
000765	Schneidring PSR 08LX	Olive Seal PSR 08LX
000766	Mutter 08L	Union Nut 08L
000837	Verschraubung GE 22L R1/2"	Connection GE 22L R1/2"
000861	Schneidring PSR 18LX	Olive Seal PSR 18LX
000862	Mutter 18L	Union Nut 18L
000865	Verschraubung GE 18L R3/4"	Connection GE 18L R3/4"
000921	Reduzierung RI 1/2" X 1/4" CFX	Reducer RI 1/2" X 1/4" CFX
001138	Sechskant Schraube M12x90mm DIN933 8.8 ZN	Hexagon Screw M12x90mm DIN933 8.8 ZN
001156	Stopfmutter M6 DIN985 ZN	Lock Nut M6 M6 DIN985 ZN
001191	U-Scheibe A12	Washer A12
001192	Federring A12	Spring Washer A12
001272	O-Ring Wasserabscheider	O-Ring Water separator





## 9. Ersatzteilliste / Spare Part List

Baugruppe: Wasserabscheider 2. Stufe / Assembly: Water Separator 2nd Stage





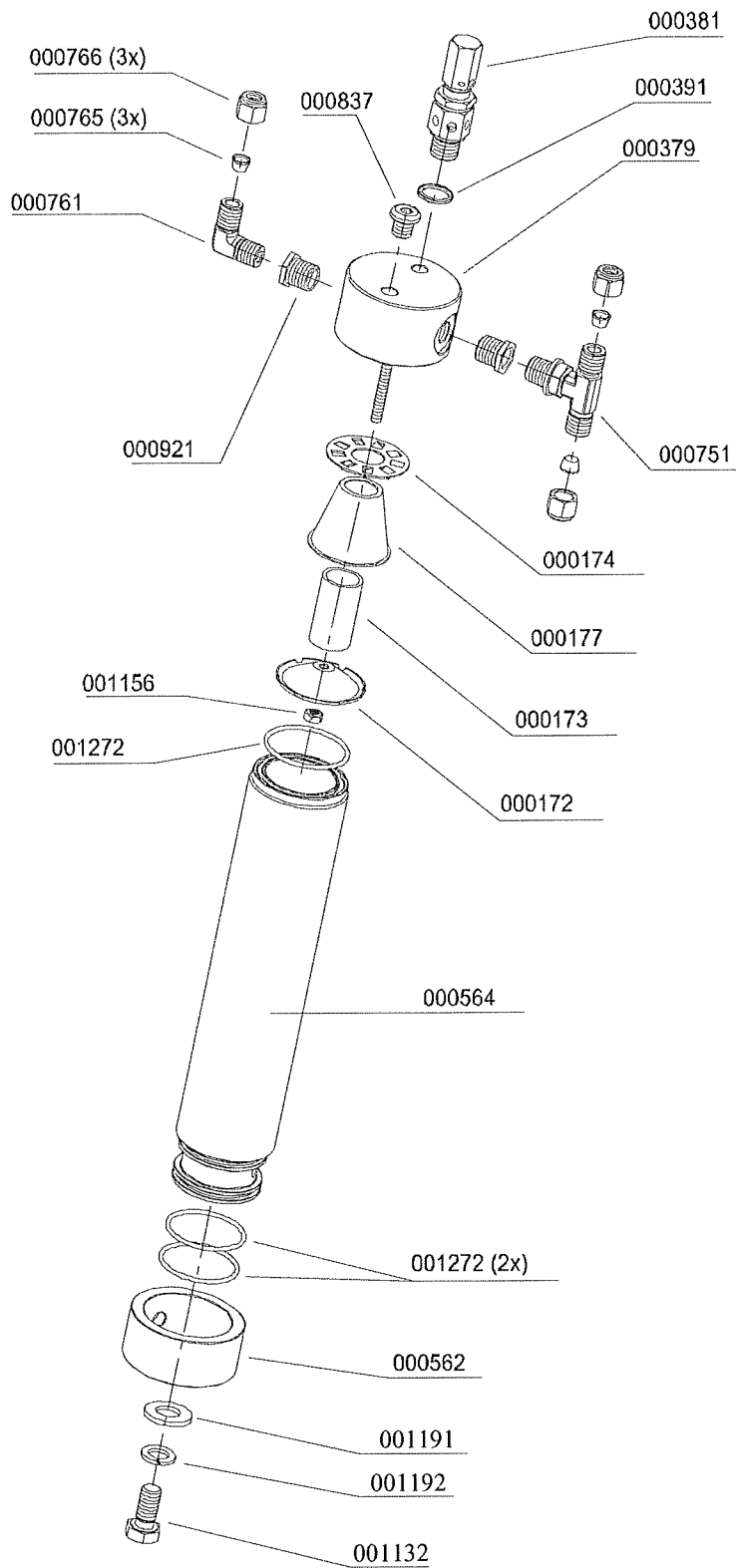
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Wasserabscheider 3. Stufe / Spare Part List: Water Separator 3rd Stage

Bestell-Nr. / Order No.	Benennung	Description
000172	Halteteller Wasserabscheider	Plastic Air Deflector water separator
000173	Sinterfilter Wasserabscheider LW 570, LW 720 1.,2.,3. Stufe	Sintered Filter Water separat. LW 570, LW 720 1st,2nd,3rd Stage
000174	Drallscheibe, Wasserabscheider	Twist Disk, Water separator
000177	Wasserabweiser, Wasserabscheider	Water Deflector, Plastic
000379	Wasserabscheider - Oberteil	Top Cap Water Separator
000381	Sicherheitsventil G3/8" Einstelldruck 90 bar	Safety Valve G3/8" 90 bar, relief pressure 90 bar
000391	U-Sit Ring, Ø16,7XØ24X1,5mm	Seal Ring U-Sit, Ø16,7XØ24X1,5mm
000562	Wasserabscheider - Ring, 2. Stufe	Ring Water Separator, 2nd St.
000564	Wasserabscheider - Behälter, 2. Stufe	Container Water Separ. 2nd St.
000751	Verschraubung, mit Mutter & Schneidringe TE 8L1/4"	Connection incl nut&olive seal TE 8L1/4"
000761	Verschraubung WE 08 PLR CFX 1/4"	Elbow Connection WE 08 PLR CFX 1/4"
000765	Schneidring PSR 08 LX	Olive Seal PSR 08 LX
000766	Mutter 08L	Union Nut 08L CFX
000837	Verschraubung GE 22L R1/2"	Connection GE 22L R1/2"
000921	Reduzierung RI 1/2"X1/4" CFX	Reducer RI 1/2"X1/4" CFX
001132	Sechskant Schraube M12x25mm DIN933 8.8 ZN	Hexagon Screw M12x25mm DIN933 8.8 ZN
001156	Stopfmutter M6 DIN985 ZN	Lock Nut M6 M6 DIN985 ZN
001191	U-Scheibe A12	Washer A12
001192	Federring A12	Spring Washer A12
001272	O-Ring Wasserabscheider	O-Ring Water separator

## 9. Ersatzteilliste / Spare Part List

### Baugruppe: Wasserabscheider 3. Stufe / Assembly: Water Separator 3rd Stage





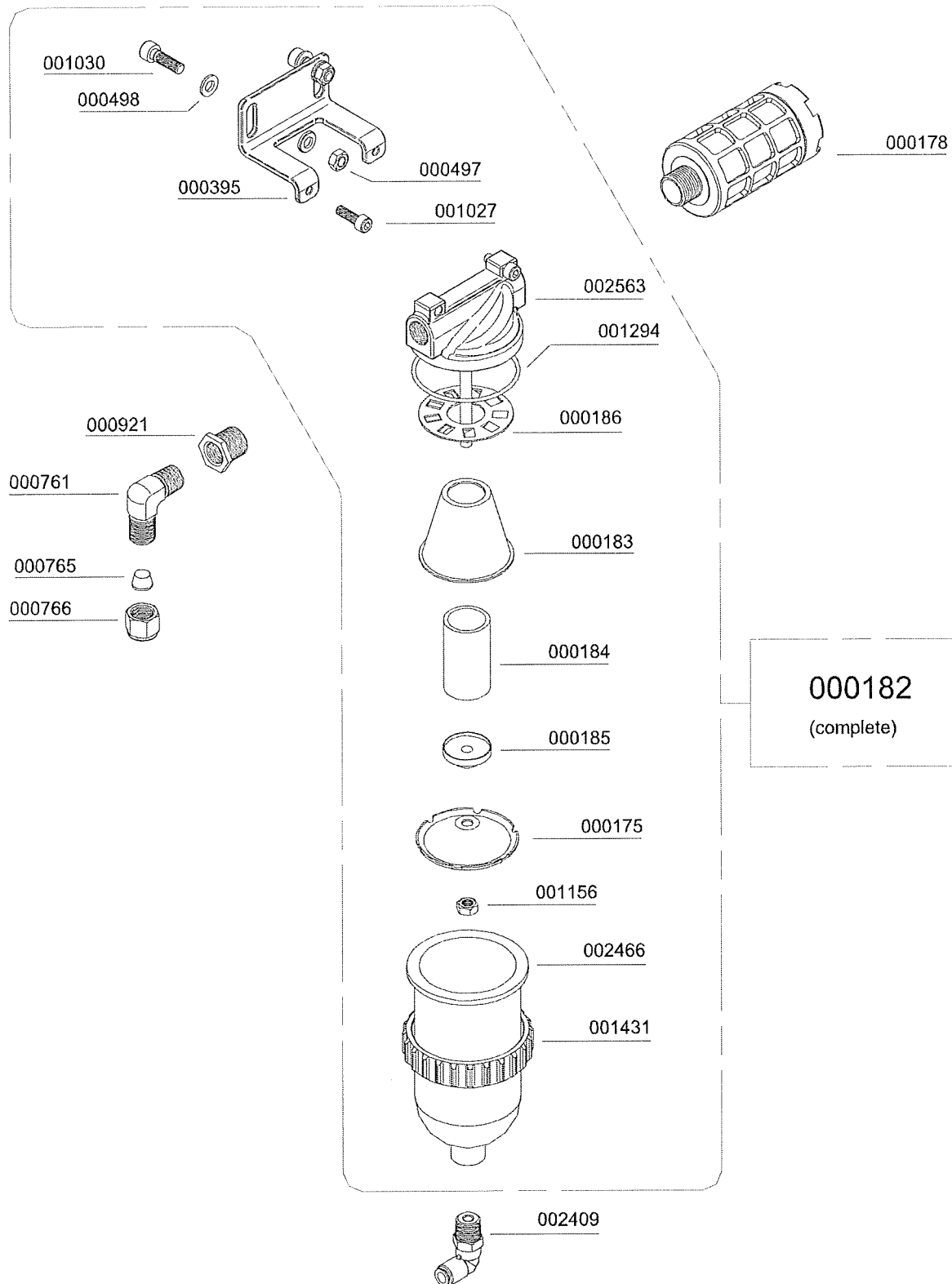
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste Ölabscheider / Spare Part List: Oil Separator

Bestell-Nr. / Order No.	Benennung	Description
000175	Deckel, Wasserabscheider	
000178	Schalldämpfer G1/2"	Silencer G1/2"
000182	Endstufe Wasserabscheider (PN 15 bar)	Water Separator c/W bracket
000183	Wasserabweiser	<i>Filter Protec</i>
000184	Sinterfilter Wasserabscheider	Siltered Filter, Oil Filter
000185	Halteteller	Plate
000186	Drallscheibe	Twist Disk
000395	Blechhalter Kondensatabscheider	Bracket water separator
000497	Mutter M6	Nut M6
000498	Unterlegscheibe	Washer A6
000761	Verschraubung WE 08 PLR CFX	Connection
000765	Schneidring PSR 08 LX	<i>Olive Seal 8mm</i>
000766	Mutter 8L	Nut 8L
000921	Reduzierung 1/4"-1/8"	Reducer 1/4"-1/8"
001027	Zylinderschraube M6x30	Allen Bolt M6x30
001030	Zylinderschraube M6x16	Allen Bolt M6x16
001156	Stoppmutter M6 DIN985 ZN	Lock Nut M6
001294	O-Ring 68x3 NBR90	O-Ring 68x3
001431	Befestigungsring Wasserabscheider LW 450	Lock Ring Water Seperator
002409	Winkelschnellkupplung G1/8"-8mm	Quick release coupling elbow
002466	Kondensatbehälter für Abscheider	Condensate bowl
002563	Wasserabscheider Oberteil PN 15 bar	

## 9. Ersatzteilliste / Spare Part List

### Baugruppe: Ölabscheider / Assembly: Oil Separator





## 9. Ersatzteilliste / Spare Part List

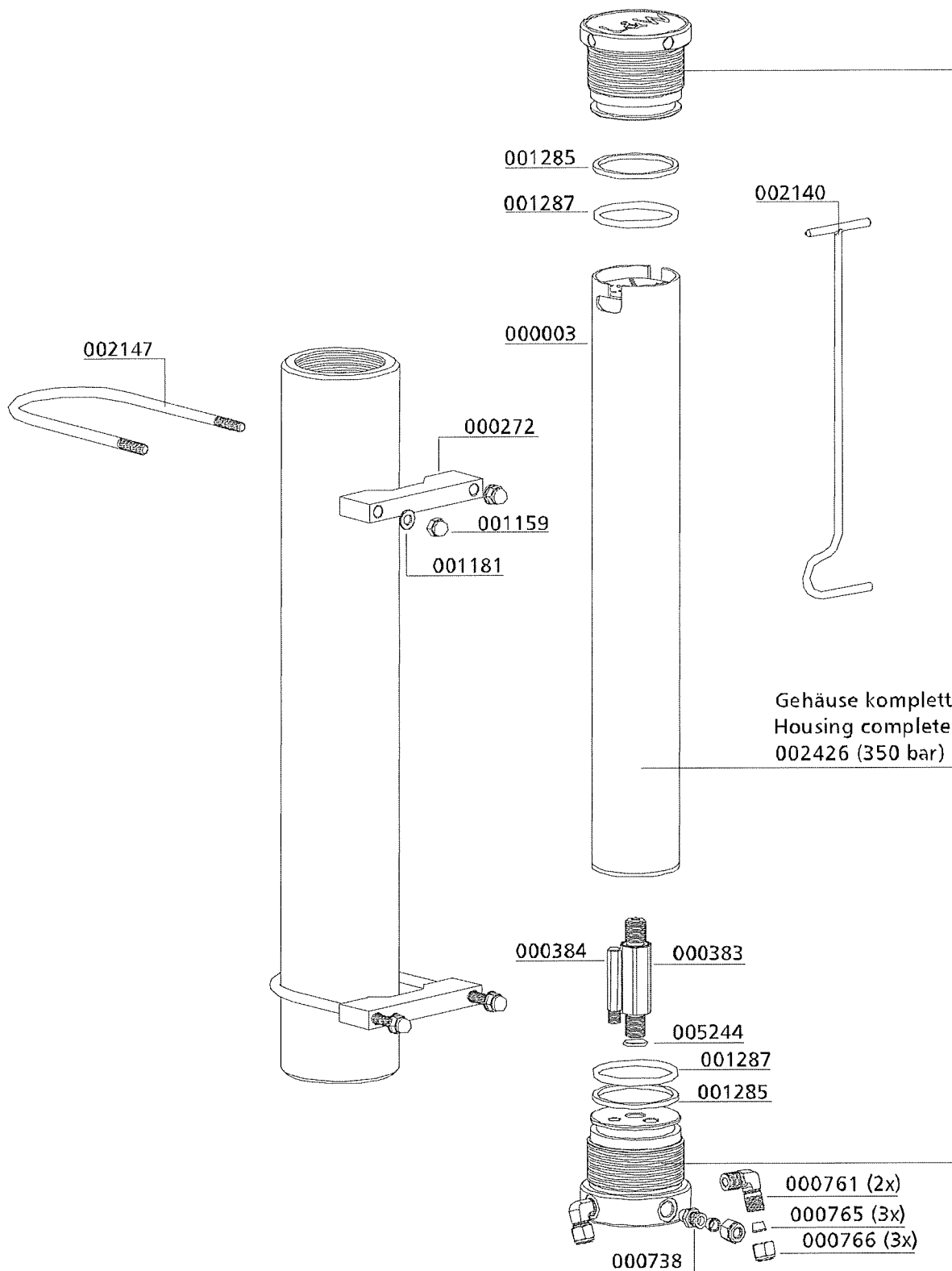
### Ersatzteilliste: Filtergehäuse 2,3l / Spare Part List: Filter Housing 2.3ltr

Bestell-Nr. / Order No.	Benennung	Description
000003	Filterpatrone 2,3l	Filter Cartridge 2.3ltr BA
000272	Abstandshalter für Filtergehäuse	Spacer Bracket for Filtertower
000383	Messing Adapter für Filterpatrone	Brass Filter Adapter
000384	Düse Filtergehäuse	Jet Filter Housing
000738	Verschraubung GE 08 PLR 1/4"	Connection GE 08 PLR 1/4"
000761	Verschraubung WE 08 PLR CFX 1/4"	Elbow Connection WE 08 PLR CFX 1/4"
000765	Schneidring PSR 08 LX	Olive Seal PSR 08 LX
000766	Mutter M08LCFX	Union Nut M08LCFX
001159	Stopfmutter M8 DIN985 ZN	Lock Nut M8 DIN985 ZN
001181	U-Scheibe A8 DIN125 ZN	Washer A8 DIN125 ZN
001285	Stützring, Filtergehäuse	Back-up Ring Filter Housing
001287	O-Ring, Filtergehäuse	O-Ring filter housing
002140	Filterschlüssel 1,7 & 2,3 Liter Behälter	Filter tool 1,7 & 2,3 Litre
002147	Haltebügel für Filtergehäuse, beidseitig M8X35mm	Holder for filter housing, M8X35mm (both sides)
002426	Filtergehäuse, 2,3l	Filter housing 2.3ltr
005244	O-Ring	O-Ring



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Filtergehäuse 2,3l / Assembly: Filter Housing 2.3ltr





## 9. Ersatzteilliste / Spare Part List

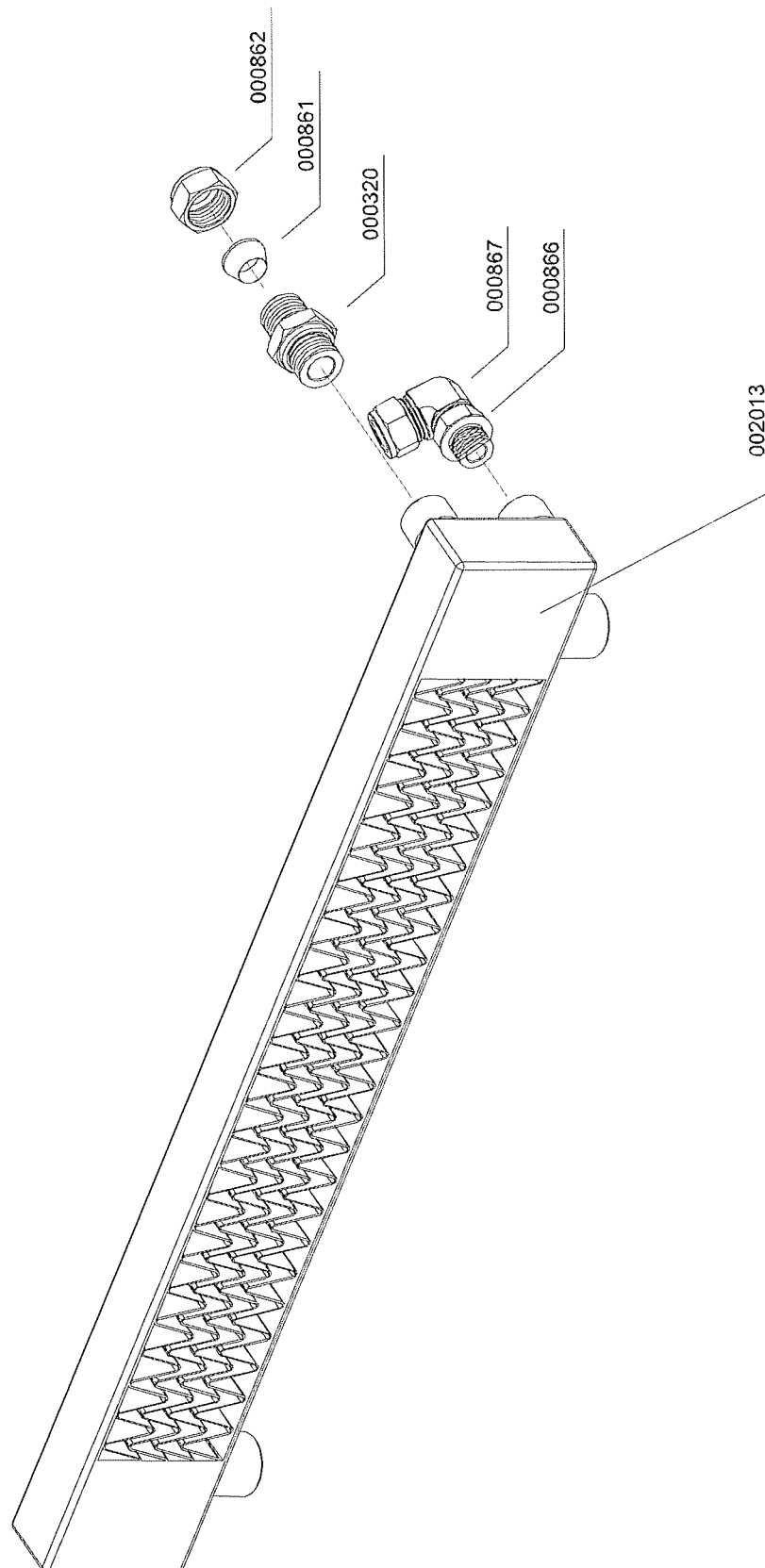
### Ersatzteilliste: Kühler 1. Stufe / Spare Part List: Radiator 1st Stage

Bestell-Nr. / Order No.	Benennung	Description
000319	Kühler	Cooler
000320	Verschraubung	Connection
000861	Schneidring	Olive Seal
000862	Mutter 18L	Union Nut 18L
001039	Zylinderschraube M8x16 DIN 912 8.8 ZN	Allen Screw M8x16 DIN 912 8.8 ZN
001159	Stopfmutter M8 DIN 985 ZN	Lock Nut M8 DIN 985 ZN
001181	U-Scheibe A8	Washer A8



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kühler 1. Stufe / Assembly: Radiator 1st Stage





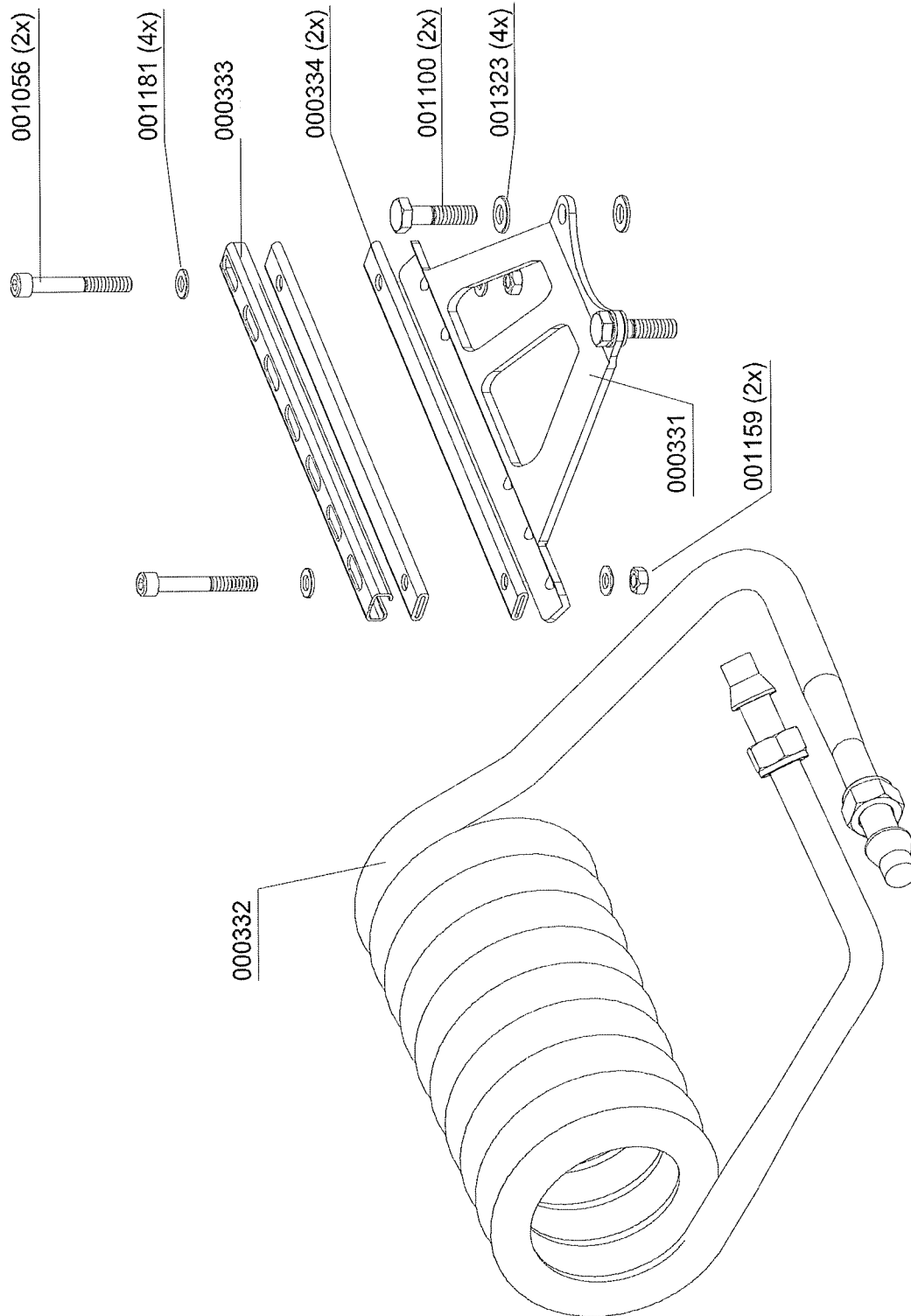
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Kühler 2. Stufe / Spare Part List: Cooling Pipe 2nd Stage

Bestell-Nr. / Order No.	Benennung	Description
000331	Halter	Bracket
000332	Wärmetauscher inkl. Mutter u. Schneidring	Heat Exchanger 2nd Stage c/w Nut and Olive Seal
000333	Halter	Bracket
000334	PVC Schlauch, transparent, l=320mm	PVC Hose for Bracket
001058	Zylinderschraube M8x70 DIN 912 8.8 ZN	Allen Screw M8x70 DIN 912 8.8 ZN
001100	Sechskantschraube M10x25 DIN 933 8.8 ZN	Hexagon Screw M10x25 DIN 933 8.8 ZN
001159	Stopfmutter M8 DIN 985 ZN	Lock Nut M8 DIN 985 ZN
001181	U-Scheibe A8	Washer A8
001323	Cu-Ring DIN 7603 A	Copper Seal Ring DIN 7603 A

## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kühler 2. Stufe / Assembly: Cooling Pipe 2nd Stage





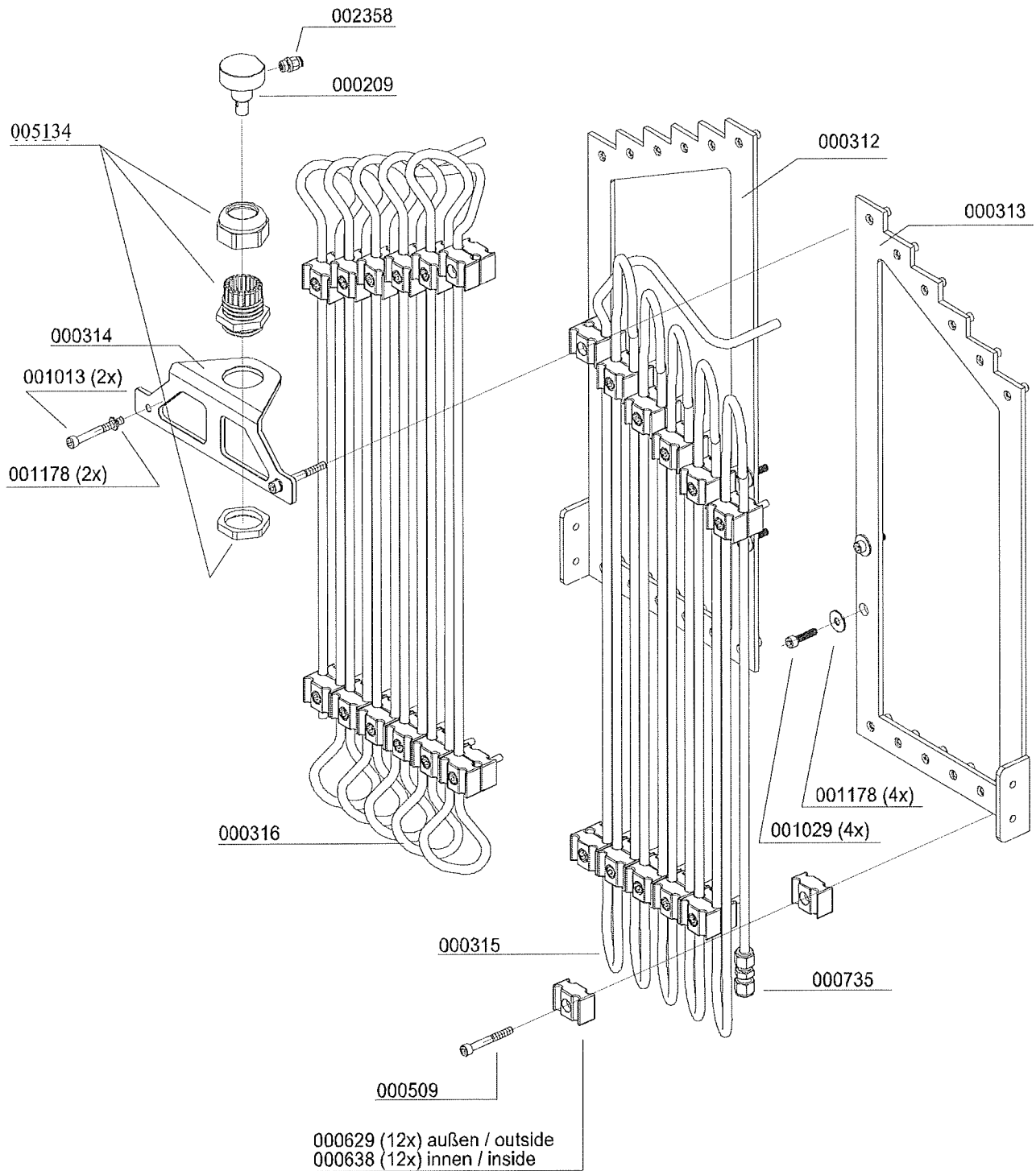
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Kühler 3. u. 4. Stufe / Spare Part List: Cooling Pipes 3rd and 4th Stage

Bestell-Nr. / Order No.	Benennung	Description
000209	Oeleinfüllstopfen	Oil Filler Plug
000312	Halter mit Blindnietmuttern	Bracket c/w Blind Rived Nuts
000313	Halter mit Blindnietmuttern	Bracket c/w Blind Rived Nuts
000314	Halteblech Ölschlauch	Bracket Oil House
000315	Kühlrohr links 4.Stufe ohne Halter u. Klemmen	Cooling Pipe 4th w/o Holder&Clamp and Olive Seal
000316	Kühlrohr links 3.Stufe ohne Halter u. Klemmen	Cooling Pipe 3rd w/o Holder&Clamp and Olive Seal
000509	Zylinderschraube M6 x 35 DIN 912	Allen Bolt M6 x 35 DIN 912
000629	Doppelschelle 2 x 8mm 1 Paar, PVC schwarz	Pipe Clamp 2x8mm - 1 pair, PVC black
000638	Doppelschelle 2 x 8 mm 1 Paar, Alu	Pipe Clamp 2x8mm 1pair, Alloy
000735	Verschraubung G08PL	Connection G08P
001013	Zylinderschraube M6x45mm DIN912 8.8 ZN	Allen Bolt M6x45mm DIN912 8.8 ZN
001029	Zylinderschraube M6x20mm DIN912 8.8 ZN	Allen Bolt M6x20mm DIN912 8.8 ZN
001178	U-Scheibe A6 DIN902 ZN	Washer A6 DIN902 ZN
002358	Schnellkupplung gerade	Quick rel. coupling, straight
005134	PG Verschraubung PG29 kompl. m. Klemmmutter	PG Connection PG29 c/w Nut

## 9. Ersatzteilliste / Spare Part List

Baugruppe: Kühler 3. u. 4. Stufe / Assembly: Cooling Pipes 3rd and 4th Stage





## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Sicherheitsventil / Spare Part List: Safety Valve

Bestell-Nr. / Order No.	Benennung	Description
000233	Sockel für Sicherheitsventil mit TÜV, x G1/4" seitlich 180°	Base for Safety Valve TÜV type
000553	Sicherheitsventil 225bar mit TÜV	Safety Valve 225bar c/w TÜV
000554	Sicherheitsventil 250bar mit TÜV	Safety Valve 250bar c/w TÜV
000555	Sicherheitsventil 300bar mit TÜV	Safety Valve 300bar c/w TÜV
000556	Sicherheitsventil 330bar mit TÜV	Safety Valve 330bar c/w TÜV
000557	Sicherheitsventil 350bar mit TÜV	Safety Valve 350bar c/w TÜV
000738	Verschraubung GE08LRFCX	Connection GE08LRFCX
000765	Schneidring PSR 08 LX	Olive Seal PSR 08 LX
000766	Mutter 8L	Union Nut 8L
000838	Verschlussstopfen VSTIR1/4EDCF	Plug VSTIR1/4EDCF
001044	Zylinderschraube	Allen Bolt
001058	Zylinderschraube	Allen Bolt
001158	Mutter	Nut
001181	U-Scheibe	Washer
001244	O-Ring, Flansch Sicherheitsventil	O-Ring, Flange Safety Valve
001814	Sicherheitsventil 225bar mit CE	Safety Valve 225bar with CE
001815	Sicherheitsventil 250bar mit CE	Safety Valve 250bar with CE
001816	Sicherheitsventil 330bar mit CE	Safety Valve 330bar with CE
001817	Sicherheitsventil 350bar mit CE	Safety Valve 350bar with CE



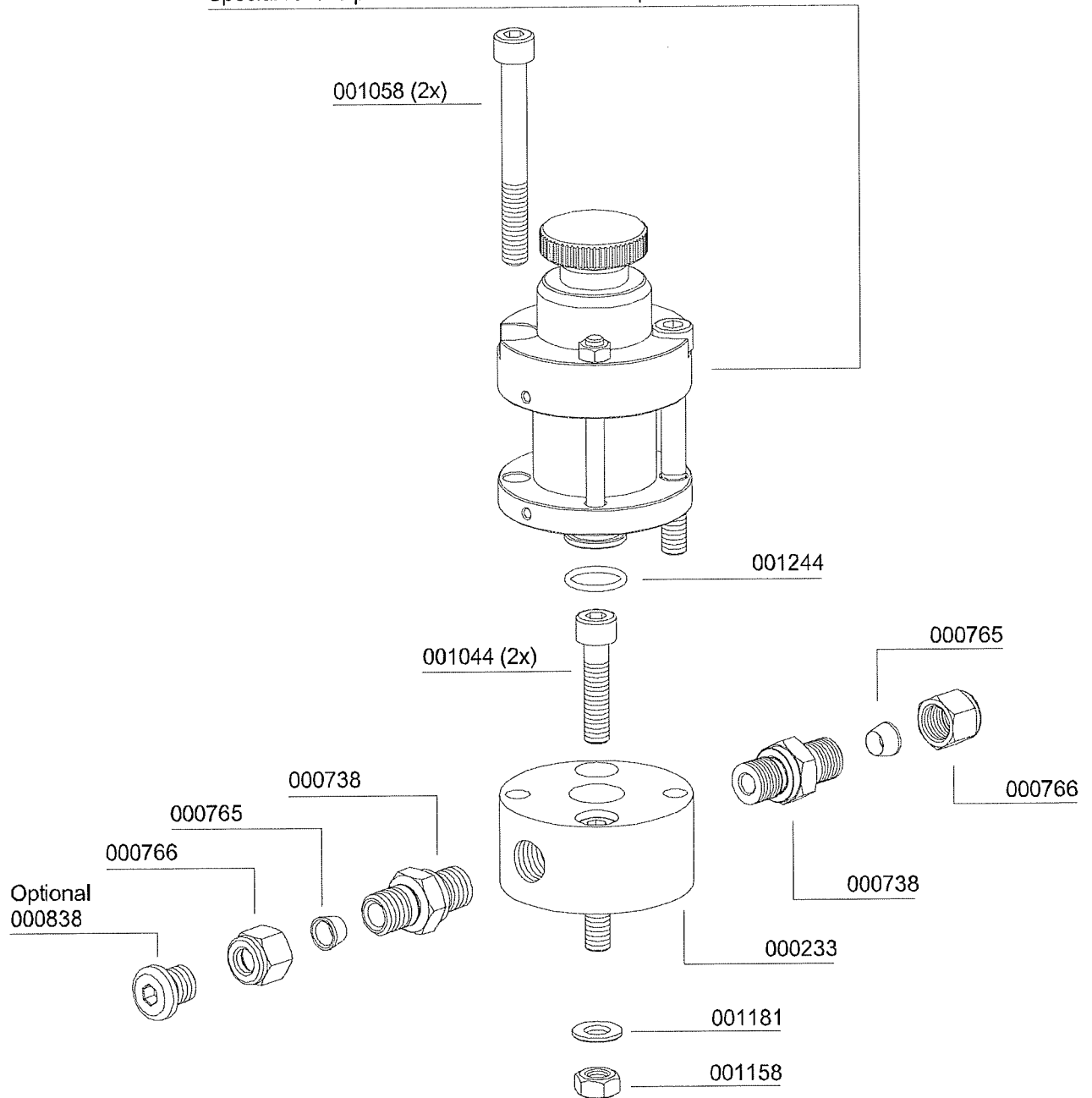
## 9. Ersatzteilliste / Spare Part List

### Baugruppe: Sicherheitsventil / Assembly: Safety Valve

Druck/ Pressure	SV-Ventil mit CE-Prüfung/ Safety Valve with CE	SV-Ventil mit TÜV-Prüfung/ Safety Valve with TÜV
225 bar	001814	000553
250 bar	001815	000554
285/300 bar	-----	000555
330 bar	001816	000556
350 bar	001817	000557

Sonder-Einstelldrücke auf Anfrage! /

Special relieve pressures are available on request!





## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Druckhalteventil / Spare Part List: Pressure Maintaining Valve

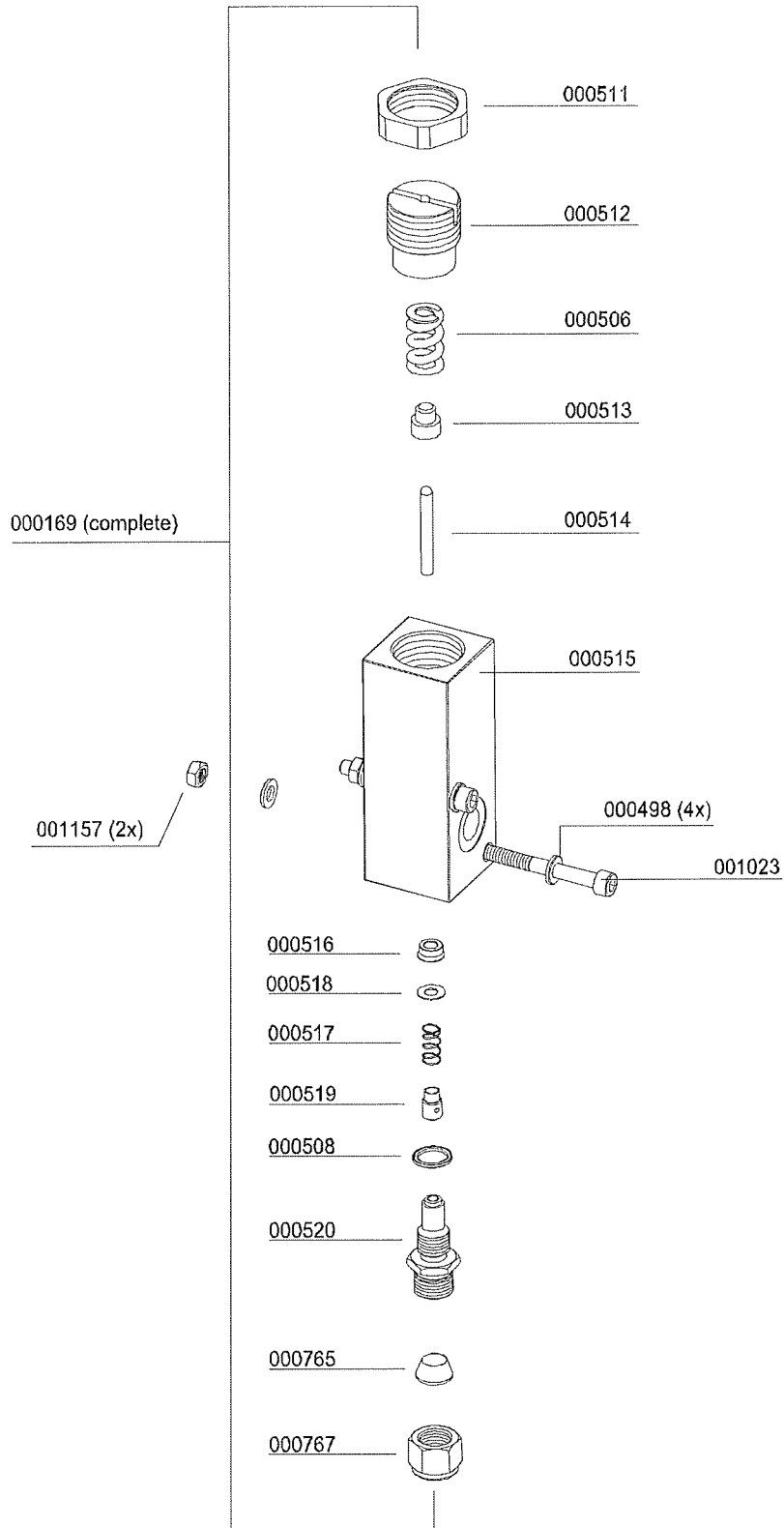
Bestell-Nr. / Order No.	Benennung	Description
000169	Druckhalterückschlagventil, schwarz	Pressure Maint. Valve black
000498	U-Scheibe DIN 125 A6	Washer DIN 125 A6
000506	Feder	Spring
000508	USIT Ring 13,7 x Ø20 x 1,5	Gasket Ring U-Sit 13,7 x Ø20 x 1,5
000511	Mutter, Druckhalterückschlagventil	Lock Nut PMV
000512	Schraube, Druckhalte-Rückschlagventil	Set Bolt PMV
000513	Druckstück für Druckhalteventil, Federadapter	Spring Adapter PMV, spring adapter
000514	Stift Druckhalte-/Rückschlagventil	Stud PMV
000515	Gehäuse, Druckhalte-Rückschlagventil	Main Body PMV
000516	Nutring, Druckhalterückschlagventil 5 x 10 x 5/2,5 90° Blau	Seal Ring PMV 5 x 10 x 5/2,5 90° blue
000517	Feder, Druckhalterückschlagventil	Coil Spring PMV
000518	Unterlegscheibe, 10 x 6 x 1, Messing	Washer, 10 x 6 x 1, Brass
000519	Dichtkappe, Druckhalte-Rückschlagventil, schwarz	Plastic Seal Piston PMV, black
000520	Hohlschraube, DHRV	Inlet Jet PMV
000765	Schneidring PSR 08 LX	Olive Seal PSR 08 LX
000767	Mutter 08 S	Union Nut 08 S
001023	Zylinderschraube	Allen Bolt
001157	Hutmutter M6 DIN1587 ZN	Domed Nut M6 DIN1587 ZN





## 9. Ersatzteilliste / Spare Part List

Baugruppe: Druckhalteventil / Assembly: Pressure Maintaining Valve





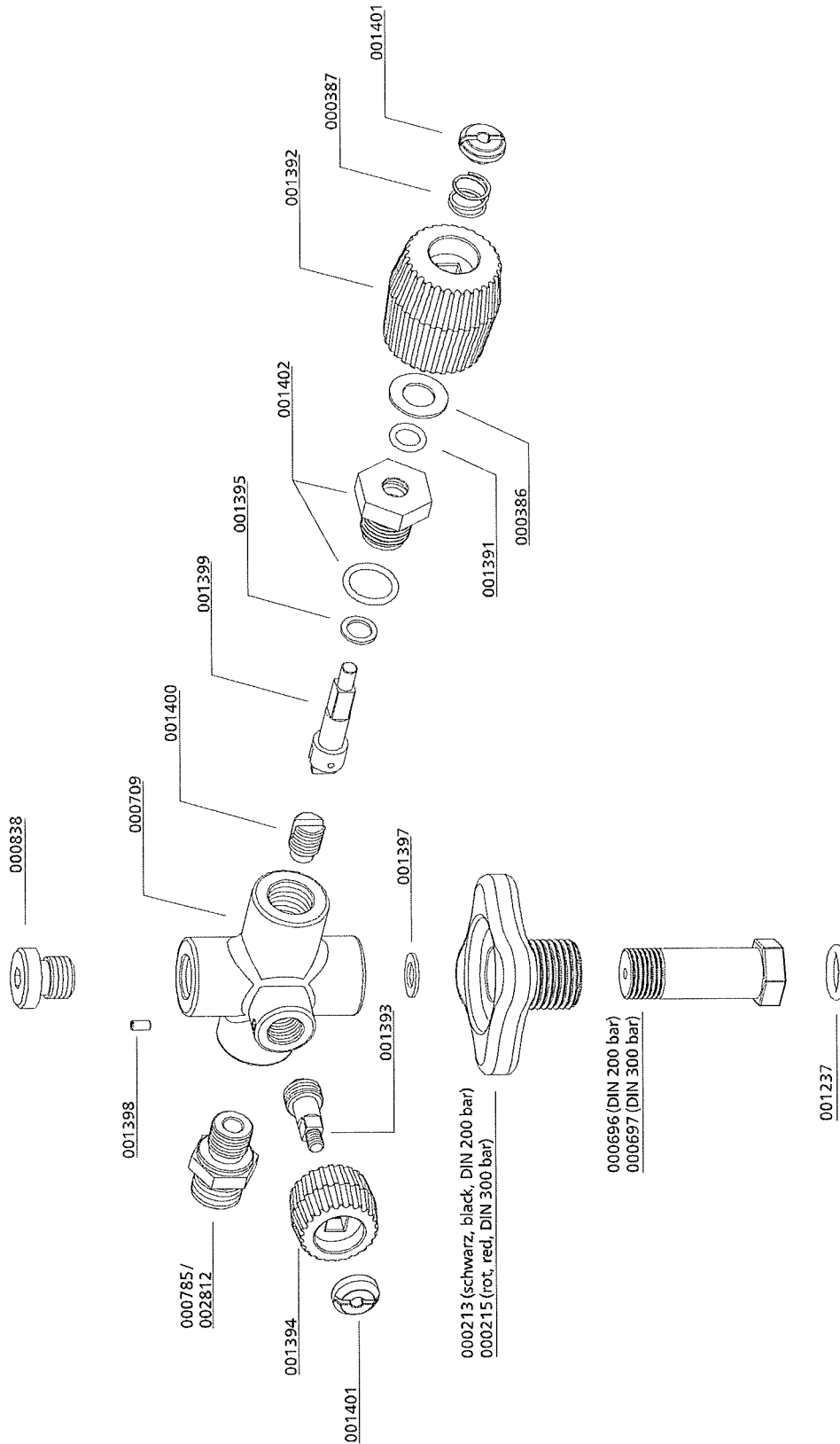
## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Füllventil / Spare Part List: Filling Valve

Bestell-Nr. / Order No.	Benennung	Description
000213	Handrad, schwarz, 200/232 bar DIN, G 5/8"	Hand Wheel DIN 200 bar, black, G 5/8"
000215	Handrad rot, 300 bar DIN	Hand Wheel DIN 300 bar, red
000386	Gleitscheibe, Kreuzventil	Slide Washer
000387	Feder, Kreuzventil	Coil Spring, cross d. valve
000696	Füllanschluss o. Handrad, Messing verchr., 200 bar, AG M16x1,5	Filling Connect. w/o handwheel. 200 bar, AG M16x1,5
000697	Füllanschluss o. Handrad, ab 2005, 300bar, AG M16X1,5 für Schlauch	Filling Connec. w/o handwheel, 300bar, AG M16X1,5 hose
000709	Füllventil Kreuzbauweise, v2 x G1/4" IG, 1 x M16 x 1,5mm IG	Filling Valve cross design
000785	Verschraubung konisch, GE 10L R1/4"	Connection conical, GE 10L R1/4"
000838	Verschlussstopfen, VSTI R1/4" ED CFX	Plug, VSTI R1/4" ED CFX
001237	O-Ring DIN Flaschenanschluss 200/300bar, 12,37x2,62 NBR90	O-Ring DIN filling connector 200/300bar, 12,37x2,62 NBR90
001322	CU-Ring, Ø8 X 13 X 1,5mm DIN7603A	Copper Seal Ring, Ø8 X 13 X 1,5mm DIN7603A
001391	O-Ring, Kreuzventil	O-Ring, / Cross design Filling Valve
001392	Füllhandrad Kreuzventil Ø35mm	Hand Wheel Filling Valve cross Ø35mm
001393	Entlüftungsspindel	Vent Spindle
001394	Entlüftungshandrad Ø27mm	Vent Hand Wheel Ø27mm
001395	Gleitscheibe, schwarz, Kreuzventil	Slide Washer, plastic black
001397	Kupferdichtung 8 x 14 x 1mm	Copper Seal Ring 8 x 14 x 1mm
001398	Madenschraube M3x8mm	Worm Screw M3x8mm
001399	Adapterwelle, Kreuzventil	Adapter Shaft
001400	Dichtspindel, Kreuzventil	Seal Spindle Filling Valve
001401	Schlitzmutter	Slotted Nut
001402	Klemmverschraubung, kompl. mit O-Ringen	Filling Spindle Body, c/w O-rings
002812	Verschraubung, Edelstahl, drehbar, G1/4" konisch M16X1,5	Verschraubung, Edelstahl, rotatable, G1/4" conical M16X1,5

## 9. Ersatzteilliste / Spare Part List

### Baugruppe: Füllventil / Assembly: Filling Valve





## 9. Ersatzteilliste / Spare Part List

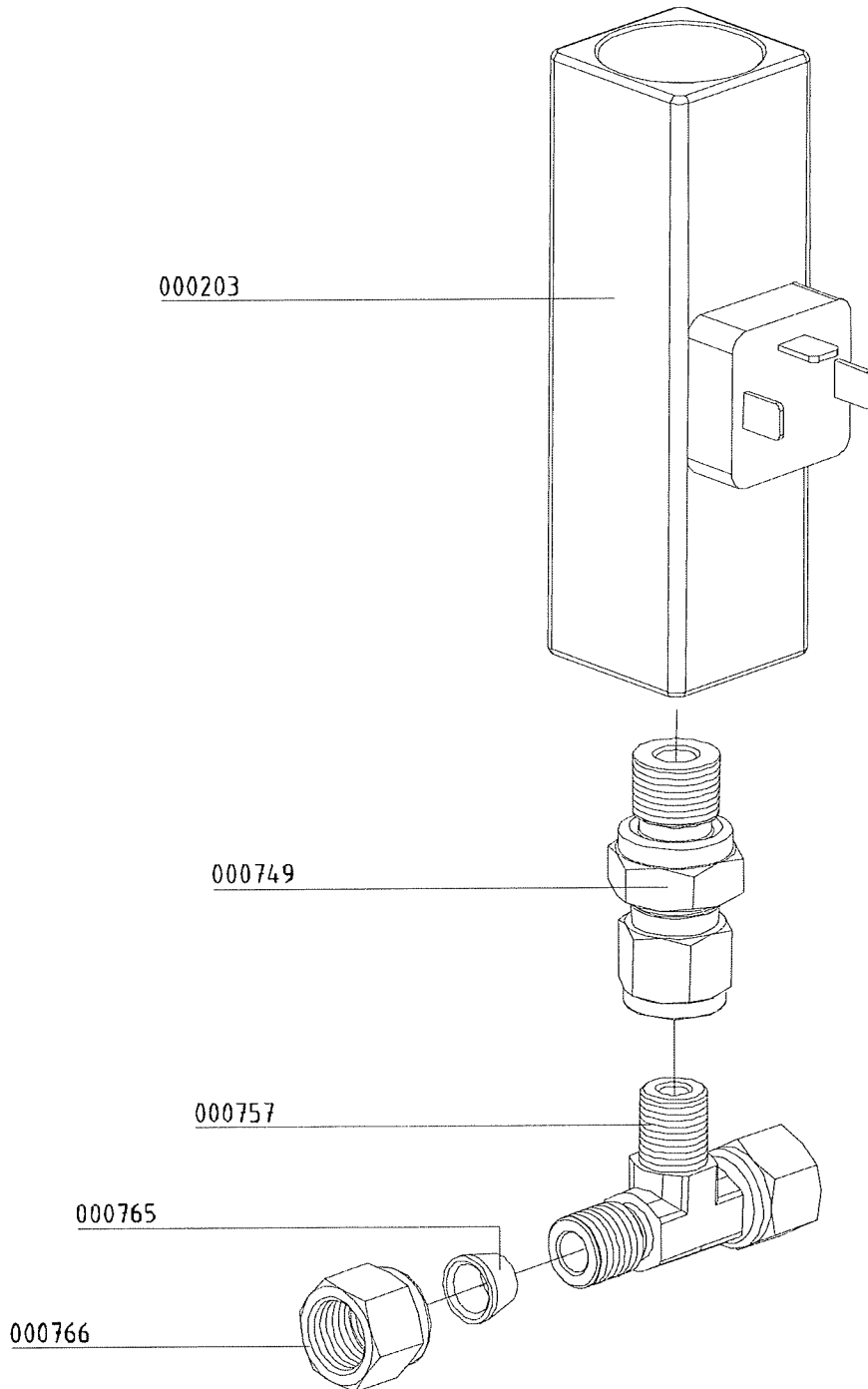
### Ersatzteilliste: Druckschalter / Spare Part List: Pressure Switch

Bestell-Nr. / Order No.	Benennung	Description
000203	Druckschalter 50-350 bar	Pressure Switch 50-350 bar
000749	Verschraubung, mit fester Mutter	Connection with fixed nut
000757	T-Verschraubung mit fester Mutter seitl. EL 08 L	T-Connection with fixed nut EL 08 L
000765	Schneidring PSR 08 LX	Olive Seal PSR 08 LX
000766	Mutter 08L CFX	Nut 08L CFX



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Druckschalter / Assembly: Pressure Switch





## 9. Ersatzteilliste / Spare Part List

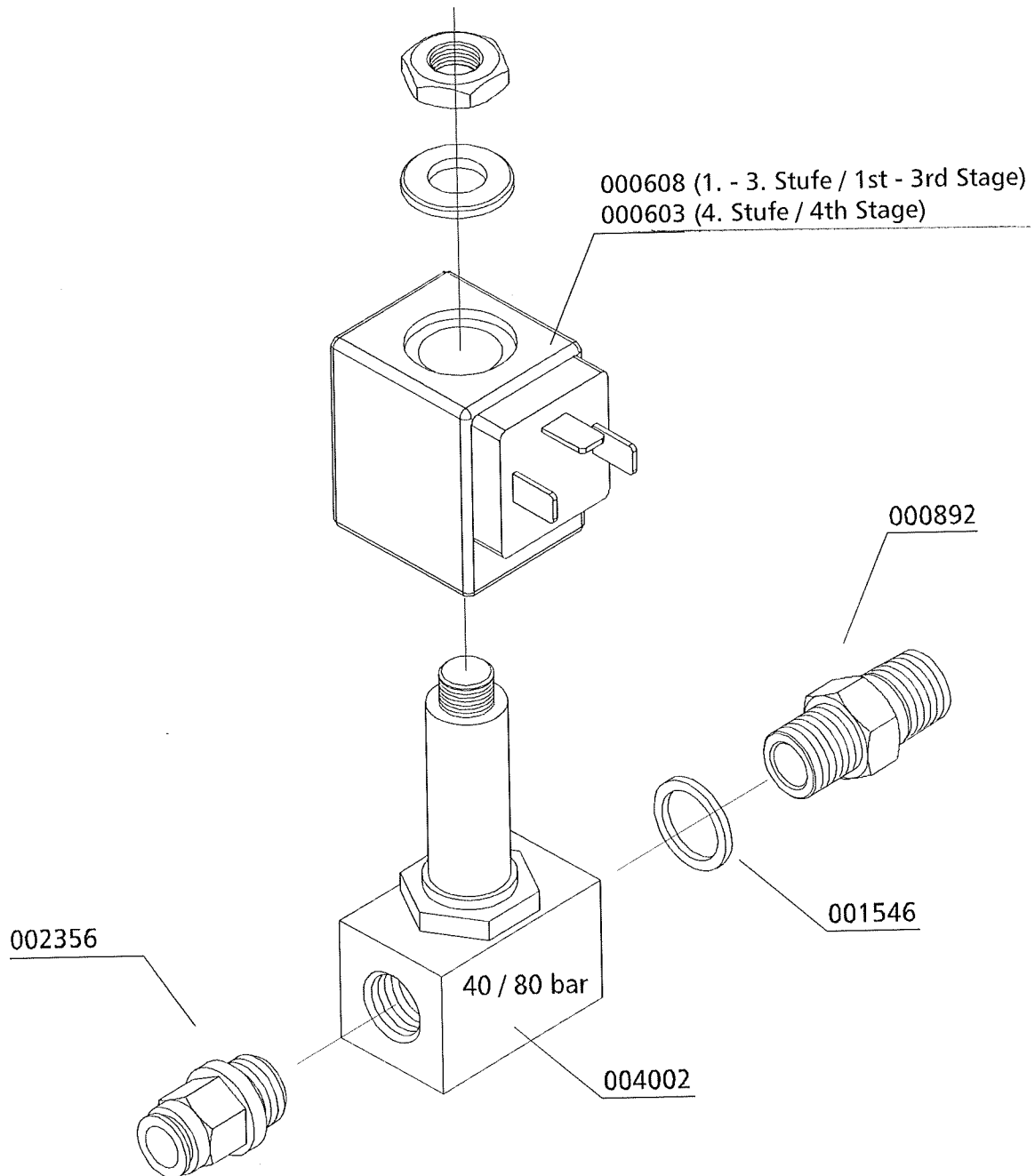
### Ersatzteilliste: Magnetventil / Spare Part List: Solenoid

Bestell-Nr. / Order No.	Benennung	Description
000603	Magnetspule, NC, 12V DC, 19W, 80 bar	Solenoid Coil NC 12V DC, 19W, 80 bar
000608	Magnetspule, NC, 12V DC, 10W, 40 bar	Solenoid Coil NC 12V DC, 10W, 40 bar
000892	Doppelnippel 4F3MK4S G1/8"-1/4"	Double Nipple 4F3MK4S G1/8"-1/4"
001546	Aludichtring für Magnetventile 18 x 13,2 x 2,5mm	Alloy Seal Ring for solenoid 18 x 13,2 x 2,5mm
002356	Schnellkupplung gerade, G1/4"-8mm	Quick rel. coupling, straight, G1/4"-8mm
004002	Magnetventil, Magnetventil 40/80 bar NC, Gehäuse: Messing	Solenoid Valve, Magnetventil 40/80 bar NC, Housing: Brass



## 9. Ersatzteilliste / Spare Part List

Baugruppe: Magnetventil / Assembly: Solenoid





## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Hochdruckabgang / Spare Part List: High Pressure Outlet

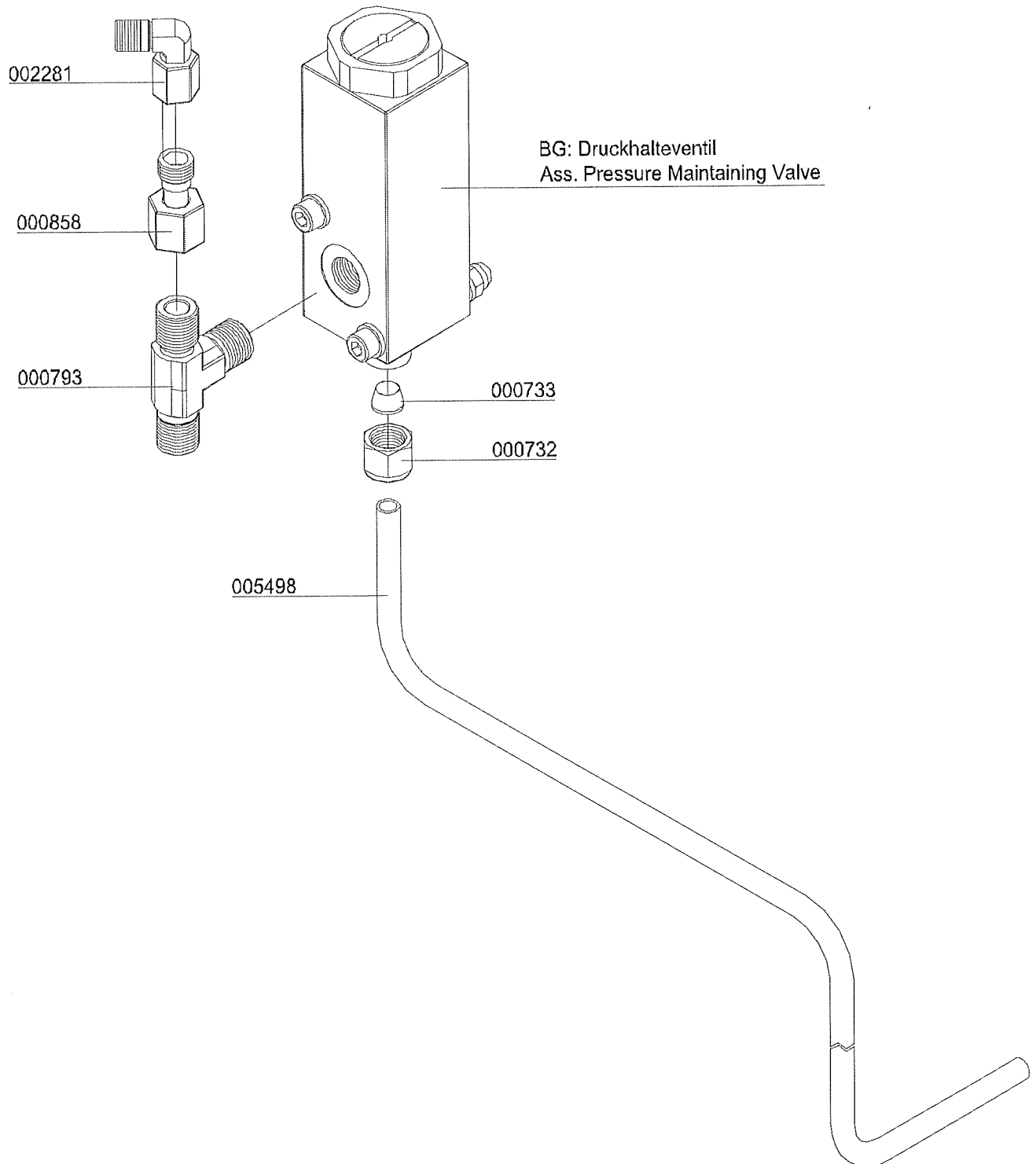
Bestell-Nr. / Order No.	Benennung	Description
000732	Mutter 06 L	Nut 06 L
000733	Schneidring SR 06	Olive Seal SR 06
000793	Verschraubung TE 10L R1/4"	Connection TE 10L R1/4"
000858	Reduzierung, mit fester Mutter RED 10/06L	Reducer with fixed nut RED 10/06L
002281	Verschraubung, mit fester Mutter W06LOMDA3C	Connection with fixed nut EW06LOMDA3C
005498	Rohrleitung 8mm, Edelstahl	Pipe s/s 8mm





## 9. Ersatzteilliste / Spare Part List

Baugruppe: Hochdruckabgang / Assembly: High Pressure Outlet





## 9. Ersatzteilliste / Spare Part List

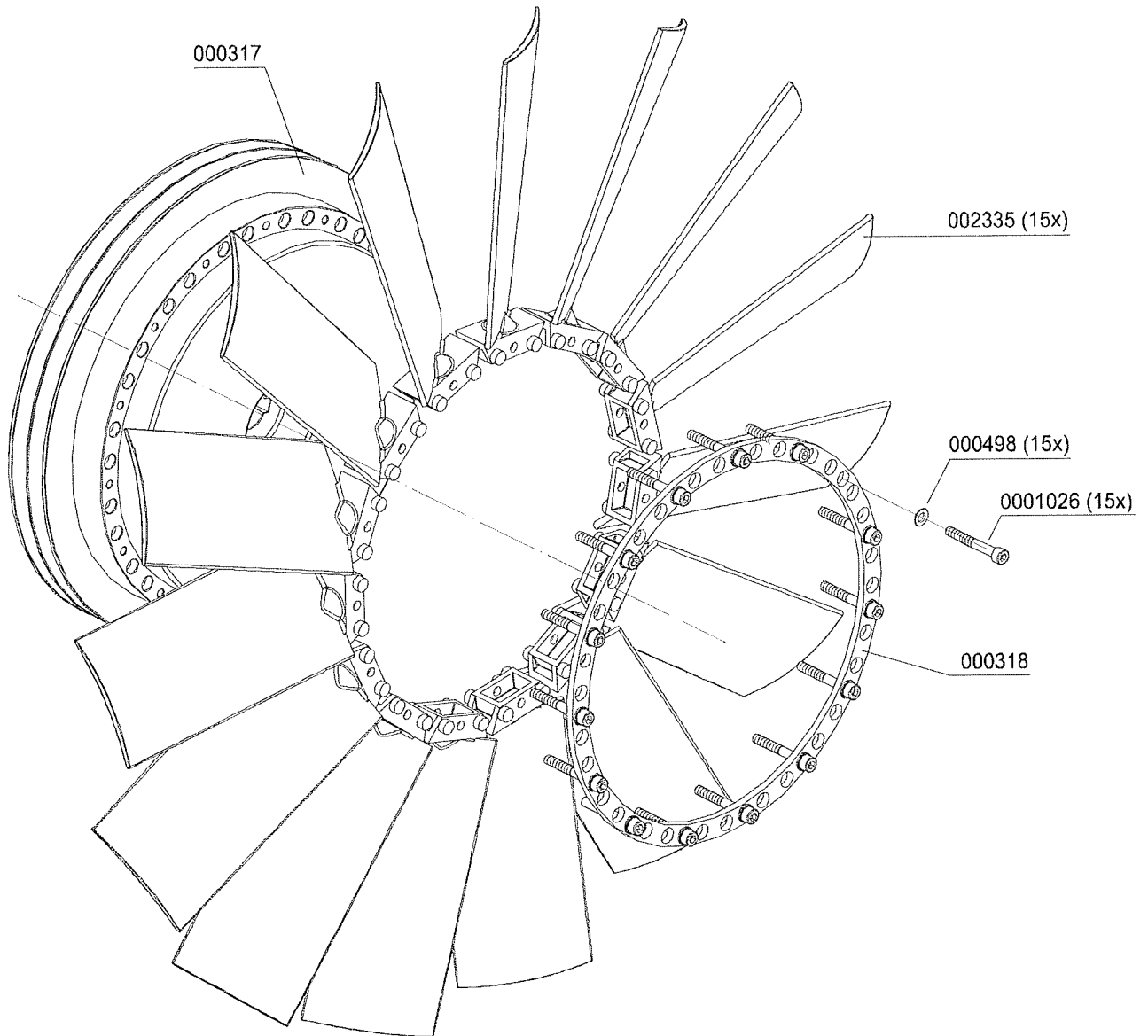
### Ersatzteilliste: Lüferrad / Spare Part List: Cooling Fan

Bestell-Nr. / Order No.	Benennung	Description
000317	Schwungscheibe	Flywheel
000318	Zentrierring, Lüfterblätter	Fixing Ring Fan Blades
000498	U-Scheibe A6	Washer A6
001026	Zylinderschraube M6x40 DIN 912 8.8 ZN	Allen Bolt M6x40 DIN 912 8.8 ZN
002335	Ventilatorflügelblatt, schwarz	Fan Blade, black, new version



## 9. Ersatzteilliste / Spare Part List

### Baugruppe: Lüfterrad / Assembly: Cooling Fan





## 9. Ersatzteilliste / Spare Part List

### Ersatzteilliste: Batterie / Spare Part List Battery

Bestell-Nr. / Order No.	Benennung	Description
001039	Zylinderschraube M8x16mm DIN912 8.8 ZN	Allen Screw M8x16mm DIN912 8.8 ZN
001098	Sechskantschraube M10x16mm DIN933 8.8 ZN	Hexagon Screw M10x16mm DIN933 8.8 ZN
001158	Mutter M8 DIN934 ZN	Nut M8 DIN934 ZN
001159	Stoppmutter M8 DIN985 ZN	Lock Nut M8 DIN985 ZN
001181	U-Scheibe A8 DIN125 ZN	Washer A8 DIN125 ZN
001182	U-Scheibe A8 DIN9021 ZN	Washer A8 DIN9021 ZN
001184	Schnorr-Scheibe, S8 N0110 ZN	Clamp Washer S8 N0110 ZN
001186	U-Scheibe A10 DIN125 ZN	Washer A10 DIN125 ZN
001189	Schnorr-Scheibe, S10 N0110 ZN	Clamp Washer S10 N0110 ZN
004091	Massekabel	Earth cable
004571	Batterie 12V 45Ah 190A	Battery 12V 45Ah 190A
004771	Gewindestange M8	Threaded Bar M8
004772	Halteschiene Batterie	Bracket, battery
004773	Abdeckkappe + Batteriepol, Farbe: rot	Cap+ battery terminal, red
004774	Masseband mit Polklemme	Earth cable
005127	Batteriekabel, Farbe: rot	Cable for battery
005488	Kontaktscheibe ART 55 M8	Contact Washer ART 55 M8



## 9. Ersatzteilliste / Spare Part List

### Baugruppe: Batterie / Assembly Battery

