



CHAPTER OVERVIEW

Operating Instructions

A

ECC - Electronic Compressor Control (if equipped).....

B

Spare Parts Lists

C

Options (if equipped).....

D

Attachment

E

Manufacturer in terms of 97/23/EC

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SERVICE INFORMATION / WARRANTY

Compressor information

Type designation

Serial number

Date of construction

Purchase information

Purchase date

First commissioned on

Warranty period

Dealer's stamp

Warranty

L&W will uphold warranty claims made during a period of 12 months from the invoice date.

If the compressor was purchased from an official L&W dealer, the date on the dealer's invoice is valid. Warranty claims can only be made on presentation of the original invoice.

Should verifiably defective parts have been delivered, we will decide to either replace the parts or repair them. The resulting transport and assembly costs will be invoiced.

No reduction of the purchase price or changes to the contract can be made. The parts for which a claim is being made should be kept safe by the purchaser and, when requested, sent to us at their cost. Replaced parts become the property of L&W. If maintenance work is carried out without our knowledge or permission by the purchaser or a third party, we are absolved from any liability for warranty claims. As a matter of principle, warranty claims can only be made by the initial purchaser.

Operating Instructions

Breathing Air Compressor

LW 200 B MC / LW 250 B MC





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GENERAL INFORMATION

General Information

We strongly recommend reading 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. Carry out other commissioning steps only if you have fully understood the following contents.

Before commissioning and using the unit, carry out all the essential preliminary work and measures concerning legal regulations and safety. These are described on the following pages of this operation manual.

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Description of Marks and Warning Signs

The following warning signs are used in this document to identify the corresponding warning notes which require particular attention by the user. The warning signs are defined as follows:



Caution

Indicates an imminently hazardous situation which, if not avoided, could result in serious injury, physical injury or death.



Warning

Indicates a potentially hazardous situation which, if not avoided, could result in physical injury or damage to the product or environment.



Note

Indicates additional information on how to use the unit.



DESCRIPTION

Scope of Delivery LW 200 B MC / 250 B MC

The MC Serie is the perfect solution for dive centers, ships, boats and places with limited space and convince with a brand new and powerful compressor block.

An innovative characteristic based on the new Motion Link design allows a very slim design. Customers can choose between two different models with a delivery rates of 200 l/min or 250 l/min. These compressors are designed for a long lifetime and continuously operations, the ideal machine for smaller stationary applications. Long maintenance intervals guarantee extremely low maintenance costs.

With a small and handy frame these compressors are highly predestined for mobile breathing air applications.

Versions

Filling pressure versions:

- PN 225 bar
- PN 330 bar
- PN 225 / 330 bar

Specifications

- 4 stroke drive engine
- Manual condensate drain
- 1 x Filling hose c/w filling valve and pressure gauge
- Pressure maintaining and non return valve
- All pistons c/w steel piston rings
- Oil- / Water separators after 2nd and 3rd stage
- Safety valves after each stage
- 3 x concentric inlet / outlet valves
- Filling pressure to your choice (200 or 300 bar)
- Connections to your choice (DIN 200 bar or 300 bar, CGA 200 bar or 300 bar and INT)
- Breathing air purification in accordance to EN 12021

Options

- Automatic stop at final pressure
- Additional filling hose c/w filling valve
- Oil pump
- Oil pressure gauge
- Intermediate pressure gauges
- Switch over device 200 / 300 bar
- Hour counter
- Additional high pressure outlet
- Wheelset
- Honda drive engine

DESCRIPTION

Technical Data



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Technical Data	LW 200 B MC	LW 250 B MC
Capacity [l/min]:	200	250
Max. Operating Pressure [bar]:	350	350
RPM [min ⁻¹]:	1425	1825
Number of Pressure Stages:	3	3
Cylinder Bore 1st Stage [mm]:	Ø 75.5	Ø 80
Cylinder Bore 2nd Stage [mm]:	Ø 32	Ø 32
Cylinder Bore 3rd Stage [mm]:	Ø 14	Ø 14
Medium:	Compressed Air / Breathing Air	
Intake Pressure:	atmospheric	
Oil Capacity [l]:	0,8	0,8
Intake Temperature [°C]:	0 < +45	0 < +45
Ambient Temperature [°C]:	+5 < +45	+5 < +45
Engine:	Briggs & Stratton	
Drive Power [kW / HP] :	6.7 / 9.0	6.7 / 9.0
RPM Motor [min ⁻¹]:	3600	3600
Start:	Starter Cord Handle	
Noise level [dB(A)]:	89	90
Dimensions L x W x H [mm]:	1060 x 500 x 590	1060 x 500 x 590
Dimensions with telescope intake pipe B x T x H [mm]:	1060 x 500 x 1300	1060 x 500 x 1300
Weight [kg]:	110	110
Content Volume Filter housing [l]:	0.44	0.44

DESCRIPTION

Unit Assembly

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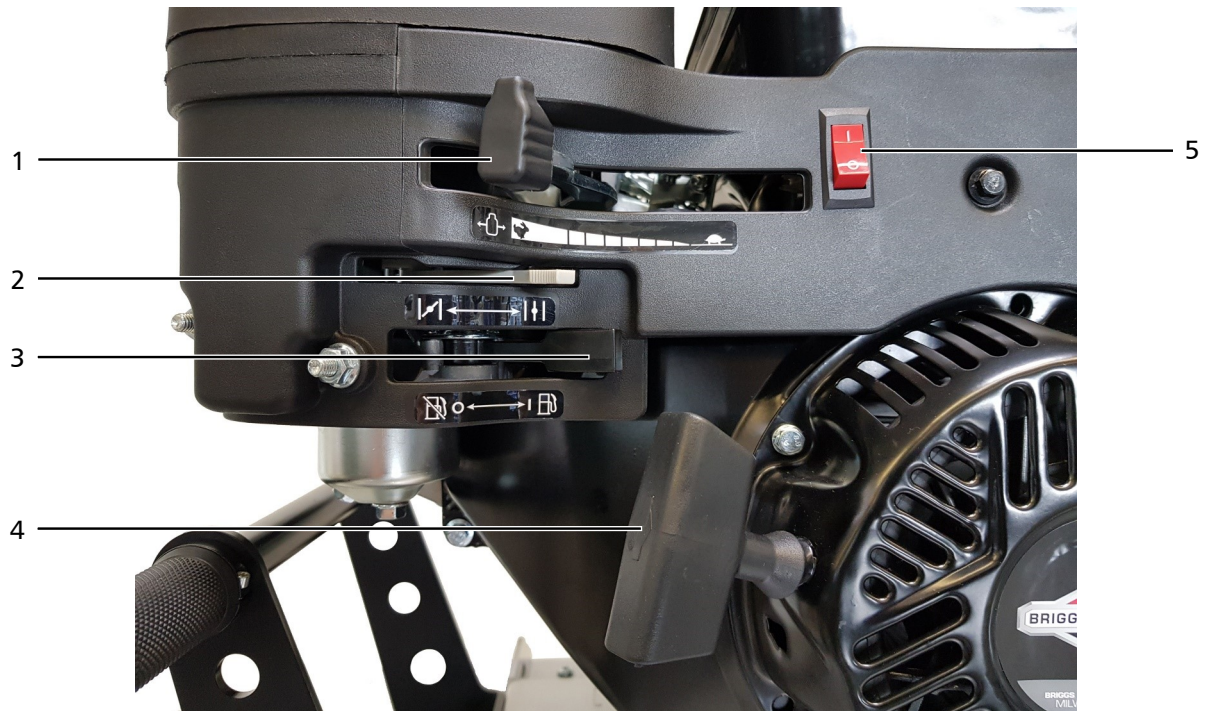


No.	Designation
1	Drive Engine
2	Final Filter Housing with Safety Valve
3	Condensate Drain Hoses
4	Filling Hose with Filling Valve and Filling Pressure Gauge
5	Compressor Block
6	Telescope Intake Pipe

DESCRIPTION

Drive Engine

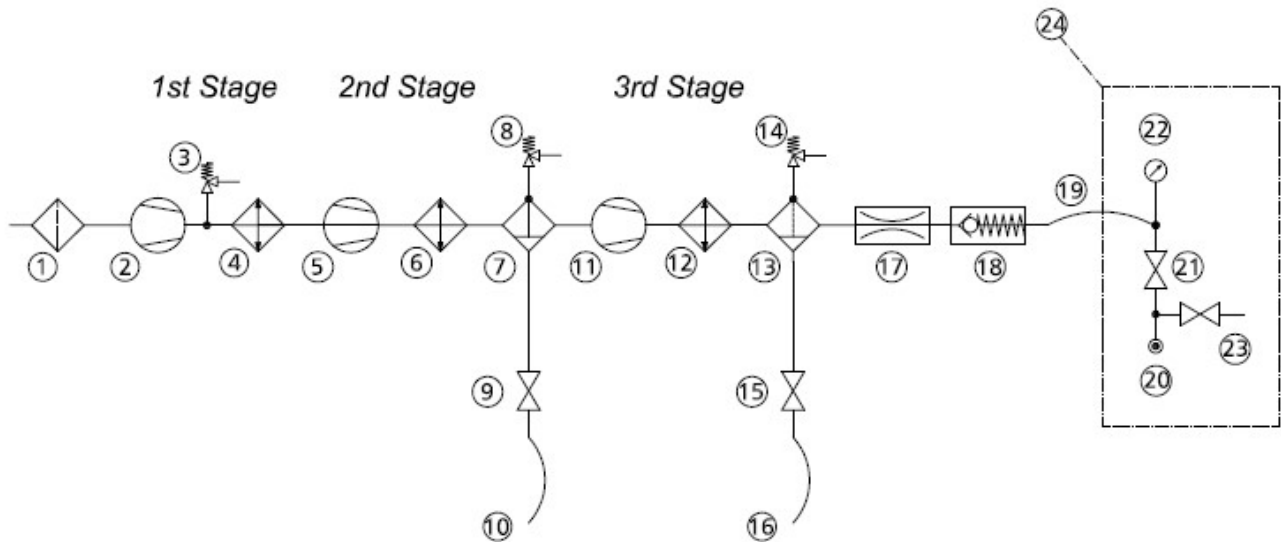
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No.	Designation
1	Throttle Control
2	Choke
3	Fuel Shut-off
4	Starter Cord handle
5	Stop Switch

DESCRIPTION

Flow Chart



- | | |
|------------------------------|---------------------------------------|
| 1. Air Intake Filter | 13. Oil-/Water Separator |
| 2. 1st Pressure Stage | 14. Final Pressure-Safety Valve |
| 3. Safety Valve 1st Stage | 15. Condensate Release Valve |
| 4. Cooling Pipe 1st Stage | 16. Condensate Release Hose |
| 5. 2nd Pressure Stage | 17. Pressure Maintaining Valve |
| 6. Cooling Pipe 2nd Stage | 18. Non-Return Valve |
| 7. Oil-/Water Separator | 19. Filling Hose |
| 8. Safety Valve 2nd Stage | 20. Filling Connector |
| 9. Condensate Release Valve | 21. Filling Valve |
| 10. Condensate Release Hose | 22. Pressure Gauge (Filling Pressure) |
| 11. 3rd Pressure Stage | 23. Vent Valve |
| 12. Cooling Pipe Final Stage | 24. Unit Filling Valve "Cross Design" |



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SAFETY PRECAUTIONS



SAFETY PRECAUTIONS

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Intended Use

Only use the unit in perfect condition for its intended purpose, safety and intended use and observe the operating instructions! In particular disorders that may affect safety have to be eliminated immediately!

Use the unit exclusively for the determined medium (see "Technical Data"). Any other use that is not specified is not authorized. The manufacturer/supplier shall not be liable for any damages resulting from such use. Such risk lies entirely with the user. Authorization for use is also under the condition that the instruction manual is complied with and inspection and maintenance requirements are enforced.

No change and modification to the unit can be made without the written agreement of the manufacturer. The manufacturer is not liable for damage to persons or property resulting from unauthorized modifications.

Operators

Target groups in these instructions;

Operators

Operators are persons who are authorized and briefed for the use of the compressor.

Qualified personnel

Qualified personnel are persons who are entitled to repair, service, modify and maintain the system.



Warning

Only trained personnel are permitted to work on the unit!



Warning

Work on the electrical equipment on / with the machine / unit may only be carried out by qualified electricians.

SAFETY PRECAUTIONS

Safety Instructions on the Unit

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

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Warning
High voltage!



Note
Ensure correct direction of rotation!



Warning
Hot surfaces!



SAFETY PRECAUTIONS

General Safety Precautions

- Read the Operating Instructions of this product carefully prior to use.
- Strictly follow the instructions. The user must fully understand and strictly observe the instructions. Use the product only for the purposes specified in the intended use section of this document.
- Do not dispose the operating instructions. Ensure that they are retained and appropriately used by the product user.
- Only trained and competent personnel are permitted to use this product.
- Comply with all local and national rules and regulations associated with this product.
- Only trained and competent personnel are permitted to inspect, repair and service the product.
- Only authentic L&W parts and accessories may be used for maintenance work. Otherwise, the proper functioning of the product may be impaired.
- Do not use faulty or incomplete products. Do not modify the product.
- Inform L&W in the event of any product or component fault or failure.
- The quality of the air supply must meet EN 12021 specifications for breathing air.
- Do not use the product in areas prone to explosion or in the presence of flammable gases. The product is not designed for these applications. An explosion might be the result if certain conditions apply.

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SAFETY PRECAUTIONS

Unit customised Safety Notices

Organisational measures

- In addition to the instruction manual, observe and comply with universally valid legal and other obligatory regulations regarding accident prevention and environment protection.
- In addition to the instruction manual, provide supplementary instructions for supervision and monitoring duties taking into consideration exceptional factors e.g. with regard to organisation of work, production, personnel employed.
- Supervise personnel's work in accordance with the instruction manual, taking into account safety and danger factors.
- Observe all safety and danger notices on the compressor and check readability and completeness.

Safety Instructions Operation

- Take measures to ensure that the machine is only taken into operation under safe and functional conditions. Only operate the compressor if all protective and safety equipment, e.g. detachable protective equipment, are provided and in good working order.
- Check the compressor at least once per day for obvious damage and defects. Inform the responsible department / person immediately if anything is not as it should be (including operation performance). Shut down the machine immediately if necessary and lock it.
- In case of malfunction, stop the compressor immediately and lock it. Repair malfunctions immediately.
- If there is a failure in the electric energy supply, shut the machine / unit down immediately.
- Ensure safe and environmentally friendly disposal of consumables and old parts.
- The stipulated hearing protectors must be worn.
- Soundproofing equipment on the compressor has to be activated in safety function during operation.
- When handling with fats, oils and other chemical agents, observe the note for the product-related safety.



SAFETY PRECAUTIONS

Maintenance Instructions

- Hoses have to be checked by the operator (pressure and visual inspection) at reasonable intervals, even if no safety-related defects have been detected.
- Immediately repair any damage. Escaping compressed air can cause injury.
- Depressurise system and pressure lines before beginning repair work.
- Pressurised air lines must be laid and mounted by qualified personnel. Connections must not be mixed up. Fittings, length and quality of the piping must correspond to requirements.
- Adjustment, maintenance and inspection activities and keep appointments, including information on replacement parts / equipment, prescribed in the operating instructions have to be respected.
- If the machine / equipment is completely off during maintenance and repair work, it must be protected against unexpected restart. Turn off main control device and remove the key and/or display a warning sign on the main switch.
- The machine and especially the connections and fittings should be cleaned from oil, fuel and maintenance products at the beginning of the maintenance / repair. Do not use aggressive cleaning agents. Use fibre-free cleaning cloths.
- Switch off compressor and clean with a slightly damp cloth. Remove dirt from cooling pipes by using a brush.
- After cleaning, examine all pipes for leaks, loose connections, chafing and damage. Immediately eliminate any faults.
- Always retighten any screw connections loosened for maintenance or repair work.
- If it is necessary to remove safety devices for maintenance and repair work, these must be replaced and checked immediately after completion of the maintenance or repair work.
- The electrical equipment of the compressor must be regularly checked. Defects, such as loose screw connections or burnt wires, must be immediately rectified by electrically skilled personnel.
- Only personnel with particular knowledge and experience with pneumatics may carry out work on pneumatic equipment.
- Only personnel with particular knowledge and experience in gas equipment may carry out work on gas equipment.

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SAFETY PRECAUTIONS

Transportation Instructions

- Parts which need to be dismantled for transport purposes must be carefully replaced and secured before taking into operation.
- The transport may only be carried out by trained personnel.
- For transportation, only use lifting devices and equipment with sufficient lifting power.
- Do not stand or work under suspended loads.
- Also separate from minor relocation machinery / system of any external energy supply. Before recommissioning, reconnect the machine to the mains according to regulations.
- When recommissioning, proceed according to the operating instructions..

Safety Regulations

- Inspections according to legal and local obligatory regulations regarding accident prevention are carried out by the manufacturer or by authorised expert personnel. No guarantees whatsoever are valid for damage caused or favoured by the non-consideration of these directions for use.

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INSTALLATION

INSTALLATION

Outdoor Installation



Danger

Compressors with petrol or diesel motors must only be located outdoors, never indoors, not even in partially closed rooms however large they may be.

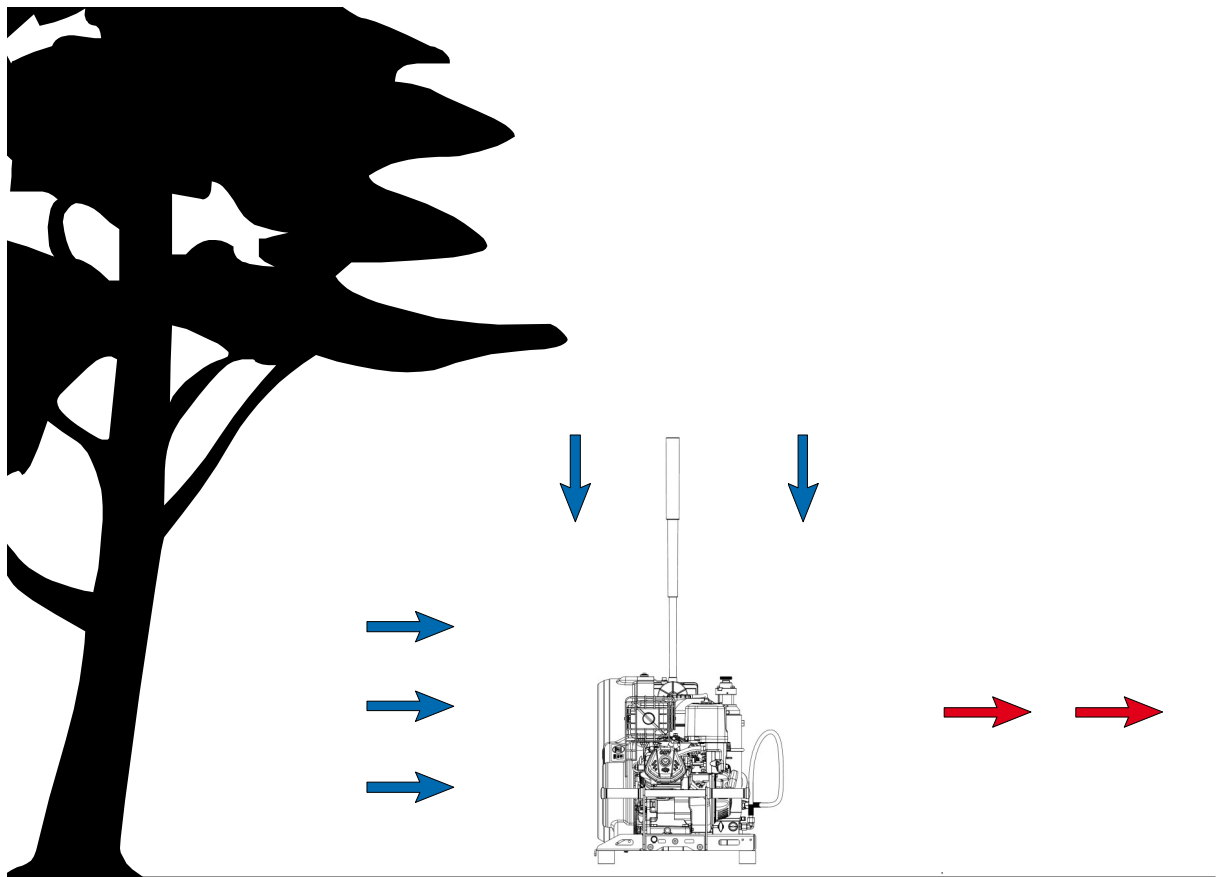
No operation in explosion-hazard areas.

The unit is not approved for operation in areas prone to explosion.

A

For outside installation observe the following:

- Install the unit horizontally and level. The floor must be vibration-free and capable of taking the load of the system weight.
- On units employing petrol or diesel motors, it is most important that only clean air is used. Position compressor in direction of wind so that exhaust fumes are blown away from the unit.
- Intake air must be free from noxious gas e.g. smoke, solvent vapours, exhaust fumes etc.
- Observe the specified operating temperature (see "Technical Data")!



INSTALLATION

Dimensions

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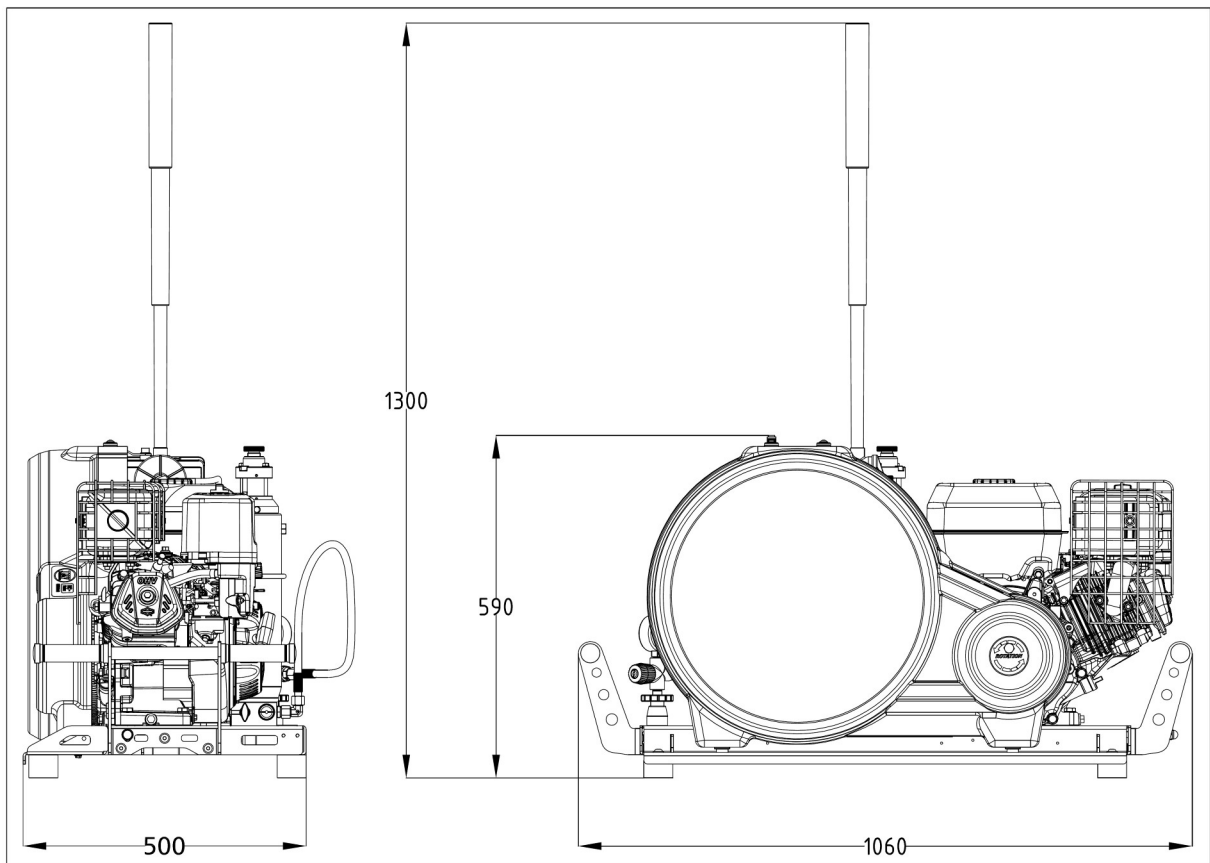


Fig. Dimensions

INSTALLATION

Minimum Distances



Note

Minimum distances must be adhered!

- Make sure that the compressor always has a sufficient amount of fresh air available.
- To prevent serious damage, ensure that the cooling air flow can flow freely.
- The following minimum distances must be adhered:
Front side min. 1500 mm, sides min. 500 mm, rear side min. 500 mm.
Avoid anything in this area which can restrict the cooling air flow.

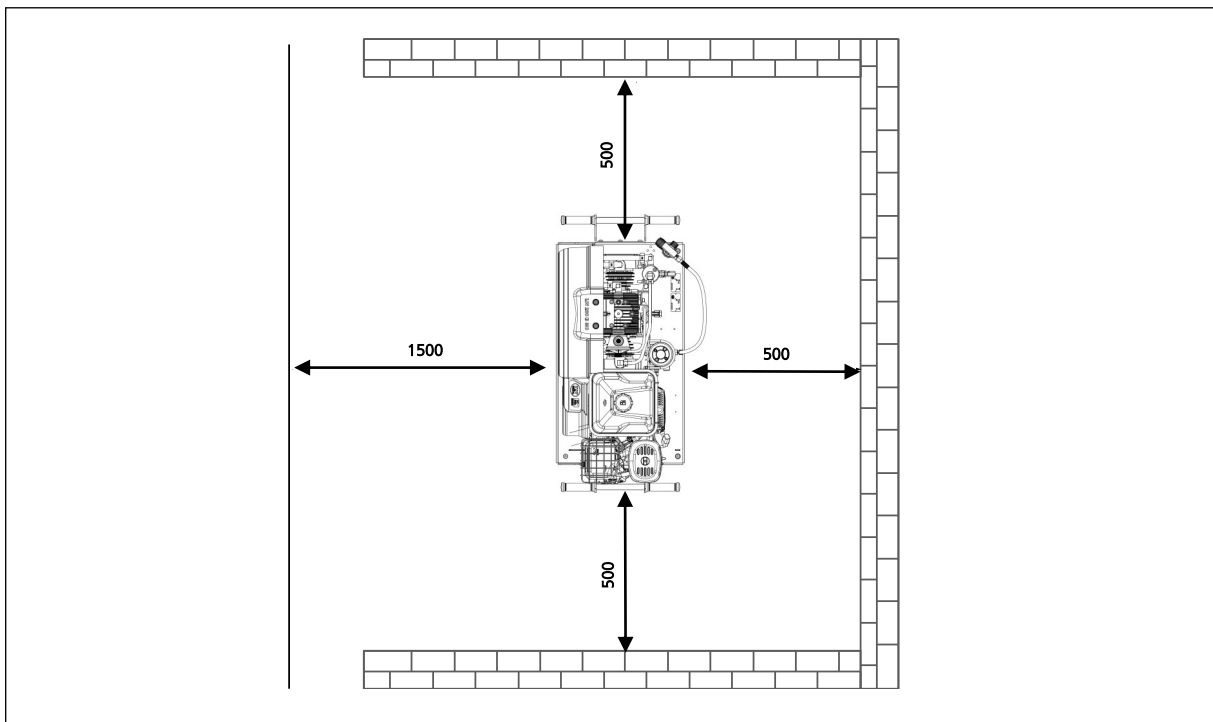


Fig. Minimum distances



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OPERATION

OPERATION

Important Operation Instructions



Danger

Compressors with petrol or diesel motors must only be located outdoors, never indoors, not even in partially closed rooms however large they may be.



Note

Ensure that all persons handling the compressor are familiar with function and operation of the unit.



Wear hearing protection

When working on a running machine, always wear hearing protection.

A



OPERATION

First Commissioning

Prior to first Commissioning, observe the following:

Necessary steps are described in the following.

- Position compressor in direction of wind so that exhaust fumes are blown away from the unit.
- Ensure that cooling air can flow freely.
- Take protection measures to avoid damages or injury by exhaust gases/exhaust pipe.
- Check fuel capacity.
- Check drive engine oil level.
- Check compressor oil level (see "Service and Maintenance").
- Check all connections and retighten if necessary.
- Check if the filter cartridge is in place (see "Service and Maintenance").
- Check the V-belt tension (see "Service and Maintenance").
- Read carefully the handbook of the petrol engine.
- Check if all filling valves are closed.

Start the compressor - **described on the following page.**

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OPERATION

First Commissioning

Start the Compressor

1. Open condensate valves.
2. Open fuel shut-off
3. Open filling valve.
4. Put stop switch to on - (I) position.
5. Slide choke lever to the left.
(if the engine is cold)
6. Slide throttle control lever to the left.
7. Start the compressor with the starter cord handle
8. Slide choke lever to the right.
9. Close condensate valves.
10. Run the compressor for about 2 minutes.
11. Close the open filling valve carefully.
12. Run the compressor up to maximum pressure and check the function of the final pressure safety valve. If the compressor is equipped with an automatic stop system please check the automatic shut down at final pressure. If the final pressure switch does not shut off, switch off the compressor with the stop switch. (see chapter "Remedying faults").
13. Stop the compressor with the stop switch.
14. Close fuel shut-off.
15. Check the compressor unit for leaks.
16. Now check the condensate drain valves:
 - Fix black condensate hoses
 - Open the condensate valves
 - If it's working order, air escape through the hoses.
17. Open all condensate valves and the filling valves carefully to vent.



Fig. Drive Engine



OPERATION

Daily Commissioning

Prior to Daily Operation, observe the following:

- Position compressor in direction of wind so that exhaust fumes are blown away from the unit.
- Ensure cooling air can flow freely.
- Take protection measures to avoid damages or injury by exhaust gases/exhaust pipe.
- Check fuel capacity.
- Check drive engine oil level.
- Check compressor oil level.
- Check if filter cartridge is in place / observe filter cartridge life!
- Ensure toxic-free, pure intake air.

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OPERATION

Filling Procedure



Caution! Fill only cylinders which:

- are marked with the test mark and the test stamp of the expert.
- have been hydrostatic tested (check last test date).
- are rated for the final pressure.
- are free from humidity.



Note

The unit must be stopped manually when final pressure is reached. No serial auto shut down. The unit must also be started manually.



Caution

Vent condensate drain valves every 15-30 minutes manually.

1. Close all filling valves.
2. Connect the closed compressed air cylinder.
3. Open cylinder valve.
4. Open the condensate drain valves during the starting process and start the compressor.
5. Close the condensate drain valves.
6. When filling pressure gauge increases, open filling valve slowly.
7. Fill the compressed air cylinder to the desired pressure; close slowly the valve of the cylinder.
8. Switch off the compressor.
9. Close and vent the filling valve.
10. Disconnect compressed air cylinder from filling valve.
11. Open condensate drain valves manually.



OPERATION

Switch off the Compressor



Note

After switching off the compressor, open condensate drain valves manually to vent the unit.

The compressor unit is not equipped as standard with an auto shut down. The unit must always be stopped manually when final pressure is reached.

During filling process, the system can be shut down at any time by switching the stop switch in off - (0) position.

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REMEDYING FAULTS

REMEDYING FAULTS

Final pressure can not be reached

Cause of fault	Remedy
Connections leaky	Retighten or clean/replace if necessary
Final pressure safety valve leaky	Replace, turn out vent screw if necessary
Pipes / heat exchanger broken	Replace
Condensate drain valves leaky	Unscrew valves, check sealing surfaces, clean, replace if necessary
Final pressure switch stop unit	Verify settings, replace if necessary
Piston of automatic condensate valve sticks (Only valid with the option - Automatic Condensate Drain)	Clean automatic condensate valve and restore function, check/replace o-rings, replace valve completely if necessary

Strong compressor vibration

Cause of fault	Remedy
V-belt tension too loose	Tension V-belt
Drive motor / Compressor unit loosely	Retighten mounting screws
Anti vibration mounts used up	Replace
Ground not levelled	Ensure a solid and level ground

Air supply too low

Cause of fault	Remedy
Inlet- / Outlet valves contaminated / defective	Clean, replace if necessary
Cylinder(s), piston(s) or piston ring(s) used up	Replace
V-belt slips	Tension V-belt
See chapter "Final pressure can not be reached"	See chapter "Final pressure can not be reached"

REMEDYING FAULTS

Compressor overheated

Cause of fault	Remedy
Inlet filter cartridge contaminated	Replace
Ambient temperature too high	Improve room ventilation / Reduce operation times
Cooling air Inlet- / Outlet insufficient	Observe minimum distances (see Installation Instructions)
Air intake hose too long	Reduce length of the air intake hose
Air intake hose diameter too small	Use a larger diameter
Wrong compressor rotation direction	Ensure correct phase rotation, observe rotation direction arrow!
Inlet- / Outlet valves contaminated / defective	Clean, replace if necessary

Safety valve leaks

Cause of fault	Remedy
Inlet- / Outlet valves of the following pressure stage defective	Clean, replace if necessary
Sinter filter of the following water separator blocked	Replace
Safety valve leaky	Replace, turn out vent screw if necessary

Oil taste in the air

Cause of fault	Remedy
Mole carbon filter cartridge saturated	Replace
Compressor oil unsuitable	Use prescribed oil quality
Filter cartridge unsuitable	Use prescribed filter type
Cylinder(s), piston(s) or piston ring(s) defective	Replace

REMEDYING FAULTS

Automatic condensate drain defective

Only valid with the option - Automatic Condensate Drain

Cause of fault	Remedy
Solenoid coils defective	Replace
Cable / supply cable defective	Repair, replace if necessary
Timer / relais defective	Replace
Sinter filter of automatic condensate valve blocked	Replace
Automatic condensate drain piston sticks	Clean automatic condensate drain valve and restore function, check/replace o-rings, replace valve complete if necessary

Condensate drain starts before reaching final pressure

Only valid with the option - Automatic Condensate Drain

Cause of fault	Remedy
Pressure stages are not as prescribed, control pressure of automatic condensate valve too low	Check corresponding Inlet- / Outlet valve, replace if necessary.
Piston sealing of automatic condensate valve contaminated / used up	Clean, replace if necessary
Timer / relais settings not correct	Adjust as prescribed
Timer / relais defective	Replace

Compressor stops before final pressure

Only valid with the option - Automatic Condensate Drain

Cause of fault	Remedy
Final pressure switch settings not correct	Correct settings
Opening pressure of the pressure maintaining valve too high	Correct settings
Fuse / circuit breaker has tripped Valid only for E models	Check fusing of the power supply / observe regulations



REMEDYING FAULTS

Filter life not sufficient

Cause of fault	Remedy
Pressure maintaining valve settings not correct	Adjust as prescribed
Filter cartridge unsuitable	Replace by a prescribed filter cartridge type
Filter cartridge too old	Observe expiration date
Filter cartridge packaging incorrect / damaged / already opened. Filter cartridge already partly saturated before change	Store filter cartridges properly, dispose defective cartridges
Operating temperature too high	Ensure sufficient ventilation
Cylinder(s), piston(s) or piston ring(s) defective	Replace

Oil consumption too high

Cause of fault	Remedy
Cylinder(s), piston(s) or piston ring(s) defective	Replace
Compressor oil unsuitable	Use prescribed oil quality
Operating temperature too high	Observe prescribed operating temperatures
Oil leak at the compressor block	Tighten corresponding mounting screws, if necessary replace corresponding paper sealing / o-ring / shaft seal

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MAINTENANCE AND SERVICE

Service, Repair and Maintenance

**Note**

The following maintenance work refers exclusively to the compressor or the compressor unit, not to the drive engine! Refer to the enclosed manual for drive engine maintenance!

Carry out service and maintenance work exclusively when the compressor is stopped and depressurised. The unit should be leak-checked regularly. Leaks can be preferably localised by using a leak detector spray (if necessary, brush pipes with soapy water).

We recommend that only authorised L&W service technicians carry out service work on the bearing of the compressor (crankshaft and connecting rods).

We urgently recommend that all maintenance, repair and installation work must only be carried out by trained personnel. This is necessary because all maintenance work can not be explained exactly and detailed in this manual.

Only use authentic spare parts for service work.

**Danger**

Components under pressure, such as hose ends, can quickly come loose when manipulated and can cause potentially fatal injuries due to the pressure surge. Any work on system parts may only be performed in a pressure-compensated state.

**Warning**

The use of accessories that have not been tested can lead to death or serious injury or damage to the unit. Only use authentic spare parts for service work.

**Warning**

Carry out maintenance or service work when the unit is switched off and protected against unexpected restart.

**Warning**

Risk of burns!

Carry out maintenance or service work when the unit has cooled down.



MAINTENANCE AND SERVICE

Daily before taking Unit into Operation

Maintenance work	Type	Quantity	Order No.
Check oil level	-	-	000001
Check condition of all filling hoses	-	-	-
Check filter cartridge lifetime	LW 200 B MC	1	011189
	LW 250 B MC	1	011189
Operate unit to final pressure and check function of final pressure switch	-	-	-

At 25 Operating Hours

Maintenance work	Type	Quantity	Order No.
Oil change	-	0.8	000001

Weekly or as needed

Maintenance work	Type	Quantity	Order No.
Check automatic condensate drain, open manual condensate taps	-	-	-
Check/Retorque all connections and bolts	-	-	-
Check V-belt tension and condition	LW 200 B MC	1	000111
	LW 250 B MC	1	011154

Annually

Maintenance work	Type	Quantity	Order No.
Oil change, if less than 1000 operating hours	-	0.8 ltr	000001
Check opening pressure of final safety valve	-	-	-
Clean coolers	-	-	-
Clean all oil/water separators, if less than 500 operating hours	-	-	-
Service intake filter (depends on condition - if less than 500 operating hours)	-	-	-



MAINTENANCE AND SERVICE

Every 500 Operating Hours

Maintenance work	Type	Quantity	Order No.
Check V-belt tension and condition	LW 200 B MC	1	000111
	LW 250 B MC	1	011154
Change intake filter	-	1	001708
Check pressure maintaining / non-return valve	-	-	-
Check all connections for leaks	-	-	-
Clean oil/water separators	-	-	-

Every 1000 Operating Hours

Maintenance work	Type	Quantity	Order No.
Replace o-ring of the DIN filling connector	-	1	001237
Replace o-ring of the revolvable filling hose	-	1	001224
Replace sintered metal filter of oil separator	-	1	002123
Replace o-ring of the water separator	-	1	001255
Replace o-ring of the final filter housing	-	2	001769
Oil change	-	0.8	000001

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MAINTENANCE AND SERVICE

Every 2000 Operating Hours

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Maintenance work	Type	Quantity	Order No.
Replace o-rings and gaskets of 1st, 2nd and 3rd stage	O-Ring (1st stage)	1	011104
	O-Ring (2nd + 3rd stage)	2	011105
Replace all Inlet- / Outlet valves incl. Gaskets	1st stage	1	003652
	2nd stage	1	000551
	3rd stage	1	011123
	Upper gasket 1st	1	003651
	Lower gasket 1st	1	011103

MAINTENANCE AND SERVICE

Service Kits

The service kits contain parts for maintenance according to the factory requirements.

The use of the service kits ensures that all required parts are ordered and replaced and gives assurance that all parts are included in the order. Depending on the model and interval, the service kits include parts such as O-Rings, Sinter Filter, Inlet Filter, Silencers, In-&Outlet Valve, Valve Seals and Compressor oil.



Fig.
Service Kits

Service Kits

Compressor	Operating Hours	Order No.
LW 200 B MC / LW 250 B MC	1000 h	011169
LW 200 B MC / LW 250 B MC	2000 h	011170

MAINTENANCE AND SERVICE

Check V-Belt Tension

The LW 200 B MC / 250 B MC compressors are driven by V-belts. Check correct V-belt tension regularly, adjust if necessary. The V-belt could lose tension during transportation. Please check the V-belt tension before starting the compressor.

Tension V-Belt

- Switch off the compressor unit.
- Disassemble the fan guard.
- Tilt the compressor slightly aside.
- Loosen 4 mounting screws of the motor flange (Fig. 1).
- Turn clamp nut until correct V-belt tension (Fig. 2).

Rotation direction clockwise: increase V-belt tension.

Rotation direction anti-clockwise: reduce V-belt tension.

- Attention: make sure V-belt pulley groove and flywheel wheel groove are align.
- Tighten mounting screws of the motor flange.
- Check V-belt tension and adjust if necessary.

Correct V-Belt Tension

Do not tension V-belts too tight. This damages bearings of compressor and motor. The V-belt should only be tensioned until there is no noise caused by slipping during start.

We recommend using a V-belt tension gauge.

Settings for V-Belt Tension

Type	Initial Installation	Operation after running in
LW 200 B MC	500 N	400 N
LW 250 B MC	600 N	450 N

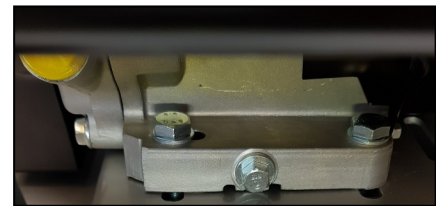


Fig. 1
Mounting Screws of the Engine Flange

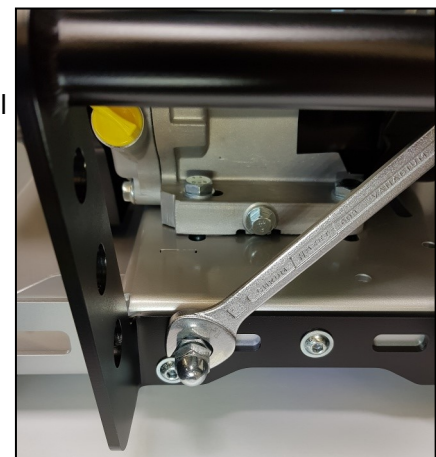


Fig. 2
Clamp Nut Drive Engine

Compressor Lubrication

Pistons, cylinders, crankshaft and connecting rods are provided with oil by splash lubrication.

A

Check Oil Level



Attention

Check oil level daily. Never start the compressor with a too low oil level. Risk of accidental loss, destruction or deterioration.

Check oil before each operation of the system!

The oil level should be between the middle and upper end of the oil sight glass. Never start the compressor with a too low oil level.

Refill new compressor oil at least when the oil level reached the middle of the indicated area.

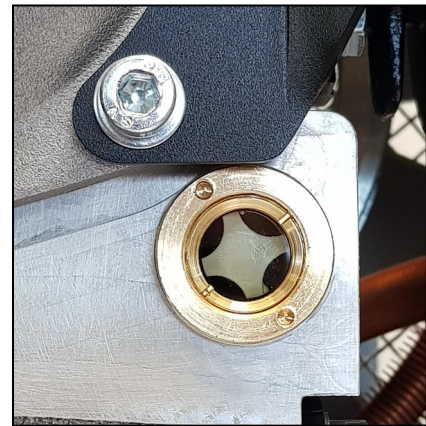


Fig. Oil Sight Glass



Caution

First oil change after 25 operating hours.

MAINTENANCE AND SERVICE

Oil Change



Note

We recommend oil change at least once a year - depending on total operating hours.

Oil change as follows:

- Run compressor warm for about 2 minutes.
- Switch off and vent compressor.
- Tilt the compressor aside.
- Place a suitable oil drain tray under the oil drain tab.
- Screw off oil drain plug carefully.
- Open the oil drain tap.
- Drain the oil completely.
- Close the oil drain tap.
- Screw in oil drain plug and tighten.
- Fill oil into the oil filler neck by a funnel.
- Check oil level. The oil level should be between the middle and upper end of the oil sight glass.

The oil change is now completed.



Fig.
Oil Sight Glass and Oil Drain Tap



Fig.
Oil Filler Neck

Maintenance Intervals

- First oil change at 25 operating hours (total hours).
- Second oil change at 1000 operating hours (total hours).
- All further changes after each 1000 operating hours.

Oil and Oil Capacity

Approx. 800 ml synthetic compressor oil is necessary for one oil change. Only use synthetic compressor oil which is recommended as suitable from L&W. (P/N: 000001)

Manual Condensation Dump System



Note

The collected condensate can contain oil and has to be disposed according to regulations.

Oil- / Water Separators

The compressor comes as standard with a manual condensation dump system. Drain condensate separators every 15 to 30 minutes, depending to air moisture.



Warning

Open valve spindle max. 1.5 turns.
The pressure in the housing can shoot out the valve spindles at high speed.

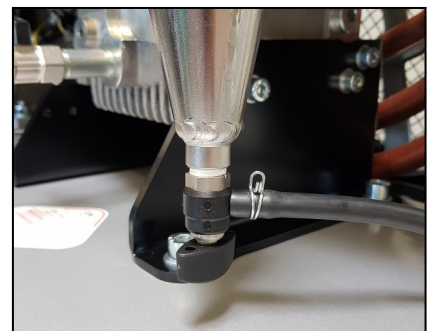


Fig. 1

Condensate Drain Valve 2nd Stage

Manual Drain

To drain manually, open the condensate drain valve of the 2nd stage oil / water separator (Fig. 1) and the condensate drain valve of the filter housing (Fig. 2).

Open valve spindle max. 1.5 turns anti-clockwise. The condensate will be drained.

Then close valve spindle clockwise.



Fig. 2

Condensate Drain Valve 3rd Stage

Maintenance Intervals

We recommend to clean oil and water separators every 500 operating hours or at least once a year, to check for corrosion damage and to replace o-rings if necessary.

The oil / water separator has an integrated sinter filter which has to be replaced every 1000 operating hours.

MAINTENANCE AND SERVICE

Maintenance - Oil / Water Separators 2nd Stage



Note

Clean all parts thoroughly before assembly.

Maintenance / cleaning of oil / water separator 2nd stage as follows:

- Loosen pipe connections (Fig. 1).
- Disassemble screw connection water separator (sinter filter holder) (Fig. 2).
- Change o-ring, previously grease new o-ring (Fig. 3).
- Change sinter filter (Fig. 4), screw-in new sinter filter by using a suitable tool.
- Place sinter filter holder into the water separator and tighten
- Connect pipe connections and tighten.

The oil / water separator maintenance is now completed.

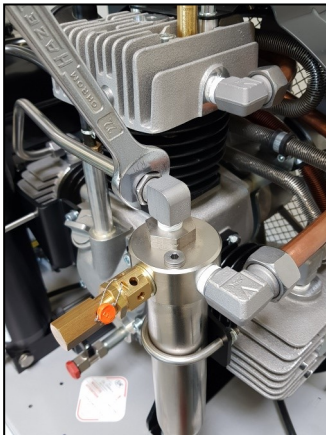


Fig. 1
Loosen Pipe Connection



Fig. 2
Loosen Screw Connection



Fig. 3
Change O-ring



Fig. 4
Change Sinter Filter

MAINTENANCE AND SERVICE

Filter Housing

The mole carbon filter housing is installed on the right hand side of the compressor housing.

Inside the filter housing a jet blows air on to the housing wall. Condensation water and oil are led by centrifugal force to the bottom of the housing. Air flows through the mole carbon filter cartridge, which purifies the air from residual moisture and odours.



Fig.
Filter Housing

Filter Cartridge

The high-pressure compressor is equipped with an integrated breathing air purification system. Air is compressed up to 350 bar, dried and odour- and tasteless purified. Oil residues are bounded. The breathing air filter cartridge consists of a molecular sieve and activated-carbon filter.

All breathing air filter cartridges are factory vacuum sealed.

We recommend unpacking the filter cartridges just before installation. Filter cartridges which are exposed too long could be saturated with moisture and become unusable.

Maintenance Intervals

Filter cartridges should be changed at the following intervals, at +20°C or more often, depending on humidity and ambient temperature:

- 31 hours for LW 200 B MC (Order No.: 011189)
- 25 hours for LW 250 B MC (Order No.: 011189)



Caution

Do not run the compressor with empty unfilled cartridges.
Only use genuine L&W cartridges.

MAINTENANCE AND SERVICE

Filter Cartridge Change

Filter cartridge change as follows:

- Stop the compressor and open carefully the drain valves. Please wait till the filter housing is completely vented; this procedure takes approx. 1 - 2 minutes
- When no air discharges from the condensate release hoses, the pressure vessels are depressurized.
- Remove the filter housing cover (Fig. 1 / Fig. 2) by using the filter key. The housing can not be opened when it is still under pressure.
- After opening the housing, remove the filter cartridge by using the filter key (Fig. 3).
- Remove adapter from used cartridge.
- Open the vacuum sealed packet of the new filter cartridge.
- Put on filter adapter (Fig. 5) on new cartridge. Use spanner to make sure adapter is sealing to cartridge bottom. Insert filter cartridge. (incl. Installed filler adapter)
- Fully turn filter housing cover by using the filter key and turn it back ¼ turn. This avoids tightening of the topcap due to vibration.

The filter cartridge change is now completed.



Fig. 1
Loosen Filter Housing
Cover by using the
Filter Key



Fig.
Remove the
Filter Housing Cover



Fig. 3
Pull out the Filter Cartridge



Fig. 4
Filter Adapter



Fig. 5
Installed Filler Adapter



Note

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

Maintenance - Filter Housing



Note

Clean all parts thoroughly before assembly.

Filter housing maintenance as follows:

- Unscrew filter housing cover by using the filter key (Fig. 1).
- Change o-ring, previously grease new o-ring (Fig. 2)
- Screw the filter housing cover in by using the filter key (Fig. 1).

The filter housing maintenance is now completed.



Fig. 1

Remove / screw in Filter Housing Cover



Fig. 2

Change O-ring

Inlet Filter



Note

Dirty filters make air intake difficult and reduce delivery capacity. Risk of compressor overheating.

A paper dry filter is used for the inlet filter.

Check air inlet filter regularly or replace it. Depending on the degree of contamination, the filter inlet can be cleaned by compressed air. Defective air inlet filters should be immediately replaced with a corresponding filter.

Maintenance intervals

We recommend that the filter cartridge should be replaced every 500 working hours (depending on pollution grade).

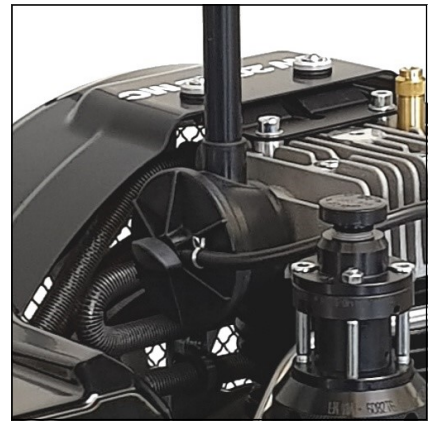


Fig.
Inlet Filter

Maintenance - Inlet Filter Housing



Note

Clean all parts thoroughly before assembly.

Change the filter inlet as follows:

- Disconnect the crankcase breather hose (Fig. 1 / Fig. 2).
- Remove mounting screw and pull out filter housing carefully (Fig. 3).
- Clean filter housing and o-rings and check if defective (fissures).
- Place o-ring into the housing (Fig. 4).
- Insert the new cartridge and assemble the housing. Place o-ring into the groove.
- Place and align the filter housing carefully, inlet port up, hose connector 90° turned to the right (Fig. 2).
- Tighten mounting screw and connect the crankcase breather hose (Fig. 3 / Fig. 1).

The filter inlet change is now completed.



Fig. 1

Disconnect the Crankcase Breather
Hose

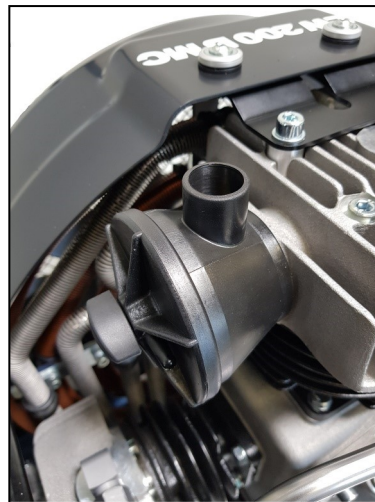


Fig. 2

Intake Filter Housing



Fig. 3

Remove Mounting Screw



Fig. 4

Intake Filter Housing O-rings

MAINTENANCE AND SERVICE

Cylinder Heads and Valves

Inlet- / Outlet valves of the specific compressor stages are located between valve head and cylinder. Outlet open while piston upstroke or compression stroke, inlet open while downstroke.

Valves are subject to normal wear and tear and have to be replaced at certain intervals (depending on specific operating conditions). Dismount valve heads to change valves. The three valves are combined Inlet- / Outlet valves. The first stage is a plate valve. The stages two and three are made of a spring operated piston which acts inside a bronze cylinder.



Fig. 1
Inlet- / Outlet Valve incl. Gaskets

Maintenance Intervals

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

Available Special Tool

Special tool are not necessary for dismounting Inlet- / Outlet valves but make work easier.

Order number: 006847

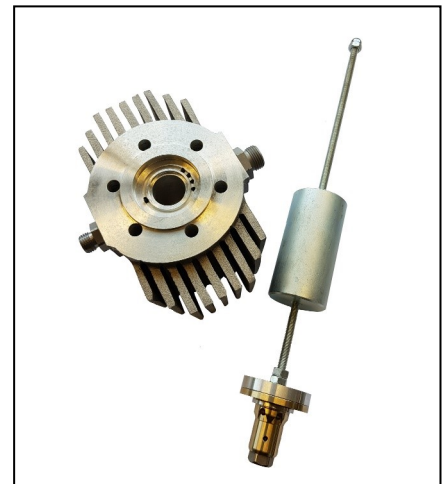


Fig. 2
Special Tool

Replace Inlet- / Outlet Valve 1st Stage



Note

The figures of the parts can differ due to the different stages.

Replace the Inlet- / Outlet valve 1st stage as follows:

- Loosen mounting screws of the fan guard (Fig. 1) and remove the fan guard.
- Disconnect the crankcase breather hose (Fig. 2).
- Loosen pipe connection (Fig. 3).
- Loosen valve head screws (Fig. 4).
- Remove valve head and check if defective (Fig. 5).

Continued on next page.



Fig. 1
Loosen Mounting Screws of
the Fan Guard

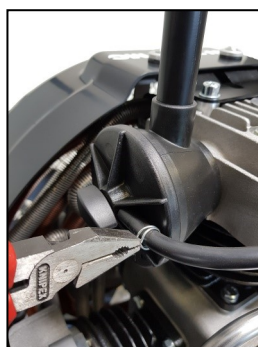


Fig. 2
Disconnect the
Crankcase Breather Hose

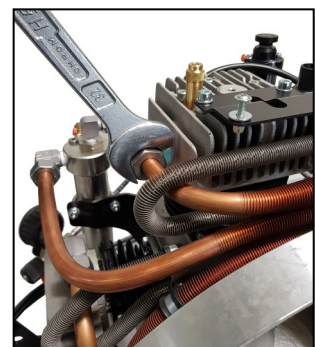


Fig. 3
Loosen Pipe Connection

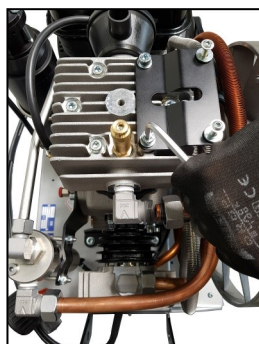


Fig. 4
Loosen Valve Head
Screws

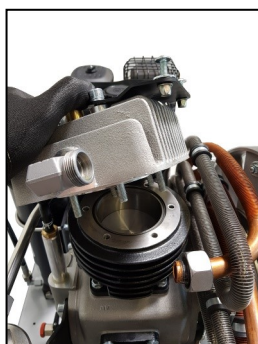


Fig. 5
Remove Valve Head

MAINTENANCE AND SERVICE

Replace Inlet- / Outlet Valve 1st Stage - Continue



Note

The figures can differ from the delivered parts.

- Remove and replace valve head gasket and inlet / outlet valve (Fig. 6).
Replace lower valve seal.
Replace upper valve seal.
- Insert inlet / outlet valve. CAUTION: Observe correct position between valve centre hole and valve head locating pin (Fig. 7).
- Place valve head carefully on top of the cylinder (take care to keep valve in place).
- Tighten valve head screws crosswise (Fig. 8).
- Tighten pipe connection and fix crankcase breather hose to air intake housing. Don't forget to fix spring wire clamp.
- Mount fan guard (Fig. 9)

Inlet- / Outlet valve change 1st stage is now completed.

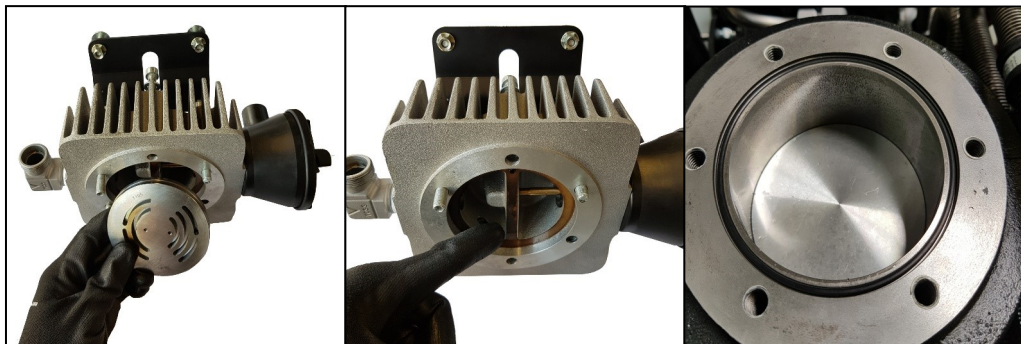


Fig. 6

Valve Head Gasket and Inlet / Outlet Valve

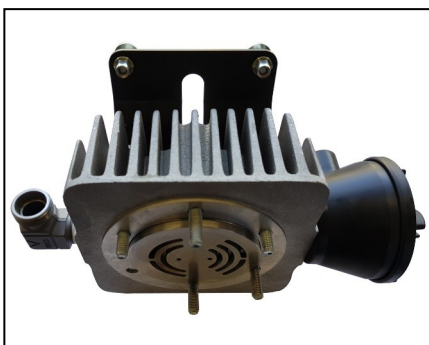


Fig. 7

Valve Head with Inlet / Outlet Valve

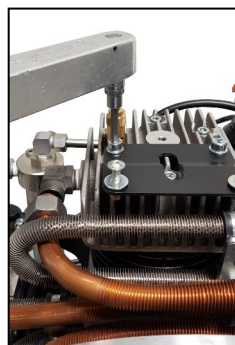


Fig. 8

Tighten Valve Head
Screws

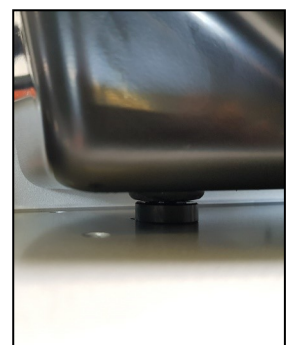


Fig. 9

Mount Fan Guard

Replace Inlet- / Outlet Valve 2nd Stage / 3rd Stage



Note

The figures of the parts can differ due to the different stages.

Replace the Inlet- / Outlet valve 2nd stage / 3rd stage as follows:

- Loosen mounting screws of the fan guard (Fig. 1) and remove the fan guard.
- Loosen pipe connection (Fig. 2).
- Loosen valve head screws (Fig. 3).
- Remove valve head Observe that the lower valve gasket is also pulled out. It can still stick inside the cylinder head.
- Remove inlet / outlet valve (Fig. 4).
- Check valve head if defective (check locating pin).

Continued on next page.



Fig. 1
Loosen Mounting Screws of
the Fan Guard

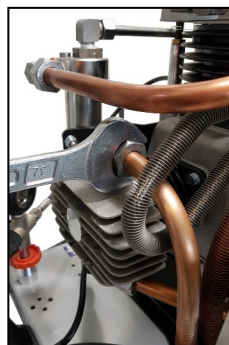


Fig. 2
Loosen Pipe
Connection

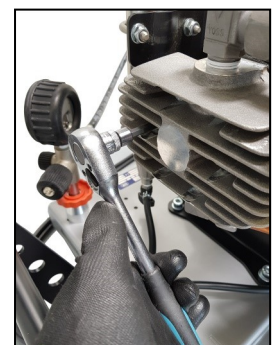


Fig. 3
Loosen Valve Head
Screws



Fig. 4
Remove Inlet / Outlet
Valve

Replace Inlet- / Outlet Valve 2nd Stage / 3rd Stage - Continue



Note

The figures of the parts can differ due to the different stages.

- Change upper valve gasket (aluminum ring).
(Note the installation direction - the groove in the aluminum ring must face to the inlet- / outlet valve)
- Change lower valve gasket (aluminium gasket).
- Insert new inlet- / outlet valve into the valve head (Fig. 5).
(Caution: Observe correct position between valve centre hole and valve head locating pin)
- Place the valve head with the new inlet- / outlet valve.
- Tighten valve head screws crosswise (Fig. 6).
- Tighten pipe connections.
- Mount fan guard (Fig. 7)

Inlet- / Outlet valves change 2nd stage / 3rd stage is now completed.

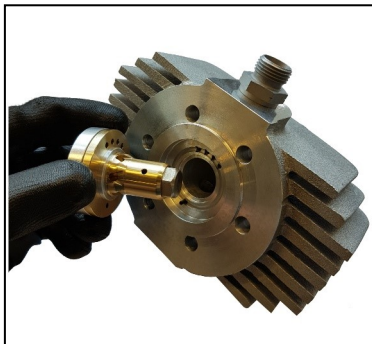


Fig. 5

Insert new Inlet- / Outlet Valve

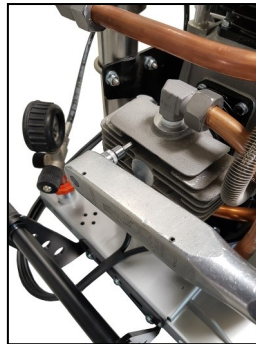


Fig. 6

Tighten Valve Head
Screws

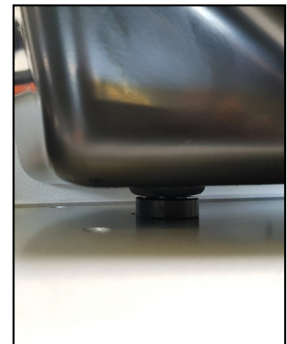


Fig. 7

Mount Fan Guard

Safety Valves

Every pressure stage is equipped with a separate over pressure safety valve. Safety Valves avoid a non permissible high pressure at the specific pressure stages and limit maximum operation pressure of the compressor.

Safety valves are adjusted to:

- 1st Stage: 8 bar
- 2nd Stage: 70 bar
- 3rd Stage: max. final pressure

The adjusted blow-off pressure [bar] of the safety valves is indicated on their housings.

All safety valves are factory sealed with special L&W safety seals to avoid manipulation of the limit value settings.

Safety valves with removed seals have to be immediately checked for the prescribed settings and replaced if necessary.

The safety valve of the final stage is furthermore equipped with a knurled screw to be activated once.

Turning the knurled screw clockwise could vent the valve completely and therefore the final filter housing.

During normal operation conditions, the knurled screw has to be turned anti-clockwise up to the upper stop. An integrated circlip avoids complete unscrewing.

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



Note

Replace defective safety valves immediately!



Fig. 1
Safety Valve 1st Stage

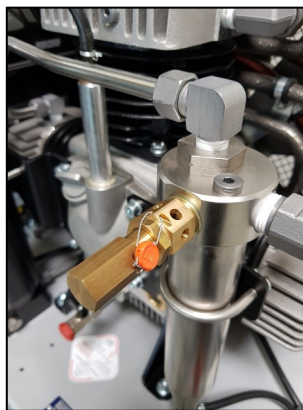


Fig. 2
Safety Valve 2nd Stage



Fig. 3
Safety Valve 3rd Stage

Pressure Maintaining / Non Return Valve

The pressure maintaining / non return valve combination is placed in the flow direction after the final filter housing.

Pressure Maintaining Valve

The pressure maintaining valve drains a large part of the water content of the compressed air mechanically by ensuring the minimum outlet pressure. This guarantees optimal drying and purification of the breathing air.

After starting the compressor, the pressure inside the final filter housing constantly increases. The pressure maintaining valve prevents the compressed air from blowing off (final pressure gauge = 0 bar).

When the adjusted opening pressure is reached (150 and 180 bar), the purified compressed air flows via pressure maintaining and non return valve to the filling valve.

The value of the opening pressure of the pressure maintaining valve can be read at the final pressure gauge. When opening pressure is reached, the pressure gauge value increases within a few seconds.

Adjust pressure maintaining valve see next page.

Non Return Valve

The non return valve which is placed after the pressure maintaining valve, prevents the purified breathing air from flowing back into the filter housing / condensate drain valves.

After compressor stop, the indicated filling pressure remains constant, if the non return valve is working correctly.

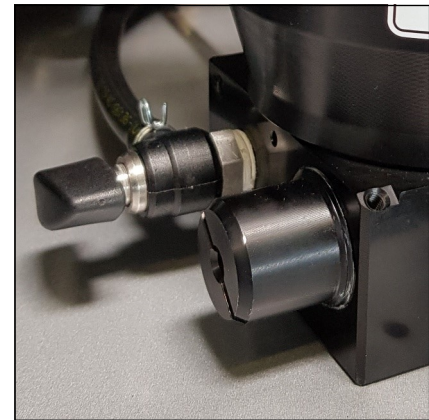


Fig.
Drain Valve and Pressure
Maintaining / Non Return Valve

Adjust Pressure Maintaining Valve

- Vent filling valve and close afterwards (filling pressure gauge 0 bar)
- Start the compressor
- Observe filling pressure gauge
- When the opening pressure of the pressure maintaining valve is reached, the indicated filling pressure increases within some seconds from 0 bar up to the adjusted opening pressure.

If the opening pressure does not reach a value between 150 and 180 bar, adjust the pressure maintaining valve as follows:

Increase opening pressure:

- Vent filling valve (filling pressure 0 bar)
- Loosen clamp screw on the side
- Turn adjusting screw clockwise by using a suitable slotted screwdriver
- Start compressor and check opening pressure, adjust if necessary
- Tighten clamp screw on the side
- Check opening pressure again

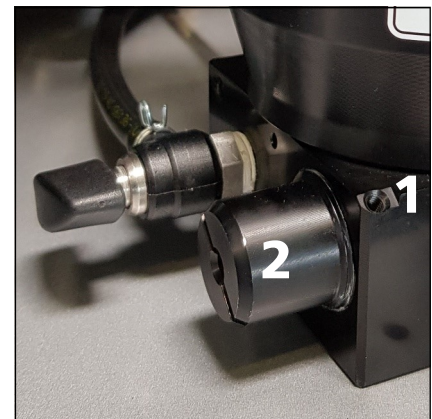


Fig.
Clamp Screw -1-
Pressure Maintaining/Non Return Valve-2-

Reduce opening pressure:

- Vent filling valve (filling pressure 0 bar)
- Loosen clamp screw on the side
- Turn adjusting screw anti-clockwise by using a suitable slotted screwdriver
- Start compressor and check opening pressure, adjust if necessary
- Tighten clamp screw on the side
- Check opening pressure again



Note

If the adjusted opening pressure of the pressure maintaining valve is higher than the final pressure of the compressor, the final pressure safety valve blows off before pressure maintaining valve opens (final pressure = 0 bar). When valve settings are not clear (e.g. after disassembly / repair), start the adjustment with a low basic setting (turn adjusting bolt 3 full turns in).

O-rings - Filling Valve and Filling Hose

Check o-rings from filling valve and filling hose regularly and change if necessary.



Note

Clean all parts thoroughly before assembly.

O-ring at the Filling Valve

- Change o-ring, previously grease new o-ring (Fig. 1).

O-ring at the Filling Hose

- Remove filling hose from the filling valve (Fig. 2).
- Change o-ring, previously grease new o-ring.
- Connect filling hose to the filling valve and tighten.



Fig. 1
O-ring at the Filling Valve



Fig. 2
O-ring at the Filling Hose

MAINTENANCE AND SERVICE

A

Test of Pressure Equipment

According to the Pressure Equipment Directive (PED 97/23/EC) and TÜV Darmstadt (German supervising authorities). State: 10th of December, 2005

Subject pressure equipment with a product permissible operating pressure [bar] x content volume [litres] from 200 up to max. 1000.

Example: Filter housing 0.44 l

Maximum operating pressure: 350 bar

Content volume: 0.44 litres

$350 \text{ bar} \times 0.44 \text{ litres} = 154$

154 is smaller than the minimum of 200 -> therefore no test by a licensed expert is required.

1. Examination after 5 years by a qualified person or authorized organisations.

Visual inspection, inside and outside.

2. Examination after 10 years by a qualified person or authorized organisations.

Visual inspection, inside and outside.

In addition, a water pressure test is carried out at 1.5 times of the permissible vessel operating pressure.

The test methods described in point 1 and 2 must be repeated periodically - as described above.

Max. numbers of load cycles for operation with max. allowable pressure variation		
Final pressure [bar]	Load cycles	Operating hours [h]
225	43750	10930
330	4400	1100



Caution

The filter container has to be replaced after 15 years!



A

MAINTENANCE RECORDS



MAINTENANCE RECORDS

Maintenance work

A

Description	Date, signature



STORAGE

Conservation / Storage of the Compressor

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

- Run the compressor at 200 bar filling pressure for approximately ten minutes (control the flow with the filling valve to maintain constant pressure).
- Replace compressor oil, open filling valve(s) and run compressor for a few minutes.
- Stop compressor and open drain valves (depending on the compressor type, this may happen automatically).
- Remove top cap of final filter housing: clean thread, grease o-ring and thread with a food grade grease or silicone grease. Close filter housing.
- Remove intake filter cartridge and undo intake pipes on all valve heads.
- Start compressor unit.
- Spray a few drops of compressor oil into intake connectors.
- Stop compressor unit and insert intake filter cartridge.
- Bring intake pipes back in position and fix connections and nuts. Close filling- and drain valves.
- Store the compressor in a cool dry place free from dust and contamination. A dust cover is recommended as long as condensation can be avoided.
- If compressor unit should be stored for a period of more than one year, an oil change is strongly recommended before it's been re-used.
- Fuel driven units only: fill up fuel tank to top level to avoid corrosion.

A



STORAGE

De-conservation, Commissioning

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

- If compressor hasn't been used for longer than 12 months, we strongly recommend an oil change before any use.
- Replace intake filter cartridge and check oil level.
- Clean compressor unit, check for foreign objects.
- Check condition and tension of V-belts, replace if necessary.
- Check condition of filling hoses, replace if necessary.
- Secure hoses against whipping and open filling valves and run compressor for approximately 10 minutes.
- Check condition of final filter cartridge, replace if necessary.
- Close filling valves and run compressor up to final pressure.
- Check safety valve relief pressure of final stage and/or pressure switch setting.
- Check all connections and pipe work for leaks.
- Once all above steps are completed, compressor unit is now ready for use.

A

STORAGE

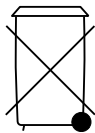
Transportation Instructions

- Parts which need to be dismantled for transport purposes must be carefully replaced and secured before taking into operation.
- The transport may only be carried out by trained personnel.
- For transportation, only use lifting devices and equipment with sufficient lifting power.
- Do not stand or work under suspended loads.
- Also separate from minor relocation machinery / system of any external energy supply. Before recommissioning, reconnect the machine to the mains according to regulations.
- When recommissioning, proceed according to the operating instructions..

Disposal

The product must be disposed in accordance with national waste disposal regulations and by an appropriate waste disposal company.

Electric and Electronic Components



EU-wide regulations for the disposal of electric and electronic appliances which have been defined in the EU Directive 2002/96/EC and in national laws are effective from August 2005 and apply to this device.

Common household appliances can be disposed by using special collecting and recycling facilities. However, as this device has not been registered for household usage, it must not be disposed of through these means.

The device can be returned to L&W. Please do not hesitate to contact us if you have any further questions on this issue.



**ERSATZTEILLISTEN / SPARE PARTS LISTS
DETAILANSICHTEN / DETAILED VIEWS**

C

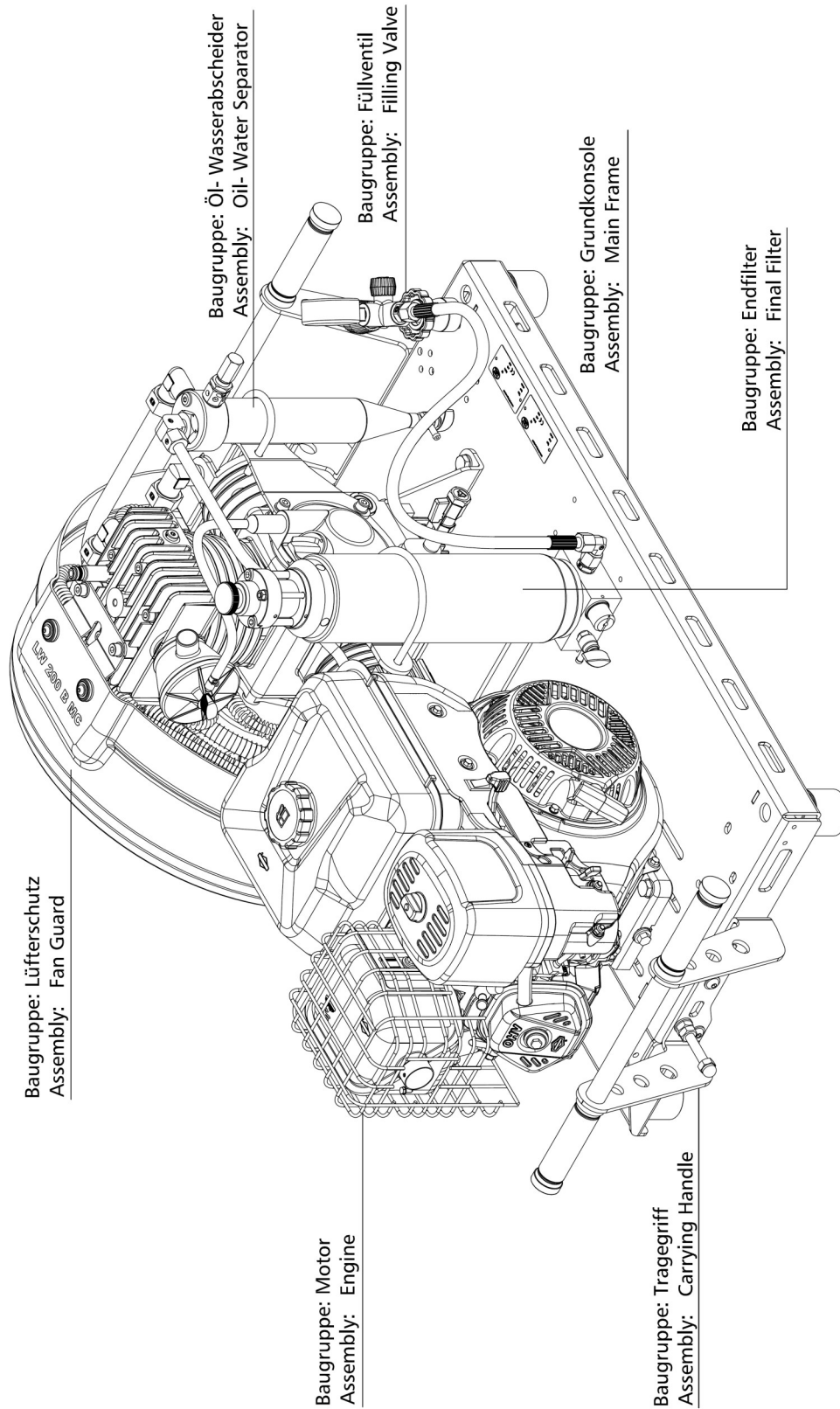


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DETAILANSICHT / DETAILED VIEW

Gesamtansicht Kompressor / Overall View Compressor





ERSATZTEILLISTE / SPARE PART LIST

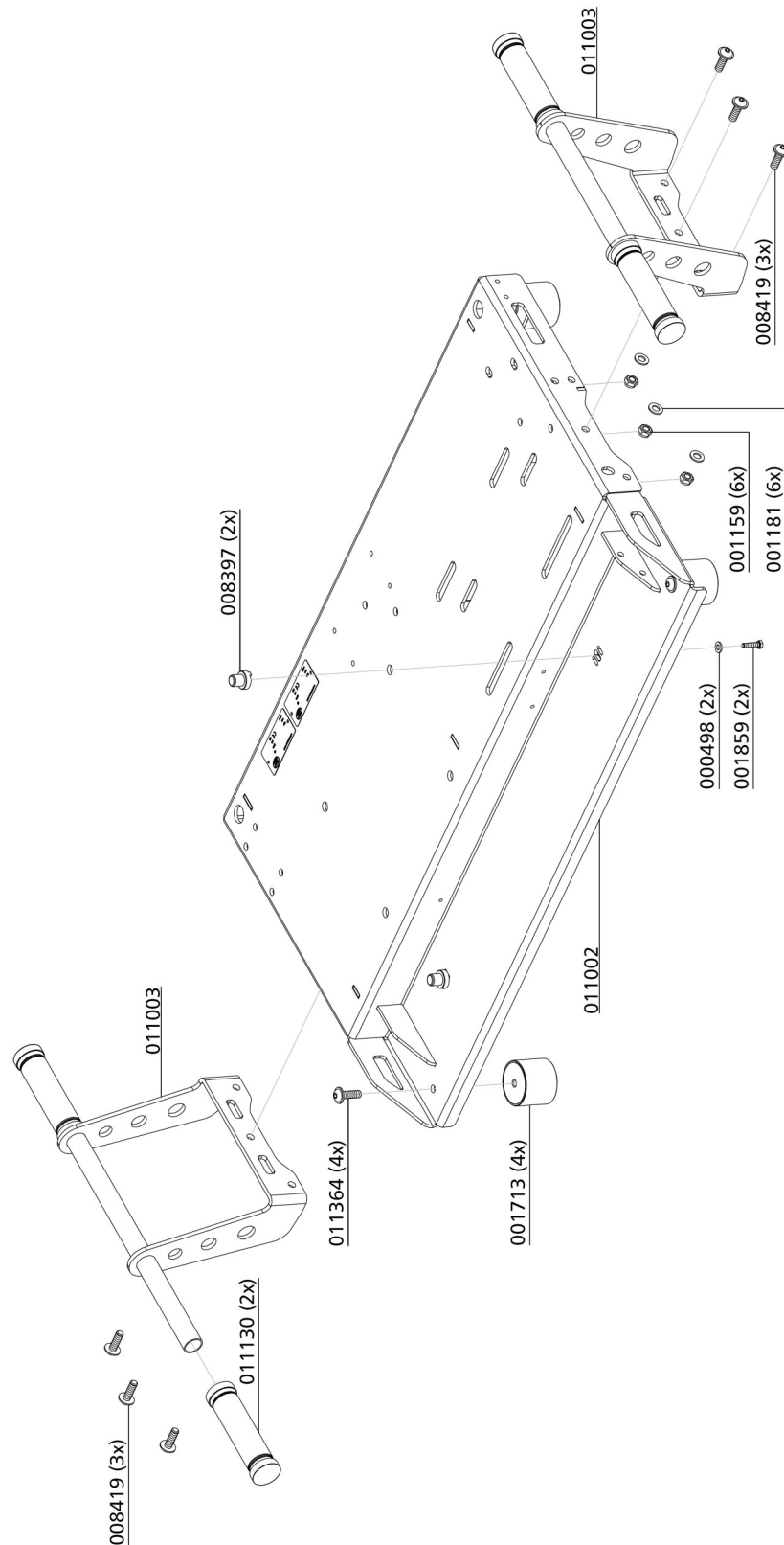
Baugruppe: Grundgestell / Assembly: Main Frame

Best.-Nr. / Order No.	Benennung	Description
000498	U-Scheibe A6	Washer A6
001159	Stopfmutter M8	Lock Nut M8
001181	U-Scheibe A8	Washer A8
001713	Standfuß, Gummipuffer	Rubber Stand
001859	Befestigungsschraube Ø5,5x19	Fixing Bolt V-Belt Cover
008397	Aufsteckstutzen Lüfterabdeckung	Plug-on Fan Cover
008419	Linsenflanschschraube M8x25	Buttonhead Screw M8x25 mm
011002	Grundkonsole	Main Console LW 200
011003	Tragegriff ohne Stütze	Carrying Handle LW 200
011130	Gummigriffe mit Endkappen (1 Paar)	Rubber grips with end caps
011364	Linsenschraube M8x16	Oval-Head Screw Olive

C

DETAILANSICHT / DETAILED VIEW

Baugruppe: Grundgestell / Assembly: Main Frame



C



ERSATZTEILLISTE / SPARE PART LIST

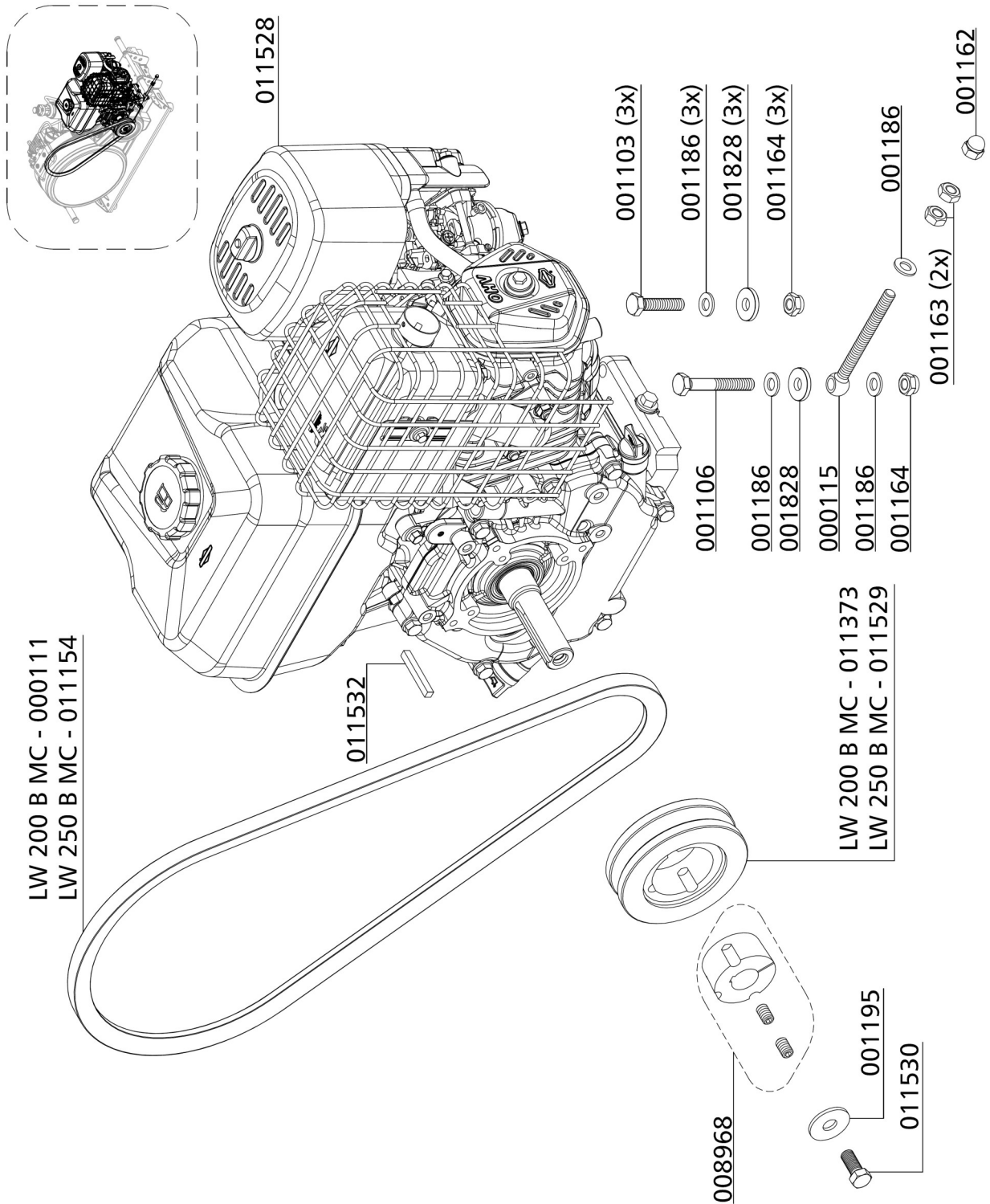
Baugruppe: Motor / Assembly: Engine

Best.-Nr. / Order No.	Benennung	Description
000111	Keilriemen SPA 1332	V-Belt
000115	Spannschraube M10	Fixing Block Tensioning Bolt
001103	6-kant Schraube M10x45mm	Hexagon Screw
001106	6-kant Schraube M10x70mm	Hexagon Bolt
001162	Hutmutter M10	Domed Nut M10
001164	Stopfmutter M10	Lock Nut M10
001186	U-Scheibe A10	Washer A10
001195	U-Scheibe A13	Washer A13
001828	U-Scheibe A10,5	Washer
008968	Spannbuchse für Riemenscheibe	Taper Lock bush
011154	Keilriemen XPA 1382	V-Belt
011373	Keilriemenscheibe SPA 106-1	V-Belt Pulley
011528	Antriebsmotor, Briggs&Stratton	Engine
011529	Keilriemenscheibe SPA 132-1	V-Belt Pulley
011530	Sechskantschraube UNF7/16x1	Hexagonal Bolt
011532	Passfeder 1/4"	Woodruff Key 1/4"

C

DETAILANSICHT / DETAILED VIEW

Baugruppe: Motor / Assembly: Engine





ERSATZTEILLISTE / SPARE PART LIST

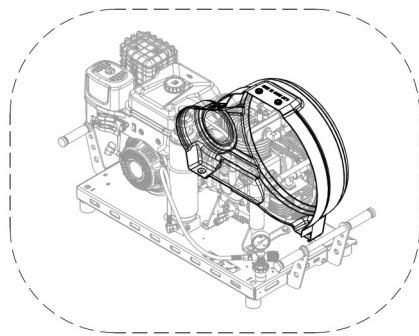
Baugruppe: Lüfterabdeckung / Assembly: Fan Guard

Best.-Nr. / Order No.	Benennung	Description
001178	U-Scheibe A6	Washer A6
005839	Linsenflanschschraube M6x25mm	Flange Button Head Screw
008015	Aufkleber Rotation	Sticker Rotation
008396	Gummitülle	Rubber Grommet
011152	Aufkleber "LW MC-Series"	Sticker "LW MC-Series", w/b
011358	Gummitülle Ø18x24x7mm	Rubber Grommet Ø18x24x7mm
011504	Haltebolzen Ventilatorschutz oben	Support Bolt - Fan Cover
011527	Ventilatorschutz mit Wellengitter	Fan Guard
011533	Aufkleber "LW 200 B MC"	Sticker "LW 200 B MC", white
011534	Aufkleber "LW 250 B MC"	Sticker "LW 250 B MC", white

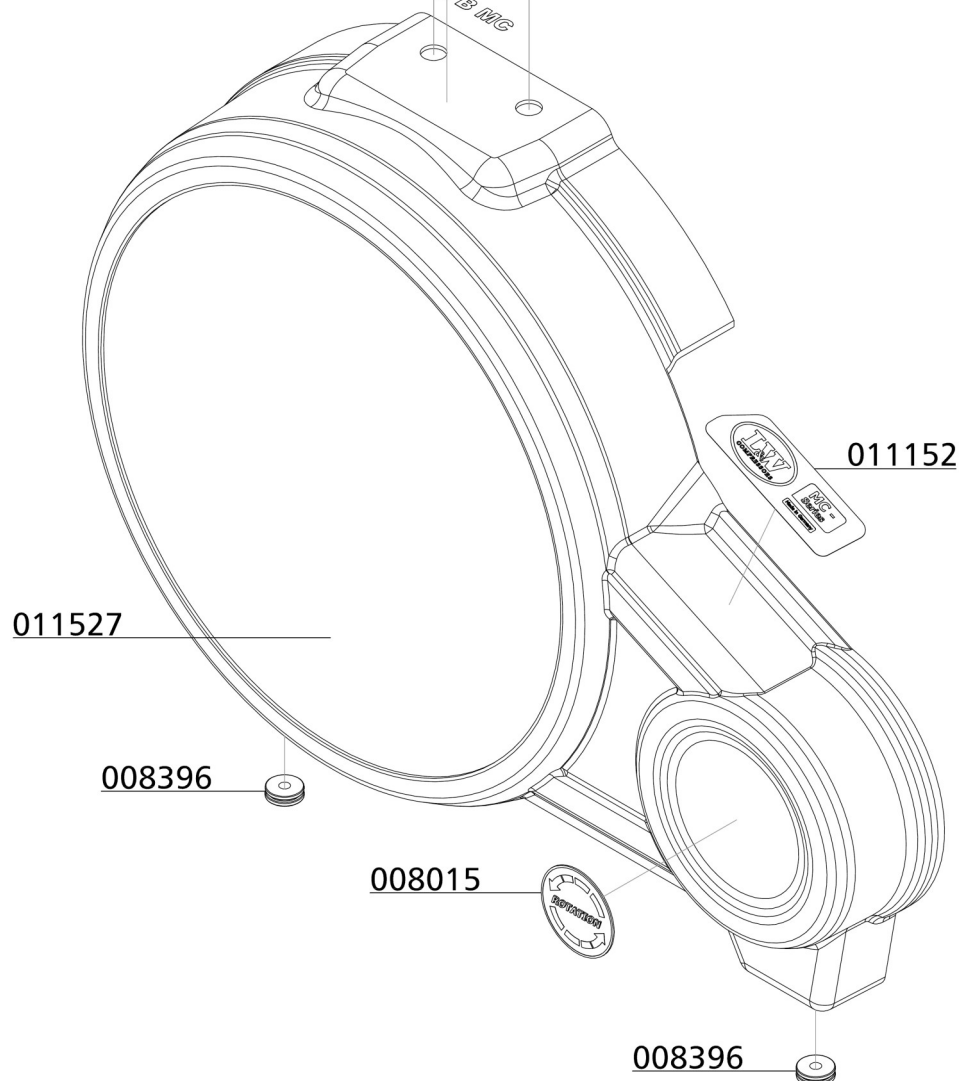
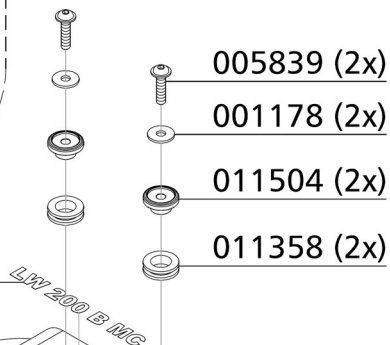
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ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Lüfterabdeckung / Assembly: Fan Guard



011533 - LW 200 B MC
011534 - LW 250 B MC



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ERSATZTEILLISTE / SPARE PART LIST

Rohrleitungssystem / Pipework

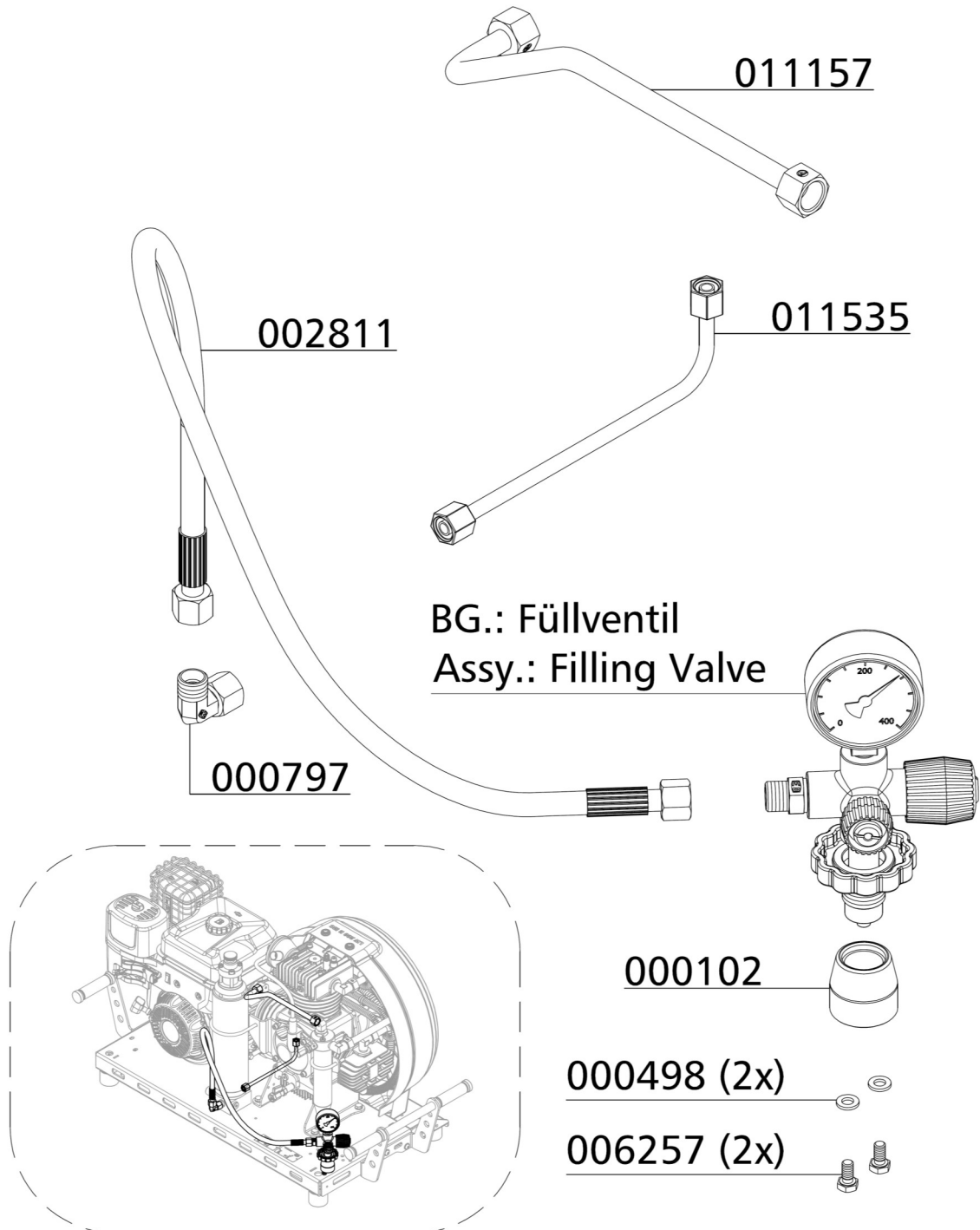
Best.-Nr. / Order No.	Benennung	Description
000102	Einschraubstutzen DIN Füllanschluss G5/8	Holder DIN Filling connector
000498	U-Scheibe A6	Washer A6
000797	Verschraubung EW10L	Elbow Connection
002811	Hochdruckschlauch 1000mm	HP-Hose
006257	6-kant Schraube M6x14mm	Hexagon Bolt
011157	Rohrleitung Ø12mm, komplett mit M.&S.	PipeØ12mm, c/w Nuts and Olives
011535	Rohrleitung Ø8mm, komplett mit M.&S.	Pipe Ø8mm, c/w Nuts and Olives

C

DETAILANSICHT / DETAILED VIEW

Rohrleitungssystem / Pipework

C

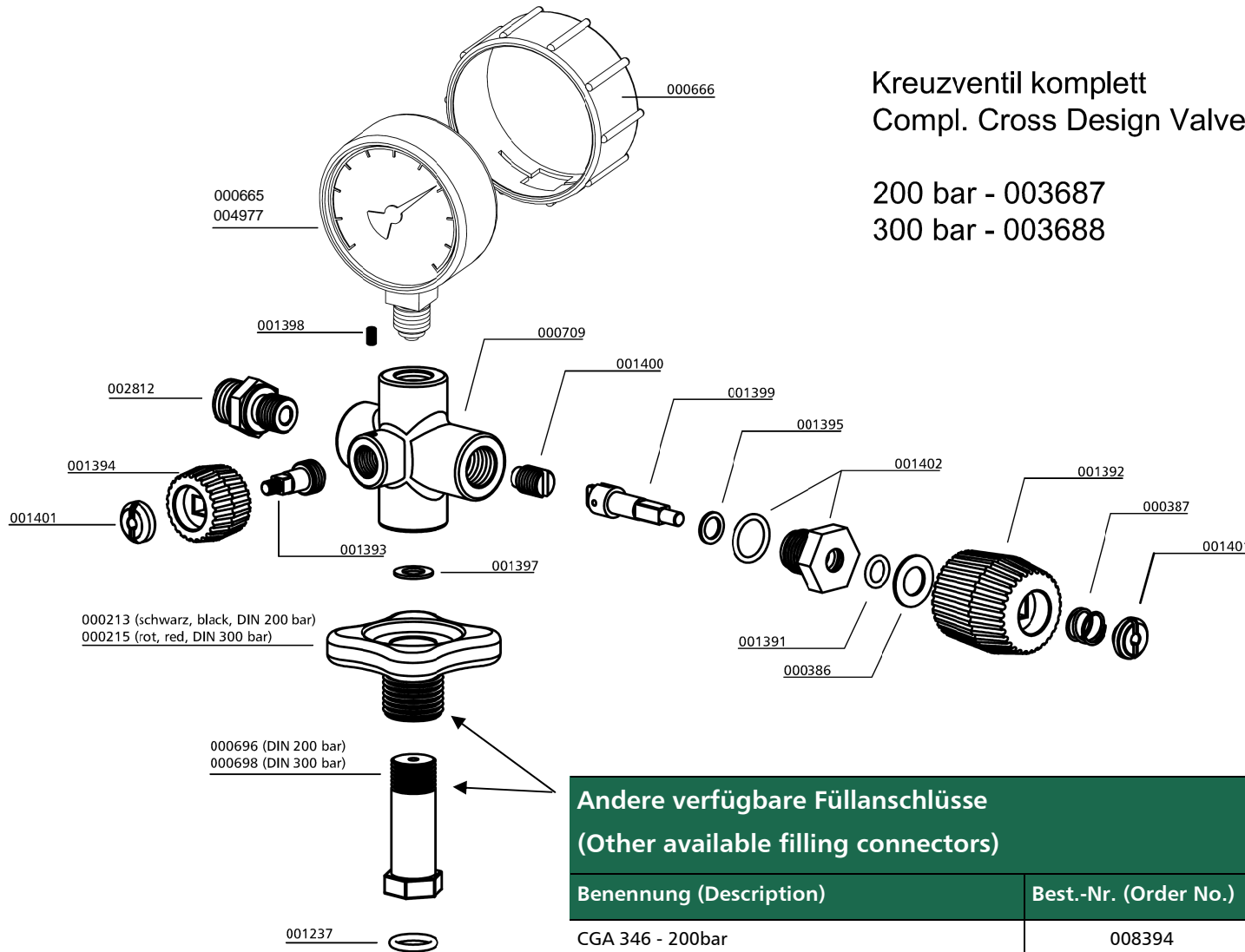




ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Kreuzventil / Assembly: Cross Design Valve

Best.-Nr. / Order No.	Benennung	Description
000213	Handrad, schwarz DIN 200bar	Hand Wheel DIN 200 bar, black
000215	Handrad rot DIN 300bar	Hand Wheel DIN 300 bar, red
000386	Gleitscheibe, Kreuzventil	Slide Washer
000387	Feder (Kreuzventil)	Coil Spring, cross d. valve
000665	Manometer, (Messing)	Pressure Gauge, (brass)
000666	Manometerschutzkappe Ø63mm	Protector Pressure Gauge Ø63mm
000696	Füllanschluss o. Handrad 200bar	Filling Connector w/o handwheel 200bar
000698	Füllanschluss o. Handrad 300bar	Filling Connector w/o handwheel 300bar
000709	Füllventil Kreuzbauweise, kompl.	Filling Valve cross design
001237	O-Ring DIN Flaschenanschluss	O-Ring DIN filling connector
001391	O-Ring	O-Ring
001392	Füllhandrad Kreuzventil	Hand Wheel Filling Valve cross
001393	Entlüftungsspindel	Vent Spindle
001394	Entlüftungshandrad	Vent Hand Wheel
001395	Gleitscheibe, schwarz, Kreuzventil	Slide Washer, plastic black
001397	Kupferdichtung	Copper Seal Ring
001398	Madenschraube	Worm Screw
001399	Oberspindel	Adapter Shaft
001400	Dichtspindel, Kreuzventil	Seal Spindle Filling Valve
001401	Schlitzmutter	Slotted Nut
001402	Gehäuseverschraubung komplett mit O-Ringen	Filling Spindle Body c/w O-Rings
002812	Verschraubung, Edelstahl	Connection, S/S
003687	Füllventil Kreuzbauweise komplett 200bar	Filling Valve cross complete unit 200bar
003688	Füllventil Kreuzbauweise komplett 300bar	Filling Valve cross complete unit 300bar
004977	Manometer, (Edelstahl)	Pressure Gauge, (s/s)



Kreuzventil komplett
Compl. Cross Design Valve

200 bar - 003687
300 bar - 003688

**Andere verfügbare Füllanschlüsse
(Other available filling connectors)**

Benennung (Description)	Best.-Nr. (Order No.)
CGA 346 - 200bar	008394
CGA 347 - 300bar	006842
INT / Yoke - 200/232 bar	002307

DETAILANSICHT / DETAILED VIEW

Baugruppe: Kreuzventil / Assembly: Cross Design Valve





ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Endfiltergehäuse / Assembly: Final Filter Tower

Best.-Nr. / Order No.	Benennung	Description
000506	Druckfeder	Spring
000508	USIT Ring	Gasket Ring U-Sit
000516	Nutring, DHRV	Seal Ring PMV
000517	Druckfeder, DHRV	Coil Spring PMV
000518	U-Scheibe	Washer, M5, brass
000519	Dichtkappe, DHRV	Plastic Seal Piston PMV
000644	Filterpatrone	BA Filter Cartridge
000761	Winkelverschraubung	Elbow Connection
000783	Gerade Verschraubung	Straight Connection
000837	Verschlussstopfen	Plug
000941	Madenschraube	Worm Screw
001039	Zylinderschraube	Allen Bolt
001181	U-Scheibe A8	Washer A8
001718	Innenrohr Filtergehäuse	Inner Tube Filter Housing
001742	Druckstift, DHRV	Pressure Pin
001743	Einlassverschraubung, DHRV	Inlet Connection
001744	Einstellschraube, DHRV	Adjusting Bolt
001745	Düsenrohr, HD-Filter	Inlet Jet
001753	Patronenstift, Zylinder	Cartridge Pin
001769	O-Ring, Filtergehäuse	O-Ring Filter Housing LW 100
001788	Federdruckstück	Spring Adapter
001795	Filterschlüssel	Filter Tool
001819	O-Ring, Filterpatrone-Nippel	O-Ring, Filter cartrid. nipple
001825	O-Ring, Filterpatrone	O-Ring, filter cartridge
002309	Filterpatrone	Filter cartridge
002474	Filtergehäuse kompl. mit DHRV, Schlüssel	Filter housing c/w PMNRV
003006	O-Ring, DHV	O-Ring, PMV



ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Endfiltergehäuse / Assembly: Final Filter Tower

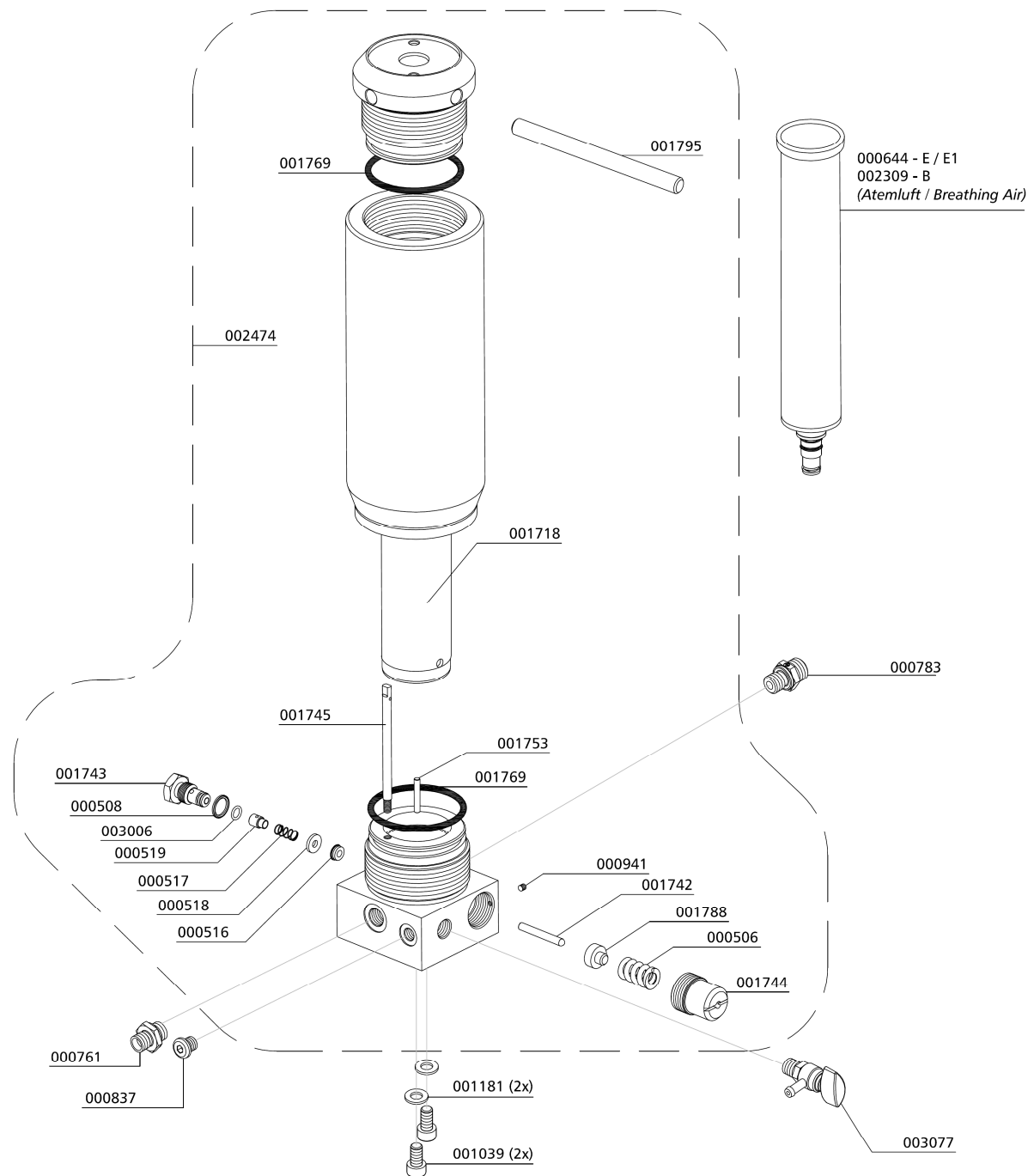
Best.-Nr. / Order No.	Benennung	Description
003077	Entwässerungsventil R1/4 AG, konisch	Drain Valve R1/4 male
008347	Schraubadapter	Screw Adapter
008348	Düsenrohr Hochdruckfilter	Nozzle Tube
009657	Filterschlüssel	Filter key
010572	Drallscheibe	Swirl Disk
010573	Umlenkung Einlassluftstrom	Deflection Inlet Airflow
010576	O-Ring	O-ring 63,5 x 2
010759	Zylinderschrauben M4x12mm	Allen Bolt M4x12mm
011174	Atemluft Filterpatrone 0,44 Liter	Filter Cartridge 0.44 ltr.
011189	Filterpatrone 0,44 Liter	Filter Cartridge 0,44 ltr.
011281	Filtergehäuse kompl. mit DHRV, Schlüssel	Filter housing c/w PMNRV

C

DETAILANSICHT / DETAILED VIEW

Baugruppe: Endfiltergehäuse (Volumen 0,37 Ltr.)

Assembly: Final Filter Tower (Volume 0.37 ltr.)

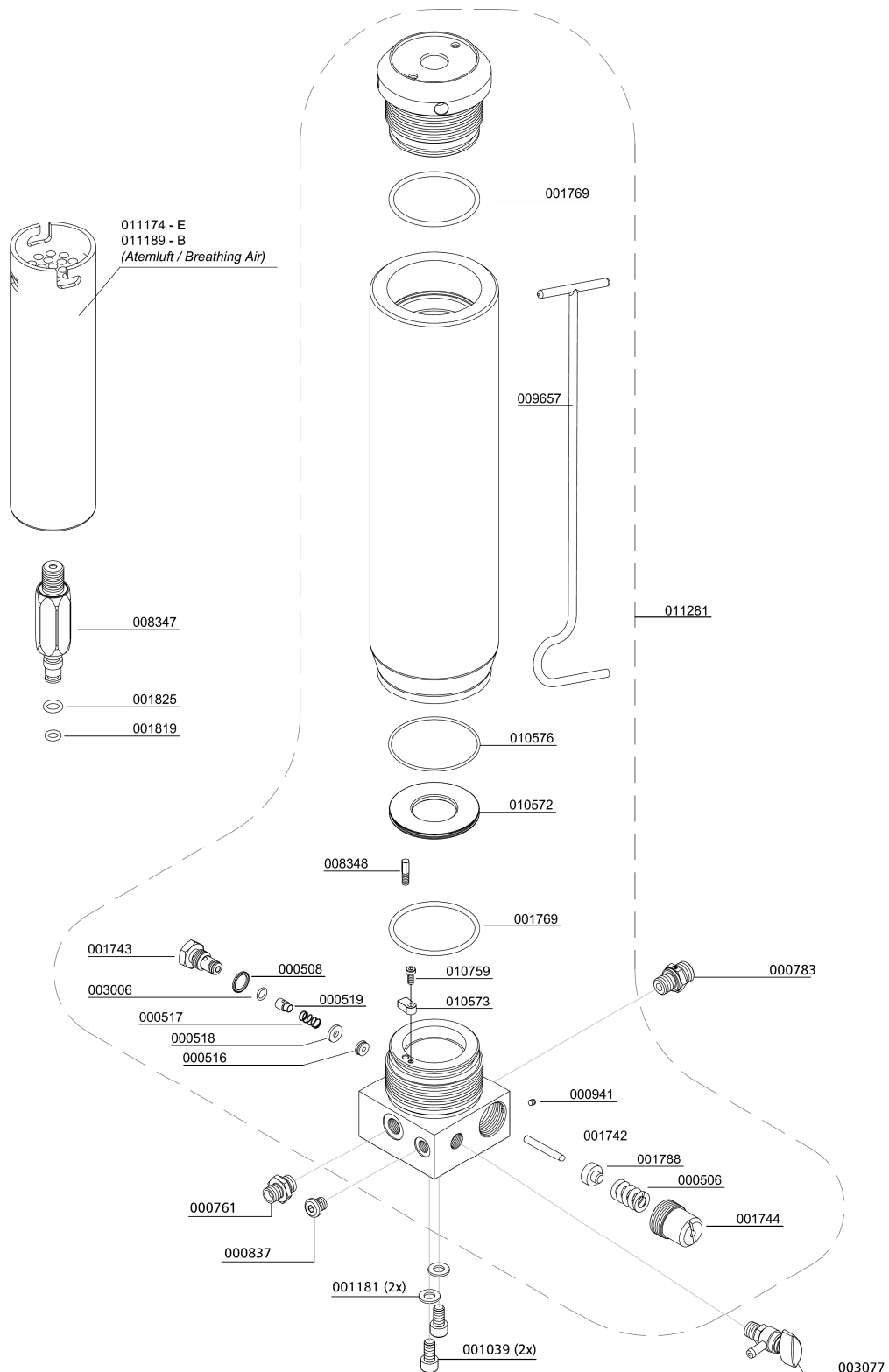


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DETAILANSICHT / DETAILED VIEW

Baugruppe: Endfiltergehäuse (Volumen 0,44 Ltr.)

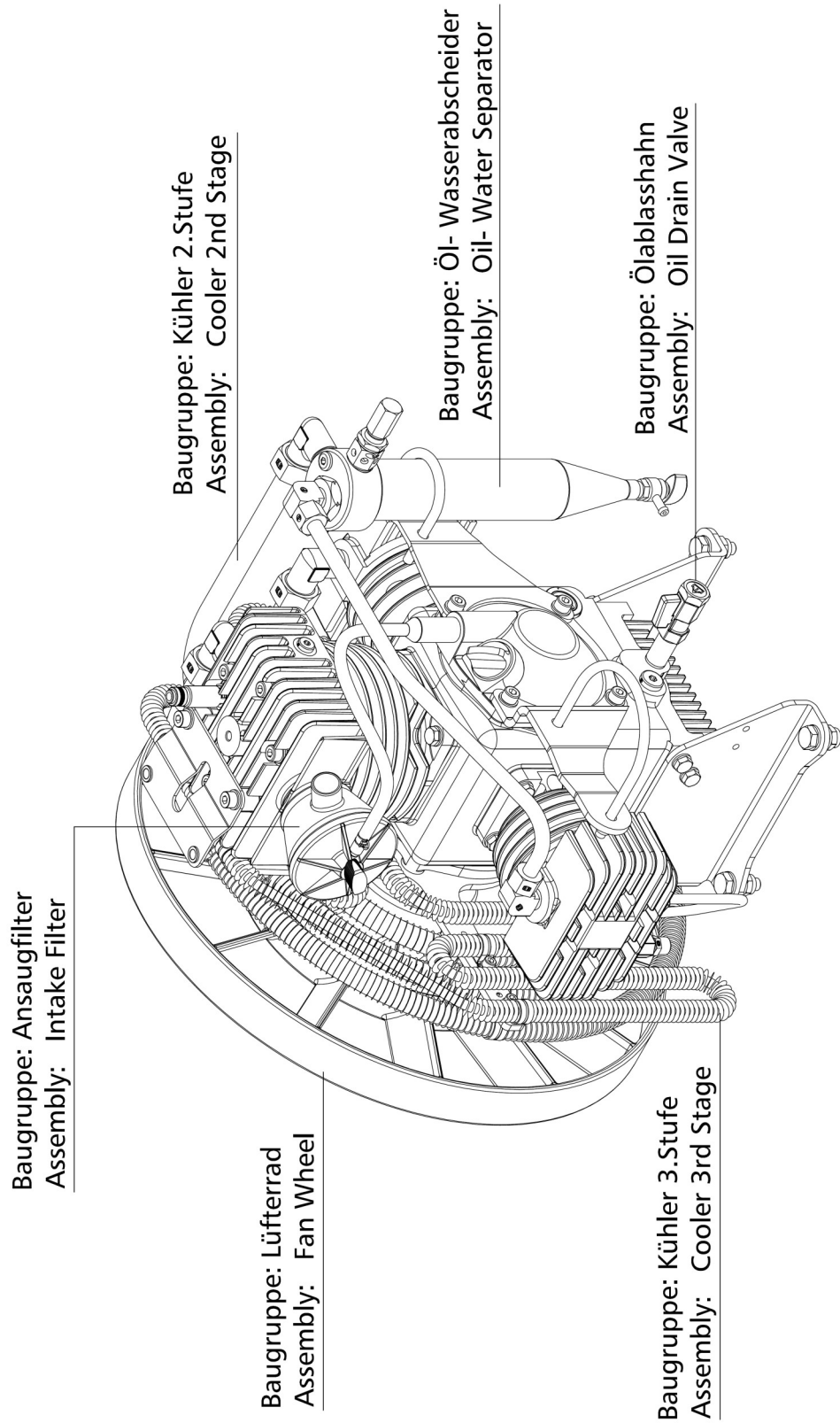
Assembly: Final Filter Tower (Volume 0.44 ltr.)



C

DETAILANSICHT / DETAILED VIEW

Gesamtansicht Verdichtereinheit / Overall View Compressor Assembly





ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Kompressorblock / Assembly: Compressor Block

Best.-Nr. / Order No.	Benennung	Description
000220	Sicherheitsventil G3/8, 8 bar	Safety Valve
000738	Gerade Verschraubung GE 08 L	Straight Connection
000811	Winkelverschraubung WE 12L G3/8	Elbow Connection
000837	Verschlussstopfen G1/8	Plug
000838	Verschlussstopfen G1/4	Plug
000863	Winkelverschraubung WE 18L R1/2	Elbow Connection
001041	Zylinderschraube M8x25mm	Allen Screw
001042	Zylinderschraube M8x30mm	Allen Screw
001045	Zylinderschraube M8x45mm	Allen Screw
001056	Zylinderschraube M8x60mm	Allen Screw
001060	Zylinderschraube M8x80mm	Allen Screw
001063	Zylinderschraube M8x95mm	Allen Screw
001081	6-kant Schraube M8x20mm	Hexagon Screw
001082	6-kant Schraube M8x25mm	Hexagon Screw
001159	Stopfmutter M8	Lock Nut
001164	Stopfmutter M10	Lock Nut
001181	U-Scheibe A8	Washer
001186	U-Scheibe A10	Washer
002124	Ventilkopf 3. Stufe	Valve Head 3rd Stage
003651	Obere Dichtung Ventil 1.Stufe	Gasket, Valve 1st Stage (up)
003652	Saug- & Druckventil 1. Stufe	Valve 1st stage
003766	Aludichtring für G3/8 Gewinde	Alloy Seal Ring for G3/8
005856	Winkelverschraubung Ø8mm R1/8	Elbow Hose Connection
006846	Schlauchschelle	Hose Clamp
007043	Kondensatschlauch Ø5,4xØ9,4mm	Condensate Hose
008482	Haltebügel für Wasserabweiser	U-Clamp Water Separator
008696	6kt-Schraube M10x30mm	Hexagon Screw
010451	Ventilkopf 1. Stufe	Valve Head 1st Stage
010785	O-Ring Ø128 x 2mm	O-Ring
010810	Zylinder 1.Stufe	Cylinder 1st Stage

C



ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Kompressorblock / Assembly: Compressor Block

Best.-Nr. / Order No.	Benennung	Description
010811	Zylinder 1.Stufe	Cylinder 1st Stage
010812	Zylinder 2.Stufe	Cylinder 2nd Stage
010813	Zylinder 3.Stufe	Cylinder 3rd Stage
010819	Lagerdeckel	Bearing Cover
010833	Kugelhahn 2 x G3/8 IG	Ball Valve
010834	Doppelnippel R3/8, Länge 40mm	Double Nipple
011092	Ölschauglas mit Dichtung G3/4	Oil Level Indicator c/w gasket
011103	O-Ring Ø81x2mm	O-ring
011104	O-Ring Ø84x2mm	O-ring
011105	O-Ring Ø50x2mm	O-ring
011106	Anschlussadapter Kurbelgehäuseentlüftung	Adapter Crankcase Vent
011107	Distanzstück 15mm	Spacer 15mm
011109	Verschlusschraube GN 740 G3/8	Plug
011110	Verschlusschraube GN 441 G3/4	Plug
011111	Luftleitblech mit Gewindenieten	Air Deflector
011112	Halteblech Wasserabscheider	Holder Oil- Water Separator
011113	Halteblech Kühler	Holder Cooler
011115	Konsole Kompressorblock	Console Compressor Block
011280	Ventilkopf 2. Stufe	Valve Head 2nd Stage
011536	Haltebügel Filtergehäuse	U-Clamp for Filter Housing
011537	Halter Filterbehälter	Bracket Final Filter

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ERSATZTEILLISTE / SPARE PART LIST

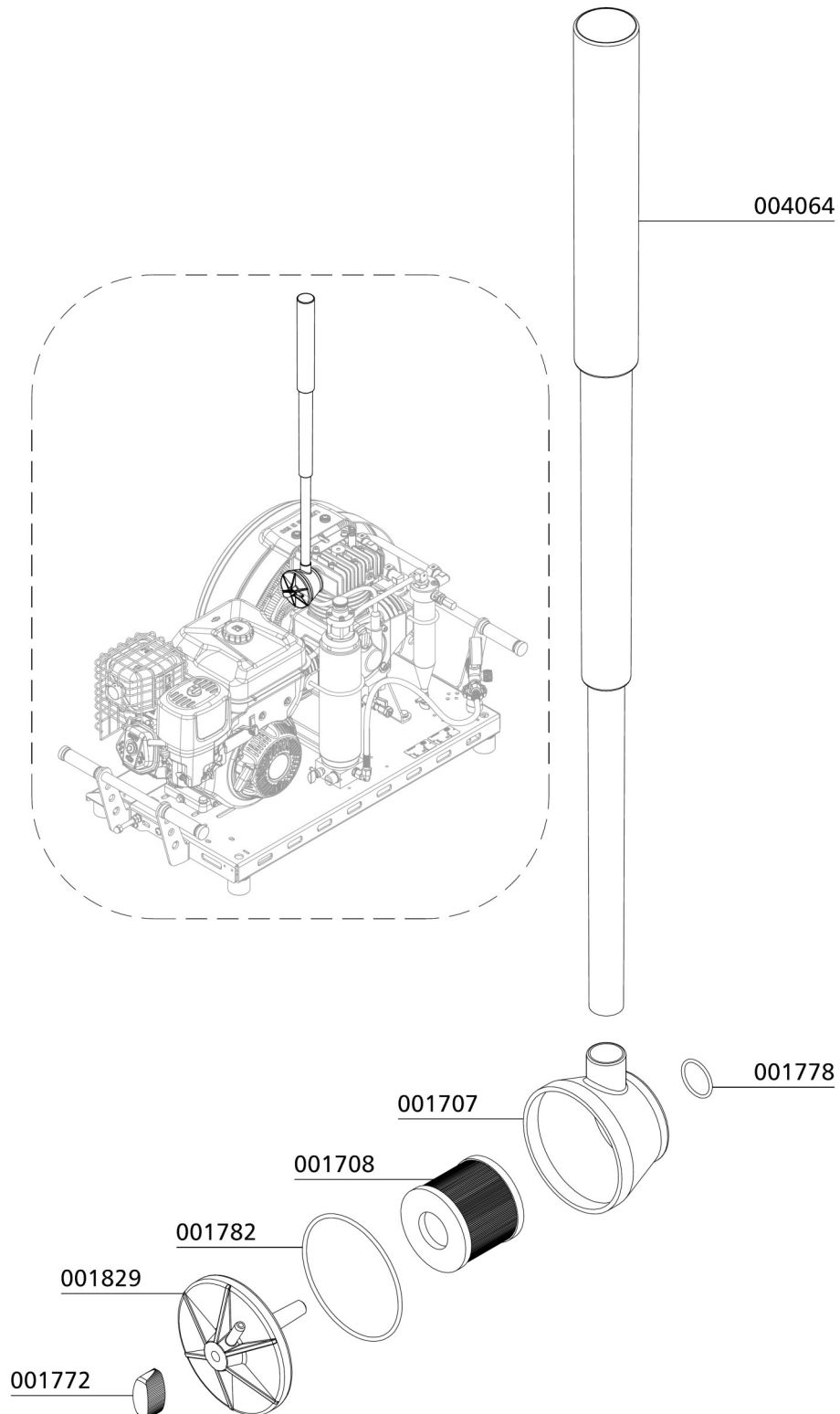
Baugruppe: Ansaugfilter / Assembly: Intake Filter

Best.-Nr. / Order No.	Benennung	Description
001707	Ansaugfiltergehäuse	Air Intake Filter Housing
001708	Ansaugfilterpatrone	Air Intake Filter Cartridge
001772	Flügelmutter PVC-schwarz	Winged Nut, PVC black
001778	O-Ring Ø22x2mm	O-Ring
001782	O-Ring Ø80x2mm	O-Ring
001829	Deckel Ansaugfiltergehäuse	Cover Air Intake Housing
004064	Teleskop Ansaugrohr 3-teilig	Telescope intake pipe

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ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Ansaugfilter / Assembly: Intake Filter





ERSATZTEILLISTE / SPARE PART LIST

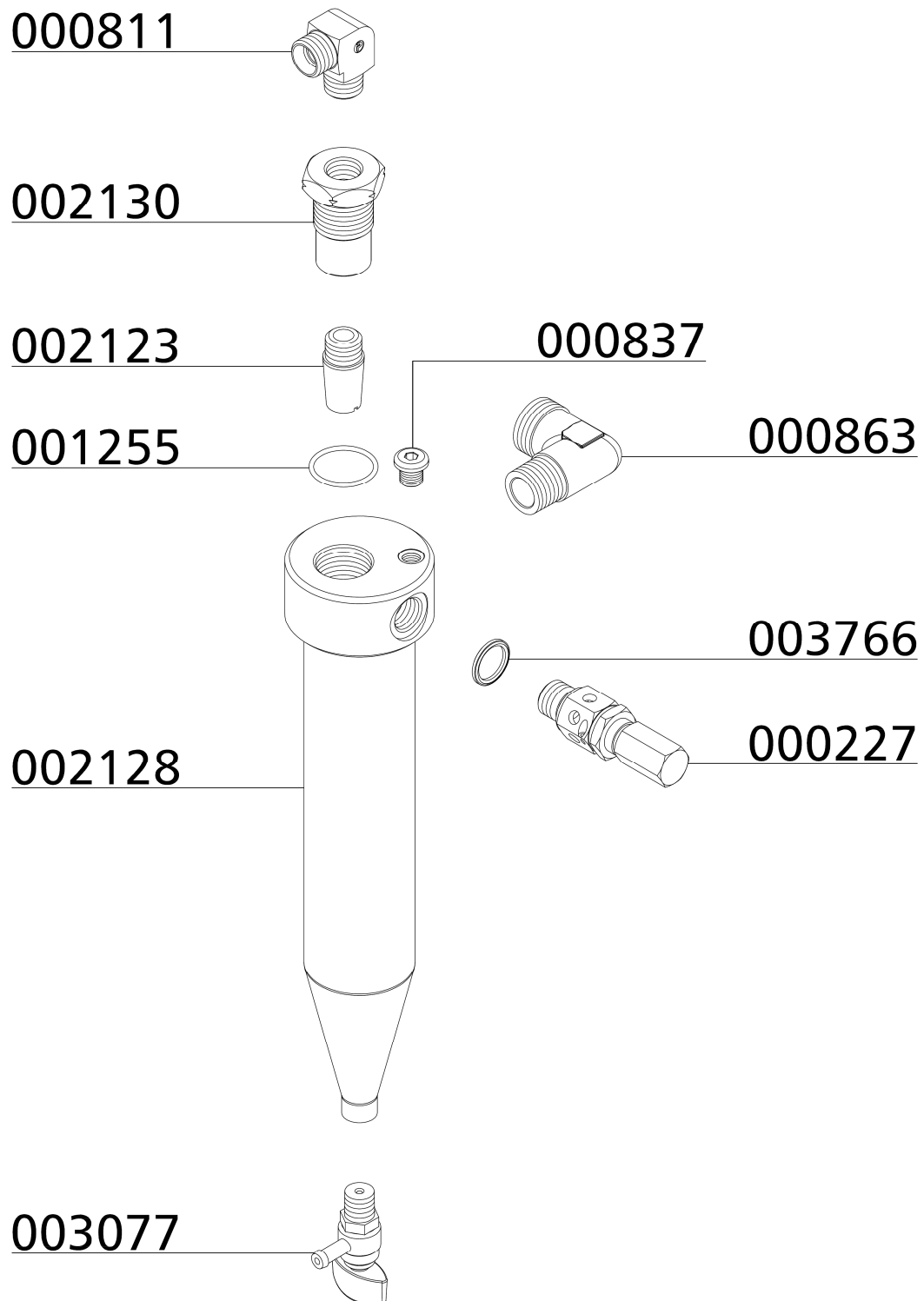
Baugruppe: Öl- Wasserabscheider / Assembly: Oil- Water Separator

Best.-Nr. / Order No.	Benennung	Description
000811	Winkelverschraubung WE 12L R3/8	Elbow Connection
000837	Verschlussstopfen G1/8	Plug
000863	Winkelverschraubung WE 18L R1/2	Elbow Connection
001255	O-Ring Ø26x2mm	O-Ring
002123	Sinterfilter G3/8 AG	Sinter Filter
002128	Wasserabscheider, 1. und 2. Stufe	Water separa. 1st + 2nd Stage
002130	Halter für Sinterfilter G3/8	Holder for Sinterfilter G3/8
003077	Entwässerungsventil R1/4 AG, konisch	Drain Valve R1/4 male
003766	Aludichtring für G3/8 Gewinde	Alloy Seal Ring

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DETAILANSICHT / DETAILED VIEW

Baugruppe: Öl- Wasserabscheider / Assembly: Oil- Water Separator



C

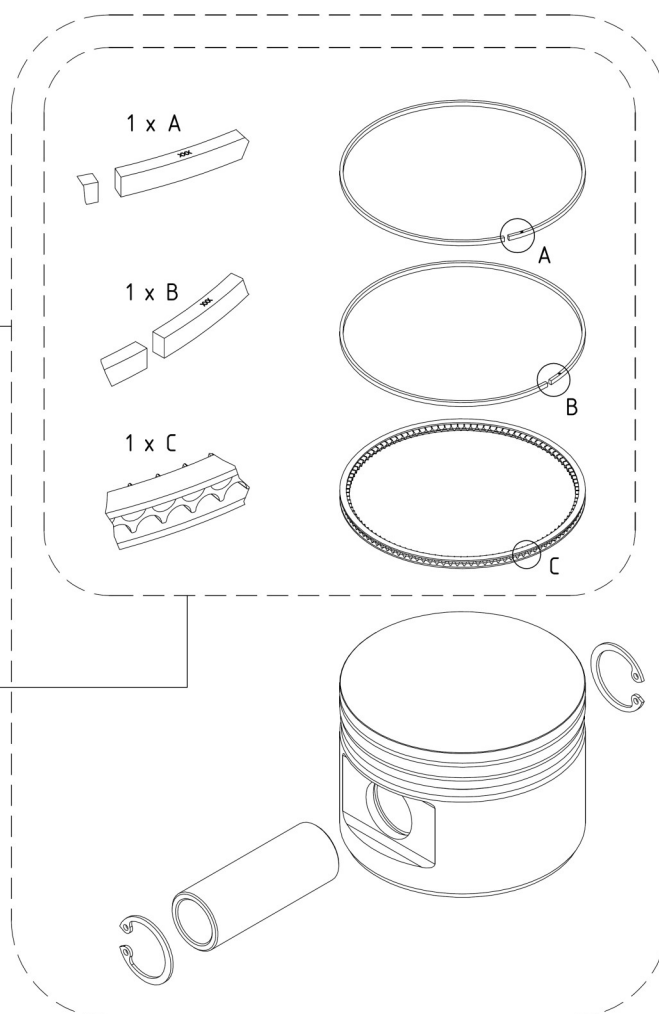
Baugruppe: Kolben 1. Stufe / Assembly: Piston 1st Stage

Best.-Nr. / Order No.	Benennung	Description
000047	Satz Kolbenringe Ø75,5mm 1. Stufe	Set Piston Rings 1st Stage
010814	Kolben 1.Stufe Ø75,5mm, komplett	Piston 1st Stage, complete
010815	Kolben 1.Stufe Ø80mm, komplett	Piston 1st Stage, complete
011116	Satz Kolbenringe Ø80mm 1. Stufe	Set Piston Rings 1st Stage

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010814 - LW 200 MC
010815 - LW 250 MC

000047 - LW 200 MC
011116 - LW 250 MC



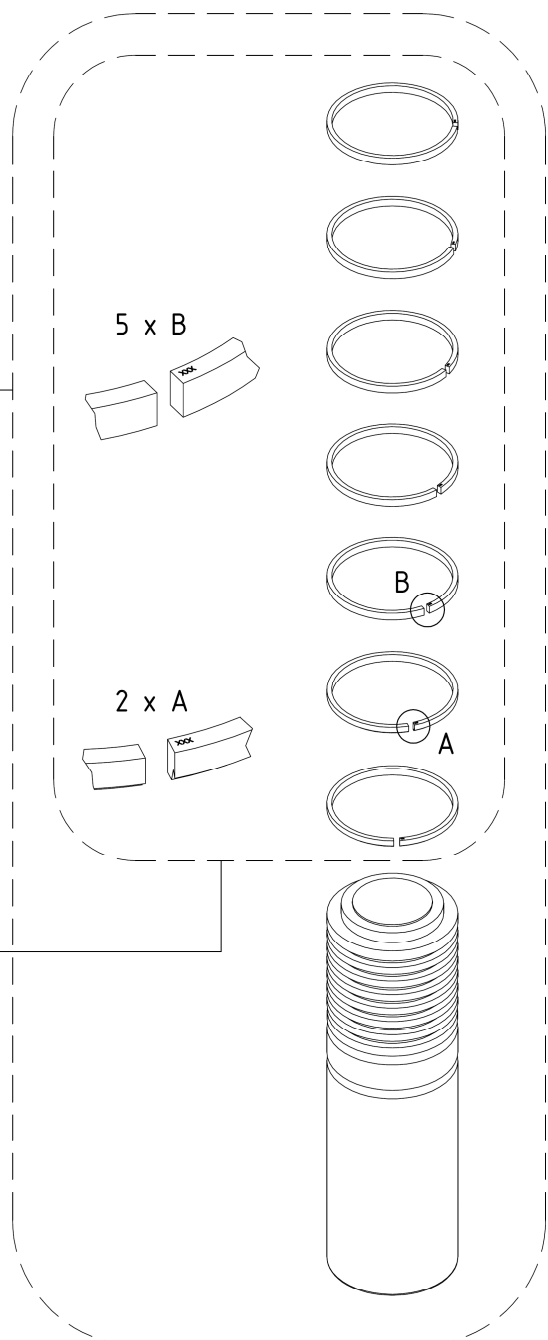
ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Kompressionskolben 2. Stufe
Assembly: Compression Piston 2nd Stage

Best.-Nr. / Order No.	Benennung	Description
010816	Kolben 2.Stufe Ø32mm komplett	Piston 2nd Stage, complete
011117	Satz Kolbenringe 2. Stufe / 7Stk.	Set of Piston Rings, 2nd Stage

010816 - Ø32mm

011117 - Ø32mm



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ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Kompressionskolben 3. Stufe

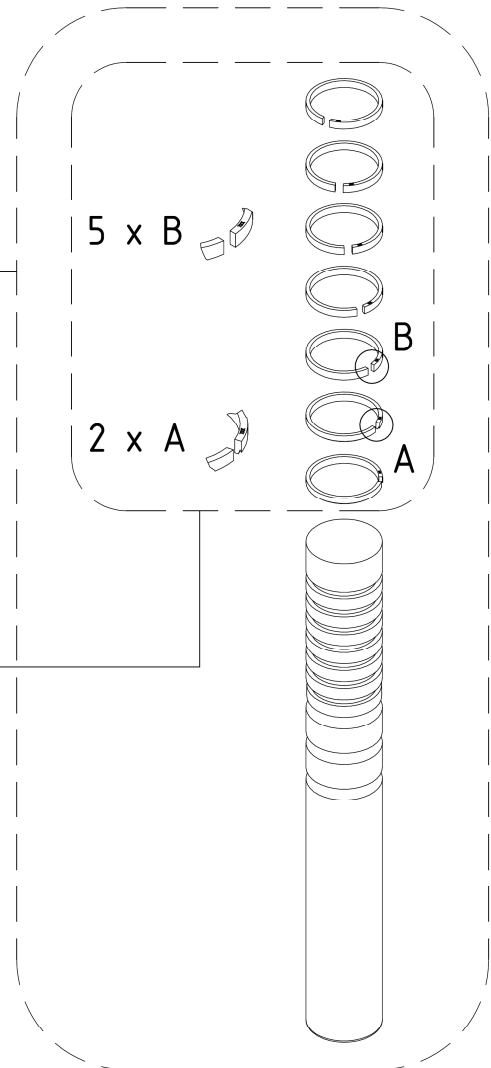
Assembly: Compression Piston 3rd Stage

Best.-Nr. / Order No.	Benennung	Description
010817	Kolben 3.Stufe Ø14mm komplett	Piston 3rd Stage
011118	Satz Kolbenringe 3. Stufe / 7Stk.	Set of Piston Rings, 3rd Stage

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010817 - Ø14mm

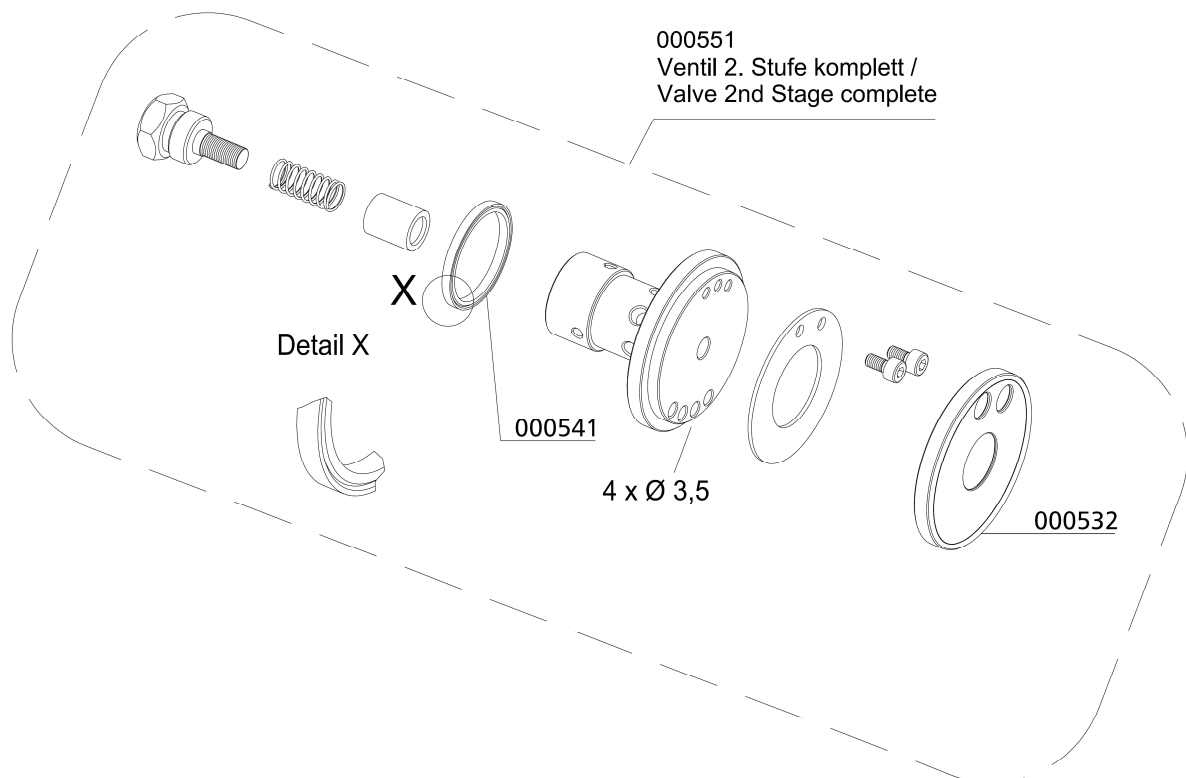
011118 - Ø14mm



ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Saug & Druckventil 2. Stufe / Assembly: In & Outlet Valve 2nd Stage

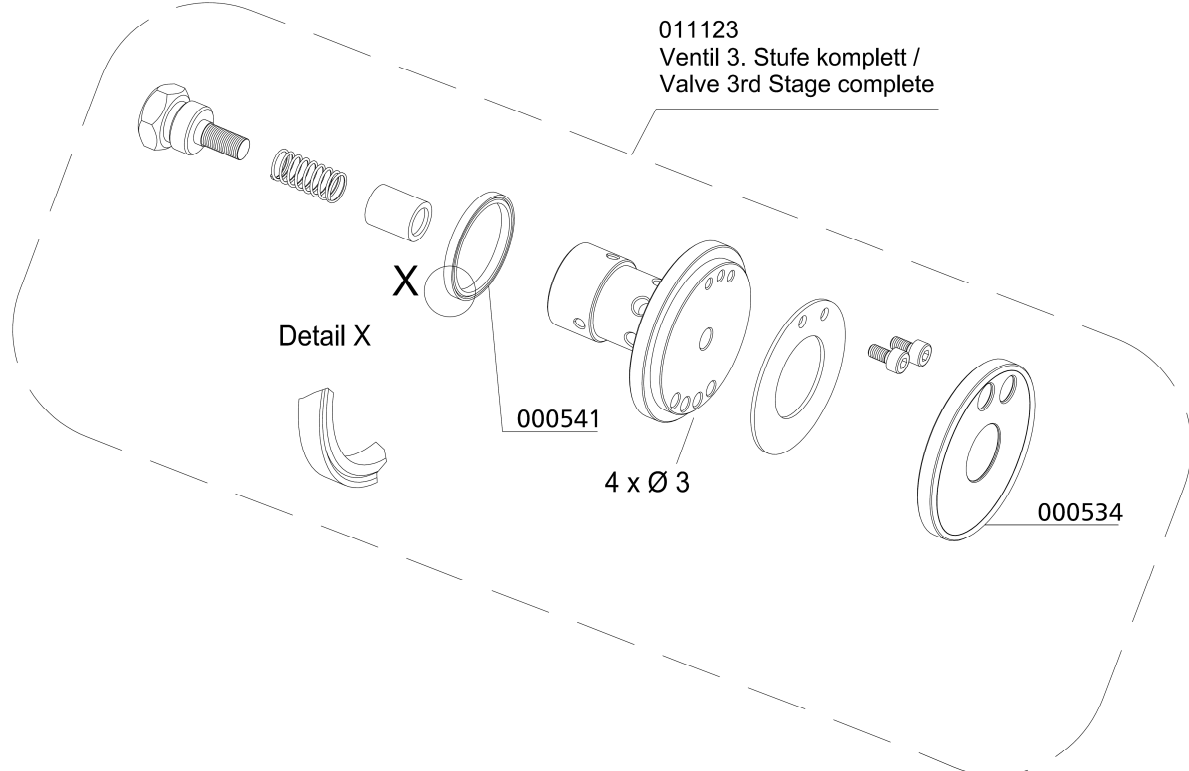
Best.-Nr. / Order No.	Benennung	Description
000532	Ventildichtung, Saug-& Druckventil unten	Lower Valve Gasket
000541	Dichtring / Dichtung Ventil	Upper Alloy Seal Ring
000551	Saug- & Druckventil	In- & Outlet Valve



ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Saug & Druckventil 3. Stufe / Assembly: In & Outlet Valve 3rd Stage

Best.-Nr. / Order No.	Benennung	Description
000534	Ventildichtung, Saug- & Druckventil	Lower Valve Gasket
000541	Dichtring / Dichtung Ventil	Upper Alloy Seal Ring
011123	Saug-Druckventil, komplett	In- & Outlet Valve





ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Kurbeltrieb / Assembly: Crank Drive

Best.-Nr. / Order No.	Benennung	Description
000839	Verschlussstopfen	Plug
000969	Zylinderschraube	Allen Bolt
001010	Zylinderschraube	Allen Screw
001323	CU-Ring	Copper Seal Ring
001336	Sicherungsring	Circlip A16
001342	Sicherungsring	Circlip A30
001365	Sicherungsring	Circlip I35
010112	Passfeder	Woodruff Key
010809	Kurbelgehäuse	Crankcase
010818	Pleuel 1.Stufe	Con Rod
010823	Kurbelwelle	Crankshaft
010824	Gegengewicht-Unterteil	Counterweight lower Part
010829	Kreuzkopf	Crosshead
010830	Kreuzkopfbolzen	Crosshead Pin
011099	Flachkopfschraube	Pan Head Bolt
011100	Passfeder	Woodruff Key
011121	Zylinderrollenlager 17x40x16 mm	Bearing
011122	Nadellager 22x34x20 mm	Bearing
011352	Sockel	Base
011353	Kulisse komplett	Motion Link complete

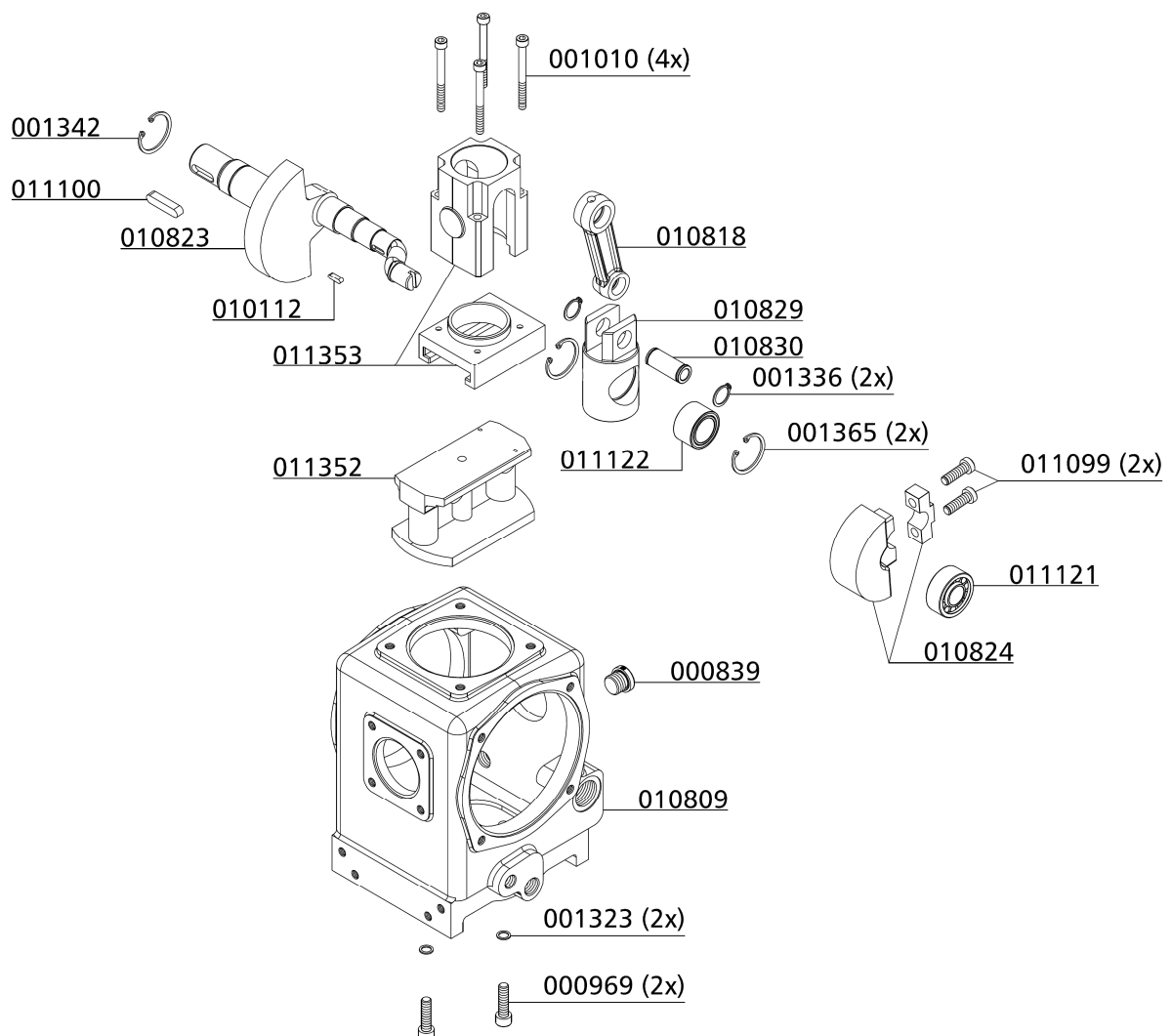
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DETAILANSICHT / DETAILED VIEW

Baugruppe: Kurbeltrieb / Assembly: Crank Drive

Ab Blocknummer 14
From Block Number 14

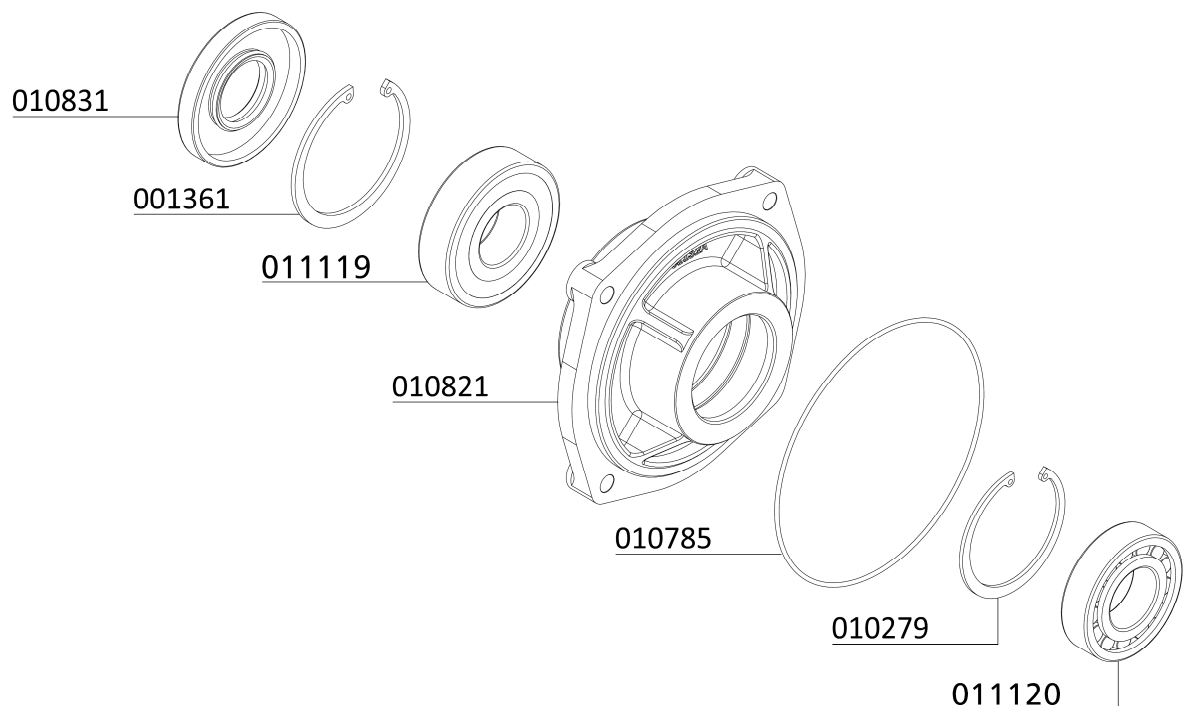
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Baugruppe: Lagerdeckel schwungradseitig

Assembly: Bearing Cover Flywheel Side

Best.-Nr. / Order No.	Benennung	Description
001361	Sicherungsring I70	Circlip
010279	Sicherungsring I62	Circlip
010785	O-Ring Ø128x2mm	O-Ring
010821	Lagerdeckel	Bearing Cover Flywheel Side
010831	Wellendichtring 30x72x10RST	Shaft Seal
011119	Rillenkugellager 30x72x19mm	Bearing
011120	Zylinderrollenlager 30x62x16mm	Bearing





ERSATZTEILLISTE / SPARE PART LIST

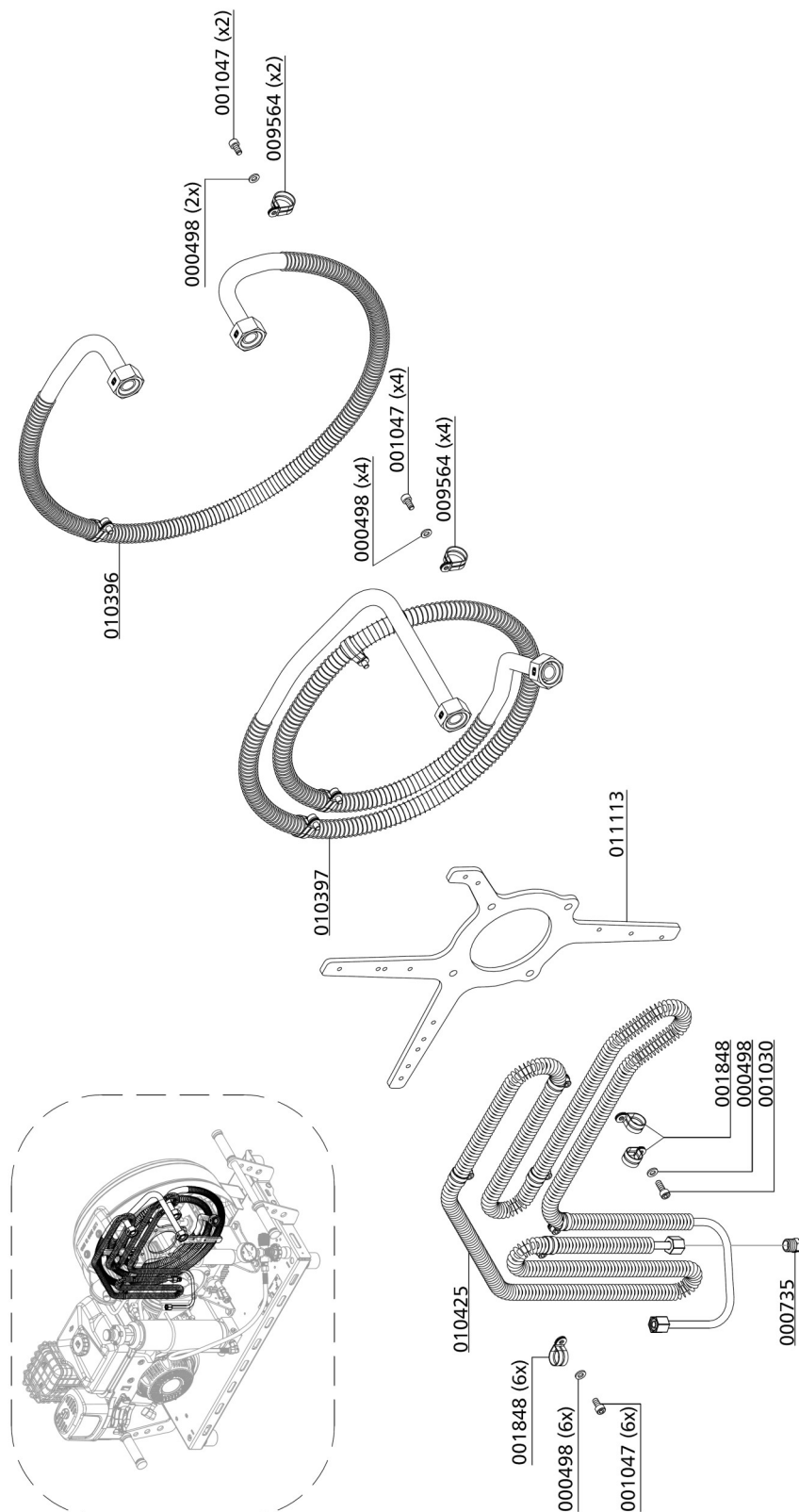
Baugruppe: Kühler / Assembly: Cooler

Best.-Nr. / Order No.	Benennung	Description
000498	U-Scheibe A6	Washer
000735	Gerade Verschraubung G08L	Connection
001030	Zylinderschraube M6x16mm	Allen Bolt
001047	Zylinderschraube M6x12mm	Allen Bolt
001848	Rohrschelle (Ø15-18mm)	Pipe Clamp, 8mm Finned Pipe
009564	Rohrschelle Ø21, 12 breit	Pipe Clamp
010396	Kühler 1. Stufe, mit Muttern & Schneidr.	Cooler 1st Stage LW 200
010397	Kühler 2. Stufe, mit Muttern & Schneidr.	Cooler 2nd Stage LW 200
010425	Kühler 3. Stufe	Cooler 3rd Stage LW 200
011113	Halteblech Kühler	Holder Cooler

C

DETAILANSICHT / DETAILED VIEW

Baugruppe: Kühler / Assembly: Cooler

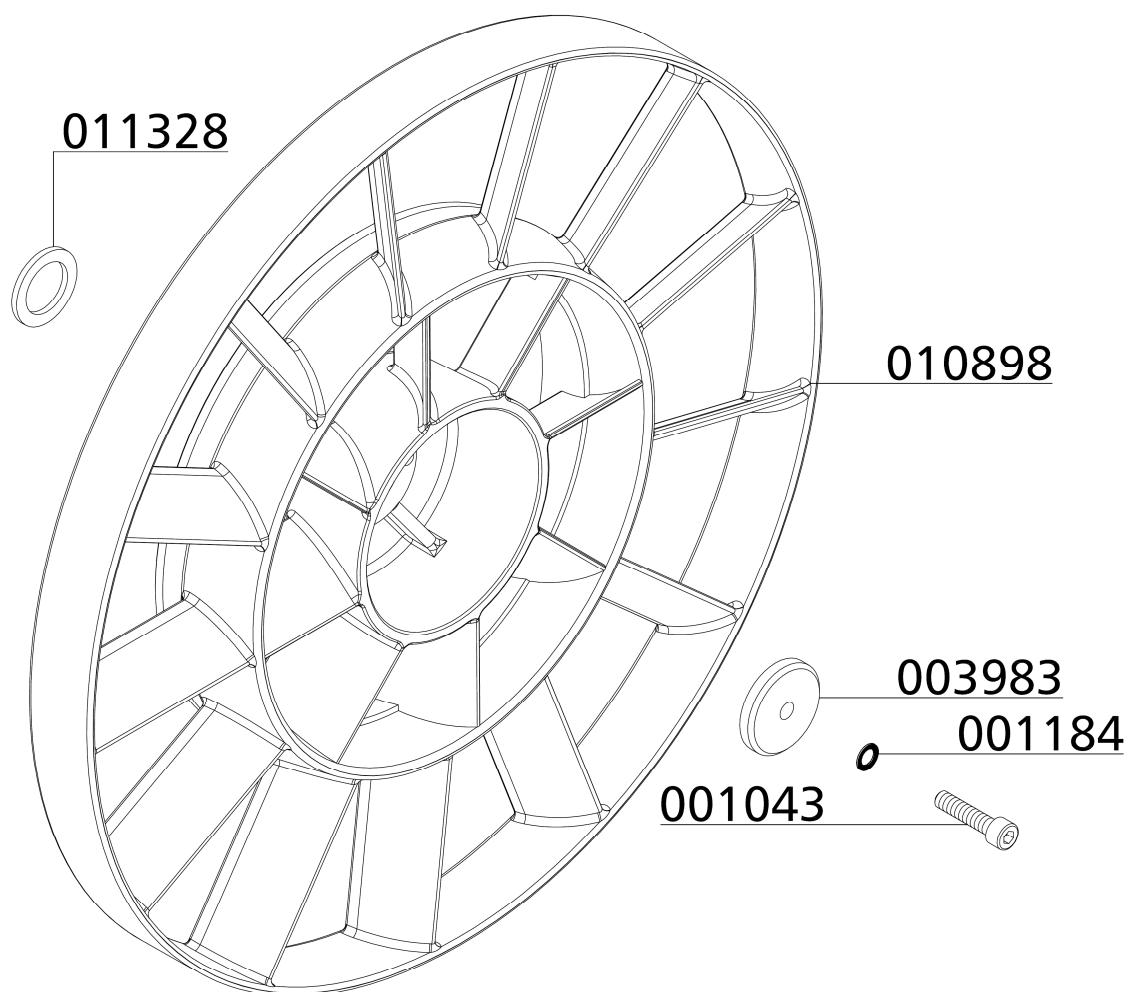


C

ERSATZTEILLISTE / SPARE PART LIST

Baugruppe: Lüfterrad / Assembly: Flywheel Assembly

Best.-Nr. / Order No.	Benennung	Description
001043	Zylinderschraube M8x35	Allen Bolt
001184	Schnorr-Scheibe S8	Clamp Washer
003983	Scheibe Schwungrad	Washer, Flywheel
010898	Lüfterrad Ø460mm	Fan Wheel Ø460mm
011328	Anlegescheibe 3mm	Washer 3mm





OPTIONS



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ADDITIONAL FILLING HOSE

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ADDITIONAL FILLING HOSE

The additional hose with filling valve allows to fill two bottles simultaneously. The hose with filling valve is available in 200 and 300 bar version.

Please refer to Chapter A for all information about the filling process.

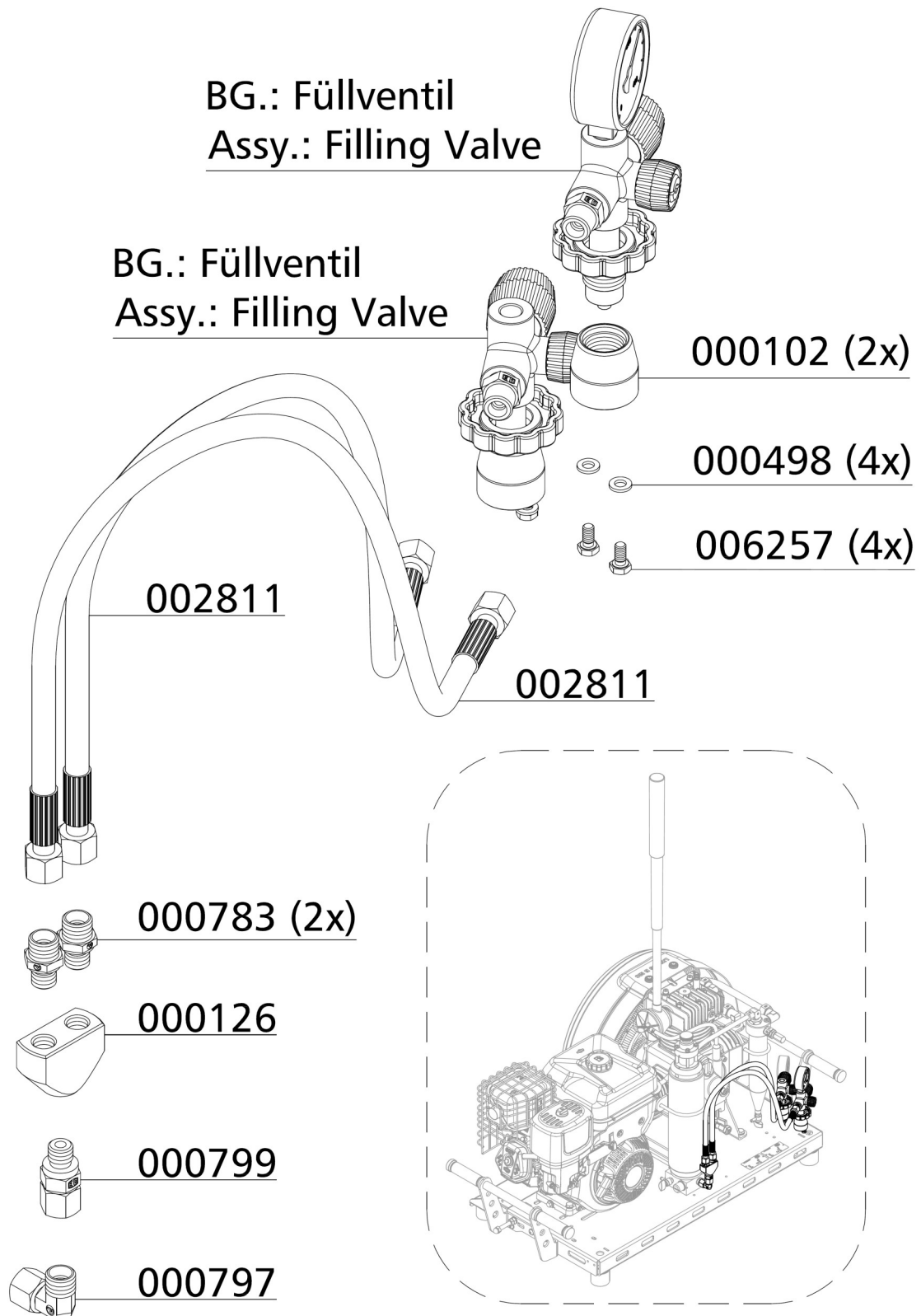
Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000102	Einschraubstutzen DIN Füllanschluss G5/8	Holder DIN Filling connector
000126	Y-Verteiler, schwarz eloxiert	Y-connector
000498	U-Scheibe A6	Washer A6
000783	Gerade Verschraubung GE10L	Straight Connection
000797	Verschraubung EVW10L	Elbow Connection
000799	Verschraubung EGE10L	Connection with fixed nut
002811	Hochdruckschlauch 1000 mm	HP-Hose
006257	6-kant Schraube M6x14	Hexagon Bolt

D

ADDITIONAL FILLING HOSE

Detailed View



D



AUTO SHUT DOWN

D

AUTO SHUT DOWN

Final pressure switch

The pressure switch shuts off the compressor automatically when the selected final pressure is reached. The final pressure switch is already adjusted to the corresponding cut-out pressure.

The pressure can be adjusted with the upper adjusting screw as follows:

Increasing cut-out pressure:

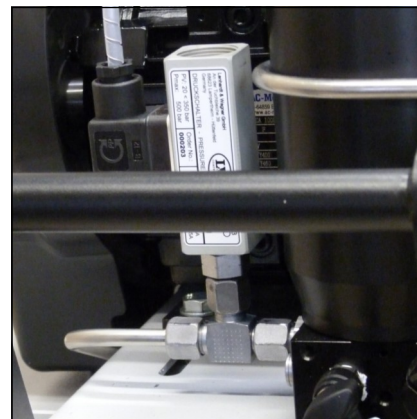
Turn the adjusting screw clockwise.

Reducing cut-out pressure:

Turn the adjusting screw anti-clockwise.

Adjust the pressure switch in steps of a quarter turn.

Restart the compressor after every adjustment step to verify the actual cut-out pressure.



Final pressure switch

D



Note

Do not adjust the final pressure switch to the safety valve pressure. The final pressure switch has to be adjusted to min. 10 bar below the safety valve pressure. Otherwise, the safety valve can open during operation. This considerably reduces the life of the safety valve.

Example settings:

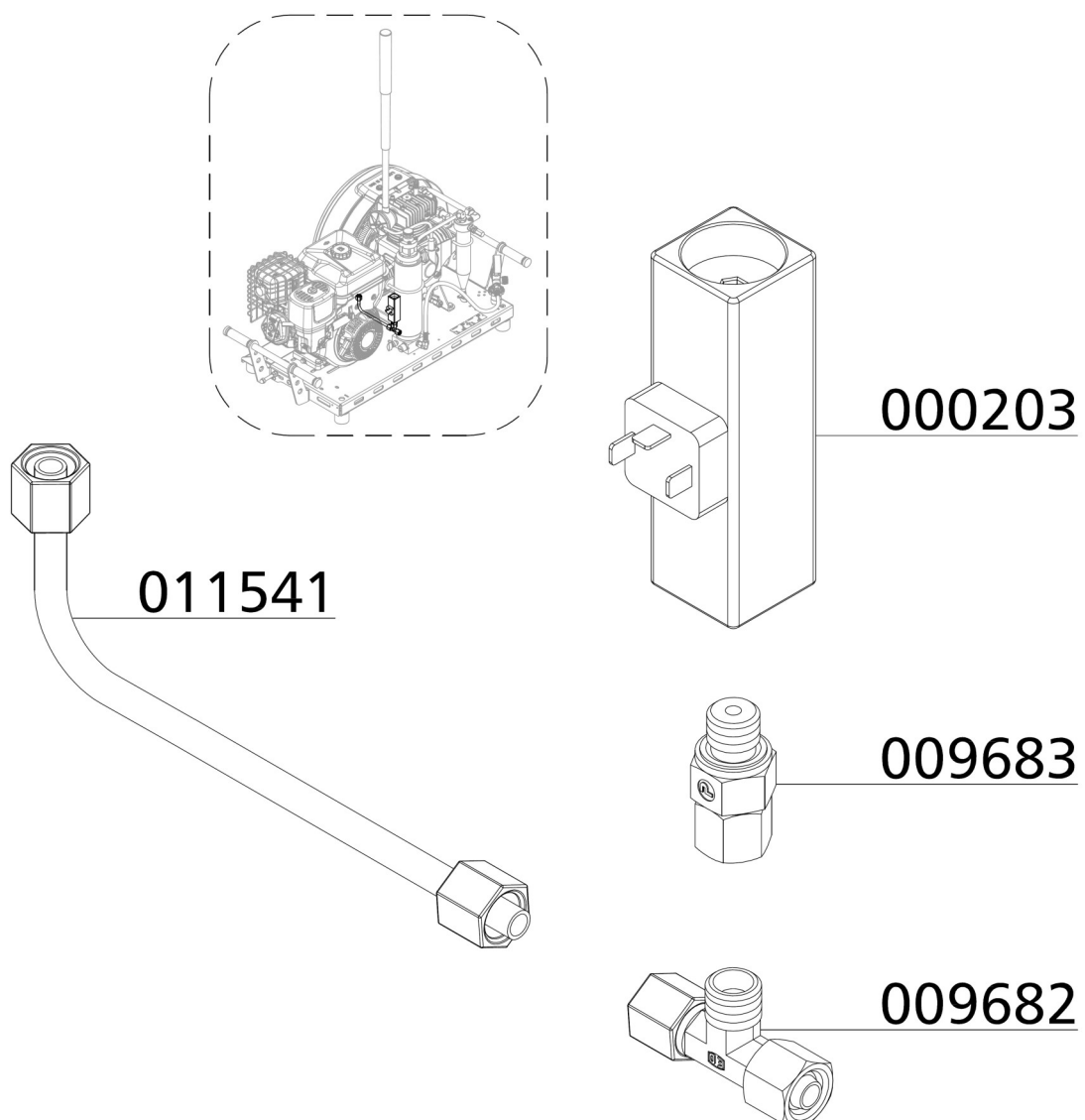
Safety valve	Max. Operating Pressure
225 bar	215 bar
250 bar	240 bar
330 bar	320 bar

AUTO SHUT DOWN

Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000203	Druckschalter, G1/4" IG, PV 50 - 350 bar	Pressure Switch 50-350 bar
009682	Verschraubung EL08L	T-Connection
009683	Verschraubung EGE08L	Connection with fixed nut
011541	Rohrleitung Ø8mm, komplett mit M.&S.	Pipe Ø8mm, c/w Nuts and Olives

Detailed View





HOUR COUNTER

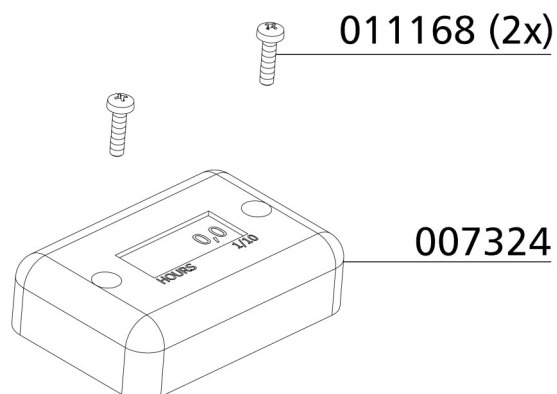
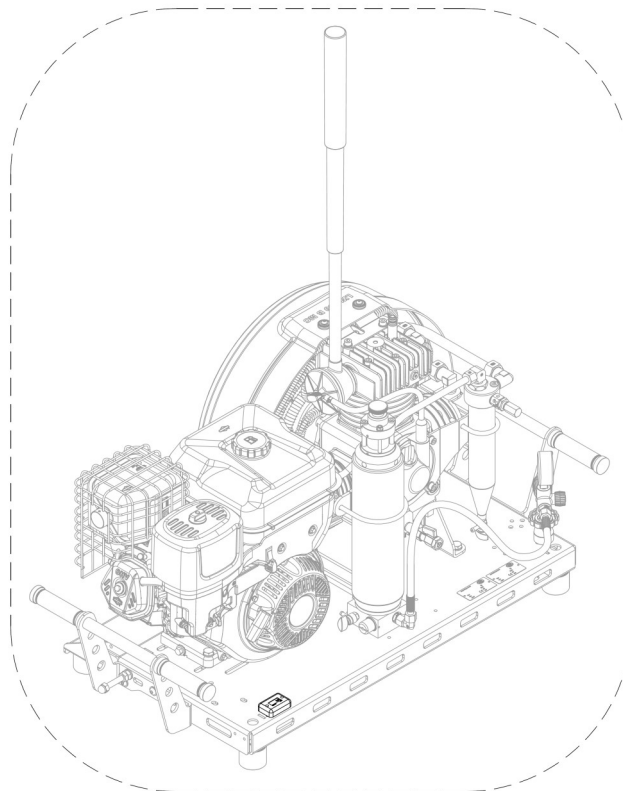
D

HRUR COUNTER

Spare Part List

Best.-Nr. / Order No.	Benennung	Description
007324	Betriebsstundenzähler	Hour Counter c/w battery
011168	Flachkopfschraube mit Kreuzschlitz M2,5x12	Screw with cross recess

Detailed View





OIL PUMP

D

OIL PUMP

Maintenance and Service

Oil Sieve Change

Oil sieve change as follows:

- Loosen cover screws (Fig.1 / 4 pcs).
- Remove the cover, the cover gasket and the oil sieve.
- Clean the oil sieve with petroleum-ether or replace the defective oil sieve.
- Replace the gaskets.
- Soak the gaskets with oil before placing (respect mounting direction).
- Be sure to position the arrow from the new oil sieve opposite to inlet and return ports of the pump (see Fig.2).
- Remount the cover with the 4 cover screws. Tightening torque: 4.5 - 8 N.

The oil sieve change is now completed.

Maintenance intervals

- We recommend cleaning or replacing the oil sieve every 1,000 working hours.
- Service Kit oil pump (002569). Consists of: 000798—Oil sieve + 000672—oil pump cover gasket.

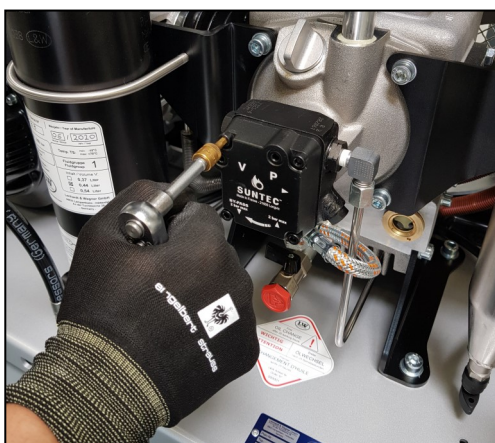


Fig. 1



Fig. 2



OIL PUMP

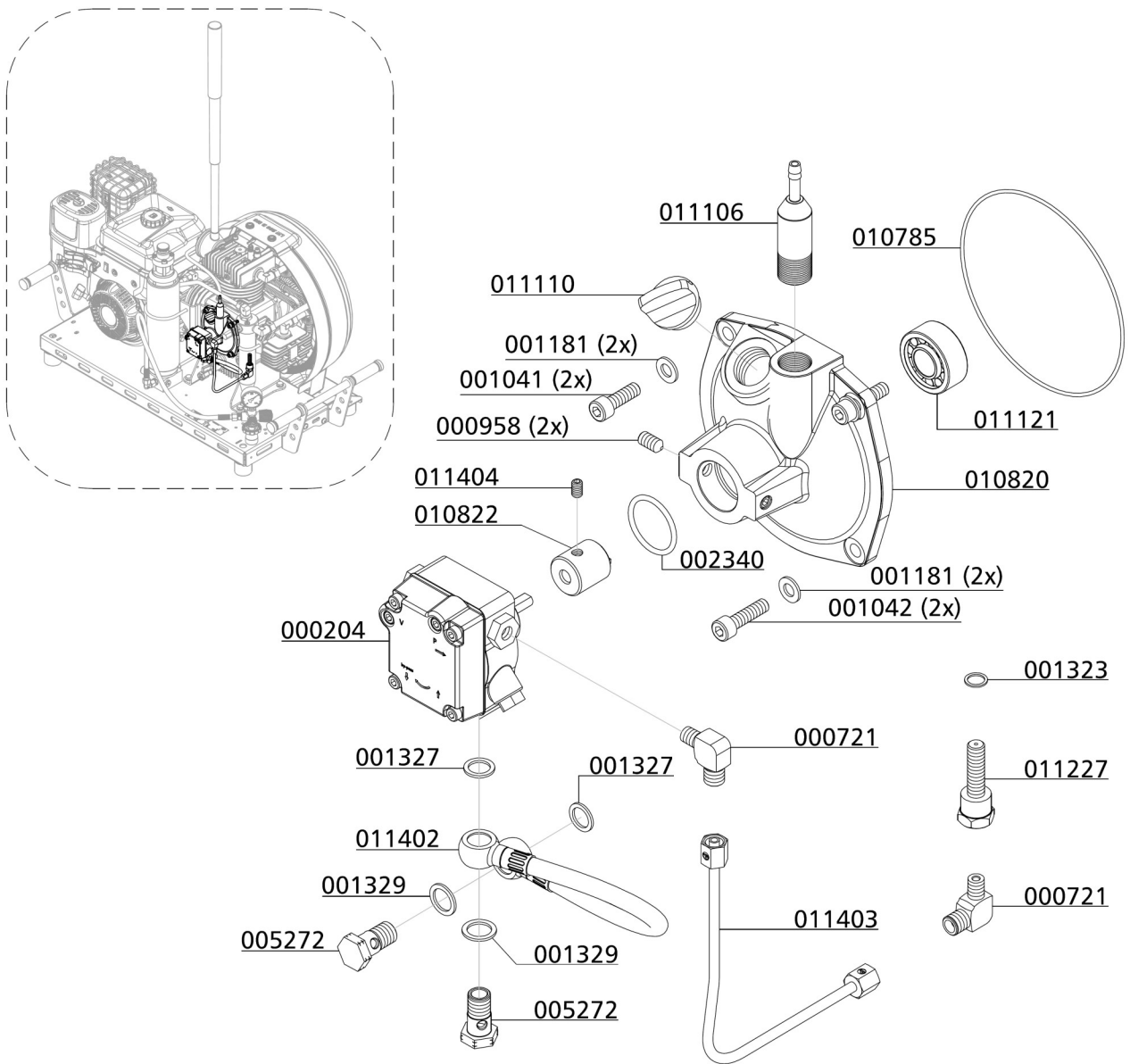
Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000204	Ölpumpe, kompl.	Oil Pump compl.
000721	Verschraubung	Connection
000958	Gewindestift, Madenschraube	Hexagon Socket Screw
001041	Zylinderschraube	Allen Screw
001042	Zylinderschraube	Allen Screw
001181	U-Scheibe A8	Washer A8
001323	CU-Ring	Copper Seal Ring
001327	CU-Ring	Copper Seal Ring
001329	CU-Ring	Copper Seal Ring
002340	O-Ring Ölpumpenflansch	O-Ring, oil pump flange
005272	Hohlschraube G1/4" - AG	Banjo Bolt G1/4" - male
010785	O-Ring	O-Ring
010820	Lagerdeckel	Bearing Cover Oil Pump Side
010822	Ölpumpen-Mitnehmer	Oil Pump Driver
011106	Anschlussadapter	Adapter Crankcase Vent
011110	Verschlusschraube GN 441, 3/4"	Plug G3/4
011121	Zylinderrollenlager 17x40x16 mm	Bearing
011227	Spezialschraube M10	Special Bolt M10
011402	Ölansaugschlauch, Block - Ölpumpe	Oil Suction Hose
011403	Rohrleitung Ø6mm, komplett mit M.&S.	Pipe Ø6mm, c/w Nut and Olive
011404	Gewindestift M6x8	Threaded Pin

D

OIL PUMP

Detailed View



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OIL PRESSURE GAUGE

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OIL PRESSURE GAUGE

Oil pressure gauge

The oil pressure gauge shows the compressor oil pressure during operation. Oil pressure values should remain between:

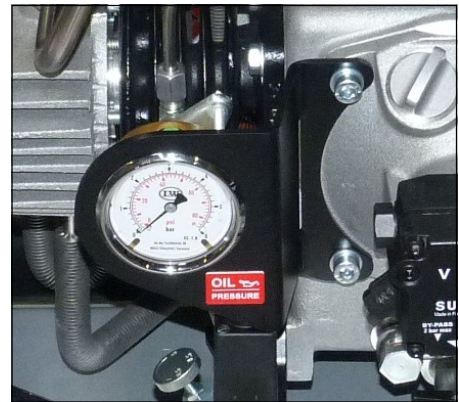
- min. + 1,0 bar
- max. + 2,0 bar

If oil pressure value stays below the minimum value:

- Wrong compressor rotation direction (see rotation direction arrow)
- Oil level too low, not enough oil in the compressor
- Oil pump filter contaminated
- Oil intake pipe damaged / defective
- Oil temperature below +5 °C - lubrication not possible
- Oil temperature higher than +120 °C - oil viscosity too low
- Oil pump defective

If oil pressure value stays above the maximum value:

- Low oil temperature, between +5 °C and +10 °C
- Should stay within the range of tolerance when operation temperature is reached..



Oil pressure gauge

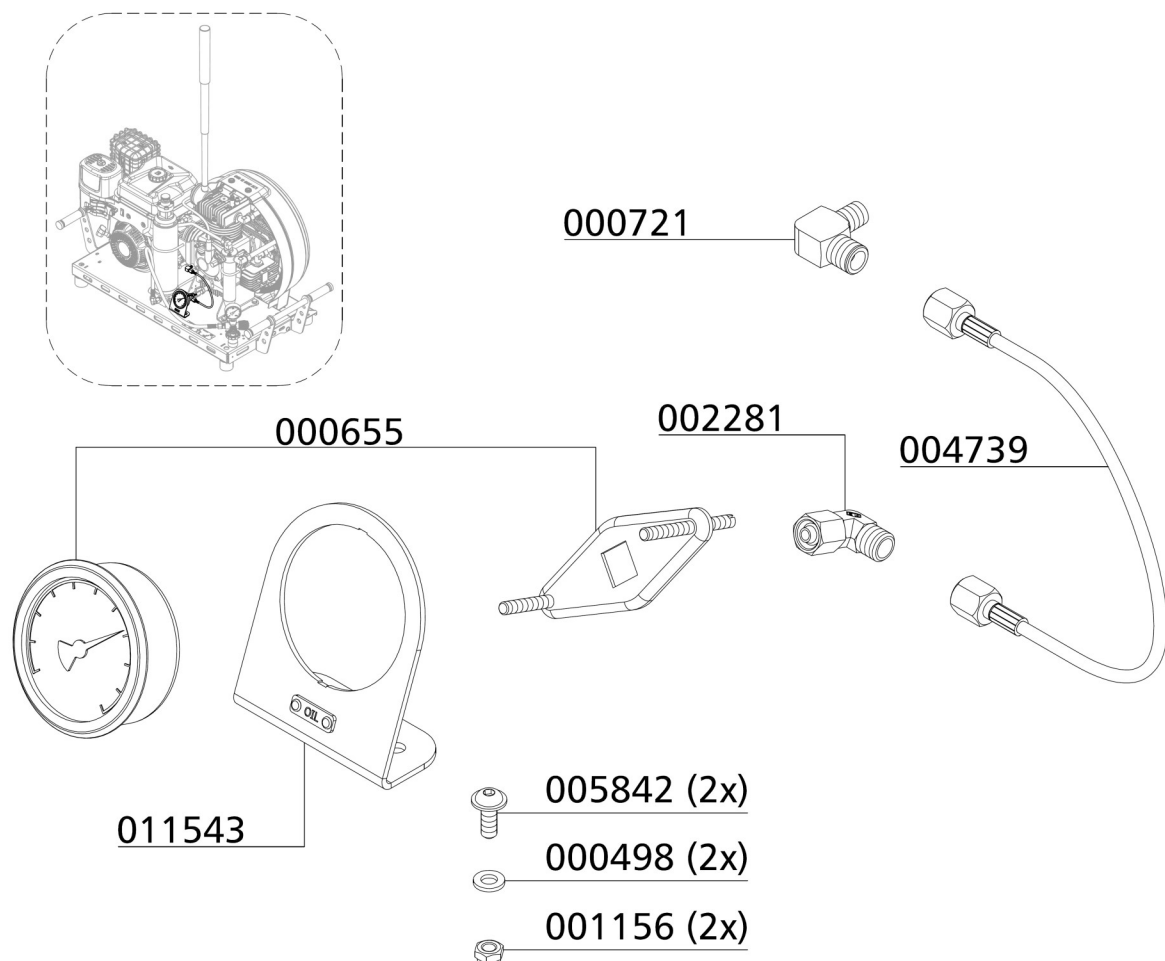
OIL PRESSURE GAUGE

Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000498	U-Scheibe A6	Washer A6
000655	Einbaumanometer 0-6 bar Ø63mm	Press.Gauge, glycerine, brass
000721	Verschraubung WE06L	Connection
001156	Stopfmutter M6	Lock Nut M6, zinc plated
002281	Verschraubung EW06L	Connection with fixed nut
004739	Manometerschlauch 400mm	Pressure gauge hose
005842	Linseflanschschraube M6x16mm	Flange Button Head Screw
011543	Halter Öldruckmanometer	Bracket Oil Pressure Gauge

D

Detailed View





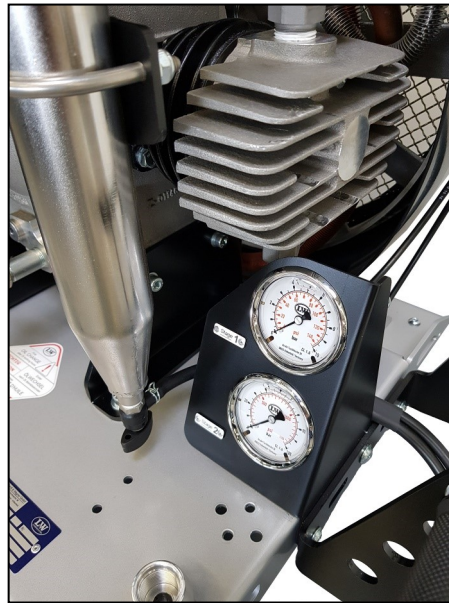
INTERSTAGE PRESSURE GAUGE

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INTERSTAGE PRESSURE GAUGE

Interstage pressure gauge

Each of the 3 pressure stages is monitored by a single pressure gauge. This is serviceable for troubleshooting and allows detecting faults at an early stage.



Indicated interstage pressures depend on final pressure settings.

The pressure gauges should show the following values at a final pressure of 300 bar:

1st stage: approx. 5 bar

2nd stage: approx. 60 bar

3rd stage: approx. 300 bar



INTERSTAGE PRESSURE GAUGE

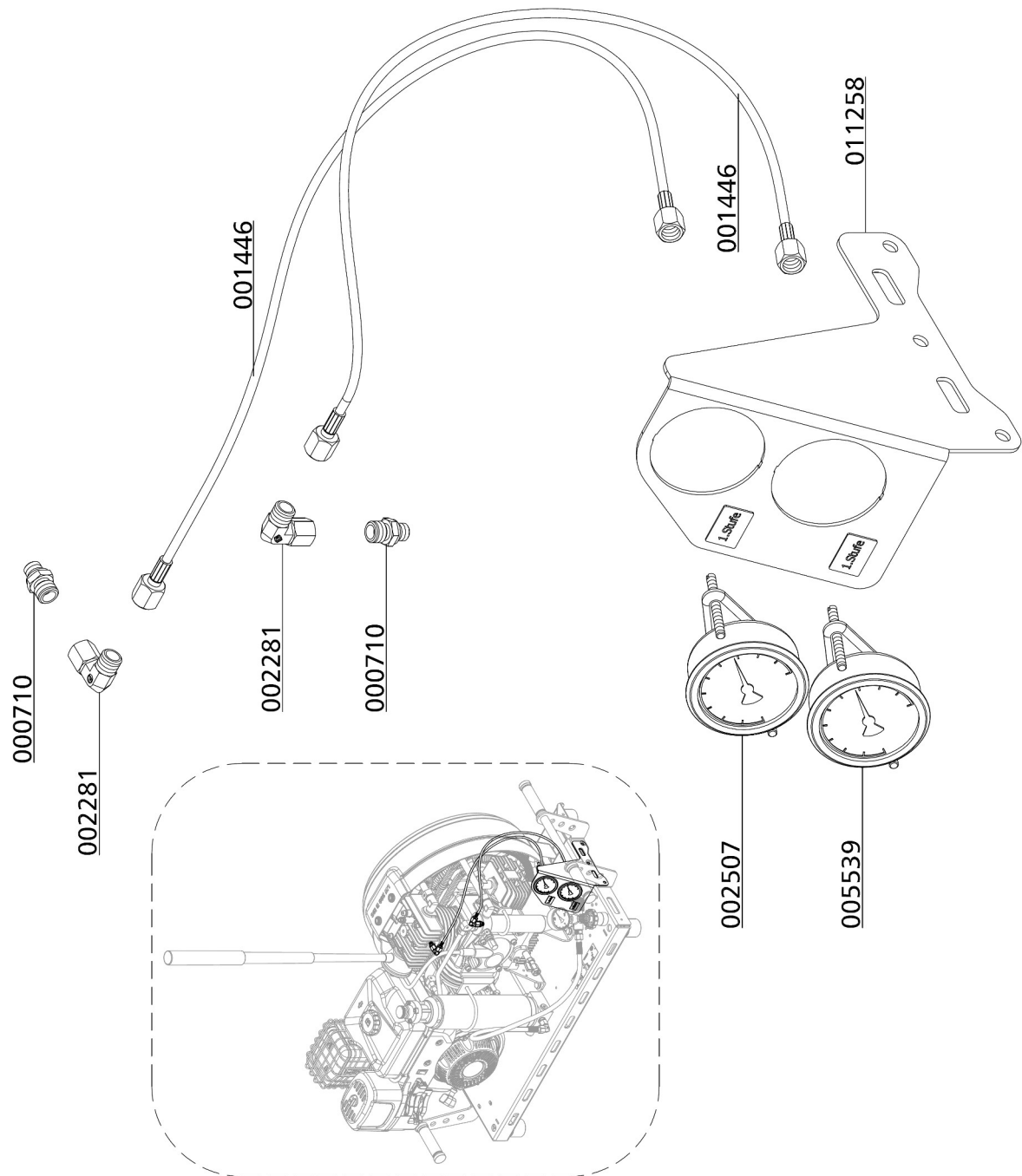
Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000710	Verschraubung GE06L	Connection w/o nut & olive seal
001446	Manometerschlauch 700mm	Pressure Gauge Hose
002281	Verschraubung EW06L	Connection with fixed nut
002507	Einbaumanometer 0-10bar	Pressure Gauge 0-10bar
005539	Einbaumanometer 0-100bar	Pressure Gauge 0-100bar
011258	Halteblech Zwischendruckmanometer	Holder 1st & 2nd Pressure Gauge

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INTERSTAGE PRESSURE GAUGE

Detailed View



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SWITCH OVER DEVICE 200/300 BAR

D

SWITCH OVER DEVICE 200/300BAR

Operation:

300 bar

The pressure selector spindle (1) should be screwed fully in clockwise.

200 bar

The pressure selector spindle (1) should be screwed fully out anti clockwise.



ATTENTION

Operate 200/300bar pressure selector spindle (1) only if filterhousing has been vented by using the drainage valve (2).



Fig.
Pressure Selector Spindle and Drain Valve



SWITCH OVER DEVICE 200/300BAR

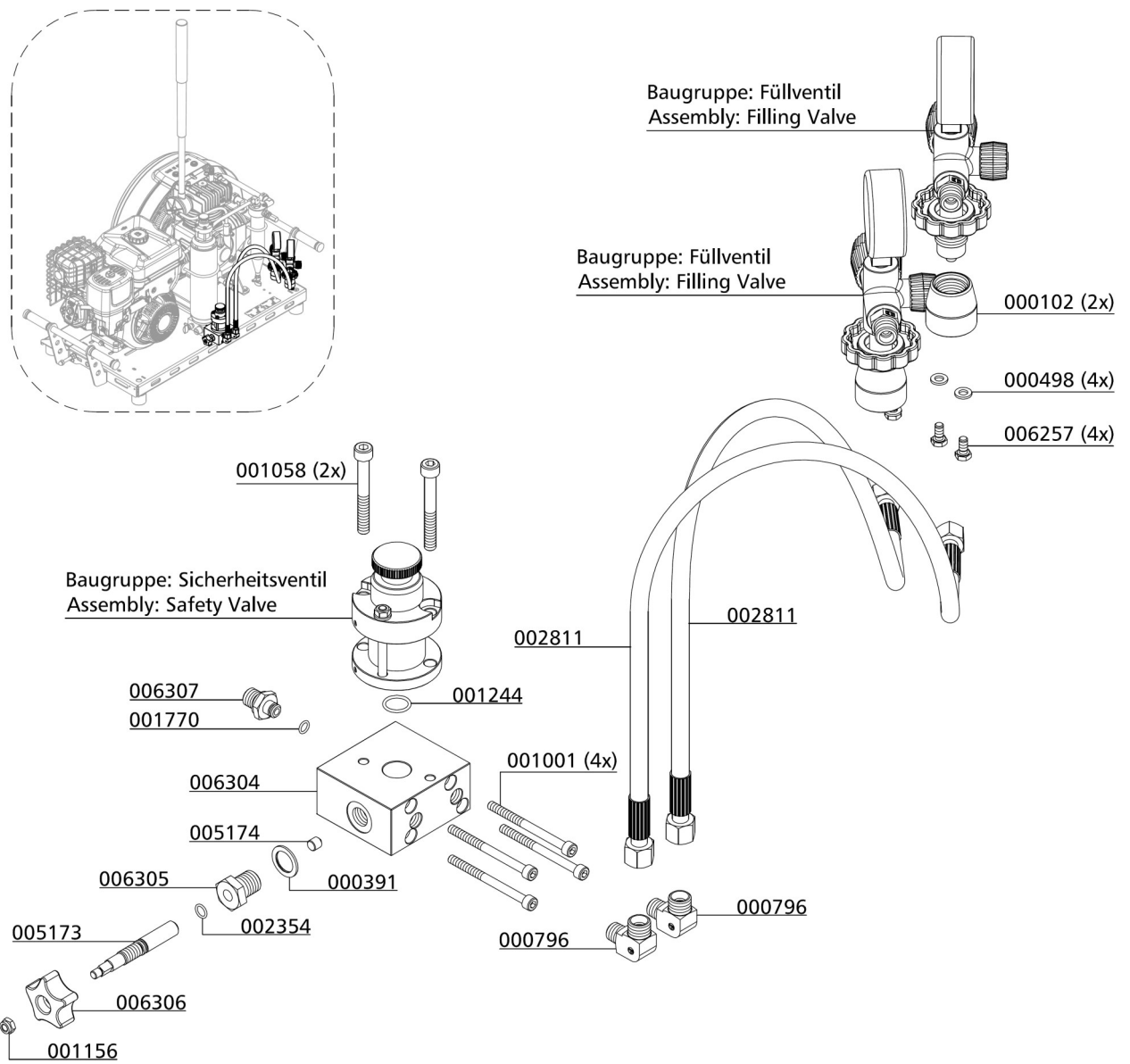
Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000102	Einschraubstutzen DIN Füllanschluss G5/8	Holder DIN Filling connector
000391	Usit-Ring	Seal Ring U-Sit
000498	U-Scheibe A6	Washer A6
000796	Verschraubung WE10L	Elbow Connection
001001	Zylinderschraube M6x75mm	Allen Bolt
001058	Zylinderschraube M8x70mm	Allen Bolt
001156	Stopfmutter M6	Lock Nut M6
001244	O-Ring Ø16x2mm	O-Ring, flange safety valve
001770	O-Ring, Düsenschraube	O-Ring Inlet Jet
002354	O-Ring Ø8x1,5mm	O-Ring
002811	Hochdruckschlauch 1000mm	HP-Hose
005173	Spindel Druckumschaltung	Spindle, switch over device
005174	Dichtkegel Druckumschaltung 200/300 bar	Conical nipple,switch o.device
006257	6-kant Schraube M6x14mm	Hexagon Bolt
006304	Umschaltventilkörper	Housing
006305	Hohlschraube	Banjo Bolt
006306	Sterngriff	Star Shaped Grip
006307	Verbindungsrippel	Nozzle

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SWITCH OVER DEVICE 200/300BAR

Detailed View



D



WHEEL SET

D



WHEEL SET

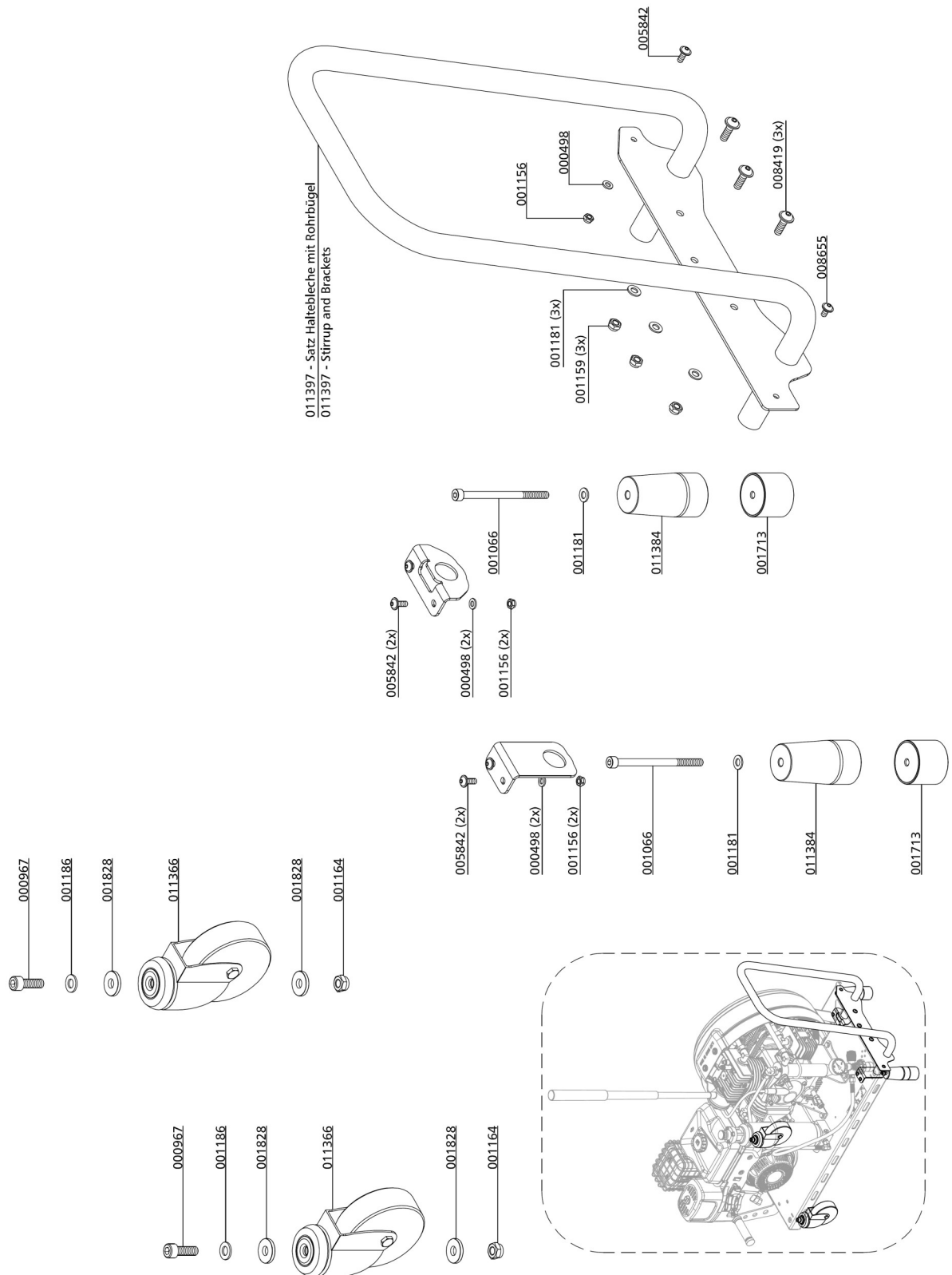
Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000498	U-Scheibe A6	Washer A6
000967	Zylinderschraube M10x30mm	Allen Bolt
001066	Zylinderschraube M8x120mm	Allen Bolt
001156	Stopfmutter M6	Lock Nut
001159	Stopfmutter M8	Lock Nut
001164	Stopfmutter M10	Lock Nut
001181	U-Scheibe A8	Washer
001186	U-Scheibe A10	Washer
001713	Standfuß, Gummipuffer	Rubber Stand
001828	U-Scheibe A10,5	Washer
005842	Linsenflanschschraube	Flange Button Head Screw
008419	Linsenflanschschraube M8x25	Flange Button Head Screw
008655	Linsenflanschschraube	Flange Button Head Screw
011366	Lenkrolle Ø100x32 mm	Swivel Castor Wheel Ø100x32 mm
011384	Distanzstück für Gummifuß / Radsatz	Spacer, Ø50mm, anodized black
011397	Satz Haltebleche mit Rohrbügel	Stirrup and Brackets

D

WHEEL SET

Detailed View



D



HONDA DRIVE ENGINE

D



HONDA DRIVE ENGINE

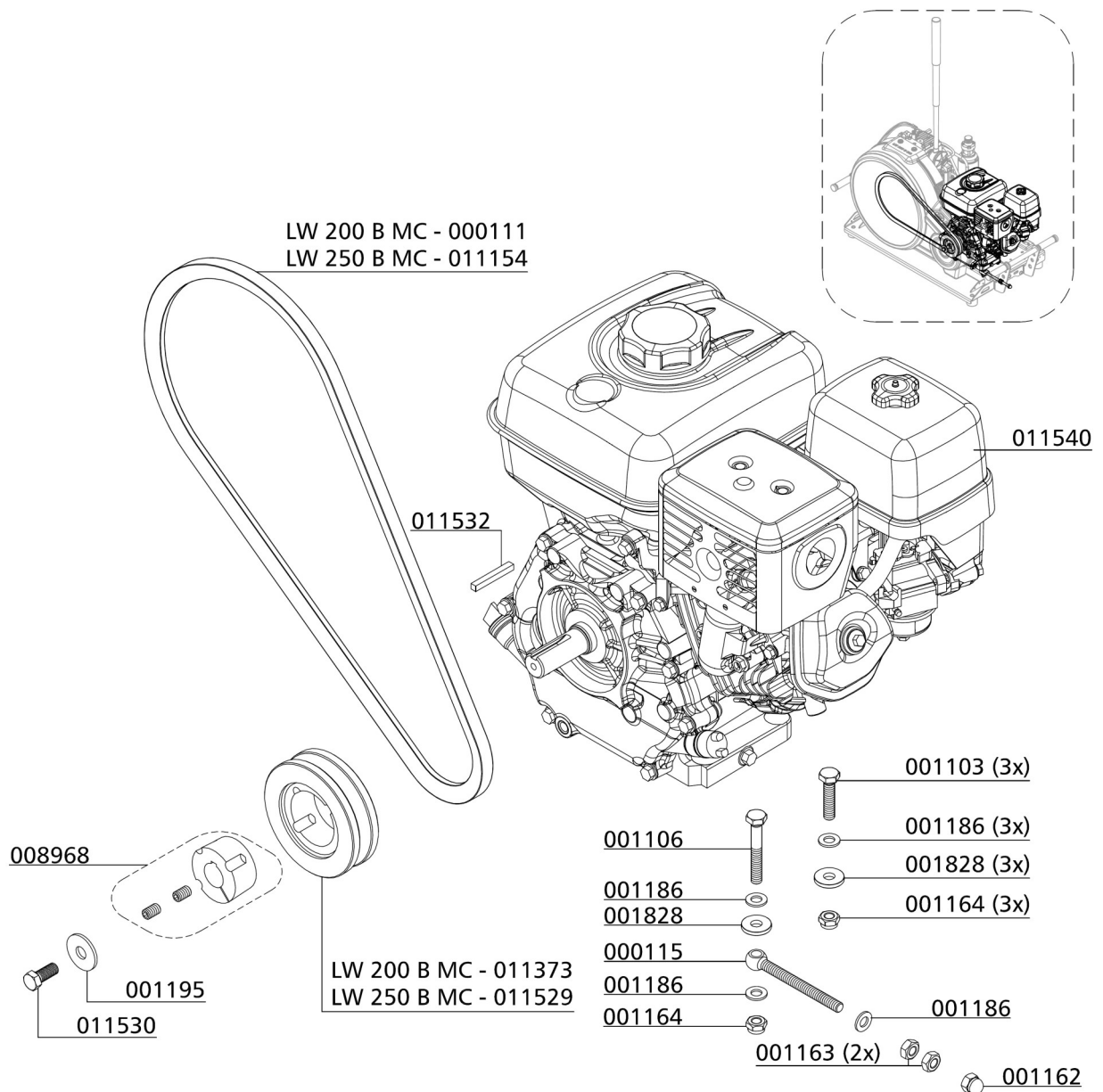
Spare Part List

Best.-Nr. / Order No.	Benennung	Description
000111	Keilriemen SPA 1332	V-Belt
000115	Spannschraube M10	Fixing Block Tensioning Bolt
001103	6-kant Schraube M10x45mm	Hexagon Screw
001106	6-kant Schraube M10x70mm	Hexagon Bolt
001162	Hutmutter M10	Domed Nut M10
001164	Stopfmutter M10	Lock Nut M10
001186	U-Scheibe A10	Washer A10
001195	U-Scheibe A13	Washer A13
001828	U-Scheibe A10,5	Washer
008968	Spannbuchse für Riemenscheibe	Taper Lock bush
011154	Keilriemen XPA 1382	V-Belt
011373	Keilriemenscheibe SPA 106-1	V-Belt Pulley
011529	Keilriemenscheibe SPA 132-1	V-Belt Pulley
011530	Sechskantschraube UNF7/16x1	Hexagonal Bolt
011532	Passfeder 1/4"	Woodruff Key 1/4"
011540	Antriebsmotor Honda	Drive Engine Honda

D

HONDA DRIVE ENGINE

Detailed View



D



ATTACHMENT

E

Lenhardt & Wagner GmbH

**An der Tuchbleiche 39
D-68623 Lampertheim – Hüttenfeld**

www.lw-compressors.com



Operating Instruction

Safety valve

Typ:

SiV2 BKZ 989 TÜV.SV.12-989.5.G.V.P CE 0091 AlMgSi1 F31 1100* Lenhardt & Wagner

SiV BKZ TÜV.SV.14-1140.5.G.V.p CE 0091 AlMgSi1 F31 1100* Lenhardt & Wagner

Set pressure:	see mark (hand wheel on top of valve)
Maximum outflow:	Set pressure 100-159 bar: 750 l / min Set pressure 160-350 bar: 1.100 l / min
Suitable media:	Media-resistant, non-corrosive gases

The safety valve is used for protection of pressurized components, eg pipelines, pressure vessels, or the compressor itself.

The hand wheel on the top of the safety valve is marked with the adjusted set pressure.



- 1) **Identification of set pressure**
- 2) **Seal**
- 3) **Fixing screws¹**
- 4) **Venting screw (hand wheel)**
- 5) **Identification serial number**
- 6) **Socket for safety valve**

Safety valve with socket

¹ und die Anforderungen des AD 2000 Merkblatts W7 erfüllen. The fixing screws M8 must be strength class 8.8 and meet the requirements of Merkblatt AD 2000 leaflet W7. Shaft length 70mm.

In order to prevent manipulation of the set pressure, all safety valves are factory fitted with a seal.

A safety valve on which the seal has been removed, must be returned to the manufacturer for repair / adjustment before further use.

In addition, the safety valve has a venting device (hand wheel).

When rotated clockwise, the safety valve and the filter housing of the final stage are completely vented.

During normal operation, the screw is unscrewed to the upper stop anticlockwise; an integrated safety ring prevents the screw from being removed.

If a safety valve blows off, the system must be switched off immediately and the cause of the error, investigated.

There are two possible reasons:

1. The safety valve is defective and blows off before the set pressure.

In this case the safety valve should be submitted immediately to the manufacturer for repair or replaced with a new one.

2. The safety valve opens properly, the problem is on the system.

A constant blowing of the safety valve is not permitted, the sealing seat of the valve can be damaged. The error on the system must be detected and repaired before further filling operations.

The safety valve may only be used if it is ensured that the maximum flowrate of the system does not exceed the blow-off rate of the safety valve.

The safety valve may only be used with the approved media.

Repair work on compressors must only be performed by trained personnel.

Dismantling of the safety valve

Ensure that on the safety valve is no pressure.

Loosen and remove the two M8 fixing bolts with a 6 mm Allen key.

The safety valve can now be removed by turning and simultaneously pulling out of the socket.

Mounting

1. Clean the safety valve socket.

2. Oil the insert pin of the safety valve including the O-ring with 1 to 2 drops of oil.

3. Press the safety valve pin complete into the socket.

4. Fasten the safety valve with the two 8 mm allen screws into the socket

(Tightening torque: 10 Nm)

5. Screw the venting screw (hand wheel) anticlockwise to its upper limit.

6. Start the System (Compressor), check installation for leaks and proper function.

Manufacturer: Lenhardt & Wagner GmbH
An der Tuchbleiche 39
D-68623 Lampertheim – Hüttenfeld

Contact: E-Mail: service@lw-compressors.com
Web: www.lw-compressors.com
Tel.: +49 (0) 6256 – 85880 0
Fax: +49 (0) 6256 – 85880 14

Note:

Only use safety valves which are in a technically perfect condition, for its intended purpose, safety and danger awareness, in compliance with the operating instructions!
Faults which could affect safety must be rectified immediately!

Notes:

- The safety valve must be installed directly on the protected pressure vessel and / or the plant.
 - The safety valve must be installed in an upright position.
 - The flow area of the port must be greater than the valve opening.
 - Protect valve against splashes
-

Maintenance:

- In accordance with current Pressure Equipment Directives, the safety valve must be periodically checked for operation and reliability.
- Refill annually lubricating oil:
Oil filling position:
Hole on the spacer (see arrow, Figure 1)
- Oil level: Fill oil into the hole until oil comes out of the hole.

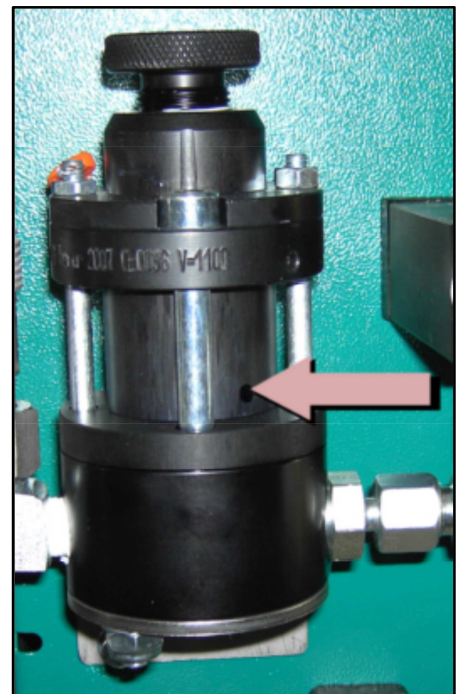


Figure 1: Position for oil refill

To be used lubricating oil for the safety valve: L&W Article N°.: 008500 (content: 30 ml)



INFORMATION ON THE
SERVICE LIFE OF
L&W HIGH PRESSURE HOSES





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Storing hose lines	8
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TESTING HOSE LINES

Testing hose lines

An essential factor in ensuring operational safety when handling L&W compressors is the proper testing of the hose lines used.

Tests are necessary:

- After assembly and before commissioning the hose line.
- After accidents, changes (modifications) to the compressor system, longer periods of non-use and damage due to, for example, collisions or natural phenomena (extraordinary test).
- After carrying out repair work on the compressor system that could compromise safety.
- Recurrently at fixed, regular intervals.

The proprietor must determine the type, scope and deadlines for the tests according to his or her individual operating conditions and on the basis of a risk assessment. **The specifications and recommendations of the manufacturer must be observed.** The specifications made regarding type, scope and deadlines (as well as the replacement intervals) must be documented in writing as occupational health and safety measures.

The results of the tests must also be recorded, e.g. together with the test report of the machine, and kept at least until the next test.

The above-mentioned tests may only be carried out by persons who are qualified to do so and who are authorized by the company (employer).

Testing after assembly and before commissioning

In the test after assembly and before commissioning, factors relating to assembly or factors that can only be evaluated on the fully assembled machine must be assessed.

The assembled hose lines must also be assessed.

Some test points can already be assessed during a visual inspection when the machine is switched off. An overview of the recommended scope of testing for a visual inspection of hose lines is given in the appendix.

Further test points included in the test of hose lines before commissioning, require a functional test with the machine running.

A recommendation for the scope of testing is given in the appendix.



Recurring test

Since hose lines are subject to influences that cause damage during operation and can lead to dangerous situations, they must be tested recurrently at fixed intervals. The aim of recurring tests is to detect and repair damage in good time.

The objective is to ensure that the system remains in a safe condition.

Procedure for hose lines found to be "defective"

If defects are found during the testing of the hose line that impair the safe condition of the work equipment, these must be rectified immediately. If this is not possible, suitable measures must be taken to ensure that the machine cannot be used further before it is repaired. Defective hose lines must be replaced before the machine can be used further.

It is not permitted to repair or reassemble damaged hose lines with old, previously used parts!

If several hose lines are replaced at the same time, precautions must be taken to prevent mix-ups of the connections or the installation points.

Test intervals

Deadlines for the recurring tests of the hose lines should already be set before commissioning.

Otherwise, there is a risk that work equipment will continue to be used or operated for too long without being tested.

The intervals between the recurring tests must be selected in such a way that deviations from the safe operating condition of work equipment can be detected and eliminated in good time.

The intervals for recurring tests specified here are guidelines and based on experience. Shorter test intervals may have to be specified on the basis of the risk assessment; special operating conditions; or according to the manufacturer's specific instructions in the machine operating manual. Longer test intervals may also be specified, provided that this is justifiable and tenable from a safety point of view. The determination of the test intervals should be documented.

Type of test	Recommended test intervals
Visual inspection	Before commissioning the system
Functional test	Annually with previous visual inspection

Persons qualified to test hose lines

A qualified person is a person who, through his or her professional training, professional experience and recent professional activity, has the necessary specialist knowledge required for testing work equipment - in this case for testing hose lines.

These requirements are defined in the Technical Rules for Industrial Safety TRBS 1203

"Qualified persons - general requirements" fulfilled if:

- the qualified person has completed a professional training that enables his or her professional knowledge to be determined in a comprehensible manner, i.e. based on professional qualifications or comparable evidence. For the testing of hose lines, the person concerned must have completed a technical professional training or another technical qualification sufficient for the intended testing tasks. The object is to guarantee that the tests will be carried out properly.
- proof of practical use at work of the equipment to be tested as well as the associated professional experience is provided. The qualified person must be sufficiently familiar with the conditions that demand the performance of tests, such as the result of the risk assessment or observations during the working day.
- there is proof of recent professional activity in the area of the upcoming tests and appropriate further training. The qualified person must also have gained experience with regard to the tests to be performed or comparable tests. He or she must also have knowledge of the state of the art with regard to the work equipment or components to be tested as well as the hazards to be considered. This also includes knowledge of the relevant technical regulations and the updating of this knowledge, e.g. through participation in training courses/instruction.

The qualified person is not subject to any technical instruction during the course of his or her testing activity and must not be disadvantaged because of this.

Experts who have carried out tests on the hose lines up to now and who meet the three criteria mentioned above and who have familiarized themselves with the contents of the German Ordinance on Industrial Safety and Health and the changes associated with it are also considered qualified persons to whom the tests can continue to be assigned.

See also:

- ⇒ § 2 para. 7 of the German Ordinance on Industrial Safety and Health,
- ⇒ Technical Rules for Operational Safety TRBS 1203.



Replacing hose lines

As a general rule, even when stored properly and subjected to permissible stress during use, all hose lines are subject to natural aging, which changes the material and composite properties and reduces the performance of the hose lines.

This limits the service life of a hose line and the operator must ensure that hose lines are replaced at appropriate intervals.

Immediate replacement of hose lines

Hose lines must be replaced immediately in the event of the following defects:

- External visible damage to the hose line or fittings.
- Internal damage to the tube or the reinforcement.
- Leakage from the hose line or the fittings.
- Deformation of the hose line or the fittings.



SERVICE LIFE

Service life of L&W high pressure hoses

When determining the service life or the replacement interval of the individual hose lines, the concrete specifications and recommendations of the hose line or machine manufacturer must be observed. Furthermore, empirical values resulting from previous tests done under the prevailing operating conditions on site are also relevant.

Guideline values for recommended replacement intervals of hose lines which have proven themselves in practice are summarized below.

Hose line requirements	Recommended replacement intervals
Standard requirements	6 years (Service life including a maximum of 2 years storage time)
Increased requirements, e.g. due to - increased operating time, e.g. multi-shift operation, or short machine or pressure pulse cycle times - strong external and internal influences (due to the medium), which greatly reduce the service life of the hose line	2 years (service life)

The guideline given above for a replacement interval of six years for hose lines meeting normal requirements includes a maximum storage period of two years. The guideline value of two years for hose lines meeting increased requirements represents the maximum permissible service life.

A prolongation of the guideline values given above for replacement intervals is possible if

- appropriate test values and empirical values are available from the operator of the machine which permit safe continued use beyond the recommended maximum service period,
- a hazard or risk assessment, documented in writing, has been carried out by the operator, which also takes into account protective measures in the event of failure of hose lines, and
- tests for safe working conditions are carried out by qualified persons at appropriately set, if necessary reduced, intervals.

It must be ensured that the prolongation of the replacement intervals does not result in a dangerous situation that could injure employees or other persons.

If hose lines fail during operation or if damage or defects are frequently detected during the recurring tests, then, in addition to investigating the causes, the test and replacement intervals must be shortened.



STORAGE

Storing hose lines

When storing hose lines, storage conditions must be aimed at minimizing the natural aging that occurs over time and the associated change in material and composite properties.

For this purpose, the following information must be provided:

- Store in a cool, dry and low-dust place.
Low-dust storage can be achieved, for example, by wrapping the hoses in plastic film.
- Avoid direct sun or UV radiation.
- Shield from nearby heat sources.
- Avoid storage temperatures below -10 °C for elastomers.
- Do not use ozone-generating light fittings or electrical devices that may produce sparks in the immediate vicinity.
(Ozone-generating light fittings are, for example, fluorescent light sources, mercury vapor lamps).

The most favorable storage conditions are temperatures between +15 °C and +25 °C, as well as a relative humidity below 65 %.

During storage, hose lines must not come into contact with substances that could cause damage, e.g. acids, alkalis, solvents. Penetration of ozone or other harmful air constituents can be prevented by sealing the ends or by wrapping the hoses in plastic film. They must be stored flat and free of tension.

The storage period for hose lines should not exceed two years.



ANNEX

Recommended scope of testing "visual inspection" (before initial commissioning or recommissioning)

- Is all user information required for safe operation of the system available (e.g. flow chart, operating instructions)?
- Do the hose lines comply with the flow chart or parts list?
- Are there protective measures in place, such as pressure relief valves, for cases of unusually high pressure pulses or pressure amplifications?
- Are the hose lines marked with the name or abbreviation of the manufacturer, maximum permissible operating pressure, nominal diameter, quarter/year of manufacture?
- Are the hose lines installed in such a way that, in accordance with DIN 20 066
 - the natural position does not hinder movement?
 - turning or twisting of the hose is prevented, likewise tensile load caused by a line that is too short and a bending radii that is too small?
 - the hose is routed via a kink protector (if necessary on the connecting element)?
 - sufficient clearance prevents external mechanical influences or abrasion on the edges?
 - hose bridges prevent damage being caused by driving over the hose line?
 - hose guides (such as hose saddles and sufficiently wide hose brackets) protect loosely laid hose lines and
 - a heat shield protects against high temperature exposure?
- Are suitable protective measures, such as fixtures, safety gear or shielding provided for hose lines that, in the event of failure, pose a risk of whipping?
A risk is to be assumed if persons are generally present in the immediate vicinity of the hose lines, for example.
- Do the hose lines of newly commissioned or re-commissioned machines already show signs of damage?
- Are the installed hose lines still within the storage/use period recommended by the relevant manufacturer?
- Are the hose lines free of paint?
- Are the hose lines free of chafe marks?
- Does the operating manual contain information on test intervals? If so, what?

Note:

The installed hose lines should not be made from used hoses or used press fittings that have already been in use as part of a hose assembly!



ANNEX SCOPE OF TESTING; TEST CRITERIA

Recommended scope of testing "Functional test" (before initial or recommissioning)

Note:

Visual inspection must be carried out before the functional test

- All parts of the system must be tested at least at the maximum working pressure that could be achieved taking into account all intended applications:
 - Are the hose lines and connecting elements free of leakage?
 - Have all hose lines withstood the pressure?

Note:

The installed hose lines should not be made from used hoses or used press fittings which have already been in use as part of a hose assembly!