Operating Instructions

Filling Panel with 1 Pressure Range

Filling Panel with 2 Pressure Ranges

Product 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 product 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 .....

....

Spare Parts Lists .....

Options (if equipped) .....

Attachment .....

Manufacturer in terms of 2014/68/EU

The full name and address of the manufacturer is:

Lenhardt & Wagner GmbH

An der Tuchbleiche 39
68623 Hüttenfeld / Germany

Phone: +49 (0) 62 56 - 85 88 0 - 0
Fax: +49 (0) 62 56 - 85 88 0 - 14

E-Mail: service@lw-compressors.com
Internet: www.lw-compressors.com

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General Information and Technical Data

General Information / Description of Warning Symbols 5
Scope of Delivery 6
Technical Data 7
Unit Assembly 8
Flow Chart - Filling Panel with one Pressure Range 9
Flow Chart - Filling Panel with two Pressure Ranges 10

Safety Precautions

Intended Use / Operators 12
General Safety Precautions 13
Unit customised safety notices 14
Maintenance instructions 15
Transportation instructions / Safety regulations / Disposal 16

Installation

Mechanical Installation / Electrical Installation 18

Operation

Filling Panel with one / two Pressure Ranges 20
Filling procedure 21

Maintenance and Service

Service, Repair and Maintenance 23
Maintenance Overview 24
Safety valve 25
Maintenance records ..... 27 - 28

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.

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.

Scope of Delivery

The wide range of L&W filling panels has established itself as an industry benchmark for optimum design with an extensive list of features. The modular design guarantees that filling stations can be extended to adapt to your future requirements. The panels are available with either 200, 232 or 300 bar filling pressure (3000/4500 psi) or as dual pressure filling panels for simultaneous filling without the need to select the pressure. The self venting lever operated filling valves are available with either filling hoses and connections or direct filling connections for BA cylinders. We have a wide range of filling connections available.

Specifications

- Steel frame, powder coated
- Steel plate housing powder coated
- 8 mm bulkhead fitting for air inlet (inter-changeable left/right)
- Ready for connection, piped with 8 mm stainless steel piping
- Start/Stop remote control with running control lamp (available for various compressor controls)
- Large Ø 100 mm pressure gauge for each filling pressure range
- Self-venting lever filling valves (optionally with silencer).
- Available with filling hoses or direct BA connections according to your specifications
- Filling connections according to DIN 477, CGA, or INT (special connections on request)
- Filling strips with 2 pressure ranges also have pressure reducers and safety valves for parallel filling operation

Filling panels with filling hoses

- 1000 mm HP hoses with stainless steel fittings (longer hoses available)
- Filling connections anti-whip option recommended for DIN or NF connections

Filling panels with direct BA connections

- Direct BA connections for flanging the cylinders on to the panel
- Filling connections anti-whip option recommended for DIN or NF connections
- Dust caps and holders for DIN connections

Options available

- L&W anti-whip safety connections for DIN/NF connections
- Silencers for further reducing venting noise
- Storage inlet/outlet with hand wheel valve and pressure gauge
- Pressure reducer and safety valve in the inlet for 300 bar storage and only 200 bar filling
- 8 mm bulkhead outlet for additional filling panels (modular system)
- Customized products available on request

Technical Data

Technical Data	
Max. Pressure [bar]:	350
Medium:	Compressed Air / Breathing Air
Operating temperature [°C]:	+5 < +45
Noise level (measured at 1 m) [dB(A)]:	93

Dimensions and weights

Number of connections	Dimensions L x W x H [mm] 1 DB	2 DB	Weight [kg] 1 DB	Weight [kg] 2 DB
1-point	210 x 230 x 330	-	6,5	-
2-point	390 x 230 x 330	580 x 230 x 330	9,0	13,0
3-point	580 x 230 x 330	820 x 230 x 330	12,0	16,0
4-point	820 x 230 x 330	820 x 230 x 330	15,0	18,0
6-point	1180 x 230 x 330	1180 x 230 x 330	20,0	23,0
8-point	1560 x 230 x 330	1560 x 230 x 330	25,0	28,0
9-point	1760 x 230 x 330	1760 x 230 x 330	28,0	31,0
10-point	1950 x 230 x 330	1950 x 230 x 330	31,0	34,0

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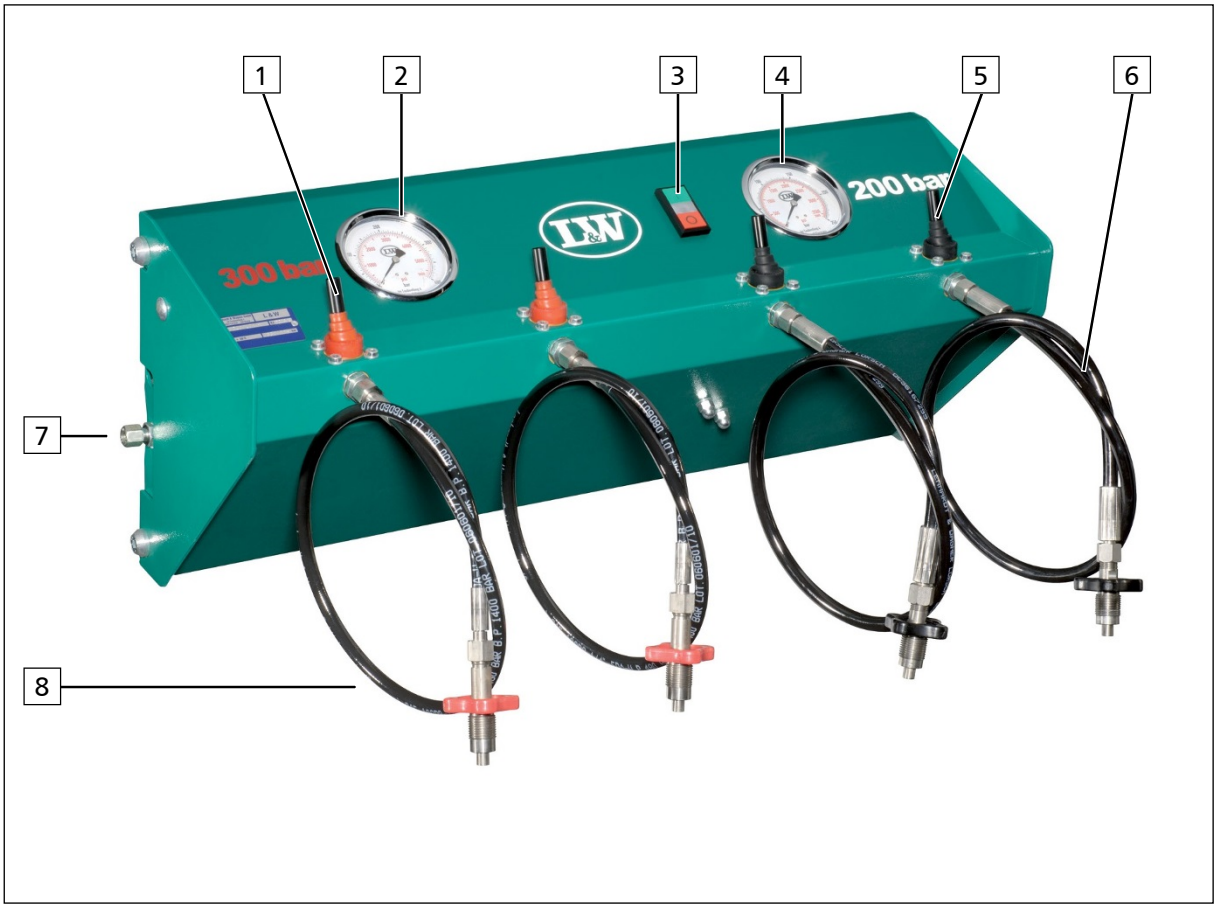
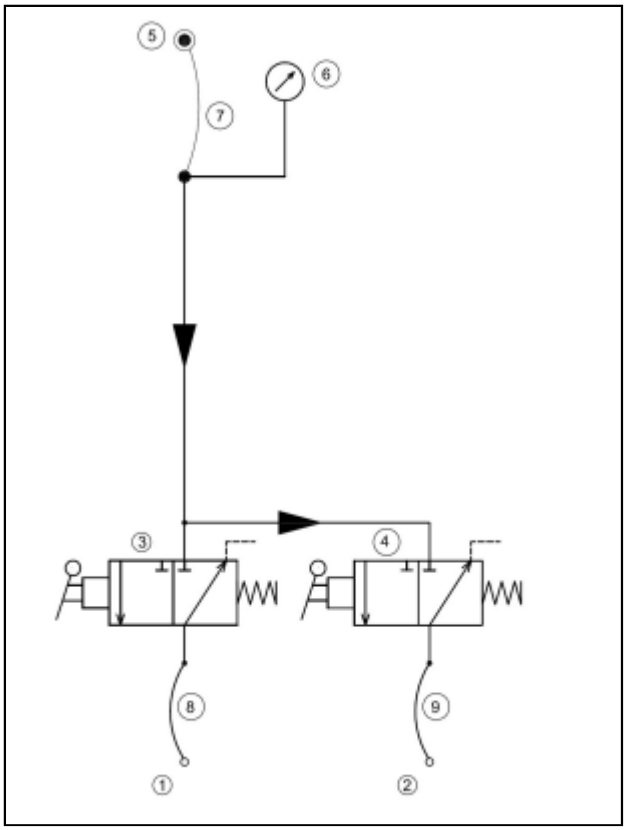
Unit Assembly



4 point panel - 2 x 200 bar, 2 x 300 bar with hoses and DIN anti-whip connections

No.	Designation
1	Lever Filling Valves 300 bar (red)
2	Pressure Gauge First Pressure Range (300 bar)
3	Start/Stop Button with Operating Lamp
4	Pressure Gauge Second Pressure Range (200 bar)
5	Lever Filling Valves 200 bar (black)
6	Filling Hose with DIN Charging Point (black / 200 bar)
7	High-pressure Inlet (8 mm)
8	Filling Hose with DIN Charging Point (red / 300 bar)

Flow Chart - Filling Panel with One Pressure Range



Filling Panel 2x 200 bar *or* 2x 300 bar

LENHARDT & WAGNER GMBH

DATE: 18.07.2014

FLOW DIAGRAM

1 Tank Connector 200 or 300 bar, G5/8" DIN 477
2 Tank Connector 200 or 300 bar, G5/8" DIN 477
3 Lever Filling Valve
4 Lever Filling Valve
5 Inlet Connector 8L (M14 x 1.5mm)
6 Pressure Gauge (Ø100 mm, 0-250 bar or 0-400 bar)
7 HP-Hose
8 HP-Filling Hose
9 HP-Filling Hose

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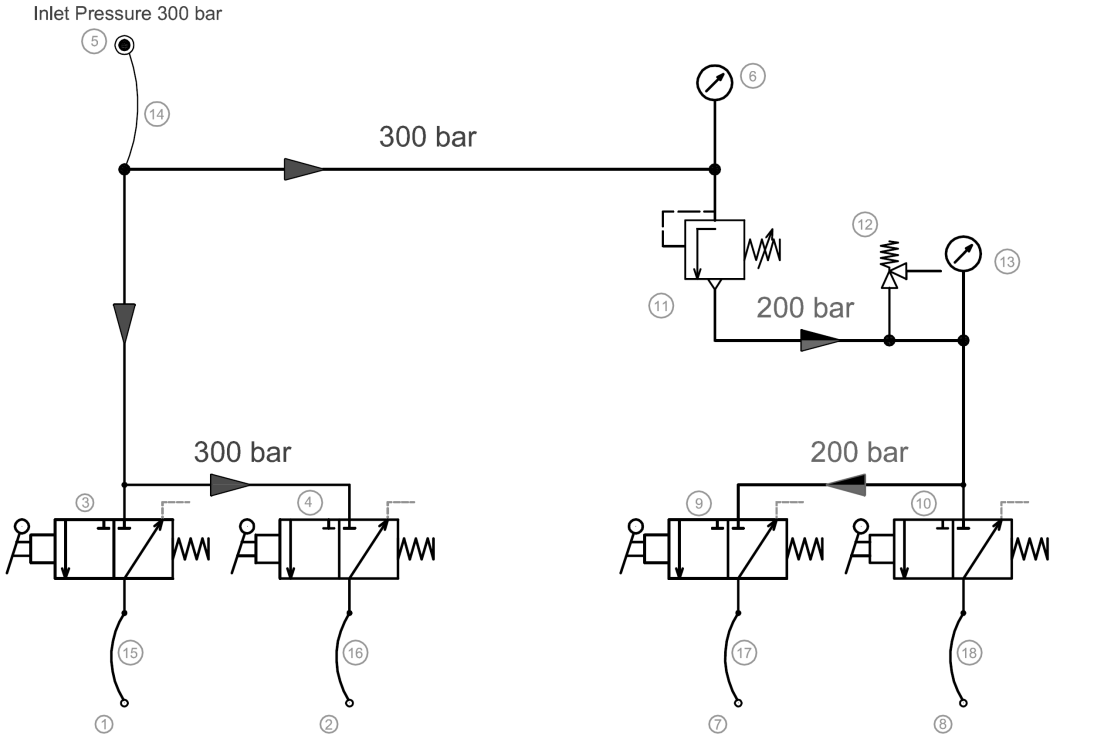
Flow Chart - Filling Panel with Two Pressure Ranges



FILLING PRESSURE 300 BAR

FILLING PRESSURE 200 BAR

FLOW DIAGRAM

1 Tank Connector 300 bar, G5/8" DIN 477
2 Tank Connector 300 bar, G5/8" DIN 477
3 Lever Filling Valve
4 Lever Filling Valve
5 Inlet Connector 8L (M14 x 1.5mm)
6 Pressure Gauge 300 bar (0-400 bar, Ø100 mm)
7 Tank Connector 200 bar, G5/8" DIN 477
8 Tank Connector 200 bar, G5/8" DIN 477
9 Lever Filling Valve
10 Lever Filling Valve
11 Pressure Reducer (Set Pressure: 220 bar)
12 Safety Valve (Relief Pressure: 225 bar)
13 Pressure Gauge 200 bar (0-250 bar, Ø100 mm)
14 HP-Hose
15 HP-Filling Hose
16 HP-Filling Hose
17 HP-Filling Hose
18 HP-Filling Hose

Filling Panel 2x 200 bar & 2x 300 bar
LENHARDT & WAGNER GMBH

DATE: 18.07.2014

SAFETY PRECAUTIONS

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 unauthorised 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.

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.

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 is 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.

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.
- 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.
- 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.
- 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.

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..

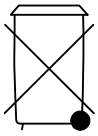
Safety regulations

- 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.

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.

INSTALLATION

Mechanical Installation

For installation of the filling panel observe the following:

- Use the filling panel only in clean and dry rooms.
- Observe the specified operating temperature (see "Technical Data")
- Mount the holding frame of the filling panel horizontally and in a user-friendly position. The wall must be capable of taking the load of the filling panel.
- Check all connections and retighten if necessary.
- Close filling valves, pressurize the system and check for leaks.
- Check the safety device.

Caution
Filling panels with direct filling connections: the load-bearing capacity of the wall must be sufficient to support the weight of the filling panel and the total weight of the maximum number of cylinders to be connected.

Electrical Installation

- The Start/Stop switch with operating lamp, which is integrated in the filling panel as standard, can be connected to the compressor control. The controls of L&W compressors are equipped with special terminals to provide the electrical connection of filling panels.
- Ensure the Start/Stop switch is designed for the control voltage of the compressor:

  - L&W - standard compressor control = 230 V
  - L&W - ECC compressor control = 24 V

Caution
Work on the electrical equipment of the compressor/filling panel may only be carried out by qualified electricians.

OPERATION

Filling Panel with one Pressure Range

This option allows the filling of 200 bar and 300 bar. The filling pressure is colour-coded to allow an optical differentiation. (Fig. black filling connections)

The DIN hand wheels have the following colour-codes:

- 200 bar: black
- 300 bar: red

Furthermore, the corresponding filling pressures at the compressor are marked by the bellows and labels.

Filling Panel: 4 x 200 bar

Filling Panel: 4 x 200 bar

Filling Panel with two Pressure Ranges

200 bar / 300 bar parallel operation

This filling panel enables a parallel filling with 200 bar and 300 bar. For this purpose, the filling panel is equipped with a pressure reducer, a final pressure safety valve and a second filling pressure gauge.

The DIN hand wheels are colour-coded to allow an optical differentiation of the filling ranges:

- 200 bar: black
- 300 bar: red

Furthermore, the corresponding filling pressures at the compressor are marked by the bellows and labels.

Filling Panel: 4 x 300 bar and 2 x 200 bar

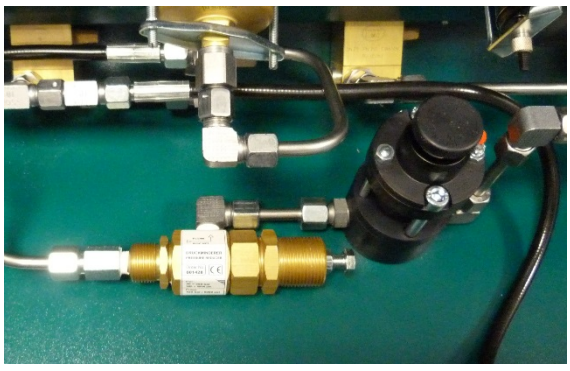


Fig. (left) Pressure reducer; (right) safety valve

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.

1. Connect the closed compressed air cylinders to the filling connections
2. Open storage valve / start compressor
3. If the filling pressure exceeds the cylinder pressure (filling panel pressure gauge), open cylinders valves slowly
4. Move the levers of the connected filling valves to open position
5. Fill compressed air cylinders to the desired filling pressure
6. Close cylinders valves
7. Close the lever filling valves and the filling hoses will be automatically vented
8. Disconnect compressed air cylinders from the filling connections
9. Close storage valve / stop compressor to complete the filling process

MAINTENANCE AND SERVICE

Service, Repair and 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.

Maintenance Overview

Maintenance work	Intervall	Quantity	Order No.
Check connections and mounting parts if installed correctly	After 15 operating hours, continuously once a year	-	-
The operator must perform an optical check of the hose pipes	Once a year	1 x each charging point	004959
Check safety valve function + refill oil	Once a year	1	008500
Check pressure lines for leakage	Once a year	-	-
Check lever filing valves	Once a year	Rep. Small Rep. Big	002451 002452
Clean pressure lines from contaminations	Depending on contamination, at least once a year	-	-
Sinter filter DIN filling connector	Every 2 years	1 x each charging point	002911
Change o-rings of the DIN filling connector	Every 2 years	1 x each charging point	001237

Note :

The maintenance and repair instructions for the rocker arm filling valves are stored in the “E - Systems” chapter.

Safety valve

The safety valve must periodically - in accordance with the currently valid Pressure Equipment Directives - checked on operation and reliability.

Figure 1: Position for oil refill

Refill annually lubricating oil

- Oil filling position:
  Hole on the spacer (see arrow, Figure 1)
- Oil level:
  Fill the lubrication oil into the hole until oil runs out.

Note

- Lubricating oil for the safety valve: L&W Article N°.: 008500 (content: 15 ml)

MAINTENANCE RECORDS

Maintenance work

Description	Date, signature

Replaced Parts

Designation	Part number	Date, signature

ERSATZTEILLISTEN / SPARE PARTS LISTS
DETAILANSICHTEN / DETAILED VIEWS

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Version: 13.08.2025

INHALTSVERZEICHNIS / CONTENTS

Gehäuse - Verschraubungen / Housing - Screw connections 3

Kipphebelventil mit Verschraubungen / Lever Valve cw Connections 5

Füllschlauch / Filling Hose 6

Direktanschluss / Direct BA Connection 8

Druckminderer / Pressure Reducer 10

Sicherheitsventil / Safety Valve 11

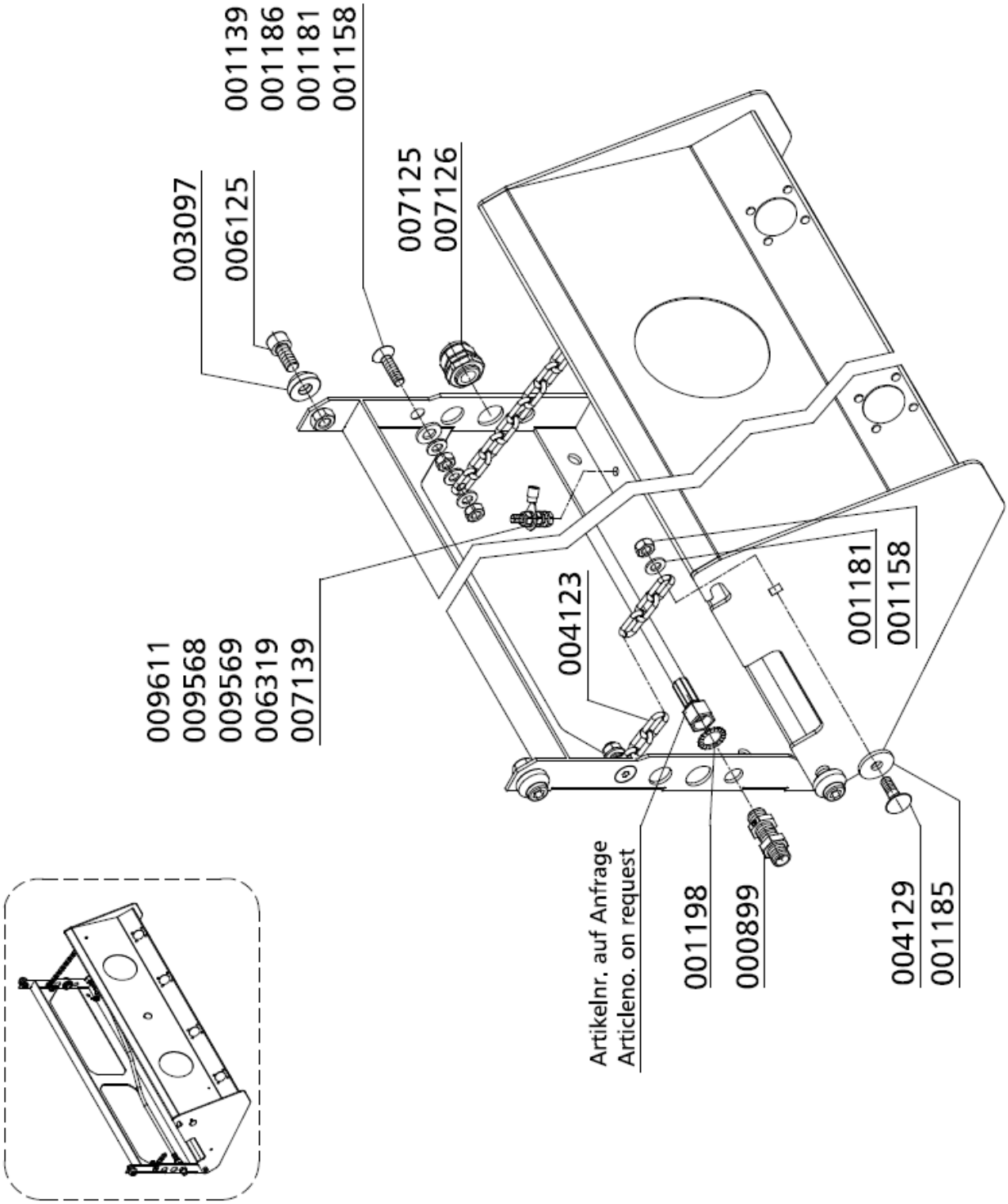
Manometer 250 bar und 400 bar - Pressure Gauge 250 bar und 400 bar 13

Start-Stopp Schalter - Start-Stop Buttons 14

Gehäuse - Verschraubungen / Housing - Screw connections

Best.-Nr. / Order No.	Benennung	Description
000899	Schottverschraubung 8L	Bulkhead Fitting 8L
001139	Senkkopfschraube	Counter Sunk Screw
001158	Mutter	Nut M8
001181	U-Scheibe A8	Washer A8
001185	U-Scheibe V9	Square Bore Washer V9
001186	U-Scheibe A10	Washer A10
001198	Schnorr-Scheibe S14	Clamp Washer S14
004123	Haltekette Füllleiste, verzinkt	Chain for filling panel
004129	Schlossschraube	Carriage bolt
006125	Flachkopfzylinderschraube	Pan Head Bolt
006319	PVC isolierte Aderleitung	
007125	Lapp Verschraubung SKINTOP	Connection
007126	Lapp Gegenmutter 6-kant	Hex nut
007139	Klauke Quetschkabelschuh, Ring- M6	
009568	U-Scheibe	Washer, M6, brass
009569	Mutter M6	Nut M6 - brass
009611	6-kant Schraube	Hexagon Bolt, Brass

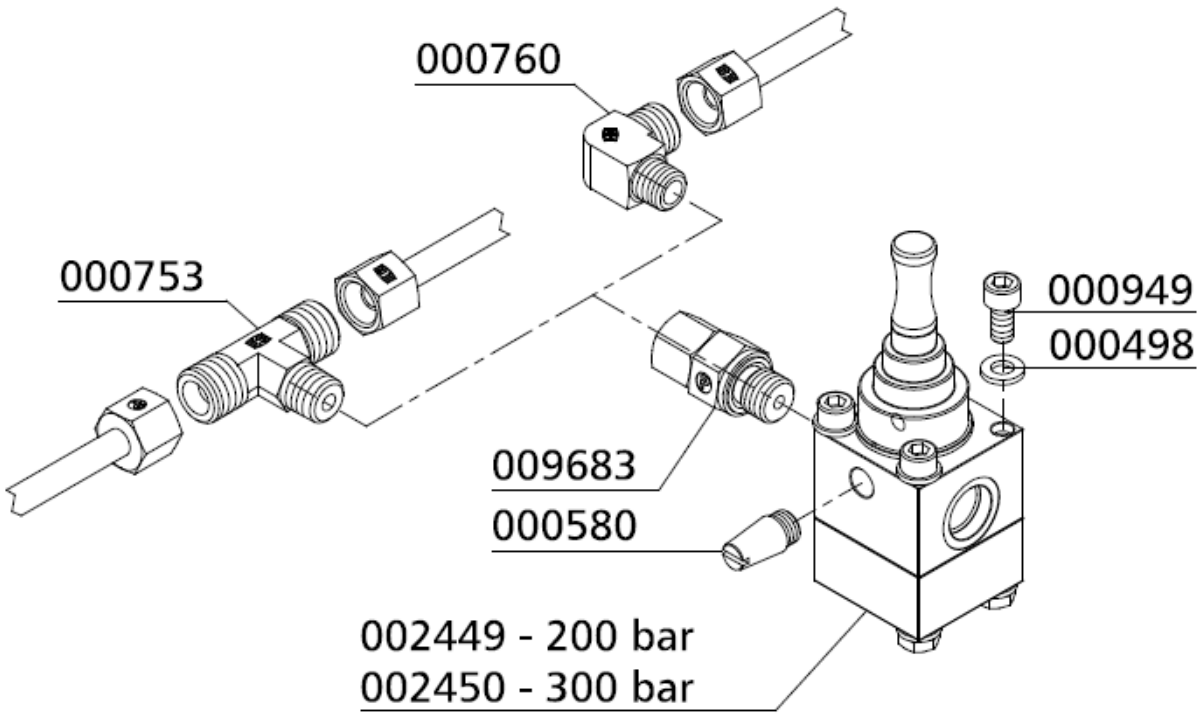
Gehäuse - Verschraubungen / Housing - Screw connections



Zeichnerische Darstellung kann variieren - je nach Ausführung
Graphic representation may vary - depending on the design

Kipphebelventil mit Verschraubungen / Lever Valve c/w Connections

Best.-Nr. / Order No.	Benennung	Description
000498	U-Scheibe, DIN 125 A6	Washer, DIN 125 A6
000580	Schalldämpfer, Kipphebelventil, G1/8"	Silencer Lever Filling Valve, G1/8"
000753	Verschraubung, T08L	Elbow Connection, T08L
000760	Verschraubung, W08LCFX	Elbow Connection, W08LCFX
000949	Flachkopfzylinderschraube, M6x12mm DIN6912 8.8 ZN	Pan Head Bolt, M6x12mm DIN6912 8.8 ZN
002449	Kipphebelventil / Füllleiste 200 bar	Lever Valve (filling panel) 200bar
002450	Kipphebelventil / Füllleiste 300 bar	Lever Valve (filling panel) 300bar



Artikelnr. der Rohre auf Anfrage
Articleno. of the hoses on request

Füllschauch / Filling Hose

Best.-Nr. / Order No.	Benennung	Description
000213	Handrad, schwarz DIN 477	Hand Wheel DIN 200 bar, black
000215	Handrad rot DIN 477	Hand Wheel DIN 300 bar, red
000695	Füllanschluss, 200 bar, AG M16X1,5	Filling Connection, 200 bar, M16X1,5 (female)
000697	Füllanschluss, 300 bar, AG M16X1,5	Filling Connection, 300 bar, M16X1,5 (female)
000701	Sicherheitsfüllanschluss, 200 bar, AG M16X1,5	Anti Whip Connection, 200 bar, M16X1,5 (female)
000702	Sicherheitsfüllanschluss, 300 bar, AG M16X1,5	Anti Whip Connection, 200 bar, M16X1,5 (female)
000797	Verschraubung mit fester Mutter	Elbow Connection c/w fixed nut
001237	O-Ring, 12,37 x 2,62 NBR90	O-Ring, 12,37 x 2,62 NBR90
001238	O-Ring, 12,42 x 1,78 NBR90	O-Ring, 12,42 x 1,78 NBR90
001435	Hochdruckschlauch, 1000mm, beidseitig 10L	HP Hose, 1000mm, both ends 10L fixed
002449	Kipphebelventil / Füllleiste 200 bar	Lever Valve - 200 bar, panel
002450	Kipphebelventil / Füllleiste 300 bar	Lever Valve - 300 bar, panel
002911	Sinterfilter, Ø6,3 x 8mm	Sintered Filter, Ø6,3 x 8mm
005439	Verschraubung, Füllleisten, GE M16x1,5/10L	Connection for Filling Panels, GE M16x1,5/10L

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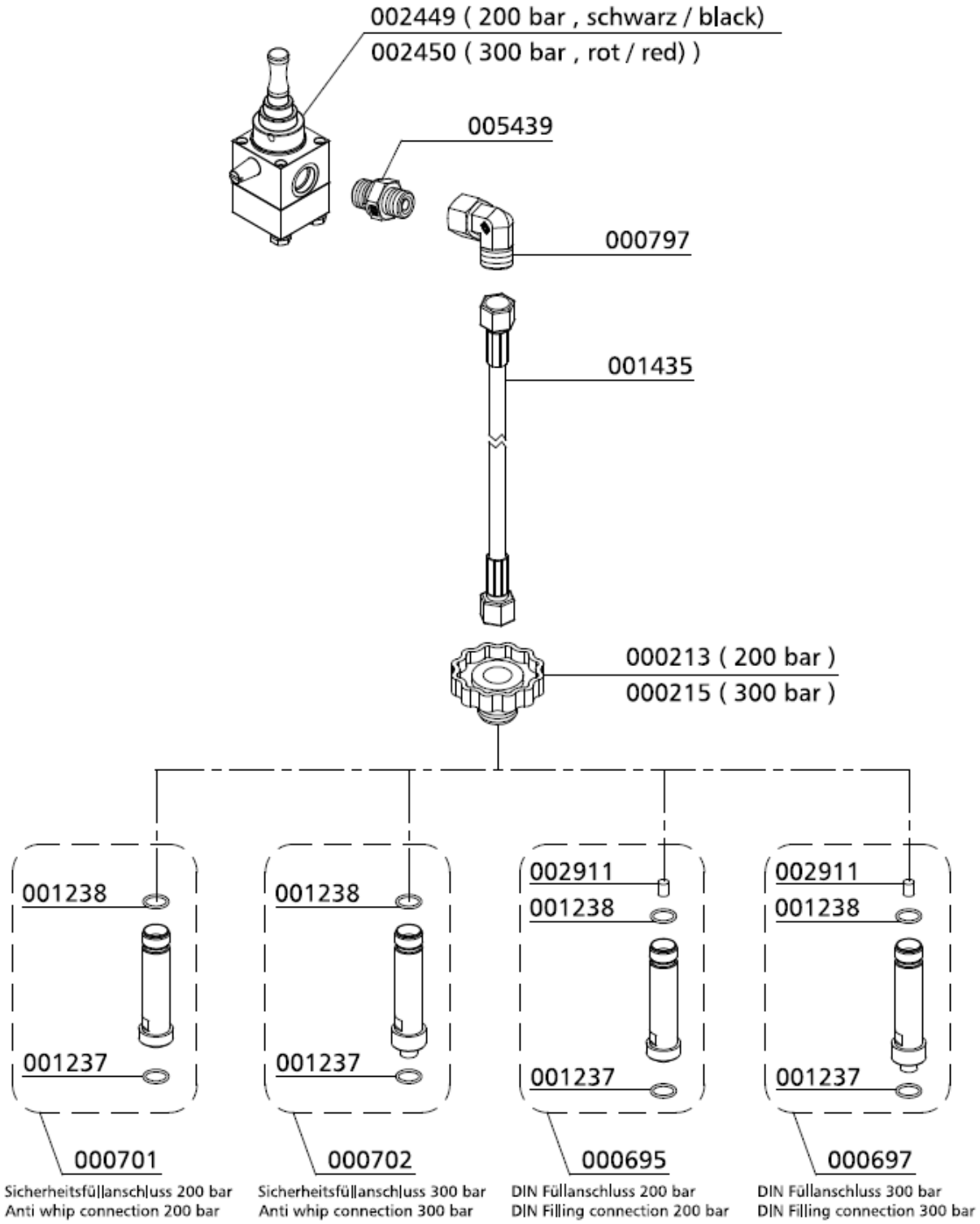
Füllschauch / Filling Hose

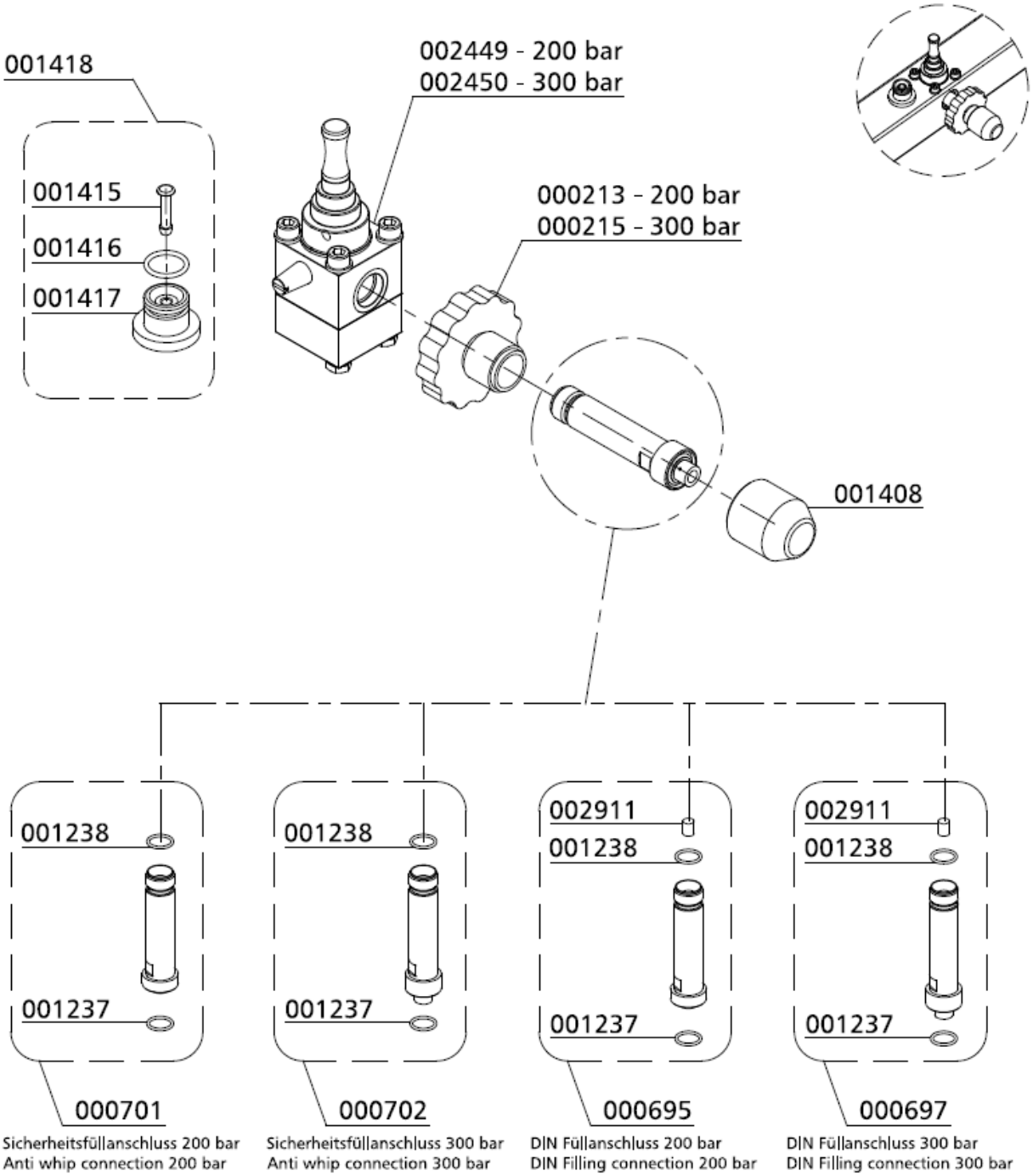


Direktanschluss / Direct BA Connection

Best.-Nr. / Order No.	Benennung	Description
000213	Handrad, schwarz DIN 477	Hand Wheel DIN 200 bar, black
000215	Handrad rot DIN 477	Hand Wheel DIN 300 bar, red
000695	Füllanschluss, 200 bar, AG M16X1,5	Filling Connection, 200 bar, M16X1,5 (female)
000697	Füllanschluss, 300 bar, AG M16X1,5	Filling Connection, 300 bar, M16X1,5 (female)
000701	Sicherheitsfüllanschluss, 200 bar, AG M16X1,5	Anti Whip Connection, 200 bar, M16X1,5 (female)
000702	Sicherheitsfüllanschluss, 300 bar, AG M16X1,5	Anti Whip Connection, 200 bar, M16X1,5 (female)
001237	O-Ring, 12,37 x 2,62 NBR90	O-Ring, 12,37 x 2,62 NBR90
001238	O-Ring, 12,42 x 1,78 NBR90	O-Ring, 12,42 x 1,78 NBR90
001408	Verschlusskappe, G5/8"IG,	Protection Cap G5/8", female
001415	Blindniete, Ø4 x 24	Rivet, Ø4 x 24
001416	O-Ring, 15 x 2,5 NBR70	O-Ring, 15 x 2,5 NBR70
001417	Halterung für Verschlusskappe, ohne Niete & O-Ring	PVC Holder for Cap, w/o Rivet & O-Ring
001418	Halterung für Verschlusskappe, mit Niete (c/w rivet) & O-Ring	PVC Holder for Cap, c/w Rivet and O-Ring
002449	Kipphebelventil / Füllleiste 200 bar	Lever Valve - 200 bar, panel
002450	Kipphebelventil / Füllleiste 300 bar	Lever Valve - 300 bar, panel
002911	Sinterfilter, Ø6,3 x 8mm	Sintered Filter, Ø6,3 x 8mm

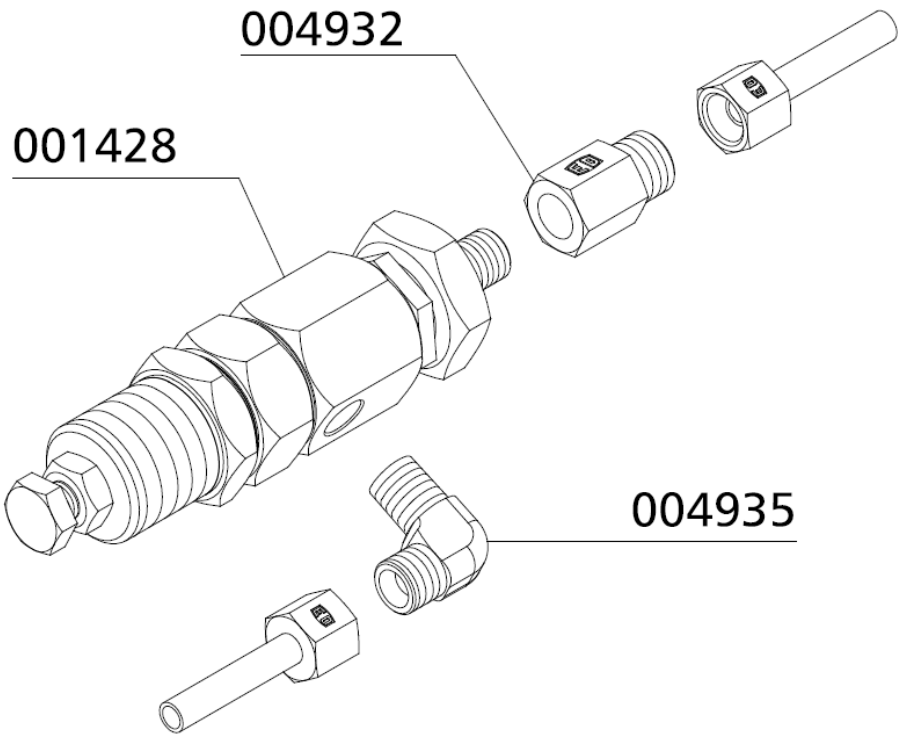
C

Direktanschluss / Direct BA Connection



Druckminderer / Pressure Reducer

Best.-Nr. / Order No.	Benennung	Description
001428	Druckminderer	Pressure Reducer
004932	Verschraubung, GA 1/4"NPT / 8S	Connection, GA 1/4"NPT / 8S
004935	Verschraubung, WE08S-1/4" NPT	Elbow Connection, WE08S-1/4" NPT

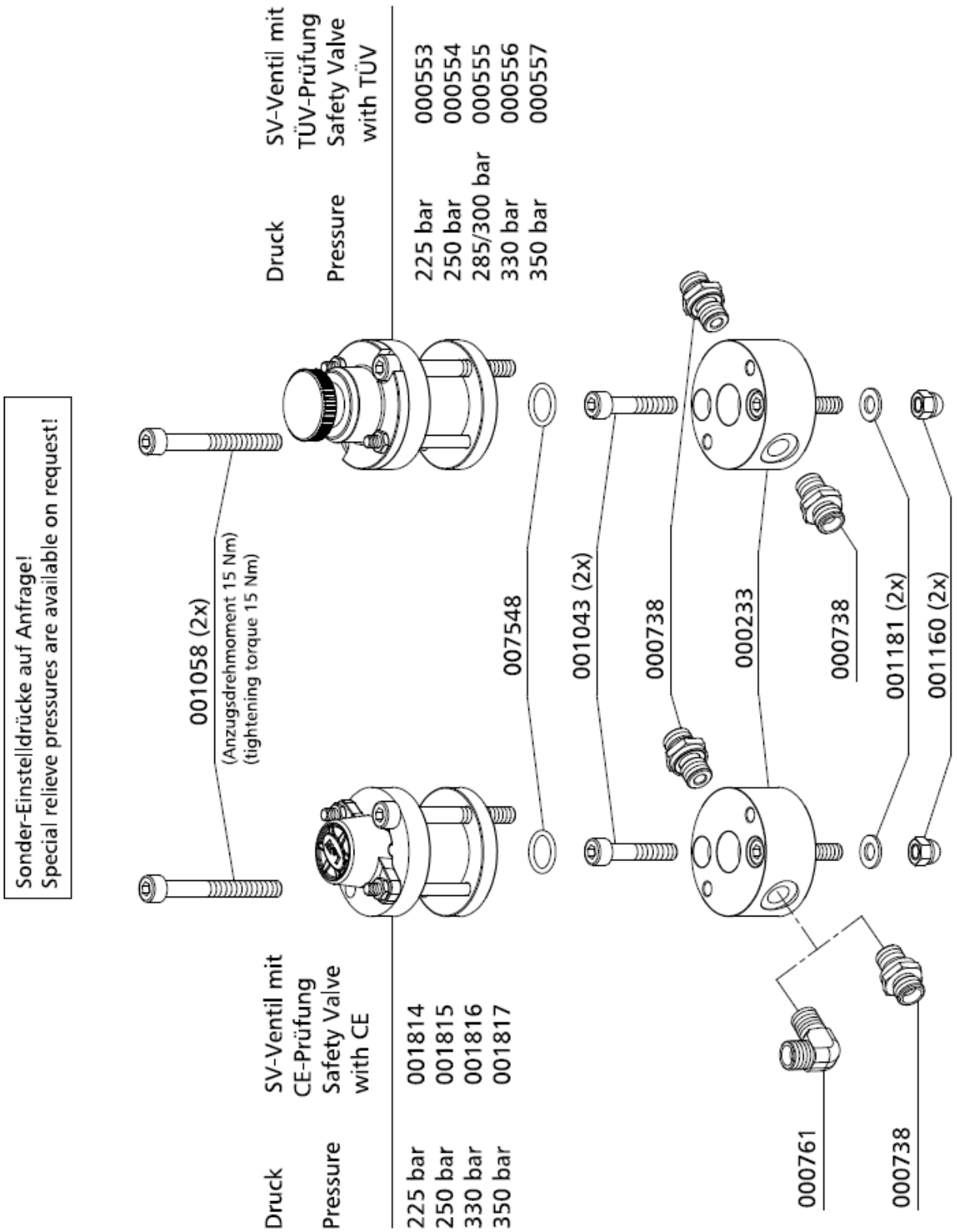


Artikelnr. der Rohre auf Anfrage
Articleno. of the hoses on request

Sicherheitsventil / Safety Valve

Best.-Nr. / Order No.	Benennung	Description
000233	Sockel für Sicherheitsventil mit TÜV, x G1/4“ seitlich 180°	Base for Safety Valve TÜV type
000553	Sicherheitsventil 225bar mit TÜV	Safety Valve 225bar c/w TÜV
000554	Sicherheitsventil 250bar mit TÜV	Safety Valve 250bar c/w TÜV
000555	Sicherheitsventil 300bar mit TÜV	Safety Valve 300bar c/w TÜV
000556	Sicherheitsventil 330bar mit TÜV	Safety Valve 330bar c/w TÜV
000557	Sicherheitsventil 350bar mit TÜV	Safety Valve 350bar c/w TÜV
000738	Verschraubung, GE08LRCFX	Connection, GE08LRCFX
000761	Winkelverschraubung, WE08LRA3CX	Elbow Connection, WE08LRA3CX
001043	Zylinderschraube, M8x35mm DIN912 8.8 ZN	Allen Bolt, M8x35mm DIN912 8.8 ZN
001058	Zylinderschraube, M8x70mm DIN912 8.8 ZN	Allen Bolt, M8x70mm DIN912 8.8 ZN
001160	Hutmutter, M8 DIN1587 ZN	Domed Nut, M8 DIN1587 ZN
001181	U-Scheibe,, A8 DIN125 ZN	Washer, A8 DIN125 ZN
001814	Sicherheitsventil 225bar mit CE	Safety Valve 225bar with CE
001815	Sicherheitsventil 250bar mit CE	Safety Valve 250bar with CE
001816	Sicherheitsventil 330bar mit CE	Safety Valve 330bar with CE
001817	Sicherheitsventil 350bar mit CE	Safety Valve 350bar with CE
007548	O-Ring 16 x 2.0 NBR90	O-Ring

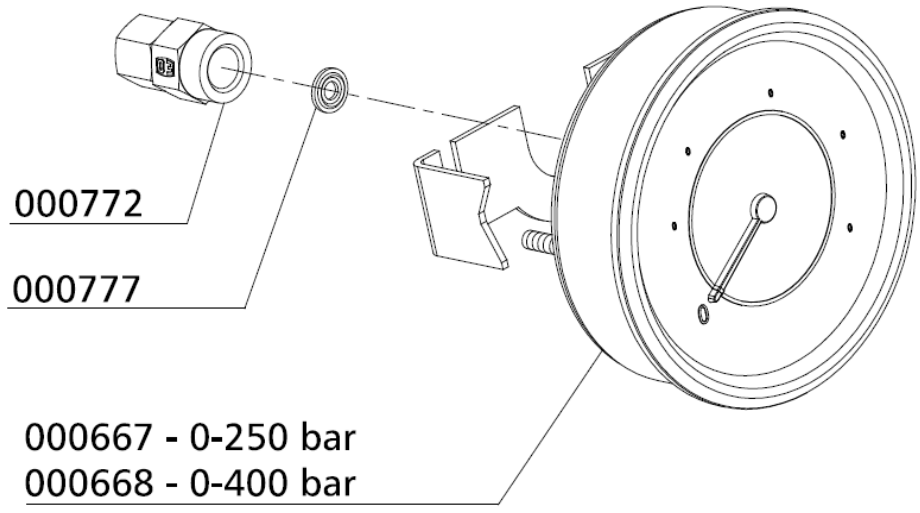
Sicherheitsventil / Safety Valve



C

Manometer 250 bar und 400 bar / Pressure Gauge 250 bar und 400 bar

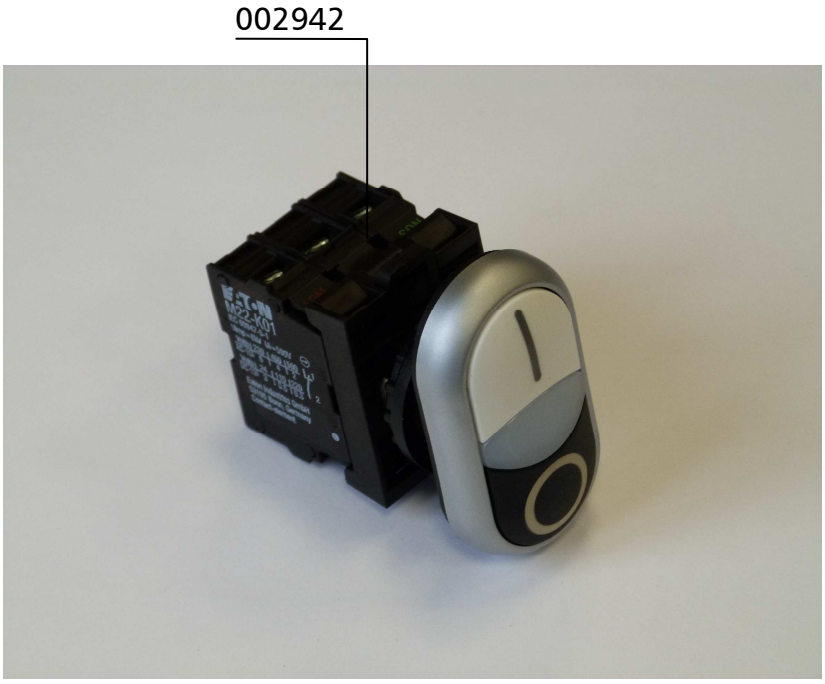
Best.-Nr. / Order No.	Benennung	Description
000667	Einbaumanometer mit Befestigungsbügel, 0-250bar, Ø100mm	Pressure Gauge c/w Mounting Brackets, 0-250bar, Ø100mm
000668	Einbaumanometer mit Befestigungsbügel, 0-400bar, Ø100mm	Pressure Gauge c/w Mounting Brackets, 0-400bar, Ø100mm
000772	Verschraubung Manometer, MAV08LROMDCF	Connection Pressure Gauge, MAV08LROMDCF
000777	Dichtring für Manometerverschraubung, DKI1/4CFX	Seal Ring for Pressure Gauge, DKI1/4CFX

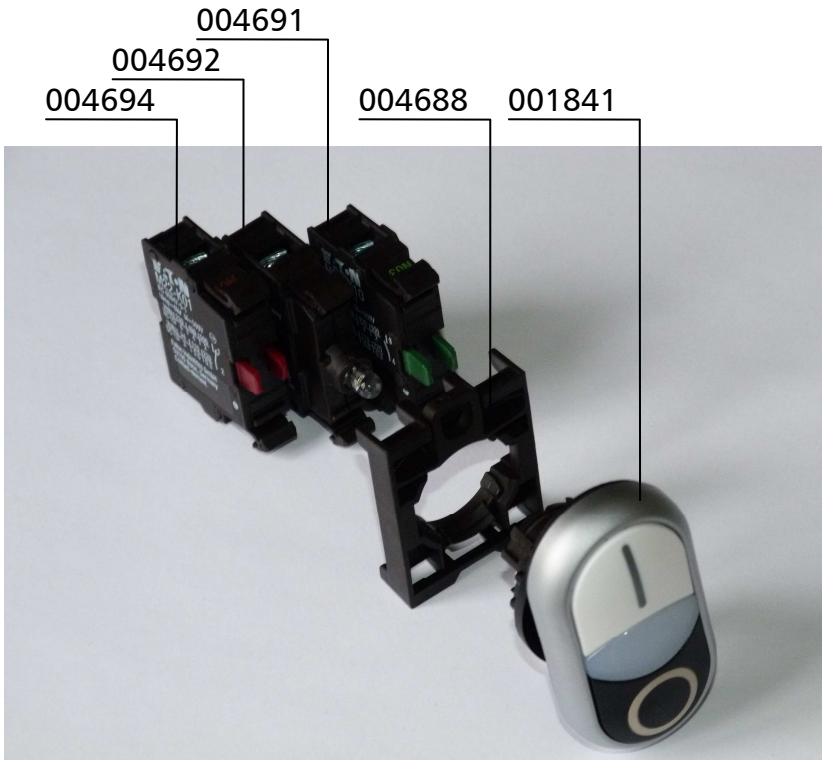


Start/Stopp-Schalter / Start/Stop-Buttons

Best.-Nr. / Order No.	Benennung	Description
002942	Start / Stopp Schalterelemente	Start / Stop Buttons
001841	Doppeldrucktaster	Double Pushbutton
004688	Befestigungsadapter Wahlschalter	Clamp adapter selector switch
004691	Schließer-Kontakt, Front	Closing Contact (front)
004692	LED Element weiß	LED Element
004694	Öffner-Kontakt Aus-Taster	Breaker, button

Start/Stopp-Schalter / Start/Stop-Buttons





OPTIONS

D

Version: 10.08.2025

TABLE OF CONTENTS

Storage control 3

Inlet pressure reduction 9

Throttle valve 11

Anti-whip connections 15

Operating hours counter, emergency stop switch, start/stop switch RPC control 17

D

STORAGE CONTROL

D

Storage tank filling

Check if all lever filling valves are closed before filling of the storage tank to the desired operating pressure. Open the storage cylinder valves and the hand wheel valve on the filling panel and start the compressor.

Read the storage pressure on the pressure gauge (Fig. 1).

Close the hand wheel valve (or also the storage cylinder valves) when the desired storage pressure is reached.

Operation

Use the storage pressure to fill the cylinders as follows:

- Connect the cylinders being filled to the filling valves according to chapter “Operation”
- Ensure that the cylinder valves are open
- Check the storage pressure with the pressure gauge (Fig. 1)
- Open the hand wheel valve by turning the black hand wheel (Fig.2)
- Open the cylinder valves and turn the respective lever filling valves
- The overflow from the storage to the filling panel starts
- Close the hand wheel valve after overflow (if the storage pressure is not sufficient, close the hand wheel valve and start the compressor)
- Close cylinder valves if wanted

Fig. 1 - Hand wheel valve and pressure gauge

Hand wheel valve

Open the hand wheel valve:

- Turn black hand wheel valve anticlockwise

Close the hand wheel valve:

- Turn black hand wheel valve clockwise

Fig. 2 - Hand wheel valve

Hand wheel valve

The hand wheel valve is maintenance-free.

Spare parts are available in the L&W stock and can be ordered any time.

Best.-Nr. / Order No.	Designation
001477	Complete Unit

Rubber Hand Wheel

Best.-Nr. / Order No.	Designation
006748	Complete Unit
includes:	
005010	Sticker for Hand Wheel Valve Cap
002389	Upper Cap

Top section and Lower spinlde

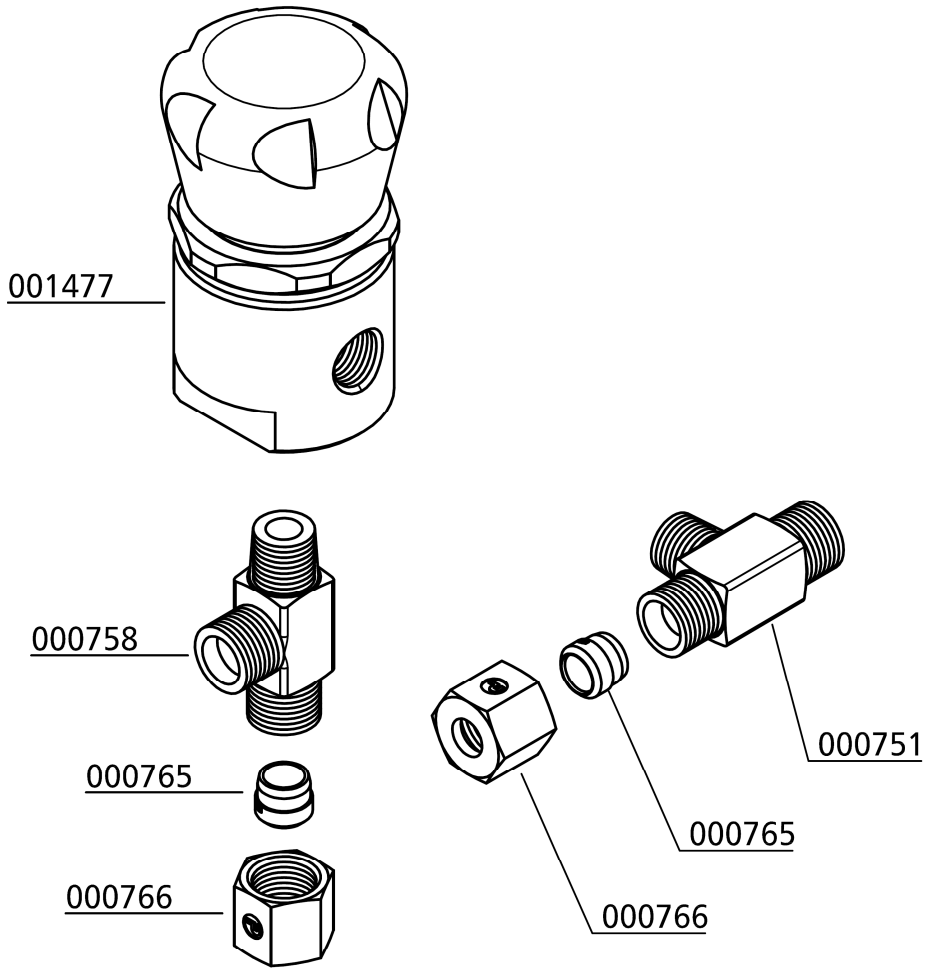
Best.-Nr. / Order No.	Designation
012945	Complete Unit
includes:	
005010	Sticker for Hand Wheel Valve Cap
002389	Upper Cap
001233	O-Ring B6—10x2 NBR90
-	DS 15/10/2
000237	Ball Bearing
-	Housing Upper Section

Storage Pressure Gauge and Fittings

Best.-Nr. / Order No.	Benennung	Description
000662	Manometer 0-400 bar	Pressure Gauge 0-400 bar
000765	Schneidring PSR 08 LX	Olive Seal PSR 08 LX
000766	Mutter M08LCFX	Nut M08LCFX
000899	Schottverschraubung 8L	Bulkhead Fitting 8L

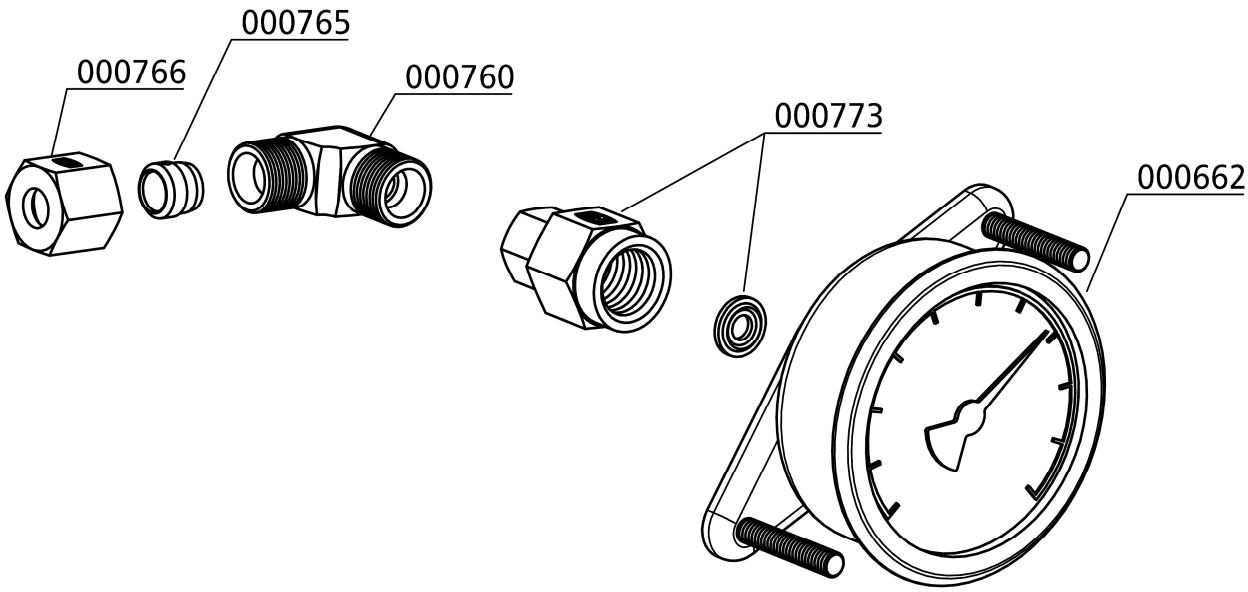
Drehventil ohne Entlüftung / Rotary valve non-venting

Best.-Nr. / Order No.	Benennung	Description
000751	Verschraubung mit Mutter & Schneidringe, TE 08 LRCFX	Connection incl nut&olive seal, TE 08L RCFX
000758	Verschraubung, LE 08 LR	T-Connection, LE 08 LR
000765	Schneidring, PSR 08 LX	Olive Seal, PSR 08 LX
000766	Mutter, M 08 LCFX	Nut, M08 LCFX
001477	Drehventil ohne Entlüftung inkl. Handrad, 350 bar	Cascade Valve non-venting c/w Hand Wheel, 350 bar



Manometer Speicher / Pressure Gauge Tank

Best.-Nr. / Order No.	Benennung	Description
000662	Einbaumanometer mit Befestigungsbügel, 0-400bar Ø63mm	Press. Gauge c/w fixing strap, 0-400bar Ø63mm
000760	Verschraubung, W08LCFX	Elbow Connection, W08LCFX
000765	Schneidring 8mm, PSR 08 LX	Olive Seal 8mm, PSR 08 LX
000766	Mutter, M08LCFX	Nut, M08LCFX
000773	Manometerverschraubung mit fester Mutter	Connection Pressure Gauge IG 1/4" MAVE 08 LR c/w fixed nut



INLET PRESSURE REDUCTION

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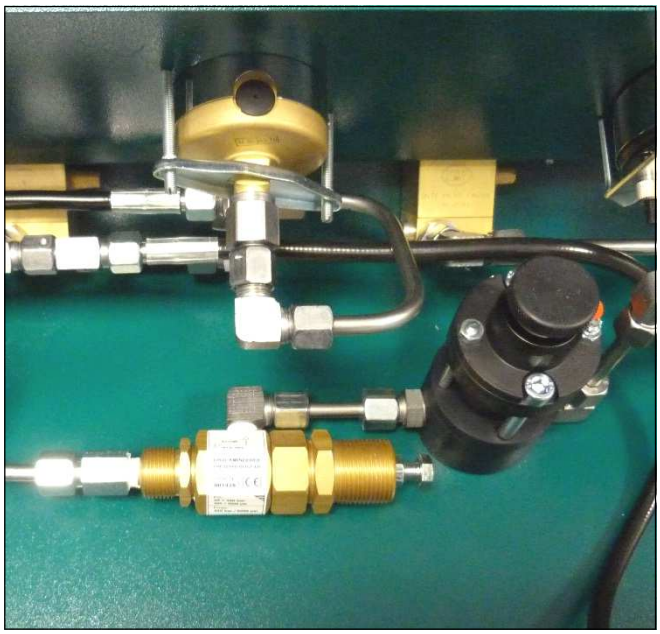
Function

If the system pressure (inlet pressure at the filling panel) is higher than the desired filling pressure, an inlet pressure reducer and a correspondent safety valve can be install alternatively to an external pressure reducing station.

Use the next bigger filling panel housing for filling panels below four filling connections.

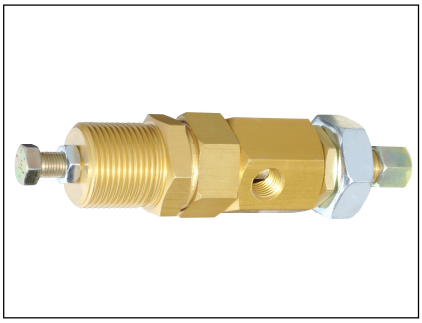


Pressure reducer (left) & safety valve (right)

Spare parts list

Order No.	Description
001428	Pressure reducer with adjusting screw
000761	Elbow connection WE 8L-1/4“
004379	Inlet connection pressure reducer 8L
000766	Nut 8L
000765	Olive Seal 8L
000233	Safety Valve Base
000739	Connection GE 8L-1/4"
001814	Safety valve 225 bar (CE)
000553	Safety valve 225 bar (TÜV)
001816	Safety valve 330 bar (CE)
000556	Safety valve 330 bar (TÜV)
001244	O-ring safety valve flange

Safety Valve Base



Pressure reducer with adjusting screw

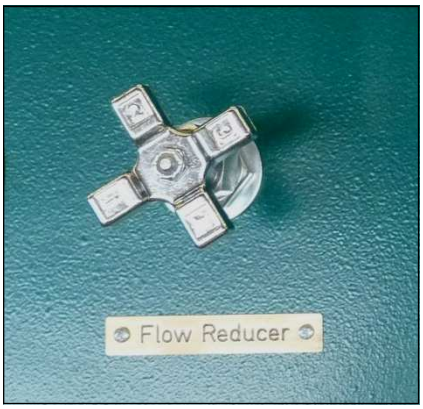
THROTTLE VALVE

D

Adjustment Charging Rate via Throttle Valve

The flow rate can be steplessly adjusted by the throttle valve. The throttle valve can be individually adjusted to the number of cylinders and to the available filling pressure.

Respect the instructions of the storage tank manufacturer. The filling pressure rise can be read on the filling pressure gauge.



Stepless adjustable throttle valve

D

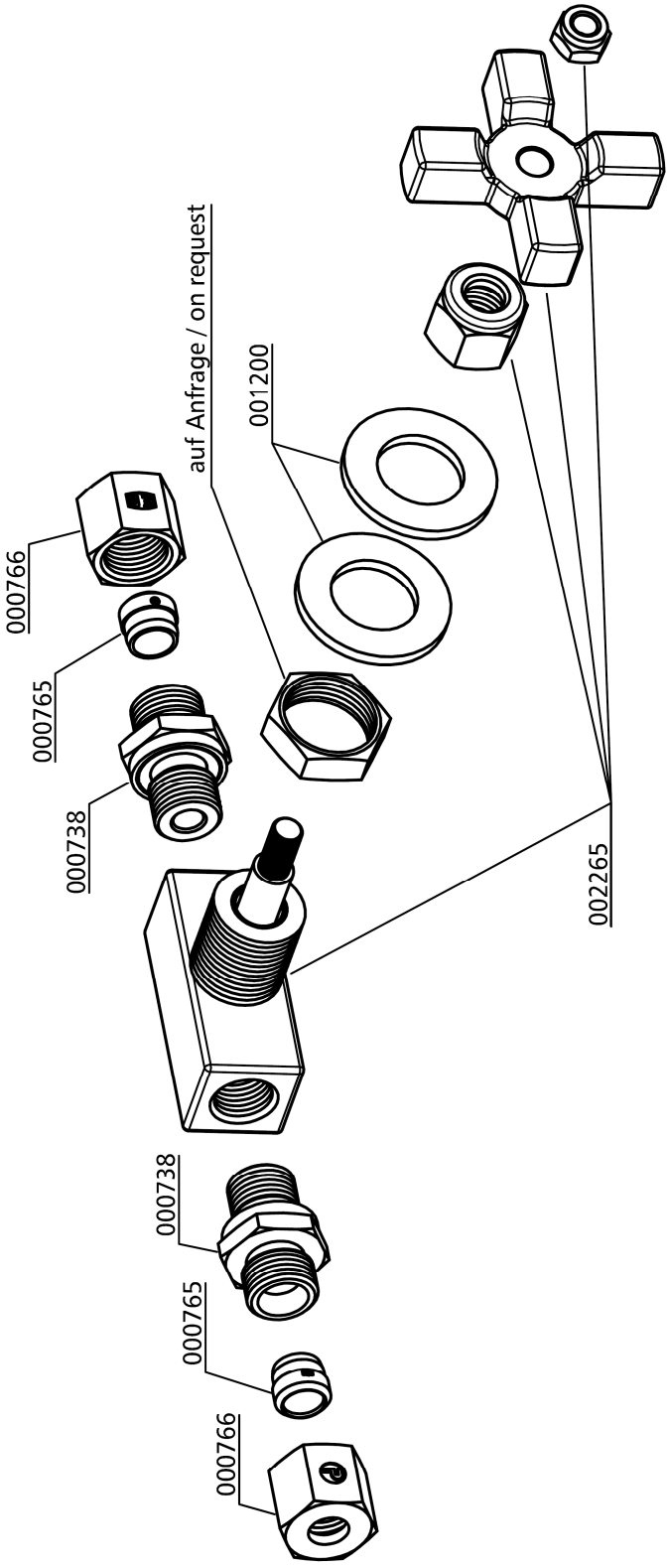
Spare parts list

Order No.	Description
002265	Throttle valve

Drosselventil / Throttle Valve

Best.-Nr. / Order No.	Benennung	Description
000738	Verschraubung, GE08LRCFX	Connection, GE08LRCFX
000765	Schneidring, PSR 08 LX	Olive Seal, PSR 08 LX
000766	Mutter, M08LCFX	Union Nut, M08LCFX
001200	U-Scheibe, A19 DIN125 ZN	Washer, A19 DIN125 ZN
002265	Drosselventil, ohne Befestigungssatz, max 345 bar	Throttle valve, w/o mount kit, max 345 bar

Drosselventil / Throttle Valve



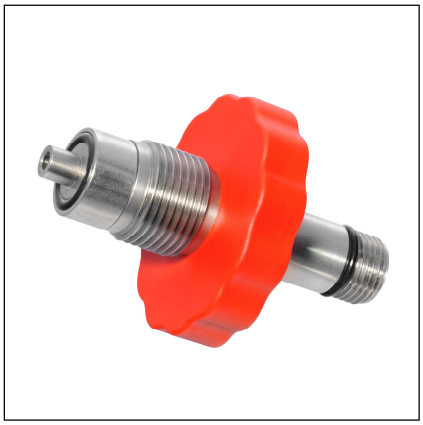
ANTI-WHIP CONNECTIONS

D

Anti-whip connections

The flow restrictor of the anti-whip connections avoids a “whipping” of the filling hose during opening of the lever filling valve without connected cylinder.

When connecting the respective cylinder valve to the anti-whip connection, the flow restrictor opens and the filling procedure can be done.



Anti-whip connection with hand wheel DIN 300 bar

D

Spare parts list

Order No.	Description
000701	Anti-whip Connection 200 bar without Hand Wheel
002303	Anti-whip Connection 200 bar with Hand Wheel
000702	Anti-whip Connection 300 bar without Hand Wheel
002304	Anti-whip Connection 300 bar with Hand Wheel

90° elbows for filling hoses

The elbow connection to connect the lever filling valve to the filling hose can be easily retrofitted to all L&W filling panels with filling hoses.

Winkelverschraubung M16x1,5

Spare parts list

Order No.	Description
000797	Elbow connection 10L

OPERATING HOURS COUNTER
EMERGENCY STOP SWITCH
START/STOP SWITCH

D

Hour Counter

Monitoring of the hour counter: connect the hour counter, which is installed to the filling panel to the compressor control or to an external control.

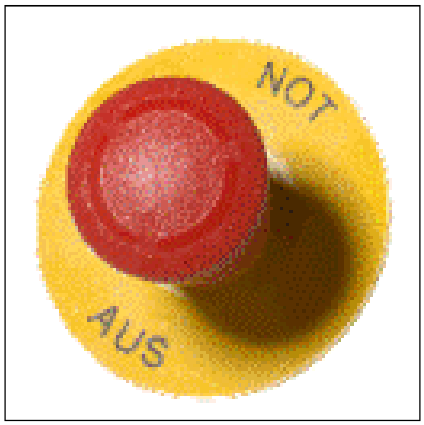
Hour Counter

Spare parts list

Order No.	Description
002089	Hour counter 230V

Emergency Stop Switch

Increase the safety standard of your filling system by using an emergency stop switch. This can be integrated in the emergency stop line of the compressor or in an external control.



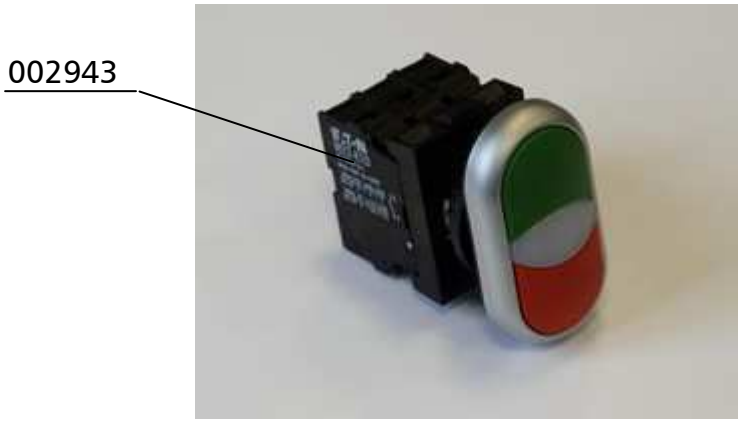
Emergency Stop Switch

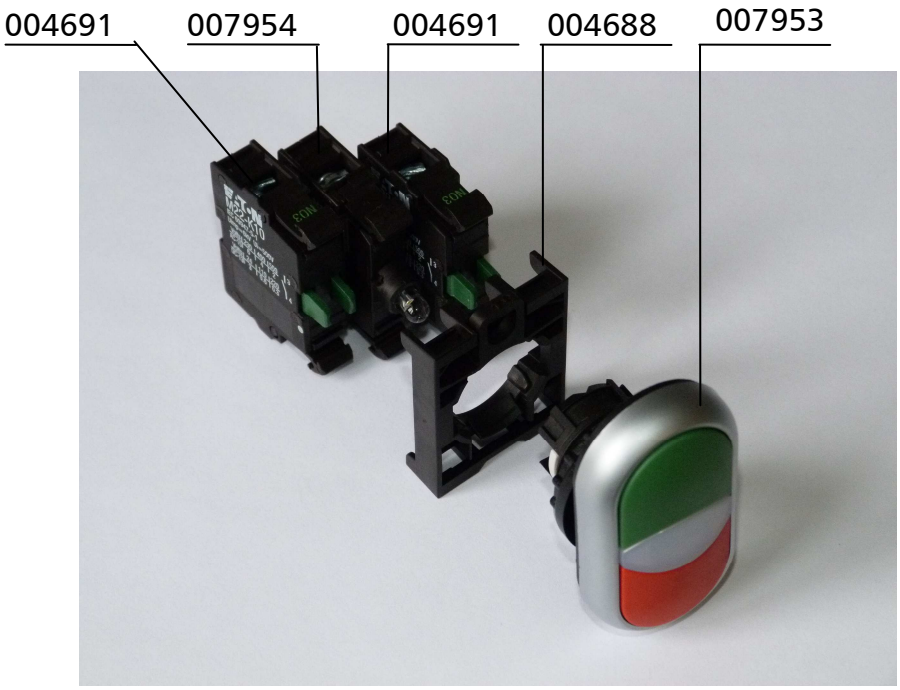
Spare parts list

Order No.	Description
003121	Emergency Stop Switch, complete

Start/Stop-Switch (RPC)

Best.-Nr. / Order No.	Benennung	Description
002943	Start / Stopp Schalterelemente für	Start / Stop Buttons (ECC Control)
004688	Befestigungsadapter Wahlschalter	Clamp adapter selector switch
004691	Schließer-Kontakt, Front	Closing Contact (front)
007953	Doppeldrucktaster	Double Pushbutton
007954	LED Element weiß	LED Element





ATTACHMENT

Reconditioning for Lever Filling Valve 002449 (200 bar) and 002450 (300 bar)

with valve body made from Aluminium

Note on Safety

Special attention should be paid to statements preceded by the following signs:

⚠ **WARNING** Indicates a strong possibility of severe personal injury or death if instructions are not followed.

⚠ **CAUTION** Indicates that equipment or property damage can result if instructions are not followed.

⚠ **NOTE** Gives helpful information.

These overhaul instructions describe the dismantling and assembly of the toggle filling valve without inlet fitting and without filling tube or outlet fitting.

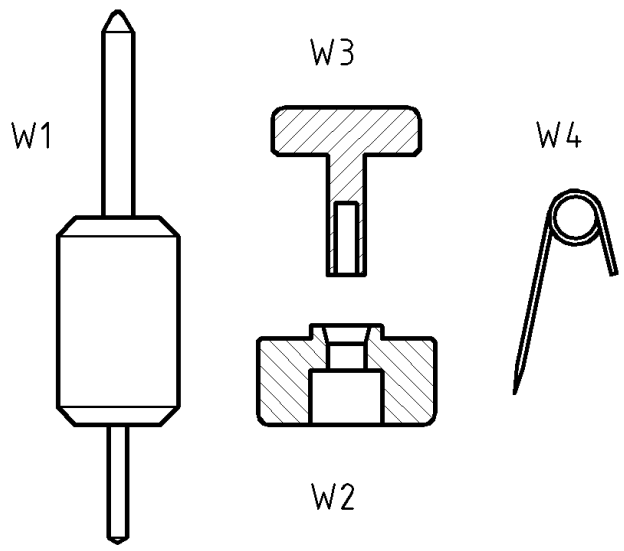
For overhaul and repair are available
- Gasket kit **012891** - Therein included all O-rings as used
- Maintenance kit **012889** - Therein included all wear parts and O-rings as used.
- Lubricant (grease) e.g. 003953.

Available are furthermore all parts according to parts list on page 12 and 13.
Except the parts which are included in the maintenance and gasket kit.

⚠ **NOTE**

Before disassembling, the valve must be thoroughly cleaned on the outside, especially the inlet and outlet threads. After disassembling, clean all individual parts. Use normal mild, grease-dissolving cleaning agents. No alkalis or acids.

When assembling, observe the instructions for greasing O-rings and sliding parts with special grease (e.g. 003953) as well as the tightening torque specifications



1. Tools, necessary

1.1 Standard Tools

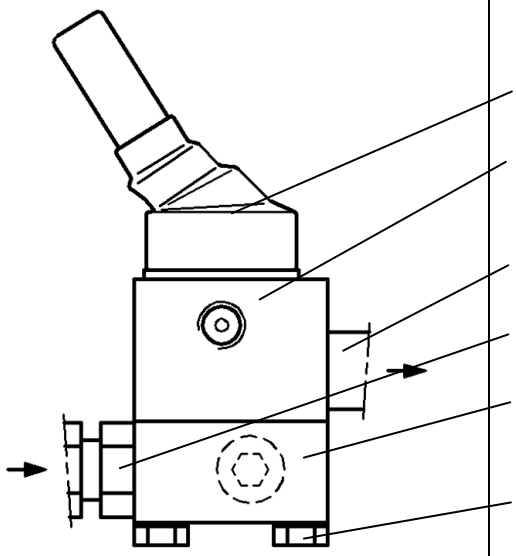
1 x open ended or ring spanner, jaw size 10 mm
1 x hexagon key L-wrench, hexagon 5 mm
1 x pin punch Ø 5mm
1 x hammer, light, 200 till 300 g
1 x torque wrench up to 20 Nm (2 kpm)
with 1 x hexagon socket jaw width 10 mm
1 x hexagon bit , hexagon 5 mm

1.2 Special Tools

1 x W1 centering pin Ø 5mm combined with drift Ø 3 mm
1 x W2 retainer
1 x W3 plunger
1 x W4 safety pin DIN 7404 size 3, 48 mm long

Reconditioning for Lever Filling Valve 002449 (200 bar) and 002450 (300 bar)

with valve body made from Aluminium



2. Designation, main parts

Lever bar, gaiter

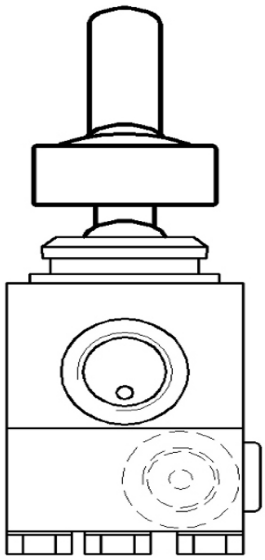
body top lever valve with :
valve seat, valve stem, thrust insert

(filling tube)

(inlet fitting)

Lower body llever valve housing with :
coil spring, sealing cone, filter and plug screw

hexagon screw M6 x 30 mm



3. Valve dismantling

NOTE

Numbers stated behind the parts designation are related to the parts list at page 12 and 13.

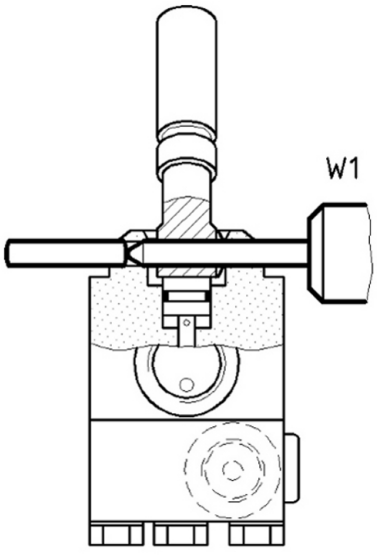
3.1 remove gaiter (1)

Detach the gaiter (1) from the body top lever valve (7) and slide it over the lever bar (2).

Check the gaiter (1) for damage (cracks or holes). If any are present, replace the gaiter !

NOTE

Valve may be kept by hand for the above.



3.2 Remove lever bar (2)

Remove cylinder pin (3) with W1 (centering pin Ø 5 mm) as shown.

NOTE

Valve may be kept by hand for the above.

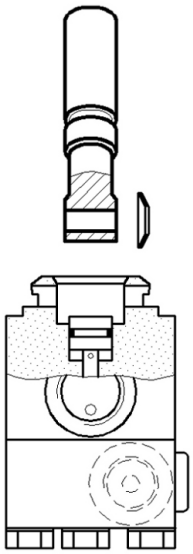
If the cylinder pin (3) is too tight in the body top lever valve (7), drive it out using a pin punch Ø 5mm and a light hammer.

CAUTION

For this fix the valve in a vice with smooth vice jaws or a firm cloth.

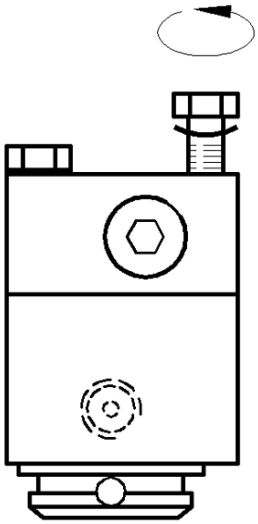
Reconditioning for Lever Filling Valve 002449 (200 bar) and 002450 (300 bar)

with valve body made from Aluminium



… 3.2

Remove lever bar (2) and spring washer (4) .



3.3 Separate body top lever part (7) and lower body lever valve (15)

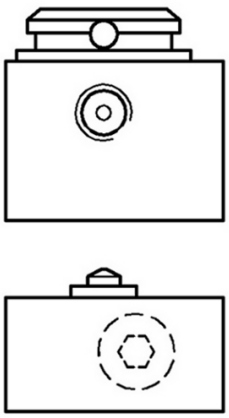
⚠ CAUTION

For this fix the valve in a vice with smooth vice jaws or a firm cloth.

Unscrew the 3 pcs hexagon screws (21) with an open ended or ring spanner jaw size 10 mm.

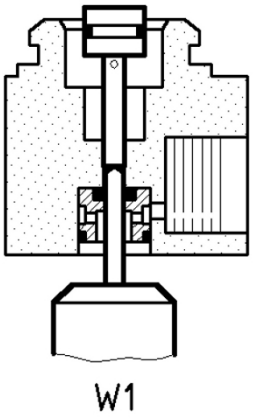
⚠ CAUTION

Press the body top lever part (7) and the lower body lever valve (15) together by hand at remove from the vice, to avoid the pop out of internal valve parts.



… 3.3

Place lower body lever valve (15) onto a clean worktop and remove body top lever part (7).



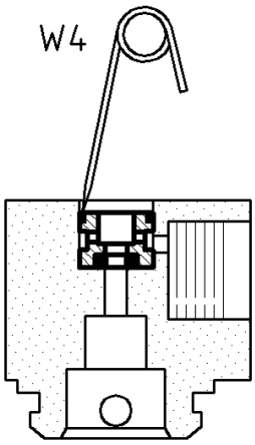
3.4 Remove valve stem (8) and thrust insert (6)

Remove valve stem (8) and thrust insert (6) by W1 (centering pin) as shown.

⚠ CAUTION

Act carefully to avoid damage on the seal seat of the valve stem (8).

Remove O-ring (5) Ø 7 x Ø 1.5 mm from thrust insert (6).

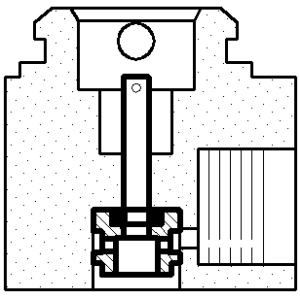


3.5 Remove O-Ring (11)

Remove O-ring (11) Ø 9 x Ø 1.5 mm with W4 (safety pin).

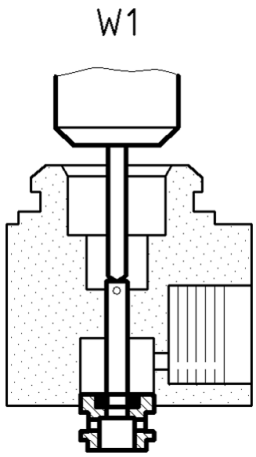
⚠ CAUTION

Throw away O-ring (11) Ø 9 x Ø 1.5 mm.
It is impaired by the above described procedure.



3.6 Remove valve seat (10)

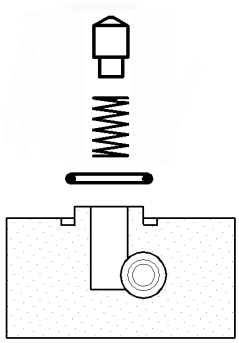
Put valve stem (8), with venting bore on top, into body top lever part (7) as shown.



… 3.6

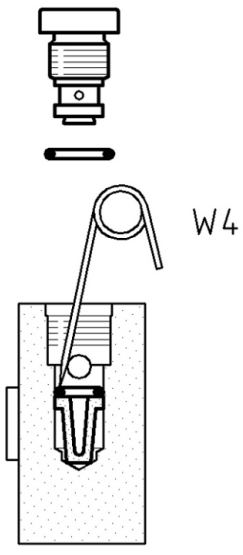
Remove valve seat (10) with W1 (centering pin) via valve stem (8) as shown.

Remove O-ring (9) Ø 3.68 x Ø 1.78 mm, from valve seat (10).



3.7 Remove sealing cone (12), coil spring (13) and O-ring (14)

Remove sealing cone (12) , coil spring (13) and O-ring (14) Ø 10.82 x Ø 1.78 mm from lower body lever valve (15).



3.8 Remove plug screw (19), O-rings (18) and (17), filter (16)

⚠ CAUTION

For this fix lower body lever valve (15) with its narrow sides in a vice with smooth vice jaws or a firm cloth.

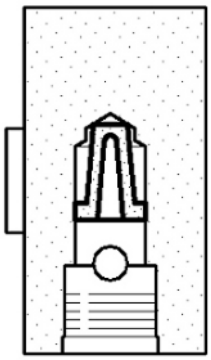
Remove plug screw (19) by a hexagon key L-wrench, hexagon 5 mm.

Remove O-ring (18) Ø 8 x Ø 1.5 mm from plug screw (19).

Remove O-ring (17) Ø 4.47 x Ø 1.78 mm with W4 (safety pin) .

⚠ CAUTION

Throw away O-ring (17) Ø 4.47 x Ø 1.78 mm.
It is impaired by the above described procedure.



... 3.8

Remove filter (16), for this take lower body lever valve (15), with filter chamber showing down and tap the lower body lever valve (15) on a clean surface until the filter (16) falls out.

4. Assemble valve

NOTE

Numbers stated behind the parts designation are related to the parts list at page 12 and 13.

NOTE

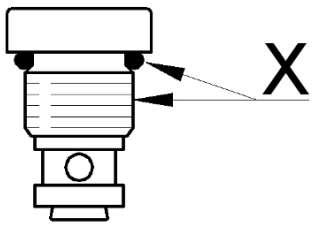
Check all single parts for wear.
Replace all worn or faulty parts.

Always replace sealing cone (12) !

Always replace all O-rings !
Use gasket kit 012891.

Use maintenance kit 012889.

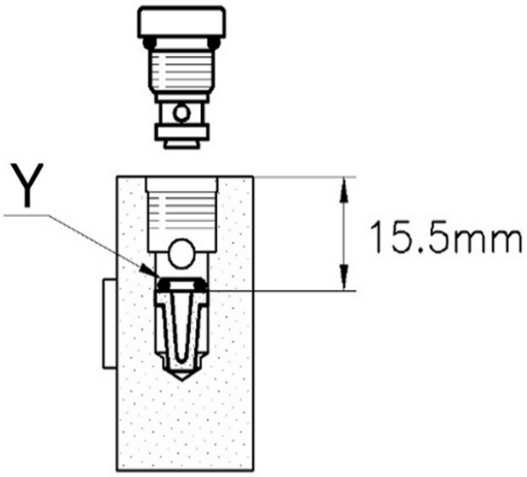
Lightly grease threads and O-rings with a suitable lubricant; e.g. 003953.



4.1 Plug screw (19) and O-ring (18)

Put O-ring (18) Ø 8 x Ø 1.5 mm on plug screw (19).

X - Lubricate O-ring (18) and thread of plug screw (19).



4.2 Assemble filter (16), O-ring (17), plug screw (19) with O-Ring (18)

⚠ CAUTION

For this fix lower body lever valve (15) with its narrow sides in a vice with smooth vice jaws or a firm cloth.

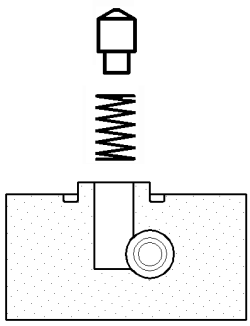
Insert filter (16), thereby do not tilt it. Move filter (16) down against block. Check mounting depth 15.5 mm.

Y - Put O-ring (17) Ø 4.47 x Ø1.78 mm **not lubricated** onto filter (16).

Screw in plug screw (19) with a hexagon key L-wrench, hexagon 5 mm .

⚠ CAUTION

Fasten plug screw (19) by a torque wrench with 8.5 Nm (0.85 kpm).

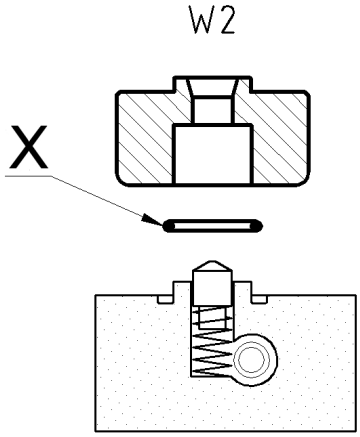


4.3 Assemble coil spring (13) and sealing cone (12)

Insert coil pring (13) and sealing cone (12) in lower body lever valve (15).

⚠ CAUTION

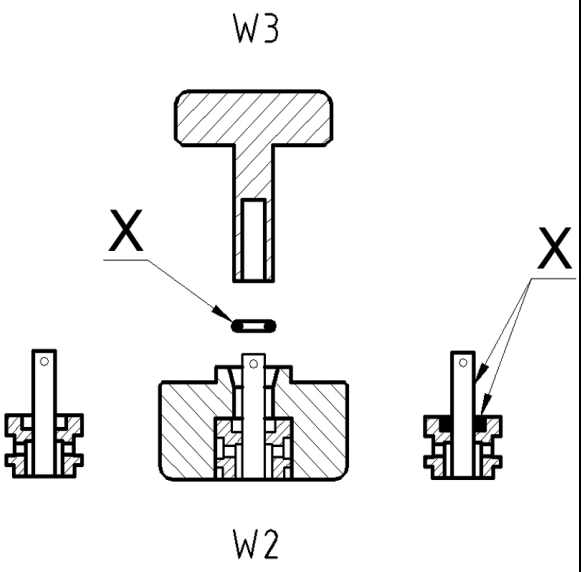
Check sealing cone (12) for mobility with fingertip.



4.4 Assemble O-Ring (14)

X - Lubricate O-ring (14) Ø 10.82 x Ø 1.78 mm.

Press O-ring (14) into groove of lower body lever valve (15) with W2 (retainer).



4.5 Assemble valve stem (8) and O-ring (9) in valve seat (10)

Put valve stem (8), with venting bore on top, into valve seat (10).
Put W2 (retainer) over both parts as shown.

X - Lubricate O-ring (9) Ø 3.68 x Ø 1.78.

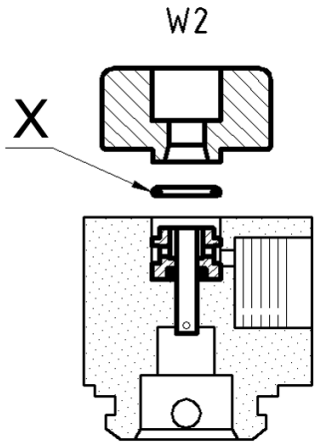
Press O-Ring (9) with W3 (plunger) in valve seat (10).

Remove W2 (retainer).

X - Lubricate projecting part of the valve stem (8) and face of the valve seat (10).

⚠ CAUTION

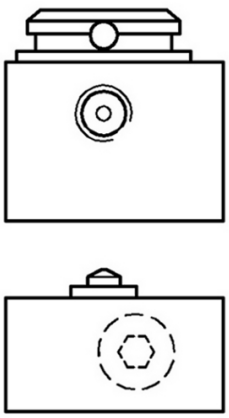
In this connection do not move valve stem (8) to avoid that O-Ring (9) will be pushed out of valve seat (10).



4.6 Assemple valve seat (10) with valve stem (8) and O-ring (9)

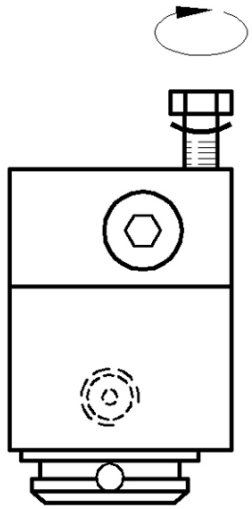
Insert valve seat (10) with mentioned parts into body top lever part (7).

X - Lubricate O-ring (11) Ø 9 x Ø 1.5 mm and push it with W2 (retainer) into body top lever part(7).



4.7 Unite valve body upper part (7) with lower body lever valve (15)

Place body top lever part (7) on lower body lever valve (15).



... 4.7

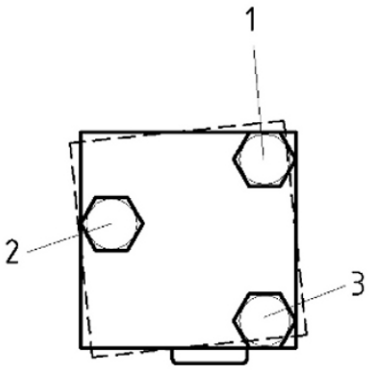
Press body top lever part (7) and lower body lever valve (15) together by hand as shown.

Screw in by hand or with an open ended or ring spanner, jaw size 10 mm, only 1 pcs hexagon screw (21) with curved spring washer (20) as shown.

⚠ CAUTION

For this fix only body top lever part (7) in a vice with smooth vice jaws or a firm cloth.

Valve body lower part (15) should be still moveable.



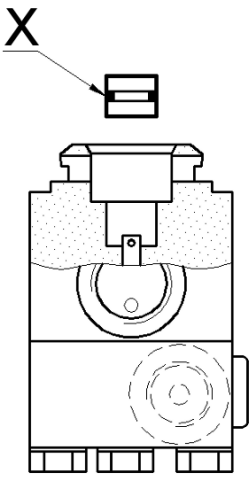
... 4.7

Align the sides of body top lever part (7) with the sides of lower body lever valve (15).

Screw in by hand or with a open ended or ring spanner, jaw size 10 mm, the remaining 2 pcs hexagon screws (21) with curved spring washers (20).

⚠ CAUTION

Tighten hexagon screws (21) in sequence 1-2-3 by torque wrench with 8.5 Nm (0.85 kpm).

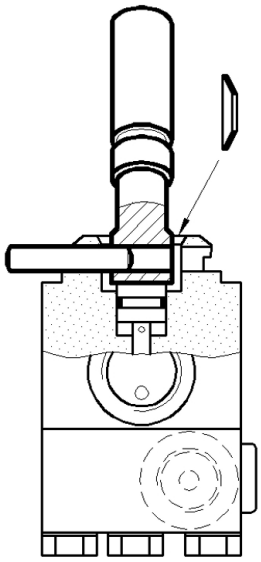


4.8 Assemble thrust insert (6) and O-ring (5)

X - Lubricate O-Ring (5) Ø 7 x Ø 1.5 mm and put it on thrust insert (6).

Push thrust insert (6) with O-ring (5) into valve body upper part (7).

Move thrust insert (6) with W1 (drift Ø 5mm) two to three times down.



4.9 Assemble lever bar (2)

⚠ CAUTION

For this fix the valve in a vice with smooth vice jaws or a firm cloth.

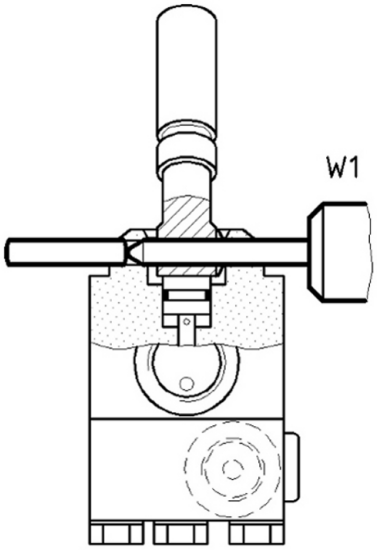
Lightly lubricate bore in lever bar (2).

Place lever bar (2) in the valve that it points backward, related to the valve outlet.

The bore in the body top lever part (7) and in the lever bar (2) should align.

Insert cylinder pin (3) to the middle of the valve and insert the spring washer (4) as shown.

If cylinder pin (3) cannot be moved by hand, push it in with a pin punch Ø 5mm and a light hammer.

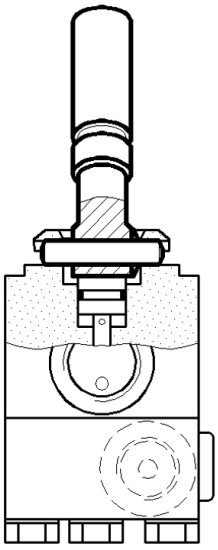


… 4.9

Center spring washer(4) with W1 (drift Ø 5mm) .

⚠ CAUTION

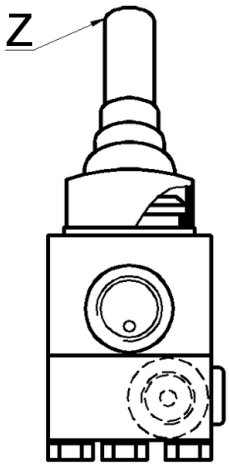
Thereby do not push out cylinder pin (3).



… 4.9

Fully push in cylinder pin (3).

If cylinder pin (3) cannot be moved by hand, push it in with a pin punch Ø 5mm and a light hammer.



4.10 Attach gaiter (1)

Z - Moisten lever bar (2) with a little soap water.

Slide the gaiter (1) over lever bar (2) and fix it at body top lever part(7).

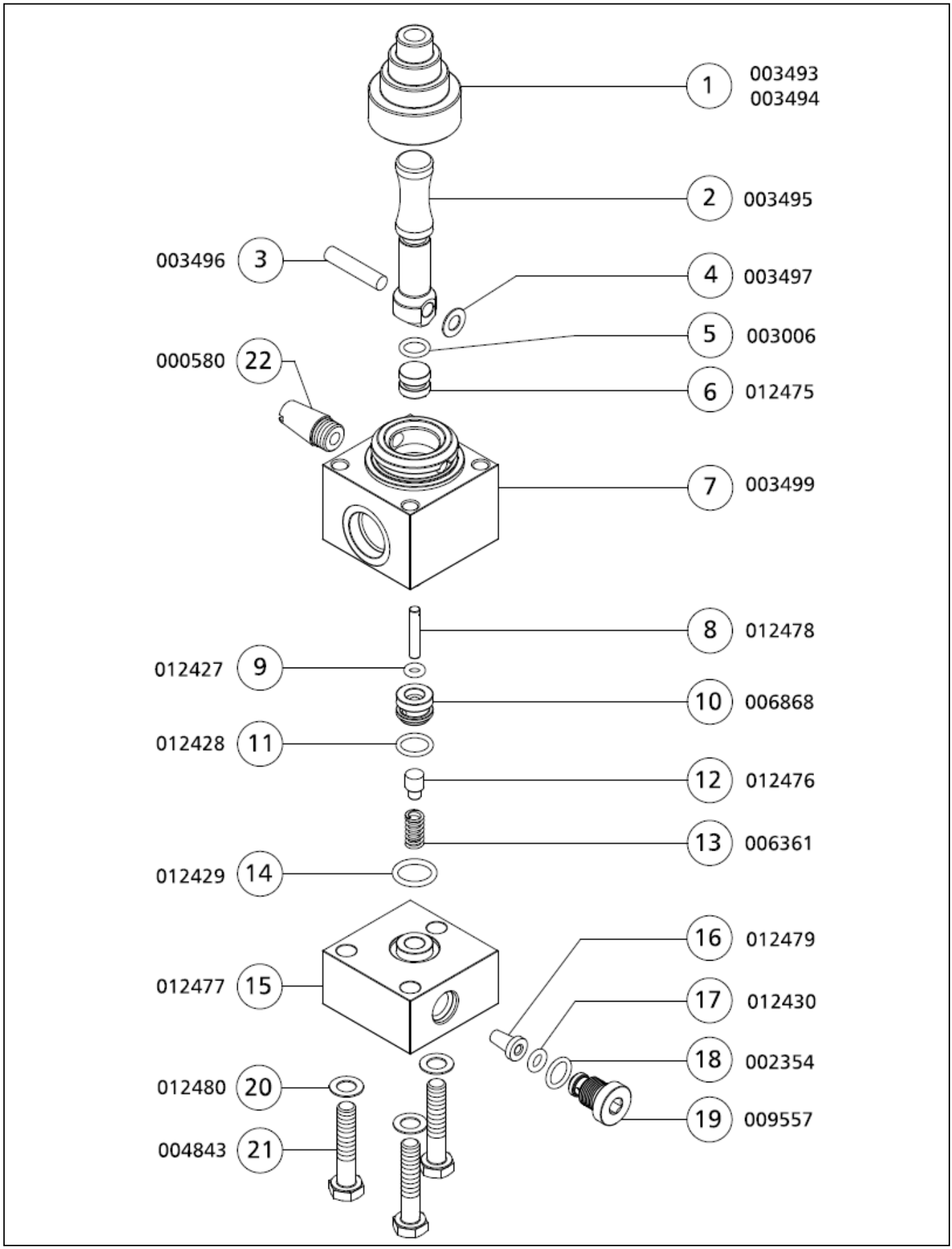
Ensure that the bead at the bottom of the gaiter (1) engages correctly in the groove body top lever part (7) and check that the gaiter (1) is not twisted in itself.

Operate the lever bar (2) several times and check that the gaiter (1) is working properly. Correct the installation of gaiter (1) if necessary.

The assembly of the toggle filling valve is thereby completed.

Reconditioning for Lever Filling Valve 002449 (200 bar) and 002450 (300 bar)

with valve body made from Aluminium



Reconditioning for Lever Filling Valve 002449 (200 bar) and 002450 (300 bar)

with valve body made from Aluminium

Best.-Nr. / Order No.	Benennung	Description
002449	Kipphebelventil / Füllleiste 200 bar Material Alu	Lever filling valve / filling panel 200 bar
002450	Kipphebelventil / Füllleiste 300 bar Material Alu	Lever filling valve / filling panel 300 bar

Teil-Nr. / Part No.	Anzahl / Quantity	Best.-Nr. / Order No.	Benennung	Description
1	1	003493	Faltenbalg (Kipphebelventil) schwarz	Gaiter, lever valve, black
1	1	003494	Faltenbalg (Kipphebelventil) rot	Gaiter, lever valve, red
2	1	003495	Kipphebel verchromt	Lever bar s/s, toggle valve
3	1	003496	Zylinder Stift für Kipphebelventil, ø5x24	Cylinder pin lever valve (new)
4	1	003497 #	Tellerfeder Kipphebelventil	Spring washer, toggle valve
5	1 *	003006 #	O-Ring, 7 x 1,5 NBR90	O-Ring
6	1 *	012475 #	Druckstück Kipphebelventil	Thrust insert lever valve
7	1	003499 #	Ventilkörper Oberteil	Body top lever valve
8	1 *	012478 #	Ventilstange Kipphebelventil	Valve stem - lever valve
9	1 *	012427 #	O-Ring, 3,35 x 1,78 NBR 90	O-Ring
10	1 *	006868 #	Ventilsitz Kipphebelventil	Valve seat, lever valve
11	1 *	012428 #	O-Ring, 9 x 1,5 NBR70	O-Ring
12	1 *	012476 #	Dichtkegel Kipphebelventil	Sealing Cone - lever valve
13	1	006361 #	Ventilfeder Kipphebelventil, ø6x11	Coil Spring lever valve
14	1 *	012429 #	O-Ring, 10,82 x 1,78 NBR70	O-Ring
15	1	012477 #	Ventilkörper Unterteil	Lower body lever valve housing
16	1 *	012479 #	Sinterfilter Kipphebelventil	Sinter filter lever valve
17	1 *	012430 #	O-Ring, 4,47 x 1,78 NBR70	O-Ring
18	1 *	002354 #	O-Ring, 8 x 1,5 NBR90	O-Ring
19	1 *	009557 #	Halteschraube G1/8 - Kipphebelventil	Plug screw, lever valve
20	3	012480 #	Federscheibe 6 mm	Spring washer 6 mm
21	3	004843	6-kant Schraube, M8x30 DIN931	Screw
22	1	000580	Schalldämpfer für Kipphebelventil, G1/8"	Silencer lever filling valve

= not available separately

* = included in the seal kit (012891) and maintenance kit (012889)

LENHARDT & WAGNER GMBH
Germany 68623 Lampertheim - An der Tuchbleiche 39
Tel: +49 (0) 62 56 - 85 88 00 Fax: +49 (0) 62 56 - 85 88 014
E-Mail : service@lw-compressors.com

Lenhardt & Wagner GmbH

An der Tuchbleiche 39
D-68623 Lampertheim – Hüttenfeld

www.lw-compressors.com

Operating Instruction

Safety valve

Typ:
SiV2 BKZ TÜV.SV.24-1140.5.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 160-380 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.

Safety valve with socket

1) ***Identification of set pressure***
2) ***Seal***
3) ***Fixing screws[1]***
4) ***Venting srew (hand wheel)***
5) ***Identification serial number***
6) ***Socket for safety valve***

[1] 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: 15 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 quantity: 5-10 drops

Figure 1: Position for oil refill

To be used lubricating oil for the safety valve: L&W Article N°.: 008500

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

E

CONTENTS

Testing hose lines

Testing hose lines 3
Testing after assembly and before commissioning 3
Recurring test 4
Procedure for hose lines found to be "defective" 4
Test intervals 4
Persons qualified to test hose lines 5

Maintenance

Replacing hose lines 6
Immediate replacement of hose lines 6

Service life

Service life of L&W high pressure hoses 7

Storage

Storing hose lines 8

Annex

Scope of testing, test criteria ..... 10 - 11

E

Testing hose lines

Ein 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

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.

Auswechseln 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

Unverzüglicher 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 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.

line requirements	**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.

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 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

E

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!

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!