I N S T R U C T I O N M A N U A L

LW 1300 E

Breathing Air Compressor

L E N H A R D T & W A G N E R G M B H

LENHARDT & WAGNER GmbH
An der Tuchbleiche 39
D-68623 Lampertheim-Hüttenfeld / Germany

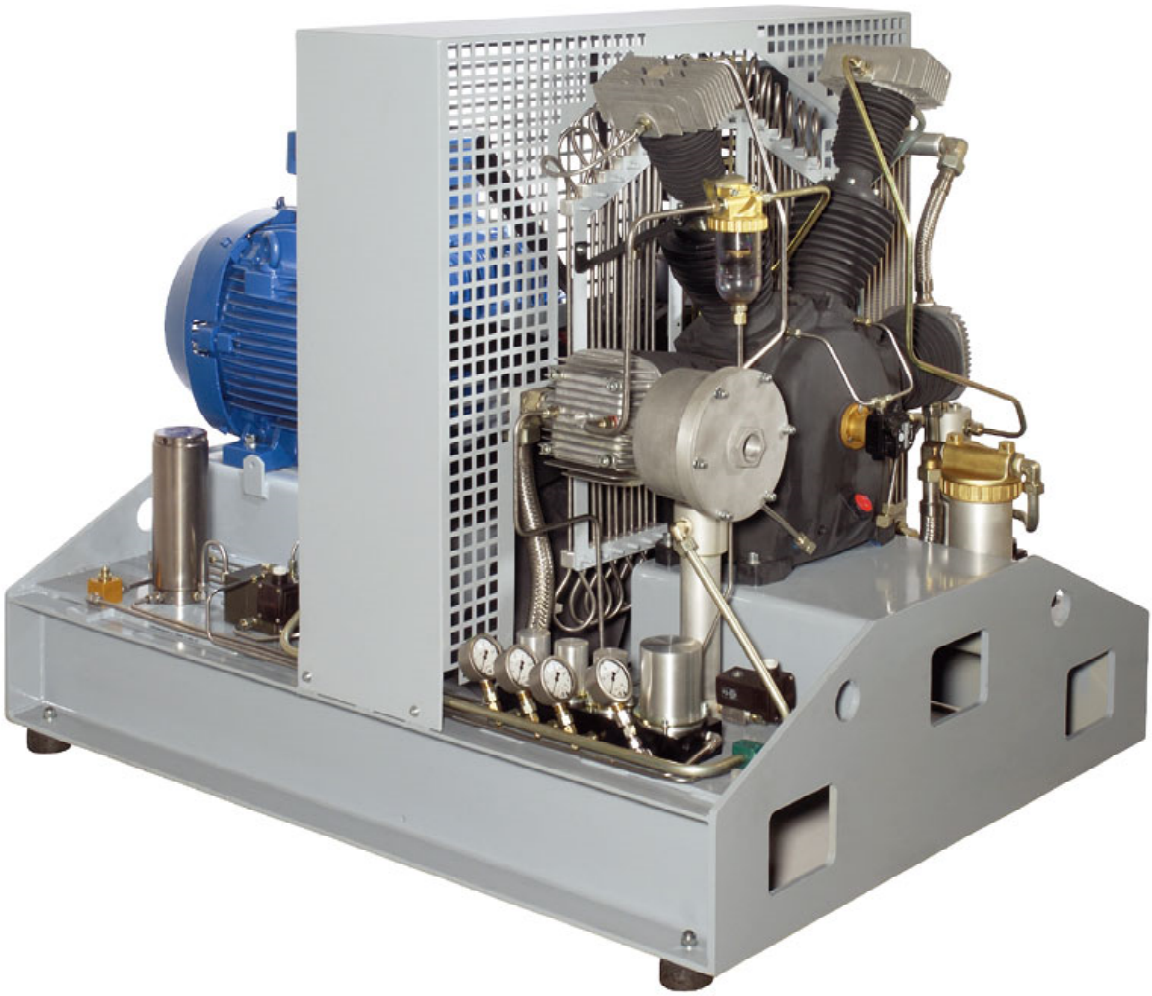
Phone: +49 6256 85880 0
Fax: +49 6256 85880 14
www.lw-compressors.com
eMail: info@lw-compressors.com

Technical Data	LW 1300 E
Delivery Capacity:	1,300 l/min
Max. Pressure:	350 bar *(420 bar on request)*
RPM Compressor:	985 min^{-1}
No of Pressure Stages:	4
Cylinder Bore 1st Stage::	Ø 135 mm
Cylinder Bore 2nd Stage:	Ø 70 mm
Cylinder Bore 3rd Stage:	Ø 32 mm
Cylinder Bore 4th Stage:	Ø 16 mm
Stroke:	120 mm
Medium:	Air
Working Pressure 1st Stage:	2.8 bar *(at 200 bar final pressure)*
Working Pressure 2nd Stage:	17 bar *(at 200 bar final pressure)*
Working Pressure 3rd Stage:	76 bar *(at 200 bar final pressure)*
Relief Pressure Safety Valve 1st Stage:	8 bar
Relief Pressure Safety Valve 2nd Stage:	25 bar
Relief Pressure Safety Valve 3rd Stage:	95 bar
Relief Pressure Safety Valve Final Stage:	*depents on application*
Intake Pressure:	atmospheric
Oil Pressure:	+1.5 bar (+/- 0.3 bar)
Oil Capacity:	4.9 ltr
Air Intake Temperature:	0 < +45°C
Ambient Temperature:	+5 < +45°C
Cooling Air Requirement:	> 9,000 m^3/h
Voltage:	400 V / 3-Phase / 50 Hz *(special windings on request)*
Protection Class Drive Motor	IP 55
Motor Power:	37 kW
RPM Motor:	985 min^{-1}
Start:	Star / Delta

Dimensions: Depth:	1,590 mm (62.6”)
Length:	1,210 mm (47.6”)
Height:	1,260 mm (49.6”)
Weight:	approx. 1,000 kg

Breathing Air Quality according to:

DIN 3188 - EN 12021 - ISO 2533 - BS 4001 & BS 4275



LW 1300 E

S A F E T Y P R E C A U T I O N S

General Notice

This instruction manual contains the operation and maintenance procedures necessary to safely run your L&W compressor.
We strongly recommend to read this manual thoroughly prior operation and to follow all the safety precautions precisely.

Damage resulting from any deviation from these instructions is excluded from warranty and liability for this product.
Be sure to pay attention to the following points:

- Fill only tanks with a valid hydrostatic test date
- Never exceed the working-pressure rating indicated on the tank
- Carry out proper maintenance on the compressor and filtration system
- Care must be taken to avoid the intake of contaminated air in to the compressor
- Do not exceed maximum operating temperatures

Safety Precautions

- Read the operation manual of your compressor carefully
- Allow only qualified personnel to run the compressor
- Do not place any objects on compressor while in operation
- Make sure no person or object can accidentally touch any moving parts while running
- Take care that the intake-air is pure and free of toxic gases
- All work on compressor must be carried out while compressor is disconnected for the power supply and depressurized
- Check unit regularly for air- & oil leaks
- Never weld damaged high-pressure tubes
- Filling-hoses must be in perfect condition; special attention should be paid to the connecting fittings
- Do not touch any hot compressor / engine parts while doing maintenance work as these may cause injury by burning. Wait until unit has cooled down.

Application:

4-stage breathing air compressor.
Large capacity, slow running stationary compressor
- ideal for professional applications.

Specifications:

- Ready to connect, fully wired with pneumatic/electric compressor control and start/delta start cycle, automatic stop and automatic condensation drain
- Operating panel with start/stop buttons and drain test button, final pressure gauge and hours counter
- Sturdy steel housing, powder coated in RAL 6026
- All pistons with piston rings
- Low pressure oil pump
- Oil filter cartridge
- Oil/water separators after each stage, safety valve for each stage
- Inlet pressure control and cut-off (ECC version only)
- Pressure maintaining and non-return valve
- HP-Outlet

Options:

ECC Control

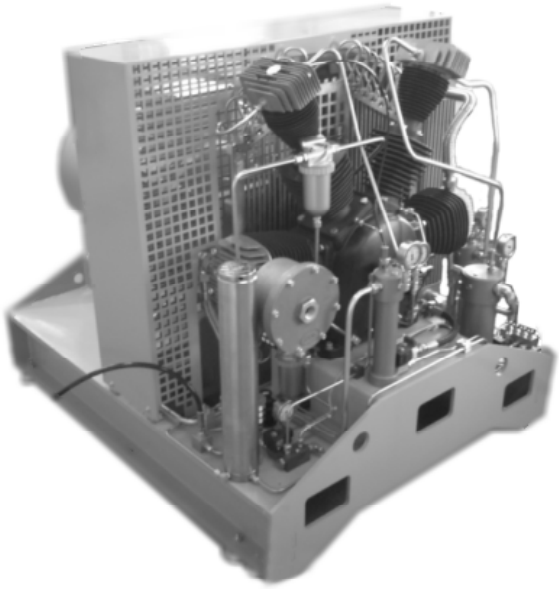
Motor overload protection switch

Special windings for electric motor and control (e.g. 220V / 60Hz)

Oil pressure control

420 bar version

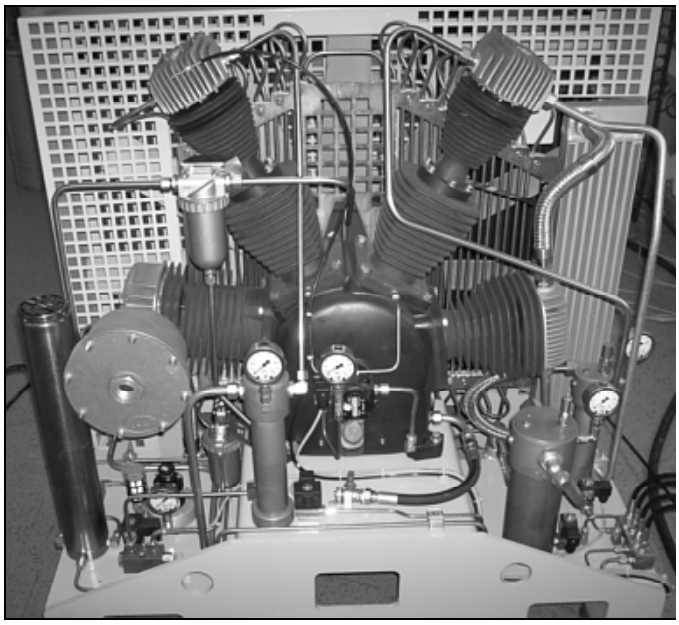
HP-Outlet



LW 1300 E

Method of Operation

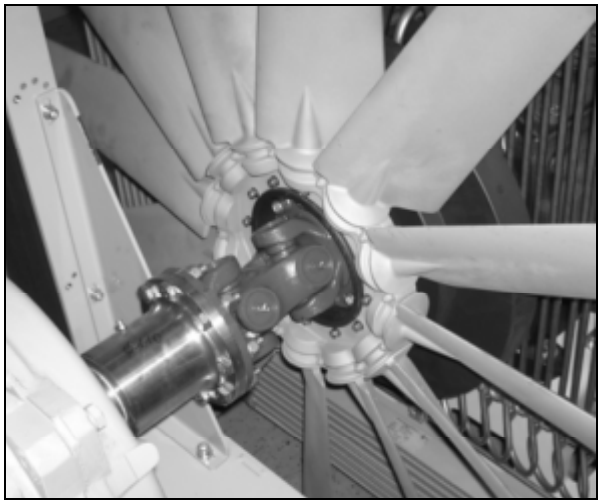
Air comes through a micro filter into the first stage, gets compressed and leaves trough the heat exchanger into a water / oil separator. A short pipe leads the air into the second cylinder and is further compressed, leaving again through a heat exchanger and the second water /oil separator and then compressed in the third stage to the final pressure. The air then goes through the after cooler and into the mole carbon filter. The purified air passes a safety valve and into the pressure maintaining valve, there to the air manifold and filling hoses or, if required, into an external filling panel.



4-stage Compressor Block

Electric Motor / Universal Joint

Standard specification: 37 kW / 3-Phase / 50 Hz / 985 rpm
- Special windings on request -
Compressor block is direct driven via universal joint (rotation ratio 1:1)
Drive motor is free of maintenance
Universal joint: lubricate grease nipples every 500 hours, at least once a year



Universal Joint

Installation

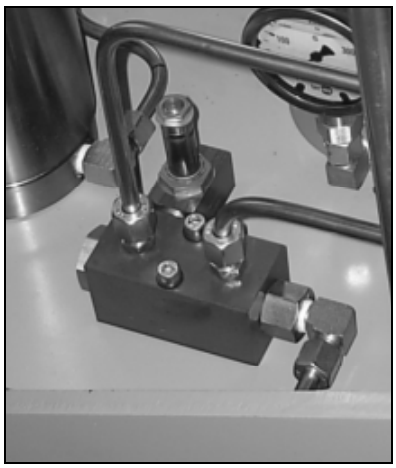
The compressor should only be connected by a qualified licensed electrician.
NOTE: Check direction of rotation immediately after the first start !
If the direction of rotation is wrong, the oil pump will not lubricate the 3rd & 4th stage pistons which may cause them to overheat / cease.
Furthermore the unit would not get the required cooling air flow.
When facing the front of the compressor cover, the direction of rotation should be anticlockwise (check arrow on drive motor).
Don't place compressor closer than 1 meter to any walls and ensure good ventilation.

Automatic Condensation Dump System

The L&W 1300 E comes with an auto dump system as standard.
Each pressure stage has its own oil- / water separator.
Solenoids open and drain all four condensate separators about every 15 minutes.

Standard Version: all four separators have solenoids which were controlled by an electronic timer. The timer is located in the switchboard compartment and activates the dump valves every 15 minutes - interval is adjustable - to release the condensate through hoses. We recommend the use of a 20 litre container to collect all condensate. It can then be deposed of like discarded oil.
The drain noise is kept to a minimum with a silencer.
Operation can be check by the blue push button on the dash panel.

ECC Version: all four separators have solenoids which were controlled by the ECC. It activates the dump valves every 15 minutes to release the condensate through. We recommend the use of a 20 litre container to collect all condensate. It can then be deposed of like discarded oil.
The drain noise is kept to a minimum with a silencer.
Operation of the solenoids can be check at Test Menu (* 4)

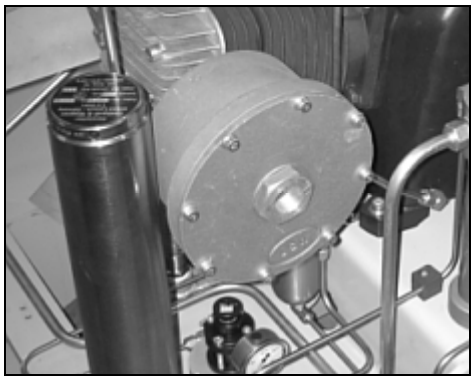


Condensate Dump Block (Final Stage)

Final Stage Water Separator & Silencer

Intake Filter

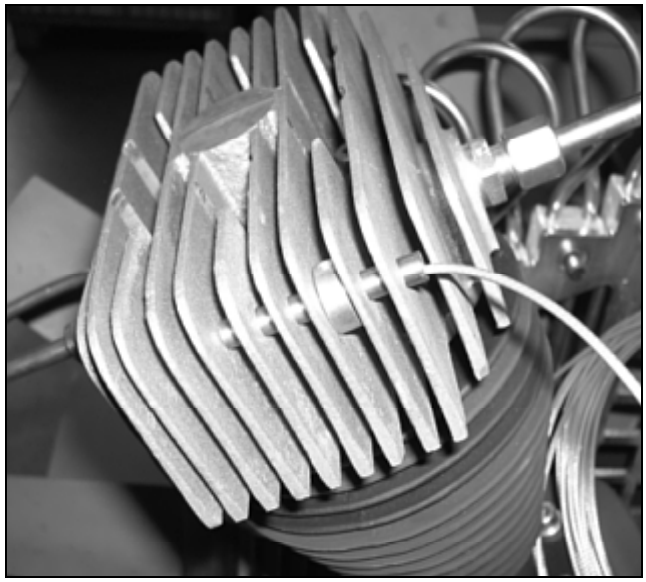
A micro filter cartridge is used as an intake filter.
We recommend to replace filter cartridges every 1000 working hours.
A dirty, contaminated filter restricts the intake flow, reduces the compressors delivery capacity and causes overheating.



Intake Filter Housing

Cylinder Heads and Valves

Inlet and outlet valves are located inside the cylinder heads.
Inlet valves opens on the down stroke, outlet valve opens on the upstroke.
Valves should be replaced after 2000 working hours due to normal wear and tear.
To replace valves the cylinder heads have to be removed. All four valves are combined valves (inlet and outlet valves form one unit).
First and second stage valves are of plate valve design, third an fourth stage uses spring operated pistons which act inside brass cylinders.
These valves sit loose inside the cylinder head, alloy rings are used as high temperature seals.
There are no special tools required to do any service work.



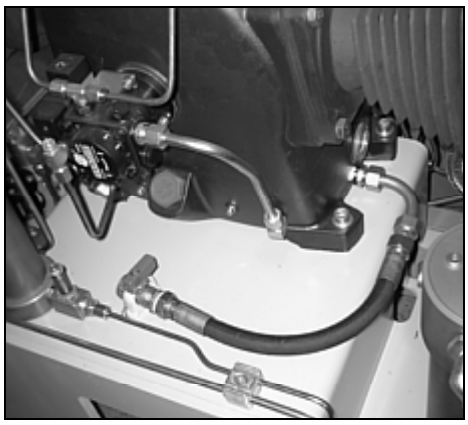
Final stage cylinder head with optional temperature control

Lubrication

LW 1300 compressor is equipped with a directly driven, low pressure oil pump.

- Crankshaft is lubricated by oil spray / oil slinger.
- 1st and 2nd stages are lubricated by spray oil.
- 3rd & 4th stages are lubricated by mechanical oil pump

The oil pump is protected by a plastic sieve which is located under the oil pump cover.
It has to be cleaned every 1000 working hours.



Oil Pump &
Oil Drain Hose with Oil Release Valve

NOTE:
Check oil level daily.
It never should be lower than the red marking on the oil level indicator glass (located on right hand side of compressor crankcase).

Starting the Compressor for the first Time

Start / Stop Keys & Condensate Drain Test Button (Standard Control System)

- Place the compressor at a distance of at least 50 cm to any walls (air temperature max. +40°C)
- Check compressor oil level
- Check if final filter cartridge is in place
- Make sure all filling valves are closed (if attached)
- Start compressor by green push button (Std Control only)
- Check direction of rotation - immediately after the 1st start
- Run compressor to max. pressure
- Check if end-pressure switch works at max. pressure (Std Control only)

- Check compressor unit for air leaks
- Check auto dump valves for function by pushing the blue push button on the dash panel (standard version)
- Turn off compressor by red push button (Std Control only)
- Release pressure by filling valves

Safety Valves

Every pressure-stage is equipped with a separate safety valve.
They protect the unit from over -pressure / load.

Safety Valves Settings:

1st Stage:	**8 bar**
2nd Stage:	**25 bar**
3rd Stage:	**95 bar**
4th stage:	**final pressure**

Endpressure Safety Valve

If a safety valve blows it indicates problems with either inlet or outlet valve of the next following stage (valid for 1st, 2nd & 3rd stage compression stages).

NOTE: Faulty safety valves should always be replaced!

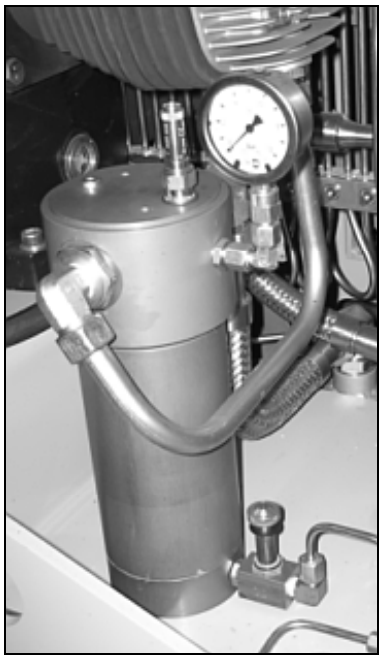
Oil / Water Separators

Condensate separation takes place after every stage of compression.
All four separators have solenoids which are controlled by an electronic timer / ECC.

Standard Control:
Timer is located in the switchboard compartment and activates the dump valves every 30 minutes - interval is adjustable.

Clean condensate separators every 1,000 hours
Replace O-rings every 1,000 hours
Replace sinter filters every 1,000 working hours.

Condensate Release Hoses



Water Separator 1st Stage

Pressure maintaining and non-return valve

The combined pressure maintaining / non-return valve is located in the system directly after the final filter housing

Pressure Maintaining Valve

Pressure Maintaining Valve

The pressure maintaining valve serves to keep the pressure in the final filter housing at a minimum of 150 to 180 bar. This high pressure creates more condensation in the separator/housing that can be mechanically removed (opening the drain valve) before the air is finally purified in the final filter, thus extending the life of the filter cartridge.

When the compressor is started, the pressure will build up in each stage as the compressor runs. The pressure in the final filter housing will increase until the pressure maintaining valve set pressure is reached. As a result of this function, the filling pressure gauge will not show any pressure for approx 1 min after the compressor is started and no air will flow out of the filling valve if opened.

Once the pressure maintaining valve opens, the pressure gauge will respond by climbing quite rapidly (within a few seconds) to the set pressure of the pressure maintaining valve (default 150 to 180 bar).

Adjusting the pressure maintaining valve:

- Open the filling valve to vent the system completely, close the filling valve *(Pressure gauge reads 0 bar)*
- Start the compressor
- Monitor the pressure gauge
- The valve will open and the pressure the gauge climbs to quickly to the set pressure, this should be 150 – 180 bar
- If the pressure setting is outside this valve, adjust the pressure maintaining valve as follows:

Increase the pressure setting:

- Stop the compressor and open the drain valves
- Open the filling valve to vent the system after the pressure maintaining valve *(Pressure gauge reads 0 bar)*
- Loosen the locking screw on the pressure maintain valve
- Using a suitable tool, screw the valve setting screw clockwise to increase the spring tension
- Start the compressor and check the pressure setting, adjust as necessary
- Re-tighten the locking screw
- Check the pressure maintaining opening pressure once again

Decrease the pressure setting:

- Stop the compressor and open the drain valves
- Open the filling valve to vent the system after the pressure maintaining valve *(Pressure gauge reads 0 bar)*
- Loosen the locking screw on the pressure maintain valve
- Using a suitable tool, screw the valve setting screw anti-clockwise to decrease the spring tension
- Start the compressor and check the pressure setting, adjust as necessary
- Re-tighten the locking screw
- Check the pressure maintaining opening pressure once again

Warning:

If the pressure maintaining valve is set at a higher pressure than the maximum working pressure, the final safety valve will blow off before the pressure maintaining valve opens, the pressure gauge will read 0 bar!
After repair work where the pressure maintaining valve is not yet adjusted, the basic setting is the setting screw approx 3 turns in to the housing.

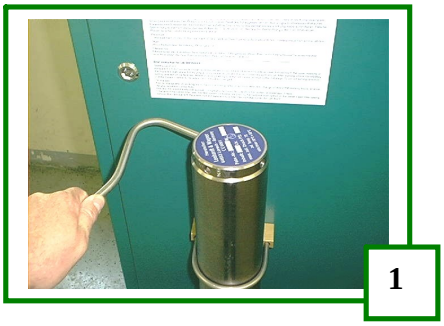
Non-return valve

The non-return valve is located after the pressure maintaining valve and prevents air from flowing back from the filling lines into the final filter housing/compressor block. The non-return valve is operating correctly if the pressure gauge on the filling valve remains constant when the drain valves on the compressor are opened.

Filter cartridge change

- Unscrew the filter housing cap anti-clockwise, first with the special cartridge key and later by hand (1)
- Place the other end of the cartridge key in the filter cartridge in the filter housing (2)
- Unscrew the filter cartridge anti-clockwise and pull the cartridge out of the housing (3)
- Check O-ring for wear and grease thread of top cap
- Open the sealing of the new filter cartridge and use the cartridge key to place it in the filter housing (3)
- Screw in the new filter cartridge clockwise with the cartridge key hand tight (2)
- Refit the cap of the filter housing clockwise, first by hand and than by the filter key, hand tight (1)
- Close the drain valve of the separator / filter housing if only the hand operated drain is mounted.

The filter cartridge replacement is now completed, ensure that the saturated filter cartridge is disposed of correctly at an approved waste point.


1


2


3

Motor Protection

The following L&W compressors are fitted with a motor protection switch as standard:

LW 280 E / ES

LW 300 E / ES

LW 450 E / ES

LW 570 E / ES

LW 720 E / ES

LW 1300 E / ES

Motor Protection Switch

In case of an overload, it cuts off the main power supply to save the motor / compressor unit from damage.

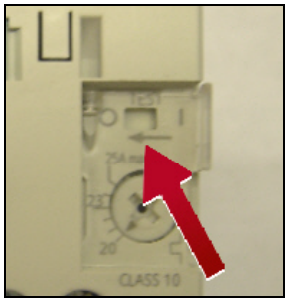
If the motor protection switch has been activated, it lights the red OFF button on the control panel (L&W Standard control) or comes up with a message on the display (L&W ECC)

L&W Standard Control Dashboard

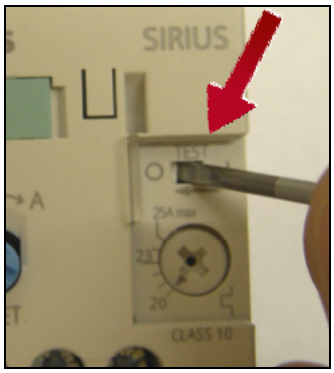
How to test and reset the motor protection switch:

- Remove cover of electro box

- Slide plastic cover of “test switch” to left hand side

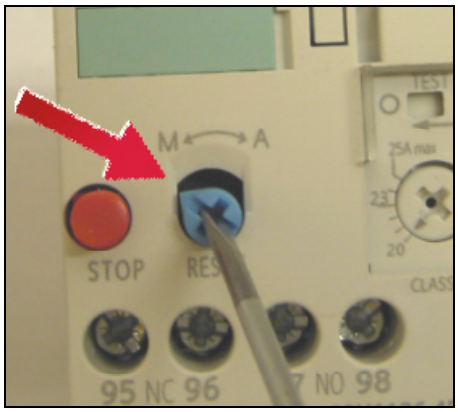


- Use small sized screw driver to activate test switch (slide to left hand side)



- Press red „Start“ button on compressor dashboard
- Compressor should **not** start now!!

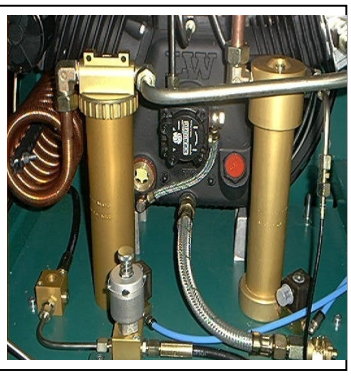
- Reset motor protection switch by pushing the blue reset button



-- Close cover of test switch

- Refit cover of electro cover

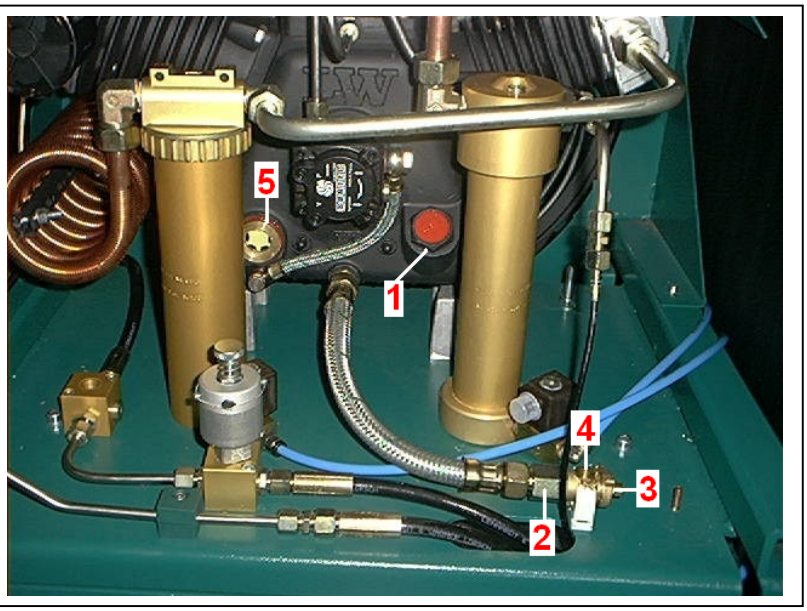
OIL CHANGE INSTRUCTIONS
LW 300 / LW 450 / LW 570 / LW 720 / LW 1300

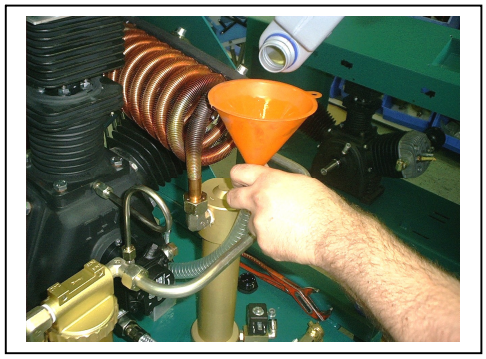


For the periodic oil change, please follow the time schedule of the instruction manual;
Only use original L&W synthetic oil type (1 ltr bottle, order no.: 000001).

Before changing the oil, be sure the compressor is switched off and cannot be inadvertantly started. Disconnect it from the power supply or by switch off the starter of the gasoline or Diesel engine.

To conduct an oil change, the temperature of the oil must be at least +20°C to allow it to flow easily. In cold climates, the compressor should run first for about 15 minutes, dependent on the ambient temperature.





The picture above is showing the easy way of oil refilling by using a funnel placed on the oil drain hose.

Oil change

- Unscrew the filling cap anti-clockwise (1)
- Remove the oil drain hose from its holder (2)
- Unscrew the drain hose cap anti-clockwise (3)
- Hold the drain hose over a container for waste oil and open the drain valve (4)
- Let the oil drain completely, close valve (4), screw on plug (3) and relocate the hose
- Refill the block with original L&W compressor oil (approx. 1.8 ltr) by using a funnel
- The indicator glass (5) should be filled up to the top level - **DO NOT OVERFILL WITH OIL!!**
- Refit the oil filler cap

The oil change is now completed, **ensure the filling cap (1) is securely refitted.**
The schedule in the maintenance manual will indicate the next oil change or the ECC display.
Ensure the waste oil is disposed of correctly at an approved waste oil point.

Symptom	Problem	Remedy
Final pressure is not reached	Connections leaking	Re-tighten, clean and/or replace
	Final pressure safety valve blows off	Replace
	Cooling pipe leaking	Replace
	Condensation drain valves	Check tightness, clean and/or replace
	Final pressure switch cuts off (option)	Re-set final pressure cut off
Compressor vibrates excessively	Driving joint worn	Replace
	Compressor block and/or prime mover mounting screws loose	Re-tighten
	Shock absorbing feet worn down	Replace
	Uneven surface	Move compressor accordingly
Compressor overheats	Inlet filter cartridge blocked	Replace
	Ambient temperature too high	Improve ambient conditions or run for shorter periods
	Cooling air feed/exhaust not sufficient	Adhere to the installation data
	Inlet hose too long	Reduce the length and/or increase the diameter
	Inlet hose diameter too small	Increase diameter
	Compressor turning in the wrong direction	Ensure correct rotation (phase)
	Suction/pressure valve blocked	Clean and/or replace
Safety valve blows off	Suction / pressure valve in the following stage defect	Clean and/or replace
	Sinter filter in the following stage blocked	Replace
	Safety valve leaks	Replace (do not tamper)
Air tastes of oil	Molecarbon filter needs replacing	Replace
	Incorrect compressor oil	Use only authorised oil type
	Non conform type of filter	Replace with correct filter
	Cylinders and / or piston rings worn	Replace
Delivery rate too low	Suction/pressure valve blocked	Clean and/or replace
	Cylinder / piston rings worn	Replace
	Also see section „final pressure is not reached“	
Automatic condensation drain not functioning *(Option))*	Solenoids defect	Replace
	Cable/wiring defect	Repair
	Timer defect	Replace
	Sinter filter from pneumatic valve blocked	Replace
	Piston in the pneumatic valve blocking	Dismantle pneumatic valve
Automatic condensation drain operates between cycles	Pilot pressure for pneumatic valve too low (2nd stage pressure)	Replace suction/pressure valve / safety valve
	Piston seat in the pneumatic valve damaged/contaminated	Clean / Replace
	Timer settings incorrect	Set default settings

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

ELECTRONIC COMPRESSOR CONTROL

LW ECC

Various L&W compressors are equipped with the all-electrical computer supported control system LW ECC – as an option.
It is easy to operate and allows multiple and individual settings.

LW EEC Features:

- **LCD-Display with key pad**
- **Coloured LEDs for ON / OFF / Main Voltage indication**
- **Automatic- & semi-automatic operation mode**
- **Automatic dump system**
- **Integrated counter for operation hours**
- **Integrated counter for load cycles**
- **Maintenance intervals automatically displayed**
- **Required service part numbers automatically displayed**
- **Fully adjustable pressure ranges for start and stop**
- **Various warning messages will be displayed**
- **Check of end-pressure safety valve possible**
- **Auto switch-off when system is not running**
- **Extentable by additional modules (external filling panel)**
- **Easy to operate menu**
- **Warning messages** *("Housing Open" / "Emergency Switch")*
- **Load-free start cycles**
- **Star / Delta start**

LW ECC OPTIONS:

- **Oil Pressure Control**
- **Oil Temperature Control**
- **Cylinder Head Temperature Control**
- **Inter Stage Pressure Monitoring**
- **PIN Controlled Access**
- **Ambient Air Temperature Control**
- **Master / Slave Option**
  (if more than one ECC equipped compressors are combined)

ECC Controller

Immediately after the compressor has been connected to power,
the ECC-display comes up with the following menu:

MAINMENU

Charging	0 min
Total	0,0 h
Start : 1	Stop : 0
Help: *	OFF
Final Press	0 bar

Present filling time in minutes
Total operation hours
Key 1 to start compressor / Key 0 to stop compressor
** Key leads to submenus* *Current operation state = Off*

Present filling pressure

The following keys can now be used:

Key	*Function*
1	**Start** - *Starts the compressor*
0	**Stop** - *Stops the compressor*
*	**Leads to the submenus**

After typing the * key the following menu appears:

SELECTION MENU M100

	Selection:
2	Display
3	Settings
4	Test
5	Statistics
6	Maintenance
7	Operation Mode
(M100)	Return: #

Key 2 leads to submenu "Display"
Key 3 leads to submenu "Settings"
Key 4 leads to submenu "Test"
Key 5 leads to submenu "Statistics"
Key 6 leads to submenu "Maintenance"
Key 7 leads to submenu "Operation mode"
Key # leads back to submenu "Mainmenu"

(M100) tells that you are currently on menu page 100.

Remark:
Beside the listed numbers, the compressor unit can always be started / stopped by using keys 1 and 0.

DISPLAY MENU M200

	Display I:
2	Press. Stage 1
3	Press. Stage 2
4	Press. Stage 3
5	Cyl. Head Temp.
6	Oil Temp.
7	Display II
(M200)	Return#

*Key 2 shows current pressure of the 1st stage**
Key 3 shows current pressure of the 2nd stage
Key 4 shows curent pressure of the 3rd stage
Key 5 shows temperature of the final stage cylinder head
Key 6 shows the oil temperature
Key 7 shows Display II
Key # leads back to "Mainmenu"

By pressing key 2 the following informations appear:

Charging	0 min
Total	0,0 h
Start:1	Stop: 0
Help:*	OFF
Press.	0 bar
1st Stage	0,0 bar

Use keys 3 to 6 to change between values displayed in this line

** = Option*

Option:

If the compressor unit features two different pressure ranges, both pressures can be displayed in the main menu by pressing key 8.
(text of line 3 changes to „Press. 200/300").

Display II:

Press.		Temp.	
4:	0	C:	0
5:	0	D:	0
6:	0	E:	0
7:	0	F:	0
	bar		°C

Key # leads back to "Mainmenu".

SETTINGS M300

	Settings:
	Automatic
2	Stop pressure
3	Restart Press.
	Semi-Automatic
4	Stop Pressure
9	Close
(M300)	Return: #

Key 2 leads to submenu "Set Stop Pressure" (in automatic mode)
Key 3 leads to submenu „Set Restart Pressure" (in automatic mode)

Key 4 leads to submenu „Set Stop Pressure" (in the semi-automatic mode)
Key 9 leads back to "Selection menu"
Key # leads back to "Mainmenu"

Remark:
Use menu M700 to change between "Automatic" and "Semi-Automatic" mode.
Restart pressure can only be setted in "Automatic Mode".

SET STOP PRESSURE (Automatic Mode) M320

(Only in automatic mode, see menu M700))

	Set
	Stop Pressure:
Actual: 330 bar	
7	New Value:
	>> XXX bar
	(050,, 333)
8	Confirm
(M320)	Return: #

Current restart pressure
Key 7 if restart pressure should be changed
XXX indicates modified stop pressure
Chooseable pressure range for restart pressure
Key 8 confirms new restart pressure
Key # leads back to „Mainmenu"

SET RESTART PRESSURE (Automatic Mode) M330

(Only in automatic mode, see menu M700)

Set	
Restart Pressure:	
Actual: 180 bar	*Current restart pressure*
7 New value:	*Key 7 if restart pressure should be changed*
>> XXX bar	*XXX indicates modified restart pressure*
(030,, 310)	*Chooseable pressure range for restart pressure*
8 Confirm	*Key 8 confirms new restart pressure*
(M330) Return : #	*Key # leads back to „Mainmenu“*

Remark:
Restart pressure must be at least 20 bar lower that current stop pressure.

SET STOP PRESSURE (Semi-Automatic Mode) M340

(Only in semi-automatic mode, see menu M700)

Set	
Stop Pressure:	
Actual: 180 bar	*Current stop pressure*
7 New Value:	*Key 7 if stop pressure should be changed*
>> XXX bar	*XXX indicates modified stop pressure*
(030,, 310)	*Chooseable pressure range for stop pressure*
8 Confirm	*Key 8 confirms new stop pressure*
(M340) Return : #	*Key # leads back to “Mainmenu”*

TEST MENU M400

Test:	
2 Solenoids	*Key 2 leads to submenu “Test Solenoids”*
3 Safety Valve	*Key 3 leads to submenu “Test Safety Valve”*
4 Test-Stop	*Key 4 leads to submenu “Test Stop without Venting“*
9 Close	*Key 9 leads back to submenu “Selection”*
(M400) Return : #	*Key # leads back to „Mainmenu“*

TEST SOLENOIDS M420

Test Solenoids	
3	open
7	close
9	Close
(M420)	Return : #

Key 3 opens solenoids
Key 7 closes solenoids

Key 9 leads back to submenu „Test“
Key # leads back to „Mainmenu”

Remark:
This menu can not be left unless solenoids have been closed by key 7

TEST SAFETY VALVE M430

Test Safety Valve		
Close Filling Valves!		
5 Start	0 Stop	
9 Close		
(M430)	Return : #	

Key 5 to start test *Key 0 to stop test*
Key 9 leads back to submenu „Test“
Key # leads back to „Mainmenu“

Remark:
Close all filling valves /-panels before you run the safety valve test.
Compressor will run up to its maximum pressure, which is limited by the setting of the end-pressure safety valve.
It will not stop at “Stop Pressure” (see menu M320).

TEST STOP M440

Test Stop without Venting	
5	Stop
6	Vent
Pressure	0 bar
9	Close
(M440)	Return : #

Key 5 stops compressor during test run
Key 6 vents compressor after leak search has been finished
Shows current filling pressure
Key 9 leads back to submenu „Test“
Key # leads back to „Mainmenu”

Remark:
Test Stop can only be carried out after compressor has been started *(key 1).* Main purpose of it is to check compressor unit for air leaks.

STATISTICS MENU M500

Statistics	
Operation Hours:	
15,2 h	
Start cycles:	
48	
Max Press	338 bar
9 Close	
(M500)	Return : #

Total operation hours of compressor unit

Total number of compressor starts
Maximum working pressure of unit (set by safety valve test)
Key 9 leads back to submenu „Selection“
Key # leads back to „Mainmenu“

Remark:
Press key 5 to get information on which ECC software version is currently installed on your system (M505), i.e.: .
By pressing key 2 you get the total load cycles of the filter housing.

Maintenance Menu M600

Hours remaining	
Oil change	14 h
Sinter filt	989 h
Silencer	4989 h
Valves	5989 h
Oil filter	1000 h
8 Change done	
(M600) Return : #	

Shows remaining hours of listed components (i.e. next oil change in 14 hours,...)

Key 8 leads to submenu "Receipt Maintenance"
Key # leads back to „Mainmenu"

Remark:
System will display message when any of the listed parts should be replaced, plus in addition matching L&W spare part numbers.

Confirm Maintenance M680

Confirm Maintenance	
2	Oil change
3	Sinter filters
4	Silencer
5	Valves
6	Oil filter
(M680)	Return : #

Key 2 receipts oil change
Key 3 receipts change of sinter filters
Key 4 receipts change of silencer
Key 5 receipts change of valves
Key 6 receipts oil filter
Key # leads back to „Mainmenu"

Display confirms any reset of „Hours remaining" with the following message:

Confirm Maintenance	
Operation Hours Meter Set	
9	Close
(M680)	Return : #

Key 9 leads back to submenu "Hours remaining"
Key # leads back to „Mainmenu"

Operation Mode Menu M700

Operation Mode:	
2	Automatic
3	**Semi-Automatic**
9	Close
(M700)	Return : #

Key 2 activates automatic mode
Key 3 activates semi-automatic mode

Key 9 leads back to submenu „Selection“
Key # leads back to „Mainmenu“

Remark:
See also menu 300.
Activated modes are always displayed in bolt letters
(above example: Semi-Automatic)

Attention:
Compressor can start automatically if automatic mode is activated
(depending on restart pressure, see M330) !!

Never work on a unit which is connected to main power!
Always pull main plug before doing any maintenance work!

RISK OF ACCIDENT during maintenance work!!

ECC Display

Instructions for use

L&W PURACON
Humidity Controller

Contents

Lenhardt & Wagner GmbH
An der Tuchbleiche 39
D-68623 Lampertheim - Hüttenfeld
Germany
www.lw-compressors.com

For your safety

For correct, effective and safe use of the equipment and to avoid hazards it is essential to read and adhere to the following recommendations.

Strictly follow the instructions for use

Any use of the equipment requires full understanding and strict adherance of these instructions. The apparatus is only to be used for purposes specified here. Attention is drawn to the specific instructions for use of compressor and/or compressed air acoordingly.

Maintenance

The apparatus must be inspected, calibrated and serviced by specialists at regular intervals (and a record kept). We recommend obtaining a service contract with our authorized Service. Repair or calibration should only be carried out by authorized Service technicians

Liability for correct function or damage

The liability for the correct function of apparatus is irrevocably transferred to the owner or operator to the extent that if the equipment has been serviced or repaired by personnel not employed or authorised by Lenhardt & Wagner or when the equipment was used in a manner incompatible with the intended use. Lenhardt & Wagner cannot be held responsible for damage caused by non-compliance with the recommendations given above. The warranty and liability provisions of the terms of sale and delivery of Lenhardt & Wagner are affected by the recommendations given above.

Lenhardt & Wagner GmbH

Intended Use

The instrument is for monitoring the humidity of air/gas in a filling system such as a breathing air filling station using high pressure compressors.

Correctly installed and connected, the instrument monitors and displays the moisture content in a high pressure pipeline. The instrument can be used as a visual reference for the state of purification filters, as an audio alarm for exceeding pre-set moisture levels, or as a safety device for cutting out off a compressor when a pre-set moisture level is exceeded.

Regulations

Regulations for the quality of breathing are relavant, as are regulations for the installation and operation of high pressure gas installations and cylinders. In particular, the EN 12021 stipulates a limit of 25 mg/m³ moisture in breathing air as measured from a compressor.

Description

The instrument consists of the following components which make up the standard scope of delivery:

Display unit

The display unit consists of an housing with an LCD display, 3 quick reference LEDs, a mains power cable, an orange sensor cable and two button on the front for Mode and Rest.

The orange sensor cable should only be connected / disconnected when the power supply is off (unplugged). Cables up to 30m length are available as accessories.

The power supply cable is for use with a standard 230V CE socket with earth, other voltages available on request.

The LCD display shows the present moisture level in mg/m³ and/or self test and alarm messages.

The 3 quick refernce LEDs give a visual indication of the moisture level (factory settings):

- Green <20 mg/m³
- Yellow 21-25 mg/m³
- Red >25 mg/m³ (cut-off or alarm relay is activated)

Sensor housing

The cylindrical sensor housing consists of two halves screwed into each other and sealed with an O ring. The sensor housing contains the highly sensitive sensor that monitors the moisture content. If a filter is not changed when the display indicates, then water droplets may enter the sensor housing causing faults in the system.

Blind plug

The stainless steel blind plug that is sealed with an o-ring is used to block the lower housing body when the upper body is removed for repair/service. This ensures that the filling station can still function without the humidity controller.

Instructions for use

These instruction form part of the scope of delivery

Installation

Warning: Before any work is carried out, isolate the power supply to prevent injury.

The puracon may be already installed in a compressor or a filling station, or may need to be installed in an existing system as follows:

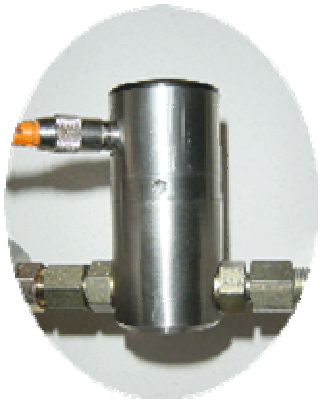
Display

Remove the two plastic covers from the front of the display, unscrew the four screws which join the front cover and the rear cover.

When the display is opened, the two cables can be unplugged from the printed circuit board (PCB) and the front cover including PCB placed in a safe place.

The rear cover can now be mounted onto a wall or panel with 4 screws (not included). The two cables are located on the left hand side.

Plug in the cables onto the PCB without using excessive force and refit the front cover and the two plastic strips.



Sensor

The sensor housing should be vertically mounted in the high pressure pipeline after a non return/pressure maintaining valve. A non return valve is recommended in the outlet of the housing towards the filling panel. The connections should be made with suitable ermeto connections by a qualified technician. There is no particular direction of flow.

Care is to be taken that no burrs or debris remains in the pipeline.

Sensor cable

The sensor cable plug has a guide inside for the sensor housing socket to prevent incorrect connections. Do not use excessive force when plugging the cable in, and screw down the plug finger tight.

***Warning*:** Do not connect/disconnect the sensor cable when the power supply is on.

Power supply

If the Puracon is to be connected to a standard electric socket, simply plug in the CE plug into an earthed socket. The standard units require 210 – 250V AC, 40-60 Hz. other voltages available on request.

If the Puracon is to be connected into a compressor´s power supply, the cable in the electrical distibution box of the compressor is to be shielded, the shielding can be connected to a suitable metal connection. A qualified electrician is recommended for carrying out this work.

Electrical connections

1 PE Earth green/yellow cable)
2 L1 240V AC or +12V / +24V (special version)
3 Neutral or Return in -12V / -24V (special version)
4 Free
5 Off (Relay switched. Motor off)
6 On (Relay switched, motor can be started) Relay voltage <40V AC or <2V DC
7 Common connection

Operation

When the power supply is turned on, or when the compressor is turned on, the puracon will start a self test sequence.

Language selection

Press Reset

Press and hold Mode, press Reset

When a Peep is heard and the display goes blank, release Mode

"Language" will appear in the display

After hearing a peep, press Mode and keep it pressed

When the desired language appears in the display, release Mode

A long beep signal appears at the end of the selection.

Display

The display will show the actual humidity in the system and display the value in mg/m³ on the LCD accompanied by an LED as follows.

After the compressor has been standing for some time or after a filter change, there will be remaining moisture in the system that will be displayed as a value higher than 20 mg/m³ with a yellow or red LED. When the compressor air starts to flow through the system, the remaining moisture will be flushed out of the system and the moisture level will reduce.

Errors

If and error is shown in the display, the unit can be re-set by pressing and then releasing the Reset button. The system will restart and carry out a self test. Pressing Reset at any time will return the unit to the normal monitoring mode.

The following errors may appear in the display:

Error 1 Mositure, defective or contaminated sensor

Error 2 Mositure, value outside normal parameters or out of calibration

Error 3 -

Error 4 Default is missing, data loss in memory, cross connection

Error 5 Senasor cable is defective or broken, no monitoring

If this error remains, replace the sensor cable.

Error 10 Voltage for sensor supply <7 volt> 10 volt

Error 11 Voltage for processor supply <4.7 volt>5.3 volt

Error 12 12V DC Supply <10 volt> 14 volt

Error 13 15V AC/DC transformer <13 Volt> 17 Volt

If the error remains on the display after reset, then the unit must be returned to an authorised repair facility.

Sensor calibration

The sensor is subject to a natural aging process with an expected life of approx. 6 years. The sensor should be calibrated every 2 years. This calibration requirement is not necessary if independent air/gas quality assurance measures are taken (at least once a year).

Removal of sensor and display for return

For the regular calibration or if the unit has a defect and must be sent back for repair, the unit can be dismantled as follows:

Sensor cable

Ensure the power supply is isolated and unplug the sensor cable from the sensor housing.

Sensor housing

Ensure that the sensor hosuing is vented and pressure free. The upper part of the sensor housing can be unscrewed from the lower housing using a suitable “C” spanner.

Fit the blanking plug into the lower housing to seal the system and allow continued use (without humidity monitoring).

Display

Remove the two plastic strips from the front of the display, remove the 4 screws and pull the front display half away from the rear halve carefully.

Unplug the two (or three) cables from the PCB.

Return the front half of the display and the upper sensor unit to an authorised repair facility or to a Lenhardt & Wagner facility. It is not necessary to include the cables with the returned unit.

Technical data

Display

Dimensions (L x W x H):	120 x 120 x 60 mm
Installation dimensions:	150 x 120 x 60 mm
Weight	approx. 800 g
Voltage (standard unit)	210 - 250 V AC 6VA
Frequency	40 - 60Hz
Protection class	IP65
Relay	<40V DC/<2A DC

Sensor

Dimensions (L x Ø):	95 x 45 mm
Installation dimensions:	95 x 100 mm
Weight:	approx. 800 g
Maximum pressure:	330bar
Protection class:	IP65
Working temperature	+5 - +50°C

Lenhardt & Wagner GmbH
An der Tuchbleiche 39
D-68623 Lampertheim - Hüttenfeld
Germany

Phone: +49 6256 – 85880 0
Fax: +49 6256 – 85880 14

EMail: info@lw-compressors.com
www.lw-compressors.com

Service, Repair and Maintenance

All repair, service and maintenance work is to be carried out when the compressor is stopped, isolated from the power supply and pressure free.
The unit is to be regularly checked for leaks of air/oil, air leaks can be localised using a leak detector or spray

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

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

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

- ✓ Fuel Driven Units only: Fill up fuel tank to top level to avoid corrosion.

De-conservation, commissioning:
After the compressor has been stored, the following steps are to be taken:

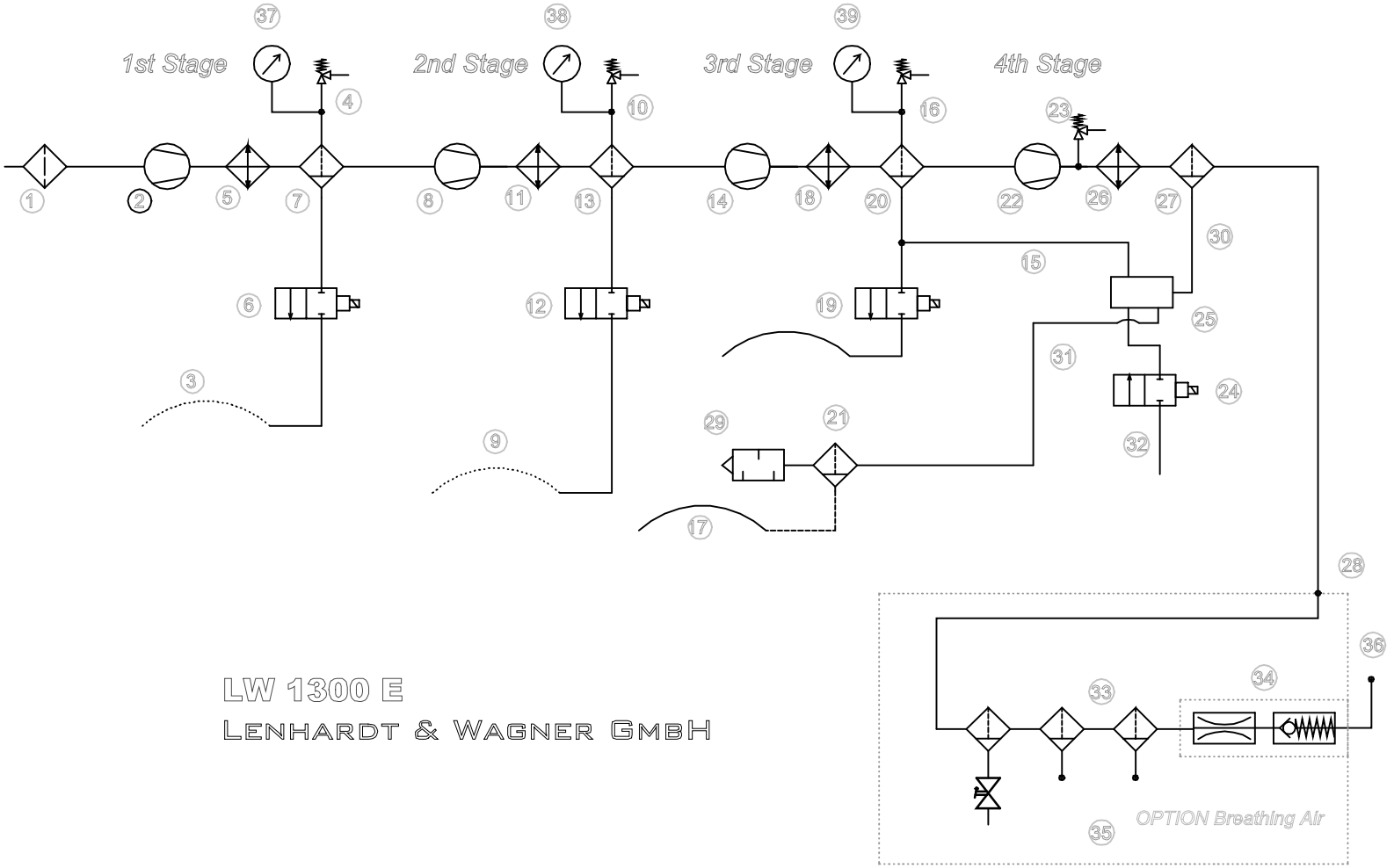
- ✓ If the compressor has been stored for more than 12 Months, we recommend replacing the oil before use.
- ✓ Replace the final purification filter.
- ✓ Check oil level.
- ✓ Inspect the condition of the vee belts, replace if necessary
- ✓ Inspect the filling hoses visually for signs of deterioration,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

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

Maintenance List

LW 1300 E

Service	Intervals	Qty.	Order No.	Remark
Oil changes	1st after 25 working hours 2nd after 75 working hours 3rd after 500 working hours thereafter every 1,000 working hours - but at least once a year	4,800 ml	000001 (1 ltr)	
Replace air intake filter	every 1,000 working hours	1	002662	
Replace in- & outlet Valves	every 2,000 working hours	1st stage: 1 2nd stage: 1 3rd stage: 1 4th stage: 1	000936 000259 000551 000552	
Replace sintered filter of condensate valve	after 1,000 working hours - thereafter every 5,000 working hours	1	000188	
Replace sintered filter of water separators	every 2,000 working hours	1 3	000184 000173	
Replace silencers	every 3,000 hours	3	000178	Console / Control Pressure 3rd Stage / 4th Stage
Set Piston Rings ***(final stage)***	every 8,000 hours	1	001530	
Grease universal joint	every 500 hours			*Recommended specification:* OKS 470 (-30°C / +120°C)
Clean oil pump sieve	every 1,000 working hours			
Clean air radiators	every 1,000 working hours			
Check pipes for air leaks	every 200 working hours			



LW 1300 E

LENHARDT & WAGNER GMBH

FLOW DIAGRAM

1 Intake Filter
2 1st Compression Stage
3 Condensate Hose 1st Stage
4 Safety Valve 1st Stage
5 Heat Exchanger
6 Solenoid 1st Stage
7 Oil-/Waterseparator
8 2nd Compression Stage
9 Condensate Hose 2nd Stage
10 Safety Valve 2nd Stage
11 Heat Exchanger
12 Solenoid 2nd Stage
13 Oil-/Waterseparator
14 3rd Compression Stage
15 Condensate Hose 3rd Stage
16 Safety Valve 3rd Stage
17 Condensate Hose 4th Stage
18 Heat Exchanger
19 Solenoid 3rd Stage
20 Oil-/Waterseparator
21 Condensate Separator
22 4th Compression Stage
23 Safety Valve 4th Stage
24 Solenoid NC
25 Pneumatic Condensate Valve
26 Heat Exchanger
27 Oil-/Waterseparator 4th Stage
28 High Pressure Outlet
29 Silencer
30 Condensate Drain Hose 4th Stage
31 Condensate Drain Pipe 3rd Stage
32 Pressure Drain 3rd Stage
33 Filterhousing 3 x 2.3 Litre
34 Pressure Maintaining / Non-return Valve
35 Condensate Drain Valve
36 High Pressure Outlet G1/4"
37 Pressure Gauge 1st Stage
38 Pressure Gauge 2nd Stage
39 Pressure Gauge 3rd Stage

Benennung	Description	Bestell Nr. / Order No.
Halteteller Wasserabscheider	Water separator - Mounting plate	000172
Wasserabweiser - Sinterfilter	Water separator - Sintered filter	000173
Drallscheibe, Wasserabscheider	Water separator - Twist disc	000174
Deckel Wasserabscheider	Cover, water separator	000175
Stiftschraube, Wasserabscheider	Water separator - Threaded rod	000176
Wasserabweiser, Wasserabscheider	Water separator - Deflector	000177
Öl/Wasserabscheider PN15 bar	Oil/water separator PN 15 bar	000181
Wasserabweiser	Water deflector	000183
Sinterfilter	Sintered filter	000184
Halteteller	Plate	000185
Drall Scheibe	Twist disc	000186
Stiftschraube	Threaded rod, water sparator	000187
Ölpumpenhalterflansch	Oil pump mounting flange	000200
Ölpumpe	Oil pump	000204
Ölpumpenantriebsflansch	Oil pump drive flange	000208
Sicherheitsventil G3/8" 8 bar	Safety valve, G3/8", 8 bar	000220
Sicherheitsventil G3/8" 25 bar	Safety valve, G3/8", 25 bar	000223
Halteklotz, Alu 40 x 40 x 40mm, 1 x G3/8" oben, 2 x G1/4" seitlich	Mounting block, alu, 40 x 40 x 40mm, 1 x G3/8" & 2 x G1/4" side	000231
Obere Ventildichtung 2. Stufe	Upper Valve gasket 2nd Stage	000257
Untere Ventildichtung 2. Stufe	Lower Valve gasket 2nd Stage	000258
Ventil 2. Stufe komplett	Valve 2nd Stage complete	000259
Wasserabscheider - Oberteil	Water Separator - Top	000379
Sicherheitsventil G3/8" 70 bar	Safety valve, G3/8", 70 bar	000381
Düse Filtergehäuse	Jet Filter Housing	000384
O-Ring	O-Ring	000391
Ölablassschlauchventil mit Kappe	Oil drain hose valve incl. Cap	000431
Unterlegscheibe	Washer	000498
USIT Ring	Seal	000508
Schraube	Bolt	000509
Ventil 4. Stufe komplett	Valve 4th Stage complete	000525
Ventil 3. Stufe komplett	Valve 3rd Stage complete	000526
Alu Dichtung, Ventil 4. Stufe	Alu Seal, Valve 4th Stage	000531
Alu Dichtung, Ventil 3. Stufe	Alu Seal, Valve 3rd Stage	000532
Wasserabscheider - Ring	Water Separator - Ring	000562
Wasserabscheider - Behälter	Water Separator - Body	000564
Kugelhahnventil 2 x G1/4" IG, PN 500 bar	Ball Valve, 2 x G1/4" female PN 500 bar	000592
Magnetventil, 2 x 1/4", 40bar, 230 V, NC	Magnetic valve, 2 x G1/4" NC, 230 V 40 bar	000615

Benennung	Description	Bestell Nr. / Order No.
Magnetventil, 2 x G1/4", 1,2 mm, NC, 230 V 120 bar	Solenoid, 2 x G1/4", 1.2mm NC 230 V 120 bar	000618
Manometer, 0-10Bar , Ø 63mm, G1/4" Radial, Glyzeringef. ,KL 1,6	Pressure Gauge, 0-10Bar Ø 63mm, G1/4" Radial, KL 1.6	000645
Manometer, 0-25 Bar, Ø63mm, G1/4" Radial, Glyzeringef.	Pressure Gauge, 0-25Bar Ø 63mm, G1/4" Radial	000646
Manometer, 0-100bar, Ø 63mm, G 1/4" Radial, Kl 1,6 Glyzeringef., Edelstahlgehäuse,	Pressure Gauge, 0-100bar Ø 63mm, G 1/4" Radial, Kl 1.6	000649
Manometer, 0-400bar, Ø 63mm, G 1/4" Radial, KL 1,6	Pressure Gauge 0-400bar, Ø 63mm G 1/4" Radial, KL 1.6	000652
Verschraubung	Connection	000710
Verschraubung	Connection	000712
Verschraubung	Connection	000716
Verschraubung	Connection	000722
Verschraubung	Connection	000738
Verschraubung	Connection	000743
Verschraubung	Connection	000761
Schneidring, PSR 08 LX	Olive Seal, PSR 08 LX	000765
Mutter, M 08 L A3C	Ermeto Nut 08 L A3C	000766
Verschraubung	Connection	000773
Dichtring für Manometerverschraubung	Seal Ring for Pressure Gauge Connection	000777
Verschraubung	Connection	000783
Verschraubung	Connection	000788
Verschraubung	Connection	000796
Verschraubung	Connection	000799
Mutter, M 10L A3C	Ermeto Nut, M 10L A3C	000801
Schneidring, PSR 10LX	Olive Seal PSR 10LX,	000802
Verschraubung	Connection	000807
Mutter Nut M12L	Ermeto Nut M12L	000813
Schneidring, PSR 12LX	Olive Seal, PSR 12LX	000814
Verschraubung	Connection	000816
Verschraubung	Connection	000818
Verschraubung	Connection	000820
Mutter, M 15L A3C	Ermeto Nut, M 15L A3C	000822
Verschlussstopfen VSTI R1/8" ED A3C	Plug VSTI R1/8" ED	000837
Verschlussstopfen VSTI R1/4" ED A3C	Plug VSTI R1/4" ED	000838
Reduzierung, RED 10S/10L A3C	Reducer 10S to 10L	000856
Schneidring, PSR18LX	Olive seal, PSR18LX,	000861

Benennung	Description	Bestell Nr. / Order No.
Mutter, M18LA3C	Ermeto Nut, M18LA3C	000862
Verschraubung	Connection	000863
Verschraubung	Connection	000879
Mutter M28L A3C	Ermeto Nut, M28L A3C	000880
Schneidring, PSR 28L X	Olive Seal, PSR 28L X	000881
Verschraubung	Connection	000892
Reduzierung, RI 1" - 1/2" A3C	Reducer 1" to 1/2"	000918
Reduzierung, RI 1/2" - 1/4" A3C	Reducer 1/2“ to 1/4“	000921
Ventil 1. Stufe komplett	Valve 1st Stage komplete	000936
Gewindestift	Worm Screw	000959
Schraube	Bolt	000967
Schraube	Bolt	000975
Schraube	Bolt	000977
Schraube	Bolt	000979
Schraube	Bolt	000997
Schraube	Bolt	001021
Schraube	Bolt	001027
Schraube	Bolt	001029
Schraube	Bolt	001030
Schraube	Bolt	001040
Schraube	Bolt	001041
Schraube	Bolt	001042
Schraube	Bolt	001043
Schraube	Bolt	001048
Schraube	Bolt	001055
Schraube	Bolt	001057
Schraube	Bolt	001088
Schraube	Bolt	001122
Schraube	Bolt	001132
Schraube	Bolt	001134
Schraube	Bolt	001135
Schraube	Bolt	001141
Stoppmutter	Stop Nut	001152
Verschraubung	Connection	001154
Stoppmutter	Stop Nut	001156
Schraube	Bolt	001157
Mutter	Nut	001158
Mutter	Nut	001164
Mutter	Nut	001165
Mutter	Nut	001167

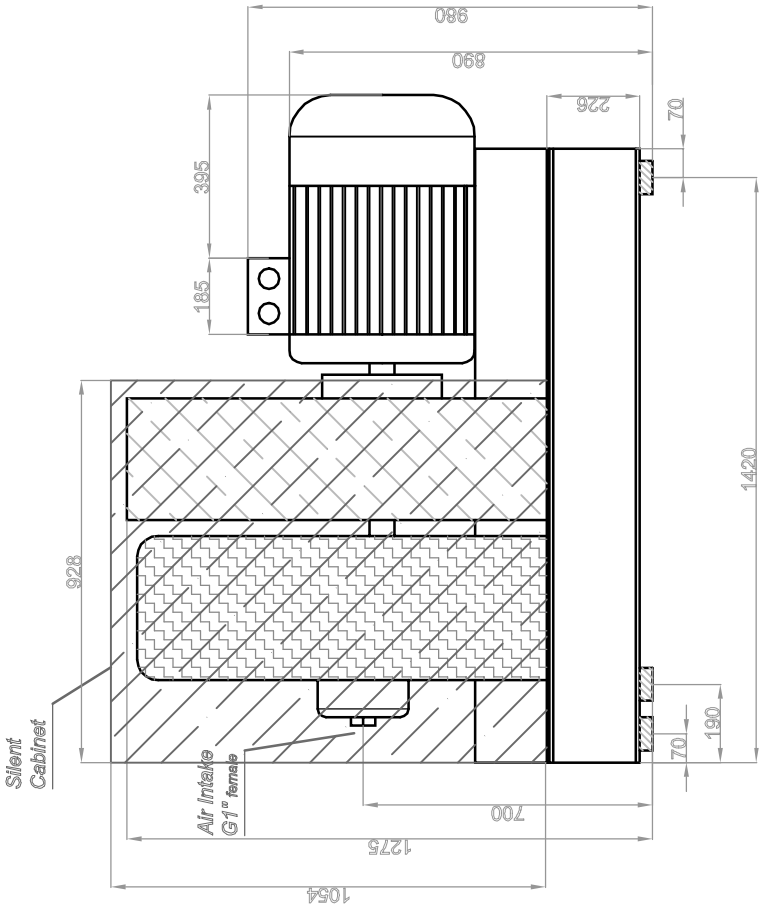
Benennung	Description	Bestell Nr. / Order No.
Mutter	Nut	001170
Unterlegscheibe	Washer	001176
Unterlegscheibe	Washer	001181
Unterlegscheibe	Washer	001186
Unterlegscheibe	Washer	001189
Unterlegscheibe	Washer	001191
Federring, A12 DIN127 ZN	Spring Ring, A12 DIN127 ZN	001192
Unterlegscheibe	Washer	001193
Unterlegscheibe	Washer	001199
O-Ring	O-Ring	001206
Unterlegscheibe	Washer	001215
O-Ring	O-Ring	001260
O-Ring	O-Ring	001272
Stützring	Support ring filter housing	001285
O-Ring	O-Ring	001287
O-Ring	O-Ring	001297
O-Ring	O-Ring	001299
O-Ring	O-Ring	001312
O-Ring	O-Ring	001316
Unterlegscheibe	Washer	001326
Sicherungsring	Circlips	001337
Sicherungsring	Circlips	001356
Sicherungsring	Circlips	001357
Gummi Lager	Rubber Mount	001675
Filterschlüssel 450 (1,7 / 2,3 l Filtergehäuse)	Filter key for 1.7 and 2.3 liters housing	002140
Ölablass - Schlauch	Oil drain hose	002153
Mutter	Nut	002372
O-Ring	O-Ring	002419
Kondensatbehälter für Endstufeabscheider (PN15 bar) G1/8" Ablass	Condensation drain bowl for final stage separator (PN15 bar) G1/8" drain	002466
Wasserabscheider Oberteil PN15	Water separator head PN15	002563
Rohr	Pipe	002600
Rohr	Pipe	002601
Rohr	Pipe	002602
Rohr	Pipe	002603
Rohr	Pipe	002604
Rohr	Pipe	002605
Rohr	Pipe	002606
Rohr	Pipe	002607

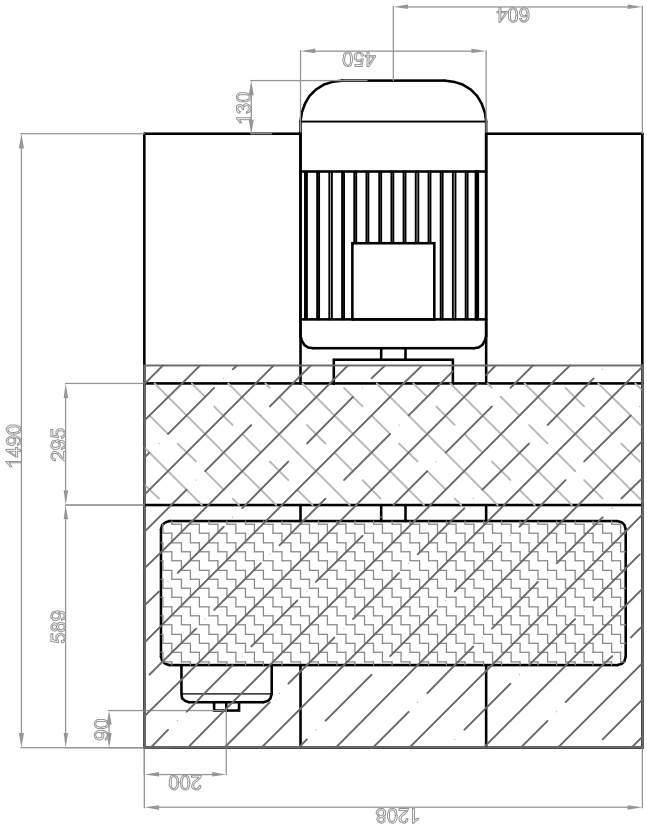
Benennung	Description	Bestell Nr. / Order No.
Rohr	Pipe	002608
Rohr	Pipe	002609
Rohr	Pipe	002610
Rohr	Pipe	002611
Rohr	Pipe	002612
Rohr	Pipe	002613
Rohr	Pipe	002614
Rohr	Pipe	002615
Rohr	Pipe	002616
Rohr	Pipe	002617
Rohr	Pipe	002618
Rohr	Pipe	002619
Rohr	Pipe	002620
Schlauch	Tube	002621
Schlauch	Tube	002622
Schlauch	Tube	002623
Schlauch	Tube	002624
Schlauch	Tube	002625
Schlauch	Tube	002626
Schlauch	Tube	002627
Füllschlauch	Filling Tube	002628
Kühler Stufe 1 - Hauptteil	Radiator 1st Stage	002629
Kühler Stufe 2 - Hauptteil	Radiator 2nd Stage	002630
Kühler Stufe 3 - Hauptteil	Cooler 3rd Stage	002631
Kühler Stufe 3 - Haltebügel	Bracket Cooler 4th Stage	002632
Kühler Stufe 3 - Kühlrohreinheit	Cooling Pipe Unit 3rd Stage	002633
Kühler Stufe 4 - Montageblech	Cooler 4th Stage	002634
Kühler Stufe 4 – Haltewinkel	Bracket	002635
Kühler Stufe 4 – Haltewinkel	Bracket	002636
Lüfterrad – Nabe	Hub	002637
Lüfterrad – Flügel	Fan Blade	002638
Lüfterrad – Stift	Pin	002639
Filter – Sockel	Base	002640
Filter – Gehäuse	Housing	002641
Filter – Kopf	Head	002642
Filter (Erdgas)	Filter (CNG)	002643
Filter – Lochscheibe	Filterdisk	002644
Filter – Filterrohr (Erdgas)	Filterpipe (CNG	002645
Wasserabscheider 1. Stufe Ring	Ring Water Separator 1st Stage	002646
Wasserabsch. 1. Stufe Behälter	Water Separator 1st Stage	002647

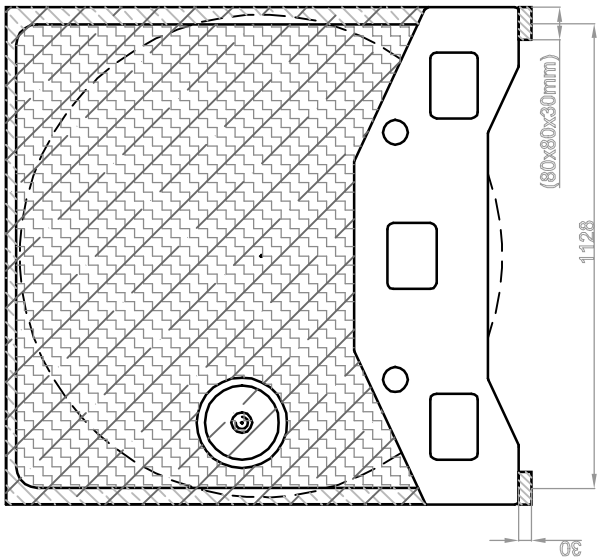
Benennung	Description	Bestell Nr. / Order No.
Wasserabsch. 1. Stufe Drallscheibe	Twist Disk Water Separator 1st Stage	002648
Wasserabsch. 1. Stufe Sinterfilter	Sinter Filter Water Separator 1st Stage	002649
Wasserabsch. 1. Stufe Abweiser	Deflector Water Separator 1st Stage	002650
Wasserabsch. 1. Stufe Halteteller	Water Separator 1st Stage	002651
Wasserabsch. 1. Stufe Oberteil	Top Water Separator 1st Stage	002652
Wasserabsch. 1. Stufe Kappe	Cap Water Separator 1st Stage	002653
Wasserabsch. 2.+ 3. Stufe Kappe	Cap Water Separator 2^{nd} / 3^{rd} Stage	002654
Haltewinkel Kondensatabscheider Typ: 280 Compact	Bracket Oil Separator Type: 280 Compact	002655
Haltewinkel Ölabscheider	Bracket Oil Separator	002656
Sicherheitsventil Sockel	Base Safety Valve	002657
Sicherheitsventil	Safety Valve	002658
Magnetventil Aludichtungsring	Alloy Gasket Solenoid	002659
Kondensat-Ablasseinheit Sockel	Condensate Release Block	002660
Ansaugfilter Gehäuse	Intake Filter Housing	002661
Ansaugfilter Filter	Intake Filter Cartridge	002662
Ansaugfilter Deckel	Cap Intake Filter	002663
Ölablassschlauch Halteklammer	Plastic Holder Oil Drain Hose	002664
Ölpumpe Halteblech	Bracket Oil Pump	002665
Ölpumpe Öldruckschalter	Pressure Switch Oil Pump	001525
Verschraubung	Connection	002667
Kurbelwelle	Crankshaft	002668
Kurbelwelle Gegengewicht	Crankshaft Counterweight	002669
Kurbelw. Gegengewicht Schraube	Bolt	002670
Pleuel Stufe 1	Connecting Rod 1st Stage	002671
Pleuel Stufe 2, 3, 4	Connecting Rod 2nd, 3rd, 4th Stage	002672
Pleuel Nadellager	Needle Bearing Connecting Rod	002673
Kurbelwelle Distanzring	Spacer Crankshaft	002674
Kurbelwelle Sicherungsring	Circlip Crankshaft	002675
Kolben Stufe 1	Piston 1^{st} Stage	002676
Kolbenbolzen Stufe 1	Piston Pin 1st Stage	002677
Kolbenringe Stufe 1	Piston Rings 1st Stage	002678
Kolben Stufe 2	Piston 2nd Stage	002679
Kolbenbolzen Stufe 2	Piston Pin 2nd Stage	002680
Kolbenringe Stufe 2	Piston Rings 2nd Stage	002681
Führungskolben Stufe 3, 4	Guide Piston 3rd / 4th Stage	002682
Führungskolben Bolzen Stufe 3, 4	Guide Piston Pin 3rd / 4th Stage	002683
Verdichtungskolben Stufe 3	Compression Piston 3rd Stage	002684
Verdichtungskolben Stufe 4	Compression Piston 4th Stage	002685

Benennung	Description	Bestell Nr. / Order No.
Kolbenringe Stufe 3	Piston Rings 3rd Stage	002686
Kolbenringe Stufe 4	Piston Rings 4th Stage	002687
Zylinder 1 Fussdichtung	Gasket Cylinder 1st Stage	002688
Zylinder 1	Cylinder 1st Stage	002689
Zylinder 1 Ventil-O-Ring	O-Ring Valve 1st Stage	002690
Obere Dichtung Ventil 1. Stufe	Upper Valve Gasket 1st Stage	002691
Zylinder 1 Kopf	Cylinder Head 1st Stage	002692
Zylinder 2	Cylinder 2nd Stage	002693
Kupferdichtring Ventil 2. Stufe	Lower Gasket Cylinder 2nd Stage	002694
Führungszylinder 3, 4	Guide Cylinder 3rd / 4th Stage	002695
Kompressionszylinder 3	Compression Cylinder 3rd Stage	002696
Zylinder 3 Kopf	Cylinder Head 3rd Stage	002697
Kompressionszylinder 4	Compression Cylinder 4th Stage	002698
Zylinder 4 Kopf	Cylinder Head 4th Stage	002699
Fitting	Fitting	002700
Ölschauglas	Oil Level Indicator	002701
Ölschauglas Dichtung	Gasket Oil Level Indicator	002702
Ölschleuderring	Splash Ring	002703
Sicherungsring	Safety Washer	002704
Zylinderrollenlager	Roller Bearing	002705
Kurbelgehäuse Deckeldichtung	Gasket Crankcase	002706
Sicherungsring	Circlip	002707
Kurbelgehäuse Deckel	Cover Crankcase	002708
Schwungrad	Flywheel	002709
Schwungrad Beilagscheibe	Washer Flywheel	002710
Unterlegscheibe	Washer	002711
Schraube	Bolt	002712
Entlüftungsstutzen	Vent Neck	002713
Radial-Wellendichtring	Shaft Seal	002714
Sicherungsring	Circlip	002715
Stiftschraube	Pin Bolt	002716
Öl-Einfüll-Verschlussschraube	Oil Plug	002717
Kurbelgehäuse	Crankcase	002718
Konsole	Console	002719
Fuss	Foot	002720
Rohrhalter	Pipe Clamp	002721
Rohrhalter	Pipe Clamp	002722
Kardangelenk LW 1300	Drive Joint LW 1300	002723
Kardangelenk Antriebsflansch	Drive Flange	002724
Kardangelenk Schmiernippel	Grease Nippel	002725

Benennung	Description	Bestell Nr. / Order No.
Antriebsflansch Passfeder	Woodruff Key Drive Joint	002726
Rohrhalter	Pipe Clamp	002727
Nietmutter	Rivet	002728



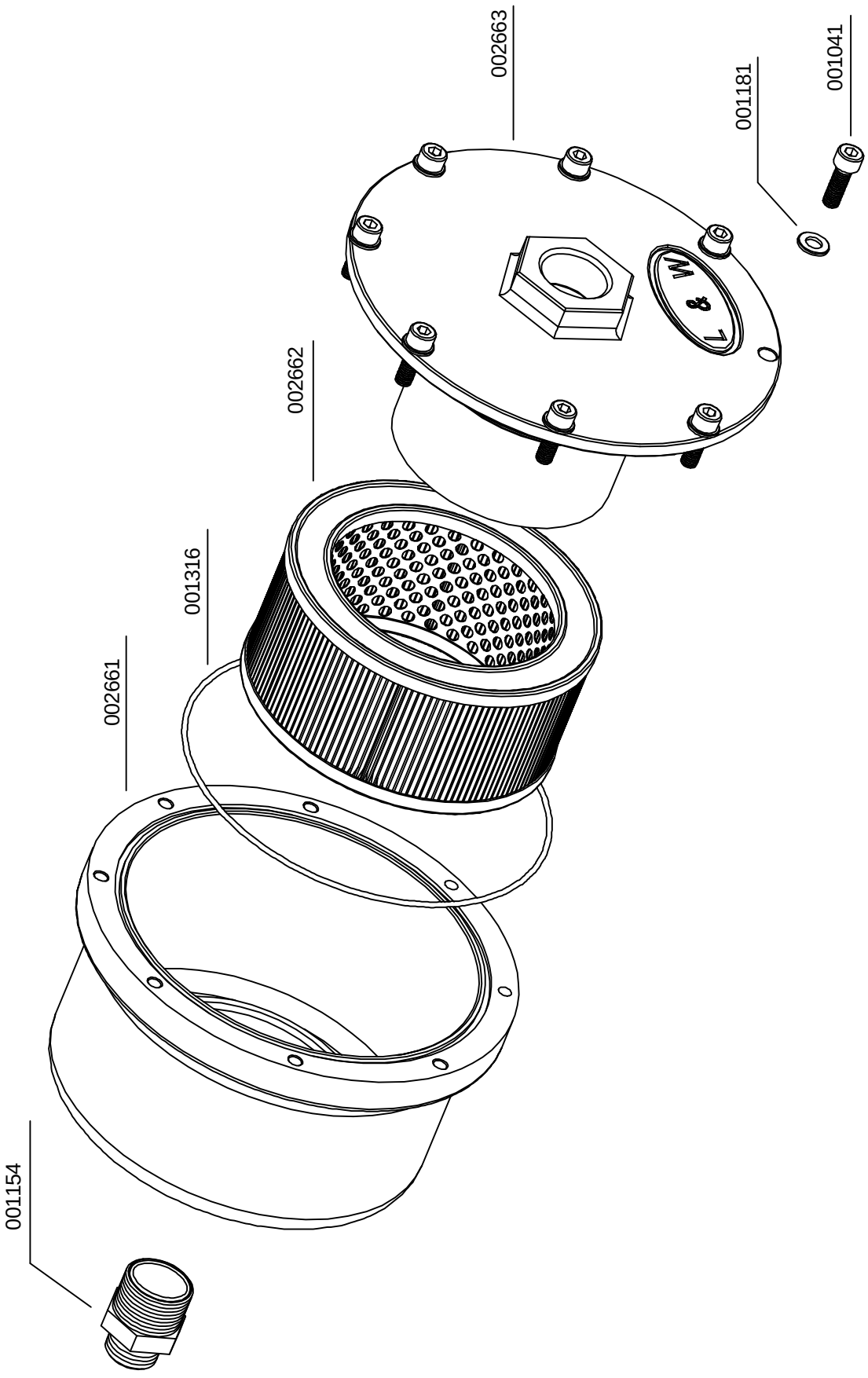




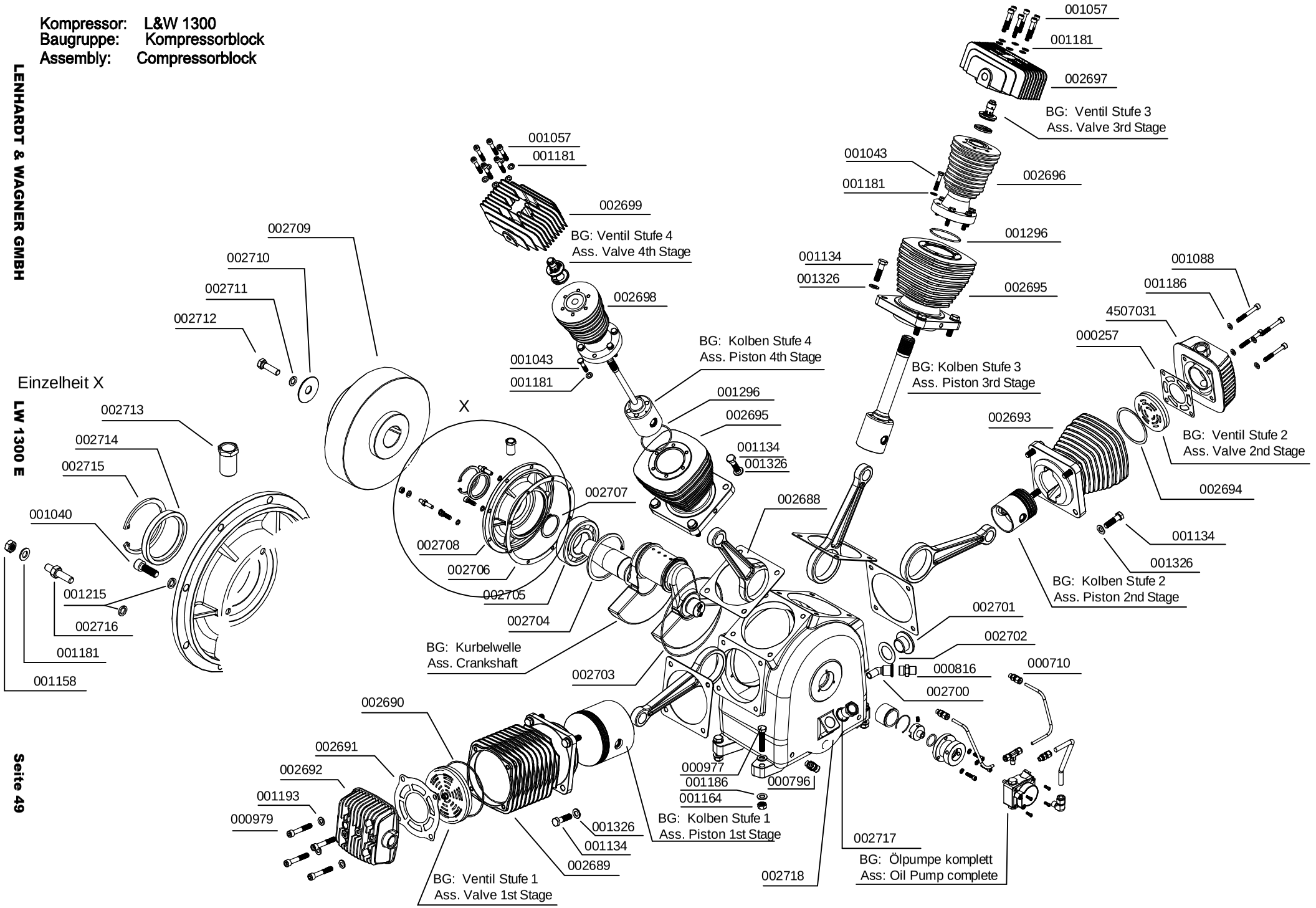
LW 1300 E 30 kW

Kühlluftbedarf /
Cooling Air Requirement:
> 11.100 m³/h

LENHARDT & WAGNER GMBH


002663
001181
001041
002662
001316
002661
001154

Kompressor: L&W 1300
Baugruppe: Kompressorblock
Assembly: Compressorblock

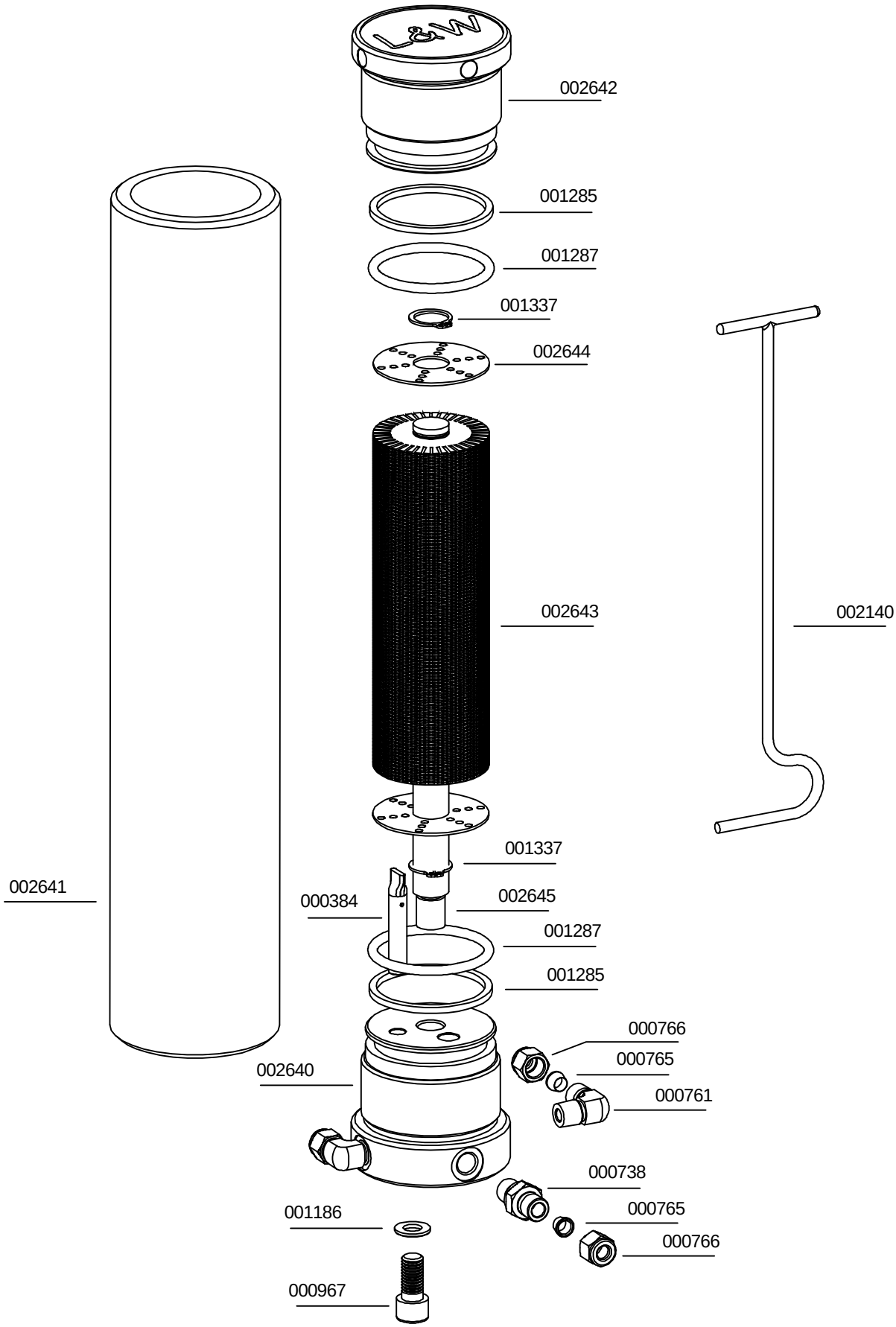


LENHARDT & WAGNER GMBH

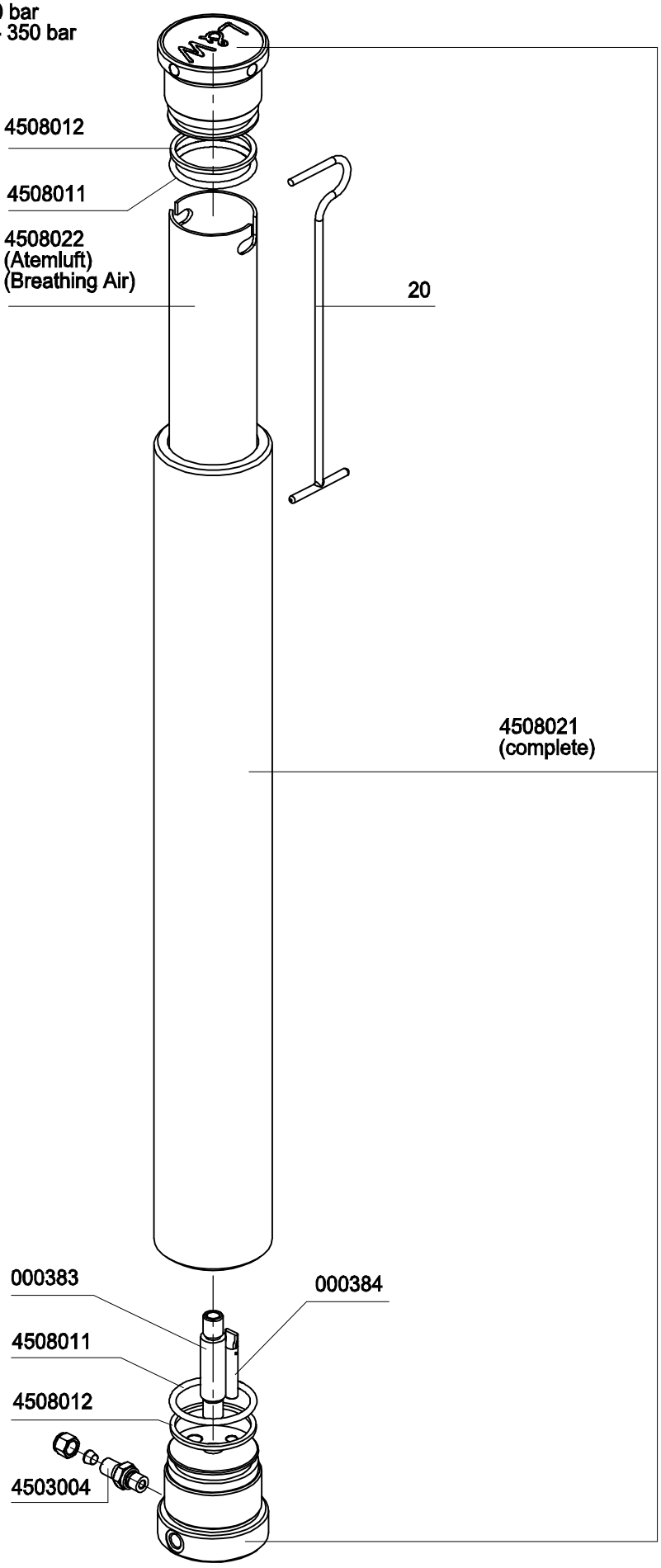
LW 1300 E

Seite 49

Baugruppe: Filtereinheit (Erdgas)
Assembly: Filter Unit (CNG)

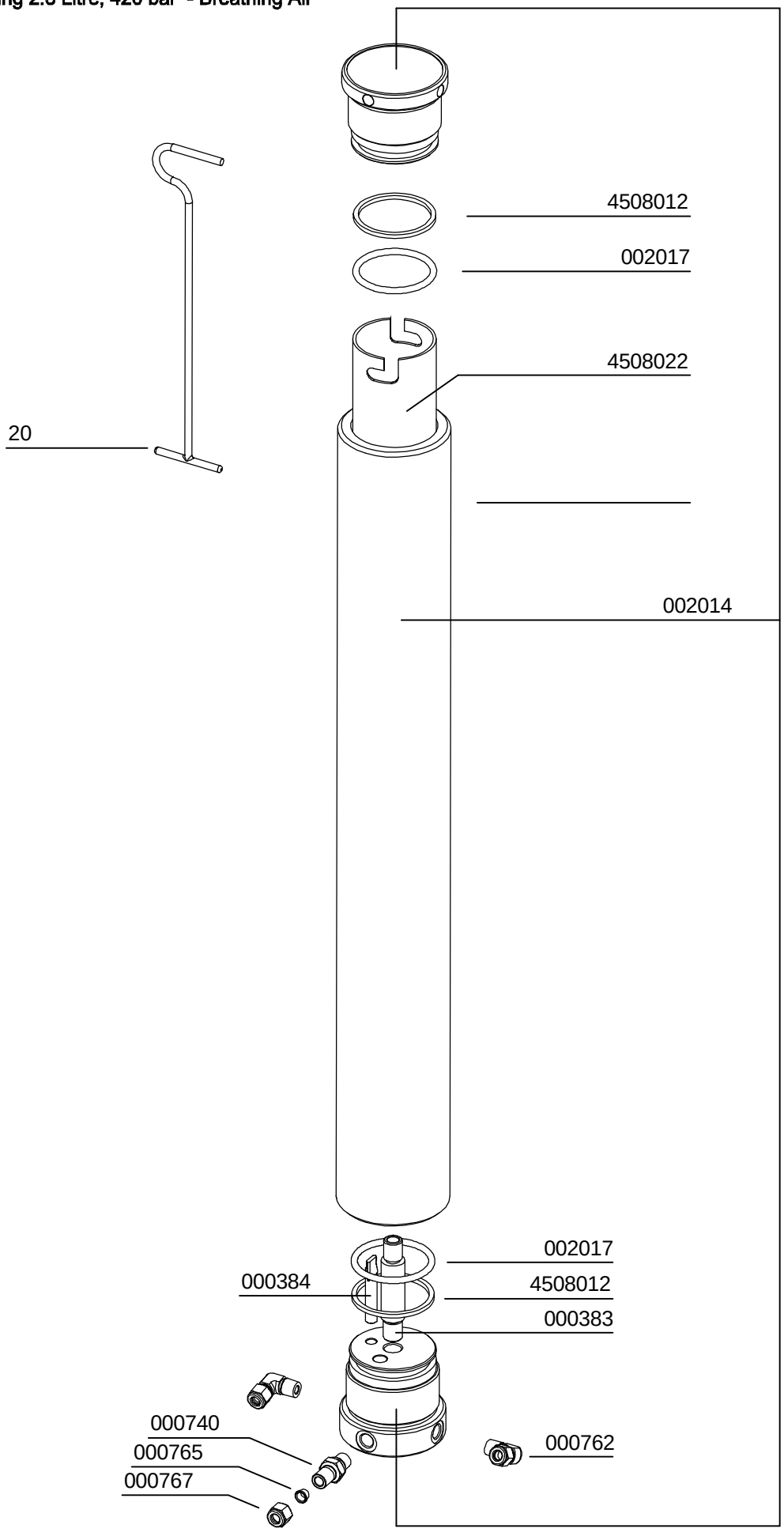


Baugruppe: Filtergehäuse Atemluft - 350 bar
Assembly: Filterhousing Breathing Air - 350 bar



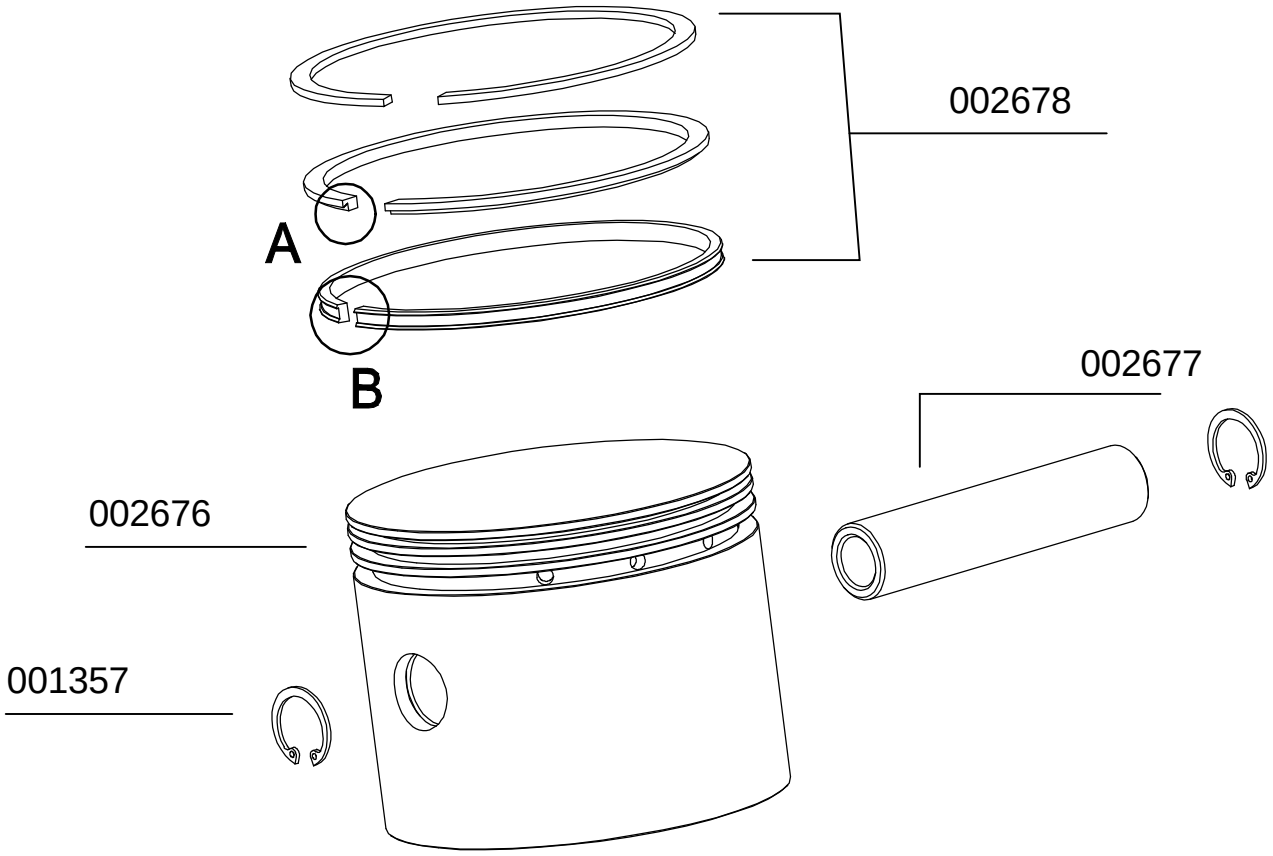
P_{max}: 350 bar

Baugruppe: Filtergehäuse 2,3 Liter, 420 bar - Atemluft
Assembly: Filterhousing 2.3 Litre, 420 bar - Breathing Air

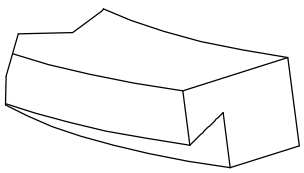


P_{max}: 420 bar

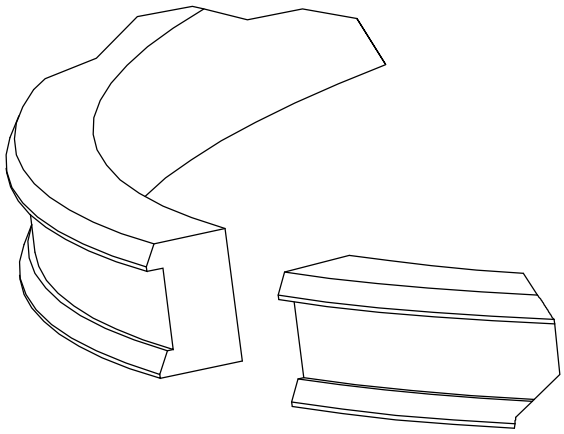
Kompressor: L&W 1300
Baugruppe: Kolben Stufe 1
Assembly: Piston 1st Stage



Detail A

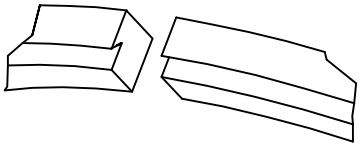


Detail B

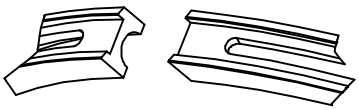


Kompressor: L&W 1300
Baugruppe: Kolben Stufe 2
Assembly: Piston 2nd Stage

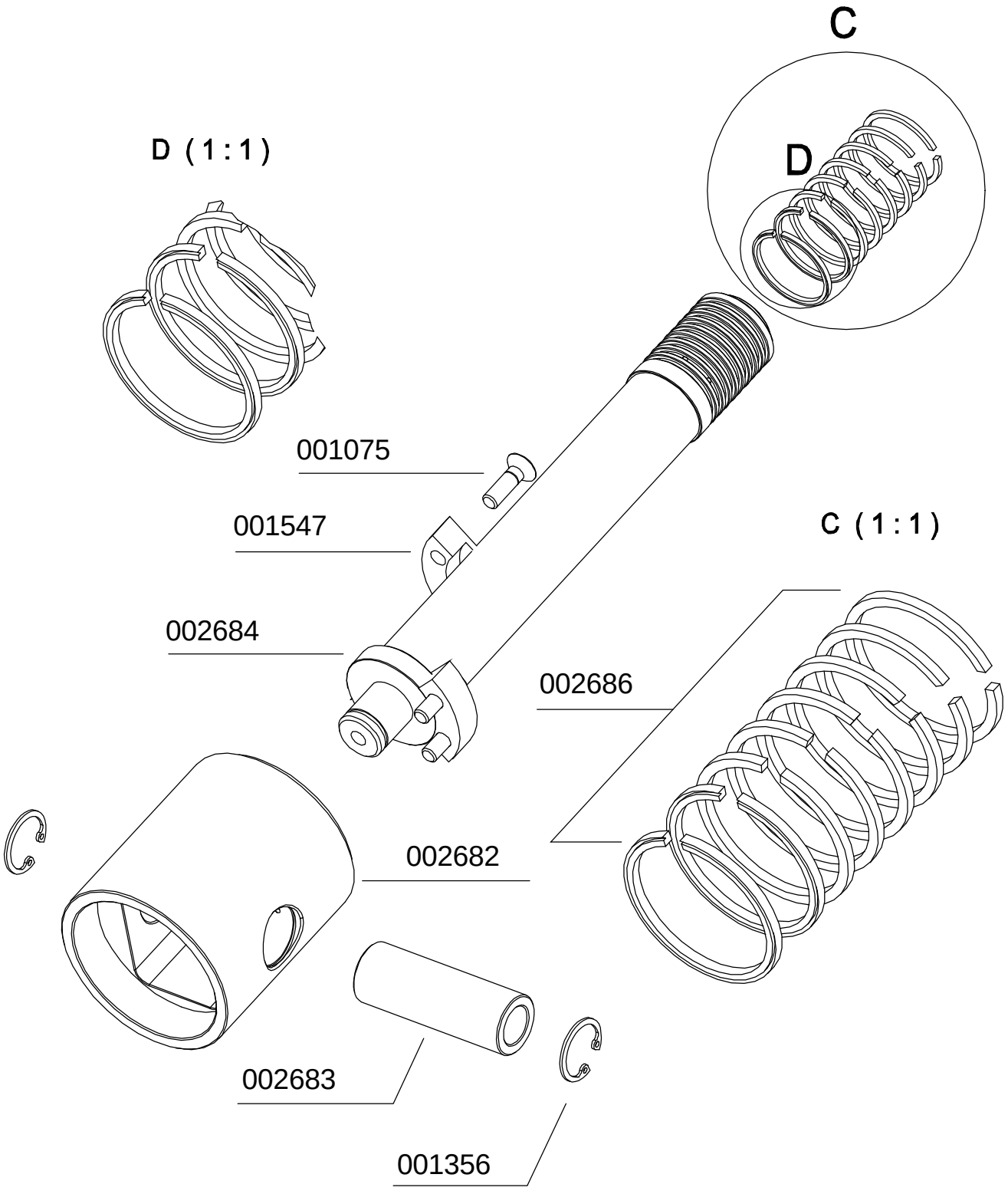
A (2 : 1)



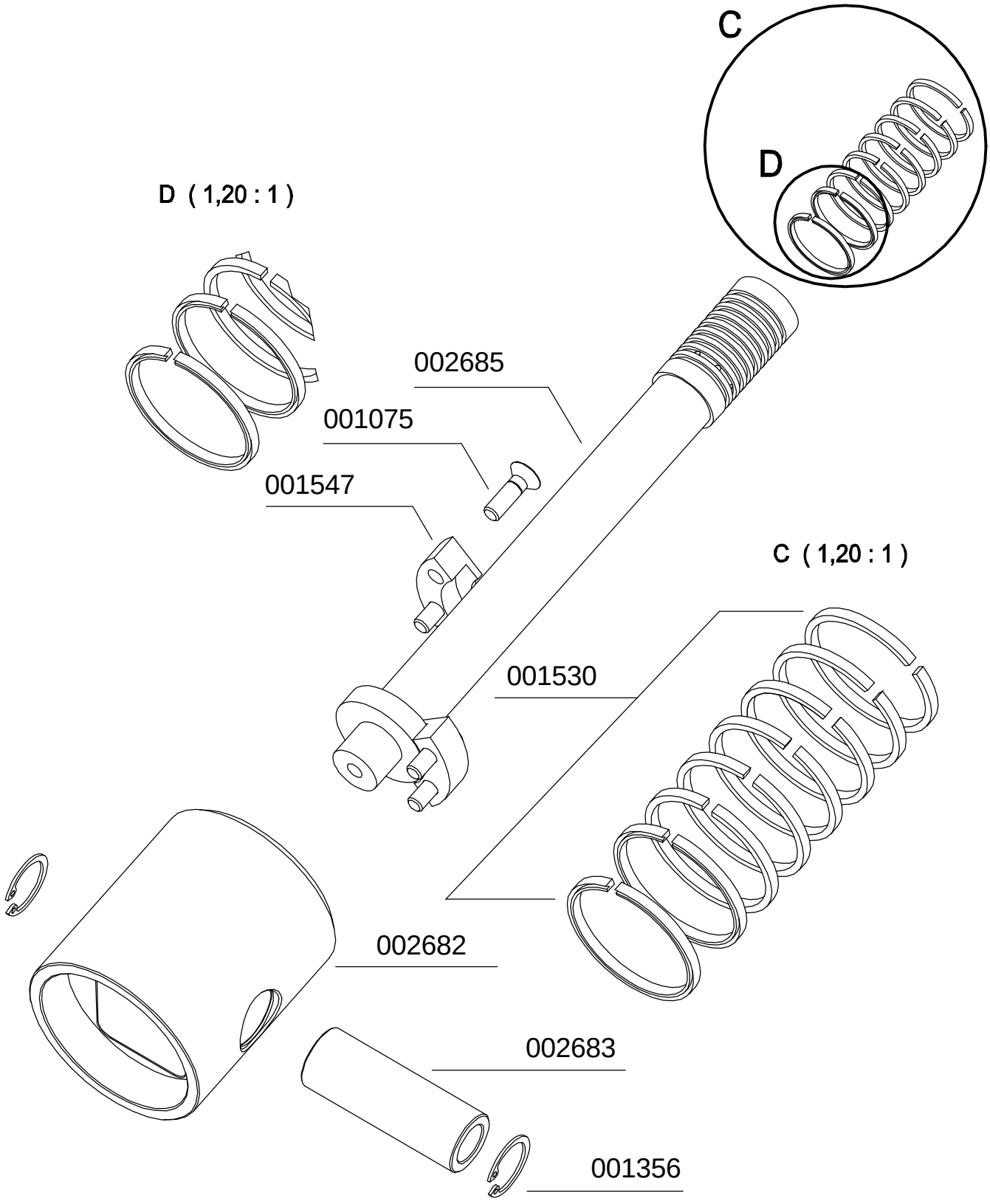
B (2 : 1)



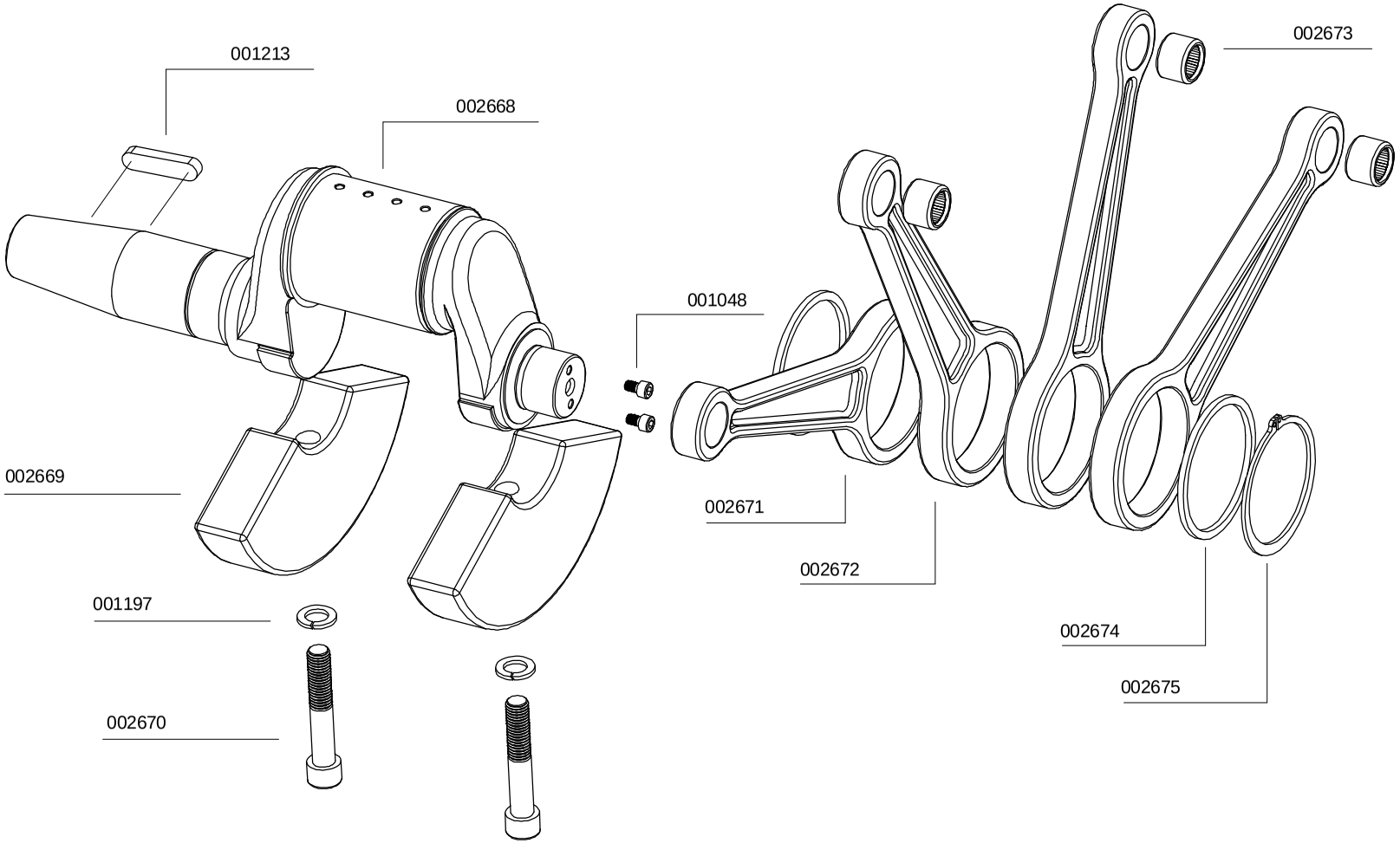
Kompressor: L&W 1300
Baugruppe: Kolben Stufe 3
Assembly: Piston 3rd Stage



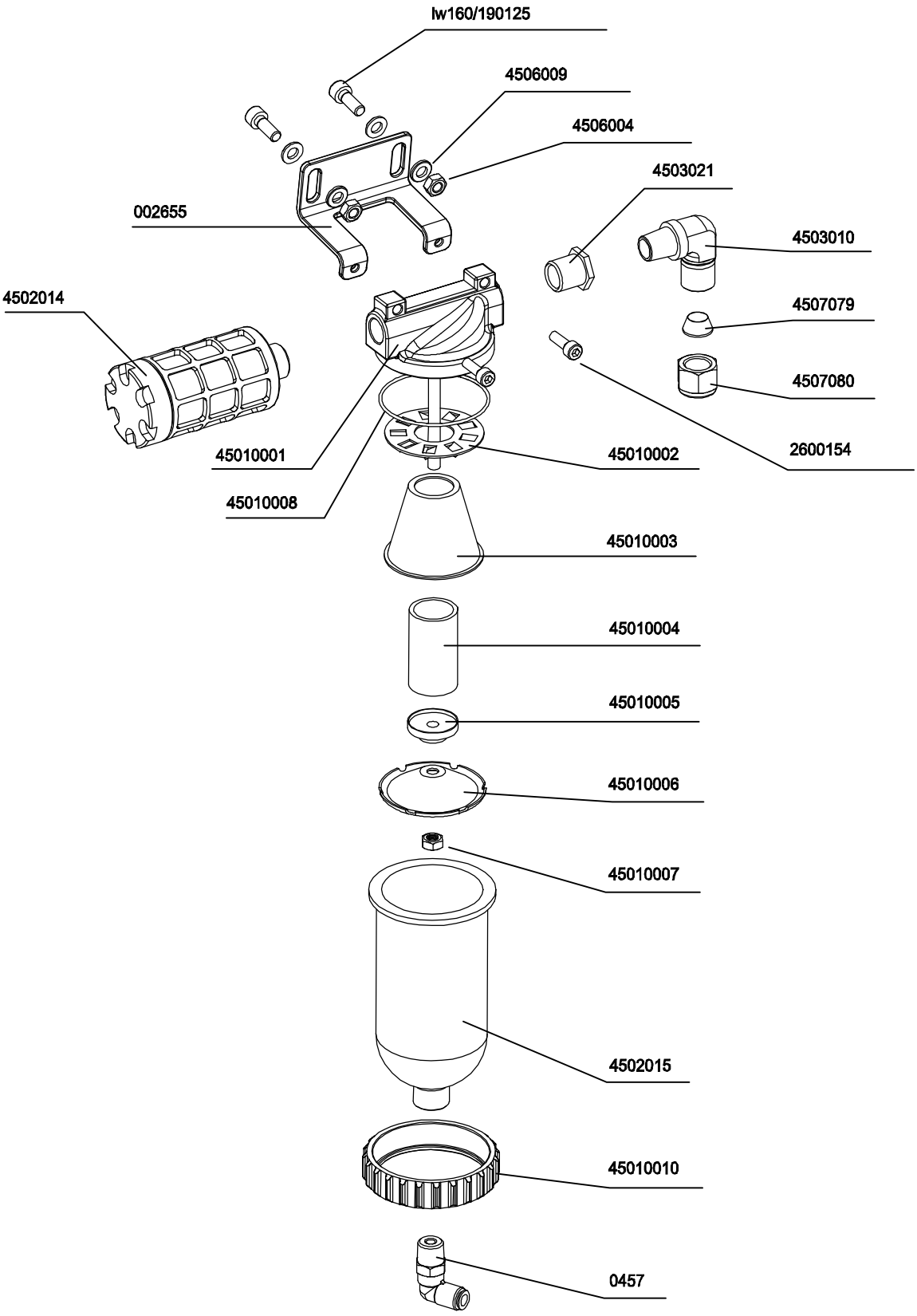
Kompressor: L&W 1300
Baugruppe: Kolben Stufe 4
Assembly: Piston 4th Stage



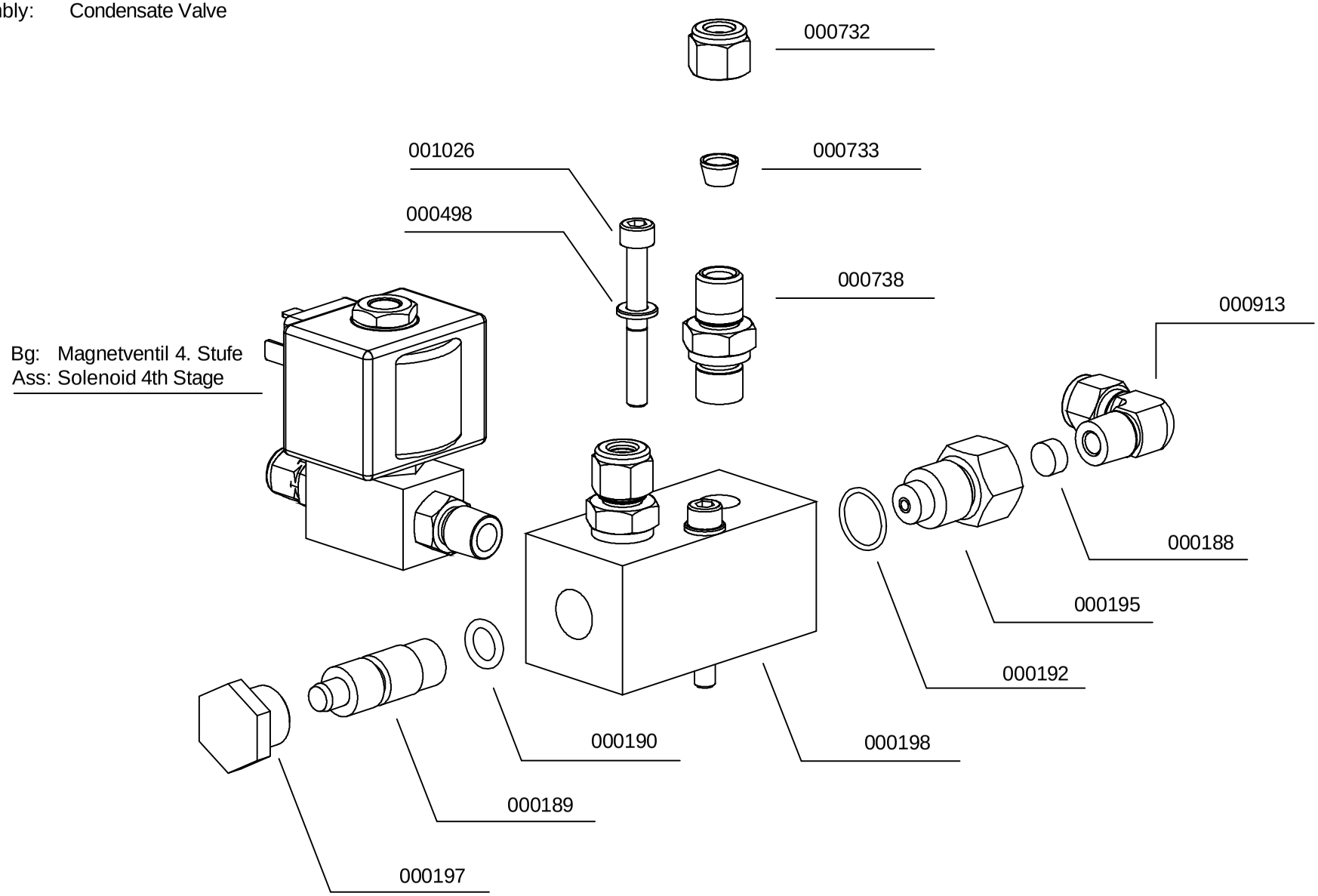
Kompressor: L&W 1300
Baugruppe: Kurbelwelle
Assembly: Crankshaft



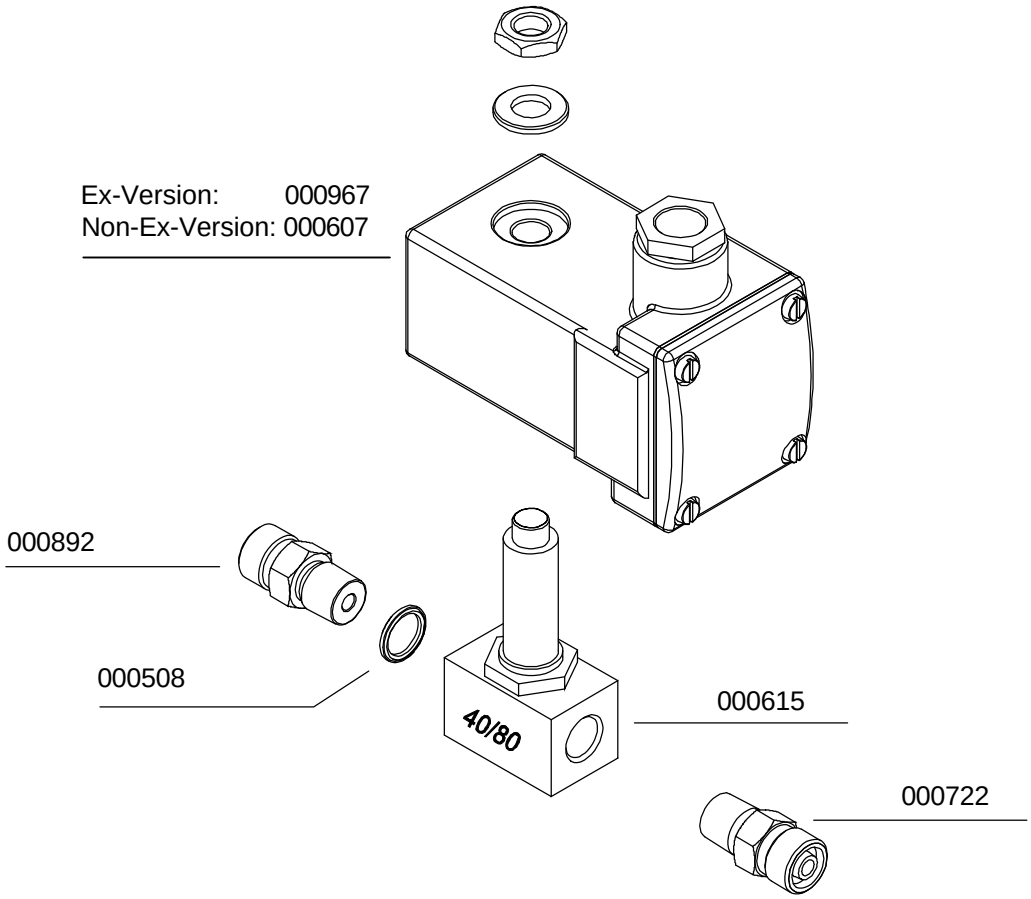
Kompressor: L&W 1300
Baugruppe: Kondensatabscheider (Endstufe)
Assembly: Condensate Separator (Final Stage)



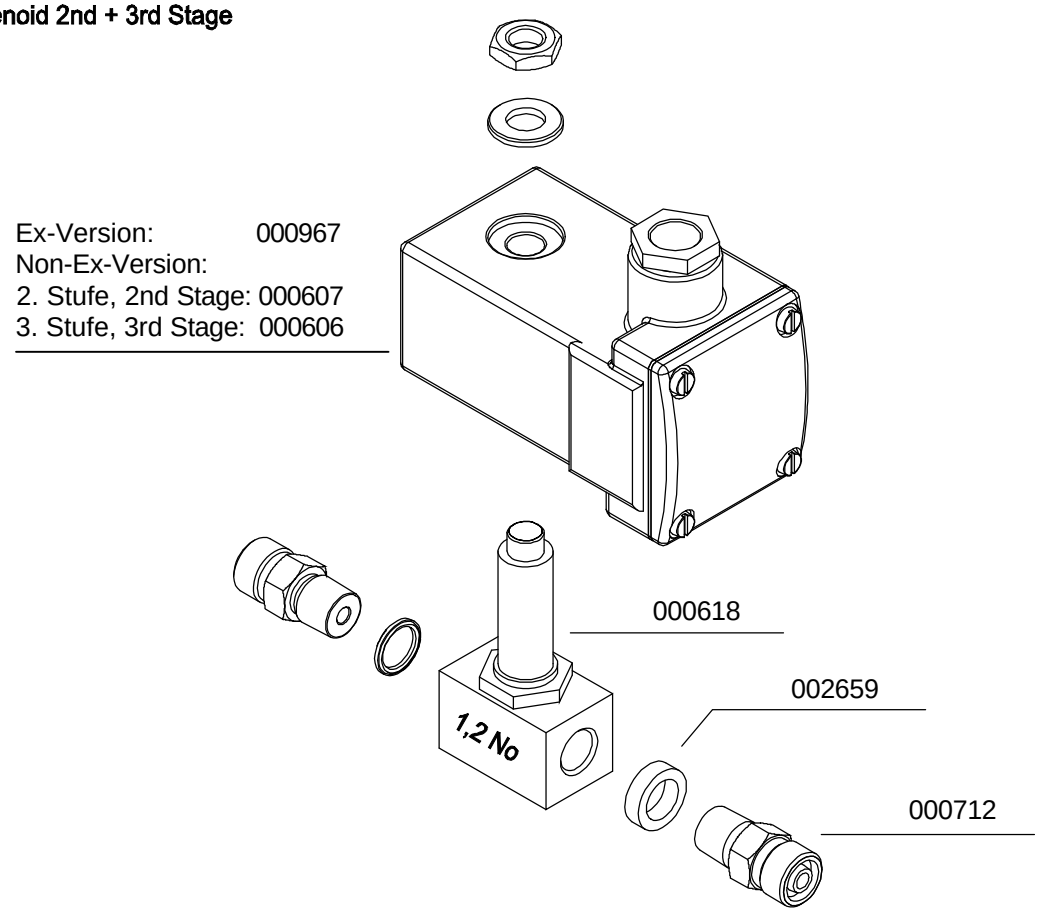
Kompressor: L&W 1300
Baugruppe: Kondensatventil
Assembly: Condensate Valve



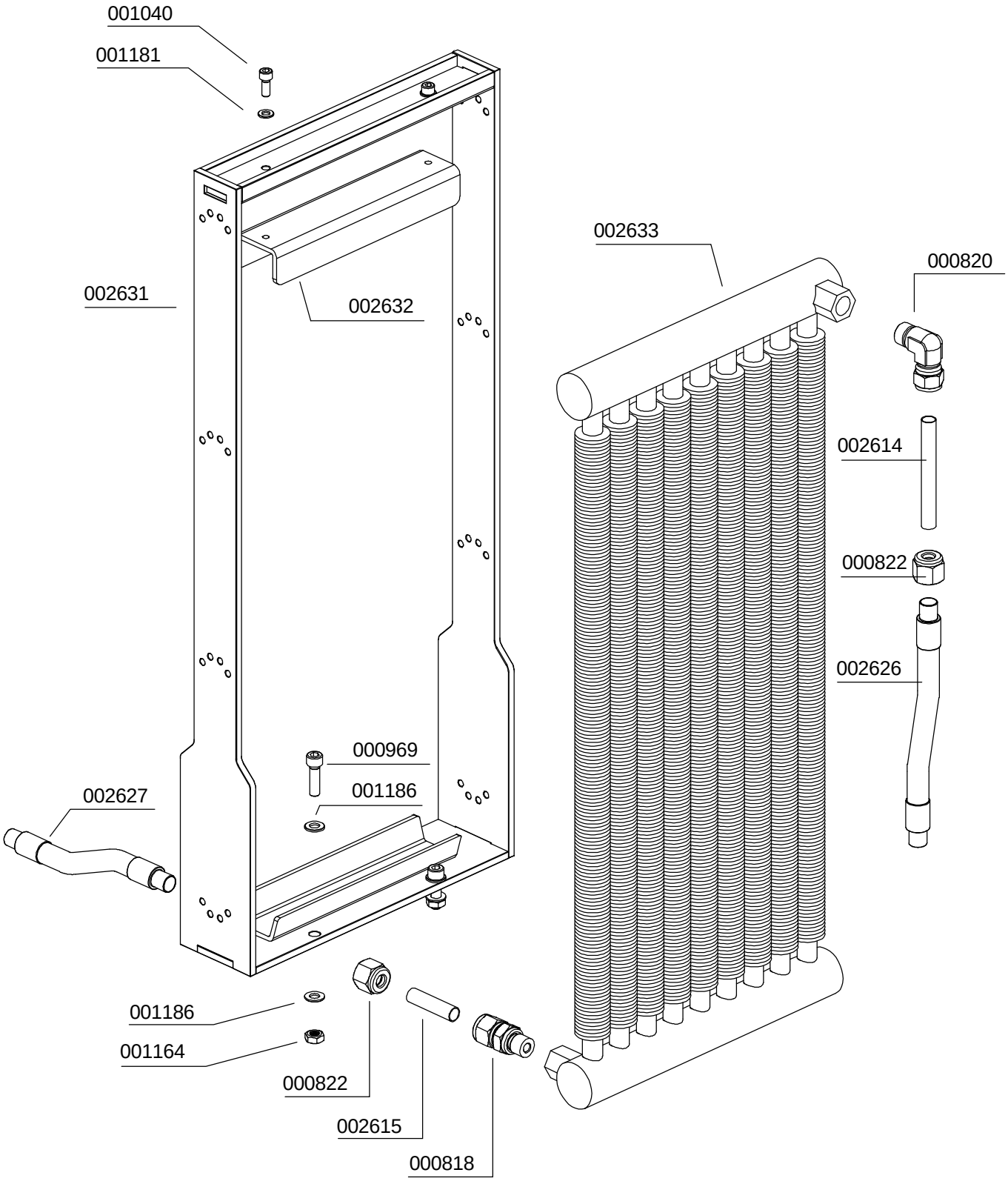
Kompressor: L&W 1300
Baugruppe: Magnetventil 1. Stufe
Assembly: Solenoid 1st Stage



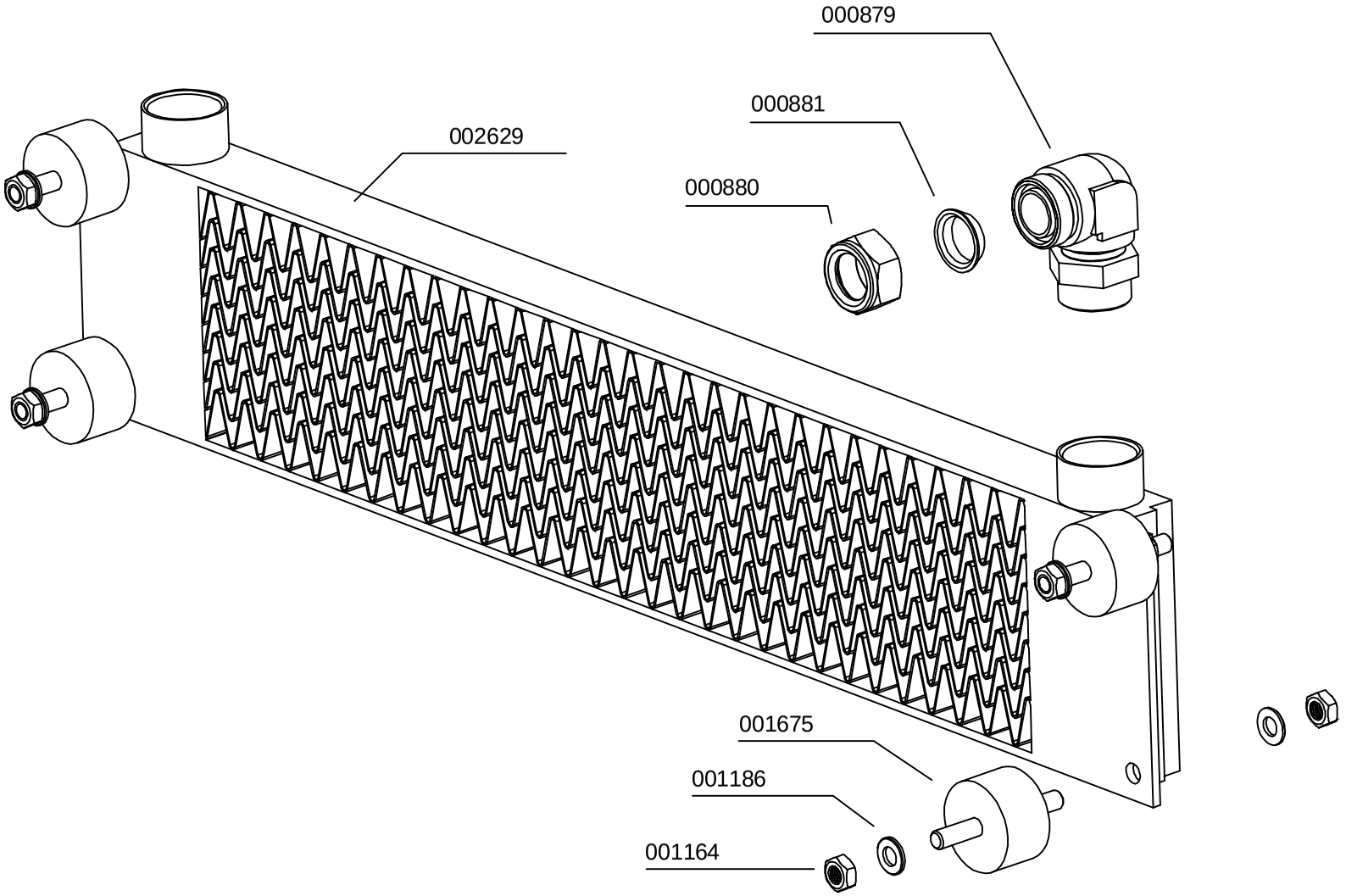
Kompressor: L&W 1300
Baugruppe: Magnetventil 2. + 3. Stufe
Assembly: Solenoid 2nd + 3rd Stage



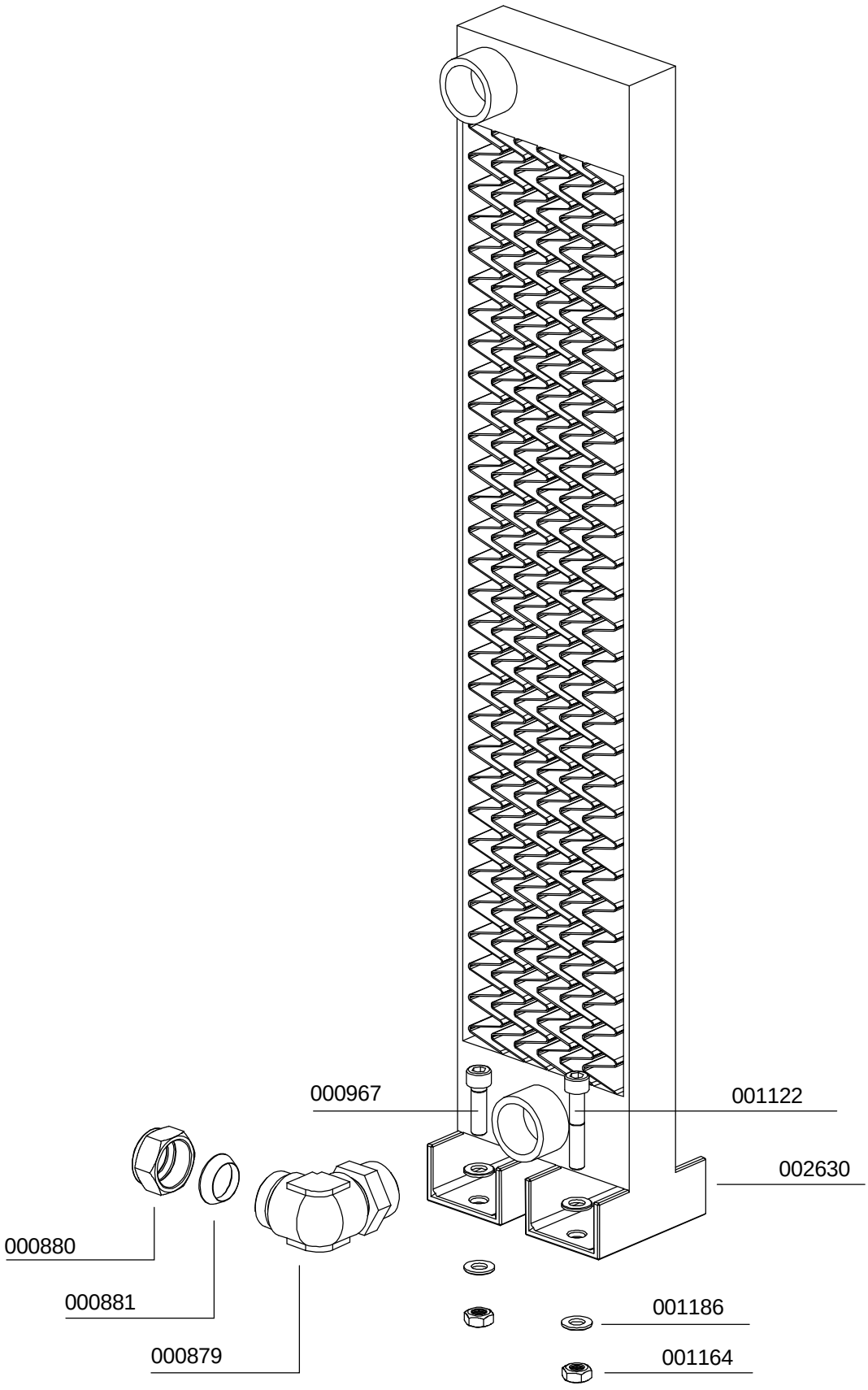
Kompressor: L&W 1300
Baugruppe: Kühler Stufe 3
Assembly: Cooler 3rd Stage



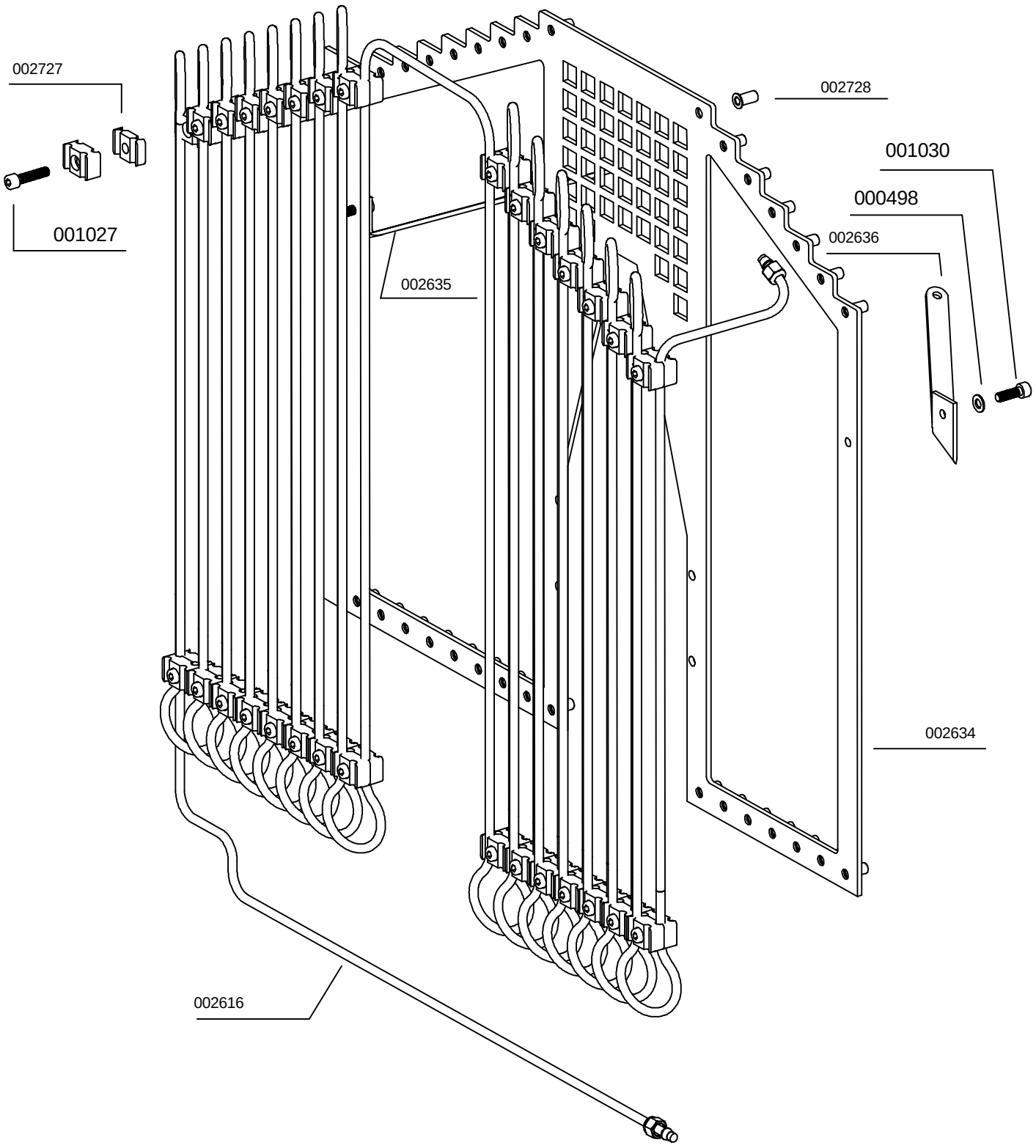
Kompressor: L&W 1300
Baugruppe: Kühler Stufe 1
Assembly: Cooler 1st Stage



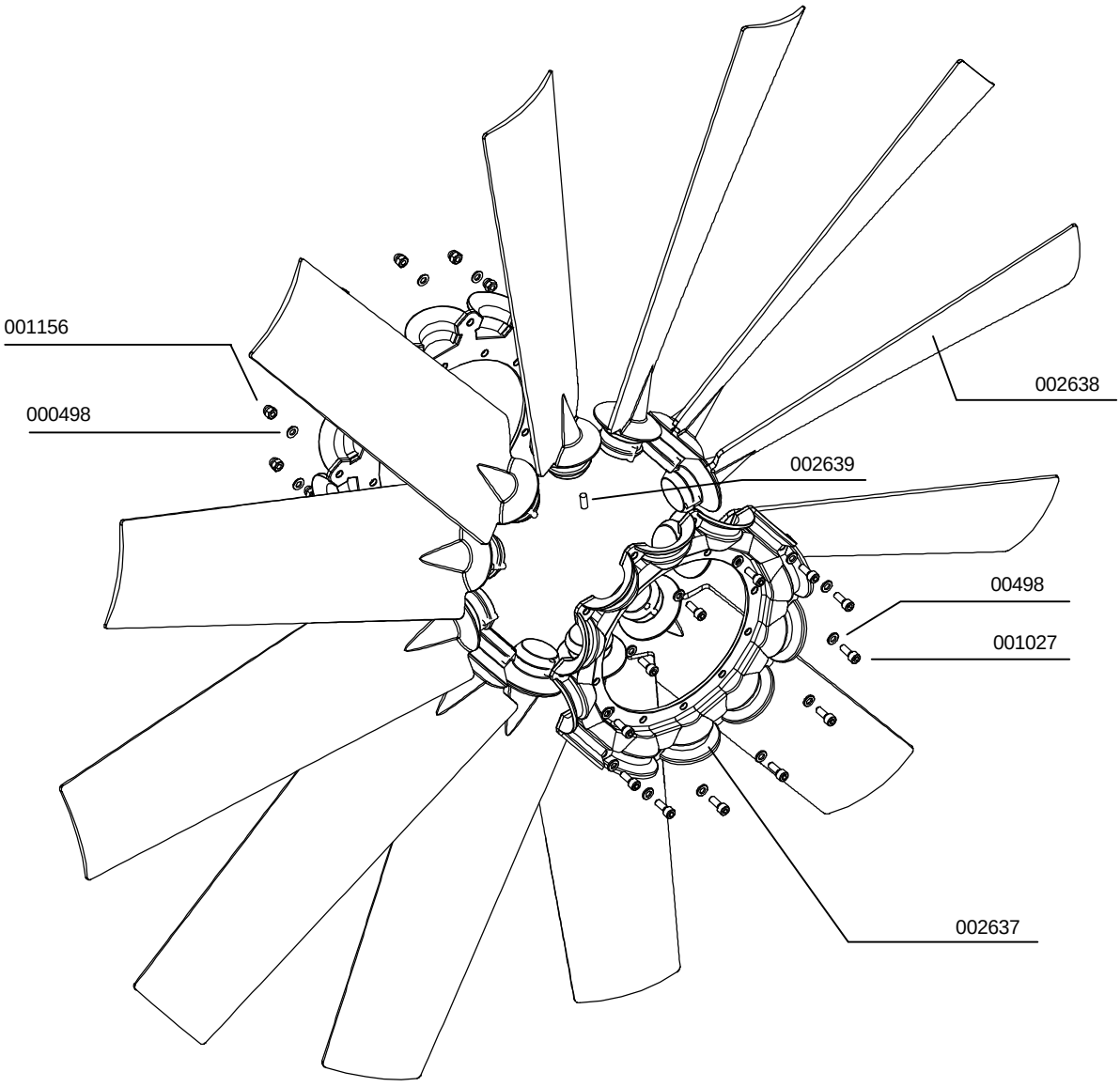
Kompressor: L&W 1300
Baugruppe: Kühler Stufe 2
Assembly: Cooler 2nd Stage



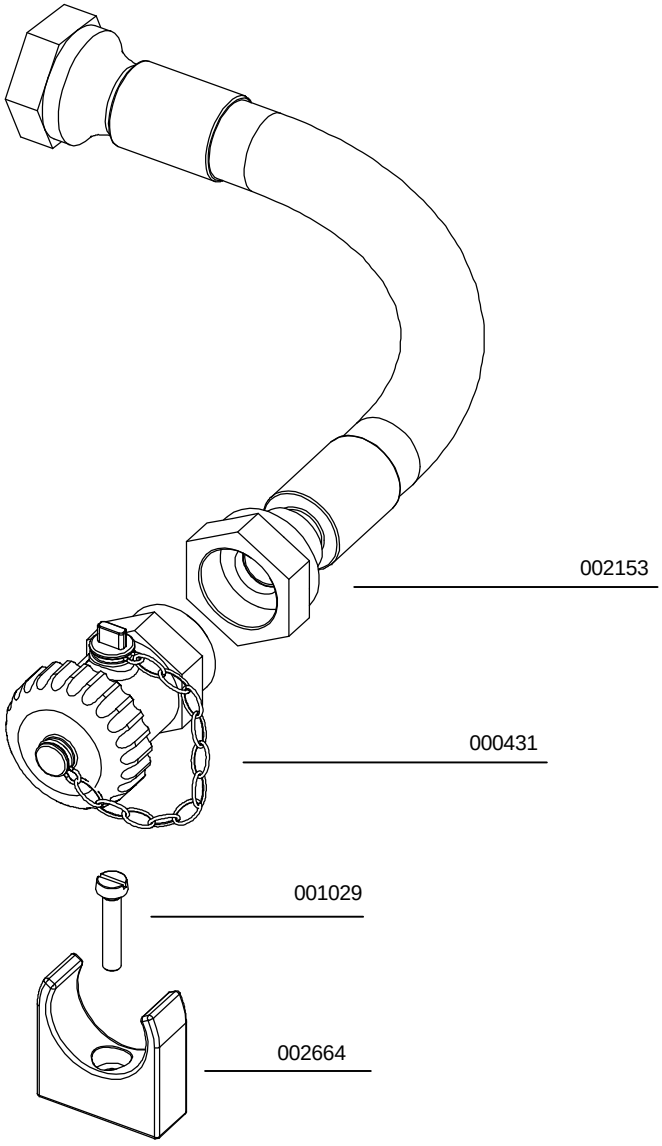
Kompressor: L&W 1300
Baugruppe: Kühler Stufe 4
Assembly: Cooler 4th Stage



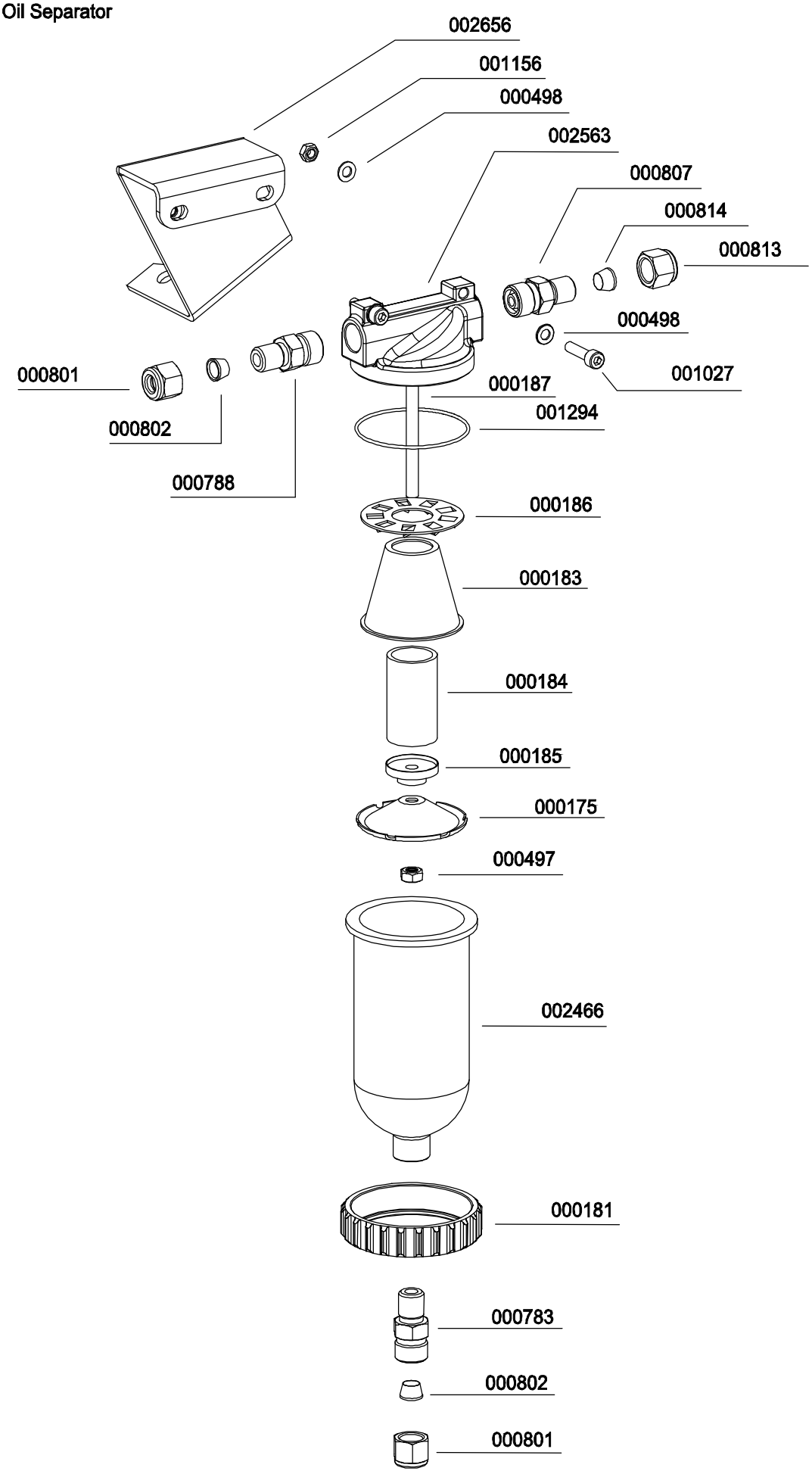
Kompressor: L&W 1300
Baugruppe: Lüfterrad
Assembly: Flywheel



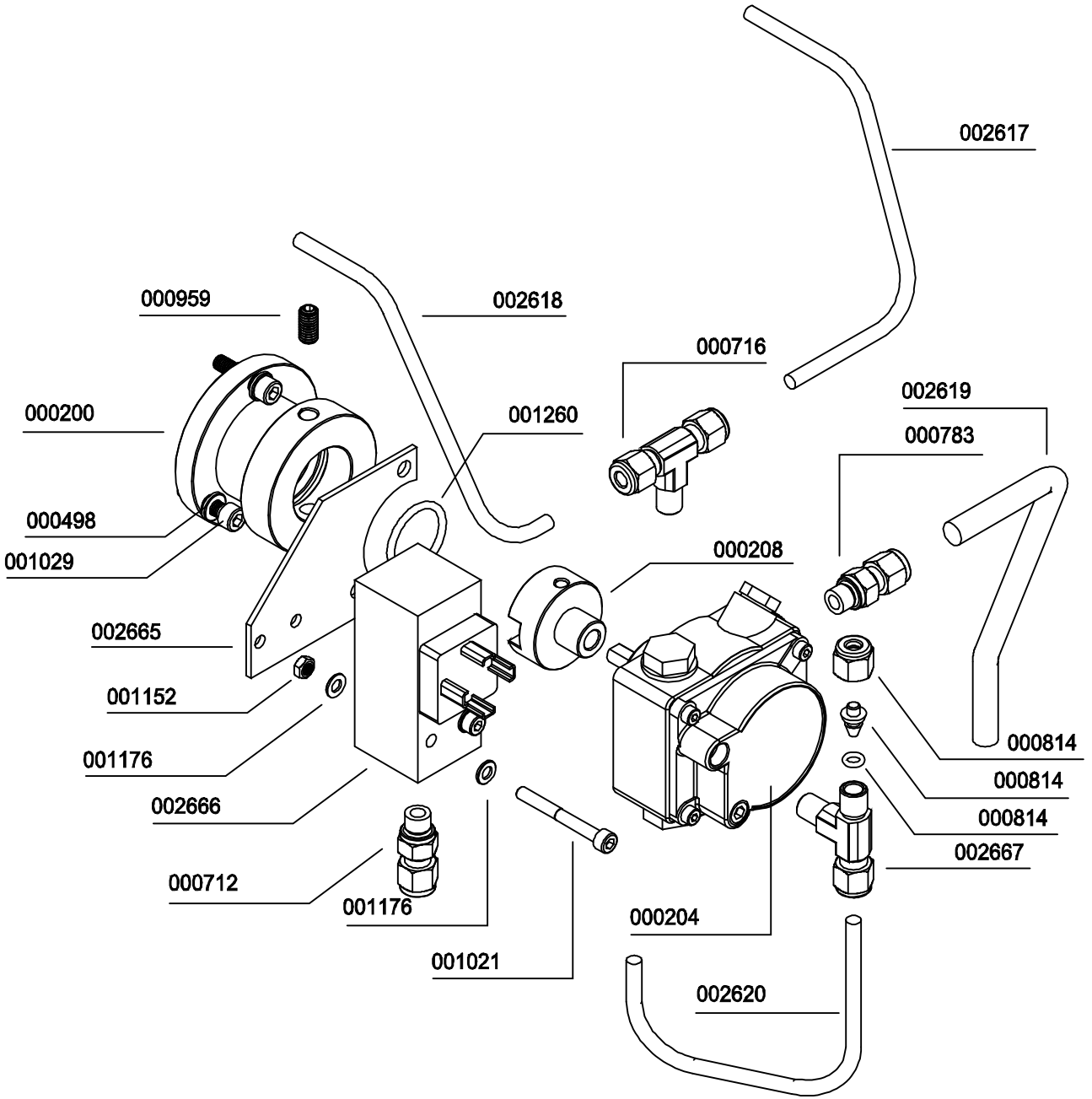
Kompressor: L&W 1300
Baugruppe: Ölablass Schlauch
Assembly: Oil Drain Hose



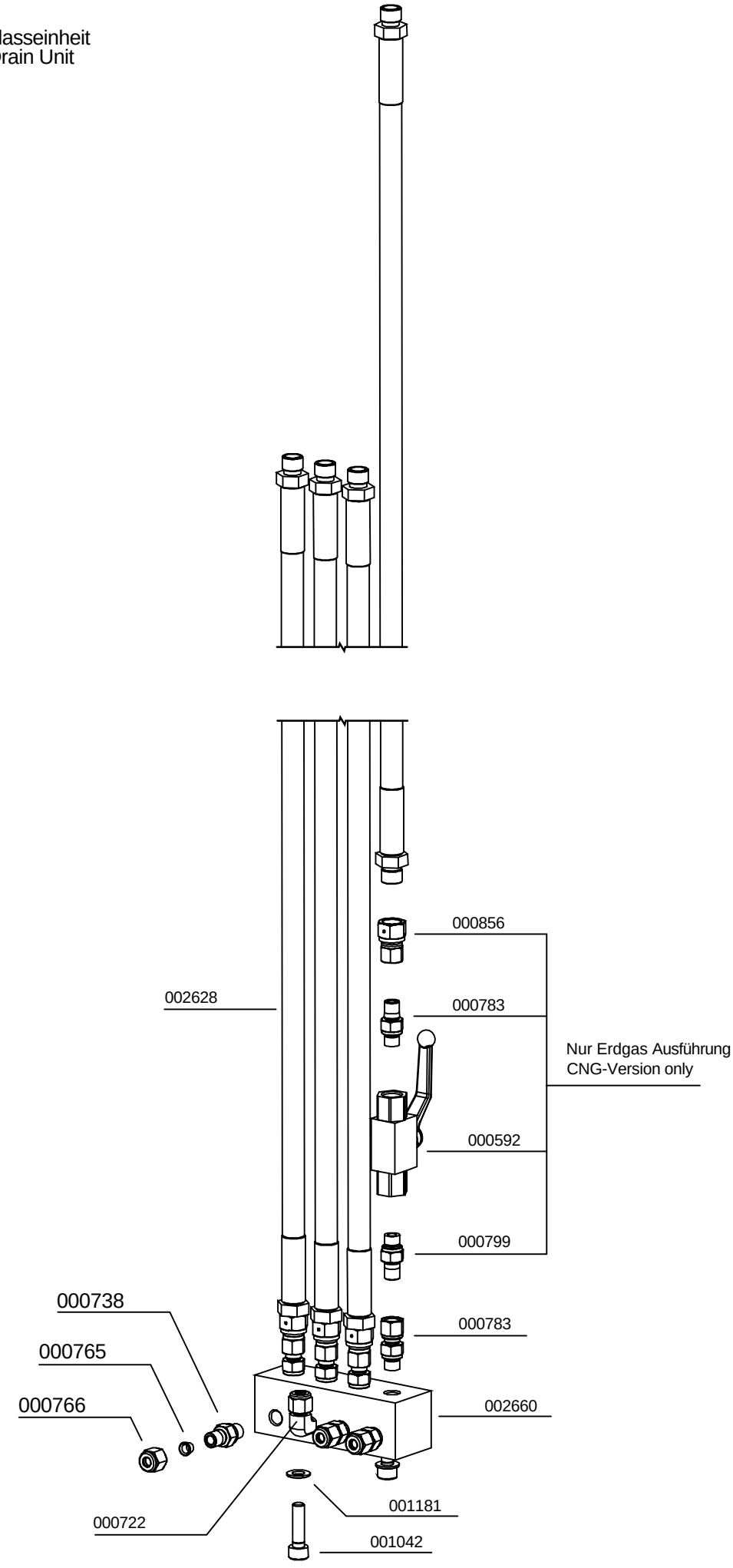
Kompressor: L&W 1300
Baugruppe: Ölabscheider
Assembly: Oil Separator



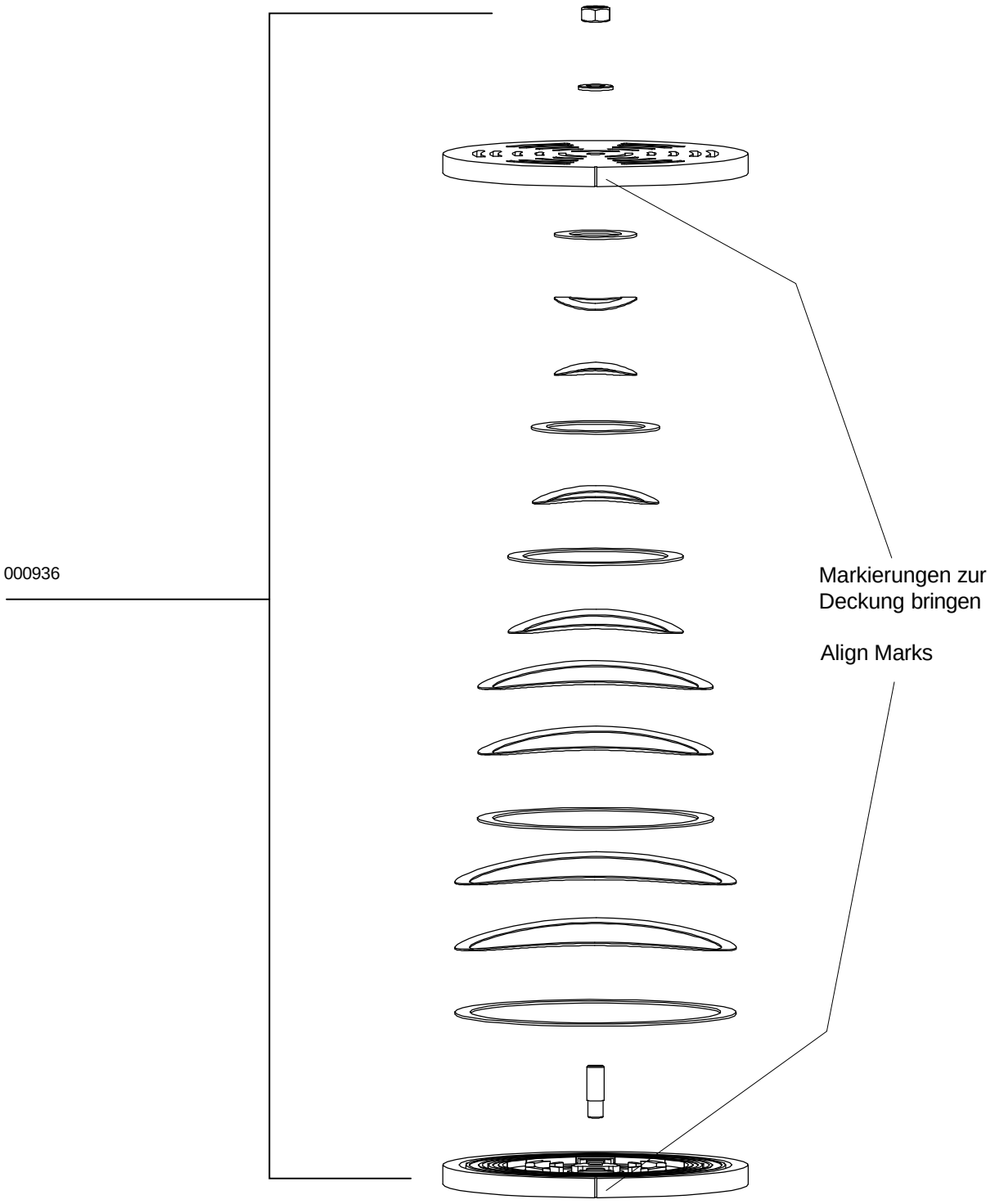
Kompressor: L&W 1300
Baugruppe: Ölpumpe
Assembly: Oil-Pump



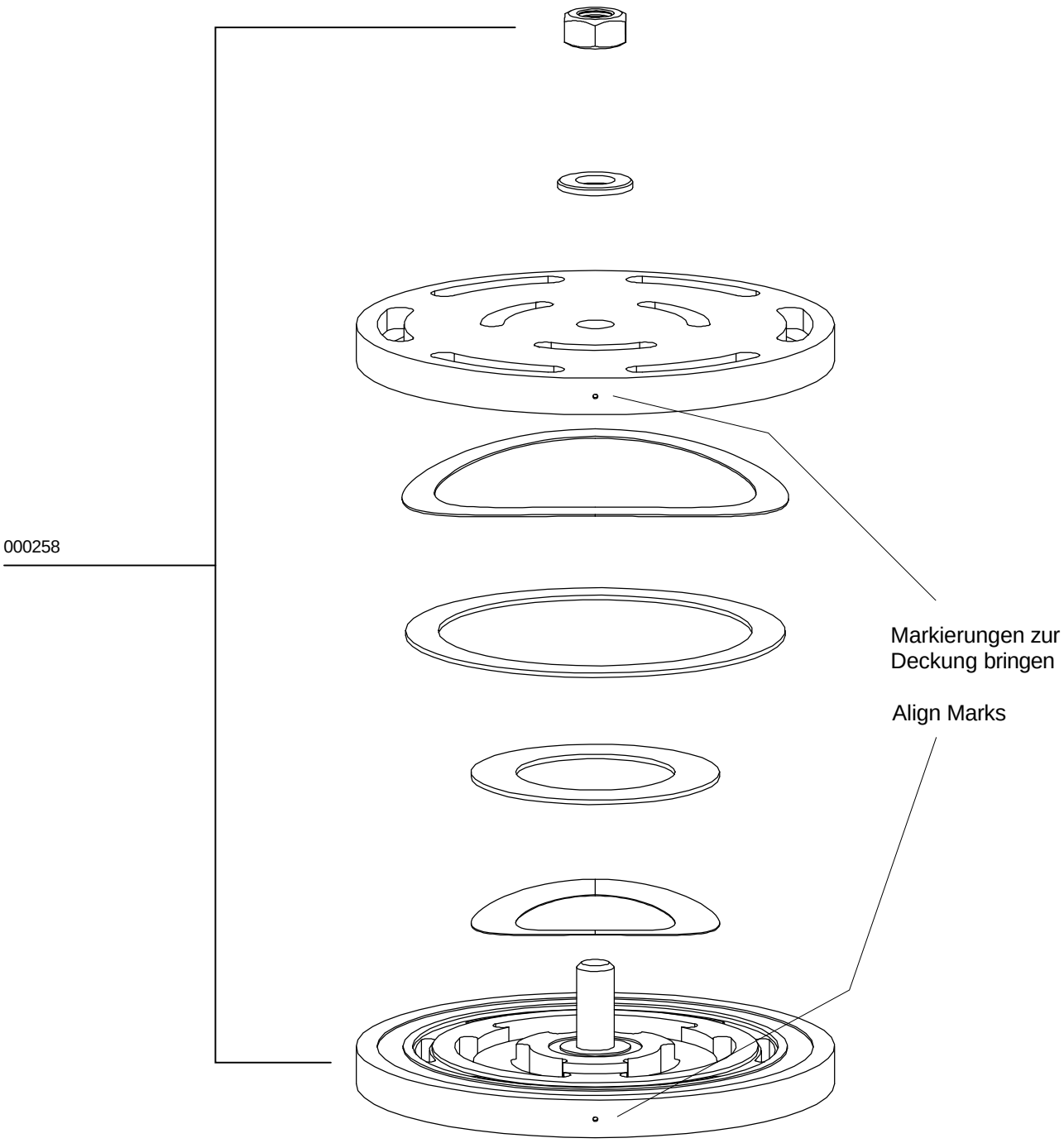
Kompressor: L&W 1300
Baugruppe: Kondensat Ablasseinheit
Assembly: Condensate Drain Unit



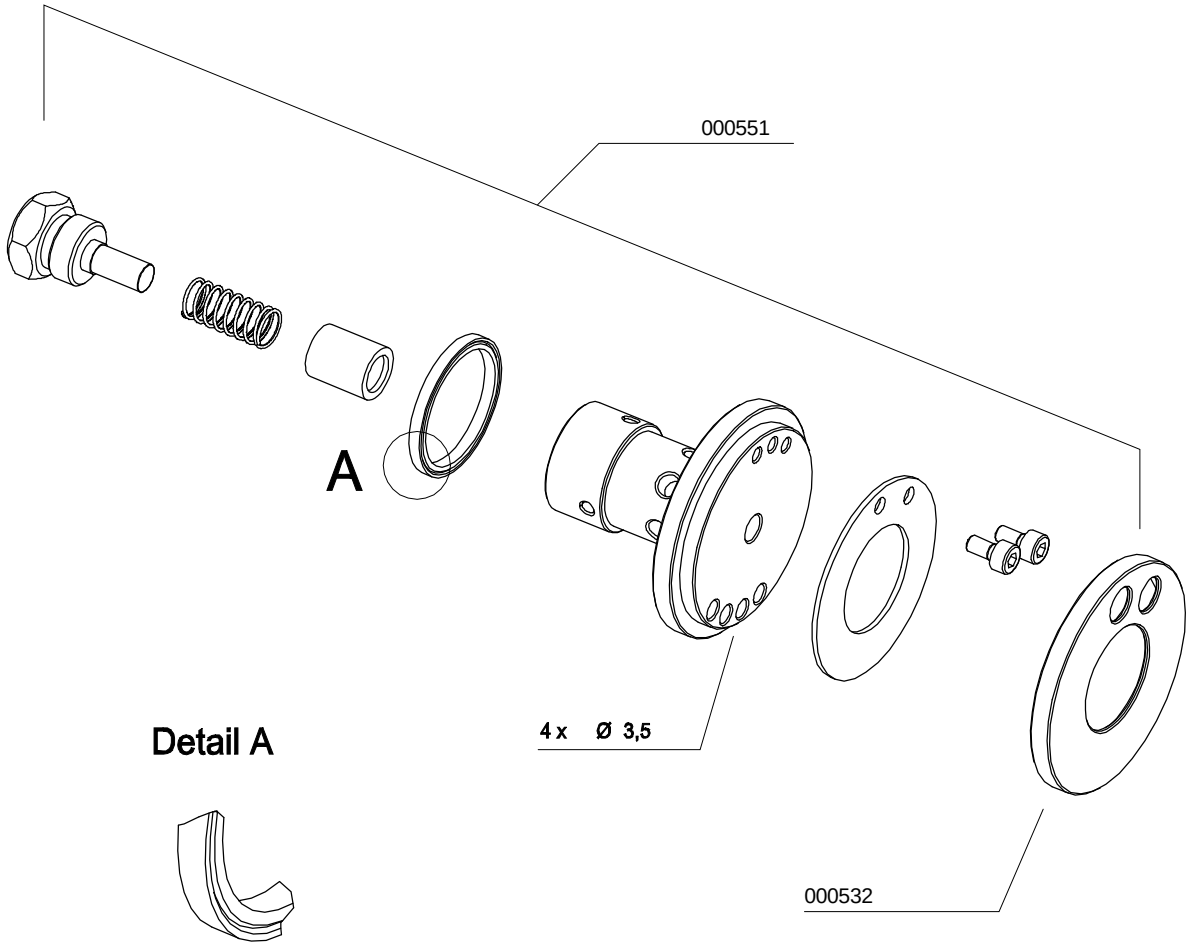
Kompressor: L&W 1300
Baugruppe: Ventil 1. Stufe
Assembly: Valve 1st Stage



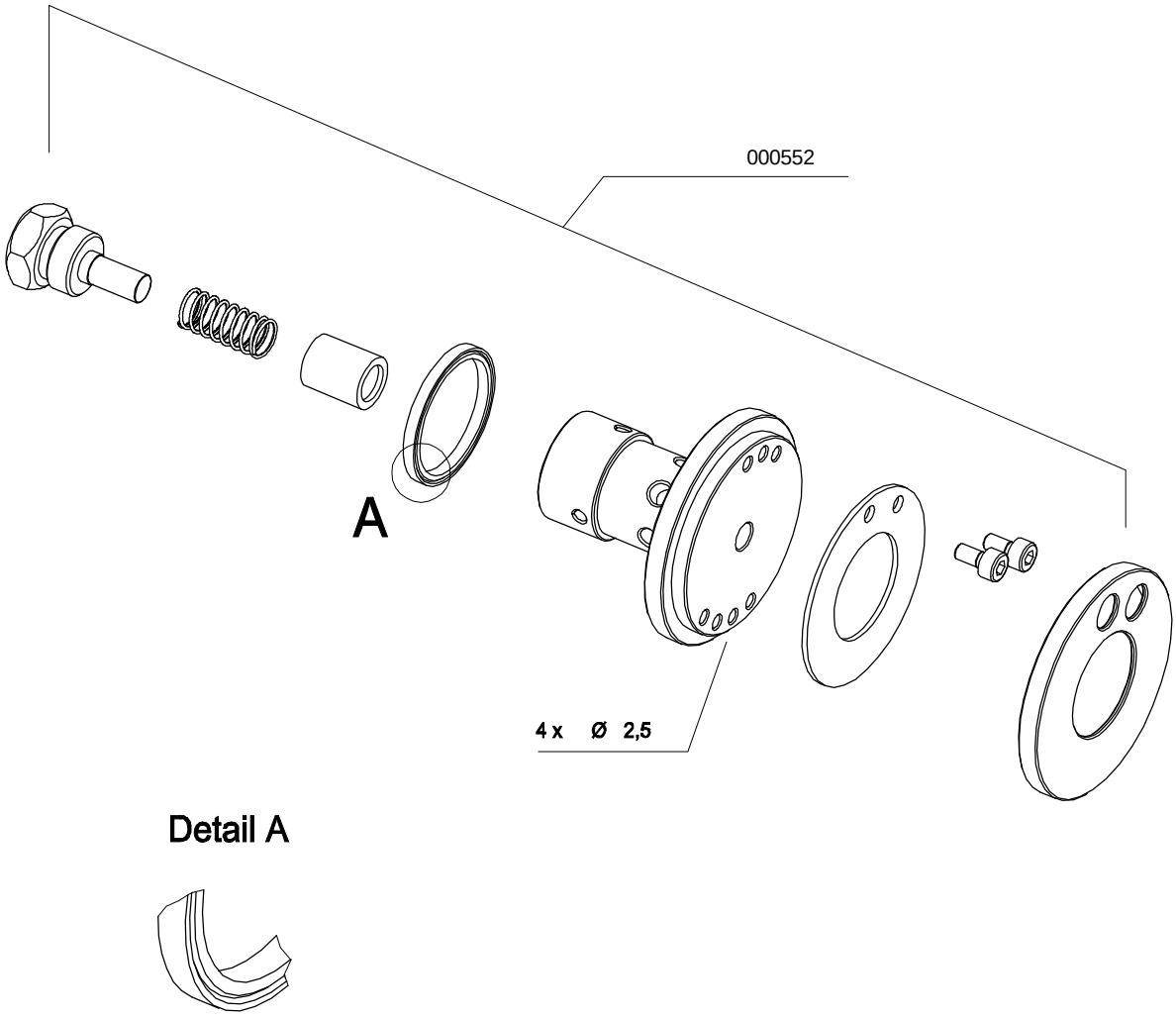
Kompressor: L&W 1300
Baugruppe: Ventil 2. Stufe
Assembly: Valve 2nd Stage



Kompressor: L&W 1300
Baugruppe: Ventil 3. Stufe
Assembly: Valve 3rd Stage



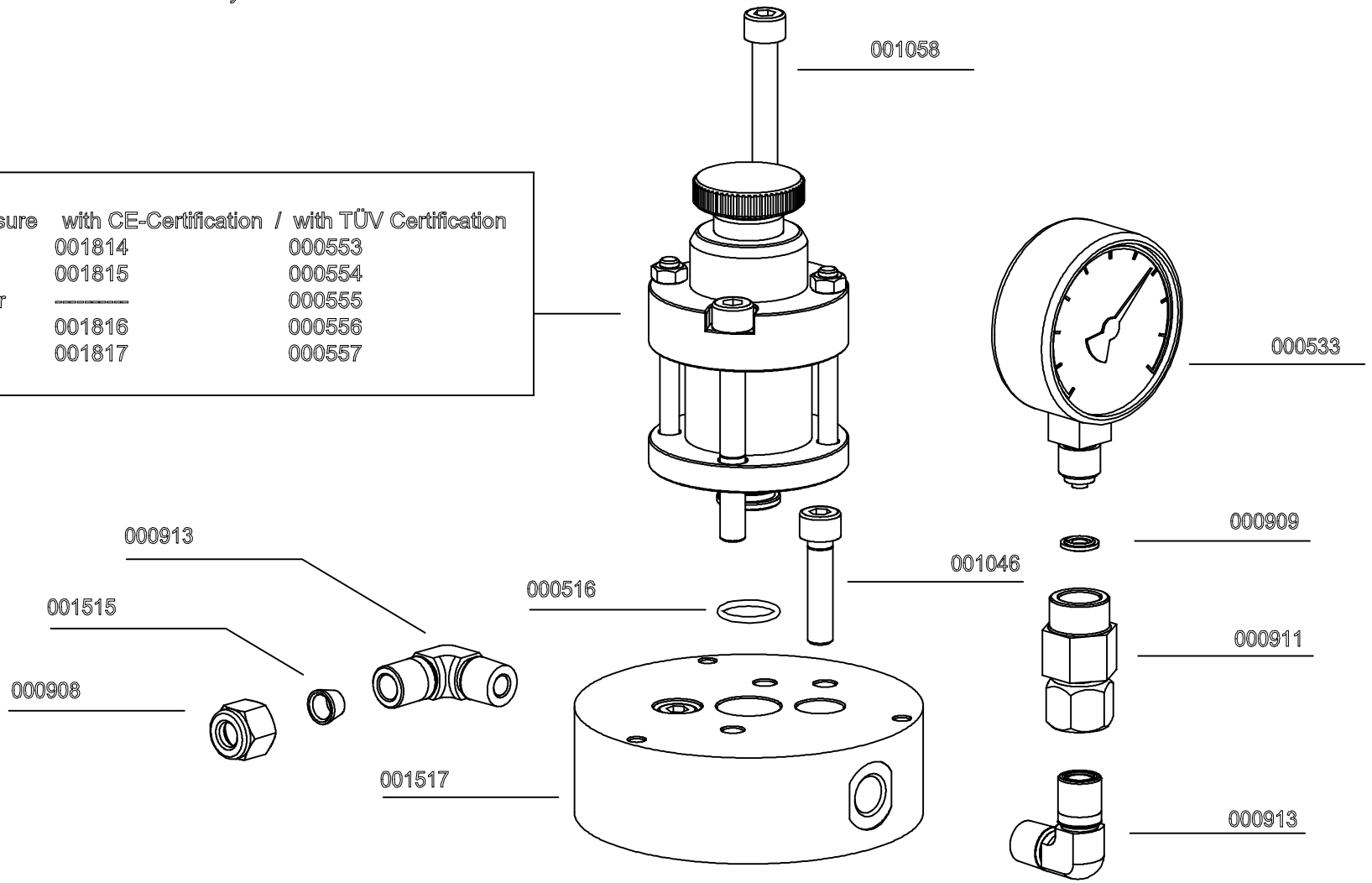
Kompressor: L&W 1300
Baugruppe: Ventil 4. Stufe
Assembly: Valve 4th Stage



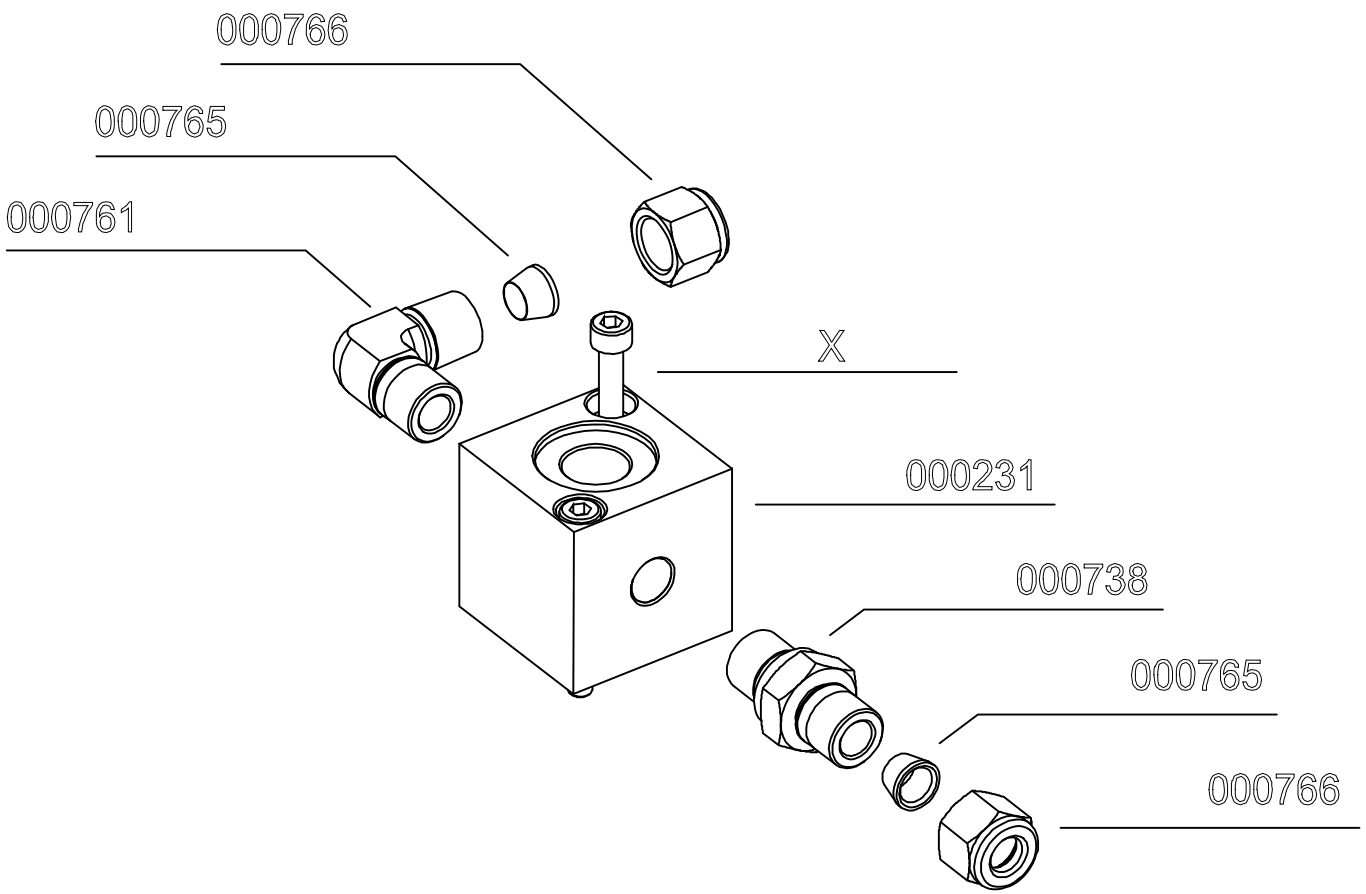
Detail A

Kompressor: L&W 1300
Baugruppe: Enddruck-Sicherheitsventil
Assembly: End Pressure Safety Valve

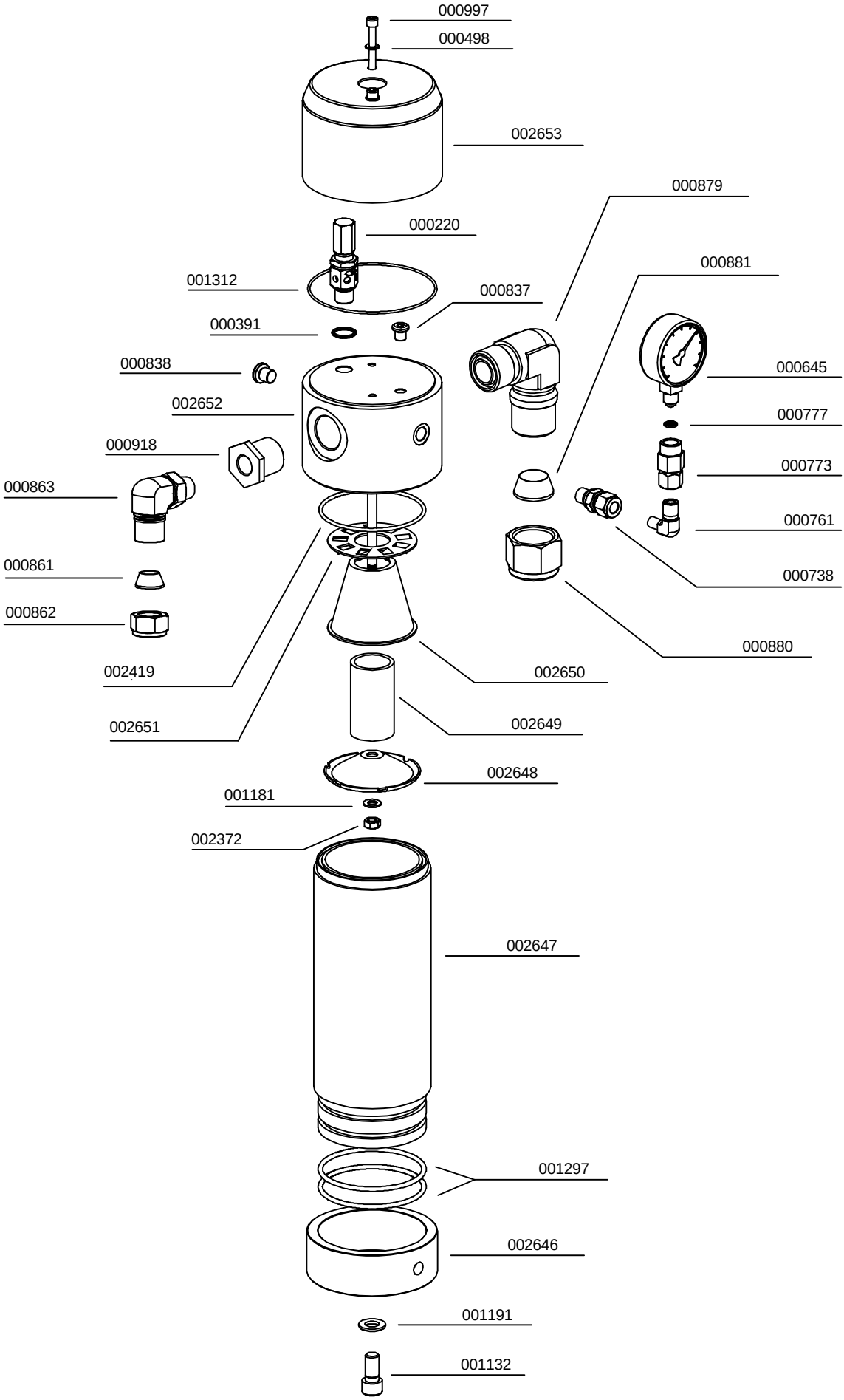
Relief Pressure	with CE-Certification	/ with TÜV Certification
225 bar	001814	000553
250 bar	001815	000554
285/300 bar	———	000555
330 bar	001816	000556
350 bar	001817	000557



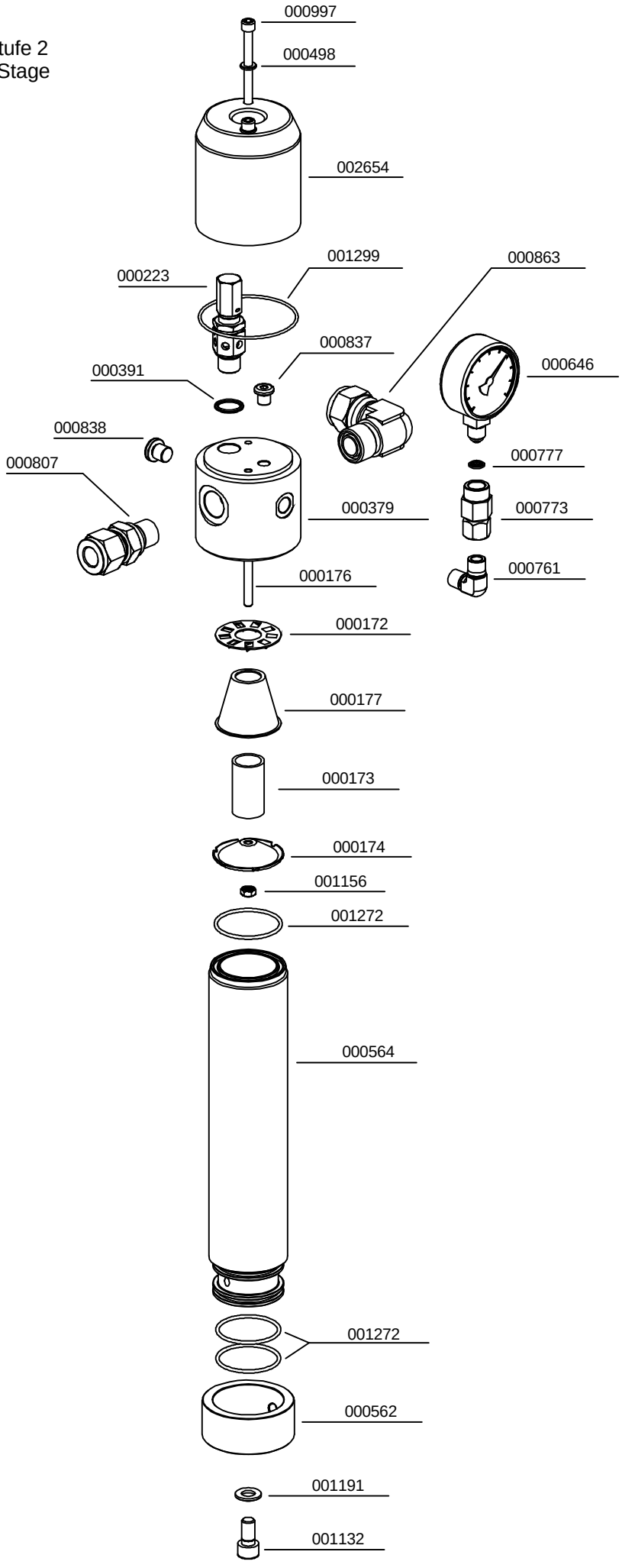
Kompressor: L&W 1300
Baugruppe: Druckschaltersockel
Assembly: Pressure Switch Base



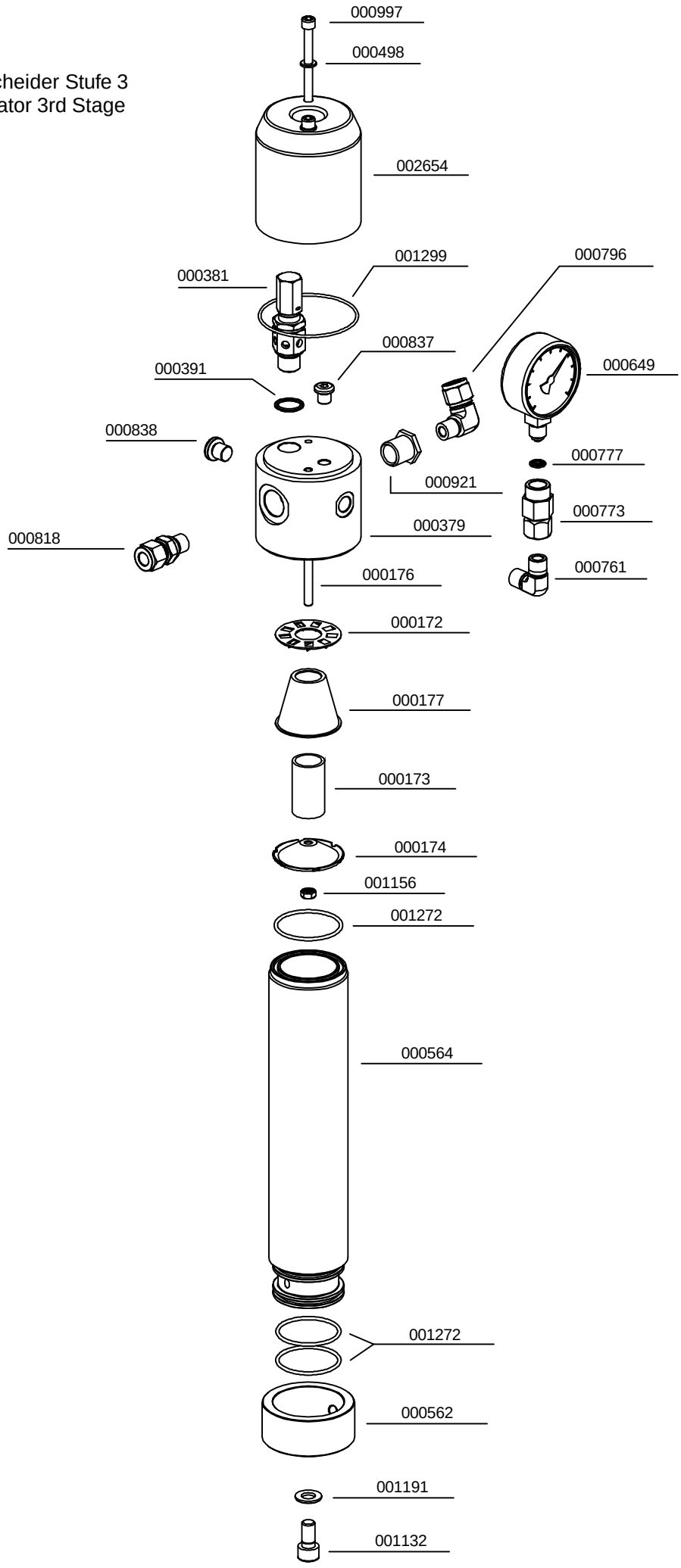
Kompressor: L&W 1300
Baugruppe: Wasserabscheider Stufe 1
Assembly: Water Separator 1st Stage



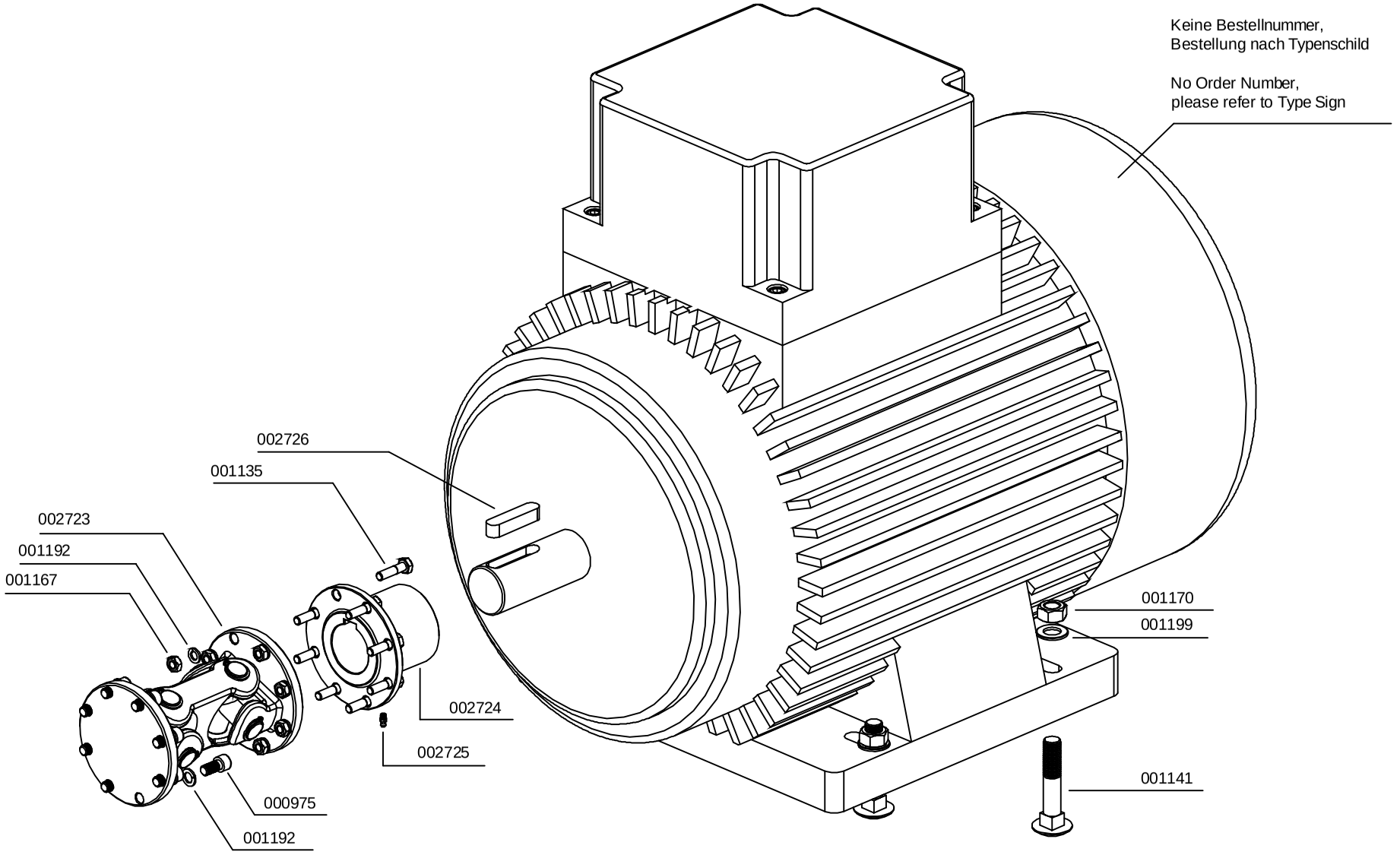
Kompressor: L&W 1300
Baugruppe: Wasserabscheider Stufe 2
Assembly: Waterseparator 2nd Stage



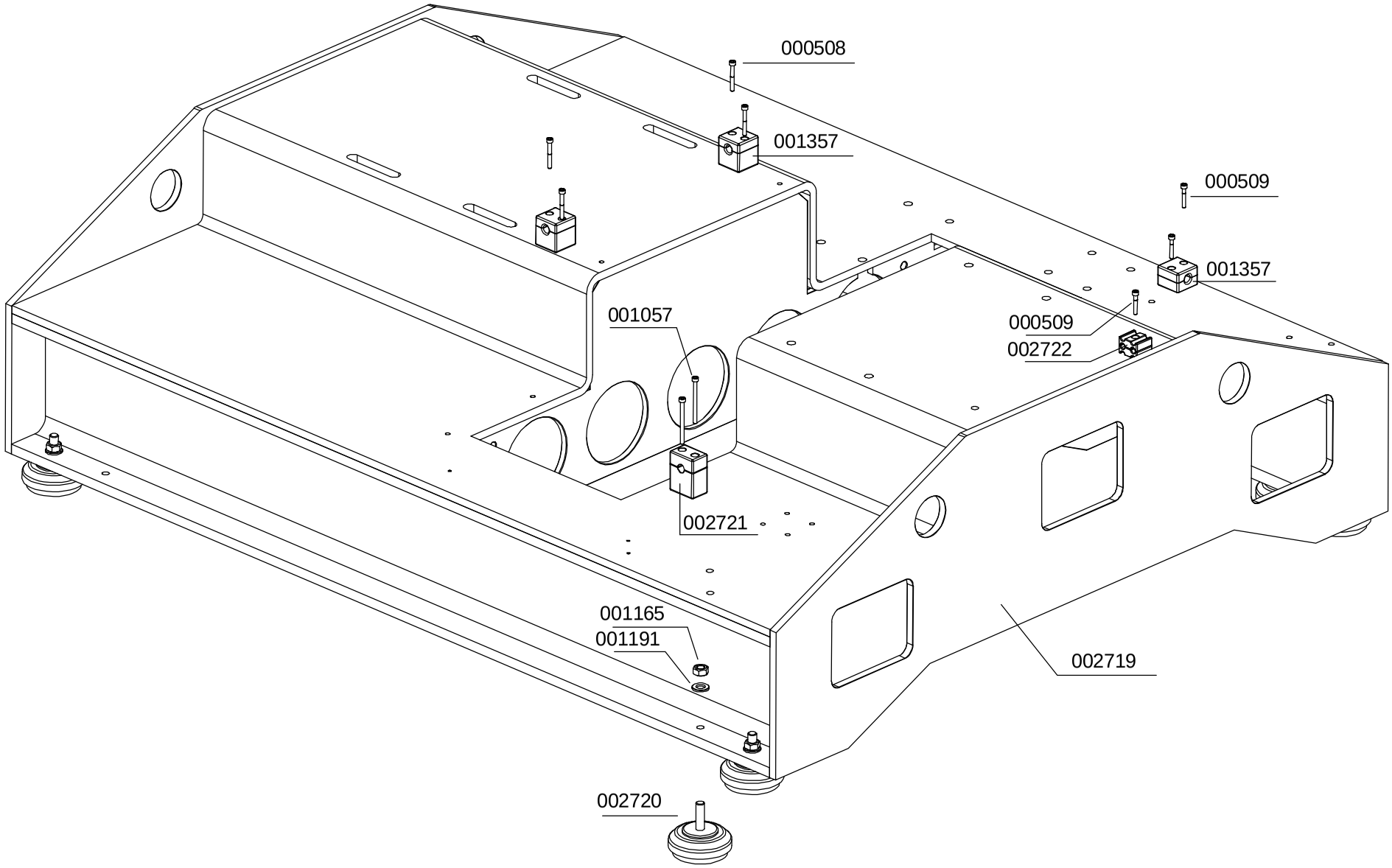
Kompressor: L&W 1300
Baugruppe: Wasserabscheider Stufe 3
Assembly: Waterseparator 3rd Stage



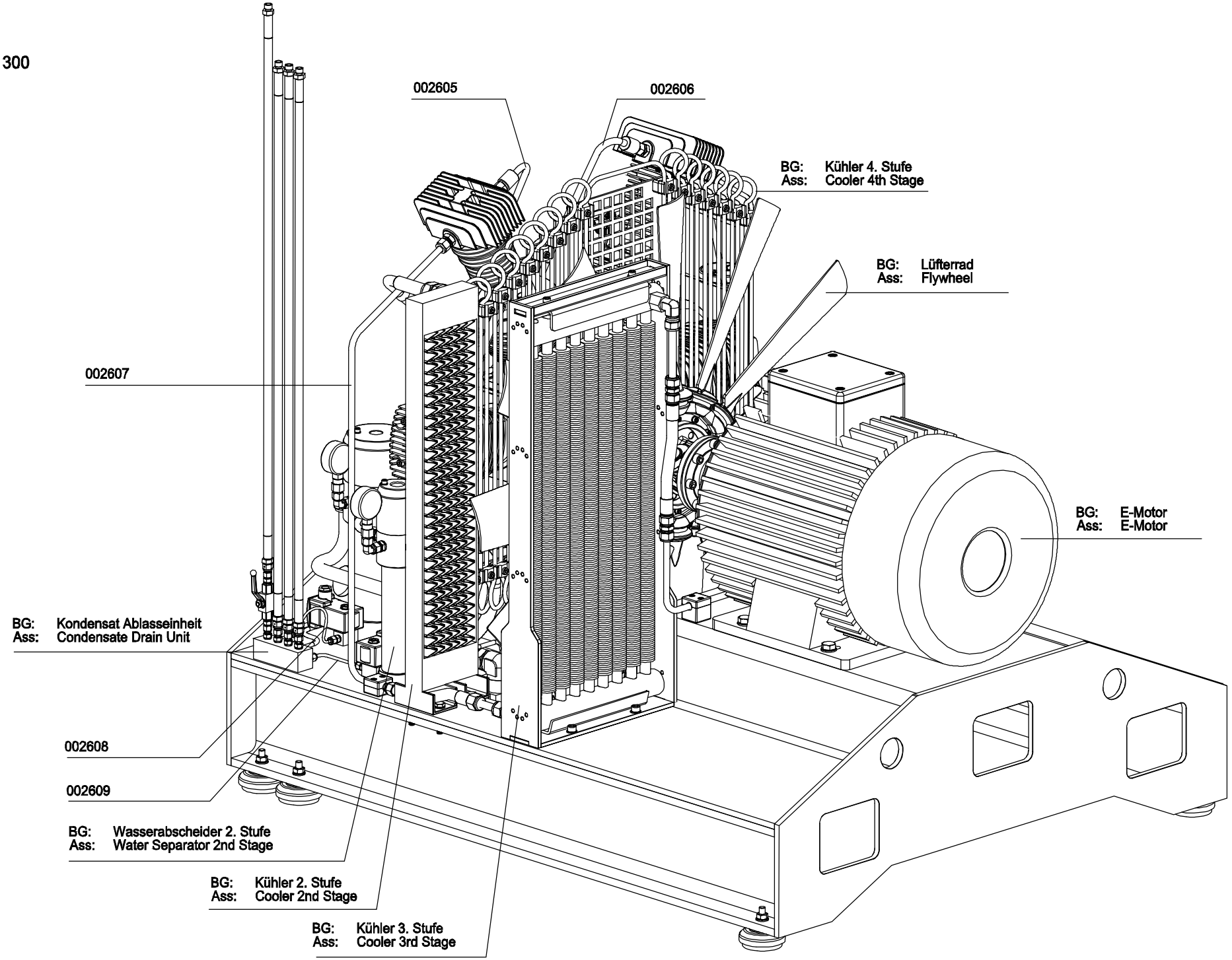
Kompressor: L&W 1300
Baugruppe: E-Motor
Assembly: E-Motor



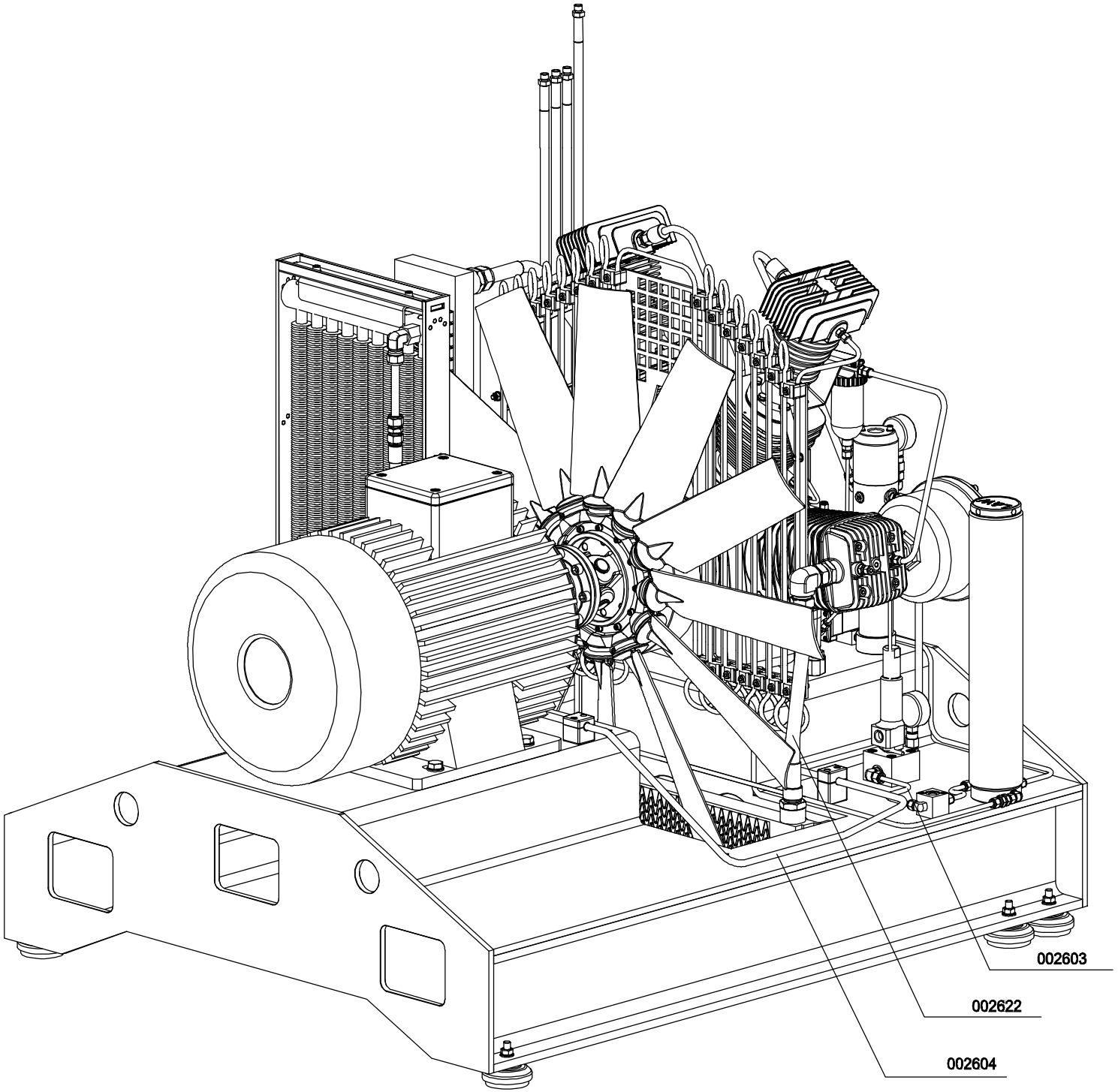
Kompressor: L&W 1300
Baugruppe: Konsole
Assembly: Console



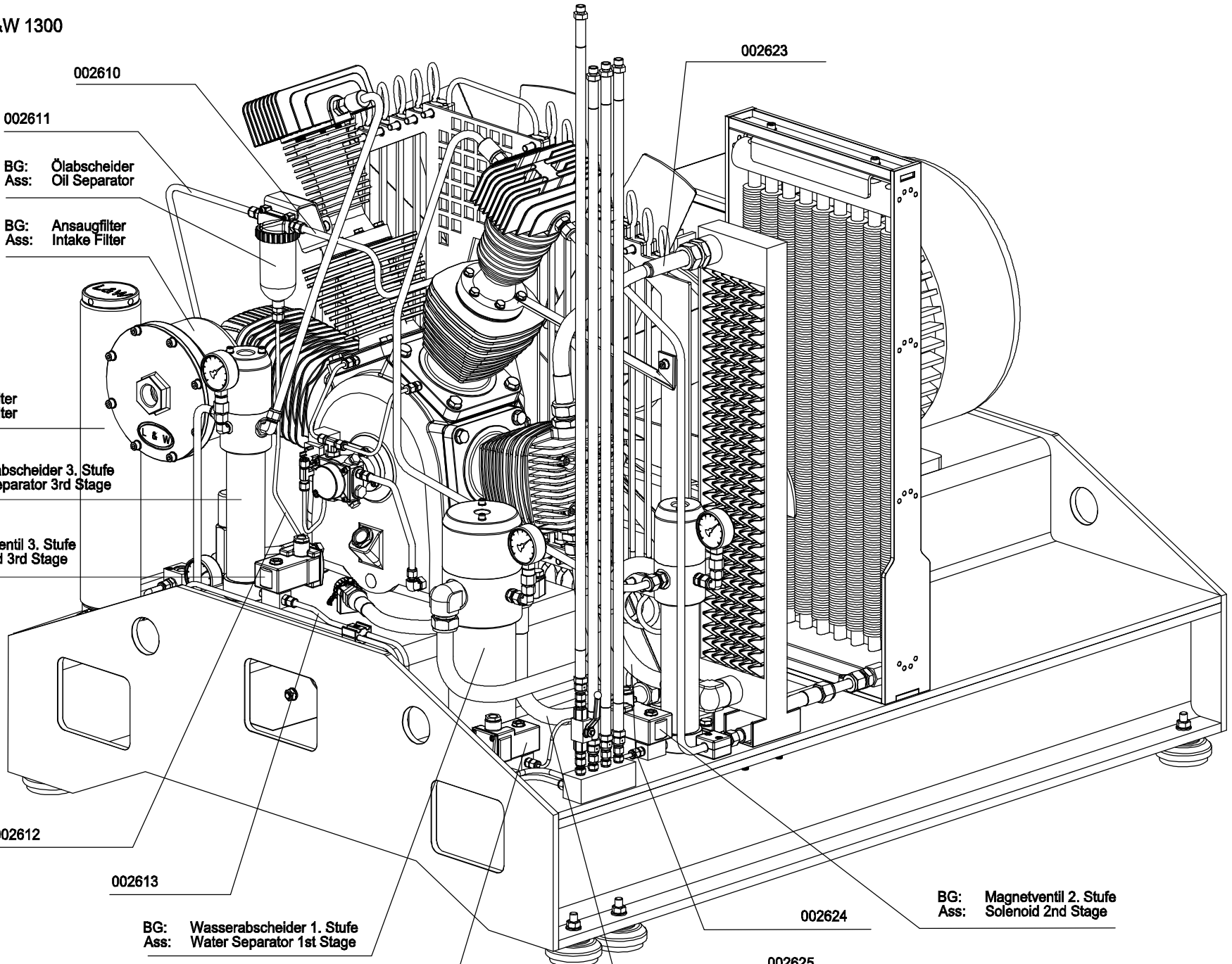
L&W 1300


002605
002606
BG: Kühler 4. Stufe
Ass: Cooler 4th Stage
BG: Lüfterrad
Ass: Flywheel
002607
BG: E-Motor
Ass: E-Motor
BG: Kondensat Ablasseinheit
Ass: Condensate Drain Unit
002608
002609
BG: Wasserabscheider 2. Stufe
Ass: Water Separator 2nd Stage
BG: Kühler 2. Stufe
Ass: Cooler 2nd Stage
BG: Kühler 3. Stufe
Ass: Cooler 3rd Stage

L&W 1300 E



Kompressor: L&W 1300



Kompressor: L&W 1300
Motor: 37kW