
INSTRUCTION MANUAL



LW 320 B

Nautic - AI

**BREATHING AIR
COMPRESSOR**



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&V 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.

Technical Data	LW 300 B
Type	3 cylinder, 3 stage, air cooled, oil lubricated
Delivery rate	320 Litre/min (19.2 m³/h)
Prime mover	Briggs & Stratton 4-stroke engine - Type: Vanguard 245400 Power output: 9.7 kW (13 bhp) @ 3,600 rpm
Operating temperature	+5°C - +50°C
Operating pressure	max. 350 bar
Cooling air requirement	approx. 2,250 m³/h
Air outlet temperature	appr. 8-10 °C above ambient
Breathing air filter capacity	900 m³ at +20°C (approx. 57 hrs.)
Compressor speed	1480 RPM
Fuel capacity	8.3 litre
Average fuel consumption:	3.8 litre/h
Oil capacity (engine)	1:5 litre (without filter)
Oil capacity and pressure (compressor)	1.8 Litre, 1.8 bar (+/- 0.3 bar)
Dimensions	L x W x H (mm) 1290 x 740 x 610
Weight	Steel version: 230 kg Alloy version: 180 kg
Noise level	95 dB[A] @ 1m distance

Options:

High pressure outlet (10L), no filling connections

Extra filling hose (max 4 per compressor), filling valve and filling connection
Running hours counter

Automatic stop device, shuts down the compressor at final pressure, includes external on/off switch for wall mounting,

Automatic drain device with magnetic valves, pneumatic condensation valve, timer and silencer
200/300 bar filling module, selection valve, safety valve, filling hose, valve and filling connection
Dual pressure filling module, 200 and 300 bar, pressure reducer, safety valve
Inter stage pressure gauges and oil pressure gauge, mounted in a console

German TÜV/CEOC certification

Breathing Air Quality according to:

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

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

Phone: + 49 62 56 / 85 880 0
Fax: + 49 62 56 / 85 880 14
e-Mail: info@lw-compressors.com

LW 320 B

Application:

Breathing- and industrial-air applications. Ideal for diving schools, ships and for applications where minimum extras are required due to logistical/expenditure factors. The compact construction makes the compressor ideal for applications with limited space.

Specification:

- Petrol driven compressor
- Standard version: mild steel frame

AI version: Aluminium lightweight frame

- All pistons with piston rings
- Low pressure oil pump
- Oil/water separators after each stage,
- Safety valve for each pressure stage
- Breathing air purification in accordance with EN 12021, filter capacity 900 m³ at +20°C
- Pressure maintaining and non-return valve
- Filling pressure gauge (0 – 400 bar)
- 1 filling hose and valve (*max. 4 filling points and/or HP outlet*)
- Powder coated frame
- Foldable handles

NOTES

Check oil level of compressor and drive engine before each day of use.
Only run the unit on hard and even ground!

Always ensure good room ventilation and pure intake air!



Breathing Air Compressor

LW 320 B



F U N C T I O N A N D O P E R A T I O N

Drive Engine

Compressor units can be delivered with various drive motors depending on customer requirements.

Standard specification:

Briggs & Stratton, Type: Vanguard 245400

9.7 kW @ 3,600 rpm

Average fuel consumption: 3.8 litre/h

Dump System

LW 320 B compressors come with a manual drain system as standard.

Both waterseparators and the endfilterhousing have to be drained by hand operated drain valves about every 15 to 20 minutes (depending on humidity).

Option Automatic Drain:

Two solenoids open and drain three condensate separators about every 15 minutes.

We recommend the use of a 20 litre container to collect all condensate. It can then be disposed of like discarded oil. The drain noise of the final stage is kept to a minimum by an additional silencer.

Intake Filter

A micro filter cartridge is used as an air intake filter.

We recommend to replace it every 100 working hours (*depending on pollution*) but at least every two years.

A dirty, contaminated filter restricts the airflow, reduces the compressors capacity and causes overheating.

Cylinder Heads and Valves

Inlet and outlet valves are located inside the cylinder heads.

Inlet valve open on the down stroke, outlet valves open on the upstroke.

All valves should be replaced after 1500 working hours due to normal wear and tear.

To replace valves the cylinder heads have to be removed. All three valves are combined valves which means that inlet and outlet valves form one unit.

The first stage valve is of plate valve design. Second & third stage valves use a spring operated piston inside a bronze alloy cylinder, sealing is done by alloy-ring & cap. There are no special tools required to change any of the valves

(2nd & 3rd stage valves do have a M6 thread in the body centre, use a matching bolt to pull them out of the head)

Lubrication

Crankshaft bearings and 1st stage cylinder are lubricated by oil splash.

2nd & 3rd stage cylinders are lubricated by a mechanical oil pump (average oil pressure: +1.8 bar).

Option

Oil pressure control is offered as an option.

An additional oil pressure switch (located next to the oil filter housing) controls the outlet pressure of the oil pump. In case of under pressure (below +1.5 bar) it turns off the machine automatically.

Oil pressure of the system can be checked by removing one of the plugs of the oil filter housing and fitting a suitable pressure gauge.

1.8 litre of synthetic compressor oil (order no. L&W 9001) is required for an oil change.

NOTE: Oil level should be at least at middle of oil dip stick marks

Starting the Compressor for the first Time

- Place the compressor on even ground (air temperature max. +50°C)
- Check compressor oil level
- Check if air filter cartridge is in place
- Make sure all filling valves are closed
- Start compressor (push green button)
- Check direction of rotation - immediately after the start
- Run compressor to final pressure
- Restart compressor
- Check compressor unit for air leaks (push red button and do not release it until test is finished)
- Check dump system
- Release pressure by filling valve(s)



Safety Valves

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

- 1st Stage: 8 bar**
- 2nd Stage: 60 bar**
- 3rd Stage: final pressure**

Blowing safety valves usually indicate problems with either inlet or outlet valve of the next following stage.

NOTE: A faulty safety valve has to be replaced immediately!

Oil / Water Separators

Oil / water separators (condensate separators) are fitted after every compression stage. Integrated sinter filters protect the compressor system from unwanted deposits. We recommend to clean the separator bodies & replace the sinter filters (plus required O-rings) every 1000 working hours.

Final Air Purifier (Mole Carbon Filter)

The mole carbon filter housing is mounted to the right hand side of the compressor frame, *capacity: 1.7 litre, P_{max}: 350 bar*. Inside the filter housing a jet blows air to the housing body. Oil and water mist condenses and flows to the bottom of the housing. Air then flows through the mole carbon filter cartridge, which purifies the air from moisture and odours. See *chart for intervals*:

LW 320 B 1.7 ltr. Housing: every 53 hours (@ +20°C)

Furthermore the filterlife strongly depends on humidity and air temperature. Cartridges are vacuum packed. We recommend to open them just before they will be fitted to the compressor, as they could be saturated with moisture just being exposed to high humidity. To change the filter cartridge stop the compressor. It will then automatically release all remaining air pressure. This can take up to two minutes. Once the unit is depressurized the filter housing cap can be unscrewed with the T-shaped filter tool delivered with the compressor. If any pressure remains in the housing, it will be almost impossible to open the filter housing cap. The filter itself can

also be unscrewed with the filter tool to be replaced by a new one. Screw cap on hand tight.

Filling Valve

The compressor comes with four filling valve as standard, an additional high pressure outlet is available as an option.

Standard length of filling hose: 0.65 meter

Available tank connectors:

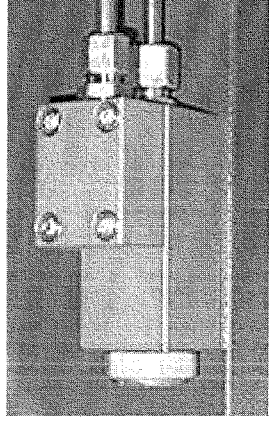
**DIN 200 bar & DIN 300 bar
INT**

**CGA 346 (200 bar) & CGA 347 (300 bar)
NF (200 bar)**



Filling valve in cross design fitted with DIN 300 bar tank connector

Pressure Maintaining / Non Return Valve



Pressure Maintaining / Non-return Valve

A pressure maintaining / non-return valve is fitted after the mole carbon filter housing.

It ensures that all air leaving the filter system has at least 160 bar - optimising the effectiveness of the filter. Check opening pressure of pressure maintaining valve at least every 10 working hours.



Maintenance

Compressor oil level has to be checked daily.

Compressor oil change intervals:

1st oil change after 25 working hours and subsequently every 1000 working hours - but at least once a year -

Only use synthetic compressor oil (order number LW 000001). About 1.8 litre of oil is required for an oil change.

The mole carbon filter cartridge has to be changed regularly (see *change of mole carbon filter cartridge*)

- Check connections for leaks every 20 working hours
- Change inlet air filter every 100 working hours
- Open & clean condensation separators (first and second stage) every 1000 working hours
- Replace inlet / outlet valves every 1500 working hours

For service work on the drive engine, please refer to the Briggs & Stratton service manual

Trouble Shooting

Compressor does not reach end-pressure

- Check for air leaks on pipe connections, solenoids & heat exchangers
Replace seals or tighten connections
- Check safety valves for air leaks
Replace immediatly

Delivery capacity is decreasing

- V-belt tension incorrect: *Adjust or replace*
- Inlet air filter dirty: *Replace*
- Inlet / outlet valves leaking: *Clean or replace*
- Pistons, piston rings and / or cylinders worn: *Replace faulty parts*

Blowing safety valve of 1st / 2nd stage

- Inlet or outlet valve of the following stage is faulty: *Clean or replace*
Do never attempt to adjust or repair safety valves!

Oil smell in the air

- Mole carbon filter cartridge is saturated: *Replace immediately*
- Use of wrong type of oil: It is important to use synthetic compressor oil

Compressor runs too hot

- Poor room ventilation: *Room temperature should not exceed 40 °C*
- Cooling air in-/outlet is restricted
- Air intake filter is dirty: *Replace*
- Intake hose is too long or too small in diameter
- Faulty inlet / outlet valves: *Clean or replace*
- Wrong direction of rotation

Conservation of Compressor

If the compressor will not be used for a long period of time the following steps should be carried out:

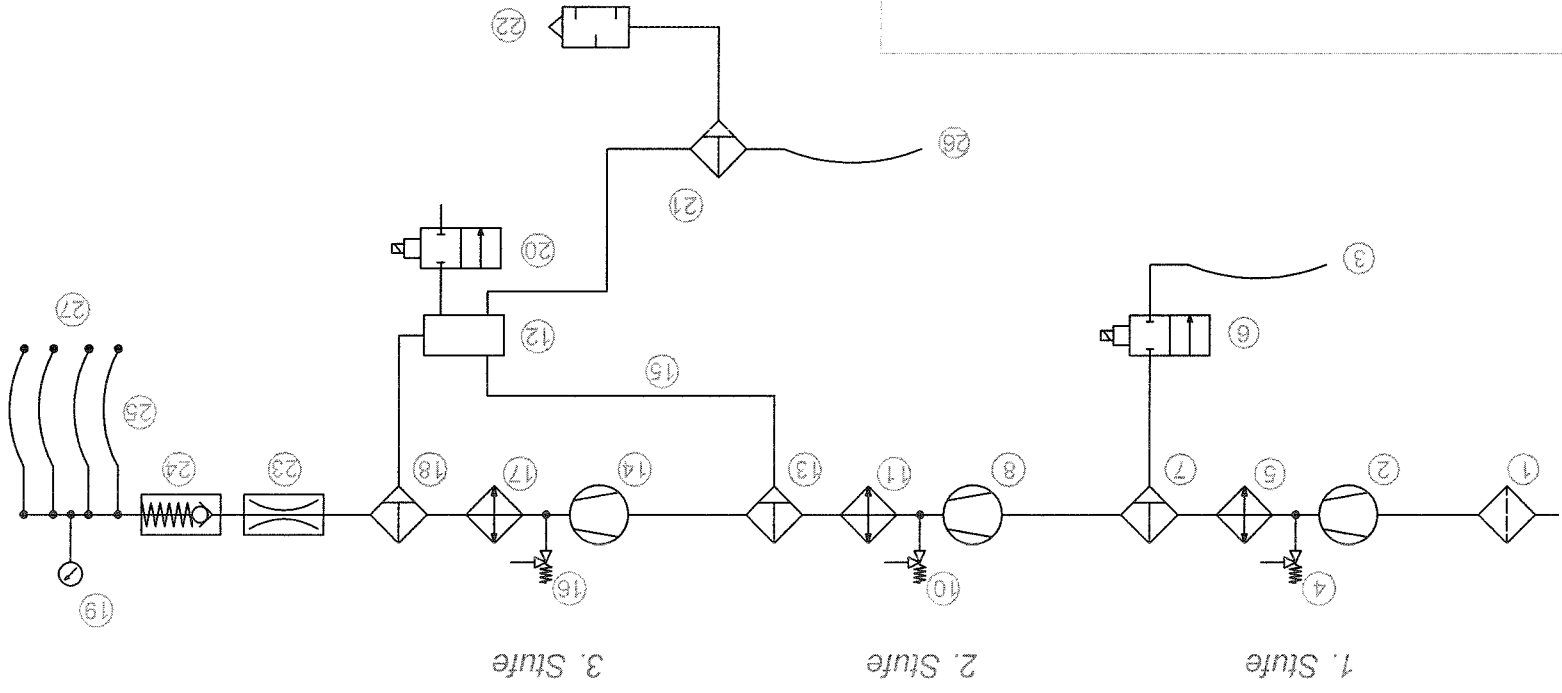
- Run compressor for about 10 to 15 minutes
- Open filling valves and let compressor run for another five minutes
- Turn compressor off
- Drain water separators and endfilter housing
- Close filling valve(s)
- Open the mole carbon filter housing. Lubricate thread with Vaseline and close the housing (used filter cartridge can remain inside)
- Compressor should be stored dry & dust free

Re-starting the compressor (*after conservation*)

Before re-starting the compressor the following steps should be carried out:

- Change oil (if the compressor was out of use for more than 12 months)
- Check air intake filter
- Replace the mole carbon filter cartridge
- Check oil level
- Start compressor
- Run the compressor with open filling valves for 5 minutes
- Close filling valves
- Drive compressor up to 200 bar and check connections for leaks
- Drive compressor to final pressure
- Check if end pressure safety valve (or endpressure switch – if fitted) is working

LW 230 E / LW 280 E
LW 230 ES / LW 280 ES
LW 300 E / LW 300 B
LW 320 B / LW 320 ES
 LENHARDT & WAGNER GMBH



- 1 Intake Filter
- 2 1st Pressure Stage
- 3 Condensate Drain Hose
- 4 Safety Valve 1st Stage
- 5 Heat Exchanger
- 6 Condensate Solenoid
- 7 Oil- / Water Separator
- 8 2nd Pressure Stage
- 9 Condensate Drain Hose
- 10 Safety Valve 2nd Stage
- 11 Heat Exchanger
- 12 Pneumatic Condensate Valve
- 13 Oil- / Water Separator
- 14 3rd Pressure Stage
- 15 Control Pressure 2nd Stage
- 16 Safety Valve 3rd Stage
- 17 Heat Exchanger
- 18 Oil- / Water Separator
- 19 Pressure Gauge
- 20 Solenoid
- 21 Condensate Drain Final Stage
- 22 Silencer
- 23 Pressure Maintaining Valve
- 24 Non-Return Valve
- 25 High Pressure Hose
- 26 Condensate Drain Hose
- 27 Tank Connector (DIN / Yoke or CGA)

FLOW DIAGRAM

MAINTENANCE LIST


LW 320 B

Maintenance Work	Intervals	Qty.	Order No.
Replace Filter Cartridge <i>Filter Capacity 1.7 ltr.:</i>	LW 300 B: every 53 working hours (@ +20°C)	1	LW 300/450 8005
Check Oil Level	once a day (before 1 st Start)		
Oil Change	1 st Oil change after 25 working hours (in total) thereafter every further 1000 working hours - but at least once a year	1800 ml per Fill	LW 300/450 9001
Replace Air Intake Cartridge	depends on pollution - but at least every two years	1	LW 300/450 7017
Check V-Belts	every 50 working hours	2	LW 260 0035E
Replace Valves 1 st Stage 2 nd Stage 3 rd Stage	every 1500 working hours	1 1 1	LW 260 0092 LW 260 0084 LW 260 0064
Check Pressure Maintaining- / Non Return Valve	every 200 working hours		
Check Safety Devices	at least once a year This should only be done by professional engineers		
Check Pressure Pipes for Air Leaks	every 200 working hours		

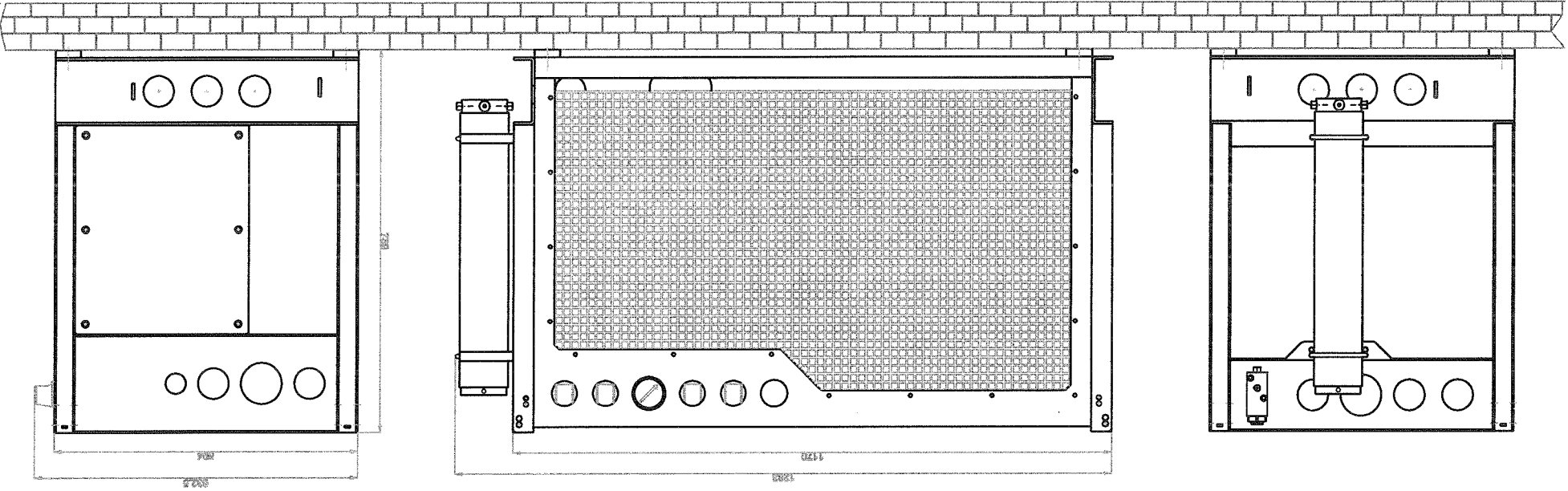
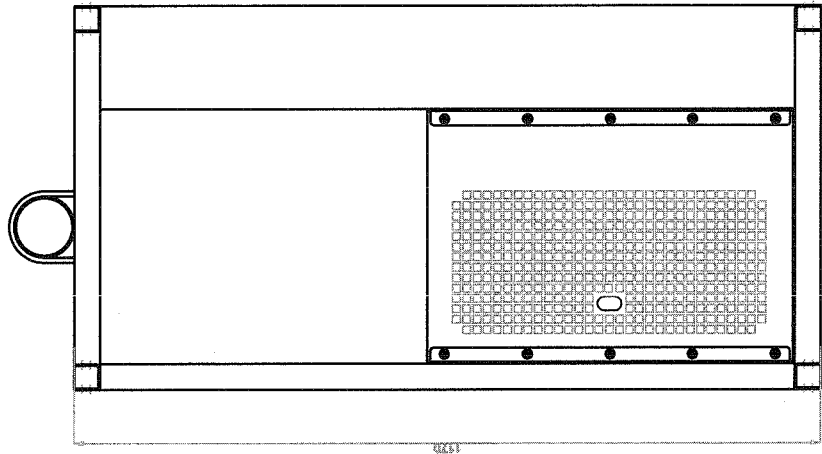
MAINTENANCE LIST

LW 320 B

Maintenance Work	Intervals	Qty.	Order No.
------------------	-----------	------	-----------

Clean Pressure Pipes	- but at least every two years		
Check Condition of Filling Hoses	once a day (before the 1 st fill)		
Replace Sinter Filter of Condensate Valve	1 st change after 1000 working hours thereafter every 2000 working hours	1	LW 300/450 2011 b
Clean Oil-Water Separators	every 1000 working hours - but at least once a year		
Replace Sinter Filters of Water Separators	every 1000 working hours every 1000 working hours every 1000 working hours	1 1 1	LW 260 0121 LW 260 0121 LW 300/450 10004
Replace Silencer	every 500 Working Hours	1	LW 300/450 2014
Check / Retorque Connections & Bolts	after 15 working hours - thereafter every 500 working hours		

LW 320 B Nautic
Overall Dimensions



SPARE PARTS LIST**LW 320 B**

Qty.	Description	Order No.	Comments
1	Drive Engine Briggs & Stratton - Type: 245400	001820	
1	Frame LW 280 B, mild steel	001821	
1	Frame LW 280 B, aluminium	001822	
2	V-Belt LW 300 B	001823	
1	Prime Mover Pulley	001824	
2	Filling Connector DIN 200 bar	4044	
2	Hand Wheel 200 bar - Black	4045	
2	Hand Wheel 300 bar - Red	4046	
2	Filling Connector DIN 300 bar	4048	
1	Safety Valve 225 bar <i>(with test certificate and TÜV)</i>	4052	
1	Safety Valve 330 bar <i>(with test certificate and TÜV)</i>	4053	
1	Sinter Filter for Condensation Valve	4200	
8	Washer	LW 160/190 276	
4	Washer	LW 160/190 276	
1	Bolt	LW 260 0036	
1	Locking Washer	LW 260 0037	
4	Dome Headed Bolt	LW 260 0042	
2	Tensioning screws	LW 260 0043	
1	Flywheel	LW 260 0044	
11	Ventilator Blade	LW 260 0045	
1	Mounting Ring	LW 260 0046	
1	Oil Pump Cover	LW 260 0047	
1	Shaft Seal Ring	LW 260 0048	
1	Pump Drive	LW 260 0049	
2	Roller	LW 260 0050	
1	Pump Cover	LW 260 0051	

SPARE PARTS LIST**LW 320 B**

Qty.	Description	Order No.	Comments
1	O-Ring	LW 260 0052	
1	Bearing Flange	LW 260 0053	
1	O-Ring	LW 260 0054	
2	Main Bearing	LW 260 0055	
1	Spacer	LW 260 0056	
1	Woodruff Key Crankshaft	LW 260 0057	
1	Crankshaft	LW 260 0058	
3	Big End Bearing	LW 260 0059	
1	Thrust Washer	LW 260 0060	
1	Circlip	LW 260 0061	
12	Cylinder head Bolt	LW 260 0062	
1	Cylinder Head, 3 rd Stage	LW 260 0063	
1	Valve Assembly, 3 rd Stage complete	LW 260 0064	
1	Cylinder, 3 rd Stage	LW 260 0065	
2	O-Ring	LW 260 0066	
2	Guide Cylinder, 3 rd Stage	LW 260 0067	
2	O-Ring	LW 260 0068	
1	Piston Ring Set, 3 rd Stage	LW 260 0069	
1	Piston, 3 rd Stage	LW 260 0070	
4	Circlip	LW 260 0071	
1	Guide Piston	LW 260 0072	
1	Circlip	LW 260 0073	
2	Small End Bearing	LW 260 0074	
2	Piston Pin	LW 260 0075	
2	Connecting Rod, 2 nd & 3 rd Stage	LW 260 0076	
1	Crankcase	LW 260 0077	
1	Seal	LW 260 0078	
1	Crank Case Cover	LW 260 0079	
1	O-Ring	LW 260 0080	

SPARE PARTS LIST**LW 320 B**

Qty.	Description	Order No.	Comments
1	Piston, 2 nd Stage	LW 260 0081	
1	Piston Ring Set 2 nd Stage complete	LW 260 0082	
1	Cylinder, 2 nd Stage	LW 260 0083	
1	Valve Assembly, 2 nd Stage complete	LW 260 0084	
1	Cylinder head, 2 nd Stage	LW 260 0085	
1	Connecting Rod, 1 st Stage	LW 260 0086	
1	Small End Bearing	LW 260 0087	
1	Piston, 1 st Stage	LW 260 0088	
1	O-Ring	LW 260 0089	
1	Cylinder, 1 st Stage	LW 260 0090	
8	Screw	LW 260 0091	
4	Screw	LW 260 0091	
1	Valve Assembly, 1 st Stage complete	LW 260 0092	
4	90° Connection	LW 260 0093	
4	Sealing ring	LW 260 0094	
4	Nut	LW 260 0095	
1	Connection pipe	LW 260 0096	
1	Connection pipe	LW 260 0097	
5	90° Connection	LW 260 0098	
14	Sealing ring	LW 260 0099	
12	Nut	LW 260 0100	
1	T-Piece	LW 260 0101	
1	Connection	LW 260 0102	
1	Oil Pressure Feed 2 nd Stage	LW 260 0103	
1	Oil Pressure Feed 3 rd Stage	LW 260 0104	
1	Oil Pump supply pipe	LW 260 0105	
1	Cooling Spiral 1 st Stage	LW 260 0106	
1	Cooling Spiral 2 nd Stage	LW 260 0107	
1	Cooling Spiral 3 rd Stage	LW 260 0108	

SPARE PARTS LIST**LW 320 B**

Qty.	Description	Order No.	Comments
3	Cooling Spiral Mount	LW 260 0109	
3	Cooling Spiral Mount	LW 260 0110	
6	Cooling Spiral Mount	LW 260 0111	
6	Cooling Spiral Clamp	LW 260 0112	
8	Bolt	LW 260 0113	
4	Bolt	LW 260 0114	
1	Hose, Crank Case Breather	LW 260 0115	
1	Oil Filling Cap	LW 260 0116	
1	Pressure Relief Valve, 2 nd Stage - 60 bar	LW 260 0117	
2	Sinter Filter Housing	LW 260 0118	
2	O-Ring Guide	LW 260 0119	
2	O-Ring, Sinter Filter	LW 260 0120	
2	Sinter Filter (incl. O-Ring Sinter Filter)	LW 260 0121	
2	Clamp	LW 260 0122	
2	Water Separator	LW 260 0123	
2	Plug	LW 260 0124	
1	90° Connection	LW 260 0125	
2	Nut	LW 260 0126	
1	Condensation Drain Pipe 2 nd Stage	LW 260 0127	
1	Condensation Connecting Pipe	LW 260 0128	
1	T-Piece	LW 260 0129	
1	Magnet Valve 2 nd Stage	LW 260 0130	
2	90° Connection for Hose	LW 260 0131	
1	Condensation Drain Hose, 1 st Stage	LW 260 0132	
1	Cooling Spiral	LW 260 0133	
1	Mounting Bracket	LW 260 0134	
1	Mounting Plate	LW 260 0135	

SPARE PARTS LIST**LW 320 B**

Qty.	Description	Order No.	Comments
1	Mounting Block for Safety Valve w/o cert. 3/8"	LW 260 0136	
1	Mounting Block for Safety Valve with cert.	LW 260 0137	
2	High Pressure Hose	LW 260 0138	
1	Condensation Drain Hose, 2 nd & 3 rd Stages	LW 260 0139	
1	Condensation Drain Hose	LW 260 0140	
1	Pipe	LW 260 0141	
1	Reducer	LW 260 0142	
1	Pipe	LW 260 0143	
2	Lever Filling Valve complete	LW 260 0144	
2	Mounting Nut Filling Valve	LW 260 0145	
1	Pressure Sensor	LW 260 0146	
1	Crush Washer	LW 260 0147	
1	Pressure Sensor Connection	LW 260 0148	
1	Pipe	LW 260 0149	
1	Bulk Head Connection	LW 260 0150	
1	Pipe	LW 260 0151	
1	Pipe	LW 260 0152	
11	Screw	LW 260 0153	
8	Screw	LW 260 0154	
8	Screw	LW 260 0155	
2	Connection	LW 260 0156	
8	Screw	LW 260 0157	
2	T-Piece	LW 260 0158	
1	Crank Case Breather	LW 260 0159	
2	Bolt	LW 260 0160	
1	Seal, Safety Valve w/o cert.	LW 260 0161	
11	Washer	LW 260 0162	

SPARE PARTS LIST**LW 320 B**

Qty. Description

Order No.

Comments

1	ECC Display Unit, complete	LW 260 0167	
1	O-Ring	LW 260 0168	
2	High Pressure Filling Hose	LW 260 0169	
1	Seal	LW 260 0170	
1	Union Condensation Valve	LW 260 0171	
4	Washer	LW 260 0171	
2	Nut	LW 260 0172	
2	Screw	LW 260 0173	
2	Screw	LW 260 0174	
1	O-Ring	LW 260 0189	
1	O-Ring	LW 260 0190	
3	Nut	LW 260 0191	
4	Screw	LW 300/450 0155	
1	Sinter Filter	LW 300/450 10004	
1	Magnet Valve 1st Stage	LW 300/450 2009	
1	Condensation Bleed Off Valve	LW 300/450 2011	
1	Repair Kit for Condensation Valve	LW 300/450 2011a	
1	Silencer	LW 300/450 2014	
1	Oil/Water Separator 2nd/3rd Stage	LW 300/450 2015	
1	Inlet Flange	LW 300/450 3000	
4	90° Connection	LW 300/450 3001	
1	Reducer	LW 300/450 3002	
3	Connection	LW 300/450 3004	
3	90° Connection	LW 300/450 3010	
2	Double Nipple	LW 300/450 3013	
1	Hose Connection	LW 300/450 3015	
1	Connections	LW 300/450 3022	
4	Nut M8	LW 300/450 6005	
14	Nut M10	LW 300/450 6006	

SPARE PARTS LIST**LW 320 B**

Qty.	Description	Order No.	Comments
------	-------------	-----------	----------

28	Washer	LW 300/450 6010	
2	Clamp	LW 300/450 6021	
6	Lock Nut	LW 300/450 6027	
2	Mounting Block, Filter Housing	LW 300/450 6030	
1	Safety Valve 225 bar (without test certificate)	LW 300/450 7007	
1	Safety Valve 330 bar (without test certificate)	LW 300/450 7008	
1	Inlet Filter Housing, complete.	LW 300/450 7016	
1	Clamp	LW 300/450 7016a	
1	Inlet Filter Cover	LW 300/450 7016b	
1	Inlet Filter Cartridge	LW 300/450 7017	
1	Oil Level Glass	LW 300/450 7021	
2	Circlip	LW 300/450 7026a	
1	Piston Pin	LW 300/450 7026b	
1	Piston Ring Set, 1st Stage complete	LW 300/450 7027	
1	Copper Seal, 1st Stage Valve	LW 300/450 7030a	
1	Upper Gasket, Valve 1st Stage	LW 300/450 7030b	
1	Cylinder Head, 1st Stage	LW 300/450 7031	
1	Pressure relief Valve 1st Stage	LW 300/450 7033	
4	Cylinder Head Bolt	LW 300/450 7045	
16	Lock Washer	LW 300/450 7047	
11	Sealing ring	LW 300/450 7079	
11	Nut	LW 300/450 7080	
4	Sealing ring	LW 300/450 7083	
4	Nut	LW 300/450 7084	
4	Screw	LW 300/450 7087	
1	Filter Housing 1,7 ltr., P_{max}: 350 bar	LW 300/450 8004	

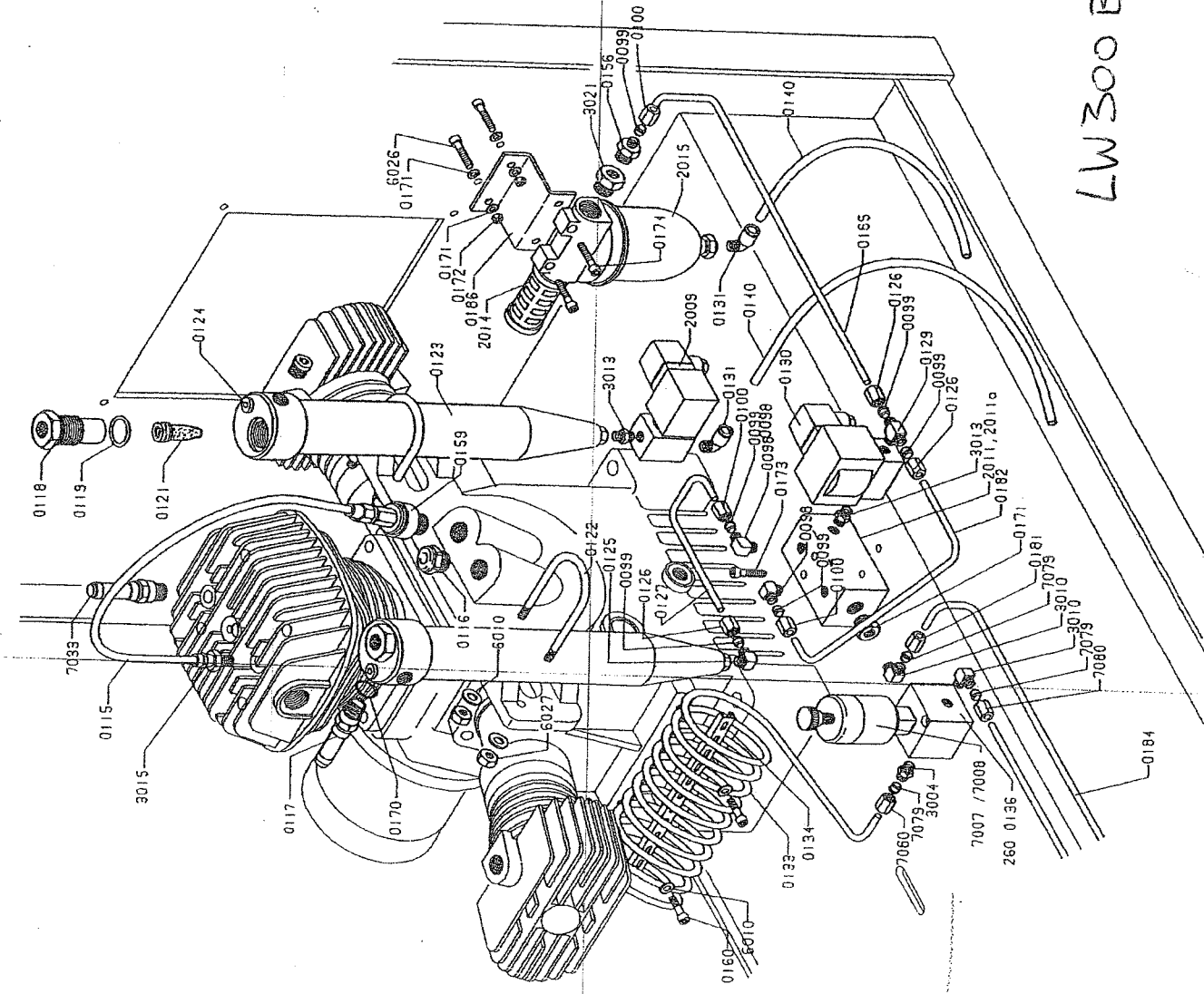
SPARE PARTS LIST**LW 320 B**

Qty. Description

Order No.

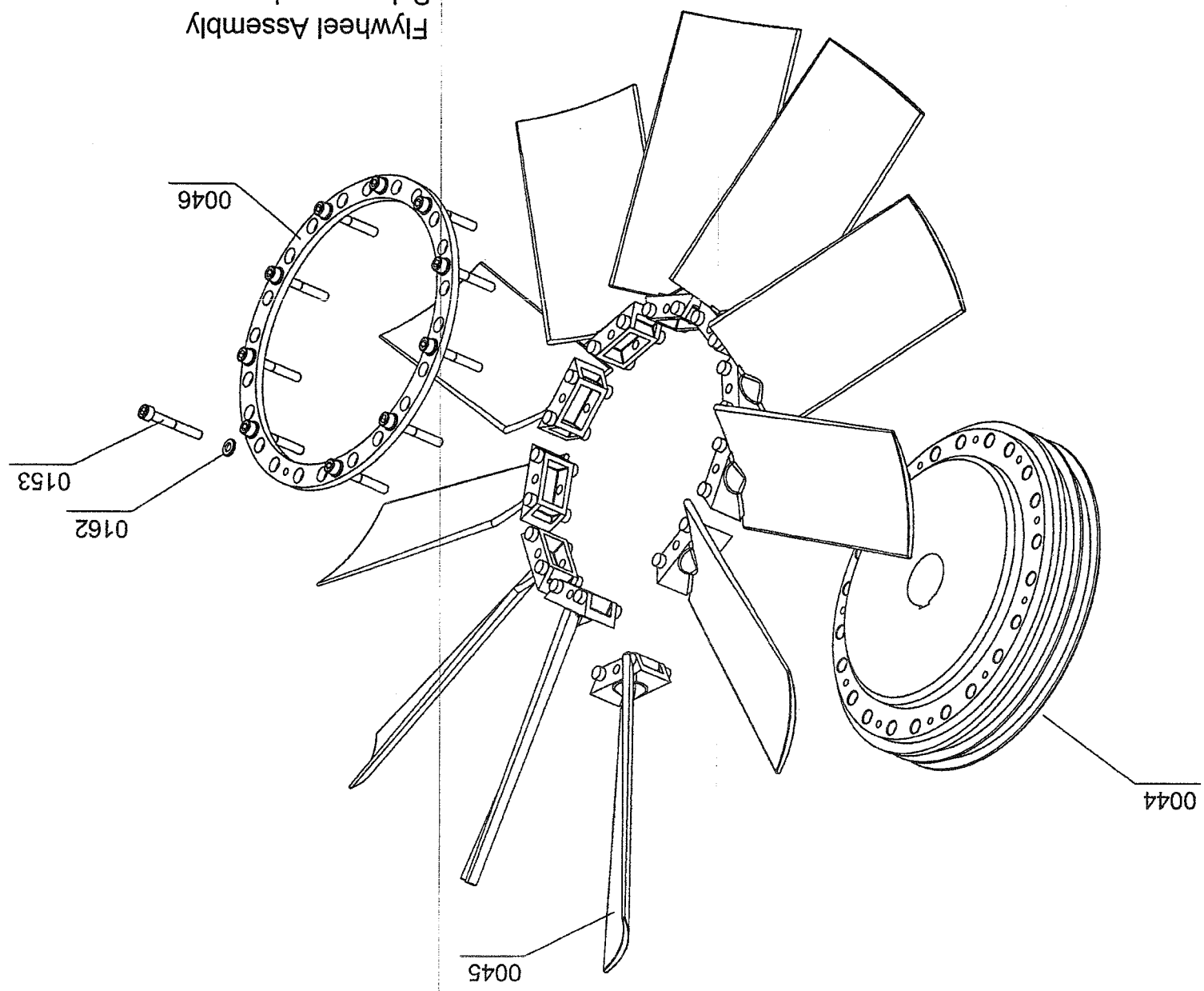
Comments

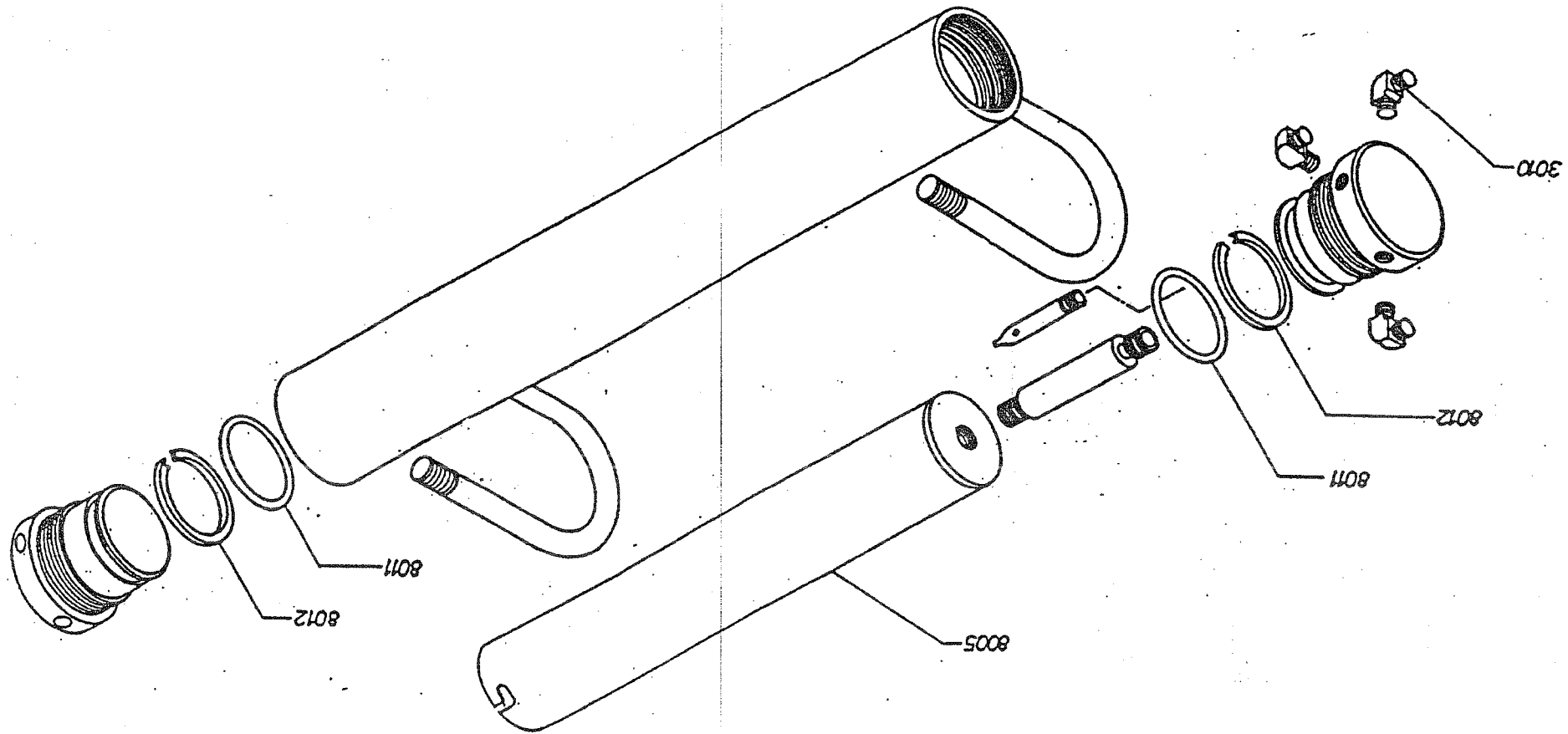
1	Pressure Maintaining & Non Return Valve	LW 300/450 8006a	
1	Filter Housing 2,3 ltr., P _{max} : 350 bar	LW 300/450 8021	
2	Woodruff Key	LW 300/450ES 0191	
4	Foot	LW 300/450ES 1018	
1	Cooling Fan Fairing	LW 300/450ES 1027b	
1	90° Connection	LW 300/450ES 3005	
1	Hose Connection	LW 300/450ES 3015	
4	Nut M8	LW 300/450ES 6005	
4	Washer	LW 300/450ES 6010	
4	Washer	LW 300/450ES 6010	
4	Washer	LW 300/450ES 6010	
1	Connection	LW 300/450ES 7067	
1	Oil Drain Hose	LW 300/450ES 7068	
1	Plug	LW 300/450ES 7069	
1	Woodruff Key	LW 300/450ES 7074	
1	Fan	LW 300/450ES 7085	
1	Fan Flange	LW 300/450ES 7086	
1	Grub Screw	LW 300/450ES 7088	
4	Connection	LW 450 3016	
2	Mounting Screws	LW 450 6026	



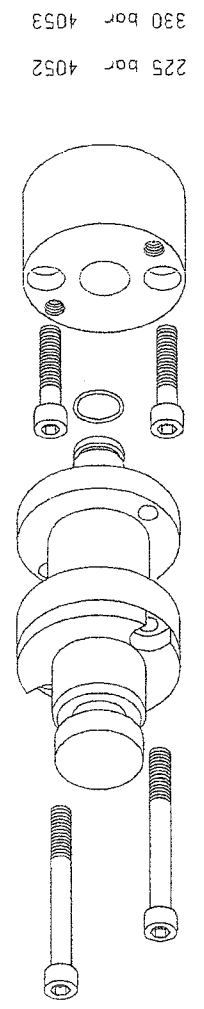
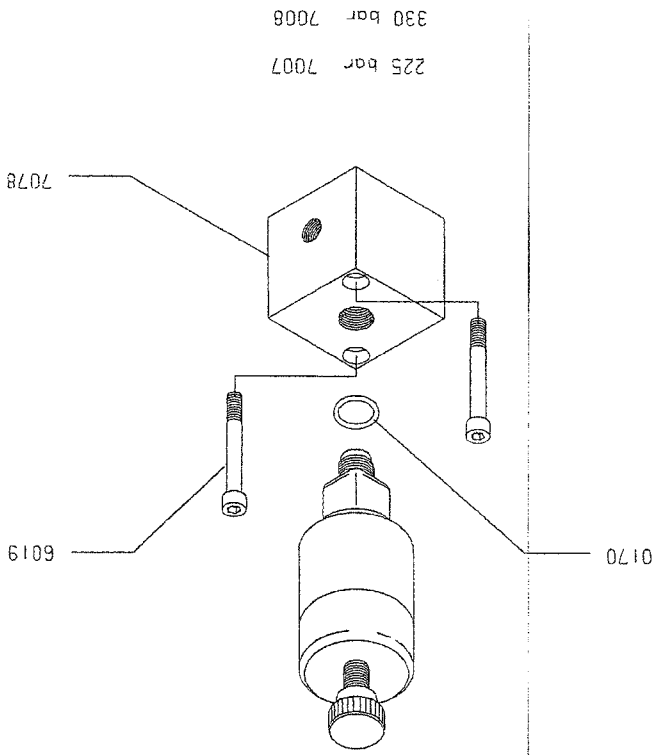
LW300 B

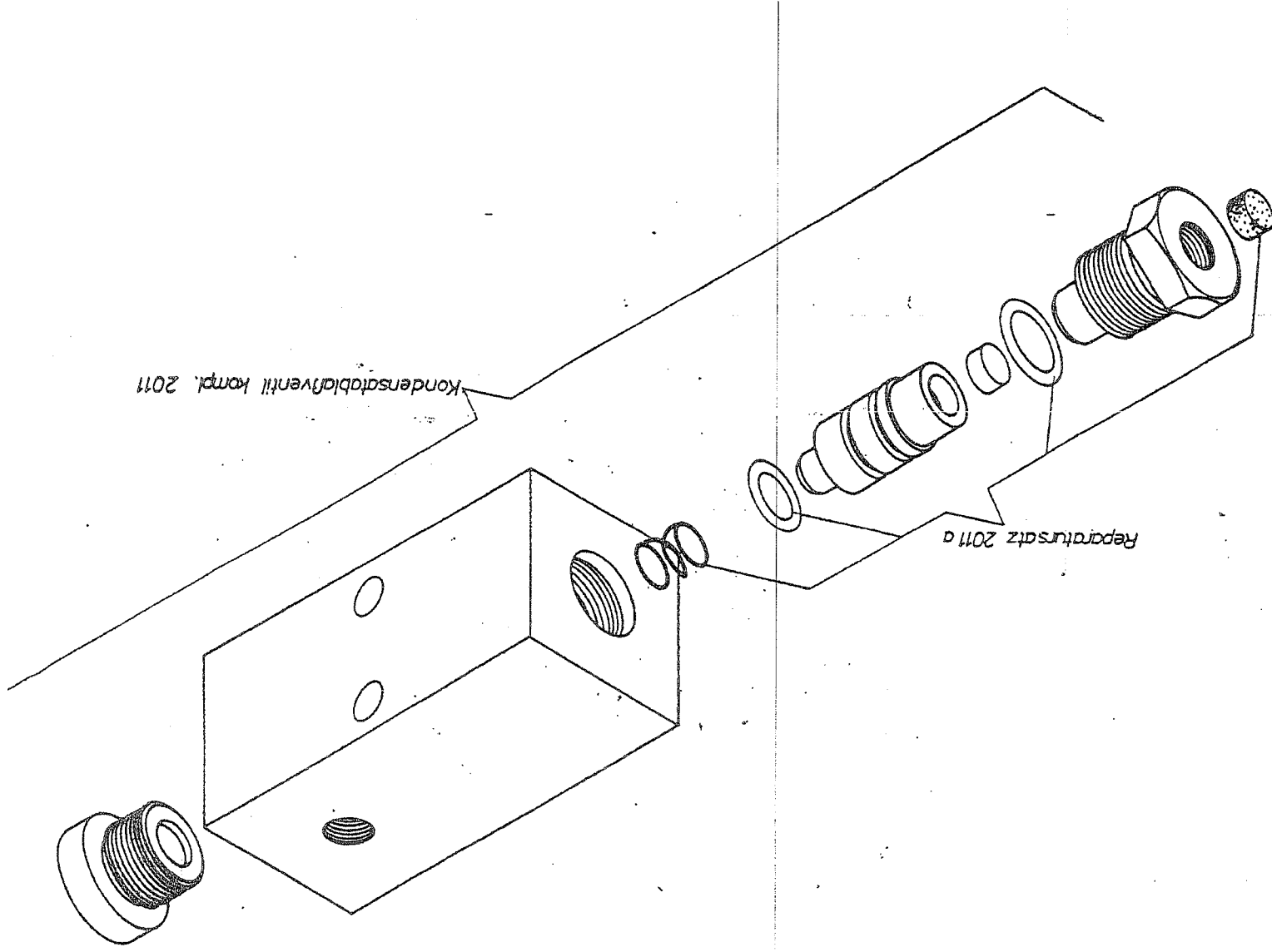
Flywheel Assembly
Schwungrad

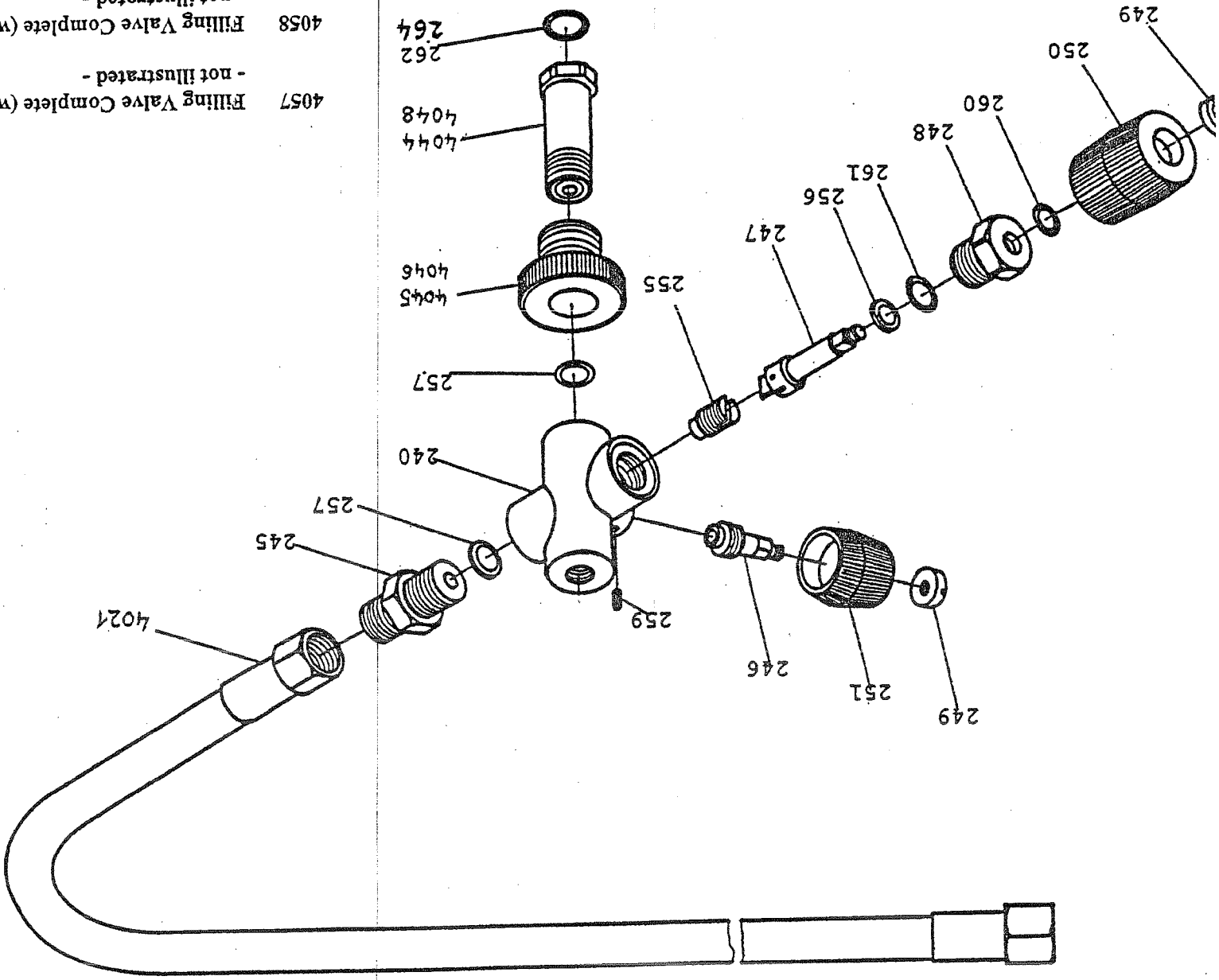




LM 300/260 E

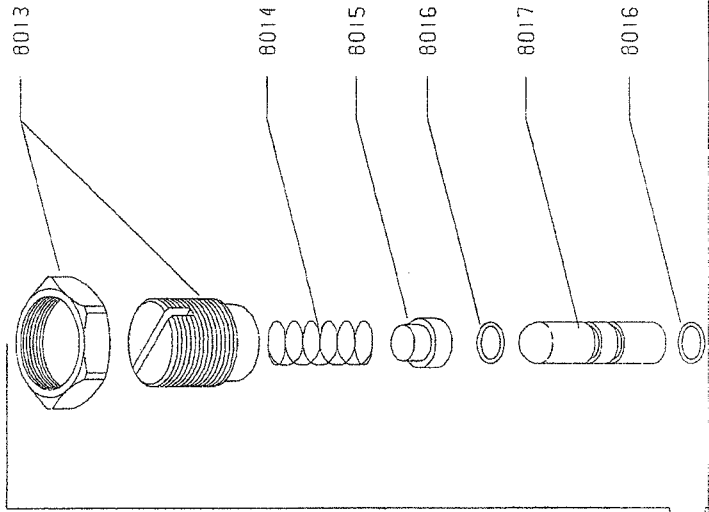




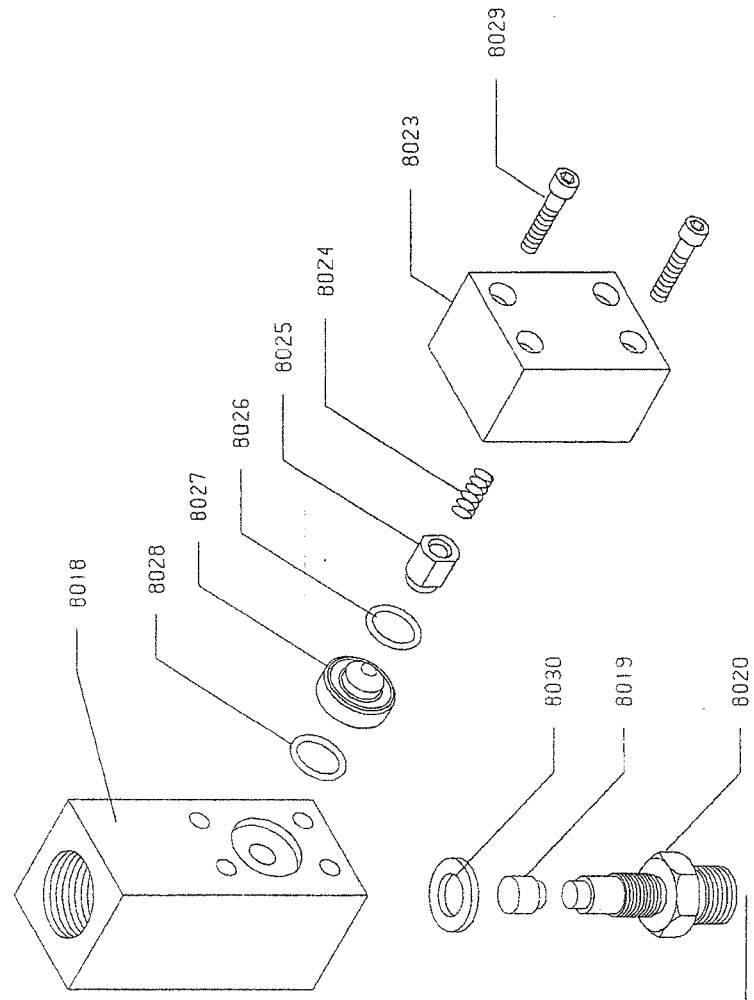


4057 Filling Valve Complete (without hose) - not illustrated -

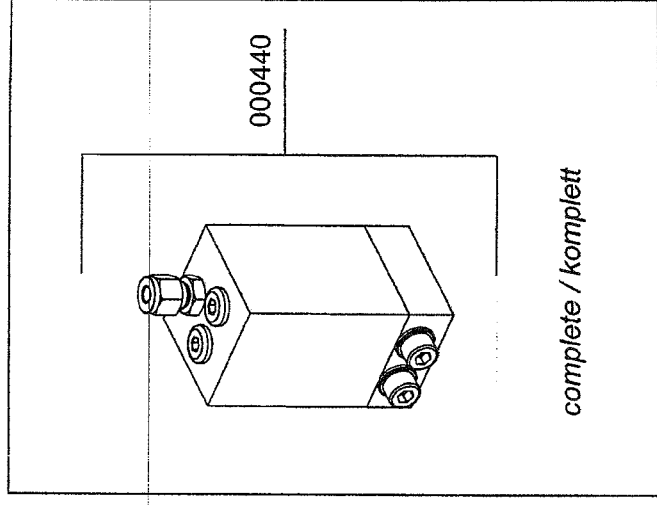
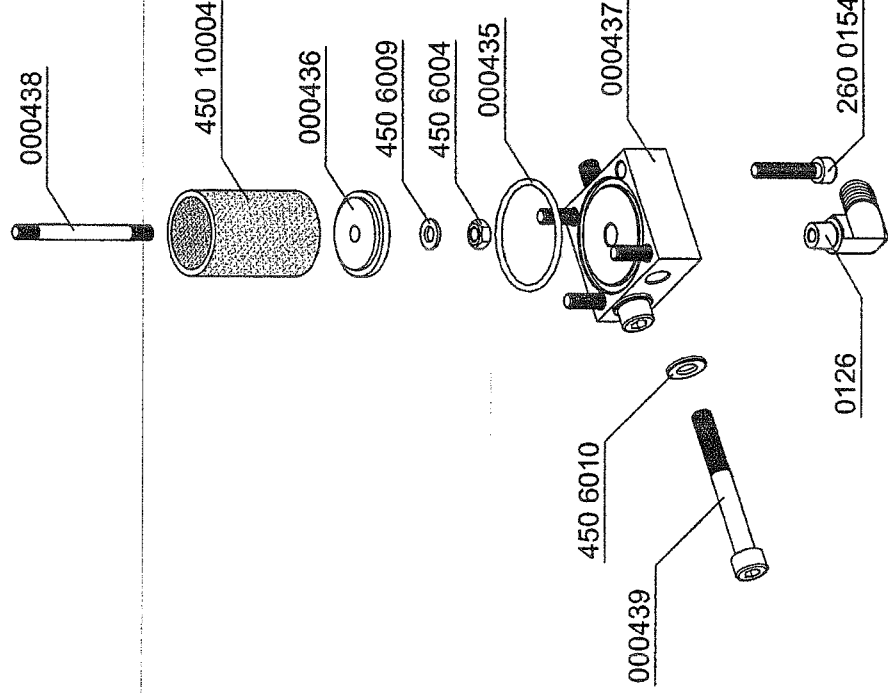
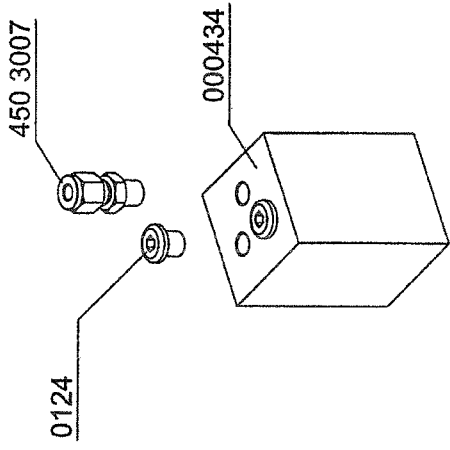
4058 Filling Valve Complete (without hose & pressure gauge) - not illustrated -



8006



LW 260 E



Oilfilter Assembly
Zusammenbau Ölfilter