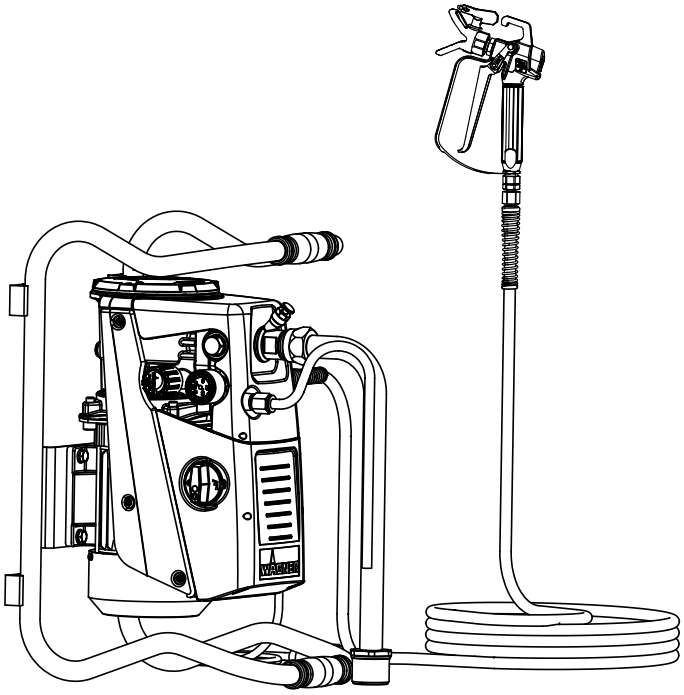
WAGNER

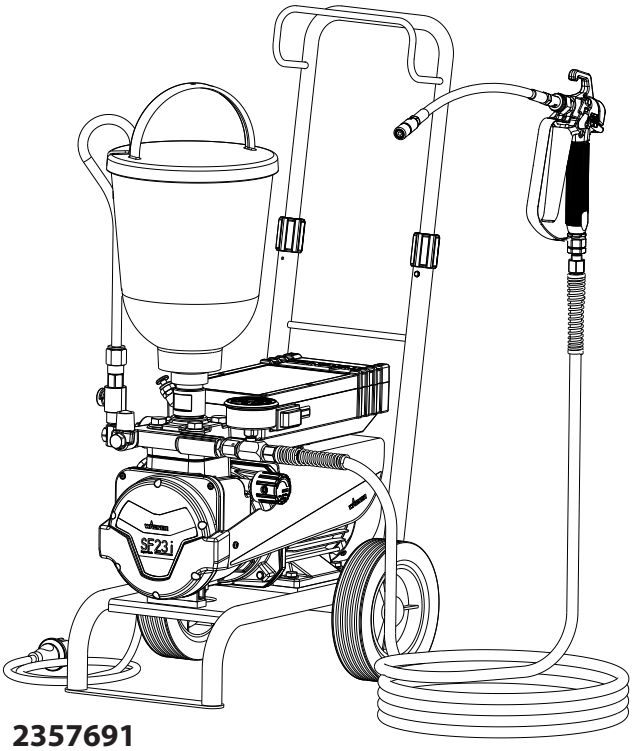
Service manual
with electrical repair instructions for electrically instructed persons of the J. Wagner GmbH

Super Finish 23 PLUS
Super Finish 23i

2334 444 **With trolley, 230V**
2346191 **With trolley, 110 V UK (IP44)**



2334 424 **With frame, 230 V**
2344967 **With frame, 110 V UK (IP54)**
2346191 **With frame, 110 V UK (IP44)**



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WARNING!

Attention, danger of injury by injection!

Airless units develop extremely high spray pressures.

	 Danger
1	Never bring fingers, hands or other body parts into contact with the spray jet! Never point the spray gun at yourself, other persons or animals. Never use the spray gun without spray jet safety guard. Do not treat a spray injury as a harmless cut. In case of injury to the skin by coating material or solvents, consult a doctor for quick and correct treatment. Inform the doctor about the coating material or solvent used.
2	**The following points are to be observed in accordance with the operating manual before every start-up:** 1. Faulty units may not be used. 2. Secure a Wagner spray gun with the securing lever at the trigger guard. 3. Ensure earthing. 4. Check the permissible operating pressure of the high-pressure hose and spray gun. 5. Check all the connecting parts for leaks.
3	**Instructions for regular cleaning and maintenance of the unit are to be observed strictly.** **Observe the following rules before any work on the unit and at every working break:** 1. Relieve the pressure from the spray gun and high-pressure hose. 2. Secure a Wagner spray gun with the securing lever at the trigger guard 3. Switch the unit off.

Ensure safety!

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Contents

ELECTRICAL REPAIR INSTRUCTIONS

1 SAFETY REGULATIONS FOR AIRLESS SPRAYING

All local safety regulations in force must be observed.
The following sources are just a sample of those containing safety requirements for Airless spraying.

a) The European Standard „Spray equipment for coating materials – safety regulations„ (EN 1953).

The following safety regulations are to be observed in order to ensure safe handling of the Airless high-pressure spraying unit.

1.1 FLASH POINT

Danger	Only spray coating materials with a flash point of 21 °C or higher. The flash point is the lowest temperature at which vapors develop from the coating material. These vapors are sufficient to form an inflammable mixture over the air above the coating material.

1.2 EXPLOSION PROTECTION

Danger	Do not use the unit in work places which are covered by the explosion protection regulations. The unit is not designed to be explosion protected. Do not operate the device in explosive areas (zone 0, 1 and 2). Explosive areas are, for example, places where paints are stored and locations in direct proximity to the object being sprayed. Keep the device at least 3 m from the object you are spraying.

1.3 DANGER OF EXPLOSION AND FIRE FROM SOURCES OF IGNITION DURING SPRAYING WORK

Danger	There must be no sources of ignition such as, for example, open fires, lit cigarettes, cigars or tobacco pipes, sparks, glowing wires, hot surfaces, etc. in the vicinity.

1.4 DANGER OF INJURY FROM THE SPRAY JET

Danger 	Attention, danger of injury by injection! Never point the spray gun at yourself, other persons or animals. Never use the spray gun without spray jet safety guard. The spray jet must not come into contact with any part of the body. In working with Airless spray guns, the high spray pressures arising can cause very dangerous injuries. If contact is made with the spray jet, coating material can be injected into the skin. Do not treat a spray injury as a harmless cut. In case of injury to the skin by coating material or solvents, consult a doctor for quick and correct treatment. Inform the doctor about the coating material or solvent used.

1.5 SECURE SPRAY GUN AGAINST UNINTENDED OPERATION

Always secure the spray gun when mounting or dismounting the tip and in case of interruption to work.

1.6 RECOIL OF SPRAY GUN

Danger	When using a high operating pressure, pulling the trigger guard can effect a recoil force up to 15 N. If you are not prepared for this, your hand can be thrust backwards or your balance lost. This can lead to injury.

1.7 BREATHING EQUIPMENT AS PROTECTION AGAINST SOLVENT VAPORS

Wear breathing equipment during spraying work.
A breathing mask is to be made available to the user.

1.8 PREVENTION OF OCCUPATIONAL ILLNESSES

Protective clothing, gloves and possibly skin protection cream are necessary for the protection of the skin.

Observe the regulations of the manufacturer concerning coating materials, solvents and cleaning agents in preparation, processing and cleaning units.

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1.9 MAX. OPERATING PRESSURE

The permissible operating pressure for the spray gun, spray gun accessories, unit accessories and high-pressure hose must not fall short of the maximum operating pressure of 25 MPa (250 bar or 3625 psi).

1.10 HIGH-PRESSURE HOSE

 Danger	Attention, danger of injury by injection! Wear and tear and kinks as well as usage that is not appropriate to the purpose of the device can cause leakages to form in the high-pressure hose. Liquid can be injected into the skin through a leakage.

- High-pressure hoses must be checked thoroughly before they are used.
- Replace any damaged high-pressure hose immediately.
- Never repair defective high-pressure hoses yourself!
- Avoid sharp bends and folds: the smallest bending radius is about 20 cm.
- Do **not drive over** the high-pressure hose. Protect against sharp objects and edges.
- Never pull on the high-pressure hose to move the device.
- Do not twist the high-pressure hose.
- Do not put the high-pressure hose into solvents. Use only a wet cloth to wipe down the outside of the hose.
- Lay the high-pressure hose in such a way as to ensure that it cannot be tripped over.

	Only use WAGNER original-high-pressure hoses in order to ensure functionality, safety and durability.

1.11 ELECTROSTATIC CHARGING (FORMATION OF SPARKS OR FLAMES)

 Danger	Electrostatic charging of the unit may occur during spraying due to the flow speed of the coating material. These can cause sparks and flames upon discharge. The unit must therefore always be earthed via the electrical system. The unit must be connected to an appropriately-grounded safety outlet.

An electrostatic charging of spray guns and the high-pressure hose is discharged through the high-pressure hose. For this reason the electric resistance between the connections of the high-pressure hose must be equal to or lower than 1 MΩ.

1.12 USE OF UNITS ON BUILDING SITES AND WORKSHOPS

The unit may only be connected to the mains network via a special feeding point with a residual-current device with INF ≤ 30 mA.

1.13 SOCKET AT THE UNIT

Do not load the socket with more than 1500 Watt. Unroll any connected cable drum completely.

1.14 VENTILATION WHEN SPRAYING IN ROOMS

Adequate ventilation to ensure removal of the solvent vapors has to be ensured.

1.15 SUCTION INSTALLATIONS

The are to be provided by the unit user in accordance with the corresponding local regulations.

1.16 EARTHING OF THE OBJECT

The object to be coated must be earthed.
(Building walls are usually earthed naturally)

1.17 CLEANING THE UNIT WITH SOLVENTS

 Danger	When cleaning the unit with solvents, the solvent should never be sprayed or pumped back into a container with a small opening (bunghole). An explosive gas/air mixture can arise. The container must be earthed.

1.18 CLEANING THE UNIT

 Danger	Danger of short-circuits caused by water ingression! Never spray down the unit with high-pressure or high-pressure steam cleaners.

1.19 WORK OR REPAIRS AT THE ELECTRICAL EQUIPMENT

These may only be carried out by a skilled electrician. No liability is assumed for incorrect installation.

1.20 WORK AT ELECTRICAL COMPONENTS

Unplug the power plug from the outlet before carrying out any repair work.

2 TECHNICAL DATA

2.1 TECHNICAL DATA (230 V VERSION)

Voltage :	230 V AC, 50 Hz
Fuses :	16 A time-lag
Unit connecting line :	6 m long, 3 x 1.5 mm^2
Max. current consumption:	7.4 A
Degree of protection :	IP 44
Rated input of device:	1.3 kW
Max. operating pressure :	25 MPa (250 bar)
Max. volume flow :	2.6 l/min
Volume flow at 12 MPa (120 bar) with water :	2.3 l/min
Max. temperature of the coating material :	43 °C
Max. viscosity :	20,000 mPas
Empty weight	
Model including carriage:	29 kg
Model on frame:	24 kg
Hydraulic oil filling quantity :	
Hydraulics housing (old)	0.88 liter
Hydraulics housing (new)	1.15 liter
Gears	0.05 liter
Plug connection on device (not included in all models):	230 Volt ~, 50 Hz
max. connection:	1500 W
Max. vibration at the spraygun :	lower than 2.5 m/s^2
Max. sound pressure level:	74 dB (A)*

*Place of measurement: 1 m distance from unit and 1.60 m above floor, 12 MPa (120 bar) operating pressure, reverberant floor

2.2 TECHNICAL DATA (110 V VERSION UK)

Voltage :	110 V AC, 50 Hz
Fuses :	16 A time-lag
Unit connecting line :	6 m long, 3 x 1.5 mm^2
Max. current consumption:	14.4 A
Degree of protection :	IP 44
Rated input of device:	1.3 kW
Max. operating pressure :	25 MPa (250 bar)
Max. volume flow :	2.6 l/min
Volume flow at 12 MPa (120 bar) with water :	2.3 l/min
Max. temperature of the coating material :	43 °C
Max. viscosity :	20,000 mPas
Empty weight	
Model including carriage:	29 kg
Model on frame:	24 kg
Hydraulic oil filling quantity :	
Hydraulics housing (old)	0.88 liter
Hydraulics housing (new)	1.15 liter
Gears	0.05 liter
Max. vibration at the spraygun :	lower than 2.5 m/s^2
Max. sound pressure level:	74 dB (A)*

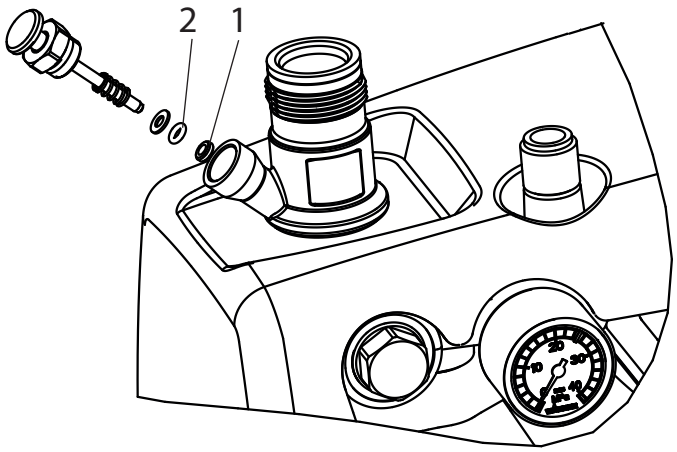
*Place of measurement: 1 m distance from unit and 1.60 m above floor, 12 MPa (120 bar) operating pressure, reverberant floor

3 REPAIRS AT THE UNIT

Danger	Switch the unit off. Before all repair work: Unplug the power plug from the outlet.

3.1 INLET VALVE PUSHER

1. Use a 17 mm spanner to screw out the inlet valve button.
2. Lubricate O-ring (2) and replace it together with wiper (1).



3.2 INLET VALVE

1. Place a 30 mm wrench on the trigger housing (1) and remove.
2. Screw out the trigger housing with the inlet valve (2) from the paint section.
3. Pull of the clasp (3) using a screwdriver.
4. Place the enclosed 30 mm wrench (order no. 341434) on the inlet valve (2). Turn out the inlet valve carefully.
5. Clean the valve seat (4) with a cleaning agent and brush (ensure that no brush hairs are left behind).
6. Clean the seals (5, 6) and check for damage. Replace, if necessary.
7. Check all the valve parts for damage. In case of visible wear replace the inlet valve.

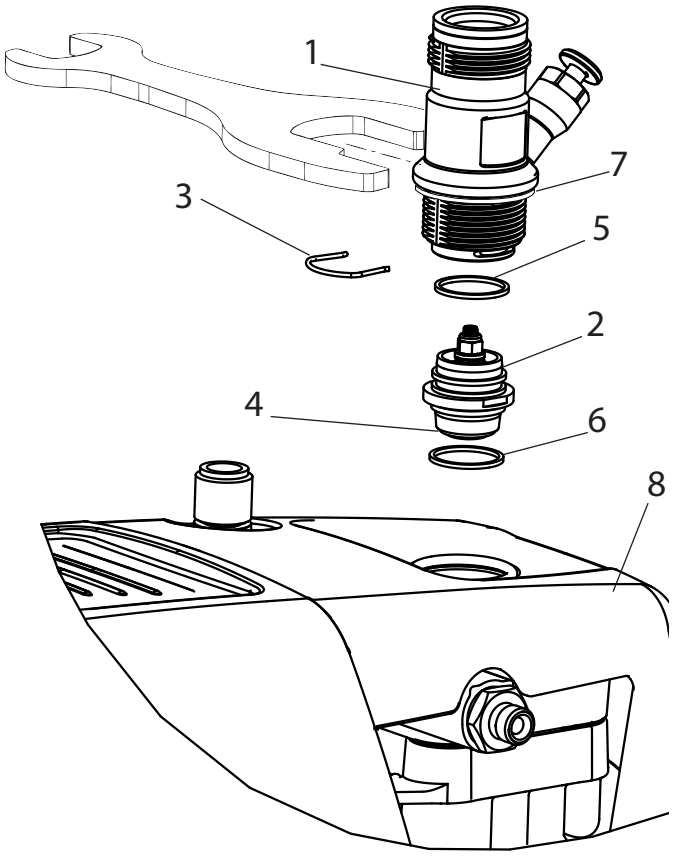
	Valve lift 1.9 ± 0.1 mm Thread lead at valve cone 0.8 mm.

Installation

1. Insert the inlet valve (2) into the trigger housing (1) and secure with the clasp (3). Ensure that the (black) seal (5) is mounted in the trigger housing.

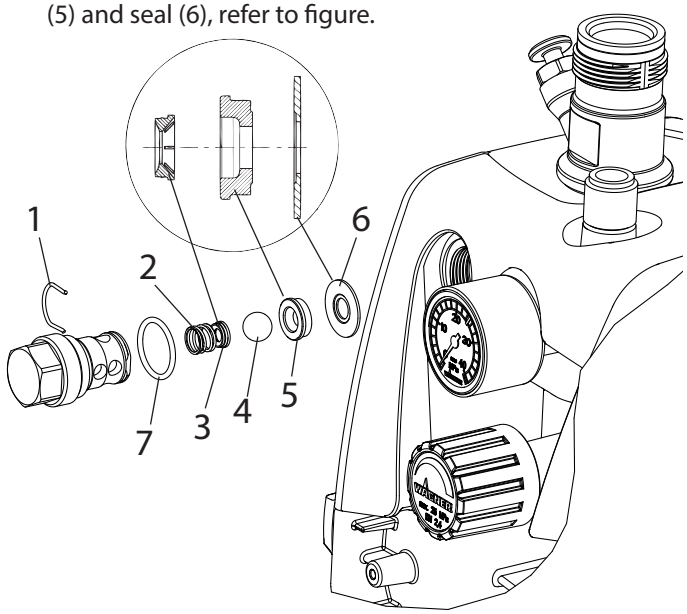
	The O-ring (7) prevents that the thread will get soiled. In addition it also tightens the pump head housing (8).

2. Screw the unit from the trigger housing and the inlet valve into the paint section. The same (black) seal (6) has to be mounted in the paint section.
3. Tighten the trigger housing with the 30 mm wrench (90 Nm tightening torque).



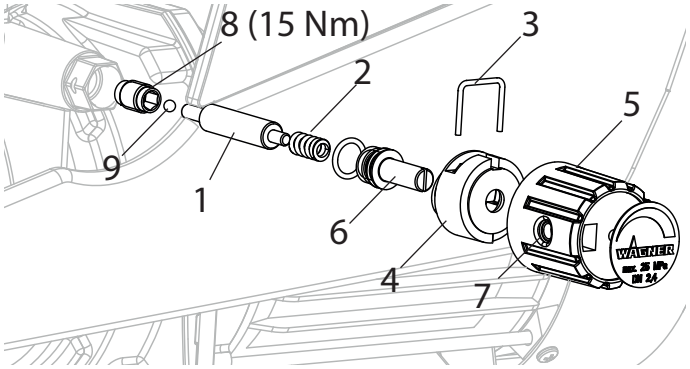
3.3 OUTLET VALVE

1. Use a 22 mm wrench to screw the outlet valve from the paint section.
2. Carefully pull of the clasp (1) using the enclosed screwdriver. The compression spring (2) presses ball (4) and valve seat (5) out.
3. Clean or replace the components.
4. Check the O-ring (7) for damage.
5. Check the installation position when mounting the spring support ring (3) (clipped onto spring (2)), outlet valve seat (5) and seal (6), refer to figure.



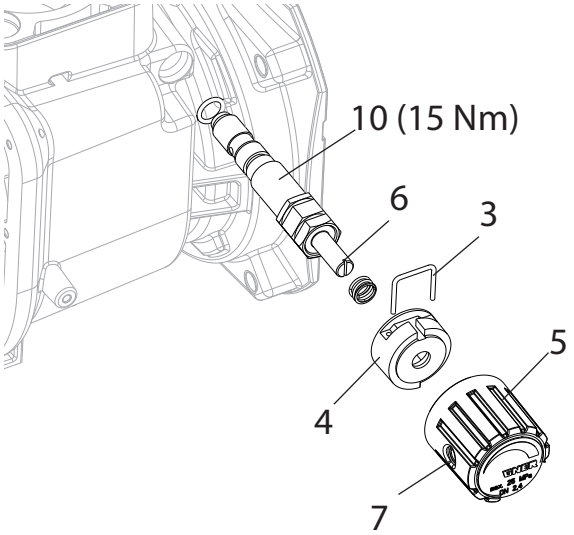
3.4 PRESSURE CONTROL VALVE (OLD)

1. Screw in the valve plate holder (8) with a hexagon socket screw key (AF 6).
2. Insert ball (9) (e.g. place it in the valve plate holder and tighten with a hexagon socket screw key).
3. Insert pusher (1) with the long and narrow side first.
4. Insert pressure spring and place O-ring on the pressure regulation screw.
5. Mount spring (2), stop sleeve (4) and clamp (3).
6. Turn pressure regulation screw (6) to the left until the spring snaps (pressure = 0).
7. Attach suction system or hopper.
   Test medium: water
8. Mount a pressure gauge (0 – 400 bar), an original pressure hose from Wagner and a high pressure airless gun.



3.4.1 PRESSURE CONTROL VALVE (NEW)

1. Insert regulator (10) and tighten it.
2. Mount stop sleeve (4) and clamp (3).
6. Turn pressure regulation screw (6) to the left until the spring snaps (pressure = 0).
7. Attach suction system or hopper.
   Test medium: water
8. Mount a pressure gauge (0 – 400 bar), an original pressure hose from Wagner and a high pressure airless gun.



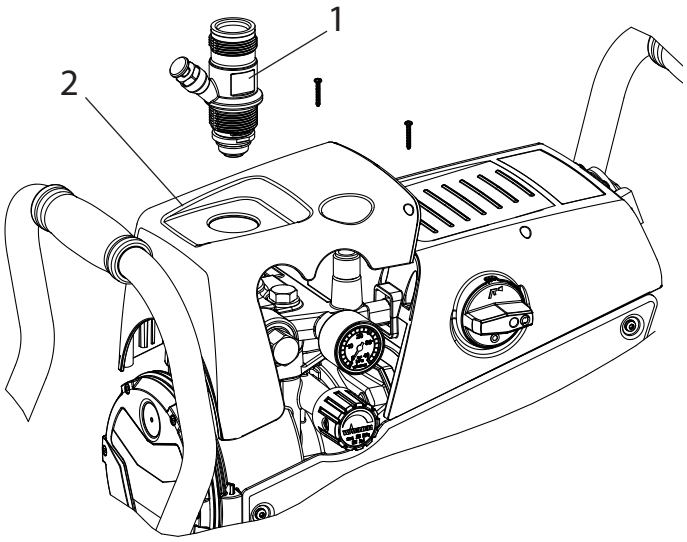
SETTING THE MAXIMUN OPERATING PRESSURE (CLOSING PRESSURE)

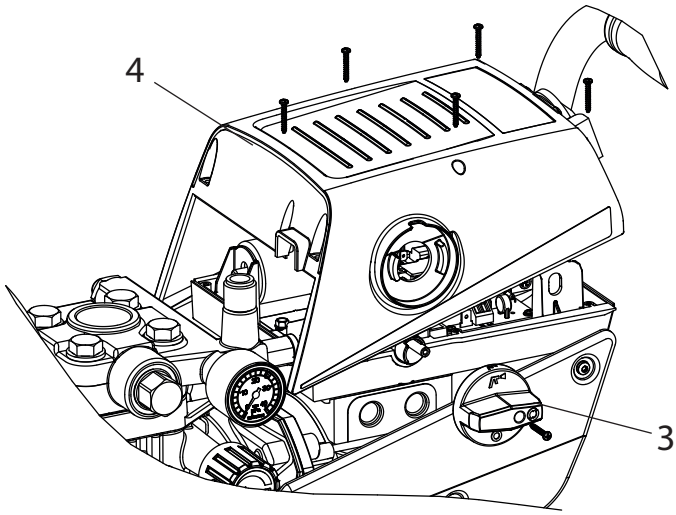
1. Lock the spray gun.
2. Set multifunction switch to ⟳, switch on the machine and let it run for 2-3 minutes for ventilation. Turn the pressure regulation screw (6) slowly until the machine starts to suck in water.
3. Set multifunction switch to ⚑ and trigger spray gun for ventilating high pressure hose and spray gun. Lock the spray gun .
4. Turn the pressure regulation screw (6) slowly until the pressure gauge shows 250 bar (25 MPa, 3625 psi).
5. Put pressure regulation knob (5) on the pressure regulation screw and fully turn it to the right. Hold it in this position and tighten the pin (7) with a hexagonal wrench (2.5 mm).
6. Turn pressure regulation knob to the left.
7. Release pressure by pressing the trigger of the the spray gun.
8. Control setting while the gun is locked again.
9. Seal pin with red sealing wax.
10. Set multifunction switch to ⟳.
11. Machine is ready for operation!

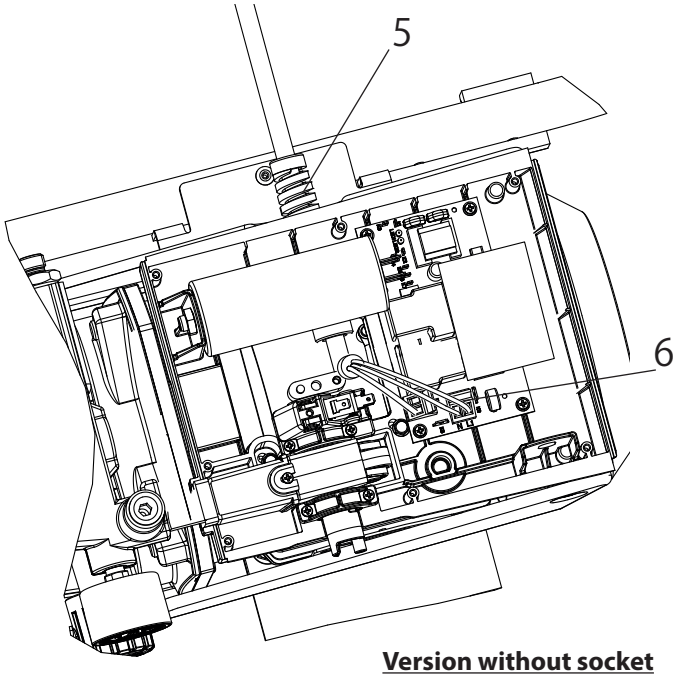
3.5 REPLACING THE POWER CABLE

Danger	This may only be carried out by a skilled electrician. Pay attention to the electrical repair instructions starting on page 24. Switch the unit off. Before all repair work: Unplug the power plug from the outlet.

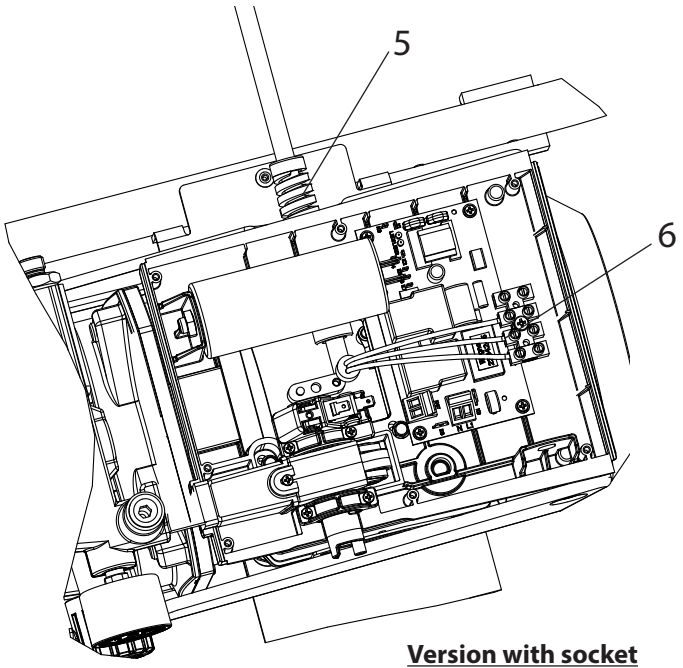
1. In models with a front cover unscrew the trigger housing with inlet valve (1) from the paint section (see inlet valve, 3.2, sections 1 to 2) and remove the front cover (2) by unscrewing the screws.
2. Remove the multi-function switch (3) by unscrewing the screws.
3. Remove the rear cover (4) by loosening the screws.
4. Loosen the cable threaded joint (5).
5. Loosen the wires in the mains terminal (6).
6. Replace the unit connecting line.
   (only an approved power cable with the designation H07-RNF with a splash-proof plug may be used).
7. Connect the green/yellow wire to the contact with the PE sign.
8. Remount the covers carefully (do not squeeze any cables!)
9. Screw the trigger housing back into place (see inlet valve, 10.2, sections 3)







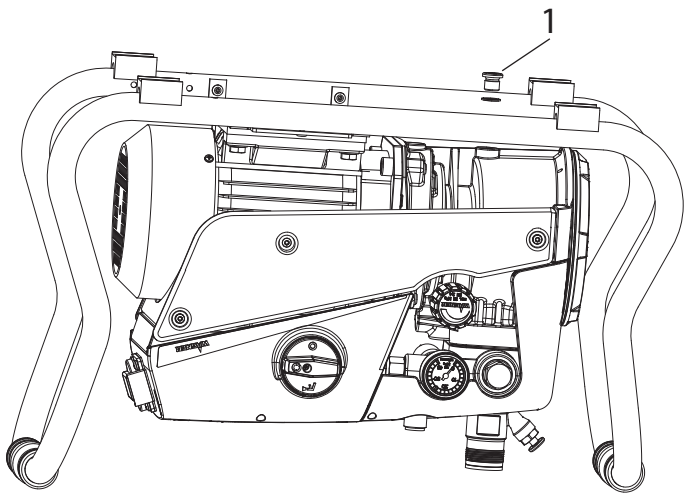
Version without socket

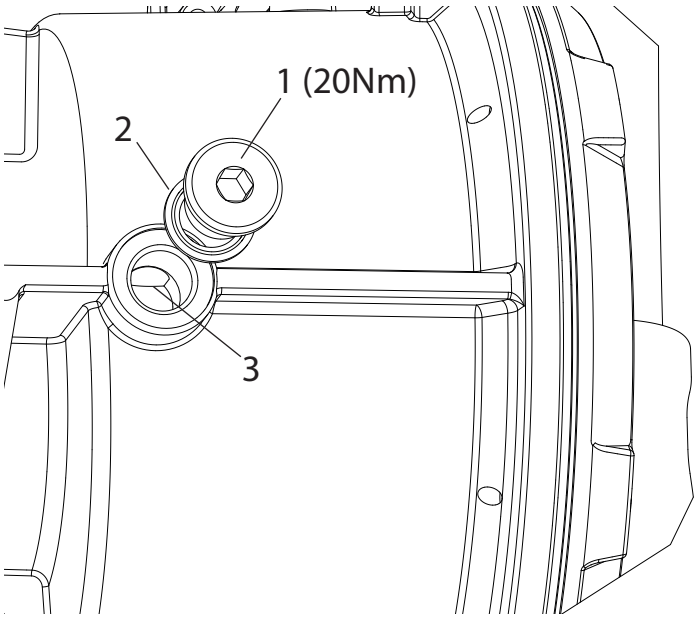


Version with socket

3.6.1 CHECKING THE OIL LEVEL

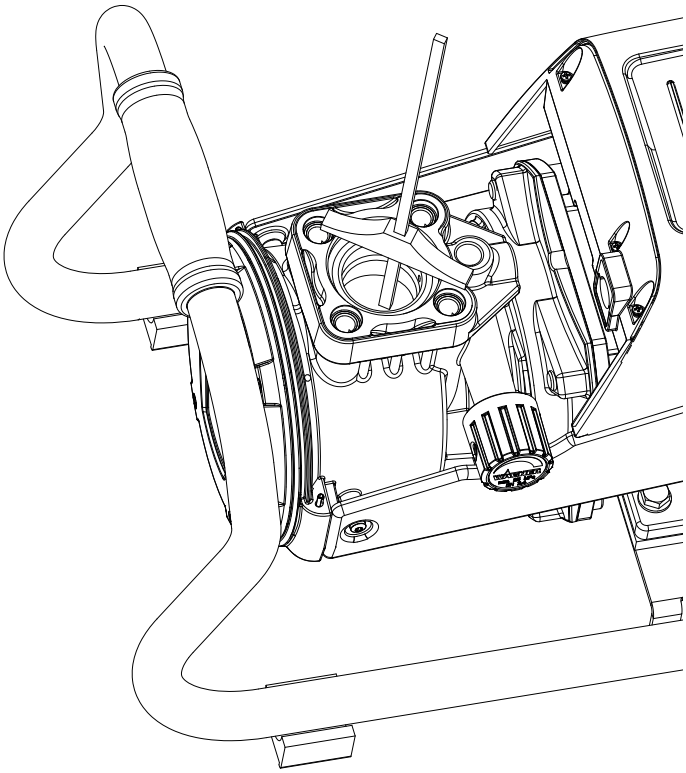
1. Put the machine in a horizontal upside down position (for the chariot version it may be necessary to turn down the shaft).
2. Remove oil locking screw (1) hexagon socket screw key (AF 6).
3. Oil level must be on the same lever as the top of rib (3) inside the threaded hole. Refill if necessary; suck up excessive oil.
4. Tighten oil locking screw (1) and gasket (2).





3.6.2 CHECKING THE OIL LEVEL WHEN THE PUMP IS DISASSEMBLED

1. If the pump head and the pressure inlet are removed,the oil level should be at a depth of 49 mm (see sketch).

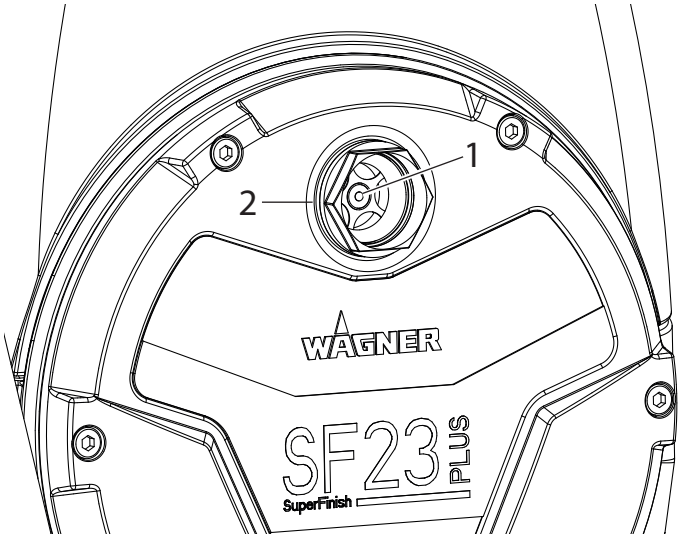


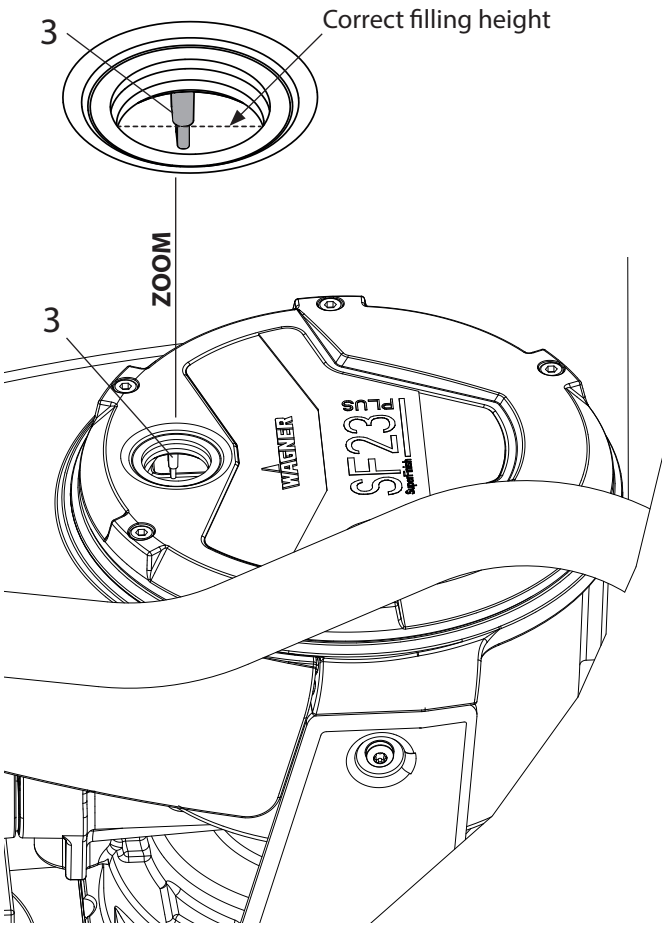
3.6.3 CHECKING THE OIL LEVEL AT A MODEL WITH OIL GAUGE GLASS

1. Place the machine in a horizontal position (slightly aslope).
2. If necessary shake the machine a little bit in order to have an equal distribution of the air bubbles inside the oil.
3. The oil level has to be in the center of the small red circle (1).

Refilling oil

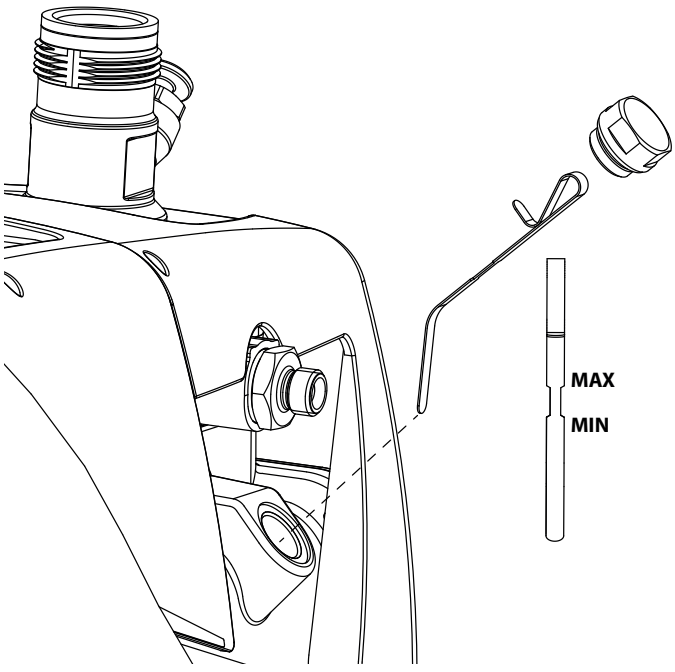
1. Place the machine in a horizontal position.
2. Remove oil gauge glass (2) (AF22).
3. Fill oil up to the edge of the black plastic pin (3).





3.6.4 CHECKING THE OIL LEVEL (NEW HOUSING)

1. Check oil level in the horizontal set-up.
2. The oil level must be in the middle between MIN and MAX.



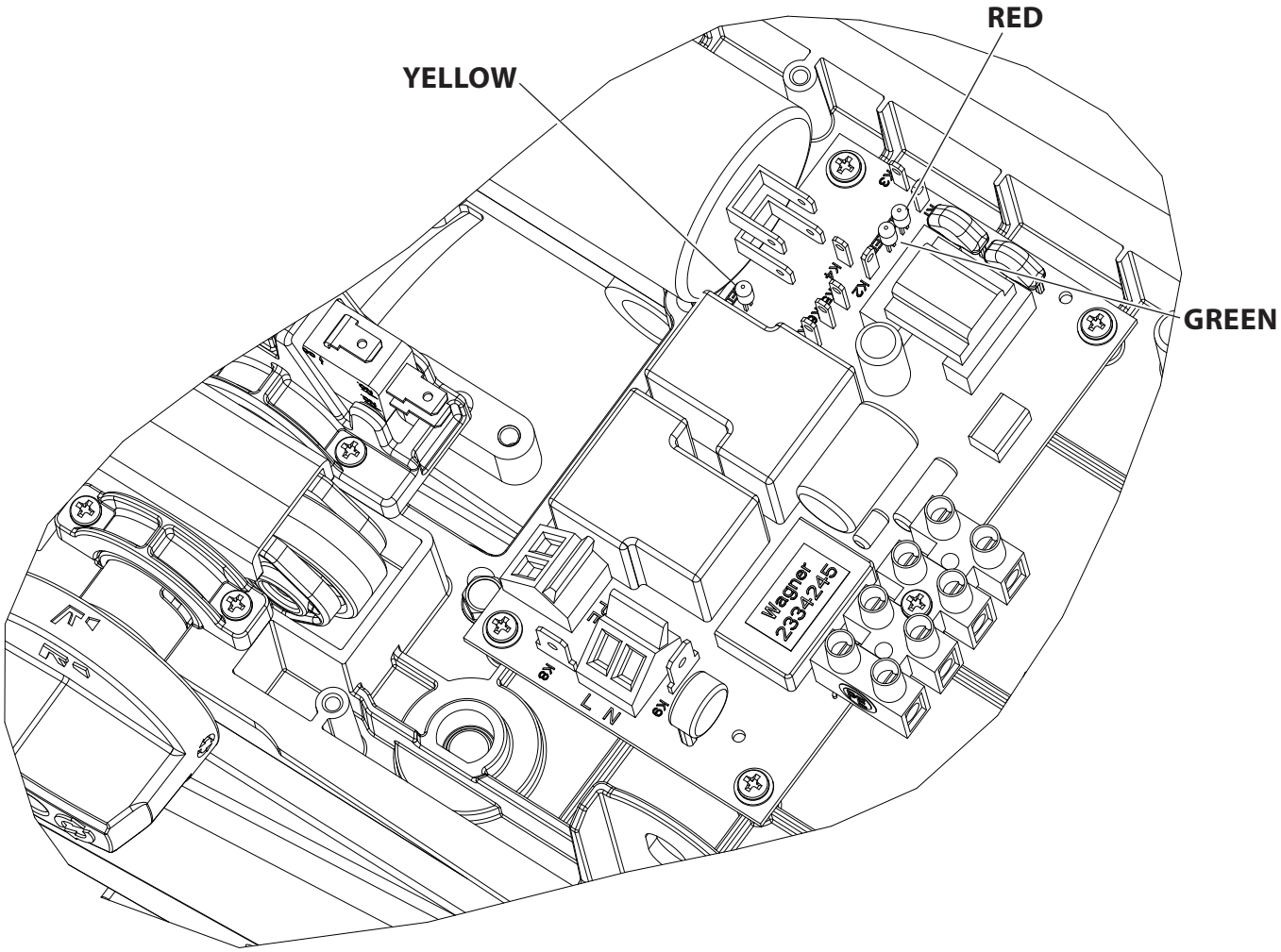
3.7 TROUBLESHOOTING

TYPE OF MALFUNCTION	WHAT ELSE?	POSSIBLE CAUSE	MEASURES FOR ELIMINATING THE MALFUNCTION
Unit does not start		Unit fuse has triggered	Let the motor cool down (you can also check the LED on the PCB -> see chapter 3.7)
		Multi-function switch not set back previously to „0“	Set multi-function switch to „0“ and then switch back on
Unit runs but makes a strange-noise	Motor runs without load (very silent), unit without function	Gearwheel inside the gearbox is damaged	Replace gearwheel, remove the broken pins inside the grooves of the gearbox housing (e.g. with compressed air)
	Motor produces a loud and high noise	Fan cover vibrates	Tighten the screws of the fan cover, if necessary place waher (A6,4) between motor and fan cover
Unit can‘t be ventilated	Ventilation possible in vertical position	Not enough oil	Check/correct oil level (Find reason for oil loss. Maybe there is oil in the gear box?)
	Pressure regulation valve can only be mounted when pressing the pressure regulation knob	Pusher too long	Change pusher or turn off/reduce marked side to 7.6mm (± 0.1) 
Unit does not suck in	Most likely ->	Inlet valve damaged or clogged	Replace or clean inlet valve
		Outlet valve damaged or clogged	Replace or clean outlet valve
	Valve makes no sound	Unit not ventilated	Ventilate unit
Delivery rate too low	Most likely ->	Inlet valve damaged	Replace inlet valve
	Material sucked up hardly	Unit is sucking in air	Search for the problem: suction system?, Inlet valve pusher?, Gaskets inside the inlet valve? Red inlet installed?...
		Suction filter clogged	Clean or replace
		Viscosity of the material too high	Try to us outlet valve 341246 testen (stainless steel version from SF-31)
Unit does not generate pressure	Material comes out of the return hose	Wrong setting for the relief valve	Correct setting
		Relief valve leaks	Replace relief valve
Pressure can‘t be released	Multifunction switch in circulation position -> no material comes out of the return hose	Wrong setting for the relief valve	Correct setting
		Relief valve clogged	Clean or replace relief valve
Unit loses oil	Edge of the front cover is soiled with oil	Wrong assembly of front cover	Reassemble
		Cavities inside the groove of the o-ring	Remove o-ring and check the groove
	Oil comes out of the fitting of the diaphragm	Housing leaks due to cavities	Disassemble pump head - is oil in one of the threaded holes (M12)? - Replace housing
		Diaphragm fixation leaks	Replace diaphragm

TYPE OF MALFUNCTION	WHAT ELSE?	POSSIBLE CAUSE	MEASURES FOR ELIMINATING THE MALFUNCTION
Material comes out of the paint head	Material comes out of the inlet valve housing	Sealing ring 341331 missing	Mount sealing ring
		Material runs from the outlet valve into the paint head (this material has destroyed the paint head)	Replace paint head. It's essential to replace the outlet valve as well!
Rubber foot has fallen off from frame or chariot		Washer used during production is too small	Use a washer with correct size of A6,4 and clench it

3.8 INDICATORS AT THE ELECTRIC CONSOLE

POS	DESCRIPTION
1	**LED red** (Indicator for voltage supply - lights up when there is voltage supply)
2	**LED green** (Indicator for "ready for operation" – lights up when there is voltage supply and the thermal fuse is closed = means temperature of the motor is ok)
3	**LED yellow** (Indicator for contactor – lights up when contactors are fixed and there is volatge voltage supply for the motor)



4 SPARE PARTS

4.1 SPARE PARTS LIST SF 23 PLUS

ITEM	ORDER-NO*	DESIGNATION	QUANTITY**
1	233 4044	Cover (right)	1
2	2334 038	Cover	1
3	9952 685	Cable threaded joint	1
4	0261 352 ***	Mains cable H07-RNF 3x 1.5mm², 6m long	1
5	9952 681	CEE plug (3-pole)	1
6	2343 810	Gasket	2
7	2341 465	Label (right)	1
8	2334 041	Terminal box cover	1
9	421 328	Oval head screw 3, 17x20	7
10	2341 466	Label (left)	1
11	9953 144 252 337	Capacitor 25µF (230V version) Capacitor 50µF (110V version)	1 1
12	233 4225	Lock, shaft, P/S	1
13	9905 105	Oval head screw 17x13	5
14	9920 123	Disc	4
15	9953 146	Capacitor 65µF (only 110V version)	1
16	2334 245	PCB	1
17	2337 541 2346 678 2346 677	Rating label (230V version)**** Rating label (110V version, 50Hz)**** Rating label (110V version, IP54)****	1 1 1
18	2337 484	Connecting plate	1
19	9903 348	Self-drilling screw	2
20	233 9961	Ground plate cpl.	1
21	2342 089	Hexagon head screw M4	4
22	9902 225	Oval head screw 3,5x9,5	4
23	2337 557	Fan cover	1
24	2347 274	Multi-fonction switch	1
25	2337 065	Connection	1
26	2344 692	Motor gasket	1
27	2334 046	Connecting plate	2
28	2315 382	Oval head screw M4x10	10
29	2334 042	Cover (left)	1
30	341 492	Label 110V	1
31	2342 535	Plate	1
32	9950 242	Gasket	1
33	9905 113	Oval head screw 5x10	2
34	9950 241	Socket	1
35	2336 571 2336 969	Electric motor 230V, 50Hz (incl. pos. 22,23) Electric motor 110V, 50Hz (incl. pos. 22,23)	1 1

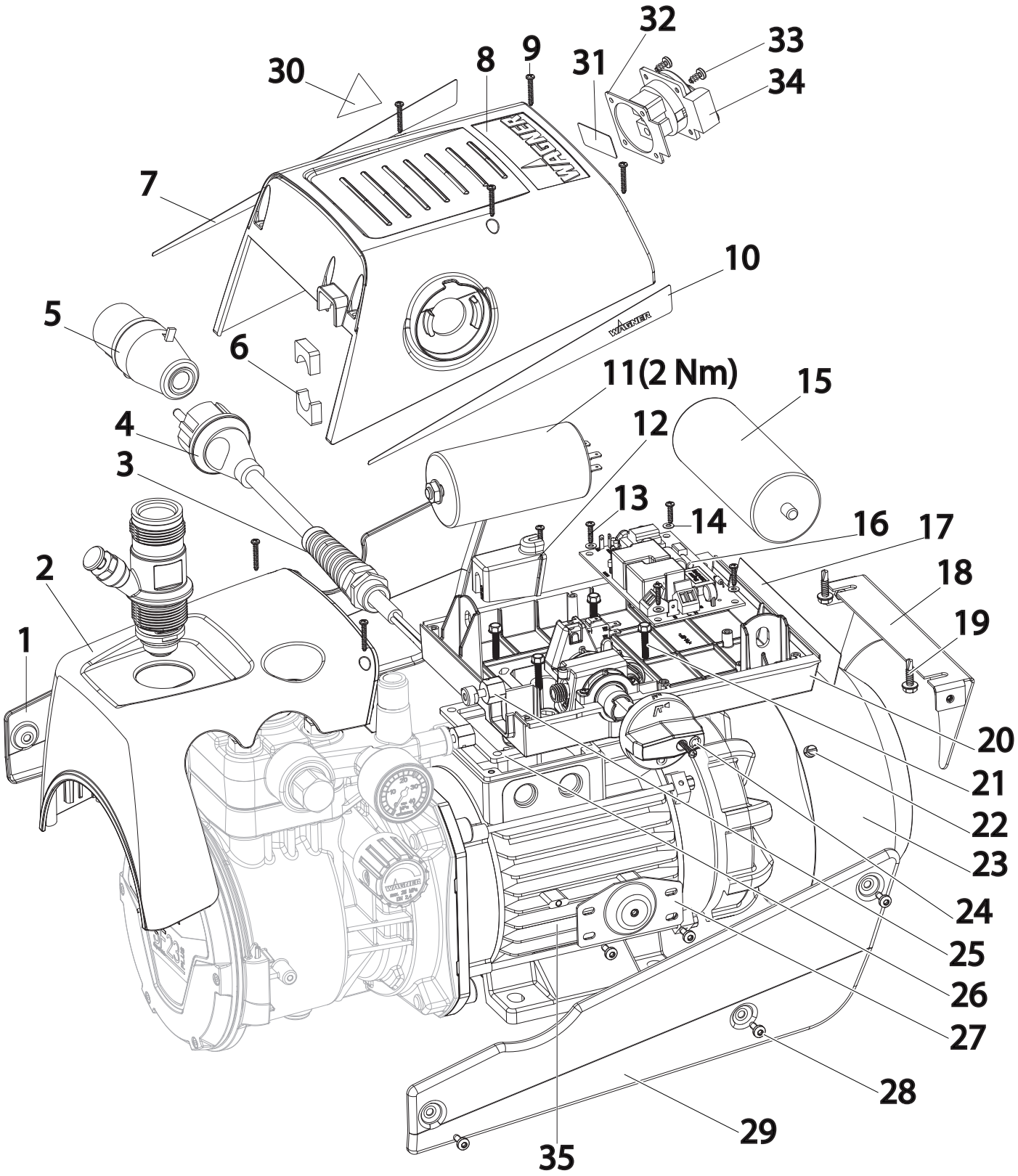
* Order number for 1 piece

** Quantity in the complete assembly

*** Cut off plug for UK-version

**** Keep record when changing the serial number

WAGNER



Explanation

(xNm) indicates torque

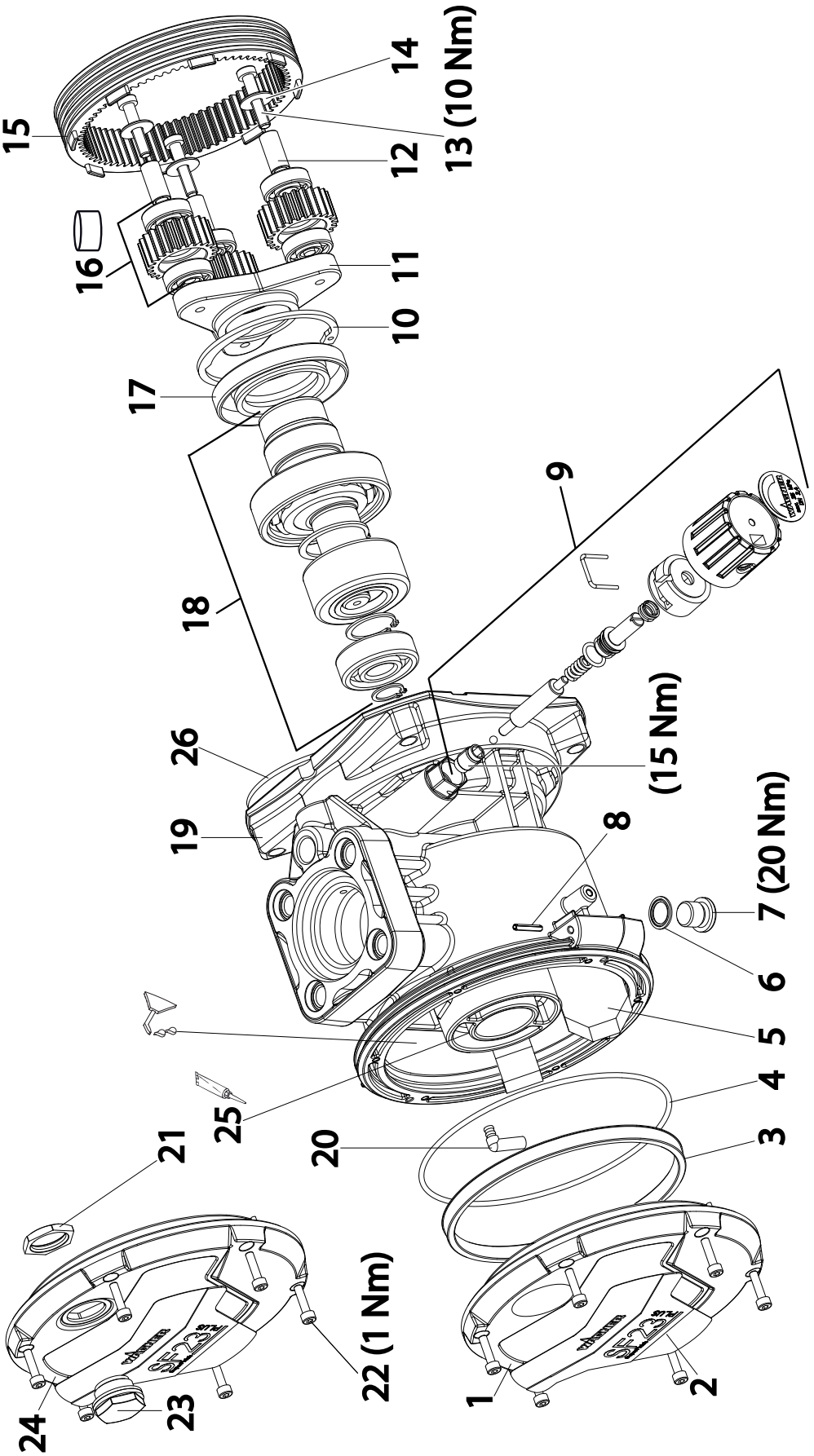
Old housing (until approx. July 2016)

ITEM	ORDER-NO*	DESIGNATION	QUANTITY**
1	2334 021	Front cover	1
2	2339 570	Label SF-23plus	1
3	2346 129	Support ring	1
4	2334 050	O-ring 133x2,62	1
5	2344 623	Snubber	2 (4***)
6	9970 210	U-seal	1
7	9904 307	Locking screw	1
8	9932 206	Spiral pin	2
9	234 7186	Service kit oil control valve SF-23Plus	1
10	3056 464	Lock ring	1
11	233 3995	Planet carrier	1
12	233 6970	Sleeve	3
13	9902 101	Cylinder head screw	3
14	9920 304	Disc, B6,4, DIN 9021	3
15	2334 008	Gear-wheel	1
16	2343 682	Planet wheel (set of 3)	1
17	9970 532	Shaft sealing ring	1
18	2333 998	Eccentric shaft cpl.	1
19	2334 897	Housing cpl. (incl. pos. 20)	1
20	2337 486	Oil return pipe	1
21	2346 363	Securing nut	1
22	9900 308	Cylinder head screw	6
23	2337 156	Oil gauge glass (optional)	1
24	2346 367	Front cover with oil gauge glass (optional, incl. pos. 21,23)	1
25	xxxx xxx	Capillary tube	1
26	2337 102	O-ring 136x3,55	1

* Order number for 1 piece
** Quantity in the complete assembly
*** Added when sealing the capillary tube

WAGNER

Old housing (until approx. July 2016)



Explanation

(xNm) indicates torque

lubricate with 40-50 g gear grease

fill in 0.88 l hydraulic oil (order-no. 21061)

seal with UHU-Plus 2K (order-no. 2344102)

For SF 23 Plus (230V) units up to serial number 2352:
Repairs due to oil leakage: Seal the capillary tube (25) with UHU Plus 2K and install 2 additional snubbers (5).
After that adjust the oil volume (even oil level).
Note: Cover and snubber will expand when heated. This results in a little decrease of the oil level.

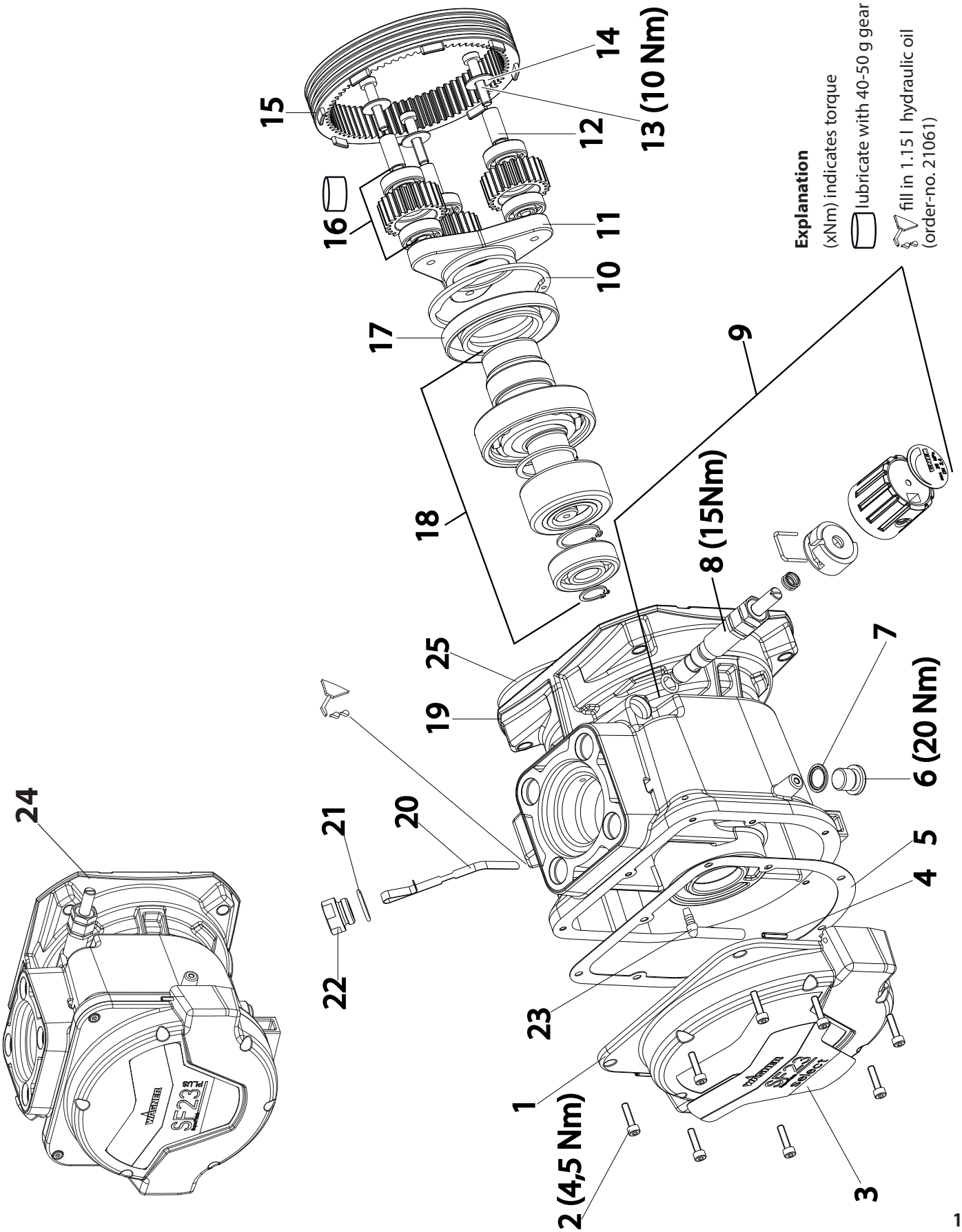
New housing (since approx. August 2016)

ITEM	ORDER-NO*	DESIGNATION	QUANTITY**
1	2354 707	Front cover	1
2	9900 308	Hexagon socket head cap screw	8
3	2339 570 2358 269	Label SF-23plus Label SF-23 Select	1 1
4	9932 206	Spiral pin	2
5	2359 781	Seal	1
6	9904 307	Hexagon socket screw plug	1
7	9970 210	U-seal	1
8	0340222	Regulator assy.	1
9	0340 223	Service kit pressure control valve SF-23Plus	1
10	3056 464	Lock ring	1
11	2333 995	Planet carrier	1
12	233 6970	Sleeve	3
13	9902 101	Cylinder head screw	3
14	9920 304	Disc, B6,4, DIN 9021	3
15	2334 008	Gear-wheel	1
16	2343 682	Planet wheel (set of 3)	1
17	9970 532	Shaft sealing ring	1
18	2333 998	Eccentric shaft cpl.	1
19	2354 418	Housing	1
20	2362 313	Oil dip stick	1
21	9971 146	O-ring	1
22	0341 349	Oil screw plug	1
23	0278 387	Oil return pipe	1
24	2370989	Housing assy. SF 23 PLUS (Pos. 1-8,10,11,17-23,	1
25	2337 102	O-Ring 136x3,55	1

* Order number for 1 piece
** Quantity in the complete assembly

WAGNER

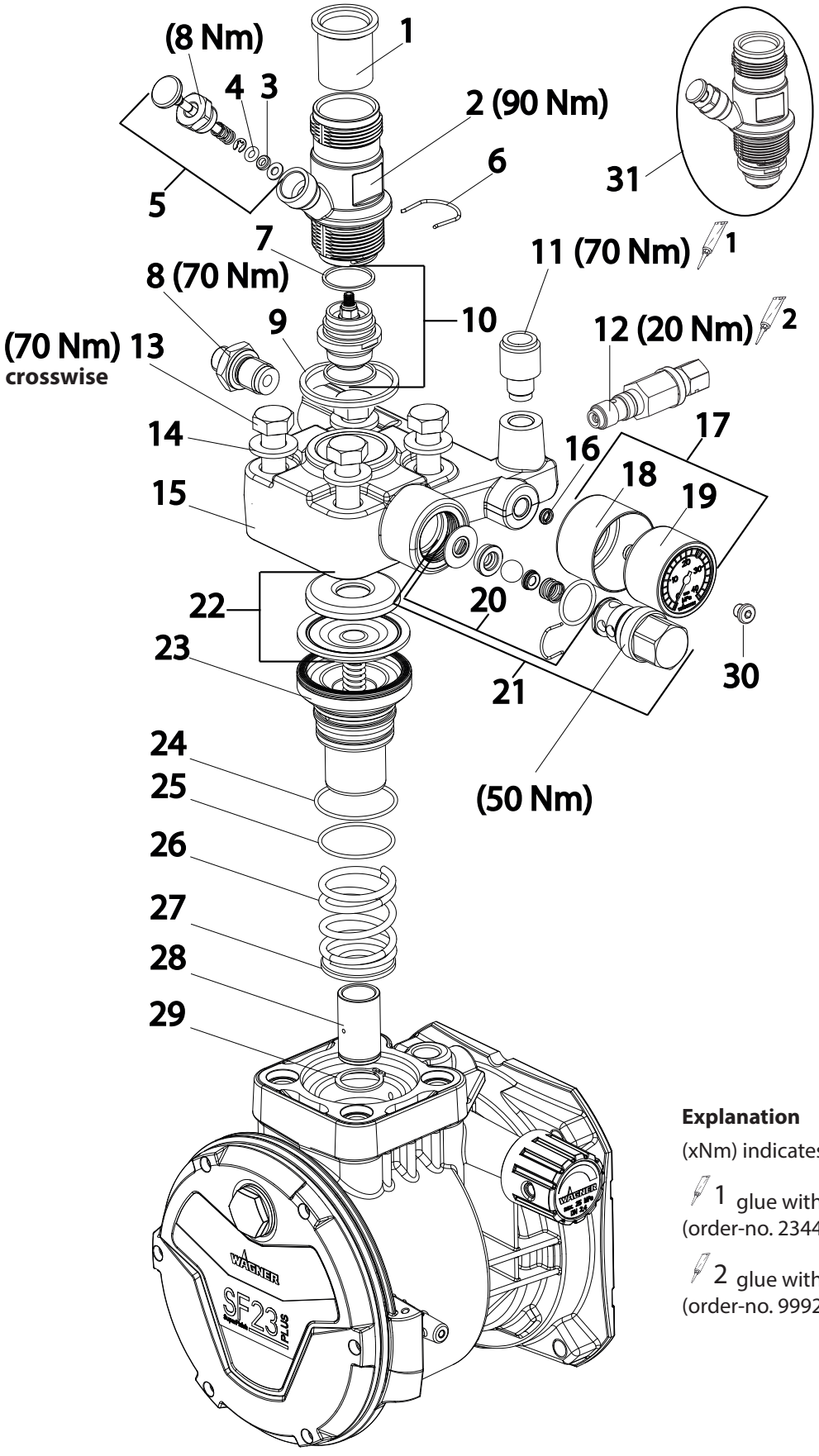
New housing (since approx. August 2016)



ITEM	ORDER-NO*	DESIGNATION	QUANTITY**
1	340 339	Inlet	1
2	2334 383	Inlet valve housing	1
3	341 316	Wiper	1
4	9971 486	O-ring	1
5	233 7033	Inlet valve pusher cpl.	1
6	341 336	Clip	1
7	341 331	Sealing ring	2
8	344336	Reducing double nipple	1
9	233 7138	O-ring 31,4x3,55	1
10	344 700	Inlet valve cpl.	1
11	344323	Fitting M20x2	1
12	2337 068	Relief valve cpl.	1
13	9900 217	Hexagon head screw	4
14	9920 134	Disc	4
15	2334 010 2353874	Paint head SF23 PLUS Paint head SF23i (Ni plated)	1 1
16	9970 218	Sealing ring	1
17	234 3666	Pressure gauge cpl.	1
18	252 478	Housing	1
19	252475	Pressure gauge	1
20	341 702	Service kit outlet valve	1
21	2342 946	Outlet valve cpl.	1
22	340 241	Diaphragm cpl.***	1
23	2336 971	Pressure inlet	1
24	2337 112	O-ring 37,8x1,78	1
25	2337 113	O-ring 34,65x1,78	1
26	2337 076	Pressure spring	1
27	3061 423	Disc	1
28	2333 996	Piston	1
29	2337 078	Locking ring	1
30	9904 306	Locking screw (only models without pressure gauge)	1
31	2334402	Inlet valve assy. (Pos. 1,2,5,6,10)	1

* Order number for 1 piece
** Quantity in the complete assembly
*** With aluminium supporting washer starting fall 2016

WAGNER



Explanation

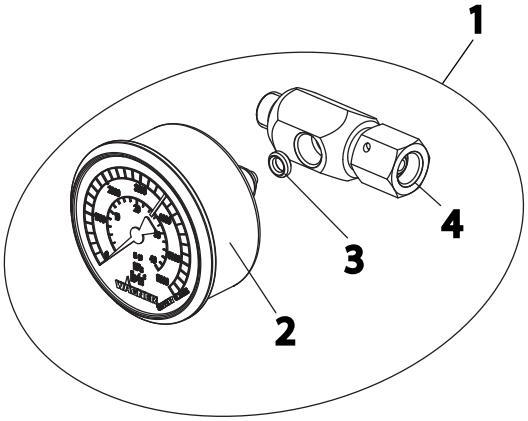
(xNm) indicates torque

1 glue with UHU-Plus 2K (order-no. 2344102)

2 glue with Loctite 542 (order-no. 9992831)

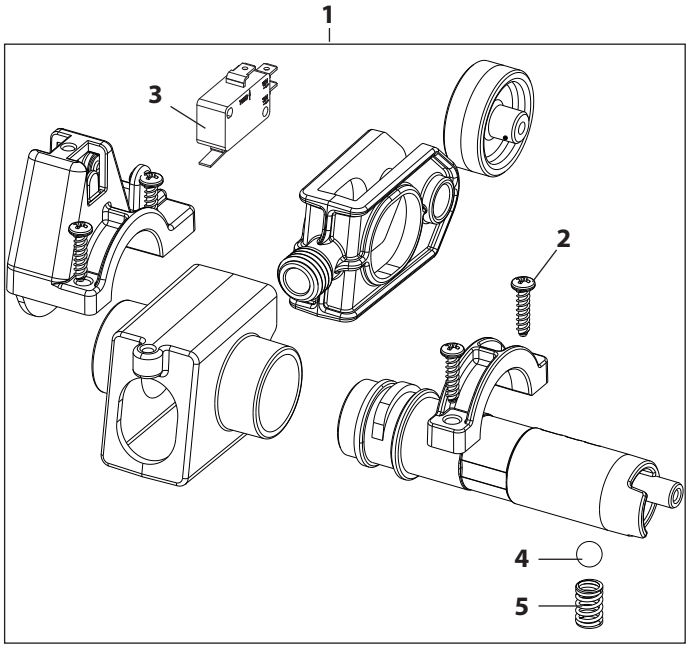
4.2 PRESSURE GAUGE COMBINATION (UK 110V VERSION)

ITEM	ORDER-NO*	DESIGNATION	QUANTITY**
1	0340 257	Pressure gauge cpl. incl. pos. 2,3,4)	1
2	9991 956	Pressure gauge	1
3	9970 109	Sealing ring	1



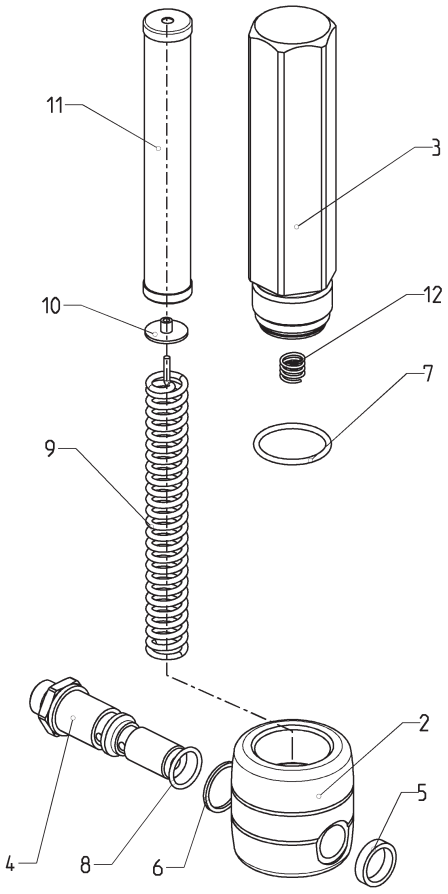
4.3 SPARE PARTS LIST TERMINAL BOX

ITEM	ORDER-NO	DESIGNATION
1	2347471	Service kit terminal box cpl. (without pos. 3)
2	9905105	Oval head screw 3,17 x 13
3	417315	Micro switch
4	9941540	Ball (D 6)
5	2340 646	Pressure spring



4.4 SPARE PARTS LIST HIGH-PRESSURE FILTER

ITEM	ORDER NO.	DESIGNATION
1	0097 121	High-pressure filter HF- 01 compl.
2	0097 301	Filter block
3	0097 302	Filter housing
4	0097 303	Hollow screw
5	0097 304	Seal ring
6	9970 110	Seal ring
7	9974 027	O-ring 30x2 (PTFE)
8	9971 401	O-ring 16x2 (PTFE)
9	0508 749	Bearing spring
10	0508 603	Bearing ring
11	0508 748 0508 450 0508 449	Filter insert 60 meshes Optional: Filter insert 100 meshes Filter insert 30 meshes
12	9994 245	Pressure spring

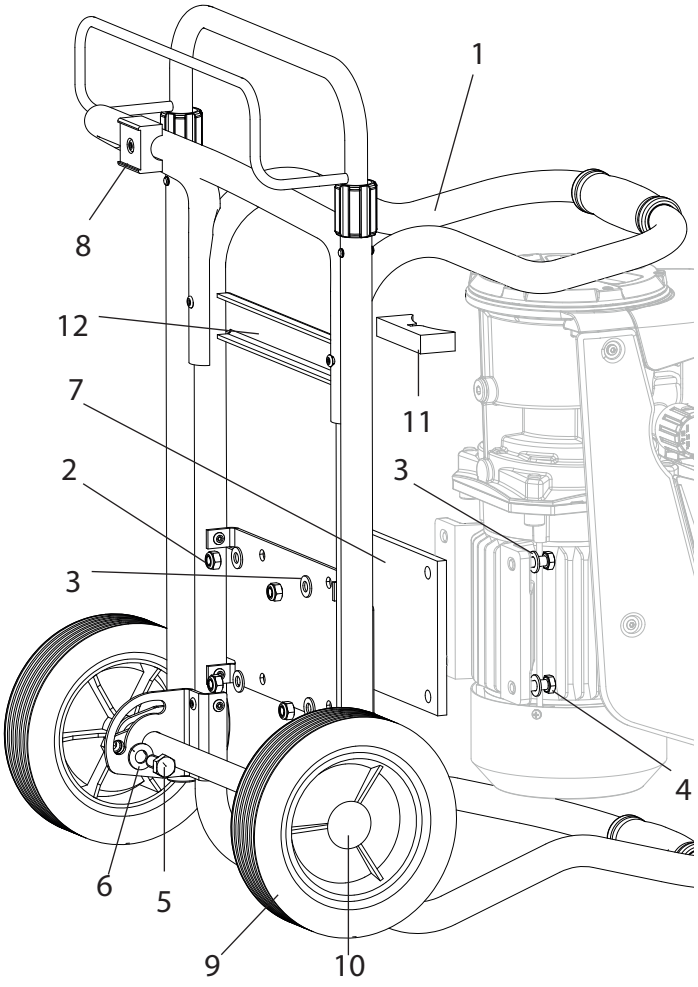


Spare parts diagram high-pressure filter

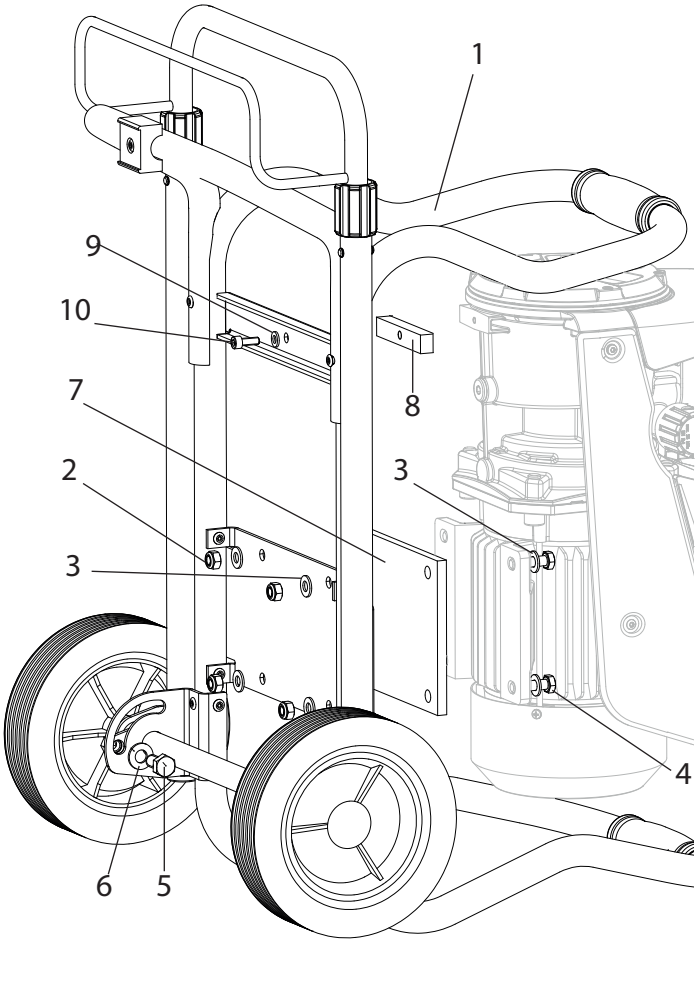
4.5 SPARE PARTS LIST TROLLEY

ITEM	ORDER NO.	DESIGNATION
1	2343 670	Trolley assy. (SF 23 PLUS)
2	9910 208	Hexagon nut M8
3	9920 102	Washer A 8.4
4	9900 118	Hexagon screw M8x30
5	3054 019	Hexagon screw M10x20
6	9920 106	Washer A 10.5
7	2340 954	Intermediate plate
8	0340 303	Foot
9	9994 961	Wheel
10	9994 950	Wheel cap
11	2350 499	Absorber (rubber)
12	2352 491	Bar with rivets (incl. pos. 11)

ITEM	ORDER NO.	DESIGNATION
1	2343 670	Trolley assy. (SF 23 PLUS)
2	9910 208	Hexagon nut M8
3	9920 102	Washer A 8.4
4	9900 118	Hexagon screw M8x30
5	3054 019	Hexagon screw M10x20
6	9920 106	Washer A 10.5
7	2340 954	Intermediate plate
8	2362 484	Absorber
9	9920 311	Washer A 6,4
10	9900 325	Hexagon screw M6x16



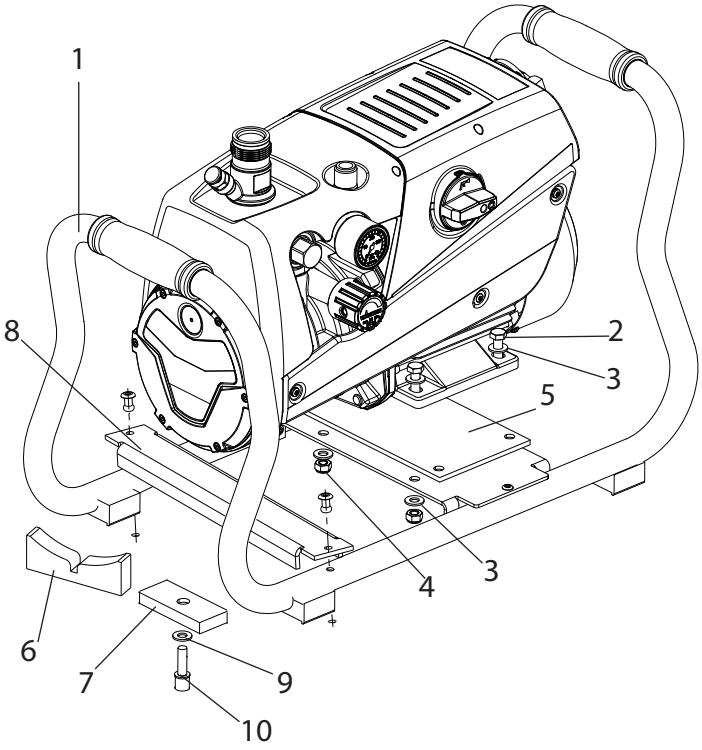
Spare parts diagram trolley SF 23 PLUS (OLD)



Spare parts diagram trolley SF 23 PLUS (NEW)

4.6 SPARE PARTS LIST FRAME

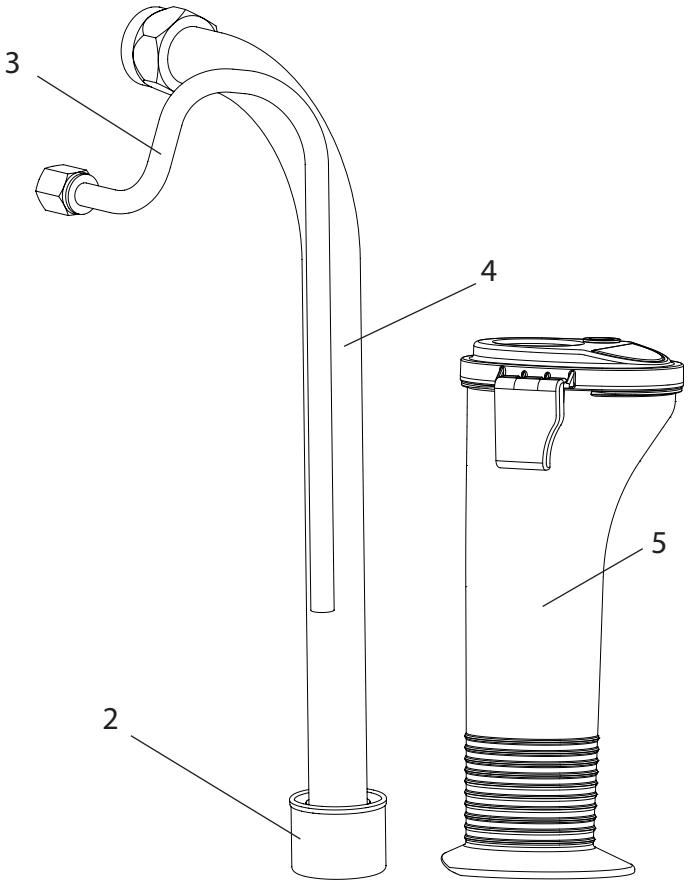
ITEM	ORDER NO.	DESIGNATION
1	2343 637	Frame complete
2	9900 118	Hexagon screw M8x30
3	9920 102	Washer A 8.4
4	9910 208	Hexagon nut M8
5	2340 954	Intermediate plate
6	2350 499	Absorber (old)
7	2362 484	Absorber (new)
8	2352 491	Bar with rivets (incl. pos. 6)
9	9920 311	Washer A 6,4
10	9900 325	Hexagon screw M6x16



Spare parts diagram frame

4.7 SPARE PARTS LIST SUCTION SYSTEM

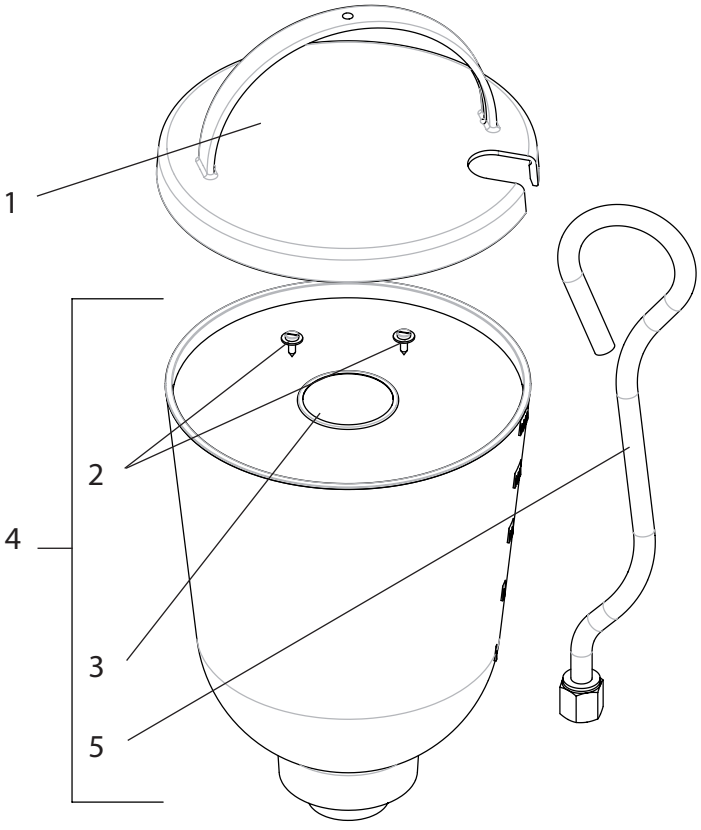
ITEM	ORDER NO.	DESIGNATION
1	2342 879	Suction system assy..
2	2323 325 0250 245	Filter, mesh width 1 mm Optional: Filter, mesh width 0,8 mm
3	2343 688	Return pipe
4	2342 682	Suction tube
5	2306 987	PumpRunner



Spare parts diagram suction system

4.8 SPARE PARTS LIST HOPPER 5L

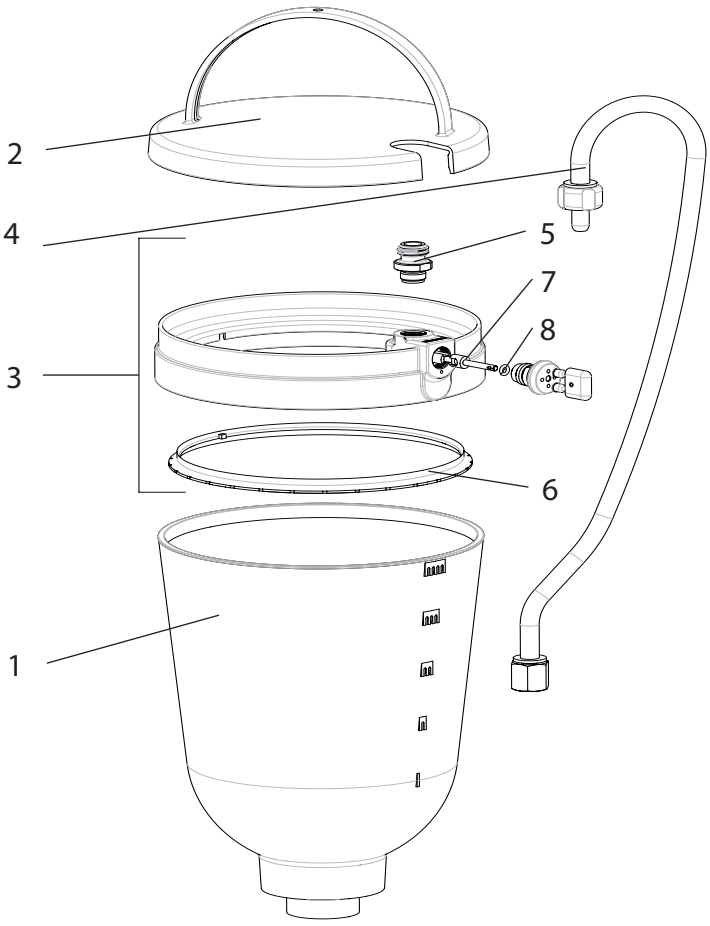
ITEM	ORDER-NO	DESIGNATION
-	0341 265	Hopper 5l, assy.
1	0340 901	Cover
2	0037 607 0003 756	Filter disk, mesh width 0,8 mm Optional: Filter disk, mesh width 0,4 mm
3	9902 306	Sheet metal screw 3,9x13 (2)
4	0340 904	Hopper
5	0340 908	Return pipe



Spare parts diagram hopper

4.9 SPARE PARTS LIST HOPPER WITH TOPCLEAN

ITEM	ORDER-NO	DESIGNATION
-	0341 268	Hopper 5l with TopClean, assy.
1	0340 904	Hopper 5l (filter disc see 11.7)
2	0340 901	Cover
3	0340 271	TopClean, assy.
4	0340 270	Return pipe
5	0340 499	Screwing
6	0340 466	Distributor ring
7	0340 500	Rotary valve shaft
8	9971 486	O-ring 4x2 (FFPM)

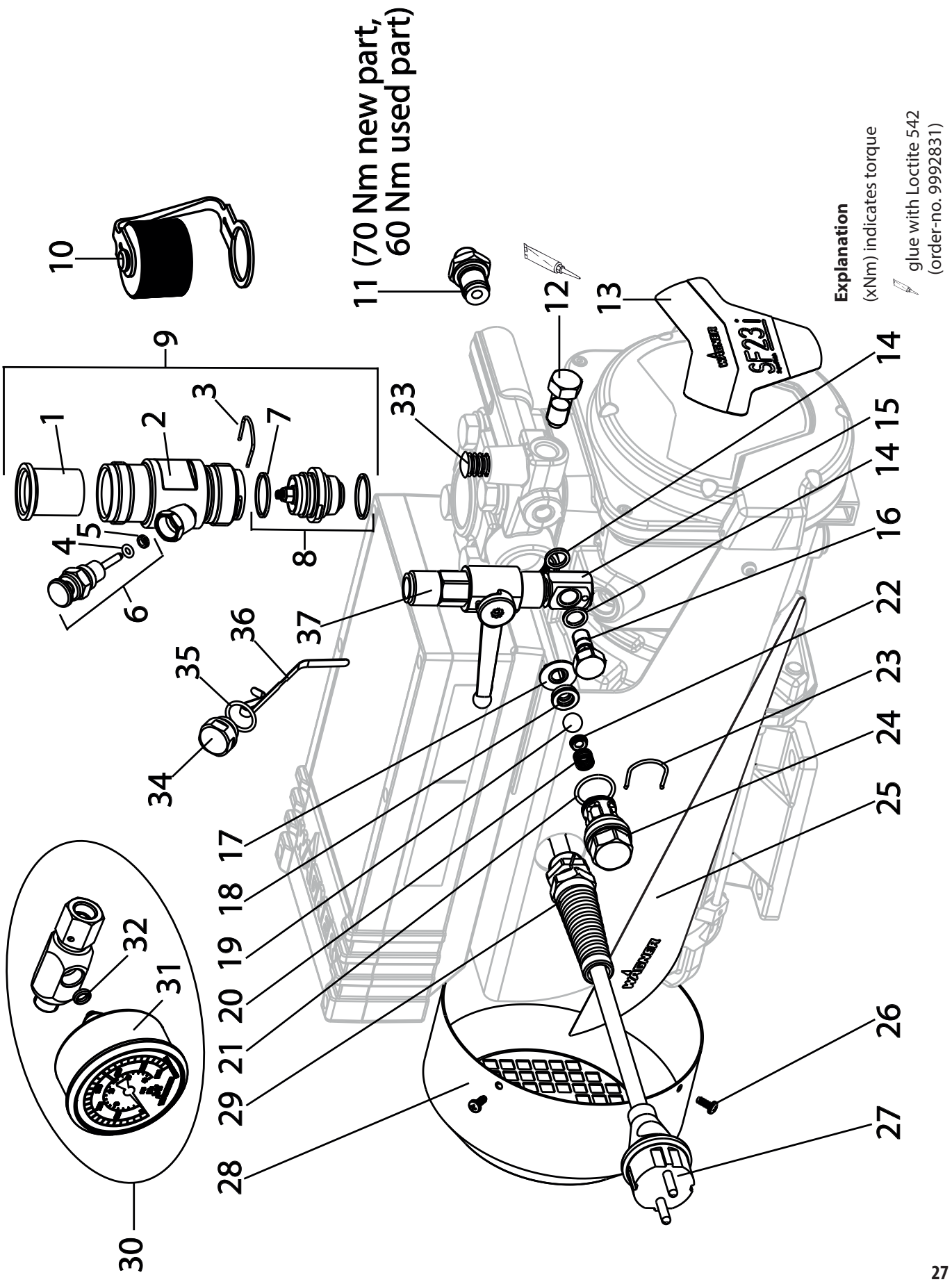


Spare parts diagram hopper with TopClean

4.10 SPARE PARTS LIST SF 23i

ITEM	ORDER-NO	DESIGNATION
1	0340 339	Inlet
2	0252 279	Inlet valve trigger housing
3	0341 336	Clasp
4	9971 486	O-ring
5	0341 316	Wiper
6	0341 241	Inlet valve trigger (incl. pos. 4, 5)
7	0341 331	Sealing ring
8	0344 700	Inlet valve (incl. pos.7 (2x))
9	0252 278	Inlet valve complete. (pos. 1,2,3,6,8)
10	9990 865	Dust protective cap
11	0344 336	Double socket NPS 1/4“
12	2355 213	Plug
13	2356 818	Label SF 23i
14	0097 410	Seal
15	2355 209	Hinge piece
16	2355 211	Screw
17	0341 347	Sealing ring
18	0341 327	Outlet valve seat
19	9941 501	Ball 10
20	0341 326	Pressure spring
21	9971 470	O-ring 20x2
22	0253 405	Spring support ring
23	0341 328	Clasp
	0341 702	Outlet valve, service set (pos. 17-23)
24	0341 246	Outlet valve complete (incl. pos. 17-23)
25	2358 270	Label (right)

ITEM	ORDER-NO	DESIGNATION
	2358 271	Label (left)
26	9902 225	Oval head screw 3.5x9.5
27	0261 352 (EU) 0341 520 (AUS)	Mains cable H07-RNF 3x 1.5mm^2, 6m long
28	2337 557	Fan cover
29	9952 685	Cable threaded joint
30	0340 256	Pressure gauge cpl.
31	9991 797	Pressure gauge
32	9970 109	Sealing ring
33	9990 571	Protective cap
34	0341 349	Oil cap screw
35	9971 146	O-ring
36	2362 313	Oil measuring stick
37	2355 212	Discharge tap complete (incl. pos. 14-16)


11 (70 Nm new part,
60 Nm used part)
10
9
1
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3
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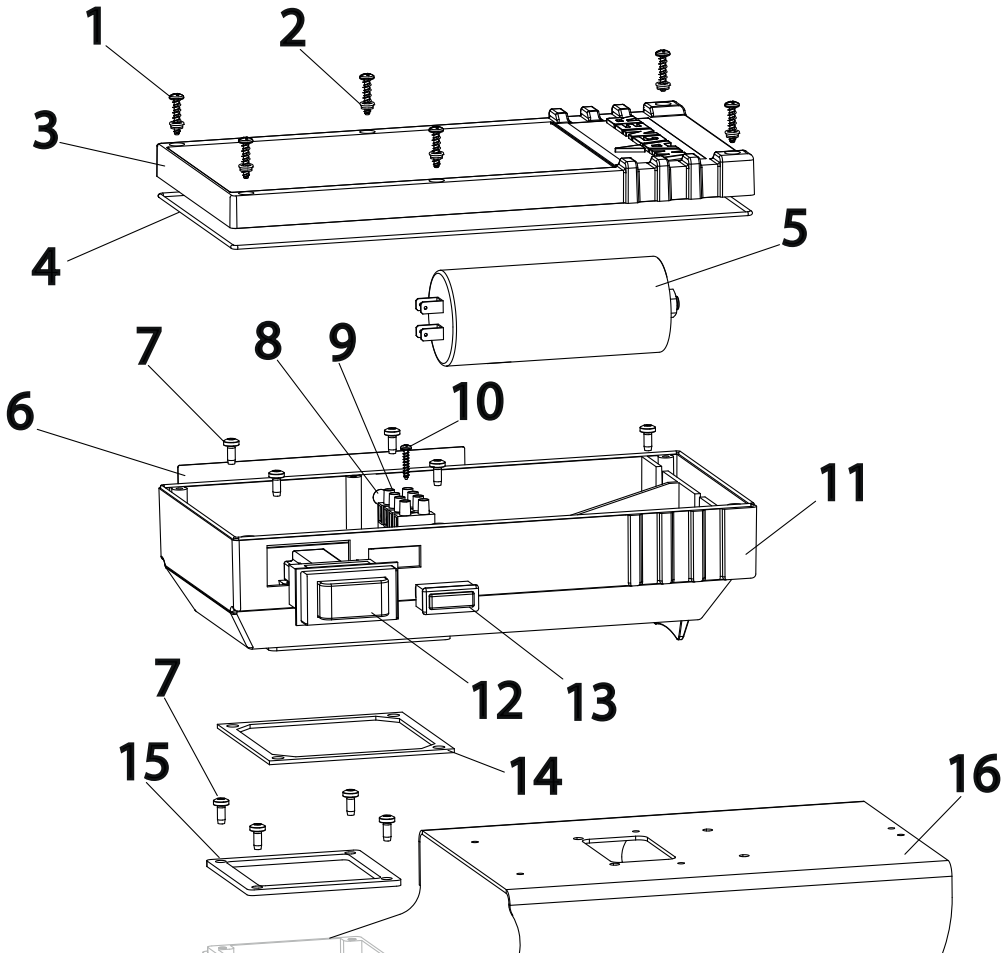
31
30
SF23i
Explanation
(xNm) indicates torque
glue with Loctite 542
(order-no. 9992831)

ITEM	ORDER-NO*	DESIGNATION	QUANTITY**
1	9905103	Pan head screw	6
2	9971536	Sealing washer	6
3	0254 334	Cover	1
4	9971484	O-LINE, SEALING (2 required)	2
5	9953 144	Capacitor 25µF	1
6	2356016	Rating plate SF-23i	1
7	2315382	Pan head screw	10
8	9950 239	Label PE	1
9	9950 244	Terminal strip	1
10	9902 234	Pan head screw	1

ITEM	ORDER-NO*	DESIGNATION	QUANTITY**
11	0254 335	Electric box	1
12	9953 696	Motor protection switch	1
13	2301 766	Glimmlampe	1
14	2356 684	Sealing wiring box	1
15	2344 692	Sealing motor	1
16	2355 033	Cover sheet	1

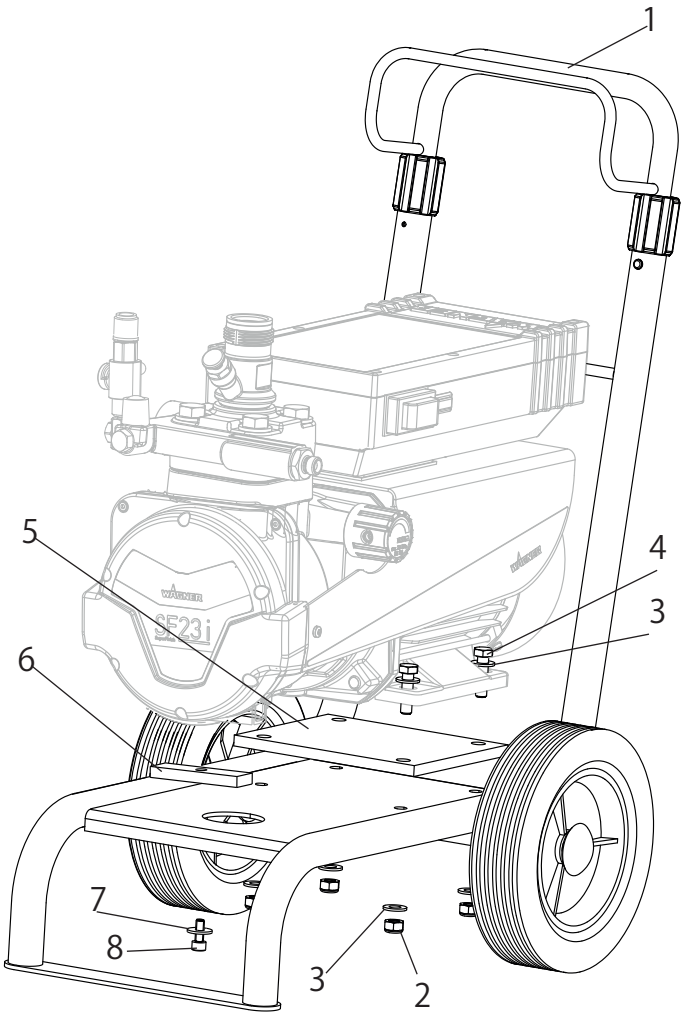
* Order number for 1 piece
** Quantity in the complete assembly



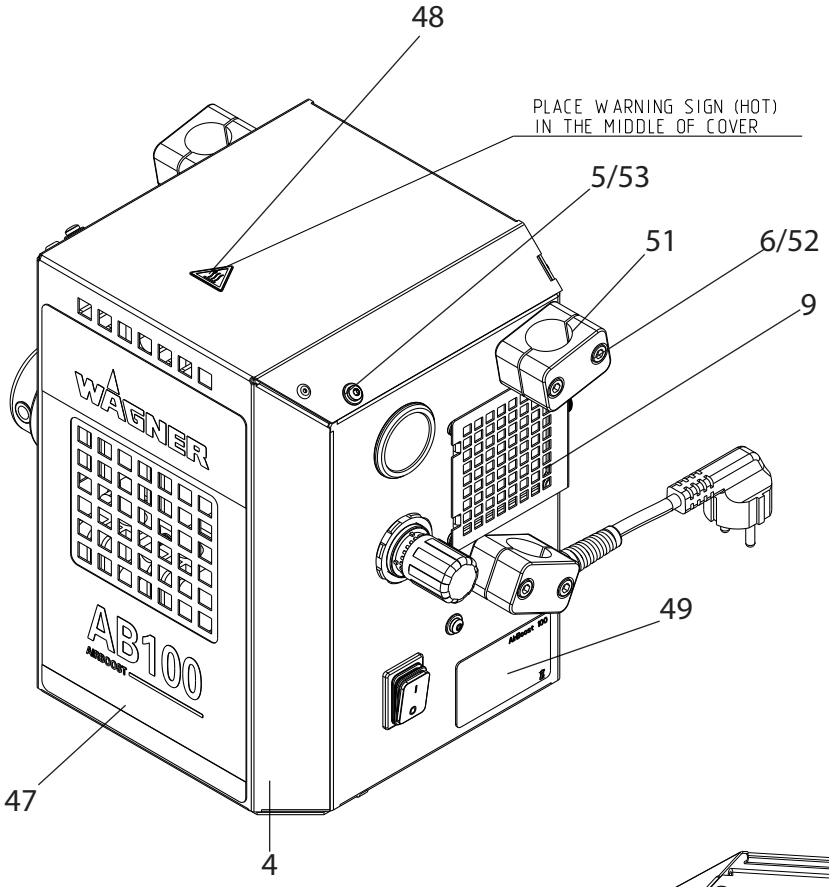
WAGNER

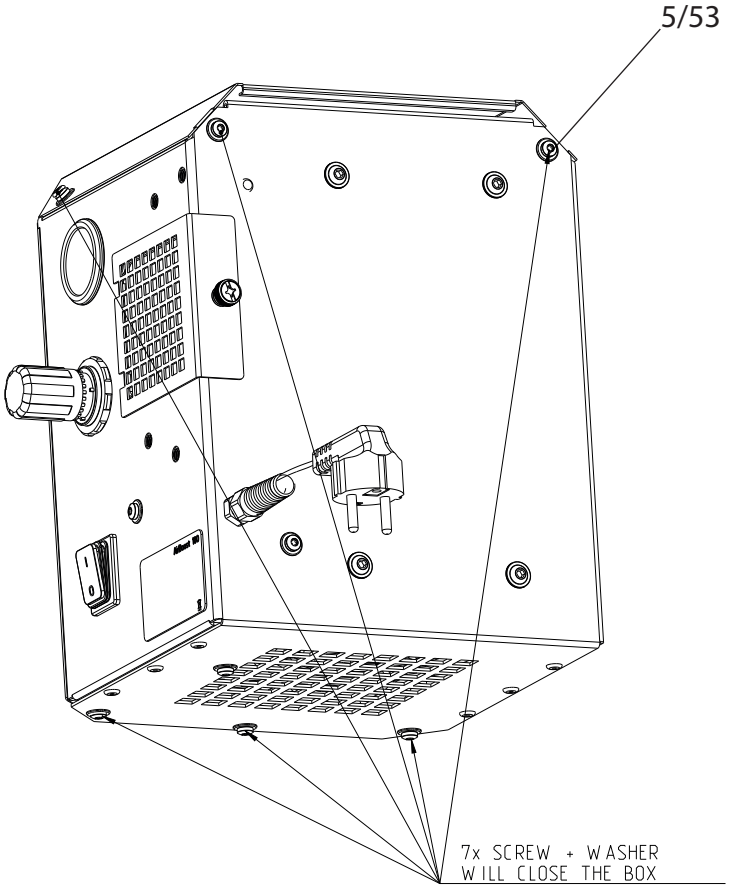
4.11 SPARE PARTS LIST TROLLEY SF23I

ITEM	ORDER NO.	DESIGNATION
1	2355 034	Trolley assy. (SF 23i)
2	9910 208	Hexagon nut M8
3	9920 102	Washer A 8.4
4	9900 118	Hexagon screw M8x30
5	2340 954	Intermediate plate
6	2362484	Absorber
7	9920 311	Washer A 6,4
8	9900 325	Hexagon screw M6x16



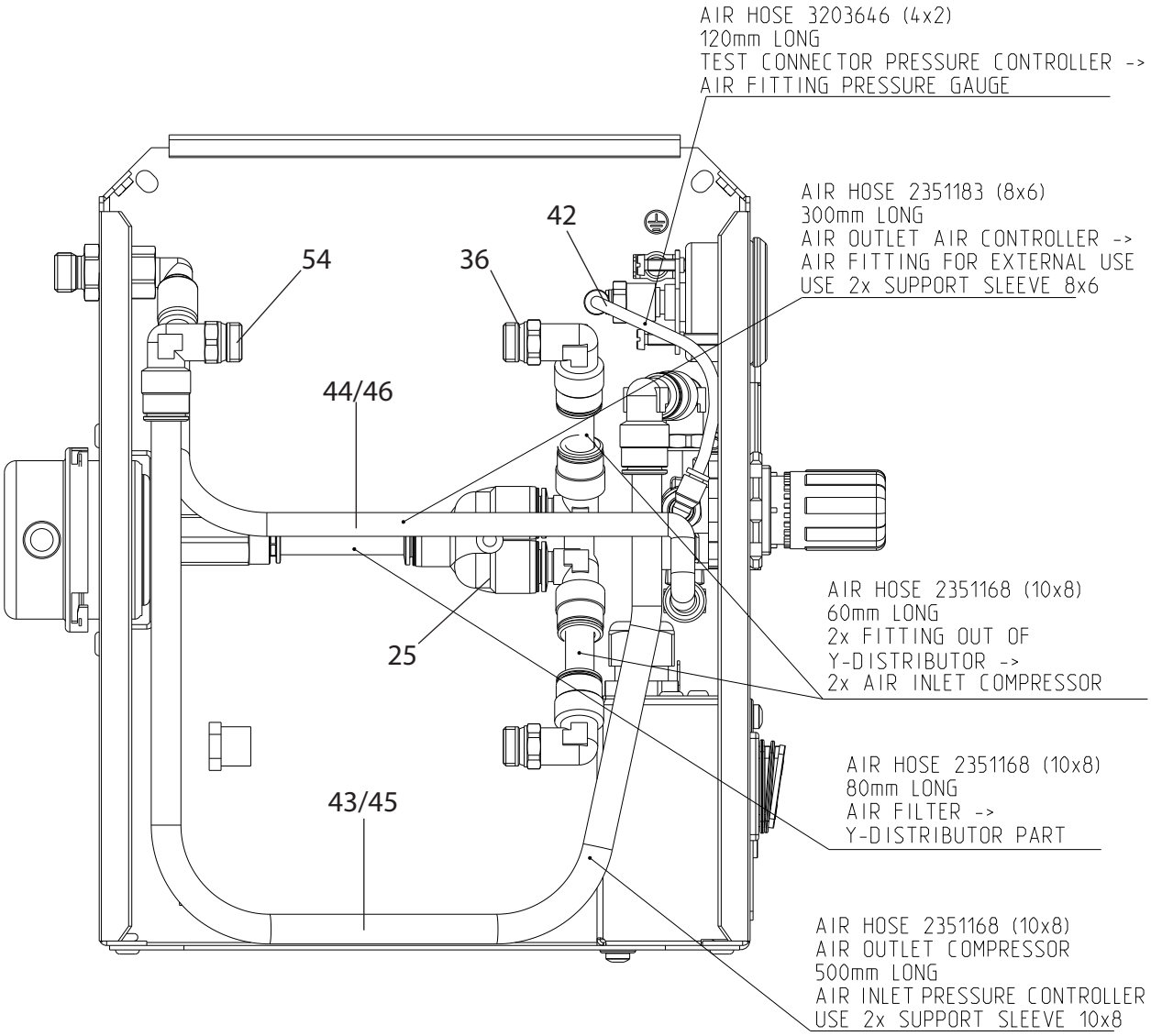
5 AIR BOOST 100





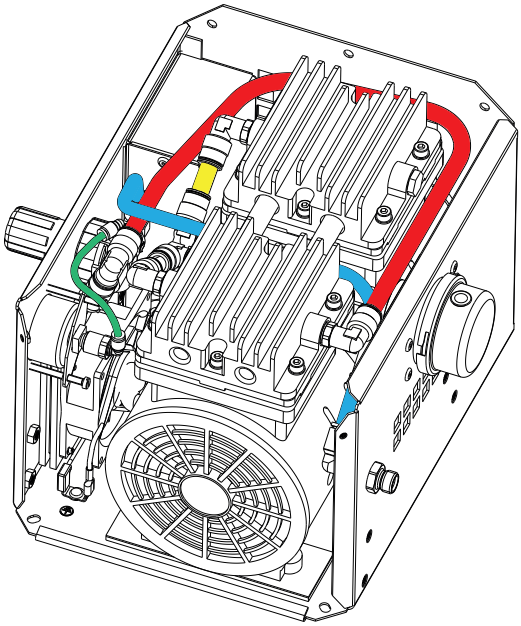
ITEM	ORDER NO.	DESIGNATION
4	2346612	Cover, air compressor housing
5	2315382	Pan head screw, thread forming
6	9920103	Washer, A6.4, DIN 125
9	2351368	Fan guard
47	2350142	Label AB100
48	2351477	Warning label, hot surface
49	2351107	Rating plate
51	9994691	Clamp (2 parts)
52	9900333	Hexagon socket head cap screw
53	9920308	Washer

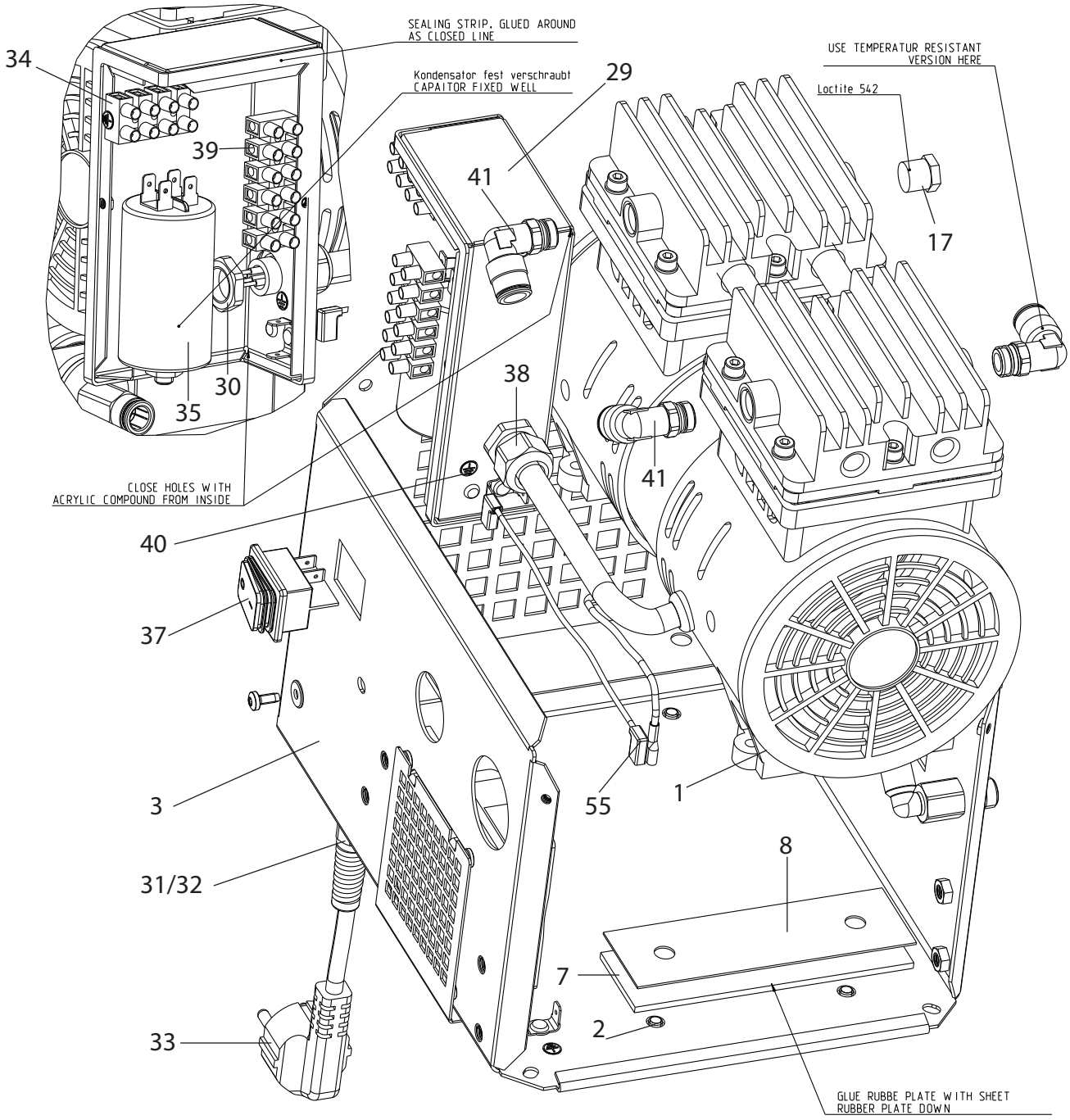
WAGNER



ITEM	ORDER NO.	DESIGNATION
54	2352624	Fitting (elbow 90°)
44	2351183	Air hose 8x6, black
46	2351668	Reinforcing sleeve, 8x6
43	2351168	Air hose 10x8, black
25	3204065	Y-connector QSY-10
36	3113304	Right-angle connector 10-10
42	3203646	Air hose D4/2, blue
45	2351667	Reinforcing sleeve 10x8

i	Please advise which length you need when you are ordering the air hoses (minimum length 1m).

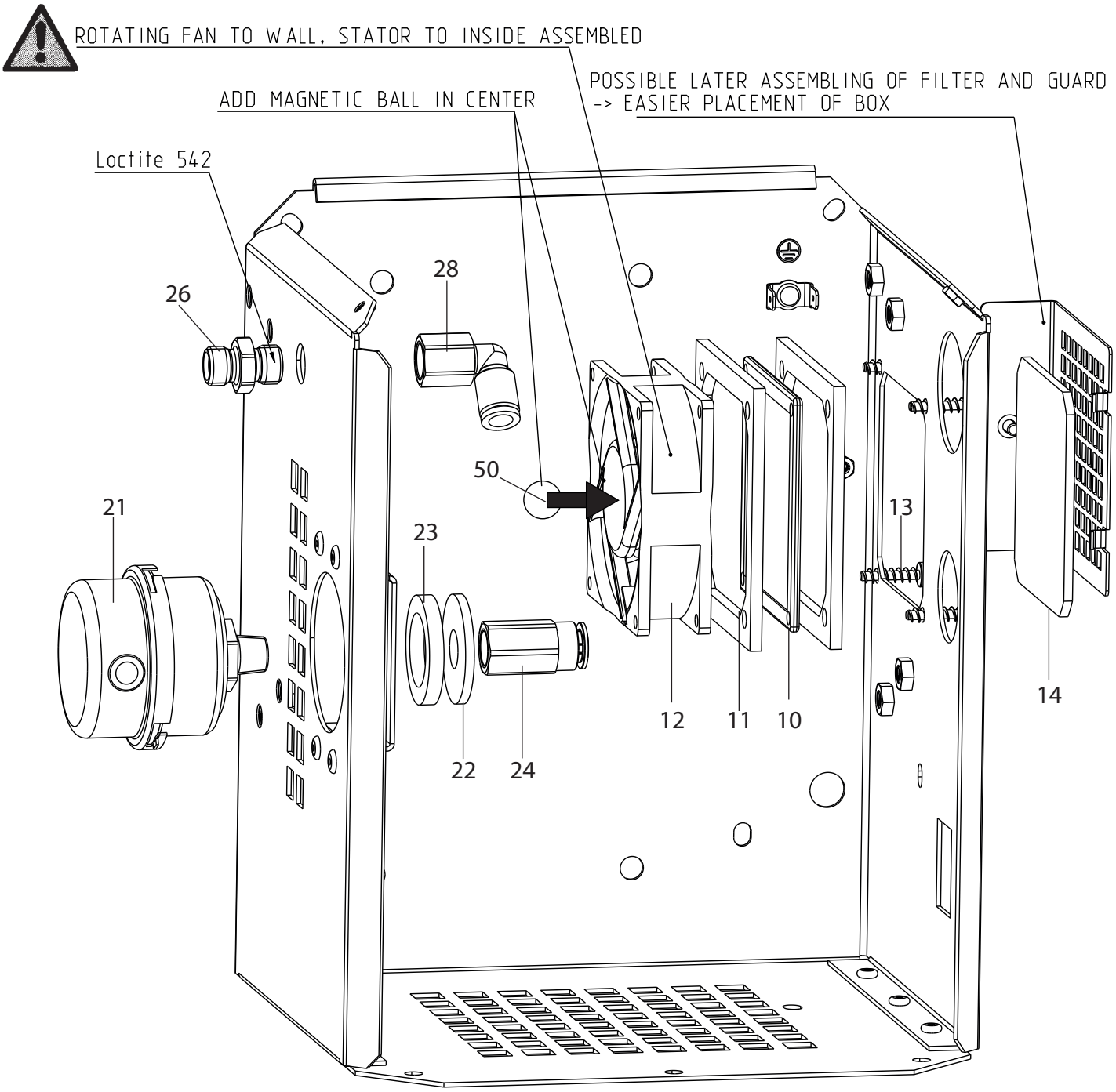




ITEM	ORDER NO.	DESIGNATION
1	2351104	Compressor OLF 400 cpl.
2	2325555	Oval-head screw M6x16
3	2346611	Compressor housing
7	2350546	Absorbing plate, compressor
8	2351546	Supporting plate
17	3050107	Locking screw G1/4“
29	2357735	Terminal box cpl.
30	3156832	Lock nut M16x1.5
31	2350547	Hexagon nut
32	3158658	Cable connection BS-M12x1,5 Skintop
33	2351108	Power cord D, tilted

ITEM	ORDER NO.	DESIGNATION
34	9950244	Terminal strip Europe
35	2349341	Capacitor 14µF
37	2351474	ON/OFF switch, illuminated
38	3156824	Cable connection
39	2306244	Terminal strip Europe (6-way)
40	9950372	Earthing symbol
41	3304818	Elbow screw connection S6520
55	2351619	Flexible earthing lead

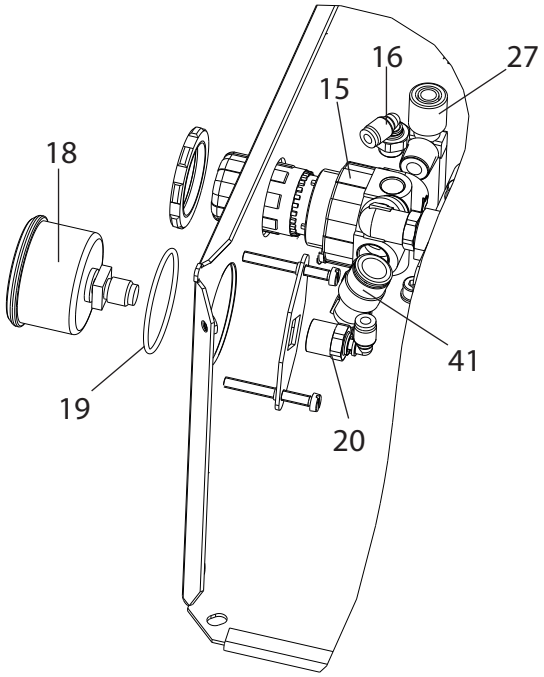
WAGNER



ITEM	ORDER NO.	DESIGNATION
10	2351185	Fan filter (metal)
11	2351105	Fan plate
12	2351106	Axial fan 80x80x25
13	9905111	Oval-head screw for plastic
14	2351461	Air fan
21	2348862	Suction filter, OLF400

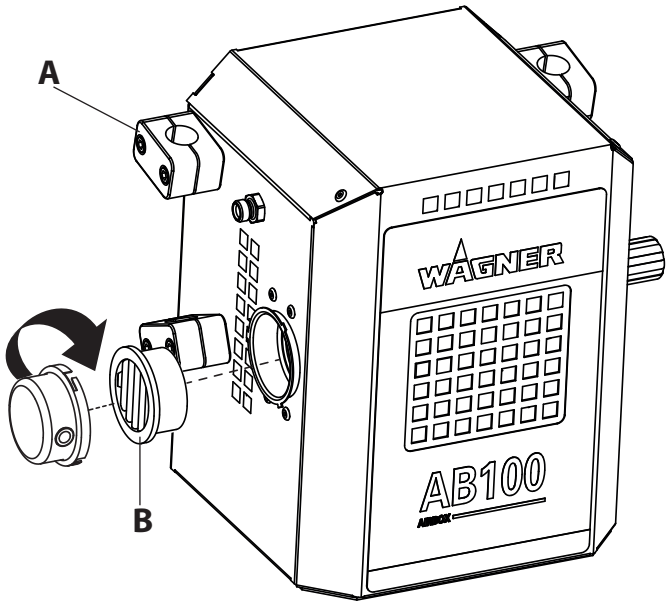
ITEM	ORDER NO.	DESIGNATION
22	9920306	Washer
23	2351109	Spacer washer
24	3304972	Socket end fitting 6463-10-1/4
26	9983239	Double nipple
28	2350896	Plug connection, elbow 90°, IG
50	2351678	Ball (magnetic)

ITEM	ORDER NO.	DESIGNATION
15	2352665	Pressure regulator 4 bar, limited
16	2351110	Quick connector , elbow 90°, AG
18	9943160	Pressure gauge 0-6bar
19	2337112	O-ring 37,8x1,78
20	3661516	Elbow fitting
27	3054980	Elbow connection R1/4-8
41	3304818	Elbow screw connection S6520



5.1 ADDITIONAL SPARE PARTS FROM THE INSTRUCTION MANUAL

ITEM	ORDER NO.	DESIGNATION
A	2351462	Attachment clips incl. screws
B	2348863	Air filter



1 BASIC PRINCIPLES

1.1 ELECTRICALLY INSTRUCTED PERSON

In order to carry out work on electrical systems and equipment, a person must at least have training as an electrically instructed person.

However, an electrically instructed person is not authorised to autonomously set up, modify or repair electrical systems and equipment. Such tasks may only be performed under the direction and supervision of a skilled electrician.

The electrically instructed person must be trained on all systems and equipment. This training is carried out by the senior skilled electrician, who highlights the hazards and special features. The senior skilled electrician also ensures that the requirements and guidelines in respect of UVV, VDE and EN standards have been complied with.

All electrically instructed persons must receiving training at least once a year on the hazards, safe handling and correct conduct in relation to electrical systems.

Documents and work instructions must also be made available to electrically instructed persons. These must relate to the exact machine type and indicate potential hazards and special features. The work instructions must include safe and correct replacement of a connecting cable, for example.

1.2 SKILLED ELECTRICIAN FOR DEFINED TASKS

In order to autonomously carry out work on electrical systems and equipment, a person must have training as a skilled electrician for defined tasks.

However, the skilled electrician for defined tasks must also, like the electrically instructed person, be trained on all systems and equipment. This training is carried out by the senior skilled electrician, who highlights the hazards and special features. The senior skilled electrician also ensures that the requirements and guidelines in respect of UVV, VDE and EN standards have been complied with.
It is also necessary for a responsible skilled electrician to assume professional responsibility.

1.3 LEGAL FOUNDATIONS

Once a system and its equipment has been repaired, modified or set up, it must not constitute any hazard for users and their environment. To ensure that safety can still be guaranteed, an annual inspection is required for mobile systems and equipment.

1.4 WHICH TESTS MUST BE PERFORMED

A test in accordance with the guidelines of BGV A3 **must** be performed and verified. This test must be performed on all electrical equipment, even if "only" a mechanical repair has been carried out.

Contents of BGV A3: The test as per BGV A3 is divided into a visual and a metrological test.

Visual inspection:	- Protective conductors (protection class I)
	- Insulating parts
	- Housing
	- Connecting cables
	- Typeplate
	- Machine-specific components
Metrological test:	- Short-circuit test
	- Protective conductor resistance (RSL)
	- Equivalent leakage current (IEA)
	- Insulation resistance (Riso)
	- Functional test

Attention! If one of the above-specified criteria cannot be fulfilled, then the test is **considered a failure.**
If the customer refuses the necessary repair, he must be informed in writing to this effect. Clear reference must be made to the fact that safe operation of the system cannot be assured. This must be counter-signed by the operating company.
You must fulfil this obligation as you, as an expert, will be required to produce evidence in the event of damage.

1.5 FIVE SAFETY RULES

The Five Safety Rules are more than just rules. They are the precondition for working on electrical systems and appliances. Please take these rules seriously - they are essential for your safety.

Isolation

Isolation means all-pole disconnection of a system from live parts.
All live cables must be disconnected at all poles at the place of work before starting work. This can be done by means of main switches, expert removal of fuses, disconnection of plug connectors etc.

Protecting against restarting

In order to prevent inadvertent restarting of a system on which work is being carried out, restarting must be prevented reliably and safely. For example the unscrewed fuse elements can be replaced with lockable disabling elements or circuit-breakers can be masked with adhesive film. A "Please do not switch on - work in progress" sign can also be affixed. For appliances which are connected to the network by a plug connector, it is sufficient to store the unplugged connector on the machine in such a way that it cannot be mixed up with another connector. In addition, the connector must always be kept in the worker's immediate vicinity.

Verification of safe isolation from the supply

Verification of safe isolation from the supply in low-voltage networks, i.e. systems with operating voltages below 1000 V, must only be carried out using devices or equipment suitable for this purpose. A two-pole measuring instrument must be used. The voltage detectors used must comply with the respective rated voltage and must be tested before and after verification of safe isolation from the supply. I.e. the function of the detectors must be tested on a reliable live source.

Earthing and short-circuiting

After ensuring safe isolation from the supply, the conductors and earthing must be connected together with short-circuit-proof earthing and shorting jumpers. With this measure, the upstream overcurrent protective devices trigger and the system is immediately isolated in the event of inadvertent restoration of power. It should be noted that earthing is carried out first, then short-circuiting.

Cover or shield any adjacent live parts.

Often inadmissible approach to adjacent live system parts cannot be easily prevented. In such cases these system parts must be protected against accidental contact by permanent and securely fitted insulating covers.

1.6 CATEGORISATION OF PROTECTION CLASSES

Legal basis
In electrical engineering, protection classes enable the categorisation and identification of electrical equipment (for example, devices and installation components) in relation to the existing safety measures for protection against electric shock.
The protection classes are defined for all electrical equipment in DIN EN 61140 (VDE 0140-1).
A distinction is made between four protection classes for electrical equipment. Symbols are provided in order to identify equipment with the relevant protection class. These symbols are defined in IEC 60417. The use of safety precautions in the different classes of electrical equipment is described in DIN EN 61140 (VDE 0140-1):2007-03, section 7.

Protection class 0
There is no special protection against electric shock in addition to the basic insulation. Connection to the protective conductor system is not possible. Appliances with this protection class are not permitted in Germany and Austria. This protection class will not be included in any international standards in future. There is no symbol for protection class 0.

Protection class I 

All electrically conductive housing parts of the equipment are connected to the protective conductor system of the fixed electrical installation, which is at earth potential. Mobile appliances in protection class I have a plug connector with a protective conductor contact or an earthing pin plug. These must be executed so that the protective conductor connection is established as the first connection on plugging in. It must also be ensured that in the event of damage the protective conductor connection is disconnected last. The connecting cable entry into the appliance must be mechanically strain-relieved

Protection class II 

Equipment in protection class II has reinforced or double insulation around live parts, so that no conductive parts can be live even in fault conditions. This is also referred to as total insulation. Appliances in protection class II do not have a protective conductor contact.

Protection class III 

Appliances in protection class III operate with safety extra-low voltage (SELV).
Safety extra-low voltage means voltages that do not exceed 50 V AC (alternating voltage) or 120 V DC (direct voltage). This voltage must be generated by a safety transformer as per DIN VDE 0570-2-6 or EN 61558-2-6 for a mains-operated appliance.
Safety extra-low voltage taken from batteries or accumulators belongs to protection class III without the need for further measures.

1.7 EXPLANATION OF ELECTRIC VARIABLES AND COMPONENTS

Dimensional unit	Arithmetic unit	Explanation
A	I	Electric current in ampere
V	U	Electric voltage in volts
KV	U	Electric voltage in kilo-volts
VA	S	Apparent electric power
W	P	Electric power in watts
KW	P	Electric power in kilowatts
KWh	P	Electric power in kilowatt hours
Ω	R	Electric resistance in ohms
KΩ	R	Electric resistance in kiloohms
MΩ	R	Electric resistance in megaohms

Designation	Explanation
L1	External conductor
L2	External conductor
L3	External conductor
N	Neutral conductor
PE	Protective conductor
3~	Threephase AC voltage

1.8 EXPLANATION OF ELECTRICAL TERMS

Rated current
The rated current In is the rated value for a system, a power circuit or electrical equipment.

Operating current
The operating current Ib is the current that must flow during uninterrupted operation.

Overcurrent
Overcurrent is any current that exceeds the permissible current loading.
Overcurrent is the generic term.
Overload current is an overcurrent that occurs in an electrically fault-free power circuit.
Short-circuit current is an overcurrent that can occur due to an error.

Operating voltage
The operating voltage is the voltage present between the conductors during full function.

External conductor
External conductors are live conductors.

Neutral conductor
A neutral conductor is connected to the neutral point and star point, and is capable of contributing to the transmission of electrical energy.

Protective conductor
A protective conductor is necessary for certain protective measures against shock currents, in order to establish an electrical connection to one of the following parts.
- exposed conductive part of the electrical equipment
- external conductive parts
- earth electrodes, equipotential bonding

Earth fault
An earth fault is an electrical connection between an external conductor or neutral conductor to the protective conductor.

Interwinding fault
An interwinding fault is a short in a winding of the motor. This winding has a different resistance to the other windings.

PEN conductor
A PEN conductor is an earthed conductor which performs the function of protective conductor and neutral conductor simultaneously.

Active part (of an electrical system)
An active part is a live part of an electrical system or device (e.g. fuses, terminals, switches, capacitors, etc.) through which current flows during normal operation

Emergency switch, emergency stop
This switch is identified by its colouring (red on yellow) and serves to stop hazardous states or hazardous movements. The emergency switch does not serve for switching during normal operation or isolation in accordance with the Five Safety Rules (1.5).

Isolation
This is the disconnection of a system or its equipment from all sources.

Basic insulation
This is the insulation of active parts during normal operation to protect against direct contact.

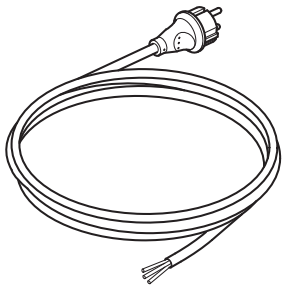
Direct contact
This is direct contact between an active part of an electrical system (an external conductor/phase) and the human body in normal operation.

Indirect contact
This is indirect contact between an active part and the human body due to an existing insulation fault. The housing of an electrical device which is not live under normal conditions is contacted (fault).

2 FUNCTIONAL TEST WORK INSTRUCTION

2.1 FUNCTIONAL TEST OF CORD SET

1. Ensure safe isolation from the supply before commencing work.
2. A multimeter or test buzzer should be used for testing. The function should be checked first of all.
3. Attach a measuring lead to one of the two pins on the connector.
4. Attach the second measuring lead to one of the device terminals N (blue) or L1 (brown). If no tone is audible or if the measuring device indicates an infinitely high resistance, the measuring lead must be attached to the other terminal, as it is not possible to tell to which pin the respective wire is connected on the earthing pin plug. If a tone is now audible or if the measuring device actuates, this wire is ok. Move the connecting cable in order to rule out a defective contact; if no interruption is discernible, this wire is ok. Repeat with the other wire N (blue) or L1 (brown).
5. Repeat point four in order to verify the functionality of the protective conductor (green/yellow). This is only necessary for equipment class I. See chapter 4.3
6. If an interruption or defective contact is found in one of the wires, then the wire is defective.
7. The defective component must be made inoperative in order to prevent further use.

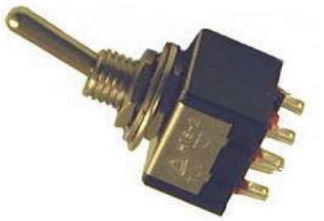


2.2 FUNCTIONAL TEST OF THE CAPACITOR

1. Ensure safe isolation from the supply before commencing work.
2. An insulation resistance tester (e.g. Metriso 500) must be used for the measurement.
3. The capacitor must be electrically isolated from the device. To do this, disconnect the plug connector on the capacitor.
4. Set the measuring device (Metriso 500) to measuring range III.
5. Connect the two test probes of the measuring device to the two terminal lugs on the capacitor.
6. To start the measurement, press the test button on the handle.
7. The measuring device deflects fully, then after approx. 20 sec. the pointer begins to wander to the left. The measurement is only complete when the pointer has moved all the way to the left (zero deflection).
8. Now disconnect the measuring device from the capacitor and switch to the Volt (V=) position.
9. After approx. two minutes, reconnect the test probes to the capacitor (point 5). The display begins to wander from right (full deflection) to left (zero deflection).
10. If a deviation is found at point seven, for instance if the pointer remains at full deflection (right) or zero deflection (left) for more than a minute, then this capacitor is defective.
11. The defective component must be made inoperative in order to prevent further use.

2.3 FUNCTIONAL TEST OF SWITCHES/BUTTONS

1. Ensure safe isolation from the supply before commencing work.
2. A multimeter or test buzzer should be used for testing. The function should be checked first of all.
3. First disconnect all electrical connections at the switch or button.
4. With the switch in the 0 position, all of the switch connections must be checked against each other. If a continuity is found, the switch is defective.
5 In position I of the switch the superimposed switch connections must have continuity. If no continuity is found, the switch is defective.
6. The defective component must be made inoperative in order to prevent further use.



2.4 FUNCTIONAL TEST OF EARTHING CONTACT SOCKET

1. Ensure safe isolation from the supply before commencing work.
2. First perform a visual inspection of the socket for damage.
3 If no mechanical damage is found, work through chapter1.5 (The Five Safety Rules) in the reverse order.
4. A two-pole measuring instrument should be used to check the electrical functionality. If a multimeter is used, it should be set to V~ or VAC.
5. Now check the voltage present between L1 and N. If this is 230 V AC then the voltage between L1 and PE must also be checked.
6. If a deviation is found in point 2 or point 5, there is a defect.
7. The defective component must be made inoperative in order to prevent further use.

2.5 FUNCTIONAL TEST OF THE MOTOR OVERCURRENT PROTECTION SWITCH

1. Ensure safe isolation from the supply before commencing work.
2. First perform a visual inspection of the motor protection switch for damage.
3. A multimeter or test buzzer should be used for testing. The function should be checked first of all.
4. Connect one test probe of the test buzzer to terminal N and the second one to terminal U1/Z1.
5. Now switch the motor overcurrent protection switch on and off two or three times. The buzzing tone sounds when the switch is at one; no buzzing tone should be audible in the OFF position.
6. Now connect the test probes to terminals L1 and U2. Repeat point 5 as a check.
7. If a deviation is found in relation to point 5 or 2, there is a defect.
8. The defective component must be made inoperative in order to prevent further use.

2.6 FUNCTIONAL TEST OF THE THREEPHASE MOTOR

1. Ensure safe isolation from the supply before commencing work.
2. A multimeter should be used for testing; this must be set to ohm (Ω) and tested.
3. In order to obtain a reliable and meaningful measurement, all cables of the motor must be disconnected first of all. Note down the connection plan.
4. In order to determine an interwinding fault, the Y/Δ jumpers must be removed. Note down the connection plan.
5. Measure all motor cables to the housing; if a continuity is found, then the motor has an earth fault and is defective.
6. Measure all three windings individually; they must present the same resistance. If a deviation of ≥ 2.0% is found, the motor has an interwinding fault and is defective.
7. If the motor is equipped with a thermal link, this must be tested for continuity. If no continuity is present or a resistance of ≥ 5Ω is present, the motor is defective.

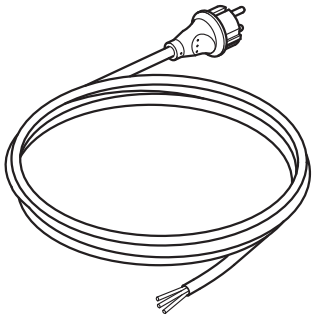
2.7 FUNCTIONAL TEST OF AC MOTOR

1. Ensure safe isolation from the supply before commencing work.
2. A multimeter should be used for testing; this must be set to ohm (Ω) and tested.
3. In order to obtain a reliable and meaningful measurement, all cables of the motor must be disconnected first of all. Note down the connection plan.
4. Measure all cables to the housing; if a continuity is found, then the motor has an earth fault and is defective.
5. Measurement of the individual windings is not possible, as they are internally bridged.
6. If the motor is equipped with a thermal link, this must be tested for continuity. If no continuity is present or if a high resistance is present, the motor is defective.

3 REPAIR WORK INSTRUCTION

3.1 REPLACING A CORD SET

1. Ensure safe isolation from the supply before commencing work.
2. Remove the old cable, noting the contact configuration.
3. Strip new cord set to desired length, taking care not to damage the insulation of the wires.
4. Shorten conductors N (blue) and L1 (brown) by 1.5 cm, to ensure that when there is a tensile load on the cable, the protective conductor (yellow/green) is disconnected from the machine last.
5. Press on the wire end ferrules, to ensure secure contact.
6. Install strain relief in order to prevent the connecting cable from being pulled out. Make sure that the strain relief is not excessively tightened, which could cause the cable to shear off.
7. Ensure secure contact when connecting the individual wires.
8. After completing the repair a measurement in accordance with BGV A3 must be carried out, in order to ensure electrical safety and functionality.
9. The defective component must be made inoperative in order to prevent further use.



3.2 REPLACING A 400 V CORD SET

1. Ensure safe isolation from the supply before commencing work.
2. First of all loosen the strain relief until the cable can be freely moved.
3. Disconnect the defective cable, noting the exact pin assignment.
4. Strip the new cable to the desired length, taking care not to damage the insulation of the individual wires.
5. First shorten wires L1, L2, L3 and N by 1.5 cm. This ensures that when there is a tensile load on the cable, the protective conductor (PE) is disconnected last.
6. Now strip the individual wires to the desired length.
7. Now press the wire end ferrules on, making sure that the wires terminate flush with the sleeve and that no individual wires protrude.
8. Now connect the cable in accordance with the pin assignment noted in point 3. Make sure that secure contact is achieved.
9. Now tighten the strain relief - but not too much, as this could cause the cable or an individual wire to shear off.
10. After completing the repair a measurement in accordance with BGV A3 must be carried out, in order to ensure electrical safety and functionality. See chapter 1.4

3.3 REPLACING THE CAPACITOR

1. Ensure safe isolation from the supply before commencing work.
2. Remove the wires (plug connector on capacitor).
3. Loosen the fixing nut on the front of the capacitor.
4. Remove the capacitor.
5. Now install and connect the new capacitor in the reverse order.
6. After completing the repair a measurement in accordance with BGV A3 must be carried out, in order to ensure electrical safety and functionality. See chapter 1.4.
7. The defective component must be made inoperative in order to prevent further use.

3.4 REPLACING SWITCHES / BUTTONS

1. Ensure safe isolation from the supply before commencing work.
2. Remove the individual wires at the switch, noting the contact configuration.
3. Remove the switch, noting its installation position.
4. Install the new switch.
5. Establish the electrical connection, observing the contact configuration of point 2.
6. After completing the repair a measurement in accordance with BGV A3 must be carried out, in order to ensure electrical safety and functionality. See chapter 1.4
7. The defective component must be made inoperative in order to prevent further use.

3.5 REPLACING THE EARTHING CONTACT SOCKET

1. Ensure safe isolation from the supply before commencing work.
2. Loosen the fastening screws and remove the socket from the housing.
3. Loosen and remove all cables at the earthing contact socket, noting the contact configuration.
4. Establish the electrical connection to the new earthing contact socket, ensuring correct and safe contacting.
5. The earthing contact socket can now be re-installed in the housing.
   Pay attention to the installation position of the socket. This must ensure the best possible splash protection, even in operating status.
6. After completing the repair a measurement in accordance with BGV A3 must be carried out, in order to ensure electrical safety and functionality.
7. The defective component must be made inoperative in order to prevent further use.

3.6 REPLACING THE MOTOR PROTECTING SWITCH

1. Ensure safe isolation from the supply before commencing work.
2. Mark the individual wires with the relevant terminal designation of the motor protecting switch, in order to prevent mix-up.
3. Now disconnect all electrical connections from the motor protecting switch.
4. The motor protecting switch can now be removed.
5. Now install the new motor protecting switch and restore the electrical connection.
6. After completing the repair a measurement in accordance with BGV A3 must be carried out, in order to ensure electrical safety and functionality.
7. In order to prevent further use of the defective motor protecting switch, it must be made unserviceable and disposed of.

3.7 REPLACING THE THREEPHASE MOTOR

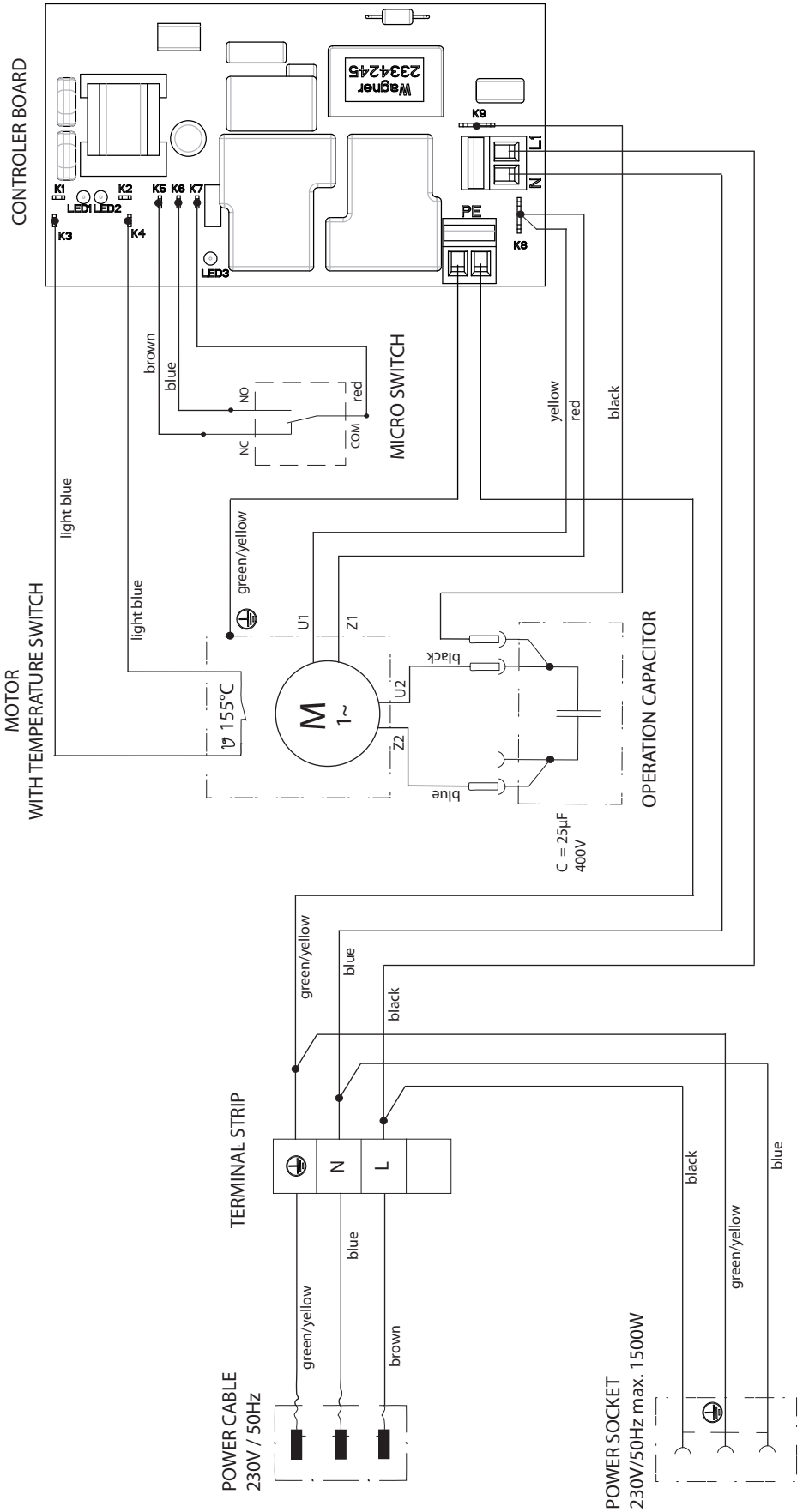
1. 1. Ensure safe isolation from the supply before commencing work.
2. First disconnect the defective motor, noting the exact pin assignment.
3. Now replace the motor.
4. Ensure correct positioning of the Y/Δ jumpers on the motor terminal board.
5. Observe the pin assignment noted in point 2 when connecting the individual wires. Make sure that secure contact is achieved.
6. After completing the repair a measurement in accordance with BGV A3 must be carried out.
7. If the direction of rotation of the motor is incorrect, external conductors L1 and L2 and U and V must be swapped over.
8. In order to exclude further use of the defective motor, all wires must be disconnected directly at the motor.
9. After completing the repair a measurement in accordance with BGV A3 must be carried out, in order to ensure electrical safety and functionality See chapter 1.4

3.8 REPLACING THE AC MOTOR

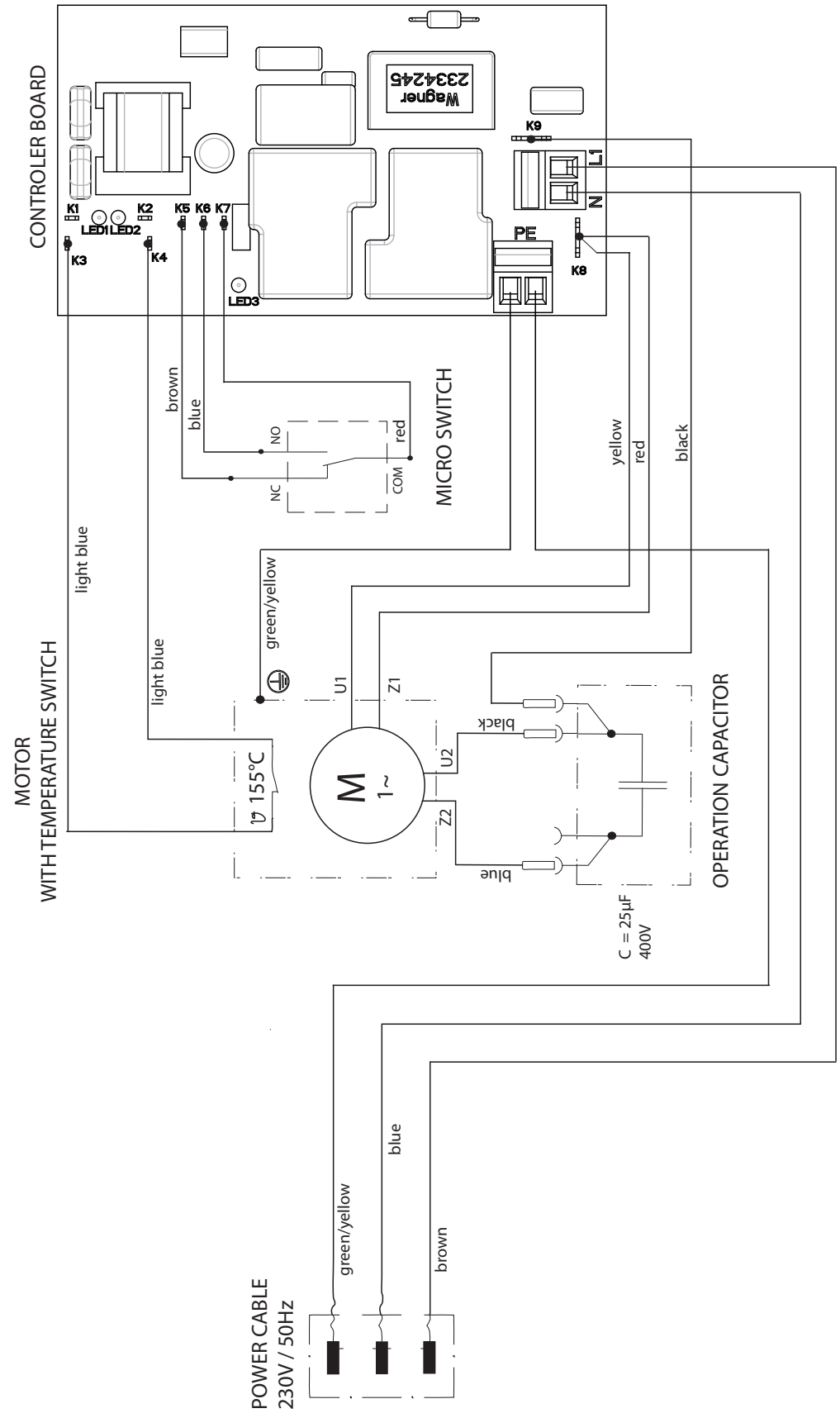
1. Ensure safe isolation from the supply before commencing work.
2. First disconnect the defective motor, noting the exact pin assignment.
3. Now replace the motor.
4. Observe the pin assignment noted in point 2 when connecting the individual wires.Also ensure secure contact when connecting the wires.
5. After completing the repair a measurement in accordance with BGV A3 must be carried out.
6. In order to exclude further use of the defective motor, all wires must be disconnected directly at the motor.

4 MACHINE-SPECIFIC DOCUMENTS

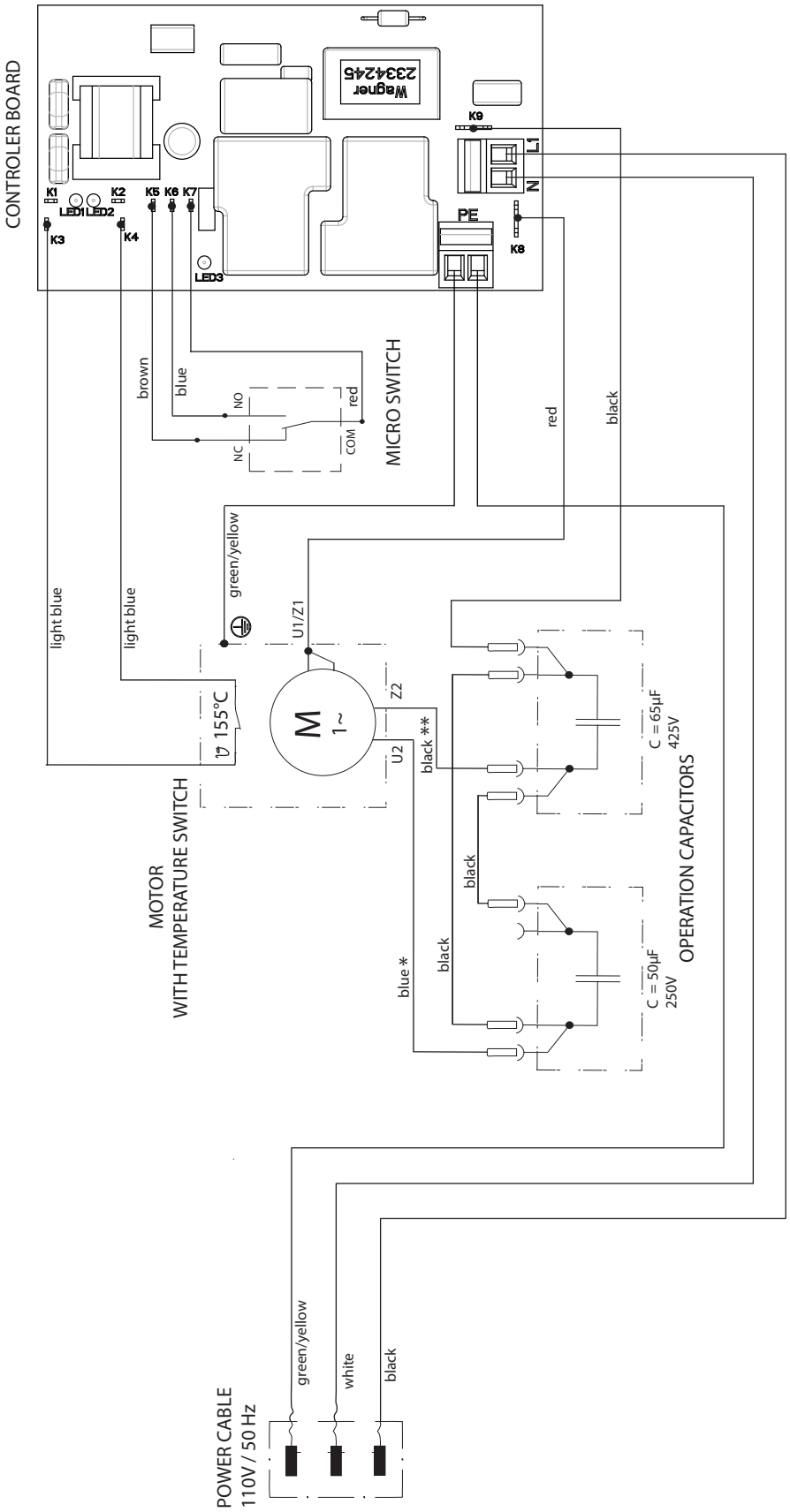
4.1 CONNECTION DIAGRAM SUPER FINISH 23 PLUS 230V WITH SOCKET



4.2 CONNECTION DIAGRAM SUPER FINISH 23 PLUS 230V WITHOUT SOCKET

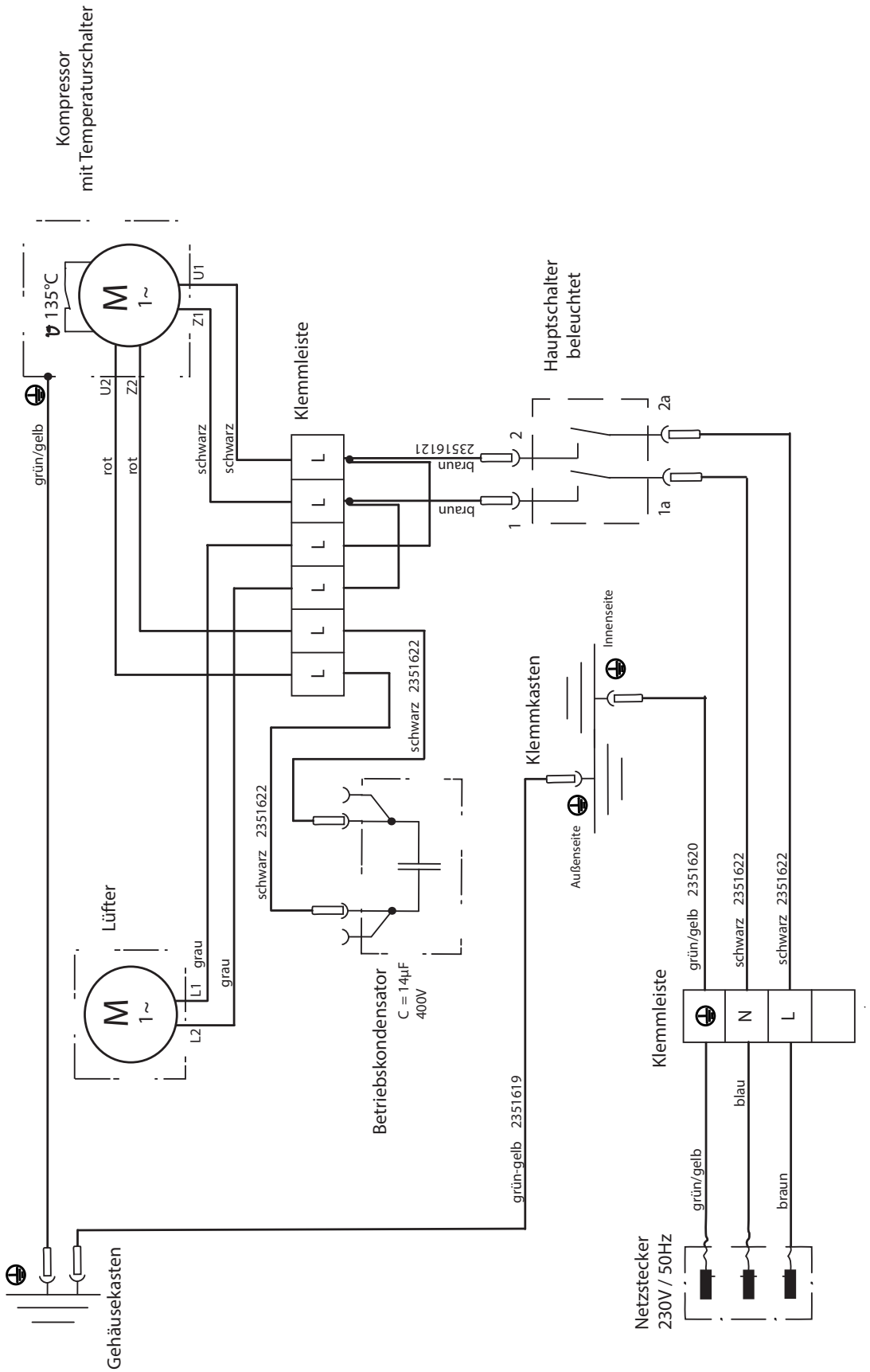


4.3 CONNECTION DIAGRAM SUPER FINISH 23 PLUS 110V UK



* **black** for the first production series
** **yellow** for the first production series

4.4 CONNECTION DIAGRAM AIRBOOST 100



4.5 CONNECTION DIAGRAM SUPER FINISH 23I