



CE-20 WATER BLASTER

500 Bar

3X 400 V 50 Hz

3X 440 V 60 Hz

UNLOADER

USER GUIDE & SPARE-PART BOOK



RTH Renders Technischer Handel
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Thank you for choosing our water blaster. For your safety and correct operation, please carefully read the information and instructions in this manual before use.

NOTE: All of the information stated in this manual is based on data available at the time of printing. DEN-JET reserves the right to modify or change its products and / or specification data at any time without prior notice.

DEN-JET has no responsibility or liability regarding misuse of the product or use of the product with third party products.

DEN-JET warranty's is limited to repair or replacement of faulty items at the time of manufacture.

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Model:	CE20-500
Technical details:	
50 Hz Version W.P. Bar / Psi Flow Lpm / Gpm	500 / 7250 16 / 4.2
60 Hz Version W.P. Bar/ Psi Flow Lpm / Gpm	500 / 7250 16 / 4.2
Electrical Spec. Motor Hp/ Kw Voltage 50/60 Hz Amperage A	20 / 15 400 / 440 21 / 19
Dimensions L x W x H mm Weight Kg	1060 x 760 x 850 280

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Certificate of E.U conformity:

DEN-JET Nordic A/S
Terndrupvej 7, Astrup
DK-9510 Arden
Denmark

According to E.U. Machine Directive 2006/42/EC. Appendix IIA

We hereby declare that the electrical driven high-pressure water blaster machines:

CE-20-350 50/60 Hz and CE-20-500 50/60 Hz

Has been designed, manufactured and tested to fully comply with the health and safety requirements of the E.U. machine regulations.

ANY modification or change of the machine without our prior consent will render this declaration null and void.

Appropriate E.U. regulations:	E.U. Machine Directive (2006/42/EC) Current issue.
	E.U. Low Voltage Directive (2006/95/EC)
	E.U. EMC Directive (2004/108/EC).

Coordinated standards

Used particularly:	EN 809	pr EN 1889
	EN 292 part 1 & 2	EN 60204-1
	EN 574	EN 294
		EN 50081-2
		EN 6100-6-2

Date: June 2017

Benny S. Jensen

Managing Director.

Safety Precautions:

To safeguard the operator who uses the machine and its accessories and as accident prevention and protection of bystanders and property, the following safety precautions must be observed. Always treat the water blaster in the same way as any other power driven high speed cutting tool!

Never let children or people who have not been properly instructed operate the machine.

Use the electric plug in a proper socket with ground to earth wiring. The entire electrical installation must be with earth wiring! All electrical installations must be made only by an electrician. A GFCI (Residual current device) is recommended.

Always keep the high-pressure cleaner and the belonging accessories in good working condition. Check that the machine and its accessories are free from defects, and in good working condition, with special attention to the insulation on the electric cable. In case of defect: Do NOT OPERATE THE MACHINE! Get the machine serviced.

Eye protection must be worn at all times when operating the machine to protect against repelling or ricocheting materials hitting the eyes and causing damage.

Ear protection must be worn at all times when operating the machine to protect against hear loss during operation.

Proper footwear and protective clothing must be worn at all times when using the equipment to avoid and prevent damage to the operator.

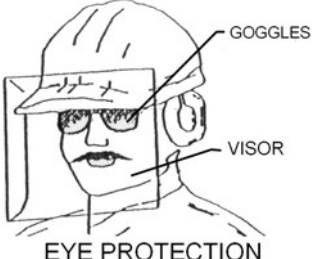
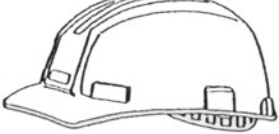
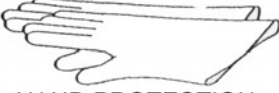
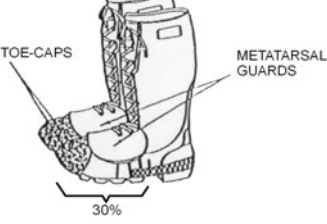

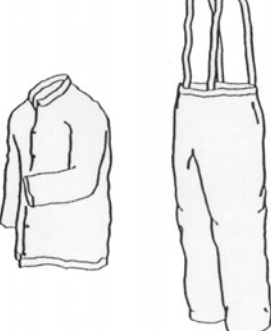
NEVER direct the jet at yourself. Do not attempt to clean your clothes or footwear with the machine.

Precautions must be made to keep bystanders away from the working range.
NEVER spray-jet on humans or live animals, the high pressure jet can cause severe injury.

NEVER spray at electrical equipment, or at the machine itself.
Make sure the machine is turned off and disconnected from the main power supply before service or repair.



Safety Precautions:

The below shown protective clothing and devices should be worn both by personnel operating the water blaster system and equipment and by those working nearby:

 <p>EYE PROTECTION</p>	<p>Operators must wear visors or goggles to guard against spray and flying debris. A combination of both goggles and visor is recommended. It will protect the eyes and the face during both water-blasting as well as abrasive water-blasting.</p>
 <p>HEAD PROTECTION</p>	<p>Safety helmets must be worn at all time by personnel within the work area. Helmet material must be able to withstand mechanical shock exceeding 10G in 8ms without fracturing.</p>
 <p>HAND PROTECTION</p>	<p>Shear proof gloves must be worn by the operator at all times. A glove combination of a cloth inner lining and a water tight outer layer is preferable.</p>
 <p>FOOT PROTECTION</p>	<p>Safety boots with steel toecaps minimum 0.5mm (0.02”) thick must be worn. The toecap must cover at least 30% of the footwear length. Basic safety footwear must also be equipped with metatarsal guards to protect the instep. Safety boots are available in numerous designs.</p>
 <p>HEARING PROTECTION</p>	<p>Operators and other personnel exposed to noise levels of more than 90-dBa for more than 1 hour must wear suitable ear protection. Ear plugs or ear muffs are usually sufficient.</p>
 <p>PROTECTIVE CLOTHING</p>	<p>Waterproof clothes protect the operator only from spray and flying debris. They do NOT deflect direct jet impact. Therefore, an operator must take care never to point a water-jet either at them selves or other personnel.</p>

Medical emergency information:

Immediate medical attention should be given to personnel who sustain equipment related injuries while operating the system. In such cases, it is vital that medical personnel be apprised of all facts relevant to such injuries. Therefore, all operating personnel should be provided with waterproof emergency medical alert tags or cards, describing the nature of their work and the possibility of injury inherent in the use of water jetting equipment. The below example of a standard card can be printed out or photo copied, bend, laminated and used as medical alert tag.

<h1>MEDICAL ALERT</h1> <p>This card is to be carried by personnel working with high-pressure water jetting equipment. Obtain medical treatment immediately for ANY high-pressure water-jet injuries.</p> 
<p>This person has been working with water jetting at pressures up to 55,000 psi (374Mpa, 3,740bar, 3,867 kg/cm²) with a jet velocity of up to 3,000 fps (914 mps). This should be taken into account during diagnosis. Unusual infections with microaerophilic organisms occurring at lower temperatures have been reported. These may be gram-negative pathogens such as found in sewage. Bacterial swabs and blood cultures may therefore be helpful. A local poison control centre should be contacted for additional treatment information and advise.</p> <div><p>DEN-JET Nordic A/S Terndrupvej 7, Astrup, DK-9510 Arden, Denmark Tel: +45 98 55 88 68 Fax: +45 98 55 88 18 www.denjet.com</p></div>

Preparing the machine for operation:

1) Place the machine in a safe location and secure the unit with lashing belts.

2) Freshwater Connection.

Prepare the water supply for the blaster, by attaching a 3/4" hose to the supplied low pressure inlet coupling on the side of the water tank. Connect the other end to the **fresh water** supply from the vessel. Open for the water supply and fill up the water tank before starting the machine. Always use the inlet connection on the tank for supplying water.

3) High Pressure Hose Connection

Mount the 1/2" high pressure hose to the blaster by attaching the swivel of the hose to the outlet fitting of the pump head. Please use 2 x 27mm spanners / wrenches to tighten the connection. Additional high pressure hoses supplied with the machine should be mounted now by using the supplied 1/2" nipples male-male to connect the hoses together. Please use 2 x 27mm spanners / wrenches to tighten the connection.

4) Trigger Gun Connection

Mount the trigger gun with lance to the high pressure hose. Please use 2 x 27mm spanners / wrenches to tighten the connection. Mount the correct nozzle at the end of the lance.

5) Electrical Power Connection

Connect the power cable CEE plug to an earthed 3 phase 32 Amp power socket. Should the CEE plug provided with the machine not fit your electrical system, replace the plug with one that fits.

6) Machine is now ready for operation.

Operation of the Machine:

- A) Ensure that the water supply is open.
- B) Turn the main power switch to ON. Press the green START button – machine starts. Allow the machine a few seconds for the automatic star – delta switch to turn over.
- C) Get a firm grip with both hands on the trigger gun handle and lance handle. Press the trigger and start blasting. Always be aware of other crew members in your working area – Safety is first priority.

Note: Do NOT let the machine run idle for more than 10 minutes, as it may cause damage to the pump. (Water heats up).

Shut-down of the Machine:

- A) Press the red STOP button – machine stops.
- B) Squeeze the trigger gun to release the pressure inside the high pressure hose.
- C) Turn off the water supply.

Storage of machine during Winter time.

Store the machine in a frost free location.

Drain the water from the machine and flush the pump with anti-freeze fluid.

Preparing the machine for operation:

The machine is equipped with the following safety devices:

- a) STOP button. The STOP button (pos. 18 Electrical spare-parts assembly) stops the machine when pushed in. (The optional emergency STOP pos. 41 do the same, twist to release)
- b) Main switch. The main switch (pos. 19 Electrical spare-parts assembly) disconnects the main supply. UN-PLUG MACHINE WHEN REPAIRING!!!
- c) Over load relay. The overload relay protects the motor against overloading (pos. 27 Electrical spare-parts assembly)
- d) Safety valve. The safety valve built onto the top of the pump is protecting against over-pressure (pos. 1 -500 Bar Pump assembly.)

Set-Up & Use:

Check	Task
Daily Inspection	<i>Check the strainer in the water-tank.</i> Clean if necessary. <i>Check the oil level on the crankcase of the pump.</i> Fill up if necessary. <i>Check for air-bubbles in the suction hose between tank and pump.</i> If there are bubbles then tighten the hose-clips. <i>Check high pressure connections for leakage.</i> NEVER tighten connections under pressure. <i>Check high pressure hoses for wear and cracks.</i> Replace if necessary. <i>Check the power cord for wear and cracks.</i> Replace if necessary. <i>Check the air intake grill of the electric motor.</i> Clean for dust if necessary.
	Notice: To prevent damage to hoses and electrical cord, avoid letting the high-pressure hoses rub against sharp edges for example manholes or getting squeezed in door openings etc. Replace if necessary.
	Inlet water temperature must be below 60°C (140°F)

Maintenance:

Maintenance	Task
Lubrication	<p><i>Oil renewal on the pump crankcase is to be completed the first time after no more than 50 hours of use. Oil renewal is hereafter to be completed in every 400 hours of use. Or at least one time a year.</i></p> <p><i>Use a SAE 30 or 10W-40 Oil (part number:83600870)</i></p> <p><i>Quantity: 1,04 Liter (0,27 US Gallon)</i></p> <p><i>Fill up until the oil level is visible in the sight glass.</i></p>
Renewal of oil	<p>Switch off the machine. Loosen the oil drain screw on the lower back of the pump crank-case. Let the oil drain out into a waste oil-tray. Remount the oil drain screw and pour in new oil through the oil inlet on top of the pump until visible in the oil sight glass.</p> <p>Notice: Always dispose of the used oil in a proper manner.</p>
Cleaning	<p><i>A part of keeping the machine and its accessories in good working condition is keeping it clean. But NEVER clean the machine itself with high-pressure. Do not use solvents.</i></p>
Storage	<p><i>Keep the unit frost free, or flush the pump thoroughly with non alcoholic antifreeze fluid.</i></p>

Overhauling and adjusting safety / un-loader valve:

Turn off the machine, unplug the power supply cable and squeeze the trigger gun to release any pressure in hose before carry out the service job!!!

Possible reasons for low pump pressure:

- The high pressure nozzle is worn or too big in orifice size,
- Leakage from hose connections or trigger gun,
- Filter in water tank is partly blocked,
- Pump sucks air through inlet hoses, packing seal worn – water leaking below the pump,
- The un-loader valve or safety valve is not correctly adjusted or worn.

The un-loader and safety valve must be reset correctly after repair or inspection.

Overhauling Procedure:

Detach the dump back hose.

Loosen the 6 screws (pos. 14) from un-loader housing (pos. 1).

Loosen the lock-nut (pos. 2) on top of the spring guide (pos. 10).

Unscrew the complete piston housing (pos. 7) plug un-loader and plug gauge (pos. 20 & 21).

The valve-seat (pos. 16) can be pushed out from the un-loader housing side with a rod.

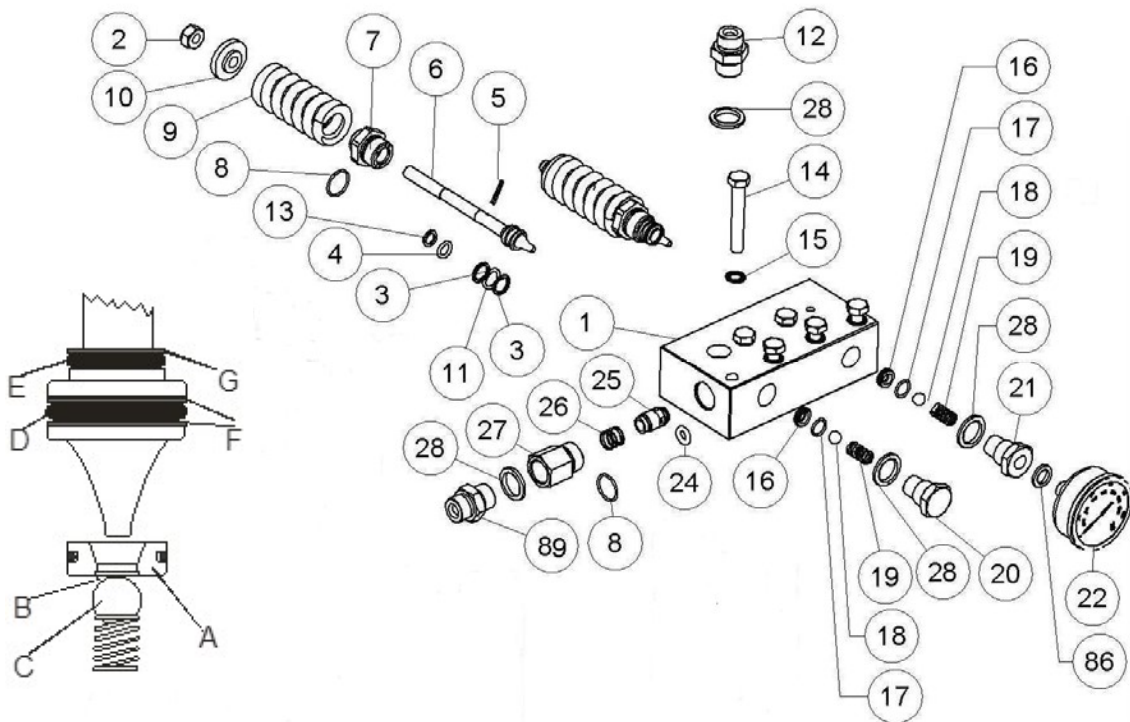
Unscrew the outlet fitting (pos. 27).

Clean all the parts and overhaul by refitting the parts supplied in the repair kit(s).

Ensure the parts are put in place as shown below.

Pay attention to the orientation of the back-up ring F & G, O-ring D & E and valve seat A (the short seat edge B should be facing the ball C).

Assemble the un-loader / safety valve again.



Adjusting Procedure:

Re-adjust the un-loader and safety valve by running the machine with a correctly sized nozzle. Squeeze the trigger and slowly tighten the un-loader and safety valve nut (pos. 2) on top of the spring guide (pos. 10) simultaneously*, until desired working pressure is reached and there is no more leakage (dump back) through the un-loader valve dump back hose (look inside the water tank) and safety valve weep hole at un-loader housing.

Activate the trigger a few times and check again.

The safety valve must be set slightly higher than the un-loader valve.

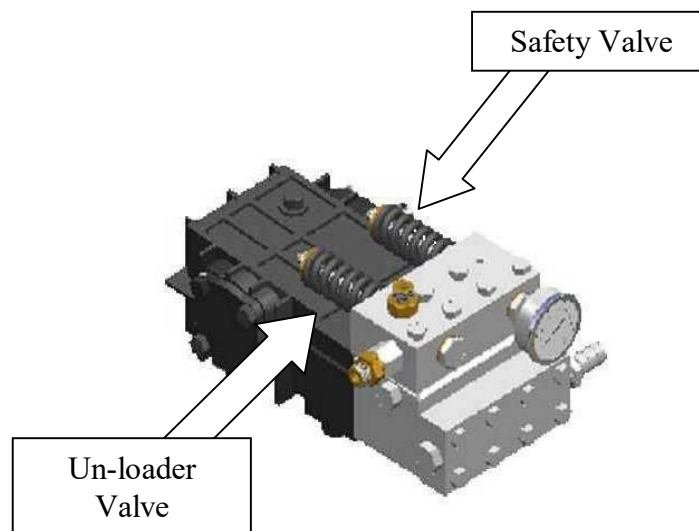
Check for leakage under the un-loader housing.

Make sure that the black springs still have movement allowance after setting the correct pressure.

The correct working pressure is regulated by the size of the nozzle, and the nozzle should never be too small.

Remark *:

1. Squeeze the trigger when adjusting the un-loader spring.
2. Release the trigger when adjusting the safety valve spring.



Trouble shooting and repair:

Problem	Repair
When the main switch is turned on And the green start button is pushed in, the Water-blaster will not start.	<i>Fault somewhere in the power supply.</i> Is the Power light on? Make sure the main supply cable is connected correctly. Inspect cord for cracks and wears.
The motor is humming but the pump does not run.	<i>Too low voltage, one phase is missing. High-pressure pump is blocked.</i> Check the mains voltage. Check the main connection voltage with a meter. With the machine turned off, hand turn the motor, at the fan, if it remains blocked, check the pump.
The pressure drops and the Water-blaster works irregularly.	<i>The strain filter in the water tank is blocked or dirty or the water supply from the tap is insufficient. Air in the Suction hose.</i> Clean the strain water filter. The machine should always suck from the water-tank. Open fresh water tap fully. Tighten the hose clamps on the suction hose.
The Water-blaster is running at high pressure when trigger is released.	<i>The check valve in the un-loader out-let fitting is stuck or leaking.</i> Clean the check-valve in the un-loader out-let fitting. Replace the O-ring
The Water-blaster does not reach the right working pressure when the trigger handle is activated.	<i>Leakage from: Safety valve, hose connections, trigger-gun. The pump sucks air. The high-pressure nozzle is worn or too big in size. The un-loader valve or safety valve is not correctly adjusted, or is worn. Plunger packings are worn.</i> Turn of the water-blaster. Inspect for leakage. Replace the nozzle. Set the un-loader, repair if necessary. Change packings.
The Water-blaster works with approximately 2/3 of the maximum pressure, and the high-pressure hose is vibrating.	<i>There is dirt in the valves.</i> Turn off the Water-blaster. Dismantle the pump head and the valves, remove the dirt and check to ensure the valve discs are moving freely and fits tight and smooth to their seats.

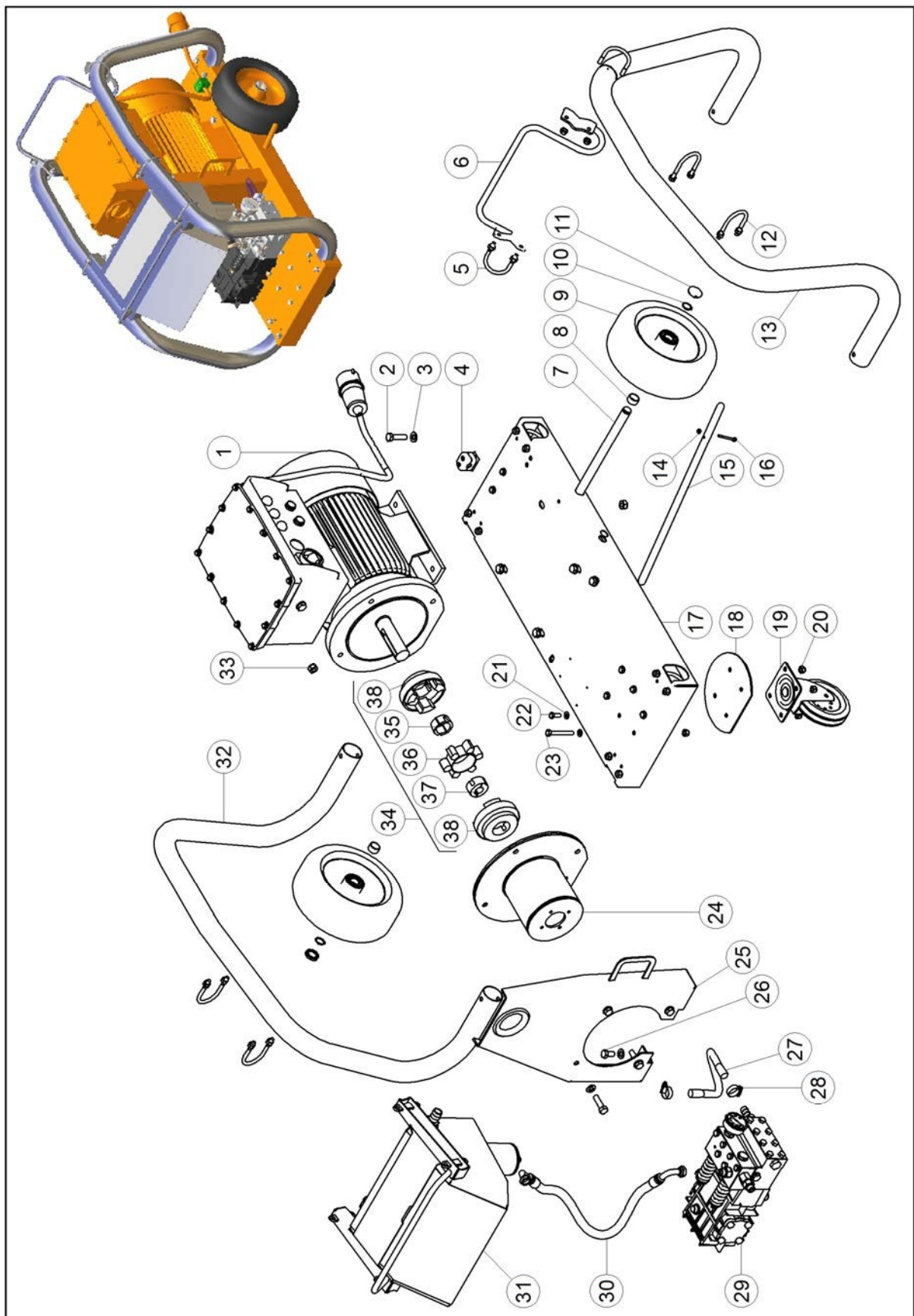
Trouble shooting and repair:

Problem	Repair
Excessive water leakage from under the pump	<p><i>Packing is worn</i></p> <p>Replace packing. (Always replace O-ring as-well)</p>
Noisiness	<p><i>The pump sucks air. One or more valve springs are broken or stuck. Dirt in the valves. No or too little oil in the crankcase or motor bearings worn out.</i></p> <p>Inspect the low-pressure water supply. Tighten hose clips. Replace springs. Clean the valves. Replace the bearings.</p>
Water in the oil	<p><i>The Oil-seal is worn out. High moisture in the air (condensing inside the crankcase) The high pressure seals are completely worn out.</i></p> <p>Check or replace the oil-seals. Renewal of the crankcase oil more often. Replace the high pressure seals.</p>

Coupling Mounting



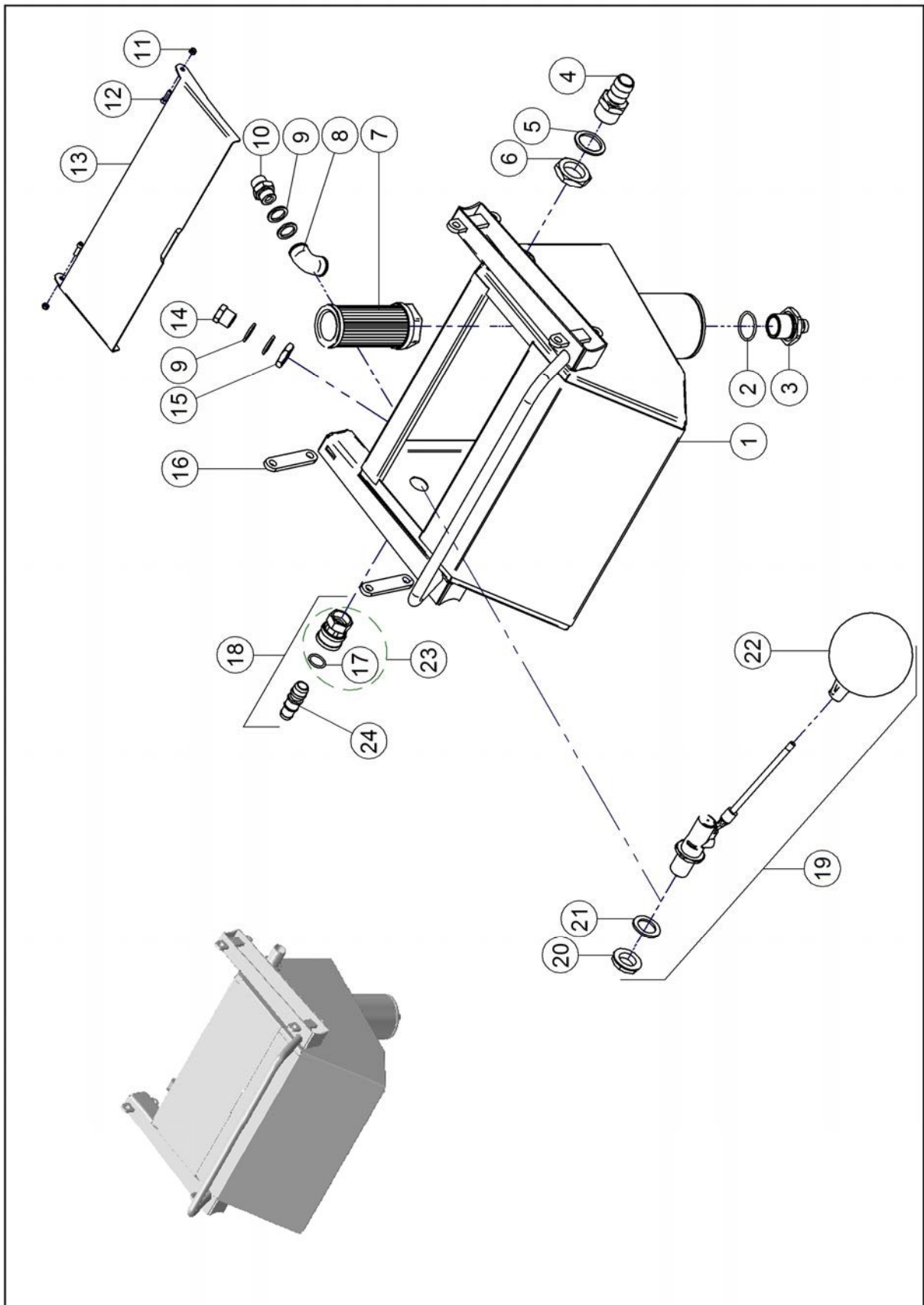
CE20-500 WATER-BLASTER MAIN SPARE-PARTS ASSEMBLY



**CE20-500 WATER-BLASTER
MAIN SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
1		1	EL SYSTEM
2	80101084	8	SCREW
3	80100851	10	WASHER
4	80100597	1	CABLE CLAMP
5	80100775	6	U-BOLT SHORT
6	81000447	1	CABLE HOLDER
7	81000621	1	AXLE
8	81000623	2	SPACER
9	81000618	2	WHEEL
10	80100669	2	CIRCLIP
11	81000619	2	HUB-CAP
12	80100617	4	U-BOLT LONG
13	81000248	1	LEFT FRAME
14	80100053	1	LOCK NUT
15	81000251	1	MECHANICAL BRAKE
16	80100254	1	SCREW
17	81000242	1	BASE PLATE
18	81000445	1	SUPPORT FOR CASTOR WHEEL
19	81000235	1	CASTOR WHEEL
20	80100259	8	LOCK NUT
21	80100506	16	WASHER
22	80100258	4	SCREW
23	80100379	4	SCREW
24	81000240	1	BELL HOUSING
25	81000250	1	LIFT PLATE
26	80100629	2	SCREW
27	83400525	0,5m	SUCTION HOSE
28	80100527	2	HOSE CLIPS
29	81200639	1	PUMP ASSEMBLY 60Hz
29	81200243	1	PUMP ASSEMBLY 50Hz
30	81300594	1	HOSE DUMP BACK
31	81000236	1	WATER TANK
32	81000249	1	RIGHT FRAME
33	80100847	10	LOCK NUT
34	81000244	1	COUPLING
35	81000268	1	TAPER BUSH
36	81000594	1	RUBBER ELEMENT
37	81000595	1	TAPER BUSH
38	81000592	2	COUPLING HALF

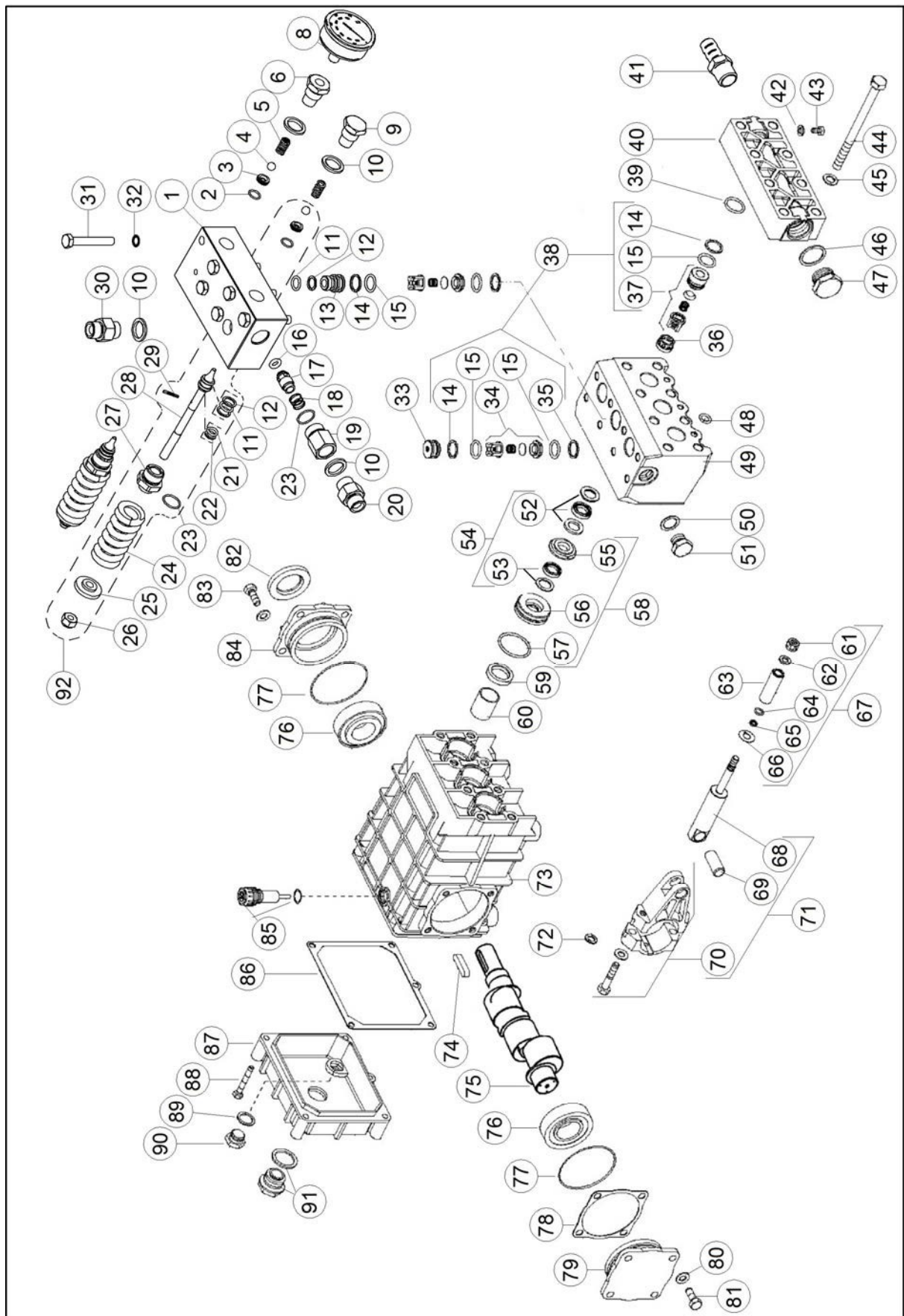
CE20-500 WATER BLASTER **WATER TANK SPARE-PARTS ASSEMBLY**



**CE20-500 WATER BLASTER
WATER TANK SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
1	81000313	1	WATER TANK WELDED CE20
2	80200402	1	O-RING
3	80500761	1	HOSE NIPPLE
4	80500227	1	HOSE NIPPLE
5	80500975	1	BONDED SEAL
6	80100405	1	CONTRA NUT
7	81000902	1	FILTER STRAINER
8	80500647	1	ELBOW
9	80500429	4	BONDED SEAL
10	80500427	1	NIPPLE
11	80100513	2	LOCK NUT
12	80100605	2	SCREW
13	81000311	1	LID
14	80500495	1	PLUG
15	80100632	1	CONTRA NUT
16	81000425	4	BRACKET FOR U BOLT
17	80200612	1	O-RING
18	80500423	1	QUICK COUPLING
19	81000602	1	FLOAT VALVE COMPLETE
20	80100802	1	CONTRA NUT
21	80500974	1	BONDED SEAL
22	81000606	1	BALL
23	80500604	1	QUICK COUPLING FEMALE
24	80500603	1	QUICK COUPLING HOSE NIPPLE

CE20-500 WATER BLASTER PUMP SPARE-PARTS ASSEMBLY



CE20-500 WATER BLASTER PUMP SPARE-PARTS LIST

Pos.	Item No.	Qty.	Description
1	81300293	1	HOUSING UNLOADER
2	80200597	2	O-RING Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
3	81300595	2	VALVE SEAT Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
4	81300559	2	BALL Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
5	80300555	2	SPRING
6	81300597	1	PLUG GAUGE
7	N/A		
8	81300821	1	GAUGE
9	81300596	1	PLUG SPRING
10	80500429	4	BONDED SEAL
11	80200606	3	O-RING Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
12	80200605	5	BACK UP RING Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
13	81300598	1	CONNECTOR
14	80200611	6	BACK UP RING Part of valve kit 81200822 (pos.38)
15	80200608	9	O-RING Part of valve kit 81200822 (pos.38)
16	80200291	1	O-RING Part of rep. kit 81300619
17	81300290	1	CHECK VALVE
18	80300556	1	SPRING
19	81300289	1	OUTLET FITTING
20	80500375	1	NIPPLE
21	80200598	2	O-RING Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
22	80200604	2	BACK UP RING Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
23	80200599	3	O-RING Part of rep. kit 81300619 Part of assembly 81300861 (pos.92)
24	80300549	2	SPRING BLACK Part of assembly 81300861 (pos.92)
25	81300550	2	SPRING GUIDE Part of assembly 81300861 (pos.92)
26	80100259	2	LOCK NUT Part of assembly 81300861 (pos.92)
27	81300292	2	PISTON HOUSING Part of assembly 81300861 (pos.92)
28	81300548	2	PISTON Part of assembly 81300861 (pos.92)
29	81300551	2	PIN Part of assembly 81300861 (pos.92)
30	80500792	1	NIPPLE
31	80100598	6	SCREW Torque: 50Nm / 37 lbf•ft
32	80100599	6	SPRING WASHER
33	81200618	2	VALVE PLUG
34	81200712	3	DISCHARGE VALVE Part of valve kit 81200822 (pos.38)
35	80200840	3	BACK UP RING Part of valve kit 81200822 (pos.38)
36	81200609	3	SPACER
37	81200711	3	SUCTION VALVE Part of valve kit 81200822 (pos.38)
38	81200822	1	VALVE KIT
39	80200612	3	O-RING
40	81200613	1	INLET BLOCK
41	80500436	1	HOSE NIPPLE
42	80200609	1	WASHER
43	80100601	1	SCREW
44	80100602	8	SCREW Torque: 50Nm / 37 lbf•ft

CE20-500 WATER BLASTER PUMP SPARE-PARTS LIST

Pos.	Item No.	Qty.	Description
45	80100599	8	SPRING WASHER
46	81200614	1	WASHER
47	81200615	1	PLUG Torque: 140Nm / 103 lbf•ft
48	80200598	3	O-RING
49	81200608	1	PUMP HEAD
50	80500605	2	BONDED SEAL
51	80500598	2	PLUG Torque: 80Nm / 60 lbf•ft
52	81200607	3	HIGH PRESSURE SEAL KIT Part of seal rep. kit 81200619 (pos.54)
53	81200605	3	LOW PRESSURE SEAL KIT Part of seal rep. kit 81200619 (pos.54)
54	81200619	1	SEAL KIT COMPLETE
55	81200606	3	BACK UP RING Part of back up ring rep. kit 81200634 (pos.58)
56	81200604	3	BRASS RING Part of back up ring rep. kit 81200634 (pos.58)
57	80200607	3	O-RING Part of back up ring rep. kit 81200634 (pos.58)
58	81200634	1	BACK UP RING KIT
59	81200603	3	OIL SEAL *) Before June 2017
59	81201753	3	OIL SEAL **) After May 2017
60	81200602	3	GUIDE BUSHING *) Before June 2017
60	N/A	3	NO LONGER IN USE **) After May 2017
61	81200630	3	PLUNGER NUT Torque: 15Nm / 11 lbf•ft Part of plunger rep. kit 81200704 (pos.67)
62	80100398	3	COPPER SEAL Part of plunger rep. kit 81200704 (pos.67)
63	81200616	3	PLUNGER SLEEVE
64	80200610	3	O-RING Part of plunger rep. kit 81200704 (pos.67)
65	81200601	3	RING Part of plunger rep. kit 81200704 (pos.67)
66	81200600	3	PLUNGER.DISC Part of plunger rep. kit 81200704 (pos.67)
67	81200704	1	PLUNGER REP KIT W/O PLUNGER SLEEVE
68	81201754	3	CROSS HEAD * Part of con. Rod kit 81200599 (pos.71)
68	81201754	3	CROSS HEAD ** Part of con. rod kit 81201755 (pos.71)
69	81200637	3	WRIST PIN Part of con.rod kit 81200599 & 81201755 (pos.71)
70	81200636	3	CONNECTING ROD Torque: 30Nm / 22 lbf•ft Part of con.rod kit 81200599 & 81201755 (pos.71)
71	81200599		CONNECTING ROD ASSEMBLY *) Before June 2017
71	81201755	3	CONNECTING ROD ASSEMBLY **) After May 2017
72	80100879	6	WASHER
73	81200631	1	CRANK CASE *) Before June 2017
73	81201752	1	CRANK CASE **) After May 2017
74	81200629	1	KEY
75	81200627	1	CRANKSHAFT 50 Hz
75	81200628	1	CRANKSHAFT 60 Hz.
76	80400506	2	BEARING
77	80200407	2	O-RING
78	81200632	1	SHIM
79	81200620	1	FLANGE CLOSED
80	80100170	8	WASHER
81	80100603	4	SCREW Torque: 25Nm / 19 lbf•ft
82	81200635	1	OIL SEAL
83	80100171	4	SCREW Torque: 25Nm / 19 lbf•ft
84	81200633	1	FLANGE OPEN
85	81200621	1	OIL BREATHER
86	81200622	1	BACK COVER GASKET
87	81200623	1	CRANK CASE BACK COVER *) Before June 2017
87	81201751	1	CRANK CASE BACK COVER **) After May 2017
88	80100604	5	SCREW Torque: 11Nm / 8 lbf•ft
89	81200624	1	GASKET
90	81200625	1	PLUG Torque: 11Nm / 8 lbf•ft
91	81200365	1	OIL LEVEL GLASS
92	81300861	2	PISTON AND SPRING ASSEMBLY

*) Before June 2017, **) After May 2017

CE20-500 WATER BLASTER VALVE REPAIR KIT

Item No./Kit Description	Pos.	Item No.	Qty.	Description
Pos. 38 81200822 VALVE KIT	14	80200611	6	BACK-UP RING
	15	80200608	9	O-RING
	34	81200712	3	DISCHARGE VALVE
	35	80200840	3	BACK UP RING
	37	81200711	3	SUCTION VALVE

Item No./Kit Description	Pos.	Item No.	Qty.	Description
Pos. 71 81200599 / CONNECTING ROD KIT	70	81200636	1	CONNECTING ROD
	69	81200637	1	WRIST PIN
	68	81200638	1	CROSS HEAD

3 set of Connecting Rod Kit are required to overhaul one pump

Item No./Kit Description	Pos.	Item No.	Qty.	Description
Pos. 67 81200704 / PLUNGER REP. KIT	61	81200630	3	PLUNGER NUT
	62	80100398	3	COPPER SEAL
	64	80200610	3	O-RING
	65	81200601	3	RING
	66	81200600	3	PLUNGER DISC

Item No./Kit Description	Pos.	Item No.	Qty.	Description
Pos. 54 81200619 / SEAL REP. KIT	53	81200605	3	LOW PRESSURE SEAL KIT
	52	81200607	3	HIGH PRESSURE SEAL KIT

Item No./Kit Description	Pos.	Item No.	Qty.	Description
Pos. 58 81200634 / BACK UP RING REP. KIT	55	81200606	3	BACK UP RING
	56	81200604	3	BRASS RING
	57	80200607	3	O-RING

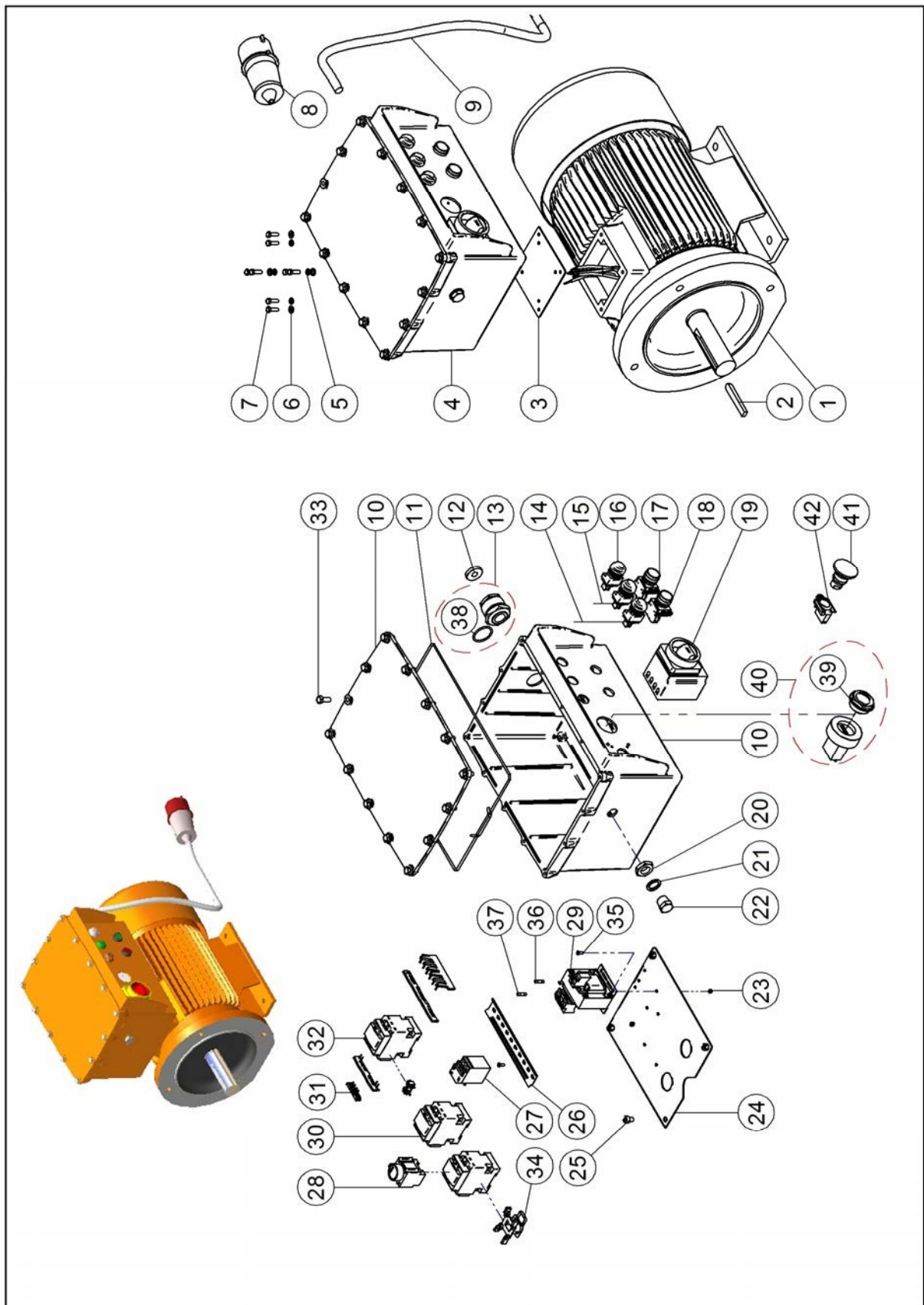
UNLOADER REPAIR KIT

Item No./Kit Description	Pos.	Item No.	Qty.	Description
Pos. 92 81300861 PISTON AND SPRING ASSEMBLY	2	80200597	1	O-RING
	3	81300595	1	VALVE SEAT
	4	81300559	1	BALL
	11	80200606	1	O-RING
	12	80200605	2	BACK UP RING
	21	80200598	1	O-RING
	22	80200604	1	BACK UP RING
	23	80200599	1	O-RING
	24	80300549	1	SPRING BLACK
	25	81300550	1	SPRING GUIDE
	26	80100259	1	LOCK NUT ZN
	27	81300292	1	PISTON HOUSING UNLOADER
	28	81300548	1	PISTON FOR UNLOADER 500 BAR
	29	81300551	1	PIN

Item No./Kit Description	Pos.	Item No.	Qty.	Description
81300619 REP. KIT UNLOADER & SAFETY VALVE	2	80200597	1	O-RING
	3	81300595	1	VALVE SEAT
	4	81300559	1	BALL
	11	80200606	1	O-RING
	12	80200605	2	BACK UP RING
	16	80200291	1	O-RING
	21	80200598	1	O-RING
	22	80200604	1	BACK UP RING
	23	80200599	2	O-RING

2 set of Repair Kit are required to overhaul both unloader and safety valve

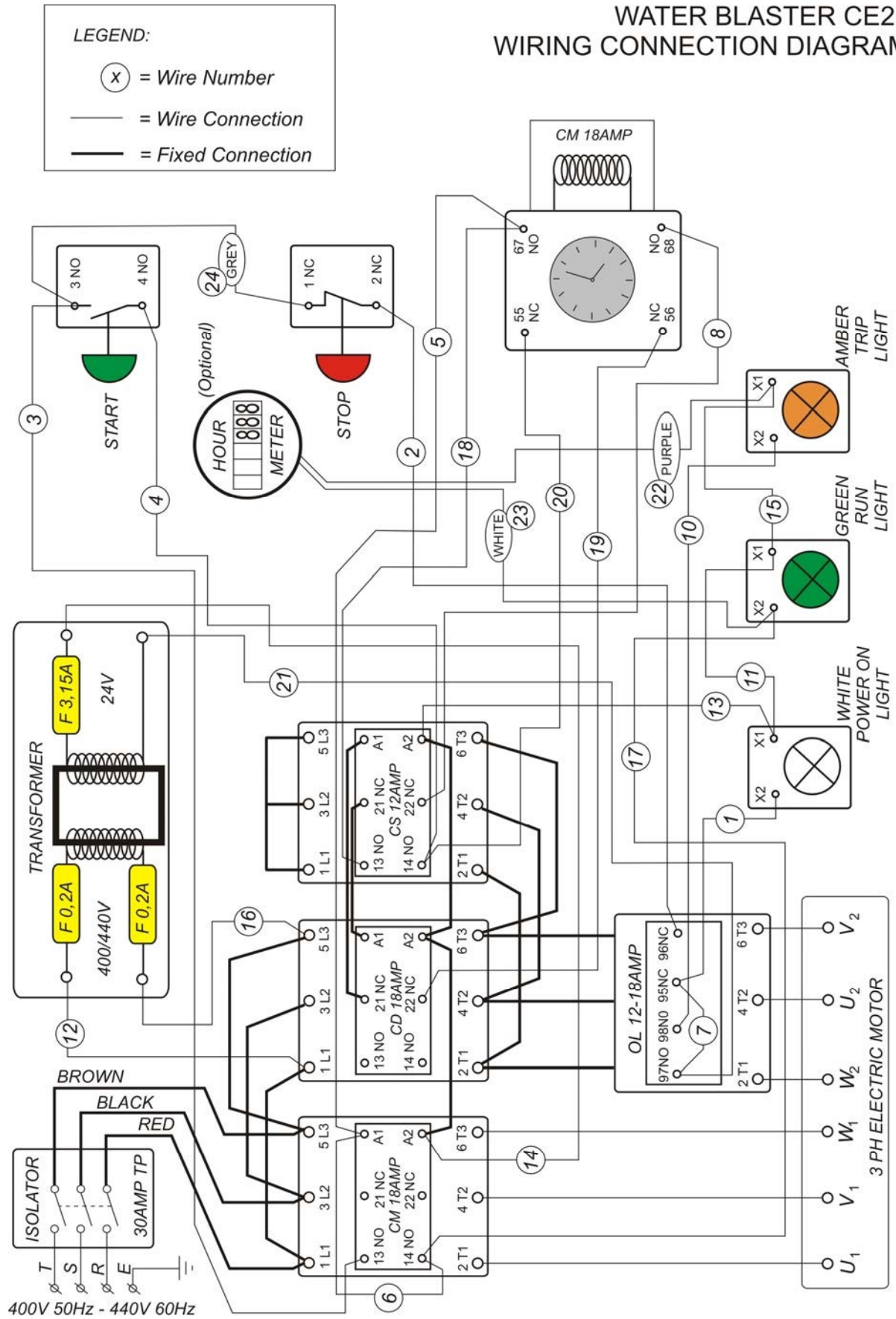
CE20-500 WATER BLASTER ELECTRICAL SYSTEM SPARE-PARTS ASSEMBLY



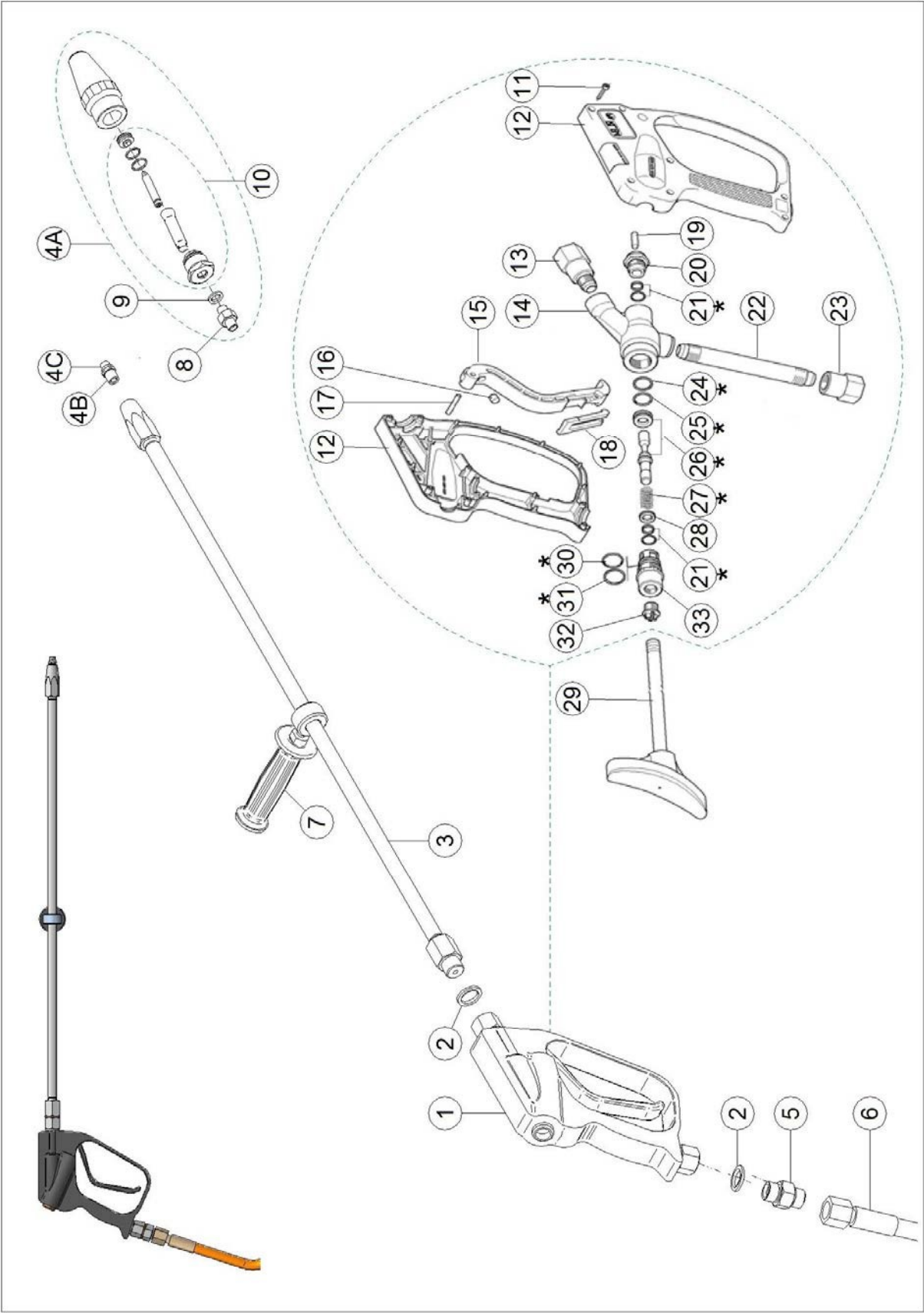
**CE20-500 WATER BLASTER
ELECTRICAL SYSTEM SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
1	81100245	1	MOTOR 20hp 4P B35 CASING 160L 400/690V-50/60HZ
2	81100602	1	KEY
3	81100600	1	RUBBER WASHER
4	81100683	1	EL-BOX ASSY. CE20
5	80100618	4	COPPER WASHER
6	80100398	4	COPPER WASHER
7	80100385	8	SCREW
8	81100630	1	PLUG CEE FOR CE20-50Hz
8	81100707	1	PLUG CEE FOR CE20-60Hz
9	83500592	15M	CABLE
10	81001127	1	EL-BOX (BOX+ LID)
11	83300602	1.3M	ROPE SEAL
12	81100632	1	RUBBER SEAL
13	81000406	1	GLAND NUT COMPLETE
14	81100594	1	PILOT LIGHT AMBER
15	81100596	1	PILOT LIGHT GREEN
16	81100595	1	PILOT LIGHT WHITE
N/A	81100597	3	BULB FOR PILOT LIGHT
17	81100598	1	PUSH BOTTON ON (GREEN)
18	81100599	1	PUSH BOTTON OFF (RED)
19	81100581	1	CIRCUIT BREAKER
20	80100632	1	CONTRA NUT
21	80500429	1	BONDED SEAL
22	80500495	1	PLUG
23	80100596	4	LOCK NUT
24	81000396	1	MOUNTING PLATE
25	80100382	4	SCREW
26	81100575	1	OMEGA RAIL
27	81100577	1	OVER LOAD RELAY
28	81100580	1	TIMER
29	81100500	1	TRANSFORMER
30	81100576	2	CONTACTOR (inclusive coil)
31	81100572	1	CONNECTION SET
32	81100578	1	CONTACTOR (inclusive coil)
33	80100671	14	SCREW
34	81100579	3	COIL FOR CONTACTOR (spare part)
35	80100595	4	SCREW
36	81100574	1	FUSE 3.15 A
37	81100573	3	FUSE 0.2 A
38	80200402	1	O-RING
39	81000757	1	SIGHT GLASS OPTIONAL
40	81100857	1	HOUR METER ASSY. OPTIONAL
41	81100700	1	EMERGENCY BUTTON OPTIONAL
42	81100699	1	EMERGENCY BREAKER OPTIONAL
	81100601		WIRE HARNESS

WATER BLASTER CE20 WIRING CONNECTION DIAGRAM



**DRY SHUT GUN 8KPSI
SPARE-PARTS ASSEMBLY**



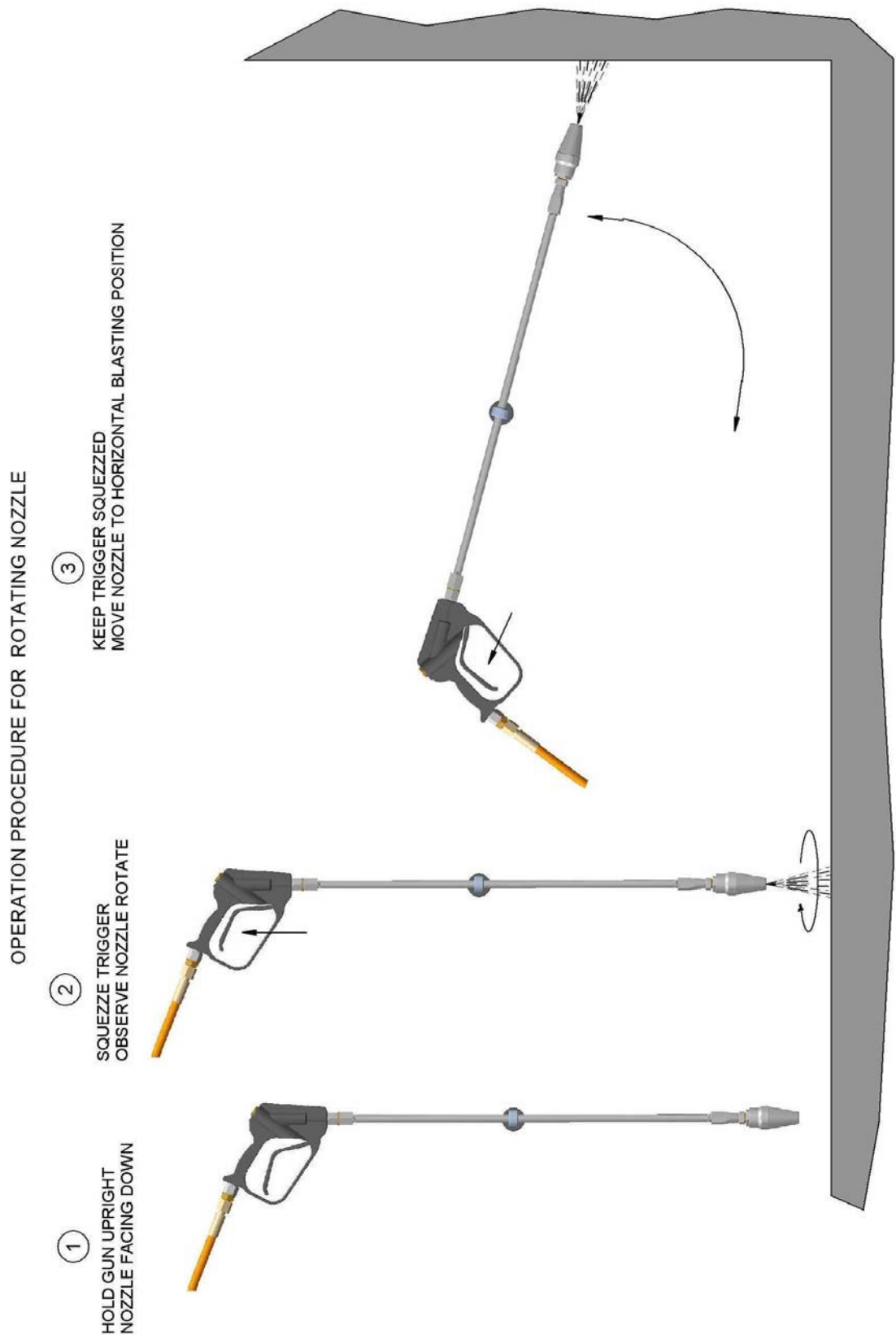
DRY SHUT GUN 8KPSI SPARE-PARTS LIST

Pos.	Item No.	Qty.	Description
	81400895		GUN DRY SHUT WO (NOZZLE ,HOSE ,NIPPLE, SHOULDER REST)
1	81400860	1	TRIGGER HANDLE
2	80500429	2	BONDED SEAL
3	81400644	1	LANCE LONG 560BAR 1000mm
4		1	NOZZLE
5	80500375	1	NIPPLE
6	81400962		HOSE (H.P) 20m 500 BAR W 1/2"BSPP SWIVEL
7	81400075	1	SIDE HANDLE
8	80500654	1	NIPPLE
9	80500971	2	BONDED SEAL
10			REP KIT ROTATING NOZZLE
11	80100594	7	SCREW (Not available separately)
12	81400903	1	HOUSING SET (Not available separately)
13	81400902	1	OUTLET FITTING (Not available separately)
14	81400901	1	VALVE HOUSING (Not available separately)
15	81400906	1	TRIGGER (Not available separately)
16	81400905	1	STRIKER (Not available separately)
17	81400904	1	PIN (Not available separately)
18	81400907	1	SAFETY LATCH (Not available separately)
19	81400864	1	ACTUATOR ROD (Not available separately)
20	81400863	1	PLUG (Not available separately)
21	80200694	2	SEAL ASSY. Part of rep. kit 81400861
22	81400900	1	BACK PIPE (Not available separately)
23	81400899	1	INLET FITTING (Not available separately)
24	80200074	1	BACK UP RING Part of rep. kit 81400861
25	80200070	1	O-RING Part of rep. kit 81400861
26	81400898	1	PISTON-SEAT Part of rep. kit 81400861
27	80300613	1	SPRING Part of rep. kit 81400861
28	81400897	1	SPACER (Not available separately)
29	81400231	1	SHOULDER REST
30	80200691	1	O-RING Part of rep. kit 81400861
31	80200693	1	BACK UP RING Part of rep. kit 81400861
32	81400896	1	PLUG (Not available separately)
33	81400862	1	SPRING HOLDER (Not available separately)
*	81400861		REP. KIT FOR GUN 560BAR (Pos.21,24,25,26,27,30,31)

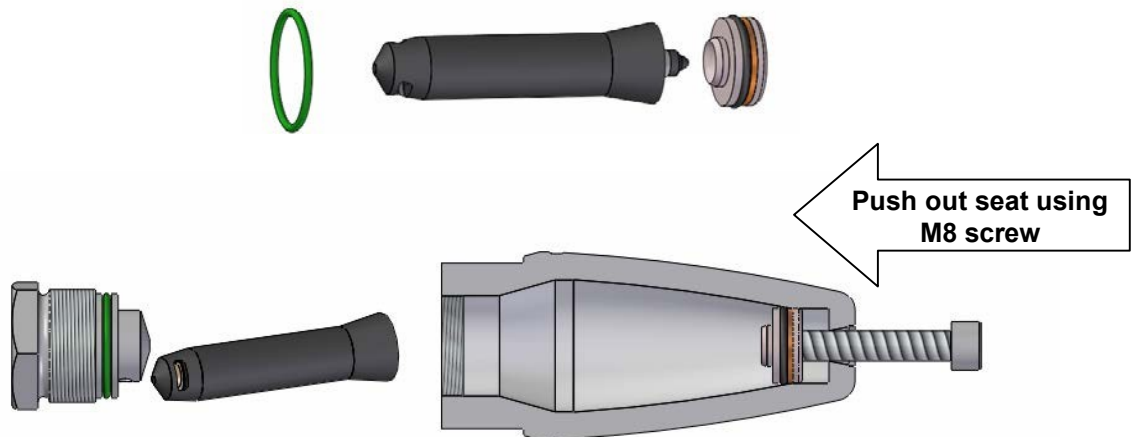
NOZZLE LIST

Pos.	Item No.	Qty.	Description
4A	81500618	1	ROTATING NOZZLE 035
10	81500620		REP. KIT ROT. NOZZLE 035
4B	81500629	1	NOZZLE STRAIGHT JET 035
4C	81500630	1	NOZZLE FAN JET 035/15°

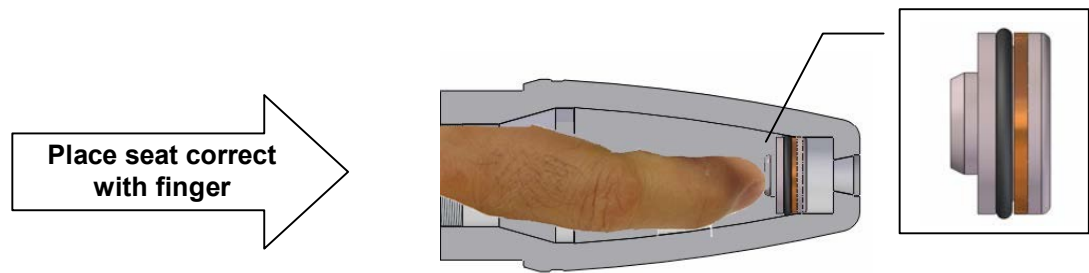
OPERATION PROCEDURE FOR ROTATING NOZZLE



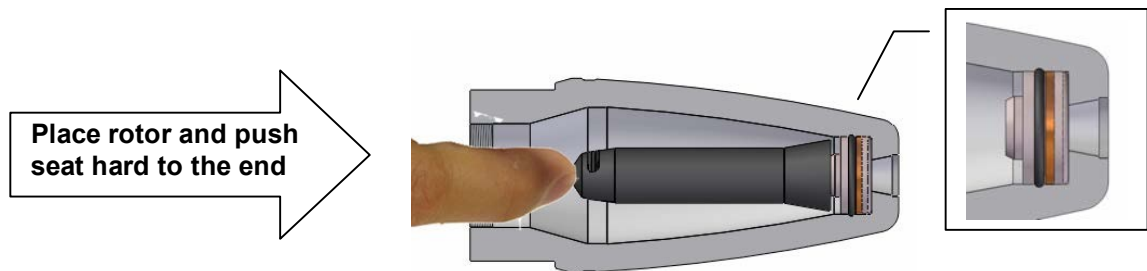
Rotating Nozzle Replacement Procedure Repair Kit



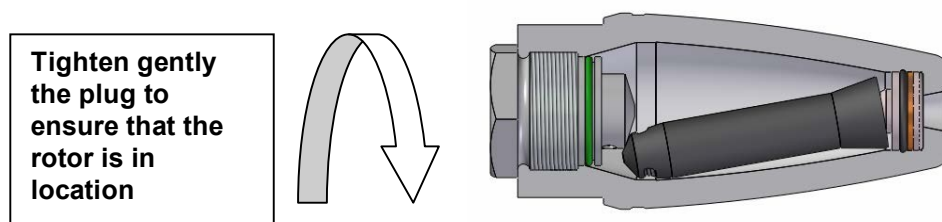
step-1



step-2



step-3



step-4

**SAND BLASTING EQUIPMENT 1/4" BSPP
SPARE PART ASSEMBLY**

