



**CD160-1400
UHP WATER BLASTER**

**Diesel Driven
Motor Pump Unit
MECHANICAL BOOSTER PUMP**

**User Guide
Maintenance Guide
Spare-parts book**



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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.

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

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Model:	
Data:	CD160-1400
Pressure [Bar]	1400
[Psi]	20000
Flow [L/min]	42
US Gpm	11
Power [Hp]	160
[Kw]	115
Fuel	Diesel
Engine Speed [Rpm min ⁻¹]	1800
Dimensions LxWxH [mm]	2300 x 1400 x 1800 (Depending on Frame Build)
Weight [Kg]	1600 (Depending on Frame Build)

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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 Abrasive Cutting Equipment 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: October 2016

Benny S. Jensen

Managing Director.

WARNING 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.

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. Be especially alert when pulling or releasing the trigger as sudden reaction forces will occur

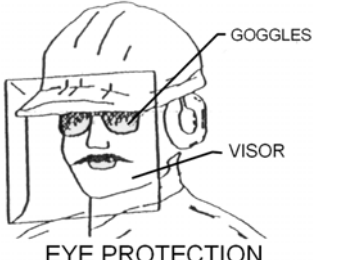
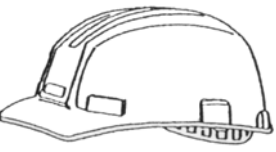

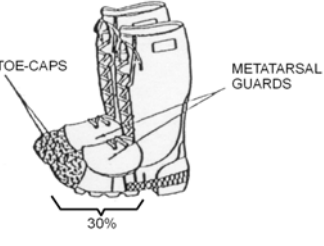

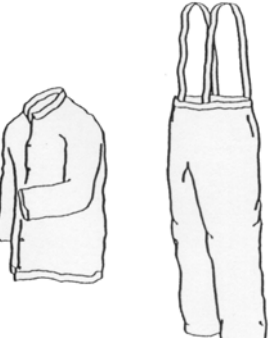
Precautions must be made to keep bystanders away from the working range. Especially when pulling the trigger as sudden reaction forces can make changes in the direction of the jet. **NEVER** spray-jet on humans or live animals, the high pressure jet can cause severe injury and/or death.

NEVER spray at electrical equipment, or at the machine itself.

Before service or repair: Make sure the machine is turned off, and pressure is released from the system by pulling the trigger after shutting down the machine. The machine should be disconnected from the main power supply by pulling out the electrical plug.

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.

MEDICAL ALERT

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.



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.



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Set-Up & Use:

Mount the high-pressure hose on to the Water-blaster high-pressure outlet fitting on the left side of the cylinder-head. Mount the trigger gun with lance to the high-pressure hose. Always use two wrenches when tightening the hoses.

Prepare the water supply for the Water-blaster, by attaching a 1" hose to the supplied low pressure inlet coupling on the bottom of frame below the water tank. Connect the other end of the water supply hose to a fresh water tap. Open the tap. To prevent water spill always use the float valve inlet on the lower front of the machine. The supply line must be able to maintain a supply of more than 50 L/min

Fill the diesel tank with clean diesel fuel for automotive use, the tanks fuel capacity is approximately 130 Liter.

Turn on the unit by turning the key to the preheating stage, wait a few seconds then turn key to start. Throttle up the engine by pulling or turning the throttle cable.

Get a firm grip with both hands on the gun handle and the lance handle. Press the trigger and start blasting. Pay special attention to the fact that energizing the gun with so high a flow (50 liters/min) in combination with such a high pressure causes reaction forces that can cause the jet to change direction.

After shut down of the Water-blaster, always release the pressure inside the high-pressure hoses by pulling the trigger on the spray-gun before dismantling the high-pressure hoses. Trapped high-pressure can cause severe injury.

Notice:

The machine is equipped with the following safety devices:

- a) Key switch for normal shut down (and start up) turn the key counter clockwise to stop.
- b) Emergency Stop Button, at upper corner of unit, stops the machine when pushed in. Twist to reset.
- c) Low engine oil-pressure shut down.
- d) Low booster pump pressure.



Set-Up & Use / Daily inspection:

Check	Task
Daily Inspection	<p><i>Check the oil level on the crankcase of the pump, sight glass.</i> Fill up if necessary. <i>Check for air-bubbles in the suction hose between tank and feed 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 oil level on the crankcase of the engine.</i> Replenish if low. <i>Check the air intake grill.</i> Clean for dust if necessary. Do NOT Cover. <i>Check fan belts.</i> Tighten / Exchange if loose or damaged. <i>Check fuel and cooling system hoses.</i> Replace if damaged.</p>
	<p>Notice: To prevent damage to hoses, avoid letting the high-pressure hoses rub against sharp edges for example manholes or getting squeezed in door openings etc. Replace if necessary.</p>
	<p>Inlet water temperature must be below 60°C (140°F)</p>

Check	Task
Daily inspection of water filter	<p><i>Filter cleaning / change interval depends on water quality.</i> <i>Pay attention not to spill dirt from the filter-bag into the filter housing when taking out the dirty filter. The bag filter can be cleaned, but so not turn it inside out. There are also 2 filter strainers in the water tank.</i> <i>They also may need cleaning depending on water quality.</i></p>

Maintenance, pump:

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 an Industrial purpose 220 Oil</i> <i>Examples: Shell Tellus 220, Esso Nuto 220, Texaco Regal EP220</i> <i>Statoil: Loadway XA220</i> <i>Quantity: 16 Liter. (Seel Oil level glass)</i></p> <p><i>Fill up until the oil level is visible in the middle of the sight glass with stopped pump.</i> <i>Do not overfill</i></p>
Renewal of oil	<p>Switch off the machine. Loosen the oil drain screw on the lower side 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> <i>Take of minus pole on battery for long time storage.</i> <i>Maintenance charge battery regularly.</i></p>

Trouble shooting and repair, unit:

Problem	<i>Repair</i>
When the key is turned the engine will not crank	<i>Start battery not charged enough to crank engine.</i> Charge battery (12 Volt)
The engine cranks but will not start.	<i>Empty diesel tank, clogged diesel fuel filter.</i> Fill diesel tank Change fuel filter. If fuel supply has been stopped, manually pump fuel through to engine by means of the hand push pump on top of the diesel filter before attempting to start engine
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 continues jetting at high pressure when trigger is released. The Water-blaster is running at high pressure when trigger is released and no jetting.	<i>The Gun valve is stuck by dirt and indicate That the filter or hoses has not been clean before assembly</i> Replace gun rep kit and ensure that system is flushed at low pressure before mounting nozzle <i>The check valve in the un-loader out-let fitting is stuck or leaking.</i> The hose may still contain pressure so loosen hose and bleed pressure slowly before opening fully. 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. or safety valve is not correctly adjusted, or is worn. Rupture disc is burst. Plunger packings are worn.</i> Turn of the water-blaster. Inspect for leakage. Replace the nozzle. Set the safety valve, repair if necessary. Change rupture disc. 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. High pressure seals may be worn, replace seals.

Trouble shooting and repair, unit:

Problem	<i>Repair</i>
Excessive water leakage from under the pump	<p><i>Packing is worn</i></p> <p>Replace packings. (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>

Nozzle change:

Change the nozzle when it is worn, (spray pattern becomes irregular and/or a drop in pressure occurs. Use 2 wrenches when changing nozzle. Only change to a correctly sized new nozzle.

Using optional Nozzle types:

The gun can be used with different types of nozzles: Straight-jet, fan-jet and self-rotating types.

Overhauling gun:

If the gun starts to leak or parts become damaged it can be repaired. Please refer to the main spare-parts assembly for correct position of parts during repair.

Cleaning the strainer in the water tank:

Drain the water tank by un-screwing the drain plug located on the down left hand corner of the water tank.

Flush out the tank inside with a water hose.

Unscrew and take out the water strainer from inside the water tank. Wash it from inside with a water hose. Scrub it on the outside if stubborn dirt.

Screw back the cleaned strainer, re-pack and screw in the drain plug.

Changing the micro filter cartridge:

Drain the water from the tank as described above. Unscrew the hexagon nut on top of the round filter cartridge located beneath the water tank.

Take out the corrugated filter cartridge. Discard the cartridge. The filter cartridge absorbs dirt particles, **THE CARTRIDGE IS DISPOSABLE AND CANNOT BE CLEANED.**

Flush the filter housing with water. Refit a new filter cartridge into the filter housing, ensure the length of the filter is correct, measured against the discarded cartridge. Clean and put O-rings back in place. Mount the filter housing and tighten the hexagon top nut.

Remember to tighten the drain screw at the bottom of the filter housing.

NEVER run the pumps with-out the stainless steel cooling cover in place, inspect that cooling water returns freely back to water-tank through the thin black plastic hose.

Overhauling pump:

Cylinders are mounted from behind. Each cylinder is mounted separately. Start by removing the spray cooling cover. Then dismantle the plunger connection block so the plunger becomes loose. Loosen the cylinder head bolts for each cylinder bit by bit. Screw out the top bolts entirely. The back-block and cylinder with plunger, and the valve cartridge comes loose, and can be taken out.

Valves:

Unscrew the flat faced valve pin holding the stop nut gently with a pipe wrench or in a vise. Check the mating surfaces of the inlet valve disc. And the conical valve pin. It is possible to touch up the mating surfaces of the inlet disc by lapping the parts on a piece of very fine sand-paper laid out on an absolutely flat surface. If wear and tear are too severe for touch up, replace items. Ensure O-rings and packings are in good condition, replace if worn. Re-assemble the valve, be careful not to over-tighten the screw. Use one small drop of Lock-tight to secure the valve pin thread.

Changing Packing and Plungers:

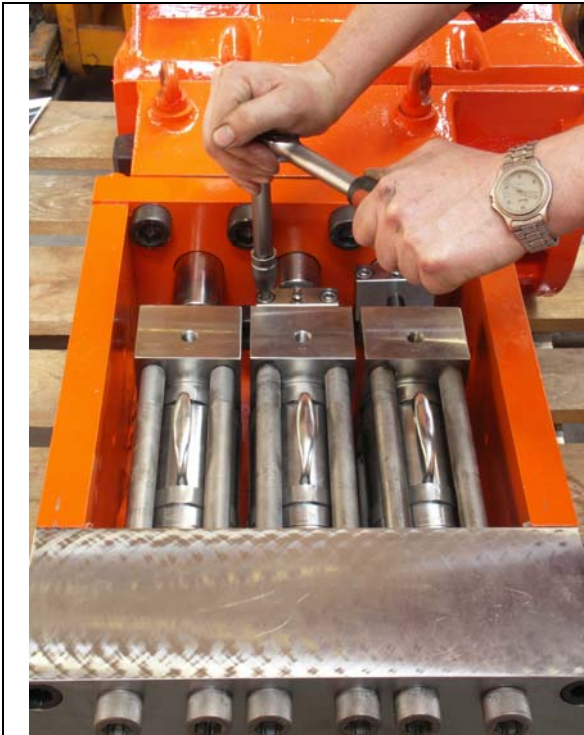
Pull the plunger out from behind. Remove Packing spring and throat bushing and with a plastic rod of around Ø30mm (1.25") in thickness and 200mm (6") Long, gently knock out the packing adaptor, packings and back-up ring from front. Inspect plunger for scaring, and packings and back-up rings for wear. Replace from front if needed. Reinsert plunger from behind.

Reassemble:

Tighten the cylinder head screws bit by bit in an alternating pattern to 450Nm 45Kgm (300 lbf ft.) of torque. Then remount the plunger connection block.

Remember to put back the cooling mist cover before running the machine again.

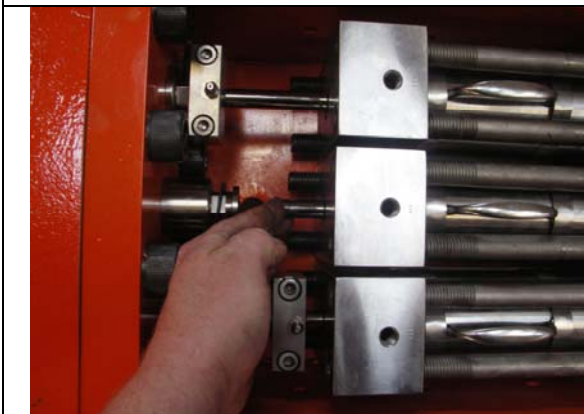
Service instructions Fluid end 1



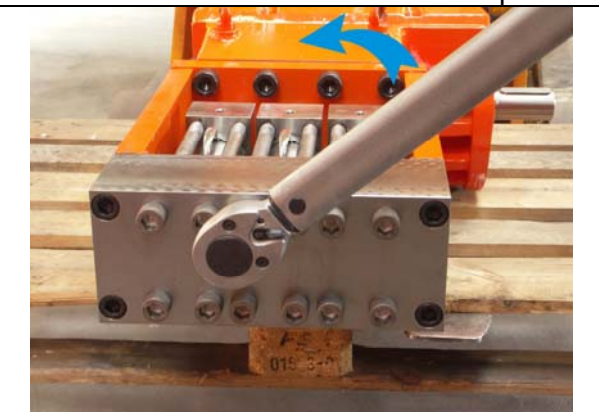
Disassemble floating plunger holder



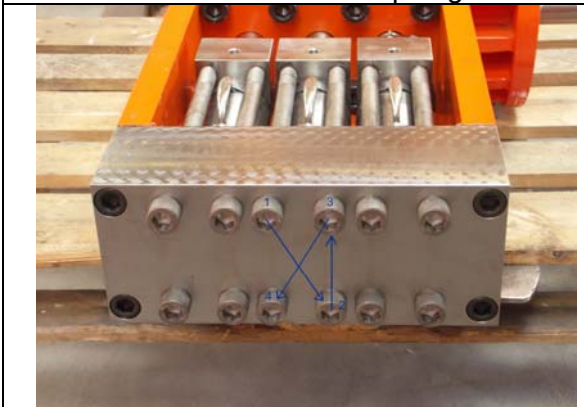
Take off floating plunger holder, take care of small pieces.



Push the plunger forward



Loosen the cylinder head bolts, bit by bit.



Loosen bolts in an alternating pattern.



Unscrew the 2 upper bolts entirely, loosen but leave the bottom bolts engaged.

Service instructions Fluid end 2



Slide out valve cartridge.



Slide out cylinder.



Over view of parts for ONE cylinder assembly.



After changing worn parts, slide back stuffed cylinder.



Slide in valve cartridge, keep o-rings in place with grease

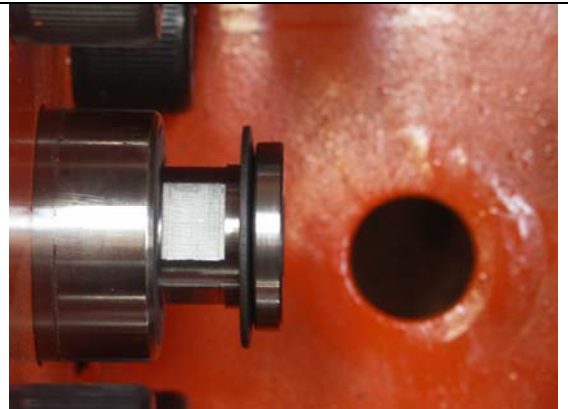


Align cylinder and valve to back block and manifold recess.

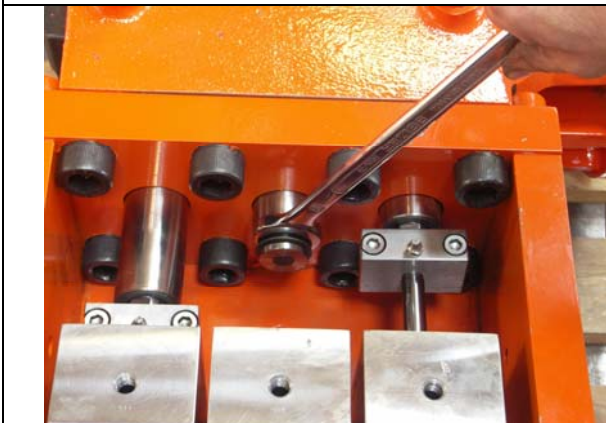
Service instructions Fluid end 3



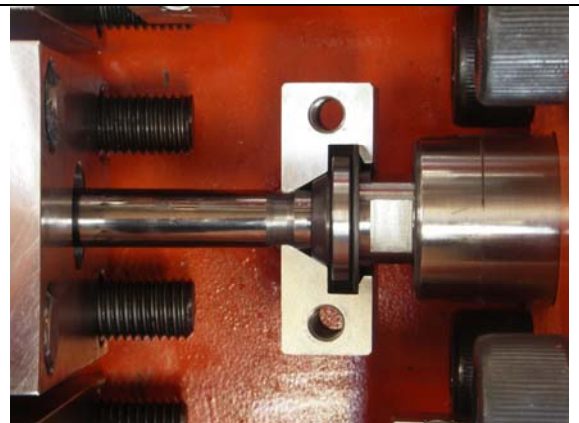
Tighten cylinder head screws in an alternating manner to 450Nm.



Notice the orientation of the Bellville washer.



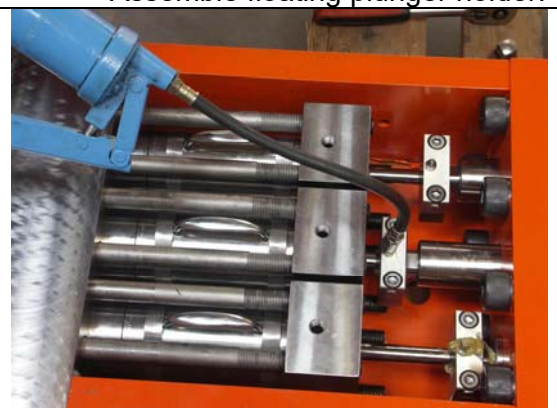
Tighten Plunger adaptor.



Assemble floating plunger holder.



Tighten floating plunger clamp.



Grease floating plunger assembly.

Maintenance / Service, Diesel Engine:

Maintenance	Task
Lubrication	<p><i>Oil renewal on the engine 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 200 hours of use. Or at least one time a year.</i></p> <p><i>Use a CC or CD Grade oil (API classification) Under normal operating temperatures -30°C to 30°C use multigrade SAE10W/30 or SAE 10W/40(part number:83600870) Under cold operating temperature below -30°C use multigrade SAE 5W/20 or SAE 5W/30 Under warm operating temperature over 30°C use multigrade SAE 10W/40 Quantity: 10 Liter (Depending on oil sump cover, Check with oil dipstick, do not overfill)</i></p> <p><i>Remember to refit oil drain plug. Fill up until the oil level is visible at the full mark on the oil dip stick.</i></p>
Oil Filter	<p><i>Change the oil filter when changing the oil. (Part number: 81001210)</i></p>
Renewal of oil	<p><i>Switch off the machine. Loosen the oil drain screw on the lower side of the engine 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.</i></p> <p>Notice: Always dispose of the used oil in a proper manner.</p>
Diesel Fuel	<p><i>Use fresh clean automotive quality diesel fuel. When operating in cold environments, make sure the diesel fuel are suitable for the temperature.</i></p>
Air intake filter	<p><i>Clean air intake filter every 50-100 hours, Exchange every 200-400 Hours. (Depending on running environment. (Part number: 81001035)</i></p>
Diesel Fuel filter	<p><i>Diesel fuel filters should be changed every 400 Hours (Part numbers: Pre-filter 81001212 & Main-filter: 81001213)</i></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 /Antifreeze	<p><i>Always run the engine with glycol based antifreeze mixture in the cooling system, also in hot weather. Mix accordingly with manufactures specifications to obtain the desired antifreeze temperature. Change every 2 years. The unit is protected to -30°C at delivery. The cooling system contains approximately 18 Liters of fluids.</i></p>

Trouble shooting / Repair, Diesel Engine:

Problem	Cause / Repair
Exhaust smoke is black	<p><i>The load is too heavy for the engine.</i> Reduce load. <i>Air intake filter dirty.</i> Clean or replace air filter. <i>Turbo charger is stuck.</i> Loosen / repair Turbo charger. <i>Bad fuel injector nozzle(s)</i> Check nozzles, replace if spray pattern is faulty. <i>Intake/exhaust valves needs adjusting.</i> <i>Motor is worn.</i></p>
Exhaust smoke is white	<p><i>When running in cold weather and before the engine is warm white smoke is normal.</i> <i>Cylinder head gasket leaking.</i> Check cause of cooling water leak into engine. <i>Wrong injection timing.</i> Set timing correctly. <i>Air intake filter dirty.</i> Clean or replace filter. <i>Dirty fuel filter.</i> Change filter. <i>Air in fuel line, leak in fuel pipe.</i> Tighten or replace faulty fuel line. <i>Leakage around injectors.</i> Tighten or replace seal.</p>
Exhaust smoke is blue	<p><i>Oil level in crankcase to high.</i> Drain oil until correct level. <i>Too much oil fog in air breather / crankcase ventilation.</i> Check breather valve/ Valve seal. Replace breather valve and / or tube.</p>
Engine is not running smoothly	<p><i>Air somewhere in fuel line</i> Tighten or replace faulty fuel line. <i>Fault in speed-regulating governor.</i> <i>Faulty injector nozzle(s)</i> <i>Faulty Diesel distributor pump.</i></p>

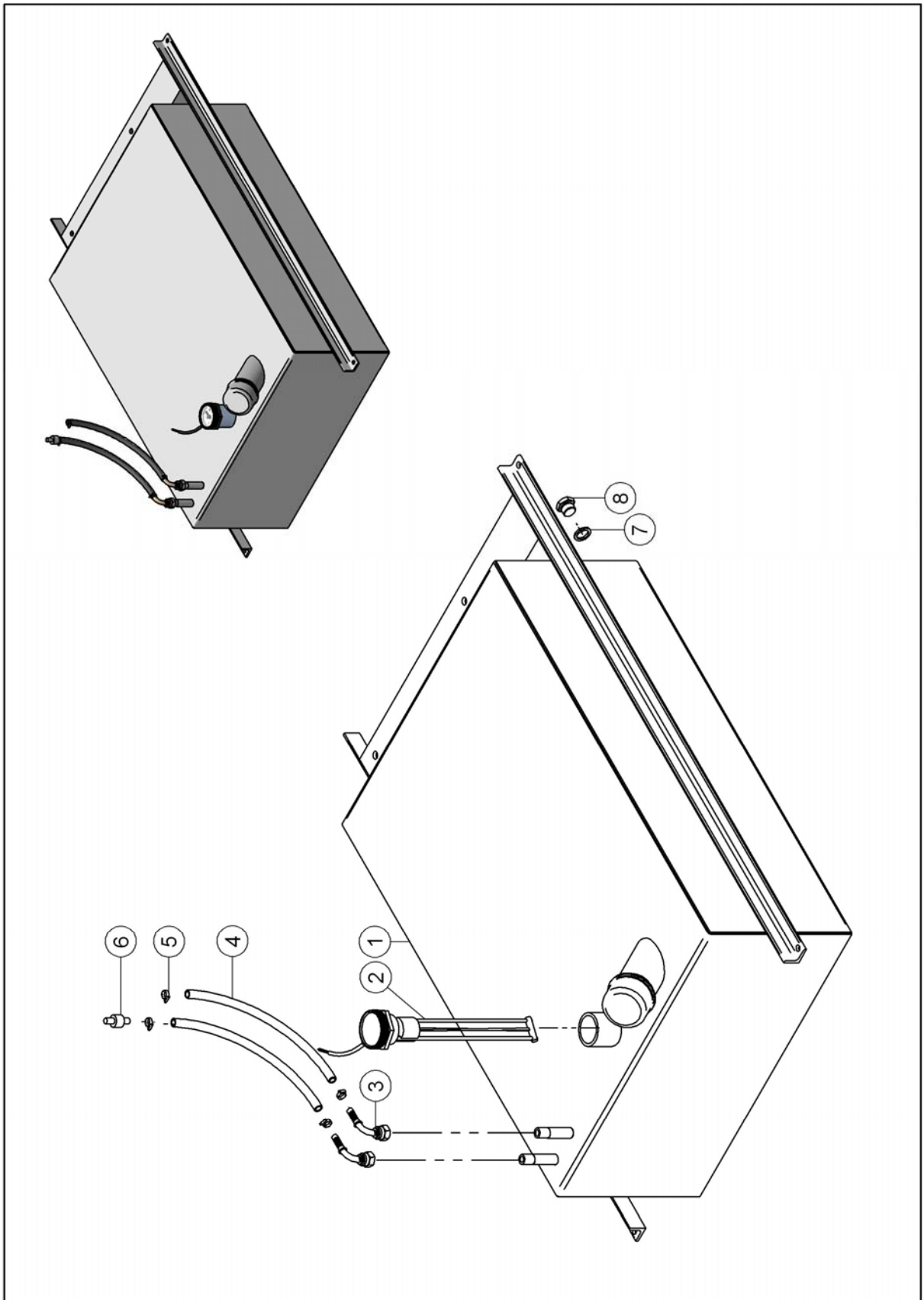
Trouble shooting / Repair, Diesel Engine:

Problem	Cause / Repair
Engine temperature too High.	<p><i>Low level in radiator / cooling system.</i> CAUTION when opening. Steam boiling water may escape. Fill up radiator. <i>Blocked air intake outlet grille.</i> Remove obstruction. <i>Engine is overloaded.</i> Reduce Load. <i>Fan belt (water pump belt) is broken.</i> Replace fan belt. <i>Electric fan is not running.</i> Fault in electric circuit Faulty thermostat in lower cooling hose. <i>Fuel injection timing wrong (Retarded)</i> Set correct timing. <i>Water cooling system pump faulty.</i> Replace pump.</p>
Engine is not charging the battery	<p><i>Fault in the alternator / Alternator circuit</i> Find fault and rectify. Battery is faulty.</p>
Engine stops suddenly	<p><i>Run out of fuel</i> Fill up with fuel, hand pump to prime. <i>Air in fuel line.</i> Bleed air. Hand pump to prime. <i>Fuel filter clogged.</i> Change fuel filter. <i>Fuel feed pump faulty</i> Check pump, replace if faulty. <i>Engine is stuck.</i></p>
Abnormal noise	<p><i>Fan is touching metal.</i> Make clearance. <i>Valve clearance too big.</i> Adjust valves. <i>Injection timing wrong (too advanced).</i> Adjust timing. <i>Badly worn engine bearings.</i></p>

**CD160 WATER BLASTER 1400 BAR
MAIN SPARE-PART LIST**

Pos.	Item No.	Qty.	Description
1	N/A	1	MOTOR PUMP UNIT CD160-2500
2	81001080	2	DISTANCE BUSHING
3	81001544	1	PUMP SUPPORT
4	81000934	2	RUBBER FOOT
5	81001200	1	BRACKET UNIVERSAL BOOSTER PUMP
6	81001267	1	BRACKET HOLDER FOR RADIATOR
7	81001549	1	EXHAUST FLEX CONNECTOR
8	81001289	1	BRACKET FOR ENGINE EXHAUST
9	81000929	1	MUFFLER
10	80100938	1	CLAMP
11	81000935	4	RUBBER FOOT
12	N/A	1	WATER SYSTEM
13	81101015	1	BATTERY
14	81100846	1	THROTTLE CABLE
15	81100845	1	ENGINE CONTROLLER
16	81000765	1	BRACKET
17	81100864	1	JUNCTION EL-BOX
18	81001363	1	FRAME
19	81000892	1	ROOF PLATE
20	81000857	4	RUBBER DAMPENER
21	81000886	1	FUEL TANK
N/A	81101272	1	EMERGENCY STOP

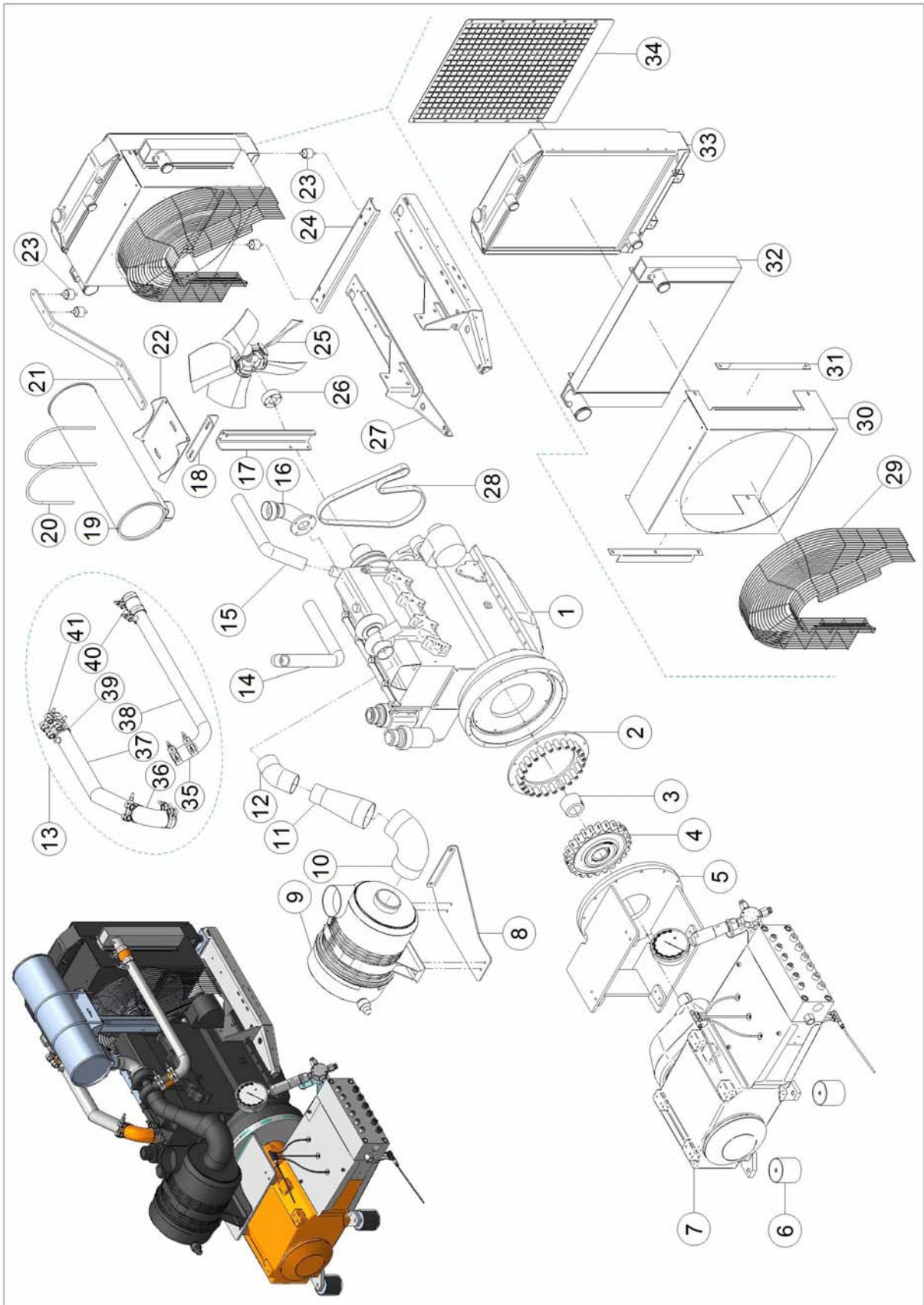
**CD160 WATER BLASTER 1400 BAR
DIESEL TANK SPARE-PART ASSEMBLY**



**CD160 WATER BLASTER 1400 BAR
DIESEL TANK SPARE-PART LIST**

Pos.	Item No.	Qty.	Description
1	81000886	1	FUEL TANK
2	81101187	1	LEVEL GAUGE
3	84000601	2	HOSE END
4	83400623	3m	RUBBER HOSE
5	80100904	6	HOSE CLIP
6	81100906	1	CONTRA VALVE
7	80500429	1	BONDED SEAL
8	80500617	1	PLUG

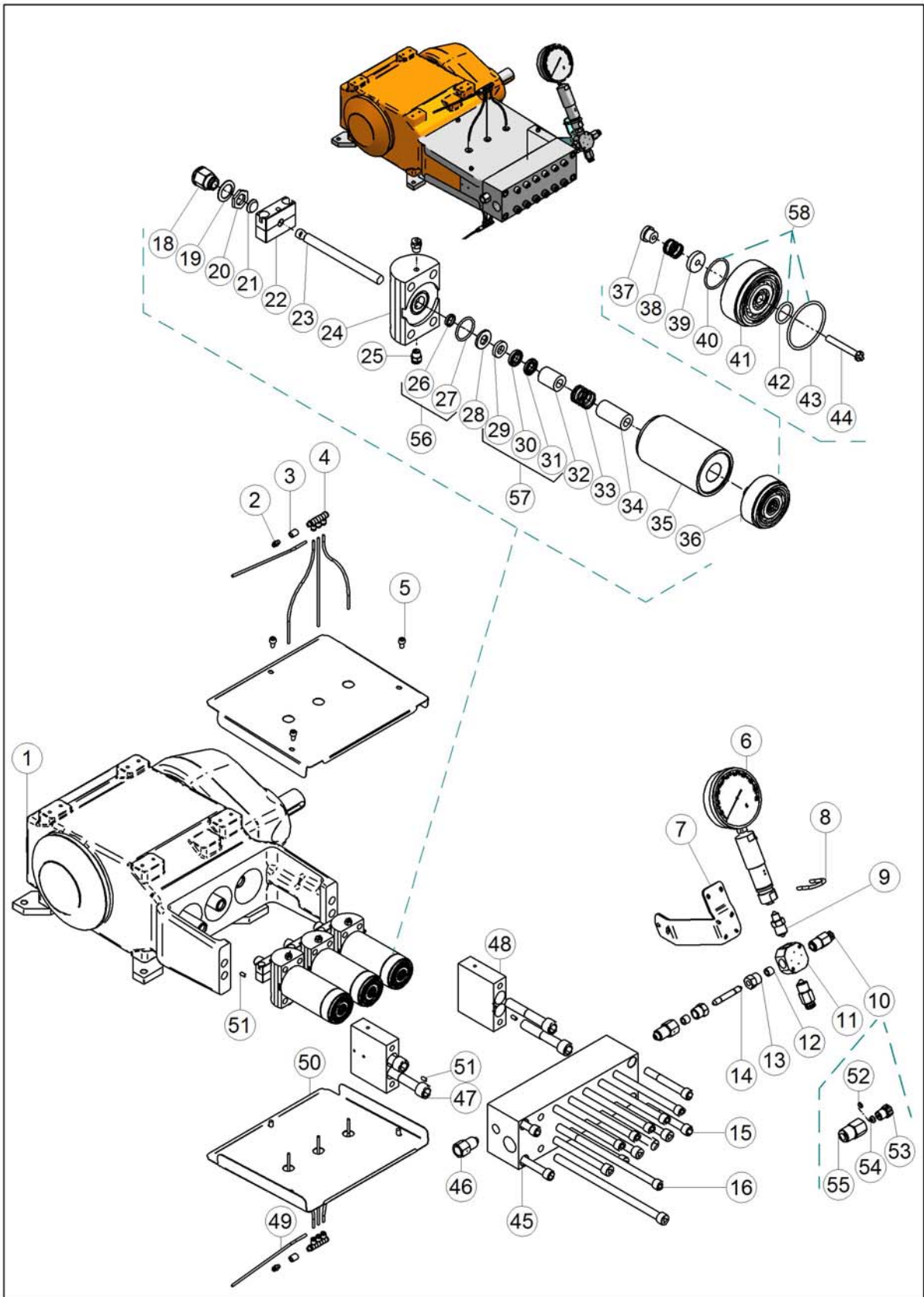
CD160 WATER BLASTER 1400 BAR POWER UNIT SPARE-PART ASSEMBLY



**CD160 WATER BLASTER 1400 BAR
POWER UNIT SPARE-PART LIST**

Pos.	Item No.	Qty.	Description
1	81101175	1	ENGINE 4 CYLINDER
2	81001650	1	COUPLING FLANGE COMPLETE
3	81000884	1	TAPER BUSH
4	81001649	1	RUBBER ELEMENT
5	81000883	1	BELL HOUSING
6	81000934	2	RUBBER FOOT
7	81201560	1	PUMP COMPLETE
8	81001199	1	BRACKET AIR FILTER HOLDER
9	81000865	1	AIR FILTER
10	81001318	1	ELBOW RUBBER
11	81001337	1	REDUCER CONE
12	81001316	1	ELBOW RUBBER
13	81001450	1	AIR PIPE TURBO SET
14	81001227	1	RUBBER HOSE RADIATOR - MOTOR
15	81001228	1	RUBBER HOSE MOTOR - RADIATOR
16	81001549	1	EXHAUST CONNECTOR
17	81001756	1	BRACKET FOR MUFFLER
18	81001757	1	TOP BRACKET FOR MUFFLER
19	81000929	1	MUFFLER
20	80101151	2	U-BOLT
21	81001755	1	RADIATOR SUPPORT
22	81001758	1	SUPPORT BRACKET FOR MUFFLER
23	81000857	4	RUBBER DAMPENER
24	81001709	1	TRAVERSE BRACKET
25	81101219	1	FAN
26	81001298	1	BUSHING FOR FAN
27	81001267	1	BRACKET HOLDER FOR RADIATOR
28	81001361	1	FAN BELT
29	81001224	1	RADIATOR NET
30	81001225	1	RADIATOR GUARD
31	81001332	2	WASHER PLATE
32	81001218	1	INTERCOOLER
33	81001217	1	RADIATOR
34	81001334	1	GUARD NET
35	83400666	1	RUBBER CONNECTOR MOTOR - INTERCOOLER
36	81001202	1	ELBOW RUBBER
37	81001668	1	PIPE INTERCOOLER - MOTOR
38	81001667	1	PIPE MOTOR - INTERCOOLER
39	83400667	1	RUBBER CONNECTOR INTERCOOLER - MOTOR
40	83400665	1	RUBBER CONNECTOR MOTOR - INTERCOOLER
41	80100891	8	CLIP
N/A	81001210	1	OIL FILTER
N/A	81001212	1	DIESEL FUEL PRE. FILTER
N/A	81001213	1	DIESEL FUEL MAIN FILTER
N/A	81101262	1	THERMOSTAT 83 C°
N/A	81101263	1	GASKET THERMOSTAT
N/A	81001082	1	DIESEL CHECK VALVE
N/A	80100683	6	HOSE CLIP

CD160 WATER BLASTER 1400 BAR PUMP SPARE-PART ASSEMBLY



**CD160 WATER BLASTER 1400 BAR
PUMP SPARE-PART LIST**

Pos.	Item No.	Qty.	Description
1	81200962	1	POWER END
2	80500279	2	QUICK COUPLING
3	80500687	2	SOCKET
4	80501402	2	MANIFOLD
5	80100855	6	SCREW
6	N/A	1	GUAGE CONVERTER SYSTEM
7	81001390	1	BRACKET GAUGE HOLDER
8	80100725	1	U-BOLT
9	80501236	1	NIPPLE
10	81300702	2	RUPTURE DISC ASSEMBLY
11	80500671	1	CROSS
12	80500632	2	COLLAR
13	80500631	2	GLAND NUT
14	80500314	1	NIPPLE
15	80101007	4	SCREW ALLEN UNC (Torque 450 NM)
16	80100696	12	SCREW ALLEN UNC (Torque 450 NM)
18	81201396	3	PLUNGER ADAPTOR UHP PUMP
19	80300600	3	WASHER BELVILLE
20	81201670	3	NUT FOR PLUNGER ADAPTOR
21	81200797	3	THRUST DISC
22	81200811	3	FLOATING CLAMP
23	81200808	3	PLUNGER
24	81201432	3	BACK PLATE 7/8"
25	80500096	6	QUICK COUPLING
26	80200876	3	SEAL COOLING Part of LP seal kit 81201502 (pos.56)
27	80200560	3	O-RING Part of LP seal kit 81201502 (pos.56)
28	N/A	3	SUPPORT RING Not Available for 7/8" Plunger set-up
29	81200806	3	BACK UP RING Part of HP packing kit 81201503 (pos.57)
30	80200666	3	PACKING BACK Part of HP packing kit 81201503 (pos.57)
31	80200642	3	PACKING FRONT GOLD Part of HP packing kit 81201503 (pos.57)
32	81200807	3	PACKING ADAPTOR
33	80300601	3	SPRING
34	81200810	3	THROAT BUSHING
35	81200804	3	CYLINDER UHP
36	81200803	3	VALVE UHP ASSEMBLY
37	81200733	3	VALVE STOP NUT
38	80300602	3	SPRING
39	81200732	3	VALVE DISC SUCTION
40	80200681	3	O-RING Part of valve o-ring kit 81201504 (pos.58)
41	81200934	3	VALVE BODY
42	80200650	3	O-RING Part of valve o-ring kit 81201504 (pos.58)
43	80200677	3	O-RING Part of valve o-ring kit 81201504 (pos.58)
44	81200730	3	DISCHARGE VALVE PIN
45	81201367	1	PUMP HEAD
46	80500681	2	ADAPTOR
47	80100963	4	SCREW
48	81201370	2	SIDE PLATE
49	83400522	2m	COOLING HOSE
50	81001371	2	COVER
50	81001753	2	COVER CLOSED (optional)

**CD160 WATER BLASTER 1400 BAR
PUMP SPARE-PART LIST**

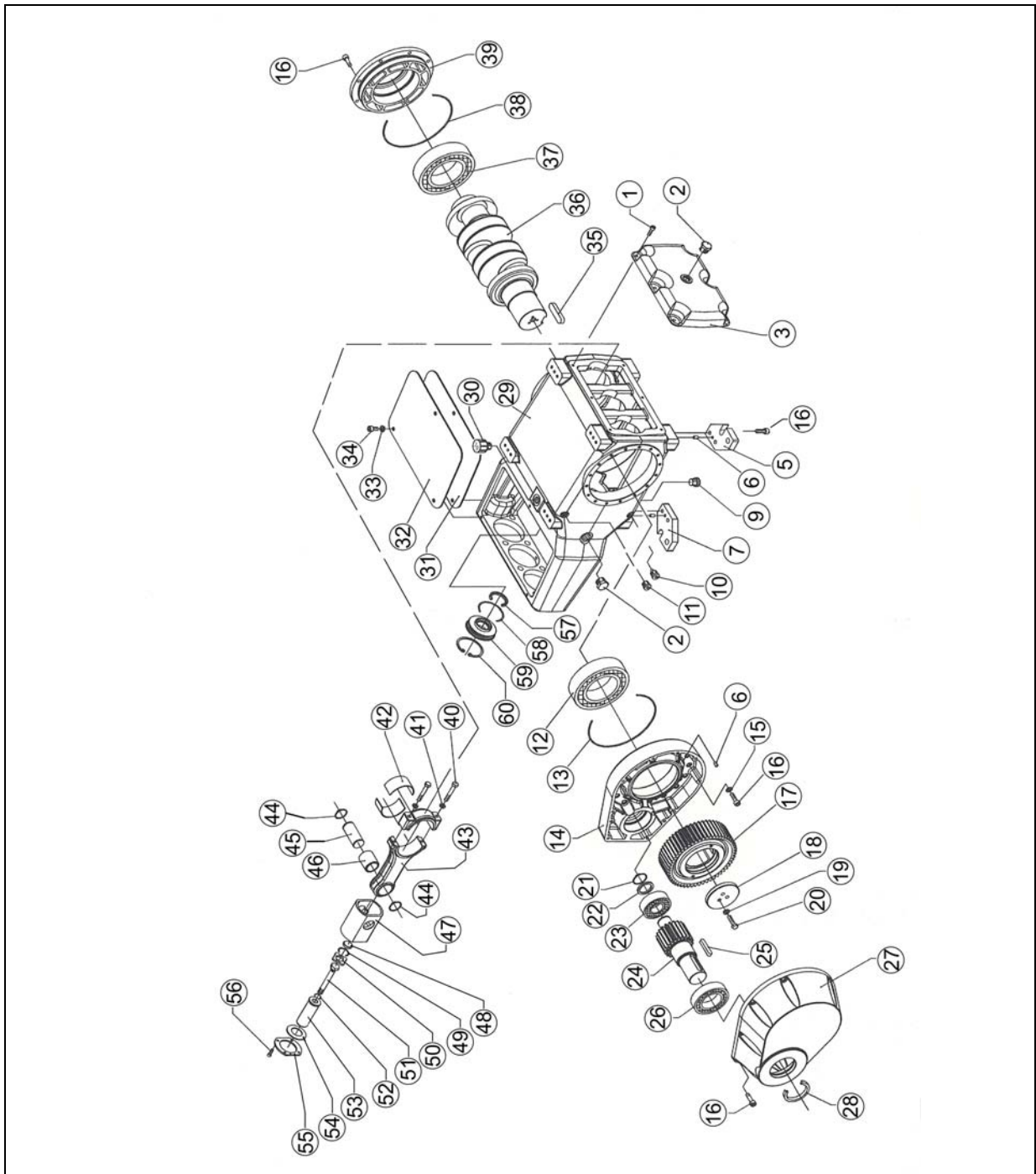
Pos.	Item No.	Qty.	Description
51	80100941	4	PIN
52	81300635	2	RUPTURE DISC PURPLE 1500 BAR W.P. (25000PSI Burst Pressure) Part of pos.10
53	81300641	2	RUPTURE DISC THRUST SCREW Part of pos.10
54	81300642	2	RUPTURE DISC SEAT Part of pos.10
55	81300639	2	RUPTURE DISK HOLDER 1.1/8UNF Part of pos.10
56	81201505		LOW PRESSURE SEAL KIT
57	81201506		HIGH PRESSURE PACKING KIT
58	81201504		VALVE O-RING KIT

PUMP SPARE-PARTS KITS

Item No./Kit Description *	Pos.	Item No.	Qty.	Description
81201505 LOW PRESSURE SEAL KIT Pos. 56	26	80200876	3	SEAL COOLING
	27	80200560	3	O-RING
Item No./Kit Description *	Pos.	Item No.	Qty.	Description
81201506 HIGH PRESSURE PACKING KIT Pos. 57	29	81200806	3	BACK UP RING
	30	80200666	3	PACKING BACK
	31	80200642	3	PACKING FRONT GOLD
Item No./Kit Description *	Pos.	Item No.	Qty.	Description
81201504 VALVE O-RING KIT Pos. 58	40	80200681	3	O-RING
	42	80200650	3	O-RING
	43	80200677	3	O-RING

1 kit required to overhaul pump

CD160-1400 WATER-BLASTER POWER END SPARE-PARTS ASSEMBLY



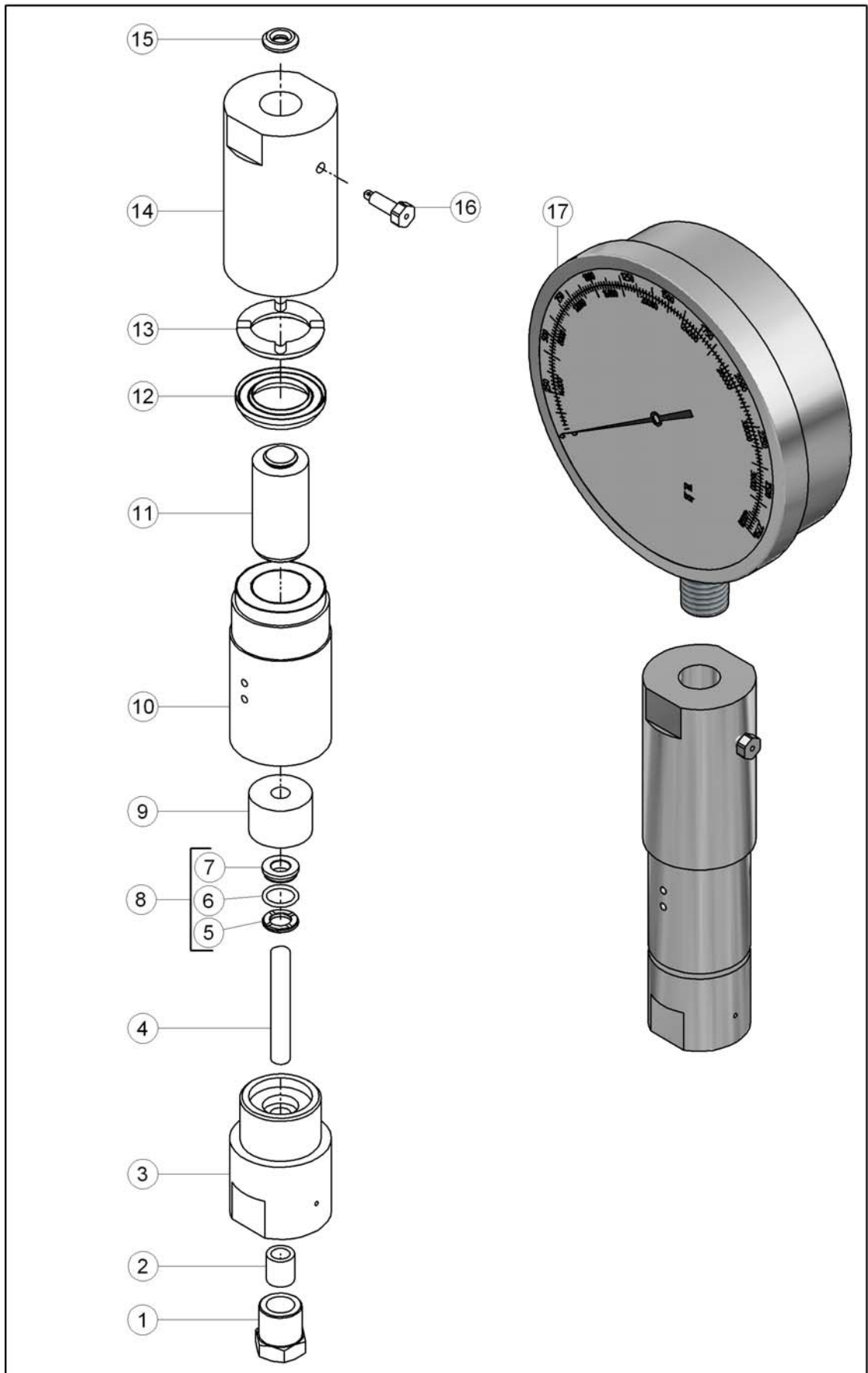
CD160-1400 SERIES WATER-BLASTER PUMP UNIT SPARE-PARTS LIST

Pos.	Item No.	Qty.	Description
1	80100383	6	SCREW
2	81200365	3	OIL LEVEL GLASS
3	81201091	1	BACK COVER
5	81201007	1	FOOT PLATE REAR
6	81201011	4	GUIDE PIN
7	81201005	1	FOOT PLATE FRONT
9	80500912	1	DRAIN PLUG

**CD160-1400 SERIES WATER-BLASTER
PUMP UNIT SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
10	81200350	2	PLUG
11	80500893	2	PLUG
12	80400616	1	BEARING
13	80200772	1	O-RING
14	81201096	1	HOUSING GEAR BOX
15	80100599	15	WASHER
16	80100591	35	SCREW
17	81201097	1	GEAR WHEEL
18	81201098	1	RETAINER FLANGE
19	80100807	3	WASHER
20	80100808	3	SCREW
21	80100809	1	CIR CLIP
22	81201099	1	RETAINER RING
23	80400617	1	BEARING
24	81201100	1	PINION GEAR
25	81201114	1	KEY FOR PINION GEAR
26	80400618	1	BEARING
27	81201101	1	COVER GEARBOX
28	80200773	1	OIL SEAL
29	81201102	1	CRANK CASE
30	81201106	1	OIL FILLER CAP
31	81000894	1	BOTTOM COVER COOLING SYSTEM
32	81000894	1	TOP COVER COOLING SYSTEM
33	80100599	6	WASHER
34	80100810	4	SCREW
35	81201115	1	KEY FOR CRANK SHAFT
36	81201103	1	CRANK SHAFT
37	80400611	1	BEARING
38	80200774	1	O-RING
39	81201117	1	COVER FOR SIDE BEARING
40	80100811	6	SCREW FOR CONNECTING ROD
41	80100812	6	WASHER
42	81201104	3	BEARING SHELL SET (FOR 1 CONNECTING ROD)
43	81201105	3	CONNECTING ROD
44	80100813	3	CIR CLIP
45	81201106	3	GUDEON PIN
46	81201107	3	GUDEON PIN BEARING BUSHING
47	81201108	3	CROSS HEAD
48	81201109	3	DISC
49	80200775	3	O-RING
50	81201110	3	FIFTH WHEEL RETAINER
51	80100814	3	SCREW
52	80200776	3	O-RING
53	81201111	3	PONY ROD
54	80300629	3	BELVILLE WASHER
55	81201112	3	RETAINER FLANGE
56	80100815	12	SCREW
57	80200777	3	OIL SEAL
58	80200778	3	O-RING
59	81201113	3	OIL SEAL HOLDER
60	80100816	3	CIR CLIP
1-60	81200962	1	POWER END COMPLETE

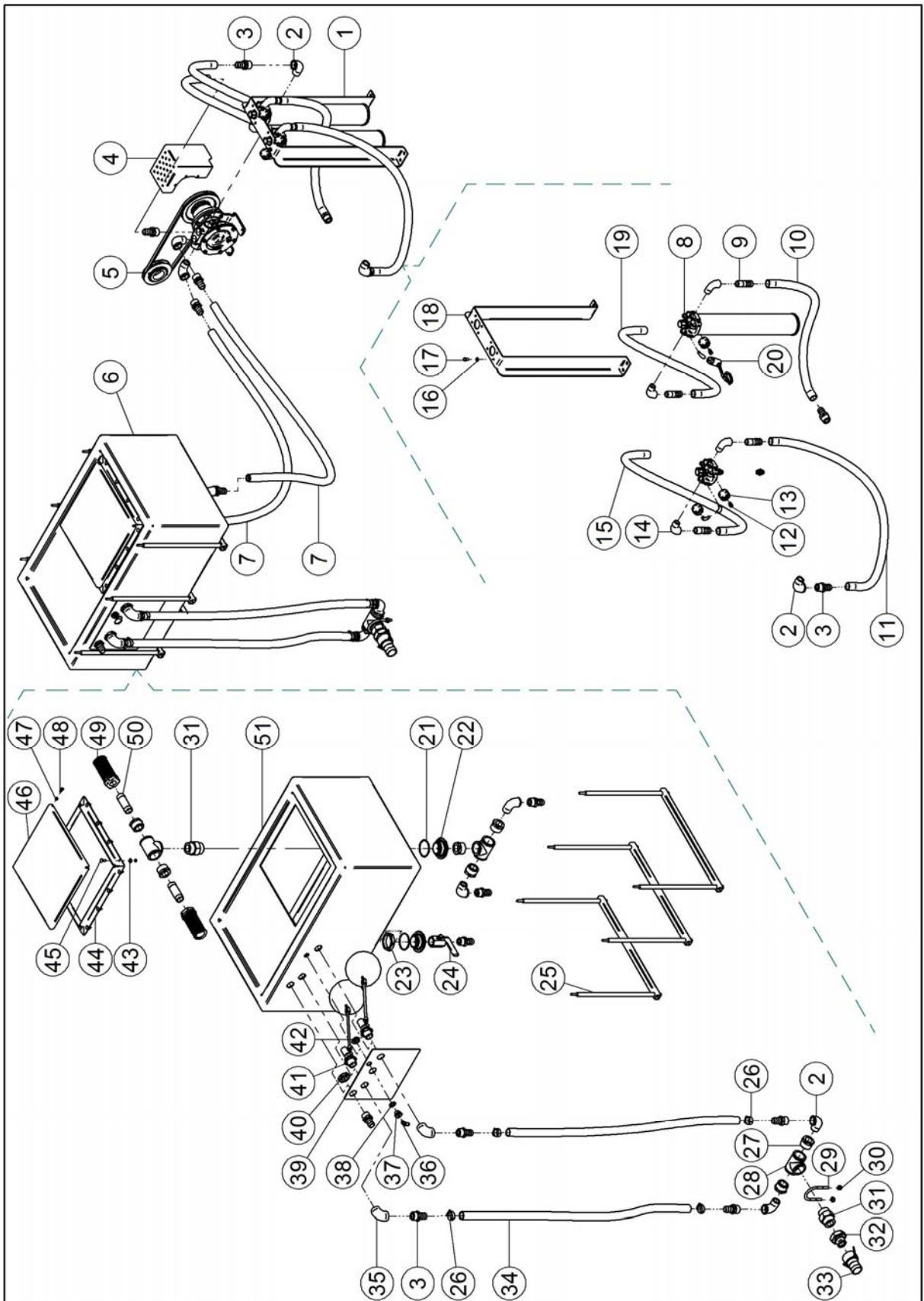
CD160 WATER BLASTER 1400 BAR GAUGE CONVERTER SPARE-PARTS ASSEMBLY



**CD160 WATER BLASTER 1400 BAR
GAUGE CONVERTER SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
	81300655		GAUGE CONVERTER (gauge not included)
1	80500594	1	GLAND NUT
2	80500593	1	COLLAR
3	81300656	1	HOUSING UHP
4	81300659	1	PISTON SMALL
5	N/A	1	HEADER RING SMALL PACKING-a
6	N/A	1	O-RING
7	N/A	1	SMALL PACKING FOR Ø8,5-a
8	81300858	1	SEAL KIT
9	81300753	1	BACK-UP RING FOR Ø8.5
10	81300657	1	LOW PRESSURE HOUSING
11	81300661	1	PISTON LARGE
12	80200657	1	PACKING
13	81300660	1	HEADER RING
14	81300658	1	GAUGE HOUSING
15	80500413	1	COPPER SEAL
16	81300663	1	BLEED SCREW
17	81300592	1	GAUGE

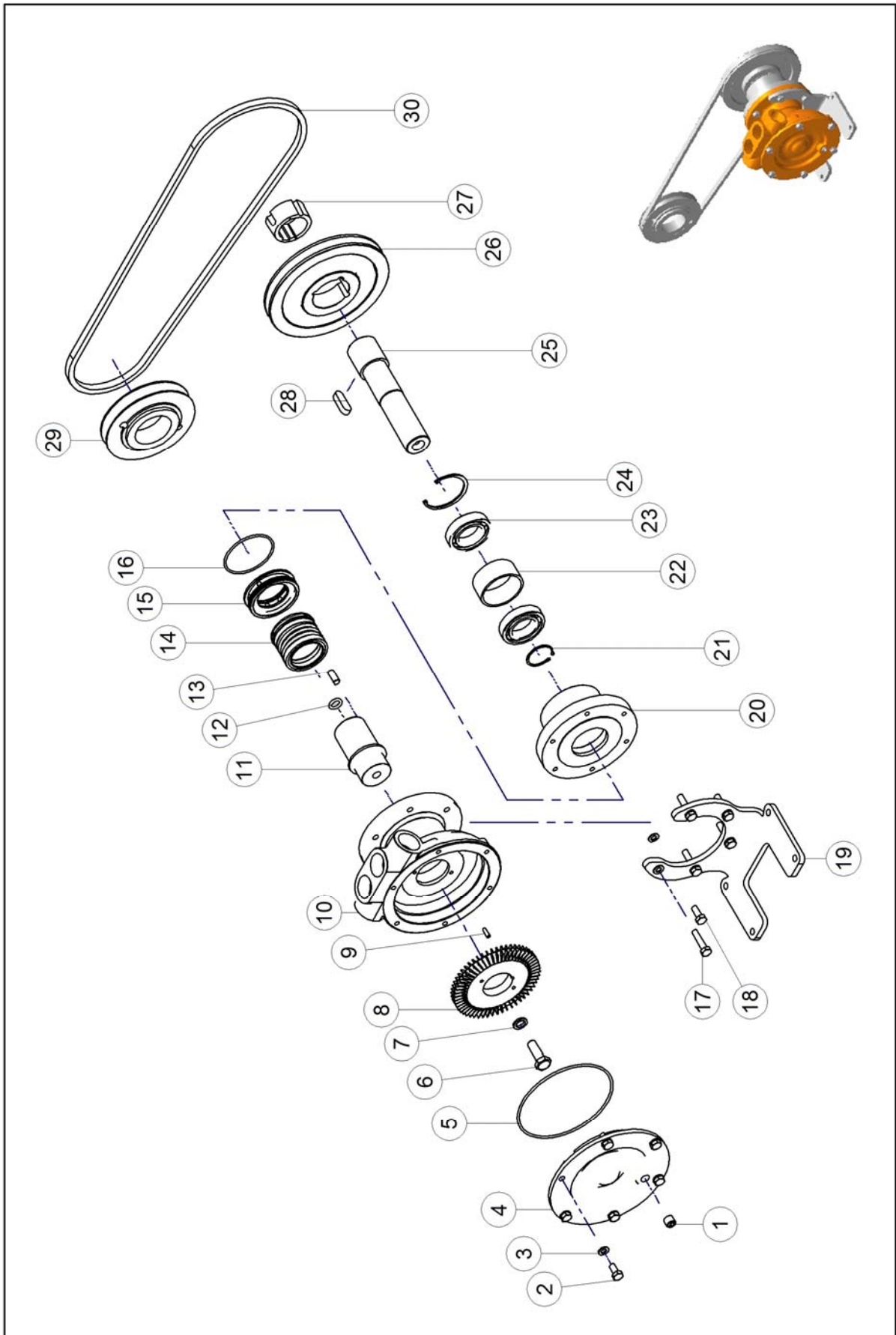
**CD160 WATER BLASTER 1400 BAR
WATER SYSTEM SPARE-PART ASSEMBLY**



**CD160 WATER BLASTER 1400 BAR
WATER SYSTEM SPARE-PART LIST**

Pos.	Item No.	Qty.	Description
1	N/A	1	FILTER SYSTEM
2	80500237	8	ELBOW
3	80500227	14	HOSE NIPPLE
4	81001389	1	GUARD BOOSTER PUMP
5	N/A	1	BOOSTER PUMP
6	N/A	1	WATER TANK COMPLETE
7	83400524	2 x 1.5m	HOSE SUCTION
8	81000902	2	FILTER
9	80500684	4	HOSE NIPPLE
10	83400606	1m	HOSE W NET
11	83400606	1m	HOSE W NET
12	80500685	4	ELBOW
13	81300631	3	GAUGE
14	80500437	4	ELBOW
15	83400606	1m	HOSE W NET
16	80100606	8	WASHER
17	80100703	8	SCREW
18	81000840	1	BRACKET
19	83400606	1m	HOSE W NET
20	81100844	1	PRESSURE SWITCH
21	80200677	2	O-RING
22	80500882	2	ADAPTOR
23	80500875	2	CONTRA NUT
24	80500660	1	BALL VALVE
25	N/A	3	HOLDER WATER TANK
26	80100527	16	HOSE CLIPS
27	80500854	8	BUSHING
28	80500943	3	TEE
29	80100617	1	U-BOLT
30	80100259	2	LOCK NUT
31	80500944	2	NIPPLE
32	80500847	1	QUICK COUPLING MALE
33	80500848	1	QUICK COUPLING HOSE EVERTITE
34	83400606	2 x 1,5m	HOSE W NET
35	80500808	2	ELBOW
36	80500279	1	ELBOW SWIVEL
37	80500606	1	BUSHING
38	80500429	1	BONDED SEAL
39	81001079	1	BRACKET-HOLDER BALL VALVE
40	80100405	2	CONTRA NUT
41	81000428	2	FLOAT VALVE
42	80100632	1	CONTRA NUT
43	80100884	16	WASHER
44	81001220	4	BRACKET
45	80100965	16	SCREW CARRIAGE BOLT
46	81001220	1	LID
47	80100053	18	LOCK NUT
48	80100052	2	SCREW ALLEN
49	81000199	2	FILTER STRAINER
50	80500908	2	NIPPLE
51	81000790	1	WATER TANK

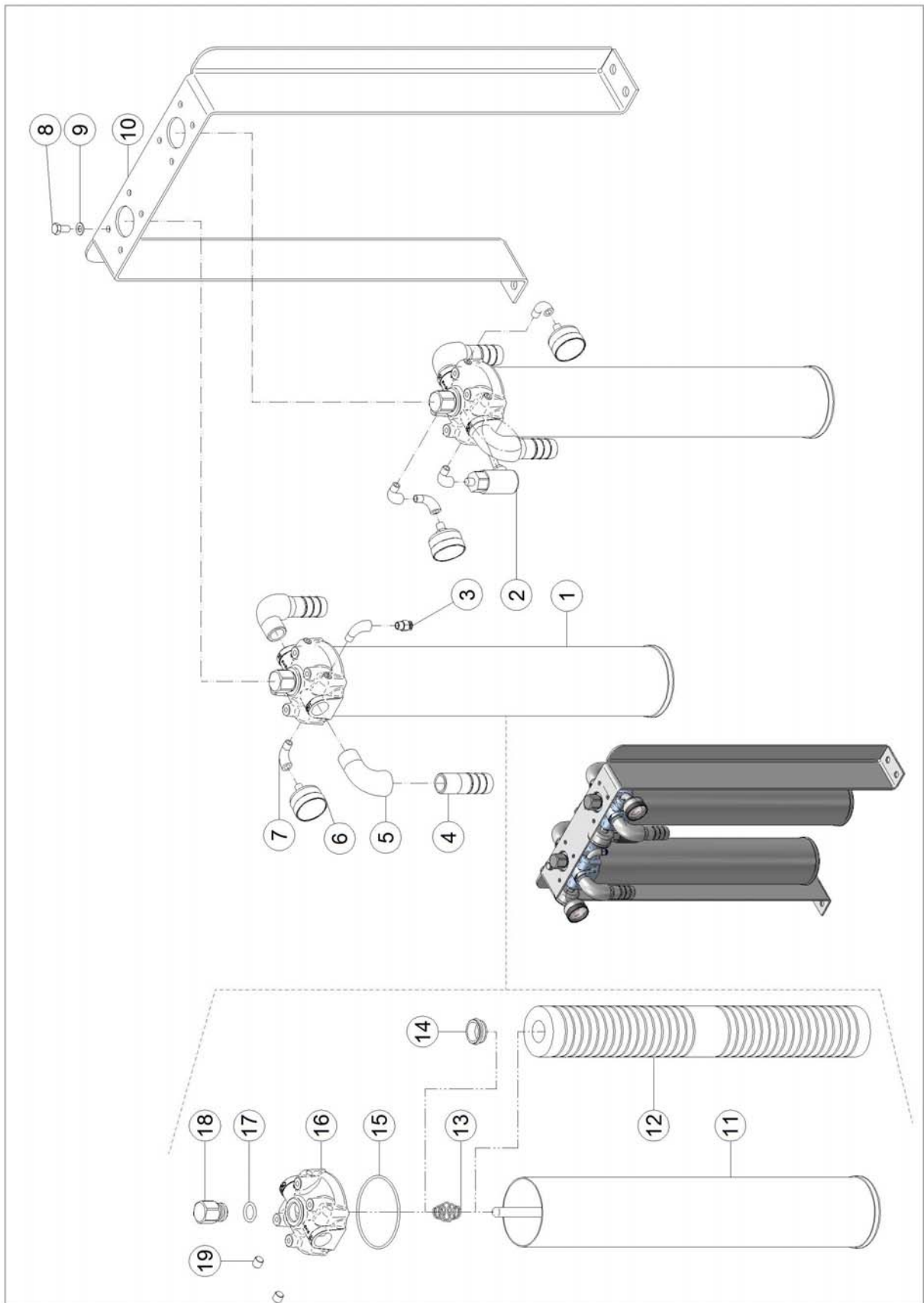
CD160-1400 SERIES WATER-BLASTER BOOSTER PUMP UNIT SPARE-PARTS ASSEMBLY



**CD160-1400 SERIES WATER-BLASTER
BOOSTER PUMP UNIT SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
1	80500341	1	PLUG
2	80100703	6	SCREW
3	80100170	12	WASHER
4	80000162	1	END COVER
5	80200568	1	O-RING
6	80100168	1	SCREW
7	80500971	1	BONDED SEAL
8	81200172	1	IMPELLER FEED PUMP
9	81200165	1	KEY
10	81200160	1	HOUSING FEED PUMP
11	81200173	1	AXLE ADAPTOR
12	80200634	1	O-RING
13	81200164	1	KEY
14	80200157	1	MECHANICAL SEAL
15	81200163	1	DRAIN BUSHING
16	80200407	1	O-RING
17	80100704	5	SCREW
18	80100671	1	SCREW
19	81000908	1	BRACKET
20	81000832	1	BEARING HOUSING
21	80100764	1	CIRCLIP
22	81000833	1	BUSHING
23	80400604	2	BEARING
24	80100765	1	CIRCLIP
25	81000913	1	AXLE
26	81000808	1	PULLY
27	81000268	1	TAPER BUSH
28	81100902	1	KEY
29	81000807	1	PULLY
30	81001333	1	V-BELT
N/A	81001389	1	GUARD BOOSTER PUMP

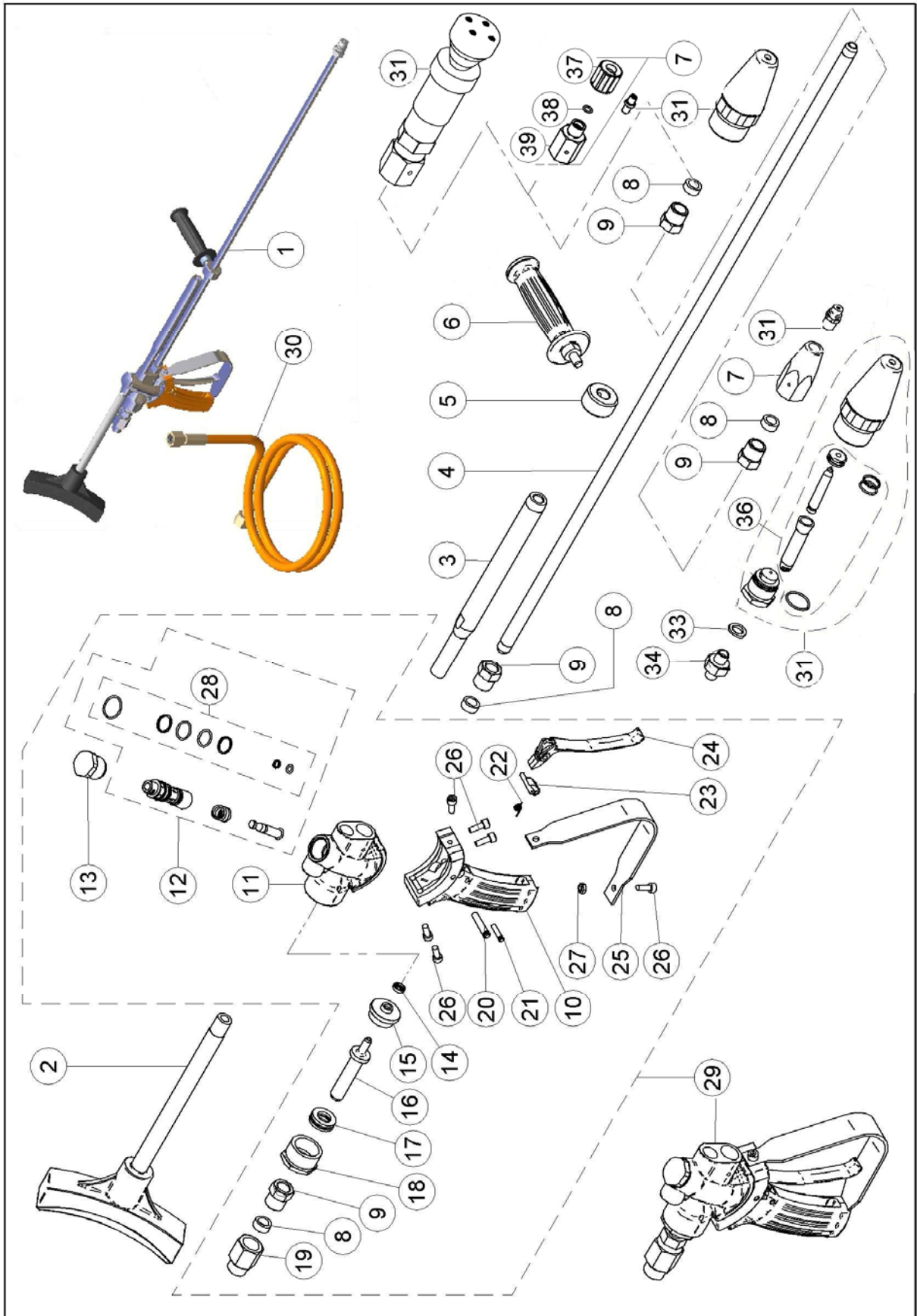
CD160-1400 SERIES WATER-BLASTER WATER FILTERING SYSTEM SPARE-PARTS ASSEMBLY



**CD160-1400 SERIES WATER-BLASTER
WATER FILTERING SYSTEM SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
1	81000648	2	FILTER ASSEMBLY
2	81100844	1	PRESSURE SWITCH
3	80500096	1	QUICK COUPLING
4	80500684	4	HOSE NIPPLE
5	80500437	4	ELBOW
6	81300631	3	GAUGE
7	80500685	6	ELBOW
8	80100703	8	SCREW
9	80100606	8	WASHER
10	81000840	1	BRACKET
11	81000638	1	HOUSING
12	81000616	1	FILTER INSERT
13	80300604	1	DISTANCE SPRING
14	81001806	1	SUPPORT RING
15	80200878	1	O-RING
16	81000650	1	COVER
17	80200491	1	O-RING
18	81000649	1	TOP SCREW
19	80500094	4	PLUG

DUMP GUN 15&20 KPSI
SPARE-PARTS ASSEMBLY



**DUMP GUN 20 KPSI
SPARE-PARTS LIST**

Pos.	Item No.	Qty.	Description
1	81400037		DUMP GUN 20KPSI W/O NOZZLE HOLDER
2	81400231	1	SHOULDER SUPPORT
3	81400136	1	DUMP TUBE
4	81400042	1	BARREL TUBE
5	81400076	1	HOLDER FOR SIDE HANDLE
6	81400075	1	SIDE HANDLE
7	81500129	1	NOZZLE HOLDER FOR ¼"NPT NOZZLE
7	81500128	1	NOZZLE HOLDER FOR ¼"BSP NOZZLE
7	81500046	1	NOZZLE HOLDER ASSY. FOR NOZZLE FORM 4,19 Pos. (37,38,39)
8	80500040	3	COLLAR
9	80500041	3	GLAND NUT
10	81400036	1	HANDLE
11	81400054	1	VALVE HOUSING 20 KPSI
12	81400056	1	VALVE KIT
13	81400055	1	VALVE PLUG
14	80200627	1	SWIVEL SEAL COMPLETE
15	81400152	1	BACK-UP RING INLET SWIVEL
16	81400149	1	INLET SWIVEL SPINDLE
17	80400143	1	THRUST BEARING
18	81400151	1	RETAINER NUT INLET SWIVEL
19	81400416	1	ADAPTOR FOR HOSE END ½" BSPP
19	81400716	1	ADAPTOR FOR HOSE END M24x1.5 M- 13/16"UNF F FOR 9/16"M
20	81400050	1	PIN FOR TRIGGER LATCH
21	81400049	1	PIN FOR SAFETY LATCH
22	80300051	1	SPRING FOR SAFETY LATCH
23	81400048	1	SAFETY LATCH
24	81400047	1	TRIGGER LATCH
25	81400058	1	TRIGGER GUARD
26	80100052	6	SCREW ALLEN
27	80100053	1	LOCK NUT
28	81400296	1	O-RING & PACKING REP KIT
29	81400035	1	TRIGGER GUN HANDLE 20KPSI
30	81401470		HOSE (H.P) 1400 BAR
31	*	1	NOZZLE (SEE BELOW)
32	N/A		
33	80500971	2	BONDED SEAL
34	80500651	1	NIPPLE
35	N/A		
36	*	1	REP. KIT ROTATING NOZZLE (SEE BELOW)
37	81500127	1	RETAINER NUT NOZZLE HOLDER
38	80200623	1	O-RING
39	81500027	1	NOZZLE HOLDER

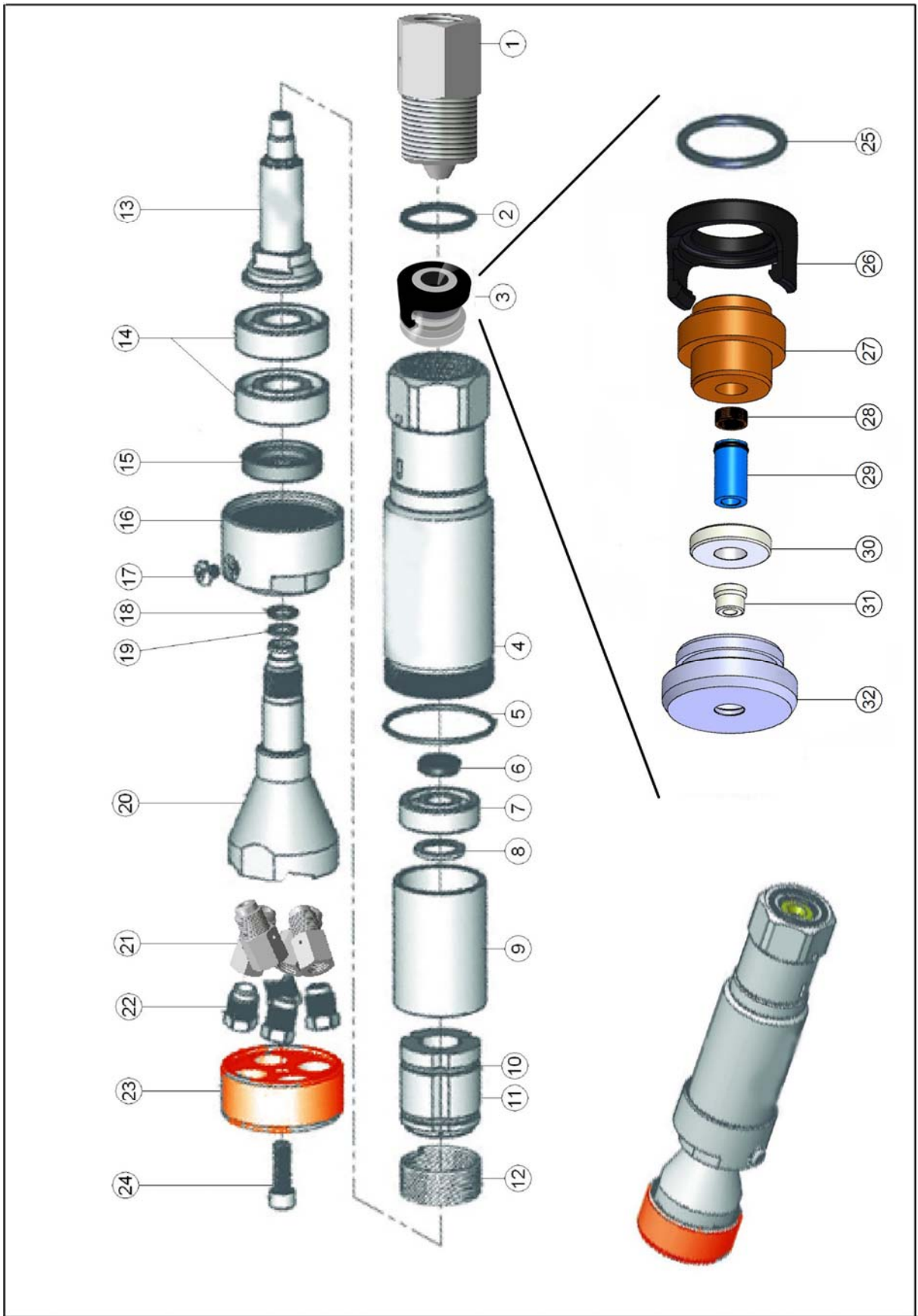
*Customer's Requirements

**DUMP GUN
REPAIR KITS**

Item No./Kit Description	Item No.	Qty.	Description
Pos. 28 81400296 O-RING & PACKING REP. KIT DUMP GUN	80200060	1	BACK-UP RING
	80200059	1	O-RING
	80200610	1	O-RING
	80200232	1	BACK UP RING
	80200070	1	O-RING
	80200074	1	BACK-UP RING
	80200057	1	O-RING

Item No./Kit Description	Item No.	Qty.	Description
Pos. 12 81400056 VALVE KIT DUMP GUN	80200060	1	BACK-UP RING
	80200059	1	O-RING
	80200610	1	O-RING
	80200232	1	BACK UP RING
	80200070	1	O-RING
	80200074	1	BACK-UP RING
	81400064	1	VALVE PIN
	81400065	1	VALVE SEAT
	80300115	1	SPRING

ULTRA IMPACT NOZZLE 2800R SPARE-PART ASSEMBLY



**ULTRA IMPACT NOZZLE 2800R
SPARE-PART LIST**

Pos.	Item No.	Qty.	Description
	81501030		ULTRA IMPACT 2800 ROTATING NOZZLE STANDARD pos.2-21,23,24
1	N/A		
2	80200779	1	O-RING
3	81501748	1	OVERHAUL REP.KIT ULTRA IMPACT NOZ. NEW IMPROVED TYPE
4	81501020	1	BODY
5	80200702	1	O-RING
6	81500982	1	SHAFT SEAL
7	80400610	1	BEARING
8	81500971	1	WASHER
9	81500993	1	SLEEVE
10	81500980	1	GARTER SPRING
11	81500979	1	WEIGHTS
12	80300626	1	SPRING
13	81500992	1	SHAFT
14	80400609	2	BEARING
15	80200749	1	OIL SEAL WITH DUST LIP
16	81501019	1	CAP
17	81501018	1	PORT SCREW
18	80200487	1	O-RING
19	80200754	1	BACK-UP RING
20	81501022	1	NOZZLE HEAD STANDARD
20	81501021	1	NOZZLE HEAD LOW FLOW
21	81500944	4	NOZZLE ADAPTOR 3/8"-7/16" UNF
22	81500592	4	NOZZLE 0.018"(0.45mm) "nozzles for other machines, see nozzle list"
23	81500945	1	WEAR CAP FOR EXTENDED NOZZLES
23	81501451	1	WEAR CAP FOR EXTENDED NOZZLES ALUMINIUM (optional)
24	80100646	1	SCREW
25	80200059	1	O-RING
26	81501749	1	SNAP FIT HOUSING
27	81501750	1	INLET SEAT
28	81501751	1	SPRING
29	81501752	1	SEAL ASSEMBLY
30	81501753	1	SEAL RETAINER
31	81501754	1	CARBIDE SEAT
32	81501755	1	HOUSING

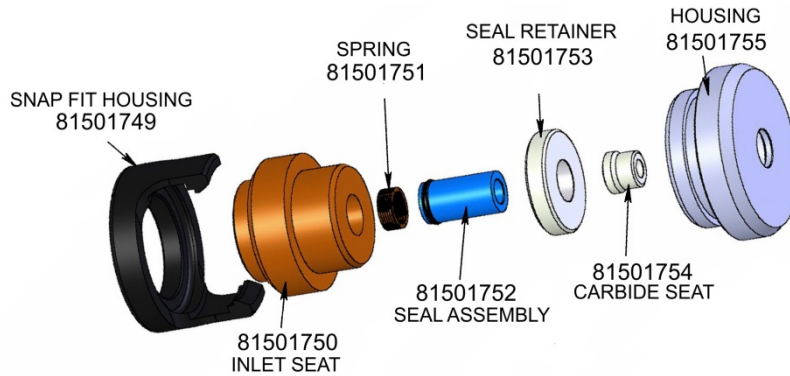
NOZZLE LIST

Part No.	Description	Size
81500137	NOZZLE PLUG 3/8"UNF	
81500723	NOZZLE 3/8"UNF	0.010"(0.25mm)
81500613	NOZZLE 3/8"UNF	0.012"(0,30mm)
81500594	NOZZLE 3/8"UNF	0.013"(0.33mm)
81500595	NOZZLE 3/8"UNF	0.014"(0.35mm)
81500614	NOZZLE 3/8"UNF	0.016"(0,40mm)
81500592	NOZZLE 3/8"UNF	0.018"(0.45mm)
81500593	NOZZLE 3/8"UNF	0.020"(0.50mm)
81500729	NOZZLE 3/8"UNF	0,024"(0.60mm)
81500596	NOZZLE 3/8"UNF	0.026"(0.65mm)
81500597	NOZZLE 3/8"UNF	0.028"(0.70mm)
81500788	NOZZLE 3/8"UNF	0.031"(0.80mm)
81500645	NOZZLE 3/8"UNF	0.036"(0.90mm)

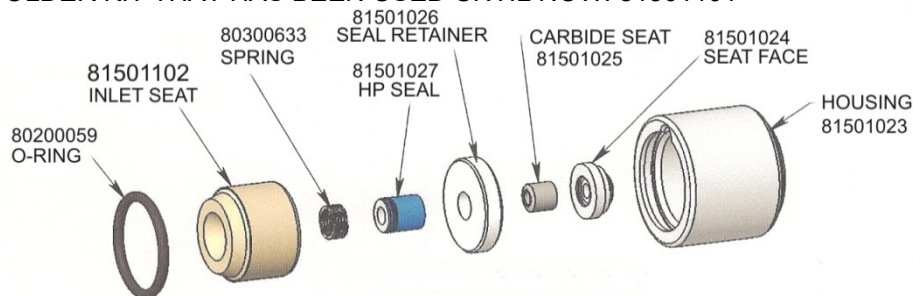
ULTRA IMPACT NOZZLE 2800R OVERHAUL KIT 81501748 ORIENTATION OF PARTS

OVERVIEW OF THE DIFFERENT DESIGNS OF REP. KIT FOR THE ULTRA IMPACT:
THE NEWEST REP. KIT WILL SUBSTITUTE THE OLDER REP. KITS

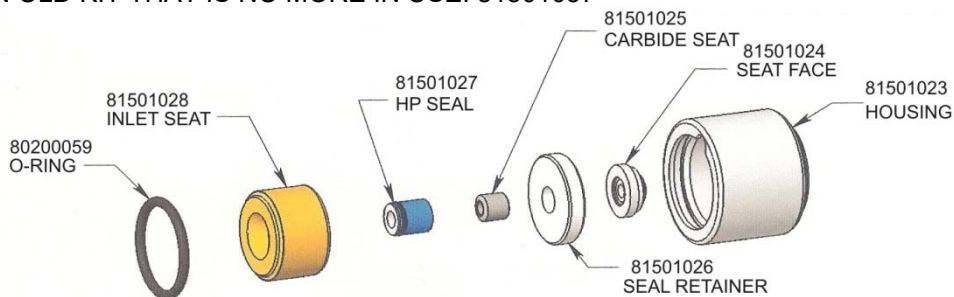
THIS IS THE NEWEST REP. KIT THAT WILL BE PUT IN TO USE AS FROM NOW: 81501748



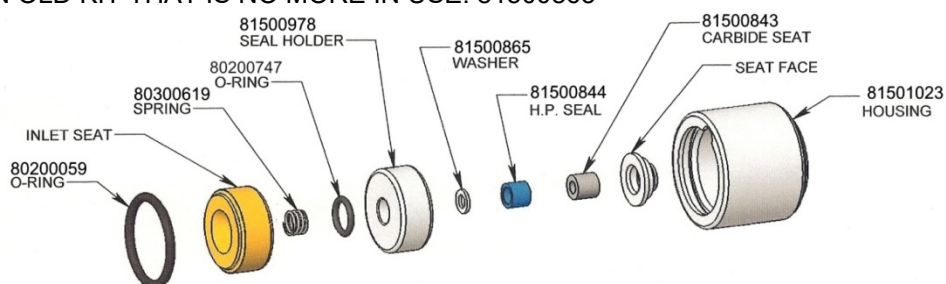
THIS IS AN OLDER KIT THAT HAS BEEN USED UNTIL NOW: 81501101



THIS IS AN OLD KIT THAT IS NO MORE IN USE: 81501057



THIS IS AN OLD KIT THAT IS NO MORE IN USE: 81500865

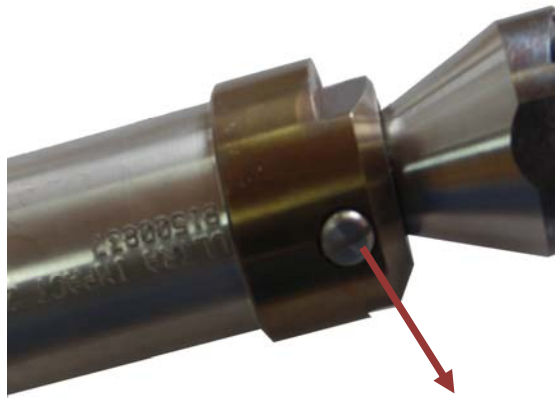
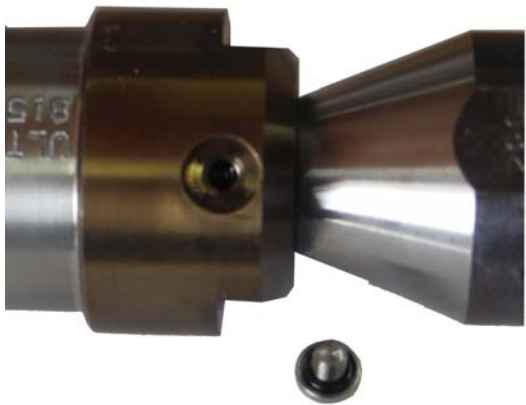

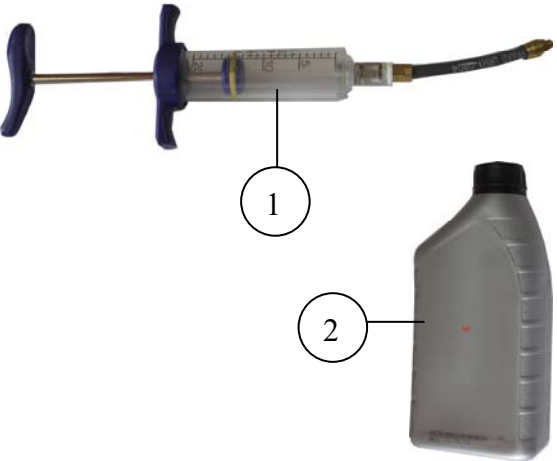
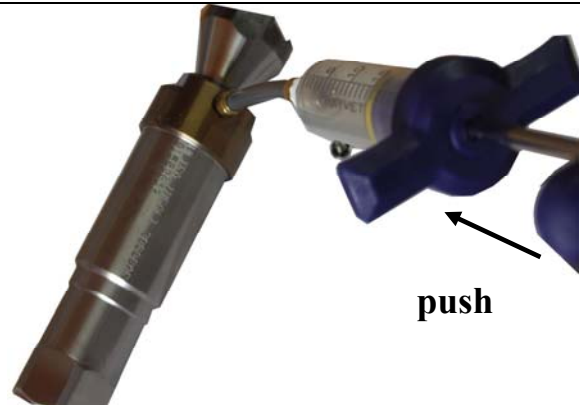
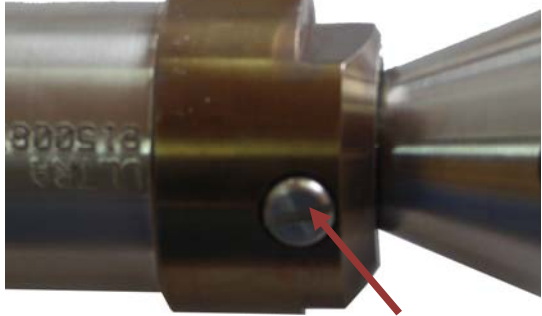


The old overhaul kit 81500896, 81501057 & 81501101 can be completely substituted with the new kit 81501748 and if a complete old rep kit is ordered, the new type kit will be delivered by default.

The internal parts of the old overhaul kit are NOT compatible or interchangeable with the new kit or vice versa. If you wish to buy internal parts to refurbish your old repair kit please refer to the above spare-parts assembly. Not all parts are available

If you are going to order almost all of the internal parts for the old repair kit, we suggest that you consider ordering a complete new repair kit 81501748, it will do a complete overhaul, as well as improve durability.

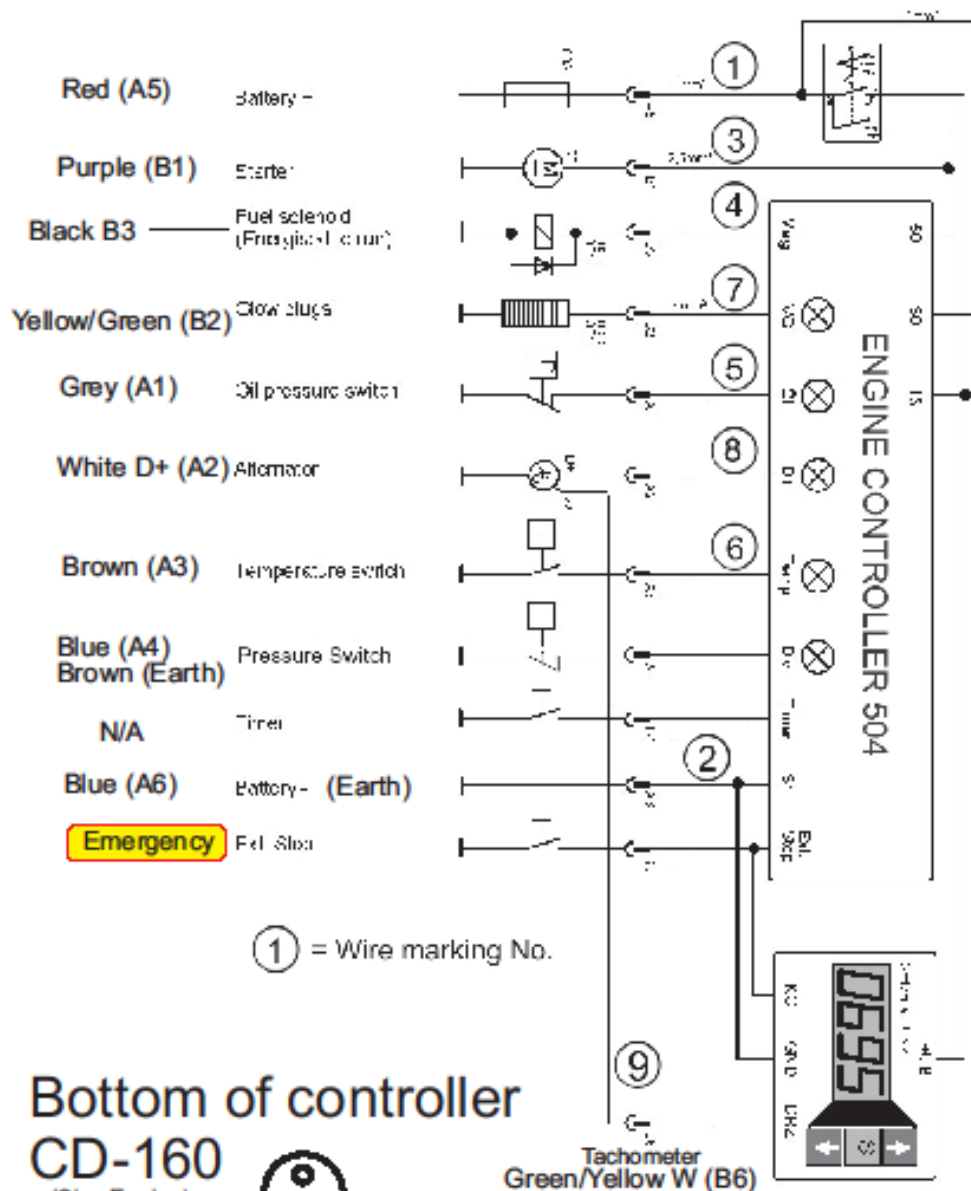
ULTRA IMPACT MAINTENANCE PROCEDURE & SPARE/PART LIST

 <p>unscrew plug</p>	
 <p>pull</p> <p>drain out old oil</p>	 <p>Discard of old oil in a proper manner- fill it with new oil</p>
 <p>push</p> <p>Press new oil in</p>	 <p>Screw the plug on</p>

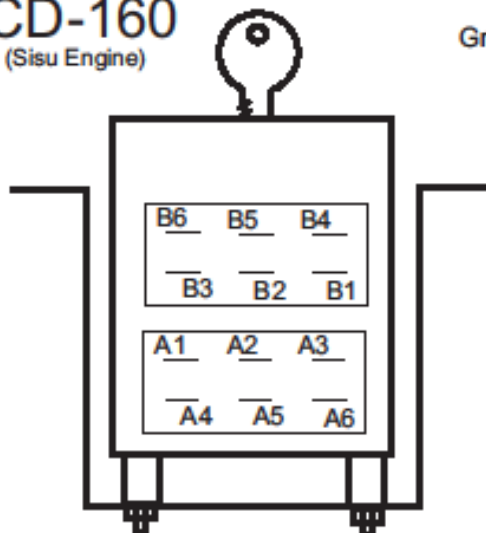
Pos.	Item No.	Qty.	Description
1	81501042	1	SYRINGE ULTRA IMPACT
2	83600613	1L	OIL

Recommended oil change / refill every 20 to 40 hours of operation.
Do **NOT** operate the Ultra Impact Nozzle without oil!

Wiring Diagram CD160 (Sisu Engine)



Bottom of controller
CD-160
(Sisu Engine)



Rear of Generator CD-160
(Sisu Engine)

