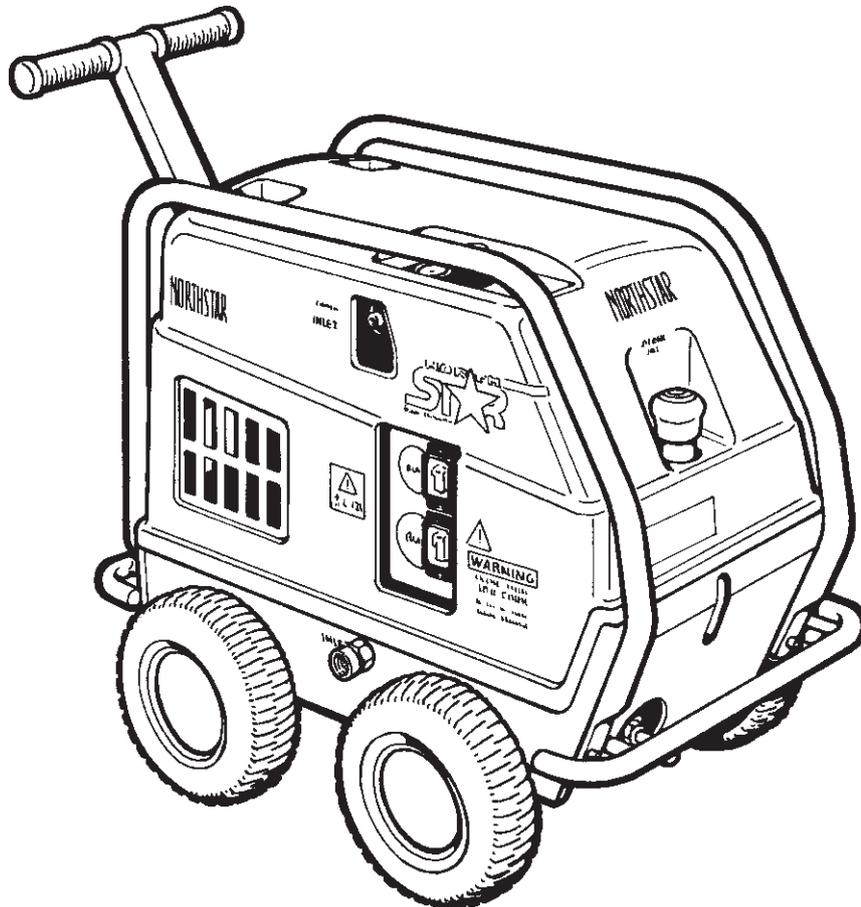


NORTHERN STAR

Proven Performance

HOT / COLD WATER PRESSURE WASHER RANGER



Item 157394



NORTHERN®
Tool & Equipment Co.

P.O. Box 1499
Burnsville, MN 55337-0499
1-800-270-0810

NORTH STAR RANGER

Pressure Washer

HOT- COLD

Congratulations on your purchase of the **RANGER** 157394 Pressure Washer!

Your pressure washer is made of high quality components to ensure the top performance you demand. Take the time to read this entire manual so you better understand the machine, how to operate it, the maintenance required and the safety precautions. You will find the assembly, operating, maintenance and troubleshooting instructions included. Be sure everyone who operates and/or maintains the equipment has read and understands this manual, the engine operations and the safety precautions. **The time you take now will prolong the life of your machine and prepare you for its safe operation.** Enjoy the exceptional performance of your



Pressure Washer, the industry leader!



**This symbol means CAUTION, WARNING OR DANGER!
Read and understand the instruction because it has to do with safety.**

Failure to comply with the instruction may result in personal injury or damage to the product.

If an injury ever occurs, seek medical attention immediately.

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SAFETY INSTRUCTIONS



Read and understand these instructions because they have to do with safety. Pay particular attention to the safety symbol throughout this manual. Failure to comply with these instructions may result in personal injury or product damage.

ELECTRICAL SAFETY

1. Properly ground this unit. Failure to ensure proper grounding can cause serious personal injury. Never use a two-prong adapter on the three-prong electrical plug that is installed.
2. Be certain all switches are “OFF” before plugging the unit into a compatible 120 volt power source.
3. Always turn off and unplug the unit from the power source if leaving unattended. Never leave unit unattended while running.
4. **Never** allow an electrical cord or connections to lay in water, it can cause a serious/fatal shock.
5. Do not use this unit on or near any electrical installations, including electrical outlets, light bulbs, fuse boxes or transformers. Severe electrical shock can occur.
6. Unplug the unit from power source **before** attempting any repairs. Electrical repairs are best suited to a licensed electrician.
7. Follow all local, state and federal electrical installation codes.

VENTILATION AND FIRE SAFETY

8. Use only No. 1 or No. 2 Diesel, to fill the fuel tank. Never use kerosene, gasoline, crankcase drainings or oil containing gasoline/solvents, these can ruin your pressure washer.
9. Fill the fuel tank slowly and only when the unit is **COOL**.
10. Never operate the unit near dust, gases, flammable vapors or other ignitable materials.
11. Always operate the pressure washer with the hood cover in place.
12. Allow the unit to cool down after stopping the pressure washer before leaving it unattended. See cool down procedure in STOPPING THE PRESSURE WASHER section.
13. Consult a qualified heating contractor for permanent installation. Follow all local, state and federal codes.
14. Always be sure there is adequate oxygen and ventilation during indoor use. Carbon monoxide gas is odorless and colorless, it can cause serious illness end even death. Vent all burner exhaust outside the building. Poorly ventilated areas cause bad combustion, motor overheating and **serious danger**.
15. Never alter or modify the unit or its safety features. Be sure all components can handle the high pressure this unit generates.
16. Be sure all connections are secure before operating the unit. Do not over tighten pressure washer adjustments; excess pressure, irregular unloader operation and wear may occur.

GENERAL SAFETY

17. Always wear safety glasses or goggles when operating the unit.
18. Always point the wand away from people and animals. High pressure streams will penetrate the skin. Seek medical attention immediately if fluid penetrates skin. **Do not** treat as a simple cut.
19. Always release system pressure after shutting off the pressure washer by squeezing the wand trigger. Never leave the unit unattended with system still pressurized.
20. High pressure spray will shatter fragile materials. Never spray directly at glass or other breakable objects.
21. Be firmly braced before squeezing the wand trigger “on”. High pressure stream may cause loss of balance.
22. Never operate the pressure wand in high levels unless the proper safety equipment to prevent fails is in place.
23. Inspect pressure hose daily for signs of wear. Never lay hose on the heat coil or drag over abrasive surfaces.
Replace hose and other components promptly when leaks or wear is discovered. Never place your hand over a pressurized leak.
24. Repair any leaks before operating the unit. Any fuel oil, pump oil or water leaks should be serviced at your nearest Northern store or call customer service at 1-800-270-0810.
25. Use only Northern parts for replacements in your pressure washer. Other brand components may cause hazardous operating conditions and will void warranty.

DETERGENT SAFETY

26. Do not alter the soap injecting system on the unit or use it in any manner not described in this manual.
27. Always wear safety goggles when operating the unit and other safety attire recommended by the detergent manufacturer. Protective clothing like rubber gloves, rubber suits and respirators may be necessary.
28. Never use acid type cleaners or other highly corrosive detergents with this pressure washer.
29. Know your detergents! Follow all appropriate instructions for preparation, use, safety and transportation of the detergent. Keep all detergents away from children. In an emergency, tell the physician exactly what detergent you are using.

UNPACKING

Closely inspect all the contents of the **RANGER** 157394 carton.

Damaged components? Contact the freight company that delivered the unit and file a claim.

Missing components? Contact our Customer Service department at 1-800-270-0810.

ELECTRICAL REQUIREMENTS

“The supply and internal wiring of portable high pressure spray washing machines shall have ground-fault-circuit-interpreter (GFCI) which is designed to protect people from line-ground shock hazards”, National Electric Code (NEC) 1987, 422, 8 (d) (3).

- All equipment and power cords connected down-line from the GFCI **are protected**.
- GFCI **does not protect** against line-to-line or line-to-neutral faults.
- GFCI **does not protect** against short circuits or overloads. Use a fuse or circuit breaker to guard against these occurrences.

Northern recommends that all electrical service be performed by a licensed electrician.

- All electrical connections must be made according to local, state, and federal codes to maintain a valid warranty.
- Connect the cord to a circuit that is wired for the 120 volts shown on the identification plate of the unit and properly electrically ground the connection.

GROUNDING INSTRUCTIONS

This pressure washer must be grounded. Grounding provides a path of least resistance for electric current to reduce the risk of shock if the unit should malfunction or breakdown. For your safety, plug the cord equipped with an equipment-grounding conductor and a grounding plug into an appropriate outlet. The outlet should be properly installed and grounded according to local electrical codes and ordinances.

GROUND-FAULT-CIRCUIT-INTERRUPTER

A GFCI is built into the plug of the pressure washer power supply cord. This GFCI provides additional protection from electrical shock. Use only the identical replacement parts that include GFCI protection when replacing the plug or power cord.

EXTENSION CORDS

Only use outdoor approved, 3-wire extension cords with 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from the unit. Outdoor cords are identified by: “Acceptable for outdoor appliances; store indoors while not in use”. Extension cord must have an electrical rating not less than the rating of the product. Do not use a damaged extension cord or abuse the cord by yanking. Keep cord away from heat sources and sharp objects. Always disconnect the extension cord from the power supply before disconnecting the unit from the extension cord,



Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a licensed electrician if you doubt whether an outlet is properly grounded. Do not modify the product plug, install a proper outlet with a licensed electrician. Reduce the risk of electrocution, keep all connections dry and off the ground. Do not touch with wet hands.

VENTILATION REQUIREMENTS

Permanent installation in an enclosed area or indoors should be performed by a qualified contractor. The burner exhaust must be stacked to the outside atmosphere and a barometric draft regulator is required as well.

INSTALLATION INSTRUCTIONS

If installing the **RANGER** 157394 indoors or in an enclosed area, observe the following guidelines:

- Operate the unit on a level surface to ensure proper lubrication to the water pump.
- Be certain the ambient temperature of the environment does not exceed 100°F. This ensures adequate air supply for the burner,
- Do not expose the unit to rain, snow or freezing temperatures.
- Do not install where dust, vapors or combustible materials will be present.

PRE-OPERATION CHECK

CLOTHING

Proper clothing is essential for your safety. Use whatever is necessary to protect your eyes, ears, feet and skin. Additional safety accessories (like a respiratory mask) may be required when using detergents with this washer.

PUMP

Check pump oil level at least once a week. Open the cover hood on the unit, remove oil plug. Oil level should be 2 mm from elbow surface. If oil is needed, fill with SAE 80-90, non-detergent oil. **Do not overfill.**

WATER SUPPLY

1. Connect the water supply to the $\frac{3}{4}$ " female garden hose swivel on the water inlet port of the unit. Connect the other end of the hose to the pressurized water supply. The supply hose should have a $\frac{3}{4}$ " inside diameter (ID) and be no longer than 50 feet.
2. The water supply pressure must be a minimum of 20 pounds per square inch (PSI) and a maximum of 125 PSI. The flow rate must be at least 3 gallons per minute (GPM).
3. Use a water softener if there is high mineral content in the water of your area. High mineral content causes excessive scale build-up in the coil/heat exchanger.
4. Connect one end of the high pressure discharge hose to outlet port on the pressure washer and the other end to the wand/gun assembly.



Be sure all connections are securely tightened.

Sudden release of high pressure streams can cause serious injury.

OPERATING INSTRUCTIONS

STARTING THE PRESSURE WASHER

BEFORE STARTING THE PRESSURE WASHER

1. Read all safety instructions throughout this manual.
2. Be sure the motor switch is in the “OFF” position, red button pushed.
3. Ensure outlet is the proper voltage (120 volts). 20 amp outlet
4. Insert the male power plug into a grounded AC outlet.
5. Press and release the “RESET” button on the GFCI power cord.
6. Press “RESET” each time after plugging the GFCI power cord into a power source.

COLD WATER OPERATION

1. After following all preparation instructions, turn the water supply on.
2. Turn the unit on by pushing the pump switch on the control panel. Once the unit starts, squeeze the trigger gun “ON” for 2 minutes to purge all air and mineral deposits from the system. This operation is to be done without lance terminal end.
3. Turn the pump switch to OFF position, release the trigger gun and lock in the “OFF” position. Fit the lance terminal end. To ensure you are in the high pressure mode, turn the nozzle holder to the right.
4. Your **RANGER** 157394 is now ready to be used as a cold water pressure washer. Turn the unit on by pushing the pump switch on the control panel. Squeeze the trigger-gun to spray a high pressure stream and release the trigger to stop the stream.
5. Adjust pressure with the unloader valve to the desired pressure.



Do not allow the unit to operate in bypass mode (with trigger released in the “OFF” position) for more than 3 minutes.

Premature failure of pump packing may occur if left in bypass mode for longer than 3 minutes.

Never look directly into the nozzle unless it is disconnected from the spray wand.

HOT WATER OPERATION

1. Fill fuel tank with 1.8 gallons of #1 or #2 Diesel.
2. Be sure trigger gun is locked in the “OFF” position and remove the nozzle/wand assembly.
3. Turn the unit on by pushing the pump switch on the control panel. Once the unit starts, squeeze the trigger gun “ON” for 2 minutes to purge all air and mineral deposits from the system.
4. Turn the pump switch to “OFF” position, release the trigger gun and lock in the “OFF” position. Connect the nozzle-wand assembly to the gun assembly. To ensure you are in the high pressure mode, turn the nozzle to the right.
5. Turn the pump switch to “ON” position, turn the burner knob located on the control panel to “ON” (position 1) Squeeze the trigger gun to spray, burner only fires when the trigger is squeezed.
6. Do not allow the unit to operate in the bypass mode (trigger not squeezed) for more than 3 minutes. Failure of pump packing may result
7. The unit is now ready to be used as a hot water pressure washer. Squeeze the trigger-gun to spray a high pressure stream, and release the trigger to stop the stream.
8. Cool down the heat exchanger by turning the burner knob “OFF” (0 position). Allow unit to run with trigger in the squeezed, “ON” position for at least 3 minutes.

NOTE:

On initial startup, water will begin turning hot in 30 seconds, reaching maximum temperature in 3 minutes with trigger squeezed. Burner stops firing when the trigger is released or when water exceeds the temperature setting.



CAUTION!
EXPOSED METAL EXHAUST OUTLET AND HOSE
CONNECTIONS DURING HOT OPERATION ARE EXTREMELY
HOT!

STOPPING THE PRESSURE WASHER



To protect your safety and the service of your **RANGER 157394**, you must follow the procedure for stopping the pressure washer outlined below:

1. Run one gallon of clean water through the used detergent lines. (If detergent has been used during this operation run).
2. Turn burner switch to “OFF” (0 position).
3. Squeeze the trigger and discharge cool water for 3 minutes to cool the burner component.
4. Turn the unit “OFF” with the main switch on the control panel.
5. Turn off the water supply immediately.
6. Squeeze the trigger gun to relieve system pressure and drain excess water.
7. Disconnect power cord and unit hoses.

USING THE DETERGENT INJECTOR

This feature is designed for use with mild detergents. North Star detergents are highly recommended for use with all North Star pressure washers.

1. Prepare cleaning solution according to the detergent label directions.
2. Immerse the strainer end of the clear vinyl hose into the detergent solution to allow detergent to siphon. Turn the nozzle at the end of the wand to the left for low pressure.
3. Start the unit as directed in the OPERATING INSTRUCTIONS. Brace yourself and the triggered gun. The detergent and water mixture will exit the low pressure nozzle.
4. Apply the solution by spraying from low surface and move up; use long, overlapping strokes. Applying from the bottom, up helps avoid streaking. Do not allow the detergent solution to dry on any surface.
5. Turn nozzle at the end of the wand to the right for the high pressure rinse mode. It takes 30 seconds to purge all detergent from the system lines.
6. Start at the top and work down for the best rinsing results.
7. Rinse the detergent injector system by running 1 gallon of clean water through after each use. This prevents corrosion or detergent residue that causes mechanical problems during later uses of your **RANGER 157394**.

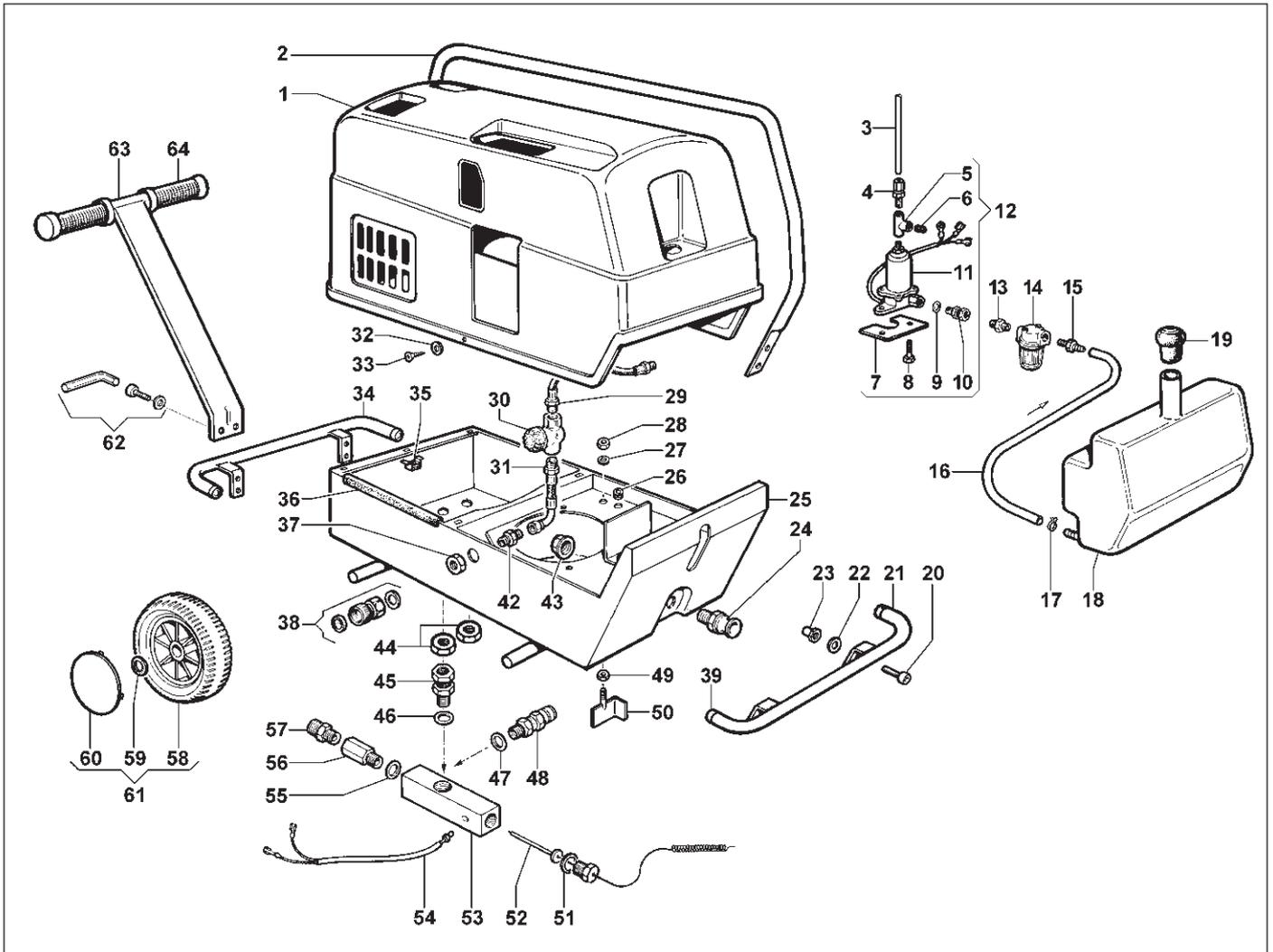
MAINTENANCE

1. Inspect and clean the water intake screen on the unit before each use.
2. Always be sure the unit is receiving the proper 120 volts. Be certain the cord is equipped with the appropriate ground prong plug to ensure proper grounding. Electrical cords and connections should not contact water.
3. Always follow STOPPING THE PRESSURE WASHER instruction outlined on page 10 of this manual.
4. Do not operate the unit in bypass mode (trigger not squeezed) for more than 10 minutes, this will cause premature failure of the pump packings.
5. Only run pump with water supply turned on all the way. Never allow pump to run dry.
6. Run a gallon of clean water through the injection line after each use. This flushes out any corrosive chemicals and prevents residue from damaging moving parts.
7. Use a water softener if the water supply has a high mineral content. This will avoid accumulation of mineral deposits in the coil/heat exchanger. If a softener is not available it is necessary to “de-scale” the coil occasionally. See your nearest Northern store or call 1-800-270-0810 for customer service.
8. Detergents are corrosive. It may be necessary to repair or replace components on the detergent injector system periodically as part of standard maintenance.
9. Never pump acids, alkalines or abrasive fluids through the unit.
10. Never operate the unit without the hood cover.
11. Eliminate leaks found in the pumping system by removing suspect parts, applying sealant to the threads and reinstalling. If using Teflon tape, be sure no tape gets into any plumbing, this causes a plugged spray nozzle and internal problems.
12. Change pump crankcase oil after first 50 hours of use, then every 250 hours. **Use only SAE 80-90**, non-detergent oil. Oil level should be 2 mm. from transparent elbow surface. Check oil once a week.
13. Change fuel filter to burner every 6 months and screen in the fuel pump on the burner each year. Be sure to use only high quality No. 1 or No. 2 Diesel.
14. Never spray water directly into the unit or store outdoors where it can be exposed to rain or other adverse weather conditions.
15. Never store the unit in a freezing environment. This causes the coil/heat exchanger to rupture and the water pump to “lock up”.. Never pour hot water on a frozen pump, a temperature change greater than 150, F can crack the water pump. Again, do not store the unit in a freezing environment.

TROUBLESHOOTING

SYMPTOMS	CAUSES	REMEDIES
The water pump will not start	The motor thermic protection is open	Check the mains voltage (+/- 5% tolerance). Check the phases in the plug are connected well.
The water pump will not enter in bypass	The no-return valve does not seal	Replace the valve or the gasket and check the pressure valve body wear.
	Leakage from the water system of the gun	Eliminate the leaks
The water pump does not reach maximum pressure	Nozzle worn	Replace the nozzle
	Pressure ball or adjustment housing worn or spring broken	Replace the faulty part
	Pressure valve gaskets worn	Replace the valve gaskets
	Pistons seal gasket worn	Replace the gaskets
	Nozzle holding head in position low pressure	Turn the head on high pressure
Strong vibrations on the water pump	Water supply insufficient	Check the water supply flow and the relative pressure (2÷10)
		Check the water filter and clean it if necessary
	Prime the pump without the lance	
	Alien matter under a check valve	Check the valves, clean and reassemble
The burner will not start	Diesel filter blocked	Clean the filter
	Diesel nozzle blocked	Clean the filter
	Worn or broken electrodes	Replace the electrodes
	The pressure switch remains open	Replace the pressure switch
	Safety thermostat is open	Replace the safety thermostat
Anormal noise of Diesel pump	Low diesel	Fill diesel tank or work on cold water
No detergent suction	High viscosity of the employed detergent	Further dilute the detergent
	Detergent filter blocked	Clean the filter

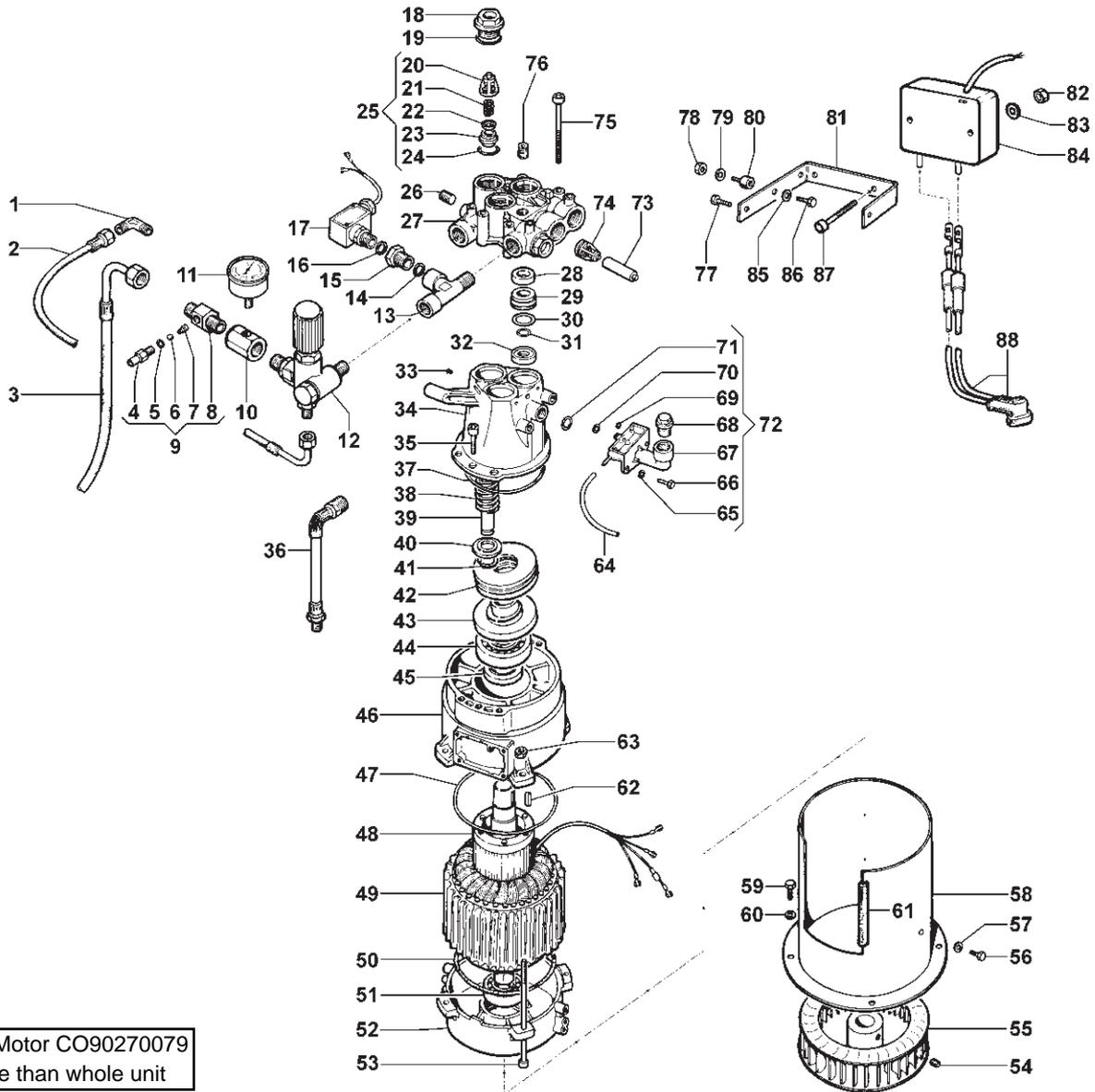
FRAME, COWLING ASSEMBLY EXPLODED VIEW



N°	Code	Description	Note	Qty	Model
1	0477 0096	Cover		1	
2	2416 0104	Roll-bar		2	
3	3208 0800	Copper Hose	Ø4	1	
4	2803 0322	Coupling	Ø4 GC1/8"	1	
5	2803 0258	"T" Coupling	G1/8	1	
6	3200 0017	Plug	G1/8x8	1	
7	3002 0322	Diesel Pump Support		1	
8	3607 0106	Hexagonal Screw	M6x10	2	
9	2811 0083	Washer	13,5x19x1,5	1	
10	0011 0001	Adapter	1/4 M-F	1	
11	2422 0012	Diesel Pump		1	
12	2422 0020	Diesel Pump Kit		1	
13	2000 0051	Nipple	1/4 M-M	1	
14	1002 0079	Diesel Filter		1	
15	2803 0408	Coupling	G1/4 PG Ø7	1	
16	3208 0895	Diesel Hose		1	
17	1003 0067	Hose Clamp		1	
18	3029 0011	Diesel Tank		1	
19	3200 0039	Diesel Tank Plug		1	
20	3609 0030	Screw	M5x20	8	
21	2437 0001	Front Bumper		1	
22	2819 0009	Spring Washer		8	
23	2815 0026	Rivet	M5x13	8	
24	2434 0022	Cable Holder		1	
25	3206 0272	Frame		1	
26	2434 0012	Cap		1	
27	2811 0023	Washer	Ø6,6x18x2	1	
28	0604 0095	Nut	M6	1	
29	3208 0823	Suction Hose	L = 210	1	
30	1002 0110	Water Filter		1	
31	3208 0824	Suction Hose		1	

N°	Code	Description	Note	Qty	Model
32	2811 0074	Washer	Ø4,36x16	2	
33	3625 0037	Special Screw		2	
34	2437 0002	Rear Bumper		1	
35	0600 0039	Special Bolt		5	
36	1201 0078	Gasket		2	
37	0604 0066	Nut		1	
38	2800 0074	Straight Hose Tail		1	
39	3200 0062	Plug		4	
42	2000 0089	Nipple	3/4M-3/8M	1	
43	1227 0002	Ring Nut for Cable Holder	PG16	1	
44	1227 0015	Ring Nut		2	
45	0011 0003	Adapter	M/F G3/8	1	
46	1209 0099	Copper Washer		1	
47	1209 0097	Copper Washer		1	
48	1215 0148	Safety Valve		1	
49	0604 0095	Nut	M6	1	
50	0466 0014	Throttle Conveyor		1	
51	1209 0007	Copper Washer		1	
52	3230 0011	Regulation Thermostat		1	
53	2803 0503	Coupling		1	
54	3230 0003	Safety Thermostat		1	
55	1209 0099	Copper Washer		1	
56	2417 0054	Reduction		1	
57	2803 0260	Delivery Coupling		1	
58	2810 0030	Wheel		4	
59	0009 0179	Ring	Ø20	4	
60	0402 0189	Wheel Cover		4	
61	2810 0031	Wheel Kit		4	
62	5018 0038	Handle Fitting Assembly		1	
63	1803 0030	Handle Bar		1	
64	1817 0032	Handle Bar Knob		2	

PUMP, MOTOR ASSEMBLY EXPLODED VIEW



Pump & Motor CO90270079
Cost more than whole unit

N°	Code	Description	Note	Qty	Model
1	1211 0021	By-Pass Elbow Coupling		1	
2	3208 0726	By-Pass Hose		1	
3	3208 0728	H.P. Hose		1	
4	2803 0244	Detergent Coupling		1	
5	1210 0227	O-Ring		1	
6	3003 0011	Detergent Ball		1	
7	1802 0155	Detergent Spring		1	
8	0801 0038	Detergent Injector		1	
9	0801 0040	Detergent Injector Kit		1	
10	2417 0032	Reduction		1	
11	1816 0101	Gauge		1	
12	1215 0118	Unloader Valve		1	
13	2803 0218	"T" Coupling		1	
14	1209 0091	Copper Washer	3/8"	1	
15	2825 0018	M/F Reduction	G3/8-G1/4	1	
16	1209 0097	Copper Washer		1	
17	2421 0004	Pressure Switch		1	
18	3202 0155	Plug		6	
19	1210 0048	O-Ring	2,62x20,24	6	
20	1205 0025	Suct./Del. Valve Cage		6	
21	1802 0125	Spring		6	
22	3604 0017	Suct./Del. Valve		6	
23	3009 0087	Suct./Del. Valve Seat		6	

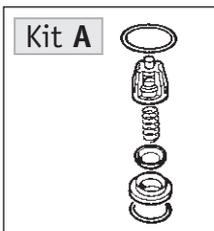
N°	Code	Description	Note	Qty	Model
24	1210 0046	O-Ring	2,62x17,13	6	
25	1220 0029	Suct./Del. Valve Ass.y kit		6	
26	3202 0093	Plug		1	
27	3218 0101	Pump Manifold		1	
28	1241 0031	Packing		3	
29	0009 0169	Packing Retainer		3	
30	1210 0333	O-Ring	1,78x23,52	3	
31	1210 0337	O-Ring	2,62x15,08	3	
32	0019 0081	Oil Seal		3	
33	3200 0055	Plug		3	
34	2432 0013	Piston Holder		1	
35	3609 0005	Screw	M8x20	2	
36	3208 0823	Suction Hose		1	
37	1210 0225	O-Ring	Ø2,62x88,57	1	
38	1802 0153	Piston Spring		3	
39	2409 0057	Piston Guides		3	
40	0009 0173	Ring		3	
41	0009 0175	Ring		3	
42	0436 0011	Complete Axial Bearing		1	
43	0001 0374	Eccentric Shaft		1	
44	0438 0046	Ball Bearing		1	
45	0019 0036	Oil Seal		1	
46	1009 0092	Front Motor Flange		1	

PUMP, MOTOR ASSEMBLY EXPLODED VIEW

N°	Code	Description	Note	Qty	Model
47	1201 0124	Motor Gasket		1	
48	0001 0464	Rotor Shaft		1	
49	3041 0152	Stator		1	
50	1201 0124	Motor Gasket		1	
51	0438 0059	Ball Bearing		1	
52	1009 0094	Back Motor Housing		1	
53	3609 0129	Screw	M5x20	4	
54	3622 0028	Stop Adjustable Nut	M8x10	1	
55	3632 0028	Fan Kit		1	
56	3607 0177	Hexagonal Screw	M6x14	2	
57	2811 0023	Washer	Ø6,6x18x2	2	
58	0466 0012	Shroud Cover		1	
59	3607 0097	Hexagonal Screw	M6x16	4	
60	2811 0030	Washer	Ø6,4x12,5x1,6	4	
61	1201 0094	Gasket		2	
62	1602 0051	Key	5x5x20	1	
63	0604 0046	Nut	M5x6	4	
64	3208 0831	H.P. Hose		1	
65	2811 0030	Washer	Ø6,4x12,5x1,6	2	
66	3607 0177	Hexagonal Screw	M6x14	2	
67	2803 0312	Oil Level Wiewer		1	

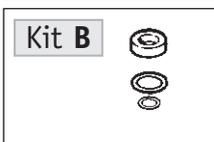
N°	Code	Description	Note	Qty	Model
68	3200 0031	Plug		1	
69	1210 0383	O-Ring	Ø1,78x3,69	2	
70	1210 0055	O-Ring	Ø1,78x6,07	1	
71	1210 0091	O-Ring		1	
72	2803 0314	O-Ring		1	
73	0601 0197	Valve Shim		1	
74	1220 0029	Suct./Del. Valve Ass.y kit		6	
75	3609 0127	Screw	M8x140	4	
76	3200 0017	Plug	G1/8	1	
77	3607 0177	Hexagonal Screw	M6x14	1	
78	0604 0010	Nut	M6	1	
79	2811 0023	Washer	Ø6,6x18x2	1	
80	3002 0326	Spacer		1	
81	3002 0328	Support		1	
82	0604 0075	Nut	M4	2	
83	2811 0006	Washer	Ø4,3x9	2	
84	3226 0075	H.T. Transformer		1	
85	2811 0030	Washer	Ø6,4x12,5x1,6	1	
86	3607 0106	Hexagonal Screw	M6x10	1	
87	3609 0113	Screw	M5x10	2	
88	0535 0065	H.T. Cable Kit		1	

Suction / Delivery Valve Kit (5025 0007)



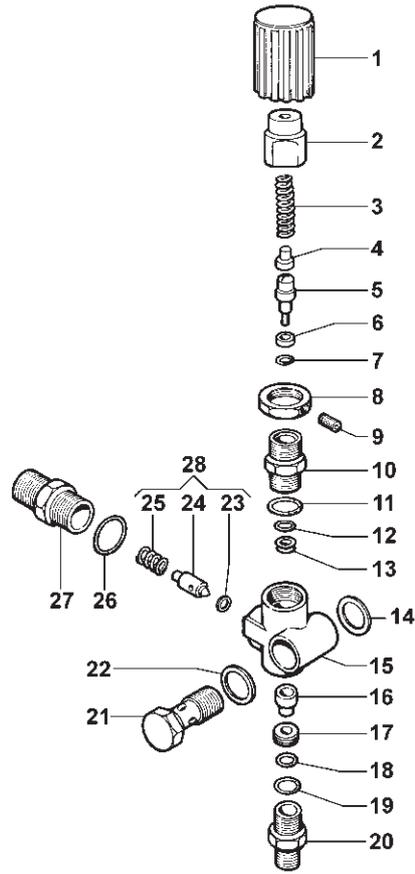
5025 0007		
N°	Cod.	Qty
19	1210 0048	6
20	1205 0025	6
21	1802 0125	6
22	3604 0017	6
23	3009 0087	6
24	1210 0046	6

Seal Kit (5019 0025)



5019 0025		
N°	Cod.	Qty
28	1241 0031	3
30	1210 0333	3
31	1210 0337	3

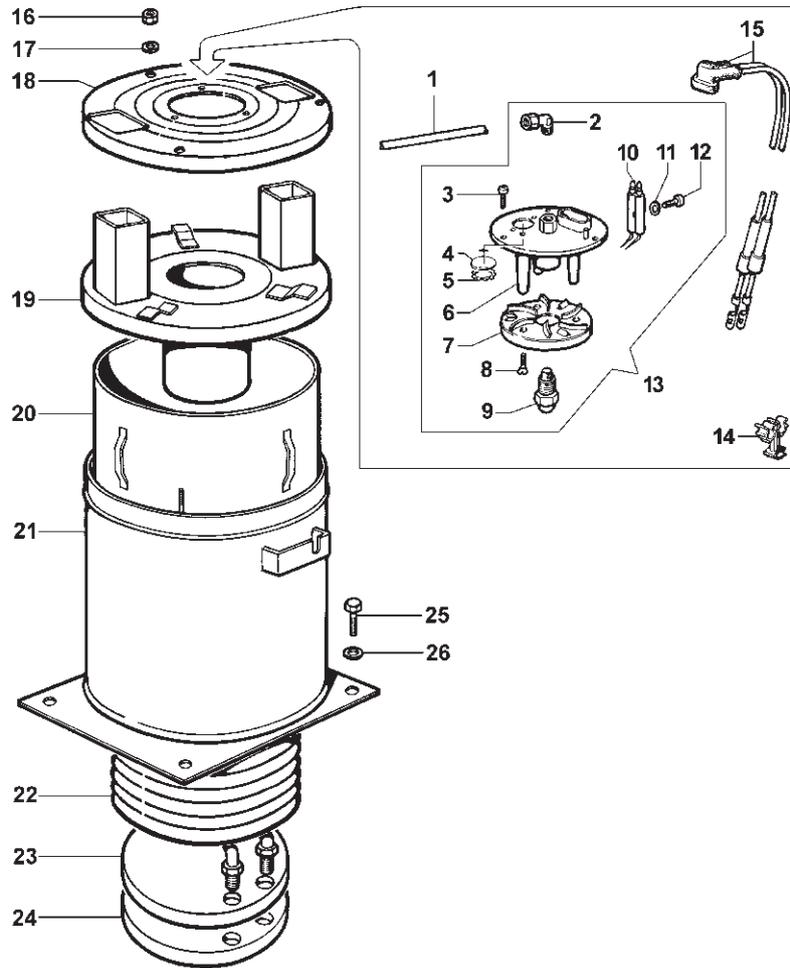
UNLOADER VALVE EXPLODED VIEW



N°	Code	Description	Note	Qty	Model
1	1817 0031	Knob		1	
2	2803 0262	Coupling		1	
3	1802 0119	Unloader Spring		1	
4	3002 0334	Spacer		1	
5	0015 0118	Rod		1	
6	0009 0096	Ring		1	
7	1210 0039	O-Ring	Ø1,78x 7,66	1	
8	1227 0022	Ring Nut		1	
9	3622 0030	Stop Adjustable Nut	M4x4	1	
10	3202 0094	Cap		1	
11	1210 0040	O-Ring	Ø1,78x15,6	1	
12	1210 0055	O-Ring	Ø1,78x6,07	1	
13	0009 0167	Ring		1	
14	1209 0082	Copper Washer		1	

N°	Code	Description	Note	Qty	Model
15	0424 0206	Unloader Body		1	
16	1809 0016	Half-Ball		1	
17	3036 0004	Seat		1	
18	1210 0186	O-Ring	Ø1x10	1	
19	1210 0040	O-Ring	Ø1,78x15,6	1	
20	2803 0266	By-Pass Coupling		1	
21	2803 0264	Special Screw		1	
22	1209 0082	Copper Washer		1	
23	1210 0198	O-Ring	Ø2,5x4	1	
24	3600 0060	Check Valve		1	
25	1802 0120	Check Valve Spring		1	
26	1210 0040	O-Ring	Ø1,78x15,6	1	
27	2803 0268	Coupling		1	
28	3600 0062	Check Valve Kit		1	

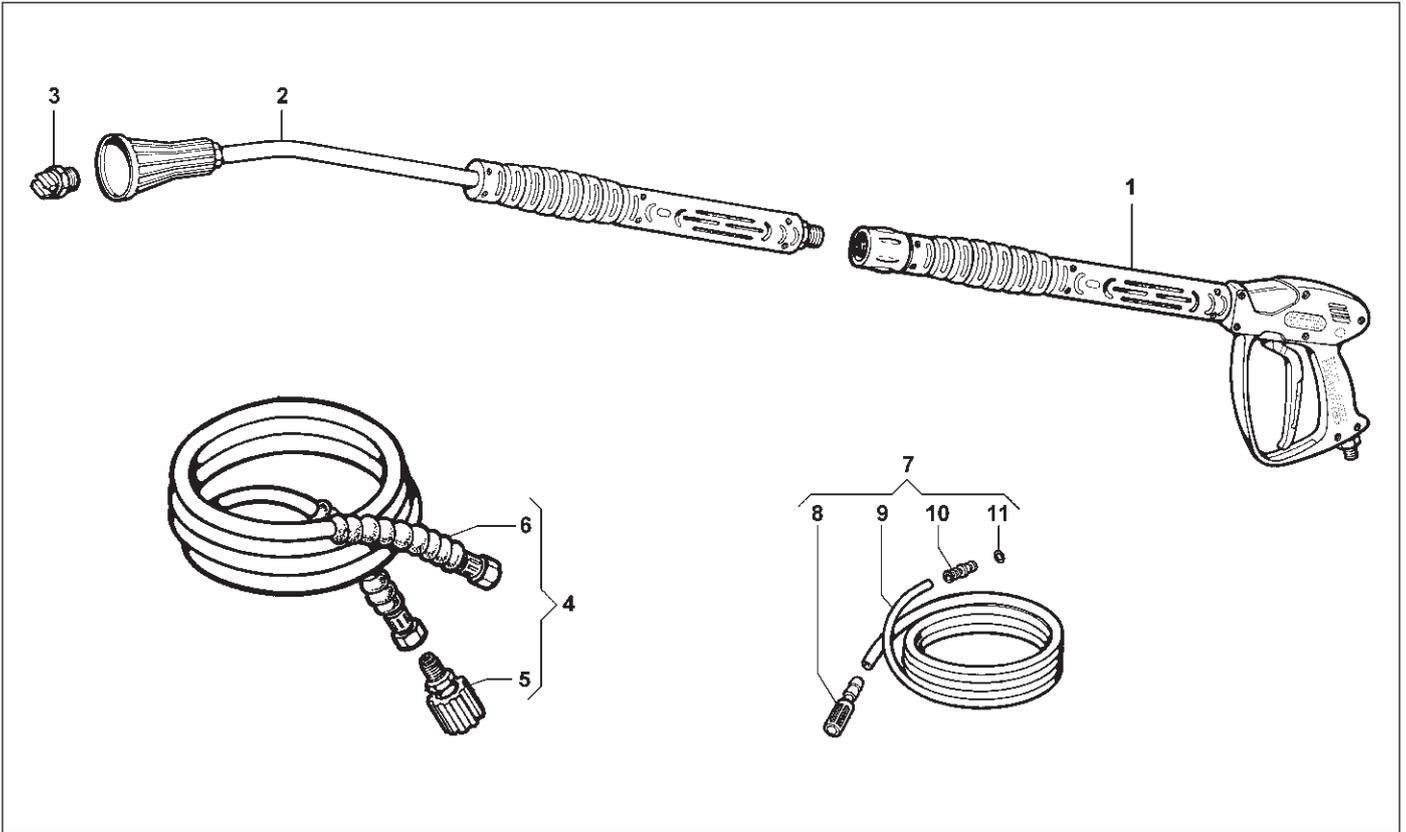
BURNER, BOILER EXPLODED VIEW



N°	Code	Description	Note	Qty	Model
1	3208 0800	Copper Diesel Hose		1	
2	2803 0320	Helbow Coupling	90°	1	
3	3625 0013	Screw	4,2x9,5	3	
4	3200 0074	Plug		1	
5	3019 0035	Outer Seeger	Ø22	1	
6	0602 0047	Electrode Holder Disc		1	
7	0602 0048	Air Turbulence Ring		1	
8	3608 0004	Screw	M3x6	3	
9	3400 0340	Diesel Nozzle	0,90 - 60°W CT	1	
10	0805 0017	Bifilar Electrode		1	
11	2819 0020	Spring Washer	D.15x5,2x0,4	1	
12	3625 0046	Screw	M5x12	1	
13	0335 0026	Burner Head Kit		1	

N°	Code	Description	Note	Qty	Model
14	1202 0052	Hook		2	
15	0535 0065	H.T. Cable Kit		1	
16	0604 0010	Nut	M6	3	
17	2811 0030	Washer	Ø6,4x12,5x1,6	3	
18	0402 0132	Boiler Cover		1	
19	0402 0134	Exhaust Cover		1	
20	0424 0204	Internal Boiler Body		1	
21	0424 0200	External Boiler Body		1	
22	3044 0008	Coil		1	
23	2822 0008	Hard Refractory Pad		1	
24	2822 0010	Soft Refractory Pad		1	
25	3607 0010	Hexagonal Screw	M8x16	5	
26	2811 0016	Washer	Ø8,4x17x1,6	5	

GUN, HOSE, WAND ASSEMBLY EXPLODED VIEW



	N°	Code	Description	Note	Qty	Model
24100112	1	2410 0060	Spray gun		1	
33010787	2	3301 0635	Lance Kit		1	
34000402	3	3400 0254	Water Nozzle	15 035 Ø1,14 1/4	1	
33010639	4	3301 0554	H.P. Hose Kit	5/16" L = 10 m	1	
	5	1407 0027	Quick Coupling	M22X1,5	1	
	6	3208 0743	H.P. Hose	5/16" L = 10 m	1	
	7	3301 0487	Detergent Hose Kit		1	
	8	1002 0055	Detergent Filter		1	
	9	3208 0705	Detergent Hose	L = 750 mm	1	
	10	2803 0267	Detergent Coupling		1	
	11	1210 0227	O-Ring	Ø1,78x5,28	1	