

LANDA®

VNG

OPERATOR'S MANUAL

VNG4-2000

- VNG4-2024A 1.109-563.0
- VNG4-2024B 1.109-564.0
- VNG4-2024C 1.109-565.0
- VNG4-2024H 1.109-568.0

VNG4-3000

- VNG4-3024A 1.109-569.0
- VNG4-3024B 1.109-570.0
- VNG4-3024C 1.109-571.0
- VNG4-3024H 1.109-574.0

VNG6-3000

- VNG6-3024B 1.109-575.0
- VNG6-3024C 1.109-576.0

VNG8-3000

- VNG8-3024B 1.109-579.0
- VNG8-3024C 1.109-580.0
- VNG8-3024H 1.109-582.0

VNG10-2000

- VNG10-2024B 1.109-559.0
- VNG10-2024C 1.109-560.0



For technical assistance or the dealer nearest you,
consult our web page at www.landa.com

8.913-939.0

CONTENTS

Introduction & Important Safety Information	4-6
Component Identification	7
Installation	8-12
Location	8
Gas Codes	8
Electrical	8
Gas Piping	8,10
Installation Guide	9
Propane Gas	10
Natural Gas	10
Venting	10
Draft Diverter	10
Water Source	11
Water Connection	11
Inspecting & Testing Gas Piping	11
Gas Pressure	11
Warning and Check Lists	12
Operation Instructions	13
General Cleaning Techniques	14
Maintenance	15-18
Troubleshooting Guides	19-23
VNG-S Exploded Views	24-25
VNG-S Parts List	26-27
VNG-L Exploded Views	28-29
VNG-L Parts List	30-31
Control Panel Assembly	32
Control Panel Parts List	33
VNG-L 6-3000, 8-3000 Burner Assembly	34
VNG-L 6-3000, 8-3000 Burner Parts List	35

VNG-L 10-2000 Burner Assembly	36
VNG-L 10-2000 Burner Parts List	37
VNG Electrical Box Auto Start	38
VNG Electrical Box Auto Start Parts List	39
VNG Electrical Box Time Delay & Parts List	40
VNG Remote Electrical Box	41
VNG Handheld Wireless Exploded View & Parts List	42
VNG Handheld Wireless Operating Instructions	43
VNG 4-2000, 4-3000, 6-3000 Pump Assembly	44
VNG 4-2000, 4-3000, 6-3000 Pump Assembly Parts List	45
VNG 8-3000, 10-2000 Pump Assembly	46
VNG 8-3000, 10-2000 Pump Assembly Parts List	47
VNGL Float Tank & Parts List	48
Hose and Spray Gun Assembly	49
Parts Specifications, Landa Pump	50-51
Burner Specifications	52
Basic Facts	53
Pressure Equivalentents	53
VRT 3 Unloader Exploded View and Parts List	54-55
VBXL Unloader Exploded View and Parts List	53
VB8 Valve Exploded View and Parts List	56-57
LT Pump Exploded View and Parts List	58-59
LX Pump Exploded View and Parts List	60-61

Warranty

Model Number _____

Serial Number _____

Date of Purchase _____

The model and serial numbers will be found on a decal attached to the pressure washer. You should record both serial number and date of purchase and keep in a safe place for future reference.

INTRODUCTION & IMPORTANT SAFETY INFORMATION

Thank you for purchasing this Pressure Washer. We reserve the right to make changes at any time without incurring any obligation.

Owner/User Responsibility:

The owner and/or user must have an understanding of the manufacturer's operating instructions and warnings before using this pressure washer. Warning information should be emphasized and understood. If the operator is not fluent in English, the manufacturer's instructions and warnings shall be read to and discussed with the operator in the operator's native language by the purchaser/owner, making sure that the operator comprehends its contents.

Owner and/or user must study and maintain for future reference the manufacturers' instructions.

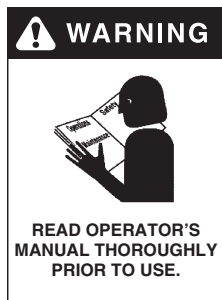
The operator must know how to stop the machine quickly and understand the operation of all controls. Never permit anyone to operate the engine without proper instructions.

This manual should be considered a permanent part of the machine and should remain with it if machine is resold.

When ordering parts, please specify model and serial number. Use only identical replacement parts.

This machine is to be used only by trained operators.

IMPORTANT SAFETY INFORMATION



WARNING: To reduce the risk of injury, read operating instructions carefully before using.

1. Read the owner's manual thoroughly. Failure to follow instructions could cause malfunction of the machine and result in death, serious bodily injury and/or property damage.
2. Know how to stop the machine and bleed pressure quickly. Be thoroughly familiar with the controls.
3. Stay alert — watch what you are doing.
4. Do not replace LP tank while machine is running.
5. All installations must comply with local codes. Contact your electrician, plumber, utility company or the selling distributor for specific details. If your machine is rated 250 volts or less, single phase will be provided with a ground fault circuit interrupter (GFCI). If rated more than 250 volts, or more than single phase this product should only be connected to a power supply receptacle protected by a GFCI.

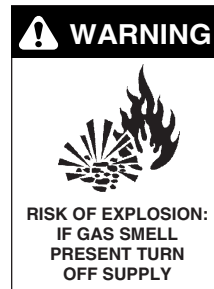
DANGER: Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service personnel if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the product - if it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use any type of adaptor with this product.



WARNING: Keep wand, hose, and water spray away from electric wiring or fatal electric shock may result.

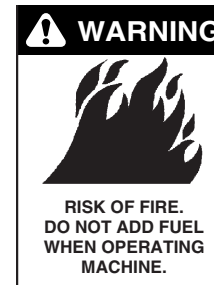
6. To protect the operator from electrical shock, the machine must be electrically grounded. It is the responsibility of the owner to connect this machine

to a UL grounded receptacle of proper voltage and amperage ratings. Do not spray water on or near electrical components. Do not touch machine with wet hands or while standing in water. Always disconnect power before servicing.



WARNING: Flammable liquids can create fumes which can ignite, causing property damage or severe injury.

WARNING: Risk of explosion — Operate only where open flame or torch is permitted.



WARNING: Risk of fire — Do not change tanks when the product is operating or still hot.

WARNING: Use vapor fuel only.

7. Oil burning appliances shall be installed only in locations where combustible dusts and flammable gases or vapors are not present.

Do not store or use gasoline near this machine.

8. Keep operating area clear of all persons.



WARNING: High pressure spray can cause paint chips or other particles to become airborne and fly at high speeds. To avoid personal injury, eye, hand and foot safety devices must be worn.

9. Eye, hand, and foot protection must be worn when using this equipment.

IMPORTANT SAFETY INFORMATION



WARNING: This machine exceeds 85 db appropriate ear protection must be worn.



WARNING: Protect machine from freezing.



CAUTION: Hot discharge fluid. Do not touch or direct discharge stream at persons.

WARNING: This machine produces hot water and must have insulated components attached to protect the operator.



WARNING: Risk of asphyxiation. Use this product only in a well ventilated area.



WARNING: Risk of injury. Hot surfaces can cause burns. Use only designated gripping areas of spray gun and wand. Do not place hands or feet on non-insulated areas of the pressure washer.

10. To reduce the risk of injury, close supervision is necessary when a machine is used near children. Do not allow children to operate the pressure washer. This machine must be attended during operation.



WARNING: Be extremely careful when using a ladder, scaffolding or any other relatively unstable location. The cleaning area should have adequate slopes and drainage to reduce the possibility of a fall due to slippery surfaces.



WARNING: Grip cleaning wand securely with both hands before starting. Failure to do this could result in injury from a whipping wand.

11. Never make adjustments on machine while in operation.
12. Be certain all quick coupler fittings are secured before using pressure washer.



WARNING: High pressure developed by these machines will cause personal injury or equipment damage. Keep clear of nozzle. Use caution when operating. Do not direct discharge stream at people, or severe injury or death will result.

13. To keep machine in best operating conditions, it is important you protect machine from freezing. Failure to protect machine from freezing could cause malfunction of the machine and result in death, serious bodily injury, and/or property damage. Follow storage instructions specified in this manual.
14. Inlet water must be clean fresh water and no hotter than 90°F.
15. Avoid installing machines in small areas or near exhaust fans. Adequate oxygen is needed for combustion or dangerous carbon monoxide will result.
16. Manufacturer will not be liable for any changes made to our standard machines or any components not purchased from us.
17. The best insurance against an accident is precaution and knowledge of the machine.

WARNING: Use vapor fuel only.
18. Do not overreach or stand on unstable support. Keep good footing and balance at all times.
19. Do not operate this machine when fatigued or under the influence of alcohol, prescription medications, or drugs.
20. Follow the maintenance instructions specified in the manual.
21. Do not replace LP tank while machine is running. Serious injury could result.

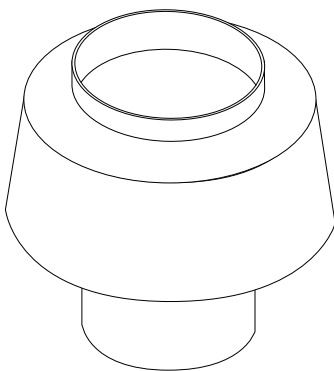
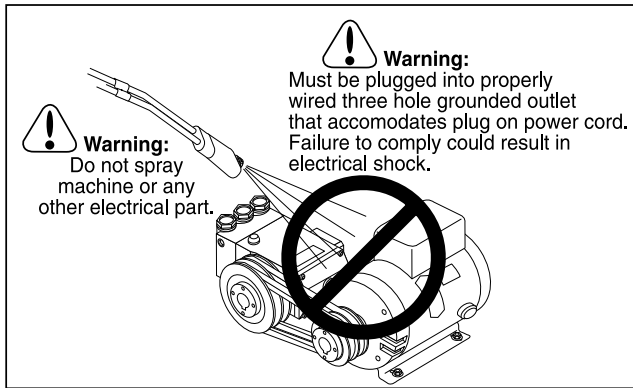
IMPORTANT SAFETY INFORMATION

23. Never expose a spark or flame where there may be unburned gas present.
24. Install the machine 18" above the floor and about 2 feet from wall providing adequate ventilation and space.
25. When making repairs disconnect from electrical source and shut off gas valve.
26. Install this machine on non combustibile flooring.
27. Do not allow acids, caustic or abrasive fluids to pass through the pump.
28. Never run pump dry or leave spray gun closed longer than 1-2 minutes.

WARNING: If connection is made to portable water supply, a back flow device must be provided.

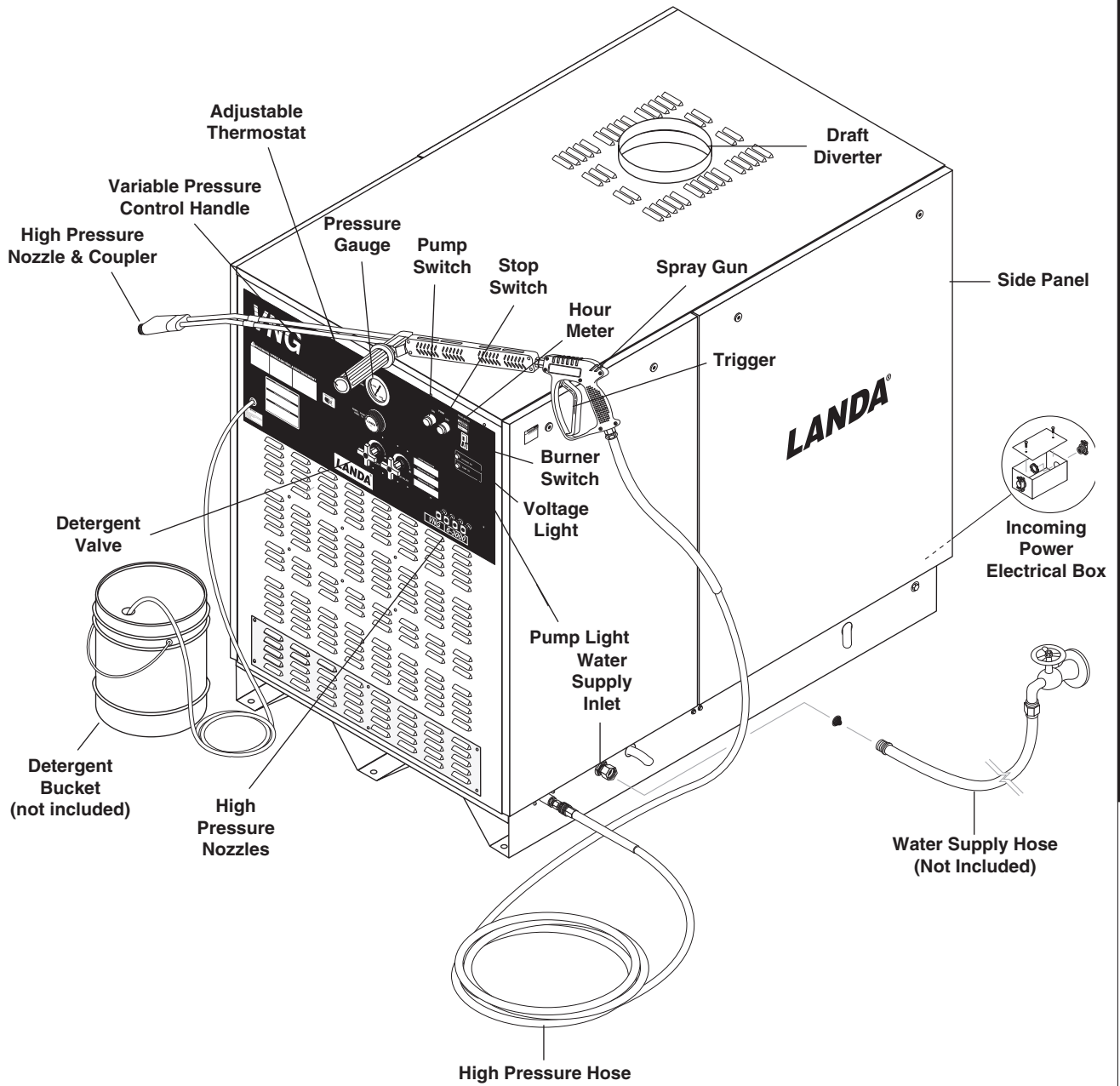


Follow the maintenance instructions specified in the manual.



Example Of Down Draft Diverter For Gas Fired Machines

COMPONENT IDENTIFICATION



INSTALLATION

Place machine in a convenient location providing ample support, drainage and room for maintenance.

Location:

This machine is certified for indoor installation. Its location should protect the machine from damaging environmental conditions, such as wind, rain and freezing.

1. The machine should be run on a level surface where it is not readily influenced by outside sources such as strong winds, freezing temperatures, rain, etc. The machine should be located considering accessibility of the components and the refilling of detergents, adjustments and maintenance. Normal precautions should be taken by operator of machine to prevent excess moisture from reaching power machine or electrical controls.
2. It is recommended that a partition be made between wash area and machine to prevent direct spray from spray gun from coming in contact with machine. Excess moisture reaching pressure washer or electrical controls will reduce life of machine and may cause electrical shorts.
3. During installation of machine, beware of poorly ventilated locations or areas where exhaust fans may cause an insufficient supply of oxygen. Sufficient combustion can only be obtained when a sufficient supply of oxygen is available for the amount of fuel being burned. If it is necessary to install a machine in a poorly ventilated area, outside fresh air may have to be piped to burner and a fan installed to bring air into area.
4. Do not locate near any combustible material. Keep all flammable material at least 20 feet away. Allow enough space for servicing the machine. Local code will require certain distances from floor and walls. (Two feet away should be adequate.)

AVOID SMALL LOCATIONS OR AREAS NEAR EXHAUST FANS.

Gas Codes:

Confer with local gas company and with proper municipal officials regarding any specific code or regulations governing the installation. The installation must conform to local codes.

Electrical:

The machine, when installed, must be electrically grounded in accordance with local codes. Check for proper power supply using a volt meter; check the serial plate for the correct requirements.

Gas Piping:

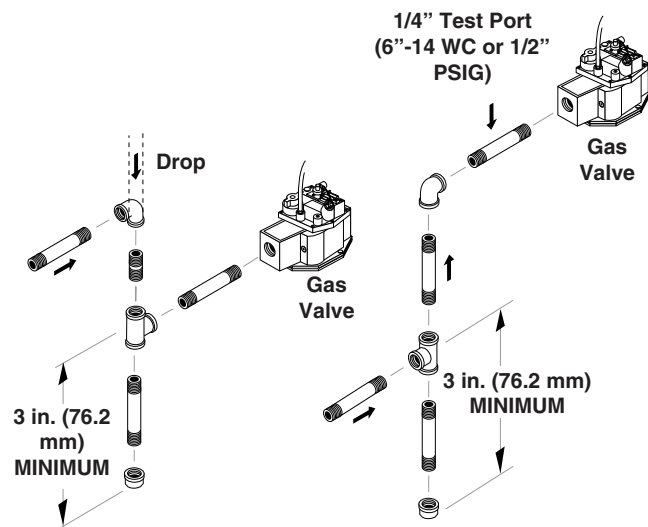
All piping must comply with local codes and ordinances of the National Fuel Gas Code. A sediment trap or drip leg must be installed in the supply line to the burner. See figure 1.

A union shall be installed in the gas line adjacent to and upstream from the control manifold and downstream from the manual main shut-off valve.

A 1/8" N.P.T. plugged tapping accessible for test gauge connection shall be installed immediately upstream of the gas supply connection for the purpose of determining the gas supply pressure to the burner, and to prevent damage to gas valve.

If a manual gas shut off valve is not in the gas supply line within six feet of the machine and in an accessible location, one shall be installed.

Figure 1: Drip Leg

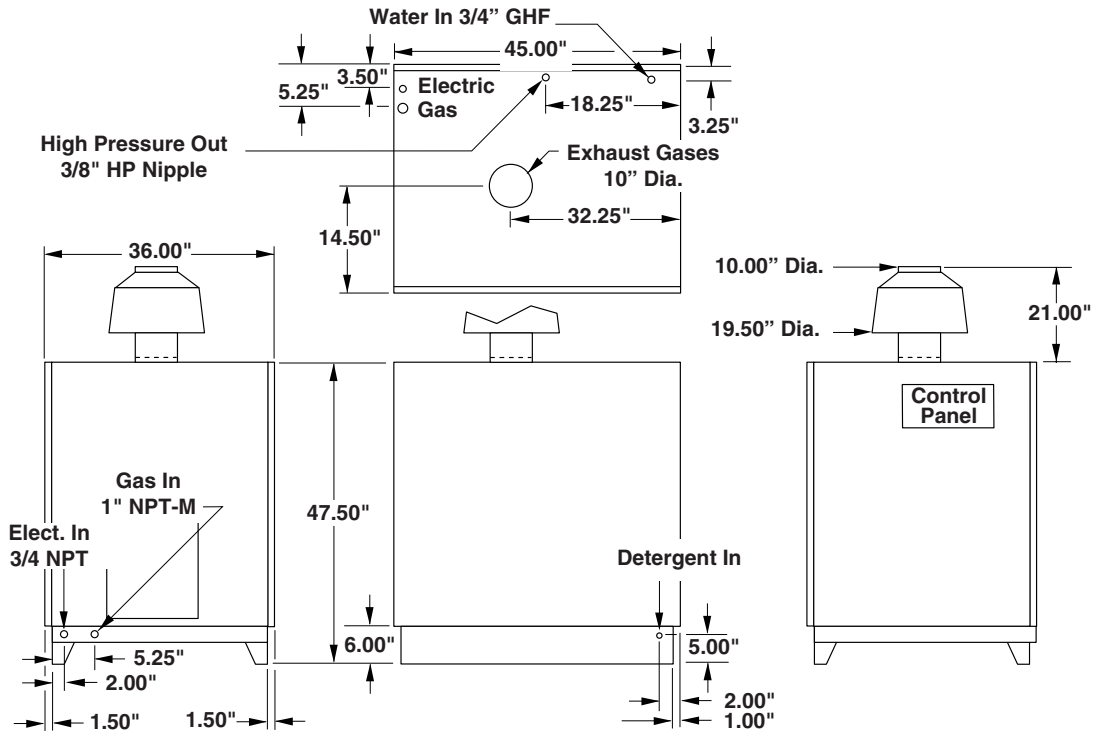


Sediment trap (drip leg) must be installed in the supply line.

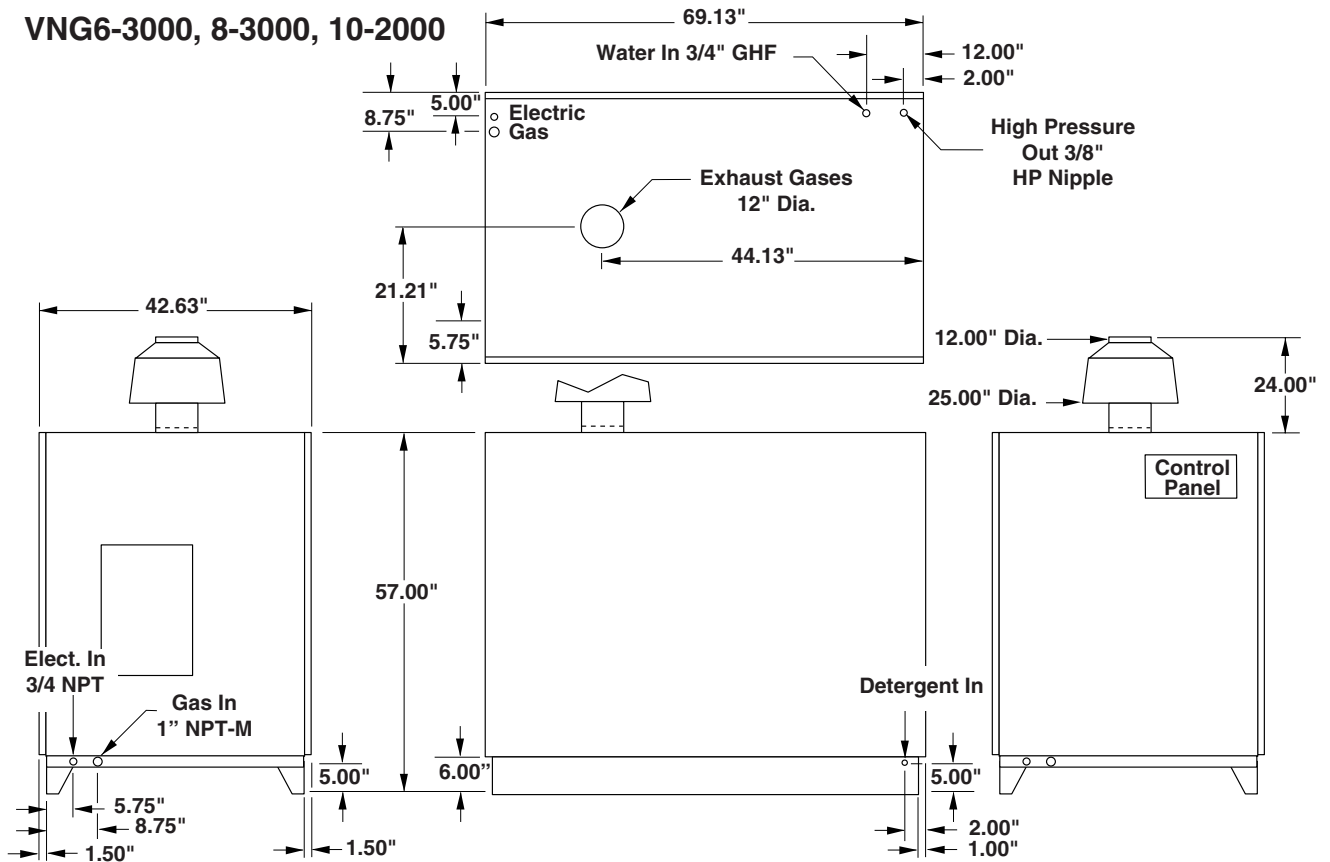
A manual shut-off valve shall be installed in the gas supply line external to the appliance. See Figure 2. The gas line should be a separate supply direct from the meter to the burner. It is recommended that new pipe be used and located so that a minimum amount of work will be required in future servicing. The piping should be installed to be durable, substantial and gas tight. It should be clear and free from cutting burrs and defects in structure of threading. Cast iron fittings or aluminum tubing should not be used for the main gas circuit. Joint compounds (pipe dope) should be used sparingly on male threads only and be approved for all gases.

INSTALLATION

VNG4-2000, 4-3000, 4-4000

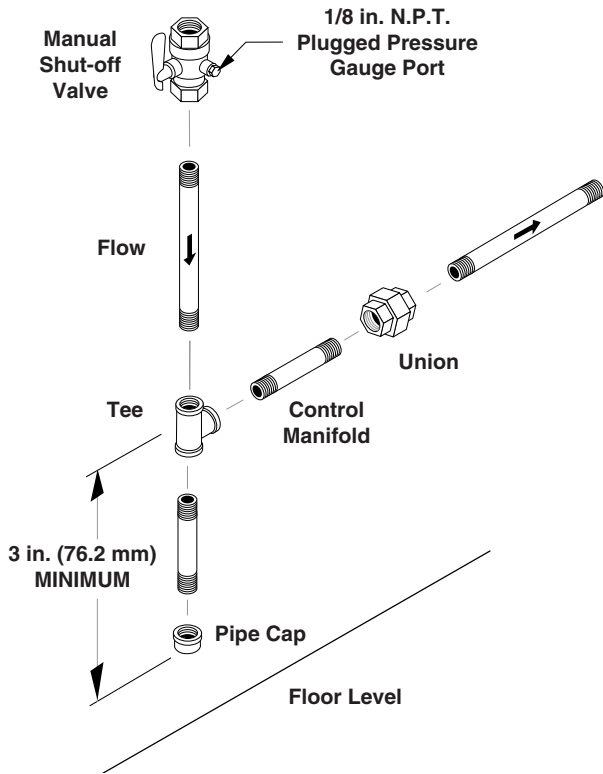


VNG6-3000, 8-3000, 10-2000



INSTALLATION

Figure 2: Union Location



Location of union and drip leg for connecting conversion burner to house piping.

Propane Gas:

The following pipe sizes should be used between the regulator and the gas valve on the burner.

Distance From Regulator	Pipe Size
0 - 50'	1" 1 PS
50' - 100'	1-1/2" 1 PS
100' - 200'	1-3/4" 1 PS

Natural Gas:

The following pipe sizes should be used between the meter and the cleaner.

Distance From Regulator	Pipe Size
0 - 50'	1-1/2" 1 PS
50' - 100'	2" 1 PS
100' - 200'	2-1/2" 1 PS

Venting:

Because this machine is installed indoors, regulations or ventilation concerns may call for a chimney or furnace pipe.

When venting the machine, if the machine is to be in an enclosed area with a stack on it, be sure the flue pipe is the same size as the stack on the machine. Poor draft will cause the machine to soot and not operate efficiently. When placing the machine for installation, keep in mind that the machine should be positioned in such a manner that the stack will be as straight as

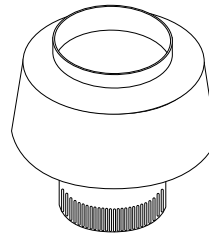
possible and protrude through the roof of the building at a proper location and at sufficient height to eliminate down draft. The flue pipe of a gas fired machine shall be installed with a down draft diverter.

Input - BTU Per Hour	Draft Hood & Flue Pipe Size
410,000 - 600,000	10 inch
600,000 - 750,000	12 inch

Draft Diverter:

The draft diverter (figure 3) should be installed at least one (1) foot above the heating coil. The diverter enhances the draft through the burner by severing the chimney effect created in sections of furnace pipe positioned below. It also helps prevent freezing of the coil due to wind chill factors.

Figure 3

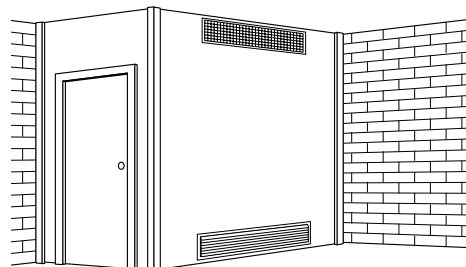


Optional

When the pressure washer is installed in a tightly closed room without ventilation openings to the outdoors or other rooms, provisions shall be made for supplying air for combustion through special openings, one near the floor line and the other near the ceiling, each to be sized on the basis of one square inch or more of free area for each 1,000 BTU input per hour. See Figure 4.

When a room is of unusually tight construction and has a ventilating fan, which may be used for exhausting air to outdoors - or has a vented fireplace - it is recommended that combustion air be supplied to the enclosed room through intakes extending to the outside of the building and terminating in downturned fittings, suitably arranged to prevent obstruction from snow or rain, and including a protecting screen not smaller than 1/4 inch mesh.

Figure 4



Ventilating Air Opening 1 sq. in. for each 1000 BTU per hour input. Illustration showing air openings necessary to supply air for combustion when heating appliance is installed in an enclosed room.

INSTALLATION

Water Source:

Water source for machine should be supplied by a 5/8" I.D. garden hose with a city water pressure of not less than 30 psi. If the water supply is inadequate, or if the garden hose is kinked, the machine will run very rough and the burner will not fire.

Water Connection:

Connect the high pressure hose by pulling the coupler collar back and then inserting it onto the discharge nipple. Secure it by pushing the collar forward.

Attach the wand into the trigger spray gun using teflon tape on the pipe threads to avoid leaks.

Inspection and Testing Gas Piping:

The building structure should not be weakened by installing the gas piping. The piping should not be supported by other piping, but should be firmly supported with gas hooks, straps, bands or hangers. Butt or lap welded pipe should not be run through or in an air duct.

Before turning gas under pressure into piping, all openings from which gas can escape should be closed. Immediately after turning on gas, the system should be checked for leaks. This can be done by watching the 1/2 cubic foot test dial and allowing 5 minutes to show any movement, or by soaping each pipe connection and watching for bubbles. If a leak is found, make the necessary repairs and repeat the above test.

Defective pipes or fittings should be replaced and not repaired. Never use a flame or fire in any form to locate gas leaks; use a soap solution.

After the piping and meter have been checked completely, purge the system of air. **DO NOT** bleed the air inside an enclosed room.

The appliance and its individual shut-off valve must be disconnected from the gas supply piping system during the pressure testing of that system at test pressure in excess of 1/2 psig or damage to the gas valve will occur.

Gas Pressure:

The ideal incoming gas pressure is 11 w.c.i. (water column inches –minimum 6 w.c.i., maximum 14 w.c.i. or 1/2 psig). The correct operating manifold pressure for natural gas is 3.5 w.c.i. The operating manifold pressure for propane gas is 11 w.c.i. The gas valve pressure regulator can be adjusted between 3 and 4 w.c.i. natural gas or 6 and 11 w.c.i. for propane.

If the desired input rating cannot be obtained within the above manifold pressure adjusting range, the next size larger or smaller burner orifice should be used.

WARNING & CHECK LIST

WARNING

1. Installation or servicing of gas appliances and controls must only be performed by qualified personnel. After installation or servicing, test manual valve, operating valves, pressure regulator, and automatic shut-off valve for proper operation.
2. Install in a suitable dry location. The machine must be located in an area properly protected from the weather.
3. Shut off gas and electricity before starting installation or service. Turn gas back on to test or operate.
4. **DO NOT** connect pressure washer before pressure testing gas piping. Damage to gas valve may result (6 - 14 w.c.i. or 1/2 psig).
5. **DO NOT** insert any object other than suitable pipe or tubing in the inlet or outlet of the gas valve. Internal damage may occur and result in a hazardous condition.
6. **DO NOT** grip gas valve body with a pipe wrench or vise. Damage may result causing gas leakage. Use inlet or outlet bosses or a special body wrench.
7. **DO NOT** short the gas valve terminals.
8. **DO NOT** allow any flame to impinge on the regulator vent tubing if supplied. It may clog and cause gas valve malfunction.
9. **DO NOT** use the gas cock to adjust the gas flow.
10. In case main burner fails to shut off, turn off gas supply.
11. Keep all combustible materials away from gas appliances. **DO NOT** allow lint or dust to collect in burner area.
12. Dials must only be operated by hand. Never use pliers, wrenches or other tools to turn dials.
13. Leak test with a soap solution after installation or service with the main burner on. Coat pipe and tubing joints, gaskets, etc. Bubbles indicate leaks.
14. If the machine is installed in an enclosed room, care should be taken to ensure that an adequate supply of air is available for combustion and ventilation (1 sq. inch per 1000 BTU).

INSTALLATION

CHECK LIST BEFORE STARTING:

	YES	NO
Has gas supply been inspected by an authorized contractor to meet local codes?		
Is machine protected from downdraft and excessive wind?		
Is machine shielded from moisture or water spray?		
Is the voltage correct and are the circuit breaker and supply cord adequate according to specifications and serial plate notation?		
Is the machine electrically grounded?		
Is there ample water supply?		
Have all flammable liquids or gases been removed from installation location?		
Is there adequate gas supply for the BTU rating of the burner?		
Is incoming gas supply pressure between		
6 - 14 water column inches or 1/2 PSIG?		
Has the proper gas regulator been installed for pressure and volume?		
Is the machine properly vented to allow adequate air flow?		
Are the propane tanks large enough, according to rating to prevent freezing?		
Have gas lines been checked for gas leaks?		
Have gas lines been checked with local codes?		
Have all operators using this machine been instructed properly & have they read the manual?		
Has the machine been installed according to operator's manual instructions?		

CAUTION: If "NO" has been checked on any of the above questions, do not operate the machine.

FOR YOUR SAFETY READ BEFORE LIGHTING

WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance has an electronic ignition system. When lighting the pilot, follow these instructions exactly.

B. BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

FOR YOUR SAFETY

"WHAT TO DO IF YOU SMELL GAS"

- Do not try to light any appliance.
- Do not touch any electrical switch, do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

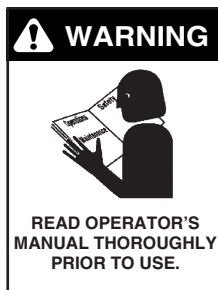
C. Use only your hand to turn the gas control. Never use tools. If the knob will not push in or turn by hand, don't try to repair it; call a qualified service technician. Forced or attempted repair may result in a fire or explosion.

D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

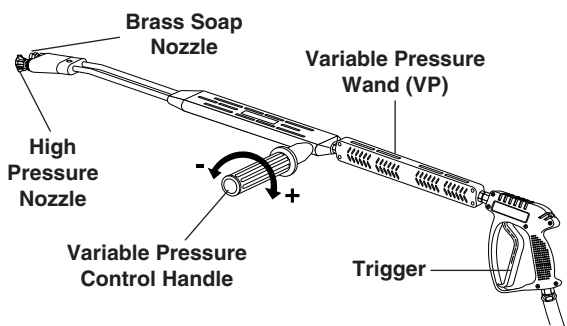


CAUTION: This machine is equipped with an electronic ignition system. Lighting of the pilot is accomplished through electronic spark ignition. Do not attempt to light the appliance manually as a burn injury or electrical shock may result.

OPERATION INSTRUCTIONS



1. **STOP!** Read operator's manual before operating this machine. Failure to read operation and warning instructions may result in personal injury or property damage.
2. Turn all switches off.
3. Review installation instructions.
4. Connect water supply hose to the inlet connector and turn water on. Check for water leaks and tighten as needed.
5. Turn on the main gas supply and turn the gas valve control knob into the "ON" position (see page 14).
6. Close the steam knob and detergent valve by turning clockwise and setting the temperature control knob between 200°- 225°F.
7. Before installing nozzle, turn on machine allowing water to run from the end of the wand until clear.
8. Attach the desired high pressure nozzle into the wand quick coupler by pulling the coupler collar back and inserting the nozzle. Secure nozzle by pushing the coupler collar forward.
9. Turn the pump switch on to start the machine. When spray gun is closed a time delay feature will turn the machine off.
10. For hot water, push the burner switch to the ON position and pull the trigger on the spray gun. Sparking begins, the pilot gas ignites and then the ignitor/sensor will turn the main burner on. The pump switch must be turned ON before the burner and remote detergent switches will turn on.
11. To apply detergent, open the detergent valve counterclockwise making sure that the detergent pick up tube is in the detergent solution and not sucking air. With optional remotes, the detergent switch needs to be turned to the OFF position before turning to the ON position to activate the detergent solenoid.
12. When steam is needed, turn the steam knob counterclockwise. Then turn the temperature adjustment knob to 275°F.
13. **To Stop:** Turn the burner switch off and place the detergent pick-up tube into fresh water. Open the detergent valve and trigger spray gun allowing detergent lines to be flushed and the burner to cool. Otherwise, coil damage will result.
14. After water has cooled, turn pump switch to OFF position. If the machine is going to be off for an extended period of time, put the manual valve on the gas valve into the OFF position.
15. Turn the water off. Protect from freezing.



Selection of high or low pressure is accompanied by turning the handle. Note: High pressure nozzle must be inserted at end of wand to obtain high pressure. To apply soap read operator's manual.

GENERAL CLEANING TECHNIQUES

CLEANING TECHNIQUES

Pre-rinse cleaning surface with fresh water. Place detergent suction tube directly into cleaning solution and apply to surface at low pressure (for best results, limit your work area to sections approximately 6 feet square and always apply detergent from bottom to top). Allow detergent to remain on surface 1-3 minutes. Do not allow detergent to dry on surface. If surface appears to be drying, simply wet down surface with fresh water. If needed, use brush to remove stubborn dirt. Rinse at high pressure from top to bottom in an even sweeping motion keeping the spray nozzle approximately 1 foot from cleaning surface. Use overlapping strokes as you clean and rinse any surface. For best surface cleaning action spray at a slight angle.

Recommendations:

- Before cleaning any surface, an inconspicuous area should be cleaned to test spray pattern and distance for maximum cleaning results.
- If painted surfaces are peeling or chipping, use extreme caution as pressure washer may remove the loose paint from the surface.
- Keep the spray nozzle a safe distance from the surface you plan to clean. High pressure wash a small area, then check the surface for damage. If no damage is found, continue to pressure washing.

CAUTION - Never use:

- Bleach, chlorine products and other corrosive chemicals
- Liquids containing solvents (i.e., paint thinner, gasoline, oils)
- Tri-sodium phosphate products
- Ammonia products
- Acid-based products

These chemicals will harm the machine and will damage the surface being cleaned.

RINSING

It will take a few seconds for the detergent to clear. Apply safety latch to spray gun. Select and install desired high pressure nozzle. **NOTE:** You can also stop detergent from flowing by removing detergent siphon tube from bottle.

MAINTENANCE

PREVENTATIVE MAINTENANCE

1. Check to see that water pump is properly lubricated.
2. Follow Winterizing Procedures to prevent freeze damage to the pump and coils.
3. Always neutralize and flush detergent from system after use.
4. If water is known to be high in mineral content, use a water softener in your water system or de-scale as needed.
5. Do not allow acidic, caustic or abrasive fluids to be pumped through the system.
6. Always use high grade quality Landa cleaning products.
7. Never run pump dry for extended periods of time. Shut off timer will be set for two minutes.
8. Periodically delime coils per instructions.

It is advisable, periodically, to visually inspect the burner. Check air inlet to make sure it is not clogged or blocked. Wipe off any oil spills and keep this equipment **clean and dry**.

The areas around the Landa washer should be kept clean and free of combustible materials, gasoline and other flammable vapors and liquids.

The flow of combustion and ventilating air to the burner must not be blocked or obstructed in any manner.

Note: Pump damage may occur if ran in bypass longer than two minutes.

MAINTENANCE AND SERVICE

Spray Nozzles

Each machine is equipped with one or more spray nozzles, depending on model. Different spray nozzles are calibrated for each machine depending on the flow and pressure of that particular model. Spray nozzles vary in bore size and angle of spray. Popular spray angles are 0°, 15°, 25°, 40°. When ordering, please specify size and angle of nozzle. Nozzle size for each machine is located on the serial plate.

Unloader Valves:

Unloader valves are preset and tested at the factory before shipping. Occasional adjustment of the unloader may be necessary to maintain correct pressure.

Call your Local Dealer for Assistance. Tampering with the factory setting may cause personal injury and or property damage, and will void the manufacturer's warranty.

Winterizing Procedure:

Damage due to freezing is not covered by warranty. Adhere to the following cold weather procedures whenever the washer must be stored or operated under freezing conditions.

During winter months, when temperatures drop below 32°F, protecting your machine against freezing is necessary. Siphoning a small amount of antifreeze into the system is recommended. This is done by pouring a 50:50 mix of antifreeze and water into the float tank and then siphoning 100% antifreeze through the detergent line with the pump on. If compressed air is available, an air fitting can be screwed into the float tank strainer fitting and by injecting compressed air, all water will be blown out of the system. The use of a draft diverter will prevent the wind chill factor from freezing the coil.

High Limit Hot Water Thermostat:

For safety, each machine is equipped with a high limit control switch. In the event the temperature of the water should exceed its operating temperature, the high limit control will turn the burner off until the water cools.

Pumps:

Use only SAE 30 weight non-detergent oil. Change oil after first 50 hours of use. Thereafter, change oil every three months or at 500 hour intervals. Oil level should be checked through use of the dipstick found on the top of the pump or by the red dot visible through the oil gauge window. Oil should be maintained at that level.

HEATING COIL

Condensation from Heating Coil

When cold water is being pumped into the water heater coil, and the burner is on, condensation will form on the coil and drip down into the burner compartment, giving the appearance of a leaking coil, particularly on cold humid days.

To Check Water Heater Coil for Leaks:

With the main burner "OFF" start machine and allow it to run a few minutes. Look into the burner compartment with a drop light or flashlight. If no leaks are visible, then water dripping from coil is from condensation.

MAINTENANCE & SERVICE

Deliming Coil:

In alkaline water areas, lime deposits can accumulate rapidly inside the coil pipes. This growth is increased by the extreme heat build up in the coil. The best preventative for liming conditions is to use high quality cleaning detergents. In areas where alkaline water is an extreme problem, periodic use of Landa Deliming Powder will remove lime and other deposits before coil becomes plugged. (See Deliming Instructions for use of Landa Deliming Powder.)

Periodic coil deliming is recommended.

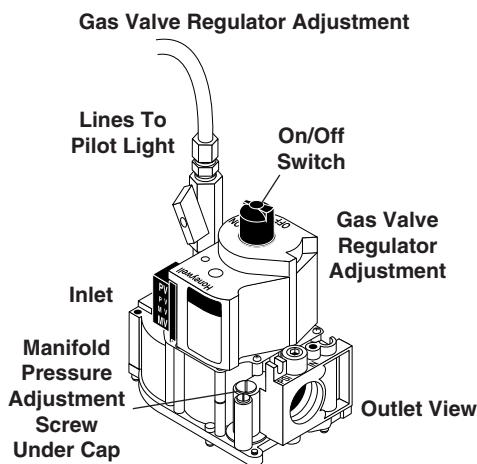
1. Fill a container with 4 gallons of water, then add 1 lb. of deliming powder. Mix thoroughly.
2. Remove nozzle from spray gun assembly and put spray gun into container.
3. Attach a short section (3-5 ft.) of garden hose to machine to siphon solution from an elevated container or add mixture to the float tank. Turn pump switch on allowing solution to be pumped through coil and back into the container. Solution should be allowed to circulate 2-4 hours.
4. After circulating solution flush entire system with fresh water. Reinstall nozzle in spray gun.

GAS VALVE REGULATOR ADJUSTMENT

Adjustment of the built-in regulator isn't normally necessary, since it is preset at the factory. However, field adjustment may be accomplished as follows:

1. Attach manometer at pressure tap port.
2. Remove regulator adjustment screw cap.
3. With a small screwdriver, rotate the adjustment screw clockwise to increase or counterclockwise to decrease gas pressure.
4. Replace regulator adjustment screw cap (see Figure 5).

Figure 5



Pressure Relief Valve

Each machine is equipped with a relief valve to relieve pressure in the system when higher than normal operating pressures are encountered. If operating pressure of machine is found to be normal and relief valve continues to leak, repair or replace the valve. **CAUTION:** Relief valve can become obstructed by deposits and must be unscrewed at least once per year to allow discharge.

PROPANE GAS

General Safety Precautions

Have a qualified gas service person assist in any gas burner installation or service. Few maintenance people or mechanics are knowledgeable in gas controls or related safety practices. Propane gas is heavier than air; unburned propane gas will gravitate to the floor rather than rise out of the stack. Hence, adequate floor space and good ventilation are especially important with propane systems.

Gas Pressure Requirements

All propane fired machines operate on vapor propane fuel only. They are designed to operate at a pressure of 11 w.c.i. (between 1/3 and 1/2 of one psi), and are often operated at even higher pressures when extra heat is needed.

Exterior regulators are needed to control the system. Propane bottles are not included with the machine. A high pressure regulator should be installed on the propane bottle and a low pressure regulator attached to the pressure washer.

Propane Cylinder Capacity

An important consideration with propane systems is the capacity of the supply cylinder relative to the needs of the burner. The burner operates on propane as a vapor gas. As gas is used from the propane cylinder, the liquid in the cylinder boils to maintain vapor gas pressure. This boiling process cools the liquid, and in a heavy, continuous-demand situation, the liquid temperature can fall to the point at which it cannot provide vapor gas as rapidly as is needed. In this case, it may be necessary to warm the propane cylinder by directing a warm spray, not over 120°F, on the cold cylinder or by manifolding two propane bottles together to increase total vaporization capacity. It is recommended that a minimum 100 lb. vapor propane bottle be used on the machine, depending on the length of running time desired.

BURNER FEATURES

Operated Automatic Valve

This machine is equipped with an Intermittent Pilot Ignition System. This system is designed to eliminate the need for a constant burning pilot. Lighting of the pilot is accomplished through electronic spark ignition each time the burner and flow switch call for heat. The pilot is not burning when there is no call for heat. Do not attempt to light the appliance manually as a burn injury or electrical shock may result. The pilot light will remain on and the main gas valve is turned off when the spray gun is closed.

Care of Main Burner

Due to condensation from heater coils dripping down on the burners, scale build-up may occur in the burner jet orifices.

1. TO REMOVE BURNER MANIFOLD FROM WATER HEATER COIL:

Turn off the gas to the main burner by turning the knob to the "OFF" position on the gas valve and the main gas supply.

Disconnect the pilot and ignition lines from the gas valve. Disconnect union in main burner line below thermostat. Slide burner manifold out through shell opening.

2. TO CLEAN BURNER JETS:

Select proper size drill for type gas involved. Use pin vise to hold drill and ream out each jet orifice.

CAUTION: Do not ream out orifices to a larger size.

If the water heater will be exposed to freezing weather, an anti-freeze solution should be circulated through the coil by whatever means are available for the particular system the water heater is used on.

To Adjust Pressure Regulator

Adjustment of the pressure regulator is not normally necessary since it is preset at the factory. However, field adjustment may be accomplished as follows:

1. Manometer attachment may be accomplished at the pressure tap plug.
2. Remove regulator adjustment screw cap (see Figure 5, page 14).
3. With small screwdriver, rotate adjustment screw clockwise to increase, or counterclockwise to decrease pressure.
4. Replace regulator adjustment screw cap.

PREVENTATIVE MAINTENANCE

This pressure washer was produced with the best available materials and quality craftsmanship. However, you as the owner have certain responsibilities for the correct care of the equipment. Attention to regular preventative maintenance procedures will assist in preserving the performance of your equipment. Contact your Landa dealer for maintenance. Regular preventative maintenance will add many hours to the life of your pressure washer. Perform maintenance more often under severe conditions.

MAINTENANCE SCHEDULE		
Pump Oil	Inspect	Oil level daily
	Change	After first 50 hours, then every 500 hours or annually
Check and Tighten Belts		Every 3 months
Remove Burner Soot		Annually
Burner Adjustment/Cleaning		Annually
Clean Burner Nozzles		Annually
Descale Coil		Annually (More often if required)
Replace High Pressure Nozzle		Every 6 months
Replace Quick Couplers		Annually
Clean Water Screen/Filter		Weekly
Replace HP Hose		Annually (If there are any signs of wear)
Grease Motor		Every 10,000 hours

OIL CHANGE RECORD

Date Oil Changed Month/Day/Year	Estimated Operating Hours Since Last Oil Change

TROUBLESHOOTING - BURNER

PROBLEM	POSSIBLE CAUSE	SOLUTION
FLOW & BURNER SWITCH ON; NO SPARK, NO PILOT GAS	A. No main power	With power switch on, open trigger on spray gun and set your test meter to the 24 volt scale. Probe terminals 24V and 24V(GND). If you do not read 24 volts, the problem is not the ignition system. Perform normal system checks of main power, transformer, thermostat and the limit control. If you do read 24 volts at TH and GND, the problem is in the ignition system. Check for loose or defective wiring. If wiring is good, replace the ignition control unit.
	B. Faulty transformer	
	C. Faulty burner & flow switch	
	D. Faulty ignition control unit	
HAVE SPARK, NO PILOT GAS FLOW	Main gas supply turned off	Set test meter to 24 volt scale.
		1. Be sure main gas valve (gas cock or selector arm) is turned on.
		2. With gas on and system sparking, probe terminals PV and 24V(GND). If pilot gas does not flow with 24 volts at these terminals, replace gas valve.
		3. Probe terminals PV and MV/PV. If 24 volts not present, replace ignition control box.
HAVE PILOT GAS, NO SPARK	A. Defective ignitor/sensor and or its wiring	Set test meter to ohm scale.
		1. Disconnect the wire from the IGN terminal on the ignition control unit.
	B. Faulty ignition control unit	2. Touch one meter probe to the tip of the ignitor/sensor rod in the pilot. Touch the other probe to the quick connect at the other end of ignitor/sensor wire.
		3. If you have continuity from the tip of the ignitor/sensor rod to the connector and no spark, replace the ignition control unit.
		4. If you do not have continuity through wire and the ignitor/sensor, check for a loose wire connection in the wire. Repair as needed.
		5. Check to see if spark shorts to burner ring through a cut in the ignitor wire.

TROUBLESHOOTING - BURNER

PROBLEM	POSSIBLE CAUSE	SOLUTION
HAVE PILOT FLAME, MAIN BURNER WILL NOT TURN ON	Faulty main valve coil in the gas valve	Set test meter to 24 volt scale.
	Faulty ignitor/sensor and/or its wiring	With pilot flame on ignitor/sensor, probe terminals MV and MV/PV on the ignition control unit. If you read 24 volts here, but not at the gas valve, there is a loose wiring connection. Repair or replace as needed.
	Ground wire not attached to machine chassis	If you do read 24 volts at MV and MV/PV and the pilot flame is impinging on the ignitor/sensor rod, the problems may be:
	Faulty ignition control unit	a. Faulty ignitor/sensor and/or its wiring.
		b. Faulty ignition control unit.
		Set test meter to the ohm scale. Turn burner switch off.
Check continuity through the green ground wire and its connections.		
	Reconnect the ignitor/sensor wire and the ground wire.	
	Turn burner switch on. With the pilot burning and the flame on the ignitor/sensor rod, the main burner should turn on. If it does not, replace the ignition control unit.	
SHORT-CYCLING OF MAIN BURNER. MAIN BURNER TURNS OFF BEFORE THE BURNER SWITCH OR FLOW SWITCH IS TURNED OFF	Draft condition pulls flame away from ignitor/sensor rod.	Check the thermostat by bypassing at terminals P1 & 1.
		Set thermostat high. With main burner on, observe the pilot flame impingement on the ignitor/sensor.
	Faulty thermostat or water temperature is too high	If pilot flame is small and draft condition pulls flame from ignitor sensor rod, the burner will turn off and then on again. a. Adjust pilot flame higher or clean pilot orifice. b. Bend ignitor/sensor rod closer to pilot flame.
		If flame impingement on the ignitor/sensor is stable and the system short-cycles, check the limit switch.
		Set test meter to 110 volt scale; a. When the system cycles off, probe the switch terminals of the limit switch. b. If you read 24V across the switch terminals the limit switch is open. Replace the limit switch.
	A pilot flame set too high will also cause burner to short cycle. Pilot flame lifts over ignitor/sensor.	

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
LOW OPERATING PRESSURE	Faulty pressure gauge	Install new gauge.
	Insufficient water supply	Use larger garden hose; clean filter washer at water inlet.
	Old, worn or incorrect spray nozzle	Match nozzle number to machine and/or replace with new nozzle.
	Belt slippage	Tighten or replace; use correct belt.
	Plumbing or hose leak	Check plumbing.
	Faulty or misadjusted unloader valve (where applicable)	Adjust unloader for proper pressure. Install repair kit when needed.
	Worn packing in pump	Install new packing kit.
	Fouled or dirty inlet or discharge valves in pump	Clean inlet and discharge valves.
	Worn inlet or discharge valves	Replace with valve kit.
	Obstruction in spray nozzle	Remove obstruction.
	Leaking pressure control valve (where applicable)	Rebuild or replace as needed.
	Detergent metering valve left open sucking air, or faulty metering valve	Close and/or replace metering valve.
	Slow motor RPM	Check incoming voltage.
LOW WATER TEMPERATURE	Improper size of gas lines	See pages 7-8 for sizing of gas lines.
	Low gas pressure	Increase gas pressure to machine.
	Improper pressure regulator	Specify BTU, building gas pressure and 11 w.c.i. to machine for correct sizing of regulator.
	Low gas valve pressure	Increase gas pressure as described on page 14.
	Soot buildup on coils not allowing heat transfer	Clean coils.
	Improper burner nozzle	See exploded view parts list.

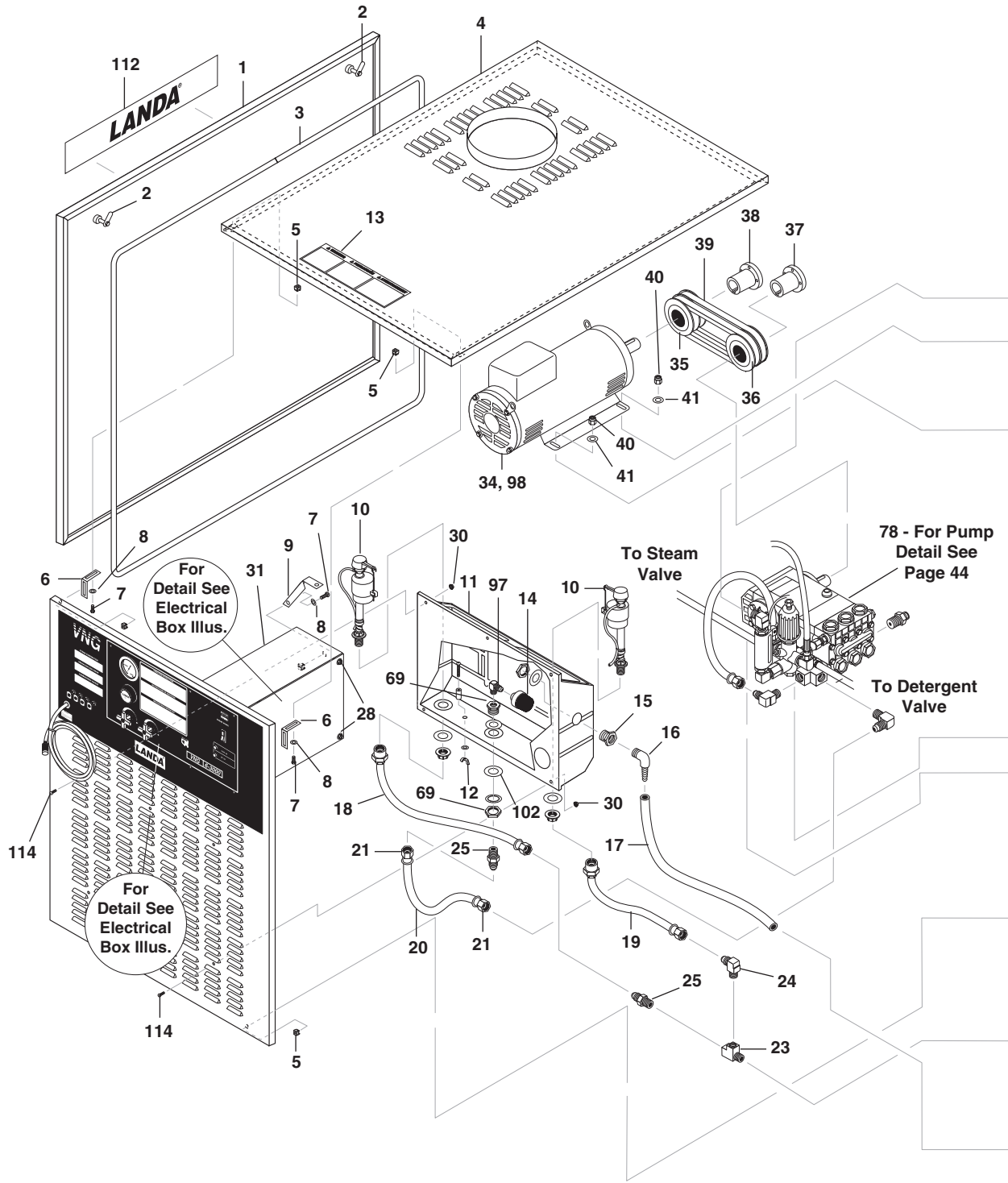
TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
WATER TEMPERATURE TOO HOT	Incoming water to machine warm or hot	Lower incoming water temperature.
	Gas pressure too high	Call local gas company.
	Detergent line sucking air	Tighten all clamps. Check detergent lines for holes.
	Defective high limit switch	Replace.
	Incorrect burner nozzle size	See exploded view parts list.
	Insufficient water supplied	Check water G.P.M. to machine.
	Restricted water flow	Check nozzle for obstruction, proper size.
DETERGENT NOT DRAWING	Air leak	Tighten all clamps. Check detergent lines for holes.
	Detergent metering valve packing not tight or packing worn	Tighten nut. Replace valve or packing.
	Filter screen on detergent suction hose plugged	Clean or replace.
	Dried up detergent plugging metering valve	Disassemble and clean thoroughly.
	High viscosity of detergent	Dilute detergent to specifications.
	Restriction behind float tank screen removed	Install restriction.
	Hole in detergent line(s)	Repair hole.
	Strainer basket plugged	Remove and clean.
	Connections on selector valve loose	Put teflon tape on all pipe connections.
	Detergent solenoid not opening (where applicable)	Check flow switch, replace detergent solenoid.
	PUMP RUNNING NORMALLY BUT PRESSURE LOW ON INSTALLATION	Pump sucking air
Valves sticking		Check and clean or replace if necessary.
Unloader valve seat faulty		Check and replace if necessary.
Nozzle incorrectly sized		Check and replace if necessary (see serial plate for proper size).
Worn piston packing		Check and replace if necessary.

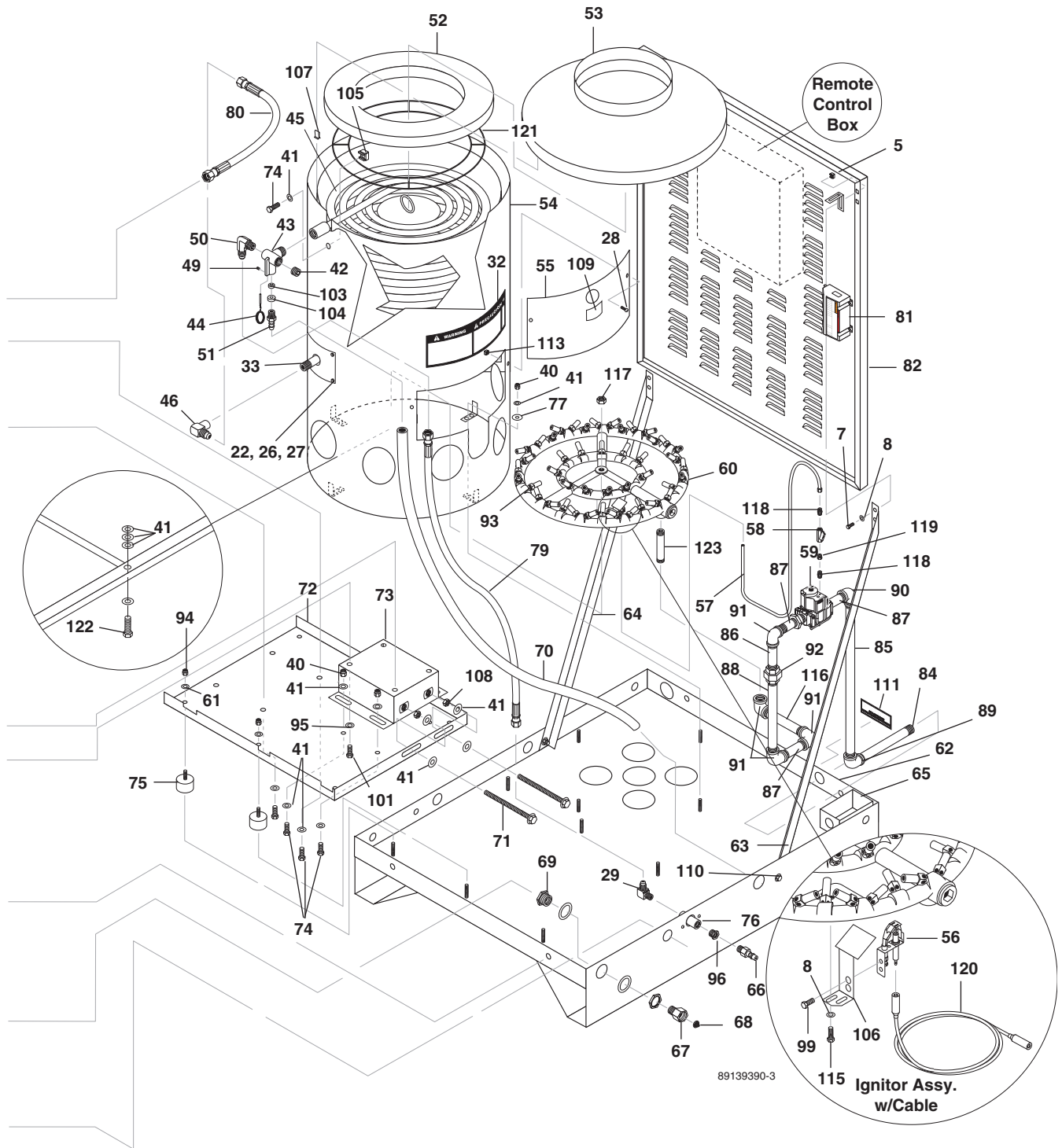
TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
FLUCTUATING PRESSURE	Valves worn	Check and replace if necessary.
	Blockage in valve	Check and replace if necessary.
	Pump sucking air	Check water supply and air seepage at joints in suction line.
	Worn piston packing	Check and replace if necessary.
PUMP NOISY	Air in suction line	Check water supply and connections on suction line.
	Broken or weak inlet or discharge valve springs	Check and replace if necessary.
	Excessive matter in valves	Check and clean if necessary.
	Worn bearings	Check and replace if necessary.
PRESENCE OF WATER IN OIL	Oil seal worn	Check and replace if necessary.
	High humidity in air	Check and change oil twice as often.
WATER DRIPPING FROM UNDER PUMP	Piston packing worn	Check and replace if necessary.
	O-ring plunger retainer worn	Check and replace if necessary.
OIL DRIPPING	Oil seal worn	Check and replace if necessary.
EXCESSIVE VIBRATION IN DELIVERY LINE	Irregular functioning of the valves	Check and replace if necessary.
RELIEF VALVE LEAKS WATER	Relief valves defective	Replace or repair.

EXPLODED VIEW - 4-2000, 4-3000



EXPLODED VIEW - 4-2000, 4-3000



4-2000, 4-3000 EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.912-539.0	Panel, Side VNG-S	2
2	8.719-066.0	Latch, Vise Action	4
3	9.802-072.0	Trim, w/Sponge	26.5 ft
4	8.912-536.0	Panel, Top VNG-S	1
5	9.802-793.0	Nut, Cage, 1/4" x 16 Gauge	26
6	95-0763034	L-Bracket, VNG	4
7	9.802-700.0	Bolt, 1/4" x 3/4" NC HH	21
8	9.802-802.0	Washer, 1/4" Flat SAE	23
9	8.912-527.0	Brace, VNG Electrical Box	1
10	9.802-185.0	Valve, Float Tank, Vertical	2
11	9.802-084.0	Tank, Plastic, Universal Float	1
12	9.802-106.0	Plug, Float Tank	1
13	9.800-033.0	Label, Warning, Hot Water	1
14	8.707-061.0	Strainer, 1/2" Basket	1
15	9.802-052.0	Bulkhead, 3/4" Polypro	1
16	9.802-050.0	Adapter, 3/4" x 3/4" MT x Insert, 90°	1
17	9.802-261.0	Hose, 3/4" Push-on	2.5 ft.
18	9.802-257.0	Inlet Hose, 30", Water Supply	1
19	8.711-775.0	Inlet Hose, 13", Water Supply	1
20	9.802-259.0	Hose, 1/2" Push-on	1.5 ft.
21	9.802-151.0	Swivel, 1/2" JIC Fem, Push-on	2
22	9.802-798.0	Screw, Tek, #10 x 1/2"	4
23	8.706-860.0	Tee, 1/2" Street	1
24	9.802-131.0	Elbow, 1/2" JIC x 1/2" Pipe 90°	1
25	9.802-128.0	Nipple, 1/2" JIC x 1/2"	2
26	8.933-009.0	Gasket, Burner Plate	1
27	9.803-132.0	Plate, Insulation Retainer	1
28	9.802-764.0	Screw, 10/32" x 3/4" HEX	6
29	9.802-040.0	Elbow, 1/2" JIC x 1/2" 90°	1
30	9.802-695.0	Nut, 10/32" KEPS	6
31	9.802-969.0	Box, Electrical, VNG	1
32	9.800-031.0	Label, Pilot Light Warning	1
33	9.802-014.0	Nipple, 1/2" x 3" Galv. Pipe	1
34		Motor, See Specifications Pages	
35		Pulley, Motor, See Specifications Pages	
36		Pulley, Pump, See Specifications Pages	
37		Bushing, Pump, See Specifications Pages	
38		Bushing, Motor, See Specifications Pages	
39		Belt, See Specifications Pages	
40	8.725-395.0	Nut, 3/8" ESNA	12
41	8.725-394.0	Washer, 3/8" Flat, SAE	36
42	8.706-248.0	Plug, 3/8"	1
43	9.149-003.0	Discharge Manifold	1
44	8.750-095.0	Thermostat, 302°	1
	8.750-096.0	(Knob)	1

ITEM	PART NO.	DESCRIPTION	QTY
45	9.803-135.0	Coil, Dura 20" Dia, Sch 80	1
46	9.802-043.0	Elbow, 1/2", 90°, Female, JIC	1
47	9.802-159.0	Connector, 1/4" Tube x 1/4" MPT	1
48	8.918-421.0	Hose, 1/4" x 36" Gauge	1
49	9.196-012.0	Screw 10-24 x 1/4"	1
50	9.802-039.0	Elbow, 1/2 JIC x 3/8 MPT	1
51	8.707-019.0	Hose Barb, 1/2" Barb x 3/8" MPT, Push-On	1
52	8.930-140.0	Insulation, Top Head, 20"	1
53	9.802-976.0	Top, Burner Wrap, 20"	1
54	8.917-568.0	Wrap, Outer Assy, 20"	1
55	9.802-975.0	Cover, Burner Access, 20" Coil	1
56	9.803-610.0	Pilot, Natural Gas Pilot	1
57	9.802-911.0	Tubing, Aluminum	36"
58	9.802-178.0	Valve, 1/4" Jomar, T-91LP, Ball	1
59	9.803-616.0	Valve, Gas VR8304	1
	9.803-618.0	▲ LPG Regulator Kit (LP Gas Valve Conversion Kit)	1
60	8.718-055.0	Burner Ring Assy, X44, w /#54 Jets	1
	8.718-060.0	Burner Ring Assy, X44, w /#63 Jets (LP Option)	1
61	8.718-980.0	Washer, 5/16" Flat, SAE	6
62	8.912-534.0	Base, VNG, Small	1
63	8.912-541.0	Brace, Left Side, VNG-S	1
64	8.912-540.0	Brace, Right Side VNG-S	1
65	9.802-484.0	Box, Junction 3 Hole, 3/4"	1
	9.802-425.0	▲ Cord, Service 8/3 (4-3A,G)	6 ft.
	9.802-436.0	▲ Cord, Service 10/3 (4-2A,G)	6 ft.
	9.802-437.0	▲ Cord, Service 10/4 (4-3B, C, H)	6 ft.
	9.802-429.0	▲ Cord, Service, 12/4 (4-2B, C, F, H;)	6 ft.
	9.800-040.0	▲ Label, Ground	1
65	8.718-945.0	▲ Screw, #14 x 3/4", Tek	2
	9.802-520.0	▲ Strain Relief, 3/4"	1
	9.802-483.0	▲ Cover, 2" x 4", Metal	1
66	9.802-171.0	Nipple, 3/4" x 3/8", NPT ST Male	1
67	9.802-146.0	Swivel, 1/2" MP x 3/4" GHF	1
68	8.707-055.0	Strainer, Inlet, Garden Hose	1
69	8.707-000.0	Connector, 1/2", Anchor	1

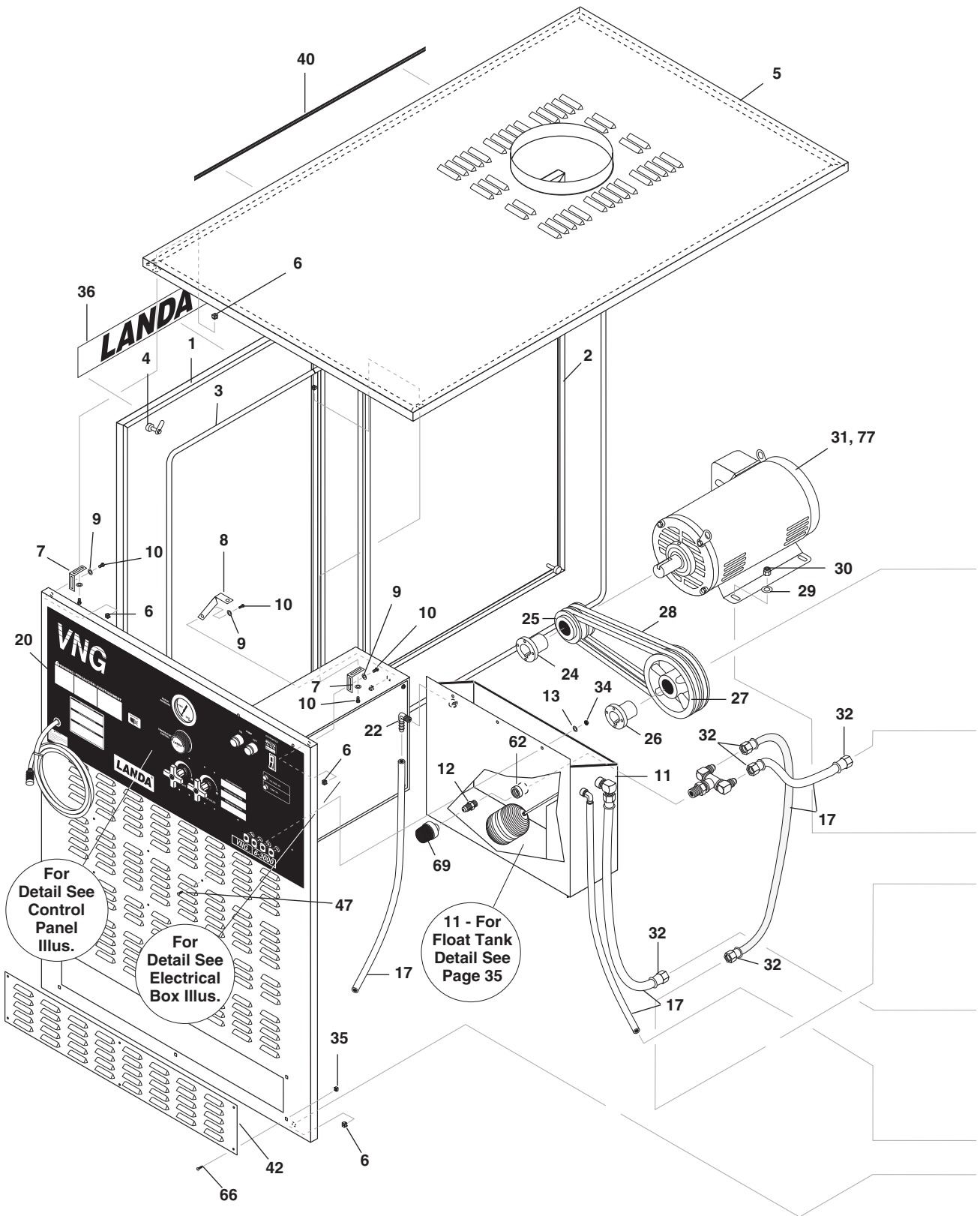
4-2000, 4-3000 EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
70	9.802-259.0	Hose, 1/2", Push-On	4 ft.
71	9.802-735.0	Bolt, 3/8" x 5-1/2" NC HH Tap 2	
72	9.803-130.0	Platform, Motor 3/16"	1
73	9.803-131.0	Rail, Pump, General Combo	1
74	9.802-720.0	Bolt, 3/8" x 1" NC HH	16
75	9.803-532.0	Isolator, 5/16" Fem x Fem	6
76	8.912-530.0	Discharge Assy	1
	9.804-003.0	Screw, 1/4" x 3/4"	2
	9.802-773.0	Nut, 1/4" ESNA	2
77	9.802-811.0	Washer, 5/16" Fender	4
78	Pump, See Specifications Pages		
79	8.918-211.0	Hose, 3/8" x 40", 2 Wire	1
80	8.918-424.0	Hose, 3/8" x 25", 2 Wire	1
81	9.803-613.0	Ignition, Electronic Control	1
	9.802-759.0	▲ Screw, 10/32" x 1/2"	4
	9.802-695.0	▲ Nut, 10/32" Keps	4
82	8.912-538.0	Panel, Burner End	1
83	8.716-269.0	Box, Metal, Junction, 12" x 12" x 4" Remote	1
84	8.706-022.0	Nipple, 1" x 6" Black Pipe	1
85	8.719-959.0	Pipe, 1" NPT x 18" Black	1
86	9.802-018.0	Nipple, 3/4" x 3" Black Pipe	1
87	9.802-019.0	Nipple, 3/4" x 2" Pipe	3
88	9.802-020.0	Nipple, 3/4" x 6" Black, Pipe	1
89	9.802-026.0	Elbow, 1" Black Pipe, 90°	1
90	9.802-028.0	Elbow, 1" x 3/4" Reducing, 90°	1
91	9.802-027.0	Elbow, 3/4" Black, 90°	4
92	9.802-049.0	Union, 3/4" Black Pipe	1
93	8.710-215.0	Gas Jet, NG, #52	44
	8.717-377.0	Gas Jet, LP, #63	44
94	9.802-776.0	Nut, 5/16" ESNA	6
95	9.804-057.0	Washer	4
96	8.706-294.0	Bushing, 1/2" x 3/8" Steel	1
97	9.802-131.0	Elbow, 1/2" Street, Brass	1
98	9.802-425.0	▲ Cord, Service, SO, 8/3 Coleman (4-3A, G)	4.25 ft.
	9.802-436.0	▲ Cord, Service, SEO, 10/3,Coleman (4-2A, G)	4.25 ft.
	9.802-437.0	▲ Cord, Service, SO, 10/4 Coleman (4-3B, C, H)	4.25 ft.
	9.802-429.0	▲ Cord, Service, SEO, 12/4 Coleman (4-2B,C,F,H;)	4.25 ft.

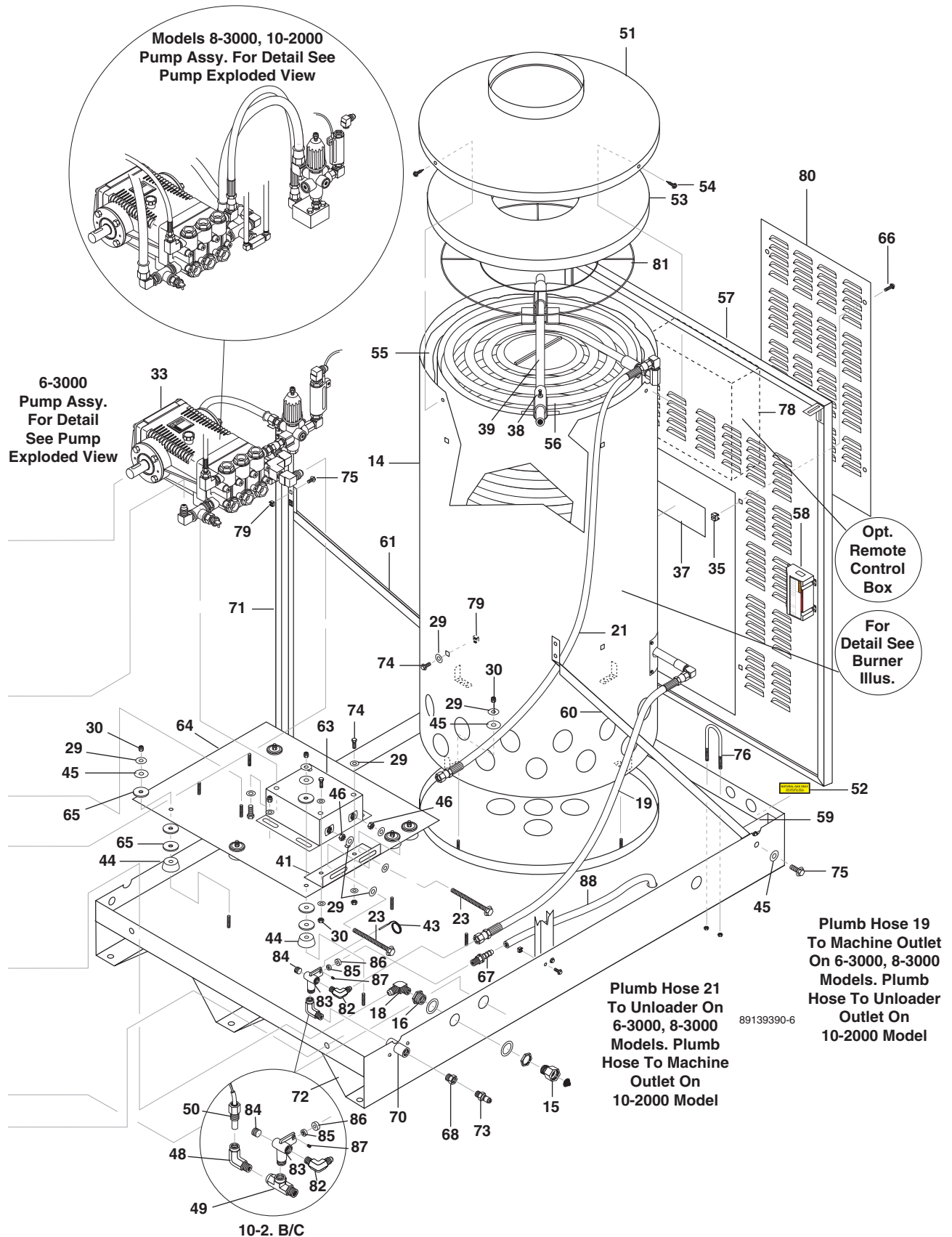
ITEM	PART NO.	DESCRIPTION	QTY
	9.802-520.0	Strain Relief, 3/4" (4-2)	1
	9.802-522.0	Strain Relief, 1" (4-3)	1
99	9.802-772.0	Screw, 10/32" x 1/4" Hex	2
100	9.802-016.0	Bushing, 1" x 3/4"	1
101	9.804-058.0	Bolt, Pump Mounting	4
102	8.719-039.0	Washer, 1-3/16" x 2-1/4"	1
103	8.725-944.0	Disk Rupture 8000#	1
104	9.184-030.0	Spacer, Rupture Disk	1
105	9.802-792.0	Nut, 3/8" x 12 Gauge, Cage	8
106	8.719-957.0	Splash Guard, Pilot Light	1
107	9.802-825.0	Clips, Retaining	4
108	9.802-789.0	Nut, 3/8" Hex, NC	2
109	9.800-028.0	Label, Pilot Light	1
110	9.802-767.0	Screw, 3/8" x 3/4" HH NC, Whiz	2
111	8.932-963.0	Label, Liquid Propane	1
	8.932-964.0	Label, Natural Gas	1
112	8.900-802.0	Label, VNG Landa Stripe	2
113	9.802-791.0	Nut, 10/32 x 16 Gauge, Cage	2
114	9.802-759.0	Screw, 10/32" x 1/2" Black	2
115	8.718-582.0	Bolt 1/4" x 1/2" NC, HH	2
116	8.706-109.0	Nipple, 3/4" x 7", Black Pipe	1
117	9.802-781.0	Nut, 3/8" NC, Whiz -Loc	1
118	9.803-563.0	Connector, 1/4" Tube x 1/8" MPT	1
119	8.706-910.0	Bushing, 1/4" x 1/8" Bushing	1
120	9.803-562.0	Cable, Ignition, 48"	1
121	8.719-940.0	Ring, Insulation Retainer	1
122	9.802-769.0	Bolt, 3/8" x 1 3/4" NC, Whiz -Loc	1
123	8.706-087.0	Nipple, 3/4" x 4" Black Pipe	1

▲ Not Shown

EXPLODED VIEW - 6-3000, 8-3000, 10-2000



EXPLODED VIEW - 6-3000, 8-3000, 10-2000



6-3000, 8-3000, 10-2000 EXPLODED VIEW PARTS LIST

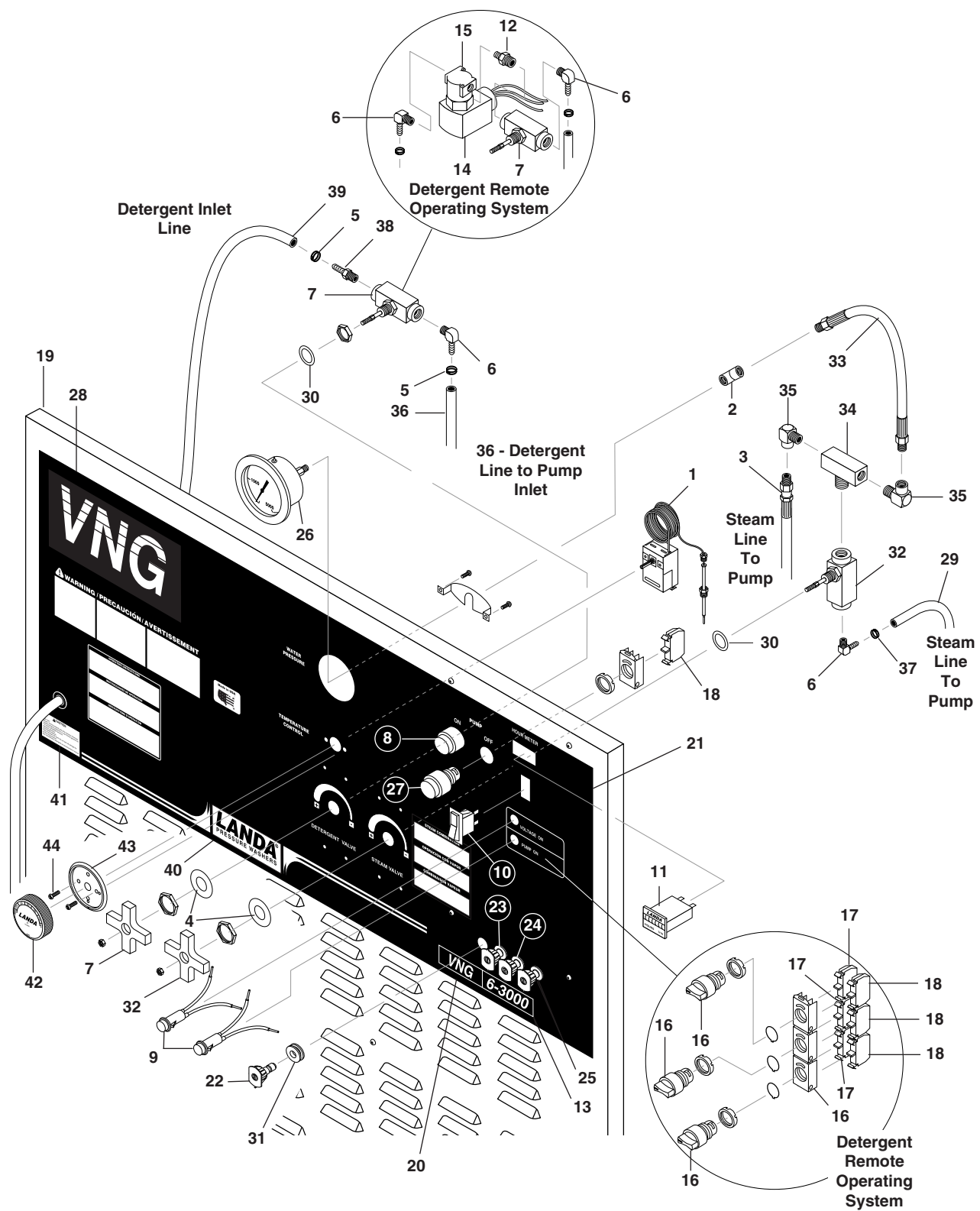
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	8.912-517.0	Panel, Side, Small, VNG-L	2	40	8.900-802.0	VNG, Landa Stripe	2
2	8.912-515.0	Panel, Side, Large, VNG-L	2	41	8.912-381.0	Retainer, Pump Take-Up	1
3	9.802-072.0	Trim, 1/16", w/Sponge	55 ft.	42	8.912-512.0	Panel, Pully Access	1
4	8.719-066.0	Latch, Vise Action	8	43	8.950-094.0	Thermostat, Adjustable, 302°F	1
5	8.912-510.0	Panel, Top, VNG-L	1	44	9.802-066.0	Pad, Foot, Soft Rubber	7
6	9.802-793.0	Nut, Cage, 1/4" x 16 Gauge	26	45	9.802-811.0	Washer, 3/8" x 1-1/2" Fender	13
7	8.912-528.0	L-Bracket, VNG	8	46	9.802-789.0	Nut, 3/8" Hex, NC	2
8	8.912-527.0	Brace, VNG, Electrical Box	1	47	9.802-771.0	Screw, 10/32" x 3/4" BH SOC	3
9	9.802-802.0	Washer, 1/4", Flat, SAE	22	48	8.706-208.0	Elbow, 1/2" Street	1
10	9.802-700.0	Bolt, 1/4" x 3/4"	22	49	8.706-236.0	Tee, 1/2" Street 10-2B, 10-2C	2
11	8.903-590.0	Float Tank Assy	1	50	8.712-187.0	Switch, Snap, 275° Hi-Limit 10-2B, 10-2C	1
12	9.802-128.0	Nipple, 1/2" JIC x 1/2" Pipe	1	51	8.912-546.0	Top, Burner Wrap, 30" ENG/VNG Large	1
13	9.804-082.0	Washer, 1/4" Black	3	52	8.932-964.0	Label, Natural Gas	1
14	8.912-553.0	Module, Wrap, Outer, Large	1		8.932-963.0	Label, Liquid Propane	1
15	9.802-146.0	Swivel, 1/2" MP x 3/4" GHF	1	53	8.930-141.0	Insulation, Top Head 30"	1
16	8.707-000.0	Connector, 1/2" Anchor	1	54	9.802-799.0	Screw, Tek #14 x 1"	3
17	9.802-261.0	Hose, 3/4" Push-On	15.75 ft.	55	8.717-435.0	Insulation Blanket, Die-Cut	1
18	9.802-132.0	Elbow, 3/4" JIC x 1/2", 90°	1	56	8.912-248.0	Coil, 25" Dia. VNG-L	1
19	8.918-229.0	Hose, 1/2" x 54", 2 Wire Pressure Loop (6-3, 8-3)	1	57	8.912-513.0	Panel, Burner End, VNG-L	1
	8.918-227.0	Hose, 1/2" x 36", 2 Wire, Pressure Loop (10-2)	1	58	9.803-613.0	Ignition, Control Electric	1
20	9.800-033.0	Label, Warning, Hot Water	1		9.802-759.0	▲ Screw, 10/32" x 1/2"	4
21	8.918-229.0	Hose, 1/2" x 54", 2 Wire Pressure Loop (6-3, 8-3)	1		9.802-695.0	▲ Screw, 10/32" Keps	4
	8.918-230.0	Hose, 1/2" x 70", 2 Wire Pressure Loop (10-2)	1	59	8.716-339.0	Box Junction (6-3B, 8-3B, H; 10-2B)	1
22	9.802-050.0	Adapter, 3/4" x 3/4" MT Insert, 90°	2		9.802-484.0	Box, Junction, 3 Hole (6-3C, 8-3C, 10-2C,)	1
23	9.802-735.0	Bolt, 3/8" x 5-1/2" NC HH	2		9.802-520.0	▲ Strain Relief, 3/4" (6-3C, 8-3C, 10-2C,)	1
24	Motor Bushing, See Specifications Pages				9.802-522.0	▲ Strain Relief, 1" (6-3B, 8-3C, 10-2B)	1
25	Motor Pulley, See Specifications Pages				9.803-975.0	▲ Strain Relief, CG 100-1050, 1" Blk (4/4 COR) 8-3B/H, 10-2B	1
26	Bushing, See Specifications Pages				8.718-945.0	▲ Screw, #14 x 3/4" Tex	2
27	Pump Pulley, See Specifications Pages				9.800-040.0	▲ Label, Ground	1
28	Pump Belt, See Specifications Pages				9.802-437.0	▲ Cord, Service, 10/4 (6-3C; 8-3C; 10-2C)	8.5 ft.
29	8.725-394.0	Washer, 3/8" Flat (6-3) (8-3, 10-2)	35 37	59	9.802-483.0	▲ Cover, 2" x 4", Metal	1
30	8.725-395.0	Nut, 3/8" ESNA, NC (6-3) (8-3, 10-2)	21 23		9.803-992.0	▲ Cord, Service, SO, 4/4 (8-3B, H; 10-2B)	8.5 ft.
31	Motor, See Specifications Pages				8.715-933.0	▲ Cord, Service, SO, 6/4 (6-3B,)	8.5 ft.
32	9.802-152.0	Swivel, 3/4" Female, Push-On	6	60	8.912-523.0	Brace, Right Side, VNG-L	1
33	Pump, See Specifications Pages			61	8.912-521.0	Brace, Left Side, VNG-L	1
34	9.802-695.0	Nut, 10/32" Keps	3	62	8.706-925.0	Bushing, 3/4" x 1/2" Pipe	1
35	9.802-791.0	Nut, Cage, 10/32" x 16 Gauge	12				
36	8.900-802.0	Label, VNG Stripe	2				
37	9.800-031.0	Label, Pilot Warning Light	1				
38	8.719-515.0	Bolt, 3/8" x 1-1/4" NC, Black	1				
39	8.912-249.0	Crosshanger, 1", SCH 80	1				

6-3000, 8-3000, 10-2000 EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
63	9.803-131.0	Rail, Pump (6-3)	1
	8.912-215.0	Rail, Pump (8-3,10-2)	1
64	8.912-533.0	Power Platform, VNG-L	1
65	9.802-067.0	Bumper Pad, Engine	21
66	9.802-759.0	Screw, 10/32" x 1/2"	12
67	8.707-381.0	Push-on, 1/2" Barb x 3/8" MPT	1
68	8.706-294.0	Bushing, 1/2" x 3/8", Steel	1
69	8.707-061.0	Strainer, 1/2" Basket	1
70	8.912-530.0	Coupling, Discharge, VHG	1
	9.804-003.0	▲ Screw, 1/4" x 3/4"	2
	9.802-773.0	▲ Nut, 1/4" ESNA	2
71	8.912-519.0	Vertical Brace, VNG-L	2
72	8.912-509.0	Base, VNG-L	1
73	9.802-171.0	Nipple, 3/8" x 3/8" NPT ST, Male	1
74	9.802-720.0	Bolt, 3/8" x 1", NC HH	10
75	9.802-767.0	Screw, 3/8" x 3/4", 12 Gauge	14
76	9.802-718.0	U-Bolt, 5/16" x 1" Pipe	1
77	9.802-437.0	▲ Cord, Service, SO , 10/4, (6-3C; 8-3C; 10-2C)	8.25 ft.
	9.803-992.0	▲ Cord, Service, SO, 4/4, (8-3B, H; 10-2B)	8.25 ft.
	8.715-933.0	▲ Cord, Service, SO, 6/4, (6-3B,)	8.25 ft.
	9.802-522.0	▲ Strain Relief, 1"	1
78	8.716-269.0	Box, Metal, 12" x 12" x 4" (Optional)	1
79	9.802-792.0	Nut, 3/8" x 12 Gauge, Cage	22
80	8.912-514.0	Cover, Burner Access	1
81	8.719-936.0	Ring, Insulation Retainer	1
82	9.802-039.0	Elbow, 1/2 JIC x 3/8 MPT	1
83	9.149-003.0	Manifold Coil Outlet	1
84	8.706-248.0	Plug, 3/8"	1
85	8.725-944.0	Disk, Rupture 8000 #	1
86	9.184-030.0	Spacer, Rupture Disk	1
87	9.196-012.0	Screw, 10-24 x 1/4"	1
88	9.802-259.0	Hose, 1/2" Push-on	44"

▲ Not Shown

CONTROL PANEL ASSEMBLY

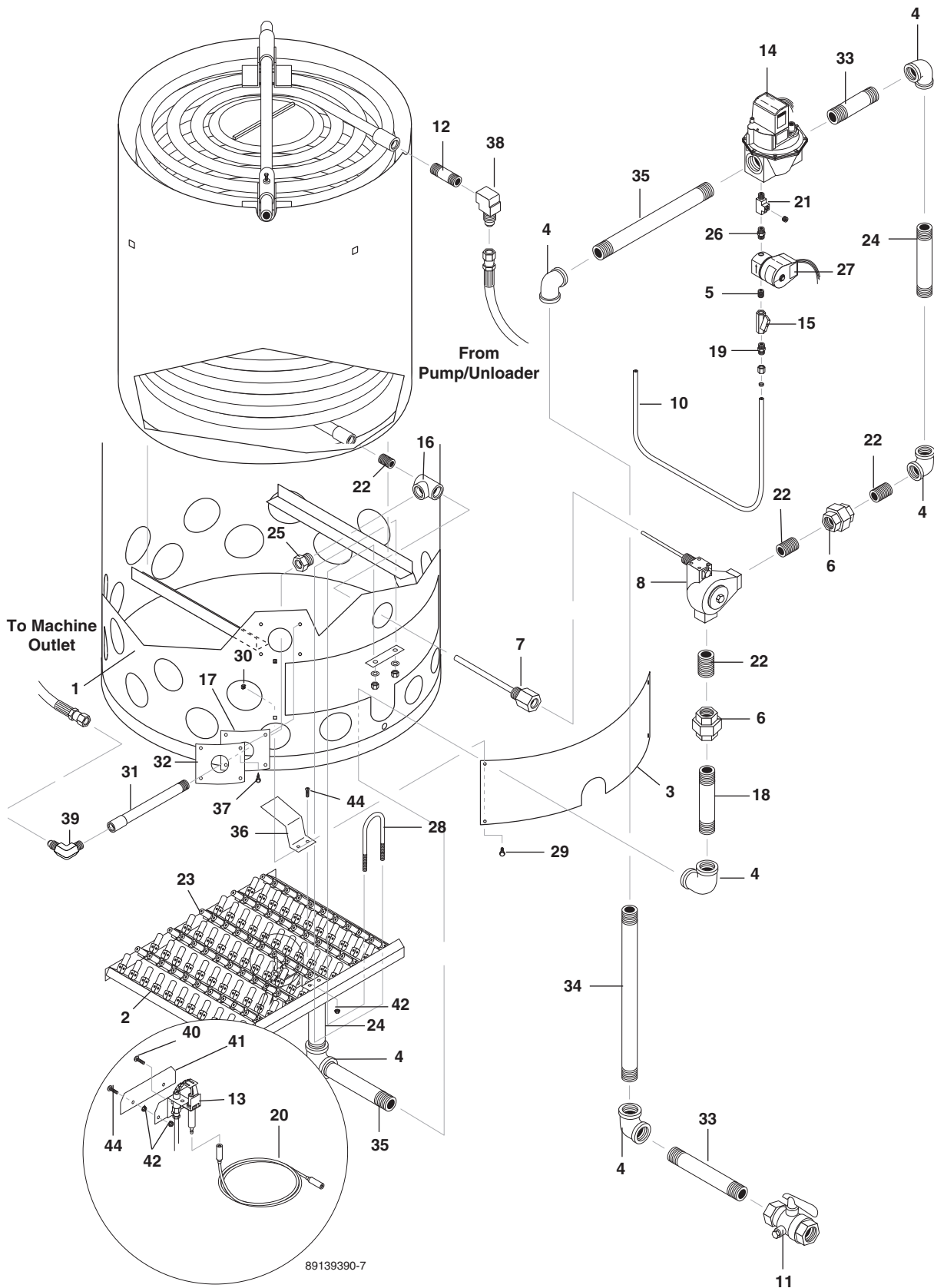


CONTROL PANEL PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	8.750-095.0	Thermostat, 302°	1		8.712-378.0	Nozzle, 0009 Red (8-3)	1
2	8.706-162.0	Elbow, 1/4" Female Pipe	1		8.712-386.0	Nozzle, 0015 Red (10-2)	1
3	8.918-419.0	Hose, 1/4" x 36", 2 Wire Ga. (S)	1	23	8.712-358.0	Nozzle, 15055 Yellow (4-2)	1
4	9.802-810.0	Washer, 5/8" Flat	2		8.712-350.0	Nozzle, 1504.5 Yellow (4-3)	1
5	9.802-210.0	Clamp, Hose, UNI .46 - .54	2		8.712-370.0	Nozzle, 1502 Yellow (6)	1
6	8.706-958.0	Hose Barb, 1/4" Barb, 90°	3		8.712-379.0	Nozzle, 1509 Yellow (8-3)	1
7	8.707-317.0	Valve, Control Metering	1		8.712-387.0	Nozzle, 1515 Yellow (10-2)	1
8	9.803-974.0	Switch Green, Push Button	1	24	8.712-359.0	Nozzle, 2505.5 Green (4-2)	1
	8.716-718.0	Switch, 2 Position CH, Auto Start Option	1		8.712-351.0	Nozzle, 2504.5 Green (4-3)	1
9	9.802-455.0	Light, Indicator, Green, 125V	2		8.712-371.0	Nozzle, 2507 Green (6-3)	1
10	9.802-453.0	Switch, Curvette (Burner)	1		8.712-380.0	Nozzle, 2509 Green (8-3)	1
11	9.802-283.0	Meter, Hour	1		8.712-388.0	Nozzle, 2515 Green (10-2)	1
12	8.706-780.0	Nipple, 1/4" Hex	1	25	8.712-360.0	Nozzle, 4005.5 White (4-2)	1
13	8.900-409.0	Label, 4-2000	1		8.712-352.0	Nozzle, 4004.5 White (4-3)	1
	8.900-411.0	Label, 4-3000	1		8.712-372.0	Nozzle, 4007 White (6-3)	1
	8.900-417.0	Label, 6-3000	1		8.712-381.0	Nozzle, 4009 White (8-3)	1
	8.940-171.0	Label, 8-3000	1		8.712-389.0	Nozzle, 4015 White (10-2)	1
	8.900-422.0	Label, 10-2000	1	26	8.712-150.0	Gauge, 0-5000 PSI	1
14	9.802-533.0	Solenoid Coil, 120V (Remote)	1	27	9.803-973.0	Switch, Red, Push Button	1
15	9.802-532.0	Valve, Det. Less Coil (Remote)	1	28	8.900-791.0	Label, VNG Logo	1
16	9.802-536.0	Switch, Selec CH (Remote)	3	29	9.802-254.0	Hose, 1/4", Push-On, (Small) (Large)	36" 40"
17	9.802-535.0	Block, Con. CH N/O Auto Start (Remote w/Auto Start) Time Delay (Remote w/Time Delay)	1 4 1 3	30	8.719-011.0	Washer, 5/8" Star	2
18	9.802-534.0	Block, Con. CH N/C Time Delay (Remote w/Auto Start) (Remote w/Time Delay)	2 2 3	31	9.802-064.0	Grommet, Rubber, Nozzle	4
19	8.912-537.0	Panel, Control, VNG Small	1	32	9.802-187.0	Valve, Metering Steam	1
	8.912-511.0	Panel, Control, VNG Large	1	33	8.918-180.0	Hose, 1/4" x 16", 2 Wire Gauge	1
20	8.900-261.0	Label, VNG Lexan	1	34	8.706-213.0	Tee, 1/4" Branch Male, Steel	1
	8.900-260.0	Label, VLP Lexan	1	35	8.706-200.0	Elbow, 1/4" Street	2
21	8.900-808.0	Label, VNG Control Panel	1	36	9.802-252.0	Tube, Braided Vinyl (Small) (Large)	36" 41"
	8.900-790.0	Label, VNG Control Panel (Auto Start Option)	1	37	8.709-069.0	Clamp, Screw	1
	8.900-804.0	Label, VNG Control Panel (Remote Option)	1	38	8.706-941.0	Hose Barb, 1/4" Barb x 1/4	1
22	8.712-349.0	Nozzle, 0004.5 Red (4-3)	1	39	9.802-251.0	Tube, 1/4" x 1/2", Clear Vinyl	10 ft.
	8.712-357.0	Nozzle, 0005.5 Red (4-2)	1		8.707-058.0	▲ Strainer, 1/4" Brass	1
	8.712-369.0	Nozzle, 0007 Red (6-3)	1	40	8.900-832.0	Label, Landa Stripe	1
				41	9.800-049.0	Label, Manuf. Cleaning Solution	1
				42	8.750-096.0	Knob, Thermostat 302°	1
				43	8.712-190.0	Bezel, Thermostat	1
				44	8.718-779.0	Screw, 4 mm x 6 mm	2

▲ Not Shown

VNG 6-3000, 8-3000 BURNER ASSEMBLY



89139390-7

VNG 6-3000, 8-3000 BURNER PARTS LIST

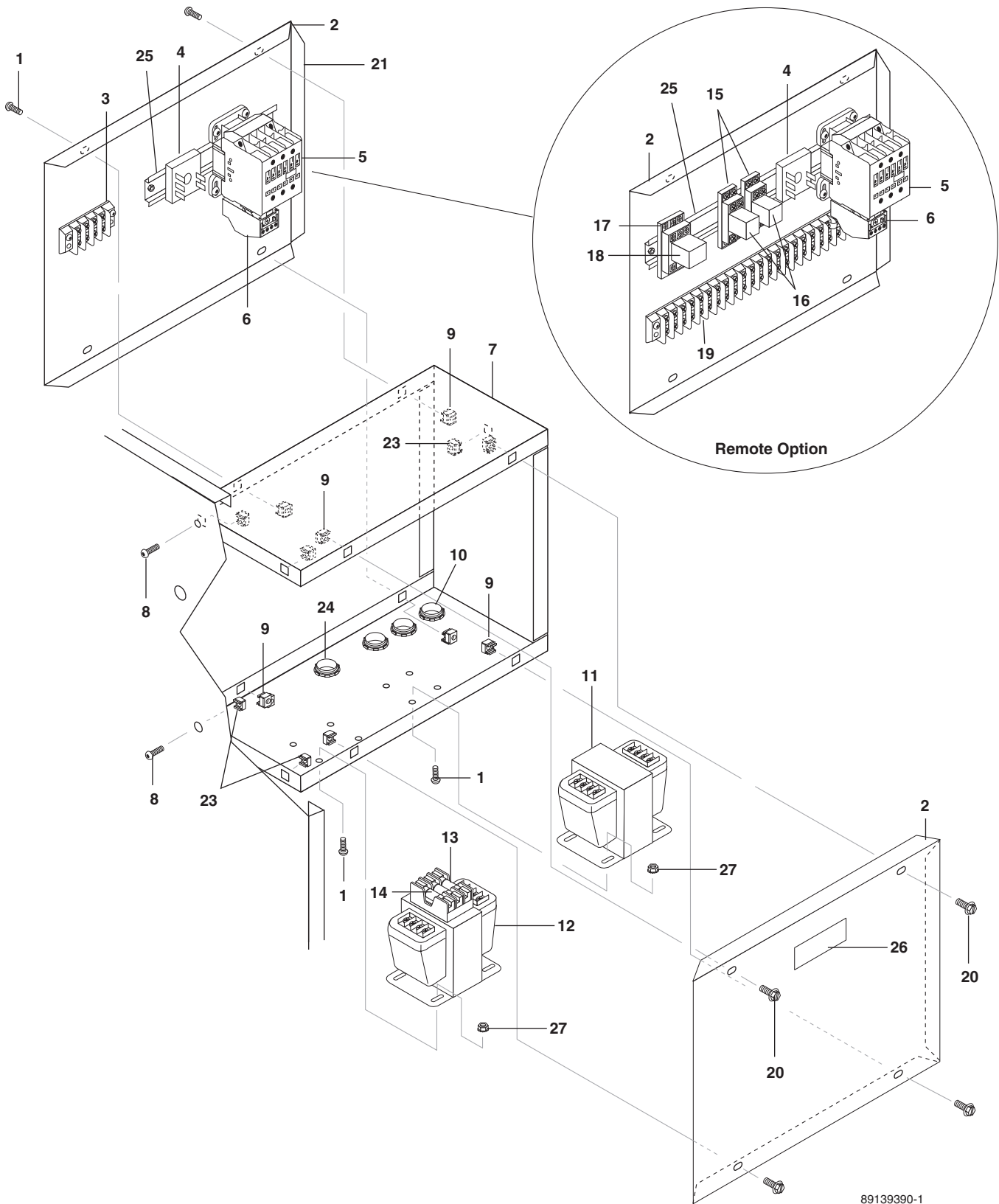
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	8.912-553.0	Module, Wrap, Outer, Large Coil	1	22	8.706-118.0	Nipple, 1" Close, 3500 PSI	3
2	8.919-524.0	Burner Ring Assy, W/# 54 Jets	1	23	8.710-216.0	Gas Jet, NG, #54	98
	8.919-525.0	Burner Ring Assy, W/# 65 Jets (LP Option)	1		8.710-218.0	Gas Jet, LP, #65	98
3	8.912-550.0	Door, Burner, Large	1	24	8.706-019.0	Nipple, 1" x 5" Black Pipe	2
4	9.802-026.0	Elbow, 1", Black Pipe, 90°	6	25	8.706-038.0	Bushing, 1" x 1/2" 3M F/S	1
5	8.706-777.0	Nipple, 1/4" Close	1	26	8.706-878.0	Nipple, 1/4" Pipe x 1/8" Pipe	1
6	8.706-323.0	Union, 1", Black Pipe	2	27	9.803-612.0	Solenoid, Pilot	1
7	8.718-088.0	Well, Pressure, Modulating Thermostat	1	28	9.802-719.0	U-Bolt, 5/16" x 3", Pipe	2
8	8.718-087.0	Modulating Thermostat KimRay	1	29	9.802-754.0	Bolt, 1/4" x 1/2" Whiz Loc	4
9	9.802-027.0	Elbow, 3/4", Black, 90°	2	30	9.802-794.0	Nut, Cage, 1/4" x 12 Gauge	4
10	9.802-911.0	Tubing, Aluminum, 600 RL, 1/4" Dead Soft	40"	31	8.912-694.0	Extension, Outlet	1
11	8.718-062.0	Valve, Gas Shut-Off, 1" MPT	1	32	9.803-132.0	Plate, Insulation Retainer	1
12	9.802-014.0	Nipple, 1/2" x 3", Galvanized	1	33	8.706-050.0	Nipple, 1" x 8" Black Pipe	2
13	9.803-610.0	Pilot, Ignitor	1	34	8.719-959.0	Nipple, 1" x 18" Black Pipe	1
14	8.718-050.0	Valve, Gas V8943B1010/B (NG)	1	35	8.706-022.0	Nipple, 1" x 6" Black Pipe	1
	8.718-048.0	Valve, Gas, V8943C1018 (LP)	1	36	9.802-972.0	Splash Guard, Pilot Light	1
15	9.802-178.0	Valve, Ball, 1/4" Female x 1/4" Female	1	37	9.802-798.0	Screw, #10 x 1/2" Tek Hex	4
16	8.706-094.0	Tee, Black Steel, 3000 PSI	1	38	9.802-043.0	Elbow, 1/2" JIC x 1/2" Female	1
17	8.933-009.0	Gasket, Burner Plate	1	39	8.705-975.0	Elbow, 1/2" JIC x 1/2" MPT	1
18	8.706-024.0	Nipple, 1" x 4" Black Pipe	1	40	9.802-772.0	Screw, 10/32" x 1/4" Hex	2
19	9.802-159.0	Connector, 1/4" Tube x 1/4" MPT	2	41	8.912-739.0	Bracket, Pilot Access	1
20	9.803-562.0	Cable, Ignitor, 48"	1	42	9.802-695.0	Nut, 10/32", KEPS	6
21	8.706-857.0	Tee, 1/8" Street	1	43	9.802-764.0	Screw, 10/32" x 3/4", Hex	2
				44	9.802-759.0	Screw, 10/32" x 1/2", Hex Black	4

▲ Not Shown

VNG-L 10-2000 BURNER PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-028.0	Elbow, 1" x 3/4" Reducing, Blk	2	31	9.802-719.0	U-Bolt, 3/16" x 3" Pipe	2
2	8.706-019.0	Nipple, 1" x 5", Black Pipe	2	32	8.706-878.0	Nipple, 1/4" Pipe x 1/8" Pipe	1
3	9.803-562.0	Cable, Ignitor, 48"	1	33	8.706-206.0	Elbow, 1/2" Black Pipe	1
4	8.718-050.0	Valve, Gas, V8943B1010/B (NG)	1	34	8.706-038.0	Bushing, 1" x 1/2" 3M F/S	1
	8.718-048.0	Valve, Gas, V8943C1018 (LP)	1	35	8.912-694.0	Extension, Outlet	1
5	8.719-959.0	Pipe, 1" NPT x 18" Blk Sch.40	1	36	9.803-132.0	Plate, Insulation Retainer	1
6	9.802-026.0	Elbow, 1", Black Pipe, 90°	5	37	8.933-009.0	Gasket, Burner Plate	2
7	8.706-050.0	Nipple, 1" x 8" Black Pipe	2	38	9.802-798.0	Screw, #10 x 1/2" Tek, Hex Head	16
8	9.802-772.0	Screw, 10/32" x 1/4"	2	39	8.912-520.0	Plate, Cover, NG, LM w/Hole	1
9	8.706-021.0	Pipe, 1" NPT x 11", Black Pipe, Sch. 40	1	40	8.912-739.0	Bracket, Pilot Access	1
10	8.706-323.0	Union, 1", Black Pipe	1	41	9.802-764.0	Screw, 10/32" x 3/4" Hex	2
11	8.706-118.0	Nipple, 1", Close, 3500 PSI	2	42	9.802-695.0	Nut, 10/32" Keps	6
12	9.802-754.0	Screw, 1/4" x 1/2" HH NC, Whiz Loc	4	43	9.802-759.0	Screw, 10/32" x 1/2", Black	2
13	8.912-550.0	Door, Burner, Large	1	44	8.710-216.0	Gas Jet, NG, #54	98
14	9.802-794.0	Nut, Cage, 1/4" x 12 Gauge	4		8.710-218.0	Gas Jet, LP, #65	98
15	8.919-524.0	Burner Assy, Lg Square W/#54 Jets (NG)	1	45	8.706-777.0	Nipple, 1/4" Close	1
	8.919-525.0	Burner Assy, Lg Square W/#65 Jets (LP Option)	1	46	8.912-522.0	▲ Plate Cover, NC, LM w/o Hole	1
16	9.803-610.0	Pilot, Ignitor	1			▲ Not Shown	
17	9.802-972.0	Splash Guard, Pilot Light	1				
18	9.802-911.0	Tubing, 1/4" Aluminum	40"				
19	8.718-062.0	Valve, Gas, Shut-Off, 1" MPT	1				
20	8.912-553.0	Wrap, Outer, 30" Large Coil	1				
21	8.706-857.0	Tee, 1/8" Street	1				
22	9.802-178.0	Valve, 1/4" Jomar T-91LP Ball	1				
23	9.802-159.0	Connector Tube, 1/4" x 1/4" MPT	2				
24	9.802-014.0	Nipple, 1/2" x 3" Galvanized	1				
25	9.802-040.0	Elbow, 1/2" JIC x 1/2", 90°	1				
26	8.706-216.0	Tee, 1/2" Female Steel Pipe	1				
27	9.802-043.0	Elbow, 1/2" JIC x 1/2" FPT	1				
28	9.803-612.0	Solenoid, Pilot	1				
29	8.707-019.0	Hose Barb, 1/2" Barb x 3/8" MPT	1				
30	9.802-259.0	Hose, 1/2" Push-On	4.25 ft.				

VNG ELECTRICAL BOX - AUTO START



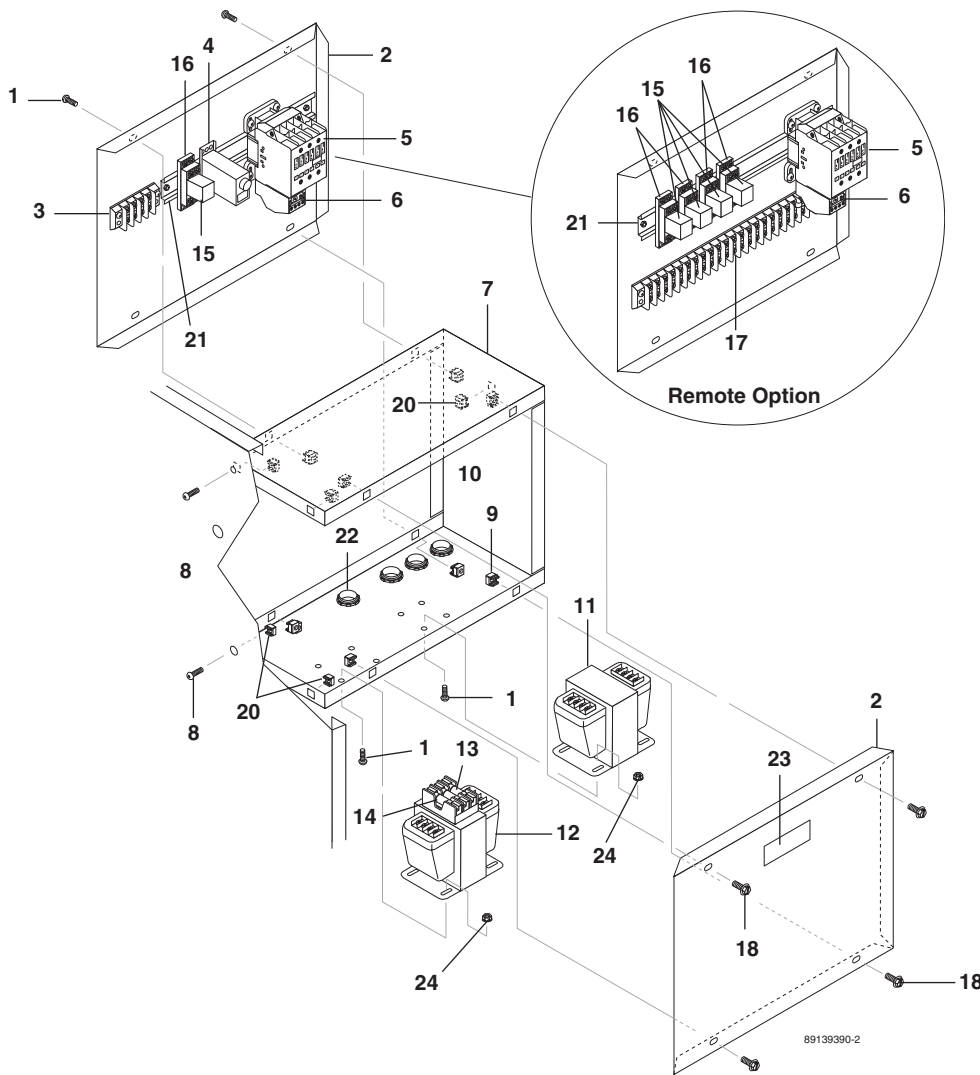
89139390-1

VNG ELECTRICAL BOX - AUTO START PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-759.0	Screw, 10/32" x 1/2" BHSOC	15	12		Transformer, See Specifications Pages	
2	9.802-970.0	Panel, Electrical Box, Side	2	13		Primary Fuse, See Specifications Pages	
3	9.802-491.0	Block, Terminal, 4 Pole	1	14		Secondary Fuse, See Spec's Pages	1
	9.802-749.0	▲ Screw, 8/32" x 3/4"	2	15	9.802-467.0	Base, Relay IDEC (Remote Option)	2
	9.802-785.0	▲ Nut, 8/32" Keps	2	16	9.802-468.0	Relay, 120V, IDEC (Remote Option)	2
4	9.802-472.0	Timer, Solid State 120V, 5-60 Min. Lockout	1	17	9.802-466.0	Relay, Socket Idec, Remote	1
5		Contactor, See Specifications Pages		18	9.802-469.0	Relay, Latch, 2 Idec, Remote	1
6		Overload Relay, See Specifications Pages		19	9.802-493.0	Block, Terminal, 16 Pole, Remote	1
7	9.802-969.0	Box, Electrical VNG	1	20	9.802-764.0	Screw, 10/32" x 3/4" Hex	4
8	9.804-003.0	Screw, 1/4" x 3/4" BH SOC	4	21	9.802-762.0	▲ Screw, 10/32" x 1-1/4"	1
9	9.802-791.0	Nut, Cage 10/32" x 16 Gauge	8		9.802-695.0	▲ Nut, Keps, 10/32"	6
10	9.802-520.0	Strain Relief, 3/4" (4-2;4-3;6-3C,8-3C, 10-2C,) Remote Option	3	22	9.802-771.0	▲ Screw, 10/32" x 3/4"	1
		(6-3B, 8-3B, H; 10-2B)	1	23	9.802-793.0	Nut, Cage, 1/4" x 16 Gauge	5
	9.802-522.0	Strain Relief, 1" (6-3B,)	2	24	9.802-520.0	Strain Relief, 3/4" (Remote Option)	1
	9.803-975.0	Strain Relief, CG 100-1050 1" Blk (4/4 COR) (8-3B, H; 10-2B)	2	26	9.800-016.0	Label, Power disconnect	1
11		Transformer, See Specifications Pages		27	9.802-695.0	Nut 10/32 Keps	8

▲ Not Shown

VNG ELECTRICAL BOX - TIME DELAY

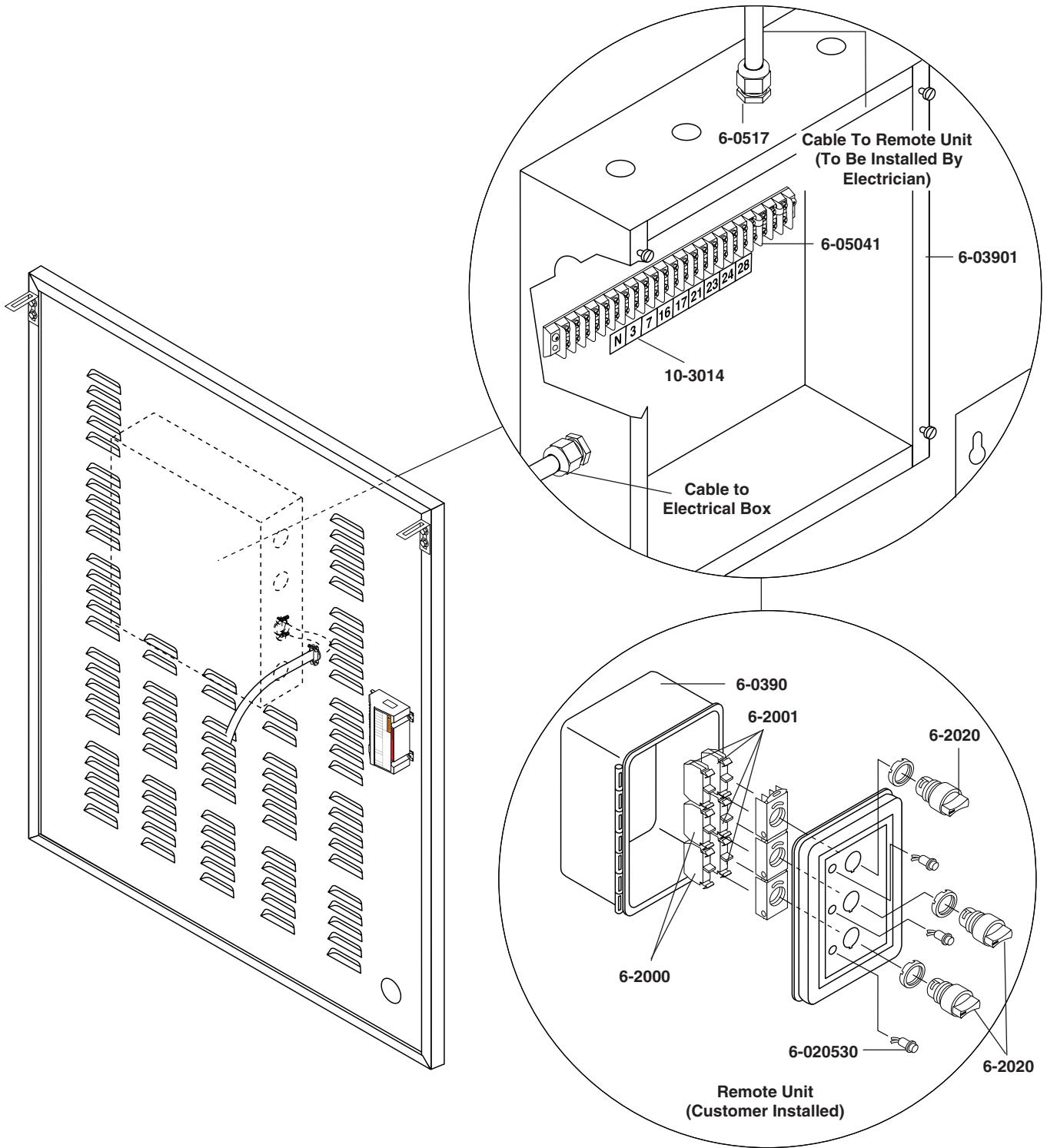


VNG ELECTRICAL BOX - TIME DELAY PARTS LIST

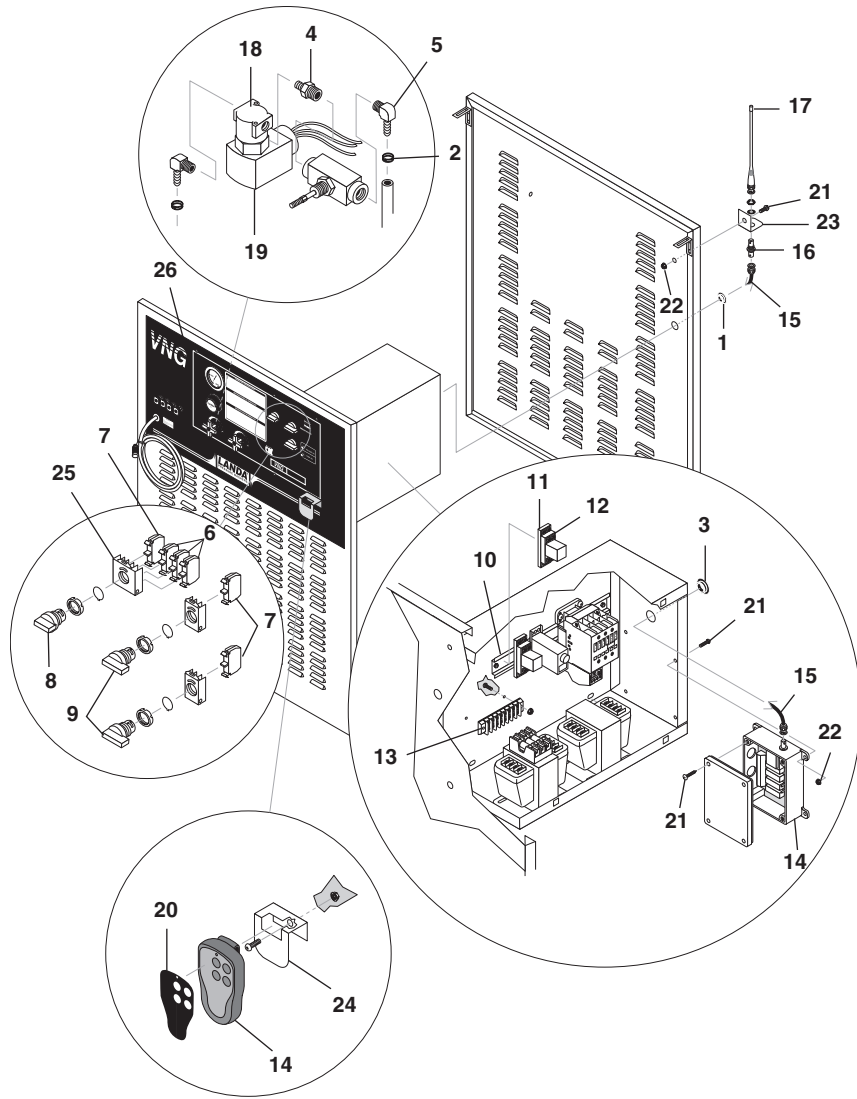
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-759.0	Screw 10/32" x 1/2" BHSOC	15	14	Secondary Fuse, See Specifications Pages		
2	9.802-970.0	Panel, Electrical Box, Side	2	15	9.802-467.0	Base, Relay IDEC (Remote Option)	1 4
3	9.802-491.0	Block, Terminal, 4 Pole	1	16	9.802-468.0	Relay, 120V, IDEC (Remote Option)	1 4
	9.802-749.0	▲ Screw, 8/32" x 3/4" BHSOC	2	17	9.802-493.0	Block, Terminal, 16 Pole, (Remote Option)	1
	9.803-676.0	▲ Nut, 8/32" ESNA	2	18	9.802-764.0	Screw, 10/32" x 3/4" Hex	4
4	9.802-473.0	Timer, Multi Function 24V - 120/240V	1	19	9.802-771.0	▲ Screw, 10/32" x 3/4"	1
5		Contactor, See Specifications Pages			9.802-695.0	▲ Nut, Keps, 10/32"	6
6		Overload Relay, See Specifications Pages		20	9.802-793.0	Nut, Cage, 1/4" x 16 Gauge	5
7	9.802-969.0	Box, Electrical VNG	1	21	9.802-457.0	Din Rail (Option)	7" 12"
8	9.804-003.0	Screw, 1/4" x 3/4" BH SOC	4	22	9.802-520.0	Strain Relief, 3/4" (Remote Option)	1
9	9.802-791.0	Nut, Cage, 10/32" x 16 Gauge	8	23	9.800-016.0	Label, Power disconnect	1
10	9.802-520.0	Strain Relief, 3/4" (Remote Option)	3 1	24	9.802-695.0	Nut, Keps, 10/32"	8
11		Transformer, See Specifications Pages					
12		Transformer, See Specifications Pages					
13		Primary Fuse, See Specifications Pages					

▲ Not Shown

VNG REMOTE ELECTRICAL BOX - ALL MODELS



VNG HANDHELD WIRELESS EXPLODED VIEW & PARTS LIST



ITEM	PART NO.	DESCRIPTION	QTY
1	8.706-755.0	Bushing, .875"	1
2	6.390-126.0	Clamp, Hose	2
3	9.802-104.0	Bushing, 3/4" Snap	1
4	8.706-777.0	Nipple, 1/4" Close	1
5	8.706-958.0	Hose Barb, 1/4" Barb x 1/4" Pipe, 90°	2
6	9.802-534.0	Block, Contact, N/C	3
7	9.802-535.0	Block, Contact, N/O	3
8	9.802-536.0	Switch, Selector, w/Red Lever	1
9	8.716-718.0	Switch, 2 Position	2
10	9.802-457.0	Din Rail, 35mm	6.5
11	9.802-467.0	Base, Relay, SH2B-05, IDEC	1
12	9.802-468.0	Relay, 120V, RH2B-UL-AC120	1
13	9.802-492.0	Block, Terminal, 8 Pole	1
14	8.716-442.0	Wireless, Transmitter-Receiver 4 Relay	1
15	8.716-444.0	Cable Radio Remote, CC58C-5 Coaxial Cable	1

ITEM	PART NO.	DESCRIPTION	QTY
16	8.716-445.0	Connector, Radio Remote BNC Connection	1
17	8.716-446.0	Antenna, Radio Remote BNC Connection	1
18	9.802-532.0	Valve, Chem. Less Solenoid 04F20C2118AAF	1
19	9.802-533.0	Solenoid Coil, 120C AF4C05	1
20	8.940-008.0	Label, Land, Lancom Remote Control	1
21	9.802-749.0	Screw, 8/32" x 3/4" BHSOC	7
22	9.802-785.0	Nut, 8/32", KEPS	7
23	8.912-674.0	Bracket, Antenna Mount, Wireless Remote	1
24	8.912-675.0	Bracket, Trans, Wireless Rem	1
25	8.930-439.0	Adapter, 5-Way Mounting	1
26	8.900-804.0	Label, VNG Cont. Panel w/Remote	1

VNG HANDHELD WIRELESS OPERATING INSTRUCTIONS

Wireless Remote Control Operation

Step 1: Pressure Washer Operation

Once the main circuit breaker power to the machine is turned on, the pump can be controlled either at the machine control panel or with the remote transmitter.

To remotely turn pump "ON", press transmitter button #1. To turn pump "OFF" press button #2. Pump can be turned off at the machine by turning the control panel pump switch to the "OFF" position.



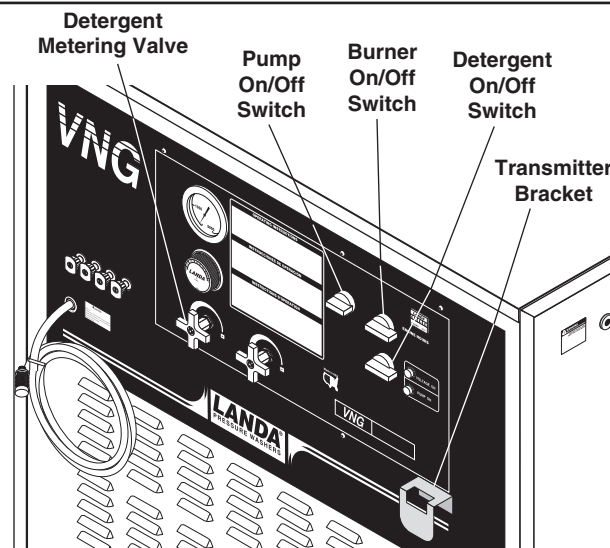
TRANSMITTER

Step 2: Burner Operation

To operate burner in remote mode turn control panel burner switch to the "ON" position. Note: Burner remote will only work when the machine control panel Burner switch is in the "ON" position.

Remotely control burner by pressing transmitter button #3 to turn burner "OFF". Pressing button #3 again will turn burner "ON".

The control panel burner switch will be non-functional if burner is turned "OFF" remotely. To re-activate the control panel burner switch either press button 3 to turn burner "ON" or turn control panel pump switch "OFF".



Step 3: Detergent Operation

The machine has an electronic solenoid to operate detergent flow. To operate detergent in remote mode, adjust the detergent metering valve to the desired flow and turn control panel detergent valve switch to the "ON" position. Note: Detergent remote will only work when the machine control panel detergent switch is in the "ON" position.

Remotely control detergent by pressing transmitter button #4 to turn detergent "OFF". Pressing button #4 again will turn detergent "ON".

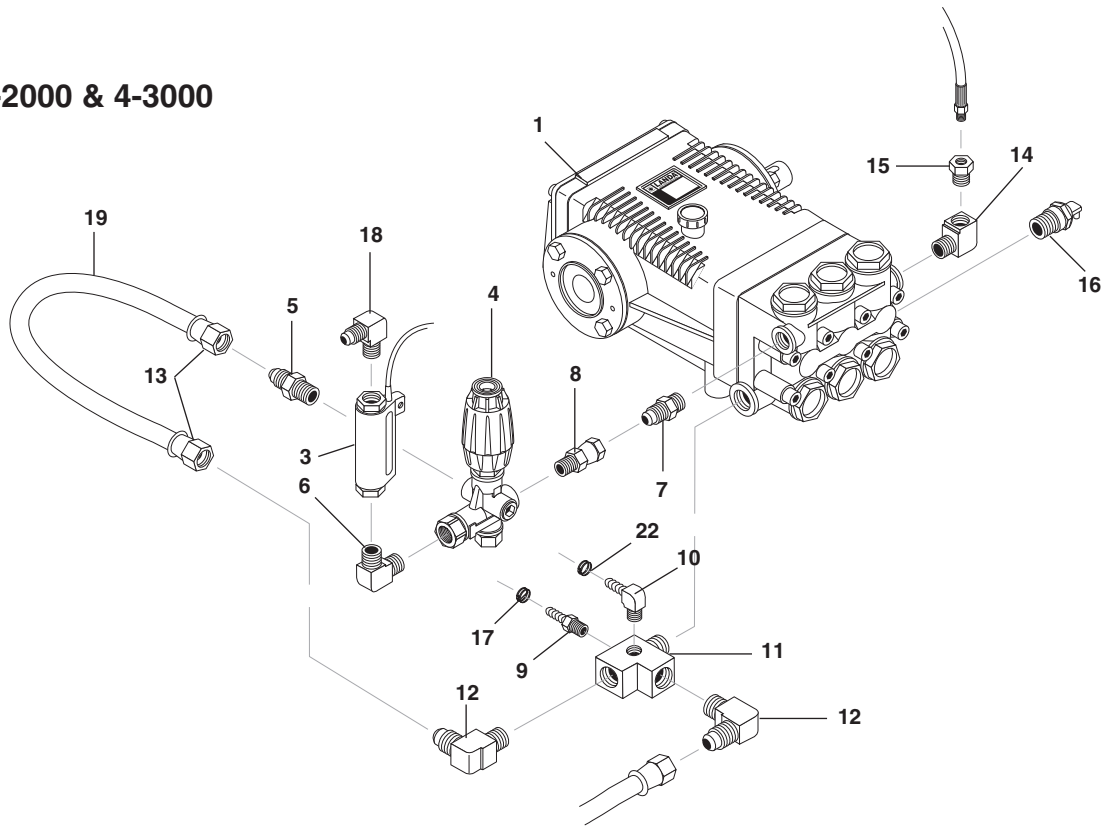
The control panel detergent switch will be non-functional if detergent is turned "OFF" remotely. To re-activate the control panel switch either press button #4 to turn detergent "ON" or turn control panels pump switch "OFF".

NOTE: The wireless remote option has Time Delay Shutdown installed and will shut down after 3-5 minutes of no use.

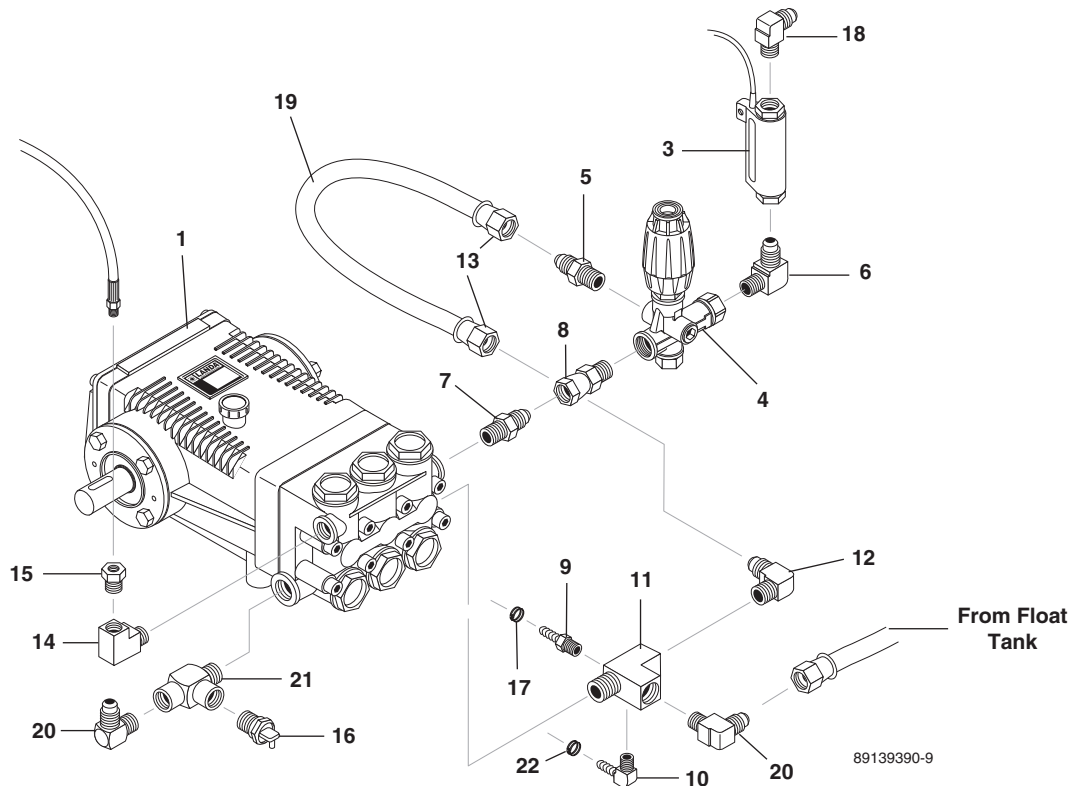
If machine times out while using remotely, press the pump "OFF" button to reset the timer. Press transmitter pump "ON" button to restart pump.

VNG 4-2000, 4-3000, 6-3000 PUMP ASSEMBLY

4-2000 & 4-3000



6-3000



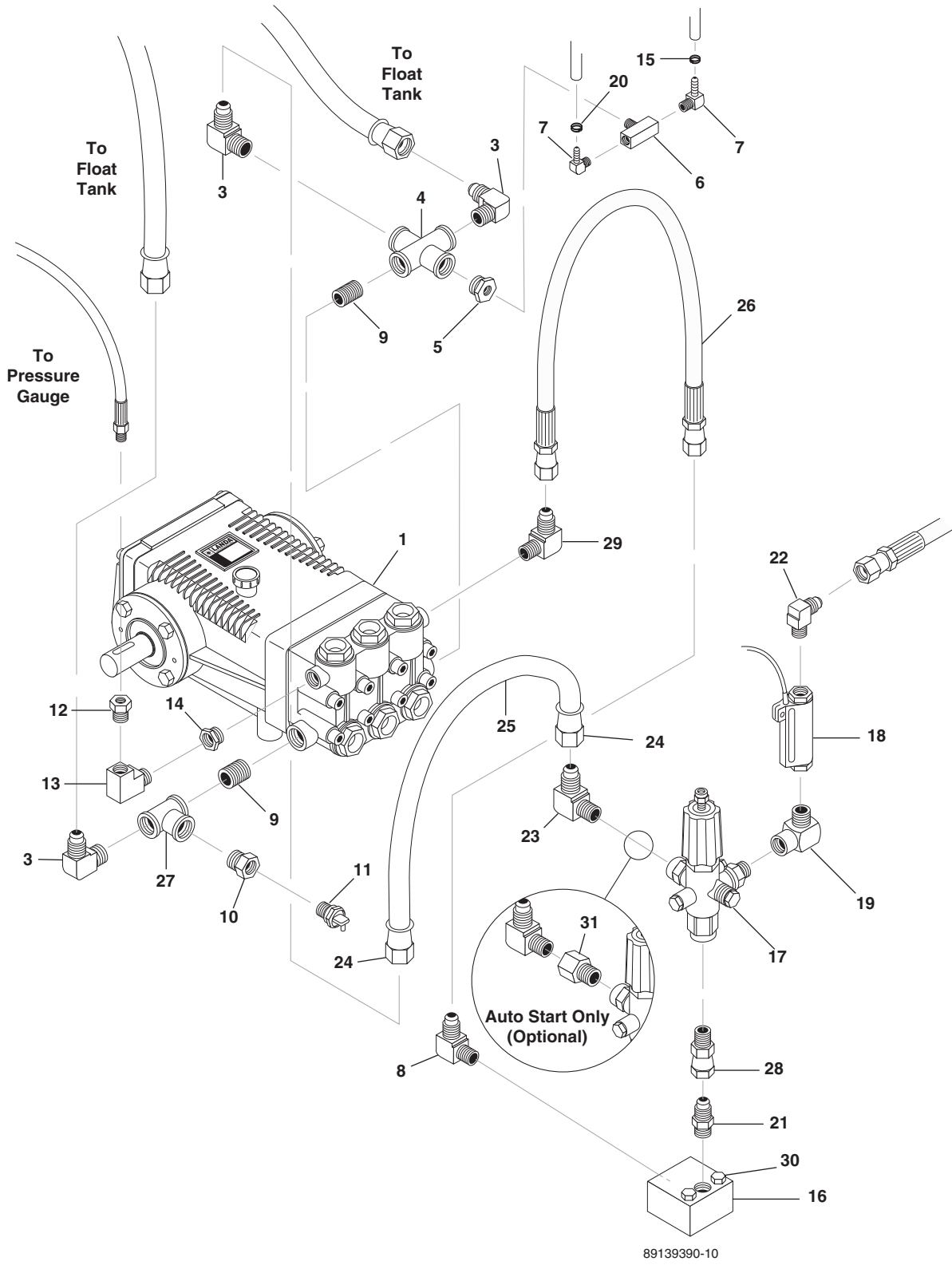
89139390-9

VNG 4-2000, 4-3000, 6-3000 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1		Pump, See Parts Specifications Pages	
2	9.803-131.0	▲ Rail, Pump	1
3	8.933-006.0	Switch, Flow MV60, Yellow	1
4	8.750-299.0	Unloader, VRT3, 8 GPM @4500 PSI	1
	9.802-362.0	Unloader, PA 8 GPM @3650, w/Switch (Auto Start)	1
5	9.802-127.0	Nipple, 1/2" JIC x 3/8" Pipe	1
6	8.706-168.0	Elbow, 3/8", Male Pipe	1
7	9.802-036.0	Nipple, 1/2" JIC x 3/8" Pipe	1
	9.802-048.0	Swivel, 1/2" JIC Fem, 3/8" Male (Auto Start Option)	1
8	9.802-048.0	Swivel, 1/2" JIC Fem, 3/8" Male	1
	9.802-037.0	Nipple, 1/2" JIC, 3/8" Female (Auto Start Option)	1
9	8.706-940.0	Hose Barb, 1/4" Barb x 1/8" Male Pipe	1
10	8.706-955.0	Hose Barb, 1/4" x 1/8" 90°	1
11	9.803-050.0	Tee, 1/2" Street w/2 Holes	1
12	9.802-131.0	Elbow, 1/2" JIC x 1/2", 90° (6-3)	1
		(4-2, 4-3)	2
13	9.802-151.0	Swivel, 1/2" JIC Female	2
14	8.706-207.0	Elbow, 3/8" Street	1
15	8.706-297.0	Bushing, 3/8" x 1/4", Galv.	1
16	8.707-256.0	Pump Protector, 1/2" PTP	1
17	6.390-126.0	Clamp, Hose, .46 -, .54 ST	1
18	9.802-039.0	Elbow, 1/2" JIC x 3/8" Male	1
19	9.802-259.0	Hose, 1/2", Push On	1.25"
20	9.802-132.0	Elbow, 3/4" JIC x 1/2" (6-3)	2
21	8.706-860.0	Tees, 1/2" Street (6-3)	1
22	8.709-069.0	Clamp, Screw, #4	1

▲ Not Shown

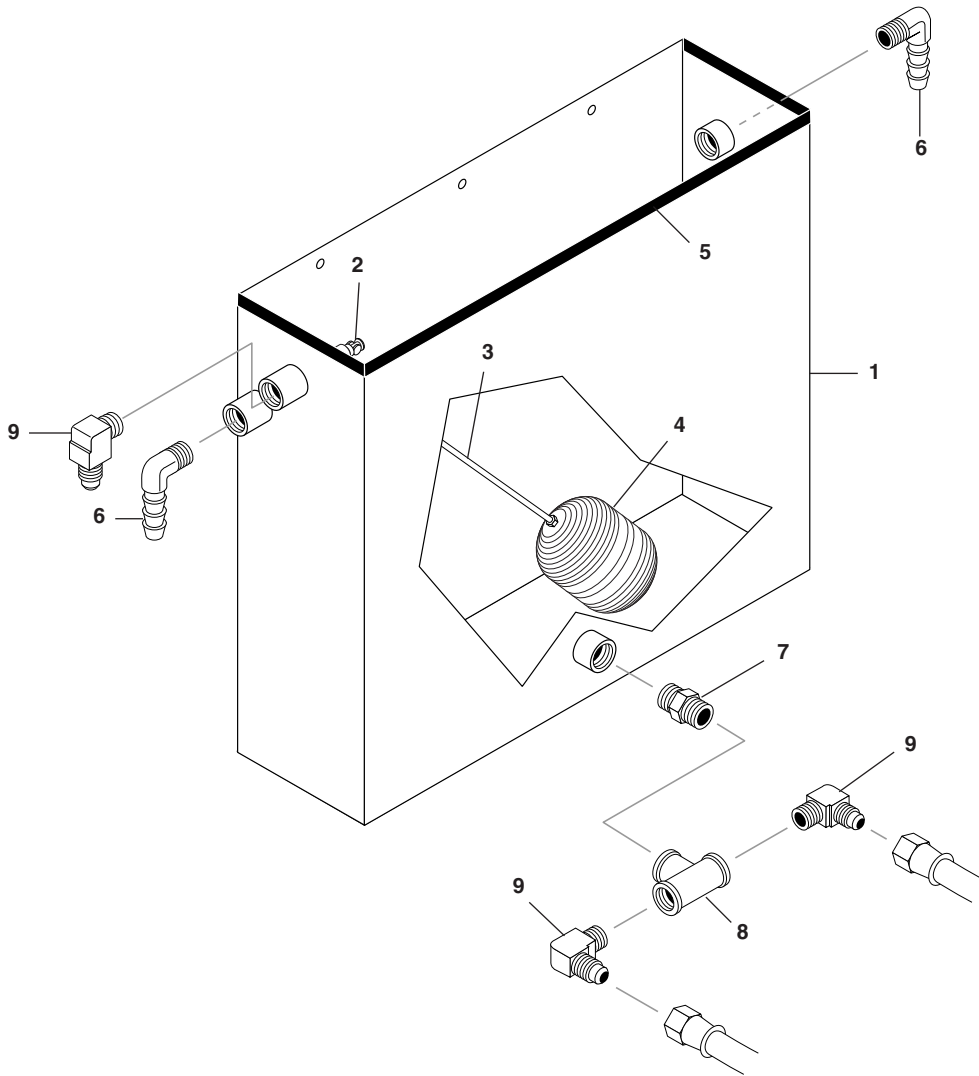
VNG 8-3000, 10-2000 PUMP ASSEMBLY



VNG 8-3000, 10-2000 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	8.904-889.0	Pump, Landa LX8030/L (8-3)	1	20	8.709-069.0	Clamp, Screw, #4	1
	8.904-891.0	Pump, Landa LX1025/L (10-2)	1	21	9.802-038.0	Nipple, 1/2" x 1/2" JIC (8-3, 10-2)	1
2	8.912-215.0	▲ Rail, Pump Combo	1		9.802-048.0	Swivel, 1/2" JIC Fem x 3/8" Male (8-3 Auto Start Option)	1
3	9.803-557.0	Elbow, 3/4" SAE x 3/4", 90°, Brass	3	22	9.802-039.0	Elbow, 1/2" JIC, 3/8", 90°	1
4	8.706-852.0	Cross, 3/4" Female Pipe	1	23	9.802-132.0	Elbow, 3/4" JIC x 1/2", 90° (8-3, 10-2)	1
5	8.706-923.0	Bushing, 3/4" x 1/4" Pipe	1	24	9.802-152.0	Swivel, 3/4" SAE Female, Push-On	2
6	8.706-854.0	Tee, 1/4" Branch, Male	1	25	9.802-261.0	Hose, 3/4" Push-On	2 ft.
7	8.706-958.0	Hose Barb, 1/4" Barb x 1/4" Pipe, 90°	2	26	8.918-225.0	Hose, 1/2" x 28", 2 Wire	1
8	9.802-039.0	Elbow, 1/2" JIC x 3/8" MPT (Auto Start Option)	1	27	8.706-846.0	Tee, 3/4" Female, Brass	1
	9.802-039.0	Elbow, 1/2" JIC, 1/2" 90°	1	28	9.802-037.0	Nipple, 1/2" JIC x 3/8" Fem (8-3 Auto Start Option)	1
9	8.706-799.0	Nipple, 3/4" Close	2		8.706-315.0	Swivel, 1/2" x 1/2" JIC Male (8-3, 10-2)	1
10	8.706-925.0	Bushing, 3/4" x 1/2" Pipe	1	29	9.802-040.0	Elbow, 1/2" JIC x 1/2", 90°	1
11	8.707-256.0	Pump Protector, 1/2" PTP	1	30	9.802-730.0	Bolt, 3/8" x 2 1/2", GR5 Zinc	2
12	8.706-297.0	Bushing, 3/8" x 1/4", Galv.	1		8.725-394.0	▲ Washer, 3/8" Flat	2
13	8.706-207.0	Elbow, 3/8" Street	1		8.725-395.0	▲ Nut, 3/8" ESNA	2
14	8.706-294.0	Bushing, 1/2" x 3/8"	1	31	8.706-992.0	Adapter, 1/2" x 3/8" (8-3 Auto Start Option)	1
15	6.390-126.0	Clamp, Hose, .46 -, .54 ST	1			▲ Not Shown	
16	9.802-870.0	Block, Unloader, 3/8" x 3/8", 1.25 Steel (8-3 Auto Start Option)	1				
	9.802-869.0	Block, Unloader, 1/2" x 1/2" x 1.75" Steel	1				
17	8.715-508.0	Unloader, VBXL 13 GPM, @3000 PSI (8-3, 10-2)	1				
	9.802-362.0	Unloader, PA 8 GPM @3650 PSI VB8 w/Switch (8-3 Auto Start Option)	1				
18	8.933-006.0	Switch, Flow, MV60, Yellow	1				
19	9.802-024.0	Elbow, 3/8" x 1/2" Steel, Street	1				
	8.706-168.0	Elbow, 3/8" Male Pipe (Auto Start Option)	1				

VNGL FLOAT TANK (#30-536) EXPLODED VIEW

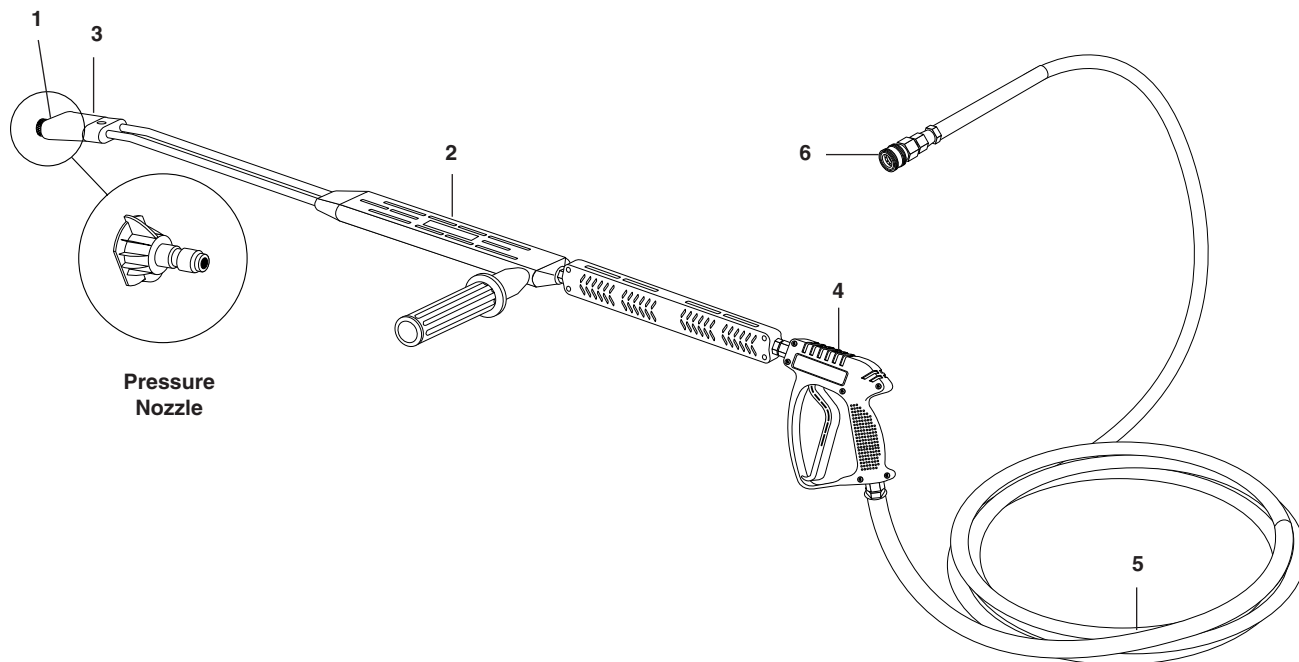


VNGL FLOAT TANK (#30-536) PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	8.912-518.0	Assembly, Float Tank, S.S.	1	7	8.706-800.0	Nipple, 3/4" Hex, Brass	1
2	8.749-329.0	Valve, Float, 3/4"	1	8	8.706-846.0	Tee, 3/4" Female Pipe	1
3	8.707-025.0	Stem, 10" Float	1	9	9.803-557.0	Elbow, 3/4" SAE x 3/4", 90°, Brass	3
4	8.706-512.0	Ball, Float, Black Plastic	1	10	8.706-925.0	▲ Bushing, 3/4" x 1/2" Pipe	1
5	9.802-071.0	Trim, 750 B2 x 1/16" Black	3.25 ft.	11	8.707-061.0	▲ Strainer, 1/2" Basket	1
6	9.802-050.0	Adapter, 3/4" x 3/4" MT x Insert 90°	2	12	9.802-128.0	▲ Nipple, 1/2" JIC x 1/2" Pipe	1

▲ Not Shown

HOSE & SPRAY GUN ASSEMBLY



HOSE & SPRAY GUN ASSEMBLY PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-165.0	Coupler, 1/4", Male	1	4	8.749-170.0	Gun, Shut-off, Landa, 5000 PSI, 10.5 GPM	1
	9.802-096.0	▲ O-Ring, Small Coupler, High Heat, 1/4"	1		5	8.739-072.0	Hose, 3/8" x 50', 2-Wire Tuff-Skin (4-2, 4-3, 6-3)
2	8.711-308.0	Wand, SS, V.P. Wand, AR (AL 344) w/Coupler	1	8.739-401.0		Hose, 1/2" x 50' 2-Wire Tuff-Flex (8-3, 10-2)	1
	8.710-722.0	Wand Only, SS.V.P. Wand, AR (AL 344)	1	6	9.802-166.0	Coupler, 3/8" Female	1
		AL83455VPKIT Repair Kit, AR SS Seat (AL 334, 344)	1		9.802-100.0	▲ O-Ring, Large, Coupler, High Heat, 3/8"	1
3	9.802-286.0	Nozzle Only, 1/8"	1			▲ Not Shown	

SPECIFICATIONS

PARTS SPECIFICATIONS: LANDA PUMP

Machine Model	Pump Model	Part #	Pulley	Pulley Part #	Bushing	Bushing Part #	Size	Voltage/PH	Motor Part #	Pulley	Pulley Part #	Bushing
4-20024A	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6 HP	230V/1PH	9.802-336.0	2AK41H	8.715-545.0	1-1/8"
4-20024B	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6 HP	230V/3PH	9.802-329.0	2AK41H	8.715-545.0	1-1/8"
4-20024C	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6 HP	460V/3PH	9.802-329.0	2AK41H	8.715-545.0	1-1/8"
4-20024H	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6 HP	208V/3PH	9.802-330.0	2AK41H	8.715-545.0	1-1/8"
4-30024A	LT5030	8.904-874.0	2BK80H	8.715-592.0	25mm	9.802-403.0	8 HP	230V/1PH	8.715-165.0	2BK34H	9.802-382.0	1-3/8"
4-30024B	LT5030	8.904-874.0	2BK80H	8.715-592.0	25mm	9.802-403.0	8 HP	230V/3PH	8.715-166.0	2BK34H	9.802-382.0	1-3/8"
4-30024C	LT5030	8.904-874.0	2BK80H	8.715-592.0	25mm	9.802-403.0	8 HP	460V/3PH	8.715-166.0	2BK34H	9.802-382.0	1-3/8"
4-30024H	LT5030	8.904-874.0	2BK80H	8.715-592.0	25mm	9.802-403.0	8 HP	208V/3PH	8.715-164.0	2BK34H	9.802-382.0	1-3/8"
6-30024B	LT6035/L	8.904-883.0	3BK70H	8.715-617.0	25mm	9.802-403.0	15 HP	230V/3PH	8.715-118.0	3TB56	8.715-606.0	P1x1-5/8"
6-30024C	LT6035/L	8.904-883.0	3BK70H	8.715-617.0	25mm	9.802-403.0	15 HP	460V/3PH	8.715-118.0	3TB56	8.715-606.0	P1x1-5/8"
8-30024B	LX8030	8.904-889.0	3BK80H	8.715-618.0	25mm	9.802-403.0	20 HP	230V/3PH	8.715-123.0	3TB60	8.715-607.0	P1x1-5/8"
8-30024C	LX8030	8.904-889.0	3BK80H	8.715-618.0	25mm	9.802-403.0	20 HP	230V/3PH	8.715-123.0	3TB60	8.715-607.0	P1x1-5/8"
8-30024H	LX8030	8.904-889.0	3BK80H	8.715-618.0	25mm	9.802-403.0	20 HP	230V/3PH	8.715-125.0	3TB60	8.715-607.0	P1x1-5/8"
10-20024B	LX1025	8.904-891.0	3BK70H	8.715-617.0	25mm	9.802-403.0	20 HP	230V/3PH	8.715-123.0	3TB60	8.715-607.0	P1x1-5/8"
10-20024C	LX1025	8.904-891.0	3BK70H	8.715-617.0	25mm	9.802-403.0	20 HP	460V/3PH	8.715-123.0	3TB60	8.715-607.0	P1x1-5/8"

SPECIFICATIONS

PARTS SPECIFICATIONS: LANDA PUMP (CON'T)

Model (Con't)	Bushing Part #	Belt Size/Qty	Belt Part #	Motor Contact	Motor Overload	Stepdown Transformer	Primary Fuse	Primary Fuse Part #	Secondary Fuse	Secondary Fuse Part #	Stepdown Transformer
4-2A	9.802-400.0	AX37 (2)	9.802-409.0	8.724-281.0	N/A	9.802-552.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
4-2B	9.802-400.0	AX37 (2)	9.802-409.0	8.724-272.0	8.724-304.0	9.802-552.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
4-2C	9.802-400.0	AX37 (2)	9.802-409.0	8.724-268.0	8.724-303.0	9.802-552.0	1/2 A	9.802-462.0 (2)	8/10 A	9.802-464.0	9.802-553.0
4-2H	9.802-400.0	AX37 (2)	9.802-409.0	8.724-276.0	8.724-304.0	8.716-882.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
4-3A	9.802-401.0	BX34 (2)	8.715-695.0	8.724-281.0	8.724-306.0	9.802-552.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
4-3B	9.802-401.0	BX34 (2)	8.715-695.0	8.724-276.0	8.724-305.0	9.802-552.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
4-3C	9.802-401.0	BX34 (2)	8.715-695.0	8.724-268.0	8.724-304.0	9.802-552.0	1/2 A	9.802-462.0 (2)	8/10 A	9.802-464.0	9.802-553.0
4-3H	9.802-401.0	BX34 (2)	8.715-695.0	8.724-276.0	8.724-305.0	8.716-882.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
6-3B	9.803-980.0	BX50 (3)	8.715-709.0	8.724-281.0	8.724-307.0	9.802-552.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
6-3C	9.803-980.0	BX50 (3)	8.715-709.0	8.724-276.0	8.724-304.0	9.802-552.0	1/2 A	9.802-462.0 (2)	8/10 A	9.802-464.0	9.802-553.0
8-3B	9.803-980.0	BX54 (3)	8.715-712.0	8.735-015.0	8.724-307.0	9.802-552.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
8-3C	9.803-980.0	BX54 (3)	8.715-712.0	8.724-281.0	8.724-305.0	9.802-552.0	1/2 A	9.802-462.0 (2)	8/10 A	9.802-464.0	9.802-553.0
8-3H	9.803-980.0	BX54 (3)	8.715-712.0	8.735-015.0	8.724-307.0	8.716-882.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
10-2B	9.803-980.0	BX52 (3)	8.715-711.0	8.735-015.0	8.724-307.0	9.802-552.0	1 A	8.933-007.0 (2)	8/10 A	9.802-464.0	9.802-553.0
10-2C	9.803-980.0	BX52 (3)	8.715-711.0	8.724-281.0	8.724-306.0	9.802-552.0	1/2 A	9.802-462.0 (2)	8/10 A	9.802-464.0	9.802-553.0

BURNER SPECIFICATIONS

MODEL	BURNER ASSEMBLY	JET SIZE	GAS VALVE	PILOT ORIFICE CONVERSION
VNG4-2000	X-44	#54	3/4" VB8304	No
VNG4-3000	X-44	#54	3/4" VB8304	No
VNG6-3000	SQ-98	#54	1" V8943B	No
VNG8-3000	SQ-98	#54	1" V8943B	No
VNG10-2000	SQ-98	#54	1" V8943B	No
VLP4-2000	X-44	#63	3/4" V8943B-393691 LP Kit	No
VLP4-3000	X-44	#63	3/4" V8943B-393691 LP Kit	No
VLP6-3000	SQ-98	#65	1" V8943C	No
VLP8-3000	SQ-98	#65	1" V8943C	No
VLP10-2000	SQ-98	#65	1" V8943C	No

BASIC FACTS

BASED ON 60° F	PROPANE	BUTANE
Formula	C3H8	C4H10
Vaporization Point (°F)	-43.7	31.1
Specific Gravity (Vapor)	1.522	2.006
Specific Gravity (Liquid)	0.508	0.584
Lbs. Per Gallon (Liquid)	4.23	4.87
B.T.U. Per Cubic Foot (Vapor)	2.563	3.39
B.T.U. Per Lb. (Vapor)	21.663	21/3-9
B.T.U. Per Gallon (Liquid)	91.74	1-3/93
Cubic Feet Per Lb. (Liquid)	8.607	7/53
Cubic Feet Per Gallon (Liquid)	3.45	31/9
Octane Number	125	1
Molecular Weight	44.09	58.12
To calculate running cost:		
1 cubic Ft./1,000 B.T.U.		
100 cubic Ft./Therm		
Therm/Hour		
50¢ Therm		
Example:	Using natural gas	
	400,000 BTU Machine	
	400 cubic feet	
	4 Therms/hour	
	4 x .50 = \$2.00/hour to run	

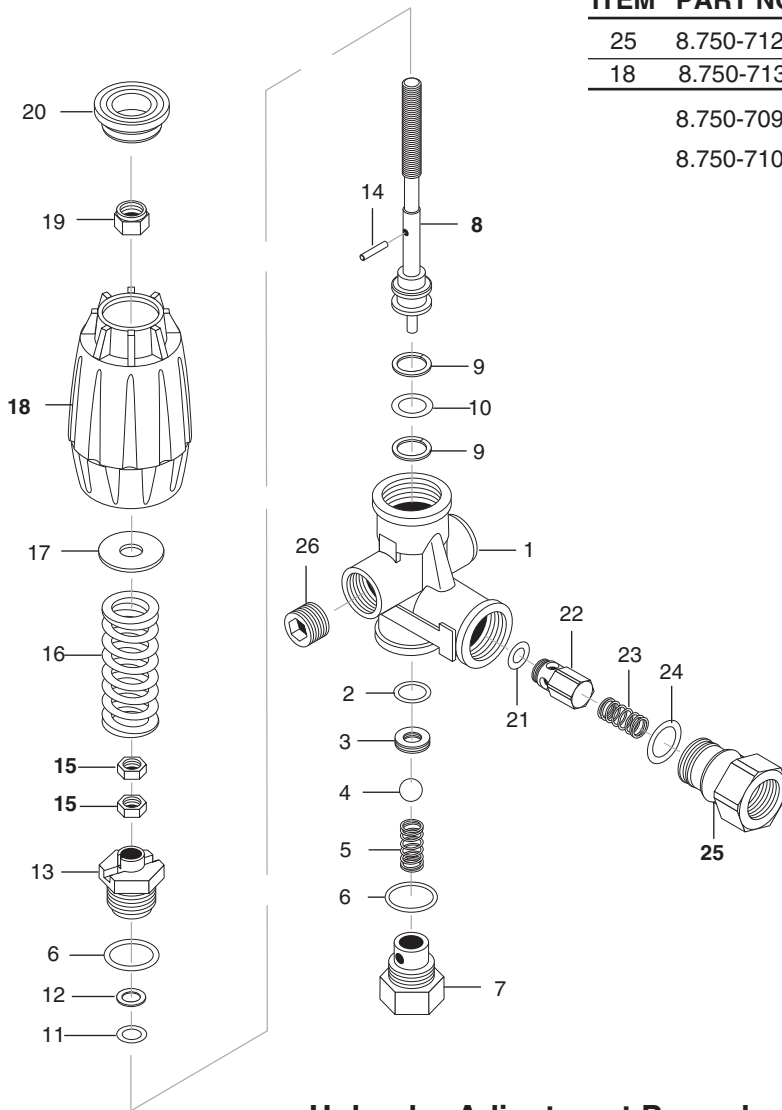
PRESSURE EQUIVALENTS

Simply stated, pressure is the force exerted by a gas or liquid attempting to escape from a container. It is useful to know how strong this “attempt to escape” is. Pressure can be measured with a manometer or with a pressure gauge. At the lower levels, it is expressed in “water column inches” i.e. 1 w.c.i. Higher pressures are expressed in terms of the force exerted against a square inch of area. For example, 125 lbs. per square inch (125 psi).

1 Water Column Inch	=	50 Oz./Sq. In.	11 Water Column Inches	=	6.35 Oz./Sq. In.
11 Water Column Inches	=	4 Lb./Sq. In.	1 Lb./Sq. In.	=	27.71 Water Column Inches
1 Lb./Sq. In.	=	"2.04" Mercury"	"1" Mercury"	=	.39 Lb./Sq. In.
1 Std. Atmosphere	=	14.73 Lbs./Sq. In.			

VRT3 UNLOADER EXPLODED VIEW AND PARTS LIST

8.750-297.0, 8 GPM, 2320 PSI
 8.750-298.0, 8 GPM, 3630 PSI
 8.750-299.0, 8 GPM, 4500 PSI



ITEM	PART NO.	DESCRIPTION	QTY
25	8.750-712.0	Outlet Fitting	1
18	8.750-713.0	Knob, Unloader	1
	8.750-709.0	Repair Kit, VRT3, 2320/3630 PSI	
	8.750-710.0	Repair Kit, VRT3, 4500 PSI	
		(Kit Items: 1, 4, 8-12, 16, 21-22)	

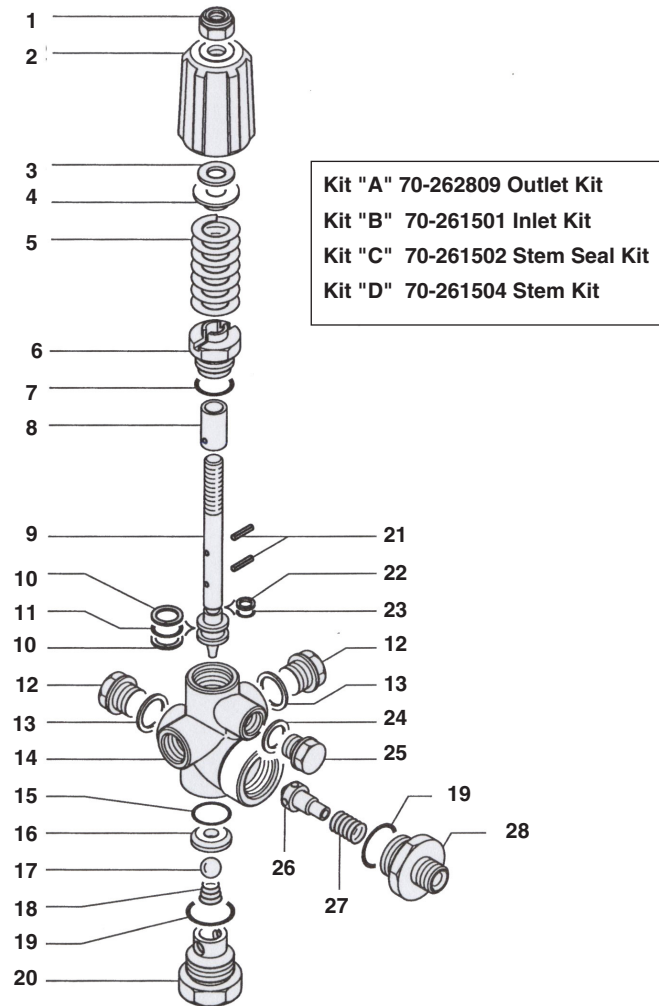
Unloader Adjustment Procedures

1. Remove lock nut (Item 19).
2. Remove adjustment knob (Item 18).
3. Loosen the two (2) nuts (Item 15), move them upward on stem (Item 8) until you see 4 or more threads below the nut.
4. Re-attach adjusting knob (Item 18).
5. Start machine. Open the trigger of the spray gun. Increase pressure by turning adjustment knob (Item 18) clockwise until pressure is at the desired operating pressure.
6. Remove the adjustment knob (Item 18), tighten the lower nut (Item 15) tightly against the upper nut (Item 15). Re-attach adjustment knob (Item 18) and screw down until contact is made with the nuts (Items 15). Screw down lock nut (Item 19) onto the stem (Item 8) until the threads cut into the nylon insert of the lock nut (Item 19).

*If adjustment knob (Item 18) **DOES NOT** make contact with upper nut (Items 15), remove adjusting knob (Item 18), re-adjust (raise) nuts (Items 15) on stem (Item 8) and re-attach adjustment knob (Item 18), then repeat step #6.

If adjustment knob (Item 18) **DOES make contact with upper nut; release the trigger of the spray gun and watch the pressure gauge for the pressure increase ("spike"). This "spike" **SHOULD NOT** exceed 500 psi above the operating pressure. If "spike" pressure exceeds the 500 psi limit, remove the adjusting knob (Item 18) and re-adjust (lower) the nuts (Items 15) on the stem (Item 8). Re-attach the adjusting knob (Item 18), then repeat step #6.

VBXL 8.715-508.0 (5-3324) UNLOADER EXPLODED VIEW

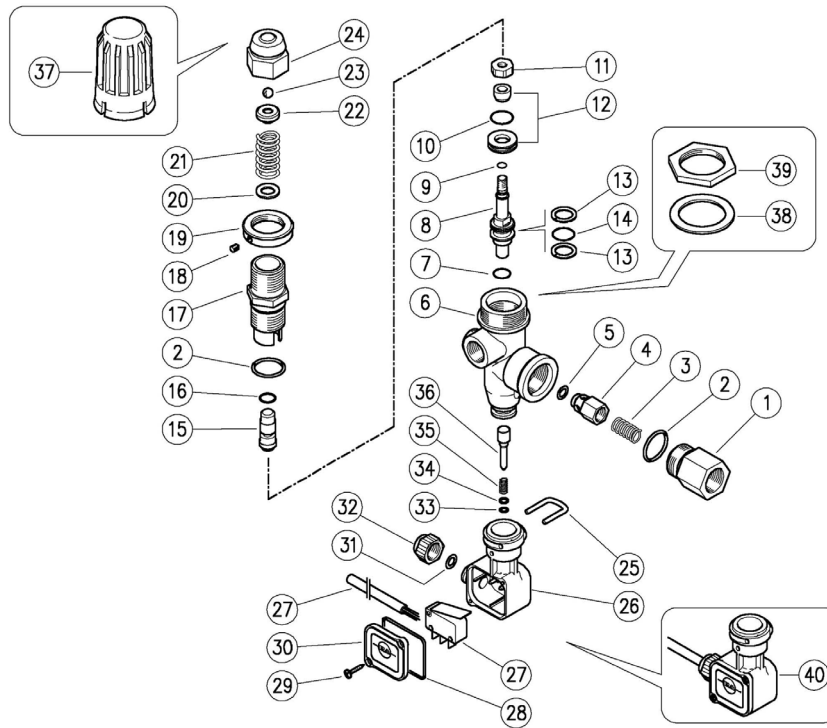


VBXL 5-3324 UNLOADER EXPLODED VIEW PARTS LIST

ITEM#	PART #	DESCRIPTION	KIT	QTY	ITEM#	PART #	DESCRIPTION	KIT	QTY
1	8.717-192.0	Nut, Locking		1	15	9.803-948.0	O-Ring, Seat	B	1
2	8.717-269.0	Handle, Red		1	16	8.932-703.0	Seat	B	1
3	8.932-697.0	Space, Anti-friction	D	1	17	8.730-888.0	Ball, 7/16"	B	1
4	8.932-693.0	Plate	D	1	18	8.730-688.0	Spring, Ball	B	1
5	8.932-689.0	Spring	D	1	19	8.932-681.0	O-Ring, Relief	A,B	2
6	8.717-403.0	Stem Nut	D	1	20	8.717-405.0	Relief, 1/2"		1
7	9.803-191.0	O-Ring, Nut	C	1	21	8.932-705.0	Pin	C	2
8	8.932-684.0	Spacer, Red		1	22	8.717-077.0	O-Ring, Teflon 106	C	1
9	8.932-695.0	Stem	D	1	23	8.932.702.0	O-Ring, Stem	C	1
10	8.717-078.0	O-Ring, Teflon 115	C	2	24	9.803-198.0	Washer, Copper		1
11	8.932-682.0	O-Ring, Stem	C	1	25	9.803-951.0	Plug, 1/4"		1
12	9.802-925.0	Plug, 3/8"		2	26	9.803-917.0	Poppet	A	1
13	9.803-198.0	Washer, Copper, 3/8"		3	27	8.933-017.0	Spring, Poppet	A	1
	9.803-950.0	Washer, Copper, 1/4"		1	28	8.932-701.0	Discharge Port, 1/2"		1
14	8.932-679.0	Body		1	29	8.932-702.0	Connector		1

VB8 VALVE EXPLODED VIEW

VB8 Valve, 9.802-362.0 (5-3027)



VB8 VALVE EXPLODED VIEW PARTS LIST

ITEM#	PART #	DESCRIPTION	QTY	ITEM#	PART #	DESCRIPTION	QTY
1	60.0058.31	Delivery coupl., 3/8F Bsp brass	1	22	60.1210.31	Spring guiding ring	1
2	10.3070.02	O-Ring 1.78 x 18.77 mm Ni 85	2	23	14.7421.50	Ball, 1/4" Sst.	1
3	60.0053.51	Spring, 0.7 x 9 x 20 mm Sst.	1	24	60.1209.31	Valve regulating Insert, brass	1
4	60.0052.31	Shutter pin, brass	1	25	29.0087.51	U-bolt, Sst.	1
5	10.3070.02	O-Ring, 3 x 6 mm	1	26	29.0089.84	Housing, PR5 PA black	2
6	60.1201.35	Housing-BB8, 3/8 M Bsp c/sunk, brass	1	27	12.5006.00	Cable, 3 x 0.75L.1000 mm + Microswitch	1
7	10.3170.08	O-Ring, 2.62 x 7.6 mm Ni 85	1	28	10.3206.01	O-Ring, 2.62 x 28.25 mm	1
8	60.1206.31	Piston, M6 brass	1	29	16.3020.00	S/tapp. screw, DIN7981 2.5 x 12mm nick.pl.	2
9	10.3001.01	O-Ring, 1 x 4 mm Ni 85	1	30	29.0088.84	Lid, PR5 PA black	1
10	10.3066.01	O-Ring, 1.78 x 15.6 mm Ni 85	1	31	10.3169.00	O-Ring, 2.62 x 6.02 mm	1
11	60.1205.31	Special Nut, M6 brass	1	32	29.0082.84	Locknut for cable gland, PA black	1
12	60.2221.20	Seat, 10 mm + O-Ring, 1.78 mm NBR 85+shutt.	1	33	10.3038.00	O-Ring, 1.78 x 3.68 mm	1
13	10.4021.00	Back-up Ring, opn. 11.5 x 15.9 x 1.2 mm	2	34	14.3519.53	Washer, 4 x 8 x 0.8 mm Sst.	1
14	10.3175.00	O-Ring 2.65 x 10.77 mm	1	35	60.2303.51	Spring, 1.1 x 8 x 20 mm Sst.	1
15	60.1204.31	Spring rest pin, brass	1	36	60.1281.31	Micro-switch piston, brass	1
16	10.3167.01	O-Ring, 2.62 x 5.23 mm Ni 85	1	37	60.1202.84	Valve regulating knob, PA black (1)	1
17	60.1203.31	Piston holder, brass	1	38	14.3582.00	Washer, 30.5 x 42 x 2 mm	1
18	16.2100.00	Set screw, DIN914M 4 x 4 mm	1	39	60.2254.31	Ring nut , M30 brass (1)	1
19	60.1704.31	Ring nut, M22 x 1 brass	1	40	29.0096.24	Casing kit - PR5, complete 40 bar	1
20	14.3719.00	Washer, 9 x 15 x 1, 5 mm Sst.	1				
21	60.1208.61	Spring, 3.2 x 15.4 x 33 mm z.pl.	1				
				Kit: K1	60.1212.24	Repair kit-VB8. 9 x 1 pcs. (1) 60.1290.00	1

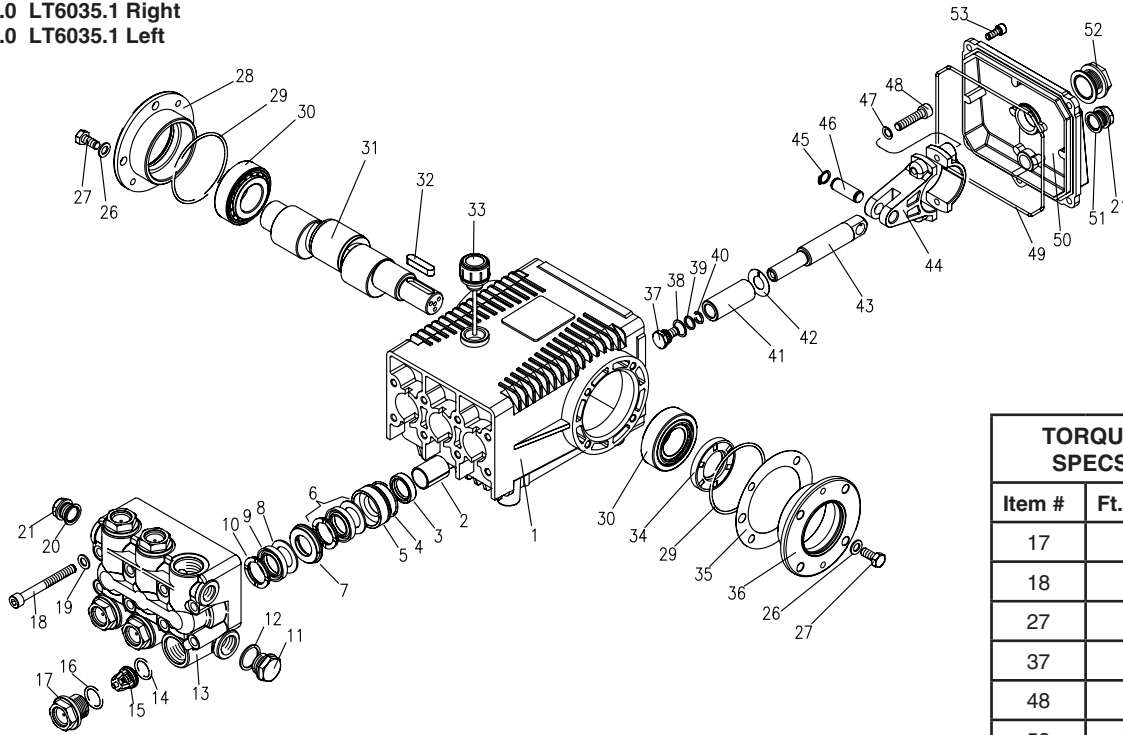
VB8 VALVE EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	12-60005831	3/8" Bsp F Outlet Fitting	1	21	12-60120861	Spring 3 x 33mm	1
2	12-10307002	‡ O-Ring 1.78 x 18.77mm	2	22	12-60121031	Upper Frame	1
3	12-60005351	Spring	1	23	12-14742100	1/4" Ball	1
4	12-60005231	Check Valve	1	24	12-60120931	Brass Cap	1
5	12-10321300	‡ O-Ring 3 x 6mm	1	25	12-29008751	Sst Clip	1
6	12-60120135	VB8 Brass Body	1	26	12-29008984	Plastic Housing	1
7	12-10317008	‡ O-Ring 2.62 x 7.6	1	27	12-12500600	El. Cable & Micro Switch	1
8	12-60120631	Piston	1	28	12-10320601	O-Ring 2.62 x 28.25mm	1
9	12-10300101	‡ O-Ring 1 x 4mm	1	29	12-16302000	2.5 x 12mm Screw	2
10	12-10306601	‡ O-Ring 1.78 x 15.6mm	1	30	12-29008884	Cover	1
11	12-60120531	M6 Nut	1	31	12-10316900	O-Ring 2.62 x 6.02mm	1
12	12-60222120	‡ VB8 Seat & Shutter	1	32	12-29008284	Black Nut - 40 Bar	1
13	12-10402100	‡ Back Ring 11.4 x 15.9	2	33	12-10303800	O-Ring 1.78 x 3.68	1
14	12-10317500	‡ O-Ring 2.62 x 10.77mm	1	34	12-14351900	Washer 4 x 8mm	1
15	12-60120431	Spring Guide	1	35	12-60230351	Spring	1
16	12-10316701	‡ O-Ring 2.62 x 5.23mm	1	36	12-60128131	PR 5 Pin	1
17	12-60120331	Piston Housing	1	37	12-60120284	Plastic Handle (83-60129000)	1
18	12-16210000	M4 x 4mm Dowel	1	38	12-14358200	Washer D. 30mm (8360129000)	1
19	12-60170431	M22 Nut	1	39	12-60225431	M30 Nut (83-60129000)	1
20	12-14371900	Washer 9 x 15mm	1	40	12-29009624	PR5 Pl. Housing Kit	1
					12-60121224	‡ VB8 Repair Kit	

LT.1 SERIES PUMP EXPLODED VIEW

- 8.904-869.0 LT4035.1 Right
- 8.904-870.0 LT4035.1 Left
- 8.904-871.0 LT4040.1 Right
- 8.904-872.0 LT4040.1 Left
- 8.904-874.0 LT5030.1 Right
- 8.904-879.0 LT5030.1 Left
- 8.904-881.0 LT6035.1 Right
- 8.904-883.0 LT6035.1 Left

G3 Evolution



TORQUE SPECS	
Item #	Ft.-Lbs.
17	75
18	45
27	18
37	10
48	30
53	7.6

LT.1 SERIES PUMP EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	9.803-163.0	Crankcase	1	19	9.802-890.0	Washer	8
2	9.803-195.0	Plunger Guide	3	20	9.803-198.0	Copper Washer 3/8"	1
3*	See Kit	Plunger Oil Seal	3	21	9.802-925.0	Brass Plug 3/8"	1
4*	See Kit	O-Ring Ø1.78 x 31. 47	3	26	9.802-884.0	Washer	8
5*	See Kit	"Pressure Ring, Brass	3	27	9.802-944.0	Hexagonal Screw	8
6*	See Kit	"U" Seal Low Pressure	3	28	9.803-182.0	Closed Bearing Housing	1
7*	See Kit	Intermediate Ring, Brass	3	29	9.803-186.0	O-Ring Ø2.62 x 71.12	2
8*	See Kit	Support Ring, Teflon Bronze	3	30	9.803-160.0	Roller Bearing, Tapered	2
9 *	See Kit	"U" Seal High Pressure	3	31	9.803-148.0	Crankshaft (GT4040.1, 5030.1, 6035.1)	1
10*	See Kit	Support Ring	3		9.803-149.0	Crankshaft (GT 4035.1)	1
11	9.802-926.0	Brass Plug, 1/2"	1	32	9.803-167.0	Crankshaft Key	1
12	9.803-199.0	Copper Washer 1/2"	1	33	9.802-923.0	Oil Dip Stick	1
13	9.802-933.0	Manifold Head	1	34	9.803-139.0	Crankshaft Seal	1
14*	See Kit	O-Ring Ø2.62 x 17.13	6	35	9.803-177.0	Shim	2
15*	See Kit	Valve Assembly	6	36	9.803-181.0	Bearing Housing	1
16*	See Kit	O-Ring Ø2.62 x 20.29	6	37*	See Kit	Plunger Bolt	3
17	9.802-928.0	Valve Plug	6	38*	See Kit	Copper Spacer	3
18	9.802-943.0	Manifold Stud Bolt	8				

LT.1 SERIES PUMP PARTS LIST (CONT)

ITEM	PART NO.	DESCRIPTION	QTY
39*	See Kit	O-Ring Ø1.78 x10.82	3
40*	See Kit	Teflon Ring	3
41*	See Kit	Plunger	3
42*	See Kit	Copper Spacer	3
43	9.803-143.0	Plunger Rod	3
44	9.803-157.0	Connecting Rod	3
45	9.802-912.0	Snap Ring	6
46	9.802-915.0	Connecting Rod Pin	3
47	9.802-889.0	Spring Washer	6
48	9.802-937.0	Connecting Rod Screw	6
49	9.803-194.0	O-Ring Ø2.62 x 152.07	1
50	9.803-166.0	Crankcase Cover	1
51	9.803-197.0	Gasket, G3/8	1
52	9.803-202.0	Sight Glass G3/4	1
53	9.802-939.0	Cover Screw	5

* Part available in kit (See below)

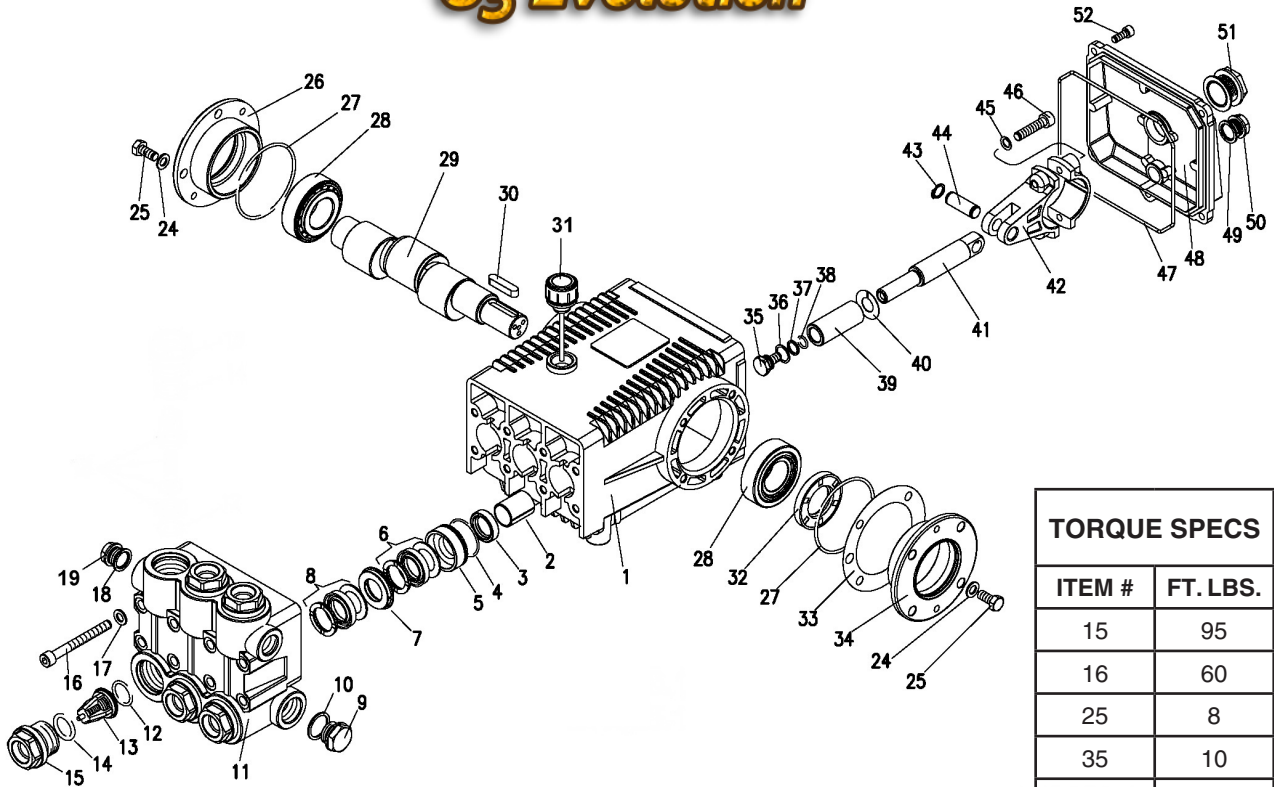
REPAIR KIT NUMBER	8.916-488.0	8.916-487.0	8.916-322.0	8.916-323.0	9.802-607.0	9.802-611.0
KIT DESCRIPTION	Plunger "U" Seal 20mm LT-4040.1, LT-6035.1 LT-4035.1	Plunger "U" Seal 22mm LT-5030.1	"U" Seal Packing Assy 20mm LT-4040.1 LT-6035.1 LT-4035.1	"U" Seal Packing Assy 22mm LT-5030.1	Plunger 20mm LT-4040.1 LT-6035.1 LT-4035.1	Plunger 22mm LT-5030.1
ITEM NUMBERS INCLUDED	4, 6, 8, 9, 10	4, 6, 8, 9, 10	4, 5, 6, 7, 8, 9,10	4, 5, 6, 7, 8, 9,10	37, 38, 39, 40, 41, 42	37, 38, 39, 40, 41, 42
NUMBER OF CYLINDERS KIT WILL SERVICE	3	3	1	1	1	1

REPAIR KIT NUMBER	9.802-603.0	9.802-606.0
KIT DESCRIPTION	Complete Valve (all pumps)	Plunger Oil Seals (all pumps)
ITEM NUMBERS INCLUDED	14, 15, 16	3
NUMBER OF CYLINDERS KIT WILL SERVICE	6	3

LX.1 SERIES PUMP EXPLODED VIEW

8.904-888.0 LX 8030R.1
 8.904-889.0 LX 8030L.1
 8.904-892.0 LX 1025R.1
 8.904-891.0 LX 1025L.1

G3 Evolution



TORQUE SPECS	
ITEM #	FT. LBS.
15	95
16	60
25	8
35	10
46	30
52	7.6

LX.1 SERIES PUMP EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	9.803-163.0	Crankcase	1	18	9.803-199.0	Copper Washer 1/2	1
2	9.803-195.0	Plunger Guide	3	19	9.802-926.0	Brass Plug 1/2	1
3*	See Kit	Plunger Oil Seal	3	24	9.802-884.0	Washer	8
4*	See Kit	O-Ring Ø1.78 x 37.82	3	25	9.802-944.0	Flange Screw	8
5*	See Kit	Pressure Ring, 25mm	3	26	9.803-182.0	Closed Bearing Housing	1
6*	See Kit	U-Seal, 25mm	3	27	9.803-186.0	O-Ring Ø2.62 x 71.12	2
7*	See Kit	Intermediate Ring 25mm	6	28	9.803-160.0	Roller Bearing	2
8*	See Kit	U-Seal, 25mm	3	29	9.803-288.0	Crankshaft (LX 8030)	1
9	9.803-285.0	Brass Plug, 3/4	1		9.803-289.0	Crankshaft (LX 1025)	1
10	9.803-286.0	Copper Washer 3/4	1	30	9.803-167.0	Crankshaft Key	1
11	9.802-935.0	Manifold Housing	1	31	9.802-923.0	Oil Dip Stick	1
12*	9.803-291.0	O-Ring Ø2.62 x 23.47	6	32	9.803-139.0	Crankshaft Seal	1
13*	See Kit	Valve Assembly	6	33	9.803-177.0	Shim	2
14*	9.803-287.0	O-Ring Ø3.53 x 25.80	6	34	9.803-181.0	Bearing Housing	1
15	9.802-930.0	Valve Plug	6	35*	See Kit	Plunger Bolt	3
16	9.802-942.0	Manifold Stud Bolt	8	36*	See Kit	Copper Spacer	3
17	9.802-890.0	Lock Washer	8				

LX.1 SERIES PUMP EXPLODED VIEW PARTS LIST (CONT.)

ITEM	PART NO.	DESCRIPTION	QTY
37*	See Kit	O-Ring Ø1.78x10.82	3
38*	See Kit	Teflon Ring	3
39*	See Kit	Plunger 25mm	3
40*	See Kit	Copper Spacer	3
41	9.803-143.0	Plunger Rod 3	
42	9.803-157.0	Connecting Rod	3
43	9.802-912.0	Snap Ring	6
44	9.802-915.0	Connecting Rod Pin	3
45	9.802-889.0	Spring Washer	6
46	9.802-937.0	Connecting Rod Screw	6
47	9.803-194.0	O-Ring Ø2.62 x 152.07	1
48	9.803-166.0	Crankcase Cover	1
49	9.803-197.0	Gasket, G3/8	1
50	9.802-925.0	Brass Plug 3/8	1
51	9.803-202.0	Sight Glass G3/4	1
52	9.802-939.0	Cover Screw	5

* Available in kit (See below)

KIT NUMBERS	8.725-364.0	8.725-365.0	9.802-614.0	9.802-608.0	9.802-606.0
KIT DESCRIPTION	Plunger Seal 25 mm	Seal Packing 25mm	Plunger 25mm	Complete Valve	Plunger Oil Seals
ITEMS NUMBERS INCLUDED	4, 6, 8	4, 5, 6, 7, 8	35, 36, 37, 38, 39, 40	12, 13, 14	3
NUMBER OF CYLINDERS KIT WILL SERVICE	3	1	1	6	3



**LANDA LIMITED NEW PRODUCT WARRANTY
PRESSURE WASHERS
WHAT THIS WARRANTY COVERS**

All LANDA pressure washers are warranted by LANDA to the original purchaser to be free from defects in materials and workmanship under normal use, for the periods specified below. This Limited Warranty is subject to the exclusions shown below, is calculated from the date of the original purchase, and applies to the original components only. Any parts replaced under this warranty will assume the remainder of the part's warranty period.

SEVEN YEAR PARTS AND ONE YEAR LABOR WARRANTY:

Components manufactured by LANDA, such as frames, handles, top and bottom wraps, float tanks, fuel tanks, belt guards, and internal components on the oil-end of Landa manufactured pumps. Pro-Duty units (PD Series) have a three-year warranty against material defects and workmanship. General, AR, Legacy, Comet and swash and wobble plate pumps have a one year warranty. Heating coils have a five year warranty from date of original machine purchase.

ONE YEAR PARTS AND ONE YEAR LABOR WARRANTY:

All other components, excluding normal wear items as described below, will be warranted for one year on parts and labor. Parts and labor warranty on these parts will be for one year regardless of the duration of the original component manufacturer's part warranty.

WARRANTY PROVIDED BY OTHER MANUFACTURERS:

Motors, generators, and engines, which are warranted by their respective manufacturers, are serviced through these manufacturers' local authorized service centers. LANDA is not authorized and has no responsibility to provide warranty service for such components.

WHAT THIS WARRANTY DOES NOT COVER

This warranty does not cover the following items:

1. Normal wear items, such as nozzles, spray guns, discharge hoses, wands, quick couplers, seals, filters, gaskets, O-rings, packings, pistons, pump valve assemblies, strainers, belts, brushes, rupture disks, fuses, pump protectors.
2. Damage or malfunctions resulting from accidents, abuse, modifications, alterations, incorrect installation, improper servicing, failure to follow manufacturer's maintenance instructions, or use of the equipment beyond its stated usage specifications as contained in the operator's manual.
3. Damage due to freezing, chemical deterioration, scale build up, rust, corrosion, or thermal expansion.
4. Damage to components from fluctuations in electrical or water supply.
5. Normal maintenance service, including adjustments, fuel system cleaning, and clearing of obstructions.
6. Transportation to service center, field labor charges, or freight damage.

WHAT YOU MUST DO TO OBTAIN WARRANTY SERVICE

While not required for warranty service, we request that you register your LANDA pressure washer by returning the completed registration card. In order to obtain warranty service on items warranted by LANDA, you must return the product to your Authorized LANDA Dealer, freight prepaid, with proof of purchase, within the applicable warranty period. If the product is permanently installed, you must notify your Authorized LANDA Dealer of the defect. Your Authorized LANDA Dealer will file a claim with Landa, who must subsequently verify the defect. In most cases, the part must be returned to LANDA freight prepaid with the claim. For warranty service on components warranted by other manufacturers, your Authorized LANDA Dealer can help you obtain warranty service through these manufacturers' local authorized service centers.

LIMITATION OF LIABILITY

LANDA'S liability for special, incidental, or consequential damages is expressly disclaimed. In no event shall LANDA'S liability exceed the purchase price of the product in question. LANDA makes every effort to ensure that all illustrations and specifications are correct, however, these do not imply a warranty that the product is merchantable or fit for a particular purpose, or that the product will actually conform to the illustrations and specifications. Our obligation under this warranty is expressly limited at our option to the replacement or repair at a service facility or factory designated by us, of such part or parts as inspection shall disclose to have been defective. **THE WARRANTY CONTAINED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY.** LANDA does not authorize any other party, including authorized LANDA Dealers, to make any representation or promise on behalf of LANDA, or to modify the terms, conditions, or limitations in any way. It is the buyer's responsibility to ensure that the installation and use of LANDA products conforms to local codes. While LANDA attempts to assure that its products meet national codes, it cannot be responsible for how the customer chooses to use or install the product. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

LANDA[®]

Form #8.913-939.0 • Revised 5/11 • Printed in U.S.A