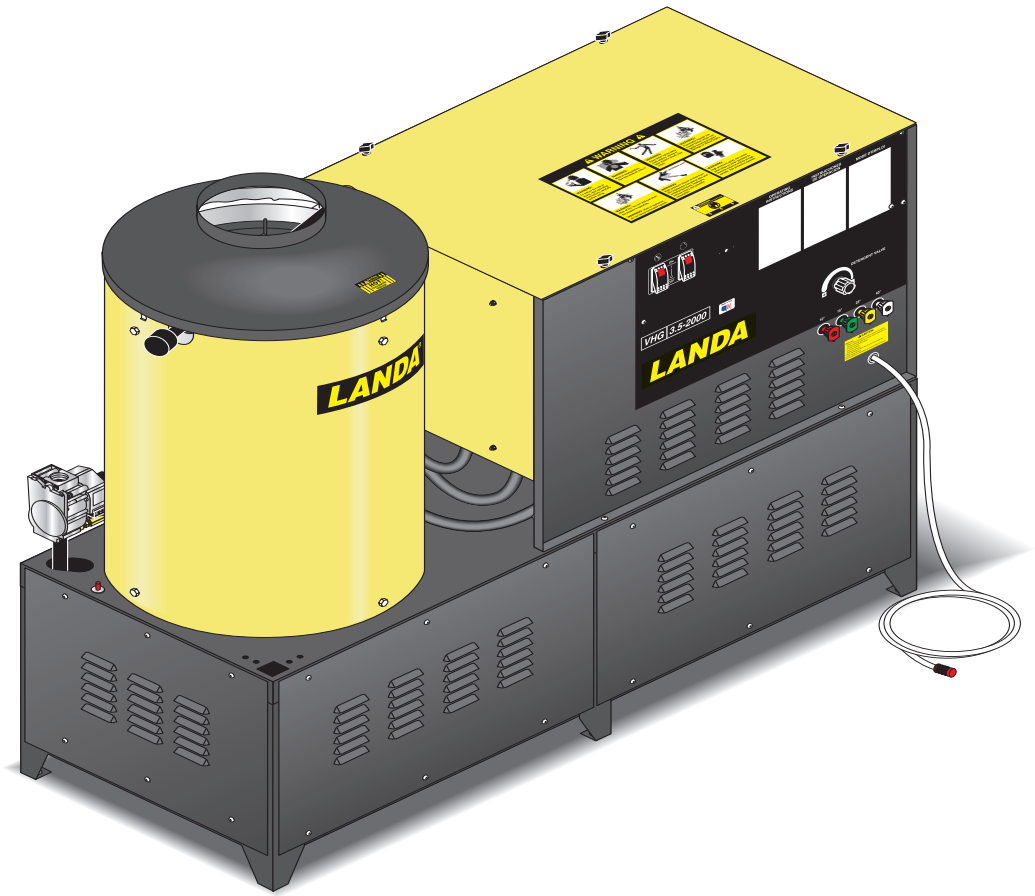
LANDA® VHG

OPERATOR'S MANUAL

- VHG4-3000
- VHG4-2000
- VHG4-2200
- VHG8-3000
- VHG5-3000
- VHG6-3000



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

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CONTENTS

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.

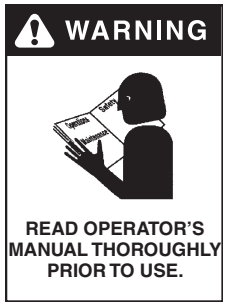
The operator must know how to stop the machine quickly and understand the operation of all controls. Never permit anyone to operate the engine without proper instructions.

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.

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.

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. Gas 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

EAR PROTECTION MUST BE WORN

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

CAUTION

HOT DISCHARGE FLUID DO NOT TOUCH OR DIRECT DISCHARGE STREAM AT PERSONS.

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 INJURY. HOT SURFACES CAN CAUSE BURNS

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

TRIGGER GUN KICKS BACK - HOLD WITH BOTH HANDS

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

RISK OF INJECTION OR SEVERE INJURY TO PERSONS. KEEP CLEAR OF NOZZLE.

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.

WARNING

PROTECT FROM FREEZING

WARNING: Protect machine from freezing.

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 then 90°F.

WARNING

RISK OF ASPHYXIATION. USE THIS PRODUCT ONLY IN A WELL VENTILATED AREA.

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

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

RISK OF INJURY FROM FALLS WHEN USING LADDER.

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.

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.

WARNING: Use vapor fuel only.

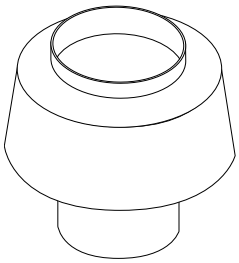
22. The LP models are designed to run on vapor propane fuel. Do not use liquid fuel. Have a qualified serviceman install and service your equipment.

IMPORTANT SAFETY INFORMATION

23. Never expose a spark or flame where there may be unburned gas present.
24. Install this machine about 2 feet from wall to provide adequate ventilation and servicing space. This equipment incorporates parts such as snap switches or similar parts that tend to produce arcs or sparks. Therefore, when located in a garage, it should be in a room or enclosure provided for the purpose or should be installed 18" (457mm) or more above the floor.
25. When making repairs disconnect from electrical source and shut off gas valve.
26. Install this machine on non combustible 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 3 minutes.

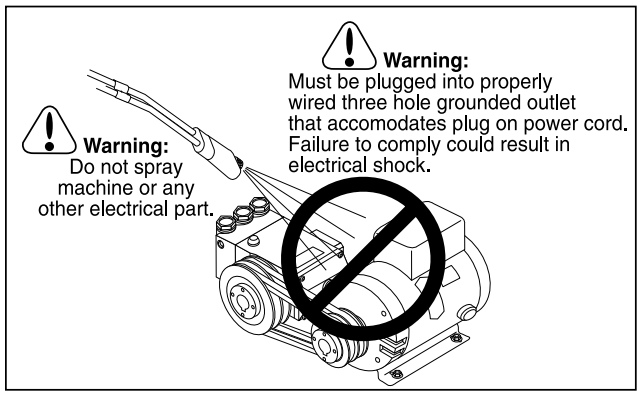
WARNING: If connection is made to portable water supply, a back flow device must be provided.

29. Exhaust gases should not be vented into a wall, a ceiling or a concealed space of a building. A draft diverter must be installed to prevent down draft and to allow cooling of exhaust temperatures. Exhaust gases that exceed 470°F (243°C) are not suitable for connection to Type B gas vents.

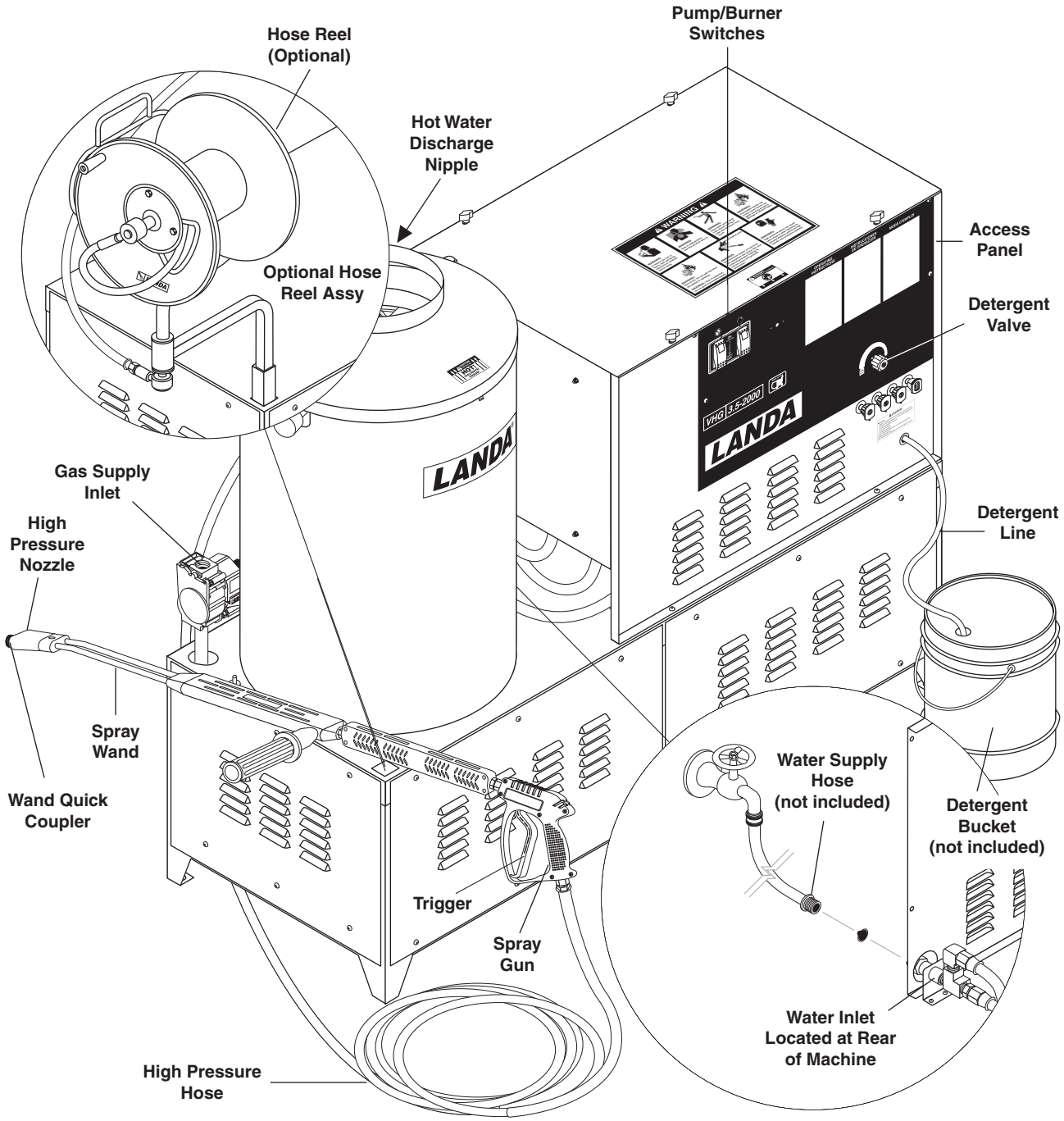


Example of Down Draft Diverter for Gas Fired Machines

Follow the maintenance instructions specified in the manual.



COMPONENT IDENTIFICATION - ALL MODELS



Pump — Delivers a specific gpm to the high pressure nozzle which develops pressure. (Not Shown)

Spray Gun — Controls the application of water and detergent onto cleaning surface with trigger device. Includes safety latch.

Detergent Valve— Allows you to siphon and mix detergents.

Wand — Must be connected to the spray gun.

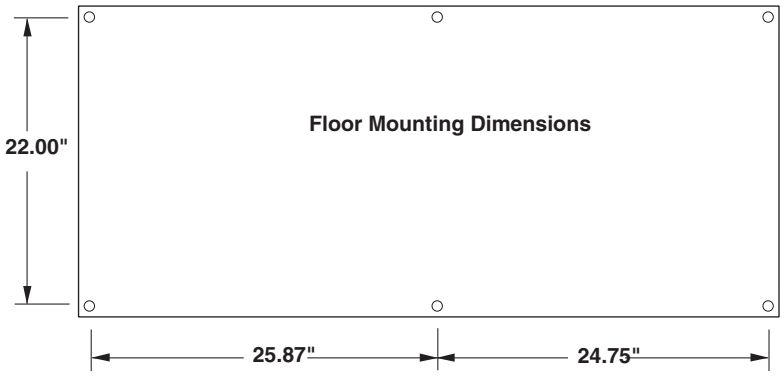
High Pressure Hose — Connect one end to water pump high pressure discharge nipple and the other end to spray gun.

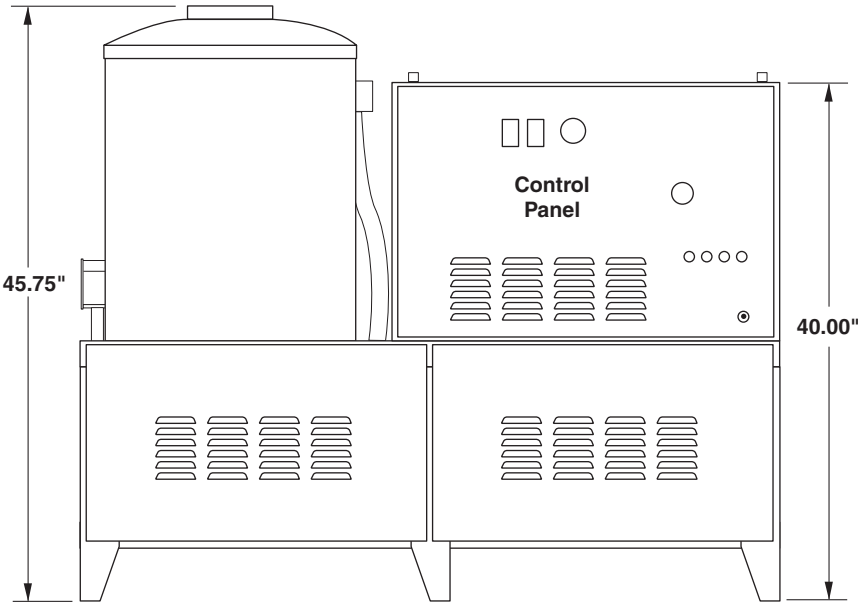
Rupture Disk — Secondary pressure release in the unlikely event the unloader valve fails. (Not Shown)

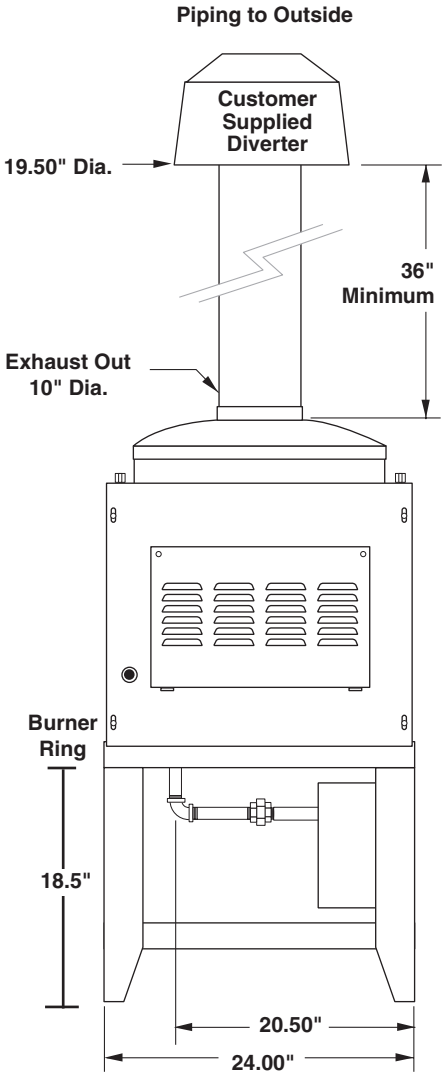
Unloader Valve — Safety device which, when the spray gun closes, prevents over pressurization. (Not Shown)

NOTE: **If trigger on spray gun is released for more than 3 minutes, water will leak from the pump protector. Warm water will discharge from pump protector onto floor. This system prevents internal pump damage.**

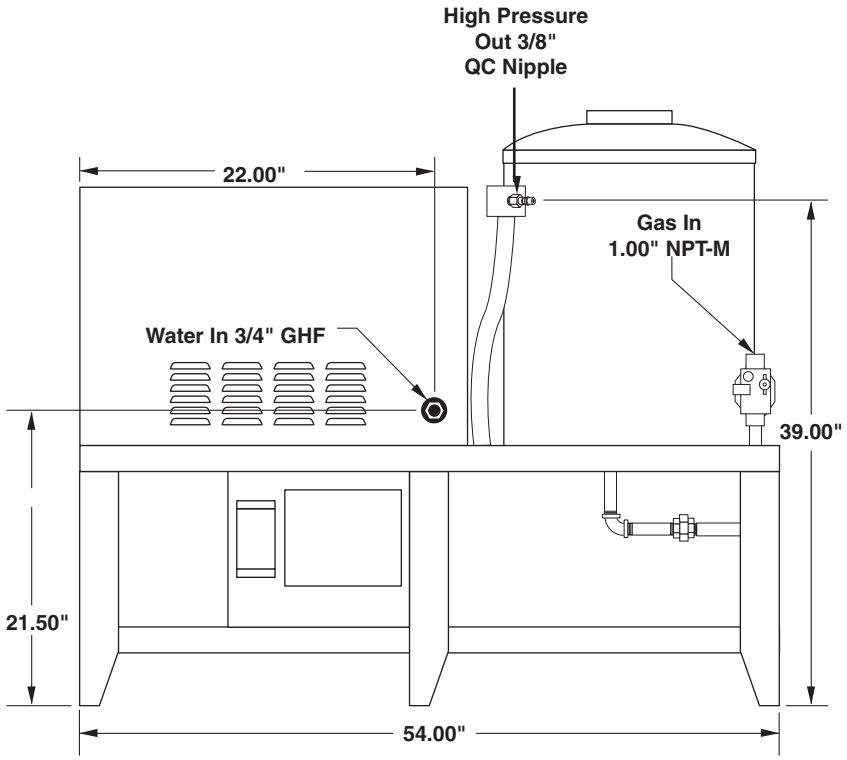
INSTALLATION - VHGL- 4, 5







NOTE: Draft diverter should be installed 3 ft. above exhaust outlet.



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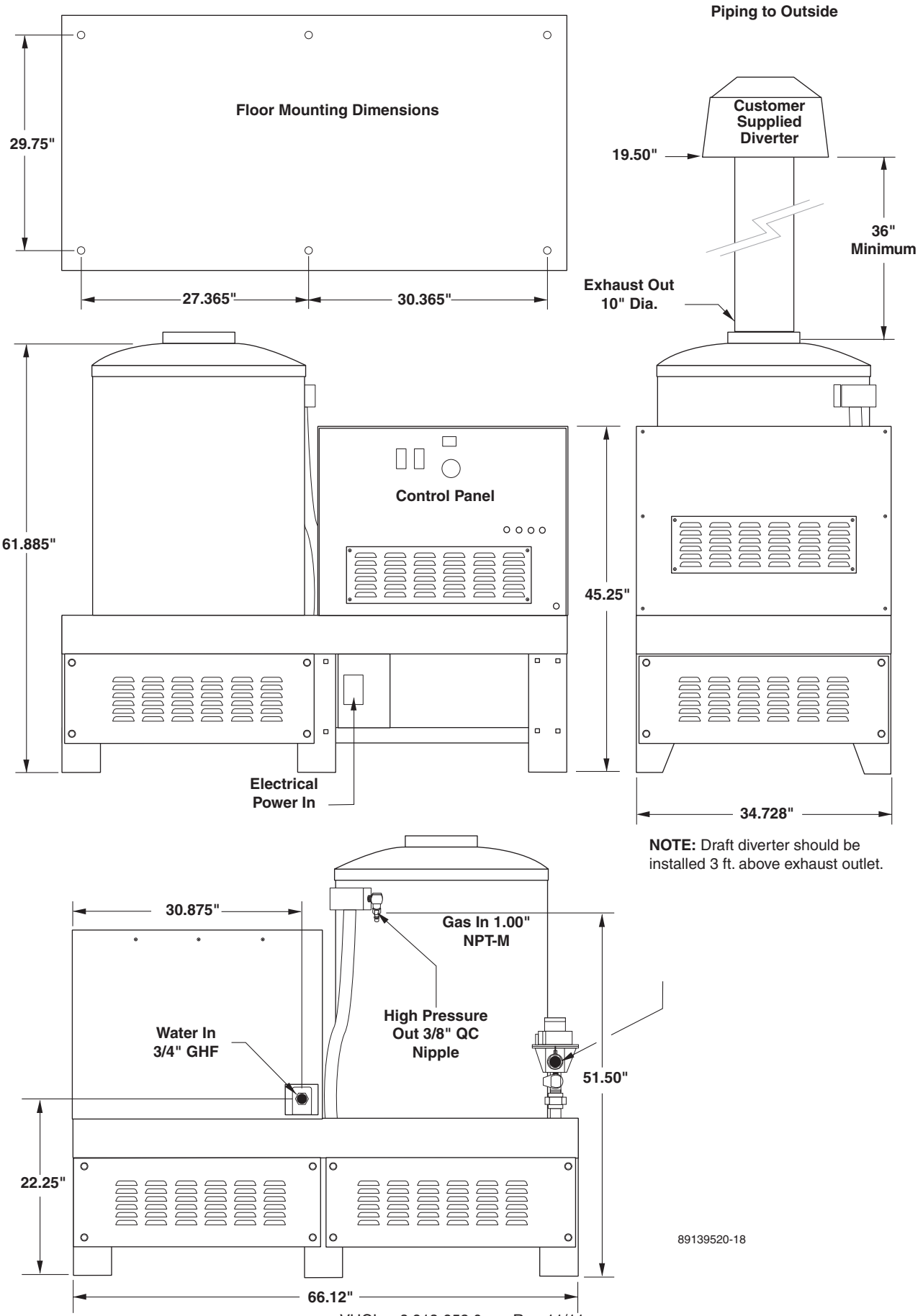
INSTALLATION - VHGL-6, 8



NOTE: Draft diverter should be installed 3 ft. above exhaust outlet.

INSTALLATION

Place machine in a convenient location providing ample support, drainage and room for maintenance (pgs 8-9).

Location:

The location should protect 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 for the replacing of components and the refilling of detergents, adjustments and maintenance. Normal precautions should be taken by the operator of the machine to prevent excess moisture from reaching the power unit or electrical controls.
2. It is recommended that a partition be made between the wash area and the machine to prevent direct spray from the spray gun from coming in contact with the machine. Excess moisture reaching the power unit or electrical controls will reduce the machine's life and may cause electrical shorts.
3. During installation of the 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 there is a sufficient supply of oxygen 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 the burner and a fan installed to bring the air into the 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).

WARNING: Avoid small areas or 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 to local codes. Check for proper power supply using a volt meter; check the serial plate for the correct requirements.

Install a gas union in the gas line adjacent to and upstream from the control manifold and downstream from the manual main shut-off valve. A 1/8" NPT 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.

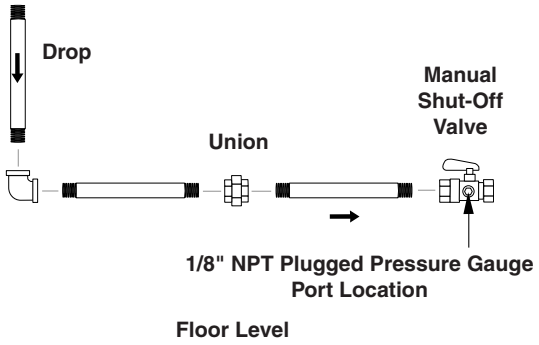


Figure 1: Union Location

Union Connection

The following pipe and stack sizes are just recommendations. Always consult a local plumber and venting contractor for local codes and regulations during installation.

Length of Pipe (ft.)	Iron Pipe Size	
	1/2"	3/4"
10	3339	6982
20	2295	4799
30	1843	3854
40	1577	3298
50	1398	2923
60	1267	2649
70	1165	2437
80	1084	2267
90	1017	2127
100	961	2009
150	772	1613
200	660	1381
250	585	1224
300	530	1109
350	488	1020
400	454	949
450	426	890
500	402	841

The following tables show maximum capacity for final stage pipe in thousands of BTU/HR of commercial propane.

From first stage regulator (at tank) to second stage regulator.

The previous chart is based on incoming gas pressure of 10 PSI and a pressure drop of 1 PSI. Numbers are for straight schedule 40 pipe; fittings further reduce capacity.

From second stage regulator to machine:

The following chart is based on incoming gas pressure of 11 w.c.i. and a pressure drop of 5 w.c.i. Numbers are for straight schedule 40 pipe; fittings further reduce capacity.

Length of pipe (ft.)	Iron Pipe Size		
	1/2"	3/4"	1"
10	291	608	1146
20	200	418	788
30	161	336	632
40	137	287	541
50	122	255	480
60	110	231	435
70	102	212	400
80	94	198	372
90	87	185	349
100	84	175	330

The chart below is based on gas pressure in the range of 0-.5 PSI, specific gravity of .6 and a pressure loss of .5 w.c.i. Numbers are for straight schedule 40 pipe; fittings further reduce capacity.

Length of Pipe (ft.)	Iron Pipe Size				
	3/4"	1"	1 -1/4"	1- 1/2"	2"
10	360	680	1400	2100	3950
20	250	465	950	1460	2750
30	200	375	770	1180	2200
40	170	320	660	990	1900
50	151	285	580	900	1680
60	138	260	530	810	1520
70	125	240	490	750	1400
80	118	220	460	690	1300
90	110	205	430	650	1220
100	103	195	400	620	1150
150	84	160	325	500	950
200	72	135	280	430	800

Venting:

If machine is used 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 chimney on it, be sure the chimney 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, position the stack to be as straight as possible and to protrude through the roof of the building at a proper location and at sufficient height to eliminate down-draft. The chimney of a gas fired machine shall be installed with a down-draft diverter located about 3 ft. above machine.

Input - BTU Per Hour	Draft Hood & Flue Pipe Size
250,000 - 320,000	8 inch
320,000 - 410,000	9 inch
410,000 - 600,000	10 inch
600,000 - 750,000	12 inch

NOTE: If the flue pipe exceeds 10 ft. in length, or contains more than two elbows, use next size larger pipe and draft hood or the burner will not ignite. No movable flue pipe damper should be used on any installation.

Draft Diverter

Draft diverter shall be installed 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.

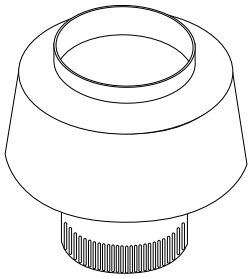


Figure 2: Draft Diverter Customer Supplied

When the heating appliance 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 3).

When a room is of unusually tight construction and has a kitchen and/or bathroom ventilating fan, which may be used for exhausting air 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 down-turned fittings. These should be suitably arranged to prevent obstruction from snow or rain, and include a protecting screen not smaller than 1/4 inch mesh.

INSTALLATION

Figure 3: Ventilation

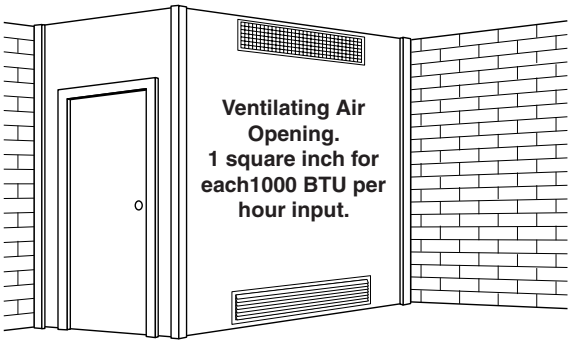


Illustration showing air openings necessary to supply air for combustion when installed in an enclosed room.

Water Source:

The water source for the 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 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 or clothes chute.

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 for 5 minutes for 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.

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

Gas Pressure:

The ideal incoming gas pressure is 11 w.c.i (water column inches). Minimum is 9 w.c.i., maximum is 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 10 w.c.i. By adjusting the gas valve pressure regulator between 3 and 4 w.c.i. a side range can be achieved for natural gas.

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

The gas pressure coming out of the regulator and going to the burner ring has been factory set for elevations of 0 to 2000 ft. Altitudes greater than 2000 ft will require adjustments to the gas manifold pressures. Consult your local service dealer/distributor for high altitude adjustments. In Canada, certification for installation at altitudes over 4500 feet above sea level is the jurisdiction of local authorities. You should not readjust the burner ring gas pressure. If you replace your gas valve, you will need to adjust the new valve. Refer to your machine's **specification plate** for the correct pressure setting. Follow the installation and adjustment instructions provided with your replacement valve.

Note: Air for combustion and ventilation along with exhaust flue sizing must conform to methods outlined in current American Standard (ANSI-Z223.1) National Fuel Gas Code or National Standard of Canada CSA-149.1 and CSA-149.2 "Installation Code for Gas Burning Appliances".

START-UP

WARNING: Read and follow instructions carefully when installing or servicing machine. Failure to do so may result in damage to property or personal injury.

1. Installation or servicing of gas appliances and controls must only be performed by qualified personnel. After installation or servicing, test the manual valve, operating valves, pressure regulation, and automatic shut-off valve for proper operation.
2. Install in a suitable dry location. Machine must be located in an area properly protected from weather.
3. Shut off gas and electricity before starting installation or service. Turn back on to test or operate.
4. DO NOT connect machine before pressure testing the gas piping. Damage to gas valve may result. (9" - 14" W.C.P. 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 short the gas valve terminals.
7. **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.
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 gas flow.
10. If 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.
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).

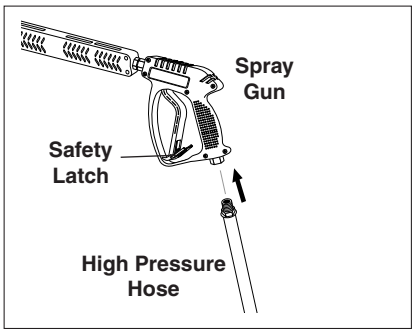
FOR YOUR SAFETY READ BEFORE LIGHTING
WARNING
If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.
A. This appliance has a pilot which must be lighted by hand. When lighting the pilot, follow these instructions exactly.
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 supplier, call the fire dept.
C. Use only your hand to push in or turn the gas control knob. 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.

Check List Before Starting:

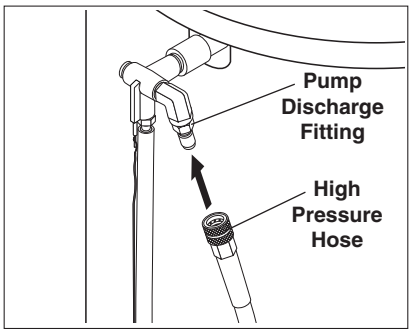
CAUTION! If "NO" has been checked on any of the following sixteen questions, do not operate this machine.

	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 and have they read the manual?		
Has the machine been installed according to operator's manual instructions?		

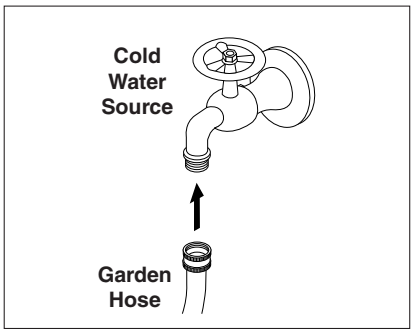
ASSEMBLY INSTRUCTIONS



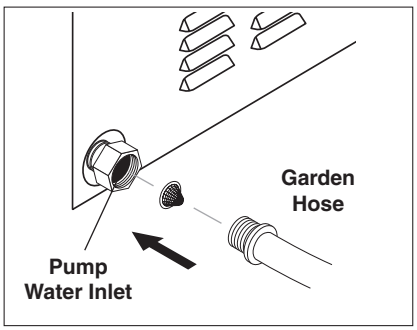
STEP 1: Attach the high pressure hose to the spray gun using teflon tape on hose threads. Move safety latch into locked position to prevent spray gun trigger from activating.



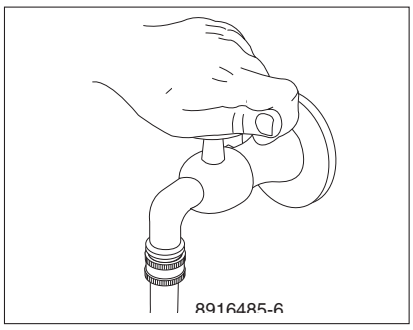
STEP 2: Connect the high pressure hose to the discharge fitting. Push coupler collar forward until secure.



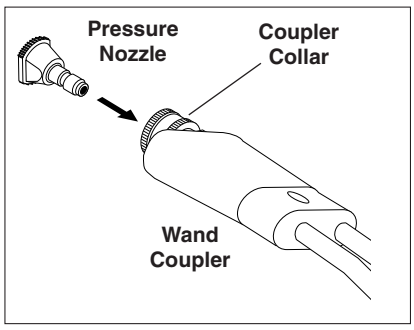
STEP 3: Connect garden hose to the cold water source.



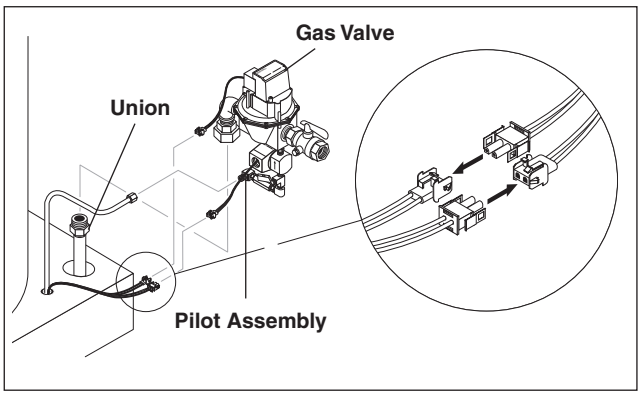
STEP 4: Connect the garden hose to pump water inlet. Inspect inlets. ***CAUTION: Do not run the pump without water or pump damage will result.***



STEP 5: Before installing nozzle, turn on the water supply and run machine allowing water to run from the end of the wand until clear. Turn off machine.

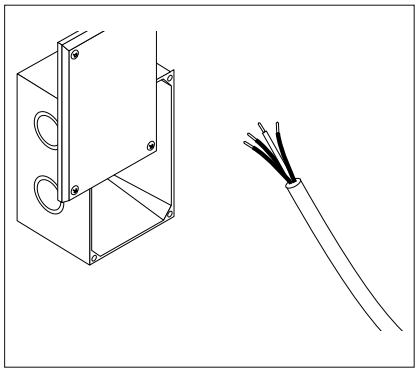


STEP 6: Pull the spring-loaded collar of the wand coupler back to insert pressure nozzle. Release the coupler collar and push the nozzle until the collar clicks. Pull the nozzle to make sure it is seated properly.

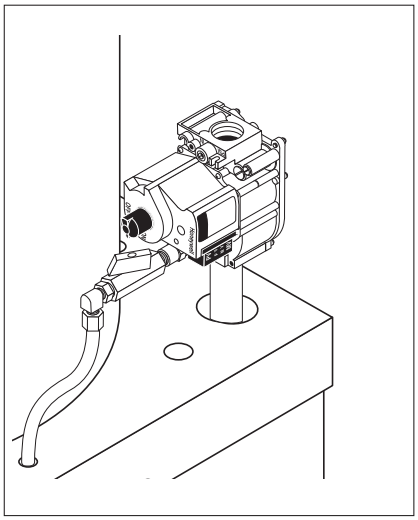


STEP 7: Connect gas valve, with plastic cover pointing upward, and pilot assembly to union on machine and plug in wires.

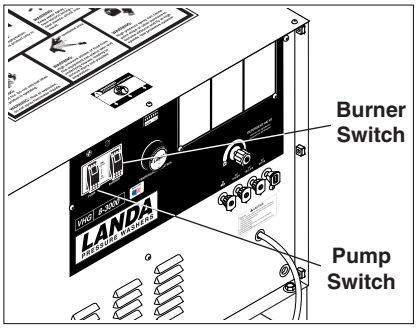
OPERATING INSTRUCTIONS



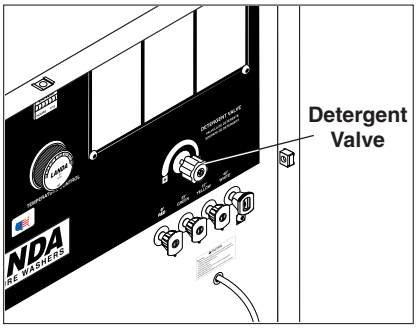
STEP 1: Have an electrician connect power supply into junction box according to information shown on the serial plate.



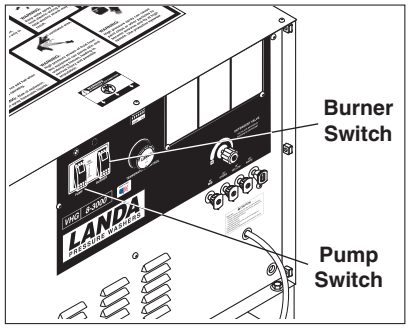
STEP 2: Turn on main gas supply and depress and turn control knob to the 'ON' position.



STEP 3: Push pump 'ON' switch, or turn to pump position and pull the trigger on the spray gun allowing cold water to flow. To activate the gas control valve for hot water, push the burner switch to the 'ON' position and pull the trigger on the spray gun.



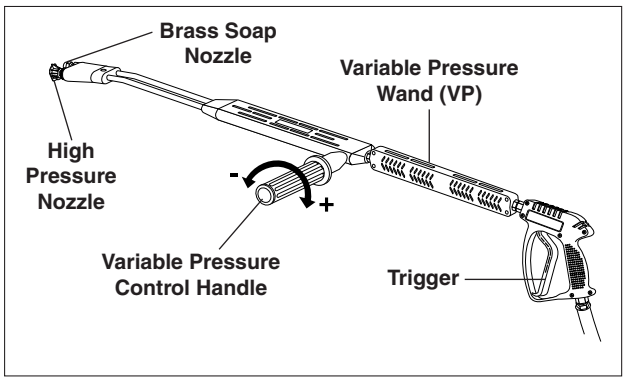
STEP 4: To apply detergent open the detergent valve counterclockwise making sure that the detergent pick-up tube is in the detergent solution and not sucking air.



STEP 5: 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.

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.

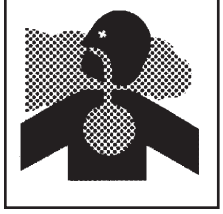
Turn the water off. Protect from freezing.



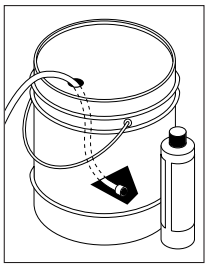
Selection of high or low pressure is accompanied by turning the handle. **NOTE:** High pressure nozzle must be inserted at end of wand to obtain high pressure. To apply soap, see page 16.

APPLYING DETERGENT & GENERAL OPERATING TECHNIQUES

⚠ WARNING

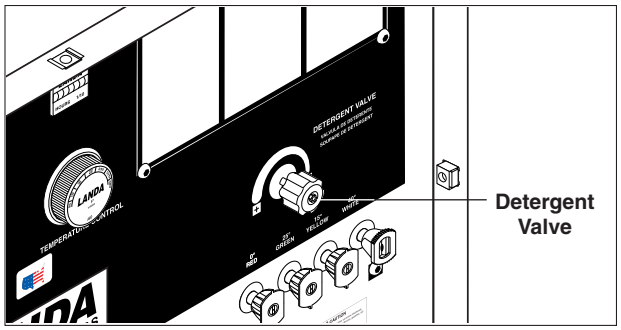


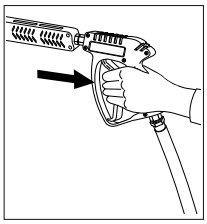
WARNING: Some detergents may be harmful if inhaled or ingested, causing severe nausea, fainting or poisoning. The harmful elements may cause property damage or severe injury.



STEP 1: Use detergent designed specifically for pressure washers. Household detergents could damage the pump. Prepare detergent solution as required by the manufacturer. Fill a container with pressure washer detergent. Place the filter end of detergent suction tube into the detergent container.

STEP 2: Open detergent valve counterclockwise until you obtain desired mixture. Detergent will mix with the high pressure water stream.





STEP 3: With the motor running, pull trigger to operate machine. Liquid detergent is drawn into the machine and mixed with water. Apply detergent to work area. Do not allow detergent to dry on surface.

IMPORTANT: You must flush the detergent from your pressure washer after each use by placing the suction tube into a bucket of clean water, then run the pressure washer for 1-2 minutes.

NOTE: If you remove detergent siphon tube from container or allow container to empty, it will cause low pressure by sucking air, which will damage the pump.

THERMAL PUMP PROTECTION

If you run the engine for 3-5 minutes without pressing the trigger on the spray gun, circulating water in the pump can reach high temperatures. When the water reaches this temperature, the pump protector engages and cools the pump by discharging the warm water onto the ground. This thermal device prevents internal damage to the pump.

CLEANING TIPS

Pre-rinse cleaning surface with fresh water. Place detergent suction tube directly into cleaning solution and apply to surface. 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:***

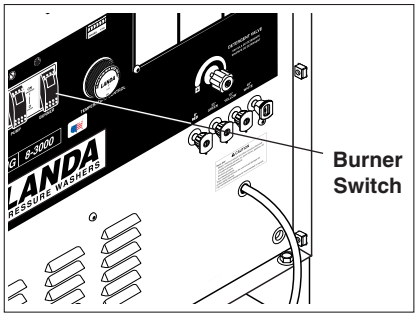
- Bleach, chlorine products and other corrosive chemicals
- Liquids containing solvents (i.e., paint thinner, gasoline, oils)
- Tri-sodium phosphate products
- Ammonia products
- Acid-based products

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

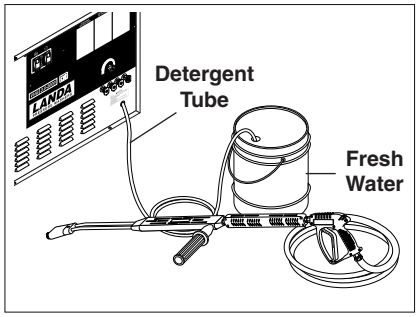
RINSING

Turn detergent valve clockwise to close. Operate pressure washer and allow a few seconds for the detergent to clear.

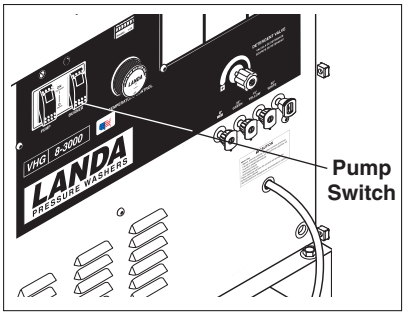
SHUTTING DOWN AND CLEANUP



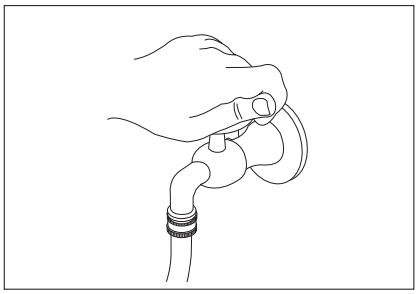
STEP 1: Turn the burner switch to the 'OFF' position.



STEP 2: Place the detergent tube in fresh water and open the detergent valve and spray gun, allowing the detergent lines to be flushed and the burner to cool. Otherwise coil damage may occur.



STEP 3: After water has cooled, push or turn pump switch to 'OFF' position. If the machine will be turned off for an extended period of time, put the gas cock on the gas valve in the 'OFF' position.



STEP 4: Turn off water.

STORAGE

CAUTION: Always store your pressure washer in a location where the temperature will not fall below 32°F (0°C). The pump in this machine is susceptible to permanent damage if frozen. FREEZE DAMAGE IS NOT COVERED BY WARRANTY.

1. Stop the pressure washer, squeeze spray gun trigger to release pressure.
2. Detach water supply hose and high pressure hose.
3. Turn on the machine for a few seconds, until remaining water exits. Turn pump off immediately.
4. Do not allow high pressure hose to become kinked.
5. Store the machine and accessories in a room which does not reach freezing temperatures.

CAUTION: Failure to follow the above directions will result in damage to your pressure washer.

After Extended Storage

CAUTION: Prior to restarting, thaw out any possible ice from pressure washer hoses, spray gun or wand.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
WATER TEMPERATURE TOO HOT	Incoming water to machine warm or hot	Lower incoming water temperature.
	Gas pressure too high	See specifications for proper gas pressure.
	Detergent line sucking air	Tighten all clamps. Check detergent lines for holes.
	Defective high limit switch	Replace.
	Incorrect burner nozzle size	See serial plate.
	Insufficient water supplied	Check water GPM to machine.
	Restricted water flow	Check nozzle for obstruction, proper size.
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.
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	Check water supply and possibility of air.
	Valves sticking	Check and clean or replace if necessary.
	Unloader valve seat faulty	Check and replace if necessary.
	Nozzle i ncorrectly sized	Check and replace if necessary (See serial plate for proper size).
	Worn piston packing	Check and replace if necessary.
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.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
OIL DRIPPING	Oil seal worn	Check and replace if necessary.
LOW OPERATING PRESSURE	Faulty pressure gauge	Install new gauge.
	Insuffient 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 new nozzle.
	Belt Slippage	Tighten or replace. Use correct belt.
	Plumbing or hose leak	Check plumbing system for leaks. Retape leaks with teflon tape.
	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 valve.
	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 sizing gas lines.
	Low gas pressure	Increase gas pressure to machine.
	Improper pressure regulator	Specify BTU, building gas pressure 11 w.c.i. to machine for correct sizing of regulator.
	Low gas pressure	Increase gas pressure
	Soot buildup on coils not allowing heat transfer	Clean coils.
	Improper burner nozzle	See serial plate.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
FLOW & BURNER SWITCH ON; NO SPARK, NO PILOT GAS	A. No main power B. Faulty transformer C. Faulty burner & flow switch D. Faulty ignition control unit	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.
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

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 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 oriface. 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 accross 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.

MAINTENANCE AND SERVICE

Spray Nozzles:

Each machine is equipped with one or more spray nozzles, depending on the 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 relieve pressure in the line when a spray gun is closed. Unloader valves are preset and tested at the factory before shipping. Occasional adjustment of the unloader may be necessary to maintain correct pressure. For valve adjustment contact your nearest dealer or call technical support. 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 outdoors under freezing conditions.

It is necessary to protect your machine against freezing when temperatures drop below 32° F. 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.

Low Pressure Diagnosis:

(Machines with spray gun)

Refer to Troubleshooting Chart for low pressure. If the trouble is found to be either the unloader or the pump, your next step is to determine which is the problem. This can be done by eliminating the unloader from the system and attaching the 50' discharge hose directly to the pump. If high pressure is developed in this manner, the pump is good and the unloader needs to be repaired or replaced. If low pressure is still present, then the pump needs repairing.

CAUTION: When using this procedure to test components keep the spray gun open at all times.

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 SAE30 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 COILS

To Check Water Heater Coil for Leaks:

With the main burners "OFF" start the pumping unit and allow it to run for a few minutes. Check into the burner compartment with a drop light or flashlight. If no leaks are visible, then water dripping from coils is condensation from the flue gases when the burners are on.

Condensation from Heating Coil:

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

Deliming Coils:

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 prevention for liming conditions is to use high quality cleaning detergents. In areas where alkaline water is an extreme problem, periodic use of Landa Coil Conditioner (part # 9-74002) will remove lime and other deposits before coil becomes plugged. (See the following instructions for use of Landa Coil Conditioner.)

Periodic flushing of coils 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. Secure the trigger on the spray gun into the open position.
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 coils 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 wand assembly to spray gun.

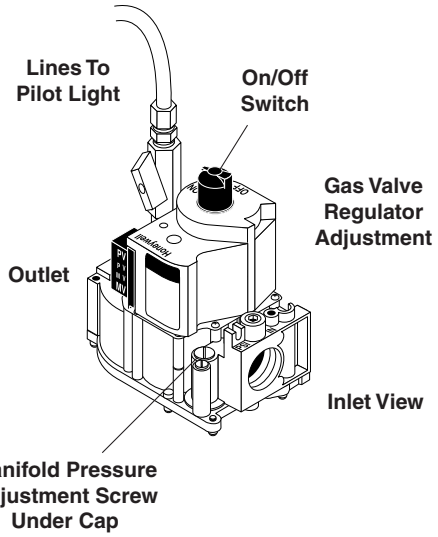
GAS VALVE REGULATOR ADJUSTMENT

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

Gas Valve Regulator Adjustment



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 switch is turned on. 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 23).
3. With small screwdriver, rotate adjustment screw clockwise to increase, or counterclockwise to decrease pressure.
4. Replace regulator adjustment screw cap.

BASIC FACTS

Based on 60°		Propane	Butane
1 Cu. Ft. NG Approx 1,1000 BTU			
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 Gal. (Liquid)		4.23	4.87
BTU per Cu. Ft. (Vapor)		2.563	3.39
BTU per Gal. (Liquid)		91.547	102.032
BTU per Lb. (Liquid)		21.591	21.221
Cu. Ft. per Lb. (Liquid)		8.607	6.53
Cu. Ft. per Gal. (Liquid)		36.45	31.8
Octane Number		125	91
Molecular Weight		44.09	58.12
To Calculate Running Cost:	1,000 BTU = 1 Cu. Ft.		
	100 Cu. Ft. = 1 Therm		
	1 Therm = 1 Hour		
	Cost of Gas per Therm = Cost to Run		
Example Using Natural Gas at 50¢ Therm:	400,000 BTU Machine		
	400 Cu. Ft. (400,000 / 1,000)		
	4 x 50¢ = $2.00 / Hour to Run ((400 / 100) x cost of gas)		

MAINTENANCE AND SERVICE

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. 11 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"	=	50 oz./sq. in.	"11"" Water Column"	=	6.35 oz./sq. in.
"11"" Water Column"	=	4 lb./sq. in.	1 lb./sq. in.	=	"27.71"" Water Column"
1 lb./sq. in.	=	14.73 lbs./sq.in	"1"" Mercury"	=	.39 lb./sq. in
1 Std. Atmosphere	=	14.73 lbs./sq. in.			

OIL CHANGE RECORD

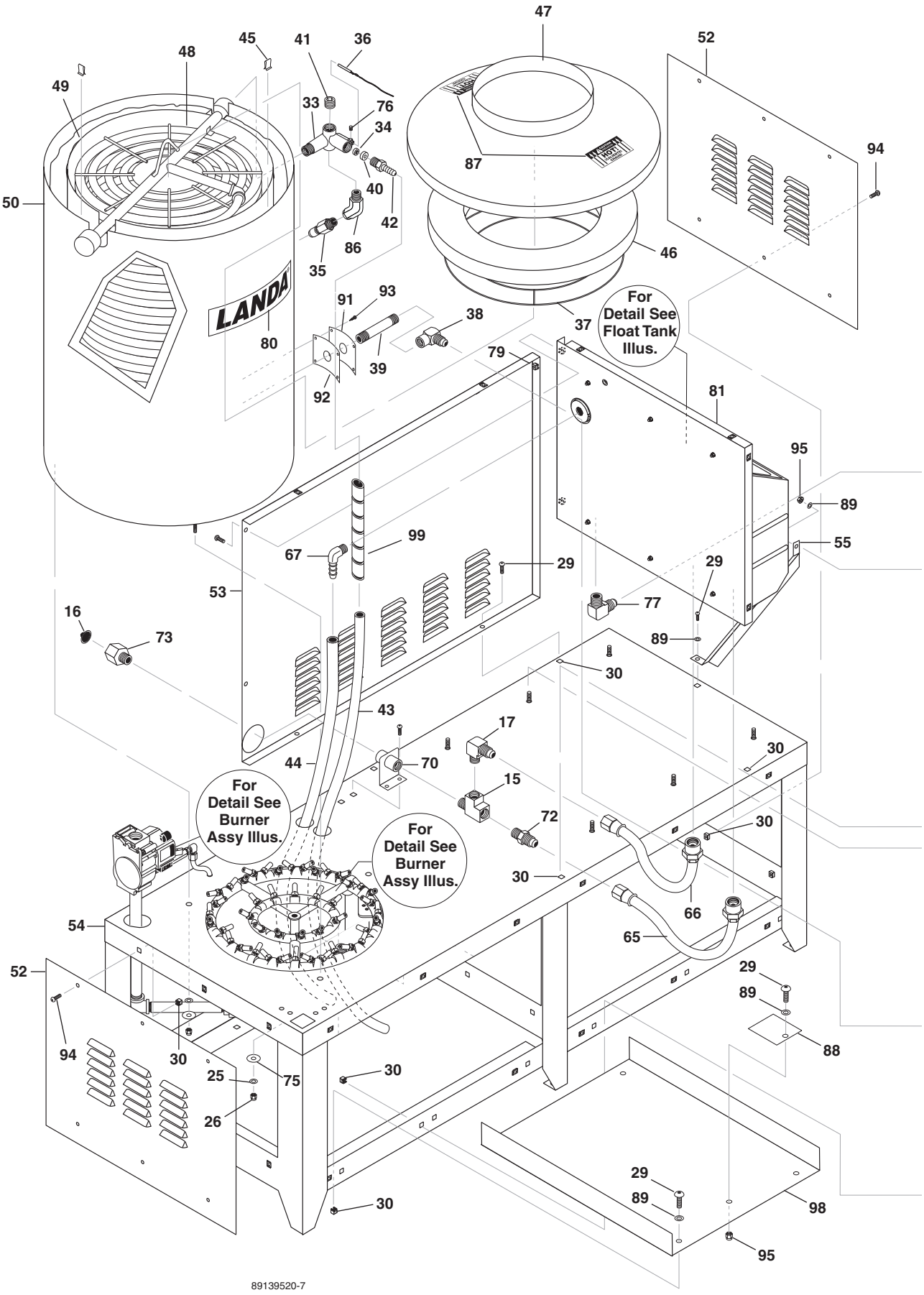
Date Oil Changed Month/ Day/Year	Estimated Operating Hours Since Last Oil Change

PREVENTATIVE MAINTENANCE

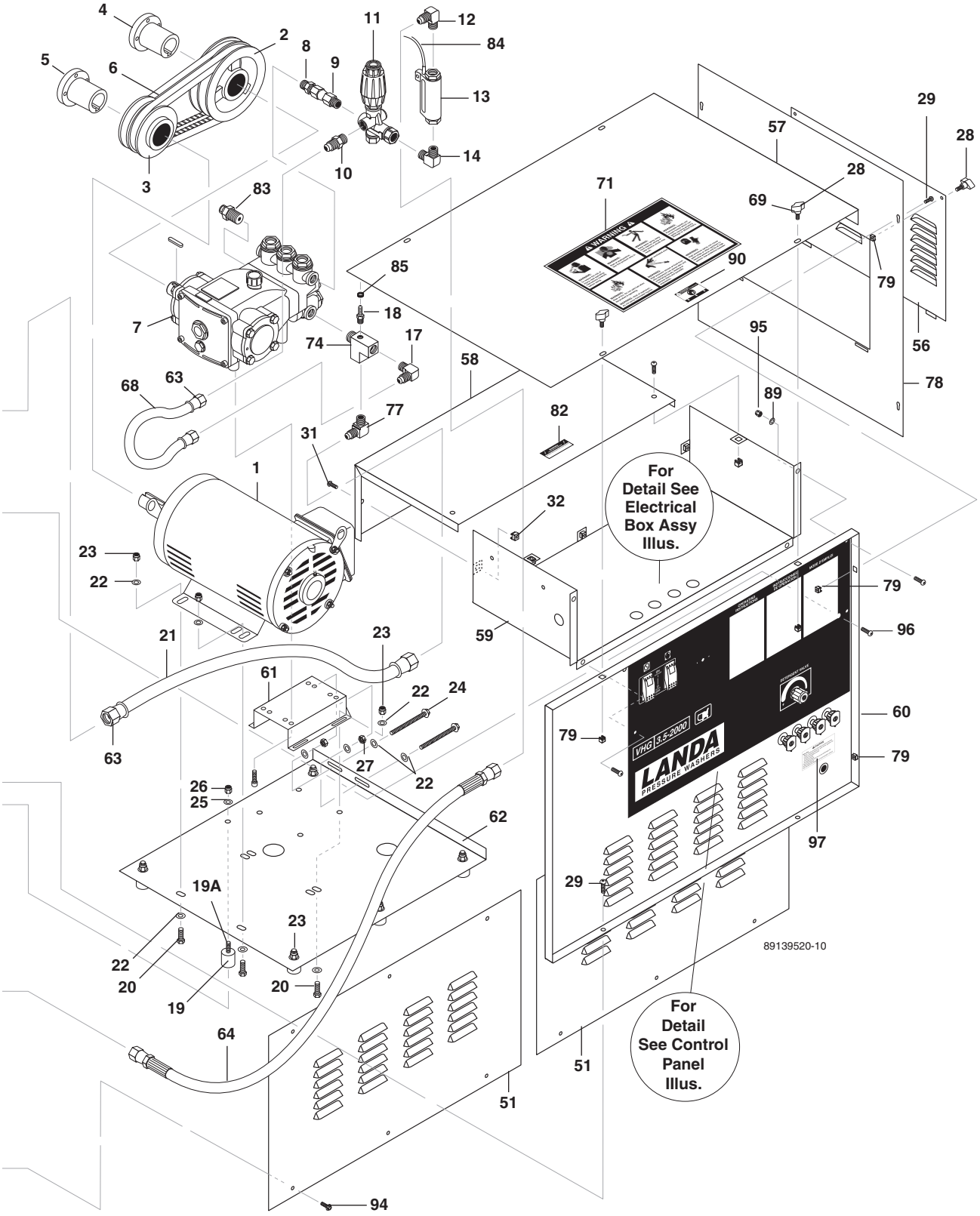
This pressure washer was produced with the best available materials and quality craftsmanship. However, you as the owner have certain responsibilities for the correct care of the equipment. Attention to regular preventative maintenance procedures will assist in preserving the performance of your equipment. Contact your 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		
Replace Fuel Lines		Annually
Pump Oil	Inspect	Daily inspect the oil level
	Change	After first 50 hours, then every 500 hours or annually
Clean Burner Filter		Annually
Remove Burner Soot From Heating Coil		Annually
Check Belt Tension		Monthly
Descale Coil		Annually - (more often if required)
Replace High Pressure Nozzle		Every 6 months
Replace Quick Connects		Annually
Clean Water and Chemical Screen/Filter		Weekly
Clean Float/Supply Tank		Every 6 months
Replace HP Hose		If there is any sign of wear
Grease Motor		Every 10,000 hours
Check Burner Pilot Jets		Annually
Pressure Relief Valve		Annually

EXPLODED VIEW VHGL- 4, 5



EXPLODED VIEW VHGL-4, 5



EXPLODED VIEW VHGL- 4, 5 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	Motor, See Spec Pages		
	9.802-425.0	▲ Cord, Service, SO 8/3, Coleman (4-3A/G)	4.25 ft.
	9.802-429.0	▲ Cord, Service, SEO 12/4, Coleman (4-22B/C/N/H, 5-3C)	4.25 ft.
	9.802-436.0	▲ Cord, Service, SEO 10/3, Coleman (4-2A/G, 4-22A)	4.25 ft.
	9.802-437.0	▲ Cord, Service, SEO 10/4, Coleman (4-3B/C/H)	4.25 ft.
	9.802-426.0	▲ Service Cord, 8/4 (5-3B/H)	4.25 ft.
2	Pulley, Pump, See Spec Pages		
3	Pulley, Motor, See Spec Pages		
4	Pump Bushing, See Spec Pages		
5	Bushing, Motor, See Spec Pages		
6	Belt, Pump/Motor, See Spec Pages		
7	Pump, See Spec Pages		
8	9.802-036.0	Nipple, 1/2" JIC, 3/8" Pipe	1
9	9.802-048.0	Swivel, 1/2" JIC Fem, 3/8" Male	1
10	9.802-127.0	Nipple, 1/2" JIC x 3/8" Pipe	1
11	8.750-299.0	Unloader, VRT 3, 8 GPM @ 4500 PSI	1
12	9.802-039.0	Elbow, 1/2" JIC, 3/8", 90°	1
13	8.933-006.0	Switch, Flow MV 60, Yellow	1
14	8.706-168.0	Elbow, 3/8", Male, Pipe	1
15	8.706-860.0	Tee, 1/2" Street	1
16	8.707-055.0	Strainer, Inlet, Garden Hose	1
17	9.802-131.0	Elbow, 1/2" JIC x 1/2", 90°	2
18	8.706-940.0	Hose Barb, 1/4" Barb x 1/8" ML Pipe	1
19	9.803-532.0	Isolator, 5/16" THRD, Fem x Fem, 1" x 1"	6
19A	8.718-717.0	Stud, 5/16" - 18 x 1" B7 TFL Zinc	6
20	8.718-618.0	Bolt, 5/16" x 3/4" NC HH (4-2A/G/H)	4
	9.802-720.0	Bolt, 3/8" x 1", NC HH (3-11D, 4-2A/G/H)	8 4
21	9.802-259.0	Hose, 1/2", Push-On	30"
	9.802-261.0	Hose, 3/4" Push-On (5-3B/C/H)	30"
22	8.725-394.0	Washer, 3/8", SAE, Flat (4-2A/G/H) 12	20
	8.718-980.0	Washer, 5/16", Flat (4-2A/G/H)	8
23	8.725-395.0	Nut, 3/8" ESNA, NC (4-2A/G/H)	8 4
	9.802-776.0	Nut, 5/16" ESNA NC (4-2A/G/H)	4

ITEM	PART NO.	DESCRIPTION	QTY
24	9.802-735.0	Bolt, 3/8" x 5-1/2", NC HH Tap	2
25	8.718-980.0	Washer, 5/16" Flat, SAE	9
26	9.802-776.0	Nut, 5/16" ESNA, NC	9
27	9.802-789.0	Nut, 3/8" Hex, NC	2
28	9.802-746.0	Screw, Thumb, 1/4" - 20 x 1/2"	6
29	9.802-765.0	Screw, 1/4" x 1/2" BH SOC CS	30
30	9.802-794.0	Nut, Cage, 1/4" x 12 Gauge	41
31	9.802-759.0	Screw, 10/32" x 1/2" BHSOC Black	5
32	9.802-791.0	Nut, Cage, 10/32" x 16 Gauge	5
33	9.149-003.0	Manifold Coil Discharge	1
34	8.725-944.0	Rupture Disk 8000#	1
35	9.802-171.0	Nipple, 3/8" x 3/8" NPT ST	1
36	8.750-095.0	Thermostat 240°F	1
37	8.719-940.0	Retainer Ring, Insulation	1
38	9.802-043.0	Elbow, 1/2" JIC x 1/2" Fem, 90°	1
39	9.802-014.0	Nipple, 1/2" x 3", Galv. SCH. 80	1
40	9.184-030.0	Spacer, Rupture Disk,	1
41	8.706-248.0	Plug, 3/8"	1
42	8.707-019.0	Hose Barb, 1/2" Barb x 3/8" MPT , Push-On	1
43	9.802-259.0	Hose, 1/2" Push-On	31"
44	9.802-261.0	Hose, 3/4" Push-On	1.5 ft.
45	9.802-825.0	Retainer Clip	4
46	8.930-140.0	Insulation, Tank Head, 20 VHG/ENG	1
47	9.802-976.0	Top, Burner Wrap, 20", ENG/VNG-S	1
48	9.803-135.0	Coil, Dura, 20", SCH 80, VNG Small	1
49	8.750-917.0	Insulation, Blanket, 26" x 60"	1
50	8.912-621.0	Wrap, Outer SM, 20" Coil, Assy, LRG VHG	1
51	8.912-617.0	Panel Side, LRG, VHG LRG (Rear Panels Optional)	2
52	8.912-619.0	Panel Side, SM, VHG LRG	2
53	8.912-629.0	Panel, Back/Side, VHG LRG	1
54	8.917-628.0	Base, Assembly, VHG Small	1
55	8.913-069.0	Brace, Base, 45°, WB-120	1
56	8.912-652.0	Panel, Access, VHG Large (Yellow)	1
	8.912-653.0	Panel, Access, VHG Large, SS (Optional)	1

EXPLODED VIEW VHGL-4, 5 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
57	8.912-657.0	Cover, Top, VHG, Yellow	1
	8.912-658.0	Cover, Top, VHG SS (Optional) 1	
58	8.912-631.0	Cover, LRG Electrical Box, VHG LRG	1
59	8.912-623.0	Box, Electrical, Large, VHG LRG	1
60	8.912-625.0	Panel, Control, VHG LRG	1
61	9.803-131.0	Rail, Pump or Generator Combo (PHW/SKID)	1
62	9.803-130.0	Platform, Motor 3/16", PHW/VNG	1
63	9.802-151.0	Swivel, 1/2" JIC Fem, Push-On (5-3B/C/H)	4 2
	9.802-152.0	Swivel, 3/4" JIC Fem, Push-On (5-3B/C/H)	2
64	8.918-211.0	Hose, 3/8" x 40" 2 Wire	1
65	8.711-775.0	Inlet Hose, 13"	1
66	8.711-773.0	Inlet Hose, 8"	1
67	9.802-050.0	Adapter, 3/4" x 3/4" MT, 90°	1
68	9.802-259.0	Hose, 1/2", Push-On	1.25 ft.
69	8.718-976.0	Washer, 1/4" Retainer	6
70	9.802-961.0	Hose Connection Bracket, PHW/PHWS/OHW	1
71	9.800-012.0	Label, Warning, VHG Large	1
72	9.802-128.0	Nipple, 1/2" JIC x 1/2" Pipe	1
73	9.802-146.0	Swivel, 1/2" MP x 3/4" GHF w/Strainer	1
74	9.802-123.0	Tee, 1/2" w/1/8" Hole, Street	1
75	9.802-811.0	Washer, 3/8" x 1-1/2", Fender, SAE	3
76	9.196-012.0	Screw, 10/24" x 1/4"	1
77	9.802-131.0	Elbow, 1/2" JIC x 1/2", 90°	2
	9.802-132.0	Elbow, 3/4" JIC x 1/2", 90° (5-3B/C/H)	2
78	8.912-655.0	Cover, Side, VHG Large, Yellow	1
	8.912-656.0	Cover, Side, VHG Large, SS (Optional)	1
79	9.802-793.0	Cage, Nut, 1/4" x 16 Gauge	14
80	8.916-090.0	Label, Landa Logo	1
81	8.912-640.0	Panel, Side, VHG Large	1
82	9.800-016.0	Label, Disconnect Power	1
83	8.707-256.0	Pump Protector, 1/2"	1
84	8.724-844.0	Switch, Reed Replacement, MV 60	1
85	6.390-126.0	Clamp, Hose, .46-, .54 ST	1
86	9.802-041.0	Elbow, 3/8" STL, Steel, 45°	1
87	9.800-006.0	Label, HOT	2
88	8.912-884.0	Reflector, Pilot Light	1
89	9.804-082.0	Washer, 1/4" Flat Black	10

ITEM	PART NO.	DESCRIPTION	QTY
90	8.932-965.0	Label, Warning Exposed Pulleys	1
91	8.912-220.0	Retainer Plate	1
92	8.933-009.0	Gasket, Burner Plate	1
93	9.802-798.0	Screw, #10 x 1/2" Tek	4
94	9.802-754.0	Bolt, 1/4 Whiz	24
95	9.802-773.0	Nut, 1/4 ESNA	6
96	9.804-003.0	Screw, 1/4 x 3/4	6
97	9.800-049.0	Label, Manufacturer's Cleaning Solution	1
98	8.912-637.0	Plate, Burner, VHG Large	1
99	9.802-445.0	Wrap, 1/2" Spiral, Blk	6"

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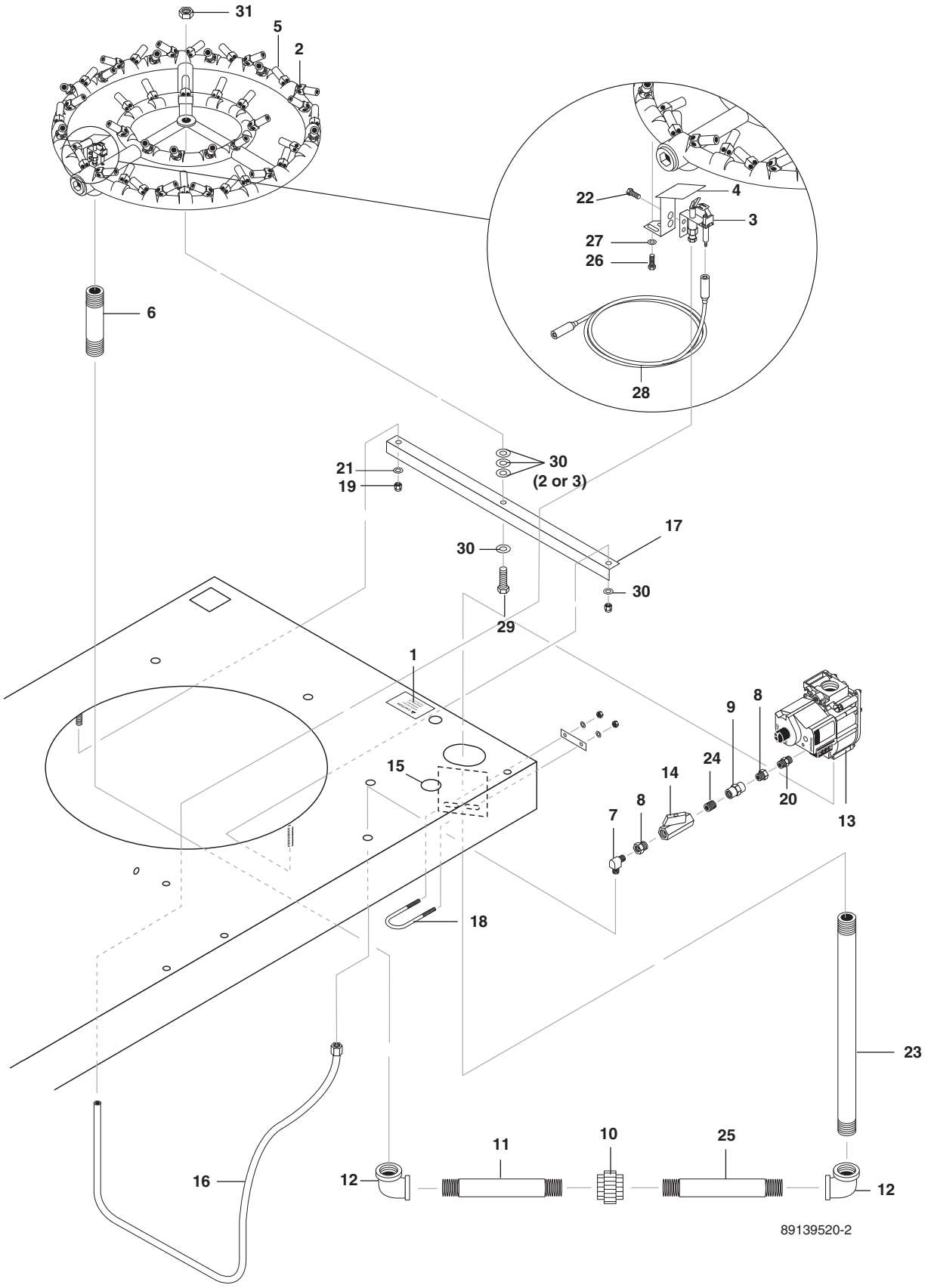
BURNER ASSEMBLY VHGL-4, 5



BURNER ASSEMBLY VHGL-4, 5 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.932-964.0	Label, Natural Gas	1
	8.932-963.0	Label, Liquid Propane (LP Option)	1
2	8.718-055.0	Burner Ring, Assy, x 44 w/# 54 Jets (VHG 3 & 4, NG)	1
	8.725-894.0	Burner Ring, Assy, x 44 w/# 52 Jets (VHG 5, NG)	1
	8.718-060.0	Burner Ring, Assy, x 44 w/# 63 Jets (LP Option)	1
3	9.803-610.0	Igniter, Pilot,	1
4	8.719-957.0	Splash Guard, Pilot Light	1
5	8.710-216.0	Gas Jet, NG, # 54 (VHG 3 & 4, NG)	44
	8.710-215.0	Gas Jet, NG, # 52 (VHG 5, NG)	44
	8.717-377.0	Gas Jet, NG, # 63 (LP Option)	44
6	9.803-561.0	Nipple, 3/4" x 5", Black Pipe	1
7	8.707-029.0	Elbow, 1/4" Tube x 1/8"	1
8	8.706-910.0	Bushing, 1/4" x 1/8" Pipe	2
9	8.706-812.0	Coupling, 1/4" Hex	1
10	9.802-049.0	Union, 3/4" Black Pipe	1
11	8.706-109.0	Nipple, 3/4" x 7" Black Pipe	1
12	9.802-027.0	Elbow, 3/4" Black, 90°	2
13	9.803-616.0	Valve, Gas, VR8304	1
	9.803-618.0	▲ LP Conversion Kit (Optional)	1
14	9.802-178.0	Valve, Ball, 1/4" Fem x 1/4" Fem	1
15	9.802-103.0	Snap Bushing, 5/8"	1
16	9.802-911.0	Tubing, Aluminum	29"
17	8.917-578.0	Strap, Burner,	1
18	9.802-718.0	U-Bolt, 5/16" x 1" Pipe	1
19	9.802-776.0	Nut, 5/16" ESNA, NC	2
20	9.803-563.0	Connector, 1/4" Tube x 1/8" MPT	1
21	8.718-980.0	Washer, 5/16" Flat, SAE	2
22	9.802-772.0	Screw, 10/32" x 1/4" Hex	2
23	8.706-112.0	Pipe, 3/4" x 11" Black Pipe	1
24	8.706-777.0	Nipple, 1/4" Close,	1
25	8.730-378.0	Nipple, 3/4" x 7 1/2" Black Pipe	1
26	8.718-582.0	Bolt, 1/4" x 1/2", NC, HH	2
27	9.802-802.0	Washer, 1/4" Flat	2

ITEM	PART NO.	DESCRIPTION	QTY
28	9.803-562.0	Cable, Ignition 48",	1
29	9.802-727.0	Bolt, 3/8" x 1-3/4"	1
30	9.802-807.0	Washer, 3/8" Flat	4
31	9.802-781.0	Nut, 3/8" NC, Whiz-Loc	1

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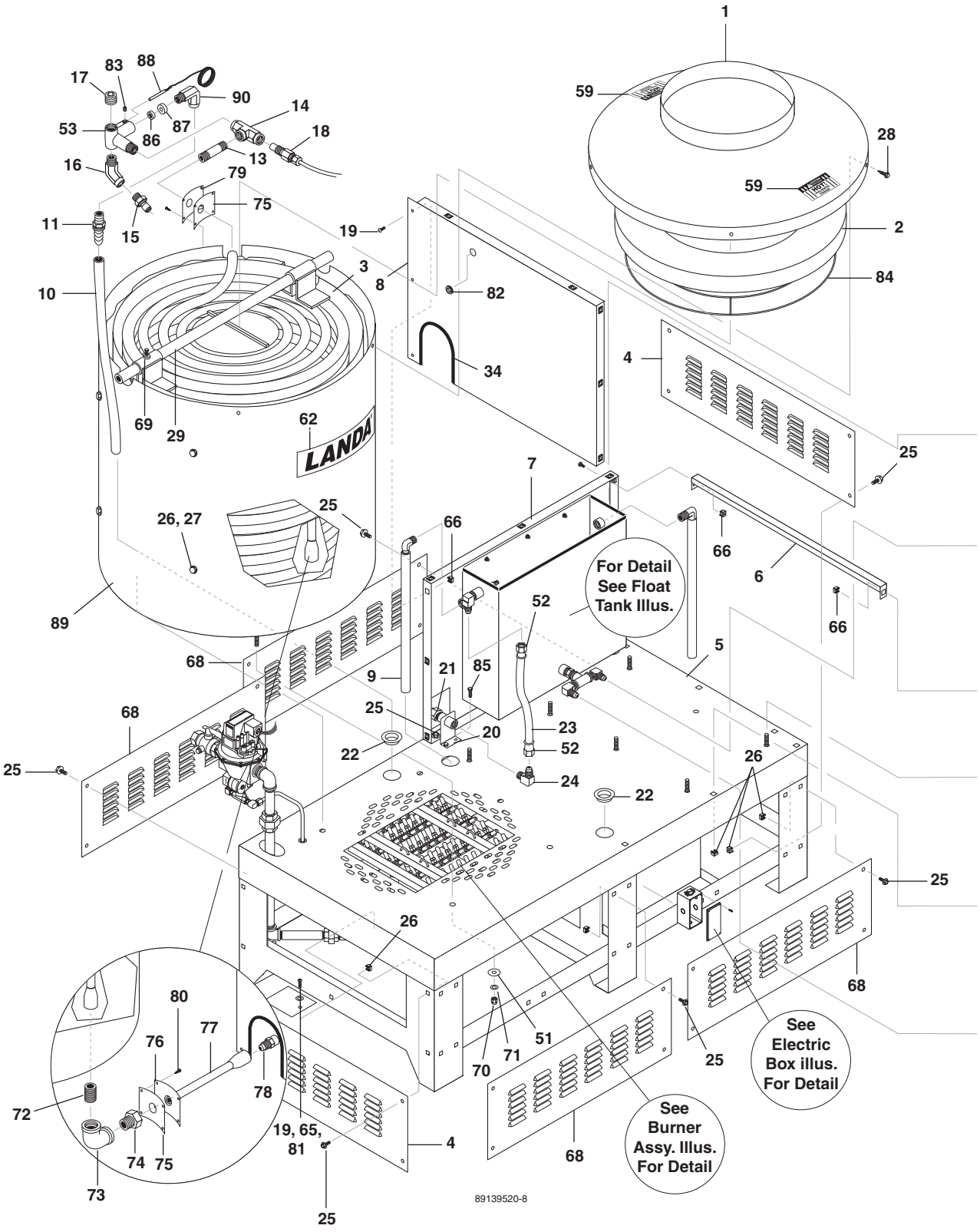
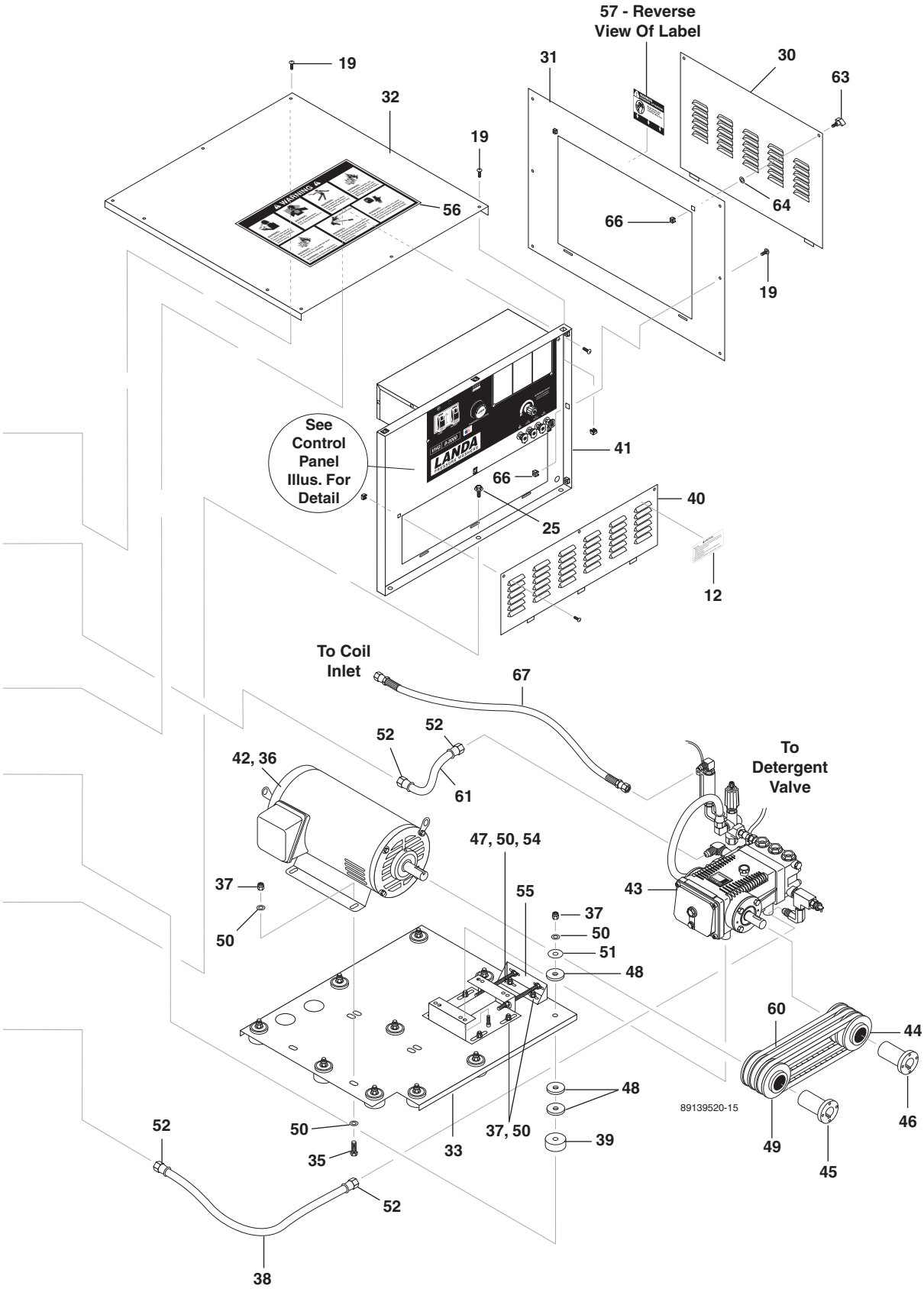
EXPLODED VIEW VHGL-6, 8



EXPLODED VIEW VHGL-6, 8



EXPLODED VIEW VHGL-6, 8 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.912-546.0	Top, Burner Wrap, 30 VNG	1
2	8.930-141.0	Insulation, Tank Head, 30"	1
3	8.912-248.0	Coil Assy, Modulating, VNG-LM	1
	8.717-435.0	▲ Insul. Blanket, 33"x89"x1/2"	1
4	8.912-662.0	Cover, Side Bottom, VHG 6-8	2
5	8.912-669.0	Assembly, Base, VHG 6-8	1
6	8.912-683.0	Support, Control, Panel, 6-8	1
7	8.912-668.0	Panel, Back, VHG Large 6-8	1
	9.800-020.0	▲ Label, Cold Water Inlet	1
8	8.912-672.0	Panel, Side, VHG Large 6-8	1
9	9.802-261.0	Hose, 3/4" x 18" Push-On	2
10	9.802-259.0	Hose, 1/2" Push-On	3.33 ft.
11	8.707-019.0	Hose Barb, 1/2" Barb x 3/8" MPT,Push-On	1
12	9.800-049.0	Label, Manufacturer's Cleaning Solution	1
13	9.802-014.0	Nipple, 3" Sch 80	1
14	8.706-216.0	Tee, 1/2"	1
15	9.802-171.0	Nipple, 3/8" x 3/8" NPT ST Male	1
16	9.802-041.0	Elbow, 3/8" Street 45°	1
17	8.706-248.0	Plug 3/8"	1
18	8.712-185.0	Switch, Snap, 225 DR Hi Limit	1
19	9.802-765.0	Screw, 1/4" x 3/4" BH SOC	28
20	9.802-961.0	Bracket, PHW Hose Connection	1
21	9.802-146.0	Swivel, 1/2" MP x 3/4" GHF w/Strainer	1
22	9.803-545.0	Grommet, 2-5/16", Rubber	2
23	9.802-261.0	Hose, 3/4" Push-On	15"
24	9.802-132.0	Elbow, 3/4" JIC x 1/2", 90°	1
25	9.802-767.0	Screw, 3/8" x 3/4" HH NC, Whiz	39
26	9.802-792.0	Nut, Cage 3/8" x 12 Gauge	45
27	9.802-720.0	Bolt, 3/8" x 1" NC HH	6
	8.725-394.0	Washer, 3/8" SAE	6
28	9.802-799.0	Screw, #14 x 1" Tek, Hex Head	3
29	8.912-249.0	Cross Hanger, 1" SCH 80	1
30	8.912-652.0	Panel, Access, VHG Large	1
31	8.912-678.0	Cover, Side, VHG Large 6-8	1
32	8.912-680.0	Cover, Top, VHG Large 6-8	1
33	8.912-682.0	Platform, Pump/Motor 6-8	1
34	9.802-071.0	Trim, 1/16" Black	1.25 ft.
35	9.802-720.0	Bolt, 3/8" x 1" NC	10

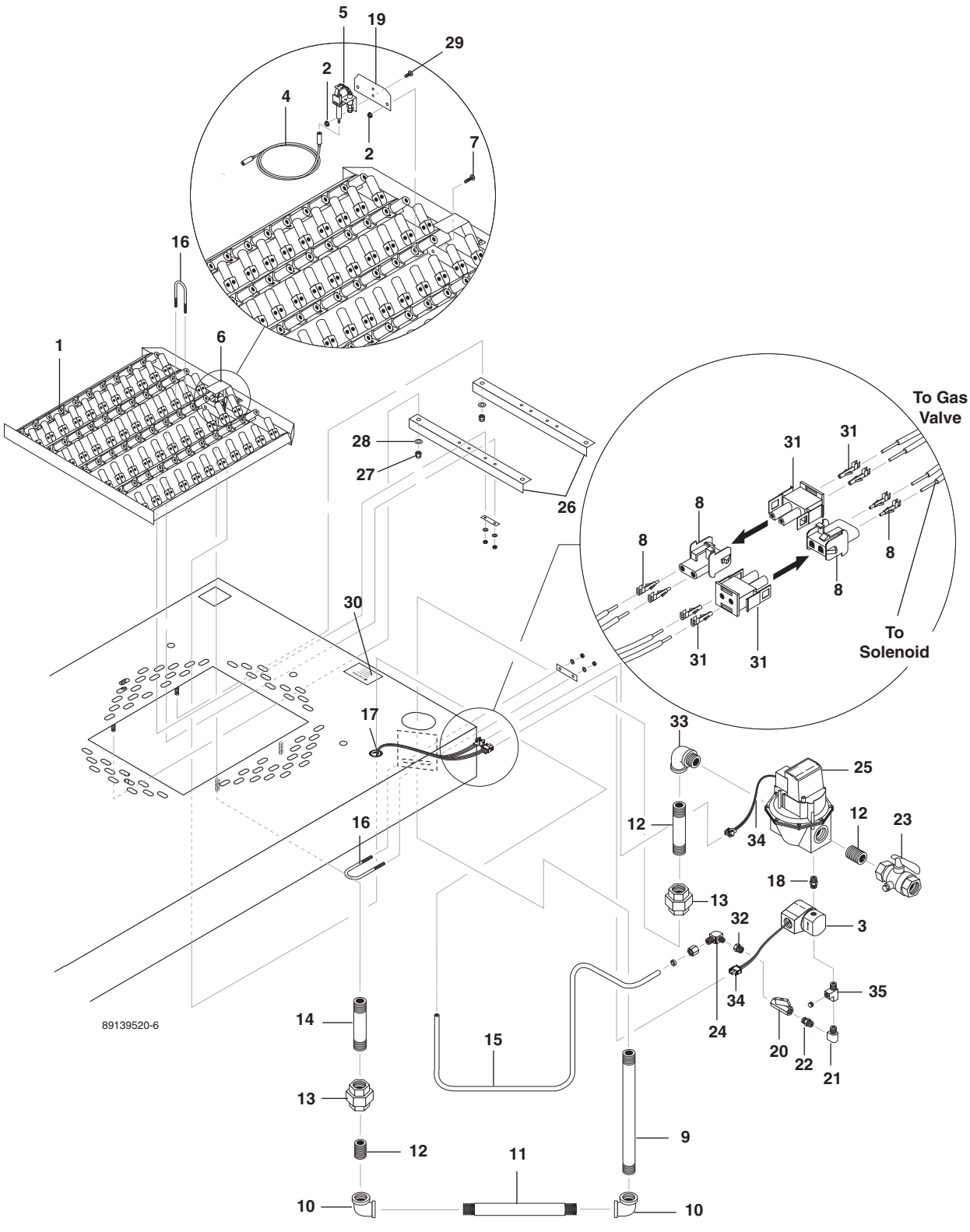
ITEM	PART NO.	DESCRIPTION	QTY
36	8.715-933.0	▲ Service Cord, 6/4 (6-3B/H)	5 ft.
	9.802-437.0	▲ Service Cord, 10/4 (6-3C, 8-3C)	5 ft.
	9.803-992.0	▲ Service Cord, 4/4 (8-3B/H)	5 ft.
37	8.725-395.0	Nut, 3/8" ESNA, NC	20
38	9.802-261.0	Hose, 3/4" Push-On	3 ft.
39	9.802-066.0	Pad, Soft Rubber, 50 Duro	10
40	8.912-677.0	Cover, Access	1
41	8.912-666.0	Panel, Control Assy.	1
42	Motor, See Spec Pages		
	9.802-522.0	▲ Strain Relief, 1" Metal (6-3B/H, 6-3 C, 8-3C)	1
	8.751-297.0	Strain Relief, 1" 90°, 4/4 Cord (8-3B)	1
43	Pump, See Specification Pages		
44	Pulley, See Specification Pages		
45	Bushing, See Specification Pages		
46	Bushing, See Specification Pages		
47	9.802-735.0	Bolt, 3/8" x 5-1/2"	2
48	9.802-067.0	Bumper Pad, Engine	10
49	Pulley, See Specification Pages		
50	8.725-394.0	Washer, 3/8" SAE, Flat	34
51	9.802-811.0	Washer, 3/8" x 1-1/2" Fender, SAE	14
52	9.802-152.0	Swivel, 3/4" SAE Female	6
53	9.149-003.0	Manifold Discharge	1
54	9.802-171.0	Nut, 3/8" Hex	2
55	8.912-381.0	Bracket, Pump Take-Up	1
56	9.800-012.0	Label, Warning	1
57	8.932-965.0	Label, Warning, Exposed Pulleys	1
58	9.800-021.0	▲ Label, Hot Water Outlet	1
59	9.800-006.0	Label, Hot/Caliente	2
60	Belts, See Specification Pages		
61	9.802-261.0	Hose, Push-On	9"
62	8.916-090.0	Label, Landa Logo	1
63	9.802-746.0	Screw, Thumb, 1/4"-20 x 1/2"	2
64	8.718-976.0	Washer, 1/4" Retainer	2
65	8.912-884.0	Reflector, Pilot Light	1
66	9.802-793.0	Nut, Cage, 1/4" x 16 Gauge	28
67	8.918.227.0	Hose,1/2" x 36", 2 Wire Pressure Loop	1
68	8.912-660.0	Cover, Front Bottom	4
69	8.719-515.0	Bolt, 3/8" x 1-1/4"	1

EXPLODED VIEW VHGL-6, 8 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
70	9.802-776.0	Nut, 5/16" ESNA	4
71	9.802-811.0	Washer, 3/8" x 1-1/2"	4
72	8.706-118.0	Nipple, 1" Close	1
73	8.706-206.0	Elbow, 1" Black Pipe	1
74	8.706-038.0	Bushing, 1" x 1/2", 3M F/S	1
75	8.933-009.0	Gasket, Burner Plate	2
76	9.803-132.0	Insulation, Retainer Plate	1
77	8.912-694.0	Extension, Outlet	1
78	9.802-038.0	Nipple, 1/2" JIC x 1/2" Pipe	1
79	8.912-520.0	Plate, Cover, NG-LM w/Hole	1
80	9.802-798.0	Screw, #10 x 1/2" Tek	8
81	9.804-082.0	Washer, 1/4" SAE, Black	2
82	9.802-104.0	Bushing, 3/4" Snap	1
83	9.196-012.0	Screw, 10/24" x 1/4"	1
84	8.719-936.0	Retainer Ring, Insulation	1
85	9.802-701.0	Bolt, 1/4" x 1"	2
86	8.725-944.0	Disk, Rupture 8000#	1
87	9.184-030.0	Spacer, Rupture Disk	1
88	8.750-095.0	Thermostat, 240°F	1
89	8.912-664.0	Wrap, Outer VHGL-6-8 GPM	1
90	8.706-207.0	Elbow, 3/8" Street, 90° Steel	1

▲ Not Shown

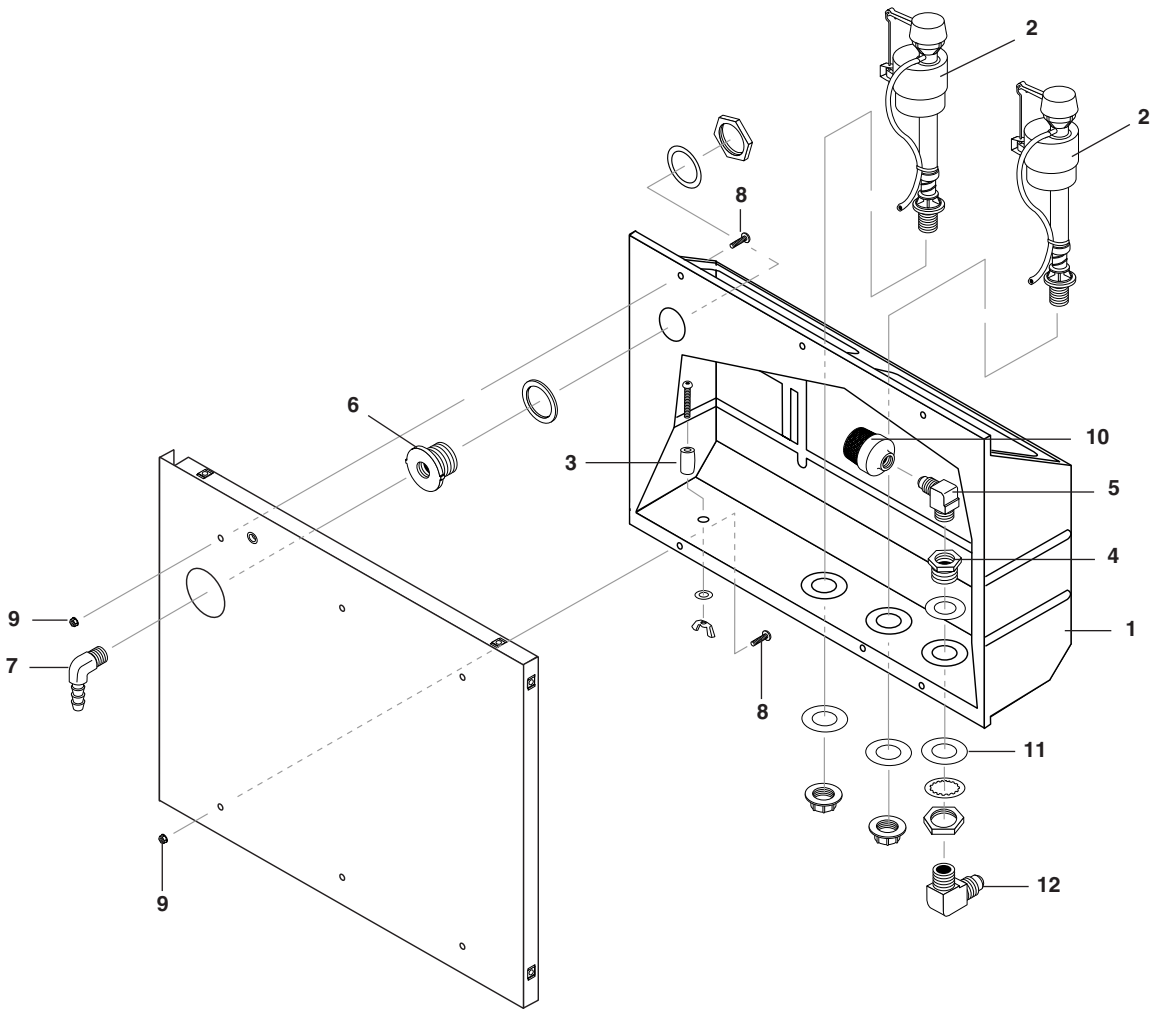
BURNER ASSEMBLY VHGL-6, 8



BURNER ASSEMBLY VHGL-6, 8 PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.919-524.0	Burner Ring, w/54 Jets, VHG-Large	1
	8.919-525.0	Burner Ring, w/65 Jets (LP Option)	1
2	9.802-695.0	Nut, 10/32" Keps	6
3	9.803-612.0	Solenoid, Pilot	1
4	8.930-332.0	Ignitor Cable, 69"	1
5	9.803-610.0	Pilot, Ignitor	1
6	9.802-972.0	Splash Guard, Pilot Light	1
7	9.802-759.0	Screw, 10/32 x 1/2", Black	4
8	8.716-318.0	Housing, Cap	2
	8.716-525.0	Terminal, Male Socket	4
9	9.802-971.0	Nipple, 1" x 15" Black, SCH 40	1
10	9.802-026.0	Elbow, 1" Black Pipe, 90°	2
11	8.706-020.0	Nipple, 1" x 12-1/2" Black	1
12	8.706-118.0	Nipple, 1" Close, Black Pipe	3
13	8.706-323.0	Union, 1" Black Pipe	2
14	8.706-022.0	Nipple, 1" x 6", Black Pipe	1
15	9.802-911.0	Tubing, Aluminum	36"
16	9.802-718.0	U-Bolt, 5/16" x 1" Pipe	5
17	9.802-103.0	Snap, Bushing, 5/8"	1
18	8.706-878.0	Nipple, 1/4" x 1/8" Pipe	1
19	8.912-739.0	Bracket, Pilot Access	1
20	9.802-178.0	Valve, Ball 1/4" Fem x 1/4" Fem	1
21	8.706-827.0	Elbow, 1/4" Street	1
22	8.706-777.0	Nipple, 1/4" Close	1
23	8.718-062.0	Valve, Gas Shutoff 1" NPT	1
24	8.707-029.0	Elbow, 1/4" Tube x 1/8" MPT 90°	1
25	8.718-050.0	Valve, Gas, V8943B, NG	1
	8.718-048.0	Valve, Gas, V8943C	1
26	8.912-670.0	Strap, Burner,VHG Large	2
27	9.802-776.0	Nut, 5/16" ESNA	4
28	8.718-980.0	Washer, 5/16" Flat, SAE	4
29	9.802-772.0	Screw, 10/32" x 1/4" Hex	2
30	8.932-964.0	Label, Natural Gas	1
	8.932-963.0	Label, Liquid Propane (LP Option)	1
31	8.716-317.0	Housing, Plug	2
	8.716-524.0	Terminal, Fem Socket	4
32	8.706-910.0	Bushing, 1/4 x 1/8 Pipe	1
33	8.706-183.0	Elbow, 1" Street, Black 90°	1
34	9.802-447.0	Conduit, 1/4" x 8"	2
35	8.706-857.0	Tee, 1/8" Street	1

VHGL- 4, 5 FLOAT TANK

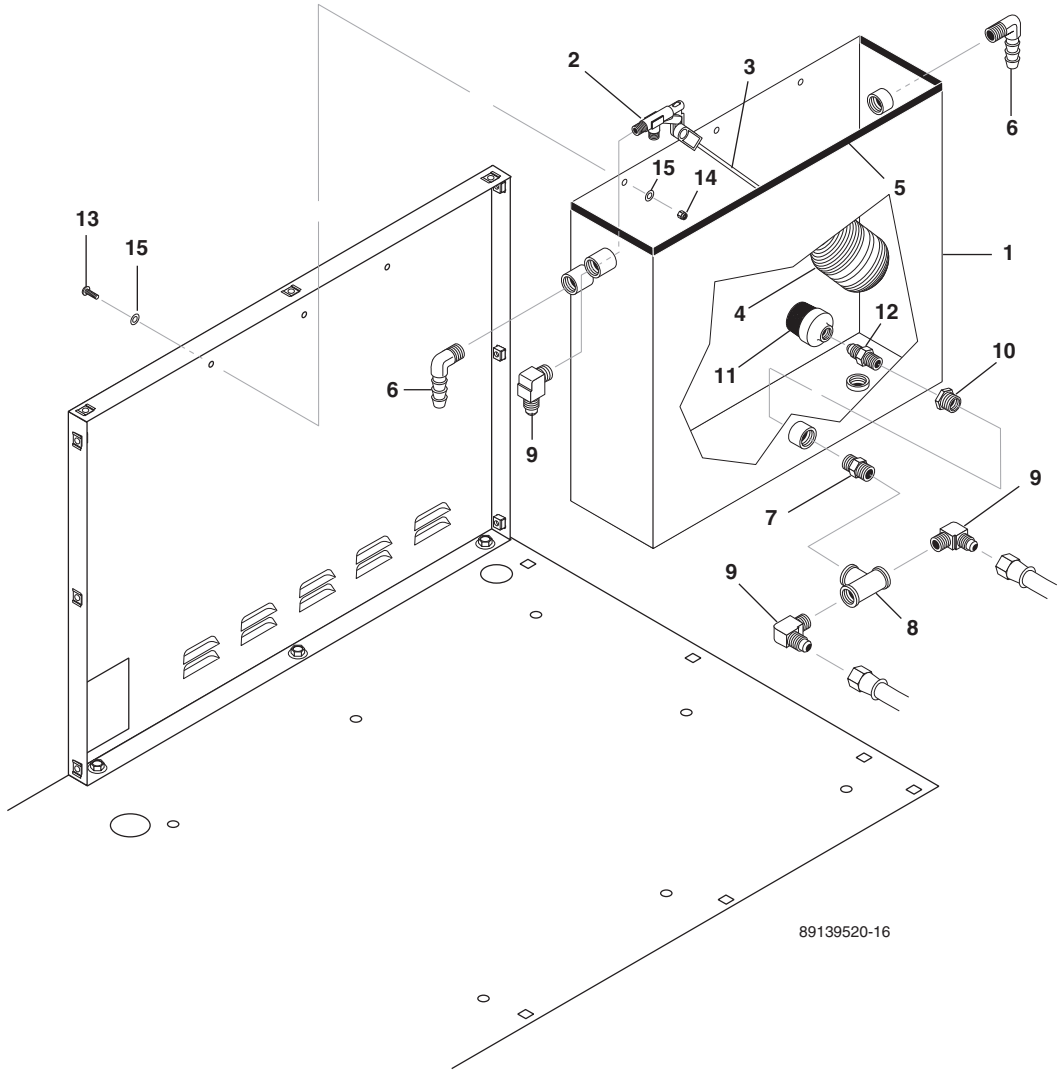


VHGL - 4, 5 FLOAT TANK

ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-084.0	Tank, Universal Float	1
2	9.802-185.0	Valve, Float Tank, Vertical	2
3	9.802-106.0	Plug, Float Tank Assembly	1
4	8.707-000.0	Connector, Anchor, 1/2"	1
5	9.802-131.0	Elbow, 1/2" JIC x 1/2", 90 (4-2000, 4-2200, 4-3000, 5-3000)	1

ITEM	PART NO.	DESCRIPTION	QTY
6	9.802-052.0	Bulkhead, 3/4" Poly Pro	1
7	9.802-050.0	Adaptor, 3/4" x 3/4" MTX Insert	1
8	9.802-771.0	Screw 10/32" x 3/4"	6
9	9.802-695.0	Nut, 10/32" Keps	6
10	8.707-061.0	Strainer, 1/2", Basket	1
11	8.719-039.0	Washer, 1-3/16" x 2-1/4"	1
12	9.802-131.0	Elbow, 1/2" JIC x 1/2" 90°	1

VHGL-6, 8 FLOAT TANK



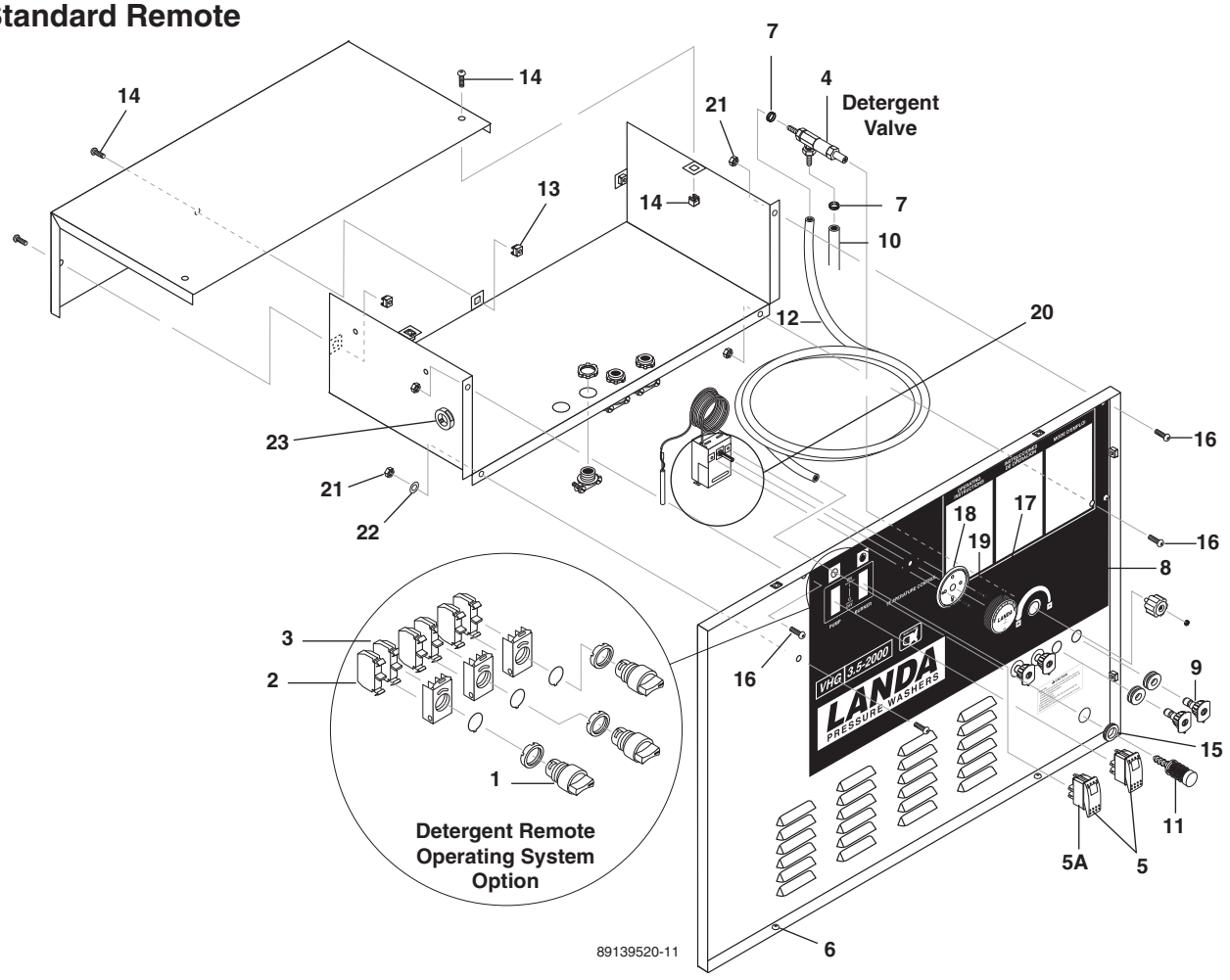
VHGL-6, 8 FLOAT TANK (#8.903-590.0) PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.912-518.0	Assy, Float Tank, S.S.	1
2	8.749-329.0	Float Valve, 3/4" Kerick	1
3	8.707-025.0	Stem, 10" Float	1
4	8.706-512.0	Ball, Float, Black Plastic	1
5	9.802-071.0	Trim, 750 B2 x 1/16" Black	3.25 ft
6	9.802-050.0	Adapter, 3/4" x 3/4" MT x Insert 90°	2
7	8.706-800.0	Nipple, 3/4" Hex	1

ITEM	PART NO.	DESCRIPTION	QTY
8	8.706-846.0	Tee, 3/4" Female Pipe	1
9	9.803-557.0	Elbow, 3/4" SAE x 3/4", 90°, Brass	3
10	8.706-925.0	Bushing, 3/4" x 1/2" Pipe	1
11	8.707-061.0	Strainer, 1/2" Basket	1
12	9.802-128.0	Nipple, 1/2" JIC x 1/2" Pipe	1
13	9.804-003.0	Screw, 1/4" x 3/4"	3
14	9.802-773.0	Nut, 1/4" ESNA	3
15	9.804-082.0	Washer, 1/4" Black	6

VHGL-4, 5 CONTROL PANEL AND PARTS LIST

Standard Remote

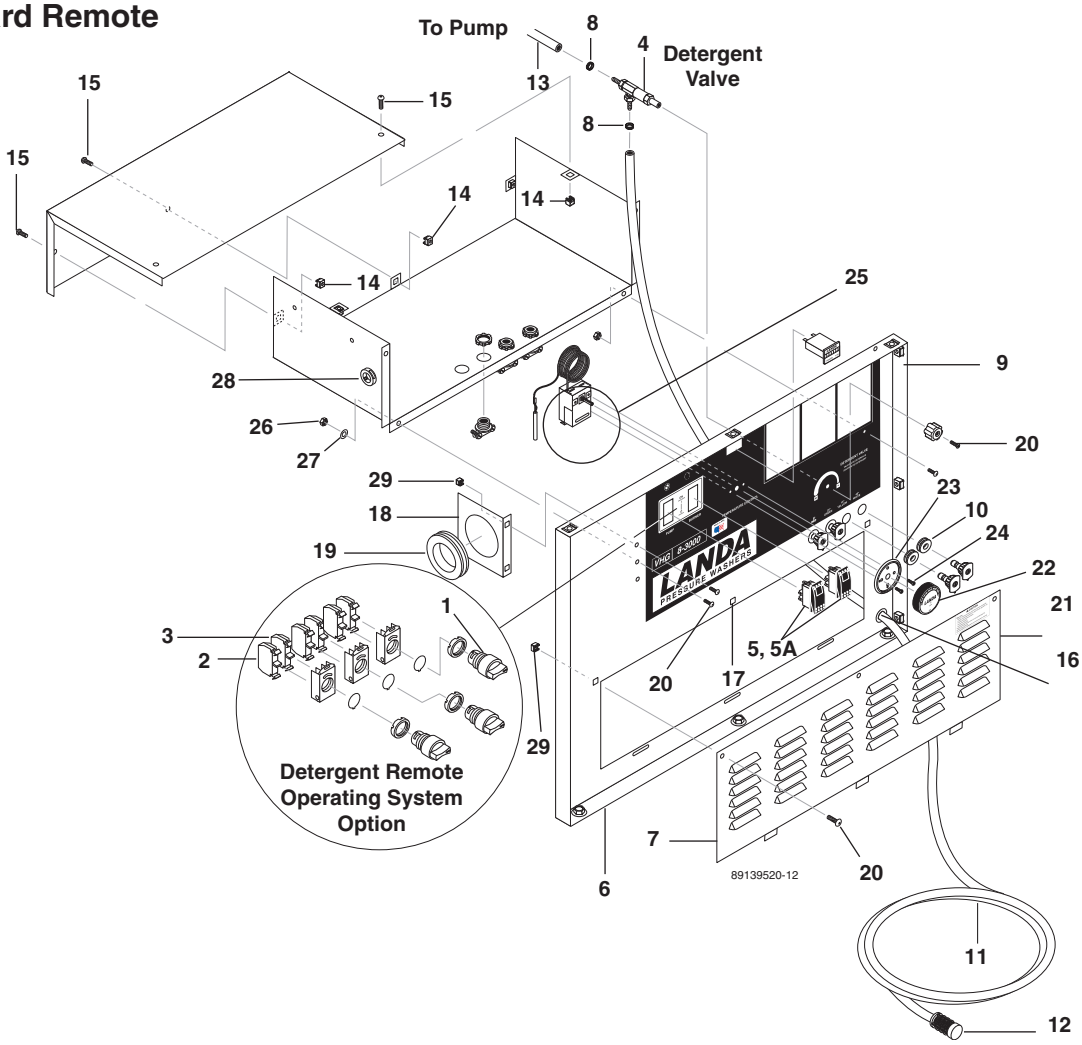


ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-536.0	Switch Selector, w/Red Lever (Remote Option)	3
2	9.802-534.0	Block, Contact, NC (Remote Option)	3
3	9.802-535.0	Block, Contact, NO (Remote Option)	3
4	9.802-188.0	Valve, Metering, 1/4" Hose	1
5	9.802-451.0	Switch, Rocker, Carling	2
5A	9.802-452.0	Switch Rocker, Carling M-Circuit, (Time Delay Option Only)	1
6	8.912-625.0 8.912-627.0	Panel, Control, VHG Large Panel, Control, Remote, VHG Large	1 1
7	6.390-126.0	Clamp, Hose, .46-, .54 ST	2
8	8.900-288.0	Label, Control Panel	1
9	9.802-064.0	Grommet, Rubber, Nozzle Holder	4
10	9.802-251.0	Tubing, 1/4" x 1/2", Clear Vinyl	10 ft.

ITEM	PART NO.	DESCRIPTION	QTY
11	8.707-058.0	Strainer, 1/4" Brass w/Check Valve	1
12	9.802-252.0	Hose, 1/4" x 1/2" Braided Vinyl	1.25 ft.
13	9.802-791.0	Nut, Cage, 10/32" x 16 Gauge	5
14	9.802-759.0	Screw, 10/32" x 1/2" Black	5
15	9.802-104.0	Bushing, 3/4" Snap	1
16	9.804-003.0	Screw, 1/4" x 3/4"	4
17	8.750.097.0	Knob, Thermostat 240 F	1
18	8.712-190.0	Bezel, Thermostat	1
19	8.718-779.0	Screw, 4mm x 6mm	2
20	8.750-095.0	Thermostat, 240F	
21	9.802-773.0	Nut, 1/4-20 ESNA NC	4
22	9.802-082.0	Washer, 1/4" Flat, Zinc	4
23	9.802-103.0	Bushing, Snap 5/8"	1

VHGL-6, 8 CONTROL PANEL AND PARTS LIST

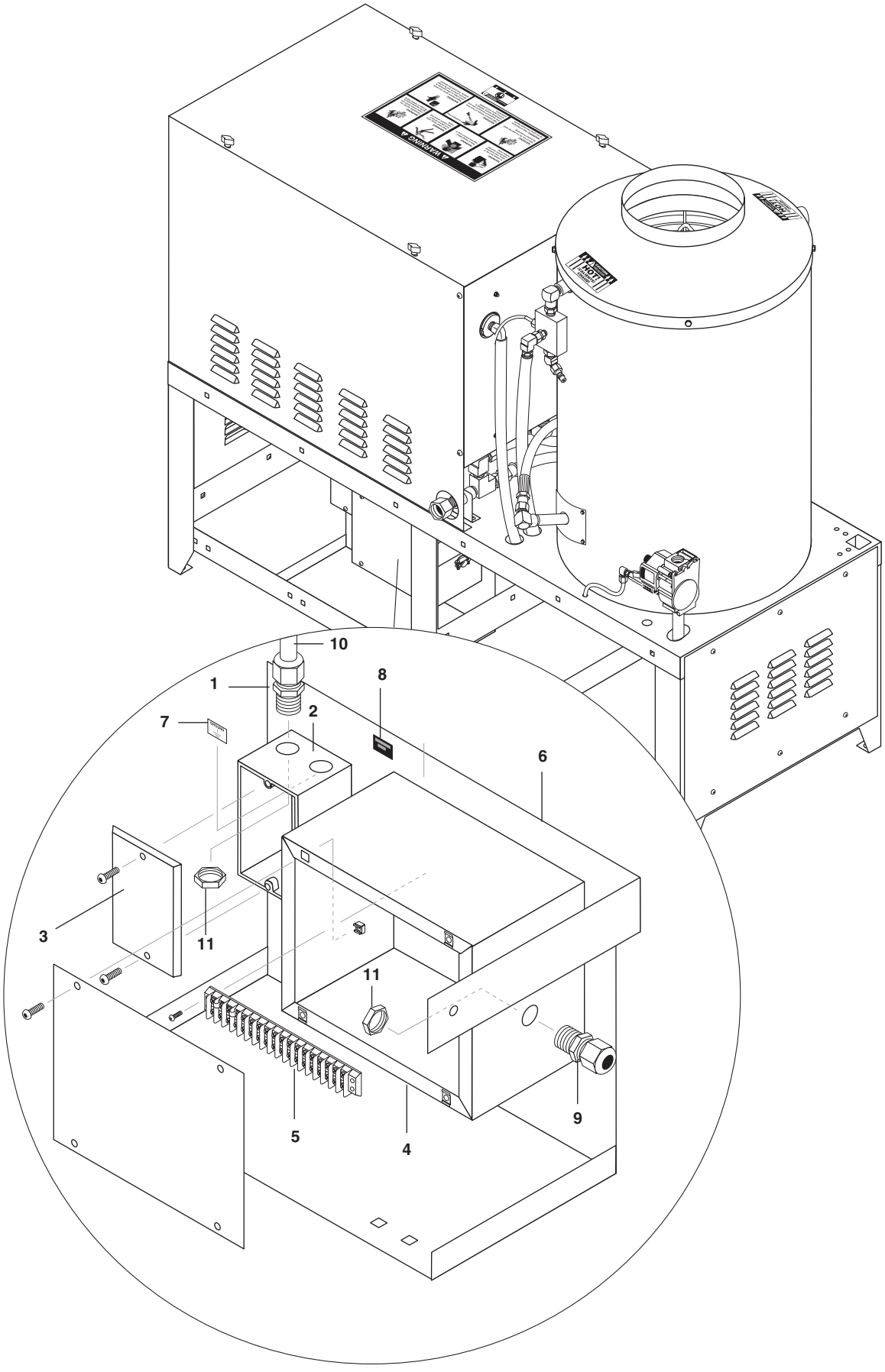
Standard Remote



ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-536.0	Switch Selector w/Red Lever (Remote Option)	3
2	9.802-534.0	Block, Contact, WC (Remote Option)	3
3	9.802-535.0	Black, Contact, NO (Remote Option)	3
4	9.802-188.0	Valve, Metering, 1/4" Hose	1
5	9.802-451.0	Switch, Rocker, Carling	2
5A	9.802-452.0	Switch, Rocker, Carling, M-Circuit (Time Delay Option)	1
6	8.912-666.0	Panel, Control, VHG Large	1
	8.912-667.0	Panel, Control, Remote	1
7	8.912-677.0	Cover, Access	1
8	6.390-126.0	Clamp, Hose, .46-, .54 ST	2
9	8.900-288.0	Label, Control Panel	1
10	9.802-064.0	Grommet, Rubber	4
11	4-02080000	Tube, 1/4" x 1/2", Clear Vinyl	10 ft
12	8.707-058.0	Strainer, 1/4" Brass	1

ITEM	PART NO.	DESCRIPTION	QTY
13	9.802-252.0	Hose, 1/4" x 1/2", Braided Vinyl	1.25 ft
14	9.802-791.0	Nut, Cage, 10-32 x 16 Gauge	5
15	9.802-759.0	Screw, 10/32" x 1/2" Black	5
16	9.802-104.0	Bushing, 3/4" Snap	1
17	9.802-765.0	Screw, 1/4" x 1/2" Black	2
18	8.912-684.0	Bracket, Cord	1
19	9.803-545.0	Grommet, 2-5/16"	1
20	8.718-783.0	Screw, 1/4 x 3/4, Black	5
21	9.800-049.0	Manuf. Cleaning Solution	1
22	8.750-097.0	Knob, Thermostat 240°F	1
23	8.712-190.0	Bezel, Thermostat	1
24	8.718-779.0	Screw. 4mm x 6mm	2
25	8.750-095.0	Thermostat, 240°F	1
26	9.802-773.0	Nut,1/4-20 ESNA NC	4
27	9.804-082.0	Washer, 1/4" Flat, Zinc	4
28	9.802-103.0	Bushing, Snap 5/8"	1
29	9.802-793.0	Nut, Cage, 1/4x16 Gauge	5

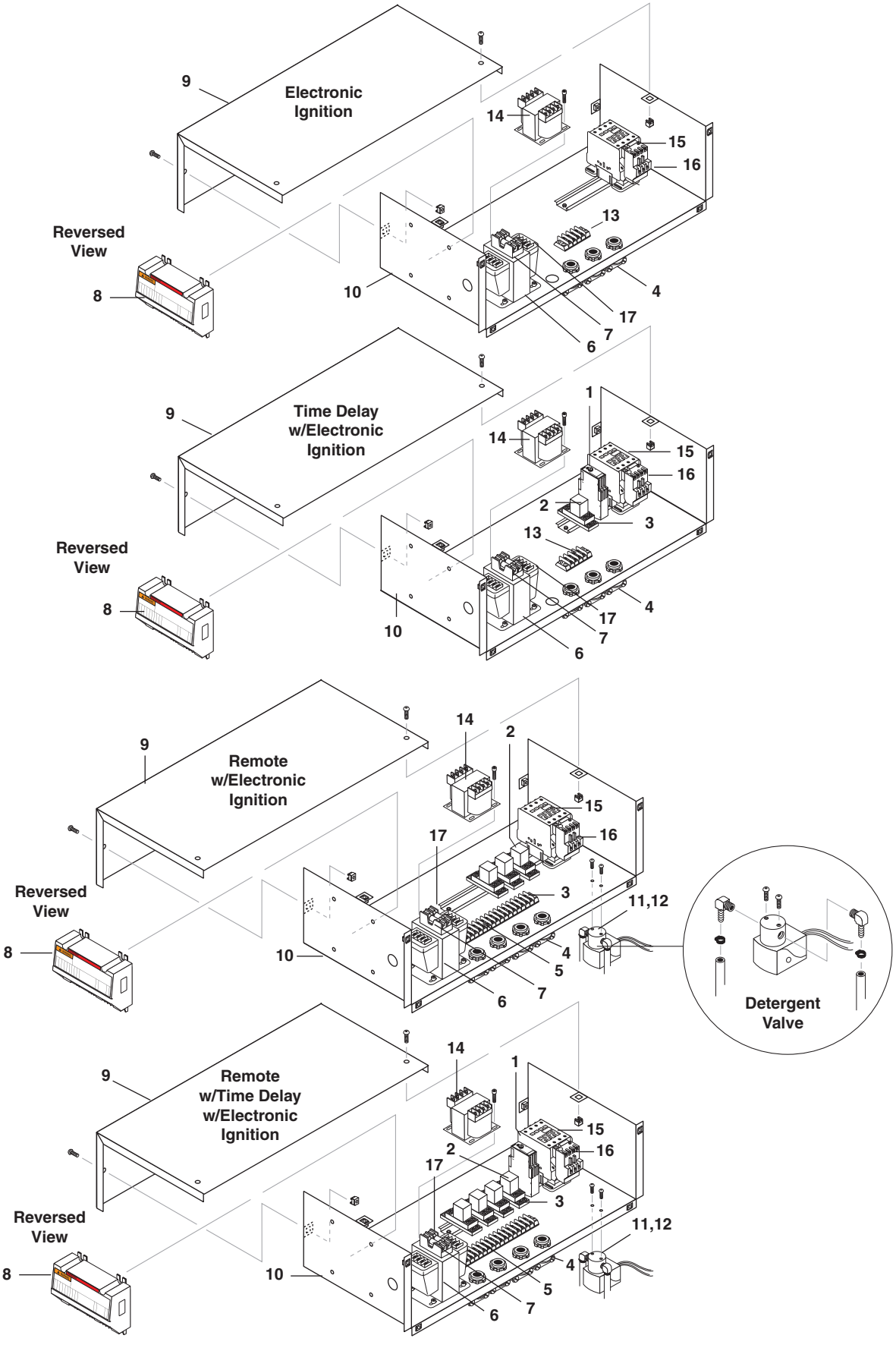
VHGL POWER IN/REMOTE ELECTRICAL BOX



VHGL POWER IN/REMOTE ELECTRICAL BOX PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-518.0	Strain Relief, LQ Tite, 3/4" (4-2A; 4-22A/B/C/G/H/N; 4-3A/B/C/G/H; 5-3C/H; 6-3C; 8-3C)	1
	9.802-521.0	Strain Relief, 3/4" (5-3B)	1
	8.716-564.0	Strain Relief, 1" (6-3B,H)	1
2	9.802-484.0	Box, Junction, 3 Hole, 3/4" (4-2A; 4-22A/B/C/G/H/N; 4-3A/B/C/G/H; 5-3B/C/H; 6-3C; 8-3C)	1
	8.716-339.0	Box, Electric, 4" x 2", 3 Hole (6-3B/H; 8-3B/H)	1
3	9.802-483.0	Cover Plate, Junction Box, 2" x 4"	1
4	8.716-270.0	Box, Metal Junction, 8" x 10" x 4", Remote Option	1
5	9.802-493.0	Block, Terminal, 16 Pole, Remote Option	1
6	8.912-646.0	Elec/Remote Box Panel, VHG Small (4-5 GPM)	1
	8.912-673.0	Bracket, Remote Box, VHG Large (6-8 GPM)	1
7	9.800-040.0	Label, Ground	1
8	8.900-207.0	Label, Incoming Power	1
9	9.802-518.0	Strain Relief, 3/4" (Remote Option)	1
10	9.802-425.0	Cord, Service SO, 8/3 Power (4-3A/G)	7.5 ft.
	9.802-426.0	Cord, Service, 8/4 Power (5-3B/H)	7.5 ft.
	8.715-933.0	Cord, Service, 6/4 Power (6-3B/H) (8-3B/H)	6 ft.
	9.802-429.0	Cord, Service SEO, 12/4 Power (4-22B/C/H/N; 5-3C)	7.5 ft.
	9.802-436.0	Cord Service, 10/3 Power (4-2A; 4-22A/G)	7.5 ft.
	9.802-437.0	Cord Service, 10/4 Power (4-3B/C/H)	7.5 ft.
		(6-3C, 8-3C)	6 ft.
11	9.802-526.0	Locknut, 3/4" (Rmote Option)	1

VHGL ELECTRICAL BOX ASSEMBLIES

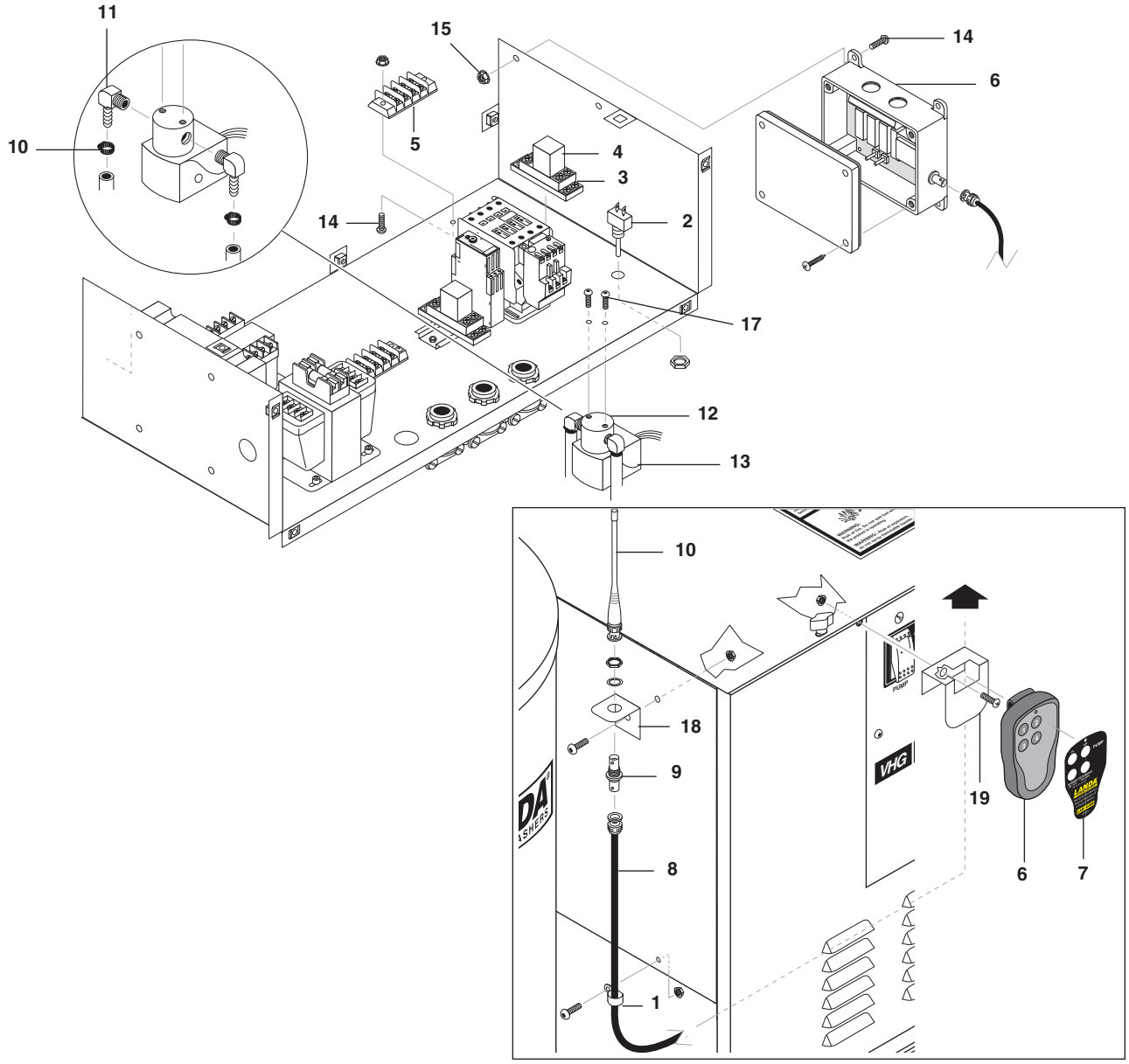


VHGL ELECTRICAL BOX ASSEMBLIES

ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-473.0	Timer, Multi-Function, 24V-120/240	1
2	9.802-468.0	Relay, 120V, See Option	
3	9.802-467.0	Base, Relay, See Option	
4	9.802-520.0	Strain Relief, 3/4", Standard Remote	3 4
5	9.802-493.0	Block, Terminal, 16 Pole	1
6	Transformer, See Specification Pages		
7	Fuse, See Specification Pages		
8	9.803-613.0	Ignition, Electronic Control	1
9	8.912-631.0	Cover, Electrical Box, VHG Large	1
10	8.912-623.0	Box, Electrical, VHG Large	1
11	9.802-532.0	Valve, Detergent, Less Solenoid	1
12	9.802-533.0	Solenoid Coil, 120V	1
13	9.802-491.0	Block, Terminal, 4 Pole	1
14	9.802-553.0	Transformer, 120/240-24V,-50 KVA	1
15	Contactor, See Specification Pages		
16	Overload, See Specification Pages		
17	Fuse, See Specification Pages		
	9.800-040.0	▲ Label, Ground	1

▲ Not Shown

HANDHELD WIRELESS ASSEMBLY & PARTS LIST

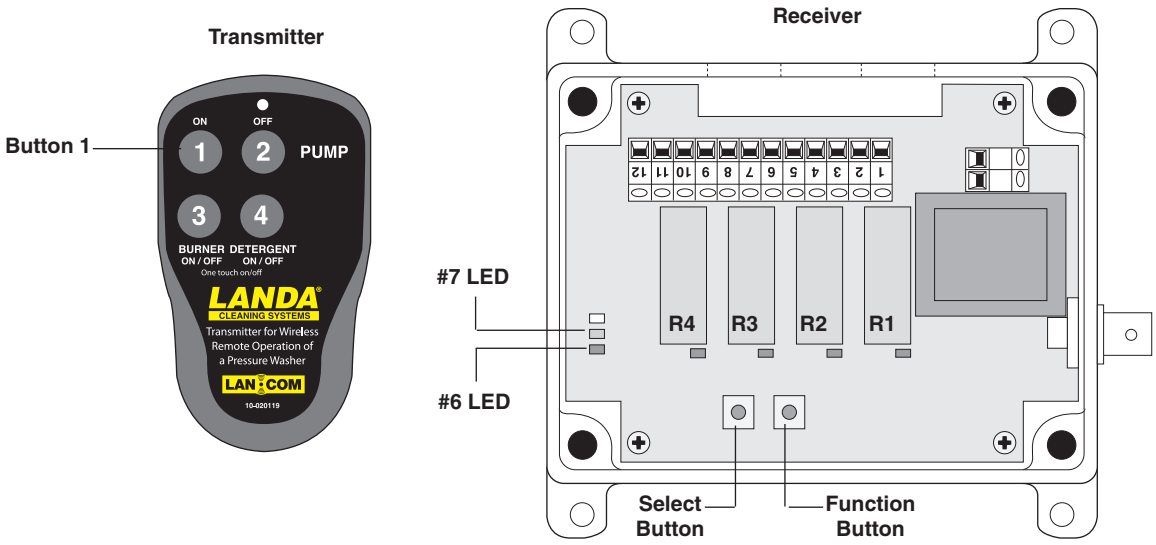


ITEM	PART NO.	DESCRIPTION	QTY
1	9.804-534.0	Clamp, Cable 1/2 x 1/2 NYL	1
2	8.716-078.0	Switch, Toggle, 1-1/2 Hp, 1-Pole P#CA201-73	1
3	9.802-467.0	Base Relay SH2B-05, IDEC	1
4	8.716-230.0	Relay 24V Finder	1
5	9.802-491.0	Block, Terminal 4 Pole	1
6	8.716-442.0	Wireless, Transmitter-Receiver Cervis	1
7	8.940-008.0	Label, Landa, LANCOM Remote Control	1
8	8.716-444.0	Cable, Radio Remote, RG-58/U Coaxial Cable	1
9	8.716-445.0	Connector, Radio Remote Bulkhead BNC-BNC	1
10	8.716-446.0	Antenna, Radio Remote, BNC Connection	1

ITEM	PART NO.	DESCRIPTION	QTY
11	8.706-958.0	Hose Barb, 1/4" Barb x 1/4" Pipe	2
12	9.802-532.0	Valve, Chem, Less Solenoid 04F20C2118AAF	1
13	9.802-533.0	Solenoid Coil, 120V AF4C05	1
14	9.802-749.0	Screw, 8/32" x 3/4" BHSOC	6
15	9.802-785.0	Nut, 8/32", Keps	6
16	6.390-126.0	Clamp, Hose, .46-, .54 ST	2
17	9.802-772.0	Screw, 10/32 x 1/4 HWH Roloc, ZN	2
18	8.912-674.0	Bracket, Antenna Mount, Wireless Remote	1
19	8.912-675.0	Bracket, Transmitter, Wireless Remote	1

Transmitter/Receiver Communication Set-up at Factory

Programming communication between the receiver and transmitter requires the removal of the receiver enclosure lid. The receiver must ahve 120V power. This process utilizes the Function/Select buttons on the main panel control board (PCB) of the receiver (See Figure below). A number of colored LED's are used to indicate various steps in the programming process (See Figure below). It is recommended that this process is not done while wired to the machine.



Receiver Programming LED's and Programming Switches

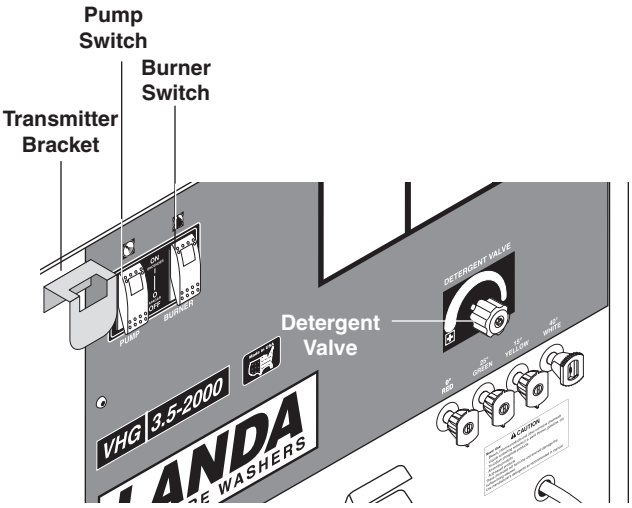
The T60-04CRV receiver programming process is as follows: While programming, make sure there are no other transmitters are transmitting in the area.

1. Press the **Function** button once to select the "Learn Code" mode. (#6 Red LED lights, you have approximately 5 seconds to make the next selection.)
2. Press the **Select** button once and then press any button on the transmitter and hold. (#6 Red LED will blink on/off three times and go out. After releasing the transmitter button, the relays will respond to the appropriate buttons (Button 1/R1; Button 2/R2; Button 3/R3; Button 4/R4); and the #6 red LED will blink on/off indicating that one or more adjustable codes have been learned by this receiver.
3. Press and hold the **Select** button for 6-8 seconds so the yellow LED is on solid. (#7 Yellow LED lights)

   NOTE: *This step is only completed when establishing the first transmitter communication.*

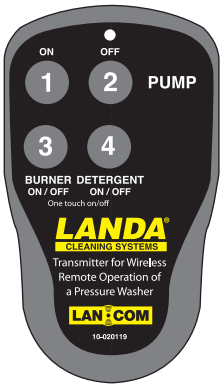
The receiver is now programmed to the desired transmitter.

HANDHELD WIRELESS OPERATING INSTRUCTIONS



Control Panel

For Wireless Remote Control Operation Step 1: Push the control panel pump switch to the "ON" position (first click). With the switch in this position the wireless remote is ready for use.

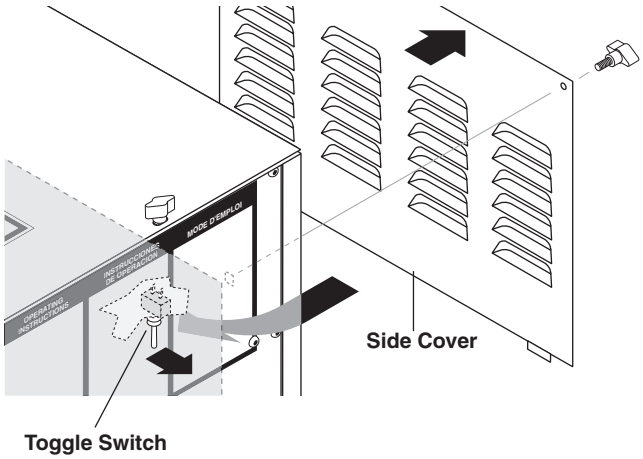


Transmitter

Step 2: To control pressure washer in remote mode, press transmitter button 1 to turn pump "ON". Press transmitter button 2 to turn pump "OFF". Pump can also be controlled manually by pressing the control panel pump ON/OFF switch.

Step 3: To operate burner in remote mode push control panel burner switch to the "ON position.

NOTE: If pump is running, burner will turn on. Press transmitter button 3 to turn burner "OFF" and press again to turn "ON". To place the control panel burner switch back in to operation, press transmitter button 3 to turn burner "ON" and then press the control panel burner switch to the "OFF" position. Burner can now be controlled with the control panel burner ON/OFF switch.

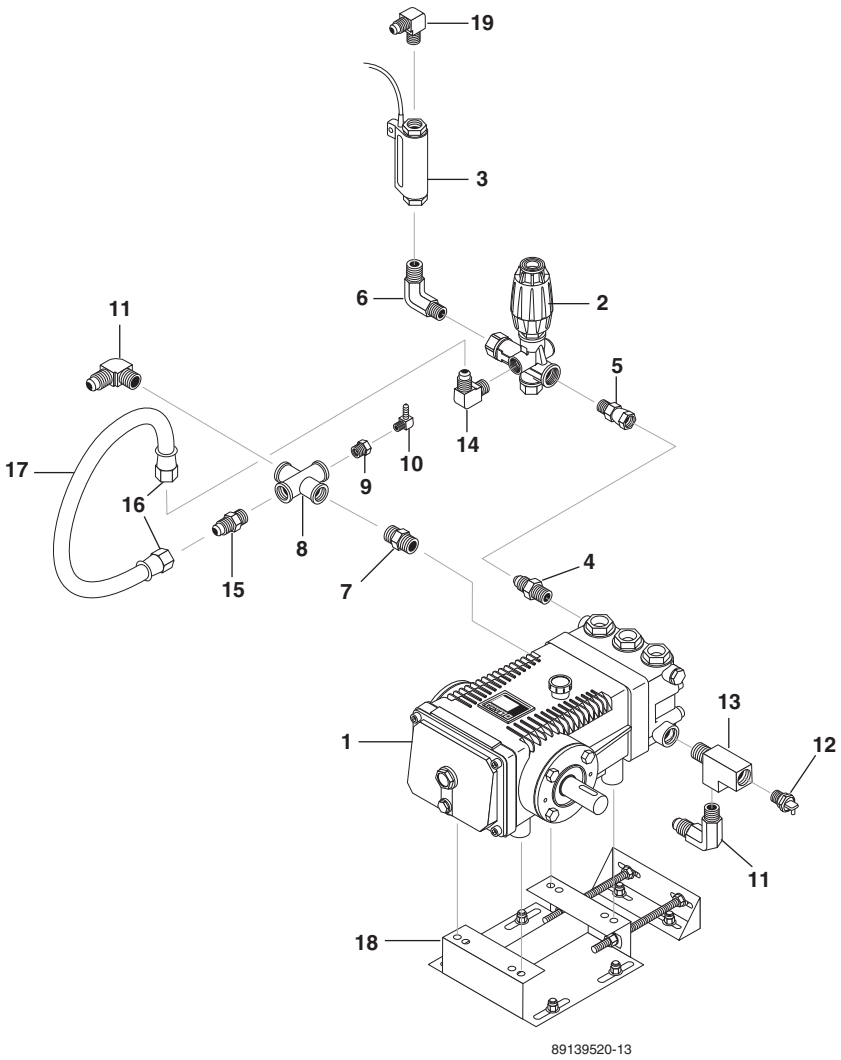


Step 4: The machine has an electronic solenoid to operate the detergent. The solenoid toggle switch is factory set to the off position for remote operation. Adjust the detergent valve to the desired flow. Press transmitter button 4 to turn ON/OFF detergent flow. To operate detergent at the control panel, first turn off main power, remove side cover and toggle the solenoid switch to the ON Position.

When machine is not in use, push control panel pump switch to the "off position. Store transmitter on the transmitter bracket.

NOTE: Normal operating range for the transmitter is about 500 feet interference-fee (line of site); 300 feet light interference (inside warehouse, pallet shelves); and 100 feet heavy interference (through concrete/ stone walls, metal doors). If greater range is desired, the antenna can be mounted at a seperate location. This requires a longer cable - RG-58-U coaxial with BNC end connectors.

VHGL-6 PUMP ASSEMBLY

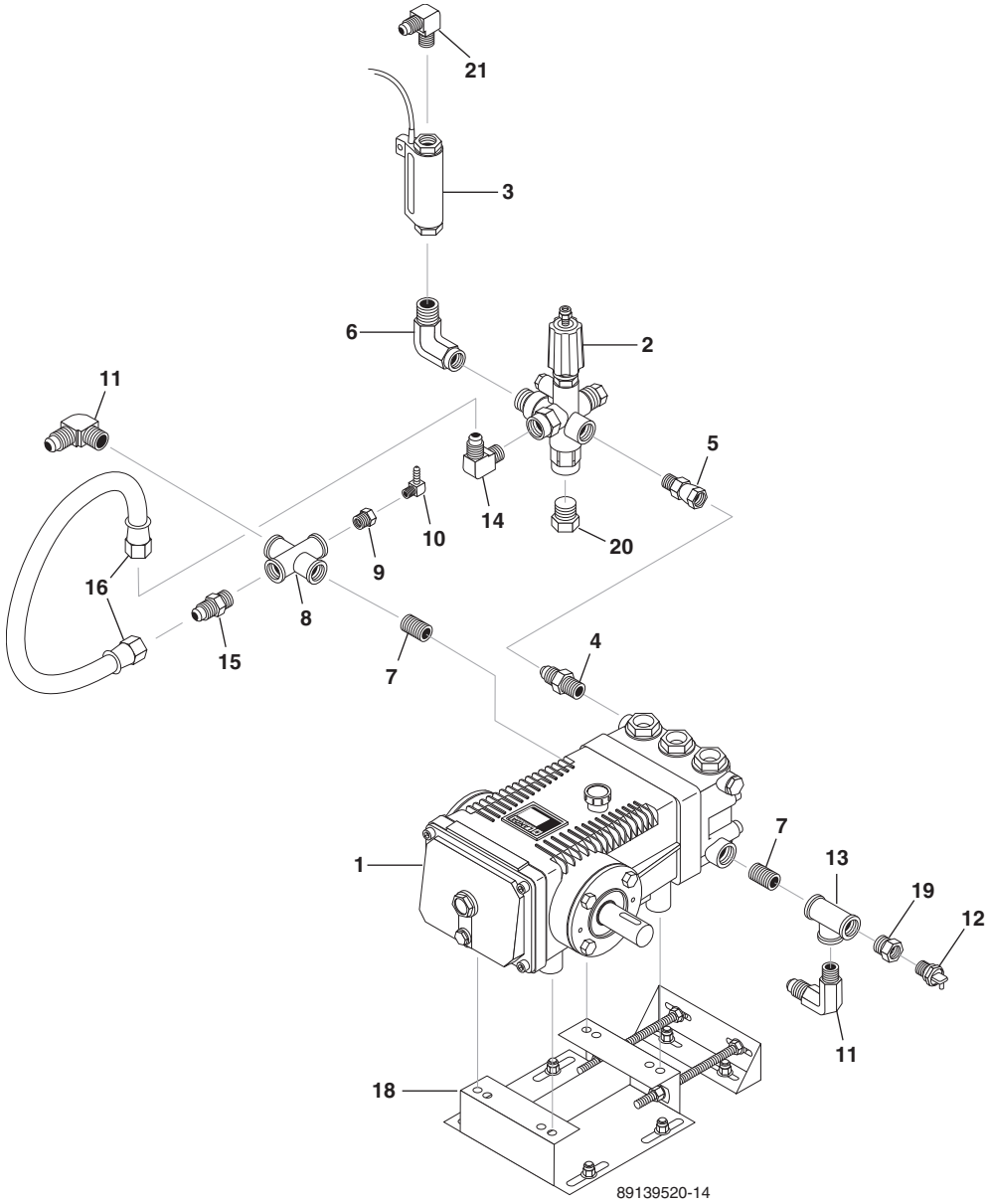


VHGL-6 PUMP ASSEMBLY PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.904-883.0	Pump, Landa, LT6035/L	1
2	8.750-299.0	Unloader, VRT 3 , 8 GPM @4500 PSI	1
3	8.933-006.0	Switch, Flow MV60, Yellow	1
4	9.802-036.0	Nipple, 1/2" JIC x 3/8" M	1
5	9.802-048.0	Swivel, 1/2" JIC Fem, 3/8" Male	1
6	9.706-168.0	Elbow, 3/8" MPT	1
7	8.706-797.0	Nipple, 1/2" Hex	1
8	9.802-119.0	Cross 1/2" Female, Cast, Inlet	1
9	8.706-915.0	Bushing, 1/2" x 1/4" Brass	1
10	8.706-958.0	Hose Barb, 1/4" Barb x 1/4" Pipe, 90°	1

ITEM	PART NO.	DESCRIPTION	QTY
11	9.802-132.0	Elbow, 3/4" JIC x 1/2", 90°	2
12	8.707-256.0	Pump Protector, 1/2" PTP	1
11	9.802-132.0	Elbow, 3/4" JIC x 1/2", 90°	2
13	8.706-860.0	Tee, 1/2" Street	1
14	9.802-129.0	Elbow, 1/2" JIC x 3/8", 90°	1
15	9.802-128.0	Nipple, 1/2" JIC x 1/2" Pipe	1
16	9.802-152.0	Swivel, 3/4" SAE, Female	2
17	9.802-261.0	Hose, 3/4" Push-On	27"
18	8.912-215.0	Rail, Pump	1
19	9.802-039.0	Elbow, 1/2" JIC x 3/8" 90°	1

VHGL-8 PUMP ASSEMBLY

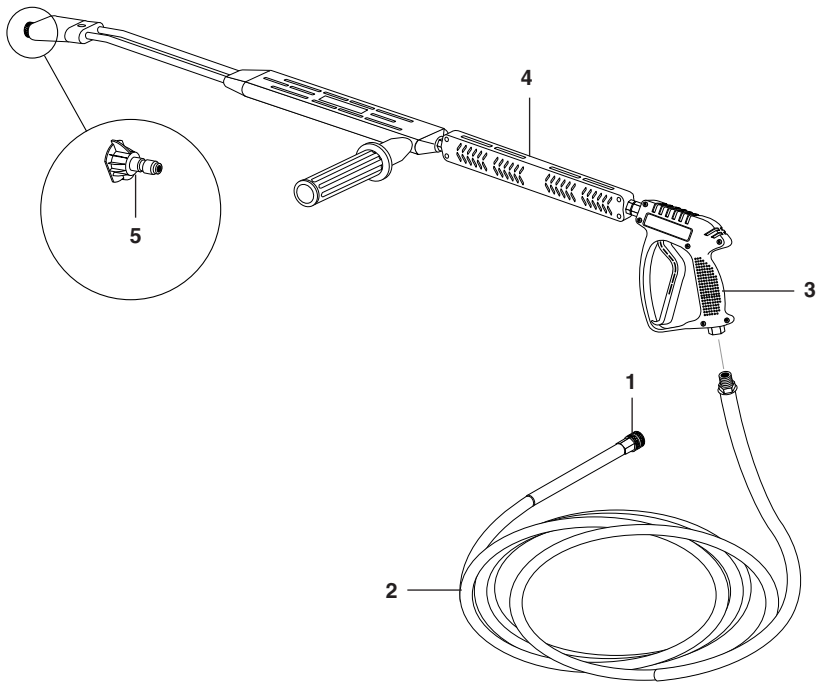


VHGL-8 PUMP ASSEMBLY PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.904-889.0	Pump, Landa, LX8030/L	1
2	8.715-508.0	VBXL Unloader	1
3	8.933-006.0	Switch, Flow MV60, Yellow	1
4	9.802-038.0	Nipple, 1/2" JIC x 1/2 Pipe	1
5	9.802-048.0	Swivel, 1/2" JIC Fem, 3/8" Male	1
6	9.802-024.0	Elbow, Street, 3/8"x1/2" Steel	1
7	8.706-799.0	Nipple, 3/4" Close	2
8	9.802-119.0	Cross 1/2" Female, Cast, Inlet (6-3)	1
	8.706-852.0	Cross, 3/4" Pipe (8-3)	1
9	8.706-923.0	Bushing, 3/4" x 1/4"	1
10	8.706-958.0	Hose Barb, 1/4" Barb x 1/4" Pipe, 90°	1

ITEM	PART NO.	DESCRIPTION	QTY
11	9.803-557.0	Elbow, 3/4" SAE x 3/4", 90°	2
12	8.707-256.0	Pump Protector, 1/2" PTP	1
13	8.706-846.0	Tee, 3/4" Female Pipe (8-3)	1
14	9.802-129.0	Elbow, 1/2" JIC x 3/8" 90°	1
15	9.802-128.0	Nipple, 1/2" JIC x 1/2" Pipe	1
16	9.802-152.0	Swivel, 3/4" SAE, Female	2
17	9.802-261.0	Hose, 3/4" Push-On	27"
18	8.912-215.0	Rail, Pump	1
19	8.706-925.0	Bushing, 3/4" x 1/2"	1
20	8.706-866.0	Plug, 1/2" Countersunk	1
21	9.802-039.0	Elbow, 1/2" JIC x 3/8" 90°	1

HOSE & SPRAY GUN ASSEMBLY



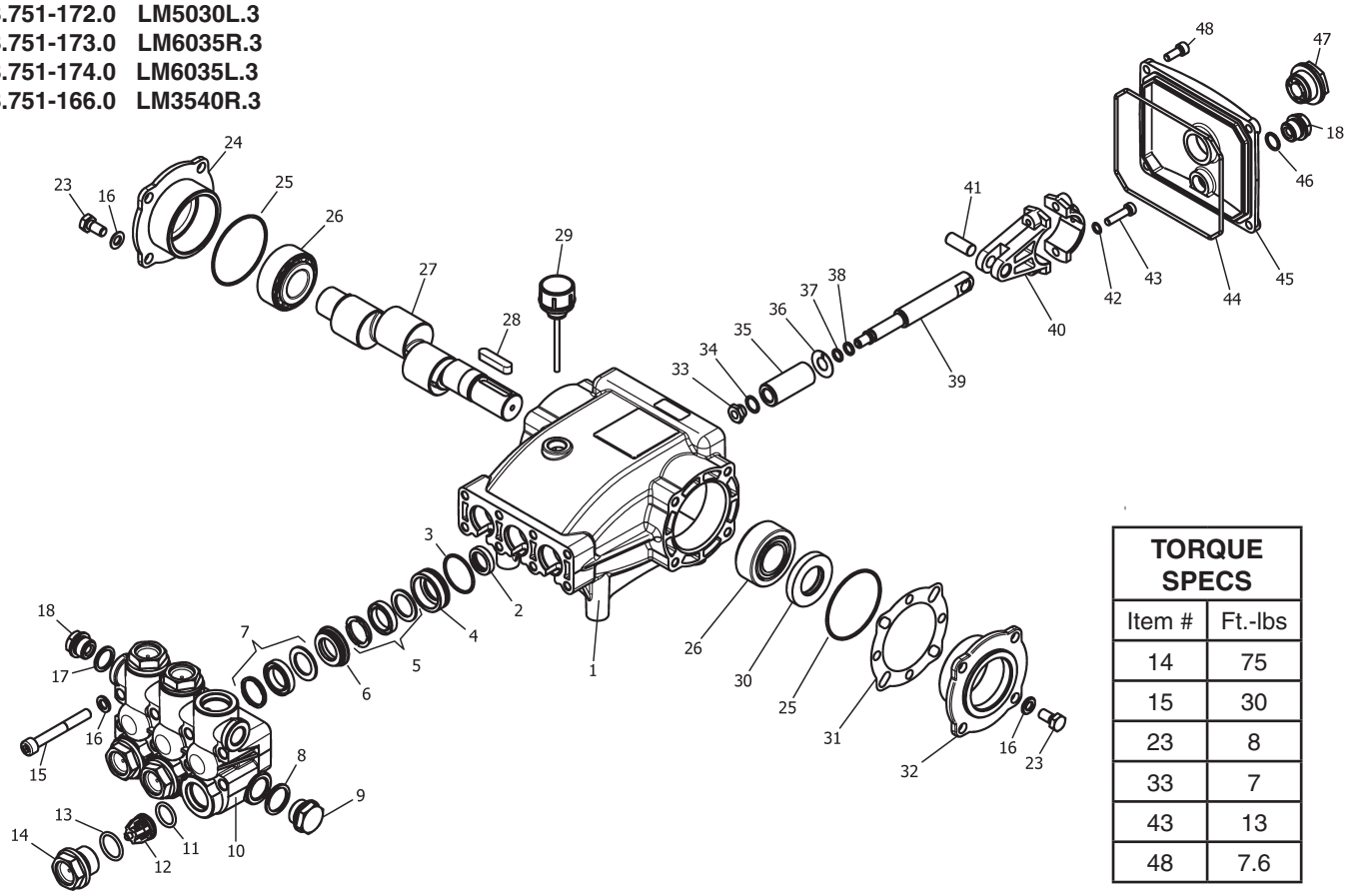
HOSE & SPRAY GUN ASSEMBLY PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	9.802-166.0	Coupler, 3/8" Female	1
2	8.739-026.0	Hose 3/8" x 50', 1 Wire Tuff Skin (4-22, 4-3, 4-2, 5-3, 6-3)	1
	8.739-401.0	Hose, 1/2" x 50', 2 Wire, Tuff -Flex (8-3)	1
3	8.751-234.0	Gun, Landa, L1050, 5000 PSI, 10.4 GPM	1
4	8.711-293.0	Lance, Spray Insulated	1
5	8.712-357.0	Nozzle, 0005.5, Red (4-22, 5-3)	1
	8.712-358.0	Nozzle,1505.5, Yellow (4-22, 5-3)	1
	8.712-359.0	Nozzle, 2505.5, Green (4-22, 5-3)	1
	8.712-360.0	Nozzle, 4005.5, White (4-22, 5-3)	1
	8.712-349.0	Nozzle, 0004.5, Red (4-3)	1
	8.712-350.0	Nozzle,1504.5, Yellow (4-3)	1
	8.712-351.0	Nozzle, 2504.5, Green (4-3)	1
	8.712-352.0	Nozzle, 4004.5, White (4-3)	1
	8.712-353.0	Nozzle, 0005, Red (4-2A)	1
	8.712-354.0	Nozzle, 1505, Yellow (4-2A)	1
	8.712-355.0	Nozzle, 2505, Green (4-2A)	1
	8.712-356.0	Nozzle, 4005, White (4-2A)	1
	8.712-369.0	Nozzle, 0007, Red (6-3)	1
	8.712-370.0	Nozzle, 1507, Yellow (6-3)	1
	8.712-371.0	Nozzle, 2507, Green (6-3)	1
	8.712-372.0	Nozzle, 4007, White (6-3)	1
	8.712-378.0	Nozzle, 0009, Red (8-3)	1
	8.712-379.0	Nozzle, 1509, Yellow (8-3)	1
	8.712-380.0	Nozzle, 2509, Green (8-3)	1
	8.712-381.0	Nozzle, 4009, White (8-3)	1

LM.3 SERIES PUMP EXPLODED VIEW

8.751-167.0 LM4030R.3
8.751-168.0 LM4030L.3
8.751-169.0 LM4035R.3
8.751-170.0 LM4035L.3
8.751-171.0 LM5030R.3
8.751-172.0 LM5030L.3
8.751-173.0 LM6035R.3
8.751-174.0 LM6035L.3
8.751-166.0 LM3540R.3

G3 Evolution



TORQUE SPECS	
Item #	Ft.-lbs
14	75
15	30
23	8
33	7
43	13
48	7.6

LM.3 SERIES PUMP EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	8.751-216.0	Crankcase	1
2*	See Kits Below	Plunger Oil Seal	3
3*	See Kits Below	O-Ring Ø1.78 x 31.47	3
4*	See Kits Below	Pressure Ring	3
5*	See Kits Below	U-Seal	3
6*	See Kits Below	Intermediate Ring	3
7*	See Kits Below	U-Seal	3
8	9.803-199.0	Washer, Copper	1
9	9.802-926.0	Plug, Brass 1/2	1
10	8.751-218.0	Manifold Head	1
11*	See Kits Below	O-Ring Ø2.62 x 17.13	6
12*	See Kits Below	Valve Assembly	6
13*	See Kits Below	O-Ring Ø2.62 x 20.29	6
14	9.802-928.0	Valve Plug	6
15	9.802-938.0	Manifold Stud Bolt	8
16	9.802-884.0	Washer	16

ITEM	PART NO.	DESCRIPTION	QTY
17	9.803-198.0	Copper Washer 3/8	1
18	9.802-925.0	Brass Plug 3/8	1
23	9.802-944.0	Screw, Hex, 8mm x18mm	8
24	8.717-210.0	Closed Bearing Housing	1
25	9.803-192.0	O-Ring Ø1.78 x 60.05	2
26	8.933-011.0	Tapered Roller Bearing	2
27	8.751-222.0	Crankshaft (5030,3540)	1
	8.751-223.0	Crankshaft (4030, 4035, 6035)	1
28	9.803-167.0	Crankshaft Key	1
29	9.802-921.0	Oil Dip Stick	1
309.803-140.0		Crankshaft Seal	1
31	9.803-178.0.0	Shim	2
32	8.717-209.0	Bearing Housing	1
33*	See Kits Below	Plunger Nut, M*	3
34*	See Kits Below	Copper Spacer	3
35*	See Kits Below	Plunger (4035, 6035)	3

LM.3 SERIES PUMP EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
35	See Kits Below	Plunger (4030, 5030)	3
	See Kits Below	Plunger (3540)	3
36*	See Kits Below	Copper Spacer	3
37*	See Kits Below	O-Ring Ø1.78 x 7.66	3
38*	See Kits Below	Teflon Ring	3
39	8.751-224.0	Plunger Rod	3
40	9.803-158.0	Connecting Rod	3
41	8.751-228.0	Connecting Rod Pin	3
42	9.803-218.0	Spring Washer	6
43	9.803-238.0	Connecting Rod Screw	6
44	8.933-016.0	O-Ring, Ø2.62 x 126.67	1
45	8.751-229.0	Crankcase Cover	1
46	9.803-197.0	O-Ring, Ø1.78 x 14	1
47	9.803-202.0	Sight Glass 3/4	1
48	9.802-939.0	Cover Screw	5

* Available in kit (See below)

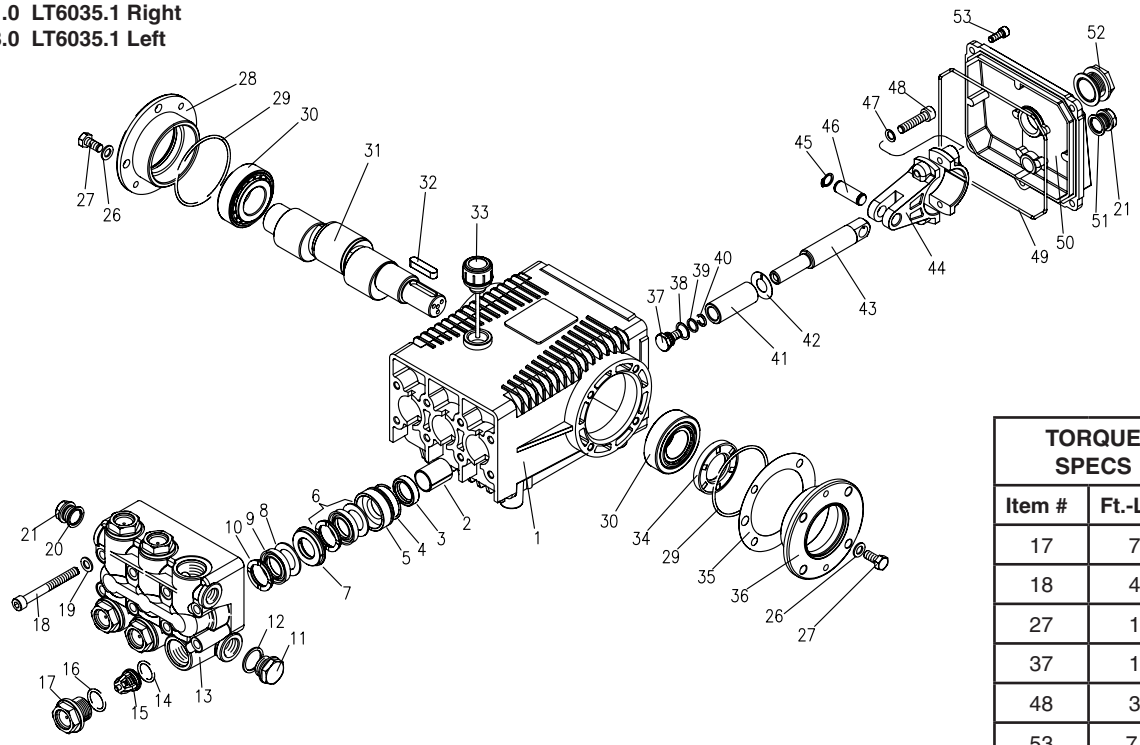
REPAIR KIT NO.	8.725-360.0	8.725-362.0	8.725-358.0	8.725-361.0	8.725-363.0	8.725-359.0
KIT DESCRIPTION	Plunger Seal LM-4035 LM-6035 18mm	Plunger Seal LM-4030 LM-5030 20mm	Plunger Seal LM-3540 15mm	Complete Seal Packing LM-4035 LM-6035 18mm	Complete Seal Packing LM-4030 LM-5030 20mm	Complete Seal Packing LM-3540 15mm
ITEM NUMBERS INCLUDED	3, 5, 7	3, 5, 7	3, 5, 7	3, 4, 5, 6, 7	3, 4, 5, 6, 7	3, 4, 5, 6, 7
NO. OF CYLINDERS KIT WILL SERVICE	3	3	3	1	1	1

REPAIR KIT NO.	8.751-237.0	8.751-238.0	8.933-023.0	9.802-603.0	9.802-609.0
KIT DESCRIPTION	Plunger LM-4035 LM-6035 18mm	Plunger LM-4030 LM-5030 20mm	Plunger LM-3540 15mm	Complete Valve	Plunger Oil Seals
ITEM NUMBERS INCLUDED	33, 34, 35, 36, 37, 38	33, 34, 35, 36, 37, 38	33, 34, 35, 36, 37, 38	11, 12, 13	2
NO. OF CYLINDERS KIT WILL SERVICE	1	1	1	6	3

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
1	9.803-163.0	Crankcase	1
2	9.803-195.0	Plunger Guide	3
3*	See Kit	Plunger Oil Seal	3
4*	See Kit	O-Ring Ø1.78 x 31. 47	3
5*	See Kit	"Pressure Ring, Brass	3
6*	See Kit	"U" Seal Low Pressure	3
7*	See Kit	Intermediate Ring, Brass	3
8*	See Kit	Support Ring, Teflon Bronze	3
9 *	See Kit	"U" Seal High Pressure	3
10*	See Kit	Support Ring	3
11	9.802-926.0	Brass Plug, 1/2"	1
12	9.803-199.0	Copper Washer 1/2"	1
13	9.802-933.0	Manifold Head	1
14*	See Kit	O-Ring Ø2.62 x 17.13	6
15*	See Kit	Valve Assembly	6
16*	See Kit	O-Ring Ø2.62 x 20.29	6
17	9.802-928.0	Valve Plug	6
18	9.802-943.0	Manifold Stud Bolt	8

ITEM	PART NO.	DESCRIPTION	QTY
19	9.802-890.0	Washer	8
20	9.803-198.0	Copper Washer 3/8"	1
21	9.802-925.0	Brass Plug 3/8"	1
26	9.802-884.0	Washer	8
27	9.802-944.0	Hexagonal Screw	8
28	9.803-182.0	Closed Bearing Housing	1
29	9.803-186.0	O-Ring Ø2.62 x 71.12	2
30	9.803-160.0	Roller Bearing, Tapered	2
31	9.803-148.0	Crankshaft (GT4040.1, 5030.1, 6035.1)	1
	9.803-149.0	Crankshaft (GT 4035.1)	1
32	9.803-167.0	Crankshaft Key	1
33	9.802-923.0	Oil Dip Stick	1
34	9.803-139.0	Crankshaft Seal	1
35	9.803-177.0	Shim	2
36	9.803-181.0	Bearing Housing	1
37*	See Kit	Plunger Bolt	3
38*	See Kit	Copper Spacer	3

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

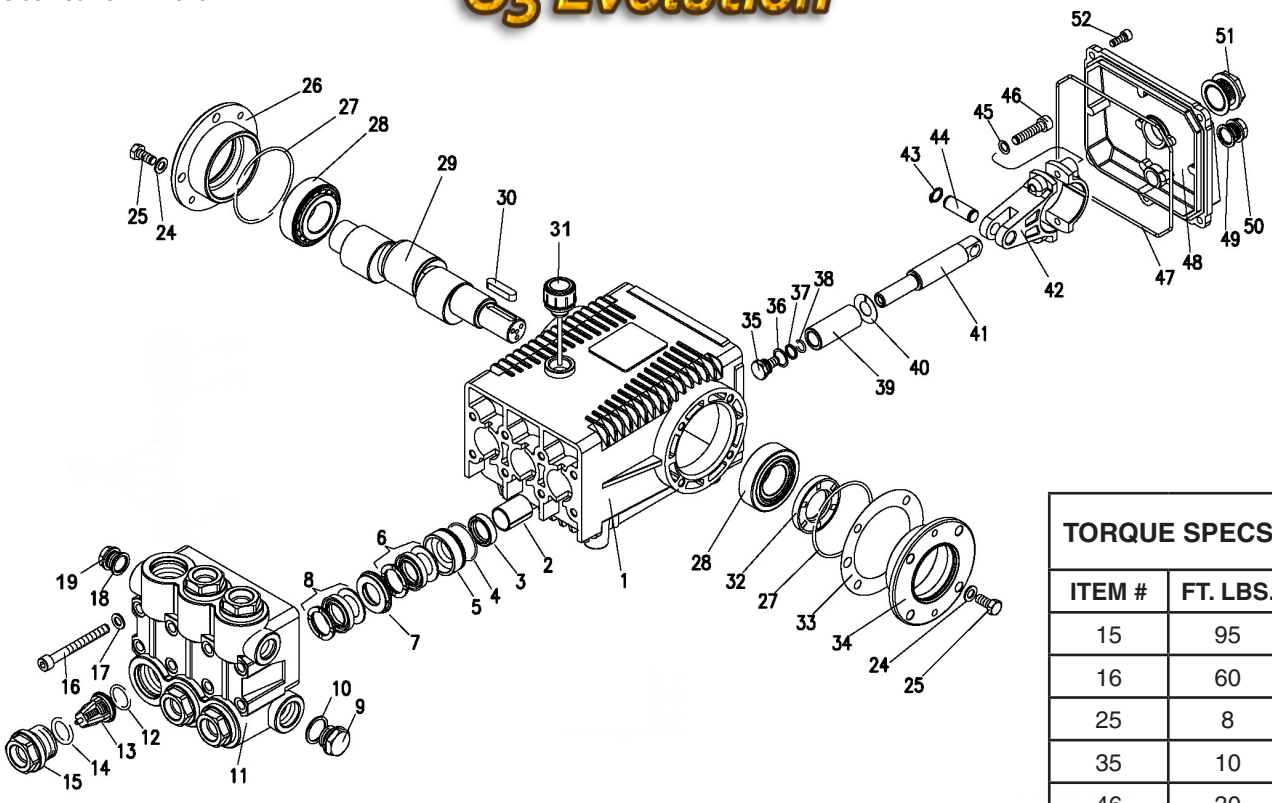
* Part available in kit (See below)

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



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
1	9.803-163.0	Crankcase	1
2	9.803-195.0	Plunger Guide	3
3*	See Kit	Plunger Oil Seal	3
4*	See Kit	O-Ring Ø1.78 x 37.82	3
5*	See Kit	Pressure Ring, 25mm	3
6*	See Kit	U-Seal, 25mm	3
7*	See Kit	Intermediate Ring 25mm	6
8*	See Kit	U-Seal, 25mm	3
9	9.803-285.0	Brass Plug, 3/4	1
10	9.803-286.0	Copper Washer 3/4	1
11	9.802-935.0	Manifold Housing	1
12*	9.803-291.0	O-Ring Ø2.62 x 23.47	6
13*	See Kit	Valve Assembly	6
14*	9.803-287.0	O-Ring Ø3.53 x 25.80	6
15	9.802-930.0	Valve Plug	6
16	9.802-942.0	Manifold Stud Bolt	8
17	9.802-890.0	Lock Washer	8

ITEM	PART NO.	DESCRIPTION	QTY
18	9.803-199.0	Copper Washer 1/2	1
19	9.802-926.0	Brass Plug 1/2	1
24	9.802-884.0	Washer	8
25	9.802-944.0	Flange Screw	8
26	9.803-182.0	Closed Bearing Housing	1
27	9.803-186.0	O-Ring Ø2.62 x 71.12	2
28	9.803-160.0	Roller Bearing	2
29	9.803-288.0	Crankshaft (LX 8030)	1
	9.803-289.0	Crankshaft (LX 1025)	1
30	9.803-167.0	Crankshaft Key	1
31	9.802-923.0	Oil Dip Stick	1
32	9.803-139.0	Crankshaft Seal	1
33	9.803-177.0	Shim	2
34	9.803-181.0	Bearing Housing	1
35*	See Kit	Plunger Bolt	3
36*	See Kit	Copper Spacer	3

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

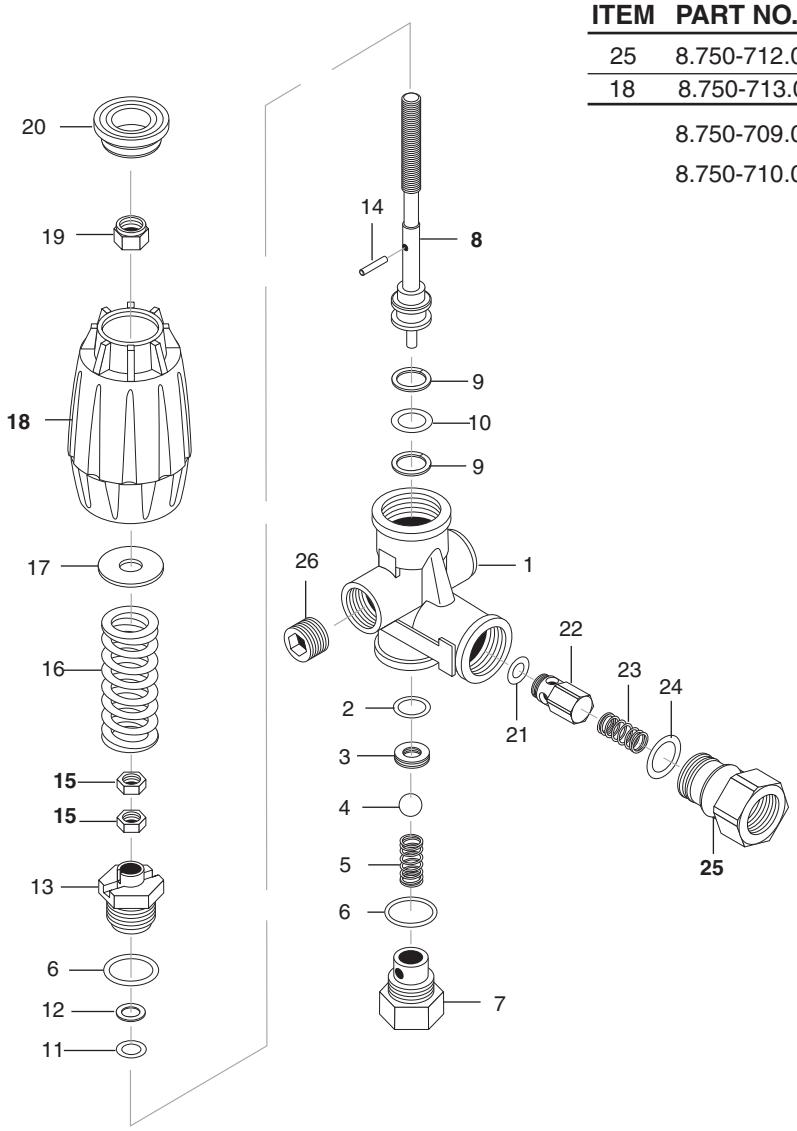
ITEM	PART NO.	DESCRIPTION	QTY
37*	See Kit	O-Ring Ø1.78x10.82	3
38*	See Kit	Teflon Ring	3
39*	See Kit	Plunger 25mm	3
40*	See Kit	Copper Spacer	3
41	9.803-143.0	Plunger Rod	3
42	9.803-157.0	Connecting Rod	3
43	9.802-912.0	Snap Ring	6
44	9.802-915.0	Connecting Rod Pin	3
45	9.802-889.0	Spring Washer	6
46	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

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)	

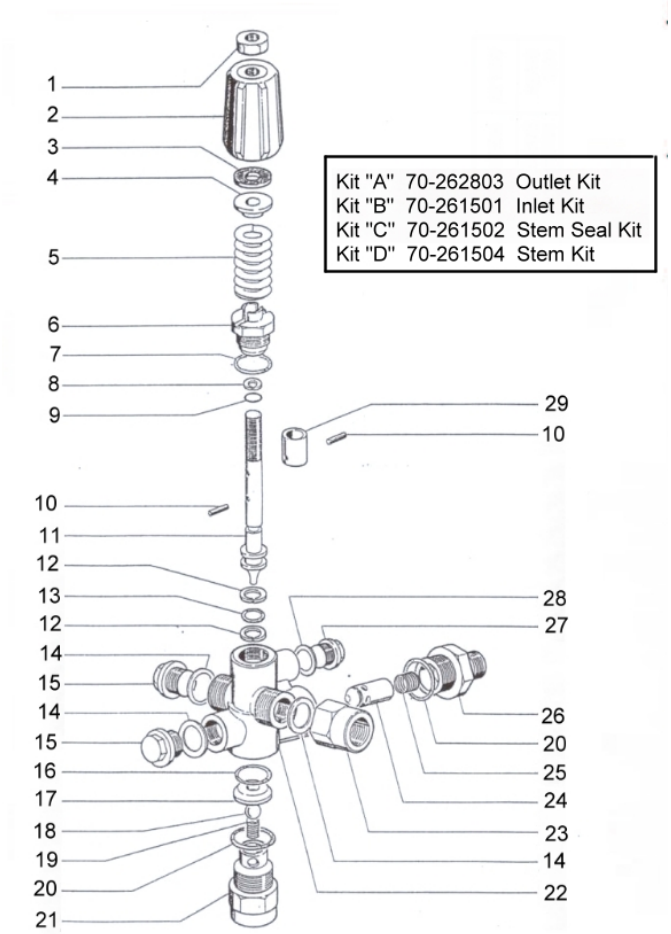
Unloader Adjustment Procedures

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 UNLOADER VALVE



VBXL UNLOADER EXPLODED VIEW AND PARTS LIST

ITEM#	PART #	DESCRIPTION	KIT	QTY
1	8.717-192.0	Nut, Locking		1
2	8.717-269.0	Handle, Red		1
3	70-140021	Space, Anti-friction	D	1
4	70-120204	Plate	D	1
5	70-090024	Spring	D	1
6	8.717-403.0	Stem Nut	D	1
7	9.803-191.0	O-Ring, Nut	C	1
8	8.717-077.0	O-Ring, Teflon 106	C	1
9	70-060120	O-Ring, Stem	C	1
10	70-150505	Pin	C	2
11	70-120606	Stem	D	1
12	8.717-078.0	O-Ring, Teflon 115	C	2
13	70-060121	O-Ring, Stem	C	1
14	9.803-198.0	Washer, Copper, 3/8"		3
15	9.802-925.0	Plug, 3/8"		2
16	9.803-948.0	O-Ring, Seat	B	1
17	70-150306	Seat	B	1
18	8.730-888.0	Ball, 7/16"	B	1

ITEM#	PART #	DESCRIPTION	KIT	QTY
19	70-090011	Spring, Ball	B	1
20	70-060118	O-Ring, Relief	A,B	2
21	8.717-405.0	Relief, 1/2"		1
22	70-020439	Body		1
23	70-140729	Connector		1
24	70-110208	Poppet	A	1
25	8.933-017.0	Spring, Poppet	A	1
26	70-140728	Discharge Port, 1/2"		1
27	9.803-951.0	Plug, 1/4"		1
28	9.803-950.0	Washer, Copper, 1/4"		1
29	70-080300	Spacer, Red		1

SPECIFICATIONS

PART SPECIFICATIONS

	PUMP						MOTOR						
Machine Model	Pump Model	Part #	Pulley	Pulley Part #	Bushing	Bushing Part #	Size	Voltage/pH	Hertz	Part #	Pulley	Pulley Part #	Bushing
4-20024A	LM4035	8.751-169.0	BK90H	8.715-574.0	24mm	9.802-402.0	5 HP	230V/1PH	60	9.802-341.0	BK30	8.715-560.0	H x 3/4"
4-22024A	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6.2 HP	230V/1PH	60	9.802-336.0	2AK41H	8.715-545.0	H x 1-1/8"
4-22024B	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6.2 HP	230V/3PH	60	8.751-004.0	2AK41H	8.715-545.0	H x 1-1/8"
4-22024C	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6.2 HP	460V/3PH	60	8.751-004.0	2AK41H	8.715-545.0	H x 1-1/8"
4-22024G	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6.2 HP	208V/1PH	60	9.802-337.0	2AK41H	8.715-545.0	H x 1-1/8"
4-22024H	LT5030	8.904-874.0	2AK84H	9.802-375.0	25mm	9.802-403.0	6.2 HP	208V/3PH	60	9.802-330.0	2AK41H	8.715-545.0	H x 1-1/8"
4-30024A	LT5030	8.904-874.0	2BK80H	8.715-592.0	25mm	9.802-403.0	8.2 HP	230V/1PH	60	8.715-165.0	2BK34H	9.802-382.0	H x 1-3/8"
4-30024B	LT5030	8.904-874.0	2BK80H	8.715-592.0	25mm	9.802-403.0	8.2 HP	230V/3PH	60	8.750-999.0	2BK34H	9.802-382.0	H x 1-3/8"
4-30024C	LT5030	8.904-874.0	2BK80H	8.715-592.0	25mm	9.802-403.0	8.2 HP	460V/3PH	60	8.750-999.0	2BK34H	9.802-382.0	H x 1-3/8"
4-30024G	LT5030	8.904-874.0	2BK80	8.715-592.0	25mm	9.802-403.0	8.2 HP	208V/1PH	60	8.715-163.0	2BK34H	9.802-382.01	H x 1-3/8"
4-30024H	LT5030	8.904-874.0	2BK80	8.715-592.0	25mm	9.802-403.0	8.2 HP	208V/3PH	60	8.750-998.0	2BK34H	9.802-382.0	H x 1-3/8"
5-30024B	LT5030	8.904-874.0	2BK65H	9.804-060.0	25mm	9.802-403.0	10 HP	230V/3PH	60	8.751-015.0	2BK36H	9.802-383.0	H x 1-3/8"
5-30024C	LT5030	8.904-874.0	2BK65H	9.804-060.0	25mm	9.802-403.0	10 HP	460V/3PH	60	8.751-015.0	2BK36H	9.802-383.0	H x 1-3/8"
5-30024H	LT5030	8.904-874.0	2BK65	9.804-060.0	25mm	9.802-403.0	10 HP	208V/3PH	60	8.715-109.0	2BK36	9.802-383.0	H x 1-3/8"
6-30024B	LT6035	8.904-883.0	3BK70H	8.715-617.0	25mm	9.802-403.0	15 HP	230V/3PH	60	8.751-006.0	3TB56	8.715-606.0	P1 x 1-5/8"
6-30024C	LT6035	8.904-883.0	3BK70H	8.715-617.0	25mm	9.802-403.0	15 HP	460V/3PH	60	8.751-006.0	3TB56	8.715-606.0	P1 x 1-5/8"
8-30024B	LX8030	8.904-889.0	3BK80H	8.715-618.0	25mm	9.802-403.0	20 HP	230V/3PH	60	8.751-012.0	3TB60	8.715-607.0	P1 x 1-5/8"
8-30024C	LX8030	8.904-889.0	3BK80H	8.715-618.0	25mm	9.802-403.0	20 HP	460V/3PH	60	8.751-012.0	3TB60	8.715-607.0	P1 x 1-5/8"

SPECIFICATIONS

PART SPECIFICATIONS

	MOTOR			CONTROLS							
Model (Con't)	Bushing Part #	Belt Size/Qty	Belt Part #	Switch Part #	Contactor	Overload	Stepdown Transformer	Primary Fuse	Primary Fuse Part #	Secondary Fuse	Secondary Fuse Part #
4-2A	9.803-897.0	BX38 (1)	9.802-417.0	9.802-451.0	8.724-276.0	N/A	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-22A	9.802-400.0	AX36 (2)	9.802-408.0	9.802-451.0	8.724-281.0	N/A	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-22B	9.802-400.0	AX36 (2)	9.802-408.0	9.802-451.0	8.724-272.0	8.724-304.0	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-22C	9.802-400.0	AX36 (2)	9.802-408.0	9.802-451.0	8.724-268.0	8.724-303.0	9.802-552.01/2 Amp		9.802-462.0 (2)	8/10 Amp	9.802-464.0
4-22G	9.802-400.0	AX37 (2)	5-602037	9.802-451.0	8.724-281.0	N/A	8.716-882.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-22H	9.802-400.0	AX37 (2)	5-602037	9.802-451.0	8.724-276.0	8.724-304.0	8.716-882.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-3A	9.802-401.0	BX34 (2)	8.715-695.0	9.802-451.0	8.724-281.0	8.724-306.0	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-3B	9.802-401.0	BX34 (2)	8.715-695.0	9.802-451.0	8.724-276.0	8.724-305.0	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-3C	9.802-401.0	BX34 (2)	8.715-695.0	9.802-451.0	8.724-268.0	8.724-304.0	9.802-552.01/2 Amp		9.802-462.0 (2)	8/10 Amp	9.802-464.0
4-3G	9.802-401.0	BX34 (2)	8.715-695.0	9.802-451.0	8.724-281.0	8.724-306.0	8.716-882.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
4-3H	9.802-401.0	BX34 (2)	8.715-695.0	9.802-451.0	8.724-272.0	8.724-305.0	8.716-882.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
5-3B	9.802-401.0	BX32 (2)	9.802-413.0	9.802-451.0	8.724-281.0	8.724-305.0	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
5-3C	9.802-401.0	BX32 (2)	9.802-413.0	9.802-451.0	8.724-272.0	8.724-312.0	9.802-552.0	1/2 Amp	9.802-462.0(2)	8/10 Amp	9.802-464.0
5-3H	9.802-401.0	BX32 (2)	9.802-413.0	9.802-451.0	8.724-281.0	8.724-306.0	8.716-882.	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
6-3B	9.803-980.0	BX42 (3)	8.715-703.0	9.802-451.0	8.724-281.0	8.724-307.0	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
6-3C	9.803-980.0	BX42 (3)	8.715-703.0	9.802-451.0	8.724-276.0	8.724-304.0	9.802-552.01/2 Amp		9.802-462.0 (2)	8/10 Amp	9.802-464.0
8-3B	9.803-980.0	BX44 (3)	8.715-705.0	9.802-451.0	8.735-015.0	8.724-307.0	9.802-552.0	1 Amp	8.933-007.0 (2)	8/10 Amp	9.802-464.0
8-3C	9.803-980.0	BX44 (3)	8.715-705.0	9.802-451.0	8.724-281.0	8.724-305.0	9.802-552.0	1/2 Amp	9.802-462.0 (2)	8/10 Amp	9.802-464.0

SPECIFICATIONS

BURNER SPECIFICATIONS

MODEL	BURNER ASSEMBLY	JET SIZE	GAS VALVE	PILOT ORIFICE CONVERSION
VHG4-2000	X-44	#54	See Parts List	No
VHG4-2200	X-44	#54	See Parts List	No
VHG4-3000	X-44	#54	See Parts List	No
VHG5-3000	X-44	#52	See Parts List	No
VHG6-3000	SQ-98	#54	See Parts List	No
VHG8-3000	SQ-98	#54	See Parts List	No

LP CONVERSION SPECIFICATIONS

MODEL	BURNER ASSEMBLY	JET SIZE	GAS VALVE	PILOT ORIFICE CONVERSION
VHG4-2000LP	X-44	#63	See Parts List	No
VHG4-2200LP	X-44	#63	See Parts List	No
VHG4-3000LP	X-44	#63	See Parts List	No
VHG5-3000LP	X-44	#63	See Parts List	No
VHG6-3000LP	SQ-98	#65	See Parts List	No
VHG8-3000LP	SQ-98	#65	See Parts List	No

LANDA®

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. General, AR, Liberty, 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 manufacturer's, 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 MERCANTABILITY 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.

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