

HS Series
Hot Water Generator

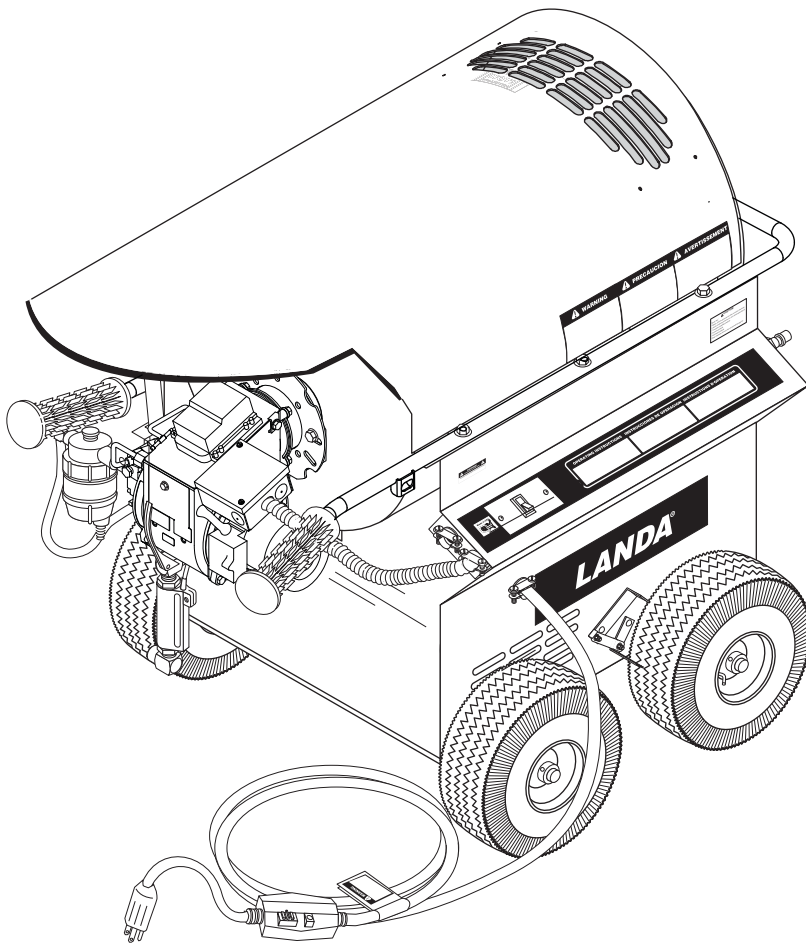
LANDA®

Operator's Manual

Heater Module

MODELS:

HS-3000
1.103-900.0



For the Landa Dealer nearest you, consult our web page at www.landa.com

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Intertek

8.913-943.0-P



12/13/19

Machine Data Label

Model: _____

Date of Purchase: _____

Serial Number: _____

Dealer: _____

Address: _____

Phone Number: _____

Sales Representative: _____

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How To Use This Manual

This manual contains the following sections:

- How to Use This Manual
- Safety
- Operations
- Maintenance
- Parts List

The HOW TO USE THIS MANUAL section will tell you how to find important information for ordering correct repair parts.

Parts may be ordered from authorized dealers. When placing an order for parts, the machine model and machine serial number are important. Refer to the MACHINE DATA box which is filled out during the installation of your machine. The MACHINE DATA box is located on the inside of the front cover of this manual.

Model: _____
Date of Purchase: _____
Serial Number: _____
Dealer: _____
Address: _____
Phone Number: _____
Sales Representative: _____

The model and serial number will be found on a decal attached to the machine.

The SAFETY section contains important information regarding hazardous or unsafe practices of the machine. Levels of hazards are identified that could result in product damage, personal injury, or severe injury resulting in death.

The OPERATIONS section is to familiarize the operator with the operation and function of the machine.

The MAINTENANCE section contains preventive maintenance to keep the machine and its components in good working condition. They are listed in this general order:

- Winterizing Procedure
- High Limit Thermostat
- Cleaning of Coils
- Rupture Disk
- Fuel
- Ignition Circuit
- Electrode Setting
- Burner Nozzle
- Fuel Control System
- Air Adjustment
- Coil Removal HS-3000
- Maintenance
- Preventative Maintenance

The PARTS LIST section contains assembled parts illustrations and corresponding parts list. The parts lists include a number of columns of information:

- **REF** – column refers to the reference number on the parts illustration.
- **PART NO.** – column lists the part number for the part.
- **QTY** – column lists the quantity of the part used in that area of the machine.
- **DESCRIPTION** – column is a brief description of the part.
- **NOTES** – column for information not noted by the other columns.

NOTE: If a service or option kit is installed on your machine, be sure to keep the KIT INSTRUCTIONS which came with the kit. It contains replacement parts numbers needed for ordering future parts.

NOTE: The manual part number is located on the lower right corner of the front cover.

Introduction & Safety Information

Thank you for purchasing a Landa Heater Module.

This manual covers the operation and maintenance of the HS-3000 heater module. All information in this manual is based on the latest product information available at the time of printing.

Landa, Inc. reserves 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 Landa Heater Module. 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.

SAVE THESE 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

NOTE: This heater module HS-3000 is designed for connection to a pressure washer (not included). Read and follow **WARNING** and operating instructions of pressure washer connected to model HS-3000.



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

ATTENTION: Pour réduire le risque de blessures, lire attentivement les instructions de fonctionnement avant l'utilisation.

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 this product and bleed pressures quickly. Be thoroughly familiar with the controls.
3. Stay alert - watch what you are doing.
4. All installations must comply with local codes. Contact your electrician, plumber, utility company or the selling dealer for specific details.

To comply with the National Electric Code (NFPA 70) and provide additional protection from risk of shock, this product is provided with a ground fault circuit interrupter (GFCI) built into the power cord plug (250V 30 amp or less, 1 PH). If replacement of the plug or cord is needed, use only identical replacement parts.

WARNING: Must be plugged into properly wired three hole grounded outlet that accommodates plug on power cord. Failure to comply could result in electrical shock.

AVERTISSEMENT: Doit être raccordé dans une sortie à trois trous mise à la masse et correctement câblée qui peut accueillir une fiche sur un cordon d'alimentation. Le non-respect de cette consigne pourrait causer un choc électrique.

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

DANGER: Une mauvaise connexion du conducteur de terre de l'équipement peut entraîner un risque d'électrocution. Vérifier auprès d'un électricien qualifié ou du personnel d'entretien si vous avez des doutes quant à savoir si la sortie est correctement mise à la masse. NE PAS modifier la fiche fournie avec le produit - si elle n'entre pas dans la sortie, faire installer une sortie appropriée par un électricien qualifié.

Safety



WARNING: Do not operate machine in areas where flammable vapors (gasoline, solvents, etc.) may be present, as this machine may ignite the vapors.

AVERTISSEMENT: Ne pas utiliser la machine dans des endroits où des vapeurs inflammables (essence, solvants, etc.) pourraient être présentes, car cette machine

pourrait enflammer les vapeurs.

WARNING: Do not use gasoline, crankcase drainings or oil containing gasoline, solvents or alcohol. Doing so will result in fire and/or explosion.

AVERTISSEMENT: Ne pas utiliser d'essence, de drainage du carter de moteur ou d'essence contenant de l'huile, de solvants ou de l'alcool. Agir de la sorte risquerait de créer un incendie et/ou une explosion.



WARNING: Risk of explosion - Do not spray flammable liquids. Operate only where an open torch is permitted.

AVERTISSEMENT: Risque d'explosion - Ne pas pulvériser de liquides inflammables. Utiliser uniquement dans des endroits où l'utilisation d'une flamme nue ou d'une torche est permise.

- This oil burning machine shall be installed only in locations where combustible dusts and flammable gases or vapors are not present.
- In these oil burning models, use only kerosene, No. 1 home heating fuel, or diesel.



WARNING: Keep wand, hose, and water spray away from electric wiring or fatal electric shock may occur. Read warning tag on electrical cord.

AVERTISSEMENT: Garder la lance, le boyau et le jet d'eau à l'écart de tout câblage électrique ou des chocs électriques mortels pourraient survenir. Lire l'étiquette

d'avertissement sur le cordon électrique

- To protect the operator from electrical shock, the machine must be electrically ground-ed. 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: Spray gun kicks back — hold with both hands.

AVERTISSEMENT: Le pistolet pulvérisateur peut présenter un risque de retour; le tenir avec les deux mains.

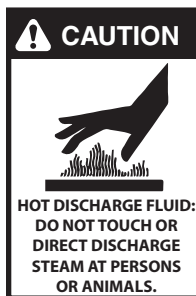
- Grip cleaning wand securely with both hands before starting. Failure to do this could result in injury from a whipping wand.



WARNING: Risk of injection or severe injury - Keep clear of nozzle - Do not touch or direct discharge stream at persons or animals or severe injury or death will result. This machine is to be used only by trained operators.

AVERTISSEMENT: Risque d'injection ou de blessures graves - Se tenir à l'écart de la buse. Ne pas

toucher ou décharger directement le jet vers des personnes ou des animaux, car cela risquerait de causer des blessures graves ou même la mort. Ces machines doit être utilisé uniquement par des opérateurs formés.



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

ATTENTION: Liquide de décharge chaud. Ne pas toucher ou décharger directement le jet vers des personnes ou des animaux,

- High pressure developed by the attached pressure washer can cause bodily injury or damage. Use caution when operating. Do not point the spray gun at anyone or at any part of the body.

- Never make adjustments on machine while it is in operation.



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.

AVERTISSEMENT: Un jet haute pression peut écailler la peinture ou provoquer l'émission d'autres particules dans l'air et leur projection à hautes vitesses. Pour éviter les lésions corpo-

relles, une protection des yeux, du visage, des mains et des pieds doit être portée lors de l'utilisation de cet équipement.

- Always wear properly eye protection such as safety goggles or face shield while spraying.
(Safety glasses do not provide full protection.)



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

DANGER: Risque d'asphyxie. Ne pas inhaler les vapeurs.

- When the machine is working, do not cover or place in a closed space where ventilation is insufficient.



WARNING: Risk of fire. Do not add fuel when the machine is operating or still hot.

AVERTISSEMENT: Risque d'incendie - Ne pas changer les réservoirs pendant que le produit est en marche ou encore chaud.

- Check to make sure burner shuts off when spray gun trigger is closed.



WARNING: Protect from freezing.

AVERTISSEMENT: Protéger la machine contre le gel.

- To prevent a serious injury, make certain quick coupler on discharge hose has locked before using pressure washer.
- Do not allow acids, caustic or abrasive fluids to pass through

the this machine.

- Inlet water must be from a cold, fresh, city water supply.
- To reduce the risk of injury, close supervision is necessary when a product is used near children. Do not allow children to operate the pressure washer.
This machine must be attended during operation.
- The best insurance against an accident is precaution, and knowledge of the machine.
- Do not operate this product when fatigued or under the influence of alcohol or drugs. Keep operating area clear of all persons.
- Landa will not be liable for any changes made to our standard machines, or any components not purchased from Landa.



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.

AVERTISSEMENT: Faire preuve d'une extrême prudence au moment d'utiliser une échelle, des

échafaudages ou toute autre surface relativement instable. La zone de nettoyage doit avoir une pente et un drainage adéquats pour réduire la possibilité d'une chute due à une surface glissante.

- Do not overreach or stand on unstable support. Keep good footing and balance at all times.
- Follow the maintenance instructions specified in the manual.
- When making repairs disconnect from electrical source.
- Turn burner off and open spray gun to allow water to flow and cool coil to 100° before turning machine off.
- Before disconnecting high pressure hose from HS-3000 water outlet, open spray gun to relieve back pressure in hose.



WARNING: Appropriate ear protection must be worn if attached pressure washer exceeds 85 db.

AVERTISSEMENT: Cette machine excède 85 dB et une protection de l'ouïe appropriée doit être portée.

CAUTION: This machine produces hot water and must have insulated spray gun, wand and other discharge components attached to

protect the operator.

AVERTISSEMENT: Cette machine produit de l'eau chaude et doit comporter des composants isolés attachés pour protéger l'opérateur

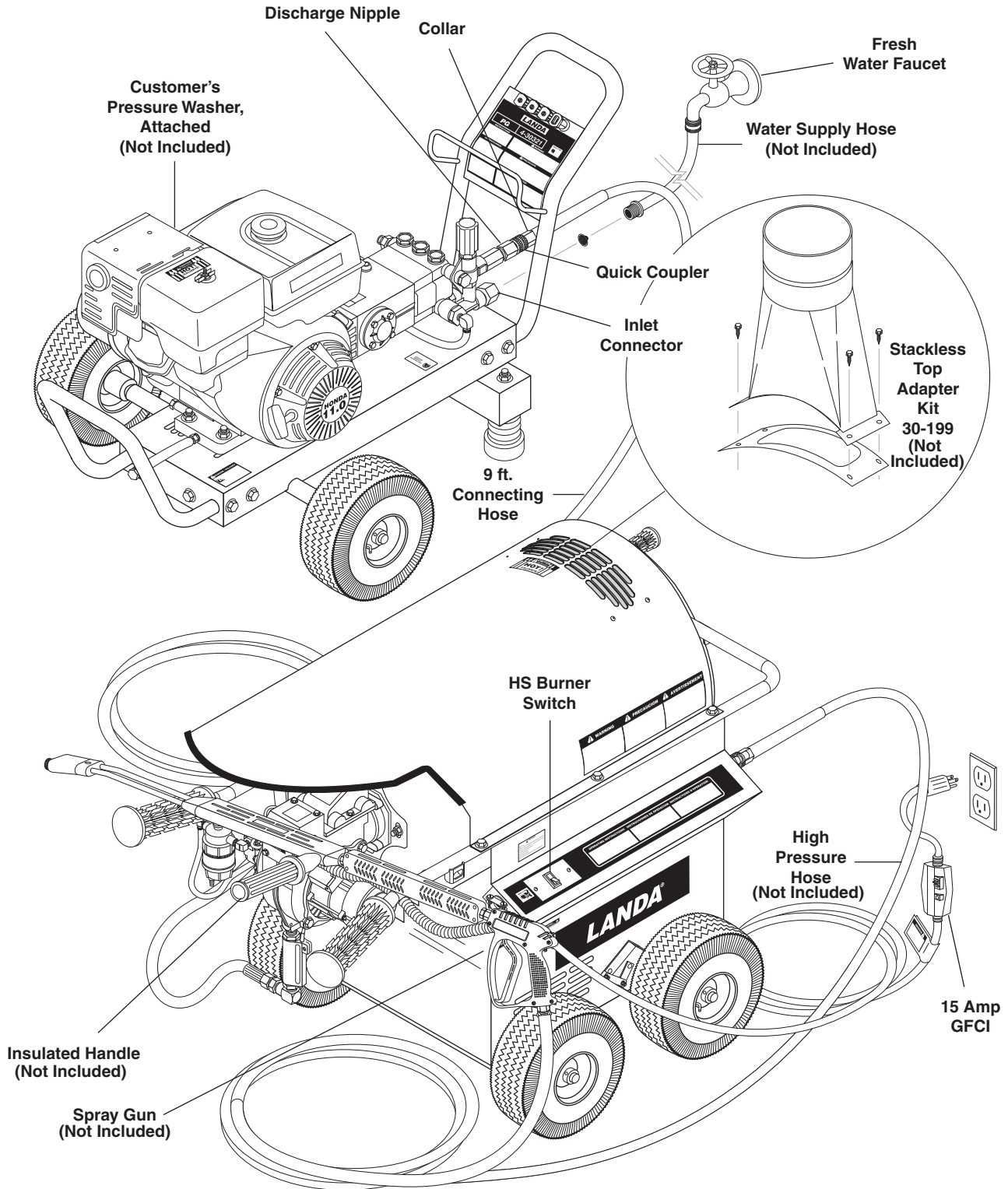


WARNING: Do not spray machine or any people, animals or electrical parts.

AVERTISSEMENT: Ne pas vaporiser sur la machine ou les gens, les animaux ou les pièces électriques.

Operations

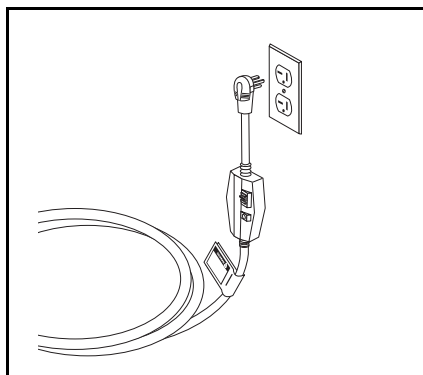
Component Identification



NOTE: The water in this machine is hot. The wand and spray gun must be insulated

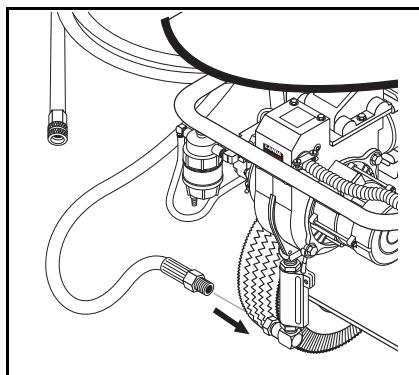
Hose, spray gun & wand and attached pressure washer not included on the HS-3000

Assembly Instructions

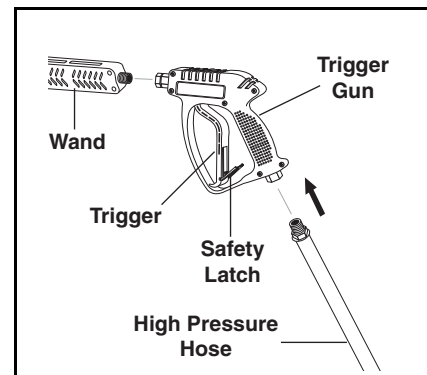


STEP 1: Location of machine is important. Avoid installing near combustible material or in poorly ventilated areas.

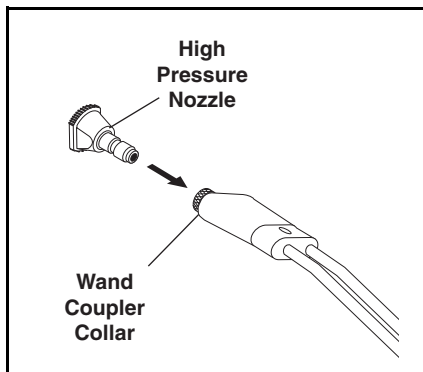
Connect the power cord into the proper electrical outlet, then push in the GFCI reset button. (Refer to serial plate for information.)



STEP 2: Connect high pressure hose from the attached pressure washer (not included) to the hot water discharge nipple by sliding quick coupler collar back. Insert quick coupler onto discharge nipple and secure by pushing quick coupler collar forward. (See Component Identification)



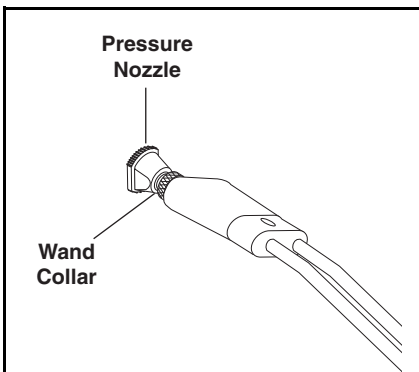
STEP 3: Attach variable pressure control wand to spray gun using teflon tape on threads to prevent leakage. Position safety latch to prevent trigger from being pulled.



STEP 4: Pull the spring-loaded collar of the wand coupler collar back to insert your choice of pressure nozzle.

CAUTION: Never replace nozzles without engaging the safety latch on the spray gun trigger.

ATTENTION: Ne jamais remplacer les buses sans d'abord mettre le dispositif de sécurité sur la détente du pistolet pulvérisateur.



STEP 5: Release the coupler collar and push the nozzle until the collar clicks. Pull the nozzle to make sure it is seated properly.

Operations

Installation

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

Location

The location should protect the machine from damaging environmental conditions, such as; wind, rain, and freezing.

Machine must be stored indoors when not in use.

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 to allow accessibility for refilling of fuel, 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 water spray from coming in contact with the machine. Excess moisture reaching any electric components or electrical controls will reduce machine 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.

Electrical

This machine, when installed, must be electrically grounded in accordance to local codes. Check for proper power supply using a volt meter.

Placement

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.)

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 attached pressure washer will run very rough and the burner will not fire.

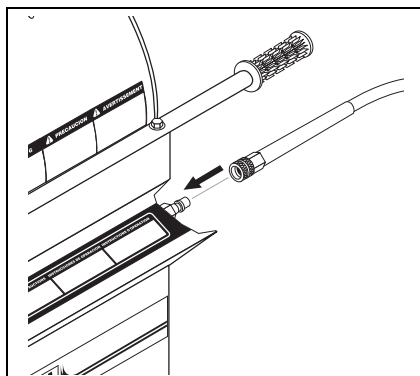
Connection

Connect the wand, nozzle, hose and spray gun (where applicable). On pipe thread connections, use teflon tape to avoid water leaks.
(See Component Identification)

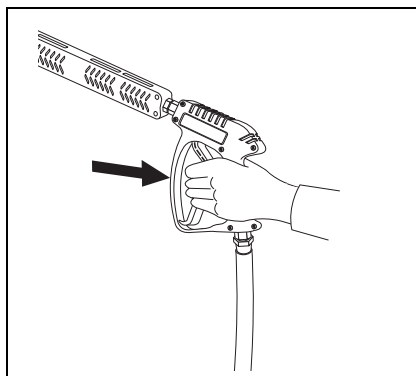
Venting

Adding exhaust vent pipe to your oil fired burner is not recommended. It restricts air flow, causing carbon build-up, which affects the operation, and increases maintenance on the coil. If a stack must be used, refrain from using 90° bends. If the pipe can not go straight up then use only 45° bends and go to the next size pipe. The overall pipe length must not exceed 6 feet in length. Adjust burner air settings after stack is installed

Operating Instructions

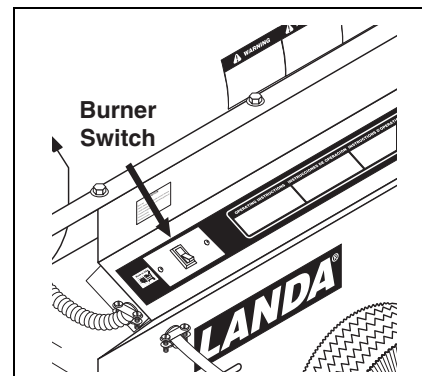


STEP 1: Connect the high pressure hose quick coupler from attached pressure washer to discharge nipple by sliding the quick coupler collar back and inserting quick coupler on coupler nipple and pushing the quick coupler collar forward to secure it.

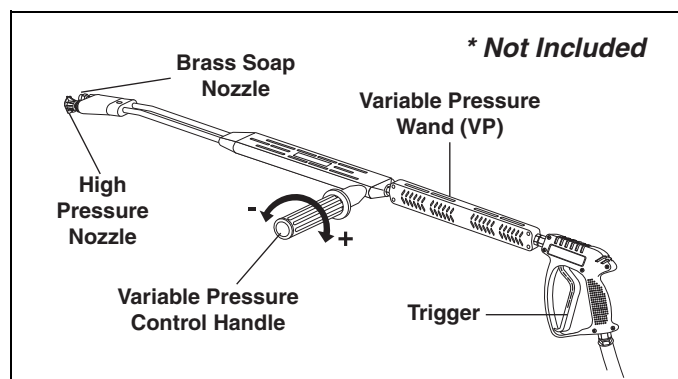


STEP 2: Grip spray gun and wand handle securely.

Start attached pressure washer according to the manufacturers instructions. When a steady stream of water flows from the spray gun and wand the machine is ready for cold water cleaning.



STEP 3: For hot water washing, turn the HS burner switch to the ON position. (The burner will light automatically.)



Selection of high or low pressure is accompanied by turning the handle.

NOTE: High pressure nozzle must be inserted at end of wand to obtain high pressure. To apply soap read operator's manual of attached pressure washer.

NOTE: High pressure hose, nozzles, gun and wand are included with attached pressure washer and not part of model HS-3000.

IMPORTANT NOTICE: Read operating instructions of connected pressure washer.

Operations

Detergent And General Cleaning Techniques



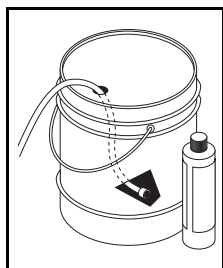
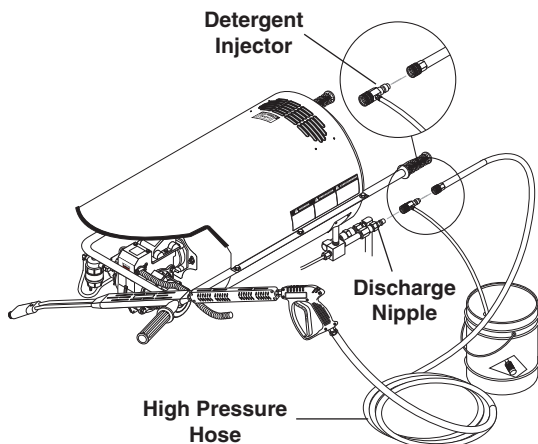
WARNING: Some detergents may be harmful if inhaled or ingested, causing severe nausea, fainting or poisoning. The harmful elements may cause property damage or severe injury.

AVERTISSEMENT: Certains détergents peuvent être dangereux s'ils sont inhalés ou ingérés, provoquant de fortes

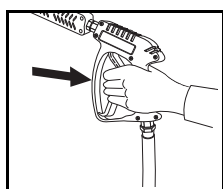
nausées, des évanouissements et l'empoisonnement. Les éléments dangereux peuvent causer des dommages à la propriété ou des blessures graves.

STEP 1: Connect detergent injector to discharge nipple on machine.

Connect high pressure hose to injector with quick coupler. (Check to make sure locking coupler sleeves are in proper position before applying water pressure).



STEP 2: 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 3: With safety latch on spray gun engaged, secure black detergent nozzle into quick coupler.

NOTE: Detergent cannot be applied using red, yellow, green or white nozzles.

STEP 4: With the engine 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 injection system after each use by placing the suction tube into a bucket of clean water, then run the pressure washer in low pressure for 1-2 minutes.

IMPORTANT: The instructions on this page pertain to the pressure washer used in connection with model HS-3000.

Cleaning Tips

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

Recommendations:

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

⚠ CAUTION - Never use:

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

⚠ ATTENTION: Ne jamais utiliser:

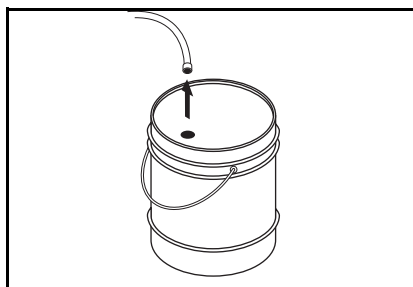
- Eau de Javel, produits à base de chlore et autres produits chimiques corrosifs
- Liquides contenant des solvants (c.-à-d. diluant à peinture, essence, huiles, etc.)
- Produits à base de tripolyphosphate de sodium
- Ammoniac ou produits à base d'acide

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

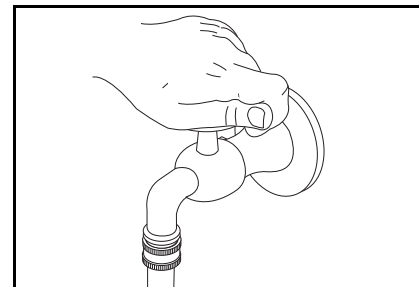
Rinsing

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

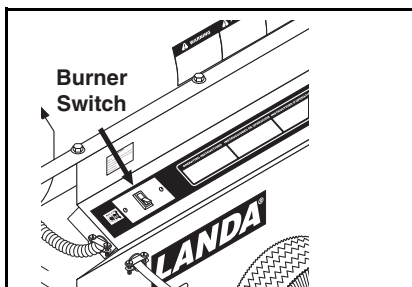
Shutting Down And Clean-up



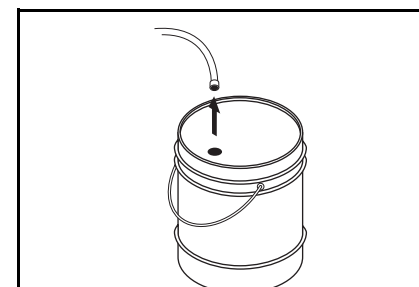
STEP 1: Remove detergent suction tube from container and insert into one (1) gallon of fresh water. Pull trigger on spray gun and siphon water for one minute.



STEP 3: Turn water off.



STEP 2: Turn HS burner switch off and continue spraying water, allowing the water to cool.



STEP 4: Open the spray gun to relieve remaining pressure.

After water has cooled to less than 100°, turn the attached pressure washer off.

Storage

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

ATTENTION: Toujours entreposer la laveuse à pression dans un endroit où la température ne sera pas inférieure à 0 °C (32 °F). La pompe sur cette machine est susceptible de subir des dommages si elle est exposée au gel. **LES DOMMAGES DUS AU GEL NE SONT PAS COUVERTS PAR LA GARANTIE.**

1. Stop the pressure washer, squeeze spray gun trigger to release pressure.
2. Use compressed air at the inlet hose to blow water out discharge nipple.

3. 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.

ATTENTION: Le non-respect des directives ci-dessus entraînera des dommages à la laveuse à pression.

After Extended Storage

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

ATTENTION: Avant de redémarrer, faire fondre la glace se trouvant sur les boyaux, le pistolet pulvérisateur ou la lance de la laveuse à pression.

Preventative Maintenance

1. Use clean fuel - kerosene, No. 1 home heating fuel or diesel. Clean or replace fuel filter every 100 hours of operation. Avoid water contaminated fuel as it will seize up the fuel pump. De-soot coils monthly. Use an additive if diesel is being used.
2. Check to see that the attached pressure washer water pump is properly lubricated.
3. Follow winterizing instructions to prevent freeze damage to pump and coils.
4. Always neutralize and flush detergent from system after use.
5. If water is known to be high in mineral content, use a water softener on your water system, or descale as needed.
6. Do not allow acidic, caustic or abrasive fluids to be pumped through system.
7. Always use high grade quality Landa cleaning products.
8. Never run attached pressure washer pump dry for extended periods of time.
9. If machine is operated with smoky or eye burning exhaust, coils will soot up, not letting water reach maximum operating temperature. (See section on Air Adjustments).
10. Never allow water to be sprayed on or near the motor or burner assembly or any electrical component.
11. Descale coils as per instructions.

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

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

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

Maintenance And Service

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.

During winter months, when temperatures drop below 32°F, protecting your machine against freezing is necessary. Store the machine in a heated room. If this is not possible use compressed air on the 9 ft. hose end and, by injecting compressed air, all water will be blown out of the system.

High Limit 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.

Cleaning of 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 Descaler (part #8.914-296.0) will remove lime and other deposits before coil becomes plugged.

Periodic descaling of the heating coil is recommended so please consult your local Landa Dealer for instructions.

Removal of Soot and Heating Coil

In the heating process, fuel residue in the form of soot deposits may develop between the heating coil pipe and block air flow which will affect burner combustion. When soot has been detected on visual observation, the soot on the coil must be washed off after following the coil removal steps (See Coil Removal).

Rupture Disk

If pressure from pump or thermal expansion should exceed safe limits, the rupture disk will burst, allowing high pressure to be discharged through hose to ground. When the disk ruptures it will need to be replaced. Inspect rupture disk annually for any obstructions.

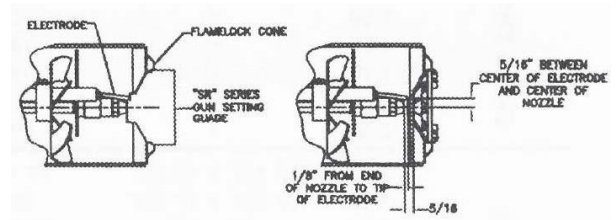
Fuel

Use clean fuel oil that is not contaminated with water and debris. Replace fuel filter and drain tank every 100 hours of operation. Use No. 1 or No. 2 Heating Oil (ASTM D306) only. **NEVER** use gasoline in your burner tank. Gasoline is more combustible than fuel oil and could result in a serious explosion. **NEVER** use crankcase or waste oil in your burner. Fuel unit malfunction could result from contamination.

Ignition Circuit

Periodically inspect wires, spring contact and electrodes for condition, security and proper spacing. Transformer test: **(CAUTION 10,000 VOLTS)** use defect free insulated screwdriver and keep fingers off blade! Lay blade across one contact: OK if arc will span 1/2" between end of blade and other contact.

Electrode Setting



Periodically Check wiring connections.
If necessary to adjust electrodes, use diagram.

Burner Nozzle

Keep the tip free of surface deposits by wiping it with a clean, solvent-saturated cloth, being careful not to plug or enlarge the nozzle. For maximum efficiency, replace the nozzle each season.

Fuel Control System

The HS-3000 utilizes a fuel solenoid valve located on the fuel pump to control the flow of fuel to the combustion chamber. This solenoid, which is normally closed, is activated by a flow switch when water is flowing through it. When an operator releases the trigger on the spray gun, the flow of water through the flow switch stops, turning off the current to the fuel solenoid. The solenoid then closes, shutting off the supply of fuel to the combustion chamber. Controlling the flow of fuel in this way gives an instantaneous burn or no burn situation, thereby eliminating high and low water temperatures, and combustion smoke normally associated with machines incorporating a spray gun. Periodic inspection is recommended to insure that the fuel solenoid valve functions properly. This can be done by operating the machine and checking to see that when the trigger on the spray gun is in the off position, the burner is not firing.

Fuel Pressure Adjustment

To adjust fuel pressure, first install a pressure gage into the port just after the pump fuel exit. Turn the adjusting screw (located at the regulator port) clockwise to increase, and counterclockwise to decrease. Do not exceed 200 psi or lower the pressure below 130 PSI, when checked at the post-pump pressure port.

The fuel pressure may need to be adjusted due to altitude. For every 500 ft altitude above sea level, the boiling point of water goes down 1 °F. At high altitude environments, this boiling point change may require the heat input to be lowered so the water input does not turn to steam earlier than at the factory settings and activate the pressure sensors and pressure relief equipment when the unit is operated and much higher altitudes from factory settings or local dealer site settings. Check with your dealer before making local site fuel pressure adjustments.

Also, as ambient temperature changes seasonally, the fuel temperature in the feed tank and air temperature inlet can impact fuel flow. In more extreme temperatures, this local-site adjustment may also require different fuel nozzles for fuel inlet temperatures that are at seasonal extremes (higher or lower) in locations where the temperature changes are beyond moderate temperatures of between 40°F and 90°F. Colder temperatures will make for a thicker flow and less fine a fuel spray while hotter temperatures will make for a thinner flow a more fine spray with the same nozzle. Consider alternate nozzle configurations from the

baseline factory-supplied nozzle for operating in such temperature extremes if performance is not meeting needs with air band and fuel pressure settings alone.

NOTE: When changing fuel pump, a by-pass plug must be installed in return line port or fuel pump will not prime.

Air Adjustment

The oil burner on this machine is preset for operation at altitudes near 500 feet. If operated at higher altitudes, it may be necessary to adjust the air band for a #1 or #2 smoke spot on the Bacharach scale.

To adjust, Loosen locking screw found on the air band. Start machine and turn burner ON and close air band until black smoke appears from burner exhaust vent. Note air band position. Next, slowly open the air band until white smoke just starts to appear and note air band position, again. Rotate the air band halfway between to the previously noted positions. Tighten locking screws. Typical distance from the 'black smoke' position is roughly 3/8"-1/2" more open from the point of visible black smoke, but may vary based upon local operating conditions.

- For higher altitudes, the air band opening may need to be increased; for lower altitude, the air band may need to be decreased.
- For higher humidity, the air band opening may need to be increased; for lower relative humidity, the air band may need to be decreased.
- For higher ambient temperatures the air band opening may need to be increased; for lower ambient temperatures, the air band opening may need to be decreased.

Adjust the burner to your operating location's environment as-needed for best smoke spot and performance compliant with local, state, and federal regulations.

Example: a unit preset at a factory at 1700 feet altitude with an air band of 1.1" and fuel pressure of 190 PSI with Ambient temperature of 72 °F and a relative humidity of 84% using #2 Diesel fuel oil. The unit is shipped to a location at 5300 feet altitude with ambient air temperature of 59 °F and a relative humidity of 25%. The air band required adjustment to 1.8" opening and fuel pressure lowered to 150 PSI for a high altitude adjustment for both heat input adjustments and combustion air intake with the same fuel type.

To adjust: start machine and turn burner ON. Loosen two locking screws found on the air band (refer to illustration) and close openings until black smoke appears from burner exhaust vent. Note air band position. Next, slowly open the air band until white smoke just starts to appear. Turn air band halfway back to the black smoke position previously noted. Tighten locking screws.

Coil Removal HS-3000

Removal of the coil, because of freeze breakage, thermal expansion or to clean soot from it, can be done quickly and easily.

1. Disconnect hose from inlet side of the coil.
2. Disconnect electrical connection to the thermostat.
3. Remove rupture disk and associated fittings.
4. Remove the 3-3/8" bolts from each side of coil and tank assembly (these bolts are used to fasten handles to chassis).
5. Remove burner assembly from combustion chamber.
6. Disconnect 1/2" pipe nipples and tee fittings from inlet and discharge side of coil.
7. Remove top tank wrap exposing insulation and coil. Bend back insulation tabs in exhaust stack. Then fold back insulation.
8. Remove bolts from underneath that hold down coil to bottom wrap.
9. Remove coil.
10. Replace or repair any insulation found to be torn or broken.
11. Reinstall new or cleaned coil reversing Steps 9 through 1.

NOTE: Before step 6, lift coil and tank assembly onto some type of exposed support for ease of removing inlet and discharge fittings.

Maintenance

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
BURNER WILL NOT LIGHT	Disconnected or short in electrical wiring	All wire contacts should be clean and tight. No breaks in wire.
	Burner motor thermal protector tripped	If tripped, check voltage, connections and extensions for cause. Check fuel pump shaft rotation for binding, causing motor to over heat.
	Flex-coupling slipping on fuel pump shaft or burner motor shaft	Replace if needed.
	On-off switch defective	Check continuity through burner switch.
	Heavy sooting on coil and burner, can cause interruption of air flow and shorting of electrodes	Clean as required.
	Improper electrode setting	Clean and test according to diagram in operators manual.
	Fuel not reaching combustion chamber	Check fuel pump for proper flow. Check solenoid flow switch on machines with spray gun control for proper on-off flow switch.
	Fuel solenoid malfunction	Check by placing screwdriver inside coil then turn machine on, open spray gun and check for magnetic pull.
	Clogged burner nozzle	Replace.
	Water not turned on	Turn on water to activate burner flow switch.
	Flow switch malfunction	Remove, test for continuity and replace as needed.
MACHINE SMOKES	Improper fuel or water in fuel	Drain tank and replace contaminated fuel.
	Improper air adjustment	Readjust air bands on burner assembly.
	Low fuel pressure	Adjust fuel pump pressure to specifications.
	Air leaks in fuel lines	Check fuel lines for leaks or air bubbles. Tighten or replace as needed.
	Plugged or dirty burner nozzle	Replace.
	Faulty burner nozzle spray pattern	Replace nozzle.
	Heavy accumulation of soot on coils and burner assembly	Remove coils and burner assembly. Clean thoroughly.
	Misaligned electrode	Realign electrodes to specifications.
	Fuel filter partially clogged	Replace as needed.
	Obstruction in smoke stack	Check for insulation blockage or other foreign objects.
	Soot build up on coils	Clean coils with soot remover.
	Lime build up in coils	Clean inside of coils using Landa's coil cleaner.
Improper burner nozzle	See exploded view parts list.	

PROBLEM	POSSIBLE CAUSE	SOLUTION
LOW WATER TEMPERATURE	Improper fuel or water in fuel	Drain fuel tank and replace with proper fuel.
	Low fuel pressure	Increase fuel pressure.
	Weak fuel pump	Check fuel pump temperature. Replace pump if needed.
	Fuel filter partially clogged	Replace as needed.
	Soot build up on coils	Clean coils with soot remover.
	Lime build up on coils	Clean inside of coils using Landa's coil cleaner.
	Improper burner nozzle	See exploded view parts list.
WATER TEMPERATURE TOO HOT	Incoming water to machine warm or hot	Lower incoming water temperature.
	Fuel Pump pressure too high	Lower fuel pressure.
	Fuel Pump defective	Replace fuel pump.
	Detergent line sucking air	Tighten all clamps. Check detergent line for holes.
	Defective high limit switch	Replace.
	Incorrect fuel nozzle size	See exploded view parts list.
	insufficient water supplied	Check GPM to machine.
	Restricted water flow	Check nozzle for obstruction, proper size.

Maintenance

Preventative Maintenance

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

Maintenance Schedule		
Pump Oil (Non-foaming) SAE 10W-40	Inspect	Oil level daily
	Change	After first 50 hours, then every 500 hours or annually
Replace High Pressure Nozzle		Every 6 months
Replace Quick Connects		Annually
Clean Water Screen/Filter		Weekly
Replace HP Hose		Annually

Oil Change Record

Check pump oil level before first use of your new Power Washer. Change pump oil after first 50 hours and every year or 500 hours thereafter. Use SAE 10W-40 non-foaming oil.

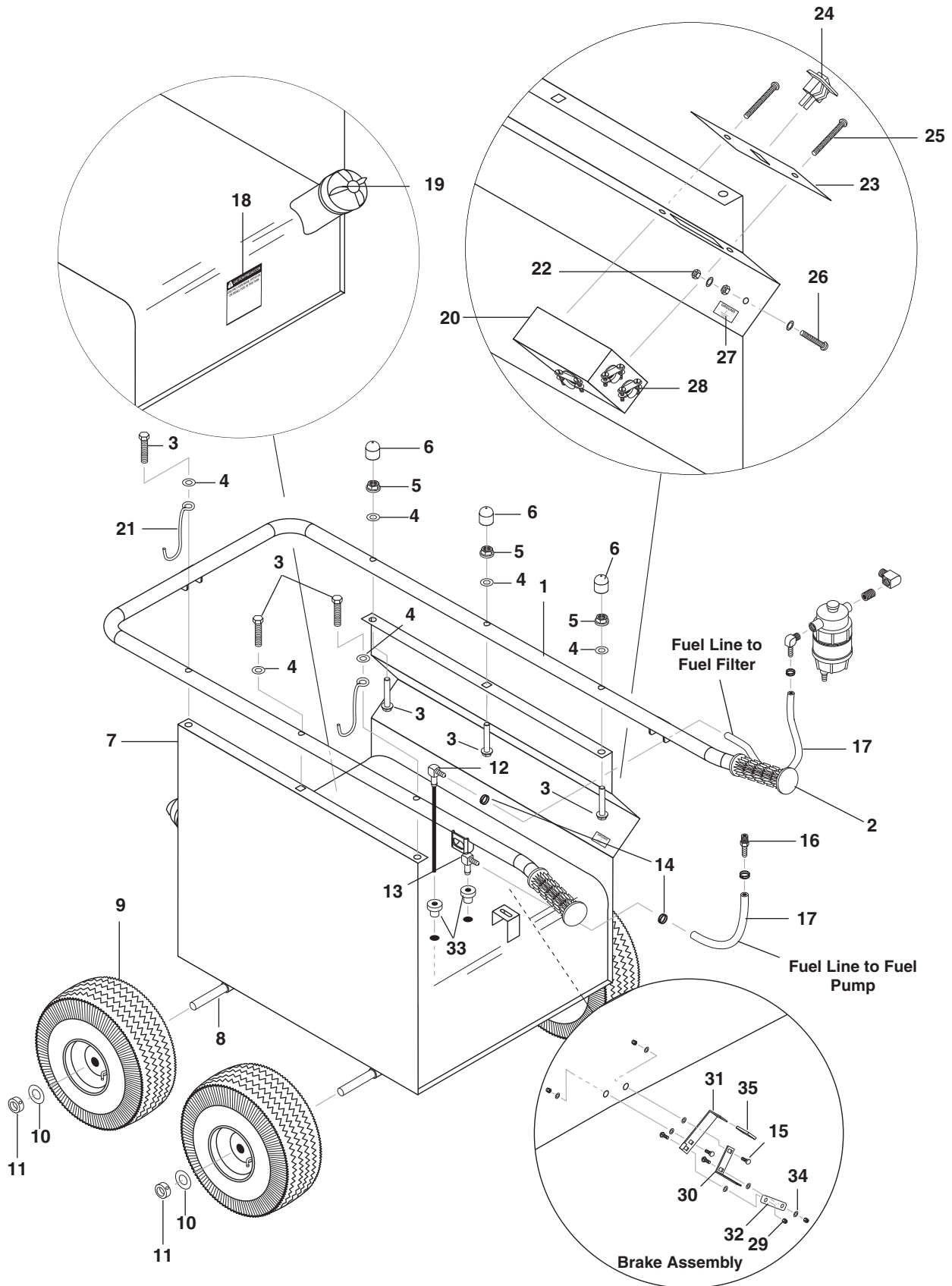
Date Oil Changed Month/Day/Year	Estimated Operating Hours Since Last Oil Change

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

Parts

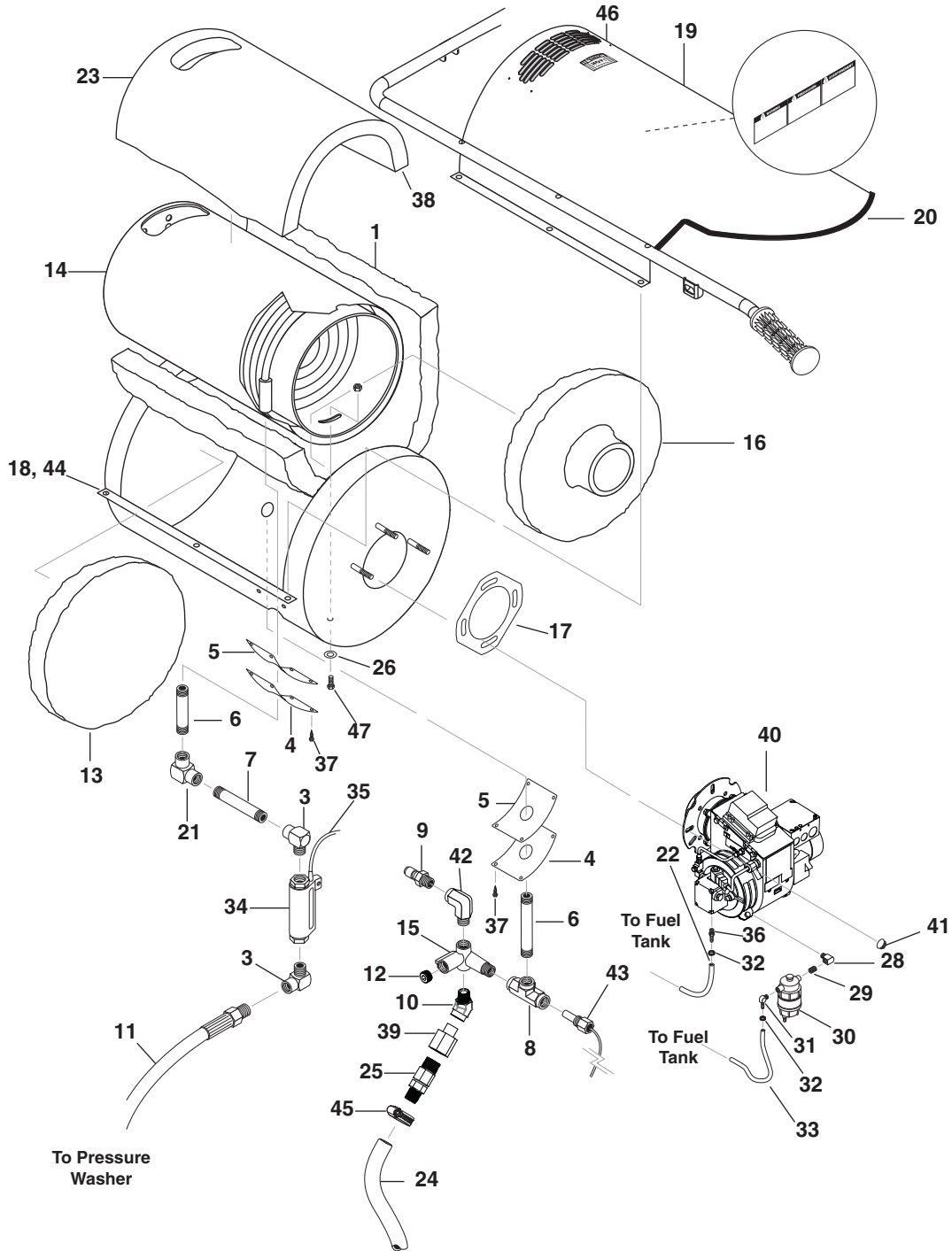
HS-3000

LANDA HS



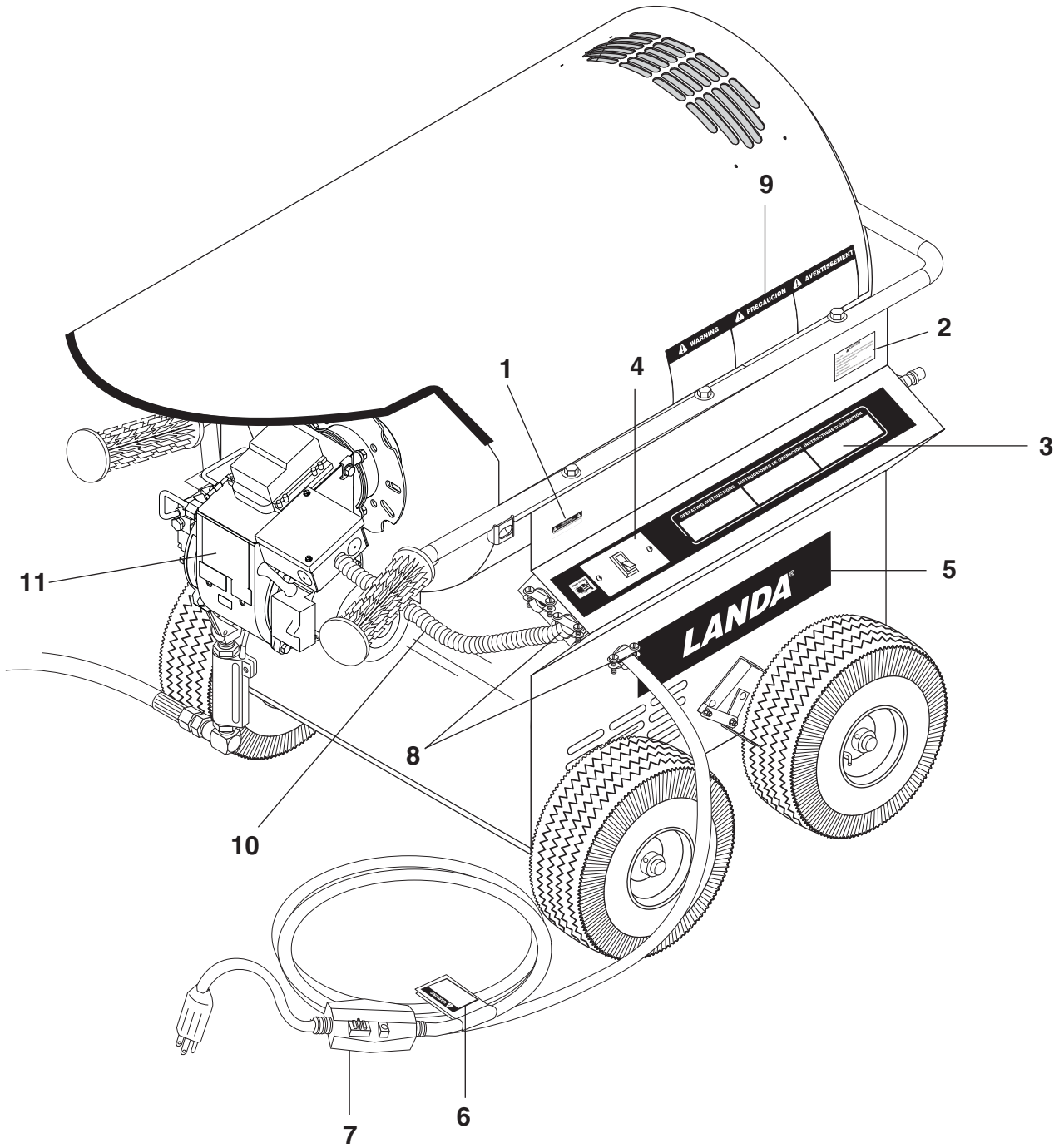
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	8.917-448.0	1	HANDLE, WELDMENT	
2	9.802-069.0	2	GRIP, 1", HANDLE (WAFFLE)	
3	8.718-674.0	6	BOLT, 3/8-16 X 2-1/4", GR 8.2 WHIZ LOC	
4	8.725-394.0	6	WASHER, 3/8", SAE FLAT	
5	9.802-781.0	6	NUT, 3/8" NC, WHIZ LOC FLANGE	
6	8.750-435.0	6	CAP, BLACK VINYL .364 X 1/2	
7	8.912-256.0	1	CHASSIS, HS-3000	
8	8.911-226.0	2	AXLE, 27"	
9	8.754-186.0	4	QH WHEEL ASSY, 10" GRAY STEEL RIM W/TUB	
10	90-4005	4	WASHER, 5/8", FLAT, SAE	
11	9.802-782.0	4	COLLAR, 5/8" BORE SHAFT 3010	
12	8.706-494.0	1	DIP TUBE, PLASTIC, 7.5"	
13	9.802-054.0	1	ELBOW, FUEL TANK	
14	8.709-069.0	2	CLAMP, SCREW, 5/16"W, 1/4-5/8"D, SS	
15	90-100472	4	BOLT, 1/4-20 X 1.0 PLT, CARRIAGE, ZINC	
16	8.706-941.0	1	HOSE BARB, 1/4" BARB X 1/4" ML PIPE	
17	4-02100000	2	HOSE, 1/4", PUSH-ON, 18" LONG	
18	10-020110	1	LABEL, USE ONLY KEROSENE	
19	9.802-082.0	1	CAP, FUEL TANK, PLASTIC	
20	8.716-323.0	1	BOX, JUNCTION, 5 HOLE 1/2"	
21	8.719-950.0	2	HOLDER, WAND	
22	9.802-695.0	5	NUT, 10/32" KEPS	
23	8.912-225.0	1	SWITCH PLATE, HOT	
24	9.802-453.0	1	SWITCH, CURVETTE 120V & 220V	
25	8.718-735.0	2	SCREW, 6/32" X 3/4", RH, SLOT, M/S MACHINE	
26	9.802-762.0	1	SCREW, 10/32" X 1-1/4", RH, SC, BLACK	
27	9.800-040.0	1	LABEL, GROUND	
28	9.802-519.0	3	STRAIN RELIEF, 1/2" METAL	
29	90-2000	4	NUT, 1/4" ESNA, NC	
30	95-07164828	1	BRACKET, BRAKE PAD, BLACK	
31	9.803-111.0	1	LEVER, BRAKE, BLACK	
32	95-07164829	1	LINKAGE, BRAKE, BLACK	
33	2-010061	2	BUSHING, MOUNT RUBBER	
34	9.802-802.0	12	WASHER, 1/4" FLAT, SAE	
35	9.804-608.0	1	CAP, VINYL, FLAT, YELLOW	

Tank & Burner

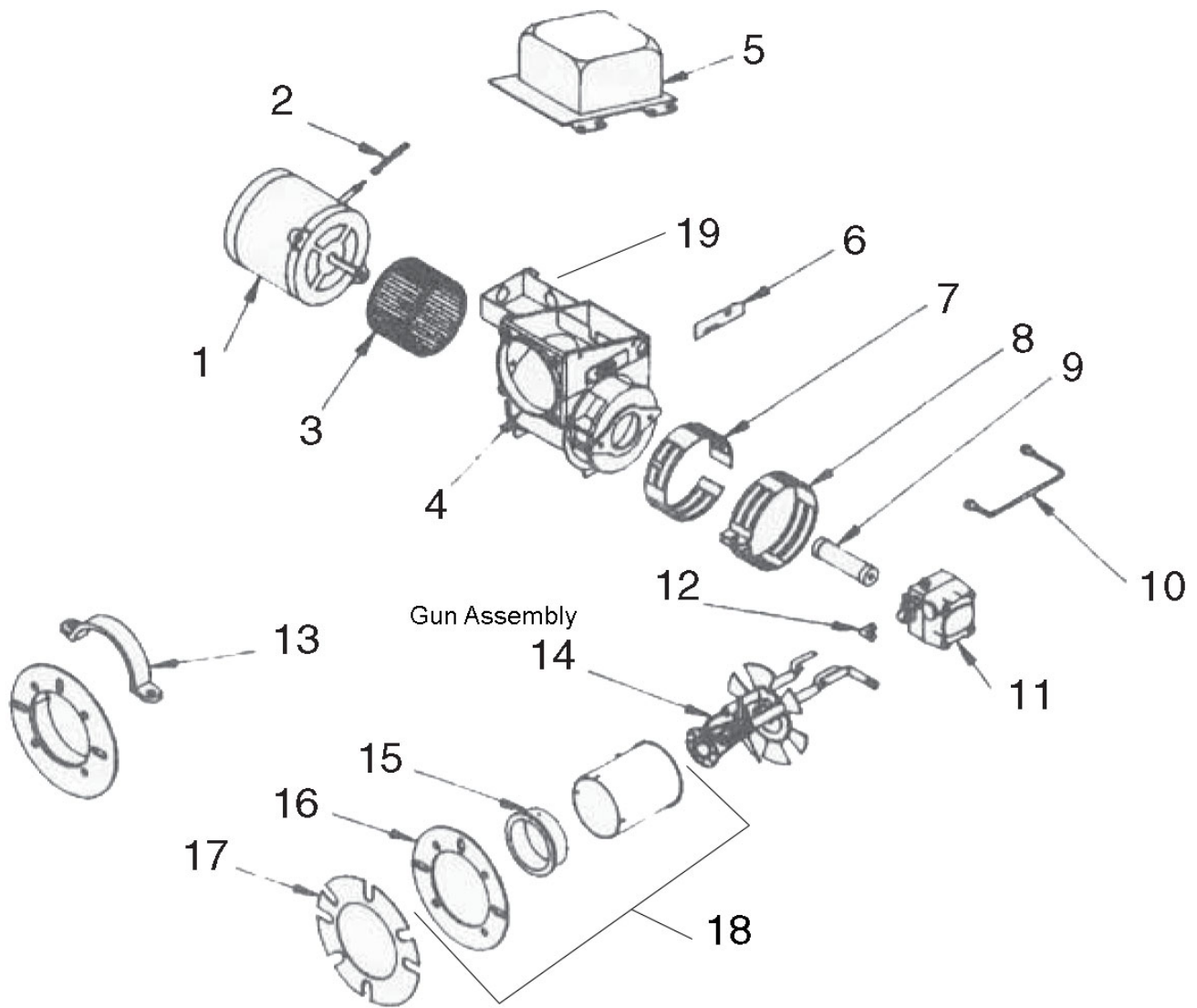


REF	PART NO.	QTY	DESCRIPTION	NOTES
1	9.802-896.0	1	INSULATION, BLANKET-NO FOIL, 24" X 57"	
2	9.800-033.0	1	LABEL, WARNING, HOT WATER	
3	9.802-024.0	2	ELBOW, STREET, 3/8" X 1/2"	
4	9.803-132.0	2	PHW INSULATION RETAINER	
5	8.933-009.0	2	GASKET, BURNER PLATE	
6	9.802-015.0	2	NIPPLE, GALVANIZED, 1/2" X 4"	
7	8.705-996.0	1	NIPPLE, GALVANIZED, 1/2" X 5"	

REF	PART NO.	QTY	DESCRIPTION	NOTES
8	8.706-216.0	1	TEE, 1/2" STEEL	
9	9.802-171.0	1	NIPPLE, 3/8" X 3/8" NPT ST, FEMALE	
10	9.802-041.0	1	ELBOW, 3/8" STREET, 45 DGR, STEEL	
11	8.918-205.0	1	HOSE, 3/8" X 9', 2 WIRE, HS	
12	8.706-248.0	1	PLUG, 3/8" ALLEN COUNTER SUNK	
13	9.802-883.0	1	INSULATION, FRONT HEAD, NO HOLE	
14	8.912-239.0	1	COIL REPLACEMENT, SCH 80 W/STEEL WRAP	
15	9.149-003.0	1	MANIFOLD COIL OUTLET	
16	9.802-894.0	1	INSULATION, BURNER HEAD, W/HOLE	
17	9.802-651.0	2	GASKET, STANDARD, LARGE	
18	8.916-486.0	1	WRAP, BOTTOM, BLACK	
-	8.916-514.0	1	WLMT, BOTTOM WRAP, STAINLESS	
19	8.912-192.0	1	WRAP, TOP, STAINLESS STEEL	
20	9.802-071.0	36"	TRIM, 1/16" BLACK, 750B-2	
21	8.706-172.0	1	ELBOW, 1/2" FEMALE	
22	9.803-559.0	1	CLAMP, SCREW, 9/16"W, 1-1/4"OD, SS	
23	9.802-902.0	1	INSULATION, BLANKET - DIE CUT, 28"	
24	9.802-206.0	9"	Hose 5/8" PUSH-ON	
25	8.707-381.0	1	RUPTURE DISC ASSY, 8500#	
26	8.725-394.0	2	WASHER, FLAT, SAE, 3/8"	
27	8.725-395.0	4	NUT, ESNA, NC, 3/8"	NOT SHOWN
28	8.706-827.0	1	ELBOW, STREET, 1/4"	
29	8.706-777.0	1	NIPPLE, CLOSE, 1/4"	
30	8.709-158.0	1	FILTER, FUEL OIL/H2O SEPARATOR	
-	8.709-161.0	1	ELEMENT, FUEL/H2O SEPARATOR	NOT SHOWN
31	8.706-958.0	1	HOSE BARB, 90°, 1/4" BARB X 1/4" PIPE	
32	8.709-069.0	2	CLAMP, SCREW, 5/16"W, 1/4-5/8"D, SS	
33	4-02100000	2	HOSE, 1/4" PUSH-ON, FUEL LINE, 18" LONG	
34	8.933-006.0	1	SWITCH, FLOW, MV 60	
35	8.724-844.0	1	REPLACEMENT REED, MV 60	
36	8.706-941.0	1	HOSE BARB, 1/4" BARB X 1/4" ML PIPE	
37	9.802-797.0	8	SCREW, SS# 10 X 1/2", HEX HEAD, TEK	
38	8.755-185.0	1	INSULATION, BLANKET-NO FOIL, 3" X 57" X 1"	
39	8.706-302.0	1	ADAPTER, 1/2" x 3/8" STEEL	
40	-	-	BURNER ASSEMBLY,	SEE SPECIFICATIONS PAGES
41	9.802-781.0	5	NUT, 3/8" FLANGE, WHIZ LOC	
42	8.706-207.0	1	ELBOW, 3/8" STREET	
43	8.712-185.0	1	HIGH LIMIT SNAP SWITCH, 225° F	
44	8.924-773.0	2	SHIM, STAINLESS OPT, TOP WRAP	SS BOTTOM WRAP OPTION
45	9.803-559.0	1	CLAMP, SCREW, 9/16"W, 1-1/4"OD, SS	
46	9.800-006.0	1	LABEL, "HOT CALIENTE" W/ARROW	
47	9.802-727.0	2	BOLT, 3/8" X 1-3/4", NC, HH	



REF	PART NO.	QTY	DESCRIPTION	NOTES
1	9.800-016.0	1	LABEL, DISCONNECT POWER SUPPLY	
2	9.800-049.0	1	LABEL, MANUFACTURER'S CLEANING SOLUTION	
3	8.900-336.0	1	LABEL, HS-3000 CONTROL PANEL	
4	8.912-225.0	1	SWITCH PLATE, HS-3000 SWITCH PLATE	
-	8.900-337.0	1	LABEL, HS-3000	
5	8.916-090.0	2	LABEL, LANDA LOGO	
6	8.932-969.0	1	LABEL, WARNING SERVICE CORD	
7	9.802-432.0	1	CORD, W/GFCI PLUG, 120V 15A	
8	9.802-519.0	4	STRAIN RELIEF, 1/2" METAL	
9	9.800-033.0	1	LABEL, WARNING HOT WATER	
10	8.716-006.0	2 ft.	CONDUIT, FLEX, ALUM, 3/8"	
-	8.716-007.0	2	CONDUIT, BUSHING, ANTI-SHORT	NOT SHOWN
11	9.756-435.0	1	BURNER, EHASR 120V 2T 120V S	
12	8.756-491.0	1	FUEL NOZZLE, 2.25 X 80 BZ	
13	8.756-409.0	1	CONNECTOR, LEVER NUT, 2-WIRES	NOT SHOWN
14	8.756-410.0	1	CONNECTOR, LEVER NUT, 3-WIRES	NOT SHOWN
15	8.756-411.0	1	CONNECTOR, LEVER NUT, 5-WIRES	NOT SHOWN



REF	PART NO.	QTY	DESCRIPTION	NOTES
1	8.756-293.0	1	MOTOR, BURNER, 1/5 120V 50-60HZ	
2	13121	1	MOTOR CORD COVER	
3	8.700-730.0	1	BLOWER WHEEL, 5-.25' x 3-7/16(307000)	
4	8.700-735.0	1	BURNER HOUSING EHASR	
5	8.700-802.0	1	IGNITOR, 120V, SIDE/EH-EHA MOUNT	
6	13392	1	SLOT COVER PLATE	
7	8.700-732.0	1	BAND, AIR BURNER INNER EHA/SR	
8	8.700-729.0	1	AIR BAND 8 HOLE OUTER EHA/SR	
9	8.700-776.0	1	COUPLING 5/16 X 1/2'FS	
10	8.700-704.0	1	OIL LINE, 6'	
11	8.756-290.0	1	FUEL PUMP, WCS - COMBO/W SOLENOID 120V	
12	13494	1	BRASS 90° ELBOW	
13	2689-SER	1	ADJUSTABLE FLANGE	
14	8.756-450.0	1	GUN ASSEMBLY, BURNER-RG/*CST/GBB1	
15	8.756-302.0	1	AIR CONE #8A	
16	21758-011	1	FLANGE	
17	8.700-692.0	2	GASKET, E & M SERIES BURNERS	
18	8.756-305.0	1	FLANGE, AIR TUBE, WELDED 1.75" "E"	
19	8.756-742.0	1	JUNCTION BOX, EHASR, BLACK BODY	
-	8.756-741.0	1	JUNCTION BOX, EHASR, BLACK COVER	NOT SHOWN
-	8.756-743.0	1	PLUG, HOLE, JUNCTION BOX, M&E	NOT SHOWN

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