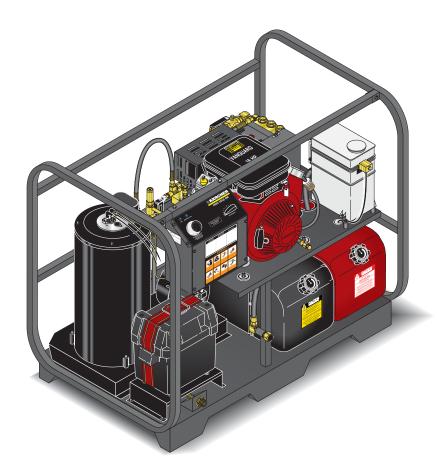


HDS PE CAGE

English

2

Pressure Washer



SHOP PRESSURE PARTS

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

MODELS: HDS 4.0/32 Pe Cage

1.575-615.0

HDS 5.0/32 Pe Cage 1.575-616.0

HDS 5.5/35 Pe Cage 1.575-617.0

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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 of your machine is located on the back of 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:

- Storage
- · Engine Maintenance
- Preventative Maintenance
- Maintenance & Service
- Unloader Valves
- Winterizing Procedure
- High Limit Hot Water Thermostat
- Pumps
- · Cleaning of Coils
- Scale Protection
- Rupture Disk
- Fuel
- Burner Nozzle
- Air Adjustment
- Troubleshooting

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 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.

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 operator

Important Safety Information



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

AVERTISSEMENT: 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 the machine and bleed pressure quickly. Be thoroughly familiar with the controls.
- 3. Stay alert watch what you are doing.



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

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

 All installations must comply with local codes.
 Contact your electrician, plumber, utility company or the selling dealer for specific details.



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

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



WARNING: High pressure spray can cause paint chips or other particles to become airborne and fly at high speeds. To avoid personal injury, eye, face, 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 corporelles, une protection des yeux, du visage, des mains et des pieds doit être portée lors de l'utilisation de cet équipement

- Always wear properly rated eye protection such as safety goggles or face shield while spraying. (Safety glasses do not provide full protection.)
- 6. Keep operating area clear of all persons.

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

AVERTISSEMENT: Des liquides inflammables peuvent produire des vapeurs qui peuvent s'enflammer, causant ainsi des dommages à la propriété ou des blessures graves.



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

AVERTISSEMENT: Risque d'explosion - Utiliser uniquement dans des endroits où l'utilisation d'une flamme nue ou d'une torche est permise.



MACHINE.

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

AVERTISSEMENT: Risque d'incendie - Ne pas ajouter de carburant pendant que la machine fonctionner ou est encore chaude.

WARNING: Do not use gasoline crankcase draining 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 fire — Do not spray flammable liquids.

AVERTISSEMENT: Risque d'incendie - Ne pas pulvériser de liquides inflammables.

 Allow engine to cool for 1-2 minutes before refueling. If any fuel is spilled, make sure the area is dry before testing the spark plug or starting the engine. (Fire and/or explosion may occur if this is not done.)

Gasoline engines on mobile or portable equipment shall be refueled:

- a. outdoors;
- b. with the engine on the equipment stopped;
- with no source of ignition within 10 feet of the dispensing point; and
- d. with an allowance made for expansion of the fuel should the equipment be exposed to a higher ambient temperature.

In an overfilling situation, additional precautions are necessary to ensure that the situation is handled in a safe manner.

WARNING: Risk of injury. Disconnect battery ground terminal before servicing.

AVERTISSEMENT: Risque de blessures. Débrancher la borne de mise à la terre de la batterie avant de procéder à des opérations d'entretien.

- When in use, do not place machine near flammable objects as the engine is hot.
- Oil burning appliances shall be installed only in locations where combustible dusts and flammable gases or vapors are not present. Do not store or use gasoline near this machine.
- 10. Use No. 1 or No. 2 heating oil (ASTM D306) only. NEVER use gasoline in your fuel oil 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.
- 11. Do not confuse gasoline and fuel oil tanks. Keep proper fuel in proper tank.



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.

AVERTISSEMENT: Risque de blessures. Les surfaces chaudes peuvent causer des brûlures.

Utiliser uniquement les zones de prise désignées du pistolet pulvérisateur et de la lance. Ne pas placer les mains ou les pieds sur des endroits non isolés de la laveuse à pression au moment de démarrer un moteur à essenc

12. Transport/Repair with fuel tank EMPTY or with fuel shut-off valve OFF.



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

ATTENTION: Liquide de décharge chaud. 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.

WARNING: This machine produces hot water and must have insulated 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

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

AVERTISSEMENT: Agripper la lance de nettoyage avec les deux mains avant de commencer. Le non-respect de cette consigne pourrait mener à des blessures

causées par le mouvement violent de la lance

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



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

AVERTISSEMENT: La haute

pression générée par ces machines causera des lésions corporelles ou des dommages à l'équipement. Se tenir à l'écart de la buse. Faire preuve de prudence lors de l'utilisation. Ne pas décharger directement le jet vers des personnes ou des animaux, car cela risquerait de causer des blessures graves ou même la mort.



WARNING: Protect machine from freezing.

AVERTISSEMENT: Protéger la machine contre le gel.

16. 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.

 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.

AVERTISSEMENT: Risque d'asphyxie. Utiliser ce produit uniquement dans un endroit bien ventilé.

18. Avoid installing machines in small areas or near exhaust

fans. Adequate oxygen is needed for combustion or dangerous carbon monoxide will result.

- Manufacturer will not be liable for any changes made to our standard machines or any components not purchased from us.
- 20. The best insurance against an accident is precaution and knowledge of the machine.



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: Une modification non autorisée de la machine ou l'utilisation de pièces

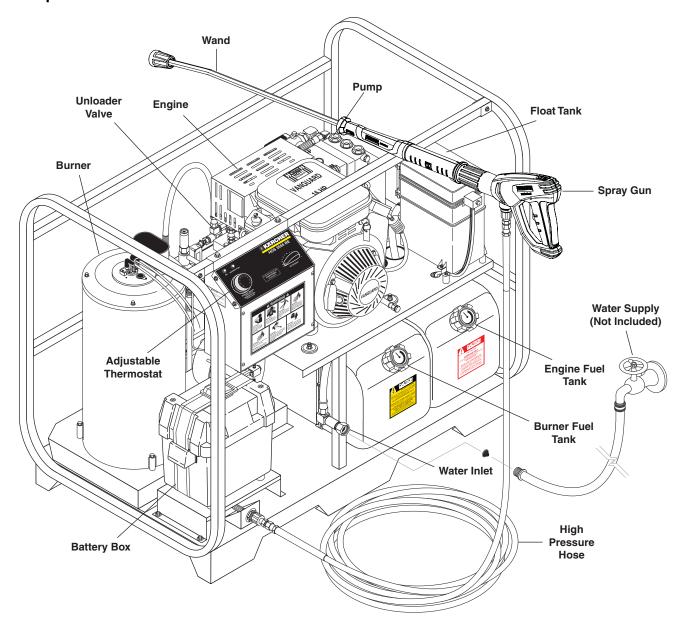
de rechange non approuvées peut causer des lésions corporelles et/ou des dommages à la propriété, et annulera la garantie du fabricant.

- 21. Do not allow acids, caustic or abrasive fluids to pass through the pump.
- 22. Never run pump dry or leave spray gun closed longer than 1-2 minutes.
- 23. Machines with shut-off spray gun should not be operated with the spray gun in the off position for extensive periods of time as this may cause damage to the pump.
- 24. Protect discharge hose from vehicle traffic and sharp objects. Inspect condition of high pressure hose before using or bodily injury may result.
- 25. Before disconnecting discharge hose from water outlet, turn burner off and open spray gun to allow water to cool below 100° before stopping the machine. Then open the spray gun to relieve pressure. Failure to properly cool down or maintain the heating coil may result in a steam explosion.
- 26. Do not overreach or stand on unstable support. Keep good footing and balance at all times.
- Do not operate this machine when fatigued or under the influence of alcohol, prescription medications, or drugs.
- 28. In oil burning models, use only kerosene, No. 1 home heating fuel, or diesel. If diesel is used, add a soot remover to every tankful.



Follow the maintenance instructions specified in the manual.

Component Identification



Pump — Delivers a specific gpm to the high pressure nozzle which develops pressure.

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

Unloader Valve— Safety device which allows pressure to be released when spray gun is closed.

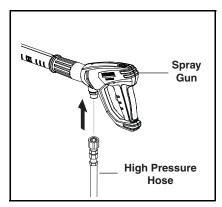
High Pressure Hose — Connect one end to water pump discharge nipple and the other end to spray gun.

Adjustable Thermostat — Safety control which prevents temperatures from going above adjustable setting.

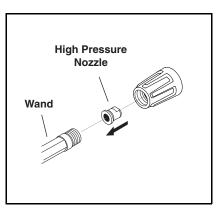
Wand — Must be connected to the spray gun.

NOTE: If trigger on spray gun is released for more than 2 minutes, water will leak from valve. Warm water will discharge from pump protector onto floor. This system prevents internal pump damage.

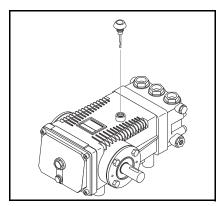
Assembly Instructions



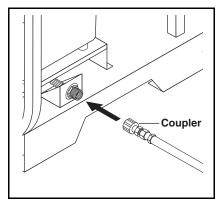
STEP 1: Attach the high pressure hose to the spray gun using teflon tape on hose threads.



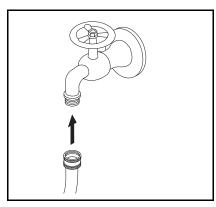
STEP 2: Remove Wand end and first place the O-ring followed by the high pressure nozzle as shown. Replace end of wand.



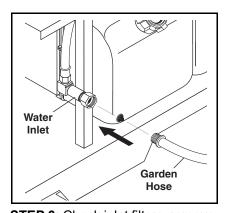
STEP 3: Remove shipping cap and install oil dipstick. Check pump oil level by using dipstick or observe oil level in oil window (if equipped). Use 30 wt. non detergent oil.



STEP 4: Connect the high pressure hose to the pump discharge fitting. Push coupler collar forward until secure.



STEP 5: Connect garden hose to the cold water source.



STEP 6: Check inlet filters, remove debris, then connect the garden hose to pump water inlet.

CAUTION: Do not run the pump without water or pump damage will result.

ATTENTION: Ne pas faire fonctionner la pompe sans eau pour éviter d'endommager la pompe.

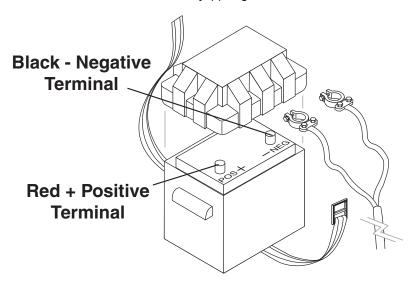
Battery Installation

Due to Federal Regulations concerning shipment of corrosive chemicals, batteries are not shipped with this machine.

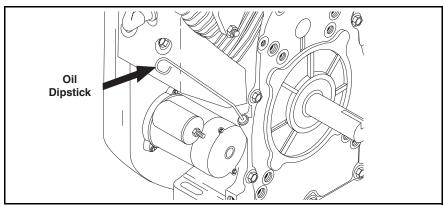


Local purchase of battery will be the responsibility of the owner. Automotive type 12 Volt Group 24 battery is recommended for placement within the weather resistant box. Follow safety and installation instructions furnished with the battery.

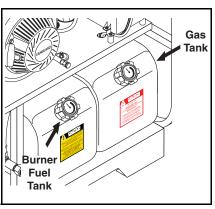
Red Cable is attached to battery (+) positive terminal, black cable is connected to battery (-) negative terminal.



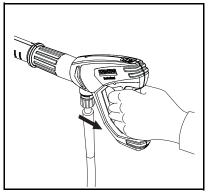
Operating Instructions



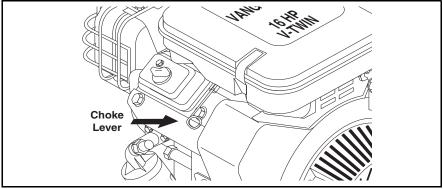
STEP 1: Check engine oil level. Oil level should be level with the bottom of the oil filler neck. Be sure the machine is level when checking the oil level. (Refer to the engine's operating manual included with machine.) We recommend that the oil be changed after the first 5 hours of use, then once every 50 hours. **NOTE:** Improper oil levels will cause low oil sensor to shut off engine. **IMPORTANT!** Do not run engine with high or low oil levels as this will cause engine damage.



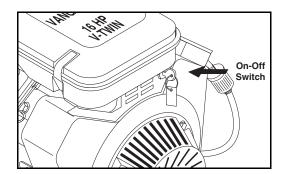
STEP 2: Fill gas tank and burner fuel tank with proper fuel. Do not confuse gasoline and fuel oil tanks. Keep proper fuel in proper tank.



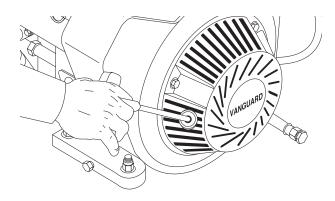
STEP 3: Trigger the spray gun to eliminate trapped air then wait for a steady flow of water to emerge from the spray nozzle.



STEP 4: Pull the choke lever out to the "Choke" position (on a warm engine, leave the choke lever in the run position). Push the choke lever to the "Closed" position. To restart a warm engine, leave the choke lever in the "Open" position



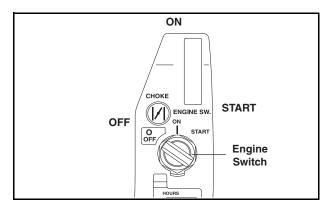
STEP 5: (Pull Start Models)Turn the engine switch to "Start" position.



STEP 6: Pull the starter grip. If the engine fails to start after 2 pulls, squeeze the trigger gun to release pressure and repeat step. Return starter gently. After the engine warms up enough to run smoothly, move choke to run position and throttle to fast position.

CAUTION: Small engines may kick back. Do not hold pull starter grip tightly in hand.

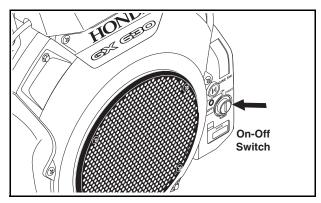
ATTENTION: Les petits moteurs peuvent présenter un risque de retour.



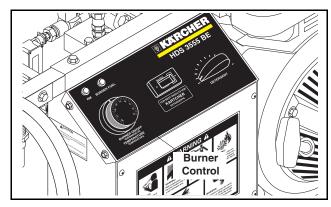
STEP 8: (Electric Start Models) Turn the key to the START position, and hold it there until the engine starts. If the engine fails to start within 5 seconds, release the key, and wait at least 10 seconds before operating the starter again.

Using the electric starter for more than 5 seconds at a time will overheat the starter motor and can damage it.

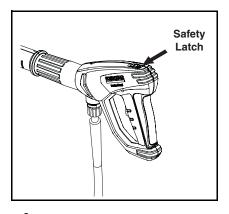
When the engine starts, release the key, allowing it to return to the ON position. If the choke knob has been pulled to the CLOSED position to start the engine, gradually push it to the OPEN position as the engine warms up.



STEP 7: (Electric Start Models) Turn the engine switch to "Start" position.



STEP 9: Turn the burner "ON". Turn thermostat dial to the 210° mark



WARNING! Never replace nozzle without engaging the safety latch on the spray gun trigger.

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

Detergent & General Cleaning Techniques

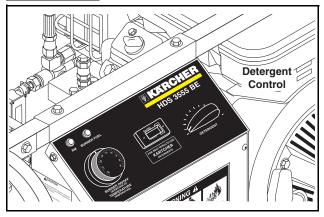


WARNING: Some detergents may be harmful if inhaled or ingested, causing severe nausea, fainting or poisoning. The harmful elements may cause property damage or severe injury.



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: 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 metering valve.

STEP 3: Detergent will be drawn into the pump and coil and discharged under pressure. Never use anything that will damage the pump and coil.

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 from your machine after each use by placing the suction tube

into a bucket of clean water and then running the pressure washer for 1-2 minutes.

Thermal Pump Protection

If you run the engine on your pressure washer for 3-5 minutes without pressing the trigger on the spray gun, circulating water in the pump can reach high tempera-

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

Recommendations:

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

CAUTION - Never use:

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

ATTENTION: Ne jamais utiliser :

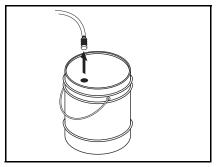
- Eau de Javel, produits à base de chlore et autres produits chimiques corrosifs
- Liquides contenant des solvants (c.-à-d. diluant à peinture, essence, huiles, etc.)
- Produits à base de tripolyphosphate de sodium
- · Ammoniac ou produits à base d'acide

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

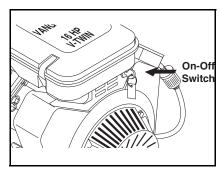
Rinsing

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 bottle.

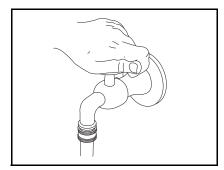
Shutting Down & Clean Up



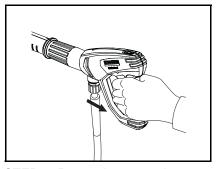
STEP 1: Remove detergent suction tube from container and insert into one gallon of fresh water. Open detergent metering valve. Pull trigger on spray gun and siphon water for one minute. Close detergent valve.



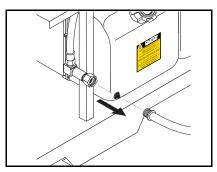
STEP 2: Turn off the engine



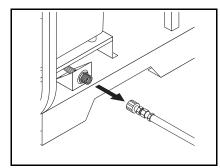
STEP 3: Turn off water supply.



STEP 4: Press trigger to release water pressure.



STEP 5: Disconnect the garden hose from the water inlet on the machine.



STEP 6: Disconnect the high pressure hose from high pressure outlet.



STEP 7: Engage the spray gun safety lock.

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.

ATTENTION:

- 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 engine off immediately.
- 4. Drain the gas and oil from the engine.
- 5. Do not allow high pressure hose to become kinked.
- 6. 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 cidessus entraînera des dommages à la laveuse à pression.

When the pressure washer is not being operated or is being stored for more than one month, follow these instructions:

- Replenish engine oil to upper level.
- 2. Drain gasoline from fuel tank, fuel line, fuel valve and carburetor.
- 3. Pour about one teaspoon of engine oil through the spark plug hole, pull the starter grip several times and replace the plug. Then pull the starter grip slowly until you feel increased pressure which indicates the piston is on its compression stroke and leave it in that position. This closes both the intake and exhaust valves to prevent rusting of cylinder.
- 4. Cover the pressure washer and store in a clean, dry place that is well ventilated away from open flame or sparks. NOTE: The use of a fuel additive, such as STA-BIL[®], or an equivalent, will minimize the formulation of fuel deposits during storage. Such additives may be added to the gasoline in the fuel tank of the engine, or to the gasoline in a storage container.

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

Engine Maintenance

During the winter months, rare atmospheric conditions may develop which will cause an icing condition in the carburetor. If this develops, the engine may run rough, lose power and may stall. This temporary condition can be overcome by deflecting some of the hot air from the engine over the carburetor area. **NOTE**: Refer to the engine manufacturer's manual for service and maintenance of the engine.

Preventative Maintenance

- Check to see that water pump is properly lubricated.
- 2. Follow winterizing instructions to prevent freeze damage to pump and coils.
- 3. Always neutralize and flush detergent from system after use.
- If water is known to have high mineral content, use a water softener in your water system, or de-scale as needed.
- 5. Do not allow acidic, caustic or abrasive fluids to be pumped through system.
- 6. Always use high grade quality cleaning products.
- 7. Never run pump dry for extended periods of time.
- Use clean fuel: kerosene, No. 1 fuel oil, or diesel.
 Clean or replace fuel filter every 100 hours of operation. Avoid water contaminated fuel as it will damage the fuel pump.
- 9. If machine is operated with smoky or eye burning exhaust, coils will soot up, not letting water reach maximum operating temperature.
- Never allow water to be sprayed on or near engine or burner assembly or any electrical component.
- 11. Periodically delime coils as per instructions.
- 12. Check to see that engine is properly lubricated.

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

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

Maintenance And Service

Unloader Valves

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

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 then mix a 50/50 solution of anti-freeze and water in the float tank. Turn the engine on to siphon the anti-freeze mixture through the machine. If compressed air is available, an air fitting can be screwed into the float tank by removing the float tank strainer and fitting. Then inject the compressed air. Water will be blown out of the machine when the trigger on the spray gun is opened.

High Limit Hot Water Thermostat

For safety, each machine is equipped with a temperature sensitive high limit control switch. In the event that the water should exceed its operating temperature, the high limit control will turn the burner off until the water cools then it will automatically reset itself. The thermostat sensor is located on the discharge side of the heating coil. The thermostat control dial is located on the control panel.

Pumps

Before running the pump check the pump crankcase for a proper oil level. A proper oil level is indicated by the red dot in the sight glass or between the high and low marks on the dipstick. Use only SAE 30 non-detergent oil. Change the initial oil after the first 50 hours and then change the oil every 500 hours or every three months.

When draining oil, clean inside of crankcase to remove all impurities.

CAUTION: When operating in damp places or with high temperature fluctuations oil must be changed immediately.

ATTENTION: Lorsque l'appareil est utilisé dans des endroits humides ou où les températures fluctuent fortement, l'huile doit être changée immédiatement.

Cleaning of Coils

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

Scale Protection

- Fill container with K\u00e4rcher scale inhibitor fluid Rm 110.
- 2. Obtain water hardness values from local water authority, or using a water hardness testing kit.
- 3. Adjust impulse transmitter in electric cabinet (preset at #5.)

Water hardness (² dH)	5	10	15	20	25	30
Impulse transmitter	10	8	7	6.5	6	5.5

When operating unit without a scale protection, the heater coil may become scaled.

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 disk ruptures it will need to be replaced.

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 fuel 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.

CAUTION: If the fuel pump is allowed to run dry for any length of time it will be damaged.

ATTENTION: Si la pompe à carburant fonctionne à sec pendant un certain temps, elle s'endommagera.

Fuel Control System

This machine utilizes a fuel solenoid valve located on the fuel pump to control the flow of fuel to the combustion chamber. The solenoid, which is normally closed, is activated by a flow switch when water flows through it. When the operator releases the trigger on the spray gun, the flow of water through the flow switch stops, turning off the electrical 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 the combustion smoke normally associated with machines incorporating a spray gun. Periodic inspection, to insure that the fuel solenoid valve functions properly, is recommended. This can be done by operating the machine and checking to see that the burner is not firing when the spray gun is in the OFF position.

When operating without the burner there must be heating fuel in the fuel tank. Otherwise the fuel pump has no lubrication and will run dry. This can cause damage to the coupling and to the fuel pump.

Fuel Pressure Adjustment

To control water temperature, adjust fuel pressure by turning the regulating pressure adjusting screw clockwise to increase, counterclockwise to decrease. Do not exceed 200 psi.

NOTE: hen changing fuel pump, a bypass plug must be installed in return port or fuel pump will not prime.

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.

Air Adjustment

Machines are preset and performance tested at the factory - elevation 100'. A one-time initial correction for your location will pay off in economy, performance, and extended service life. If a smoky or eye-burning exhaust is being emitted from the stack, two things should be checked. First, check the fuel to be certain that kerosene or No. 1 home heating fuel is being used. Next, check the air adjustment on the blower assembly.

Preventive 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.

Check pump oil level before first use of your new pressure washer. **Change** pump oil after first 50 hours and every 3 months or 500 hours thereafter.

Use SAE 30 weight oil, non-detergent.

Maintenance Operation		Every 8 Hrs or Daily	25 Hrs or Weekly	50 Hrs or Monthly	100 Hrs or Yearly	Yearly
01 1 . 0 !!	Pump		Х			
Check Oil	Engine	Х				
Change Oil	Pump					Х
	Engine			Х		
Air Cleaner		Check		Clean		
Spark Plug					Х	
Check Valve Clearance						Х
Fuel Tank Filter					Х	
Water Filter/Clean		Check				X

Date Oil Changed Month/Day/Year	No. of Operating Hours Since Last Oil Change	Brand Name and Type of Oil (See above)

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
	Faulty pressure gauge	Install new gauge.
	Insufficient water supply	Use larger supply hose; clean filter at water inlet.
	Old, worn or incorrect spray nozzle	Match nozzle number to machine and/or replace with new nozzle.
	Belt slippage	Tighten or replace; use correct belt.
	Plumbing or hose leak	Check plumbing system for leaks. Retape leaks with teflon tape.
LOW	Faulty or mis-adjusted unloader valve	Adjust unloader for proper pressure. Install repair kit when needed.
OPERATING	Worn packing in pump	Install new packing kit.
PRESSURE	Fouled or dirty inlet or discharge valves in pump	Clean inlet and discharge valves.
	Worn inlet or discharge valves	Replace with valve kit.
	Obstruction in spray nozzle	Remove obstruction.
	Leaking pressure control valve	Rebuild or replace as needed.
	Slow engine RPM	Set engine speed at proper specifications.
	Pump sucking air	Check water supply and possibility of air seepage.
	Valves sticking	Check and clean or replace if necessary.
	Unloader valve seat faulty	Check and replace if necessary.
	Little or no fuel	Fill tank with fuel.
	Improper fuel or water in fuel	Drain fuel tank and fill with proper fuel.
	Clogged fuel line	Clean or replace.
BURNER	Plugged fuel filter	Replace as needed.
WILL NOT LIGHT	Mis-adjusted burner air bands	Readjust air bands for clean burn.
NOT LIGHT	Little or no fuel pressure from fuel pump	Increase fuel pressure to specification and/or replace fuel pump. Test with pressure gauge.
	Faulty burner transformer	Test transformer for proper arc between contacts. Replace as needed.
(continued on next page)	Disconnected or short in electrical wiring	All wire contacts should be clean and tight. No breaks in wire

PROBLEM	POSSIBLE CAUSE	SOLUTION
	Flex coupling slipping on fuel pump shaft or burner motor shaft	Replace if needed.
	On-Off switch defective	Check for electrical current reaching burner assembly with burner switch on.
	Heavy sooting on coil and burner can cause interruption of air flow and shorting of electrodes	Clean as required.
BURNER WILL NOT LIGHT (continued	Improper electrode setting	Check and reset according to diagram in Operator's Manual.
from previous page)	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 fuel flow control.
	Clogged burner nozzle	Clean as required.
	Thermostat faulty or slow engine speed	Increase engine RPM to increase voltage.
	Flow switch malfunction	Remove, test for continuity and replace as needed.
	Flow solenoid malfunction	Replace if needed.
	Valves worn	Check and replace if necessary.
FLUCTUATING	Blockage in valve	Check and replace if necessary.
PRESSURE	Pump sucking air	Check water supply and air seepage at joints in suction line.
	Worn piston packing	Check and replace if necessary.
	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.
	Plugged or dirty burner nozzle	Replace nozzle.
machine	Faulty burner nozzle spray pattern	Replace nozzle.
SMOKES	Heavy accumulation of soot on coils and burner assembly	Remove coils and burner assembly, clean thoroughly.
	Misaligned electrode setting	Realign electrodes to specifications.
	Obstruction in smoke stack	Check for insulation blockage or other foreign objects.
	Low engine RPM	Increase RPM

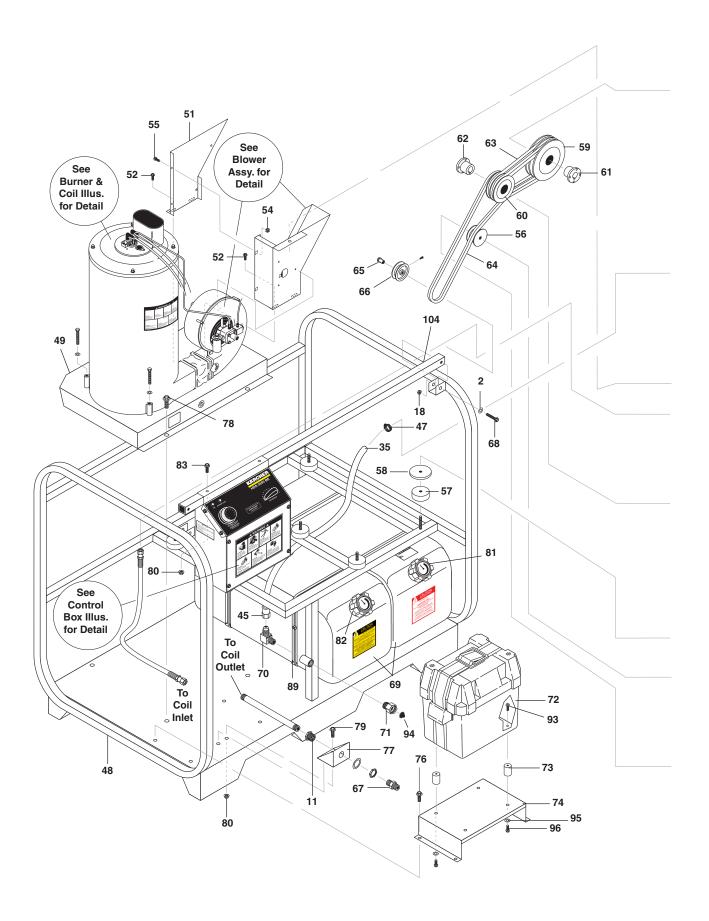
PROBLEM	POSSIBLE CAUSE	SOLUTION
	Improper fuel or water in fuel	Replace with clean and proper fuel.
	Low fuel pressure	Increase fuel pressure.
LOW WATER	Weak fuel pump	Check fuel pump pressure. Replace pump if needed.
TEMPERATURE	Fuel filter partially clogged	Replace as needed.
	Soot build-up on coils not allowing heat transfer	Clean coils.
	Improper burner nozzle	See nozzle specifications. (page 30)
	Incoming water to machine warm or hot	Lower incoming water temperature.
	Fuel pump pressure too high	See specifications for proper fuel pressure.
	Fuel pump defective	Replace fuel pump.
WATER TEMPERATURE	Detergent line sucking air	Tighten all clamps. Check detergent lines for holes.
тоо нот	Defective temperature switch	Replace.
	Incorrect fuel nozzle size	See specifications for proper fuel nozzle. (page 30)
	Insufficient water supplied	Check water G.P.M. to machine.
	Restricted water flow	Check nozzle for obstruction, proper size.
	Air in suction line	Check water supply and connections on suction line.
PUMP NOISY	Broken or weak inlet or discharge valve springs	Check and replace if necessary.
	Excessive matter in valves	Check and clean if necessary.
	Worn bearings	Check and replace if necessary.
PRESENCE OF WATER	Oil seal worn	Check and replace if necessary.
IN OIL	High humidity in air	Check and change oil twice as often.
	Piston packing worn	Check and replace if necessary.
WATER DRIPPING	O-Ring plunger retainer worn	Check and replace if necessary.
FROM UNDER PUMP	Cracked piston	Check and replace if necessary.
PUMP	Pump protector	Lower water supply pressure. Do not run with spray gun closed longer than 2 minutes

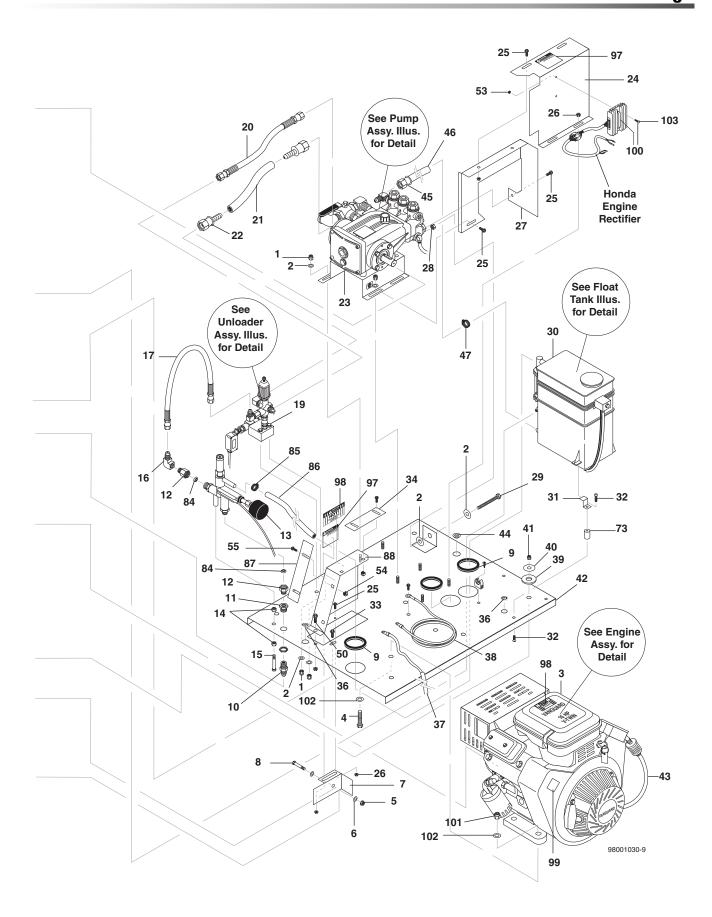
PROBLEM	POSSIBLE CAUSE	SOLUTION
OIL DRIPPING	Oil seal worn	Check and replace if necessary.
EXCESSIVE VIBRATION IN DELIVERY LINE	Irregular functioning of the valves	Check and replace if necessary.
	Air leak	Tighten all clamps. Check detergent lines for holes.
	Restrictor in float tank is missing	Replace restrictor. Check for proper orifice in restrictor.
DETERGENT	Filter screen on detergent suction hose plugged	Clean or replace.
NOT DRAWING	Dried up detergent plugging metering valve	Disassemble and clean thoroughly.
	High viscosity of detergent	Dilute detergent to specifications.
	Hole in detergent line(s)	Repair hole.
	Low detergent level	Add detergent, if needed.
	Pump sucking air	Check water supply and possibility of air seepage.
PUMP RUNNING	Valves sticking	Check and clean or replace if necessary.
NORMALLY BUT PRESSURE LOW ON	Nozzle incorrectly sized	Check and replace if necessary (See serial plate for proper size).
INSTALLATION	Unloader valve seat faulty	Check and replace if necessary.
	Worn piston packing	Check and replace if necessary.
	Fuel pump seized	Replace fuel pump.
BURNER	Burner fan loose or misaligned	Position correctly, tighten set screw.
MOTOR WILL	Defective control switch	Replace switch.
NOT RUN	Loose wire	Check and replace or tighten wiring.
	Defective burner motor	Replace motor.
RELIEF VALVE LEAKS WATER	Relief valve defective	Replace or repair

Parts

KARCHER PE CAGE

- 1.575-615.0
- 1.575-616.0
- 1.575-617.0





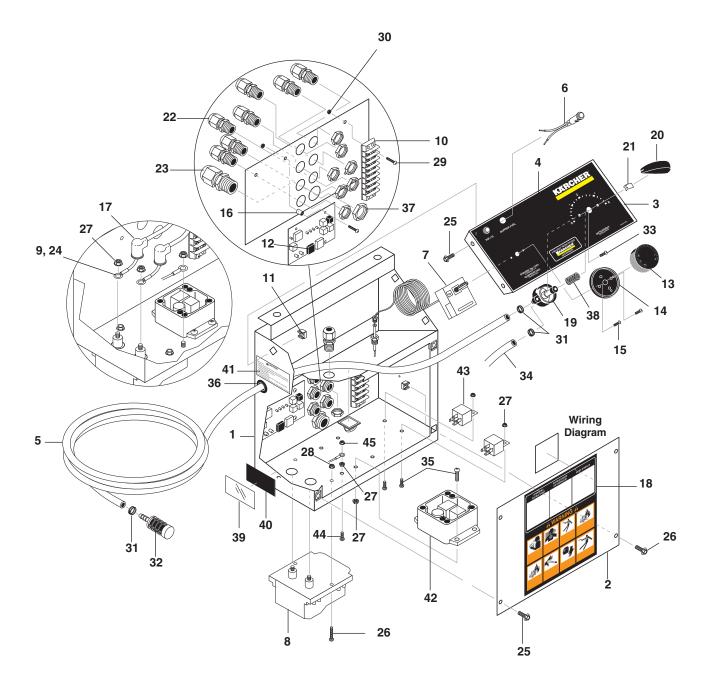
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	9.802-779.0	8	NUT, 3/8" ESNA, NC	
2	9.802-807.0	11	WASHER, 3/8" SAE, FLAT	
3	-	-	ENGINE	SEE SPECIFICATIONS PAGES
4	9.802-728.0	4	BOLT, 3/8-16 x 2", HH ZINC	(HONDA ONLY)
-	9.802-714.0	4	BOLT, 5/16" X 1-3/4", TAP	(VANGUARD ONLY)
5	9.802-781.0	1	NUT, 3/8" NC, WHIZ LOC FLANGE	
6	9.802-807.0	2	WASHER, 3/8", SAE, FLAT ZINC	
7	9.803-510.0	1	BRACKET, IDLE	
8	9.802-728.0	1	BOLT, 3/8-16 x 2", HH ZINC	
9	9.803-545.0	3	GROMMET, 2-5/16" RUBBER, CAB WASHER	
10	8.757-655.0	1	ADAPTER STEEL 1/2 JIC (M) X 3/8 NPTF (M)	
11	8.755-033.0	2	BULKHEAD, 3/8" FXF NPT STEEL	
12	9.803-600.0	2	SWIVEL, M22 X 3/8" ANCHOR	
13	4.749-148.3	1	SYSTEM, SAFETY, SKIDS	
14	9.804-644.0	2	NUT, 8 MM HEX	
15	8.756-434.0	1	BOLT, M8X1.25, 60MM, 10.9, HX	
16	8.757-935.0	1	ADAPTER STEEL 1/2 JIC X 3/8 NPTF (F) 90°	
17	8.918-422.0	1	HOSE, 3/8" X 20", 2 WIRE PRESSURE LOOP	
18	9.802-781.0	2	NUT, 3/8" FLANGE, WHIZ LOC	
19	9.802-728.0	2	BOLT, 3/8" X 2", NC HH	
20	8.918-432.0	1	HOSE, 3/8" X 18", 2 WIRE PRESSURE LOOP	
21	9.802-259.0	14"	HOSE, 1/2" PUSH-ON	
22	9.802-151.0	2	SWIVEL, 1/2" JIC FEMALE, PUSH-ON	
23	-	-	PLEASE SEE PUMP ASSEMBLY PAGE	
24	8.919-822.0	1	BELT GUARD	(1.575-617.0)
-	9.803-507.0	1	BELT GUARD	(1.575-615.0, 1.575-616.0)
25	9.803-551.0	5	SCREW, 5/16" X 3/4" WHIZ LOC	
26	9.802-778.0	6	NUT, 5/16" FLANGE, WHIZ LOC	
27	9.803-501.0	1	GUARD, ASSEMBLY, PUMP PULLEY	
28	9.802-789.0	1	NUT, 3/8" HEX, NC	
29	9.802-735.0	1	BOLT, 3/8" X 5" HH	
30	9.803-526.0	1	FLOAT TANK ASSEMBLY, HDS SKID	
31	9.803-511.0	1	BRACKET, ZEE	
32	9.803-277.0	6	BOLT, 5/16" X 1/2" WHIZ	
33	9.803-551.0	1	SCREW 5/16" X 3/4" WHIZ LOC FLANGE	
34	9.804-023.0	1	PLATE, BELT GUARD TOP	(1.575-615.0 ONLY)
35	9.802-261.0	32"	HOSE, 3/4" PUSH-ON	
36	9.802-064.0	2	GROMMET, RUBBER, NOZZLE HOLDER	
37	8.753-358.0	1	CABLE, BATTERY, 61", RED	
38	9.753-395.0	1	CABLE, BATTERY, 24", BLACK	
39	9.802-067.0	7	BUMPER PAD, ENGINE	
40	9.802-811.0	7	WASHER, 3/8" X 1-1/2" FENDER, SAE	
41	9.802-779.0	7	NUT, 3/8" ESNA, NC	

REF	PART NO.	QTY	DESCRIPTION	NOTES
41	9.802-779.0	7	NUT, 3/8" ESNA, NC	
42	9.803-502.0	1	PLATFORM, ASSEMBLY	
43	9.802-254.0	45"	HOSE, 1/4" FUEL LINE	
44	9.803-678.0	1	GROMMET, 3/8" RUBBER	
45	9.802-152.0	2	SWIVEL, 3/4" SAE FEMALE, PUSH-ON	
46	9.802-261.0	14"	HOSE, 3/4" PUSH-ON	
47	9.803-559.0	2	CLAMP, SCREW, #12	
48	9.803-518.0	1	CAGE, HDS WELD ASSEMBLY	
49	9.803-500.0	1	BURNER MOUNT, ASSY	
50	9.802-767.0	7	SCREW, 3/8" X 3/4" WHIZ LOC	
51	9.803-508.0	1	PLATE, R#180-00190-01	
52	9.803-551.0	4	SCREW, 5/16" X 3/4" WHIZ LOC	
53	9.802-695.0	2	NUT, 10/32" KEPS	
54	9.802-794.0	6	NUT, CAGE, 1/4" X 12 GAUGE	(1.575-616.0, 1.575-617.0)
-	9.802-794.0	7	NUT, CAGE, 1/4" X 12 GAUGE	(1.575-615.0)
55	9.802-753.0	5	SCREW, 1/4" X 3/4" HH NC, WHIZ LOC	(1.575-615.0)
-	9.802-753.0	3	SCREW, 1/4" X 3/4" HH NC, WHIZ LOC	(1.575-616.0, 1.575-617.0)
56	9.803-603.0	1	PULLEY, IDLER	
57	9.802-066.0	7	PAD, SOFT RUBBER, 50 DURO	
58	9.802-067.0	7	BUMPER PAD, ENGINE	
59	-	-	PUMP PULLEY	SEE SPECIFICATIONS PAGES
60	-	-	ENGINE PULLEY	SEE SPECIFICATIONS PAGES
61	-	-	PUMP BUSHING	SEE SPECIFICATIONS PAGES
62	-	-	ENGINE BUSHING	SEE SPECIFICATIONS PAGES
63	-	-	PUMP BELT	SEE SPECIFICATIONS PAGES
64	-	-	BELT, BLOWER	SEE SPECIFICATIONS PAGES
65	8.912-382.0	1	KEY, .185 SQUARE X 1"	
66	8.715-526.0	1	PULLEY, AK 30 X 15MM BORE	
67	4.111-042.0	1	ADAPTER COMPLETE TR22AG-3/8-NPT	
68	9.802-730.0	2	BOLT, 3/8" X 2-1/2" GR 5 ZINC	
69	-	-	FUEL TANKS	SEE FUEL TANK PAGES
70	8.757-202.0	1	ELBOW BRASS 3/4 SAE (M) X 1/2 NPTF (M)	
71	8.757-203.0	1	SWIVEL, 1/2" M-NPTF x 3/4" GHF	
72	8.706-600.0	1	BOX, BATTERY, M-100	
73	9.803-532.0	7	ISOLATOR, 5/16" THREAD, FEMALE X FEMALE, 1" X 1"	
74	9.803-504.0	1	BRACKET, BATTERY	
75	9.803-277.0	4	SCREW, 5/16" X 1/2" WHIZ LOC	
76	9.802-756.0	4	SCREW, 5/16" X 1" WHIZ LOC	
77	9.803-505.0	1	BRACKET, MOUNT	
78	9.802-767.0	4	SCREW, 3/8" x 3/4" NC, WHIZ LOC FLANGE	
79	9.802-753.0	2	SCREW, 1/4-20 x 3/4" WHIZ LOC	
80	9.802-775.0	4	NUT, 1/4" FLANGE, ZN	

HDS Pe Cage

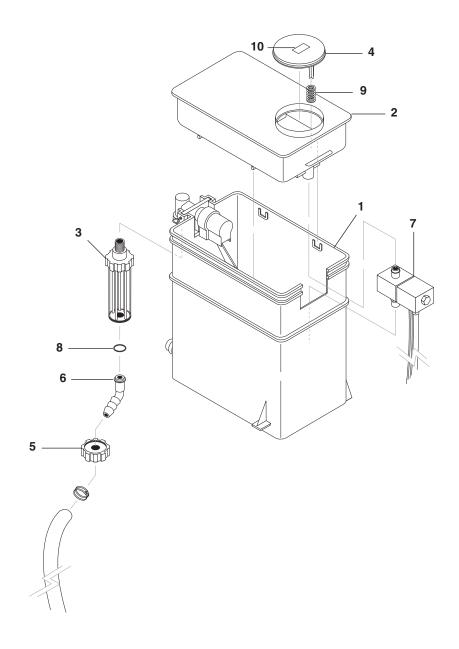
REF	PART NO.	QTY	DESCRIPTION	NOTES
81	8.751-057.0	1	CAP, 14" W/FUEL GAUGE, GAS, RED	
82	9.803-535.0	1	CAP, 14" W/FUEL GAUGE, GAS, BLACK	
83	9.802-832.0	2	BOLT, 5/16" X 2-3/4" WHIZ LOC	
84	5.363-360.0	2	COPPER DISK	
85	9.803-559.0	1	CLAMP,SCREW,9/16"W, 1-1/4"OD, SS	
86	9.802-260.0	60"	HOSE, 5/8" PUSH-ON	
87	9.803-519.0	1	PLATE, BELT GUARD	
88	9.803-506.0	1	GUARD, ENGINE PULLEY	
89	9.802-512.0	4	CABLE, TIE, 45"	
90	9.802-053.0	3	BUSHING, RUBBER, NITRITE	
91	9.803-531.0	2	ELBOW, 1/4" H X STD PIPE,90°	
92	9.802-054.0	1	ELBOW, FUEL TANK, ZINC	
93	9.803-277.0	4	SCREW, 5/16" x 1/2", WHIZ LOC FLANGE	

REF	PART NO.	QTY	DESCRIPTION	NOTES
94	9.804-016.0	1	FILTER SCREEN WASHER, GARDEN HOSE/ 30MESH	
95	9.802-813.0	4	WASHER, 5/16" LOCK	
96	8.718-618.0	4	BOLT, 5/16" X 3/4" NC GRADE 5	
97	8.758-329.0	2	LABEL, WARNING - EXPOSED PULLEYS	
98	8.758-328.0	1	LABEL, HOT - CALIENTE	
99	8.758-356.0	2	LABEL, RPM FACTORY SET	
100	9.802-764.0	2	SCREW, 10/32" X 3/4" HEX	
101	9.802-779.0	4	NUT, 3/8" ESNA	(1.575-615.0,1.575-617.0)
-	9.802-776.0	4	NUT, 5/16" ESNA	(1.575-616.0)
102	9.802-807.0	8	WASHER, 3/8" SAE, FLAT	(HONDA)
-	8.718-980.0	8	WASHER, 5/16" SAE, FLAT	(VANGUARD)
103	9.802-764.0	2	SCREW, 10/32" X 3/4" HEX	
104	8.911-537.0	1	RAIL, CAGE W/HOLES	

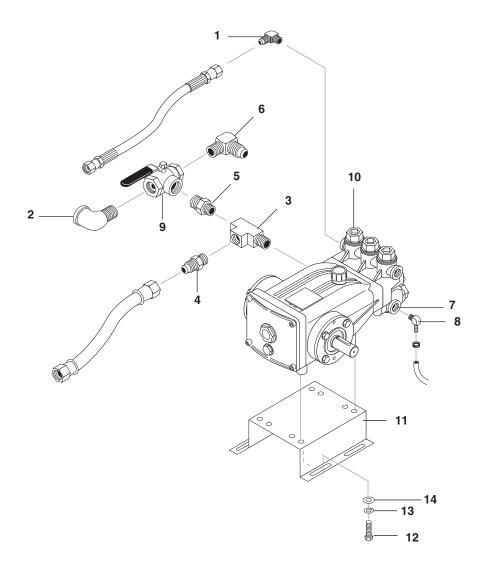


REF	PART NO.	QTY	DESCRIPTION	NOTES
1	9.803-512.0	1	BOX, ELECTRICAL	
2	9.803-513.0	1	COVER, ELECTRICAL BOX	
3	9.803-514.0	1	CONTROL PANEL	
4	8.758-637.0	1	LABEL CONTROL PANEL 12V HDS SKID	
5	9.802-251.0	96"	TUBE, 1/4" ID X 1/2" OD, CLEAR VINYL	
6	9.803-540.0	2	LIGHT, BLUE, 14V	
7	8.750-094.0	1	THERMOSTAT, ADJUSTABLE 302°F	
8	8.918-451.0	1	IGNITOR, BURNER, 12VDC	
9	6.647-519.0	2	WIRE, ELECTRODE	
-	8.716-376.0	2	TERMINAL RING, TONGUE	NOT SHOWN

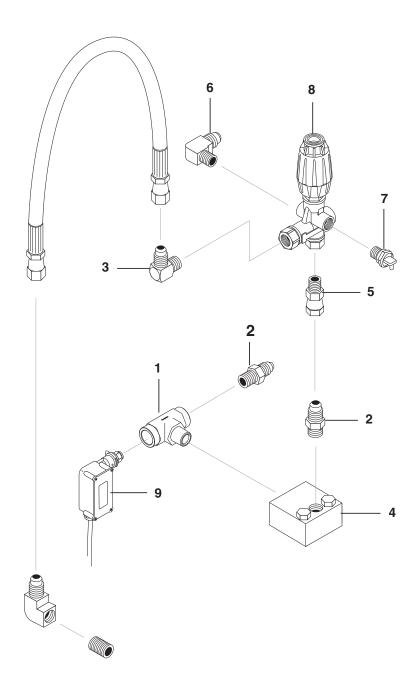
REF	PART NO.	QTY	DESCRIPTION	NOTES
10	8.716-395.0	1	TERMINAL STRIP, 12-CKT	
11	9.802-793.0	8	NUT, CAGE, 1/4" X 16 GAUGE	
12	6.633-412.0	1	GENERATOR, PULSE	
13	8.750-096.0	1	KNOB, THERMOSTAT 302°F	
14	8.712-190.0	1	BEZEL, THERMOSTAT	
15	8.718-779.0	2	SCREW, 4MM X 6MM	
16	9.803-606.0	2	SPACER, NYLON	
17	9.804-615.0	2	COVER, TERMINAL, RED	
18	8.758-491.0	1	LABEL, OPERATING/WARNING	
19	4.580-064.0	1	VALVE	
20	5.321-379.0	1	KNOB, METERING VALVE	
21	5.337-021.0	1	SPRING, PLATE, METERING VALVE	
22	8.716-598.0	7	STRAIN RELIEF, .1831 (.51 HOLE)	
23	9.802-515.0	1	STRAIN RELIEF, STRAIGHT, LQ TITE	
24	6.618-076.0	2	SOCKET, SPARK PLUG	NOT SHOWN
25	9.802-754.0	8	SCREW, 1/4" X 1/2" HH NC, WHIZ LOC	
26	9.802-749.0	2	SCREW, 8/32 X 3/4, BH SOC BLK	
27	9.802-695.0	5	NUT, 10/32" KEPS	
-	9.802-695.0	8	NUT, 10/32" KEPS	(1.575-615.0, 1.575-617.0)
28	9.802-785.0	3	NUT, 8/32, KEPS	
29	8.718-733.0	4	SCREW, 6-32" X 5/8", RH SLOT	
30	9.802-784.0	4	NUT, 6/32" HEX	
31	8.709-069.0	3	CLAMP, SCREW, #4	
32	8.707-058.0	1	STRAINER, 1/4" BRASS W/CHECK VALVE	
33	9.803-609.0	2	SCREW, 4MM X 12MM	
34	9.802-251.0	56"	TUBE, 1/4" ID X 1/2" OD, CLEAR VINYL	
35	9.802-759.0	3	SCREW, 10/32 X 1/2" BH SOC CS	(1.575-615.0)
-	9.802-759.0	1	SCREW, 10/32 X 1/2" BH SOC CS	(1.575-616.0)
-	9.802-759.0	4	SCREW, 10/32 X 1/2" BH SOC CS	(1.575-617.0)
36	9.803-678.0	1	GROMMET, RUBBER	
37	9.802-525.0	1	LOCKNUT, 1/2"	
38	5.332-028.0	1	SPRING	
39	9.800-034.0	1	CLEAR LEXAN	
40	8.758-336.0	1	LABEL ASSEMBLED IN USA OUTDOOR USE	
41	8.758-335.0	1	LABEL, MANUFACTURER'S CLEANING SOLUTION	
42	8.752-804.0	1	REGULATOR, 12 VDC	(1.575-615.0, 1.575-617.0)
-	9.802-530.0	1	RECTIFIER, BRIDGE	NOT SHOWN (1.575-616.0)
-	9.802-771.0	1	SCREW, 10/32 X 3/4, BH SOC CS	NOT SHOWN (1.575-616.0)
43	9.802-470.0	1	RELAY, 12V, 40 A	(1.575-615.0)
-	-	2	-	(1.575-617.0)
-	9.802-471.0	1	RELAY, 24V, 40A	(1.575-616.0)
44	8.718-812.0	1	SCREW, 10/32 X 3/4, BH SOC, SS	
45	8.718-858.0	1	NUT, 10/32, HEX	



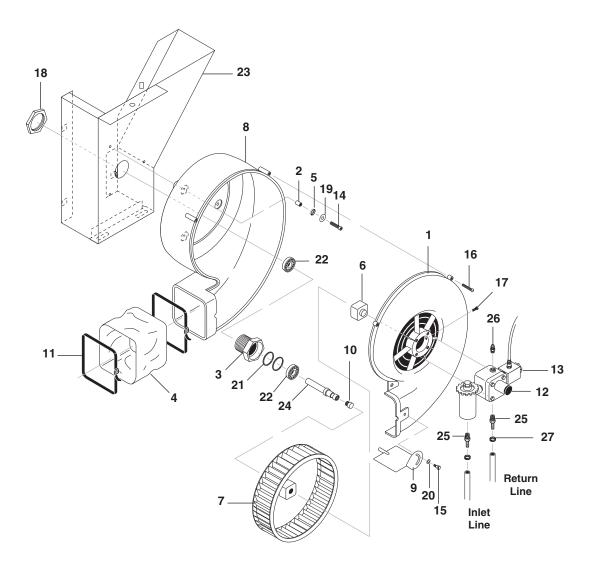
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	3.593-060.0	1	FLOAT TANK W/VALVE	
2	4.070-094.0	1	TANK, SCALE INHIBITOR	
3	4.730-127.0	1	FILTER, WATER	
4	5.063-226.0	1	LID, SCALE INHIBITOR TANK	
5	5.310-062.0	1	NUT, FLOAT TANK	
6	5.443-285.0	1	HOSE STEM, 45°	
7	6.686-025.0	1	VALVE, SOLENOID, DN3	
8	6.362-078.0	1	O-RING	
9	5.332-001.0	1	SPRING, SCALE INHIBITOR TANK	(USE SPRING ONLY IF NOT USING SCALE INHIBITOR)
10	8.758-555.0	1	LABEL, RM-110	



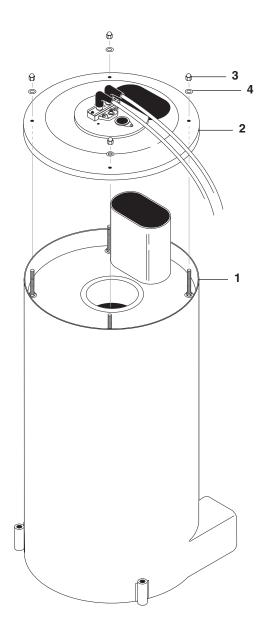
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	8.757-616.0	1	ELBOW STEEL 1/2 JIC (M) X 3/8 BSPP (M)	
2	8.757-658.0	1	ELBOW STREET BRASS 3/4	
3	8.757-257.0	1	TEE, STREET 1/2"	
4	8.757-200.0	1	ADAPTER BRASS 1/2 SAE (M) X 1/2 NPTF (M)	
5	8.757-504.0	1	NIPPLE, 3/4" X 1/2", BRASS	
6	8.757-503.0	1	ELBOW BRASS 3/4 SAE (M) X 3/4 NPTF (M)	
7	8.757-906.0	1	ADAPTER STEEL 1/2 BSPP(M) X 3/8 NPTF(F)	
8	8.757-644.0	1	HOSE BARB BRASS 1/4 X 3/8 NPTF (M) 90°	
9	9.803-558.0	1	VALVE, 3/4" BALL, BRASS, 3-WAY	
10	-	-	PUMP, PLEASE SEE SPECIFICATIONS PAGES	
11	9.803-503.0	1	RAIL, PUMP	
12	9.802-744.0	4	BOLT, 10MM X 20MM, ZINC	
13	8.718-961.0	4	WASHER, M10, SPLIT ZINC	
14	9.802-807.0	4	WASHER, 3/8" FLAT ZINC	
15	8.756-874.0	1	ADAPTER STEEL 1/2 NPTF(F) X 1/2 BSPP(M)	



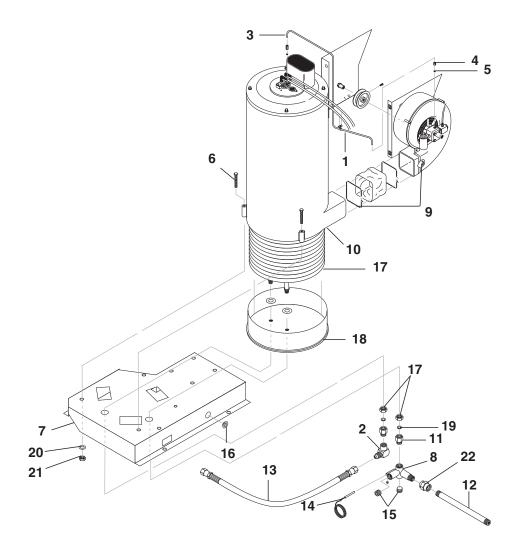
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	8.758-211.0	1	TEE STEEL BRANCH 3/8 NPTF	
2	8.757-655.0	2	ADAPTER STEEL 1/2 JIC (M) X 3/8 NPTF (M)	
3	8.757-509.0	1	ELBOW STEEL 1/2 SAE (M) X 3/8 NPTF (M)	
4	9.802-870.0	1	BLOCK, UNLOADER, 3/8" X 3/8" 1.25 STEEL	
5	8.757-656.0	1	SWIVEL STEEL 1/2 JIC (F) X 3/8 NPTF (M)	
6	8.757-262.0	1	ELBOW BRASS 1/2 SAE (M) X 3/8 NPTF (M)	
7	8.707-254.0	1	PUMP PROTECTOR, 3/8" PTP	
8	8.750-299.0	1	UNLOADER, VRT 3, 8 GPM@ 4500 PSI	
9	8.716-125.0	1	SWITCH, PRESSURE N/O, 3/8" NPT SS	



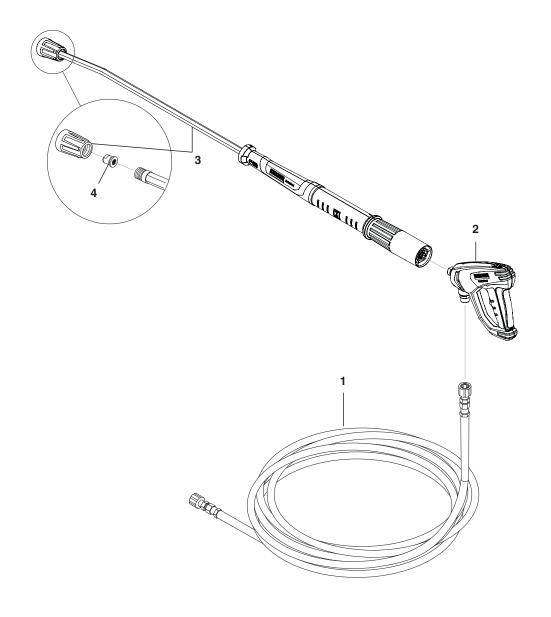
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	5.063-274.0	1	COVER	
2	5.110-306.0	3	SLEEVE	
3	5.112-602.0	1	BUSHING	
4	5.178-032.0	1	CLOTH COLLAR	
5	5.379-011.0	3	RING, RUBBER	
6	5.471-060.0	1	ELEMENT, COUPLING	
7	5.600-021.0	1	WHEEL, RUNNING	
8	5.605-143.0	1	HOUSING	
9	5.606-002.0	1	FLAP, AIR	
10	6.343-166.0	1	RING, TOLERANCE, D14 X 8	
11	6.388-608.0	2	TIE, CABLE, 8 X 55 TENSION BAND0	
12	6.472-925.0	1	PUMP, FUEL	
13	8.753-179.0	1	COIL, ASSY, FUEL PUMP, 12 VDC	
-	8.753-180.0	-	VALVE, SOLENOID	(REPLACEMENT ONLY)
14	7.303-041.0	3	SCREW, M5 X 20	
15	7.303-077.0	1	SCREW, SHEET METAL	
16	7.303-084.0	5	SCREW	
17	7.306-090.0	1	SCREW, M6 X 16	
18	7.310-100.0	1	NUT, KM8	
19	9.802-802.0	3	WASHER, 1/4", FLAT, SAE	
20	7.312-278.0	1	WASHER, 5.3	
21	7.343-231.0	2	CLIP, SPRING, 32 X 1.2	
22	7.401-115.0	2	BEARING, BALL, 6002-2R	
23	9.804-569.0	1	GUARD, BLOWER BELT	
24	9.803-247.0	1	SHAFT, BLOWER, KARCHER	
25	6.472-927.0	2	HOSE, STEM	
26	6.389-261.0	1	SCREW, UNION	
27	6.390-126.0	2	CLAMP, HOSE	



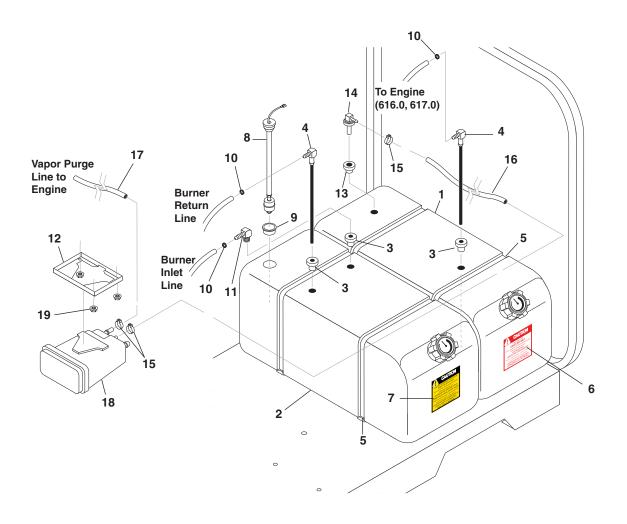
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	3.640-148.0	1	HEATER, FLOW	
2	4.654-280.0	1	COVER D.K.	
3	7.311-380.0	4	NUT, CAP, M 6	
4	7.312-167.0	4	WASHER, LOCK, A 6.4	
5	2.880-177.0	1	ELECTRODES, SPARE PARTS KIT	
6	8.717-329.0	1	NOZZLE, BURNER, 1.75 A 80° (1.575-615.0)	
-	8-717-347.0	1	NOZZLE, BURNER, 2.25 A 80° (1.575-616.0, 1.575-617.0)	



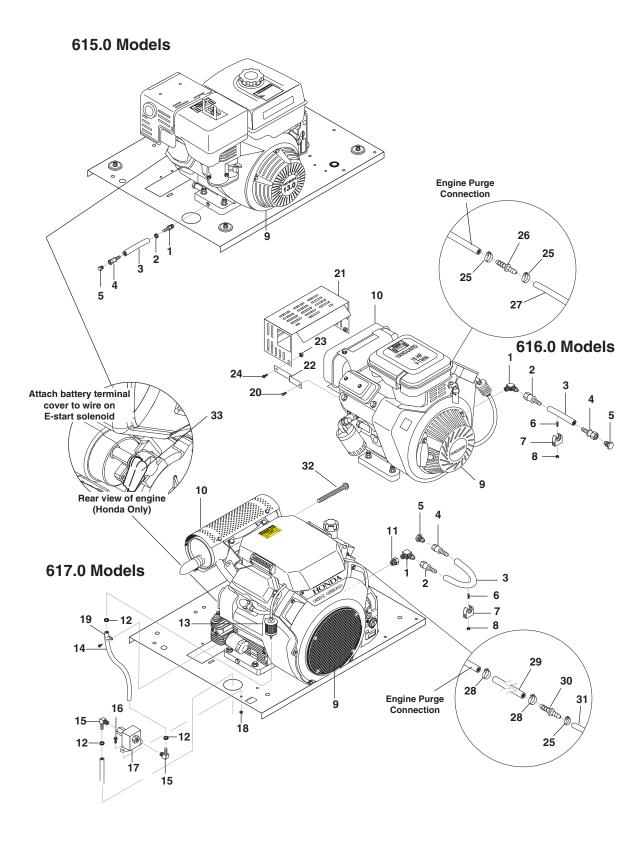
REF	PART NO.	QTY	DESCRIPTION	NOTES
1	6.647-527.0	1	BRACKET	
2	8.757-935.0	1	ADAPTER STEEL 1/2 JIC X 3/8 NPTF (F) 90°	
3	5.423-234.0	1	TUBING	
4	6-389-262.0	2	NUT, UNION, A 4-LL	
5	6.389-263.0	2	RING, CUTTING, D.4	
6	9.802-769.0	3	SCREW, 3/8" X 1-3/4" HH NC, WHIZ LOC	
7	9.803-500.0	1	BASE, COIL MOUNT	
8	8.757-240.0	1	MANIFOLD COIL OUTLET DISCHARGE W/SLNT	
9	9.803-520.0	1	ASSEMBLY, BLOWER, HDS SKID	
10	9.803-521.0	1	ASSEMBLY, COIL TANK, HDS SKID	
11	9.803-600.0	2	SWIVEL, M22 X 3/8" HEX MALE PIPE	
12	8.730-380.0	1	PIPE, DISCHARGE, 3/8" X 10"	
13	8.918-236.0	1	HOSE, INLET, HIGH PSI, 27"	
14	8.750-094.0	1	THERMOSTAT 302°F	
15	8.757-241.0	2	PLUG 3/8 NPTF ALLEN COUNTER SUNK W/SLNT	
16	9.802-103.0	1	BUSHING, SNAP	
17	4.680-081.0	1	HEATING COIL	
18	4.655-043.0	1	FLASH PAN W/INSULATION (BOTTOM)	
19	5.363-360.0	3	COPPER DISK	
20	9.802-817.0	3	WASHER, 3/8" X 1"	
21	9.802-779.0	2	NUT, 3/8" ESNA	
22	8.758-090.0	1	COUPLING STEEL 1/2 NPTF-F X 3/8 NPTF-F	



REF	PART NO.	QTY	DESCRIPTION	NOTES
1	6.110-029.0	1	HOSE ASSEMBLY TR ROTATABLE DN8 40MPA 15M	
2	4.118-005.0	1	EASY!FORCE ADVANCED	
3	4.112-000.0	1	JET PIPE TR 1050 MM	
4	2.113-022.0	1	POWER NOZZLE TR 25045	(1.575-615.0)
-	2.113-025.0	1	POWER NOZZLE TR 25055	(1.575-616.0)
-	2.113-026.0	1	POWER NOZZLE TR 25060	(1.575-617.0)



REF	PART NO.	QTY	DESCRIPTION	NOTES
1	8.752-916.0	1	TANK, GAS, 11 GALLON	(1.575-616.0, 1.575-617.0)
2	8.752-189.0	1	TANK, DIESEL, 11 GALLON	
3	9.802-053.0	3	BUSHING, RUBBER, NITRILE	(1.575-616.0, 1.575-617.0)
4	9.802-056.0	2	DIPTUBE, PLASTIC, 10.75" LONG	(1.575-616.0, 1.575-617.0)
5	9.802-512.0	2	CABLE, TIE, 48"	(1.575-615.0)
-	9.802-512.0	4	CABLE, TIE, 48"	(1.575-616.0, 1.575-617.0)
6	8.758-350.0	1	LABEL THIS TANK FOR GAS ONLY	(1.575-616.0, 1.575-617.0)
7	8.758-339.0	1	LABEL USE ONLY KEROSENE	
8	8.919-503.0	1	ASSY, FUEL LEVEL LOW SENSOR	
9	9.803-604.0	1	GROMMET, LOW LEVEL FUEL SWITCH	
10	6.390-126.0	3	CLAMP, HOSE	
11	9.802-054.0	1	ELBOW, 1/4" FUEL, ZINC	
12	8.920-497.0	1	BRKT, 1.2L CANISTER	
13	8.751-215.0	1	GROMMET, REMOTE VENT	
14	8.751-059.0	1	VENT, REMOTE ASSY	
15	8.753-066.0	4	CLAMP, 1 EAR 12.6-14.5MM #7	
16	9.802-254.0	24"	HOSE, 1/4" PUSH-ON	
17	9.802-254.0	36"	HOSE, 1/4" PUSH-ON	
18	8.751-381.0	1	CARBON CANISTER, 1.2L	
19	9.802-775.0	3	NUT, 1/4" FLANGE ZN	



REF	PART NO.	QTY	DESCRIPTION	NOTES
1	9.802-154.0	1	PLUG, PUSH-ON DRAIN, HONDA	(1.575-615.0)
-	8.757-509.0	1	ELBOW STEEL 1/2 SAE (M) X 3/8 NPTF (M)	(1.575-616.0, 1.575-617.0)
2	8.709-069.0	1	CLAMP, SCREW, #4	(1.575-615.0)
-	9.802-151.0	1	SWIVEL, 1/2" JIC FEM., PUSH-ON	(1.575-616.0, 1.575-617.0)
3	9.802-254.0	18"	HOSE, 1/4" PUSH-ON, FUEL LINE	(1.575-615.0)
-	9.802-259.0	16"	HOSE, 1/2" PUSH-ON	(1.575-616.0, 1.575-617.0)
4	9.802-153.0	1	SWIVEL, 1/4" JIC FEMALE, PUSH-ON	(1.575-615.0)
-	9.802-151.0	1	SWIVEL, 1/2" JIC FEM., PUSH-ON	(1.575-616.0, 1.575-617.0)
5	9.802-125.0	1	PLUG, 1/4" JIC	(1.575-615.0)
-	9.802-126.0	1	PLUG, 1/2" JIC, FLARE, 639F-8	(1.575-616.0, 1.575-617.0)
6	9.802-764.0	1	SCREW, 10/32" X 3/4", HEX WASH SL MACHINE BLACK	(1.575-616.0, 1.575-617.0)
7	9.802-203.0	1	CLAMP, 1/2" RO-CLIP, KLEINHUIS	(1.575-616.0, 1.575-617.0)
8	9.802-695.0	1	NUT, 10/32" KEPS	(1.575-616.0, 1.575-617.0)
9	8.750-579.0	1	ENGINE, HONDA,GX390UT2QNR2, (389 CC) E/S, 18 AMP	(1.575-615.0)
-	8.754-819.0	1	ENGINE, VANGUARD (570 CC)E/S, 20 AMP	(1.575-616.0)
-	8.752-149.0	1	ENGINE, HONDA, GX630R, NO THROTTLE 17 AMP	(1.575-617.0)
10	9.803-631.0	1	MUFFLER, EXHAUST, BRIGGS	(1.575-616.0)
-	8.750-497.0	1	MUFFLER, HONDA, GX630/GX670, (688 CC) RIGHT	(1.575-617.0)
-	8.739-597.0	2	S BOLT, FLANGE, M8 X 20	(1.575-617.0)
-	9.802-798.0	1	S SCREW, #10-1/2", TEK, HH, SS	(1.575-617.0)
11	8.750-737.0	1	ADAPTER, HONDA M20-1.5 X 3/8" FPT	
12	6.390-126.0	5	CLAMP, HOSE, .4654 ST	(1.575-617.0)
13	8.709-152.0	1	FILTER, FUEL DISPOSABLE	(1.575-617.0)
14	9.802-254.0	2 ft.	HOSE, 1/4" PUSH-ON, FUEL LINE	(1.575-617.0)
15	8.757-204.0	2	HOSE BARB, 1/4" BARB X 1/8" M-NPTF, 90°	(1.575-617.0)
16	9.802-753.0	2	SCREW, 1/4" X 3/4" HH NC, WHIZ LOC	
17	8.933-005.0	1	PUMP, 12V FUEL, FACET	(1.575-617.0)
18	9.802-775.0	2	NUT, 1/4" FLANGE, ZINC	(1.575-617.0)
19	9.802-204.0	1	CLAMP, HOSE	
20	9.802-830.0	4	SCREW, 1/4"-20 X 1/2", T/F CS ZN	
21	9.802-867.0	1	GUARD, MUFFLER, VANGUARD	
22	9.802-868.0	2	BRACE, VANGUARD MUFFLER BRACKET	
23	9.802-794.0	2	NUT, CAGE, 1/4" X 12 GAUGE	
24	9.802-754.0	-	SCREW, 1/4" X 1/2" HH NC, WHIZ LOC	
-	9.802-830.0	4	SCREW, 1/4"-20 X 1/2", T/F CS ZN	
25	8.753-066.0	3	CLAMP, 1 EAR 12.6-14.5MM #7	
26	8.753-269.0	1	REDUCER, CONNECTOR 1/4" X 3/16"	
27	9.802-254.0	36"	HOSE, PUSH-ON	
28	8.753-065.0	1	CLAMP, 1 EAR 15.7-18.5MM #10	
29	8.711-785.0	4"	HOSE, 3/8" PUSH-ON	
30	8.753-270.0	1	REDUCER, CONNECTOR 3/8" X 1/4"	
31	9.802-254.0	32"	HOSE, 1/4' PUSH-ON	
32	8.718-781.0	1	SCREW, PAN HEAD	
33	9.804-615.0	1	COVER, BATTERY TERMINAL, RED	

Specifications

Pump

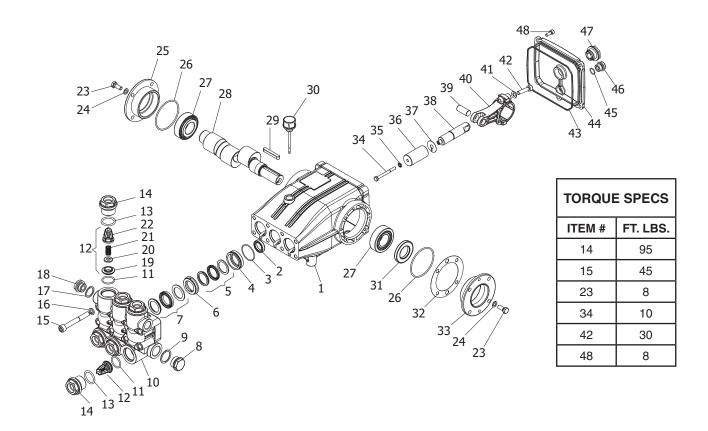
MODEL	PUMP MODEL#	PART #	UNLOADER	PULLY	PULLY PART #	BUSHING	BUSHING PART #
1.575-615.0*	KT4540	8.921-715.0	8.715-483.0	2AK94H	9.803-548.0	25MM	9.802-403.0
1.575-616.0	KT6036	8.921-717.0	8.715-483.0	2BK90H	8.715-593.0	25MM	9.802-403.0
1.575-617.0*	KT6036	8.921-717.0	8.715-483.0	2BK80H	8.715-390.0	25MM	9.802-403.0

Engine

MODEL	ENGINE	ENGINE PART #	ENGINE PULLY	PULLY PART #	BUSHING	BUSHING PART #	BELT SIZE	BELT PART#
1.575-615.0*	GX390 (389 CC)	8.750-579.0	3TB34	9.802-392.0	P2 x 1	9.802-404.0	AX38)	9.802-410.0
1.575-616.0	VAN (570 CC)	8.754-819.0	3TB34	9.802-392.0	P2 x 1	9.802-404.0	BX38	9.802-417.0
1.575-617.0*	GX630 (688 CC)	8.752-149.0	3TB34	9.802-392.0	P2 x 1	9.802-404.0	BX36	8.715-697.0

Blower

MODEL	BELT SIZE	BELT PART #	
1.575-615.0*	AX37	9.802-409.0	
1.575-616.0	AX37	9.802-409.0	
1.575-617.0*	AX37	9.802-409.0	

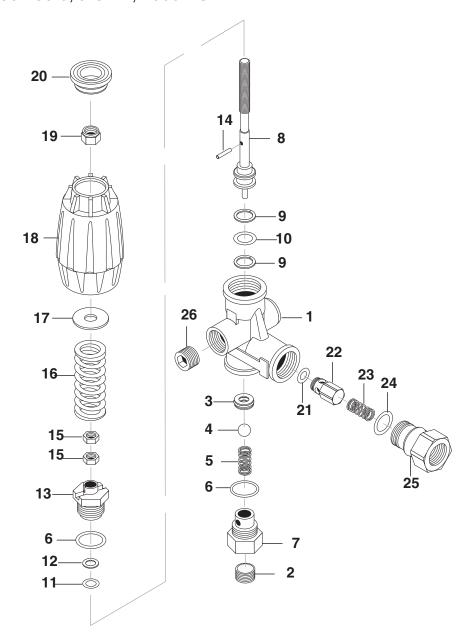


REF	PART NO.	QTY	DESCRIPTION	NOTES
1	8.752-825.0	1	CRANKCASE	
2*	-	3	PLUNGER OIL SEAL	SEE KITS TABLE
3*	-	3	O-RING Ø1.78 X 37.82	SEE KITS TABLE
4*	-	3	PRESSURE RING, 18MM	SEE KITS TABLE
5*	-	3	U-SEAL, 18MM	SEE KITS TABLE
6*	-	3	INTERMEDIATE RING, 18MM	SEE KITS TABLE
7*	-	3	U-SEAL, 18MM	SEE KITS TABLE
8	9.802-926.0	1	BRASS PLUG, G1/2	
9	9.803-199.0	1	COPPER WASHER 1/2	
10	8.753-816.0	1	MANIFOLD HOUSING	
11*	9.804-498.0	6	O-RING Ø2.62 X 25.1	SEE KITS TABLE
12*	-	6	VALVE ASSEMBLY	SEE KITS TABLE
13*	9.803-193.0	6	O-RING 3068	SEE KITS TABLE
14	9.802-928.0	6	VALVE PLUG	
15	8.753-817.0	8	MANIFOLD STUD BOLT	
16	9.802-890.0	8	LOCK WASHER	
17	8.719-008.0	1	COPPER WASHER 3/8	
18	8.707-262.0	1	BRASS PLUG 3/8	
19*	-	6	VALVE SEAT	SEE KITS TABLE
20*	-	6	VALVE PLATE	SEE KITS TABLE

REF	PART NO.	QTY	DESCRIPTION	NOTES
21*	-	6	VALVE SPRING	SEE KITS TABLE
22*	-	6	VALVE CAGE	SEE KITS TABLE
23	8.752-830.0	8	HEX SCREW	
24	9.802-884.0	8	WASHER	
25	9.803-182.0	1	CLOSED BEARING HOUSING	
26	9.803-186.0	2	O-RING Ø2.62 X 71.12	
27	9.803-160.0	2	ROLLER BEARING	
28	8.753-818.0	1	CRANKSHAFT Ø25 (4540)	
-	8.752-827.0	1	CRANKSHAFT Ø25 (6036)	
29	9.803-167.0	1	CRANKSHAFT KEY	
30	8.752-834.0	1	OIL DIP STICK	
31	9.803-139.0	1	CRANKSHAFT SEAL	
32	9.803-177.0	2	SHIM	
33	9.803-181.0	1	BEARING HOUSING	
34*	8.752-841.0	3	PLUNGER BOLT	SEE KITS TABLE
35*	8.752-820.0	3	BONDED SEAL	SEE KITS TABLE
36*	8.753-819.0	3	PLUNGER, 18MM	SEE KITS TABLE
37*	8.752-823.0	3	COPPER SPACER	SEE KITS TABLE
38	8.753-820.0	3	PLUNGER ROD	
39	8.752-822.0	3	CONNECTING ROD PIN	
40	8.752-821.0	3	CONNECTING ROD	
41	9.802-889.0	6	SPRING WASHER	
42	9.802-937.0	6	CONNECTING ROD SCREW	
43	9.803-194.0	1	O-RING Ø2.62 X 152.07	
44	8.752-826.0	1	CRANKCASE COVER	
45	9.803-906.0	1	O-RING Ø1.78 X 14.00	
46	8.707-262.0	1	BRASS PLUG G3/8	
47	9.803-202.0	1	SIGHT GLASS G3/4	
48	8.752-824.0	5	COVER SCREW	

KIT NUMBERS	8.753-821.0	8.753-822.0	8.753-823.0	8.753-824.0	9.752-835.0
KIT DESCRIPTION	Plunger Seals 18 mm	Seal Packing 18 mm	Plunger 18 mm	Complete Valve	Plunger Oil Seals
ITEM NUMBERS INCLUDED	3, 5, 7	3, 4, 5, 6, 7,	34, 35, 36, 37	11, 12, 13,	2
NUMBER OF CYLINDERS KIT WILL SERVICE	3	1	1	6	3

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



REF	PART NO.	QTY	DESCRIPTION	NOTES
25	8.750-713.0	1	OUTLET FITTING	
18	8.750-712.0	1	KNOB, UNLOADER	
-	8.750-709.0	-	REPAIR KIT, VRT3, 2320/3630 PSI	
-	8.750-710.0	-	REPAIR KIT, VRT3, 4500 PSI	
-	-	-	(KIT ITEMS: 3, 4, 6, 9-12, 21, 24)	

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 (Item19).
- *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.



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