EASY-KLEEN

PRESSURE SYSTEMS LTD.

MANUFACTURER OF HIGH PRESSURE CLEANING EQUIPMENT

Natural Gas (EZN) and Propane (EZP) Fired Water Heaters

OPERATING MANUAL

FOR QUICK REFERENCE, RECORD YOUR MACHINE DATE HERE:

Model_____ **Serial #**_____**Volts**_____

Phase_____**HP**_____**Date Shipped** _____

Easy-Kleen Pressure Systems

1-800-315-5533

This manual contains operational information that is specific for The EZN and EZP, Natural Gas and Propane fired hot water heaters.

Read the following instructions carefully before attempting to assemble, install, operate or service this pressure washer. Failure to comply with these instructions could result in personal injury and/or property damage.

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IMPORTANT SAFETY INFORMATION

The safe operation of our pressure washing systems is the FIRST priority of Easy-Kleen. This will only be achieved by following the operation and maintenance instructions as explained in this manual and all other enclosed manuals.

This manual contains essential information regarding the safety hazards, operations, and maintenance associated with this machine. The manual should always remain with the machine, including if it is resold.

ALL CAUTIONS AND SAFETY WARNINGS MUST BE FOLLOWED TO AVOID INJURY OR DAMAGE TO EQUIPMENT.

THIS EQUIPMENT IS TO BE USED ONLY BY TRAINED OPERATORS AND MUST ALWAYS BE ATTENDED DURING OPERATION.

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

1. Read the instructions in this manual carefully before attempting to assemble, install, operate or service this pressure washer. Failure to comply with the instructions could result in personal injury and/or property damage.

***WARNING*: Use protective eyewear and clothing when operating equipment in order to avoid personal injuries.**

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

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

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

2. Be thoroughly familiar with all controls and know how to stop the machine in the event of an emergency.

***WARNING*: Dangerous Gases**

3. If you smell gas, shut off the gas supply to the appliance, extinguish any open flame, and test all joints with a soap solution. If the odor persists, call your gas supplier immediately.

***WARNING*: Keep water spray away from electrical wiring.**

4. All electrically powered equipment must be grounded at all times to prevent fatal electric shocks. Do not spray water on or near electrical components. Do not touch electrical components while standing in water or when hands are wet. Always make sure machine is disconnected from power source before servicing.

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

5. Use equipment in a well-ventilated area to avoid carbon monoxide poisoning or death. This machine must never be connected to a Type B gas vent.

***WARNING*: Risk of injection or severe injury to persons. Keep clear of nozzle spray.**

6. High pressure spray can cause serious injuries. Never point pressurized spray at any person or animal. Handle the spray assembly with care.

***WARNING*: Risk of injury. Hot surfaces can cause burns.**

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

***WARNING*: Trigger gun kicks back. Hold with both hands.**

7. Hold firmly to the gun and wand during start up and operation of the machine. Do not attempt to make adjustments while the trigger gun is in operation.

8. Make sure all quick coupler fittings are properly secured before operating pressure washer.

***WARNING*: Risk of injury from falls when using ladder.**

9. Do not overreach or stand on anything unstable. Keep a good balance and make sure to keep a steady footing at all times.

***WARNING*: Protect from freezing.**

10`. It is important to keep your machine from freezing in order to keep it in its best working condition. Failure to protect your machine from freezing may cause damage to the machine and personal injuries may occur as a result.

***WARNING*: High Voltage**

11. For machines with an electric motor or 120v burner – THE MACHINE MUST BE ELECTRICALLY GROUNDED. Must be connected to a GFCI (Ground Fault Circuit Interrupter). All Service Must be done with the machine disconnected from the supply circuit.

12. Protect high pressure hoses from sharp objects and vehicles. Inspect condition of hoses prior to use, or serious injury could occur.

13. Do not pass acids or other caustic or abrasive fluids through the pump.

14. Do not attempt to operate this machine if fatigued or under the influence of alcohol, prescription medications, or drugs.

15. Some of the maintenance procedures involved in this machine require a certified technician (these steps are indicated throughout this manual). Do not attempt to perform these repairs if you are not qualified.

If you need further explanation of any of the information in this manual, suspend any activity involving the equipment and call our toll free number for assistance, 1-800-315-5533.

SPECIFICATIONS

MODEL #	MACHINE BTU/HR	BURNER RING # JETS	GAS PRESSURE W.C. (in.)	TYPE OF GAS	AIR RESTRICTION VENT OPENING @ SEA LEVEL	FLUE OUTLET DIAMETER
EZN195	195K	32	3.5	NG	NONE	8 in
EZP195	195K	32	11	LPG	NONE	8 in
EZN295	295K	32	3.5	NG	NONE	8 in
EZN295	295k	32	5	NG	NONE	8 in
EZP295	295K	32	11	LPG	1 + 1	8 in
EZN390	390K	44	3.1	NG	1 + 1/2	8 in
EZP390	390K	44	8	LPG	1+1	8 in
EZN510	510K	66	3.5	NG	NONE	10 in
EZP510	510K	66	11	LPG		10 in
EZN560	560K	33	3.7	NG	1+0	10 in
		+33				10 in
EZP560	560K	44	11.5	LPG	1+0	10 in
		+22				10 in
EZN720	720K	66	3.7	NG	1+1	10 in
EZP720	720K	66	11.3	LPG	1+1	10 in
EZN940	940k	88	3.5	NG	NONE	12 in
EZP940	940k	88	11.5	LPG	NONE	12 in

EASY-KLEEN MODULAR WATER HEATERS

INTRODUCTION

Thank you for selecting a quality EASY-KLEEN product. We are pleased to have you included among the many satisfied owners of an EASY-KLEEN SYSTEM.

Years of engineering have gone into the development of these fine products and only top quality components and materials are used throughout. Each machine is carefully tested and inspected before leaving our plant to ensure years of dependable service.

The rest is up to you. To continue to receive satisfactory performance, remember that this machine represents a substantial investment on your part, but properly cared for and maintained it will return this investment many times. As with all mechanical equipment, your machine requires proper installation, proper operation, and maintenance as outlined in this manual.

PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLING AND OPERATING MACHINE. EXAMINE THE MACHINE AND CRATE CAREFULLY FOR SHIPPING DAMAGE OR MISSING PARTS. REPORT PROMPTLY ANY SHORTAGES OR DAMAGE CLAIMS TO FREIGHT CARRIER.

Carefully review any additional manuals that have been included with your system and follow ALL ADDITIONAL OPERATING INSTRUCTIONS. They are specific for the quality components that have been used to manufacture your machine and are an integral part of the operating and maintenance procedures.

SCOPE

These instantaneous Coil-type Industrial Water Heaters are designed primarily for use in conjunction with existing cold water washing systems, either as a field upgrade to a hot water washer or as integral component of a modular Hot Water system. **NOTE:** These water heaters are restricted to industrial use only and are not to be used as portable water heaters.

OPERATING CHARACTERISTICS

MAXIMUM WORKING PRESSURE

The water heater coils are designed to operate safely at specific working pressures (see SPECIFICATIONS for the water pressure of your model). Each water heater is equipped with a safety pressure relief valve (unloader) which prevents operation above this pressure. If the high pressure system requires a lower relieving pressure for pump and motor protection, then the unloader/bypass valve on the pumping unit should be adjusted to desired pressure rating.

HIGH LIMIT TEMPERATURE CONTROL

The water heater is equipped with a "high limit control" thermostat present at 220 F. It shuts down the burner in the event of excessive outlet temperature caused by insufficient water flow through the heater coil. This control can be adjusted to desired temperature up to but not exceeding 220 F.

PRESSURE SWITCH

A pressure switch is installed on the high pressure pump to prevent burner operation in the absence of water flow. When heater is used with shutoff gun pumping systems, the pressure switch controls the burner in conjunction with operation of the trigger gun.

FLOW SWITCH

A flow switch is installed on the outlet of the high pressure pump and will shut off the pump and motor in the absence of water flow as well as turning it back on when flow is detected (by squeezing the wand trigger).

SAFETY RELIEF VALVE

WARNING: The safety relief valve on this unit has been factory set and is not to be adjusted. Tampering with relief valve may cause personal injury or equipment damage and will void the manufacturer warranty.

INSTALLATION INSTRUCTIONS

These water heaters are certified for installation on combustible flooring with clearance to combustible walls as follows: **6 inches at rear, 18 inches at end, and 24 inches at front.** Installations must be performed in accordance with CAN1 B149.1 and 2 Codes and UL 1766 requirements in Canada and/or prevailing state and local codes in the USA.

GAS SUPPLY

Have a qualified technician install the gas supply line to the machine.

NATURAL GAS

Run a minimum 1 inch IPS gas supply line to the heater reducing to 3/4 IPS at inlet of combination gas valve. Install a gas shutoff cock in supply line to provide for shutting off the gas for routine line maintenance or repairs. The gas supply pipe shall be a direct line from the gas burning equipment in the building.

PROPANE

For stationary installations, run a minimum 3/4 IPS supply line as above. For portable applications, a hose and regulator assembly is included with the optional portability kit. This includes a P01 tank connector, single stage regulator and an approved supply hose for connection to a combination gas valve.

Obtain one or more 100 lb. propane tank (s) and locate near the heater. Insert the male P01 connector on the regulator into the female receptacle located on the propane tank shutoff valve and tighten firmly (L.H. thread). Open tank valve and check for gas leaks using a dish soap solution. If the machine has been left for a long period, the gas line will need to be purged; therefore, several attempts may be needed to start burner. Release knob and wait 5 minutes before lighting pilot in the normal fashion.

Note: Continuous outdoor operation in freezing temperatures may require several tanks manifolded together to maintain consistent vaporization of the propane. Contact your local Lp gas distributor for multiple tank requirements and manifold assembly.

REQUIRED GAS MANIFOLD PRESSURE

See SPECIFICATIONS chart on page 6 for the requirements of your model.

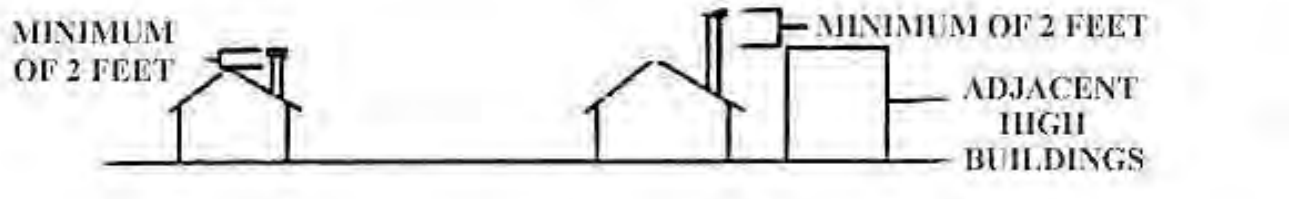
Pressure tap located on automatic gas valve.

Certified for installation at 0 to 4500 Ft. altitude. Installations at over 4500 Ft. and up to 6000 Ft. require a 4% deration of input rating, achieved by a slight reduction of gas pressure regulator setting.

VENTING REQUIREMENTS

STATIONARY INSTALLATIONS

A draft diverter must be attached to the flue hood outlet. Use same size vent as draft hood outlet and avoid short turns. Horizontal runs are not recommended. Never use a vent pipe smaller than the draft hood. If total run is more than 25', use larger size chimney. A 90 degree elbow is equivalent to a run of 20 feet. OBSERVE CAN1 B49.1 and 2 installation code requirements. IMPORTANT: All venting must be in accordance with applicable federal and state laws, and local ordinances. Consult local heating contractors.



CAUTION: If the heater is left unused for extended periods during sub-zero weather, a column of freezing air will build up in the venting system. If the building has a negative pressure condition, some of the freezing air will be drawn over the draft hood, spilling onto the heating coil which will eventually cause it to freeze and rupture. Have an installer ensure that correct draft conditions are maintained to prevent this costly occurrence.

LOCATED IN CONFINED SPACE

The confined space should have 2 permanent openings: one near the top and one near the bottom of the enclosed area. The openings need to be a minimum of one square inch per 1000 BTU's of the total input rating of all units in the enclosed area. The openings shall grant free access to the interior with sufficient passage from the outside. Consult a certified gas installer on location and installation.

WARNING: If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury, or loss of life. Do not tamper with factory installed controls.

PORTABLE PROPANE APPLICATIONS

An optional rain cap can be furnished to the flue outlet.

FREE AIR FOR COMBUSTION AND VENTING

If the unit is installed in an equipment room or other enclosure, care must be taken to supply sufficient free air for combustion and ventilation. Observe CAN1 B49.1 and 2 Installation Code Requirements. Care should be taken to keep the base of the unit clear of trash or any object that could interfere with combustion air to the burner. The installer will know how and where to place a supply air duct, ensuring that the opening will not promote drafts that may blow out the pilot. Keep area around machine clear to ensure air can get to the burner.

COMBUSTION AIR SUPPLY

Natural Gas or Propane is consumed; therefore, air is required for combustion, for draft hood dilution, and for ventilation.

BASIC CONTROLS

The water heaters are equipped with automatic gas valves that have an electronic control with an ignitor and a thermostat. A high temperature limit protects the system against excessive outlet water temperature. A pressure switch prevents burner operation without water flow. A burner "On-Off" switch is provided for manual control.

OPERATING INSTRUCTIONS

TO OPERATE MAIN BURNER

Be sure water is flowing through water heater coil before turning on burner switch. Start the pumping unit involved until a steady stream of water is flowing from the spray gun.

Turn burner switch to “On” position. Burner will ignite and remain in operation as long as there is sufficient water flow to satisfy the pressure switch and temperature limit control. To shut off main burner, turn burner switch to “Off”. For complete shutdown of the water heater, turn knob on combination gas valve to “Off” position. Should the pilot outage occur, turn automatic gas valve to “Off”. Wait 5 minutes to clear combustion chamber of accumulated gas and retry.

CONDENSATION FROM COIL

When cold water is being pumped through the heater coil and the burner is firing, condensation may form at times on the coil and drip down the burner compartment. This can be particularly noticeable on cold, humid days giving the false appearance of a leaking coil. A leaking coil is identified by a continuously cycling pump. With the wand trigger off, the pressure gauge should read 0 with no flow.

TO CHECK HEATER COILS FOR LEAKS

Start the pumping unit and allow it to run for a few minutes with the burner “Off”. Check the burner compartment with a trouble light or flash light. If no leaks are visible, this will confirm that occasional water dripping from the coil is due to condensation of the flue gases, when the burner is firing.

GENERAL MAINTENANCE AND CARE

WINTERIZATION

If the water heater is likely to be exposed to freezing weather, then it should be winterized with anti-freeze. Circulation of the anti-freeze solution through the coil by means of the pump is the most fail-safe method.

WATER CONDITION

Use a softener on your water system if local water is known to be high is mineral content. The advantages of soft water are very beneficial. Prevents scale buildup in heater coil, cleans better with considerably less detergent, prevents streaking on painted surfaces and glass when rinsing.

BURNER MAINTENANCE

WARNING: Repair of the burner is to be done by authorized and trained burner professionals only.

Due to periodic condensation dripping down onto the burner a scale build up may eventually occur in the burner jet orifices.

BURNER REMOVAL

Shut off the gas supply line to the water heater. Disconnect ¾ pipe union in burner valve train. Remove the two burner retaining nuts. Turn gas cock knob on combination gas valve to "Off" position. Remove Boiler Assembly from frame.

TO CLEAN BURNER JETS

Select proper size drill for type of gas involved (see SPECIFICATIONS). Hand turn jet drill to clean burner. Air blow scale from around the burner jets.

CAUTION: Ensure jet orifices are not changed, as this will change efficiency and safe operation of heater.

DESCALING HEATER COIL

If heater coils develop excessive scale buildup they should be acidized to remove the scale. Excessive scale in heater coils will reduce efficiency of the unit and affect recovery capacity.

DESCALING PROCEDURE

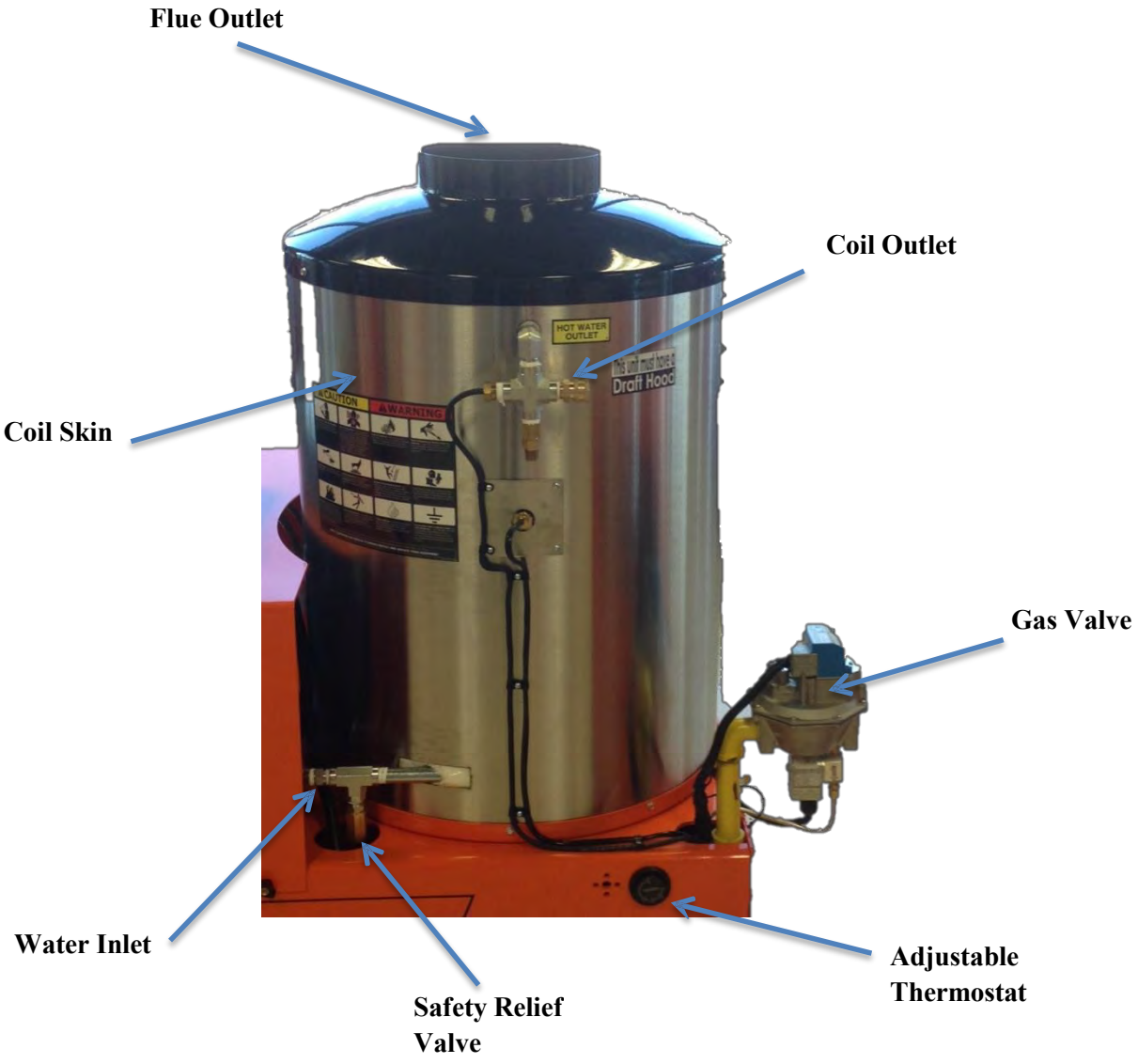
WARNING: Coil Descaling is to be done by qualified personnel only.

The best way to acidize the coil is with a circulation pump capable of handling acids:

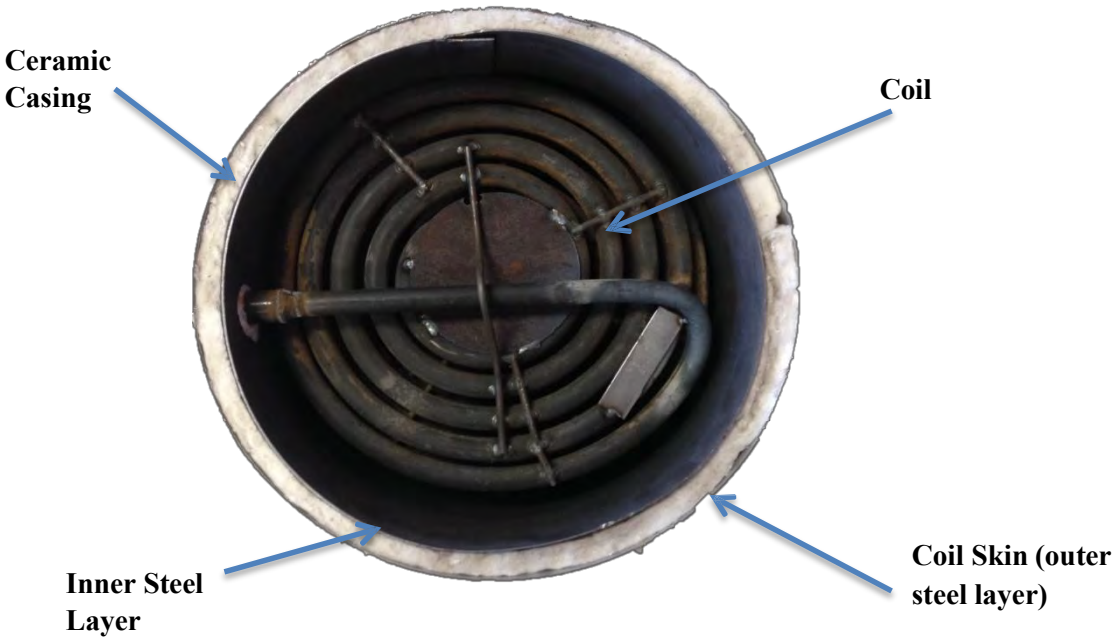
1. Fill a plastic container with a suitable acid diluted with water to desired strength.

2. Connect the discharge from the circulating pump to the hot water outlet on the water heater with a suitable hose. Connect the inlet of the circulating pump to the acid container with suction hose from the pump module and use it as a return hose to the acid container. As the acid dissolves the scale it becomes neutralized, so about every five minutes add more acid to the container until all the scale has been removed from the coil. Flush out coil thoroughly with water after descaling.

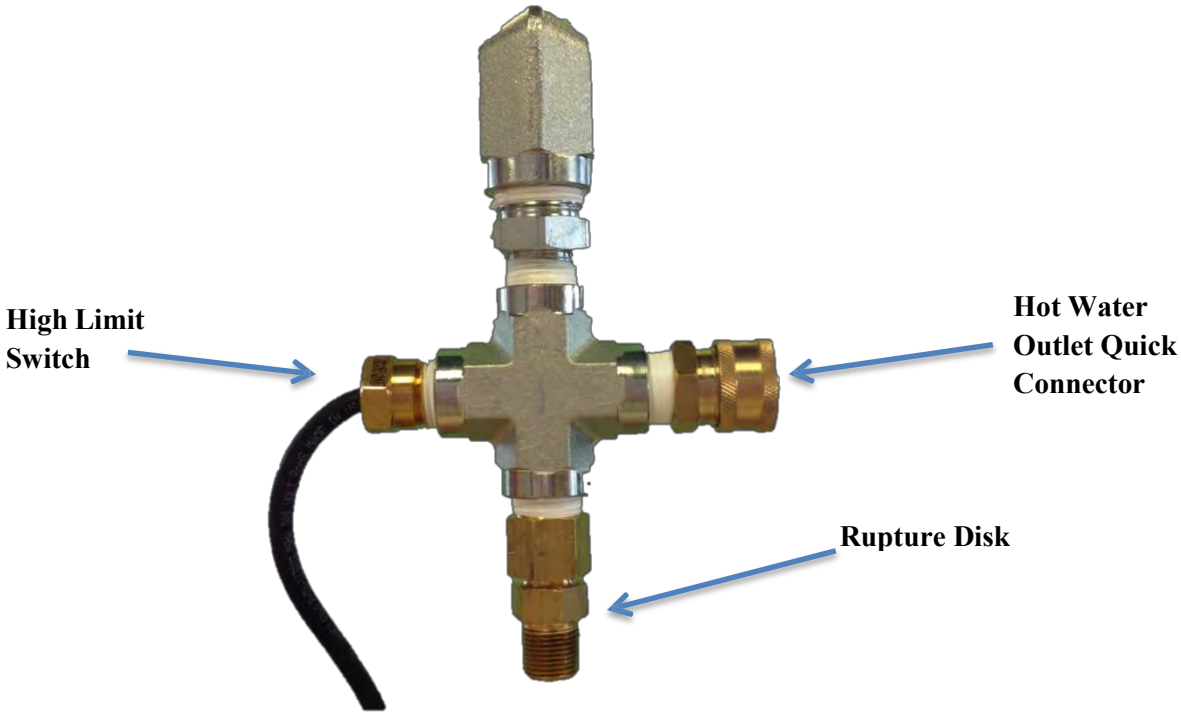
COMPONENT IDENTIFICATION



Hot Water Tank Interior (Top Cover Removed):



Coil Outlet (zoomed in view):



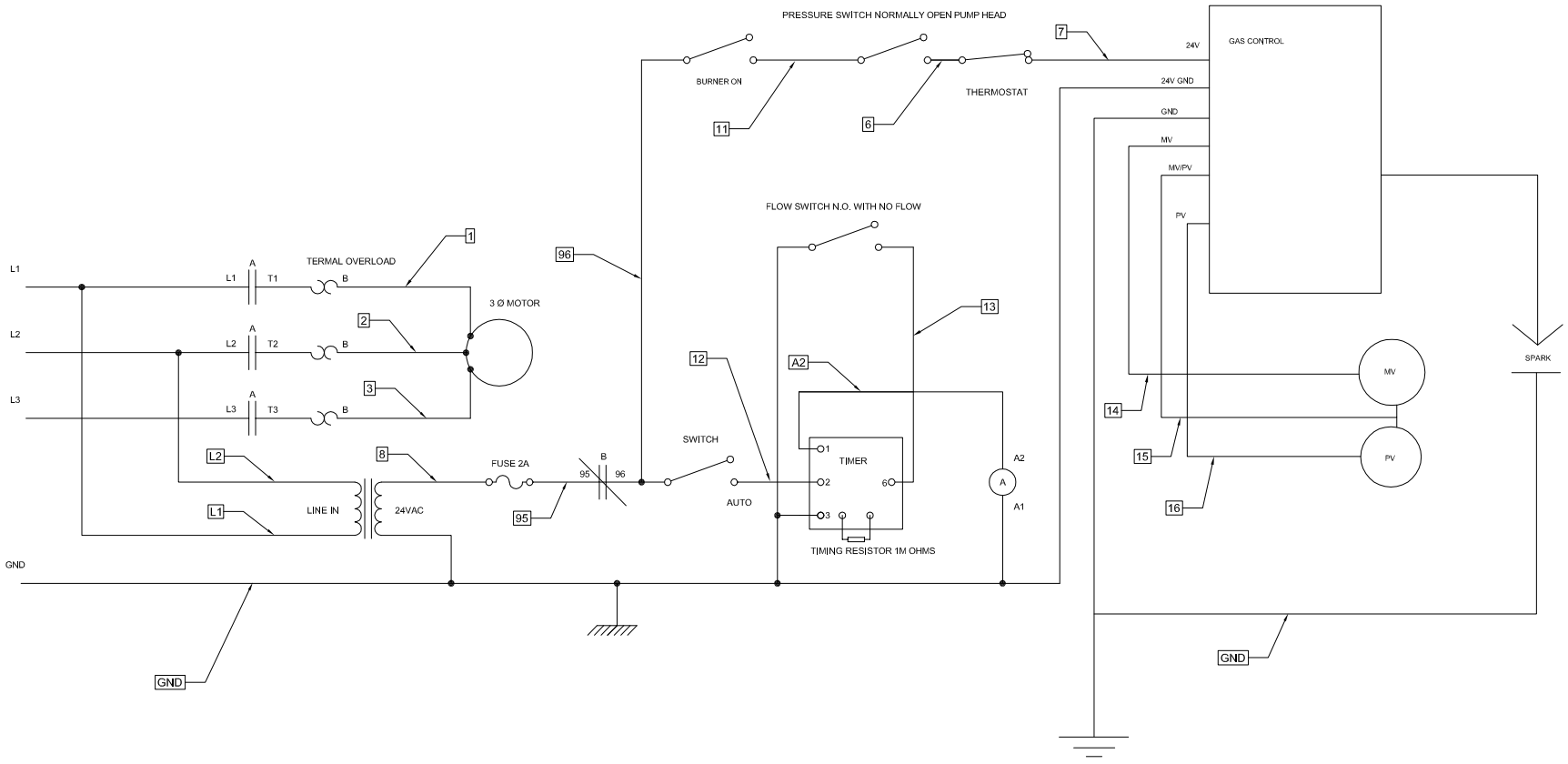
EASY-KLEEN PRESSURE SYSTEMS LTD.

TROUBLE SHOOTING GUIDE - BURNER SYSTEM

Problem	Cause	Remedy
1. Pilot Does Not Light	a. Gas leak in pilot feed tube	a. Check all Fittings with soap solution.
	b. Low service supply pressure	b. Ensure that gas supply meets the required pressure for your model indicated on the SPECIFICATIONS chart (page 6). Check gas supplier if not within range.
	c. Bad Electrical Ground	d. Check ground connection to pilot bracket.
2. Nuisance Pilot Outage	a. Check causes 1a, 1b, 1c, and 2b	
	b. Inadequate gas supply pipe size to machine	b. If gas regulator has to be adjusted to maximum pressure to obtain desired water temperature, this can result in pilot gas pressure to dip extremely low on burner startup. Also, excessive pressure can surge through on burner shutdown. Check 1b at burner manifold while firing.
3. No Flame at Burner	a. Manual valve on gas supply line closed	a. Open valve.
	b. Pilot not igniting	b. Light Pilot.
4. Burner Fails to Start	a. Check for loose electrical connections	a. Tighten electrical connections.
	b. Pressure switch not operating	b. Repair or replace flow switch.
	c. Limit control inoperative	c. Replace high limit control.
	d. Automatic valve inoperative	d. Replace automatic gas valve.

CIRCUIT DIAGRAM

AUTO START STOP 3 PHASE 460/575V AC GAS FIRED



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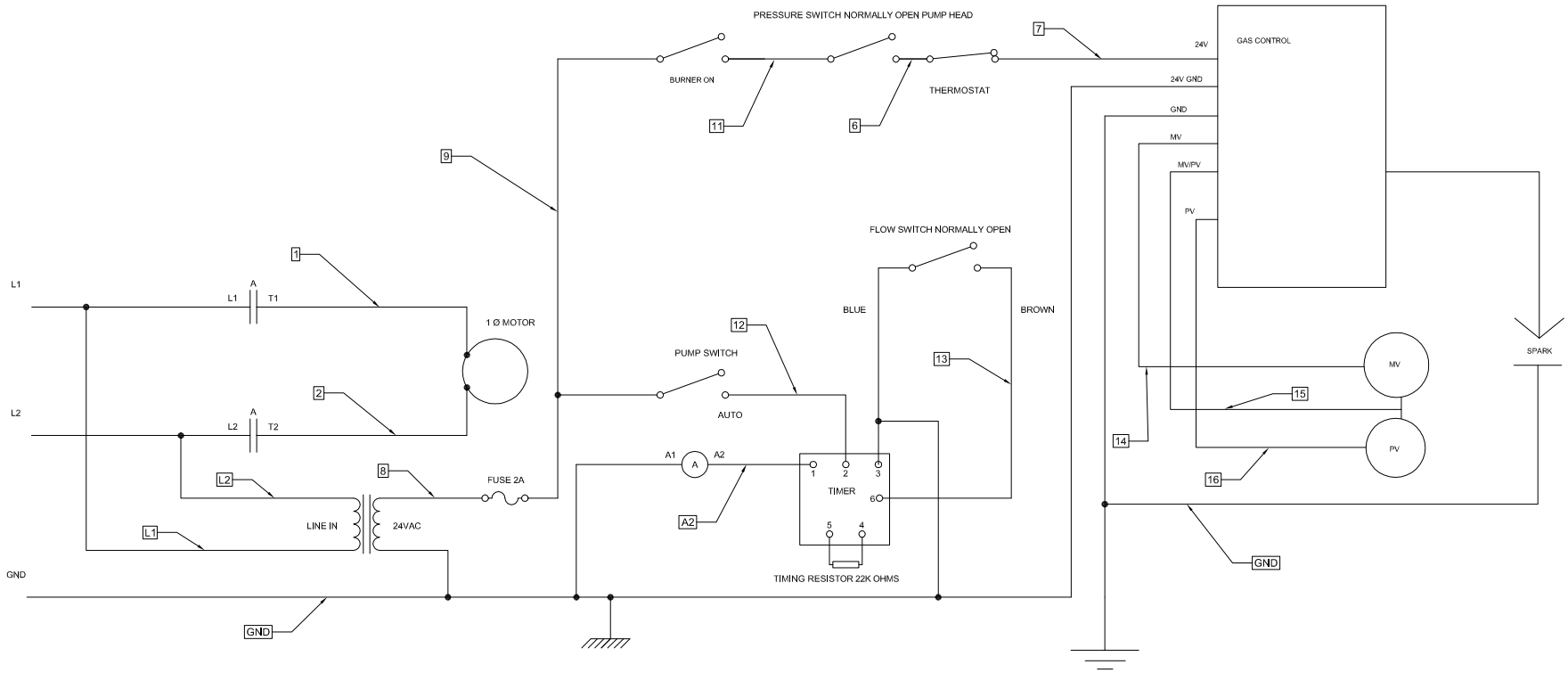
CIRCUIT DIAGRAM

AUTO START STOP SINGLE PHASE 120V/240V AC GAS FIRED



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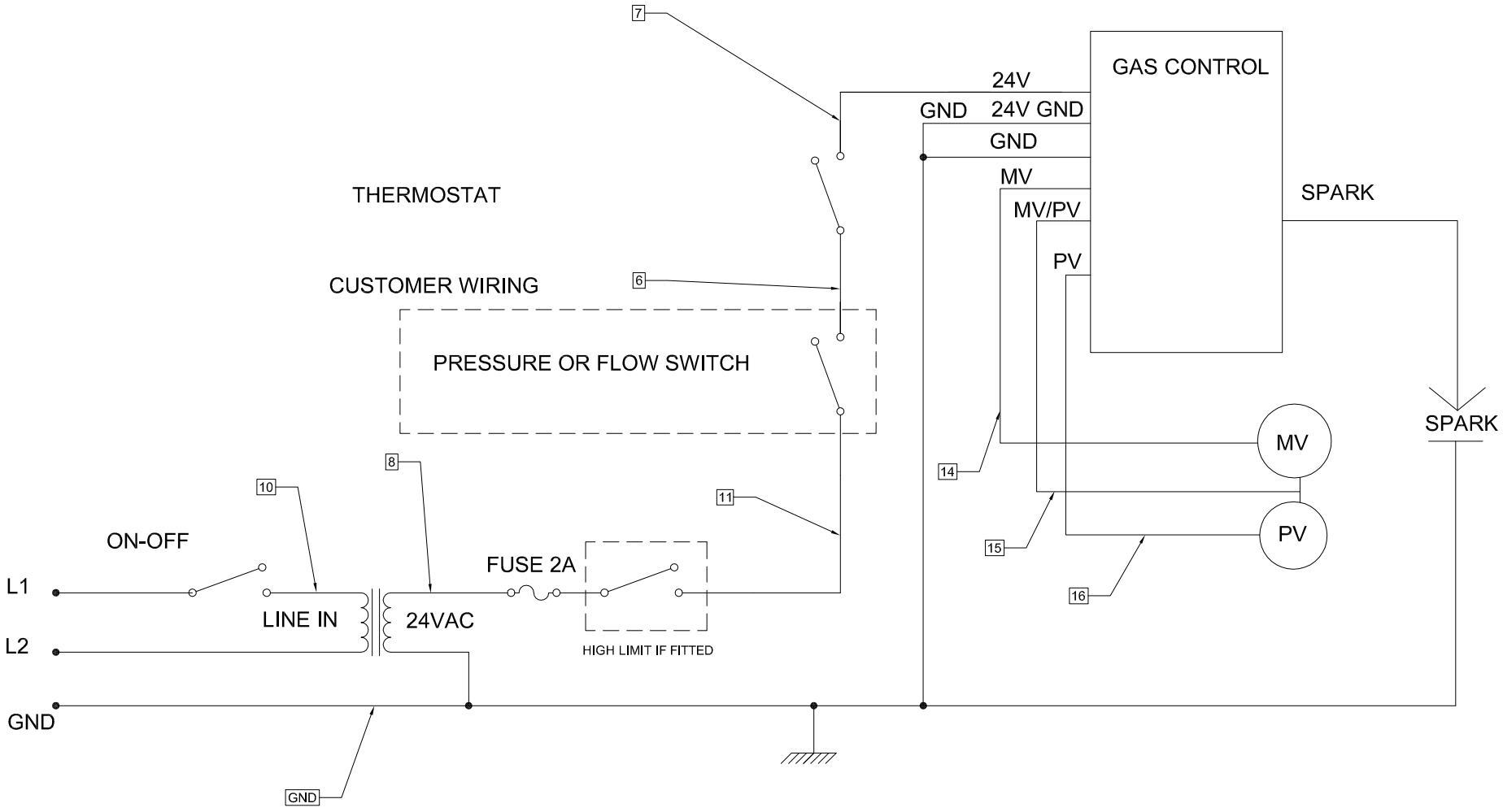
CIRCUIT DIAGRAM

120V/240V AC GAS FIRED HEATER



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EASY-KLEEN
PRESSURE SYSTEMS LTD.
MANUFACTURER OF HIGH PRESSURE CLEANING EQUIPMENT

MANUFACTURER'S WARRANTY

The manufacturer warrants all original equipment of the manufacturer to be free from defects in material and workmanship as follows:

Pump Head	10 years
Pump Crankcase	5 years
Internal Pump Parts	90 days
Heating Coil	5 years, 1 prorated
Honda Engine* Kohler Engine* Others	3 years, 1 year
Electric Motor*	1 year
Frame and Body Materials	Lifetime
Burner Assemblies	1 year
Wheels and Castors	90 days
Accessories, Unloader, Safety Valves	90 days
Hoses, Fittings, O'Ring, and Elastomers	90 days
Pressure Gauges	90 days

Within the periods stated above and at the discretion and approval of Easy-Kleen, if there is shown to be a defect in material or workmanship, the defective parts will be repaired or replaced at the manufacturers place of business or an original manufacturers repair depot when returned PREPAID. This warranty will not cover labor if warranty work is conducted at the customer's place of business. Road service will be charged at the normal rate in these situations. Damage resulting from freezing, accident, neglect, tampering, abuse, alteration, or improper installation and operation will automatically void this warranty.

All labor repairs are to have an Easy-Kleen pre-authorized repair number (PARN). In order to receive a PARN, please email a copy of your invoice to our service department and make sure to clearly indicate the date of purchase and the serial number of the machine. A pre-determined service time will then be appointed to you. If new parts are needed, they will be invoiced to you as normal. Defective parts are to be sent to us prepaid for warranty and consideration. If a part is found to be defective, a credit will be issued to cover the costs of parts and shipping.

Note: This warranty will not extend to consequential damage or liability that occurs as a result of original defect.

*** Due to original equipment manufacturer's requirements, Easy-Kleen is not permitted to perform warranty repairs or claims for electrical motors, gas, or, diesel engines. If you require warranty information for these please call our service department and they will put you in touch with your local warranty representative.**

If you have any questions or comments regarding this warranty please call 1-800-315-5533.

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