HARSCO INDUSTRIAL
Patterson-Kelley

DURATION™ Water Heating System

For installation with a MACH® Condensing Boiler

Model #:_____

Serial #_____

Start-Up Date: _____

Harsco Industrial, Patterson-Kelley
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East Stroudsburg, PA 18301
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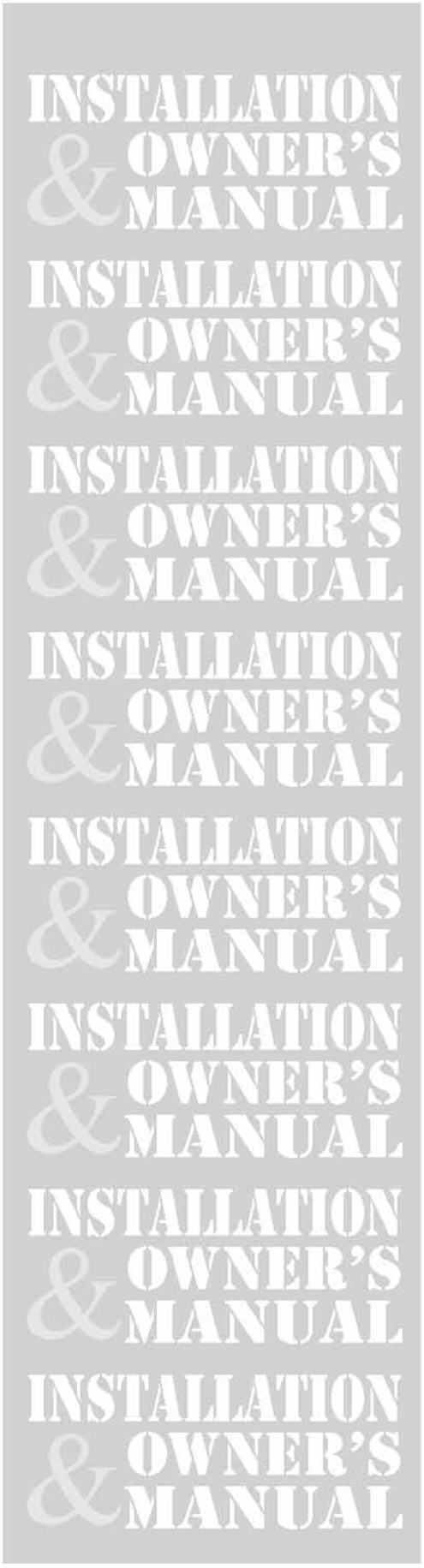


FOR BOILER INSTALLATION INSTRUCTIONS, REFER TO THE APPROPRIATE MACH® GAS-FIRED BOILER INSTALLATION & OWNERS MANUAL.

This manual is intended as a supplement to the MACH® Gas-Fired Boiler Installation & Owner's manual. All appropriate safety and technical information from the MACH® manual should be followed in detail.

1.0 INTRODUCTION

This manual covers installation, operation, and maintenance of the DURATION™ Condensing Water Heating System (CWHS). While details may differ slightly, basic operation is the same for all models. The DURATION™ CWHS is built to operate using the MACH® condensing boiler as the heating source for heating the domestic hot water supply. Water flows from the boiler to one side of the heat exchanger and back to the boiler in a closed loop heating system. The domestic hot water supply is heated during circulation through the other side of the heat exchanger. The sizing of the DURATION™ CWHS allows the boiler to operate in a high efficiency condensing mode. The high-quality materials and thoroughly tested system should provide years of trouble-free service if the instructions in this manual are followed carefully.

The DURATION™ CWHS is only a part of the complete hot water supply system. The DURATION™ CWHS may be fully operational and yet may not deliver hot water as desired because of poor circulation, improper control settings, heat source failure, or other operating conditions. Additional equipment such as temperature sensors, pumps, flow switches, valves, and other components will be required for satisfactory operation of any system. Harsco Industrial, Patterson-Kelley cannot be responsible for the design or operation of such systems and a qualified engineer or contractor must be consulted.

2.0 SAFETY

⚠ WARNING It is **essential** to read, understand, and follow the recommendations of this manual before installing, operating, or servicing this equipment. Failure to do so could result in exposure to hazardous electrical voltages and may result in serious injury, death, and/or property damage.

⚠ CAUTION Installation and service must be performed by a qualified and knowledgeable installer or service agency.

2.1 GENERAL

The DURATION™ Condensing Water Heating System **must** be:

- Installed, operated, and serviced by qualified, properly trained personnel in accordance with instructions contained in this manual and the manual for the accompanying MACH® Gas-Fired Boiler.
- Installed by qualified personnel in accordance with designs prepared by qualified facility engineers including: structural, mechanical, electrical, and other applicable disciplines.
- Operated and serviced in accordance with a comprehensive safety program determined and established **by the customer**. Do not attempt to operate or service until such a program has been established.

NOTICE! Each safety device must be maintained and checked per the recommended schedule; refer to Section 4 of this manual.

2.2 TRAINING

It is **essential** to read, understand, and follow the recommendations of this manual before installing, operating, or servicing this equipment. Failure to do so could result in property damage, or serious injury. Proper training is the best protection against accidents. Operating and service personnel must be thoroughly familiar with the basic construction and operation of the DURATION™ CWHS, and all applicable safety precautions. If any of the provisions of this manual are not fully and completely understood, **contact the Harsco Industrial, Patterson-Kelley technical service department toll-free at (877) 728-5351 for assistance.** Please have the reference number (Cxxxxxx) of the unit available.

2.3 SAFETY FEATURES

It is the responsibility of the customer to maintain the safety features, such as: guards, safety labels, safety controls, interlocks, lockout devices, etc., in place and operable.

2.4 SAFETY LABELS

The following words may be used in this manual to denote the degree of seriousness of the individual hazards.

⚠ DANGER indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury. This signal word is to be limited to the most extreme situations.

⚠ WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

⚠ CAUTION indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE/NOTE - NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol is not used with this signal word.

The safety labels shown below are affixed to the DURATION™ CWHS and dual language labels may also be affixed to the boiler. Although the labels are of high quality, they may become dislodged or unreadable over time. Contact Harsco Industrial, Patterson-Kelley for replacement labels.

2.5 SAFETY PRECAUTIONS

Provide a suitable location for the DURATION™ CWHS, away from normal personnel traffic. There should be adequate working space, proper ventilation and lighting. The structure should be sufficiently strong and rigid to support the weight of the DURATION™ CWHS, piping and accessories.

⚠ CAUTION **Proper lockout/tagout procedures must be employed whenever this unit is serviced.**

2.5.1 Electrical Hazards

- Shock hazard! Properly lockout/tagout the electrical service and all other energy sources before working on or near the DURATION™ CWHS.
- Shock hazard! DURATION™ CWHS is not rated for wash-down service.
- Shock hazard! This unit uses 230 VAC power.

2.5.2 Burn Hazard

- Burn hazard! Pipes, vents, and boiler components could be hot. Do not touch uninsulated piping during operation or immediately after shutdown of the boiler.
- Burn hazard! Hot fluids. Use caution when servicing or draining the DURATION™ CWHS.

2.5.3 Crush Hazards

- Lifting hazards! Use properly rated lifting equipment to lift and position the DURATION™ CWHS. The load is unbalanced. Test balance before lifting. Do not allow personnel beneath the lifted load. Refer to approximate weights in the table to the right:
- Bump hazard from overhead ductwork and piping. Install components with adequate vertical clearance.

DURATION™ CWHS Sizes	Weight in Pounds
450,000 Btu/H	530
1,050,000 Btu/H	600
1,500,000 Btu/H	620
2,000,000 Btu/H	650

2.5.4 Pressure Hazards

- Pressure hazard! Hot fluids. Make sure isolation valves are closed before servicing the DURATION™ CWHS.

2.5.5 General Hazards

- Tripping hazard! Do not install piping on floor surfaces. Maintain clear path around the DURATION™ CWHS.
- Slip and fall hazard! Use drip pan to catch water while draining the DURATION™ CWHS. Maintain dry floor surfaces.

3.0 INSTALLATION

3.1 RECEIVING AND STORAGE

3.1.1 Initial Inspection

Upon receiving the DURATION™ CWHS, inspect it for signs of shipping damage. Since some damage may be hidden, we recommend unpacking and inspecting the DURATION™ CWHS, before signing the receiving documents.

Verify that the total number of pieces shown on the packing slip agrees with those actually received.

NOTICE! Note any damage, suspected potential damage, or shortage of materials on the freight bill and immediately notify the carrier. File all claims for shortage or damage with the carrier. Claims for hidden damages must be filed with your carrier within 7 days.

3.1.2 Storage Prior to Installation

If the DURATION™ CWHS is not installed immediately, it must be stored in a location adequately protected from the weather, preferably indoors. If this is not possible, then it should remain in the shipping container protected by a waterproof covering.

NOTICE! Controls and other equipment that are damaged or fail due to weather exposure are not covered by warranty.

3.2 PLACEMENT

Provide a firm, level foundation, preferably of concrete.

The boiler and DURATION™ CWHS must be level to function properly. To assist in mounting the DURATION™ CWHS, four holes are provided in the base. They are sized for 5/8" mounting hardware. For seismic requirements contact your local Harsco Industrial, Patterson-Kelley representative.

3.2.1 Electrical Connections

NOTICE! Electrical connections should be made only by a qualified electrician

The DURATION™ CWHS requires 208-240 VAC, single phase, 60 hertz power, with a dedicated neutral and ground as labeled. The voltage from L1 or L2 to neutral must be approximately 115 VAC. There must

be less than 1.0 V from neutral to ground. The DURATION™ CWHS electrical supply circuit requires less than 15 amps for all sizes.

An external electrical disconnect with adequate overload protection is required. The DURATION™ CWHS must be grounded in accordance with local codes or in the absence of such requirements, in the U.S. with National Electrical Codes, ANSI/NFPA No. 70 latest edition and in Canada to the current Canadian Electrical Code, Part I, CSA C22.1.

NOTICE! A dedicated earth ground (green wire) is required. Do not ground through the conduit. It is also important that proper polarity be maintained.

All field wiring connections are in the control panel at the bottom of the terminal strip. The wiring diagram is affixed to the interior of the panel and is also shown in the section 6.1.1 and 6.1.2 of this manual.

3.2.2 Additional Electrical Connections

1. The DURATION™ CWHS must be connected to the MACH® boiler DHW pump output (TB2-12, 120VAC and TB2-5, neutral) terminals.
   Note: Consult the appropriate boiler manual for the locations of these terminals.
2. The DURATION™ CWHS must also be connected to the MACH® boiler DHW Thermostat (TB1-8 and TB1-7) terminals.
   Note: Consult the appropriate boiler manual for the locations of these terminals.
3. The DURATION™ CWHS also requires connection to two aquastats:
   a. One aquastat should be located in the DHW storage tank (aquastat #1) and
   b. One aquastat should be located in the return line from the DHW tank to the DURATION™ CWHS heat exchanger (aquastat #2).

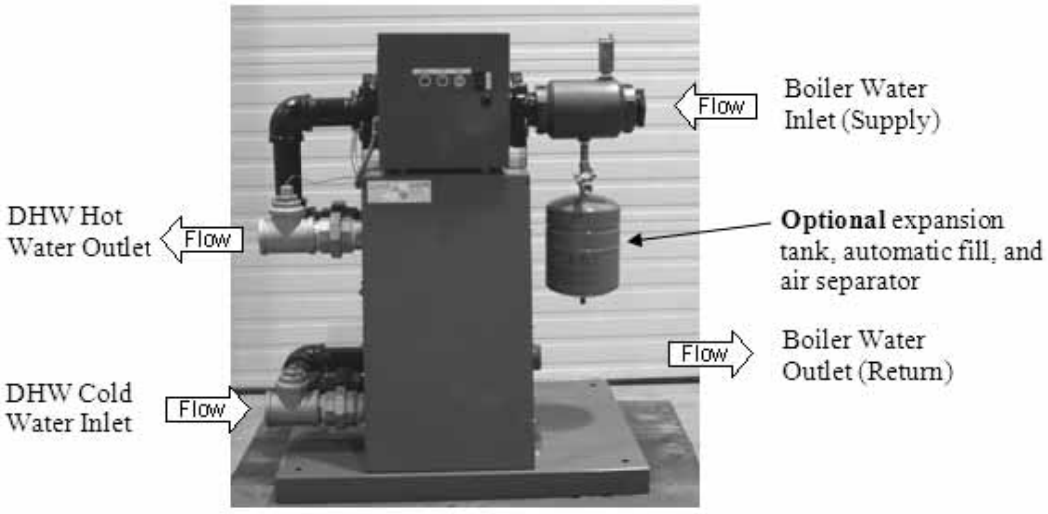
   These aquastats are wired in the normally closed position and open on a temperature rise (heat demand satisfied). They are for contact closure only.

3.3 WATER PIPING

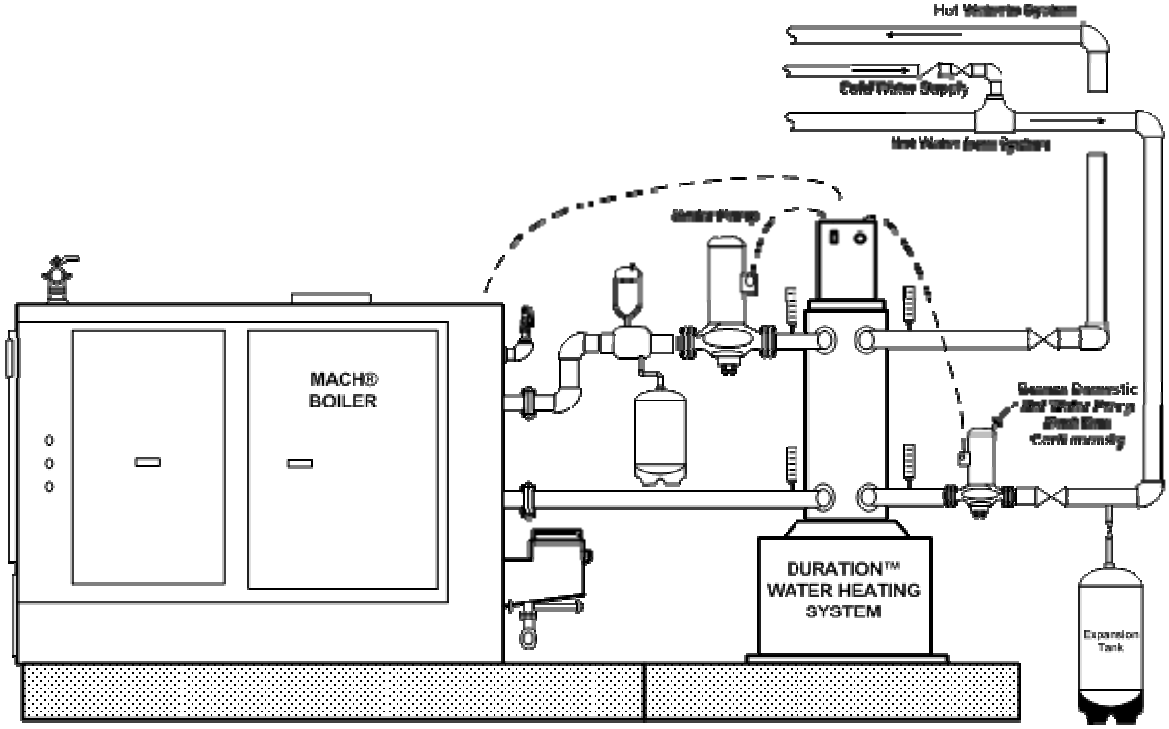
The boiler and DURATION™ CWHS may be connected using a closed loop system. Flow in the boiler loop is maintained by the pump supplied on the DURATION™ CWHS. The boiler loop flows through one side of the DURATION™ CWHS heat exchanger(s). The domestic water flows through the other side of the heat exchanger(s). The heat exchanger is piped in counter flow for the most efficient operation. The boiler connections to the DURATION™ CWHS are both on one side of the unit and the Domestic Water Connections are both on the other side of the unit. (see photo below).

The piping must be designed in accordance with sound engineering practice and installed in accordance with all national, state, and local codes established by the authority having jurisdiction. Incorrect piping or poor installation may cause poor performance of the system and reduced efficiency.

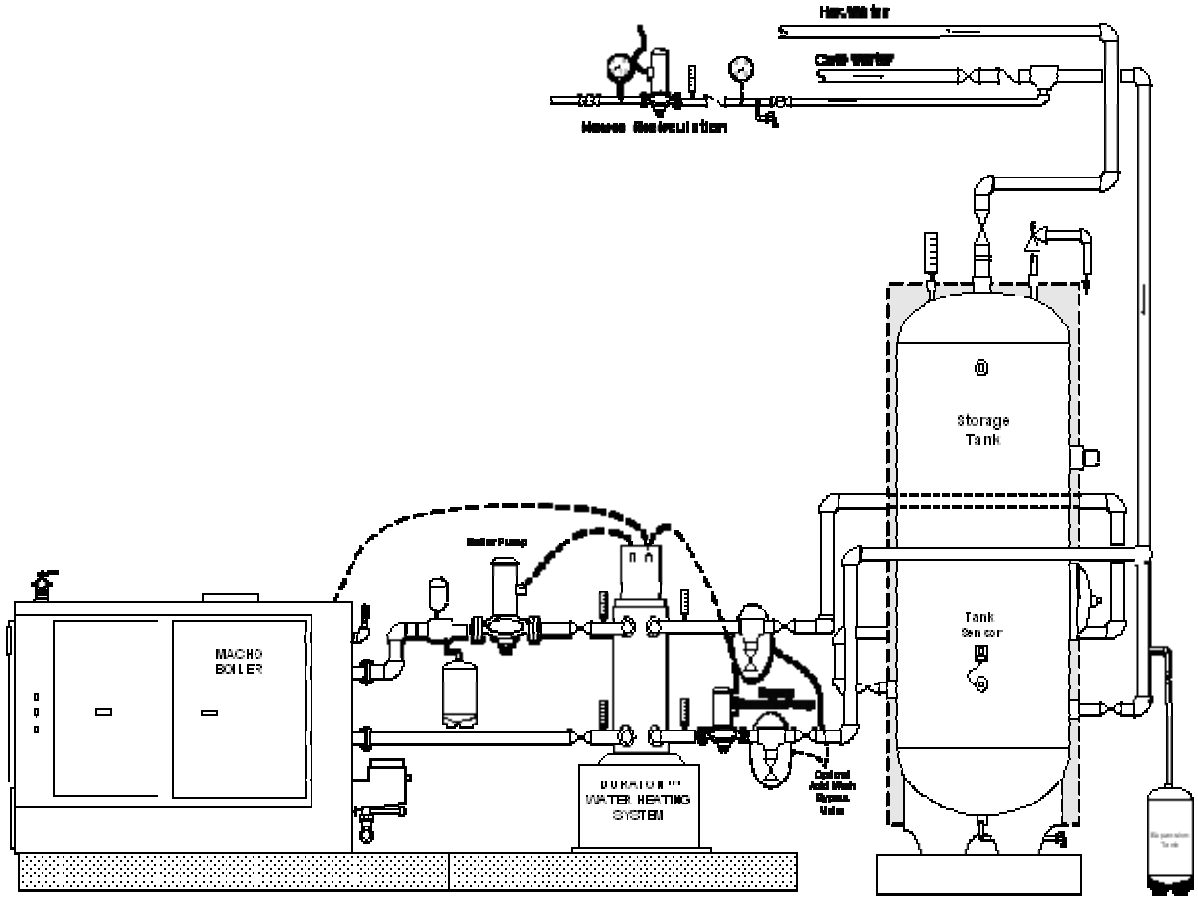
NOTICE! Connect the water flow as shown. Incorrect flow will result in poor performance and may result in eventual damage or premature failure of the equipment.



DURATION™ CWHS



DURATION™ CONTINUOUS CIRCULATION PIPING SCHEMATIC



DURATION™ STORAGE TANK PIPING SCHEMATIC

3.3.1 Boiler Water Flow Loop

For proper water flow requirements see below. The boiler hot water outlet (top) connects to the pump inlet. On the same side of the DURATION™ CWHS, the bottom pipe (heat exchanger outlet) connects to the boiler return water connection. The boiler loop should include two isolation valves, unions, drain, and a strainer. This boiler loop is field installed using contractor supplied parts. The boiler loop connecting the boiler and the DURATION™ CWHS should not exceed 10 ft of pressure drop.

3.3.2 Domestic System Connections

There are two connections for the domestic water system, the cold inlet (bottom) and hot outlet (top). It is important to connect the cold water to the inlet (bottom) of the heat exchanger. The outlet (top) of the heat exchanger supplies the domestic hot water to the system. The cold water makeup should include a backflow prevention device and a shutoff valve to isolate the system for maintenance. The domestic hot water outlet may be connected to a tank or to a continuous circulation system.

This unit can supply domestic water under a variety of operating conditions. An example of typical operating conditions is shown below. Contact your local Harsco Industrial, Patterson-Kelley representative for additional operating conditions and sizing recommendations.

Typical Operating Conditions 100°F Rise

MACH® Boiler Model	Boiler Flow (GPM)	Boiler Design ΔT ºF	Boiler ΔP (ft)	**DURATION**™ DHW System ΔP (ft)	DHW Flow (GPM)	DHW Design ΔT ºF	Boiler Pump ΔP (ft) Max
C2000	120	30	10	17	36	100	36
C1500	90	30	10	17	27	100	38
C1050	64	30	6	17	19	100	32
C900	54	30	6	16	16	100	33
C750	45	30	6	16	14	100	34
C450	27	30	6	16	8	100	34
C300	18	30	6	16	5.4	100	34

4.0 OPERATION

4.1 DURATION™ SYSTEM SETUP

To setup this system, rated DHW demand (full load) must be present. Set the boiler water setpoint to approximately 5˚F above the desired domestic water temperature. Enable the boiler to fire. Set the speed on the boiler loop pump until the temperature of the DHW output is at desired setpoint.

4.2 MACH® BOILER SETUP

The MACH® boiler with ENVI® control should be setup according to the following instructions.

1. DHW Mode 2 Storage & Stat
2. DHW Type 1 DHW Priority
3. DHW Setpoint should be set 5°F higher than the desired domestic water outlet temperature.
4. ON Different = 5°F, OFF Different = 5°F

4.3 CHWS BOILER PUMP OPERATION

Wilo Pump Operating Mode

Use the constant speed mode to set the outlet temperature of the DURATION™ CWHS . To adjust the outlet temperature, follow the following steps:

1. Press the red tuning button to select the pump operating mode.
2. Turn the red tuning button to select the constant speed mode.
3. Press the red tuning button to save the selection.
4. Turn the red tuning button to change the speed.
5. Press the red tuning button to save the speed selection.

Please see the Wilo Stratos Manual for operation of the pump at http://www.wilo-usa.com. Various sizes of pump are used on the various sizes of the DURATION™ CHWS.

	Control system Δp-v, regulated to variable differential pressure set value (fig. 6) (default).
	Control system Δp-c, regulated to constant differential pressure set value (fig. 7).
	The regulator mode control system deactivates the module pressure variations. The speed of the pump is kept at a constant level. The speed is set internally using the tuning button (fig. 9).
26.0 RPM x100	Pump set to a constant speed (2.600 rpm example shown) - regulator mode.

4.4 CHWS DOMESTIC PUMP OPERATION

The domestic pump is a Grundfos Magna Pump. Please see the Grundfos Magna Manual http://www.grundfos.com for operation of the pump. Please see the Grundfos Magna Technical document for operating characteristics and system design parameters.

5.0 MAINTENANCE AND INSPECTION

⚠ WARNING General lockout/ tag out procedure must be employed when servicing this unit.

5.1 MAINTENANCE AND INSPECTION SCHEDULE

5.1.1 As Needed

If the unit is scaled on the domestic water side of the heat exchanger, it can be cleaned by pumping a descaler, such as Rydlyme (www.rydlyme.com) through the heat exchanger. This can be accomplished by closing the heat exchanger
isolation valves, connecting the descaler system to the optional “acid wash” taps, opening the acid wash valves and pumping the descaling treatment through the heat exchanger in accordance with the descaler manufacturer’s instructions. After cleaning, flush thoroughly with clear water, before returning the heat exchanger to regular service.

5.1.2 Semi-Annual

Inspect piping for leaks

Check that pump turns on and off in response to the thermostat

Perform Boiler Maintenance as detailed in Boiler Manual

5.1.3 Annually

Inspect and clean heat exchanger.

Verify correct temperature operation of DHW and Boiler. If DHW is not heating properly, check heat exchanger for scaling.

Test thermostat to ensure boiler shuts off. Test hi limit to ensure system turns off

Perform Boiler Maintenance as detailed in Boiler Manual

⚠ WARNING Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

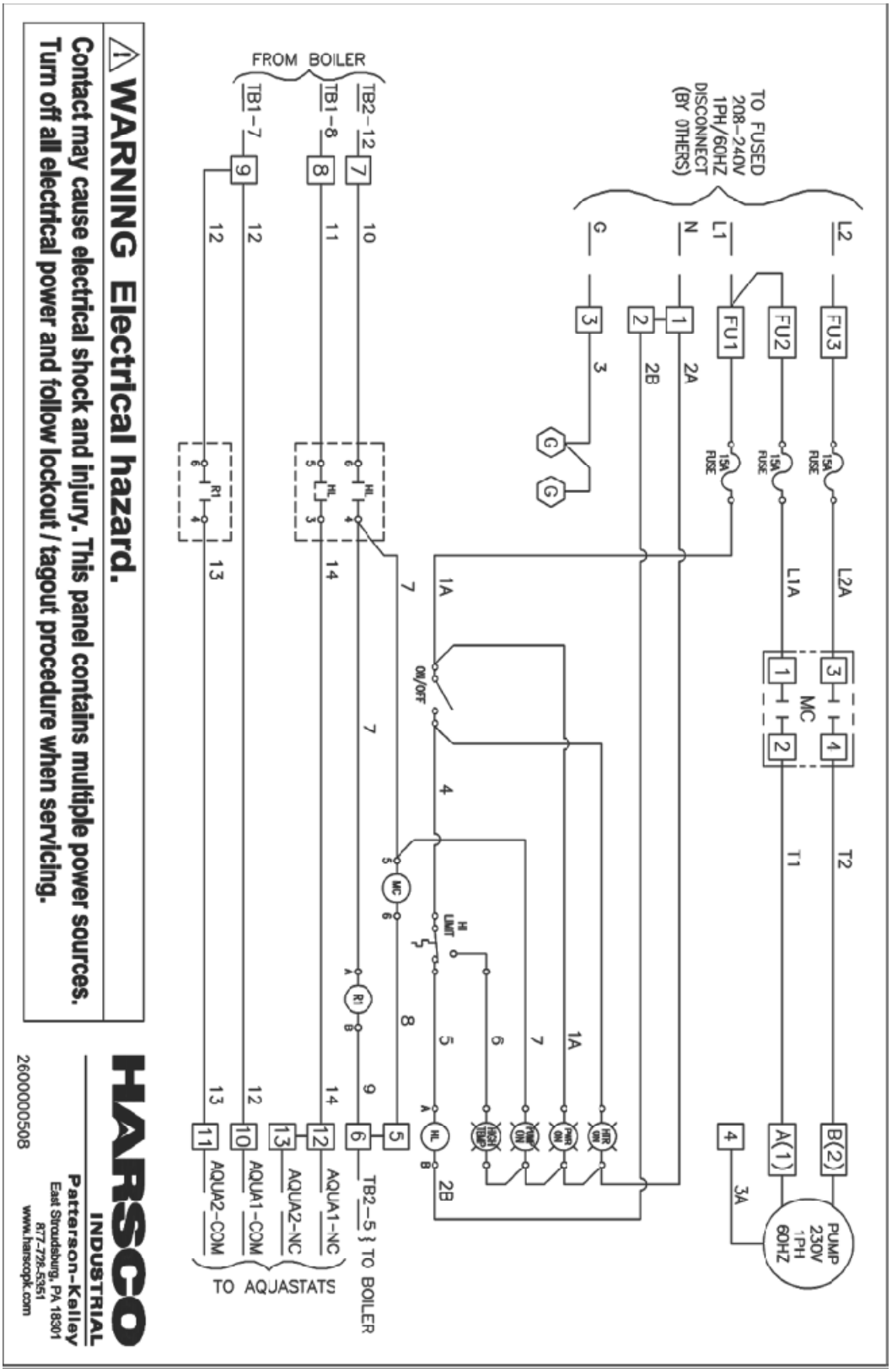
6.0 PARTS & TECHNICAL SUPPORT

Spare parts and replacement parts can be ordered from your local Harsco Industrial, Patterson-Kelley REPRESENTATIVE. If you need assistance locating your representative, please call our customer service department at 570-476-7261 or fax us at (570) 476-7247. Technical information is also available at the Harsco Industrial, Patterson-Kelly website – www.harscopk.com. When calling about your DURATION™ Water Heating System, please have the **serial number** available.

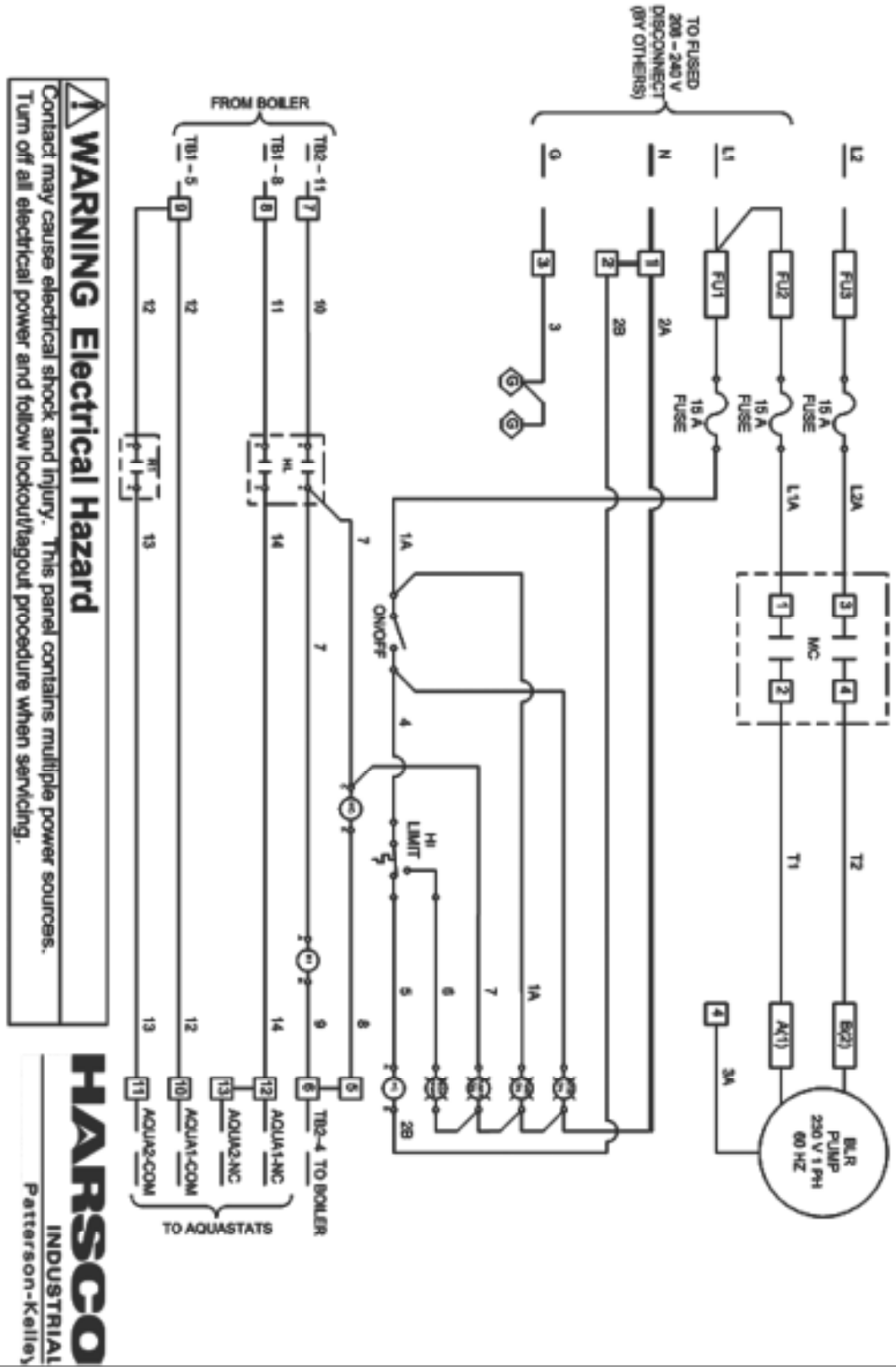
⚠ WARNING Use of Non-Factory Authorized replacement parts are not recommended for this equipment. All control components are engineered for safety and are designed to work in unison with each of the other components. Use of non-factory authorized replacement parts jeopardizes the functionality of the safety features as well as the performance of the DURATION™ Water Heating System.

Electrical schematic and component drawings are displayed on the following pages. Drawings specific to your particular boiler model can be supplied by your local Harsco Industrial, Patterson-Kelley representative.

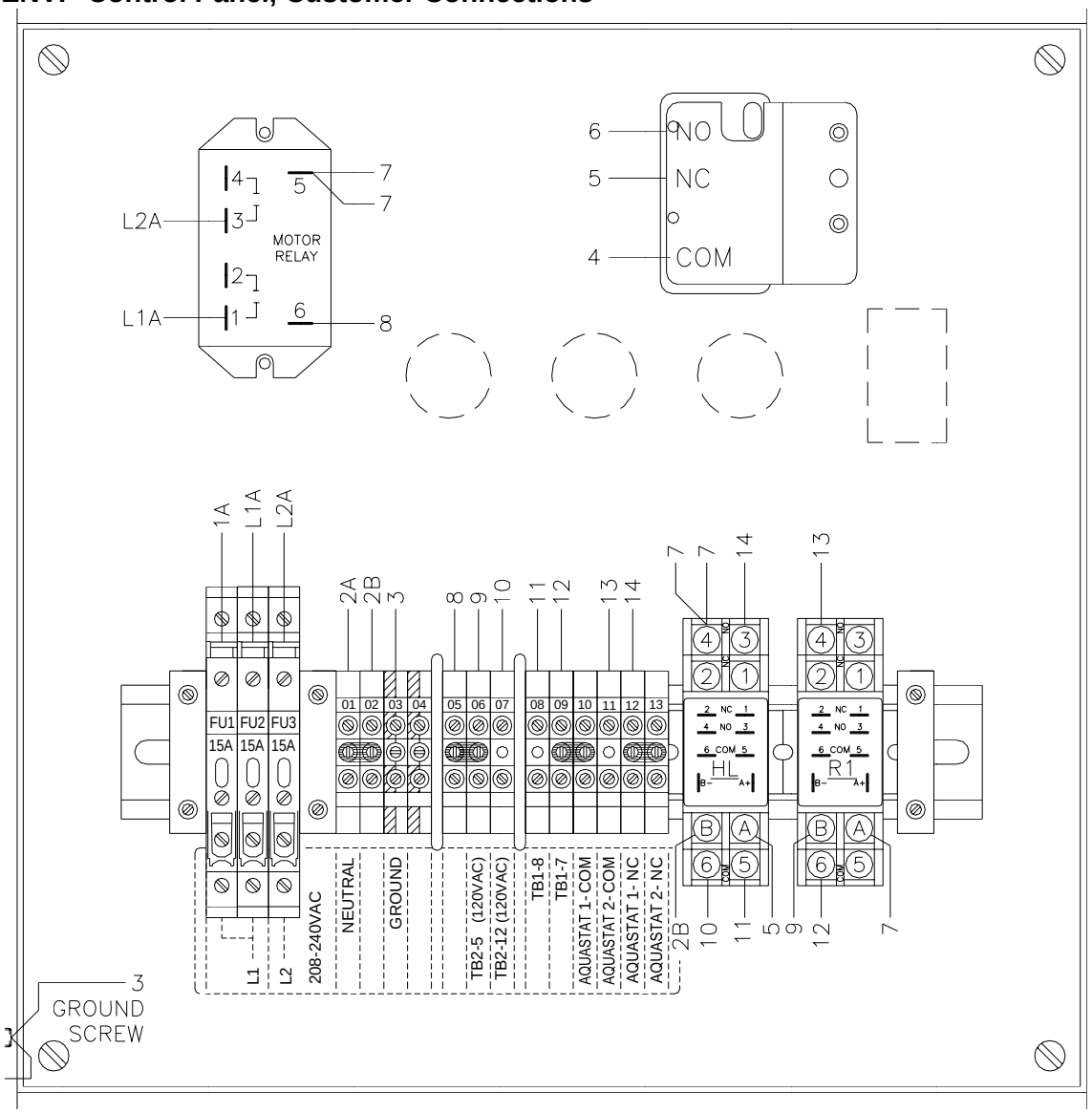
6.1.1 Wiring Diagram – MACH® Boilers with ENVI® Control System

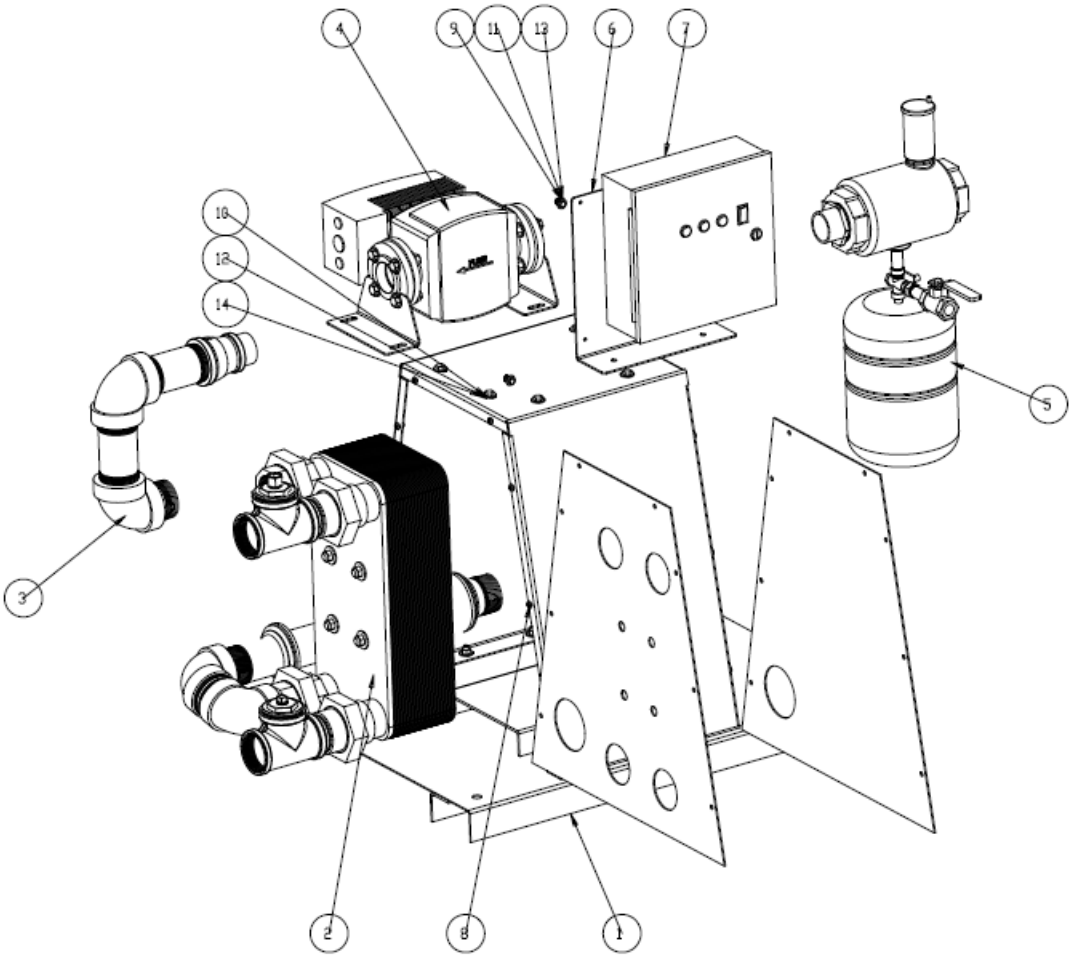


6.1.2 Wiring Diagram – MACH® Boilers with MCBA Control System



6.1.3 ENVI® Control Panel, Customer Connections





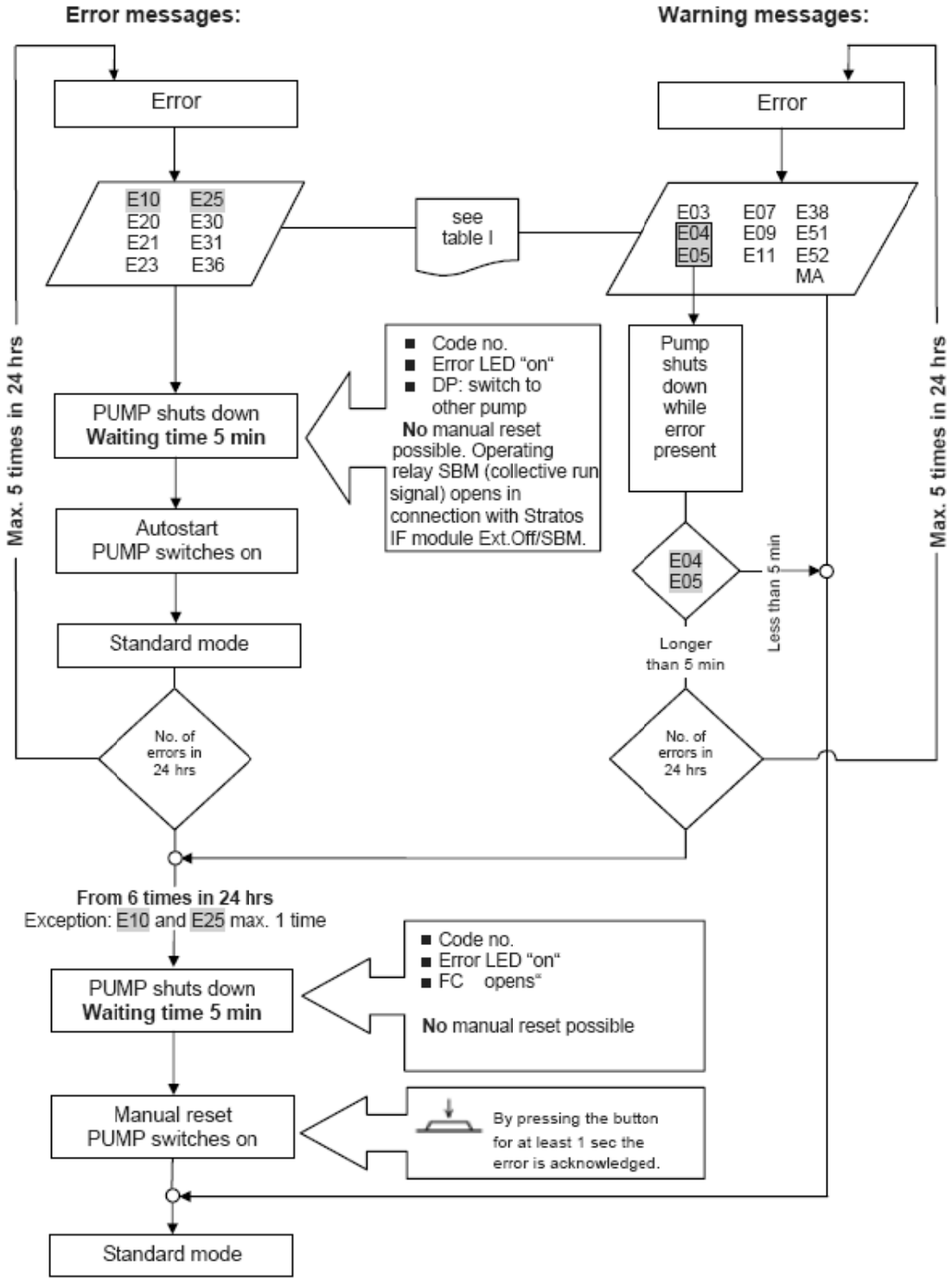
6.1.4 Exploded View

6.1.4.1 Item Identification

Item	Description	Item	Description
1	Support Frame	8	¼-20 x ½" Screw – Torx Head
2	Heat Exchanger	9	Hex Nut ¼-20
3	Variable Speed Pump	10	3/8-16 X 1" Hex Head Screw
4	Manifold	11	¼-20 X ¾" Hex Head Screw
5	Expansion Tank	12	Hex Nut 3/8-16
6	Control Panel Bracket	13	¼ Flat Washer
7	Control Panel	14	3/8 Flat Washer

7.0 TROUBLESHOOTING

7.1 PUMP ERRORS



Error message: Error LED "on"

Code No.	Symbol flashing	Problem	cause	remedies
E04	Supply terminal	Mains undervoltage	Mains overloaded	Check electrical installation
E05	Supply terminal	Mains overvoltage		Check electrical installation
E10	Motor	Pump blocked	e.g. sedimentation	De-blocking routine starts automatically. Should this not remove the blockage, the pump switches off after 10 sec. Call customer services
E20	Motor	winding overheated	Motor overloaded	Let motor cool down, check the settings
			Ambient temperature to high	Reduce water temperature
E21	Motor	Motor overload	Sediment in the pump	Call customer services
E23	Motor	Short circuit/contact fault	Motor defect	Call customer services
E25	Motor	Contact error	Module not correctly installed	Reinstall module
E30	Module	Excess temperature module	Air intake to module heat sink is blocked	Free air intake
E31	Module	Excess temperature power component	Ambient temperature to high	Improve ventilation in room
E36	Module	Module faulty	Electronic components faulty	Call customer service / swap module

Warning messages: Error LED "off"

Code No.	Symbol flashing	Problem	cause	remedies
E03		Water temperature > 110°C	Heating control incorrectly set	Set to lower temperature
E04		Mains undervoltage	Mains overloaded	Check electrical installation
E05		Mains overvoltage		Check electrical installation
E07		Generator operation	Driven by admission pressure pump	Balance pump capacity regulation
E09		Generator operation	Driven by reverse flow through "off" pump	Check circulation direction. Fit a check valve at the pressure side
E11		Pump idling	Air in the pump	Vent pump and unit
E38	Motor	Temp. sensor medium faulty	Motor faulty (automatic night setback)	Call customer services
E51		non-permissible combination	Different pumps	
F52		Master/slave communication error Pump switches from standard mode to fixed characteristic (depending on chosen set value, see fig. 9)	Stratos IF module not correctly positioned, cable faulty	After 5 min. the modules switch to single-pump mode. Reinstall modules, check cable
MA		Master/slave not set		Specify master and slave

NOTICE! Refer to the Wilo Stratos Manual for operation of the pump at http://www.wilo-usa.com

9. Fault finding chart

WARNING!

Before removing the control box cover, make sure that the electricity supply has been switched off for at least 5 minutes.
The pumped liquid may be scalding hot and under high pressure. Before any removal or dismantling of the pump, the system must therefore be drained or the isolating valves on either side of thepump must be closed.

○ Indicator light is off.

☼ Indicator light is on.

✸ Indicator light is flashing.

Indicator lights		Fault	Cause	Remedy
Green	Red			
○	○	The pump is not running.	One fuse in the installation is blown/tripped off.	Replace/reset the fuse. Check that the electricity supply falls within the specified range.
			The current-operated or voltage-operated circuit breaker has tripped off.	Reset the circuit breaker. Check that the electricity supply falls within the specified range.
			The pump may be defective.	Replace the pump or call GRUNDFOS SERVICE for assistance.
✸	○	The pump is not running.	The pump has been stopped in one of the following ways: 1. With the button ⊛. 2. With the R100. 3. External on/off switch in position off. 4. Via bus signal.	1. Star: the pump by pressing ⊛. 2. Star: the pump with the R100 or by pressing ⊛. 3. Switch on the on/off switch. 4. Star: the pump via bus signal.
○	☼	The pump has stopped due to a fault.	Electricity supply failure.	Check that the electricity supply falls within the specified range.
			Pump blocked and/or impurities in the pump.	Dismantle and clean the pump.
			The pump may be defective.	Use the R100 for fault finding, see section *6.6.3 Fault indications*. Replace the pump or call GRUNDFOS SERVICE for assistance.
☼	☼	The pump is running but is faulty	The pump is faulty, but is able to operate.	The pump is able to operate. Try to reset the fault indication by briefly switching off the electricity supply or by pressing the button ⊛, ⊛ or ⊛. Use the R100 for fault finding, see section *6.6.3 Fault indications*. In the case of repeated faults, contact GRUNDFOS SERVICE.
✸	☼	The pump has been set to stop and is faulty.	The pump is faulty, but is able to operate (has been set to STOP).	

Indicator lights		Fault	Cause	Remedy
Green	Red			
☼	○	Noise in the system.	Air in the system.	Vent the system.
			The flow is too high.	Reduce the setpoint and possibly change over to AUTOADAPT or constant pressure.
			The pressure is too high.	Reduce the setpoint and possibly change over to AUTOADAPT or proportional pressure.
☼	○	Noise in the pump.	Air in the pump.	Vent the pump.
			The inlet pressure is too low.	Increase the inlet pressure and/or check air volume in the expansion tank (if installed).

NOTICE! Refer to the Grundfos Magna Manual http://www.grundfos.com for operation of the pump

Limited Warranty

Subject to the terms and conditions herein, Harsco Industrial, Patterson-Kelley, (Seller) warrants to the original owner at the original installation site that products manufactured by Seller will be free from defects in materials and workmanship for a period as follows:

For the Heat Exchanger: Five (5) years from date of startup (the "Warranty Period"), provided that startup is completed within six months from the date of shipment.

Complete unit except Heat Exchanger: One (1) year from date of startup (the "Warranty Period"), provided that startup is completed within six months from the date of shipment.

REMEDY

The sole remedy of this warranty is expressly limited to the repair or replacement of any part found to be defective under conditions of normal use within the Warranty Period. Installation is not included.

WARRANTY

The owner must notify the original installer of the Product and Seller (Attention: Harsco Industrial, Patterson-Kelley, 100 Burson Street, East Stroudsburg, PA 18301), in writing, within the Warranty Period, providing a detailed description of all claimed defects. Transportation to the factory or other designated facility for repairs of any products or items alleged defective shall, in all events, be the responsibility and at the cost of the owner.

EXCLUSIONS

Seller shall have no liability for and this warranty does not cover:

A. Incidental, special or consequential damages, such as loss of the use of products, facilities or production, inconvenience, loss of time or labor expense involved in repairing or replacing the alleged defective Product.
B. The performance of any Product under conditions varying materially from those under which such Product is usually tested under industry standards at of the time of shipment.
C. Any damage to the Product due to abrasion, erosion, corrosion, deterioration, abnormal temperatures or the influence of foreign matter or energy.
D. The design or operation of owner's plant or equipment or of any facility or system of which any Product may be made a part.
E. The suitability of any Product for any particular application.
F. Any failure resulting from misuse, modification not authorized by Seller in writing, improper installation or lack of or improper maintenance.
G. Equipment furnished by the owner, either mounted or unmounted, or when contracted for by the owner to be installed or handled.
H. Leakage or other malfunction caused by:
    1. Defective installations in general and specifically, any installation which is made:
        a. in violation of applicable state or local plumbing housing or building codes,
        b. contrary to the written instructions furnished with the unit
    2. Adverse local conditions in general and, specifically, sediment or lime precipitation in the heat exchanger passages or corrosive elements in the atmosphere.
    3. Misuse in general and, specifically, operation and maintenance contrary to the written instructions furnished with the unit, disconnection, alteration or addition of components or apparatus, not approved by Seller, operation with fuels or settings other than those set forth on the rating plate or accidental or exterior damage.
I. Production of noise, odors, discoloration or rusty water.
J. Damage to surrounding area or property caused by leakage or malfunction.
K. Costs associated with the replacement and/or repair of the unit including: any freight, shipping or delivery charges, any removal, installation or reinstallation charges, any material and/or permits required for installation, reinstallation or repair, charges to return the boiler and or components. Seller's liability under this warranty shall not in any case exceed the amount paid for the Product found to be defective.

THIRD PARTY WARRANTIES

For goods or components not manufactured by Seller, the warranty obligations of Seller shall, in all respects, conform and be limited to one (1) year from the date of shipment.

SEVERABILITY

To the extent that any provision of this warranty would be void or prohibited under applicable law, such provisions shall be limited in effect to the minimum extent necessary to render the remaining provisions hereof enforceable.

NO OTHER WARRANTIES

Seller makes no implied warranty of merchantability or fitness for a particular purpose or other warranties with respect to any products or services except as expressly set forth in this limited warranty.