

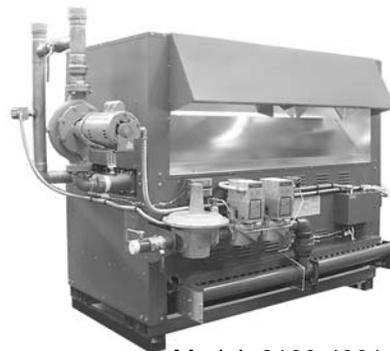
INSTALLATION AND OPERATING INSTRUCTIONS

RAYTHERM™ COMMERCIAL SWIMMING POOL HEATER

Models
P-926 to P-1826
and
P-2100 to P-4001



Models 1287-1758



Models 2100-4001

WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
 - Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

This manual should be maintained in legible condition and kept adjacent to the heater or in a safe place for future reference.



Raypak®

A Rheem® Company

Contents

3	SECTION 1: RECEIVING EQUIPMENT
3	SECTION 2: GENERAL SPECIFICATIONS
3	SECTION 3: INSTALLATION INSTRUCTIONS
3	Code Requirements
3	Base Installation
4	Clearances
4	Combustion Air
5	Venting Connections
6	Gas Supply Connections
7	Water connections
8	Controls
14	Wiring Diagrams
18	SECTION 4: SERVICING INSTRUCTIONS
18	General Location of Controls
19	Start-Up Procedures
20	Inspection Procedures
21	Servicing Procedures
24	Maintenance & Care
25	SECTION 5: TROUBLE SHOOTING
25	Mechanical
27	Electrical
28	SECTION 6: REPLACEMENT PARTS
35	WARRANTY

SECTION 1 / RECEIVING EQUIPMENT

On receipt of the equipment, visually check for external damage to the carton or the shipping crate. If the carton or shipping crate is damaged, make a note on the Bill of Lading and report the damage to the Carrier immediately. Remove the boiler from the carton or shipping crate.

Do **NOT** use the shipping base crate as an installation base.

On occasion, we ship some items loose. Be sure that you receive the number of packages indicated on the Bill of Lading.

When ordering parts, you must specify Model and Serial Number of boiler. When ordering under warranty conditions, you must also specify date of installation.

Raypak recommends that this manual be reviewed thoroughly before installing your Raypak Pool Heater. If there are any questions which this manual does not answer, please contact the factory or your local Raypak representative.

Claims for shortages and damages must be filed with carrier by consignee. Permission to return goods must be factory authorized and are subject to a stocking charge.

Purchased parts are subject to replacement only under the manufacturer's warranty. Debits for defective replacement parts will not be accepted and will be replaced in kind only per our standard warranties.

SECTION 2 / GENERAL SPECIFICATIONS

Models 962, 1125, 1223, 1336, 1468, 1631, 1826 & 2100 through 4001 are specifically designed for indoor installation only. Models 926, 1083, 1178, 1287, 1414, 1571 & 1758 are specifically designed for outdoor installation only. All heaters are standard with electronic ignition for both natural and propane applications. Heaters require 115V power supply. Control circuits operate at 24V, to be supplied by a 115V to 24V transformer.

These heaters are design certified and tested under the requirements of ANSI Z21.56 / CSA 4.7 American National Standard for Gas-Fired Pool Heaters. Rated inputs suitable for up to 2000 feet elevation. For elevations above 2000 feet, reduce input 4% for each 1000 feet above sea level, as high elevation reduces combustion performance.

SECTION 3 / INSTALLATION INSTRUCTIONS

CALIFORNIA PROPOSITION 65 WARNING:

This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

IMPORTANT NOTICE

These instructions are intended for the use of qualified personnel only, specifically trained and experienced in the installation of this type of heating equipment and related system components. Installation and service personnel may be required by some states to be licensed. If your state is such, be sure your contractor bears the appropriate license. Persons not qualified shall not attempt to fix this equipment nor attempt repairs according to these instructions.

WARNING:

Improper installation, adjustment, alteration, service or maintenance may damage the equipment, create a hazard resulting in asphyxiation, explosion or fire, and will void the warranty.

CODE REQUIREMENTS

NOTE: *The heater should not be located in an area where possible water leakage will result in damage to the area adjacent to the appliance or to the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the appliance. The pan must not restrict combustion air flow.*

Installation must be in accordance with local codes, or, in the absence of local codes, with the latest editions of the National Fuel Gas Code, ANSI Z223.1/NFPA 54, and National Electrical Code, ANSI/NFPA 70.

BASE INSTALLATION

Do **NOT** use the shipping base crate as an installation base.

Heater must be mounted on a level base, such as cement slab, cement blocks or other non-combustible surface. An optional non-combustible base is available for Indoor Heater 962 through 1826. An alternative method for providing a base for combustible floors as illustrated below. Heaters may not be installed on carpeting.

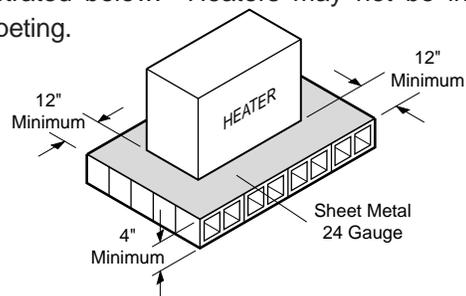


Fig. #8148

Hollow concrete cinder block; align holes and leave ends open. Alternative method for providing a non-combustible base.

VENTING CONNECTIONS

DRAFTHOOD (INDOOR) MODELS 962-1826

Locate and assemble as shown below. Secure with screws supplied in envelope in carton.

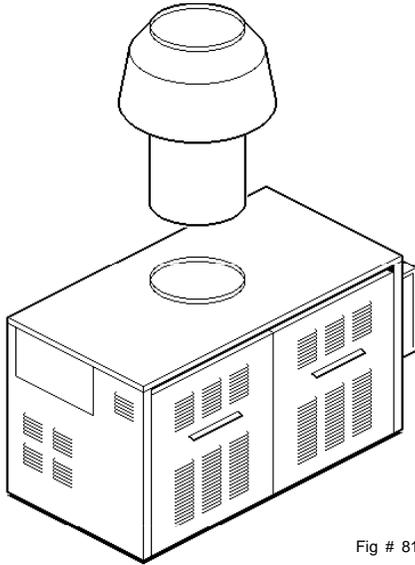


Fig # 8165

Models 2100-4001 have built-in drafthoods that must be properly vented to the outside.

VENT PIPING

WARNING:

Indoor heater requires a drafthood that must be connected to a vent pipe and properly vented to the outside. Failure to follow this procedure can cause fire or fatal carbon monoxide poisoning.

Vent piping the same size or larger than the draft hood outlet is recommended, however, when the total vent height is at least ten (10) feet (draft hood relief opening to vent terminal), the vent pipe size may be reduced as specified in Chapter 10 of the National Fuel Gas Code, ANSI Z 223.1/NFPA 54 - latest edition. Avoid long horizontal runs of vent pipe and too many elbows. If installation requires horizontal or non-vertical runs, the vent pipe must have a minimum of 1/4 inch per foot rise and should be supported at not more than five foot intervals. Plumbers' tape, criss-crossed, will serve to space both horizontal and vertical piping. Gas vents supported only by the flashing and extending above the roof more than five feet should be securely guyed or braced to withstand snow and wind loads. We recommend use of insulated vent pipe spacer through the roofs and walls.

For protection against rain or blockage by snow, the vent pipe must terminate with a vent cap which complies with the local codes or, in the absence of such codes, to the latest edition of the National Fuel Gas Code, **ANSI Z223.1/NFPA 54**.

The discharge opening must be a minimum of two feet vertically from the roof surface and at least two feet higher than any part of the building within ten feet. Vent stack shall be at least five feet in vertical height above the draft hood outlet. The vent cap location shall have a minimum clearance of 4 feet horizontally from, and in no case above or below, unless a 4-foot horizontal distance is maintained, from electric meters, gas meters regulators and relief equipment.

The weight of the vent stack or chimney must not rest on boiler draft hood. Support must be provided in compliance with applicable codes. The heater top and draft hood must be readily removable for maintenance and inspection. Vent pipe should be adequately supported to maintain proper clearances from combustible construction.

Type "B" double wall or equivalent vent pipe is recommended. However single wall metal vent pipe may be used as specified in the latest edition of the National Fuel Gas Code **ANSI Z223.1/NFPA 54**.

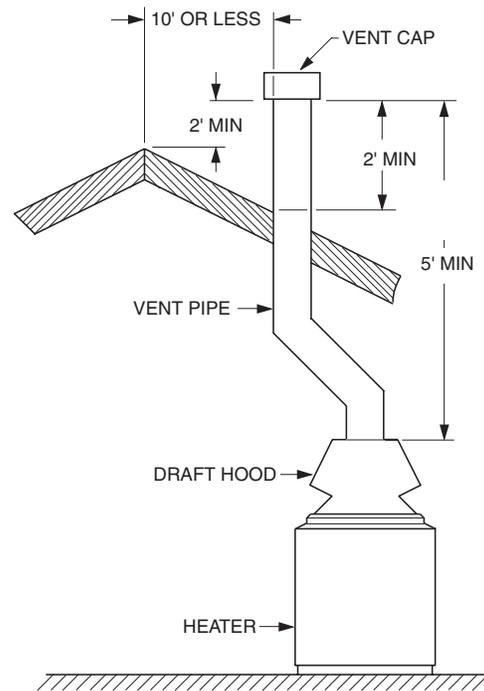


Fig. #8119

At the time of removal of an existing heater, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

- (a) Seal any unused openings in the common venting system.
- (b) Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
- (c) Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliance not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
- (d) Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
- (e) Test for spillage at the drafthood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.
- (f) After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers and any other gas burning appliance to their previous conditions of use.
- (g) Any improper operation of the common venting system should be corrected so the installation conforms with the latest edition of the National Fuel Gas Code, ANSI Z223.1/NFPA 54. When re-sizing any portion of the common venting system, the common venting system should be re-sized to approach the minimum size as determined using the appropriate tables in Part 11 of the National Fuel Gas Code, ANSI Z223.1/NFPA 54.

For special venting applications that require reduced vent sizes and through the wall venting, the optional D Series Power Vent can be used. Consult the factory or your local Raypak representative.

GAS SUPPLY CONNECTIONS

Gas piping must have a sediment trap ahead of the heater gas controls, and a manual shut-off valve located outside the heater jacket. All gas piping should be tested after installation in accordance with local codes.

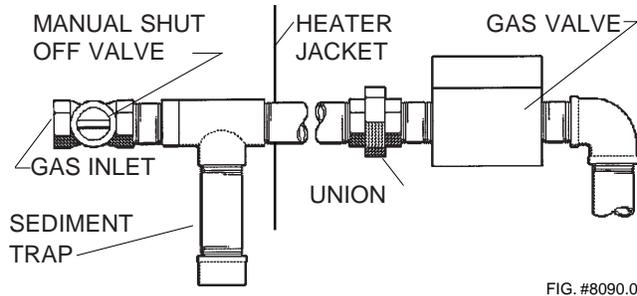


FIG. #8090.0

CAUTION: *The heater and its manual shut-off valve must be disconnected from the gas supply during any pressure testing of that system at test pressures in excess of 1/2 psig (3.45 KPA). Dissipate test pressure in the gas supply line before reconnecting the heater and its manual shut-off valve to gas supply line. FAILURE TO FOLLOW THIS PROCEDURE MAY DAMAGE THE GAS VALVE. OVER PRESSURIZED GAS VALVES ARE NOT COVERED BY WARRANTY. The heater and its gas connections shall be leak tested before placing the appliance in operation. Use soapy water for leak test. DO NOT use open flame.*

NOTE: *Do not use teflon tape on gas line pipe thread. A flexible sealant is recommended.*

A minimum of 7 in. WC and a maximum of 10.5 in. WC upstream pressure under load, and no load conditions must be provided for natural gas or a minimum of 11 in. WC and a maximum of 13 in. WC for propane gas.

GAS PRESSURE REGULATOR

The gas pressure regulator is preset and sealed at 4 in. WC for natural gas, and 11 in. WC for propane gas. Between the gas valve and the burners is a 1/8" pipe plug. The pressure at this point, taken with a manometer, should be about 3.7 in. WC natural gas and 10.5 in. WC propane gas. If an adjustment is needed, remove seal and turn adjustment screw clockwise , to increase pressure or counterclockwise , to decrease pressure.

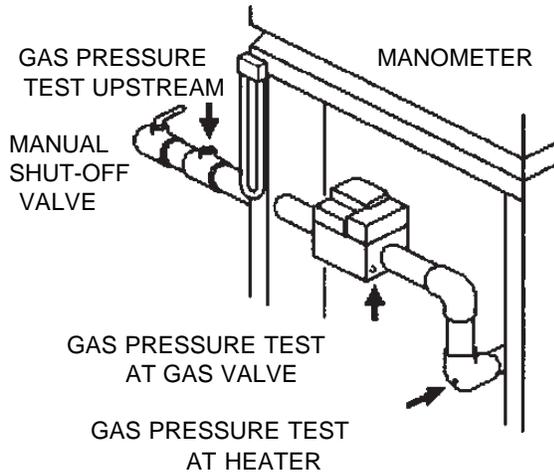


Fig. #8149.0

PIPE SIZING FOR GAS CONNECTIONS

	MAXIMUM EQUIVALENT PIPE LENGTH													
	NATURAL GAS 1000 BTU/FT 60 SPECIFIC GRAVITY @ 0.5 in. W.C. PRESSURE DROP						PROPANE GAS 2500 BTU/FT 1.53 SPECIFIC GRAVITY @ 0.6 in. W.C. PRESSURE DROP							
	1"		1-1/4"		1-1/2"		2"		2-1/2"		3"		4"	
	N	P	N	P	N	P	N	P	N	P	N	P	N	P
926/962	-	15	20	45	45	110	150	360	400	-	-	-	-	-
1083/1125	-	10	15	35	35	80	120	300	300	-	-	-	-	-
1178/1223	-	-	-	25	25	60	85	220	200	-	-	-	-	-
1287/1336	-	-	-	25	20	55	75	180	170	325	560	-	-	-
1414/1468	-	-	-	20	15	45	65	150	165	300	500	-	-	-
1571/1631	-	-	-	15	15	35	50	20	125	250	400	-	-	-
1758/1826	-	-	-	15	10	30	40	100	100	225	340	-	-	-
2100	-	-	-	10	10	25	30	80	75	175	260	-	-	-
2500	-	-	-	-	-	15	20	55	55	135	160	400	600	-
3001	-	-	-	-	-	10	15	35	40	85	120	250	500	-
3500	-	-	-	-	-	-	10	30	30	45	80	200	400	600
4001	-	-	-	-	-	-	5	20	25	35	65	160	300	400

VENTING OF DIAPHRAGM GAS COMPONENTS

Heaters have gas train components that have diaphragms in their construction are supplied with a bleed line connection that must be connected to the outside atmosphere as required by the National Fuel Gas Code. Under **NO** circumstances shall bleed lines terminate in the gas utilization equipment flue or exhaust system.

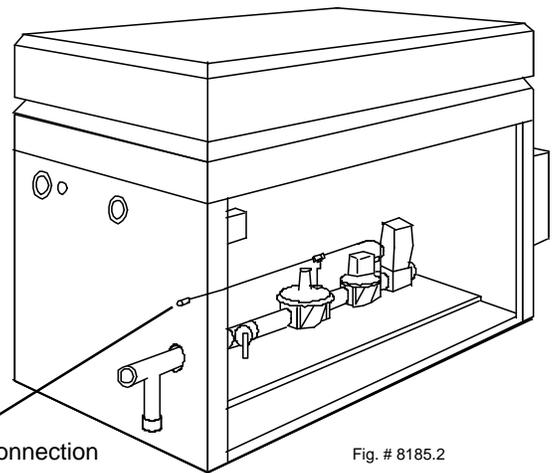


Fig. # 8185.2

WATER CONNECTIONS

LOCATION

The heater requires water flow and positive pressure to fire and operate properly. It must therefore be installed downstream of the discharge side of the filter pump. A typical installation is plumbed as follows:

1. The inlet side of the filter is plumbed directly to the discharge side of the filter pump;
2. The outlet side of the filter is then plumbed to the inlet of the heater; and
3. The outlet of the heater is plumbed to the return line to the pool or spa. The pump, filter and heater are thus plumbed in series.

Heater must be located so that any water leaks will not damage the structure of adjacent area. High temperature plastic pipe (CPVC) may be connected directly into the heater Models 926-1223, if local codes permit and if controls operate the pump for at least fifteen minutes after the heater is turned off.

CAUTION (Models 926-1223): *NEVER install PVC directly into heater. Four feet of copper or high temperature pipe and two elbows are required between the heater and the PVC connections.*

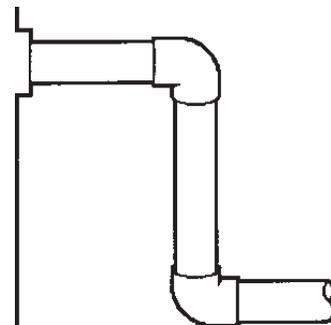


Fig. # 8129.0

When local codes permit the use of less than four feet high temperature piping or two elbows, provisions should be made to always shut the heater off a minimum of 15 minutes prior to pump shut down in order to carry away residual heat and prevent damage to the low temperature piping. A fireman switch included in the time clock may be used for this purpose with instructions not to override this sequence manually. See wiring diagram section for electrical hookup location of the fireman switch in the electrical circuit.

NOTE (Models 926-1223): *If piping is used into the heater, this piping (copper) must be anchored or screwed into the flange (metal) if operating pressures above 30 PSI are encountered.*

CONTROLS
WATER PRESSURE SWITCH

A water pressure switch is provided in the heater to shut down the gas valves in the event the water supply to the heater is interrupted. It is very important to verify that the switch electrically opens and shuts off the gas valve when water flow to the heater is interrupted. Otherwise, rapid and severe damage to the heater will likely occur. (The water pressure switch should be checked and adjusted for proper operation by a qualified service person at the time of installation and periodically checked thereafter. Refer to pressure switch servicing instructions in Section 4 of this manual).

WARNING: *Operation of the heater without water circulation will cause rapid and severe damage to the heater.*

AUTOMATIC CHLORINATORS AND CHEMICAL FEEDERS

All chemicals must be introduced and completely diluted into the pool or spa water before being circulated through the heater. Do not place chlorine tablets or bromine sticks in the skimmer. High chemical concentrations will result when the pump is not running (eg, overnight).

Chlorinators must feed downstream of the heater and have an anti-siphoning device to prevent chemical backup into the heater when the pump is shut off.

NOTE: *High chemical concentrates from feeders and chlorinators that are out of adjustment will cause very rapid corrosion to the heat exchanger in the heater. Such damage is not covered under the warranty.*

UNITHERM GOVERNOR OPERATION

The patented Unitherm Governor is a thermostatic mixing valve specifically designed to maintain constant heater internal temperature between 105° to 115°F despite continually changing flow rates from the filter and changing pool temperatures. This narrow range is needed to prevent damaging condensation on the burners which will occur if the heater runs for any length of time below 100°F. It is also needed to inhibit scale formation in the tubes by maintaining temperatures well below accelerated scaling temperatures.

The Unitherm Governor is built into the inlet/outlet header on models 926 through 1223. The larger sizes, models 1287 through 4001, have an externally mounted bypass pump that is designed to maintain the water entering the heater at the proper temperature that will prevent condensation and scale. Thermometers are provided on the inlet and outlet to the heater.

COMPANION FLANGE CONNECTIONS
 (Models 926-1223)

DO NOT use petroleum base assembly fluids (such as Petroleum Jelly or Lubricating Oil). If assembly lube is required use a silicone base such as Armoral etc.

The inlet/outlet header flange accepts a 2" copper tube as a slip connection directly into the header. The flange is also threaded for a 2" NPT copper male adapter.

MODELS 926 - 1223

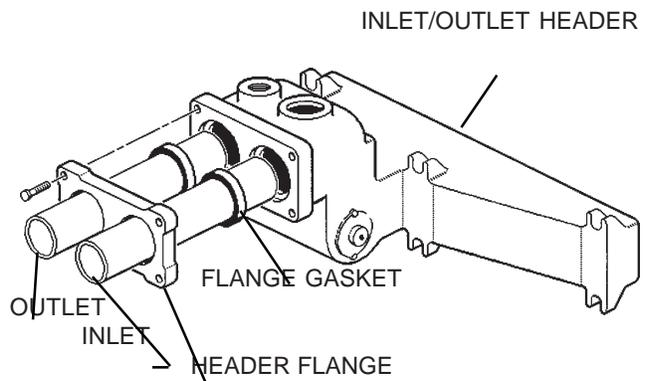
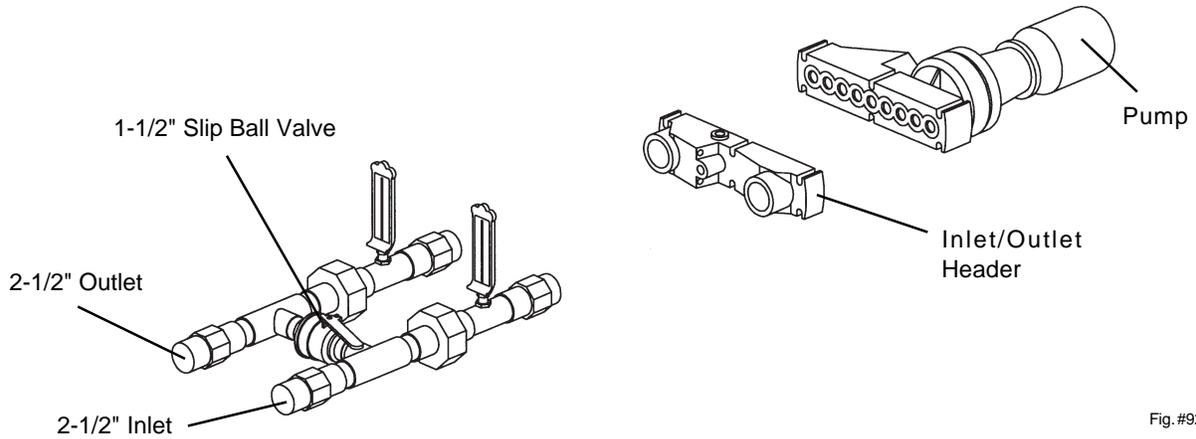
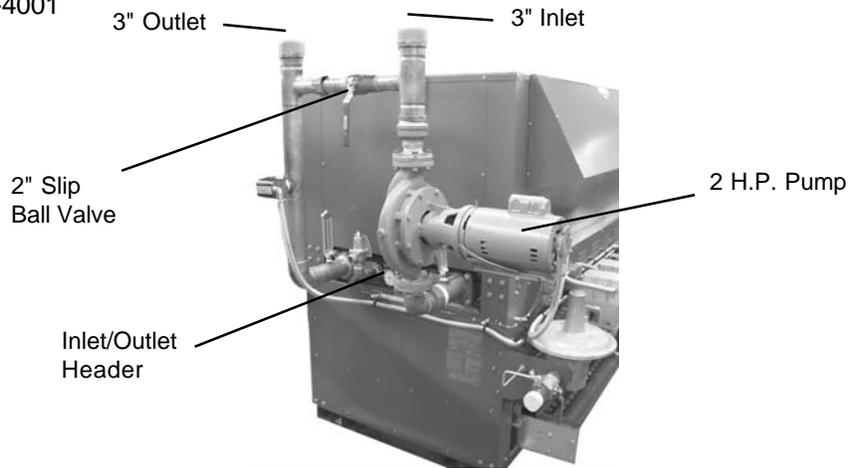


Fig. #8221.0

MODELS 1287/1336 - 1758/1826



MODELS 2100-4001



FLOW RATES/WATER CONNECTIONS

MODEL	CONNECTION SIZE	MIN GPM	MAX GPM
926-1223	*	60	120
1287-1826	2-1/2" FPT	Refer to flow rate table	
2100-4001	3" FPT		

MODELS	LOOP* FLOW RATES (GPM)	HEATER FLOW RATES (GPM)
1287/1336	30-50	85
1414/1468	35-55	85
1571/1631	40-65	85
1758/1826	45-70	85
2100	50-80	180
2500	60-95	180
3001	75-115	180
3500	90-135	180
4001	100-150	180

*Loop is secondary piping to heater from main system.

Raypak recommends the installation of an air bleed vent at a suitable location (usually the highest point) to remove air from the piping system. These units should be available at your local wholesale supplier. Raypak does not provide this item.

CAUTION:

Power to the heater should be interlocked with the main system pump to make sure the heater does not fire without the main system pump in operation.

Improper flow control can damage the heater. Uncontrolled flow (too high) or restricted flow (too low) can seriously affect heater operation. Follow these instructions to make sure your heater is properly installed.

Models 1287 through 4001 are equipped with an external pump and bypass arrangement that blends outlet water with the inlet to increase the inlet water temperature, thereby reducing the likelihood of condensation forming on the heat exchanger. The pump also serves to circulate water through the heater from the main system piping.

To complete the installation of the pool heater, the pool thermostat needs to be installed in the main return water line. This will ensure that the heater will be energized at the right time. If the main water line is too far away from the heater and the capillary bulb will not reach it, locate the pool thermostat adjacent to the main line and run wires back to the heater. Follow the instructions listed below to install the pool stat.

MOUNTING THE POOLSTAT CONTROL WITH FRONT-MOUNTED LOOP USING MOUNTING SLOTS

For heater models:

1287, 1336, 1414, 1468, 1571, 1631, 1758, 1826, 2100, 2500, 3001, 3500, 4001.

Note: For more detail on piping, see figures 9268 and 9269.

1. Remove the poolstat control cover by removing the two cover screws at the top. See Figs. 1 & 2.
2. Lace metal strapping or clamps, (NOT PROVIDED) through the 3/4" slots on the cover and fasten securely to pipe as shown in Figs. 3 & 4. **NOTE:** Do not over-tighten clamps.
3. Remove either the left or right "knock-out" for wiring on the poolstat control as shown in Fig. 5.
4. Attach appropriate conduit and connectors to the poolstat control.
5. Attach wires to the poolstat wire terminals. See Fig.6.
6. Install poolstat control to the cover and fasten cover screws.
7. Poolstat should be mounted level as shown in Fig. 7.



Fig. 1: Poolstat Control



Fig. 2: Control Cover

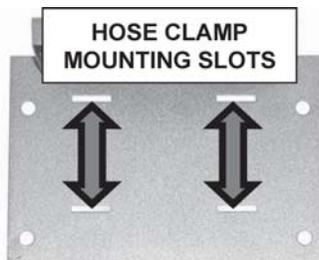


Fig. 3: Hose Clamp Slots



Fig. 4

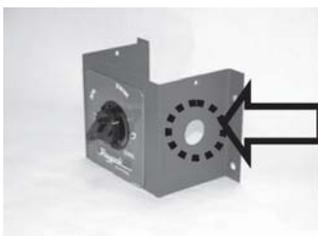


Fig. 5



Fig. 6



Fig. 7

MOUNTING WELL INTO SYSTEM RETURN LOOP PIPE - FRONT-MOUNTED LOOP:

Note: For more detail on piping configurations for large systems, see figures 9268 and 9269.

1. Locate and mark an area on the main system return loop pipe where the well is always exposed to the water circulating back from the pool. See Fig. 8.
2. Shut off water and drain any water from the pipe as necessary.
3. Drill a 23/32" diameter hole (1/2" NPT) into the pipe as shown in Fig. 9.
4. Using a 1/2" NPT tap and appropriate handle, thread the tap into the pipe.
5. Apply pipe dope as necessary to male threads of well and insert into threaded hole.

Note: Do not over-tighten well.

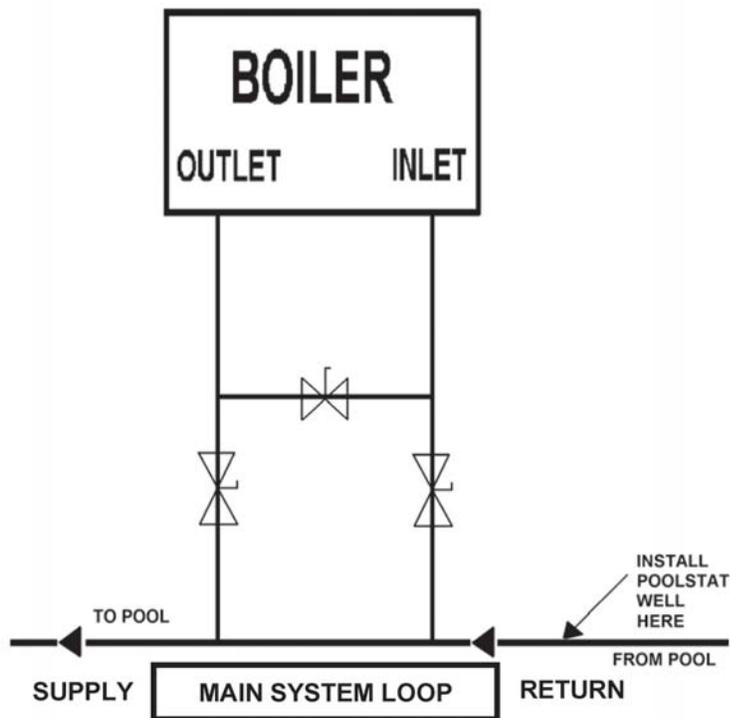


Fig. 8

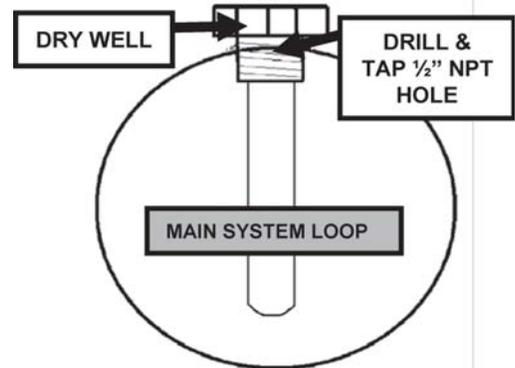


Fig. 9

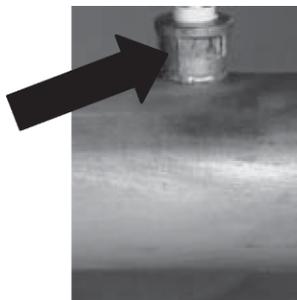


Fig. 10

Note: The drawings and instructions above show only one of several acceptable ways of installing the dry well into main system loop. The use of saddle clamps and "Weld O Lets" (shown in Fig. 10) are acceptable. Follow clamp manufacturer's instructions.

To adjust the temperature:

1. Both isolation valves must be fully open.
2. Adjust Bypass Valve "A" 1/2 open and Balancing Valve "B" fully open. (See piping configuration page 11)
3. Fire your Raypak pool heater and adjust Bypass Valve "A" to obtain a heater inlet temperature approximately 100°F-105°F. Turning Valve A in the open direction will raise the heater inlet temperature and closing Valve "A" will lower the heater inlet temperature.

CAUTION

The inlet temperature must be kept above 100°F.

Changes in system flow or valve position may require re-adjustment of the flow settings. Check the heater bypass settings after making adjustments. Failure to maintain an inlet temperature above 100°F may result in damage to the heater. Failure to comply with this instruction voids the warranty.

P/N 901664

4. If the heater inlet temperature remains less than 100°F and Valve "A" is fully open, leave Valve "A" fully open and throttle Valve "B" until the heater inlet temperature rises to within the range of 100°F-105°F.
5. The resultant heater outlet temperature should be in the range of 120-130°F.
6. As the pool temperature rises to the desired temperature as controlled by the Pool aquastat, small adjustments to valves "A" and "B" will be required for optimum performance. Heater temperatures should be checked regularly to prevent heater condensation. The heater inlet temperature can be higher than 100°F without heater damage but operating at less than 100°F inlet can cause damage from condensation.

Note: Consult factory if target temperatures cannot be achieved.

PIPING CONFIGURATIONS FOR RAYTHERM COMMERCIAL POOL HEATERS

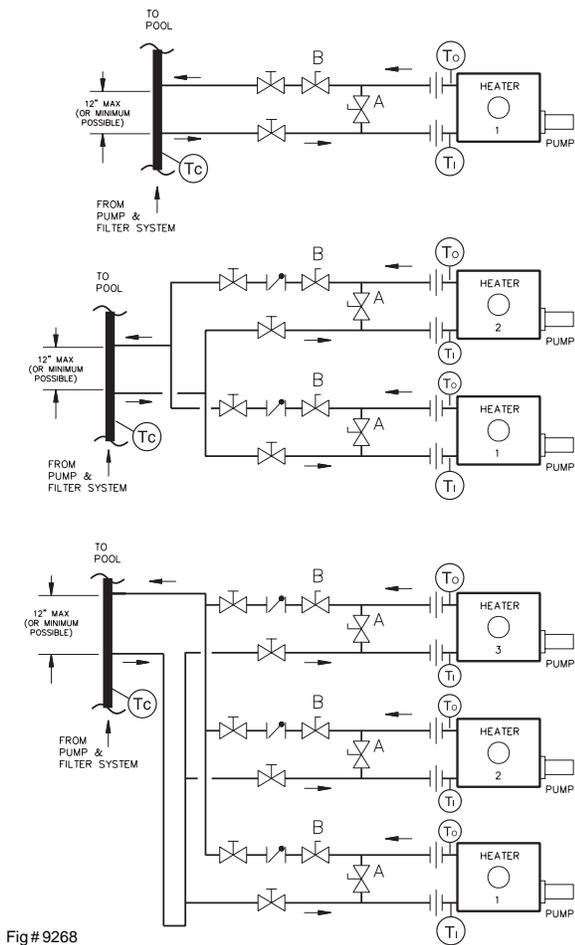


Fig # 9268

Models 1287 thru 1826

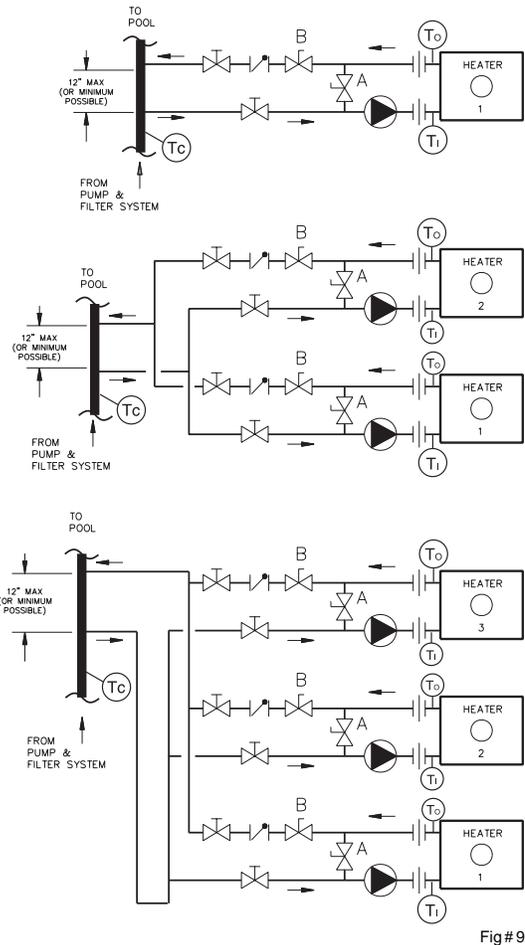


Fig # 9269

Models 2100 thru 4001

- BLENDED WATER TEMPERATURE (THERMOMETER AT HEATER INLET)
- HEATER OUTLET TEMPERATURE THERMOMETER
- HEATER THERMOSTAT
- RECOMMENDED FIELD INSTALLED ISOLATION VALVES FOR SERVICE

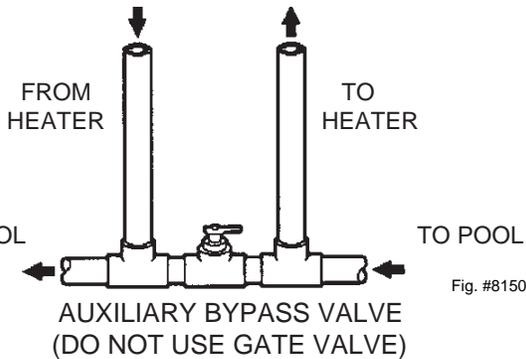
KEY	
	PUMP
	UNION
	GATE VALVE
	CHECK VALVE
	BALL VALVE

NOTES:

1. PLUMB SWING CHECK VALVE IN GRAVITY CLOSED POSITION.
2. PIPE ALL RELIEF VALVES TO DRAIN, OR AS LOCAL CODES REQUIRE.
3. MINIMUM PIPE SIZE MUST BE EQUAL TO THE HEATER INLET/ OUTLET SIZE EXCEPT WHERE PIPES HOLD FLOW FOR MORE THAN ONE HEATER. FOR TWO HEATERS INCREASE COMMON PIPE SIZE BY ONE, FOR THREE HEATERS, INCREASE COMMON PIPE SIZE BY TWO.

EXTERNAL AUXILIARY BYPASS VALVE
(Where Required) 926-1223 Models only

An auxiliary bypass valve should be used when flow rates exceed 120 GPM (usually a high performance pump size larger than two HP will exceed this flow rate). This valve is required to complement the function of the automatic bypass valve, particularly when starting the heater in winter or early spring when the spa or pool temperature is below 55°F. It also serves to eliminate needless pressure drop through the heater and accompanying reduction in the flow rate to the spa jets, etc.



AUXILIARY BYPASS VALVE ADJUSTMENT

To set bypass: With clean filter, adjustment is made by feeling the inlet and outlet pipes at the heater. Outlet pipes should be slightly warmer than inlet and comfortable to the touch. If pipe is hot, close bypass; if cold, open bypass.

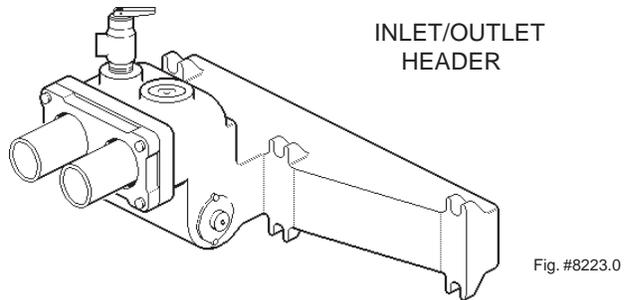
NOTE: Do not use a gate valve as an auxiliary bypass valve on any heaters.

Models 926-1223

The heater is also equipped with a manual bypass built into the header. This is in addition to the automatic bypass valve. This may be used with flow rates up to 120 GPM and adjusted as below.

NOTE: Sooting or liming caused by improper bypass adjustment voids the warranty.

BYPASS VALVE



OPEN POSITION **CLOSED POSITION**
MANUAL BYPASS **ADJUSTMENT**

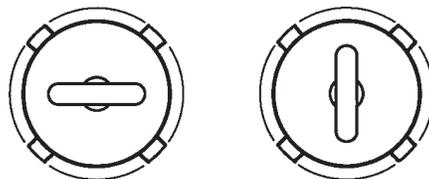


Fig. #8222.0

NOTE: To avoid water damage or scalding due to valve operation, drain pipe must be connected to valve outlet and run to a safe place of discharge. Drain pipe must be the same size as the valve discharge connection throughout its entire length and must pitch downward from the valve. No shut-off valve shall be installed between the relief valve and the drain line. Valve lever should be tripped at least once a year to ensure that waterways are clear.

TEMPERATURE CONTROLS

HIGH LIMITS

The pool heater is equipped with two high limits. Both high limits, the non-adjustable auto reset high limit and adjustable manual reset high limit are attached to the outlet side of the in/out header.

POOL STAT

The pool heater is equipped with a pool thermostat that is attached to the inlet side of the in/out header to control the pool temperature.

LOW WATER CUT-OFF

Automatically shuts down burner whenever water level drops below probe. 30 second time delay prevents premature lockout due to temporary conditions such as power failure or air pockets. Standard on Cal Code heaters.

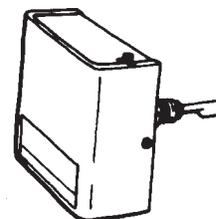


Fig. #6043

HIGH & LOW GAS PRESSURE SWITCHES

Pressure switches sense either high or low gas pressure and automatically shut down burners if abnormal pressures exist. Standard on Models 3001-4001.

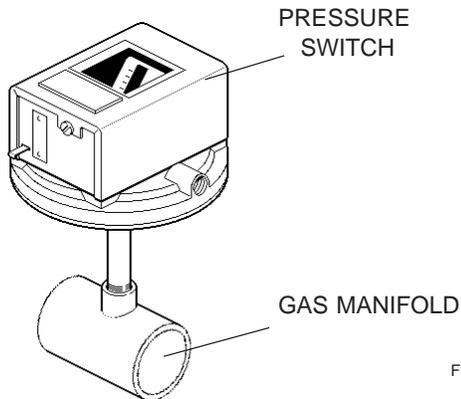


Fig. #8236

Heater must be electrically grounded and bonded in accordance with local codes, or, in the absence of local codes, with the latest edition of the National Electrical Code, ANSI/NFPA 70.

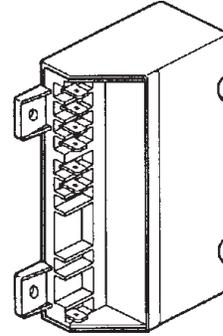


Fig. #8929.1

ELECTRICAL WIRING

CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

DANGER - SHOCK HAZARD - Make sure electrical power to the heater is disconnected to avoid potential serious injury or damage to components.

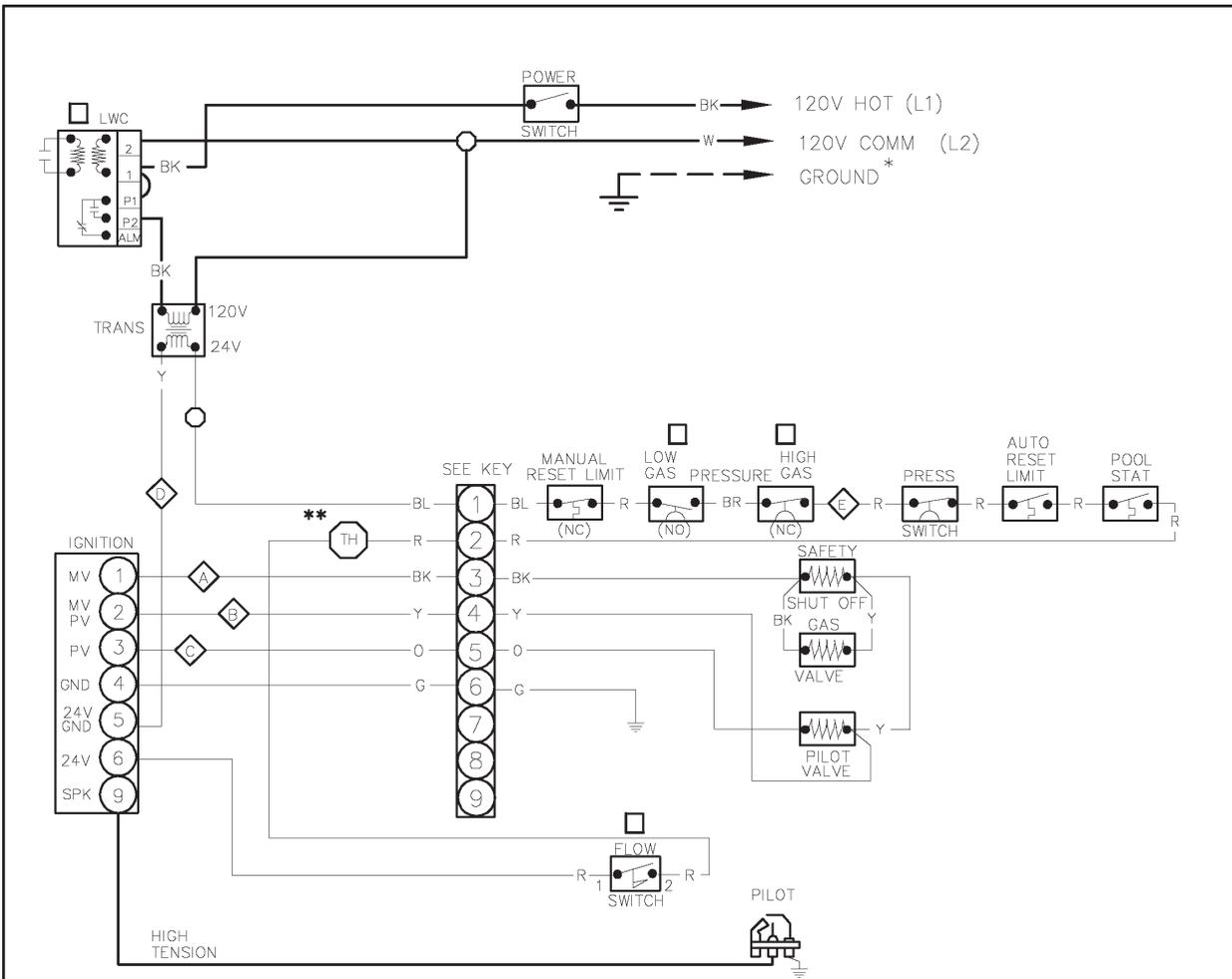
NOTE: If it is necessary to replace any of the original wiring, it must be replaced with 105° C wire or its equivalent.

ELECTRONIC IGNITION

The intermittent ignition device conserves energy by automatically extinguishing the pilot when desired temperature is reached. When additional heat is needed, the pilot re-ignites electrically, eliminating the fuel costs of maintaining a constant pilot. To ensure safe operation, the gas valve cannot open until the pilot relights and is confirmed.

Model	w/out lockout	with lockout
926-1826 Natural Gas	Standard	Optional
926-1826 Propane	N/A	Standard
2100-4001 Natural Gas	N/A	Standard
2100-4001 Propane	N/A	Standard

**WIRING DIAGRAM
MODELS 926 - 1223**



NOTES:

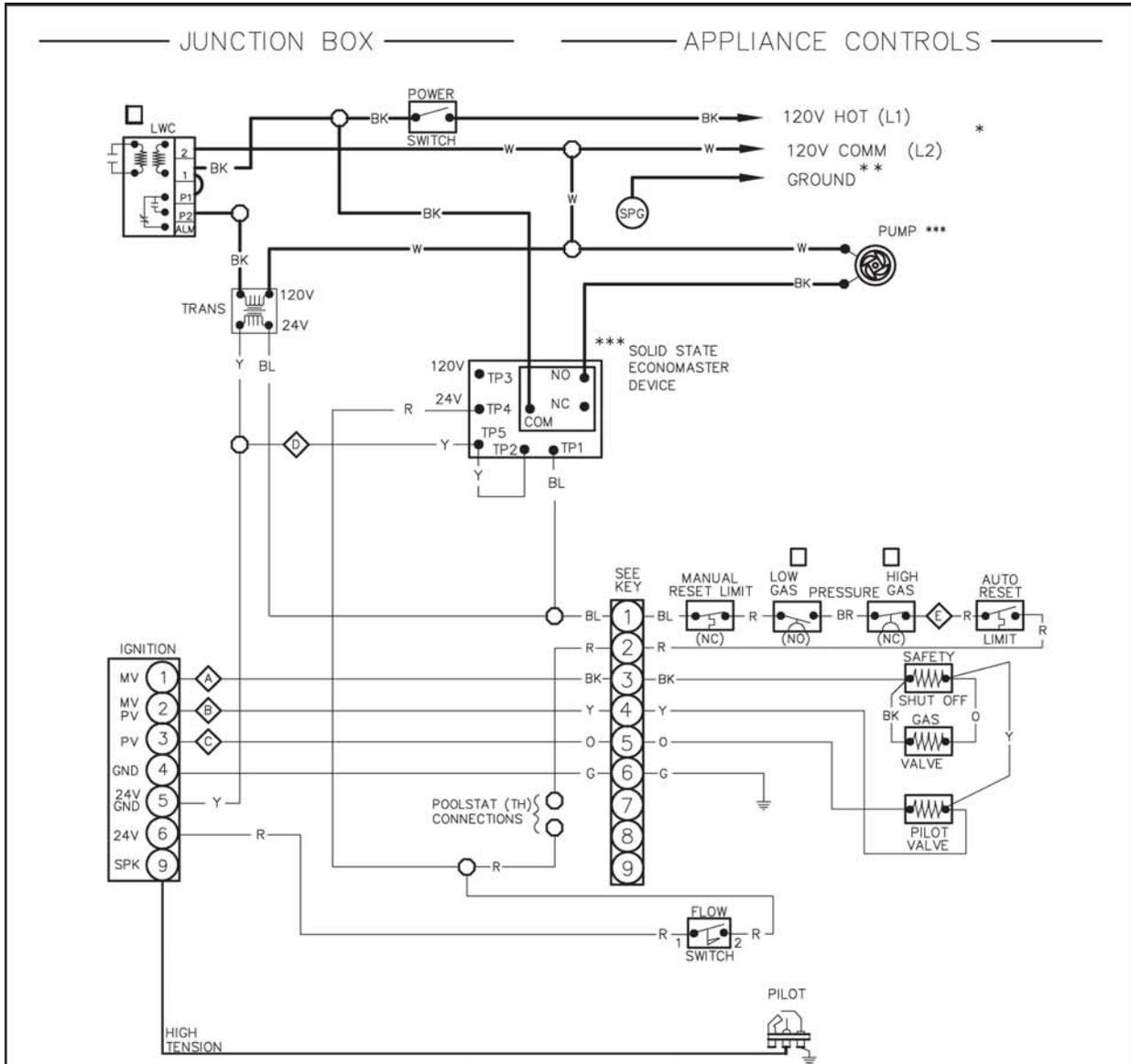
- ◆-◆ CONNECTIONS FOR OPTIONAL E-4 ALARM PANEL.
- * USE GROUND CLIP PROVIDED. FAILURE TO PROVIDE PROPER GROUND MAY RESULT IN LOCK-OUT
- ** USE TH CONNECTION FOR FIREMAN SWITCH HOOKUP
- *** DUALSTAT INCLUDES POOL AQUASTAT (NC) & AUTO RESET LIMIT (NC)
- CHECK CONTROLS PROVIDED (WIRED AS SHOWN)
- REPLACE WIRING WITH 105°C WIRE ONLY

KEY										
—	24V									
—	120V									
- - -	120V FIELD WIRE									
○	WIRE NUT									
BK	BLACK									
BR	BROWN									
R	RED									
O	ORANGE									
Y	YELLOW									
G	GREEN									
BL	BLUE									
V	VIOLET									
W	WHITE									
PLUG (ACTUAL)										
<table border="1"> <tr> <td>3</td> <td>2</td> <td>1</td> </tr> <tr> <td>6</td> <td>5</td> <td>4</td> </tr> <tr> <td>9</td> <td>8</td> <td>7</td> </tr> </table>		3	2	1	6	5	4	9	8	7
3	2	1								
6	5	4								
9	8	7								
FRONT VIEW										
152103	8									

APPROVED BY:
CHECKED BY:
ORIG E.O. 2101
05/15/86
CHG E.O. 04-035
08/06/04
Raupak

WIRING DIAGRAM IID FIRING MODE - ON/OFF	
INPUTS:	926,000 THRU 1,223,000 BTUH
SIZE:	926-1223
TYPE:	P

WIRING DIAGRAM
MODELS 1287-1826



NOTES:

- * POWER TO APPLIANCE MUST BE INTERLOCKED WITH MAIN SYSTEM FILTER PUMP.
- ** **USE GROUND CONNECTION PROVIDED. FAILURE TO PROVIDE PROPER GROUND MAY RESULT IN LOCK-OUT ALL GROUND \perp TERMINATE AT (SPG).**
- *** PUMP USED MUST BE RATED AT 10 AMPS MAX OR 3/4 HP MAX. PUMP DELAY ADJUSTABLE BETWEEN 3-10 MINUTES.

⬠-⬠ CONNECTIONS FOR OPTIONAL E-4 ALARM PANEL.

CHECK CONTROLS PROVIDED (WIRED AS SHOWN)

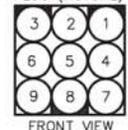
IF ANY OF THE ORIGINAL WIRE AS SUPPLIED MUST BE REPLACED, IT MUST BE REPLACED WITH ITS EQUIVALENT, 105°C OR 150°C AS NOTED.

KEY

- 24V 105°C
- - - 24V 150°C
- 120V 105°C
- - - 120V 150°C

- WIRE NUT
- (SPG) GROUND
- BK - BLACK
- BR - BROWN
- R - RED
- O - ORANGE
- Y - YELLOW
- G - GREEN
- BL - BLUE
- V - VIOLET
- W - WHITE

PLUG (ACTUAL)



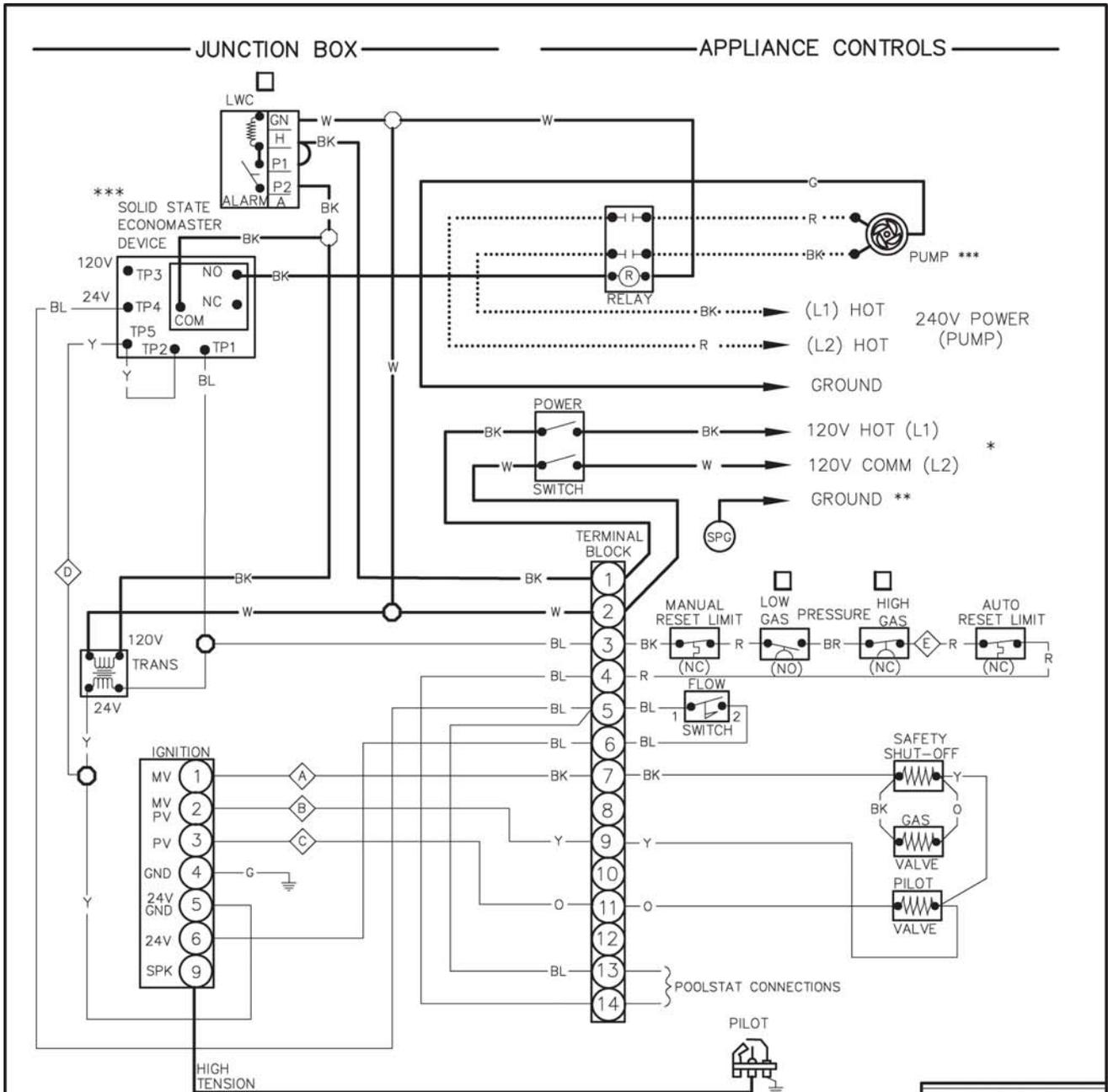
FRONT VIEW

CHECKED BY:	
APPROVED BY:	
ORIG E.O.	3171
	3/23/98
CHG E.O.	3560
	9/29/06
<i>Raypak</i>	

WIRING DIAGRAM IID/ECONOMASTER FIRING MODE - ON/OFF	
INPUTS:	1,287,000 THRU 1,826,000 BTUH
SIZE:	1287-1826
TYPE:	P

152403 3

WIRING DIAGRAM
MODELS 2100-2500



NOTES:

- * POWER TO APPLIANCE MUST BE INTERLOCKED WITH MAIN SYSTEM FILTER PUMP.
 - ** USE GROUND CONNECTION PROVIDED. FAILURE TO PROVIDE PROPER GROUND GROUND MAY RESULT IN LOCK-OUT. ALL GROUND \neq TERMINATE AT (SPG).
 - *** PUMP USED MUST BE RATED AT 10 AMPS MAX OR 3/4 HP MAX. PUMP DELAY ADJUSTABLE BETWEEN 3-10 MINUTES.
 - ⬡-⬢ CONNECTIONS FOR OPTIONAL E-4 ALARM PANEL.
 - ☑ CHECK CONTROLS PROVIDED (WIRED AS SHOWN)
- IF ANY OF THE ORIGINAL WIRE AS SUPPLIED MUST BE REPLACED, IT MUST BE REPLACED WITH ITS EQUIVALENT, 105°C OR 150°C AS NOTED.

KEY

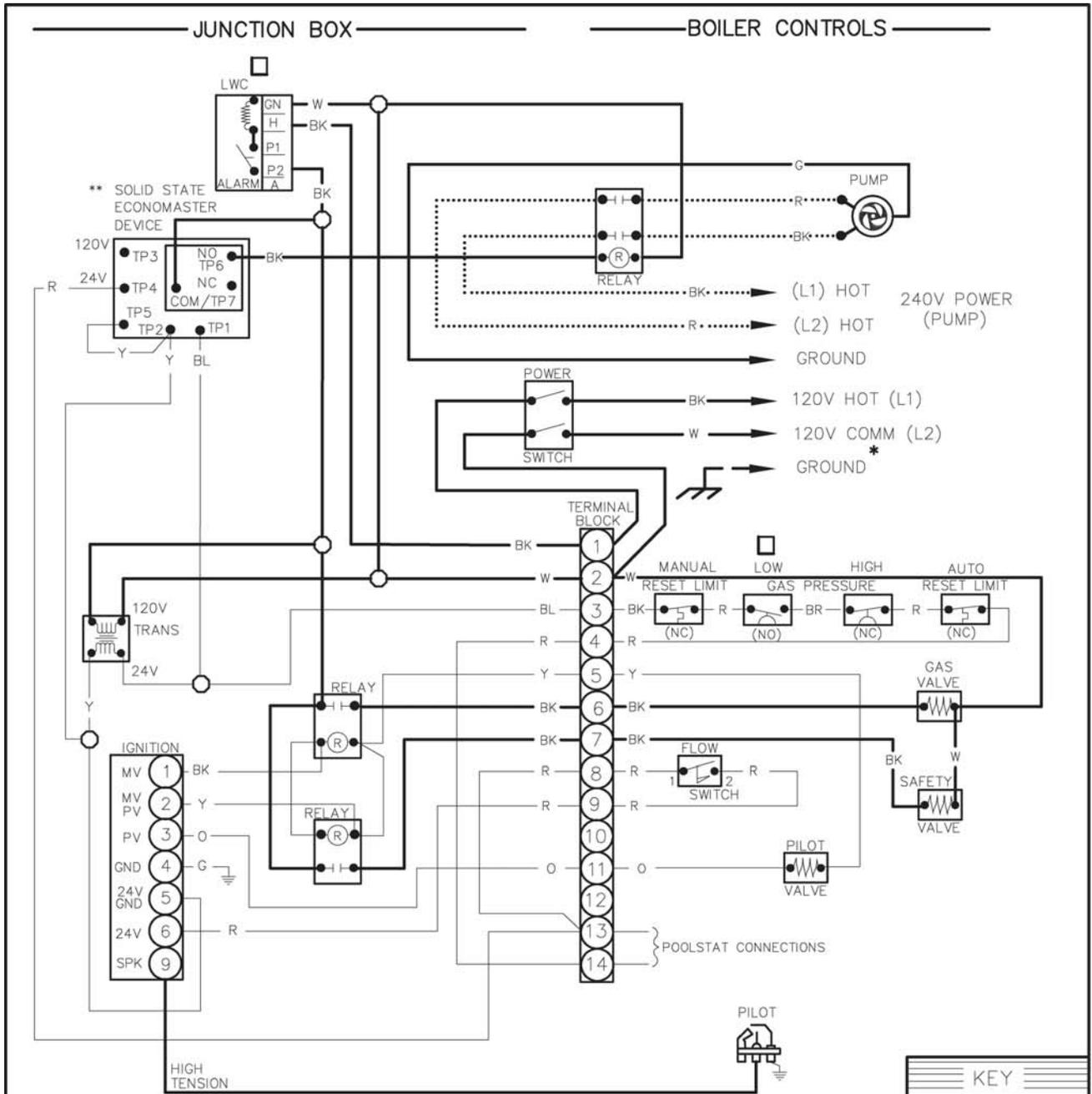
- 24V 105°C
- 120V 105°C
- - - 120V 150°C
- ⋯ 240V 105°C
- WIRE NUT
- ⊕ SPG GROUND
- BK - BLACK
- BR - BROWN
- R - RED
- O - ORANGE
- Y - YELLOW
- G - GREEN
- BL - BLUE
- V - VIOLET
- W - WHITE

CHECKED BY:	
APPROVED BY:	
ORIG E.O.	3180
	12/13/99
CHG E.O.	3560
	9/29/06
<i>Raypak</i>	

WIRING DIAGRAM IID ECONOMASTER	
FIRING MODE: ON/OFF	
INPUTS:	2,100,000 THRU 2,499,000 BTUH
SIZE:	2100-2500
TYPE:	P

152456	2
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WIRING DIAGRAM
MODELS 3001-4001



NOTES:

POWER TO BOILER MUST BE INTERLOCKED WITH MAIN SYSTEM FILTER PUMP.

* USE GROUND CLIP PROVIDED. FAILURE TO PROVIDE PROPER GROUND MAY RESULT IN LOCK-OUT

** PUMP DELAY ADJUSTABLE BETWEEN 3-10 MINUTES.

CHECK CONTROLS PROVIDED (WIRED AS SHOWN)
REPLACE WIRING WITH 105°C WIRE ONLY

CHECKED BY:	
APPROVED BY:	
ORIG E.O.	3180
	12/27/99
CHG E.O.	3335
	8/29/00
Raupak	

**WIRING DIAGRAM IID ECONOMASTER
FIRING MODE-ON/OFF**

INPUTS: 3,000,000 THRU 4,000,000 BTUH

SIZE: **3001-4001**

TYPE: **P**

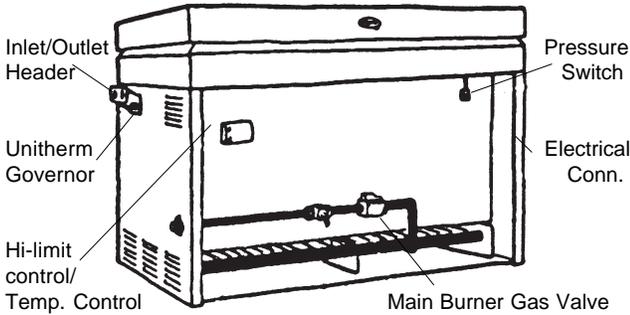
152457 1

KEY	
—	24V
.....	240V
-----	120V
- - - - -	120V FIELD WIRE
○	WIRE NUT
BK	BLACK
BR	BROWN
R	RED
O	ORANGE
Y	YELLOW
G	GREEN
BL	BLUE
V	VIOLET
W	WHITE

SECTION 4/ SERVICING INSTRUCTIONS

GENERAL LOCATION OF CONTROLS

MODELS 926-1826



MODELS 2100-4001

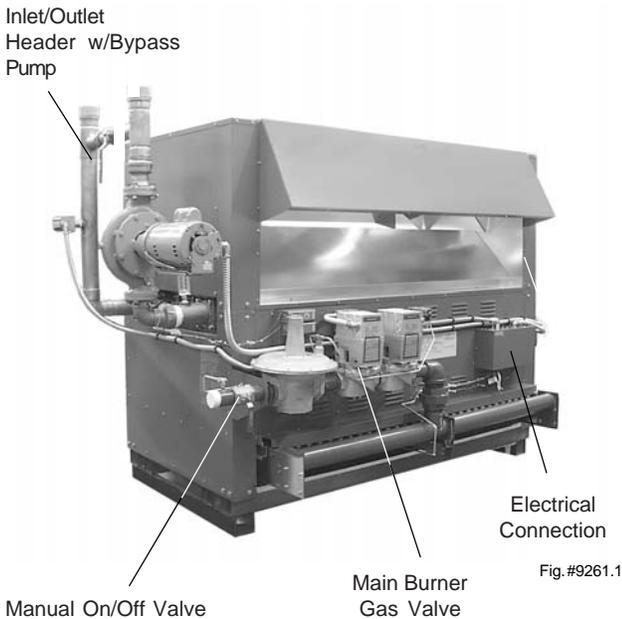


Fig.#9261.1

TEMPERATURE CONTROL

The pool water temperature is controlled by the pool thermostat.

The heater water temperature high limit is controlled by the manual reset high limit.

PRESSURE SWITCH

The pressure switch, or heater actuator, ensures that the heater operates only when the filter pump is in operation. It is factory set at 1.75 PSI for deck level installations. When the heater is located below the level of the spa or pool, it may be necessary to reset the pressure switch to compensate for the no-flow static head. If it is necessary to reset the pressure switch, we recommend the following procedure:

PRESSURE SWITCH ADJUSTMENT:

1. Make sure the pool filter is clean before adjusting the switch.
2. Set the heater control to the OFF mode.
3. Turn the filter pump on and confirm that the pressure switch is closed (use a multimeter to check). If the pressure switch fails to close, either the switch setting is too high or the filter pump is not supplying enough pressure.
4. Turn the heater ON.
5. Manually turn the pressure adjustment knob clockwise until the heater shuts off. (A flat screw driver may be necessary if knob is too tight).
6. Slowly turn the adjustment knob counter-clockwise until the heater calls for heat again.
7. Turn an additional 1/2 turn counter-clockwise.
8. While the heater is running, check the adjustment by turning the pump off and on several times. The burners should shut off immediately when the pump is turned off. If it does not, repeat the above steps until proper operation is observed.

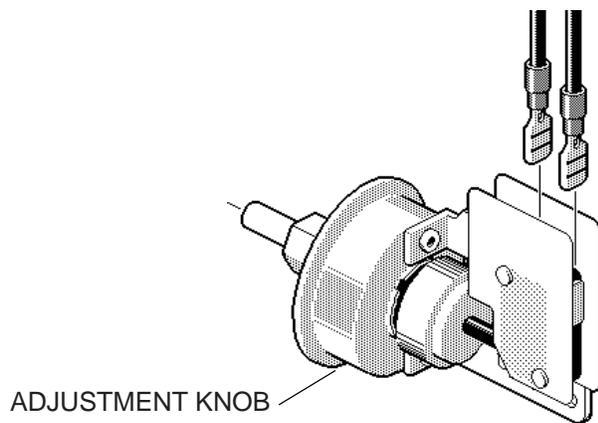


Fig. # 8069.1

PRESSURE SWITCH ADJUSTMENT RANGE

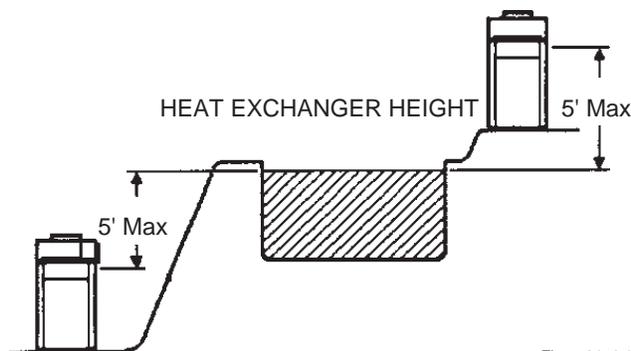


Fig. # 8152.0

NOTE: If heater is installed outside of the limits shown, a flow switch must be used in place of the pressure switch when mounted and wired adjacent to the heater.

TWO-SPEED PUMPS

In some cases, the flow on the low speed is insufficient to operate the heater. This is apparent when the pressure switch cannot be further adjusted or if the heater makes banging noises. In these cases, the pump must be run at high speed when heating the water.

CAUTION: Do not operate the heater without the function of a properly adjusted pressure switch.

PILOT SAFETY

The heater employs a pilot safety which closes the main gas valve within 8/10ths of a second whenever the pilot flame is interrupted. Pilot flame is automatically lit when the device is powered. Unit performs its own safety check and opens the main valve only after the pilot is proven to be lit.

START-UP PROCEDURES

BEFORE START-UP BURNERS

Clean main burners and air louvers of dust, lint and debris. Keep heater area clear and free from combustibles, flammable liquids, and chemicals. Do not obstruct the flow of combustion and ventilating air.

WATER

Water must be flowing through the heater.

START-UP

CAUTION: Propane gas is heavier than air and sinks to the ground. Exercise extreme care in lighting heater in confined areas.

LIGHTING INSTRUCTIONS

1. Close all gas valves. Turn off electric power supply wait 5 minutes.
2. Open manual pilot valve. Turn on electric power, pilot is automatically lighted.
3. Open main gas valve.
4. Set temperature controls to desired temperature.

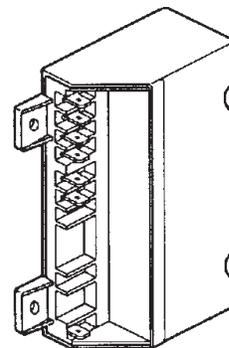


Fig. #8929.1

TO SHUT DOWN

Close all manual gas valves. Turn off electric power.

AFTER START-UP

Pilot System Checkout Procedure

1. Turn on power to the ignition systems and turn gas supply off.
2. Check ignition module as follows:
 - a. Set the thermostat above pool water temperature to turn heater on.
 - b. Watch for continuous spark at the pilot burner.
 - c. Time the spark operation. Time must be within the lockout timing period (15 or 90 seconds).
 - d. Turn thermostat down to turn off heater and wait 60 seconds on lockout models before beginning step 3.
3. Turn on gas supply.
4. Set thermostat above pool water temperature to turn on heater.
5. Systems should start as follows:
 - a. Spark will turn on and pilot gas valve will open at once. Pilot burner should ignite after gas reaches the pilot burner.
 - b. Spark ignition should cut off when pilot flame is established.
 - c. Main gas valve should open and main burner should ignite after gas reaches the burner port.

INSPECTION PROCEDURES

BURNERS

Clean main burners and air louvers of dust, lint and debris. Keep boiler area clear and free from combustibles and flammable liquids. Do not obstruct the flow of combustion and ventilating air. Make visual check of burner and pilot flame. Yellow flame indicates clogging of air openings. Lifting or blowing flame indicates high gas pressure. Low flame indicates low gas pressure.

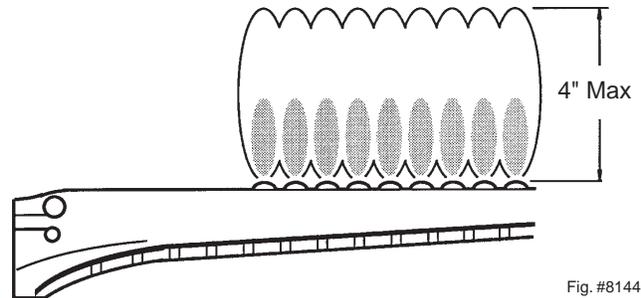


Fig. #8144

MAIN BURNER FLAME



PILOT BURNER FLAME

Feel inlet and outlet pipes. Outlet should be only slightly warmer than inlet. It should not be hot.

WARNING: *Should overheating occur or the gas supply fails to shut off, turn off the manual gas control to the appliance.*

CONTROLS

Check all controls to see that they are operational. To check electric safety turn off main burner. Observe pilot burner when shutting off pilot gas. Ignition spark should go on. Main gas valve will also drop out.

SERVICING PROCEDURES

TUBE CLEANING PROCEDURE (TYPICAL)

Establish a regular inspection schedule, the frequency depending on the local water condition and severity of service. Do not let the tubes clog up solidly. Clean out deposits over 1/16" in thickness.

Although the illustration shows the mechanical cleaning procedure of a small boiler, it is typical of all sizes. The boiler may be cleaned from the return header side as shown, without breaking pipe connections. It is preferable, however, to remove both headers for better

visibility through the tubes and to be sure the ground up lime dust does not get into the system.

Note that you do not remove the top pan or the heat exchanger, generally.

After reaming, mount the wire brush in lieu of the auger and clean out the debris remaining in the tubes.

Another method is to remove the heat exchanger, ream tubes and immerse heat exchanger in non-inhibited de-scale solvent.

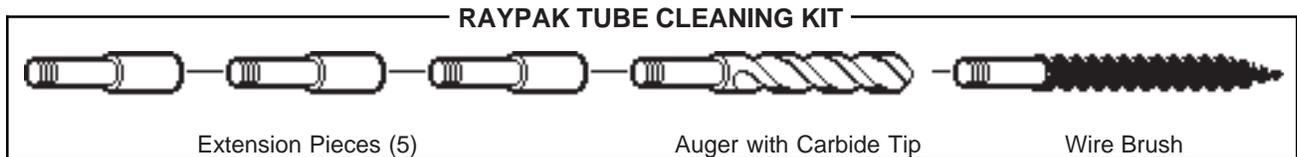


Fig. #8154.0

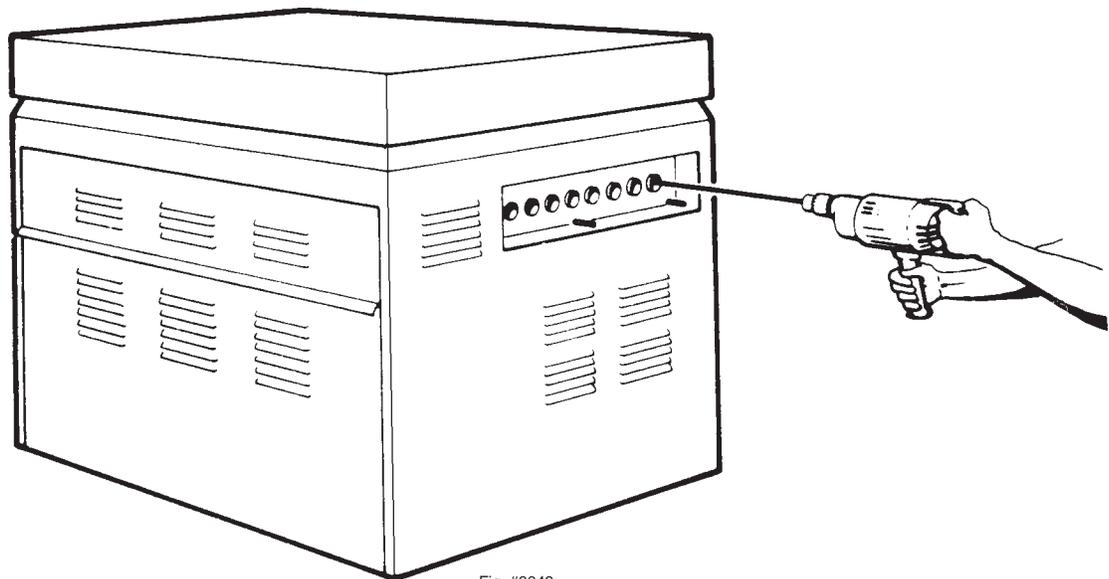


Fig. #6049

BURNER DRAWER REMOVAL

1. Shut off power and gas supply to the pool heater. Disconnect union(s) and pilot tubing, then loosen and remove burner-hold down screws.
2. Disconnect wires at gas valve and slide burner drawer out.

GAS VALVE REMOVAL

1. Shut off gas supply to the pool heater. Remove gas piping to gas valve inlet.
2. Disconnect wires, pilot tubing and bleed line, if required.
3. Turn vertical gas pipe from manifold slightly and unscrew gas valve.
4. Reverse above procedure to re-install.

MAIN BURNER AND ORIFICE REMOVAL

1. Remove screws and burner hold down bracket.

NOTE: *If the heat exchanger is sooted badly, the burner hold-down bracket and spacer can become distorted from direct flame impingement and this usually necessitates replacement of these parts.*

2. Lift burners from slotted spacer and slide from orifices. Clean with a wire brush.
3. Orifices usually do not need to be replaced. To clean, run either copper wire or wood through orifice. Do not enlarge hole. To remove orifice, use a socket wrench and remove the manifold. **DO NOT** overtighten when reinstalling.

PILOT REMOVAL AND CLEANING

1. Disconnect pilot tubing at pilot and sensor/igniter wire. Remove screws holding pilot bracket to burner drawer.
2. Remove pilot and bracket, clean pilot of debris, small bugs, etc., with wire or small brush.
3. Replace pilot, pilot tubing, sensor ignition wires and check for leaks.

HEAT EXCHANGER REMOVAL

1. Shut water, gas and electricity off, close valves, relieve pressure and remove relief valve. Remove side inspection panels.
2. Remove top holding screws.
3. Remove draft diverter, lift and remove top and flue collector on stack type models. Remove inspection panels.
4. Loosen bolts and disconnect flange nuts on inlet-outlet header, loosen union(s) at gas pipe, and slide boiler away from piping until studs clear the heater.

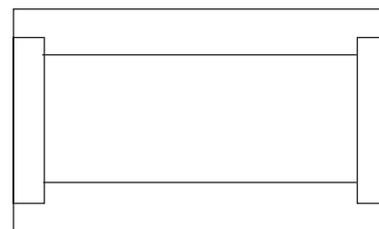
5. Remove heat exchanger corner brackets.
6. Remove combustion chamber clips at the four corners of the heat exchanger.
7. Lift heat exchanger straight up using caution not to damage refractory.

HEAT EXCHANGER REASSEMBLY

1. Heat exchanger header O-rings should be replaced with new ones.
2. Install inlet-outlet and return water headers and install header retainer nuts and torque nuts evenly.
3. Install the four (4) corner clips between tube sheets and refractory. Replace "V" baffles.
4. Install thermostat sensing bulbs in header wells and replace bulb retaining clips.
5. Install inlet and return pipes in water headers using pipe thread sealant.
6. Install water pressure relief valve, flow switch, and low water cutoff devices if so equipped.
7. Open water supply and return shutoff valves. Fill heater and water piping system with water. Check heater and piping system for leaks at full line pressure. Run system circulating pump for a minimum of 1/2 hour with heater shutoff.
8. Shut down entire system and vent all radiation units and high points in system piping. Check all strainers for debris.
9. Install fuel collector, jacket top and inspection panels. Install top holding screws. Install draft diverter and vent piping if so equipped.
10. If gas piping was disconnected, reconnect gas piping system and check for leakage using a soap solution.
11. Double check electrical circuits, grounding connections and pump with wiring diagram supplied with heater.
12. Check for correct water pressure and water level in the system. Make sure that system pump operates immediately on the call for heat. The system is ready for operation.

COMBUSTION CHAMBER REMOVAL

To remove the combustion chamber you must first have removed the heat exchanger. Unbolt metal combustion chamber retainer from top and remove combustion chamber panels individually.



REFRACTORY PANELS TOP VIEW

Fig. #8155.0

CONTROL WELL REPLACEMENT

Remove top, sensing bulb and clip. Collapse well tube at the open end and with a chisel, push through into the header, and remove the well through header. Insert a new well and roll into place. If a roller is not available, solder the well in place with silver solder.

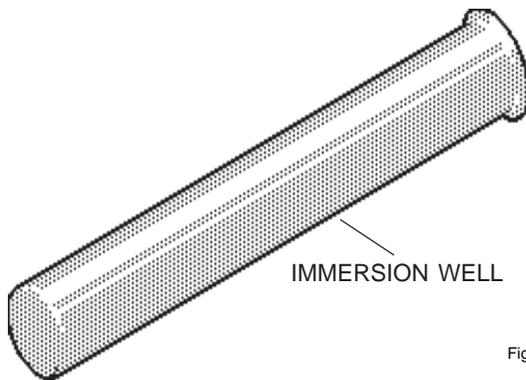


Fig. #8126.0

TUBE REPLACEMENT PROCEDURE

On Raypak tube replacement may be affected without rolling, as a temporary means of repair, provided there are two or more tubes rolled into act as stays on left and right sides. The "O" rings should provide a seal up to 125 PSI working pressure. Use a 3/8" heavy duty reversible drill motor or larger, to power the tube roller. If a reversible drill is not available, after rolling the tube in, remove the drill motor and wrench out the roller. A tube roller is available from the factory.

Shut gas and power off to the unit, close the system off and drain the pool heater. Remove draft diverter. Remove the access panels and jacket top. Lift the canopy and flue collector off (on models 926-1826, remove the canopy hold-down brackets). Remove "V" baffles over tube(s) to be replaced. If no pipe unions have been provided, use the header as a union, remove the flange nuts off the inlet-outlet header, break gas connection and slide boiler away from piping, allowing room to work. Pull wedge slips out of control wells and remove sensing bulbs. Remove flange nuts from the return header and remove header. Lift heat exchanger straight up and out.

Heat exchanger header o-rings must be replaced with new ones. The tube may be cut out with a hack-saw or hammer and chisel adjacent to both tube sheets, leaving stubs in the tube sheets. Then proceed to collapse stubs in the tube sheets with a chisel or screwdriver. Use caution not to cut into the tube sheet. Replacement tubes will have the fins stripped off longer on one end. The long end is inserted into the opening of the tube sheet first; then the short end is fitted through the opposite tube sheet. If the tube ends become dented or bent, straighten at least four (4) inches back from the tube end by means of a tapered punch.

Insert tube roller into tube opening up to stop against tube, then push center rod in until roller is tight. Be careful to keep replacement tube squared up 1/8" outside each tube sheet. A loose tube will sometimes pull toward the roller. Attach drill motor to tube roller, holding it straight and level. Proceed to expand tube until the tool begins to grab. At this point, 1/2" to 1" should be exposed on the tool shank. Reverse drill motor or wrench out by hand. Care should be exercised to avoid applying excessive torque during rolling operation and to avoid thinning out any part of the tube wall excessively over .015". Use same procedure at the opposite end of the tube.

Apply line pressure test, and re-roll, if necessary, before replacing canopy.

PROCEDURE FOR CLEANING FLUE GAS PASSAGEWAYS

Soot can clog areas behind fins and cause eventual tube failure. Any sign of soot at base of burners or around outer jacket indicates a need for cleaning.

1. Lift off draft hood and flue collector by removing bolts and screws.
2. Remove "V" baffles from heat exchanger.
3. Remove burner tray.
4. Take garden hose and wash heat exchanger, making sure soot is removed from between fins. (Avoid excessive water against refractory).
5. Reassemble; when boiler is fired, some steam will form from wet refractory. This is normal.

NOTE: *In extreme cases it may be necessary to remove the heat exchanger completely for cleaning. The simplest method is steam cleaning at a local car wash. **DO NOT WIRE BRUSH!***

CAUTION: *Soot is combustible, so exercise extreme care.*

UNITHERM GOVERNOR REPLACEMENT

1. Shut off water, gas and electricity, close valves, relieve pressure.
2. Drain heat exchanger.
3. Remove Unitherm Governor.

MODELS 926-1223
UNITHERM GOVERNOR

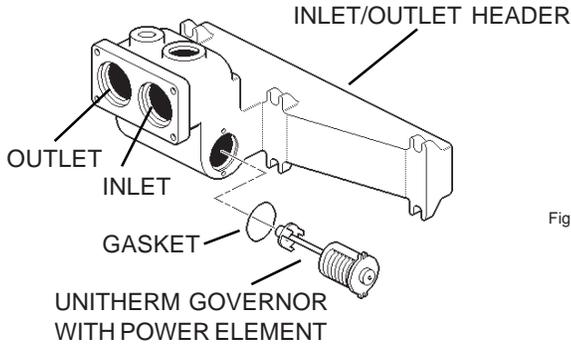
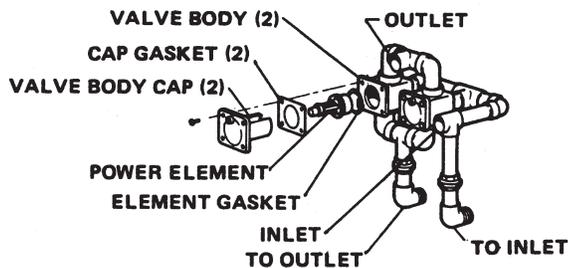
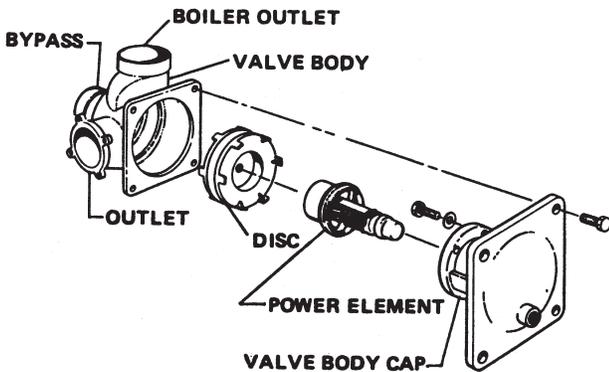


Fig. #8224.0

MODELS 1287-1826 (Models prior to Jan. '95)
DOUBLE EXTERNAL U.G.



MODELS 2100-4001 (Models prior to Jan. '95)
EXTERNAL U.G.



To test operation of Unitherm Governor, place in hot water and watch for movement against spring. If no movement, replace.

MAINTENANCE AND CARE

To be followed one month after initial start-up and then quarterly.

1. Inspect top of heater and draft-hood for soot, and open fuel gas passageways.

CAUTION: Soot may be combustible. Wet completely when cleaning.

2. Clean main burners and pilot burner of dust and lint.

3. Inspect and operate all controls and gas valve.
4. Make visual check of burner and pilot flame. Flame pattern on main burner and pilot is indicated above. Yellow flame means restriction of air openings. Lifting or blowing flame indicates high gas pressure. Low flame means low gas pressure.
5. Clean room air intake openings to ensure adequate flow of combustion and ventilation air.
6. Remove header opposite inlet pipes when cleaning and inspect internal tubes for scale deposits. If scale does not form within first quarterly inspection, then inspect annually thereafter.

CAUTION: Combustion air must not be contaminated by corrosive chemical fumes which can damage the heater and void the warranty.

7. Keep heater air clear and free from combustible materials and other flammable and corrosive vapors and liquids.
8. Keep moving parts lubricated.
9. Manual operation of pressure/temperature relief valve at least once a year.

SPA WATER CHEMISTRY

NOTE: Chemical imbalance can cause severe damage to your heater and associated equipment. Maintain your water pH between 7.2 and 7.8, and total alkalinity between 100 and 150 ppm. If the mineral content and dissolved solids in the water become too high, scale forms inside the heat exchanger tubes, reducing heater efficiency and also damaging the heater. If the pH drops below 7.2, the heater will be severely damaged.

NOTE: Heat exchanger damage resulting from chemical imbalance is not covered under the warranty.

WINTERIZATION

WINTERIZING YOUR HEATER

When heaters installed outdoors in freezing climate areas are to be shut down for the winter, please observe the following step-by-step procedure:

1. Remove the drain plug or open the drain cock located on the inlet-outlet header. On larger heaters with external Unitherm Governor(s) and piping, locate plug at low point of Governor piping, or break connections and rotate inlet fittings 180° to face downward. Turn off manual main gas and main gas shut off.
2. Disconnect compression fittings on both ends of the 1/8" copper tube and allow the tube to drain. Remove the "heat exchanger inspection panels" on the right side of the heater to gain access to the fitting on the return header. Remove return header.

SECTION 5 / TROUBLESHOOTING GUIDE

IMPORTANT NOTICE

These instructions are primarily intended for the use of qualified personnel specifically trained and experienced in the installation of this type of heating equipment and related system components. Installation and service personnel may be required by some states to be licensed. Persons not qualified shall not attempt to install this equipment nor attempt repairs according to these instructions.

MECHANICAL (FOR QUALIFIED SERVICE PERSONNEL ONLY)

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Harmonics, or whining noise	U.G. Inoperative.....	Check movement by putting in hot water (110°F or higher). If no movement, replace.
	*Debris or restriction in system.....	Locate the restriction and remove. Flush system and clean.
	*Debris in gas line..... Low flow.....	Remove debris or blow out gas line. Scale forming in heat exchanger - clean heat exchanger and check pool pH and total alkalinity.
Heater going on and off continuously	Dirty filter.....	Backwash filter.
	Low water level in pool.....	Raise water level.
	External bypass setting out of adjustment.....	Adjust bypass
	*Pressure switch out of adjustment.....	Adjust pressure switch
Liming or scale forming on heat exchanger	Pool water.....	Recommended pH should be between 7.2 and 7.8 total alkalinity 100-150 PPM maximum. Hardness -150-400 PPM maximum.
Sooting	High flow rates.....	Reduce by adding manual bypass valve and adjust by putting thermometer in header (1/4" NPT) drain opening. Set bypass so thermometer reads between 105° and 110°F.
	U.G. Inoperative.....	Check movement by putting in hot water (110°F or higher). If no movement, replace.
	*Air starvation.....	Refer to installation instructions.
	*Improper venting.....	Follow recommended installation instructions.
	*Insects or debris clogging burner intake ports.....	Clean burners
Pilot outage	Low gas pressure.....	Adjust gas pressure.
	Restricted pilot.....	Clean pilot.
	Weak pilot generator.....	Replace pilot.
Yellow lazy flame	Low gas pressure.....	Adjust gas pressure.
	*Insects or debris clogging burner intake ports.....	Clean burners.

*Usually occurs on initial start-up

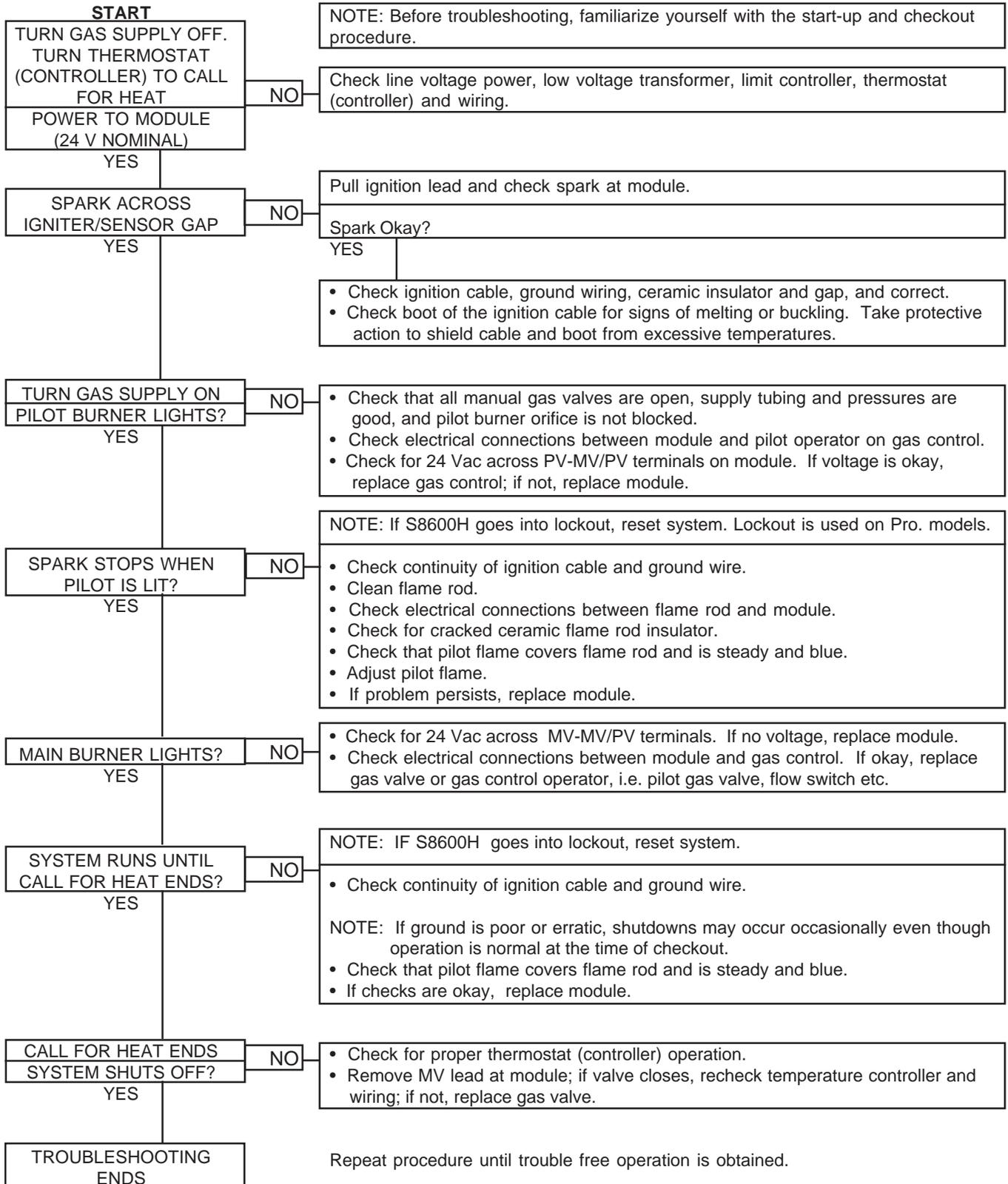
Outer jacket very hot (paint blistered)	*Broken refractory caused by shipping damage or improper combustion..... Excessive sooting of heat exchanger.....	Replace refractory panels. Determine cause of sooting & correct.
Takes long time to heat pool or spa	Calculate temperature in °F/hr..... Filter not running long enough..... Dirty filter..... Gas line or meter under-sized.....	Heat rise (°F/hr.) = $\frac{\text{Htr.output}}{\text{Pool gallonage} \times 8.33}$ or refer to heater sizing chart. This does not take into account heat loss due to weather. Reset time clock. Clean filter. Refer to installation instructions.
Liming	Bypassing too much water.....	Inspect bypass for movement, if no movement, replace.
Leaking at well.	U/G not functioning.....	Replace if no movement when heated.
Leaking at heat exchanger.	Overacid.....	Replace well and maintain water chemistry properly.
Gasket brittle and leaking- (overheated).	Overacid..... Heater running after pump shuts off..... Refractory damage..... Sooted heater.....	Replace heat exchanger and maintain chemistry properly. See pressure switch adjustment. Replace refractory. Determine cause of sooting and correct.

*Usually occurs on initial start-up

ELECTRICAL (ELECTRONIC IGNITION IID) IID
Intermittent Pilot System
TROUBLESHOOTING HONEYWELL S8600

WARNING
HIGH VOLTAGE
 For qualified Technicians ONLY

NOTE: Some heaters may be equipped with an ignition module that shuts off pilot gas if pilot fails to light. To reset, interrupt power to heater.



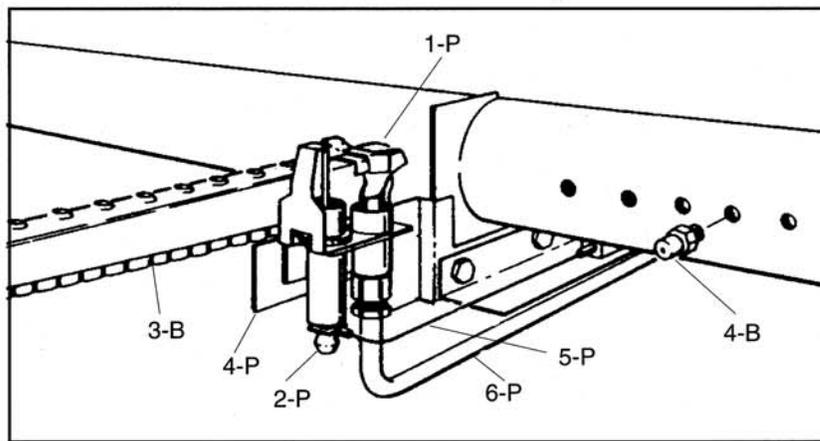
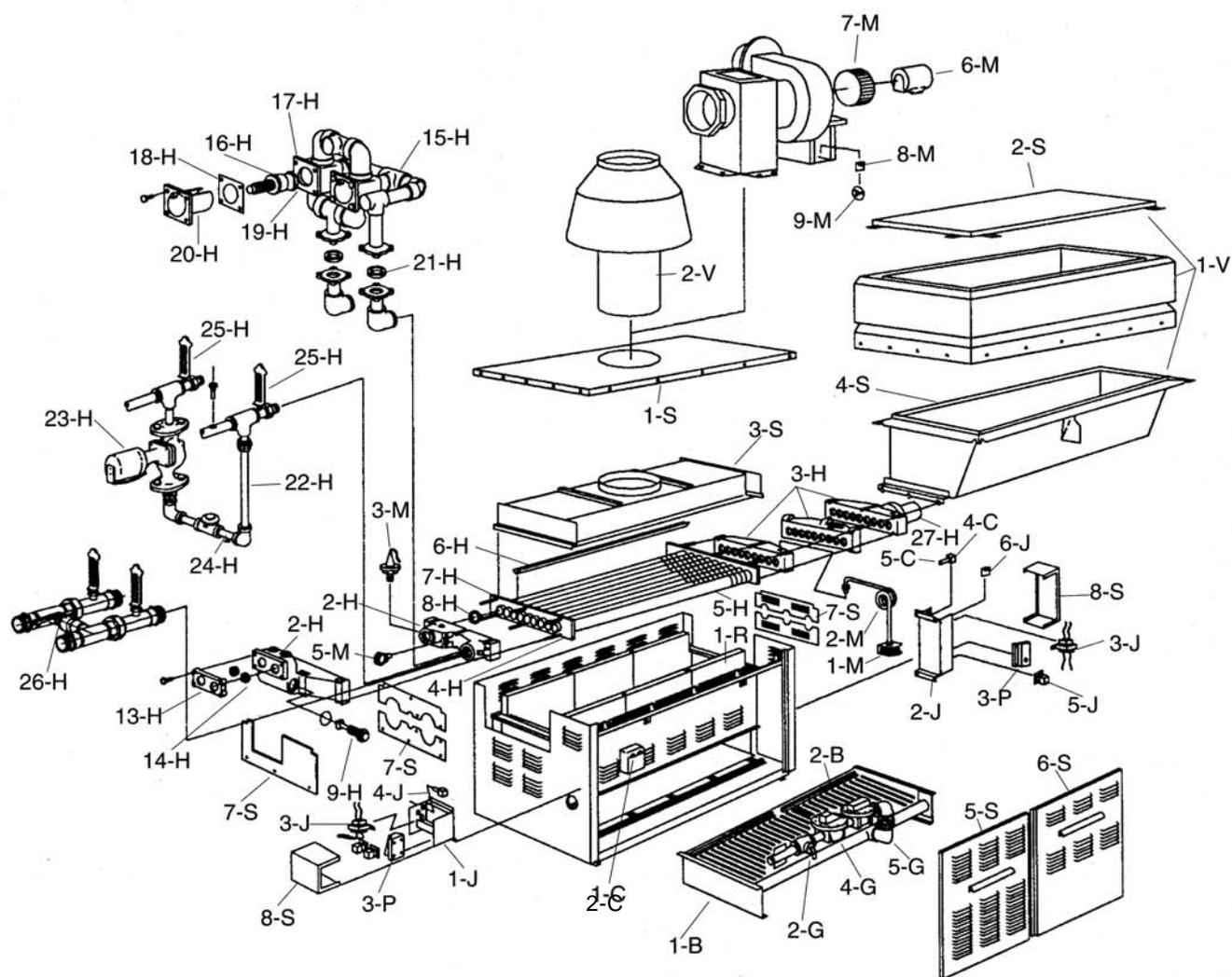
SECTION 6 / REPLACEMENT PARTS LIST

NOTE: *To supply the correct part it is important that you state the model number, serial number and type of gas when applicable.*

Any part returned for replacement under standard company warranties must be properly tagged with RAYPAK return parts tag, completely filled in with the heater serial number, model number, etc., and shipped to the Company freight prepaid.

If determined defective by the Company and within warranty, the part will be returned in kind or equal substitution, freight collect. Credit will not be issued.

Raypak, Inc.
2151 Eastman Avenue
Oxnard, CA 93030



CALL OUT	DESCRIPTION	962 [926]	1125 [1083]	1223 [1178]	1336 [1287]	1468 [1414]	1631 [1571]	1826 [1758]
B	BURNER TRAY							
1-B	Burner Tray w/Burners (Sea Level)*	002092F	002093F	002094F	002095F	002096F	002097F	002098F
	Burner Tray w/o Burners (Sea Level)*	002099F	002100F	002101F	002102F	002103F	002104F	002105F
2-B	Burner Hold Down/Spacer	002120F	002121F	002122F	002123F	002124F	002125F	002126F
3-B	Burner	301210/59	301210/69	301210/75	301210/82	301210/90	301210/100	301210/112
4-B	Burner Orifice Nat. #48 Indoor (Sea Level)*	350077F/59	350077F/69	350077F/75	350077F/82	350077F/90	350077F/100	350077F/112
	Burner Orifice Nat. #49 Outdoor (Sea Level)*	350078F/59	350078F/69	350078F/75	350078F/82	350078F/90	350078F/100	350078F/112
	Burner Orifice Pro. #57 (Sea Level)*	350083F/59	350083F/69	350083F/75	350083F/82	350083F/90	350083F/100	350083F/112
C	CONTROLS							
1-C	Dualstat Replacement (Thermostat & Hi Limit Auto Hi-Limit)	010863F	010863F	010863F	010863F	010863F	010863F	010863F
					007141F	007141F	007141F	007141F
2-C	Manual High Limit	007144F	007144F	007144F	007144F	007144F	007144F	007144F
	Manual Hi-Limit 40-180°F	010093F	010093F	010093F	010093F	010093F	010093F	010093F
3-C	Low Water Cutoff	006202F	006202F	006202F	006202F	006202F	006202F	006202F
4-C	Flow Switch				007142F	007142F	007142F	007142F
5-C	Flow Switch Paddle				004079F	004079F	004079F	004079F
6-C	Temp Controller (Not Shown)	006865F	006865F	006865F	006865F	006865F	006865F	006865F
7-C	High Limit 135 F	600892F	600892F	600892F				
8-C	Temp Controller 0-100 F (Not Shown)	006040	006040	006040	006040	006040	006040	006040
G	GAS VALVE							
1-G	Manual "B" Valve	007195F	007195F	007195F	007195F	007195F	007195F	007195F
2-G	Manual "A" Valve	007189F	007189F	007189F	007190F	007190F	007190F	
	Manual "A" Valve 1-1/2							600881
3-G	Pilot Regulator Nat.	004060F	004060F	004060F	004060F	004060F	004060F	004060F
	Pilot Regulator Pro.	004061F	004061F	004061F	004061F	004061F	004061F	004061F
4-G	Auto On/Off Valve 1-1/4	004094F	004094F	004094F	004094F	004094F	004094F	
	Auto On/Off Valve 1-1/2							004095F
5-G	Combination Valve Nat.	600631	600632	600632	600632	600632	600632	600633
	Combination Valve Pro.	600692	600692	600692	600692	600692	600693	600693
	Pilot Valve	600562	600562	600562	600562	600562	600562	600562
H	HEAT EXCHANGER							
1-H	Heat Exchange Assy. (Complete)	002482F	002483F	002484F	002485F	002486F	002487F	002488F
	Heat Exchanger Assy Brass w/Pump Hdr.				006952F	006953F	006954F	006955F
2-H	Inlet/Outlet Header	002489F	002489F	002489F	002216F	002216F	002216F	002216F
3-H	Return Header	002491F	002491F	002491F	002492F	002492F	002492F	002492F
	Return Pump Header Brass				002224F	002224F	002224F	002224F
4-H	Tube Bundle	003167F	003168F	003169F	002197F	002198F	002199F	002200F
5-H	Heat Exchange Tube	002208F	002209F	002210F	002211F	002212F	002213F	002214F
6-H	Baffle Kit	001520F	001521F	001522F	001523F	001524F	001525F	001526F
7-H	Bolt Kit	001051F	001051F	001051F	001051F	001051F	001051F	001051F
	Stud Bolt Kit w/Pump Header				001527F	001527F	001527F	001527F
8-H	Header Gasket	800086B	800086B	800086B	800001B	800001B	800001B	800001B
9-H	U.G. Single	002475F	002475F	002475F				
10-H	Drain Valve	500834	500834	500834				
11-H	Sensor Well	007211F	007211F	007211F	350338	350338	350338	350338
12-H	Well Retaining Clip	300203	300203	300203	300203	300203	300203	300203
13-H	Inlet/Outlet Flange	002477F	002477F	002477F				
14-H	Flange Gasket	800080B	800080B	800080B				
15-H	U.G. Double w/Piping				007905F	007905F	007905F	007905F
16-H	Unitherm Governor				002493F	002493F	002493F	002493F
17-H	O-Ring				005893F	005893F	005893F	800006F
18-H	Cap Gasket				005894F	005894F	005894F	800007F
19-H	Housing				005895F	005895F	005895F	350469F
20-H	Housing Cap				005896F	005896F	005896F	350429F
21-H	Flange Gasket				005897F	005897F	005897F	800027F
22-H	Bypass Pump Assy. (Complete)				N/A	N/A	N/A	N/A
23-H	Bypass Pump 115V				950965	950965	950965	950965
24-H	Bypass Check Valve				501581	501581	501581	501581
25-H	Thermometer				600133	600133	600133	600133
26-H	1 1/2" Slip Ball Valve				501647	501647	501647	501647
27-H	Volute Pump 4 1/4" Impeller				004844F	004844F	004844F	004844F
28-H	Bypass Assy. (Complete with Thermometer)				009507F	009507F	009507F	009507F
29-H	Manual Bypass Valve (Not Shown)	006994F	006994F	006994F	N/A	N/A	N/A	N/A

*FOR ALTITUDES HIGHER THAN 2000 FEET ABOVE SEA LEVEL, CONSULT THE FACTORY.

CALL OUT	DESCRIPTION	962 [926]	1125 [1083]	1223 [1178]	1336 [1287]	1468 [1414]	1631 [1571]	1826 [1758]
J	J-BOX							
1-J	J-Box Nat.	002675F	002675F	002675F	002675F	002675F	002675F	002675F
	J-Box Pro./Nat. w/Lockout	002676F	002676F	002676F	002676F	002676F	002676F	002676F
2-J	J-Box Nat.	002227F	002227F	002227F	002227F	002227F	002227F	002227F
	J-Box Pro./Nat. w/Lockout	002230F	002230F	002230F	002230F	002230F	002230F	002230F
	J Box Pro/Nat w/Lockout and Pump Relay				005588F	005588F	005588F	005588F
	J Box Pro/Nat w/Lockout and Pump Relay Board				006494F	006494F	006494F	006494F
3-J	Transformer	006533F	006533F	006533F	006533F	006533F	006533F	006533F
4-J	Toggle Switch	008079F	008079F	008079F	008079F	008079F	008079F	008079F
5-J	Relay-Pump 24V SPDT				007377F	007377F	007377F	007377F
6-J	Pump Relay PC Board				004675F	004675F	004675F	004675F
M	MISCELLANEOUS COMPONENTS							
1-M	Pressure Switch	062237B	062237B	062237B	062237B	062237B	062237B	062237B
2-M	Pressure Switch Tube Assy.	003273F	003273F	003273F	003273F	003273F	003273F	003273F
3-M	PRV 125 PSI	007224F	007224F	007224F	007224F	007224F	007224F	007224F
4-M	Delimiting Kit	052870F	052870F	052870F	052870F	052870F	052870F	052870F
5-M	Temperature & Pressure Gauge				007399F	007399F	007399F	007399F
6-M	Power Vent Motor	951105F	951105F	951105F	951112F	951112F	951112F	951112F
7-M	Power Vent Wheel	951106F	951106F	951106F	951113F	951113F	951113F	951113F
8-M	Power Vent PC Board	005503F	005503F	005503F	005503F	005503F	005503F	005503F
9-M	Power Vent Pressure Switch	601212	601212	601212	601212	601212	601212	601212
P	PILOT							
P-1	Pilot Nat. IID	002234F	002234F	002234F	002234F	002234F	002234F	002234F
	Pilot Pro. IID	002235F	002235F	002235F	002235F	002235F	002235F	002235F
2-P	Pilot Orifice Nat.	600552	600552	600552	600552	600552	600552	600552
	Pilot Orifice Pro.	600894	600894	600894	600894	600894	600894	600894
3-P	Ignition Control Nat.	004817B	004817B	004817B	004817B	004817B	004817B	004817B
	Ignition Control Pro. (Nat. w/Lock)	004818B	004818B	004818B	004818B	004818B	004818B	004818B
4-P	Pilot Mounting Bracket	304665	304665	304665	304665	304665	304665	304665
5-P	Ignition Rod	064839	064839	064839	064839	064839	064839	064839
6-P	Pilot Tube (Specify Length)	400013	400013	400013	400013	400013	400013	400013
7-P	High Tension Wire	002663B	002663B	002663B	002663B	002663B	002663B	002663B
R	REFRACTORY							
1-R	Refractory Kit	001002F	001003F	001004F	001005F	001006F	001511F	001512F
2-R	Refractory Retainer Kit	000987F	000988F	000989F	000990F	000991F	001518F	001519F
S	SHEET METAL							
1-S	Jacket Top (Indoor)	002293F	002294F	002295F	002296F	002297F	002298F	002299F
2-S	Flat Top Assy. (Outdoor)	002312F	002313F	002314F	002315F	002316F	002317F	002318F
3-S	Flue Collector (Indoor)	002248F	002244F	002249F	002250F	002251F	002252F	002253F
4-S	Flue Collector (Outdoor)	002258F	002259F	002260F	002261F	002262F	002263F	002264F
5-S	Door Assy. Left (Indoor)	002265F	002266F	002267F	002268F	002269F	002270F	002271F
	Door Assy. Left (Outdoor)	002279F	002280F	002281F	002282F	002283F	002284F	002285F
	Door Assy. w/Side Latch Brackets (Indoor)*	005337F	005338F	005339F	005340F	005341F	005342F	005343F
6-S	Door Assy. Right (Indoor)	002272F	002273F	002274F	002275F	002276F	002277F	002278F
	Door Assy. Right (Outdoor)	002286F	002287F	002288F	002289F	002290F	002291F	002292F
	Door Assy. w/Side Latch Brackets (Outdoor)*	005330F	005331F	005332F	005333F	005334F	005335F	005336F
7-S	Access Panel Group	002300F	002300F	002300F	002303F	002303F	002303F	002303F
	Access Panel Group 2 1/2" w/Pump Header				002304F	002304F	002304F	002304F
8-S	J-Box Sheetmetal	002668F	002668F	002668F	002668F	002668F	002668F	002668F
9-S	Pump Cover (Not Shown)				002671F	002671F	002671F	002671F
V	VENTING							
1-V	Stackless Top Kit (Outdoor)	002305F	002306F	002307F	002308F	002309F	002310F	002311F
2-V	Draft Hood (Indoor)	006484	006485	006485	006486	006486	006486	006487

* FOR UNITS BUILT 1995 THRU CURRENT

CALL OUT	DESCRIPTION	2100	2500	3001	3500	4001
B	BURNER TRAY					
1-B	Burner Tray w/Burners (Sea Level)*	001897F	001898F	001899F	001900F	001901F
	Burner Tray w/o Burners (Sea Level)*	001902F	001903F	001904F	001905F	001906F
2-B	Burner Spacer/Hold Down Bracket	001907F	001908F	001909F	001910F	001911F
3-B	Burner	305846/21	305846/25	305846/30	305846/35	305846/40
4-B	Burner Orifice Nat. #17 (Sea Level)*	350791F/21	350791F/25	350791F/30	350791F/35	350791F/40
	Burner Orifice Pro. #36 (Sea Level)*	351053F/21	351053F/25	351053F/30	351053F/35	351053F/40
C	CONTROLS					
1-C	Dualstat Replacement	010863F	010863F	010863F	010863F	010863F
2-C	Manual High Limit 40-180°F	009554F	009554F	009554F	009554F	009554F
4-C	High Pressure Switch			007188F	007188F	007188F
5-C	Low Water Cut Off (Cal Code Only)	006202F	006202F	006202F	006202F	006202F
6-C	Flow Switch	007142F	007142F	007142F	007142F	007142F
7-C	Temp Controller 40-106°F (not shown)	007907F	007907F	007907F	007907F	007907F
8-C	Temp Controller 0-100 °F (not shown)	006040	006040	006040	006040	006040
G	GAS VALVE					
1-G	Manual "B" Valve	007195F	007195F	007195F	007195F	007195F
2-G	Manual "A" Valve	007933F	007933F	600043F	600043F	600043F
3-G	Auto On/Off Valve	004095F	004096F			
4-G	Combination Valve Nat.	600633	600633			
	Combination Valve Pro.	600693	600693			
5-G	Valve Actuator Body			600454/2	600454/2	600454/2
6-G	Regulator Nat.			600078	600078	600078
	Regulator Pro.			003614F	003614F	003614F
7-G	Pilot Regulator Nat.	004060F	004060F	004060F	004060F	004060F
	Pilot Regulator Pro.	004061F	004061F	004061F	004061F	004061F
8-G	Actuator On/Off			011908F	011908F	011908F
9-G	Pilot Gas Valve	600562	600562	600154	600154	600154
10-G	High Gas Pressure Switch			007188F	007188F	007188F
H	HEAT EXCHANGER					
1-H	Heat Exchanger Assy. (Complete)	001932F	001933F	001934F	001935F	001936F
2-H	Inlet Header	010037F	010037F	010037F	010037F	010037F
29-H	Outlet Header	001967F	001967F	001967F	001967F	001967F
3-H	Return Header	001970F	001970F	001970F	001970F	001970F
4-H	Tube Bundle	001942F	001943F	001944F	001945F	001946F
5-H	Heat Exchange Tube	001952F	001953F	001954F	001955F	001956F
6-H	Baffle Kit	001957F	001958F	001959F	001960F	001961F
7-H	Bolt Kit	001962F	001962F	001962F	001962F	001962F
8-H	Header Gasket	001054F	001054F	001054F	001054F	001054F
9-H	Unitherm Governor (Complete)	N/A	N/A	N/A	N/A	N/A
10-H	Housing	005886F	005886F	005887F	005887F	005887F
11-H	Disc	005888F	005888F	005888F	005888F	005888F
12-H	Element	005889F	005889F	005889F	005889F	005889F
13-H	Cap	005890F	005890F	005890F	005890F	005890F
14-H	O-Ring (2)	005891F	005891F	005891F	005891F	005891F
15-H	Sensor Well 1/2"	350338	350338	350338	350338	350338
16-H	Sensor Well 5/8"	350337	350337	350337	350337	350337
17-H	Well Retaining Clip	300203	300203	300203	300203	300203
18-H	Bypass Pump Assy. (Complete)	N/A	N/A	N/A	N/A	N/A
19-H	Bypass Pump 115V 1/4 HP	007226F	007226F	007226F	007226F	007226F
20-H	Bypass Check Valve	500509	500509	500509	500509	500509
21-H	Thermometer	600133	600133	600133	600133	600133
22-H	Bypass Adapter-Inlet Flange	005592F	005592F	005592F	005592F	005592F
23-H	Bypass Adapter Outlet	005591F	005591F	005591F	005591F	005591F
24-H	Recirculating Assy Complete	007749F	007749F	007749F	007749F	007749F
25-H	Recirculating Adapter inlet	005591F	005591F	005591F	005591F	005591F
26-H	Recirculating Adapter Outlet	007866F	007866F	007866F	007866F	007866F
27-H	In Line 2 H.P. Pump	951276	951276	951276	951276	951276
28-H	2" Slip Ball Valve	601494	601494	601494	601494	601494

*FOR ALTITUDES ABOVE 2,000 FEET ABOVE SEA LEVEL, CONSULT THE FACTORY.

CALL OUT	DESCRIPTION	2100	2500	3001	3500	4001
J	J-BOX					
1-J	J-Box	002614F	002614F	002615F	002615F	002615F
	J-Box with Pump Relay	005589F	005589F	005590F	005590F	005590F
2-J	Transformer	006533F	006533F	006533F	006533F	006533F
3-J	Relay SPDT 24V	007377F	007377F	007377F	007377F	007377F
	Relay SPDT 120V			008145F	008145F	008145F
4-J	Toggle Switch	008079F	008079F	008079F	008079F	008079F
	Toggle Switch DPST	650958	650958	650958	650958	650958
5-J	Pump Relay PC Board	004675F	004675F	004675F	004675F	004675F
M	MISCELLANEOUS COMPONENTS					
1-M	Pressure Switch	062237B	062237B	062237B	062237B	062237B
2-M	PRV 125 PSI	007758F	007759F	007759F	007759F	500868
3-M	Deliming Kit	052870F	052870F	052870F	052870F	052870F
4-M	T & P Gauge	007399F	007399F	007399F	007399F	007399F
5-M	Power Vent Motor	951155F	951155F	951156F	951156F	951156F
6-M	Power Vent Motor Drive Belt	951158F	951158F	951158F	951158F	951158F
7-M	Power Vent Discharge Fan	951159F	951159F	951160F	951160F	951160F
8-M	Power Vent Shaft/Bearing Assy.	951161F	951161F	951162F	951162F	951162F
9-M	Power Vent PC Board	005503F	005503F	005503F	005503F	005503F
10-M	Power Vent FlueSensor	006433F	006433F	006433F	006433F	006433F
11-M	120V Coil Contactor (Not Shown)	007906F	007906F	007906F	007906F	007906F
P	PILOT					
1-P	Pilot Nat. IID	002084F	002084F	002084F	002084F	002084F
	Pilot Pro. IID	002085F	002085F	002085F	002085F	002085F
2-P	Pilot Orifice Nat.	600552	600552	600552	600552	600552
	Pilot Orifice Pro.	600894	600894	600894	600894	600894
3-P	Ignition Control	004818B	004818B	004818B	004818B	004818B
4-P	Pilot Mounting Bracket	305847	305847	305847	305847	305847
5-P	Ignition Rod	064839	064839	064839	064839	064839
6-P	Pilot Tube (Specify Length)	400013	400013	400013	400013	400013
7-P	High Tension Wire	002663B	002663B	002663B	002663B	002663B
R	REFRACTORY					
1-R	Refractory Kit	001971F	001972F	001973F	001974F	001975F
2-R	Refractory Retainer Kit	001976F	001977F	001978F	001979F	001980F
3-R	Refractory Heat Shield	010226F	010226F	010226F	010226F	010226F
S	SHEET METAL					
1-S	Draft Hood Top Assy.	002079F	002080F	002081F	002082F	002083F

**LIMITED WARRANTY
RAYTHERM TYPE P
SIZES 0926-4001**

SCOPE:

Raypak, Inc. ("Raypak") warrants to the original owner that all parts of this heater which are actually manufactured by Raypak will be free from failure under normal use and service for the specified warranty periods and subject to the conditions set forth in this Warranty. Labor charges and other costs for parts removal or reinstallation, shipping and transportation are not covered by this Warranty but are the owner's responsibility.

HEAT EXCHANGER WARRANTY:

Five (5) years from date of heater installation. Includes only cupro nickel heat exchanger with bronze waterways.

ANY OTHER PART MANUFACTURED OR FURNISHED BY RAYPAK:

One (1) Year warranty from date of heater installation, or eighteen (18) months from date of factory shipment based on Raypak's records, whichever comes first.

SATISFACTORY PROOF OF INSTALLATION DATE, SUCH AS INSTALLER INVOICE, IS REQUIRED. THIS WARRANTY WILL BE VOID IF THE HEATER RATING PLATE IS ALTERED OR REMOVED.

ADDITIONAL WARRANTY EXCLUSIONS:

This warranty does not cover failures or malfunctions resulting from:

1. Failure to properly install, operate or maintain the heater in accordance with our printed instructions provided;
2. Abuse, alteration, accident, fire, flood and the like;
3. Sediment or lime buildup, freezing, or other conditions causing inadequate water circulation;
4. High velocity flow exceeding heater design rates;
5. Failure of connected systems devices, such as pump or controller;
6. Use of non-factory authorized accessories or other components in conjunction with the heater system;
7. Chemical contamination of combustion air or use of chemical additives to water.
8. Misuse or neglect, including but not limited to freeze ups, and operating the heater with cabinet door off, having flow restrictions or obstructions between the heater outlet and pool/spa or not maintaining proper thermal balance (pH level must be between 7.2 and 7.8 and total alkalinity between 100 and 150 PPM. Total Dissolved Solids (TDS) must be no greater than 3000 PPM)

PARTS REPLACEMENT:

Under this Warranty, Raypak will furnish a replacement for any failed part. The failed part must first be returned to Raypak if requested, with transportation charges prepaid, and all applicable warranty conditions found satisfied. The replacement part will be warranted for only the unexpired portion of the original warranty. Raypak makes no warranty whatsoever on parts not manufactured by it, but Raypak will apply any such warranty as may be provided to it by the parts manufacturer.

TO MAKE WARRANTY CLAIM:

Promptly notify the original installer, supplying the model and serial numbers of the unit, date of installation and description of the problem. The installer must then notify his Raypak distributor for instructions regarding the claim. If either is not available, contact Service Manager, Raypak, Inc., 2151 Eastman Ave, Oxnard, CA 93030 or call (818) 889-1500. In all cases proper authorization must first be received from Raypak before replacement of any part.

EXCLUSIVE WARRANTY - LIMITATION OF LIABILITY:

This is the only warranty given by Raypak. No one is authorized to make any other warranties on Raypak's behalf. THIS WARRANTY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. RAYPAK'S SOLE LIABILITY AND THE SOLE REMEDY AGAINST RAYPAK WITH RESPECT TO DEFECTIVE PARTS SHALL BE AS PROVIDED IN THIS WARRANTY. IT IS AGREED THAT RAYPAK SHALL HAVE NO LIABILITY, WHETHER UNDER THIS WARRANTY, OR IN CONTRACT, TORT, NEGLIGENCE OR OTHERWISE, FOR ANY SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGE, INCLUDING DAMAGE FROM WATER LEAKAGE. Some states do not allow limitations on how long an implied warranty lasts, or for the exclusion of incidental or consequential damages. So the above limitation or exclusion may not apply to you.

This Limited Warranty gives you specific legal rights. You may also have other rights which may vary from state to state. We suggest that you complete the information below and retain this certificate in the event warranty service is needed. Reasonable proof of the effective date of the warranty (date of installation) must be presented, otherwise, the effective date will be based on the date of manufacture plus thirty (30) days.



www.raypak.com

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Litho in U.S.A.