



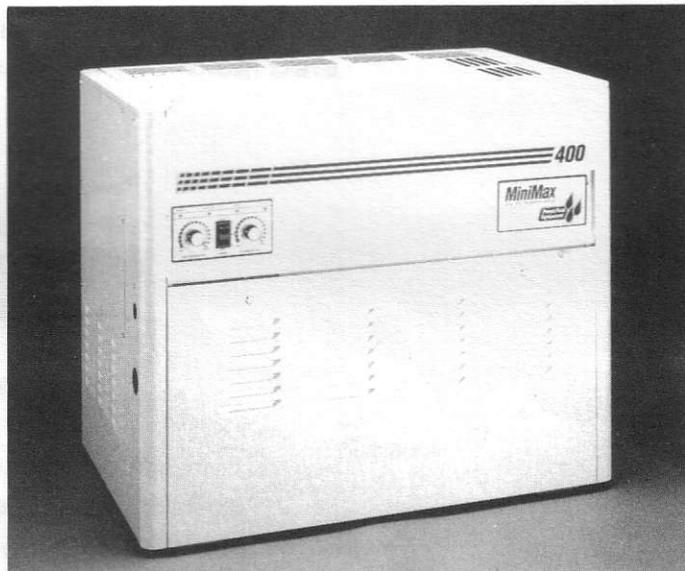
Swimming Pool Systems

MiniMax POOL & SPA HEATER

OPERATION, INSTALLATION & SERVICE MANUAL

FOR YOUR SAFETY - READ BEFORE OPERATING

Caution: If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.



To
Consumer
Retain For
Future
Reference

U.S. Patent Numbers
5,318,007 - 5,228,618
5,201,307 - 4,595,825
and European Patent Pending

Warning: Improper installation, adjustment, alteration, service or maintenance can cause property damage, loss of life or limb. Installation and service must be performed by a qualified installer, service agency or the gas supplier.

FOR YOUR SAFETY

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 neighbour's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the Fire Department.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

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MiniMax

Pool and Spa Heater

Congratulations on your purchase of a MiniMax high performance heating system. Proper installation and service of your new heating system and correct chemical maintenance of the water will ensure years of enjoyment. The MiniMax is a compact, lightweight and efficient gas fired high performance pool and spa heater. The heater is equipped with features that take advantage of new technology developed exclusively for the MiniMax. This is the first pool heater that can be directly connected to schedule 40 PVC pipe and has a built-in top.

IMPORTANT NOTICE

Gas Safety (Installation and Use) Regulations, 1994

It is the law that all gas appliances are installed by competent persons in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure that the law is complied with.

General Requirements

The appliance must be installed by a competent person ie. CORGI registered in accordance with the relevant requirements of the Gas Safety Regulations, current I.E.E. Regulations, Model Water Byelaws, Local Water Authority Byelaws and any relevant requirements of the local gas supplier, local authority and the relevant British Standard Codes of practice and Building Regulations. Manufacturers notes must not be taken in any way as overriding statutory obligations. Typical documents include:

BS. 6891; Installation of low pressure pipework.

BS.6644; Installation of Gas Fired Hot Water Boilers 60kW to 2MW.

CP341; Water Supply.

British Gas Publications:

IM2; Purging Procedures of Non-domestic Gas Installations.

IM5; Soundness Testing Procedures for Industrial and Commercial Gas Installations.

IM11; Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters.

Model Water Byelaws.

SPECIFICATIONS - Dimensions

Outdoor Installation - Flueless

Model	"A" Dim
150	17 7/8"
250	23 7/8"
400	33 3/8"

Table 1

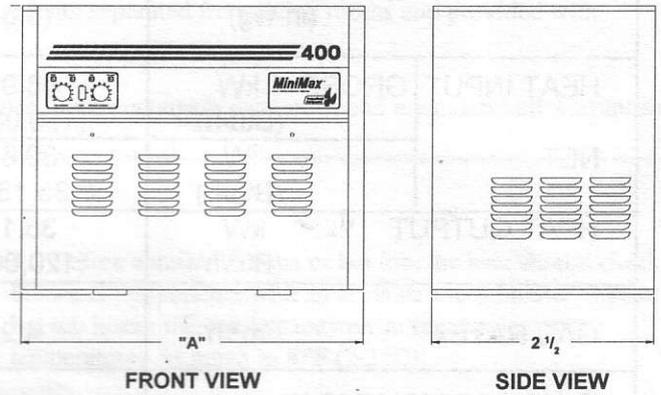


Fig. 1

Indoor Installation - with draught divertor

Model	"A" Dim	"B" Dim	"C" Dim	"D" Dim
150	17 7/8"	6 1/2"	7 3/4"	39 3/4"
250	23 7/8"	12 1/2"	10"	42 3/4"
400	33 3/8"	22 3/8"	17"	51 3/4"

Table 2

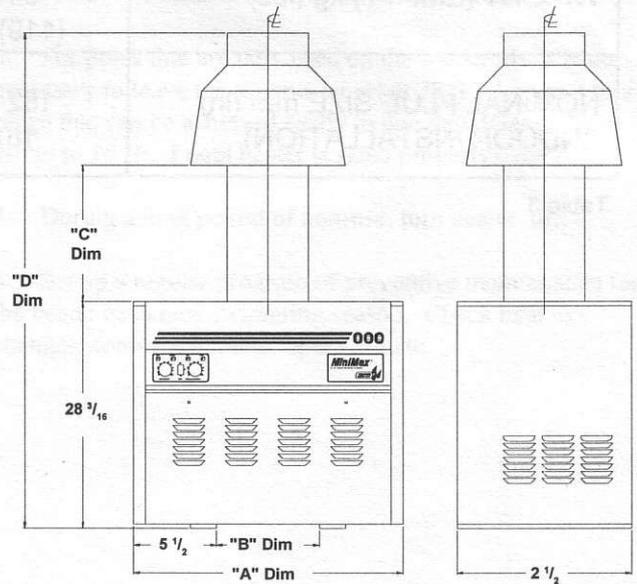


Fig. 2

SPECIFICATIONS - Technical Data (Natural Gas Models Only)

MODEL		150	250	400
GAS CATEGORY, TYPE, AND SUPPLY PRESSURE		I _{2H} G20 @ 20 mbar (8 IN.WG)		
BURNER PRESSURE mbar (in-wg)		8.9 (3.6)	8.9 (3.6)	8.9 (3.6)
HEAT INPUT	GROSS kW (Btu/h)	43.95 (150,000)	73.3 (250,000)	117.2 (400,000)
	NET kW (Btu/h)	39.6 (135,150)	66.0 (225,250)	105.6 (364,400)
HEAT OUTPUT kW (Btu/h)		35.16 (120,000)	58.64 (200,100)	93.76 (319,900)
GAS RATE m ³ /h		4.2	7	11.2
FLUE GAS VOLUME l/sec (7%CO ₂)		16.50	27.5	44
INJECTOR DIAMETER (mm) & I.D		3.45 29	3.45 29	3.45 29
MAX WATER PRESSURE bar (psi)		8 (125)	8 (125)	8 (125)
MAXIMUM WATER FLOW TEMP C		45	45	45
ELECTRICAL SUPPLY		240V~50Hz FUSED AT 5A		
WEIGHT (EMPTY) kg (lbs)		54 (119)	62 (137)	76 (167)
NOMINAL FLUE SIZE mm (in) (INDOOR INSTALLATION)		152 (6)	178 (7)	254 (10)

Table 3

Introduction

This instruction manual provides operating instructions, installation and service information for the MiniMax high performance heater. The information in this manual applies to the MiniMax 150, 250 and 400 natural and propane (LP) models. Note that the British Gas Certification and the CE Mark apply only to the Natural gas models.

This heater is designed for the heating of fresh water swimming pools and spas, and should not be used for any other purpose. The heater must only be installed in the open air or in a room separated from living rooms and provided with appropriate ventilation directly to the outside.

The heater must be used only in accordance with these instructions. Incorrect use is dangerous and invalidates all warranties and certification.

Safety Rules

1. Spa or hot tub water temperatures should never exceed 104 °F (40 °C). A temperature of 100 °F (38 °C) is considered safe for a healthy adult. Special caution is suggested for young children.
2. Drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness which could lead to unconsciousness and subsequently result in drowning.
3. Pregnant women beware! Soaking in water above 102 °F (39 °C) can cause fetal damage during the first three months of pregnancy (resulting in the birth of a brain-damaged or deformed child). Pregnant women should stick to the 100 °F (38 °C) maximum rule.
4. Before entering the spa or hot tub, the user should check the water temperature with an accurate thermometer. Spa or hot tub heater thermostats may err in regulating water temperatures as much as 4 °F (2.2 °C).
5. Persons with medical history of heart disease, circulatory problems, diabetes or blood pressure problems should obtain their physician's advice before using spas or hot tubs.
6. Persons taking medications which induce drowsiness, such as tranquilizers, antihistamines or anticoagulants, should not use spas or hot tub.

Energy Saving Tips

1. If possible, keep pool or spa covered when not in use. This will not only cut heating costs, but also keep dirt and debris from settling in the pool and conserve chemicals.
2. In swimming pool applications, the pool heater thermostat setting should be 78 °F or lower. This is accepted as being the most healthy temperature for swimming by the American Red Cross.
3. Use an accurate thermometer.
4. When the proper maximum thermostat settings have been determined, tighten the thermostat knob stopper.
5. Set timeclock to start circulation system no earlier than daybreak. The swimming pool loses less heat at this time.
6. For pools that are only used on the weekends, it is not necessary to leave the thermostat set at 78 °F. Lower it to a range that can be achieved easily in one day. (Generally 10 °F to 15 °F, if pool heater is sized properly).
7. During a long period of non-use, turn heater off.
8. Set up a regular program of preventive maintenance for the heater each new swimming season. Check heat exchanger, controls, burners, operation etc.

Preventive Maintenance Service/Maintenance work must only be conducted by a qualified professional.

Purex Pool Products MiniMax heaters are especially designed for swimming pool and spa use. Most homeowners enjoy many years of trouble-free service. For continued trouble free service each swimming season, a qualified professional service engineer should be called to:

1. Remove and clean burner tray and pilot assembly.
2. Clean and retighten all wiring terminals.
3. Remove heater top and inspect heat exchanger for

soot deposit.

4. Remove inspection plate and return head to check for scale.
5. Clean and adjust pressure switch.
6. With burner tray removed, check fire box for cracks.

Whether or not scale is a problem, a yearly inspection is good preventive maintenance. If a minor problem should exist it is much better to catch it in the early stages rather than to incur extensive repair charges later on.

WARNING: Should overheating occur or the gas supply fall to shut off, turn off the manual gas control valve to the appliance. Do not use this heater if any part has been under water. Immediately call a qualified service technician to inspect the heater and to replace any part of control system and gas control which has been under water.

LIGHTING/OPERATION - Natural/Propane

FOR YOUR SAFETY: READ BEFORE LIGHTING MINIMAX

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

- A. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
- B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- C. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- D. Never store any materials within the vicinity of the appliance or ventilation openings.

SAFETY INFORMATION - IF YOU SMELL GAS, FOLLOW THESE RULES:

- 1. Shut off gas line or propane tank.
- 2. Immediately call your gas supplier from a neighbour's phone.
- 3. Follow the gas supplier's instruction.
- 4. If you cannot reach your gas supplier, call the fire department.
- 5. Do not light matches or lighter.
- 6. Do not try to light any appliance.
- 7. Do not touch any electrical switch. Do not use any phone in your building.
- 8. Open all doors and windows. (Indoors)

STOP! Have you read the safety information?

TO LIGHT THE APPLIANCE

- 1. Set the thermostat to lowest setting. - refer to next page.
- 2. Push power switch off.
- 3. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow the safety information. If you don't smell gas, go to next step.
- 4. Make sure pump is running and primed.
- 5. Push power switch on. (Either pool or spa mode.)
- 6. Set thermostat to desired setting.
- 7. The pilot should spark and the pilot should ignite, then heater will fire.
- 8. In new installations where the gas line hasn't been bled, the pilot and main burner combustion sequence may be slower than normal.
- 9. If the heater does not operate as it should, in a reasonable amount of time, read the Troubleshooting Guide portion of this manual.

TO TURN THE APPLIANCE OFF

- 1. Set the thermostat to lowest setting and turn off power switch.
- 2. Turn off all electric power to the appliance if service is to be performed.

If the appliance is to be turned off during a period when frost is likely, consult your service engineer/gas supplier to take the appropriate action. (Drain the system.)

OPERATING CONTROL

For convenience and economy all MiniMax heaters are equipped with two thermostats on the front of the heater control panel.

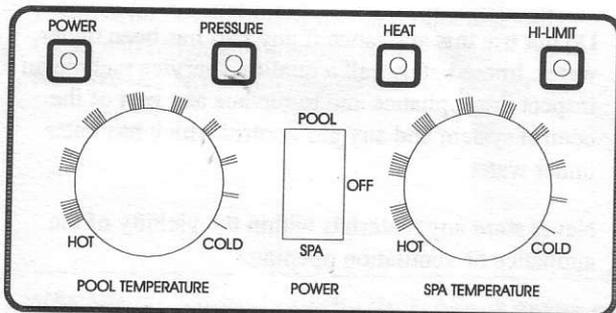


Fig. 3

The Pool/Off/Spa switch allows the heater to be turned off when heating is not desired.

1. "Pool" position - Maintains selected pool temperature.
2. "Off" position - Heater will not come on regardless of drop in pool temperature.
3. "Spa" position - This allows separate control of spa water temperature.

SELECTOR DIALS

The selector dials eliminate constant thermostat adjustments. Set the spa dial at the desired spa temperature and the pool dial at the desired pool temperature. This provides convenient preset operating temperatures.

"THERMOSTAT KNOB STOPPER"

Each thermostat is equipped with a mechanical stop (Fig. 4) that can be locked with use of a screwdriver to prevent temperatures in excess of that desired by the user.

The maximum setting can be adjusted by loosening the screw "A" and turning the stopper dial to desired maximum setting. Lock the setting by tightening the screw.

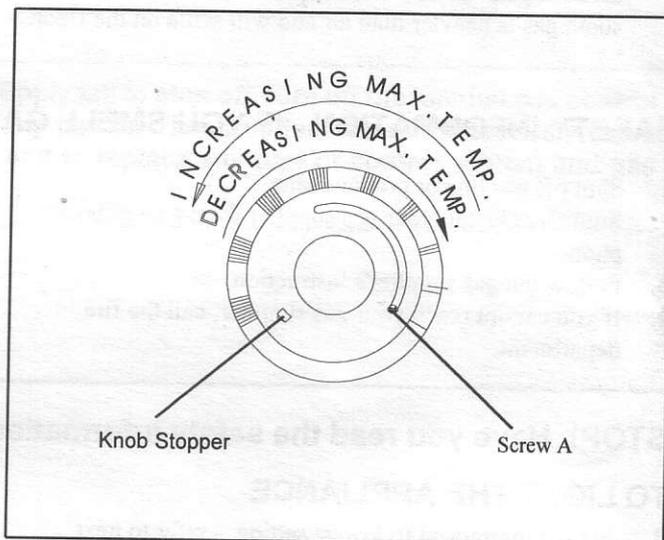


Fig. 4

OVERHEAT THERMOSTAT

A manual re-set overhear thermostat is fitted adjacent to the flow header. If the appliance will not light, before contacting a service engineer, press the re-set button (Fig. 5) once.

If the overheat condition persists, or is repeated, contact your service engineer or gas supplier.

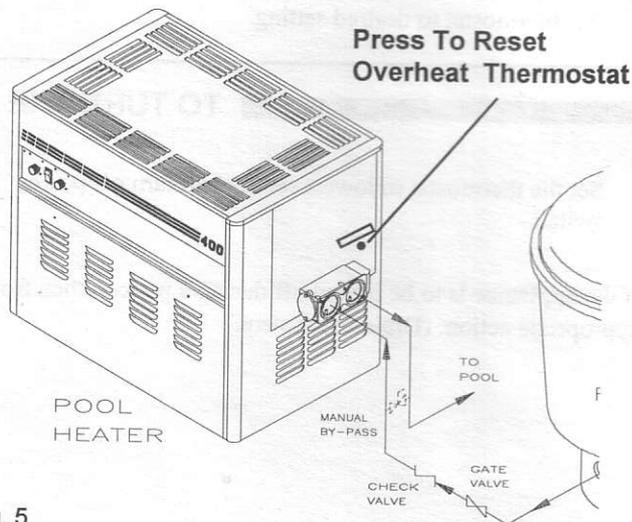


Fig. 5

INSTALLATION INSTRUCTIONS - Water Connections

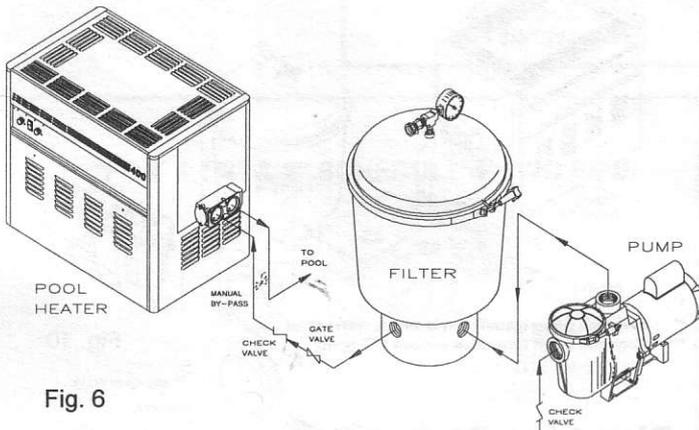


Fig. 6

Accessibility

To assure easy access, plumbing should not be installed over the top of the heater. The water lines should come directly into the heater from the side or up from the ground.

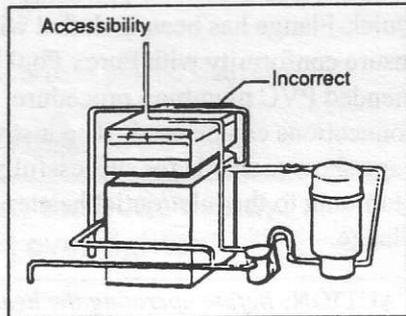


Fig. 7

Below Pool Level Installations

Where a pool heater is to be installed below the water level of the pool, it is necessary to readjust the pressure switch to allow for the constant water pressure in the system. Gate valves should **NOT** be installed on the return line

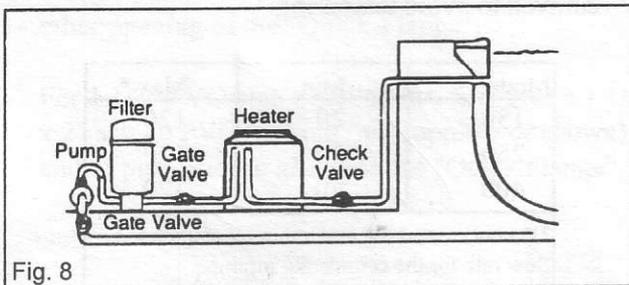


Fig. 8

from the heater. When the heater is installed below pool level, install a check valve after the heater and a gate valve between

Caution: Exercise care when installing chemical feeders so as to not allow back siphoning of chemical into heater, filters or pump.

Non Combustible flooring

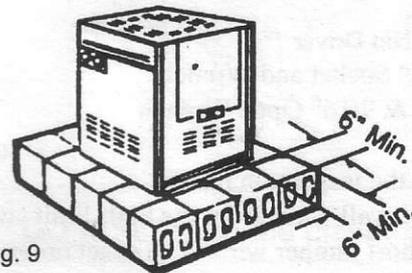


Fig. 9

Note: Heater must be installed on a non-combustible floor and at least six inches from any combustible material or wall. Before installing water pipe, check local building codes related to pool heaters.

Heaters installed below water level require adjustment of the pressure switch.

1. Backwash filter and clean the pump hair and lint basket before making any adjustment to the pressure switch.
2. Turn on the circulation pump switch, the heater power switch and set the thermostat(s) to the hottest setting.
3. Turn the pressure switch adjustment knob clockwise until the heater turns off.
4. Turn the adjust knob 1/4 turn counter clockwise. The heater should come back on.
5. Turn the pump off. The heater should shut off with the circulation pump. If no, repeat steps 2, 3 and 4.
6. Use the circulation pump switch to turn the heater on and off several times to insure proper adjustments.



Note: If pool is more than 1 ft. above heater or vice-versa, the pressure switch may have to be replaced with a flow switch.

INSTALLATION INSTRUCTIONS - Water Connections

Reversible Inlet/Outlet Connection

The MiniMax is factory assembled with right side inlet/outlet water connections. The inlet/outlet header can be reversed for left side water connections without removing the heat exchanger.

Reversing Water Connections Disassembly

Tools needed:

- 1/4" Nut Driver
- 9/16" Socket and Wrench
- 1/2" & 9/16" Open Wrench

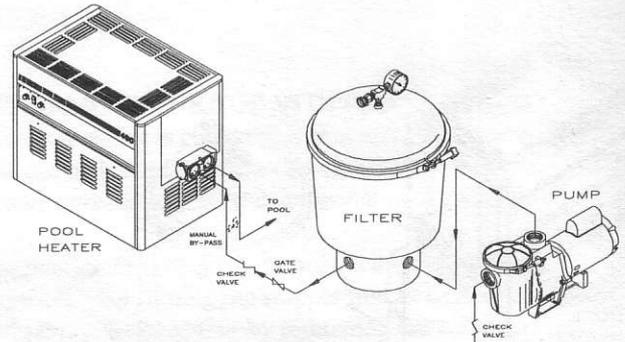
1. Remove the inspection plates.
2. Disconnect all wires from the high-limit switches except short jumper wire. The exact order of disconnection is not important.
3. Disconnect the pressure switch tube from the in/out header.
4. Remove the temperature sensing bulb from the in/out header. **Note:** You may cut the wire bundle ties.
5. Exchange the in/out header with the return header. Replace the heat exchanger tube seals with new seals provided.
6. Install the temperature sensing bulb by passing the wires through the hole provided on the left side of brace panel. Route wires through support bracket.
7. Install the pressure switch tubing into the in/out header by passing it above the brace panel.
8. Reconnect all high limit wires. The order of connection is not important. Route the wires through the same hole as the thermostat sensor wires.
9. Reinstall the inspection plates.

Plumbing

Valves

- When any equipment is located below the overflow rim of the pool or spa, valves should be placed in the circulation piping system to isolate the equipment from the pool or spa.
- Check valves are recommended to prevent back siphon.

Caution: Exercise care when installing chemical feeders so as to not allow back siphoning of chemical into the heater, filters or pump.



- * Required when installation is below water level
- *** Required when flow rates exceed 120 gpm.

Fig. 10

** ISOLATION VALVE FROM POOL

Plumbing Connections

The MiniMax heater has the unique capability of direct schedule 40 PVC plumbing connections. A Quick-Flange has been included with the MiniMax to insure conformity with Purex Pool Systems recommended PVC plumbing procedure. Other plumbing connections can be used. The instructions on the next page show methods for successfully connecting plumbing to the inlet/outlet header, with the Quick-Flange.

CAUTION: Before operating the heater on a new installation, turn on circulation pump and bleed all air from the filter using the air relief valve on top of the filter. Water should flow freely through heater.

Do not operate the heater unless water in pool/spa is at proper level.

Manual By-Pass

Where the flow rate exceeds the maximum 120 gpm a manual by-pass should be installed and adjusted. After adjustments are made, the valve handle should be removed to avoid tampering.

Model	Min.	Max.*
150	20	120
250	30	120
400	40	120

*Do not exceed the maximum recommended flow rate for the connecting piping.

Table 3

Below Pool Installation

If the heater is below water level, the pressure switch must be adjusted. **This adjustment must be done by a qualified service technician.**

Quick-Flange Installation Instruction Sheet

Each MiniMax Quick-Flange Kit contains:
 1 - Quick-Flange unit 2 - 2" Rubber gaskets
 4 - 3/8 Bolts 2 - 1 1/2" Rubber gaskets
 4 - 3/8" Washers 2 - Plastic sleeves

FOR 1 1/2" & 2" SCHEDULE 40 PVC PIPE

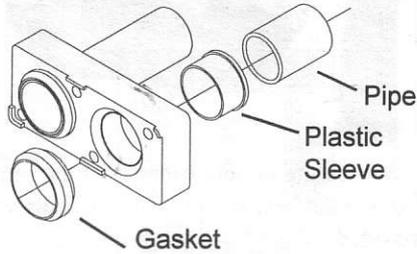


Fig. 11

1. Insert plastic sleeves into the "Quick Flange" inlet and outlet openings.
2. Slip rubber gaskets over plastic sleeves.
3. Bolt the "Quick-Flange" to the header.

**NOTE: Tighten the bolts evenly!
Do not over tighten!**

4. Use plumbers roll or medium grit sand paper and clean the inlet/outlet openings of the "Quick-Flange". Use the same method to clean the PVC pipe. The sand paper open will break up any grease or contaminant that may not be cleaned away with a primer.
5. Use 711 PVC (or comparable glue) and follow manufacturer's recommendations. Apply to the inlet opening of the "Quick-Flange. Do the same to the PVC pipe and **quickly** insert pipe into "Quick-Flange" and twist pipe 1/4 turn. Do the same to the other opening of the "Quick-Flange".
6. For 1 1/2" PVC pipe installations, first glue a 1 1/2" x 2" sch 40 PVC bushing (not supplied or shown) to end of pipe prior to gluing to the "Quick Flange".

FOR 1 1/2" & 2" COPPER PIPE

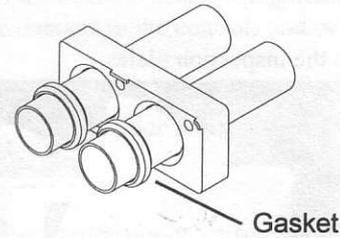


Fig. 12

You **"DO NOT"** need the plastic sleeves. *

1. Insert pipe into inlet/outlet opening of the "Quick-Flange".
2. Slip the rubber gasket over the pipe, using the 2" rubber gasket for 2" copper pipe or the 1 1/2" rubber gasket for 1 1/2" copper pipe.
3. Bolt the "Quick-Flange" to the header.

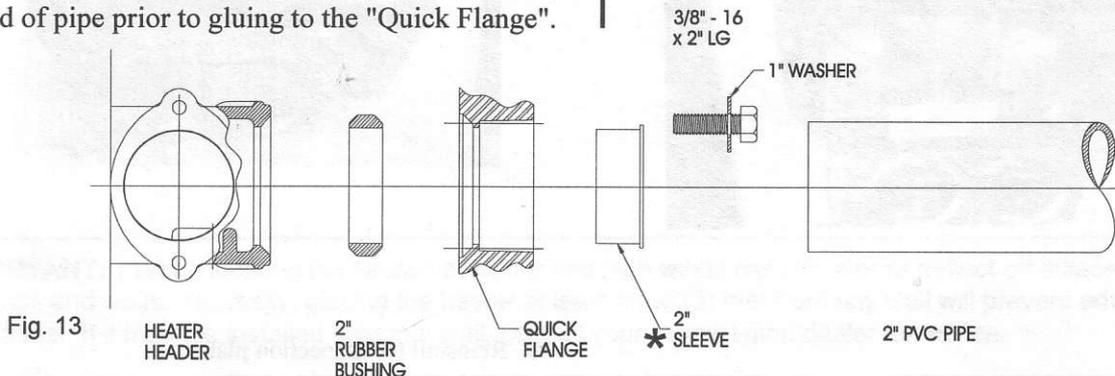


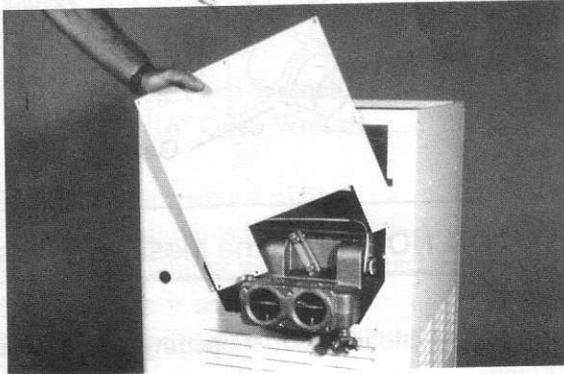
Fig. 13

INSTALLATION INSTRUCTIONS - Water

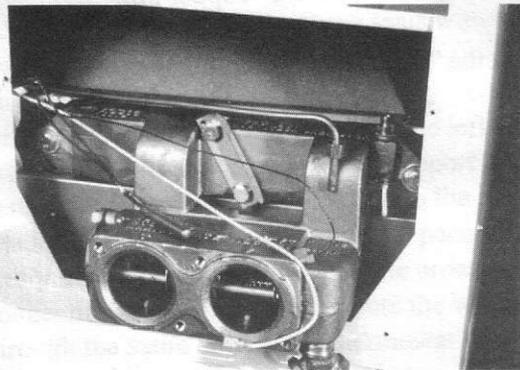
Reversible Inlet/Outlet Connections

The MiniMax is factory assembled with right side inlet/outlet water connections. The inlet/outlet header can be reversed for left side water connections without removing the heat exchanger.

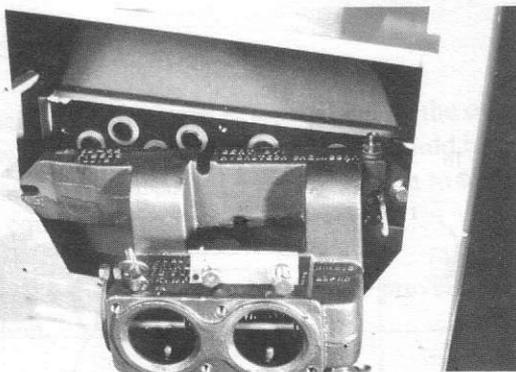
1. Remove the inspection plates.



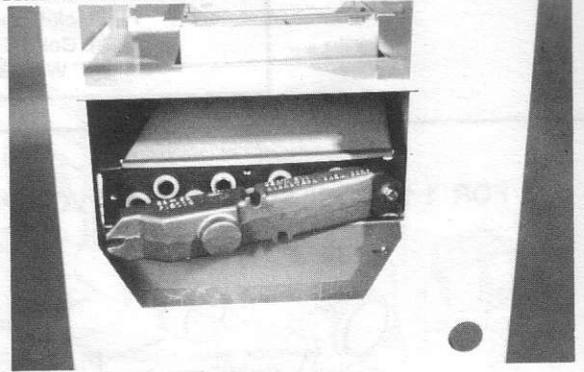
2. Disconnect all wires from the high-limit switches except short jumper wire. Disconnect the pressure switch tube from the in/out header. Remove the temperature sensing bulb from the in/out header.



3. Remove in/out header bolts.

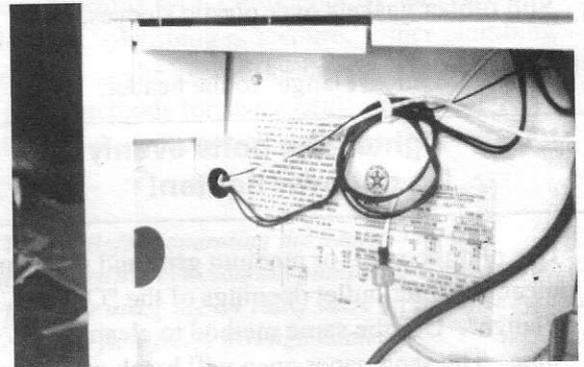


4. Remove return header.

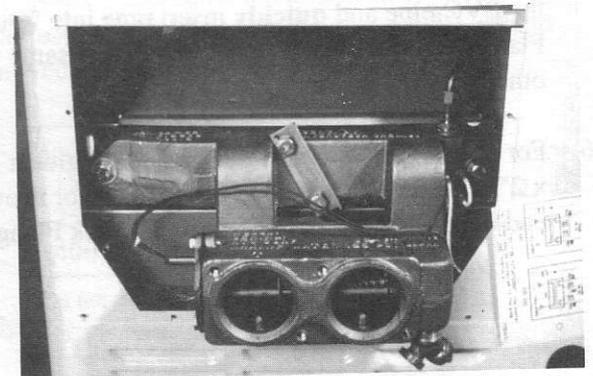


5. Switch the in/out header with the return header. Replace the heat exchanger tube seals with new seals provided.

6. Install the temperature sensing bulb and hi-limit wires by passing them through the hole provided on the left side of front panel.



7. Reconnect all high-limit wires. The order of connection is not important. Route the wires through the same hole as the thermostat sensor wires. Reroute and install the pressure switch tubing behind the control box and into the in/out head.



8. Reinstall the inspection plates.

INSTALLATION INSTRUCTIONS - Outdoor

The heater should not be installed closer than 6 inches to any fences, walls or shrubs at any side or back, nor closer than 18 inches at the plumbing side. A minimum clearance of 24 inches must be maintained at front of heater.

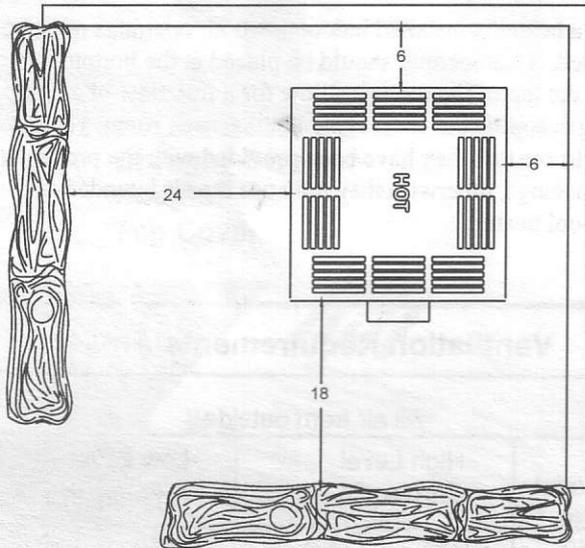


Fig. 14

Do not install the heater in locations which will permit the accumulation of leaves or other combustible material around the base of the heater.

Do not install the heater in a location that will allow sprinklers to operate near the heater equipment since the water may cause damage to the controls and/or electronics.

Do not install directly under any roof mounted gutter.

Do not install the heater under an overhang of less than three (3) feet from the top of the heater. The area under the overhang must be open on three sides. Overhangs must be such that flue products are not diverted into living spaces. Heaters installed under overhangs must be protected from direct roof water drainage by gutters and the like. From the point where the flue products leave the heater, that point **MUST** be a minimum of four (4) feet below, four (4) feet horizontally from or one (1) foot above any door, window or gravity inlet to a building.

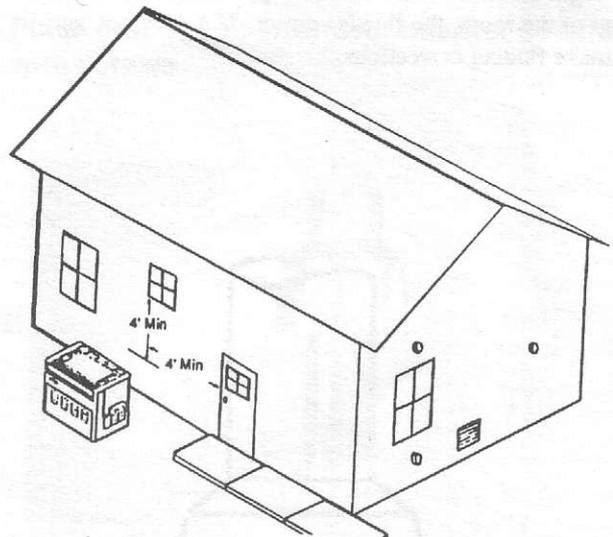


Fig. 15

IMPORTANT: When locating the heater, consider that high winds can roll over or deflect off adjacent buildings and walls. Normally, placing the heater at least three (3) feet from any wall will prevent adverse conditions. If it must be installed next to a wall, consult your Purex/Triton dealer for advice.

INSTALLATION INSTRUCTIONS - Indoor

Flue Requirements

A flue extension of the same size must be connected to the draft diverter and extended two feet above any obstacle within a 10 foot radius of the flue. The flue should then be fitted with a suitable terminal. NOTE: Do not alter the heater draught diverter in any way; it has been designed by the manufacturer and approved by British Gas plc. To ensure efficient flueing, use 45° Elbow for horizontal installation when attaching flue pipe to draught diverter.

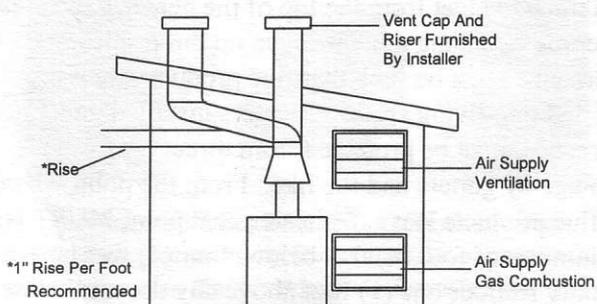


Fig. 16

A quick check of your flue installation. Allow heater to operate for 15 minutes. Then strike a wooden match and blow out the flame. With the match smoking, hold next to the draught diverter. If the smoke is pulled up into the flue and out of the room, the flue is correct. If it does not, you must make flueing corrections.

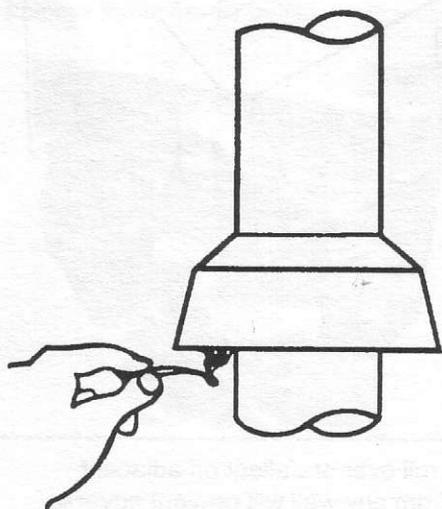


Fig. 17

Air Supply Requirements

When a heater is installed indoors, two air openings must be provided. One opening should be placed at the bottom and one at the top of the room to allow for a free flow of air. If other gas appliances are installed in the same room, you must check to see that they have been provided with the proper size openings, otherwise they may use the air intended for your pool heater.

Ventilation Requirements Area			
All air from outside			
Model No.	High Level Cm ² (sq. in.)	Low Level Cm ² (sq. in.)	
150	270 (42)	540	(84)
250	300 (46)	600	(92)
400	400 (62)	800	(124)

Table 4



It is essential that the ventilation is direct from outside. The appliance must not be installed in a room directly or indirectly connected to a living space.