



TROPIC ISLE POOL and SPA HEATER INSTALLATION & OPERATION MANUAL

FOR YOUR SAFETY - READ BEFORE OPERATING

Warning: 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

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, consult 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 neighbor'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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TROPIC ISLE® POOL AND SPA HEATER

Congratulations on your purchase of a Tropic Isle Heating system. Proper installation and service of your new heating system and correct chemical maintenance of the water will ensure years of enjoyment.

NOTICE OF IMPORTANCE . . .

...For installer and operator of the "Tropic Isle" pool and spa Heater. The manufacturer's warranty will not be accepted as valid if, for any reason, the heater is improperly installed and/or operated. Be sure to follow the instructions set forth in this manual.

The installation must conform with local codes or, in the absence of local codes, with the latest National Fuel Gas Code, ANSI Z223.1

FOR YOUR SAFETY - READ BEFORE OPERATING

WARNING: IF YOU DO NOT FOLLOW THESE
INSTRUCTIONS EXACTLY, A FIRE OR
EXPLOSION MAY RESULT, CAUSING
PROPERTY DAMAGE, PERSONAL INJURY OR
LOSS OF LIFE.

MEMBER





LIGHTING/OPERATION

FOR YOUR SAFETY READ BEFORE LIGHTING IID HEATERS

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.
- WHAT TO DO IF YOU SMELL GAS**
- Do not try to light any appliance.
 - Do not touch any electric 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.
- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. 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.

OPERATING INSTRUCTIONS

1. STOP! Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
5. Remove control access panel.
6. Push in gas control knob slightly and turn clockwise  to "OFF."
7. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.
8. Turn knob on gas control counter-clockwise  to "ON".
9. Replace control access panel.
10. Turn on all electric power to the appliance.
11. Set thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

NOTE: Knob cannot be turned to "OFF" unless knob is pushed in slightly. Do not force.

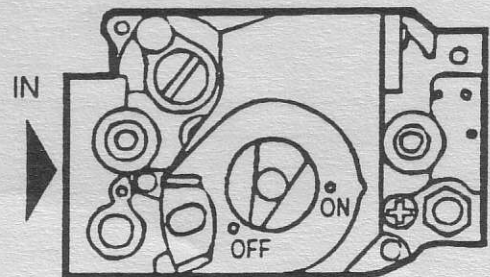
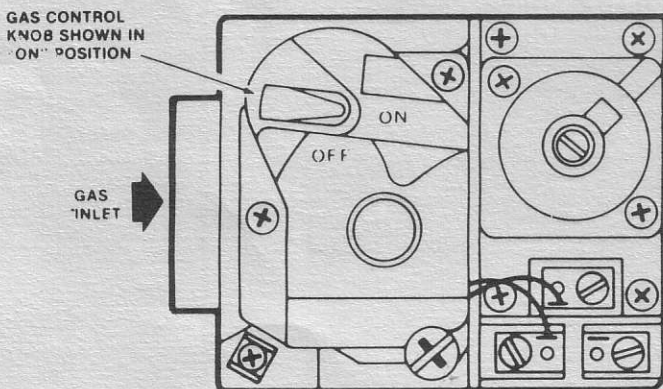



Fig. 2

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove control access panel.
4. Push in gas control knob slightly and turn clockwise  to "OFF." Do not force.
5. Replace control access panel.


LIGHTING INSTRUCTIONS

FOR YOUR SAFETY READ BEFORE LIGHTING MILLIVOLT HEATERS

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 has a pilot which must be lighted by hand. When lighting the pilot, follow these instructions exactly.
- B. BEFORE LIGHTING 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.
- WHAT TO DO IF YOU SMELL GAS**
- Do not try to light any appliance.
 - Do not touch any electric 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.
- C. If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. 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.

LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
 2. Set the thermostat to lowest setting.
 3. Turn off all electric power to the appliance.
 4. Remove control access panel.
 5. Push in gas control knob slightly and turn clockwise  to "OFF."
 9. Push in control knob all the way and hold in. Immediately light the pilot with a match. Continue to hold the control knob in for about one (1) minute after the pilot is lit. Release knob and it will pop back up. Pilot should remain lit. If it goes out, repeat steps 5 through 10.
- If knob does not pop up when released, stop and immediately call your service technician or gas supplier.
 - If the pilot will not stay lit after several tries, turn the gas control knob to "OFF" and call your service technician or gas supplier.

GAS CONTROL KNOB SHOWN IN "OFF" POSITION

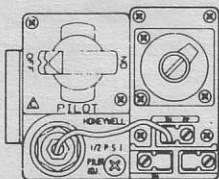


Fig. 3

HONEYWELL
GAS VALVE

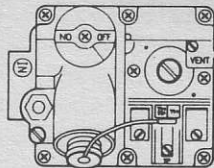


Fig. 4

ROBERTSHAW
GAS VALVE

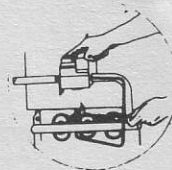


Fig. 5

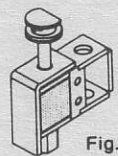





Fig. 6

PILOT

- NOTE: Knob cannot be turned from "PILOT" to "OFF" unless knob is pushed in slightly. Do not force.
6. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.
 7. The pilot location is shown on Figure 5.
 8. Turn knob on gas control counter-clockwise  to "PILOT".
 10. Turn gas control knob counterclockwise  to "ON."
 11. Replace control access panel.
 12. Turn on all electric power to the appliance.
 13. Set thermostat to desired setting.

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove control access panel.
4. Push in gas control knob slightly and turn clockwise  to "OFF." Do not force.
5. Replace control access panel.

TEMPERATURE CONTROL

SINGLE TEMPERATURE CONTROL SYSTEM

Temperature control:

The heater thermostat is located on the front of the heater (control panel) and may be set for desired pool temperature.

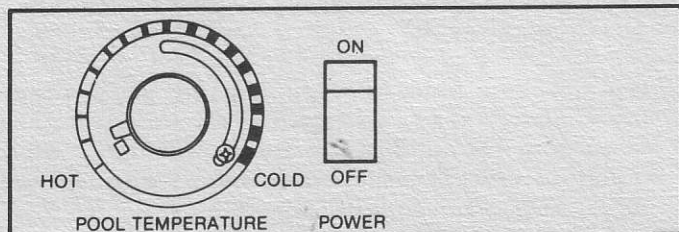


Fig. 7

Power switch:

On/off switch allows you to turn the heater on and off without changing the temperature setting. The thermostat will not regulate the operation of the heater with this switch in the off position.

DUAL TEMPERATURE CONTROL SYSTEM

The "Tropic Isle" Heater is also offered with the two thermostats on the front of the heater (control panel). The "Dual Therm" control system offers a 2-way heating option for convenience and economy.

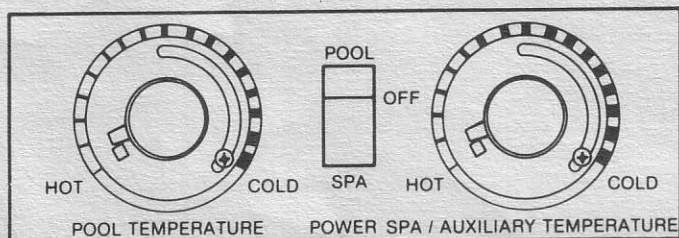


Fig. 8

POWER SWITCH:

The Pool/off/spa switch allows the heater to be turned off while on vacation or servicing.

1. "Pool" Position - Maintains normal or desired pool or spa temperature you selected.
2. "Off" Position - Heater will not come on regardless of drop in pool temperature.
3. "Spa/Auxiliary" Position - This allows separate control of spa water temperature, or a secondary lower conservative setting when your pool will not be in use.

Example: 80°F Pool 72°F Auxiliary.

WARNING: "Should overheating occur or the gas supply fail 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.

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. Then flip the power switch when the desired water temperature for the pool or spa is needed. This provides accurate, convenient high/low control for pool, spa or pool/spa installations.

"STOPPER THERMOSTAT KNOB"

Each thermostat is equipped with a mechanical stop that can be locked with use of a screw driver to prevent pool temperatures in excess of that desired by the pool owner. Fig. 9

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

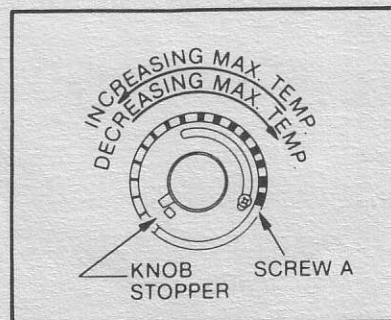


Fig. 9

SAFETY RULES FOR SPA & HOT TUB

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 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, user should check the water temperature with an accurate thermometer; spa or hot tub thermostats may err in regulating water temperatures by as much as 4 degrees Fahrenheit (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 tubs.

FUNCTION INDICATOR LIGHT

HOMEOWNER'S GUIDE TO THE TROPIC ISLE HEATER WITH INDICATOR LIGHTS

The four indicator lights are provided to help you understand the operation of the heater and if something should go wrong, to help find the problem.

POWER LIGHT

The light should go on when on/off switch is pushed on. If it doesn't, check the circuit breaker or fuse in the house electrical power control box. If all breakers are on or all fuses are good, you should call a qualified serviceman.

PRESSURE LIGHT

When the power light is on and the pump is running, creating water pressure in the lines, the pressure light should be on. If the pressure light does not come on when the pump is running, the pump may have lost its prime. If this is not the case, water flow may be restricted by an inadvertently closed valve or a clogged filter or pump basket.

HEAT LIGHT & HI-LIMIT LIGHT

Whenever the pressure light is on and the thermostat is set to call for heating, the heat light will normally come on and heating of the water will occur, (when the gas valve knob is in the "On" position). When the water has reached the desired temperature the heat light will go out, water heating will stop. If the hi-limit light comes on instead of the heat light, it indicates that the high limit thermostats have been activated due to an over heating condition. Check for closed valves, a dirty filter, or a clogged pump basket that could prevent water flow. Another problem that can cause the high limit thermostats to trip, is a defective temperature control thermostat. To check for this, turn the temperature control knob to the cold position. If the heat light and the hi-limit light do not go off, the thermostat is defective. If over heating has occurred, correct the flow problem as soon as water temperature in the heat exchanger is sufficiently cooled. The high limit thermostat will automatically reset itself.

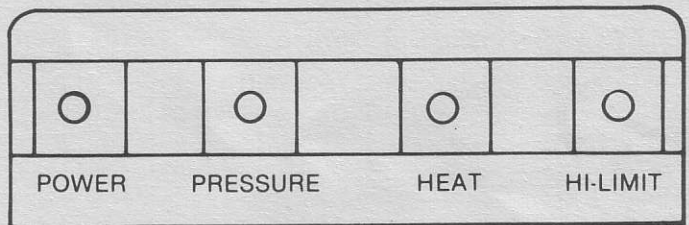


Fig. 10

SPECIFICATIONS

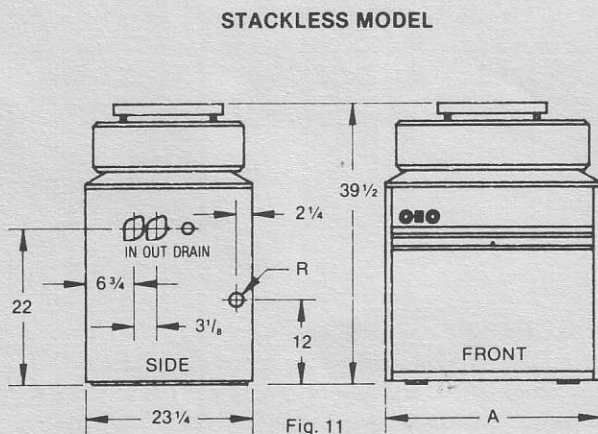


Fig. 11

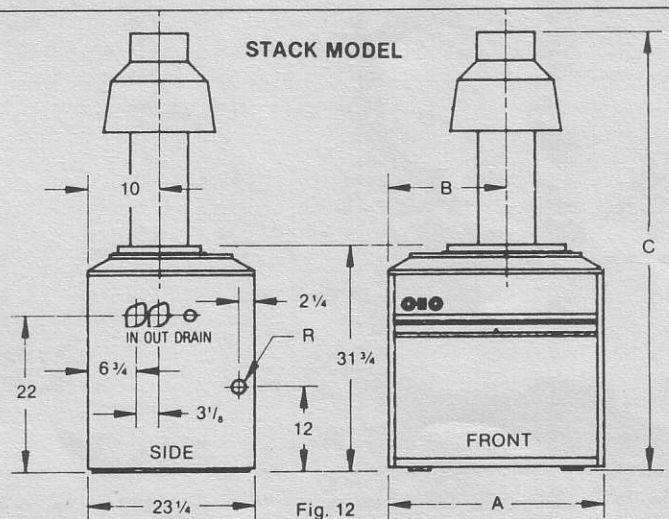


Fig. 12

R = GAS LINE HOLE

HEATER SPECIFICATIONS	Model					
	C120	C180	C240	C300	C360	C400
"A" Width (Front)	16 1/2"	20 1/2"	23 1/2"	28 1/2"	32 1/2"	36 1/2"
"B" Left Side to E Stack	9"	11"	12 1/2"	15"	17"	19"
"C" Height (W/Drafthood)	55"	60 1/2"	60 1/2"	61 1/2"	62 1/2"	65 1/2"

CHEMICAL BALANCE

POOL AND SPA WATER

It is important to your heater

Your Tropic Isle pool heater was designed specifically for your spa or pool and will give you many years of trouble free service provided you keep your water chemistry in proper condition.

The three major items that can cause problems with your pool heater are pH, Chlorine Residual and Total Alkalinity. These things if not kept in proper balance will cause your pool heater to form calcium or lime in the tubes of the heat exchanger which can shorten the life of the heater and create damage.

WHAT CHLORINE DOES

Two pool guests you do not want are algae and bacteria. To get rid of them and make pool water sanitary for swimming - as well as to improve the water's taste, odor and clarity - some sort of disinfectant must be used.

Chlorine, universally approved by health authorities, is the accepted disinfecting agent for bacteria. And, by maintaining a free chlorine residual or no less than 0.6 ppm (parts per million), algae can also be prevented.

WHAT IS CHLORINE RESIDUAL?

When you add chlorine to the pool water, a portion of the chlorine will be consumed in the process of destroying bacteria, algae and other oxidizable materials. The chlorine remaining is called chlorine residual. You can determine the chlorine residual of your pool water with a reliable test kit, available from your Guardex dealer.

You must maintain a free chlorine residual level adequate enough to assure a continuous kill of bacteria or virus introduced into pool water by swimmers, through the air, from dust, rain or other sources. Since chlorine residual is lowered by sunlight (its ultraviolet rays decompose chlorine) it is impossible to maintain a constant residual level with most forms of chlorine unless a mechanical device - a Hypochlorinator - is used to feed the chlorine compound continuously.

Whether or not you have such a device, it is wise to test pool water regularly, never allowing chlorine residual to drop below 0.6 ppm (parts per million), the minimum level for effective chlorination.

RULE: Maintain a chlorine residual no lower than 0.6 ppm.

CONTROL pH

The term pH refers to the acid alkaline balance of water expressed on a numerical scale from 0 to 14. A test kit for measuring pH balance of your pool water is available from your swimming pool dealer.

pH CHART

Strongly Acid			Neutral					Strongly Alkaline						
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Muriatic Acid has a pH of about 0. Pure water is 7 (neutral).

Weak Lye solutions have a pH of 13-14.

RULE: 7.4 to 7.6 is a desirable pH range.

It is essential to maintain correct pH. If pH becomes too high (over alkaline) it has these effects.

1. Greatly lowers the ability of chlorine to destroy bacteria and algae.
2. Water becomes cloudy.
3. There is more danger of scale formation on the plaster or in the coils of the heater.
4. Filter may become blocked.

If pH is too low (over acid) there may be:

1. Excessive eye burn or skin irritation.
2. Etching of the plaster.
3. Corrosion of metal fixtures in the filtration and recirculation system, which may create brown, blue, green, or sometimes almost black stains on the plaster.
4. Corrosion of copper in the heater, which may cause leaks.
5. If you have a sand and gravel filter, the alum used as a filter aid may dissolve and pass through the filter.

CAUTION: Do not test for pH when the chlorine residual is 0.8 or higher, to avoid a false reading. Some test kits, such as the Guardex 4-in-1 Test Kit, contain a de-chlorinator to enable you to check pH in the presence of higher chlorine residuals.

RULE: Chemicals that are acid lower pH. Chemicals that are alkaline raise pH.

pH CONTROL CHART

6.8	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4
Add Soda Ash or Sodium Bicarbonate		Marginal	Ideal		Marginal	Add Sodium Bisulfate		

ALKALINITY High — Low

"Total alkalinity" is a measurement of the total amount of alkaline chemicals in the water and controls pH to a great degree. (It is not the same as pH which refers merely to the relative alkalinity acidity balance.) Your pool water's total alkalinity should be adjusted to 80-100 ppm to permit easier pH control.

A total alkalinity test is simple to perform, using the Guardex 4-in-1 Test Kit. You will need to test about once a week until alkalinity is in the proper range. Then, only once every month or so to be sure it is being maintained.

WATER CONNECTIONS

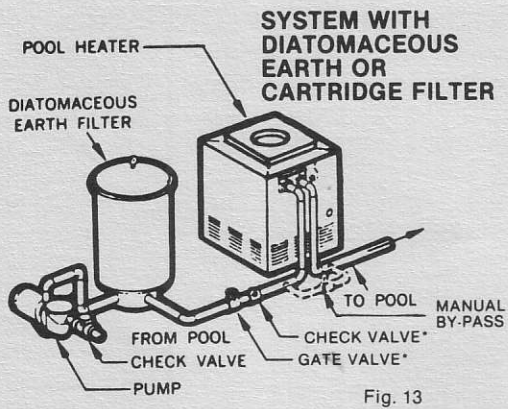


Fig. 13

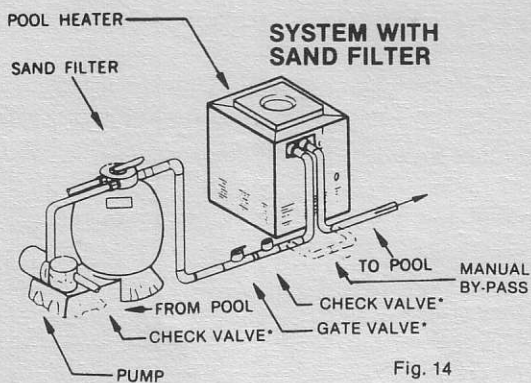


Fig. 14

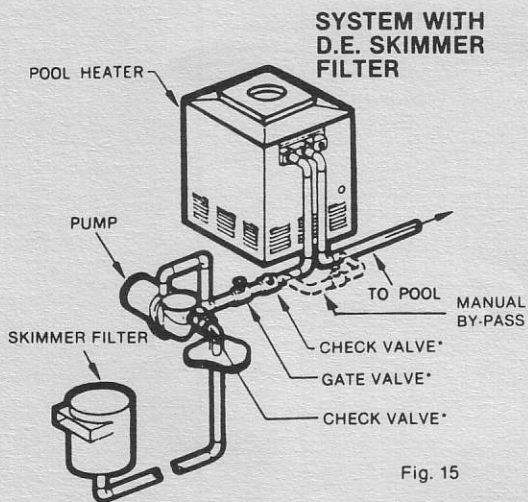


Fig. 15

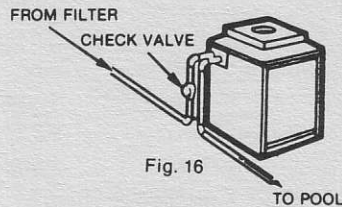
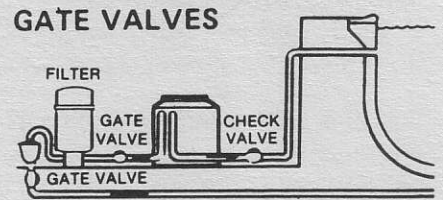


Fig. 16



PLUMBING

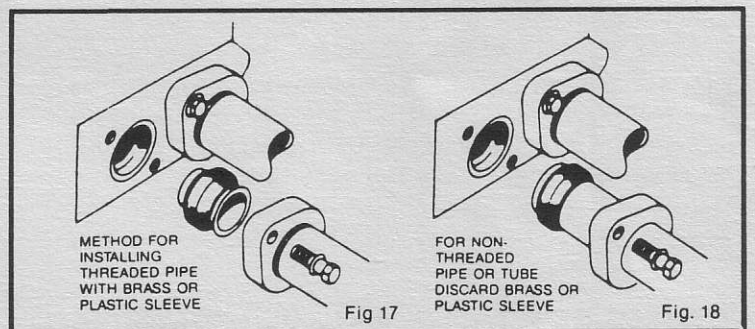
When the plumbing, filter grids, fittings or any other elements of the filter system are made of plastic materials, they may be damaged by momentary "back syphoning" of hot water from the heater when the pump stops running. To prevent such back flow, it is suggested to install a positive check valve and "heat sink" (3 ft.) copper pipe in the plumbing between the filter or plastic pipe and the heater.

Gate valves should **not** be installed on the return line from the heater. When the heater is installed below pool level, install a check valve after the heater or gate valves between the filter and heater and on the suction side of pump as shown in fig. 16. This will allow isolation of the heater from all equipment for inspection or repairs.

FLANGE COUPLINGS

Connect the inlet and outlet water pipes to the universal flange couplings on the heater as shown below. Inlet and outlet are indicated on the heater. The flanged couplings accept either threaded iron pipe 1½" NPT, unthreaded 1¼" iron pipe, or 1½" copper tubing.

The Tropic Isle Gas Heater equipped with an optional hydro-mechanical modulator kit comes standard with 2" connectors (either 2" threaded or 2" copper tube).



CAUTION: Before starting the heater on a new installation, bleed all air from the system by running filter pump for at least 15 minutes. Water should flow freely through heater.

MANUAL BY-PASS

Where the flow rate exceeds the maximum capacity of heater (see the maximum recommended flow rate), a manual by-pass should be installed and adjusted. After adjustments are made, the valve handle should be removed to avoid tampering.

*OPTIONAL

WATER CONNECTIONS

CIRCULATING PUMP

A pump capable of delivering the minimum required flow rate (table 1) must be operated before heater is fired.

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.)

Table 1 **RECOMMENDED FLOW RATE**

Model	1 1/2"		2"	
	Min.	Max.	Min.	Max.
All C120's	20	80	20	120
All C180's	20	80	20	120
All C240's	25	80	25	120
All C300's	30	80	30	120
All C360's	35	80	35	120
All C400's	35	80	35	120

*Equipped with Hydro-mechanical modulator

GAS CONNECTIONS

GAS LINE

Before installing the gas line, be sure to check what gas the heater has been designed to burn. This is important because different types of gas require different gas pipe sizes. The rating plate on the heater will indicate which gas the heater is designed to burn. The following table shows what size pipe is required for the distance from gas meter to the heater. The table is for natural gas at a specific gravity of .65 and propane at specific gravity of 1.5.

When sizing gas lines, calculate 3 additional feet of straight pipe for every elbow used.

The pipe sizes shown in this table are for natural gas. For propane gas, decrease by one size.

When laying the gas line, avoid getting dirt, grease or other foreign material in the pipe as this may cause damage to the gas valve, resulting in heater failure.

The gas meter should be checked to make sure that it will supply enough gas to the heater and any other appliances that may be used on the same meter.

The gas line from the meter will usually be of a larger size than the gas valve supplied with the heater. Therefore a reduction of the gas line will be necessary. Make this reduction as close to the heater as possible.

The heater and any other gas appliances must be disconnected from the gas supply piping system during any pressure testing on that system (greater than 1/2 psig).

The heater and its gas connections must be leak tested before placing the appliance in operation.

A manual main shut-off valve must be installed external to the heater.

Do not install gas line union inside heater jacket.

	Natural	Propane
Maximum Inlet Gas Pressure	10" W.C.	14" W.C.
Minimum Inlet Gas Pressure	6" W.C.**	12" W.C.
Normal Manifold Pressure	5" W.C.	11" W.C.
**7" W.C. for C400		

Table 2 **PIPE SIZED FOR LENGTH OF RUN**

MODEL	1/2"		3/4"		1"		1 1/4"		1 1/2"	
	Natural	Propane	Natural	Propane	Natural	Propane	Natural	Propane	Natural	Propane
C120	10'	40'	60'	150'	500'	600'	—	—	—	—
C180	—	20'	30'	80'	125'	250'	450'	600'	—	—
C240	—	10'	20'	50'	80'	150'	250'	500'	600'	—
C300	—	—	10'	30'	50'	100'	200'	350'	400'	600'
C360	—	—	—	20'	30'	70'	125'	250'	250'	500'
C400	—	—	—	10'	20'	60'	80'	150'	150'	450'

TESTING REGULATED MANIFOLD PRESSURE

1. Attach manometer to heater jacket.
2. Shut off main gas valve.
3. Remove 1/8" NPT plug on outlet face of valve and screw in the fitting from manometer kit.
4. Connect manometer hose to the fitting.
5. Turn on heater.
6. The manometer must read 5" WC for natural gas, 11" WC for LP gas, while heater is firing.
7. For adjustment, remove "Reg. Adj." cap and turn screw using screwdriver clockwise to increase, counter-clockwise to decrease gas pressure.

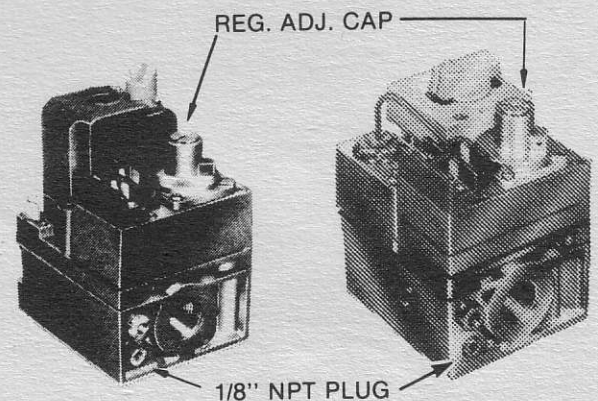


Fig. 19

VENTILATION

OUTDOOR INSTALLATION ONLY

For outdoor installation with stackless top, heater must be placed in a suitable area on a level, noncombustible surface. Do not install heater under an overhang less than 3 feet from top of the heater. The area under overhang must be open on three sides. Maintain minimum clearances as indicated below. Vent kit must be installed minimum of 5 feet below, 4 feet horizontally from any opening to a building.

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

NOTE: 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 feet from any wall will prevent adverse conditions.

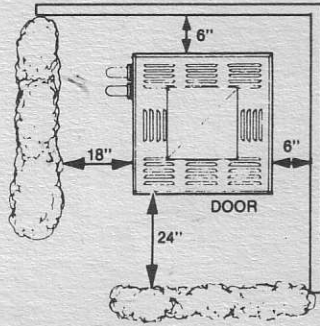


Fig. 20

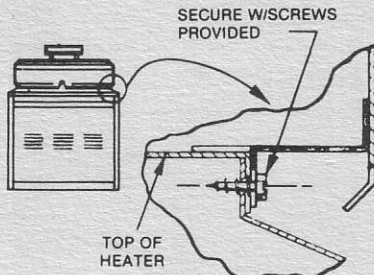


Fig. 21

STACKLESS VENT TERMINAL KIT

Proper Vent Terminal Kit must be secured to heater to complete installation.

Table 3

MODEL	VENT KIT NO.
C120	W12
C180	W18
C240	W24
C300	W30
C360	W36
C400	W40

INDOOR INSTALLATION ONLY

Heater must be placed in a suitable room with level noncombustible flooring in an area where leakage of exchanger or connections will not result in damage to the area adjacent to the heater or the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the heater. The pan must not restrict air flow. The following minimum clearances must be provided from combustible materials.

Water Connection Side 18" Front - 24"
Remaining Side - 6" Back - 6"

The heater requires two uninterrupted air supply openings; one for ventilation and one to supply oxygen for proper gas combustion. The air supply openings should be sized according to the following table.

Table 4

MODEL NUMBER	VENTILATION REQUIREMENTS	
	COMBUSTION AREA VENT REQUIRED - SQ. IN.	VENTILATION AREA VENT REQUIRED - SQ. IN.
C120	120	120
C180	180	180
C240	240	240
C300	300	300
C360	360	360
C400	400	400

STACK TYPE VENT KIT

The proper draft hood and adapter must be installed on the heater as shown below.

Table 5

MODEL	VENT KIT NO.	VENT STACK
C120	DJ2	6" Dia.
C180	D24	7" Dia.
C240	D24	7" Dia.
C300	D30	8" Dia.
C360	D36	9" Dia.
C400	D40	10" Dia.

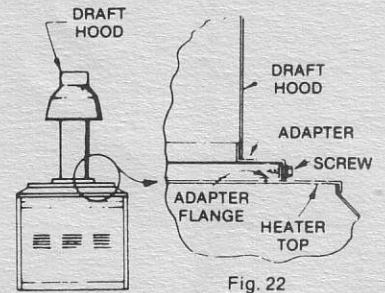


Fig. 22

A vent extension of the same size must be connected to the draft hood and extended at least 2 feet higher than highest point of the roof within 10 feet radius horizontally. The vent should then be capped with an approved vent cap (weather cap). Proper venting is extremely important to the operation of the heater.

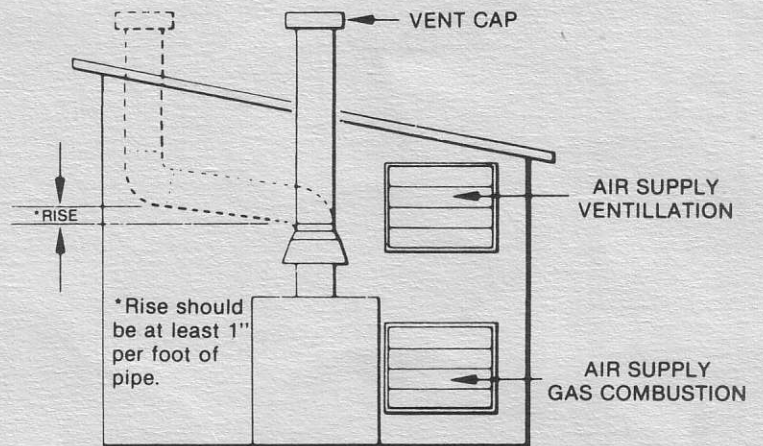


Fig. 23

The appliance must be located as close as practicable to a chimney or gas vent. The appliance should be installed at least 5 feet away from pool.

ELECTRICAL

ELECTRICAL WIRING FOR INTERMITTENT IGNITION (IID) MODELS ONLY

ELECTRICAL SYSTEM Electrical Rating 115 V.A.C. or 230 V.A.C.
50/60 Hz Less than 1 Amp

NOTE: If any of the original wiring supplied with this appliance must be replaced, installer must supply (No. 18 AWG 105°C U.L. approved AWM low energy stranded) copper wire or it's equivalent.

CAUTION: The heater must be electrically grounded and bonded in accordance with local codes or, in the absence of local codes, with the latest national electrical codes ANSI/NFPA No. 70.

Always use crimp type connectors when connecting two wires.

- BLK = Black YEL = Yellow
- ORN = Orange BLU = Blue
- VIO = Violet RED = Red
- WHT = White GRN = Green
- IGN = Ignitor Cable

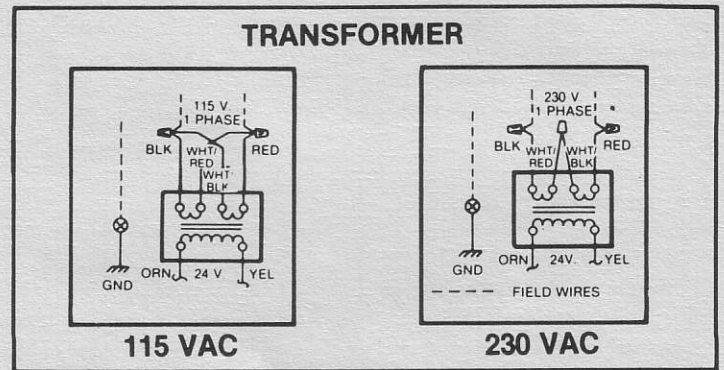


Fig. 24

WIRING DIAGRAM TROPIC ISLE (IID) POOL AND SPA HEATER

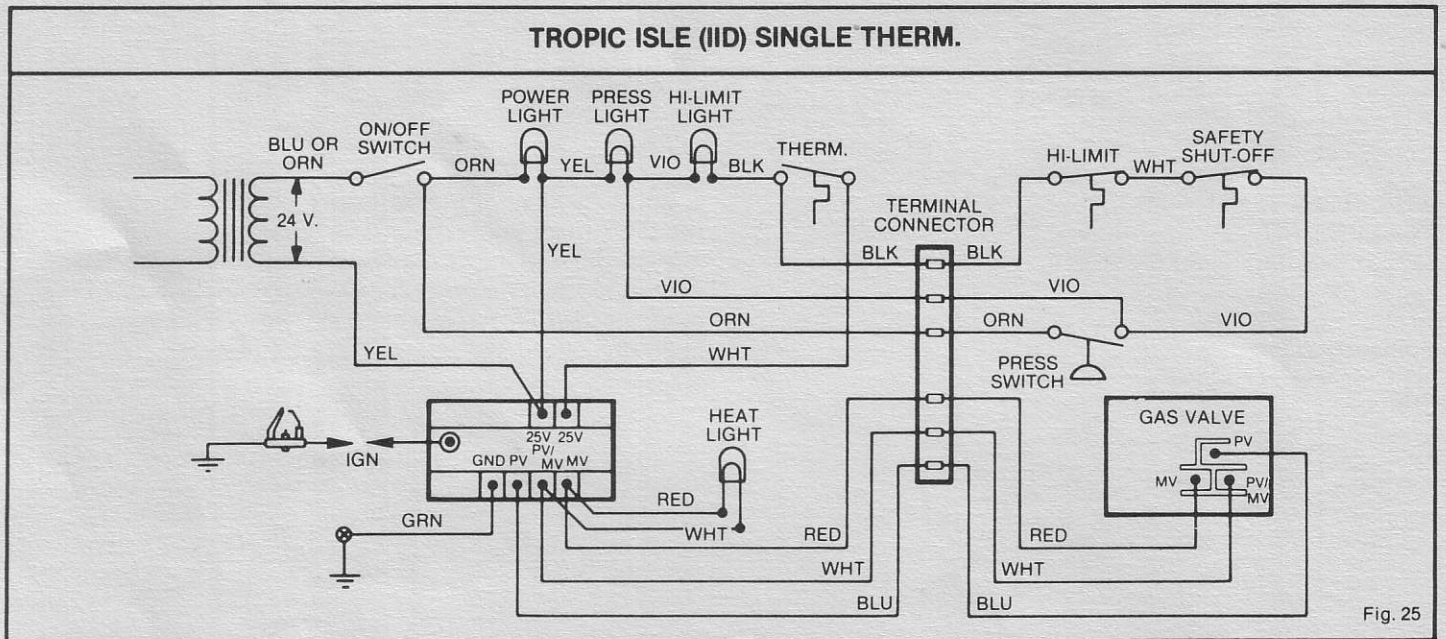


Fig. 25

TYPICAL TIME DELAY CLOCK (FIREMAN SWITCH) WIRING

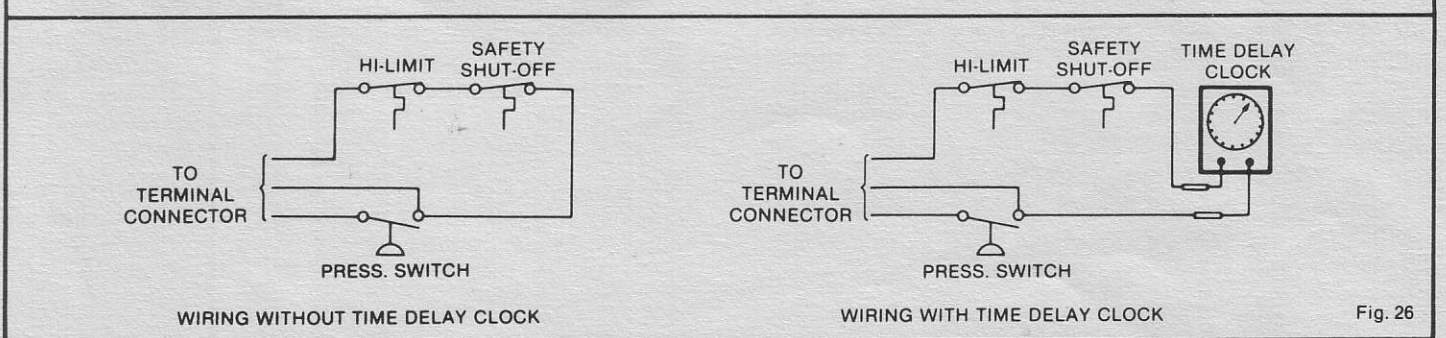


Fig. 26

ELECTRICAL

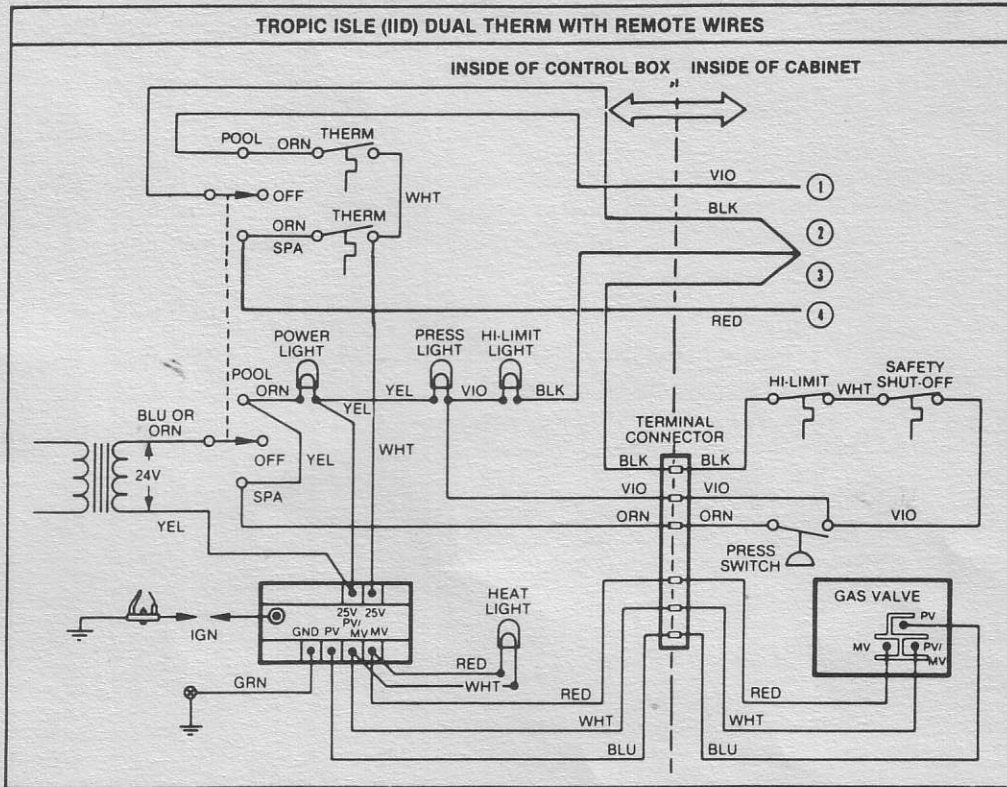
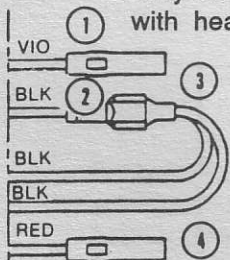


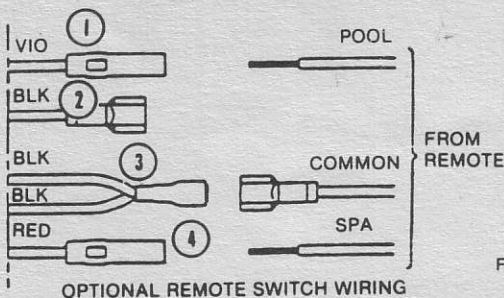
Fig. 27

INSTALLATION INSTRUCTIONS FOR REMOTE SWITCH DUAL THERM IID

1. Disconnect single black wire (2) (w/male connector) from paired black wires (3) (w/female connector).
2. Connect spa wire from remote switch to red wire (4) to butt splice and crimp it.
3. Connect pool wire from remote switch to violet wire (1) to butt splice and crimp it.
4. Connect common wire from remote switch with the fully insulated male connector (supplied with heater) to the paired black wires (3).



FACTORY WIRING



OPTIONAL REMOTE SWITCH WIRING

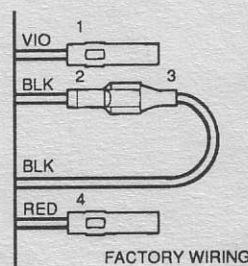
Note: It is good practice to run field wires in conduit, but they must not be placed in same conduit with line voltage conductors. Doing so can cause control problems.

2 wire remote

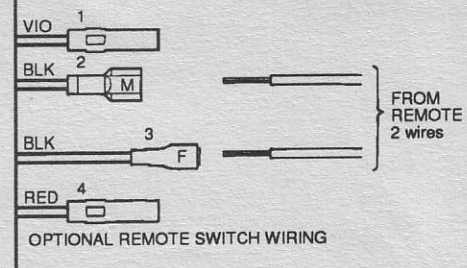
1. Disconnect two black wires (common) from each other (2) (3).
2. Connect both remote wires to the black common wires. (in any order)
3. The violet and red wires will remain unconnected.

Note: If this wiring method is used for remote thermostats only, then turn the MiniMax thermostats to their highest setting. If this wiring method is used for

on/off switch only, then set the MiniMax thermostats to your desired temperature.



FACTORY WIRING



OPTIONAL REMOTE SWITCH WIRING

Fig. 28

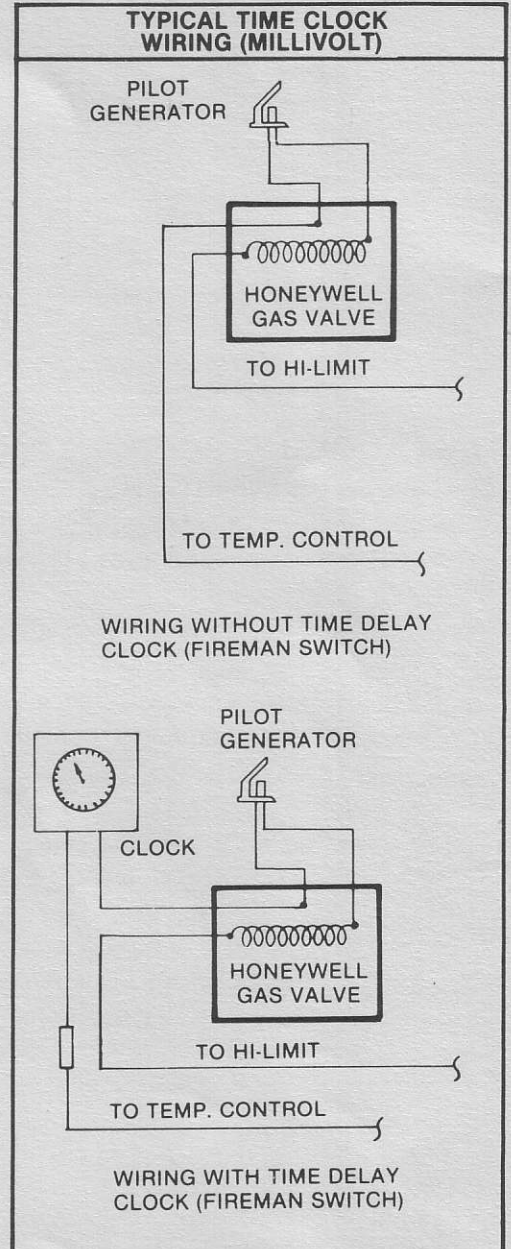
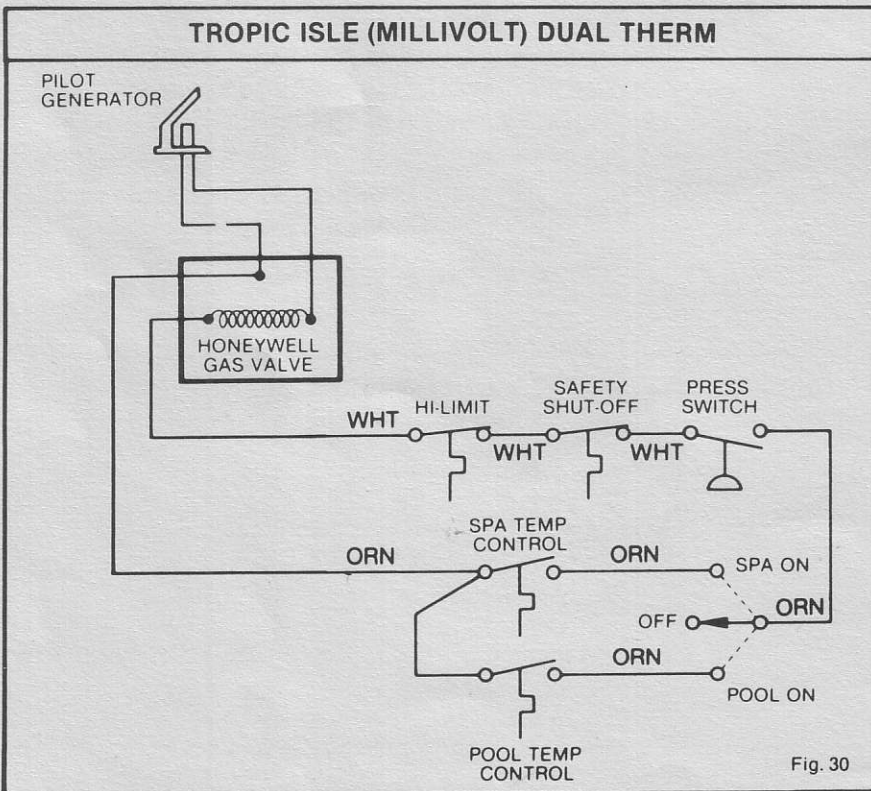
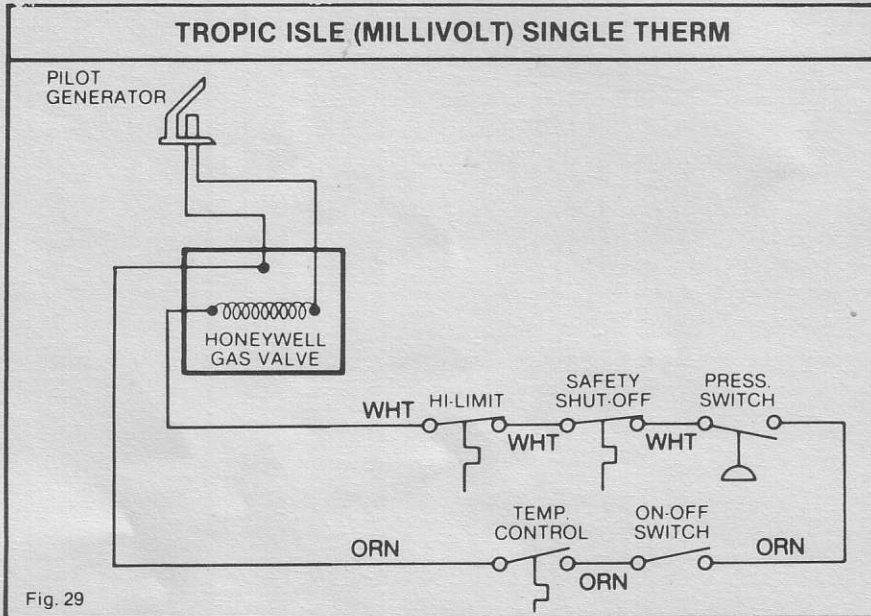
ELECTRICAL

ELECTRICAL WIRING FOR MILLIVOLT MODELS ONLY.

ELECTRICAL SYSTEM CAUTION: This heater has a self-contained electrical power supply and needs no external electrical source. Do not connect external power supply or damage will result.

NOTE: If any of the original wiring as supplied with this appliance must be replaced, installer must supply (No. 18 AWG 105°C U.L. approved AWM low energy stranded) copper wire. Always use crimp type connectors when connecting two wires.

WIRING DIAGRAM TROPID ISLE (MILLIVOLT) POOL AND SPA HEATER



WHT = WHITE
ORN = ORANGE

MAINTENANCE

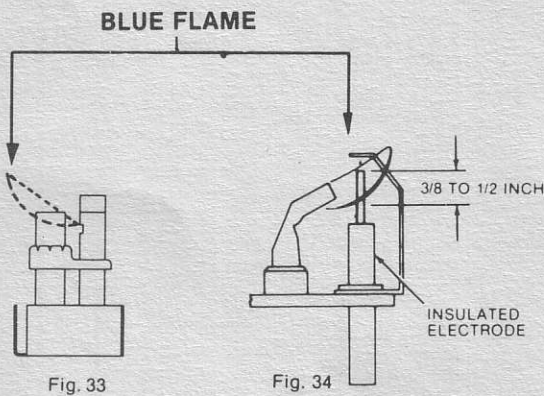
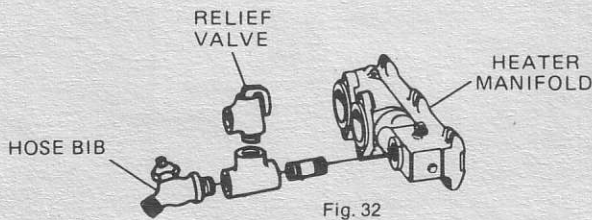
MAINTENANCE INSTRUCTIONS:

It is recommended that you check the following at least every six months and at the beginning of every swimming season.

1. Examine the venting system.
2. Visually check the burner and pilot flame. (See the pictorial sketch and drawing below). When flame appears yellow, burners should be inspected and cleaned. Use a wire brush if necessary.
3. Keep the heater area clear and free from combustibles and flammable liquids.
4. Make sure there are no obstructions in the flow of combustion and ventilating air.

RELIEF VALVE

Installation instruction for pressure relief valve, when required. Manually operate relief valve at least once a year.



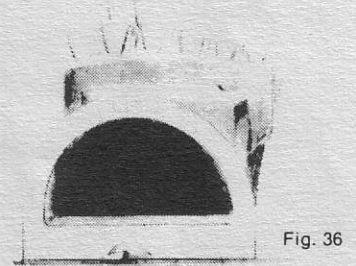
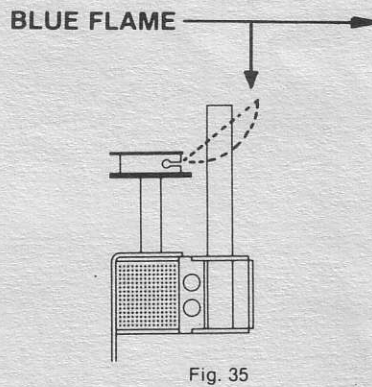
SPRING AND FALL OPERATION

If the pool is being used only occasionally, do not turn the heater completely off. Set the thermostat down to 65°F. This will keep the pool and the surrounding ground warm enough to bring the pool up to a comfortable swimming temperature in a shorter period of time.

WINTER OPERATION

If the pool won't be used for a month or more, turn the heater off at the main gas valve. For areas where there is no danger of water freezing, water should circulate through the heater all year long, even though you are not heating your swimming pool. Where freezing is possible, it is necessary to drain the water completely from the heater. This may be done by opening the drain valve and allowing all water to drain out of the heater. Also, disconnect the pressure switch from its 1/4" copper line. This will prevent damage from freezing expanded water that may lie in this tube after the heater has been drained.

CAUTION: If the heater has been drained for freezing conditions, do not turn "ON" until the system is circulating water.



TROUBLE SHOOTING

HEATER WILL NOT COME ON

POSSIBLE CAUSE	REMEDY
Automatic Ignition System Fails (IID Models)	Check if electrical connections are correct and securely fastened — if Yes, call serviceman.
Pilot Light Out (Millivolt)	Relight pilot.
Pump Not Running	Place pump in operation
Pump Airlocked	Check for leaks
Filter Dirty	Clean filter
Pump Strainer Clogged	Clean strainer.
Defective Wiring or Connections	Repair or replace wires
Pressure Switch Defective	Replace switch
Defective Gas Controls	Call serviceman
On-Off Switch in "Off" Position	Turn switch to "On"

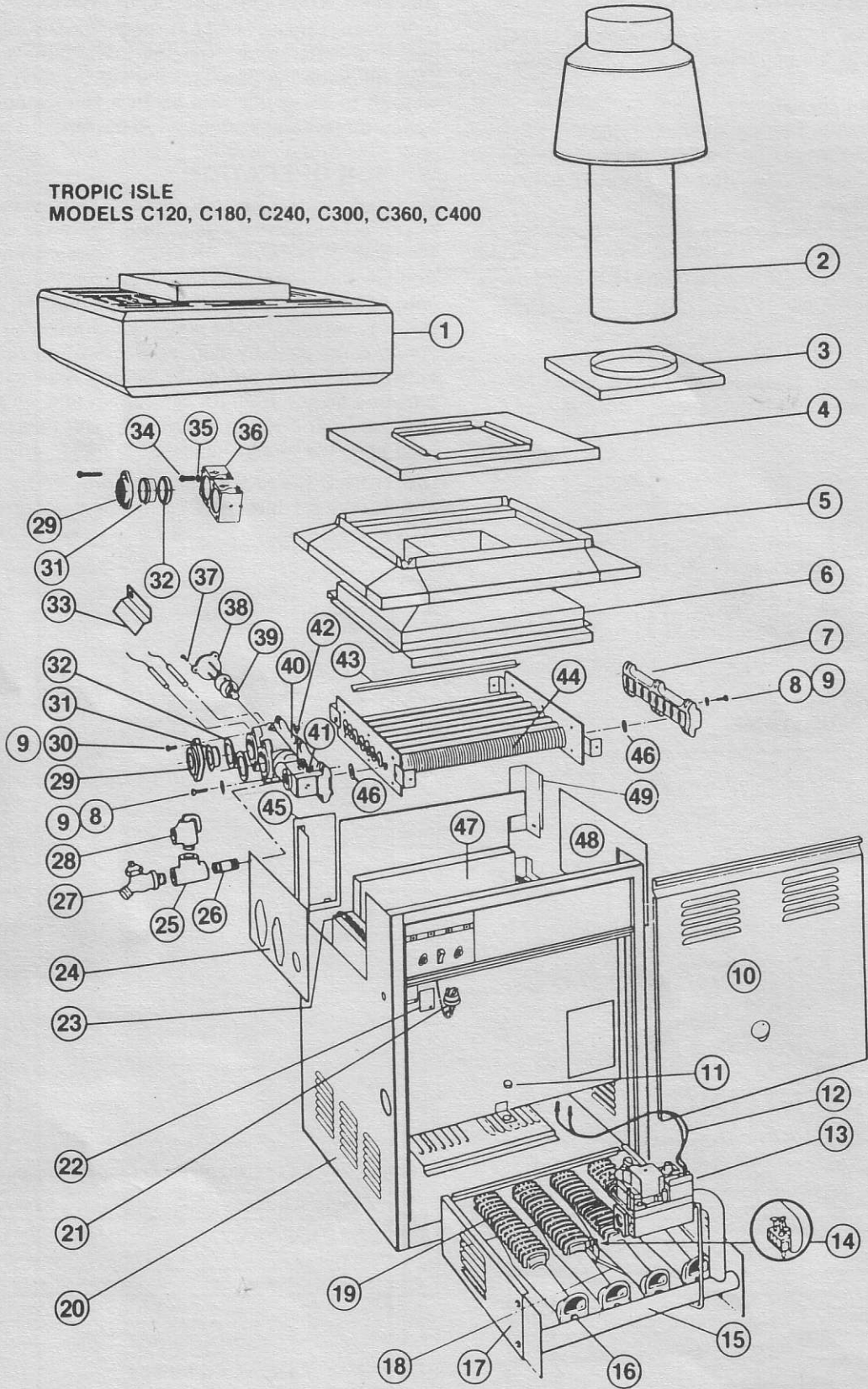
HEATER SHORT CYCLING (Rapid On and Off Operation)

POSSIBLE CAUSE	REMEDY
Insufficient Water Flow	Clean filter and pump strainer
Defective Wiring	Repair or replace wiring
Flow Valve out of Adjustment	Call serviceman

HEATER MAKES KNOCKING NOISES

POSSIBLE CAUSE	REMEDY
Heater Operating after Pump has shut off	Shut off gas supply and call serviceman.
Heater Exchanger Scaled	Shut off gas supply and call serviceman.

TROPIC ISLE
MODELS C120, C180, C240, C300, C360, C400



TROPIC ISLE PARTS LIST

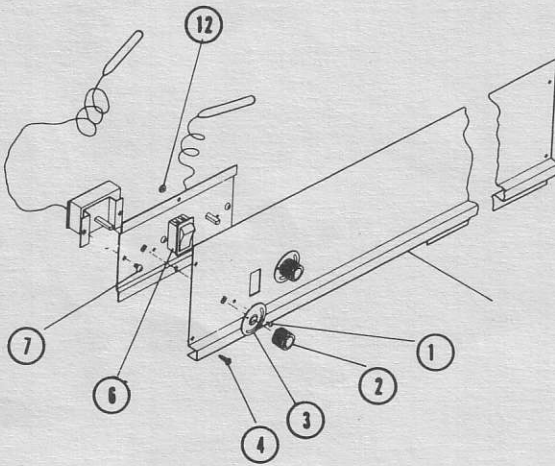
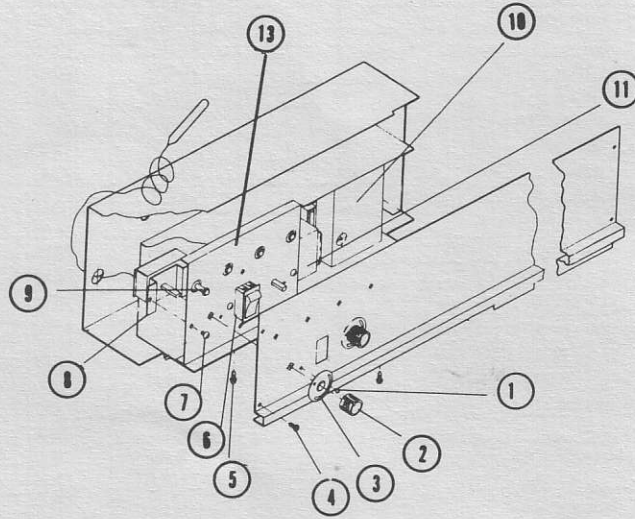
ITEM	PART DESCRIPTION	DIV.	C120	C180	C240	C300	C360	C400
1	Exhaust Vent - Stackless Models	1	10127	10128	10129	10130	10131	10132
2	Drafthood - Stack Models	1	10134	10135	10135	10136	10137	10138
3	Adaptor, Drafthood - Stack Models	1						
4	Top, Jacket	1	73454	73455	73456	73457	73458	73459
5	Collar Assembly, Jacket	1	73384	73385	73386	73387	73388	73389
6	Flue Collector	1	73008	73009	73010	73011	73012	73013
7	Head, Return (Cast Iron)	1	70992	70992	70992	70992	70992	70992
	Head, Return (Brass)	1	70990	70990	70990	70990	70990	70990
8	Washer -3/8"	11	72180	72180	72180	72180	72180	72180
9	Bolt, 3/8" - 16 x 1-1/4"	16	70427	70427	70427	70427	70427	70427
10	Door, Assembly	1	72932	72933	72934	72935	72936	72937
11	Bushing, Hi-Tensions Wire (IID)	1	70551	70551	70551	70551	70551	70551
12	Harness Wire (IID)	1	72306	72306	72306	72306	72306	72306
	Set, Wire (Millivolt - Single Therm)	1	73471	73471	73471	73471	73471	73471
	Set, Wire (Millivolt - Dual Therm)	1	73472	73472	73472	73472	73472	73472
13	Gas Valve - Natural (IID)	1	72122	72122	72122	72122	72122	72122
	Gas Valve - Natural (Millivolt)	1	72117	72117	72117	72117	72117	72117
	Gas Valve - Propane (Millivolt)	1	72119	72119	72119	72119	72119	72119
	Gas Valve - IID Pro	1	72123	72123	72123	72123	72123	72123
14	Pilot Burner - Natural (IID)	1	71511	71511	71511	71511	71511	71511
	Pilot Ass'y - Natural (Millivolt)	1	73992	73992	73992	73992	73992	73992
	Pilot Ass'y - Propane (Millivolt)	1	73991	73991	73991	73991	73991	73991
	Pilot Generator	1	71515	71515	71515	71515	71515	71515
15	Gas Manifold	1	71287	71288	71289	71290	71291	71292
16	Orifice, Natural #29		2 ea. 71465	3 ea. 71465	4 ea. 71465	5 ea. 71465	6 ea. 71465	7 ea. 71465
	Orifice, Propane #44		2 ea. 71460	3 ea. 71460	4 ea. 71460	5 ea. 71460	6 ea. 71460	7 ea. 71460
17	Burner Tray Ass'y Compl. - Natural	1	73215	73216	73217	73218	73219	73220
	Burner Tray Ass'y Compl. - Propane	1	73226	73221	73222	73223	73224	73225
	Burner Tray Ass'y Compl. (IID)	1	72834	72836	72838	72840	72842	72844
	Burner Tray Pro IID	1	72823	72824	72825	72826	72827	72828
18	Pilot Gas Tubing		72081	72081	72081	72081	72081	72081
19	Burner, Main		2 ea. 70526	3 ea. 70526	4 ea. 70526	5 ea. 70526	6 ea. 70526	7 ea. 70526
	Jacket Assembly	1	73112	73113	73114	73115	73116	73117
21	Pressure Switch	1	71580	71580	71580	71580	71580	71580
22	Junction Box Cover	1	70786	70786	70786	70786	70786	70786
23	Rope		71116	71116	71116	71116	71116	71116
24	Inspection Plate - Inlet/Outlet	1	71535	71535	71535	71535	71535	71535
25	Tee 3/4" Brass (When Req'd)	1	71983	71983	71983	71983	71983	71983
26	Nipple 3/4" Brass (When Req'd)	1	71388	71388	71388	71388	71388	71388
27	Valve, Drain	1	71134	71134	71134	71134	71134	71134
28	Valve, Pres. Relief (When Req'd)	1	72138	72138	72138	72138	72138	72138
29	Flange, Inlet/Outlet (Cast Iron) 1 1/2"	2	70901	70901	70901	70901	70901	70901
	Flange, Inlet/Outlet (Brass) 1 1/2"	2	70902	70902	70902	70902	70902	70902
	Flange, Inlet/Outlet (Brass) 2" **	2	70209	70209	70209	70209	70209	70209
30	Bolt, Flange 3/8" - 16 x 1 3/4" (CI)	4	70421	70421	70421	70421	70421	70421
31	Bushing 1 1/2"	2	70545	70545	70545	70545	70545	70545
	Bushing 2" **	2	70544	70544	70544	70544	70544	70544
32	Rubber Sleeve 1 1/2"	2	71896	71896	71896	71896	71896	71896
	Rubber Sleeve 2" **	2	71895	71895	71895	71895	71895	71895
33	Heat Shield, Head Inlet/Outlet	1	70997	70997	70997	70997	70997	70997
34	Bolt 3/8" - 16 x 1" **	4	70415	70415	70415	70415	70415	70415
35	Washer **	4	72169	72169	72169	72169	72169	72169
36	Modulator Ass'y **	1	73228	73228	73228	73228	73228	73228
37	Bolt, Flow Valve 1/4" - 20 x 3/4"	3	70418	70418	70418	70418	70418	70418
38	Flow Valve Ass'y (Cast Iron)	1	73001	73001	73001	73001	73001	73001
	Flow Valve Ass'y (Brass)	1	73003	73003	73003	73003	73003	73003
39	Power Element, Flow Valve	1	71576	71576	71576	71576	71576	71576
40	Head, Inlet/Outlet (Cast Iron)	1	70983	70983	70983	70983	70983	70983
	Head, Inlet/Outlet (Brass)	1	70984	70984	70984	70984	70984	70984
41	Hi-Limit	1	71016	71016	71016	71016	71016	71016
42	Safety Shut-Off	1	71017	71017	71017	71017	71017	71017
43	Baffle, Flue	7	70346	70347	70348	70349	70355	70356
44	Heat Exchanger	1	73043	73044	73045	73046	73047	73048
45	Cover Plate, Flow-Valve	1	73206	73206	73206	73206	73206	73206
46	Gasket, Tube Seal	16	70951	70951	70951	70951	70951	70951
47	Combust. Chamber Ass'y	1	72988	72989	72990	72991	72992	72994
48	Inspection Plate	1	71536	71536	71536	71536	71536	71536
49	Inspection Plate Flow-Valve	1	71538	71538	71538	71538	71538	71538

See Control Panel Assembly on Next Page

*FOR USE W/MODULATOR ONLY

CONTROL PANEL EXPLODED VIEW

CONTROL PANEL & CONTROL BOX ASSEMBLY (IID)



CONTROL PANEL ASSEMBLY (MILLIVOLT)

No.	Description	Part No.	IID Qty. Req'd.		Millivolt Qty. Req'd.	
			Sgl. Therm.	Dual Therm.	Sgl. Therm.	Dual Therm.
1	Screw, Knob Stopper	71716	1	2	1	2
2	Knob, Thermostat	71134	1	2	1	2
3	Knob, Stopper	71940	1	2	1	2
4	Screw #8 x 1/2 LG Self-Tap	71698	4	4	4	4
5	Screw #8 x 1/4 LG Self-Tap	71703	4	4	0	0
6	Power Switch	71952 71949	1 0	0 1	1 0	0 1
7	Screw #10-12 UNF x 1/4 LG	71659	2	4	2	4
8	Temperature Control	72022	1	2	1	2
9	Light Indicator	71284	4	4	0	0
10A	Module Electronic Natural	73584	1	1	0	0
10B	Module electronic propane/therm	73585	1	1	0	0
11	Transformer	72052	1	1	0	0
12	Nut, #8 - 32 UNC	71414	0	0	2	2
13	Control Box Assembly	72925 72956	1 0	0 1	0 0	0 0