

INTERMATIC®

PF1000 SERIES

FREEZE PROTECTION CONTROLS

INSTALLATION OPERATION & SERVICE MANUAL

MODEL: PF1222TB1 SUBPANEL

**TWO CIRCUIT POOL EQUIPMENT CONTROL WITH FREEZE AND HEATER PROTECTION
IN INDOOR/OUTDOOR ENCLOSURE**

PANEL RATING: 60 AMP. 120/240 VOLT, 607 HZ.

! DANGER

Risk of drowning!

Do not permit unsupervised children to use pool or spa.

Close supervision of children required at all times.

! WARNING Risk of Fire or Electrical Shock

Turn power off at main panel before servicing this switch or the equipment it controls. This control panel must be installed according to the National Electrical Code and local code requirements. Use MIN 75°C Copper conductors ONLY. Install interchangeable circuit breakers with an interrupting current rating of 10000 symmetrical amperes, or higher. Follow manufacturers instructions for installing and testing of ground fault circuit breakers (GFCB) and interrupters (GFCI). Install only LISTED receptacle(s) and/or wiring device(s) inside the enclosure. When panel is outdoors, a LISTED rainproof cover must be installed over the wiring device in the side knockouts. This control should not be connected to any equipment which would cause bodily injury or property damage should it be activated unexpectedly. Reinstall safety guard after wiring.

GENERAL INFORMATION

This Pool Equipment Control is designed to automatically operate the Filter Pump, Cleaner Pump and also to provide freeze protection for the pool equipment. Nevertheless this product is not intended to be a substitute for insulation, coverings, or maintenance.

THE FILTER PUMP TIME SWITCH is located in the upper left side of the enclosure and operates the Filter Pump, as set by the trippers on the yellow dial, on a 24 hour schedule. For setting the schedule, refer to page 3 of this Manual.

THE FIREMAN SWITCH (heater protection mechanism) is located next to the manual lever and its function is to stop the heating process 20 minutes before the Time Switch turns OFF the Filter Pump. By doing so, the circulating water cools the heat exchanger thus preventing excess heat build-up.

THE CLEANER PUMP TIME SWITCH is located in the upper right side of the enclosure and operates the Cleaner Pump (Booster Pump). The trippers of this Time Switch should be set so that the operation of the Cleaner Pump falls within the operation of the Filter Pump. To avoid equipment damage, the two Time Switches are interlocked and the Cleaner Pump would not operate unless the Filter Pump is already operating.

THE FREEZE PROTECTION THERMOSTAT is located in the lower left side of the enclosure and turns ON the Filter Pump when the air temperature (where the Control Panel is located) drops below the temperature set by the dial (between 33°F and 42°F).



CAUTION

Risk of injury or property damage!

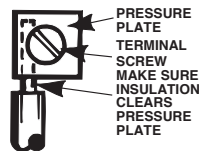
Do not install or operate this equipment and other associated equipment without basic safety precautions.

Read and follow the safety instructions listed below and other basic safety precautions before installation or operation of this control and other associated equipment.

1. *This control must be installed by a qualified person, according to the national and local electrical codes.*
2. *Install this control not less than 5 feet (3 meters in Canada) from inside edge of pool and 1 foot (30cm) above ground.*
3. *USE COPPER CONDUCTORS ONLY rated 75°C minimum.*
4. *Do not exceed maximum ratings of individual components, wiring devices and current carrying capacity of conductors.*
5. *For control grounding, bonding, installing and the wiring of underwater lights, refer to Article 680 of the National Electrical Code or Article 68 of the Canadian Electrical Code.*
6. *The control should not operate any equipment which would cause bodily injury or property damage should it be activated unexpectedly.*

INSTALLATION

1. Select the proper location for the Control Panel and prepare the necessary conduit run(s) required by the installation layout.
2. Remove the four #10 hex head screws from the back of the enclosure and attach mounting brackets to enclosure.
3. Hang enclosure on a flat vertical surface or other support, using hardware suitable for the purpose.
4. Properly terminate conduits at both ends and pull-in the conductors as specified by the installation layout.
5. Follow wiring diagram on page 4, connect 240 Volt Supply to LINE 1, LINE 2, NEUTRAL (if needed) and EQUIPMENT GROUND to the terminals so indicated.
6. Insert a 20 or 30 Amp 240 Volt circuit breaker into the Breaker Base and connect leads to Terminal TB1 on the left, see insert for proper termination.
7. Connect Filter Pump leads to terminals 2 and 4 of Filter Pump Time Switch and Cleaner Pump leads to terminals 2 and 4 of Cleaner Pump Time Switch. Connect the grounding leads of each pump to the Equipment Grounding Terminal at the bottom of the enclosure.
8. If the Control Panel is installed in location, where it is exposed to direct sun most of the day, extend 8 inches of the copper capillary tube of the thermostat into an open ended (plastic or metal) conduit, about 10 inches long, installed at bottom of the enclosure. **Handle capillary tube with care!**
9. If external bonding is required, install a bonding lug at bottom of enclosure and bond installation according to code requirements.



10. If required by the heater manufacturer, follow his instructions and make the fireman switch connections. Use at least #18 AWG wiring with insulation rated 300 Volt or higher. Connect heater ON/OFF switch in series with the fireman Switch and turn switch on heater to ON.

11. TEST INSTALLATION:

- a. Turn the thermostat dial to its lowest setting and place crushed ice (in plastic bag) inside capillary coil of Thermostat.
- b. Turn ON power to Control Panel, wait 20 seconds then slowly turn thermostat dial counter-clockwise until Filter Pump starts.
- c. Using the manual lever on Cleaner Time Switch, turn ON-OFF the Cleaner Pump.
- d. Turn OFF power to Control Panel, remove ice, check wiring, tighten terminal screws if necessary, reinstall time switch insulators and front plate.
- e. Turn ON power to Control Panel and set time Switches and the Thermostat, see OPERATION instructions on page 3.

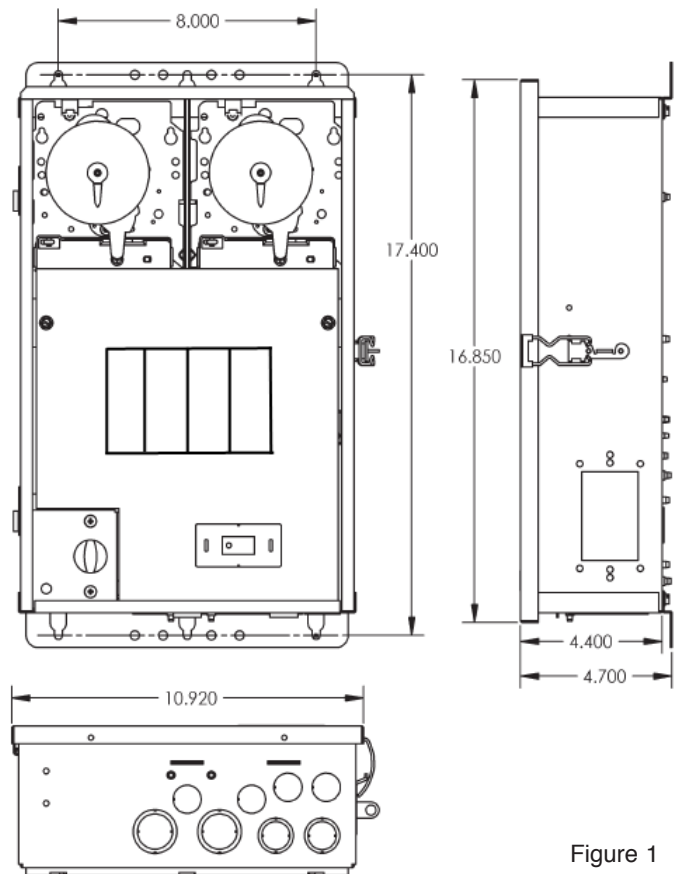


Figure 1

OPERATION

TO SET FILTER TIME SWITCH, follow instructions on the right. The length of the daily filtration/heating cycle depends on many variables such as size, shape, and geographic location of the pool, water chemistry, type of pool equipment, usage and season of year. If not sure, contact your local pool service professional for advice.

TO SET CLEANER TIME SWITCH, follow instructions on the right. NOTE: This Control is factory wired to prevent equipment damage by allowing the Cleaner Pump to operate only when the Filter Pump is already operating. This requires that the Cleaner Time Switch settings (ON and OFF times) must be *within* the operating hours of the Filter Pump. For example: If the Filter Pump is set to operate from 8 am to 2 pm daily, the Cleaner Pump Time Switch should be set to operate no longer than 8:30 am to 1:30 pm.

TIME SWITCH OPERATING INSTRUCTIONS

1. TO SET "ON" AND "OFF" TIMES: Hold TRIPPERS against edge of CLOCK-DIAL, pointing to time (AM or PM) when ON and OFF operations are desired. Tighten tripper screws firmly.

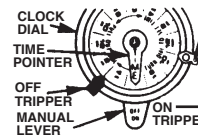
2. TO SET TIME-OF-DAY: Pull CLOCK-DIAL outward. Turn in either direction and align the exact time-of-day on the CLOCK-DIAL (the time now, when switch is being put into operation) to the **POINTER. — DO NOT MOVE POINTER —**

• **TO OPERATE SWITCH MANUALLY:** Move MANUAL LEVER below CLOCK-DIAL left or right as indicated by arrows, This will not affect next operation.

• **FOR MORE THAN ONE DAILY ON-OFF**

OPERATION: Place additional tripper pairs on CLOCK-DIAL (order 156T1978A).

• **IN CASE OF POWER FAILURE,** reset CLOCK-DIAL to proper time-of-day. See step 2 above.



TO SET THERMOSTAT, turn dial, pointing to desired temperature, marked on the plate, between 32°F and 45°F. Again, many variables must be considered before selecting the "turn ON" temperature of the Filter Pump and your local pool service professional is the best source of information. The Thermostat is factory set to turn OFF the Filter Pump when the ambient temperature rises 5°F above its set point.

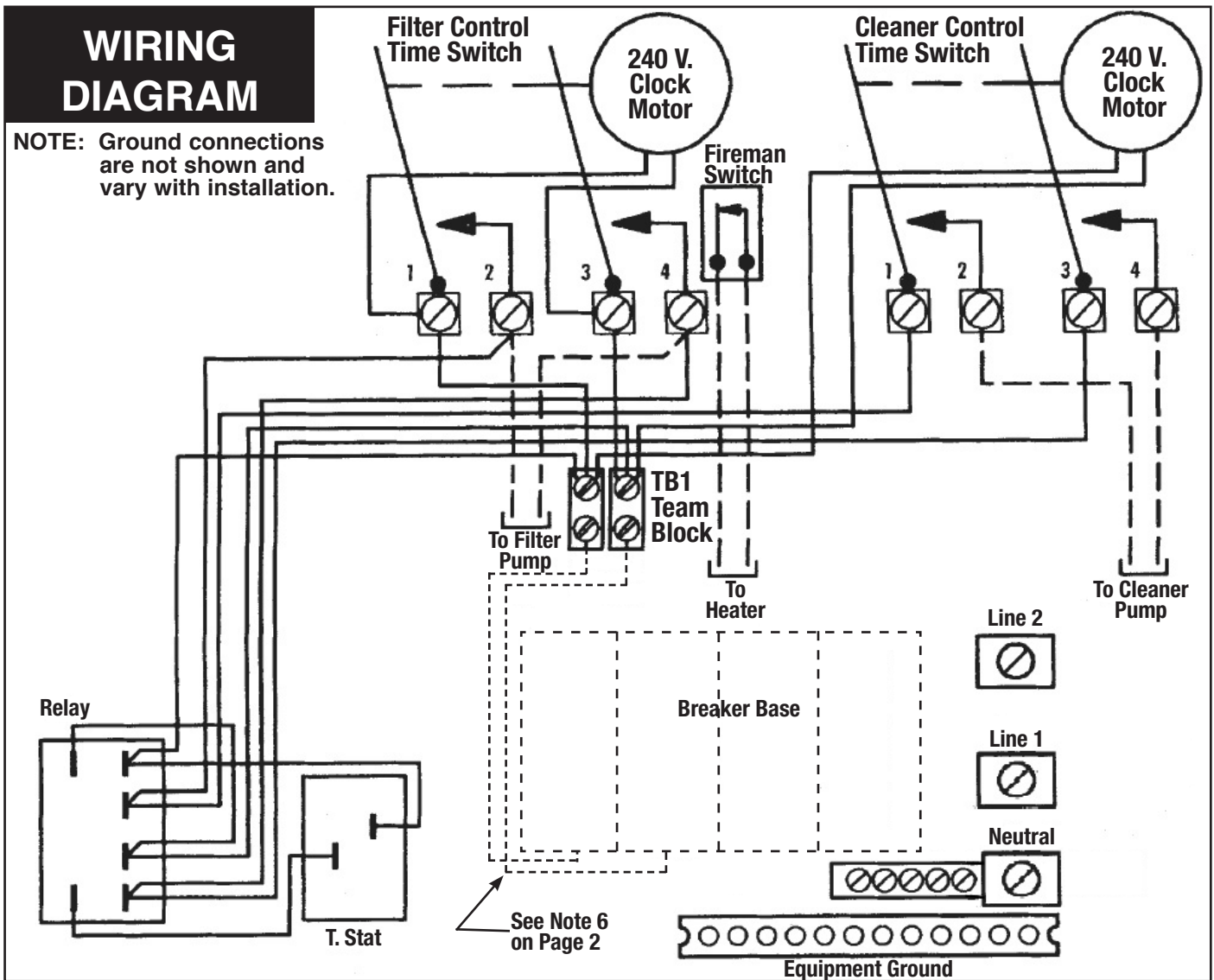
THE FIREMAN SWITCH (Heater Protection Mechanism), if installed, is factory set and shuts OFF the heater 20 minutes before the Time Switch turns OFF the filter pump. The Fireman Switch requires no setting or service.

TROUBLESHOOTING

SYMPTOM	CAUSE(S)	CORRECTIVE ACTION
1. Time Switch will not keep time - dial is turning.	1a. Frequent power outages 1b. Wrong voltage/cycle 1c. Loose clock motor connections	Reset dial Change clock motor Check connections
2. Time Switch Dial stops at ON or OFF tripper.	2a. Loose tripper 2b. Bent dial 2c. Defective motor	Check/change tripper Check/change mechanism Change clock motor
3. Load is ON at all times-- dial is turning.	3a. Welded contacts 3b. Two ON-trippers on dial 3c. No OFF tripper on dial 3d. Defective mechanism	Change mechanism Change tripper Change tripper Change mechanism
4. Dead clock motor. (Clock motor gears do not rotate.)	4a. Defective clock motor (open coil due to lightning or surge) 4b. Loose clock motor connections 4c. Wrong voltage	Change clock motor Check connections Change clock motor
5. Filter Pump will not start when temp. is below 32°F.	5a. Defective thermostat 5b. Defective relay 5c. Faulty wiring 5d. Power outage	Replace thermostat Replace relay Check wiring Install stand-by power

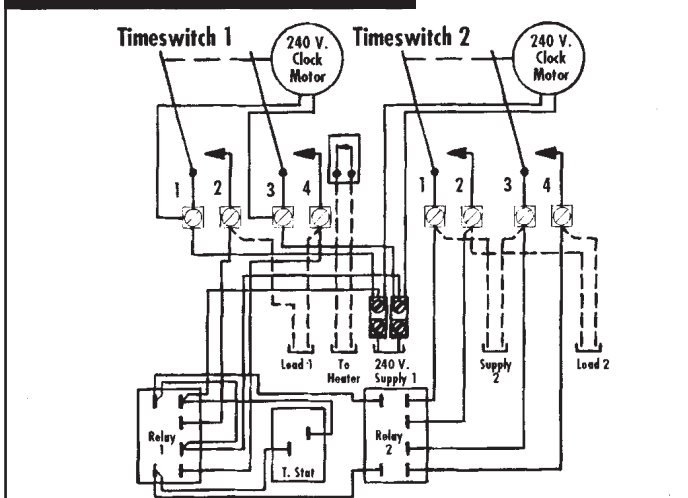
WIRING DIAGRAM

NOTE: Ground connections are not shown and vary with installation.



ALTERNATE WIRING FOR TWO INDEPENDENTLY WIRED PUMPS

NOTE: Relay #2 is not furnished, must be ordered separately.



LIMITED ONE YEAR WARRANTY

If within the warranty period specified, this product fails due to a defect in material or workmanship, Intermatic Incorporated will repair or replace it, at its sole option, free of charge. This warranty is extended to the original household purchaser only and is not transferable. This warranty does not apply to: (a) damage to units caused by accident, dropping or abuse in handling, acts of God or any negligent use; (b) units which have been subject to unauthorized repair, opened, taken apart or otherwise modified; (c) units not used in accordance with instructions; (d) damages exceeding the cost of the product; (e) sealed lamps and/or lamp bulbs, LED's and batteries; (f) the finish on any portion of the product, such as surface and/or weathering, as this is considered normal wear and tear; (g) transit damage, initial installation costs, removal costs, or reinstallation costs.

INTERMATIC INCORPORATED WILL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY MODIFIED TO EXIST ONLY AS CONTAINED IN THIS LIMITED WARRANTY, AND SHALL BE OF THE SAME DURATION AS THE WARRANTY PERIOD STATED ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS ON THE DURATION OF AN IMPLIED WARRANTY, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

This warranty service is available by either (a) returning the product to the dealer from whom the unit was purchased or (b) completing a warranty claim online at www.intermatic.com. This warranty is made by: Intermatic Incorporated, Customer Service 7777 Winn Rd., Spring Grove, Illinois 60081-9698. For warranty service go to: <http://www.Intermatic.com> or call 815-675-7000.

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