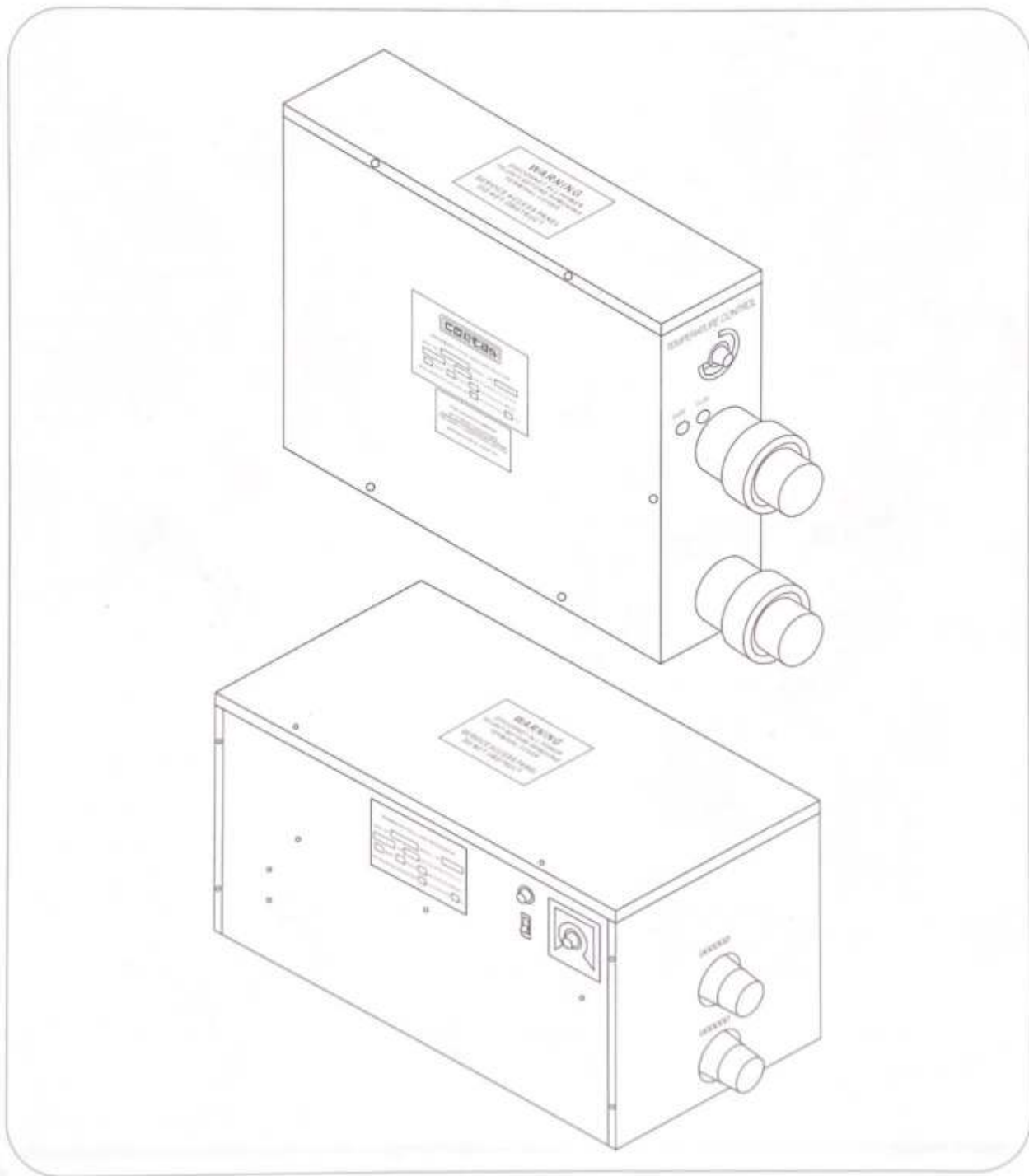


POOLHEATER

with built-in flow switch



1.0 DESCRIPTION

Spa Heaters are intended for use on spas or hot tubs having a forced water circulation system.

The water flow through the heater should be at least 15 GPM but should not exceed 80 GPM. Higher flow may damage the heater.

2.0 INSTALLATION

WARNING

Only qualified personnel, as defined by National Electrical Code Article 100, should install and maintain this equipment. Unauthorized alteration or improper maintenance of this unit may release the manufacturer from any warranty claims. The installation must be in accordance with the instructions in this manual and applicable local plumbing and electrical codes.

CHECK ELECTRICAL CONNECTIONS TO ALL COMPONENTS within the heater for tightness. These can become loose during shipment and handling.

2.1 Physical Placement

The Spa Heater is suitable for indoor or outdoor installation. See Figure 1 for piping connections and Figures 2A and 2B for electrical connections. The heater should be securely mounted to a smooth, flat surface. It may be conveniently located next to the filtration equipment. Leave minimum clearance of 9 inches on the left, 12 inches both above and to the front and 6 inches on the back for service entrances and access.

2.2 Electrical Installation

CAUTION

The electrical installation must be in accordance with Article 680 of the National Electrical Code, and ANSI/NFPA 70.

The electrical supply power must be single phase, 2 wire, 240 VAC. The supply must be protected by a circuit breaker or a fused disconnect switch. An insulated ground conductor must be provided. See Figures 2A and 2B and Table 1 for supply wire and circuit sizing. A lug has been provided for attachment for the BONDING wire per the National Electric Code, 1996 Edition, Article 680-22, (a) (4). This lug is located between the inlet and outlet pipes of the heater.

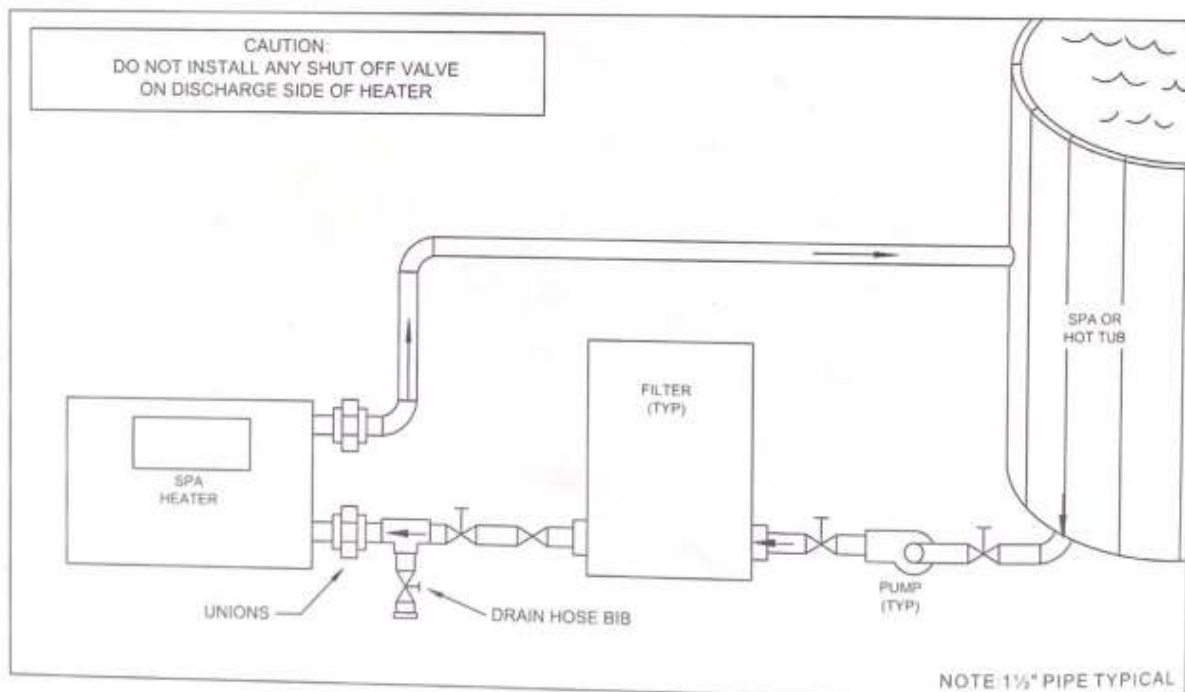
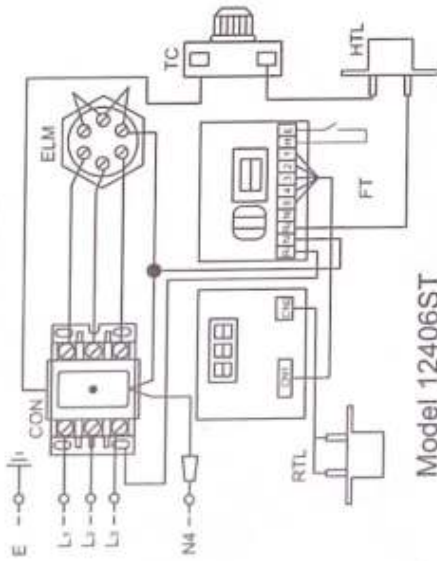


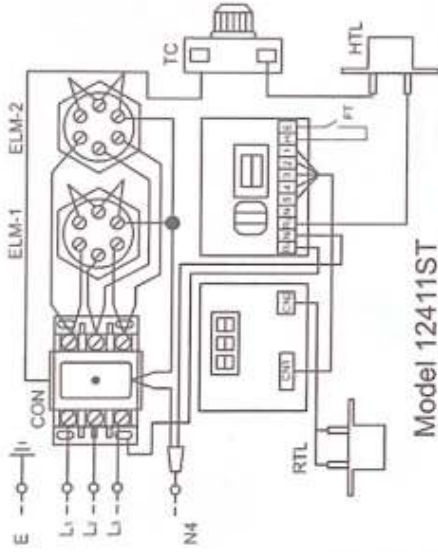
Figure 1. Piping Diagram

POWER SUPPLY
220/380V AC SINGLE PHASE



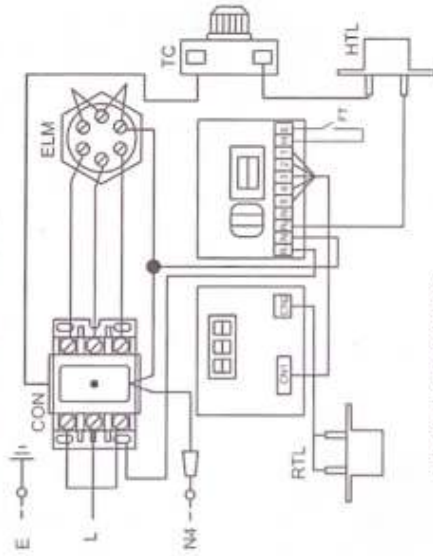
Model 12406ST
figure 2A, Wiring Diagram

POWER SUPPLY
220/380V AC SINGLE PHASE



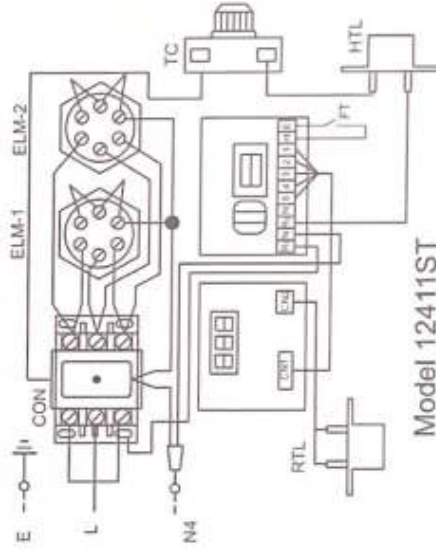
Model 12411ST
Model 12415ST
figure 2B, Wiring Diagram

POWER SUPPLY
220V AC SINGLE PHASE



Model 12406ST
figure 2A, Wiring Diagram

POWER SUPPLY
220V AC SINGLE PHASE



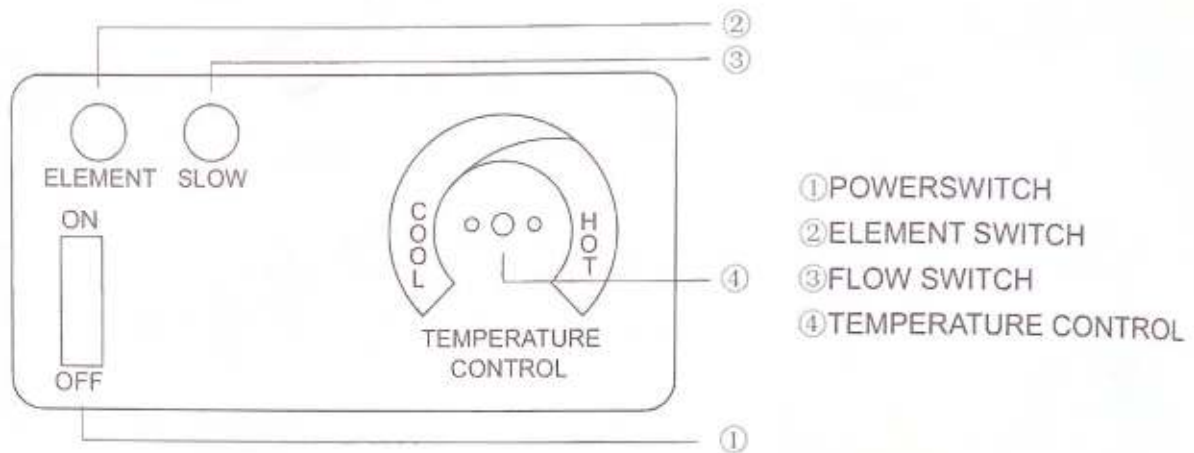
Model 12411ST
Model 12415ST
figure 2B, Wiring Diagram

- 1 INSULATED GROUND CONDUCTOR, COPPER, MUST BE THE SAME SIZE AS THE SUPPLY WIRING, BUT NOT LESS THAN #12 AWG
- 2 FACTORY SPICED LEADS ARE PROVIDED FOR CONNECTION TO CUSTOMER SUPPLIED AUXILIARY CONTROLS. REMOTE THERMOSTAT SEE YOUR DEALER FOR INSTALLATION INSTRUCTIONS

- 3 THE ST MODEL SPA HEATER IS AVAILABLE WITH EITHER A FLOW SWITCH, PN 23000102 OR A PRESSURE SWITCH, PN23007210. CONFIRM WHICH DEVICE YOUR HEATER IS EQUIPPED WITH BEFORE ORDERING REPLACEMENT PARTS
- HTH: HI-TEMP CUT OFF MANUAL RESET
TC: TEMPERATURE CONTROL-THERMOSTAT
ELM-2: HEATING ELEMENT(S)
CON1: CONTACTOR 2-POLE 55AM(AMPIRES)
CON2: CONTACTOR 2-POLE 35AM(AMPIRES)
CON3: CONTACTOR 1-POLE 30AM(AMPIRES)
CB: CIRCUIT BREAKER/CUSTOMER SUPPLIED
PL1: PILOT LIGHT ELEMENT
PL2: PILOT LIGHT FLOW SWITCH
FLS: FLOW SWITCH
PRS SW: PRESSURE SWITCH(ALTERNATE)

- 1 INSULATED GROUND CONDUCTOR, COPPER, MUST BE THE SAME SIZE AS THE SUPPLY WIRING, BUT NOT LESS THAN #12 AWG
- 2 FACTORY SPICED LEADS ARE PROVIDED FOR CONNECTION TO CUSTOMER SUPPLIED AUXILIARY CONTROLS. REMOTE THERMOSTAT SEE YOUR DEALER FOR INSTALLATION INSTRUCTIONS

- 3 THE ST MODEL SPA HEATER IS AVAILABLE WITH EITHER A FLOW SWITCH, PN 23000102 OR A PRESSURE SWITCH, PN23007210. CONFIRM WHICH DEVICE YOUR HEATER IS EQUIPPED WITH BEFORE ORDERING REPLACEMENT PARTS
- HTH: HI-TEMP CUT OFF MANUAL RESET
TC: TEMPERATURE CONTROL-THERMOSTAT
ELM-2: HEATING ELEMENT(S)
CON1: CONTACTOR 2-POLE 55AM(AMPIRES)
CON2: CONTACTOR 2-POLE 35AM(AMPIRES)
CON3: CONTACTOR 1-POLE 30AM(AMPIRES)
CB: CIRCUIT BREAKER/CUSTOMER SUPPLIED
PL1: PILOT LIGHT ELEMENT
PL2: PILOT LIGHT FLOW SWITCH
FLS: FLOW SWITCH
PRS SW: PRESSURE SWITCH(ALTERNATE)

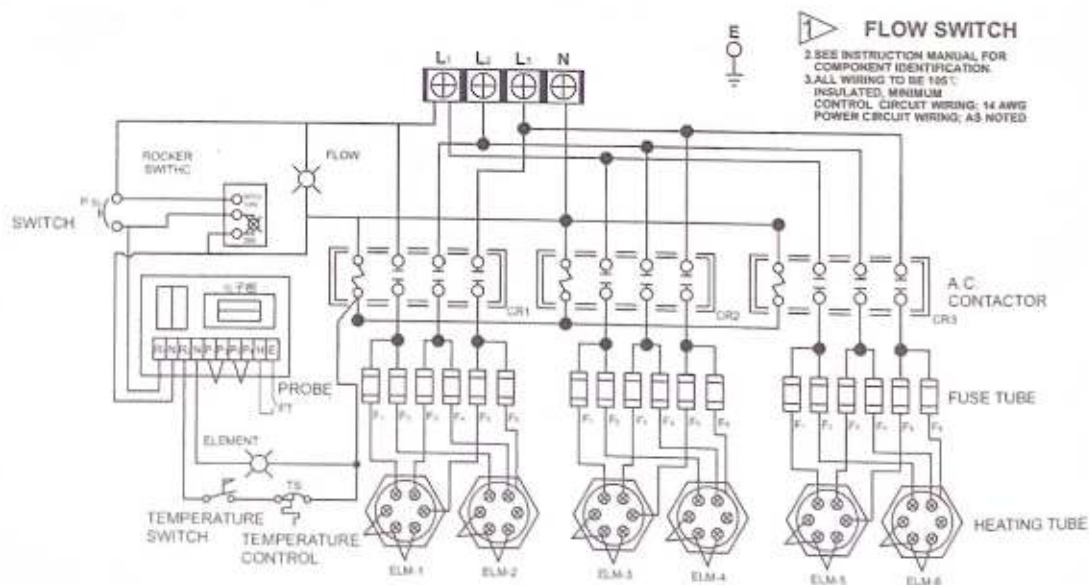


OPERATION

1. Connect water and electricity, and must test again.
2. Turn the water valve off, switch on main power. FLOW will light up on thermostat.
3. Turn the thermostat on, indicator light both left and right side will light up, then knob the thermostat between 30°C-65°C. ELEMENT lights up means warming finishing.

REQUIREMENT

1. Voltage: alternating voltage:240/380V AC
2. Frequency: 50Hz
3. Current: refer to ampere meter on nameplate
4. Power Switch: adopt high-quality Three-phase four-wire active power filters
Quadropole Leakage switch, Two-phase Leakage switch
5. Thermostat: safely connect the earth wire.



5.5kw - 60kw
three phase
15kw, 18kw, 24kw, 30kw, 32kw, 36kw,
40kw, 42kw, 45kw, 54kw, 60kw
@380/415V

1 INSULATED GROUND CONDUCTOR, COPPER, BUT NOT LESS THAN #12 AWG

2 FACTORY SPICED LEADS ARE PROVIDED FOR CONNECTION TO CUSTOMER SUPPLIED AUXILIARY CONTROLS. REMOTE THERMOSTAT SEE YOUR DEALER FOR INSTALLATION INSTRUCTIONS

3 HI-TEMP CUT OFF MANUAL RESET TEMPERATURE CONTROL-THERMOSTAT (TC)

HTH HI-TEMP CUT OFF MANUAL RESET TEMPERATURE CONTROL-THERMOSTAT (TC)

ELM1-2 HEATING ELEMENT(S)

CON1 CONTACTOR 2-POLE 55AM(AMPIRES)

CON2 CONTACTOR 2-POLE 30AM(AMPIRES)

CON3 CONTACTOR 1-POLE 30AM(AMPIRES)

CB CIRCUIT BREAKER(CUSTOMER SUPPLIED)

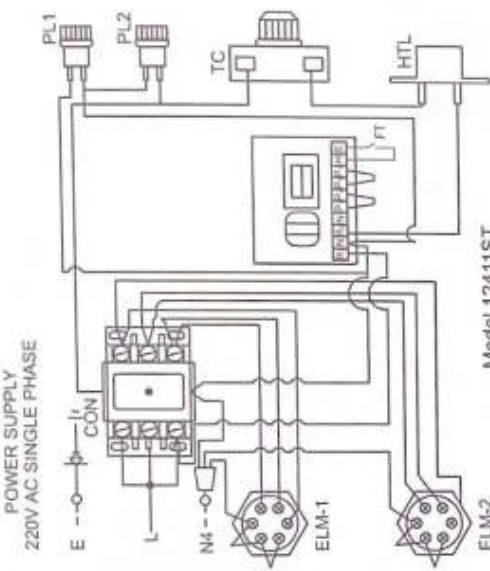
PL1 PILOT LIGHT ELEMENT

PL2 PILOT LIGHT FLOW SWITCH

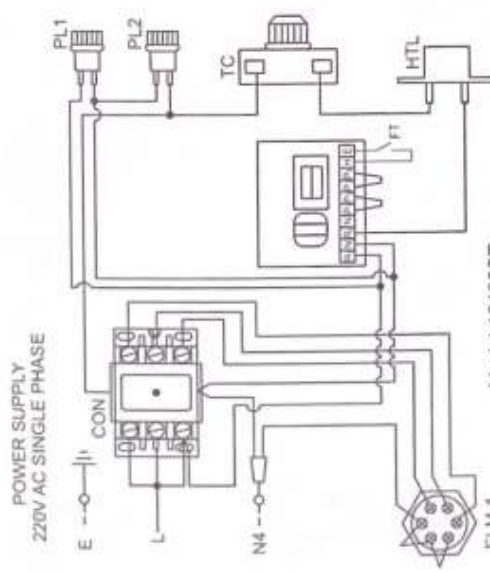
FLS FLOW SWITCH

PRS SW PRESSURE SWITCH(ALTERNATE)

THE ST MODEL SPA HEATER IS AVAILABLE WITH EITHER A FLOW SWITCH PN 2300100 OR A PRESSURE SWITCH PN2007210 CONFORM WHICH DEVICE YOUR HEATER IS EQUIPPED WITH BEFORE ORDERING REPLACEMENT PARTS



Model 12411ST
Model 12415ST
figure 2B, Wiring Diagram



Model 12406ST
figure 2A, Wiring Diagram

1 INSULATED GROUND CONDUCTOR, COPPER, BUT NOT LESS THAN #12 AWG

2 FACTORY SPICED LEADS ARE PROVIDED FOR CONNECTION TO CUSTOMER SUPPLIED AUXILIARY CONTROLS. REMOTE THERMOSTAT SEE YOUR DEALER FOR INSTALLATION INSTRUCTIONS

3 HI-TEMP CUT OFF MANUAL RESET TEMPERATURE CONTROL-THERMOSTAT (TC)

HTH HI-TEMP CUT OFF MANUAL RESET TEMPERATURE CONTROL-THERMOSTAT (TC)

ELM1-2 HEATING ELEMENT(S)

CON1 CONTACTOR 2-POLE 55AM(AMPIRES)

CON2 CONTACTOR 2-POLE 30AM(AMPIRES)

CON3 CONTACTOR 1-POLE 30AM(AMPIRES)

CB CIRCUIT BREAKER(CUSTOMER SUPPLIED)

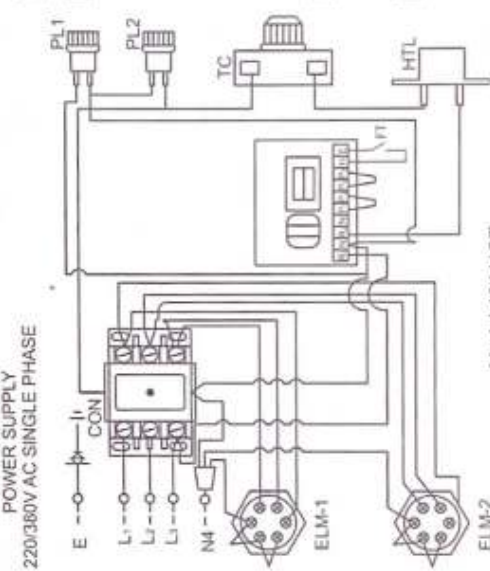
PL1 PILOT LIGHT ELEMENT

PL2 PILOT LIGHT FLOW SWITCH

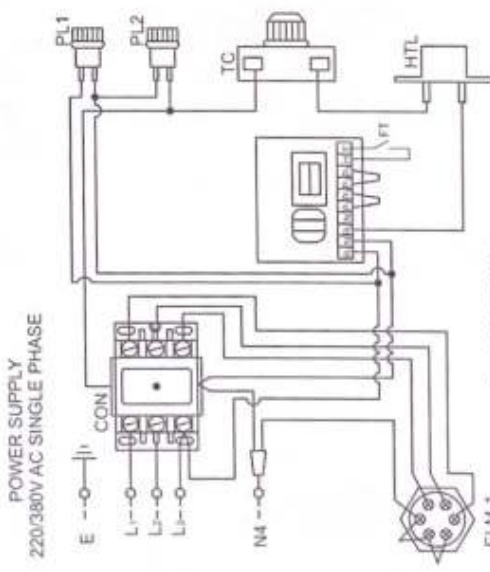
FLS FLOW SWITCH

PRS SW PRESSURE SWITCH(ALTERNATE)

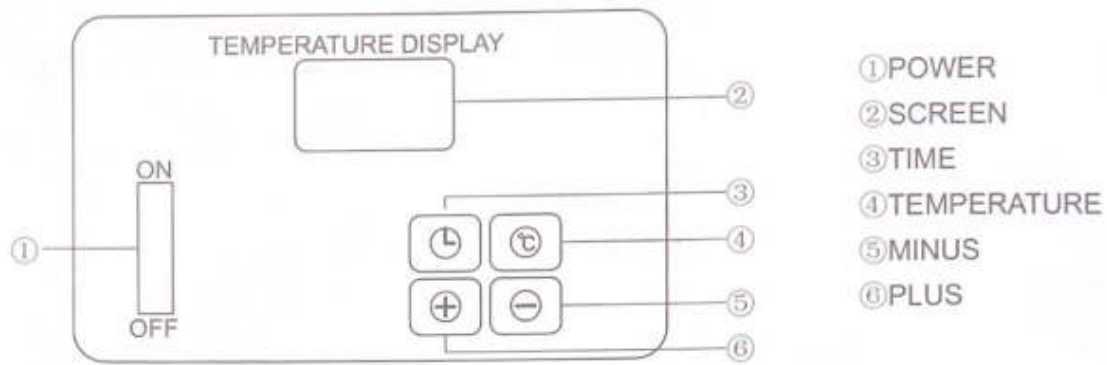
THE ST MODEL SPA HEATER IS AVAILABLE WITH EITHER A FLOW SWITCH PN 2300100 OR A PRESSURE SWITCH PN2007210 CONFORM WHICH DEVICE YOUR HEATER IS EQUIPPED WITH BEFORE ORDERING REPLACEMENT PARTS



Model 12411ST
Model 12415ST
figure 2B, Wiring Diagram



Model 12406ST
figure 2A, Wiring Diagram

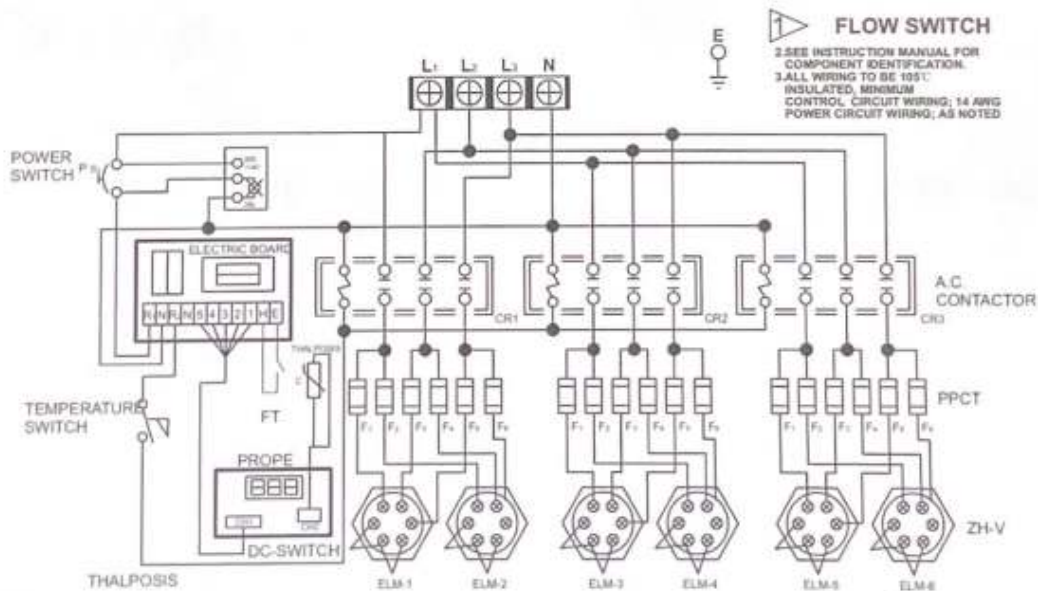


OPERATION

1. Get water and electricity through, also must need to be tested.
2. Press "ON" on the power switch to open machine, and temperature inside machine will be showed rapidly on screen.
3. If to adjust temperature of water, press ④ first, then press ⑤ or ⑥ to need. Temperature range (30°C-65°C).
4. If to adjust press ③ first, then press ⑤ or ⑥ to need. (1-15 hours)

REQUIREMENT

1. Voltage: alternating voltage: 240/380V AC
2. Frequency: 50Hz
3. Current: refer to ampere meter on nameplate
4. Power Switch: adopt high-quality Three-phase four-wire active power filters Quadropole Leakage switch, Two-phase Leakage switch
5. Thermostat: safely connect the earth wire.



5.5kw - 60kw
 three phase
 15kw, 18kw, 24kw, 30kw, 32kw, 36kw,
 40kw, 42kw, 45kw, 54kw, 60kw
 @380/415V

