

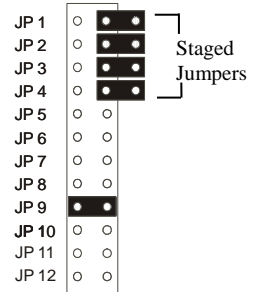
FOR REVISION C PUG MAIN BOARD (2014)

60 Hz IQ2020 PUG Main PC Board Replacement Instructions for all Hot Spring (2001 – 2009 PHASE I); Tiger River and Limelight Models (2001 – 2009)

IMPORTANT!

The Program Jumpers and Power Jumpers must be set according to spa model. The program jumpers are in the Main PC Board, “staged” (placed on only one terminal of each jumper location) on terminals JP1- JP3. In effect, the jumper locations (JP1-JP3) are open. Set the jumpers according to the procedure detailed in these instructions.

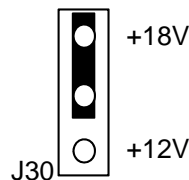
Program Jumpers



The Relay Board to Main Board Voltage Selection Jumper must be set according to the combination of Relay Board to Main Board at J30. Both Relay Board and Main Board voltage setting must be set to same relay coil voltage value.

- When using an “old” 3 Relay Heater Relay Board with the Revision C PUG Main Board the Main Board Jumper shall be set to +18V (top pin – center pin). There is no setting on the old relay board
 - Note: Relay Coil voltage is set to +18V
- When using a “new” 2 Relay Heater Relay Board with the Revision C PUG Main Board, the Main Board Jumper shall be set to +12V (center pin - bottom pin). The new Relay Board shall be set to “+12V New”
 - Note: Relay Coil voltage is set to +12V

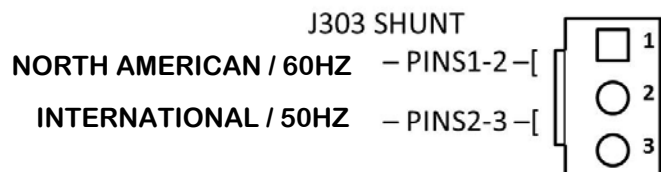
Voltage Select Jumpers



The Jumper (J303) must be set according to the Line to Neutral Input voltage that powers the Main PC Board. Note that all 230VAC Domestic installations still use 115VAC L-N to Power the PCB, even though the Heaters and Jet Pumps operate at 230VAC. A shunt jumper is used to select this setting.

- J303 is set to Pins 1-2 for North American

Selection Jumper (J303)



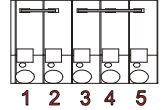
WARNING! Before applying power to the control box, complete the entire procedure contained in these instructions.

ALL JUMPER SETTINGS MUST BE VERIFIED BEFORE POWER IS APPLIED.

Failure to properly set the jumpers may result in damages to the control box that are not covered by the warranty.

* Internally Connected Thermistors may be required if the spa was manufactured before 2004.

Power Jumpers



Removing the control box from the spa:

1. Disconnect power to the spa and access the equipment compartment.
2. On the front of the control box, remove the screws and open the control box cover.
3. Disconnect the control and high limit thermistors.
4. Disconnect all components from the flag terminals, remove the strain reliefs and cords. Save the strain reliefs (if undamaged) to be used on the new control box.

Note: CANADIAN models only, disconnect and remove the in-line circulation pump fuse. You will need to install it on the new control box.

5. On the left side of the control box, disconnect the copper bonding wire(s).
6. Inside the control box on the right side, disconnect the ribbon cable.
7. Inside the control box, remove the mounting screws and slide the control box to the right.
8. Lift the control box away from the bracket and remove.

Setting the Program Jumpers on the Main PC Board:

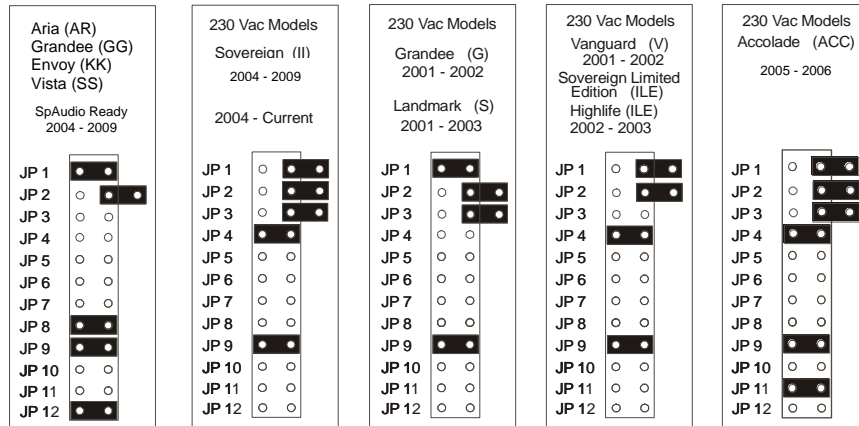
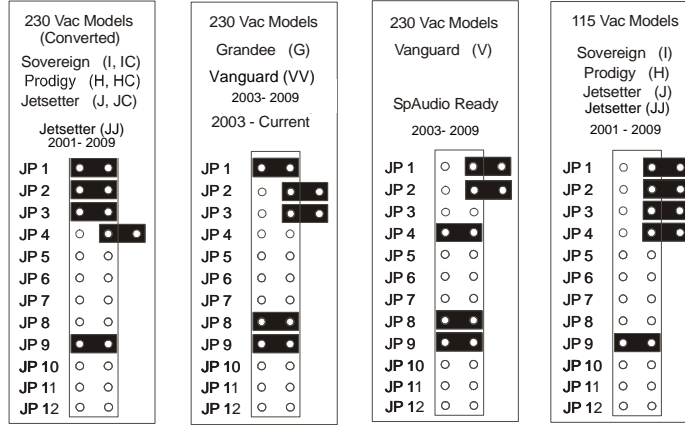
The Program Jumpers 'program' the control box to work in a specific spa model.

1. On the Main PC Board, locate the Program Jumpers.
NOTE: The Program Jumpers are staged on only one terminal of each jumper location. In effect, the jumper locations (JP1-JP3) are open. You must set the jumpers.
2. Use a pair of needle nose pliers to set the Program Jumpers (P/N 36021) according to the illustrations on the next page, listed by operating voltage and spa model.
3. Set the Program Jumpers (according to the illustration), using a pair of needle nose pliers to remove or slide a jumper onto the terminals.
4. If your spa model does not use all three Program Jumpers, leave the extras attached to only one terminal, as they were when the Main PC Board box was shipped to you.
5. The program jumper installed at location JP9 will cause the set temperature display to read in °F. Remove the jumper for the display to read in °C.

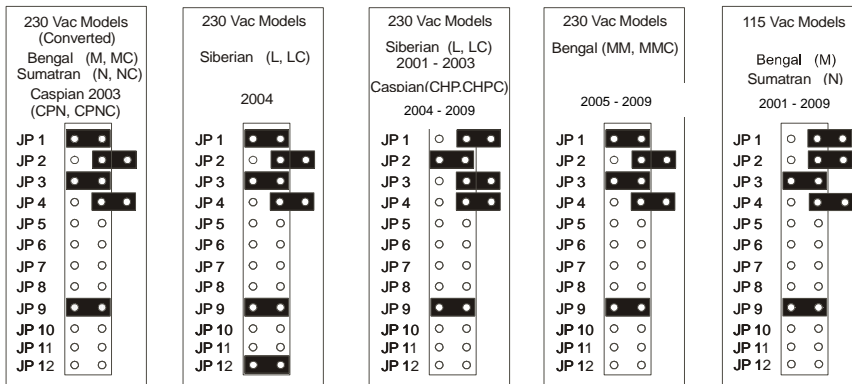
IQ2020 PUG MAIN PC BOARD

WARNING! JP5, JP6, JP7, AND JP10 MUST REMAIN OPEN. DO NOT INSTALL JUMPERS AT THESE LOCATIONS!

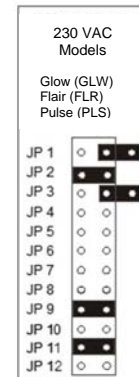
Program Jumper Configuration HOT SPRING (2001 – 2009 PHASE I)



TIGER RIVER 2001 – 2009



LIMELIGHT 2008 – 2009



Removing the Heater Relay Board from the Control Box:

1. Remove the screw holding the horizontal cover bracket then slide it to the right to remove it from the control box.
2. Disconnect the Red, Black and White wires that lead to the Main PC board coming from the heater relay board with needle nose pliers.

Figure 1

Caution: Be careful not to damage the connectors on the Main PC Board.

3. Disconnect remaining heater and ground wires from the heater relay board only.
4. Remove all four screws securing the heater board (2 retaining and 2 grounding screw).
5. Remove the metal guard from the control box.
6. Using the lift points, gently lift the heater relay board straight out of the control box. **Figure 2**

Caution: Board will still be firmly connected to the main control board, lifting heater relay board straight out will disconnect it from the Main PC Board.

Wires from the Heater Relay Board

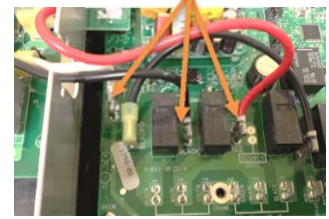


FIGURE 1

Lift Points

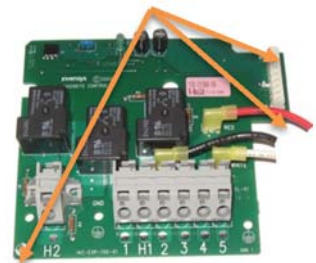


FIGURE 2

Removing the Main PC Board from the Control Box:

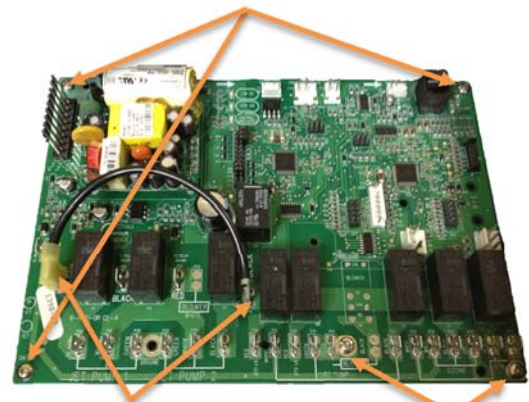
1. Disconnect the black wire mounted on the Main PC Board located on terminal P13 and P12 and transfer it to the new Main PC Board. **Figure 3**
 2. Remove all five screws securing the PC Board (3 retaining and 2 grounding screws). **Figure 3**
- Note:** Grounding Screws are longer than the retaining screws.

Mounting the New Main PC Board into the Control Box:

1. Place the Main PC Board in the control box and make sure all screw holes are line-up.
2. Install the 2 grounding screws making sure they line-up with the grounding plate on the back of the control box. **Note:** Grounding Screws are longer than the retaining screws.
3. Install the 3 retaining screws.

Caution: Make sure connections are aligned perfectly.

3 Retaining Screws



Black Wire and Terminals P12 and P13

FIGURE 3

2 Grounding Screws

Mounting the Heater Relay Board into the Control Box:

1. Line up the connector on the top right of the heater relay board with the connection on the top left of the control board.
2. Making sure all the screw holes are lined up, use the lift points and press down firmly to secure the relay board. **Figure 2**

Caution: Make sure connections are aligned perfectly.

3. Line up metal guard and screw into place.
4. Connect the RED, WHITE, AND BLACK wires from the heater relay board, through the guard slot, to the labeled connections on the Main PC Board. **Figure 1**
5. Line up the horizontal cover bracket and screw into place.

Note: Make sure to slide cover bracket into slot in the metal guard.

Reinstall the control box to the spa:

1. Place the control box on the mounting bracket and slide control box to the left.
2. Inside the control box, attach the mounting screws to the mounting bracket.
3. Reconnect the control and high limit thermistors along with the control panel and pressure switch or pressure switch jumper.
4. Reconnect all components to the flag terminals, strain reliefs and cords.
Note: *CANADIAN models only, reconnect the in-line circulation pump fuse.*
5. On the left side of the control box, reconnect the copper bonding wire(s).
6. Reconnect power wires to the terminal block TB-1.

Wiring the line voltage conduit to terminal block TB-1:

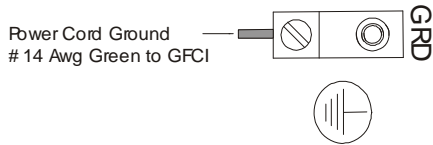
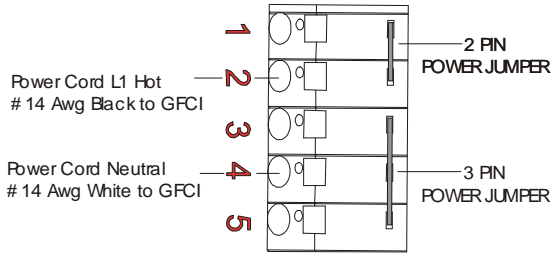
CAUTION! *If the line voltage is wired incorrectly, damage to the Main PC Board may occur.*

1. Double-check the setting of the Power Jumpers.
2. Locate the wiring instructions for your spa model.
3. Refer to the illustrations on the next page and locate your spa model and operating voltage.
4. Wire the terminal block (TB-1) as shown.

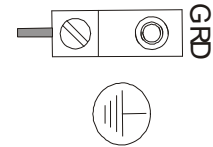
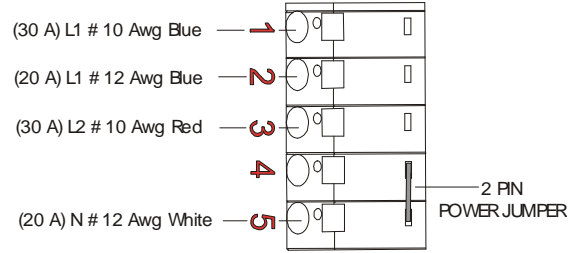
Before supplying power to the control box:

1. Double check the Program Jumper and Power Jumper settings. If the jumpers are incorrectly set, damage may occur when power is applied!
 2. Double check all component connections. Be sure the wire colors match the labeling on the terminals.
 3. Double check the input connections to TB-1.
 4. On 230 Vac models, be sure that all wires are connected to the proper terminals on the GFCI breaker. For your reference, a wiring illustration is located on the last page of these instructions. Please note that the Permanently Connected and Converted models are wired differently.
- **CAUTION! *INCORRECT WIRING TO THE 230 Vac GFCI BREAKER OR TB-1 MAY RESULT IN PERMANENT DAMAGE TO THE CONTROL BOX.***

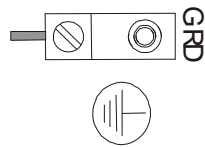
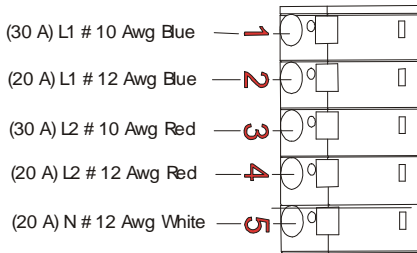
115 Vac Models
Sovereign (I), Jettsetter (J),
Prodigy (H),
Bengal (M), Sumatran (N)



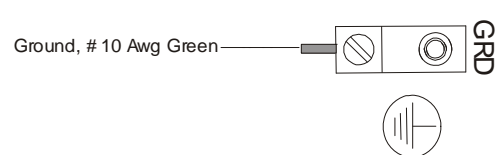
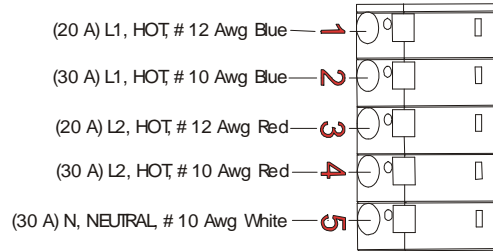
230 Vac CONVERTED Models
Sovereign (I), Jettsetter (J),
Prodigy (H),
Bengal (M), Sumatran (N)



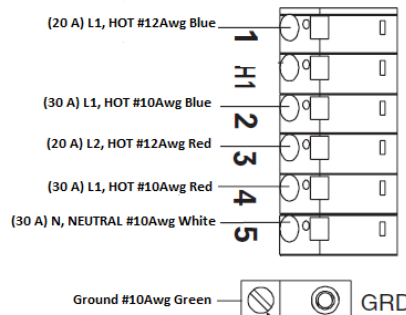
230 Vac Models
Grandee (G), Sovereign (II), Landmark (S)
Vanguard (V), Vanguard (W), Accolade (ACC),
Highlife (ILE), Sovereign Limited Edition (ILE),
Caspian (CPN), Siberian (L) 2001-2002, Bengal (MM)



230 Vac Models
Vista (SS), Envoy (KK),
Caspian (CHP) 2004 - Current
Siberian (L) 2003 - 2004

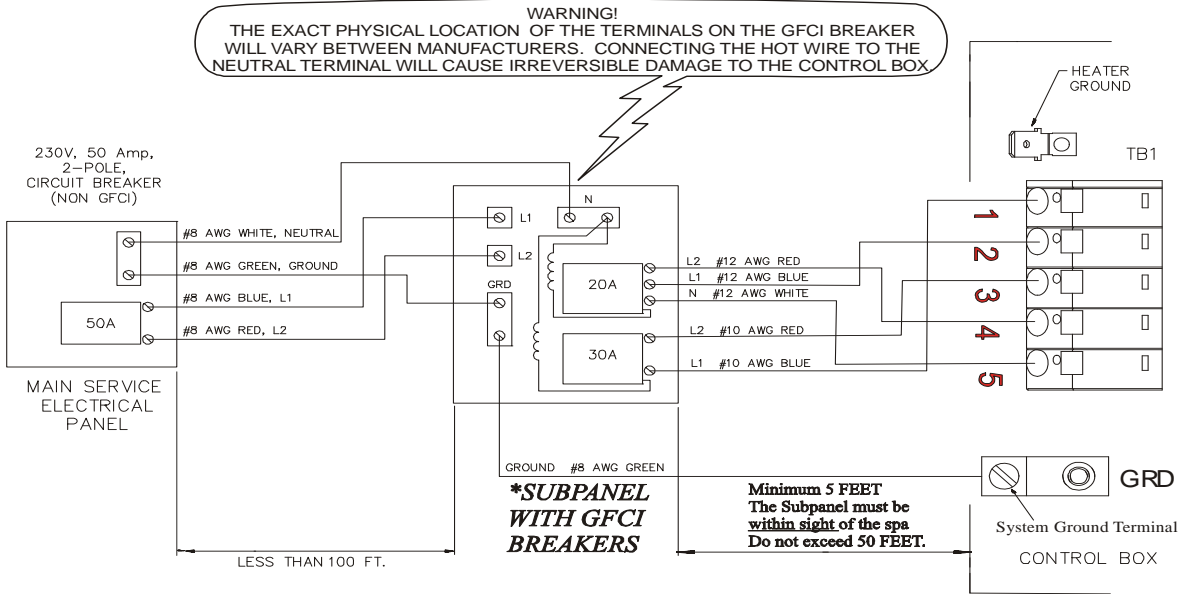


230 Vac Models
Glow (GLW), Flair (FLR), Pulse (PLS)
2008-2009



230 Vac Permanently Connected Models

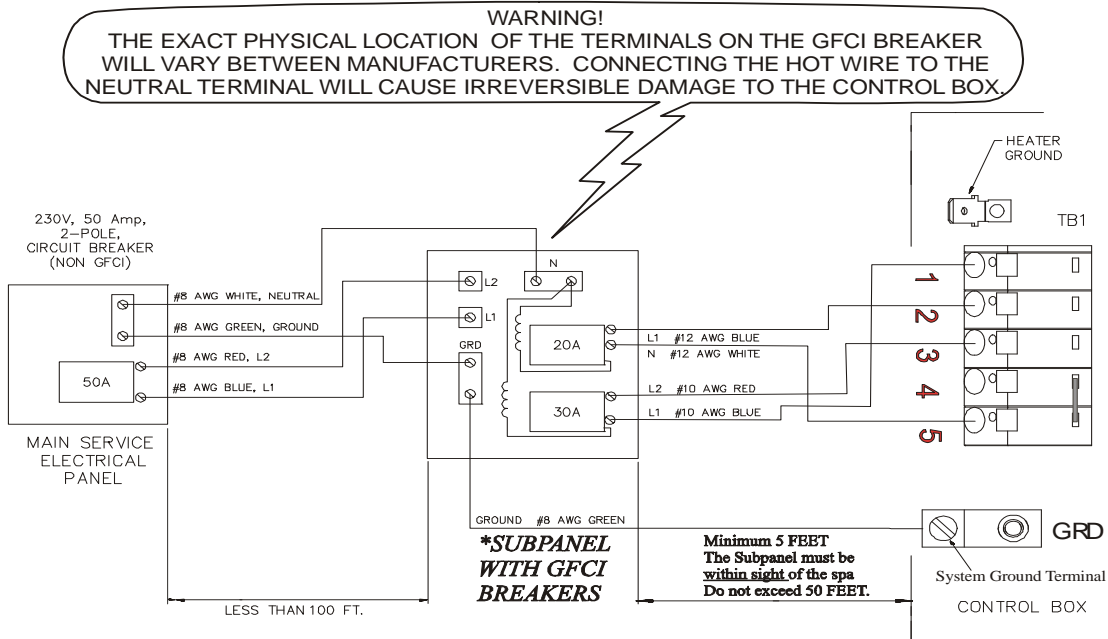
Grandee (G), Vanguard (V), Sovereign (II), Landmark (S), Siberian (L) 2001-2002,
 Vanguard (VV), Accolade (ACC), Sovereign Limited Edition '02 (ILE)
 Highlife '03 (ILE), Bengal (MM), Caspian '03 (CPN)



Note: The wire connections to G.F.C.I. breakers are for reference only.
 ENSURE that the white neutral wire is connected to the load neutral of the 20 amp breaker.

230 Vac Converted Models

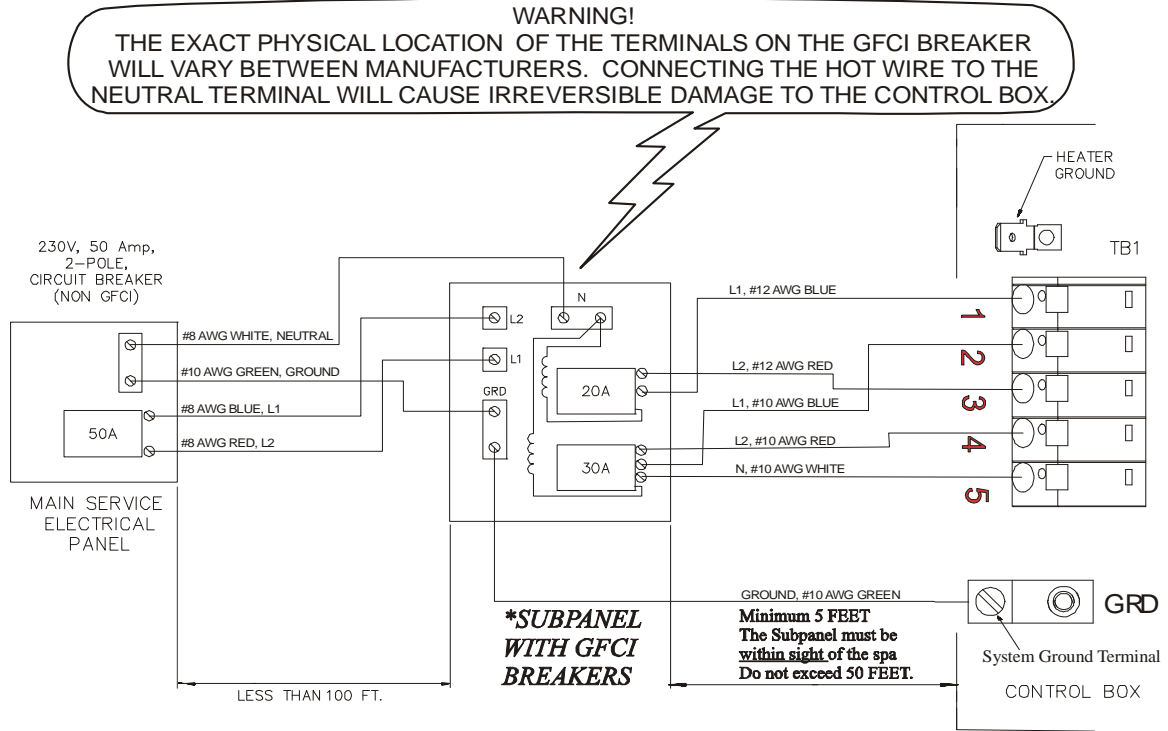
Jetsetter (J and JJ), Sovereign (I), Prodigy (H), Sumatran (N) and Bengal (M)



Note: The wire connections to G.F.C.I. breakers are for reference only.
 ENSURE that the white neutral wire is connected to the load neutral of the 20 amp breaker.

230 Vac Permanently Connected Models

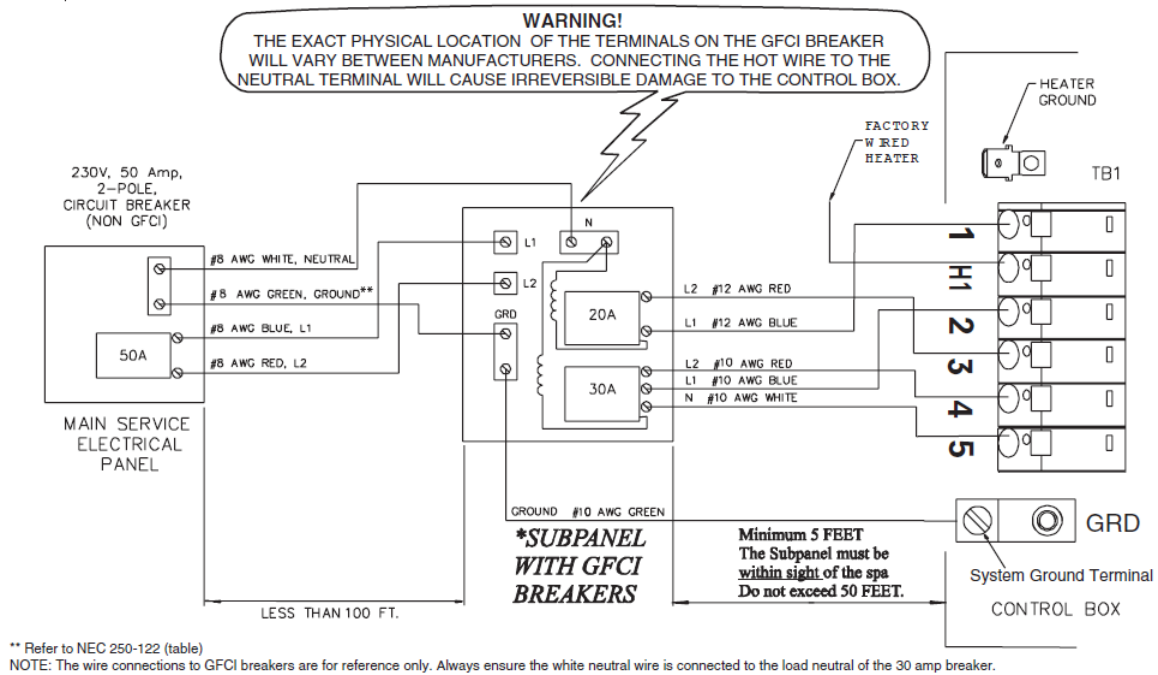
Vista (SS), Envoy (KK), Caspian (CHP), Siberian (L) 2003 - 2004



Note: The wire connections to G.F.C.I. breakers are for reference only.
ENSURE that the white neutral wire is connected to the load neutral of the 30 amp breaker.

230 Vac Permanently Connected Models

Glow (GLW), Flair (FLR), Pulse (PLS) 2008-2009



** Refer to NEC 250-122 (table)

NOTE: The wire connections to GFCI breakers are for reference only. Always ensure the white neutral wire is connected to the load neutral of the 30 amp breaker.