LEVEL BEST CONTROL REPLACEMENT PROCEDURE

TI-378

LEVELING AND STABILIZATION

Purpose

This document outlines the process of replacing an existing Level Best control with a new replacement.

NOTE: This document has been modified from the original Kwikee 1422271 Rev. 7 APR03 release.

Safety

Before starting any work read these instructions. Disconnect the chassis battery before beginning any work on Level Best System.

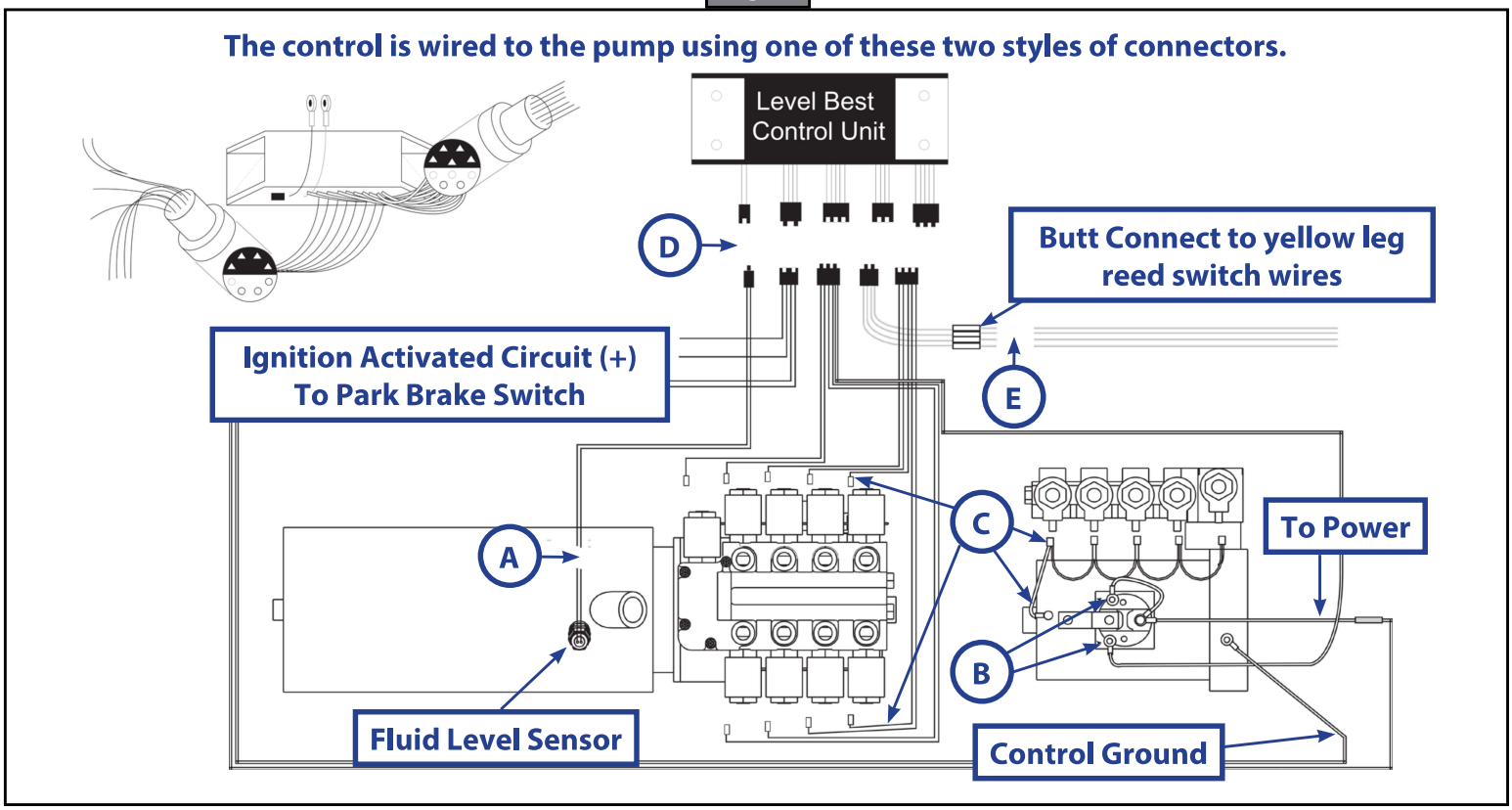
Procedure

Removing Old Control

NOTE: Disconnect the positive cable from the battery before beginning any work.

1. Cut the wires going to the Level Best Control approximately 1 to 2 inches from the sensor (Fig. 1A).
2. Remove the wires attached to the two small posts on the motor control solenoid. Leave the battery cables in place (Fig. 1B).
3. Remove all the spade connectors from the valve solenoids (Fig. 1C).
4. Unscrew the hose clamps connecting the jack motor control unit to the motor. Pull the control unit and all the wires away from the pump unit (Fig 1D).
5. Cut the yellow wires that go to each jack from the control unit (Fig. 1E).

Fig. 1



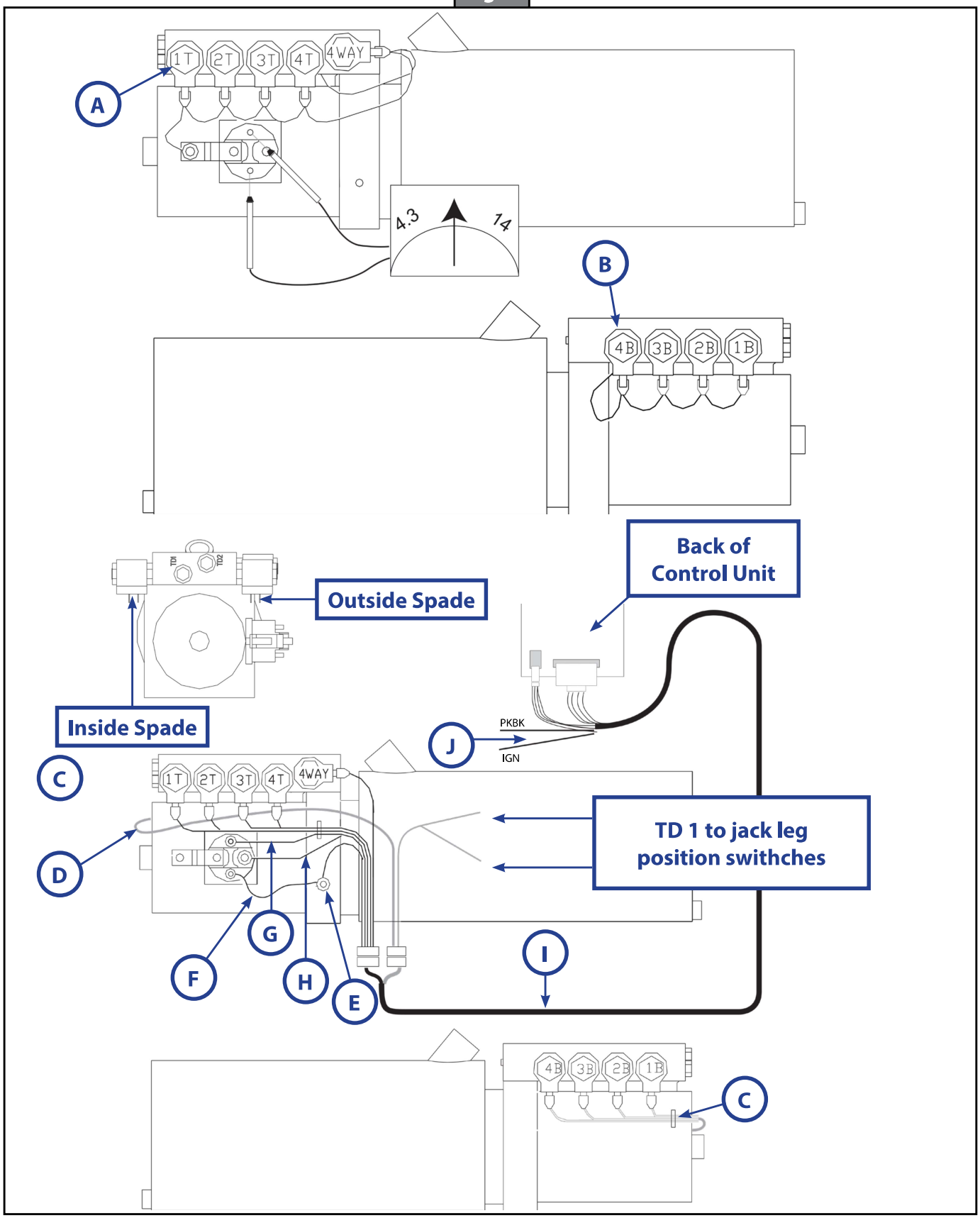
Installing the New Control

1. Check the condition of the pump motor solenoid by measuring the resistance of the primary coil. To do this place an ohm meter across the two small posts of the solenoid with no other wires connected. If the ohms of the solenoid is lower than 4.3 or higher than 14 ohms, the unit must be replaced before installing the new control.
2. Install the daisy chain harness. This harness is identified by its red color, nine spade connectors and one ring terminal. For Steps 2-6 Refer to Figure 2.
   - **A.** Attach the ring terminal to the bolt on the motor side of the solenoid. Then attach the spade connectors to the inside spade on the valve solenoids working your way around the manifold from 1T through 4T (Fig. 2A).
   - **B.** Attach the next spade connector to the 4-way valve solenoid and pass the remaining section of the daisy chain across to the 4B valve solenoid. Attach the spade connector to 4B through 1B (Fig. 2B).
3. Attach the wiring harness pigtail to the pump by attaching the wires corresponding to the valve markings on the top of the manifold (Fig. 2C). Wire TD1 will not be connected at this time. Wire TD2 is not used at all for this installation so it can be coiled, tie wrapped and secured at this time.
   - **A.** Connect the black wire with the ring lug to the ground bolt on the side of the pump (Fig. 2D).

NOTE: On some pumps this ground lug will be on the back of the motor and have the black battery cable connected to it (Fig. 2E)

   - **B.** Connect the red wire with the ring lug to the pump solenoid on the battery cable side of the solenoid (Fig. 2F).
   - **C.** Connect the white wire labeled SOL + to one of the empty small posts on the pump solenoid (Fig. 2G).
4. Connect the 12" jumper wire included in the kit between the remaining small posts on the solenoid and the ground bolt on the side of the pump (Fig. 2H).
5. Install the 16' multi-wire harness (Fig. 2I). Route the end with the two connectors that mate to the control panel through the firewall and into the dash area near the control panel location (Fig. 2J).
6. At the small connector of the multi wire harness that goes to the control panel, are yellow, blue and black wires. The black wire is not used. Connect the yellow wire to an ignition source that has 12 volts when the engine is running.
   - **A.** Connect the blue wire to the park brake wire. This connection must show ground when the park brake is set. Identify the park brake signal wire in the chassis harness. The park brake switch and signal wire will usually be found on, or near, the park brake pedal assembly. This wire will show ground or 12-volts positive when the park brake is applied, the type of signal will vary from one type chassis to another.

Fig. 2


1T
2T
3T
4T
4WAY
A
4.3
14
B
4B
3B
2B
1B
Back of
Control Unit
Outside Spade
Inside Spade
PKBK
IGN
J
C
D
TD 1 to jack leg
position swithches
G
F
H
E
I
C

7. Once the appropriate wire is located, determine the type of signal by using a volt-ohm meter while engaging the park brake. If a positive signal is present, the use of a relay is required see (Fig 3). Next, splice the blue park brake wire labeled PKBK from the control unit into the signal wire.

NOTE: Many class "A" motor home chassis with the Level Best system are equipped with an automatically-applied park brake system. These systems automatically apply the parking brake when the transmission is shifted into park. Identify the park brake signal wire in the chassis harness. This wire will carry a positive 12Vor ground signal. A signal wire can generally be found in one of four locations:

- **A.** The steering column just below the head and rim at the upper adjustment point or at the base just above the floor line.
- **B.** The front bulkhead wiring connector. This connector is located on the driver's side of the vehicle and can be accessed inside the vehicle under the dash or at the exterior under the hood.
- **C.** At the slave cylinder actuator of the park brake.
- **D.** And possibly in the transmission wiring harness.

8. Once the appropriate wire is located, determine the type of signal by using a volt-ohm meter while engaging the park brake. If a positive signal is present, the use of a relay is required see (Fig. 3).

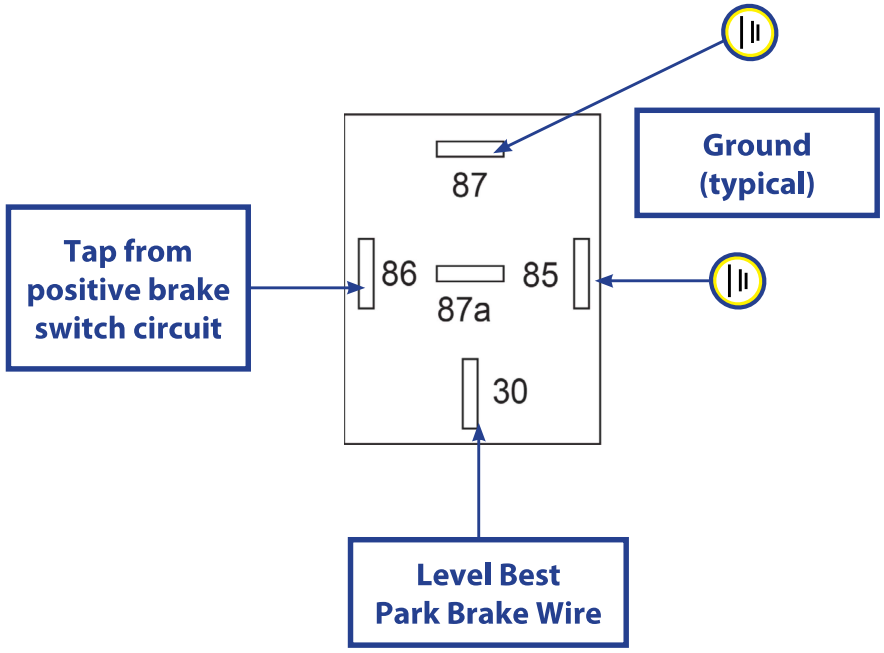
Fig. 3

Relay Wiring, Brake Circuit 12 volt positive ON

Relay required when park brake circuit does not utilize a ground signal for brake application.

Bosch Mini Relay
Part # 0 332 209 150 or equivalent

Wire to be hot with ignition on and brake not applied.



9. At the pump manifold end of the multi wire harness, the wire labeled (TD 1) is for the jack leg position switches. The new control requires that the leg position switches be wired in series see (Fig. 4).

A. Attach a yellow 16 gauge wire to TD 1 at the pump manifold. Run this wire to the first jack leg sensor and attach to one of the two sensor wires.

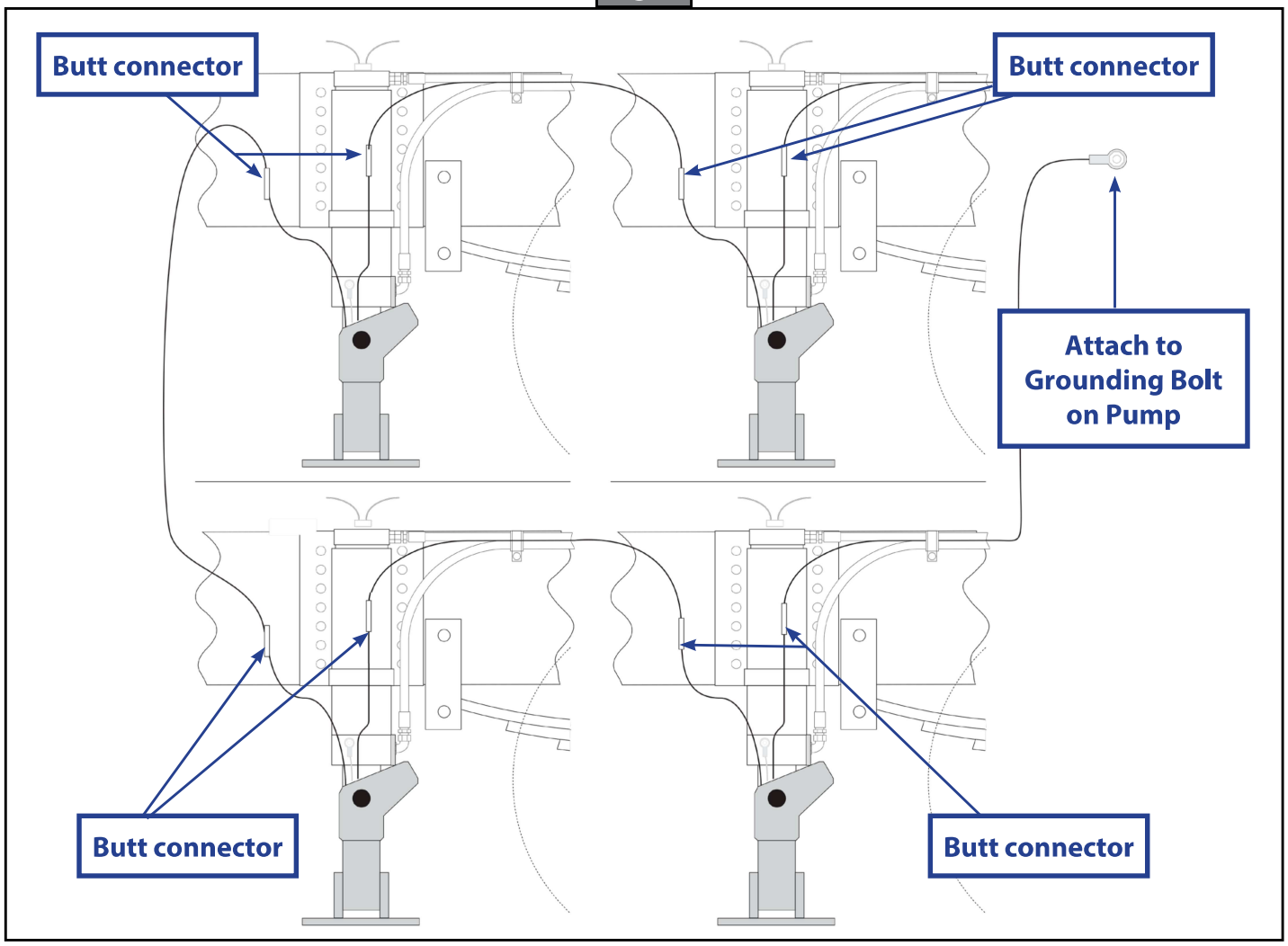
B. Attach another yellow wire to the remaining wire at the sensor and run this wire to the next jack leg and sensor. Continue this process until all four sensors are connected.

C. At the last sensor attach the yellow wire to the remaining sensor wire and run the other end of the yellow wire to the grounding bolt on the pump and connect with a 5/16" ring terminal.

On all Level Best Systems there is yellow 16 gauge wire attached to the switch lead with a heat shrink butt connector (Fig. 4).

Check all wiring connections insure all connectors are fully inserted and locked. Reconnect battery cables, ground first and test the system.

Fig. 4



Control Panel Installation

One method of installing the control panel uses a mounting bracket to install it below the driver's instrument panel. If space is available, flush mounting the control panel into the vehicle instrument panel is another option.

A. First, determine where the wires are to be routed.
B. Look for any existing holes that can be used to route the control panel wiring from the pump manifold to the control panel location.
C. If no hole is found, drill a 1 ½" hole through the fire wall near the selected installation site.
D. Route the wire through the hole to the control panel location.

Bracket Mount Application

Select a position along the lower edge of the dash that provides adequate surface area for mounting the bracket and allows convenient system operation (Fig 5).

A. Route the multi-wire cable through the opening in the bracket and insert the connector into the receptacle on the back of the control panel shown in (Fig 6).
B. Insert the control panel into the bracket and attach it with four ½" sheet metal screws (included in the panel mounting kit).

Fig. 5

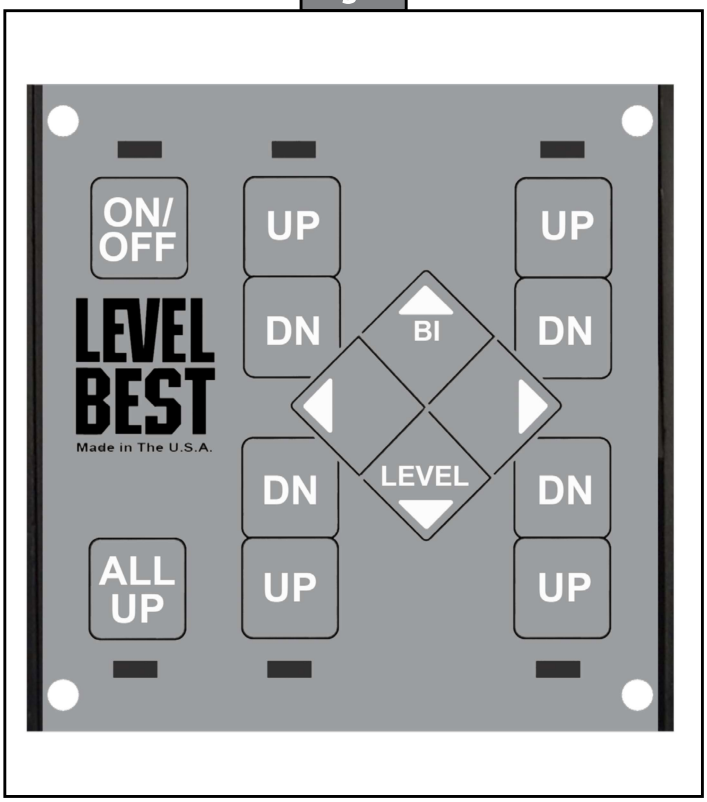
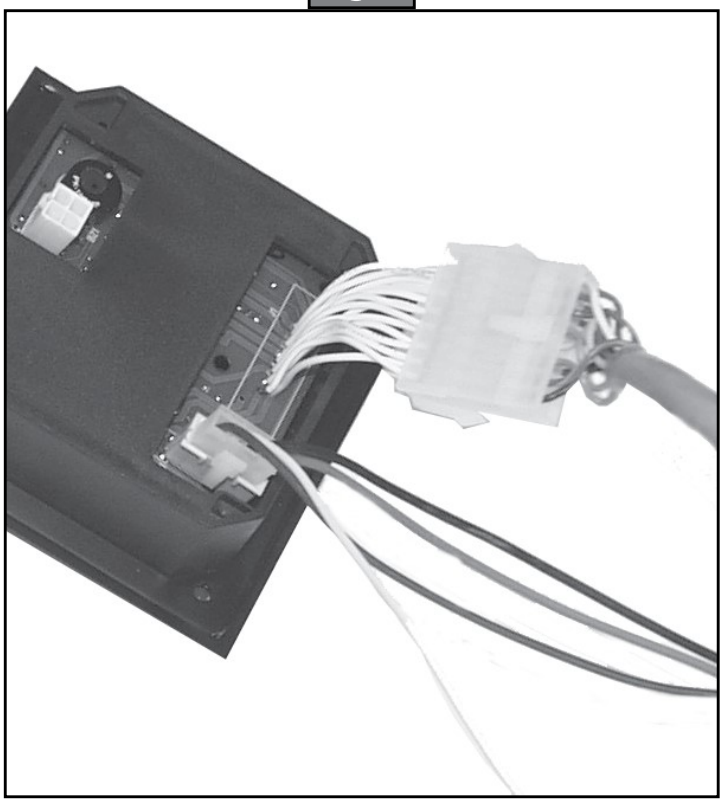


Fig. 6



Flush Panel Mount Application

(Not shown)
Inspect the location for flush mounting the control panel and insure that there is adequate space for the box portion of the control panel and the multi-wire cable connections. Using the touch pad (control panel) as a template lay out and cut the opening. Route multi-wire cable through the opening in the dash and insert the connectors into the receptacles on the back of the control panel. The control panel should fit snugly into this opening. Remember, it's easier to cut the opening too small and enlarge it to fit rather than to cut it too large and have to fill the opening back in.

NOTE: When the control panel has been installed and the wires have been routed, seal any holes that may have been drilled from the interior to the exterior of the vehicle with a silicone sealant.

Completing the Wiring Connections

1. Check that all system ground harness connections are firmly attached.
2. The final connection is the 8 ft. red #4 cable from the pump motor's solenoid to the positive terminal on the chassis battery