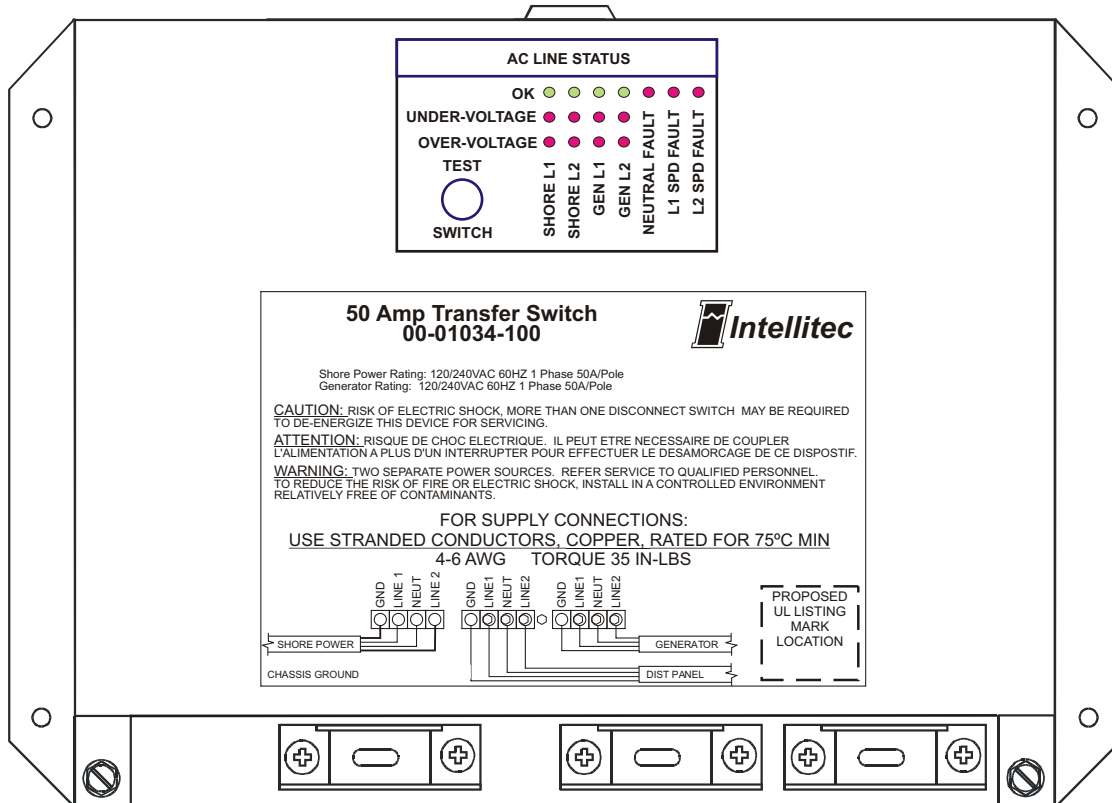


50 AMP TRANSFER SWITCH

INSTALLATION & SERVICE MANUAL



Part Number 00-01034-000/-100/-200

CAUTION

The 50 Amp Transfer Switch connects the power from the shore cord or the generator to the coach's distribution panel. Power from both these sources is fed into the box. The full power of these sources is available within this box. Inadvertent shorts inside this box could result in severe damage and/or injury.

All servicing within this box should be done only by a qualified Service Technician.

Tools Required:

Accurate Voltmeter (*digital read-out preferred*).

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HOW IT WORKS:

The 50 Amp Transfer Switch automatically selects from available power sources, either generator or shore power, to feed the main distribution panel of the coach. The generator power source has priority over the shore power source, which means that if safe and adequate supply voltages are present at the generator input, the transfer switch will connect L1, L2, and Neutral from the generator to the corresponding inputs on the distribution panel, disregarding the presence or absence of safe and adequate supply voltage at the shore power inputs.

If safe and adequate supply voltage is not available from the generator, but is available from the shore power cord, the transfer switch will connect L1, L2, and Neutral from the shore power cord to the corresponding inputs on the distribution panel.

The unit determines if safe and adequate voltages are present by continually measuring the voltages present at both shore power and generator inputs prior to and after the transfer. If the voltages present between L1 and neutral and L2 and neutral are within 95-132Vac and within 5% of each other, and the voltage between neutral and safety ground is less than 5Vac, the source is considered safe and adequate and a transfer will occur. If the selected source voltages stray outside of the safe and adequate thresholds listed above, the transfer switch will disconnect that source from the distribution panel. In that manner, the transfer switch protects the loads connected through the distribution panel.

In addition, the -100 Model incorporates basic lightning protection at the input to the distribution panel. The -200 Model incorporates surge protection which not only protects distribution panel loads from lightning induced transient voltages but also protects those loads from supply induced transient voltages.

FIELD CONNECTIONS (See Fig. 1):

SHORE POWER -

The 4-6 AWG Line 1 (L1), Line 2 (L2), Neutral, and Safety Ground leads should be connected to the four position "Shore Power" terminal block. Each of the screws securing these connections should be tightened to a minimum torque of 35 in.lbs. Only use stranded copper conductors rated at 75 degrees C minimum.

GENERATOR -

The 4-6 AWG Line 1 (L1), Line 2 (L2), Neutral, and Safety Ground leads should be connected to the four position "Generator" terminal block. Each of the screws securing these connections should be tightened to a minimum torque of 35 in.lbs. Only use stranded copper conductors rated at 75 degrees C minimum.

DISTRIBUTION PANEL -

The 4-6 AWG Line 1 (L1), Line 2 (L2), Neutral, and Safety Ground leads should be connected to the four position "Distribution Panel" terminal block. Each of the screws securing these connections should be tightened to a minimum torque of 35 in.lbs. Only use stranded copper conductors rated at 75 degrees C minimum.

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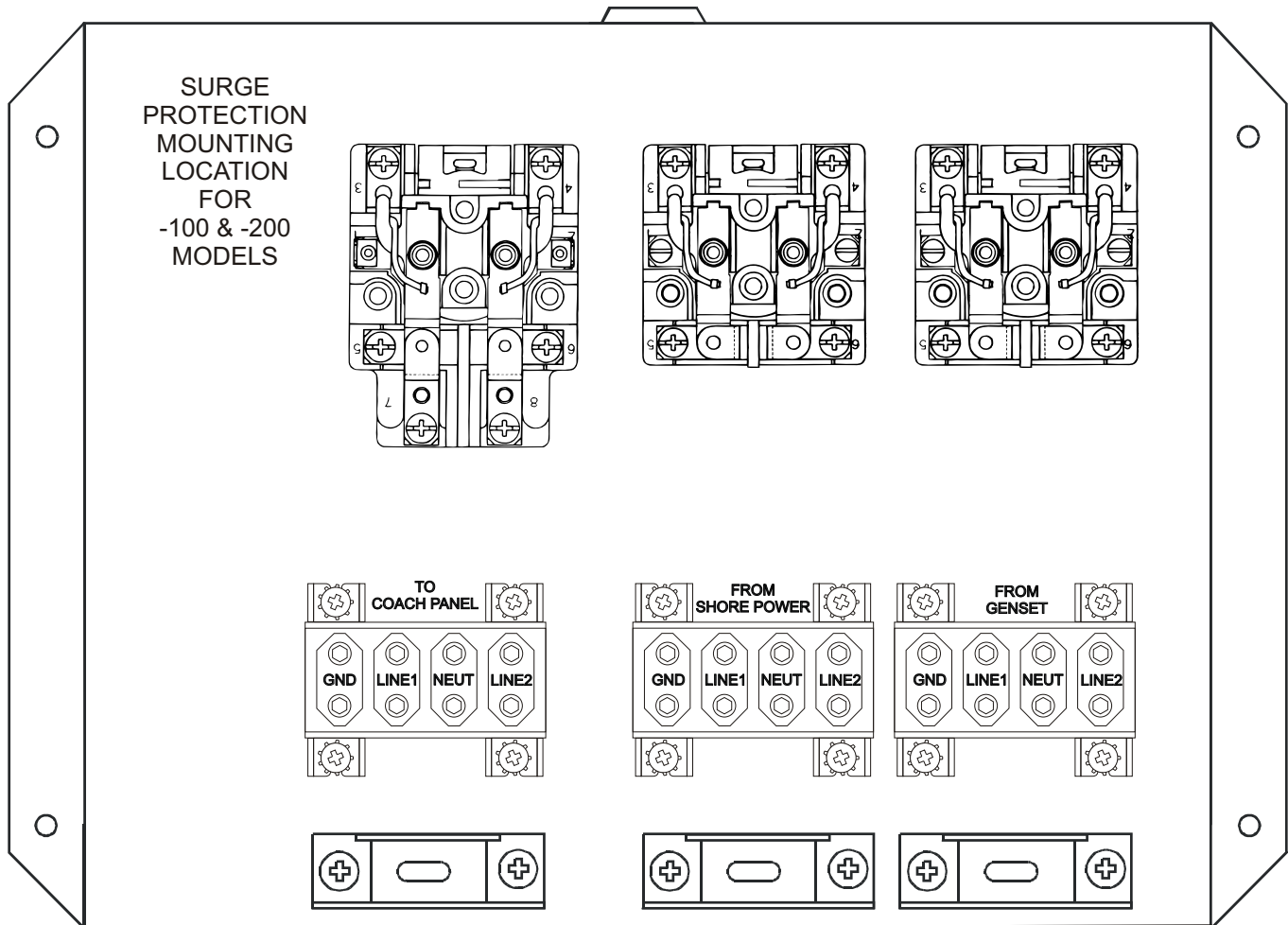


FIGURE 1

Cover removed
(INSIDE VIEW)

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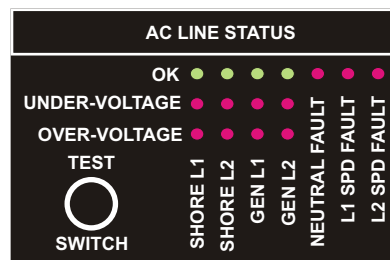
INTERNAL (Factory) WIRING (See Figure 2):

Line 1 (L1) and Line 2 (L2) power from the shore power terminal block are fed to each of the normally open contacts on K2, a double-pole, single-throw contactor. The Neutral (N) from the shore power terminal block is fed to each of the normally closed contacts on K1, a double pole, double throw contactor. If safe and adequate line voltage is available from the shore power source, and not available from the generator, contactor K2 operates, connecting L1 and L2 from the shore power source to the distribution panel, and Neutral is connected to the Neutral on the distribution panel through the normally closed contacts on K1.

Line 1 (L1) and Line 2 (L2) power from the generator are fed to each of the normally open contacts on K3, a double-pole, single-throw contactor. The Neutral (N) from the generator is fed to each of the normally open contacts on a double pole, double throw contactor (K1). If safe and adequate line voltage is available from the generator, independent of the presence of safe and adequate line voltage at the shore power inputs, and no wiring fault is present, contactor K3 and K1 operate after a 15-20 second delay, connecting L1 and L2 from the generator to the distribution panel, and Neutral from the generator to the Neutral on the distribution panel.

On the -100 and -200 Models with Surge Protection Device(s) (SPD), the surge protection devices are wired between L1 and Neutral and L2 and Neutral connected to the distribution panel outputs. On the -100 Model the surge protection device has no external failure indicator. On the -200 Model, the surge protection devices have a visual indicator on the top of the device to indicate that they have been over-stressed and failed, and a connection to a circuit on the control printed circuit board to provide local and remote failure indication.

LOCAL STATUS DISPLAY:



The Local Display is visible through a label on the the cover, and indicates the status of the power sources available to the transfer switch when any source presents voltage at the shore power or generator inputs.

If shore power is available and safe and adequate voltages are present at the shore power inputs, then the green "SHORE L1" and "SHORE L2" indicators will be lit and the red "Neutral Fault" indicator will be extinguished.

If generator power is available and safe and adequate voltages are present at the generator inputs, then the green "GEN L1" and "GEN L2" indicators will be lit and the red "Neutral Fault" indicator will be extinguished.

On the -200 Model there are also two red indicators that display the status of the Surge Protection Device associated with line L1 (SPD1) and line L2 (SPD2). If these indicators are lit, the associated Surge Protection Device has been over-stressed and has failed. The SPD1 and SPD2 devices are field replaceable by a

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qualified service technician. The individual device has a mechanical failure indicator visible to the service technician after opening the cover.

TEST SWITCH:

For testing and trouble-shooting purposes there is also a Test Switch accessible on the cover of the Transfer Switch. If safe and adequate voltages are present at the shore power inputs, and the unit has transferred the distribution panel loads to the shore power source, pressing this switch will cause a disconnection of the shore power source from the distribution panel loads.

If safe and adequate voltages are present at the generator inputs, and the unit has transferred the distribution panel loads to the generator source, pressing this switch will cause a disconnection of the generator source from the distribution panel loads.

If safe and adequate voltages are present at both the generator and shore power inputs, and the unit has transferred the distribution panel loads to the generator source, pressing this switch will cause a disconnection of the generator source from the distribution panel loads, and connection of the shore power source to the distribution panel loads.

OPTIONAL REMOTE DISPLAY:

An optional remote display is available that allows the user to access various data available from the incoming power sources. The optional remote display panel will only be active if a 120/240Vac power source is available. This display uses Intellitec's PMC communication protocol to communicate between the transfer switch and the display panel and, therefore, will only function in a system that includes a communication master such as the 50 or 100 Amp Smart Energy Management (EMS) System, PMC Programmable Multiplexing System, or Multipoint Switching System. The Transfer Switch and Display Panel are connected to those systems via a three wire power/communication harness, and the connection to the transfer switch is made via a 3 pin low voltage connector at the rear of the cover.. The remote display panel displays parameters such as:

- 1) Shore Power L1 voltage.
- 2) Shore Power L2 voltage.
- 3) Generator L1 voltage.
- 4) Generator L2 voltage.
- 5) Neutral Fault (line imbalance or loss of bonding).
- 6) Under-Voltage Warning and Fault.
- 7) Over-Voltage Warning and Fault.
- 8) L1 SPD fault (with -200 Model only).
- 9) L2 SPD fault (with -200 Model only).

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SERVICING:

There are no dealer serviceable parts in the -000 and -100 transfer switch. Replacement of a defective box is the only way to correct a failed unit in these models. On the -200 Model only SPD1 and SPD2, the surge protection devices, are replaceable at a dealer level by a qualified service technician.

REMOVAL AND REPLACEMENT:

CAUTION

BEFORE ATTEMPTING TO REMOVE THE COVER, BE SURE THE POWER FROM BOTH THE SHORE CORD AND GENERATOR ARE OFF. NONE OF THE LED INDICATORS ON THE COVER OF THE TRANSFER SWITCH SHOULD BE LIT PRIOR TO REMOVING THE COVER.

All servicing within this box should be done only by a qualified Service Technician.

IMPORTANT: Remove the cover to gain access to the connections.

To gain access to the connections remove the two hex head screws at either side of cover, approximately in line with the row of input cable clamps. Lift the end of the cover near the field wiring inputs up, and push the cover back, to remove the cover to expose the interior of the unit. Make a diagram of the all the connections before removing any wires.

- 1) Unscrew the six cable clamp screws releasing the cables.
- 2) Loosen the set screws of the 12 connectors along the field wiring side of the terminal blocks, in order. This will allow the cables to be removed.
- 3) Loosen the set screw securing the ground wire used to bond the transfer switch housing to vehicle ground.
- 4) Unscrew the four mounting screws and remove the unit from the coach.)

IMPORTANT!

During installation, wire per the wiring diagram and instructions printed on the box cover. The field wiring screws must be tightened to 35 in-lbs to insure a tight connection.

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TROUBLE SHOOTING:

No power to the coach from shore cord.

Check to make sure that the shore outlet has power. This will be indicated if the green "SHORE L1-OK" and "SHORE L2-OK" LED's on the Local Status Display are lit. If none of the "SHORE L1" or "SHORE L2" indicators are lit then turn off the shore power circuit breakers and reset them to "ON".

If the red "NEUTRAL FAULT" indicator is lit, unplug the shore power cord and check the presence/condition of the Neutral and Ground pins on the plug and check the continuity between these pins and the associated field connection on the "Shore Power" terminal block at the transfer switch. No transfer will occur if a neutral fault exists on the shore power source.

If either of the red "SHORE L1" or "SHORE L2" "UNDER-VOLTAGE" indicators is lit, unplug the shore power cord and check the presence/condition of the L1 or L2 pins on the plug and check the continuity between these pins and the associated field connection on the "Shore Power" terminal block at the transfer switch. No transfer will occur if an under-voltage fault exists on the shore power source.

If either of the red "SHORE L1" or "SHORE L2" "OVER-VOLTAGE" indicators is lit, a problem exists in the shore power source between the receptacle and the utility transformer. No transfer will occur if an over-voltage fault exists on the shore power source.

Check the circuit breakers in the coach distribution panel to be sure they are not tripped. Reset them to be sure.

Replace Transfer Switch.

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TROUBLE SHOOTING (Cont'd):

No power to the coach from the generator.

Check to make sure that the generator input has power. This will be indicated if the green "GEN L1-OK" and "GEN L2-OK" LED's on the Local Status Display are lit. If none of the "GEN L1" or "GEN L2" indicators are lit then turn off the generator circuit breakers and reset them to "ON".

If the red "NEUTRAL FAULT" indicator is lit, check the continuity between the neutral and ground connections on the generator and the associated field connection on the "Generator" terminal block at the transfer switch. No transfer will occur if a neutral fault exists on the generator power source.

If either of the red "GEN L1" or "GEN L2" "UNDER-VOLTAGE" indicators is lit, check the continuity between the L1 and L2 connections on the generator and the associated field connection on the "Generator" terminal block at the transfer switch. No transfer will occur if an under-voltage fault exists on the generator source.

If either of the red "GEN L1" or "GEN L2" "OVER-VOLTAGE" indicators is lit, a problem exists in the generator. No transfer will occur if an over-voltage fault exists on the generator power source.

Check the circuit breakers in the coach distribution panel to be sure they are not tripped. Reset them to be sure.

Replace Transfer Switch.

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NOTES:

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