INSTALLED 4/23/99

TODD ENGINEERING SALES, INC.

Power Switch™ Owner's Instructions

Models TS30, TS50S, PS245S, PS250, PS262S, PS2245S, PS850, TS30E, TS50E, PS275, PS2100

Product Overview

Todd Engineering Power Switches™ provide automatic power supply switching between two, three, or four separate 120/240 volt AC input sources. Depending on the model chosen, the Power Switch™ can select between the powercord and an onboard generator, or an onboard inverter, or between all three. One model can switch between two separate 30A 120V cords, a 50A 240V cord, a generator, and an inverter. Switching is automatic: the Power Switch™ senses the presence of available supplies and automatically selects the proper one. The Power Switch™ can be installed at the electrical entry of the RV on the line side of the main distribution panel, or it can be installed on the load side of the panel between the main panel and a sub panel. This means it can be wired to provide switching for the entire electrical load of the RV, half the load (as in hot 1 only), or only certain designated circuits (useful for inverter applications with limited load capability).

The Power Switch™ is designed with a switchable solid state feature allowing a 20 second delay for generator start-up, or instantaneous switching for inverter input. An LED is provided for diagnostic purposes. The Power Switch™ comes with a lifetime warranty certificate.

Installation

I. Disconnect Power

Make sure the generator is off, the external powercord is unplugged, and the inverter, if any, is shut off.

II. Location

The Power Switch™ mounting location may be on any interior (out of direct weather) surface. The location chosen must be accessible after installation. Consideration should be given to mounting the Power Switch™ where possible near the powercord entry, or near the location of the generator output. Typical locations include under counter cabinets, below closet compartments, inside bed pedestal or cabinets, overhead cabinets, under floor storage compartments accessed from the vehicle exterior, etc. Reminder: Electrical

28706 Holiday Place • Elkhart, IN 46517 • (219) 293-8633 • (800) 439-8633 • FAX (219) 295-8527

Call 1-800-HEY TODD

devices do not like foreign contaminants such as metal particles, grime, or moisture; therefore, do not mount the unit in an engine compartment or under a kitchen sink drain, etc. Do not mount the unit in a compartment designed for the storage of flammable liquids, such as gasoline (See CAUTION).

III. Electrical Preparation

Determine which knockouts in the enclosure are required for this installation. Wires should enter through the correct openings, as they may be specific to generator, powercord, and inverter. Be careful to select knockouts which allow adequate space inside the enclosure for the installation of clamps and wires. On models utilizing the nonmetallic enclosure, the knockouts are numbered, and certain knockouts are designated for specific models only. Remove only knockouts required. Note that on the metal enclosures the knockouts are dual sized; check clamp size and utilize matching knockout diameter. Remove the inner knockout first, by tapping inward; then remove outer ring, if required, by tapping and then peeling the ring outward with pliers. Install cable clamps in knockout openings.

IV. Mounting

Mount the Power Switch™ with screws through holes provided in bottom corners of can. The unit should be screwed to a solid surface firmly enough to hold its weight during vehicle operation.

V. Electrical Connections

A. Attach an 8 gauge chassis ground wire to the transfer switch ground bar. A direct access hole to the ground bar is provided through the enclosure for convenience.

B. Determine proper connections of wire conductors to electrical terminals. On 120 VAC wiring the ground wire is bare or green, the neutral wire is white, and the hot wire is black. On 240 VAC wiring there are two hot wires; one is black, and the other is red.

C. Strip the outer jacket from all of the incoming cables. Strip insulation from the ends of the copper conductors. Insert cables through clamps in correct openings. Models in nonmetallic enclosures have limitations on certain knockouts, based on model number; refer to Section VI. Do not tighten cable clamps at this time.

D. Route internal ground wires around lower area of enclosure and secure to ground bar. Exercise care to bend ground wires away from electrical contacts on components to avoid the possibility of electrical short circuit.

E. Connect the ground wires to the ground bar. Tighten terminals to a minimum of 20 inch-pounds.

F. Connect the neutral (white) wire connections.

G. Connect the hot wire(s). If there is a black wire and a red wire (for 240 VAC), it does not matter which is hot 1 and which is hot 2.

H. In some applications it may be desirable to feed a 120 volt supply, such as an inverter, into both hot legs of a transfer switch, so that the 120 volt supply can operate the entire RV load. Although discretion is advised in designing this into a system, it is acceptable, *as long as the connection to both hot legs is accomplished on the input side of the transfer switch.* To do this, connect the hot from the 120 volt supply, such as an inverter, to hot 1, then attach a jumper wire of the same gauge from hot 1 to hot 2. Consideration should be given to the following:

1. All the load must be 120 volt; you cannot operate a 240 volt load from a 120 volt supply.

2. There may be a load which would be undesirable to run from this particular 120 volt supply; that load should be isolated when the 120 volt supply is operating. The TS30 is sometimes used as a 'lock-out' switch to prevent specific loads from being operated from designated supplies. Example: Preventing a battery charger or an air conditioner from running from an inverter, yet operating from generator or powercord.

I. Some switch models utilize aluminum lugs for hot and neutral connections; others use wire leads.

1. For connections to lugs, insert wires into lugs to full depth of lug; tighten securely.

2. For connections to wire leads, hold the wires parallel to each other so that the wire tips are even, then secure with a wire nut. Use the proper size nut. Tighten nuts as tightly as possible with bare hands. Double check all connections for tightness.

J. Tighten cable clamps on switch enclosure.

K. Attach lid. On metal enclosures an 8-32 self tapping screw is provided to secure the lid in order to prevent child access. Lids for nonmetallic enclosures snap on and are less easily opened without deliberate effort.

VI. Specifics by Model

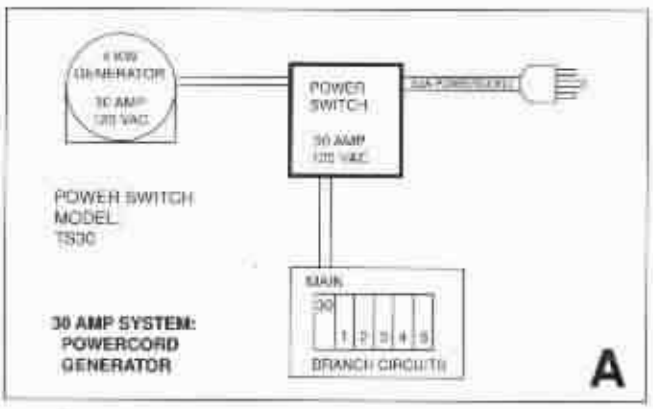
Model TS30 This model has a nonmetallic enclosure with numbered knockout openings. This switch is rated for 30 amps 120 volts. Wire leads are color coded: black for hot and white for neutral.

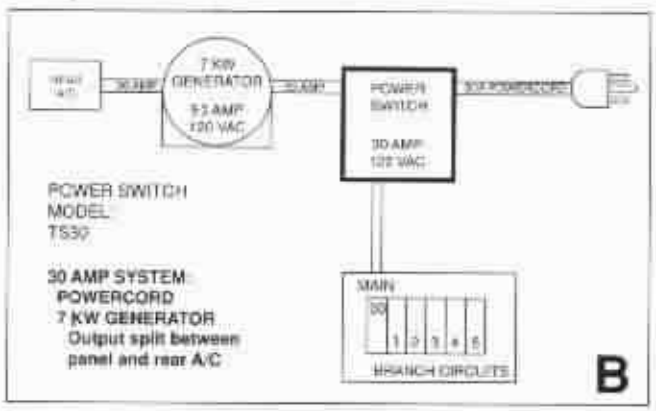
1. Any number knock out opening on this model may be used.

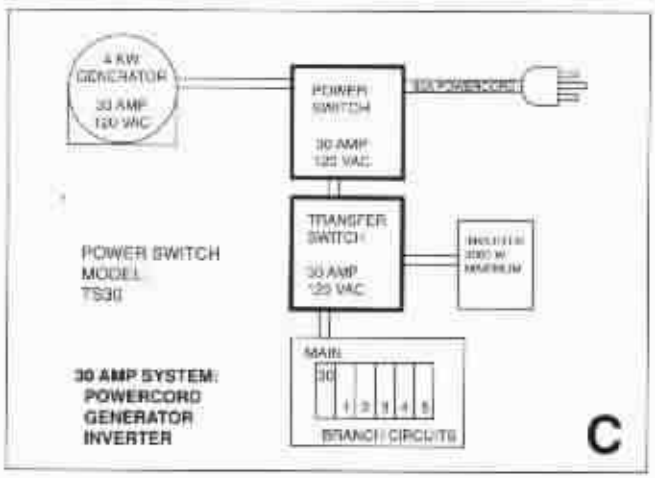
2. Installation between powercord (default) and generator (dominant). Connect powercord leads to terminals 7 and 8 (on the narrow end of the relay); these are the *normally closed* contacts. Connect generator leads to terminals 5 and 6 (on the shoulders of the relay); these are the *normally*

open contacts. Connect output to panel to terminals 3 and 4 (on the wide end of the relay). The bypass switch should be off, **1** on the switch.

3. For installation between inverter (default) and another power supply (dominant), such as the output from a prior powercord/generator transfer switch, connect the inverter to terminals 7 and 8, and connect the other supply to 5 and 6. Output terminals always remain the same. These connections will allow any other supply to dominate the inverter, and the inverter output will pass through the normally closed contacts of the switch. This allows the inverter to operate only in the absence of other power supplies, which is beneficial for inverters. Set the bypass switch to **ON**.







Model TS30E Like the TS30, this model is rated at 30 amps per pole, two pole. However it has a 240 VAC relay coil, and it has no time delay module. It is designed for European applications where the standard powercord is 15 amps, 240 VAC, single phase. The European powercord will have a single hot, a neutral, and a ground conductor, but the cord will be rated at 240 volts, 15 amps, rather than at 120 volts, 30 amps, as in the USA.

Model TS50S This model has a nonmetallic enclosure with numbered knock outs. The switch may be wired for 30 amps/240 volts, or for 50 amps/120 volts. Facing the switch so that the time delay control module is at the top; the left relay is the neutral relay, and the right relay is the hot relay. Wire leads are color coded black for hot 1 and 2 and white for neutral.

1. **Do not use knockouts 3, 4, 7, and 8** as there is not enough clearance.

2. For installation wired as a 50 amp, 120 volt switch, connect the **pairs** of wires on each relay together to double their ampacity. Connect terminals 7 and 8 (the narrow end of the relay) on the neutral relay and the hot relay to the respective neutral and hot wires from the powercord (default). Connect terminals 5 and 6 on both relays to the wires from the generator (dominant). Connect terminals 3 and 4 on both relays to the wires going to the panel, or other output.

3. For installation wired as a 30 amp, 240 volt switch, connect the wire leads on each relay individually. Connect terminals 7 and 8 (the narrow end) on the neutral relay separately as neutral 1 and neutral 2 from the inverter, or other supply desired as default. Connect terminals 7 and 8 on the hot relay separately as hot 1 and hot 2 from the same supply. NOTE: If this supply, such as an inverter, is 120 volts instead of 240 volts, and it is desired to connect it to both legs in order to provide power to the total load, the input leads may be tied together in pairs, as above, on the transfer switch *input*. Connect terminals from 5 and 6 on the neutral relay separately as neutral 1 and neutral 2 from the alternate power supply, desired as dominant. Connect terminals 5 and 6 on the hot relay in the same manner. Output terminals follow the same pattern, as hot 1, hot 2, and neutral 1, neutral 2.

IMPORTANT NOTE: Many times the TS50S switch will get installed in the wrong application, and a switch, such as a PS245S, PS250, or PS262S Power Switch rated 50 amps, 240 volts should have been used. Remember these details-

a. The TS50S as a 50 amp 120 volt switch will work for a 50 amp 120 volt single circuit generator, but it will not work for a powercord rated 50 amps 240 VAC. Additionally, a 50 amp

powercord should never be connected so that only one hot leg is switched (see Model TS50S Questions & Answers). This then indicates a larger switch is necessary to accommodate the 50 amp cord. If a 30 amp powercord is used, then the main breaker must be 30 amps, which indicates that the extra 20 amps of generator capacity is unused, and a smaller model generator would serve as well. Remember that a switch must always be sized for the larger power supply. Please verify that the TS50S is the correct switch for your application.

b. The TS50S as a 30 amp 120/240 volt switch will work with a 7KW maximum generator wired with two output circuits, but again the powercord, if 50 amps, requires a larger switch. If the powercord is only 30 amps, then the switch would only be acceptable if the main breaker in the panel, in order to accept the generator, is two pole, and in order to protect the powercord, is limited to 30 amps. This is unusual, plus there is always the temptation for the consumer to replace the breaker with a larger one, which removes the protection for the powercord. If the Generator 2 circuit output has one circuit going directly to a rear A/C and the other circuit going to the switch, which is a common practice, and the other supply is a 30 amp powercord, then the recommended switch is a TS30, and the TS50S is oversized. If two separate 30 amp powercords are being used, in conjunction with a one or two circuit generator, then the TS50S is the correct switch, but this scenario is unusual, and in some states, for technical reasons and when for sale to the general public, is not accepted by code. *Technical reasons include the possibility of back feeding from one cord to another in certain circumstances, which could be hazardous if one cord were plugged in and the other were not, leaving the prongs on the second plug exposed.*

Model TS50S Questions & Answers

1. TS50S Versus 50 amp powercord-

Q. *Can I use a TS50S for a 50 amp powercord?*

A. No. Because a TS50S only switches one hot leg and a 50 amp powercord is 240 VAC with two hot legs (black and red).

2. Switching half of a 240 volt supply-

Q. *Can I use a TS50S to switch just one hot leg of a 50 amp 240 volt supply (50 amp powercord or a 240 volt generator) and feed the other hot leg straight through without wiring to the switch?*

A. Yes and no. A TS50S *may not be used* to switch one leg only of a two leg supply if the two leg supply is the *default* supply in the switch. The TS50S *may be used* to switch one leg only of a two leg supply if the two leg supply is the *dominant* supply in the switch.

Example A- NO: The TS50S may not be used to switch one leg of a 50 amp 240 volt powercord (default) and a 50 amp 120 volt generator (dominant). In this case if the generator is started and the powercord is still plugged in, the powercord will be only half switched.

Example B- YES: The TS50S may be used to switch between one leg only of a 240 volt generator and a 30 amp powercord, or 120 volt inverter, when the generator is in the dominant positon and the cord is in the default position. In this case if the generator is started and the powercord is still plugged in, the powercord will be completely switched.

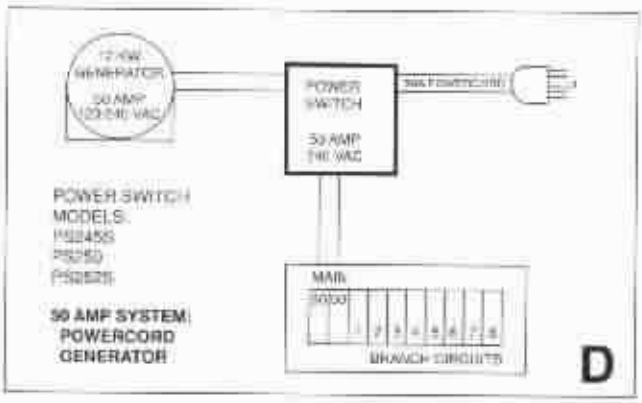
Example C- YES: The TS50S may also be used as a secondary switch to transfer between a 120 volt inverter and only one leg of the output of a primary transfer switch (for example where the primary switch transfers between a 50 amp powercord and a 12KW generator). The primary switch output leg *must be* the dominant position in the TS50S. The inverter (default position) will then operate in the absence of power from the first switch. If either the generator or powercord is energized both hot legs will feed all the way to the panel; therefore there is no time when any power supply is only half switched.

Summary- The TS50S may be used to switch one leg of a two leg supply only when the two leg supply is the dominant supply in the switch.

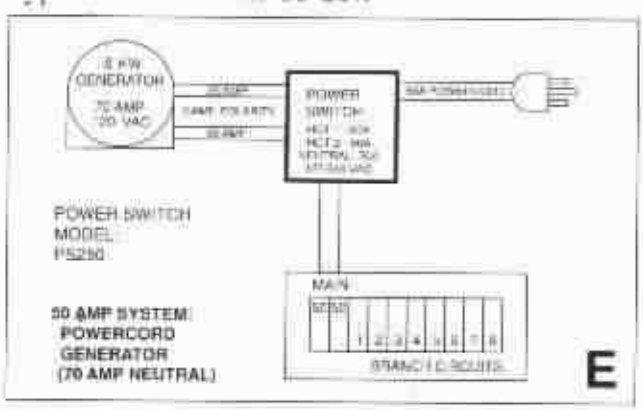
Model TS50E This model has a nonmetallic enclosure with numbered knockout openings. It is the European equivalent of the TS50S for 240 VAC 1 phase applications. Like the TS30E above, it has a 240 volt coil, and does not have a time delay module. It is suitable for applications with a single hot, a neutral, and a ground conductor, at 240 volts, 50 amps. It is not suitable for a domestic 50 amp powercord.

1. **Do not use knockouts 3,4,7, and 8,** as there is not enough clearance.
2. For installation wired as a 50 amp, 240 volt single phase switch, connect the **pairs** of wires on each 30 amp relay together to double their ampacity. Connect terminals 7 and 8 (the narrow end of the relay) on the neutral relay and the hot relay to the respective neutral and hot wires from the powercord (default). Connect terminals 5 and 6 on both relays to the wires from the generator (dominant). Connect terminals 3 and 4 on both relays to the wires going to the panel, or other output.

Model PS245S This model has a nonmetallic enclosure with numbered knockout openings. The switch is rated for 120/240 volt, 4 pole, 50 amps per pole. Facing the switch so that the time delay control module is at the top; the left relay is the neutral relay, and the right relay is the hot relay. Wire leads are color coded black for hot 1, red for hot 2, and white for neutral.



1. **Do not use knockouts 3,4,7, and 8.**
2. Installation between powercord (default) and generator (dominant). Connect powercord neutral and terminals 7 and 8 on the neutral relay together. Connect powercord hot 1 and hot 2 *individually* to terminals 7 and 8 on the hot relay. Connect generator neutral(s) to terminals 5 and 6 on the neutral relay. If the generator has only one neutral lead, tie it to both neutral terminals on the relay. Connect generator hot 1 and hot 2 individually to terminals 5 and 6 on the hot relay. Connect output to panel or other destination to terminals 3 and 4 on each relay. The bypass switch should be off, **I** on the switch.
3. For installation between an inverter (default) and another power supply (dominant), such as the output from a prior powercord/generator transfer switch, connect the inverter neutral to terminals 7 and 8 on the neutral relay. Connect the inverter hot to terminals 7 and 8 on hot relay. Connect the alternate power supply neutral to terminals 5 and 6 on neutral relay. Connect the alternate supply hot 1 and hot 2 *individually* to terminals 5 and 6 on the hot relay. Connect the output to terminals 3 and 4 on each relay. The bypass switch should be **ON**.

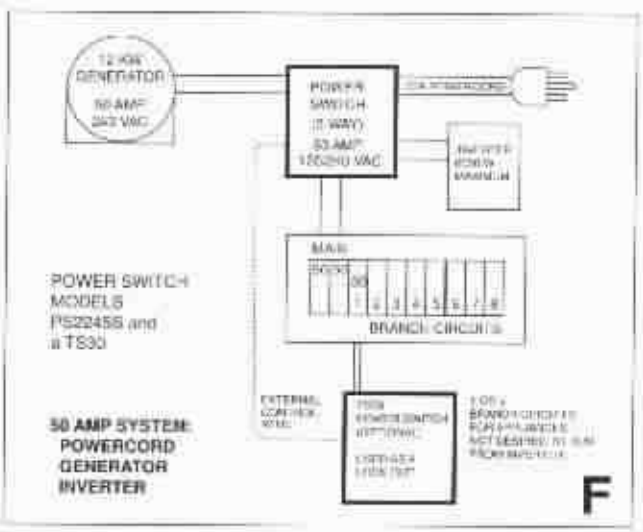


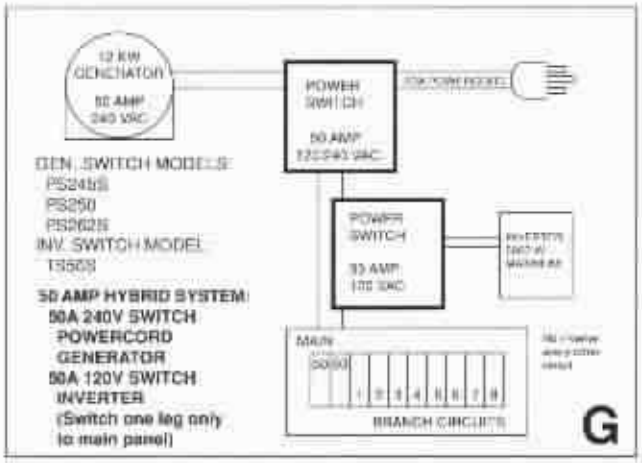
Model PS250 This model has a nonmetallic enclosure with numbered knockout openings. The switch is rated for 120/240 volts, hot 1 and hot 2 at 50 amps, neutral at 70 amps. This switch is contactor based, rather than using relays. Facing the switch so that the time delay control printed circuit board is on the right side of the contactors, the top contactor is for powercord input, and the bottom contactor is for generator input. *This switch is not recommended for inverter switching.* Inputs are on the right side of the switch; the output is on the left, from the upper contactor.

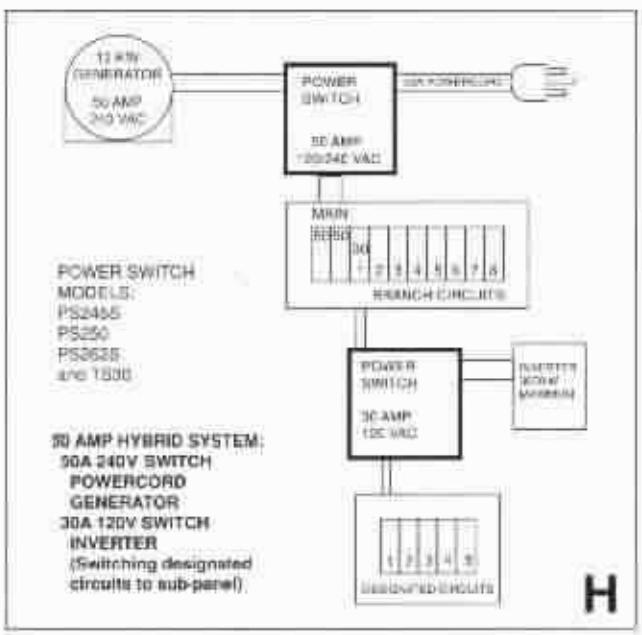
1. **Do not use knockouts 5 & 6.**
2. Connect powercord neutral wire to middle lug on upper contactor. Connect powercord hot 1 and hot 2 to the hot lugs on the contactor; hot 1 and hot 2 are interchangeable. Connect generator neutral to the middle lug on lower contactor. Connect generator hot 1 and hot 2 to the two hot lugs. Connect output wires to the lugs on the upper contactor in the same manner. There is no time delay bypass switch on the Model PS250; however there is a green LED on the module which when lit indicates that power is present from the generator and the time delay module is functioning properly (it has successfully completed its 20 second delay and has provided power to the contactor coil).

Model PS262S This model has a metal hinged enclosure. It is rated 120/240 volts, 3 pole, 60 amps per pole. It is relay based in its operation, and uses three relays to accomplish its switching. Each relay has two sets of contacts, each rated at 30 amps, and the contacts are wired together in pairs to yield 60 amps of capacity per relay. With the lid opening so that it hinges away from you the left relay is hot 1; the center relay is neutral; and the right relay is hot 2. There is a row of heavy duty terminal lugs across the bottom of the enclosure. Connect leads as marked and as color coded. This model also includes a time delay bypass switch to allow for instantaneous switching where the delay is not required for generator startup.

Model PS2245S This model is designed to switch automatically between three different

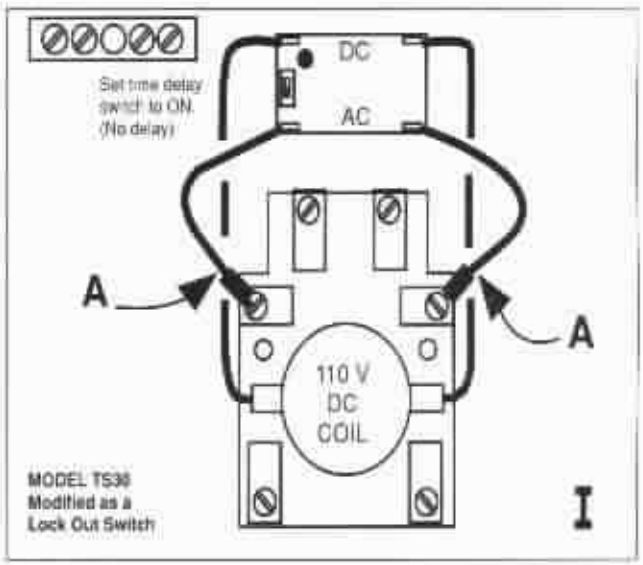






power supplies, and is rated 120/240 volts, 4 pole, 50 amps per pole. It is actually two PS245S Power Switches™ plus heavy duty wiring lugs in one container, all pre-wired together. Connections are color coded: black for hot 1, red for hot 2, and white for neutral. This model also includes two time delay bypass switches; this allows for delayed switching for generator startup and instantaneous switching where the delay is not required. The Model TS30, modified to use as a lock out switch, may be used with the PS2245S if desired. (See drawings F and I)

Model PS850S This model is designed to switch automatically between four different power supplies (inverter, generator, 50 amp powercord, and two separate 30 amp powercords). It is actually three PS262S Power Switches™ plus heavy duty wiring lugs in one container, pre-wired together. It also includes two safety relays at the 30 amp powercord inputs to prevent electrical backfeeding when one of the 30 amp cords is plugged into a receptacle and the prongs on the



Clip internal control wires here (A). Attach to external control wires (hot and neutral) from primary transfer switch. (See drawing F)

other plug are exposed. It is rated 120/240 volts, 3 pole, 60 amps per pole. Connections are color coded: black for hot 1, red for hot 2, and white for neutral. This model also includes three time delay bypass switches to allow for delayed switching for generator startup and instantaneous switching when the delay is not required. It is custom built and must be special ordered.

Model PS275 This model is a heavy duty larger version of the model PS250. It is rated 120/240 volt, three pole, 75 amps per pole. Like the PS250 it is contactor based. It is custom built and must be special ordered.

Model PS2100 This model is a heavy duty larger version of the model PS275. It is rated 120/240 volt, three pole, 100 amps inductive, 120 amps resistive, per pole. Like the PS275 it is contactor based. It is custom built and must be special ordered.

VII. Operational Test

A. Plug in the powercord. If the main panel circuit breakers are switched on, RV load should operate normally. Unplug the powercord.

B. Start the generator. There is a preprogrammed 20-30 second delay in all switches except the 240 volt export models. This delay is designed to allow the generator a brief warm-up period. When the delay completes its cycle the switch should engage and the RV load should operate normally.

C. Shut down the generator. As the generator winds down the switch should disengage

without chatter or cycling. Now it's on, then click, it's off.

D. Plug in the powercord. Start the generator. After the preprogrammed delay the switch should switch automatically from powercord to generator. Other than an audible click at the switch, you may not be able to notice the transfer. Shut down the generator and unplug the powercord.

E. On transfer switch models designed to switch between three power supplies, plug in the powercord, start the generator, and turn on the inverter. With all three supplies energized at the same time, the switch will select the generator for the primary supply choice. Shut down the generator. The switch will transfer to the powercord. Unplug the powercord. The switch will transfer to the inverter. The inverter should always be connected so that it is only selected in the absence of both other supplies (default mode).

VIII. Troubleshooting

A. LOW VOLTAGE: Low voltage is harmful to most appliances. *Contactor* based transfer switches are also affected by low voltage: if the voltage level drops far enough the contactor points will chatter. Sustained contact chattering can cause transfer switch damage. Switches that have been damaged by chattering need to be returned to the factory and repaired.

1. General Low Voltage: Low voltage can be caused by low voltage conditions such as an RV park with inadequate wiring for the crowded camper conditions, where everyone's electricity suffers (brown out). In this case a voltmeter will be helpful and will show a low voltage reading from the park receptacle, even before the RV is plugged in. When you experience general low voltage conditions, remember that brown outs can be harmful to most appliances. A better alternative might be to run from the generator until park voltage conditions improve.

2. Localized Low Voltage: Low voltage conditions can be caused by specific situations such as an additional cord which is too long and too small for the load. Every now and then someone will try to extend their RV powercord by using a 16 gauge 100 foot extension cord. That type of cord is suitable for a pair of hedge clippers, but not for powering an RV. A localized low voltage condition will result when a load is turned on which is larger than that for which the cord was designed. As soon as the RV tries to draw more current than the amount for which the cord is rated, the voltage will fall *within the length of the cord*, and the RV will see low voltage. This is especially noticeable during inrush current situations such as an air conditioner startup. Contactor based transfer switches (PS250/PS275/PS2100) are affected by this. The compressor will try to start, the voltage will drop, which will cause the contactor to drop out, at which point the voltage will rise to the pre-inrush level. The contacts will chatter when the A/C compressor kicks in, however the voltage may read normal. Most meters are not fast enough to record this voltage drop. You can test for low voltage readings during this inrush cycle by reading voltage at the contactor terminals while manually holding the contactor plunger down in its closed position. This will override the chattering condition and the meter will have time to register the reduced voltage. If this condition exists, identify and correct the low voltage situation before proceeding further.

B. PHYSICAL INTERFERENCE: Some transfer switch models have wiring connections made by wire nuts on 6" leads. Occasionally on these models, the wiring connections will get folded into the can in such a manner that the wiring will interfere with the physical operation of the relay. Visually inspect for free operation of the relay(s).

C. TIME DELAY BYPASS SWITCH: The time delay function in the control module on some models may be bypassed. Relay based transfer switches have incorporated into the control module board a small switch which allows the technician to activate or bypass the time delay. (Older models had a small jumper which accomplished the same function.) The time delay is necessary during generator startup so that the generator does not have to start under load; the delay is not necessary for powercords or inverters. (Starting a generator under load is like trying to start a car with a manual transmission while it is in gear.) Therefore in transfer switch operation where the module is controlling a supply other than the generator, the delay switch should be set to the bypass position. This will allow instantaneous switching. Another time for bypassing the delay is during diagnostic and troubleshooting efforts; if bypassing the delay causes the switch to work when it otherwise won't, then the time delay has malfunctioned, and the board should be replaced. To bypass the time delay, locate the switch on the end of the printed circuit board, and select the position on the switch labeled **ON**. Time delay bypass is now activated, and transfer will be instantaneous.

D. FAILED TIME DELAY CONTROL MODULE: It is possible for a voltage spike etc. to cause the time delay control module to fail; if this happens the switch will no longer transfer. Power Switch™ models have a diagnostic LED mounted on the control module printed circuit board. If the module is receiving 120 VAC input and is operating properly, the LED will light. This means the control module has timed for the 20 second delay and is now providing power to the coil on the

relay. If the module input is energized and the LED does not light after 30 seconds, the time delay function in the module has failed, and the module should be replaced. To verify this, try setting the time delay switch on the board to the delay bypass position; the switch should transfer with no delay. *Note that this position will allow emergency operation until the module can be replaced; however, there will not be a 20 second delay for generator startup.* All repairs should begin by unplugging and replacing the control module first. However, if the LED is on and the switch is not working, then the control module is functioning properly and the switch has other problems, such as a failed relay or contactor, and the entire switch should be returned for repair.

HI-POT Testing

(MANUFACTURING COMPANIES ONLY)
Note: If the hi-pot test is performed from the plug on the powercord, the test may only hi-pot the cord itself; it may not test the RV wiring beyond the switch. The hi-pot test should be performed from either the Power Switch™ *output*, or from the main panel. Test as follows:

1. Turn on all circuit breakers in the panel.
2. Make sure generator is off.
3. Make sure the powercord is unplugged. Verify that the prongs on the powercord plug are protected so that hi-pot voltage won't cause a fault reading from a short, or cause bodily injury from electrical shock.
4. Turn off or disconnect all appliances that would be damaged by the hi-pot test.
5. Connect the hi-pot leads to:
   a. Power Switch™ ground bar,
   b. Power Switch™ *output terminals* hot 1, hot 2 (if present), and neutral.
6. Energize the hi-pot and conduct test. This will hi-pot test for leakage (short) between the current carrying conductors and the ground in the entire 120/240 VAC circuitry beyond the transfer switch. In most cases it will also test the powercord itself. Turn off the hi-pot.
7. **Do not test the Power Switch™ generator input.** *The hi-pot will damage the time delay control module in the Power Switch™.* If the generator wires to the switch must be checked, disconnect generator wires from the Power Switch™ and connect hi-pot test leads to the loose wires. Reconnect wires after test.
8. If hi-pot test fails there is a short in the system. The next step is to isolate the location of the short. Turn off main breaker in panel and hi-pot test again. If test still fails, fault is between switch and panel. Test cord for shorted plug. If test passes, turn on main breaker, and turn off all branch breakers except one. Retest each branch circuit individually until shorted circuit is isolated. Repair fault and retest. Hi-pot test is successful when there are no more fault indications.

Generator Note

It is never advisable to start or stop a generator under load. To prolong the life of this transfer switch, and the life of the air conditioner, microwave, and other appliances, always turn those appliances off before starting or stopping the generator.

Medical Appliances

Todd Engineering will not knowingly sell a Power Switch™ for any life support application. It is strongly recommended that you do not operate any life support equipment from a Power Switch™. If the Power Switch™ should malfunction, or fail to operate due to other external conditions, it is possible that all connected appliances including any life support equipment will also shut down, resulting in a risk of medical complications and potential loss of life.

Caution

Do not install this or any electrical accessory in a compartment intended for storing flammable liquids such as gasoline, etc. whose fumes are explosive and can cause injury and death. There are components in the Power Switch™ which in their normal operation may cause arcing. Additionally, the simple act of turning on a light switch or unplugging the cord on an electrical appliance can cause a spark, and consequently an explosion from gasoline or other vapor. **Therefore do not install a transfer switch in a compartment intended for storing flammable liquids, and never store flammable liquids inside a compartment containing *any* electrical device.**

Warranty

In addition to a standard two year warranty, all Power Switch™ transfer switches come with a **Lifetime Warranty Certificate** which is activated by completing and mailing back its attached registration form. There is no charge for this extended warranty. Please refer to the warranty certificate for details on the standard two year warranty and on the lifetime extension.