VANNER
POWER GROUP

BRUTUS Static Inverter

Models—TB12-12, TB24-12, TB30-12, TB16-24, TB32-24

Installation/Operation/Service Manual

Please read through this manual carefully when proceeding through the installation of the inverter.

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LIMITED WARRANTY

VANNER WELDON, INC. (Manufacturer) warrants, to the original user, that each Vanner Weldon product is free from defects in materials and factory workmanship if, and only if, the following requirement are complied with:

A. The product is installed and checked out properly according to all guidelines, instructions, and checkout procedures set forth in the product Installation and Operating Manual.

B. The installer records all checkout data required and completes, signs, and returns the warranty initiation card to the VANNER WELDON office within ten (10) days after installation.

Manufacturer's obligation under this warranty is limited to correcting without charge any part or parts of such products which shall be returned to its factory or one of its authorized service facilities, transportation charges prepaid, within one (1) year from first installation or within eighteen (18) months from date of manufacture, whichever comes first, provided examination discloses to Manufacture's satisfaction that such parts were originally defective. Correction of such defects by repair to, or supplying of replacements for defective parts, shall constitute fulfillment of all obligations to original user.

This warranty shall not apply to any of Manufacturer's products which must be replaced because of normal wear, which have been subject to misuse, negligence, or accident, or which shall have been repaired or altered outside of Manufacturer's factory, unless authorized by Manufacturer.

MANUFACTURER SHALL NOT BE LIABLE FOR ANY CLAIMS, LOSS, DAMAGE, OR EXPENSE WHATSOEVER RESULTING DIRECTLY OR INDIRECTLY FROM THE USE OF ITS PRODUCT OR FROM ANY OTHER CAUSE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THESE LIMITATIONS MAY NOT APPLY TO YOU.

ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OR TRADE OR OTHERWISE, INCLUDING BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF ONE **(1) YEAR AFTER FIRST INSTALLATION OR EIGHTEEN (18) MONTHS FROM DATE OF MANUFACTURE**, WHICHEVER COMES FIRST. SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. NO PERSON, AGENT, OR DEALER IS AUTHORIZED TO GIVE ANY WARRANTIES ON BEHALF OF MANUFACTURER OR TO ASSUME FOR MANUFACTURER ANY OTHER LIABILITY IN CONNECTION WITH ANY OF ITS PRODUCTS UNLESS MADE IN WRITING AND SIGNED BY AN OFFICER OF MANUFACTURER.

LIMITED WARRANTY

SPECIAL NOTICE TO PURCHASER
REGARDING WARRANTY PROCEDURE

It is absolutely necessary that requirements outlined in paragraph A. and B. above be complied with for warranty to be in effect. **MAKE SURE THE INSTALLER HAS COMPLETED AND SIGNED YOUR PORTION OF THE WARRANTY INITIATION CARD, CERTIFYING THAT THOSE REQUIREMENTS HAVE BEEN COMPLIED WITH.**

If any trouble occurs with this product during installation or before the warranty has expired, follow these instructions:

With model and serial numbers available for reference, as well as all available installation test readings, call VANNER WELDON at **614-771-2718**, and request WARRANTY SERVICE ASSISTANCE.

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1.0 GENERAL INFORMATION

1.1 INTRODUCTION AND PRINCIPLE OF OPERATION

The BRUTUS Inverter is an instrument of the highest quality, designed with the latest "state-of-the-art" engineering for long-term reliable performance. The inverter attaches with two cables to a battery DC electrical system and produces nominal 120 VAC 60 Hz output. It is backed by a nation wide network of service distributors.

The BRUTUS Inverter with TRUSINE Technology is a high performance static inverter that converts the output of a 12 or 24 VDC electrical system to 120 VAC 60 Hz with a capacity up to 3200 watts. TRUSINE Technology incorporates high frequency switching techniques with Field Effect Transistors (FETs) to achieve a constant peak **pure sine wave output**, the same as utility power. The waveform is not distorted under load so that even the most waveform-sensitive instruments can be operated. When operating inductive loads like a motor, BRUTUS with TRUSINE Technology actually recycles the reactive energy from the motor so that it maintains its high efficiency. BRUTUS has no limitations on the power factor of loads, either leading or lagging.

1.2 SPECIFICATIONS

BRUTUS MODEL # TB12-12	TB24-12	TB30-12	TB16-24	TB32-24
Nom. Input, Volts ····· 12 VDC (17 max.)	12 VDC (17 max.)	12 VDC (17 max.)	24 VDC (34 max.)	24 VDC (34 max.)
Max. Input, Amps ····· 125 @ 1200W	250 @ 2400W	315 @ 3000W	85 @ 1600W	170 @ 3200W
Nom. Output, Volts ·· 120 VAC	120 VAC	120 VAC	120 VAC	120VAC
Nom. Output, Amps ·· 10 AMPS	20 AMPS	25 AMPS	13 AMPS	27 AMPS
Nom. Surge, Amps ·· 45 AMPS	90 AMPS	95 AMPS	45 AMPS	95 AMPS
Weight, Lbs. ····· 40 LBS	65 LBS	75 LBS	40 LBS	65 LBS

All BRUTUS units:

1. Will operate with ambient temperature between -40 to 105 degrees F.
2. Have minimum cooling air circulation requirements of 120 cfm.
3. Have the dimensions of 8" H x 15" W x 15" D.

1.3 INVERTER STANDARD FEATURES

1. **OUTPUT WAVEFORM** - Maintains constant-peak, constant-width pure sine wave output with less than 3% total harmonic distortion and no limitation on operation of loads.

2. **OVER-CURRENT PROTECTION** - Protects BRUTUS with a fast-acting current-sensing circuit that shuts unit off if an internal over-current state exists. The battery source is protected from overload by an internal fuse. The AC output is protected by a circuit breaker on the front panel.

3. **PRECISE VOLTAGE REGULATION** - Compensates for input voltage level changes due to the engine being on or off. BRUTUS regulates the 120 VAC output within $\pm$ 5% under all load conditions.

4. **AUTO START/STOP** - Automatically starts and stops inverter upon demand of AC load.

5. **LOW BATTERY CUT OUT** - Automatically turns the inverter off when the battery reaches an unacceptable low operating level. The BATTERY LOW lamp will illuminate and the unit will not restart. The battery must be recharged before inverter can be reset and started again.

6. **REMOTE CONTROL RECEPTACLE FOR MANUAL OPERATION** - Provides capability for an optional remote ON - OFF/RESET switch on the front panel.

7. **DURABLE ENCLOSURE** - Protects BRUTUS with a rugged aluminum enclosure and polyurethane enamel coating to stand up to extreme road and marine conditions.

8. **THERMAL SENSE FAN -** Cooling fan automatically turns on and off depending inverter internal temperature.

9. **GFCI RECEPTACLE** - Ground Fault Circuit Interrupter (GFCI) protected 120 VAC duplex receptacle is mounted on the front panel.

1.4 OPTIONS

1. 230 VAC, 50 Hz output

2. D05189 (4-104) Remote Control with indicator lamp

3. D05195 (4-414) Quick-disconnect (QD) input connectors - For ease of installation and removal.

4. "H" suffix, AC Hardwire output, GFCI protected.

1.5 INVERTER FRONT CONTROL PANEL (Refer to Fig. 1.1)

1. **POWER SWITCH** - This is a momentary rocker switch which rests in the center position.

   A. OFF/RESET - When pushed into this position and released, the inverter is completely off. This position is also used to reset the unit when required.

   B. ON - When pushed into this position and released the inverter monitors the AC output to determine if a load is present. If it detects a load of greater than 5 watts, the inverter turns on fully. When the load is removed, the inverter returns to standby.

2. **ON Lamp** - Indicates inverter is on and in the standby mode.

3. **BATTERY LOW Lamp** - When the battery voltage remains below 10.5 VDC (21.0 VDC for 24 VDC) for more than 5 seconds, the inverter shuts off and the BATTERY LOW lamp glows. This condition results from overdischarge of the battery. The battery must be recharged before the inverter can be restarted. To reset, place power switch in the OFF/RESET position momentarily and then back to the ON position. The inverter will start and the BATTERY LOW lamp will turn off.

4. **OVERLOAD Lamp** - If a load on the inverter exceeds the rated capacity for more than 5 seconds, the OVERLOAD lamp glows. The external condition must be corrected and the power switch set to OFF/RESET momentarily and then back to ON to restart the inverter.

5. **OVERTEMP Lamp** - When the internal temperature of the inverter reaches an unacceptable level, the inverter shuts off and this lamp turns on. The inverter must be allowed to cool and the power switch set to OFF/RESET momentarily and then back to ON to restart the inverter.

6. **GFCI RECEPTACLE** - A duplex Ground Fault Circuit Interrupter, GFCI, protected receptacle is mounted on the front panel.

7. **CIRCUIT BREAKER** - A push button circuit breaker(s) is mounted on the front panel. The circuit breaker protects both the front panel AC receptacle and the AC output on rear of inverter.

8. **REMOTE CONTROL receptacle** - Used with the optional D05189 Remote Control.

9. **DC input cable clamps** - Strain relief clamps for DC input cables. It is optional to have DC input cables enter through rear of unit (see Fig. 1.2).

10. **Grounding Block -** When required by local code or ordinance, this block can be used to ground the inverter to vehicle chassis or electrical system ground.

1.5 INVERTER FRONT CONTROL PANEL (cont)

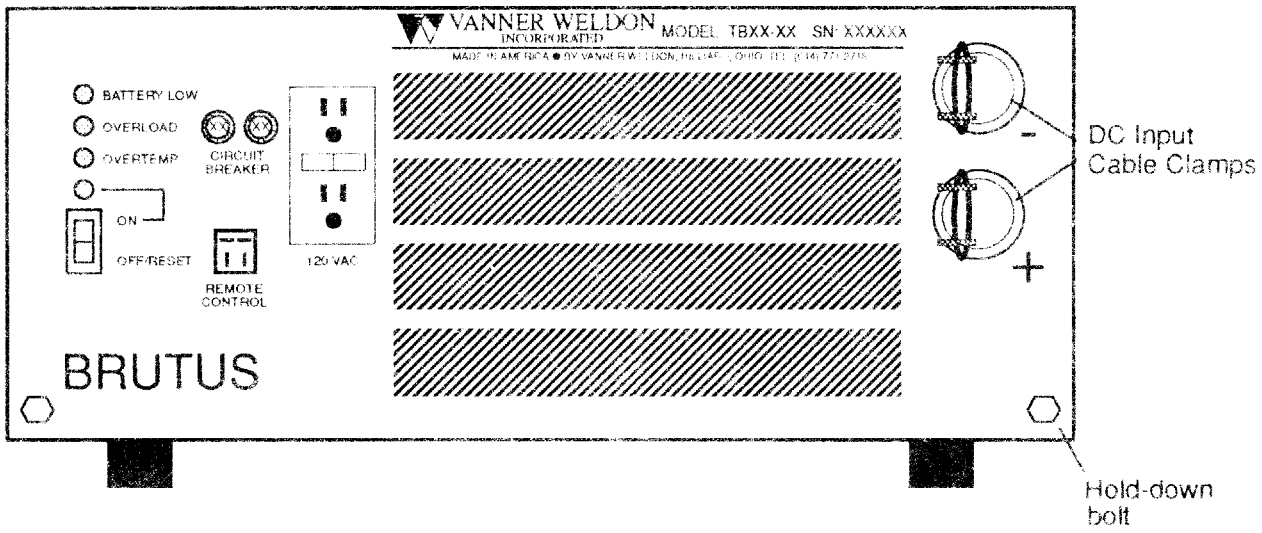


Figure 1.1 - Inverter Front Control Panel

1.6 INVERTER BACK PANEL (Refer to Fig. 1.2)

1. **AC hardwire output -** (optional junction box, standard on 3000, 3200 W)
2. **Cooling fan inlet and finger guard**
3. **Hold-down bracket bolts**
4. **Grounding Block**
5. **DC input cable clamps** (optional)

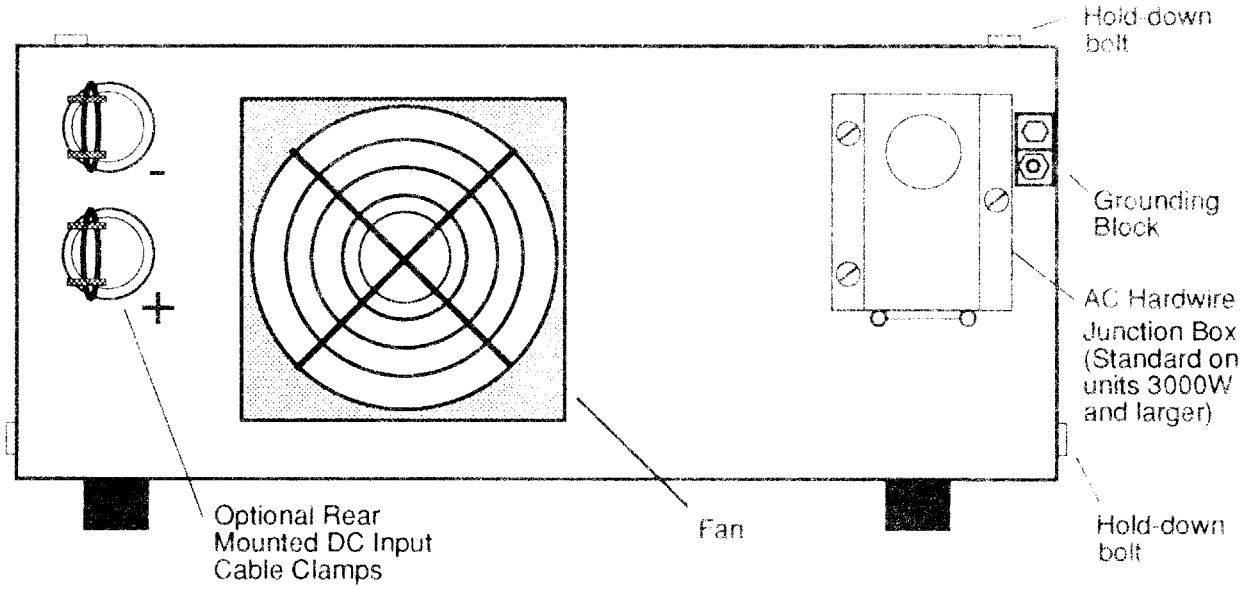


Figure 1.2 - Inverter Rear Panel

1.7 OPERATING GUIDELINES

To provide satisfactory performance at its designed capacity, you must first follow the steps listed below.

1. Use the appropriate size, type and number of batteries for the AC load and duty cycle being used. There are two basic factors involved in the selection of a battery for use with an inverter: type and capacity.

   TYPE: It is recommended that an auxiliary battery of the deep cycle type (at least a Group 27), in addition to the cranking battery, be added to the system and dedicated to the inverter. The deep cycle construction allows the battery to be discharged to a low level and recharged without any significant cell damage. A battery isolator should be used to allow both batteries to be charged from the alternator while preventing the inverter from discharging the cranking battery.

   CAPACITY: Battery capacity is rated in ampere hours; i.e., the number of amps the battery can be expected to provide for a period of x number of hours. Example: a battery with 100 amp-hour rating will provide 5 amps of output for a period of 20 hours, theoretically.

   To determine how much battery capacity is required to operate a device through a static inverter, both the inefficiencies of the inverter and the reduced capacity of the battery due to higher discharge rate must be taken into account. Many battery manufacturers recommend not more than 50% discharge of a battery. Therefore, it is recommended that the load be multiplied by a constant (K) of 2.0 to account for these considerations. The formula to use is:

$$\frac{W}{V} \times T \times 2.0 = \text{AH required, where}$$

   W = watts output - the amount of power required for the AC load. If output amps are known, multiply by 120 V to get watts.

   T = time in hours that the load will be operated without recharging the batteries.

   V = input DC voltage of the inverter (Use minimum battery voltage).

   AH = amp hours capacity of battery bank.

   Example: Determine the amp-hours of battery capacity to run two 100 watt lights (200 watt total) for six hours without recharging:

$$\frac{\text{200 watts x 6 hour}}{\text{10 VDC input}} \times 2.0 = \text{200 amp - hours}$$

1.7 OPERATING GUIDELINES (cont)

To determine operating time available from a known battery bank, use the following formula:

$$T = \frac{AH}{2.0} \times \frac{V}{W}$$

2. Use the correct cable size for inverter connection to the battery. Battery cable of adequate size is very important for proper and efficient operation of the inverter. For best results, use flexible high strand wire such as welding cable. Peak performance characteristics of the static inverter will not be realized unless the following table is used when selecting input conductors for use with the inverter.

All BRUTUS MODELS					
Material	Copper				
Distance from battery to inverter in feet:	TB12-12	TB24-12	TB30-12	TB16-24	TB32-24
6 feet	#1/0	#3/0	#3/0	#2	#1/0
8 feet	#2/0	#4/0	#4/0	#1/0	#2/0
10 feet	#3/0	NR	NR	#2/0	#3/0

NR - NOT RECOMMENDED

NOTE: The above cable sizes are based on maximum surge capacity of the inverters. Smaller cable sizes may be used with some applications. Please consult the factory for recommendations on your specific application.

3. For continuous use, the alternator must provide sufficient output to satisfy the charging requirements of the battery bank feeding the inverter. The following equation may be used to calculate alternator output requirement.

$$\frac{\text{Output Wattage Required}}{\text{Battery Voltage (minimum)}} = \text{Alternator Amps}$$

4. Provide adequate ventilation. If the inverter is installed in a sealed service compartment, provide fresh air access.

5. Install the harness properly.

6. Keep a copy of this manual with the inverter at all times.

2.0 INSTALLATION AND CHECKOUT

2.1 INVERTER HARDWARE KIT

Listed below is the hardware included with each inverter. Verify that all hardware is included when unpacking this kit.

Description	Qty	Part Number
#14 x 1" Screws	4	04864 (4722-40008)
Lugs, Inverter Terminal	2	02673 (4442-24102)
Tie down brackets	4	04855 (3056-11451)

Note: The cable and lugs for battery terminal connections are not provided. Refer to Section 1.7, step 2 for selecting the cable size; select the appropriate lugs accordingly.

2.2 RECOMMENDED INSTALLATION TOOLS

1. 7/16 Wrench
2. 1/2" Socket wrench
3. Wire crimpers or soldering iron and solder for very large wire
4. Flat blade screwdriver
5. Phillips screwdriver
6. 1/4" Nutdriver
7. Sharp knife
8. Volt/Ohm Meter (VOM)

2.3 SELECTION OF INVERTER LOCATION

IDEAL INVERTER LOCATION IS:

1. Close to the batteries: no farther than a 10 -foot run of wire from the battery.
2. Protected from the weather. Install BRUTUS in the vehicle cab or an outside service compartment. **Caution - Do not install the inverter in the bottom of a service compartment.**
3. Well-ventilated and allows for a minimum of 2" of clearance around the entire inverter to provide adequate cooling air circulation. Select a location where no other equipment or gear can be stored directly on top of the inverter.

2.4 MOUNTING CONFIGURATION

BRUTUS can be mounted horizontally utilizing the hold-down brackets contained in the hardware kit. Using a 3/16" drill bit, drill four holes in the mounting surface as illustrated in Fig. 2.1 below. Optional mounting hole locations are also available as illustrated in Fig. 2.1 by shading. Do not secure the inverter at this time, these holes will be used to secure the inverter later.

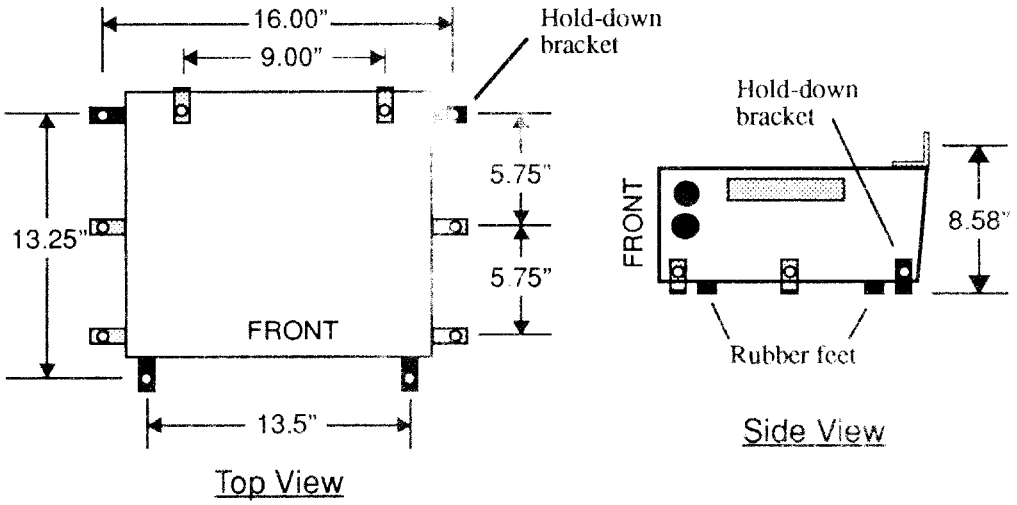


Figure 2.1 - Surface Hole Locations for Horizontal Mounting

BRUTUS may also be mounted vertically. If vertical mounting is desired, the installer can fabricate mounting brackets similar to those illustrated in Fig. 2.2 below. The brackets may be made from angle bar sock (approx. 2"x 1-1/4"x 3/16"). Fig. 2.2 illustrates the hole pattern for vertical bulkhead mounting.

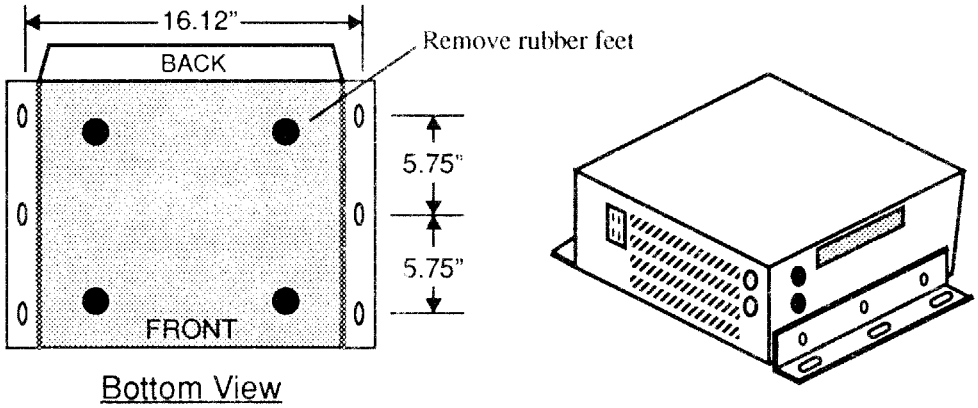


Figure 2.2 - Surface Hole Locations for Vertical Mounting (Installer Supplied)

2.5 INSTALLATION OF INVERTER BATTERY

-CAUTION-

ALWAYS DISCONNECT THE BATTERY BEFORE DOING ANY WORK ON THE VEHICLE DC WIRING.

The manufacturer recommends using one of the following methods when installing an additional battery for inverter use:

1. Connect the vehicle battery and the inverter battery to a battery isolator as shown in Fig. 2.3 below.

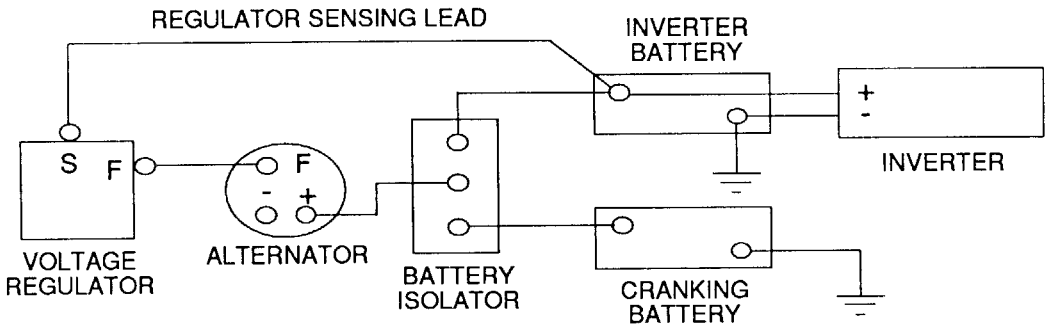


Figure 2.3 - Installation With Solid State Battery Isolator

2. Connect the vehicle battery and the inverter battery to a dual battery switch as shown in Fig. 2.4 below.

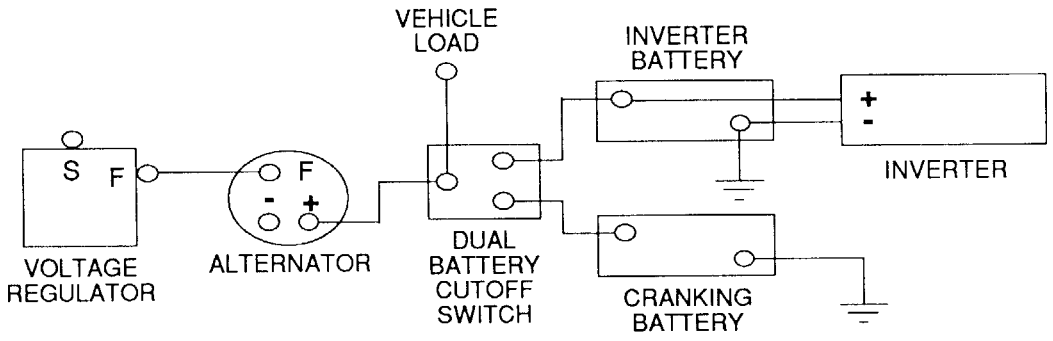


Figure 2.4 - Installation With Manual Dual Battery Disconnect Switch

3. Always connect input cables at inverter before connecting to battery.

2.6 ROUTING AND TERMINATING DC INPUT CABLES

1. Mark the selected positive cable at each end with red tape so it can be identified after routing through the vehicle.

-CAUTION-

BURNING OR CHAFING THROUGH THE CABLE INSULATION WILL DAMAGE THE INVERTER AND VEHICLE ELECTRICAL SYSTEMS. BE AWARE THAT THIS IS A COMMON INSTALLATION PROBLEM.

THIS INVERTER IS INPUT POLARITY SENSITIVE. THE POLARITY OF THE DC INPUT MUST BE CORRECT OR INVERTER DAMAGE WILL RESULT.

CABLES MUST BE DISCONNECTED AT BATTERY BEFORE CONNECTING OR DISCONNECTING CABLES AT INVERTER.

2. Route the cables from the inverter location to the inverter battery location using existing holes where possible. Use tie wraps and tape liberally to secure the cables so they cannot inadvertently contact the hot engine exhaust or other heat-producing components. Grommets should be used to protect cables where they come into contact with hard or sharp edges.

3. To connect the DC input cables to the inverter, refer to Fig. 2.5 and the steps below.

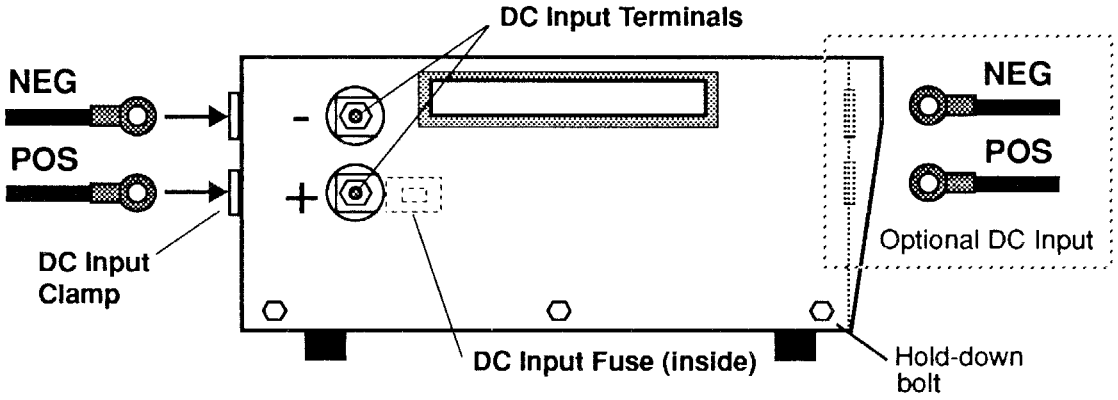


Figure 2.5 - Right Side Panel View, DC Input Terminals

A. Remove plugs from right side panel of inverter to gain access to DC input terminals.

B. Route the positive and negative DC input cables into the inverter through the corresponding (+) and (-) DC input clamps on the front panel or through the optional rear access holes. The unit may be set up for front or rear wiring.

2.6 ROUTING AND TERMINATING DC INPUT CABLES (cont)

C. Attach the lugs of the DC input cables to the DC input terminal studs and tighten nuts provided. See Figure 2.6 for proper DC input lug orientation.

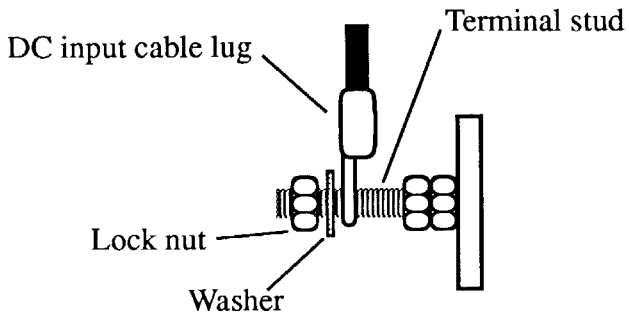


Figure 2.6 -DC Input Cable Lug Orientation

D. With cables fastened to the DC input terminals, tighten the DC input clamps on the front panel.

E. Install side panel plugs.

4. Install the lugs for the battery connection by stripping back the insulation on the wire approximately 1/2" and securely soldering or crimping the lug on the wire.

5. Connect the negative wire with the black tape to negative battery terminal first, then connect the positive wire (red tape) to the positive battery terminal. NOTE: Sparks may occur when making these connects.

6. For units equipped with optional Quick-Disconnect (QD) connectors, use the following procedure to install connectors on cables.

   Crimp the QUICK- DISCONNECT (QD) lug (Item A) on the cable (Item B) and install the QD housing (Item C) as shown in Fig. 2.7, below. Be sure to install the red QD connector on the wire with the marked red tape and the black QD on the other wire. Do not connect the harness to the inverter at this time.

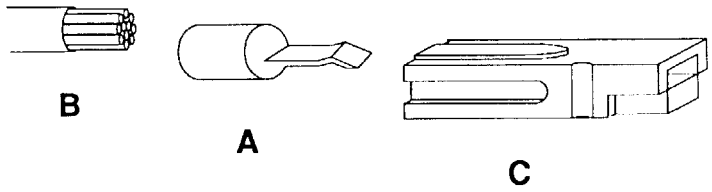


Figure 2.7 - Quick-Disconnect Diagram

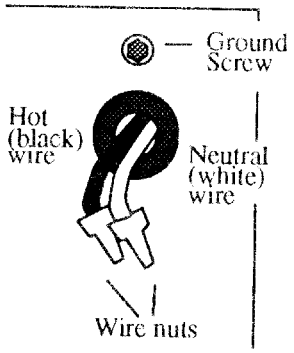
2.7 INSTALLING AC WIRING

-CAUTION-

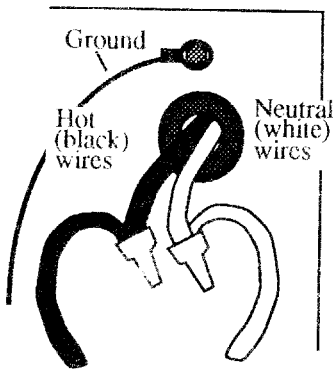
Utility power cannot be directly connected to inverter output. If utility power is required in the vehicle along with the inverter output, use the Automatic Transfer Switch for transferring two input sources to a common load.

Multiple outlets can be used with this inverter by utilizing the optional AC HARDWIRE BOX (Std. on 3000W and larger) on the rear panel of the inverter. This option can be factory installed and should be selected at the time of order. AC hardwire installation is as follows (see Fig. 2.8 below):

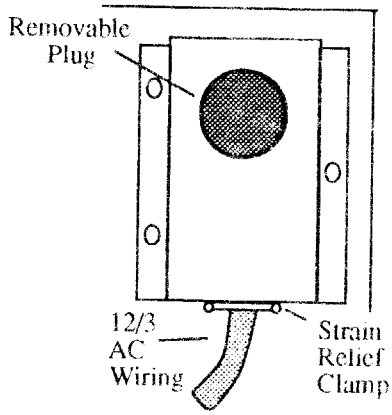
1. Install the desired number of AC receptacle(s) in the selected remote output location(s).
2. Route and connect three 12-gauge wires (HOT, NEUTRAL, and GROUND) from the remote AC receptacle(s) to the inverter.
3. Insert the three 12-gauge (#10 for 3000, 3200W) AC wires into the inverter rear panel AC HARDWIRE BOX. The BOX provides two different access holes for using a wire strain relief clamp. Insert a wire strain relief clamp into the most convenient access hole and plug the unused hole.
4. Attach the HOT (black) and NEUTRAL (white) AC wires to the corresponding black and white wire pigtails coming from inside the inverter. Use the wire nuts provided.
5. Using the ring connector provided, attach ground (copper) wire of the AC circuit to the GROUND (green) terminal screw on the rear panel of the inverter inside the AC HARDWIRE BOX
6. Secure BOX to inverter rear panel with screws provided.



Inverter rear panel with AC Hardwire Box Removed



AC Hardwire connections at rear of investor



AC Hardwire Box secured

FIGURE 2.8 - AC Hardwire Output

2.8 SECURING THE INVERTER

1. Attach the hold-down brackets (from the hardware kit) to the inverter using the hold-down bracket bolts at the bottom of the front and back panels.

2. Using the mounting holes drilled in Section 2.4, securely tie down the inverter to its mounting surface with the screws provided in the hardware kit.

2.9 INVERTER OPERATING PROCEDURE

Main Power Switch Operation

1. Push the power switch into the ON position momentarily and release; the ON lamp will illuminate.

2. Apply an AC load; inverter comes on, fan turns and ON lamp stays illuminated.

3. Disconnect load; fan stops,inverter turns off and returns to standby. The ON lamp remains illuminated .

4. Push the power switch into the OFF position momentarily and release; the inverter shuts off completely.

5. It is not necessary to turn the inverter off when not in use. The inverter draws very little current in the standby state and is factory set to shut off automatically in 99 hours if no load is applied.

If the inverter fails any or all of the above steps, refer to "Troubleshooting," Section 3.

2.10 REMOTE CONTROL OPERATION [Optional, D05189 (4-104)]

1. Mount the Remote Control panel (w/ ON indicator lamp) in the desired location.

2. Route the remote control wire harness to the inverter location. Plug the wire harness into the REMOTE CONTROL receptacle on the inverter front panel.

3. The inverter can now be controlled with the remote switch. The remote switch has the same functions as the main power switch, ON and OFF. **NOTE: The inverter can be shut off or on from either the main power switch or the remote control at any time.**

4. All inverter front panel lamps function normally when the remote control is used.

5. The indicator lamp on the remote control switch plate functions just as the ON lamp on the inverter front panel. The lamp glows continuously when the inverter is turned ON.

2.11 INVERTER REGISTRATION CARD

IT IS EXTREMELY IMPORTANT THAT YOU FILL OUT THE REGISTRATION CARD AND RETURN IT TO DYNAMOTE SO THAT WE CAN COMMUNICATE WITH YOU AS PRODUCT UPDATES OCCUR.

Proper installation of the inverter is not complete until the warranty is properly initiated as follows:

1. Fill in all the information requested on the Warranty Registration card.
2. Mail this postage-paid card to Vanner Weldon Inc.

3.0 SERVICE AND TROUBLESHOOTING

3.1 GENERAL INFORMATION

The only reason to be in this part of the manual is because your inverter is not working properly. If you have completed the operating procedure in Section 2.9 and the inverter still does not work, continue with this section.

The easiest way to troubleshoot the inverter is while it is still installed in the vehicle or boat. It can also be tested with a stand-alone battery. **DO NOT ATTEMPT TO RUN THE INVERTER DIRECTLY FROM A POWER SUPPLY OR BATTERY CHARGER.**

Only the simplest of tools and instruments are required for 90% of the problems you may encounter with your inverter. You will need:

1. A Volt/Ohm Meter (VOM)
2. Socket wrenches
3. A slotted screw driver

The remaining 10% of the possible problems are often intermittent or less obvious and require more sophisticated instruments and technical expertise to solve. This kind of capability can be found at the Vanner factory and major warranty and repair centers around the country. **IF THE PROBLEM CANNOT BE SOLVED USING THE TROUBLESHOOTING SECTION, CALL THE VANNER WELDON SERVICE CENTER** (614-771-2718). Before calling, determine and record for easy reference the following information:

1. Model number and serial number of the unit.
2. Type and rated wattage of AC load.
3. DC voltage at the battery.
4. AC voltage at inverter receptacle.
5. Length and size (gauge) of harness cable.

3.2 TROUBLESHOOTING PROCEDURE

The method used in the manual for troubleshooting is a collection of flow charts. The flow charts contain a series of questions to be answered. Each flow chart addresses a specific symptom you may experience and the corrective action required.

To use the Troubleshooting Flow Chart (Section 3.4) simply go to the Symptom List (Section 3.3) and pick the symptom that most closely matches the problem you are experiencing. The symptom box will direct you to the appropriate flow chart. Start at the top of each chart and answer the question that is asked. Depending on your response, the chart will direct you to the appropriate solution.

3.3 SYMPTOM LIST

SYMPTOM #1

Inverter ON lamp does not light after pressing the ON-OFF/RESET button to the ON position. Inverter will not run loads. No other lights are on.

→ GO TO PAGE 17

SYMPTOM #2

Inverter ON lamp lights but load will not run when connected to the AC receptacle and turned on. No other lamps light.

→ GO TO PAGE 18

SYMPTOM #3

Inverter OVERLOAD lamp lights when a load is applied.

→ GO TO PAGE 19

SYMPTOM #4

Inverter BATTERY LOW lamp lights when a load is applied or after a load has been running for a short period of time.

→ GO TO PAGE 20

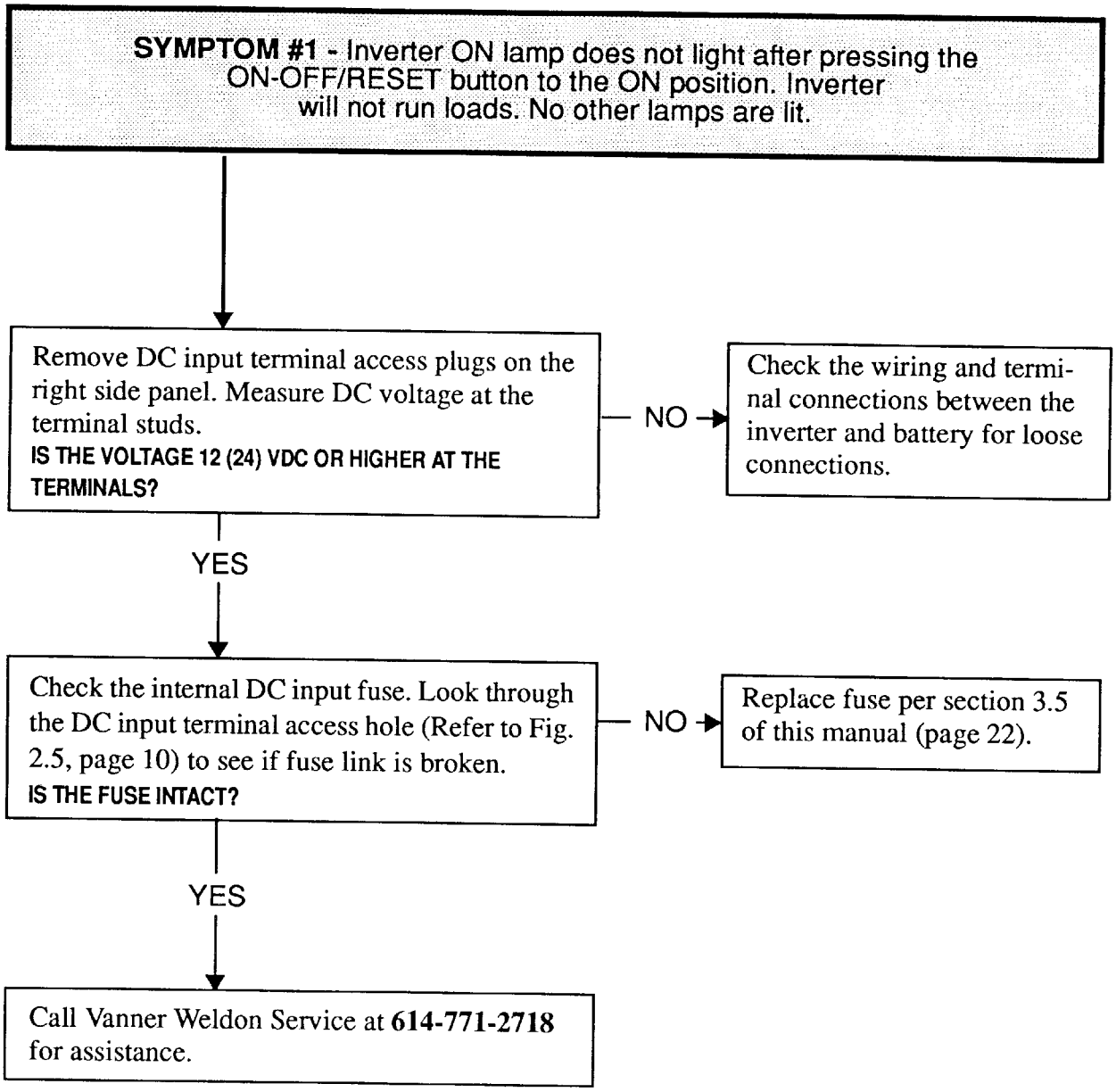
SYMPTOM #5

Inverter OVERTEMP lamp lights when inverter has been running for a period of time.

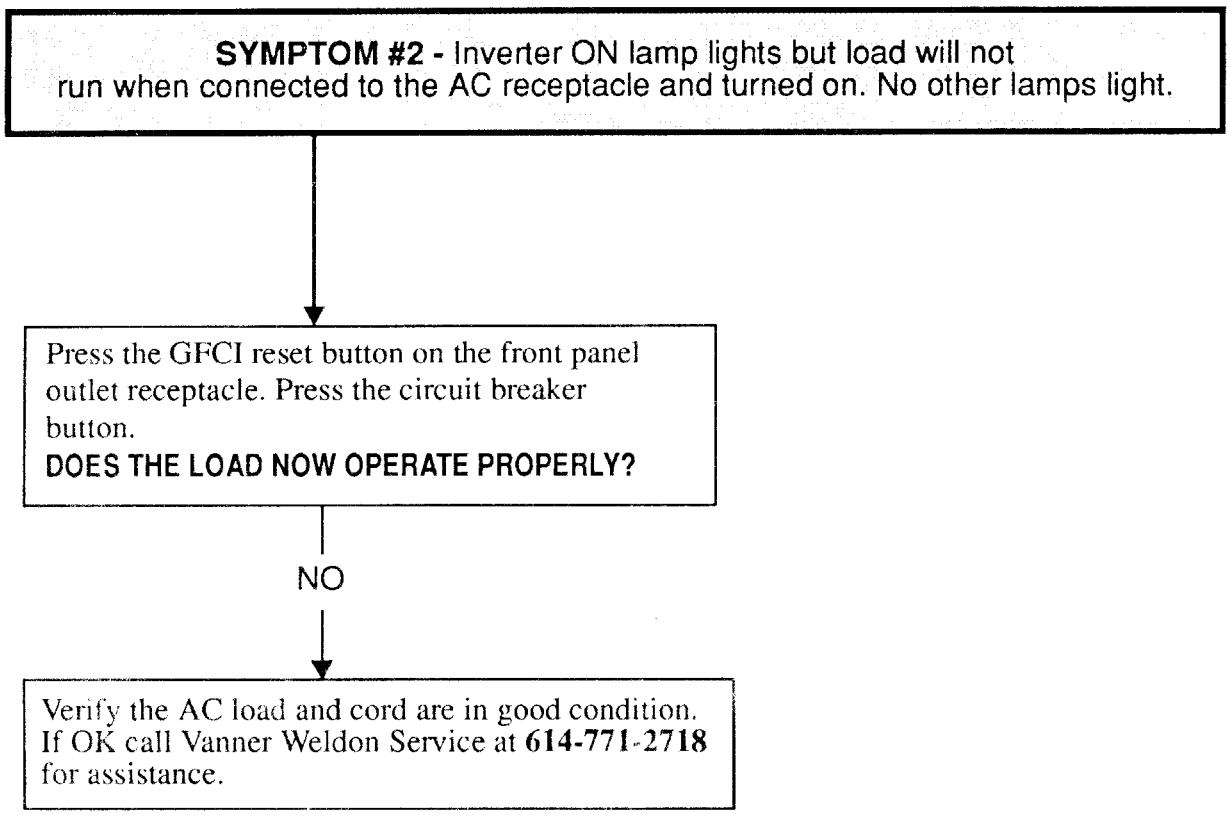
→ GO TO PAGE 21

If your symptom does not appear above call Vanner Weldon Service at 614-771-2718 for assistance

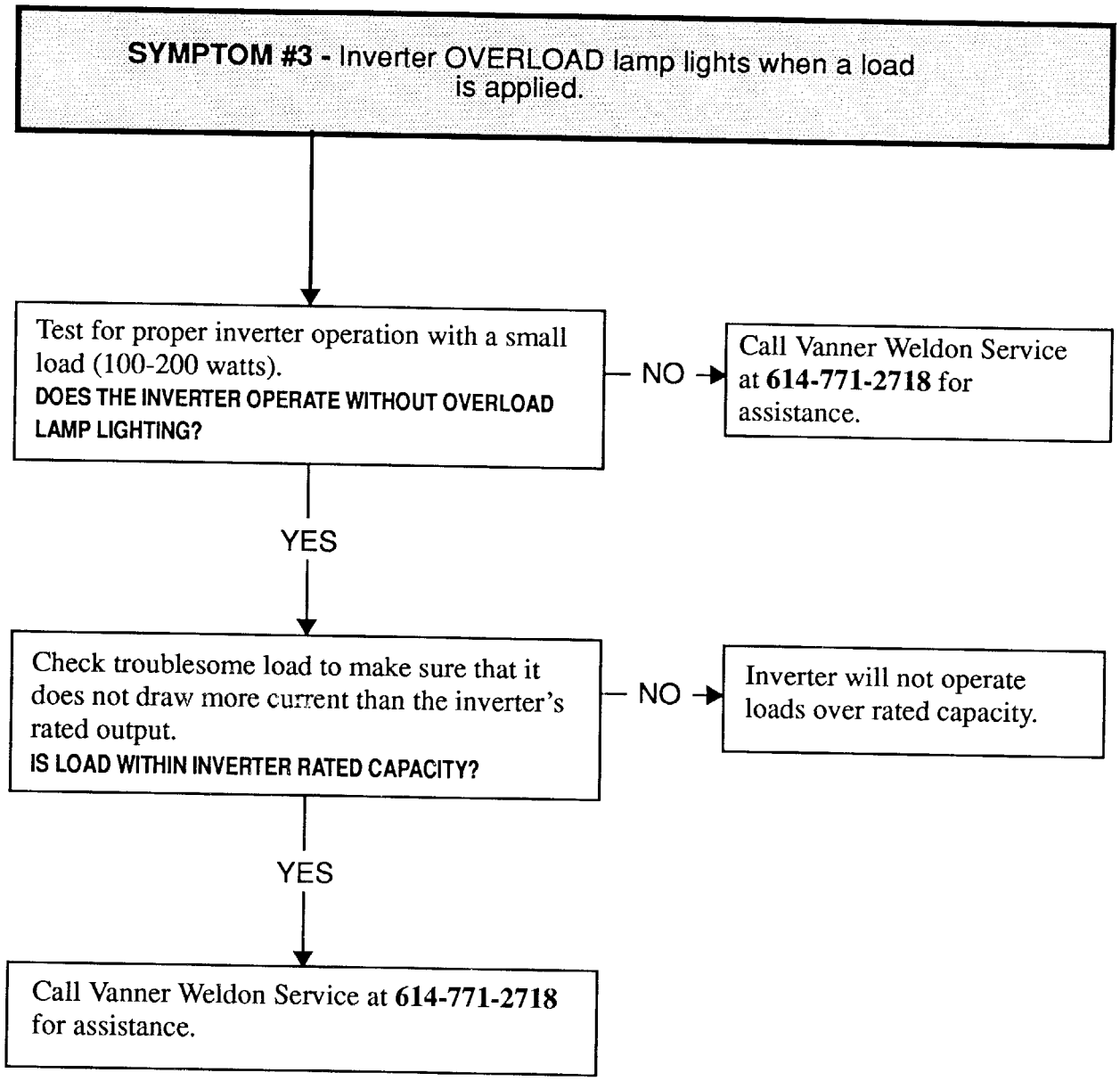
3.4 TROUBLESHOOTING FLOW CHART



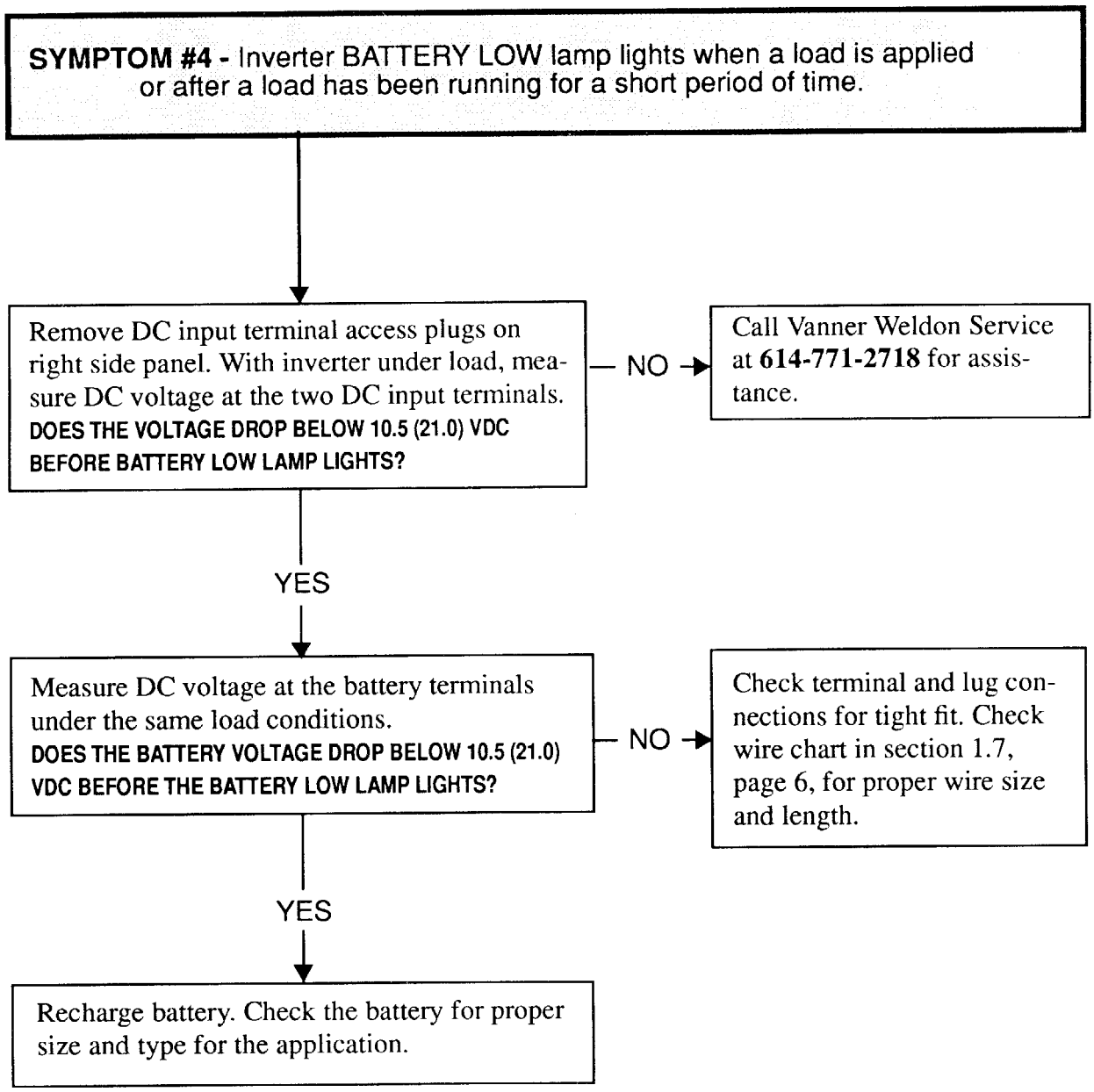
3.4 TROUBLESHOOTING FLOW CHART (cont).



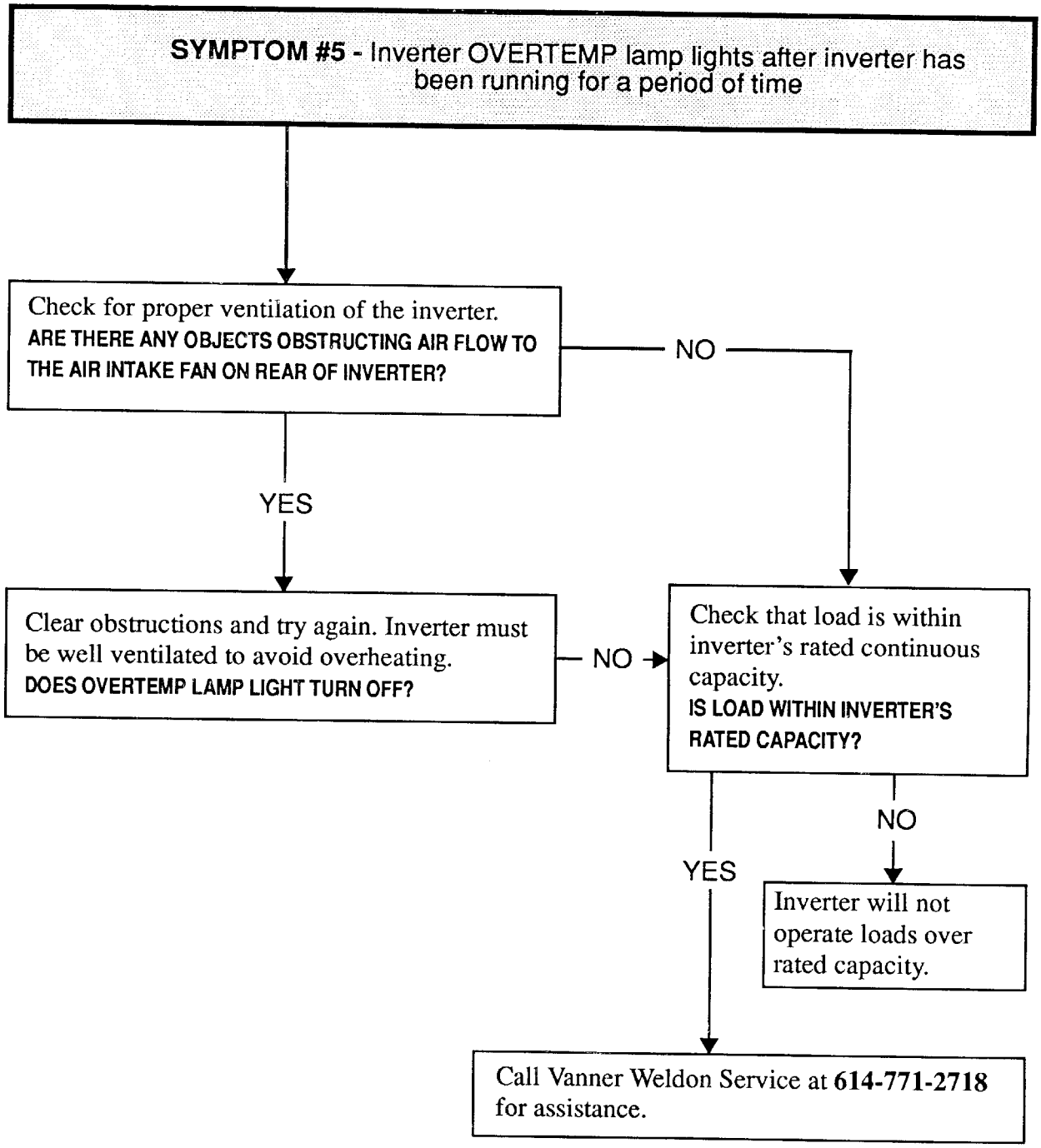
3.4 TROUBLESHOOTING FLOW CHART (cont)



3.4 TROUBLESHOOTING FLOW CHART (cont)



3.4 TROUBLESHOOTING FLOW CHART (cont)



3.5 DC INPUT FUSE REPLACEMENT

1. Disconnect inverter battery cables at the battery.
2. Remove the ten chassis bolts (4 on top, 3 on each side) securing the inverter top panel to the chassis.
3. Remove the two access plugs from the right side of unit.
4. Slide cover up and off chassis.
5. Locate fuse near (+) positive DC input terminal (see Fig. 2.5). Remove blown fuse by loosening the lock nuts and sliding the fuse link off the threaded studs (see Fig. 3.1).
6. Replace fuse with same type and rating (See Parts List in Section 4). Tighten the lock nuts.
7. Replace cover, install plugs and secure all bolts.
8. Connect inverter cables to battery.

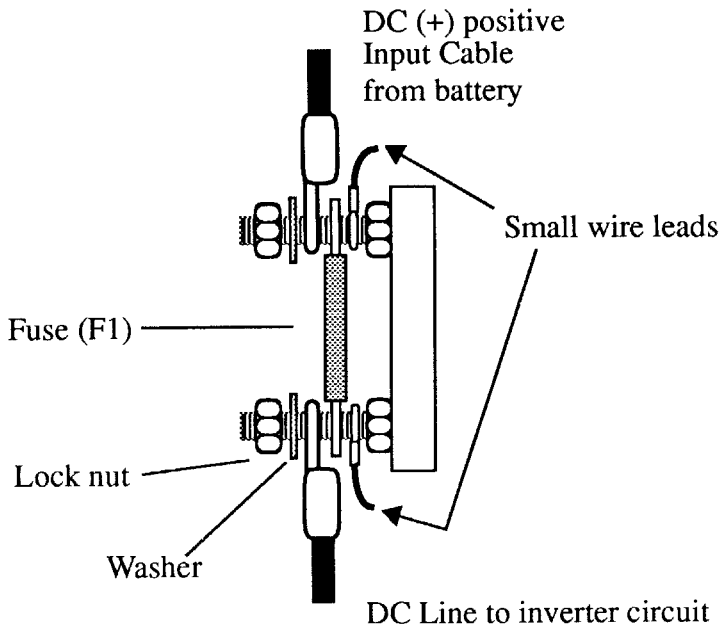


Figure 3.1 - DC Input Fuse Replacement