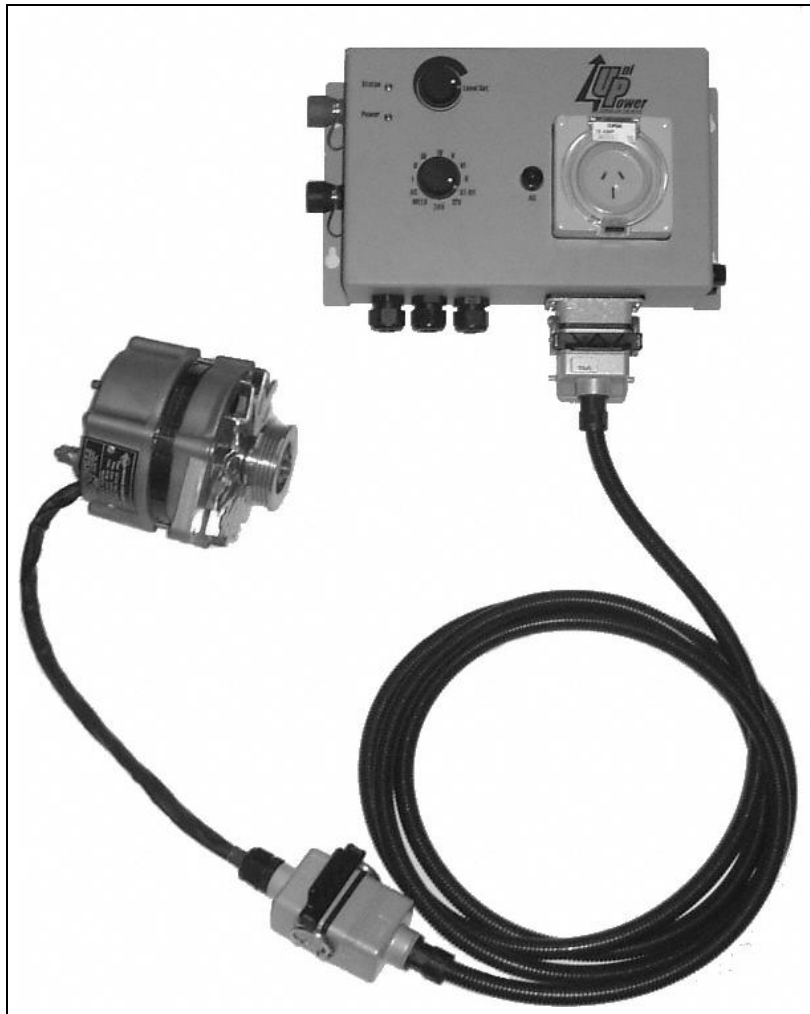


UNIPOWER 3500

(BC Model)

INSTRUCTION MANUAL



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HEALTH AND SAFETY

It is important that this Instruction Manual is read carefully and the instructions complied with, particularly in the conscientious applications of safety precautions.

This equipment may be classified, for health and safety reasons as Electrical, Electro-Mechanical, or Mechanical.

All products are type checked to the specification given in the current instruction manual or leaflet and, when used for normal or prescribed applications within the parameters of the specification, will not cause damage or hazard to health and safety, provided that due regard is given to the Warning and Caution Notices and that normal engineering/safety practices are observed.

IMPORTANT NOTICE

The UNIPOWER 3500 can only be installed by an accredited factory installer. On completion of the installation all final testing and commissioning of the UNIPOWER 3500 must be undertaken under the supervision of a licensed electrician

Electrical Precautions

1. Care must be taken to ensure that all power cables especially those connected to the auxiliary (110/240v) output sockets, are maintained in good condition. Connectors must be well insulated and watertight. All cables must be regularly inspected for chafing and splitting.
2. Do not allow the auxiliary supply or battery cables to lie in oil, water or any corrosive liquid.
3. Any plugs or sockets which are used for auxiliary output connections or interconnections must conform to local standards.
4. If auxiliary power extension cables are used, ensure that the interconnections are waterproof and secure. Also ensure that the cable cores are of sufficient cross-sectional area with respect to the length of cable and current being drawn.

Safety Precautions

1. Ear protection must always be worn where engine/appliance noise levels are high.
2. Eye protection should always be worn when using power tools.

GENERAL SPECIFICATIONS

Control Module Layout

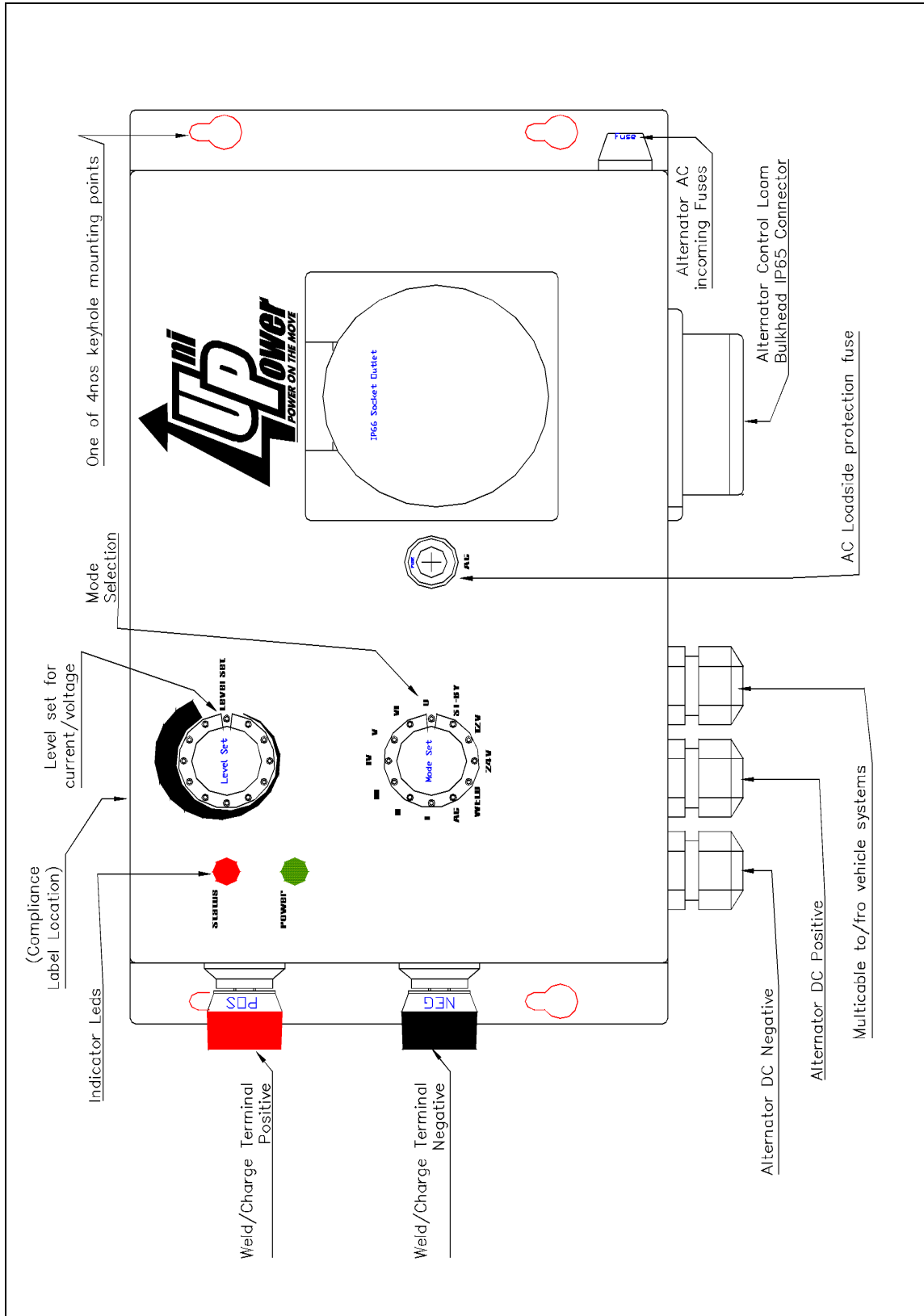


Figure 1: Map of the UNIPOWER 3500 Control Module

240 (110) Volts Sinewave AC Power Generation

In the 'AC' mode, the UNIPOWER 3500 produces 240(110)V of AC power at 50 (50/60) Hz or cycles per second. The maximum output capacity of the UNIPOWER 3500 at any time is governed by the speed of rotation of the engine (ie engine rpm). If the engine rpm is below a permissible level to sustain a connected load at 240(110)V the red "Status" LED indicator will fast flash to indicate that the rpm needs to be increased or the connected AC load needs to be reduced.

Battery Charging

The system is a fully automatic voltage regulated battery charger which can be used to charge either 12 or 24 volt batteries.

Duty Cycle - 100%

The UNIPOWER 3500 is designed so that it can operate continuously under full load. ie up to either:-

- 3500 Watts at 230 (110) volts auxiliary power,
- 80 amps of 12 volts battery charging,
- 80 amps of 24 volts battery charging.

Voltage Regulation

Voltage regulation is achieved via a smart microprocessor that responds quickly to changes in load. This ensures that the correct voltage is always supplied to the appliance (auxiliary power) or to the batteries when regulated battery charging is selected.

Over Current Protection

The auxiliary AC power circuit is protected against accidental overload by the incorporation of a current limiting system which limits the current drawn to the maximum available output of the UNIPOWER 3500, regardless of the overload applied. Fuses, located at the right hand side of the Control Module (refer Table 2) are also placed in the supply lines from the alternator to provide further protection.

UNIPOWER 3500 AC Output Voltage	RATING OF 3AB Ceramic Filled Fast Blow Glass Fuses
220-250VAC	15A/250VAC
110-120VAC	20A/120VAC or 20A/250VAC

Table 1: Fuse table for alternator AC fuse protection on Control Module

AC load side protection is monitored and managed by one of the two microprocessors; in addition to a 15A/250V (ceramic/sand filled glass fuse) fastblow fuse mounted at the front of the Control Module.

240 (110)V AC Earth Leakage Protection

The control enclosure and alternator when fitted and operated in accordance with the manufacturer's specifications, is built to comply with AS2790, and is therefore not electrically bound to earth or ground. No ELCB (Earth Leakage Circuit Breaker) or RCD (Residual Current Device) should be fitted or used in conjunction with the AC output from this unit.

If in doubt, please contact the manufacturer.

Fail Safe Protection

The system will shut down if the regulator should fail, thereby protecting the alternator, control module and applied load.

In the event of an abnormally low supply (control) battery voltage, the control will shut the system down and no output will be produced from the unit or the alternator; this is indicated by the loss of the green "Power" LED indicator and a slow flash of the red "Status" LED indicator.

When this happens reset the selector switch to ST-BY to charge the supply (control) battery for a short duration and then resume the previous operation if required.

RATINGS

AC Power Generation

Output Voltage :	230 (110)V at 50 (60)Hz (Voltage regulation -10%max, efficiency 88% @ 25°C ambient)
Maximum Cont. Output :	3500W (3.5kVA at unity power factor)
Type :	Low T.H.D Sinewave Output.

Battery Charging

Fully automatic battery charging

Electronic voltage & charge rate regulation.

Continous output

12V Charge Position- up to 80 amps at 14.3V @8,000 alternator rpm

24V Charge Position- up to 80 amps at 27.4V @8,000 alternator rpm

INSTALLATION

Before installing your new UNIPOWER 3500, please read these installation instructions carefully.

It is advisable that you have the following tools to complete the installation satisfactorily:-

- Electric drill and drill bits
- Medium screwdriver/ Phillips screwdriver
- Self-tapping screws for solenoid
- Tension Bar
- Crimping tool/pliers
- Set of 1/2" drive sockets

1.0 Mounting the Control Module

1. Select suitable location for Control Module ensuring that:-
 - i) The cables will reach the alternator.
 - ii) The module location is protected from flooding.
 - iii) There is sufficient access for the operator to have uninterrupted vision and gain full access to the unit.

As the Control Module is rated to IP65 (when all connections are secured in place) it can be mounted outside of the vehicle. However, care should be taken to ensure that the proposed location for mounting of the Control Module will be free from damage due to inadvertent impact, excessive heat, severe vibration and potential theft or vandalism.

2. Mount the Control Module as illustrated by fig. 2. Do not obstruct the back of the Module, as the rear surfaces have been designed to be cooled by air convection currents.

DANGER!

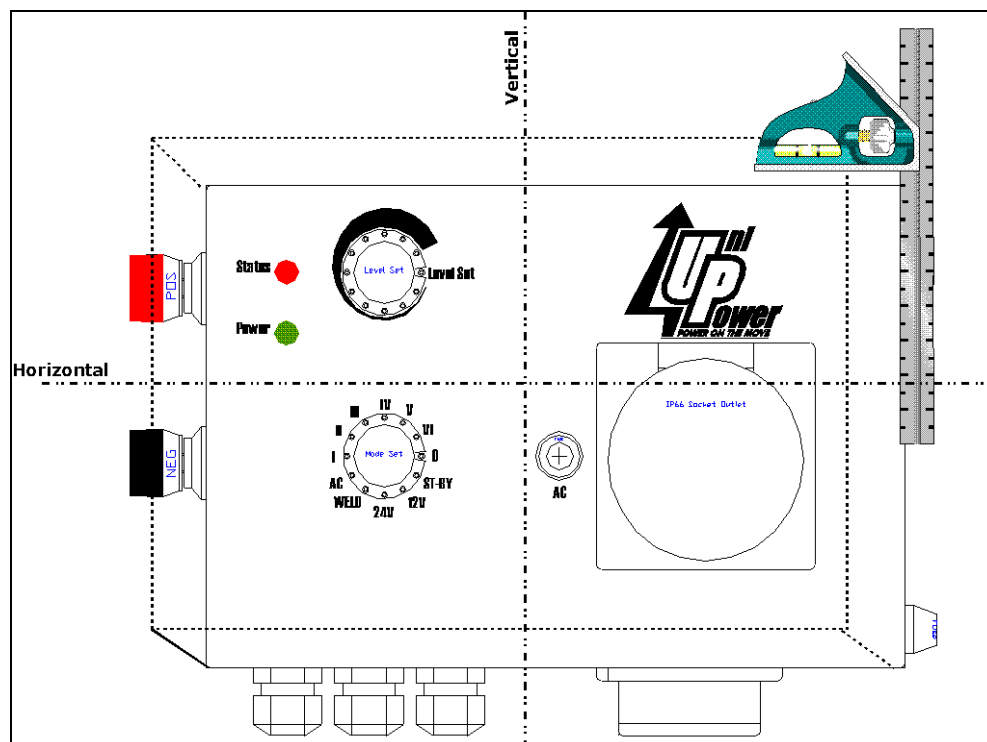
DO NOT DRILL into the Control Module, as this will breach its seal or IP rating.

3. Connect the alternator leads (positive and negative) and alternator control loom supplied to the module as illustrated by fig 3 or fig. 4.

CAUTION

All cabling and its associated installation is to be performed in accordance with AS2790, AS3100 and AS1966. If in doubt consult your UNI-POWER dealer or the manufacturer.

Figure 2: How to mount the Control Module



2.0 Mounting the Solenoid

Only mount the solenoid when the vehicle's alternator is to be replaced with the UNIPOWER 3500 alternator OR if the UNIPOWER 3500 is to be used for battery charging when in the "ST-BY" position.

1. Mount the solenoid in a suitable location adjacent to the battery, away from direct heat and vibration from the engine.
2. The heavy gauge red cable (4 B & S) bolts to the UNIPOWER 3500 alternator B+ terminal, while the other end on the solenoid is connected to the battery to be charged. See fig 3.

NOTICE TO INSTALLER

The Control Module has been factory preset to allow the unit to charge either a 12V or a 24V-battery system as illustrated by fig. 3. The factory preset charging voltage is clearly marked on Compliance Label found at the top side of the Control Module. Check that the solenoid to be installed matches the table found in fig 3.

3.0 Fitting the Alternator

1. There are two methods of fitting the alternator: -

- A) *When space and fitting are constrained:*
Replace the existing alternator with an UNIPOWER 3500 alternator,
- B) *This is the preferred method:*
Add the UNIPOWER 3500 alternator as a "slave", i.e. two alternators,

Note: Optimum open circuit voltage is reached at 8000 alternator rpm. The pulley ratio should be selected with this in mind.

A. Replacing the existing alternator with a UNIPOWER 3500 alternator. (Refer to fig. 3 for wiring layout)

- i) Disconnect the battery terminals (earth terminal first) to prevent accidental shorting of wires during installation.
- ii) Before removing the old alternator, ascertain which wire when disconnected from the rear of the alternator turns off the Charge Warning Light. Having found the correct wire, this should be marked as it must be connected to the yellow wire from the Control Module as illustrated in fig. 3.

Note: If your vehicle does not have Charge (Alternator) Warning Light, see 4.0 Installing a Charge Warning Light, page 15

- iii) Remove the existing alternator and disconnect the wires.

Note: Your UNIPOWER 3500 module has a built-in regulator so the existing one will not be required.

- iv) Store the old alternator as you may wish to refit it prior to selling your vehicle later.
- v) A 1 mm spacer washer is fitted between the split pulley, with a further two washers (2 and 3 mm) being fitted to the outside of the pulley. These can be adjusted to suit various belt sections. Please ensure when inserting between the pulley halves that the belt doesn't "bottom" on the pulley, as this will cause the belt to slip and wear.
- vi) Install the UNIPOWER 3500 alternator, ensuring that the pulleys are perfectly aligned. Failure to do this will cause excessive belt wear and premature failure. (See 6.0 Drive Belts, page 15)
- vii) Connect the white wire from the Control Module to one of the small terminals (M5) on the solenoid. An earth wire should then be run from the other small terminal to the vehicle chassis using minimum 4 mm auto wire (1.84 mm², 75° C PVC multi-stranded conductor).

- viii) Connect the yellow wire from the Control Module to the wire which you earlier marked from the Charge Warning Light.

Note: Some modern electronic dash ignition lights are not compatible with the UNIPOWER 3500 circuit and consequently a separate light may need to be installed.

- ix) The brown wire from the Control Module must be connected to a suitable ignition supply - *not the ignition coil*. Ensure that when the ignition key is turned "ON" there is a voltage supply and when the key is in any other position there is no voltage at all.

Note: Incorrect termination of the brown wire will cause the vehicle's battery to continually lose its charge.

Info on additional wires : *The green wire (Auto AC engine solenoid activation) and red wire (Spare) are for optional features that can be programmed and setup for your Control Module. Consult the dealer you purchased your unit from for further information on your specific requirements.*

- x) Connect the orange heavy cable (4 B & S marked 'DC +') from the Control Module to the B+ terminal on the alternator and the other orange heavy cable (4 B & S marked 'DC -') to the D- connection on the alternator
- xi) Connect the thick cable (generally 5 or 6 mm auto cable) which was originally connected to the B+ terminal on the old alternator, to the remaining large (M8) terminal on the solenoid. The other end of this thick cable (generally 5 or 6 mm auto cable), should remain connected to your battery + terminal.
- xii) The other large terminal on the solenoid should be connected to the B+ terminal of the UNIPOWER 3500 alternator, as previously explained in section 2.0 Mounting the Solenoid.
- xiii) Connect the alternator connector to the alternator loom connector as shown in fig. 3. and fig. 4.

Note: In the event that this connector requires to be removed from the alternator control loom. The Connector Wiring Reference Table found in fig. 7, page 16; will assist in reconnecting the wires correctly. It is imperative that the seal rings and gland arrangement be replaced as received from the factory; in order to protect the IP ratings of the conduit and connector housings(IP65).

- xiv) Reconnect the battery terminals and install the throttle cable as outlined in 5.0 Hand Throttle Installation on page 15.

B. Adding the alternator as a "slave" unit. (Refer to fig. 4 and fig. 5. for wiring layout)

- i) Mount the alternator in any convenient location attached to an existing alternator bracket or to the engine block. Either way it is essential that the pulleys are aligned and spaced correctly as previously advised in 3.A. (v) and (vi).

In practice where a vehicle is fitted with a diesel engine and the original alternator is fitted with a vacuum pump for servo brake assistance, the UNIPOWER 3500 alternator can only be installed as an additional alternator and may be operated in parallel with the existing unit.

Where a vehicle has two batteries, one battery can be connected to each of the alternators AND/OR the use of a battery changeover switch (available from Hella and Cole-Hershee) could be use to control how each of these batteries are charged or discharged.

- ii) In the event that the UNIPOWER 3500 is to be setup as **NOT** being require to providing battery charging in the "ST-BY" position, refer to fig. 4., for the wiring configuration.
- iii) In the event that the UNIPOWER 3500 is to be setup to enable battery charging in the "ST-BY" position, refer to figure 4., for the wiring configuration. Proceed as per 3. A (i), (v), (vi), (vii), (viii), (ix), (x), (xi), (xii), (xiii) and (xiv).

Note: A new Charge Warning Light may require to be fitted. Refer to 4.0 Installing a new Charge Warning Light on page 15.

Figure 3: UNIPOWER 3500 setup to enable vehicle battery charging

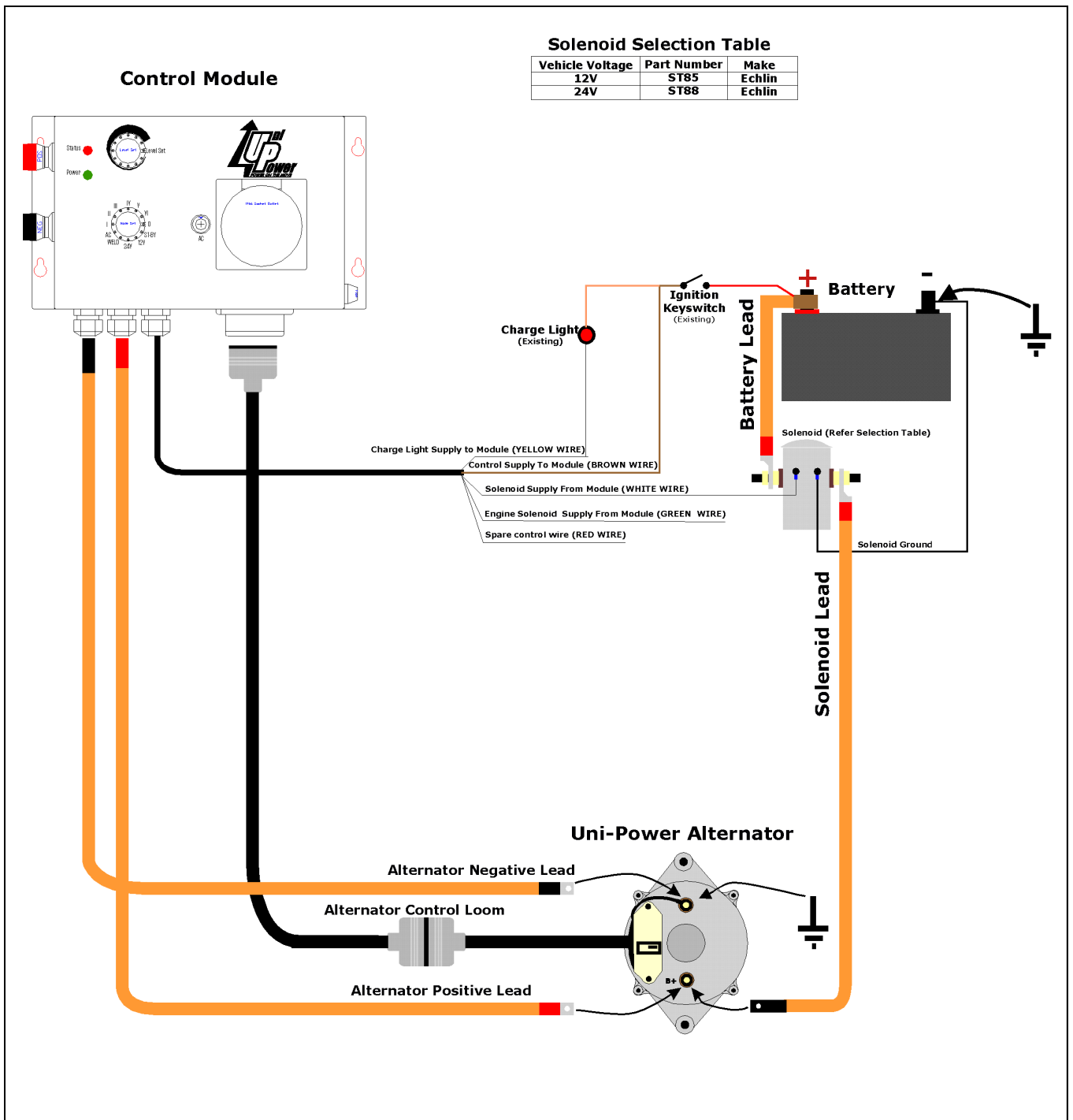


Figure 4: UNIPOWER 3500 setup that does not require vehicle battery to be charged

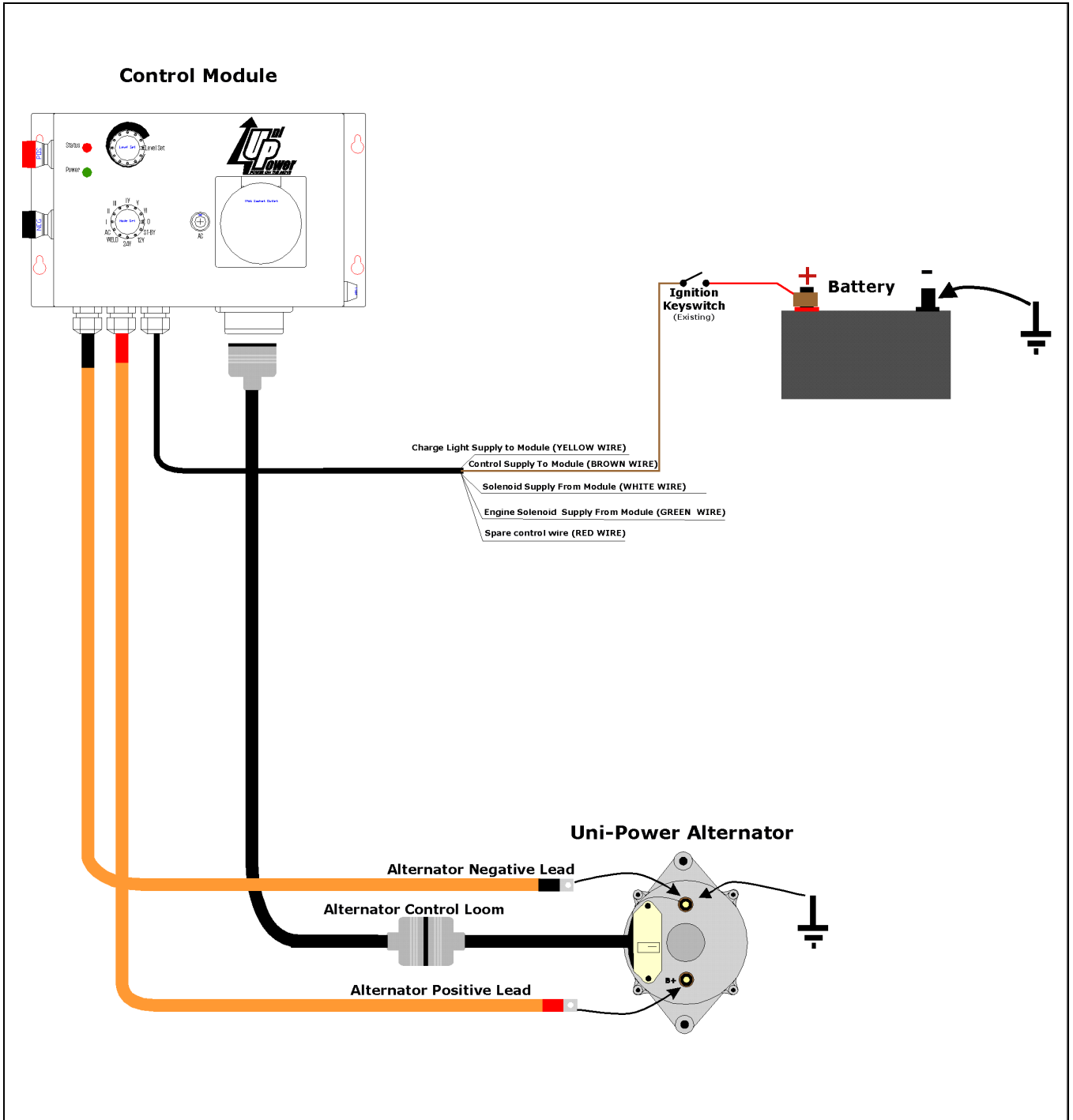
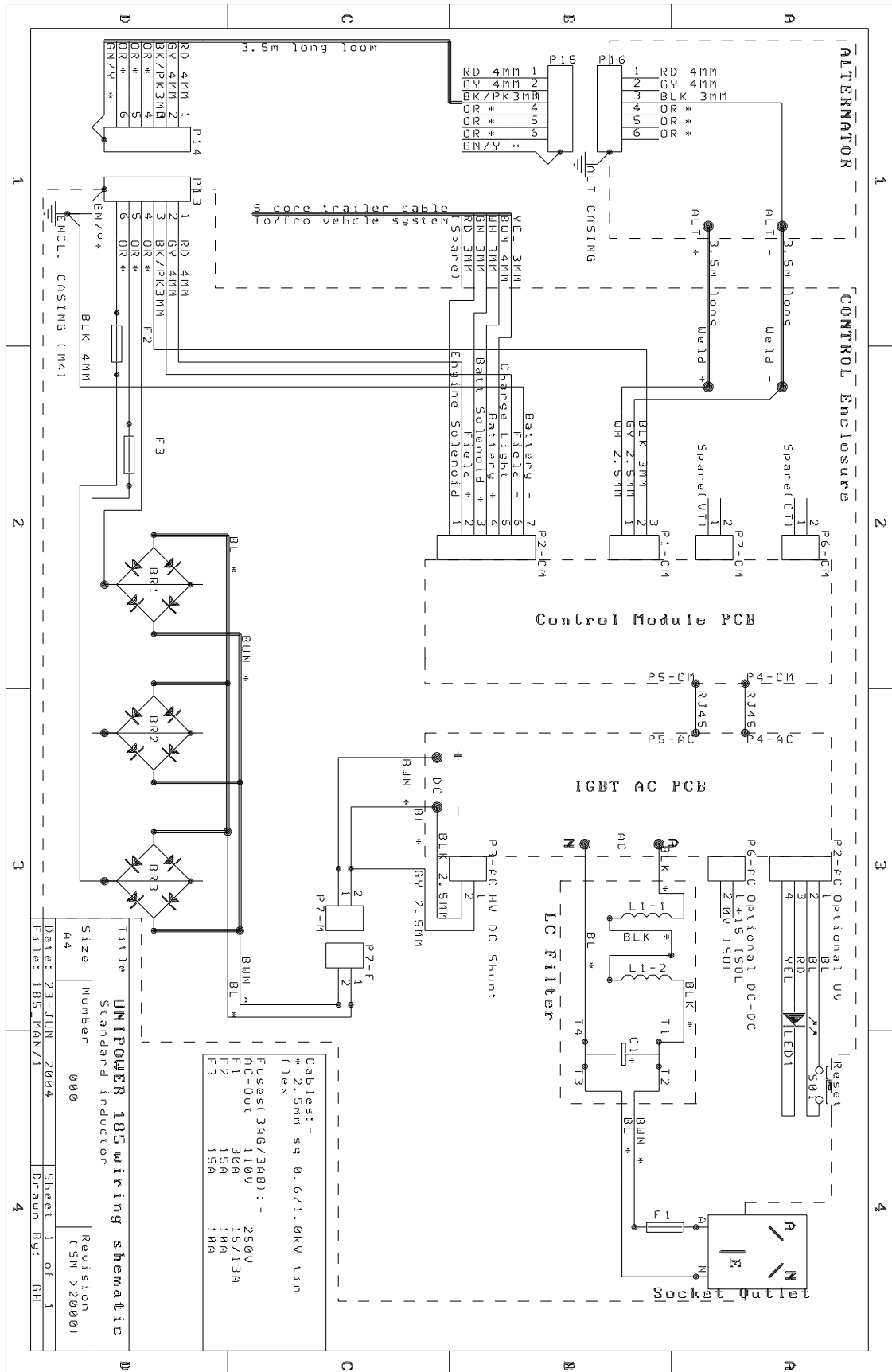


Figure 5: Schematic Wiring Diagram for the Unipower 3500



4.0 Installing a Charge (Alternator) Warning Light. (optional)

1. Obtain and fit a suitable dashboard light.
2. Connect one terminal to the same connection as the brown wire (ignition switch) and the other to the yellow wire (spade terminal) - see figure 6 below.

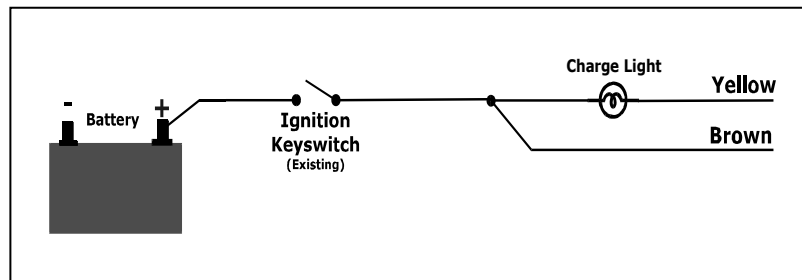


Figure 6: Connection schematic for new Charge Warning Light

3. Turn on the ignition key without starting the engine. The light should illuminate.
4. Start the engine and gently increase the revs. The Charge Warning Light should extinguish to indicate that the alternator is charging the battery.

Note: To positively ascertain that the UNIPOWER 3500 alternator is charging the battery, when the Control Module is in the "ST-BY" position, measure the voltage across the battery terminals, using a multimeter, before and after the engine is started. The measured values should correspond to the following table 3.

Table 2: Normal charging voltage levels

Vehicle battery voltage	Reading of battery voltage before starting engine in volts DC	Reading of battery voltage while engine is running in volts DC
12V system	11.0-13.8**	13.4-14.3
24V system	22.0-27.4**	27.4-29.0

** Subject to the state and condition of the battery

5.0 Hand Throttle Installation. (optional)

(For vehicles that do not have an existing hand throttle)

1. Select a suitable location for the hand throttle control. It is recommended that the hand throttle (control mechanism) be mounted adjacent the ignition key switch on the driver's side of the vehicle.

Note: Care should be taken to ensure that the installation of the hand throttle does not interfere in any way with the normal driving and safe operation of the vehicle.

2. Install the control mechanism and connect the cable to the fuel lever (increases or decreases fuel quantity):
 - i) Ensure the cable is the correct length.
 - ii) Ensure there are no sharp bends in the cable.
 - iii) It is important that there is sufficient leverage at the point of contact of the cable to the fuel lever. At least 4-5 cm should be allowed from the fulcrum (pivot) point.
 - iv) The hole through which the inner cable passes should be at least 3.5 mm in diameter to ensure the normal operation of the linkage when driving.

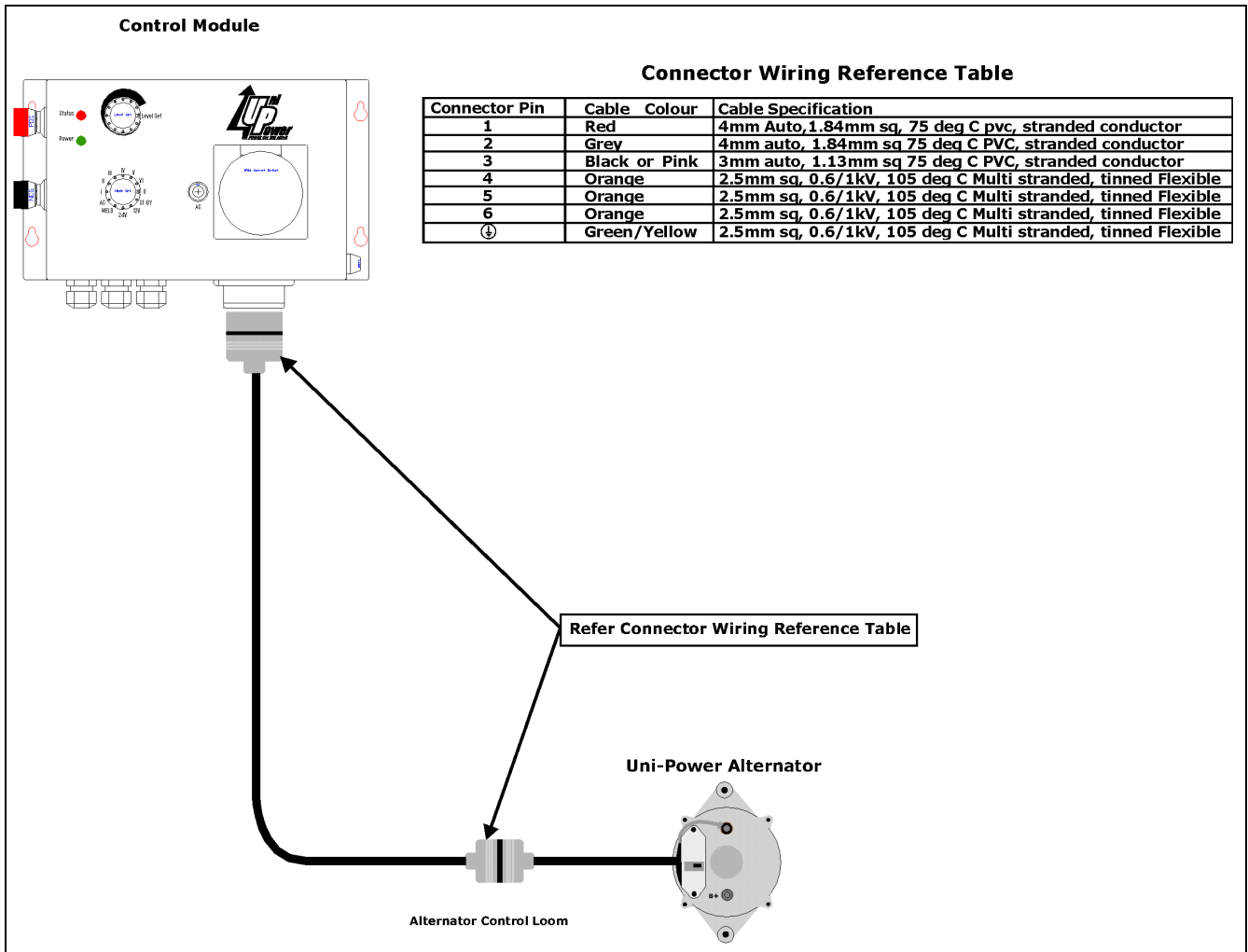
6.0 Drive Belt(s)

The UNIPOWER 3500 alternator under full load is capable of peak transmission loads of upto 5 kW (7 Hp). It is essential that only high quality belt(s) be used and tensioned sufficiently to prevent slippage. There should be very little "give" when the belt is flexed by hand.

We strongly recommend a reinforced raw edge belt (as produced by Dayco or Gates) as their traction characteristics are superior to normal belts.

After installation, check the belt tension regularly.

Figure 7: Connector Wiring Reference Table



7.0 Engine Solenoid Installation.(optional Auto AC)

(For systems optioned or programmed for Automatic engine speed control upon sensing of an AC load))

1. Select a suitable location for the engine solenoid. It is recommended that the vehicle manufacturer be consulted for the appropriate type/make and model of solenoid prior to installation.

Note: Care should be taken to ensure that the installation of the solenoid does not interfere in any way with the normal driving and safe operation of the vehicle.

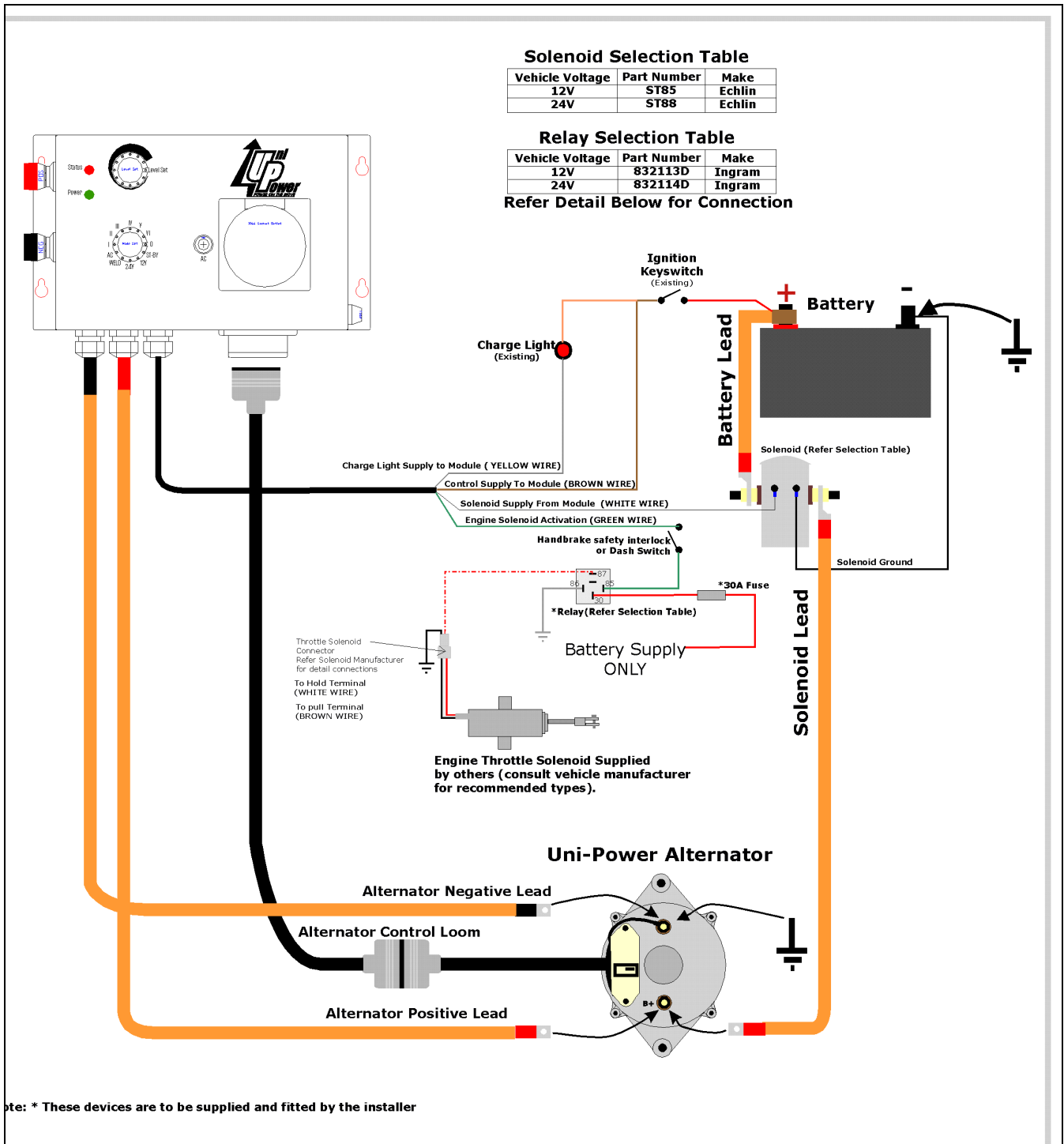
Safety: To ensure that the engine solenoid does not energise in the driving mode a park or handbrake interlock can be wired into the activation line per fig.8 and fig.9

2. Install the control mechanism and connect the cable to the fuel lever (increases or decreases fuel quantity):
 - Ensure the cable is the correct length.
 - Ensure there are no sharp bends in the cable.
 - It is important that there is sufficient leverage at the point of contact of the cable to the fuel lever. At least 4-5 cm should be allowed from the fulcrum (pivot) point.
 - The hole through which the inner cable passes should be at least 3.5 mm in diameter to ensure the normal operation of the linkage when driving.
3. Refer to fig. 8 and fig.9 for how to interface the engine solenoid with the Control Module.
 - The green wire from the control module is to be use to activate the solenoid relay only. **IT MUST NOT BE USED TO DIRECTLY ACTIVATE THE SOLENOID**, as some solenoids require as much as 30A to energise the pull coil.
 - Ensure that when the solenoid is de-energised that there is no tension being exerted on the fuel rack or lever.
 - Setup the high idle of the solenoid (energised position) to correspond with an alternator rpm as follows:

5800 Alternator RPM > High Idle Setting > 6800 Alternator RPM

- Test the unit for correct operation and safety per AC Auto operation found on page 23.

Figure 8: Engine Solenoid setup for AC Auto Mode, if fitted. Schematic shows setup configuration for systems WITH battery charging in the "ST-BY" Mode



RELAY DETAIL

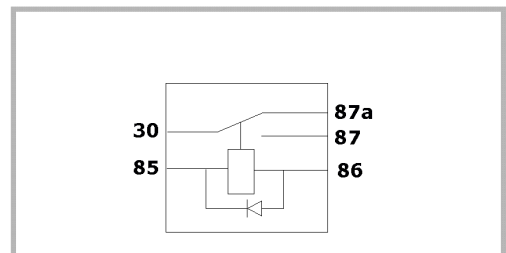
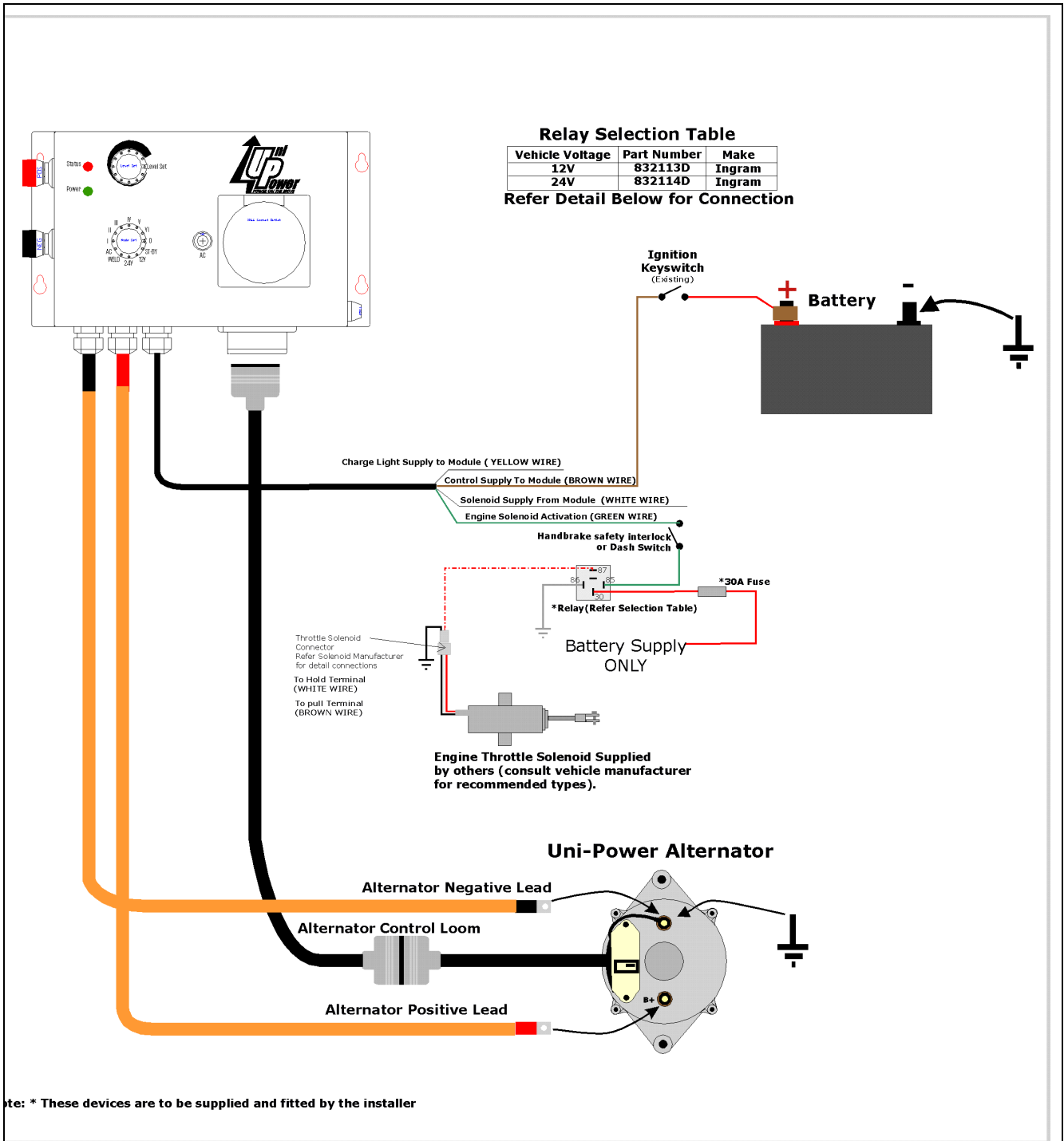
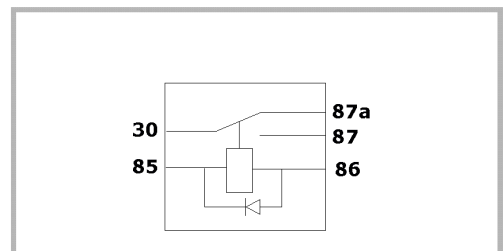


Figure 9: Engine Solenoid setup for AC Auto Mode, if fitted. Schematic shows setup configuration for systems WITHOUT battery charging in the "ST-BY" Mode



RELAY DETAIL



OPERATION

Engine speed

Recommended engine speed setting

APPLICATION	1750rpm	2000rpm	2250rpm	2500rpm	2750rpm	3000rpm
240(110)V AC Power	500-1750 Watts			1750-3500 Watts		
12V Battery Charging	Recommended			Recommended		
24V Battery Charging	Recommended			Recommended		
12V Jump Starting to 80 Amps	Recommended			Recommended		
24V Jump Starting to 80 Amps	Recommended			Recommended		

Table 3: Recommended engine speed setting based on application

The above table can be use as a guide in helping you to understand how to set your engine speed. Simply put, more engine speed will be required for heavy duty applications e.g. starting a single phase motor and less engine speed will be required for light duty applications e.g. powering up a 60W fluroscent lamp.

The above recommendations are based on a minimum pulley ratio of 2.5 [The ratio of the diameter of the engine drive pulley TO the diameter of the alternator pulley (55mm dia.)]

In general, the larger the pulley ratio the lower the engine speed will be required to accomplish the given task. And, the smaller the pulley ratio the higher the engine speed will be required to accomplish the same task.

240(110)V AC Power

1. Ensure that the appliance or accessory to be operated does not exceed the maximum output capacity of the UNIPOWER 3500 ie 3500W or 3.5kVA
2. Ensure that the selector switch is in the "AC" position.
3. Start the engine.
4. Open the hand throttle and adjust the engine rpm for correct operation of the appliance in use, i.e. if less than maximum power is needed, the engine rpm can be reduced to match the load without affecting the operation of the appliance. This reduces fuel consumption and wear and tear on the prime mover (engine).
5. Before plugging in the appliance or accessory to be operated, check that the "Power" Led is illuminated.

If the engine rpm is too low the "Status" Led will fast flash. To rectify this situation, raise the engine speed accordingly.

6. Plug in appliance or accessory to be operated and commence operation.

The "Power" and "Status" Leds activate on the following fault conditions and can be identified as follows:

- Near maximum power for corresponding rpm range or rpm below corresponding level. "Status" Led flashes intermittently.
- Control supply battery voltage extremely low and shutdown imminent. "Power" Led flashes intermittently until it goes off and the "Status" Led slow flashes.

When this occurs return the mode switch to the "ST-BY" position and recharge the battery for a few minutes.

7. Upon completion of operation, throttle down to idle, return selector switch on the UNIPOWER 3500 to "ST-BY" or "0". Disconnect or unplug the appliance plug from the socket.
8. Turn off the engine if desired.

OPERATION TIP: Lights and flickering

When using the UNIPOWER 3500 to power-up incandescent and/or fluroscent lights: Flickering of the lights may indicate that the engine speed could be reduced to improve engine fuel economy

OPERATION TIP: Switching on capacitive loads

When using the UNIPOWER 3500 to power-up capacitive loads, a small time delay from switching ON to starting may be experienced: Increase the engine speed for quicker starting of capacitive loads

PERIODIC SAFETY INSPECTION:

To ensure safe and reliable operation of the above equipment an annual inspection by a licensed electrician or factory accredited service centre is recommended.

External Battery Charging

(Refer to figure 10 for illustrations)

1. Turn the selector switch to the correct voltage position:

Position "12V" to boost charge or jump start a 12 volt vehicle system OR
Position "24V" to boost charge or jump start a 24 volt vehicle system

WARNING !!

Do not attempt to charge a 12V battery in the 24V mode. Overcharging may cause the battery electrolyte to boil violently and cause an explosion

2. Connect the appropriate jumper leads to the respective negative terminal of the battery to be charged, negative (black) terminal and positive (red) terminal of the UNIPOWER 3500.

AT THIS STAGE: Do not connect anything to the positive terminal of the battery to be charged.

3. Start engine
4. Adjust or set the Hand throttle to the appropriate engine rpm.

SAFETY CHECK #1

Always double check that the positive of the battery to be charged is connected to the lead connected to the positive (red) module terminal and that the negative of the battery to be charged is connected to the lead connected to the negative (black) module terminal

SAFETY CHECK #2

Preform Safety Check #1 once again

WARNING !!

Failure to adhere to the above safety checks can result in the damage to the battery or vehicle system under charge

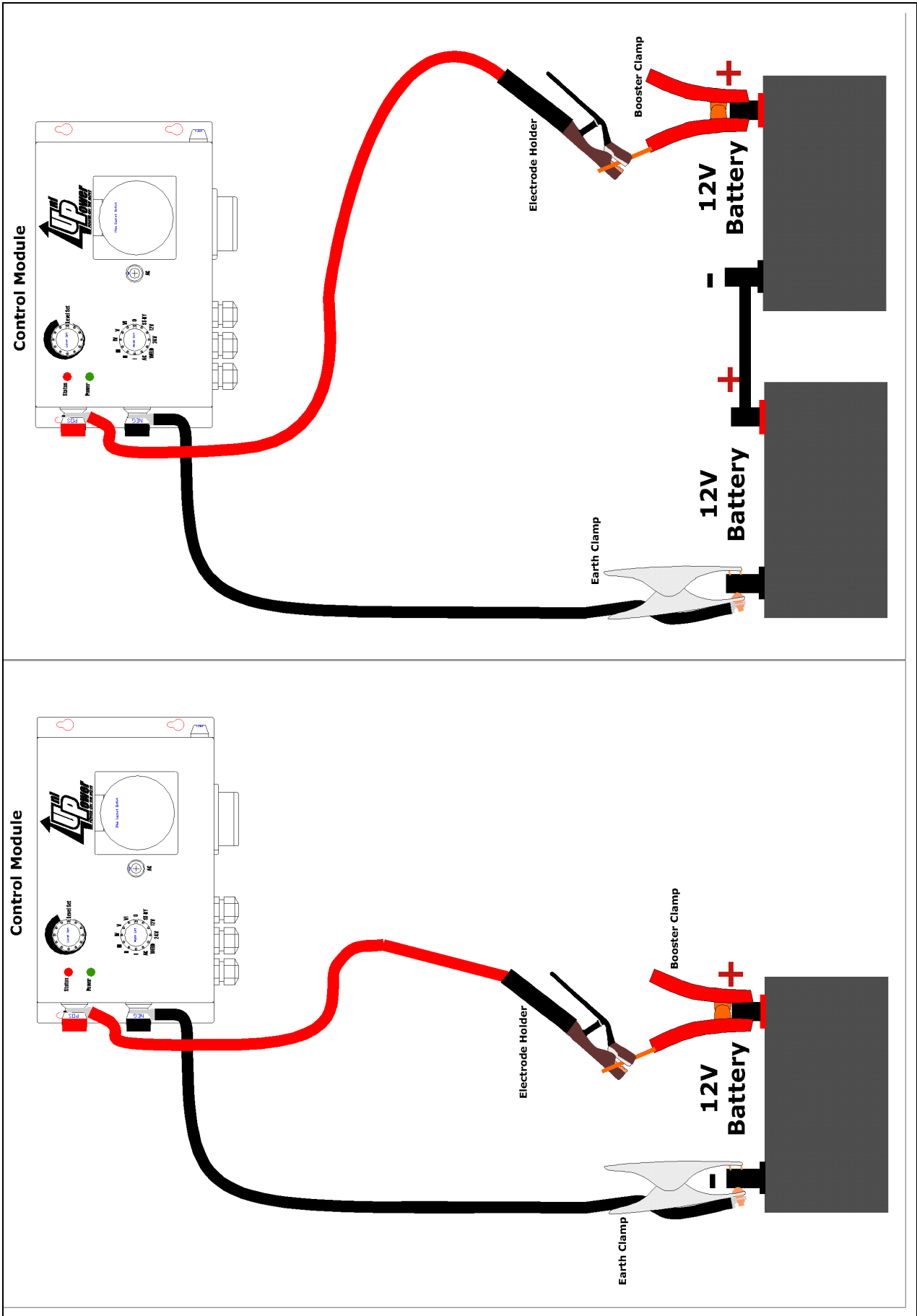
5. Carefully, yet quickly clamp the jumper lead onto the positive terminal of the battery to be charged.

The UNIPOWER 3500 will now supply a regulated charge which will vary depending on the state and size of the battery under charge.

If you are attempting to "Jump Start" another vehicle in this manner; it would be advisable to allow the UNIPOWER 3500 to boost recharge the battery of the vehicle proposed to be "Jump Started" for several minutes. This will allow the "flat" battery an opportunity to recharge and may ensure that the vehicle does not continue to stop soon after it has been "Jump Started".

6. Normally, a 10 minute charge should be sufficient to start an engine. With the battery still connected; "test start" the engine after 2-3 minutes. If the engine cannot be started, continue to charge the battery for a further 5-8 minutes, and try again.
7. When Charging is complete, remove the positive connection to the battery. Throttle down to idle, return selector switch on the UNIPOWER 3500 to "ST-BY" or "0".
8. Switch engine off and remove all jumper (charging) leads connected to the UNIPOWER 3500.

Figure 10: External Battery Charging for a 12V and 24V System (shown with Unipower Weld Lead Set)



External Variable Battery Charging (Optional feature, if fitted)

(Refer to figure 10 as a guide for connecting battery charging leads)

1. Turn the selector switch to the position programmed for Variable Battery Charging (refer to the Compliance Label found at the top of the Control Module). It will indicate the roman numeral that corresponds to this mode, if fitted.

Set the "Level Set" to the voltage that corresponds to the nominated charging voltage that the battery or set of batteries will need for charging.

Tip: Minimum is 4~8V dc, with each increase in the "Level Set" producing an approximate 6V dc increment in charging voltage. Maximum charging voltage the unit will output at 8,000 alternator rpm is 40V dc. A dc voltmeter or multimeter may be required to confirm the charge voltage setting as well as the state of the battery to be charged.

WARNING !!

Overcharging may cause the battery electrolyte to boil violently and cause an explosion. Consult the battery manufacturer for their optimum or recommended charging voltages for their make/model of battery.

2. Connect the appropriate jumper leads to the respective negative terminal of the battery to be charged, negative (black) terminal and positive (red) terminal of the UNIPOWER 3500.

AT THIS STAGE: Do not connect anything to the positive terminal of the battery to be charged.

3. Start engine
4. Adjust or set the Hand throttle to the appropriate engine rpm.

SAFETY CHECK #1

Always double check that the positive of the battery to be charged is connected to the lead connected to the positive (red) module terminal and that the negative of the battery to be charged is connected to the lead connected to the negative (black) module terminal

SAFETY CHECK #2

Preform Safety Check #1 once again

WARNING !!

Failure to adhere to the above safety checks can result in the damage to the battery or vehicle system under charge

5. Carefully, yet quickly clamp the jumper lead onto the positive terminal of the battery to be charged.
The UNIPOWER 3500 will now supply a regulated charge which will vary depending on the state and size of the battery under charge.
6. When Charging is complete, remove the positive connection to the battery.
Throttle down to idle, return selector switch on the UNIPOWER 3500 to "ST-BY" or "0".
7. Switch engine off and remove all jumper (charging) leads connected to the UNIPOWER 3500.

AC Auto (Optional feature, if fitted)

1. In this mode the engine high idle speed is preset by the activation of a solenoid controlling the engine fuel lever. Prior to switching to this mode, refer to the section on page 19 and 20 for correct operation.
2. Before starting the engine, ensure that the hand brake is securely fastened or pulled and that the gear shift is in a neutral or parked position (for automatic vehicles). Then start the engine.

Caution: The activation of the engine solenoid is interlocked for safety with the hand brake via a relay. This is to ensure that the unit is not inadvertently operated in this mode whilst the vehicle is being normally driven.

Turn the selector switch to the position programmed for AC Auto (refer to the Compliance Label found at the top of the Control Module). It will indicate the roman numeral that corresponds to this mode, if fitted. The engine will automatically be raised to the predetermined rpm.

3. Upon completion of AC operation, throttle down to normal low idle, return selector switch on the UNIPOWER 3500 to "ST-BY" or "0". Switch engine off and remove all power leads connected to the UNIPOWER 3500.

MAINTENANCE

Monthly Maintenance

1. Check all battery and electrical cables for signs of fraying, cracking or general deterioration.
2. Check the jumper lead clamps for damage. Replace any suspect parts.
3. Ensure that the control box is secure by checking the mounting feet (rear) and the castle nuts that hold the front panel in place.
4. Clean the exterior only of the control module with DRY compressed air.
5. Check drive belt tension, this should be 45kgf(100 lbs) or approximately 1/4 " deflection when depressed.
6. Replace belt if necessary.

Annual Maintenance

1. Remove and clean alternator.
2. Check bearings and brushes for wear, replace if necessary.
3. Check for damage to terminal connections or electrical wiring.

Statement Of Warranty FOR UNIPOWER 3500

LIMITED WARRANTY: Uni-Power International Pty Ltd (Uni-Power) warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within one year or 2,000 operation hours (whichever occurs first), from the date of purchase by the end user, Uni-Power shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Uni-Power's specifications, instructions, and recommendations and standard industry practices, and not otherwise subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement at Uni-Power's sole option, of any components or parts of the product determined by Uni-Power to be defective.

LIMITATION OF LIABILITY: Uni-Power shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchase or replacement goods, or claims of customers of the Purchaser or his appointed agent for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Uni-Power with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Uni-Power whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not except as expressly provided herein, exceed the price of the goods upon which such liability is based.

No transportation costs of any kind are covered under this warranty. Transportation charges to send products to an authorised warranty repair/service centre shall be the responsibility of the customer. All returned goods shall be at the customer's risk and expense.

Each and every claim for warranty should and must be accompanied by a Fault Report detailing the occurrence and severity (if known) of the fault condition. The Fault Report must also contain the appropriate model number and serial numbers of the product/s in concern.

EXCLUSIONS

Normal wear and tear items viz.:

- Alternator carbon brushes
- Alternator pulley
- Battery cables and associated accessories forming part of this assembly e.g. electrode holder and earth clamp

Transport costs to and from the service centre are at the customer's risk and expense and accordingly the customer/s should arrange the appropriate insurance cover.