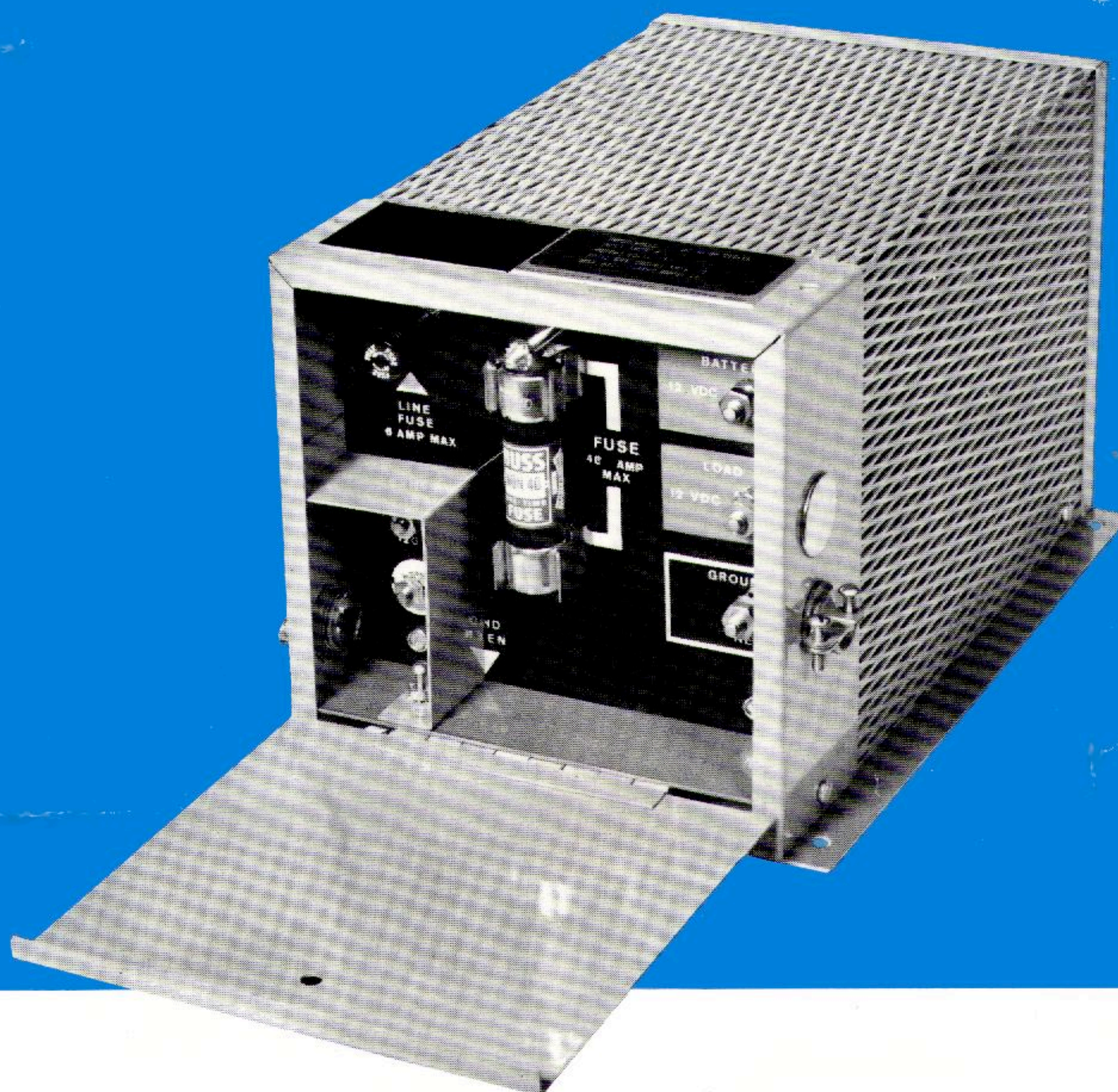


UNIVOLT

POWER SUPPLY & *automatic* BATTERY CHARGER

*Travel tested over a million miles
and proved to give you worry-
free power for "home style"
comfort on the open road.*



Whether you're a veteran traveler or starting your outdoor adventures for the first time, you'll get more travel enjoyment with minimum power worries with a U/V.

WHAT IS A UNIVOLT?

U/V is a high output, compact, solid state DC Power Supply and **automatic** Battery Charger in a completely sealed "Rolls Royce" style package. You'll find too, that U/V is easier on you, because there are no switches, relays, timers or adjustments

for you to worry about. Once installed, U/V will give you years of operation without attention... other than possibly replacing a fuse or two.

WHAT'S A UNIVOLT FOR?

When travel trailers were in their infancy, the original idea was to merely put a house on wheels. This worked pretty well as long as stoves and lights were kerosene and people didn't have to go too far away from civilization.



But, people started adding more convenience appliances. They really wanted a house away from home. And, like a house, they ran on standard 110 VAC. Which is all right as long as you have AC, and it's constant.

But what do you do with no AC?

Why not be like a car or truck? Their accessories all run on low voltage DC.

So, the idea of "self contained" travel started. That means running lights and electrical appliances away from an AC source... just like the lights, cigarette lighter and radio in your car... off the battery.

Most cars have a 12 Volt battery. The trailer or camper has a 12 Volt battery. Both are charged from the car generator... as long as you're driving. And while you're in a park, you use AC. Fine. But that takes double wiring (AC-DC)... dual light fixtures (AC-DC)... Universal (AC-DC) motors for fans, pumps, etc. That gets rather expensive.

What about an all 12 Volt DC system? There are plenty of 12 V appliances around. Why not start a trend?

Great. How do you power a 12 V system? Well, with a special converter for when you're "plugged in", to change the AC to DC. Then off in the country everything runs off the battery.

Makes sense. But how do you keep that battery all charged up and ready to go?

Buy a battery charger to use in the park.

That's pretty good. But how do you know **when** your battery needs charging, and how do you keep it from overcharging?

Well, you can figure it'll need charging if you've used the trailer. But how much is another thing. You'd better buy some other measuring equipment. And you have to watch chargers pretty carefully, because there are relays, switches, timers, and a whole lot of adjustments that have to be made for variations in line voltage.

Wait a minute. That's pretty complicated, especially when the idea was to make travel easy. Wouldn't it be better if:

- 1—you had a DC system for use away from an AC hook-up... and could run your lights, heater, water pump, radio, TV and what not off of the 12 Volt battery in your car and trailer?
- 2—you could still use AC while in parks to give you all the DC power for your system... and charge the battery at the same time?
- 3—you could get this done fast, automatically, and without overcharging a battery ever?

Right. It would. And that's what U/V is all about. 12 VDC power for a 12 V DC system... plus an **automatic**, worry-free battery charger... with a two year guarantee!

HOW UNIVOLT WORKS

U/V plugs into any 110-120 VAC source. Inside the unit are two circuits that work independently of each other.

One — the Load Circuit — is connected to the distribution panel and supplies power for all low voltage appliances, water pumps, blowers, forced air heaters, lights, etc.

The other — the Charger Circuit — uses a unique voltage "sensing" circuit which operates according to the needs of the battery. When charging is required, the "sensor" allows electricity to flow to the battery until a full charge is reached. The "sensor" then makes a 100% shut-off and stays off, until the battery charge level drops below the shut-off voltage.

With this fully automatic unit, battery overcharging is impossible.

Also, if you should happen to need more total amps at one time, the U/V "senses" the need, and lets the battery help supply the increase... up to 40 amps with the U/V 25, and 60 amps with the U/V 40.

U/V is so fast, it will fully charge the standard automotive battery in 4 to 10 hours. And you can charge more than one battery, in parallel, at a time (not quite as fast, of course).

All circuitry is protected from damage by internal devices or fuses. All fuses are standard automotive or industrial and can be purchased at service stations or hardware stores.

As an additional safety factor, U/V is protected against reverse polarity (accidental wrong hook-up to the battery). Should this occur, there is absolutely no danger of damage to your U/V, battery or person. A fuse merely is blown and the U/V stops operating. Simply make the correction and replace the fuse.

Another U/V exclusive. In winter travel, it's sometimes a good idea to remove the battery in extremely cold weather. No problem. The U/V still operates from the AC hook-up.

SPECIFICATIONS	UNIVOLT 25	UNIVOLT 40
Input Volts:	120 AC — 60 Cycles	120 AC — 60 Cycles
Input Amps:	6	8
Output Volts:	13.5 DC (nominal)	13.5 DC (nominal)
Total Max. Output Amps	25 Resistive Load	40 Resistive Load
Max. Batt. Charge Amps	12*	20*
Charge Rate:	1-2 Amps 25 Amp Load	8-10 Amps 40.Amp Load
Dimensions:	7" x 7" x 12"	7" x 7" x 12"
Weight (less carton)	26 lbs.	30 lbs.

* Under extreme load conditions for short periods, the small unit can deliver up to 60 amps and the large unit up to 80 amps.

This is done in the following way. When the battery is in good condition and fully charged in the small unit, a maximum of 35 amps may be drawn from the battery and added to the 25 amps from the unit. In the large unit, a maximum of 40 amps may be drawn from the battery and added to the 40 amps from the unit.

This surge condition normally occurs only when all appliances are activated at the same time.

If this high rate should continue for more than a few minutes, the battery capacity, of course, decreases and lowers the power reserves.



INSTALLATION

We recommend that the largest wire mentioned in the following instructions be used.

Bolt unit base down only, and in a well ventilated area with 6" minimum clearance on all sides. Completely enclosed areas must have at least a 5" x 5" opening for ventilation. Air circulation gives the unit greater reliability and increases its life. Warranty void if ventilation not provided.

Do not place unit under water areas, e.g. sinks, water storage tanks, etc. This eliminates the possibility of shorting due to water leaks.

HOOK-UP—HIGH VOLTAGE SIDE

Terminal lugs are provided and should be **crimped**, not soldered, to the wires.

Use #14 wire from main fuse box.

1. Remove all fuses.
2. Take the 3 lead wires to 120VAC side in small compartment in unit.
3. Hook black wire to top terminal in small box; white wire to white circled terminal; green to ground bolt at base of unit.

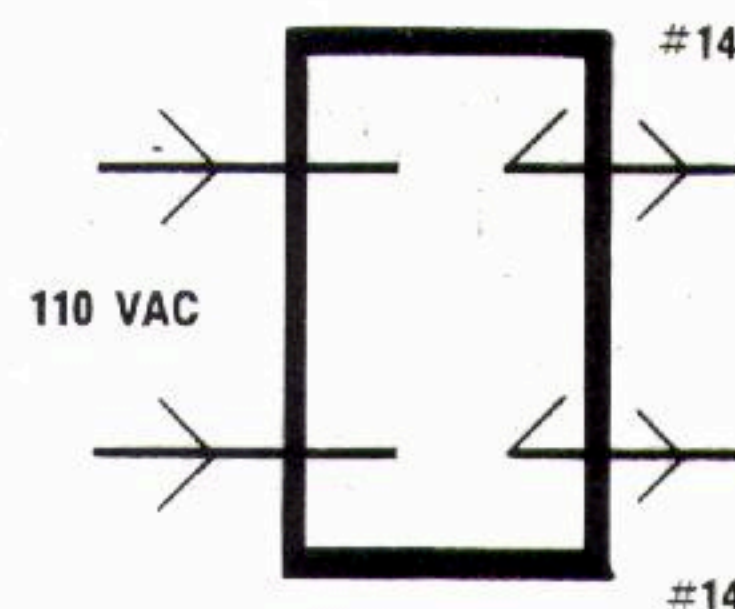
HOOK-UP—LOW VOLTAGE SIDE

Copper terminal lugs are provided with lock washers and brass nuts for attachment to: battery wire—load wire—ground wire. These should be **crimped** and not soldered.

No. 8 stranded wire is recommended.

1. **BATTERY.** Attach #8 wire from + battery terminal to breaker box/distribution panel, and from the breaker to Battery + on unit.
2. **LOAD.** Attach #8 wire to breaker box/distribution panel for lights, appliances, etc., and from the breaker to Load + on unit.
3. **GROUND.** Attach #8 negative battery wire and negative wire for all fixtures to Ground — on unit.

High Voltage
Breaker Box/
Distribution Panel



HIGH CURRENT APPLIANCES

To 12VDC pumps, compressors, heater blowers, water pumps, etc., we recommend you increase wire size (#8 or #10) to these appliances from the low voltage distribution panel. This is recommended because the larger wire size will minimize line loss and give these appliances maximum efficiency.

12 VOLT RADIO AND T.V.

Run a separate wire **directly from the battery** to these appliances. The battery will act as a filter and eliminate power supply hum that might occur through direct hook-up through the unit. Charger circuit in the unit has enough capacity to power these appliances, and the slight additional load will not harm the unit. However, **no other** loads should be attached to the battery charger circuit.

FUSES

SMALL FUSE. Use only Buss MDX 6 $\frac{1}{4}$ for small unit, or GLH-8 for large unit. If higher value fuses are used, and damage occurs, warranty is void.

Under emergency conditions only, if these fuses are not available, an automotive type AGC-7 $\frac{1}{2}$ for both units may be used. Replace with correct type of fuse as soon as possible.

LARGE FUSE. This protects the battery charging circuit. Its functions are:

1. To limit the maximum amount of current drawn from the unit to 35 amps on the small unit—40 amps on the large unit.
2. To prevent reversal of battery connection from damaging the unit.
3. To protect against damage from "dead shorts." Use only Buss type NON 35 for small unit—NON 40 for large unit.

We recommend that a box of ten fuses of both types be carried by the owner since we have found that when a shorting condition does exist, it may repeat itself several times before the problem is located and corrected.

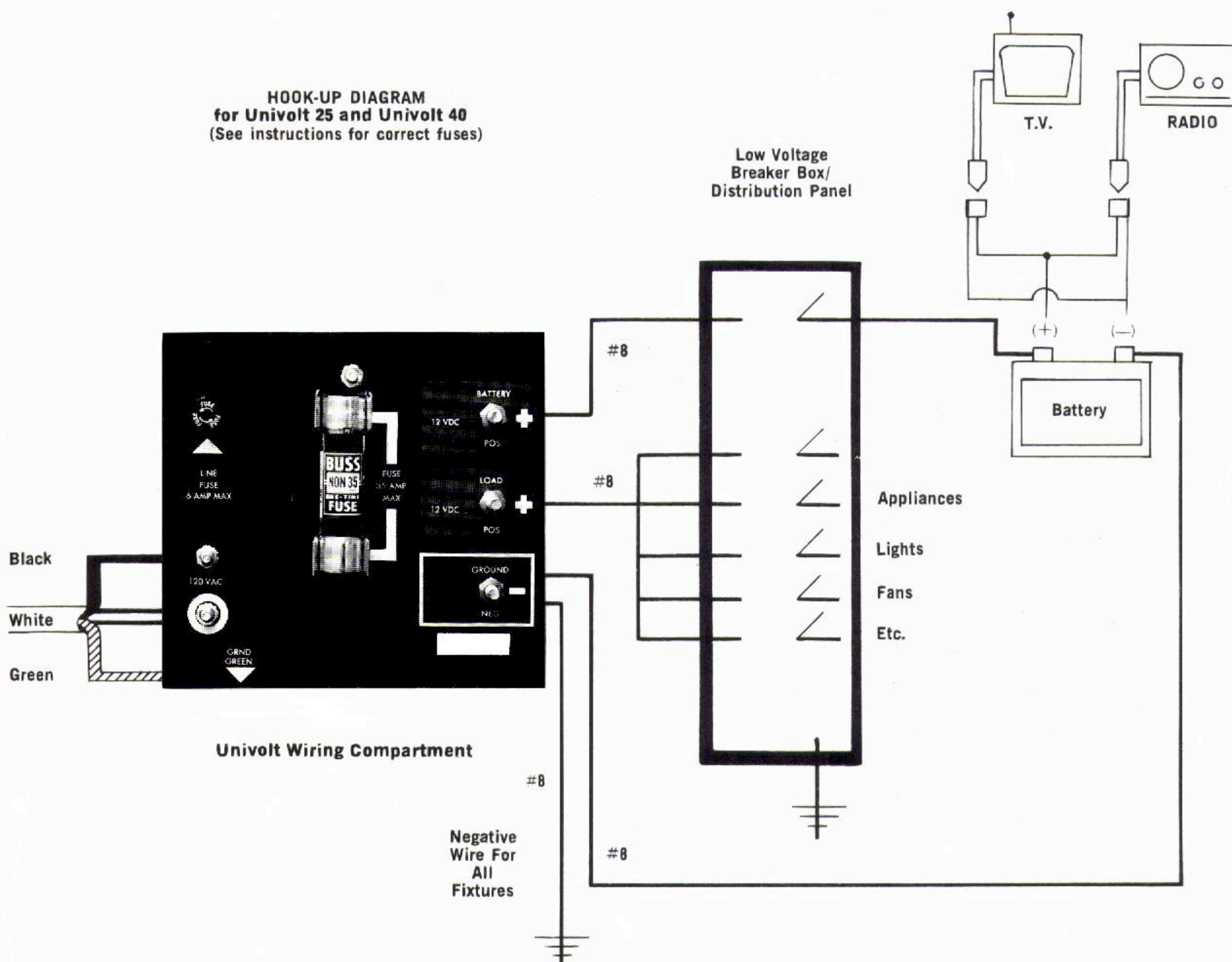
WHAT MODEL SHOULD BE USED?

If your normal (not merely intermittent) load is over 25 amps, then you should possibly consider using the larger model.

Some of the equipment and power consumption are:

EQUIPMENT	APPROX. POWER CONSUMPTION
Lights—GE #93 (12 watt)	1.04 amps/ea.
" #1141 (18 watt)	1.44 amps/ea.
" #1073 (25 watt)	1.8 amps/ea.
Heater Fan Motor	3 to 5 amps
Pump Motor	6 amps
Ceiling Fan	2 amps
Exhaust Hood Fan	2 amps

HOOK-UP DIAGRAM
for Univolt 25 and Univolt 40
(See instructions for correct fuses)



TESTING

After hook-up is completed, put back both fuses.

Plug in trailer or camper to 110V line.

If hook-up is correct, unit will immediately start to charge the battery, if needed.

TO TEST CONNECTION

1. Connect voltmeter across 110V line.
2. Check for correct line voltage—105/125 VAC.
3. Change range on voltmeter to read 12 VDC output voltage.
4. Check for approximately 14V between Common Ground and + load line with battery disconnected.
5. With battery connected and no accessories on, meter should read approximately 14.5V during charge cycle.
6. With all accessories on (25 amp max.) check for approximately 2-3V voltage drop.

HI-POT (High Potential Insulation Testing)

1. Before high potting trailer or camper, remove both fuses from unit. The unit is insulated to withstand 1500 VAC between transformer primary and chassis.
2. If short is indicated, a special hi-pot test on the unit can be made as follows:
 - a. Remove all fuses.
 - b. Connect one lead of hi-pot equipment to ground and the other to the white circle terminal in the small compartment of the unit.
 - c. Follow your normal hi-pot procedure.
 - d. These units have all been tested. Shorting will not normally be found in the unit. Should the unit be shorted, return it for immediate replacement.

WARRANTY

1. **U/V** is guaranteed unconditionally for 2 years from date of manufacture—as determined by serial number—against any defects in materials and workmanship.
2. Unit further warranted on a 5 year pro-rata basis on current retail price of units at time of repair and FOB Newmark. If unit cannot be repaired, it will be replaced with a model in production at that time. Replacement or repair will be determined by factory.
3. All work must be done in the Newmark factory. If seal is removed or broken, guarantee and warranty is void.
4. This guarantee is in lieu of all others expressed or implied, and the total limit of our responsibility is to repair or replace.

It is not necessary to file the serial number with the factory at time of purchase, as number shows exact date of manufacture.

CAUTION: Sealed unit. Warranty void if seal removed. In case of failure, read trouble shooting chart. If unit still should not function, send to factory and we will immediately exchange for a unit currently in production at that time, according to the terms of the warranty. Include name, address, City and State and Serial No. of Unit.

TROUBLE SHOOTING CHART

SYMPTOM	POSSIBLE CAUSE	REMEDY
Blown Line Fuse	1. Incorrect input line voltage (such as 230 VAC or 25 CPS).	1. Connect to 120 VAC, 60 Cycle line.
	2. Overloaded Circuit	2. Turn off switches to reduce load. Replace line fuse with proper fuse.
	3. Shorted Load.	3. Check for defective wiring, lamps or motors and repair. Replace fuse as indicated in Step 2 above.
Blown Battery Fuse	4. Shorted Battery.	4. Replace battery and battery fuse.
	5. Short in wiring between battery and U/V.	5. Replace or repair defective wiring. Replace battery fuse.
	6. Battery terminals not properly connected to U/V (+) and (-) terminals.	6. Make proper connections; positive battery terminal to U/V batt. (+) and negative batt. terminal to batt. (-). Replace battery fuse.
Dim lights or sluggish fan motor	7. Low line voltage.	7. Use line voltage of 115 VAC + 10 volts.
	8. Poor ground connection.	8. Clean contacts on fixture.
	9. 25 CPS line frequency (some foreign countries).	9. Use 60 CPS line frequency.
	10. Discharged battery (When operating without 115 VAC line).	10. Charge battery.
U/V will not charge battery	11. Input line not connected.	11. Connect input line
	12. Battery not connected. Check fuse.	12. Connect battery to U/V . Replace fuse.
	13. Bad battery.	13. Replace battery.
	14. Faulty charging circuit.	14. Check charging current to a discharged battery with no load. If no charging current is present, replace U/V .
Specific gravity of battery is too high (over 1.275)	15. Battery is low on water.	15. Add distilled water to battery.
	16. Faulty charging circuit.	16. Check charging current to battery when specific gravity is 1.275 or above. If charging current is present, replace U/V .
No load voltage (no lights, etc.)	17. Input line and/or battery is not connected.	17. Make necessary connections.
	18. Blown fuse.	18. Replace fuse.
	19. Defective U/V.	19. Replace U/V .