

# HEAVY DUTY POWER SUPPLIES

## OPERATION AND INSTALLATION INSTRUCTIONS



These instructions pertain to all models in the NEWMAR Heavy Duty Power Supply series. These products are designed to provide communication power in the harshest electrical and physical environments and have a 30 year history of demonstrated durability and reliable service under such conditions.

Typical applications include marine and land-based RF systems; oil platforms, work and crew boats, commercial shipping, recreational craft, oil patch, mining, microwave and repeater sites.

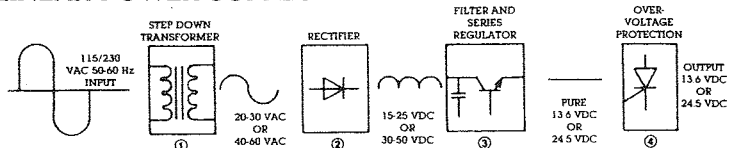
The reliable, time-tested linear circuit will withstand input voltage irregularities such as those caused by generator loading, poor grid power quality and various types of line noise. The rugged physical construction of the unit assures survival in mobile installations subject to jarring, shock and vibration.

### FEATURES

- Critical line regulation design maintains DC output voltage within 1% regardless of varying AC input voltages or changing load conditions.
- Automatic thermal overload protection prevents internal damage from high temperatures due to ambient and/or overloads.
- Low output ripple eliminates electronic noise and interference.
- Overvoltage protection prevents damage to equipment due to line spikes or component failure.
- Automatic current limiting circuit eliminates damage from shorts and output overload.
- 115/230 VAC input selector switch.
- Maintenance free solid state circuitry assures years of dependable service.
- Polyurethane coated printed circuit board resists corrosion.
- Rugged, rust and corrosion proof case of anodized aluminum with integral oversized heat sink provides convection cooling of components.
- Integral shock mounts reduce component vibration.
- All components selected for dependable performance in the most hostile environments.
- Each unit thoroughly tested and inspected before shipment.
- Two year limited warranty.

### THEORY OF OPERATION

HIGHLY REGULATED LOW RIPPLE LINEAR POWER SUPPLY



1. STEP DOWN & ISOLATE VOLTAGE
2. RECTIFY AC TO DC CURRENT
3. FILTER & REGULATE TO PURE DC AND ELIMINATE RIPPLE
4. PROTECT SENSITIVE LOADS FROM OVERVOLTAGE CONDITIONS

### NEWMAR — HEAVY DUTY POWER SUPPLIES

MODEL	13.6 VDC OUTPUT	DIMENSIONS			WEIGHT
		D	W	H	
115-12-8	8 Amps Intermittent	8.5	x 4.6	x 6.3 (inch)	10 lbs.
	5 Amps Continuous	21.6	x 11.7	x 15.2 (cm)	4.5 Kg
115-12-20A	20 Amps Intermittent	16.3	x 7.8	x 5.7 (inch)	20 lbs.
	8 Amps Continuous	41.4	x 19.8	x 14.5 (cm)	9.1 Kg
115-12-35CD	35 Amps Continuous	14.0	x 9.5	x 6.5 (inch)	32 lbs.
		35.6	x 24.1	x 16.5 (cm)	14.5Kg
	24.5 VDC OUTPUT				
115-24-10	10 Amps Intermittent	16.3	x 7.8	x 5.7 (inch)	20 lbs.
	4 Amps Continuous	41.4	x 19.8	x 14.5 (cm)	9.1 Kg
115-24-18CD	18 Amps Continuous	14.0	x 9.5	x 6.5 (inch)	32 lbs.
		35.6	x 24.1	x 16.5 (cm)	14.5 Kg
115-24-35CD	35 Amps Continuous	18.75	x 13.0	x 6.5 (inch)	60 lbs.
		47.6	x 33	x 16.5 (cm)	27.3 Kg

### INPUT VOLTAGE

All Models-

- 105-125 / 210-250VAC (selectable)
- 50-60Hz

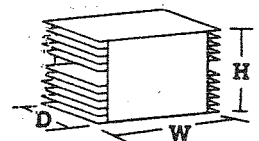
Derate to 50% output below 110 and 220 VAC

### Duty Cycle

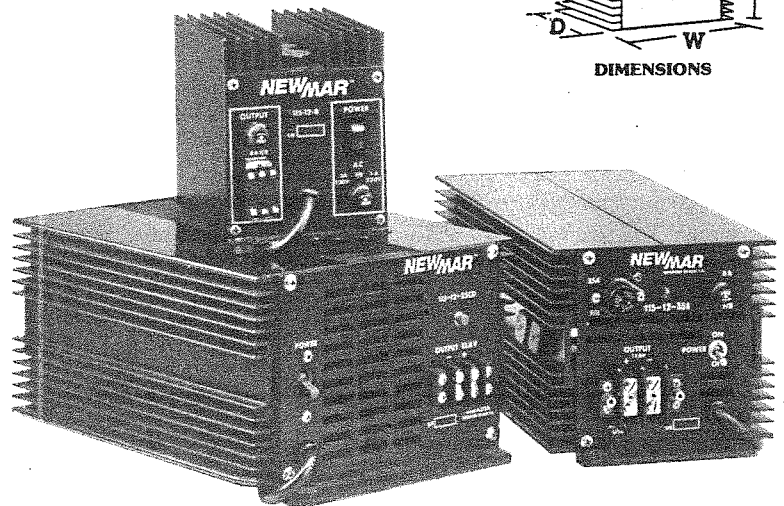
Intermittent: 20 minutes max on time, 20% duty

Continuous: 24 Hours/Day 100% duty

### CASE SIZE



### DIMENSIONS

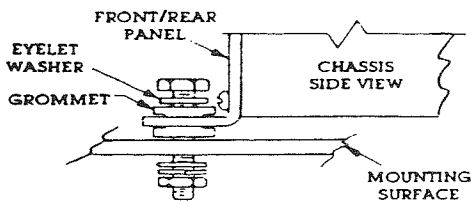


## INSTALLATION

Select a suitable location for installation. The power supply should be mounted where there will be a free flow of air around the unit. It should not be located near hatches, water or oil pumps, exhaust manifolds or where the power supply is likely to come into contact with battery gasses. Vertical mounting is preferred for cooler operation but horizontal mounting is acceptable when this is impractical. It is recommended that the supply be mounted as close to the load as possible to reduce the effect of voltage line loss. Use the rubber shock-absorbing grommets provided to assure a secure installation and to protect the internal components from excessive vibration.

**IMPORTANT:** Although the power supply is constructed of materials and in a manner which makes it highly resistive to the corrosive effects of moisture in the environment, it is **not** waterproof. Do not mount the supply where there is a possibility of water entering the unit. Evidence of water entry into the supply will void the warranty.

## HOW TO INSTALL GROMMETS FOR ISOLATION AND SHOCK MOUNTING



**NOTE:** Heavy duty mounting kit available for extreme vibration environments. Specify P/N 400-1035-0 for units up to 15 lbs. Specify P/N 400-3570-0 for units over 15 lbs.

## INPUT

The power supply will accept either a 115 VAC or 230 VAC input at either 50 or 60 Hz. As it comes from the factory it is ready for 115 VAC service.

If the supply is to be used with 230 VAC input, the standard three-prong 115 VAC plug must be removed and a 230 VAC plug attached. (230 VAC plug not provided.) Note: the black lead is the *Hot fused* lead, white is *Neutral* and green is the *Safety/Chassis Ground*.

Next, the input selector switch located on the front panel must be moved from the 115 VAC position to the 230 VAC position. This switch is recessed but can easily be moved using a ball point pen or similar tool.

Finally, the input fuse value must be changed. A spare fuse for 230 VAC operation has been provided. The correct fuse value for both 115 and 230 VAC use is disig-

nated on either side of the fuseholder. (Note: the symbol "F/B" above the fuseholder indicates that any replacement fuses must be of the fast blow or regular type. Do not use slow blow fuses.)

**CAUTION (230 V a.c. applications only):** If a.c. input is derived from a source consisting of two **HOT** leads (phase-to-phase 230V a.c. input voltage), an external fuse or circuit breaker must be used to protect the unfused (formerly **NEUTRAL**, now **HOT**) lead.

## OUTPUT

Remove the terminal block cover. Carefully observing correct polarity (+ to + and - to -) attach your DC output wiring to the output terminals using the ring lug connectors provided. (See Wire Size Table for correct gauge.) Be sure to replace the terminal block cover in order to prevent accidental shorting of the output terminals in the future.

## WIRE SIZE TABLE

The table below may be used to determine the correct gauge DC output wiring depending on the model you have and the length of the run from the power supply to the load.

Output Amps	Wire Length		
	10	15	20
8	14awg	12awg	12awg
10-18-20	12awg	10awg	10awg
35	8awg	6awg	6awg

## OPERATION/TROUBLESHOOTING

When the power supply is plugged in and the power switch is positioned to "on", the AC indicator light will illuminate. If it fails to do so upon first application of power to the unit, check the AC input fuse. Replace if necessary. If the input fuse is blowing repeatedly, check to see that the input selector switch is in the correct position. If it is, then there is probably a short within the unit. Remove AC power to the supply and contact the factory to obtain a return authorization or have the unit serviced by a qualified repair technician.

The power supply is equipped with a current limiting circuit. This circuit protects the unit against being overloaded. In the event the current demand from the load exceeds the power supply's rating, output voltage will immediately drop to protect internal components. Should this occur, check to see that you have properly

matched the power supply and load current rating. Note: Inductive loads such as DC motors may require start-up surge current far greater than required while running. When matching the power supply to an inductive load it is essential that the surge rating be used to specify the correct supply.

In most cases the current limit circuit will prevent the output fuse from blowing, but if this should need replacing note that again, fast-blow or regular fuse only must be used. The correct fuse rating is marked beside the output fuseholder.

To protect the load being powered from any condition which might cause output voltage to go high (such as a failed component or AC voltage line spikes), the power supply employs an over-voltage protection circuit. If you suspect that this circuit has been "nuisance tripped" by a line spike, simply shut the unit off for about 60 seconds to allow it to reset itself.

## MODIFICATIONS

If battery back-up to the load is required the power supply can be modified to act as a "float" charger † to the battery bank. In addition, output voltage may be adjusted to meet special requirements. Contact the factory for more information on these modifications.

† over-current protection recommended on charging leads.

## OPERATING TEMPERATURE

**Standard Units** 0-50° C, Derate Linearly  
From 100% @ 40° C  
To 50% @ 50° C  
Thermal shutdown @  
85° C Case temperature

**C.D. Units** 0-65° C, Derate Linearly  
From 100% @ 50° C  
To 50% @ 65° C  
Thermal Shutdown @  
85° C Case temperature

## OUTPUT VOLTAGE

**12 V Models** 13.6 VDC (Internally adjustable 12.8 - 14.5 VDC) Ripple: 40mV P-P ( @ 110-125 / 220-250 VAC input)

**24 V Models** 24.5 VDC \*(Internally adjustable 22.8 - 26.3 VDC) Ripple: 70mV P-P ( @ 110-125 / 220-250 VAC input)

\* Set at 27.2 VDC for battery charger modification

**Regulation All Models:** 1% Line and Load ( @ 110-125 / 220-250 VAC input)

**NEWMAR**