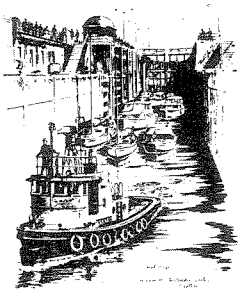

BALMAR™
PRODUCTS INC.

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Seattle, WA 98107
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BALMAR HIGH OUTPUT MARINE ALTERNATORS

Your Balmar Marine Alternator has been engineered for superior performance and reliability over any comparable size stock alternator. Care must be taken during installation to provide adequate mounting strength and correct belt alignment to ensure proper output and service life.

RATING: The AMPERAGE output stamped on the alternator is the continuous output available at maximum operating temperature, SAE cold ratings are 5% to 20% higher.

CHOOSING PROPER SIZE: Always choose an alternator with 15% to 20% more capacity (continuous) than maximum load. Actual output depends on engine cruising RPM and pulley size. See chart #1.

OUTPUT WIRE SIZE: Proper wire size must be used due to increased amperage. 0' - 12' #2 wire, 12' - 20' #0 wire.

METERS: Standard inline Amp meters must be removed and should be replaced with a standard Volt meter. Should you wish to read output Amps, a high capacity 0-200 amp shunt type meter may be used. The Balmar VA 200 monitor provides both digital amperage and voltage for up to 4 battery banks and is available from your dealer.

ISOLATORS: Provide proper charging to each battery bank automatically. Models 9115, 9235 and 9265 have built-in isolators for two battery banks. A three bank external isolator model 1-123 or 1-163 may be used by bridging the output terminal of the alternator. DO NOT attach an external isolator to a single output leg. The single output model 9135 can be used with a 2 or 3 bank external isolator models 1-122 or 1-123, DO NOT use an isolator rated less than 120 amps per output terminal.

MAINTENANCE: Keep alternator clean and dry. Check belt tension regularly, replace any suspect belts. CARRY A SPARE BELT

MOUNTING

1. Remove existing alternator and compare mounting points. Many alternators are directly replaceable, however if your unit is not a simple bracket adapter can easily be fabricated at a local machine shop. A variety of adjustments arms are available from us or local auto supply's. Make sure belt alignment will be correct. Spacers are provided with each alternator (except 1" foot)

The slip ring frame can be rotated to match the existing unit. To do this remove the thrubolts, separate JUST far enough to rotate to the desired position. Then replace thru bolts. CAUTION Separating end frame to far causes the brushes to drop on the greased shaft. If this happens, remove the frame completely, clean brushes, reassemble spring and brushes, retaining brushes with a pin or tooth pick. Remove pin after frame is reassembled.

3. Models 9135 and 9115 come standard with a 2.7" X 1/2". Other sizes are available. A single belt may be used. Models 9235 and 9265 come standard with a 2.7" X 1/2" dual grove pulley, and should be used with dual belts. When changing pulleys or using your original pulley tighten the shaft nut to 40-60 foot pounds. If a torque wrench is not available insert a 5/16" hex wrench in end of shaft, tighten nut until spring washer is just flattened.

4. Install new belt of proper size - FAN BELT MUST BE TIGHT run engine for 15 minutes and retighten. To test for proper tension with ENGINE OFF insert a 6" screwdriver into cooling fins of alternator and try to turn. If pulley turns the belt can slip. A slipping belt will create heat and cause bearing failure. Check belt tension EACH TIME engine is started just as you would oil and water. This is especially important on single belt installations. ALWAYS CARRY SPARE BELTS.

5. Install regulator (wiring harness provided) on flat surface near engine. Area should be as cool and dry as possible. Ground the regulator case. Regulator wires MUST NOT be extended to a length greater than 10 feet.

A. Plug in Grey triplex plug on harness to rear of alternator.

B. Connect Black ground wire to alternator ground terminal.

C. Connect Red field sense wire directly to the starting battery. If a battery selector switch is used, connect the wire to the common output terminal. Regulator wires MUST NOT be extended to a length greater than 10 feet. See diagrams A - C.

D. Connect Brown to ignition switch or oil pressure activated switch.

E. Connect output wire(s) directly to battery(s) using the proper size fine stranded wire. 0'-12' #2 wire, 12'-20' #0 wire.

F. White wire may be used for electric tachometers not having their own sending unit. Tachometers will have to be adjusted and calibrated as necessary.

G. Any existing wires not used should be disconnected from source and taped off.

A slight whine from the alternator under load is normal. When you hear the whine you will know the alternator is charging.

If you have an isolator (divider) installed, the Red wire on the regulator MUST be on the output terminal going to your normal starting battery, or at the battery itself. This allows proper regulation of all batteries in the system.

7. COMMON QUESTIONS

A. Will all this available amperage overcharge my batteries? No, the charging rate of the batteries is determined by the voltage difference between the alternator and the voltage of the batteries. The greater the difference the higher the charge rate, the closer the two voltages the lower the charge rate, when the voltages are equal the charging stops.

B. Should I use a manual regulator control? This devise is often used to try and compensate for a overloaded or inadequate system. If a charging system has a alternator of proper capacity this type of device is not necessary. Should you choose to use a manual regulator controller get some professional advise.

C. How much horsepower will the alternator use? There are 746 watts per horsepower. So, for example 100 amps X 12 volts = 1200 watts, divided by 746 = 1.61 horsepower. Remember this is 100% efficient, allow for mechanical losses, so you could say 2 horsepower. Hey! Nothing's free.

D. What should I carry for spares? We offer an offshore kit which includes, brushes, bearings and diodes for each model alternator. You should also carry a couple of extra belts.

CHART #1 - AMPERAGE AVAILABLE AT ALTERNATOR ROTOR RPM

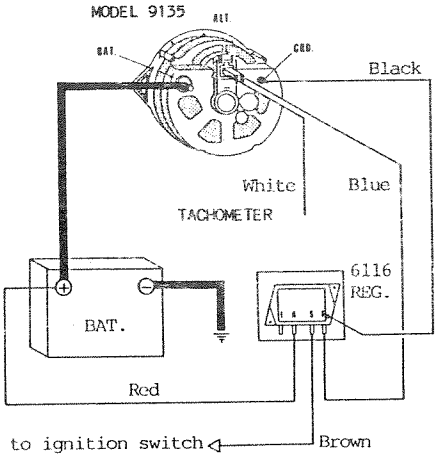
	ROTOR RPM							
MODEL	1500	2000	2500	3000	3500	4000	5000	6000
9135	20	50	60	75	85	90	110	120
9115	10	50	82	100	110	113	120	125
9235	51	91	110	120	126	130	135	138
9265	18	79	115	135	147	155	163	168

The alternator amperage ratings are at continuous 200 degrees, SAE ratings are 5% to 20% greater. Actual output may vary, due to temperature, belt tension, etc. Standard pulley diameter is 2.7" other sizes are optional.

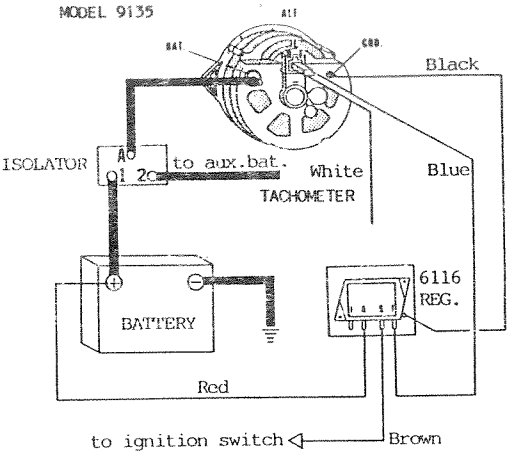
To determine the alternator rotor RPM, divide your crankshaft pulley outside diameter by 2.7 and multiply by engine RPM. Example, 6 divided by 2.7= 2.2 X 1600 (RPM)= 3520 (Rotor RPM). Using model 9115 the amperage available would be 110 amps.

Manufactured exclusively for Balmar by Lestek Mfg. For technical service call 800-433-7628.

A. Regulator Wiring Diagram

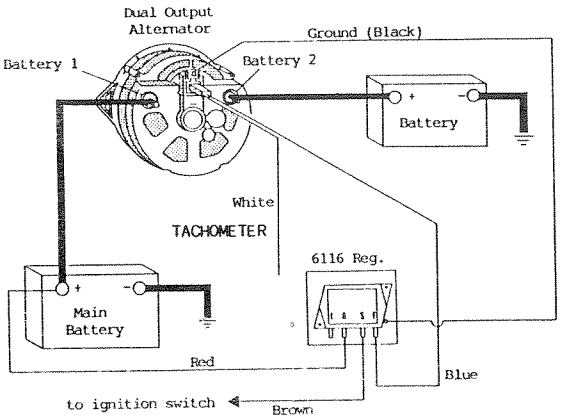


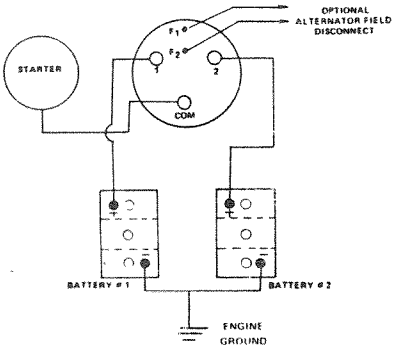
B. Regulator & Isolator Wiring Diagram

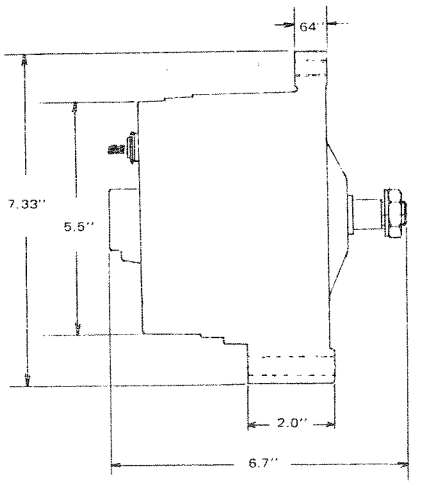


C. Regulator & Dual Battery Wiring Diagram

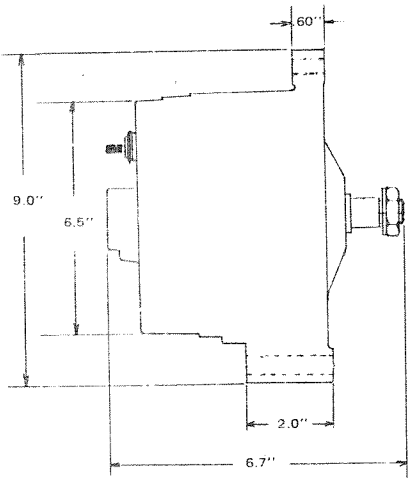
MODEL 9115







Models 9135 & 9115



Models 9235 & 9265

	TEST POINTS		
	Ignition off	Ignition on Engine not running	Ignition on Engine running
Reg. Term. A	12.6 volts	12.6 volts approx.	14 volts
Reg. Term. S	0	12 volts approx.	13 - 14 volts
Reg. Term. F	0	10 - 11 volts approx.	4 - 12 volts approx.
Alt. R	0	0	8 volts
Alt. F	0	10 - 11 volts approx.	4 - 12 volts approx.
Alt. Battery	12.6 volts	12.6 volts	14 volts
*Alt. Battery	0	0	14.5 - 15 volts
*Iso. A Term.	0	0	14.5 - 15 volts
*Iso. #1 Term.	12.6 volts	12.6 volts approx.	14 volts
*Iso. #2 Term.	(#2 battery voltage if battery is connected)		14 volts

* Test points when Isolator is used - Diagram B.