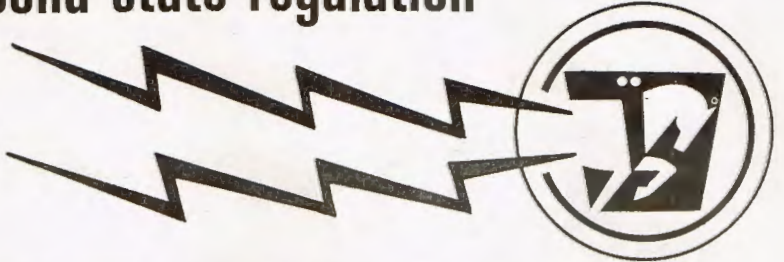


New Flywheel Alternator

with solid state regulation

12 volt - 10 amp

12 volt - 30 amp



FOR WISCONSIN SINGLE, TWO and FOUR CYLINDER ENGINES

This flywheel alternator is of the permanent magnet type and has *no brushes, commutator, belts or adjustments*. A series of coils (stator) is mounted to the engine gear cover, and the magnetic flux is provided by a permanent magnet in the flywheel which rotates around these stationary coils. Four components make up this light weight - space saving source of energy as illustrated below, a *flywheel* with magnetic rotor, *stator*, *rectifier* module and *regulator* module.

The *center-tap* rectifier arrangement prevents damage to the alternator system, in the event of incorrect battery connection or by arc welding. One half of the load-producing winding is in series with each diode, so when the battery is connected in reverse, resistance of the winding limits the current draw and keeps it at a safe level. If the incorrect battery connection is not remedied, complete drainage of the battery occurs, but the rectifier will not be damaged.

In the case of arc welding, the winding acts as a choke and its inductance prevents the transient voltage from damaging the diodes.

Since the physical appearance of both alternators is very similar, the 12 volt - 30 amp unit can be distinguished from the 10 amp unit by the ammeter calibrations, and by a 14 gage green wire in place of a 16 gage red wire, from the ammeter to the stator-regulator connector. Also, by the contrasting colors of the two lead wires emanating from the regulator module. The 10 amp regulator has white and red leads, the 30 amp black and red.

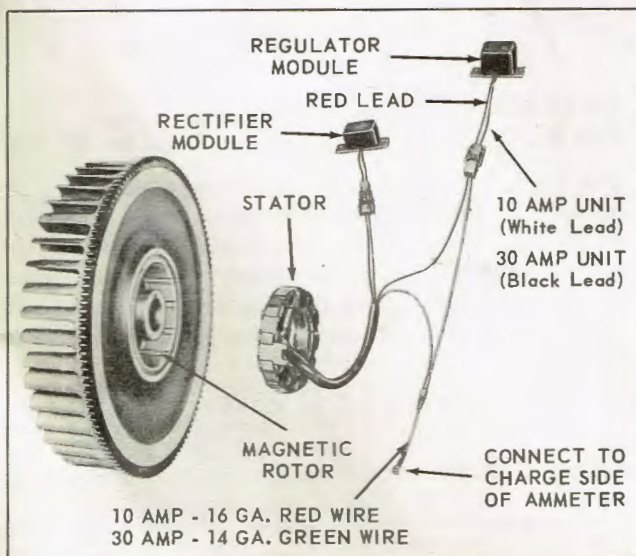
PRECAUTIONS to be exercised in the use of this flywheel alternator:

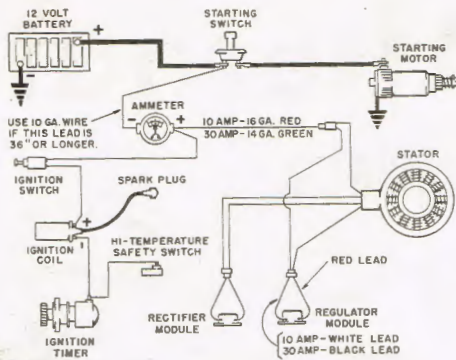
1. **Do Not** reverse battery connections. This is for a *negative ground* system only.
2. Connect booster batteries properly - positive to positive and negative to negative.
3. **Do Not** polarize the alternator.
4. **Do Not** ground any wires from stator or modules which terminate at connectors.
5. **Do Not** operate engine with battery disconnected from system.
6. Disconnect at least one battery lead if a fast battery charger is used.
7. Never use a fast battery charger to boost the battery output.

WIRING CIRCUIT

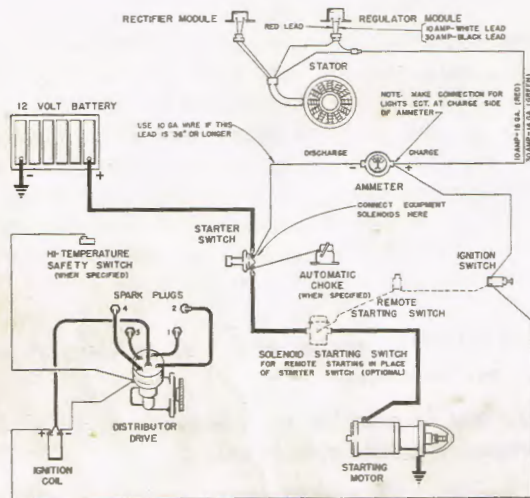
The *fool-proof* type connectors used, prevent incorrect wiring from the stator to the rectifier and regulator modules. To disconnect plugs, squeeze outer ends of receptical and pull apart.

The rectifier and regulator modules are grounded to the engine and therefore should not be removed and mounted at some remote location. This is a **negative ground circuit**. Connect ground strap from negative post of battery to starting motor flange, or good clean grounding surface on engine.





WIRING DIAGRAM
For Single Cylinder Models



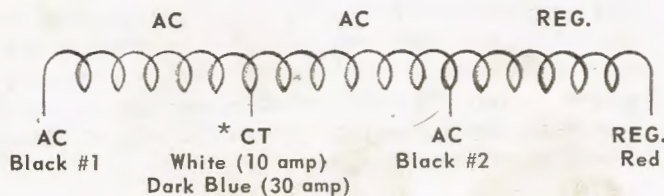
WIRING DIAGRAM
For Two and Four Cylinder Models

SERVICE PROCEDURE:

Examine leads for broken or frayed wires, or loose connections. If none are found, disconnect battery and uncouple connectors joining stator and the two modules. Make sure mounting face (base of modules), is making proper contact with engine. It is imperative that the modules be properly secured to the mounting surface, since this is their ground connection. Heat is also dissipated from the modules thru its mounting, therefore the surface must be clean and free of contaminants, oil, grease, etc.

TO CHECK STATOR

Use an ohmmeter with R x 1 scale (minimum sensitivity of 20,000 ohms/volts), and check continuity as follows:



FOR 10 AMP UNIT STATOR

METER PROBE CONNECTIONS		METER VALUE R X 1 SCALE	REPLACE STATOR
+	-		
Black #1 to Black #2		APPROX. 1.0 ohms	0 Indicates Short Circuit. ∞ Indicates Open Circuit.
Black #1 to CT		0.5 ohm	
Black #2 to CT		0.5 ohm	
Black #1 to Red		1.5 ohms	
Black #2 to Red		0.5 ohm	
Any Pin to Engine Ground		∞	Any reading indicates a short circuit.

FOR 30 AMP UNIT STATOR

METER PROBE CONNECTIONS		METER VALUE R X 1 SCALE	REPLACE STATOR
+	-		
Black #1 to Black #2		APPROX. 0.40 ohm	∞ Indicates Open Circuit.
Black #1 to CT		0.20 ohm	
Black #2 to CT		0.20 ohm	
Black #1 to Red		2.20 ohms	
Black #2 to Red		1.75 ohms	
Any Pin to Engine Ground		∞	Any reading indicates a short circuit.

STATOR IDENTIFICATION:

10 amp - 3/8" wide flange 30 amp - 5/8" wide flange

TO CHECK RECTIFIER MODULE, Part No. YJ-58

The same module is used for both the 10 amp and 30 amp circuits. It can be distinguished from the regulator by the two black lead wires and identification decal. Use an ohmmeter and static check continuity as follows:

METER PROBE CONNECTIONS		CORRECT METER VALUE	REPLACE RECTIFIER MODULE
+	-	R X 1 SCALE	
Eng. Gnd. to Black #1		5 to 15 ohms	Any reading indicates a short circuit.
Black #1 to Eng. Gnd.		∞	
Eng. Gnd. to Black #2		5 to 15 ohms	
Black #2 to Eng. Gnd.		∞	

TO CHECK REGULATOR MODULE

Part No. YJ-59 for 10 amp circuit, YJ-60 for 30 amp.

The regulator module can be distinguished from the rectifier module by the lead wire colors and identification decal. The 10 amp unit has a WHITE WIRE and a RED WIRE leading to the socket connector, whereas the 30 amp regulator has BLACK and RED lead wires. Use a good ohmmeter and static check continuity as follows:

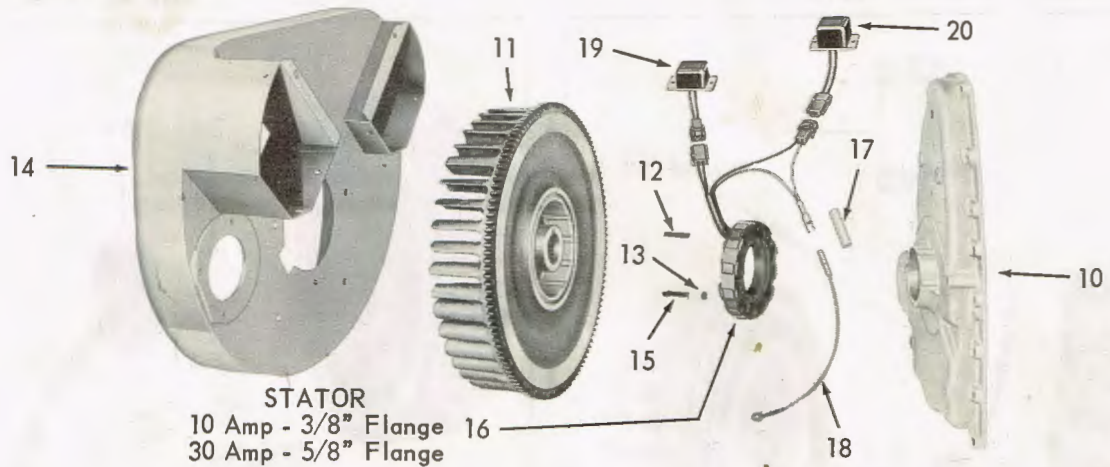
METER PROBE CONNECTIONS		10 Amp Unit	30 Amp Unit	CORRECT METER VALUE	REPLACE REGULATOR MODULE
+	-			R X 1 SCALE	
Red	to Eng. Gnd.	x	x	∞	Any reading indicates
Eng. Gnd.	to Red	x	x	∞	
Red	to White	x		∞	
White	to Red	x		∞	
White	to Eng. Gnd.	x		∞	

FLYWHEEL ALTERNATOR

12 VOLT - 10 AMP and 30 AMP circuits

with individual RECTIFIER and REGULATOR modules

SERVICE PARTS LIST: The following items are in addition to, or replace similar parts found in the standard parts manual of each specific engine model. The parts illustration is for the VG4D engine, but can be applied to all models.



STATOR
10 Amp - 3/8" Flange
30 Amp - 5/8" Flange

REF. NO.	DESCRIPTION	NO. REQ.	PART NUMBER PER ENGINE MODEL					
			AENL	AGND	S-10D, S-12D	THD, TJD	VE4D VF4D, VH4D	VG4D
10	GEAR COVER ASSEMBLY BEARING RETAINER PLATE - flywheel end	1 1	BG-344-S1	BG-343-S1	BG-350A-S1	BD-103J-S1	BD-100K-4-S1	BD-101B-S1
11	FLYWHEEL with rotor and ring gear For 10 amp alternator circuit For 30 amp alternator circuit	1 1	N-104-5 N-104-9	N-103-5 N-103-9	N-105-2	N-102-5 N-102-9	N-101-6 N-101-10	N-100-5 N-100-9
12	ROLL PIN - For 10 amp stator For 30 amp stator	2 2	PA-336 PA-362	PA-340 PA-340		PA-368 PA-340	PA-368 PA-340	PA-368 PA-340
13	LOCKWASHER, No. 10, for stator mt'g.	4	PE-14	PE-14	PE-14	PE-14	PE-14	PE-14
14	FLYWHEEL SHROUD	1	SE-154-A	SE-217-H	SE-301B-1 (back plate)	SE-135-AT	SE-74-YA	SE-124-AM
15	SCREW - For 10 amp stator mt'g. For 30 amp stator mt'g.	4 4	XB-114 XB-110	XB-113 XB-106	XB-113	XB-113 XB-106	XB-113 XB-106	XB-113 XB-106
16	STATOR ASSEMBLY - For 10 amp circuit For 30 amp circuit	1 1	YB-75 YB-76	YB-75 YB-76	YB-75	YB-75 YB-76	YB-75 YB-76	YB-75 YB-76
17	INSULATOR - ammeter wire connector	1	YD-350	YD-350	YD-350	YD-350	YD-350	YD-350
18	WIRE ASSEMBLY - stator plug to ammeter For 10 amp stator For 30 amp stator	1 1	YL-381-6 YL-380-6	YL-381-6 YL-380-6	YL-381-18	YL-381-14 YL-380-14	YL-381-14 YL-380-14	YL-381-18 YL-380-18
19	RECTIFIER MODULE - For 10 and 30 amp	1	YJ-58	YJ-58	YJ-58	YJ-58	YJ-58	YJ-58
20	REGULATOR MODULE - For 10 amp circuit For 30 amp circuit	1 1	YJ-59 YJ-60	YJ-59 YJ-60	YJ-59	YJ-59 YJ-60	YJ-59 YJ-60	YJ-59 YJ-60

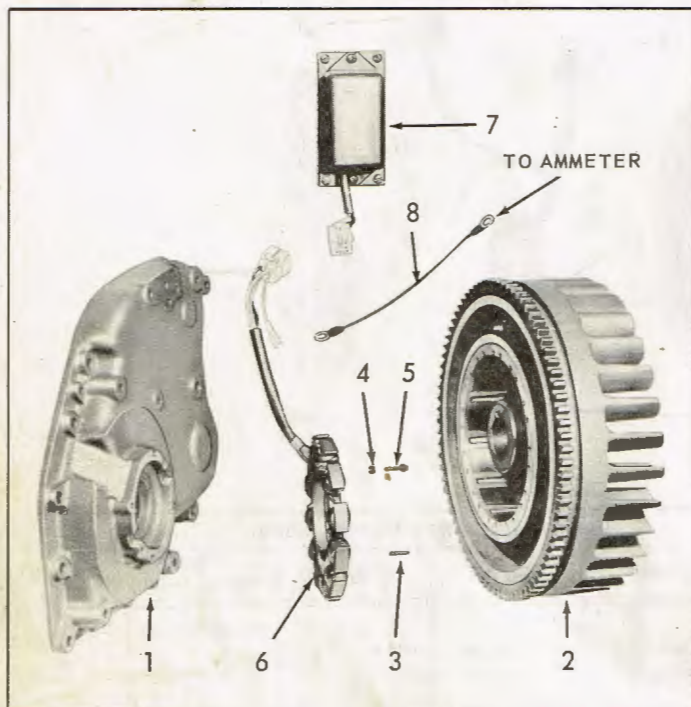
PARTS REQUIRED - NOT ILLUSTRATED

CRANKCASE	1	AA-91B-1	BA-54-20					
ENGINE BASE	1	BB-128A-5						
CLIP for stator wires	1	PC-630-1	PG-430					
GASKET for bearing retainer plate	1	QD-833						
NUT, #10-32, for mounting modules	4	PD-115	PD-115	PD-115	PD-115	PD-115	PD-115	PD-115
LOCKWASHER, #10 I.E.T., for mounting modules	4	PE-78-A	PE-78-A	PE-78-A	PE-78-A	PE-78-A	PE-78-A	PE-78-A
SCREW, #10-32, for mounting modules	4	XA-7	XA-7	XA-7	XA-8	XA-8	XA-8	XA-8

(OBSOLETE) FLYWHEEL ALTERNATOR

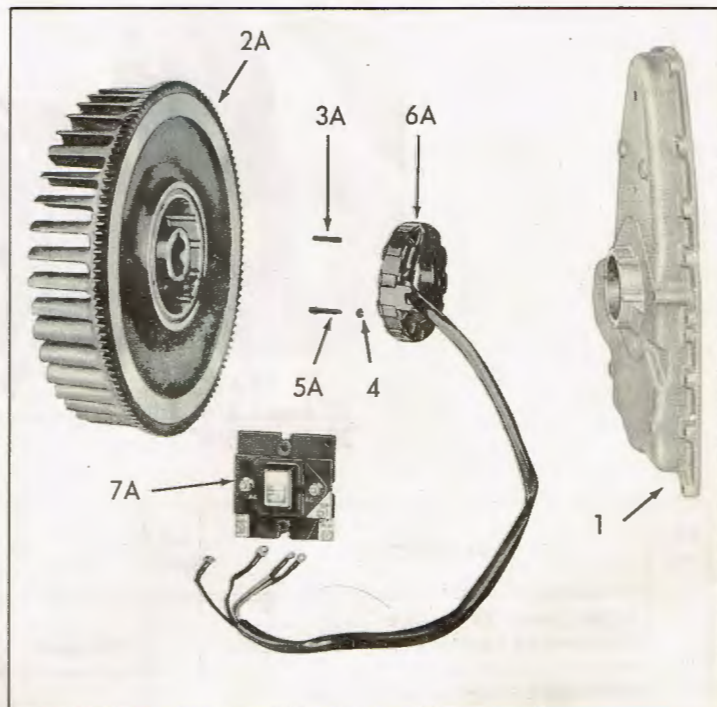
The improved Flywheel Alternator System (Page 3), with *individual Rectifier and Regulator Modules*, replaces this *Single Unit Rectifier-Regulator System*. **FOR SERVICE:** The *Stator, Magnetic Rotor, Rectifier and Regulator* are *not interchangeable*, and because of the *10 and 30 Amp Systems* it is necessary that the *Engine Model, Specification and Serial Numbers* be given when ordering parts.

12 VOLT - 10 AMP ALTERNATOR



316866C

12 VOLT - 30 AMP ALTERNATOR



291304C

REF. NO.	DESCRIPTION	NO. REQ.	PART NUMBER PER ENGINE MODEL				
			AENL	AGND	THD, TJD	VE4D VF4D, VH4D	VG4D
1	GEAR COVER ASSEMBLY BEARING RETAINER PLATE, flywheel end	1			BD-103J-S1	BD-100K-4-S1	BD-101B-S1
2	FLYWHEEL with rotor and ring gear For 10 amp alternator circuit	1	N-104-5		N-102-5	N-101-6	N-100-5
2A	For 30 amp alternator circuit	1		N-103	N-102	N-101	N-100
3	ROLL PIN for 10 amp stator mounting	2	PA-336		PA-368	PA-368	PA-368
3A	ROLL PIN for 30 amp stator mounting	2		PA-340	PA-340	PA-340	PA-340
4	LOCKWASHER, No. 10, for stator mounting	4	PE-14	PE-14	PE-14	PE-14	PE-14
5	SCREW, for 10 amp stator mounting	4	XB-114		XB-113	XB-113	XB-113
5A	SCREW, for 30 amp stator mounting	4		XB-106	XB-106	XB-106	XB-106
6	STATOR ASSEMBLY, for 10 amp circuit	1	YB-72		YB-72	YB-72	YB-72
6A	STATOR ASSEMBLY, for 30 amp circuit	1		YB-67	YB-67	YB-67	YB-67
7	RECTIFIER-REGULATOR MODULE For 10 amp alternator circuit	1	YJ-56		YJ-56	YJ-56	YJ-56
7A	For 30 amp alternator circuit	1		YJ-49-S1	YJ-49-S1	YJ-49-S1	YJ-49-S1
8	WIRE ASSEMBLY for 10 amp circuit Stator receptacle to ammeter	1	YL-379-14	YL-379-14	YL-379-14	YL-379-14	YL-379-18