

GALE

GALE PRODUCTS DIVISION OF
 OUTBOARD MARINE CORP.
 P.O. Box 470, Galesburg, Illinois

ELECTRICAL SYSTEM

BATTERY

A 6 volt battery was used on motors before 1957, and a 12 volt system 1957 and later. Make sure battery is securely fastened and in a safe location in the boat. Long battery cables are to be avoided, but battery must be located so that it will not be in path of motor when fully tilted. The negative battery terminal is grounded on all models.

IMPORTANT: Always remove battery from boat for charging. Disconnect the battery cables when boat is not being used.

STARTER

Autolite starting motors are used. When servicing the starting circuits, refer to the appropriate wiring diagram in the individual engine section. Many motors are equipped with a mercury switch or safety switch which interrupts the starting circuit when throttle or shift lever is in an improper position. Consider and check the safety switch when checking starter circuits. Test specifications are as follows:

Model MDH-4001M

Volts	6
Rotation	CCW
Armature end play.....	0.005 min.
Brush spring tension (oz.).....	42-66

No-Load test

Volts	5.0
Amperes	52
RPM	8100

Lock test

Volts	2.0
Amperes	230
Torque (ft.-lbs.)	1.6

Model MDO-4002M

Volts	12
Rotation	CCW
Armature end play.....	0.005 min.
Brush spring tension (oz.).....	42-66

No-Load test

Volts	10.0
Amperes	38
RPM	10000

Lock test

Volts	4.0
Amperes	170
Torque (ft.-lbs.)	1.5

Models MDW-4002M, MDW-4102M

Volts	12
Rotation	CCW
Armature end play.....	0.005 min.
Brush spring tension (oz.).....	42-66

No-Load test

Volts	10.0
Amperes	26
RPM	8500

Lock test

Volts	4.0
Amperes	160
Torque (ft.-lbs.)	2.1

The starter drive unit is assembled on the armature shaft on two-cylinder motors as shown in Fig. G139. Four-cylinder motors use a separate jack-shaft driven by a pinion on armature as shown in Fig. G140. Most drive units use a rubber cushion to absorb the shock as starter is engaged.

The Bendix drive unit should be lightly lubricated with a non-gummy graphite oil or light grease, and cleaned occasionally to permit free engagement and disengagement.

Note sequence of disassembly and refer to Fig. G139 or Fig. G140, to be sure parts are assembled in proper order on shaft. Tighten shaft nut (1) until rubber cushion is slightly compressed, then continue tightening until cotter pin hole in shaft is aligned. Do not back off the nut to install cotter pin.

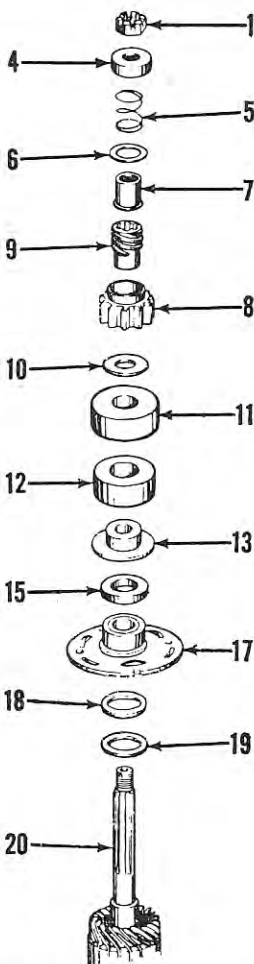


Fig. G139 — Exploded view of starter drive used on two cylinder models so equipped.

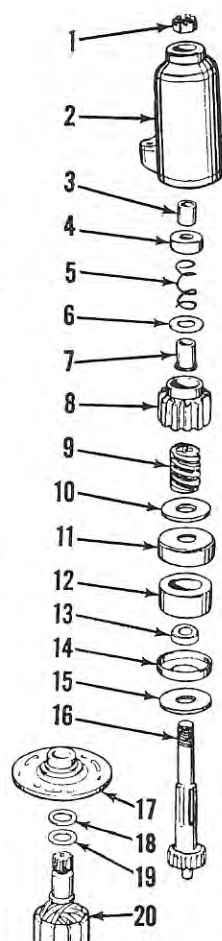


Fig. G140 — Exploded view of gear reduction starter drive used on V-4 models.

VOLTAGE REGULATOR

Electric starting models may be equipped with a generator and voltage regulator. An Autolite Model VRU-6101A regulator is used. Two soldered resistance units are located below base of regulator. Test specifications are as follows:

Cutout Relay	
Air gap	0.031-0.034
Point gap	0.015 min.
Closing voltage (range).....	12.6-13.6
Opening reverse current (amps)	3.0-5.0
Voltage Regulator	
Air gap	0.048-0.052
Voltage range (hot)	14.2-15.0

Current Regulator

Air gap	0.048-0.052
Output (amperes)	9.0-11.0
Ground polarity	Negative

GENERATOR

The Autolite generator is belt driven from a pulley mounted on top of flywheel on two cylinder models; or below flywheel and magento drive pulley on four cylinder models. Generator belt tension should be adjusted to allow a deflection of $\frac{1}{4}$ - $\frac{3}{8}$ inches on two cylinder motors or $\frac{1}{8}$ - $\frac{3}{16}$ inches on four cylinder units. Do not run belt too tight. On four cylinder models, to renew or install generator drive belt it is

necessary to remove magneto drive belt and flywheel. Reinstall and time magneto drive belt as outlined in the overhaul section for the motor. Generator test specifications are as follows:

Brush spring tension.....	12-24 oz.
Field draw	
Volts	10.0
Amperes	1.7-1.9
Motoring draw	
Volts	10.0
Amperes	4.0-5.0
Output	
Volts	15.0
Amperes	10.0
RPM	7000

CENTRAL PARTS DISTRIBUTORS

Parts for Gale, Buccaneer or Sovereign Outboard Motors may be obtained through any Johnson or Evinrude Dealer or Parts Distributor. If nearest dealer is not known, check the CENTRAL PARTS DISTRIBUTOR listings following Johnson or Evinrude Sections of this manual.