

SECTION 3 - IGNITION and ELECTRICAL SYSTEMS

MERCURY
SNOWMOBILES

PART D - LIGHTING SYSTEMS



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LIGHTING SYSTEM - MODELS 220 and 250

GENERAL

Models 220-250 Snowmobiles incorporate fully-regulated, alternating current system for maximum efficiency and simplicity of operation. The light circuit is completely independent from the battery and charging circuit and, for this reason, lights are operable only when the engine is running.

Headlights are 12-volt, sealed beam with vertical adjustment. Model 220 is equipped with a single headlight featuring "Hi" and "Low" beam. Model 250 is equipped with dual headlights which have "Hi" beam only.

The taillight assembly contains twin 6-volt bulbs which provide a running light on the rear of the vehicle and also serve

as a regulator of voltage output to the headlight.

Operation of the headlight and taillight is controlled by the light switch located in the dash panel. When engine is running and light switch is in "OFF" position, the taillight on both models and the headlight on the 220 Model only will be illuminated by a light circuit warmup current which passes thru the taillight filaments and the Model 220 headlight filament.

NOTE: Model 250 headlights do not light up when light switch is in "OFF" position, however, the taillights will glow.

REPLACEMENT BULBS

Snowmobile Model No.	Type Headlight	Mercury Part No.	GE Part No.
220	Single	D-53453	4420
250	Dual	D-55693	4444
220-250 with Regulator D-58938A2	Dual & Single	D-57584	GE57X

NOTE: On 220 models only, standard automotive headlamp (Part No. 4002) may be used as a temporary replacement, if the recommended headlamp (GE Part No.

4420) is not immediately available; however, to maintain peak lighting efficiency, it should be replaced with the correct headlamp as soon as possible.

Model 220-250 Taillights:

Mercury Part No. D-53893 (GE Part No. 47)

NOTE: If equivalent No. 47 bulbs are used as substitutes, be sure that bulbs are made by a reputable manufacturer, as their performance is critical to proper operation of the light regulating circuit.

LIGHT REGULATOR SYSTEM - MODELS 220 and 250

Installation of varistor (C-83-61348A1) on the light switch (Figure 1) is recommended to reduce the possibility of damage to the light regulator system (on 220-250 models) which could result from a high voltage surge created when the light switch is turned on or off. The varistor then serves as a voltage suppressor, preventing excessive voltage from reaching the light regulator circuit.

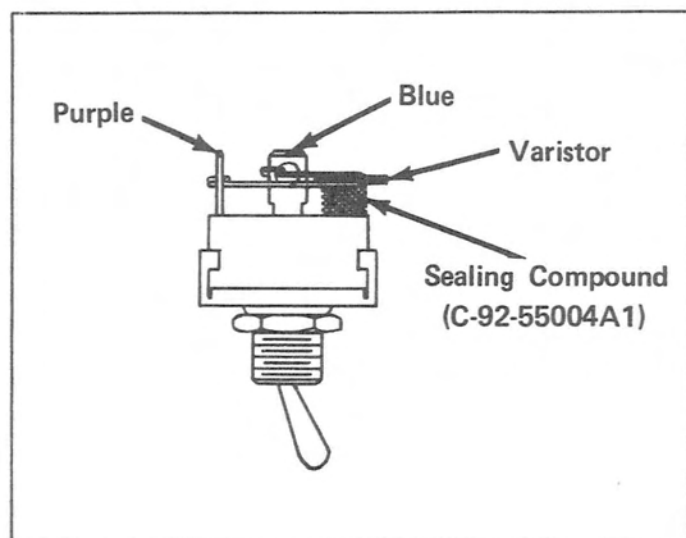


Figure 1. Varistor Installation

IMPORTANT: Installation of the varistor is recommended for all Mercury 250 or 220 Snowmobiles equipped with dual headlights and/or a two pole light switch. The varistor IS NOT required or necessary on 220 or 250 Mercury Snowmobiles equipped with a single headlight and/or three pole light switch. DO NOT use varistor with replacement light regulator (D-58938A2).

Installation of the varistor on the above specified models, while recommended, IS NOT mandatory, but should be offered to the owners as an added safeguard against failure of light circuit components. If light failures (premature lamp failure - dim lights - no lights) are encountered, always troubleshoot the lighting system as outlined on Pages 3D-2 thru 3D-4, following.

If tests indicate that the light regulator circuit within the switch box has been damaged, it then will be necessary to install a new light regulator to restore proper operation of the vehicle lights. DO NOT replace switch box; install auxiliary Light Regulator (D-58938A2).

IMPORTANT: Before installing any new components in the light system, MAKE CERTAIN that the taillight harness in the snowmobile has been thoroughly checked (electrically and visually) and that no shorts exist in the yellow wire.

TROUBLESHOOTING

The following information has been prepared to assist in troubleshooting lighting problems on Model 220-250 Snowmobiles after it has been established that: 1) Headlight harness is properly connected, 2) headlamp(s) and taillamp(s) are not burned out, 3) correct, factory-recommended lamps are being used.

NOTE: Voltage supplied for operation of lights is fully regulated by a light regulator circuit within the switch box. Taillamps are an integral part of this circuit and, to maintain proper regulation, only factory recommended lamps should be used as replacements for headlamp(s) and taillamp(s).

TROUBLE CHART

Trouble	Probable Cause	Check
A. No Lights	1. Defective stator 2. Defective light regulator	1. Test stator 2. Test light regulator
B. No taillight - headlight brighter than normal	Shorted taillight harness (yellow wire)	Test harness
C. Premature headlamp failure	Shorted taillight harness (yellow wire)	Test harness
D. Taillight brighter than normal	Damaged light regulator in switch box	Test light regulator
E. Premature taillamp failure	Damaged light regulator in switch box	Test light regulator
F. No taillight - headlamp dimmer than normal	Damaged light regulator in switch box	Test light regulator
G. Taillight dimmer than normal - headlight dimmer than normal	Open circuit between taillamp and socket and/or socket and ground	Socket connection
H. Intermittent lights	Shorted stator lead (blue wire)	Test stator

IMPORTANT: Troubles D-E-F also are a direct result of a **SHORTED TAILLIGHT HARNESS** which damages the light regulator in the switch box. To remedy, locate and

repair the short in the harness or replace harness before installing any new components in the system.

COMPONENT CHECKS

1. Use VOA Electrical Tester (C-91-52751) to perform the following tests.
2. Disconnect yellow and blue leads from switch box terminals.
3. Remove both taillamps from taillight.

IMPORTANT: Before making any tests with VOA Tester, turn meter selector to range specified and adjust pointer to ohms set position with small red and black leads clipped together. Ohms set position **MUST BE** readjusted each time meter range is changed.

LIGHT REGULATOR SPECIFICATIONS

SWITCH BOX or REMOTE REGULATOR (D-58603A3)

Check	Range	Reading
Red lead to blue switch box or regulator terminal, black lead to ground	R x 100	18-24
Black lead to blue switch box or regulator terminal, red lead to ground	R x 100	18-24
Red lead to yellow switch box or regulator terminal, black lead to ground	R x 100	18-24
Black lead to yellow switch box or regulator terminal, red lead to ground	R x 100	18-24
Red lead to yellow switch box or regulator terminal, black lead to blue terminal	R x 1	22-26

NOTE: If tests do not meet specifications, install light regulator assembly (D-58938A2). DO NOT use varistor. DO NOT replace switch box assembly. For electrical tests on new regulator, see "Troubleshooting Rocket and

Lightning Lighting System", outlined later in this section.

IMPORTANT: Taillight harness MUST BE checked for a short circuit if light circuit regulator has been damaged.

LIGHT CIRCUIT SPECIFICATIONS - STATOR

NOTE: Stator may be checked without removing flywheel.

Check	Range	Reading
Red lead to blue wire, black lead to ground	R x 1	1.2 - 1.5

TAILLIGHT HARNESS (YELLOW WIRE)

Check	Range	Reading
Red lead to yellow wire, black lead to ground	R x 1000	No movement
Red lead to yellow wire, black lead to opposite end of yellow wire (either taillamp socket)	R x 1	Full movement

IMPORTANT: While performing test, visually inspect and twist harness. It is possible that a cut or break could exist in the wire, but presently is not making sufficient contact to indicate a short.

LIGHT SWITCH

NOTE: Use appropriate chart below to test light switch with Magneto Analyzer (C-91-25213).

MODEL 220

Switch Position	Between Terminals	Magneto Analyzer Pointer (Scale 2)
1. Off	Purple - Blue	No movement
2. Off	Purple - Black	No movement
3. Hi	Purple - Blue	"OK" block
4. Hi	Purple - Black	No movement*
5. Lo	Purple - Black	"OK" block
6. Lo	Purple - Blue	No movement*

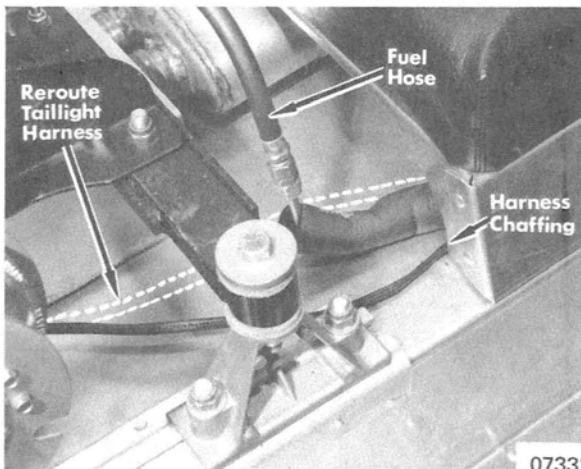
** On test 4 and 6, pointer on Magneto Analyzer will show a "half scale" reading if blue wire is connected to switch box.*

NOTE: If light switch fails any tests, switch is inoperative and must be replaced.

MODEL 250

Switch Position	Between Terminals	Magneto Analyzer Pointer (Scale 2)
1. Off	Purple - Blue	No movement
2. On	Purple - Blue	"OK" block

TAILLIGHT WIRING HARNESS ROUTING - MODEL 220



Inspect all snowmobile taillight wiring harnesses for a chaffing condition in the vicinity of the chassis where the fuel hose and harness meet at the front left corner of the seat cushion. (Figure 2) If necessary, reroute the harness to eliminate chaffing by lifting the fuel hose and placing the harness on the opposite side (toward the muffler) of the fuel hose. The harness can be taped to the fuel hose to hold in place.



Figure 2. Rerouting Taillight Wiring Harness

LIGHTING SYSTEM — MODEL 200

GENERAL

Current for operation of the lights on Model 200 Snowmobiles is provided by a lighting coil within the flywheel magneto. This light circuit is completely independent from the ignition circuit, and vehicle lights operate only when the engine is running.

The taillight assembly contains twin 12-volt bulbs which provide a running light on the rear of the vehicle. Operation of the headlight and taillight is controlled by the ignition switch which has a "Run/Lite" position.

BULB REPLACEMENT

Two types of headlights are used on the Model 200. One is a round sealed beam unit and the other a rectangular unit with a replaceable bulb.

ROUND HEADLIGHT REPLACEMENT

1. Remove top cowl.
2. Remove 2 nuts which secure headlight retaining ring to cowl.
3. Remove 3 spring retainers which secure headlight in retaining ring.
4. Reverse preceding to install new headlight.

RECTANGULAR HEADLIGHT REPLACEMENT

1. Remove top cowl.
2. Twist light socket ¼-turn counterclockwise and remove light socket from lamp assembly.
3. Replace bulb and reinstall in socket assembly.

TAILLIGHT REPLACEMENT

1. Remove 4 screws which secure lense to taillight assembly.
2. Replace bulbs as necessary.
3. Install lense.

REPLACEMENT BULBS

Location	Mercury Part No.	Vendor Part No.	Volt
Round Headlight	D-57581	GE4480	12
Rectangular Headlight	D-59383	Stanley A7048H	12
Taillight	D-57584	GE 57X	12

TROUBLESHOOTING

Circuitry can be checked with a continuity meter according to wiring diagram in Part F, "Wiring Diagrams", of this section.

IMPORTANT: Before making any tests with VOA Tester, turn meter selector to range specified and adjust pointer to ohms set position with small red and black leads clipped together. Ohms set position **MUST BE** readjusted each time meter range is changed.

Ignition switch and light winding can be checked as outlined, following:

NOTE: If repeated lamp failures have been encountered, install Voltage Regulator Kit (D-58938A4). Electrical tests

for regulator are outlined in "Troubleshooting Rocket and Lightning Lighting System", later in this section.

STATOR - LIGHT WINDING

NOTE: Use VOA Electrical Tester (C-91-52751) to test stator.

Check	Range	Reading
Red lead to yellow wire Black lead to ground	R x 1	.6 - 1.0 Ohms

LIGHTING SYSTEM

ROCKET (339cc) and LIGHTNING (398cc)

GENERAL

Rocket (339cc) and Lightning (398cc) Snowmobiles incorporate a regulated flywheel magneto lighting system. The light circuit is completely independent of the ignition circuit and operates only when the engine is running.

The taillight assembly contains twin 12-volt bulbs which provide a rear running light on the snowmobile.

Operation of the headlight and taillight is controlled by a separate light switch located on the dash.

CAUTION: Voltage regulator will burn out if vehicle is operated with headlight harness disconnected and light switch in "On" position.

BULB REPLACEMENT

HEADLIGHT REPLACEMENT

1. Raise top cowl.
2. Twist light socket ¼-turn counterclockwise and remove light socket from lamp assembly.
3. Replace bulb and reinstall socket assembly.

TAILLIGHT REPLACEMENT

1. Remove 4 screws which secure lens to taillight assembly.
2. Replace bulbs as necessary.
3. Install lens.

REPLACEMENT BULBS

Location	Mercury Part No.	Vendor Part No.	Volt
Headlight	D-58725	Stanley A-7041	12
Taillight	D-57584	GE57X	12

TROUBLESHOOTING

Circuitry can be checked with a continuity meter according to wiring diagram in Part F, "Wiring Diagrams", of this section. Light switch, voltage regulator and light winding of flywheel magneto stator can be checked as outlined following.

NOTE: Use VOA Electrical Tester (C-91-52751) to test stator and voltage regulator.

IMPORTANT: Before making any tests with VOA Tester, turn meter selector to range specified and adjust pointer to ohms set position with small red and black leads clipped together. Ohms set position **MUST BE** readjusted each time meter range is changed.

STATOR - LIGHT WINDING

Check	Range	Reading
Red lead to blue wire Black lead to ground	R x 1	.4 - .6 ohms

NOTE: If check is performed with light winding off the engine, connect yellow and either blue (green) wire together before making test.

VOLTAGE REGULATOR

Red lead to heat sink Black lead to regulator "Pin"	R x 1000	No continuity
Black lead to heat sink Red lead to regulator "Pin"	R x 1000	No continuity

LIGHT SWITCH

Check ignition switch with Magneto Analyzer (C-91-25213) on Scale 2, "Distributor Resistance", as outlined in following chart. When checking between terminals (Figure 1), meter must move to "OK" block.

Switch Position	Between Terminals	Magneto Analyzer Pointer (Scale 2)
Off	Yellow/red-purple	No movement
On	Yellow/red-purple	"OK" block

TAILLIGHT HARNESS REPAIR

ROCKET (339cc) and LIGHTNING (398cc)

A pinched taillight harness at the inside, bottom edge of the fuel tank may cause a short circuit in the lighting system on Rocket (339cc) and Lightning (398cc) models and affect headlight and taillight illumination.

If a pinched taillight harness is suspected of causing a malfunction in the light circuit, perform the following simple check:

1. Disconnect the taillight harness from the main harness (located behind the dash).
2. If the headlights then operate with the light switch "On" and the engine running, an obvious short exists in the taillight harness.

NOTE: Rocket Snowmobiles (above VEHICLE Serial No. 2981749) and Lightning Snowmobiles (above VEHICLE Serial No. 2984091) are equipped with two (2) trim moulding spacers and a ground clip on the inside, bottom edge of the fuel tank to relieve fuel tank pressure on the taillight harness.

To repair and prevent recurrence of a pinched taillight harness, complete the following:

1. Remove rear backrest cushion and loosen front fuel tank hold-down.
2. Inspect and repair taillight harness as necessary.
3. Install two 2½" trim moulding spacers (cut from one D-58809-1) and a ground clip (D-54-60197) on inside,

bottom edge of fuel tank, as shown in Figure 1.

4. Secure fuel tank hold-down and install rear backrest cushion.

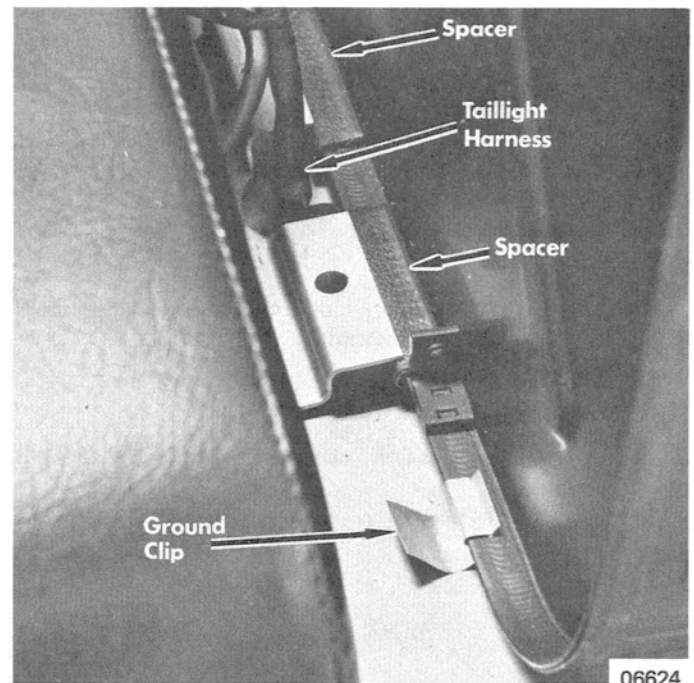


Figure 1. Spacers and Ground Clip Installed

LIGHTING SYSTEM

HURRICANE (644cc)

GENERAL

The Hurricane (644cc) is equipped with dual 12-volt headlights and twin-bulb taillight which operates on direct current from the snowmobile battery.

The lights are turned on by placing the ignition key in "Run/Lights" position.

IMPORTANT: When snowmobile is parked or unattended for any length of time, especially during daylight hours, **MAKE CERTAIN** that ignition key IS NOT left in "Run/Lights" position, or lights will remain turned on. This condition, of course, will result in battery discharge.

BULB REPLACEMENT

HEADLIGHT REPLACEMENT

1. Raise top cowl.
2. Twist light socket $\frac{1}{4}$ turn counterclockwise and remove light socket from lamp assembly.
3. Replace bulb and reinstall socket assembly.

TAILLIGHT REPLACEMENT

1. Remove 4 screws which secure the lens to the taillight assembly.
2. Replace bulbs as necessary.
3. Install lens.

REPLACEMENT BULBS

Location	Mercury Part No.	Vendor Part No.	Voltage
Headlight	D-58725	Stanley A-7041	12
Taillight	D-57584	GE 57X	12

TROUBLESHOOTING

Refer to trouble chart, "Vehicle Lights DO NOT Operate Properly", Section 7, Part C.

LIGHTING SYSTEM - 440 MAX (438cc) with CHASSIS SERIAL NO. 3447382 and BELOW

GENERAL

Model 440 MAX (438cc) Snowmobiles incorporate a regulated flywheel magneto lighting system. The light circuit is completely independent of the ignition circuit and operates only when the engine is running.

The taillight assembly contains three 12-volt bulbs. Two bulbs provide running lights and one bulb provides stoplight operation.

The lights are turned on by placing the ignition key in

"Run/Lights" position with engine running. The stoplight is actuated whenever the brake lever is pulled. The headlight dimmer switch provides high and low beam operation of the headlights.

CAUTION: Voltage regulators will burn out if vehicle is operated with headlight harness disconnected and ignition switch in "Run/Lights" position.

BULB REPLACEMENT

HEADLIGHT REPLACEMENT

1. Open top cowl.
2. Remove headlight connector from lamp assembly and unscrew collar from lens. Remove collar and washer.
3. Replace bulb.

NOTE: Boss on bulb base must align with slot in lens.

4. Position rubber and steel washer over lamp (rubber side toward bulb) and secure with collar.
5. Attach leadlight connector to lamp assembly.
6. Close top cowl.

TAILLIGHT/STOPLIGHT REPLACEMENT

1. Remove 4 screws, which secure lens to taillight assembly, and remove lens.
2. Replace bulbs as necessary.
3. Install lens.

REPLACEMENT BULBS

Location	Mercury Part No.	Vendor Part No.	Volts
Headlight	D-88-64288	Stanley A-5975	12
Taillight	D-57584	G.E. No. 57X	12
Stoplight	D-88-63118	G.E. 1003	12

TROUBLESHOOTING

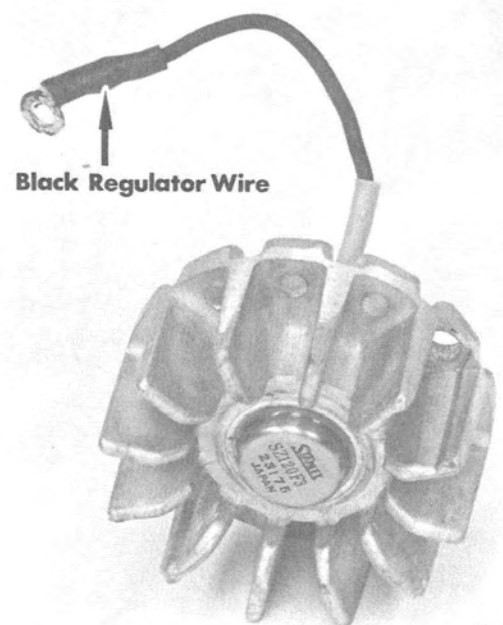
NOTE: Refer to troubleshooting chart, Section 7, Part C. Circuitry can be checked with a continuity meter according to wiring diagram in Part F, "Wiring Diagrams", of this section. Light winding of flywheel magneto stator and voltage regulators can be checked as outlined following. Use VOA Electrical Tester (C-91-52751) to test stator and voltage regulator(s).

IMPORTANT: Before making any tests with VOA Tester, turn meter selector to range specified and adjust pointer to ohms set position with small red and black leads clipped together. Ohms set position **MUST** BE readjusted each time meter is changed.

STATOR-LIGHT WINDING

Check	Range	Reading
Between 2 yellow wires.	Rx1	.1 - .5
Red VOA lead to one yellow wire, black lead to ground.	Rx1000	No continuity
Red VOA lead to other yellow wire, black lead to ground.	Rx1000	No continuity

VOLTAGE REGULATORS



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Figure 1. Headlight/Taillight Voltage Regulator

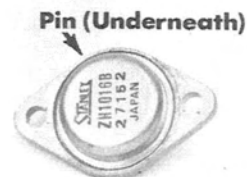
NOTE: Before testing headlight/taillight voltage regulator, black regulator wire (Figure 1) MUST BE removed from terminal block.

HEADLIGHT/TAILLIGHT VOLTAGE REGULATOR

Check	Range	Reading
Red VOA lead to black wire, black lead to ground.	Rx1000	No continuity
Black VOA lead to black wire, red lead to ground.	Rx1000	No continuity

NOTE: Before testing stoplight voltage regulator, regulator MUST BE removed from bracket. (Figure 2)

Figure 2. Stoplight Voltage Regulator



07865

STOPLIGHT VOLTAGE REGULATOR

Check	Range	Reading
Red VOA lead to regulator "Pin", black lead to regulator case.	Rx1000	No continuity
Black VOA lead to regulator "Pin", red lead to regulator case.	Rx1000	No continuity

LIGHTING SYSTEM - MARK I (644cc) and MARK II (644cc)

GENERAL

Mark I and Mark II snowmobiles are equipped with dual 12-volt headlights with high-low beam and dual taillight/stoplight. Snowmobile lights are operated by direct current from the snowmobile battery.

The lights are turned on by placing the ignition key in "Run/Lights" position. The stoplight is actuated whenever the

brake lever is pulled. High and low beam operation of the headlights is provided by the headlight dimmer switch.

IMPORTANT: When snowmobile is parked or unattended for any length of time, especially during daylight hours, **MAKE CERTAIN** that the ignition key **IS NOT** left in "Run/Lights" position, or lights will remain turned on. This condition, of course, will result in battery discharge.

BULB REPLACEMENT

HEADLIGHT REPLACEMENT

1. Open top cowl.
2. Remove headlight connector from lamp assembly and unscrew collar from lens. Remove collar and washer.
3. Replace bulb.

NOTE: Boss on bulb base must align with slot in lens.

4. Position rubber and steel washer over lamp (rubber side toward bulb) and secure with collar.
5. Attach headlight connector to lamp assembly.
6. Close top cowl.

TAILLIGHT/STOPLIGHT REPLACEMENT

1. Remove gas cap.
2. Remove 4 taillight lens screws, rubber seal and lens.
3. Replace bulb(s) as necessary.
4. Install lens and secure with screws.
5. Install rubber seal and gas cap.

REPLACEMENT BULBS

Mark I and Mark II Models with Chassis Serial No. 3591478 and Below

Location	Mercury Part No.	Vendor Part No.	Volts
Headlight	D-88-64288	Stanley A-5975	12
Taillight	D-57584	G.E. No. 57X	12
Stoplight	D-88-63775	G.E. No. 89	12

Mark II Model with Chassis Serial No. 3787640 and Above

Location	Mercury Part No.	Vendor Part No.	Volts
Headlight	D-88-65526	Stanley A-59801A	12
Taillight/Stoplight	D-88-65361	G.E. No. 1035	12

TROUBLESHOOTING

NOTE: Refer to troubleshooting chart, Section 7, Part C. Circuitry can be checked with a continuity meter according to wiring diagram in Part F, "Wiring Diagrams", of this section. Voltage regulator can be checked as outlined following.

Use VOA Electrical Tester (C-91-52751) to test voltage regulator.

IMPORTANT: Before making any tests with VOA Tester, turn meter selector to range specified and adjust pointer to ohms set position with small red and black leads clipped together. Ohms set position **MUST BE** readjusted each time meter range is changed.

VOLTAGE REGULATOR

CAUTION: Battery cables **MUST BE** disconnected from battery before testing voltage regulator.

*NOTE: Before testing voltage regulator, black regulator wire **MUST BE** disconnected from red harness wire.*

Check	Range	Reading
Red VOA lead to black wire, black lead to ground.	Rx1000	No continuity
Black VOA lead to black wire, red lead to ground.	Rx1000	No continuity

LIGHTING SYSTEM - 340 S/R, 440 MAX, 440 M/X and 440 S/R with CHASSIS SERIAL NO. 3709838 and ABOVE

GENERAL

340 S/R, 440 MAX, 440 M/X and 440 S/R Snowmobiles incorporate a regulated flywheel magneto lighting system. The light circuit is completely independent of the ignition circuit. On manual start snowmobiles, lights can be operated only when the engine is running. On 440 electric start snowmobiles, lights are battery-operated, and engine need not be running. The 12-volt lighting system consists of dual, 45-watt headlights

with high-low beam and dual [two (2) filament] taillight/stoplight.

The lights are turned on by placing the ignition key in "Run/Lights" position. The stoplight is actuated whenever the brake lever is pulled. High and low beam operation of the headlights is provided by the headlight dimmer switch.

BULB REPLACEMENT

HEADLIGHT REPLACEMENT

1. Open top cowl.
2. Remove headlight connector from lamp assembly and unscrew collar from lens. Remove collar and washer.
3. Replace bulb.

NOTE: Boss on bulb must align with slot in lens.

4. Position rubber and steel washer over lamp (rubber side toward bulb) and secure with collar.
5. Attach headlight connector to lamp assembly.
6. Close top cowl.

TAILLIGHT/STOPLIGHT REPLACEMENT

1. Remove gas cap.

2. Remove 4 taillight lens screws, rubber seal and lens.
3. Replace bulb(s) as necessary.
4. Install lens and secure with screws.
5. Install rubber seal and gas cap.

REPLACEMENT BULBS

Location	Mercury Part No.	Vendor Part No.	Volts
Headlight	D-88-65526	Stanley A-59801A	12
Taillight/Stoplight	D-88-65361	G.E. No. 1035 or Westinghouse No. 1035	12

TROUBLESHOOTING

NOTE: Refer to troubleshooting chart, Section 7, Part C. Circuitry and switches can be checked with a continuity meter according to wiring diagram in Part F, "Wiring Diagrams", of this section. On an electric model, a fuse is located between battery and rectifier. Starter motor and lights WILL NOT operate if fuse is "blown". Light winding of flywheel magneto stator and voltage regulator can be checked as outlined following.

IMPORTANT: Before making any tests with VOA Tester, turn meter selector to range specified and adjust pointer to ohms set position with red and black meter leads clipped together. Ohms set position MUST BE readjusted each time meter range is changed.

STATOR - LIGHT WINDING (440 Models)

Disconnect chassis electrical harness from engine electrical harness by separating connector located by secondary ignition coils. Use VOA Electrical Tester (C-91-52751) to perform following stator checks.

Check	Range	Reading
VOA leads connected between 2 yellow stator wires	R x 1	.1 - .5
VOA leads connected between one yellow stator wire and ground	R x 1000	No continuity
VOA leads connected between other yellow stator wire and ground	R x 1000	No continuity

STATOR - LIGHT WINDING (340 S/R Model)

Disconnect engine electrical harness from chassis electrical harness by separating connector located by right front engine mount. Use VOA Electrical Tester (C-91-52751) to perform the following stator checks.

Check	Range	Reading
VOA leads connected between terminal with green and yellow wires attached <u>and</u> terminal with green/black and yellow/green wires attached	R x 1	.05 - .55
VOA leads connected between terminal with green and yellow wires attached <u>and</u> engine ground	R x 1000	No continuity
VOA leads connected between terminal with green/black and yellow/green wires attached <u>and</u> engine ground	R x 1000	No continuity

VOLTAGE REGULATOR

IMPORTANT: A defective voltage regulator usually will result in no lights on a manual model and no battery charging on an electric model. Lights will continue to operate on an electric model until battery is discharged. When troubleshooting an electric model, refer to Part E, "Charging and Electric Start Systems", of this section.

After checking stator-light winding as outlined preceding, and voltage regulator is suspected of causing the problem, check voltage regulator in either manner as outlined following:

1. Install new voltage regulator and check operation of snowmobile lights or snowmobile battery charging system, as applicable.

2. On manual starting snowmobiles, disconnect voltage regulator wire(s) from terminal block. Run engine at IDLE speed and check operation of lights.

CAUTION: DO NOT operate engine above IDLE SPEEDS or for an extended period of time with voltage regulator disconnected.

LIGHTING SYSTEM - 340 S/T, 400 S/T, 440 S/T, 340 T/T and 440 T/T GENERAL

The 340 S/T, 400 S/T, 440 S/T, 340 T/T and 440 T/T Snowmobiles use regulated, alternating current (AC) for lighting power. The AC current is generated in flywheel stator windings and is supplied direct to the 12-volt lighting system. The lighting system is completely independent of the ignition circuitry.

The 12-volt lighting system consists of a single, 60-watt

headlight with high-low beam and a single (dual filament) taillight/stoplight.

Lights are turned on by placing light switch in "On" position ("Run/Lights" position on 340 T/T and 440 T/T) when engine is running. The stoplight is illuminated when brake lever is pulled. High and low beam operation of the headlight is controlled by headlight dimmer switch.

BULB REPLACEMENT

HEADLIGHT REPLACEMENT

1. Open top cowl.
2. Unplug headlight harness from sealed beam headlight.
3. Remove headlight cover retaining wires, headlight cover and sealed beam headlight.
4. Replace sealed beam headlight and reassemble headlight assembly.

NOTE: Boss on bulb must align with detent in headlight cover.

5. Close top cowl.

2. Replace bulb and reassemble taillight assembly.

REPLACEMENT BULBS

Location	Mercury Part No.	Vendor Part No.	Volts
Headlight	D-88-67793	Speaker No. 550006-0 or G.E. No. 4492	12
Taillight/Stoplight	D-88-65361	G.E. No. 1035 or Westinghouse No. 1035	12

TAILLIGHT/STOPLIGHT REPLACEMENT

1. Remove 2 taillight lens screws and taillight lens.

TROUBLESHOOTING

NOTE: Refer to troubleshooting chart, Section 7, Part C. Circuitry and switches can be checked with a continuity meter according to wiring diagram in Part F, "Wiring Diagrams", of this section. Light winding of alternator stator and voltage regulator can be checked as outlined following.

STATOR - LIGHT WINDING (400 S/T Model)

On 400 S/T Snowmobile, disconnect green/yellow stator wire from yellow chassis harness wire at "quick-connector". Make the following check with VOA Electrical Tester (C-91-52751) on stator light winding. Adjust VOA Meter to ohms set position with VOA leads shorted.

Check	Range	Reading
VOA leads connected between green/yellow stator wire and stator ground at white stator wire attached to rewind starter assembly	R x 1	.1 - .8

STATOR - LIGHT WINDING (340 S/T, 440 S/T, 340 T/T and 440 T/T Models)

On 340 S/T, 440 S/T, 340 T/T and 440 T/T Snowmobiles, disconnect engine wires from chassis harness by separating

small plug-in connector (located by right rear engine mount). Make the following check with VOA Electrical Tester (C-91-52751) on stator light winding. Adjust VOA Meter to ohms set position with VOA leads shorted.

Check	Range	Reading
VOA leads connected between green/yellow stator wire and white stator wire (at terminals of small plug-in connector)	R x 1	.1 - .8

VOLTAGE REGULATOR

A defective voltage regulator usually will result in failure of lighting system. This voltage regulator can be checked ONLY by replacement.

After checking stator-light winding, as outlined preceding, and voltage regulator still is suspected of causing the failure, replace the voltage regulator with a good regulator and then check operation of snowmobile lights. If lights are operable, assume that the original regulator was bad.

CAUTION: DO NOT attempt to check this voltage regulator by disconnecting it from lighting system and operating snowmobile engine. Failure to adhere to this caution will result in damage to electrical component(s).