

SECTION 3 - IGNITION and ELECTRICAL SYSTEMS

MERCURY

SNOWMOBILES

PART B - TEST PROCEDURES



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IGNITION BREAKER POINTS

CLEANING and INSPECTION

CLEANING

1. Dirty contact points should be dressed with a few strokes of a clean, fine-cut contact file. File should not be used on other metals and should not be allowed to become greasy or dirty. Normal point condition is overall grey color.

NOTE: Never use emery cloth to clean contact points.

2. After considerable use, contact surfaces may not appear bright and smooth, but this is not necessarily an indication that points are not functioning satisfactorily. Do not attempt to remove all roughness nor dress point surfaces down smooth. Merely remove scale or dirt.
3. Badly burned or pitted contact points should be replaced and cause of trouble eliminated.

ABNORMAL POINT WEAR

1. Under normal operating conditions, ignition contact points will provide many hundreds-of-hours of service.
2. Points, which have been operated for a period of time, have a rough surface, but this may not mean that points are worn out.
3. If roughness between points match, so that a large contact area is maintained, points will continue to provide

- satisfactory service until most of the tungsten is worn off.
4. If points burn or pit, however, they soon become unsatisfactory for further operation. Not only must they be replaced, but ignition system must be checked to determine cause and elimination of trouble. Unless condition, which causes point burning or pitting, is corrected, new points will provide no better service than old points.

BURNING of POINTS

1. Contact point burning results from high voltage, presence of oil or other foreign material, defective condenser and improper point adjustment.
2. Oil or crankcase vapors on point surfaces cause points to burn rapidly. This is easy to detect, since oil produces a smudgy line under contact points.
3. If contact point opening is too small, points will be closed for too much operating time. Average current flow thru points will be too high, so points will burn rapidly and arcing will occur between points and result in low secondary voltage and engine miss.
4. High series resistance in condenser circuit will prevent normal condenser action, so contact points will burn rapidly. This resistance may be caused by a loose condenser mounting or lead connection, or by poor connections inside condenser.

CONDENSER

PERFORMANCE

The following 4 factors affect condenser performance, and each factor must be considered in making any condenser test.

Breakdown -- a failure of insulating material -- a direct short between metallic elements of condenser. This prevents any condenser action.

Low Insulation Resistance (Leakage) -- prevents condenser from holding a charge. All condensers are subject to leakage which, up to a certain limit, is not objectionable.

High Series Resistance -- excessive resistance in condenser circuit, due to broken strands in condenser lead or to defective connections. This will cause burned points and ignition failure upon initial start and at high speeds.

Capacity -- determined by area of metallic elements and insulating and impregnating materials.

For a complete check of condenser, use a tester which will check above conditions. Follow instructions given by manufacturer of test equipment.

THUNDERBOLT IGNITION MAKER POINTS

INSPECTION

High primary voltage in Thunderbolt Ignition System will darken and roughen the maker points within a short period of time. **DO NOT BE ALARMED.** While points in this condition would not operate satisfactorily in the conventional magneto, they will continue to perform in Thunderbolt System. **DO**

NOT, therefore, replace Thunderbolt Ignition points unless an obvious malfunction exists, or contacts are loose or burned away. Rough or discolored contact surfaces are not evidence for replacement in Thunderbolt Ignition System. In general, cam follower will have worn away by the time points become unserviceable.

SPARK PLUG

INSPECTION and ADJUSTMENT

CONVENTIONAL

1. Inspect each plug individually every 100 hours for badly worn electrodes, glazed, broken or blistered porcelain and replace where necessary.
2. Inspect each spark plug for make and heat range. All plugs must be the same make and number or heat range (if more than one is used). Refer to "Specifications" Section 8 for spark plug numbers.

CAUTION: Never bend center electrode to adjust gap. Always adjust by bending ground or side electrode.

3. Adjust spark plug gaps with a round feeler gauge. Refer to "Specifications" Section 8 for spark plug gap. (Figure 1) Replace defective plugs.
4. Install spark plugs to engine with new gaskets and torque as specified in "Specifications" section.

NOTE: Improper installation is one of the greatest causes of unsatisfactory spark plug performance.

5. Always use a new gasket and wipe seats in head clean. Gasket must be fully compressed on clean seats to

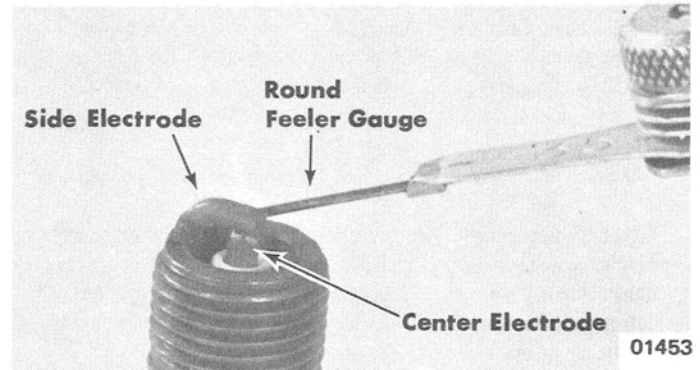


Figure 1. Adjusting Gap

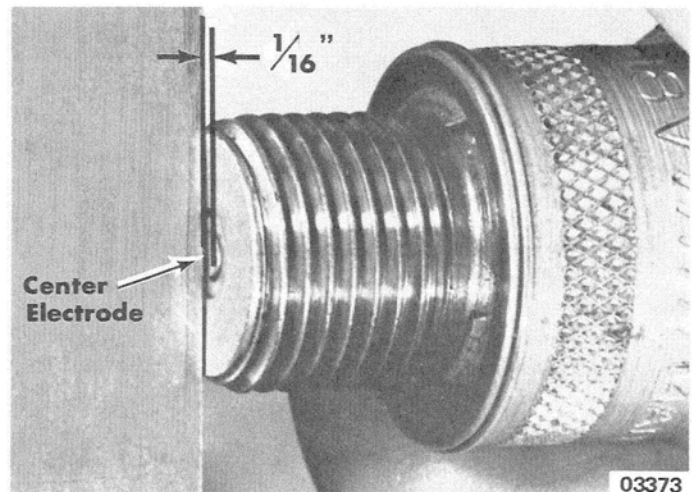
complete heat transfer and provide a gas tight seal in cylinder. For this reason, as well as necessity of maintaining correct plug gap, correct torque is very important during installation.

6. Replace or repair any loose or damaged spark plug wires. Install all wires to proper spark plug.

PERMA GAP

1. Check condition of external insulator. If insulator is cracked, replace plug.
2. Check depth of center electrode as shown in Figure 2. If electrode is burned back more than 1/16" from plug surface, replace plug.
3. Cracks, which may be found around internal insulator (electrode end), will not harm plug operation, and plug may be used.

Figure 2. Checking Spark Plug Electrode Depth



SPARK PLUG TROUBLESHOOTING

PLUG CONDITIONS	FACTORS CAUSING THIS CONDITION	CORRECTIVE ACTION
Plug "flash over" (firing from upper terminal to base of plug)	Dirty insulator tops--oil dirt and moisture on insulator will shunt current to base of plug. The above condition can be caused by failure of spark plug boot.	Keep plugs wiped clean with cloth moistened with cleaning solvent. Check spark plug boot and replace if necessary.
Lead fouling (light and powdery or shiny glazed coating on firing end)	By-products of combustion and fuel additives, deposited as a powder which may later melt and glaze on insulator tip.	Remove deposits in engine. Use recommended oil and gasoline. Replace spark plug.
Oil or carbon fouling	Wet, black deposits on firing end of plug usually caused by excessive amount of oil in fuel mixture, weak spark, worn piston rings, pistons.	Use recommended oil and gasoline in correct ratio. Correct engine condition.
	Hard, baked-on, black carbon deposits result from use of incorrect oil and gasoline. Wrong type spark plug (too cold).	Use recommended oil and gasoline in correct ratio. Use recommended spark plug.
Normal electrode wear	Due to intense heat, pressure and corrosive gases, together with spark discharge, the electrode wears and gap widens.	Plugs should be regapped every 100 hours.
Rapid electrode wear	Condition may be caused by (1) gas leakage past threads and seat gaskets, due to insufficient installation torque or damaged gasket, (2) too lean a mixture or (3) ignition timing advanced beyond specifications.	Install plugs to specified torque. Use new spark plug seat gasket each time a new or cleaned spark plug is installed. Adjust carburetor to specifications. Adjust timing to specifications.

PLUG CONDITIONS	FACTORS CAUSING THIS CONDITION	CORRECTIVE ACTION
Broken upper insulator (firing around shell crimp under load conditions)	Careless removal or installation of spark plug.	Replace with a new spark plug.
Broken lower insulator (firing tip)	Cause usually is carelessness in regapping either by bending of centerwire to adjust the gap or permitting gapping tool to exert pressure against tip of center electrode or insulator when bending side electrode to adjust the gap.	Replace with a new spark plug.
	Fracture or breakage of lower insulator also may occur occasionally if engine has been operated under conditions causing severe and prolonged detonation or pre-ignition.	Use "colder" type plug for particular type of operation.
Damaged shell	Very seldom occurs, but cause is almost always due to mishandling by applying excessive torque during installation. This failure usually is in form of a crack in Vee of thread next to seat gasket or at groove below hex.	Replace with a new spark plug.

SPARK PLUG USAGE CHART

Model	Mercury Number	Manufacturer Number
200	C-33-57676	Bosch M225TI
220	C-33-39440	Champion UL18V
250	C-33-39440	Champion UL18V
Rocket	C-33-59162 C-33-60919	AC-S41F Champion L81
Lightning	C-33-60917	Champion L78
Hurricane	C-33-59804	Champion D77V
440 MAX ①	C-33-63059	Champion RL78 or AC-S40FR
Mark I	C-33-59599 C-33-57451	Champion L77V or AC-V40FFM
Mark II ②	C-33-59599 C-33-57451	Champion L77V or AC-V40FFM
440 MAX ③	C-33-60816	Champion RN3
440 S/R ⑤	C-33-60816	Champion RN3
Mark II ④	C-33-65591	Champion QL-77V
400 S/T	C-33-68546 C-33-68458	Champion N-19V Champion N-55G
340 S/R	C-33-70779	AC-S42XLR
440 M/X	C-33-70781	AC-S43XLR
440 S/R ⑥	C-33-70781	AC-S43XLR
340 S/T	C-33-68458	Champion N-55G
440 S/T	C-33-68458	Champion N-55G
440 T/T ⑦	C-33-68546	Champion N-19V
340 T/T	C-33-73271	Champion QN-19V
440 T/T ⑧	C-33-73271	Champion QN-19V

IMPORTANT: DO NOT, under any circumstances, use AC-S41F (C-33-59162) or Champion L81 (C-33-60919) spark plugs in Lightning (398cc) Mercury Snowmobiles above CHASSIS Serial No. 2985933.

① CHASSIS Serial No. 3447382 and Below

② CHASSIS Serial No. 3591478 and Below

③ CHASSIS Serial No. 3709838 and Above

④ CHASSIS Serial No. 3787640 and Above

⑤ CHASSIS Serial No. 3794985 and Below

⑥ CHASSIS Serial No. 4067797 and Above

⑦ CHASSIS Serial No. 4210249 and Below

⑧ CHASSIS Serial No. 4347125 and Above

THUNDERBOLT IGNITION SYSTEM

220 and 250 MODELS

TEST PROCEDURES

WARNING: When testing or servicing the Thunderbolt Ignition System, it is extremely important that the following precaution is observed, as high voltage is present: **DO NOT** touch or disconnect any ignition system parts while engine is running.

CHECKING THUNDERBOLT IGNITION SYSTEM DESCRIPTION

The test procedures, following, are provided to indicate a component's general condition but are not alone conclusive in detecting a failed part. Results, which are obtained by replacing a suspected component (by process of elimination) with a new part, are considered the ultimate check. Follow the service procedures in the order listed.

The following equipment is required to check the system:

1. VOA Electrical Tester (C-91-52651)
2. Magneto Analyzer (C-91-25213)
3. Trigger coil assembly
4. Switch box assembly
5. Ignition coil assembly
6. Stator assembly
7. Conventional spark plug (ground electrode removed)

Because of the super energy and voltage characteristics of Thunderbolt Ignition, spark plug fouling has been virtually eliminated.

Test results have shown, however, that certain types of oil, which are used in fuel mixtures, occasionally can cause spark plug fouling in the Thunderbolt Ignition System.

If spark plug fouling is encountered, do not look for a malfunction with the Thunderbolt Ignition System or experiment with other than recommended spark plugs. Investigate the type and ratio of oil being used in the fuel mixture. If plug fouling persists even when using Quicksilver Snowmobile Oil in the correct ratio, make certain correct spark plugs (Champion UL18V; C-33-39440) have been installed.

TROUBLE CHART - IGNITION and ELECTRICAL SYSTEM

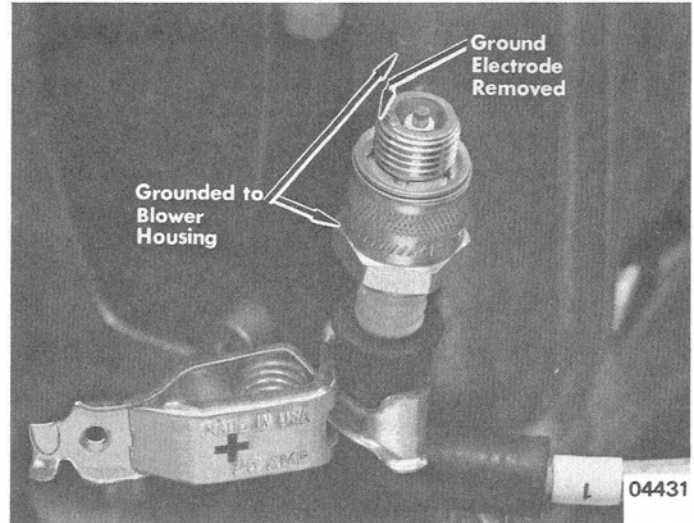
Malfunction	Probable Causes
1. Engine kicks back during start attempt.	Trigger coil leads, spark plug leads or ignition coil primary leads reversed. Advanced spark.
2. Engine misfires at low speeds.	Stator open or shorted between red lead and ground.
3. Engine misfires at high speeds.	Short at white starter lock-out terminal. Stator open or shorted between white lead and ground.
4. Engine running on one cylinder.	Trigger coil lead open or shorted to ground. Defective switch box.
5. Dim head lamp light.	Defective tail lamp or switch box.
6. Head lamp burns out after short period of time.	Tail lamp harness shorted to ground or switch box defective.
7. No head lamp light.	Stator open or shorted between blue and ground.
8. Low battery charging current.	Defective bridge rectifier or stator shorted between a yellow/red lead and ground.
9. No battery charging current.	Defective bridge rectifier or stator open between two yellow/red leads.
10. Engine will not crank electrically.	Defective starter lock-out (ER models only).
11. Engine electrically cranks in opposite direction to that of rotation while running.	Defective starter lock-out (ER models only).

CHECKING for SPARK

WARNING: High Voltage Is Present! DO NOT hold spark plug in hand for the following check. DO NOT pull "sparky" off spark plug to check for spark while engine is running.

1. Remove spark plug lead from either spark plug.
2. Remove ground electrode from standard type spark plug (not Polar Gap), connect plug to spark plug lead and ground to blower housing cover. (Figure 1)
3. Turn key to "Run" position and crank engine over with manual starter or electric starter and watch for spark across air gap.
4. If no spark is observed, perform the check on the other spark plug lead.

Figure 1. Spark Plug Grounded to Blower Housing



TESTS, if NO SPARK at ONE SPARK PLUG LEAD ONLY

IMPORTANT: Before making any tests with VOA Tester (C-91-52751), turn meter selector to range specified and adjust pointer to the ohms set position with small red and black leads clipped together. Ohms set position MUST BE readjusted each time meter range is changed.

1. Check spark plug lead insulation for cuts or breaks which could cause a short or open circuit.
2. Inspect terminal connections of ignition coil and trigger coil at switch box.
3. Inspect trigger coil lead wires for cuts or breaks which could cause a short or open circuit.
4. Test trigger coil assembly with VOA Tester. Disconnect brown/white, brown and braided shield leads from switch box. (Figure 2)

NOTE: Trigger coil can be tested without removing assembly from blower backplate.

If trigger coil tests within specifications, continue with next step.

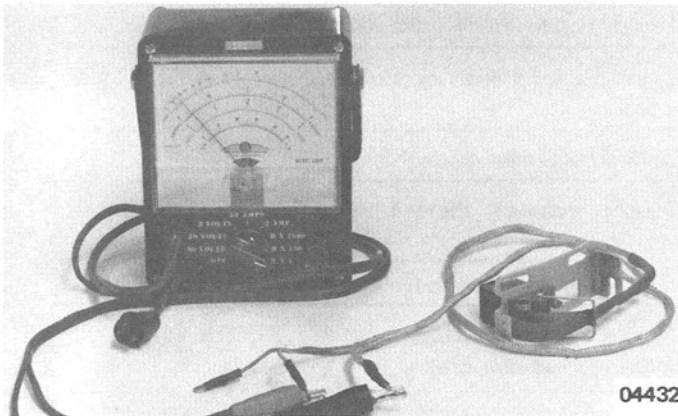


Figure 2. Testing Trigger Coil

TRIGGER COIL SPECIFICATIONS

Check (Figure 3)	Range	Reading
Between brown/white and braided shield	R x 1	115-135
Between brown and braided shield	R x 1	76-94

6. Test ignition coil with VOA Tester. Disconnect primary leads from switch box and secondary lead from spark plug. (Figure 3)

NOTE: Ignition coil can be tested without removing coil assembly from vehicle.

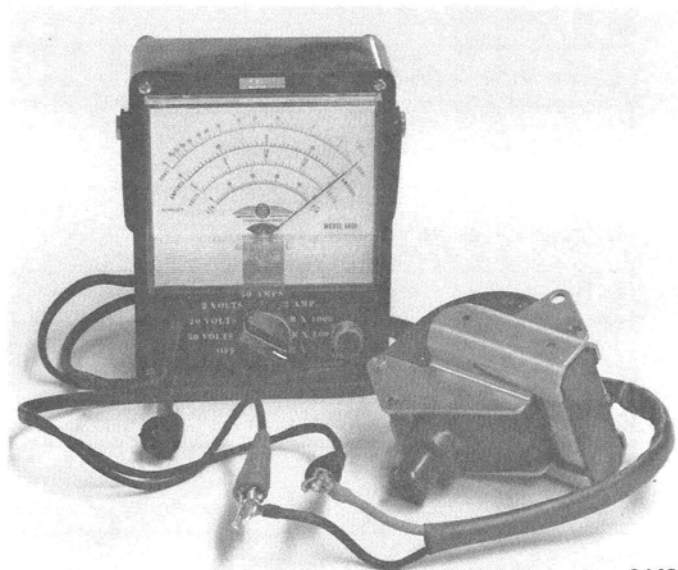


Figure 3.
Testing Ignition Coil

5. Replace switch box assembly. Process of elimination must be used, as there are no test procedures for the switch box. If replacement switch box does not correct the problem, continue with the next step.

IGNITION COIL SPECIFICATIONS

Check (Figure 4)	Range	Ohm Scale Reading
Between primary leads	R x 1	0
Between a primary lead and the secondary	R x 100	3.0-3.6
Between a primary lead and the bracket	R x 1000	No continuity
Between the secondary and the bracket	R x 1000	No continuity

The preceding checks and tests should detect a cause for no spark at one spark plug lead. If not, finish the test procedures by replacing the trigger coil assembly first, then, if necessary, the ignition coil assembly.

NOTE: If ignition coils are removed from the vehicle, DO NOT disassemble coils and mounting brackets. Remove as a complete unit.

TESTS, if NO SPARK at BOTH SPARK PLUG LEADS

- Complete checks outlined in Steps 1-2-3 of preceding "Tests, if No Spark Plug Lead Only".
- Test ignition switch operation with Magneto Analyzer (C-91-25213).
 - Turn Magneto Analyzer selector switch to position No. 2 (Distributor Resistance) and connect small red and black test leads together.
 - Turn meter adjustment knob for scale No. 2 until meter pointer lines up with set position on left side of "OK" block on scale No. 2.
 - Unclip small red and black test leads.
 - Test switch by connecting small red and black test leads to switch terminals shown in Figure 4.
 - Terminal "M" must not make contact with any terminal other than "G" at any time.
 - Terminal "S" must not make contact with any terminal other than "B" at any time.
 - If ignition switch fails to meet the above specifications, switch is inoperative and must be replaced.

NOTE: If a key switch works loose in the dash panel, it is possible to damage the lead wires or cause a short or open circuit if switch body is rotated excessively. Tighten bezel securely to prevent switch from rotating.

If ignition switch tests within specifications, continue with next step.

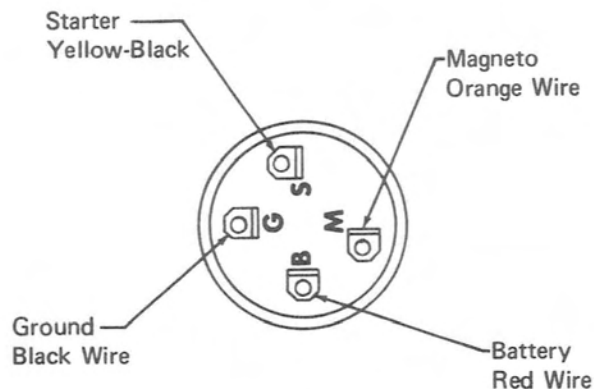


Figure 4. Back View of Ignition Switch

IGNITION SWITCH TEST

Key Position (Figure 5)	Between Terminals	Magneto Analyzer Pointer (Scale 2)
Off	M-G	"OK" block
Run	M-G	No movement
Start	S-B	"OK" block



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Figure 5. Testing Stator Assembly

- Test stator assembly with V-O-A Tester. Within the flywheel are permanent magnets and a wound stator. The stator assembly consists of 4 individual windings which generate alternating current for operation of the ignition, lights and charging of the battery on electric starting models. The 2 large windings only are a part of the ignition system. One winding generates most of the power at low engine speeds; the other generates most of the power at high engine speeds. Disconnect red and white leads from switch box. (Figure 5)

NOTE: Stator assembly may be checked without removing flywheel.

STATOR ASSEMBLY IGNITION SPECIFICATIONS

Check	Range	Reading
High speed ignition between white and ground	R x 1	100-125
Low speed ignition between red and ground	R x 100	24-26

If stator assembly tests within specifications, continue with next step.

- Complete test of trigger coil assembly as outlined in step No. 4 of "Tests, if No Spark at One Spark Plug Lead Only", preceding.

Remove trigger coil inspection plate from blower housing assembly (located in lower, front corner of blower housing assembly) and measure air gap between blower assembly magnet and trigger coil pole shoe. (Figure 6) Air gap MUST BE .020"-.040" (.51mm-1.0mm). Shim under trigger coil mounting plate changes air gap. If air gap is too great, remove shim. (Figure 6)

If trigger coil tests and air gap check within specifications, continue with next step.

- Replace switch box assembly. Process of elimination must

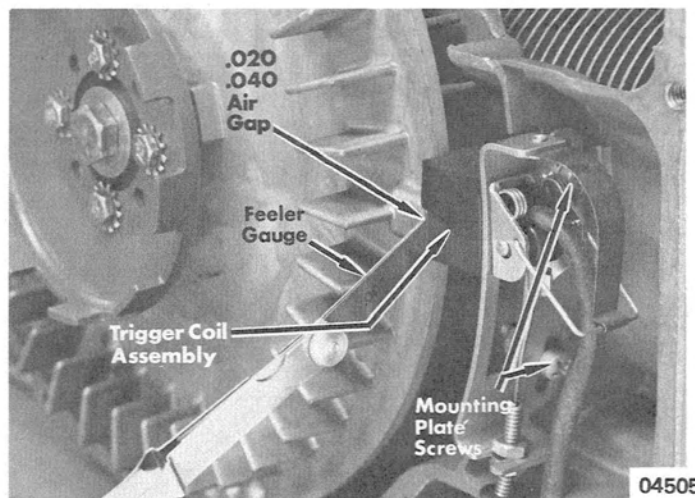


Figure 6. Measuring Air Gap

be used, as no test procedures exist for the switch box.

Preceding checks and tests should detect a cause for no spark at both spark plug leads. If they have not, finish test procedures by replacing stator assembly first, then, if necessary, the trigger coil assembly.

HIGH SPEED IGNITION CIRCUIT

The high speed ignition circuit is connected from stator to switch box and starter lock-out via white wire. Thru this connection, starter lock-out senses voltage output from stator and electronically regulates operation of electric start systems.

TROUBLE CHECK

If a high speed ignition cutout or misfire develops, whereby full engine RPM cannot be attained, check white wire connections at switch box and starter lock-out for a possible short circuit condition.

CORRECTION

If a short circuit exists, it usually will be visible in the form of a "carbon track" in terminal plastic. This condition can be eliminated by (1) scraping terminal plastic to remove "carbon track", (2) remove and discard square terminal washer from white terminal on starter lock-out and switch box and (3) reinstall white wire and thoroughly coat terminal studs, terminal plastic and metal area around terminal plastic with Liquid Neoprene (C-92-25711-1).

NOTE: DO NOT REPLACE starter lock-out or switch box if a short circuit exists. Proper cleaning and insulation is sufficient to eliminate this type of condition.

BOSCH IGNITION SYSTEM TEST PROCEDURES

MODEL 200

GENERAL

Model 200 Snowmobiles use a Bosch magneto for ignition and light power. All lighting system component checks and specifications are explained in Part D, "Lighting Systems", of this section. All checks should be completed with either the

Magneto Analyzer (C-91-25312) or the VOA Electrical Tester (C-91-52751). Use test procedures sent with equipment, unless otherwise noted.

COMPONENT CHECKS

NOTE: Inspect the spark plug lead wire for chaffing against the dash panel. If necessary, reposition or insulate lead wire and/or trim sharp edges from spark plug cut-out in dash panel. (Figure 1)

Use VOA Electrical Tester (C-91-52751) to perform the following coil and stator tests.

IMPORTANT: Before making any test 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.

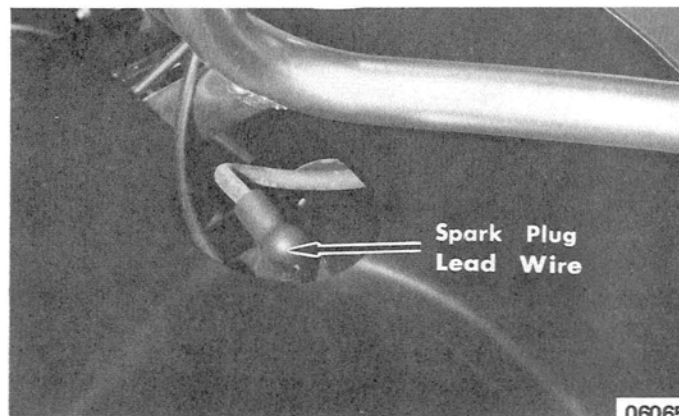


Figure 1. Spark Plug Lead Wire

COIL

Check	Range	Reading
<u>Primary</u> Red lead to coil terminal; black lead to black coil lead	R x 1	1.6-2.2 Ohms
<u>Secondary</u> Red lead to plug terminal with spark plug lead removed; black lead to black coil lead	R x 100	75-85 Ohms

STATOR - IGNITION WINDING

NOTE: Check winding with breaker points open.

Check	Range	Reading
Red lead to black lead of ignition winding; black lead to ground	R x 1	3-4 Ohms

CONDENSER

Check condensers with Magneto Analyzer (C-91-25213). Loosen and lift ignition winding off stator plate and open breaker points before checking condenser. Perform test, using

Scale 4, 5 and 6 as outlined in analyzer manual. Scale 4 reading should be .25-.30 microfarads.

IGNITION 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 2), meter

must move to "OK" block.

Terminals, other than those listed, should not have continuity.



Figure 2. Back View of Ignition Switch

Key Position	Connects Terminal
Off	E - D - G
Run	A - F
Start	A - F - B

IGNITION SYSTEM TEST PROCEDURES

ROCKET (339cc) and LIGHTNING (398cc)

Rocket (339cc) and Lightning (398cc) Snowmobiles use a magneto for ignition and light power. All lighting system component checks and specifications are explained in Part D, "Lighting Systems", of this section. All checks should be

completed with either the Magneto Analyzer (C-91-25213) or the VOA Electrical Tester (C-91-52751). Use test procedures sent with equipment, unless otherwise noted.

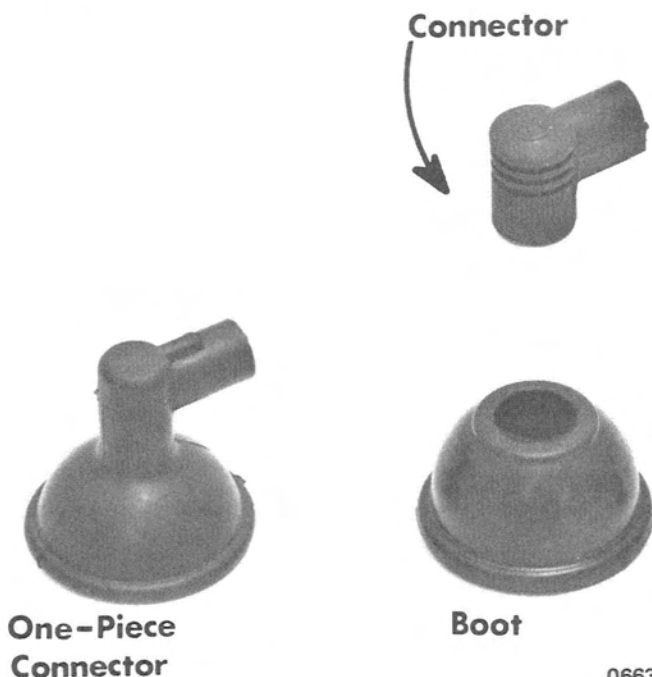
COMPONENT CHECKS

NOTE: An occasional spark leakage condition has been experienced on Rocket (339cc) and Lightning (398cc) engines which are equipped with rubber boots (D-59879) around the spark plugs below the spark plug connector. (Figure 1) When servicing Rocket and Lightning Snowmobiles, remove and discard these boots (if engine is so equipped). On some engines, the spark plug connector and rubber boot are one-piece, moulded construction. In this case, it will be necessary to replace the complete spark plug connector with a Mercury spark plug connector (C-47604A1).

Use VOA Electrical Tester (C-91-52751) to perform the following coil and stator tests.

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.

Figure 1. Spark Plug - Rubber Boots



COIL

Check	Range	Reading
<u>Primary No. 1</u>		
Red lead to coil white lead; black lead to ground	R x 1	1.2 - 1.8 Ohms
<u>Primary No. 2</u>		
Red lead to coil red lead; black lead to ground	R x 1	1.2 - 1.8 Ohms
<u>Secondary No. 1 and 2</u>		
Red lead to spark plug lead terminal with lead removed; black lead to ground	R x 100	50-70 Ohms

STATOR - IGNITION WINDING

Check	Range	Reading
<u>No. 1 Winding</u> Red lead to stator white lead; black lead to ground	R x 1	.9 - 1.4 Ohms
<u>No. 2 Winding</u> Red lead to stator red lead; black lead to ground	R x 1	.9 - 1.4 Ohms

CONDENSER

Check condenser with Magneto Analyzer (C-91-25213).
Remove condenser lead from breaker points and perform tests,

using Scale 4, 5 and 6 as outlined in analyzer manual. Scale 4
reading should be .225-.275 microfarads for either condenser.

EMERGENCY STOP SWITCH

Refer to Figure 2 for stop switch "On-Off" position. This also
is etched on the switch.

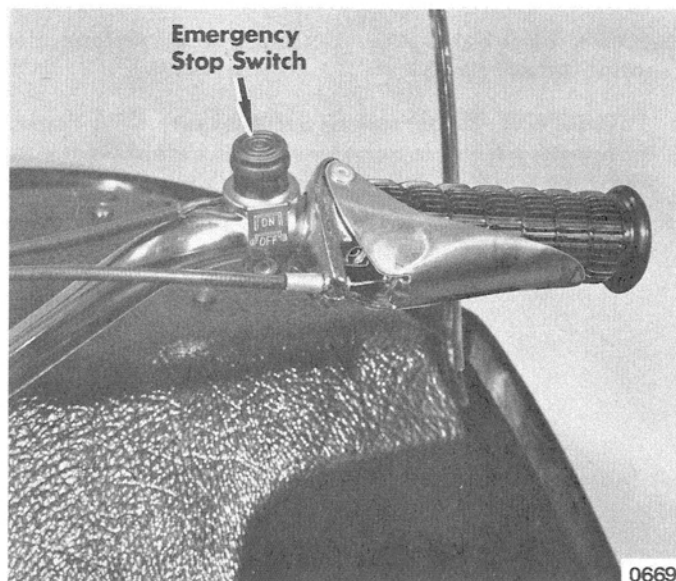


Figure 2. Emergency Stop Switch Position



Check	Range	Switch Position	Reading
1. Connect VOA leads to switch terminals.	R x 1 R x 1000	Off On	0 No continuity
2. Connect one VOA lead to steering post and other lead to a switch terminal.	R x 1000 R x 1000	Off On	No continuity

IGNITION 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 3), meter

must move to "OK" block.

Terminals, other than those listed, should not have continuity.

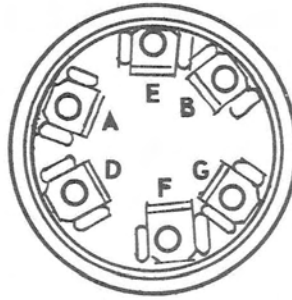


Figure 3. Back View of Ignition Switch

Key Position	Connects Terminal
Off	E - D - G
Run	A - F
Start	A - F - B

THUNDERBOLT IGNITION SYSTEM

HURRICANE (644cc)

TEST PROCEDURES

WARNING: When testing or servicing the Thunderbolt Ignition System, it is extremely important that the following precaution be observed, as high voltage is present: **DO NOT** touch or disconnect any ignition system parts while engine is running.

The Hurricane (644cc) Snowmobile uses "Maker Points" Thunderbolt Ignition. The switch box contains both ignition circuitry and rectification diodes for battery charging. The lighting system is explained in Part D, "Lighting Systems", of this section. All checks should be completed with either the Magneto Analyzer (C-91-25213) or VOA Electrical Tester (C-91-52751). Use test procedures sent with equipment, unless otherwise noted.

COMPONENT CHECKS

Use VOA Electrical Tester (C-91-52751) to perform the following tests.

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.

COIL

1. Disconnect the leads from the coil primary studs.
2. With VOA Electrical Tester, make the following measurement on each coil, being sure that pointer of VOA

Meter is adjusted to the ohms set position with the VOA leads shorted.

Check	Range	Reading
VOA leads connected to (+) positive and (-) negative marked coil studs.	R x 1	0
VOA leads connected to secondary tower connector and ground.	R x 100	5-6

STATOR - IGNITION WINDING

Check	Range	Reading
Red VOA lead to red stator lead and black VOA lead to ground	R x 1000	10-15
Red VOA lead to blue stator lead and black VOA lead to red stator lead	R x 100	2-3

SWITCH BOX

1. Disconnect orange, red, blue and green leads from switch box.

2. With VOA Electrical Tester, make the following measurements, being certain that pointer of VOA Meter is adjusted to ohms set position with VOA leads shorted:

Check	Range	Reading
1. Red VOA lead to blue terminal and black VOA lead to green terminal.	R x 1	10-15
2. Red VOA lead to red terminal and black VOA lead to green terminal.	R x 1	10-15
3. Reverse VOA leads in Steps 1 and 2.	R x 1000	No continuity
4. Red VOA lead to ground and black VOA lead to blue terminal.	R x 1	10-15
5. Red VOA lead to ground and black VOA lead to red terminal.	R x 1	10-15
6. Reverse VOA leads in Steps 4 and 5.	R x 1000	No continuity
7. Red VOA lead to green terminal and black VOA lead to ground.	R x 1000	No continuity
8. Reverse VOA leads in Step 7.	R x 1	70-150
9. Red VOA lead to orange terminal and black VOA lead to green terminal.	R x 1	100-200

EMERGENCY STOP SWITCH

Refer to Figure 1 for stop switch "On-Off" position. This also is etched on the switch.

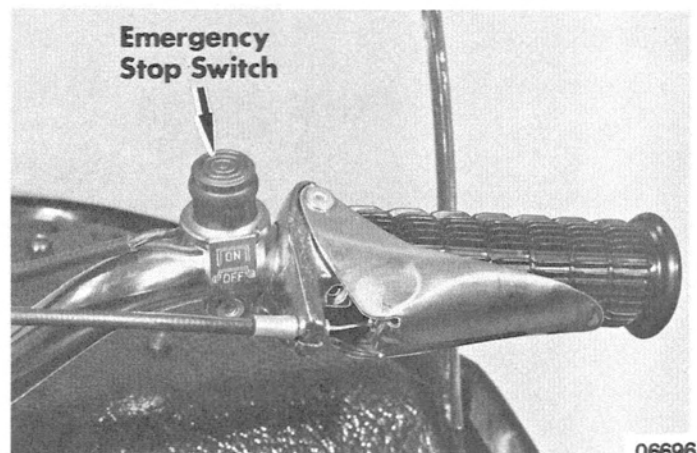


Figure 1. Emergency Stop Switch Positions

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Check	Range	Switch Position	Reading
1. Connect VOA leads to switch terminals.	R x 1 R x 1000	Off On	0 No continuity
2. Connect one VOA lead to steering post and other lead to a switch terminal.	R x 1000 R x 1000	Off On	No continuity

IGNITION 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 2), meter must move to "OK" block.

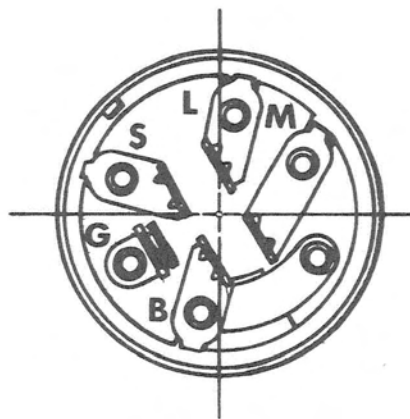


Figure 2. Back View of Ignition Switch

Key Position	Connects Terminal
Off	G-M
Run/Lights	B-L
Run	No continuity
Start (momentarily)	B-S

MAGNETO IGNITION SYSTEM TEST PROCEDURES

440 MAX (438cc), 440 M/X (438cc) and 440 S/R (438cc)

DESCRIPTION

The 440 MAX (438cc), 440 M/X (438cc) and 440 S/R (438cc) Snowmobiles use a magneto for ignition and lights. All lighting system component checks and specifications are explained in

Part D, "Lighting Systems", of this section. All checks should be completed with either the Magneto Analyzer (C-91-25213) or the VOA Electrical Tester (C-91-52751). Use test procedures sent with equipment, unless otherwise noted.

COMPONENT CHECKS

Use VOA Electrical Tester (C-91-52751) to perform the following coil, stator and emergency stop switch tests.

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 PLATE - PRIMARY IGNITION COIL WINDING

IMPORTANT: Engine harness **MUST** be unplugged from engine before making coil tests. When checking ignition coil windings, No. 1 (white wire) breaker point assembly

must be open when checking stator white wire. No. 2 (red wire) breaker point assembly must be open when checking stator red wire.

Check	Range	Reading
<u>No. 1 Winding</u> Red VOA lead to stator white wire; black lead to ground	R x 1	.6 - 1.6
<u>No. 2 Winding</u> Red VOA lead to stator red wire; black lead to ground	R x 1	.6 - 1.6

CONDENSER

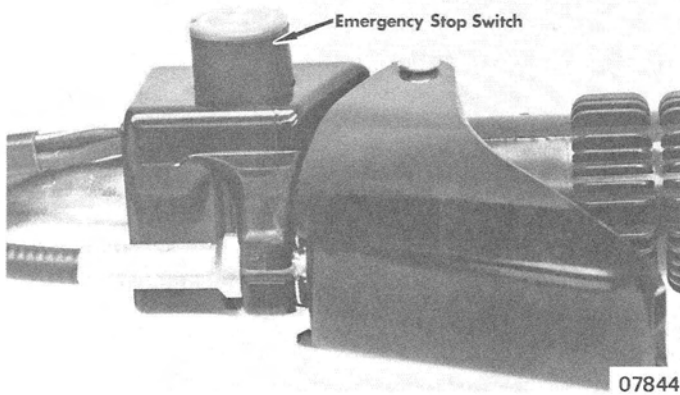
Check condenser with Magneto Analyzer (C-91-25213). Unsolder wires from condenser and perform tests, using Scale

4, 5 and 6 as outlined in analyzer manual. Scale 4 reading should be .225-.275 microfarads for either condenser.

SECONDARY IGNITION COIL

Check	Range	Reading
<u>Primary Winding No. 1</u> Red VOA lead to coil white wire; black lead to ground	R x 1	.2 - .8
<u>Primary Winding No. 2</u> Red VOA lead to coil red wire; black lead to ground	R x 1	.2 - .8
<u>Secondary Windings No. 1 and 2</u> Red VOA lead to spark plug lead terminal with lead removed; black lead to ground	R x 100	70 - 100

EMERGENCY STOP SWITCH



“Run” or “Off” position of stop switch can be noted by shape of button. (Figure 1) For “Off” position, switch is depressed and rubber is “squashed out”. For “Run” position, switch is up and not “squashed”.

Figure 1. Emergency Stop Switch

Check	Range	Switch Position	Reading
1. Connect VOA leads to switch wires.	R x 1 R x 1000	Off On	0 No continuity
2. Connect one VOA lead to steering post and other lead to a switch wire.	R x 1000 R x 1000	Off On	No continuity No continuity

IGNITION SWITCH

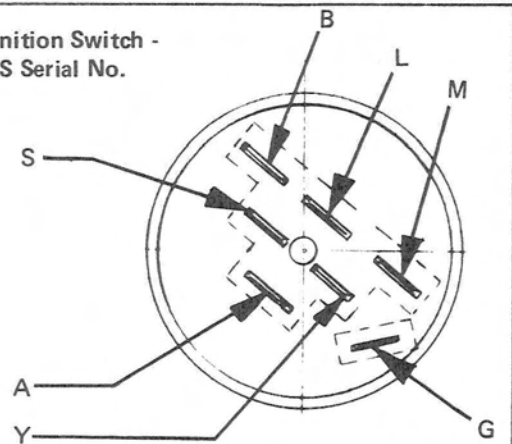
Check ignition switch with VOA Electrical Tester (C-91-52751) as outlined in the following charts. When

checking between connecting terminals (Figure 2 or 3), meter must move to right side of scale.

440 MODELS with CHASSIS SERIAL NO. 3447382 and BELOW

Figure 2. Back View of Ignition Switch -
440 Models with CHASSIS Serial No.
3447382 and Below

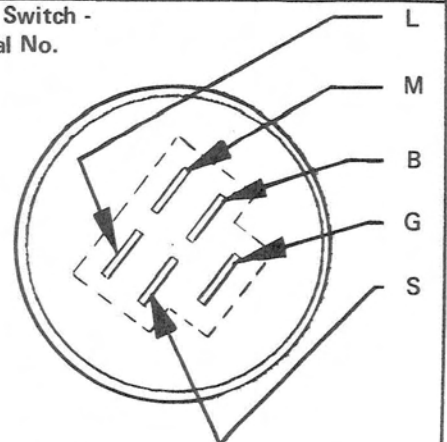
Key Position	Connects Terminal	Range	Reading
Off	G-M-L	R x 1	0
Run/Lights	A-Y	R x 1	0
Run	None	R x 1000	No continuity
Start	B-S	R x 1	0



440 MODELS with CHASSIS SERIAL NO. 3709838 and ABOVE

Figure 3. Back View of Ignition Switch -
440 Models with CHASSIS Serial No.
3709838 and Above

Key Position	Connects Terminal	Range	Reading
Off	G-M	R x 1	0
Run/Lights	B-L	R x 1	0
Run	None	R x 1000	No continuity
Start (momentarily)	B-S	R x 1	0



THUNDERBOLT IGNITION SYSTEM TEST PROCEDURES

MARK I (644cc) and MARK II(644cc)

DESCRIPTION

WARNING: When testing or servicing the Thunderbolt Ignition System, it is extremely important that the following precaution be observed, as high voltage is present. DO NOT touch or disconnect any ignition system parts while engine is running.

Mark I (644cc) and Mark II (644cc) Snowmobiles use

“Breakerless” Thunderbolt Ignition. The rectification diodes for battery charging are contained in the rectifier. The switch box contains only ignition circuitry. The lighting system is explained in Part D, “Lighting Systems”, of this section. All checks should be completed with either the Magneto Analyzer (C-91-25213), VOA Electrical Tester (C-91-52751) or Thunderbolt Ignition Analyzer (C-91-62563A1). Use procedures sent with test equipment, unless otherwise noted.

COMPONENT CHECKS

CAUTION: Before making any component checks, the battery cables MUST be disconnected from the battery.

Use VOA Electrical Tester (C-91-52751) to perform the following tests.

IMPORTANT: Before making any checks 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.

SECONDARY IGNITION COIL

Disconnect wires from coil primary studs and high tension wire from coil. With VOA Electrical Tester, make the following measurement on each coil, being sure that pointer of VOA Meter is adjusted to ohms set position with VOA leads shorted.

Check	Range	Reading
VOA leads connected to (+) positive and (-) negative marked coil studs.	R x 1	0
VOA leads connected to secondary tower connector and ground.	R x 100	8 - 12

STATOR - IGNITION WINDING

NOTE: Red and blue stator wires must be removed from switchbox terminals (or wires) before making checks.

Check	Range	Reading
Red VOA lead to red stator wire and black VOA lead to ground	R x 1	40 - 70
Red VOA lead to blue stator wire and black VOA lead to red stator wire	R x 100	45 - 70

NOTE: Refer to “Charging and Electric Start System”, Section 3E, for stator charging circuit tests.

TRIGGER COIL

NOTE: Tan and white trigger wires must be removed from switchbox terminals (or wires) before making checks.

Check	Range	Reading
VOA leads connected between tan and white wires.	R x 100	6.5 - 9.5
Red VOA lead to white wire and black lead to ground	R x 1000	No continuity
Red VOA lead to tan wire and black lead to ground.	R x 1000	No continuity

SWITCH BOX CHECKS

Remove cover from switch box (if so equipped) and disconnect salmon, tan, white, red, blue and green wires from switchbox terminals (or wires).

Use VOA Electrical Tester (C-91-52751) to make the following checks.

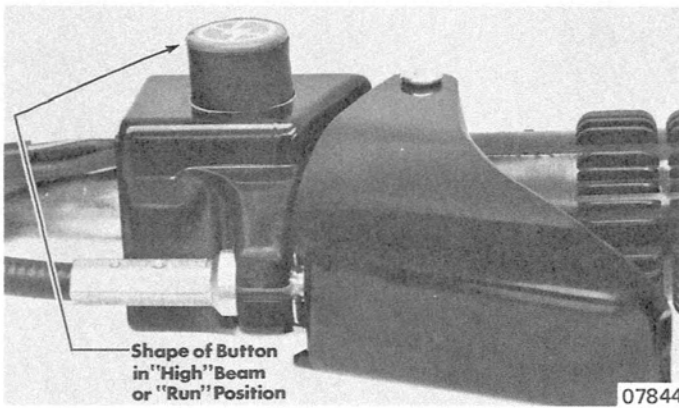
IMPORTANT: Before making any checks with VOA tester, turn meter selector to range specified and adjust pointer to ohms set position with red and black leads clipped together. Ohms set position **MUST BE** readjusted each time meter range is changed.

Black VOA Meter Lead	Red VOA Meter Lead	Range	Reading
Salmon terminal (or wire)	Green cyl. No. 1 terminal (or green wire)	R x 1	Continuity ▲
Salmon terminal (or wire)	Green cyl. No. 2 terminal (or green/white wire)	R x 1	Continuity ▲
Salmon terminal (or wire)	Blue terminal (or wire)	R x 1	Continuity ▲
Blue terminal (or wire)	Red terminal (or wire)	R x 1	Continuity ▲
Salmon terminal (or wire)	Case	R x 1	Continuity ▲
Green cyl. No. 1 terminal (or green wire)	Case	R x 1	Continuity ▲
Green cyl. No. 2 terminal (or green/white wire)	Case	R x 1	Continuity ▲
Green cyl. No. 2 terminal (or green/white wire)	Salmon terminal (or wire)	R x 1000	No continuity*
Green cyl. No. 1 terminal (or green wire)	Salmon terminal (or wire)	R x 1000	No continuity*
Blue terminal (or wire)	Salmon terminal (or wire)	R x 1000	No continuity
Case	Salmon terminal (or wire)	R x 1000	No continuity*
Case	Green cyl. No. 2 terminal (or green/white wire)	R x 1000	No continuity*
Case	Green cyl. No. 1 terminal (or green wire)	R x 1000	No continuity*
Red terminal (or wire)	Blue terminal (or wire)	R x 1000	No continuity

▲ Any meter movement would indicate "Continuity".

* The VOA needle should jump abruptly and settle back to the left side of scale ("No Continuity").

EMERGENCY STOP SWITCH



“Run” or “Off” position of stop switch can be noted by shape of button. (Figure 1) For “Off” position, switch is depressed and rubber is “squashed out”. For “Run” position, switch is up and not “squashed”.

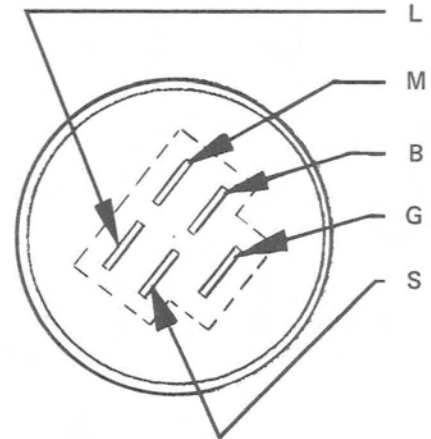
Figure 1. Emergency Stop Switch

Check	Range	Switch Position	Reading
1. Connect VOA leads to switch wires.	R x 1 R x 1000	Off On	0 No continuity
2. Connect one VOA lead to steering post and other lead to a switch wire.	R x 1000 R x 1000	Off On	No continuity No continuity

IGNITION SWITCH

Check ignition switch with VOA Electrical Tester (C-91-52751), as outlined in the following chart. When checking between connecting terminals (Figure 2), meter must move to right side of scale.

Figure 2. Back View of Ignition Switch



Key Position	Connects Terminal	Range	Reading
Off	G-M	R x 1	0
Run/Lights	B-L	R x 1	0
Run	None	R x 1000	No continuity
Start (momentarily)	B-S	R x 1	0

CAPACITOR DISCHARGE IGNITION SYSTEM TEST PROCEDURES

400 S/T, 340 T/T and 440 T/T with D-67856 Type Switch Box (Plug-In Connections at Switch Box - Figure 1)

DESCRIPTION

WARNING: When testing or servicing a capacitor discharge ignition system, it is extremely important that the following precaution be observed, as high voltage is present. DO NOT touch or disconnect any ignition system parts while engine is running.

400 S/T, 340 T/T and 440 T/T Snowmobiles use "Breaker-less" Capacitor Discharge Ignition. Alternating current is

generated in the windings of a 12-pole alternator stator, three (3) which supply ignition power and nine (9) which supply lighting power. The switch box contains only ignition circuitry. The lighting system is explained in Part D ("Lighting Systems") of this section. All checks should be completed with either the Magneto Analyzer (C-91-25213), VOA Electrical Tester (C-91-52751) or Thunderbolt Ignition Analyzer (C-91-62563A1). Use procedures sent with test equipment, unless otherwise noted.

COMPONENT CHECKS

Use VOA Electrical Tester (C-91-52751) to perform the following checks:

IMPORTANT: Before making any checks with VOA

Tester, turn meter selector to range specified and adjust pointer to ohms set position with red and black leads shorted together. Ohms set position MUST BE readjusted each time meter range is changed.

SECONDARY IGNITION COIL

Disconnect switch box wire from each ignition coil primary stud and high tension wire from each spark plug. With VOA Electrical Tester, make the following measurement on each

coil, being sure that pointer of VOA Meter is adjusted to ohms set position with VOA leads shorted.

Check	Range	Reading
VOA leads connected between primary terminal stud and coil ground at short black coil wire.	R x 1	.03-.50
VOA leads connected between high tension wire and coil ground at short black coil wire.	R x 100	1-3

STATOR - IGNITION WINDING

Disconnect stator harness connector (connector with black and white stator wires attached) from switch box. Make the following checks with VOA Electrical Tester on stator ignition

windings. Adjust VOA Meter to ohms set position with VOA leads shorted.

Check	Range	Reading
VOA leads connected between white stator wire terminal of stator connector and stator ground.	R x 100	20-30
VOA leads connected between black stator wire terminal of stator connector and stator ground.	R x 1	30-100

NOTE: Refer to "Lighting Systems", Section 3D, for stator light winding checks.

TRIGGER COIL

CAUTION: Trigger coils must be checked BEFORE replacing switch box. A bad trigger coil could cause severe damage to switch box.

Disconnect trigger harness connector (connector with black, white and red trigger wires attached) from switch box. Make the following checks with VOA Electrical Tester on trigger coil. Adjust VOA Meter to ohms set position with VOA leads shorted.

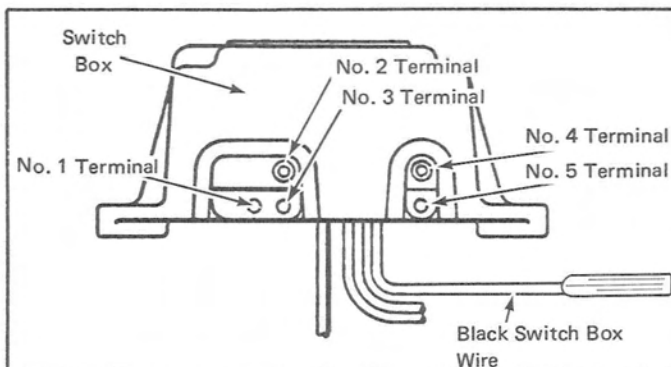
Check	Range	Reading
VOA leads connected between white trigger wire terminal and red trigger wire terminal of trigger connector.	R x 100	1-3
VOA leads connected between white trigger wire terminal and black trigger wire terminal of trigger connector.	R x 100	1-3
VOA leads connected between black trigger wire terminal of trigger connector and ground.	R x 1000	No continuity
VOA leads connected between white trigger wire terminal of trigger connector and ground.	R x 1000	No continuity
VOA leads connected between red trigger wire terminal of trigger connector and ground.	R x 1000	No continuity

SWITCH BOX

CAUTION: Trigger coils must be checked BEFORE replacing switch box. A bad trigger coil could cause severe damage to switch box.

Disconnect red and white switch box wires from secondary ignition coils and black switch box wire from black chassis harness wire at "quick-connector". Unplug trigger and stator harnesses from switch box. Make the following checks with VOA Electrical Tester on switch box. Adjust VOA Meter to ohms set position with VOA leads shorted.

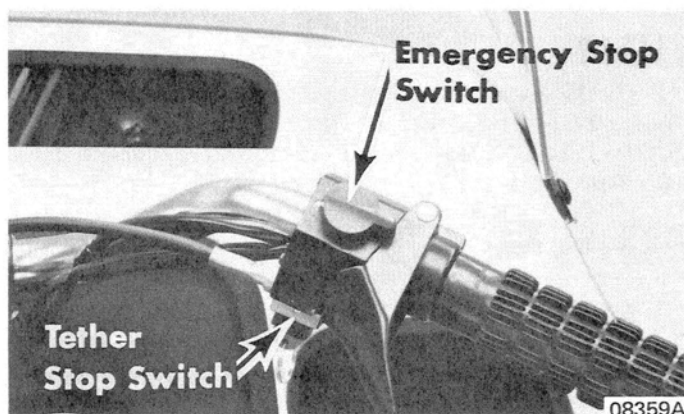
Figure 1. Sno-Twister Switch Box



Black Meter Lead	Red Meter Lead	Range	Reading
Case	Red Switch Box Wire	R x 1000	No continuity
Case	White Switch Box Wire	R x 1000	No continuity
Case	No. 4 Terminal (Figure 1)	R x 1000	Continuity *
Case	No. 5 Terminal (Figure 1)	R x 1000	Continuity *
Case	No. 2 Terminal (Figure 1)	R x 1000	Continuity *
Case	No. 3 Terminal (Figure 1)	R x 1000	Continuity *
Case	No. 1 Terminal (Figure 1)	R x 1000	Continuity *
No. 4 Terminal (Figure 1)	Case	R x 1000	No continuity
No. 5 Terminal (Figure 1)	Case	R x 1000	No continuity
No. 2 Terminal (Figure 1)	Case	R x 1000	Continuity *
No. 3 Terminal (Figure 1)	Case	R x 1000	Continuity *
No. 1 Terminal (Figure 1)	Case	R x 1000	Continuity *
Red Switch Box Wire	Case	R x 1000	Continuity *
White Switch Box Wire	Case	R x 1000	Continuity *
Black Switch Box Wire (Wire which was disconnected from chassis harness)	Case	R x 1000	Continuity *

* Any meter movement would indicate "Continuity".

EMERGENCY STOP SWITCH



Emergency stop switch (Figure 2) is in "Run" position when aligned with white "dot" on control lever mount. For "Off" position, emergency stop switch is aligned with either red "dot" on control lever mount.

Disconnect black and white (orange on 440 T/T) emergency stop switch wires from chassis terminal block. Make the following checks with VOA Electrical Tester on emergency stop switch. Adjust VOA Meter to ohms set position with VOA leads shorted.

Figure 2. Emergency Stop Switch and Tether Stop Switch

Check	Range	Switch Position	Reading
VOA leads connected between white (orange on 440 T/T) and black switch wires.	R x 1000 R x 1000	Off Run	Continuity No continuity
VOA leads connected between white (orange on 440 T/T) switch wire and handlebar.	R x 1000	Run	No continuity

TETHER STOP SWITCH (400 S/T Only)

Tether stop switch (Figure 2) is in "Run" position when tether pin is inserted into tether switch. For "Off" position, tether pin is removed from tether switch. Disconnect black and white tether stop switch wires from chassis terminal block. Make the

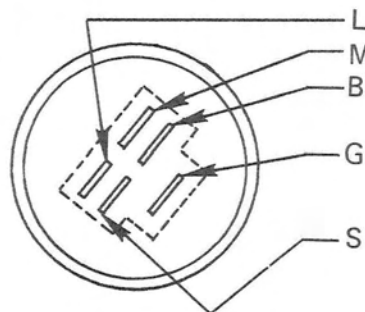
following checks with VOA Electrical Tester on tether stop switch. Adjust VOA Meter to ohms set position with VOA leads shorted.

Check	Range	Tether Position	Reading
VOA leads connected between white and black switch wires.	R x 1000 R x 1000	Off Run	Continuity No continuity
VOA leads connected between white switch wire and handlebar.	R x 1000	Run	No continuity

IGNITION SWITCH (440 T/T Only)

Check ignition switch with VOA Electrical Tester (C-91-52751), as outlined in the following chart. When checking between connecting terminals (Figure 3), meter must move to right side of scale.

Figure 3. Back View of Ignition Switch



Key Position	Connects Terminal	Range	Reading
Off	G-M	R x 1	0
Run/Lights	B-L	R x 1	0
Run	None	R x 1000	No continuity
Start (momentarily)	B-S	R x 1	0

MAGNETO IGNITION SYSTEM TEST PROCEDURES

340 S/R

DESCRIPTION

The 340 S/R Snowmobile uses a magneto for ignition and lights. All lighting system component checks and specifications are explained in Part D, "Lighting Systems", of this section.

All checks should be completed with either the Magneto Analyzer (C-91-25213) or the VOA Electrical Tester (C-91-52751). Use test procedures sent with equipment, unless otherwise noted.

COMPONENT CHECKS

Use VOA Electrical Tester (C-91-52751) to test stator ignition windings, secondary ignition coils, emergency stop switch and ignition switch.

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 PLATE - PRIMARY IGNITION COIL WINDING

IMPORTANT: Engine harness **MUST** be unplugged from chassis harness before making coil tests. When checking the ignition coil winding, the respective breaker point assembly must be open. This ignition system has one (1) primary ignition coil.

Check	Range	Reading
Red VOA lead to <u>either</u> black engine harness wire; black VOA lead to engine ground	R x 1	2.0-4.0*

* A black wire is attached to each set of breaker points. Depending upon which black wire that meter is connected to, the respective breaker points must be open.

CONDENSER

Check condenser with Magneto Analyzer (C-91-25213). Unsolder wires from condenser and perform tests, using Scales 4,

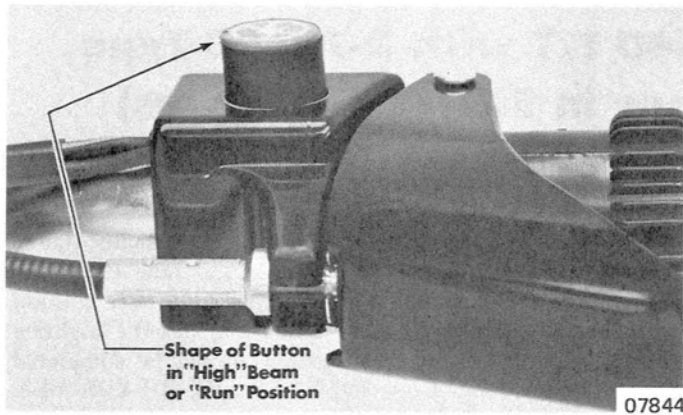
5 and 6 as outlined in Magneto Analyzer manual. Scale 4 reading should be .10-.15 microfarads for each condenser.

SECONDARY IGNITION COIL

Dash assembly and carburetor must be removed to check ignition coils.

Check	Range	Reading
<u>Primary Coil Winding</u> Red VOA lead to coil terminal marked #15; black VOA lead to coil terminal marked #1	R x 1	1.0-3.0
<u>Secondary Coil Winding</u> Red VOA lead to coil high tension wire; black VOA lead to coil terminal marked #1	R x 1000	6.0-9.0

EMERGENCY STOP SWITCH



“Run” or “Off” position of stop switch can be noted by shape of button. (Figure 1) For “Off” position, switch is depressed and rubber is “squashed out”. For “Run” position, switch is up and not “squashed”.

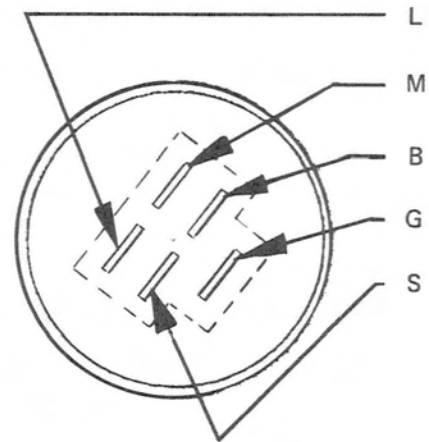
Figure 1. Emergency Stop Switch

Check	Range	Switch Position	Reading
1. Connect VOA leads to switch wires.	R x 1 R x 1000	Off On	0 No continuity
2. Connect one VOA lead to steering post and other lead to a switch wire.	R x 1000 R x 1000	Off On	No continuity No continuity

IGNITION SWITCH

Check ignition switch with VOA Electrical Tester (C-91-52751), as outlined in the following chart. When checking between connecting terminals (Figure 2), meter must move to right side of scale.

Figure 2. Back View of Ignition Switch



Key Position	Connects Terminal.	Range	Reading
Off	G-M	R x 1	0
Run/Lights	B-L	R x 1	0
Run	None	R x 1000	No continuity
Start (not used)	B-S	R x 1	0

CAPACITOR DISCHARGE IGNITION SYSTEM TEST PROCEDURES

340 S/T, 440 S/T, 340 T/T and 440 T/T with D-72598 Type Switch Box (Plug-In Connections in Switch Box Wires)

DESCRIPTION

WARNING: When testing or servicing a capacitor discharge ignition system, it is extremely important that the following precaution be observed, as high voltage is present. **DO NOT** touch or disconnect any ignition system parts while engine is running.

340 S/T, 440 S/T, 340 T/T and 440 T/T Snowmobiles use "Breakerless" Capacitor Discharge Ignition. Alternating cur-

rent is generated in the windings of a 12-pole alternator stator, three (3) which supply ignition power and nine (9) which supply lighting power. The switch box contains only ignition circuitry. The lighting system is explained in Part D ("Lighting Systems") of this section. All checks should be completed with either the Magneto Analyzer (C-91-25213), VOA Electrical Tester (C-91-52751) or Thunderbolt Ignition Analyzer (C-91-62563A1). Use procedures sent with test equipment, unless otherwise noted.

COMPONENT CHECKS

Use VOA Electrical Tester (C-91-52751) to perform the following checks:

IMPORTANT: Before making any checks with VOA

Tester, turn meter selector to range specified and adjust pointer to ohms set position with red and black leads shorted together. Ohms set position **MUST BE** readjusted each time meter range is changed.

SECONDARY IGNITION COIL

Disconnect switch box wire from each ignition coil primary stud and high tension wire from each spark plug. With VOA Electrical Tester, make the following measurement on each

coil, being sure that pointer of VOA Meter is adjusted to ohms set position with VOA leads shorted.

Check	Range	Reading
VOA leads connected between primary terminal stud and coil ground at short black coil wire.	R x 1	.03-.06
VOA leads connected between high tension wire and coil ground at short black coil wire.	R x 100	1-3

STATOR - IGNITION WINDING

Disconnect stator and trigger wires from switch box wires at large black, plug-in connector. Make the following checks with

VOA Electrical Tester on stator ignition windings. Adjust VOA Meter to ohms set position with VOA leads shorted.

Check	Range	Reading
VOA leads connected between yellow stator wire (at terminal of plug-in connector) and stator ground. (This reading would affect idle.)	R x 100	20-30
VOA leads connected between blue stator wire (at terminal of plug-in connector) and stator ground. (This reading would affect top end.)	R x 1	30-100

NOTE: Refer to "Lighting Systems", Section 3D, for stator light winding checks.

TRIGGER COIL

CAUTION: Trigger coils must be checked **BEFORE** replacing switch box. A bad trigger coil could cause severe damage to switch box.

Disconnect stator and trigger wires from switch box wires at large black, plug-in connector. Make the following checks with VOA Electrical Tester on trigger coils. Adjust VOA Meter to ohms set position with VOA leads shorted.

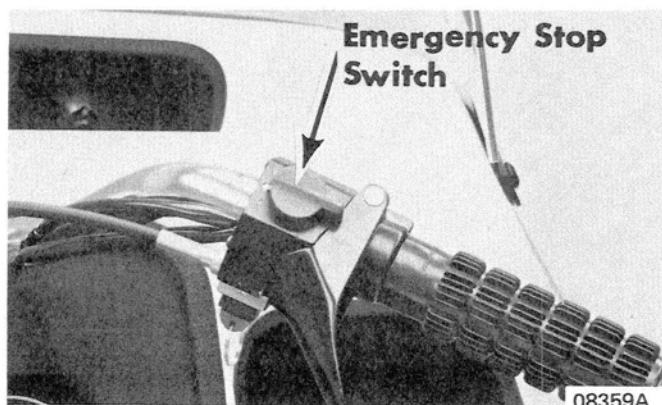
Check	Range	Reading
VOA leads connected between green trigger wire and red trigger wire at terminals of plug-in connector.	R x 1	20-40
VOA leads connected between green trigger wire and white trigger wire at terminals of plug-in connector.	R x 1	20-40
VOA leads connected between white trigger wire (at terminal of plug-in connector) and ground.	R x 1000	No continuity
VOA leads connected between green trigger wire (at terminal of plug-in connector) and ground.	R x 1000	No continuity
VOA leads connected between red trigger wire (at terminal of plug-in connector) and ground.	R x 1000	No continuity

SWITCH BOX

CAUTION: Trigger coils must be checked **BEFORE** replacing switch box. A bad trigger coil could cause severe damage to switch box.

Switch box cannot be satisfactorily checked with a VOA meter. If an ignition problem persists after checking other ignition components (as outlined preceding), the switch box should be replaced.

EMERGENCY STOP SWITCH



Emergency stop switch (Figure 2) is in "Run" position when aligned with white "dot" (or "ON" marked position) on control lever mount. For "Off" position, emergency stop switch is aligned with either red "dot" (or "STOP" marked position) on control lever mount.

Disconnect black and orange emergency stop switch wires from chassis terminal block. Make the following checks with VOA Electrical Tester on emergency stop switch. Adjust VOA Meter to ohms set position with VOA leads shorted.

Figure 2. Emergency Stop Switch

Check	Range	Switch Position	Reading
VOA leads connected between orange and black switch wires.	R x 1000 R x 1000	Off Run	Continuity No continuity
VOA leads connected between orange switch wire and handlebar.	R x 1000	Run	No continuity