Foreword

This manual is designed primarily for use by snowmobile mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the snowmobile user who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, the adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, the mechanic should read the text, thoroughly familiarize himself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment is specified, makeshift tools or equipment should not be used. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation of the snowmobile.

Whenever you see the symbols shown below, heed their instructions! Always follow safe operating and maintenance practices.

WARNING

This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.

CAUTION

This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to, or destruction of equipment.

NOTE: Indicates points of particular interest for more efficient and convenient operation.

This manual is divided into the following four sections:

(1) Specifications

This section contains general and technical specifications, a complete torque chart and engine performance curves.

(2) Maintenance and Theory of Operation

The procedures for inspection, adjustments and minor repair are described in this section. An explanation on the structure and function of each of the major components and assembly enables the mechanic to better understand what he is doing.

(3) Repair

This section shows the best method for removal, disassembly, inspection, assembly, and installation which are necessary for proper maintenance and repair. Assembly and installation notes are provided to explain special points.

(4) Appendix

The appendix in the back of the manual contains miscellaneous information, including metric reference and conversion charts, special tools, wiring diagram, and an index.

This shop manual has been prepared to assist the mechanic in servicing the KAWASAKI snowmobiles. All procedures contained within should be followed closely.

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ELECTRICAL COMPONENTS

Type	12 VAC, 120 W
Headlight Bulb Part Number	92069-3501
	12 V, 60/60 W
Tail/Brake Light	G.E. 1157
Instrument Light	G.E. 363 12 V-3 W

FRAME

Frame	Aluminum alloy and HSLA steel construction

Service Specifications

ENGINE

Effective Compression Ratio	7.3 to 1
Top Ring/Groove Clearance	0.009 in. (max) (0.22 mm)
Bottom Ring/Groove Clearance	0.008 in. (max) (0.19 mm)
Piston Ring End Gap (Top)	0.008-0.016 in. (0.2-0.4 mm)
Piston Ring End Gap (Bottom)	0.008-0.016 in. (0.2-0.4 mm)
Piston Skirt Clearance	0.002-0.004 in. (0.05-0.10 mm)
Connecting Rod Radial Play	0.0008-0.001 in. (0.02-0.03 mm)
Connecting Rod Side Clearance	0.016-0.020 in. (0.4-0.5 mm)
Connecting Rod Small End Diameter	0.787-0.789 in. (20.0-20.5 mm)
Crankshaft End Play (max)	0.015 in. (0.38 mm)
Crankshaft Run Out (max)	0.002 in. (T.I.R.) (0.05 mm)

Maintenance Chart

Frequency / Operation	Beginning of Each Season	First 50-100 Miles or 5-10 Hours Use	Every 300 Miles or 20 Hours Use	Every 600 Miles or 40 Hours Use	Every 900 Miles or 60 Hours Use	End of Each Season	Page Reference
Install new spark plugs	x			x			2-34
Check carburetor adjustment	x	x					2-29
Check throttle cable adjustment	x	x			x		2-31
Check enrichener cable adjustment	x	x			x		2-32
Replace fuel filter					x		2-29
De-carbon engine and exhaust						x	3-53
Check ignition timing		x					2-32
Replace drive belt (be sure converter sheaves are clean and dry)	x			x			2-43
Check drive converter and driven converter alignment	x				x		2-38
Check drive converter bushings for wear					x		3-72
Clean and inspect drive and driven converters						x	2-44
Check drive chain tensioner guides	x						2-45
Adjust track tension and check alignment	x	x	x				2-50
Check ski alignment	x			x			2-47
Adjust brake		x	x				2-44
Check fasteners for security (use torque chart as a guide)	x			x			1-9
Inspect ski skegs for wear	x		x				2-48
Measure wear of slide rail wear strips	x		x				3-90
Adjust headlight	x						2-36
Check fan belt tension						x	3-48

Carburetor Theory of Operation

Introduction

The mixing of fuel and air in the amounts required for efficient combustion is the function of the carburetor.

A common method for referring to carburetors is the bore or venturi size. This method is used in snowmobiles. The measurement is the diameter of the smallest part of the venturi. (See Figure 2-12.)

The carburetor is the rider's primary control over the movement of his machine. The carburetor chooses the engine speed that will propel the machine at the desired rate. With a squeeze of the control the rider can choose a speed anywhere from a virtual crawl to flat out. The rider expects that the engine will respond instantly, anywhere within its operating range.

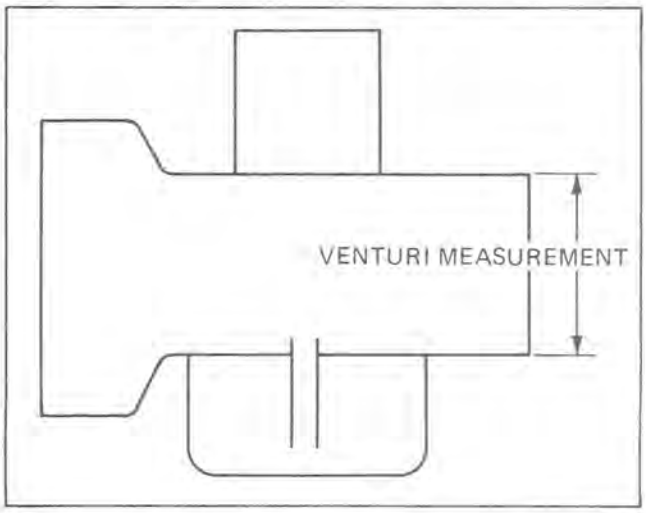


Figure 2-12

The carburetor receives the message from the rider in the form of a pull on a cable. This lifts a valve which uncovers the air passage to the engine. This valve, aided by numerous ports, passages, needles, and jets, regulates the flow of fuel and air into the engine. When the valve is lifted, a greater quantity of fuel/air mixture flows under the valve into the engine, causing it to produce more power. When the valve is lowered, less fuel/air mixture is admitted to the engine, causing it to reduce speed and power.

The carburetor controls the amount of fuel/air mixture which reaches the engine. (See Figure 2-13.)

The fuel/air ratio must be adjusted to meet the changing needs of the engine for particular conditions of load and speed. The ideal burning ratio of fuel to air is about 1:15 or one gram of fuel to each 15 grams of air. This is an "ideal" or "theoretical" mixing ratio, and is only achieved for a fraction of the time that the engine is running. Due to incomplete vaporization of fuel at low speeds or additional fuel required at high speeds, the actual operational fuel/air ratio is usually richer.

Within the acceptable fuel/air ratios that can be burned in the engine, a balance between power and economy must be reached. The amount of air entering the engine for combustion is the limiting factor for maximum performance. To take advantage of the limited amount of air available for combustion, it is necessary to surround each air molecule with enough fuel molecules to insure that all of the air is utilized. Maximum power is obtained by gaining maximum burning efficiency of the available air. Maximum economy is gained by surrounding each molecule of fuel with several molecules of air to insure maximum use from a given quantity of fuel. Maximum economy is maximum burning efficiency of the available fuel.

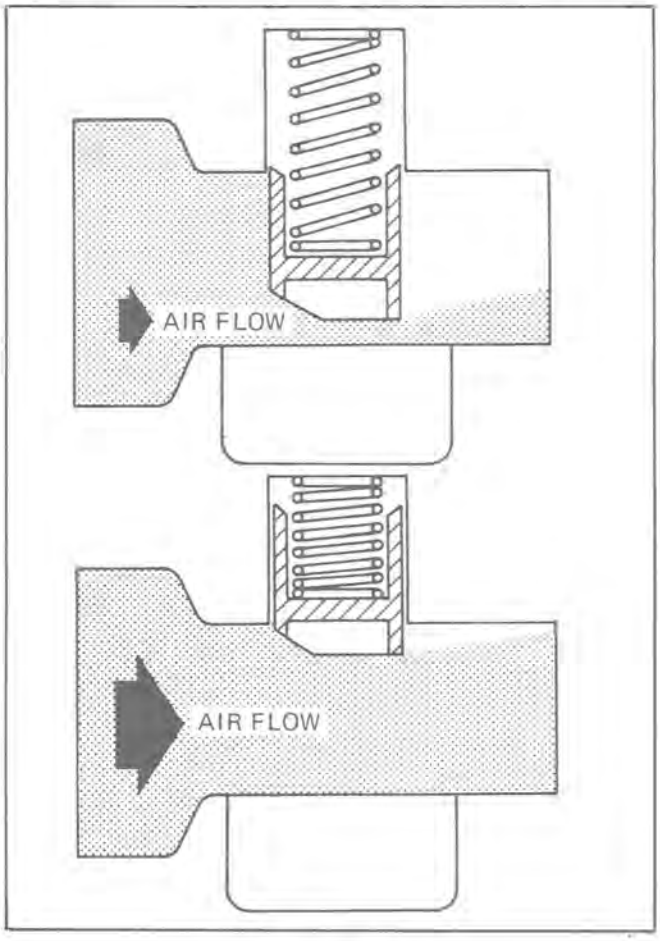


Figure 2-13

Ignition System Theory of Operation

The ignition system consists of the spark plugs, ignition coil, a capacitor discharge ignition (CDI) igniter, exciter coil, and a pulser coil. (See Figure 2-33.)

The CDI magneto assembly consists of a flywheel with four magnets evenly spaced about the circumference and a stator. The stator serves as a mount for three coils. The exciter coil charges the capacitor in the CDI igniter; the pulser coil signals the CDI igniter to fire the spark plugs (both spark plugs fire simultaneously); and the lighting coil supplies current to the lights. (See Figure 2-34.)

As the flywheel rotates, an alternating current is induced in the coils mounted on the stator.

The CDI igniter capacitor stores the charge generated by the exciter coil. The amount of charge the exciter coil gives the capacitor effects the intensity of the spark.

Current generated by the pulser coil causes the capacitor in the CDI igniter to release its stored charge to the ignition coil. The ignition coil primary induces a high voltage in the secondary winding, and causes a spark to jump across the spark plug electrodes.

This sequence occurs twice every rotation of the flywheel.

The pulser coil has no effect on the intensity of the spark. Its sole purpose is to signal the capacitor when to release its charge to the ignition coil.

Two switches (emergency stop and key) are connected to CDI igniter leads through the engine connector which comprise the "stop" circuit. Each switch functions independently of the other and when positioned to "stop" will complete a circuit preventing charge of the capacitor in the CDI igniter. If no charge is applied to the capacitor, there is no output from the CDI igniter to ignition coil resulting in no spark at the plugs.

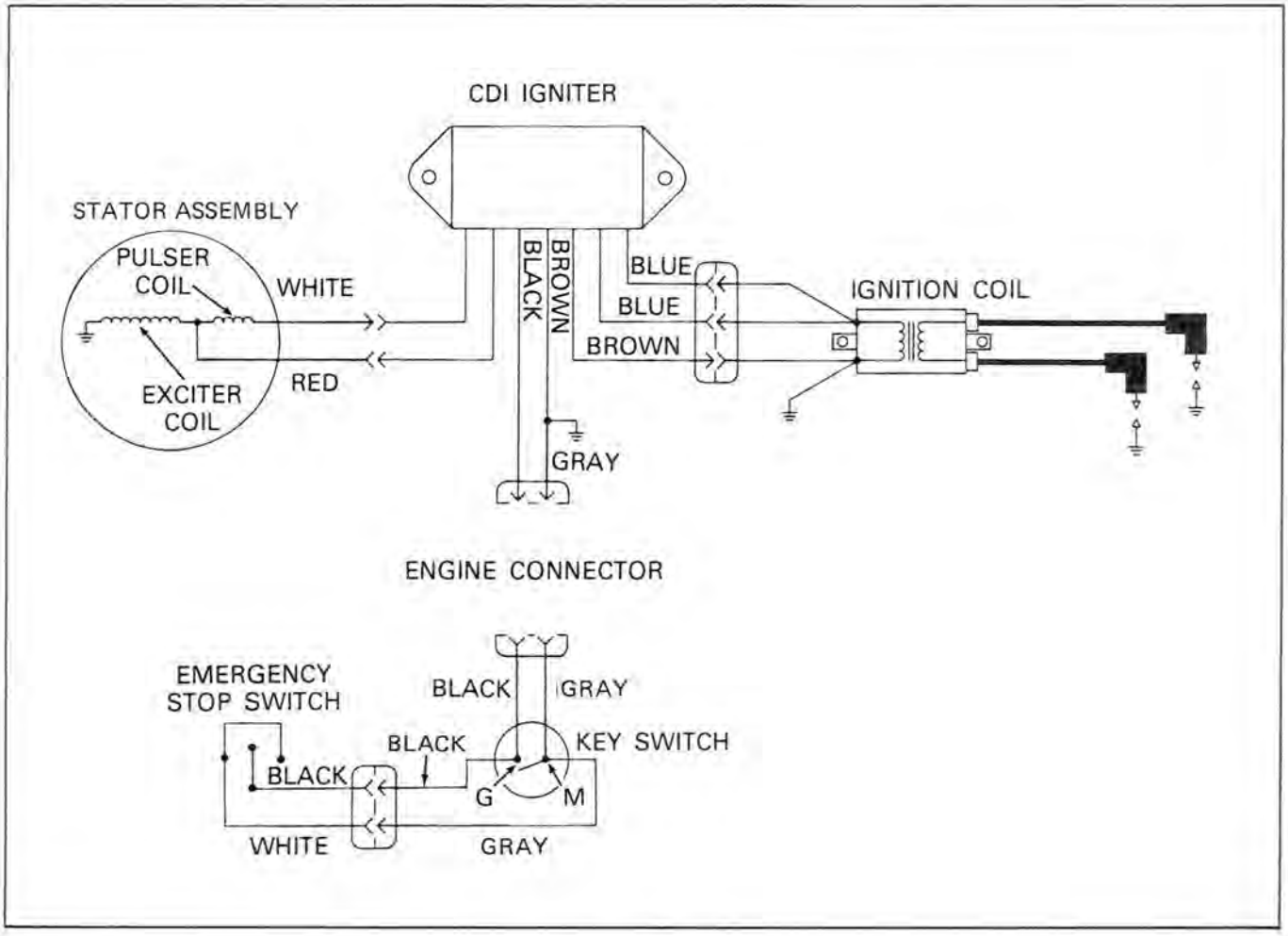
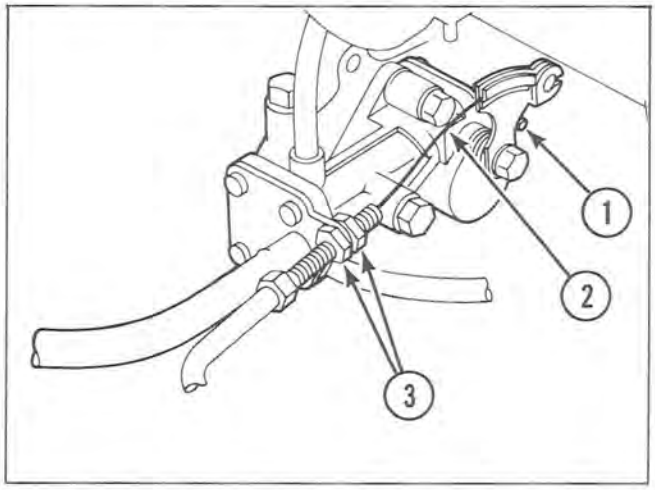


Figure 2-33



1. Lever Stop Pin
2. Slack Removed
3. Cable Locknuts

Figure 2-49

5. Adjust RH carburetor throttle cable so that oil pump lever and both throttle valves move simultaneously as the throttle control lever is activated.

6. Perform Carburetor Adjustments.

7. Secure air silencer into position with four springs. Install long springs on upper silencer tab retainers and short springs on lower silencer tab retainers.

CAUTION

While installing air intake silencer, check that:

a. The rubber seals between silencer body and carburetors are properly positioned and fit securely.

b. The intake hose is positioned rearward beneath brake and enrichener cable.

Failure to comply with the above steps will cause engine failure.

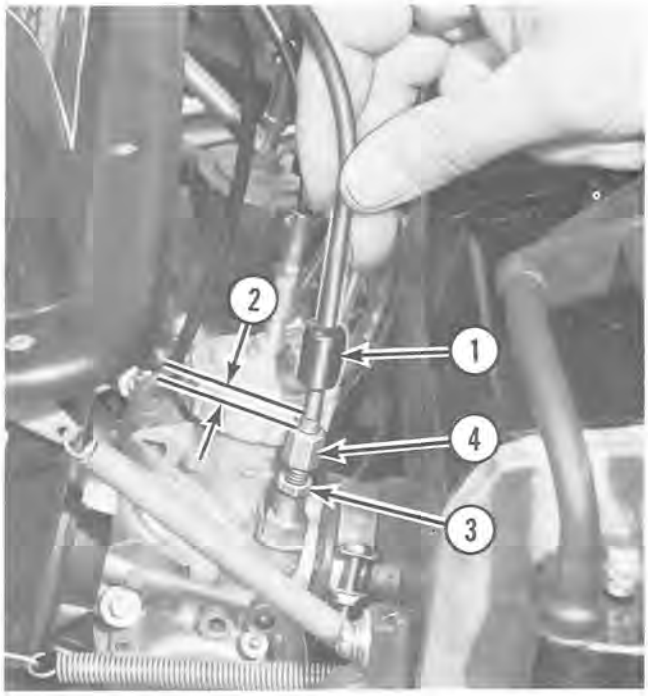
8. Install mounting screws to secure the instrument panel assembly.

Enrichener Cable Adjustment

With the Enrichener lever down, and boot slid up the casing, the Enrichener Cable should have 1/16 in. (1.5 mm) of free movement when raised. (See Figure 2-50.)

NOTE: Engine flooding may occur if the Enrichener Cable free movement is less than 1/16 in. (1.5 mm).

If adjustment is required, loosen locknut and turn adjusting screw to obtain the correct movement. After adjustment, or checking, reposition boot over enrichener fitting to prevent foreign matter from entering the enrichener system.



1. Boot
2. 1/16 In. (1.5 mm)
3. Locknut
4. Adjusting Screw

Figure 2-50

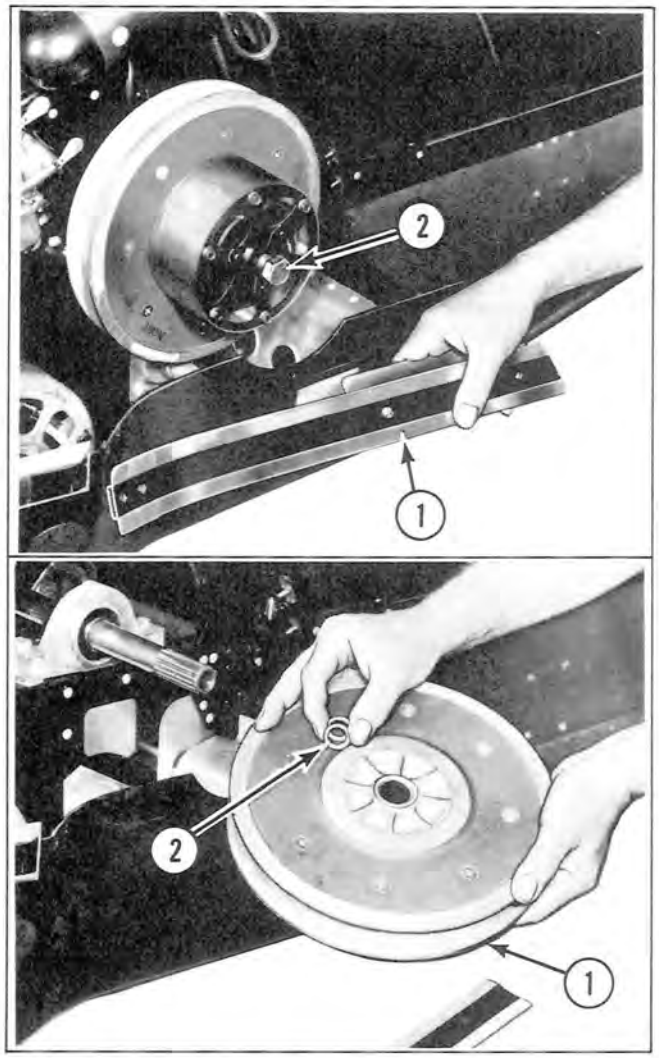
Ignition System

Since the CDI system has no mechanical parts, there are no parts to wear out, and no scheduled maintenance is required. If any of the CDI system components are defective, they must be replaced.

Ignition Timing Check

Remove drive belt prior to performing the following procedure.

1. Install a fabricated timing pointer onto engine. For accuracy, it is important to attach pointer to engine rather than chassis, so that pointer can move with the engine. (See Figure 2-51.)



1. Aluminum Trim
2. Retaining Bolt
3. Shims
4. Driven Torque Converter

Figure 2-76

2. Slide driven converter from jackshaft and add or remove shims, as required, from bore of driven converter to obtain correct converter offset. (See Figure 2-76.)

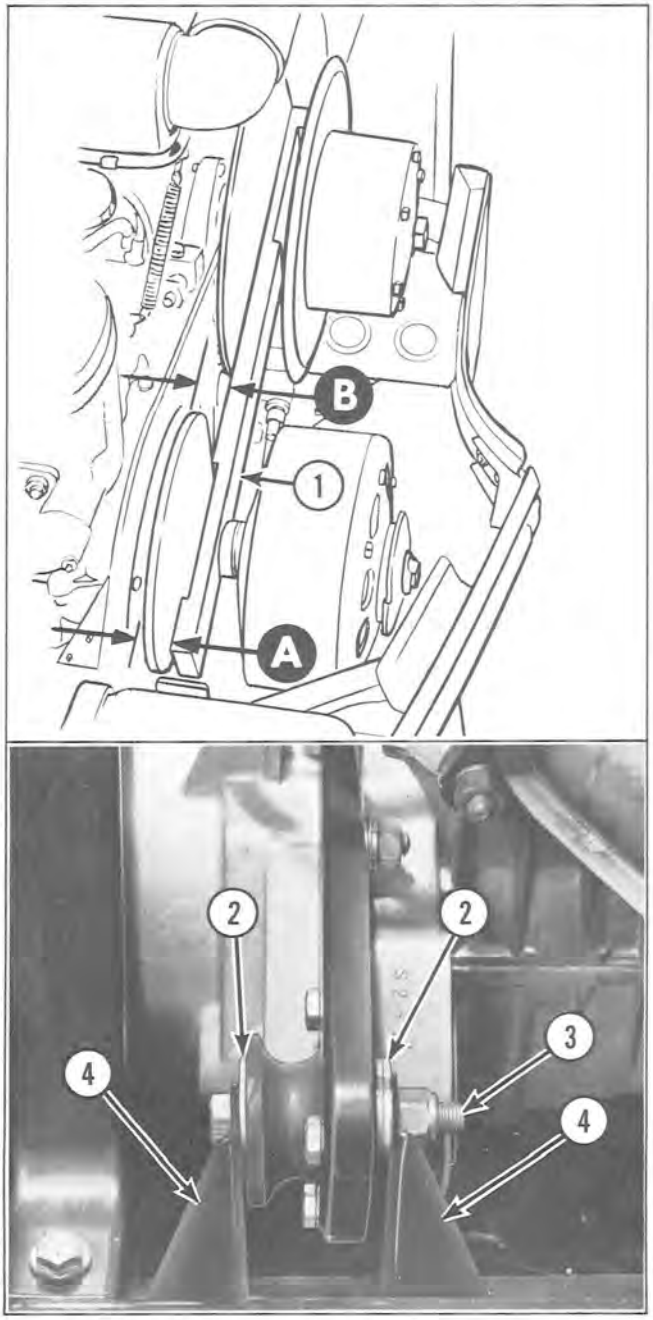
3. Reinstall driven converter, and torque mounting bolt 40 to 50 ft lb (5.53 to 6.91 kg-m).

4. Position aluminum trim onto the lower pan and secure with screws and nuts. Be sure special washers are installed under head of each screw to prevent damaging the decal pattern on the aluminum trim.

5. Inspect drive and driven converters for correct parallelism.

Converter Parallelism

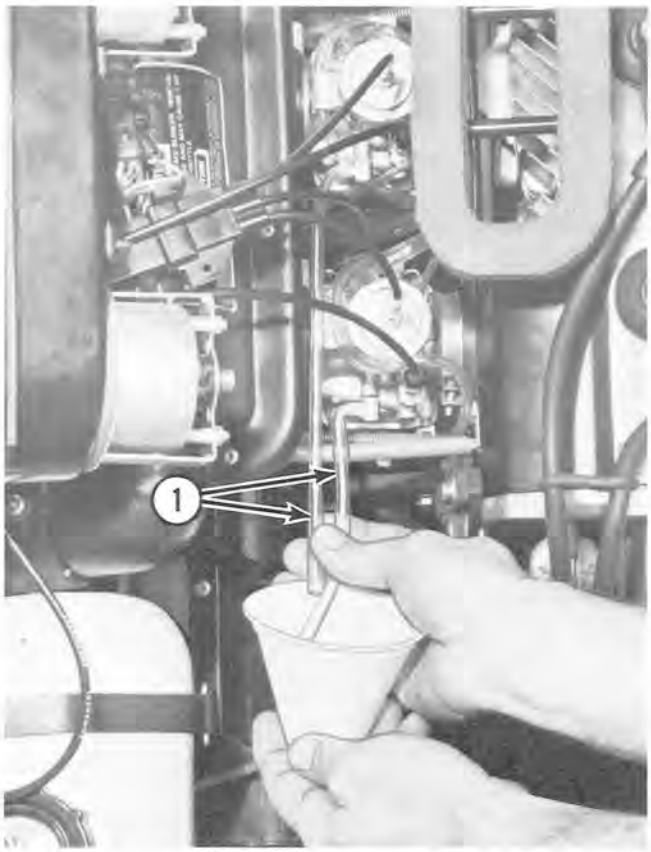
1. After checking the center-to-center and offset distance, parallelism must be checked by measuring dimensions A and B as shown. (See Figure 2-77.) Compare dimensions A and B against Notes I and II.



1. Alignment Gauge P/N 57001-3503
2. Shims
3. Engine Mount Bolt
4. Engine Mounting Bracket

Figure 2-77

NOTE I: Dimension A must be equal to or more than dimension B.



1. Vent Tubes

Figure 2-96

10. Drain and refill engine gearcase.

11. Block the rear of the snowmobile off the ground to remove weight from the suspension.

12. Loosen the rear axle locking bolt on either end of rear axle then loosen adjusting nuts to relieve track tension.

13. If paint is scratched, use touch-up paint to restore original finish, and wax the hood and chassis using an automotive type wax.

14. Cover your snowmobile to protect it from dirt and dust.

Removal From Storage

1. Fill the fuel tank with fresh fuel.

2. Fill the oil tank with Kawasaki Snowmobile Oil.

3. Check the oil tube connecting the oil tank to oil pump for air bubbles. If any air is present, bleed the oil tube and pump.

4. Check and fill engine oil pump gearcase. Use Shell XL100 10W-30 non-foaming engine oil. Level should be above center of sight gauge but not higher than the top.

5. Remove the plugs (masking tape or rags) from the air intake silencer and muffler outlet.

6. Using a suitable solvent, clean the converter sheaves. The converter sheaves must be clean and dry.

7. Install a new drive belt. Use the one removed last year as a spare.

8. Adjust the track tension.

WARNING

Be sure engine has stopped before checking or adjusting track alignment.

9. Start the engine and rotate the track several revolutions, at low speed only, then stop engine and check the track alignment.

10. Lower the vehicle from blocks.

11. Operate the snowmobile with the old spark plugs for the first 1/2 hour of operation. This will allow the oil used while storing the snowmobile to collect on the old spark plugs. Install new spark plugs, refer to the Specifications page for the recommended heat range and gap adjustment.

Ignition Troubleshooting

NOTE: The following tips may help isolate ignition problems quickly.

1. A defective exciter coil, CD igniter, ignition coil, key switch or emergency stop switch can be the cause of no spark, weak spark or intermittent spark.

2. A defective pulser coil may cause no spark or intermittent spark but not a weak spark.

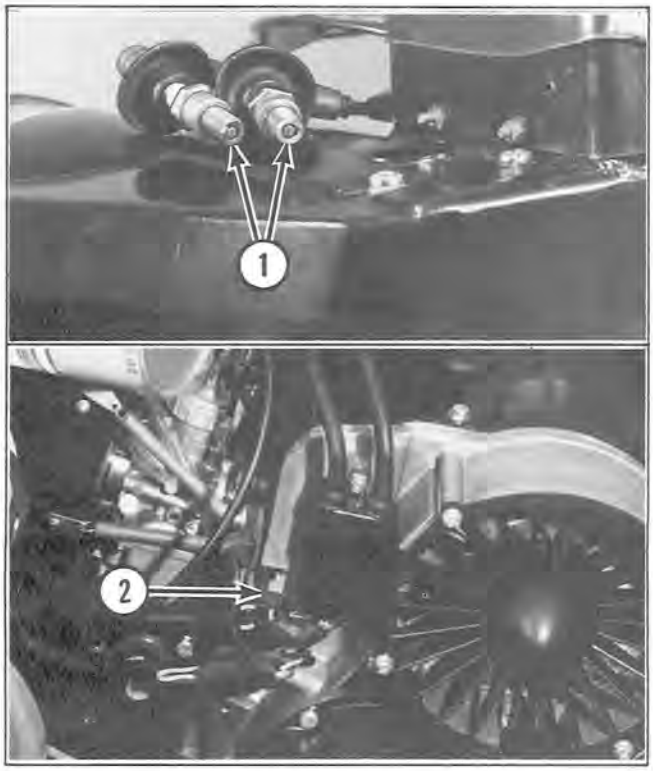
Preliminary Procedures

When an ignition problem is present, prior to performing elaborate troubleshooting try to solve problems by performing the easy tests first.

Spark Test

Check ignition coil output to spark plugs by performing the following:

1. Connect test spark plug to each spark plug cap. (See Figure 3-1.)



1. Test Spark Plugs
2. Wiring Harness Connector

Figure 3-1

NOTE: Fabricate test spark plug by removing ground electrode. This increases distance spark must jump from center electrode to ground, working the ignition system harder than jumping standard spark plug gap.

2. Crank engine and observe spark.

   a. Blue colored spark jumps gap of test spark plug indicates ignition system should start and run engine if timing is correct.

   b. No spark observed, continue troubleshooting procedure.

Stop Circuit Elimination Test

Remove key switch and emergency stop switch circuits from the system. Separate wiring harness connector on the engine. (See Figure 3-1.)

1. Crank engine. If spark occurs with the connector separated, ignition components on the engine are okay, defective component must be key switch, emergency stop switch or the wiring. Refer to Key Switch and Emergency Stop Switch Tests.

2. If no spark is observed, test ignition components mounted on engine.

Ground Wire Test

Check condition of the grounded BROWN wire between ring terminal at engine connector and ring terminal on primary of the ignition coil.

1. Remove screw securing each ring terminal to ground.

2. Set meter to low ohms scale (XI). Connect one ohmmeter lead to the ring terminal removed from the ground at the ignition coil. Connect the other ohmmeter lead to the ring terminal removed from the ground at the engine connector. (See Figure 3-2.)

3. If ohmmeter indicates closed circuit (0), BROWN ground wire between the engine connector and the ignition coil is okay.

4. If ohmmeter indicates open circuit (∞) or high resistance, BROWN ground wire is defective. Check BROWN ground wire connection at the ring terminals, the three wire connector between CD igniter and ignition coil. If the wire checks okay, replace the CD igniter.

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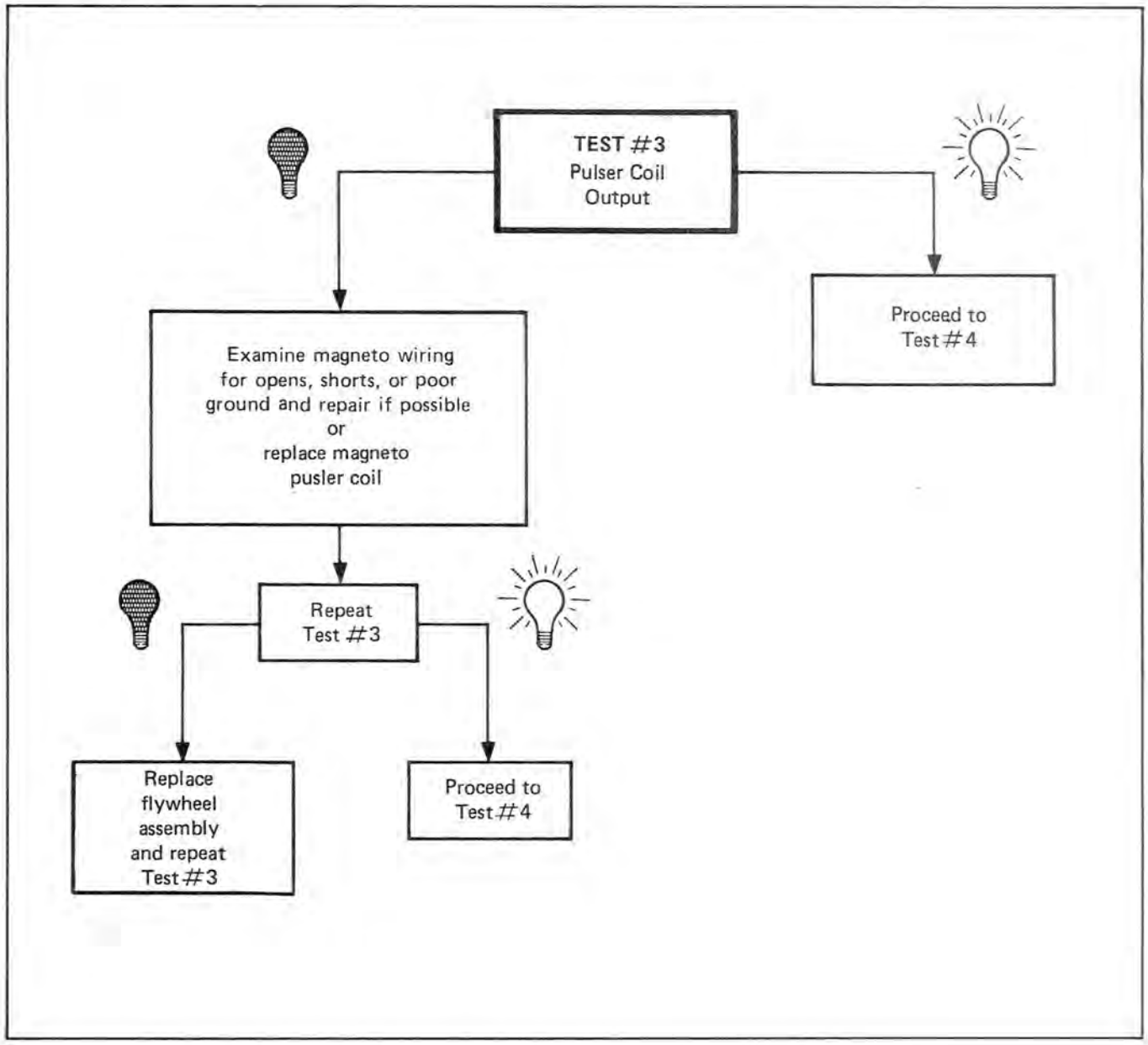


No Lamp or Low/Inconsistent Reading

Lamp Lights at Specified Value

STANDARD VALUE TEST #3

RANGE	VALUE
Low	90

3. Turn the dimmer switch to low beam, the ohmmeter should indicate a closed circuit (0).

4. Turn the dimmer switch to high beam, the ohmmeter should indicate open circuit (∞).

5. Move the ohmmeter lead from the orange wire terminal to the green wire terminal in the dimmer switch half of the connector.

6. Turn the dimmer switch to high beam, the ohmmeter should indicate a closed circuit (0).

7. Turn the dimmer switch to low beam, the ohmmeter should indicate an open circuit (∞).

8. If any of the tests in steps 3, 4, 6, or 7 were faulty, replace the dimmer switch.

9. If all of the above tests were okay and there is no power to the headlight, and the headlight harness, lighting coil, voltage regulator, and key switch tests were okay, the problem is in the main harness. The main harness should be removed and repaired or replaced.

Stop/Tail Light Harness Test

1. Check stop/tail light bulb before testing and make sure it is making a good connection in the socket.

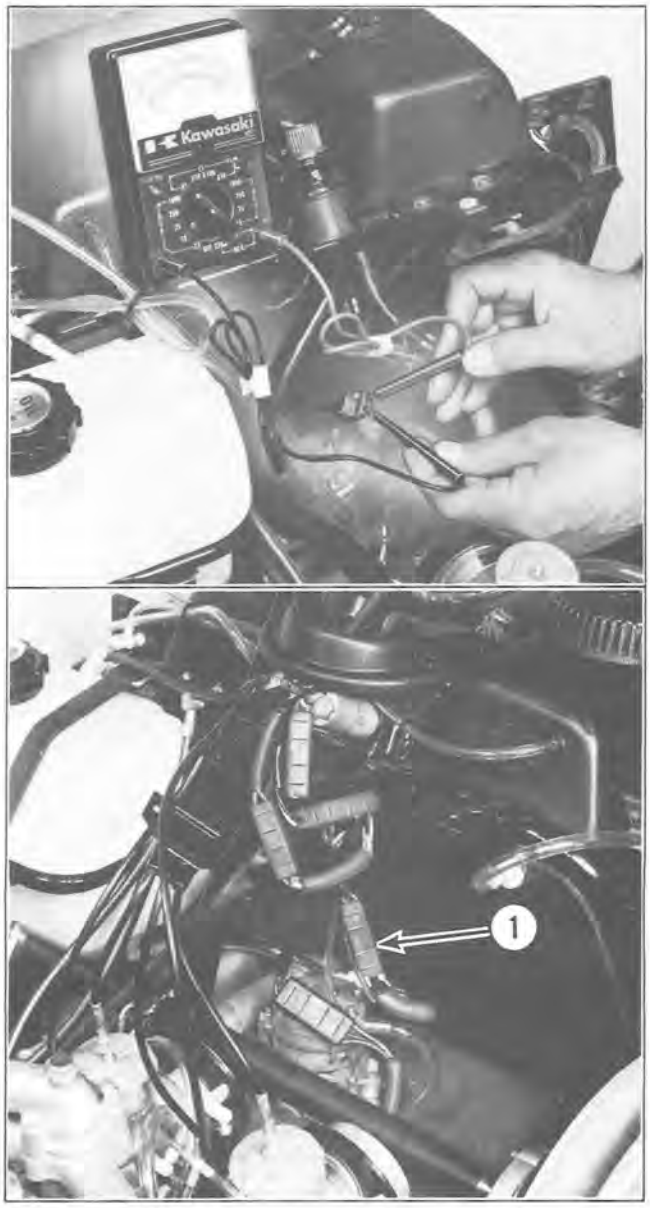
2. Disconnect the tail light connector from the main harness.

3. To check the wiring to the tail light, set the ohmmeter on low ohm scale (X1). Connect one ohmmeter lead to the black wire terminal in the tail light half of the connector. Connect the other ohmmeter lead to the yellow wire terminal of the connector. (See Figure 3-11.) Ohmmeter should indicate 2 to 3 ohms.

4. To check the wiring to the stoplight, move the ohmmeter lead from the yellow to the brown wire terminal in the tail light half of the wire terminal connector. Ohmmeter should indicate 1 to 2 ohms.

5. If the readings in steps 3 and 4 read higher than specified or indicate an open circuit (∞), the problem is in the wiring to the tail/stop light. Remove the seat and inspect the wiring to the tail light. (Check the bulb contacts again.)

6. If the reading in step 3 was okay and the tail light, headlight and instrument lights do not function, proceed to the tests for the lighting coil, voltage regulator and the key switch tests. If only the tail light does not function, the problem is in the main harness. Remove and repair the main harness or replace.



1. Stop/Tail Light Harness Connector

Figure 3-11

7. If the reading in step 4 was okay, proceed to the test for the brake light switch.

8. If the brake light switch tests okay and the other lights function okay, the problem is in the main harness. Remove and repair the main harness or replace.

13. Raise the rear of the snowmobile off the ground. Start the engine and perform the carburetor adjustments as described in Section 2.

Troubleshooting

Carburetor related malfunctions can be identified as too rich or too lean a fuel mixture. Symptoms are as follows:

When the fuel/air mixture is too rich:

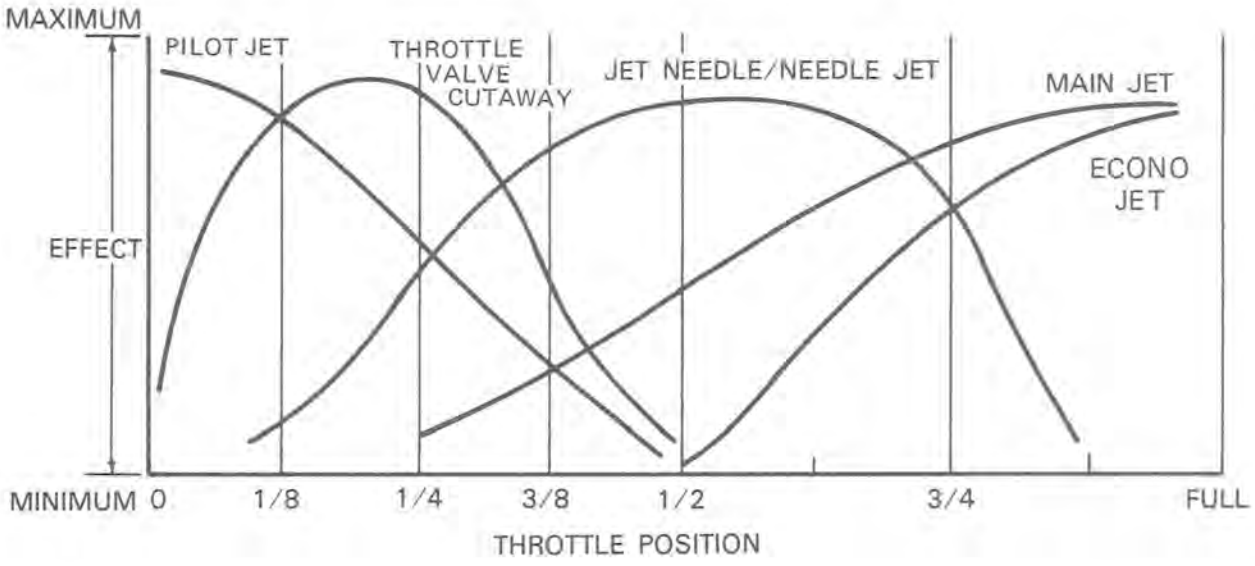
1. Engine noise is dull and intermittent.
2. The condition grows worse when the engine is hot.
3. The condition grows worse when the enrichener is opened.
4. The condition may improve slightly when the air silencer is removed.
5. Exhaust gases are heavy.
6. Spark plugs become fouled.

When fuel/air mixture is too lean,

1. The engine becomes overheated.
2. The condition improves when the enrichener is opened.
3. Acceleration is poor.
4. Spark plugs burn.
5. The revolutions of the engine fluctuate and lack of power is noticed.

If a carburetor is experiencing too rich or too lean fuel mixture problems, first check to see that the throttle is working properly. Then disassemble and clean the carburetor. A rich or lean fuel mixture is usually caused by a clogged air or fuel passage. If cleaning does not improve carburetor performance, carburetor tuning may be necessary.

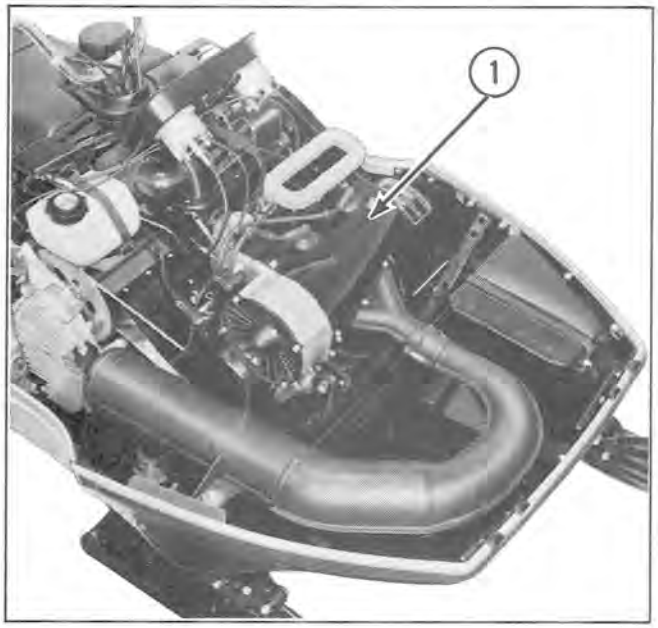
Tuning



Different fuel metering components function according to the throttle setting:

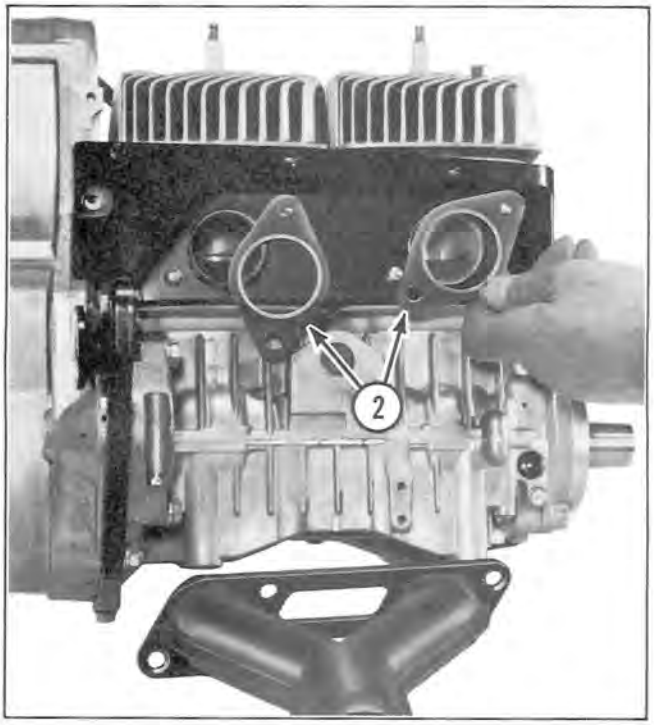
1. Pilot Jet - from closed throttle to one half (1/2) throttle opening.
2. Throttle Valve Cutaway - from closed throttle to one half (1/2) throttle opening.
3. Jet Needle and Needle Jet - one eighth (1/8) to seven eighths (7/8) throttle opening.
4. Main Jet - one quarter (1/4) to full throttle opening.
5. Econo Jet - one half (1/2) to full throttle opening.

2. Remove four nuts and lockwashers securing exhaust manifold, gaskets and exhaust air shroud to engine. (See Figure 3-41.) Discard gaskets.



1. Main Engine Shroud

Figure 3-40



1. Exhaust Manifold
2. Gaskets
3. Exhaust Air Shroud

Figure 3-41

3. Remove four bolts and flat washers securing carburetor holders, gaskets and intake air shroud to engine. Discard gaskets.

Inspection

1. Thoroughly clean air shrouds in a solvent and blow dry using compressed air.
2. Inspect air shrouds for cracks, distortion or rust.
3. Check carburetor holders and exhaust manifolds for cracks. Check gasket surfaces and clean using a scraper.

Installation

1. Reassemble air shrouds, and exhaust manifold to engine. Using new gaskets, assemble one on each side of exhaust air shroud. Secure using hardware previously removed. Torque exhaust manifold mounting nuts 8 to 10 ft lb (1.11 to 1.38 kg-m).
2. Position a new gasket between cylinder and intake air shroud. Install the carburetor holders on the outside of the intake shroud with the silencer spring washers mounted on the outboard side. Torque the bolts to 45 in. lb (0.5 kg-m).

NOTE: Apply Loctite to main air shroud screws. Use an impact driver to assure main air shroud screws are tight.

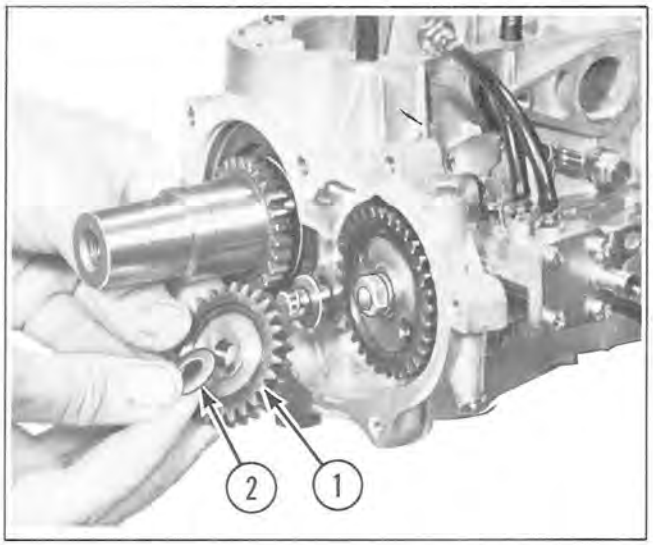
Always use new gaskets during reassembly to ensure proper sealing between components.

Fan Housing

Disassembly

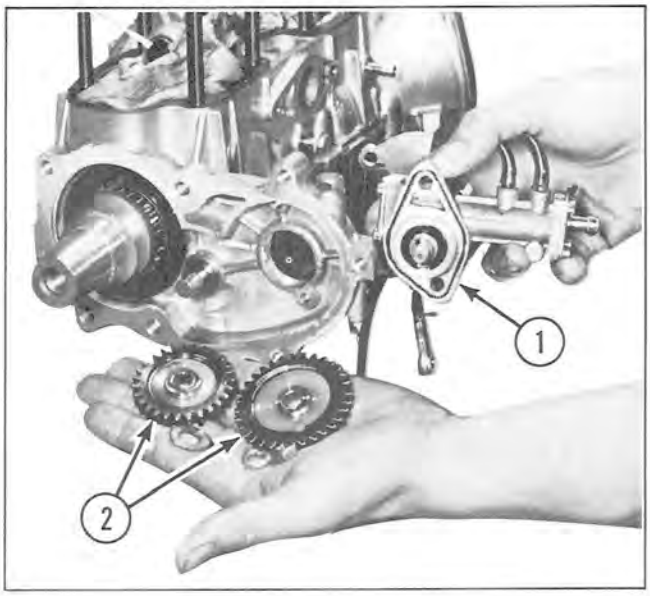
NOTE: Remove engine assembly from chassis. Refer to Engine Removal Flow Chart or follow procedure for Engine Removal.

1. Remove four nuts and washers securing fan housing to crankcase, disconnect CDI and stator wires, then remove fan housing. (See Figure 3-42 and 3-43.)
2. Using fan pulley holder tool No. 57001-3506 remove nut and washer securing fan assembly to fan housing. (See Figure 3-39.)
3. Remove fan pulley halves and spacers from fan shaft. (See Figure 3-44.)



1. Idler Gear
2. Spacer

Figure 3-67



1. Oil Pump
2. Gears

Figure 3-69

6. Install the fan puller holder tool No. 57001-3506 into the two holes in the oil pump gear. Remove the nut securing the gear to the pump shaft and remove the gear.

7. Remove the two bolts securing the oil pump to the crankcase and remove the pump. (See Figures 3-68 and 3-69.)

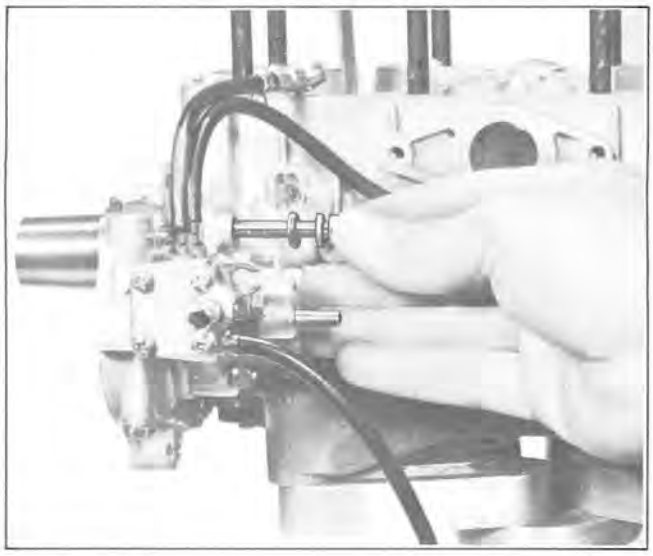


Figure 3-68

Check Valve (Banjo Fitting)

The check valve is needed to prevent oil from bleeding back to the pump when the engine stops. The check valve retains oil in the hose between the oil pump and cylinder for when the engine restarts. A small capacity, hand held pressure tester is recommended for testing the check valves. Only 3 to 6 PSI is required to move the check valve off its seat. If the valve does not check out good replace the valve. (See Figure 3-70.)

CAUTION

Do not use high pressure compressed air on the check valve. High pressure air will damage the valve which will result in engine failure.

Inspection

Check the gears, bearings and seals for wear or damage and replace if necessary.

2. Compress the throttle spring and remove the throttle spring seat plate.

3. Slide the throttle cable tip to the larger hole in the base of the throttle valve and separate the throttle cable from the throttle valve.

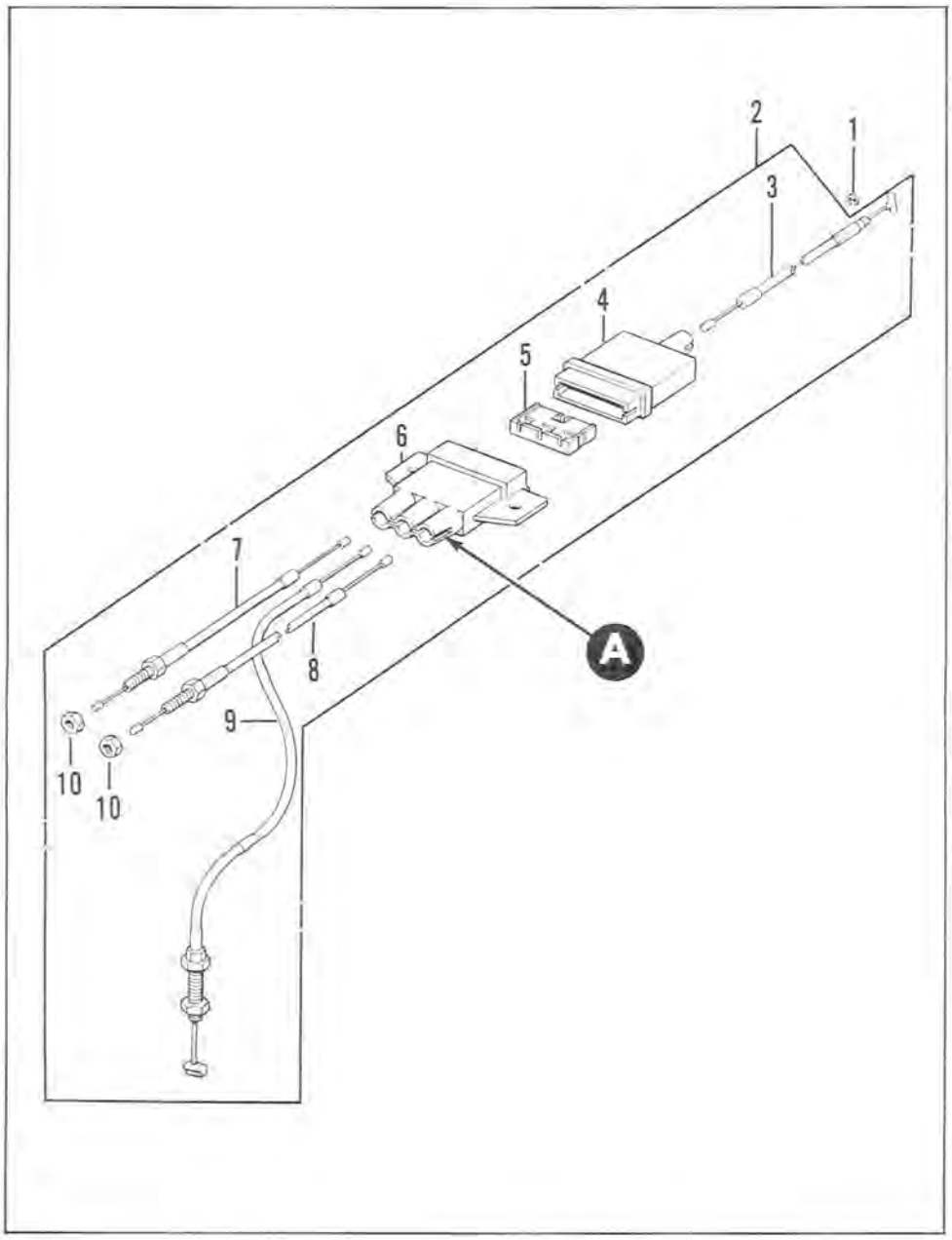
4. Loosen the throttle cable locknut and unscrew the throttle cable from the mixing body top assembly. (See Figure 3-94.) Loosen clamp screw and remove LH carburetor from carburetor holder.

5. Loosen the locknut of the oil pump cable which is toward the engine.

6. Remove the cable from the inlet plate bracket. Move the oil pump control lever to the full on position and disconnect the cable from it.

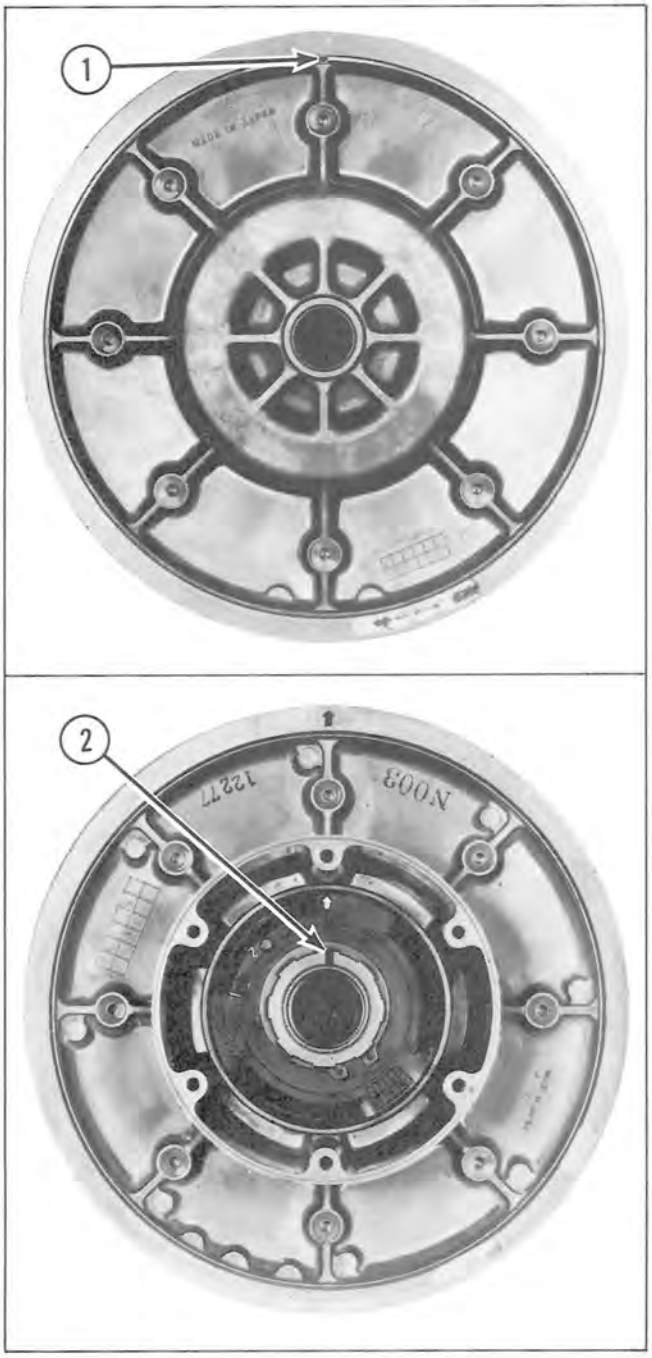
7. Remove snap ring and disconnect the throttle cable end from the throttle lever. (See Figure 3-95.)

8. Any of the cables can be removed from the assembly by inserting a screwdriver in slot A and prying the lower cable housing apart while pulling on cable for removal. (See Figure 3-95.)



1. Snap Ring
2. Throttle Cable Assembly
3. Upper Throttle Cable
4. Upper Cable Housing
5. Connector 1-3 Cable
6. Lower Cable Housing
7. RH Carb Throttle Cable
8. LH Carb Throttle Cable
9. Oil Pump Cable
10. Locknut

Figure 3-95



1. Oval Protrusion
2. Mark on Movable Sheave Shaft

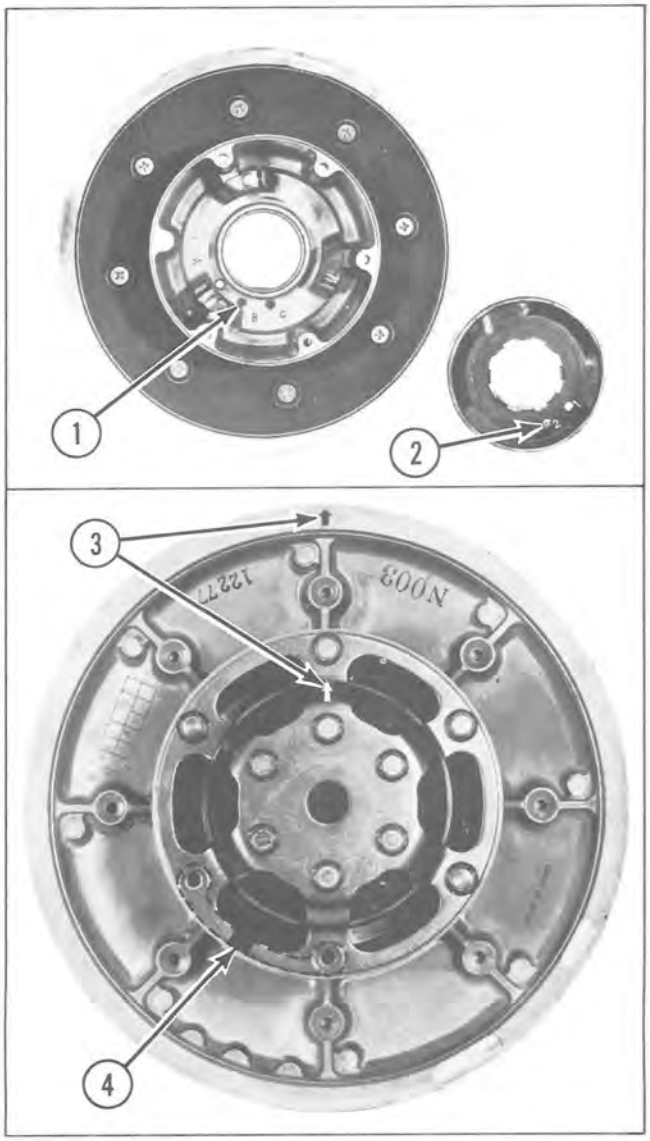
Figure 3-118

2. Very important: Locate the small oval protrusion (width 0.060 in. [1.5 mm], length 0.118 in. [3.0 mm]) on the ridge on the back side of the movable sheave. (See Figure 3-118). The oval protrusion should be in line with the reference mark applied to splined shaft during disassembly. Use reference mark to simplify reassembly process.

3. Place the fixed sheave onto the movable sheave. Position the arrow on the fixed sheave 150° clockwise from the oval protrusion (or reference mark on shaft of movable sheave) when viewing from the splined end.

   NOTE: Check to be sure the parts have no holes or dents.

4. Insert the spring. Place tang of spring into hole marked B in the fixed sheave. (See Figure 3-119.) Apply NEVER-SEEZ to the splines in the ramp cap. Insert the tang on the other end of the spring into hole number 2 in the ramp cap. (See Figure 3-119) This is the standard specification for this converter.



1. Hole B
2. Hole 2
3. Arrows Aligned
4. Balancer Plate Mark

Figure 3-119

Front Idler Shaft and Wheels

Inspection

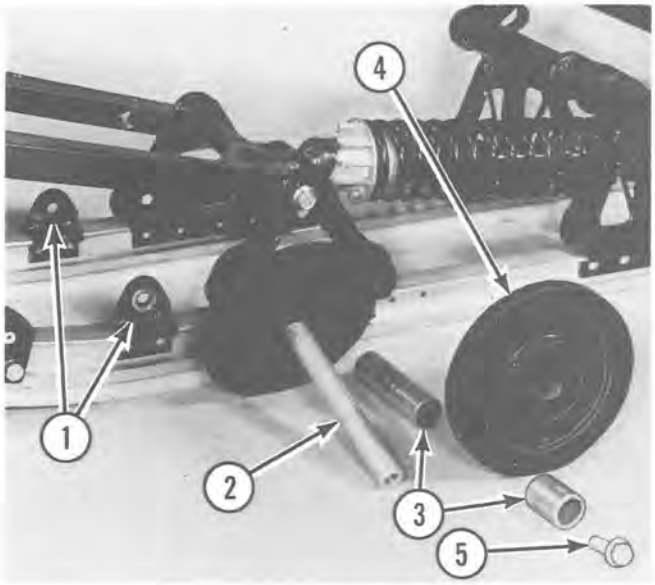
1. Replace front idler shaft wheel if rubber is excessively worn.

2. Spin wheels on the shaft and check for noise, excessive slop between shaft and bearing, or binding. Replace bearings or spacers if necessary.

3. Inspect the shaft for damage.

Removal

Remove front idler shaft and wheels from the suspension by unscrewing bolts from shaft. (See Figure 3-130.)



1. Mounting Brackets
2. Shaft
3. Spacers
4. Idler Wheel Assembly
5. Mounting Bolt

Figure 3-130

Disassembly (See Figure 3-130)

1. To remove idler wheel, remove spacers and lightly tap shaft from idler wheel assembly.

2. To remove the bearing from the idler wheel, remove the outside and inside spacers, snap ring and press the bearing out of the wheel. (See Figure 3-129.)

NOTE: To protect against wear, DO NOT allow dirt to enter bearings.

Reassembly and Installation

1. Reassemble bearings and wheels to idler shaft. Lubricate bearings and shaft before assembly. Be sure large diameter spacers face to outside of suspension.

2. Secure the idler shaft assembly to the front brackets. Torque the bolts to 25 ft lb (3.46 kg-m).

Limiter Straps

NOTE: The following repairs are performed with the slide rail suspension removed from the snowmobile.

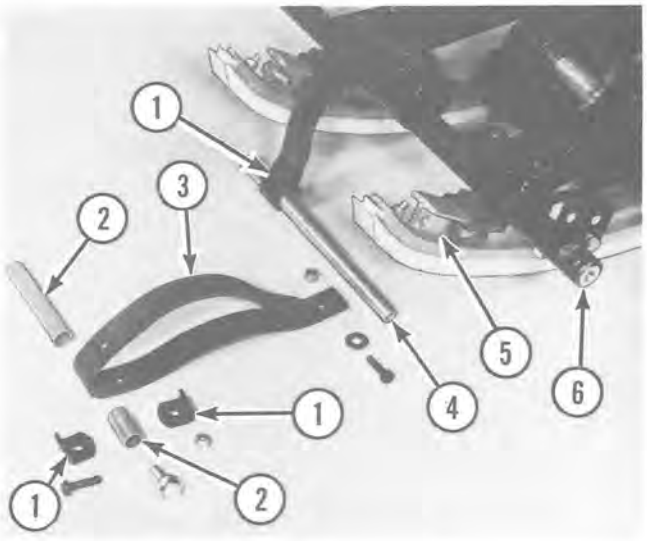
Inspection

1. Inspect limiter straps for deterioration and damage. Replace as required.

2. Check the limiter cross shaft brace and spacers for distortion.

Removal

1. To remove the limiter straps, unscrew nuts at each end, then remove strap from front swing arm and cross shaft brace. (See Figure 3-131.)



1. Special Washers
2. Spacers
3. Limiter Strap
4. Cross Shaft Brace
5. Suspension Rail
6. Swing Arm

Figure 3-131

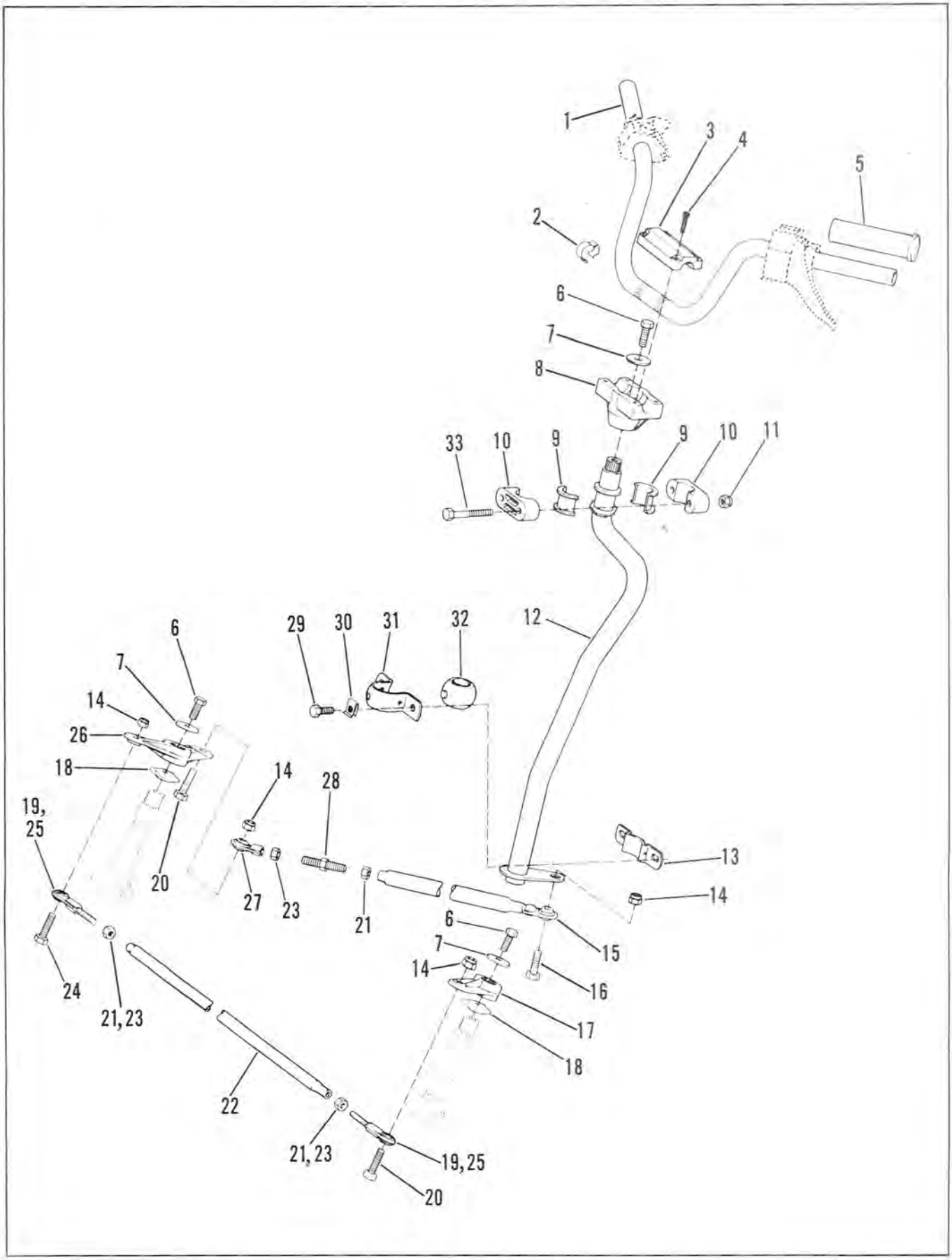

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Figure 3-152

A major brand of Gasoline Antifreeze (such as Heet) should be added to the fuel tank by following the manufacturer's recommendations on the container for proper mix ratio of gasoline with antifreeze. (See Figure 4-2.)

Figure 4-2

Fuel/Oil Mixture (Ratio)

These snowmobile engines are automatically lubricated by a variable pump which may change the mixture from about 110 to 1 to about 25 to 1, depending on engine speed and throttle opening. When the engine needs less oil, as at an idle, it gets less oil.

Under full throttle, the engine will be fed more oil. Automatic oiling is economical because it gives the engine only as much oil as it needs. This also cuts down on visible exhaust emissions.

CAUTION

Each time gas tank is filled - check for adequate oil level in the oil tank. A full oil tank assures proper fuel/oil ratio will be maintained to prevent serious engine damage

Break-in Procedure

NOTE: To insure adequate lubrication of internal engine components during early break-in, a 25-to-1 gasoline-to-oil ratio is recommended for the first three (3) gallons of gasoline. This ratio can be obtained by thoroughly mixing 1 pint (0.47 liter) of Kawasaki Snowmobile Oil with three (3) gallons (11.4 liters) of gasoline. Pre-mixing gasoline and oil will no longer be required after the initial three gallons of gasoline and oil mix have been consumed.

During the first 10 hours of operation, do not subject the snowmobile engine to continued full speed, do not ride with passengers in deep snow, and do not break trail.

For proper engine break-in, run machine on hard packed snow at approximatey 3/8 to 1/2 throttle, with occasional bursts to full speed. Limit the full speed operation to 1-1/2 to 2 minutes then return to cruising speed for 10 to 15 minute interval. After 10 hours of operation, or 2 tanks of gasoline are used, break-in is complete.

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