



INVADER

SS440-A3A



SNOWMOBILE ASSEMBLY & PREPARATION MANUAL

NOTICE TO DEALERS

This manual is provided to ensure that the snowmobile is assembled correctly and given proper presale preparation. Your customer expects and deserves a safe, reliable snowmobile, and performance of the steps listed here is essential to that end.

The selling dealer assumes sole responsibility for any unauthorized modifications prior to sale. **REFER TO YOUR SNOW PRODUCTS BINDER FOR ANY SERVICE BULLETINS SPECIFYING FACTORY DIRECTED MODIFICATIONS WHICH MUST BE PERFORMED BEFORE THE SNOWMOBILE IS READY FOR SALE.**

SAFETY AWARENESS

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.

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Dealer's Assembly and Preparation Check List

Remove the Assembly & Preparation Check List from storage case. Complete each item of the check list following the procedures outlined in this manual. Verify compliance by placing a check (✓) in box preceding each item as it is completed. Be sure to sign all sections of the form as they are completed. Retain a completed check list for your records.

KAWASAKI SNOWMOBILE DEALER'S ASSEMBLY & PREPARATION CHECK LIST	
I hereby certify that prior to delivery to the first retail purchaser assembly and preparation servicing was performed on the snowmobile listed below in accordance with the following check list, and in compliance with the established procedures prescribed by Kawasaki: (✓ check each item when completed).	
SNOWMOBILE INFORMATION	
MODEL _____	SERIAL NO. _____ ENGINE NO. _____
ASSEMBLY CHECK LIST	
1 ☐ REMOVE CRATE - check for damaged & missing parts.	6 ☐ SAFETY DECALS - properly installed.
2 ☐ SKIS - install - torque all bolts.	7 ☐ TOOL KIT - complete/installed.
3 ☐ SKI SHOCKS - mount and torque bolts.	
4 ☐ WINDSHIELD - mount to hood.	
5 ☐ HANDLEBARS - adjust to proper position/torque bolts.	ASSEMBLY BY: _____
	Signature _____
PREPARATION CHECK LIST	
1 ☐ STEERING - align skis/components secure.	*17 ☐ OIL LINE TO PUMP - (all oil injection models) bleed/secure/properly routed.
2 ☐ CLUTCH ALIGNMENT - check/adjust.	*18 ☐ ENGINE COOLANT - check level/freeze protection.
3 ☐ CLUTCH CENTER TO CENTER - check/adjust.	19 ☐ SPARK PLUGS - check/gap.
4 ☐ CHAINCASE - add lube if required/check for leaks.	20 ☐ GAS TANK - fill with recommended fuel/oil mix (refer to Owner's Manual) check for leaks.
5 ☐ BRAKE - clean disc/adjust.	21 ☐ CARBURETOR AIR SCREW - adjust.
6 ☐ WIRING HARNESS - properly routed/electrical connectors secure.	22 ☐ CARBURETOR IDLE SPEED - adjust.
7 ☐ SUSPENSION - check/adjust.	*23 ☐ PRIMER - check operation.
8 ☐ NUTS, BOLTS, OTHER FASTENERS - check/tighten.	24 ☐ IGNITION TIMING - check when engine is warm/adjust.
*9 ☐ ENGINE GEARCASE LUBRICANT - check level/add recommended oil as required.	25 ☐ ELECTRICAL SYSTEM - check operation - adjust
10 ☐ FUEL PUMP TUBES - secure and no kinks	☐ Headlight
11 ☐ ENRICHENER CONTROL - check/adjust.	☐ Taillight
*12 ☐ OIL PUMP - check synchronization/adjust.	* ☐ Electric Starter
13 ☐ THROTTLE CABLE - check/adjust.	* ☐ Battery Charging System
*14 ☐ CARB SYNCHRONIZE - check/adjust (twin carb models).	☐ Brake Light
*15 ☐ FAN BELT - check/adjust (axial fan models).	* ☐ Instruments & Indicator Lights
*16 ☐ OIL TANK - fill with Kawasaki approved oil/check for leaks.	26 ☐ TRACK - adjust tension/align
	PREPARATION BY: _____
	Signature _____
TEST RIDE	
1 ☐ CONTROL CABLES - throttle & brake works without binding in any steering position/returns freely.	8 ☐ SPEEDOMETER/TACHOMETER - check operation.
2 ☐ ENGINE STOP SWITCH - check operation.	9 ☐ NO UNUSUAL NOISES.
3 ☐ SUSPENSION - check slider ride adjustment.	*10 ☐ NO COOLANT LEAKS.
4 ☐ STEERING - action is free lock to lock/no looseness.	11 ☐ NO FUEL OR OIL LEAKS.
5 ☐ ENGINE - recoil starter works properly/engine starts promptly/good throttle response and return. Exhaust smoke present but not excessive (oil injection models).	*12 ☐ COOLANT LEVEL - check/add coolant mix as required.
6 ☐ CLUTCHES - smooth operation/correct maximum RPM.	13 ☐ CONTROLS - properly positioned/secure/adjusted.
7 ☐ BRAKES - adequate - smooth stopping power.	
	TEST RIDDEN BY: _____
	Signature _____
CUSTOMER DELIVERY	
1 ☐ OWNER'S MANUAL - explain contents/proper maintenance/install.	4 ☐ CONTROLS - explain location & operation/properly positioned for customer.
2 ☐ OWNER'S SAFETY HANDBOOK - explain contents/install.	
3 ☐ WARRANTY CERTIFICATE - explain warranty and customer responsibilities thoroughly/install.	DELIVERED BY: _____
	Signature _____
DEALER VERIFICATION	
Dealer Name _____	Signature of Dealership Manager _____
Address _____	Date _____
*Applicable models only - refer to assembly instruction provided by Kawasaki for specific models.	
P/N 49007-3501	white copy - dealer file/canary copy - owner
Printed in U.S.A.	
If it is desired to utilize the French portion of this check list, please remove the carbon sheet and insert in proper location.	

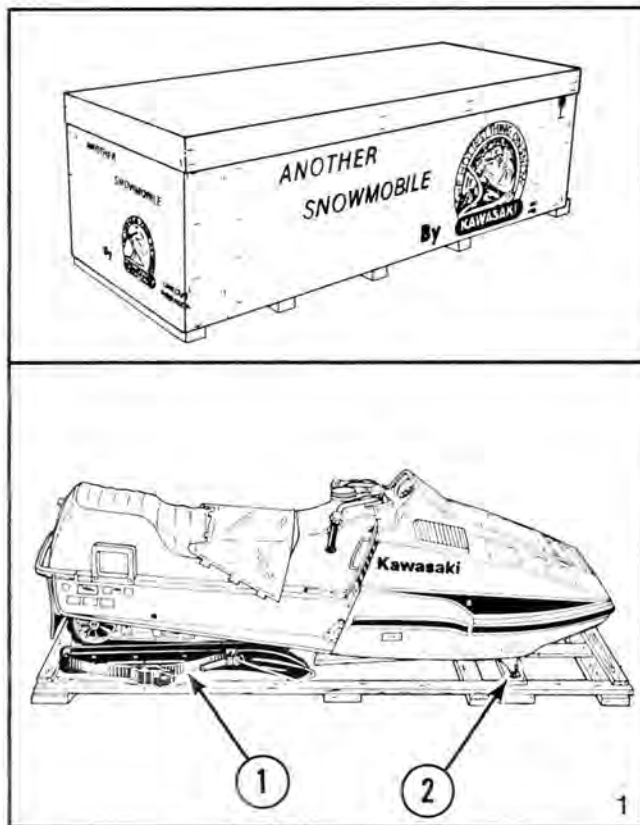
ASSEMBLY

Uncrate

Observe this **CAUTION** during next step

Bend over all exposed crate fasteners to prevent personal injury or possible vehicle damage.

In a large clear work area, open crate. Separate top and sides of crate and remove the windshield from seat. Unscrew nuts securing ski assemblies and spindles to the crate bottom and discard hardware as it is not used for snowmobile assembly. (See Figure 1.)



- 1. Ski Assembly
- 2. Ski Spindle

NOTE: When uncrating vehicle, inspect for concealed damage that may occur during shipping. If damage is apparent, STOP uncrating and check the WARRANTY POLICIES & PROCEDURES section of your Snow Products Binder under RECEIVING WAREHOUSE UNITS.

Observe this

WARNING

during next step

To prevent personal injury, use lifting equipment with approved safety hooks when raising the snowmobile.

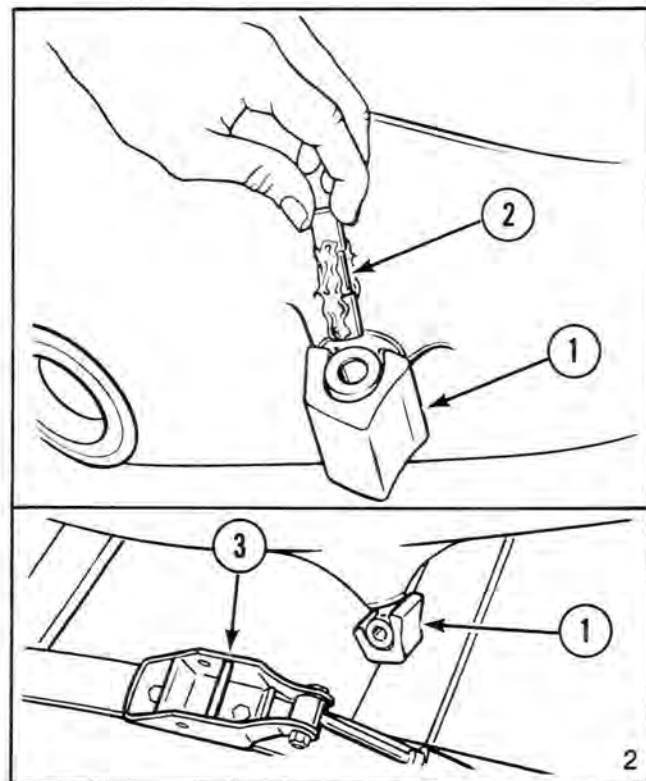
With assistance, or the use of a hoist, carefully lift the snowmobile from the crate. Thoroughly inspect the snowmobile for shipping damage and missing parts.

Remove plastic bag containing mounting hardware for skis and windshield from storage case.

Skis

Place snowmobile on its side. Be sure to provide a protected surface to prevent marring finish of the snowmobile. Then perform following:

1. Install the ski attitude damper. Apply Silicone spray or soapy water on damper to ease installation of the ski saddle over the damper. (See Figure 2.)



- 1. Ski Attitude Damper
- 2. Grease Groove
- 3. Ski Saddle

2. Fill the grease groove or cut away area of the spindle sleeve with a low temperature extreme pressure (ep) grease, and insert sleeve into the spindle. (See Figure 2.)

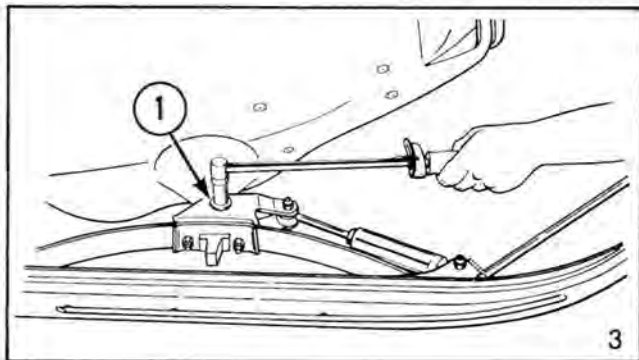
Observe this

WARNING

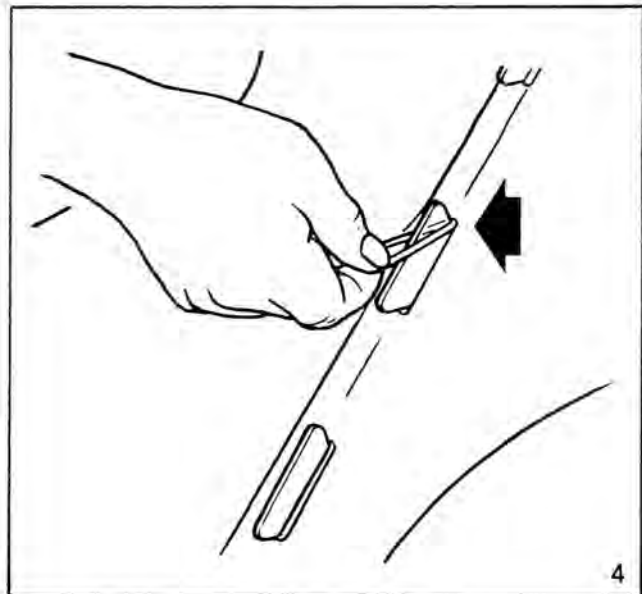
during next step

Improper tightening of spindle to saddle bolt will result in excessive steering system free play. This negatively affects vehicle handling and could result in loss of control leading to possible personal injury to the operator.

3. Secure the ski assembly to the spindle with the hardware supplied. Be sure the nut and large flat washer are installed on the inboard side of the ski assembly, then torque the nut 46 ft lb (6.4 kg-m). (See Figure 3.)

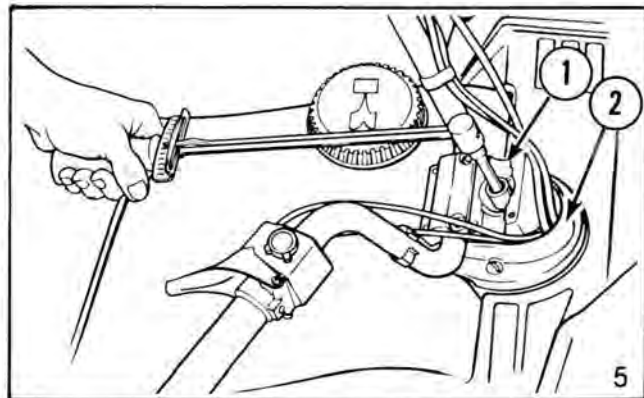


1. Flat Washer



Handlebar

Prior to securing the handlebars, check the lower handlebar holder for security to the steering pole. Torque the lower handlebar holder mounting bolt 35 ft lb (5.0 kg-m). (See Figure 5.)



1. Lower Handlebar Holder
2. Console

Windshield

Remove the plastic covering and install the windshield with the o-ring fasteners provided. (See Figure 4.)

Check the routing of the cables and wire harnesses for proper positioning. They should pass through the console at the handlebar holder, and have adequate free movement to prevent binding or rubbing during vehicle operation. (See Figure 5.)

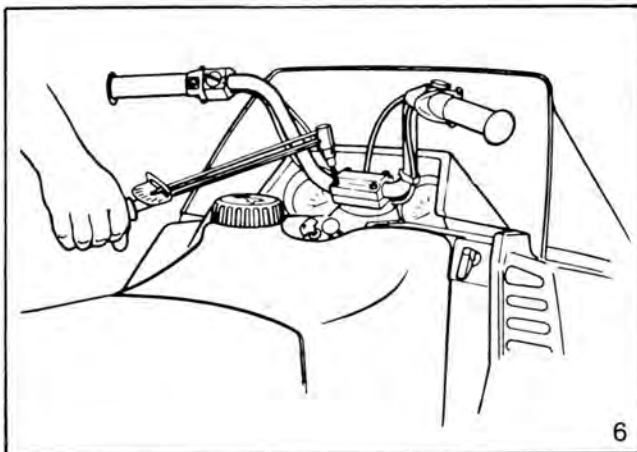
Observe this

CAUTION

during next step

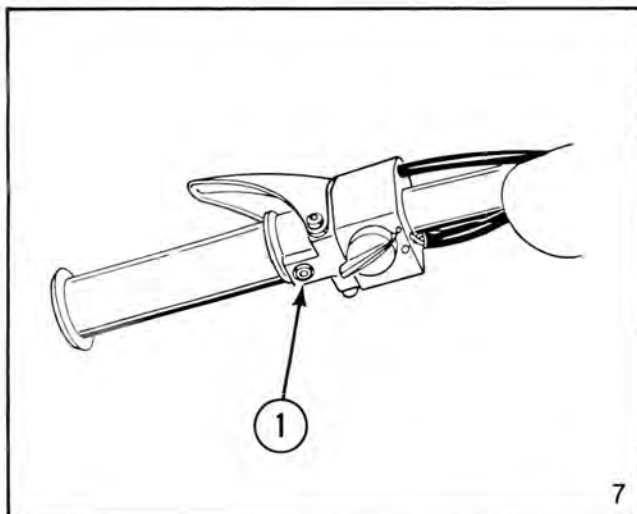
Adjust the handlebar so it does not hit the windshield, when turning in either direction.

Adjust the handlebar for a comfortable driving position and evenly torque the four socket screws securing the handlebar holder 105 in.lb (1.2 kg-m). (See Figure 6.)



Throttle and Brake Control Levers

Check throttle and brake control lever position. Be sure they are comfortable for driving. Torque set screws 25 in. lb (0.3 kg-m). (See Figure 7.)



1. Set Screw

Tool Kit, Owner Manual, and Safety Handbook

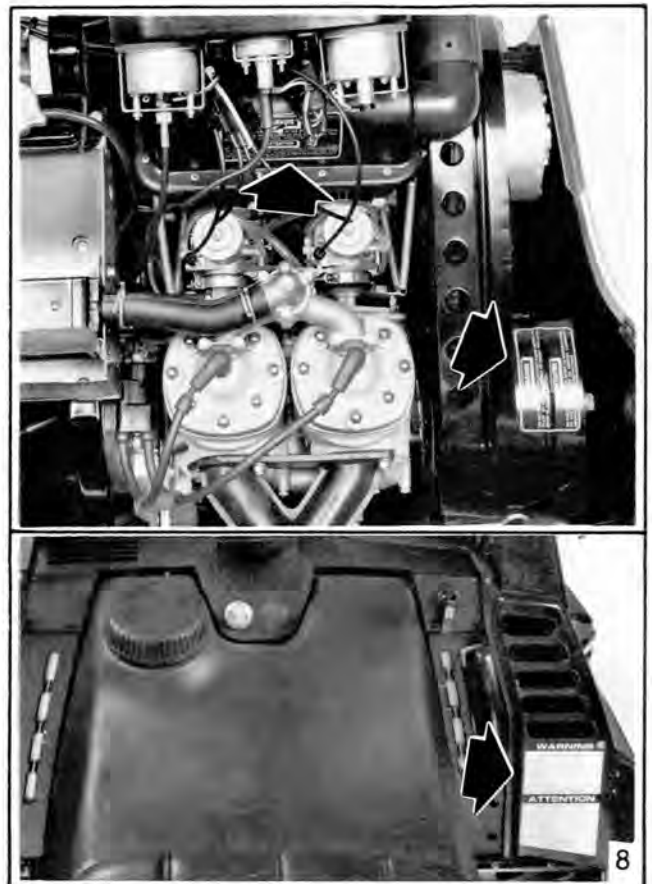
Check the storage box to be sure it contains the Tool Kit, Owner's Manual and Safety Handbook.

Safety Labels

WARNING

Safety labels specify special instructions or procedures which, if not followed correctly, could lead to personal injury.

Safety labels are located on, or next to, components that, under certain conditions, could cause personal injury. Be sure they are properly located and secure. (See Figure 8.)



PREPARATION

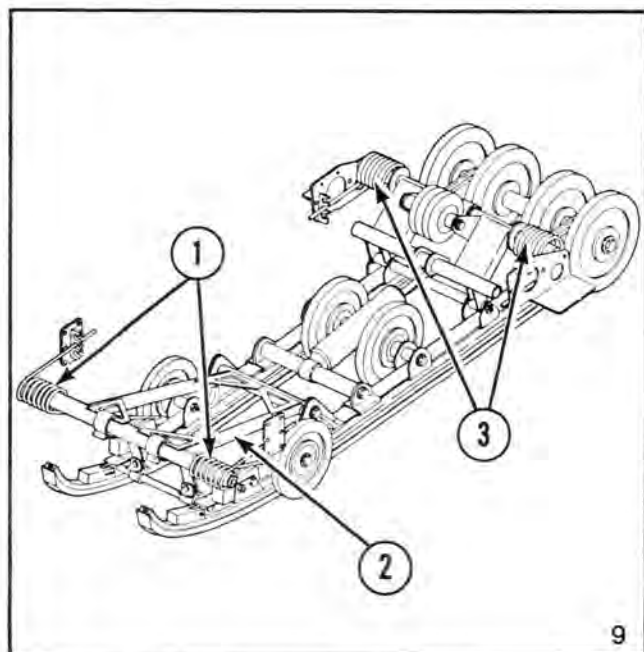
Suspension

The snowmobile is shipped with the suspension springs adjusted during production assembly to provide satisfactory ride and handling characteristics for average driver weight. Normally, no adjustments are required.

WARNING

Suspension springs are under heavy spring load. Improper adjusting techniques may result in personal injury.

Suspension adjustments consist of changing front and rear spring tension to alter vehicle handling and ride characteristics, and adjusting the front swing arm mounting position to alter weight transfer during acceleration. (See Figure 9.)



1. Suspension Front Springs
2. Suspension Front Swing Arm
3. Suspension Rear Springs

CAUTION

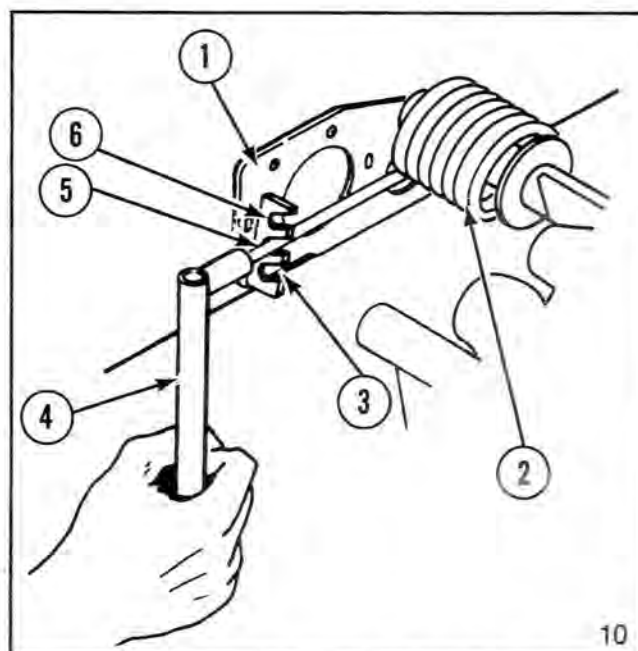
Spring tension (pre-load) of springs must be equal on each side of suspension (front to front, rear to rear). Higher tension adjustment on one spring can cause spring breakage or excessive slide wear strip wear.

Ride Adjustment

The rear springs, located on each side of the rear pivot arm, control the ride by pushing downward on the suspension to hold vehicle up. Increasing rear spring tension will stiffen the ride allowing more driver or passenger weight. Decreasing tension creates a softer ride for lighter loads.

To change rear spring tension:

1. Position spring adjusting tool P/N 57001-3507 onto end of spring. (See Figure 10.)

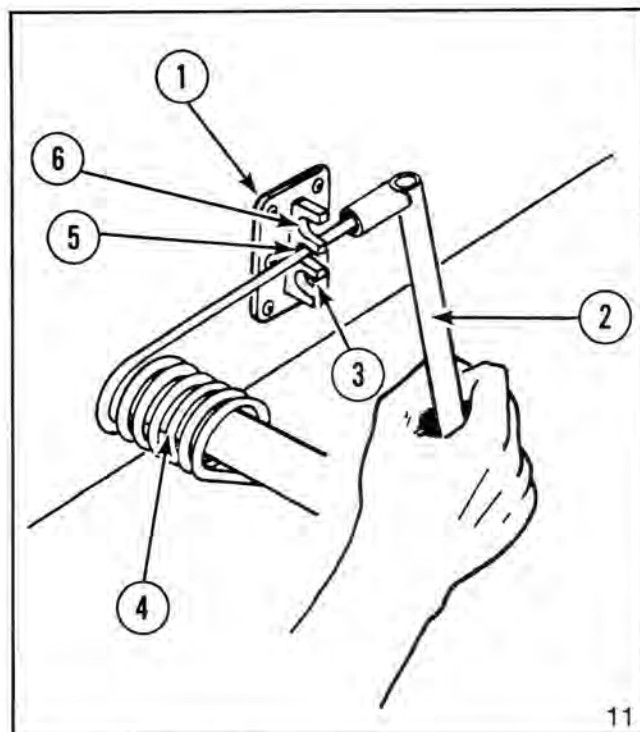


1. Rear Spring Retaining Bracket
2. Suspension Rear Spring
3. Low Tension Position
4. Spring Adjusting Tool P/N 57001-3507
5. Mid Tension Position-as produced
6. High Tension Position

2. Apply firm grip on adjusting tool with both hands. Carefully force spring out of retainer detent. Be prepared to accept heavy spring load as spring is released from retainer detent.
3. Install spring into upper detent to increase tension or into lower detent to decrease tension.
4. Repeat procedure on other rear spring to make tension equal on both sides of suspension (rear to rear).

Handling Adjustment

The front springs, located on each side of the front swing arm, control handling or steering response. Increasing spring tension forces the front of the suspension to lift more, shifting weight or pressure from skis to the suspension. Reducing tension causes less suspension lift, increasing pressure on skis. The amount of pressure on the skis directly affects steering effort and response. More ski pressure means increased steering response and effort while less pressure means easier effort but less response.



1. Front Spring Retaining Bracket
2. Spring Adjusting Tool P/N 57001-3507
3. High Tension Position
4. Suspension Front Spring
5. Mid Tension Position - as produced
6. Low Tension Position

To change front spring tension:

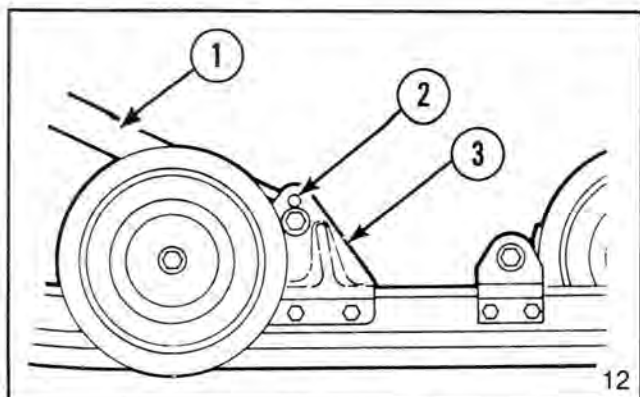
1. Position spring adjusting tool P/N 57001-3507 onto end of spring. (See Figure 11.)
2. Apply firm grip on adjusting tool with both hands. Carefully force spring out of retainer detent. Be prepared to accept heavy spring load as spring is released from retainer detent.
3. Install spring into lower detent to increase tension or into upper detent to decrease tension.
4. Repeat procedure on other front spring to make tension equal on both sides of suspension (front to front).

Swing Arm Adjustment

WARNING

Suspension front swing arm is under heavy spring load. Improper service techniques may result in personal injury.

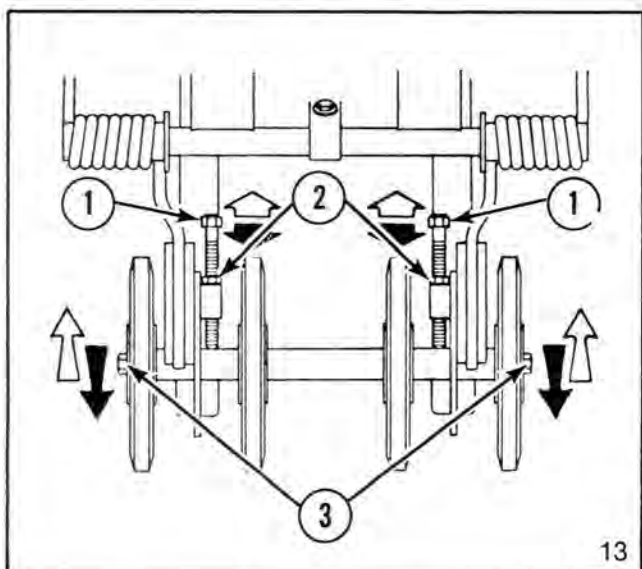
The front swing arm is positioned in lower hole of suspension front bracket for best over-all acceleration and ride characteristics. Changing swing arm to upper hole location causes less weight transfer from skis to suspension during acceleration. Less weight transfer decreases ski lift allowing increased steering stability during acceleration. (See Figure 12.)



1. Suspension Front Swing Arm
2. Upper Hole Location
3. Suspension Front Bracket

To change swing arm position:

1. Position spring adjusting tool P/N 57001-3507 onto end of front spring. (See Figure 11.)
2. Applying firm grip on adjusting tool, carefully force spring out of retaining bracket detent. Be prepared to accept heavy spring load as spring is released from retainer detent.
3. Repeat procedure on other front spring.
4. Loosen rear axle locking bolts and adjusting bolt jam nuts. Back out adjusting bolts to relieve track tension. (See Figure 13.)

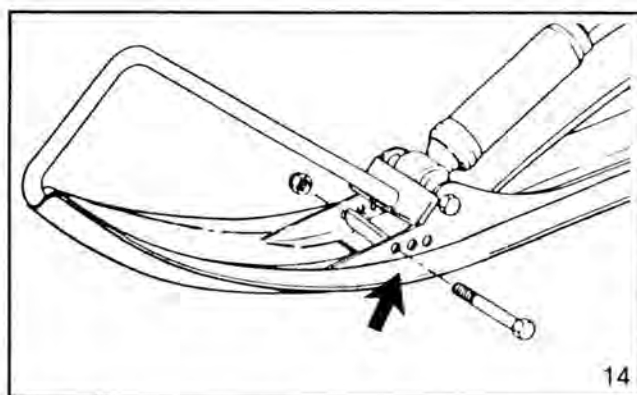


1. Adjusting Bolts
2. Adjusting Bolt Jam Nuts
3. Rear Axle Locking Bolts

5. Remove swing arm to bracket mounting bolts and position swing arm in upper location. Reinstall bolts and torque 25 ft lb (3.5 kg-m).
6. Use spring adjusting tool to reposition spring into desired detent.
7. Adjust track tension as instructed in Track Adjustment.

Ski Spring Preload Adjustment

Three positions are provided for front ski spring mounting bolt. (See Figure 14.)



1. Spring Mounting Positions

FRONT HOLE POSITION - Placing the bolt in the front hole of the ski will increase spring preload, reduce the spring arch, and result in a stiffer ride with less spring travel. This position should be used for maximum stability during high speed operation.

CENTER HOLE POSITION - allows more spring arch, reducing spring preload, resulting in a softer ride for moderate speeds and trail riding.

REAR HOLE POSITION - Installation of the bolt in the rear hole of the ski will reduce spring preload, increase the spring arch, and result in a softer ride with greater spring travel. This position is recommended for deep snow operation or slow speed trail riding.

NOTE: Always mount the front ski spring bolt into the same position on each ski.

To change the preload of the ski spring, be sure weight of snowmobile is on skis, and proceed as follows:

1. Remove nut from front spring mounting bolt.
2. Open hood and with assistance from another, stand on front bumper to relieve spring tension from mounting bolt.
3. With weight still on front bumper, remove bolt, slide spring rub strip to align with desired hole position of ski, and insert bolt.
4. Install nut and torque 25 in. lb (0.3 kg-m).

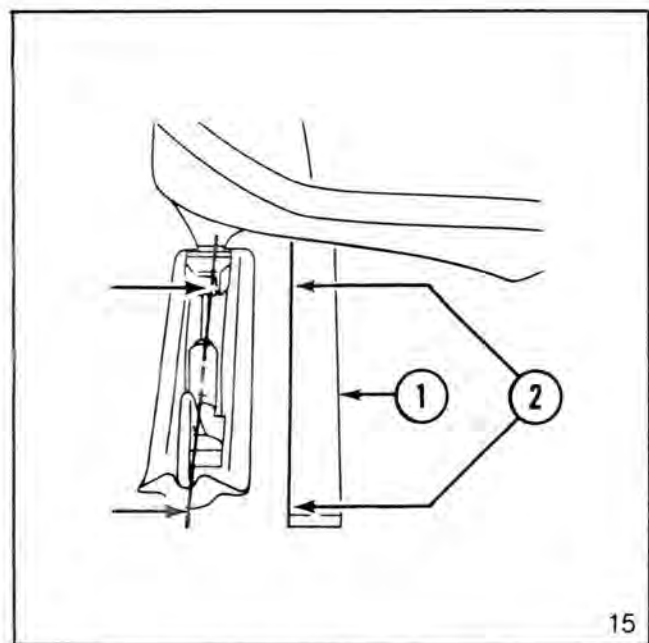
2. Position the ski so distance measured between ski center line and board edge is the same at front and rear of ski. (See Figure 15.)
3. When the ski center line is parallel to the outside edge of the track, check steering handlebar for centering. The handlebar holder should be parallel to lower edge of control panel.
4. If the handlebar requires centering, loosen lock (jam) nuts and turn tie rod length adjusting stud in the direction necessary to center handlebar. (See Figure 16.)

NOTE: Be sure center line of ski remains parallel to the straight edge while turning tie rod length adjusting stud.

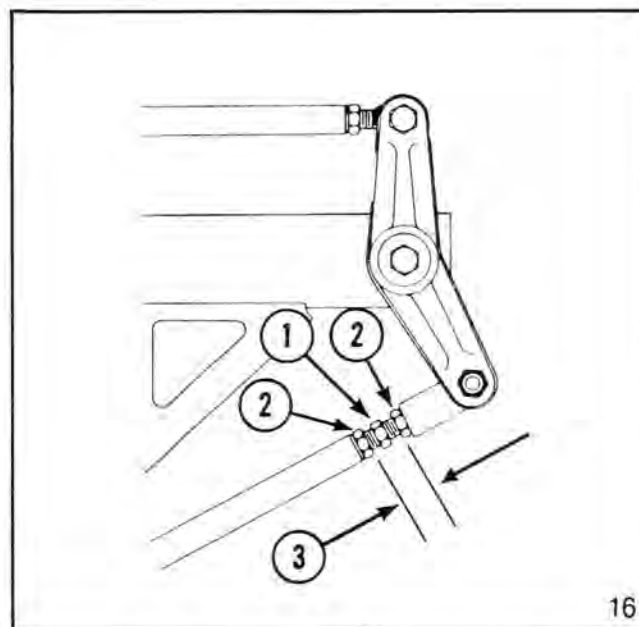
Steering Alignment

Check ski alignment and handlebar centering.

1. Place long board (or suitable straight edge) against right hand edge of the track, and measure the distance between the board and center line of the ski. (See Figure 15.)



1. Straight Edge Against Track
2. Measure Distance Here



1. Tie Rod Length Adjusting Stud
2. Locknuts
3. 1-1/4 in. (32 mm) Maximum

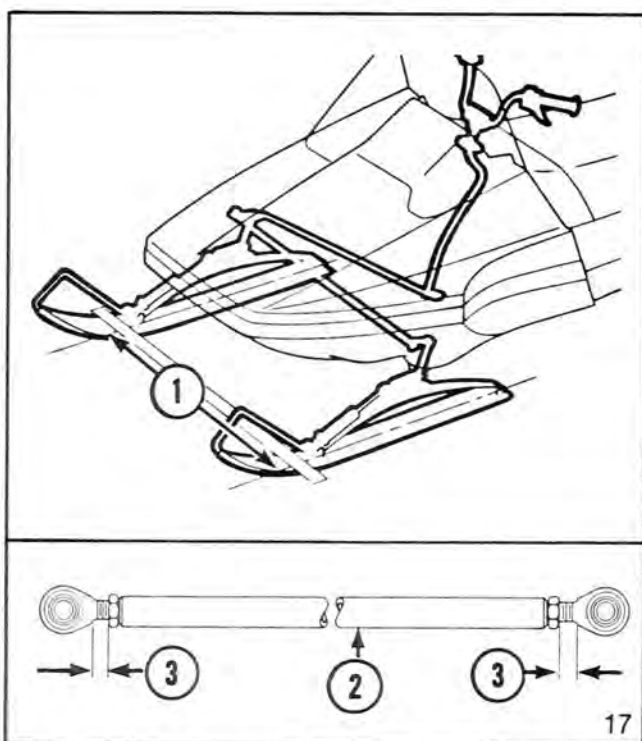
WARNING

To prevent possible steering linkage failure, the adjusting nut must remain centered between the two jam nuts and the measurement between the jam nuts must not exceed 1-1/4 in. (32 mm). (See Figure 16.)

5. To align other ski, move both ski tips towards center of snowmobile to remove steering linkage play. Loosen lock nuts and turn tie rod to obtain an equal distance from ski center to ski center when measured at the front and rear of the skis. (See Figure 17.)

WARNING

After proper alignment is obtained, the number of exposed threads at each rod end must be equal and not exceed 1/2 in. (12.7 mm) when measured from the jam nuts or possible steering linkage failure may occur. (See Figure 17.)



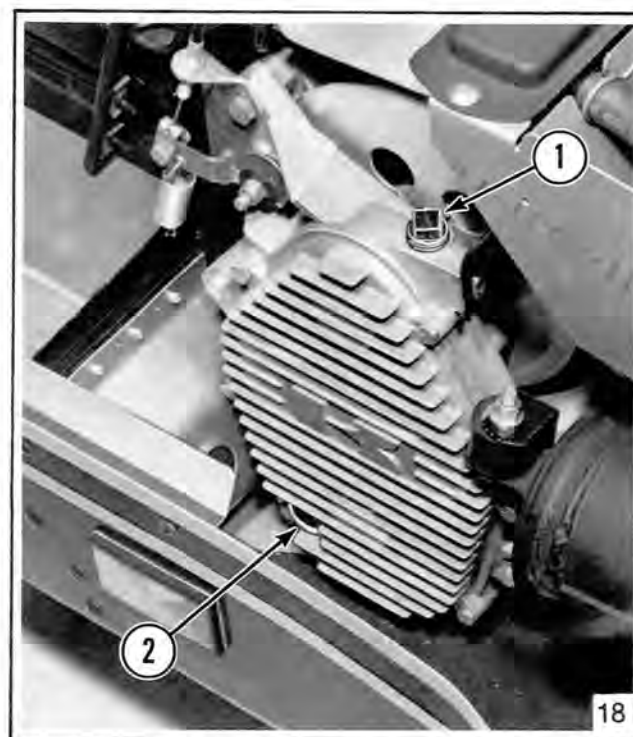
1. Equal Distance Front And Rear
2. Tie Rod
3. Exposed Threads - 1/2 in. (12.7 mm) Maximum

Wiring Harness

Check wiring harness for proper routing. Be sure wires are not being rubbed or pinched and all connectors are secure and fully connected.

Chaincase Lubrication

NOTE: Use DEXRON II Automatic Transmission Fluid when filling the chaincase.



1. Upper Fill Plug
2. Fluid Level Sight Gauge

Check chaincase fluid level. For proper lubrication of chains and bearings, fluid level must be between the center and top of sight gauge.

WARNING

Prevent oil mist from coating brake components, which may reduce braking action, by installing the fill plug with vent hole pointed away from brake disc.

If additional fluid is required, remove upper plug in the chaincase and pour DEXRON II Automatic Transmission Fluid into chaincase until level is correct. (See Figure 18.)

Brake Adjustment

Check relationship of brake cam detent to brake pad push pins. In the off position, the cam detent must be centered over pins. Be sure brake disc can be moved back and forth with very slight drag from brake pads. Measure brake control lever movement which should be less than 3/4 in. (19 mm) when brake is fully applied. Perform Brake Adjustment if required. (See Figure 19.)

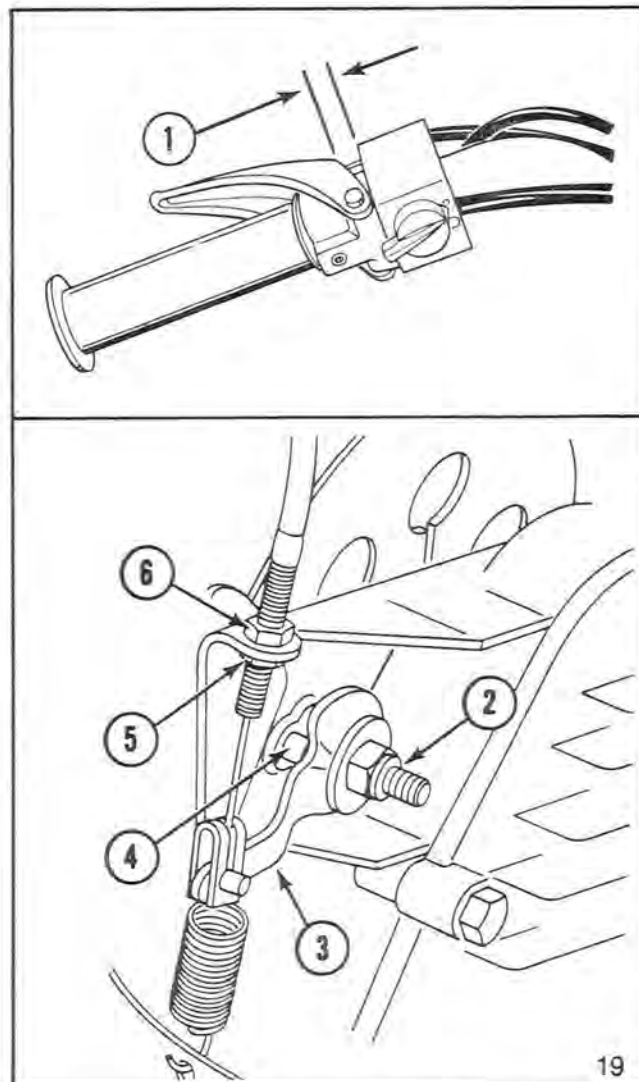
1. Back both brake cable jam nuts away from bracket about 1/4 in. (6 mm). Tighten brake adjusting nut bottoming cam against push pins.
2. Pull outer brake cable upward to remove slack from inner cable and snug upper jam nut to bracket. Tighten lower jam nut against bracket and torque both jam nuts 50 in. lb (0.6 kg-m).

Observe this **WARNING** during next step

DO NOT OVERTIGHTEN the brake because damage to components, or personal injury could result.

3. Loosen brake adjusting nut until brake disc can be rotated back and forth easily with brake pads just lightly contacting the disc.

The brake disc and hub assembly must float (free movement from left to right) on jackshaft to maintain proper alignment between the brake pads. This movement may result in a rattle heard during vehicle operation and is a normal condition.



1. 3/4 in.(19 mm) Maximum
2. Brake Adjusting Nut
3. Brake Cam
4. Brake Pad Push Pins
5. Lower Brake Cable Jam Nut
6. Upper Brake Cable Jam Nut

Engine Coolant Recommendation

Observe this **CAUTION** during next step

Approximately 1/8 in. (3.2 mm) of coolant will always appear on the floor of the reservoir tank. To be sure the coolant level is adequate, always fill to within 1/4 to 1/2 in. (6 to 12 mm) of the tank top.

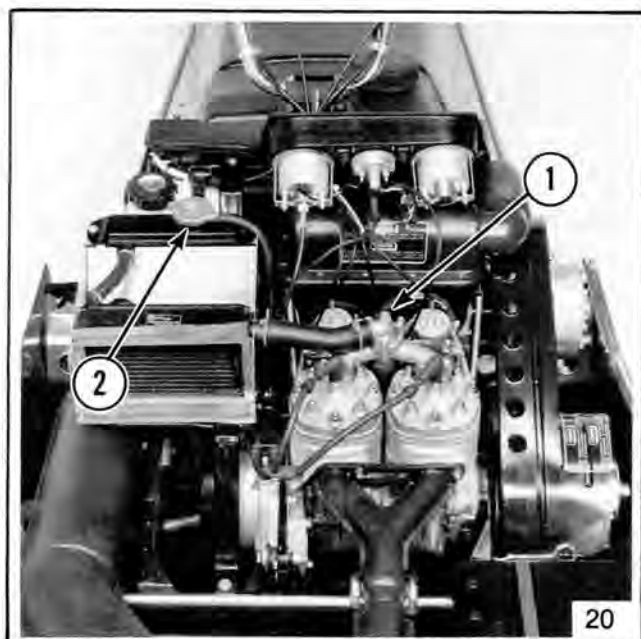
Coolant Supply - Use a 55/45 mixture of antifreeze and water (55% ETHYLENE GLYCOL base antifreeze and 45% water) when filling the cooling system. This recommended mixture will protect against freezing down to approximately -50°F (-45°C). A major brand of antifreeze (such as Prestone II or Dowgard) is recommended. The coolant level must be within 1/4 to 1/2 in. (6 to 12 mm) of the tank top when cool.

Filling Cooling System

Observe this **WARNING** during next step

Use care removing the pressure cap when the engine is hot or severe burns could result. Remove pressure cap from reservoir only when engine temperature is below 120° F (50°C).

1. Remove the pressure cap from reservoir tank. If the cooling system is empty or the coolant level is considerably low, remove vent plug from top of thermostat housing. (See Figure 20.)



1. Vent Plug
2. Pressure Cap

Observe this **CAUTION** before next step

DO NOT USE 100% ANTIFREEZE OR WATER. 100% antifreeze will freeze before a 55/45 mixture of antifreeze and water.

2. Slowly fill cooling system through reservoir tank opening. Cooling system capacity is approximately one gallon.
3. When coolant appears at vent opening in thermostat housing, reinstall vent plug, and continue filling until level is 1/4 to 1/2 in. (6 to 12 mm) down from neck in reservoir tank. Reinstall pressure cap.

NOTE: Recheck coolant level after running engine.

Drive and Driven Converter Alignment

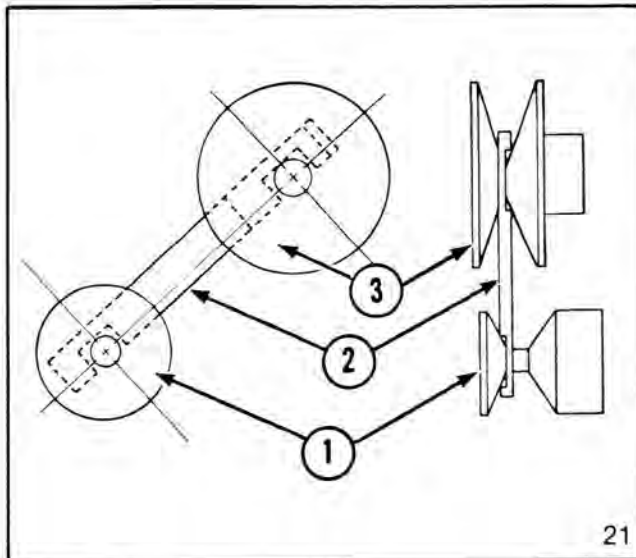
Correct converter center-to-center distance of 12.0 in. (304.8 mm) and converter offset distance of 0.525 to 0.588 in. (13.35 to 14.94 mm) is obtained when alignment gauge P/N 57001-3503 can be positioned between drive and driven converter sheaves correctly. (See Figure 21.)

Center-to-Center Distance

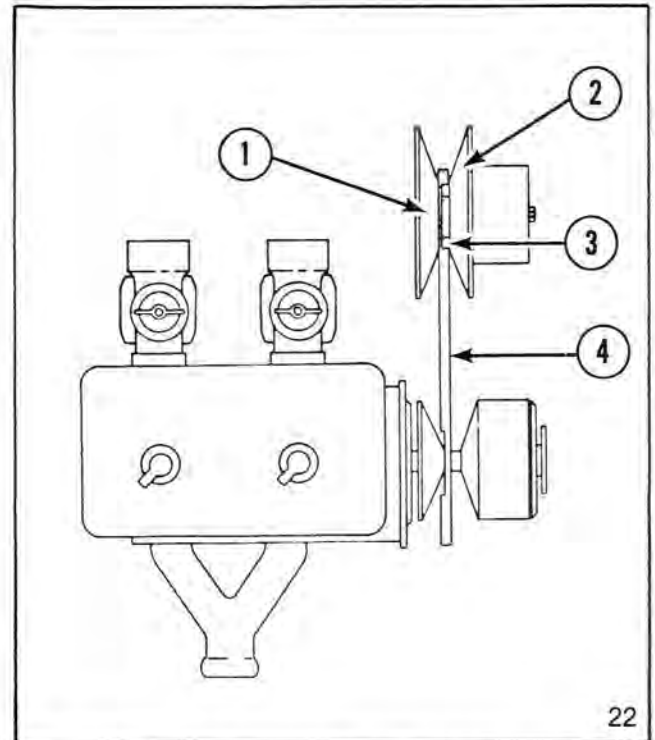
NOTE: Improper handling or misuse of alignment gauge will result in inaccurate converter alignment. Check flatness of alignment gauge with straight edge prior to each use.

1. Remove the drive belt guard and drive belt.

NOTE: Drive belt will not be reinstalled until running tests on engine are completed.

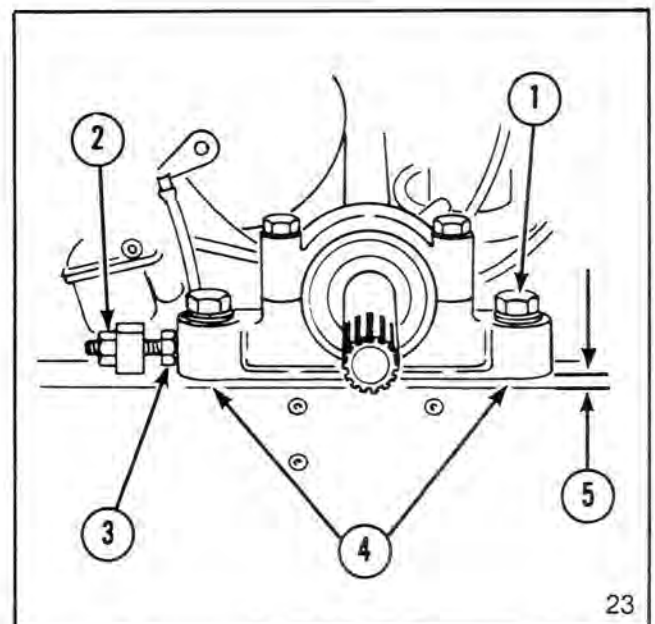


1. Drive Converter
2. Alignment Gauge P/N 57001-3503
3. Driven Converter



1. Driven Converter Movable Sheave
2. Driven Converter Stationary Sheave
3. Alignment Gauge Deep Notch
4. Alignment Gauge P/N 57001-3503

2. Rotate driven converter movable sheave clockwise, and insert alignment gauge between sheaves with deep notch facing the stationary sheave. Carefully release movable sheave, allowing spring tension to keep gauge in position between the stationary and movable sheaves. (See Figure 22.)
3. Center distance is correct if notch in alignment gauge fits over shaft on the drive converter.

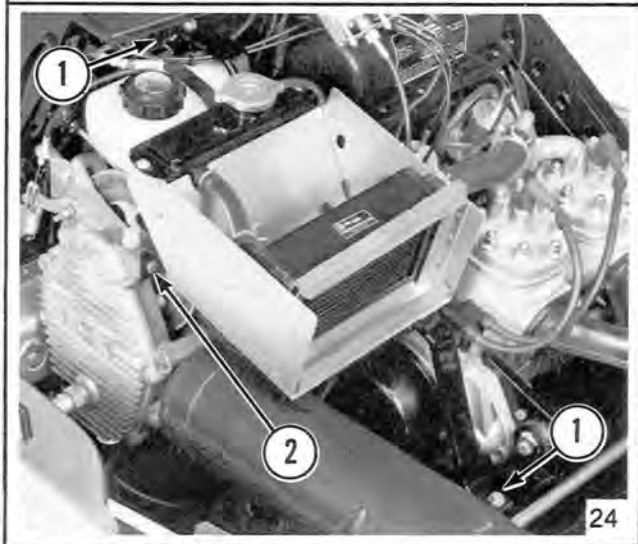
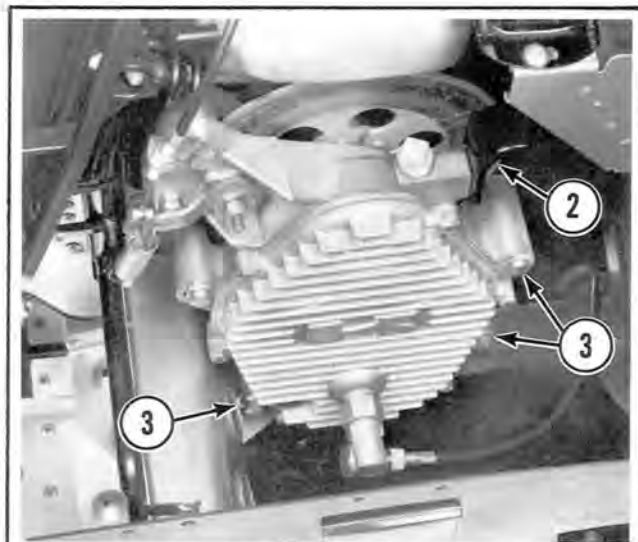


1. Bearing Retainer Mounting Bolts
2. Adjusting Bolt Locknut
3. Adjusting Bolt
4. Bearing Retainer Shims
5. Parallel

If adjustment of the converter center distance is required:

1. Loosen jackshaft bearing retainer mounting bolts and adjusting bolt locknut. (See Figure 23.)

2. Loosen four chaincase mounting bolts and three bolts securing the radiator brace bracket assembly to chassis and chaincase. (See Figure 24.)



1. Radiator Brace Mounting Bolts
2. Radiator Brace to Chaincase Bolt
3. Chaincase Mounting Bolts

3. Move the jackshaft bearing retainer and chaincase forward or rearward, as required, to obtain 12.0 in. (304.8 mm) center distance.
4. To insure correct center distance is maintained, turn adjusting bolt so head of the bolt contacts jackshaft bearing retainer flange, and tighten locknut. (See Figure 23.)

CAUTION

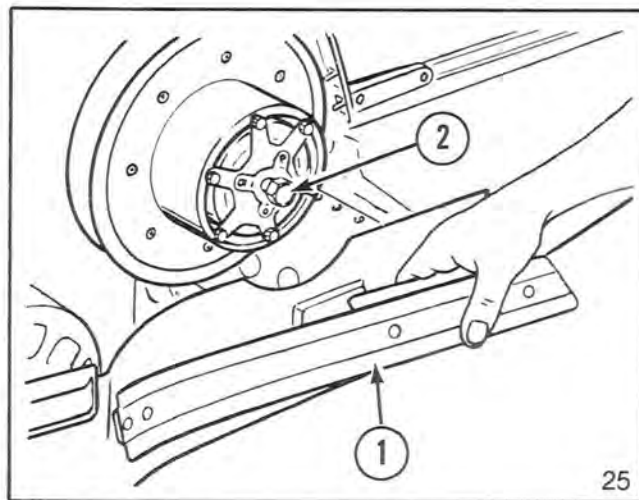
To prevent premature jackshaft bearing failure, reshim the bearing retainer after changing center distance.

5. Tighten all bolts and nuts securing chaincase and radiator brace bracket assembly. Refer to Torque Chart.
6. Perform procedures listed under Jackshaft Bearing Retainer Shimming.

Jackshaft Bearing Retainer Shimming

After adjusting center-to-center distance, shim the jackshaft bearing retainer as follows:

1. Remove left side aluminum trim from lower pan and unscrew bolt securing driven converter to the jackshaft. (See Figure 25.)



1. Aluminum Trim
2. Retaining Bolt

2. Remove shims below the bearing retainer. (See Figure 23.)
3. Position bottom of the retainer parallel to top surface of the chassis. (See Figure 23.)

Observe this

CAUTION

during next step

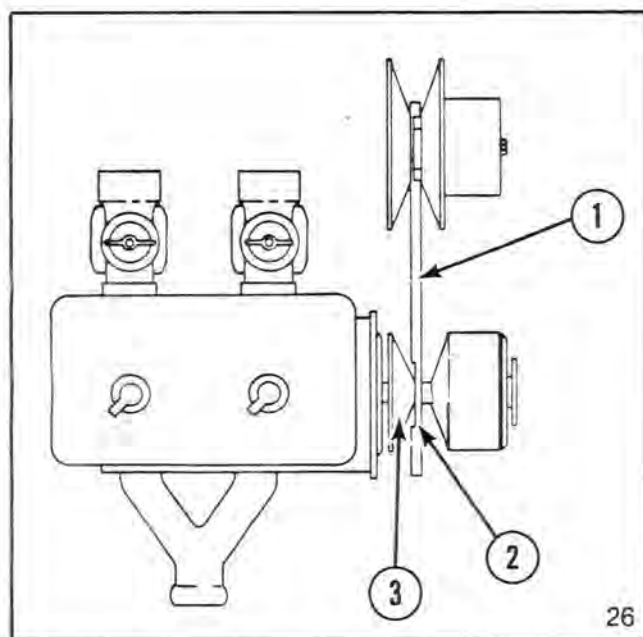
Bearing retainer should be shimmed until jackshaft center line is 6.62 in. (168.2 mm) above the track drive shaft center line.

4. Install "U"-shaped shims, as required, to fill the space between the retainer bottom and chassis top. This procedure prevents excessive jackshaft bearing preload.
5. Tighten nuts on the jackshaft bearing retainer.
6. Position driven converter onto the jackshaft and check Converter Offset Distance.

Converter Offset Distance

After checking center-to-center distance, inspect for proper converter offset.

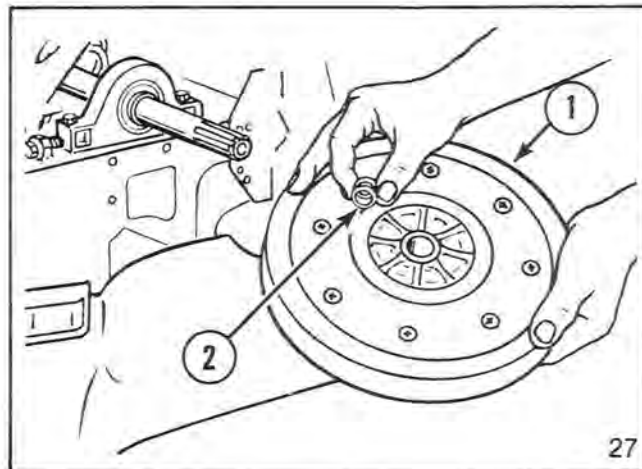
Correct offset distance is obtained when surface of shallow notch on alignment gauge contacts the base of the drive converter fixed sheave. (See Figure 26.)



1. Alignment Gauge
2. Alignment Gauge Shallow Notch
3. Drive Converter Fixed Sheave

If adjustment to the offset distance is required:

1. Remove left side aluminum trim from lower pan and unscrew bolt securing driven converter to the jackshaft. (See Figure 25.)
2. Slide driven converter from jackshaft and add or remove shims, as required, from the bore of the driven converter to obtain correct converter offset. (See Figure 27.)



1. Driven Converter
2. Shims

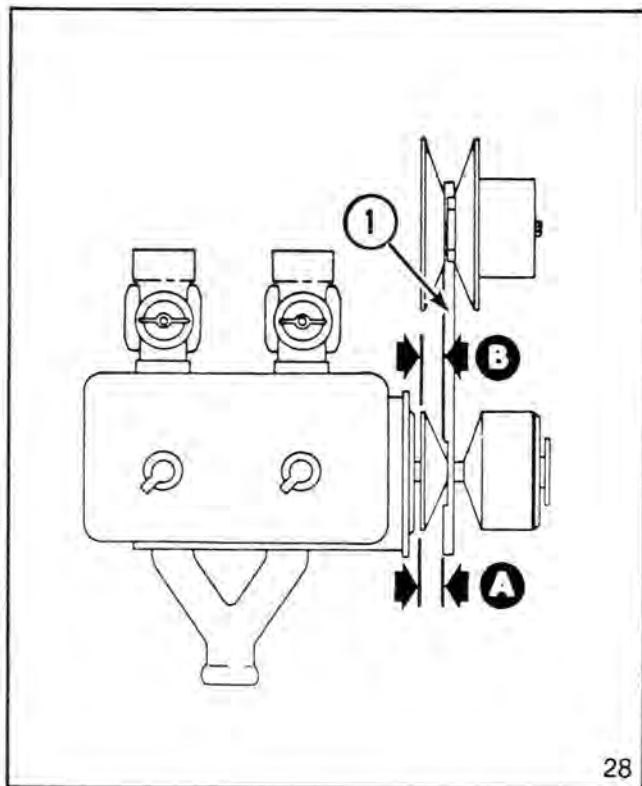
AVAILABLE SHIMS

P/N	THICKNESS
92925-3501	.032 in. (0.8 mm)
92025-3502	.063 in. (1.6 mm)
92925-3503	.100 in. (2.5 mm)

3. Reinstall driven converter and torque mounting bolt 50 ft lb (6.9 kg-m).
4. Position aluminum trim onto lower pan and secure with screws and nuts. Be sure special washers are installed under the head of each screw to prevent damaging decal pattern on aluminum trim.
5. Inspect drive and driven converters for correct parallelism.

Converter Parallelism

1. After checking center-to-center and offset distance, parallelism must be checked by measuring dimensions A and B as shown. (See Figure 28.) Compare dimensions A and B against Notes I and II.



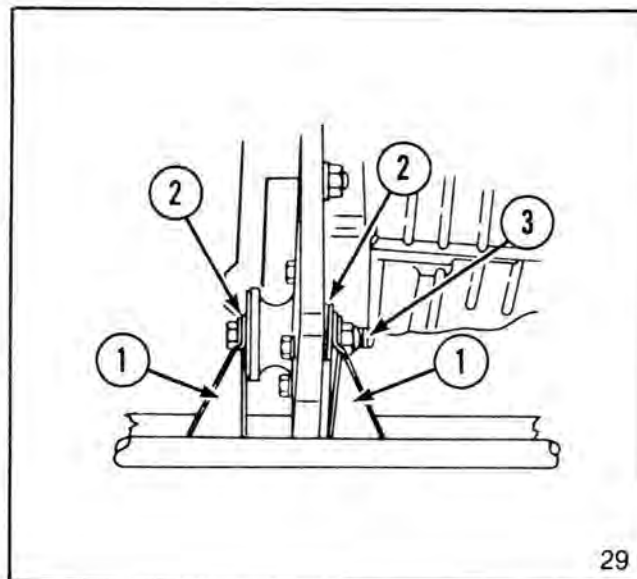
1. Alignment Gauge P/N 57001-3503

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

NOTE II: Dimension A must never exceed dimension B by 0.02 in. (0.5 mm).

2. If dimension A is less than dimension B, parallelism between drive and driven converters is not correct. Parallelism must be adjusted as follows:
 - a. Loosen large bolt in each of two engine mounts on right side of the engine.

- b. Move recoil starter end of engine forward or rearward as necessary to make converters parallel. Install "U" shaped shims on either side of both engine mounts to fill gaps between engine mounts and mounting brackets on the frame. (See Figure 29.)



1. Engine Mounting Bracket
2. Shims
3. Engine Mount Bolt

- c. Securely tighten large bolts in the two engine mounts after parallelism is obtained. (See Figure 29.)

Engine Break-In

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

Oil Recommendation

We recommend using Kawasaki Snowmobile Oil. This oil is specially formulated to give minimum piston ring varnish and combustion chamber deposits along with excellent lubrication qualities.

In an emergency situation, when Kawasaki Snowmobile Oil is not available, a B.I.A. certified TC-W oil may be substituted. All certified oils will indicate the TC-W rating on the container. If the B.I.A. certification does not appear on the container, **the oil must not be used.**

The use of lubricants such as "tune-up tonics" are **NOT RECOMMENDED.**

Filling Oil Tank

Fill oil tank with recommended oil. As the oil tank has no filter, **DO NOT ALLOW DIRT TO ENTER WHILE FILLING.** Oil tank capacity is 2-1/2 quarts (2.37 liters).

Check oil tank vent tube for:

1. Proper Routing - Sharp bends or kinks in the vent tube will reduce oil flow to the oil pump.
2. Tie Band Installation - Tie band may pinch off tube, reducing oil flow to the oil pump, if installed too tight.
3. Vent Tube Position - To prevent siphoning action, possible under certain conditions, position end of vent tube higher than top of oil tank and away from brake components (disc and pads).

Fuel Recommendation

Use regular or premium leaded gasoline with a **MINIMUM PUMP POSTED ANTI-KNOCK INDEX NUMBER OF 89. DO NOT USE GASAHOL.**

WARNING

Gasoline fumes are heavier than air and can become explosive if exposed to a pilot light from a furnace, hot water heater, clothes dryer, etc. Mix fuel or fill tank only in an area that is well ventilated and free from pilot lights and sparks.

Fuel/Oil Mixture (Break-in Only)

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.

25 to 1 Gasoline to Oil Mixture. Break-in Only	
Oil	Gasoline
1 pint U.S.)	3 gal. (U.S.) 2.6 gal. (Imp.)
1 pint (Imp.)	3 gal. (Imp.) 3.75 gal. (U.S.)

Fuel/Oil Mixture (Standard)

The fuel-to-oil ratio required is automatically controlled at the engine oil pump.

Adding Gasoline Antifreeze

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 anti-freeze. (See Figure 30.)



CAUTION

Each time fuel tank is filled, gasoline antifreeze must be added to fuel system. Moisture trapped in fuel system components (fuel tank, lines, fuel pump or carburetors) may freeze, causing engine malfunction or damage.

Filling Fuel Tank

Before removing filler cap from fuel tank, remove any ice, snow, or water from around the fuel tank opening to prevent contamination of fresh fuel mixture.

WARNING

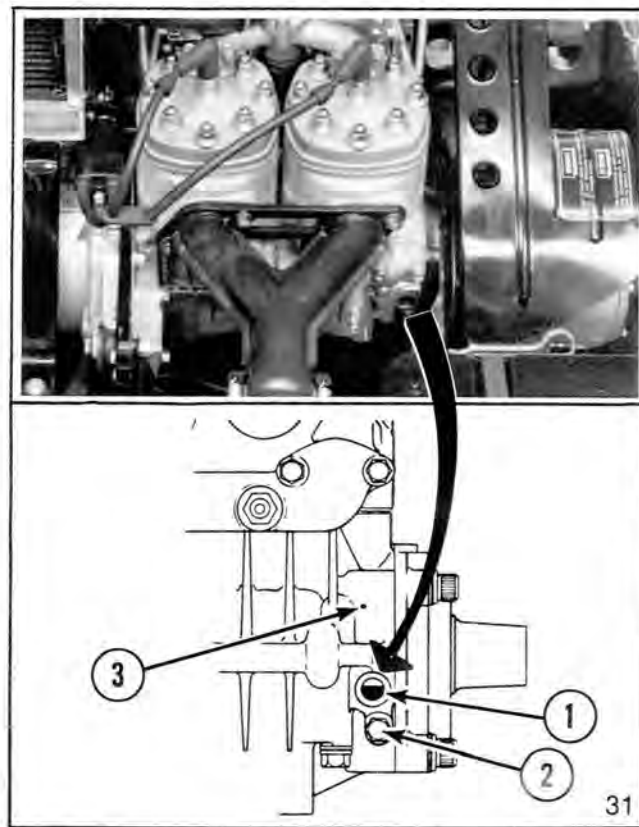
Gasoline fumes are heavier than air and can become explosive if exposed to a pilot light from a furnace, hot water heater, clothes dryer, etc. Fill the fuel tank only in an area that is well ventilated and free from pilot lights and sparks.

Fill fuel tank slowly and pour fresh fuel into the tank using funnel with a fine mesh screen.

Engine Gearcase Lubrication

Components inside gearcase drive the oil injection pump and coolant pump.

Lubricant level is correct when oil appears above center but no higher than the top of the sight gauge. This sight gauge is located on the crankcase front, below left-hand cylinder. (See Figure 31.)

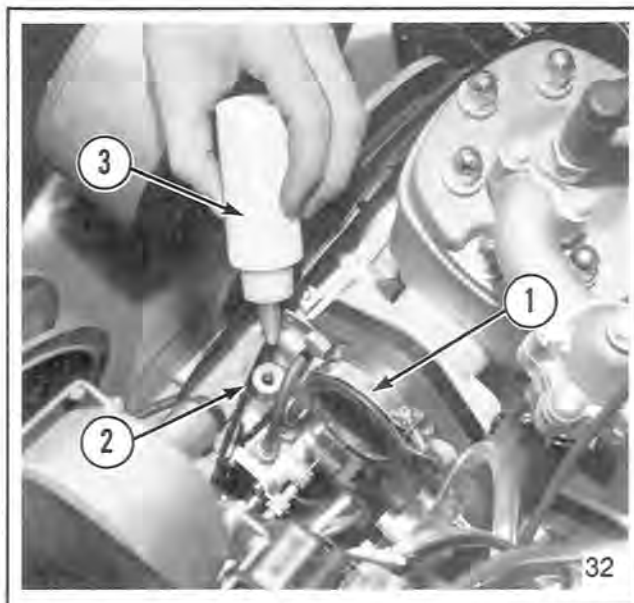


1. Oil Level Sight Gauge
2. Engine Gearcase Drain Plug
3. Gearcase Breather Hole

Fill or add lubricant to the gearcase as follows:

1. Remove instrument panel mounting screws to provide the additional clearance needed and remove the air silencer assembly.

2. Loosen clamp screw and separate the left-hand carburetor from its rubber holder.
3. Remove gearcase fill plug (located on top of gearcase) and pour Kawasaki Engine Gearcase Oil, Shell FIRE AND ICE 10W40 or an equivalent viscosity motor oil that meets or exceeds API service SE specifications. Gearcase capacity is about 1.35 oz. (40 cc). (See Figure 32.)



1. Left-Hand Carburetor Removed
2. Gearcase Fill Hole
3. Container of Oil

NOTE: The air silencer assembly should not be installed until Purging Air from Oil Pump Outlet Tubes procedure is completed.

Engine gearcase oil should be changed after the initial 100 miles of engine operation, and at the end of each season, to remove any foreign matter present in the gearcase cavity. To completely drain gearcase, remove drain plug and raise rear of snowmobile. (See Figure 32.)

Observe this **CAUTION** during next step

Failure to remove obstructions from gearcase breather hole may cause excessive oil consumption resulting in extensive engine damage. (See Figure 32.)

To insure proper operation of oil seal between the engine gearcase and crankcase, check for accumulated obstructions in the gearcase breather hole, located above gearcase sight gauge.

Before reinstalling carburetor, perform Oil Injection System preparation.

Oil Injection System

The oil pump is a variable ratio pump; at idle, the fuel/oil ratio is approximately 110 to 1, increasing with throttle position to approximately 25 to 1 at maximum power.

Bleeding Oil Pump Supply Tube

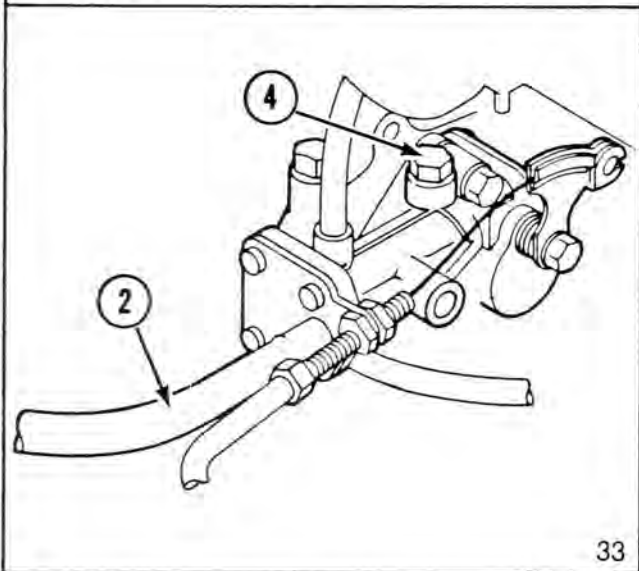
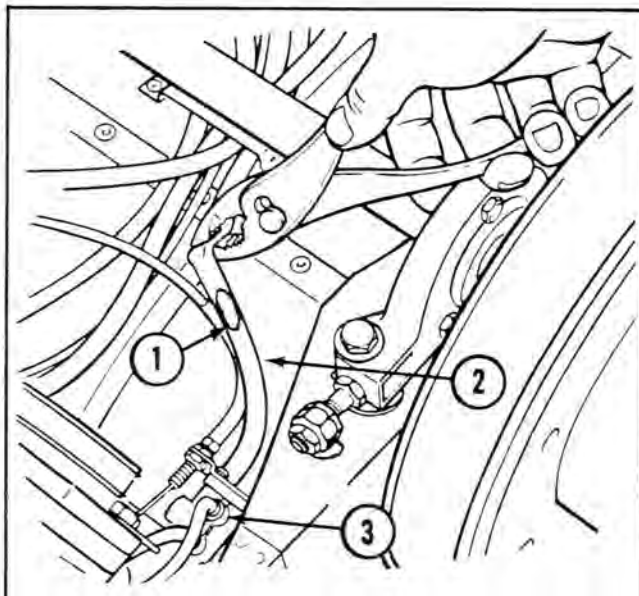
Observe this **CAUTION** during next step

Failure to bleed out air trapped in the oil line can cause severe engine damage.

After filling oil tank for the first time, bleed air from oil pump inlet tube as follows:

1. Remove instrument panel mounting screws and air silencer assembly.
2. Loosen carburetor holder clamp screw and pull LH carburetor from engine.

3. Air trapped inside oil pump assembly can be removed by squeezing (pulsing) oil pump supply tube with pliers. This process causes air to exit oil pump nipple and enter the supply tube. (See Figure 33.)



1. Air Bubble
2. Oil Pump Supply Tube
3. Oil Pump
4. Oil Pump Bleed Screw

4. Remove bleed screw from top of oil pump and allow oil to drain until all air bubbles are removed from the inlet tube. Visually check entire length of the tube to be sure that all air has been removed; then reinstall bleed screw.

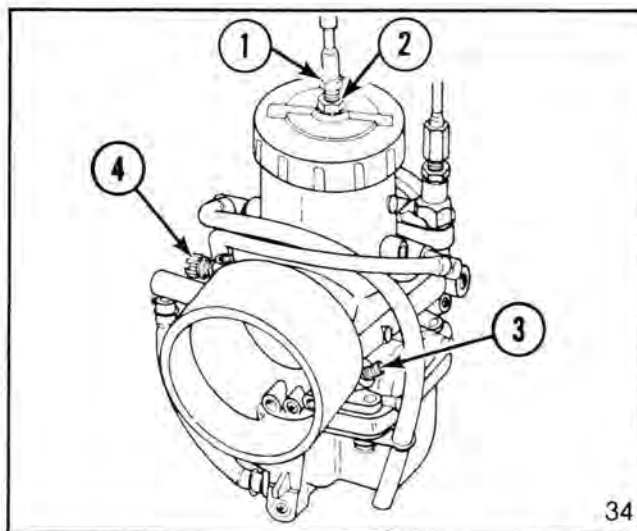
NOTE: Do not reinstall LH carburetor until oil pump synchronization and purging is completed.

Oil Pump to Carburetor Synchronization

Synchronization of the oil pump and carburetors is extremely important to assure adequate engine lubrication and peak performance.

Remove instrument panel mounting screws, air silencer assembly and LH carburetor. Remove the drive belt and perform the following procedure.

1. Loosen the idle stop screws so that both throttle slides bottom-out in the carburetor bores. (See Figure 34.)

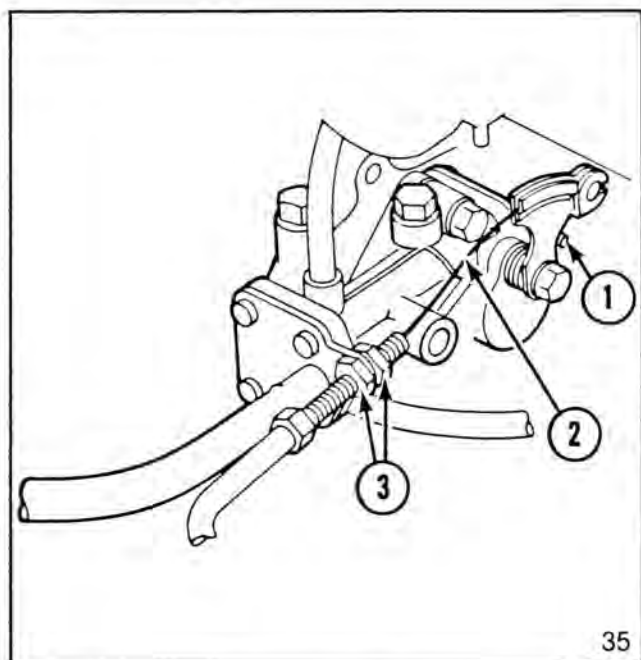


1. Throttle Cable Adjusting Screw
2. Adjusting Screw Jam Nut
3. Air Screw
4. Idle Stop Screw

NOTE: Check to be sure both throttle slides have bottomed-out. If not, loosen jam nut and turn throttle cable to allow slide to bottom-out. (See Figure 34.)

Continue squeezing (pulsing) oil pump supply tube until bubbles no longer exit the pump assembly.

2. Push oil pump lever forward until it contacts the stop pin; this insures the oil pump is at dead idle position. (See Figure 35.)



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

3. Adjust throttle cable on RH carburetor so that all slack is removed. The throttle slide should begin to rise as soon as the throttle lever on the handlebar is advanced. (See Figure 34.)
4. Loosen locknuts on oil pump cable and, while holding oil pump lever against the stop pin, remove all slack. Adjustment is correct when the lever on the oil pump and throttle slide in the RH carburetor move simultaneously as the throttle control lever is activated. (See Figure 35.)
5. Temporarily position LH carburetor into holder and adjust throttle cable so both throttle valves move simultaneously as throttle lever is actuated.

6. Turn the idle stop screws, on both carburetors, in until the spring is coil bound. Then, back off each screw six complete turns (initial adjustment). Air screw is properly adjusted when opened 1.5 turns of its seat.
7. Perform steps under Purging Air From Oil Pump Outlet Tubes.

Purging Air from Oil Pump Outlet Tubes

Remove instrument panel mounting screws and air silencer assembly. Remove drive belt and perform the following procedure.

Any air bubbles in the oil pump outlet tubes will cause serious internal engine damage. Purge air from these tubes as follows:

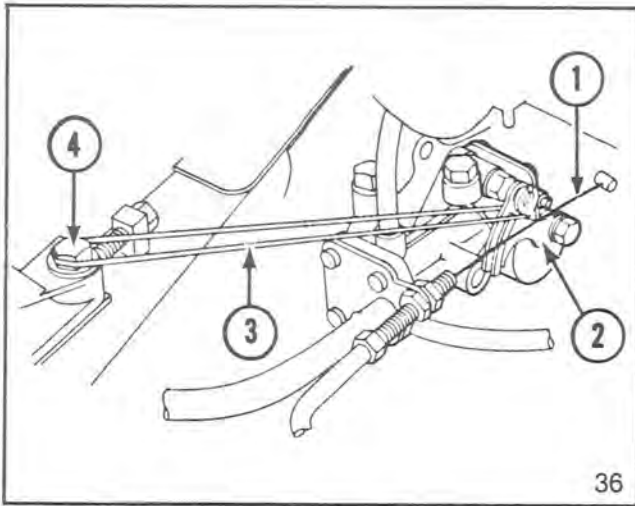
Observe this

WARNING

during next step

Failure to disconnect oil pump control cable when performing this procedure will damage the cable. The damaged oil pump control cable will prevent the throttle from returning to idle position, resulting in automatic clutch engagement when engine is started, which may lead to personal injury.

1. The oil pump inner control cable must be disconnected from the control lever on the oil pump to prevent damage to cable. Do not disturb cable locknuts when removing the inner cable. (See Figure 36.)
2. Attach rubber band to hold oil pump control lever in the wide open position. This will cause the maximum flow of oil through the outlet tubes. (See Figure 36.)



1. Oil Pump Inner Control Cable
2. Oil Pump Control Lever
3. Rubber Band
4. Mount Bolt

NOTE: Properly position plastic adaptors on the carburetors prior to air silencer installation.

6. Install air silencer assembly onto carburetors and check that rubber seals between air silencer body and carburetors fit securely during installation.
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.
8. Install mounting screws to secure the instrument panel assembly.

Observe this **CAUTION** during next step

Never run engine with air silencer removed from the carburetors. Poor engine performance and engine damage will result.

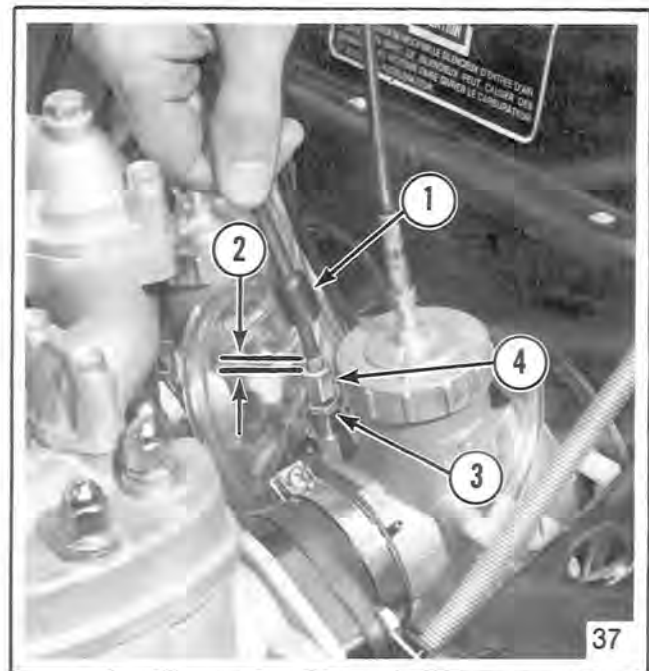
3. Install carburetor in holder. Position carburetor so float bowl does not contact front frame and tighten clamp screw. Temporarily position air silencer onto carburetors.
4. Start engine and turn both idle stop screws equally, to obtain engine idle speed of 3,000 RPM. Stop engine after it has idled for one minute. This is ample time to purge all air from the oil pump outlet tubes.

NOTE: Recheck the coolant level after running the engine.

5. Remove air silencer assembly; release rubber band and reconnect oil pump inner control cable to the lever. Be sure to check operation of oil pump control lever and cable by activating throttle control lever on handlebar.

Enrichener Cable Adjustment

With Enrichener lever down, and protective boot slid up casing, the enrichener cable should have 1/16 in. (1.5 mm) free movement when raised as shown. (See Figure 37.)



1. Protective Boot
2. 1/16 in. (1.5 mm)
3. Jam Nut
4. Adjusting Screw

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 jam nut and turn adjusting screw to obtain correct movement. Torque jam nut 20 in.lb (0.2 kg-m).

After adjustment or check, position boot over fitting to prevent dirt from entering enrichener system.

Carburetor Synchronization

It is extremely important that both carburetors function in unison. For maximum power and efficiency, both cylinders must work equally. The most effective method of synchronizing carburetors is to use a Mercury Synchro Tuner, Kawasaki P/N 57001-3510

The Mercury Synchro Tuner measures vacuum within the engine intake system. Measurement of the vacuum will vary depending on the position of the carburetor throttle valve. Raising the throttle valve position reduces the restriction on air flow resulting in a lower vacuum measurement. A lower throttle valve position restricts air flow which causes a higher vacuum measurement.

At idle, the throttle valves are positioned by the idle stop screws. The throttle cables hold the throttle valves in position when the throttle lever is actuated.

Adjust idle screws and throttle cables so that vacuum measures equally at idle and partial throttle positions for both carburetors by performing the following procedure:

NOTE: Air silencer assembly should be properly installed and drive belt removed. Secure belt guard in position with clip pins.

1. For proper adjustment and ease of starting engine without primer, start engine and allow it to warm up.

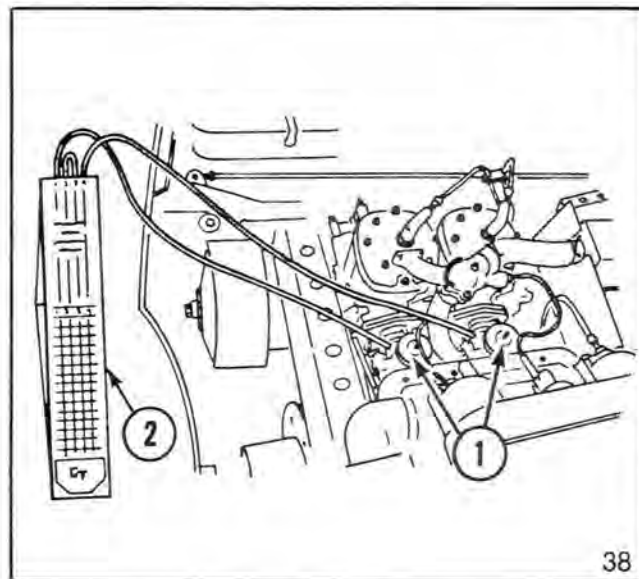
Observe this

WARNING

during next step

Avoid personal injury. Do not touch hot engine parts.

2. Turn engine off and disconnect primer tubes from carburetor fittings.
3. Connect one tube from the Synchro Tuner to each carburetor primer fitting. (See Figure 38.)



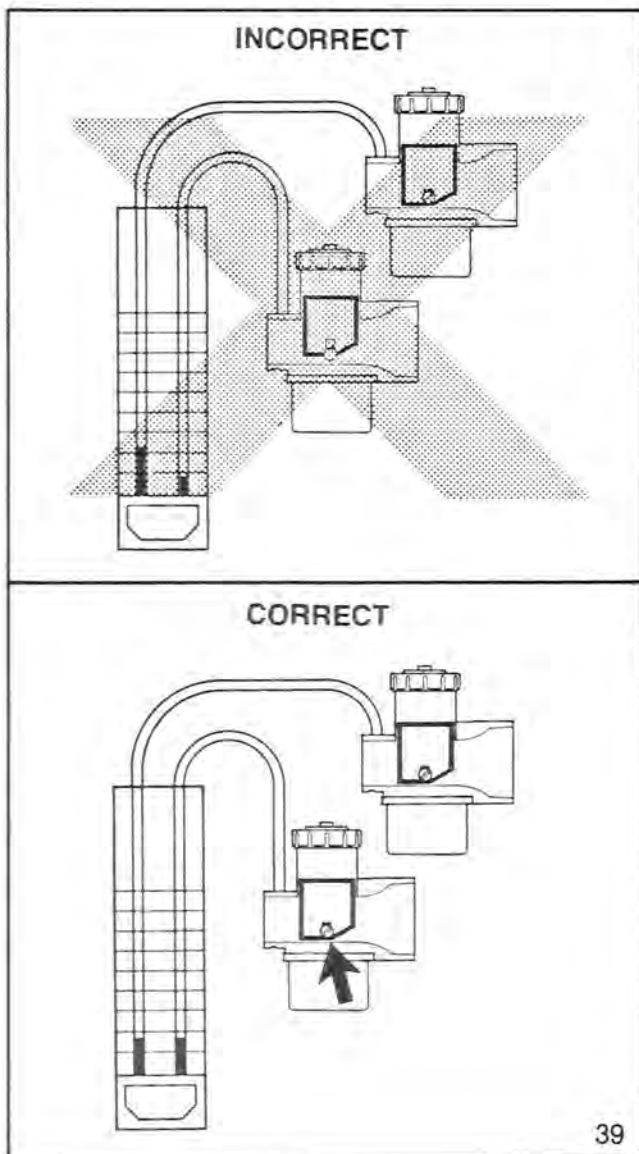
1. Carburetors
2. Mercury Synchro Tuner

NOTE: It may be necessary to install a short piece of primer tubing into the Synchro Tuner tubing ends to insure a good seal.

4. Start engine and observe vacuum indications on the Synchro Tuner at idle speed.

5. Adjust idle stop screws on both carburetors to obtain an equal vacuum at 3,000 RPM. (See Figure 39.)

NOTE: Turn idle screw inward to raise the throttle valve position. This will increase RPM and lower the vacuum. Turn idle screw out to lower RPM and increase vacuum.

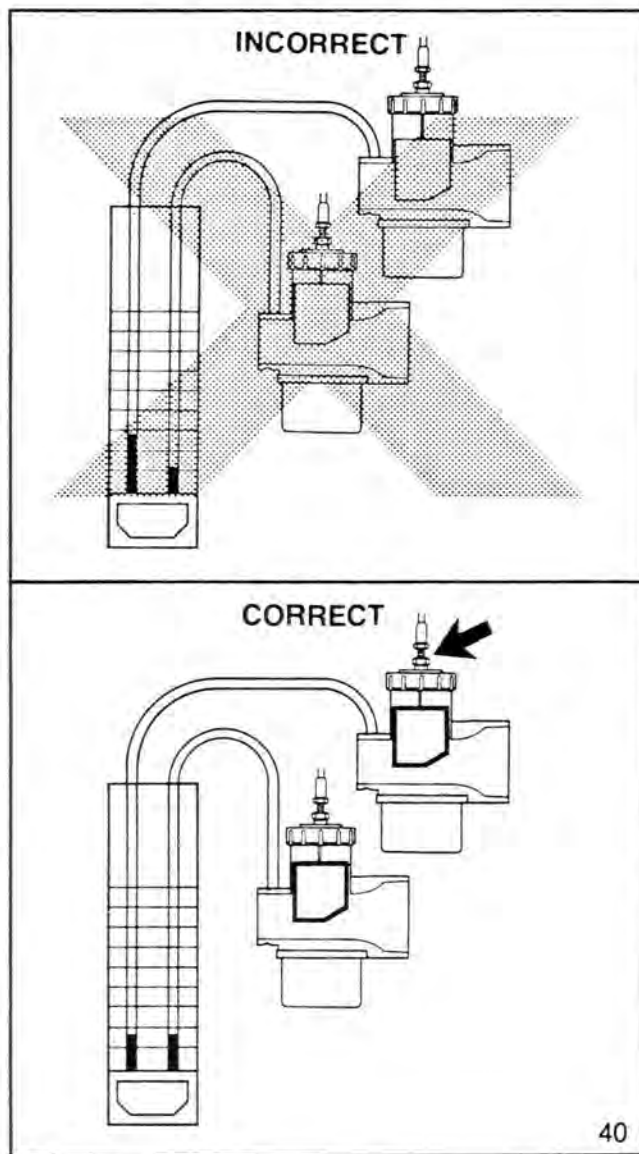


6. Use a small piece of wood to wedge throttle lever slightly open (approximately 5,000 RPM). Observe vacuum indications on Synchro Tuner.

NOTE: Because RH carburetor has been synchronized with oil pump, adjust LH carburetor only.

7. Loosen LH carburetor throttle cable jam nut. Turn LH carburetor throttle cable adjuster until vacuum indication is equal to RH carburetor. (See Figure 40.)

NOTE: Turn adjuster inward to increase the vacuum. Turn adjuster outward to lower the vacuum.

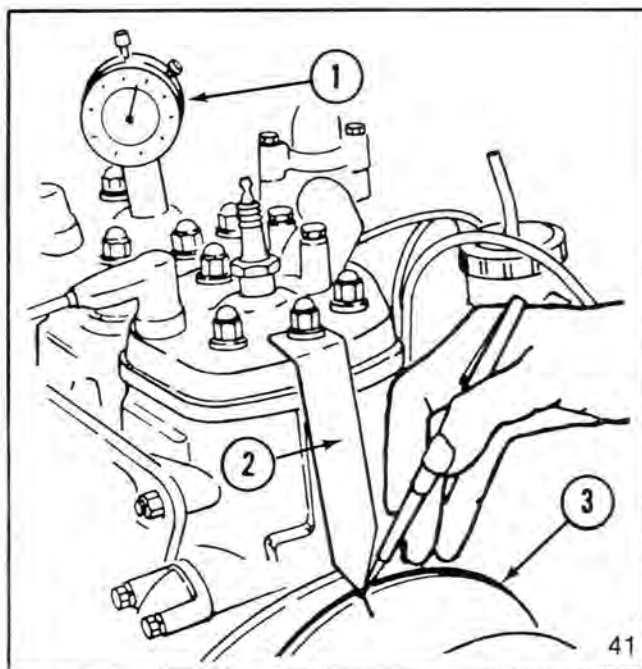


8. Actuate throttle lever to check for equal vacuum at different throttle positions. Readjust LH throttle cable if necessary. Torque LH carburetor throttle cable jam nut 20 in.lb (0.2 kg-m).
9. Reinstall primer tubes to carburetors. Proceed to Ignition Timing Check before installing the drive belt.

Ignition Timing Check

Remove the drive belt prior to performing the following procedure:

1. Install a fabricated timing pointer onto the engine. For accuracy, it is important to attach pointer to the engine rather than the chassis, so pointer can move with the engine. (See Figure 41.)



1. Dial Indicator
2. Fabricated Pointer
3. Drive Converter Fixed Sheave

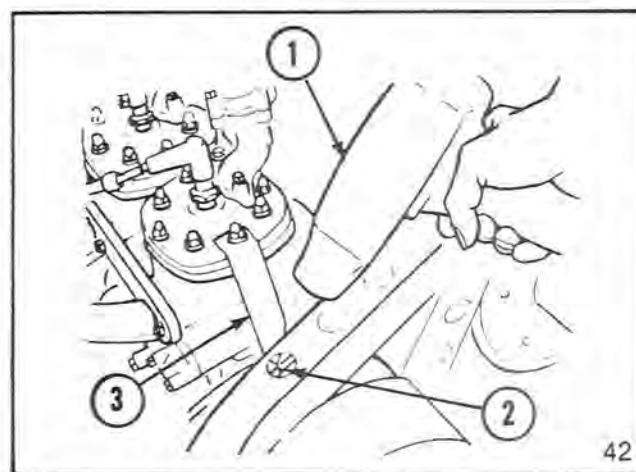
2. Remove both spark plugs and install a dial indicator into the RH cylinder spark plug hole.
3. Rotate the drive converter in the normal direction of rotation (counterclockwise) to find TDC. Next, turn the drive converter clockwise to 0.108 in. (2.75 mm) before TDC. Make a mark on the drive converter fixed sheave opposite the timing pointer. (See Figure 41.)

4. Remove dial indicator and before installing spark plugs, check that:
 - a. Plug gap is properly adjusted to 0.024 in. (0.66mm).
 - b. Be sure washer is installed on plug and the seat on the cylinder head is clean.
5. Install spark plugs and torque 20 ft lb (2.8 kg-m) torque.

Observe this **WARNING** during next step

Do not touch the spark plug leads while engine is running as they will transmit a powerful electrical shock. Do not touch the hot exhaust system. A severe burn would result.

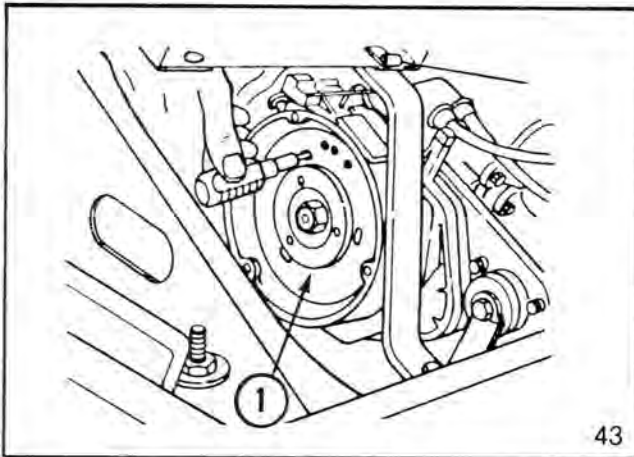
6. With drive belt removed and converter guard secured in place, run engine at 6,500 RPM. Direct timing light through opening in the converter guard directly over timing pointer. The timing is correct when the mark on the converter aligns with the pointer as timing light flashes. (See Figure 42.)



1. Timing Light
2. Mark on Drive Converter
3. Timing Pointer

If timing is incorrect, proceed as follows:

1. Remove muffler, recoil starter and starter pulley for access to flywheel openings. Then loosen stator plate mounting screws through holes in the flywheel. (See Figure 43.)



1. Flywheel

Observe this **CAUTION** during next step

When adjusting the stator plate, take care not to damage the coil windings.

2. Turn the stator plate as required (clockwise to retard timing; counterclockwise to advance timing) to correct timing and tighten stator plate screws. Temporarily position muffler on-to exhaust manifold, start engine using emergency starter rope, and recheck timing.
3. When ignition timing is correct, remove timing light, replace recoil starter components and install muffler assembly.

NOTE: Make sure the lip on insulation washer is properly positioned in the slotted muffler bracket before tightening muffler mounting nuts.

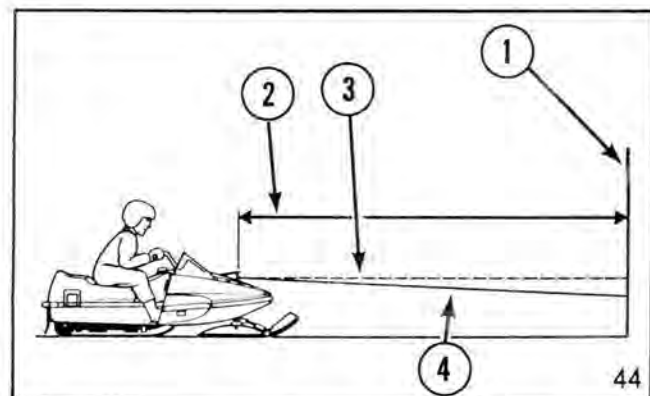
4. Install drive belt and secure converter guard into proper position with clip pins.

CAUTION

Be certain the air silencer hose is directed to the rear after the converter guard is reinstalled, as incorrect position may result in engine damage.

Headlight Adjustment

1. Position snowmobile on a level floor so headlight points at a wall 25 ft. (7,620 mm) away. The headlight must be in the up and locked position.
2. Measure distance from floor to the center of the headlight and mark wall at the dimension measured (reference mark.) (See Figure 44.)



1. Wall
2. 25 ft. (7,620 mm)
3. Reference Mark (center of headlight to floor)
4. 2 in. (51 mm) Below Reference Mark

NOTE: To assure proper aiming and to prevent vehicle from creeping ahead, be sure hood is properly secured and an operator is seated on the vehicle.

Observe this **WARNING** during next step

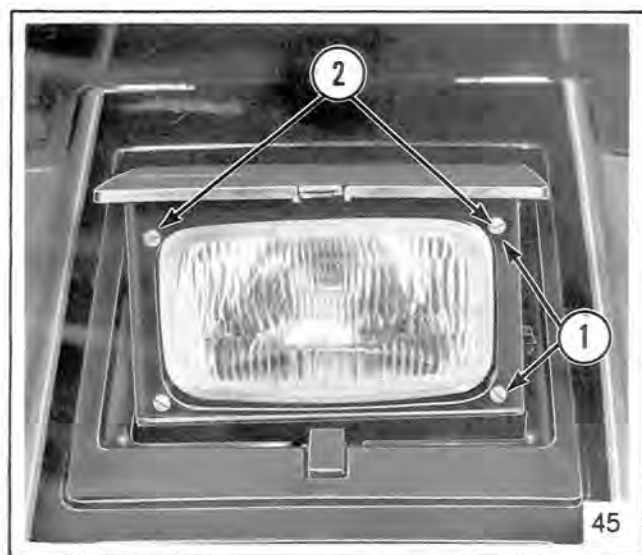
If adjusting the headlight indoors, provide proper ventilation to prevent possible carbon monoxide poisoning.

3. Turn on headlight high beam. Headlight is properly aimed when the high beam is centered and aimed 2 in. (51 mm) below reference mark on the wall. (See Figure 44.)

Observe this **CAUTION** during next step

Always turn headlight adjusting screws to the right (clockwise). Turning screws counterclockwise may back them out of the headlight, allowing headlight to become loose or drop out of position.

4. If headlight adjustment is required, turn adjusting screws to the right (clockwise) as required. (See Figure 45.)



1. Horizontal Adjusting Screws
2. Vertical Adjusting Screws

Check the operation of the headlight low beam.

Tail/Brake Light Test

The taillight will operate only when key switch is in the "Run/Lights" position.

The brake light is activated by a switch mounted in the brake lever housing on the handlebar. Brake light operation is independent of other lights and the key switch.

Track Adjustment

Track Tension

Observe this **WARNING** during next step

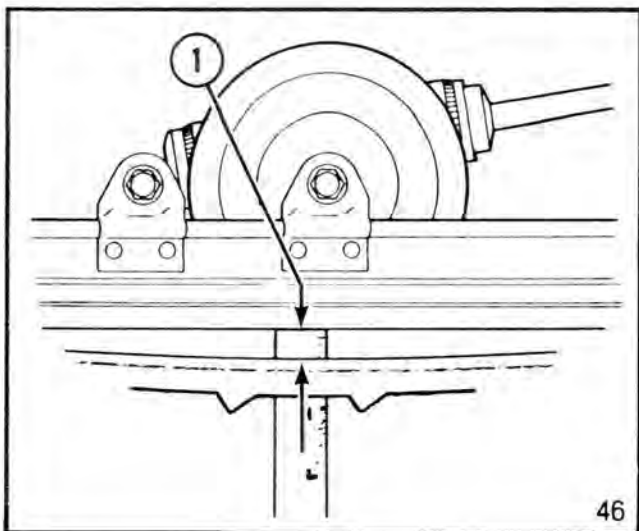
When raising rear of the snowmobile off ground, place ski tips against a stationary object and be sure the vehicle is properly secured to prevent personal injury.

To prevent personal injury, never adjust track tension with the engine running.

1. Raise rear of the snowmobile so track is off the ground for its entire length and securely brace the snowmobile so it cannot fall.

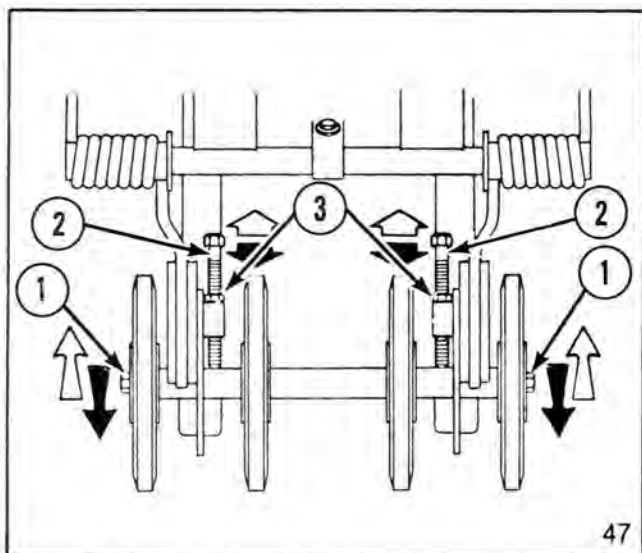
NOTE: Do not position snowmobile on its side to adjust track tension, as it would be impossible to get an accurate adjustment.

2. Hang a 5 lb (2.3 kg) weight from the track below the center set of idler wheels. At a point below the center idler wheel, measure from track upper surface to the wear strip bottom surface. The track tension should measure 3/4 in. (19 mm). (See Figure 46.)



1. 3/4 in. (19 mm)

3. To adjust track tension, loosen rear axle locking bolts. Back off rear axle adjusting bolt jam nuts from rear axle bracket. (See Figure 47.)



1. Rear Axle Locking Bolt
2. Rear Axle Adjusting Bolts
3. Rear Axle Adjusting Bolt - jam nuts

4. Turn adjusting bolts equally to attain proper tension. As a good starting point for track alignment, be sure both adjusting bolts measure the same length from bolt head to bracket.

5. Remove weight from track.

Observe this

WARNING

during next step

NEVER raise rear of snowmobile by hand or stand behind the vehicle when engine is running or track is rotating. A rotating track can fling debris rearward at great velocity. This may cause severe personal injury. Remove all tools and foreign matter from track area before starting engine.

6. Start engine and push on throttle lever only enough to turn the track slowly a few revolutions. Stop engine and perform Track Alignment check.

NOTE: If ratcheting (slippage or jumping between the drive lugs on the track and the drive sprockets) occurs during hard acceleration or braking, tighten the track slightly.

Track Alignment

Observe this

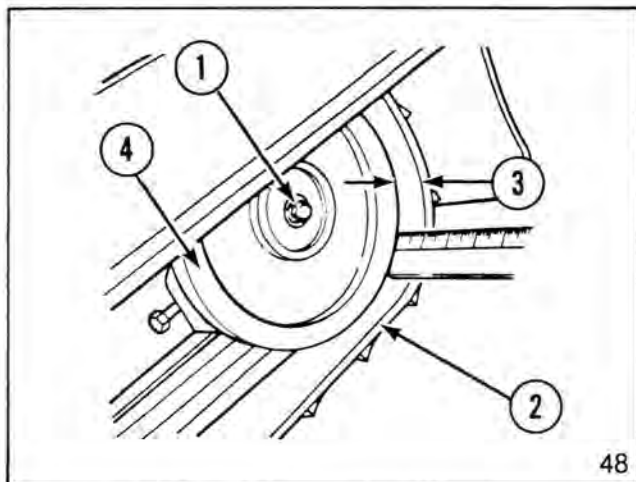
WARNING

during next step

To prevent injury, never adjust or measure track alignment while the engine is running.

Track alignment is correct when measurements from the rear idler wheel to the outside edge of the track are equal on both sides of the machine. (See Figure 48.)

Track alignment is correct when measurements from the rear idle wheel to the outside edge of the track are equal on both sides of the machine. (See Figure 48.)



1. Rear Axle Locking Bolts
2. Edge of Track
3. Dimension Equal on Both Sides
4. Idler Wheel

After performing Track Tension procedures, adjust track alignment as follows:

Observe this **WARNING** during next step

Always stop the engine and allow track to coast to a stop before measuring track alignment.

1. Start engine and apply throttle to turn track slowly a few revolutions. Let track coast to a stop and measure alignment.

2. If measurement on one side is larger, loosen rear axle locking bolts. Tighten rear axle adjusting bolt on side with the larger measurement about 1/2 turn.
3. Restart engine and recheck alignment. Repeat adjustment as necessary until alignment is correct.

CAUTION

If track alignment requires considerable adjustment, track tension should be rechecked to prevent damage to drive or suspension system.

4. Torque rear axle locking bolts 29 ft lb (3.9 kg-m). Tighten jam nuts on adjusting bolts.

NOTE: After rear axle bolts have been tightened, check to be sure that spacers (tubing) over the rear axle squeeze against slide rail brackets, preventing the spacers from rotating. Loose spacers will permit the rear axle to float and proper track alignment cannot be maintained.

TEST RIDE (Operational Checks)

CAUTION

Improper engine warm-up could result in extensive engine damage.

Engine Warm Up: Idling is not recommended to warm up the engine. It is better to drive snowmobile about five minutes at slow speeds before and sustained full throttle operation. Liquid cooled engines need time to warm up the coolant, allowing pistons and cylinders to obtain proper clearances.

Test ride snowmobile and check for the following:

✓ **CONTROL CABLES**

The throttle and brake controls must operate without binding and return freely in any steering position.

✓ **STEERING**

Steering should be smooth and free from lock-to-lock with no excessive looseness or tightness in the steering linkage.

✓ **ENGINE**

Recoil starter works properly and the engine starts promptly. Test for good throttle response and return.

✓ **SUSPENSION**

Adjusted for average driver weight and operates smoothly.

✓ **TRACK**

Track runs true with little vibration or drag. If ratcheting (slippage or jumping between drive lugs on track and drive sprockets) during hard acceleration or braking occurs, tighten track tension slightly.

✓ **EMERGENCY STOP SWITCH**

Check operation in all switch positions.

✓ **CONVERTERS**

Test for smooth operation and correct engine RPM, 8,000 at full throttle.

✓ **BRAKES**

When activated, the brakes should result in adequate smooth stopping of the track; when released, there should be no brake drag.

✓ **INSTRUMENTS**

Check for proper indications.

✓ **COOLANT TEMPERATURE**

Operating speed, loads, snow conditions and air temperature directly affect engine temperature. The radiator needs air flowing through it to transfer heat from the coolant. The heat exchanger, mounted below the seat, transfers heat by melting snow thrown on its fins by the track.

On hard-packed snow or ice where little snow contacts the exchanger, the radiator cools the engine. In deep snow, where high speeds are not possible and there is little air flow, the heat exchanger cools the engine.

Both systems require vehicle movement. Faster operating speed means more cooling air flow through the radiator and more snow contacting the exchanger. Low speed operation on hard-packed or marginal snow and/or unseasonable warm weather may cause the engine to run above normal temperature.

Engine temperature is "NORMAL" when the temperature gauge needle is in the green zone. The snowmobile may be operated if the needle enters the yellow zone, but the temperature gauge should be monitored more frequently. If the gauge needle begins to enter the red zone, increase the speed or ride the sled into deep snow that can be thrown onto the exchanger. If it remains in the red zone, stop the engine and inspect cooling system for proper operation.

During the test ride, listen for any unusual noises (rattles, squeaks, etc.) that may warrant inspection and correction.

Upon completion of Test Ride, check the following:

1. Brake adjustment.
2. Engine gearcase lubricant level.
3. Cooling system coolant level.
4. Retorque drive converter mounting bolt 70 ft lb (10.0 kg-m).
5. Thoroughly inspect the engine compartment for fuel or oil leaks and repair as required.
6. Fastener check - Perform a general inspection to check fasteners for security. Use torque chart as a guide for tightening hardware when required.

SPECIFICATIONS

ENGINE

Type	TA440A-C201
Displacement	26.6 C.I. (436cc)
Bore X Stroke	2.677 x 2.362 in. (68 x 60 mm)
Number of Cylinders	2
Ignition System	Capacitor Discharge (C.D.)
Ignition Timing (engine warm)	22° @ 6500 RPM, 0.108 in. (2.75 mm) BTDC
Spark Plug	NGK BZ-9EV
Spark Plug Gap	0.024 in. (0.6 mm)
Carburetor Make and Model	Mikuni VM 36
Engine RPM at Full Throttle	7800-8000 RPM
Engine Gearcase Capacity	1.35 oz. (40 cc)

CARBURETOR SETTINGS

Air Screw	1.5 turns off seat
Idle Screw	6 turns open from coil bound initial (3000 RPM final)

FUEL

Gasoline	Regular or Premium Leaded, minimum pump posted anti-knock number 89
Oil	Kawasaki Snowmobile Oil or B.I.A. certified TC-W oil
Gasoline/Oil Ratio	Oil Injection

LUBRICANTS

Engine Gearcase	Kawasaki Engine Gearcase Lubricant (10W40 Oil that meets or exceeds API service SE specifications)
Chaincase	DEXRON II Automatic Transmission Fluid

COOLANT

Engine Cooling System	55% ETHYLENE GLYCOL base antifreeze/45% water protection to -50°F (-45°C)
Cooling System Capacity	1.0 Gallons (3.8 liters)

DRIVE SYSTEM

Drive Belt Width	1.28 in. maximum (32.5 mm) 1.23 in. minimum (30.9 mm)
Drive Belt Outside Circumference	45.86 in. maximum (1,190 mm) 46.50 in. minimum (1,181 mm)
Converter Offset	0.525 - 0.588 in. (13.3-14.9 mm)
Converter Center Distance	12 in. (304.8 mm)

ELECTRICAL SYSTEM

Type	12 Volts - 120 Watts
Headlight	Stanley 5988
Tail/Brake Light	G.E. No. 1157
Instrument Lights	G.E. No. 1816

TORQUE CHART

DESCRIPTION	TORQUE	DESCRIPTION	TORQUE
CONTROLS & CABLES Brake lever locking - allen screw Ignition switch mtg. - face nut Throttle lever locking - allen screw	25 in.lb (0.3 kg-m) 30 in.lb (0.3 kg-m) 25 in.lb (0.3 kg-m)	CHAINCASE & JACKSHAFT Chaincase fill plug Chain sprocket to driveshaft, bottom - bolt (special) Chain sprocket to jackshaft, top - bolt (5/8) Chain tensioner mtg. - bolt (1/4) Chaincase cover mtg. - bolts (1/4) Chaincase drain plug Chaincase to chassis - nut (5/16) Jackshaft bearing retainer adjusting bolt - jam nut (3/8) Jackshaft bearing retainer housing - nuts (5/16) Jackshaft bearing retainer to chassis, front - bolt (3/8) Jackshaft bearing retainer to chassis, rear - bolt (3/8) Speedometer drive adaptor	Judgement 35 ft lb (4.8 kg-m) 50 ft lb (6.9 kg-m) 50 in.lb (0.6 kg-m) 70 in.lb (0.8 kg-m) Judgement 18 ft lb (2.6 kg-m) 20 ft lb (2.8 kg-m) 18 ft lb (2.6 kg-m) 19 ft lb (2.6 kg-m) 31 ft lb (4.1 kg-m) 120 in.lb (1.4 kg-m)
CABLES Brake cable - jam nuts (5/16) Enrichener cable - jam nuts (6 mm) Enrichener lever mtg. - nut Oil pump cable - jam nuts (6 mm) Speedometer cable Throttle cable - jam nut (6 mm)	50 in.lb (0.6 kg-m) 20 in.lb (0.2 kg-m) Hand tighten 20 in.lb (0.2 kg-m) Hand tighten 20 in.lb (0.2 kg-m)	BRAKE Brake caliper to chaincase (3/8)	35 ft lb (4.8 kg-m)
HOOD Headlamp housing holder to hood - screws (#10) Hinge bracket to hood housing holder - screws (#10) Hood hinge to hood - screws (1/4) Hood latch band mtg. - nuts (1/4)	25 in.lb (0.3 kg-m) 50 in.lb (0.6 kg-m) 25 in.lb (0.3 kg-m) Compress rubber	DRIVEN CONVERTER Coupling to fixed sheave - bolts (6 mm) Cover to movable sheave - bolts (6 mm) Driven converter to jackshaft - bolt (5/8)	120 in. lb (1.4 kg-m) 50 in.lb (0.6 kg-m) 50 ft lb (6.9 kg-m)
SEAT & CONSOLE Control panel bracket to chassis - nuts (1/4) Control panel to bracket - screws (#10) Fuel level gauge panel mtg. - screws (#10) Oil level gauge panel mtg. - screws (#10) Seat to tunnel - bolts (1/4)	95 in.lb (1.1 kg-m) 15 in.lb (0.2 kg-m) 15 in.lb (0.2 kg-m) 15 in.lb (0.2 kg-m) 35 in.lb (0.4 kg-m)	DRIVE CONVERTER Cover to movable sheave - bolts (6 mm) Drive converter to crankshaft bolt (1/2) Ramp & pin assy mtg. - bolts (6 mm) Roller & pin assy mtg. - bolts (6 mm) Weight ramp assy - nut (special)	120 in.lb (1.4 kg-m) 70 ft lb (9.7 kg-m) 96 in.lb (1.1 kg-m) 120 in.lb (1.4 kg-m) 50 in.lb (0.7 kg-m)
STEERING Handlebar holder - allen screws (1/4) Handlebar holder to steering column - bolt (3/8) Steering arm to spindle - bolt (3/8) Steering column mount to chassis - bolt (5/16) Tie rod end - jam nuts (3/8) Tie rod end to steering arm - nuts (3/8) Tie rod end to steering column - nut (3/8)	105 in.lb (1.2 kg-m) 35 ft lb (4.2 kg-m) 30 ft lb (3.9 kg-m) 18 ft lb (2.5 kg-m) 120 in.lb (1.4 kg-m) 30 ft lb (3.9 kg-m) 30 ft lb (3.9 kg-m)	ENGINE MOUNT & EXHAUST Engine mount to chassis, recoil side - nuts (3/8) Engine PTO mount to engine mount - allen screws Exhaust mount damper to bracket - nuts (5/16) Mount damper to engine mount - nuts (1/4)	25 ft lb (3.5 kg-m) 90 in. lb (1.0 kg-m) 55 in.lb (0.6 kg-m) 105 in. lb (1.2 kg-m)
SKI & SPINDLE Shock absorber to ski - nut (3/8) Shock absorber to ski saddle - nuts (3/8) Ski saddle to spindle - nut (3/8) Ski skag to ski - nuts (5/16) Ski spring to saddle - nuts (3/8) Ski spring to ski, front - nut (3/8) Ski spring to ski, rear - nut (3/8)	31 ft lb (4.0 kg-m) 31 ft lb (4.0 kg-m) 46 ft lb (5.7 kg-m) 120 in.lb (1.4 kg-m) 46 ft lb (5.7 kg-m) 25 in. lb (0.3 kg-m) 31 ft lb (4.0 kg-m)	ENGINE LIQUID COOLING SYSTEM Coolant pump to crankcase - bolts (6 mm) Thermostat housing mtg. - bolts (6 mm) Thermostat housing vent plug - bolt (8 mm)	60 in.lb (0.7 kg-m) 60 in. lb (0.7 kg-m) 12 ft lb (1.7 kg-m)
CHASSIS Bumper & brace to pan - nuts (1/4) Bumper & hood guide to pan - nuts (1/4) Bumper & hood hinge to pan - nuts (1/4) Bumper to pan - nuts (1/4) Fuel pump to tunnel - nuts (1/4) Outer guide & brace to pan - nuts (1/4) Outer guide & inner guide to pan - nuts (1/4) Outer guide & inner guide to pan - nuts (#10) Rear stay to tunnel - bolt (3/8) Snow flap spacer mtg. - nut (1/4)	70 in. lb (0.8 kg-m) 70 in. lb (0.8 kg-m) 70 in. lb (0.8 kg-m) 70 in. lb (0.8 kg-m) 35 in. lb (0.4 kg-m) 70 in. lb (0.8 kg-m) 70 in. lb (0.8 kg-m) 20 in. lb (0.2 kg-m) 19 ft lb (2.7 kg-m) 50 in. lb (0.6 kg-m)	HEAT EXCHANGER & DUCT End caps to heat exchanger - screw (#10) Heat exchanger radiator to duct - nuts (1/4) Radiator duct brace to chaincase (1/4) Radiator duct brace to chassis (5/16) Radiator duct to brace (1/4)	60 in. lb (0.7 kg-m) 50 in. lb (0.6 kg-m) 70 in. lb (0.8 kg-m) 18 ft lb (2.5 kg-m) 45 in. lb (0.5 kg-m)
SUSPENSION Front pivot shaft to tunnel - bolt (3/8) Front swing arm to suspension bracket - bolt (3/8) Idler wheel shaft mtg. - bolt (3/8) Limiter strap to swing arm - nuts (1/4) Rail wear strip retaining - nut (1/4) Rear axle adjusting bolt - jam nut (3/8) Rear axle locking - bolt (3/8) Rear limiter strap to pivot arm - nut (1/4) Rear pivot shaft to tunnel - bolt (3/8) Rear pivot arm to rear suspension arm - bolt (3/8 Gr. 8) Suspension brackets to slide rail - nuts (3/8) Suspension front spring cam mtg., front - bolt (3/8) Suspension front spring cam mtg., rear - bolt (3/8) Suspension rear arm to pivot arm - bolts (3/8) Suspension shock absorber mtg., front - nut (3/8) Suspension shock absorber mtg., rear - nut (thin) Suspension rear spring cam mtg. - nuts (5/16) Top idler shaft - bolt (3/8)	25 ft lb (3.5 kg-m) 25 ft lb (3.5 kg-m) 25 ft lb (3.5 kg-m) 45 in. lb (0.6 kg-m) 25 in. lb (0.3 kg-m) 120 in. lb (1.4 kg-m) 29 ft lb (3.9 kg-m) 45 in. lb (0.6 kg-m) 25 ft lb (3.5 kg-m) 25 ft lb (3.5 kg-m) 25 ft lb (3.5 kg-m) 105 in. lb (1.2 kg-m) 35 in. lb (0.4 kg-m) 10 ft lb (1.4 kg-m) 25 ft lb (3.5 kg-m) 25 ft lb (3.5 kg-m) 15 ft lb (1.9 kg-m) 45 in. lb (0.6 kg-m) 25 ft lb (3.5 kg-m)	ENGINE LUBRICATION SYSTEM Elbow fitting to oil tank Oil pump inlet plate mtg. - screws (4 mm) Oil pump mounting - bolts (6 mm) Oil pump outlet nozzle to crankcase - bolt (8 mm) Oil pump outlet nozzle to cylinder - bolt (8 mm)	Judgement 40 in. lb (0.5 kg-m) 60 in. lb (0.7 kg-m) 45 in. lb (0.6 kg-m) 45 in. lb (0.6 kg-m)
DRIVESHAFT Bearing housing to tunnel - nuts (5/16) Locking collar - set screw (1/4)	18 ft lb (2.6 kg-m) 70 in. lb (0.8 kg-m)	CYLINDER HEAD AND CYLINDER Carburetor holder to cylinder - bolts (8 mm) Cylinder head to cylinder - bolts Exhaust manifold mounting - nuts (8 mm)	45 in. lb (0.6 kg-m) 16 ft lb (2.2 kg-m) 70 in. lb (0.8 kg-m)
		CRANKCASE Gearcase fill plug - bolt (8 mm)	60 in. lb (0.7 kg-m)
		PISTON AND CRANKSHAFT Flywheel mounting - nut (18 mm)	60 ft lb (8.3 kg-m)
		RECOIL STARTER Friction plate to rope reel - nut (8 mm) Recoil assembly mtg. - bolt (6 mm) Starter pulley to flywheel - bolts (6 mm)	11 ft lb (1.6 kg-m) 70 in. lb (0.7 kg-m) 18 ft lb (2.5 kg-m)
		MAGNETO CDI igniter mounting (1/4) Ignition coil mounting - screw (6 mm) Stator plate mounting - screw (5 mm) Voltage regulator - nut (1/4) Wiring harness connector mounting - screw (4 mm)	60 in. lb (0.6 kg-m) 70 in. lb (0.8 kg-m) 70 in. lb (0.8 kg-m) 105 in. lb (1.2 kg-m) 40 in. lb (0.5 kg-m)

WIRING DIAGRAM

