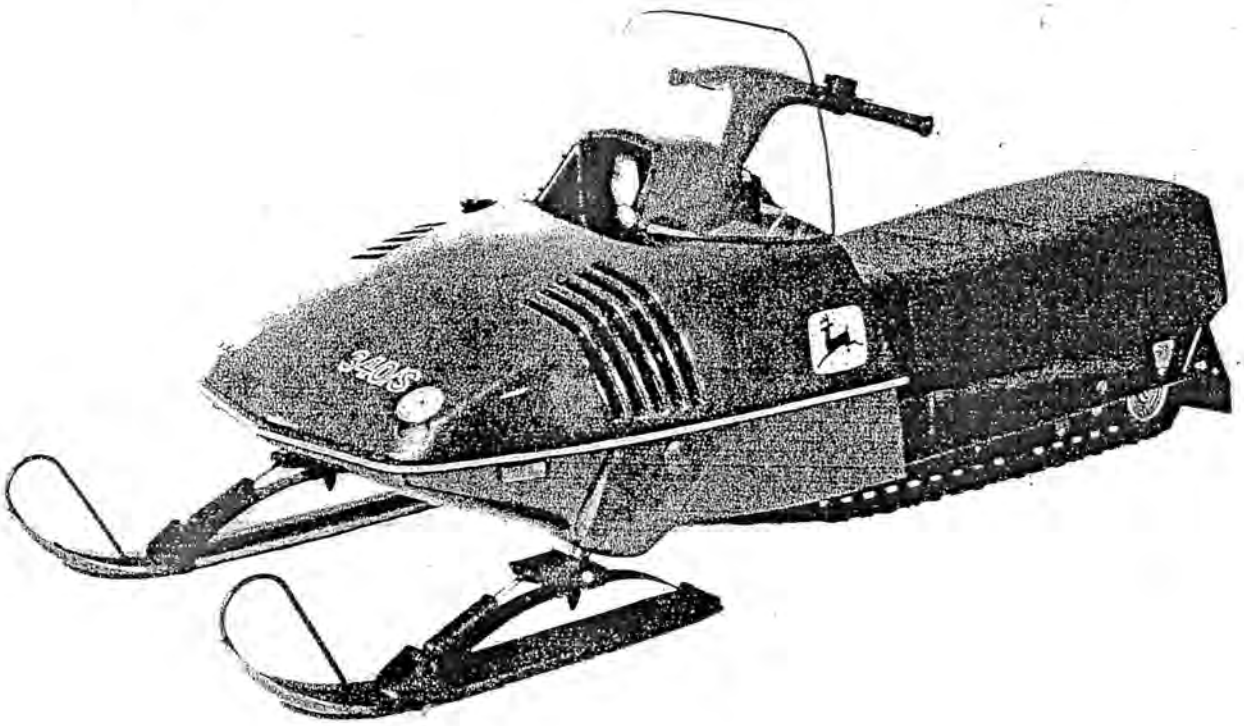
SERVICE TEXTBOOK

for

JOHN DEERE

JD340/S Snowmobile



Litho in U.S.A. – I-4

M65776

CONTENTS

SPECIFICATIONS

COMPONENT	ITEM	SPECIFICATIONS
ENGINE	Manufacturer	JD/Kioritz
	Model	KEC 340 RS/2
	No. of Cylinders	2
	Bore	60 mm
	Stroke	60 mm
	Displacement	339 cc
	Horsepower	47 @ 8000 rpm
FUEL SYSTEM	Carburetor Mfg.	Mikuni
	Carburetor Model	VM 34 (2 used) Jets (See pages 10 & 11)
	Tank Capacity	9.00 U.S. gal.
	Fuel Mixing Ratio	50:1*
CHASSIS AND BODY	Material:	
	Tunnel	Aluminum
	Hood and Pan	ABS
	Windshield	Polycarbonate
	Overall Length	104 in.
	Overall Width	40 in.
	Overall Height	41 in.
	Weight (lbs.)(dry)	385 lbs.
TRACK AND SUSPENSION	Suspension Type	Slide (JD295/S Bogie Slide w/Gates Poly Track Will Adapt to JD340/S)
	Track:	
	Manufacturer	Goodyear
	Type	Grouser Bar
	Width	15.5 in.
POWER TRAIN	Transmission:	
	Type	2 Sheave Variable
	Manufacturer	JD/Comet
	Model	102C (Primary) 90D (Secondary)
	Clutch Engagement	4000 rpm (Max.)
	Engine Maint. Speed	7800-8200 rpm
	Final Drive Ratio:	
	Standard	2.29:1
	Optional	2.06:1, 2.19:1, 2.44:1, 2.62:1
	Brake	Hydraulic Disk
	Drive Belt	M65703
ELECTRICAL SYSTEM	Spark Plug	Champ. N-19V (AM53187) AC SV4XL (AM53223)
	Timing (Dynamic)	0.090-inch (20^{o}) BTDC
	Lighting Coil Capacity	120 Watt
	Light Bulbs:	
	Headlight	AM52959 (4492)
	Stop-Taillight	AM52619 (1035)
	Speedometer	AM52847
	Tachometer	AM52847

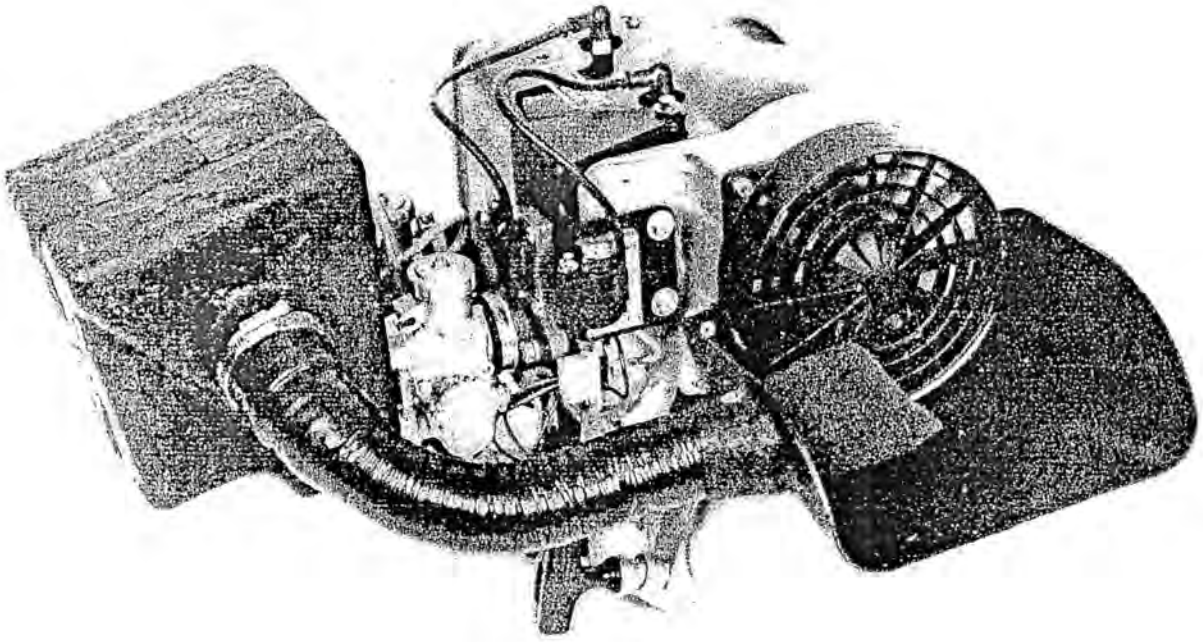
*With John Deere snowmobile oil and Premium Grade gasoline. Use 20:1 ratio for first 2 tankfuls.

DETAILED ENGINE SPECIFICATIONS

ITEM	NEW PART DIMENSION	WEAR TOLERANCE
Cylinder Bore	2.3622 to 2.3630 in.	0.006 in.
Connecting Rod (Small End)	0.8664 to 0.8669 in. 22mm	0.0016 in.
Connecting Rod Side Clearance	0.000 to 0.002 in.	0.024 in.
Crankshaft Runout (Max.)	0.002 in.	
Crankshaft End Play (Max.)	0.020 in.	
Piston at Top Land	2.3476 to 2.3484 in.	
Piston at Skirt	2.3520 to 2.3524 in.	0.005 in.
Piston Pin Bore	0.7083 to 0.7087 in. 18mm	0.001 in.
Piston Pin	0.7083 to 0.7087 in. 18mm	0.001 in.
Compression Pressure*	110 to 130 psi	

*Check compression with engine cold and throttle in wide open position. Pressure should not vary by more than 10 psi between cylinders.

ENGINE



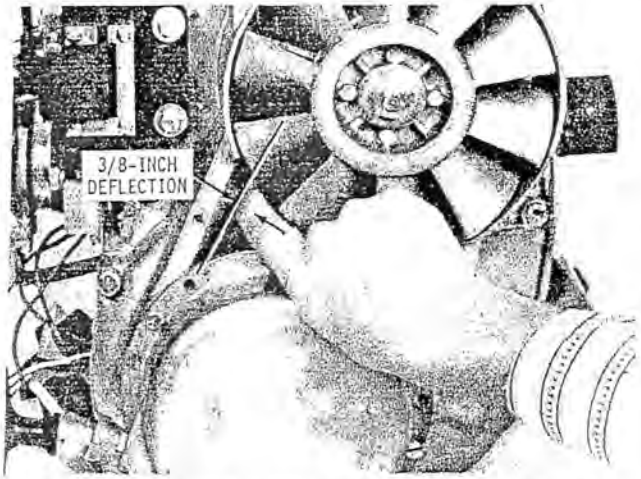
The John Deere/Kioritz 340 RS/2 engine is basically the same as other piston-ported CCW engines in the John Deere line. Repair procedures are the same. See Specifications on pages 2 and 3.

The high horsepower level is due to changes in port timing, dual carburetion, CD ignition and the expansion chamber exhaust system.

IMPORTANT: Due to the high output of this engine, the following precautions must be taken to prevent engine failure:

1. Use only Premium Grade gasoline.
2. Mix gasoline and oil in a 20:1 ratio for first 2 tankfuls. Mix in a 50:1 ratio thereafter.
3. Keep cooling fan belt tight. See page 5.
4. Proper break-in is critical. DO NOT exceed 40 mph for the first 25 miles, nor force machine at full throttle in deep snow. An occasional burst of full power on hard packed snow will not be harmful.
5. Always warm-up engine prior to making a high-speed run.

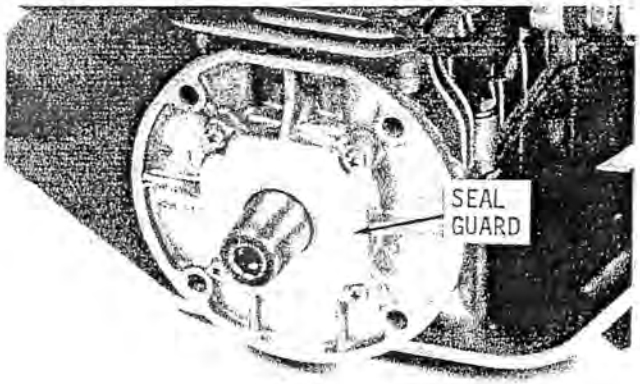
FAN BELT TENSION



A loose cooling fan belt will slip resulting in an overheated engine. Remove fan guard and check fan belt tension frequently.

Deflect belt by hand midway between sheaves. If deflection exceeds 3/8-inch, tighten belt by removing shim(s) from between upper sheave halves.

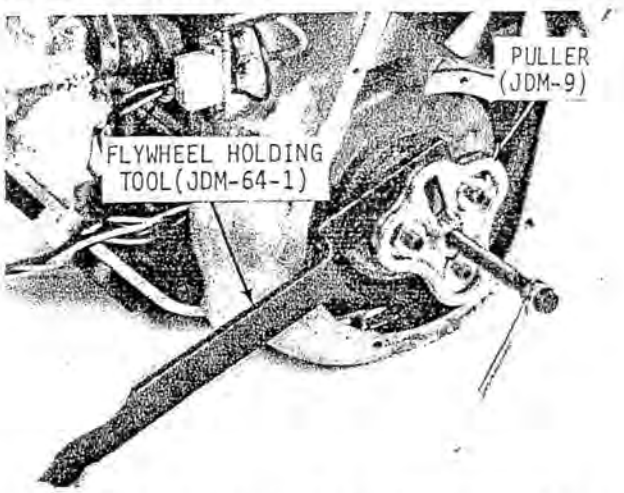
PTO SEAL GUARD



The 340 RS/2 engine has a guard which prevents a failed drive belt from damaging the PTO end seal.

When installing seal guard, center hole in guard around crankshaft before tightening screws. This will prevent guard from contacting crankshaft.

FLYWHEEL REMOVAL



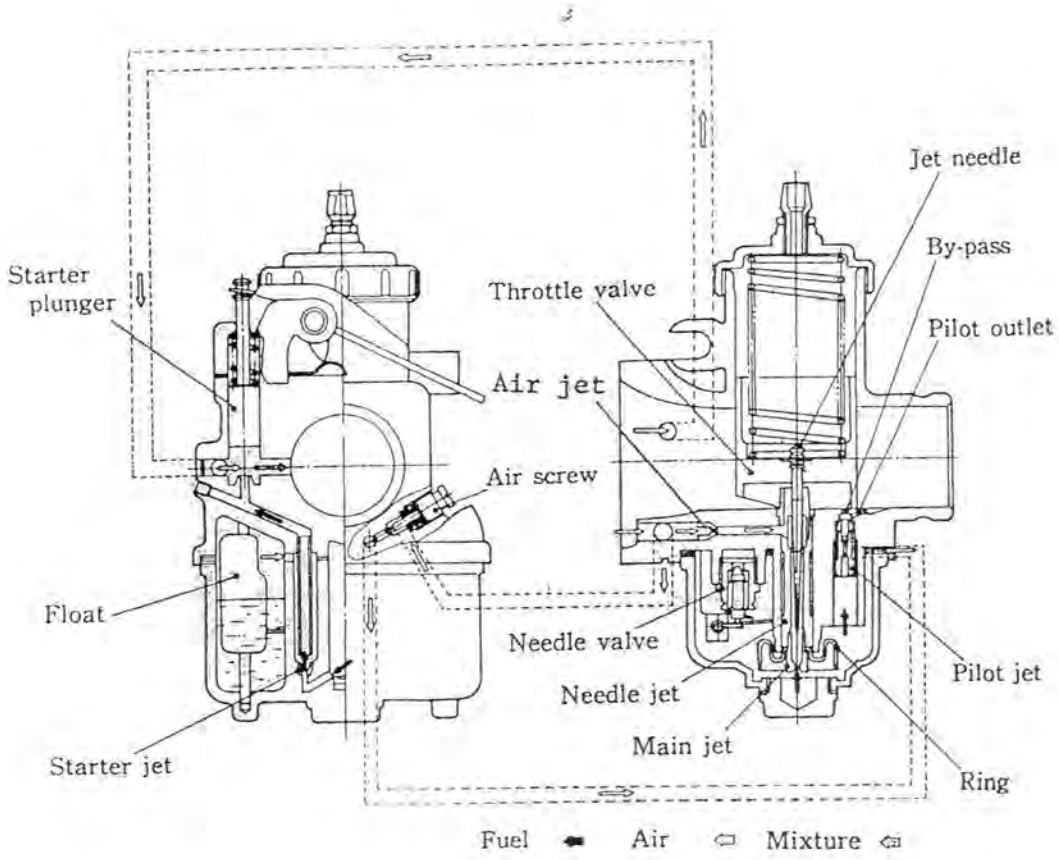
A Flywheel Holding Tool (JDM-64-1) is required to hold flywheel from rotating when removing or installing flywheel retaining nut. Also use holding tool with puller, as shown above, when pulling flywheel.

IMPORTANT: Do not strike flywheel with mallet, as this can cause permanent distortion.

Torque flywheel retaining nut to 60 ft-lbs.

FUEL SYSTEM

CARBURETOR



The functions of the Mikuni carburetor can be divided into the following: Pilot system, main system, float system and choke system.

PILOT SYSTEM (IDLE)

The pilot system consists of the air jet, pilot jet, air screw, pilot outlet and bypass. The ratio of the air/fuel mixture is controlled by adjusting the air screw.

MAIN SYSTEM

The main system consists of the jet needle, needle jet, main jet, and throttle valve. The ratio of air/fuel mixture is controlled by the size of the main jet.

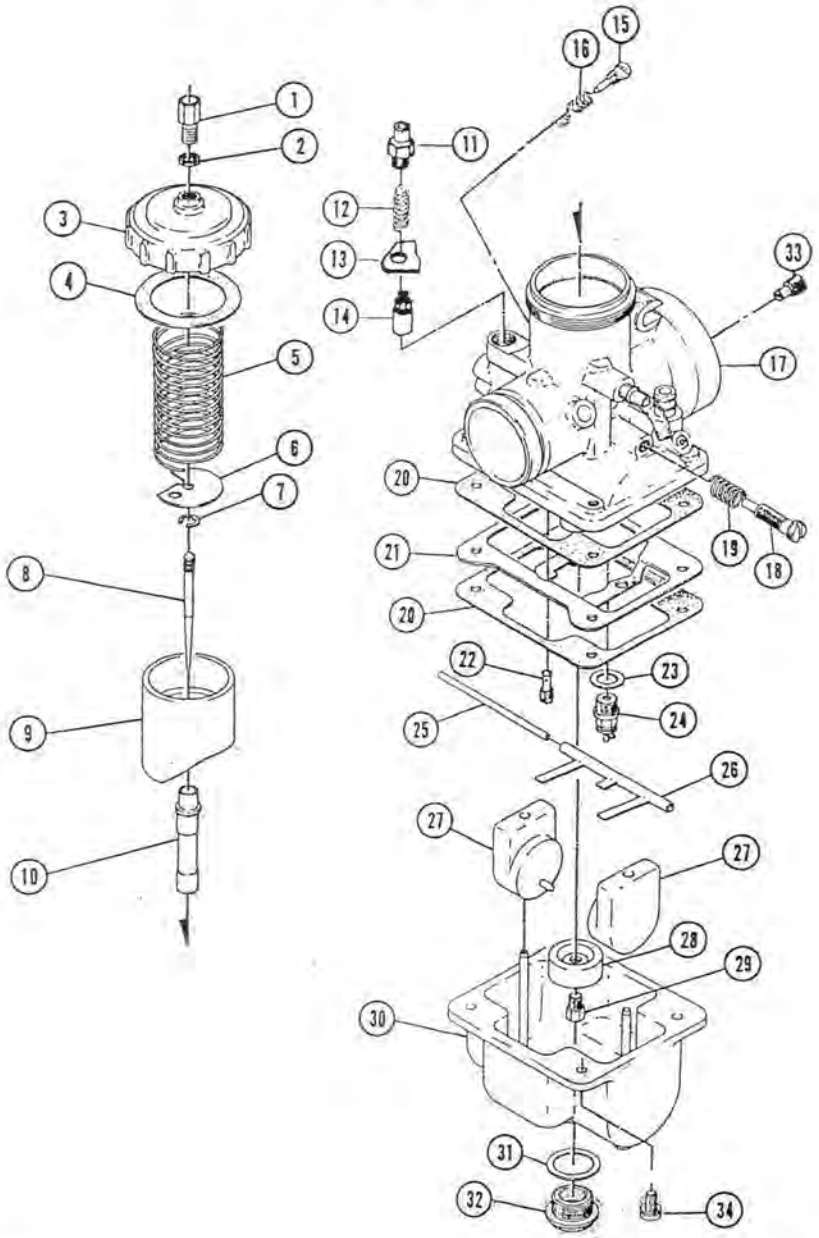
FLOAT SYSTEM

The float system consists of (2) independent floats and needle valve. The independent float system, along with a fuel surface stabilizing plate, maintain and stabilize the fuel at a constant level.

CHOKE SYSTEM (Fuel Enrichener)

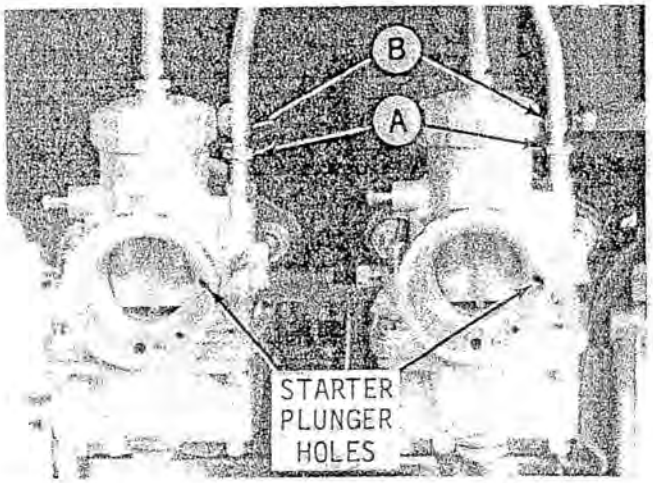
The choke system consists of the starter jet and starter plunger. This system meters additional fuel through a separate system, thus eliminating the need for a choke valve in the bore of the carburetor, which reduces carburetor efficiency.

EXPLODED VIEW OF MIKUNI VM 34-68



1. Swivel Adapters
2. Lock Nut
3. Cap
4. Gasket
5. Throttle Valve Spring
6. Plate
7. E-Ring
8. Jet Needle
9. Throttle Valve
10. Needle Jet
11. Starter Plunger Cap
12. Starter Plunger Spring
13. Washer Plate
14. Starter Plunger
15. Air Screw
16. Air Screw Spring
17. Body
18. Throttle Stop Screw
19. Stop Screw Spring
20. Gasket (2 used)
21. Baffle Plate
22. Pilot Jet
23. Gasket
24. Needle Valve Assembly
25. Float Arm Pin
26. Float Arm
27. Float (2 used)
28. Ring
29. Main Jet (See pages 10 & 11)
30. Float Body
31. Drain Plug Gasket
32. Drain Plug
33. Air Jet (1-4)
34. Screw (4 used)

CHOKE SYSTEM ADJUSTMENT



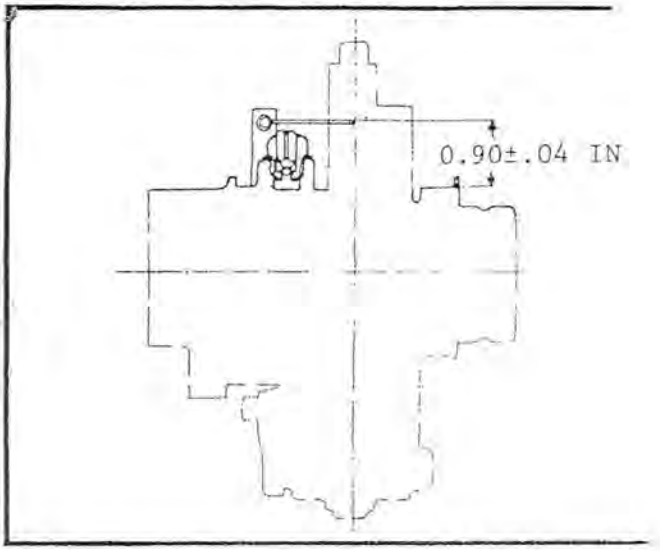
The choke system meters additional fuel for starting a cold engine. As the system requires negative pressure in order to function, the throttle must be closed when starting.

Adjust choke system as follows:

1. Position choke lever (on dash) down.
2. Look in the starter plunger hole (3 o'clock position in the carburetor throat). The starter plunger should be all the way down in its bore (seated).
3. If not, loosen jam nut (A) and turn adjusting nut (B) clockwise to bring the starter plunger down. Adjust to provide slight freeplay at lever (on dash). Tighten jam nut.
4. Pull choke lever (on dash) up. Look into the starter plunger holes (3 o'clock position). Plungers should have raised and exposed at least 50% of the holes. If not, too much freeplay was allowed in step 3.

IMPORTANT: If the starter plungers do not properly seat, the carburetor will run RICH, affecting the main system. Be certain choke lever (on dash) has slight freeplay when starter plungers are seated.

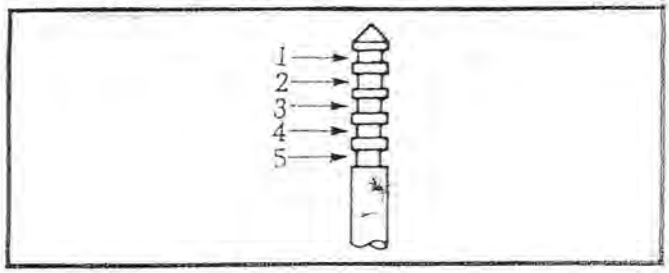
FLOAT LEVEL ADJUSTMENT



Check float adjustment as follows:

1. Remove the float chamber body and gasket from the carburetor.
2. Invert the carburetor and measure th distance from the baffle plate to the top edge of the float arms. The distance should be 0.90 + .04-inch (23 mm).
3. Bend needle-valve actuating tab, if necessary, to make adjustment.

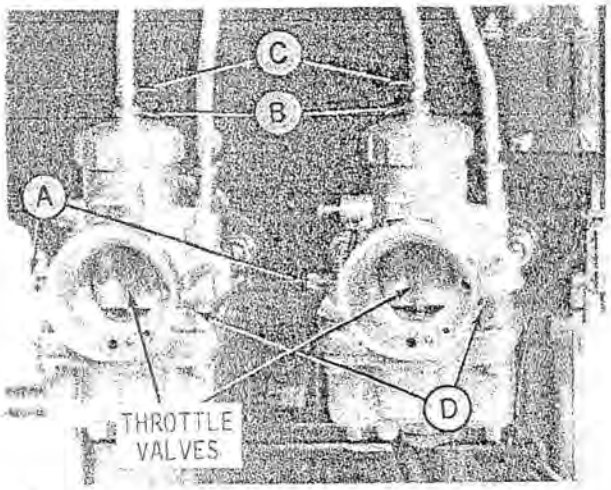
JET NEEDLE ADJUSTMENT



The jet needle can be set in one of 5 different settings to fine tune the midrange mixture ratio. This setting does not affect idle or full speed operation.

The E-ring is factory assembled in groove No. 3. Groove No. 1 provides leaner midrange operation; groove No. 5 provides riches midrange operation.

SYNCHRONIZING THE CARBURETORS



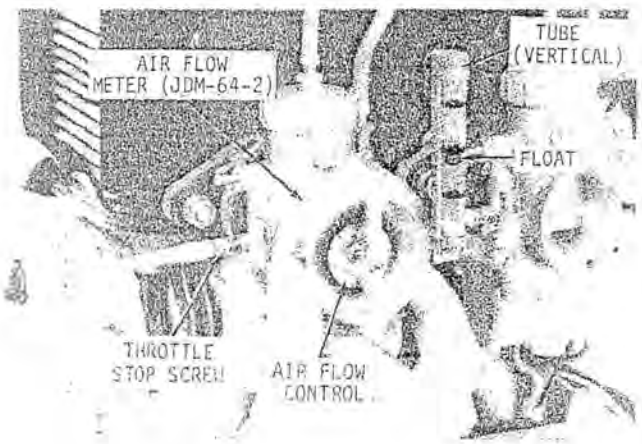
1. Turn the throttle stop screws (A) counterclockwise until the screw tips are flush with the inside of the carburetor bore.

2. Loosen lock nuts (B) on throttle cables and turn swivel adapters (C) clockwise until the throttle valves fully seat in the carburetor bores.

3. Turn the throttle stop screws (A) clockwise until they contact the throttle valves. When the screws contact the valves, the valves will begin to rise. Then turn the stop screws (A) two additional turns clockwise.

4. Carefully seat air screws (D). Back out 1-1/8 turns counterclockwise.

5. Start and warm up engine. Turn throttle stop screws (equally) clockwise to raise idle speed; counterclockwise to lower speed. Idle speed should be 2200-2600 rpm.

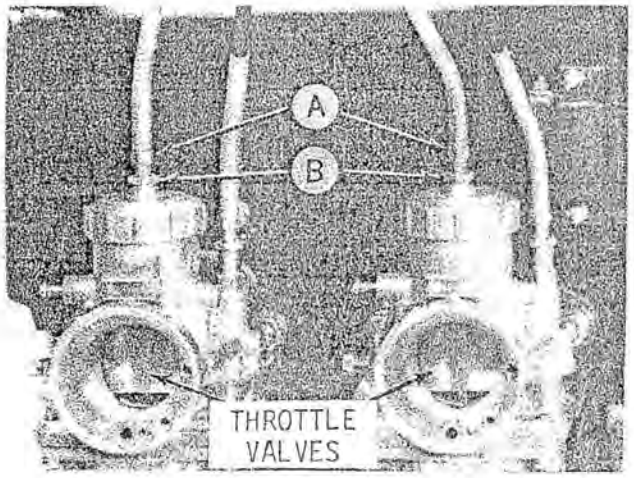


6. Open air flow control and place Air Flow Meter (JDM-64-2) over carburetor throat. Tube must be in a vertical position.

7. Slowly close air flow control until float (in tube) lines up with a graduated mark on tube.

8. Place air flow meter on second carburetor, without changing adjustment of air flow control.

9. Adjust throttle stop screw on second carburetor to bring float to same level as in step No. 7. Shut off engine.



10. Turn the swivel adapters (A) counterclockwise until all slack is removed from the throttle cables. Tighten the lock nuts (B).

11. Slowly compress the throttle lever on the handgrip. Both throttle valves should begin to rise at exactly the same time. If not, repeat step 10.

12. Support machine so track is off ground. Start engine and run at 4000 rpm. Place a wedge in throttle lever to maintain engine at this rpm.

13. Use Air Flow Meter (as in Steps 6-9) to determine if carburetors are synchronized at this rpm. If not, turn swivel adapter (A) clockwise on carburetor with highest float level until float levels match.

MAIN JET SELECTION

The main jet meters fuel through the carburetor when operating in the 1/2-to-full throttle range. Temperature and altitude affect the density of air. In order to maintain a constant air/fuel ratio, which results in peak performance, the carburetors must be jetted richer or leaner for varying conditions.

The following chart matches jet sizes (Mikuni No.) with conditions. Note that the left-hand carburetor is always jetted one number richer than the right-hand carburetor. As the left-hand cylinder is farther from the cooling fan, this is necessary to maintain uniform cylinder temperatures.

TEMPERATURE (Degrees F)										
-40° to -20°		-20° to 0°		0° to 40°		40° to 80°		Above 80°		
Left Carb.	Right Carb.	Left Carb.	Right Carb.	Left Carb.	Right Carb.	Left Carb.	Right Carb.	Left Carb.	Right Carb.	ALTITUDE (Feet)
240	230	230	220	220	210	210	200	---	---	8000-10,000
250	240	240	230	230	220	220	210	210	200	6000-8000
260	250	250	240	240	230	230	220	220	210	4000-6000
270	260	260	250	250	240	240	230	230	220	2000-4000
280	270	270	260	260*	250*	250	240	240	230	Sea Level

*Factory Installed. See page 11 for jet availability.

NOTE: As a final check on jet selection, remove spark plugs after making a high speed run. Spark plug should appear dark brown. A light brown color would indicate carburetors are jetted too LEAN; black would indicate too RICH.

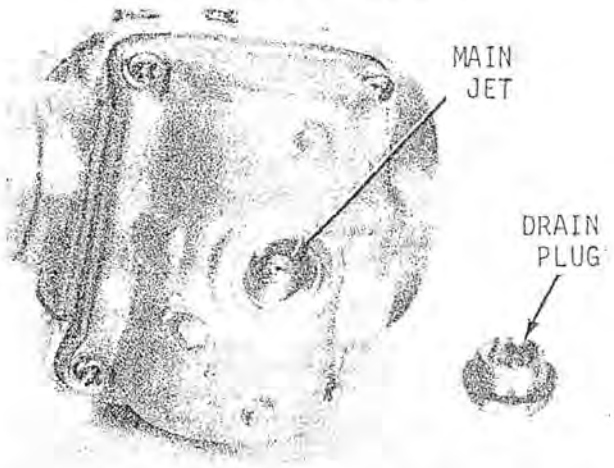
MAIN JETS AVAILABLE

Mikuni Number	John Deere Part No.	How Obtained
200	M65471	Order From Parts
210	M65472	Order From Parts
220	M65852	Order From Parts
230	M65882	In Storage Compartment
240	M65853	In Storage Compartment
250	M65854	Factory Installed R. H. Carburetor
260	M65855	Factory Installed L. H. Carburetor
270	M65883	In Storage Compartment
280	M65884	In Storage Compartment

NOTE: The larger the Mikuni number, the larger the jet orifice, which will provide a richer air/fuel mixture.

The Mikuni number is stamped into the bottom of the jet. This number is a measure of fuel flow and is not associated with an exact orifice size.

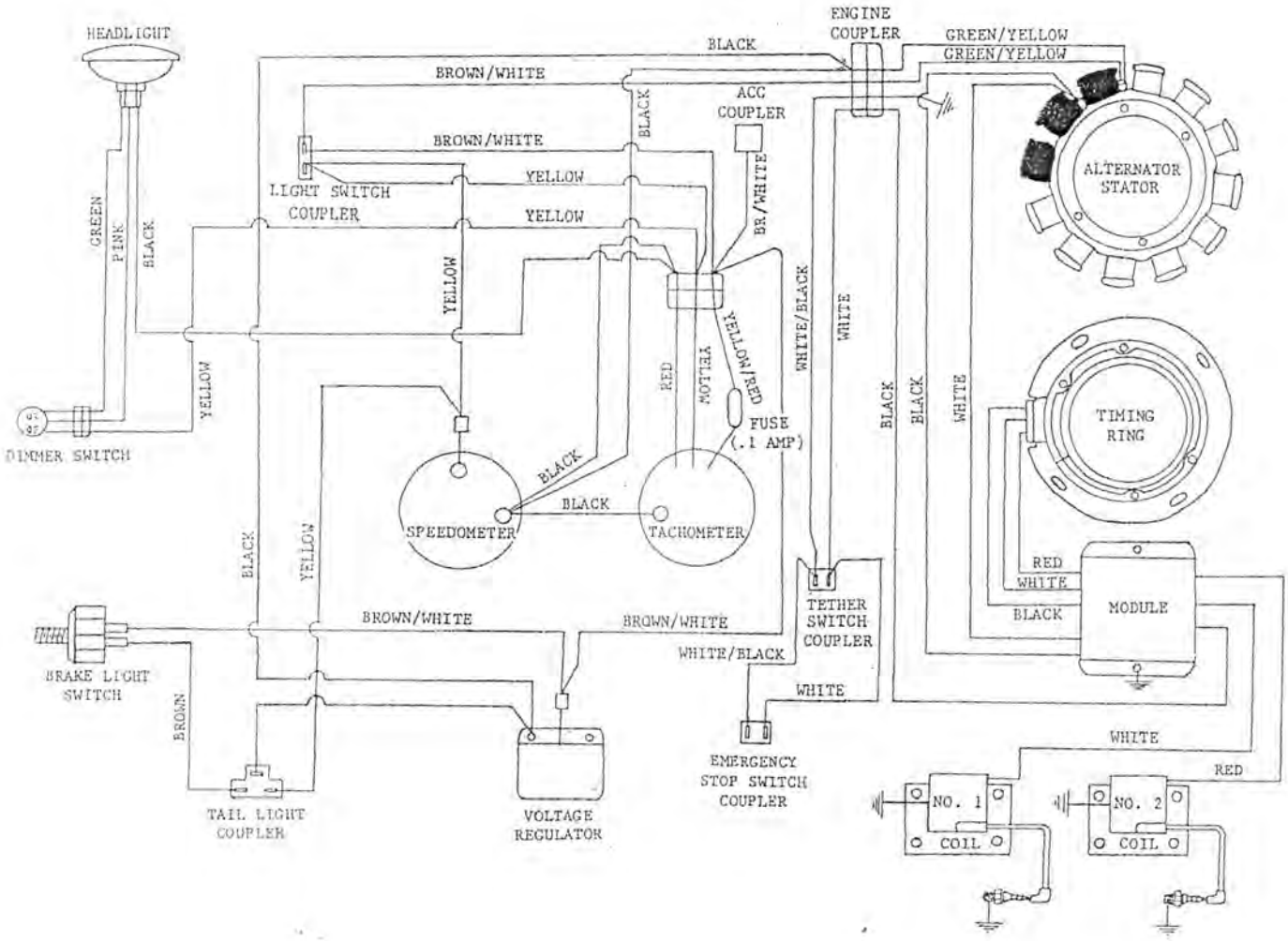
CHANGING MAIN JET



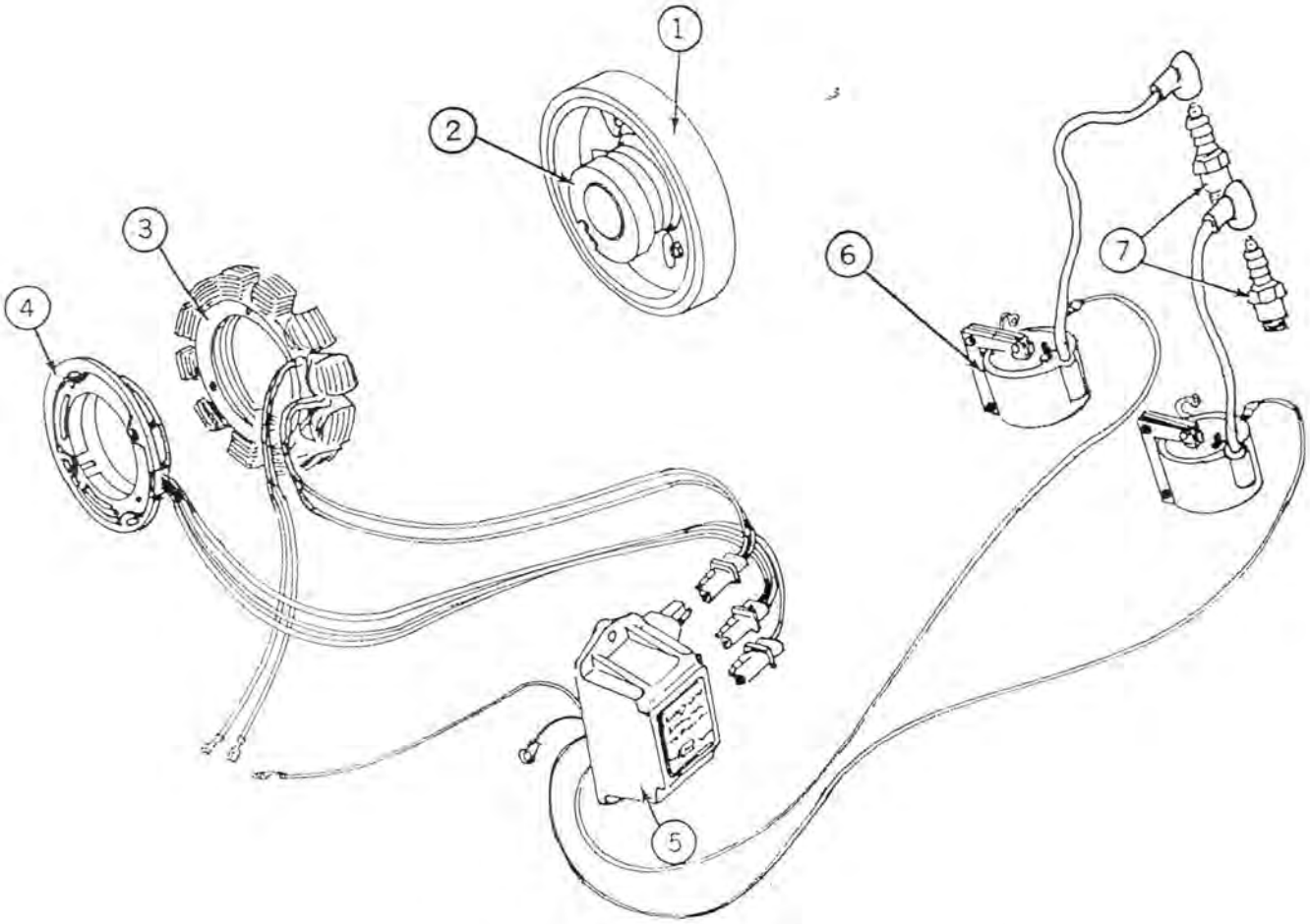
To change the main jet, remove the drain plug from the bottom of the float chamber body. This provides access to the main jet.

ELECTRICAL SYSTEM

WIRING DIAGRAM



NOTE: The wiring harness on the JD340/S has no provisions for an electric start kit.



1. Magnetic Flywheel Rotor
2. Ignition Timing Rotor
3. Alternator Stator
4. Ignition Timing Ring
5. Electronics Module
6. Ignition Transformers (Coils)
7. Surface Gap Spark Plugs

Principle of Operation

The Prestolite Electromag C.D. ignition system is a combination permanent magnet flywheel alternator and solid state capacitor discharge ignition system. The electromag is designed to supply the high voltage of the ignition system as well as as generate the current required for lighting systems.

In operation, the flywheel rotor (1), which incorporates a special flexible magnet and is mounted on the engine crankshaft, revolves around the alternator stator (3) which is fixed to the engine. Current is generated in the windings on the twelve poles of the stator plate, nine of which supply power for the lights and three of which supply power for ignition.

The electronic module (5) incorporates the ignition capacitors and the necessary solid-state circuitry for charging and discharging them. The timing rotor (2) revolving within the timing ring (4) triggers the discharge of these capacitors through the electronic box to the ignition transformers (6), which "step up" the voltage to a level necessary to insure successful firing of the surface gap spark plugs (7).

⚠ CAUTION: High Energy Ignition System can produce injurious electrical shock. Always stop engine and remove tether switch or key before touching or working on any ignition system parts. Do not hold spark plug, leads or connectors in hand to check for spark.

PRELIMINARY CHECKS

Check all plug-in connections to make certain they are clean and tight. Check all leads to make certain one is not broken or has rubbed through the insulation and is grounding out.

Since the ignition system and charging system operate independent of each other, the trouble shooting and service procedures are separated into their respective sections.

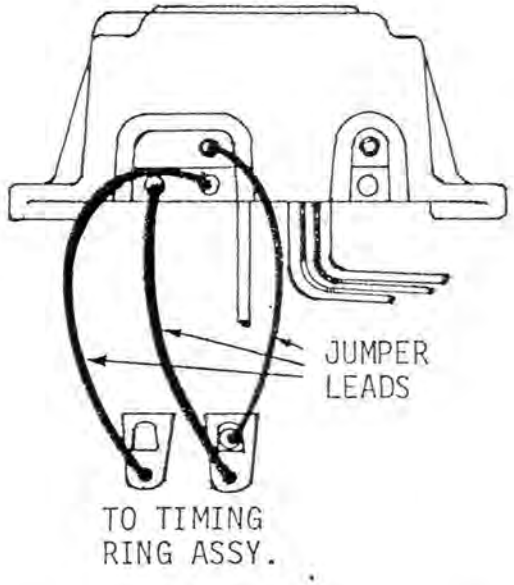
TROUBLE SHOOTING THE IGNITION SYSTEM

Disconnect a spark plug wire from one cylinder and connect it to a test spark plug. Place test plug on cylinder cover to ground plug. Do not hold in hand. Plug in the tether switch, then pull the starter and check for a spark at the test plug. Test both cylinders in the same manner. If sparks are observed at the test plug for both cylinders, the problem lies elsewhere in the engine (carburetion, timing, or mechanical failure).

1. If a spark discharge is observed at one cylinder but not the other, the problem lies in the coil or high tension lead, the timing ring, or the electronics module.

The easiest method for locating the faulty component is to use an ohmmeter and measure resistances. See ohmmeter test procedure for resistance values. However, if an ohmmeter is not available, the following test procedure can be used.

A. Coil Test - Disconnect the primary lead from the nonfiring coil (red or white lead). Disconnect the primary lead from the firing coil and install it on the nonfiring coil. Do not hold the primary lead on the coil primary terminal as a severe electrical shock may result. Plug in the tether switch, and pull the starter. If the nonfiring coil now produces a spark, the coil is good. Reconnect the primary leads to the proper coils and proceed to timing ring test. If the nonfiring coil still does not produce a spark, the coil is defective and must be replaced. (Check high tension lead before replacing coil.)



B. Timing Ring and Electronics Module Test - Make three short jumper leads terminated with one male and one female bullet-type connector to mate with the terminals in the connectors at the electronics module. (Jumper leads with small alligator clips could also be used.) Unplug the two connectors (leading to timing ring) from the electronics module. Connect the three jumper leads as shown above. Be certain connections are good.

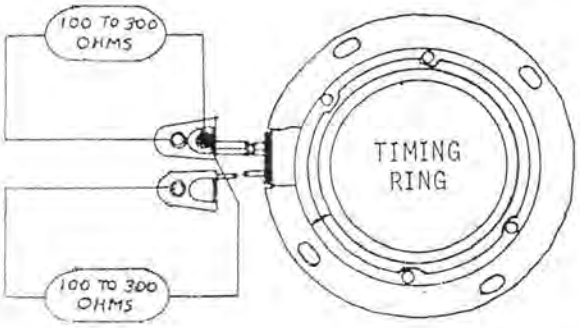
Plug in the tether switch and pull starter. If the nonfiring coil now produces a spark, the problem lies in the timing ring and it must be replaced. If the nonfiring coil still does not produce a spark, the problem lies in the electronics module and it must be replaced.

IMPORTANT: Do not operate the starter with the plug-in connectors completely disconnected from the electronics module. Internal damage can result to the electronics module.

2. If spark discharges are not observed at either cylinder, the system will have to be tested with an ohmmeter, or checked by replacing components. However, before testing the system, make certain the "ON"-"OFF" switches (tether switch and/or kill switch) are not the problem. Disconnect the large white coupler from the engine, and again check for spark discharges at the test plug(s).

OHMMETER TEST PROCEDURE

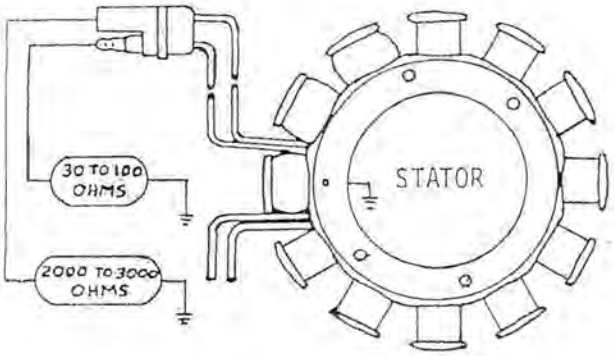
Make certain the ohmmeter being used is accurate and the batteries are fresh. Periodically zero the meter during the tests, and also zero meter each time a change of scale is made.



1. Unplug the two connectors (leading to timing ring) from the electronics module and make the following checks at the connectors on the wiring harness as shown above. Connect the ohmmeter leads between the red lead terminal and the white lead terminal. The ohmmeter should indicate between 100 and 300 ohms. Connect the ohmmeter leads between the white lead terminal and the black lead terminal. The ohmmeter should indicate between 100 and 300 ohms.

Connect one ohmmeter lead to the engine block. Then check the three terminals with the other ohmmeter lead. The ohmmeter must indicate an open circuit (infinity) at all three terminals.

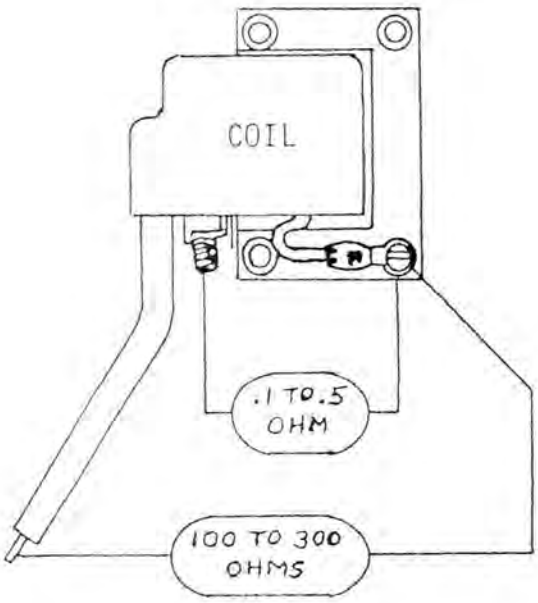
If the above readings are not obtained, the timing ring assembly is defective and must be replaced.



2. Unplug the connector (leading to alternator stator) from the electronics module and make the following checks at the connector on the wiring harness as shown above.

   Connect one ohmmeter lead to a good ground connection on the engine block. Connect the other ohmmeter lead to the black lead terminal. The ohmmeter should indicate between 30 and 100 ohms. Remove the ohmmeter lead from the black lead terminal and connect it to the white lead terminal. The ohmmeter should indicate between 2000 and 3000 ohms. (Change scales and reset ohmmeter to zero if necessary.)

   If the above readings are not obtained, the stator assembly is defective and must be replaced.



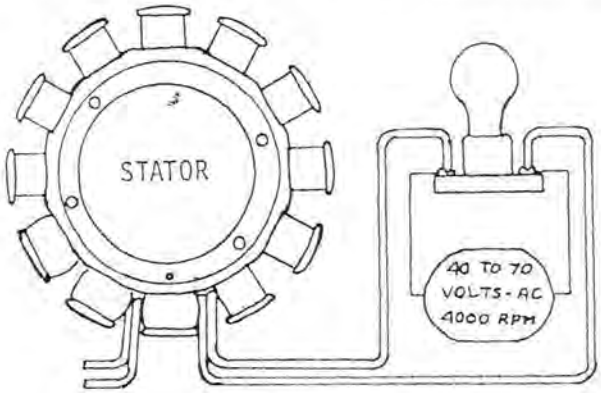
3. Check each coil separately. Remove the primary lead from the coil (red or white lead).

   Connect one ohmmeter lead to the primary terminal stud on the coil. Connect the other ohmmeter lead to the ground connection at the coil as shown above. The ohmmeter should indicate .1 to .5 ohms. Because of the low primary resistance make certain the ohmmeter has been set to zero.

   Remove the ohmmeter lead from the primary terminal stud and connect it to the spark plug wire terminal. The ohmmeter should indicate 100 to 300 ohms. If the above readings are not obtained the coil is defective and must be replaced. Use the same procedure to test the other coil. (Check high tension lead before replacing coil.)

4. If all tests to this point have been within the listed specifications, the trouble presumably lies in the electronic module. Because of the many variables involved when testing solid state componentry with an ohmmeter, check the electronic module by replacement only.

TROUBLE SHOOTING THE ALTERNATOR SECTION



The alternator can be tested for output using either an AC voltmeter or a 60 watt 125 volt light bulb with test leads.

In order to test the alternator it will be necessary to disconnect the two green/yellow leads from the system wiring. A preliminary check of the alternator can be made with an ohmmeter to determine if the leads or stator are open or grounded. The resistance of the stator assembly should be 0.2 to 0.6 ohm when checked between the two green/yellow leads. The ohmmeter should read infinity when checking between either lead and the engine housing. No reading across the two leads would indicate an open circuit and a reading from either lead to ground would indicate a grounded circuit. If a problem is indicated, check the lead wires for worn or broken insulation or a broken lead.

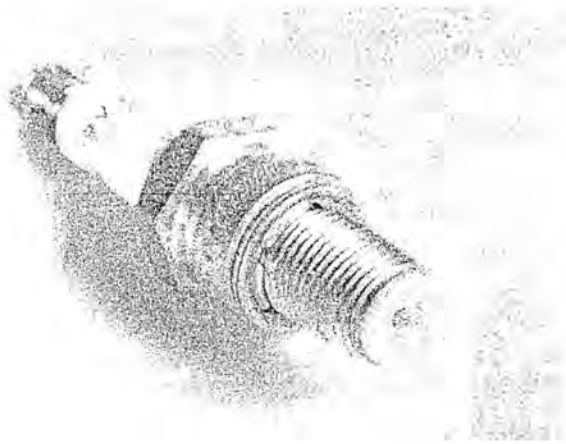
TESTING OUTPUT-AC VOLTMETER

Connect the AC voltmeter to the two green/yellow leads as shown above. Start the engine and run approximately 4000 rpm. The AC voltmeter should indicate 40 to 70 volts.

TESTING OUTPUT - TEST BULB

Connect the test bulb to the two green/yellow leads. Start the engine and run at approximately 2000 rpm. The test bulb should have a soft orange glow. The bulb should get brighter, as the engine speed is increased. At approximately 7000 rpm the bulb should be about normal brightness.

SPARK PLUGS



BRAND	PART NUMBER
AC	SV4XL (AM53223)
Champion	N-19V (AM53187)

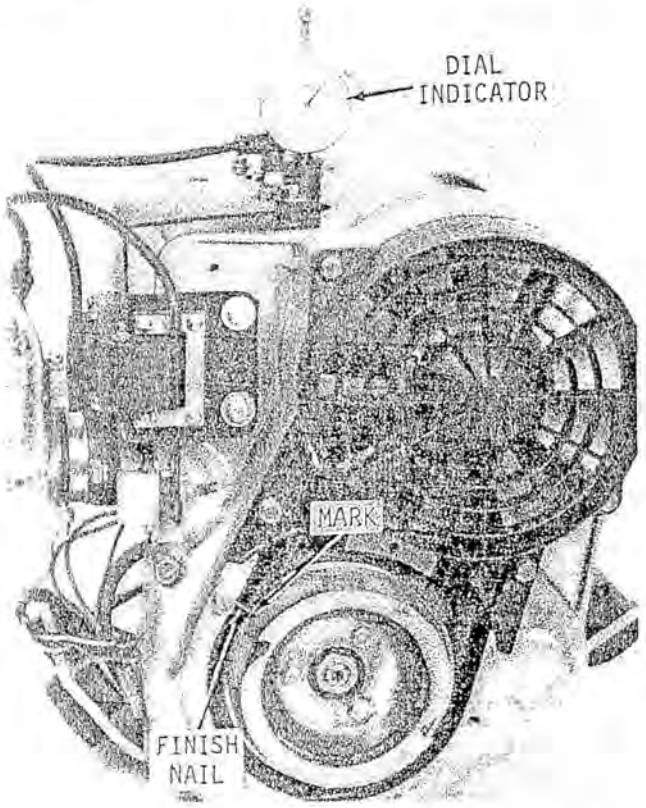
Surface gap spark plugs sometimes have a sooty appearance. This does not mean the plug is malfunctioning, as CD ignition is capable of firing a plug of this type.

If the insulator around the center electrode appears "tracked" or cracked, the plug should be replaced. If external insulator is cracked, the plug should also be replaced.

If the spark plug center electrode is burned back 1/32-inch below the insulator, replace the plug. Do not replace plug unless this condition exists or the insulator is cracked.

IGNITION TIMING

Check and adjust ignition timing as follows:



1. Remove recoil starter. Bend a loop in a small finish nail and secure nail to fan cover with a cap screw. Point on finish nail should just miss edge of sheave as shown above.

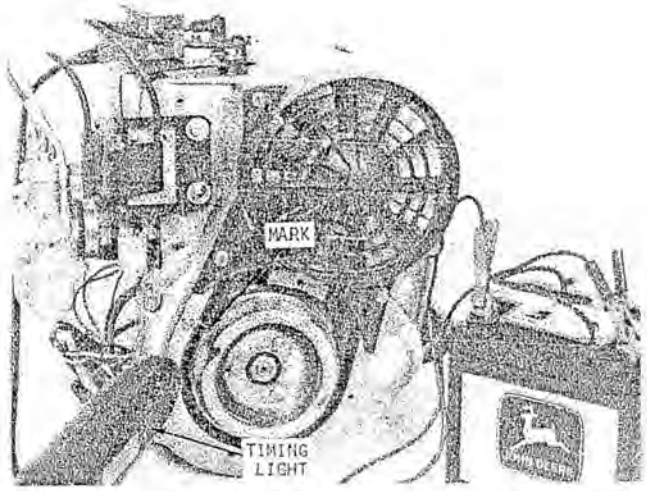
2. Install dial indicator in No. 1 spark plug hole.

3. Rotate crankshaft to locate TDC (Top Dead Center) and "zero" dial indicator.

4. Rotate crankshaft counterclockwise (opposite normal rotation) until dial indicator reads .090-inch BTDC (Before Top Dead Center).

5. With flywheel in this position, place a mark (with black felt pen) on sheave rim corresponding with nail point.

6. Remove dial indicator and reinstall spark plug.



1. Connect a timing light to No. 1 spar plug lead and to a 12-volt battery as shown above.

NOTE: A clamp-on type timing light (such as Merc-O-Tronic Model 712 picture above) is preferred. CD ignition can damage a standard timing light.

2. Start engine (with rope) and run at approximately 4000 rpm.

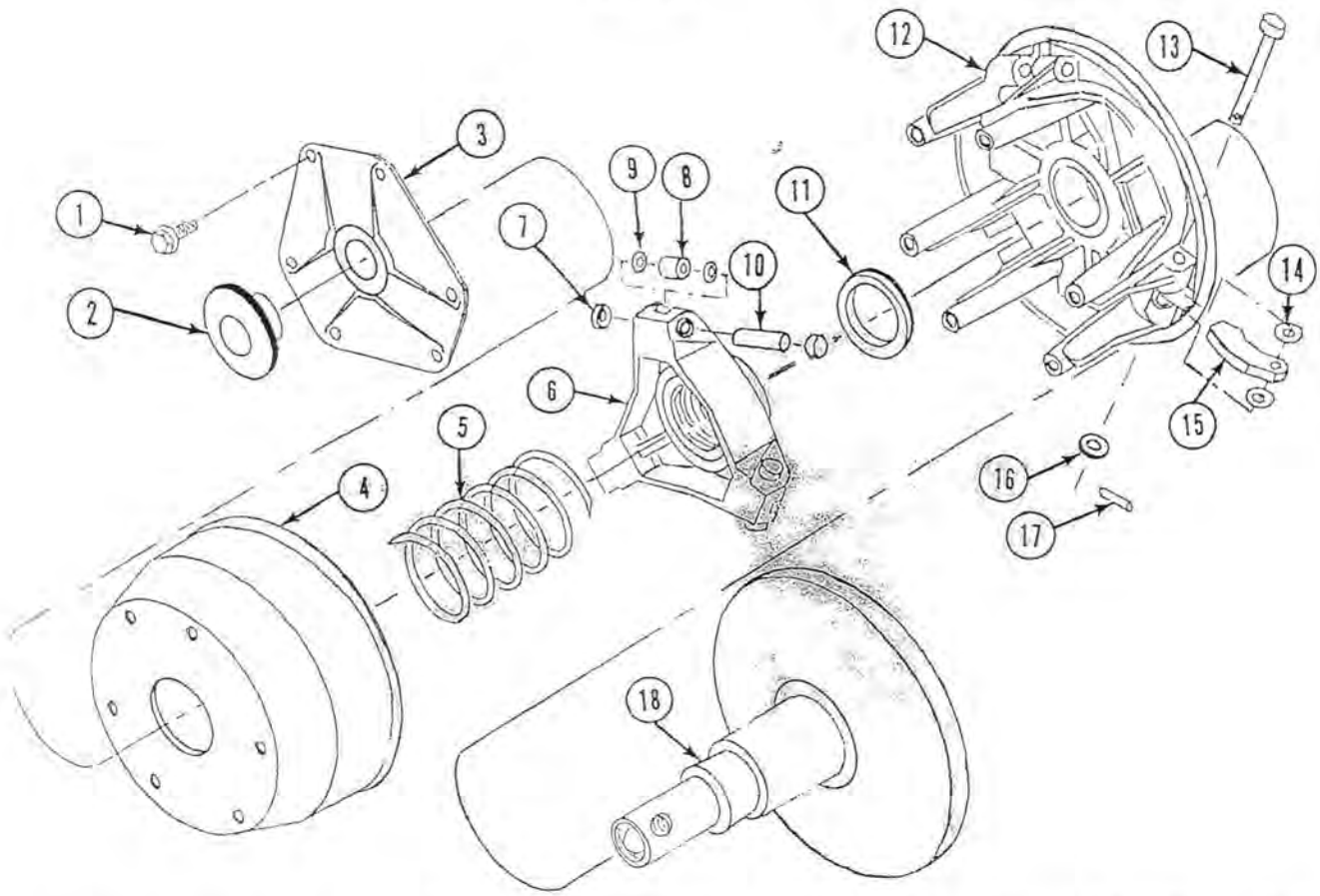
3. Aim timing light at nail point. Mark made on sheave should align with nail point.

4. If not, remove flywheel and alternator stator. Loosen (4) screws securing timing ring and rotate as necessary to advance or retard timing. Retighten screws securely.

5. Reassemble and recheck timing.

POWER TRAIN

CLUTCH



1. Cap Screw (6 used)
2. Pilot Washer
3. Cover Plate w/Bushing
4. Cover
5. Spring (Blue)
6. Spider
7. Guide Button (6 used)
8. Roller (3 used)
9. Steel Washer (6 used)
10. Pin (3 used)
11. Spacer Washer (1 used)
12. Movable Face w/Bushing
13. Pivot Pin (3 used)
14. Steel Washer (6 used)
15. "P" Cam Arm (3 used)
16. Steel Washer (3 used)
17. Spring Pin (3 used)
18. Fixed Face w/Hub

The 102C John Deere (Comet) Clutch used on the JD340/S Snowmobile is similar to the 100C and 101C Clutches. However, the following changes have been made:

1. Duralon bushings are used in the movable face (key 12) cover plate (key 3) and rollers (key 8).

2. Steel washers (keys 9 & 14) are used rather than nylon washers on each side of rollers and arms.

3. Arms (key 15) have a "flat" machined onto outside surface to "retard" upshift at low engine rpm.

4. Cover plate is offset, allowing clutch spring (key 5) to extend through cover. This provides better control of spring tension throughout the upshift range.

REMOVAL AND DISASSEMBLY

Use same procedures and tools as for other John Deere (Comet) Clutches. Remove plug from left side of pan to provide access for puller.

LUBRICATION

Duralon bushings do not require lubrication. Use Never-Seez Lubricant (PT569) or silicone spray on guide buttons (key 7), cam arms (key 15) and on pivot pins (key 13).

NOTE: Use Loctite (grade AV, Red) (AT&4927) on spider-to-hub threads. This is necessary to prevent spider from unthreading in use. It may be necessary to loosen Loctite with heat when disassembling clutch.

The 90D secondary sheave used on the JD340/S is similar to those used on other John Deere Snowmobiles. However, it does have a different cam angle (27° vs. 34°) and a weaker "Blue" spring.

The spring is factory installed in hole No. 4 as shown in the chart below.

It may be found necessary to pretension the spring differently to maintain an engine speed of 7800-8200 rpm (when at full throttle).

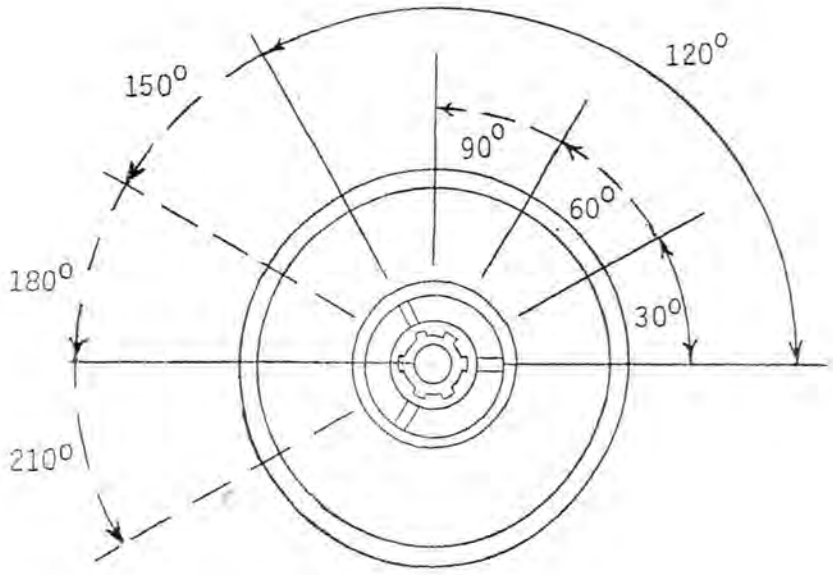
This becomes necessary with changes in temperatures and/or altitudes which affect engine horsepower.

Less pretension lowers engine maintenance speed; more pretension increases engine speed. Do not adjust to provide engine speed in excess of 8200 rpm.

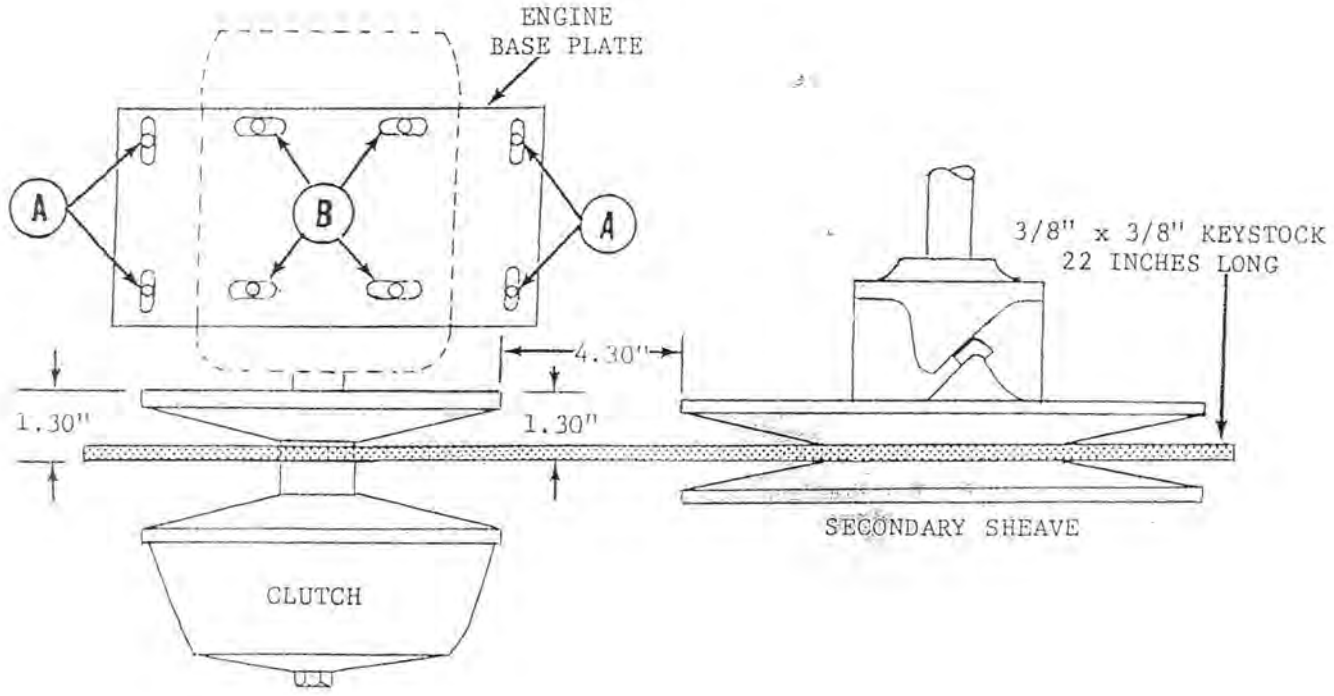
LUBRICATION: Use a light coat of Never-Seez Lubricant (PT569) or silicone spray on movable face bushing. Over lubrication will cause lubricant to sling out onto sheave faces, resulting in belt slippage.

SECONDARY SHEAVE PRETENSION CHART

Lay fixed sheave and post flat with post up. Assemble movable sheave - insert spring tang into movable sheave hole number.	With fixed cam engaged on very top of fixed sheave and post spline, rotate movable sheave counterclockwise the following number of degrees and push down on fixed cam. Insert snap ring to lock fixed cam.	Allow movable sheave to snap back (clockwise) in place to approximate number of degrees.	Pounds of spring tension when measured at sheave radius.
2	210°	180°	21 lbs.
1	180°	150°	17 lbs.
4 (Std.)	150°	120°	14 lbs.
3	120°	90°	11 lbs.
2	90°	60°	7 lbs.
1	60°	30°	4 lbs.



SHEAVE ALIGNMENT



1. Obtain a piece of straight 3/8" square key stock, 22 inches long.
2. Remove drive belt.
3. Open secondary sheave and install key stock between sheave halves. Let movable face snap back, trapping key stock.
4. Loosen bolts through rubber motor mounts (A).
5. Slide engine side-to-side as required, to obtain 1.30-inch dimensions shown above. Tighten motor mount bolts.
6. Loosen cap screws securing engine crankcase to engine base plate (B).

NOTE: Remove four plugs from bottom of pan to provide access to these cap screws.

7. Slide engine forward or rearward as required to obtain 4.30-inch dimension between sheaves as shown above. Tighten cap screws.

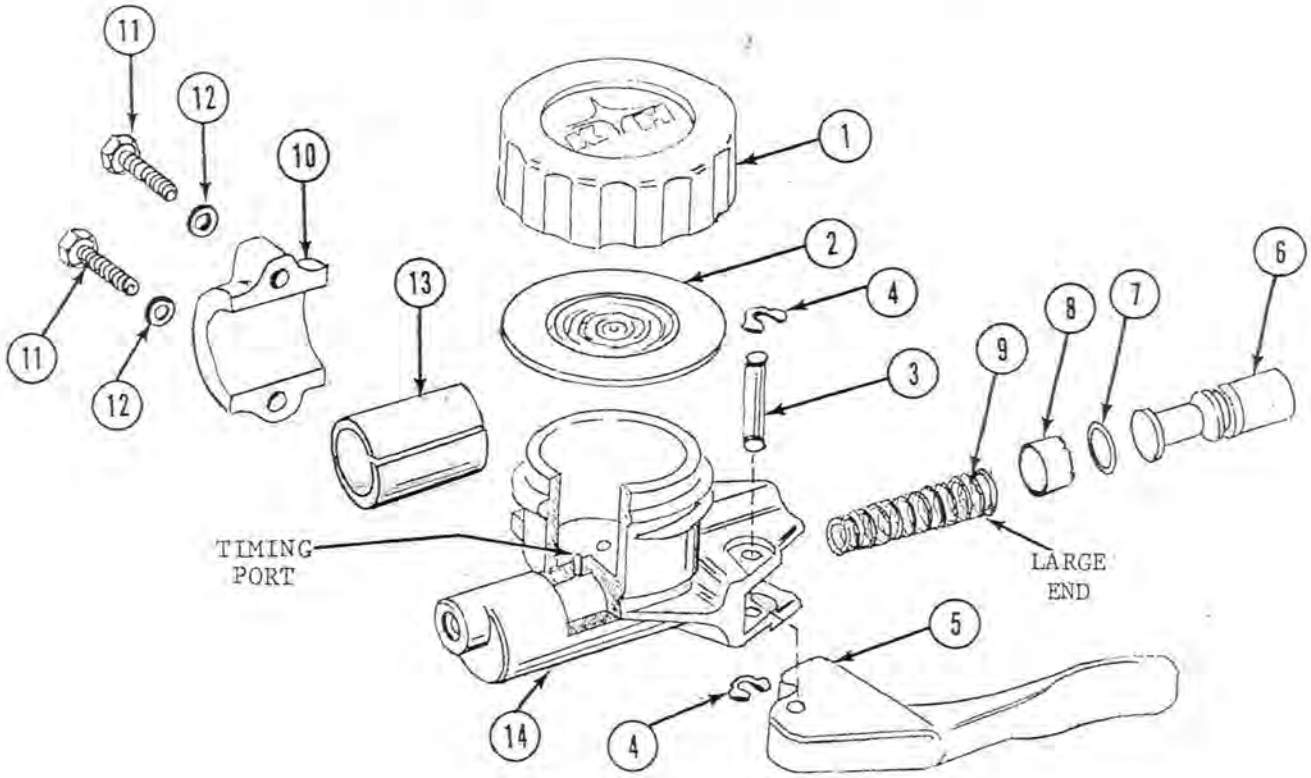
NOTE: This dimension can be increased slightly to compensate for a worn drive belt or long drive belt. The dimension can be reduced slightly to compensate for a short drive belt.

A new M65703 drive belt has the following dimensions:

OUTSIDE CIRCUMFERENCE	TOP WIDTH
47-1/2 ± 1/4-inch	1-1/4-inch

HYDRAULIC BRAKE

KELSEY-HAYES 750HB HANDLEBAR MASTER CYLINDER



1. Cover
2. Bellows Gasket*
3. Pivot Pin
4. Klip Ring
5. Hand Lever
6. Piston*
7. O-Ring*
8. Cylinder Cup*
9. Return Spring*
10. Half Clamp
11. Cap Screw (1/4 x 1-inch)
12. Flat Washer
13. Bushing*
14. Body

*Parts included in repair kit (AM53660)

INSPECTION

Remove the reservoir cover and activate the hand lever to apply the brake. A small squirt of fluid from the timing port (shown in the cutaway view) should be visible. If the squirt is not visible, press and release the lever rapidly several times to see if it will clear the port. If the squirt still does not occur, disassemble the master cylinder. In doing so, inspect for signs of wear or damage and replace parts as required.

DISASSEMBLY

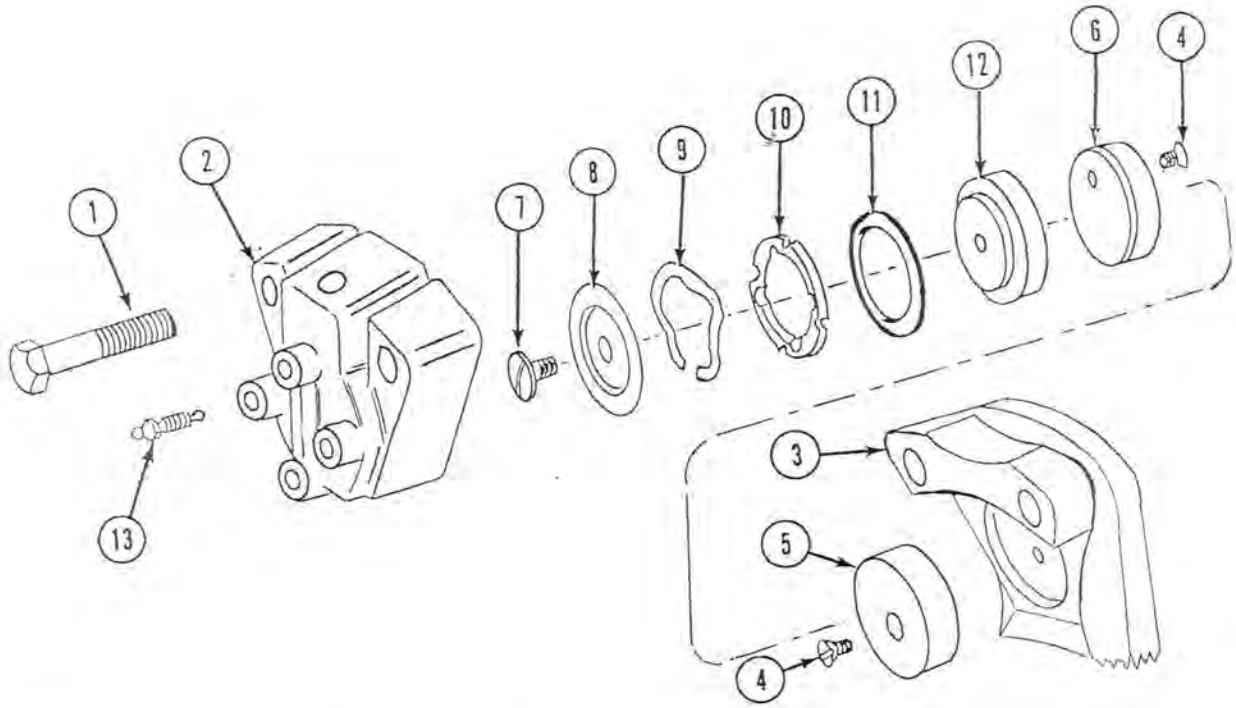
Disassemble the master cylinder by removing one of the rings (4) and pivot pin (3) so that the lever (5), piston (6), O-ring (7), cup (8) and spring (9) may be removed.

ASSEMBLY

Assemble the parts in the relationship shown in the exploded view. Making sure that the large end of the spring is towards the cup as shown.

ADJUSTMENT

No adjustment of any kind is required. The simple design offers long life and reliable operation and eliminates any need for adjustment.



1. Cap Screw (2 used)
2. Casting (Piston Side)
3. Chain Case
4. Screw (2 used)
5. Friction Pad (Case Side)
6. Friction Pad (Piston Side)
7. Screw
8. Back-up Plate
9. Wave Spring
10. Press Fit Ring
11. O-Ring
12. Piston
13. Bleeder Valve (2 used)

FRICTION PAD REPLACEMENT

1. Remove casting (Key 2) from chain case.
2. Remove screw (Key 4) securing friction pad (Key 6). Install new friction pad and secure with screw.
3. Open a bleeder valve (Key 13) slightly and press piston into casting until new friciton pad is flush with casting. Tighten bleeder valve.
4. Remove chain case cover and remove cap screw securing upper sprocket.
5. Remove 3 bolts securing left-hand secondary shaft bearing and pull secondary shaft out of chain case and brake disk.
6. Remove screw (Key 4) securing friction pad (Key 5). Install new friction pad and secure with screw.
7. Reassemble in opposite order. Apply Never-Seez lubricant to inside of brake disk hub prior to installation on secondary shaft.
8. Bleed brakes as described on page 24.

PISTON REMOVAL

If piston must be removed from casting for maintenance, use the following procedure:

1. Remove casting (Key 2) from chain case.
2. Pump brake lever rapidly until O-ring (Key 11) on piston is exposed.
3. Carefully insert 2 screwdrivers (opposite each other) in O-ring groove and pry piston out of casting.
4. Inspect and replace parts as necessary.

BRAKE FLUID

Use automotive type disk brake fluid with an SAE specification J1073.

IMPORTANT: Do not, under any circumstances, use hydraulic oil, mineral oil, aircraft type or red oil fluids, since they will cause cups and seals to expand or deteriorate and the system can no longer operate properly. If at any time hydraulic oil is used inadvertently, completely drain and flush the brake system with brake fluid. Replace all cups and seals and refill with brake fluid of approved type.

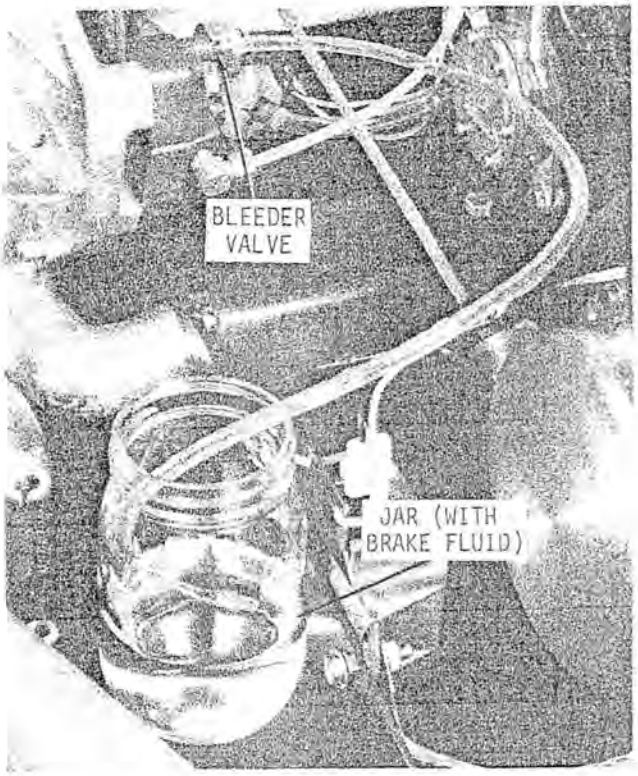
Under normal conditions of service, with the correct type of fluid, there is no need for periodic changes of fluid. Simply keep the reservoir full at all times. Make frequent checks of fluid level (at least every 10 hours of operation) by removing the screw cap from the master cylinder and fill to within 1/8-inch of the top when additional fluid is required.

BLEEDING INSTRUCTIONS

The brake is fitted with bleeder valves which seal when turned in tight, but will allow air or fluid to pass out through the hole in the nipple end of the valve when loosened. Check all fluid line connections before bleeding and check frequently to see that fluid level in the master cylinder is within 1/8-inch of top at all times. Add brake fluid as necessary. Proceed as follows:

1. Position handlebars such that the reservoir is as level as possible. Remove cap from fluid reservoir.

2. Attach a flexible bleeder tube to the upper bleeder valve nipple. Place the other end of the tube in a jar containing clean fluid. The end of the tube must be below the surface of the fluid.



3. Depress brake lever several times to pressurize system.

4. Open upper bleeder valve as the brake lever is slowly depressed. Observe air bubbles rising in the fluid as the air is expelled. Tighten the bleeder valve as the brake lever nears end of stroke.

5. Repeat step 4 until all air bubbles disappear and only fluid escapes, indicating that there is no more air left in the brake system. Check reservoir fluid level to avoid accidentally pumping air into the line at the master cylinder.

6. Bring the fluid level within 1/8-inch from the top of the reservoir.

NOTE: Do not pour any of the purged fluid back into the reservoir since it is aerated and the air trapped within it will again enter the system.

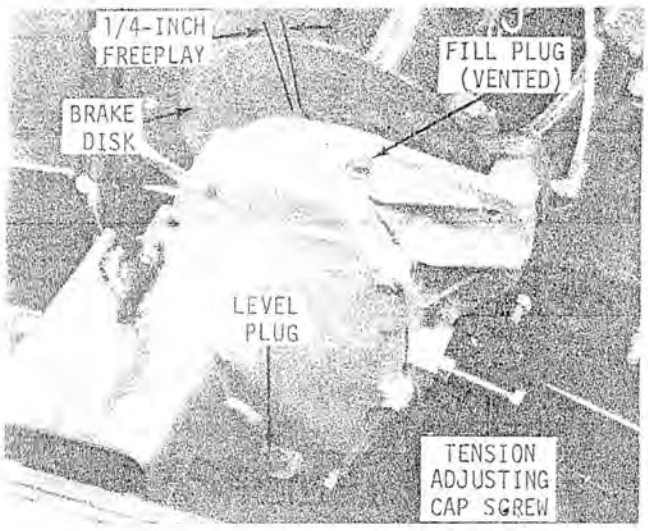
CHAIN CASE

FINAL DRIVE RATIOS

	Upper Sprocket (No. of Teeth)	Lower Sprocket (No. of Teeth)	Chain Length (No. of Pitches)	Ratio
STOCK	17	39	74	2.29:1
Opt.	17	35	72	2.06:1
Opt.	16	35	72	2.19:1
Opt.	16	39	72	2.44:1
Opt.	16	42	76	2.62:1

PART NUMBERS

Upper Sprockets	Lower Sprockets	Chain
16 (M65811)	35 (M65809)	72 Pitch Length (AM53623)
17 (M65792)	39 (M65693)	74 Pitch Length (AM53568)
	42 (M65810)	76 Pitch Length (AM53624)



LUBRICATION

1. Remove fill and level plugs.
2. Add SAE 30 oil through fill hole until it runs out level hole. Replace plugs.

NOTE: Fill plug is vented. Be certain vented plug is reinstalled in upper hole.

CHAIN TENSION

1. Check chain tension by rotating brake disk forward and backward. If chain is properly tensioned, 1/4-inch freeplay will exist at rim of brake disk as shown above.

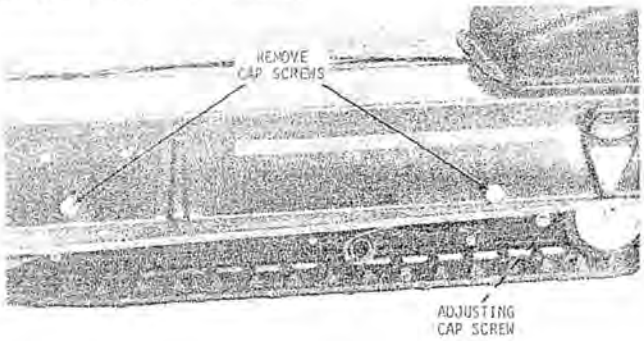
NOTE: Be certain track drive shaft does not rotate when checking freeplay. Hold track drive wheels, if necessary.

2. Turn tension adjusting cap screw clockwise to increase tension and counterclockwise to decrease tension. Tighten lock nut after making adjustment.

CHANGING SPROCKETS

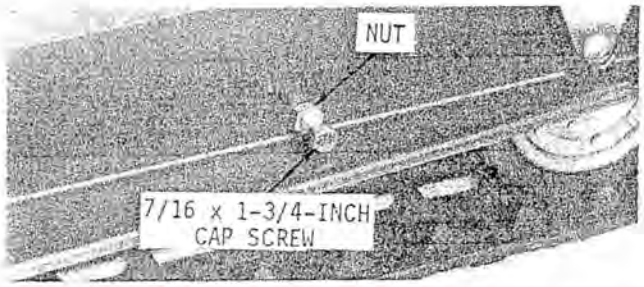
1. Tip machine on left side to prevent oil spillage.
2. Remove cap screws securing chain case cover and remove cover. This completely exposes chain and sprockets.

REMOVING SUSPENSION



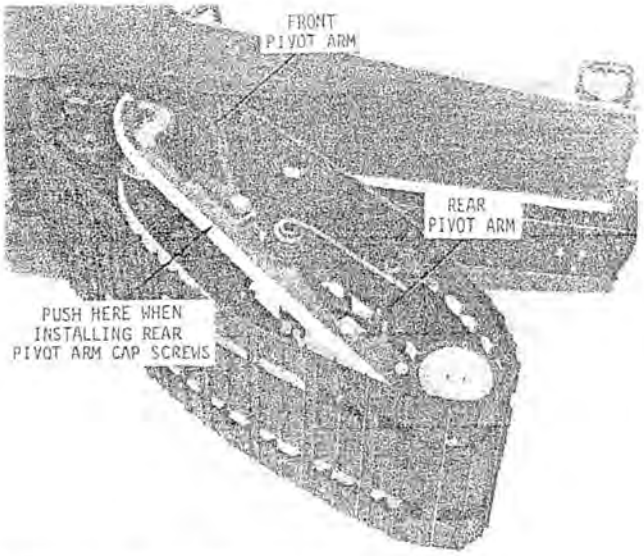
Remove suspension as follows:

1. Relieve track tension by backing out adjusting cap screws.
2. Remove four cap screws (two on each side of tunnel) securing suspension pivot arms to tunnel.
3. Remove suspension from track.
   NOTE: If pivot shaft rotates within pivot arm housing, both cap screws can not be removed unless the following procedure is used:



1. Thread a 7/16 x 1-3/4-inch cap screw (with nut) into pivot shaft. Tighten nut against tunnel.
2. Remove cap screw from opposite end.
3. Loosen nut and remove 7/16 x 1-3/4-inch cap screw.

INSTALLING SUSPENSION



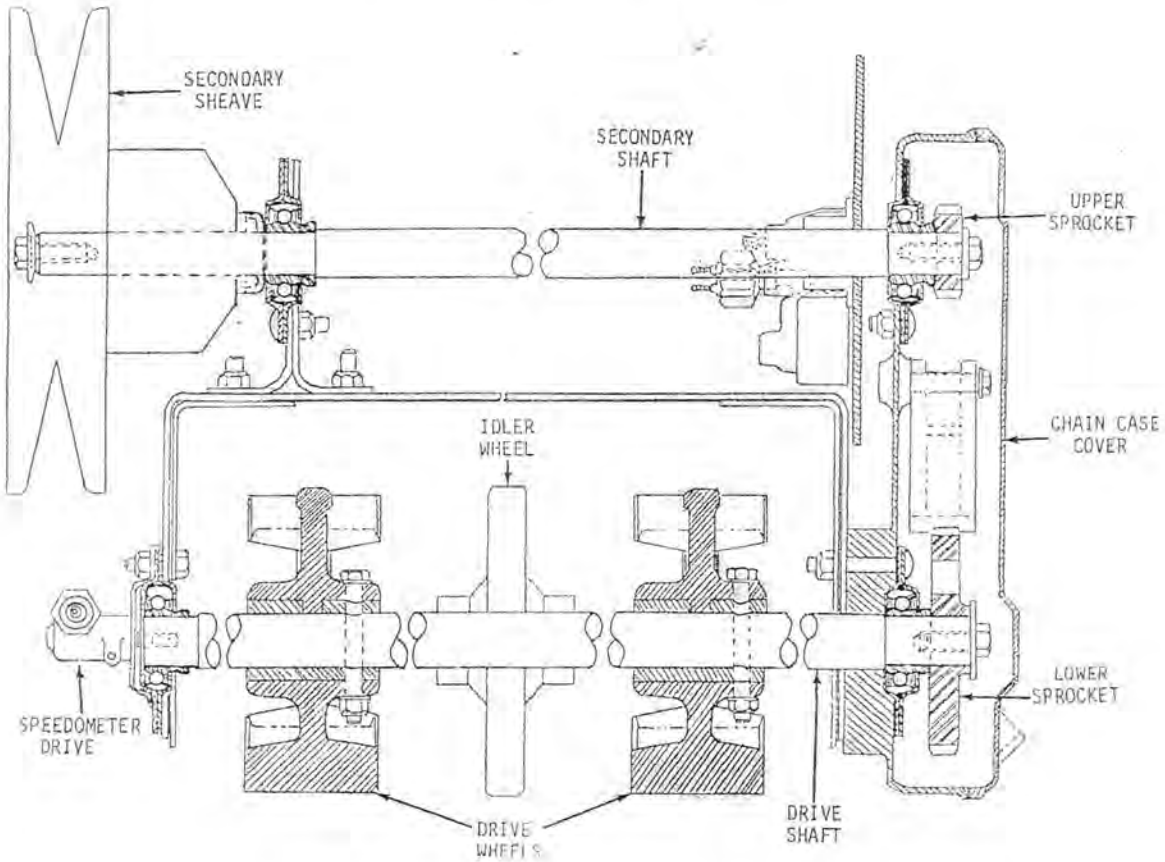
Install suspension as follows:

1. Install suspension into track.
2. With track and suspension positioned at about a 45° angle to the tunnel (as shown above) install and tighten two cap screws securing front pivot arm to tunnel.
   NOTE: The front pivot arm can be installed in one of two positions. See page 28 for details.
3. Pivot suspension up into tunnel and install two cap screws securing rear pivot arm to tunnel.

NOTE: Push suspension up (by trailing end of front pivot) when installing rear cap screws. This moves suspension rearward, allowing easier installation of rear cap screws.

4. Adjust track tension as explained on page 28.

DRIVELINE CROSS SECTION



REMOVING TRACK DRIVE SHAFT

1. Remove chain case cover. Remove drive chain and sprockets.

2. Remove three cap screws securing speedometer drive and left-hand bearing to tunnel. Remove speedometer drive and bearing.

3. Remove cap screw securing left-hand drive wheel to drive shaft. Slide drive wheel toward center idler wheel.

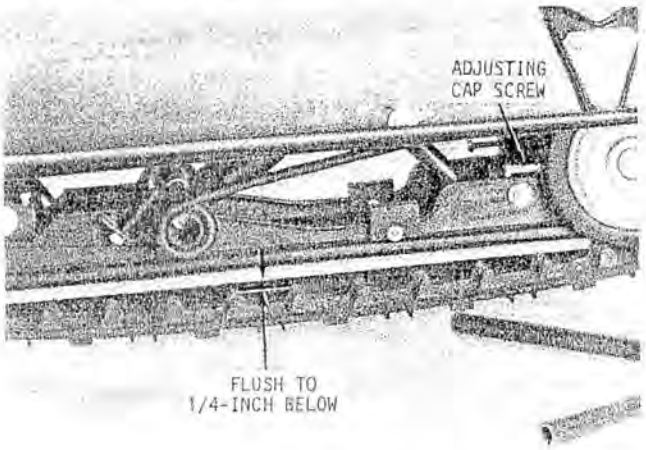
NOTE: If drive wheel will not slide on shaft, drive shaft can be removed by removing right-hand bearing (from chain case).

4. Pull drive shaft to left, out of lower chain case bearing. Drive shaft can now be removed from tunnel.

5. Reverse above procedure for installation.

TRACK TENSION

The following procedure is the preferred method of adjusting track. The method described in the operator's manual should be used only if facilities do not permit use of preferred method.



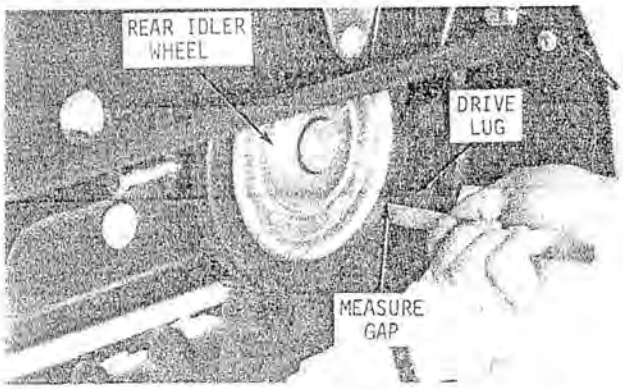
1. Securely support rear of snowmobile so track is off ground.

2. When properly tensioned, top of track drive lugs (midway in span) should be flush to 1/4-inch below bottom of wear bars as shown above.

3. Turn adjusting cap screws clockwise to increase tension; counterclockwise to decrease tension. Adjust each side as required. Tighten lock nuts after making adjustment.

TRACK ALIGNMENT

Track alignment should always be checked after adjusting track tension.



1. With rear of snowmobile securely supported, start engine and run track for short time. Let track coast to a stop. DO NOT apply brake as this can cause track to go out of alignment.

2. Measure distance between outer track drive lugs and rear idler wheel. This dimension should be equal on both sides.

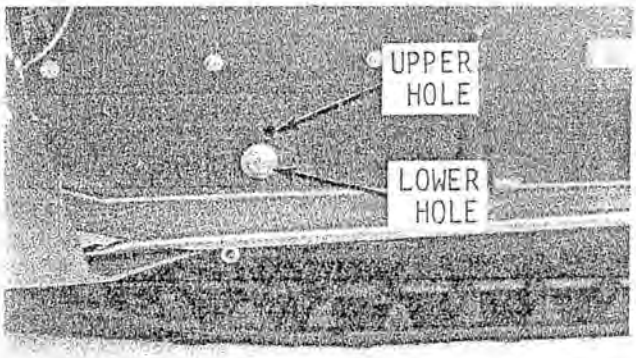
3. A track will run to the loose side. If distance between drive lugs and and idler wheels is not equal, loosen the track tension slightly on the side with the shortest dimension.

4. Repeat steps 1, 2 and 3 until distance between drive lugs and idler wheels is equal on both sides.

STEERING RESPONSE (SKI LIFT) AND SUSPENSION SPRINGS

See operator's manual for steering response (ski lift) and suspension spring adjustment.

FRONT PIVOT ARM

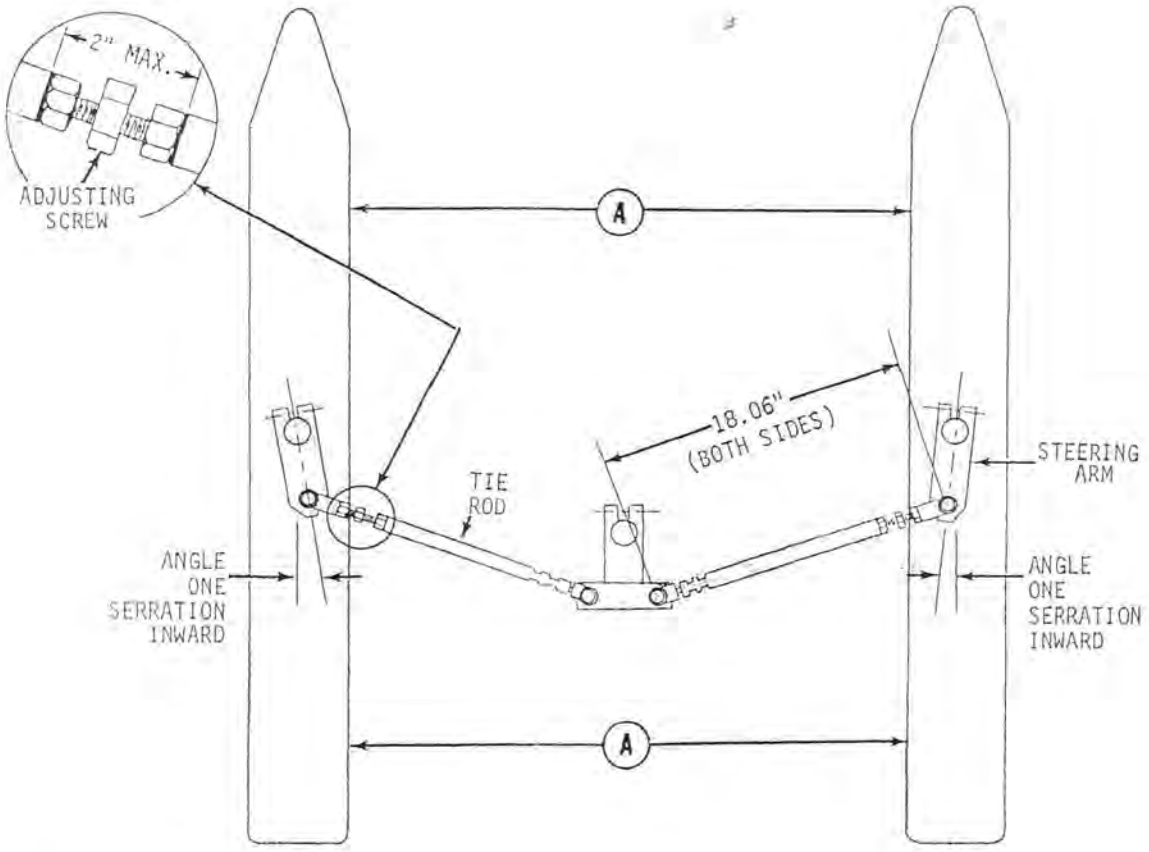


The front pivot arm can be placed in either of two positions.

Lower Hole - Use for general snowmobiling.

Upper Hole - Use when riding in deep snow conditions. When in this position, the track entry angle is less severe, allowing the track to ride above the snow.

NOTE: Check track tension after changing pivot arm position.



SKI ALIGNMENT

When properly aligned, skis are parallel (dimensions "A" equal) with skis pointing straight forward and handlebars positioned to steer straight ahead.

Loosen jam nuts and turn adjusting screws as required.

NOTE: Do not exceed 2 inches between outer tie rod end and tie rod, as shown in detail above. If 2 inches must be exceeded to obtain proper alignment, check position of steering arms.

STEERING ARMS

Steering arms must be angled inward one serration as shown above. This is important to obtain proper steering geometry.

Scribe mark on steering arm and spindle prior to disassembly to insure proper assembly.