

FOREWORD

This Drifter SB340-A2, SB440-A5 Shop Manual Supplement is designed to be used in conjunction with the Drifter SA340-A4, SB440-A4, SC340-A1 Shop Manual (P/N 99963-3511). The maintenance and repair procedures described in this Supplement are only those that are unique to the SB340-A2 and SB440-A5 models. Most service operations for these models remain identical to those described in the base Shop Manual. Complete and proper servicing of the SB340-A2 and SB440-A5 models therefore requires both this Supplement and the base Shop Manual.

The base Shop Manual and this Supplement are designed primarily for use by snowmobile mechanics in a properly equipped shop. However, they contain enough detail and basic information to make them useful to the snowmobile owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, the adjustments, maintenance, and repair should be carried out only by qualified mechanics.

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

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

WARNING

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

CAUTION

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

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

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Illustrations in this publication are intended for reference use only and may not depict actual model component parts.

MODEL IDENTIFICATION



SB340-A2 and SB440-A5

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SPECIFICATIONS

GENERAL

	MODEL	
	SB340-A2	SB440-A5
Dimensions		
Overall Length	101 in. (2565 mm)	101 in. (2565 mm)
Overall Width	35.5 in. (902 mm)	35.5 in. (902 mm)
Overall Height	43.0 in. (1092 mm)	43.0 in. (1092 mm)
Dry Weight (Approximate)	385 lb (174.6 kg)	385 lb (174.6 kg)

Engine

Model	TA340C-D203	TA440C-D203
Displacement	20.7 c.i. (339 cc)	26.6 c.i. (436 cc)
Bore x stroke	2.362 x 2.362 in. 60 x 60 mm	2.677 x 2.362 in. (68 x 60 mm)
Number of Cylinders	2	2
Engine RPM at Full Throttle	6,900 RPM	6,900 RPM
Engine RPM at Idle Speed	2,500 RPM	2,500 RPM
Starter	Manual rewind	Manual rewind

Ignition

Ignition System	Capacitor Discharge	Capacitor Discharge
Spark Plug	NGK BZ-9ES	NGK BZ-9EV

Carburetor

Carburetor Make	Mikuni	Mikuni
Carburetor Model	VM 32 Econo Jet	VM 32 Econo Jet
Identification Marking	32-187	32-186
Type of Carburetor	Slide Valve	Slide Valve
Main Jet	180	250
Air Vent	Open	Open
Jet Needle	6FL14-3	6FL14-3
Needle Jet	0 — 6	0 — 6
Throttle Valve (Cut Away)	0.079 in. (2.0 mm)	0.079 in. (2.0 mm)
Pilot Jet	30	30
By Pass	0.055 in. (1.4 mm)	0.055 in. (1.4 mm)
Pilot Outlet	0.031 in. (0.8 mm)	0.031 in. (0.8 mm)
Air Screw	2.0 Turns	2.0 Turns
Float Valve Seat	0.047 in. (1.2 mm)	0.059 in. (1.5 mm)
Starter Jet	0.059 in. (1.5 mm)	0.059 in. (1.5 mm)
Type of Float Chamber	Special	Special
Starter System	Cable, Dual Position	Cable, Dual Position
Econo Jet (Power Jet)	120 Round Reverse Type	110 Round Reverse Type

Gearing

Top Sprocket	18T	21T
Lower Sprocket	37T	38T
Sprocket Overall Ratio	2.06 to 1	1.81 to 1
Chain - (Silent Type)	90 pitch	92 pitch
Drive Chain Tension	Self Adjusting	Self Adjusting
Chain Tensioner Spring Color ...	Green	Green

Drive Converter	MODEL	
	SB340-A2	SB440-A5
Engagement Speed (approximate RPM)	3400 to 3600 RPM	3500 to 3700 RPM
Drive Converter RPM	6800 to 7000 RPM	6800 to 7000 RPM
Spring Part Number and Color (Standard)	92081-3006 Blue	92081-3002 Black
Spring Part Number and Color (Optional)	92081-3004 Pink 92081-3005 Red 92081-3001 Yellow 92081-3002 Black 92081-3011 White	92081-3004 Pink 92081-3005 Red 92081-3001 Yellow 92081-3006 Blue 92081-3011 White
Spring Length - New with no load ± 0.25 in. (6.3 mm)	4.14 in. (Blue) (105.2 mm) 3.54 in. (Pink) (89.9 mm) 3.74 in. (Red) (94.9 mm) 3.96 in. (Yellow) (100.5 mm) 4.33 in. (Black) (110.1 mm) 4.74 in. (White) (120.4 mm)	4.33 in. (Black) (110.1 mm) 3.54 in. (Pink) (89.9 mm) 3.74 in. (Red) (94.9 mm) 3.96 in. (Yellow) (100.5 mm) 4.14 in. (Blue) (105.2 mm) 4.74 in. (White) (120.4 mm)
Number of Spring Coils (All Colors)	6	6
Spring Wire Diameter (All Colors) ± 0.01 in. (0.2 mm)	0.197 in. (5.0 mm)	0.197 in. (5.0 mm)
Spring Rate (All Colors) ± 2.8 lb/in. (0.05 kg/mm) . . .	56 lb/in. (1.0 kg/mm)	56 lb/in. (1.0 kg/mm)
Spring Compression ± 5.5 lb (2.5 kg)	Blue 155 lb @ 1.36 in. (70.3 kg @ 34.5 mm) Pink 122 lb @ 1.36 in. (55.3 kg @ 34.5 mm) Red 133 lb @ 1.36 in. (60.3 kg @ 34.5 mm) Yellow 144 lb @ 1.36 in. (65.3 kg @ 34.5 mm) Black 166 lb @ 1.36 in. (75.3 kg @ 34.5 mm) White 188 lb @ 1.36 in. (85.3 kg @ 34.5 mm)	Black 166 lb. @ 1.36 in. (75.3 kg @ 34.5 mm) Pink 122 lb @ 1.36 in. (55.3 kg @ 34.5 mm) Red 133 lb @ 1.36 in. (60.3 kg @ 34.5 mm) Yellow 144 lb @ 1.36 in. (65.3 kg @ 34.5 mm) Blue 155 lb @ 1.36 in. (70.3 kg @ 34.5 mm) White 188 lb @ 1.36 in. (85.3 kg @ 34.5 mm)
Spring Outside Diameter (All Colors) ± 0.025 in. (0.63 mm)	2.28 in. (57.9 mm)	2.28 in. (57.9 mm)
Weight Part Numbers (STD)	110G0620 13042-3001 92019-008	110G0628 13042-3002 92019-008
Ramp Part Number and Identification (STD)	39152-3008 "G"	39152-3008 "G"
Weight-Total (STD)	56.8 grams	61.1 grams

Drive Converter Component Weight Chart

PART NUMBER	COMPONENT	GRAM WEIGHT
13042-3001	Weight, 0.031 in. (0.8 mm) thick	0.5
13042-3002	Weight, 0.062 in. (1.6 mm) thick	1.0
92019-008	Nut, special 6 mm	2.3
92001-3009	Bolt, aluminum, 6 x 15 mm	1.8
92001-3003	Bolt, aluminum, 6 x 20 mm	2.1
92001-3015	Bolt, steel, 6 x 16 mm	5.3
110G0620	Bolt, steel, 6 x 20 mm	6.0
110G0628	Bolt, steel, 6 x 28 mm	7.3
39152-3008	Weight Assembly "G"	47.5

Driven Converter

Cam Angle	30°
Spring Part Number	92081-3535
Spring Color	Black
Spring Length - New with no load	4.2 in. (107 mm)
Spring Diameter	2.880 in. (73.15 mm)
Spring Wire Diameter	0.155 in. (3.94 mm)
Spring Preload - Counterclockwise	3rd hole

Belt

Part Number	59011-3503
Outside Circumference	43.5 ± 0.19 in. (1104.9 ± 4.8 mm)
Width - Top surface	1.25 + 0.06 — 0.00 in. (31.7 + 1.55 — 0.00 mm)
Thickness - Top of belt to bottom of lug	0.56 ± 0.03 in. (14.2 ± 0.8 mm)
Belt Taper Angle	30°

Brake

Brake Pad replacement required when threads protruding through adjusting nut exceed	7/16 in. (11.1 mm)
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Track and Suspension

Track Type	Rubber (Internal Drive Lug)
Track Width	15 in. (381 mm)
Track Length	116 in. (2946.4 mm)
Suspension	Slide rail

Fuel/Oil

Gasoline	Leaded with minimum pump posted octane number 89
Oil	Kawasaki Snowmobile Oil (B.I.A. certified T.C.W.)
Gasoline/Oil Ratio	Oil injection (approx. fuel/oil ratio of 110 to 1 at idle and 25 to 1 at top engine speed)
Fuel Tank Capacity	9 gallons (34 liters)
Oil Tank Capacity	2.5 quarts (2.37 liters)

	MODEL	
	SB340-A2	SB440-A5
Electrical Components		
Type	12 VAC, 120W	12 VAC, 120 W
Headlight Part Number	92069-3501 12 V 60/60 W	92069-3501 12V 60/60W
Tail/Brake Light	G.E. 1157	G.E. 1157
Instrument Lights	G.E. 1816 (optional)	G.E. 1816

Frame

Frame	Aluminum alloy and HSLA steel construction	Aluminum alloy and HSLA steel construction
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SERVICE

	MODEL	
	SB340-A2	SB440-A5
Engine		
Effective Compression Ratio	7.1 to 1	7.3 to 1
Piston Ring/Groove Clearance (Top and Bottom)	0.0010 - 0.0036 in. (0.03 - 0.09 mm)	Keystone
Piston Ring End Gap (Top and Bottom)	0.006 to 0.014 in. (0.15 to 0.35 mm)	0.008 to 0.016 in. (0.2 to 0.4 mm)
Piston Skirt Clearance	0.001 to 0.003 in. (0.03 to 0.06 mm)	0.002 to 0.004 in. (0.05 to 0.10 mm)
Connecting Rod Radial Play	0.0008 to 0.0012 in. (0.021 to 0.031 mm)	0.0008 to 0.0012 in. (0.021 to 0.031 mm)
Connecting Rod Side Clearance	0.016 to 0.020 in. (0.4 to 0.5 mm)	0.016 to 0.020 in. (0.4 to 0.5 mm)
Connecting Rod Small End Diameter	0.787 to 0.789 in. (20.00 to 20.05 mm)	0.787 to 0.789 in. (20.00 to 20.05 mm)
Crankshaft End Play (Max)	0.015 in. (0.38 mm)	0.015 in. (0.38 mm)
Crankshaft Run Out (Max)	0.002 in. (TIR) (0.05 mm)	0.002 in. (TIR) (0.05 mm)

Ignition

Spark Plug Gap	0.024 in. (0.6 mm)	0.024 in. (0.6 mm)
Ignition Timing (Dynamic)	18° @ 6500 RPM	18° @ 6500 RPM
Ignition Timing (BTDC)	0.073 in. (1.86 mm)	0.073 in. (1.86 mm)

Magneto Resistance Tests

ITEM	OHMMETER LEADS CONNECTED BETWEEN	RESISTANCE
Lighting Coil Exciter Coil Pulser Coil	Yellow-Yellow Red-Ground Red-White	0.18 ohm $\pm$ 20% 160 ohms $\pm$ 20% 17 ohms $\pm$ 20%

CDI Igniter Ignition Coil Resistance Tests*

ITEM	OHMMETER LEADS CONNECTED BETWEEN	RESISTANCE
Secondary winding	High Tension-High Tension	5,700 ohms $\pm$ 15%

*NOTE: Faulty coils cannot be detected using this test alone. Use of a coil tester which simulates operating conditions is the recommended test method.

Carburetor

Air Screw Setting	2.0 turns off seat
Idle Screw Setting	6 turns open from coil bound-initial 2,500 RPM-final

Chassis

Converter Offset Distance	0.497 in. (12.6 mm)
Converter Center Distance	10.3 in. (262 mm)
Drive Chain Tension	Self Adjusting
Brake Adjustment required when lever movement exceeds	3/4 in. (19 mm)
Track Tension	3/4 in. (19 mm) maximum deflection - 5 to 8 lbs (2.2 to 3.6 kg) pull
Steering Alignment	Skis parallel or 1/8 in. (3.1 mm) toe out
Tie Rod End Adjustment Stud Jam Nut Dimensions	1-1/4 in. (32 mm) maximum

General Engine Torque Specifications

Cylinder Head Nuts	16 ft lb (2.2 kg-m)
Crankcase Bolts	16 ft lb (2.2 kg-m)
Flywheel Nut	60 ft lb (8.3 kg-m)
Recoil Case Bolts	50 in. lb (0.6 kg-m)
Spark Plug	20 ft lb (2.7 kg-m)

TORQUE CHART

DESCRIPTION	QUANTITY	SIZE	TORQUE
Controls and Cables			
Speedometer cable nuts	2	---	Hand tighten
Brake cable lock nuts	2	5/16	50 in. lb (0.6 kg-m)
Brake lever set screw	1	8 mm	25 in. lb (0.3 kg-m)
Enrichener cable jam nut	1	6 mm	20 in. lb (0.2 kg-m)
Enrichener mounting nut	1	---	Hand tighten
Ignition switch face nut	1	---	Hand tighten
Throttle cable jam nut	1	6 mm	20 in. lb (0.2 kg-m)
Throttle lever set screw	1	8 mm	25 in. lb (0.3 kg-m)
Oil pump cable jam nuts	2	6 mm	20 in. lb (0.2 kg-m)
Hood			
Hinge to hood - nuts	4	1/4	25 in. lb (0.3 kg-m)
Rubber retainer to hood - nuts	4	1/4	Compress rubber 1/2
Windshield to hood - screws special	8	---	15 in. lb (0.2 kg-m)
Steering			
Handle bar to steering pole - screws, socket head	4	1/4	105 in. lb (1.2 kg-m)
Lower steering mount to front frame - bolts	2	5/16	18 ft lb (2.6 kg-m)
Steering arms to spindle - nuts	2	3/8	30 ft lb (3.9 kg-m)
Tie rod jam nuts	4	3/8	120 in. lb (1.4 kg-m)
Tie rod to steering arm - nuts	2	3/8	30 ft lb (3.9 kg-m)
Tie rod to steering pole - nut	1	3/8	15 ft lb (1.9 kg-m)
Tie rod to steering pole - thin cut	1	3/8	15 ft lb (1.9 kg-m)
Upper steering mount to steering mount - nuts	2	5/16	18 ft lb (2.5 kg-m)
Ski and Spindle			
Shock absorber to ski - nuts	2	3/8	30 ft lb (3.9 kg-m)
Shock absorber to spindle - nuts	2	3/8	30 ft lb (3.9 kg-m)
Skeg to ski - nuts	6	5/16	18 ft lb (2.5 kg-m)
Ski saddle to spindle - nuts	2	3/8	30 ft lb (3.9 kg-m)
Ski spring to saddle - nuts	4	3/8	45 ft lb (5.7 kg-m)
Ski spring to ski, front - nuts	2	3/8	25 in. lb (0.3 kg-m)
Ski spring to ski, rear - nuts	2	3/8	30 ft lb (3.9 kg-m)
Suspension			
Front idler wheels to bracket - bolts	2	3/8	30 ft lb (3.9 kg-m)
Hi-fax to suspension rail - bolts, special	2	---	100 in. lb (1.1 kg-m)
Limiter strap to front swing arm - nuts	2	1/4	45 in. lb (0.6 kg-m)
Rear arm idler wheel mount - bolts	2	5/16	15 ft lb (1.9 kg-m)
Rear axle locking - bolts	2	3/8	30 ft lb (3.9 kg-m)
Shock absorber mount - nuts	2	3/8	15 ft lb (1.9 kg-m)
Suspension brackets to rail - nuts	20	1/4	100 in. lb (1.1 kg-m)
Suspension swing arm to bracket - nuts	4	5/16	15 ft lb (1.9 kg-m)
Swing arm pivot shafts to tunnel - bolts	4	3/8	25 ft lb (3.5 kg-m)
Track tension adjusting bolt jam nuts	2	3/8	20 ft lb (2.8 kg-m)
Drive Shaft			
Bearing housing to tunnel - nuts	3	1/4	100 in. lb (1.1 kg-m)
Drive shaft locking collar - screws, socket head	2	#10	90 in. lb (1.0 kg-m)

TORQUE CHART (CONT.)

DESCRIPTION	QUANTITY	SIZE	TORQUE
Chaincase			
Adaptor hole cap to chaincase cover	1	---	Hand tighten
Bearing support jam nut	1	1/4	95 in. lb (1.0 kg-m)
Bearing support to converter shaft - bolt	1	5/16	25 ft lb (3.5 kg-m)
Chaincase cover to chaincase - bolts	5	1/4	50 in. lb (0.6 kg-m)
Chaincase plugs	2	---	Judgement
Chaincase to front frame - nuts	4	5/16	28 ft lb (3.9 kg-m)
Lower sprocket to driveshaft - bolt, special	1	---	35 ft lb (4.8 kg-m)
Speedometer drive adaptor to chaincase cover	1	---	120 in. lb (1.4 kg-m)
Tensioner arm to chaincase - bolts	2	1/4	40 in. lb (0.45 kg-m)
Top sprocket to converter shaft - bolt	1	5/16	25 ft lb (3.5 kg-m)
Brake and Driven Converter			
Brake caliper to bracket - nuts	2	5/16	25 ft lb (3.5 kg-m)
Brake disc to fixed sheave - screws, socket head	3	1/4	95 in. lb (1.0 kg-m)
Brake support bracket to chaincase - nuts	2	1/4	100 in. lb (1.1 kg-m)
Drive Converter			
Drive converter to crankshaft - bolt	1	1/2	72 ft lb (10.0 kg-m)
Cover to movable sheave - bolt	6	6 mm	120 in. lb (1.4 kg-m)
Roller and pin assembly in movable sheave - bolt	6	6 mm	120 in. lb (1.4 kg-m)
Weight ramp and pin assembly to spider - bolt	6	6 mm	120 in. lb (1.4 kg-m)
Weight ramp - nut	3	6 mm	60 in. lb (0.7 kg-m)
Spider to fixed sheave (use Loctite #271)	1	---	160 ft lb (22 kg-m)
Chassis and Seat			
Bumper to nose pan - nuts	6	1/4	100 in. lb (1.1 kg-m)
Hood guide to nose pan - nuts	8	1/4	100 in. lb (1.1 kg-m)
Hood hinge to nose pan - nuts	4	1/4	100 in. lb (1.1 kg-m)
Hood lanyard to front frame - nut	1	#10	20 in. lb (0.2 kg-m)
Nose pan brace to front frame - nuts	2	1/4	100 in. lb (1.1 kg-m)
Passenger handle to tunnel - nuts	4	5/16	120 in. lb (1.4 kg-m)
Rear bumper to tunnel - nuts	4	1/4	100 in. lb (1.1 kg-m)
Seat to chassis, front - screws	2	1/4	35 in. lb (0.4 kg-m)
Seat to chassis, rear - bolts	2	1/4	35 in. lb (0.4 kg-m)
Fuel System			
Fuel tank pick-up fitting	1	---	Judgement
Fuel tank vent fitting	1	---	Judgement
Primer pump mount - nut	1	---	40 in. lb (0.5 kg-m)
Engine Mount and Exhaust			
Engine mount plate to front frame - nuts	4	3/8	30 ft lb (3.9 kg-m)
Engine to engine mount plate - bolts	4	1/2	30 ft lb (3.9 kg-m)
Engine Lubrication System			
Elbow fitting to oil tank	1	---	Judgement
Oil pump inlet plate screws	4	4 mm	13 in. lb (0.1 kg-m)
Oil pump mounting bolts	2	6 mm	60 in. lb (0.7 kg-m)
Oil pump nozzles	2	8 mm	10 in. lb (0.1 kg-m)
Oil tank bracket bolts	2	1/4	100 in. lb (1.1 kg-m)

TORQUE CHART (CONT.)

DESCRIPTION	QUANTITY	SIZE	TORQUE
Engine Air Shroud and Fan Case			
Air shroud mounting bolts	12	6 mm	60 in. lb (0.69 kg-m)
Engine exhaust duct mounting screws	2	#10	15 in. lb (0.17 kg-m)
Fan housing to crankcase mounting nuts	4	8 mm	11 ft lb (1.5 kg-m)
Fan screen to fan housing	4	6 mm	70 in. lb (0.8 kg-m)
Fan pulley to fan mounting nut	1	14 mm	47 ft lb (6.5 kg-m)
Cylinder Head and Cylinder			
Carburetor holder to manifold - bolts	2	8 mm	40 in. lb (0.6 kg-m)
Cylinder head to cylinder - nuts	8	8 mm	16 ft lb (2.2 kg-m)
Exhaust manifold to cylinders - nuts	4	8 mm	12 ft lb (1.7 kg-m)
Intake manifold to cylinders - bolts	4	6 mm	72 in. lb (0.8 kg-m)
Spark plug to cylinder head	2	- - -	20 ft lb (2.7 kg-m)
Crankshaft, Crankcase and Gearcase			
Gearcase fill plug	1	8 mm	96 in. lb (1.1 kg-m)
Gearcase cover mounting bolts	3	6 mm	60 in. lb (0.7 kg-m)
Gearcase cover mounting bolts	4	8 mm	12 ft lb (1.7 kg-m)
Gearcase drain plug	1	6 mm	50 in. lb (0.6 kg-m)
Oil pump gear nut	1	8 mm	12 ft lb (1.7 kg-m)
Crankcase bolts	2	6 mm	70 in. lb (0.8 kg-m)
Crankcase bolts	8	8 mm	16 ft lb (2.2 kg-m)
Crankshaft (flywheel) nut	1	18 mm	60 ft lb (8.3 kg-m)
Recoil Starter			
Recoil case to fan housing - bolts	3	6 mm	60 in. lb (0.7 kg-m)
Recoil rope reel to recoil case - nut	1	8 mm	120 in. lb (1.4 kg-m)
Starter pulley to flywheel - bolts	3	6 mm	60 in. lb (0.7 kg-m)
Magneto and CDI System			
CDI igniter to fan housing screws	2	6 mm	70 in. lb (0.8 kg-m)
Wire clamps to stator screws	2	4 mm	Hand tighten
Lighting coil to stator screws	2	5 mm	35 in. lb (0.4 kg-m)
Pulsing coil to stator screws	2	5 mm	35 in. lb (0.4 kg-m)
Stator assembly mounting screws	2	5 mm	30 in. lb (0.35 kg-m)
Wiring harness connector to fan housing screw	2	4 mm	Hand tighten
Electrical			
Taillight housing to storage case cover nuts	2	#10	10 in. lb (0.1 kg-m)
Taillight lens to body screws	2	#8	10 in. lb (0.1 kg-m)
Voltage regulator mounting nut	1	1/4	100 in. lb (1.1 kg-m)

NOTE: Loctite formulas are selected on the basis of the diameter of the fastener, and the strength of the bond required. Generally, No. 222 is used on fasteners up to 5/16 in. (8 mm) diameter. If a particularly strong bond is required, or the fastener diameter is greater than 5/16 in. (8 mm), No. 242 is specified. Loctite may significantly increase the torque necessary to remove a fastener. Be careful when applying extra force as this risks damaging the parts. Use only the specified formula on each fastener requiring Loctite. Loctite No. 222 and No. 242 are industrial designations. The consumer equivalent which may be substituted is "Lock N' Seal," product number 21, blue. The drive converter requires the use of Loctite No. 271 (P/N 49075-3612).

GEAR RATIO CHART

		DRIVE SPROCKET - NUMBER OF TEETH						
		17	18	19	20	21	22	
DRIVEN SPROCKET - NUMBER OF TEETH	36		2.00 67 MPH 90 Red	1.89 71 MPH 90 Pink			1.64 82 MPH 92 Red	Gear Ratio Speed Chain Pitch Tensioner Spring
	37	2.18 62 MPH 90 Red	2.06 65 MPH 90 Green STD SB340			1.76 76 MPH 92 Red	1.68 80 MPH 92 Green	Gear Ratio Speed Chain Pitch Tensioner Spring
	38	2.24 60 MPH 90 Green			1.90 71 MPH 92 Red	1.81 74 MPH 92 Green STD SB440		Gear Ratio Speed Chain Pitch Tensioner Spring
	39			2.05 66 MPH 92 Red	1.95 69 MPH 92 Green			Gear Ratio Speed Chain Pitch Tensioner Spring
	40		2.22 61 MPH 92 Pink	2.11 64 MPH 92 Green				Gear Ratio Speed Chain Pitch Tensioner Spring

*Theoretical MPH at 6,900 RPM.

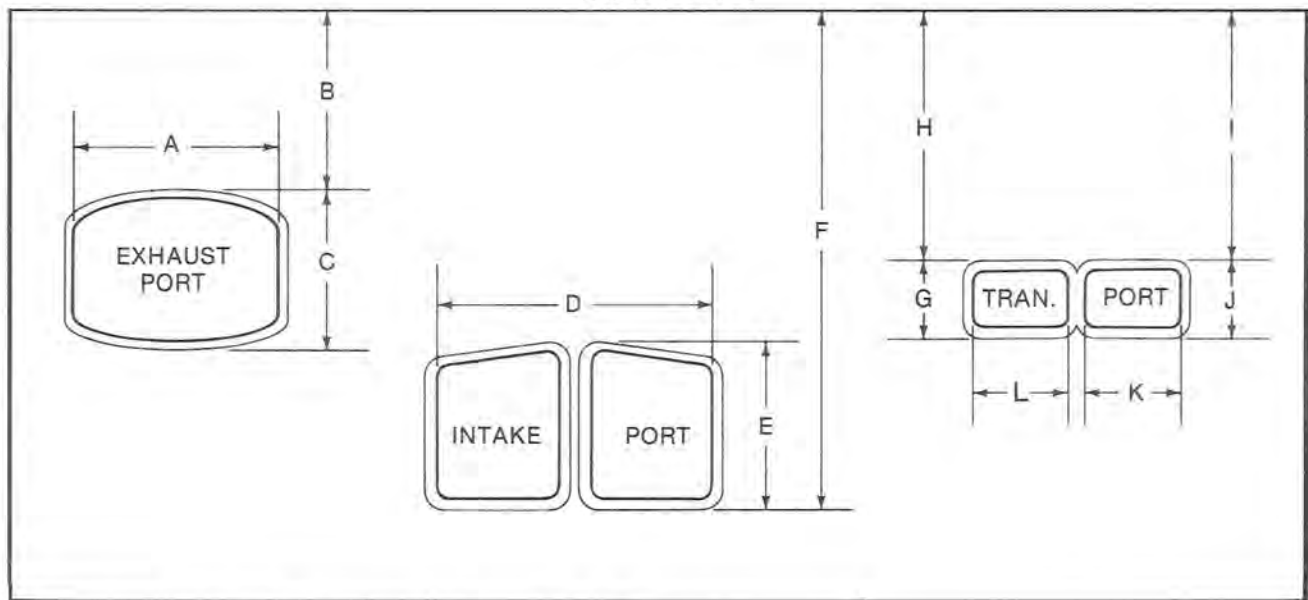
NOTE: All top speeds based on 0.98 converter ratio and engine RPM at 6,900 RPM.

Chain Tensioner Springs

COLOR	LENGTH	WIRE DIA.
Red	3.00 in. (76.20 mm)	0.049 in. (1.245 mm)
Orange	3.00 in. (76.20 mm)	0.055 in. (1.397 mm)
Pink	3.38 in. (85.85 mm)	0.049 in. (1.245 mm)
Yellow	3.38 in. (85.85 mm)	0.049 in. (1.245 mm)
Green	3.75 in. (95.25 mm)	0.049 in. (1.245 mm)
Blue	3.75 in. (95.25 mm)	0.055 in. (1.397 mm)

PORT DIMENSIONS

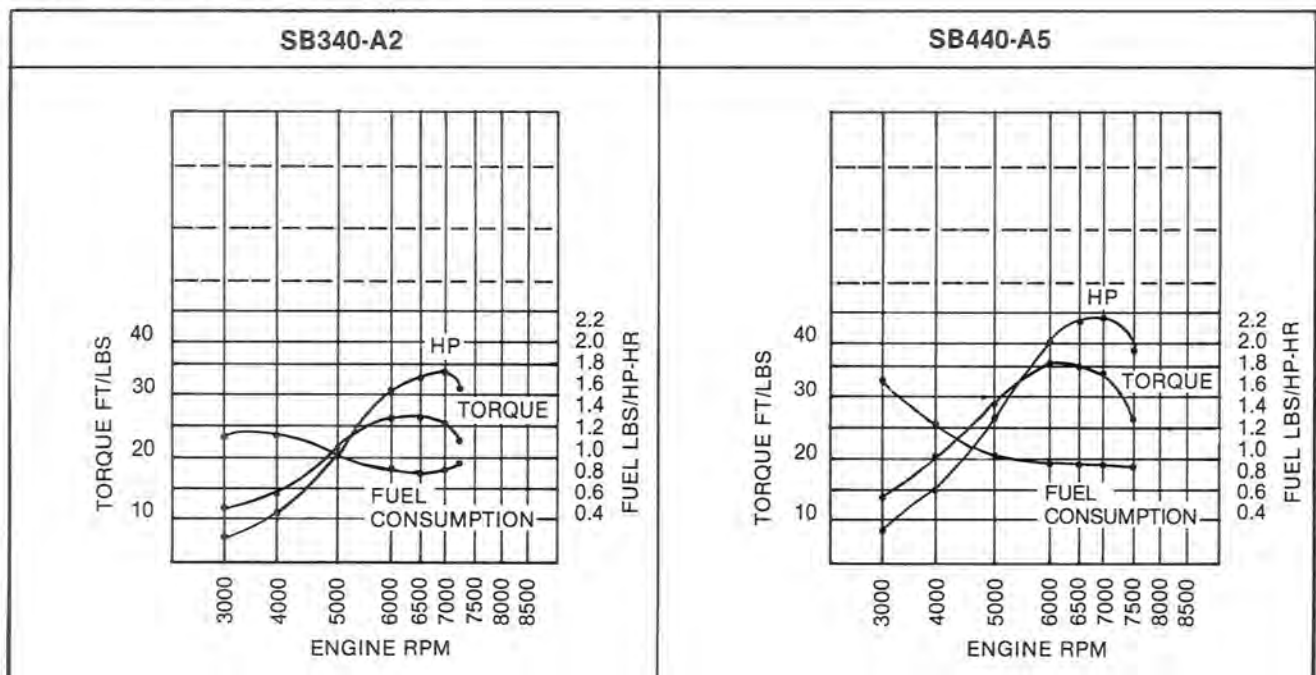
CYLINDER TOP



SB340-A2	SB440-A5
A = 1.378 in. (35.0 mm)	A = 1.575 in. (40.0 mm)
B = 1.378 in. (35.0 mm)	B = 1.358 in. (34.5 mm)
C = 1.083 in. (27.5 mm)	C = 1.102 in. (28.0 mm)
D = 1.732 in. (44.0 mm)	D = 1.890 in. (48.0 mm)
E = 1.161 in. (29.5 mm)	E = 1.185 in. (30.1 mm)
F = 3.740 in. (95.0 mm)	F = 3.764 in. (95.6 mm)
G = 0.555 in. (14.1 mm)	G = 0.555 in. (14.1 mm)
H = 1.906 in. (48.4 mm)	H = 1.906 in. (48.4 mm)
I = 1.906 in. (48.4 mm)	I = 1.906 in. (48.4 mm)
J = 0.555 in. (14.1 mm)	J = 0.555 in. (14.1 mm)
K = 0.669 in. (17.0 mm)	K = 0.787 in. (20.0 mm)
L = 0.669 in. (17.0 mm)	L = 0.787 in. (20.0 mm)

NOTE: Port width does not include the chamfer. Port height and height location includes the chamfer.
Port chamfer = 0.039 in. (1 mm)

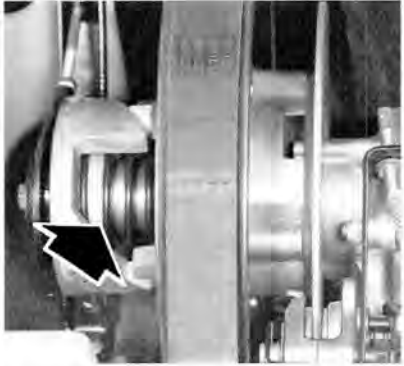
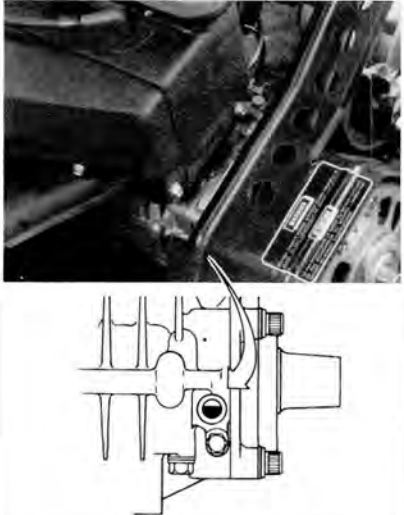
ENGINE PERFORMANCE CURVES



MAINTENANCE CHART

Frequency Operation	Beginning of Each Season	First 80-160 Kilometers or 5-10 Hours Use	Every 480 Kilometers or 20 Hours Use	Every 960 Kilometers or 40 Hours Use	Every 1450 Kilometers or 60 Hours Use	End of Each Season
Install new spark plugs	x			x		
Check carburetor adjustment	x	x				
Check throttle and oil pump cable adjustment	x	x			x	
Check enrichener cable adjustment	x	x			x	
Replace fuel and oil filters						x
Torque cylinder head nuts	x	x				
Check fan belt tension	x	x				x
Check Ignition timing		x				
Replace drive belt (be sure converter sheaves are clean and dry)	x			x		
Check drive converter and driven converter alignment	x				x	x
Check drive converter for wear					x	
Clean and inspect drive and driven converters				x		
Torque drive converter mount bolt	x	x		x		
Check chaincase lubricant level	x		x			
Check engine gearcase oil level and gearcase breather hole	x	x	x			
Replace engine gearcase lubricant		x				x
Check drive chain tensioner guides					x	x
Check brake adjustment		x	x			
Adjust track tension and check alignment	x	x	x			
Check ski alignment	x			x		
Check fasteners for security (use torque chart as a guide)	x			x		
Inspect ski skegs for wear	x		x			
Measure wear of slide rail wear strips	x		x			
Adjust headlight	x					

LUBRICATION CHART

LUBRICATION POINT	LUBRICANT	FREQUENCY	ILLUSTRATION
CONTROL CABLES Inner cables	LPS, WD-40, Dri-Slide or similar low temperature lubricant.	Once a season and every 20 hours of operation	
DRIVEN CONVERTER Ramp sliding surfaces	Low temperature grease.	Once a season and every 20 hours of operation.	
CHAINCASE HOUSING	Kawasaki chain lubricant	Check level every 20 hours of operation and change lubricant every 60 hours of operation.	
ENGINE GEARCASE	Kawasaki engine gearcase oil or 10W40 motor oil that meets or exceeds API service SE specifications, such as Shell Fire and Ice. Level should be above center of sight glass but not higher than the top.	Change after initial 5-10 hours of operation. Check every 20 hours of operation. Drain and refill at end of each season.	

OIL INJECTION SYSTEM	Kawasaki Snowmobile Oil or a BIA certified TC-W oil.	Fill oil tank each time gas tank is filled	
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OIL INJECTION SYSTEM

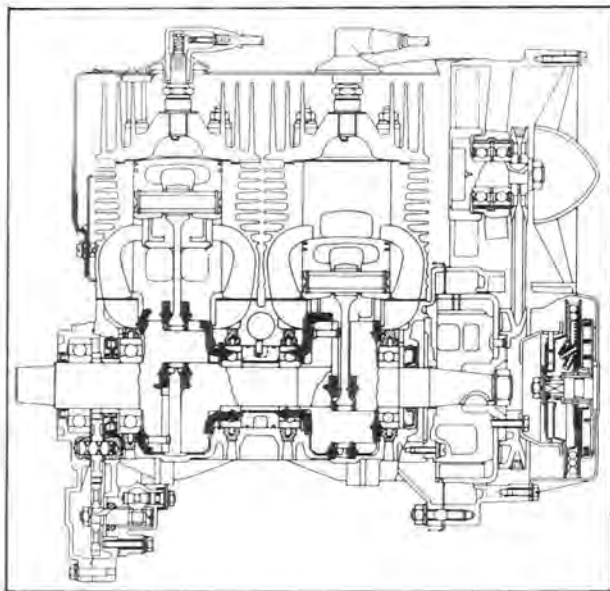
OIL INJECTION THEORY OF OPERATION

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

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

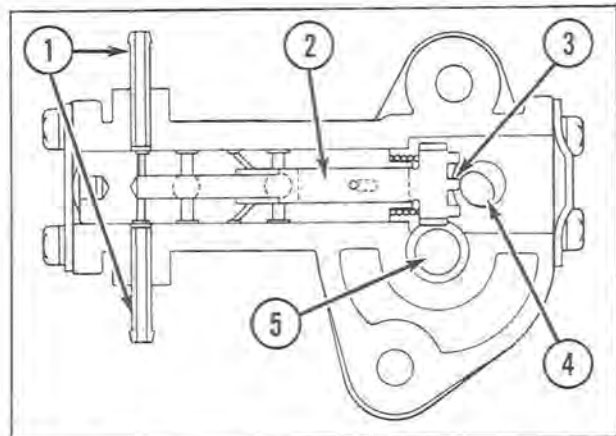
In the Kawasaki oil injection system, oil is kept in a tank separate from the engine and pumped by an oil pump to the engine. It is then mixed with the fuel/air mixture from the carburetor.

The rate at which the oil is pumped is controlled by both throttle opening and engine speed. The quantity of oil will vary with the engine's requirements. With the ideal lubrication that results, engine performance and durability are vastly improved.



The oil pump for the engine lubrication system is a plunger type. In this system, the oil pump output is controlled to regulate the ratio of oil to fuel/air mixture so that proper lubrication is achieved at all engine speeds and loads.

The oil pump output is controlled partially by the number of plunger strokes per minute. The number of plunger strokes is determined by the speed of oil pump shaft rotation. Since crankshaft rotation is transmitted directly to the oil pump shaft, the oil pump output changes in direct proportion to engine RPM.



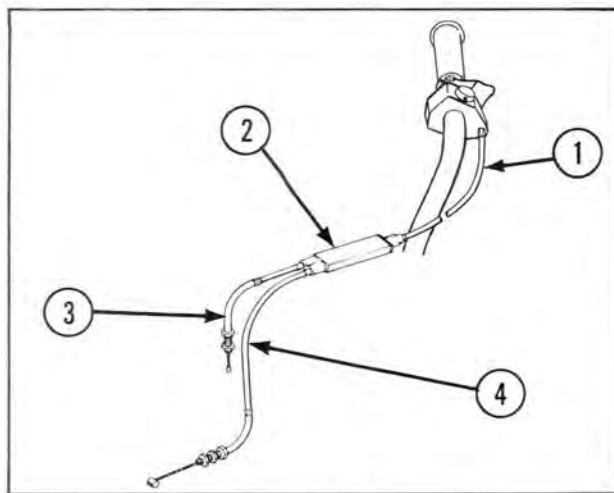
1. Outlet Ports
2. Plunger
3. Plunger Tip
4. Control Arm
5. Pump Shaft

The other factor that controls oil pump output is the plunger stroke length. This length is determined by the oil pump cam position, which is controlled by the throttle lever, through the oil pump cable.

As the cam is turned by its cable, the plunger stroke increases. When the cam is turned from the maximum flow to the minimum flow position, the plunger tip will strike the cam after less travel, thereby pumping less oil. Since there are two high points on the plunger cam face, there are two complete pumping cycles for each revolution of the plunger. A greater plunger stroke will pump more oil.

OIL PUMP CABLE REMOVAL AND INSTALLATION

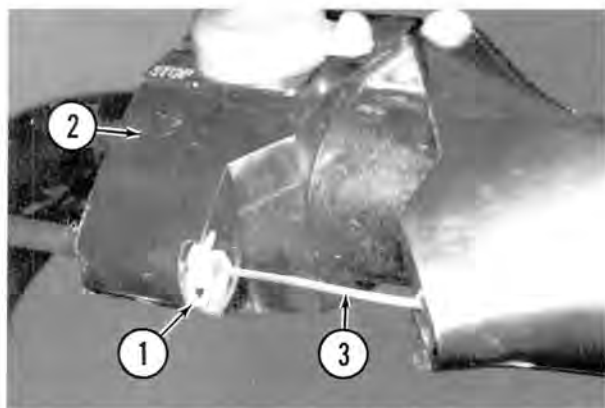
On the Drifter the throttle lever cable connects to a junction block through which it operates both the carburetor cable and oil pump cable.



1. Throttle Lever Cable
2. Junction Block
3. Carburetor Cable
4. Oil Pump Cable

To remove the oil pump cable:

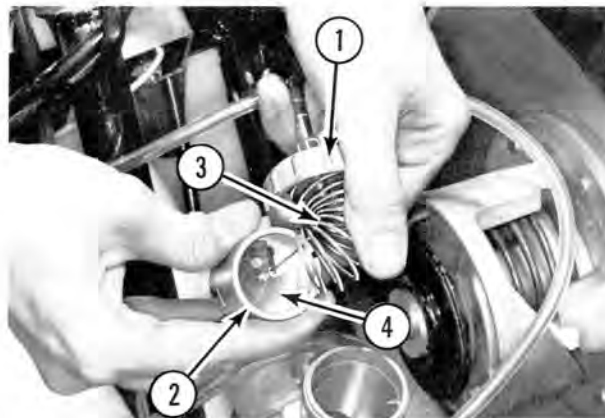
1. Remove snap ring from throttle lever cable casing at throttle case.
2. Disconnect inner throttle lever cable from throttle lever and pull cable casing out of throttle case.



1. Snap Ring
2. Throttle Case
3. Throttle Lever Cable

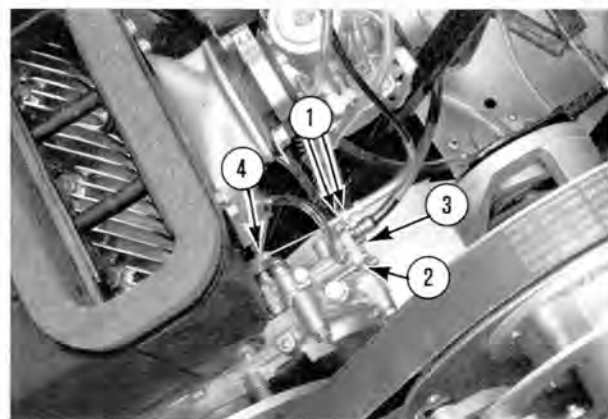
3. Loosen carburetor cable jam nut at carburetor cap and turn adjuster clockwise to create more cable free play.
4. Unscrew carburetor cap and pull throttle valve out of carburetor.
5. Pull spring towards cap and disconnect carburetor cable end from throttle valve. Push clean shop towel into carburetor and wrap throttle valve in clean towel.

WARNING Any dirt or other contaminants in the carburetor may cause faulty carburetor operation and possibly an accident.



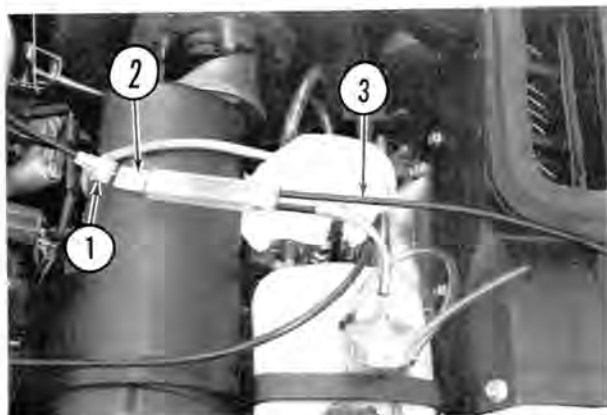
1. Carburetor Cap
2. Throttle Valve
3. Spring
4. Spring Seat

6. Loosen oil pump cable jam nuts. Slip cable out of oil pump inlet plate and disconnect cable end from oil pump control lever.



1. Jam Nuts
2. Oil Pump
3. Inlet Plate
4. Control Lever

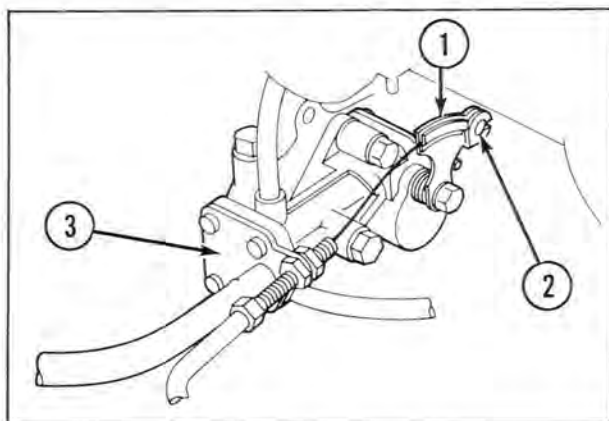
7. Pry cap out of junction block housing and pull throttle lever cable to remove junction block from housing.
8. Disconnect oil pump cable from junction block. Pry end of housing open slightly and pull cable casing out of housing.



1. Cap
2. Junction Block
3. Oil Pump Cable

To install the oil pump cable:

1. Push oil pump cable casing into junction block housing until it snaps into position. Connect cable end to junction block.
2. Slide junction block into housing and push cap into housing until it snaps into position.
3. Connect oil pump cable end to oil pump control lever. Slip cable into inlet plate and loosely install jam nut.



1. Control Lever
2. Cable End
3. Inlet Plate

4. Compress throttle valve spring into carburetor cap. Fit carburetor cable end in throttle valve. Install spring seat and release spring.
5. Slide throttle valve into carburetor. Install cap and tighten securely.
6. Push throttle lever cable through throttle case and hook it into throttle lever. Push snap ring onto end of cable casing.

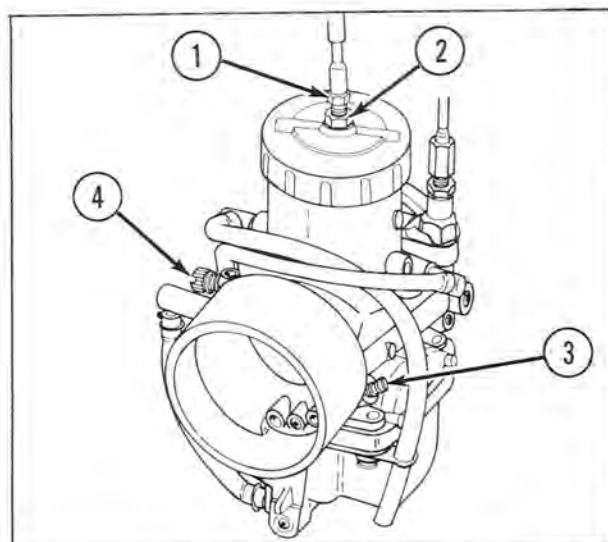
7. Continue with Oil Pump Cable Adjustment

OIL PUMP CABLE ADJUSTMENT

Synchronization of the oil pump and carburetor is extremely important to assure adequate engine lubrication and peak performance. Remove drive belt and air silencer assembly, then perform following procedure:

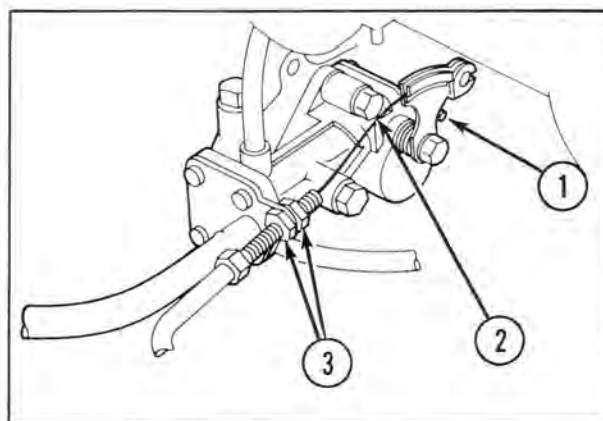
1. Loosen idle stop screw so that the throttle valve bottoms out in carburetor bore.

NOTE: Check to be sure throttle valve has bottomed-out. If not, loosen jam nut and turn throttle cable adjuster to allow valve to bottom out.



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

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



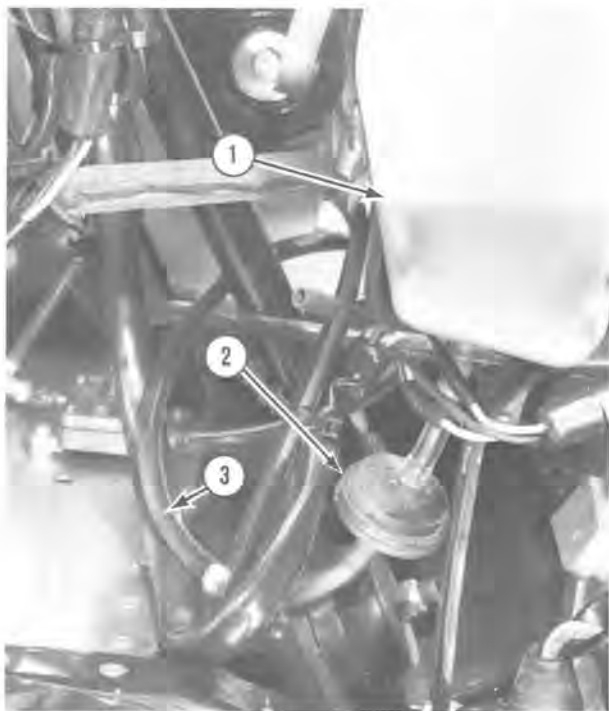
1. Lever Stop Pin
2. Slack Removed
3. Cable Locknuts

3. Adjust cable on carburetor so that all slack is removed. The throttle valve should begin to rise as soon as the throttle lever on handlebar is advanced.
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 valve in the carburetor move simultaneously as the throttle control lever is activated.
5. Turn idle stop screw in until spring is coil bound. Then, back off screw six complete turns (initial adjustment). Air screw is properly adjusted when opened 2.0 turns off its seat.
6. Reinstall air silencer assembly.
7. Adjust idle speed and check throttle control cable adjustment as described in Carburetor Adjustments.

BLEEDING OIL PUMP SUPPLY TUBE

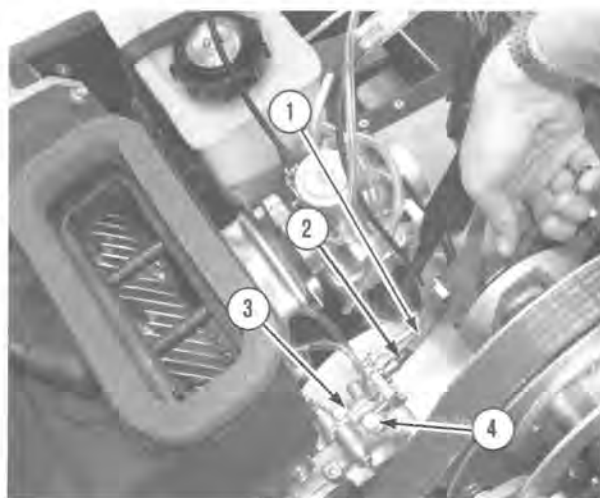
CAUTION Failure to bleed out air trapped in the oil line can cause severe engine damage.

The Drifter is equipped with an in-line oil filter to prevent foreign particles from entering the oil injection system. After filling oil tank, bleed air from oil pump supply tube as follows:



1. Oil Tank
2. Oil Supply Line Filter
3. Oil Supply Tube

1. Fill oil tank with Kawasaki Snowmobile Oil.
2. Remove oil pump bleed screw. This allows oil to fill the filter and flow through oil supply tube to oil pump.
3. Replace oil pump bleed screw when supply tube is filled.
4. Visually check oil filter and oil supply tube to be sure that all air has been removed.
5. Air trapped inside the oil pump assembly can be removed by squeezing (pulsing) oil pump supply tube with pliers. This process causes air to exit the oil pump nipple and enter the supply tube.



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

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

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

PURGING AIR FROM OIL PUMP OUTLET TUBES

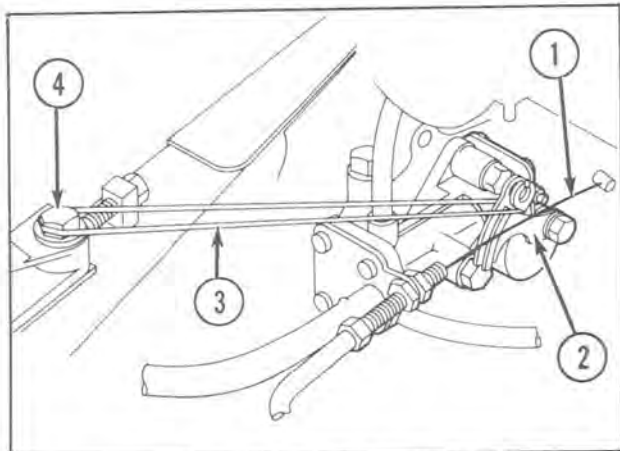
Remove drive belt and perform the following procedure.

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

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.

WARNING

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

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.
3. Start engine and adjust idle stop screw to obtain engine idle speed of 2,500 RPM. Stop engine after it has idled for one minute. This is ample time to purge all air from the oil pump outlet tubes.

CAUTION

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

4. Release rubber band and reconnect oil pump inner control cable to lever. Be sure to check operation of oil pump control lever and cable by activating throttle control lever on the handlebar.

5. Reinstall drive belt.

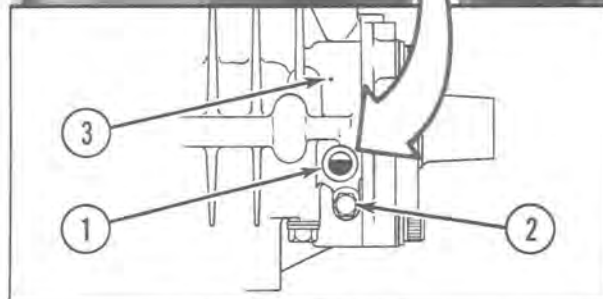
ENGINE GEARCASE OIL

Components inside gearcase drive the oil injection pump.

Lubricant level is correct when oil appears above center but not higher than the top of the sight gauge. The sight gauge is located on the engine front, below left-hand cylinder assembly.

Fill or add lubricant to the gearcase as follows:

1. 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 0.84 oz (25 cc). Reinstall fill plug and torque to 96 in. lb (1.1 kg-m).

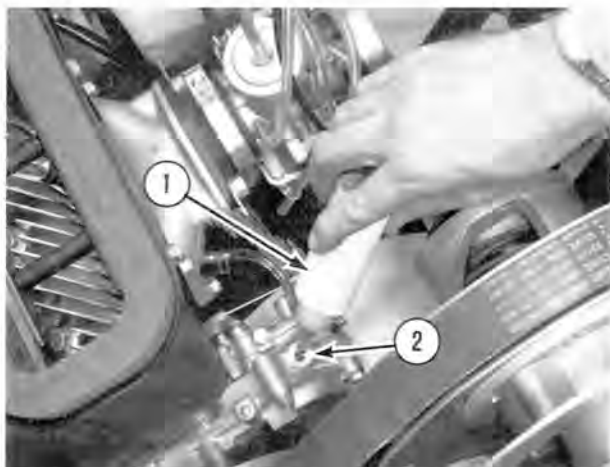


1. Oil Level Sight Gauge
2. Engine Gearcase Drain Plug
3. Gearcase Breather Hole

Engine gearcase oil should be changed after the initial 80-160 kilometers of operation, every 480 kilometers, and at the beginning of each season, to remove any impurities or foreign matter present in the gearcase cavity. To completely drain the gearcase:

1. Remove gearcase fill plug and drain plug. Raise rear of snowmobile to drain oil completely.
2. Reinstall drain plug and torque to 50 in. lb (0.6 kg-m).

3. Pour in specified type and amount of oil. Reinstall fill plug and torque to 96 in. lb (1.1 kg-m).



1. Container of Oil
2. Gearcase Fill Hole

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

CAUTION Failure to remove obstructions from gearcase breather hole may cause excessive oil consumption resulting in extensive engine damage.

OIL PUMP OUTPUT TEST

1. For this test it is necessary to run engine using premixed fuel and oil at a 40 to 1 ratio. To obtain the 40 to 1 ratio, thoroughly mix 1 pint (0.47 liter) of Kawasaki Snowmobile Oil with 5 gallons (18.9 liters) of gasoline.
2. Disconnect oil pump outlet tubes from oil pump fittings.
3. Install one end of 14 in. (610 mm) length of test tubing on oil pump fitting and insert other end into calibrated container capable of measuring approximately 5 cc.



NOTE: Use separate container and length of test tubing for each oil pump outlet fitting.

4. Secure oil pump lever at WIDE OPEN position, then start engine and adjust idle speed to 3,000 RPM. Run engine long enough to purge test tubes (oil is discharged from outlet of tubes).
5. After purging the test tubes and securing the oil pump lever WIDE OPEN, start engine and operate at 3,000 RPM for ONE MINUTE then stop engine and measure output from pump.
6. Oil pump output should be 1.8 to 2.2 cc from each tube.
7. Replace oil pump not meeting these specifications. See Oil Pump Removal and Installation.
8. Connect outlet tubes to oil pump and purge air from outlet tubes. See Purging Air From Oil Pump Outlet Tubes.

OIL PUMP NOZZLE AND CHECK VALVE TEST

The check valve is needed to prevent oil from bleeding back to the pump when the engine stops. The check valve retains oil in the hose between the oil pump and cylinder so it is instantly available when the engine restarts. A small capacity, hand held pressure tester is recommended for testing the check valves. Only 3 to 6 PSI is required to move the check valve off its seat.

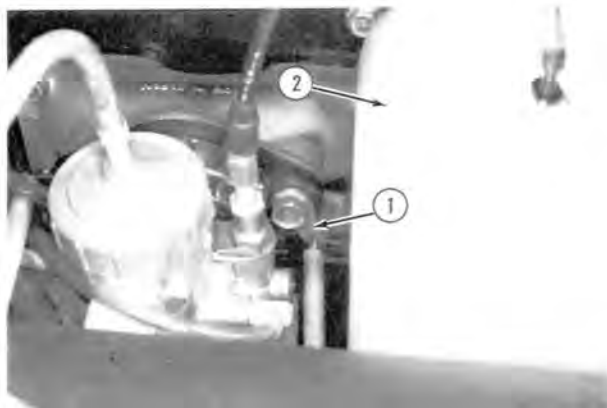
CAUTION Do not use high pressure compressed air on the check valve. High pressure air will damage the valve which will result in engine failure.

1. Remove intake silencer.
2. Disconnect oil pump outlet tubes from oil pump.
3. Remove carburetor from holder.
4. Connect pressure tester to each outlet tube. Check that oil begins to flow through each nozzle when 3 to 6 psi is applied.



5. If pressure is out of specification or oil does not flow, replace outlet tube or nozzle as required.
6. Reinstall carburetor in holder and tighten clamp securely.
7. Install intake silencer. Check that silencer spring washer on right side of carburetor holder is pointing down.

CAUTION If silencer spring washer points toward oil tank, vibration may cause it to rub against tank. Eventually, this may cause a hole in tank and subsequent loss of oil.



1. Silencer Spring Washer
2. Oil Tank

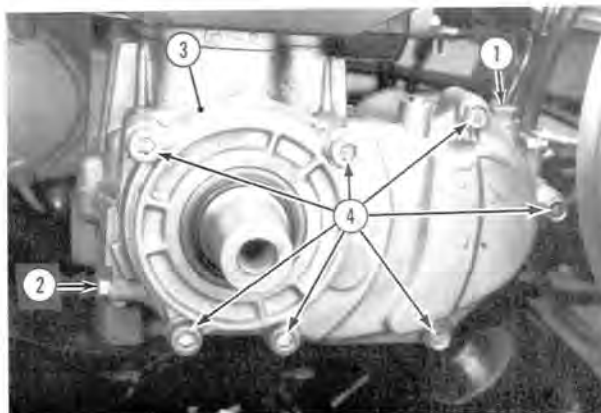
8. Connect outlet tubes to oil pump and purge air from outlet tubes. See Purging Air From Oil Pump Outlet Tubes.

OIL PUMP REMOVAL AND INSTALLATION

NOTE: To remove oil pump, you must remove engine gearcase cover and oil pump drive gear.

To remove oil pump:

1. Remove drive belt.
2. Remove drive converter. See Drive Converter Disassembly and Assembly.
3. Remove gearcase fill plug and drain plug. Raise rear of snowmobile to drain oil completely.
4. Remove bolts securing gearcase cover to crankcase and remove cover.



1. Fill Plug
2. Drain Plug
3. Gearcase Cover
4. Bolts

5. Remove idler gear.

NOTE: One spacer is installed in front of idler gear and one spacer is installed behind gear. Set spacers aside with gear. The front spacer may come off with gearcase cover.



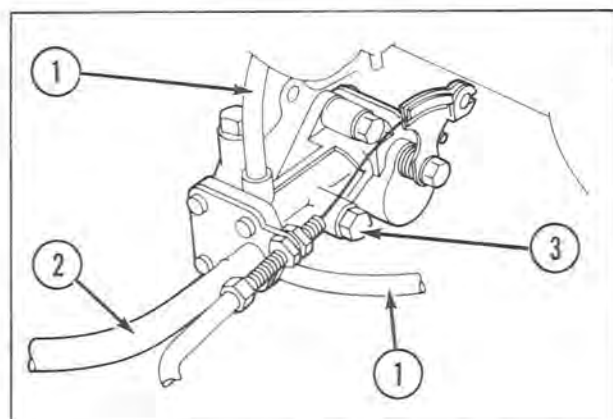
1. Spacer
2. Idler Gear
3. Spacer

6. Install fan puller holder tool into two holes in oil pump gear. Remove nut securing gear to pump shaft and remove gear.



1. Fan Puller Holder
2. Nut

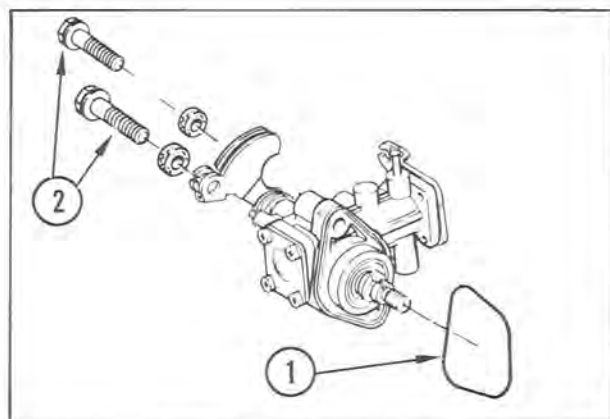
7. Disconnect oil pump outlet tubes from oil pump fittings. Disconnect oil supply tube from oil pump inlet plate and plug or crimp tube. Remove two bolts securing oil pump to crankcase and remove pump.



1. Outlet Tube
2. Supply Tube
3. Mounting Bolt

To install oil pump:

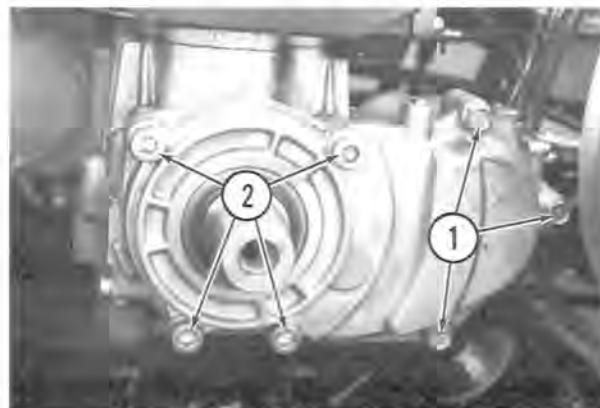
1. Install new O-ring into oil pump flange and apply thin coat of silicone sealer. Install oil pump into crankcase. Install two oil pump mounting bolts and torque them to 60 in. lb (0.7 kg-m).



1. O-ring
2. Mounting Bolts

2. Install oil pump gear on pump shaft. Install nut and torque to 12 ft lb (1.7 kg-m).
3. Position one spacer, idler gear and second spacer on idler shaft.
4. Install new O-ring into gearcase cover and coat gasket surface lightly with silicone sealer. The outer seal in gearcase cover is double-lip type. Fill area between two lips with grease before installing cover.

5. Install gearcase cover. Torque 6 mm gearcase cover mounting bolts to 60 in. lb (0.7 kg-m) and 8 mm bolts to 12 ft lb (1.7 kg-m).



1. 6 mm Bolts
2. 8 mm Bolts

6. Install gearcase drain plug and torque to 50 in. lb (0.6 kg-m).
7. Fill gearcase to just above center of sight glass but not higher than top of glass with 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 0.84 oz (25 cc). Install fill plug and torque to 96 in. lb (1.1 kg-m).

NOTE: Check the gearcase vent hole directly above the sight glass to be sure it is free from obstruction to ensure proper seal operation. If this hole is plugged, it could permit the gearcase oil to be sucked into the crankcase through the seal between the gearcase and crankcase. Loss of this oil would result in gear and bearing failure.

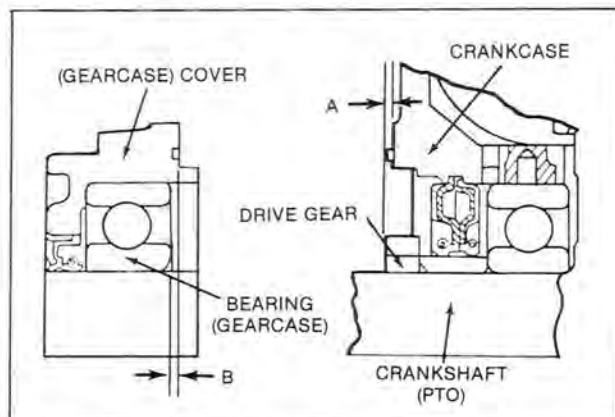
8. Reinstall drive converter. See Drive Converter Disassembly and Assembly.
9. Connect oil pump outlet tubes and supply tube to oil pump. Bleed oil pump supply tube and purge air from outlet tubes. See Bleeding Oil pump Supply Tube and Purging Air From Oil Pump Outlet Tubes.

10. Reinstall drive belt.

ENGINE GEARCASE DISASSEMBLY AND ASSEMBLY

NOTE: This section covers special procedures required only when gearcase cover bearing or crankshaft is replaced. For general gearcase disassembly and assembly refer to Oil Pump Removal and Installation.

1. To remove bearing from gearcase cover, heat cover in oven to 212°F (100°C).
2. Remove old bearing and press in new bearing.
3. When gearcase cover has cooled, measure from gasket surface of cover to face of bearing inner race. Also measure from gasket surface of crankcase to face of crankshaft drive gear. Subtract dimension B from dimension A for clearance.



4. Determine appropriate shims using following tables and install them on end of crankshaft between crankshaft drive gear and gearcase cover bearing.

NOTE: With correct shims installed there should be an axial clearance of 0.004 to 0.016 in. (0.15 to 0.39 mm).

Clearance = Dimension B-A	Shim No. Required
0.0052-0.0156 in. (0.135-0.39 mm)	None
0.0157-0.0232 in. (0.4-0.59 mm)	(1)
0.0236-0.0312 in. (0.6-0.79 mm)	(1) + (1)
0.0315-0.0390 in. (0.8-0.99 mm)	(2)
0.0394-0.0469 in. (1.0-1.19 mm)	(1) + (2)
0.0472-0.0537 in. (1.2-1.39 mm)	(3)
0.0551-0.0626 in. (1.4-1.59 mm)	(2) + (2)
0.0629-0.0705 in. (1.6-1.79 mm)	(4)
0.0709-0.0783 in. (1.8-1.99 mm)	(2) + (3)
0.0787-0.0862 in. (2.0-2.19 mm)	(2) + (2) + (2)
0.0866-0.0931 in. (2.2-2.39 mm)	(3) + (3)
0.0945-0.1020 in. (2.4-2.59 mm)	(2) + (2) + (3)
0.1024-0.1076 in. (2.6-2.735 mm)	(3) + (4)

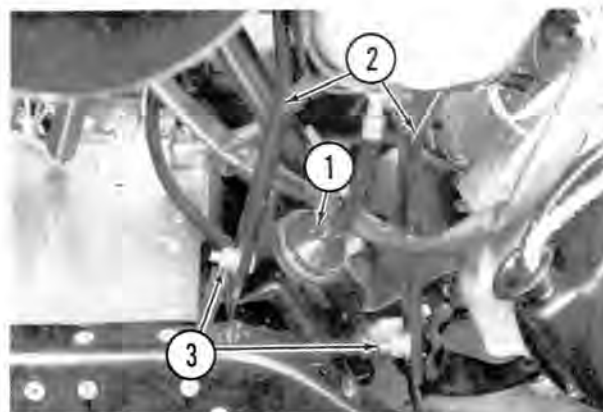
SHIM NUMBER DESCRIPTION

No.	Thickness	Part No.
(1)	0.00787 in. (0.2 ± 0.015 mm)	92025-3007
(2)	0.02362 in. (0.6 ± 0.030 mm)	92025-3008
(3)	0.03937 in. (1.0 ± 0.040 mm)	92025-3009
(4)	0.05512 in. (1.4 ± 0.050 mm)	92025-3010

OIL TANK REMOVAL AND INSTALLATION

To remove oil tank and bracket assembly:

1. Remove intake silencer.
2. Disconnect upper oil supply tube from oil filter and plug or crimp tube.
3. Release tank hold down band and lift tank off bracket assembly.
4. Remove bolts from brackets and remove bracket assembly.

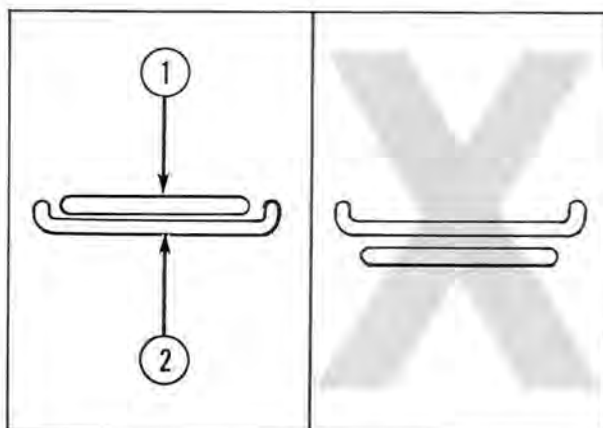


1. Oil Filter
2. Bracket Assembly
3. Bolts

To install oil tank and bracket assembly:

1. Position oil tank bracket assembly so the inside of each U-shaped bracket contacts frame bracket as shown. Install mounting bolts and torque to 100 in. lb (1.1 kg-m).

CAUTION Do not position outside surface of U-shaped bracket against frame bracket. The bracket assembly may shift and possibly disconnect oil supply tube.



1. Frame Bracket
2. U-shaped Bracket

2. Position oil tank on bracket assembly and secure with hold down band.
3. Reconnect oil supply tube to oil filter.
4. Install intake silencer.
5. Bleed oil pump supply tube and purge air from oil pump outlet tubes. See Bleeding Oil Pump Supply Tube and Purging Air From Oil Pump Outlet Tubes.

OIL FILTER REMOVAL AND INSTALLATION

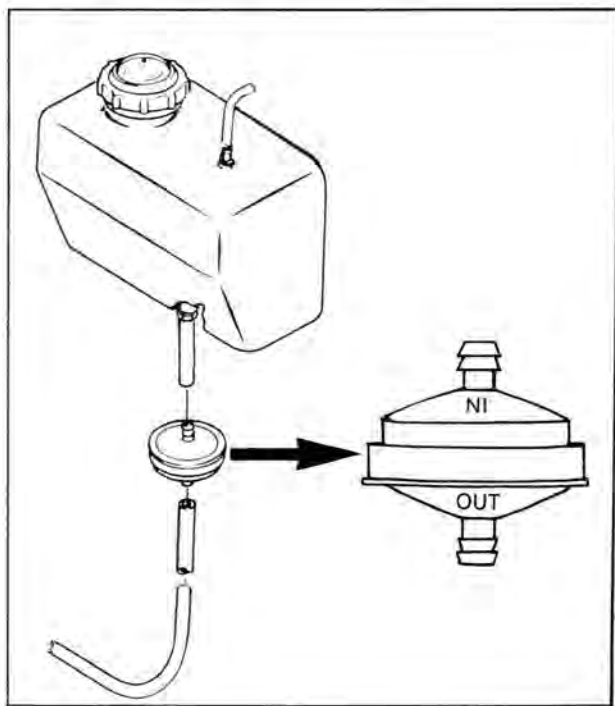
To remove the oil filter:

1. Disconnect oil supply tubes from oil filter. Plug or crimp tube ends to prevent oil drainage.
2. Replace filter with new one at end of each season, if filter shows any signs of leakage or if foreign particles are trapped in screen.

To install the oil filter:

1. Attach oil supply tubes to correct fittings on filter. Supply tube from oil tank must attach to filter fitting marked IN.

CAUTION Failure to reinstall a used filter in the proper direction will cause oil pump failure. Any foreign particles trapped in the filter screen will be picked up by the oil flowing through the filter in the opposite direction and be carried into the oil pump.

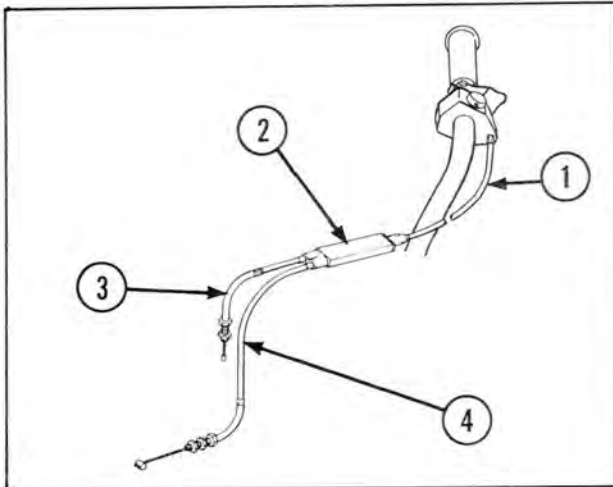


2. Bleed oil pump supply tube. See Bleeding Oil Pump Supply Tube.

FUEL SYSTEM

THROTTLE CABLE REMOVAL AND INSTALLATION

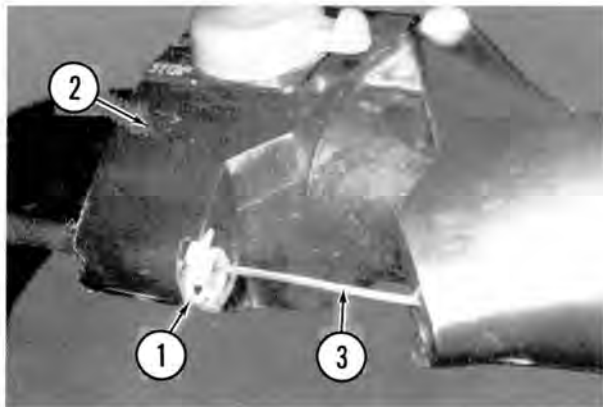
On the Drifter there are actually two throttle cables. The throttle lever cable connects to a junction block through which it operates the carburetor cable and oil pump cable.



1. Throttle Lever Cable
2. Junction Block
3. Carburetor Cable
4. Oil Pump Cable

To remove the throttle lever cable and carburetor cable:

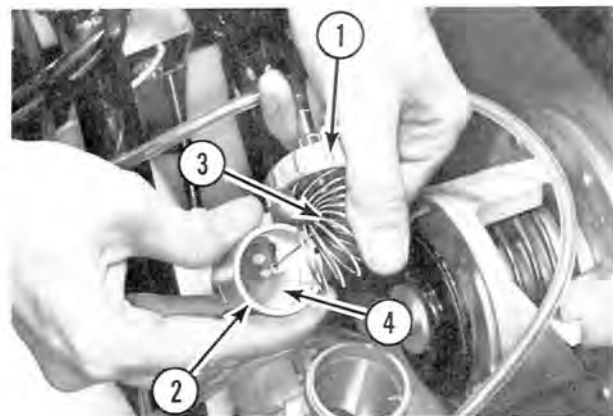
1. Remove snap ring from throttle lever cable casing at throttle case.
2. Disconnect inner throttle lever cable from throttle lever and pull cable casing out of throttle case.



1. Snap Ring
2. Throttle Case
3. Throttle Lever Cable

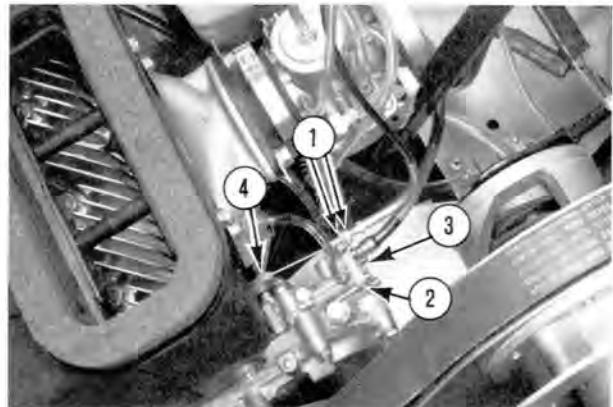
3. Loosen carburetor cable jam nut at carburetor cap and turn adjuster clockwise to create more cable free play.
4. Unscrew carburetor cap and pull throttle valve out of carburetor.
5. Pull spring towards cap and disconnect carburetor cable end from throttle valve. Push clean shop towel into carburetor and wrap throttle valve in clean towel.

WARNING Any dirt or other contaminants in the carburetor may cause faulty carburetor operation and possibly an accident.



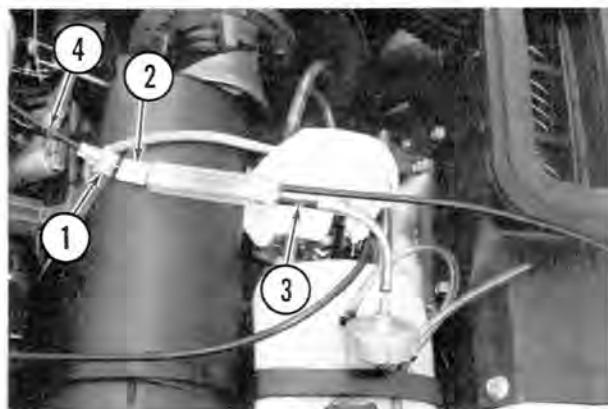
1. Carburetor Cap
2. Throttle Valve
3. Spring
4. Spring Seat

6. Loosen oil pump cable jam nuts. Slip cable out of oil pump inlet plate and disconnect cable end from oil pump control lever.



1. Jam Nuts
2. Oil Pump
3. Inlet Plate
4. Control Lever

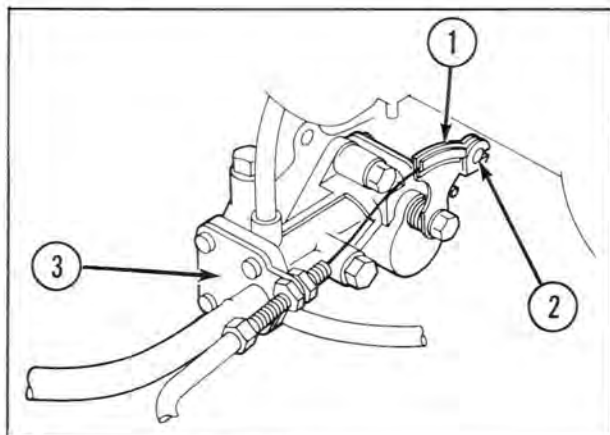
7. Pry cap out of junction block housing and pull throttle lever cable to remove junction block from housing.
8. Disconnect throttle lever cable end and carburetor cable end from junction block. Pry ends of junction block housing and cap open slightly and pull cable casings out of housing and cap.



1. Cap
2. Junction Block
3. Carburetor Cable
4. Throttle Lever Cable

To install the throttle lever cable and carburetor cable:

1. Push carburetor cable casing into junction block housing and throttle lever cable casing into housing cap until they snap into position. Connect cable ends to junction block.
2. Slide junction block into housing and push cap into housing until it snaps into position.
3. Connect oil pump cable end to oil pump control lever. Slip cable into inlet plate and loosely install jam nut.



1. Control Lever
2. Cable End
3. Inlet Plate

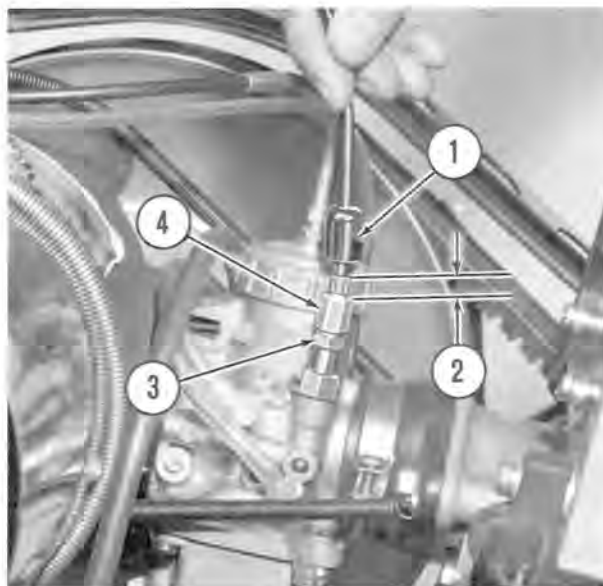
4. Compress throttle valve spring in carburetor cap. Fit carburetor cable end in throttle valve. Install spring seat and release spring.
5. Slide throttle valve into carburetor. Install cap and tighten securely.
6. Push throttle lever cable through throttle case and hook it into throttle lever. Push snap ring onto end of cable casing.
7. Synchronization of the oil pump and carburetor is extremely important to assure adequate engine lubrication and peak performance. Remove drive belt and air silencer assembly, then see Oil Pump Cable Adjustment for synchronization procedure.

CARBURETOR ADJUSTMENTS

Enrichener Cable

With the enrichener lever down, and plastic boot slid up the casing, the enrichener cable should have 1/16 inch (1.5 mm) free movement when raised as shown.

NOTE: Engine flooding may occur if the enrichener cable free movement is less than 1/16 inch (1.5 mm).



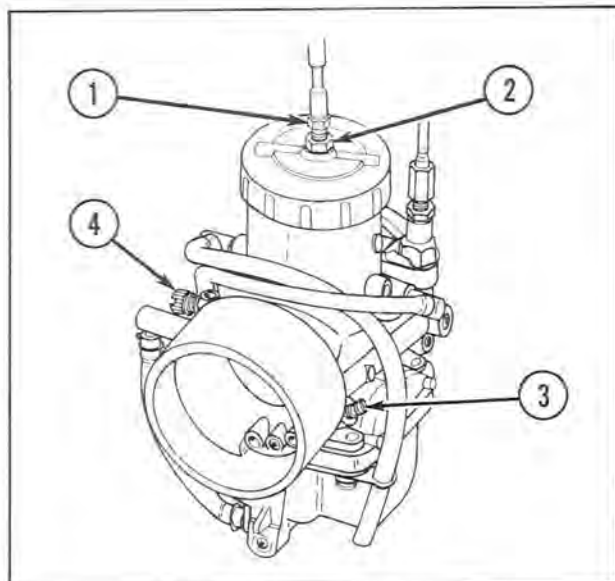
1. Plastic Boot
2. 1/16 in. (1.5 mm)
3. Locknut
4. Adjusting Screw

If adjustment is required, loosen jam nut and turn adjusting screw to obtain correct movement. Torque jam nut to 20 in. lb (0.2 kg-m).

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

Air Screw

The carburetor air screw is properly adjusted when opened 2.0 turns off its seat. Refer to the specifications page.



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

Idle Screw

The idle speed screw initial adjustment is 6 turns open from coil bound, (screw turned in tight).

WARNING If the engine idles too fast, the drive converter may not disengage when the throttle lever is released, or the converter may engage automatically. Either condition could result in personal injury.

Make sure the fuel pump pulse line and all fuel lines are secure and free of kinks and bends.

Start the engine and run it at low speed for 3 to 5 minutes for proper warm-up, and adjust the idle speed using a portable tachometer.

Throttle Control Cable

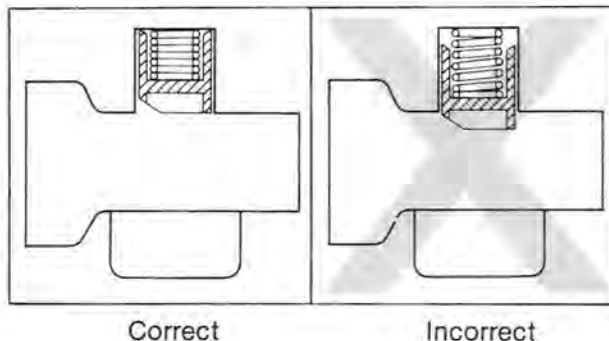
CAUTION Excessive free movement of throttle lever may cause inner throttle cable to disconnect from lever. Too little or no free movement may lead to incorrect idle adjustment.

NOTE: Check synchronization of the oil pump and carburetor cables before adjusting the throttle control cable to ensure adequate engine lubrication.

With the throttle lever at the idle position there should be 1/16 in. (1.6 mm) free play between the lever and its housing.

Remove air silencer and check that carburetor slide is raised completely above carburetor venturi at full throttle.

Adjust throttle cable by loosening adjusting screw jam nut. Turn adjusting screw to obtain proper adjustment and torque jam nut 20 in. lb (0.2 kg-m).



CARBURETOR DISASSEMBLY AND ASSEMBLY

The SB340-A2 and SB440-A5 carburetors are nearly identical to the VM32 Econo Jet carburetors used on the SA340-A4 and SB440-A4 models. Refer to pages 3-41 through 3-51 in the SA340-A4, SB440-A4, SC340-A1 Shop Manual for removal, disassembly, assembly and installation procedures.

Cleaning

Thoroughly clean all parts in nonflammable or high flash point solvent.

WARNING Never use gasoline or low flash point solvents for cleaning the carburetor. A fire or explosion could result.

Inspect all drilled holes, openings and fuel passages in the body. Blow compressed air through the passages. Remove any sediment from the fuel chamber. Use of automotive carburetor cleaners may be necessary to remove gum and varnish build-up from the jets and fuel chamber.

CAUTION Do not use automotive carburetor cleaners for cleaning the carburetor body. The plastic fittings may be damaged making it necessary to replace the carburetor.

Do not use drills or wires to clean the jets or damage to the jets will result.

Inspect float valve needle tip for wear or damage in the sealing (tapered) area. Replace float valve assembly if needle shows signs of wear or damage, such as groove or scratches.

Parts Identification

Check carburetor parts for proper identification markings prior to reassembly. If the correct components are not installed the carburetor cannot be calibrated properly.

FUEL FILTER CLEAN/REPLACE

The Drifter fuel system uses two fuel filters. One fuel filter screen is incorporated in the fuel pick-up tube weight inside the fuel tank and the other in-line filter is located in the fuel tube between the fuel tank and fuel pump.

WARNING

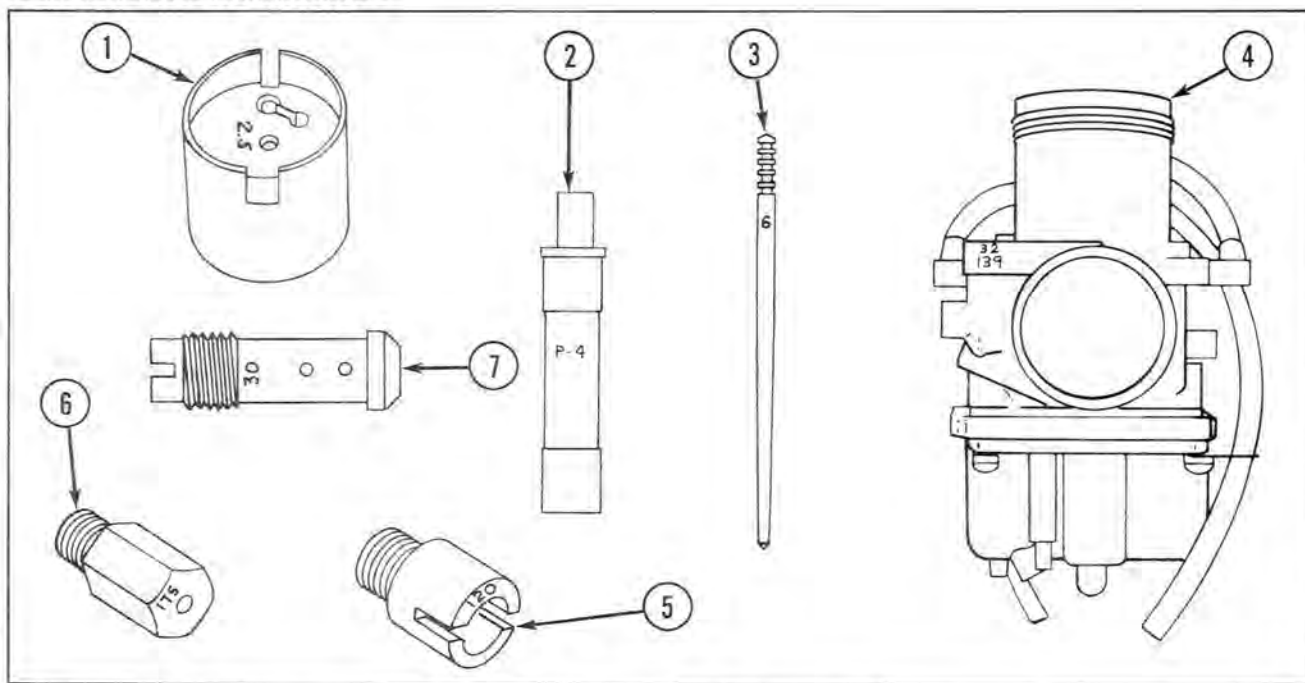
Gasoline fumes are heavier than air and can become explosive if exposed to a pilot light from a furnace, hot water heater, clothes dryer, etc. Perform maintenance only in an area that is well ventilated and free from pilot lights and sparks.

In-Line Fuel Filter

Replace the in-line fuel filter at the end of each season.

1. Crimp fuel tube between fuel tank and fuel filter.
2. Pull fuel lines off filter and install new filter.

IDENTIFICATION MARKINGS



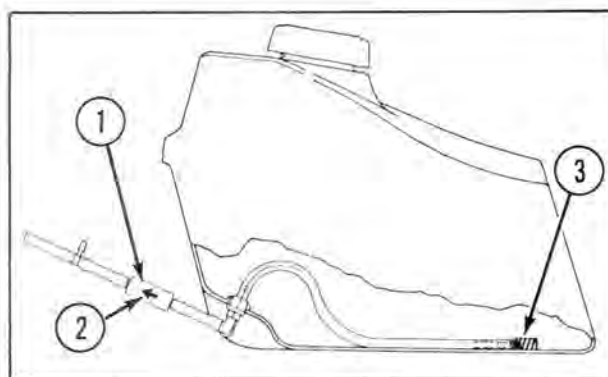
SB340-A2

1. Throttle Valve 2.0
2. Needle Jet 0-6
3. Needle 6FL14-3
4. Carburetor Body 32-187
5. Econo Jet No. 120
6. Main Jet No. 180
7. Pilot Jet No. 30

SB440-A5

1. Throttle valve 2.0
2. Needle Jet 0-6
3. Needle 6FL14-3
4. Carburetor Body 32-186
5. Econo Jet No. 110
6. Main Jet No. 250
7. Pilot Jet No. 30

Be sure arrow on new filter points toward fuel pump.



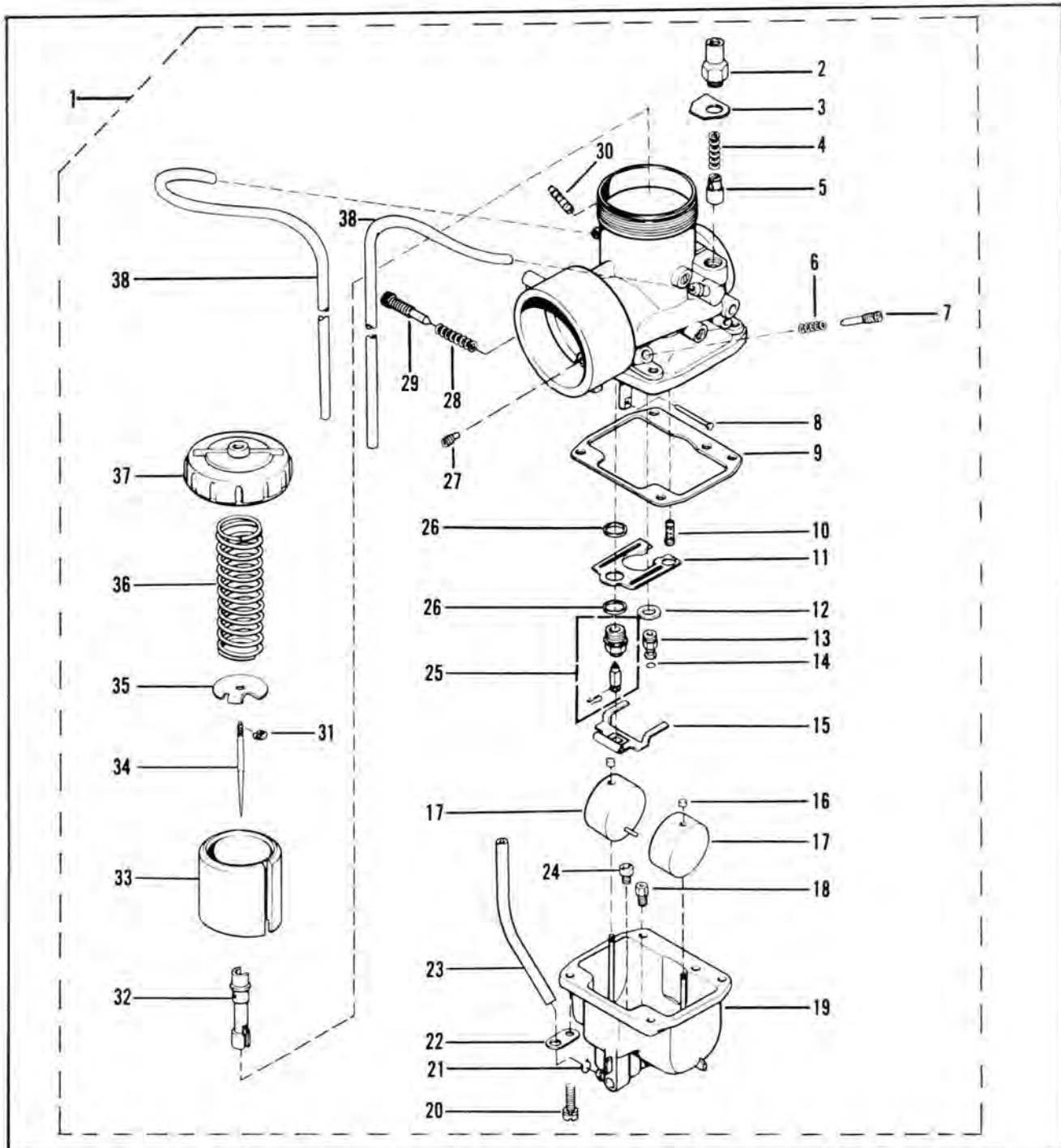
1. In-line Filter
2. Arrow
3. Filter Screen

3. Check fuel filter and tubes for leaks and replace as required.

Fuel Filter Screen

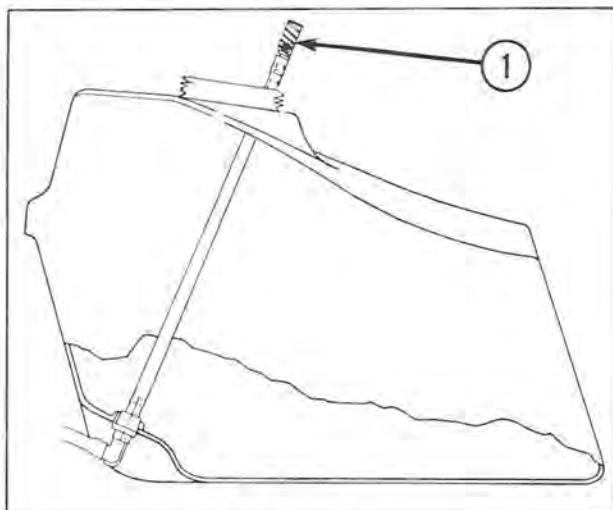
If excessive fuel tank contaminants block the flow of fuel through the screen, it must be cleaned.

1. Remove fuel tank cap.



- | | | |
|----------------------------|--------------------------|----------------------------|
| 1. Carburetor Assembly | 14. Holder O-Ring | 27. Air Jet |
| 2. Enricher Plunger Cap | 15. Float Arm | 28. Throttle Screw Spring |
| 3. Cap Washer | 16. Float Retainer | 29. Throttle Stop Screw |
| 4. Enricher Plunger Spring | 17. Float | 30. Primer Tube Fitting |
| 5. Enricher Plunger | 18. Main Jet | 31. Carburetor Needle Clip |
| 6. Air Screw Spring | 19. Float Chamber | 32. Needle Jet |
| 7. Pilot Air Screw | 20. Special Screw | 33. Throttle Valve |
| 8. Float Pin | 21. Econo Jet Tube Clamp | 34. Needle |
| 9. Float Chamber Gasket | 22. Tube Retainer | 35. Spring Seat |
| 10. Pilot Jet | 23. Tube | 36. Throttle Valve Spring |
| 11. Baffle | 24. Econo Jet | 37. Mixing Chamber Cap |
| 12. Holder Washer | 25. Float Valve Assembly | 38. Tube |
| 13. Carb Needle Holder | 26. Float Valve Gasket | |

2. Pull free end of fuel tube out of fuel tank using piece of wire.



1. Fuel Filter Screen

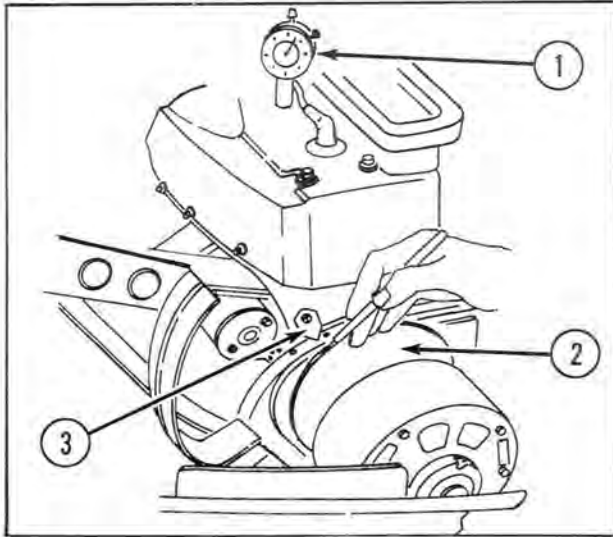
3. Remove fuel filter screen/weight assembly from tube. Clean screen and reinstall on tube. Drop end of tube into tank and install cap.

IGNITION SYSTEM

IGNITION TIMING CHECK

Remove the drive belt prior to performing the following procedure.

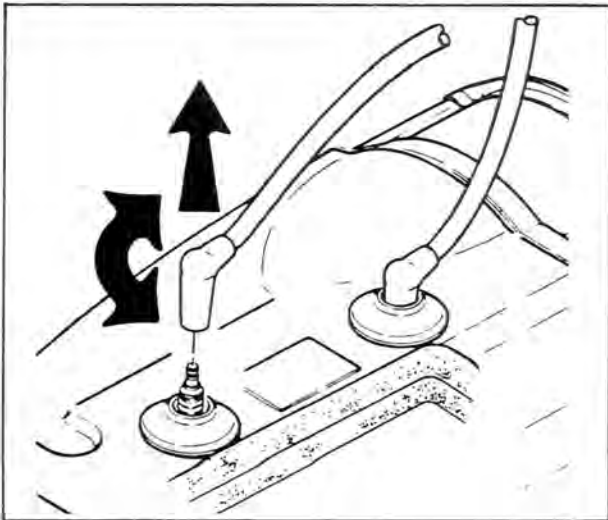
1. Install fabricated timing pointer onto engine. For accuracy, attach pointer to engine rather than chassis so pointer moves with engine.



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

2. Remove both spark plugs and install a dial indicator into the LH cylinder spark plug hole.

CAUTION When removing spark plugs, carefully rotate plug cap back and forth while pulling cap straight upward. Do not attempt to twist or force plug cap off by pulling on lead wires as this will damage the connection.



3. Rotate drive converter in normal direction of rotation (counter-clockwise) to find TDC (top dead center). Adjust dial indicator to zero.

4. Turn drive converter clockwise to 0.073 in. (1.86 mm).

5. Make a mark on drive converter fixed sheave corresponding to timing pointer.

6. Remove the dial indicator. Before installing the spark plugs, check that:

- a. Plug gap is properly adjusted.

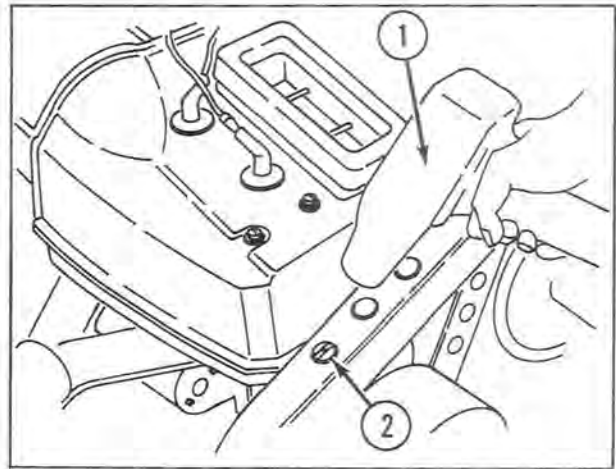
Gap: 0.024 in. (0.6 mm)

- b. Compression washer is installed on spark plug and cylinder head seat is clean.

- c. Spark plugs are torqued to 20 ft lb (2.7 kg-m).

7. Connect strobe type timing light to spark plug lead wire following manufacturer's instructions. Drive belt must be removed and converter belt guard secured in place.

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



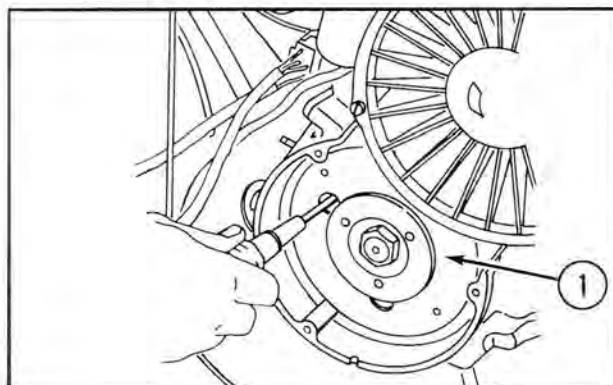
1. Timing Light
2. Mark on Drive Converter

8. Start engine and allow it to warm up to operating temperature. Then run engine at 6,500 RPM and aim timing light, through converter guard, directly at timing pointer. Timing is correct when mark aligns with pointer as light flashes.

IGNITION TIMING ADJUSTMENT

1. Remove recoil starter assembly and fan belt pulley. Twist fan belt out of the way.
2. Loosen the stator assembly mounting screws through the holes in the flywheel. To correct the timing, rotate the stator assembly as required (clockwise to retard timing; counterclockwise to advance timing).

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



1. Flywheel

3. Tighten stator mounting screws. Torque to 30 in. lb (0.35 kg-m).
4. Replace fan belt pulley, starter pulley and fan belt. Torque bolts to 60 in. lb (0.7 kg-m).

5. Recheck timing using Ignition Timing Check procedure to be sure timing is correct.

6. Install recoil starter assembly. Drive belt may now be installed and belt guard secured into position with clip pins.

IGNITION TROUBLESHOOTING USING CD IGNITION TESTER

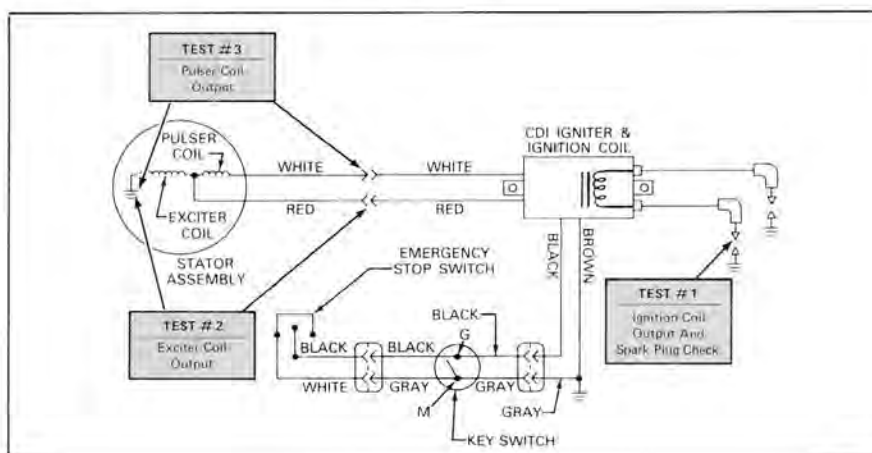
Refer to pages 3-9 through 3-13 in the SA340-A4, SB440-A4, SC340-A1 Shop Manual for preliminary ignition test procedures and a general description of the CD ignition tester operation.

The ground wire terminal on the SB340 and SB440 is located at the lower CDI igniter mounting screw.



1. Brown and Gray Wires

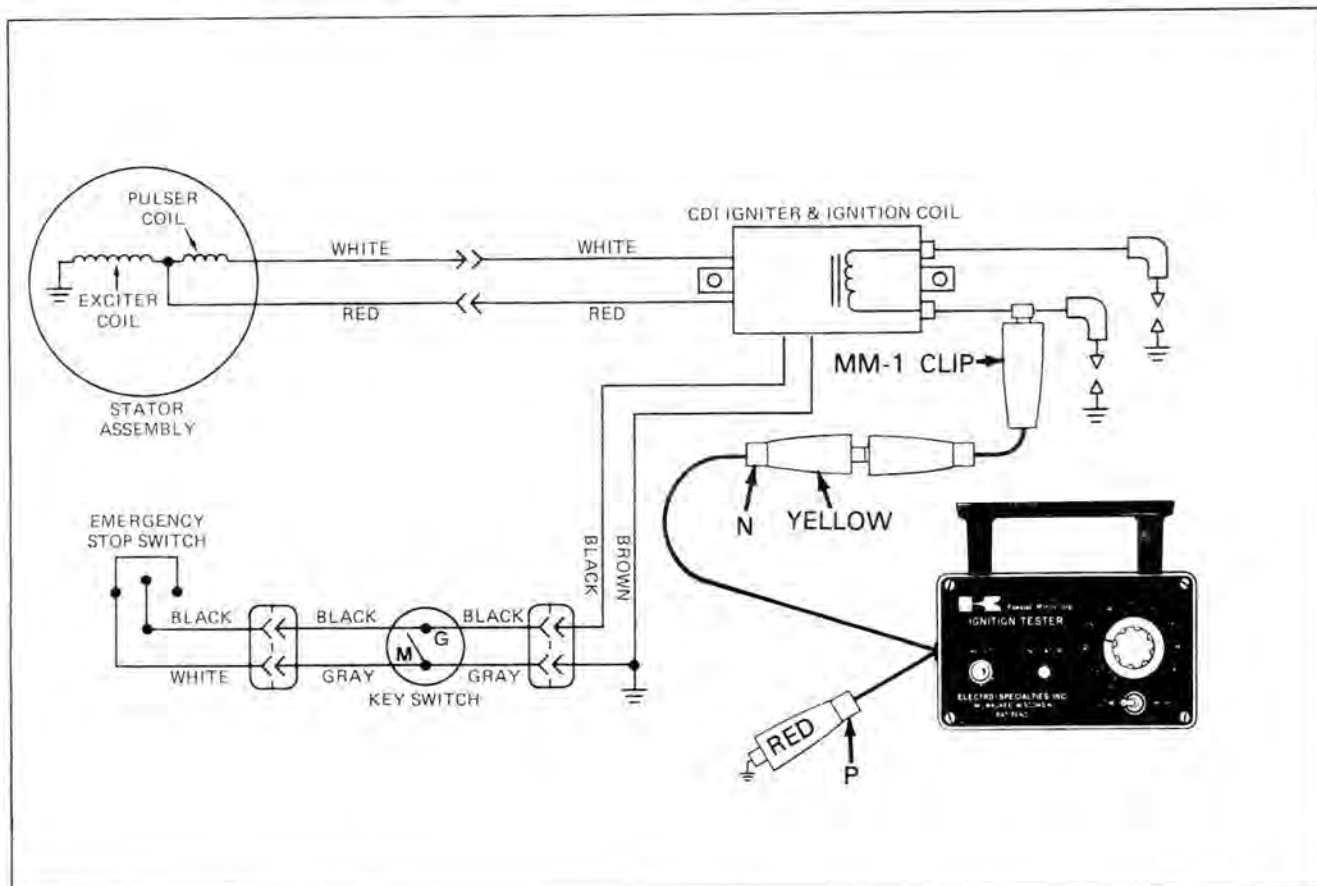
Test Sequence - Using CD Ignition Tester P/N T56019-201



TEST #1		TEST #2		TEST #3	
RANGE	DIAL SETTING	RANGE	DIAL SETTING	RANGE	DIAL SETTING
Low	25	High	35	Low	90

NOTE: Refer to following pages for detailed testing procedure.

Test No. 1
Ignition Coil Output and Spark Plug Check



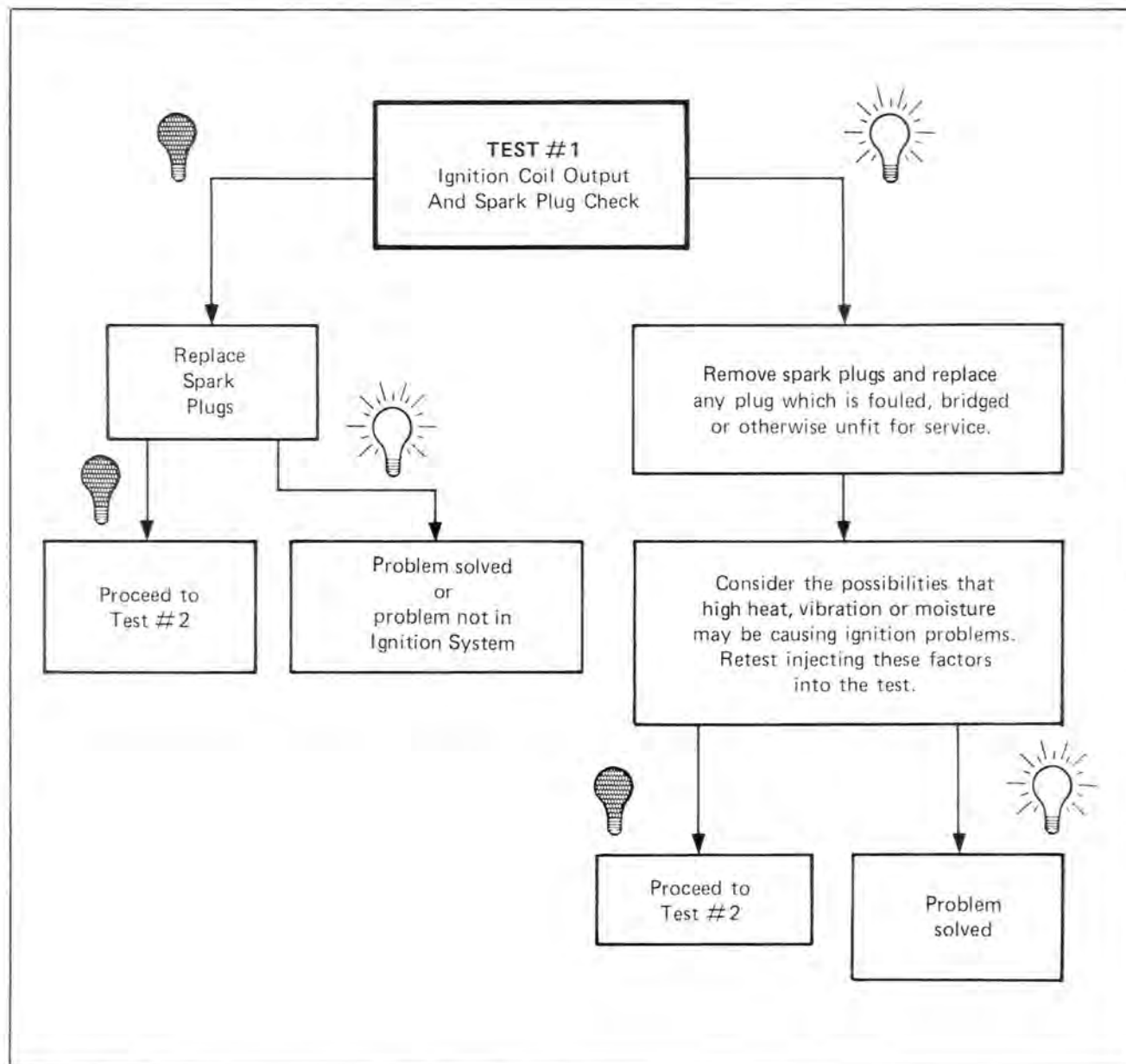
TEST CONNECTIONS

1. Connect the MM-1 adaptor to the tester N (yellow) lead wire.
2. Connect the tester P (red) lead wire to a good ground on the engine.
3. Clamp the MM-1 adaptor around either spark plug wire as close to the spark plug as possible. If insulation sleeving is over the spark plug wire, push the sleeving back so that the clip encircles the spark plug wire directly. Do not allow any metal portion of the MM-1 clip to touch the engine.
4. Before proceeding, be certain that the engine stop switch, ground wires, and all primary and secondary ignition wiring are not contributing to the problem.

TEST PROCEDURE

NOTE: After each test that lights the Indicator Lamp, push the Reset button to turn the lamp off in preparation for the next test.

1. Set the toggle switch to the Low range. Set the tester dial to 25.
2. Pull the recoil starter handle to turn the engine over. If the engine starts, allow it to idle only. Repeat this test three times to verify consistent output.
 - a. If the lamp lights consistently at or above 25 on the scale, the ignition system up to the spark plugs is operating properly. Remove the spark plugs and replace any plug which is fouled, bridged, or otherwise unfit for service. Consider the possibilities that high heat, vibration, or moisture may be causing ignition problems and repeat Test No. 1 incorporating these factors into the test.
 - b. If the lamp does not light consistently above the specified value or does not light at all, follow the steps on the next page.



No Lamp or Low/Inconsistent Reading

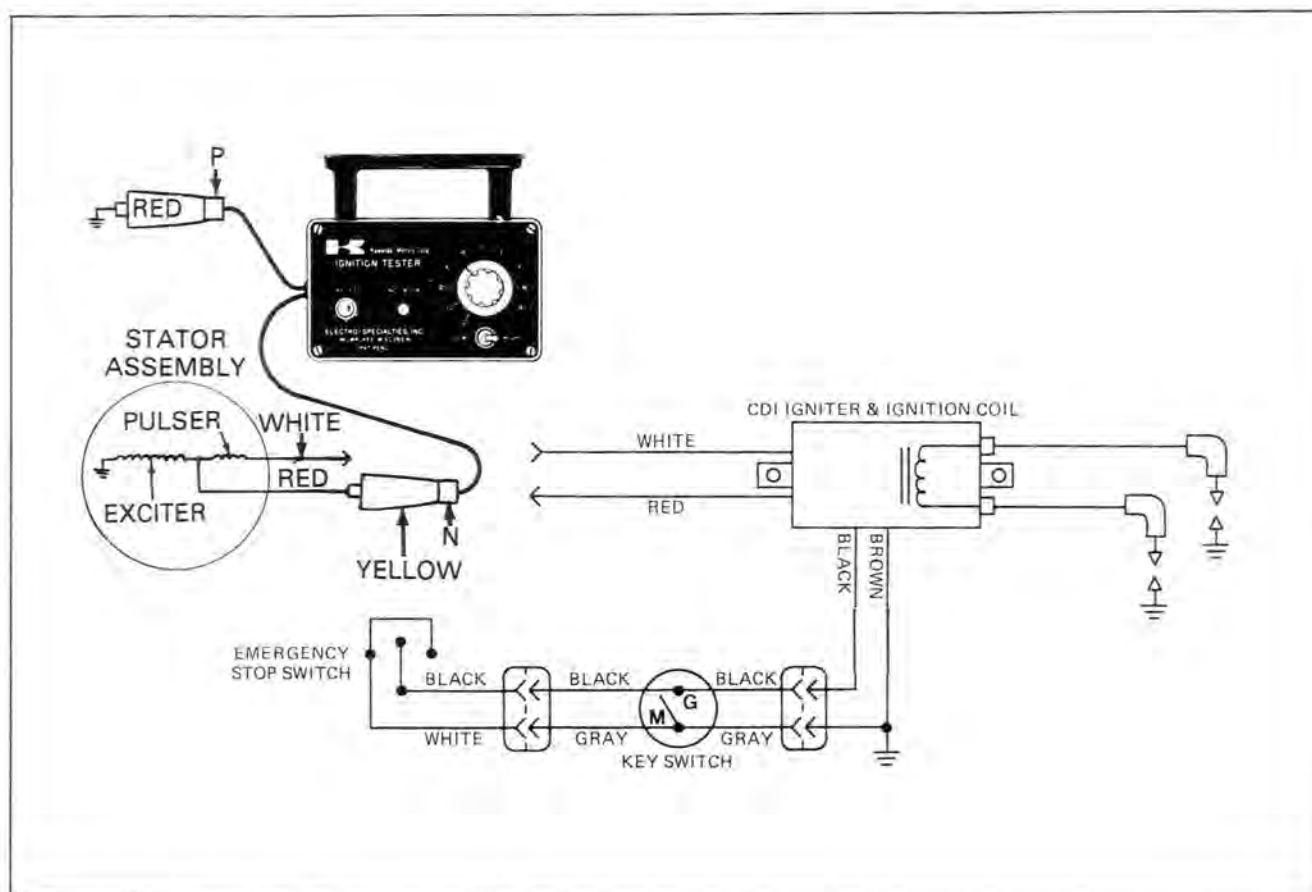


Lamp Lights at Specified Value

STANDARD VALUE TEST #1

RANGE	VALUE
Low	25

Test No. 2 Exciter Coil Output



CAUTION

Do not turn over the engine unless either coil or tester is connected to the CD igniter.

TEST CONNECTIONS

1. Disconnect the red and white wires between the magneto assembly and the CD igniter.
2. Connect the tester N (yellow) lead wire to the red wire on the magneto end of the connector.
3. Connect the tester P (red) lead wire to a good engine ground.

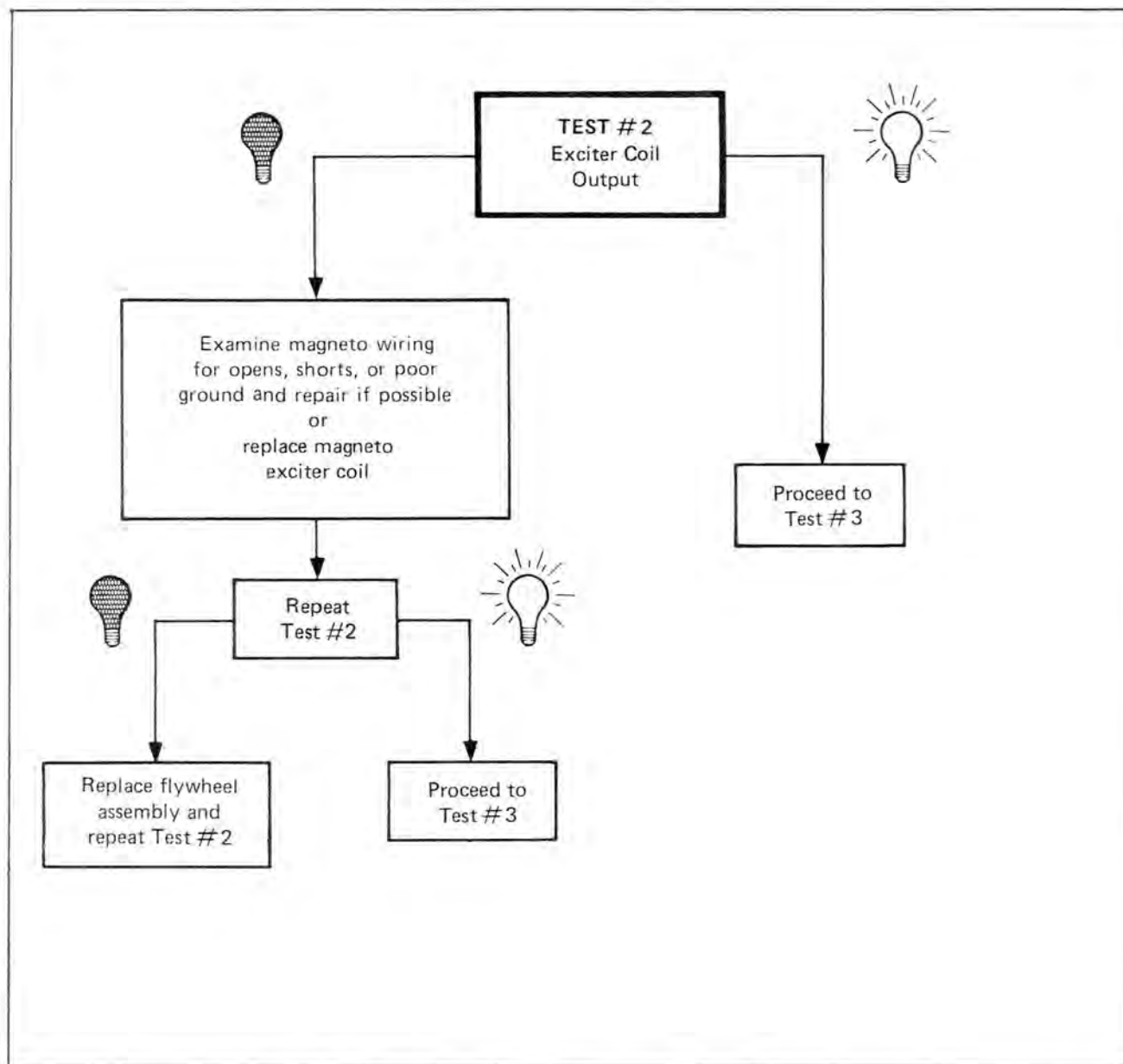
TEST PROCEDURE

1. Set the toggle switch to the High range. Set the tester dial to 35.

2. Turn over the engine while observing the Indicator Lamp on the tester.

- a. If the lamp lights, push the Reset button to turn the lamp off and repeat Test No. 2 three times. If the lamp lights consistently at 35, the magneto exciter coil is good, proceed to Test No. 3.
- b. If the Indicator Lamp gives inconsistent readings at any dial setting or does not light at all, this indicates the following:
 1. A faulty exciter coil (check the ohms). Replace the exciter coil.
 2. Faulty wiring. Check the wiring.
 3. Faulty flywheel magnets. Replace the magnets.

Follow the steps in the chart on the next page.



No Lamp or Low/Inconsistent Reading

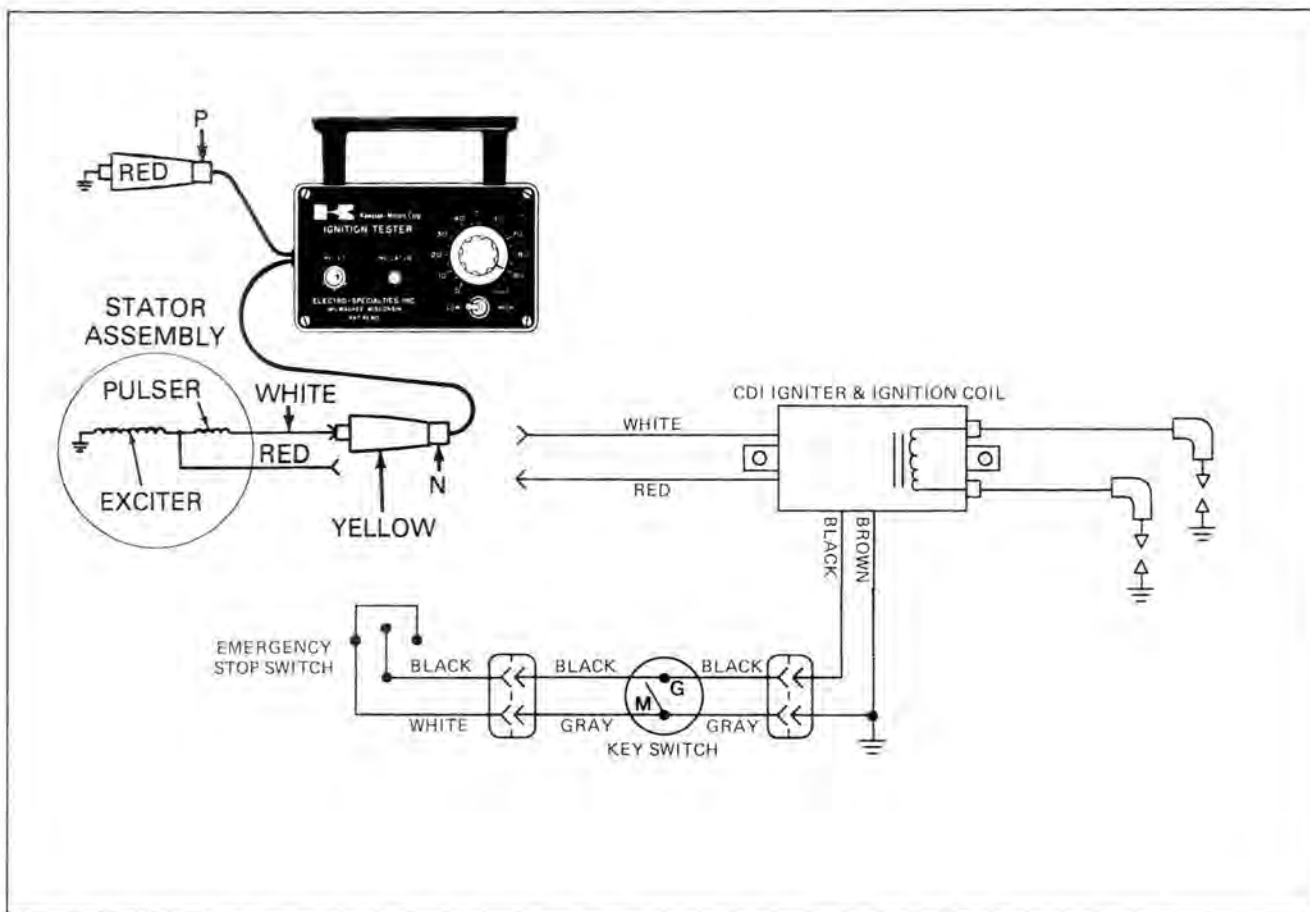


Lamp Lights at Specified Value

STANDARD VALUE TEST #2

RANGE	VALUE
High	35

Test No. 3 Pulser Coil Output

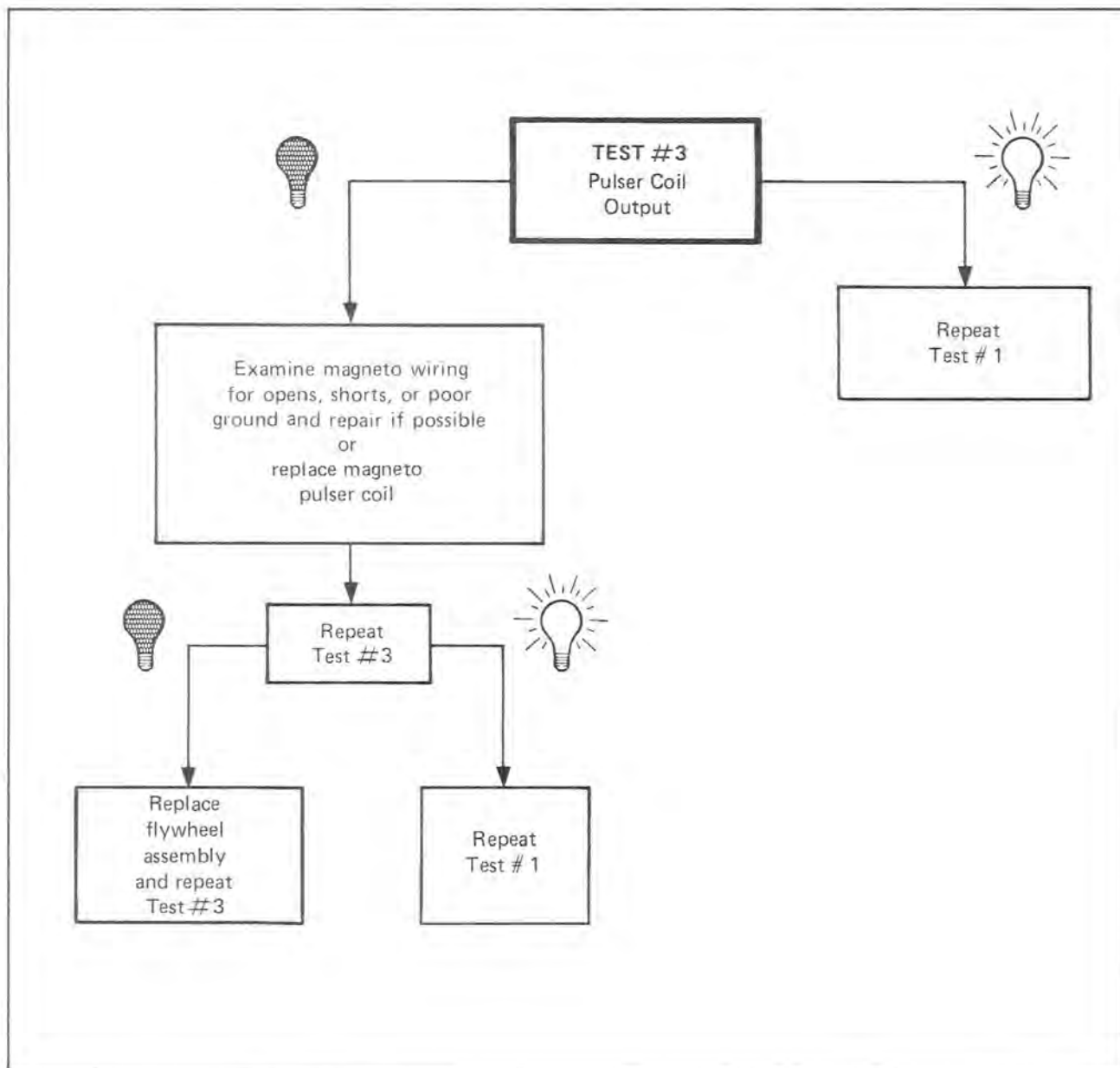


TEST CONNECTIONS

1. With both the red and white wires still disconnected, connect the tester N (yellow) lead wire to the white wire on the magneto end of the connector.
2. Connect the tester P (red) lead wire to a good engine ground.

TEST PROCEDURE

1. Set the toggle switch to the Low range. Set the tester dial to 90.
2. Turn over the engine while observing the Indicator Lamp on the tester.
 - a. If the Indicator Lamp lights, push the Reset button to turn the lamp off and repeat Test No. 3 three times. If the lamp lights consistently at 90 the pulser coil is good, repeat Test No. 1.
 - b. If the Indicator Lamp gives inconsistent readings or does not light at all, follow the steps on the next page.



No Lamp or Low/Inconsistent Reading



Lamp Lights at Specified Value

STANDARD VALUE TEST #3

RANGE	VALUE
Low	90

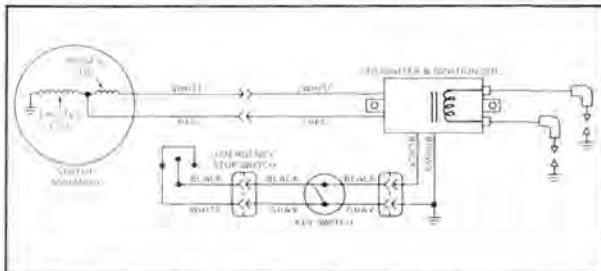
IGNITION TROUBLESHOOTING USING OHMMETER

If the Kawasaki CD ignition tester is not available, the exciter and pulser coils can be tested using an ohmmeter. This test is not as accurate as using the Kawasaki CD ignition tester.

NOTE: Exercise care to prevent an electrical shock from the CD igniter. Handle the CD igniter carefully. If you should drop it, the incorporated electronic components will be damaged.

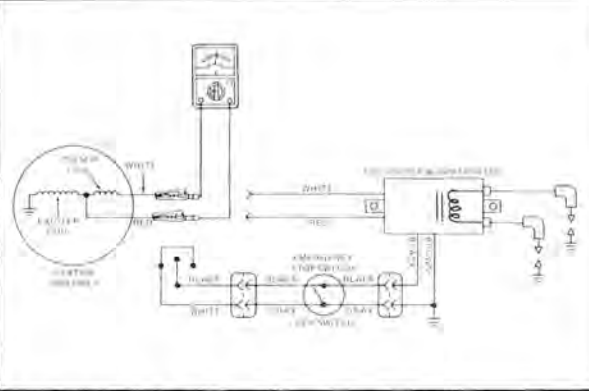
The following test procedures are alternate checks designed for locating ignition system malfunction using an ohmmeter.

1. **WIRING CONNECTIONS** - Check all wiring connectors to insure connections are clean, secure, and correct.



2. **EXCITER AND PULSER COILS** - To locate the cause of trouble (broken wire, short circuit, etc.) measure the resistance of each coil winding and check AC voltage output as specified in the following illustration. Repair defective wire or replace coil not within specifications.

CAUTION Do not use an improper tester (insulation resistance testers or other testers with a battery of large capacity). The use of a large capacity tester may ruin components during test.

		
PART TO BE MEASURED	EXCITER	PULSER
OHMMETER LEADS CONNECTED BETWEEN	RED BROWN (GROUND)	WHITE RED
RESISTANCE	160 $\Omega \pm 20\%$	17 $\Omega \pm 20\%$
*VOLTAGE AC	40 VAC	4 VAC

*Measure at cranking speed with spark plugs installed.

TORQUE CONVERTER SYSTEM

DRIVE CONVERTER THEORY OF OPERATION

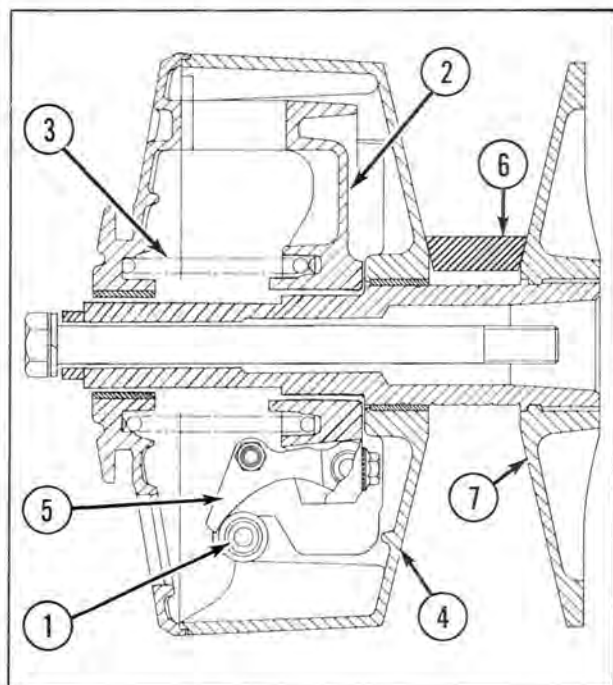
The drive converter on the snowmobile is designed to provide maximum performance under all types of snow and load conditions.

There are three variables that will change the performance characteristics of the drive converter. They are as follows:

1. Spring
2. Weights
3. Ramps

The primary function of the spring is to control the initial engagement between the movable drive sheave and T.C. belt. The spring also affects engine RPM throughout the drive converter shift pattern. A weak or light spring will decrease both engagement speed and maximum engine RPM, resulting in speeding up the shift pattern.

A heavy or strong spring will increase engagement speed and maximum engine RPM, but slows down the shift pattern.



1. Roller
2. Spider Assembly
3. Spring
4. Movable Sheave
5. Weight Ramp
6. Drive Belt
7. Stationary Sheave

The drive converter contains three ramp weights that control engine RPM. Lighter ramp weight will increase engagement RPM, and maintain higher RPM throughout the total shift pattern. Care must be taken not to exceed specified engine RPM or engine damage will occur. By contrast, heavier ramp weights will decrease engagement RPM, and also lower engine RPM throughout the shift pattern. However, the main function of the ramp weights is to control the engine RPM through the shift pattern.

The ramp is designed so the shift pattern is within the peak torque curve of the engine. The ramp profile is the major factor in determining the characteristics of the shift pattern.

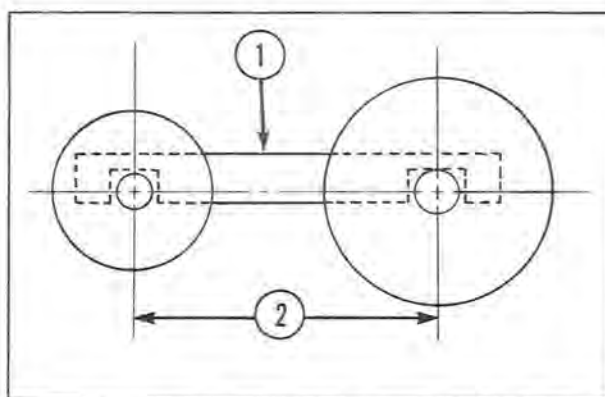
CONVERTER ALIGNMENT

Three separate checks are required to ensure correct drive and driven converter alignment. Use alignment gauge P/N 57001-3515 to make checks No. 1 and 2.

1. Converter center-to-center distance
2. Converter offset distance
3. Converter parallelism

Converter Center-To-Center Distance

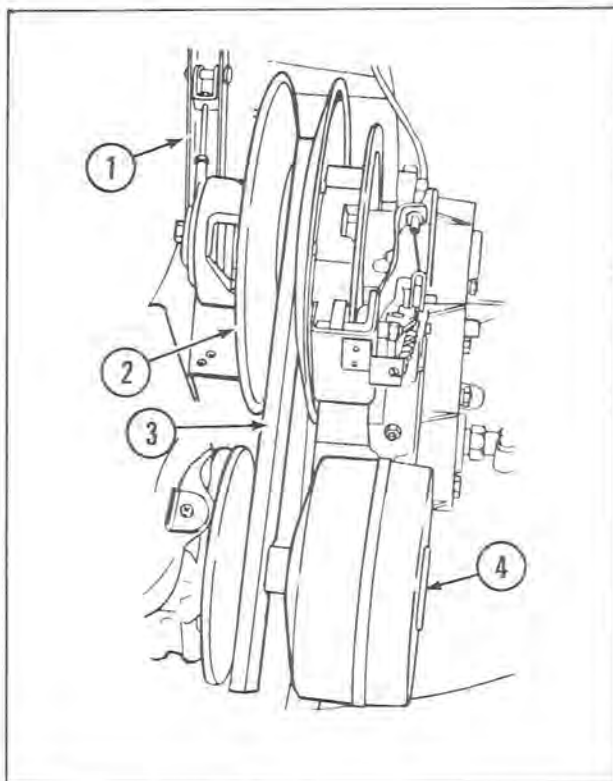
The distance from the center of the drive converter to the center of the driven converter should be 10.3 in. (262 mm).



1. Alignment Gauge
2. 10.3 in. (262 mm)

1. Remove belt guard and remove drive belt.
2. Rotate driven converter moveable sheave assembly clockwise, and insert alignment gauge between sheaves. Carefully release moveable sheave assembly allowing spring tension to retain gauge in position between stationary and moveable sheave assemblies.

3. Center distance is correct if the notch in the alignment gauge fits over the shaft on the drive converter.



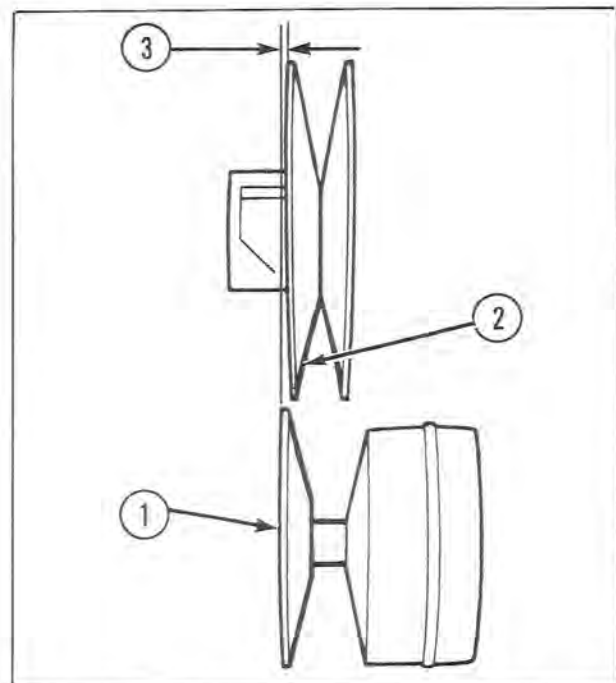
1. Driven Converter Support Arm
2. Driven Converter Moveable Sheave
3. Alignment Gauge
4. Drive Converter

4. If adjustment of converter center distance is necessary; loosen four chaincase mounting nuts. Position chaincase forward or rearward as required. Torque chaincase mounting nuts 28 ft lb (3.9 kg-m).

NOTE: Driven converter bearing support must be disconnected by removing clevis pin from chassis yoke. After adjusting chaincase, loosen support jam nut and adjust support assembly to proper length. Reconnect support to yoke and torque jam nut to 95 in. lb (1.1 kg-m).

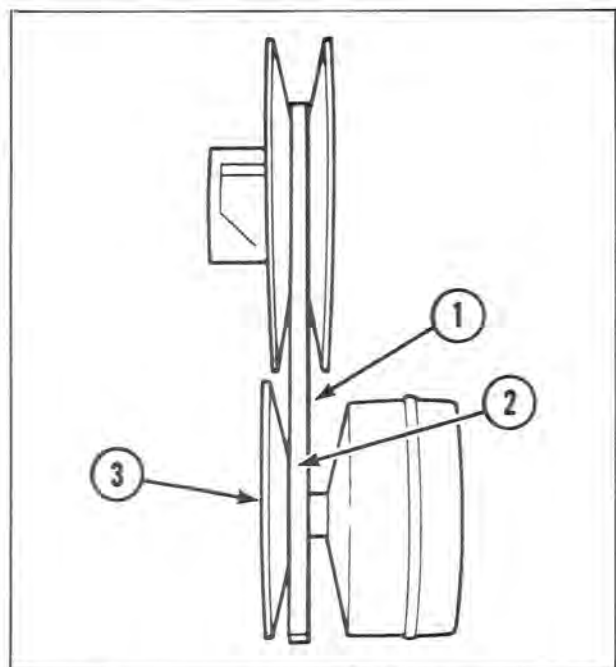
Converter Offset Distance

The distance from the back face of the drive converter stationary sheave to the edge of the driven converter moveable sheave should be 0.497 in. (11.5 mm).



1. Drive Converter Stationary Sheave
2. Driven Converter Moveable Sheave
3. 0.497 in. (11.5 mm)

1. Correct offset distance is obtained when the surface of the alignment gauge touches the base of the drive converter fixed sheave.



1. Alignment Tool
2. Alignment Tool Surface
3. Drive Converter Stationary Sheave

2. If adjustment is necessary, loosen four engine mounting nuts. Slide engine back and forth until stationary sheave touches alignment gauge. Tighten all mounting bolts securely.

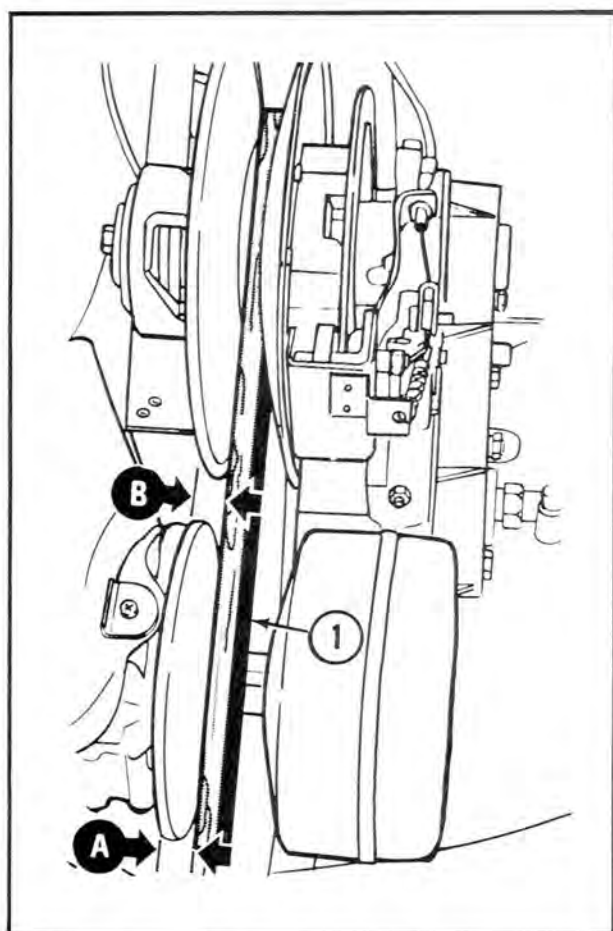
Converter Parallelism

1. When checking center-to-center and offset distances, parallelism must be checked by measuring dimensions A and B as shown. Compare dimensions A and B against Notes I and II.

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

NOTE II: Dimension A must never exceed dimension B by more than 1/16 in. (1.6 mm).

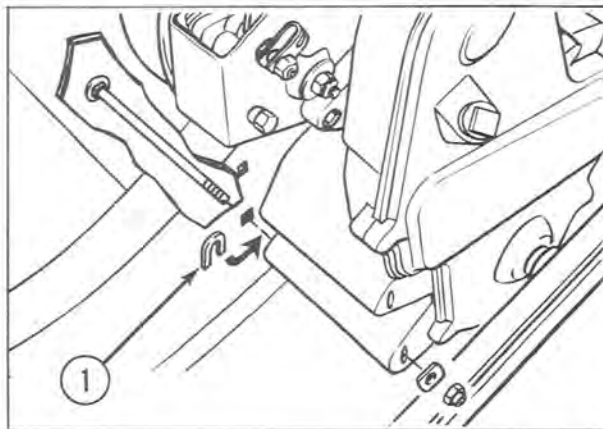
2. If dimension A is less than B, converter parallelism is not correct. Adjust parallelism by loosening engine mounting nuts, then twisting or rotating engine to correct position. Torque engine mounting nuts to 30 ft lb (4.1 kg-m).



1. Alignment Gauge

3. If parallelism is still not correct, loosen chaincase mounting nuts and install alignment "U" washers P/N 92025-3507 as required between chassis and chaincase.

NOTE: Never use more than 2 alignment "U" washers per bolt.



1. "U" Washer, P/N 92025-3507

DRIVE CONVERTER DISASSEMBLY AND ASSEMBLY

To disassemble the drive converter:

1. Remove the drive belt.
2. Remove the drive converter mounting bolt and lockwasher while holding the end of the fixed sheave with an open end wrench.



3. Install the drive converter puller and screw it in until the drive converter pops off the crankshaft taper.



4. Place the drive converter on a rubber mat or piece of cardboard on the floor. With your knee or foot on the cover, remove the bolts securing the cover to the converter. Remove the cover slowly.

WARNING Do not let go of the cover suddenly. It can pop up and cause personal injury.



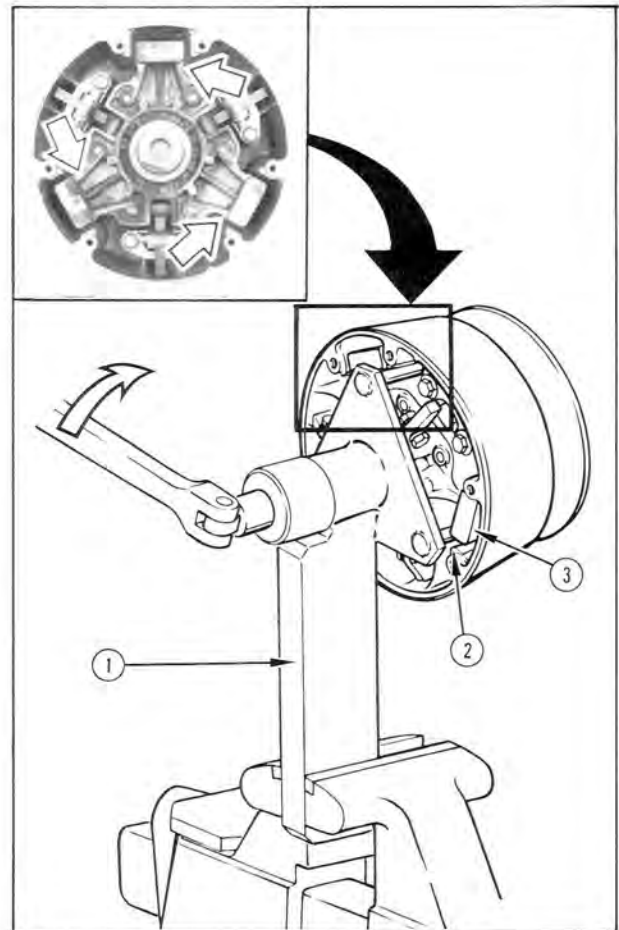
5. Remove the spring.
6. Remove each wear guide by rocking the bottom of the fingers in towards the center of the spider and lifting it out.

NOTE: The wear guides cannot be removed by pulling them straight off the spider.



7. Clamp the drive converter holder in a bench vise. Slip the end of the fixed sheave through the center of the holder and engage the holder pins with the sides of the spider. Fit the drive converter socket onto the end of the fixed sheave and turn it in the direction shown to separate the fixed sheave from the spider.

CAUTION Be sure the holder pins are forced against the spider and not the movable sheave when separating the fixed sheave from the spider or damage to the movable sheave may occur.



1. Drive Converter Holder
2. Holder Pin
3. Spider

8. Separate the spider, movable sheave and fixed sheave.
9. Remove the three ramp weight assemblies from the spider by removing the bolts and retainer washers.



1. Retainer Washer

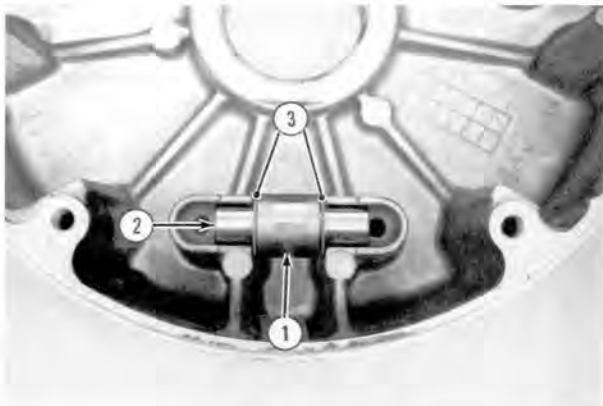
10. Remove the roller assemblies from the movable sheave by removing the bolts and retainer washers.



1. Retainer Washer

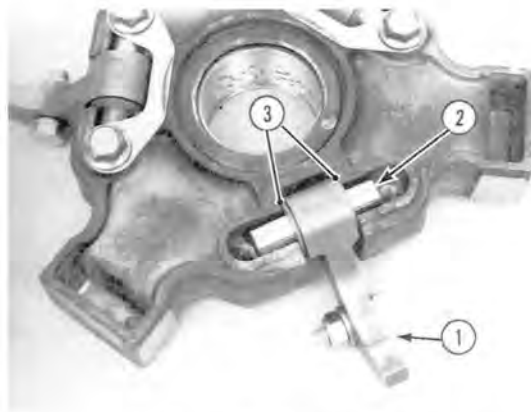
To assemble the drive converter:

1. Assemble the roller assemblies, pins, and spacers and place them into the movable sheave with the pins in the pin grooves. Install the retainer washers and bolts. Torque the bolts to 120 in. lb (1.4 kg-m).
2. After torquing the bolts, check that the rollers rotate freely.



1. Roller Assembly
2. Pin
3. Spacers

3. Assemble the weight ramp assemblies, pins and spacers and place them in the spider with the pins in the pin grooves. Install the retainer washers and bolts. Torque the bolts to 120 in. lb (1.4 kg-m).
4. After torquing the bolts, check that the weight ramps move freely.



1. Weight Ramp Assembly
2. Pin
3. Spacers

5. Apply a non-permanent locking agent such as Loctite No. 271 (P/N 49075-3612) to the threads of the fixed sheave. Place the fixed sheave on a work bench with the shaft up.

CAUTION
of the sheave.

Do not allow the locking agent to get on any sliding surfaces

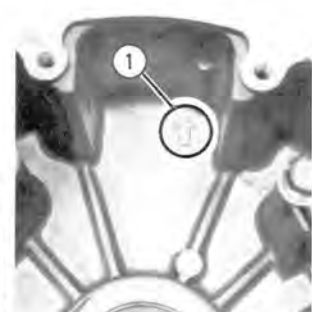


1. Loctite

6. Align the arrows on the spider and movable sheave, then place the spider inside the movable sheave.

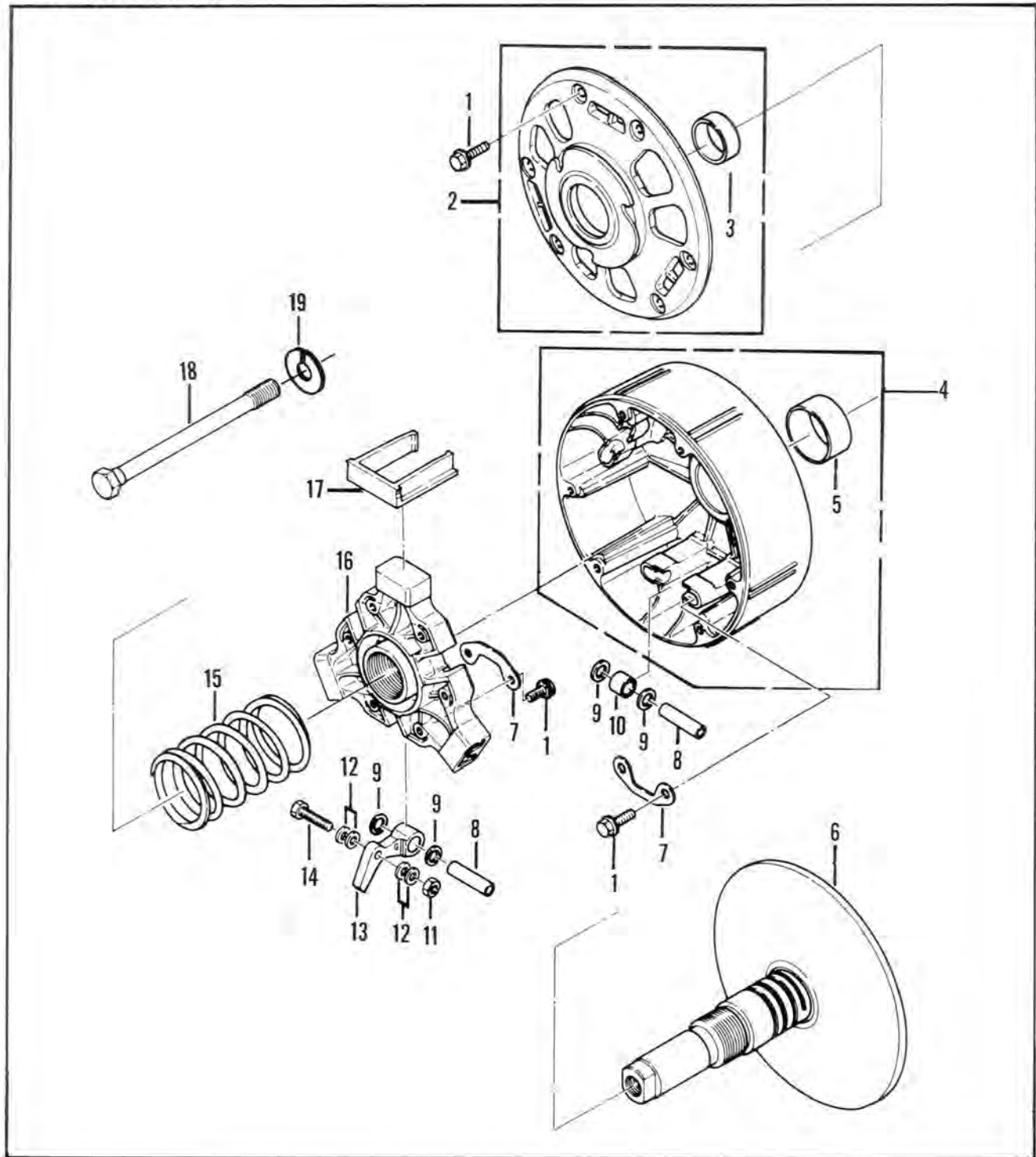


1. Arrow



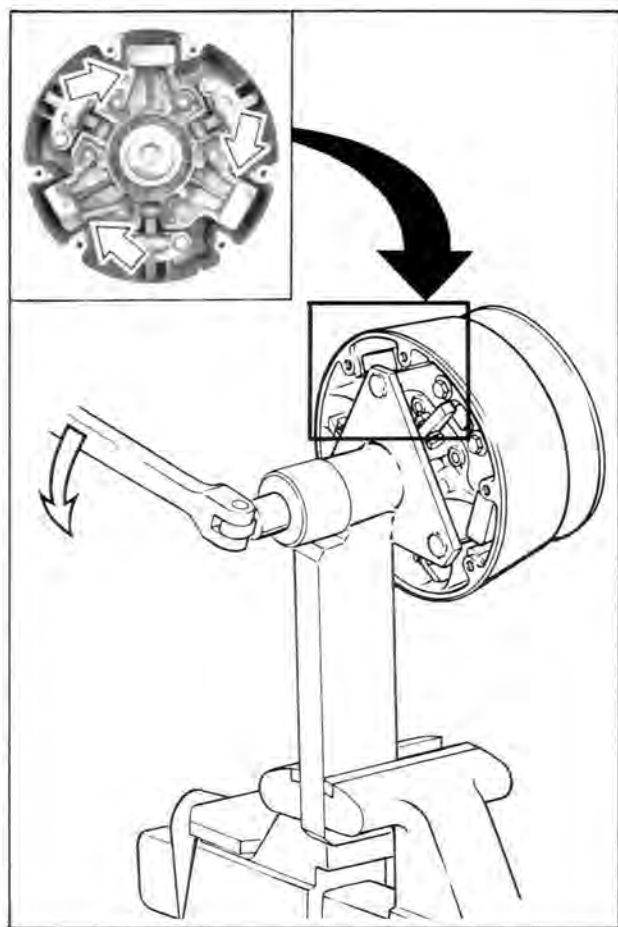
1. Arrow

DRIVE CONVERTER



- | | |
|----------------------------|--------------------------|
| 1. Bolt | 11. Nut |
| 2. Cover Assembly | 12. Weight |
| 3. Bushing | 13. Ramp Weight Assembly |
| 4. Movable Sheave Assembly | 14. Bolt |
| 5. Bushing | 15. Spring |
| 6. Fixed Sheave | 16. Spider |
| 7. Retainer Washer | 17. Wear Guide |
| 8. Pin | 18. Bolt |
| 9. Spacer | 19. Lockwasher |
| 10. Roller Assembly | |

7. Lower the movable sheave and spider onto the shaft of the fixed sheave. Screw the spider onto the fixed sheave until it is hand tight.
8. Clamp the drive converter holder in a bench vise. Slip the end of the fixed sheave through the center of the holder and engage the holder pins with the sides of the spider. Fit the drive converter socket onto the end of the fixed sheave and by turning it in the direction shown, tighten the spider and fixed sheave to 160 ft lb (22 kg-m) of torque.



9. Insert the wear guides between the spider and movable sheave in the same manner as they were removed.
10. Install the spring.
11. Align the arrow on the converter cover with the arrow on the spider. Slide the cover down over the shaft of the fixed sheave. Squeeze the cover and movable sheave together and install the six cover bolts. Torque the bolts to 120 in. lb (1.4 kg-m).

NOTE: After the drive clutch is assembled, allow 30 minutes for the locking agent to cure before operating the snowmobile.

12. Clean oil and dirt off the end of the crankshaft and the mating taper in the drive clutch with lacquer thinner or other cleaning agent which leaves no residue.
13. Position the drive clutch on the crankshaft end. Install the bolt and lockwasher. Torque the bolt to 72 ft lb (10.0 kg-m) while holding the end of the fixed sheave with an open end wrench.

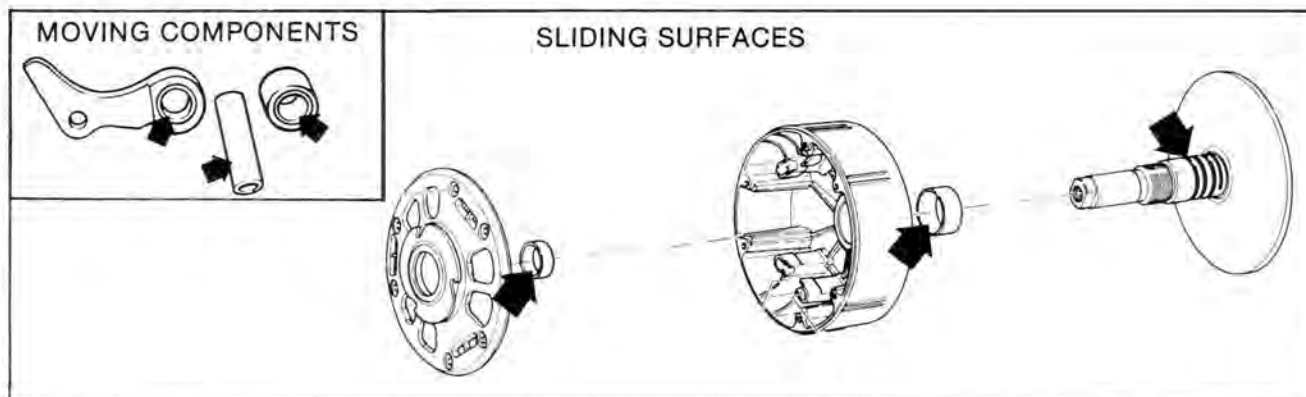
14. Install the drive belt.

DRIVE CONVERTER CLEANING AND INSPECTION

To clean the drive converter:

NOTE: Accumulation of foreign matter on sliding surfaces or moving components within converter will alter the shifting characteristics, which will affect vehicle performance throughout the shifting range. Contamination of converter components may cause the vehicle to display any of the following symptoms:

- a. Bog (hesitation) during acceleration.
- b. Poor back shift.
- c. Low top speed.



1. Remove all grease and dirt by wiping the components with a rag dipped in cleaning solvent. Dry parts with compressed air or a clean cloth.

CAUTION

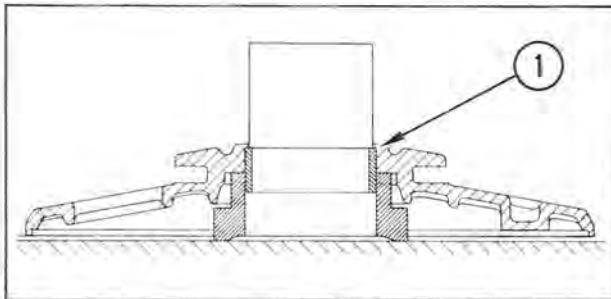
DO NOT soak components with bushings in cleaning solvents, since some solvents can damage the bushing resulting in converter failure.

2. Remove drive belt accumulations from the stationary sheave and movable sheave with cleaning solvent.
3. Remove rust and drive belt accumulations from the steel shaft of the stationary sheave with cleaning solvent or a fine grade of steel wool.
4. Thoroughly clean pins and bushings for roller and ramp weight assemblies.

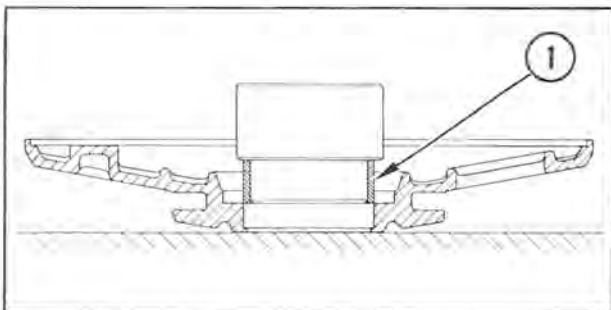
To inspect the drive converter:

1. Check the cover bushing for excessive wear. A quick check can be made by placing the cover over the fixed sheave and rocking it on the shaft. If excessive wobbling is noticed, the bushing should be replaced. For an accurate check, measure the outside diameter of the fixed sheave shaft and the inside diameter of the bushing. If the difference between the two readings is 0.02 in. (0.5 mm) or larger, replace the bushing.

NOTE: Bushings used in the converter are the split type. During inspection do not mistake the bushing line as a crack.

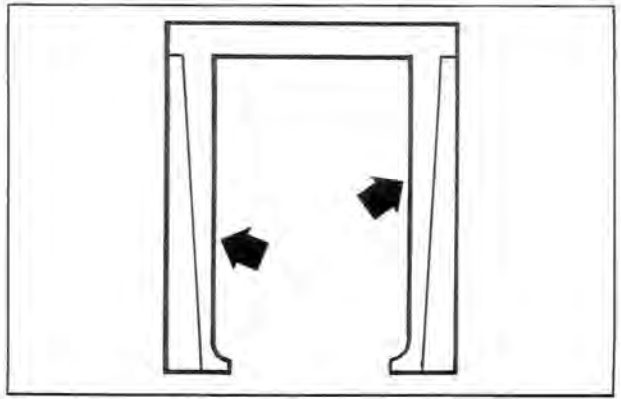


1. Removing Bushing



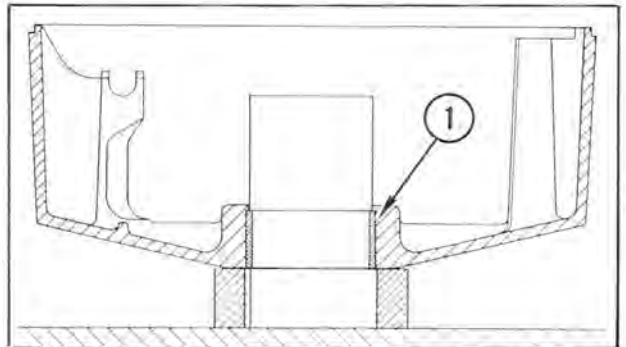
1. Installing Bushing

2. Inspect the wear guides for wear, cracks or other damage. Replace as required.

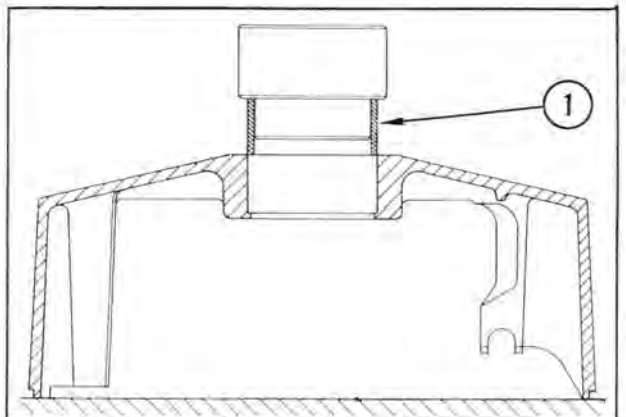


3. Slide the movable sheave onto the fixed sheave and check the bushing for excessive wear by wobbling the sheave from side to side. If movement is excessive, replace the bushing. For an accurate measurement, measure the diameter of the shaft on the fixed sheave and the inside diameter of the bushing in the movable sheave. If the difference between the two readings is 0.02 in. (0.5 mm) or larger, replace the bushing.

NOTE: Bushings used in the converter are the split type. During inspection do not mistake the bushing line as a crack.



1. Removing Bushing



1. Installing Bushing

4. Inspect the moveable sheave retainer washers, pins, spacers and rollers. Replace any part that shows signs of excessive wear or damage.

a. Spacers - Measure thickness with a micrometer. They should measure 0.032 ± 0.004 in. (0.8 ± 0.1 mm). Replacement is required when they measure 0.016 in. (0.4 mm) or less.

b. Pins and Rollers - Maximum clearance allowed between pin and roller is 0.02 in. (0.5 mm).

5. Inspect the spider assembly retainer washers, pins, spacers and ramp weights. Replace any part that shows signs of excessive wear or damage.

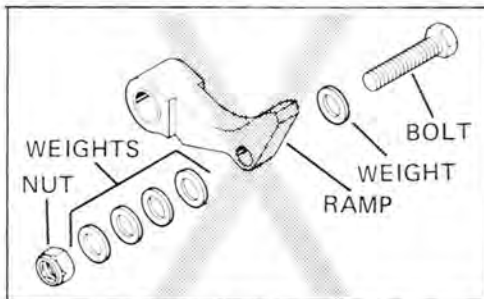
a. Spacers - Measure thickness with a micrometer. They should measure 0.032 ± 0.004 in. (0.8 ± 0.1 mm). Replacement is required when they measure 0.016 in. (0.4 mm) or less.

b. Pins and Ramp Weights - Maximum clearance allowed between pin and ramp bushing is 0.02 in. (0.5 mm).

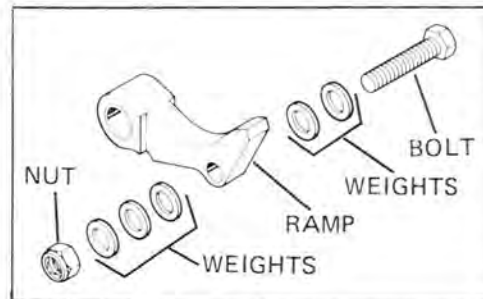


RAMP WEIGHT AND BOLT COMBINATIONS

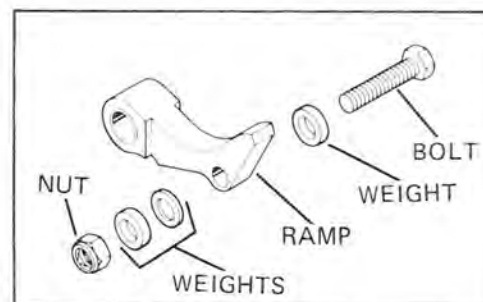
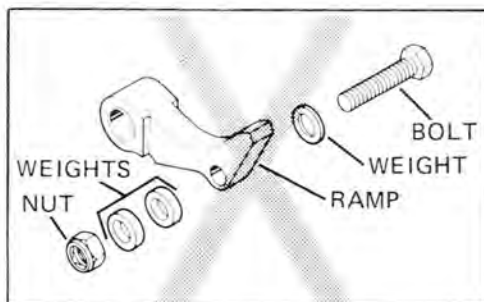
RAMP WEIGHT POSITIONING



INCORRECT



CORRECT



**DRIVE CONVERTER RAMP WEIGHT COMBINATIONS USING BOLT PART NUMBER 92001-3015
(6 x 16 mm STEEL)**

Total Ramp Weight-Grams	Number of Weights Installed	Weight (0.5 gram each) 0.031 in. (0.8 mm) thick Part Number 13042-3001	Bolt 6 x 16 mm Part Number 92001-3015	Nut Special Part Number 92019-008	Ramp Weight Part Number 39152-3008
55.1 grams	0	0	5.3 grams	2.3 grams	47.5 grams
55.6 grams	1	0.5 gram	5.3 grams	2.3 grams	47.5 grams
56.1 grams	2	1.0 gram	5.3 grams	2.3 grams	47.5 grams

CAUTION To permit proper installation and security of nut, do not exceed a maximum of 2 installed weights Part Number 13042-3001 (0.031 in., 0.8 mm thick) on 6 x 16 mm bolts.

NOTE: Installed weight positioning must not exceed 0.5 gram difference on each side of ramp as shown in illustration.

**DRIVE CONVERTER RAMP WEIGHT COMBINATIONS USING BOLT PART NUMBER 110G0620
(6 x 20 STEEL)**

Total Ramp Weight-Grams	Number of Weights Installed	Weight (0.5 gram each) 0.031 in. (0.8 mm) thick Part Number 13042-3001	Bolt 6 x 20 mm Part Number 110G0620	Nut Special Part Number 92019-008	Ramp Weight Part Number 39152-3008
55.8	0	0	6.0 grams	2.3 grams	47.5 grams
56.3	1	0.5 gram	6.0 grams	2.3 grams	47.5 grams
56.8	2	1.0 gram	6.0 grams	2.3 grams	47.5 grams
57.3	3	1.5 grams	6.0 grams	2.3 grams	47.5 grams
57.8	4	2.0 grams	6.0 grams	2.3 grams	47.5 grams
58.3	5	2.5 grams	6.0 grams	2.3 grams	47.5 grams
58.8	6	3.0 grams	6.0 grams	2.3 grams	47.5 grams
59.3	7	3.5 grams	6.0 grams	2.3 grams	47.5 grams

CAUTION To permit proper installation and security of nut, do not exceed a maximum of 7 installed weights Part Number 13042-3001 (0.031 in., 0.8 mm thick) on 6 x 20 mm bolts.

NOTE: One weight Part Number 13042-3002 (0.062 in., 1.6 mm thick) may be substituted for two weights Part Number 13042-3001 (0.031 in., 0.8 mm thick) providing that installed weight positioning does not exceed 0.5 gram difference on each side of ramp as shown in illustration.

**DRIVE CONVERTER RAMP WEIGHT COMBINATIONS USING BOLT PART NUMBER 92001-3003
(6 x 20 mm ALUMINUM)**

Total Ramp Weight-Grams	Number of Weights Installed	Weight (0.5 gram each) 0.031 in. (0.8 mm) thick Part Number 13042-3001	Bolt 6 x 20 mm Part Number 92001-3003	Nut Special Part Number 92019-008	Ramp Weight Part Number 39152-3008
51.9 grams	0	0	2.1 grams	2.3 grams	47.5 grams
52.4 grams	1	0.5 gram	2.1 grams	2.3 grams	47.5 grams
52.9 grams	2	1.0 gram	2.1 grams	2.3 grams	47.5 grams
53.4 grams	3	1.5 grams	2.1 grams	2.3 grams	47.5 grams
53.9 grams	4	2.0 grams	2.1 grams	2.3 grams	47.5 grams
54.4 grams	5	2.5 grams	2.1 grams	2.3 grams	47.5 grams
54.9 grams	6	3.0 grams	2.1 grams	2.3 grams	47.5 grams
55.4 grams	7	3.5 grams	2.1 grams	2.3 grams	47.5 grams

CAUTION To permit proper installation and security of nut, do not exceed a maximum of 7 installed weights Part Number 13042-3001 (0.031 in., 0.8 mm thick) on 6 x 20 mm bolts.

NOTE: One weight Part Number 13042-3002 (0.062 in., 1.6 mm thick) may be substituted for two weights Part Number 13042-3001 (0.031 in., 0.8 mm thick) providing that installed weight positioning does not exceed 0.5 gram difference on each side of ramp as shown in illustration.

**DRIVE CONVERTER RAMP WEIGHT COMBINATIONS USING BOLT PART NUMBER 110G0628
(6 x 28 mm STEEL)**

Total Ramp Weight-Grams	Number of Weights Installed	Weight (0.5 gram each) 0.031 in. (0.8 mm) thick Part Number 13042-3001	Bolt 6 x 28 mm Part Number 110G0628	Nut Special Part Number 92019-008	Ramp Weight Part Number 39152-3008
57.1 grams	0	0	7.3 grams	2.3 grams	47.5 grams
57.6 grams	1	0.5 gram	7.3 grams	2.3 grams	47.5 grams
58.1 grams	2	1.0 gram	7.3 grams	2.3 grams	47.5 grams
58.6 grams	3	1.5 grams	7.3 grams	2.3 grams	47.5 grams
59.1 grams	4	2.0 grams	7.3 grams	2.3 grams	47.5 grams
59.6 grams	5	2.5 grams	7.3 grams	2.3 grams	47.5 grams
60.1 grams	6	3.0 grams	7.3 grams	2.3 grams	47.5 grams
60.6 grams	7	3.5 grams	7.3 grams	2.3 grams	47.5 grams
61.1 grams	8	4.0 grams	7.3 grams	2.3 grams	47.5 grams
61.6 grams	9	4.5 grams	7.3 grams	2.3 grams	47.5 grams
62.1 grams	10	5.0 grams	7.3 grams	2.3 grams	47.5 grams
62.6 grams	11	5.5 grams	7.3 grams	2.3 grams	47.5 grams
63.1 grams	12	6.0 grams	7.3 grams	2.3 grams	47.5 grams
63.6 grams	13	6.5 grams	7.3 grams	2.3 grams	47.5 grams
64.1 grams	14	7.0 grams	7.3 grams	2.3 grams	47.5 grams
64.6 grams	15	7.5 grams	7.3 grams	2.3 grams	47.5 grams
65.1 grams	16	8.0 grams	7.3 grams	2.3 grams	47.5 grams
65.6 grams	17	8.5 grams	7.3 grams	2.3 grams	47.5 grams

CAUTION

To permit proper installation and security of nut, do not exceed a maximum of 17 in-
stalled weights Part Number 13042-3001 (0.031 in., 0.8 mm thick) on 6 x 28 mm bolts.

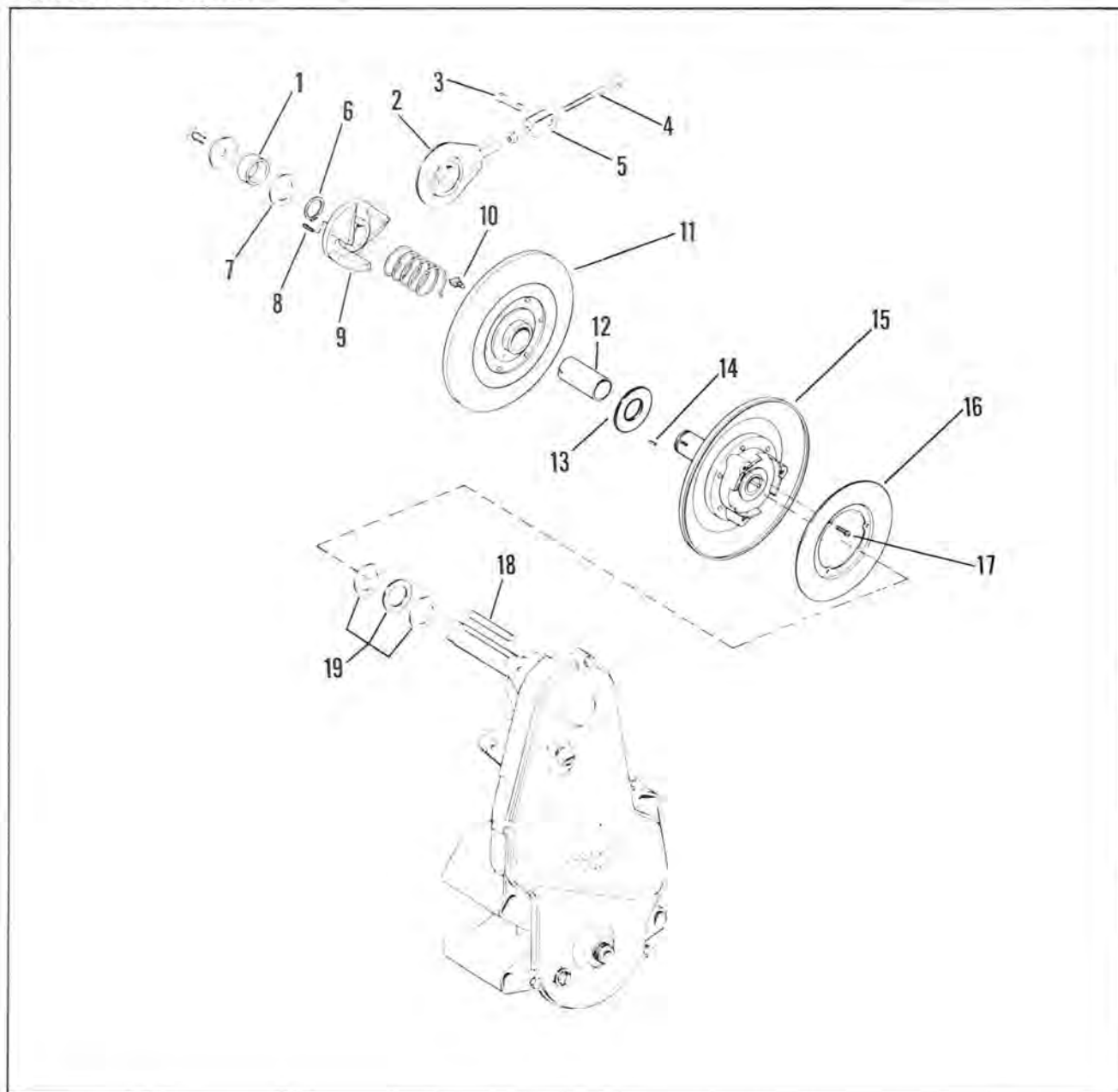
NOTE: One weight Part Number 13042-3002 (0.062 in., 1.6 mm thick) may be substituted for two
weights Part Number 13042-3001 (0.031 in., 0.8 mm thick) providing that installed weight positioning
does not exceed 0.5 gram difference on each side of ramp as shown in illustration.

DRIVEN CONVERTER DISASSEMBLY AND ASSEMBLY

Refer to pages 3-86 and 3-87 in the SA340-A4, SB440-A4, SC340-A1 Shop Manual for driven converter disassembly, cleaning, inspection and reassembly procedures.

Use the illustration below, however, and not the illustration in the base shop manual when assembling a 1981 Drifter driven converter. The 1981 models include a washer (No. 13) which is not used in prior Drifter models.

DRIVEN CONVERTER



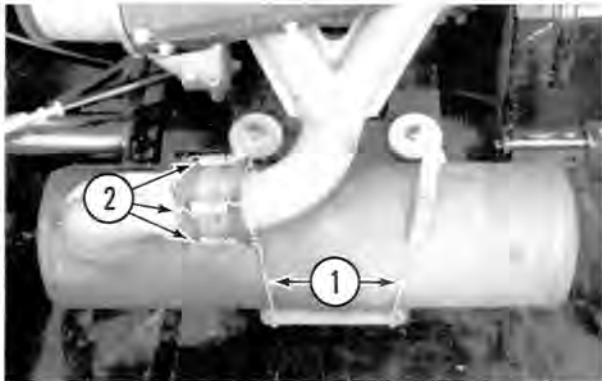
- | | |
|--------------------------------|-----------------------------|
| 1. Spacer, SB340 only | 11. Movable Sheave |
| 2. Bearing Support, SB440 only | 12. Movable Bushing |
| 3. Clevis Pin, SB440 only | 13. Washer |
| 4. Bolt, SB440 only | 14. Woodruff Key |
| 5. Support Clevis, SB440 only | 15. Fixed Sheave |
| 6. Retaining Ring | 16. Brake Disc |
| 7. Washer Spacer, SB440 only | 17. Socket Head Screw |
| 8. Spring Pin | 18. Converter Key |
| 9. Torque Ramp | 19. Converter Shaft Spacers |
| 10. Shoe Ramp Slide | |

ENGINE

MUFFLER REMOVAL AND INSTALLATION

To remove the muffler:

1. Disconnect two long springs securing muffler to muffler bracket.
2. Disconnect three short springs securing muffler to exhaust manifold.



1. Long Springs
2. Short Springs

3. Pull exhaust pipe out of boot and remove muffler.

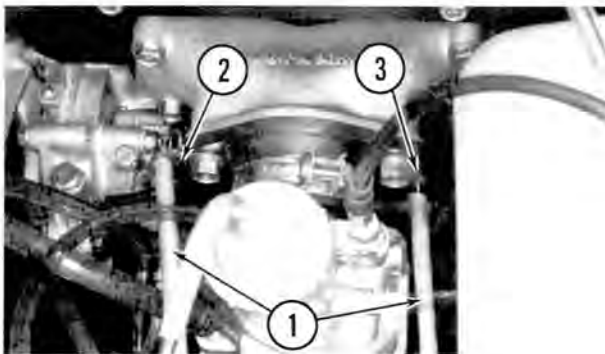
To install the muffler reverse the removal procedure.

NOTE: Apply silicone sealant to the muffler and exhaust manifold mating surfaces to prevent exhaust leakage.

SILENCER REMOVAL AND INSTALLATION

To remove the air intake silencer:

1. Disconnect spring from silencer spring washer on left side of carburetor.



1. Spring
2. Left Spring Washer
3. Right Spring Washer

2. Disconnect rubber band from oil tank bracket.

3. Twist silencer and seal off carburetor.

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

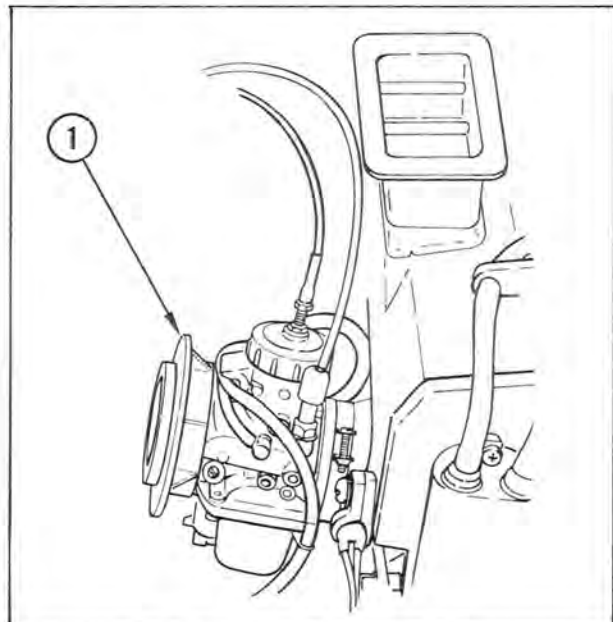
4. Check that silencer spring washer on right side of carburetor holder is pointing down.

CAUTION If silencer spring washer points toward oil tank, vibration may cause it to rub against tank. Eventually, this may cause a hole in tank and subsequent loss of oil.

To install air intake silencer reverse the removal procedure.

NOTE: Be sure the plastic adapter is installed on the carburetor before installing the silencer to prevent breakage of the econo jet fitting.

CAUTION While installing the air intake silencer, check that the rubber seal between the intake silencer and carburetor is properly positioned and secure.



1. Plastic Adapter

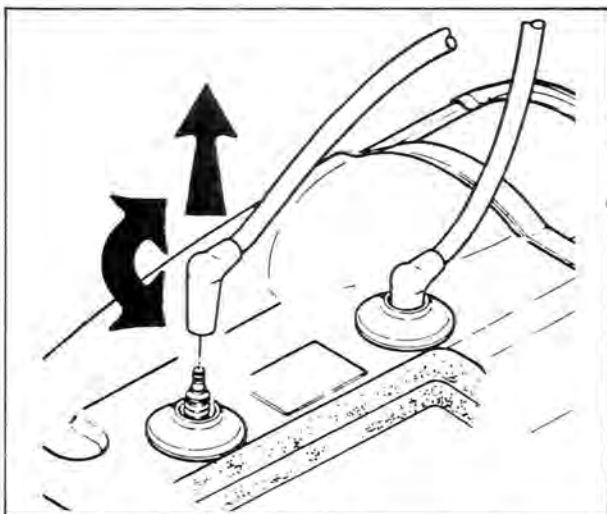
AIR SHROUD REMOVAL AND INSTALLATION

On the drifter the main upper air shroud is rubber. The intake and exhaust side air shrouds are metal.

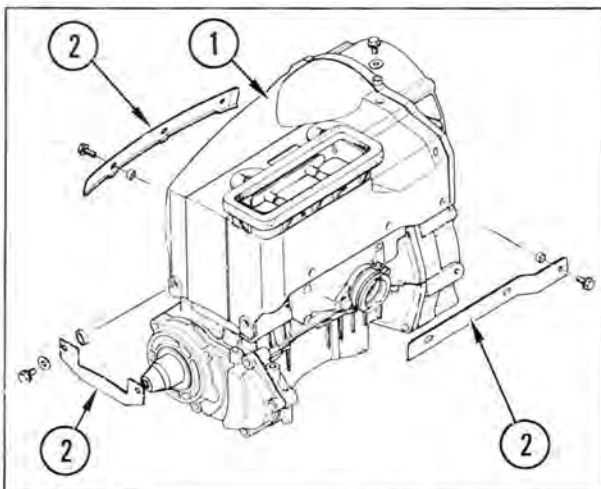
To remove the main upper shroud:

1. Remove spark plug caps. Open converter belt guard.

CAUTION When removing spark plug caps, carefully rotate plug cap back and forth while pulling cap straight upward. Do not attempt to twist or force plug cap off by pulling on lead wires as this will damage the connection.



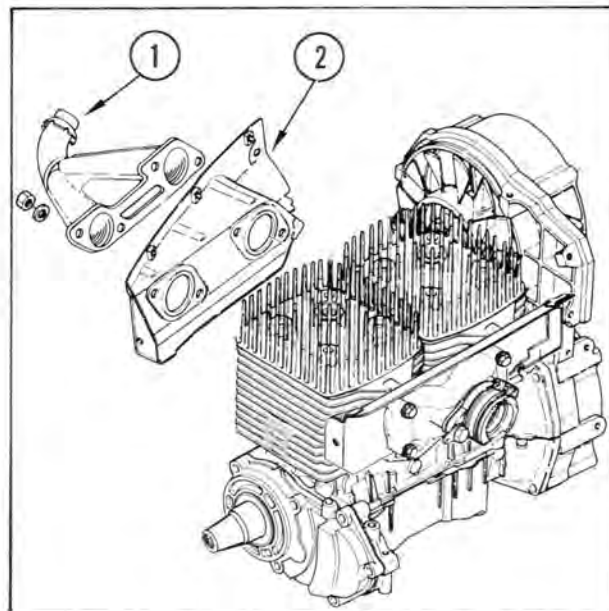
2. Remove bolts, washers and shroud plates securing upper shroud to engine. Note that each mounting hole in shroud has a collar.
3. Remove air shroud.



1. Upper Shroud
2. Shroud Plate

To remove exhaust side shroud:

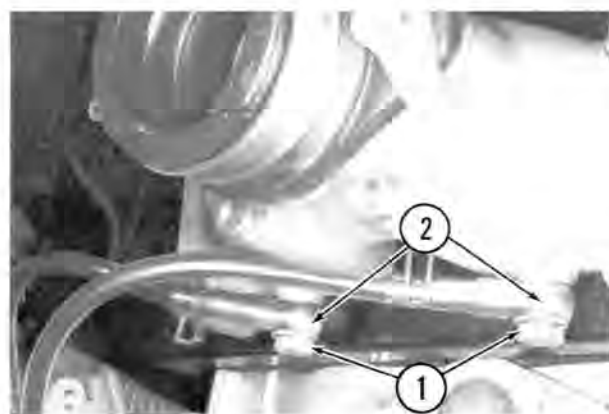
1. Remove muffler. Remove four nuts and spring washers from exhaust manifold studs. Remove exhaust manifold, and exhaust air shroud. Discard gaskets.



1. Exhaust Manifold
2. Exhaust Air Shroud

To remove intake side shroud:

1. Remove air intake silencer. See Silencer Removal and Installation.
2. Loosen carburetor holder clamp and pull carburetor out of holder.
3. Remove oil injection nozzles and check valves from intake manifold.



1. Oil Injection Nozzles
2. Check Valves

4. Remove four bolts from intake manifold and remove intake air shroud, insulator blocks and manifold. Discard gaskets.

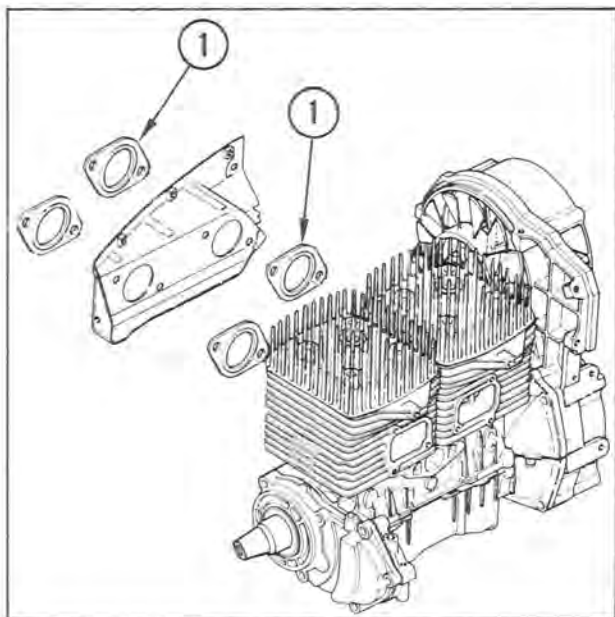
NOTE: Cover the nozzles with a plastic bag or other suitable cover to prevent foreign matter from entering the system.

To install the air shrouds:

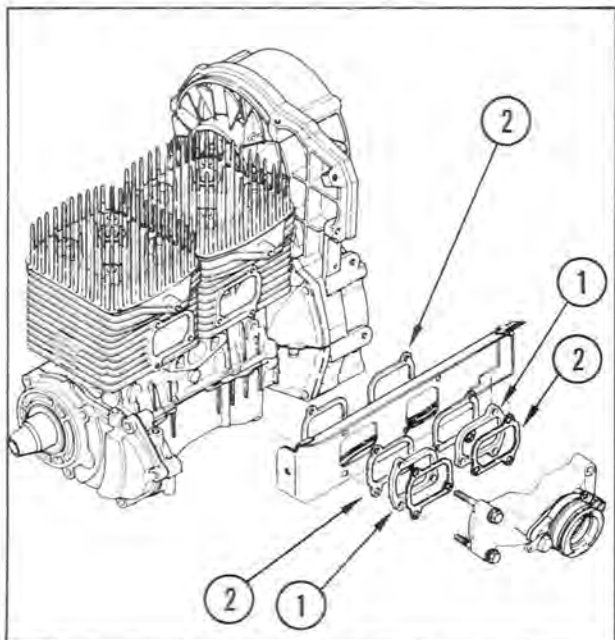
CAUTION If cylinders or cylinder heads have been removed, intake and exhaust manifold bolts must be torqued before torquing the cylinder head nuts.

NOTE: Always use new gaskets when installing the exhaust manifold, intake manifold and oil injection nozzles to prevent leakage.

1. Position exhaust air shroud on studs with exhaust gaskets on both sides. Install exhaust manifold and torque mounting nuts to 12 ft lb (1.7 kg-m). Reinstall muffler.



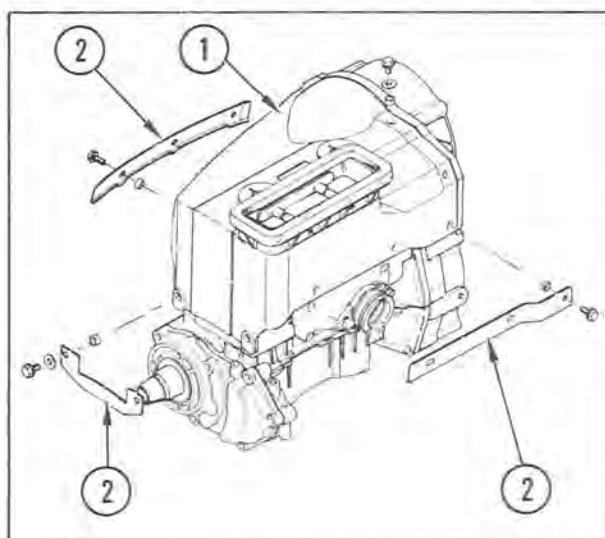
1. Exhaust Gasket



1. Insulator Block
2. Intake Gasket

2. Push mounting bolts through intake manifold. Stack gaskets, insulator blocks and intake air shroud on bolts as shown and install all parts as an assembly on cylinders. Torque mounting bolts to 72 in. lb (0.8 kg-m).
3. Install oil injection nozzles and check valves on intake manifold. Torque nozzles to 10 in. lb (0.1 kg-m).
4. Install carburetor in holder and tighten clamp securely. Reinstall air intake silencer.
5. Install upper air shroud. Fit internal shroud dampers into cylinder head and cylinder fins. Position collars in shroud mounting holes and install bolts, washers and shroud plates. Torque bolts to 60 in. lb (0.69 kg-m).

NOTE: Apply Loctite or other non-permanent locking agent to the main upper air shroud bolts to prevent them from loosening.



1. Upper Shroud
2. Shroud Plate

6. Reinstall spark plug caps. Close and latch converter belt guard.

FAN HOUSING REMOVAL AND INSTALLATION

To remove the fan housing:

1. Remove oil tank and bracket assembly. See Oil Tank Removal and Installation.
2. Remove manual starter. See Starter Assembly Removal and Installation in Section 3 of SA340-A4, SB440-A4, SC340-A1 Shop Manual.
3. Unscrew bolts securing starter pulley cup and lower fan pulley to flywheel, then remove cup and fan belt pulley.



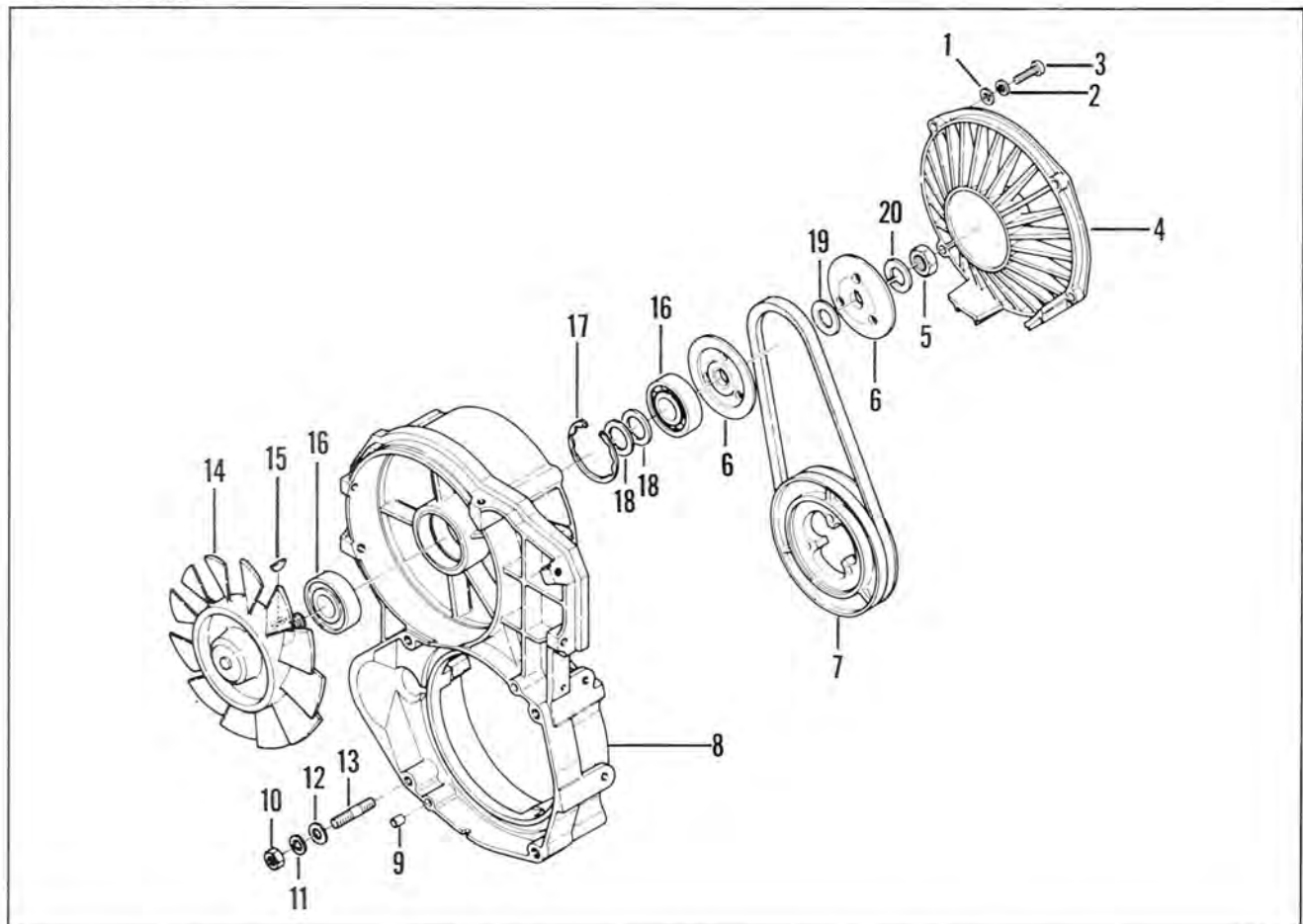
NOTE: When removing nut from stud on the lower front of the fan housing, turn handlebars to the left. Insert a short (5-1/4 to 5-1/2 in. long) 13 mm twelve point box wrench, under engine from the flywheel end, and remove nut.



1. Fan Housing

4. Remove bolts securing fan housing to intake, top, and exhaust air shrouds.
5. Remove screws securing CDI igniter unit and wiring harness connector to fan housing.
6. Unscrew four nuts from studs securing fan housing to crankcase and slide fan housing from engine assembly.

FAN HOUSING



- | | | |
|---------------------|-------------------|------------------------------------|
| 1. Plain Washer | 8. Fan Housing | 15. Woodruff Key |
| 2. Spring Washer | 9. Dowel Pin | 16. Ball Bearing |
| 3. Pan Head Screw | 10. Nut | 17. Circlip |
| 4. Fan Screen | 11. Spring Washer | 18. Shim, 1.0 mm thick |
| 5. Nut | 12. Plain Washer | 19. Pulley Shim, 0.6 mm thick (AR) |
| 6. Fan Pulley | 13. Stud | 20. Spring Washer |
| 7. Fan Drive Pulley | 14. Cooling Fan | |

To install the fan housing:

1. Install fan housing on crankcase. Secure using nuts and washers previously removed. Torque nuts to 11 ft lb (1.5 kg-m).
2. Install CDI igniter unit and wiring harness connector on fan housing and tighten screws securely.
3. Install bolts to secure fan housing to intake, top, and exhaust air shrouds.

NOTE: Apply Loctite to air shroud bolts.

4. Install fan belt, fan drive pulley and starter cup to flywheel. Secure using three bolts and lock washers. Tighten bolts evenly to prevent distortion of pulleys.

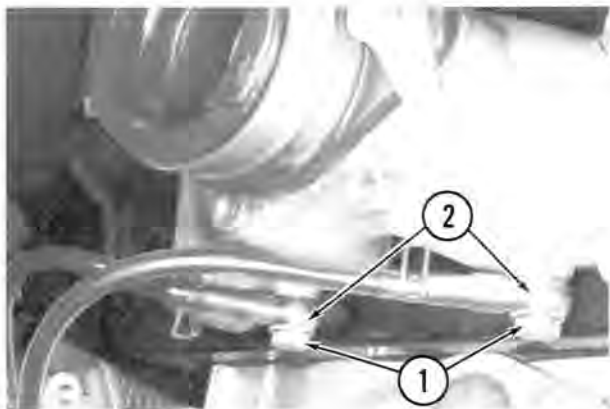
NOTE: Install fan drive pulley with machined shoulder toward flywheel.

5. Check fan belt tension. Refer to Fan Belt Tension Adjustment in Section 2 of base Shop Manual.
6. After fan belt tension is correct, install manual starter.
7. Reinstall oil tank and bracket assembly.

INTAKE MANIFOLD REMOVAL AND INSTALLATION

To remove the intake manifold:

1. Remove air intake silencer. See Silencer Removal and Installation.
2. Loosen carburetor holder clamp and pull carburetor out of holder. Remove two bolts securing carburetor holder to intake manifold.



1. Oil Injection Nozzles
2. Check Valves

NOTE: Cover the nozzles with a plastic bag or other suitable cover to prevent foreign matter from entering the system.

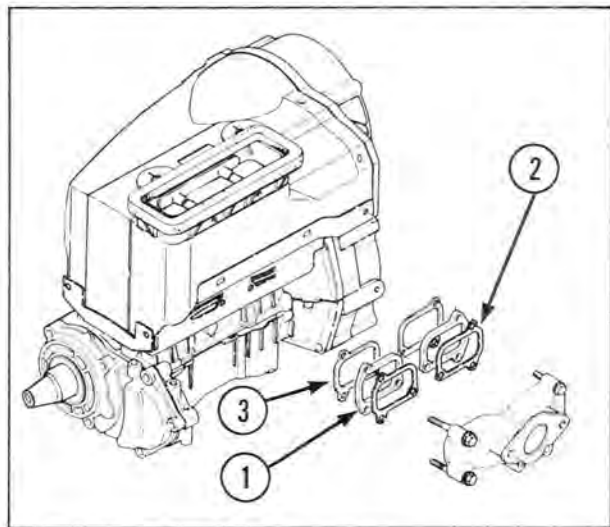
4. Remove four bolts from intake manifold and remove manifold.
5. Clean gaskets and gasket material from oil injection nozzles and check valves, manifold, insulator blocks and intake side air shroud.

To install the intake manifold:

CAUTION If cylinders or cylinder heads have been removed, the intake manifold bolts must be torqued before torquing the cylinder head nuts.

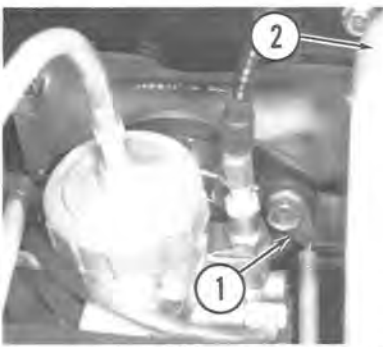
NOTE: Always use new gaskets when installing the intake manifold and oil injection nozzles to prevent leakage.

1. Push mounting bolts through intake manifold. Stack gaskets and insulator blocks on bolts as shown. Install assembly on cylinders. Torque mounting bolts to 72 in. lb (0.8 kg-m).



1. Insulator Block
2. Intake Gasket
3. Intake Gasket

2. Install oil injection nozzles and check valves on intake manifold. Torque nozzles to 10 in. lb (0.6 kg-m).
3. Install carburetor holder on intake manifold and torque bolts to 40 in. lb (0.6 kg-m). Be sure to position silencer spring washer on right side of carburetor holder so it points down.



1. Silencer Spring Washer
2. Oil Tank

CAUTION

If silencer spring washer points toward oil tank, vibration may cause it to rub against tank. Eventually, this may cause a hole in tank and subsequent loss of oil.

4. Install carburetor in holder and tighten clamp securely.
5. Install air intake silencer.

CYLINDER REMOVAL AND INSTALLATION

NOTE: To service the cylinders and pistons, engine removal is not required.

To remove the cylinders:

1. Remove main upper air shroud, intake side air shroud and exhaust side air shroud. See Air Shroud Removal and Installation.
2. Remove spark plugs. Mark heads, cylinders, and crankcase for reference in reassembly.
3. Remove eight nuts, lockwashers and washers securing cylinder heads to cylinders. Carefully remove cylinder heads and gaskets. Discard gaskets.



4. Gently tap cylinder with a soft mallet to release seal.

5. Carefully remove cylinders from crankcase studs. Hold piston during cylinder removal to prevent piston from suddenly contacting studs or crankcase.

NOTE: Before lifting the cylinder off the piston, raise it just enough to push a shop towel into the crankcase opening. This will prevent any foreign material from falling into the crankcase.

6. Remove and discard cylinder base gaskets. Scrape any gasket material from crankcase and cylinder.



To install the cylinders:

1. Install new cylinder base gaskets on crankcase.
2. Apply a light coat of oil to bearing on each end of rod, inside of cylinders and outside of pistons. Align piston rings with locating pins on piston and using ring compressor tool No. T57001-130 compress the rings and install cylinders over pistons.

CAUTION

Piston rings must align properly with locating pins located in ring groove to prevent breakage.



3. Install new head gaskets on cylinders.
4. Set cylinder heads in place on correct cylinders and loosely install the eight nuts, washers and lockwashers. Do not tighten cylinder nuts until intake and exhaust manifolds have been installed.
4. Install air shrouds.
5. Install spark plugs and torque to 20 ft lb (2.77 kg-m).

PISTON REMOVAL AND INSTALLATION

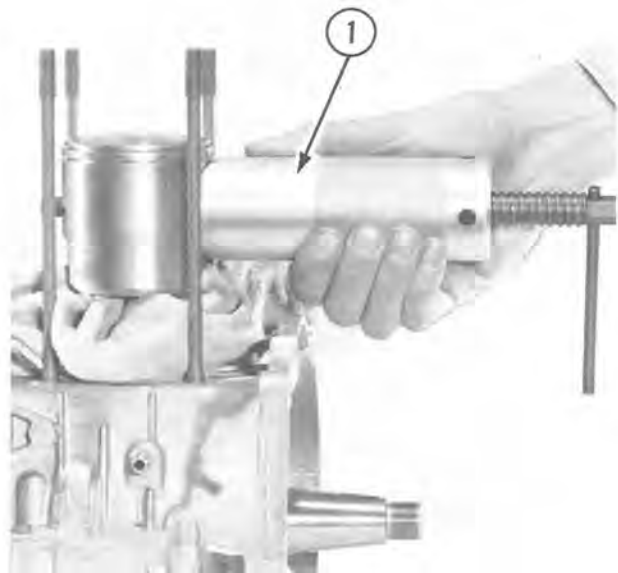
To remove the pistons:

1. Remove cylinders. See Cylinder Removal and Installation.
2. Make sure crankcase is sealed with shop towel. Then remove piston pin circlips. Discard circlips.



3. Using piston pin puller tool No. T57001-910 remove piston pins from pistons and remove piston from connecting rod.

NOTE: Keep each piston, piston pin and bearing together as a set. Mark pistons left and right to assure correct reassembly.

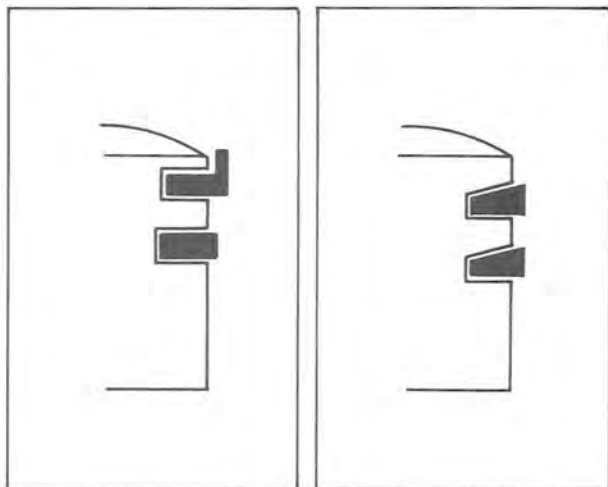


4. Using a ring expander tool remove rings from piston.

NOTE: Do not interchange rings between pistons.

To install the pistons:

1. Install piston rings with markings upward.



SB340

SB440

2. Apply light coat of oil to piston pin needle bearings and insert needle bearings into upper connecting rod.
3. Install piston to connecting rod with arrow pointing toward exhaust side. Insert piston pin and secure piston pin using new circlips.

CAUTION

New circlips must be used to prevent serious engine damage.

4. Reinstall cylinders.

CYLINDER HEAD/CYLINDER/PISTON INSPECTION

Cylinder Head

1. Remove excessive carbon from inside cylinder head using a nonferrous carbon scraper, or cylinder head brush.
2. Inspect cooling fins for damage.
3. Wash cylinder head in solvent and blow dry using compressed air.
4. Place a straight edge across the gasket surface of the head to detect any warpage. Measure in several spots. If slight distortion is present it can be corrected by placing No. 400 sandpaper on a surface plate and rubbing head in a circular motion on the sandpaper to remove high spots.

NOTE: Dying the gasket surface before you begin will indicate high spots after some sanding.

Cylinder

1. Check the cylinder for damaged or broken fins.
2. Thoroughly clean all carbon deposits from exhaust ports and cylinder walls.
3. Check cylinder wall for excessive scoring.
4. Using an inside micrometer check cylinder bore for out-of-round or taper condition.

NOTE: To check for out-of-round of the cylinder bore move the micrometer in a circular direction, 90° at a time. The difference in measurements obtained should not exceed 0.002 in. (0.05 mm).

NOTE: To check for taper of the cylinder bore, move the micrometer from the top to the bottom of the cylinder. The difference in the measurements obtained (between top and bottom) should not exceed 0.002 in. (0.05 mm).



5. Using an inside micrometer check the cylinder bore for wear. If the cylinder diameter exceeds the service limit, replace the cylinder.
6. Examine the cylinder wall for excessive wear, scoring or deep lines, and replace cylinder if necessary. The cylinders in this engine are aluminum with chrome plated bores. They cannot be honed or rebored.

CYLINDER BORE DIAMETER

MODEL	STANDARD (NEW)	SERVICE LIMIT (USED)
SB340	2.3624 - 2.3632 in. (60.005 - 60.025 mm)	2.366 in. (60.10 mm)
SB440	2.6774 - 2.6781 in. (68.005 - 68.023 mm)	2.681 in. (68.10 mm)

Piston

1. Remove all carbon from piston dome, ring grooves and piston skirt.

NOTE: If piston dome or skirt is scored or pitted from overheating, replace piston and piston rings.

2. Using a micrometer measure the outside diameter of each piston at right angle to piston pin hole and 3/16 in. (4.76 mm) from bottom.



PISTON SKIRT DIAMETER

MODEL	STANDARD (NEW)	SERVICE LIMIT (USED)
SB340	2.3607 - 2.3614 in. (59.961 - 59.980 mm)	2.355 in. (59.82 mm)
SB440	2.6744 - 2.6752 in. (67.929 - 67.950 mm)	2.670 in. (67.82 mm)

Should the measured piston skirt diameter be less than the service limit specified in the above table, replace the piston. Measure the skirt diameter of the new piston to be used, and subtract the figure obtained from the measured cylinder bore diameter. Piston skirt-to-cylinder wall clearance must be between:

PISTON SKIRT CLEARANCE

SB340 MODEL	0.001 to 0.003 in. (0.0254 to 0.0762 mm)
SB440 MODEL	0.002 to 0.004 in. (0.050 to 0.101 mm)

If this computed difference is greater than the specified tolerance, a new cylinder will also be needed.

3. Check piston pin for wear or damage. Using a 1 in. outside micrometer measure piston pin diameter.

Should piston pin diameter be less than specified service limit, pin and needle bearing must be replaced.



PISTON PIN DIAMETER

MODEL	STANDARD (NEW)	SERVICE LIMIT (USED)
ALL	0.6297 - 0.6299 in. (15.994 - 16.000 mm)	0.628 in. (15.98 mm)

4. Measure piston pin bore diameter by inserting a snap gauge approximately 1/4 in. (6.35 mm) into piston pin bore. Remove snap gauge and measure it using a 1 in. outside micrometer. If measured diameter is greater than service limit, replace piston.



PISTON PIN BORE DIAMETER

MODEL	STANDARD (NEW)	SERVICE LIMIT (USED)
ALL	0.6299 - 0.6301 in. (15.999 - 16.005 mm)	0.633 in. (16.08 mm)

5. Check needle bearings and needle bearing cage for wear or overheating.
6. Check piston ring gap by inserting piston ring into cylinder horizontally. Insert a feeler gauge in the opening between the ends of the piston ring. If maximum ring gap exceeds the service limit when measured at the top and the bottom of the cylinder bore, replace the rings.



PISTON RING END GAP

MODEL	STANDARD (NEW)	SERVICE LIMIT (USED)
SB340	0.006 - 0.014 in. (0.15 - 0.35 mm)	0.028 in. (0.7 mm)
SB440	0.008 - 0.016 in. (0.2 - 0.4 mm)	0.028 in. (0.7 mm)

7. On the SB340, install the piston rings in their grooves. Take several measurements with a feeler gauge to determine ring to groove clearance. If the clearance exceeds the service limit, replace the rings and remeasure ring to groove clearance. If the dimension still exceeds the service limit, replace the piston.



PISTON RING/GROOVE CLEARANCE
TOP AND BOTTOM

MODEL	STANDARD (NEW)	SERVICE LIMIT (USED)
SB340	0.0010 - 0.0036 in. (0.03 - 0.09 mm)	0.008 in. (0.19 mm)

NOTE: This procedure applies only to the SB340 pistons which use a Dykes top ring and a rectangular second ring. This procedure does not apply to the SB440 pistons which use keystone rings.

ENGINE REMOVAL AND INSTALLATION

Removal

1. Remove the hood.
2. Remove the retainer pins, drive belt guard and drive belt.
3. Remove the muffler.
4. Remove the intake silencer. Loosen the carburetor holder clamp and pull the carburetor out of the holder.
5. Remove the oil tank and bracket assembly. Disconnect the oil pump cable and oil supply tube from the oil injection pump.
6. Remove the spark plug caps. Remove the CDI igniter unit and wire harness connector from the fan housing. Unplug the wire harness connector.
7. Remove the starter handle from the rope guide on the steering mount.
8. Disconnect the fuel impulse tube from the engine crankcase.

9. Remove the four engine mounting bolts securing the engine mount plate to the front frame. Remove the washers, rubber mounts and spacers.

10. Remove the engine and mount plate from the snowmobile.

Installation

NOTE: Prior to installing the engine, make a crankcase pressure test to be sure there are no air leaks.

Install the engine by reversing the removal procedures along with the following:

- ☐ After step 9 check converter center-to-center distance, offset and parallelism before tightening engine mounting bolts. See Converter Alignment.
- ☐ After step 3 bleed the oil pump supply tube, synchronize the oil pump and carburetor and purge air from the oil pump outlet tubes. See Bleeding Oil Pump Supply Tube, Oil Pump Cable Adjustment, and Purging Air From Oil Pump Outlet Tubes.

NOTE: Adjust the idle speed after purging air from the oil pump outlet tubes.

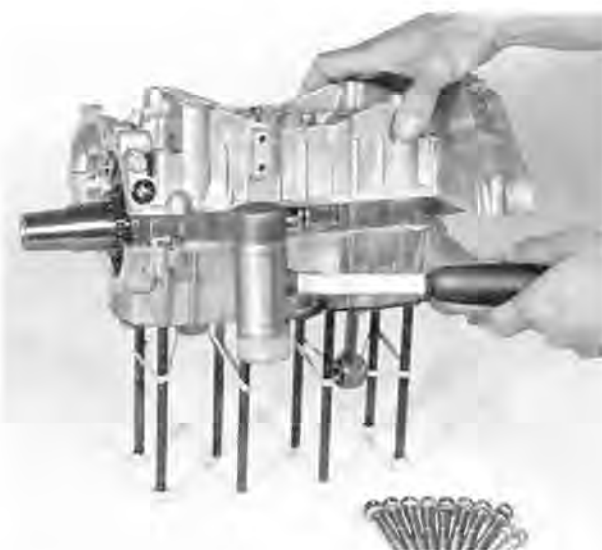
CRANKSHAFT REMOVAL AND INSTALLATION

To remove the crankshaft:

1. Remove the engine. See Engine Removal and Installation.
2. Remove the fan housing. See Fan Housing Removal and Installation.
3. Remove the oil injection pump. See Oil Pump Removal and Installation.
4. Remove the pistons. See Piston Removal and Installation.
5. Remove the flywheel and stator assembly. Refer to Section 3 in the SA340-A4, SB440-A4, SC340-A1 Shop Manual.
6. Remove the two bolts and the hole cover from the crankcase.
7. Remove the bolts securing the crankcase halves together. Remove the lower crankcase from the upper crankcase.
8. Use a mallet or a soft hammer to break the crankcase seal and separate the two halves.
9. Lift the crankshaft assembly straight up and out of the crankcase.

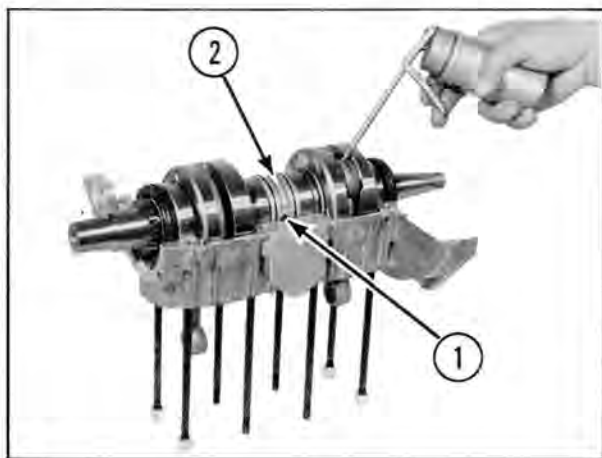
CAUTION

To prevent internal crankcase damage lift the crankshaft equally at each end during removal process.



To install the crankshaft:

1. Place the crankshaft assembly into the crankcase. Be sure the dowel pin on labyrinth seal is properly located in the notch of the upper crankcase half. Apply a liberal amount of oil to all the bearings on the crankshaft assembly. Be sure that the lips of the oil seals and the thrust washers near the center main bearings are properly seated in the grooves in the upper crankcase half.

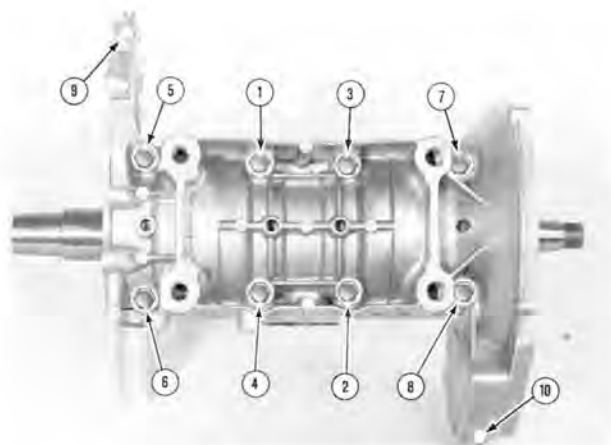


1. Dowel Pin
2. Labyrinth Seal

2. Apply a continuous thin bead of Kawasaki Sealer to the upper crankcase half.



3. Install the lower half of the crankcase. Torque the bolts in a criss-cross pattern as shown. Bolts numbered one through eight torque to 16 ft lb (2.2 kg-m). Bolts numbered nine and ten torque to 70 in. lb (0.8 kg-m).

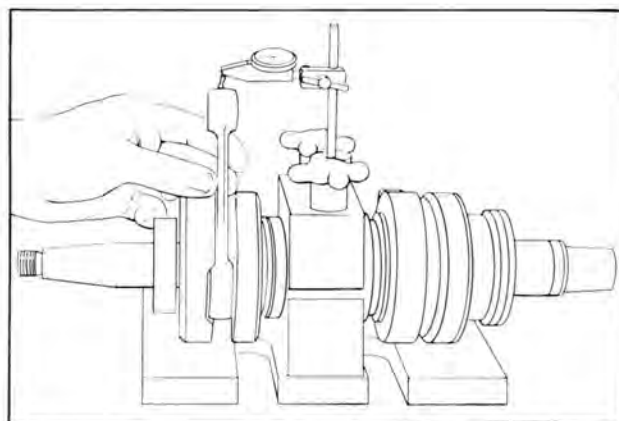


4. To complete engine assembly and installation in the frame, reverse steps 1 through 6 in Crankshaft Removal.

CRANKSHAFT INSPECTION

1. With a feeler gauge check the side clearance of the connecting rods. The correct tolerance is 0.016 to 0.020 in. (0.4 to 0.5 mm). If the clearance is greater than this replace the crankshaft assembly.
2. Check the crankshaft center bearings for wear or rough spots. If the center bearings show wear or have rough spots replace the crankshaft assembly.

3. To check the connecting rod radial clearance, set up the crankshaft as shown with a dial indicator. With the connecting rod perpendicular pull the connecting rod up toward the dial indicator. Then push the connecting rod down towards the crank pin. The difference between these two readings is the radial clearance. The allowable radial clearance is 0.0008 to 0.0012 in. (0.021 to 0.031 mm), if the radial clearance exceeds these dimensions replace the crankshaft assembly.

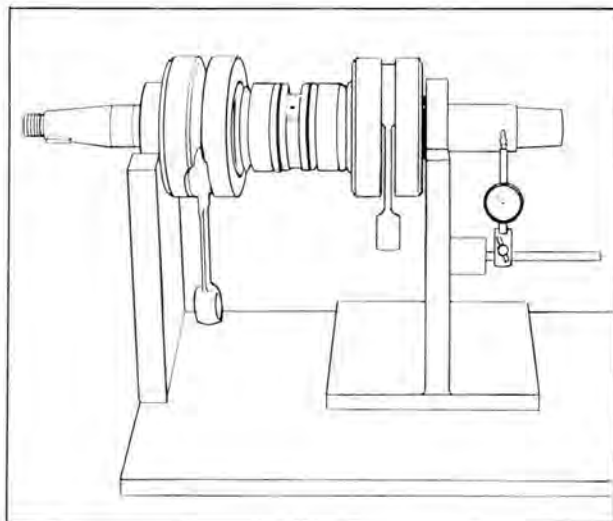


4. If the outer bearings, seals or oil pump drive gear require replacement, remove these parts with a bearing puller. Never hammer on the bearings or crankshaft to remove these parts.

When installing the bearing or gear, heat the parts with a heat gun or place on top of a light bulb. The parts will expand for easy installation.

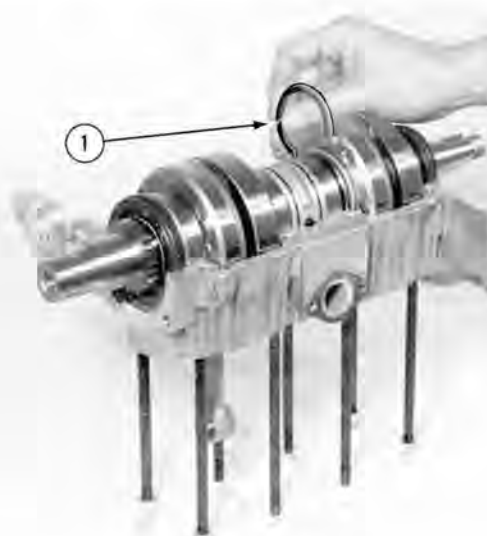


5. If the outer bearings on either end have been replaced or a new oil pump drive gear has been pressed onto the crankshaft, the crankshaft must be checked for alignment. Place the crankshaft on V-blocks and use a dial indicator as shown to check the alignment. Maximum run out permissible is 0.002 in. (0.05 mm) TIR (Total Indicated Reading). If the run out exceeds this dimension replace the crankshaft assembly.

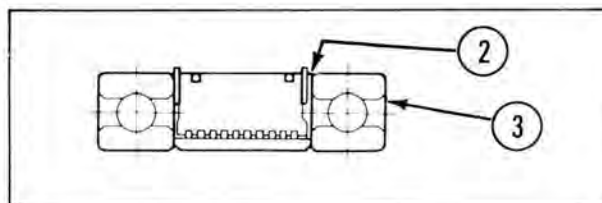


"SHIM" TO BE USED

Thickness	Part No.
0.0276 ± 0.0012 in. (0.7t ± 0.03 mm)	92025-3001
0.0315 ± 0.0012 in. (0.8t ± 0.03 mm)	92025-3002
0.0354 ± 0.0016 in. (0.9t ± 0.04 mm)	92025-3003
0.0393 ± 0.0016 in. (1.0t ± 0.04 mm)	92025-3004
0.0472 ± 0.0020 in. (1.2t ± 0.05 mm)	92025-3005



6. When reinstalling crankshaft into crankcase measure crankshaft end play. The end play can be measured with a feeler gauge between the center bearing and the thrust washer at the magneto end. The end play can also be measured by placing a dial indicator against one end of the crankshaft and moving it to one end of the crankcase and then back to the other end of the crankcase. The difference in the two readings is end play. Select a shim from the chart below to permit 0.003 to 0.005 in. (0.08 to 0.13 mm) end play. Maximum allowable end play is 0.015 in. (0.38 mm). Install the selected shim between the thrust washer and the crankshaft center bearing on the magneto end. Use only one shim to control crankshaft end play.



1. Shim
2. Insert Shim Here
3. Magneto End

C

C

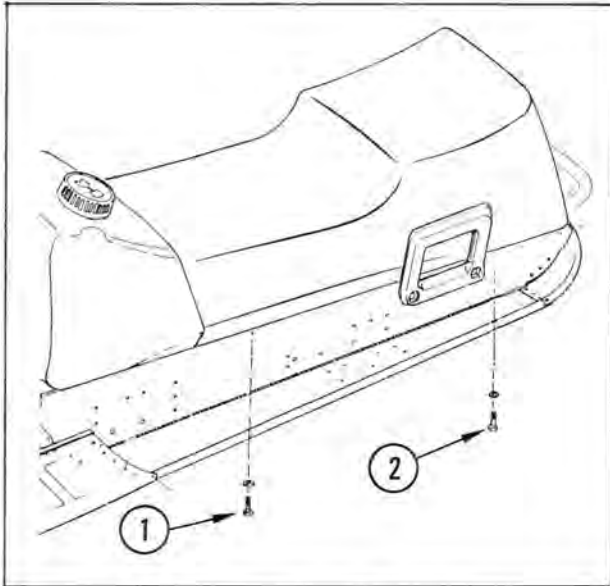
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CHASSIS

SEAT REMOVAL AND INSTALLATION

To remove the seat:

1. Open hood and disconnect taillamp wire connector located in front of fuel tank beneath air intake silencer.
2. Remove two bolts from under frame at rear corners of seat.
3. Remove two round head screws from under frame at front corners of seat.



1. Round Head Screw
2. Bolt

4. Lift off seat.

NOTE: Guide taillamp wires under fuel tank so connector does not become caught and possibly damage wires.

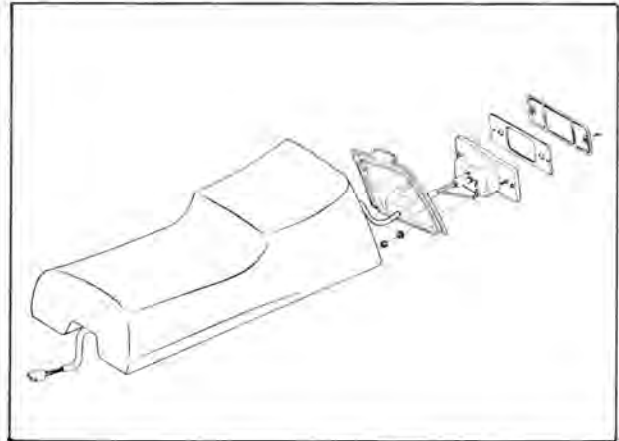
To install the seat:

1. Position seat on frame so you can feed taillamp wires under fuel tank.
2. Shift seat into proper position. Install two round head screws at front corners of seat.
3. Install bolts at rear corners of seat.
4. Torque screws and bolts to 35 in. lb (0.4 kg-m).
5. Reconnect taillamp wire connector and make sure taillamp operates correctly.

TAILLAMP REMOVAL AND INSTALLATION

To remove the taillamp:

1. Remove seat.
2. Disconnect bunjie cords from storage case cover.



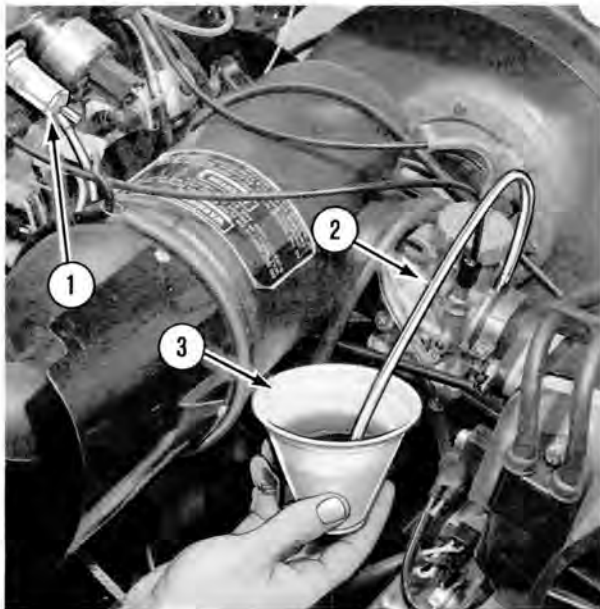
3. Remove two nuts from inside of cover. Pull taillamp wires through cover to remove taillamp.

To install the taillamp reverse the removal procedure.

STORAGE

PREPARATION FOR STORAGE

1. Thoroughly clean the snowmobile by hosing off all dirt and grime from the suspension and the engine compartment.
2. Remove the drive belt.
3. Siphon the fuel from the fuel tank.
4. To prevent rust, internal engine components must be coated with oil. This procedure is called "Engine Fogging."
 - a. Remove tube from carburetor to the primer pump at the primer pump fitting.
 - b. Submerge open end of tube into container of Kawasaki Snowmobile Oil.



1. Primer Pump
2. Primer to Carburetor Tube
3. Container of Kawasaki Snowmobile Oil

- c. Start engine and allow it to run at idle. Siphon action will draw oil into the carburetor lubricating the engine internally.

WARNING To prevent severe personal injury while the engine is running, stay clear of moving parts and do not contact the hot exhaust system components.

- d. Because fuel tank has been drained, the engine will stop when fuel in the fuel system has been consumed.
- e. Reinstall primer tube onto primer fitting and continue with preparation for storage.

5. Position the snowmobile on its side on a protective surface. Drain the fuel from the carburetor through the vent tube as shown. Position the vent tube into the retainer on the carburetor properly after all the fuel has been drained.

CAUTION Failure to drain fuel from carburetor prior to long term storage may cause restrictions in carburetor passageways and jets. This can lead to lean fuel-to-air intake mixtures that may cause severe engine damage.



1. Vent Tube

6. With a rag or masking tape, plug the openings of the air intake silencer and muffler.
7. Check the chaincase lubricant level.
8. Replace the fuel filter.
9. Drain and refill engine gearcase.
10. The driven converter sheaves are steel. To prevent rusting, apply a light coat of oil to both driven converter sheaves.

CAUTION DO NOT LUBRICATE THE DRIVE CONVERTER.

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

12. Loosen the rear axle adjusting bolts to relieve track tension.
13. If paint is scratched, use touch-up paint to restore original finish, and wax the hood and chassis using an automotive type wax.
14. Cover the snowmobile to protect it from dirt and dust.
15. Protect track clips from rusting and extend slide wear strip service life by applying a moisture remover or anti-rust product (such as WD-40, LPS or equivalent) to all exposed areas of each track clip.

REMOVAL FROM STORAGE

1. Fill the fuel tank with fresh fuel.
2. Fill the oil tank with Kawasaki Snowmobile Oil.
3. Check the oil tube connecting the oil tank to oil pump for air bubbles. If any air is present, bleed the oil tube and pump.
4. Check and fill engine oil pump gearcase. Use KAWASAKI ENGINE GEARCASE OIL. Level should be above center of sight gauge but not higher than the top.
5. Remove the plugs (masking tape or rags) from the air intake silencer and muffler outlet.

6. Using a suitable solvent, clean the converter sheaves. The converter sheaves must be clean and dry.
7. Install a new drive belt. Use the one removed last year as a spare.
8. Adjust the track tension.
9. Start the engine and rotate the track several revolutions, at low speed only, then stop engine and check the track alignment.

WARNING

To avoid possible personal injury, never allow anyone to stand behind snowmobile while track is rotating. Be sure engine has stopped before checking or adjusting track alignment. Remove all tools and foreign matter from track area before starting engine.

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

GENERAL TROUBLESHOOTING

ENGINE

Engine does not start - no spark.

1. Key switch not ON or malfunctioning.
2. Emergency stop switch in OFF position or malfunctioning.
3. Spark plug(s) fouled, oiled or damaged.
4. Plug cap(s) damaged, leaking or shorted.
5. High tension wire(s) loose, grounded or shorted.
6. Weak flywheel magnets.
7. Faulty exciter coil.
8. Faulty CD igniter.
9. Faulty pulser coil.

Engine will not start - does not get fuel.

1. Fuel tank empty.
2. Cracked, broken or pinched fuel line.
3. Obstructed or damaged fuel pump filter.
4. Carburetor jets plugged or fuel pump malfunctioning.
5. Impulse line is cracked, broken or pinched.
6. Carburetor adjusted incorrectly.

Engine will not start - fuel will not ignite.

1. Air leak between carburetor, silencer seal or intake manifold.
2. Carburetor adjusted incorrectly.
3. Water in carburetor.
4. Engine is flooded.
5. No compression (worn or broken rings, scored piston, hole in piston or damaged cylinder).
6. Blown head gasket.

Engine does not idle or idle RPM fluctuates.

1. Air screw adjusted incorrectly.

2. Idle screw adjusted incorrectly.
3. Faulty fuel pump (check valve).
4. Belt dust restricting passages in carburetor bore.
5. Impulse line cracked, kinked or broken.
6. Enrichener cable adjusted incorrectly.
7. Oil seals leaking.
8. Air leak (pressure check engine).

Engine develops power loss or runs on one cylinder.

1. Fouled or faulty spark plug(s).
2. Obstruction inside of muffler.
3. In-line filter obstructed.
4. Excessive carbon buildup in exhaust port(s).
5. Damaged or worn rings.
6. Low crankcase pressure.
7. Damaged piston.
8. Damaged head gasket.
9. Broken (shorted) high tension leads.
10. Faulty spark plug cap(s).
11. Faulty CDI igniter.
12. Faulty pulser coil.

Engine overheats.

1. Incorrect spark plug(s).
2. Cooling fins obstructed.
3. Air leak between carburetor, intake manifold or cylinders.
4. Carburetor adjusted incorrectly.
5. Excessive carbon deposits in combustion chamber, exhaust port or muffler.
6. Damaged rings caused by excessive carbon buildup.

Engine backfires; has irregular running condition.

NOTE: Engine may eventually overheat.

1. High tension lead wire shorting out.
2. Fouled or incorrect spark plug(s) (heat range too hot).
3. Air leak between carburetor and intake manifold.
4. Air leak between intake manifold and cylinders.

Engine four-cycles.

1. Carburetor incorrectly adjusted.
2. Dirt between needle valve and valve seat.

Engine stops (suddenly) after running.

1. Obstruction in fuel tank or fuel filter.
2. Fuel line obstructed or pinched.
3. Faulty exciter coil.
4. Spark plug bridged.
5. Seized piston(s).
6. Seized crankshaft.
7. Faulty CDI igniter.
8. Faulty pulser coil.

Engine stops (gradually) after running.

1. Obstruction in fuel tank or fuel filter.
2. Fuel line obstructed or pinched.
3. Damaged head gasket(s).
4. Loose cylinder head.
5. Loose spark plug(s).

DRIVE CONVERTER

Drive converter engages before specified RPM.

1. Incorrect spring.
2. Weak or damaged spring.
3. Incorrect weights.

Drive converter engages after specified RPM.

1. Incorrect spring.

2. Incorrect weights.

3. Dirty movable sheave.

4. Worn (flat spots) rollers and ramps.

5. Bushing in housing worn excessively on inside diameter.

Maximum drive converter RPM too high.

1. Incorrect weights.
2. Short belt or incorrect center-to-center distance.

Maximum drive converter RPM too low.

1. Incorrect weights (too heavy).
2. Long belt or incorrect center-to-center distance.

Shifting too quickly.

1. Incorrect weights (too heavy).
2. Weak drive spring.
3. Driven spring preload incorrect (too loose).

Shifting too slowly.

1. Incorrect weights (too light).
2. Spring too strong.
3. Driven spring preload too tight.

Belt deposits on stationary sheave and movable sheave.

1. Wrong offset and center-to-center distance.

Drive converter will not disengage at idle - engine starts hard and stalls because of belt drag.

1. Drive belt outside circumference below specifications.
2. Thickness of belt on inside diameter exceeds specifications.

DRIVEN CONVERTER

Low engine RPM yet belt shifts completely through driven converter operating range.

1. Weak spring or broken spring.

High engine RPM yet belt takes too long to shift through driven converter range.

1. Incorrect spring - too heavy.
2. Dirt on movable or stationary sheave.
3. Excessively worn movable or stationary sheave.

DRIVE BELT

Side of belt glazed or baked - caused by excessive heat buildup.

1. Incorrect belt - excessive slippage.
2. Too much throttle applied under heavy load - excessive slippage.
3. Weak drive converter spring.
4. Drive converter engagement RPM too low.
5. Improper drive converter operation (sticking, etc.).
6. Drive converter and driven converter offset/center-to-center is incorrect.
7. Oil or grease on drive converter or driven converter sheave surface.

Lugs worn off inside of belt.

1. Drive converter engages suddenly (engagement speed too high).
2. Center-to-center distance too far apart or belt too short.

Belt worn in one spot.

1. Track frozen to suspension, front drive or ground.
2. Incorrect track tension.
3. Idle speed too high.
4. Improper operation of drive converter.

Cracks at base of belt lug.

1. Continuous overrevving when snowmobile is operated.

CHAINCASE

Rattle in chaincase.

1. Incorrect chain tension.
2. Chain stretched beyond adjustable limit.

Chain slippage.

1. Incorrect chain tension.
2. Chain stretched beyond adjustable limit.
3. Sprocket teeth worn.

Chain slips off sprockets.

1. Incorrect chain tension.
2. Sprocket teeth worn.
3. Sprockets misaligned.

TRACK

Edge of track is frayed.

1. Track is misaligned.
2. Track strikes rivets in tunnel, yet alignment is correct.

Track is grooved (worn) or burnt on inside surface.

1. Track tension is too tight.
2. Rear idler wheels do not turn or otherwise damaged.

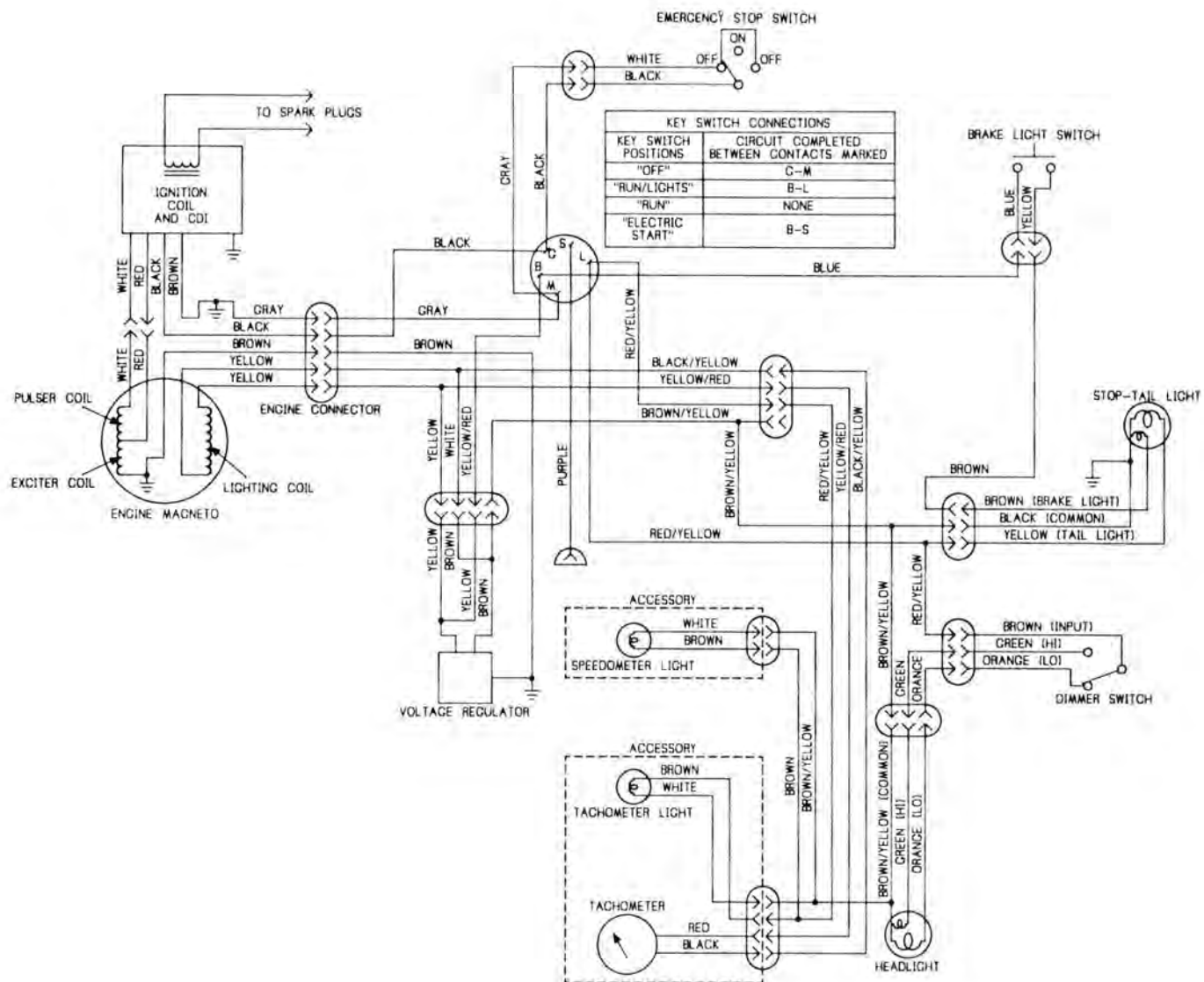
Track ratchets or hits on body tunnel (top).

1. Track tension is too loose.

Accelerated rail strip wear.

1. Slide rail(s) bent.
2. Badly worn clip that contacts slide rail.
3. Track is misaligned.

WIRING DIAGRAM



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FUEL AND OIL RECOMMENDATIONS

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" and "super oils" is **NOT RECOMMENDED**.

Filling Oil Tank

Fill oil tank with recommended oil. **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.

FUEL RECOMMENDATION

Use leaded gasoline with a minimum PUMP POSTED ANTI-KNOCK INDEX NUMBER OF 89. **DO NOT USE GASOHOL.**

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 fuel tank only in an area that is well ventialed and free from pilot lights and sparks.

Fuel 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 re-

quired 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.)	3.0 gal. (U.S.) 2.6 gal. (Imp.)
1 pint (Imp.)	3.0 gal (Imp.) 3.8 gal. (U.S.)

Fuel 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 mix by following the manufacturer's recommendations on the container for a proper mix ratio of fuel with antifreeze.



CAUTION

Each time fuel tank is filled, gasoline antifreeze must be added to fuel mixture. 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 the 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 ventilaed and free from pilot lights and sparks.

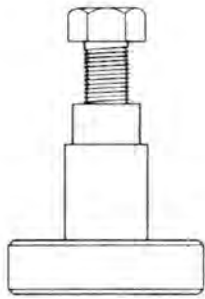
Fill the fuel tank slowly and pour the fuel mixture into the tank using a funnel with a fine mesh screen.

C

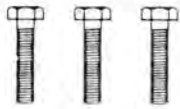
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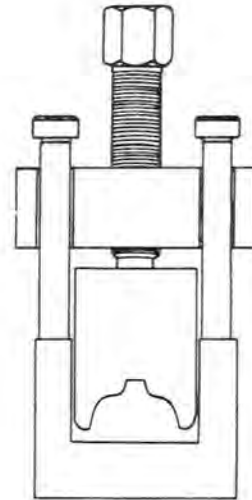
SPECIAL TOOLS



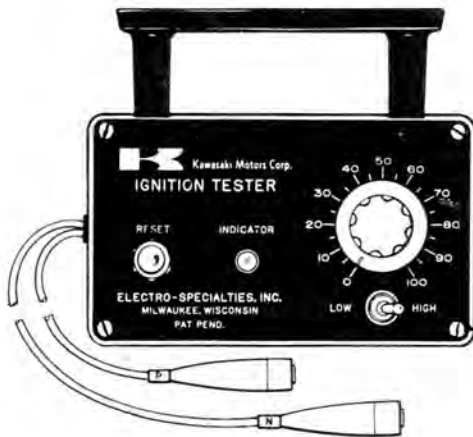
Part No. 57001-3509
Flywheel Puller



Part No. 110P0620
Flywheel Puller Bolt



Part No. 57001-3519
Track Clip Tool Assembly



Part No. T56019-201 CD Ignition Tester



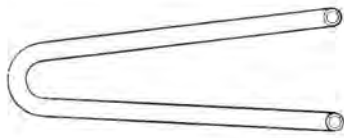
Part No. 57001-983
Multimeter Tester



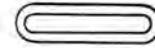
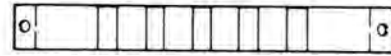
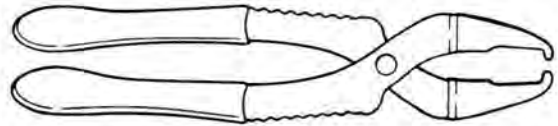
Part No. 92104-002 Liquid Gasket Sealer



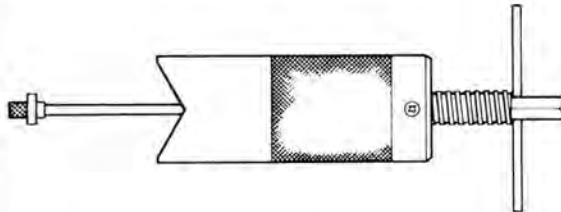
Part No. 57001-3507
Suspension Spring Adjuster



Part No. 57001-3506 Fan Pulley Holder



Part No. T57001-130
Piston Ring Compressor Set



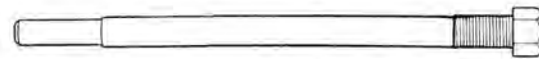
Part No. T57001-910 Piston Pin Puller



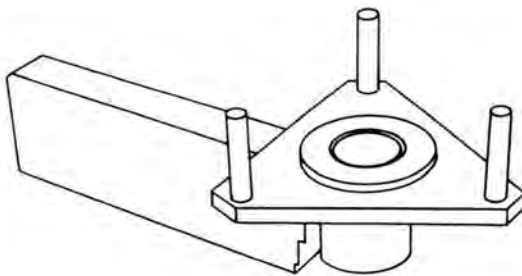
Part No. 49075-3612
Loctite No. 271



Part No. 57001-3515 Converter Alignment Gauge



Part No. 57001-3517 Drive Converter Puller



Part No. 57001-3516
Drive Converter Holder



Part No. 57001-3518
Drive Converter Socket