

CHAPTER 10

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How to Handle a Service Complaint

Even the best service center will occasionally need to deal with a disgruntled customer. Here are some tips on how to handle a service complaint:

- **REMAIN CALM AND LISTEN** until the customer has finished talking. This gives the customer the courtesy they deserve. It helps them to feel you really care about their problem. Also, by taking the time to listen, you give yourself a chance to think and to prepare to solve the problem.
- **ASK, "WHAT WOULD YOU LIKE ME TO DO?"**. By asking the customer what they expect, you will catch them off guard. If they feel you are genuinely trying to help them, they will be more agreeable to your suggestions. Often a customer will call simply to "blow off steam", never really expecting anyone to do anything.
- **YOUR TONE OF VOICE** is very important. Be calm. Always be courteous. Do not speak too quickly. Resist the temptation to use humor or sarcasm. Friendly comments will help to defuse tension.
- **DEFUSE ANGER** by listening to the customer and empathizing. Don't debate the facts, jump to conclusions, or make hasty admissions, decisions or concessions before all of the facts are known. Allow yourself time to make a thorough investigation. Apologize and acknowledge the customer's anger. Be calm and respectful. The customer is not angry with you, but with the product.
- **COMPLY** with the customer's wishes if they are reasonable and within accepted policy guidelines.
- **RESOLVE COMPLAINTS QUICKLY** after you and the customer have reached a decision. Don't make the customer feel they are being talked into something.
- **IF YOU CAN'T** do what the customer wishes, or if you haven't had enough time to thoroughly review the problem, tell them you will resolve the problem as quickly as possible. Tell them you are concerned with the problem, but that you need to look into the matter further to see what options are available. Take their telephone number and **CALL THEM BACK!**
- **KEEP THE CUSTOMER INFORMED** of your progress. If there is no progress, tell them that as well. No communication leaves the customer feeling that nothing is being done and that nobody cares. This impression can be easily cleared up if a service representative who knows the situation and what is happening can truthfully relate the facts to the customer.
- **DO NOT IGNORE A COMPLAINT** in the hope that it will go away. It won't. Every customer's concern or complaint is important.

A dealer's image is often reflected in how customer complaints are handled. The fact that you cared enough to listen and were willing to try to solve their problem can mean the difference between losing a customer or keeping them, their friends and their relatives as long-term customers.

All complaints must be addressed within your own policies and guidelines. Anyone handling customer service relationships should be familiar with these policies.

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Service Tips

In order to perform service work efficiently and to prevent costly errors, the technician should read the text in this manual, thoroughly familiarizing him/herself with procedures before beginning. Pictures and illustrations have been included with the text as an aid. Notes, cautions and warnings have also been included for clarification of text and safety concerns. However, a knowledge of mechanical theory, tool use and shop procedures is necessary to perform the service work safely and satisfactorily. Use only genuine Polaris service parts.

⚠ Cleanliness of parts and tools as well as the work area is of primary importance. Dirt and foreign matter will act as an abrasive and cause damage to precision parts. Clean the snowmobile before beginning service. Clean new parts before installing.

⚠ Watch for sharp edges which can cause personal injury, particularly in the area of the tunnel. Protect hands with gloves when working with sharp components.

⚠ If difficulty is encountered in removing or installing a component, look to see if a cause for the difficulty can be found. If it is necessary to tap the part into place, use a soft face hammer and tap lightly.

⚠ Some of the fasteners in the snowmobile were installed with locking agents. Use of impact drivers or wrenches will help avoid damage to fasteners.

⚠ Always follow torque specifications as outlined throughout this manual. Incorrect torquing may lead to serious machine damage or, as in the case of steering components, can result in injury or death for the rider(s).

⚠ If a torquing sequence is indicated for nuts, bolts or screws, start all fasteners in their holes and hand tighten. Then, following the method and sequence indicated in this manual, tighten evenly to the specified torque value. When removing nuts, bolts or screws from a part with several fasteners, loosen them all about 1/4 turn before removing them.

⚠ If the condition of any gasket or O-Ring is in question, replace it with a new one. Be sure the mating surfaces around the gasket are clean and smooth in order to avoid leaks.

⚠ Some procedures will require removal of retaining rings or clips. Because removal weakens and deforms these parts, they should always be replaced with new parts. When installing new retaining rings and clips use care not to expand or compress them beyond what is required for installation.

⚠ Because removal damages seals, replace any oil or grease seals removed with new parts.

⚠ Polaris recommends the use of Polaris lubricants and greases, which have been specially formulated for the top performance and best protection of our machines. In some applications, such as the engine, warranty coverage may become void if other brands are substituted.

⚠ Grease should be cleaned from parts and fresh grease applied before reassembly of components. Deteriorating grease loses lubricity and may contain abrasive foreign matter.

⚠ Whenever removing or reinstalling batteries, care should be taken to avoid the possibility of explosion resulting in serious burns. Always disconnect the negative (black) cable first and reconnect it last. Battery electrolyte contains sulphuric acid and is poisonous! Serious burns can result from contact with the skin, eyes or clothing. **ANTIDOTE:** External - Flush with water. Internal - Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately. Eyes - Flush with water for 15 minutes and get prompt medical attention.

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Recommended Shop Supplies/Accessories

<u>Description</u>	<u>Part Number</u>
Ammco 3880 Honing Oil	2870588
Chaincase Oil - One Gallon	2870464
Chaincase Oil Pump	2870465
Low Temp Grease - 14 1/2 Oz. Cartridge	2870577
Clutch and Choke Cable Lubricant	2870510
Fuel System Deicer (Isopropyl)	2870505
Loctite Primer T - 6 Oz. Aerosol	2870585
Loctite RC 680 - 10cc Retaining Compound	2870584
Loctite 515 Gasket Eliminator - 50cc Tube	2870587
Loctite/Chisel Gasket Remover - 18 Oz.	2870601
Metal Polish - 8 Oz.	2870632
DOT 3 Brake Fluid	2870990
Fogging Oil	2870791
Corrosion Resistant Dielectric Grease	2871027
Fox Shock Oil	2870995
High Speed, High Temp Bearing Grease	2870616

Decimal Equivalents

1/64	.0156	
1/32	.0312	... 1 mm = .0394"
3/64	.0469	
1/16	.0625	
5/64	.0781	... 2 mm = .0787"
3/32	.0938	
7/64	.1094	... 3 mm = .1181"
1/8	.1250	
9/64	.1406	
5/32	.1563	... 4 mm = .1575"
11/64	.1719	
3/16	.1875	... 5 mm = .1969"
13/64	.2031	
7/32	.2188	
15/64	.2344	... 6 mm = .2362"
1/4	.25	
17/64	.2656	... 7 mm = .2756"
9/32	.2813	
19/64	.2969	
5/16	.3125	... 8 mm = .3150"
21/64	.3281	
11/32	.3438	... 9 mm = .3543"
23/64	.3594	
3/8	.375	
25/64	.3906	... 10 mm = .3937"
13/32	.4063	
27/64	.4219	... 11 mm = .4331"
7/16	.4375	
29/64	.4531	
15/32	.4688	... 12 mm = .4724"
31/64	.4844	
1/2	.5	... 13 mm = .5118"

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Torque Specifications

Standard Torque Specifications

The following torque specifications are to be used as a general guideline. There are exceptions in the steering, suspension, and engine areas. Always consult the torque deviation chart and the specific manual section for torque values of fasteners.



Bolt Size	Threads/In (MM/Thread)	Grade 2	Grade 5	Grade 8
Torque in. lbs. (kg/m)				
#10 -	24	27 (.31)	43 (.50)	60 (.69)
#10 -	32	31 (.36)	49 (.56)	68 (.78)
Torque ft. lbs. (kg/m)*				
1/4 -	20	5 (.7)	8 (1.1)	12 (1.6)
1/4 -	28	6 (.8)	10 (1.4)	14 (1.9)
5/16 -	18	11 (1.5)	17 (2.3)	25 (3.5)
5/16 -	24	12 (1.6)	19 (2.6)	29 (4.0)
3/8 -	16	20 (2.7)	30 (4.0)	45 (6.2)
3/8 -	24	23 (3.2)	35 (4.8)	50 (6.9)
7/16 -	14	30 (4.0)	50 (6.9)	70 (9.7)
7/16 -	20	35 (4.8)	55 (7.6)	80 (11.0)
1/2 -	13	50 (6.9)	75 (10.4)	110 (15.2)
1/2 -	20	55 (7.6)	90 (12.4)	120 (16.6)

*To convert ft. lbs. to kg/m multiply foot pounds by .138.

*To convert kg/m to N/m move the decimal to the right one position.

Torque Deviation List

Due to the special grade bolts and nuts required for specific applications, observe the following torque values in the areas specified.

Bolt Size	Area Where Used	Torque Minimum-Maximum
7/16	Center Steering Block (Top)	35-40 ft. lbs. (4.83-5.52 kg/m)
1/2	Center Steering Block (Bottom)	40-50 ft. lbs. (5.52-6.9 kg/m)
1/2	Center Steering Block (Center)	55-60 ft. lbs. (7.59-8.28 kg/m)
3/8	Shock (Top& Bottom)	28-30 ft. lbs. (3.86-4.14 kg/m)
3/8	Radius Rod to Trailing Arm (Top & Bottom)	28-30 ft. lbs. (3.86-4.14 kg/m)
3/8	Drag Link (Center Frog to Steering Post)	28-30 ft. lbs. (3.86-4.14 kg/m)
3/8	Tie Rod to Steering Arm	28-30 ft. lbs. (3.86-4.14 kg/m)
3/8	Tie Rod to Steering Frog	28-30 ft. lbs. (3.86-4.14 kg/m)
7/16	Trailing Arm to Support	40-45 ft. lbs. (5.52-6.21 kg/m)
5/16	Steering Post to Bulkhead	15-17 ft. lbs. (2.07-2.35 kg/m)
1/4	Hoop to Bulkhead	6-8 ft. lbs. (.83-1.10 kg/m)
1/4	Upper Steering Bracket to Hoop	8-10 ft. lbs. (1.10-1.38 kg/m)
5/16	Flangette	15-17 ft. lbs. (2.07-2.35 kg/m)
3/8	Chaincase to Tunnel	28-30 ft. lbs. (3.86-4.14 kg/m)
3/8	Pinion Shaft Cover	17-20 ft. lbs. (2.35-2.76 kg/m)
3/8	Brake Caliper to Chaincase	28-30 ft. lbs. (3.86-4.14 kg/m)
1/4	Brake to Handlebar	8-10 ft. lbs. (1.10-1.38 kg/m)
1/4	Handlebar Block	8-10 ft. lbs. (1.10-1.38 kg/m)
1/4	Oil Tank to Hoop	4-6 ft. lbs. (.55-.83 kg/m)
1/4	Coolant Tank to Hoop	4-6 ft. lbs. (.55-.83 kg/m)
5/16	Driven Clutch to Shaft	15-17 ft. lbs. (2.07-2.35 kg/m)
7/16	Driven Clutch to Engine	45-50 ft. lbs. (6.21-6.9 kg/m)
7/16	Engine Mount to Chassis	45-50 ft. lbs. (6.21-6.9 kg/m)
7/16	Engine Mount to Engine	44-48 ft. lbs. (6.07-6.62 kg/m)

Torque Deviation List, Cont.

<u>Bolt Size</u>	<u>Area Where Used</u>	<u>Torque Minimum-Maximum</u>
10-24	Regulator	38-43 in. lbs. (.43-.49 kg/m)
1/4	Side Panel to Nosepan Brace, Rubber Washer .	4-6 in. lbs. (.05-.07 kg/m)
1/4	Side Panel to Nosepan, Well Nut	4-6 in. lbs. (.05-.07 kg/m)
1/4	Air Silencer	4-6 in. lbs. (.05-.07 kg/m)
3/8	Set Screw to Throttle Block	30-35 in. lbs. (.35-.40 kg/m)
3/8	Weld Rod Suspension	10-12 ft. lbs. (1.38-1.66 kg/m)
	Rubber Motor Mount Nuts, Low Flex	15-18 ft. lbs. (2.07-2.48 kg/m)
	Rubber Motor Mount Nuts, High Flex	25-30 ft. lbs. (3.45-4.14 kg/m)
	Manifold Nuts	13-17 ft. lbs. (1.79-2.35 kg/m)
	Ignition Switch to Plastic Console	20-25 in. lbs. (.23-.29 kg/m)
	Ignition Switch to Aluminum Console	50-55 in. lbs. (.57-.63 kg/m)
	Choke to Plastic Console	20-25 in. lbs. (.23-.29 kg/m)
	Lock Collar Set Screws	70-80 in. lbs. (.8-.92 kg/m)

Conversion Table

ft. lbs.	x	12	= in. lbs.
in. lbs.	x	.0833	= ft. lbs.
ft. lbs.	x	.1383	= kg/m
in. lbs.	x	.0115	= kg/m
kg/m	x	7.233	= ft. lbs.
kg/m	x	86.796	= in. lbs.
kg/m	x	10	= N-m
in.	x	25.4	= mm
mm	x	.03937	= in.
in.	x	2.54	= cm
lb.	x	.454	= kg
kg	x	2.2046	= lb.
mile	x	1.6	= km
km	x	.6214	= mile
gal	x	3.7853	= liters
quart	x	.9463	= liters
cc	x	.0610	= cu. inch
cc	x	.02816	= oz. (Imp.)
cc	x	.03381	= oz. (U.S.)
cu. in.	x	16.39	= cc
liter	x	28.16	= oz. (Imp.)
liter	x	33.81	= oz. (U.S.)
liter	x	.8799	= qt. (Imp.)
liter	x	1.0567	= qt. (U.S.)
°C to °F: $9 (°C + 40) \div 5 - 40 = °F$			
°F to °C: $5 (°F + 40) \div 9 - 40 = °C$			

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Extended Storage

Extended storage of a snowmobile requires preventative measures to aid against deterioration and to prolong the useful life of many components.

Cleaning and Preservation of Hood, Chassis and Trim

Proper storage starts by cleaning, washing and waxing the hood, chassis, upholstery and plastic parts. Clean and touch up with paint any rusted or bare metal surfaces. Be sure that corrosive salt and acids are removed from surfaces before beginning preservation with waxes and rust inhibitors (grease, oil or paint).

The machine should be stored indoors, out of direct sunlight and covered with a fabric snowmobile cover. Plastic tarp can cause condensation to form and damage some snowmobile components.

Controls and Linkage

All bushings, spindle shafts and tie rod ends should be coated with a light coat of oil or grease. Throttle controls and cables should be lubricated with Polaris cable lubricant (PN 2870510).

Bearings

To prevent corrosion which will destroy the bearings, always grease jackshaft and driveshaft clutch side bearings with a high quality bearing grease.

Electrical Connections

Separate electrical connector blocks and clean corrosive build-up from connectors. Lubricate or pack connector blocks with Polaris corrosion resistant dielectric grease (PN 2871044) and re-connect. Replace worn or frayed electrical wire and connectors.

Battery

Whenever the snowmobile is placed in storage for one month or more, the battery should be removed, charged to proper level, and stored in a cool dry place. Or use Polaris Battery Tender™ battery charger.

Clutch and Drive System

Remove drive belt and store in cool dry location. Lubricate sheave faces, shaft and ramps of drive and driven clutches with a light coat of oil or Polaris Clutch and Cable lubricant (PN 2870510).

Front Suspension

To minimize fatigue on the front shocks and springs, it is recommended that the front end of the machine be safely blocked off the ground, removing tension from the shocks and springs.

Track and Suspension

Under normal conditions moderate track tension should be maintained during summer storage. The rear of the machine should be supported off the ground to allow free hanging of the track.

Engine and Carburetor

Proper off season preparation of the engine and fuel system is vital to the prevention of rust and corrosion formation on precision engine parts during storage.

We recommend adding 10 oz. of fuel conditioner/stabilizer such as Gold Eagle brand STA-BIL (Polaris PN 2870652) to the gas tank and topping off with fresh fuel.

Fog the engine with Polaris Fogging Oil (PN 2870791) following recommended procedures indicated on the can.

Lubrication

Lubricate the following fittings with Polaris low temperature grease (PN 2870577).

1. Spindles, left and right. The front end of the machine should be raised to permit better grease entry into the spindle area.
2. Steering post support bracket (aerosol lubricant).
3. Rear suspension pivot shafts.
4. Remove (12) radius rod end bushings. Clean, inspect, lubricate and reinstall. Torque radius rod bolts to 25 ft. lbs.
5. Lubricate both front ski pivots at grease zerk with low temperature grease.
6. Loosen driven clutch retaining bolt and pull clutch outward to expose jackshaft bearing. Use a point type grease gun fitting to inject grease through hole in flange into bearing until grease purges out inside or outside bearing seal. Push clutch back on shaft and replace clutch retaining bolt.
7. Inject grease into fitting on speedometer drive adaptor until grease purges out inside or outside bearing seal.

Fall Tune Up

Obtaining maximum performance and use from a snowmobile requires proper care and preparation. Whenever inspection reveals worn or damaged parts, replacement is necessary.

Battery

Charge and test the battery before replacing it in the machine.

Track and Suspension

Check track tension and alignment and adjust if needed. Rotate track by hand to check for any possible damage. Carefully examine track along entire length of each rod, bending and inspecting for breakage. Check for loose nuts and bolts on suspension system. If any loose bolts are found on the rail beam, apply Loctite 262 and torque to 25 to 30 ft. lbs.

Steering Arm and Tie Rod Ends

Check steering arm and tie rod ends for play or looseness and adjust as needed.

Fasteners

Inspect and tighten all fasteners to recommend torque specs.

Clutch and Drive System

Inspect drive belt for wear, cracks and tears. If worn or damaged, replace with new belt. Install drive belt.

Spark Plugs

Inspect spark plugs and connections. Clean or replace as needed.

Controls and Linkage

Inspect all wires and cables for wear. Replace as needed. Lubricate throttle and choke controls and cables with Polaris cable lubricant. Be sure all cables and wires are routed away from hot or moving parts.

Bearings

To prevent corrosion which will destroy the bearings, always grease jackshaft and driveshaft clutch side bearings with a high quality bearing grease.

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Extended Storage (continued)

Lubrication

Lubricate the following fittings with Polaris low temperature grease (PN 2870577).

1. Spindles, left and right. The front end of the machine should be raised to permit better grease entry into the spindle area.
2. Steering post support bracket (aerosol lubricant).
3. Rear suspension pivot shafts.
4. Remove (12) radius rod end bushings. Clean, inspect, lubricate and reinstall. Torque radius rod bolts to 25 ft. lbs.
5. Lubricate both front ski pivots at grease zerk with low temperature grease.
6. Loosen driven clutch retaining bolt and pull clutch outward to expose jackshaft bearing. Use a point type grease gun fitting to inject grease through hole in flangette into bearing until grease purges out inside or outside bearing seal. Push clutch back on shaft and replace clutch retaining bolt.
7. Inject grease into fitting on speedometer drive adaptor until grease purges out inside or outside bearing seal.

Hoses

Examine all fuel and coolant hoses for cracks, stiffness or deterioration. Replace as needed.

Brakes

Check master cylinder reservoir to make sure it contains the correct amount of fluid. Fill only with Polaris DOT 3 high temperature brake fluid. Check brake pads for wear and replace as needed. Check brake lever travel.

Fluids

Check coolant level and fill with correct coolant mixture as required. To insure the coolant maintains its ability to protect the engine, it is recommended that the system be completely drained every two years and a fresh 50/50 mixture of anti-freeze and water be added.

Inspect chaincase for leaks. Check oil level and add Polaris chaincase oil as needed.

Check oil reservoir and fill with Polaris brand oil.

Emergency Shut Off Switch

Test operation of emergency shut off switch.

Throttle Safety Switch

Test operation of throttle safety switch.

Lights and Indicators

Check for proper operation of all lights, indicator lights and gauges.

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General Troubleshooting

PROBLEM	PROBABLE CAUSE	SOLUTION
Machine Fails to Move	Clutch Jammed	Belt twisted, spring broken, weights stuck, lubricated.
	Track Jammed	Foreign object caught or hi-fax melted to track clips due to lack of proper lubrication.
	Chaincase Sprocket or Chain Jammed or Broken	Chain is loose or broken. Chain tightener is loose.
Drive Belt Turns Over	Wrong Belt for Application	Replace.
	Clutch Alignment out of Spec	Adjust alignment offset.
	Engine Mount Broken or Loose	Inspect/adjust or replace.
Erratic Engine Operating RPM During Acceleration or Load Variations	Drive Clutch Binding	a. Disassembly of drive clutch required to inspect shift weights for wear and free operation. b. Clean and polish stationary shaft hub.
	Driven Clutch Malfunction	a. Replace ramp buttons. b. Inspect movable for excessive bushing clearance/replace.
Harsh Drive Clutch Engagement	Drive Belt Worn or Too Narrow	Replace.
	Excessive Belt/Sheave Clearance	Perform belt/sheave clearance adjustment with engagement spacers.
Noise in Drive System	Broken Drive Clutch Components	Check manual.
	Bearing Failure/Chaincase, Jackshaft or Front Drive Shaft	Check manual.
	Drive Chain Loose or Worn, Sprocket Teeth Broken	Inspect/adjust or replace.
	Drive Belt Surface Flat Spots	Inspect/replace.

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General Troubleshooting

PROBLEM	PROBABLE CAUSE	SOLUTION
Engine Does Not Turn	Seized Engine	Direct result of poor lubrication or inadequate fuel supply.
	Hydrostatic Lock (Fuel has entered crankcase while vehicle was standing or being transported)	Drain plug(s) located on lower crankcase for emergency draining.
Engine Turns Over But Fails to Start	Faulty Ignition	Replace spark plug(s). If engine still fails to start check for spark.
	No Fuel to Engine	a. Check tank level and fill up with correct fuel-oil mixture. b. Ice in fuel line, filter, or pump. On the standard Polaris carburetor, the choke will not function with the throttle depressed. See second item under "Probable Cause" of "Engine Continually Backfires."
	Flooded Engine (Normal situation caused by too much choking)	Hold throttle open, crank engine several times. It may be necessary to change plugs. Plugs may operate satisfactorily when dried out.
	Poor Engine Compression	Running too lean a mixture. Too small main jet will cause seizure resulting in loss of power.
Engine Does Not Start (Electric Models)	Wire Connections	Check manual.
Engine Lacks Power	Fouled or Defective Spark Plug	Change and test operation.
	Carburetor and Fuel Pump	There is no adjustment that will change power output.
	Fuel Filter (Loss of high RPM power)	Check fuel filter flow. Disconnect hose and drain about 1/2 cup. Fuel flow should be steady and encompass the entire diameter of fuel line. If not, replace filter.
Engine Continually Backfires	Faulty Plug(s)	Change Plug(s)
	Carburetor	Dirt or ice in fuel system. (De-icer should be added to fuel at all times for assurance against fuel line icing).

Ski Alignment Bar

For spindle alignment primarily on IFS models

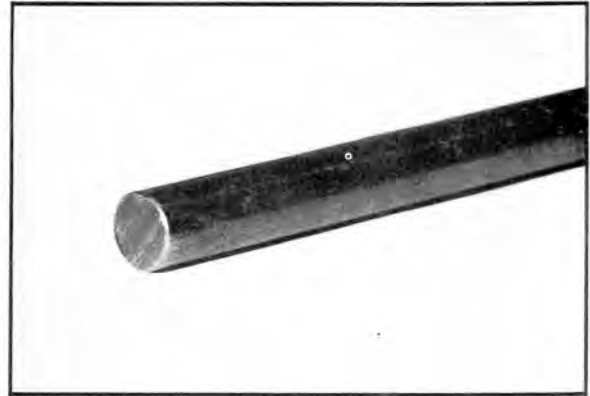
Alignment Bar Specifications:

Material: C-1018

Diameter: .623"-.625"

Length: 42"

Not available through Polaris



Fluke 73 Analog/Digital Multitester

Tests all electrical circuits and components.

PN 2870659



Ignition Timing Dial Indicator

0 - 1" Range

Indicates piston BTDC position for timing all engines.

PN 2870459



Mity Vac™

The Mity Vac™ is a multi purpose pressure/vacuum test tool.

PN 2870975



TOOLS / PUBLICATIONS

Special Service Tools

Pressure Gauge

This is a fuel system pressure tester designed to be used on fuel injected machines.
PN 2870982



Camoplast Clip Tool

This tool is used for installation of track guides and clips on Camoplast tracks.
NOTE: This tool is not for use on other tracks.

PN 2871041



Select Monitor

This is a required service tool for RXL-EFI diagnostic checks; it provides quick and easy checks of various sensor and system functions on fuel injected machines.

PN 2870969



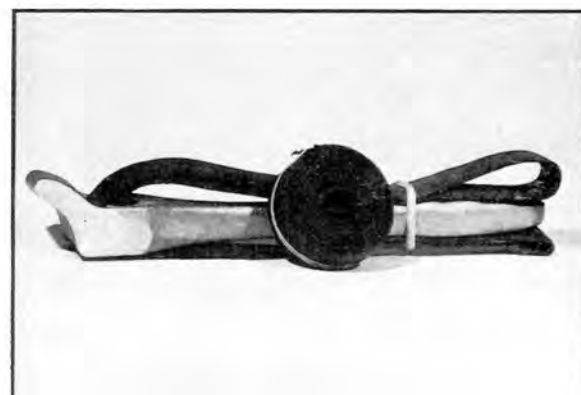
Strap Wrench

Aids in the removal and installation of flywheels, drive clutches and other cylindrical objects which need holding or turning.

PN 2870336

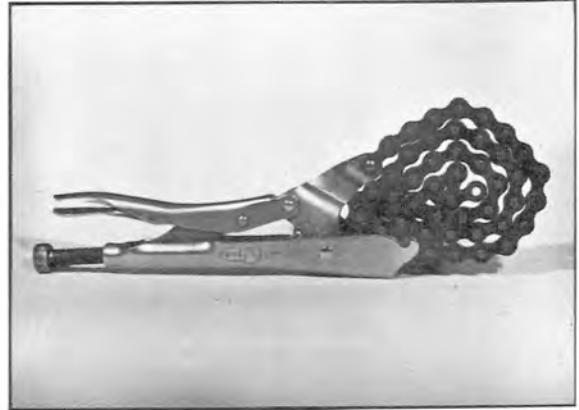
Replacement Strap

PN 2870389



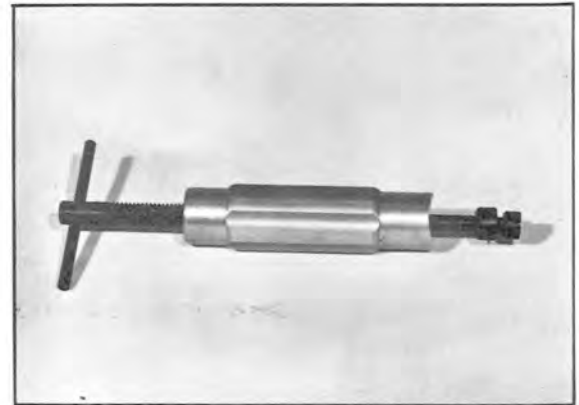
Chain Wrench

Holds flywheel puller on 3 cylinder engines and aids in removal and installation of drive clutches, etc.
PN 2870203



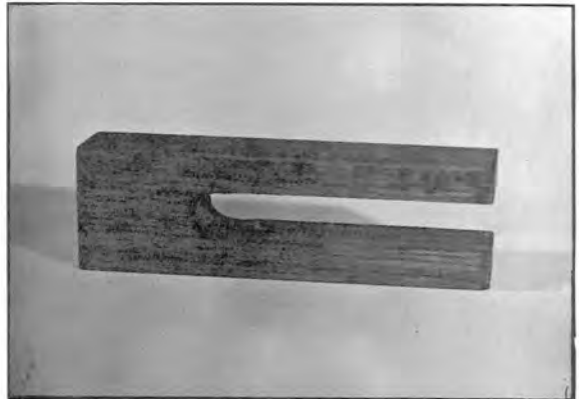
Piston Pin Puller

Removes piston pins on all engines.
PN 2870386



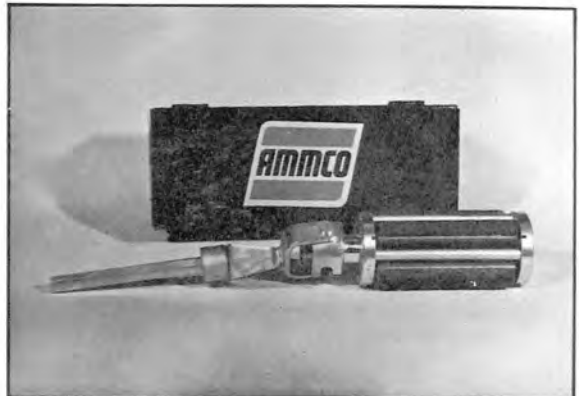
Piston Support Block

Supports piston and prevents piston skirt damage during cylinder installation on all engines.
PN 2870390



Ammco Model 3950 Cylinder Hone

Rigid cylinder hone for de-glazing and truing heat distorted cylinders.
1 7/8" - 2 3/4" Range (4.8 - 7cm)
PN 2870303



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Special Service Tools

Replacement Ammco Hone Stone Sets

Cylinder Hone Stone Set Std. Fine (Ammco No. 3952) - PN 2870305

Cylinder Hone Stone Set Std. Coarse (Ammco No. 3951) - PN 2870304

Cylinder Hone Stone Set O.S. Fine (Ammco No. 3954) - PN 2870307

Cylinder Hone Stone Set O.S. Coarse (Ammco No. 3953) - PN 2870306

O.S. Stone Sets Range 2 1/2" - 3 3/8" (6.4 - 8.6cm)



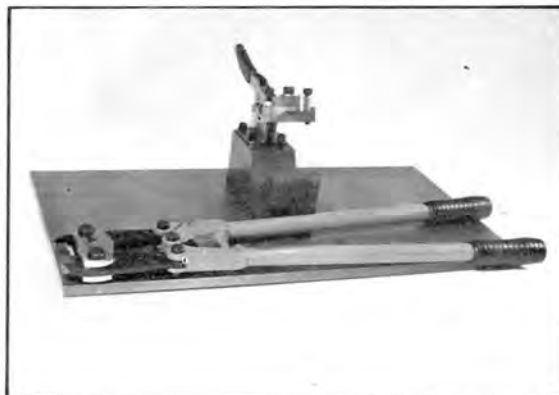
Ammco 3880 Honing Oil

Improves hone operation and prevents stone loading.
PN 2870588



Crankshaft Alignment Kit

Used for checking and straightening crankshafts on all Polaris engines.
PN 2870569



Uni-Syn Gauge

Used to synchronize carburetor air flow on multi carburetor engines.
PN 2870509



Jackshaft Installation Tool

This is a required tool for 1991 to present Indys; used to prevent damage to chaincase upper oil seal.
PN 2870974



Drive Clutch Spider Button Remover

Removes tight spider buttons easily.
PN 2870985



T Handle Drive Clutch Puller

Quick aluminum drive clutch removal for most models.
PN 2870506

Steel Drive Clutch Puller

For 1965-72 Steel Clutches.
PN 2870030

Aluminum Clutch Puller

For Models Without Nosepan Access Hole.
PN 2870130

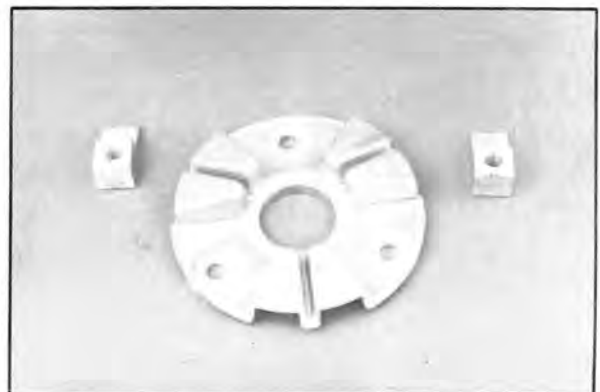


Drive Clutch Holding Fixture

All Models
PN 2870547

Replacement Holding Tabs

Used for disassembly of all aluminum drive clutches.
PN 5130518



TOOLS / PUBLICATIONS

Special Service Tools

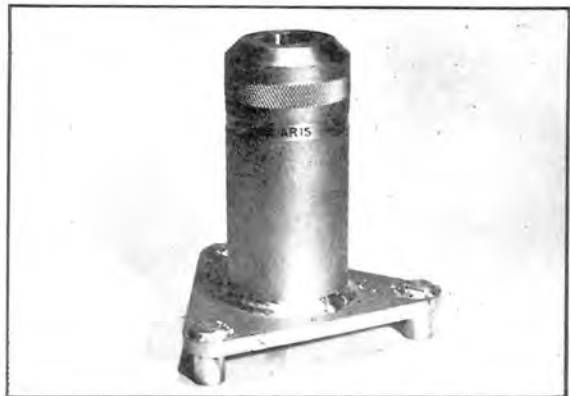
Drive Clutch Spider Nut Driver

For removal and installation of drive clutch spider jam nut on high performance models.
PN 2870338



Spider Removal Tool

Fits all aluminum drive clutch spiders. For removal and retorquing of spider.
PN 2870341



Spider Roller Centering Punch

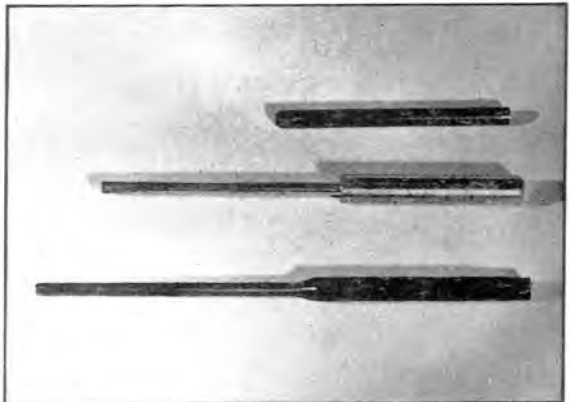
PN 2870401

Shift Weight Spring Pin Punch

PN 2870402

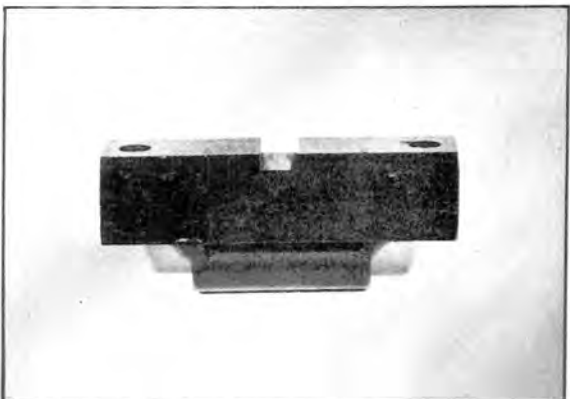
Shift Weight/Roller Pin Punch

PN 2870507



Roller Pin Gauge Block

Used during removal and installation of spider roller pins in standard aluminum drive clutches.
PN 2870310



5/8" Offset Clutch Alignment Tool

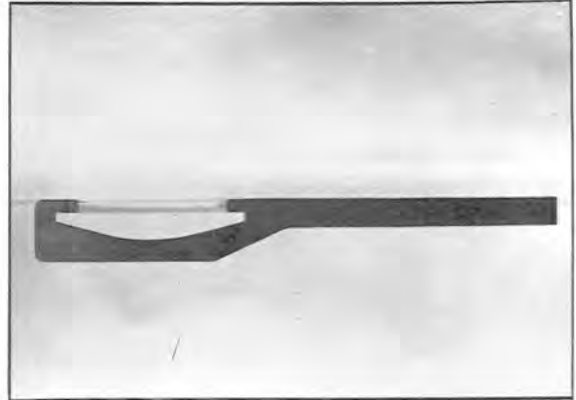
Establishes correct 5/8" (1.6cm) drive/driven clutch offset and alignment.

PN 2870426

P-90 Version Drive Clutch Alignment Tool

PN 2870914

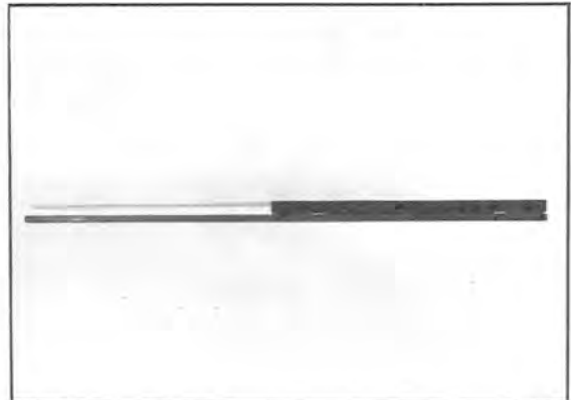
NOTE: PN 2870426 and PN 2870914 are the alignment tools for use after initial break in. Not for use at setup and pre-delivery inspection.



9/16" Offset Clutch Alignment Tool

Establishes correct 9/16" (1.4cm) drive/driven clutch offset and alignment.

PN 2870161



Drive Clutch Bore Tapered Reamer

Cleans up all drive clutch bore tapers to ensure proper fit to engine crankshaft.

PN 2870576



Jackshaft Alignment Tool

Ensures correct jackshaft bearing alignment during chaincase installation.

PN 2870399



TOOLS / PUBLICATIONS

Special Service Tools

Suspension Compression Tool

Assists with necessary compression of rear suspension springs and shocks to permit tunnel mounting bolt installation.

PN 2870354



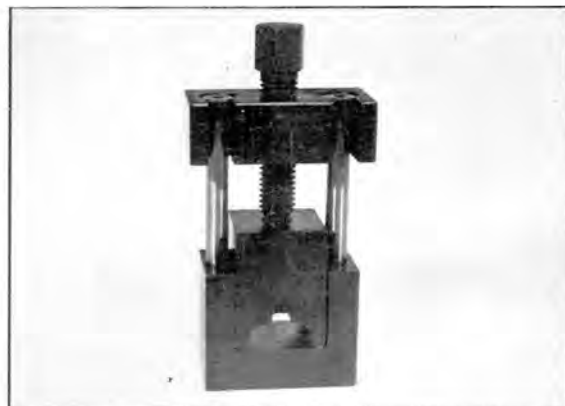
IDL Track Clipping Tool

Used for installation of track clips on **other** than Camoplast tracks.

PN 2870380

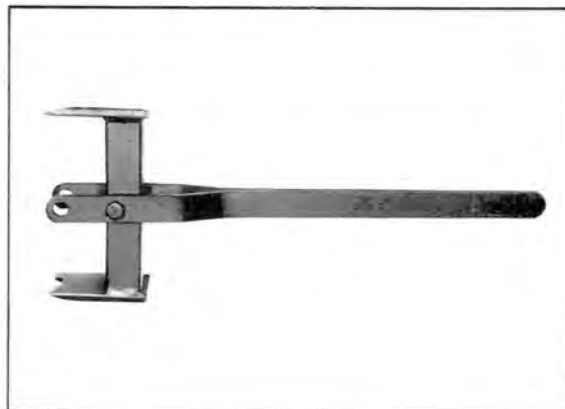
Replacement Allen head guide bolt

PN 7515461



Shock Absorber Spring Compression Tool

PN 2870623



CDI Strobe Timing Light

High intensity strobe, works on all types of ignition systems including the difficult to time 3 cylinders.

Self contained.

Requires no outside power source.

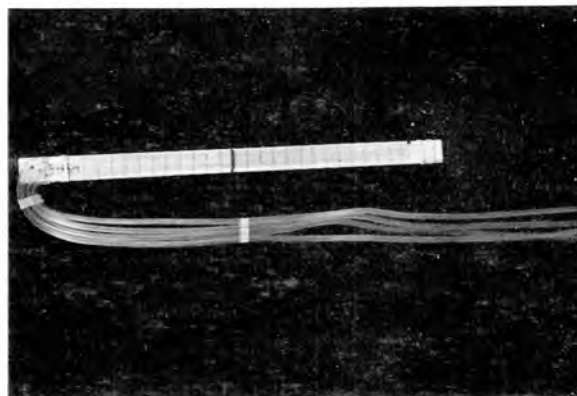
(Two "D" cell batteries included.)

PN 2870630



Carburetor Synchronizing Manometer

Accurate synchronization of multi carbureted engines which are equipped with vacuum spigots.
PN 2870672



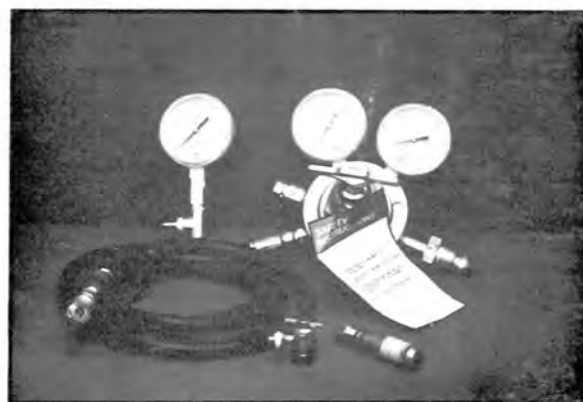
Transmission Seal/Bearing Driver

For installing bearings and case seals during transmission gearcase overhaul.
PN 2870702



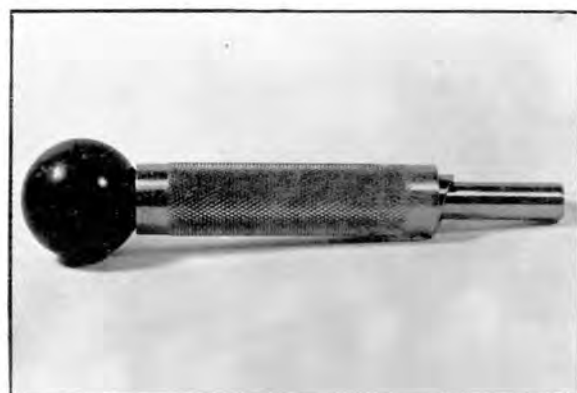
Gas Shock Recharging Kit

Contains all the necessary components and instructions to recharge Polaris gas filled suspension shock absorbers.
PN 2200421



Piston Wrist Pin Keeper Installation Tool

Used to install C-clip style retainer.
PN 2870773



TOOLS / PUBLICATIONS
Special Service Tools

Engine Cylinder Compression Gauge

PN 2870852



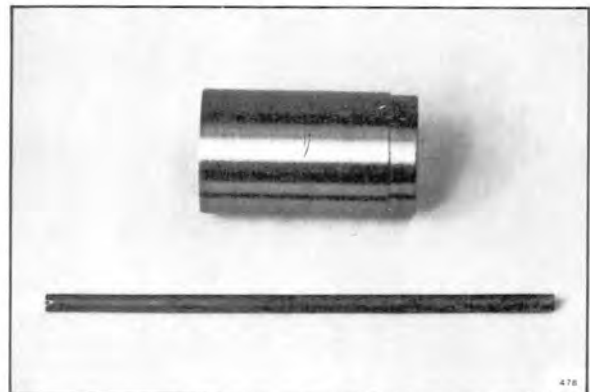
Hi Speed/Hi-Temp Bearing Grease

Special 10,000 RPM rated bearing grease.
PN 2870616



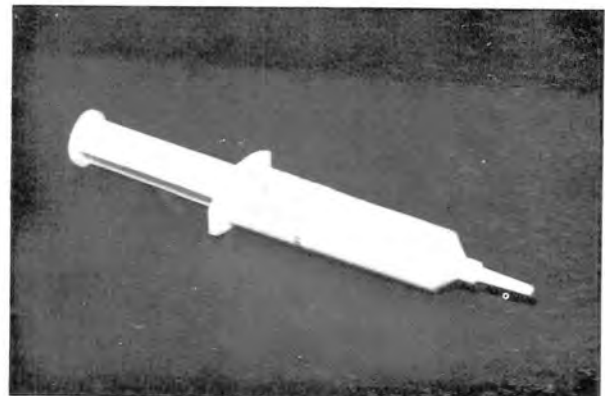
Master Cylinder Service Tool Kit

Used to remove and install master cylinder internal components.
PN 2870962



Electrical Anti-Corrosive Lubricant

Use on all electrical connections to prevent corrosion and high resistance, especially on EFI systems.
PN 2871044



Clutch Compression Tool

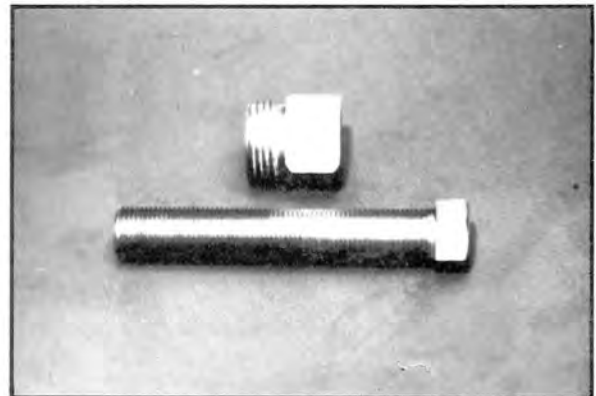
Supercedes 2870984

This clutch compression tool will work on all models including 1994 with side panels.
PN 2871173



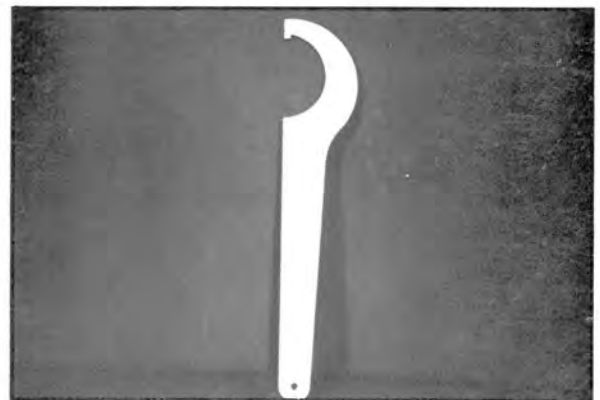
Driven Clutch Puller

Used to remove splined driven clutch from jackshaft.
PN 2871056



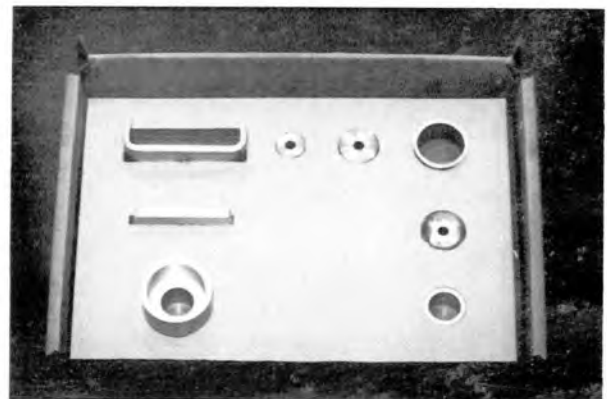
Spanner Wrench

Shock absorber cam preload adjustment tool.
PN 2870872



Clutch Bushing Replacement Tool Kit

Removes and installs all bushings on drive and driven clutches.
PN 2871025

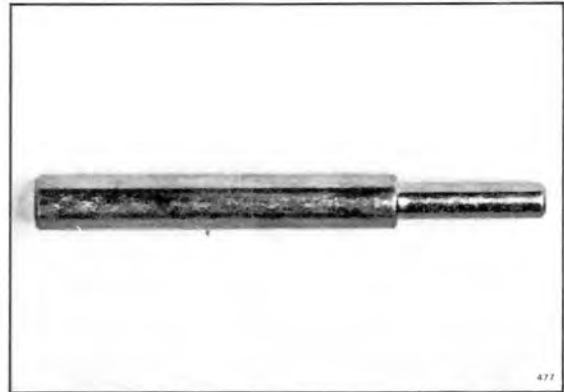


TOOLS / PUBLICATIONS

Special Service Tools

Roller/Pin Installer

Drive clutch spider roller and pin installation tool.
PN 2870910



Fox Shock Needle

Used for pressurizing Fox Shock.
PN 7052069



Battery Hydrometer

Accurate small battery specific gravity hydrometer.
PN 2870836



Fox Shock Absorber Body Block Tool

Safely holds Fox Shock body during rebuilding
without damage.
PN 2871071



TOOLS / PUBLICATIONS
Special Service Tools

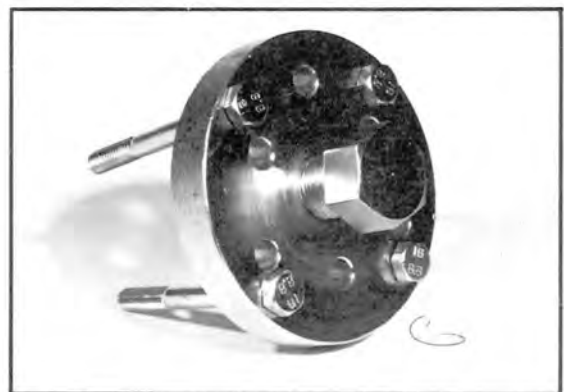
Flywheel Puller

For all 3 bolt pattern flywheels.
Items in square are for watercraft only.
PN 2871043



Flywheel Puller

Removes all 4 bolt pattern flywheels.
PN 2870159



Tunnel Rivet Tool

Installs rivets in tunnel. Includes anvil and striker.
PN 2871188



TOOLS / PUBLICATIONS
1993 Technical Service Publications

MODEL	MODEL NO.	OWNER'S MANUAL	PARTS MANUAL	PARTS MICROFICHE	ASSEMBLY INSTRUCTIONS
Trail	0930761	9911243	9912322	9912352	9912244
Sport	0930443	9911243	9912294	9912350	9912244
440	0930760	9911243	9912293	9912349	9912244
Classic	0930864	9911243	9912295	9912351	9912244
XLT	0930767	9911243	9912301	9912358	9912244
RXL	0930768	9912249	9912299	9912357	9912250
RXL SKS	0930568	9912249	9912299	9912357	9912250
500 EFI	0930674	9912249	9912296	9912353	9912250
500 EFI SKS	0930574	9912249	9912296	9912353	9912250
Trail Deluxe	0930243	9912257	9912322	9912352	9912370
440 SKS	0930560	9912257	9912293	9912349	9912244
Classic Touring	0930865	9912257	9912295	9912351	9912370
Storm SKS	0932570	9912257	9912304	9912361	9912371
XLT SKS	0930567	9912257	9912301	9912358	9912244
WideTrak	0932064	9912257	9912298	9912356	9912245
StarLite	0933427	9912235	9912297	9912354	9912239
Lite	0933433	9912235	9912297	9912354	9912239
Lite Deluxe	0933431	9912235	9912297	9912354	9912239
StarLite GT	0933127	9912235	9912323	9912355	9912384
Lite GT	0933133	9912235	9912323	9912355	9912384
XLT SP	0930667	9912282	9912301	9912358	9912341
440 XCR	0931760	9912282	9912302	9912359	9912341
Storm	0932770	9912282	9912303	9912360	9912371

Part Number

Description

9911193	Master Repair Manual Replacement Empty Binder (5 Hole)
9911340	Snowmobile Master Repair Manual Vol. 1 (1972-1991) Includes Binder
9912121	Snowmobile Master Repair Manual Vol. 2 (1985-1992) Includes Binder
9912363	1993 Master Repair Manual Update
9912364	1993 Snowmobile Technical Service Data Wallchart Packet
9912264	Maintenance Inspection Form, 150 Mile (Pkg. of 25)
9912265	Maintenance Inspection Form, 1000 Mile (Pkg. of 25)

TOOLS / PUBLICATIONS
1994 Technical Service Publications

MODEL	MODEL NO.	OWNER'S MANUAL	PARTS MANUAL	PARTS MICROFICHE	ASSEMBLY INSTRUCTIONS
440	0942760	9912387	9912495	9912507	9912528
Sport	0940443	9912490	9912505	9912516	9912534
Super Sport	0940743	9912490	9912743	9912775	9912535
Sport SKS	0940243	9912491	9912505	9912516	9912537
Classic	0942865	9912387	9912496	9912508	9912526
Trail Deluxe	0940262	9912491	9912497	9912509	9912536
Classic Touring	0942875	9912492	9912496	9912508	9912527
Indy Lite	0943433	9912493	9912499	9912511	9912532
500 EFI	0942774	9912492	9912498	9912510	9912525
Indy Lite GT	0943133	9912493	9912501	9912512	9912533
Indy Lite Deluxe	0943431	9912493	9912499	9912511	9912532
440 SKS	0942560	9912387	9912495	9912507	9912528
Trail	0940761	9912490	9912497	9912509	9912535
Starlite	0943427	9912493	9912499	9912511	9912532
Starlite GT	0943127	9912493	9912501	9912512	9912533
Widetrak LX	0942064	9912491	9912504	9912515	9912530
Widetrak GT	0942061	9912491	9912611	9912612	9912531
500 EFI SKS	0942574	9912492	9912498	9912510	9912525
XLT	0940767	9912490	9912502	9912513	9912522
RXL Touring	0940869	9912492	9912506	9912517	9912523
RXL	0940768	9912492	9912506	9912517	9912658
XLT SP	0940667	9912494	9912502	9912513	9912522
XLT Special Xtra	0946767	9912819	9912711	9912715	9912707
XLT SKS	0940567	9912491	9912502	9912513	9912522
Storm SKS	0940582	9912491	9912503	9912514	9912524
Storm	0940782	9912494	9912503	9912514	9912524
440 XCR	0941760	9912494	9912518	9912519	9912529
440 XCR SP	0941660	9912603	9912708	9912712	9912706
600 XCR	0941667	9912811	9912709	9912713	9912706

Part Number

Description

9911193	Master Repair Manual Replacement Empty Binder (5 Hole)
9911340	Snowmobile Master Repair Manual Vol. 1 (1972-1991) Includes Binder
9912121	Snowmobile Master Repair Manual Vol. 2 (1985-1992) Includes Binder
9912591	1994 Snowmobile Service Technical Update Package (Includes 1994 Master Repair Manual Update and Wallchart)

TOOLS / PUBLICATIONS
1995 Technical Service Publications

MODEL	MODEL NO.	OWNER'S MANUAL	PARTS MANUAL	PARTS MICROFICHE	ASSEMBLY INSTRUCTIONS
Lite	0953433	9912814	9912890	9912891	9912815
Lite Deluxe	0953431	9912814	9912890	9912891	9912817
Lite GT	0953133	9912814	9912892	9912893	9912820
StarLite	0953427	9912814	9912890	9912891	9912823
Sport	0950443	9912804	9912882	9912883	9912805
Super Sport	0950743	9912804	9912888	9912889	9912844
Sport SKS	0950243	9912804	9912882	9912883	9912846
Trail	0952761	9912807	9912886	9912887	9912840
Trail Deluxe	0952262	9912807	9912886	9912887	9912849
440 LC	0952760	9912807	9912903	9912904	9912808
440 SKS	0952560	9912807	9912903	9912904	9912812
500 Carb	0952764	9912807	9912919	9912920	9912921
Classic	0952865	9912862	9912907	9912908	9912863
XLT Touring	0952857	9912862	9912917	9912918	9912864
500 EFI	0952774	9912837	9912905	9912906	9912879
500 SKS	0952574	9912837	9912905	9912906	9912880
500 SKS PT	0952974	9912837	9912905	9912906	9912880
XLT	0950756	9912818	9912884	9912885	9912833
XLT SKS	0950556	9912818	9912884	9912885	9912833
XLT SKS PT	0950956	9912818	9912884	9912885	9912883
XLT SP	0956756	9913060	9913076	9913077	9912877
WideTrak LX	0952064	9912857	9912894	9912895	9912859
WideTrak GT	0952061	9912858	9912896	9912897	9912860
RXL Touring	0950869	9912837	9912898	9912899	9912878
RXL	0956768	9913061	9913078	9913079	9912838
Storm	0950782	9912853	9912901	9912902	9912854
Storm SKS	0950582	9912853	9912901	9912902	9912855
Storm SKS PT	0950982	9912853	9912901	9912902	9912855
440 XCR	0951660	9912867	9912911	9912912	9912869
600 XCR	0951656	9912867	9912913	9912914	9912870

Part Number

Description

9911193	Master Repair Manual Replacement Empty Binder (5 Hole)
9911340	Snowmobile Master Repair Manual Vol. 1 (1972-1991) Includes Binder
9912121	Snowmobile Master Repair Manual Vol. 2 (1985-1995) Includes Binder
9912719	1995 Snowmobile Service Technical Update Package (Includes 1995 Master Repair Manual Update and Wallchart)

1990 Service Bulletins

P-90-01	1990 Indy 400 and 500 Rear Suspension Shock Absorber
S-90-01	1990 Indy 400, 500 and 650 Carburetor Airbox Intake Chimney Foam
S-90-02	1990 Indy Brake Master Cylinder Sight Glass
S-90-03	1990 Star, StarTrak Carburetor Main Jet
S-90-04	1990 Indy 400 and 500 Voltage Regulator
S-90-05	1990 Sport/Sport GT P-90 System Driven Clutch Snap Ring Retainer

1990 Information Bulletins

I-90-01	1990 Pre-delivery Topics
I-90-02	1989 Indy 650 Water Pump
I-90-03	1990 WideTrak Rear Tunnel Extension Mounting Holes
I-90-04	1. 1990 650 RXL EFI Guidelines 2. Reverse Chaincase Kit Information
I-90-05	1990 Indy 500 and 400 Service Recommendations 1. Engine Ignition Timing 2. Spark Plug Fouling
I-90-06	1. Reverse Gear Kit Assembly Part Number Breakdown 2. PN 2870905 Hood Screen Kit
I-90-07	High Elevation Clutching for Indy 650

1991 Service Bulletins

S-91-01	1991 Indy Trail Brake Hose
S-91-02	Steering Post Attaching Bolt Tightness on 1991 Indy 500 SKS Snowmobiles
S-91-03	Under Hood Heat Deflection Kit - Indy 500 Snowmobiles
S-91-04	Indy 500 Drive Clutch Rebuild Kit PN 2200386
S-91-05	1991 RXL Handlebar Engine Stop Switch PN 4110109
S-91-06	1991 RXL and 650 Indy Models Drive Clutch Service/Adj.
S-91-07	1990 RXL Snowmobile Emergency Engine Shut Off Switch
S-91-08	1991 RXL Disc Brake Caliper Alignment and Cooler Hose Modification
S-91-09	1991 StarLite Engine Failure Correction Action
S-91-10	1991 Indy Lite Muffler Clearance
S-91-11	1991 Indy Lite, StarLite and Lite GT Fuel and Oil Tank Vent Line Re-routing
S-91-12	1991 Indy 400 XC Upper Steering Post Bracket Bushing
S-91-13	1991 Indy Lite GT - Muffler, Speedometer Cable, Drive Clutch
S-91-14	Carburetion Changes on 1991 Indy 500 Machines Manufactured with EC50PL-04 Engines
S-91-15	1991 RXL/RXL SKS
S-91-16	1991 Indy Lite Pilot Production <u>X913033</u> Drive Clutch Belt/Sheave Clearance Adjustment

TOOLS / PUBLICATIONS

Technical Service Printed Materials

1991 Information Bulletins

- I-91-01
 - 1. 1991 StarLite Fuel Line
 - 2. 1991 WideTrak Track Adjustment Bolt
 - 3. Thumbwarmer
- I-91-02
 - RXL EFI Tuning Tips
 - 1. Idle Adjustment
 - 2. Select Monitor
 - 3. Acceleration Clutch Tuning
- I-91-03
 - 1. Indy Brake Caliper/Disc Alignment
 - 2. Indy Chaincase Reverse Kit Cover
 - 3. Diagnosing Indy Chaincase Leakage
- I-91-04
 - 1. Later 1991 Indy 400 and 500 Ignition Timing
 - All 1991 WideTrak and Indy 400XC Ignition Timing
 - 2. 1991 Indy 400XC Jetting Information and Jet Needle "E" Clip Location Change
 - 3. Indy 500 EC50PL-04/05 Main Jet Recommendation
- I-91-05
 - 1. 1991 RXL SKS Front Limiter Strap on Rear Suspension
 - 2. 1991 RXL Muffler to Manifold Leakage
 - 3. 1991 Indy 500 Drive Clutch Setup/Procedure
 - 4. CDI Box/Flywheel Identification Setup
- I-91-06
 - 1. Improved Greaseable Transmission Input Shaft Coupler Kit for WideTrak, SuperTrak, and LongTrak Reverse Models
 - 2. Hood Screen Kit Usage
 - 3. Indy Lite and Lite GT Air Intake Door for Deep Snow Operation
- I-91-07
 - 1991 RXL Erratic Behavior and Seizures
- I-91-08
 - 1. 1991 Fuel Tank Cap Gasket
 - 2. Recoil Starter Rope Guide
 - 3. Indy Lite Handling Adjustments
- I-91-09
 - 1991 650 Indy Carburetor Idle Adjustment
- I-91-10
 - 1991 RXL EFI System Adjustments (0-3000 ft. elevation)
- I-91-11
 - 1. ECU Replacement Chip
 - 2. EFI System Diagnostic Checks

1992 Service Bulletins

- S-92-01 1992 XCR Handwarmer Wiring
- S-92-02 1992 EFI Fuel Pump Wire Connector
- S-92-03 1992 Indy 440 Cold Engine Driveaway Lean Carburetion Condition
- S-92-04 1992 Indy 500 SPX Track Suspension Wheels
- S-92-05 1992 Indy Lite GT Drive Clutch Shift Weight/Spring Change for Operation Below 6000 ft. Elevation
- 92-XLT 1992 Indy 500 XLT
 - 1. Rear Suspension Limiter Straps, Front Shock and IFS Shock Adjustment Setting Changes
 - 2. Carburetion Adjustments to Stabilize Idle RPM

1992 Information Bulletins

- I-92-01 High Performance Bearing Kit PN 2200422
- I-92-02 Snowmobile Drive Clutch Replacement Numbers Information
- I-92-03
 - 1. Snowmobile Chaincase Reverse Kit Application Data
 - 2. EFI Secondary Fuel Filter Flow
 - 3. Kinked Fuel, Oil and Vent Lines
- I-92-04
 - 1. Indy Lite Deluxe Handlebar Heater Wires
 - 2. Select Monitor Cartridge for 500 SP
- I-92-05
 - 1. 1992 Indy Lite Performance Tips
 - 2. PN 3211061 High Performance Indy Drive Belt
 - 3. Dealer Maintenance Inspection Forms
 - 4. PN 2200356 Under Hood Heat Deflection Kit
- I-92-06 1992 Indy Hydraulic Brake Caliper/Disc Float Inspection Procedure
- I-92-07
 - 1. Engine Torque Stop Adjustment
 - 2. 1992 WideTrak and SuperTrak Jackshaft Driven Side Bearing Snap Ring
 - 3. 1992 500 SPX Battery and Temperature Light Wires Misconnected
- I-92-08
 - 1. Hi/Lo Range Transmission Chain Adjustment Revision for all WideTrak and SuperTrak
 - 2. EFI System Fuel Filter Service
 - 3. Recoil Starter Engagement Problems

TOOLS / PUBLICATIONS

Technical Service Printed Materials

1993 Service Bulletins

- S-93-01 Incorrect Dimension Thrust Washer Installed on 1993 Indy Classic Touring Snowmobiles and Current Accessory Reverse Kit PN 2870861
- S-93-02 1993 WideTrak Airbox Intake Foam Duct Incorrect
- S-93-03 Incorrect Heat Range Spark Plugs Installed on Some 1993 Indy XCR Model Snowmobiles
- S-93-04 Under Hood Heat Deflection Kit PN 2200356 for 1993 Indy XLT and Indy 500 Snowmobiles
- S-93-05 Throttle Cable Junction Block Kit PN 2200470
- S-93-06 Fuel Filter Location on Some 1993 Indy Storms and Indy SKS
- S-93-07 1993 Indy Storm and Indy SKS Performance and Durability Improvements
- S-93-08 1993 Storm Low End Improvement Kit
- S-93-09 1. Base Gasket Replacement Procedure for EC58PL-01 Engines
2. Warranty Notice
- S-93-10 1. Handwarmer, wire harness modification.
2. Temp-Battery indicator warning lamp wire placement
- S-93-11 WideTrak LX Exhaust Boot
- S-93-12 Possible Fuel Leak at Electric Fuel Gauge Sender Ground Wire Screw
- S-93-13 Handwarmers Have Only Low Heat and Indicator Does Not Light in High Position
- S-93-14 Inadequate Antifreeze/Coolant Strength
- S-93-15 Loose Handlebar Grips
- S-93-16 Chaincase Washers Misplaced or Missing
- S-93-17 RXL and RXL Touring Kinked Surge Tank Vent Line
- S-93-18 1. Storm and Storm SKS Air entering Oil Line
2. Storm and Storm SKS Vibration Through Running Boards
- S-93-19 RXL Touring Improperly Routed Battery Cable
- S-93-20 600 XCR Steering Binding or Locking
- S-93-21 Loose Handlebar Grips

1993 Information Bulletins

- I-93-01 Electric Start Kits PN 2870863 and PN 2870656
- I-93-02 1993 XCR Removable Snow Filter on Air Box Chimney
- I-93-03 1993 Indy Storm/Indy Storm SKS Cooling System Inspections and Possible Modifications
- I-93-04 Use of Oxygenated Fuels in Polaris Snowmobiles

- I-93-05
1. 1993 SKS Models: Deep Snow Performance
 2. 1993 XLT: Engine Misfire
 3. 1993 All Models: Throttle Lever Does Not Always Hit Safety Switch Pin and Can Cause Engine Starting Problems
 4. 1993 Indy Lite Deluxe Model 0933431: Recoil Rope May Contact Oil Line and Eventually Wear Through Line.
 5. 1993 Indy Storm Clutching Options for Various Types of Driving Conditions
- I-93-06
1. EC58PL-01 Engines with Failed Cylinder Base Gaskets
 2. EC58PL-01 Service Tips
 3. All EC50PL and EC50PM Engines That Experience PTO End Bearing Failures
- I-93-07
- New Crate Handling Procedures
- I-93-08
- Defective Key Switches
- I-93-09
- Improved Transfer Suspension (ITS) Kits
- I-93-10
1. Oil Tank Fittings Leaking on 1994 Indy Lite/StarLite
 2. Indicator Lights That Pop Out of Console on 1994 500 EFI
- I-93-11
- Rear Torsion Springs May Rub Against Track Carrier Wheel
- I-93-12
- Carburetor Jetting Recommendation for Storm and Storm SKS Performance Kit

1994 Service Bulletins

- S-94-01
1. RXL Touring Top Chaincase Sprocket Cotter Pin Missing or Loose
 2. Lite GT Wrong Lever on Brake Block
- S-94-02
- Fuel Leaks at Carburetor Water Trap Drain Plug

1994 Information Bulletins

- I-94-01
1. Water and sediment may not drain from carburetor float bowl into sediment tube (water trap).
 2. Cooling system leak at water pump
 3. Cooling system leak at center extrusion.
 4. Oil line from oil pump to engine kinked on PTO (LH) side.
 5. Excessive fuel consumption, lack of power and poor throttle response.
 6. Kinked fuel tank vent line at fuel tank.
 7. Rear view mirrors do not have full adjustment range.
- I-94-02
1. Some 1994 Storm and Storm SKS models may encounter a rich condition when operated on rough terrain.
 2. PTO (LH) carburetor may rub against the torque stop mounting bracket on 1994 600 XCR.

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Glossary of Terms

ACS: Alternator control system. The main relay for the 1993 500 EFI system. Rectifies AC alternator voltage to DC for battery charging, and triggers the ECU with DC for start up.

ACV: Alternating current voltage.

Air Gap Spark Test: A good check for ignition voltage and general ignition system condition. Spark should arc 3/8" (1 cm) minimum from end of high tension lead to ground. Several tests are available.

Alternator: Electrical generator producing voltage alternating current.

BTDC: Before top dead center.

CDI: Capacitor discharge ignition. Ignition system which stores voltage generated by the stator plate exciter coil in a capacitor or condenser (in CDI box). At the proper moment a voltage generated by the stator plate pulser coil closes an electronic switch (thyristor) in the CDI box and allows the voltage in the capacitor to discharge into the primary windings of the ignition coil.

Center Distance: Distance between center of crankshaft and center of driven clutch shaft.

Chain Pitch: Distance between chain link pins (No. 35 = 3/8" or 1 cm). Polaris measures chain length in number of pitches.

Clutch Buttons: Plastic bushings which transmit rotation of the clutch to the movable sheave in the drive and driven clutch.

Clutch Offset: Drive and driven clutches are offset so that drive belt will stay nearly straight as it moves along the clutch face.

Clutch Weights: Three levers in the drive clutch which relative to their weight, profile and engine RPM cause the drive clutch to close.

Coil: A winding of wire around an iron core which has the ability to generate an electrical current when a magnetic current passes through it.

Condenser/Capacitor: A storage reservoir for electricity, used in both E.T. and CDI systems.

Crankshaft Run-Out: Run-out or "bend" of crankshaft measured with a dial indicator while crankshaft is supported between centers on V blocks or resting in lower half of crankcase. Measure at various points especially at PTO. Maximum allowable run-out is .006" (.02 cm).

DCV: Direct current voltage.

Detonation: The spontaneous ignition of the unburned fuel/air mixture after normal spark ignition. Piston looks "hammered" through, rough appearance around hole. Possible causes: 1) too high a compression ratio for the fuel octane; 2) low octane fuel; 3) over-advanced ignition timing.

Dial Bore Gauge: A cylinder measuring instrument which uses a dial indicator. Good for showing taper and out-of-round in the cylinder bore.

Dropping Resistor: Component in an EFI system which reduces input (battery) voltage to approximately 5 volts.

ECU: Electronic Control Module. In an EFI System, the component which monitors all data from sensors in the system, and electronically adjusts injector duration accordingly.

Effective Compression Ratio: Compression ratio measured from after the piston closes the exhaust port.

Electrical Open: Open circuit. An electrical circuit which isn't complete. (i.e. poor connections or broken wire at hi-lo beam switch resulting in loss of headlights).

Electrical Short: Short circuit. An electrical circuit which is completed before the current reaches the intended component. (i.e. a bare wire touching the snowmobile chassis under the seat resulting in loss of taillights and brake lights).

End Seals: Rubber seals at each end of the crankshaft.

Engagement RPM: Engine RPM at which the drive clutch engages to make contact with the drive belt.

E.T. Ignition: Energy transfer ignition. Magneto type ignition system using an external ignition coil.



Flat Head Bolt: To be used where finished surfaces require a flush fastening unit. Countersunk.

Foot Pound: Ft. lb. A force of one pound at the end of a lever one foot in length, applied in a rotational direction.

Fuel Pressure Regulator: Mechanical device in an EFI system which regulates fuel pressure in the distribution manifold by returning excess fuel to the tank.

Fuel Rail: The fuel distribution manifold for the injectors in an EFI system.

g: Gram. Unit of weight in the metric system.

Head Volume: Cylinder head capacity in cc, head removed from engine with spark plug installed.

Heat Exchanger: A device used to transfer heat. Mounted under running boards, they dissipate engine heat to the atmosphere.



Hex Head Bolt: Standard type of wrench-applied hexagon head, characterized by clean, sharp corners trimmed to close tolerances. Recommended for general commercial applications.

Hi-Fax: Trademark of Himont Advanced Materials. The special slide material which fits onto the bottom of the suspension rails.

High Tension Wire: The heavy insulated wire which carries the high secondary voltage from the coil to the spark plug.

Holed Piston: Piston in which a hole has formed on the dome. Possible causes: 1) detonation; 2) pre-ignition.

Ignition Coil: A type of transformer which increases voltage in the primary windings (approx. 200V) to a higher voltage in the secondary windings (approx. 14KV - 32KV) through inductions. Secondary voltage is high enough to arc the air gap at the spark plug.

Ignition Generating Coil: Exciter coil, primary charge coil. Stator plate coil which generates primary ignition voltage. CDI system uses one ignition generating coil. Twin cylinder E.T. ignition systems use two ignition generating coils. Coil is mounted at the top of the stator plate.

Inch Pound: In. lb. 12 in. lbs. = 1 ft. lb.

Kg/cm2: Kilograms per square centimeter.

Keystone Ring: A piston ring with bevel on upper inside surface.

Kilogram/meter: A force of one kilogram at the end of a lever one meter in length, applied in a rotational direction.

L Ring: A wide face piston ring with an "L" shaped cross section. Leg of "L" goes up when installing on piston.

Labyrinth Seal: A pressure type center seal identified by series of grooves and lands. Polaris engines use this type of seal to separate the cylinders in the crankcase halves.

Left Side: Always referred to based on normal operating position of the driver.

Lighting Coil: Large coil mounted at the bottom of the stator plate. Generates voltage for lights, battery charging, etc.

mm: Millimeter. Unit of length in the metric system. 1mm = .040".

Magnetic Induction: As a conductor (coil) is moved through a magnetic field, a voltage will be generated in the windings. This is how mechanical energy in our engines is converted to electrical energy in the lighting coil, ignition generating coils and trigger coil.

No. 1 Cylinder: Cylinder on flywheel side of engine.

No. 2 Cylinder: Cylinder on PTO side of engine.

Ohm: The unit of electrical resistance opposing current flow.



Oval Head Screw: Fully specified as "oval countersunk", this head is identical to the standard flat head, but possesses a rounded upper surface for attractiveness of design.



Pan Head Screw: Provides a low, large diameter head, but with characteristically high outer edges along the outer edge of the head where driving action is most effective. Slightly different head contour when supplied with Phillips Recess. See dotted line.

Piston Clearance: Total distance between piston and cylinder wall.

Piston Erosion: Piston dome melts. Usually occurs at the exhaust port area. Possible causes: 1) lean fuel/air mixture; 2) improper spark plug heat range.

Pre-Ignition: A problem in combustion where the fuel/air mixture is ignited before normal spark ignition. Piston looks melted at area of damage. Possible causes: 1) too hot a spark plug; 2) spark plug not properly torqued; 3) "glowing" piece of head gasket, metal burr or carbon in the combustion chamber; 4) lean fuel/air mixture.

Primary Circuit: This circuit is responsible for the voltage build up in the primary windings of the coil. Parts of this circuit include the exciter coil, points and condenser, wires from the stator plate to the small primary winding in the ignition coil. In the CDI system the parts include the exciter coil, the trigger coil, the wires from stator plate to CDI box and to the low resistance primary windings in the ignition coil.

Primary Clutch: Drive clutch on engine.

Primary Compression: Pressure built up in the crankcase of a two stroke engine.

TOOLS / PUBLICATIONS

Glossary of Terms (continued)

psi.: Pounds per square inch.

R & R: Remove and replace.

RFI: Radio frequency interference. Caused by high voltage from the ignition system. There are special plug caps and spark plugs to help eliminate this problem. Required in Canada.

RPM: Revolutions per minute.

Relay Coils: Electromagnetic device in an EFI system which controls circuit connection with input from another circuit.

Resistance: In the mechanical sense, friction or load. In the electrical sense, ohms. Both result in energy conversion to heat.

Right Side: Always referred to based on normal operating position of the driver.



Round Head Screw: The familiar head most universally used for general application. Good slot depth, ample underhead bearing surface and finished appearance are characteristic of this head.

Running Time: Ignition timing when fully advanced or at specified RPM.

Secondary Circuit: This circuit consists of the large secondary coil windings, high tension wire and ground through the spark plug air gap.

Secondary Clutch: Driven clutch on chaincase or jackshaft.

Seized Piston: Galling of the sides of a piston. Usually there is a transfer of aluminum from the piston onto the cylinder wall. Possible causes: 1) improper lubrication; 2) excessive temperatures; 3) insufficient piston clearance; 4) stuck piston rings.

Select Monitor: Diagnostic tool which provides static and dynamic displays of the function of critical components in an EFI system. It also has the capability to display the contents of the ECU memory.

Spark Plug Reach: Length of threaded portion of spark plug. Polaris uses 3/4" (2 cm) reach plugs.

Static Timing: Ignition timing when engine is at zero RPM.

Stator Plate: The plate mounted under the flywheel supporting the primary ignition components and lighting coil.

Surge Tank: The fill tank in the liquid cooling system.

TDC: Top dead center. Piston's most outward travel from crankshaft.

Throttle Body: The air flow metering device in an EFI system.

Transfer: The movement of fuel/air from the crankcase to the combustion chamber in a two stroke engine.

Trigger Coil: Pulser coil. Generates the voltage for triggering (closing) the thyristor and timing the spark in CDI systems. Small coil mounted at the top of the stator plate next to the ignition generating coil.

V Regulator: Voltage regulator. Maintains maximum lighting coil output at approx. 14.5 ACV as engine RPM increases.

Venturi: An area of air constriction. A venturi is used in carburetors to speed up air flow which lowers pressure in venturi to below atmospheric pressure, causing fuel to be pushed through jets, etc., and into the venturi to be mixed with air and form a combustible air/fuel mixture.

Volt: The unit of measure for electrical pressure of electromotive force. Measured by a voltmeter in parallel with the circuit.

Watt: Unit of electrical power. Watts = amperes x volts.

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LIMITED WARRANTY

Polaris Industries L.P., 1225 Highway 169 North, Minneapolis, Minnesota 55441-5078, gives a ONE YEAR LIMITED WARRANTY on all components of the Polaris Snowmobiles against defects in material or workmanship. This warranty begins on the date of purchase.

A warranty registration must be completed by your dealer and submitted to Polaris by the dealer prior to the time you attempt to obtain any service under this warranty. Be sure that you receive your copy of the Warranty Registration from your dealer, as this is your entitlement to warranty repairs. **UNLESS YOUR SNOWMOBILE IS REGISTERED WITH POLARIS, NO WARRANTY COVERAGE WILL BE ALLOWED.**

The warranty on the Polaris snowmobile is transferrable during the warranty period for a fee of \$25. This fee must be paid to the transferring dealer at the time of transfer. Transfer of warranty on snowmobiles that were purchased under the snow check program must receive prior approval of the warranty department.

REGISTRATION

At the time of sale, the Warranty Registration Form must be completed by you dealer and submitted to Polaris within ten days. Upon receipt of this registration Polaris will record the registration for warranty. No verification of registration will be sent to you as your copy of the Warranty Registration Form will be your warranty entitlement. If you have not signed the original registration and received the "customer copy," please contact your dealer immediately. No warranty will be authorized unless your snowmobile is registered.

Initial dealer preparation and set-up of your snowmobile is very important in ensuring trouble-free operation. Purchasing a machine in the crate or without proper dealer set-up will void your warranty coverage.

WARRANTY COVERAGE AND EXCLUSIONS;

LIMITATIONS OF WARRANTIES AND REMEDIES

This warranty covers all parts and components except:

1. Light Bulbs
2. Spark Plugs
3. Brake Pads
4. Suspensions Slides and Ski Wear Bars
5. Drive Belts

This warranty also covers labor charges relating to repair or replacement of defective parts which are covered by this warranty.

This warranty covers only failures due to defects in material or workmanship. This warranty does not cover accidental damage, normal wear and tear, abuse (such as operation in areas without adequate snow coverage) or improper handling. This warranty also does not cover any snowmobile that has been altered structurally, neglected, improperly maintained, used for racing, or used for purposes other than for which it was manufactured; or for any damages which occur during trailer transit, or as a result of unauthorized service or the use of unauthorized parts. In addition, this warranty does not cover physical damage to paint or finish, tearing or puncturing of upholstery material, or corrosion of defects in parts or components of the snowmobile. the warranty also does not cover damage to snowmobiles due to fire, explosion or any other cause beyond Polaris' control.

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Warranty Policy

The exclusive remedy for breach of this warranty shall be, at Polaris' exclusive option, repair or replacement of any defective materials, components or products. THE REMEDIES SET FORTH IN THIS WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON FOR BREACH OF THIS WARRANTY. POLARIS SHALL HAVE NO LIABILITY TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY DESCRIPTION, WHETHER ARISING OUT OF WARRANTY (INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) OR ANY OTHER CONTRACT, NEGLIGENCE OR OTHER TORT OR OTHERWISE. Some states do not permit the exclusion or limitation of incidental or consequential damages or implied warranties, so the above limitation or exclusion may not apply to you, if inconsistent with controlling state law.

ALL IMPLIED WARRANTIES (INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) IF UNEXCLUDABLE UNDER CONTROLLING STATE LAW ARE LIMITED IN DURATION TO THE ABOVE ONE YEAR WARRANTY PERIOD. POLARIS FURTHER DISCLAIMS ALL EXPRESS WARRANTIES NOT STATED IN THIS WARRANTY. Some state do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you if inconsistent with controlling state law.

HOW TO OBTAIN WARRANTY SERVICE

After you have purchased your snowmobile, your dealer should send the Warranty Registration Form to Polaris. If your snowmobile requires warranty service, you must take it to a current Polaris Servicing Dealer. When requesting warranty service, you must present your copy of the Warranty Registration Form to the dealer. (THE COST OF TRANSPORTATION TO AND FROM THE DEALER IS YOUR RESPONSIBILITY.) Polaris suggests that you use your original selling dealer; however, you may use any current Polaris Servicing Dealer to perform warranty service.

If you have questions or problems you cannot resolve with your dealer, please contact Polaris directly at the address given on the preceding page (Attn: Warranty Service Department).

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

If any of the above terms are void because of state or federal law, all other warranty terms will remain in effect.