ARCTIC CAT

OPERATOR'S MANUAL

ZR 5000/8000/9000
XF 5000/8000/9000
M 8000/9000



2014

Limited Warranty

Arctic Cat Inc. (hereinafter referred to as Arctic Cat) extends a limited warranty as described below on each new Arctic Cat Snowmobile it assembles and on each genuine Arctic Cat Snowmobile part and accessory assembled and sold by an authorized Arctic Cat Snowmobile dealer. The limited warranty on an Arctic Cat Snowmobile is extended to the original retail purchaser for the time periods described below; however, the balance of the remaining warranty may be transferred to another party unless the purchase is for commercial use (see below). Warranty coverage is only available in the country in which the original retail purchase occurs to the original retail purchaser resident in that country or to a transferee resident in that country of the balance of the remaining warranty.

Arctic Cat warrants only the products it assembles and/or sells and does not warrant that other products will function properly when used with an Arctic Cat Snowmobile or will not damage the Arctic Cat Snowmobile. Arctic Cat does not assume any liability for incidental or consequential damages.

Arctic Cat will repair or replace, at its option, free of charge (including any related labor charges), any parts that are found to be warrantable in material or workmanship. This repair work MUST be done by an authorized Arctic Cat Snowmobile dealer. No transportation charges, rental charges, or inconvenience costs will be paid by Arctic Cat. The warranty is validated upon examination of said parts by Arctic Cat or an authorized Arctic Cat Snowmobile dealer. Arctic Cat reserves the right to inspect such parts at its factory for final determination if warranty should apply.

The warranty periods are as follows:

1. For snowmobiles used for recreational purposes:
   —If purchased between May 1 and November 30, warranty expires ONE (1) YEAR from December 1 of the current year.
   —If purchased between December 1 and April 30, ONE (1) YEAR from the date of sale.
2. For snowmobiles used for commercial purposes (including rental operations), ONE (1) YEAR from the date of invoice and/or 5000 MILES whichever comes first (non-transferable).
3. THIRTY (30) DAYS from date of sale of snowmobile on Arctic Cat supplied batteries.

Exclusions to this warranty include normal wear, abuse (i.e. a track run on marginal snow conditions without proper lubrication or additional idler wheels), and the following parts:

Fuel Filter	Light Bulbs	Windshield	Drive Belt	Torn or Punctured Upholstery
Wear Bars	Brake Pads	Spark Plugs	Drive Clutch/Driven Clutch Wear Parts	
Wear Strips	Shock Absorber(s) - Standard*		Shock Absorber(s) - Rebuildable**	

* Limited to one (1) year or 1000 miles of "normal" riding conditions - replace for defective or leaking shock, corroded or pitted shaft, peeling chrome.

** Limited to one (1) year or 1000 miles of "normal" riding conditions - rebuild for leaking shock (warranted) - replace for defective shock, corroded or pitted shaft, peeling chrome.

The following will VOID Arctic Cat's warranty:

1. Failure to perform the proper break-in procedure and all related maintenance, storage procedures (if stored for extended periods), and/or service as recommended in the Operator's Manual.
2. Repairs and/or adjustments by anyone other than an authorized Arctic Cat Snowmobile dealer.
3. Use of an improper fuel mixture ratio.
4. Use of improper carburetor jets.
5. Use of improper gasoline, lubricating oils, or spark plugs.
6. An accident or subjecting the snowmobile to misuse, abuse, or negligent operation.
7. Any modification, addition, or removal of parts unless instructed to do so by Arctic Cat.
8. Use of the snowmobile in any way for racing purposes.
9. Removal of the engine for use in another vehicle.
10. Removal or mutilation of the Vehicle Identification Number or Engine Serial Number.
11. Use of parts not sold or approved by Arctic Cat.
12. Track and tunnel damage resulting from either ice stud or hooker plate installation.
13. Damage due to improper transportation.

Arctic Cat shall not be responsible for and this limited warranty excludes recovery of economic, punitive, consequential and incidental damages, lost profits, and loss of use. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. Arctic Cat's aggregate liability may not exceed the price of the product. The law of the State of Minnesota shall apply to all claims or disputes, exclusive of its conflicts of law provisions.

IMPLIED WARRANTY EXCLUSION AND DISCLAIMER

To the fullest extent permitted by law, Arctic Cat excludes and disclaims all implied warranties of merchantability and fitness for a particular purpose.

If you are not satisfied with warranty service or repairs, you should contact Arctic Cat at (U.S.) 1-218-681-9851 or (Canada) 1-204-982-1656.

Table of Contents

Limited Warranty .....Inside Front Cover
Foreword 1
Declaration of Conformity.....2
Snowmobile Safety Rules 3
General Information 4-22
Snowmobile Identification.....4
Control Locations 4
Gasoline-Oil.....5
Engine Break-In.....6
Drive Belt Break-In 7
Cold Drive-Away Function (5000/9000).....7
Speedometer/Tachometer 7
Diagnostic Codes 12
Handlebar Height/Tilt (M 8000 Sno Pro/LTD/ XF 8000 High Country).....13
Handlebar Tilt 14
Speedometer/Tachometer Angle.....14
Exhaust System 14
Air-Intake Silencer 14
Cooling System 14
Battery (Electric Start).....15
Jump-Starting (5000/9000).....15
Drive Clutch and Driven Clutch 16
Drive Clutch/Driven Clutch Alignment 16
Fuel Pump 16
Shock Absorbers 17
Standard Track (XF/ZR).....17
Paddle Track (XF High Country/M).....17
Track Studs (XF/ZR).....17
Reverse Operation 18
Access Panel/Hood (Removing/Installing) 19
Removable Seat (5000/ZR 8000/XF 8000/ M 8000 STD/9000) 20
Towing 21
Arctic Power Valve (APV) System (8000).....21
Exhaust Controlled Timing (ECT) System (8000) 22
Operating Instructions.....23-26
Starting and Stopping Engine 23
Braking 24
Emergency Stopping 25
Throttle/Ignition Monitor Switch 25
Varying Altitude Operation.....26
Lubrication.....27-28
Chain Case.....27
Rear Suspension 28
Maintenance.....29-52
Periodic Maintenance Checklist.....29
Air Cleaner/Filter (9000) 30
Fuel System.....30
Checking Engine Oil Level (8000) 31
Checking Engine Oil Level (5000/9000) 31
Changing Engine Oil/Filter (5000/9000) 32
Coolant Level.....33
Spark Plugs 34
Checking/Adjusting Valve Clearance (5000/ 9000).....35
Checking/Adjusting APV Cables (8000) 36
Battery (Electric Start) 37
Fuses.....39
Brake System 40
Burnishing Brake Pads 42
Drive Belt 43
Track Tension.....44
Track Alignment 46
Suspension.....47
Lights 49
Ski Wear Bars.....51
Adjusting Ski Stance.....51
Rail Wear Strips.....52
Performance Tips 53-54
Preparation for Storage 55-56
Preparation after Storage 57
U.S. EPA Emission Control Statement/ Warranty Coverage (U.S. Only).....58
Change of Address, Ownership, or Warranty Transfer 59
Warranty Procedure/Owner Responsibility .....Inside Back Cover

Reference Information

Write the appropriate information for your Arctic Cat Snowmobile in the spaces below.

Always use these numbers when referring to your snowmobile.

Model: _____
Date of Purchase: _____
Vehicle Identification Number: _____
Engine Serial Number: _____
Your Arctic Cat Dealer: _____
Address: _____
Phone: _____

⚠ WARNING

A snowmobile is a very high performance vehicle. Because it does accelerate rapidly and is capable of very high speeds, it should not be operated by a novice or an inexperienced operator. Never accelerate rapidly or drive at high speed beyond the limits of visibility or without being totally familiar with the terrain and what lies in front of you. Obey speed limits and never operate at speeds that do not allow adequate maneuvering and stopping distances. Read and study the entire Operator's Manual and Safety Handbook.
Failure to follow this warning could result in personal injury to yourself or others.

Personal Injury

- To avoid injury to yourself and others, NEVER operate the snowmobile without first reading and understanding this manual and the Snowmobile Safety Handbook; then follow the instructions and heed the warnings given.
- USE COMMON SENSE.
- DON'T DRINK and DRIVE.
- STAY IN CONTROL at ALL TIMES.
- TELL YOUR FRIENDS. If you see a friend operating a snowmobile recklessly, at excessive speeds, while intoxicated, or in other unsafe ways, don't wait until it is too late to warn of the consequences of snowmobile misuse. Such conduct endangers everyone. TAKE AN ACTIVE ROLE IN THE SAFETY OF YOURSELF AND OTHERS.

Parts and Accessories

When in need of replacement parts, oil, or accessories for your Arctic Cat Snowmobile, be sure to only use GENUINE ARCTIC CAT PARTS, OIL, AND ACCESSORIES. Only genuine Arctic Cat parts, oil, and accessories are engineered to meet the standards and requirements of your Arctic Cat Snowmobile. For a complete list of accessories, refer to the current Arctic Cat Accessory Catalog. To aid in service and maintenance procedures on these snowmobiles, an Illustrated Parts Manual and a Service Manual are available through your local Arctic Cat Snowmobile dealer.

Foreword

Congratulations! You have chosen a quality Arctic Cat Snowmobile designed and assembled to give dependable service. Be sure, as the owner/operator of an Arctic Cat Snowmobile, to become thoroughly familiar with its basic operation, maintenance, and off-season storage procedures. Read this manual and the accompanying Snowmobile Safety Handbook before operating the snowmobile to learn safe and proper use of your new Arctic Cat Snowmobile. Always operate the snowmobile within your level of skill and current terrain conditions.

The Operator's Manual, Snowmobile Safety Handbook, and Snowmobile Decals display the words Warning, Caution, and Note to emphasize important information. The symbol ⚠ **WARNING** identifies personal safety-related information. Be sure to follow the directive because it deals with the possibility of serious personal injury or even death. A **CAUTION** identifies unsafe practices which may result in snowmobile-related damage. Follow the directive because it deals with the possibility of damaging part or parts of the snowmobile. The symbol ■ **NOTE:** identifies supplementary information worthy of particular attention.

This manual covers operator-related maintenance, operating instructions, and off-season storage instructions. If major repair or service is ever required, contact an authorized Arctic Cat Snowmobile dealer for professional service.

At the time of publication, all information and illustrations were technically correct. Some illustrations used in this manual are used for clarity purposes only and are not designed to depict actual conditions. Because Arctic Cat Inc. constantly refines and improves its products, no retroactive obligation is incurred.

This Operator's Manual should be considered a permanent part of the snowmobile and must remain with the snowmobile at the time of resale. If the snowmobile changes ownership more than once, contact Arctic Cat Inc., Service Department, P.O. Box 810, Thief River Falls, MN 56701, for proper registration information. This manual was prepared by the Product Service and Warranty Department of Arctic Cat Inc.

Every Arctic Cat Snowmobile meets or exceeds the standards of the Snowmobile Safety and Certification Committee and displays the SSCC decal. Arctic Cat Inc. endorses and encourages the safe use of all snowmobiles. Always wear a helmet and eye protection. Drive with caution, observe all state and local regulations, and respect the rights of others. ISMA members like Arctic Cat do their part to improve trails, sponsor events, and generally support the sport of snowmobiling. As a member of the National Snowmobile Foundation, Arctic Cat Inc. promotes snowmobiling through education, charity, and research programs.

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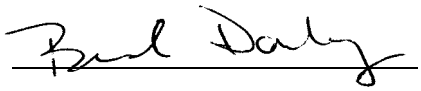
Declaration of Conformity

Application of council directives: EMC Directive 2004/108/EC
Issued by European Commission. EC Machinery Directive 2006/42/EC
Type of Equipment: Snowmobile Brand Name: Arctic Cat
Model Numbers:

S2014M8HE3OSG	S2014M8HSPUSO	S2014X8HHIUSB	S2014ZRHEPOSG
S2014M8HE3USG	S2014M9NE3OSG	S2014X9NCCUSB	S2014ZRHEPOSO
S2014M8HELUSO	S2014M9NE3USG	S2014X9NCTOSB	S2014ZRHEPUSG
S2014M8HELUSW	S2014M9NHCOSG	S2014X9NCTOSO	S2014ZRHEPUSO
S2014M8HHCOSG	S2014M9NHCUSG	S2014X9NCTUSB	S2014ZRHLEUSO
S2014M8HHCUSG	S2014M9NLEOSO	S2014X9NCTUSO	S2014ZRHLEUSW
S2014M8HLEOSO	S2014M9NLEOSW	S2014X9NHCOSW	S2014ZRHLXUSB
S2014M8HLEOSW	S2014M9NLEUSO	S2014X9NHCUSO	S2014ZRHRROSG
S2014M8HLEUSO	S2014M9NLEUSW	S2014X9NHCUSW	S2014ZRHRRUSG
S2014M8HLEUSW	S2014M9NSEOSG	S2014X9NHIOSB	S2014ZRNLEOSO
S2014M8HPEUSO	S2014M9NSEUSG	S2014X9NHIUSB	S2014ZRNLEOSW
S2014M8HPEUSW	S2014M9NSEUSO	S2014XFHEPOSG	S2014ZRNLEUSO
S2014M8HPSOSO	S2014X8HCCOSB	S2014XFHEPUSO	S2014ZRNLEUSW
S2014M8HPSOSW	S2014X8HCCUSB	S2014XFHLEUSO	S2014ZRNLXUSB
S2014M8HPSUSO	S2014X8HCTOSB	S2014XFHLEUSW	S2014ZRNLXUSG
S2014M8HPSUSW	S2014X8HCTOSO	S2014XFHLXUSB	S2014ZRNTPUSG
S2014M8HSEOSG	S2014X8HCTUSB	S2014XFNLEOSO	S2014ZRNTPUSO
S2014M8HSEOSO	S2014X8HCTUSO	S2014XFNLEOSW	S2014ZRNTROSG
S2014M8HSEUSG	S2014X8HHCOSO	S2014XFNLEUSO	S2014ZRNTRUSG
S2014M8HSEUSO	S2014X8HHCOSW	S2014XFNLEUSW	S2014ZRNTSUSB
S2014M8HSPOSG	S2014X8HHCUSO	S2014XFNTPUSG	
S2014M8HSPOSO	S2014X8HHCUSW	S2014XFNTPUSO	
S2014M8HSPUSG	S2014X8HHIOSB	S2014XFNTSUSB	

Standards to which conformity is declared:
EMC: EN 55012, EN 61000-6-2 MACHINERY: EN 12100:2010
Manufacturer (if not issuing agent): Arctic Cat Inc.
601 Brooks Ave. S.
Thief River Falls, MN 56701 USA

I, the undersigned, hereby declare that the equipment specified above conforms to the directive(s) and standard(s) as specified.



Brad Darling
Vice President/General Manager - Snowmobile Division

SNOWMOBILE SAFETY RULES

Arctic Cat® endorses and encourages the safe use of all snowmobiles.
Always follow these rules to ensure your continued enjoyment of the sport.
Receive proper training and operate within your capabilities. See operator's manual for complete safety instructions.

RÈGLEMENTS DE SÉCURITÉ EN MOTONEIGE

Arctic Cat® endosse et encourage l'utilisation sécuritaire de toutes motoneiges.
Respectez toujours ces règlements qui vous permettront de pratiquer ce sport avec plaisir.
Obtenez la formation nécessaire et conduisez selon vos capacités.
Veuillez vous référer au manuel de l'opérateur pour les instructions complètes de sécurité.

SÄKERHETSREGLER VID SNÖSKOTERKÖRNING

Arctic Cat® manar till försiktighet vid snöskoterkörning. Följ alltid dessa regler när du är ute och kör.

MOOTTORIKELKAN TURVASÄÄNNÖT

Arctic Cat® korostaa ja kannustaa moottorikelkkojen turvallista käyttöä.
Näitä sääntöjä tarkkaan noudattaen saat kelkkailusta irti parhaan mahdollisen huvin ja hyödyn.

SIKKERHETSREGLER FOR BRUK AV SNØSCOOTER

Arctic Cat® oppfordrer alle til å utvise forsiktighet ved bruk av snøscootere.
Følg alltid disse reglene når du er ute og kjører.

NORME DI SICUREZZA PER LE MOTOSLITTE

La Arctic Cat® sostiene ed incoraggia la sicurezza dello motoslitte.
Per un divertimento continuo di questo sport seguite sempre le suddette norme.

スノーモービルの安全運転ルール

アークティック・キャット社はスノーモービルの安全なご利用を奨励しています。いつまでもスノーモービルをお楽しみ頂けるよう、下記の安全運転ルールを常にお守り ください。

1 Don't drink and ride.
Ne buvez pas lorsque vous conduisez.
Kör aldrig om du är alkoholpåverkad.
Jos otat, älä kolkkaile!
Kjør aldri under påvirkning av alkohol.
Non bevete durante la guida.
飲酒運転はしないこと。



2 Always wear a helmet.
Portez toujours un casque.
Hjälm ska alltid bäras.
Käytä aina suojakypärää.
Bruk alltid hjelm.
Indossate sempre il casco.
常時、ヘルメットを着用すること。



3 Watch out for thin ice/open water.
Évitez la glace mince et les trous d'eau.
Se upp för tunn is/öppet vatten.
Varo heikkoja jäitä ja avantoja.
Se opp for tynn is/åpent vann.
Attenti allo spessore/rottura del ghiaccio.
薄氷やまだ凍ってない場所は警戒すること。



4 Use caution when crossing road/train tracks.
Soyez prudent lorsque vous traversez des routes et des chemins de fer.
Var försiktig när du korsar vägjärnväg.
Ole varovainen kun ajat tien tai rautatien poikki.
Vær forsiktig når du krysser veier/jernbaneskinner.
Usate prudenza nell'attraversare strade/passaggi a livello.
道路や踏切を横切るときは注意すること。



5 Don't ride after midnight.
Ne conduisez pas après minuit.
Kör inte efter midnatt.
Älä ajele pikkutunneilla.
Unngå å kjøre etter midnatt.
Non guidate dopo la mezzanotte.
真夜中以後は乗らないこと。



6 Beware of trees and other hazards.
Soyez attentif aux dangers naturels.
Se upp för träd och andra faror.
Varo puita ja muita vaaroja.
Se opp for trær og andre farer.
Attenti agli alberi e ai diversi ostacoli.
木や障害物に用心すること。



7 Always use a solid hitch for towing.
Assurez-vous d'avoir une attache solide pour remorquer.
Använd alltid stel koppling vid bogsering.
Käytä aina vahvoja vetolaitteita.
Bruk alltid solid slepeutstyr for tauing.
Usate un gancio fisso per il traino.
牽引にはしっかりしたロープを使うこと。



8 Observe proper rider capacity.
A. Maximum one rider on 1-Up sleds.
B. Maximum two riders on 2-Up sleds.
Respectez le nombre recommandé de passagers.
A. Maximum un passager sur les modèles réguliers.
B. Maximum deux passagers sur les modèles à 2-Niveaux.
Begränsa antal åkande.
A. Enkeldyna: Endast förare.
B. Dubbeldyna: Förare och en passagerare.
Ota huomioon kuormitusrajat.
A. Vain yksi henkilö yhden istuttavaan kelkkaan.
B. Korkeintaan kaksi kahden hengen kelkkaan.
Vær oppmerksom på passasjerkapasiteten.
A. Maks. En person på en-seters scootere.
B. Maks. To personer på to-seters scootere.
Osservate la capienza del veicolo.
1-posto: Massimo 1 passeggero.
2-posti: Massimo 2 passeggeri.
乗車定員を守ること。
一人乗りには一人だけ。
二人乗りには一人まで。



9 Check controls and maintain your machines.
Vérifiez les commandes et entretenez votre véhicule.
Kontrollera reglage och underhåll din maskin.
Tarkista kaikki säädöt ja pidä koneesi kunnossa.
Sjekk instrumentene og hold scooteren vedlike.
Controllate i comandi ed eseguite la manutenzione.
操作系のチェックや の 項をすること。



10 Be of legal age.
Soyez d'âge légal.
Respektera åldersgränsen.
Odota kunnes saavutat vaaditun ikärajan.
Vær må være over aldersgrensen.
Dovete essere maggiorenni.
運転 格のある年 に達していること。



11 Read and understand your Operator's Manual.
Lisez et comprenez votre Manuel de l'opérateur.
Läs och förstå Instruktionsboken.
Lue ja ymmärrä mitä Käyttöoppaassa sanotaan.
Les og forstå Brukerhåndboken.
Leggete attentamente il Manuale di Guida.
オーナーズ・マニュアルをよく読み、項 すること。



12 Obey all local laws and regulations and use common sense.
Obéissez aux lois et recommandations locales et usez de bon sens.
Följ terrängkörningslagen och lokala bestämmelser. Använd sunt förnuft.
Noudata kaikkia lakeja ja paikallismääräyksiä, ja käytä myös terveettä järkeä.
Overhold lokale lover og regelverk og bruk sunn fornuft.
Osservate tutte le norme di legge nazionali.
地域の条例や規則を守り、常識ある行動をすること。

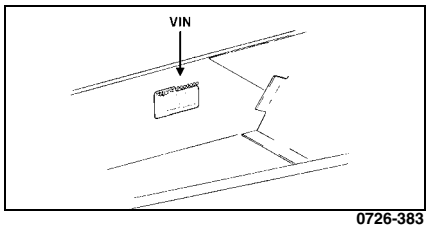


Snowmobile Safety Rules

General Information

Snowmobile Identification

The Arctic Cat Snowmobile has two important identification numbers. The Vehicle Identification Number (VIN) is stamped into the tunnel near the right-side footrest. The decal (located on the tunnel) also displays pertinent production information. The Engine Serial Number (ESN) is stamped into the crankcase of the engine.



0726-383

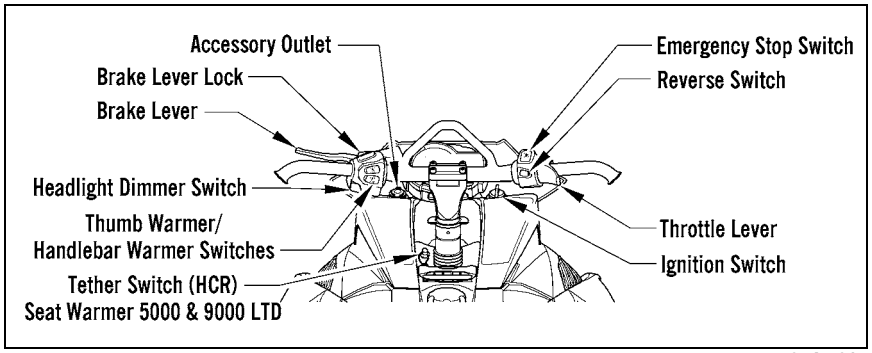
These numbers are required by the dealer to complete warranty claims properly. No warranty will be allowed by Arctic Cat Inc. if the engine serial number or VIN is removed or mutilated in any way.

Always provide the snowmobile name, VIN, and ESN when contacting an authorized Arctic Cat Snowmobile dealer for parts, service, accessories, or warranty. If the complete engine must be replaced, ask the dealer to notify Arctic Cat for correct registration information.

Control Locations

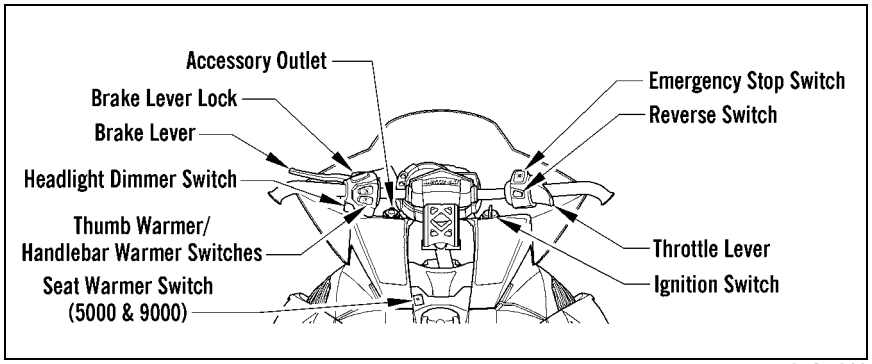
Shown are the typical control locations for Arctic Cat snowmobiles. Location of a specific control will vary according to model.

XF/M

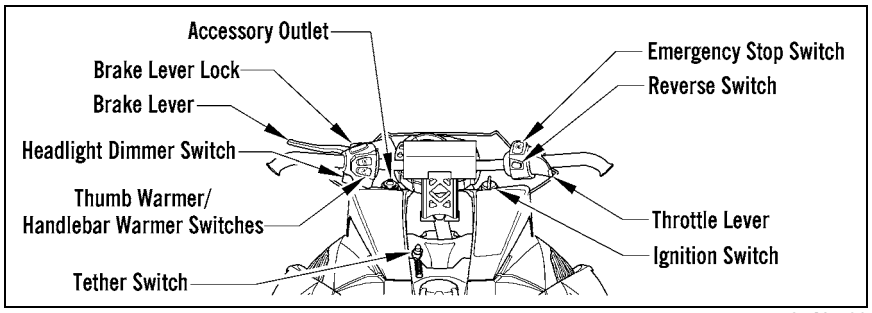


0747-615

ZR



0747-616



0746-789

Gasoline-Oil

Recommended Gasoline (5000)

The recommended gasoline to use in these snowmobiles is 87 octane regular unleaded. In many areas, oxygenates are added to the gasoline. Oxygenated gasolines containing up to 10% ethanol are acceptable gasolines.

When using ethanol blended gasoline, it is not necessary to add a gasoline antifreeze since ethanol will prevent the accumulation of moisture in the fuel system.

CAUTION

Do not use white gas or gasolines containing methanol. Only Arctic Cat approved gasoline additives should be used.

Recommended Gasoline (8000/9000)

The only recommended gasoline to use in these snowmobiles is 91 octane (minimum).

■ **NOTE: For optimum performance, use only 91 octane (minimum) gasoline.**

CAUTION

If a situation arises wherein 91 octane gasoline is not available, 89 or 87 octane gasoline can be substituted; however, do not prolong the usage of 89 or 87 octane gasoline as it will cause poor engine performance.

In many areas, oxygenates are added to the gasoline. Oxygenated gasolines containing up to 10% ethanol are acceptable gasoline. Do not use gasolines containing methanol.

CAUTION

Do not use white gas or gasoline containing methanol. Only Arctic Cat approved gasoline additives should be used.

Recommended Injection Oil (8000)

The recommended oil to use in the oil-injection system is either Arctic Cat APV Synthetic 2-Cycle Oil (p/n 4639-349 - qt) or (p/n 5639-469 - gal.) or C-TEC2 Synthetic Oil (p/n 6639-520 - 48 oz.). These oils are specially formulated to be used either as an injection oil or as a pre-mix oil (for break-in) and meets all of the lubrication requirements of the Arctic Cat snowmobile engine.

CAUTION

Any oil used in place of the recommended oil could cause serious engine damage.

Recommended Engine Oil (5000/9000)

The recommended oil to use is C-TEC4 Synthetic Oil (p/n 6639-524 - qt) or (p/n 6639-528 - gal.).

After the engine break-in period, the engine oil should be changed every 2500-3000 miles on the non-turbo or 1500-2000 miles on the turbo and before prolonged storage.

Filling Gas Tank

Since gasoline expands as its temperature increases, the gas tank must be filled to its rated capacity only. Expansion room must be maintained in the tank particularly if the tank is filled with cold gasoline and then moved to a warm area.

Also, if the snowmobile is to remain on a trailer after filling the gas tank, the bed of the trailer must be maintained level to prevent gasoline from draining out through the gas tank vent hose.

⚠ WARNING

Always fill the gas tank in a well-ventilated area. Never add gasoline to the snowmobile gas tank near any open flames or with the engine running. DO NOT SMOKE while filling the gas tank. Do not sit on the snowmobile without first installing the gas tank cap.

Break-In Gas/Oil Mixing Instructions (8000)

Before mixing gasoline and oil, make sure the oil is at room temperature (20° C/68° F). Use a U.L. approved 22.7 l (6 U.S. gal.) gasoline container for mixing the gasoline and oil. To properly mix the fuel at a 100:1 ratio, use the following procedure:

CAUTION

Never mix oil and gasoline in the snowmobile gas tank.

1. Pour gasoline into the gasoline container until approximately half full.
2. Pour 236 ml (8 fl oz) of the recommended 2-cycle oil into the gasoline container.
3. Install cap on gasoline container and shake the mixture vigorously.
4. Fill the gasoline container with gasoline; then cap the gasoline container and shake the mixture vigorously.
5. Using a fine-mesh screened funnel, pour the fuel mixture from the gasoline container into the snowmobile gas tank.

⚠ WARNING

Always fill the gas tank in a well-ventilated area. Never add gasoline to the snowmobile gas tank near any open flames or with the engine running. DO NOT SMOKE while mixing fuel or filling the gas tank.

Engine Break-In

The Arctic Cat engine (when new or rebuilt) requires a short break-in period before the engine is subjected to heavy load conditions.

8000

Arctic Cat requires that the first tankful of fuel be premixed at a 100:1 ratio in all oil-injection models.

■ NOTE: During this period, verify the oil in the oil tank is decreasing with use.

During the break-in period, a maximum of 1/2 throttle is recommended; however, brief full-throttle accelerations and variations in driving speeds contribute to good engine break-in. After one (1) tankful break-in period, the snowmobile may be taken to an authorized Arctic Cat Snowmobile dealer for a checkup. This checkup is at the discretion and the expense of the snowmobile owner.

CAUTION

DO NOT exceed the one (1) tankful limitation of a 100:1 gas/oil break-in mixture. Continuous use of a gas/oil mixture could cause spark plug fouling and excessive carbon buildup.

5000/9000

This engine does not require any premixed fuel during the break-in period.

CAUTION

DO NOT use premixed fuel in the snowmobile gas tank. Engine damage will occur.

To ensure trouble-free operation, careful adherence to the following break-in guidelines will be beneficial.

0-200 miles	1/2 Throttle (45 MPH-max)
200-400 miles	1/2-3/4 Throttle
400-600 miles	1/2-3/4 Throttle *

* With occasional full-throttle operation.

To ensure proper engine break-in, Arctic Cat recommends that the engine oil and filter be changed after 500 miles. This service is at the discretion and expense of the snowmobile owner.

Drive Belt Break-In

Drive belts require a break-in period of approximately 25 miles. Drive the snowmobile for 25 miles at 3/4 throttle or less. By revving the engine up and down (but not exceeding 60 mph), the exposed cord on the side of a new belt will be worn down. This will allow the drive belt to gain its optimum flexibility and will extend drive belt life.

■ NOTE: Before starting the snowmobile in extremely cold temperatures, the drive belt should be removed and warmed up to room temperature. Once the drive belt is at room temperature, install the drive belt.

CAUTION

Never run the engine with the drive belt removed. Excessive revving of the engine could result in serious engine damage and drive clutch failure.

Cold Drive-Away Function (5000/9000)

On these models, there is a "cold drive-away" function incorporated within the engine.

■ NOTE: When cold-starting the engine, the coolant temperature warning icon will illuminate and the TEMP display on the readout screen will begin to flash. With the engine in this temperature range, the RPM "limit" of the engine will be below drive system engagement speed. As the engine warms, the coolant temperature warning icon will begin to flash, the TEMP display will continue to flash, and the RPM "limit" of the engine will increase allowing the snowmobile to move without full-throttle operation. When the engine reaches proper operating temperature, the coolant temperature warning icon and the TEMP display will go out.

CAUTION

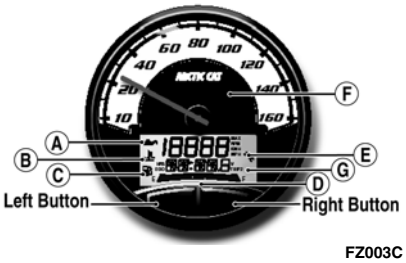
It is extremely important that the engine is properly warmed up before subjecting the engine to high speed operation or heavy loads. The engine should be allowed to idle at least 3-4 minutes before it is operated at more than 1/2 throttle. In extremely cold conditions, the warm-up time will be longer. Cold seizure and piston scuffing caused by insufficient warm-up will not be covered by warranty. Also, do not idle the engine for excessively long periods of time.

Speedometer/ Tachometer

These snowmobiles are equipped with different speedometer/tachometer styles. Determine which style your model is equipped with and use the appropriate following information.

Indicator Icons (Standard Gauge)

Certain models are equipped with a standard gauge combination speedometer/tachometer. Indicator icons are incorporated within the speedometer/tachometer. Also incorporated into the speedometer/tachometer is a digital readout screen.



FZ003C

A. Oil Pressure/Low Oil
B. Coolant Temperature
C. Low Fuel
D. Fuel Level
E. Service
F. High Beam
G. Charging System (5000/9000)

RPM/MPH (kph)

By pushing the left button once, the RPM and MPH will be displayed (one on the readout screen and one with the needle). By pushing the button once again, the functions will be reversed.

By pushing the left button (with speed being displayed) for more than two seconds, the display will change between standard mph or metric kph. Release the button when desired display appears.

With RPM displayed on the readout screen by pushing and holding the left button, maximum RPM will be displayed on the readout screen. The maximum RPM readout will reset when the right button is pushed (while maximum RPM is displayed).

Odometer/Trip-Meter (1)/ Trip-Meter (2)/Hour-Meter/Clock

■ NOTE: The clock is available on electric start models only.

By pushing the right button, the readout screen will display odometer, trip-meter (1), trip-meter (2), hour-meter, and clock. To reset the trip meter with the trip meter displayed, push and hold the right button until the display is cleared. The hour-meter readout will not reset.

Clock (Electric Start)

With the clock selected on the readout screen by pushing and holding the right button for two seconds, the option of selecting the 12-hour or 24-hour clock is available. Push the left button for 12-hour display; push the right button for 24-hour display. At this point, the hours and minutes will begin to flash. Push the left button to change the hour display; push the right button to change the minute display (either tap the buttons for individual number display or push and hold the buttons for rapid number display).

■ NOTE: During clock setting if neither button (left, right) is pushed within a 5-second time period, the clock-setting mode will be exited with changes saved.

Service Icon

On electric start models, the icon should illuminate each time the key is turned to RUN or START, and it should go out when the engine starts. If the icon stays illuminated (on electric start models) or it illuminates while the engine is running, the system is receiving input that is outside of its established parameters. If the icon illuminates indicating an error, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Coolant Temperature Warning Icon

■ NOTE: On the 5000/9000 when cold-starting the engine, the coolant temperature warning icon will illuminate, the readout screen will display TEMP, and engine RPM limit will be below drive system engagement speed.

When the engine reaches proper operating temperature, the coolant temperature warning icon and TEMP display will cease to flash.

If the coolant temperature rises too far above proper operating temperature, the coolant temperature warning icon will flash a warning (alert) and the engine will "surge" to alert the operator. If the coolant temperature rises to a critical point above proper operating temperature, the coolant temperature warning icon will cease flashing and will remain constantly illuminated.

■ NOTE: If the coolant temperature icon is constantly on, the engine will shut off if vehicle speed is reduced to 1.5 kph (0.9 MPH) or slower.

CAUTION
At this point, take precautionary measures such as changing to loose snow terrain, shutting the engine off (allowing the engine to cool down), and checking coolant level. If unable to either determine or remedy the problem, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Charging System Warning Icon (5000/9000)

The Charging System Warning Icon is designed to warn the operator if the battery charging system is not functioning. The icon should illuminate each time the key is turned to RUN or START, and it should go out when the engine starts. If the icon stays illuminated or it illuminates while the engine is running, the battery is not being charged, and the snowmobile is running on battery reserve power only.

If the Charging System Warning Icon illuminates, you should, as soon as possible, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner. The engine **WILL NOT RUN** without battery power.

Low Oil Warning Icon (8000)

The Low Oil Warning Icon is designed to alert the snowmobile operator when the oil in the oil injection reservoir gets below a prescribed level; however, it is highly recommended that a visual verification of the oil level in the reservoir be done prior to operating the snowmobile. Once the Low Oil Warning Icon illuminates during operation of the snowmobile, the operator must periodically monitor the level of oil in the reservoir and must fill the reservoir the next time gasoline is added to the gas tank. The "alert level" of the Low Oil Warning Icon is approximately equal to 1 tankful of gasoline under normal operating conditions.

Oil Pressure Warning Icon (5000/9000)

The Oil Pressure Warning Icon indicates engine oil pressure, not the oil level; however, if the oil level is low, it may affect oil pressure.

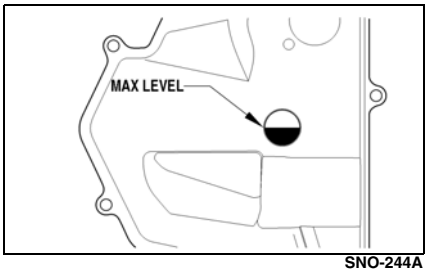
The icon should illuminate each time the ignition switch is turned to RUN or START, and it should go out when the engine starts. If the icon illuminates while the engine is running, oil pressure has been lost and the engine will automatically shut off.

If oil pressure is lost, use the following procedure to check the oil level:

CAUTION

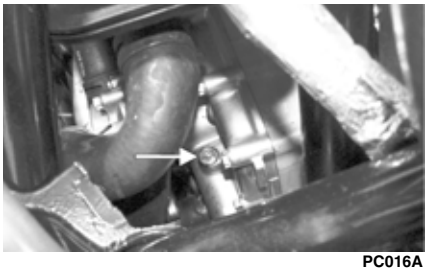
The snowmobile will be manufactured with the correct amount of oil in the reservoir. If the engine and oil are not at operating temperature, the oil will not be visible in the sight glass. Tip the snowmobile to the right at a 45° angle; then check to see if oil is present in the sight glass.

1. With the engine warm, note the oil level in the sight glass. If the level is below the sight glass, add only enough recommended oil until it is visible in the sight glass. DO NOT overfill the oil tank with oil.



SNO-244A

2. Open the air bleed bolt located on the oil pump (beneath the coolant tank) to purge air from the oil hose.



PC016A

■ **NOTE: When air can no longer be heard purging from oil pump bleed, tighten the bleed bolt to 7.5 ft-lb.**

CAUTION

Do not attempt to start the engine with the bleed bolt open.

3. Start the engine. The warning icon should go out within five seconds. If the warning icon goes out, check oil level.

4. If the warning icon does not go out, shut the engine off immediately and repeat step 2; then repeat step 3.

If the warning icon does not go out or if the engine does not start, take the snowmobile to an authorized Arctic Cat Snowmobile dealer. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Indicator Icons (Deluxe Gauge)

Certain models are equipped with a deluxe gauge combination speedometer/tachometer. Indicator icons are incorporated within the speedometer/tachometer. Also incorporated into the speedometer/tachometer is a digital readout screen.



FZ001A

A. High Beam
B. Oil Pressure/Low Oil
C. Coolant Temperature
D. Increment Button
E. Select Button
F. Decrement Button
G. Service
H. Charging System (5000/9000)

RPM/MPH (kph)

By pushing the increment button once, the RPM and MPH will be displayed (one on the readout screen and one with the needle). By pushing the button once again, the functions will be reversed.

By pushing the increment button (with speed being displayed) for more than two seconds, the display will change between standard mph or metric kph.

With RPM displayed on the readout screen by pushing and holding the increment button, maximum RPM will be displayed on the readout screen. The maximum RPM readout will reset when the decrement button is pushed (while maximum RPM is displayed).

Odometer/Trip-Meter (1)/ Trip-Meter (2)/Hour-Meter

By pushing the decrement button, the readout screen will display odometer, trip-meter (1), trip-meter (2), and hour-meter. To reset the trip meter with the trip meter displayed, push and hold the decrement button until the display is cleared. The hour-meter readout will not reset.

Clock/Altimeter

By pushing the select button, the readout screen will display clock, altimeter, and maximum altimeter.

To set the clock, select clock on the display by pushing and holding the select button for two seconds; the option of selecting the 12-hour or 24-hour clock mode is available. Push the increment button to toggle between the 12-hour display and the 24-hour display. When desired mode is displayed, push the select button.

At this point, the hours display will begin to flash. Push the increment button to increase the hours; push the decrement button to decrease the hours. Pushing and holding a button will accelerate the number display. When desired hour number is displayed, push the select button.

At this point, the minutes display will begin to flash. Push the increment button to increase the minutes; push the decrement button to decrease the minutes. Pushing and holding a button will accelerate the number display. When desired minute number is displayed, push the select button.

■ **NOTE: During clock setting if no button (increment, decrement, select) is pushed within a 5-second time period, the clock-setting mode will be exited with changes saved.**

■ **NOTE: The altimeter readout is based off barometric pressure and may require calibration as weather conditions change.**

To set/calibrate the altimeter to an established altitude with altimeter selected on the display screen by pushing and holding the select button for a minimum of two seconds, the acronym CAL will be displayed on the readout screen for one second; then the altitude value will flash. Push the increment button to increase the displayed altitude; push the decrement button to decrease the displayed altitude. Pushing and holding a button will accelerate the number display.

■ NOTE: If MPH has been selected in the speed readout, the altitude value will be displayed in feet. If kph has been selected in the speed readout, the altitude value will be displayed in meters.

To reset the maximum altimeter readout with the maximum altimeter displayed, push and hold the select button for a minimum of two seconds.

Service Icon

On electric start models, the icon should briefly illuminate each time the key is turned to RUN or START, and engine is started; then it should go out when the engine starts. If the icon stays illuminated (on electric start models) or it illuminates while the engine is running, the system is receiving input that is outside of its established parameters. If the icon illuminates indicating an error, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Coolant Temperature Warning Icon

■ NOTE: On the 5000/9000 when cold-starting the engine, the coolant temperature warning icon will illuminate, the readout screen will display TEMP, and engine RPM limit will be below drive system engagement speed.

When the engine reaches proper operating temperature, the coolant temperature warning icon and TEMP display will cease to flash.

If the coolant temperature rises too far above proper operating temperature, the coolant temperature warning icon will flash a warning (alert) and on the 5000/9000, the engine will "surge" to alert the operator. If the coolant temperature rises to a critical point above proper operating temperature, the coolant temperature warning icon will cease flashing and will remain constantly illuminated.

■ NOTE: On the 5000/9000 if the coolant temperature icon is constantly on, the engine will shut off if vehicle speed is reduced to 1.5 kph (0.9 MPH) or slower.

CAUTION

At this point, take precautionary measures such as changing to loose snow terrain, shutting the engine off (allowing the engine to cool down), and checking coolant level. If unable to either determine or remedy the problem, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Charging System Warning Icon (5000/9000)

The Charging System Warning Icon is designed to warn the operator if the battery charging system is not functioning. The icon should illuminate each time the key is turned to RUN or START, and it should go out when the engine starts. If the icon stays illuminated or it illuminates while the engine is running, the battery is not being charged, and the snowmobile is running on battery reserve power only.

If the Charging System Warning Icon illuminates, you should, as soon as possible, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner. The engine **WILL NOT RUN** without battery power.

Low Oil Warning Icon (8000)

The Low Oil Warning Icon is designed to alert the snowmobile operator when the oil in the oil injection reservoir gets below a prescribed level; however, it is highly recommended that a visual verification of the oil level in the reservoir be done prior to operating the snowmobile. Once the Low Oil Warning Icon illuminates during operation of the snowmobile, the operator must periodically monitor the level of oil in the reservoir and must fill the reservoir the next time gasoline is added to the gas tank. The "alert level" of the Low Oil Warning Icon is approximately equal to 1 tankful of gasoline under normal operating conditions.

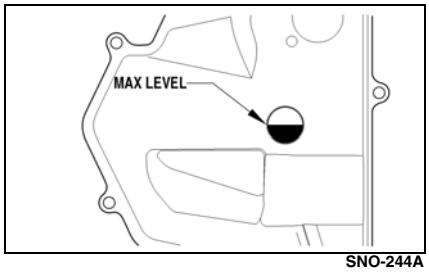
Oil Pressure Warning Icon (5000/9000)

The Oil Pressure Warning Icon indicates engine oil pressure, not the oil level; however, if the oil level is low, it may affect oil pressure.

The icon should illuminate each time the ignition switch is turned to RUN or START, and it should go out when the engine starts. If the icon illuminates while the engine is running, oil pressure has been lost and the engine will automatically shut off.

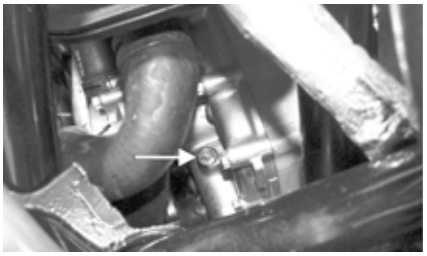
If oil pressure is lost, use the following procedure to check the oil level:

1. With the engine warm, note the oil level in the sight glass. If the level is below the sight glass, add only enough recommended oil until it is visible in the sight glass. DO NOT overfill the reservoir with oil.



SNO-244A

2. Open the air bleed bolt located on the oil pump (beneath the coolant tank) to purge air from the oil hose.



PC016A

■ **NOTE: When air can no longer be heard purging from oil pump bleed, tighten the bleed bolt to 7.5 ft-lb.**

CAUTION

Do not attempt to start the engine with the bleed bolt open.

3. Start the engine. The warning icon should go out within five seconds. If the warning icon goes out, check oil level.
4. If the warning icon does not go out, shut the engine off immediately and repeat step 2; then repeat step 3.

If the warning icon does not go out or if the engine does not start, take the snowmobile to an authorized Arctic Cat Snowmobile dealer. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Diagnostic Codes

Diagnostic codes are activated by the ECM and may be displayed on the readout screen for a number of reasons.

If a code is displayed while the engine is running, the ECM is receiving input that is outside of its established parameters. If a code has been activated, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

8000

Additional codes are displayed on the readout screen. Refer to the following chart for diagnostic codes.

Code	Trouble
2	Failure in injector(s).
4	Open or short circuit in barometric pressure sensor.
5	Open or short circuit in intake air temperature sensor.
6	Open or short circuit in water temperature sensor.
7	Open or short circuit in throttle position sensor.
12	Failure in ignition coil(s).
16	Incorrect adjustment/failure in APV cable.
17	Failure in exhaust temperature sensor.
18	Failure in servomotor.
21	Open or short circuit in/or loose knock sensor.
OCTN	Low octane gasoline.

5000/9000

These diagnostic codes are displayed on the readout screen incorporated within the speedometer/tachometer. Refer to the following chart for diagnostic codes.

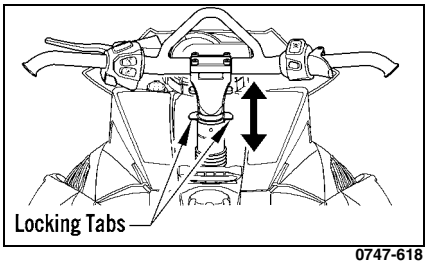
Code	Trouble
1	Failure in the fuel system.
2	Failure in injector (PTO).
3	Failure in injector (MAG).
4	Failure in barometric pressure sensor.
5	Open or short circuit in intake manifold air temperature sensor.
6	Open or short circuit in water temperature sensor.
7	Open or short circuit in throttle position sensor.
8	Open or short circuit in manifold air pressure sensor.
9	Failure in crankshaft position sensor.
11	Failure in speed sensor.
12	Failure in coil (MAG).
13	Failure in coil (PTO).
14	Failure in ISC valve.
15	Failure in oxygen sensor.
19	Failure in camshaft position sensor.
21*	Open or short circuit in/or loose knock sensor.
22*	Failure in injector (PTO secondary).
23*	Failure in injector (MAG secondary).
25	Failure in shifting system/gear position switch.
26	Malfunction in air pressure sensor.
29	Malfunction in shift control switch.
OCTN*	Low octane gasoline.

* 9000

Handlebar Height/Tilt (M 8000 Sno Pro/LTD/ XF 8000 High Country)

To adjust handlebar height, use the following procedure:

1. From each side of the steering post, compress the locking tabs to unlock the handlebar.



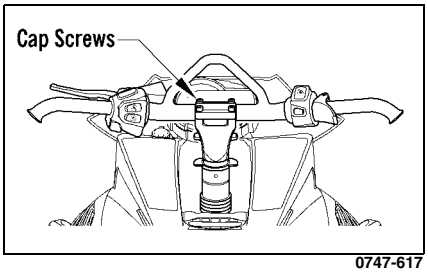
0747-618

2. With the tabs compressed, adjust the handlebar up or down to the desired position; then release the tabs to lock the handlebar in place.

■ NOTE: When the desired height is found, make sure that the lock collar is seated in the grooves by lifting up and pressing down on the handlebar.

To adjust handlebar tilt, use the following procedure:

1. Loosen the four cap screws and tilt the handlebar to the desired position.



0747-617

2. Tighten the four cap screws evenly to 15 ft-lb.

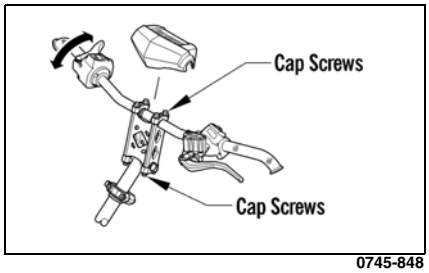
⚠ WARNING

Tighten the cap screws according to specifications to prevent unexpected "movement" of the handlebar during operation over rough terrain. DO NOT position handlebar so steering (maximum right/left turning capabilities) or throttle and brake controls are affected.

Handlebar Tilt

The handlebar can be adjusted to the operator's preference. To adjust the handlebar, use the following procedure:

1. Remove the handlebar cover; then loosen the eight cap screws securing the handlebar caps to the riser and the riser to the steering post.



0745-848

2. Adjust the handlebar to operator's desired position, tighten the cap screws evenly to 15 ft-lb, and check steering for maximum right/left turning capabilities.

■ NOTE: Do not rotate the handlebar to a position that allows air to enter the brake system.

⚠ WARNING

Tighten cap screws according to specifications to prevent unexpected "movement" of the handlebar during operation over rough terrain. DO NOT position the handlebar so steering (maximum right/left turning capabilities) or throttle and brake controls are affected.

Speedometer/ Tachometer Angle

The speedometer/tachometer can be adjusted to the operator's desired position. To adjust, use the following procedure.

1. Loosen the lock nuts and cap screws on each side of the speedometer/ tachometer bracket.
2. Adjust the speedometer/tachometer to the desired angle; then tighten the lock nuts securely.

Exhaust System

The exhaust system is designed to reduce noise and to improve the total performance of the engine. If any exhaust system component is removed from the engine and the engine is run, severe engine damage will result.

Air-Intake Silencer

Used in conjunction with the fuel intake system is a specially designed air-intake silencer. The purpose of the silencer is to quiet the intake of fresh air. Since the fuel intake system is calibrated with the air-intake silencer in place, the engine must never be run with the silencer removed. Performance will not be improved if the air-intake silencer is removed. In contrast, severe engine damage will occur.

CAUTION

These snowmobiles are not designed to be operated in dusty conditions. Operating the snowmobile in dusty conditions will result in severe engine damage.

Cooling System

These snowmobiles are equipped with a closed liquid cooling system for engine cooling. The cooling system should be inspected daily for leakage and damage. Also, the coolant level should be checked daily. If leakage or damage is detected, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

When filling the cooling system reservoir, use an ethylene glycol-based coolant/water mixture which will satisfy the coldest anticipated weather conditions of your area in accordance with the coolant manufacturer's recommendations.

■ NOTE: On the HCR, M LTD, and M 8000 Sno Pro if operating on ice or hard-packed snow, the ice scratchers must be engaged to reduce engine overheating.

■ NOTE: If operating on ice or hard-packed snow conditions, it is recommended that Ice Scratchers (p/n 5639-897) be installed to reduce wear strip wear and engine overheating.

For checking/filling cooling system, refer to Coolant Level sub-section in the Maintenance section.

Battery (Electric Start)

It is extremely important that the battery be maintained at full charge at all times and that the battery connections be clean and tight. If charging the battery becomes necessary, refer to Battery sub-section in the Maintenance section.

CAUTION

On the 5000/9000, always turn the ignition switch key to the OFF position when the snowmobile is not being used. Leaving the ignition switch in the ON position will result in discharging the battery and possible damage to the battery.

Jump-Starting (5000/ 9000)

■ NOTE: Arctic Cat does not recommend jump-starting a snowmobile with a dead battery but rather to remove the battery, service it, and correctly charge it; however, in an emergency, it may be necessary to jump-start a snowmobile. If so, use the following procedure to carefully and safely complete this procedure.

⚠ WARNING

Improper handling or connecting of a battery may result in severe injury including acid burns, electrical burns, or blindness as a result of an explosion. Always remove rings and watches.

■ NOTE: To access the battery, the seat must be removed.

1. On the snowmobile to be jump-started, slide any terminal boots away.

⚠ WARNING

Any time service is performed on a battery, the following must be observed: keep sparks, open flame, cigarettes, or any other flame away. Always wear safety glasses. Protect skin and clothing when handling a battery. When servicing a battery in an enclosed space, keep the area well-ventilated.

2. Inspect the battery for any signs of electrolyte leaks, loose terminals, or bulging sides. Leaking or bulging battery cases may indicate a frozen or shorted battery.

⚠ WARNING

If any of these conditions exist, DO NOT attempt to jump-start, boost, or charge the battery. An explosion could occur causing serious injury.

3. Inspect the vehicle to be used for jump-starting to determine if voltage and ground polarity are compatible. The vehicle must have a 12-volt DC, negative ground electrical system.

CAUTION

Always make sure the electrical systems are of the same voltage and ground polarity prior to connecting jumper cables. If not, severe electrical damage may occur.

4. Move the vehicle to be used for the jump-start close enough to ensure the jumper cables easily reach; then set and lock the brakes, shut off all electrical accessories, and turn the ignition switch OFF.

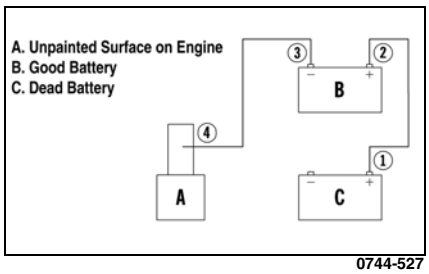
■ NOTE: Make sure all switches on the snowmobile to be jump-started are turned OFF.

5. Disconnect all external accessories such as cell phones, GPS units, and radios on both vehicles.

CAUTION

Failure to disconnect electronic accessories during jump-starting may cause system damage due to power spikes.

6. Attach one clamp of the positive (red) cable to the positive (+) terminal (1) of the dead battery (C) being careful not to touch any metal with the other clamp; then attach the other clamp of the positive (red) cable to the positive (+) terminal (2) of the good battery (B).



0744-527

■ **NOTE: Some jumper cables may be the same color but the clamps or ends will be color-coded red and black.**

7. Attach one clamp of the negative jumper cable (black) to the negative (-) terminal (3) of the good battery (B); then attach the other clamp of the negative (black) jumper cable (4) to an unpainted metal surface (A) on the engine or frame well away from the dead battery and fuel system components.

⚠ WARNING

Never make the final connection to a battery as a spark could ignite hydrogen gases causing an explosion of the battery resulting in acid burns or blindness.

8. Stand well away from the dead battery and start the vehicle with the good battery. Allow the vehicle to run for several minutes applying some charge to the dead battery.
9. Start the snowmobile with the dead battery and allow it to run for several minutes before disconnecting the jumper cables.
10. Remove the jumper cables in opposite order of hook-up (4, 3, 2, 1). Be careful not to short cables against bare metal.

■ **NOTE: Have the battery and electrical system checked prior to operating the snowmobile again.**

Drive Clutch and Driven Clutch

The drive clutch and driven clutch do not require lubrication; therefore, no special maintenance is required by the snowmobile owner except for periodical cleaning. However, the drive clutch and driven clutch should be disassembled, cleaned, and inspected by an authorized Arctic Cat Snowmobile dealer after every 800 miles of operation or at the end of the snowmobiling season whichever occurs first. This service is at the discretion and expense of the snowmobile owner.

When operating the snowmobile at high altitudes, it may be necessary to change certain component parts of the drive clutch and/or the driven clutch. See an authorized Arctic Cat Snowmobile dealer for further information.

CAUTION

DO NOT attempt to service the drive clutch and driven clutch. The drive clutch and driven clutch must be serviced by an authorized Arctic Cat Snowmobile dealer only.

Drive Clutch/Driven Clutch Alignment

The alignment between the drive clutch and driven clutch is set at the factory. Normally, no adjustment is necessary as long as neither the drive clutch nor the driven clutch is removed or disassembled. However, if premature drive belt wear is experienced or if the drive belt turns over, the drive clutch/driven clutch alignment must be checked. Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Fuel Pump

The fuel pump is designed to provide adequate amount of gas to the injectors at all throttle settings. If a fuel delivery problem is suspected, take the snowmobile to an authorized Arctic Cat Snowmobile dealer. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Shock Absorbers

Rebuildable Gas

Each shock absorber should be visibly checked weekly for fluid leakage, cracks or breaks in the body/reservoir, or a bent shaft. If any one of these conditions is detected, replacement or service is necessary. Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

■ NOTE: When the snowmobile is operated in extremely cold weather (-23° C/-10° F or colder), a small amount of leakage may be present. Unless the leakage is excessive, replacement is not necessary.

■ NOTE: The frequency of servicing rebuildable shock absorbers will vary according to the types of conditions and terrain the snowmobile has been subjected to. If riding quality deteriorates (or seems to be deteriorating), take the snowmobile to an authorized Arctic Cat Snowmobile dealer for shock absorber evaluation and/or servicing. This service is at the discretion and expense of the snowmobile owner.

Kits are available to either stiffen or soften gas shock valving.

Standard Track (XF/ZR)

Accelerated wear strip and track clip wear caused by operating on ice or hard-packed snow conditions is NOT covered under Arctic Cat Inc. warranty policy.

■ NOTE: If regularly operating on ice or hard-packed snow conditions, Performance Wear Strips (p/n 6639-448) may be installed at the expense of the snowmobile owner.

Paddle Track (XF High Country/M)

These models are equipped with a Power Claw style track which is specially designed for use in powder snow riding conditions. When the Power Claw track is operated in hard-packed snow conditions, it will run slightly slower than a standard track and it will accelerate wear strip wear. To decrease the amount of wear strip wear, slower speeds must be maintained when operating on hard-packed trails. Accelerated wear strip wear caused by operating a Power Claw track on hard-packed snow conditions is NOT covered under Arctic Cat Inc. warranty policy.

■ NOTE: If operating on ice or hard-packed snow conditions, it is recommended that Ice Scratchers (p/n 5639-897) be installed to reduce wear strip wear and engine overheating.

Track Studs (XF/ZR)

■ NOTE: Stud or hooker plate installation will void track and tunnel warranty.

■ NOTE: Arctic Cat does not recommend studding a track with greater than a 1.6 inch lug.

■ NOTE: Stud installation can be performed by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

When installing studs on a single-ply track, it is important to use Arctic Cat-approved studs (proper head diameter). If approved studs (proper head diameter) are not used, studs could tear free of the track causing possible injury or even death. Consult an authorized Arctic Cat Snowmobile dealer for information.

CAUTION

To prevent tunnel damage from the studs, Tunnel Protector Kit (p/n 6639-075) for the ZR, (p/n 6639-118) for the XF, or (p/n 6639-207) for HCR must be installed.

For proper installation, use the following procedure:

1. Using the appropriate stud template (see chart), mark the desired stud pattern to be used.

Stud Template Chart	
Track Length	p/n
129 in.	6639-143
137/141 in.	4639-991

2. Using the proper-sized stud hole drill bit, drill out the stud holes.
3. Push the stud through the hole from inside the track; then place the domed support plate and lock nut on the exposed stud.
4. Using a wrench to secure the stud, tighten the lock nut on the exposed stud.

It is also recommended that whenever studs are installed on a track, carbide wear bars should be installed on the skis. Carbide wear bars complement the track studs to balance steering control under these conditions. The length of the carbide on the wear bars should be proportionate to the number of track studs (i.e. small number of track studs — short length of carbide...many track studs — long length of carbide). The proper proportion between the number of studs and carbide length on the wear bar will maintain steering balance.

⚠ WARNING

Always balance the snowmobile with the proper proportion between the number of studs and carbide length on the wear bars. Do not "over drive" conditions; use common sense in all operating conditions.

CAUTION

Do not use studs that are more than 9.525 mm (0.375 in.) longer than the track lug height.

⚠ WARNING

Do not operate a snowmobile with loose studs as they may be thrown from the track. Always use a shielded safety stand whenever performing any maintenance or adjustments.

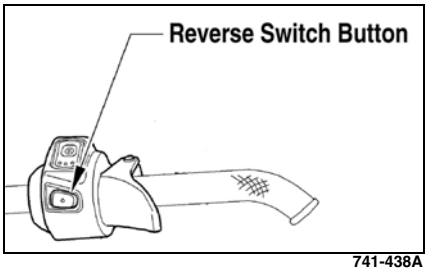
⚠ WARNING

DO NOT stand behind the snowmobile or near the rotating track. NEVER run the track at high speed when the track is suspended.

Reverse Operation

The engine reverse function offers the operator the convenience of being able to back up the snowmobile rather than having to turn the snowmobile around by hand. This feature, under most situations, should not be used to free a stuck snowmobile as it will tend to dig the skis deeper into the snow. Always use minimal speed when operating in reverse and come to a complete stop before shifting from either forward to reverse or reverse to forward.

Shifting Into Reverse



741-438A

■ **NOTE: Correct drive belt tension (deflection) is important for the reverse function to operate properly. If the belt is too tight, difficulty in engaging reverse will be experienced (the reverse function will make up to three attempts to engage into reverse, and if the function is not completed after the third attempt, the engine will shut down).**

1. Always warm up the engine for 2-3 minutes prior to shifting into reverse. The reverse function is cancelled when engine temperature is below or above normal operating range.
2. Shift only with the engine at idle RPM and the snowmobile completely stopped. The reverse function will not engage if engine is above 3000 RPM.

3. If attempting to shift into reverse at too high engine RPM (above 3000 RPM), the reverse function will be cancelled and the coolant temperature warning icon will flash. This indicates the reverse switch button was pressed at too high RPM. The operator must reduce engine RPM below 3000 and press the button a second time.
4. Upon pressing the reverse switch button, the reverse function will make up to three attempts to engage into reverse. If the function is not completed after the third attempt, the engine will shut down.

CAUTION

Never shift into reverse while the snowmobile is moving forward as it is hard on the driven clutch torque bracket and the cam rollers.

Operating in Reverse

CAUTION

Never pull the recoil starter rope when the engine is running or when operating in reverse. Damage to the engine and/or recoil start system will occur.

1. When reverse is engaged, a reverse icon will illuminate in the speedometer/tachometer and a reverse alarm will sound.
2. If the throttle lever is compressed before complete reverse engagement, the engine may shut down. Always wait for the reverse icon to illuminate and the reverse alarm to sound before backing up.
3. The system will not shift until the button is released. Also, the reverse function will cancel if operated in reverse longer than 45 seconds. Whenever the reverse function has been cancelled, the engine must be run in the forward mode for a minimum of 60 seconds at 2000 RPM before the reverse function can be used again.

⚠ WARNING

Do not use high speed when backing up. Control could be lost and injury could occur.

CAUTION

Do not use high speed when backing up. Damage to the drive belt and driven clutch components may occur.

■ NOTE: While operating in reverse, a "rev-limiter" will activate at 6500 RPM.

4. To shift into forward, stop the snowmobile and allow the engine to idle (under 3000 RPM); then press the reverse button and release. The forward selection will be complete.
5. After shifting from reverse to forward (or from forward to reverse), apply the throttle slowly and evenly to allow the driven clutch to engage properly.
6. The reverse function is cancelled whenever the engine is shut off.

CAUTION

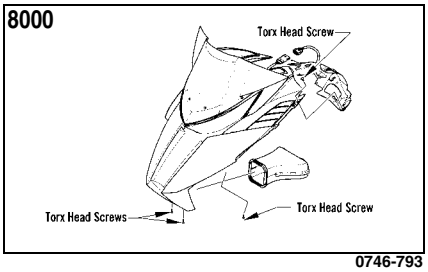
After reversing in deep powder snow conditions, make sure the snowflap does not become "caught up" in the track. Track and/or snowflap damage may occur.

CAUTION

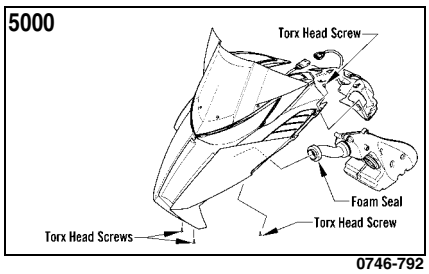
If the snowmobile is equipped with ice scratchers, the scratchers must be disengaged or component damage will occur.

Access Panel/Hood (Removing/Installing)

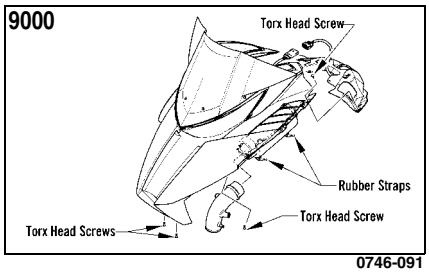
To remove the access panel and hood, use the following procedure:



0746-793

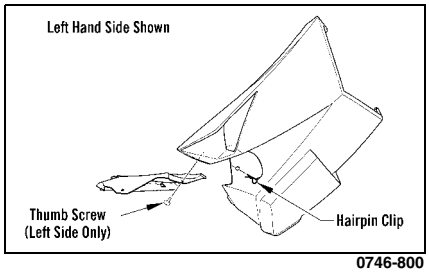


0746-792



0746-091

1. Remove the hairpin clip from the pin located at the front of the access panel.
2. On the M/XF, remove the thumb screw securing the front left access panel to the front facia. Move the panel up and off the pin; then swing the panel all the way out and unhinge the panel from the lower console.



0746-800

3. Remove the two torx-head screws securing the hood (located on the underside of the hood above the front tube of the upper A-arm); then remove the two torx-head screws from the top-side of the hood securing the hood to the upper console and the two torx-head screws from under the nosepiece of the hood.
4. Remove the intake panel below the gauge; then locate the hood harness connector (located in front of the speedometer) and unplug the connector; then move the hood slightly forward and remove the hood.

■ NOTE: On the 9000, first unhook the rubber straps securing the air filter housing to the intake plenum of the hood; then move the hood slightly forward and remove the hood.

To install the access panel and hood, use the following procedure:

1. Position the hood onto the snowmobile and connect the hood harness connector making sure the harness does not become pinched.

■ NOTE: On the 8000, make sure the hood tabs are seated between the throttle body boot.

■ NOTE: On the 9000 prior to securing the hood, make sure the air filter is seated properly into the air silencer and secured using the two rubber straps.

2. Secure the hood with torx-head screws and tighten securely.

■ NOTE: Before installing the hood, make sure the mounting screw clips are in position.

■ NOTE: On the 5000, make sure the foam seal is in place on the air intake.

■ NOTE: On the 9000, make sure the air filter housing is properly connected and secured with the rubber straps to the intake plenum of the hood and turbocharger.

3. Install the access panel onto the lower console; then close the access panel and secure with the hairpin clip and thumb screw. Install the intake panel.

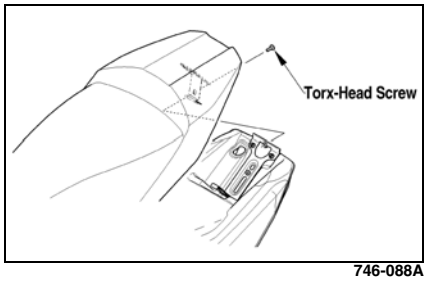
Removable Seat (5000/ ZR 8000/XF 8000/M 8000 STD/9000)

These snowmobiles are equipped with a removable seat. To remove the seat, use the following procedure:

Remove the torx-head screw from the underside of the seat; then lift on the back of the seat and move it up and rearward to remove it.

CAUTION

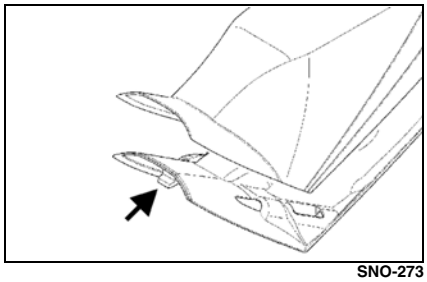
On the LXR prior to removing the seat, lift the rear of the seat and disconnect the seat heater harness connector.



746-088A

To install the seat, use the following procedure:

Route the front tab on the seat through the seat-base hold-down bracket; then install the seat and secure using the cap screw.



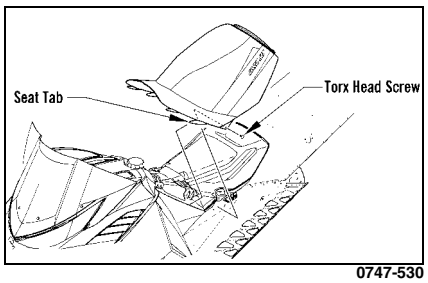
SNO-273

■ **NOTE: On the LXR prior to lowering and securing the seat, connect the seat heater harness connector.**

Removable Seat (M 8000 Sno Pro/LTD/HCR)

To remove the seat, use the following procedure:

1. Remove both torx-head screws from the side of the seat; then remove the four tabs from the seat base from the lower console. Pull back and remove the seat cover and foam.



0747-530

To install the seat, use the following procedure:

1. Position the seat foam on top of the gas tank; then slide the seat cover over the gas tank and foam.
2. Insert the seat base tabs into the slots in the console; then secure the bottom of the seat cover to the tunnel using the existing screws. DO NOT over-tighten.

Towing

If the snowmobile is to be towed by another snowmobile, do not tow using the loops in the skis. The tow rope should be attached to the spindles.

Arctic Power Valve (APV) System (8000)

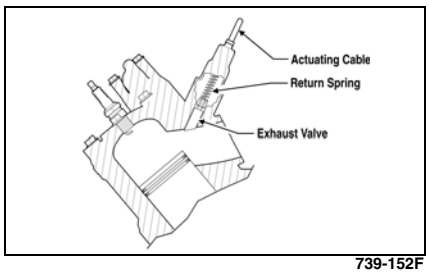
CAUTION

The recommended engine oil to use is either Arctic Cat C-TEC2 or APV Synthetic 2-Cycle Oil (see Gasoline-Oil - Recommended Injection Oil subsection in this section). Any substitute may cause an APV malfunction.

This RPM controlled servomotor (servo) actuated system adjusts the size of the exhaust ports to provide peak performance throughout the RPM range.

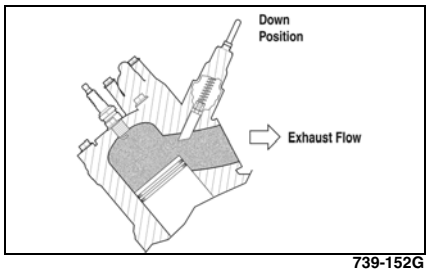
The system consists of an exhaust valve assembly mounted to the exhaust side of each cylinder and connected by adjustable cables to an electronic servo mounted beneath the hood.

■ **NOTE: The mounting location of the servo will vary from model to model.**



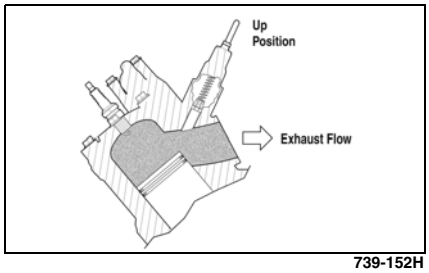
739-152F

At low RPM, the exhaust valves are held in the DOWN position by return springs. This gives the engine a "low port" exhaust design calibrated to provide maximum low RPM power and improve fuel economy at trail speeds.



739-152G

At high RPM, the exhaust valves are raised. This creates a "high port" exhaust design calibrated to provide maximum performance at high RPM.



739-152H

■ **NOTE: The RPM ranges will vary from model to model.**

■ **NOTE: If the servomotor cycles three times and then shuts down, the exhaust valve cables are not adjusted correctly. The exhaust valves may also be sticking.**

■ **NOTE: APV cleaning may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

Exhaust Controlled Timing (ECT) System (8000)

This system automatically adjusts the ignition timing to provide maximum performance through a variety of operating conditions. The ECM receives input on engine RPM (demand) and exhaust pipe temperature (engine condition) and adjusts the ignition timing accordingly. This system is not adjustable and is maintenance free.

If a system fault is suspected, use an ohmmeter to check continuity of the exhaust pipe temperature sensor located in the expansion chamber. A reading of either 0 ohm or infinity indicates a failed sensor.

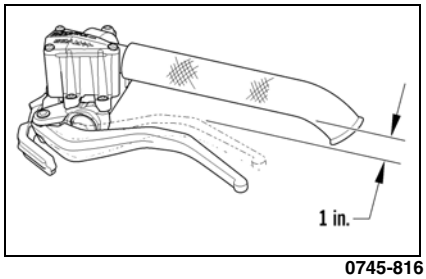
■ **NOTE: A disabled ECT system WILL NOT cause engine damage; however, a failed ECT system will have slower throttle response and may produce slightly less top-end performance.**

Operating Instructions

Starting and Stopping Engine

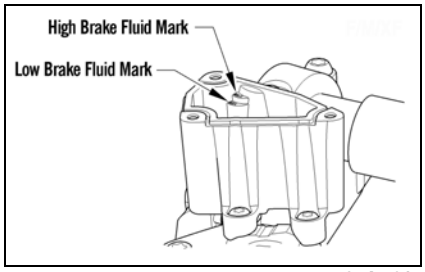
It is imperative that the brake system be checked for wear and proper operation and that all safety checks found in the accompanying Snowmobile Safety Handbook be performed before attempting to start the engine. After the engine has been started, check the headlights (high and low beam), taillight, and brakelight to be sure they are working properly and adjusted correctly. Make sure all lights are clean to provide maximum illumination. The headlight and taillight must be clean and must be illuminated whenever the engine is running.

1. Test the operation of the brake system by compressing the brake lever. The brake lever must feel firm when compressed; then while holding the brake lever in the compressed position, measure the distance between the brake lever and the handlebar. The distance must be greater than 2.54 cm (1 in.).



0745-816

2. With the brake fluid reservoir in a level position and the cover removed, check the fluid level. The brake fluid level must be at the high brake fluid mark in the reservoir.



0745-817

3. If the brake fluid is below the high brake fluid mark, add Arctic Cat approved DOT 4 brake fluid until the fluid is at the recommended level. Install and secure the reservoir cover. Do not allow moisture to contaminate the brake system.

CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

⚠ WARNING

Do not overfill the brake fluid reservoir. Overfilling the reservoir may cause the brake system to hydraulically lock. Use only Arctic Cat approved brake fluid.

⚠ WARNING

Do not start the engine if the brake system is not functioning properly. Service the brake system or have it properly repaired prior to operating the snowmobile. Serious personal injury or even death may occur if the brake system is not operating properly.

4. Test the throttle control lever by completely compressing and releasing it several times. The lever MUST return to the idle position quickly and completely.

CAUTION

Always check the coolant level before starting the engine.

5. Move the emergency stop switch to the UP or RUN position.
6. Insert key into ignition switch; then rotate key to the RUN position.

■ **NOTE: On the 8000 when a cold engine is being started, DO NOT COMPRESS THE THROTTLE CONTROL LEVER. If the throttle control lever is compressed, the engine will not start because the fuel/air mixture will be too lean.**

7. On models with manual start, pull the recoil handle slowly until resistance is felt; then give a short quick pull. Repeat until the engine starts.

■ **NOTE: In extremely cold weather, pull the recoil handle slowly two to three times to begin the starting procedure.**

CAUTION

To avoid damaging the recoil starter, DO NOT pull the recoil rope to its limit or release the recoil handle from an extended position. Allow the rope to rewind slowly.

■ **NOTE: On electric start models, rotate the key to the START position; then when the engine starts, release the key.**

CAUTION

Do not continuously run the starter for more than 5 seconds at a time.

■ **NOTE: When the engine starts, allow it to warm up properly. Idle the engine several minutes until the engine has reached normal operating temperature. Do not idle the engine for excessively long periods of time.**

8. On the 5000/9000, there is a "cold drive-away" function incorporated within the engine. This function is active until the engine reaches operating temperature.

CAUTION

On the 8000, it is extremely important that the engine is properly warmed up before subjecting the engine to high speed operation or heavy loads. The engine should be allowed to idle at least 3-4 minutes before it is operated at more than 1/2 throttle. In extremely cold conditions, the warm-up time will be longer. Cold seizure and piston scuffing caused by insufficient warm-up will not be covered by warranty. Also, do not idle the engine for excessively long periods of time.

9. Flooding — If the engine does not start but seems ready to start, engage the brake lever lock; then compress the throttle control lever fully and try to start the engine. When the engine starts, release the throttle control lever immediately. After the warm-up, release the brake lever lock.

■ **NOTE: On the 8000 if the engine fails to start during the attempt with the throttle control lever compressed, remove the spark plugs and clean and dry them thoroughly or install a new set of properly gapped, recommended spark plugs.**

10. To shut off the engine, turn the ignition key to the OFF position or push the emergency stop switch to the DOWN position.

CAUTION

On the 5000/9000, always turn the ignition switch key to the OFF position when the snowmobile is not being used. Leaving the ignition switch in the ON position will result in discharging the battery and possible damage to the battery.

Braking

The following items are items that the operator must be familiar with when operating this snowmobile and its hydraulic brake system. Important additional information on the proper maintenance of the brake system is found in the Maintenance section.

1. Use the brakes wisely. Each time the brakes are applied in all hydraulic brake systems (including automotive applications), heat is transferred to the brake fluid. The amount of heat transferred during high speed stops and/or repetitive use may be high enough to boil the brake fluid and cause the brakes to either fade or may cause an unexpected loss of brakes.

   If this occurs, the brake fluid requires a cool-down period before the brakes will again function properly. This cool-down period will vary depending upon the ambient air temperature and the temperature of the brake fluid. If loss of brakes has occurred because of high fluid temperatures, do not operate the snowmobile until the cool-down period has expired and brake lever firmness has returned.

⚠ WARNING

Excessive, repetitive use of the hydraulic brake for high speed stops will cause overheating of the brake fluid and premature brake pad wear which will result in an unexpected loss of brakes.

2. Be sure to maintain the brake fluid at the proper level and take care not to get any moisture in the system as moisture in the brake fluid lowers the boiling point. If the brake fluid is ever boiled (by high speed stops or repetitive use) or if moisture is allowed to enter the system, it must be changed. Never substitute or mix different types or grades of brake fluid.

⚠ WARNING

Use only Arctic Cat approved DOT 4 brake fluid. Never substitute or mix different types or grades of brake fluid. Brake loss can result. Check brake fluid level and pad wear before each use. Brake loss can result in severe injury or even death.

3. Never ride the brake. Even maintaining minimal pressure on the brake lever will cause the brake pads to drag on the disc and may overheat the brake fluid.
4. The brake lever lock is not a parking brake and should not be applied for periods exceeding 5 minutes. NEVER OPERATE THE SNOWMOBILE WITH THE BRAKE LEVER LOCK ENGAGED.

⚠ WARNING

The brake lever lock is not a parking brake and should not be applied for periods exceeding 5 minutes. The brake lever lock maintains the brake lever in the compressed position and maintains pressure against the brake disc; however, after a period of time, the pressure applied to the brake disc may relax below the amount required to hold the snowmobile stationary.

5. Pumping the brake lever is permissible; however, if pumping the brake lever more than twice is necessary to obtain the necessary stopping power, immediately take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.
6. When new brake pads are installed, a "burnishing" process is required.

Emergency Stopping

There are several methods of stopping or slowing the snowmobile under a variety of situations. Identified in the following chart are the ways a snowmobile may be brought to a stop and the effectiveness under normal conditions.

Item	Function
Emergency Stop Switch	interrupts ignition circuit
Throttle/Ignition Monitor Switch	interrupts ignition circuit
Ignition Switch	interrupts ignition circuit
Brake	slows the drive system
Tether (HCR/RR)	interrupts ignition circuit

Throttle/Ignition Monitor Switch

The throttle control is equipped with a monitor switch for safety purposes which will stop the engine when a loss of return spring force occurs. If ice forms in the throttle system or if there is some other malfunction of the throttle system resulting in a loss of return spring force, the monitor switch will stop the engine when the throttle control lever is released.

⚠ WARNING

If any malfunction of the throttle system occurs (such as freezing in fluffy snow) and the monitor switch does not shut off the engine, press down on the emergency stop switch IMMEDIATELY to stop the engine. DO NOT start the engine until the malfunction in the throttle system has been located and corrected.

If the snowmobile engine stops abruptly when the throttle control lever is released and the activation of the monitor switch is suspected, use the following procedure:

1. Rotate the ignition key to the OFF position.
2. Remove ice and snow from the throttle system and wait 5-10 minutes for the engine heat to thaw ice from the throttle system.
3. Test the throttle control lever by compressing and releasing it several times. The lever MUST return to the idle position quickly and completely.

■ NOTE: If the throttle control lever operates properly and the engine does not start, compress the throttle lever slightly (approximately 1/8 throttle) and try starting the engine. If the engine now starts and stops when the throttle lever is released, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

If the throttle control lever does not work properly, DO NOT ATTEMPT TO START THE ENGINE.

4. If the throttle control lever operates properly, rotate the ignition key to the RUN position and go through normal starting procedures.

■ NOTE: If the throttle control lever operates properly and the engine does not start, a malfunctioning monitor switch may be the problem. Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner. However, if a dire emergency exists wherein the engine must be started, disconnect the throttle monitor switch located in the right-side handlebar control.

■ NOTE: If disconnection of the throttle monitor switch is needed to start the engine, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service as soon as possible. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

Under no circumstances should disconnection of the throttle control wiring harness be used as a substitute for the monitor switch during normal operation of the snowmobile. Personal injury and damage could occur if the throttle system malfunctions or if the operator is unable to stop the engine in an emergency. If the snowmobile must be operated with a disconnected throttle control wiring harness, EXTREME CAUTION MUST BE TAKEN. NEVER EXCEED 10 MPH WITH THE THROTTLE CONTROL WIRING HARNESS DISCONNECTED.

■ NOTE: The monitor switch is now bypassed. All other ignition/electrical features (ignition switch, emergency stop switch, headlight, taillight, and brakelight) will operate properly.

Varying Altitude Operation

Operating a snowmobile at varying altitudes requires changes in performance components. These changes affect drive train components (on certain models).

For altitude information, see the appropriate specifications sheet.

■ NOTE: Just as important as calibrating the snowmobile for higher altitudes is recalibrating the snowmobile when going to lower altitudes.

XF models (except the XF 8000 High Country) are initially set up at the factory for operation between 0-3000 feet.

ZR models are initially set up at the factory for operation between 0-5000 feet.

M models and the XF 8000 High Country model are initially set up at the factory for operation between 6000-9000 feet.

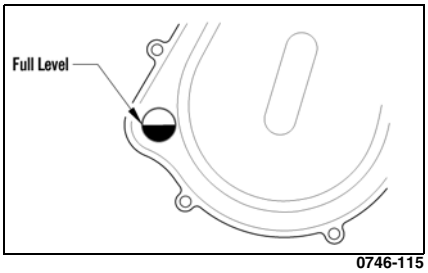
■ NOTE: Drive train changes can be made by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

Lubrication

Chain Case

■ NOTE: The snowmobile must be on a level surface for this procedure.

1. Check the lubricant level in the chain case by using the sight glass.

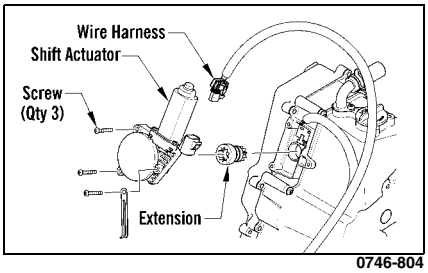


0746-115

■ NOTE: The correct level is when the lubricant is at least halfway up in the sight glass.

■ NOTE: Adding lubricant can be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

2. On the 8000 if the lube level is low, remove the fill plug from the chain case; then add the appropriate amount of Arctic Cat Synthetic Chain Lube (p/n 6639-539) in the fill hole. Install the plug.
3. On the 5000/9000 if the lube level is low, remove the three screws securing the shift actuator to the chain case, disconnect the actuator wiring harness, and remove the actuator w/ extension; then add appropriate amount of Arctic Cat Synthetic Chain Lube (p/n 6639-539) through the shift actuator opening. When the lube is halfway up the sight glass, install the shift actuator w/extension and connect the actuator wiring harness. Tighten screws to 36 in.-lb.



0746-804

CAUTION

When installing the shift actuator, rotate the actuator back and forth to properly align it with the extension gear. Failure to do so could cause component damage.

4. On the 5000/9000, start the engine and verify proper reverse and forward operation by shifting in and out of reverse three times.

■ NOTE: If excessive build-up of moisture or discolored oil is detected in the chain case, it may be necessary to replace the lube.

■ NOTE: Replacing the lubricant can be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

To replace the lubricant, use the following procedure:

■ NOTE: The side panels, hood, and exhaust resonator must be removed for this procedure.

1. Place a drain pan under the chain case; then loosen the eleven screws securing the chain case cover/oil tank assembly to the chain case housing starting with the bottom screws first.

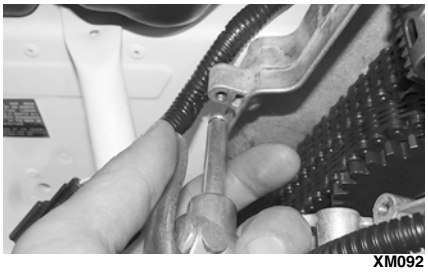
■ NOTE: It is critical that the snowmobile is on a level surface to ensure the lubricant drains properly and completely.

■ NOTE: Inspect the chain case cover seal for nicks or damage.

2. When the lubricant has completely drained from the case and the chain case is cleaned of old oil; then install the chain case cover. Tighten the cap screws to 105 in.-lb.

CAUTION

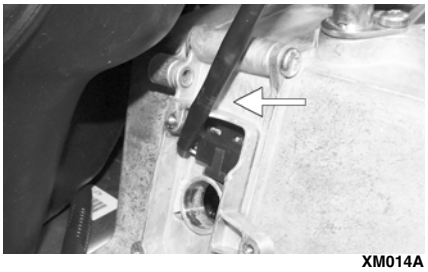
Before installing the chain case screws, be sure to clean the holes using compressed air completely of debris or damage to the chain case may occur.



XM092

3. On the 8000, pour the recommended chain case lube into the fill hole until the lubricant is at least halfway up in the sight glass; then install the plug.
4. On the 5000/9000, remove the three screws securing the shift actuator to the chain case, disconnect the actuator wiring harness, and remove the actuator w/extension. Pour recommended chain lube through the shift actuator opening until the lubricant is at least halfway up in the sight glass; then install the shift actuator w/extension and connect the actuator wiring harness.

■ NOTE: Make sure the reverse sensor wire is routed up so the wires do not become pinched between the actuator and the case.



XM014A

CAUTION

When installing the shift actuator, rotate the actuator back and forth to properly align it with the extension gear. Failure to do so could cause component damage.

5. Install and secure the exhaust resonator.
6. On the 5000/9000, start the engine and verify proper reverse and forward operation by shifting in and out of reverse three times.

CAUTION

The correct lubricant to use in the chain case is Arctic Cat Synthetic Chain Lube. Any substitute may cause serious damage to the drive system.

Rear Suspension

This procedure should be done every 40 operating hours.

■ NOTE: Arctic Cat recommends that Arctic Cat All-Temp Grease (p/n 4639-365) be used for this procedure.

1. Using Handlebar Stand (p/n 5639-152) or Steering Post Stand (p/n 5639-946) or a suitable substitute, lay the snowmobile on its left side.
2. Lubricate all grease fittings with all-temperature grease.

Maintenance

Periodic Maintenance Checklist			
Item	**Interval**	**Page**	**Remarks**
Brake System	Daily	40	Check for binding, leakage, and proper operation; lever firmness, travel, caliper, disc, and pads
Cooling System - Liquid	Daily	14,33	Check for leakage, damage, obstructions, coolant level
Oil-Injection System	Daily	—	Check for leakage, damage, and injection/engine oil level
Engine Oil (5000)	2500 Mi/ Seasonal	31	Change oil and filter
Engine Oil (9000)	2000 Mi/ Seasonal	32	Change oil and filter
Battery	Daily	15,37	Check for proper charge and tight connections
Stop Switch	Daily	—	Check for proper operation
Hoses	Daily	—	Check for damage, leakage, and wear
Headlight & Taillight/Brakelight	Daily	49-50	Check for proper operation and cleanliness
Steering System	Daily	—	Check for proper operation, tightness of bolts, and binding
Throttle Control System	Daily	25	Check for binding, sticking, proper operation, throttle cable tension, and wear
Drive Belt	Daily Monthly	43	Check for wear, cracks, and fraying Check length and width dimensions
Ski Wear Bars	Daily	51	Check for wear and damage
Electrical Wiring	Weekly	—	Check for wear, damage, and tight connections
Exhaust System	Weekly	14	Check for damage, leakage, and obstructions
Nuts, Bolts, Fasteners	Weekly	—	Check tightness
Recoil Starter	Weekly	—	Check rope for wear, fraying, and proper operation
Shock Absorbers	Weekly	17,47	Check for fluid leakage and damage and air pressure (Fox Air Shocks)
Spark Plugs	3500 Mi	34	Check center electrode insulator color, carbon, and gap
Valve Clearance (5000/9000)	5000 Mi/ Seasonal	35	Check/adjust
Suspension	Weekly	47	Check for damage, loose components, and proper adjustment
Track Tension/Alignment	Weekly	44,46	Check/adjust as necessary
Wear Strips	Weekly	52	Check for wear and damage
Wires & Cables	Weekly	—	Check for wear, damage, and fraying
Fuel System - Tank, Pump, In-Line Filter, & Vent Hose	Weekly	—	Check for damage, wear, obstructions, and leakage
Fuel Filter (5000/9000)	5000 Mi/ 2 years	—	Replace
Air Silencer (8000)	Seasonal	—	Inspect/clean
Air Cleaner/Filter (9000)	Weekly/ Seasonal	30	Check/replace
APV System	Monthly	21	Check/adjust as necessary
Chain Case	Daily	27	Check lube level and for leakage
Chain Case - Lubricant	Seasonal	27	Replace
Heat Exchangers	Monthly	—	Check for wear, leakage, and damage
Drive Clutch/Driven Clutch	Monthly	16,16	Check for damage, binding, and wear/remove drive belt, clean drive clutch/driven clutch
Rear Suspension	Monthly	28	Grease

The longevity and safety of the snowmobile can be increased by making periodic checks of the items in the preceding checklist.

If, at any time, abnormal noises, vibrations, or improper working conditions of any component of this snowmobile are detected, DO NOT OPERATE THE SNOWMOBILE. Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for inspection and adjustment or repair. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

The snowmobile should be taken to an authorized Arctic Cat Snowmobile dealer at the end of each snowmobiling season for general inspection and for off-season storage servicing. This inspection and servicing is at the expense of the snowmobile owner.

Air Cleaner/Filter (9000)

The air filter inside the air cleaner housing must be kept clean to provide good engine power and gas mileage. If the snowmobile is used under normal conditions, inspect the filter weekly and replace the filter at the intervals specified. If operated in adverse conditions, inspect and service the filter more frequently. Use the following procedure to remove the filter and to inspect and/or replace it.

CAUTION

Failure to inspect the air filter frequently if the snowmobile is used in adverse conditions can damage the turbocharger/engine.

1. Remove the left-side access panel; then remove the air filter from the housing.
2. Inspect the air filter for dirt or damage.

CAUTION

Do not use compressed air in an attempt to clean the filter. Damage to the filter may occur. If the filter is dirty, it must be replaced.

CAUTION

A torn air filter can cause damage to the turbocharger/engine. Contaminants may get inside the turbocharger/engine if the filter is torn. Carefully examine the filter for holes or tears. Replace the filter with a new one if it is torn.

3. Clean any debris from inside the air intake plenum.
4. Place the new filter (if necessary) into the housing; then install the left-side access panel.

CAUTION

Do not run the engine without the air filter installed. Severe damage to the turbocharger/engine will occur.

Fuel System

⚠ WARNING

Whenever any maintenance or inspection is made on the fuel system in which there may be fuel leakage, there should be no welding, smoking, open flames, etc., in the area.

In-Line Fuel Filter (5000/9000)

Arctic Cat recommends that the in-line fuel filter be replaced every 5000 miles. The filter must be clean to allow the fuel hose to transmit the amount of gasoline required.

If the in-line fuel filter is obstructed, gasoline flow will be restricted; therefore, the filter must be replaced. To remove and install the in-line fuel filter, use the following procedure:

⚠ WARNING

Since the fuel supply hose may be under pressure, always wear safety glasses; then remove the hose slowly to release the pressure. Place an absorbent towel around the connection to absorb the fuel.

■ NOTE: Before removing the fuel filter, take note that the filter is directional and the arrow should be directed towards the engine.

■ **NOTE: On the 5000, the fuel filter is located below the steering support. To access the filter, the hood must be removed.**

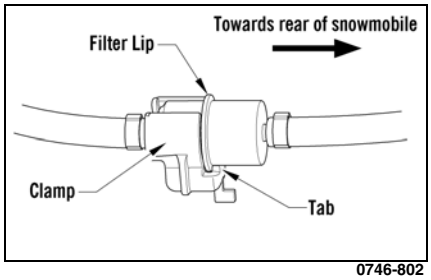
■ **NOTE: On the 9000, the fuel filter is located between the gas tank and the rear belt guard and is secured to the tunnel with a filter bracket. To access the filter, the left-side access panel must be opened and the lower console must be unlatched and opened.**

1. Remove the hose clamps and discard; then slowly remove the fuel hoses from the fuel filter. Dispose of the excess fuel from the filter properly.
2. Inspect the fuel hoses thoroughly for any signs of cracking, cuts, or wear points.
3. Place the new hose clamps on the fuel hoses; then with the fuel pump inlet and outlet noted, connect the fuel hoses to the fuel filter. Secure with the hose clamps.

CAUTION

Make sure the fuel filter is properly seated into the holder located on the tunnel behind the driven shaft.

■ **NOTE: After completing the changing of the fuel filter and the engine is started for the first time, inspect the filter area for any signs of leaks.**



0746-802

Gasoline Additives

Fuel de-icer can be used for all models. Also, periodic use of an injector cleaner for the 8000 is recommended especially in the last tank of gasoline before storage. Arctic Cat Fuel Stabilizer (p/n 0436-907) should also be added to the last tank of gasoline before storage.

Fuel Pickup Valves

If ever there is a restricted fuel flow and a pickup valve is suspected, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Checking Engine Oil Level (8000)

1. Park the snowmobile on a level surface.
2. Remove the right-side access panel.
3. Remove the fastener securing the right side of the lower console to the skid plate.
4. Verify if oil is visible in the sight glass located on the side of the oil tank.
5. If oil is not present within the sight glass, remove the oil tank cap and add the appropriate oil through the filler neck making sure to fill only to the bottom of the filler neck.



XM126A

CAUTION

Care must be taken not to over-fill the oil tank.

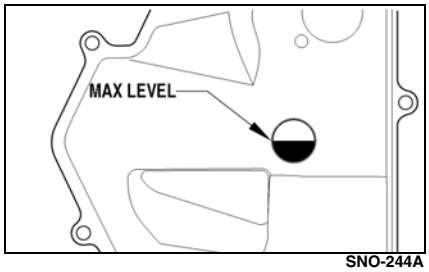
Checking Engine Oil Level (5000/9000)

■ **NOTE: The engine must be at operating temperature before checking the oil level or an incorrect oil level will result.**

CAUTION

If the engine and oil are not at operating temperature, the oil will not be visible in the sight glass. Tip the snowmobile to the right at a 45° angle; then check to see if oil is present in the sight glass.

1. Park the snowmobile on a level surface; then start the engine and allow to warm up for 5-10 minutes, or if the snowmobile was operated, allow the engine to idle approximately 30 seconds.
2. Shut the engine off; then remove the right-side access panel and verify oil is visible at least halfway up in the sight glass.



SNO-244A

3. If oil is not visible halfway up in the sight glass, add recommended engine oil until oil is visible halfway up the sight glass.

CAUTION

Care must be taken not to over-fill the reservoir with oil.

Changing Engine Oil/ Filter (5000/9000)

⚠ WARNING

Care must be taken if a hot drain plug is removed by hand. Burning could occur.

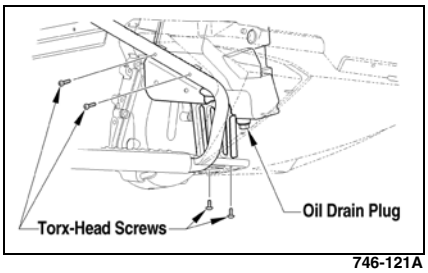
■ NOTE: Recycle or properly dispose of the used engine oil.

■ NOTE: The access panels and hood must be removed for this procedure.

1. Park the snowmobile on a level surface; then start the engine and allow it to warm up for 5-10 minutes, or if the snowmobile was operated, allow the engine to idle for approximately 30 seconds. Shut the engine off.
2. Remove the torx-head screws and the access plate from beneath the snowmobile.
3. Place a drain pan beneath the engine oil pan drain plug; then remove the plug and allow the oil to drain completely.


PC010A

4. Install the engine oil drain plug with a new gasket; then tighten the plug to 16 ft-lb.
5. Remove the four torx-head screws securing the right-side footrest to the tunnel and the support; then with a drain pan in position, remove the drain plug from the oil tank.



746-121A

■ NOTE: To aid in draining the oil from the oil tank, position a funnel between the tank and the opening of the tunnel running board.

6. After the oil has drained completely, install the drain plug with a new O-ring and tighten to 16 ft-lb.

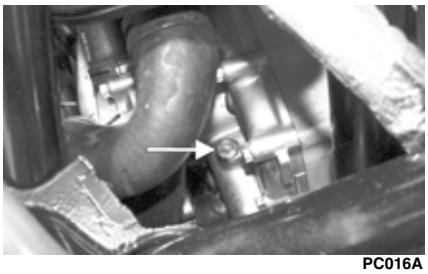
■ NOTE: Always install a new Oil Pan Drain Plug Gasket (p/n 3402-011) and a new Drain Plug O-Ring (p/n 1602-213) when changing the oil.

7. Using Oil Filter Wrench (p/n 0644-551), loosen (but do not remove) the oil filter and allow the oil to drain from the filter into the drain pan; then remove the filter.

■ NOTE: On the 9000, the oil filter is accessible between the front opening of the chassis and the lower intercooler hose.

8. Apply a light coat of fresh engine oil to the seal of the new oil filter.

9. Install the new oil filter by turning the oil filter by hand until the seal has contacted the oil filter mounting surface; then tighten the oil filter to 15 ft-lb. Remove the drain pan.
10. Pour 2.9 l (3 U.S. qt) of the recommended engine oil into the oil tank.
11. Open the air bleed bolt located on the oil pump (beneath the coolant tank) to purge air from the oil hose.



PC016A

■ **NOTE: When air can no longer be heard purging from oil pump bleed, tighten the bleed bolt to 7.5 ft-lb.**

CAUTION

Do not attempt to start the engine with the bleed bolt open.

12. Without starting the engine, place the handlebar emergency stop switch to the RUN position and the ignition switch to the ON position. The Oil Pressure Warning Icon should illuminate.

■ **NOTE: If the warning icon does not illuminate, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.**

13. If the warning icon illuminates (from step 12), start the engine. The warning icon should go out within five seconds. If it does, proceed to step 14.

■ **NOTE: If the warning icon does not go out, shut the engine off immediately and repeat step 11; then place the ignition switch to the ON position and repeat step 13. If the warning icon does not go out, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.**

14. Shut the engine off; then add oil to the oil tank until oil is visible halfway up in the sight glass.

■ **NOTE: If the oil and engine are not at operating temperature, the oil level may read too low. Always make sure the engine is at operating temperature before checking the oil.**

15. Install the access plate and torx-head screws beneath the snowmobile; then install the hood and access panels.

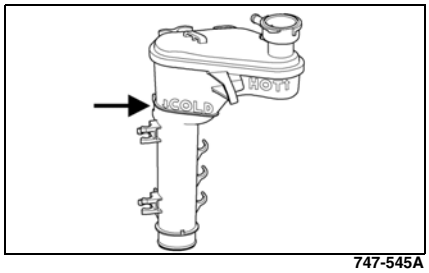
Coolant Level

■ **NOTE: Use a good quality, ethylene glycol-based, automotive-type coolant.**

■ **NOTE: Always check the coolant level with the engine cold.**

8000

Locate the coolant tank behind the expansion chamber. If the coolant needs to be added, fill the coolant tank up to the cold fill line located on the tank.

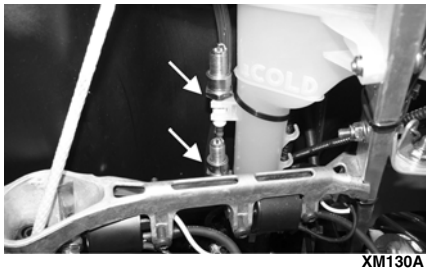


747-545A

CAUTION

After operating the snowmobile for the initial 5-10 minutes, stop the engine, allow the engine to cool down, and check the coolant level. Add coolant as necessary.

■ **NOTE: The tabs on the MAG side of the coolant tank are to hold extra spark plugs.**

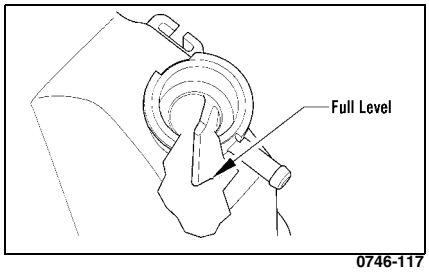


XM130A

5000/9000

■ **NOTE: The access panels and hood must be removed for this procedure.**

1. Remove the filler cap from the coolant reservoir.
2. Verify the coolant level is at the bottom of the tab in the filler neck.



0746-117

3. If the coolant is below the tab, add coolant to the reservoir until at the tab.

CAUTION

If the coolant is below the tab and if coolant has been added, immediately inspect for leakage and/or damage. If leakage or damage is detected, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Spark Plugs

5000/9000

■ **NOTE: Always use the recommended spark plugs in the engine. See the appropriate specifications sheet for correct spark plug gap.**

Varying terrain conditions and operating usage may require spark plugs of a different heat range. For example, sustained cross-country riding will usually require colder heat-range spark plugs while trail riding or other continual slow speed operation will usually require hotter heat-range spark plugs.

CAUTION

If adjusting spark plug gap is necessary, do not use the center electrode as a leverage point. Damage to the plug may occur.

Removing/Installing

■ **NOTE: Spark plug maintenance may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

■ **NOTE: For this procedure, the hood and side panels must be removed.**

1. On the 9000, remove the spark plug end caps; on the 5000, remove the two cap screws securing the ignition coils to the cylinder head cover.
2. Using a 3/8-in. drive ratchet, adapter, and a 5/8-in. spark plug socket, remove the two spark plugs.

■ **NOTE: Prior to installing the spark plugs, check the gap between the electrode and ground strap. The clearance should be 0.9 mm (0.035 in.).**

3. Install the spark plugs. Tighten to 96 in.-lb.
4. On the 5000, install the ignition coils onto the cylinder head cover and tighten the two cap screws to 96 in.-lb. On the 9000, install the spark plug end caps.
5. Install the hood and access panels.

8000

■ **NOTE: Always use the recommended spark plugs in the engine. See the appropriate specifications sheet for correct spark plug gap.**

Varying terrain conditions and operating usage may require spark plugs of a different heat range. For example, sustained cross-country riding will usually require colder heat-range spark plugs while trail riding or other continual slow speed operation will usually require hotter heat-range spark plugs.

CAUTION

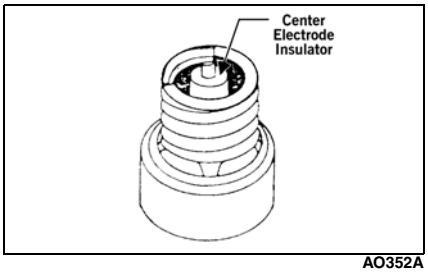
If adjusting spark plug gap is necessary, do not use the center electrode as a leverage point. Damage to the plug may occur.

Removing/Installing

1. Remove the springs securing the expansion chamber to the exhaust manifold and resonator.
2. Move the expansion chamber out of the way to access the spark plugs.
3. Remove the spark plug caps from the plugs.
4. Using a spark plug wrench, remove the plugs.
5. Install the plugs and finger-tighten.
6. Tighten the spark plugs to 19 ft-lb; then install the spark plug caps.
7. Place the expansion chamber into position and secure to the exhaust manifold and resonator with the springs.
8. Install the hood.

Checking

To see if the spark plugs being used are of the proper heat range (after the snowmobile has been operated under normal driving conditions), remove the spark plugs and examine the condition of the center electrode insulator of each spark plug.



AO352A

A. TAN or LIGHT BROWN insulator indicates correct spark plugs (heat range).

B. LIGHT GRAY or WHITE insulator indicates over-heating of the engine. This condition is caused by a too lean condition or incorrect spark plugs (heat range too hot).

C. BLACK insulator indicates fuel in the combustion chamber is not burning completely. This condition is caused by a too rich condition, too much oil, or incorrect spark plugs (heat range too cold).

■ NOTE: If the center electrode insulators are light gray, white, or black and if the oil-injection pump synchronization and ignition timing are correct, different heat-range spark plugs may be necessary. Authorized Arctic Cat Snowmobile dealers have detailed spark plug information. Consult a dealer before changing spark plugs, as incorrect heat-range spark plugs could cause poor engine performance or engine damage.

CAUTION

If a spark plug is light gray, white, or black and another is tan or light brown, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for inspection and service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Checking/Adjusting Valve Clearance (5000/9000)

After 5000 miles or prior to seasonal storage, valve clearance should be checked and adjusted as necessary.

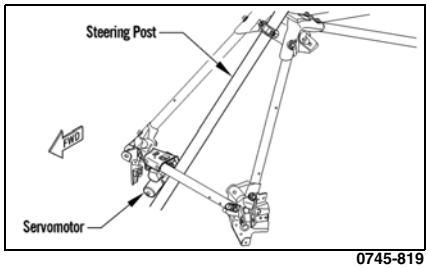
■ NOTE: Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for inspection and service. This service is at the discretion and expense of the snowmobile owner.

CAUTION

It is critical that the checking/adjusting valve clearance be done at the recommended intervals or severe engine damage may occur.

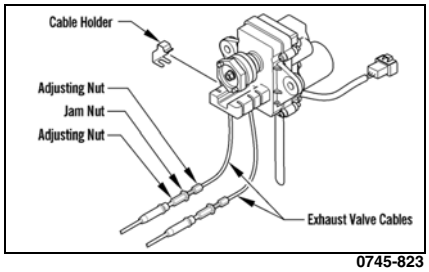
Checking/Adjusting APV Cables (8000)

Proper cable adjustment is critical to the operation of the APV system. Although inspecting cable adjustment is recommended every 1000-2000 miles, the cable should not need adjustment often. To check the cable adjustment, use the following procedure:



0745-819

1. Using a small needle-nose pliers, remove the servomotor cable holder.



0745-823

2. Using an adjustable wrench, rotate the servomotor actuator counterclockwise to loosen the cable; then pull the cable housings down and out of the servomotor.

CAUTION

Do not use the nut securing the clutch to the servomotor to rotate the actuator.

■ NOTE: For installing purposes, note the side that the servomotor cables are installed on.

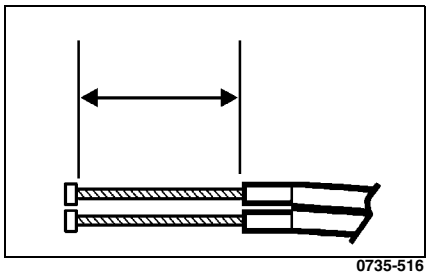
3. Slide each cable drum out of the slot of the servomotor actuator.
4. While holding the cable housing firmly, pull the cable as far out as it will go; then release. Repeat three to four times. The cable/exhaust valve should move freely without binding.

■ NOTE: If the cable/exhaust valve does not move freely, the exhaust valve assembly will need to be removed for further inspection. Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service.

■ NOTE: When measuring the cables, they are to be routed as close to their installed position as possible.

5. While holding the cable housing, lightly pull on one cable end to remove any slack; then measure the amount of exposed cable from the cable housing to the end of the cable (cable drum).

APV CABLE LENGTH	
8000	1.377 in. ± 0.039 in.



0735-516

■ NOTE: The two cable measurements must be equal in length or less than 0.5 mm (0.020 in.) difference in length from each other.

■ NOTE: Repeat steps 4 and 5 for each cable; then compare the measurements to the APV Cable Length chart.

■ NOTE: The measurements must be within the specifications from the chart. If the measurements are within specifications, no adjustment is necessary (proceed to step 8). If they are not within specifications, proceed to step 6.

6. Loosen the jam nut on the cable to be adjusted; then using the adjusting nuts, lengthen or shorten the housing as needed.
7. Once the proper length has been attained, hold the adjusting nut in place and tighten the jam nut securely.
8. Place the cable housings into position in the servomotor. Secure the cable housings with the cable holder.

CAUTION

Assure the cables are rotated and secured properly to avoid contacting exhaust components.

Battery (Electric Start)

These sealed batteries after being in service require regular cleaning and recharging in order to deliver peak performance and maximum service life. The following procedures are recommended for cleaning and maintaining sealed batteries. Always read and follow instructions provided with battery chargers and battery products.

■ NOTE: Battery maintenance may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

To remove and charge the battery, use the following procedure:

⚠ WARNING

Any time service is performed on a battery, the following must be observed: Keep sparks, open flame, cigarettes, or any other flame away. Always wear safety glasses. Protect skin and clothing when handling batteries. When servicing battery in enclosed space, keep the area well-ventilated.

⚠ WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling.

1. Remove the torx-head screw from the rear underside of the seat; then remove the seat.

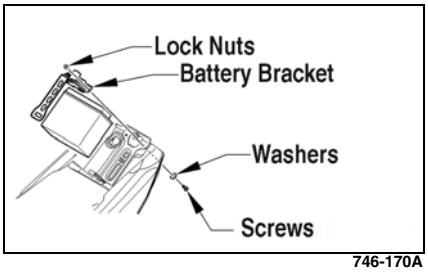
CAUTION

On the LXR, make sure to disconnect the seat heater harness connector prior to removing the seat.

2. Remove the negative battery cable and ground wire; then remove the positive cable.

■ NOTE: For installing purposes prior to removing the battery, note the routing and securing locations of the cables and harness wires.

3. Remove the two screws and lock nuts securing the battery bracket/solenoid to the seat-base; then move the bracket up and out of the way and remove the battery.



746-170A

⚠ WARNING

Avoid spillage and contact with skin, eyes, and clothing.

CAUTION

Do not charge the battery while it is in the snowmobile with the battery terminals connected.

4. Thoroughly wash the battery with soap and water; then using a wire brush, clean the battery posts and cable ends removing all corrosive buildup. Replace damaged cables or cable ends.

■ NOTE: If battery posts or cable ends have a build-up of white/green powder residue, apply water and baking soda to neutralize acid; then flush off with warm soapy water.

CAUTION

Do not remove seal strip on a sealed battery.

⚠ WARNING

Battery acid is harmful if it contacts eyes, skin, or clothing. Care must be taken whenever handling a battery.

5. Using a multimeter, test battery voltage. The meter must read no less than 12.5 DC Volts for a fully charged battery.

■ NOTE: At this point if the meter reads as specified, the battery may be returned to service (see step 9).

6. If the meter reads less than specified voltage, charge the battery using the following guidelines.
   A. When using an automatic battery charger, always follow the charger manufacturer's instructions.
   B. When using a constant-current battery charger, use the following Battery Charging Chart.

CAUTION

Never exceed the standard charging rate.

⚠ WARNING

An overheated battery could explode causing severe injury or death. Always monitor charging times and charge rates carefully. Stop charging if the battery becomes very warm to the touch. Allow it to cool before resuming charging.

Battery Charging Chart (Constant-Current Charger)

Battery Voltage (DC)	Charge State	Charge Time Required (at 1.5-2.0 Amps)
12.5 (minimum)	100%	None
12.2-12.4	75%-99%	3-6 hours
12.0-12.2	50%-74%	5-11 hours
11.0-11.9	25%-49%	13 hours (minimum)
11.5 or less	0-24%	20 hours (minimum)

■ NOTE: If the battery voltage is 11.5 DC Volts or less, some chargers may "cut off" and fail to charge. If this occurs, connect a fully charged booster battery in parallel (positive to positive and negative to negative) for a short period of time with the charger connected. After 10-15 minutes, disconnect the booster battery leaving the charger connected and the charger should continue to charge. If the charger "cuts off," replace the battery.

7. After charging the battery for the specified time, remove the battery charger and allow the battery to sit for 1-2 hours.
8. Connect the multimeter and test the battery voltage. The meter should read no less than 12.5 DC Volts. If the voltage is as specified, the battery is ready for service.

■ NOTE: If voltage in step 8 is below specifications, charge the battery an additional 1-5 hours; then retest. The battery is ready for service.

9. Place the battery into position in the snowmobile; then coat the battery posts and cable ends with a light coat of multi-purpose grease.

CAUTION

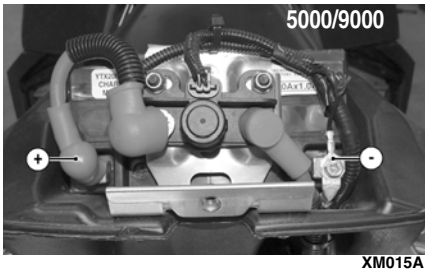
Before installing the battery, make sure the ignition switch is in the OFF position.

10. Secure the red positive cable to the positive terminal on the battery using a cap screw, lock washer, and a flat washer. Tighten securely.
11. Secure the main black negative cable and the small black negative cable to the battery using a cap screw, lock washer, and a flat washer. Tighten securely.

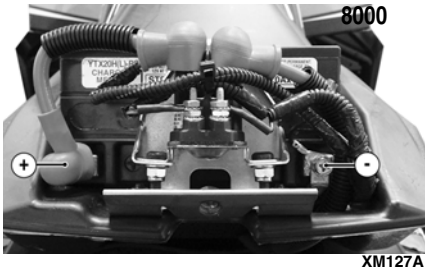
CAUTION

Connecting cables in reverse (positive to negative and negative to positive) can cause serious damage to the electrical system.

■ NOTE: Assure the harness wires and cables are routed properly as noted during removing battery procedure.



XM015A



XM127A

12. Install the battery bracket/solenoid and tighten the two screws and lock nuts to 105 in.-lb; then install the seat and secure with the torx-head screw. Tighten securely.

■ NOTE: On the LXR prior to lowering and securing the seat, connect the seat heater harness connector.

Fuses

Fuses protect the snowmobile electrical system from overloading. If electrical parts in the snowmobile are not working, the system may have been overloaded and caused a blown fuse. Before repairing or replacing any electrical part, check the appropriate fuses. If a fuse blows (opens a circuit), all the parts of the snowmobile that use that circuit will not work.

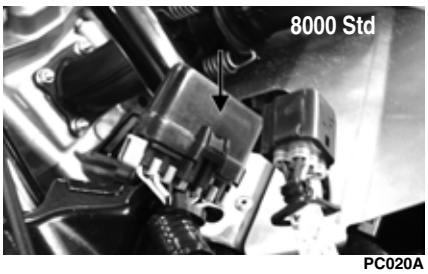
Once which fuse to check has been determined, perform the following steps:

1. Locate the fuse block and remove the fuse block cover.

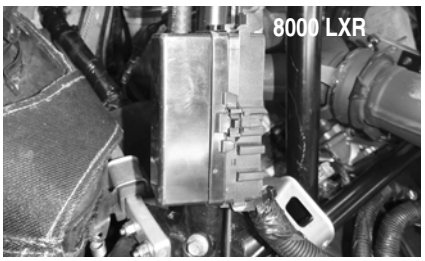
■ NOTE: To locate the fuse block on the 5000/9000, open the left-side access panel; the fuse block is above the belt guard. On the 8000, open the right-side access panel; the fuse block is on the upper spar.



PC004A



PC020A



XM132

■ NOTE: There are spare fuses beneath the fuse block cover on electric start models.

2. Remove the suspected fuse.

■ NOTE: Fuse function descriptions are next to the fuse contacts in the fuse block.

3. Look through the clear side of the fuse to see if the element inside is burned or separated. If it is, the fuse is blown and should be replaced with a fuse of the correct amperage rating.

⚠ WARNING

Always replace a fuse with one having the same specified amperage rating. Using a fuse with a higher rating can cause severe wire damage and could start a fire.

4. Install the fuse block cover and close the access panel.

Even after replacing a fuse, it may continue to blow if the cause of the overload is not determined. If the fuse continues to blow, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

Brake System

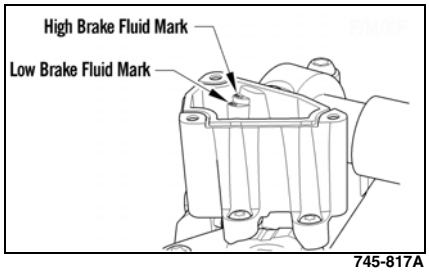
Arctic Cat recommends that the brake system (brake lever, fluid reservoir, hose, caliper, pads, and brake disc) be checked daily for fluid leakage, wear, or damage and for proper operation. Also, the brake fluid level must be checked every time before starting the engine.

⚠ WARNING

DO NOT operate the snowmobile when the brake lever lock is engaged or when any component in the brake system is damaged, worn, or adjusted improperly. If the snowmobile is operated and the brake system is not functioning properly, severe personal injury could result.

Checking/Adding Brake Fluid

1. With the brake fluid reservoir in a level position and the cover removed, check the fluid level. The brake fluid level must be at the high brake fluid mark in the reservoir.



745-817A

2. If the brake fluid is below the high brake fluid mark, add Arctic Cat approved DOT 4 brake fluid until the fluid is at the recommended level. Install and secure the reservoir cover. Do not allow moisture to contaminate the brake system.

CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

⚠ WARNING

Do not overfill the brake fluid reservoir. Overfilling the reservoir may cause the brake system to hydraulically lock. Use only Arctic Cat approved DOT 4 brake fluid. Never substitute or mix different types or grades of brake fluid. Brake loss can result. Brake loss can result in severe injury or even death.

Changing Brake Fluid

The brake fluid must be changed on a regular basis and whenever the brake fluid has been overheated or contaminated. The brake fluid should be changed every 1000 miles or at the end of the snowmobiling season, whichever occurs first. Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

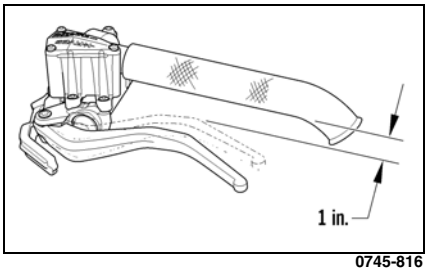
Checking Brake Lever Travel

Before each use, check the brake lever travel using the following procedure:

1. Compress the brake lever fully.

■ NOTE: Do not pump the brake lever as it will produce an inaccurate reading.

2. Measure the distance between the brake lever and the handlebar. The distance must be greater than 2.54 cm (1 in.).



0745-816

3. If the resultant distance is less than specified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for service. If not under warranty, this service is at the discretion and expense of the snowmobile owner.

⚠ WARNING

Do not operate the snowmobile if the compressed distance between the brake lever and the handlebar is less than 2.54 cm (1 in.). Brake loss may occur. Brake loss can result in severe personal injury.

Bleeding Brake System

If the brake lever feels spongy when applied, the brake system may need to be bled. To bleed the brake, use the following procedure:

■ NOTE: The brake system may be bled by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

1. Remove the reservoir cover and (if necessary) fill the reservoir to the high brake fluid mark with Arctic Cat approved DOT 4 brake fluid.

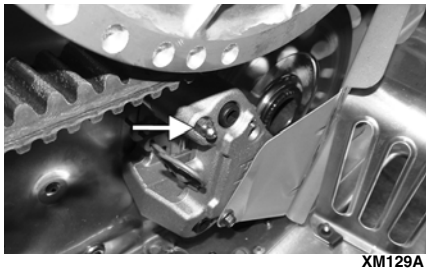
CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

⚠ WARNING

Use only Arctic Cat approved DOT 4 brake fluid. Any substitute may result in a loss of brakes.

2. Slide a piece of flexible tubing over the ball of the bleeder valve and direct the other end into a container.



XM129A

3. Slowly compress the brake lever until maximum pressure is attained; then hold the lever in the compressed position to maintain pressure. Open the bleeder valve to release the fluid and air. When the fluid stops, close the bleeder valve; then release the brake lever.
4. Repeat step 3 until the brake fluid flows free of air bubbles.

■ NOTE: It may be necessary to refill the reservoir during the bleeding process. Never allow the brake fluid to go below the low brake fluid mark in the reservoir.

5. When the brake fluid is free of all air and the brake lever feels firm when compressed, fill the reservoir to the high brake fluid mark; then install and secure the cover. Remove the tube from the bleeder valve.

Checking/Changing Brake Pads

The condition of the brake pads must be checked daily and changed if worn or damaged. To check and change the brake pads, use the following procedure:

■ NOTE: The brake pads may be changed by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

■ NOTE: When installing new brake pads, always install them as a set. Never install just one pad or use brake pads which have been used in another snowmobile.

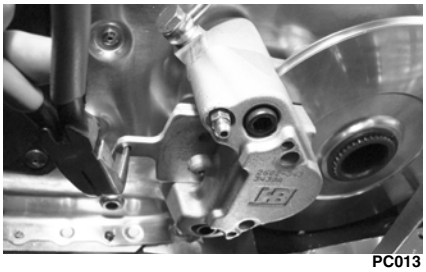
1. Remove the brake fluid reservoir cover; then remove most of the brake fluid from the reservoir. Install the cover.

CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the snowmobile.

■ **NOTE: The above procedure will allow room for the fluid from the caliper when the pistons are pushed into the caliper for installing new brake pads. Replacing the cover will prevent fluid spillage.**

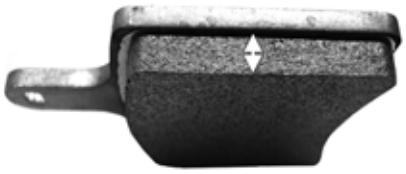
2. Open the left-side access panel and remove the rear belt guard. Remove the driven clutch.
3. Remove the two torx-head screws securing the brake shield to the belt guard mount; then remove the cap screws securing the brake shield to the brake caliper.
4. Carefully move the shield out of the way; then remove the hairpin clip securing the brake pads to the caliper assembly.
5. Using a pair of pliers, pull the outer brake pad out of the caliper assembly.



PC013

■ **NOTE: Changing one pad at a time will prevent one piston from pushing out the other piston from the caliper.**

6. Measure the thickness of the brake pad. The brake pad thickness must be greater than 5.0 mm (0.20 in.). If the brake pad thickness is less than specified, replacement of both pads is necessary.



PC011A

7. Using a flat-blade tool, slowly and carefully push the piston into the caliper.
8. Position the outer brake pad into the caliper; then install the hair-pin clip into the caliper assembly.
9. Repeat steps 5-8 for the inner pad; then secure the pad with the hairpin clip.
10. Remove the reservoir cover and remove the remaining fluid; then fill the reservoir with fresh fluid and install the cover.
11. Pump the brake lever to ensure correct positioning of the brake pads and proper brake lever travel; then release.

■ **NOTE: If brake lever travel is not within specification, bleed the brake system.**

12. Remove the reservoir cover and fill the reservoir (if necessary) to the proper level with fresh brake fluid; then install the cover.
13. Secure the brake shield, the driven clutch (tightened to 20 ft-lb), and the rear belt guard; then close and secure the left-side access panel.

■ **NOTE: When new brake pads are installed, a "burnishing" process is required (see Burnishing Brake Pads sub-section).**

Burnishing Brake Pads

After changing brake pads, the new brake pads must be burnished to achieve full braking effectiveness. Braking distance will be extended until brake pads are properly burnished.

To properly burnish the brakes, use following procedure:

1. Choose an area sufficiently large to safely accelerate to 30-40 mph and to brake to a stop.

■ **NOTE: This procedure can also be accomplished using a shielded jack stand.**

2. Accelerate to 30-40 mph; then compress brake lever to decelerate to a stop.

■ **NOTE: Lightly apply the brake lever to come to an easy stop; do not over-apply brakes or "lock up" the track.**

3. Repeat procedure 10-15 times allowing some cooling between stops.

■ **NOTE: Do not repeat too soon or too aggressively as to get the brake disc "red hot."**

⚠ WARNING

Do not attempt sudden stops or put yourself into a situation where a sudden stop will be required until the brake pads are properly burnished.

■ **NOTE: This procedure stabilizes the pad material and extends the life of the pads.**

Drive Belt

The drive belt transfers power from the drive clutch to the driven clutch. If the belt is worn, cracked, or stretched, maximum power will not be transmitted and the belt could also fail and therefore must be replaced. Periodic checks (at least once a month under normal usage) of two drive belt specifications are essential.

1. Measure the outside circumference of the drive belt. The belt should be within the recommended range in circumference (see appropriate specifications sheet).
2. Measure the outside width of the drive belt. The belt should be within the recommended range in width.
3. Check the belt for cracking, fraying, etc.

If any of the specifications or conditions are unsatisfactory, replace the drive belt.

■ **NOTE: Drive belts should be purchased from an authorized Arctic Cat Snowmobile dealer, as Arctic Cat drive belts are made to exact specifications and of quality material. Belts made by other manufacturers may not be of the same specifications or quality and, therefore, usage could result in poor performance and premature belt failure.**

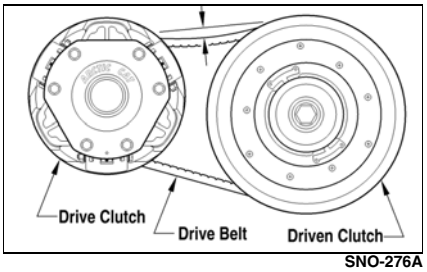
■ **NOTE: Before starting the snowmobile in extremely cold temperatures, the drive belt should be removed and warmed up to room temperature. Once the drive belt is at room temperature, install the drive belt.**

Also, new drive belts have a break-in period of approximately 25 miles. After installing a new drive belt, drive the snowmobile for 25 miles at 3/4 throttle or less. By revving the engine up and down (but not exceeding 60 mph), the exposed cord on the side of a new belt will be worn down. This allows the drive belt to gain its optimum flexibility and will extend drive belt life.

CAUTION

Never run the engine with the drive belt removed. Excessive revving of the engine could result in serious engine damage and drive clutch failure.

Checking/Adjusting Drive Belt Deflection



SNO-276A

The drive belt must have the proper fit in the drive clutch and driven clutch. To check for proper drive belt fit, use the following procedure.

1. Place a straightedge on the top of the drive belt. The straightedge should reach from the drive clutch to the top of the driven clutch.

■ **NOTE: Make sure the drive belt is all the way out in the driven clutch before checking drive belt deflection.**

2. Using a stiff ruler centered between the drive clutch and driven clutch, push down on the drive belt just enough to remove all slack and note the amount of deflection. The deflection should be within the range of 28.5-31.8 mm (1 1/8-1 1/4 in.).

3. To correct drive belt deflection, remove the sheave adjuster from the clutch, remove or add shim washers to the adjuster, and install the adjuster.

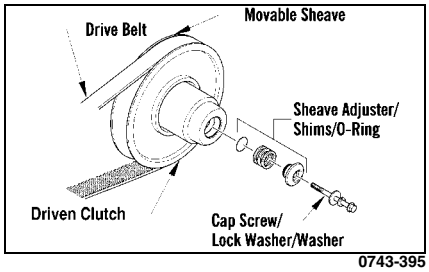
■ NOTE: Adding shim washers will decrease belt deflection and removing shim washers will increase belt deflection. Available shim washers from Arctic Cat are p/n 0648-714 (0.090 in.) - one included in the tool kit, p/n 0648-715 (0.030 in.), and p/n 0648-716 (0.060 in.).

■ NOTE: Removing/adding shim washers may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

Removing Drive Belt

■ NOTE: Changing a drive belt can be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

1. Turn ignition key to the OFF position and wait for all moving parts to stop.
2. Set the brake lever lock.
3. Open the left-side access panel.
4. Remove the cap screw, lock washer, washer, and sheave adjuster from the end of the driven clutch; then remove the sheave adjuster from the cap screw.



0743-395

■ NOTE: Verify the shims and O-ring are not removed from the adjuster.

5. Remove the lock washer and flat washer from the cap screw and reverse the sheave adjuster.
6. Install the cap screw into the driven clutch; then tighten the cap screw until the movable sheave opens far enough to allow the belt to be removed.
7. Remove the drive belt from the driven clutch first; then from the drive clutch.

■ NOTE: Before installing the drive belt, use a suitable cleaning solvent to thoroughly clean the sheaves.

Installing Drive Belt

■ NOTE: If a new drive belt is being installed, see Drive Belt Break-In subsection in the General Information section.

1. Place the drive belt (so the part number can be read and the arrows are facing the front of the snowmobile) between the sheaves of the drive clutch first; then between the sheaves of the driven clutch.
2. Install the cap screw, lock washer, washer, and sheave adjuster back into the driven clutch. Tighten the cap screw (threads coated with blue Loctite #243) to 20 ft-lb.
3. Install the left-side access panel.

⚠ WARNING

Never operate the snowmobile without the belt guard/access panel secured in place.

4. Release the brake lever lock.

Track Tension

Track tension is directly related to the overall performance of the snowmobile. If the track is too loose, it may slap against the tunnel causing wear or it may "ratchet" on the track drive sprockets. If extremely loose, the idler wheels may climb over the track lugs forcing the track against the tunnel causing the track to "lock." Arctic Cat recommends that the track tension be checked daily during the first 300 miles of operation and once a week thereafter and adjusted according to need. The track will stretch and take a "set" during break-in. Track deflection must be maintained within the recommended range.

⚠ WARNING

Track tension must be properly maintained. Personal injury could result if a track is allowed to become excessively loose.

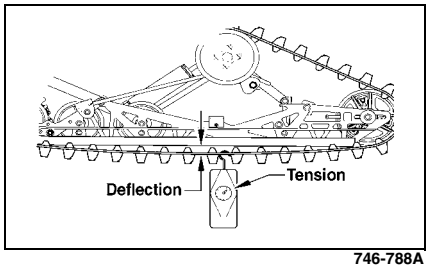
Checking Track Tension

⚠ WARNING

DO NOT attempt to check or adjust track tension with engine running. Turn ignition key to the OFF position. Personal injury could result from contact with a rotating track.

1. Remove excess ice and snow buildup from the track, track drive sprockets, and the inside of the skid frame.
2. Elevate the snowmobile on a shielded safety stand high enough to use a spring scale.
3. At the mid-point of the track (on the bottom side), hook a spring scale around a track clip; then pull down on the scale to the recommended pressure (see chart). Measure the deflection (distance) between the bottom of the wear strip and the inside surface of the track clip. Compare the measurement with the chart.

Track	Setup Tension	After Break-In Tension
129"/141"/153"/162" @ 20 lb	2 in.	2 in.
137" @ 25 lb	2 in.	2 in.



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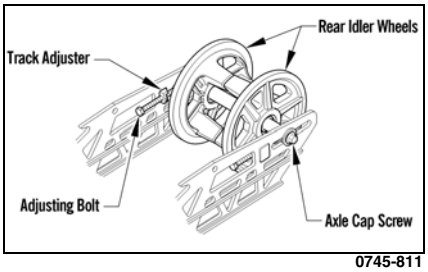
■ **NOTE: Measurement is from the bottom of the wear strip at the point of the shock pad on the slide rail.**

■ **NOTE: Only tighten track until the track does not ratchet. Too tight of a track will cause the rear suspension to not work properly.**

Adjusting Track Tension

■ **NOTE: To ensure proper track tension adjustment, perform all adjustments on both sides of the snowmobile.**

1. Loosen the idler wheel axle cap screws.



0745-811

2. If the deflection (distance between the bottom of the wear strip and the inside surface of the track clip) exceeds specifications, tighten the adjusting bolts to take up excessive slack in the track.
3. If the distance between the bottom of the wear strip and the inside surface of the track clip is less than specified, loosen the adjusting bolts to increase the slack in the track.

CAUTION

Always maintain track tension within recommended specification.

4. Check track alignment.
5. After proper track tension is obtained, tighten the idler wheel axle cap screws to 34 ft-lb; then tighten the adjusting bolts securely against the axle.

■ **NOTE: Since track tension and track alignment are interrelated, always check both even if only one adjustment seems necessary.**

⚠ WARNING

Always make sure the adjusting bolts are snug against the axle and the idler wheel cap screws are tightened to specifications. Failure to do so could cause the track to become extremely loose and, under some operating conditions, allow the idler wheels to climb over the track lugs forcing the track against the tunnel causing the track to "lock." If a track "locks" during operation, severe personal injury could result.

Track Alignment

Proper track alignment is obtained when the rear idler wheels are equal distance from the inner track drive lugs. Excessive wear to the idler wheels, drive lugs, and track will occur if the track is improperly aligned. Arctic Cat recommends that the track alignment be checked once a week or whenever the track tension is adjusted.

Checking Track Alignment

⚠ WARNING

Make sure the ignition key is in the OFF position and the track is not rotating before checking or adjusting track alignment. Personal injury could result if contact is made with a rotating track.

1. Remove excess ice and snow buildup from the track, track drive sprockets, and the inside of the skid frame.
2. Position the tips of the skis against a wall; then using a shielded safety stand, raise the rear of the snowmobile off the floor making sure the track is free to rotate.

⚠ WARNING

The tips of the skis must be positioned against a wall or similar object.

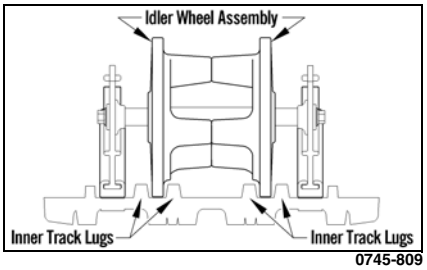
⚠ WARNING

DO NOT stand behind the snowmobile or near the rotating track. NEVER run the track at high speed when the track is suspended.

3. Start the engine and accelerate slightly. Use only enough throttle to turn the track several revolutions. SHUT ENGINE OFF.

■ NOTE: Allow the track to coast to a stop. DO NOT apply the brake because it could produce an inaccurate alignment condition.

4. When the track stops rotating, check the relationship of the rear idler wheels and the inner track drive lugs. If the rear idler wheels are centered between the inner track drive lugs, no adjustment is necessary.

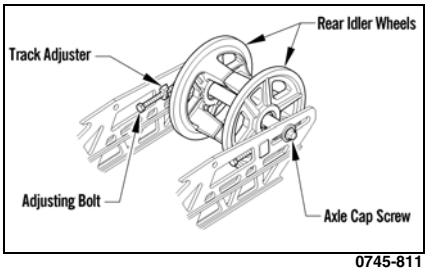


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5. If the idler wheels are not centered between the inner track drive lugs, an adjustment is necessary.

Adjusting Track Alignment

1. On the side of the track which has the inner track drive lugs closer to the rear idler wheel, loosen the idler wheel axle cap screw; then rotate the adjusting bolt clockwise 1 to 1 1/2 turns.



0745-811

2. Check track alignment and continue adjustment until proper alignment is obtained.

■ **NOTE: Make sure correct track tension is maintained after adjusting track alignment (see Track Tension sub-section in this section).**

3. After proper track alignment is obtained, tighten the idler wheel axle cap screw to 34 ft-lb; then tighten the adjusting bolts securely against the axle.

⚠ WARNING

Always make sure the adjusting bolts are snug against the axle and the idler wheel cap screws are tightened to specifications. Failure to do so could cause the track to become extremely loose and, under some operating conditions, allow the idler wheels to climb over the track lugs forcing the track against the tunnel causing the track to "lock." If a track "locks" during operation, severe personal injury could result.

4. Field test the track under actual conditions.
5. After the field test, check the alignment of the track. If additional adjustment is necessary, repeat Adjusting Track Alignment procedure.

Suspension

The suspension should be adjusted for the operational needs and riding preference of the operator.

The front shock springs determine the amount of ski pressure and the reaction of the front suspension to rough terrain. The amount of ski pressure can also be changed by adjusting the length of the skid frame front arm limiter straps.

On standard models, the rear arm shock absorber spring influences the load carrying capability of the snowmobile and should be adjusted for the weight and riding preference of the operator.

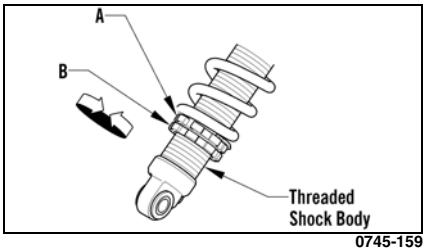
■ **NOTE: On Sno Pro models with a rear arm float shock, this adjustment is achieved by increasingly or decreasing the air pressure in the rear arm air shock absorber.**

Adjusting Front (Ski) Shock Springs

The front (ski) shock springs are individually adjustable for the terrain conditions and driving style of the operator. The spring adjuster nut has been set at the factory so the correct amount of threads are exposed between the adjuster nut and the threaded shock body as an initial setting. Additional ski pressure can be obtained by tightening the spring tension; ski pressure can be decreased by relaxing spring tension.

■ **NOTE: Equal adjustments should be maintained on both sides of the snowmobile.**

Front (ski) shock spring pre-load adjustment is accomplished by loosening the adjuster nut locking collar (B) from the adjuster nut (A) and using the Spring Adjuster Tool from the tool kit, rotating the adjuster nut in whichever direction is desired. Tighten the locking collar against the adjuster nut.



0745-159

Adjusting Fox Air Shocks (Sno Pro Models)

■ **NOTE: It is recommended to monitor the air pressure in the air shocks once every month. If air must be added to the shock, use the shock pump located in the rear compartment of the seat.**

■ **NOTE: Adjusting air shocks may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.**

The air shocks are individually adjustable for the terrain conditions and driving style of the operator. The shocks are preset at the factory (see chart) as an initial setting; however, it is possible to "fine tune" the shocks to match the operator's weight, riding style, and terrain conditions.

Initial Setting Chart		
Model	**Front Shock (Ski)**	**Rear Arm Shock**
M/XF Sno Pro	6.3 kg/cm^2 (90 psi)	10.2-10.6 kg/cm^2 (145-150 psi)
ZR Sno Pro	5.3 kg/cm^2 (75 psi)	N/A
RR	250 psi (nitrogen) 25/225 psi (air)	250 psi (nitrogen)

■ NOTE: Adding air pressure will increase the air spring force; reducing air pressure will decrease air spring force.

Checking and adjusting air pressure must be done at riding temperature (outside). Also, it is advisable to check air pressure when the outside temperature varies more than 25°.

■ NOTE: Care should be taken to have equal pressure in the front (ski) shocks before operating the snowmobile.

XF Cross Tour Rear Shock Setting Chart		
Operator Weight	**Rear Shock Pressure (psi)**	
190	Shop @ 70°F 145 psi	Trail @ 20°F 130 psi
Passenger Weight	**Rear Shock Pressure (psi)**	
100	Shop @ 70°F 155 psi	Trail @ 20°F 140 psi
140	Shop @ 70°F 165 psi	Trail @ 20°F 150 psi
180	Shop @ 70°F 170 psi	Trail @ 20°F 155 psi
220	Shop @ 70°F 180 psi	Trail @ 20°F 160 psi

To increase or decrease air pressure, use the following procedure.

■ NOTE: When adjusting air pressure, all weight must be removed from the suspension, and the shock absorbers must be fully extended.

1. Remove the air valve cap from the shock.
2. Thread the valve of Shock Absorber Air Pump onto the shock air valve approximately six rotations.

■ NOTE: As the pump is being attached to the shock, the hose will fill with air. This will result in a lower gauge pressure 2-5 psi.

3. To decrease air pressure in the shock, press the black bleed valve button half way down and hold until desired pressure is attained.

■ NOTE: Pressing the button fully down and releasing it will allow only a small amount of air to escape (micro-adjust).

4. To increase air pressure in the shock, pump until desired pressure is attained.
5. Remove the pump valve from the shock air valve.

■ NOTE: As the pump valve is being removed from the shock, the sound of air loss is from the pump hose, not from the shock.

6. Install the air valve cap onto the shock.

Adjusting Skid Frame Front Arm

The skid frame front arm shock spring tension and the limiter straps are adjustable. However, Arctic Cat recommends that the shock spring be maintained at the factory preset of 1/8-1/4 in. preload. Tightening the skid frame front arm shock spring may cause improper balance and may ruin the handling features of the snowmobile.

The length adjustment of the front arm limiter straps determines the weight distribution between the front of the skid frame and the skis. Tightening the limiter strap (shortening the strap) will pull up on the front of the skid frame and will increase ski pressure. Loosening the limiter strap (lengthening the strap) lowers the front of the skid frame and decreases ski pressure.

When customizing the amount of ski pressure, be sure to adjust both straps equally and do not over-adjust the limiter straps to adversely affect steering and operator control of the snowmobile. Some experimentation may be required until the proper adjustment for the operator's individual style is obtained.

■ **NOTE: If the limiter straps are adjusted, it is highly recommended that at least a minimum of 1/8 in. preload on the shock spring be maintained.**

⚠ WARNING

Do not adjust the front arm limiter straps to a point at which steering and operator control of the snowmobile are adversely affected.

Adjusting Rear Spring Pre-Load (ZR)

Proper adjustment of rear spring pre-load is necessary to get the most desirable ride. The chart is designed to help in setting up rear spring pre-load; however, riding style is the single greatest factor in determining rear spring requirements.

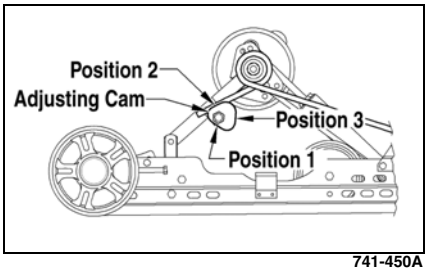
Rider Weight (lb)	Cam Position
Up to 180	1
180-240	2
Over 240	3

■ **NOTE: These cam position settings are suggestions only. Personal riding style will greatly influence cam position settings. Spend time to determine setting preferences.**

Rear spring pre-load adjustment is accomplished by rotating the adjusting cams. Position 3 provides the stiffest ride, and position 1 is for the light driver or slow-speed trail riding. Position 2 is for the average operator under normal conditions. Always rotate the cam from the lighter position to the heavier position.

CAUTION

Never force the adjustment cams from the low position to the high position. Cam damage may occur.



741-450A

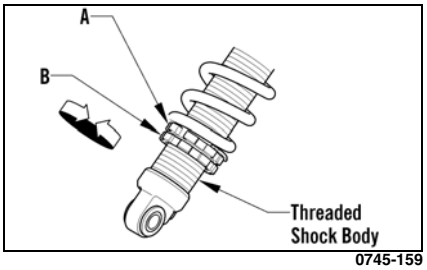
To rotate an adjusting cam, use the spark plug wrench from the tool kit. Rotate the wrench until the cam is in the desired position. To stiffen the ride, rotate the cam so as to raise the spring end. Make the appropriate adjustment on the other cam.

Adjusting Skid Frame Rear Arm Shock Spring (M/XF)

Proper adjustment of rear arm shock absorber spring pre-load is necessary to get the most desirable ride.

The rear arm shock spring is adjustable for the terrain conditions and driving style and weight of the operator. The spring adjuster nut has been set at the factory so the correct amount of threads are exposed between the adjuster nut and the threaded shock body as an initial setting.

Rear spring pre-load adjustment is accomplished by loosening the adjuster nut locking collar (B) from the adjuster nut (A) and using the Spring Adjuster Tool from the tool kit, rotating the adjuster nut in whichever direction is desired. Tighten the locking collar against the adjuster nut.



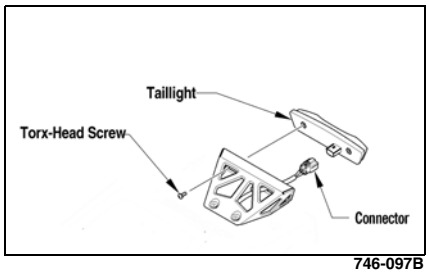
0745-159

Lights

For the correct headlight bulb and/or taillight/brakelight LED, see the appropriate specifications sheet.

Removing and Installing Taillight/Brakelight

These models are equipped with an LED taillight/brakelight. If the LED fails, it must be replaced. To remove and install the LED, use the following procedure.



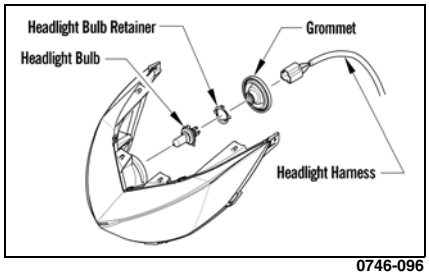
746-097B

1. Disconnect the taillight harness connector.
2. Remove the two torx-head screws securing the taillight to the bracket.
3. Connect the taillight harness connector; then secure the taillight to the bracket with the two torx-head screws.

Removing/Installing Headlight Bulb

■ NOTE: The bulb portion of headlight is fragile. HANDLE WITH CARE. When replacing the headlight bulb, the bulb assembly must first be removed from the housing. Do not touch the glass portion of the bulb. If the glass is touched, it must be cleaned with a dry cloth before installing.

1. Disconnect the headlight harness connector from the bulb; then remove the rubber grommet from the headlight housing.
2. Rotate the bulb retainer counterclockwise until it unlocks from the housing; then remove the bulb.



0746-096

3. Install the bulb and retainer; then rotate the retainer clockwise until it properly locks in place.
4. Install the rubber grommet; then connect the headlight harness connector to the bulb.
5. Check headlight aim.

⚠ WARNING

Do not operate the snowmobile unless headlight beam is adjusted properly. An incorrectly adjusted beam will not provide the operator the optimum amount of light.

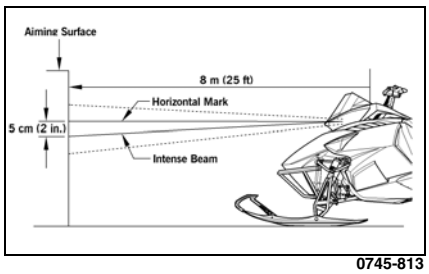
Adjusting Headlight Aim

The headlight can be adjusted for vertical aim of the HIGH/LOW beam. The geometric center of HIGH beam zone is to be used for vertical aiming.

1. Position the snowmobile on a level floor so the headlight is approximately 8 m (25 ft) from an aiming surface (wall or similar surface).

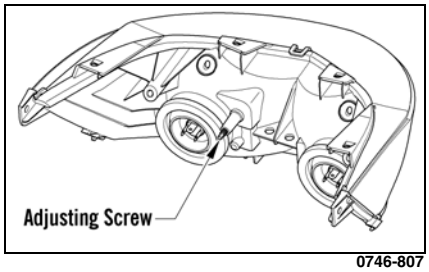
■ NOTE: There should be an "average" operating load on the snowmobile when adjusting headlight aim.

2. Measure the distance from the floor to midpoint of the headlight.
3. Using the measurement obtained in step 2, make a horizontal mark on the aiming surface.
4. Make a vertical mark which intersects the horizontal mark on the aiming surface directly in front of the headlight.
5. Engage the brake lever lock and start the engine. Move the headlight dimmer switch to the HIGH beam position. DO NOT USE LOW BEAM.
6. Observe the headlight beam aim. Proper aim is when the most intense beam is centered on the vertical mark 5 cm (2 in.) below the horizontal mark on the aiming surface.



0745-813

7. Adjust the headlight using the adjusting screw on the backside of the headlight using a 4 mm swivel socket and long extension until correct aim is obtained. Shut the engine off; then disengage the brake lever lock.



0746-807

Ski Wear Bars

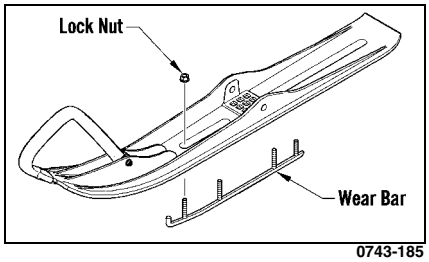
The ski wear bar is a replaceable bar attached to the underside of the ski. The purpose of the wear bar is to assist in turning the snowmobile, to minimize ski wear, and to maintain good steering control. If the snowmobile is operated primarily in deep snow, ski wear bar wear will be minimal; however, if the snowmobile is operated on terrain where the snow cover is minimal, the ski wear bar will wear faster. To maintain positive steering characteristics, Arctic Cat recommends that the ski wear bars be checked before each use and replaced if worn beyond 1/2 of the original diameter. Ski wear bars are available from an authorized Arctic Cat Snowmobile dealer.

⚠ WARNING

Operating the snowmobile with excessively worn ski wear bars may result in a loss of steering control.

Removing Ski Wear Bars

1. Using Front End Lift (p/n 5639-151), elevate the front of the snowmobile.
2. Remove the lock nuts securing the wear bar to the ski.



0743-185

3. Remove the wear bar from the ski.

Installing Ski Wear Bars

1. Move the wear bar into position on the bottom of the ski.

■ NOTE: If installing a double-offset wear bar, the carbide edge should be directed to the outside of the ski.

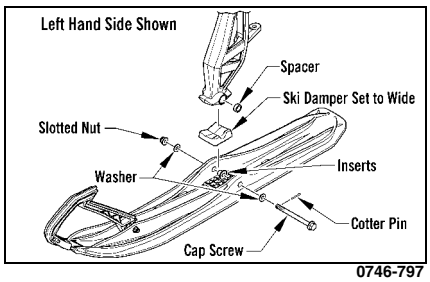
2. Align the wear bar studs with the holes in the ski; then install the lock nuts. Tighten to 15 ft-lb.

Adjusting Ski Stance

■ NOTE: Local laws and/or regulations as to maximum width of the ski stance on these snowmobiles may be applicable. Always comply with the maximum width laws and/or regulations when adjusting ski stance.

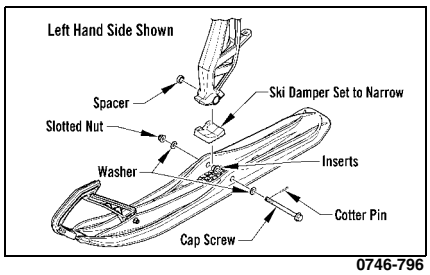
■ NOTE: Ski stance can be increased/decreased by 2.5 cm (1.0 in.).

1. Place the front of the snowmobile on a support stand.
2. Remove the cotter pin; then remove the slotted nut and cap screw securing the ski assembly to the spindle. Remove the ski. Account for the rubber damper, inserts, and washers.
3. To increase ski stance, place ski stance spacer to the outside of the spindle and adjust the damper.



0746-797

4. To decrease ski stance, place ski stance spacer to the inside of the spindle and adjust the damper.



0746-796

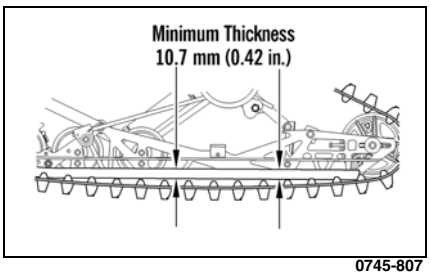
5. Apply an all-temperature grease to the non-threaded portion of the cap screw; then slide the cap screw through the ski accounting for the rubber damper, inserts, and washers.

■ NOTE: Install the cap screw so the nut will be located to the inside of the ski.

6. If using the existing nut, apply red Loctite #271 to the threads of the cap screw; then tighten the nut to 45 ft-lb.
7. Place new cotter pin into the ski cap screw and spread the pin.
8. Repeat procedure for the other ski.

Rail Wear Strips

Arctic Cat recommends that the wear strips be checked weekly and replaced as necessary. Measure the wear strips at 25.4 cm (10 in.) intervals. Wear strips must be 10.7 mm (0.42 in.) thick or thicker.



0745-807

If wear strip measurements are less than specified, replacement of both wear strips is necessary to prevent premature track clip wear and possible track damage. Take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

Each time a new set of wear strips are installed, they should be tempered. Temper the wear strips by driving the snowmobile for approximately a mile on a hard pack trail; then immediately drive into deep snow and allow the wear strips to cool. Repeat the procedure (warming up the wear strips; then cooling them down) two or three times.

■ NOTE: The rail wear strips will wear rapidly if the snowmobile is operated on terrain on which the snow cover is minimal. Loose snow is required to cool and lubricate the wear strips and prevent accelerated wear.

■ NOTE: Two Wheel Kit (p/n 6639-184) and Four Wheel Kit (p/n 5639-995) are available to reduce wear strip wear.

■ NOTE: If operating on ice or hard-packed snow conditions, it is recommended that Ice Scratchers (p/n 5639-897) be installed to reduce wear strip wear and engine overheating.

Performance Tips

Operating a high performance snowmobile requires a special attention that is not required by a low performance snowmobile. Often, a minor adjustment will result in a large increase in performance. This section is intended to highlight minor conditions that adversely affect performance and the adjustments needed to correct them. Be sure, however, to thoroughly read and understand this entire manual especially the section on spark plugs, track tension and alignment, and suspension.

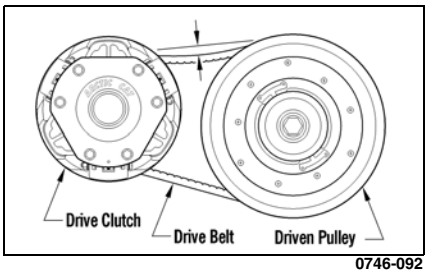
DRIVE BELT — This link between the engine and drive train is often the most neglected component. The drive belt must have the proper fit in the drive clutch and driven clutch. Proper fit is when the top surface of the drive belt is flush with the top or up to 1/16 in. higher than the driven clutch sheaves (with the sheaves fully closed). If drive belt deflection is above specification, the snowmobile will bog and lack power at engagement and will have a slower maximum speed. For good performance, proper belt deflection is critical. To correct this condition, first determine if the drive belt is within specifications and replace if worn or too long. Always run the drive belt in the same direction. Installing the drive belt so the part number can be read will ensure that the drive belt is always run the same direction.

DRIVE BELT DEFLECTION — Drive belt length, condition, and deflection are all important for peak performance. To check and adjust drive belt deflection, remove the belt guard; then use the following procedure.

■ NOTE: It may be necessary to remove a shim washer from between the driven clutch sheaves to allow the driven clutch to close tighter. Adding shim washers will decrease belt deflection and removing shim washers will increase belt deflection. Available shim washers from Arctic Cat are p/n 0648-714 (0.090 in.) - one included in the tool kit, p/n 0648-715 (0.030 in.), and p/n 0648-716 (0.060 in.).

■ NOTE: Removing/adding shim washers may be done by the snowmobile owner if qualified to do so. If the owner does not feel qualified, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for this service. This service is at the discretion and expense of the snowmobile owner.

1. Turn the engine off; then open the access panel.
2. Make sure the drive belt is sitting at the top of the driven clutch sheaves.
3. Place a straightedge on top of the drive belt. The straightedge should reach from the driven clutch to the top of the driven clutch.
4. Using a stiff ruler centered between the drive clutch and driven clutch, push down on the drive belt just enough to remove all slack. Note the amount of deflection on the ruler at the bottom of the straightedge. The deflection should be at 1 1/4 in.



0746-092

■ NOTE: Push down on the belt with the ruler only until the bottom of the belt flexes upward; then read the amount of deflection.

5. To correct drive belt deflection, remove the sheave adjuster from the clutch, remove or add shim washers to the adjuster, and install the adjuster.

■ NOTE: Adding shim washers will decrease belt deflection; removing shim washers will increase belt deflection.

6. Install the belt guard; then close the access panel.

DRIVE CLUTCH AND DRIVEN CLUTCH — Keeping the drive clutch and driven clutch clean should be the primary consideration of the operator. The drive clutch and driven clutch can be cleaned of any drive belt accumulation using compressed air. The sheaves can be cleaned using a clean cloth and parts-cleaning solvent.

DRIVE CLUTCH/DRIVEN CLUTCH OFFSET — If premature drive belt wear is experienced or if the drive belt turns over, offset must be checked. Also, offset must be checked whenever either the drive clutch or driven clutch is serviced.

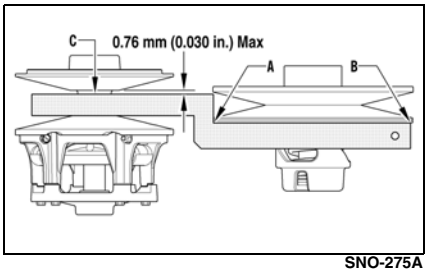
■ NOTE: For checking offset, it is necessary to use Clutch Alignment Bar (p/n 0644-588) to obtain a drive clutch/driven clutch offset of 1.450 in. This special tool can be purchased from an authorized Arctic Cat snowmobile dealer.

To check offset, use the following procedure.

1. Open the left-side access panel; then remove the belt guard.
2. Install the clutch alignment bar between the drive clutch sheaves.
3. Allow the bar to rest on the drive clutch shaft and against the outside edge of the driven clutch stationary sheave.

■ NOTE: The alignment bar must extend beyond the front edge of the drive clutch.

4. With the bar against the outside edge of the driven clutch stationary sheave at points A and B, the bar should just clear the inside edge of the stationary sheave of the drive clutch and rest on the stationary shaft at point C with a maximum 1.5 mm (0.060 in.) clearance at point C. At this point, measurement between points A and C should be 1.485 in. (with a maximum 1.5 mm (0.060 in.) clearance). If the bar either will not clear the inside edge or clearance is more than the specified amount, the offset must be corrected.



SNO-275A

■ NOTE: If the offset is out of specification, take the snowmobile to an authorized Arctic Cat Snowmobile dealer for drive system evaluation and/or servicing. This service is at the discretion and expense of the snowmobile owner.

GASOLINE — On the 8000/9000 for optimum performance, use 91 octane (minimum) gasoline.

Preparation for Storage

Prior to storing the snowmobile, it must be properly serviced to prevent corrosion and component deterioration. An authorized Arctic Cat Snowmobile dealer should perform this service; however, the owner/operator can perform this service if desired. This service is at the discretion and expense of the snowmobile owner. To prepare the snowmobile for storage, Arctic Cat recommends the following procedure:

1. Clean the seat cushion with a damp cloth and a Vinyl Protectant.
2. Clean the snowmobile thoroughly by hosing dirt, oil, grass, and other foreign matter from the skid frame, tunnel, hood, and belly pan. Allow the snowmobile to dry thoroughly. DO NOT get water into any part of the engine.

■ NOTE: On the 5000/9000, change the engine oil and replace the air filter if necessary; then proceed to step 6.

CAUTION

Do not do steps 3-5 on the 5000/9000; severe engine damage could result.

3. Place the rear of the snowmobile up on a shielded safety stand.
4. Carefully pry the intake boots partially over the throttle body inlets; then start the engine and allow to idle.
5. Spray an Engine Storage Preserver into the intakes until the engine exhaust starts to smoke heavily or until the engine starts to drop in RPM. Turn engine off. Install the intake boot.

CAUTION

Do not run the engine without the belt guard in place and secured.

6. Plug the exhaust system outlet with a clean cloth.

CAUTION

Do not do step 7 on the 5000/9000; severe engine damage could result.

7. With the ignition switch in the OFF position:
   A. Disconnect the high tension leads from the spark plugs; then remove the plugs, connect them to the leads, and ground them on the cylinder heads.

CAUTION

Never crank the engine over without grounding the spark plugs. Damage to coils and ECM may result.

   B. Pour 29.5 ml (1 fl oz) of SAE #30 petroleum-based oil into each spark plug hole and pull the recoil starter handle slowly about 10 times.
   C. Install the spark plugs and connect the high tension leads.
8. Fill the gas tank to its rated capacity; then add Arctic Cat Fuel Stabilizer (p/n 0436-907) to the gas tank following directions on the container for the stabilizer/gasoline ratio. Tighten the gas tank cap securely.
9. With the snowmobile level, check the lubricant level in the chain case. If low, add chain lube through the fill plug hole.
10. Remove the drive belt from the drive clutch/driven clutch. Lay the belt on a flat surface or slide it into a cardboard sleeve to prevent warping or distortion during storage.
11. Clean and inspect the drive clutch and driven clutch.
12. Apply light oil to the upper steering post bushing and shafts of the shock absorbers.
13. Lubricate the rear suspension with all-temperature grease.
14. Tighten all nuts, bolts, and cap screws making sure all nuts, bolts, and cap screws are tightened securely. Make sure all rivets holding the components together are tight. Replace all loose rivets.
15. Clean and polish the hood, console, and chassis with Cat Cleaner (p/n 4639-371). DO NOT USE SOLVENTS. THE PROPELLANT WILL DAMAGE THE FINISH.

■ **NOTE: On electric start models, disconnect the battery cables making sure to disconnect the negative cable first; then clean the battery posts and cables. Charge the battery.**

CAUTION

Sealed batteries require charging if left for extended non-start periods. Arctic Cat recommends trickle charging once a month. Follow the manufacturer's instructions and cautions.

16. If possible, store the snowmobile indoors. Raise the track off the floor by blocking up the back end making sure the snowmobile is secure. Loosen the track adjusting bolts to reduce track tension. Cover the snowmobile with a machine cover or a heavy tarpaulin to protect it from dirt and dust.
17. If the snowmobile must be stored outdoors, position the snowmobile out of direct sunlight; then block the entire snowmobile off the ground making sure the snowmobile is secure. Loosen the track adjusting bolts to reduce track tension. Cover with a machine cover or a heavy tarpaulin to protect it from dirt, dust, and rain.

CAUTION

Avoid storing in direct sunlight and using a plastic cover as moisture may collect on the snowmobile causing corrosion.

Preparation after Storage

Taking the snowmobile out of storage and correctly preparing it for another season will assure many miles and hours of trouble-free snowmobiling. Arctic Cat recommends the following procedure:

1. Clean the snowmobile thoroughly. Polish the exterior of the snowmobile.
2. Clean the engine. Remove the cloth from the exhaust system. Check exhaust system and air-intake silencer for obstructions.
3. Inspect all control wires and cables for signs of wear or fraying. Replace if necessary. Use cable ties or tape to route wires and cables away from hot or rotating parts.
4. Inspect the drive belt for cracks and tears. Check belt specifications. Replace if damaged or worn. Install the drive belt.

■ NOTE: If the old belt is worn but in reasonable condition, retain it with the snowmobile as a spare in case of emergency.

5. Inspect all fuel hoses and oil hoses for deterioration or cracks; replace if necessary. Make sure all connections are tight; then on the 8000, fill the oil-injection reservoir with the recommended 2-cycle oil.

■ NOTE: After prolonged storage of the 8000, Arctic Cat recommends one tankful of 100:1 gas/oil mixture be used in conjunction with the oil-injection system to ensure proper lubrication.

6. On the 8000, inspect the spark plugs. Replace, gap, or clean as necessary.
7. Tighten all nuts, bolts, and cap screws making sure all nuts, bolts, and cap screws are tightened securely.
8. If not done during preparation for storage, lubricate the rear suspension with all-temperature grease.
9. Check the coolant level and all coolant hoses and connections for deterioration or cracks. Add properly mixed coolant as necessary.
10. On electric start models, charge the battery until fully charged; then connect the battery cables making sure to connect the positive cable first. Test the electric start system.
11. Inspect the entire brake system, all controls, headlight, taillight, brakelight, ski wear bars, and headlight aim; adjust or replace as necessary.
12. Adjust the track to the proper tension and alignment.

U.S. EPA Emission Control Statement/Warranty Coverage (U.S. Only)

STATEMENT/WARRANTY

Arctic Cat warrants to the original retail purchaser, and each subsequent purchaser, that all U.S. EPA-certified Arctic Cat snowmobiles are designed, built, and equipped to conform to all U.S. EPA Emission Control Regulations. Please read the following information completely.

Your authorized Arctic Cat snowmobile dealer will repair or replace any defective emission-related component at no cost to you during the warranty period. You may have non-warranty service performed by any repair establishment that uses equivalent components. The regulations provide significant civil penalties for tampering that causes your snowmobile to no longer meet U.S. EPA emission standards.

Arctic Cat further warrants that the engine and its emission-related components are free from defects in materials or workmanship that could cause the engine to fail to comply with applicable regulations during the warranty period.

If you have any questions about this information, or the emission warranty coverage statement, contact your local authorized Arctic Cat snowmobile dealer.

WARRANTY PERIOD

The emission warranty period for this snowmobile begins on the same date as the standard warranty coverage and continues for 30 months or 2500 miles, whichever comes first.

COMPONENTS COVERED

The emissions warranty covers major emissions control components and emission-related components listed as follows:

Engine Management and Sensors
- Barometric Pressure Sensor
- Camshaft Position Sensor
- Engine Control Module (ECM)
- Engine Coolant Temperature Sensor
- Intake Air Temperature Sensor
- Manifold Absolute Pressure Sensor
- Oxygen Sensor
- Throttle Position Sensor

Fuel/Air System
- Fuel Injectors
- Fuel Pressure Regulator
- Fuel Pump
- Carburetor(s)
- Turbocharger Assembly
- Air Bypass Valve
- Turbo Waste Gate Control Valve
- Crankcase Ventilation System
- ISC Valve

Ignition System Systems
- Ignition Coil
- Knock Sensor System
- Crankshaft Position Sensor
- Exhaust Temperature Sensor
- Capacitive Discharge Ignition (CDI) Module
- Magneto Pick-Up
- Spark Plugs

Miscellaneous Items Used in Aforementioned
- Connectors
- Switches
- Grommets
- Clamps
- Hoses
- Ties
- Gaskets
- Wiring

OWNER'S RESPONSIBILITIES

The owner of any snowmobile warranted under this Arctic Cat Emission Control Statement is responsible for the proper maintenance and use of the snowmobile in accordance with Arctic Cat's recommendations in the Operator's Manual.

Change of Address, Ownership, or Warranty Transfer

Arctic Cat Inc. keeps on file the current name and address of the owner of this vehicle. This allows Arctic Cat to reach the current owner with any important safety information which may be necessary to protect customers from personal injury or property damage. Please make sure a copy of this form is completed and returned to Arctic Cat Inc. if you move or if the vehicle is sold to another party.

This form may also be used to transfer the unused portion of the original warranty to a second party. In order to transfer warranty, fill out this form completely; then return a copy of this form to Arctic Cat Inc. Arctic Cat will then process the application and issue warranty for the balance of the time remaining of the original warranty. Warranty coverage is only available in the country in which the original retail purchase occurs to the original retail purchaser resident in that country or to a transferee resident in that country of the balance of the remaining warranty.

- ❑ Address Change
- ❑ Ownership Change
- ❑ Warranty Transfer

CHANGE OF ADDRESS/OWNERSHIP/ WARRANTY TRANSFER TO:

Name _____

Address _____

City/State (Province)/Zip Code (Postal Code) _____

Phone # ( ) _____

Year and Model _____

Vehicle Identification Number (VIN) _____

Fold Back Once

Place
Stamp
Here

CHANGE OF ADDRESS/OWNERSHIP

ARCTIC CAT INC.
PRODUCT SERVICE AND
WARRANTY DEPT.
P.O. BOX 810
THIEF RIVER FALLS, MN 56701

NOTES

NOTES

Warranty Procedure/Owner Responsibility

At the time of sale, an Owner Registration form is to be completed by the selling dealer and consumer. The receipt of the registration form by Arctic Cat is a condition precedent to warranty coverage. It is the selling dealer's responsibility to retain and/or submit the appropriate copies of the form to the appropriate place(s) to initiate warranty coverage.

The dealer will furnish to the consumer a signed copy of the form which must be presented to the dealer when requesting warranty service. **The registration form is the consumer's proof of ownership and warranty eligibility. The form is used by the dealer to validate the warranty claim.** Retain your copy of the form and keep it in a safe place.

When warranty repair is suspected, the snowmobile should be taken to the selling dealer, who has the primary responsibility to perform warranty repairs. Subject to the limitations set forth in the Limited Warranty, in the event the selling dealer has ceased to do business, you have moved, or you are in a location away from your selling dealer, warranty may be performed by any authorized Arctic Cat Snowmobile dealer.

The authorized Arctic Cat Snowmobile dealer will examine the snowmobile or part to determine if, in his opinion, a warrantable condition exists. If a warrantable condition appears to exist, the dealer will repair or replace, at Arctic Cat's option, free of charge, including any related labor costs, all parts that are found to be warrantable and any other parts which the warrantable part caused to be damaged. You, the consumer, will then be asked to sign a warranty form to ensure Arctic Cat that the warranty work was actually performed.

It is the consumer's responsibility to maintain and service the snowmobile in accordance with Arctic Cat's recommendations in the Operator's Manual. To protect yourself and your snowmobile, follow all safety and service tips. **Arctic Cat will NOT warrant repairs required as a result of not performing standard operator maintenance, storage procedures, and service as outlined in the Operator's Manual.**

Should you have any questions concerning the warranty, contact an authorized Arctic Cat Snowmobile dealer.

Arctic Cat Inc., P.O. Box 810, Thief River Falls, MN 56701 (218) 681-8558



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