

SNOW-HAWK 800 HO 2007

MANUEL DE RÉPARATION

Incluant :

- Conseils de sécurité
- Fonctionnement du véhicule
- Entretien du véhicule
- Manuel de pièces

SHOP MANUAL

Include:

- Safety
- Vehicle information
- Maintenance information
- Parts catalog

PART #: SH-MAN-2007



AD Boivin Design 700 Jean-Marchand Street Lévis (Québec) G6V 9G6 Tel : (418) 838-3783 Fax : (418) 838-3957 www.adboivin.com



Warranty Policies

SNOW HAWK 800HO MY2007

June 6, 2007

AD BOIVIN WARRANTY POLICIES

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1. AD BOIVIN LIMITED WARRANTY

- Warranty coverage only becomes available upon proper **registration** of the product by an authorized Snow Hawk dealer. Moreover, this warranty coverage is only available if the vehicle is purchased in the country in which the purchaser **resides**. For Cross Border procedure please call AD Boivin.
- All genuine **AD Boivin parts and accessories**, installed by an authorized Snow Hawk dealer at the time of delivery of the vehicle, carry the same warranty as that of the vehicle.
- Please note that parts that are changed under the limited warranty by the manufacturer do not extend the limited warranty over the original coverage.
- Use of the product for racing or any other competitive activity, at any point, even by a previous owner, will render this warranty null and void.
- Routine maintenance outlined in the Snow Hawk Manual's must be timely performed in order to maintain warranty coverage. AD Boivin reserves the right to make warranty coverage contingent upon proof of proper maintenance.
- AD Boivin reserves the right to improve or modify products from time to time without assuming any obligation to modify products previously manufactured.

2. <u>SNOW HAWK 2007</u>

2.1. SCOPE OF THE LIMITED WARRANTY

AD Boivin Inc. warrants its 2007 Snow Hawk from defects in material or workmanship for the period and under the conditions below.

2.2. WARRANTY COVERAGE PERIOD

This warranty will be in effect from the date of delivery to the first retail consumer or the date the product is first put into use, whichever occurs first and for a period of:

TWELVE (12) CONSECUTIVE MONTHS, for private or commercial use owners. However, the warranty coverage period on a Snow Hawk delivered between June 1^{st} and December 1^{st} of a given year will expire December 1^{st} of the following year.

The repair or replacement of parts or the performance of service under this warranty does not extend the life of this warranty beyond its original expiration dates.

2.3. CONDITIONS TO HAVE WARRANTY COVERAGE

This warranty coverage is available only on 2007 Snow Hawk purchased as new and unused by its first owner from Snow Hawk dealer authorized to distribute Snow Hawk products in the country in which the sale occurred and then only after the AD Boivin pre-delivery inspection process is completed and documented. Warranty coverage only becomes available upon proper registration of the product by an autorized Snow Hawk dealer. Moreover, this warranty coverage is only available if the Snow Hawk snowbike is purchased in the country in which the purchaser resides. AD Boivin will not honor this limited warranty to any private use owner or commercial use owner if the preceding conditions have not been met. Such limitations are necessary in order to allow AD Boivin to preserve both the safety of its products, and also that of its consumers and the general public.

Routine maintenance outlined in the Snow Hawk Manual must be timely performed in order to maintain the warranty coverage. AD Boivin reserves the right to make warranty coverage contingent upon proof of proper maintenance.

2.4. WHAT TO DO TO OBTAIN WARRANTY COVERAGE

The customer must notify a servicing Snow Hawk dealer within two (2) days of the appearance of a defect, and provide it with reasonable access to the product and reasonable opportunity to repair it. The customer must also present to the authorized Snow Hawk dealer, proof of purchase of the product and must sign the repair/work order prior to starting the repair in order to validate the warranty repair. All parts replaced under this limited warranty become the property of AD Boivin.

2.5. WHAT AD BOIVIN WILL DO

AD Boivin's obligations under this warranty are limited to, at its sole discretion, repairing parts found defective under normal use, maintenance and service, or replacing such parts with new genuine Snow Hawk parts without charge for parts and labor, at any authorized Snow Hawk dealer during the warranty coverage period.

2.6. EXCLUSIONS

The following are not warranted under any circumstances:

- Normal wear and tear;
- Routine maintenance items, tune ups, adjustments;
- Damage caused by failure to provide proper maintenance and/or storage, as described in the Snow Hawk Manual;
- Damage resulting from removal of parts, improper repairs, service, maintenance, modifications or use of parts not manufactured or approved by AD Boivin or resulting from repairs done by a person that is not an authorized servicing dealer;
- Damage caused by abuse, abnormal use, neglect, use of the product on surfaces other than snow, or operation described in the Snow Hawk Manual;
- Damage resulting from accident, submersion, fire, theft, vandalism or any act of god;
- Operation with fuel, oils or lubricants which are not suitable for use with the product (see Snow Hawk Manual);
- Snow or water ingestion;
- Incidental or consequential damages, or damages of any kind including without limitation towing, storage, telephone, rental, taxi, inconvenience, insurance coverage, loan payments, loss time, loss income; and
- Damage resulting from studs installed on tracks.

2.7. LIMITATIONS OF LIABILITY

THIS WARRANTY IS EXPRESSELY GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT THAT THEY CANNOT BE DISCLAIMED, THE IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY. INCIDENTAL AND CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. SOME STATES / PROVINCES DO NOT ALLOW FOR THE DISCLAIMERS, LIMITAIONS AND EXCLUSIONS IDENTIFIED ABOVE, AS A RESULT, THEY MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC RIGHTS, AND YOU MAY ALSO HAVE LEGAL RIGHTS WHICH MAY VARY FROM STATE TO STATE. OR PROVINCE TO PROVINCE.

Neither the distributor, any Snow Hawk dealer nor any other person has been authorized to make any affirmation, representation or warranty regarding the product, other than those contained in this limited warranty, and if made, shall not be enforceable against AD Boivin.

AD BOIVIN WARRANTY POLICIES

AD Boivin reserves the right to modify this warranty at any time, being understood that such modification will not alter the warranty conditions applicable to the products sold while this warranty is in effect.

2.8. TRANSFER

If the ownership of a product is transferred during the warranty coverage period, this warranty shall also be transferred and be valid for the remaining coverage period provided that AD Boivin is notified of such transfer of ownership in the following way:

- a) The former owner contacts AD Boivin (at the phone number below) or an authorized Snow Hawk dealer gives the coordinates of the new owner; or
- b) AD Boivin or an authorized Snow Hawk dealer receives a proof that the former owner agreed to the transfer of ownership, in addition to the coordinates of the new owner.

2.9. CONSUMER ASSISTANCE

In the event of a controversy or a dispute in connection with this limited warranty, AD Boivin suggests that you try to resolve the issue at the dealership level. We recommend discussing issue with the authorized dealer's service manager or owner.

If the issue has not yet been solved, please submit your complaint in writing or call at the following number:

AD Boivin

<u>Customer service</u> 700 Jean-Marchand Street Lévis, Qc (G6V 9G6) Tel : (418) 838-3783 ext 245

3. WARRANTY INFORMATION

3.1. WEAR ITEMS

The following items are what we consider Wear items and they are not covered under the warranty unless failure is a direct result of a defect in material or workmanship.

Brake components
Carburetor components
Clutches
Drive belts
Filters
Finished and unfinished surfaces
Fuses
Hoses

Hydraulic components Light bulbs / Sealed Beam lamps Lubricants Sealants Seat components Ski wear rods Skis Slide rails Snow-Tracker wear Spark plugs Steering components Suspension components Track

3.2. LABOUR TIME

The time taken to complete the repair and the hourly rate must be submitted to AD Boivin via form AD-CLAIM available in appendix 1. You can also request an electronic copy (ericferland@adboivin.com) and return it to us by email or fax. While reviewing your claim, AD Boivin reserves the right to adjust hours claimed according to the usual time needed to complete the repair.

3.3. VEHICLE TESTING AFTER REPAIR

AD Boivin recognizes the importance of verifying certain repairs by testing the products in real conditions. Because each authorized dealership has differences in local conditions, AD Boivin will allow you to claim up to 0.5 hour of extra labor for vehicle testing, if the situation should warrant it. Any request for vehicle testing must be appropriate and explained in detail. If certain conditions exist which require additional testing time, prior authorization from AD Boivin must be acquired.

3.4. STUDDED TRACK

Install studs on a Snow Hawk track automatically void the warranty on the track.

3.5. DAMAGE IN TRANSIT

3.5.1. <u>Visible crate damage</u>

Every precaution is taken to ensure that new products leave the factory in proper condition. However, a product may be received with damages incurred during transit. **The carrier is insured and is responsible for the products during the transportation from the factory to its destination.** Dealer must make all claims for shortage and/or damaged products time of delivery and to notify AD Boivin by describing the shortages and/or damages on the Bill of Lading or delivery receipt and agrees to forward this notification to AD Boivin **within 7 days** after receipt of shipment. AD Boivin will not cover these claims under warranty but will make sure your request is properly processed by the carrier.

Please call <u>AD Boivin</u> (Ask for vehicle shipping) Tel .1-418-838-3783

*** TAKE THE TIME TO **INSPECT** THE COMPLETE LOAD AND SIGN THE BILL OF LADING ***

- ✓ Load *must* be *inspected* in the presence of the carrier (crate damages *number of vehicle included* in the load, etc.);
- ✓ When damages to a crate is noticed, the *carrier's bill of lading* must be marked "*temporarily accepted, subject to a further inspection*" and *signed by you* and the *carrier* !

3.5.2. Concealed crate damage

In case of concealed damage discovery at the time of unpacking, call the warranty department. Please note that pictures may be required:

- Picture of the crate;
- Picture of vehicle damage while in the crate;
- Picture of vehicle damaged area (we should be able to clearly identify it)

AD BOIVIN WARRANTY POLICIES

4. WARRANTY PARTS MANAGEMENT

As we find ways to ensure continued improvement in product quality, durability and reliability, we need as much evidence as possible to correctly identify, diagnose and find solutions to actual, "in-field" defects or failures. As a vital link between the customer and our Quality Assurance department, dealer co-operation in parts handling procedures is valuable for everyone involved.

4.1. PARTS IDENTIFICATION

Each part returned to AD Boivin / Warranty Department or kept at your dealership must be identified with a tag containing your dealer name and claim number.

4.2. PARTS KEPT AT THE DEALER'S FACILITY

Under AD Boivin policies, you are required to keep at your place of business all parts for a minimum of <u>90 days</u> from the claim credit date. Any / or all parts can be requested for further analysis by the manufacturer within this period. Failure to provide these parts upon request will automatically result in a debit of the complete claim.

4.3. <u>DEFECTIVE PARTS TO BE RETURNED</u>

When we request that defective parts be returned to AD Boivin they must be received with a copy of the AD Boivin claim within

<u>21 days</u>

from the claim credit date. If they are not returned, we will debit the repairs automatically from the dealer's parts account.

If you are required, or requested to return certain parts with your warranty claim, it is imperative to **package the parts appropriately**. Improperly packaged and subsequently damaged parts may result in a rejection of the claim, should the damage render the component useless or impossible to diagnose. Since rejected warranty parts could be returned to you, **per your request**, you want to be sure they arrive in good condition. Our warranty parts inspection staff always makes sure to package parts appropriately.

AD BOIVIN WARRANTY POLICIES

Identified parts will be returned at the expense of AD Boivin after an authorization.

Here is a partial list of parts to be returned:

- 1. Short Block
- 2. Engine assembly
- 3. Piston
- 4. Crankshaft (new or rebuilt)
- 5. Cylinder (new or rebuilt)
- 6. Crankcase
- 7. Track:
 - i. A minimum of 24 inch portion (at least 12 rods) showing both serial number as well as the defect. In this case, you should keep the rest of the track properly tagged for 90 days since we might need to examine it.
 - ii. If the track is replaced for shrinkage, stretching and/or excessive vibration the complete track assembly must be returned with a copy of the warranty claim.
- 8. Electronic Module (MPEM)
- 9. Hoods (A minimum of one square foot (12'' x 12'') of the damaged portion.
- 10. Or and any other part that is identified for return or requested by AD Boivin departments.

4.4. ADDRESS FOR WARRANTY PARTS RETURN

Send the parts at the following address:

Ad Boivin Design (Warranty Department) 700 Jean-Marchand Street Lévis (Québec), G6V 9G6 Tel : (418) 838-3783 Fax : (418) 838-3957

APPENDIX 1

Warranty Claim Sheet

Snow Hawk Warranty Claim Sheet										
		al Informati	ion							
		Dealer N	Name:		Client N	lient Name:				
		Contact	Person:		Client S	lient Signature:				
			VIN:							
		Eng	ine No.:		Year:					
		Date Da	maged:		Model:					
P/N		Des	cription		Qty	Dealer Unit Cost	Total			
						Parts Subtotal:				
Times			LA	BOUK			Tatal			
lime			Description			Flat rate	lotal			
						Labour Subtotal:				
Notes:										
			Total (1	im Cost			US or CAN			
			10tal Ua	uin Cost						

AVERTISSEMENT / AVIS LÉGAL

AD Boivin Design Inc. ne sera tenu responsable d'aucune blessure – ou décès – pouvant survenir lors de l'utilisation du Snow Hawk. Comme tout autre véhicule récréatif, le Snow Hawk peut potentiellement être dangereux si les précautions suivantes ne sont pas prises :

- Faire une lecture approfondie du guide d'utilisateur avant de conduire le véhicule;
- Apprendre comment manier adéquatement le véhicule de façon progressive avant d'en faire la conduite dans les sentiers publics;
- Conduire le véhicule en tenant compte de ses capacités personnelles et des conditions du terrain;
- Toujours porter un casque protecteur et tout autre équipement de protection adéquat;
- Ne jamais conduire en état d'ébriété ou suite à la consommation de drogues;
- Éviter toute manœuvre pouvant être dangereuse;
- Ne pas permettre l'utilisation du véhicule à un individu qui n'a pas préalablement pris connaissance des précautions à prendre;
- N'utiliser le véhicule que sur la neige (Ne pas utiliser le véhicule sur l'eau, la terre ou toute autre condition du terrain n'étant pas la neige);
- Le Snow Hawk est conçu pour un seul utilisateur et aucun passager n'est permis.

Afin d'assurer la validité de votre garantie, vous devez nous faire parvenir ce formulaire dûment signé ainsi que la carte de garantie complétée. Veuillez s'il vous plaît nous faire parvenir ces deux documents (Avertissement/Avis légal et Carte de garantie) dans l'enveloppe pré-adressée ci-incluse.

Je reconnais avoir lu et bien compris le contenu de ce document.

Nom du propriétaire du véhicule (imprimé)

Nom du propriétaire du véhicule (signature)

Date

VIN

WARNING/LEGAL NOTICE

AD Boivin Design Inc. will not be held responsible for any physical injury – or death – occurred while riding a Snow Hawk. Like any other recreational vehicle, the Snow Hawk can be potentially dangerous if the following precautions are not taken:

- Read the owner's manual carefully before operating the vehicle;
- Learn how to handle the vehicle progressively before riding on public trails;
- Drive according to your personal capabilities and terrain conditions;
- Always wear a helmet and other protective gear;
- Never drive under the influence of alcohol or any other drugs;
- Avoid any hazardous maneuvers;
- Do not let anyone else drive your vehicle unless they are aware of the precautions to take;
- Do not operate the vehicle on water, dirt or any other terrain conditions except snow;
- The Snow Hawk is designed for a single operator only, therefore no passengers are allowed;

In order to validate your warranty coverage, we must receive a signed copy of this form and the warranty card filled out. Please return both documents (Warning/Legal Notice and Warranty Card) signed and completed in the enclosed self-addressed envelope.

I attest that I have read this form and understand it clearly.

Vehicle Owner Name (printed)

Vehicle Owner Name (signature)

Date

VIN

SNOW HAWK 800HO 2007

High altitude adjustment recommendations (For information only)

			F1 m	Ì									
	Pilot	Main		305	610 2000	914	4000	5000 1524	6000 1829	7000 2134	2438 8000	9000	10000
۲F	°C -22	-30	500 20	500 20	490 20	480 20	470 20	460 17,5	450 17,5	440 17,5	430 17,5	420 17,5	410 17,5
	-4	-20	490 20	490 20	480 20	470 20	460 17,5	450 17,5	440 17,5	430 17,5	420 17,5	410 17,5	400 17,5
	14	-10	480 20	480 20	470 20	460 17,5	450 17,5	440 17,5	430 17,5	420 17,5	410 17,5	400 17,5	390 15
	32	0	470 20	470 20	460 17,5	450 17,5	440 17,5	430 17,5	420 17,5	410 17,5	400 17,5	390 15	380 15
	50	10	460 20	460 20	450 17,5	440 17,5	430 17,5	420 17,5	410 17,5	400 17,5	390 15	380 15	370 15
	68	20	450 20	450 20	440 17,5	430 17,5	420 17,5	410 17,5	400 17,5	390 15	380 15	370 15	360 15
	86	30	440 20	440 440 47,5	430 17,5	420 17,5	410 17,5	400 17,5	390 15	380 15	370 15	360 15	350 15

NOTICE :

1. In place of changing the pilot jet, the correction can be made through the airscrew adjustement.

2. Airscrew range of adjustement varies from 1 to 3 turns outwards. 1 to 2 turns outwards is optimal.

3. These jetting are only a suggested guide. Spark plug electrode color and piston wash are always your best reference.

4. In all cases, the needle clip must remain at position #3.

5. The stock airscrew setting with a 20 pilot jet is 1.6 turns out from full tight.

*** AD Boivin is not responsible for any damage after utilisation of this chart. Many facteurs can influence the calibration of a vehicle like atmospheric pressure and humidity.

CHAPTER 16 WIRE, CABLE AND HOSE ROUTING

WIRE, CABLE AND HOSE ROUTING

♦ WARNING

Make sure that all the wires are well set in the terminals and that the connector holders are well installed. Keep the wires away from any rotating, moving, heating or vibrating part. If necessary, use good retaining devices.

When reassembling, it is important to always re-install the wires to the stock positions.

SPARK PLUG WIRES AND MPEM

When changing the ignition coil or either of the ignition wires, it is important that the wires are re-installed in exactly the same position.

• The two ignition wires must be installed as shown at right.



 The ignition coil power connector connects to the MPEM in the first 2-pin connector from the front of the vehicle as shown at right.

♦ WARNING

The MPEM has a built in key guide at each socket to ensure that the correct connections find their place. If there is difficulty to make a connection with one of the housings, check the wiring diagram to make sure the location is correct.



MPEM

- 1. 2-circuit housing (BL and WT/BL wires)
- 2. 6-circuit housing
- 3. 2-circuit housing (BK and WT/BL wires)
- 4. 12-circuit housing

MAIN CHASSIS GROUND CONNECTION

Raccourci vers Extranet.Ink

The main chassis ground of the entire electrical system is located on the MAG side chassis rail just above the ignition coil, as indicated at right.

♦ WARNING

It is of utmost importance that the bolt AND locknut securing the ground connection's ring lug to the chassis is well tightened in in full contact with the chassis. A bad ground connection can cause other component failures.

The main wiring harness is divided into several segments immediately after the MPEM. The following three sections go vertically up the steering plate and towards the steering column.

Temperature Warning Light

1. Two 1-circuit connectors (BK and BK/WT wires)

Fuse

2. Fuse and fuse housing, installed with one rivet on the choke cable bracket.

Relay

3. Relay and connector, installed with one rivet on the vertical steering plate.



Cill



Near the base of the engine, close to the magneto, there are two cables. One is covered by a grey sheath and has a 2-circuit connector at its end (BL and WT/YL wires)

This is the wire from the Crankshaft Position Sensor (CPS),

The grey-sheathed wire then travels upward between the MAG side intake socket and the MAG side chassis as shown at right.

The 2-circuit housing from the CPS (BL and WT/YL wires) is connected to the main wiring harness as shown at right.

At the upper end of the cable, near where the ignition coil is mounted, a nylon tie-wrap is used to connect the CPS cable and the ignition coil wires together with the main wiring harness to avoid striking any moving parts when the vehicle is in operation, as shown at right.



Temperature Sensors

There are two temperature sensors on the Snow Hawk 800HO.

The first temperature sensor is blue (Bosch), is located on the MAG side of the head and uses a special 2-circuit connector (GR and BK wires) it is shown as Sensor No. 1 at right.

Once the connector is connected to the main wiring harness, use a nylon tie-wrap to secure the sensor wire, the CPS wire and the main wiring harness to the rigid oil tube running from the small water-pump oil reservoir to the rear of the engine, as shown at right. This connection MUST NOT obstruct the flow of oil from the reservoir to the engine!

The second temperature sensor is black (Indebras), is located on the PTO side of the head and uses the two 1-circuit connectors (YL and BK/WT wires). This cable is routed under the MAG side intake socket, around the vertical coolant tube and then under the PTO side intake socket and then directly to the temperature sensor.



♦ WARNING

It is very important that all wires and cables be installed in exactly the same positions as from the factory. There are many moving parts in the compact engine bay of the Snow Hawk 800HO and the wires must clear all of these.

Voltage Regulator

- 1. The voltage regulator uses a special female, grey 4circuit connector (YL, YL and YL wires) to directly connect to the magneto through a special male, grey 4circuit connector (YL, GR and YL)
- 2. The 2-circuit female connector from the voltage regulator (RD/BL and BK wires) connects to the 2-circuit male connector (RD/BL and BK) on the main wiring harness.
- 3. The 2-circuit connector (GR and BK wires) from the magneto connects to the main wiring harness via the 2-circuit connector (GR/WT and BK/RD wires).



Once the connectors are all well connected, group all of the cables from the voltage regulator, the magneto and parts of the main wiring harness and tie them together with one nylon tie wrap for compactness as shown at right.

From here, the tail lamp wire (WT, BK and RD wires) must pass under the engine impulse hose and along the MAG side chassis towards the rear as shown at right.

The end of the tail lamp wire should be secured with two tie wraps - one near the end of the heat exchangers where the cable must change direction, one at the very end of the tunnel cover using the two holes supplied - as shown at right.









Handlebar-Mounted Devices/Switchgears

1. Brake switch

The 2-circuit connector from the brake switch (YL and YL/WT wires) connects to the 2-circuit connector on the main wiring harness (YL and WT wires).

2. Dimmer switch

The 3-circuit connector from the dimmer switch (GY, RD/YL and GY/BK wires) connects to the 3-circuit connector on the main wiring harness (GY, YL and VI/WT).

3. Tether switch

The 2-circuit connector from the tether switch (BK and BK/YL wires) connects to the 2-circuit connector on the main wiring harness (BK and BK/YL wires).

4. Emergency stop switch

The 2-circuit connector from the emergency stop switch (BK and BK/YL wires) connects to the 2-circuit connector on the main wiring harness (BK and BK/YL wires).

5. Headlamp Connector

Once all of the connectors are seated, group the handlebar accessory, headlamp and throttle cable together with a nylon tie wrap. MAKE SURE that this grouping does not affect the cycling of the throttle cable or the steering of the vehicle in any way.

Place the emergency stop switch, the dimmer switch and the brake switch wires underneath the crashpad as shown at right.









RPM Output Signal and Accessory Connector

- 1. Single-circuit connector (YL wire) for accessories (i.e. handwarmers, visor outlet, etc.).
- 2. 2-circuit connector (GR/WT and BK/RD wires) for an optional tachometer.

Using a nylon tie-wrap, attach the two wires to the main wiring harness as shown at right.

Hood

The headlamp cable underneath the hood is attached to the hood in three places:

- 1. On the PTO side installation screw.
- 2. On the PTO vent grill.
- 3. On a cable tie block fixed to the rear grill.





CABLE ROUTING

Throttle Cable

- 1. The upper end of the throttle cable is attached to the twist throttle itself. The cable then passes in front of the handlebar and steering column.
- Connect the throttle cable to the bundle of handlebar accessory wires with a nylon tie wrap. The cable then passes over the MPEM and then downward to the carburetors and the throttle slide actuator rack as shown on the following page.



3. Throttle Cable

4. Choke Cable

Choke Cable

• NOTICE:

The choke cable is attached to a racked system on the carburetors and is then routed vertically upwards, under the main wiring harness and is then attached to the small oil reservoir with a nylon tie wrap as shown at right.

The cable then passes completely under the steering plate and up to the angled choke support bracket as shown at right.

For installation or adjustment of either the choke cable or the throttle cable, see Chapter 3 – Fuel System.







Rewind Starter Cord

(503 shown, 800HO identical)

- 1. Pass the rewind starter cord over the forward pulley.
- 2. Then under the rearward pulley.
- 3. Then, slide the rewind starter rode through the eyebolt.

Install the D-ring starter handle immediately and tie a secure knot.



HOSE ROUTING

♦ WARNING

Always ensure that all hoses are well attached at both ends, that they are in good physical condition, that they are well away from any moving part or heat source. If ANY surface cracks are present, replace the hose immediately.

Steel-Braided Brake Hose

- The brake hose is attached at its upper end to the brake master cylinder.
- The hose is then routed in front of the handlebars and steering column.
- The brake hose must be free to move and slide if necessary and must not interfere with the movement of the steering of the vehicle in any way.



- The brake hose then passes behind the steering plate and is attached with one nylon tie wrap at the corner.
- The second tie wrap is located in a hole just above the triangular cut-out in the PTO side of the chassis.



• The hose is then routed out through this cut-out, under the belt guard towards the brake caliper and is connected there.



Fuel hoses

Fuel pump

The fuel pump uses 3 hoses to function properly:

1. Impulse (Vacuum) Hose

Once installed onto the pump, the impulse hose follows the MAG side chassis and is then connected to the rear of the engine, as shown at right. Ensure that the spring clamps are well placed.

2. Fuel Hose from Fuel Tank

The black 5/16 in. fuel line follows the MAG side chassis towards the rear of the vehicle and is then connected via a reducer to the 1/4 in. clear fuel line that goes into the fuel tank.



The clear line must pass between the fuel tank and the airbox. **ENSURE** that the fuel line does NOT become pinched.



3. Fuel supply line (to carburetors)

The carburetor fuel supply line is routed form the pump, between the engine plate and engine itself and then back up and into the black tee connection at the base of the rack of carburetors. Ensure that the spring clamps are well secured.

♦ WARNING

It is very im[portan that all of these hoses are installed exactly as shown in the photos at right.



Overflow/Vent hoses and Carburetor vent hoses

Coolant Reservoir

The coolant overflow/air bleeder line is attached to the reservoir with a black spring clamp. The overflow hose is then routed downwards along the length of the reservoir and through a guide to a position that is between the coolant hose and the engine.

Fuel Tank

The fuel tank overflow line is routed from the gas cap itself under the handlebar and through the top plate of the steering column.

The hose is then tied to the rest of the handlebar accessory wires with a nylon tie wrap to secure it in place. The hose is then routed to the MAG side of the MPEM.





At this point, the hose is routed between the two carburetors, under the PTO-most coolant hose, through the triangular PTO chassis cut-out and is then secured to the chassis with a nylon tie wrap near the brake system.



Carburetor Vent Hoses

The individual carburetor vent hoses are tee'd together at the top of the assembly, near the centre. The vent hose is then routed between the two carburetors, under the PTO-most coolant hose, through the triangular PTO chassis cut-out and is then secured to the chassis with a nylon tie wrap near the brake system. Ensure that the hose does not become pinched.

As was explained for both the fuel vent hose and the fuel tank vent/overflow hose, the ends of these two hoses must be attached to the outside of the PTO side chassis as shown at right.



CHAPTER 15 DIMENSIONS AND TOLERANCES

DIMENSIONS AND TOLERANCES

	ENGINE		
	Engine type		Rotax 793 HO
	Bore	mm	82.0
		(in)	(3.228)
	Stroke	mm	75.7
		(in)	(2.980)
	Displacement	cm ³	799.5
		(in ³)	(48.789)
	Compression Ratio		12.00 ± 0,5
	Max power engine speed		7850 ± 100 tr/mn
	Piston ring type 1 st		Semi-trapez ring
	2nd		N.A.
0	Ring end gap (new)	mm	0.40 to 0.55
π		(in)	(0.016 to 0,022)
	(wear limit)	mm	1,00
		(in)	(0.039)
	Piston/ring groove clearance (new)	mm	0,05 to 0,1
		(in)	(0.0020 to 0,0039)
	(wear limit)	mm	0,2
		(in)	(0.0079)
	Piston/Cylinder wall clearance (new)	mm	0.125 +/- 0.022
		(in)	(0.049 +/- 0.0009)
	(wear limit)	mm	0,2
		(in)	(0.0079)
	Connecting rod big edn axial play (new)	mm	0.310 to 0.677
	((in)	(0.0122 to 0,0267)
	(wear limit)	mm (in)	1.2
	Maximum analysis off and alou	(IN)	(0.0472)
	Maximum cranksnaft end play	mm (in)	0.3
	Maximum anomuch of t deflection of DTO	(IN)	(0.012)
	Maximum crankshall denection at PTO		0.06
		(11)	(0.0024)
		14/	260
		VV	
	Spork plug, make and type		
- , -	Spark plug dan (Pro-dannod)	mm	
- / -	Spark plug gap (Fie-gapped)	(in)	(0.016 to 0.020)
	Ignition timing RTDC	(11)	
	(@ 3500 RPM w/beadlamp turned on)	(in)	(0.0933)
- / -		(11)	190-300
_ / _	Concreting Coil		NI A
		Ω	N.A.
			U. I- I.U
		12	N.A.

	CARBURETION		
	Carburator type		Mikuni TM40
	Main jet (MAG/PTO)		490 / 490
	Needle Jet		P-0
	Pilot jet		20
	Needle Identification - Clip Position		9DGI7-58
	Slide cutaway		2,0
	Float adjustment	mm (in)	N.A.
	Airscrew position		1.5 turns
	Idle RPM		1600
	Fuel type		Unleaded 87
	Fuel : Oil Ratio		40 : 1
E	Туре		Liquid
	Mixture ratio		50/50
\sim	Thermostat opening temperature	°C (°F)	42 (108)
	Radiator Cap Opening Pressure	kPa (psi)	90 (13)
	TORQUES		
	Cylinder head bolts N-m (lbf-ft)		29 (21)
	Exhaust manifold bolts		22 (16)
	Crankcase/Cylinder Nuts or Bolts		29 (21)
	Magneto Ring Nut		125 (92)
	Axial fan nut		N.A.
6	Primary clutch bolt		90 (66)
((@)\	Secondary clutch bolt		31.7 (23)
	Taper-Lock installation setscrews		14 (10.4)
2	Spark plugs		27 (20)
•	Handlebar mounting bolts		36.5 (27)
	Fork leg bolts (in triple clamps)		6.8 (5)
	Fork pivot bolts		45 (33)
	Ski runner nuts		22 (16)
	Lower clamp bolts		23 (17)
	Ski saddle/fork adaptor nut		85 (63)
	PRIMARY TRANSMISSION		
	Primary clutch		TRA III
	Engagement RPM		3400-3600
	Primary spring colour		Blue/yellow
	Ramp		417
	Screw position		3
	Secondary clutch		HPV VSA
6	Secondary clutch spring pretension	kg	0
\mathbf{n}		(lbf)	0
	Secondary spring colour		Green
	Helix type (progressive)		50° - 40°
	Primary transmission belt P/N		144-4740U3
	Width of primary trans. Belt (new)	mm	37,7
	((in)	(1,484)
VIV	(wear limit)	mm	35,3
		(in)	(1,390)
	Drive belt adjustment Deflection	mm	32
	_	(in)	(1.25)
	Force	kg	6,8
		(lbf)	(15)

	SECONDARY TRANSMISSION		
	Drive sprocket number of teeth		30
	Driven sprocket number of teeth		56
	Secondary transmission belt P/N		1360PTH8M-60
	Cog belt adjustment Deflection	mm	7,3
		(in)	(0.288)
	Force	kg	6,44
		(lbf)	(14.2)
	CHASSIS		
	Overall length	mm	2698
		(in)	(105)
	Overall width	mm	835
		(in)	(32.5)
	Overall height	mm	1233
	, , , , , , , , , , , , , , , , , , ,	(in)	(48)
	Dry weight	kg	170
2		(lb)	(375)
	Track width	mm	308
		(in)	(12)
	Track length (ST/LT)	mm	3074 / 3495
		(in)	(121 / 136)
	Track adjustment Deflection	mm	40 -50
		(in)	(1.5 - 2)
	Force	kg	freely hanging
		(lbf)	freely hanging
	FRONT SUSPENSION		
	Туре		Inverted, 46mm Paioli
	Travel	mm	308
		(in)	(12)
	Oil level	mm	85
		(in)	(3.3125)
	Oil type		SAE 15W
	REAR SUSPENSION		
	Туре		Expert Xtreme
	Travel	mm	405
		(in)	(16)
	Sag (with rider)	mm	100
		(in)	(4)
	Shock type		KYB, rebuildable
	ОіІ Туре		KYB, No. snow
	Hyfax P/N		04-218-22
	FLUIDS		
······	Fuel tank capacity	L	30
		U.S. gal.	9,5

CHAPTER 14 ELECTRICAL SYSTEM

CDI SYSTEM


Electrical System					
Ref.	P/N	Qty	Part Descriptions		
1-4	420 891 540	1	Magneto (12V, 360W)		
2	420 888 314	1	Stator Assy		
3	420 888 323	1	Flywheel		
4	420 966 837	1	Pick-up Assy		
5	205 063 044	3	Socket Head Screw M6x30		
6	420 640 321	2	Screw M6x16		
7	420 866 756	1	Counter Weight		
8	420 852 532	1	Starting Pulley		
9	420 827 405	1	Washer 8mm		
10	207 182 044	1	Hex Head Screw M8x20		
11	512 059 552	2	BR9ECS Spark Plug		
12	-	2	Spark plug cap		
13	512 059 696	1	Spark plug wire (375mm) with cap		
14	512 059 695	1	Spark plug wire (300mm) with cap		
15	410 914 600	1	Plastic Clip		
16	23162F	2	Locknut M6		
17	517 203 200	2	Spacer		
18	053.6.45	2	Hex Head Screw M6x45		
19	512 060 239	1	MPEM Assembly		
20-23	512 059 564	1	Ignition coil		
21	515 175 670	1	Female terminal housing (2 circuit)		
22	515 175 707	1	Female lock (2 circuit)		
23	278 000 632	2	Female terminal		
-					

WIRING DIAGRAM



Electrical System - Wiring Harness				
Ref.	P/N	Qty	Part Descriptions	
-	515175684	1	Dimmer Switch	
-	410105500	1	Emergency Stop Switch	
-	515175571	1	Tether Switch	
-	515145900	1	Tether Switch Nut	
-	515151500	1	Tether Cap and Cord	
-	410109700	1	Overheat Lamp	
-	278001016	1	Bosch Temperature Sensor (Blue)	
-	512047000	1	Indebras Temperature Sensor (Black)	
-	AN-125	1	Head Lamp Assy	
-	336772	1	Tail Lamp Assy	
-	515176100	1	Voltage Regulator	
-	512059923	1	MPEM	
-	515175704	1	Female Terminal Housing (12-circuit) @ MPEM (Deutsch)	
-	278000631	4	Male Terminal (used in P/N 515175665)	
-	278000632	10	Female Terminal (used in Deutsch connectors)	
-	515175670	1	Female Housing (2-circuit) @ MPEM (Deutsch)	
-	515175673	1	Female Housing (6-circuit) @ MPEM (Deutsch)	
-	409209900	1	Female Housing (5-circuit) @ Relay (Deutsch)	
-	410113200	1	Relay	
-	561503100	4	Female Relay Terminal	
-	515175588	1	Housing @ Bosch Temp. Sensor	
-	278000998	2	Female Terminal @ Bosch Temp. Sensor	
-	278000999	2	White Rubber Gasket @ Bosch Temp. Sensor	
-	278001673	1	Female Housing @ Voltage Regulator	
-	278001671	1	Female Locking Wedge @ Voltage Regulator	
-	515175567	2	Female Terminal @ Voltage Regulator (Big)	
-	515175665	2	Male Housing	
-	409010400	4	Female Housing (1-circuit)	
-	409010100	4	Female Terminal (used in P/N 409010400)	

CDI SYSTEM

• NOTICE:

The following procedures can be carried out without removing the engine from the vehicle. Only the body panels must be removed. For more details, see **Chapter 1 – General Instructions**.

CDI means Capacitor Discharge Ignition System

CLEANING

Clean all metal components in a non-ferrous metal cleaner.

▼ CAUTION

Clean stator and magneto using only a clean cloth.

DISASSEMBLY

3, Magneto Flywheel

To gain access to magneto assembly, remove the following parts:

- o All body panels
- o rewind starter
- o starting pulley no. 8.

To remove magneto flywheel retaining nut on the end of the crankshaft (not shown in exploded view):

 Use magneto puller ring (P/N 420 876 080). This puller must be modified as shown at right. (cut 25mm from the tab)



1. Cutby 25 mm (1 in)



TYPICAL 1. Tab in magneto h

Tab in magneto housing opening
 MB screws

 Install puller ring with its tab in magneto housing opening (No 1 at right).

VCAUTION

Use only M8 x 30 mm screws (No. 2 at right) to bolt puller to magneto.

 Remove magneto flywheel nut and lockwasher using a 30 mm socket machined to 40 mm (1.580 in) outside diameter by 16 mm (5/8 in) long.



TYPICAL A. 30 mm socket

• NOTICE:

To correctly remove a threadlocked fastener, first tap on the fastener to break the threadlocker bond. This will help avoid breakage.

- To remove magneto flywheel, install the crankshaft protector (P/N 420 876 557) onto the end of the crankshaft.
- Screw puller (P/N 529 022 500) into puller ring.
- Tighten puller bolt and at the same time, tap on bolt head using a hammer to release magneto flywheel from its taper.

4, Trigger Coil

Magneto and stator no. 2 must be removed before removing the trigger coil.

To replace the trigger coil no. 4:

- Disconnect trigger coil connector housing.
- Remove grommet from crankcase where trigger coil wire exits magneto housing.
- o Remove retaining screws no. 6.
- o Remove trigger coil and carefully pull wires.
- o Install new trigger coil and other parts removed.

ASSEMBLY

- 2, Stator
 - Position stator (No. 2 at right) so that its wire protectors are over crankcase recess (No 1 at right).
- 3, Magneto Flywheel
 - Clean crankshaft extension (taper) and apply Loctite 243 (blue) on taper, then position Woodruff key, flywheel and lock washer on crankshaft.
 - Clean nut threads and apply Loctite 243 (blue) then tighten magneto nut to 125 N-m (92 lbf-ft).
 - At reassembly, coat all electric connections except Deutsch housings (waterproof grey housing) with silicone dielectric grease (P/N 293 550 004) to prevent corrosion or moisture penetration.

▼ CAUTION

Do not use silicone "sealant", this prodcut will corrode electrical contacts. Do not apply silcone dielectric grease on any Deutsch (grey) housing otherwise the housing seal will be damaged.



TYPICAL 1. Grankcase recess 2. Wire protectors

IGNITION TIMING 793 HO Engines

Normally ignition-timing adjustment should not be required. It has been set at the factory and it should remain correctly adjusted since every part is fixed and not adjustable. The only time the ignition timing might have to be changed would be when removing and reinstalling the magneto housing, replacing the crankshaft, the magneto flywheel, the trigger coil or the MPEM. If the ignition timing is found incorrect, first check for proper crankshaft alignment. This might be the indication of a twisted crankshaft. Refer to **Chapter 7 - Engine (Cylinders/Head/Base)** for more details. The ignition timing can be checked with either the engine hot or cold.

Also, the ignition timing is to be checked at 3500 RPM with a timing light.

Engine break-in retard timing for the Snow Hawk 600HO is as follows the first hour of operation.

ENGINE	ENGINE RETARD TIMING(*)/ DURATION(h)	
800 HO	-2°/3 h	



TYPICAL 1. TDC gauge on MAG side 2. MAG side piston at TDC

• NOTICE:

Between 3000 and 4000 RPM, the spark advance does not change. So when checking ignition timing at 3500 RPM, a change in engine speed within ~ 500 RPM will not affect the timing mark when checked with the timing light.

Scribing a Timing Mark

- Clean the area around the MAG side spark plug, and remove it.
- Install the TDC gauge in the spark plug hole, (magneto side) and adjust as follows:
 - a. Position the MAG piston at approximately TDC.

b. Assemble the gauge with the adaptor and tighten the roller lock nut. Do not tighten the adaptor lock nut.

c. Screw the adaptor into the spark plug hole and tighten to prevent movement in the plug hole.

d. Position the dial face toward the PTO. Move the gauge down until the needle just begins to move, then move down a further 5 or 6 mm (approximately 1/4 in). Tighten adaptor lock nut by hand.

• Locate the piston TDC position as follows:

a. Slowly rotate the drive pulley back and forth across TDC while observing the needle. Note that the needle stops moving only as the piston is changing direction.

b. Rotate the dial face so that "0" is in line with the needle when it stops moving.

c. Again, slowly rotate the drive pulley back and forth across TDC and adjust the dial face to "0", until the needle always stops exactly at "0" before changing direction.

d. "0" now indicates exact TDC.

- Rotate the drive pulley clockwise, one-quarter turn then carefully rotate it counterclockwise until the needle indicates the specified measurement, indicated in Chapter 15 – Dimensions and Tolerances.
- Twist a wire as shown and use it as a pointer.
 Install the wire on what would be the upper starter bolt.
 Although there is no electric starter on any Snow Hawk, you can use the upper threaded hole in the crank case as a mounting position, indicated by the white arrow.
- With the TDC gauge indicating specified timing (shown at right),scribe a mark on the primary clutch inner half in line with the pointer end (shown at lower right).

Checking Ignition Timing

Use timing light (P/N 529 031 900), shown at lower right.

To check the ignition timing, refer to the illustration and proceed as follows:

♦ WARNING

Place the tips of the ski against a wall. Lift the rear of the vehicle so that the track does not touch the ground and install it on a support.

Make sure that no one goes in front of or behind the vehicle while the engine is running.

Keep away from the track and do not wear loose-fitting clothing which could be caught up in the moving parts.

- Connect the timing light pick-up to a spark plug cable.
- Connect a digital induction type tachometer (P/N 529 014 500), as shown on the following page.
- Start the engine and point the timing light on the timing mark. Bring the engine to 3500 RPM for a brief instant.









• The timing mark must be aligned with the pointer end. If such is not the case, note if the timing is retarded or advanced. Tolerance is $\pm 0.5^{\circ}$.

Changing Timing

As a Snow Hawk dealer, there is no immediate way to alter the MPEM's internal timing settings other than to send the unit back to us and have us reset the unit for you or have your local Bombardier dealer change the settings using his programmer.







TIMING RETARDED BY ABOUT 2°



TIMING ADVANCED BY ABOUT 2°

SYSTEM TESTING

IGNITION SYSTEM TESTING SEQUENCE

In case of ignition problems, check the following in the prescribed order until the problem can be solved.

- 1. Sparking/spark plug condition.
- 2. Electrical connectors.
- 3. DESS switch and engine cut-out switch.
- 4. Generator coil.
- 5. Trigger coil(s).
- 6. MPEM voltage.
- 7. High voltage coil.
- 8. Buzzer testing.

LIGHTING SYSTEM TESTING SEQUENCE

- 1. Electrical connectors.
- 2. Magneto output (lighting generator coil).

Testing Conditions

Voltage measurements are always taken upon starting the vehicle. Readings when the engine is running will be higher than the indicated range. All part temperatures must be approximately 20°C (68°F) (room temperature), otherwise the readings could be distorted.

Analysis of Readings

Voltage Readings

When testing the different magneto components, it is important to take into consideration that readings vary according to the force applied onto the manual starter. It is therefore important to employ enough force upon each trial. The reading must be 3 times within or above the range indicated in the corresponding table. If the reading is too low, the part is considered to be defective and must be replaced.

Resistance Readings

Place multimeter selector switch to ohms in order to measure resistance. Readings must be within the indicated range. Otherwise, the part is considered to be defective and must be replaced.

▼ CAUTION

When taking measurements, it is useless to try and start the vehicle since the readings would then be distorted.

Intermittent Ignition Problems

It is difficult to make an attempt at diagnostics in the case of intermittent ignition problems. Thus, problems occurring only when the engine operating temperature is normal must be checked in similar conditions. In most cases when problems are caused by temperature or vibrations, these can only be solved by replacing parts. Most problems cannot be detected when the engine is stopped.

Multiple Problems

As a matter of fact, more than one component can be defective at the same time. As a result, if the problem remains although a part was replaced, start the entire troubleshooting process over from the beginning in order to identify the other defective component.

1. SPARKING

During this operation, it is important to use the snowmobile spark plug and not a new one. Bring the plug in contact with the engine. Pull rewind starter. If no spark is produced, replace the spark plug with a new one and do the test again.

2. ELECTRICAL CONNECTOR TESTING

Make sure that none of the connectors are disconnected.

3. ENGINE CUT-OFF SWITCH TESTING

Disconnect connector housings and check the resistance as indicated in IGNITION table. If the readings are acceptable, go on to the next step. If the readings are inadequate, individually check each switch as follows.

Tether Cord Switch

Using a multimeter check by connecting probes to BLACK and BLACK/YELLOW wires. The multimeter should indicate a closed circuit ($\tilde{0}$) in the 'operating' position and an open circuit (0.L \tilde{M}) in the 'off' position.

If the readings do not correspond to the above mentioned values, replace the switch. If none of these tests are conclusive, the problem finds its source in the main wiring harness.

Proceed as follows:

Engine Cut-Off Switch

Unplug the switch block connected to the main wiring harness.from the engine cut-off switch. Check using a multimeter by connecting probes to the appropriate wires. Refer to the corresponding IGNITION AND ELECTRICAL SYSTEM TESTING table values in this subsection. The multimeter should indicate an open circuit (0.L \tilde{M}) in operating position and if the circuit is closed ($\tilde{0}$) in the off position.

• NOTICE:

For the next step, no switch must be connected to the main wiring harness.

Disconnect all switches from the main wiring harness and check the continuity of each wire by connecting probes to the end of wires of the same color. Repeat with all other wires. It is important to mention that all wires of the same color within a given harness are connected together. These wires should therefore have a closed circuit. On the other hand, BLACK and BLACK/YELLOW wires must have an open circuit (0.L M). Repair or replace if necessary.

4. GENERATOR COIL TESTING

Resistance Testing

- Disconnect the housing between the magneto and the MPEM.
- Connect multimeter probes to appropriate wires and measure the resistance. Refer to the corresponding IGNITION AND ELECTRICAL SYSTEM TESTING table in this subsection.
- Compare readings with those appearing in the IGNITION table.

Voltage Testing

When manually starting the engine while the spark plug is installed, the engine will tend to accelerate beyond the compression point. This will result in higher magneto output power.

- Disconnect the housing between the magneto and the MPEM.
- Connect the multimeter probes to the appropriate wires. Refer to the corresponding ignition and electrical system testing table in this subsection. Bring the selector switch to and the scale to 00.0 Vac.
- Activate the manual starter and check the values indicated by the multimeter.
- o Repeat this operation 3 times.
- Compare readings with those appearing in the IGNITION table.



5. TRIGGER COIL TESTING

Resistance Testing

- Connect the probes to the appropriate wires from the trigger coil housing. Refer to the corresponding IGNITION AND ELECTRICAL SYSTEM TESTING table in this subsection.
- Compare these readings with those appearing in the IGNITION table.

Voltage Testing

- Connect the probes to the appropriate wires from the trigger coil housing. Refer to the corresponding IGNITION AND ELECTRICAL SYSTEM TESTING table in this subsection.
- Activate the manual starter and check the values indicated by the multimeter.
- o Repeat this operation 3 times.
- Compare these readings with those appearing in the IGNITION table.

6. MPEM VOLTAGE TESTING

- Disconnect the housing between the module and the high voltage coil.
- Connect the multimeter probes to the RED and the BLACK wires coming out from the module. Place the selector switch and the scale to 00.0 Vac.
- Activate the manual starter and check the values indicated by the multimeter.
- o Repeat this operation 3 times.
- Compare these readings with those appearing in the IGNITION table.

7. HIGH VOLTAGE COIL TESTING

Resistance Testing

- Unplug housing between high tension coil and MPEM.
- Connect the multimeter probes to the WHITE/BLUE and the BLACK wires and measure the resistance.
- Compare these readings with those appearing in the IGNITION table.







Voltage Testing

- Disconnect spark plug cap from spark plug.
- Fasten alligator clip to spark plug cable, near the spark plug (position No. 1 at right).
- Connect other multimeter wire to engine (ground), then place selector switch and scale to 0.00 Vac.
- Activate the manual starter and check the values indicated by the multimeter.
- o Repeat this operation 3 times.
- Compare these readings with those appearing in the IGNITION table.

CONCLUSION

If none of the above testing operations produced valid results, it is strongly recommended to keep on testing according to the list appearing in the resistance column of the IGNITION table. Set the multimeter as indicated.

LIGHTING GENERATOR COIL VOLTAGE TESTING

- Disconnect the housing from the engine (YELLOW and GREEN wires).
- Connect the multimeter probes to the YELLOW and GREEN wires as described in the IGNITION AND ELECTRICAL SYSTEM TESTING table. Place the selector switch and scale to 0.00 Vac.
- Activate the manual starter and check the values indicated by the multimeter.
- o Repeat this operation 3 times.
- Compare these readings with those appearing in the IGNITION AND ELECTRICAL SYSTEM TESTING table.

CONCLUSION

If none of the above testing operations produced valid results, it is strongly recommended to keep on testing according to the list appearing in the Resistance column of the LIGHTING table. Set the multimeter as indicated.





360W SNOW HAWK 800HO IGNITION AND ELECTRICAL SYSTEM TESTING TABLE

PART	TEST TO BE PERFORMED	WIRE COLOR	RESISTANCE VALUE (OHMS)	VOLTAGE (VOLTS, V)	NOTE
Engine stop	Running insulation	BL and BL/YL	0.L	-	Engine stop switches must be in run position.
switches	Continuity in stop position	BL and BL/YL			Engine stop switches must be in stop position.
MPEM	Ground connection	BL and body ground	00.0 to 00.5	-	-
MPEM Power	Power from regulator	RD and BK	-	3 to 5 Vdc	While cranking engine.
Trigger coil No. 1 (STD)	Resistance and Output	WT/BL and BL	190 to 300	0.200-0.350 Vdc	While cranking engine.
MPEM Output Voltage	Voltage to ignition coil	WT/BL and BK	-	225-275 Vdc	With tether cap in place and with engine stop switches in run position. While cranking engine.
	Primary winding resistance	WT / BL and BK	00.2 to 00.5	-	Disconnect the ignition coil from the MPEM.
	Secondary winding resistance spark plug wires and caps included	Between both spark plug caps	14.5 k to 23.5 k	-	Do not attempt to remove spark plug caps from the wires.
High Voltage Coil	Secondary winding resistance spark plug wires removed	Male terminal to male terminal	9.6 k to 14.4 k	-	With spark plug wires removed from high voltage coil.
	Secondary winding voltage	BK and engine	-	1.5-2.5 Vdc	Do not probe in to spark plug cap with spark plug wires removed from spark plug.
Lighting generator	Output	YL, YL and GR	00.0 - 00.5 3 times	3.5-5.5 Vac 3 times	Do the test between A and B, A and C and B and C using the manual starter.
con	Coil insulation	YL and engine	0.L M	-	The term engine refers to the metal parts connected to the magneto housing.
Relay	Coil	-	-	10.5-13.6 Vdc	Engine Idling (1500-1800 RPM)
Relay	Contacts	-	-	0.00-0.11 Vdc	Engine Idling (1500-1800 RPM)

• NOTICE:

If voltage is present at the coil and contact, replace the relay. An approved automotive spark plug tester is preferred for testing the secondary winding voltage. Ignition will not work if the engine stop switches are in the kill position.

CHAPTER 13 CHASSIS, STEERING AND BODY







CHASSIS AND STEERING SYSTEM



CHASSIS AND STEERING SYSTEM



CHASSIS AND STEERING SYSTEM



	Chassis					
Ref.	P/N	Qty	Part Descriptions			
1	SH-001	1	Frame right side (MAG)			
2	SH-002	1	Frame left side (PTO)			
3	SH-116	1	Handle bar plate support			
4	SH-003L	1	Rear frame left side (PTO)			
5	SH-003R	1	Rear frame right side (MAG)			
6	SH-033L	1	Left front chassis extension (PTO)			
7	SH-033R	1	Right front chassis extention (MAG)			
8	SH-032L	1	Left front hood bungee hook (PTO)			
9	SH-032R	1	Right front hood bungee hook (MAG)			
10	SH-035	2	Front belly pan bungee hook			
11	SH-030	1	Left side belly pan bungee hook (PTO)			
12	SH-031	1	Right side belly pan bungee hook (MAG)			
13	SH-117	2	Foot peg stiffener			
14	SH-061	2	Rear lateral protector			
15	SH-062	4	Front lateral protector			
16	SH-080	2	Belly pan side shield support			
17	SH-036	2	Rear module rear bungee hook			
18	SH-118R	1	Rear module front bungee hook (RIGHT) MAG side			
19	SH-038	1	Front chassis spacer			
20	SH-020	2	Long chassis spacer			
21	SH-021	1	Short chassis spacer			
22	SH-120	1	Carburator support			
23	SH11-SAG	1	Left Foot peg grip (PTO)			
24	SH11-SAD	1	Right Foot peg grip (MAG)			
25	SH-111	1	Kickstand arm			
26	SH-110	1	Kickstand adaptor			
27	SH-112	1	Kickstans floater			
28	339-163P	1	1/2" shoulder screw socket screw			
29	12-0379	1	Kickstand spring			
30	404-338AI	1	Button head socket cap screw 5/16" x 5/8" L			
31	404-339AI	1	Button head socket cap screw 5/16" x 3/4" L			
32	SH-039	4	Side bumper and brake caliper pacer			
33	SH-047	2	Belt garde support			
34	SH-046	1	Belt garde cover			
35	SNC-26-03	2	Rubber moulding			
36	29510P	4	Hexagon head flange bolt M6 x 1.0 x 16MM (Grade 10.9)			
37	BNO1-0618	9	Pop rivet 3/16" (medium)			
38	S6-100P	8	Washer 3/16"			
39	SH-015	4	Bearing housing			
40	SH-251	1	Sprocket shaft			
41	S091C-2 001B	2	Sprocket 9 teeth			
42	6206-2RSJEMC3	4	Bearing 6206			
43	SH-250	1	Steel jackshaft			
44	SH-253	3	Key 1.5" L			
45	570 048 700	1	Bumper rubber			
-						

Chassis					
Ref.	P/N	Qty	Part Descriptions		
	-				
46	SH-084	1	Engine support		
47	SH-034	1	Choke support		
48	SH-129	1	Oil tank bracket		
49	SH-058	2	Hand starter wheel		
50	6000LLEC	2	Bearing 6000		
51	184-110	2	Retaining ring		
52	SH-057	2	Hand starter wheel spacer		
53	MM9489T26	1	Eyebolt 5/16-18 x 1"		
54	SH-042	1	Belt tensioner block		
55	20172CP	1	Hexagon head cap screw M6 x 1.0 x 80MM (full threaded)		
56	SNC-26-02	2	Rubber moulding		
57	SH01-SA	2	Fork tube support		
58	SH-005	2	Fork clamp support		
59	SH-013	4	Bottom clamp stiffener		
60	SH-012	4	Top clamp stiffener		
61	SH-043	2	Fork steel bushing		
62	SH-050	2	Fork MOS2 bushing		
63	SH-066	2	Fork bushing		
64	21655P	8	Socket head screw M8 x 1.25 x 40MM		
65	23166P	2	Nylon nut M10 x 1.5		
66	503 183 300	6	Washer 10MM spécial		
67	20237P	2	Hexagon head cap screw M10 x 1.5 x 55MM		
68	18-95266HAWK	1	Handle bar		
69	SH-016	4	Handle bar clamp		
70	SH-054	4	Rubber steering damper		
71	SH-049	4	Plastic half steering bushing		
72	SH-089	1	Lower handle bar stiffener		
73	SH-008	1	Upper handle bar stiffener		
74	SH-128	1	MPEM bracket		
75	SH14-SA	1	Steering colomn		
76	BH67010.9P	4	Hexagon head cap screw M6 x 1.0 x 70MM (Grade 10.9)		
77	20207P	4	Hexagon head cap screw M8 x 1.25 x 60MM		
78	23164P	33	Nylon nut M8 x 1.25		
79	23162P	21	Nylon nut M6 x 1.0		
80	SH-055	1	Threaded aluminum drive rod		
81	506 151 492	1	RH ball joint		
82	506 151 495	1	LH ball joint		
83	250 100 016	1	LH hexagon jam nut M10		
84	732 610 010	1	RH hexagon jam nut M10		
85	368.10.125	2	Nylon nut M10 x 1.25		
86	22204P	11	Button head socket cap screw M6 x 1,0 x 20MM		
87	8461k133-2	1	Adhesive rubber strip 1/8" thick x 2" wide x 16" L		
88	SH-132	1	Adhesive rubber strip (PTO) [modified #8461K133]		
89	8461k133-1	1	Adhesive rubber strip 1/8" thick x 2" wide (MAG)		
90	SH-085	4	Engine support adaptor		
91	341-114P	4	Washer 5/8		
-					

Chassis				
Ref.	P/N	Qty	Part Descriptions	
92	DDR6261	16	Rubber damper	
93	92140A118	4	Washer M10 large	
94	21111P	4	Lock washer M10	
95	20242P	4	Hexagon head cap screw M10 x 1.5 x 80MM	
96	061.6.25	8	Hexagon head flange bolt M6 x 1.0 x 25MM (Grade 10.9)	
97	20159P	2	Hexagon head bolt M6 x 1.0 x 20MM (Grade 10.9)	
98	23162F	4	Nylon flange nut M6 x 1.0	
99	22214P	23	Button head socket cap screw M8 x 1.25 x 20MM	
100	22215P	2	Button head socket cap screw M8 x 1.25 x 25MM	
101	22216P	3	Button head socket cap screw M8 x 1.25 x 30MM	
102	336-103	1	Hexagon flange stove nut 5/16"	
103	2946P	1	Nylon flange nut 5/16-18	
104	22205P	2	Button head socket cap screw M6 x 1.0 x 25MM	
105	22121P	2	Flat head socket cap screw M8 x 1.25 x 30MM	
106	22225P	2	Button head socket cap screw M10 x 1.5 x 25MM	
107	29530	4	Hexagon head flange bolt M8 x 1.25 x 30MM	
108	23164F	16	Nylon flange nut M8 x 1.25	
109	SNC-26-1	1	Rubber moulding	
110	BS01 0622	4	Aluminum pop rivet 3/16 (long)	
111	053,8,40	8	Hexagon head cap screw M8 x 1.25 x 40MM	
112	21653P	<u></u>	Socket head cap screw M8 x 1.25 x 30MM	
113	007.0.30	0 0	Leek weeker. M9	
114	21110F 442.12	0	Lock washer 1/2"	
115	20260P	2	Herzagen head can screw M12 x 1 75 x 30MM	
110	20209F	<u> </u>	Socket head cap screw M10 x 1.5 x 30MM	
117	SH-071		Rear module rear bungee book positioner	
110	061.8.25	<u> </u>	Hexagon head flange holt M8 x 1.5 x 30MM	
120	SH11-SAD	1	Foot peg grin (Right)	
120	SH10-SA	2	Foot peg voke	
122	SH-107	2	Foot peg torsion spring	
123	SH-106	2	Foot peg plastic bushing	
124	195-105	2	Cotter pin A3/32x3/4	
125	SNB-384	2	Clevis pin A1 1/4x7/16	
126	SH11-SAG	1	Foot peg grip (Left)	
127	SH-141	1	Tune pipe support	
128	SH-118L	1	Rear module front bungee hook (LEFT) PTO side	
129	072.14.58	2	A1/4x5/8 HHCS	
130	20198P	4	Hexagonal head cap screw M8x20	
131	DP-02	2	Steering damper plate	
132	DP-01	2	Steering damper block	
133	BN01-0618	2	Pop rivet 3/16	
134	SH-154	1	Pipe support bracket	
135	SH-153	1	Tentionnor plate	
136	22202P	1	Button head socket cap screw M6 x 1.25 x 16MM	
-				

BODY - HOOD



BODY – HOOD



Body - Hood					
Ref.	P/N	Qty	Parts description		
		-			
@	SH-77A	1	Hood assy 800HO 2007		
1	ADB-083Y	1	Yellow hood		
2	1661-0619N	21	A 3/16 Pop rivet (Alu,Black)		
3	1641-0621N	2	A 3/16 Pop rivet (Alu, large head, Black)		
4	5937	6	Head light spring		
5	ADB-098Y	6	Hood guide yellow		
6	284118	2	Rubber hook bungee		
7	AN-125	1	Head lamp		
8	SH-069	1	Grill (rear of cab)		
9	SH-070L	1	Grill (PTO side)		
10	SH-070R	1	Grill (MAG side)		
11	SH-081	2	Wearing plate		
12	S6-100P	21	A 3/16 Flat washer		
13	400-288	4	A 8-32 hex elastic nut		
14	400-579A	2	A 8-32 x 1 3/4 phillips		
15	402-637	2	A 8-32 x 2 1/2 phillips		
16	SH-257	2	Grill (front cab)		
17	4204	1	Rubber button type		
18	SH-615	1	Decal "warning label"		
19	SH-075	1	Headlamp heat sheild		
20	SH-138	1	Hood heat sheild MAG		
21	SH-139	1	Hood heat sheild PTO		
22	SH-807-D01	2	Decal top gun 800HO		
23	SH-807-D02	1	Decal Tp		
24	SH-807-D07	1	Decal Sponsor		
25	SH-807-D08	1	Decal mag side		
26	SH-807-D09	1	Decal PTO side		
27	ZZ-AD-HA-LU-AV	1	Headlight harness VR		
28	SH-161	1	Reflection shield		
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BODY – BELLY PAN



BODY – BELLY PAN





Body - Belly-pan					
Ref.	P/N	Qty	Parts descriptions		
@	SH-76A	1	Bellypan assy 800HO 2007		
1	284118	8	Rubber hook bungee		
2	1661-0619N	14	A 3/16 pop rivet (alu,black)		
3	S6-100P	23	A 3/16 Flat washer		
4	ADB-094	1	Black bellypan		
5	1641-0621N	10	A 3/16 pop rivet (alu, large head, black)		
6	SH-121	1	MAG side heat shield		
7	SH-065	1	PTO bellypan protector		
8	SH-068	1	PTO side grill		
9	SH-081	6	Wearing plate		
10	SH-082	1	Bellypan pipe protector		
11	1661-0619	10	A 3/16 pop rivet (alu)		
12	SH-115	1	MAG side grill		
13	SH-23A	1	Tool pocket assy		
14	SH-610	1	Reflector MAG side		
15	SH-611	1	Reflector PTO side		
16	SH-170	1	Clutch protecteur		
17	SH-121	1	Heat sheild		
18	SH-140	1	Heat sheild front PTO		
19	SH-137	1	Heat sheild front MAG		
20	SH-807-D03	1	Bellypan decal PTO		
21	SH-807-D04	1	Bellypan decal MAG		
22	SH-123	1	Heat sheild		
23	ADB-096	1	Fork disc black		
24	SH-077	1	Fork disc heat sheild		
-					

SH-34A Tool pocket						
Ref.	P/N	Qty	Parts descriptions			
-	204 630 050	1	Wrench socket			
-	204 630 051	1	Bar steel			
-	529 017 500	1	Rope starter			
-	529 035 582	1	Wrench adjuster			
-	529 019 400	1	Starter grip			
-	529 035 501	1	Driven tool spacing			
-	SH-114	1	Universal key			
-	SH-133	1	Tool pocket			
-	1201-0293	1	Seal			
-	1212-4580	1	Therminal weather/pack f			
-						

BODY – REAR MODULE



Body - Rear module				
Ref.	P/N	Qty	Parts descriptions	
@	SH-78A	1	Rear module assy 800HO 2007	
1	ADB-100Y	1	Yellow rear module	
2	200281	1	Seat base	
3	22204P	2	Button head cap screw M6 x 20	
4	1641-0621N	4	A 3/16 pop rivet (alu,large head, black)	
5	336772	1	Rear lamp	
6	284118	4	Rubber hook bungee	
7	169-113	2	Push nut	
8	333-105P	4	A 1/4 hex elastic nut	
9	S6-100P	4	A 3/16 Flat washer	
10	341-103P	4	Washer	
11	SH-612	1	Reflector MAG side	
12	SH-613	1	Reflector PTO side	
13	SH-618	1	Decal premix	
14	SH-807-D05	1	Decal number plate MAG	
15	SH-807-D06	1	Decal number plate PTO	
-	ADB-099	1	Plastic seat base	
-	200299R	1	Seat cover	
-				

Body - Tunnel Cover					
Ref.	P/N	Qty	Part Descriptions		
-	SH-263SA	1	Radiator assembly		
-	SH-262	2	Side support		
-	S6-100	20	Falt washer		
-	BNO1-0618	20	Pop rivet 3/16 (medium head)		
	SH-086	1	Aluminium tunnel renforcement plate		
-	SN328-014	1	Hex flange nut 1/4-20 X 3/4" (fuel pump)		
-	SN328-016	1	Hex flange nut 1/4-20 X 1 1/4" (fuel pump)		
-	170-103	2	T-screw		
-	ADB-101-FRONT	1	Front tunnel cover black		
-	ADB-101-REAR	1	Rear tunnel cover black		
-	513032979	2	Spring clamp (light green) (Pump-2-adaptor)		
-	513033022-1	1	Rubber hose (Pump-2-adaptor)		
-	403 901 811	1	Fuel pump		
-	420 874 370	1	Fuel line adaptor (b/t fuel pump and tank)		
-	BSO1-0622	9	Pop rivet 3/16 (long)		
	SH-078	1	Tunnel cover heat sheild		
	SH-260	1	UHMW tunnel protector		
-	SH-091	1	Long aluminium spacer		
-	SH-092	1	Short aluminium spacer		

CHAPTER 12 REAR SUSPENSION, SHOCK AND TRACK

REAR SUSPENSION



REAR SHOCK



MIDDLE SHOCK


SH-18A Suspension arrière			
Ref.	P/N	Qty	Part descriptions
1	20628D	6	Hoveren bood con scrow, M10 x 1.5 x 45MM (Grade 10.9)
1	30020F	0	Hexagon flead cap screw with x 1.5 x 45mm (Grade 10.9)
2	21111P	10	
3	181-188P	18	Washer 3/8 I.D
4	SH-416	2	Front outside bushing
5	SF-2836-20	4	Oil lite bushing
6	SH-43-SAG	1	Bushing housing (Left side)
7	21682P	2	Socket head cap screw M10 x 1.5 x 35MM
8	20159P	6	Hexagon head cap screw M6 x 1.0 x 20MM
9	23162P	10	Nylon nut M6 x 1.0
10	SH-415	2	Front inside swinarm hushing
10	21681P	10	Socket head can screw M10 x 1.5 x 30MM
12	210011	2	Herean head cap screw M10 x 1.5 x 50000
12	20272P	2	
13	342-121P	2	LOCK washer 1/2
14	SH-402	2	Swingarm
15	SH-421	<u> </u>	Swingarm press fit bushing
10	301411 20144P	<u> </u>	Hoveren beed een serew M5 x 0.80 x 40mm
17	20144F	<u> </u>	Washer M5
10	570.063.000	2	Rubber stopper
20	20200P	16	Hexagon head cap screw M8 x 1 25 x 25MM
21	22205P	2	Button head socket cap screw M6 x 1.0 x 25MM
22	21085P	4	Washer M6
23	517 078 700	9	Limiter strap washer M8
24	20165P	2	Hexagon head cap screw M6 x 1.0 x 45mm
25	025-00	2	Rail cap
26	01-4931-1-01BLK	2	Slider shoe
27	SH-401	2	Slide rail
28	250 000 019	2	Hexagon head cap screw M10 x 1.5 x 35MM
29	503 183 300	2	Washer M10 (spécial)
30	503 189 809	2	Rear axle outer spacer
31	BR16L	6	Shim
32	503 139 600 D0105K 1 001 0	2	Rear axie inner spacer
33	R0165K-1 001A	<u> </u>	Pooring 6205
35	371 007 700	6	Betaining 0205
36	ST 907 700	1	Rear avle shaft
37	20246CP	2	Hexagon head cap screw M10 x 1.5 x 110MM
38	23166P	9	Nvlon nut M10 x 1.5
39	23164P	14	Nylon nut M8 x 1.0
40	23161P	2	Nylon nut M5 x 0.80
41	057-00	2	Track tensioner block
42	SH-412	1	Pivot shaft

		SH-18A	Suspension arrière		
Ref.	P/N	Qty	Part desciptions		
43	SH-63SA	1	Lower shaft axle assy.		
44	023-00	2	PVC spacer		
45	BR14L	2	Shim		
46	R3250C-1 001B	4	83mm idler wheel assy. (plastic)		
47	010-00	1	Wheel axle		
48	SH-424	2	Limiter strap		
49	SH-425	2	Aluminium shaft spacer		
50	SH-428	1	Upper limiter strap shaft		
51	503 163 700	3	Lower shock eye steel bushing		
52	414 942 300	3	Lower shock eye rubber bushing		
53	No reference	2	Rear shock assy		
54	No reference	1	Middle shock assy		
55	014-00	2	Upper axle adaptor		
56	SH-418	2	Upper shaft spacer		
57	062-01	6	Upper shock eye bushing		
58	SH-419	2	Spacer		
59	018-00	2	Nylotron shim		
60	R0100C-1 001A	4	100mm idler wheel assy. (plastic)		
61	SH-420	1	Upper shaft		
62	SH-426	1	Spacer		
63	SH-427	2	Spacer		
64	SH44-SA	1	Lower shock axle assy		
65	SH43-SAD	1	Bushing housing (Right side)		
66	013-00	3	Spring stopper		
67	503 188 930	2	Spring cover		
68	C-375-2665-10375	3	Spring 280 LB/IN		
69	11300-10362-5	3	Rear shock KAYABA		
70	181-190P	2	Washer 1/2 (spécial)		
71	341-103P	2	Washer 3/16		
72	30627P	3	Hexagon head cap screw M10X40		
73	SH-480	1	Wheel axe shaft		
74	SH-447	2	Extension plate angulé		
75	SH-450	2	Spacer (block tensionner track)		
76	21652P	6	Socket head cap screw M8X25		
77	21663P	2	Socket head cap screw M8X90		
78	SH-446	2	Aluminium adaptor		
79	23164P	6	Hexagon elastic nut M8		
80	23164F	1	Hexagon elastic flange nut M8		
81	SH-449	2	Spacer		
82	SH-48A	1	Carburator assy		
83	30633P	2	Hexagon head cap screw M10X70		
-					

SHOCK EXPLODED VIEW



Shock						
Ref.	P/N	Qty	Part descriptions			
1-13	11300-10362-5	3	Shock assembly			
1	11303-21209	1	Rod assembly			
2	11301-05056	1	Shock body			
3	11301-03303	1	Floating piston			
4	11301-03006	1	O-ring			
5	11301-03805	1	Piston bushing			
6	11302-09919	1	Compressed air valve			
7	11201-90604	1	Screw			
8	11301-03021	1	O-ring			
9	11201-92151	1	Label			
10	11301-91030	1	Collar			
11	11301-03207	2	Stop ring			
12	11301-03922	1	Spring preload adjustment collar			
13	11301-90513	1	Jam nut			

REAR PAD



SH-24A Rear pad				
Ref.	P/N	Qty	Part descriptions	
	-			
1	SH-820	1	UHMW Lower rear pad	
2	SH-821	1	UHMW Upper rear pad	
3	SH-829	2	Renforcement	
4	SH-830	1	Protector	
5	284118	2	Rubber hook "Bungee"	
6	22205P	3	Button Head cap screw M6 X 25	
7	23162F	3	Hexagon elastic flange nut M6	
8	160-167P	3	Hexagon nut with free spinning washer M6	
9	SH-822B-L	1	Rear pad bended plate left	
10	SH-822B-R	1	Rear pad bended plate right	
11	23193P	16	Button screw M5 X 16	
12	23161P	16	Hexagon elastic nut M5	
13	S6-100P	25	Flat washer 3/16"	
14	K1610-40021	11	3/16" pop rivet large head aluminium black	
15	SH-144	2	Rear pad stopper block	
16	165-176	7	Whell opening 4.2 X 13 black	
-				

Rear suspension adjustment

The rear suspension can be adjusted in two places

- 1- Rear spring preload adjustment.
- 2- Middle spring preload adjustment.

Spring tension

Loosen the jam nut #1.

Using the special tool **# 3**, turn the spring preload adjustment collar **# 2**, turning it CW to stiffen the rear suspension feeling and turning it CCW to soften the rear suspension feeling.

When the adjustment is finished, tighten the jam nut $\#\ 1$ once more.

- 1- Jam nut
- 2- Spring adjustment ring
- 3- Special tool



Rear spring preload

The adjustment of the rear spring makes it possible to stiffen the suspension if it reaches the limit of its travel and to make it feel softer it the driver is the one absorbing the impacts instead of the suspension.

• NOTICE:

A properly set rear shock preload results in a 3-4" rear suspension sag with the rider on board.

Middle spring preload

Stiffen the middle spring: This puts less pressure on the front ski.

Softer the middle spring: This puts more pressure on the front ski.

Shock Maintenance

This type of shock absorber can be completely rebuilt. It can be calibred, the shims can be replaced, or the sealing rings can be replaced as need be. The driver can choose the precise adjustment that corresponds to his or her driving style.

DISASSEMBLY

Free nitrogen (N^2) pressure by removing the needle-type valve.

♦ WARNING

Nitrogen gas is under extreme pressure. Use caution when releasing this gas volume. Protective eye wear should be used.

Remove the shock absorber spring by unscrewing the pre-load collar and jam nut then by removing the spring retainer hat. To carry out these operations, use tool (P/N 861 7439 00).

Install the shock absorber in a vise then remove the shock body cap (complete) from the body of the shock absorber using a 32 mm (1.25 in) open-end wrench. Unscrew the cap in a counter-clockwise direction.

• NOTICE:

Before unscrewing the pre-load collar and jam nut, mark their position so as to be able to reinstall them correctly. To find out their original adjustment, refer to the end of the present section.

Shock body cap (complete) has been removed, gently lift the rod of the shock absorber and remove it from the body.







• NOTICE:

Pull the rod of the shock absorber out gently to avoid spilling oil or damaging the top cap and seal with the threads on the body of the shock absorber. Wrap it in a cloth when removing the shock absorber piston to soak up any oil that might run down the sides.

Store the old oil in a container. Never re-use this old oil when rebuilding a shock.



Remove the needle-type valve. Using compressed air, carefully extract the floating piston from the body of the shock absorber. Cover the opening of the shock absorber with a cloth to catch the floating piston. Make sure there is enough space in the cloth for the piston when it comes out.

♦ WARNING

Always wear safety glasses and use a compressed air gun approved by the O.H.S.A when working with compressed air.

Clean the body of the shock absorber thoroughly using an appropriate solvent. Dry it using compressed air and inspect it carefully to detect any imperfections or marks indicating wear in the bore. Replace the shock absorber in case of wear.

Put the shock absorber rod in a vise and then remove the piston and the shims.





After removing the parts, always lay them out in the order in which they were dismantled.

• NOTICE:

In general, it is recommended that the lock nut from the shock absorber rod be replaced after the absorber has been reassembled 4 times to ensure adequate locking friction.

• NOTICE:

If it is necessary to re-calibrate the valves, it is absolutely essential to identify the order in which the shims are stacked (the number of shims and their thickness). The casing of the ring seal does not need to be removed if it is only an operation of re-calibration.

The shims can be measured using a sliding caliper or a micrometer.

The shock absorber rod is plated. It must be inspected in order to detect any visible marks of wear on the surface.

If there is a leak in the ring seal, it will be necessary to measure the camber of the rod which must not exceed 0.025 mm (.001 in).

Once the new shims or the replacement shims have been selected, reassemble everything by carrying out, in reverse order, the same operations as for dismantling. Tighten the piston nut between 11 and 13 N-m (1.1 and 1.3 kg-m, 8 and 9.5 lbf-ft)



▼ CAUTION

The nut for the rod of the shock absorber can only be used 4 times before it is replaced. Use only an original part to replace it; do not substitute any other kind of part for it.

Make sure that the number of washers between the nut of the shock absorber rod and the lock nut leave a sufficient number of threads for the nut of the shock absorber rod.

Install the lock nut with the rounded part facing down.

• NOTICE:

The stack of rebound shims must not touch the threads of the rod. The washer(s) under the nut on the rod prevent the nut from going to the end of the shoulder of the shock absorber rod.



REBOUND

Leave a play of about 0.203 mm (0.008 in) between the stack of shims and the lock nut.

When adjusting the shock absorber to increase the rebound damping, always use shims measuring 26 mm (1.02 in) against the piston to close the piston openings well. Even though the total thickness is the same, a large number of thin shims offer less damping effect than a small number of thick shims.

When adjusting the shock absorber to decrease the rebound damping, always use at least 3 shims measuring 26 mm (1.02 in) against the piston to prevent any breakage that could be caused by wear.

There are 4 kinds of pistons whose number of grooves varies between 0, 2, 4, and 6 according to the rapidity of the rebound. These grooves offer variations in the damping in relation to the shims.

COMPRESSION

When adjusting the shock absorber to increase the compression damping, always use shims measuring 30 mm (1.18 in) against the piston to close the piston openings well. Even though the total thickness is the same, 2 thin shims offer less damping than one thick shim.

When adjusting the shock absorber to decrease the compression damping, always use at least 3 shims against the piston to prevent any breakage that could be caused by wear.

Always use at least one washer measuring 0.114 mm (the use of 2 or more is recommended) between the stack of shims and the lock nut washer so that the shims will have enough space to work.

During compression the grooves of the lock nut must face the stack of shims.

GENERAL INFORMATION

Calibrating the shock absorber so that there is too much damping is a frequent error. When this is done, the suspension has too much give. The suspension cannot carry out a complete extension after the compression caused by a bump. After some time, the suspension becomes sluggish and no longer performs the movements of compression and extension efficiently.

Calibrating the shock absorber so that there is not enough damping means the damping will either be insufficient or badly controlled.

In such a case, the shock absorber moves up and down almost without any restriction. When going over a bump, the symptom most often noticed is that the snowmobile bounces.

P/N	Qty	Original Configuration Rear Shocks	
		Shim Stack (Compression)	
414 888 335	1	Damping shim Ø22 x 0.114	
414 888 323	1	Damping shim Ø26 x 0.152	
414 888 318	9	Damping shim Ø30 x 0.203	
		Original Configuration	
P/N	Qty	Original Configuration Rear Shocks	
P/N	Qty	Original Configuration Rear Shocks Shim Stack (Rebound)	
P/N 414 888 337	Qty 2	Original Configuration Rear Shocks Shim Stack (Rebound) Damping shim Ø15 x 0.114	
P/N 414 888 337 414 888 322	Qty 2 16	Original Configuration Rear Shocks Shim Stack (Rebound) Damping shim Ø15 x 0.114 Damping shim Ø26 x 0.203	

• NOTICE:

Carry out a meticulous inspection of the shims and replace any bent shims in order to get perfect calibration.

Not having enough damping might lead to believe that bubbles have formed in the shock absorber because the gas pressure is not high enough. Although such a situation is rare, checking the gas pressure is recommended.

To replace the housing of the ring seal, use a ring seal guide (P/N 529 0265 00) to guide the ring seal over the shock absorber rod. Lubricate the guide before using it.

▼ CAUTION

The ring seal will be damaged if the guide is not used.

529 0265 00









● NOTICE:

Using G-N Molykote Paste (P/N 413 7037 00) lubricate the inside of the piston guide.

Install the piston to a depth of A = 131.0 mm (5.16 in). Measure this distance starting from the upper end of the shock absorber.

• NOTICE:

If the floating piston is installed too far down in the body of the shock absorber, a light pressure exerted through the hole in the needle valve will push the piston up



♦ WARNING

Be very careful when using compressed air. Cover the opening in the shock absorber with a cloth to reduce any risk of injury.

♦ WARNING

There is a risk that compressed air containing humidity will contaminate the gas chamber and cause the floating piston to rust.

♦ WARNING

Always wear safety glasses when working with compressed air.

Replace the shock absorber oil by HGP Bombardier shock absorber oil (P/N 413 7094 00). Fill up to about 10 mm (0.393 in) from the base of the threads of the ring seal housing.



Insert the shock absorber rod (complete) in the body of the shock absorber. Lightly lubricate the ring seal of the piston with shock absorber oil to make installation easier.

Install the ring seal housing near the piston. Check the shock absorber oil capacity to make sure there is no air in the body of the shock absorber when it is being reassembled.

• NOTICE:

Some oil will spill during the installation of the shock absorber so wrap it in a rag to absorb this oil.



♦ WARNING

Take care not to damage the threads of the body of the shock absorber when inserting the piston.

It might be necessary to jiggle the rod slightly to make it easier to place the piston in the bore of the body of the shock absorber.

Gently insert the piston into the body of the shock absorber. A slight up-and-down movement might be needed to allow the air to pass through the piston (complete).

• NOTICE:

When the shock absorber rod is installed hastily, there is risk that the floating piston will be moved out of its initial position. This will have a negative effect on the way the shock absorber works.

Place the piston of the shock absorber rod in the oil and add a certain quantity of oil up as far as the base of the threads of the body of the shock absorber.

The ring seal housing can now be screwed into the body of the shock absorber. Proceed gently to allow for the oil flow of the shock absorber.



ADJUSTING THE NITROGEN PRESSURE

Nitrogen (N_2) can now be added to the body of the shock absorber. Replace the needle valve.



Adjust the pressure regulator to 2070 KPa (300 lb/in²) of nitrogen. This pressure will re-establish the shock absorber pressure at its optimum level.

▼ CAUTION

Do not exceed the recommended pressure.



Always wear safety glasses when working with high

♦ WARNING

pressure gas. Never point gas under pressure at anyone.

• NOTICE:

Make sure there are no gas or oil leaks. Carry out any necessary repairs before going on the next step.

- 1. Hose
- 2. Regulator
- 3. Nitrogen bottle
- 4. Charging tool (needle)



Replace the spring retainer hat, then the spring. Next, screw the pre-load rings up to the spring. Adjust the pre-load according to the length of the spring. The shock absorber can now be installed on the vehicle. L = Position # 2



MISCELLANEOUS INFORMATION

- Never replace nitrogen by another gas. Nitrogen was chosen for its qualities as an inert gas: since it is dry (no humidity) it does not contaminate the gas chamber of the shock absorber.
- When stacking shims, 2 thin shims stacked together are as thick as one thick shim, but offer less resistance than the latter. Refer to the table SHIM EQUIVALENCE FOR THE SAME DIAMETER as illustrated in this section #.
- When stacking shims for rebound, always use shims measuring 22 mm (0.87 in) in diameter against the piston. Use at least 3 shims for the stack to avoid bending or breaking. Leave a play of about 0.203 mm (0.008 in) between the stacks of shims and the lock nut washer.
- When stacking shims for compression, always use shims measuring 30 mm (1.181 in) in diameter against the piston. Use at least 3 shims for the stack to avoid bending or breaking. Install at least one washer measuring 0.114 mm (installing 2 or more of them is recommended) between the stack of shims and the lock nut washer.

TRACK ALIGNMENT

▼ CAUTION

The track of each SNOW HAWKTM was aligned and adjusted in the factory but it is recommended that the following be checked.

- The alignment of the track
 - 1. Guides
 - 2. Hyfax (slides)
 - 3. Equal distance



o Track tension

The track must have a free deflection of about 40 mm (1 $\frac{1}{2}$ "), just below the lower pivot of the swing arm (which is the midpoint of the rail), when the rear of the vehicle is supported and the track is hanging freely.

REAR PAD

The rear pad is essential to the Snow Hawk's first-rate handling.

▼ CAUTION

Never take the rear pad off your vehicle.

Operating the Snow Hawk without its rear pad could cause the engine to overheat which could result in serious engine dammage.

Operating the vehicle without its rear pad could render nil the WARRANTY coverage of your vehicle.

REAR PAD ADJUSTMENT

Depending on snow conditions, the rear pad will need adjustments.

If snow conditions are as follows:

- Trail or hard surface;
- Icy surface;

Both rubber latches on the rear pad must be attached.

If snow conditions are as follows:

- Powdery trail or surface;
- Deep powdery snow;

The rear pad must be curved and attached.

▼ CAUTION

If the Snow Hawk's rear pad is not curved and is not attached in deep snow conditions, it could be dammaged as a result.

▼ CAUTION

If the engine overheat indicator lights up, even while operating the vehicle in plenty of snow, immediately attach the rear pad's rubber latches.

▼ CAUTION

If the rear pad is dammaged, it must immediately be repaired or replaced.

▼ CAUTION

It is crucial to follow all Snow Hawk rear pad adjustment guidelines.

PLEASE NOTE THAT OPERATING THE SNOW HAWK WITHOUT ITS REAR PAD COULD RENDER NIL THE WARRANTY COVERAGE OF YOUR VEHICLE.





EXTENSION PLATE ADJUSTMENT

There are two possible positions for the extension plate

The tilted position allow the snowhawk to improve its speed and its handling





The right position gives better performance on soft snow

CHAPTER 11 FRONT FORK AND TWIN-AXIS SKI

FORK LEG



Fork leg					
Ref.	P/N	Qty	Parts descriptions		
1-8	791 464 018	1	Fork leg assembly		
1	849 350 102	1	Cartridge		
2	849 310 511	1	Inner tube		
3	849 340 059	1	Fork seal and bushing kit		
4	849 311 568	1	Top cap assembly		
5	849 350 103	1	Compression valve assembly		
6	949 409 761	1	Outer tube		
7	949 603 733	1	Lower spring seat		
8	949 313 954	1	Spring		
9	29516P	2	Hexagone head flange bolt M6 x 30 mm		
-					

FORK ASSEMBLY



SH-41A Fork assembly				
Ref.	P/N	Qty	Parts descriptions	
1	791 464 018	2	Front fork leg USD 46 mm PAIOLI	
2	SH-028	2	Triple clamp	
3	SH-147	1	Aluminum fork adaptor (Sport Trail)	
4	SH-019	1	Lower clamp	
5	SH-059	1	Aluminum fork shaft	
6	SH-066	2	Fork lower steering bushing	
7	29516P	8	Hexagone head flange bolt M6 x 30 mm	
8	23162F	8	Flanged locknut M6	
9	SH-051	2	Steel bushing	
10	21623P	4	Socket head bolt M6 x 20 mm	
11	23162P	2	Locknut M6	
12	20171P	2	Hexagone head bolt M6 x 75 mm	
13	SH-060	1	End shaft bushing	
14	342-121P	1	1/2" spring lock washer	
15	20280P	1	Hexagone head bolt M12 x 85 mm	
16	SH-044	2	Fork collar	
17	236-306	2	O-ring	
18	P.64.12	2	Hardened bushing 3/4" I.D. 1" O.D. x 3/4"	
19	SH-050	2	Fork MOS2 bushing	
20	SH-135	2	Lower clamp collar	
21	SH-149	1	Shim	
-				

ENSEMBLE DE SKI



SH-25A Ski assembly				
Ref.	P/N	Qty	Parts descriptions	
1	RD0170	1	Ski (black)	
2	SH-31SA	1	Base plate	
3	SH-309	1	Adaptor plate	
4	SH-310	1	Rubber ski cushion	
5	ST-201	2	Runner * Snow Tracker *	
6	SH-831	2	Carbide runner 60°	
7	SH-145	1	Rubber positionner	
8	P05000050090A	2	Polyurethane bushing * RED *	
9	P05000050095A	2	Polyurethane bushing * GOLD *	
10	20279P	1	Hexagone head bolt M12 x 80 mm	
11	341-109P	2	Washer	
12	23167F	3	Flanged locknut M12	
13	12 462 100 001	4	Flanged locknut M10	
14	22205P	2	BHCS M6 x 25	
15	23162P	2	Locknut M6	
16	SH-828	2	Spécial washer	
-				

FRONT FORK

Removal

• Loosen the fork leg top cap before removing the leg from its supports.

Disassembly

o Clean the fork.

NOTICE:

The Paioli tool kit (P/N 449 450 020) is needed to perform modifications such as seal replacements and complete fork disassembly. For smaller operations such as fluid changes and/or compression valving adjustments, the supplied special tool is sufficient.

▼ CAUTION

Scratches or other damage to inner tube surfaces or gasket edges may cause oil leaks.

Scratches and other damage must be avoided. Use a mild detergent or an automobile cleaning product to dislodge any dirt.

▼ CAUTION

An inadequate dismantling of the fork leg top cap may damage the rebound adjustment needle resulting in a malfunction of the system.

To prevent such a situation, set the rebound adjustment to its fastest position (by turning it counterclockwise) before taking the cap off.

Take note of the initial position of this adjustment by counting the number of "clicks" between the initial position and the point where a slight resistance is felt (turning clockwise).

- Unscrew the fork leg top cap completely while holding the outer tube. Lower the outer tube slowly until it comes into contact with the lower section of the inner tube.
- Using your hand, push the top part of the spring down to provide enough space to insert the open end of a spanner wrench.







- o Unscrew the lock nut (C) from the piston rod and remove the fork leg top cap (B).
- Remove the upper spring retainer (R), the lock nut (C), 0 the fork spring guide (G) and the O-ring (F).





• NOTICE:

When the fork leg is turned upside down, the push rod, the needle and the return spring will fall from the piston rod. It is possible to collect them by turning the strut over slowly and keeping a finger near the tip of the piston rod.

VCAUTION

A damaged piston rod, needle or return spring may affect performance on the rebound stroke.

Be careful not to lose or damage any of those parts.





Depress the piston rod (S) completely 8 to 10 times to 0 force all the oil out.

• Install the lower part of the inner tube in a vise.

▼ CAUTION

Exerting too much pressure on the lower part of the inner tube can damage it and affect the stability of the ride.

Do not overtighten.

- Remove the rubber cap (M) located under the lower part of the inner tube.
- o Remove the spring stop washer (S).
- Unscrew and remove the cartridge, by inserting a 14 mm allen key in the compression adjustment, and by inserting the special "T" tool (T) (long tube, three prongs at one end) provided with the maintenance tool kit into the cartridge head.

• NOTICE:

Before unscrewing the cartridge, make sure the special tool (T) is well fitted into the socket in the cartridge head.

• Empty the content of the cartridge (L) by pumping the piston rod (G) several times, until the cartridge is empty.

♦ WARNING

Never attempt to modify the cartridge!

Refer to authorized personnel to carry out this operation.

Modifications to the cartridge carried out by an unauthorized person can compromise the security of the operator and invalidate the warranty.

- Move the outer tube slowly back and forth for a few complete strokes to make sure it is in good working order.
- Remove the dust seal (M).







▼ CAUTION

Scratches on the outer tube will cause oil leaks.

Be careful not to scratch the outer tube while removing the dust seal.

• Use a flat screwdriver to remove the dust seal.

Remove the stop ring.

0







- With a few sharp blows, pull the outer tube (P) out to separate it from the inner tube (A).
- The oil seal (T), the washer (Q), the dust seal (M) and the inner (R) and outer (S) bushings can be found on the inner tube. They must be removed and replaced with new parts.



Reassembly

- Remove all the elements from the inner tube, one at a time, and clean the tube.
- Replace the seals and bushings with new ones, following the prescribed sequence. (See the illustration)

● NOTICE:

While installing seals, wrap the end of the strut with a band of adhesive tape so that the seals will not be damaged by the sharp edge.



 Make sure the bushings (S & R) are well inserted in their respective positions by using the special tool (W) designed for that purpose and included in the fork maintenance tool kit.

♦ WARNING

The oil and dust seals (T & M), contrary to the bushings ((S & R) and the washer (Q), must absolutely be installed on the inner tube in a specific direction for the fork to operate properly.







 Once the bushings (S & R) are correctly installed, use the other end of the special tool (W) to insert the washer (Q), and then the oil seal (T).

 \circ Re-install the stop ring (O).

• Re-install the dust seal (M).

- Using a 14 mm allen key and the special tool (T), reinstall the cartridge (L) the compression adjustment (Z") and the washer (A).
- Use a torque wrench to tighten the cartridge to 25 N-m (2.5 kg-m, 18.4 lbf-ft).



FRONT FORK AND SKI 11 – 14

• NOTICE:

Before adjusting the torque, make sure the special tool (T) is well fitted into the socket at the end of the cartridge.

- Re-install the rubber cap (M).
- Install the spring stop washer (S).
- Make sure the O-ring (OR) is still in place. If not, reinstall it and push it against the stroke stop (F) to secure it.
- Install the spring guide (G).
- Install and screw the lock nut (C) up against the guide until a slight resistance can be felt.
- Hold the fork leg in a vertical position, fully compressed, and fill it with fork fluid up to 50 mm (2 in) from the top of the outer tube.

Recommended fluid: Cartridge fork fluid, S.A.E. 15W

• Move the piston rod in and out, in a series of complete alternating strokes, until a continual resistance can be felt during a complete stroke.

● NOTICE:

It is possible that fluid will have to be added a few times before reaching the point where a continuous resistance can be felt during a complete stroke.

WARNING

Keep a finger pressed against the opening of the piston rod since the needle, if it has not been taken out, can be ejected during this operation. If this happens, re-install the needle after the operation has been completed.







• With the fork leg still in a vertical position and fully compressed, adjust the fluid level.

Recommended level: X = 85 mm (3-5/16 in)

• NOTICE:

It may be necessary to add or remove some fluid to reach the recommended level.

▼ CAUTION

The fluid level can be modified but must remain between 85 mm and 120 mm.

- Insert the needle return spring, the needle and the push rod.
- Install the spring (F) inside the strut (P).

• NOTICE:

When the coils are closer to one another at one end of the spring, this end must be placed facing the upper part of the fork leg (i.e. towards the top cap).





Install the upper spring retainer (R) and the top cap (B) of the strut.



The top cap (B) must be screwed on until the piston rod (G) touches the bottom of the cap (B) before the cap comes into contact with the lock nut (C). The space between the cap (B) and the nut (C) must be between 1 - 2 mm (0.040 - 0.080 in).



- Using your hand, push the top part of the spring down to provide enough space to reach the lock nut (C) with the open end of a 17 mm wrench.
- Use a torque wrench and the special tool to adjust the torque to 18 20 N-m (1.8 2.0 kg-m, 13.2 –14.75 lbf-in).
- o Screw the strut top cap onto
- the outer tube. Again, use the torque wrench and the special tool to adjust the torque to 25 N-m (2.5 kg m, 18.4 lbf-in).


INSTALLATION

Follow the same procedure as for the removal but in the reverse order.

Adjustment of the front fork

o Compression

Using a screwdriver, it is possible to choose a precise setting for the speed of compression from a range of 26 positions, depending on the conditions of the terrain and the purpose for which the vehicle is used.



- + → Stiffer (Slower)
- → Softer (Faster)
- o Rebound

Using a screwdriver, it is possible to choose a precise setting for the speed of rebound from a range of 28 positions, depending on the conditions of the terrain and the purpose for which the vehicle is used.

- + → Stiffer (Slower)
- → Softer (Faster)



TWIN AXIS SKI

The basic idea is that the ski can now stay flat when the vehicle is at a lean angle of up to approximately 12° . Its's the gold and red polyurethane bushings that permits such movement and the adjustment of the two locknuts permits (No. 1 at right) can make a significant difference to the handling characteristics of the vehicle.

Tightening the nuts:

- Tightening the nuts (No. 1 above right) will compress the polyurethane bushings and allow less lean angle. The resulting stiffer front end will be more responsive and have a quicker turning feel. Recommended for deep powder snow condition.
- o **ALWAYS** adjust the two locknuts together.

Loosening the nuts:

- Loosening the nuts (No. 1 above right) will allow the polyurethane bushings to extend more and make the front end feel very forgiving. The stock settings have 1/4" (6.5mm) of thread protruding above the end of the locknuts, which is great for a novice rider and is near the minimum preload setting possible for the bushings. DO NOT slacken the locknuts further than the stock settings. A large inclination angle is recommended for hard pack conditions and groomed trail riding.
- o ALWAYS adjust the two locknuts together.

Inclination (recommended)	Conditions
8 - 10°	Groomed trail
	Hard pack
4 - 8°	Deep powder
0 - 4 [°]	Snow cross
	Race track







SNOW TRACKER

The * Snow Tracker * has bean designed to increase the responsiveness and steering accuracy of you vehicle when trail riding as well as act as an anti-darting mechanism. IF you use your vehicle off-trail or in powder snow conditions, you can use the Snow tracker device or you can remove it, we encourage to use whatever works best for you. In certain powder snow conditions, it may be preferable NOT to use this device.

For any hard pack, icy surface or well-groomed trail, we strongly recommended that you use the Snow Tracker device.

CHAPTER 10 HYDRAULIC BRAKE SYSTEM

HYDRAULIC BRAKE SYSTEM



Hydraulic brake system			
Ref.	P/N	Qty	Parts description
	I		
1	10.6707.81	1	Master cylinder
2	20.6951.50	1	Caliper
3	107.6949.11	1	Replacement brake pad
4	SH 048	1	Brake hub
5	TDSH7-3116	1	Brake disc
6	SH 039	2	Brake caliper spacer
7	053.8.45	2	Hexagon head cap screw M8 x 1.25 x 45MM
8	23164	2	Nylon nut M8 x 1.25
9	1215X30	1	* Taper lock *
10	22204P	5	Botton head cap screw M6 x 1.0 x 20MM
11	06.2196.13	2	Copper washer
12	06.2228.42	1	Banjo bolt
13	110.4671.91	1	Microswitch
14	70.3003A	1	Steel braided brake line
15	24411	5	Stove nut M6 x 1.0
16	149-161	2	Socket set screw 3/8-16 unc x 5/8"
17	293 800 060	@	Loctite 243, 10 ml
-			

Removal/Installation of Brake Disc and/or Hub

To gain access to the brake system, the cab and belly pan must be completely removed. See **Chapter 1 – General Instructions** for details.

To remove the brake disc and/or hub, the brake caliper must first be rotated up and out of the way. To do this, the lower M8 bolt that holds the caliper in place must be removed from inside the tunnel. The nut that holds this bolt in place is shown at the right.

• NOTICE:

If the intent is to change brake pads only, the caliper must be completely detached from the chassis of the vehicle with the brake line remaining secure.



Holding this nut with an open-end wrench, remove the bolt from inside the tunnel with a socket and ratchet.

Loosen the other (upper) bolt holding the caliper tight to the chassis as well, then swing the caliper up and clear of the disc. Re-tighten the upper bolt and nut enough to hold the caliper in this "swung up" position. Now completely clear from the brake disc itself, the disc can be removed either with or without the aluminum hub.

Brake Disc Only: Remove the five M6 x 16 button head bolts. (Reference No. 10 in the exploded view at the beginning of this chapter)

Brake Disc and Hub: Follow the procedure outlined on page 9-3 of **Chapter 9 – Secondary Transmission System** that outlines the removal of the Taper-Lock bushing and hub.

Cleaning and Inspection

Clean the brake parts with an all-purpose cleaner. Dry the parts well with compressed air when finished.

▼ CAUTION

Do not clean the brake pads with the cleaner. Brake pads must be replaced with new ones.

Verify that the thickness of the pad material (as shown between the arrows in the photo at the right) is greater than 1 mm (1/32 in). If the thickness is found to be less than this, replace the pads.

CAUTION

Always replace the brake pads as a set.

Brake Pad Replacement:

To replace the brake pads, proceed as follows:

- Completely remove the caliper from the chassis of the vehicle by removing the two bolts that secure it.
- Remove the clip at the end of the pin, shown in the picture on page 10-3 of this chapter.
- Using a steel punch and a hammer, push the pin completely out of the brake caliper casting. Be sure to push the pin from the side shown in the picture at the right.
- Remove the retainer clip shown in the picture on page 10-3 of this chapter.
- Remove the pads and replace with a set of new ones.

Re-assemble the brake caliper and reinstall it on the chassis following the steps outlined above in the reverse order.



Verify whether the brake disc is scratched, cracked or discolored by heat and replace as required.

▼ CAUTION

Never machine the brake disc.





Re-/Installation of Brake Disc and/or Hub

Brake Disc Only: Install the five M6 x 16 button head bolts with Loctite 243 and torque to **14 N-m (125 lbf-in)**. (Reference No. 10 in the exploded view at the beginning of this chapter)

Brake Disc and Hub: Follow the procedure outlined on page 9-4 of **Chapter 9 – Secondary Transmission System** that outlines the installation of the Taper-Lock bushing and hub. As an alignment reference, the brake disc must ride approximately midway between the two brake pads.

Re-attach the caliper to the chassis by securing the two mounting bolts that hold it in place and torque each to **25 N-m** (**220 lbf-in**).

Adjustment / Maintenance

Change the brake fluid each year.

It is very important to have a sufficient amount of brake fluid in the reservoir at all times to avoid the creation of air bubbles in the system. If air should become trapped in the system, follow the procedure outlined below.

Pump the brake lever several times to build pressure in the system. While holding the lever in the "brakes applied" position with force, slightly unscrew the bleeder valve with a wrench (see figure at right) to ensure that all air is purged from the system. As the brake lever approaches the handlebar, re-tighten the bleeder valve.

Repeat several times or until the flow of fluid from the bleeder valve is completely free from air bubbles.

Ensure that the bleeder valve is tight and the rubber cover is placed over the fitting for protection when finished.

Brake Fluid DOT 4 (DOT 5 for intense use)

NOTICE:

Never use DOT 4 brake fluid for intense or competition use.

Brake Fluid Level

Refer to Section 2.5 of **Chapter 2 – Periodic Maintenance** for details.



CHAPTER 9 SECONDARY TRANSMISSION SYSTEM

SECONDARY TRANSMISSION SYSTEM



Secondary transmission system			
Ref.	P/N	Qty	Parts description
1	SH-26A	1	Torque limiter assembly
2	SH-203R	1	Tensioner sprocket 28T
3	SH-260	1	Drive sprocket 30T
4	SH-204	2	Tensioner sprocket shaf t
5	184-153	2	Retaining ring
6	6004-2RS KML	4	Roller bearing, tensioner
7	341-108P	2	Washer
8	441.1	1	Split spring lock washer
9	30632P	2	Hexagon head cap screw M10 x 1.5 x 65MM
10	90974 A116	1	Sliding T-nut
11	1215X30	2	Taper lock
12	1360PTH8M-60	1	60MM Panther belt
13	SH-202	6	Flange
14	149-163	4	Socket set screw 3/8-16 unc x 5/8"
15	23166P	1	Hexagon elastic nut M10
16	SH-259	1	No-teeth pulley
17	SH-266	1	Tentionning plate
18	414 348 200	1	Tensioning tool
19	293 800 060	@	Loctite 243, 10 ml
-			

TORQUE LIMITER SYSTEM



SH-26A Torque limiter system			
Ref.	P/N	Qty	Parts description
1	TL-003	1	Drive sprocket 56T
2	TL-001	1	Hub
3	TL-002	1	Aluminum threaded disk
4	TL-004	2	Outside pressure plate
5	TL-005	2	Inside pressure plate
6	6525K1 O.D. 5"	2	Wearing pad
7	22320AI	6	Socket set screw M8 x 1.25 x 20MM
8	22097P	4	Flat head socket cap screw M6 x 1.0 x 8MM
9	293 800 060	@	Loctite 243, 10 ml
-			

Removal of cog belt

To gain access to the entire secondary transmission system, you must first completely remove the cab and belly pan. See **Chapter 1 – General Instructions** for details.

- Loosen the bolt that holds the tensioner sprocket in place. (See top picture at the right)
- Remove the tension on the cog belt system by unscrewing the tensioning bolt shown in the top picture at the right. Continue until the belt is no longer tight against the teeth of the tensioner sprocket.
 ALTERNATIVELY, if you wish to leave the belt tension as-is, you can simply remove the bolt that runs through the center of the tensioner sprocket and leave the tensioning bolt as-is.
- Remove the tensioner sprocket completely. (# 2 on secondary transmission system)
- Remove the two setscrews that hold the taper lock and the 28-tooth upper drive sprocket in place. (Position 1) Using a punch, hit the taper lock 2-3 times in the shaded zone shown at right (Position 5) to loosen the grip between the taper lock and the sprocket.

• NOTICE:

If either of the installation holes (shown as "Position 1" in the picture in the sidebar at the right) becomes damaged, the taper lock can be rotated 45° CCW in the sprocket bore and can then use the installation holes shown in "Position 3".

- Insert and thread in one of these two setscrews into the extraction hole (Position 2), at a maximum torque of 14
 N-m (125 lbf-in). The sprocket and taper lock assembly should now be free to slide off the shaft.
- At this point, begin to slide the belt off of the lower 56 tooth drive sprocket and simultaneously slide the entire 28 tooth driven sprocket assembly and belt off the jackshaft as shown in the picture at the right.







Installation of Cog Belt

Installation of a new cog belt is essentially the same as the steps outlined above, but in reverse order. One must pay special attention to the re-installation of the taper lock system:

- 1. Thoroughly clean the jackshaft and sprocket bore.
- 2. Align the 28-tooth sprocket and taper lock flush with the end of the jackshaft.
- 3. Applying Loctite 243, install the two installation set screws into position 1 or 3.
- 4. Torque the two set screws to 14 N-m (125 lbf-in)
- 5. Tap the taper-lock face several times in the shaded region with a steel punch and re-tighten the setscrews.
- 6. Tap again and re-torque to 14 N-m (125 lbf-in).

♦ WARNING

Loctite 243 must be used for both installation setscrews to prevent them from loosening under use. Failure to do so could result in personal injury.

Hand-tighten the tensioner sprocket bolt (Ref. No. 9 in the exploded view) and then proceed to re-apply tension to the system by tightening the tensioning bolt.

When tensioned properly, the secondary transmission system must have a deflection of **7.3 mm (0.288")** under a load of **6.44 kg (14.2 lbs)** applied midspan between the upper most and lowest cog sprockets. This tension must be verified using special tensioning tool P/N 414348200. The picture at the right demonstrates how to use a straightedge as a reference when verifying this value and also where the measurement should be taken.

▼ CAUTION

Failure to provide or verify the correct tension in the secondary transmission system could lead to premature belt and/or component failure.



Inspection of Secondary Transmission System

- Check that the roller bearings in the tensioner sprocket bore are functioning properly.
- Check for excessive dry surface cracking of the rubber in the cog belt. If excessive surface cracks are present, replace belt.
- Check that the secondary transmission system is dry and free of dirt, grime or debris. If necessary, clean the belt and sprockets with a non-corrosive cleaner.

♦ WARNING

Never operate the vehicle with the cab and/or bellypan removed. Failure to do so could result in personal injury.

TORQUE LIMITER SYSTEM

DISASSEMBLY

- Lightly loosen the 6 Allen bolts (part **# 7** on the exploded view of the torque limiter) in a criss-cross pattern.
- The threaded aluminum disc (part **# 3** on the exploded view) can now be removed by hand.
- After removing the threaded aluminum disc proceed to removing the core, the pressure plates and the friction plates. Next, remove the small Allen screws holding the final pressure plate to the cog sprocket and remove the pressure plates.

CLEANING

• All of the torque limiter components should be clean before reassembly. The parts can be cleaned using brake cleaner.

INSPECTION

• NOTICE:

Because so much dirt and dust accumulates inside the torque limiter, it should be periodically cleaned and inspected.

♦ WARNING

After approximately 10 hours of use, it is necessary to verify the torque of the 6 allen head screw (part # 7) of the torque limiter. The required torque for normal operation is 6 N-m (55 lbf-in).

- Verify the friction plates (part **# 6**) to ensure that they are not cracked or damaged. Replace if required.
- Verify the pressure plates **# 4** and **# 5** to ensure they are not scratched. If so then they can be repaired using a fine sand paper or released.
- Verify that the cog sprocket is not damaged. If damaged, replace with a new one.



REASSEMBLY

- Install pressure plate # 5 inside the cog sprocket # 1 using the small Allen screws # 8. Use loctite 243 on the Allen screw and torque to 10 N-m (89 lbf-in).
- Reassemble the torque limiter as shown in the exploded view on page 9-3.
- Once the pressure plates **# 4** and the friction plates **# 6** are properly installed, hand tighten the threaded aluminum disc **# 3** until it stops; then loosen by a ½ turn.
- To complete reassembly, tighten the 6 Allen bolts **# 7** in a criss-cross pattern to a torque of **6 N-m (55 lbf-in)**.

INSTALLATION

Install the torque limiter as described in the previous section on installation of the secondary drive cog belt.

• Lift up and immobilize the rear of the vehicle and place it on a mechanical support.

♦ WARNING

Make sure that the track is free of anything that could be projected out of its rotation field. Make sure that no one is near the vehicle.

- Have the vehicle accelerate at low speed (maximum 30 km/h or 20 mi/h) and apply the brake. Repeat 5 times.
- Ensure that the torque of the 6 Allen bolts # 7 is still at 6 N-m (55 lbf-in).

♦ WARNING

After approximately 10 hours of use, it is necessary to verify the torque of the 6 allen head screws (part #7) of the torque limiter. The required torque for normal operation is 6 N-m (55 lbf-in).





CHAPTER 8 PRIMARY TRANSMISSION SYSTEM

PRIMARY TRANSMISSION SYSTEM / PRIMARY CLUTCH



Primary clutch			
Ref. P/N Qty		Qty	Part Descriptions
0	XXX	1	Drive nulley ass'y
1	417222167	1	Fixed flange
2	417222107	1	Sliding flange ass'Y
2	417222171	1	Bushing
	203370037	1	Circlin
5	<u> </u>	1	Spring seat
6	417 222 512	1	Spring Seat
0	414089500	1	Spring blue/yellow
/	417009205		
8	417007500	1	Spring cover ass y
9	417009204	1	Bushing
10	250200009	1	Lock washer 8mm
11	205084044	1	Socket head cap screw M8x40
12	250000059	2	Hexagonal flange cap screw M6x18
13	417222552	1	Ramp
14	250400009	1	Rolled pin 10 x 32
15	417222362	2	Slider shoe
16	732401030	2	O-ring
17	417005700	1	Spring
18	417 222 213	1	Governor cup
19	417005500	1	Calibration screw
20	417 005 600	1	Washer
21	233061414	1	Hexagonal flange nut M6
22	234061410	2	Flat washer M6
23	250200006	1	Conical spring washer 14mm
24	417120000	1	Drive pulley bolt
25	732958001	1	Cotter pin
26	417004302	2	Stopper washer
27	417003900	1	Roller ass'y
28	41/222594		Pin
29	232561414	1	Hexagonal nylon nut M6
30	41/2226/1	1	Lever assy Ruching
31	417222033	1	
32 33	417222020	<u> </u>	Locktite 609 10ml
-	410700100	<u> </u>	

PRIMARY TRANSMISSION SYSTEM / SECONDARY CLUTCH



	Secondary clutch			
Ref.	P/N	Qty	Part Descriptions	
		4	Secondary slutch accombly	
			Secondary clutch assembly	
1	417 126 734	1	Hair key	
2	417 126 733	1	Spacer	
3	417 126 722	1	Cam 50-40	
4	417 126 322	1	Swivel abutment	
5	417 126 381	1	Guard	
6	417 126 688	1	Spring, green	
7	417 126 878	1	Circlip	
8	417 126 902	1	Bushing	
9	371 911 200	1	Circlip	
10	417 126 901	1	Bushing	
11	417 126 373	3	Rear cam slider shoe	
12	417 126 374	3	Front cam slider shoe	
13	210 251 180	2	Hexagon forming screw M5x11	
14	417 126 698	1	Cover	
15	417 126 909	1	Sliding flange ass'v	
16	504 099 600	1	Stopper washer	
17	504 112 300	1	Shim	
18	417 126 807	1	Fixed flange ass'y	
19	504 151 831	1	Aerodynamic cover	
20	415 005 800	1	Adjustment ring	
21	415 005 900	3	Adjustment shim	
22	207 162 544	3	Hexagonal cap screw M6x25	
23	517 302 322	1	Strenght washer	
24	20207P	1	Hexagonal cap screw M8x60	
25	417 300 238	1	Protector	
26	BR16L	2	Shim	
27	138-4628U3	1	Drive belt	
28	413 703 100	@	Loctite 609	
-				

GENERAL INFORMATION (PRIMARY CLUTCH)

Some drive pulley components (return spring, ramp) can be changed to improve vehicle performance in high altitude regions. A service bulletin will give information about calibration according to altitude.

▼ CAUTION

Such modifications should only be performed by experienced mechanics since they can greatly affect vehicle performance. Verify spring specifications before installation. Do not only refer to the spring color code.

• NOTICE:

TRA drive pulley stands for Total Range Adjustable drive pulley.

♦ WARNING

Any drive pulley repairs must be performed by an authorized Snow Hawk dealer. Sub-component installation and assembly tolerances requires strict adherence to procedures detailed.

REMOVAL

23, 24, Conical Spring Washer and Screw

- o Use holder (P/N 529 035 674).
- o Insert the tool in sliding flange tower

♦ WARNING

Never use any type of impact wrench at drive pulley removal and installation



- o Remove retaining screw.
- To remove drive pulley ass'y and/or fixed half from engine, use puller (P/N 529 022 400) for liquid cooled models.

▼ CAUTION

These pulleys have metric threads. Do not use imperial threads puller. Always tighten puller by hand to ensure that the drive pulley has the same type of threads (metric vs imperial) prior to fully tightening.

TO REMOVE DRIVE PULLEY ASS'Y

- Retain drive pulley with clutch holder.
- Install puller in pulley shaft then tighten

DISASSEMBLY

Screw and Ring Gear

▼ CAUTION

Retaining screws must be heated before disassembly. Do not exceed 150°C (300°F).

1, 2, Fixed and Sliding Half

▼ CAUTION

Do not tap on governor cup.

Screw puller into fixed half shaft about 13 mm (1/2 in). Raise drive pulley and hold it by the sliding half while knocking on puller head to disengage fixed half.

• NOTICE:

No components marking is required before disassembling this drive pulley since it has factory mark and arrows as indexing reference



1- Puller 2- Holding sliding half **Cushion Drive**

▼ CAUTION

Do not disassemble cushion drive. Governor cup and cushion drive are factory balanced as an assembly.

15, 18, Slider shoe and Governor Cup

- Carefully lift governor cup until slider shoes come at their highest position into guides.
- Hold a slider shoe set then carefully lift its housing and remove slider shoes. Proceed the same way for other housing lifting one at a time.



- 1- Hold slider shoes
- 2- Lift one housing at a time



To ease disassembly, forks (P/N 529 005 500) should be used to hold slider shoes prior to removing governor cup.



8, Spring Cover Ass'y

It is pushed by clutch spring pressure.

♦ WARNING

Clutch spring is very strong. Never attempt to remove spring cover without the recommended tools.

- Use spring compressor (P/N 529 035 524).
- o Install support guide.



1- Support guide

- Install sliding half then a seconds support guide. These support guides will prevent bushing damages.
- Remove 3 Allen screws retaining spring cover then unscrew compressor.



1- Support guide

CLEANING

1, 2, Fixed and Sliding Half

Clean pulley faces and shaft with fine steel wool and dry cloth.

1, Fixed Half and Crankshaft End

Parts must be at room temperature before cleaning.

Using a paper towel with cleaning solvent, clean crankshaft tapered end and the taper inside the fixed half of the drive pulley, crankshaft threads and retaining screw threads.

♦ WARNING

This procedure must be performed in a well-ventilated area.

▼ CAUTION

Avoid contact between cleaner and crankshaft seal because damage may occur.

Remove all hardened oil deposits that have baked on crankshaft and pulley tapered surfaces with coarse or medium steel wool and/or sand paper no.600.

▼ CAUTION

Do not use any other type of abrasive.

Reclean mounting surfaces with paper towel and cleaning solvent.

Wipe off the mounting surfaces with a clean, dry paper towel.

▼ CAUTION

Mounting surfaces must be free of any oil, cleaner or towel residue.

3, 9, Bushing

Only use petrol base when cleaning bushings.

▼ CAUTION

Do not use acetone to clean bushing.

INSPECTION

Drive pulley should be inspected annually.

26, 27, Thrust Washer and Roller

Check roller for roundness of external diameter. Check thrust washer for thickness wear. Replace as required.

▼ CAUTION

Ensure rollers are in good condition. Replace as required.

31, 32, Fitting Bolt Ass'y and Flanged Bushing

Check for wear, replace as required.

15, 16, O-Ring and Slider Shoe

Check if O-rings are cracked, cut or crushed. Replace as required.

Check slider shoes for wear. Replace if groove is not apparent on top.

1, 18, Fixed Half and Governor Cup

Inspect splines and free play between both parts. Maximum free play is 0.5 mm (0.020 in) measured at calibration screw radius. Replace if required.

3, 9, Sliding Half and Spring Cover Bushing

Visually inspect coating. Replace if worn.

Sliding Half Bushing Replacement

This bushing is not replaceable. If worn out, replace sliding half ass'y.

Spring Cover Bushing Replacement

Under normal use there is no need to replace this bushing.

- o Mount compressor (P/N 529 035 524) in a vise.
- \circ Use tools (P/N 529 035 932 and 529 035 931) to remove old bushing.

▼ CAUTION

Bushing must be bonded with retaining compound.

 Apply retaining compound Loctite 609 outside of bushing then press it down to counterbore from outside end.

▼ CAUTION

Insert bushing from sliding half side (inner side) of spring cover.

REASSEMBLING

• NOTICE:

This drive pulley is lubrication free. **Do not lubricate** any component.

Screw, Ring gear and Loctite 271

 Apply loctite 271 (P/N 412 702 900) on threads and torque to 27 N•m (20 lbf•ft).

19, 20, 21 Calibration Screw, Washer and Lock Nut

- When installing calibration screw, make sure to install washer as shown.
- Torque locking nut to 10 N•m (89 lbf•in).

28, Pin

Always use the same type of pin as originally installed when servicing. Different types have different weights for calibration purpose. Refer to TECHNICAL DATA.



1- Washer

12, 13, 14, Screw, Dowel Tube and Ramp

• Insert dowel tube from chamfered side. Make sure ramp is centred on dowel tube



1- Chamfered side

• Position dowel tube split at the angle A.

MODEL	ANGLE (A)
With TRA III	45 ± 3°



• Torque screws to 10 N•m (89 lbf•in)



1- Equal distance

32, 30, 29, 25, Screw, Lever Ass'y, Nut Cotter Pin

• NOTICE:

While installing lever assemblies make sure that the curved sides of the levers are outwards as shown.

 Always install lever assemblies so that cotter pins are on the shown side. Besides install cotter pin head on the top when lever is sat at bottom of sliding half. Bend cotter pin ends to sit perfectly against lever.

♦ WARNING

Whenever replacing centrifugal levers, always replace all 3 at the same time. Otherwise, drive pulley misbalancing will occur because of levers difference.

▼ CAUTION

Lever assemblies must be installed so that cotter pins are on the same side.

• Torque nuts to 12 N•m (106 lbf•in)



- 1- Head on top
- 2- All on the same side

▼ CAUTION

Lever ass'y and rollers must move easily after installation.

1, 2, 6, 8, Fixed Half, Sliding Half, Spring, Spring Cover and Screw

- To install spring cover, use spring compressor (P/N 529 035 524).
- Assemble fixed and sliding halves. Note that fixed halves have different cone angle. Match cone angle with crankshaft.
- Lift sliding half against spring cover and align spring cover arrow with sliding half mark.
- Tighten screws to proper torque as mentioned in exploded view.



1- Align

2, 15, 18, Sliding Half, Slider Shoe and Governor Cup

- To install governor cup, use following tool:
- Insert spring and slider shoes into governor cup so that groove in each slider shoe is vertical to properly slide in guides.



▼ CAUTION

Make sure O-rings are installed on slider shoes and that grooves are positioned vertically.



 Install fork (P/N 529 005 500) into slider shoe grooves to maintain them for governor cup installation. Proceed on 3 sets of slider shoes.

• Make sure to align governor cup arrow with sliding half and fixed half mark.

• NOTICE:

If fixed half has no mark, align governor cup mark with segment no.1 of inner half. Segments are identified on engine side.

- Carefully slide governor cup into sliding half. Align mark of governor cup with mark of fixed half.
- Remove forks and push governor cup so that its splines engage with fixed half shaft splines.



1- Align

VCAUTION

Make sure splines of both parts are fully engaged.

INSTALLATION

♦ WARNING

Do not apply anti-seize or any lubricant on crankshaft and drive pulley tapers.

WARNING

Never use any type of impact wrench at drive pulley removal and installation.

Clean mounting surfaces as described in CLEANING above.

Drive Pulley Ass'y

The following installation procedure must be strictly adhered to.

- o Install drive pulley on crankshaft extension.
- Install a new conical spring washer with its concave side towards drive pulley then install screw.

♦ WARNING

Never substitute conical spring washer and/or screw with jobber ones. Always use Snow hawk genuine parts for this particular case.

- Use holder. See removal procedure.
- Torque screws to 80 to 100 N•m (59 to 74 lbf•ft).
- o Install drive belt and guard.
- Raise and block the rear of the vehicle and support it with a mechanical stand.

♦ WARNING

Ensure that the track is free of particles which could be thrown out while track is rotating. Keep hands, tools, feet and clothing clear of track. Ensure nobody is standing near the vehicule.

- Accelerate the vehicle at low speed (maximum 30 km/h (20 mph)) and apply the brake, repeat 5 times.
- Retorque screws to 90 to 100 N•m (66 to 74 lbf•ft).
♦ WARNING

After 10 hours of operation, the transmission system of the vehicle must be inspected to ensure the retaining screw is properly torqued.

DRIVE PULLEY ADJUSTEMENT

The drive pulley is factory calibrated to transmit maximum engine power at a predefined RPM. Factors such as ambient temperature, altitude or surface condition may vary this critical engine RPM thus affecting Snow Hawk efficiency.

This adjustable drive pulley allows setting maximum engine RPM in the vehicle to maintain maximum power.

Calibration screws should be adjusted so that actual maximum engine RPM in vehicle matches with the maximum horsepower RPM given in TECHNICAL DATA.

• NOTICE:

Use precision digital tachometer for engine RPM adjustment.

• NOTICE:

The adjustment has an effect on high RPM only.

To adjust, modify ramp end position by turning calibration screws.

19, 21, 18, Calibration Screw, Locking Nut and Governor Cup

Calibration screw has a notch on top of its head.

Governor cup has 6 positions numbered 2 to 6. Note that in position 1 there is no stamped number (due to its location on casting)



1-Notch

See TECHNICAL DATA for original setting.

Each number modifies maximum engine RPM by about 200 RPM

Lower numbers decrease engine RPM in steps of 200 RPM and higher numbers increase it in steps of 200 RPM.



1- Position 1 (not numbered)

Example:

Calibration screw is set at position 3 and is changed to position 5. So maximum engine RPM is increased by about 400 RPM.

To adjust:

Just loosen locking nut enough to pull calibration screw **partially** out and adjust to desired position. Do not completely remove the locking nut. Torque locking nuts to 10 N•m (89 lbf•in).

▼ CAUTION

Do not completely remove calibration screw otherwise its inside washer will fall off

▼ CAUTION

Always adjust all 3 calibration screws and make sure they are all set at the same number.



¹⁻ Loosen just enough to permit rotating of calibration screw

REMOVAL (SECONDARY CLUTCH)

- o Remove guard and drive belt from vehicle.
- Remove cap screw no.24 shouldered washer no.20 then pull the driven pulley from the countershaft.

Note shouldered washer position for reinstallation.

Take care not to lose spacer no.26



1- Spacer

29 035 524

2- Shoulder on this side

3- Concave side facing driven pulley

Countershaft

Should countershaft removal be required, refer to BRAKE then look for COUNTERSHAFT AND BRAKE DISC REMOVAL.

DISASSEMBLY

- Use spring compressor (P/N 529 035 524).
- Remove half key no.1 and washer no.2 to disassemble the cam and the 2 pulley halves.



Driven pulley cam is spring loaded, use above mentioned tool.



CLEANING

8, 10, Large Bushing and Small Bushing

During break-in period (about 10 hours of use), teflon from bushing moves to cam or shaft surface. A teflon over teflon running condition occurs, leading to low friction. So it is normal to see gray teflon deposit on cam or shaft. Do not remove that deposit, it is not dust.

When a dust deposit has to be removed from the cam or the shaft, use dry cloth to avoid removing transferred teflon.

Pulley Half Cleaning

• Use pulley flange cleaner (P/N 421 711 809)

INSPECTION

11, 12, Slider Shoe

Check cam slider shoes for wear. Replace when inside edge thickness of cam slider shoe slope base is worn to 1 mm (0.039in) or less.



- 1- Measure thickness of slope base here
- 2- Sliding pulley side
- 3- Slope base

REASSEMBLING

11, 12, Cam Slider Shoe

- When replacing slider shoes, always install a new set (3 shoes) to maintain equal pressure on the cam.
- Install slider shoes as per following photo. RED slider shoes are being used for reverse and BLACK ones for forward.



1- BLACK slider shoe 2- RED slider shoe

22, Screws

These screws are machined at their end. With the adjustment ring steel to position 0 (zero), screw ends are flush with inner side of fixed pulley half when tighten.

▼ CAUTION

If any of these screws is not flush with inner side of sliding pulley, bushings will worn unequally.

• Assemble driven pulley components by reversing the disassembly procedure.

3, Cam

o Coat cam interior with anti-seize lubricant.

INSTALLATION

Countershaft

▼ CAUTION

Always apply anti-seize lubricant (P/N 293 800 070) on the countershaft before final pulley installation.

Should installation procedure be required, refer to BRAKE then look for BRAKE DISC and COUNTERSHAFT BEARING ADJUSTMENT.

- Reinstall the pulley on the countershaft by reversing the removal procedure.
- Driven pulley end-play is 0 (zero).

24, Pulley Retaining Screw

• Torque to 22 N•m (16 lbf•ft).

ADJUSTMENT

Pulley Alignment and Drive Belt Height

- Refer to PULLEY DISTANCE AND ALIGNMENT and DRIVE BELT to perform adjustments.
- Loosen screws no.22 turn adjustment ring no.20 then retighten screws to adjust drive belt height.

▼ CAUTION

Drive belt and pulley adjustments must always be checked whenever pulleys have been removed, replaced or disassembled.

3, Cam

- Make sure to install proper cam. Refer to TECHNICAL DATA.
- o Cam angle is identified on cam

NOTE: For high altitude regions, a service bulletin will give information about calibration according to altitude.



DRIVE BELT

MODEL	P/N	WIDTH NEW	MINIMUM WIDTH (WEAR LIMIT)
SNOW HAWK	144-4740U3	1.375 ± 0.030	1.250 ± 0.030

DIRECTION OF ROTATION

In order for the drive-belt to last as long as possible it must be installed as is shown in the illustration respecting the direction of rotation.

• NOTICE:

In the case of a belt that has already been used, mark it and reinstall it such that it will be used in the same direction.



DRIVE BELT HEIGHT MEASUREMENT AND ADJUSTMENT

Measurement

NOTE: The drive belt height measurement must be performed each time a new drive belt is installed.

NOTE: To obtain an accurate drive belt height measurement, it is suggested to allow a break-in period of 50 km (30 m).

- Before checking the belt height, ensure that a goodcondition proper belt (refer to the Application Chart) is installed.
- Adjust pulley distance and alignment. Refer to PULLEY DISTANCE AND ALIGNMENT.
- To obtain maximum vehicle performance. The belt height must be adjusted according to specifications shown in the accompanying chart.

Model	Deflection mm (in)	Force kg (lb)
Snow Hawk	32 (1 1/4)	6.8 (15)

MODEL	BELT HEIGHT
Snow Hawk	Top edge of dri∨en belt cord should
2007 800 HO	be flush with dri∨en pulley edge



1- Flush

ADJUSTMENT

Before adjusting the belt height, ensure that a good-condition proper belt (refer to the Application Chart) is installed.

- o Loosen screws and turn adjustment ring as follows:
- To lower belt in driven pulley: turn adjustment ring counterclockwise and tighten the screws.
- To raise belt in driven pulley: turn ring clockwise and tighten the adjustment screws.



1-Screws 2-Adjustment ring

Turn the adjustment ring up to one notch, tighten the screws, then rotate driven pulley to allow drive belt to settle in pulley. Check height, if required the adjustment ring can be turned up to ¼ or ½ the notch. Check height, repeat as required.

NOTE: Notches are there on the driven pulley for reference purpose only and the desired adjustment can be attained at any point.



Driven pulley notches

CHECKING DRIVE BELT TENSION

- o Place a ruler on the drive belt.
- Use the tension gauge (P/N 414 348 200) to verify the tension of the drive belt.
 - 1. Lower ring
 - 2. Upper ring
 - 3. Force
 - 4. Deflection
- Slide the lower ring of the deflection scale to the required measurement.
- Slide the upper ring of the deflection force scale to zero.
- Exert pressure until the lower ring comes even with the ruler and note the force on the upper scale (above the ring).
 - 1. Upper ring
 - 2. Exert the required pressure
 - 3. Lower ring
 - 4. Reference ruler
 - 5. Deflection





Emergency starting

It is possible to start the engine with an emergency starter cord and clip included in the toolkit stored in the bellypan of vehicle.

♦ WARNING

Do not wrap the cord around your hand. Pull only by the very end of the cord. Other than in a case of emergency, do not start your vehicle by the primary clutch. Have your vehicle repaired as soon as possible.

• Attach the emergency starter cord to the starter grip and to the small plastic clip, as shown at right.

• NOTICE:

The spark plug socket can by used as on emergency starting handle, as shown at right.

• Wrap the emergency starter cord around the primary clutch and use the groove between the cover and the sheave as a guide. Place the clip as shown at right and wrap the emergency starter cord in a counter-clockwise direction (2 full turns).





CHAPTER 7 ENGINE (CYLINDERS / HEADS / BASE / EXHAUST)

ENGINE / BOTTOM END



Engine bottom end			
Ref.	P/N	Qty	Part descriptions
1-12	420 889 686	1	Crankcase assy
2	420 640 836	10	Collar beyagone screw M8 x 75
2	420 640 431	6	Collar hexagone screw M8 x 75
3	420 040 431	0	Collar hexagone screw M6 x 45
4	420 640 311		
5	205 063 044	1	Allen screw M6 x 30
6	420 641 834	4	Stud M10 x 29/17
7	420 840 401	2	Allen screw M6 x 22
8	420 632 010	2	Pin 8 x 12
9	420 860 965	1	Cable grommet 26 7/9
10	420 960 770	1	Closure cap for impulse joint
11	420 960 777	1	Protection cap
12	420 938 190	1	Clamp 8
13	420 812 420	1	Oil seal cover
14	420 941 430	4	Countersunk screw M6 x 20
15	420 232 100	1	Ball bearing 6000 10-26-8
16	420 956 510	2	Checkvalve assy.
17-23	420 837 421	1	Water pump / oil pump shaft assy.
18	-	1	Step collar
19	420 230 196	1	Oil seal A 10x26x7 NBR
20	420 232 100	1	Ball bearing 6000 10-26-8
21	420 650 370	1	Rotary seal
22	420 950 890	2	O-ring 30x3
23	-	1	Waterpump / oil pump shaft
24	420 840 511	2	Allen screw M5 x 16
25	420 227 945	1	Infust washer 8.1/15/0.5
20	420 222 505	1	Gasket
27	420 931 810	1	Waterpump bousing
20	420 922 030	6	Hexagone screw M6 x 25
30	420 931 565	1	Gasket
31	420 810 825	1	Cover plate
32	420 941 925	2	Taptite screw M5 x 16
33	420 660 424	1	Oil line 170 mm
34	420 974 522	1	Plastic line 120 mm
35	420 874 370	1	Reduction fitting
36	420 956 239	1	Oil tube 250 mm
37	420 960 279	1	Closure cap 10.32
38	420 951 260	1	Clamp 14
39	420 951 240	1	Clamp 12
40-42	420 956 240	1	Ull talik assy. Pubbor gaskot 26.5 mm
41 12	420 000 000	1	Oil tank can S 103/2D
43	300 079 342	1	Shortblock engine
-			

ENGINE / CRANKSHAFT AND PISTONS



Engine crankshaft and pistons			
Ref.	P/N	Qty	Part descriptions
1-10	420 889 675	1	Crankshaft assembly
2	420 832 638	1	Ball bearing 6207 with oil seal assembly
3	420 832 575	1	Ball bearing 6207 with drive pin
4	420 931 792	1	Oil seal 30x42x7
5	420 945 759	1	Lock washer 22
6	420 842 230	1	Hexagone nut M22 x 1.5
7	420 832 608	1	Ball bearing 6208 with oil seal and drive pin
8	420 926 190	2	Retaining disk 72/83/2
9	420 832 700	1	Ball bearing 6208 with drive pin
10	420 931 285	1	Oil seal as 40x80x8 FPM
11	420 246 015	1	Woodruff key 3x5
12	420 832 428	2	Cageless needle bearing 20x25x23
13-14	420 889 456	2	Piston assembly 81,87 mm
14	420 815 360	2	Semi trapez ring is 2,5-82/75,4/2
15	420 916 371	2	Piston pin 20x12/15,5x65,7
16	420 845 106	4	Monohook circlip 20
17	420 832 575	2	Ball bearing 6207 with drive pin
18	420 931 455	2	Oil seal AD 34.5x76x2.6/10.2 NBR
19	420 834 355	1	Central gear 15T
20	420 819 032	1	Crankshaft PTO side
21	420 819 061	1	Crankshaft MAG side
22	420 684 653	1	Rod repair kit MAG side
22	420 684 654	1	Rod repair kit PTO side
-			

ENGINE / TOP END



B LOCTITE 243 U SEALING COMPOUND DREIBOND 2290 X LOCTITE 518-2

Engine top end			
Ref.	P/N	Qty	Part descriptions
	I		
1	420 931 838	11	Gasket 0.5
1	420 931 837	1	Gasket 0.6
1	420 931 964	1	Gasket 0.7
1	420 931 839	1	Gasket 0.8
2	420 613 852	2	Cylinder ni si c plated
3	420 854 465	2	Exhaust valve
4	420 430 110	2	O-ring 10x2.7
5	420 931 542	2	Gasket
6	420 854 455	2	Valve rod housing
7	205 062 544	<u> </u>	Allon corow M6 x 25 DIN 012
7	203 002 344	4	
8	420 260 729	2	
9	420 838 255	2	Hose spring 70-1.7-0.3
10	420 854 449	2	Exhaust valve piston
11	420 939 280	2	Hose spring 134-3.0-0.65
12	420 239 941	2	Compression spring 52,5/0,8 mm
13	420 911 558	2	Valve cover
14	420 430 220	2	O-ring 15.9-2.3
15	420 241 220	2	Adjustment screw
10	420 241 270	4	Collar boyagona scrow M10 x 80
17	420 640 524	4	Collar hexagone screw M10 x 20
10	420 040 554	- 4	Square ring
20	420 931 410	2	O-ring 89x2
21	420 923 828	1	Cylinder head
22	420 941 621	12	Collar hexagone screw M8 x 56.5 SW 11
23	420 922 519	1	Thermostat 42 degr. with gasket
24	420 931 272	1	Thermostat gasket
25	420 922 025	1	Water outlet socket
26	420 941 250	4	Taptite screw M6 x 20
27	420 850 338	1	Gasket
28	420 922 062	1	Bent outlet socket
29	420 240 480	1	Plug screw 1/8-27NPT
30	420 867 879	2	Carburator socket with read valve assembly
31	420 924 680	4	Reed pedal
<u>32</u>	420 924 695	4	Peual Slup Oval-bead screw M3 x 5
34	420 941 215	12	Taptite screw M5x16
35	420 941 923	2	Gasket
36	420 973 713	1	Exhaust manifold assembly
37	420 888 741	1	Gasket set
38	420 888 745	1	Gasket set cylinder
-			



Exhaust system			
Ref.	P/N	Qty	Parts descriptions
@	SH-75A	1	Exhault system
1	3060-30-013	1	Tuned pipe assy
2	3060-30-035	1	Superior muffler assy
3	3060-30-014	1	Lower muffler assy
3	3060-30-020	1	
- 4	3060-30-020	1	Lipper rear half enveloppe
5	3060-30-036		
6	3060-30-037	1	Lower rear hair envioppe
7	3060-30-029	1	Upper front haft enveloppe
8	3060-30-030	1	Lower front haft enveloppe
9	3060-30-027	1	Upper insulating wool
10	3060-30-028	1	Lower insulating wool
11	3060-30-033	1	R.H. heat sheild
12	3060-30-065	1	L.H. heat sheild
13	3060-30-032	1	R.H. insulating wool
14	3060-30-066	1	L.H. Insulating wool
15	420 073 070	2	
10	234 161 471	2	Lock washer 6 mm
18	205 062 044	8	SHCS M6 x 20
19	514 053 487	1	Exhaust dasket
20	514 053 812	2	Exhaust gasket
21	415 107 100	11	Spring
22	22216P	1	BHCS M8 x 30
23	20231P	2	HHCS M10 x 25
24	3060-30-077	1	Rubber mount
25	181-137P	2	Washer
26	21110P	2	Lock washer
27	21008P	2	Nut M8
28	30602-30-022	1	Rubber mount
29	23164P	1	Lock nut M8
30	21111P	2	Lock washer M10
31	3060-30-079	1	Spring bracket
32	3060-30-080	1	Blackel Bubbar humpar
34	21650P	1	
35	21653P	1	SHCS M8 x 30
36	3060-30-067	6	Spring bracket
37	3060-30-026	7	Spring
38	3060-30-068	16	Pop rivet 3/16
39	3060-30-083	16	Backing plate
40	3060-30-045	1	Retaining strap
41	3060-30-046	1	Retaining strap
42	3060-30-047	1	Retaining strap
43	3060-30-048	1	Retaining strap
44	SH-159	1	Retaining strap
-	1		

TOP END

• NOTICE:

The engine must be removed from the chassis to carry out the following operations. See **Chapter 4 – Engine Removal** for details.

TROUBLESHOOTING

Before completely disassembling the engine, check airtightness. Refer to the section named LEAK TEST AND ENGINE DIMENSION MEASUREMENT at the end of this chapter.

CLEANING

- o Discard all gaskets and O-rings.
- Clean all metal components in a non-ferrous metal cleaner.
- Scrape off carbon formation from cylinder exhaust port cylinder head and piston dome using a wooden spatula.

• NOTICE:

The letters "AUS" (over an arrow on the piston dome) must be visible after cleaning.

• Clean the piston ring groove with a groove cleaner tool or with a piece of broken ring.

DISASSEMBLY

RAVE System

• NOTICE:

RAVE stands for Rotax Adjustable Variable Exhaust.

- Remove spring clip or screws no. 16, cover no. 13 and spring no. 12.
- Remove spring no. 11.
- o Unscrew valve piston no. 10.
- Remove bellows no. 8 and spring no. 9.
- Remove cylindrical screws. Remove valve housing no. 6.
- o Pull out exhaust valve no. 3. (see right)

2, Cylinder

Remove spark plugs, coolant outlet no. 32. Unscrew cylinder head no. 21.

13, Piston

Place a clean cloth or rubber pad (P/N 529 023 400) over crankcase. Then with a pointed tool inserted in piston notch, remove both circlips no. 16 from piston no. 13.



RAVE VALVE PARTIALLY REMOVED



All engines are equipped with cageless piston pin Bearings, as shown at right.



Once the head and cylinder(s) has been removed, Use piston pin puller (P/N 529 035 503) along with 20 mm sleeve kit (P/N 529 035 542). Use also a locating sleeve.

• NOTICE:

The locating sleeve is the same that contains new cageless bearing.

Insert piston pin puller (P/N 529 035 503) making sure it sits squarely against piston as shown at right.



1. Properly seated all around

Install sleeve (1) then shouldered sleeve (2) over puller rod as shown at right.



TYPICAL - INSTALLATION OF SLEEVE KIT Sleeve
Shouldered sleeve

Screw in (LH threads) extracting nut.

Pull out piston pin no. 15 by unscrewing puller until shouldered sleeve end is flush with thrust washer of piston pin bearing.

Remove puller. Pull out shouldered sleeve carefully.

TYPICAL – PISTON PIN EXTRACTION



TYPICAL

- 1. Sleeve inside bearing Thrust washer 2.
- 3. Shouldered sleeve end





Locating sleeve
Sleeve

Remove piston from connecting rod.

Install locating sleeve. Then push the needle bearings, thrust washers and sleeve into the upper connecting rod journal

INSPECTION

• NOTICE:

For details, Refer to LEAK TEST AND ENGINE DIMENSIONS MEASUREMENT AT THE END OF THIS CHAPTER.

RAVE System

Check valve rod housing and cylinder for clogged passages.

• NOTICE:

Oil dripping from draining hole (No. 1) indicates a loose spring or damaged bellows.

8, Bellows

Check for cracked, dried or perforated bellows.

12, Spring

engine Type	SPRING P/N	COLOR	WIRE DIA. mm(in)	FREE LENGTH mm(in)	PRELOAD IN N(Lbf) AT COMPRESSED LENGHT OF 14mm (.551in)
793 HO	420239941	Blue	0.8(.031)	52.5(2.07)	10.5(2.36)

ASSEMBLY

RAVE System

Install RAVE valve (noting which is the top side when it was removed) Tighten red cap no. 15 screw to bottom.

2,13, Cylinder and Piston

Before inserting piston in cylinder, lubricate the cylinder with new injection oil or equivalent.

21,2, Cylinder Head and Cylinder

Make sure parts sealing surfaces are flat. Refer to LEAK TEST AND ENGINE DIMENSION MEASUREMENT at the end of this chapter and look for CYLINDER HEAD WARPAGE.

When installing a new cageless bearing, replace half plastic cages with sleeve.

• NOTICE:

All 793 HO engine cageless bearings have 28 needles.



TYPICAL 1. Sleeve



1. Draining hole

2. Passages

- Oil needle bearing with injection oil.
- Grease thrust washers and install them on each end of needles. The grease will help to hold them in place.
- o Insert cageless bearing into connecting rod.
- Heat piston with a 100 W lamp or a heat gun before piston installation to make the insertion of the pin much easier.

VCAUTION

Piston temperature must not exceed 46°C (115°F). Never use direct flame to heat the piston and never freeze the pin.

At assembly, place the pistons over the connecting rods with the letters "AUS" (over an arrow on the piston dome) facing towards the exhaust port.

1. Exhaust

Install shouldered sleeve.







TYPICAL – SHOULDERED SLEEVE INSTALLATION

Install piston pin puller and turn handle until piston pin is correctly positioned in piston.

All Models

▼ CAUTION

Always install new circlips. To minimize the effect of acceleration forces on circlip, install each circlip so the circlip break is at 6 o'clock as illustrated. Use appropriate piston circlip installer.

ENGINE TYPE	PISTON CIRCLIP INSTALLER (P/N)	
All	529 035 686	

Use circlip installer (P/N 529 035 686) to install new mono-hook circlips no. 16. Insert circlip into support so that, when installed in piston groove, the tab faces upward.

With round end of pusher, position circlip perpendicularly to the support axis.



With the other end of the pusher, push circlip into the support groove.





Using a plastic hammer, tap the pusher to put the circlip in place. Make sure to install new circlips with the tab toward the top as per the following photos.

▼ CAUTION

Always install new mono-hook circlips. If circlip installation fails at the first attempt, always retry with a new one because, on a second attempt, the circlip will lose its normal retaining capabilities.



1. Groove

▼ CAUTION

Circlips must not move freely after installation; if so, replace them. Clean cylinders and crankcase mating surfaces with Loctite Chisel (P/N 413708500). Coat crankcase mating surface with Loctite 518 (P/N 293800038). Choose the right gasket thickness according to combustion chamber volume. Refer to LEAK TEST AND ENGINE DIMENSION MEASUREMENT. Install it on the crankcase. Coat gasket with Loctite 518.

▼ CAUTION

Always install a gasket of the proper thickness. Failure to do so may cause detonation and severe engine damage. Before inserting piston in cylinder, lubricate the cylinder with new injection oil or equivalent. Install cylinders. Do not tighten. Install new rubber ring and round O-rings on each cylinder.



CIRCLIP READY TO BE INSTALED ON PISTON



TAB TOWARD TOP

• NOTICE:

Carefully clean screws before reinstallation, specifically under screw head.

Install exhaust manifold with gaskets. Do not tighten yet.

Torque cylinder screws in a crisscross sequence as per the following table:

M8	29 N•m (21 lbf•ft)
M10	40 N•m (29 lbf•ft)

At assembly, torque cylinder head screws to **29 N-m** (**21 lbf-ft**) in the illustrated sequence at right.

Tighten exhaust manifold bolts to 23 N-m (17 lbf-ft) in a crisscross sequence.

Apply Loctite 243 (P/N 293 800 060) on screws threads. Install outlet socket and tighten screws to **12 N-m (106 lbf-in).** Note position of longer screw.

1. Longer screw





30, Reed Valve

All Engines

Blades have a curved shape. Install with their curve facing reed block.

With blade stopper no. 32 removed, check reed valve for proper tightness. There must not be any play between blade and valve body when exerting a finger pressure on blade at blade stopper location.

In case of a play, turn blade upside down and recheck. If there is still a play, replace blade and/or valve body.

Check distance from blade stopper outer edge and distance from center of reed valve block.

TYPICAL A. 18.7 - 0, + 0.75 mm (.736 - 0, + .030 in)

Bend blade stopper as required to obtain the proper distance.



Blade stoppers may slightly interfere with cylinder during installation. Adjusted distance will be reduced automatically upon installation.

BOTTOM END

• NOTICE:

The engine must be removed from the chassis to carry out the following operations. See **Chapter 4 – Engine Removal** for details.

CLEANING

- Discard all gaskets and O-rings.
- Clean all metal components in a non-ferrous metal cleaner. Use gasket remover (P/N 413 708 500) accordingly.
- Remove old paste gasket material from crankcase mating surfaces with gasket remover (P/N 413 708 500)

▼ CAUTION

Never use a sharp object to scrape away old sealant as score marks incurred are harmful to crankcase sealing.

DISASSEMBLY

General

To remove drive pulley, refer to **Chapter 8 – Primary Transmission System**. To remove magneto, refer to CDI SYSTEM in **Chapter 14 – Electrical System**.

2,3,7,9 Crankshaft Bearings

To remove bearings from crankshaft, use a protective cap and special puller, as illustrated.

1. PTO side 2. MAG side

This includes the following parts:

PROTECTIVE CAP AND SPECIAL PULLER P/N		
P/N	Description	
420 940 755	M16 x 1.5 x 150 screw	
420 840 681	M8 x 40 screw (4)	
420 841 201	M8 x 70 screw (4)	
420 876 552	Crankshaft protector PTO all engines except 247	
420 876 557	Crankshaft protector MAG all engines except 247	
420 977 490	Puller ring (use with hafl rings 420 977 475 or 420 276 025)	
420 977 475	Half ring (2) for 72 mm O.D. bearings	
420 276 025	Half ring (2) for 62 mm O.D. bearings	
420 977 480	Puller ring	
420 977 494	Puller ring (use with hafl rings 420 977 479)	
420 977 479	Half ring (2) For 80 mm O.D. bearings	
420 876 330	Half ring (2) For 52 mm O.D. bearings	



INSPECTION

NOTE: Refer to LEAK TEST AND ENGINE DIMENSIONS MEASUREMENT (End of this chapter)

ASSEMBLY

Coat lip of all seals with Petamo grease (P/N 420 899 271).

7, Crankshaft Bearing

Smear anti-seize lubricant (P/N 413 701 000) on part of crankshaft where bearing fits.

Prior to installation, place bearings into an oil container filled with injection oil previously heated to 75° C (167°F). This will expand the bearing and ease installation.

Some bearings must be lubricated with Isoflex grease (P/N 293 550 021).

▼ CAUTION

Use only the recommended Isoflex grease. Make sure not to push Isoflex grease between outside bearing race and half crankcase. Use a sharp object to scrape away old sealant as score marks incurred are harmful to crankcase sealing.

• NOTICE:

The 50 g tube corresponds to 50 cc of grease.

Put 50 to 55 mL of grease in a syringe.

VCAUTION

Do not exceed the recommended amount of grease.

Fill inner side of PTO side bearing with Isoflex grease (about 10 mL) as shown at right.



PTO SIDE BEARING FILLED WITH ISOFLEX GREASE



ENGINE (CYLINDERS / HEAD / BASE / EXHAUST) 7 - 20

With the syringe, fill the outer ball bearing and inner side of outer seal with 40 to 45 mL of lsoflex grease as shown at right.

Apply 6 mL of grease to MAG side outer bearing.

• NOTICE:

If replaced with new bearing, do not apply grease as new bearings come with grease already applied.

BALLS COATED WITH A SEAM OF GREASE



FILL WITH GREASE AND SET IN PLACE

At crankshaft installation, position drive pins as illustrated.

1. Position pins

For 50 mL (2 U.S. oz) of injection oil in the pan under central gear to lubricate pump gearing as per photo.

1. Oil bath



Crankcase Assembly

IMPORTANT: The total assembly sequence, including sealing compound spreading, screwing and torquing of bolts according to the proper sequence, must be performed within 10 minutes. **Do not wait between each bolt torquing. All bolts must be torqued in a row.**

Before screwing together both parts of crankcase, seal it with sealing compound (P/N 420 297 906). Make sure surfaces are **perfectly** clean and degreased before applying sealing compound.

Spread a seam of **1.2 mm (1/16 in)** maximum in diameter on the surface of lower crankcase half.



As far as possible, sealing compound must be applied in one run to avoid any risks of leakage through the crankcase.



SEAMING COMPLETED – CONTACT SURFACES COVERED AND SCREW HOLES SURROUNDED

Screw all crankcase bolts in place in the following sequence and to the appropriate torque; this must be done in two steps, torquing: first, screw bolts up to 60% of the final torque **(18 N-m (13.5 lbf-ft)** for most of the bolts), then, tighten to the required torque **(i.e. 29 N-m (21 lbf-ft))**.

A. Torque bolts 1 through 16 to **29 N-m (21 lbf-ft)** B. Torque bolts 17 through **21 to 9 N-m (80 lbf-in)**

793 HO Engine Types

Install oil seal cover

BREAK-IN

After rebuilding an engine, always observe a break-in period as described in **Chapter 1 – General Instructions**.



LEAK TEST AND ENGINE MEASUREMENT

LEAK TEST

The following gives verification procedures for 593 HO engines.

PREPARATION

- 1. Remove tuned pipe.
- 2. Install plug over exhaust manifold.
- 3. Remove carburetors.
- 4. Unplug fuel inlet line from fuel rail
- 5. Insert plugs in intake rubber boots. Tighten with existing clamps.

6. Using a hose pincher (P/N 295 000 076), block impulse hose.

7. Install air pump on exhaust plug.

• NOTICE:

If necessary, lubricate air pump piston with mild soap.

▼ CAUTION

Using hydrocarbon lubricant (such as engine oil) will damage rubber seal of pump piston.

- 8. Activate pump and pressurize engine to 34 kPa
- (5 PSI). Do not exceed this pressure.
- 9. Engine must stand this pressure during 3 minutes.

 If pressure drops before 3 minutes, check tester kit by spraying a soapy solution on pump cylinder, all plugs and fittings.

- If tester kit is leaking, bubbles will indicate where leak comes from.

- If tester kit is not leaking, check engine as per the following procedure.

PROCEDURE

• NOTICE:

A flow chart has been prepared as a visual reference. Page 7-25 and 7-26 of this chapter.

Using the flow chart and the following text, pressurize area to be tested and spray soapy solution at the indicated location.

TEST PRESSURE: 34 kPa (5 PSI) for 3 minutes

 If there is a leak at the tested location, it is recommended to continue testing the next item before overhauling the engine.
There is a possibility of more than one leak.





- If there is no leak at the tested location, continue pumping to maintain pressure and continue with the next item until the leak is found.

Engine

Check the following:

- 1. All jointed surfaces and screw/stud threads of engine:
- spark plug base, insulator
- cylinder head
- RAVE valve bellows, piston and housing
- cylinder
- crankcase halves (joint)
- oil injection pump mounting flange (O-ring)
- coolant pump housing
- bleed screws/plugs.
- crankcase grease reservoir fitting

Check for air bubble or oil column going toward pump. It indicates defective check valve in injection nipples.

2. Remove cooling system cap.

Check for air bubbles in antifreeze. It indicates defective cylinder head O-ring or cylinder base gasket.

3. Remove drive pulley then check crankshaft outer seal.

4. Remove rewind starter and magneto system then check crankshaft outer seal.

5. Check pump shaft gear oil reservoir.

Pump Shaft Oil Gear Reservoir

Install air pump on adapter and pressurize as shown at right. If pressure drops, it indicates a defective crankshaft inner seal.

CRANKSHAFT INSTALLED IN UPPER HALF CRANKCASE 1. Crankshaft inner seal on PTO side 2. Crankshaft inner seal on MAG side



1. Check weep hole below coolant pump housing with soapy water.

1. Weep hole

If there is a leak, it indicates that a pump shaft is defective (oil seal beside coolant ceramic seal).



2. Leaks can be also on the oil pump side, which is blocked off on the Snow Hawk 600HO. Check this mounting area and the two mounting bolts for leaks.

3. If leak still persists, it indicates a defective casting somewhere in the engine.

Disassemble engine and carefully check for defects in castings. Pay attention to tapped holes which may go through engine sealed area and thus lead to leakage.

FINALIZING REASSEMBLY

After reassembling engine, always recheck for leakage.



ENGINE LEAK VERIFICATION FLOW CHART
ENGINE DIMENSION MEASUREMENT

This section covers the 793HO engine type.

CYLINDER HEAD WARPAGE

ENGINE TYPE	MAXIMUM
	0.05 mm (.002 in) per 50 mm (2 in) of surface
All	0.5 mm (.020 in) for total length of cylinder head

Check gasketed surface of the cylinder head with a straightedge and a feeler gauge.

ENGINE TYPE	MAXIMUM	
All	0.10 mm (.004 in)	

CYLINDER TAPER

Compare cylinder diameter 16 mm (5/8 in) from top of cylinder to just below its intake port area. If the difference exceeds the specified dimension the cylinder should be rebored and honed or should be replaced. Nikasil cylinder can be honed using diamond hone but cannot be rebored.

• NOTICE:

Be sure to restore the chamfer around all cylinder sleeve port openings.

1. Below the intake port A. 16 mm (5/8 in) from top



CYLINDER OUT OF ROUND

ENGINE TYPE	MAXIMUM	
All	0.08 mm (.003 in)	

Measuring 16 mm (5/8 in) from top of cylinder with a cylinder gauge, check if the cylinder out of round is more than the specified dimension. If larger, cylinder should be rebored and honed or should be replaced. Nikasil cylinder can be honed using diamond hone but cannot be rebored.

NOTICE:

Be sure to restore the chamfer around all cylinder sleeve port openings.

- 1. Piston pin position
- 2. Measures to be compared
- A. 16 mm (5/8 in)



COMBUSTION CHAMBER VOLUME MEASUREMENT

The combustion chamber volume is the region in the cylinder head above the piston at Top Dead Center. It is measured with the cylinder head installed on the engine.

1. Combustion chamber



• NOTICE:

When checking the combustion chamber volume, engine must be cold, piston must be free of carbon deposits and cylinder head must be leveled.

1. Remove both spark plugs and bring one piston to Top Dead Center a using a TDC gauge.

1. Bring piston to TDC



- 2. Remove cylinder head.
- 3. Seal piston ring gap with a small amount of grease.
- 4. Reinstall cylinder head.

5. Obtain a graduated burette (capacity 0 - 50 cc) and fill with an equal part (50/50) of gasoline and injection oil.

6. Open burette valve to fill its tip. Add liquid in burette until level reaches 0 cc.

7. Inject the burette content through the spark plug hole until liquid touches the top spark plug hole.



1. Graduated burette (0-50 cc)

• NOTICE:

The liquid level in cylinder must not drop for a few seconds after filling. If so, there is a leak between piston and cylinder. The recorded volume would be false. Reseal the piston ring gap and follow the instruction provided above.

8. Let burette stand upward for about 10 minutes, until liquid level is stabilized.

9. Read the burette scale to obtain the quantity of liquid injected in the combustion chamber.

• NOTICE:

When the combustion chamber is filled to top of spark plug hole, it includes an amount of 2.25cc corresponding to the spark plug well.

10. Repeat the procedure for the other cylinder.

ENGINE TYPE	COMBUSTION CHAMBER VOLUME (cc) (up to top thread of spark plug hole)
793 HO	38.5+1.93



1

1. Top of spack plug ho;e

11. Install a thicker or thinner cylinder/crankcase gasket (refer to *Parts Catalogs*) in order to obtain the specified combustion chamber volume or the nearest.

ENGINE TYPE	CHANGE IN COMBUSTION CHAMBER VOLUME (cc) FOR EVERY 0.1 mm (.004 in) OF GASKET THICKNESS
793	0.53

USED PISTON MEASUREMENT

Note the measurement on the piston dome.

- 1. Piston dome
- 2. Piston measurement



- 1. Measuring perpendicularly (90°) to piston pin axis
- A. 15 mm (.590 in)





ENGINE	MAXIMUM PISTON SKIRT WEAR
TYPE	mm (in)
All	0.15 (.006)

The measured dimension must not be less than 0.15 mm (.006 in) of the one scribed on piston dome. Otherwise, install a new piston.

CYLINDER/PISTON CLEARANCE

Used and New Pistons

IMPORTANT: Make sure used piston is not worn more than specified. See USED PISTON MEASUREMENT above.

Take the measurement on the piston dome.

- 1. Piston dome
- 2. Piston measurement



Adjust and lock a micrometer to the specified value on the piston dome.

1. Micrometer set to the piston dimension



- 1. Use the micrometer to set the cylinder bore gauge
- 2. Dial bore gauge



1. Indicator set to 0 (zero)

IMPORTANT: Always remove cylinders from crankcase before measuring.

Position the dial bore gauge at 16 mm (5/8 in) below cylinder top edge.

1. Measuring perpendicularly (90°) to piston pin axis A. 16 mm (5/8 in)

Read the measurement on the cylinder bore gauge. The result is the exact piston/cylinder wall clearance. If clearance exceeds specified tolerance, replace cylinder.

● NOTICE:

Make sure the cylinder bore gauge indicator is set exactly at the same position as with the micrometer, otherwise the reading will be false.

IMPORTANT: The total piston/cylinder clearance (actual cylinder diameter minus actual piston skirt diameter) should be within 0.30 mm (.012 in).





RING/PISTON GROOVE CLEARANCE

Using a feeler gauge check clearance between rectangular ring and groove. Replace piston if clearance exceeds specified tolerance. Refer to **Chapter 15 – Dimensions and Tolerances.**



RING END GAP

Position ring half-way between transfer ports and intake port.

• NOTICE:

In order to correctly position the ring in the cylinder, use piston as a pusher.

Using a feeler gauge, check ring end gap. Replace ring if gap exceeds specified tolerance. Refer to **Chapter 15 – Dimensions and Tolerances.**

- 1. Transfer port
- 2. Intake port



Crankshaft deflection is measured with a dial indicator.

Measuring (in crankcase)

First, check deflection with crankshaft in crankcase. If deflection exceeds the specified tolerance, recheck deflection using V-shaped blocks to determine the defective part(s). See below.

Measuring (on bench)

Once engine is disassembled, check crankshaft deflection on Vshaped blocks. If deflection exceeds the specified tolerance, it can be worn bearings or a bent crankshaft. Remove crankshaft bearings and check deflection again on V-shaped blocks to determine the defective part(s). See measurement A in following illustration.

1. Measure at mid point between the key and the first thread A. 3 mm (1/8 in)





Crankshaft Deflection on PTO side

ENGINE	MAXIMUM ON PTO SIDE
TYPE	mm (in)
All	0.06 (.0024)

Crankshaft Deflection on MAG side

ENGINE	MAXIMUM ON MAG SIDE
TYPE	mm (in)
All	0.05 (.002)

Crankshaft Deflection in Center of Crankshaft

ENGINE TYPE	MAXIMUM IN CENTER OF CRANKSHAFT mm (in)
All	0.08 (.0031)

• NOTICE:

Crankshaft deflection cannot be correctly measured between centers of a lathe.

If the deflection exceeds the specified tolerance, crankshaft should be repaired or replaced.

Connection Rod Big End Axial Play

ENGINE	NEW PARTS	WEAR
TYPE	MIN MAX.	LIMIT
All	0.31-0.67mm (.012029 in)	1.20mm (.047 in)

Using a feeler gauge, measure distance between thrust washer and crankshaft counterweight. If the distance exceeds specified tolerance, repair or replace the crankshaft.



CRANKSHAFT END-PLAY

End-play is not adjustable but it should be between 0.10 - 0.30 mm (.004 - .012 in).

CHECKING CRANKSHAFT ALIGNMENT

- Install a degree wheel (P/N 529 035 607) on crankshaft end.
- o Remove both spark plugs.
- Install a TDC gauge (P/N 414 104 700) in spark plug hole on MAG side.
- o Bring MAG piston to top dead center.
- Rotate degree wheel (not crankshaft) so that 360° mark aligns with center of crankcase. Scribe a mark on crankcase.
- o Remove TDC gauge and install it on center cylinder.
- Bring PTO piston to top dead center. Degree wheel must rotate with crankshaft.

Interval between cylinders must be $180^{\circ} \pm 0.5$. Any other reading indicates a misaligned (twisted) crankshaft.



CHAPTER 6 COOLING SYSTEM

COOLING SYSTEM



Cooling System			
Ref.	P/N	Qty	Part descriptions
			·
1	509000323	1	Coolant reservoir
2	509000187	1	Closure cap
3	SH-263SA	1	Heat exchanger
4	SH-264	1	Protector
5	SH-093	2	Coolant tube #4
6	SH-094	1	Coolant tube #3
7	SH-095	1	Coolant tube #1
8	SH-096	1	Coolant tube #5
9	SH-097	1	Coolant tube #2
10	415080200-S	1	Overflow tube
11	414554800	1	Spring clamp (black)
12	408800400	12	Hose clamp (geared)
13	BN01-0618	17	3/16" Medium pop rivet
14	SH-262	2	Slide support
15	SH-165	1	Wear pad
16	SH-064	2	Wear pad
-	278001016	1	Temperature sensor (Bosch, Blue, MAG side)
-	512047000	1	Temperature sensor (Indebras, Black, PTO side)
-	420922517	1	Thermostat (42°)
-	420931272	1	Thermostat sealing ring

♦ WARNING

This vehicle is equipped with a liquid cooling system. ALWAYS ride with the rear deflector pad installed and in conditions where there is enough snow to properly cool the engine. If the red temperature light on the steering column should ever illuminate, stop immediately and let the vehicle cool down, and then find some snow. NEVER continue to operate the vehicle with the temperature light illuminated as severe engine damage will occur.

COOLING SYSTEM LEAK TEST

- Install special radiator cap (P/N 529021400) included in engine leak tester kit (P/N 861749100) on coolant tank.
- Install hose pincher (P/N 295000076) on the overflow hose. Using pump also included in the kit and pressurize the entire system through the coolant reservoir to 100 kPa (15 PSI).
- Check all hoses and cylinder/base for coolant leaks. Spray all connections with a soapy water solution and look for air bubbles.



INSPECTION

Check the general condition of hoses and clamp tightness.

DRAINING THE SYSTEM

To drain the cooling system:

- Siphon the coolant mixture from the coolant tank.
- Disconnect the hose at the water pump inlet housing to drain coolant from engine.
- When the coolant level is low enough, lift the rear of the vehicle to drain the heat exchangers.

WARNING

Never drain or refill the cooling system when the engine is hot.

DISASSEMBLY AND ASSEMBLY

Temperature sensors:

 Apply Loctite 592 (P/N 413 702 300) thread sealant to temperature sensor threads to avoid leakage.

Pressure Cap (No. 2):

Check if the cap pressurizes the system. If not, 0 install a new 90 kPa (13 PSI) cap (do not exceed this pressure).

Thermostat:

To check the thermostat, put it in a basin of water and gradually heat it. The thermostat should start to open when water temperature nears 42°C (108°F). It will be almost fully open at 50°C (122°F).

ENGINE	TEMPERATURE
All	42°C (108°F)

The thermostat is a double action type:

(1) Its function is to give faster warm up of the engine by controlling a circuit; water pump — engine — coolant tank. This is done by bypassing the heat exchanger radiator circuit and using what it called a short circuit during warm up, i.e. before the coolant temperature reaches 42°C (108°F).



TYPICAL — CLOSED THERMOSTAT, COLD ENGINE 1. To reservoir 2. From cylinders

(2) When the liquid is warmed enough, the thermostat progressively opens the circuit; water pump - engine - heat exchangers - coolant tank to keep the liquid at the desired temperature. (See the diagram of the exploded view on page 6-1).

These 2 functions have the advantage of preventing a massive entry of cold water into the engine.



TYPICAL — OPEN THERMOSTAT, WARM ENGINE To radiators

2. From cylinders

COOLING SYSTEM REFILLING PROCEDURE

▼ CAUTION

To prevent the formation of corrosion or freezing, always re-fill the system with the recommended premixed coolant.

REFILLING PROCEDURE

● NOTICE:

Use the 50/50 premixed coolant rated for -37°C (- 35°F) (P/N 293 600 038).

- Do not reinstall pressure cap.
- With engine cold, refill coolant tank up to COLD LEVEL line.
- Start engine. Refill up to line while engine is idling until rear heat exchangers are warm to the touch (about 4 to 5 minutes).
- Always monitor coolant level while filling tank to avoid emptying.
- o Install pressure cap.
- o Lift rear of vehicle and support it safely.
- Blip the throttle 3 4 times to bring engine speed to 7000 RPM.
- o Apply the brake to stop the track.
- Lower vehicle back on ground and add coolant up to 15 mm (1/2 in) above the COLD LEVEL line, as shown at right.
- Lift front of vehicle approximately 60 cm (24 in) and support it safely. Let the vehicle idle for two minutes like this
- Put the vehicle back on the ground and add coolant up to 15 mm (1/2 in) above the COLD LEVEL line.
- When the engine has completely cooled down, recheck coolant level in coolant tank and refill up to the line if needed.
- Check for coolant mixture freezing point. The specification is - 37°C (- 35°F). Adjust as necessary.



CHAPTER 5 REWIND STARTER

REWIND STARTER



REWIND STARTER			
Ref.	P/N	Qty	Part descriptions
1	420810868	1	Connecting flange
2	420241236	4	Socket head screw M6 x 16
3-12	420889765	1	Rewind starter
3	420811404	1	Starter housing
4	420939115	1	Rewind spring
5	420852286	1	Rope sheave
6	412500200	1	Starter rope (2200mm)
7	420852297	1	Pawl
8	420852305	1	Pawl lock
9	420847925	1	Stage sleeve
10	420250400	1	O-ring
11	420852520	1	Lock ring
12	420845560	1	Locking element
13	-	1	Positioning pin
14	420941256	4	Hex collar screw M6 x 20
15	420899763	@	Molykote PG 54, 10g
16	293530011	@	Sealant, Sikaflex black # 221
17	572084400	1	Starter grip
-			

INSPECTION

• NOTICE:

Due to dust accumulation, rewind starter must be periodically cleaned, inspected and re-lubricated.

CAUTION

It is of the utmost importance that the rewind starter spring be lubricated periodically using Molykote PG 54 (P/N 420 899 763). Otherwise, rewind starter component life will be shortened and/or rewind starter will not operate properly under very cold temperatures.

- Check if rope **# 6** is fraying, replace if so.
- When pulling starter grip, mechanism must engage within 30 cm (1 ft) of rope pulled. If not, disassemble rewind starter, clean and check for damaged plastic parts. Replace as required, lubricate, reassemble and recheck. Always replace O-ring # 10 every time rewind starter is disassemble.
- When releasing starter grip, it must return to its stopper and stay against it. If not, check for proper spring preload or damages. Readjust or replace as required.
- When pulling starter grip 10 times in a row, it must return freely. If not, check for damaged parts or lack of lubrication. Replace parts or lubricate accordingly.

REMOVAL

- Using a small screwdriver, extract rope knot from starter grip **# 17**. Cut rope close to knot. Tie a knot near starter.
- Remove screw **# 14** securing rewind starter to engine then remove rewind starter.



ROPE REPLACEMENT

- Pull out rope. Hold rewind starter in a vise. Slide rope and untie the knot. Pull out the rope completely.
 - 1) Knot to be untied.

• NOTICE:

When rope is completely pulled out, spring preload is 4 ½ turns.

DISASSEMBLY

- Undo knot previously tied at removal. Let sheave get free to release spring preload.
- Cut locking element # 12 and discard. Remove lock ring # 11, O-ring # 10, stepped sleeve # 9, Pawl lock # 8 and Pawl # 7.
- Remove sheave **# 5** from starter housing **# 3**. Hold the spring with a screwdriver.
- Pull out knot and then pull out rope # 6.



ASSEMBLY

At assembly, position spring **# 4** outer end into spring guide notch then wind the spring counter clockwise into guide.

WARNING

Since the spring is tightly wound inside the guide it may fly out when rewind is handled. Always handle with care.



1) Outer end into guide notch

♦ CAUTION

It is of the utmost importance that the rewind starter spring be lubricated periodically using Molykote PG 54 (P/N 420 899 763). Otherwise, rewind starter component life will be shortened and/or rewind starter will not operate properly under very cold temperatures.

- Lubricate spring assembly and 1cm (1/2 in) wide on bottom of housing with Molykote PG 54.
 - 1) Molykote PG 54



The use of standard multi-purpose grease could result in rewing starter malfunction.

- To install rope **# 6**, insert rope into sheave **# 5** orifice and lock it by making a knot, leaving behind a free portion of about 25 mm in length. Fuse rope end with a lit match and insert it into sheave.
- Free portion inserted into the sheave.
- Lubricate housing post with silicone compound grease. Install sheave.

5 orifice a free d with a

A32C2AA

A01C14A

0

0

To adjust cord tension:

- Wind rope on the sheave and place the rope sheave into the starter housing making sure that the sheave hub notch engages in the rewind spring hook.
- Rotate the sheave counter-clockwise until rope end is accessible through rope exit hole. This will give ½ turn of preload.
- Pull the rope out of the starter housing and temporarily make a knot to hold it.



- Lubricate pawl **# 7** with Molykote PG 54 (P/N 420 899 763) then install over rope sheave.
- Lubricate pawl lock **# 8** with Molykote PG 54. Install over pawl.
- Instal stepped sleeve # 9 with its sleeve first. Lubricate a new O-ring # 10 and lock ring # 11 whit Molykote PG 54. Install over pawl lock.

1) Stepped sleeve

2) O-ring

3) Lock ring

• Install the locking element nut **# 12**.

INSTALLATION

- Fuse rope end with a lit match.
- Thread starter rope **# 6** over guide pulleys and through eye bolt.
- o Reinstall rewind starter assembly on engine.
- Pass rope through starter grip **# 17** and tie a knot in the rope end. Insert rope end down and pull the starter grip over the knot.





CHAPTER 4 ENGINE REMOVAL

ENGINE REMOVAL

Front fork

sprockets when removing the fork.

Remove the hood, bellypan and rear module from vehicle. Refer to Chapter 1, GENERAL INSTRUCTIONS.

Remove the two forward brackets (P/N SH-032 L/R)

Remove tuned pipe, primary muffler and secondary muffler. Refer to chapter 7, ENGINE.

Use a crate or box to support the vehicle just under the drive







Front fork

Unfasten the tie rod end which connects the steering columb to the upper triple clamp.

Unfasten the two fork bolts that retain the fork to the vehicle.

- 1. Tie rod nut
- 2. Upper fork bolt (other fork bolt is directly below it)



Carburators

Remove the rubber latch retaining the fuel tank and place it as shown on the right to have free access to air box and carburators.

Remove the air box.

Remove the carburators to the engine boots. Refer to chapter 3, **FUEL SYSTEM**.



Water pump oil tank

Using a drill and a 3/16 in. Bit, drill out the two rivets that secure the water pump oil tank to mag side chassis.

Cut the tie-wrap that secure the choke cable to the oil tank hose.



Recoil Starter

 Using a flat-head screwdriver, push the knot out of the recess in the starter handle. Since it is often easier, cut the cord just before the knot while holding the cord securely such that it does not slip and go into the recoil housing. Make a new knot in the cord once the starter handle has been removed to prevent this from happening.

• Make a knot as shown at right.





Secondary Clutch

- Open the secondary clutch using the the spacer tool (P/N 529 008 700). For more details, see Chapter 8 – Primary Transmission System.
- Remove the bolt retaining the secondary clutch to the jackshaft and then slide the secondary off the jackshaft at the same time removing the drive belt.
- Using the primary clutch holder tool (P/N 529 027 600), remove the primary clutch bolt.
- Using the primary clutch puller (P/N 529 022 400) remove the primay clutch from the engine.



Engine Connector

- Cut the tie-wrap and disconnect the two-place housing that connects the Crank Position Sensor (CPS) to the wiring harness (blue and white/yellow wires). This connector is located just above the jackshaft, near the ignition coil and the water pump oil reservoir.
- The engine-side of the Crank Position Sensor (CPS) wire then passes down the height of the chassis towards the magneto and is attached to the tube that goes from the water pump oil reservoir to the water pump itself via a tie-wrap. Cut this tie-wrap as well.



 Cut the tie-wraps that secure the wires from the engine to the voltage regulator. Then disconnect the four-place housing (yellow, yellow and yellow wires) and the twoplace housing (green and black wires) that is next to the four-place housing.



• Unplug the two wires from the two temperature sensors located at the rear of the head of the engine.



Impulse Hose

• Disconnect the impulse hose from the crankcase of the engine.



Cooling System

• Loosen the hose clamp that holds the forward cooling hose to the water pump housing inlet at the front of the engine. With a bucket below this point, let the coolant drain from the system **completely**.



 Loosen the hose clamp on the reservoir end of the short hose that runs from the head to the reservoir and disconnect the hose from the reservoir, as shown at right.



 Loosen the hose clamp farthest towards the PTO side on the PTO side heat exchanger and disconnect the hose there. This hose runs from the head of the engine to the inlet of the tunnel-mounted heat exchangers and should remain connected to the engine when removing.



- Now that all of the peripheral equipment has been disconnected, unscrew and remove the 4 bolts (per side) that secure the engine plate to each side of the chassis.
- \circ PTO side bolts (x 4)



• MAG side bolts (x 4)

• Now the engine can be completely removed from the vehicle.



Re-Installating Engine

To re-install the engine, follow the instructions above in the reverse order. However, pay close attention to the following details :

- Ensure that the 4 (per side) engine plate bolts are well torqued to **37 N-m (27lbf-ft, 325 lbf-in).** Loctite 243 is recommended here.
- Ensure the correct alignment of the clutches and the preload/deflection of the drive belt.
- Ensure that each cable, wire and hose is properly connected and its original routing is used. (See Chapter 17 Wire, Cable and Hose Routing for more details.)
- Ensure that each coolant line is re-installed using the original routing and that each hose clamp is well tightened.
- Re-fill the coolant reservoir to the Cold Level line before attempting to start the vehicle. It is recommended to elevate the front of the vehicle about 12 in. off the ground when adding coolant to the system to ensure that all of the air bubbles will escape. See Chapter 6 Cooling System for more details.

CHAPTER 3 FUEL SYSTEM

FUEL SYSTEM



Fuel system			
Ref.	P/N	Qty	Parts descripsions
1	ADB-SH1	1	Fuel tank 31L
2	322111-BLK	1	Gaz tank cap
3	907301-01	1	7/32" gaz tank (overflow)
4	95-S21TQ	1	Rubber rope 21"
5	SH-166	1	Air box
6	508 000 132	2	Intake adaptor
7	508 000 346	2	Gemi clamp
8	3060-20-003	1	Air filter
9	3060-20-005	1	O-ring
10	415 128 729	1	Carburator kit TM-40
11	512 059 835	2	Gemi clamp
12	07-0411	1	Throttle cable
13-15	512 059 110	1	Choke cable
14	394 103 300	1	Lock washer (interior teeth)
15	512 059 094	1	Plstic nut
16	01-0053	1	Twist throttle
17	24-1101	1	Handle grip (set)
18	570 135 100	1	Grommet
19	414 580 700	1	Male connector
20	415 080 200-01	1	Hose
21	404 162 001-01	1	Hose
22	572 045 500	1	T-fitting
23	404 162 001-02	1	Hose
24	403 901 811	1	
25	414 415 200	4	
26	14-349-01	1	lubing
27	415 080 200-2	1	
20	415 07 9 600-1	1	
29	415 050 200-03	1	
31	513 032 979	2	Spring clamp
32	513 033 022-1	1	Hose
33	420 874 370	1	Male connector
34	414 420 700	1	Spring clamp
35	SH-092	1	Short spacer
36	SH-091	1	Long spacer
37	170-103	2	T-nut
38	SN328-016	1	Hex head flange screw 1/4-20 x 1 1/4
39	SN328-014	1	Hex head flange screw 1/4-20 x 3/4
40	570 045 500	1	Grommet
-			

CARBURETORS (TM 40)



FUEL SY	STEM	3 -	5
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Carburetors (TM 40)			
Ref.	P/N	Qty	Part Descriptions
	I		Ia
1	403 138 740	1	Carburator kit TM-40
2	404 162 017	1	Funnel (PTO)
3	404 161 955	2	Screw
4	404 161 945	2	O-ring
5	404 107 900	2	Main jet 490
6	404 161 887	2	Pilot jet 20
7	404 162 019	2	Needle 9DHI12-58-3
8	404 162 020	2	Piston Valve 2.0
9	404 137 600	2	Packing
10	404 152 200	2	E-ring
11	404 152 200	2	Cooket
11	404 101 940	2	Gasket
12	404 161 939	2	
13	404 162 006	1	I hrottle shaft
14	-XXX-	1	Screw
15	-XXX-	1	Adjustment spring
16	404 161 935	2	
17	404 101 901	<u> </u>	Screw
10	404 161 932		Float
20	404 161 960	2	Float Body
21	707 200 027	1	E-ring
22	404 162 007	4	Plate
23	404 162 008	2	Holder
24	404 161 928	2	Screw
25	404 162 009	2	Lever
26	404 161 926	2	Ring
27	404 161 925	1	Ring
28	404 161 924	2	Ring
29	404 161 923	4	
30	404 138 300	2	E-IIIg
32	404 162 010	<u> </u>	Spring
33	404 161 920	2	Screw
34	404 161 919	2	Plate
35	404 162 012	1	Funnel (MAG)
36	404 161 918	1	Spring (PTO)
37	404 161 917	1	Screw (PTO)
38	404 162 022	1	Bracket (PTO)
39	404 162 014	1	Spring
40	404 162 015	1	Throttle shaft
41	404 137 500	1	Adjustment screw
42	404 161 913	1	Spring

Carburetors (TM 40)			
Ref.	P/N	Qty	Part Descriptions
43	404 161 912	1	Screw
44	404 136 100	1	Screw
45	404 161 911	2	Screw
46	404 161 910	3	Screw
47	404 161 909	2	Lever
48	404 140 000	2	Сар
49	404 136 900	2	Holder guide
50	404 161 908	2	Spring
51	404 161 907	2	Plunger ass'y
52	404 161 906	2	Screw
53	404 161 905	1	Nipple
54	404 162 001	2	Hose
55	404 161 903	2	Screw
56	404 162 000	1	Bracket
57	404 161 901	1	Starter lever
58	404 161 899	2	Сар
59	404 161 898	2	Adjuster
60	404 161 897	2	Spring
61	404 161 896	2	Washer
62	404 161 895	2	Packing
63	404 153 400	2	Nipple
64	404 154 900	2	Сар
65	404 161 894	3	Packing
66	404 103 500	1	Spring
67	404 161 981	1	Shaft ass'y
68	404 161 956	1	Hose
69	404 161 957	2	Clip
70	404 138 800	8	Screw
71	-XXX-	1	Spring
72	270 500 118	2	Packing
73	270 500 095	2	Closure cap
REMOVAL

Loosen clamps **# 7** retaining air box **# 5** to carburetor assembly and remove air box.

Disconnect the carburetor support block that is located at the middle-bottom of the carburetor assembly. Pull rearwards on the upper portion of the block to disconnect it completely.

Loosen clamps **# 11** retaining dual carburetor assembly to carburetor sockets.

Disconnect throttle and choke cables.

▼ CAUTION

Always loosen the LOWER nut when removing the throttle or choke cable as to avoid disturbing the settings of either.

Remove dual carburetor assembly, pinch and disconnect fuel line. Take care to recuperate fuel.





♦ WARNING

Fuel is flammable and explosive under certain conditions. Always wipe off any fuel or oil spillage from the vehicle. Ensure work area is ventilated. Do not smoke or allow open flames or sparks in the vicinity.

CLEANING AND INSPECTION

The entire carburetor should be cleaned with an all-purpose cleaner and dried with compressed air before disassembly.

▼ CAUTION

Heavy duty carburetor cleaner may be harmful to the float material and to the rubber parts, O-ring, seats, etc. Therefore, it is recommended to remove those parts prior to cleaning.



▼ CAUTION

Carburetor body and jets should be cleaned with carburetor cleaner following manufacturer's instructions. When jets are very dirty or coated with varnish and gum, replace them.

♦ WARNING

Solvents with a low flash point such as gasoline, naphtha, benzol, etc., should not be used as they are flammable and explosive.

Inspect the condition of the tip of the fuel inlet valve. If the tip is worn, replace both the valve and its seat.

• NOTICE:

Install only a snowmobile carburetor inlet value as it is designed to function with a fuel pump.

Check to see if the throttle slide is worn and replace it if required.

Check for fuel that may have soaked into float; replace as necessary.

Check float for cracks or other damage affecting free movement; replace as necessary.

Inspect throttle and choke cables and housings for any damage. Replace as necessary.

DISASSEMBLY AND RE-ASSEMBLY

NOTICE:

To ease the carburetor disassembly and assembly procedure, it is recommended to use carburetor tool kit (P/N 404 112 000)

20 FLOAT BOWL

Unscrew drain screw # 3 and screw # 52. Remove float bowl.

19 FLOAT AND NEEDLE VALVE ASS'Y

Unfasten both screws # 18 then, pull out float and needle valve assembly # 19.

Upon re-assembly, apply Loctite 243 on screw threads.

5 MAIN JET

The main jet installed in the carburetor has been selected for a temperature of - 20° C (0° F) at sea level. Different jetting can be installed to suit temperature and/or altitude changes. A service bulletin will give information about calibration according to altitude and temperature.

Main jet # 5 may be removed without removing float bowl # 20 by first removing drain screw # 3.

#6 PILOT JET

Use narrow screwdriver from carburetor tool kit (P/N 404 112 000) to unfasten pilot jet # 6.

♦ WARNING

It is critical to the free operation of the throttle slide that the 2 connecting plates as assembled in one carburetor be of the exact same length. Always replace the connecting plates by a pair of new ones that were matched at the factory for length and discard the old ones. Simultaneously replace all the plates of the carburetors of a same rack.

NOTICE:

Do not disassemble throttle slide needlessly.

▼ CAUTION

After throttle slide reassembly, proceed with a leak test. See below for procedure.

7 NEEDLE

Remove carburetor cover # 12.

Loosen needle retainer screw # 33.

Fully open throttle and hold in this position for the following step.

Move aside needle retainer # 34.

1. Needle retainer moved aside.

Turn dual carburetor assembly upside down to free needle # 7. Take care not to loose plastic washer # 9 under needle circlip # 10.



2 INTAKE SPICKET

Unscrew throttle slide cover screws # 70.

Open throttle 3/4 wide and hold it there.

Lift throttle slide covers bottom first until they are free from carburetor bodies. Then, slide them out.

- 1. Lift bottom first
- 2. Slide out

After inserting throttle slide cover in place and be-fore installing screws, ensure O-ring gasket is properly seated in its groove especially in the area around vent nipple. See illustration at right.

- 1. Needle retainer
- 2. Ensure O-ring gasket is properly seated in nipple area.



CARBURETOR ADJUSTMENTS

Adjustments should be performed following this sequence:

- Pilot screw adjustment
- Carburetor synchronization and throttle slide height (preliminary idle speed adjustment)
- Throttle cable adjustment
- Choke cable adjustment
- Final idle speed adjustment (engine running).

Mikupi TM 40	Set	Setting			
	MAG	PTO			
Pilot jet	20	20			
Air screw	1.5 turns	1.5 turns			
Slide cutaway	2.0	2.0			
Needle	9DHI12-58-3	9DHI12-58-3			
Main jet	490	490			
Fuel level	N/A	N/A			
-	-	-			

PILOT SCREW ADJUSTMENT

Completely close the pilot screw (until a slight seating resistance is felt) then back off as specified.

Turning screw clockwise leans mixture and conversely, turning it counter-clockwise enriches mixture.

Refer to "DIMENSIONS AND TOLERANCES" for the exact specifications.

- 1- Idle speed screw
- 2- Pilot screw (one on each carburetor)



CARBURETOR SYNCHRONIZATION AND THROTTLE SLIDE HEIGHT (PRELIMINARY IDLE SPEED ADJUSTMENT)

First proceed on PTO carburetor.

Use a drill bit to measure the throttle slide height (see table at right) on outlet side of carburetor (engine side).

Model	Throttle slide height (drill bit size)	
	± 0.1 mm (±0.004")	
Snow hawk 800 HO 2007	1.6 mm (0,063")	
-	-	

- 1- Adjust PTO carburetor first
- 2- Drill bit used as a gauge to measure throttle height
- 3- Idle speed screw

Adjust by turning idle speed screw # 41.



For MAG carburetor, proceed using the synchronization screw. Use the same drill bit used for the PTO carburetor to measure throttle slide height. Turn synchronization screw to adjust.

- 1- PTO carburetor adjusted first
- 2- Drill bit used as a gauge to measure throttle height.
- 3- Synchronization screw

• NOTICE:

Make sure that throttle cable does not hold the throttle slide. Loosen cable adjuster accordingly

Final idle speed adjustment (engine running at idle speed) should be within 1/2 turn of idle speed screw from preliminary adjustment.



INSTALLATION

▼CAUTION

Never allow throttle slide(s) to snap shut.

To re-install the carburetor, carry out the removal operations in the reverse order.

Be sure that the carburetor assembly is properly inserted into the engine intake sockets before tightening the two hose clamps. (A small amount of white grease can help here) After this, be sure to reconnect the black plastic carburetor support block to the lower shaft at the middle-bottom of the carburetor assembly.

THROTTLE CABLE ADJUSTMENT

Adjust throttle cable as per following procedure:

Loosen throttle cable housing adjusting and locking nuts.

Connect throttle cable barrel to carburetor cam lever # 40.

While holding throttle lever to wide open throttle position, pull on the throttle cable until mechanism touches the stopper. In this position, turn cable housing adjusting nut and tighten lock nut.

Also ensure that, when throttle is released to idle position, the idle adjusting screw end touches its stopper.

- 1- Throttle cable
- 2- Adjusting nut
- 3- Locking nut



CHOKE CABLE ADJUSTMENT

Adjust choke cable as per following procedure:

Loosen choke cable housing adjusting and locking nuts.

Connect choke cable on starter lever # 57.

While choke lever is fully open, pull choke cable until starter lever reaches the stopper. Tighten cable housing adjusting and locking nuts in this position.

As a confirmation, the gap between the stopper and the bracket should be within 0 and 0.5 mm (0 and 1/64 in).

A - Within 0 and 0.5 mm (0 and 1/64 in)



Idle Speed Final Adjustment

Start engine and allow it to warm then adjust idle speed to specifications by turning idle speed screw clockwise to increase engine speed or counterclockwise to decrease it.

Refer to **Chapter 15 – Dimensions and Tolerances** for the specifications.

 NOTICE: Do not attempt to set the idle speed by using the pilot screw. Severe engine dam-age can occur.

FUEL PUMP

REMOVAL

Install a hose pincer (P/N 295 000 076) on fuel supply line close to pump inlet.

Disconnect fuel outlet line(s).

Disconnect impulse line.

Remove screws securing fuel pump to chassis.



PUMP VERIFICATION

Check fuel pump valves operation as follows:

Connect clean plastic tubing to the inlet nipple and alternately apply pressure and vacuum with pump of leak test kit. The inlet valve should re-lease with pressure and hold under vacuum.

Repeat the same procedure at the outlet nipple. This time the outlet valve should hold with pres-sure and also under vacuum.

Check impulse diaphragm and gasket as follows:

Connect clean plastic tubing to the impulse nipple and plug vent hole on top cover with a finger. Either applies pressure or vacuum using the pump (P/N 529 021 800) from the Engine leak tester kit. The diaphragm/gasket must not leak.

1- Pump

2- Plug vent hole



CLEANING AND INSPECTION

Check fuel pump valves operation as follows:

The entire pump should be cleaned with general-purpose solvent before disassembly.

Fuel pump components should be cleaned in general purpose solvent and dried with compressed air.

♦ WARNING

Solvent with a low flash point such as gasoline, naphtha, benzol, etc., should not be used as each is flammable and explosive.

Inspect diaphragm. The pumping area should be free of holes, tears or imperfections. Replace as needed.

INSTALLATION

Inverse removal procedure.

♦ WARNING

Perform a pressure test to ensure there is no leak in the fuel system.

Chapter 2 PERIODIC MAINTENANCE

• NOTICE:

Regular inspection and maintenance of the Snow Hawk is of utmost importance. Follow the guidelines in the table below for optimum vehicle performance. Suggested intervals must be reduced if the vehicle is subjected to severe usage conditions.

Item	Interval (Hrs)	Break-in (~ 10 Hrs.)	5 Hrs	15 Hrs	65 Hrs (yearly)
	Fuel lines and connections	V	-	-	V
2.1 Carburation	Carburetor adjustment	V	-	-	V
2.1 Carburetion Throttle cable		V - A	-	-	V - A
	Air Intake Filter	V	-	-	V - C
Carburetor support bracket		-	-	-	V
	Starter cord	V	-	-	V
	Cylinder head bolts	V	-	-	V
	Engine support bolts	V	-	-	V
2.2 Motor	Exhaust system	V	-	V	V
	Coolant level	V - A	-	V	V - F
	Oil level (water pump oil reservoir)	V - A	-	V	V
	Cooling System (hose connections)	V	-	-	V
	Primary drive belt	V	V	-	V - R
2.3 Primary transmission	Primary and secondary clutch	V	-	V	V - C
system	Primary clutch bolt	V	-	-	V
-	Secondary clutch pre-tension	V - A	-	-	V - A
	Secondary drive belt (cog belt)	V	-	-	V
2.4 Secondary	Cog sprockets	V	-	-	V
transmission system	Torque Limiter	V	-	-	V - A
	Taper Locks	V	-	-	V
	Brake fluid	V	-	-	F
2.5 Brake system	Brake pads	V	-	V - R	V - R
-	Brake microswitch	V	-	-	V
	Front Fork	F	-	F	F
	Fork rubber cushion and bolt	V	-	V	V
2.6 Front suspension and	Fork air bleeder screw	V - A	V - A	V - A	V - A
SKI	Twin axis ski bushings / nuts	V - A	-	V - A	V - A
	Ski and runners	V	V - R as needed		V - R
0.7. Deen even en eien en d	Suspension	V	-	V	-
2.7 Rear suspension and	Shocks	V	-	V	F
таск	Track	V - A	-	V - A	V - A
	Handlebar bolts	V	-	-	V
2.8 Chassis	Steering components	V	-	V	V
	Assembly bolts / nuts	V	-	-	V - C
	Spark plugs	V - A - R	-	V - A - R	V - A - R
	Spark plug gap	V - A	-	-	V - A
	Fuse	V	-	-	V
2.9 Electrical system	Headlight projection/aim	-	-	-	V - A
	Lighting system, stop lamp and				
	emergency stop switch	v	V	-	V

• NOTICE:

V = Verify, A = Adjust, C = Clean, R = Replace one or several part(s), F = Replace fluid

2.1. CARBURATION

Fuel lines and connections

Check all hoses and connections in order to find and fix leaks and/or to help prevent them.

Carburetor adjustment

For carburetor adjustment, refer to **Chapter 3 - Fuel system** section.

Throttle cable

The throttle cable can be adjusted by setting the adjustment mechanism on the throttle end of the throttle cable.

Air intake filter

The air intake filter must be cleaned at least once a year, or more often under severe usage conditions. Clean the filter in a solution containing a non-flammable cleaning solvant (such as hot soapy water). Once dry, apply some light engine to the filters to prevent the infiltration of water and dust.

2.2. ENGINE

Recoil starter cord

Pull gently on the handle to unwind the full length of the cable. Inspect the cable visually to detect any wear or other damage that could eventually cause the cord to break.

Cylinder head bolts

Refer to the appropriate procedure in **Chapter 7 – Engine** (Cylinders/Head/Base).







Engine support bolts

To carry out this operation, refer to the appropriate procedure in **Chapter 7 – Engine (Cylinders/Head/Base).**

Exhaust system

Using a torque wrench, check the torque of the retaining bolts of the exhaust manifold. Apply a torque of **10 N-m (1 kg-m, 7.4 lbf-ft)**.



Then, proceed to a visual inspection of the system to detect any leak or abnormality in the gasket material.



Cooling system

Inspect the coolant level in the coolant reservoir located on the MAG side of the vehicle. If the coolant level is below the "Cold" coolant mark when the vehicle is not warm or has not been ridden within 30mins or more, add coolant until this line. Check all of the hoses / hose connections and ensure that there are no fluid leaks in the system.



2.3. PRIMARY TRANSMISSION

Primary and secondary clutches

Remove the belt and verify that the sliding half-pulleys of the two clutches is in good working condition.

To take the belt off, first use the special tool provided to open the secondary clutch (P/N 529 008 700). Then, slip the belt over the pulley from rear to front as illustrated. To reinstall the belt, proceed in the reverse order.

Primary clutch bolt

Check the torque on the primary clutch retaining bolt. **Recommended torque: 90 - 100 N-m (9–10 kg-m, 70 lbf-ft).**

For more information, refer to **Chapter 8 - Primary Transmission System**.

Pre-tension of the secondary clutch spring

For more information, refer to **Chapter 8 - Primary Transmission System**.

Primary transmission belt

Examine the belt. Make sure it is not cracked, frayed or worn in an abnormal way (uneven wear, wear on one side only, missing cogs, or cracked material). Abnormal wear of the belt is often due to mis-alignment of the pulleys, excessive throttle when the track is frozen, quick acceleration without a preliminary warmup, a scratched or rusted pulley, oil on the belt, or a twisted replacement belt. If need be, ask an authorized SNOW HAWK[™] dealer for advice.

Measure the width of the belt. Replace if it is less than **31.6 mm** (1.245 in) wide.



For more information, refer to **Chapter 8 - Primary Transmission System**.

2.4. SECONDARY TRANSMISSION

Secondary transmission cog belt

Examine the cog belt. Make sure it is not cracked, frayed or worn in an abnormal way. If in doubt as to the condition of the belt, replace it with a new one.

Verify the tension of the secondary transmission belt according to the instructions found in **Chapter 9 - Secondary Transmission System**.



Cog Sprockets

Check the appearance of the cog sprockets. Make sure all the sprockets are there and are free of any accumulated dirt. Clean if necessary.

Taper-locks

Refer to Chapter 9 - Secondary Transmission System.



2.5. BRAKE SYSTEM

Brake fluid

Check to see if the brake fluid level is above the "mimimum" mark (see illustration). If not, add fluid.

VCAUTION

Use only DOT 4 brake fluid from a sealed container. Do not use any other type of brake fluid.



Brake pads

Verify the thickness of the brake pad linings as illustrated. Brake pads must both be replaced if either one of them shows a clearance of less than 1 mm (1/32 in.).

• NOTICE:

For the replacement of brake fluid, refer to **Chapter 10 – Hydraulic Brake System**.

2.6. FRONT SUSPENSION AND SKI

Front fork

The air pressure inside the fork legs must be as close as possible to atmospheric pressure. Therefore, it is advisable to remove the bleeder screws **after every ride** to re-establish the pressure. It should be done more frequently when temperature variations are greater and more frequent (such as when the vehicle is stored in a heated garage).





A visual inspection of the fork legs can reveal oil leaks that might indicate broken main seals. If excessive oil is presest on the lower fork leg, a seal replacement may be required.

It is recommended to replace the fork oil after the break-in period and, from then on, after every 15 hours of use. For details, refer to **Chapter 11 – Front Fork and Twin-Axis Ski**.

▼ CAUTION

It is advisable to change the fork fluid when preparing the vehicle for storage. The presence of condensation in the suspension fluid could cause corrosion during the storage period.

Twin-Axis Ski and Runners

Verify the torque of all the bolts holding the ski, as well as all the studs and nuts retaining the runners. Also inspect the appearance of the runners to detect any wear, distortion, or broken studs.





2.7. REAR SUSPENSION AND TRACK

Suspension

Verify that all suspension bolts and nuts are well tightened, especially the four that retain the suspension to the chassis (use Loctite 243 here) Verify that none of the parts are damaged or missing.

Verify that the suspension wheel bearings are in good working order. Check the condition of the suspension limiter straps. Check the condition of the hyfax.

For more information, refer to Chapter 12 - Rear suspension and Track.



Shock absorbers

Check around the shock guards for the presence of oil leaks.

Shock oil must be replaced once a year. Refer to Chapter 12 - Rear suspension and Track.

▼ CAUTION

It is advisable to change the shock fluid when preparing the vehicle for storage. The presence of condensation in the suspension fluid could cause corrosion during the storage period.



Track

Check the condition, alignment and tension of the track.

With the engine turned off and the rear end of the machine raised from the ground, rotate the track manually and inspect it to make sure it is in good working condition. It must not be cracked and all the lugs must be intact.

• NOTICE:

For track alignment and tension, refer to Chapter 12 - Rear Suspension, Shocks and Track.



CHASSIS AND STEERING

Handlebar mounting bolts

Verify and adjust the torque to **36.5 N-m (3.7 kg-m, 27 lbf-ft)**, following a criss-cross order.

Steering mechanism

Verify the condition of the tie rod ends and check for excessive play in the pivots of the steering system. For alignment, refer to **Chapter 13 – Chassis and Steering.**





Assembly

The chassis of the SNOW HAWK is different in that most of the assembly is done by bolting components rather than welding them. Therefore, bolts must be checked and tightened as need be. When doing this, refer to the **Torque Table** at the end of this section.

2.8. ELECTRICAL SYSTEM

Spark plug

Check the general condition of the plug, the colour of its electrodes, carbon deposits, plug gap and possible damage to the gasket

A NGK BR9ECS spark plug is recommended.

Check the spark plug gap. The suggested gap is 0.45 mm (0.018").

When tightening the spark plug, the torque must be between 25 and 30 N-m (18 and 21.5 lbf-ft; 2.5 and 3.0 kg-m).



Porcelain Colour	Probable Cause
	- Plug Temperature rating is too high
Light Grey (Overheated)	- Plug gap too wide
Light Grey (Overheated)	- Air/Fuel mixture too lean
	- Stale gasoline
	- Plug temperature rating too low
Blackish (Fouled)	- Plug gap is too small
	- Air/Fuel mixture too rich
	- Oil/Fuel mixture too rich

▼ CAUTION

The engine may be seriously damaged if the temperature rating of the spark plug is inadequate.

Refer to the NGK codification on the next page.

Symbols used on the NGK spark plugs



Spark plug gap

The suggested gap is **0.45 mm (0.018").** For more information, refer to **Chapter 14 – Electrical System.**

Wiring Harness

Electrical wires and connections should be inspected visually to quickly locate broken wires or faulty connections. For more information, refer to **Chapter 14 – Electrical System.**

Headlamp, stop lamp and engine cut-off switch

Before each ride or excursion, it is recommended to verify that the headlamp, the stop/tail lamp and the engine cut-off switch are in good working order.

TORQUE TABLE

ITEM	N-m	kg-m	lbf-ft	lbf-in
Torque Limiter bolts (6)	6.2	0.62	4.6	55
Rear Suspension mounting bolts (4)	51	5.1	38	450
Rear Suspension lower swingarm bolts (2)	90	9	66	792
Recoil starter housing bolt	7	0.7	5	62
Primary clutch bolt	90	9	66	792
Secondary clutch bolt	31.7	3.17	23	276
Taper-Lock installation setscrews	14	1.4	10.4	125
Spark plugs	25	2.5	18	216
Handlebar mounting bolts	36.5	3.65	27	324
Triple clamp bolts	6.8	0.68	5	60
Fork pivot bolts	45	4.5	33	396
Ski runner nuts (4)	19	1.9	14	168
Lower clamp nuts	23	2.3	17	204
Ski saddle/fork adaptor nut	85	8.5	63	756

For any other bolt or screw that is not mentioned in the list, please refer to the following table.

	BOLT GRADE " 8.8 "		GRADE " 10.9 "					
(MM)	N-m	kg-m	lbf-ft	lbf-in	N-m	kg-m	lbf-ft	lbf-in
6	10	1	7	84	15	1.5	11	132
8	25	2.5	18	216	36	3.6	27	324
10	49	4.9	36	432	72	7.2	53	636
12	85	8.5	63	756	125	12.5	92	1104

CHAPTER 1 GENERAL INSTRUCTION

FIRST CONTACT

The SNOW HAWK[™] is a completely new type of vehicle. Technically speaking, it is a cross between a snowmobile and a motorcycle. However, its behaviour depends on the conditions in which it is used. Sometimes, it will react more like a bike while at other times, it will react more like a snowmobile or a jetski.

Describing exactly how the SNOW HAWK[™] behaves is difficult. This is why we recommend that you take the time to become acquainted with your machine in an area free of any obstacle. This first contact should take place at low speed, with a series of basic manoeuvres that will allow you to learn about the reactions of the vehicle.

A good exercise is to follow a "figure 8" trajectory because this will allow you to experiment with right- and left-hand turns followed by accelerating and braking.

Turning can be done by steering right or left, keeping in mind the speed of the vehicle, the snow conditions and how quickly you want to change direction.

♦ WARNING

Some people enter a turn by stretching out a leg on the inside of the turn and letting the foot slide over the ground (a technique used in motocross). We advise against this practice which could cause severe injuries if your foot should sink into the snow. We rather suggest keeping both feet on the footpegs as much as possible.

An upright position, with the knees clutching the gas tank and the elbows pointing away from the vehicle, will give a sense of security and provide greater freedom of movement while accelerating or slowing down.

♦ WARNING

The greatest danger in using this vehicle is the perception you may have of how competent you are. Overestimating how competent you are can result in hazardous situations both for yourself and for other trail users.

Do not forget to take all the time that is necessary for you to practice and feel comfortable at low speeds before attempting high-speed manoeuvres. You will then be able to fully appreciate the joy of driving.

LOCATION OF MECHANISMS AND CONTROLS (503 SHOWN, 800HO IDENTICAL)



- 1. Throttle control
- 2. Brake lever
- 3. Parking brake lever
- **4.** Engine-cutoff (tether)
- 5. Gas tank cap
- 6. Dimmer switch
- 7. Choke control
- 8. Emergency-stop button
- 9. Temperature Light



- **10.** Hood latches (4)
- 11. Rear module latches (4)
- 12. Bellypan latches (6)
- 13. Kick stand
- 14. Headlight
- 15. Stop and tail light



- 16. Recoil starter handle
- 17. Hood latches (4)
- 18. Rear module latches (4)
- **19.** Bellypan latches (6)

FUEL

This vehicle is powered by a two-stroke engine that uses a premixed gasoline and oil mixture.

Gasoline: Regular unleaded gas with a minimum octane rating of **89** (R+M)/2



Motor oil: Bombardier / ROTAX Formula XPS Synthetic Pre-mix oil (P/N 293 600 045)

Mixture ratio: 32 : 1

Fuel tank capacity: 30 L (9.5 gallons)

Gasoline	Oil
(L)	(ml)
5	156
10	313
15	469
20	625
25	781
30	937,5

▼ CAUTION

A mixture in which the proportion of oil is too low will cause piston failure. On the other hand, a mixture in which the proportion of oil is too high will cause excessive carbon deposits that will result in fouled spark plugs and will affect performance.

Always mix in a proportion of 32 parts of gasoline for each part of oil.

• NOTICE:

- The use of isop[ropyl alcohol (commonly known as "gasline antifreeze) is recommended in a ratio of 150 mL per fuel tank in very cold temperatures.
- Avoid mixing oils of different brands.

OPERATING INSTRUCTIONS

Pre-driving inspection

♦ WARNING

A pre-driving inspection is of the utmost importance before using the vehicle. Do not start the machine until you are sure all mechanisms and controls are functioning properly. Failing to proceed in the prescribed manner may result in severe injuries or even death.

- Make sure the track and the idler wheels are not frozen and that they move freely.
- Depress the brake lever and make sure the brake is fully engaged before the end of the lever touches the handlebar. The lever must return to its original position as soon as it is released.
- Turn the twist throttle control a few times to make sure it functions properly. The control must return automatically to the idle position as soon as it is released.
- Make sure the engine cutoff switch, the stop light, the headlight (high and low beams) and the tail light are in good working order.

Starting the engine

- Put the cap of the engine cutoff (tether) switch in place. <u>The</u> <u>other end of the cord must be securely attached to the</u> <u>driver.</u>
- If the engine is cold, use the choke control.
 - 0. Normal position (not activated)
 - 1. Intermediate choke position
 - 2. Full choke position



• Start the engine by firmly pulling the handle of the rewind starter.

♦ WARNING

Do not touch the throttle control while starting the engine.

Stopping the engine

• While the engine is idling, remove the engine cutoff cap (tether) or press the emergency-stop button.



BREAK-IN PERIOD

Engine

VCAUTION

A cautious break-in period of 10 to 15 hours is essential before using the vehicle at full power. Failure to provide a sufficient break-in period could result in severe engine damage.

▼ CAUTION

The timing of all Snow Hawk 600HO's is retarded by 3° for a period of 1-hour during the first stages of the break-in period. You may notice a slight increase in performance and a reduction in fuel consumption after this time.

During the break-in period, the throttle control should not be turned more than ³/₄ of its range. However, occasional periods of brief, brisk acceleration and frequent speed variations contribute to a good break-in. On the other hand, periods of long, high acceleration, sustained high speed and engine overheating are harmful during the break-in period.

WARNING

This vehicle is equipped with a liquid cooling system. ALWAYS ride with the rear deflector pad installed and in conditions where there is enough snow to properly cool the engine. If the red temperature light on the steering column should ever illuminate, stop immediately and let the vehicle cool down, and then find some snow. NEVER continue to operate the vehicle with the temperature light illuminated as severe engine damage will occur.

♦ WARNING

During the first hour of the break-in period the fluid levels in the coolant reservoir and the small water pump oil reservoir will go down slightly. This is perfectly normal. Be sure to top-up these fluids with proper coolant (P/N 293600038) and proper oil (P/N 293600045).

Drive Belt

A new drive belt must be submitted to a 5-hour break-in period. Avoid high-speed driving and brisk accelerations during this period.

Inspection – 10 hours

A general inspection is recommended after the first 10 hours of use. This inspection must be carried out by an authorized SNOW HAWK [™] dealer.

● NOTICE:

- Most of the wear in this vehicle occurs during the break-in period.
- Bolts and nuts can easily become loose in a new machine. Make sure you check them regularly during this period.

REMOVAL OF THE BODY PANELS (HOOD, REAR MODULE AND BELLYPAN)

In order to work on the vehicle more easily and to access the anchor ties, we suggest that you remove the rear module from the vehicle. To do so, you must first remove the hood. Proceed as follows:

- o Disconnect the front headlight.
 - Unhook the 4 rubber latches (2 / side).
 - o Remove the hood.
 - Remove the fuel tank cap.
 - Set the choke to the full position.
 - Unplug the tail light connector located under the light itself, underneath the rear fender.
 - o Release the rear module from its four rubber latches, slip the rewind starter handle through the space provided and remove the rear module.







Roll the two O-rings down and pull the two white plastic collars down over the fork legs. To ensure that they will not interfere, let them hang loose at the base of the fork leg.

- o Remove the circular fork disc
- o De-latch the two rubber latches on the sides of the belly pan (towards the rear of the vehicle)
- o De-latch the four rubber latches on the bottom of the belly pan.
- Descend the belly pan to floor level; most maintenance can be performed with the belly pan in this position. However, if it is required to completely remove the belly pan, remove the single bolt attaching the ski to the fork. At this point, a second person can lift the front of the vehicle slightly and the belly pan can be slid out from underneath.





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FOREWORD

Congratulations and thank you for buying an *A.D. Boivin design inc.* Snow HawkTM vehicle. We appreciate the confidence in our product that you have demonstrated by making this purchase.

Several years of design, tests and improvements were necessary to produce this vehicle which combines performance, driving pleasure and safety.

Proper maintenance on a regularly-scheduled basis is essential in order to obtain the performance you have the right to expect from your machine. In this manual, you will find all the information needed for adjustments to and the maintenance of this vehicle.

We sincerely hope that you will have many years of enjoyment with your Snow Hawk[™].

AD Boivin design Inc.

All the information, illustrations, photographs and specifications found in this manual are based on the latest available data at the time of publication. Due to improvements or other changes, it is possible that you will note a few differences. *AD Boivin design Inc.* reserves the right to make changes at any time.

WARNING /CAUTION / NOTICE

Please read this manual and follow the instructions carefully. Pay particular attention to the boxes entitled WARNING and CAUTION as well as to the paragraphs preceded by the word *NOTICE*.

♦ WARNING

This symbol is designed to call attention to particular instructions and procedures, which, if not followed to the letter, could cause injury and even fatal accidents.

▼ CAUTION

This symbol is designed to call attention to particular instructions and procedures, which, if not followed to the letter, could cause damage to or even destruction of the vehicle. • NOTICE: The information in the NOTICES is designed to explain maintenance procedures and to ensure the best possible use of the vehicle.

IMPORTANT REMARKS

Using this vehicle can be a very pleasurable experience and we wish you all the enjoyment that it can bring you. However, if certain rules are not respected, this sport can become a source of environmental problems and of interpersonal conflicts.

Adopting a responsible attitude and behaving in a responsible manner at all times will help avoid such problems and conflicts.

Protect the Future of your sport. Be responsible and respect local laws at all times. Demonstrate an awareness of the importance of the environment and respect the rights of others.

WARRANTY

Refer to A&D Boivin warranty policies section.

LOCATION OF THE V.I.N.

There are two emplacements for the V.I.N on right side of vehicle.





IMPORTANT MAINTENANCE WARNINGS:

♦ WARNING

Never have the motor running inside a building. The exhaust fumes contain carbon monoxide, a colourless, odourless gas which can cause death or severe injuries.

Allow the motor to run only in a well-ventilated area.

♦ WARNING

When hot, a motor, an exhaust system or a drive system can cause burns.

Wait until they have cooled before carrying out maintenance.

♦ WARNING

The gas tank can catch fire if it is not handled correctly. Gas vapours can burst into flames easily.

Do not smoke while carrying out vehicle maintenance.

Do not carry out maintenance anywhere near exposed flames or sparks.

♦ WARNING

Brake fluid can be dangerous for people and animals. These fluids are harmful or fatal if swallowed and must not come into contact with the skin or eyes.

♦ WARNING

Carrying out maintenance of this vehicle while the motor is running can be dangerous. Injuries could result from contact with moving parts.

Make sure you turn off the motor before working on the vehicle.

♦ WARNING

Working on this vehicle without wearing the appropriate clothing can be dangerous. Injuries could result if you are not adequately protected.

Always wear the necessary equipment when working on the vehicle: shoes, goggles, gloves and/or mask if necessary.

Important information maintenance

- Replace any joints, brake shoes, pins and clips by new ones.
- o Use special tools when so indicated.
- Use original parts as well as recommended products.
- After reassembling the vehicle, inspect the parts and verify the torque on the nuts and bolts.

Replacement parts

Use only A D Boivin parts or their equivalent. A&D Boivin's original high-quality parts are designed and manufactured especially for your vehicle.

• NOTICE: Using replacement parts that are not equivalent or are of inferior quality could mean your vehicle will not be able to perform as it should and could damage your machine.

AD BOIVIN Manufacturing Fun	(An English copy is on the reverse)
NUMÉRO D'IDENTIFICATION DU VÉ MODÈLE COURRIER ÉLECTRONIQUE PROPRIÉTAIRE ENREGISTRÉ ADRESSE VILLE ÉTAT/PROVINCE ZIP/CODE POSTAL NUMÉRO DE TÉLÉPHONE LIEU D'ACHAT DATE D'ACHAT SIGNATURE DU PROPRIÉTAIRE SIGNATURE DU PROPRIÉTAIRE SIGNATURE DU CONCESSIONNAIF En signant cette carte, le propriétaire consent véhicule. La garantie du véhicule n'est pas propriétaire.	ÉHICULE

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d'un an pour les pièces et la main d'oeuvre. Veuillez noter que les renseignements contenus sur cette carte de garantie et nous la relourner ann d'activer la garantie d'un an pour les pièces et la main d'oeuvre. Veuillez noter que les renseignements contenus sur cette carte de garantie ont la priorité sur tout autre document.

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REGISTERED OWNER	
ADDRESS	
CITY	
STATE/PROVINCE	
ZIP/POSTAL CODE	
TELEPHONE NUMBER	
PLACE OF PURCHASE	
DATE OF PURCHASE	
OWNER SIGNATURE	
DEALER SIGNATURE	
The owner certifies that he carefully read the I	legal notice joined with the vehicle. If the warranty card
is not signed by the vehicle owner, the war	rranty is void.
Please complete and keep this copy of your w	varranty registration card in your service manual for
	(Une version en français se situe au verso)
ADDRESS	
CITY	
STATE/PROVINCE	
ZIP/POSTAL CODE	
TELEPHONE NUMBER	
PLACE OF PURCHASE	
DATE OF PURCHASE	
OWNER SIGNATURE	
DEALER SIGNATURE	
The owner certifies that he carefully read the l	legal notice joined with the vehicle. If the warranty card
DEALER SIGNATURE The owner certifies that he carefully read the l is not signed by the vehicle owner, the war	legal notice joined with the vehicle. If the warranty card rranty is void.

Please complete and mail this copy of your warranty registration card to us in order to activate the one year parts & labour warranty for your Snow Hawk. Please note that the information contained on this warranty card takes precedence over other documentation.