



**POLARIS**  
The Way Out.

# TECHNICAL SERVICE BULLETIN

## Snowmobile

Bulletin Number: S-09-08 (A) (B)

Date: Revised: 11/17/2010

Model Year(s): 2008 - 2009

Safety Bulletin

**Service Bulletin**

Service Alert Fax

Production Update Kit

Distribution:  Owner / Principle  Service Manager  Sales Manager  Parts Manager  Technicians

*This Service Bulletin is located at [www.polarisdealers.com](http://www.polarisdealers.com)*

-Confidential and Proprietary-

### SUBJECT: 2008–2009 800 IQ 121/Switchback Engine Durability Update

**NOTE: This Service Bulletin Expires on November 30, 2010 except for wholegood stock (WS) units.**

#### PURPOSE:

Polaris Industries Inc. has developed an engine update kit for all 2008 and 2009 800 IQ 121 / Switchback snowmobiles that will update the original engine with the 2010 800 pistons, cylinder head, and ECU calibration. In addition to the engine updates, a service silencer has been designed to replace the original, stock silencer for snowmobiles that are engineered for, and primarily operated at, low elevations.

Please review this Service Bulletin closely and then perform the engine update repair on all affected 2008 and 2009 800 IQ 121 and Switchback snowmobiles. This Service Bulletin not only outlines the repair and warranty procedures, but also several important service notes and reminders intended to allow your dealership to execute this Service Bulletin accurately and as timely as possible in order to get your 800 IQ 121 and Switchback customers ready for the start of the upcoming riding season.

In addition to this Service Bulletin, Polaris will also publish Team Tip: S-09-09-01. The Team Tip will address questions and concerns your dealership and customers may have regarding this Service Bulletin. The Team Tip will be an evolving document that we will update regularly as common dealer inquiries are made. Please reference the online version of the Team Tip frequently to help address any questions or concerns you may have. We will also be sending a letter to all registered customers detailing the release of this Service Bulletin. The letter will instruct them to contact their authorized dealer to schedule a time to complete this repair (sample of consumer letter on pages 6 and 7).

#### AFFECTED MODELS:

Model Year	Model Numbers	Model	Vehicle Identification Number Range
2008	S08PB8ES S08PB8EE	Early Build 2009 800 IQ 121	All Reference Unit Inquiry on the dealer website to lookup affected Snowmobile VINs.
2009	S09PB8ES S09PB8ESL	2009 800 IQ 121	
	S09PE8ES S09PE8EEL	2009 800 IQ Dragon SP	
	S09PR8ESL	2009 800 IQ Switchback	
	S09PS8ESL S09PS8EEL	2009 800 IQ Dragon Switchback	

## Before beginning the engine update repair process, please review the following notes and reminders:

### CUSTOMER SERVICE SCHEDULING AND CHECK-IN

- For each unit scheduled, please review the information in Unit Inquiry to verify we have the consumer's most current address on file. The consumer name and address in Unit Inquiry is the address all consumer correspondence will be mailed to. If you are aware of an address change or the sale of this vehicle, please update this information by completing an Address Change form or Ownership Transfer form on the Consumer Information tab in Unit Inquiry.
- Upon check-in, take time to review proper, routine maintenance with each consumer. Polaris suggests approaching each update experience as a chance for your dealership to provide your customers with their pre-season maintenance checkup.
  - The fuel filter must be replaced as part of periodic maintenance as outlined in the Owner's Manual. The fuel filter is scheduled to be replaced initially at 1,000 miles and then at 2,000 mile intervals as outlined in the Owner's Manual. Note that fuel filter replacement is considered routine maintenance and not covered under the warranty policy. Please verify mileage and maintenance history and discuss replacing the fuel filter with the consumer if necessary.
  - Periodic maintenance items such as chain case adjustment/lube change, suspension adjustments, clutch/belt inspection, cleaning and alignment, etc. should be performed after the engine update kit is installed. Performing these maintenance procedures at this time is not only convenient for your dealership and customers, but ensures your customers' snowmobiles are ready to go before the snow flies.

### BEFORE YOU BEGIN THE REPAIR:

#### CYLINDER INSPECTION

- For the majority of engine updates you perform, cylinder replacement will not be necessary. However, it is important to hone the cylinders as part of this update.
  - Polaris has provided several informational tools for dealership technicians to aid in assessing cylinder honing needs and providing information on cylinder honing basics:
    1. The instructions included with the repair kit outline how to determine when to hone the cylinder and when to replace the cylinder.
    2. A cylinder honing poster (PN 9922793) will be mailed to your dealership, free of charge, the week of August 24, 2009. The poster is also posted on the Dealer Website under News, Forms & Links / Service & Warranty / Cylinder Honing Poster – Snowmobile.
    3. A STOP Site video clip is available at the service videos link in the STOP Site area of the Dealer Website. You must select Snow product line to access the video. This video will help dealer technicians understand cylinder honing basics.

**NOTE:** If a cylinder can be honed and re-used, dealers are required to hone and re-use the cylinder. If a cylinder cannot be honed, dealerships must request warranty authorization via an ASK Polaris case. All requests for warranty must be accompanied by a photo of the cylinder that cannot be honed. All replaced cylinders are required to be returned to the Roseau Parts Inspection facility. The Warranty Parts Inspectors will carefully inspect all replaced and returned cylinders to verify their replacement was necessary. Original cylinders that are returned to Polaris for warranty credit that could have been reused if honed will be returned and charged-back to your dealership.

#### SILENCER

The only Polaris-authorized aftermarket exhaust component/modification is the Starting Line Products (SLP) Silencer offered by Pure Polaris and SLP.

- Polaris PN 2876340 or 2877184                      SLP Part Number 09-288 or 09-289

**NOTE:** If the snowmobile is equipped with the PURE Polaris or SLP silencer, you do **not** need to replace it with the new 800 Service Silencer, PN 1262142-489.

**NOTE:** Polaris does not conduct engine testing with aftermarket modifications or engine performance products other than the before-mentioned SLP silencer. If any aftermarket modifications or engine performance products are installed on the snowmobile, Polaris recommends removing the components/modifications and re-configuring the snowmobile back to the stock configuration. If the consumer insists on re-installing their non-SLP silencer, please explain the potential ramifications of runability problems, potential for engine failure, and voided engine warranty.

## **CLAIMING THIS BULLETIN AND CUSTOMER FOLLOW UP**

- Upon repair completion, promptly submit the warranty claim for this Bulletin.
- Once Polaris receives the Service Bulletin warranty claim for each VIN completed, Polaris will send a letter (sample on page 8) to the consumer confirming notification of the engine update and providing confirmation of the factory extended limited engine warranty until June 1, 2010.

## **PERFORMING THE ENGINE UPDATE:**

1. Thoroughly review the detailed instructions included with the Engine Rebuild Kit, PN 2204168.
2. Use Digital Wrench to verify that no diagnostic trouble codes exist before and after completing the repair. If codes exist, troubleshoot the error and resolve the issue prior to returning the snowmobile to the customer. Remember that while the cylinder head, pistons, and ECU calibration is being upgraded, some customers may have been experiencing an issue caused by a fault completely unrelated to these parts and it is best to address any codes while the unit is in for service.
3. Use Digital Wrench to re-flash the ECU with new calibration files. The new calibration files are for all 2008 – 2010 800 CFI-powered snowmobiles, and are labeled as such in Digital Wrench. *Remember to match the engine fuel injector color code with the fuel calibration map color code.*
4. Install the Engine Rebuild Kit.
5. Replace the original, stock silencer with the 800 Service Silencer, PN 1262142-489.
6. Complete a Service Bulletin Completion Decal and adhere it to the air box.

## **PREPPING THE UNIT FOR CUSTOMER PICK UP:**

1. Premix the fuel (10 gallons) with 1 quart of Polaris Semi-Synthetic Blend Two-Stroke Oil (40:1 fuel:oil ratio). *Semi-synthetic oil allows for reduced piston ring break-in time.*
2. Replace the fuel filter if the vehicle mileage exceeds 1,000 miles (1,600 km) or 3,000 miles (4,800 km). *The fuel filter is part of routine maintenance and is not warrantable.*

## **CUSTOMER REVIEW:**

1. Polaris recommends that all variable exhaust powered snowmobiles use Polaris VES Gold Plus Two-Stroke engine oil. VES Gold Plus will be replacing VES Gold and features increased engine protection characteristics, substantially reduced smoke and odor, and greatly reduced starter recoil pull effort in sub-zero temperatures.
2. Take time to educate the customer on the importance of using high-quality, clean fuel and how to use the fuel selector wires. Always remember that if there is any question to quality or ethanol content of the fuel in the tank, the fuel selector wires should be unplugged. The fuel selector wires should only be connected when the fuel in the tank is non-ethanol-premium (91 octane or higher) grade.
3. Take time to explain the detonation elimination technology (DET) introduced with the new ECU calibration. Upon completion of this update, the ECU will be re-calibrated to be more aggressive in not only detecting detonation, but also eliminating it. Please see a more detailed description of DET in Team Tip S-09-09-01. Communicating these new features is necessary for customer education and understanding of new features now present on their snowmobile.

**PARTS INFORMATION:****S-09-08 – WHOLEGOOD STOCK UNITS – Engine Rebuild Kit / Service Silencer / ECU Reflash**

PART NUMBER / DESCRIPTION	2204168 (QTY.1) – MY 08/09 800 Engine Rebuild Kit 1262142-489 (QTY. 1) – MY 08/09 800 Service Silencer 7170107 (QTY.1) – Bulletin Completion Decal
PARTS AVAILABILITY	September 14, 2009.
DIRECT-SHIP FROM POLARIS?	YES – PN 2204168: Dealers will receive a minimum quantity of 15% of the affected units that were shipped to you. Once the initial direct-ship is complete, dealers will be able to order additional engine update kits as needed.  <i>** Dealer will need to order PN 1262142-489 and 7170107 separately.</i>
TO BE ORDERED BY DEALER?	YES – September 14, 2009 – Dealers will need to order the service silencer, the remainder of the engine rebuild kits and Bulletin completion decals required.

**S-09-08A – REGISTERED UNITS – Engine Rebuild Kit / Service Silencer / ECU Reflash / Cylinder Honing**

PART NUMBER / DESCRIPTION	2204168 (QTY.1) – MY 08/09 800 Engine Rebuild Kit 1262142-489 (QTY. 1) – MY 08/09 800 Service Silencer 7170107 (QTY.1) – Bulletin Completion Decal
PARTS AVAILABILITY	September 14, 2009.
DIRECT-SHIP FROM POLARIS?	YES – PN 2204168: Dealers will receive a minimum quantity of 15% of the affected units that were shipped to you. Once the initial direct-ship is complete, dealers will be able to order additional engine update kits as needed.  <i>** Dealer will need to order PN 1262142-489 and 7170107 separately.</i>
TO BE ORDERED BY DEALER?	YES – September 14, 2009 – Dealers will need to order the service silencer, the remainder of the engine rebuild kits and Bulletin completion decals required.

**S-09-08B – REGISTERED UNITS – Engine Rebuild Kit / ECU Reflash / Cylinder Honing (\*Customer has SLP Silencer)**

PART NUMBER / DESCRIPTION	2204168 (QTY.1) – MY 08/09 800 Engine Rebuild Kit 7170107 (QTY.1) – Bulletin Completion Decal
PARTS AVAILABILITY	September 14, 2009.
DIRECT-SHIP FROM POLARIS?	YES – PN 2204168: Dealers will receive a minimum quantity of 15% of the affected units that were shipped to you. Once the initial direct-ship is complete, dealers will be able to order additional engine update kits as needed.  <i>** Dealer will need to order PN 7170107 separately.</i>
TO BE ORDERED BY DEALER?	YES – September 14, 2009 – Dealers will need to order the remainder of the engine update kits and Bulletin completion decals required.

**WARRANTY CLAIM INFORMATION:**

A single group claim may be submitted listing the complete (17 digit) Vehicle Identification Number for machines with the same model number. File claim type SB (Service Bulletin). DO NOT PUT MORE THAN ONE MODEL NUMBER ON A CLAIM.

**S-09-08 – WHOLEGOOD STOCK UNITS – Engine Update Kit / Service Silencer / ECU Reflash**

SERVICE BULLETIN #	S-09-08
CLAIM TYPE	SB (Service Bulletin)
LABOR ALLOWANCE	4:0 (4.0) Hours
CLAIM PART NUMBERS	N/A - Auto Process Bulletin
BULLETIN EXPIRATION DATE	Service Bulletin S-09-08 will expire on 11/30/2010 (Except WS units).

**S-09-08A – REGISTERED UNITS – Engine Update Kit / Service Silencer / ECU Reflash / Cylinder Honing**

SERVICE BULLETIN #	S-09-08A
CLAIM TYPE	SB (Service Bulletin)
LABOR ALLOWANCE	4:30 (4.5) Hours
CLAIM PART NUMBERS	N/A - Auto Process Bulletin
BULLETIN EXPIRATION DATE	Service Bulletin S-09-08A will expire on 11/30/2010 (Except WS units).

**S-09-08B – REGISTERED UNITS – Engine Update Kit / ECU Reflash / Cylinder Honing (\* Customer has SLP Silencer)**

SERVICE BULLETIN #	S-09-08B
CLAIM TYPE	SB (Service Bulletin)
LABOR ALLOWANCE	4:30 (4.5) Hours
CLAIM PART NUMBERS	N/A - Auto Process Bulletin
BULLETIN EXPIRATION DATE	Service Bulletin S-09-08B will expire on 11/30/2010 (Except WS units).

**SERVICE BULLETIN COMPLETION DECAL:**

A Service Bulletin Completion Decal must be completed for this Bulletin repair. Attach the decal to the air box assembly. If you require more decals, order them through normal Polaris parts ordering channels.

**PARTS RETURN AND DISPOSAL INFORMATION:**

The original pistons, cylinder head, and cylinder (if replaced) must be returned. These parts must be returned to Polaris within 30 days of claim submission or the complete warranty claim, parts and labor, will be charged back. Your dealership will not be required to return the original stock silencer. However, the original silencer must be destroyed and removed from circulation in accordance with all applicable regulations.

**CUSTOMER NOTIFICATION:**

Polaris will mail two notification letters to all customers who purchased an affected snowmobile (sample letters provided on pages 6, 7 and 8 of this Bulletin). The first letter will be mailed approximately two weeks after this Service Bulletin is published. The second letter will be mailed upon Service Bulletin and warranty claim completion. In addition to this letter, dealers are required to notify owners of affected models, and those customers identified as purchasing affected parts and make arrangements to perform this repair.

Sincerely,



Laurie Rengel  
Manager, Service Dealer Development and Warranty

**SAMPLE IQ AND SWITCHBACK INITIAL CONSUMER LETTER  
MAILED ON SEPTEMBER 9, 2009**



**POLARIS®**

**Polaris Industries Inc.**  
2100 Highway 55  
Medina, Minnesota 55340-9770  
www.polarisindustries.com

September 9, 2009

Mr. John Doe  
123 Main Street  
Any Town, USA 55555

Dear Mr. Doe,

Our number one priority at Polaris is customer satisfaction, and we know satisfaction is driven by product quality. Although many model year 2008 and 2009 800 owners enjoyed trouble-free operation, some customers' expectations were not met. To ensure your complete satisfaction, we have made the decision to update all model year 2008 and 2009 800cc snowmobiles with new and improved model year 2010 engine components and to extend your limited engine warranty through June 1, 2010.

A Technical Service Bulletin has been issued to all authorized Polaris Snowmobile Dealers to accomplish this. Please contact your dealer at your earliest convenience to schedule an 800 update appointment. Included in the 800 IQ and Switchback update will be new pistons, new cylinder head, new fuel management calibration and a new exhaust silencer. The update is also compatible with the PURE Polaris SLP silencer, so if you have already installed this as an accessory you will not need to install the new silencer.

While your snowmobile is at the dealership for the engine update, we also encourage you to take care of all specified pre-season maintenance. These maintenance procedures are critical to maximizing overall snowmobile performance and life. We have asked that Service Personnel at the dealership take time to review the maintenance schedule with you and determine if there are any outstanding maintenance needs.

Upon receiving notification from your dealer that the engine update is complete, Polaris will send you a communication confirming your limited factory engine warranty has been extended to June 1, 2010. This engine warranty extension serves as a thank you and demonstrates our confidence in this product.

In summary, please contact your local authorized Polaris snowmobile dealer now to discuss this repair and schedule your engine update appointment. We wish you an enjoyable and safe riding season!

Sincerely,

Polaris Industries Inc.

*For more specific information regarding the 800 engine update, please review the  
Frequently Asked Questions on the reverse side of this letter.*

## 800 Engine Update Frequently Asked Questions

### **What are my next steps?**

Please contact your authorized snowmobile dealer to schedule a service appointment. Reference the 800 Engine Update Technical Service Bulletin recently released on your snowmobile.

### **What if I no longer own this snowmobile?**

If you know the whereabouts of the current owner of this snowmobile, please forward this important update information to them so that they may take advantage of this offer. If you are unaware of the address of the current owner of this snowmobile, please notify your dealer.

### **What types of changes were made to the engine parts my dealer will be installing on my snowmobile?**

The 800 engine update kit upgrades all 2008 - 2009 800cc CFI engines with new pistons that feature two rings and a new piston profile. Each kit includes a new cylinder head, which is designed to optimize combustion stability.

### **How does the new fuel management calibration work?**

The DET system helps prevent damage to the engine from detonation by going into an engine protection mode whenever the DET system is active.

### **Will I know if the DET system is active?**

The Detonation Elimination System (DET) has been re-calibrated to be more aggressive in not only detecting detonation, but also alerting the operator when detonation is occurring. If an excessive detonation condition is detected, the check engine light will illuminate notifying the operator of an excessive detonation condition. In this mode the ECU is actively adjusting ignition timing and fuel levels to reduce detonation. If the level of detonation subsides, the ECU will return the ignition timing and fuel levels to normal operating levels and the check engine light will turn off.

If the detonation condition is severe and cannot be controlled by normal means, the ECU will flash the check engine light and limit the maximum engine speed to 6,000 RPM to prevent engine damage. The engine will remain in this mode until the operator turns the engine off and restarts it.

If you encounter either of the scenarios listed above, the most likely causes of severe detonation are outlined in the troubleshooting table below:

<b>Cause of DET Activation</b>	<b>Solution</b>
Poor fuel quality	Replace with higher quality fuel
Incorrect ethanol / non-ethanol fuel mode (jumper) wire connection	Verify correct wire connection or disconnection for fuel type in tank
Low fuel level in tank	Refuel with recommended fuel
Water in fuel	Replace with recommended fuel
Plugged fuel filter	See your Polaris dealer for service
Alcohol-based fuel additive used with ethanol fuel	Do not add deicers or additives that contain any form of alcohol while using up to 10% ethanol fuel
Improper engine modifications	Do not modify the engine

### **Are there any special engine break-in suggestions once I receive my snowmobile back from my dealer?**

Polaris recommends that the first tank of fuel contain a premix of 10 gallons of fuel with 1 quart of Polaris Semi-Synthetic Blend Two-Stroke Oil (40:1 fuel:oil ratio). *Semi-synthetic oil allows for reduced piston ring break-in time.* At the time of pick-up, have a conversation with the service personnel at the dealership to verify the contents of the fuel tank on your snowmobile.

Drive with extra caution during the break-in period. Perform regular checks on fluid levels, lines, and all other important areas of the machine.

Excessive heat build-up during the first three hours of operation will damage close-fitted engine parts. Do not operate at full throttle or high speeds for extended periods during the first three hours of use. Vary the throttle openings and machine speeds to reduce friction on all close-fitting machined parts, allowing them to break in slowly without damage.

### **What type of fuel should I use during break-in and future riding?**

All Polaris CFI snowmobiles are calibrated to run using 91 octane oxygenated fuels. Never use fuel containing more than 10% ethanol or E85 blended fuels. Reference your Owner's Manual for more information regarding fuel.

**SAMPLE OF CONSUMER LETTER 2 – MAILED ONCE BULLETIN HAS BEEN FILED BY YOUR DEALERSHIP**



**Polaris Industries Inc.**  
2100 Highway 55  
Medina, Minnesota 55340-9770  
[www.polarisindustries.com](http://www.polarisindustries.com)

Date

Ms. Jane Doe  
123 Main Street  
Anytown, USA 55555

Dear Ms. Doe,

Your Polaris dealer has notified us that the engine update has been completed on your snowmobile. Thank you for taking the time to have your <MODEL YEAR> Polaris <MODEL NAME> updated with the new engine components and calibration map.

As a demonstration of our confidence in the newly designed and engineered engine you now have, Polaris will extend the manufacturer's limited engine warranty on all updated snowmobiles until June 1, 2010. *Any remaining manufacturer's or extended service contract warranty you may have on your snowmobile will still apply after the June 1, 2010 date.* Your dealer has more specific information on the warranty end date of your snowmobile, and more information regarding coverage under an extended limited engine warranty can be found in your owner's manual.

Enclosed with this letter is an Owner's Manual addendum. Please review the addendum carefully as there is important information that will improve your overall ownership experience. When you have completed your review, please file it with the Owner's Manual for your snowmobile.

Again, thank you for taking the time to have the update completed. We appreciate your cooperation and apologize for any inconvenience this may have caused you. We wish you an enjoyable and safe riding season!

Sincerely,

Polaris Industries Inc.