Bulletin #: IMCTB-008
Rev: A
Pages 2
Author: Richard Waters
Date: 2/3/2003
Affected Models: Chief 2002+

Technical Bulletin

Head Stud/Bolt Cleaning, Torque Values & Tightening Sequence

Tools Required

Torque Wrench, 1/2” 12 point socket, 3/8"-16 Bottom Tap

Materials Required

Brake/Carb cleaner, Tapping Fluid

Head Stud/Bolt Cleaning, Torque Values & Sequence

Read this service bulletin carefully and thoroughly before commencing work. If you do not understand the instructions or have questions, see your supervisor immediately. If you are unsure of any of the procedures, please contact your Indian Field Service Manager (FSM).

Description

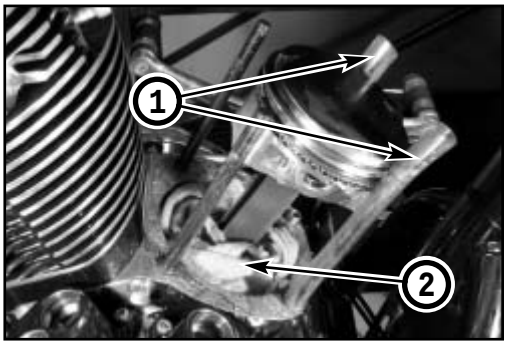
These instructions have been created as a detailed supplement to the PowerPlus 100 Service Manual. They apply specifically to head stud/bolt cleaning, tightening sequence and torque values, and do not refer to component removal and refitting. Refer to the service manual for detailed instructions.

Head bolts/studs must be clean and free from contaminants and excess oil. Failure to perform adequate cleaning will cause inaccurate torque figures and incorrect clamping of the cylinder head which may result in a blown head gasket.

Incorrect torque figures and tightening sequence will result in distortion of the cylinder head.

Preparation

1 When removing the cylinder ensure adequate protection of the head stud threads from damage by the loose pistons. *TIP: Place plastic tubes over the studs for protection.*



Cleaning

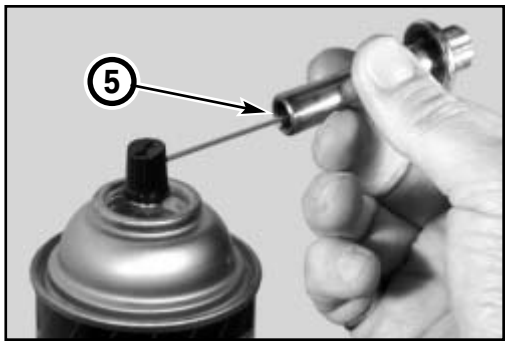
2 Prior to cleaning the head studs, protect the crank case from falling debris and contamination by placing clean rags in the cylinders around the connecting rods.

Stud Cleaning

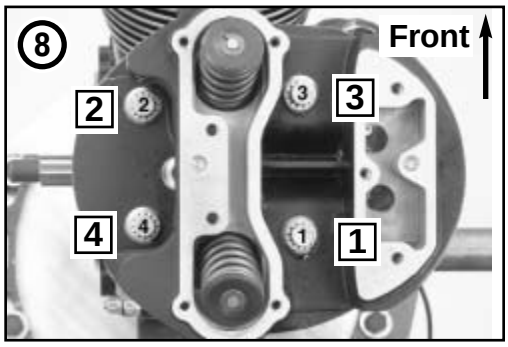
3 Wipe down threads with a clean cloth and de-contaminate with carb/brake cleaner. Blow off debris and excess cleaner with compressed air.

Bolt Cleaning

4 Thoroughly clean the threads of the cylinder head bolts before installation. Friction caused by debris and grime will result in a false torque reading. Use a 3/8"-16 bottom tap. A starting tap will not remove debris in the deep reaches of the head bolt. A bottom/chasing tap is preferred yet a bottoming/cutting tap will suffice.



5 With the fine spray tube attached to the carb/brake cleaner, blow out all oil and debris from the internal treads of the head bolts. Fully insert the spray tube into the bolt and work your way out from the base of the threads. Thoroughly blow out the head bolt with compressed air.



Refit

For detailed refitting of the engine, refer to the PowerPlus 100 Service Manual. While refitting, special attention is required on the following points.

6 Ensure the cylinder head fits correctly over the 3 locating dowels and is completely seated on the head gasket.

WARNING: Misalignment of the head can occur when it is not fully seated over the locating dowels. Ensure the cylinder head is completely seated before refitting the head bolts.

7 Using 20w-50 engine oil, lightly coat the head bolt threads (2-4 drops) and the washer face (1 drop).

CAUTION: Do not apply excessive oil.

8 Refit the head bolts finger tight in an "X" sequence until just snug (see photo). All bolts must pull snug against the head counterbore. If any do not, repeat steps 3 to 5.

9 Tighten the head bolts in sequence to 5ft/lbs +/-1ft/lbs.

10 Tighten the head bolts in sequence to 14ft/lbs +/-1ft/lbs.

11 Finally turn each head bolt in sequence through 90º (1/4 turn), +/-2º.

Field Service Managers

Reggie Weakley: 408-846-7105 • Don Mahovlic: 408-846-7201 • Gary Andersen:408-846-7305 • Rich Kennedy 408-846-7107

Routing

Service Manager	Sales Manager	Parts Manager	Lead Technician	Technician #1	Technician #2	Technician #3	Technician #4	Return this to: