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Title: 2013-2015 N13 Required Torque Wrench to Complete Connecting Rod Bolt Torque Procedure

Applies To: 2013-2015 N13 APR Liner Upgrade

Change Log

Please refer to the change log text box below for recent changes to this article:

11/27/2017 - Initial Article Release

Description

In some instances an N13 can develop a catastrophic engine failure due to improperly torqued connecting rod bolts after APR installation.

Symptom(s)

Low oil pressure, misfire faults, excessive lower-end noise, broken/stretched connecting rod bolts, spun connecting rod bearing(s), and in extreme situations a ventilated engine block.

Required Tool(s)

Each service department will be issued (1) Snap-On torque wrench and torque wrench checker.

Tool Description:	Tool Number:
Snap-On Torque Wrench	CTECH3R250A (12.5-250 ft-lb) (16.9-339.0 Nm)
Snap-On (3/4")Torque Wrench Checker	6004-F-DDT (60-600 ft-lb) (81.3-813.6 Nm)

Download the torque test software from the EZ-Tech diagnostic and service page prior to using the torque wrench.

WARNING:

- **Maintenance/Service: Clean the wrench with a damp cloth. DO NOT use solvents, thinners or carburetor cleaners. DO NOT immerse the entire wrench into anything.**

- **If display shows persistent "TORQUE ZERO ERROR" at power on, the wrench is damaged and must be returned for repair.**

- **If display show "ANGLE ERROR" in angle mode, fastener rotation speed has exceeded capacity of wrench.**
- **Wrench must be held still during angle zeroing. Motion is indicated by alternating dashes "--"on display.**

CAUTION:

- During extended storage periods remove the batteries from the wrench.
- Date and time will be set back to default settings and will need to updated prior to use.

Torque Wrench Tester Set Up

Refer to tool instruction document 4328553 for proper set-up of the Snap-On torque wrench tester.

4328553 – 6004-F-DTT Digital Torque Tester Kit Tool Instruction

Note: The torque wrench will have to be checked prior to each repair, this will check for any inconsistency with the torque wrench.

Note: Prior to each use check the torque checker and torque wrench date and time.

Torque Wrench Set Up

Refer to tool instruction document 4328552 for proper set-up of the Snap-On torque wrench.

4328552 – CTECH3FR250A Digital Torque Wrench Tool Instruction

CAUTION:

- Whichever comes first (1) year or 5,000 cycles the torque wrench will require a calibration.
- Average battery life is 80 hours of continuous use.
- If the batteries require replacement there is a 20 minute window before loss of date and time.

Installation/Repair Step(s)

CAUTION:

- Follow the N13 engine service.
- Excessive oil can cause a hydro-lock situation during installation of a connecting rod bolt.
- The connecting rod joint surface is a fractured surface take care during installation.
- Engine damage will occur if the connecting rod cap is installed backwards.
- Do not use any universal adapters and swivels.

1. Please review the N13 engine service manual, general inspection procedure prior to installation of engine components.

2. Lubricate the cylinder wall and piston rings with clean engine oil. Install the piston and connecting rod assembly using coping tool (12-146-01). Make sure the APR ring has been removed to ease piston installation.

3. Lubricate the upper and lower connecting rod bearings with a fine film of clean engine oil or Lubriplate #105.

4. Discard the original connecting rod bolts and install **new** bolts for this procedure. Lubricate the bolts with clean engine oil to the first (3-4 threads) and flange surface **do not submerge the whole bolt into oil.**

5. Install the connecting rod cap making sure the cap is installed correctly. Install the connecting rod cap bolts with the use of hand tools alternating back and forth. **Do not use an impact wrench, damage will occur to the joint and threads**.

6. Complete piston installation and torque sequence in pairs in starting with: cylinders (1/6), (2/5), (3/4). Torque the connecting rod bolts in three steps starting with preset: **(PSET1) 22 ft-lbs (30 Nm), arrow up to (PSET2) 77 ft-lbs (105 Nm), arrow up, (PSET3) 90 degrees. To ensure proper torqueing during 90 degrees place a paint mark on the bolt and connecting rod cap.**

Note: There's a potential chance the connecting rod bearing can spin if it's not completely torqued. DO NOT rotate the crankshaft until these steps have been completed.

CAUTION:

- If a connecting rod bolt is over torqued both bolts have to be replaced and the cap has to be recentered. If one bolt is replaced premature failure will occur due uneven clamp load across the connecting rod and bearing.
- Please repeat steps 4, 5, 6 and 7.
- **Please add your technician comments to the repair order stating which cylinder was overtorqued due to the added lines of data.**

7. Continue onto downloading torque wrench data.

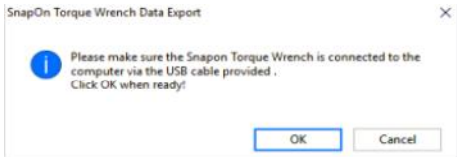
Downloading Electronic File Stored in Torque Wrench

1. Ensure that the proper drivers and software have been downloaded and installed prior to downloading **any** torque wrench data.

2. Open/Run the **TORQUE TEST SOFTWARE** and follow prompts.

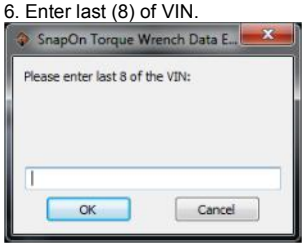
3. Using the supplied USB cord in Torque Wrench Kit (CTECH3R250A), connect one end of USB to Torque wrench and the other to EZ-Tech computer.

4. Click “OK” after connecting the torque wrench to a PC computer using the supplied USB cord.

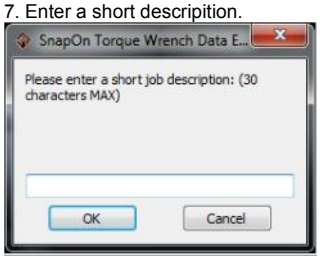


5. The file is “Zipped” to desktop, attach file to case file.

6. Enter last (8) of VIN.



7. Enter a short descripition.



8. Attach downloaded file to the case file.

WARNING:

- **Download your torque wrench data and attach it to the case file.**
- **DO NOT manipulate or change the csv.file data.**

- **A potential warranty chargeback can occur if the torque wrench data is not downloaded into the case file.**

Warranty Information

Warranty Claim Coding:
Refer to the Warranty Coding Manual for Group and Noun Codes.

Standard Repair Time(s):

Refer to the SRT Manual for Repair Times

OTHER RESOURCES

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