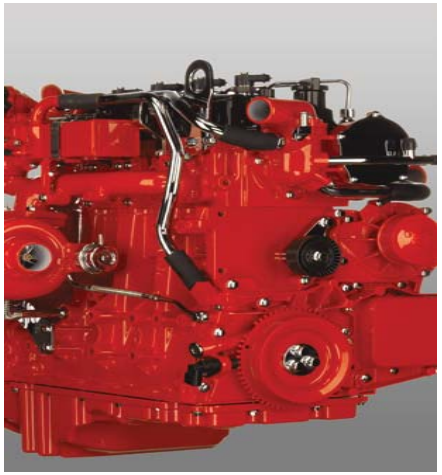
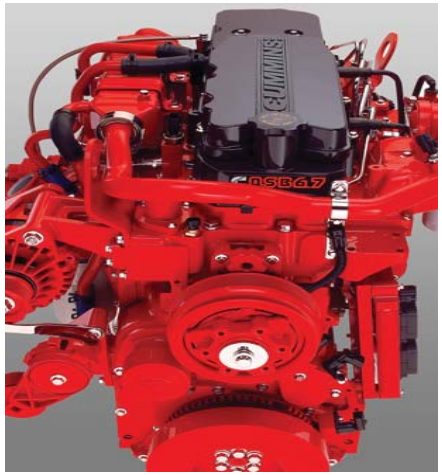
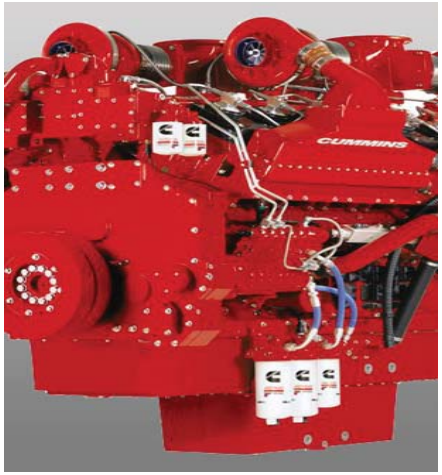
Cummins ISX Fuel Pump Campaign Discussion

March 26th 2015

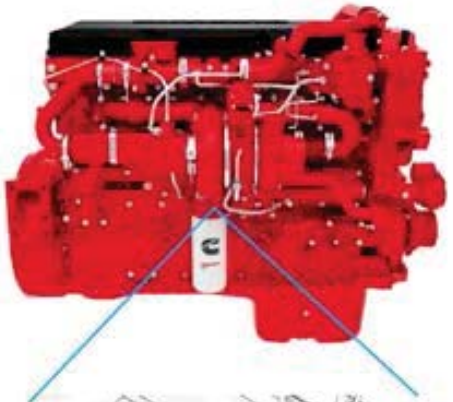


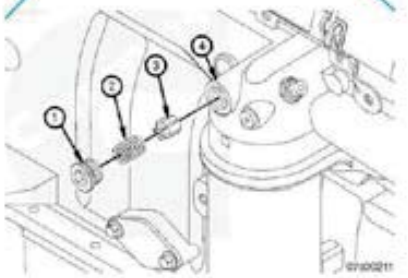
Background / Changes

- Campaign Background:
  - August 2014 – Cummins launched Campaigns with Temporary Repair Practices (TRP) guided toward replacing and inspecting the ISX12 and ISX15 fuel pump components (barrels, plungers, tappets)
  - 20% of fuel pump campaign has been completed, which provided data for continued investigation
    - To date: 97% of all pumps returned met reuse guidelines
    - Cummins now knows that debris is the main failure mechanism impacting the fuel pump
  - Cummins has released a redesigned Lubricating Oil Filter Bypass Valve
    - New valve provides more effective sealing capability
    - Cummins has high confidence that the new valve will better protect the fuel pump and improve oil flow conditions during momentary high oil filter restriction
- Campaign Changes:
  - Stop the current C1555/1556 Fuel Pump campaigns and associated TRPs – **Effective April 1, 2015**
  - Supersede to a new Lube Oil Filter Head Bypass (LOFH) Valve campaign – **May 1, 2015**

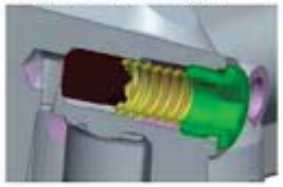
Lube Oil Filter Head (LOFH) Bypass Valve Specifics

- Located on hot side of engine, within the oil filter housing.
- New design reduces leakage when closed.
- Precision molded and machined seat/plunger interface.





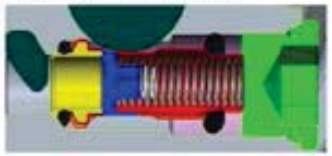
Old BPV Design



Plug, Spring & Valve

Injection molded polyetherimide

New BPV Design



- Yellow – Stainless Steel Seat
- Blue – 33% Glass Filled Nylon Seat
- Red – Stainless Steel Stamped Cage
- Black – Viton O-rings

First LOFH BV went into product at JEP engine plant on February 20th

Driven to Improve Customer Uptime

- **More Effective Solution:**
  - All pumps were inspected as part of the campaign. Inspections showed greater than 97% of fuel pump components being replaced met reuse guidelines.
  - We have identified a more effective repair that helps prevent fuel pump failures and can be implemented faster, which minimizes downtime for our customers.
- **Better Fuel Pump Protection**
  - Re-designed lubricating oil filter bypass valve ensures better protection of the fuel pump.
  - The re-designed lubricating oil filter bypass valve is based on a proven design used in Cummins mid-range engines.
  - Extensive testing and analysis confirms new repair direction.
- **More Uptime**
  - A less invasive repair that can be completed in less than an hour at any location.
  - We can ensure ample supply of parts to complete the repair with minimum customer downtime.