

PSI - GMPT Engine Training



Introduction

- Training on PSI/GMPT Base Engines
- Classroom and Hands-On
- Base Engine Components
- Ignition Systems
- Fuel System Set-Up
- Speed Governing

Agenda

- 1.6L Classroom-Hands-On
Fuel System & Speed Governing Theory
- Fuel System Set-Up – Hands-On
- Speed Governing

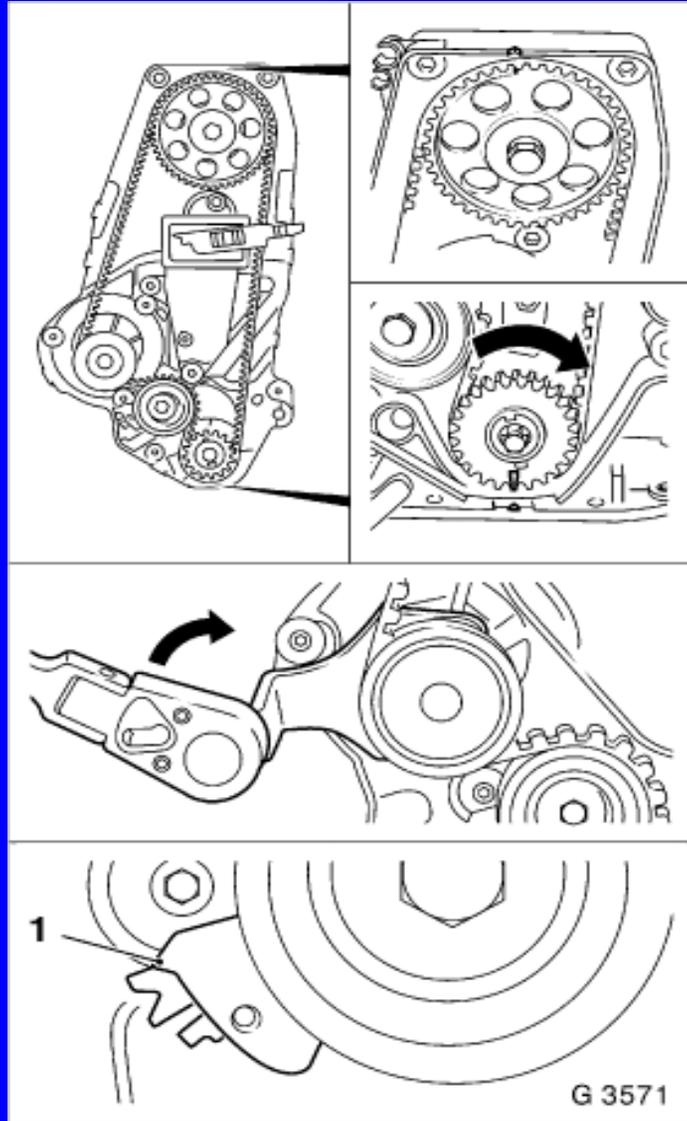
Overview

- Provide overview of major engine systems for each engine
- Review discussions on the engine

VORTEC 1600

- Displacement: 98 cid (1598 cc)
- Compression Ratio: 9.4:1
- Valve Configuration: Single Overhead Cam
- Valve Lifters: Radiused Hydraulic Cam Follower
- Bore: 79 mm
- Stroke: 81.5 mm
- Main Bearing Caps: 2-Bolt
- Balance Method: Internal
- Intake Manifold: PFI-type
- Firing Order: 1-3-4-2
- Oil Pan Capacity: 3.7 qt (3.5L) with Filter
- Engine Rotation: Clockwise (from the front)

VORTEC 1600 – Cam Drive



Belt Driven Cam Drive

Spring Loader Belt Tensioner

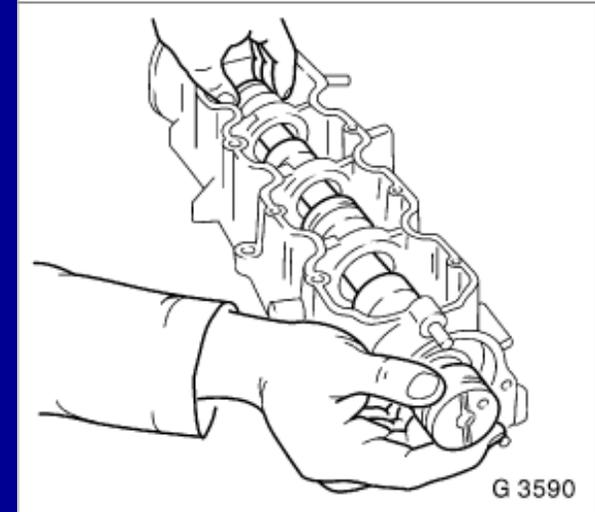
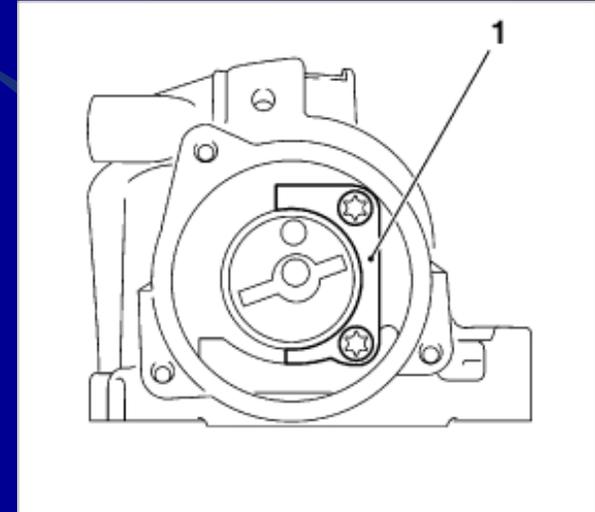
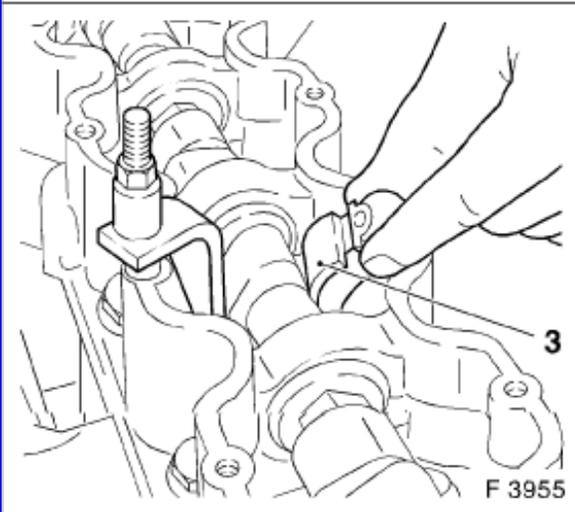
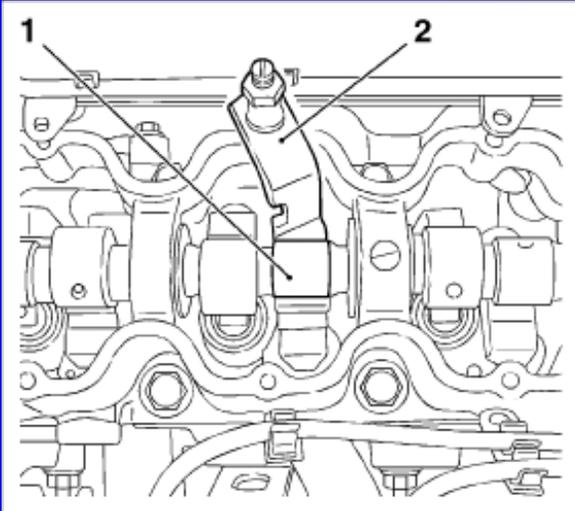
Index on Cam and Crank Gears

Tension Adjustment by Water Pump

Tension Indicator

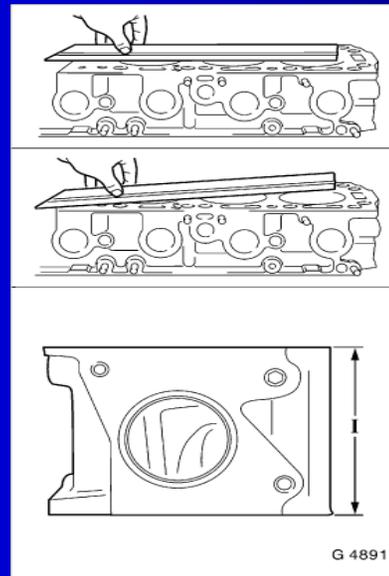
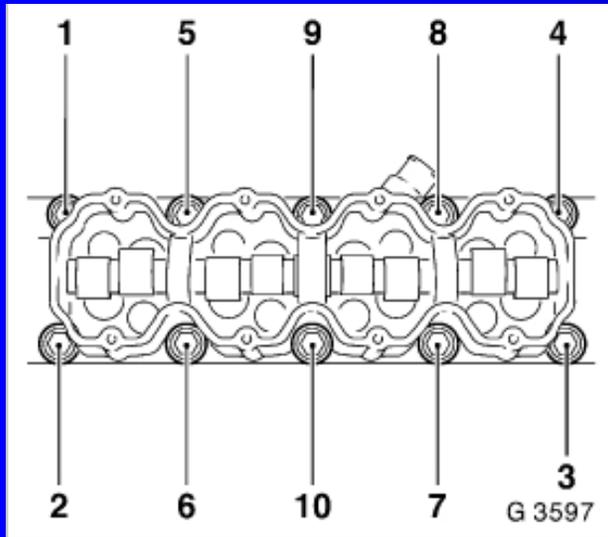
VORTEC 1600 – Cam Remove

On Engine Cam
Follower and
Cam Removal

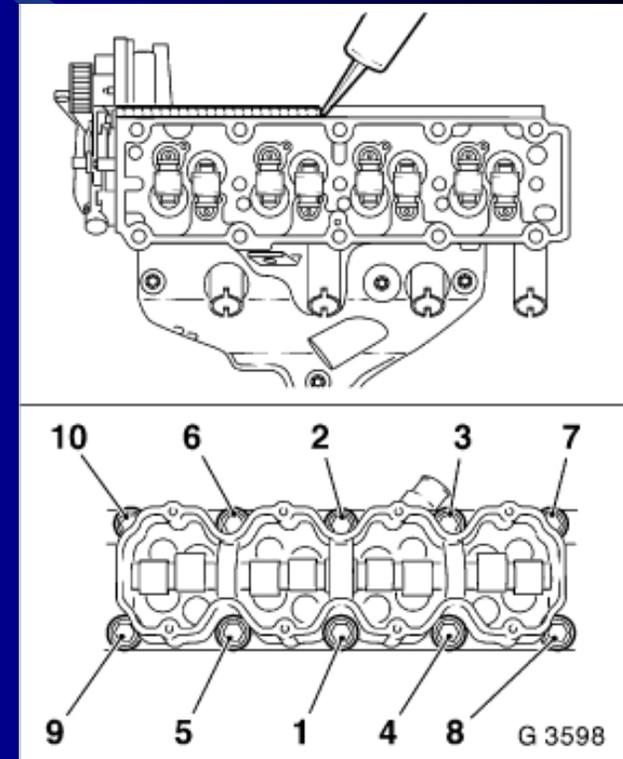


VORTEC 1600 – Cam Housing & Cylinder Head

Head removal Sequence

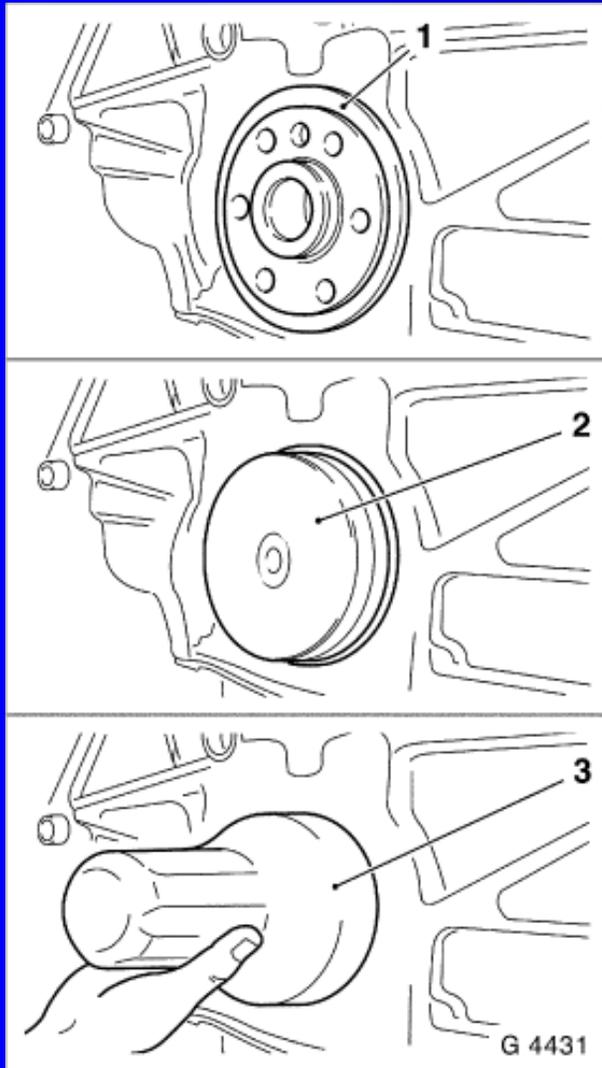


Head Install Sequence



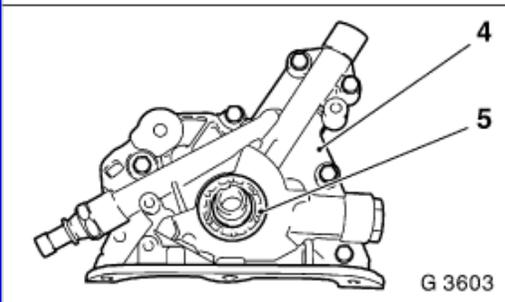
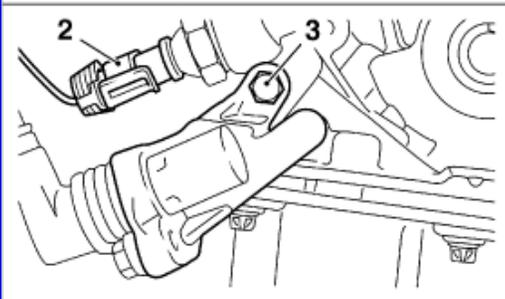
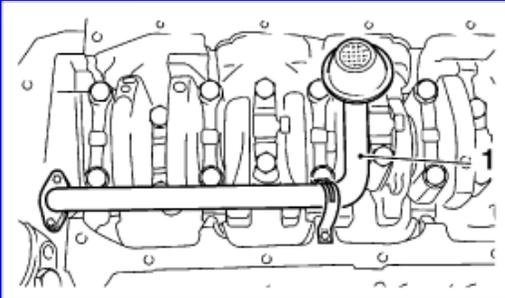
Remove Head Bolts in Sequence Shown at Above Left
Apply Green Adhesive Sealant to Cam Cover Sealing Area
Torque Cylinder Head in Sequence Shown at Above Right
Torque to 25 Nm (18 ft. lbs.) +60°+60°+60°
Cylinder Head Height – 95.90 – 96.10 mm
Resurfacing Not Permitted

VORTEC 1600 – Rear Main Oil Seal

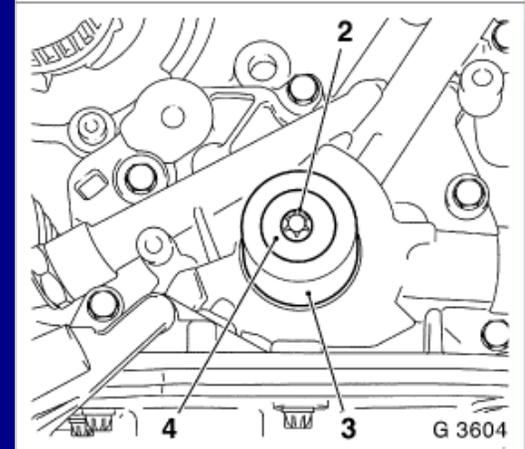
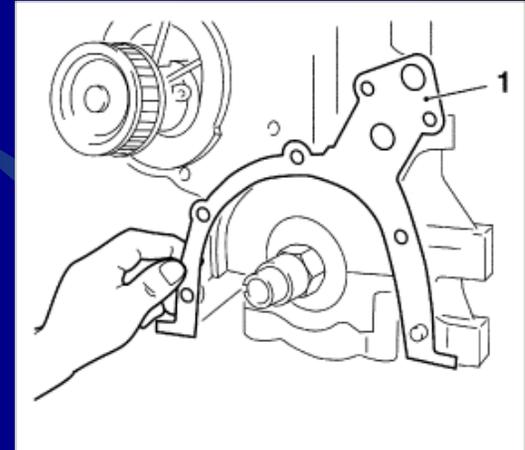


One Piece Rear Main Oil Seal

VORTEC 1600 – Oil Pump



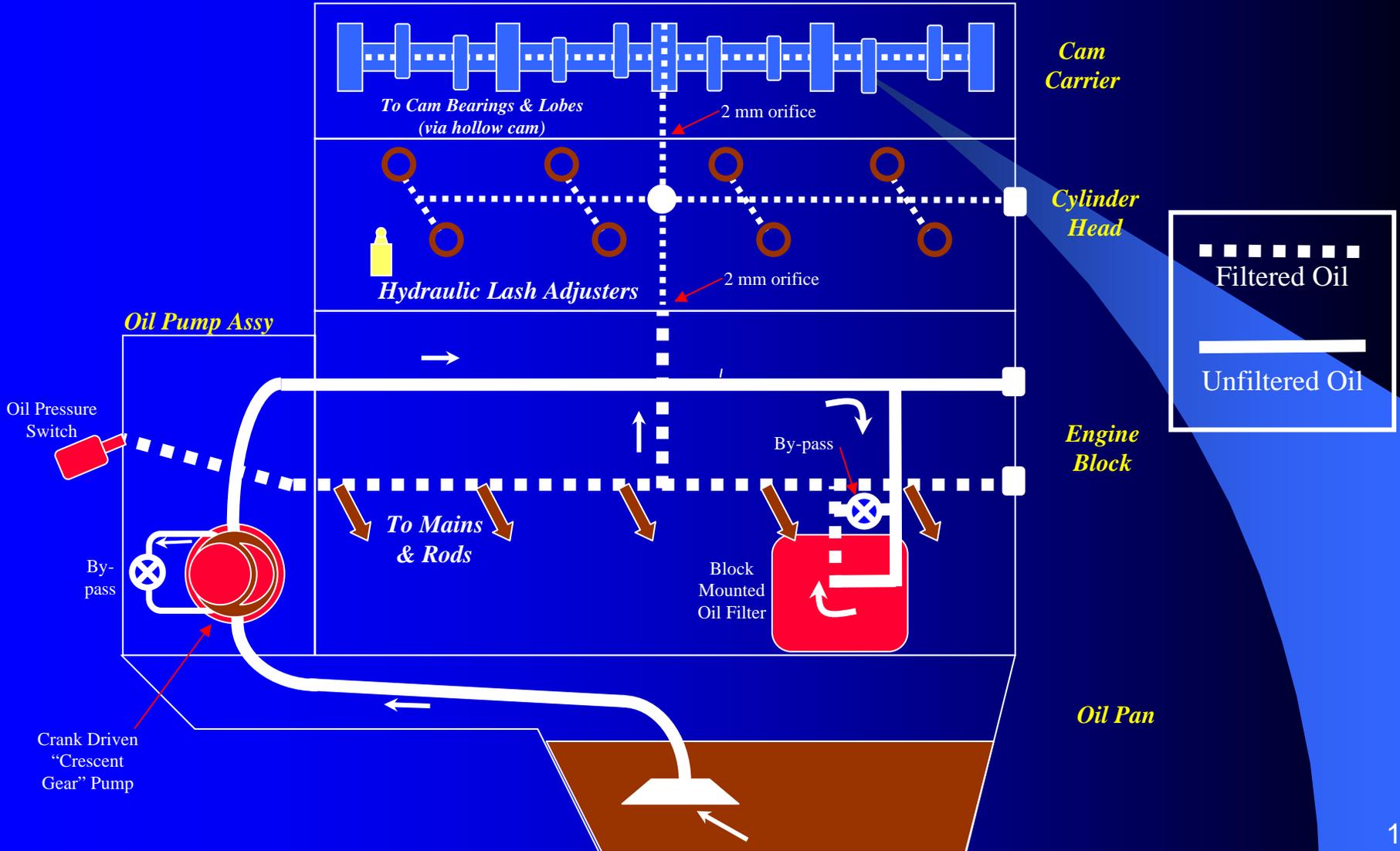
- Oil Pump is Crank Driven
- Integral to Front Cover
- Screened Oil Pick-Up



VORTEC 1600 – Oil Circuit

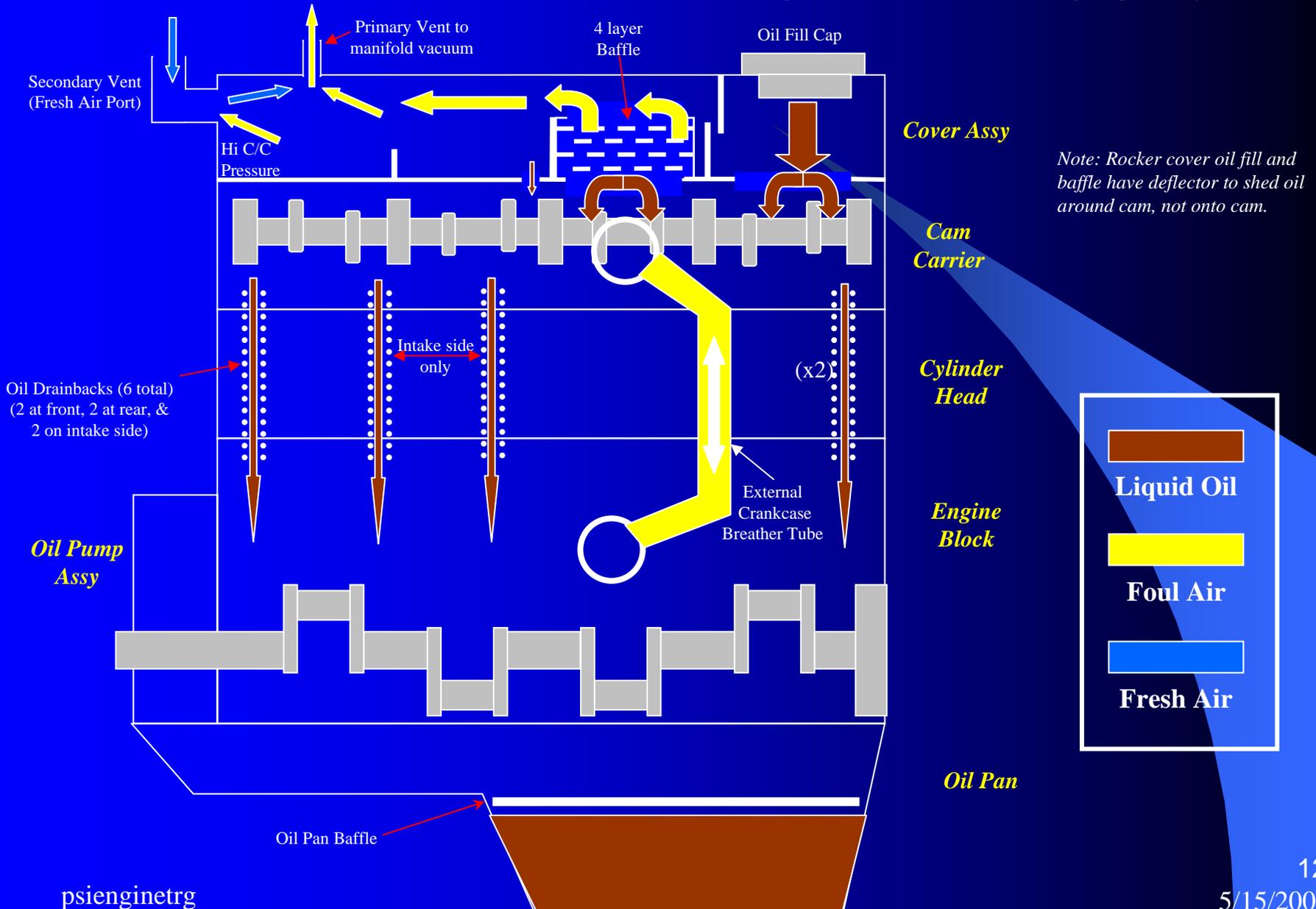
(Pressurized Circuit Shown – see Ventilation for drainbacks)

* Note: Diagram does not reflect actual engine geometry

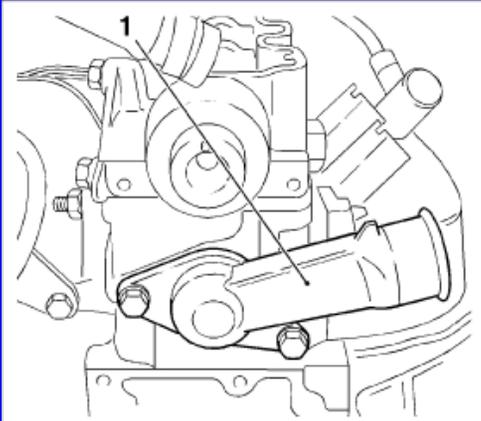


VORTEC 1600 Crankcase Ventilation*

* Note: Diagram does not reflect actual engine geometry



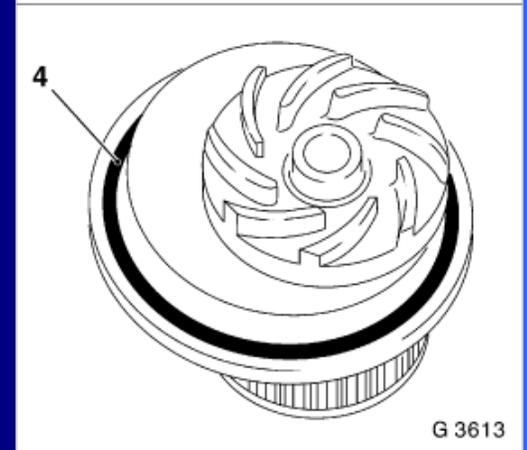
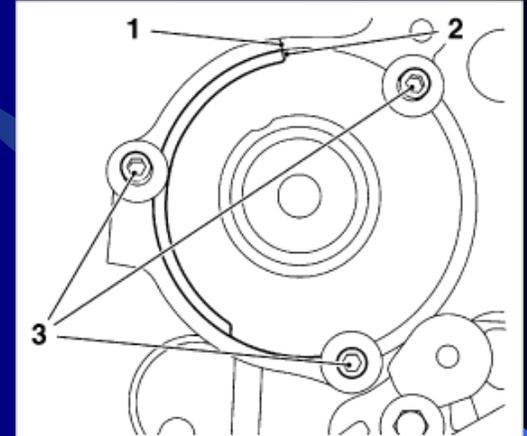
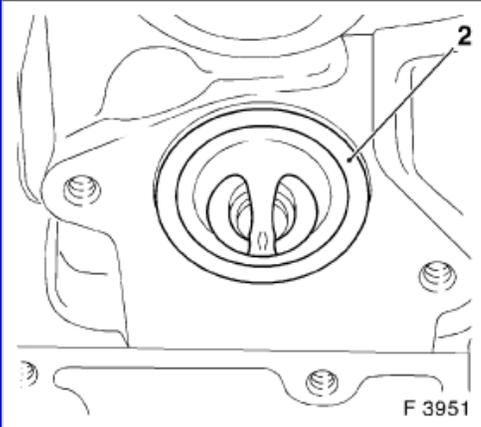
VORTEC 1600 – Thermostat & Water Pump



- Thermostat Located Behind Timing Cover

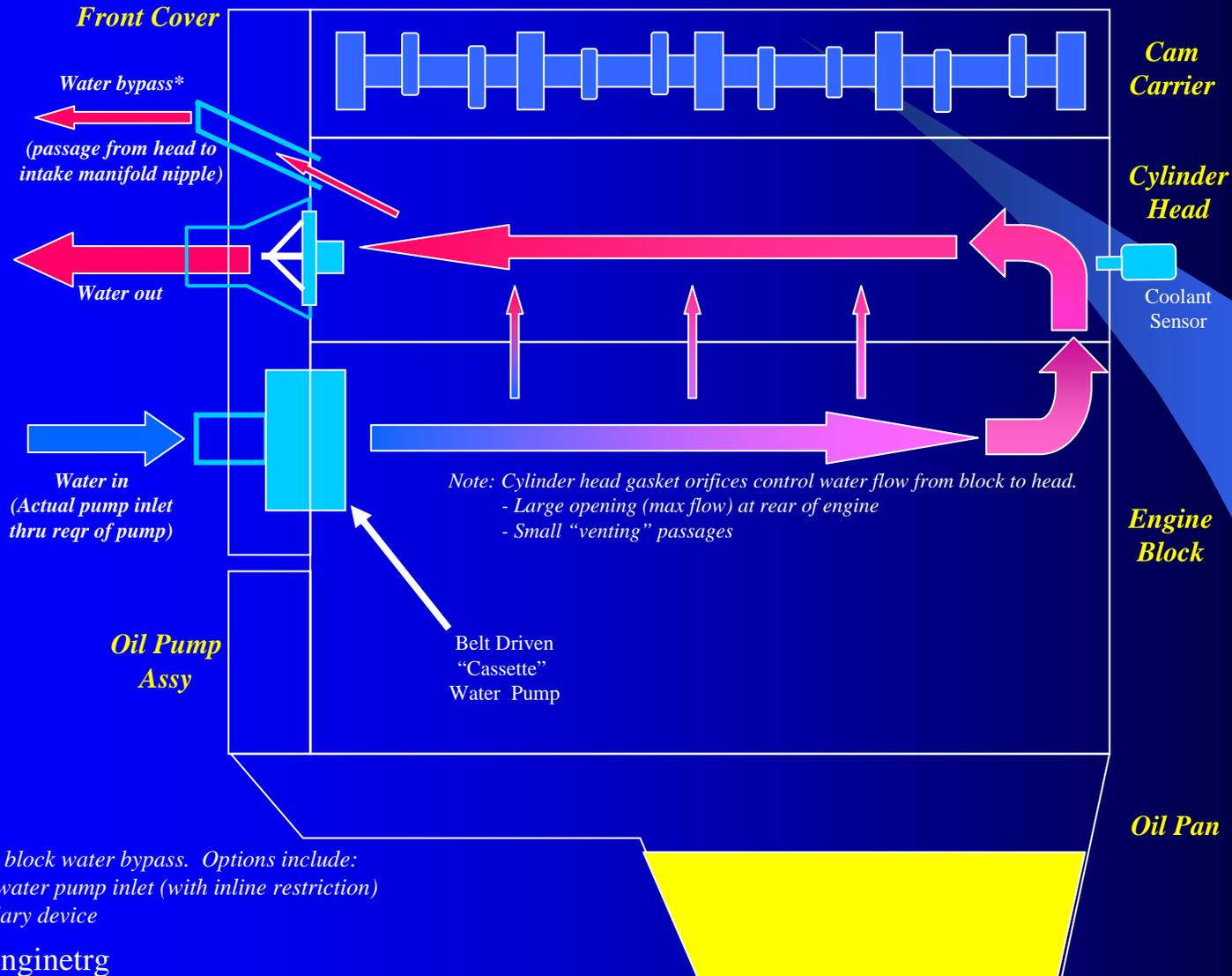
- Thermostat Operating Range – 179°-206° F

- Water Pump is Belt Driven



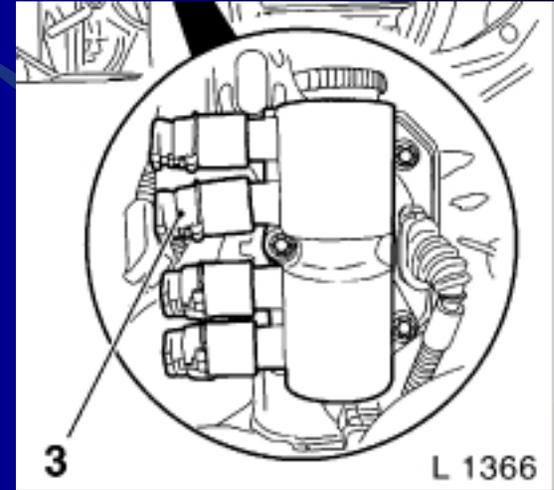
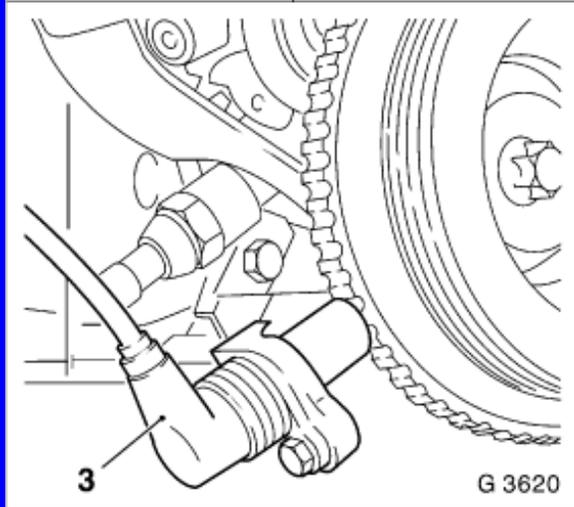
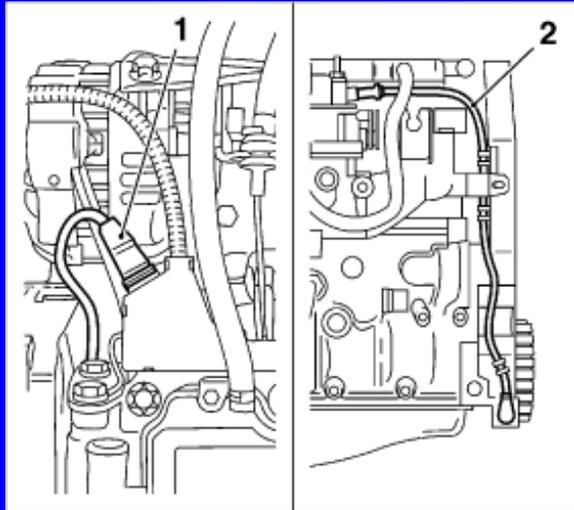
VORTEC 1600 Cooling Circuit*

* Note: Diagram does not reflect actual engine geometry



*Note: Do not block water bypass. Options include:
 - bypass to water pump inlet (with inline restriction)
 - feed ancillary device

VORTEC 1600 – Ignition System



DIS – Distributorless Ignition System
Crank Sensor Generates RPM Signal
Ground Side of Coil Controlled by ECM
TMAP & ECT Input for Spark Control

Questions & Answers