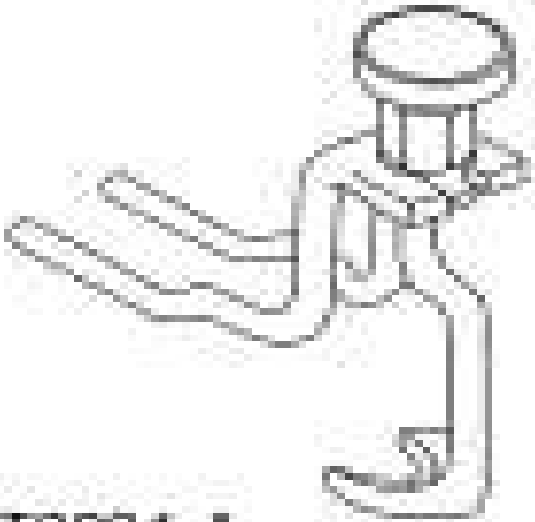
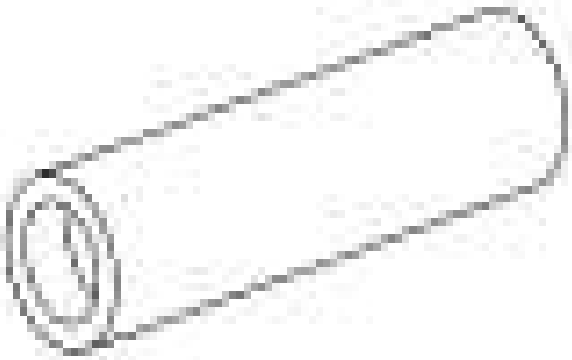


DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES

CYLINDER HEAD

Special Tool(s)

SPECIAL TOOL CHART

 <p>ST2B04-A</p>	<p>Compressor, Valve Spring 303-1039</p>
 <p>ST1332-A</p>	<p>Installer, Valve Stem Oil Seal 303-383 (T91T-6571-A)</p>

Material

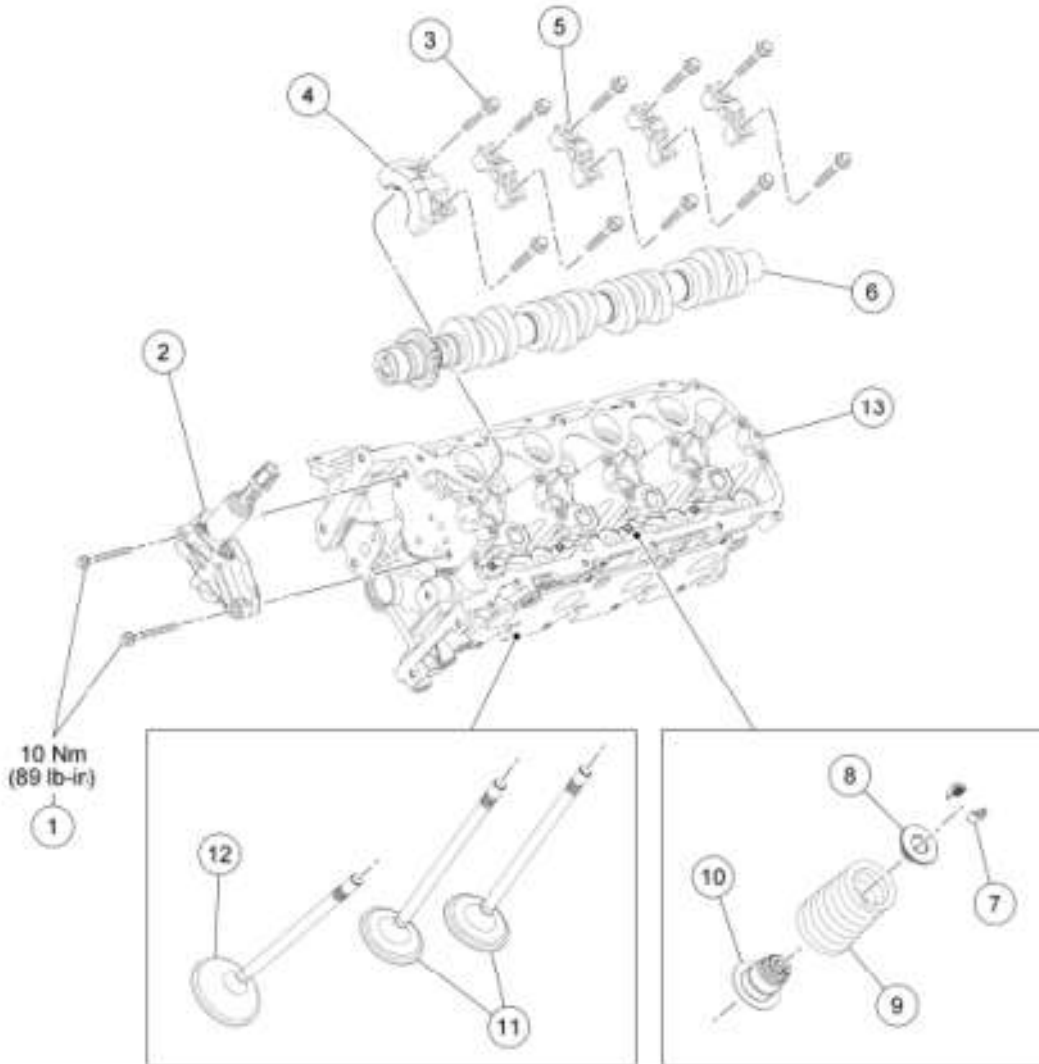
MATERIAL SPECIFICATIONS

Item	Specification
Motorcraft® SAE 5W-20 Premium	

Synthetic Blend Motor Oil
 XO-5W20-QSP (US); Motorcraft®
 SAE 5W-20 Super Premium Motor
 Oil CXO-5W20-LSP12 (Canada); or equivalent

WSS-M2C930-A

NOTE: LH side shown in illustration, RH side similar.



N0070935

Fig. 424: Identifying Cylinder Head Components With Torque Specifications
 Courtesy of FORD MOTOR CO.

ITEM DESCRIPTION

Item	Part Number	Description
1	W701520	Variable Camshaft Timing (VCT) housing assembly bolts (2 required)
2	6C261 LH/6C260 RH	VCT housing assembly
3	N807834	Camshaft bearing cap bolt (10 required)
4	6B284	Camshaft front bearing cap
5	6B280	Camshaft bearing cap (4 required)
6	6C255 LH/6251 RH	Camshaft

7	6518	Valve spring retainer key (24 required)
8	6514	Valve spring retainer (12 required)
9	6513	Valve spring (12 required)
10	6A517	Valve seal (12 required)
11	6507	Intake valves (8 required)
12	6505	Exhaust valve (4 required)
13	6050 LH/6049 RH	Cylinder head

Disassembly

1. Remove the bolts and the Variable Camshaft Timing (VCT) housing.
 - Discard the gasket.
2. Lubricate the camshaft and camshaft journals with clean engine oil and install the camshaft.

NOTE: **The camshaft must be installed in the head to use the Valve Spring Compressor to compress the valve springs.**

3.

NOTE: **Lubricate the camshaft bearing caps with clean engine oil.**

Install the camshaft bearing caps in their original locations.

- Position the front camshaft bearing cap.
 - Position the remaining camshaft bearing caps.
 - Install the bolts finger-tight.
4. Using the Valve Spring Compressor, compress the valve spring and remove the valve spring retainer keys.

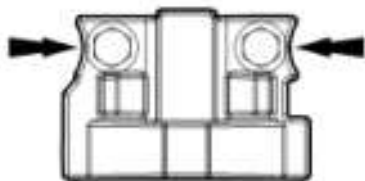


Fig. 425: Identifying Valve Spring Compressor (303-1039)
Courtesy of FORD MOTOR CO.

5. Remove the valve spring retainer, the valve spring and the valve seal.
 - Discard the valve seal.
6. Remove the valve from the cylinder head.
7. Repeat the previous 3 steps for each valve.
8. Inspect the components. For additional information, refer to **ENGINE SYSTEM - GENERAL INFORMATION**.
9. **NOTE:** **Remove the front thrust camshaft bearing cap straight upward from the**

9. **bearing towers or the bearing cap may be damaged from side loading.**

Remove the 2 bolts and the cylinder head camshaft front bearing cap.



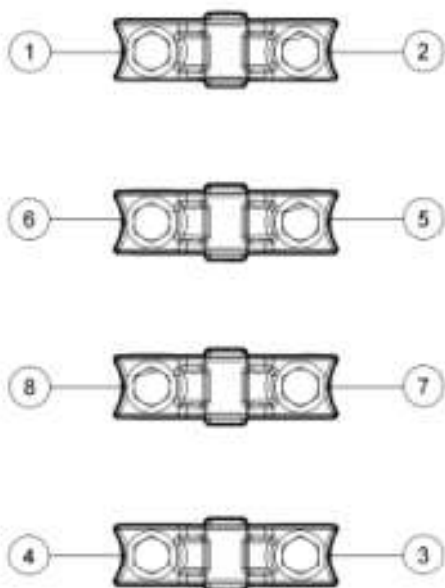
N0070049

Fig. 426: Locating Cylinder Head Camshaft Front Bearing Cap And Bolts
Courtesy of FORD MOTOR CO.

NOTE: The camshaft bearing caps must be installed in their original locations. Record camshaft bearing cap locations. Failure to follow these instructions may result in engine damage.

- 10.

Remove the remaining bolts in the sequence shown in illustration and remove the cylinder head camshaft bearing caps.



N0091483

Fig. 427: Identifying Camshaft Bearing Caps Bolts In Sequence
Courtesy of FORD MOTOR CO.

11. Remove the camshaft.
12. Check the cylinder head for distortion. For additional information, refer to ENGINE SYSTEM - GENERAL INFORMATION .

1. Lubricate the camshaft and camshaft journals with clean engine oil and install the camshaft.

2. **NOTE:** **Lubricate the camshaft bearing caps with clean engine oil.**

Install the camshaft bearing caps in their original locations.

- Position the front camshaft bearing cap.
- Position the remaining camshaft bearing caps.
- Install the bolts finger-tight.

3. **NOTE:** **Lubricate the valve stem with clean engine oil prior to installation.**

Install the valve into the cylinder head.

4. **NOTE:** **Lubricate the valve seal and valve stem with clean engine oil prior to installation.**

Position a new valve seal onto the valve stem.

5. Using the Valve Stem Oil Seal Installer, install the new valve seal.

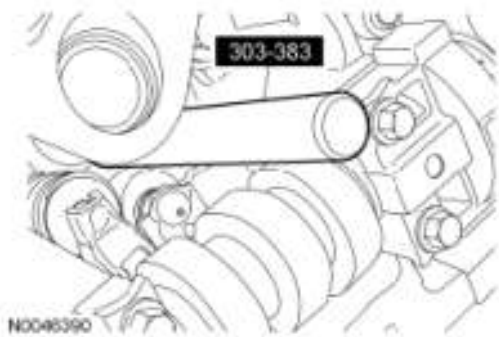


Fig. 428: Identifying Valve Stem Oil Seal Installer (303-383)
Courtesy of FORD MOTOR CO.

6. Using the Valve Spring Compressor, install the valve spring, the valve spring retainer and the valve spring retainer keys.



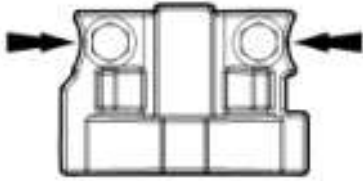
Fig. 429: Identifying Valve Spring Compressor (303-1039)
Courtesy of FORD MOTOR CO.

7. Repeat the previous 2 steps for each valve.

NOTE: Remove the front thrust camshaft bearing cap straight upward from the bearing towers or the bearing cap may be damaged from side loading.

8.

Remove the 2 bolts and the cylinder head camshaft front bearing cap.



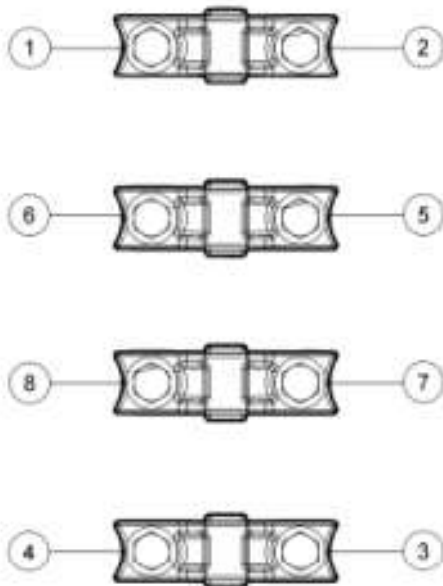
N0070049

Fig. 430: Locating Cylinder Head Camshaft Front Bearing Cap And Bolts
Courtesy of FORD MOTOR CO.

NOTE: The camshaft bearing caps must be installed in their original locations. Record camshaft bearing cap locations. Failure to follow these instructions may result in engine damage.

9.

Remove the remaining bolts in the sequence shown in illustration and remove the cylinder head camshaft bearing caps.



N0091483

Fig. 431: Identifying Camshaft Bearing Caps Bolts In Sequence
Courtesy of FORD MOTOR CO.

10. Remove the camshaft.

11. Install a new gasket, the VCT housing and the bolts.

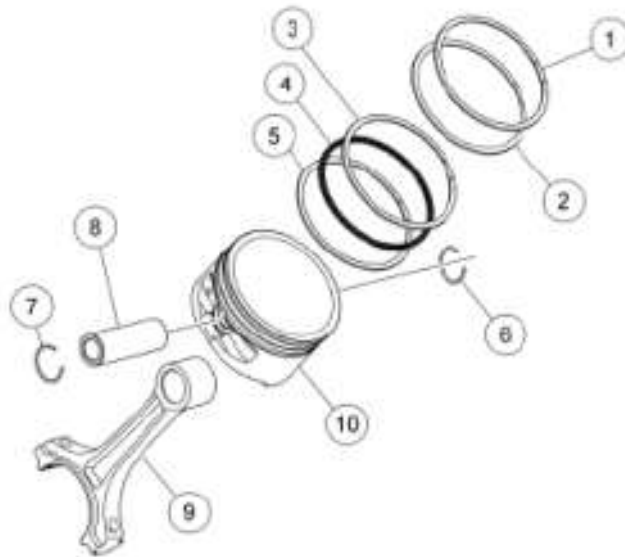
- Tighten to 10 Nm (89 lb-in).

PISTON

Material

MATERIAL SPECIFICATIONS

Item	Specification
Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil XO-5W20-QSP (US); Motorcraft® SAE 5W-20 Super Premium Motor Oil CXO-5W20-LSP12 (Canada); or equivalent	WSS-M2C930-A



N0010114

Fig. 432: Exploded View Of Piston
 Courtesy of FORD MOTOR CO.

ITEM DESCRIPTION

Item	Part Number	Description
1	6150	Piston compression ring, upper
2	6152	Piston compression ring, lower
3	6159	Piston oil control segment ring, upper
4	6161	Piston oil control spacer
5	6159	Piston oil control segment ring, lower
6	6140	Piston pin retainer
7	6140	Piston pin retainer
8	6135	Piston pin
9	6200	Connecting rod
10	6110	Piston

Disassembly

WARNING: Since the retainer ring has a tendency to spring out, cover the end of the pin bore with a hand or shop rag when removing the ring. Wear eye protection. Failure to follow these instructions may result in serious personal injury.

1. Remove the piston rings from the piston.
 - Discard the piston rings.
2. Mark the piston and the connecting rod on the same side for assembly reference.



Fig. 433: Locating Mark On Piston And Connecting Rod
Courtesy of FORD MOTOR CO.

3. Remove the piston pin retainers and the piston pin.
4. Separate the piston from the connecting rod.
5. Clean and inspect the piston and connecting rod. For additional information, refer to **ENGINE SYSTEM - GENERAL INFORMATION**.

Assembly

NOTE: The connecting rod must be installed into the piston with the marks made during disassembly on the same side. If a new piston or connecting rod is being installed, it can be installed in either direction.

- 1.

Position the connecting rod in the piston.



N0089658

Fig. 434: Locating Mark On Piston And Connecting Rod
Courtesy of FORD MOTOR CO.

2. Lubricate the piston pin and pin bore with clean engine oil.
3. Install the piston pin in the piston and connecting rod assembly.
4. Install the piston pin retaining clips in the piston.
5. Lubricate the piston and the new piston rings with clean engine oil.
6. Install the piston rings onto the piston.