2013 ENGINE

Engine Mechanical -3.5L TI-VCT - Explorer

SPECIFICATIONS

MATERIAL SPECIFICATIONS

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Item	Specification	Fill Capacity
Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil (US); Motorcraft® SAE 5W- 20 Super Premium Motor Oil (Canada) XO-5W20-QSP (US); CXO-5W20-LSP12 (Canada)	WSSM2C945-A	5.7 L (6 qt) includes filter change

TORQUE SPECIFICATIONS

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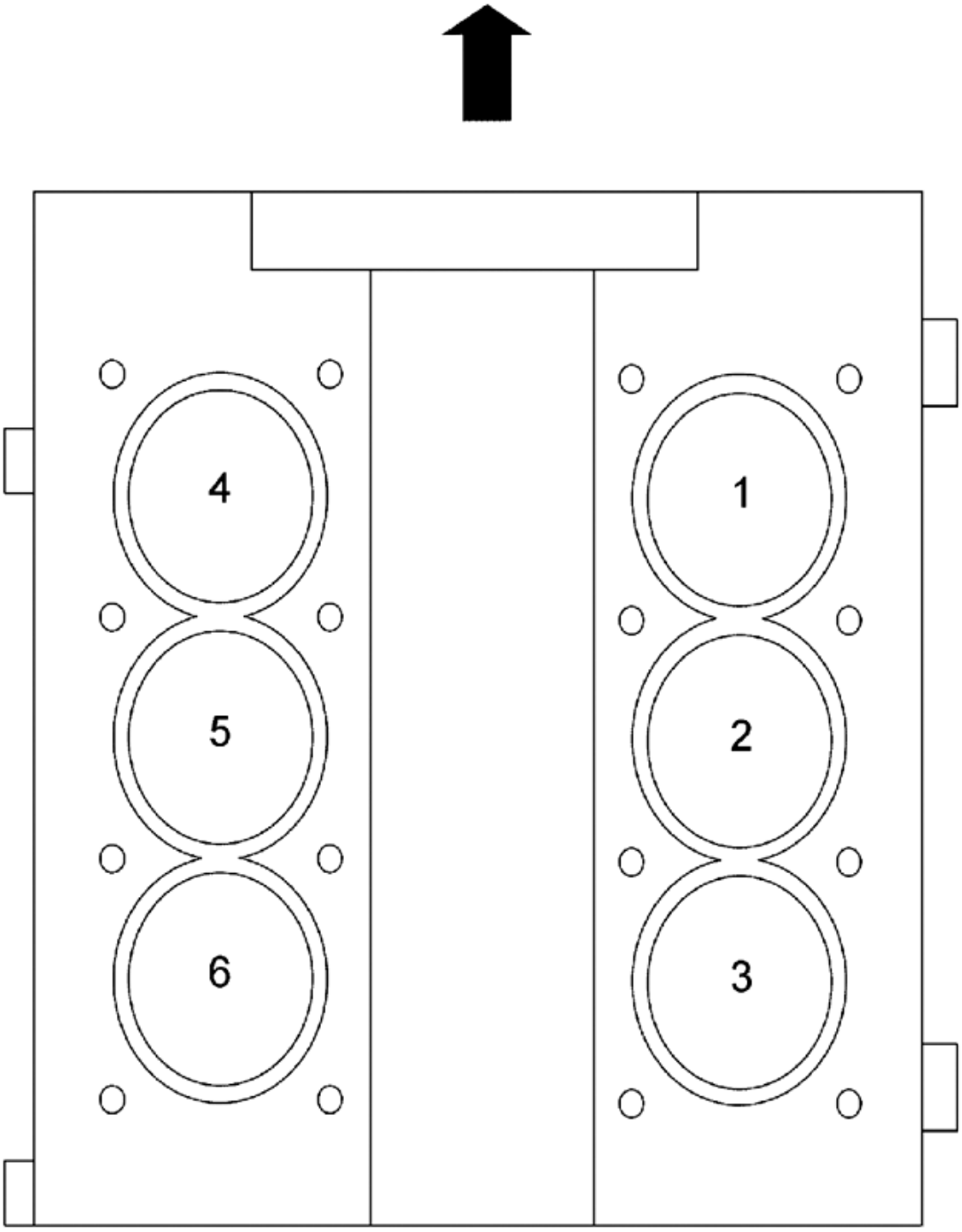
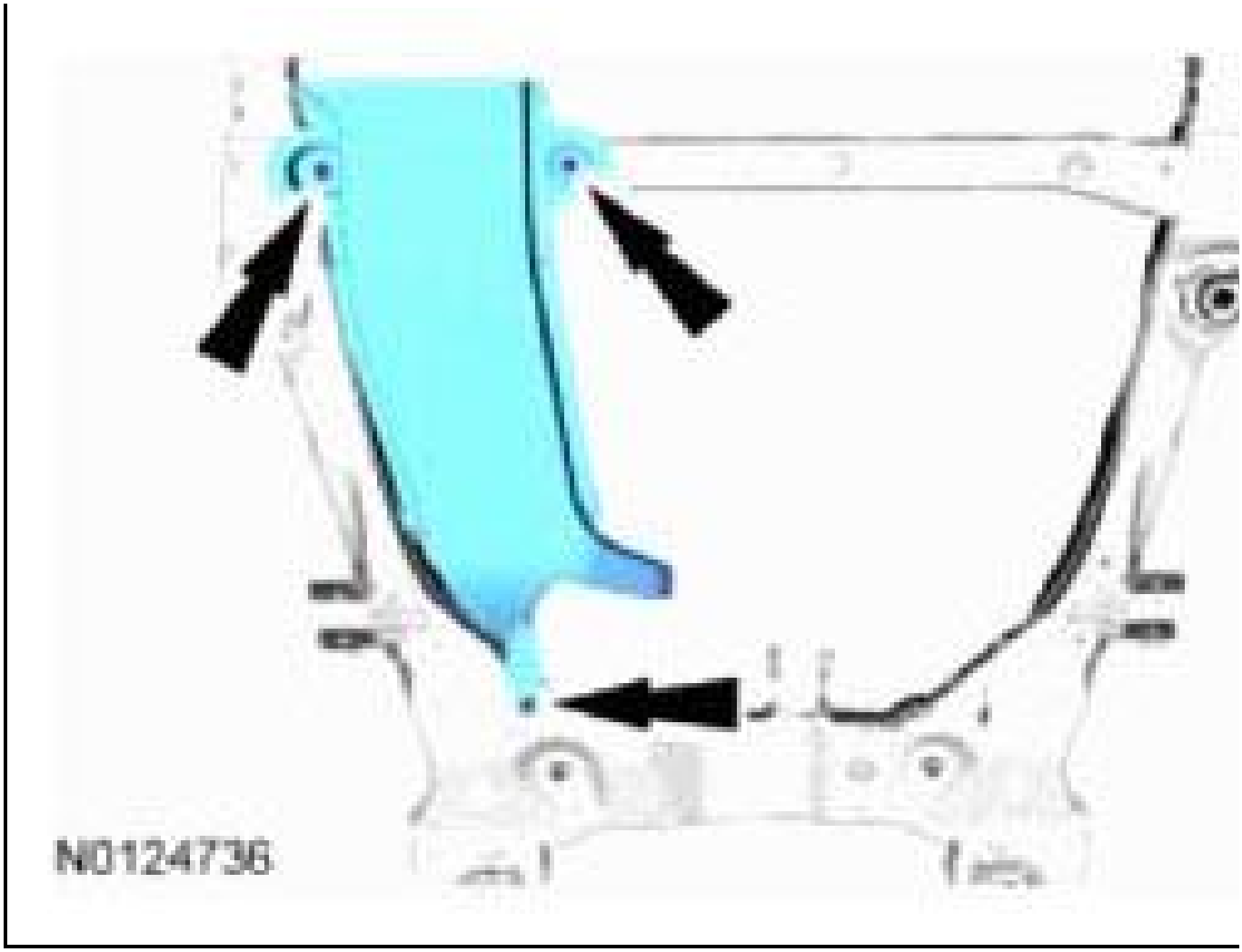
Description	Part Number	Torque
A/C compressor bolts and nut	W714077	25 Nm (18 lb-ft)
A/C compressor stud	W712610	9 Nm (80 lb-in)
A/C pressure tube fitting nuts	W520413	8 Nm (71 lb-in)
Accessory drive belt tensioner bolts	W503278	11 Nm (97 lb-in)
Battery cable power feed cable nut	N805320	9 Nm (80 lb-in)
Block oil gallery plug - LH(1)	W528207	48 Nm (35 lb-ft)
Block oil gallery plug - rear(1)	W715597	85 Nm (63 lb-ft)
Block oil gallery plug - RH(1)	W528205	32 Nm (24 lb-ft)
	6A051	40 Nm (30 lb-ft)
Camshaft bearing cap bolts	W710702	Refer to **CAMSHAFT**
CMP sensor bolts	W503275	10 Nm (89 lb-in)
Crankshaft rear seal retainer plate bolts	W503277	Refer to **CRANKSHAFT REAR SEAL WITH RETAINER PLATE**
Crankshaft pulley bolt	W701512	Refer to **CRANKSHAFT PULLEY**
Cylinder head bolts	6065	Refer to **CYLINDER HEAD - LH** Refer to **CYLINDER HEAD - RH**
CHT sensor	6G004	10 Nm (89 lb-in)
Engine block coolant drain plug - RH	W701548	10 Nm (89 lb-in) plus an additional 720 degrees
Engine block coolant drain plug - LH	W701516	16 Nm (142 lb-in) plus an additional 180 degrees
Engine front cover bolts	-	Refer to **ENGINE FRONT COVER**
Engine mount-to-engine nuts	W714682	63 Nm (46 lb-ft)
Engine oil filter	6714	5 Nm (44 lb-in) plus an additional 180 degrees



N0069904

Fig. 1: Engine Cylinder Identification Number
Courtesy of FORD MOTOR CO.

Exhaust Emission Control System



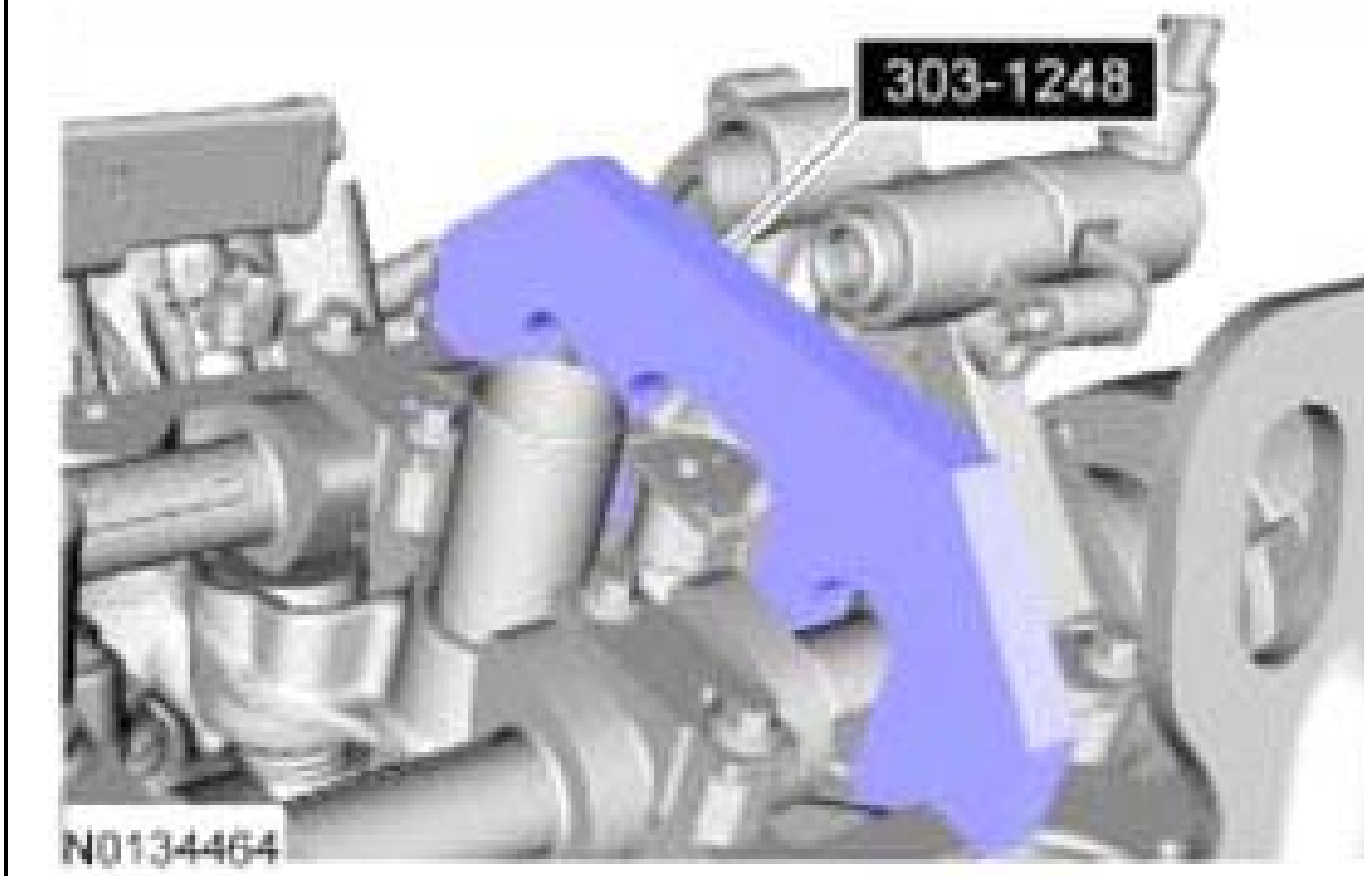
32.

NOTE: **Do not allow the intermediate shaft to rotate while it is disconnected from the gear or damage to the clockspring may occur. If there is evidence that the intermediate shaft has rotated, the clockspring must be removed and recentered. For additional information, refer to CLOCKSPRING , and CLOCKSPRING ADJUSTMENT .**

NOTE: **Index-mark the steering column shaft position to the steering gear for reference during installation.**

Remove the bolt and disconnect the steering column shaft from the steering gear.

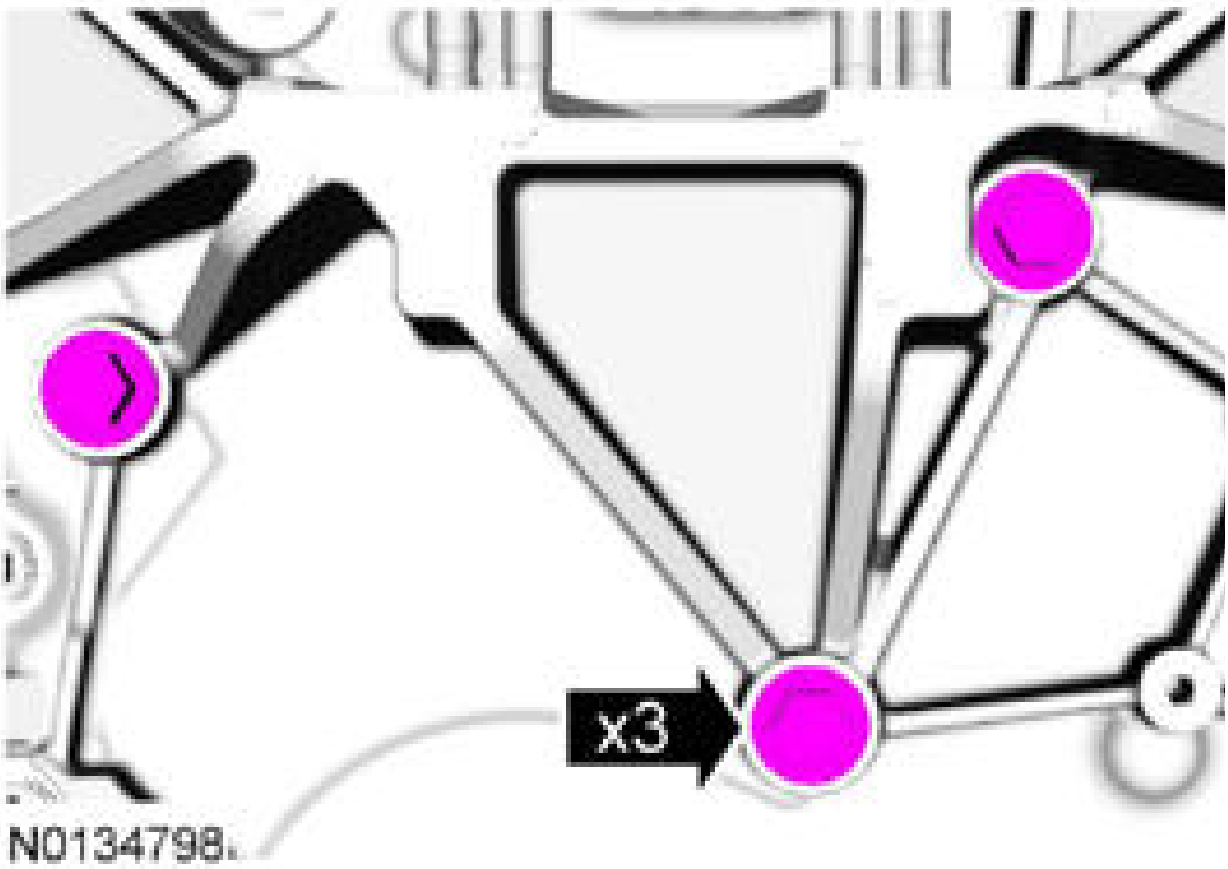
- Discard the bolt.



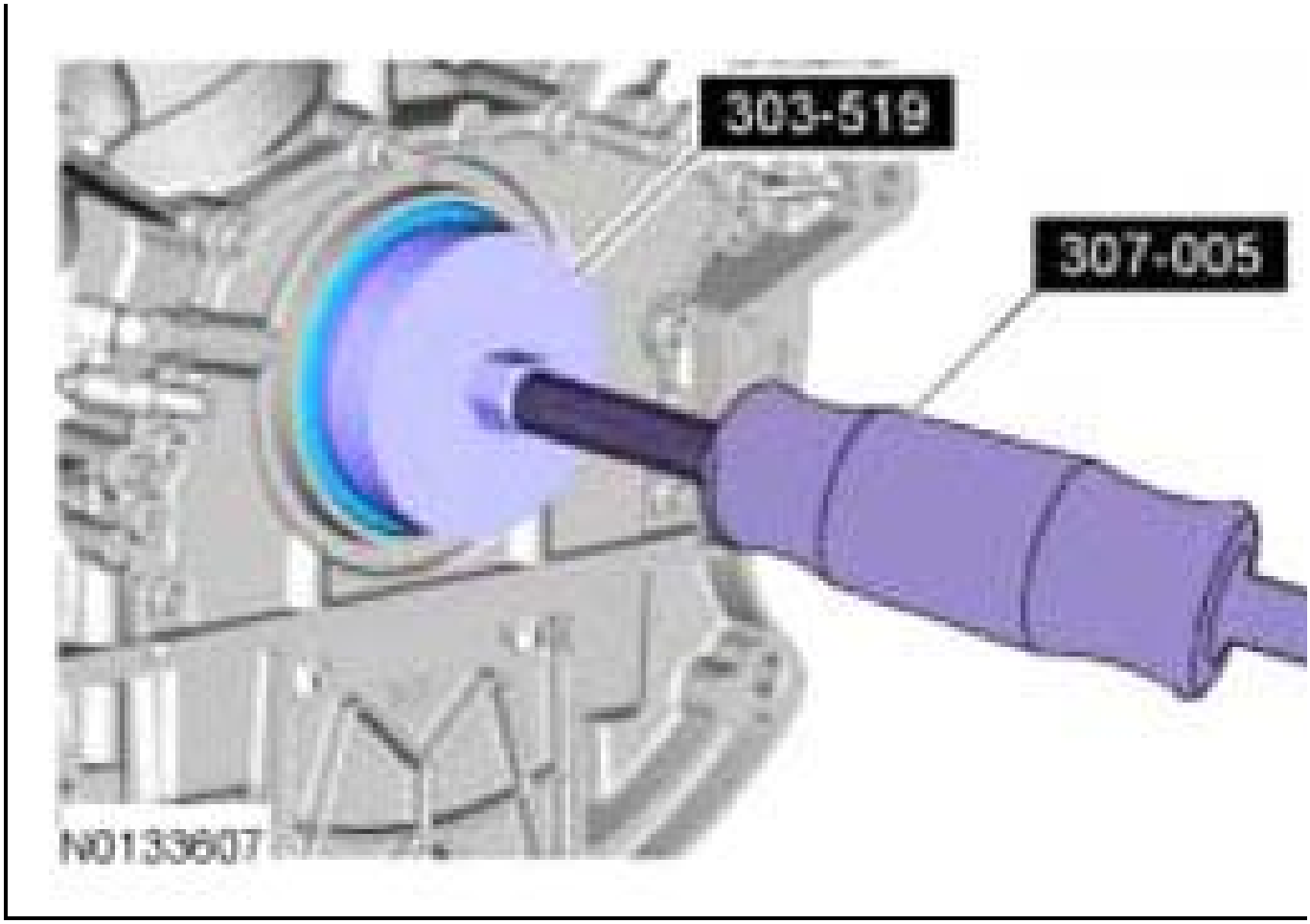
109. **NOTE: Cylinder head camshaft bearing caps are numbered to verify that they are assembled in their original positions.**

NOTE: Mark the exhaust and intake camshafts for installation into their original locations.

Remove the 12 bolts, 6 camshaft caps, mega cap and the RH camshafts.



52. Install the remaining engine front cover bolts. Tighten all of the engine front cover bolts in the sequence shown in illustration in 7 stages.
    - Stage 1: Tighten bolts 1 thru 22 to 10 Nm (89 lb-in).
    - Stage 2: Tighten bolts 23 thru 25 to 15 Nm (133 lb-in).
    - Stage 3: Tighten bolt 26 to 10 Nm (89 lb-in).
    - Stage 4: Loosen bolt 26 one full turn.
    - Stage 5: Tighten bolts 23 thru 25 to 30 Nm (22 lb-ft) plus an additional 90 degrees.
    - Stage 6: Tighten bolts 1 thru 22 to 20 Nm (177 lb-in) plus an additional 45 degrees.
    - Stage 7: Tighten bolt 26 to 10 Nm (89 lb-in) plus an additional 45 degrees.

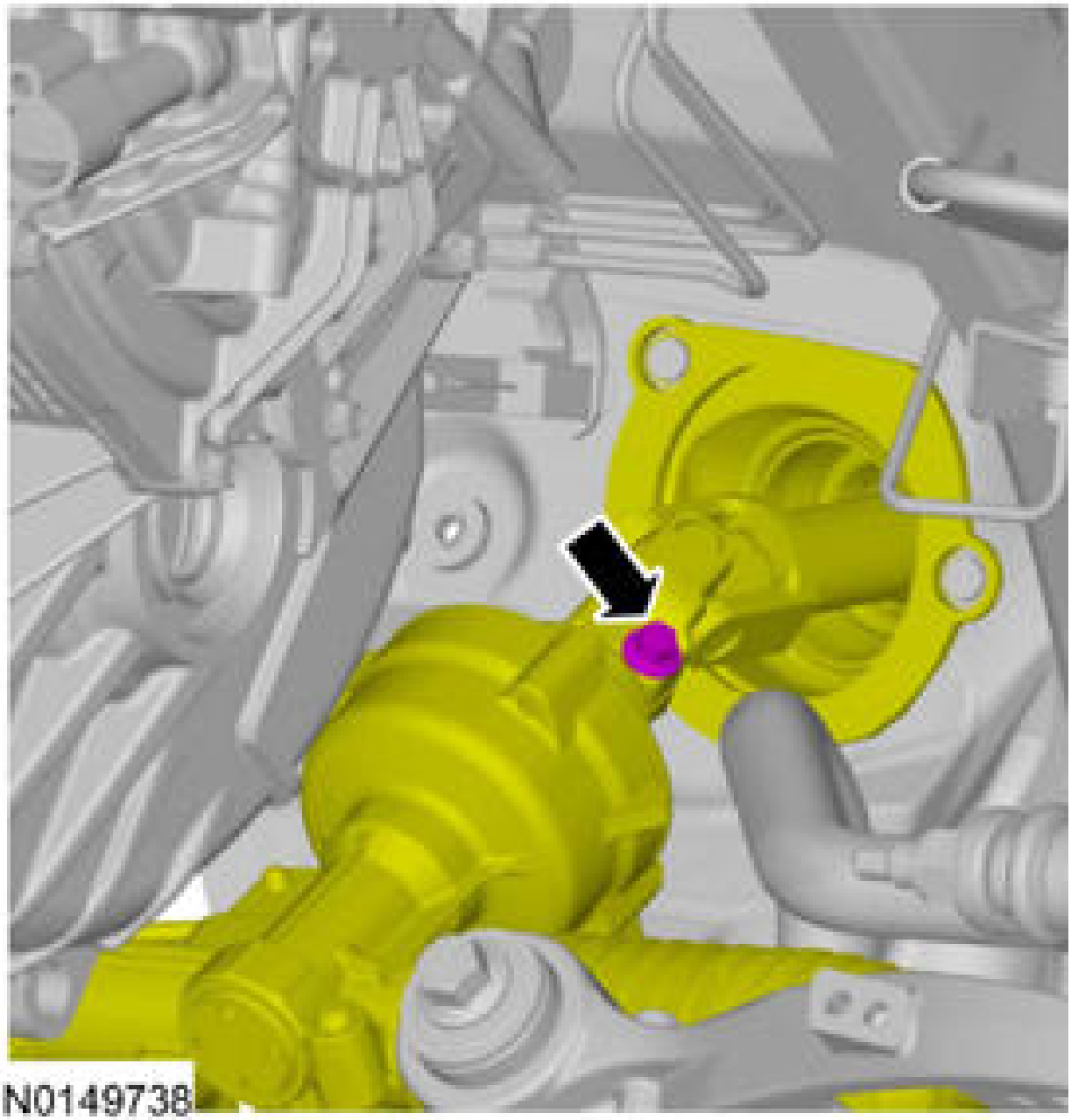


Installation

1. Clean all sealing surfaces with Motorcraft® Metal Surface Prep.

   NOTE: Lubricate the seal lips and bore with clean Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil (US); Motorcraft® SAE 5W-20 Super Premium Motor Oil (Canada) prior to installation.

2. Position 303-1250 onto the end of the crankshaft and slide a new crankshaft rear seal onto the tool.



57. Install the underbody air duct and the 3 twist lock retainers.

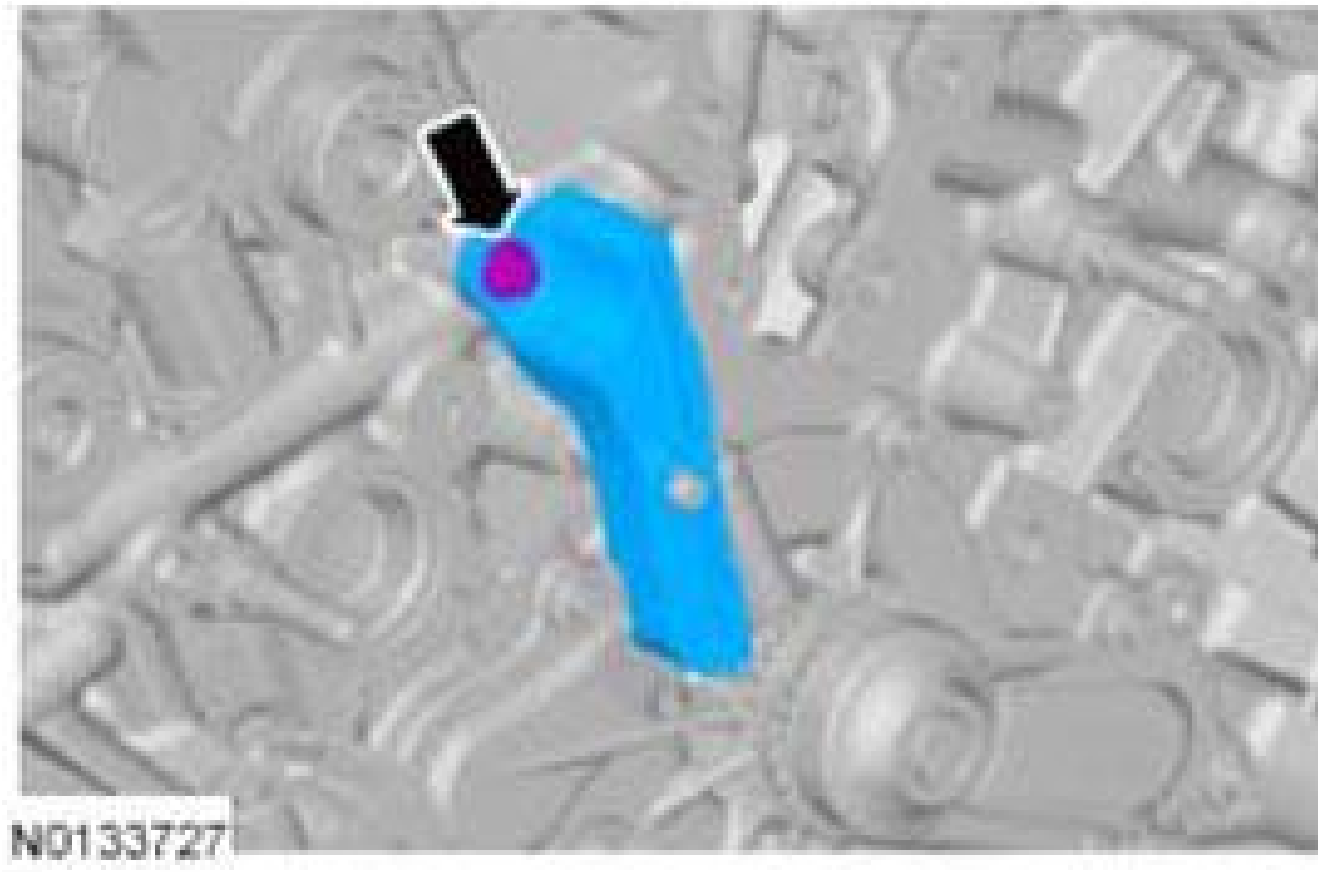
OIL PAN

MATERIAL SPECIFICATIONS

Item	Specification
Motorcraft® High Performance Engine RTV Silicone TA-357	WSEM4G323-A6
Motorcraft® Metal Surface Prep ZC-31-A	-
Motorcraft® SAE 5W-20 Premium Synthetic Blend Motor Oil (US); Motorcraft® SAE 5W-20 Super Premium Motor Oil (Canada) XO-5W20-QSP (US); CXO-5W20-LSP12 (Canada)	WSSM2C945-A
Motorcraft® Silicone Gasket Remover ZC-30	-

Removal

WARNING: Before beginning any service procedure, refer to SAFETY WARNINGS . Failure to follow this instruction may result in serious personal injury.



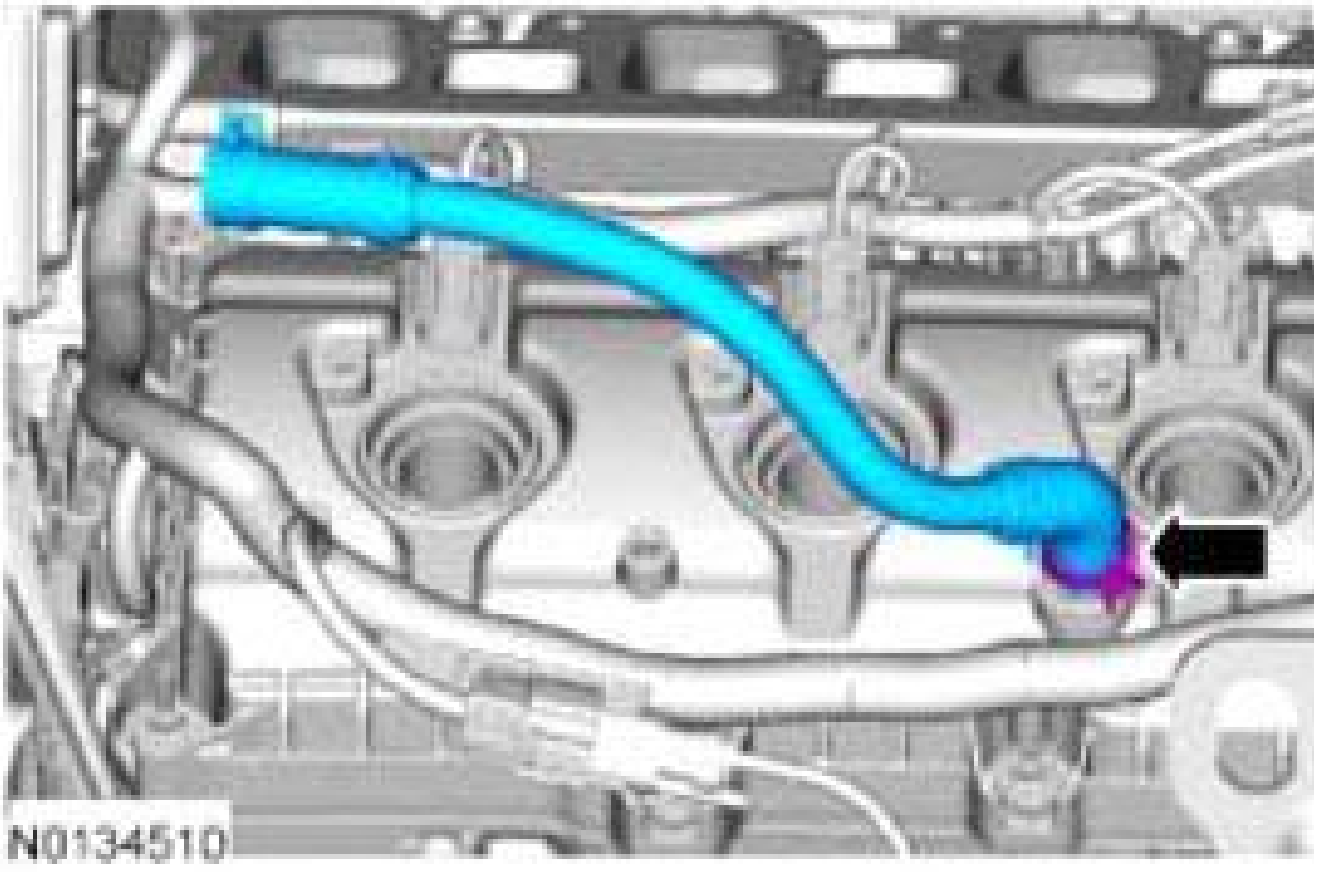
25. **NOTE: The following steps are only for the replacement of the secondary timing chain tensioners. Do not reuse the secondary timing chain tensioners if removed, or damage to the engine may occur.**

For replacement of the secondary timing chain tensioner, perform the following 6 steps.

26. **NOTE: A slight twisting motion will aid in the removal of the VCT oil control solenoid.**

NOTE: Keep the VCT oil control solenoid clean of dirt and debris.

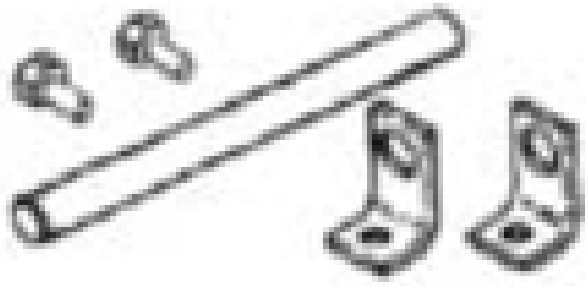
Remove the LH exhaust **VCT** oil control solenoid.

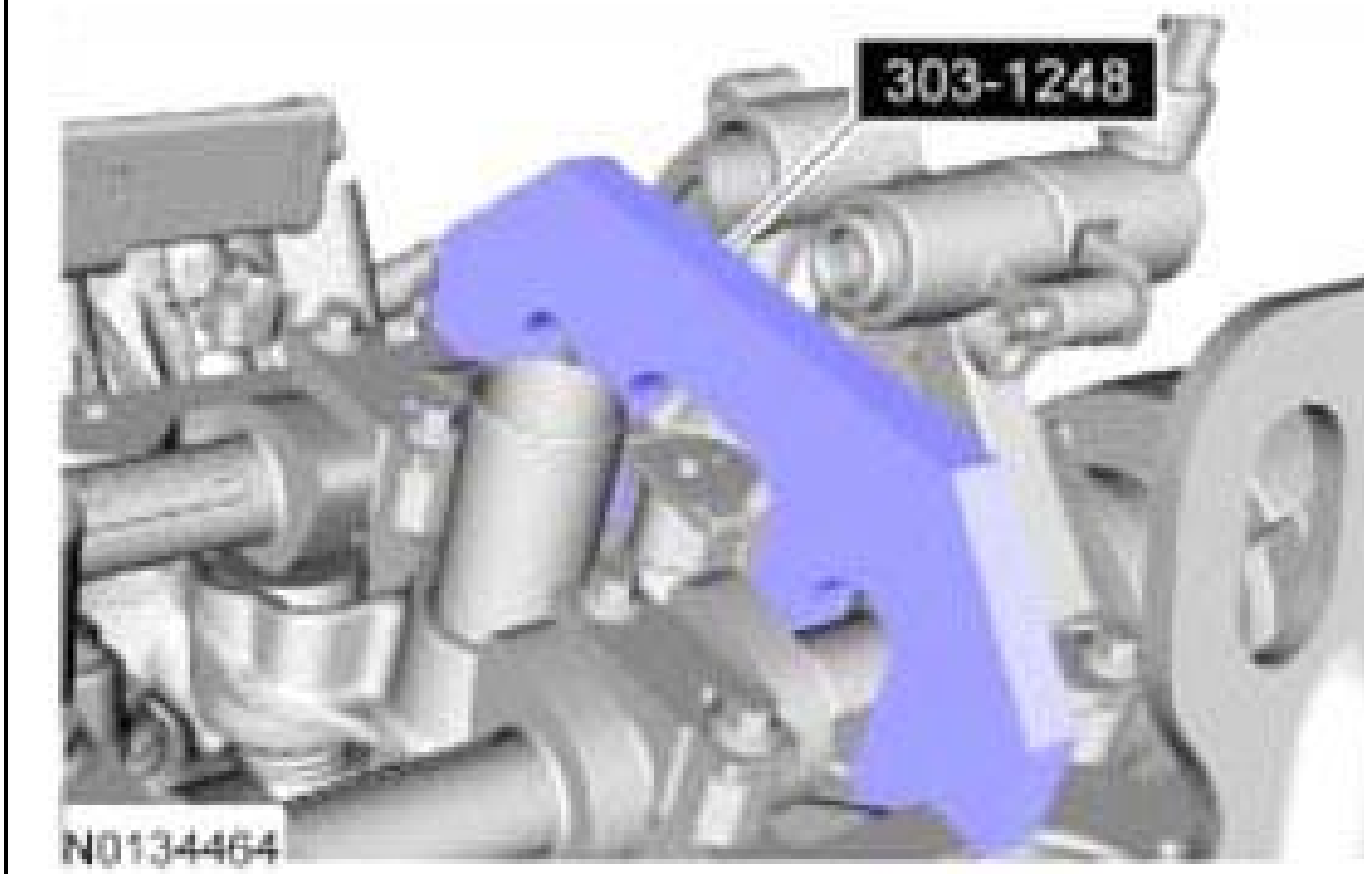


8. Install the RH ignition coils. REFER to **IGNITION COIL-ON-PLUG - RH** .

VALVE SPRING, RETAINER AND SEAL

SPECIAL TOOL(S) DESCRIPTION

	Compressor, Valve Spring **303-300T87C-6565-A**



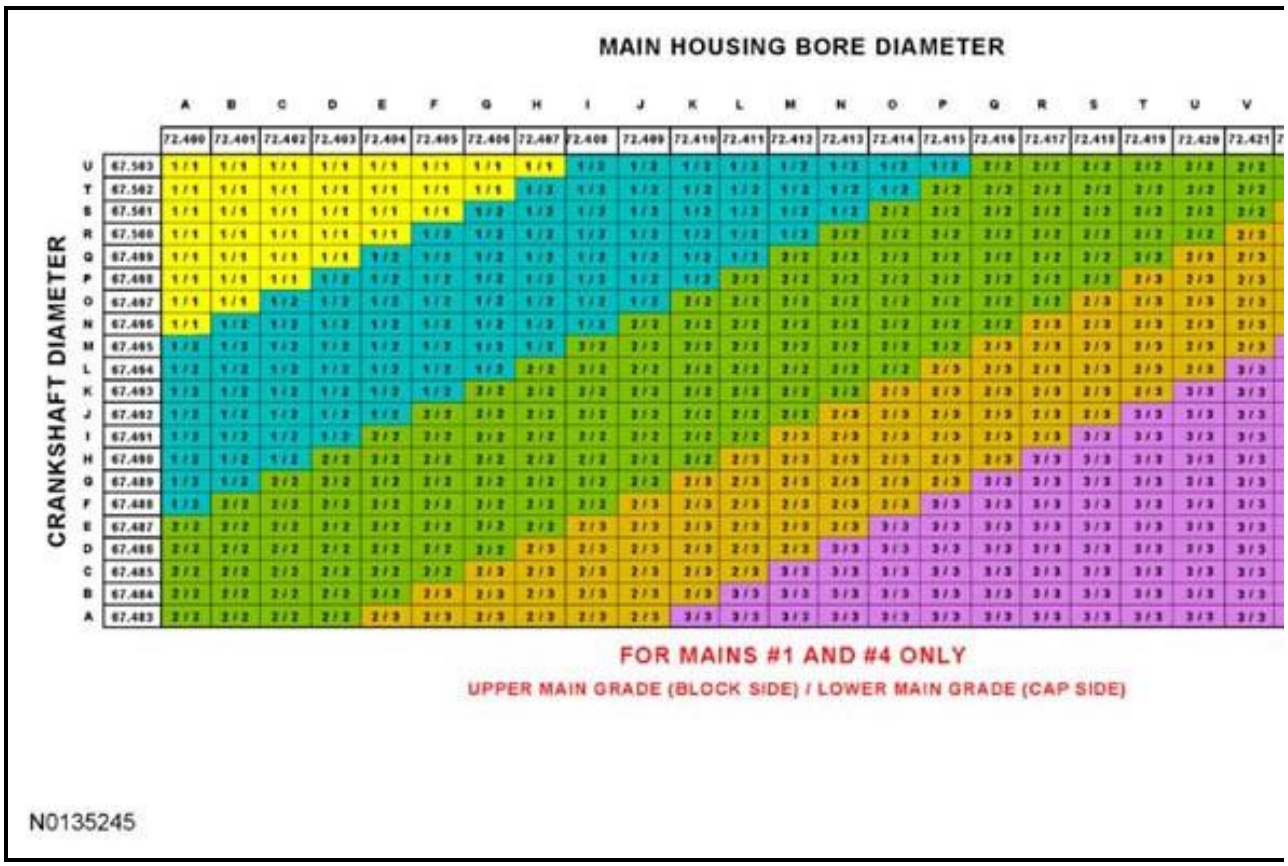
NOTE: **The following 3 steps are for primary timing chains that the colored links are not visible.**

68. Mark the timing chain link that aligns with the timing mark on the LH intake **VCT** assembly as shown in illustration.

3. **NOTE: This chart is for selecting main bearings 1 and 4 only, the remaining bearings will be selected using a different chart in the next step.**

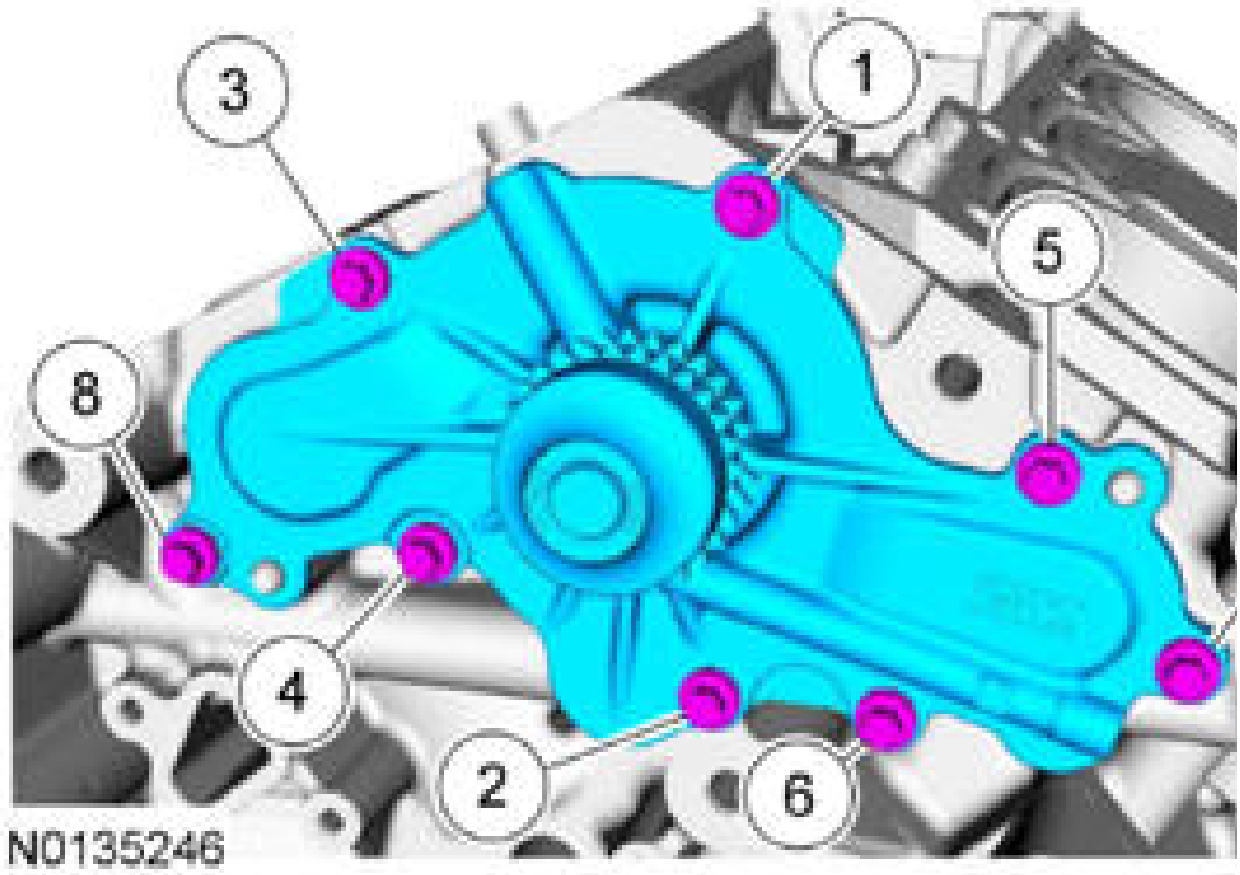
Using the data recorded earlier and the Bearing Select Fit Chart, Standard Bearings, determine the required bearing grade for main bearings 1 and 4.

- Read the first letter of the engine block main bearing code and the first letter of the crankshaft main bearing code.
- Read down the column below the engine block main bearing code letter and across the row next to the crankshaft main bearing code letter, until the 2 intersect. This is the required bearing grade(s) for the No. 1 crankshaft main bearing.
- As an example, if the engine block code letter is "F" and the crankshaft code letter is "P", the correct bearing grade for this main bearing is a "1" for the upper bearing and a "2" for the lower bearing.
- Repeat the above steps using the fourth letter of the block and crankshaft codes to select the No. 4 bearing.

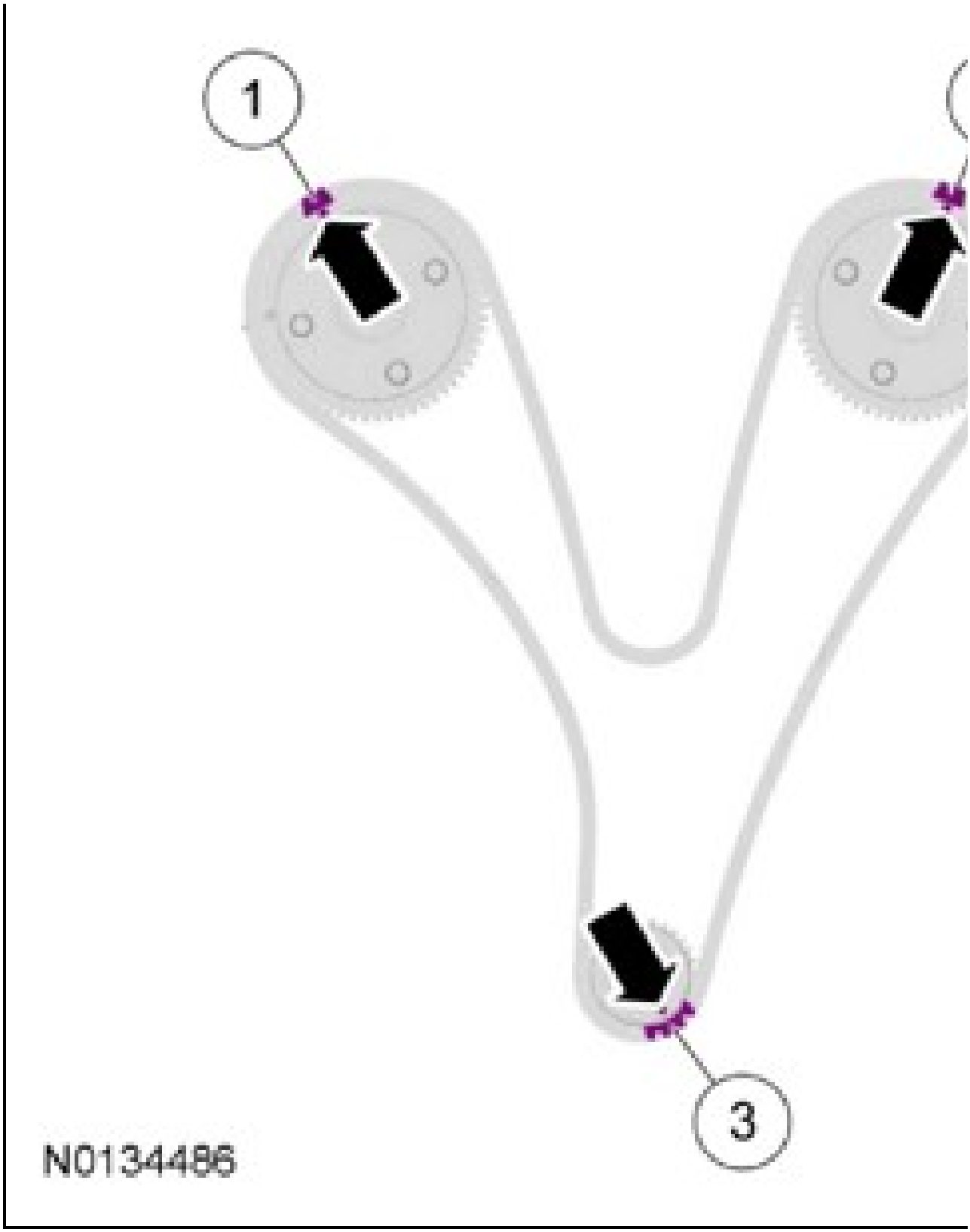


4. **NOTE: This chart is for selecting main bearings 2 and 3 only.**

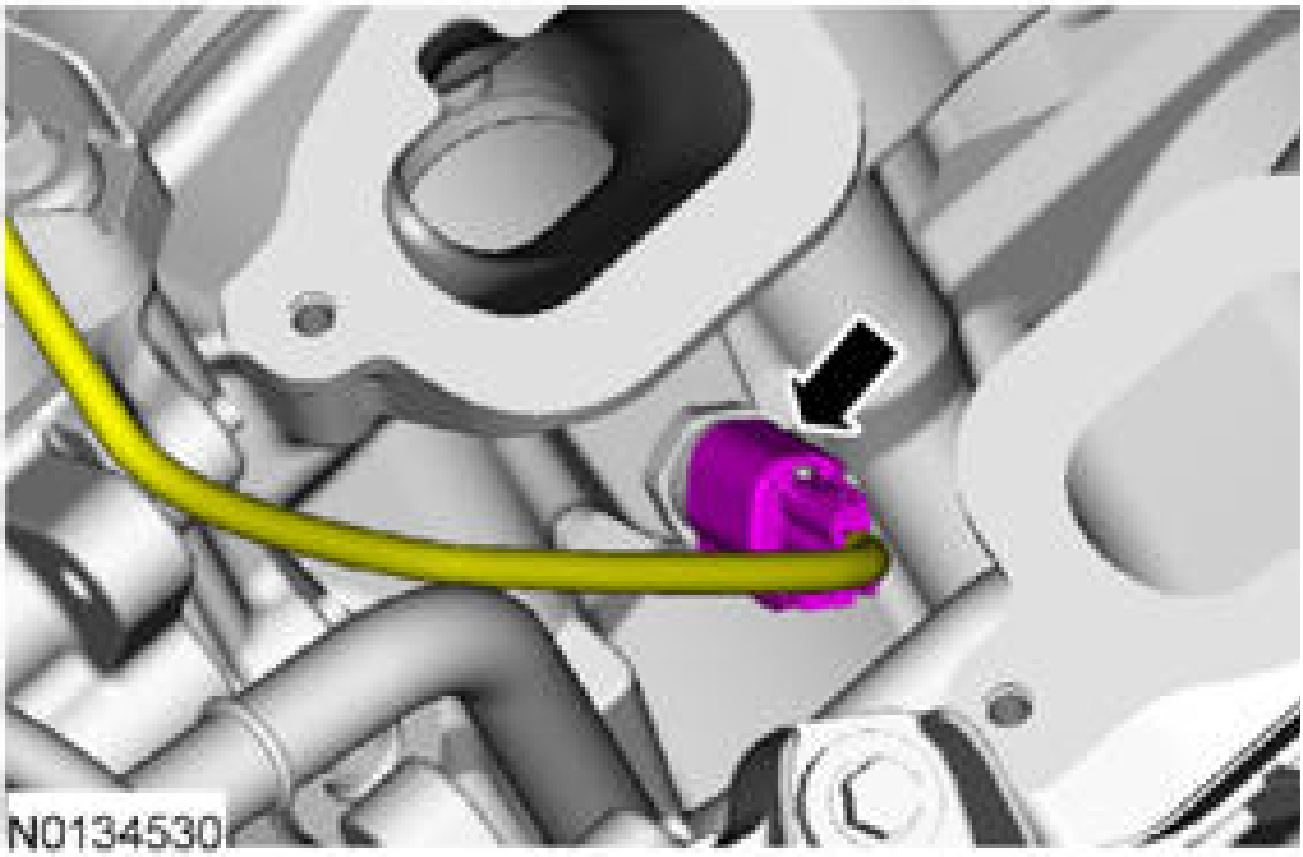
Using the data recorded earlier and the Bearing Select Fit Chart, Standard Bearings, determine the required bearing grade for main bearings 2 and 3.



40. Install the KS and the 2 bolts.
    - Tighten to 20 Nm (177 lb-in).



88. **NOTE: Do not use excessive force when installing the VCT oil control solenoid.**



NOTE: **If the engine is repaired or replaced because of upper engine failure, typically including valve or piston damage, check the intake manifold for metal debris. If metal debris is found, install a new intake manifold. Failure to follow these instructions can result in engine damage.**

118.

Using new intake manifold and thermostat housing gaskets, install the lower intake manifold and the 10 bolts.

- Tighten in the sequence shown in illustration to 10 Nm (89 lb-in).