

Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0T019X
Title: 2AZ-FE LUBRICATION: LUBRICATION SYSTEM: ON-VEHICLE INSPECTION (2010 Corolla)		

ON-VEHICLE INSPECTION

1. CHECK ENGINE OIL LEVEL

- (a) Warm up and stop the engine, then wait for 5 minutes.
- (b) Check that the engine oil level is between the low level and full level marks on the level gauge.
If low, check for leakage and add oil up to the full level mark.

NOTICE:

Do not fill with engine oil to above the full level mark.

2. CHECK ENGINE OIL QUALITY

- (a) Check the oil for deterioration, water, discoloring or thinning.
If the quality is visibly poor, replace the oil.

3. INSPECT OIL PRESSURE

- (a) Remove the oil pressure switch .



- (b) Install the oil pressure gauge.

- (c) Warm up the engine.
- (d) Check the oil pressure.

Oil Pressure:

AT IDLE	AT 3000 RPM
29 kPa (0.3 kgf/cm ² , 4.3 psi) or more	170 to 300 kPa (1.7 to 3.1 kgf/cm ² , 24 to 44 psi)

- (e) If the oil pressure is not as specified, check the oil pump .
- (f) Remove the oil pressure gauge.
- (g) Install the oil pressure switch .



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Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM00000259G01IX
Title: 2ZR-FE LUBRICATION: LUBRICATION SYSTEM: ON-VEHICLE INSPECTION (2010 Corolla)		

ON-VEHICLE INSPECTION

1. CHECK ENGINE OIL LEVEL

- (a) Warm up and stop the engine, then wait for 5 minutes.
- (b) Check that the engine oil level is between the low level and full level marks on the level gauge.
If low, check for engine oil leaks and add oil up to the full level mark.

NOTICE:

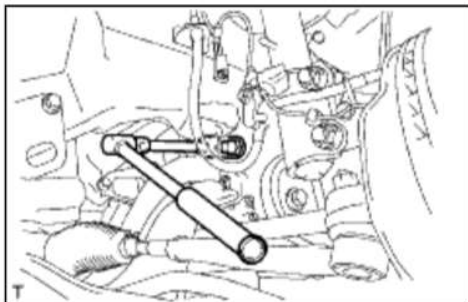
Do not fill with engine oil to above the full level mark.

2. CHECK ENGINE OIL QUALITY

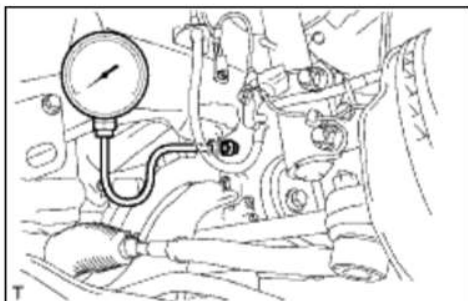
- (a) Check the oil for deterioration, water, discoloring or thinning.
If the quality is visibly poor, replace the oil.

3. INSPECT OIL PRESSURE

- (a) Disconnect the oil pressure switch connector.



- (b) Using a 24 mm deep socket wrench, remove the oil pressure switch.



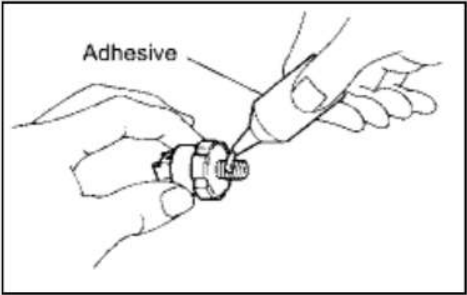
- (c) Install the oil pressure gauge.

- (d) Warm up the engine.
- (e) Check the oil pressure.

Oil Pressure:

AT IDLE	AT 3000 RPM
25 kPa (0.3 kgf/cm ² , 3.6 psi) or more	150 to 400 kPa (1.5 to 4.1 kgf/cm ² , 22 to 58 psi)

- (f) If the oil pressure is not as specified, check the oil pump INFO.
- (g) Remove the oil pressure gauge.



- (h) Apply adhesive to the end 2 or 3 threads on the oil pressure switch.
- Adhesive:
Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

- (i) Using a 24 mm deep socket wrench, install the oil pressure switch.
- Torque: 15 N·m (153 kgf·cm, 11ft·lbf)**

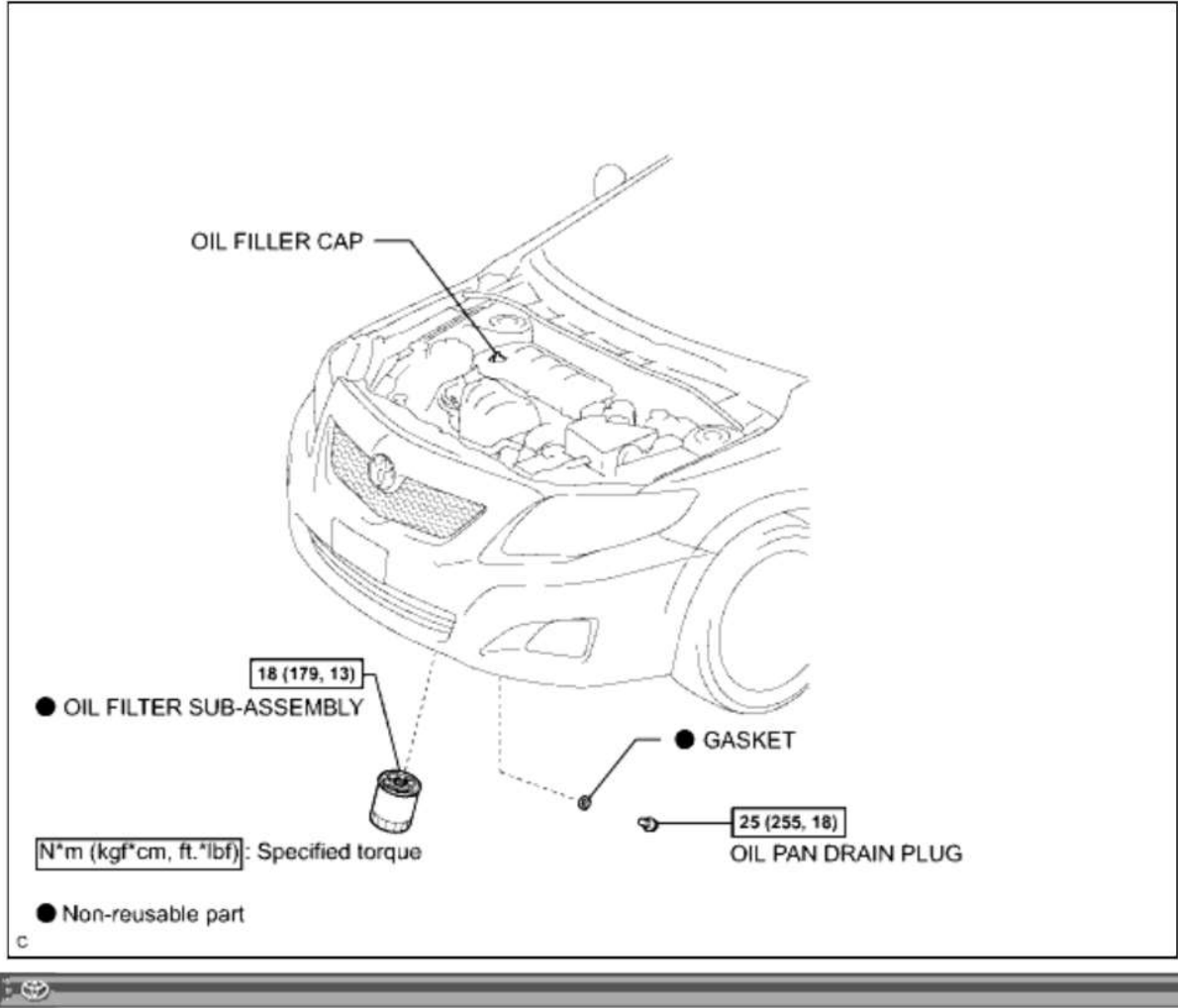
NOTICE:
Do not start the engine for at least 1 hour after installation.

- (j) Connect the oil pressure switch connector.
- (k) Check for engine oil leaks.

Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0I013X
Title: 2AZ-FE LUBRICATION: OIL AND OIL FILTER: COMPONENTS (2010 Corolla)		

COMPONENTS

ILLUSTRATION



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0H014X
Title: 2AZ-FE LUBRICATION: OIL AND OIL FILTER: REPLACEMENT (2010 Corolla)		

REPLACEMENT

CAUTION:

- Prolonged and repeated contact with engine oil will cause remove of natural oils from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer.
- Precautions should be taken when replacing engine oil to minimize the risk of your skin making contact with used engine oil. Wear protective clothing and gloves. Wash your skin thoroughly with soap and water, or use a waterless hand cleaner to remove any used engine oil. Do not use gasoline, thinners or solvents.
- For environmental protection, used oil and used oil filters must be disposed of at designated disposal sites.

1. DRAIN ENGINE OIL

- Remove the oil filler cap.
- Remove the oil drain plug and drain the oil into a container.
- Clean and install the oil drain plug with a new gasket.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

2. REMOVE OIL FILTER SUB-ASSEMBLY

- Using SST, remove the oil filter.

SST: 09228-06501

3. INSTALL OIL FILTER SUB-ASSEMBLY

- Clean the oil filter installation surface.
- Apply engine oil to a new oil filter gasket.
- Lightly screw the oil filter into the engine until the oil filter does not turn.
- Using SST, tighten the oil filter.

SST: 09228-06501

- Depending on the work space available, choose from the following:

1. If enough space is available, use a torque wrench to tighten the oil filter.

Torque: 18 N·m (179 kgf·cm, 13ft·lbf)

2. If enough space is not available to use a torque wrench, tighten the oil filter a 3/4 turn by hand or use a common wrench.

4. ADD ENGINE OIL

- Add fresh engine oil and install the oil filler cap.

Engine Oil

OIL GRADE	OIL VISCOSITY (SAE)
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OIL GRADE	OIL VISCOSITY (SAE)
• ILSAC multigrade engine oil	• 0W-20 • 5W-20

Capacity

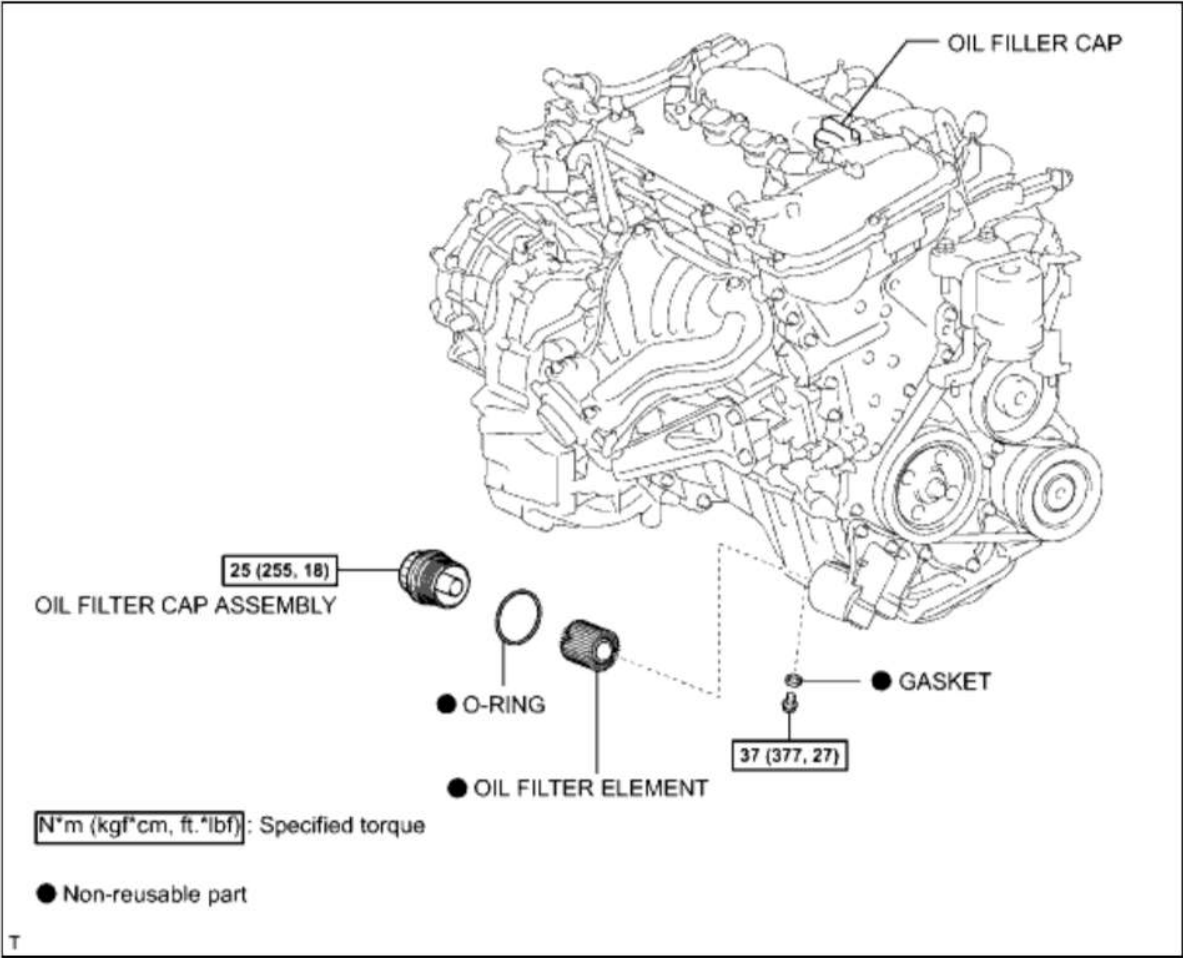
ITEM	STANDARD CONDITION
Drain and refill with oil filter change	3.8 liters (4.0 US qts, 3.3 Imp. qts)
Drain and refill without oil filter change	3.6 liters (3.8 US qts, 3.2 Imp. qts)
Dry fill	4.5 liters (4.8 US qts, 4.0 Imp. qts)

5. INSPECT FOR OIL LEAK

Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM00000259001GX
Title: 2ZR-FE LUBRICATION: OIL AND OIL FILTER: COMPONENTS (2010 Corolla)		

COMPONENTS

ILLUSTRATION



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002UQM01FX
Title: 2ZR-FE LUBRICATION: OIL AND OIL FILTER: REPLACEMENT (2010 Corolla)		

REPLACEMENT

CAUTION:

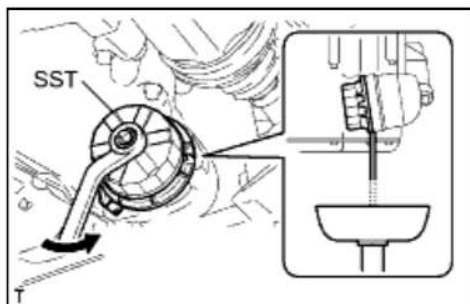
- Prolonged and repeated contact with engine oil will cause removal of natural oils from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer.
- Precautions should be taken when replacing engine oil to minimize the risk of your skin making contact with used engine oil. Wear protective clothing and gloves. Wash your skin thoroughly with soap and water, or use a waterless hand cleaner to remove any used engine oil. Do not use gasoline, thinners or solvents.
- For environmental protection, used oil and used oil filters must be disposed of at designated disposal sites.

1. DRAIN ENGINE OIL

- Remove the oil filler cap.
- Remove the oil drain plug and drain the oil into a container.
- Clean and install the oil drain plug with a new gasket.

Torque: 37 N·m (377 kgf·cm, 27ft·lbf)

2. REMOVE OIL FILTER CAP ASSEMBLY



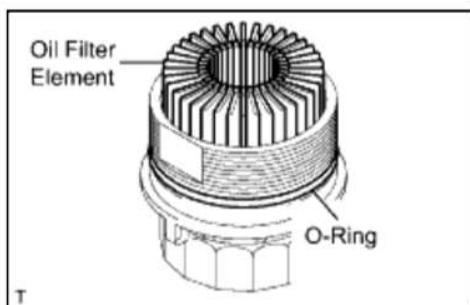
- Using SST, loosen the oil filter cap 4 revolutions, align the cap ribs vertically, and drain the remaining engine oil in the oil filter cap.

SST: 09228-06501

HINT:

Set a container below the oil filter cap assembly before loosening the oil filter cap.

- Remove the oil filter cap assembly.



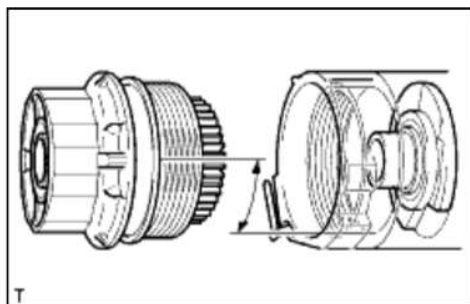
- Remove oil filter element and O-ring from the oil filter cap.

NOTICE:

Be sure to remove the O-ring (for the cap) by hand, without using any tools, to prevent damage to the groove for the O-ring on the cap.

3. INSTALL OIL FILTER CAP ASSEMBLY

- (a) Clean the oil filter cap threads and O-ring groove.
- (b) Apply a small amount of engine oil to a new O-ring and install it to the oil filter cap.
- (c) Set a new oil filter element in the oil filter cap.
- (d) Remove any dirt or foreign matter from the installation surface and inside of the engine.



- (e) Reapply a small amount of engine oil to the O-ring of the oil filter cap assembly. Align the cutout in the oil filter cap threads 90° to the grooves in the oil filter bracket and temporarily tighten the cap.

NOTICE:

Make sure that the O-ring does not get caught between the parts.

- (f) Using SST, tighten the oil filter cap assembly.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

SST: 09228-06501

NOTICE:

- After tightening the oil filter cap assembly, check for gaps between the installation surfaces.
- Do not remove the oil filter bracket clip when installing the oil filter cap assembly.
- Do not cross thread the oil filter cap assembly.

4. ADD ENGINE OIL

- (a) Add fresh engine oil and install the oil filler cap.

Engine Oil

OIL GRADE	OIL VISCOSITY (SAE)
• ILSAC multigrade engine oil	• 0W-20 • 5W-20

Capacity

ITEM	STANDARD CONDITION
Drain and refill with oil filter change	4.2 liters (4.4 US qts, 3.7 Imp. qts)
Drain and refill without oil filter change	3.9 liters (4.1 US qts, 3.4 Imp. qts)
Dry fill	4.7 liters (5.0 US qts, 4.1 Imp. qts)

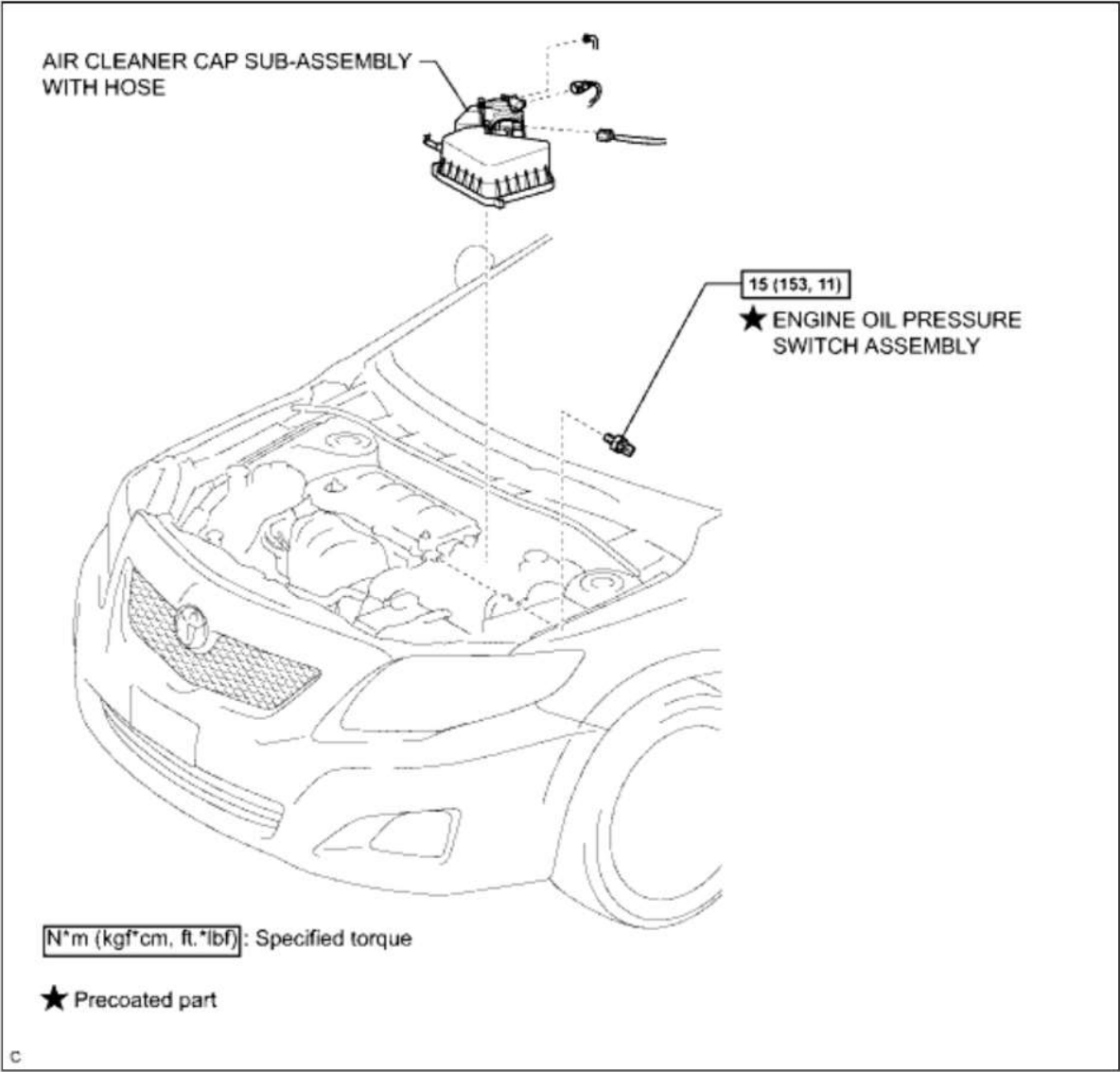
5. INSPECT FOR OIL LEAK



Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000003D7H003X
Title: 2AZ-FE LUBRICATION: OIL PRESSURE SWITCH: COMPONENTS (2010 Corolla)		

COMPONENTS

ILLUSTRATION



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Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000003D7I003X
Title: 2AZ-FE LUBRICATION: OIL PRESSURE SWITCH: REMOVAL (2010 Corolla)		

REMOVAL

1. REMOVE AIR CLEANER CAP SUB-ASSEMBLY WITH HOSE



2. REMOVE ENGINE OIL PRESSURE SWITCH ASSEMBLY

(a) Disconnect the oil pressure switch connector.



(b) Using a 24 mm deep socket wrench, remove the oil pressure switch.

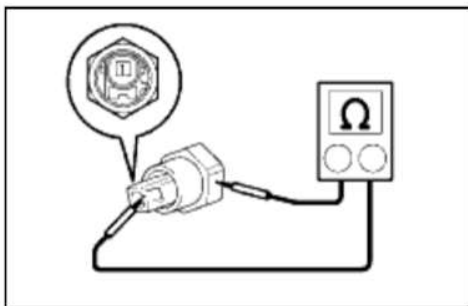


Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000003D7G003X
Title: 2AZ-FE LUBRICATION: OIL PRESSURE SWITCH: INSPECTION (2010 Corolla)		

INSPECTION

1. INSPECT ENGINE OIL PRESSURE SWITCH ASSEMBLY

- (a) Disconnect the oil pressure switch connector.
- (b) Start the engine.



- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - Switch body	Idling	10 k Ω or higher
1 - Switch body	Engine stopped	Below 1 Ω

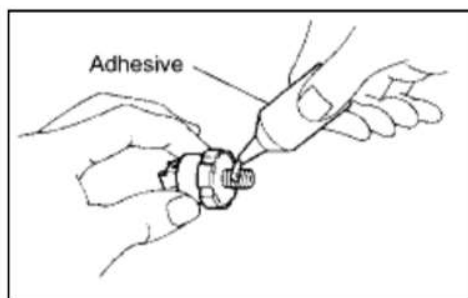
- (d) Reconnect the oil pressure switch connector. If the result is not as specified, replace the oil pressure switch assembly.



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000003D7F003X
Title: 2AZ-FE LUBRICATION: OIL PRESSURE SWITCH: INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL ENGINE OIL PRESSURE SWITCH ASSEMBLY



(a) Apply adhesive to 2 or 3 threads of the oil pressure switch.

Adhesive:

Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent

(b) Using a 24 mm deep socket wrench, install the oil pressure switch.

Torque: 15 N·m (153 kgf·cm, 11ft·lbf)

NOTICE:

Do not start the engine for at least 1 hour after installation.

(c) Connect the oil pressure switch connector.

2. INSTALL AIR CLEANER CAP SUB-ASSEMBLY WITH HOSE INFO

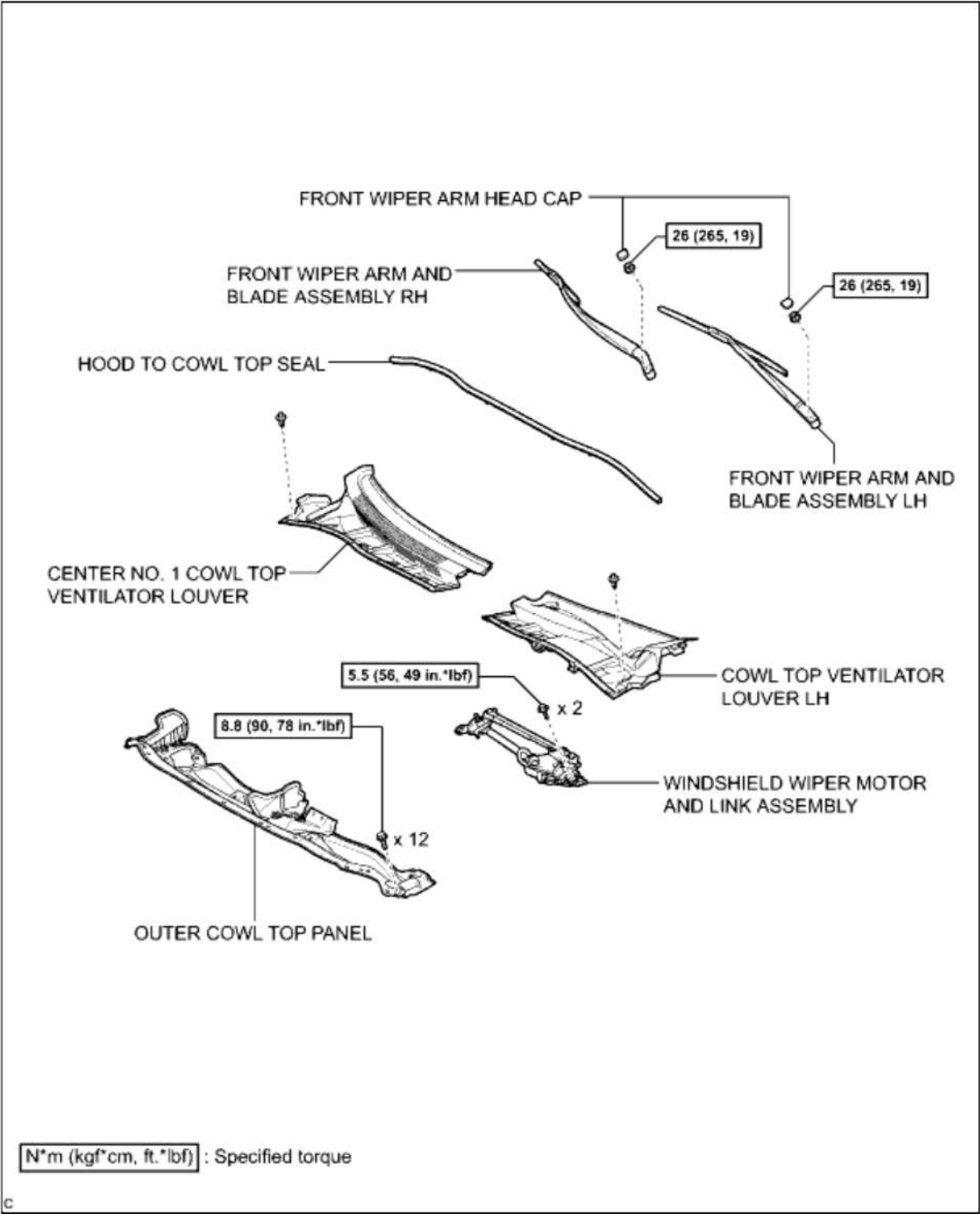
3. INSPECT FOR OIL LEAK



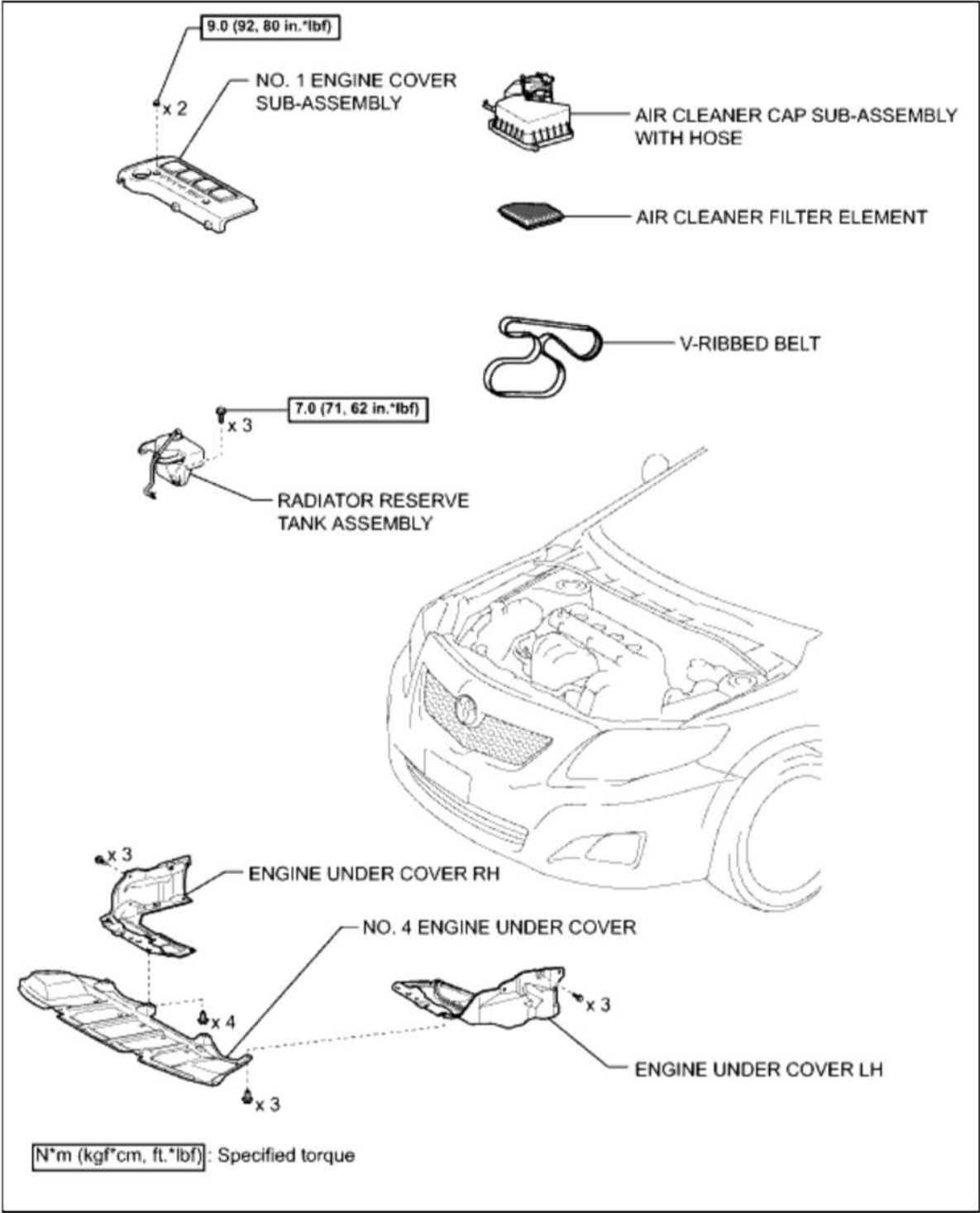
Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0L016X
Title: 2AZ-FE LUBRICATION: OIL PUMP: COMPONENTS (2010 Corolla)		

COMPONENTS

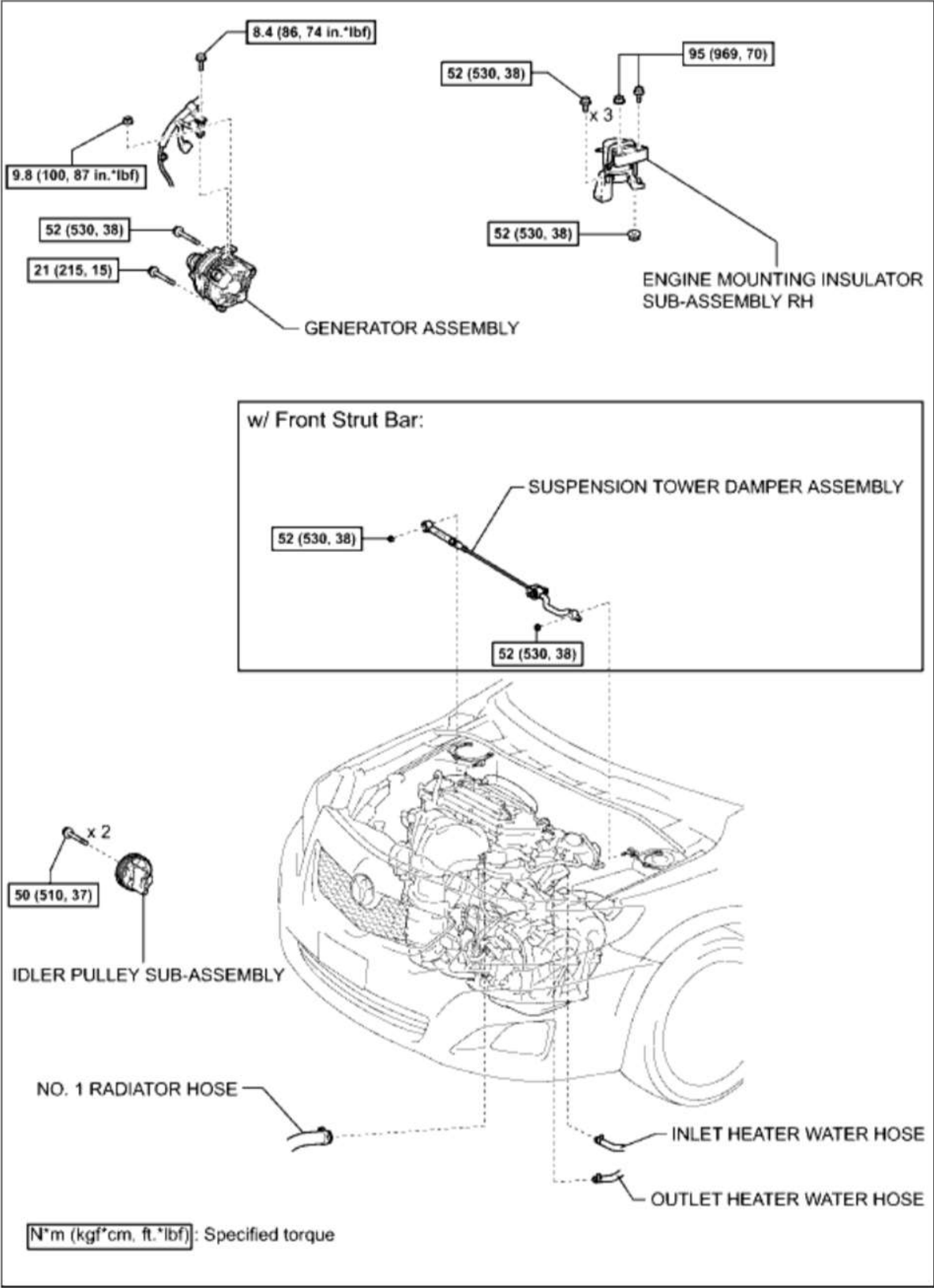
ILLUSTRATION



ILLUSTRATION

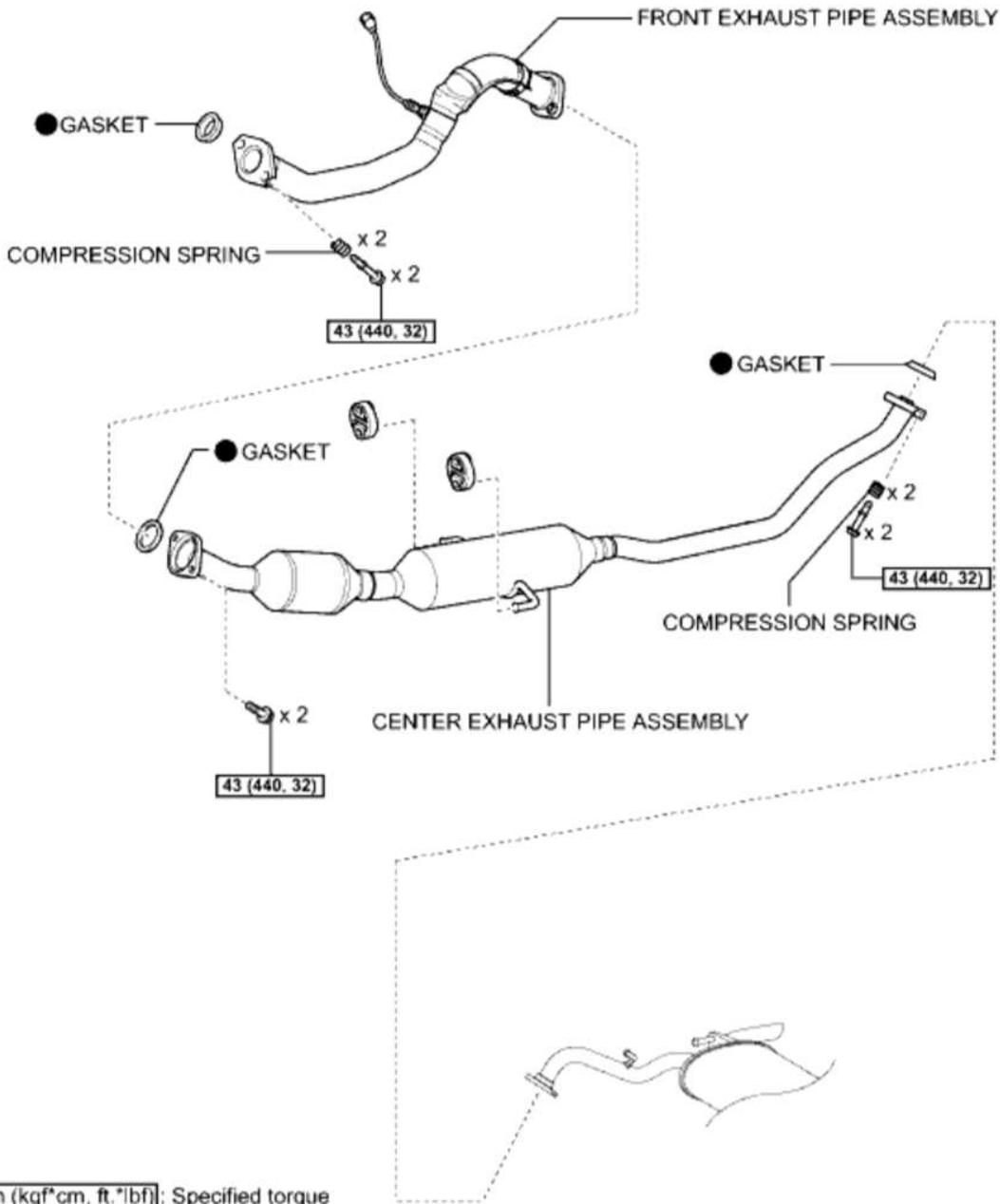


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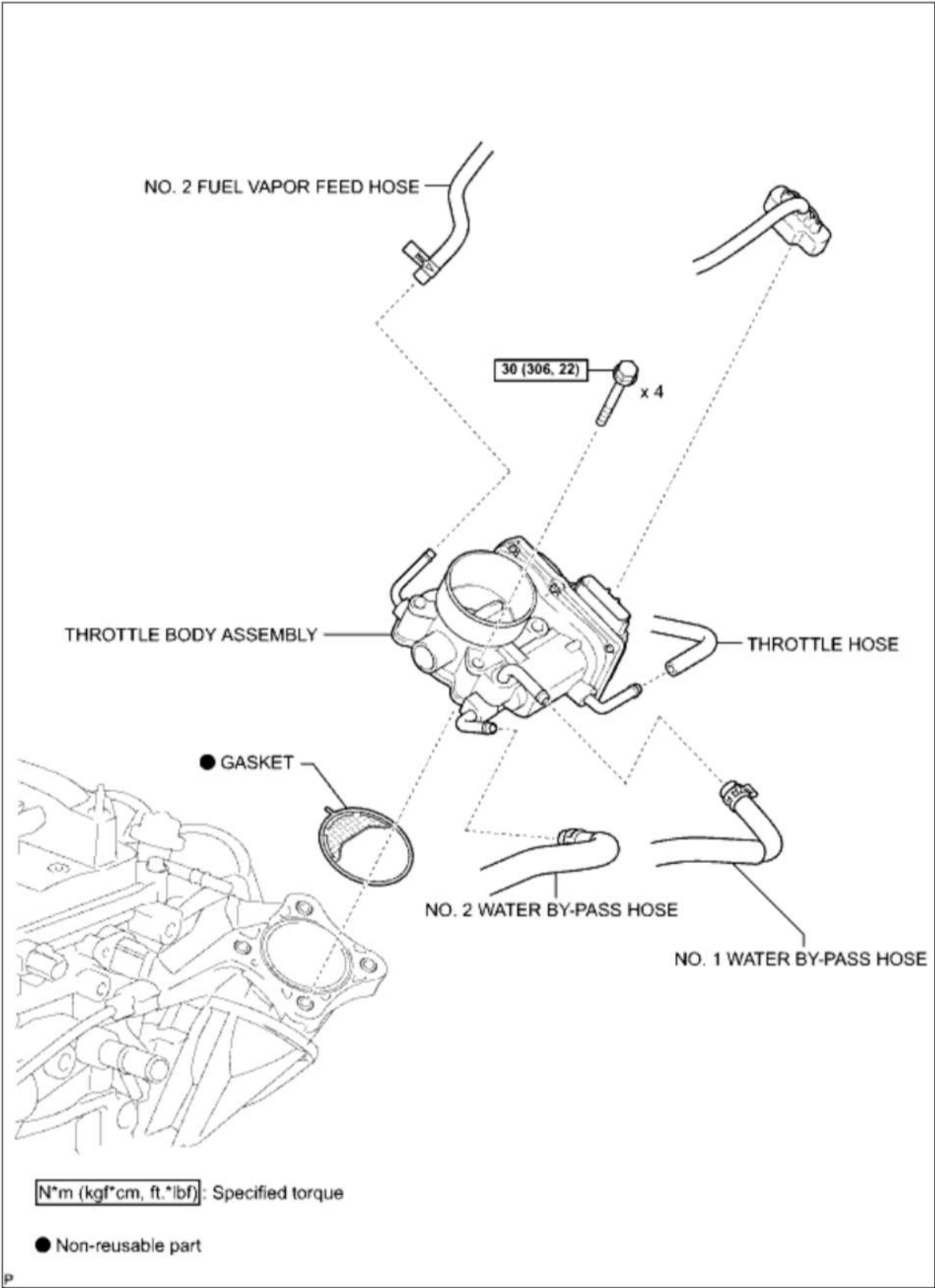


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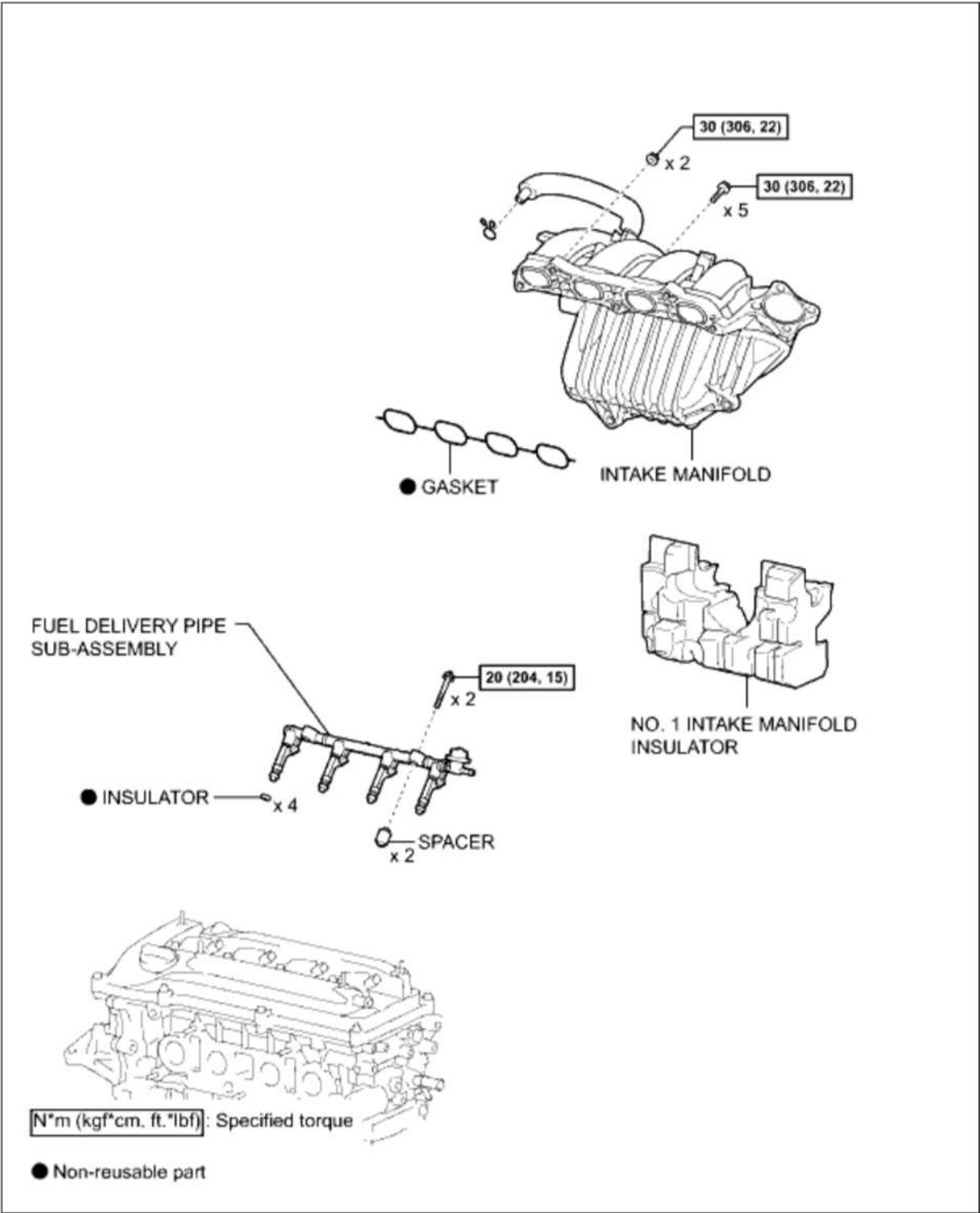
for Torsion Beam Type Suspension:



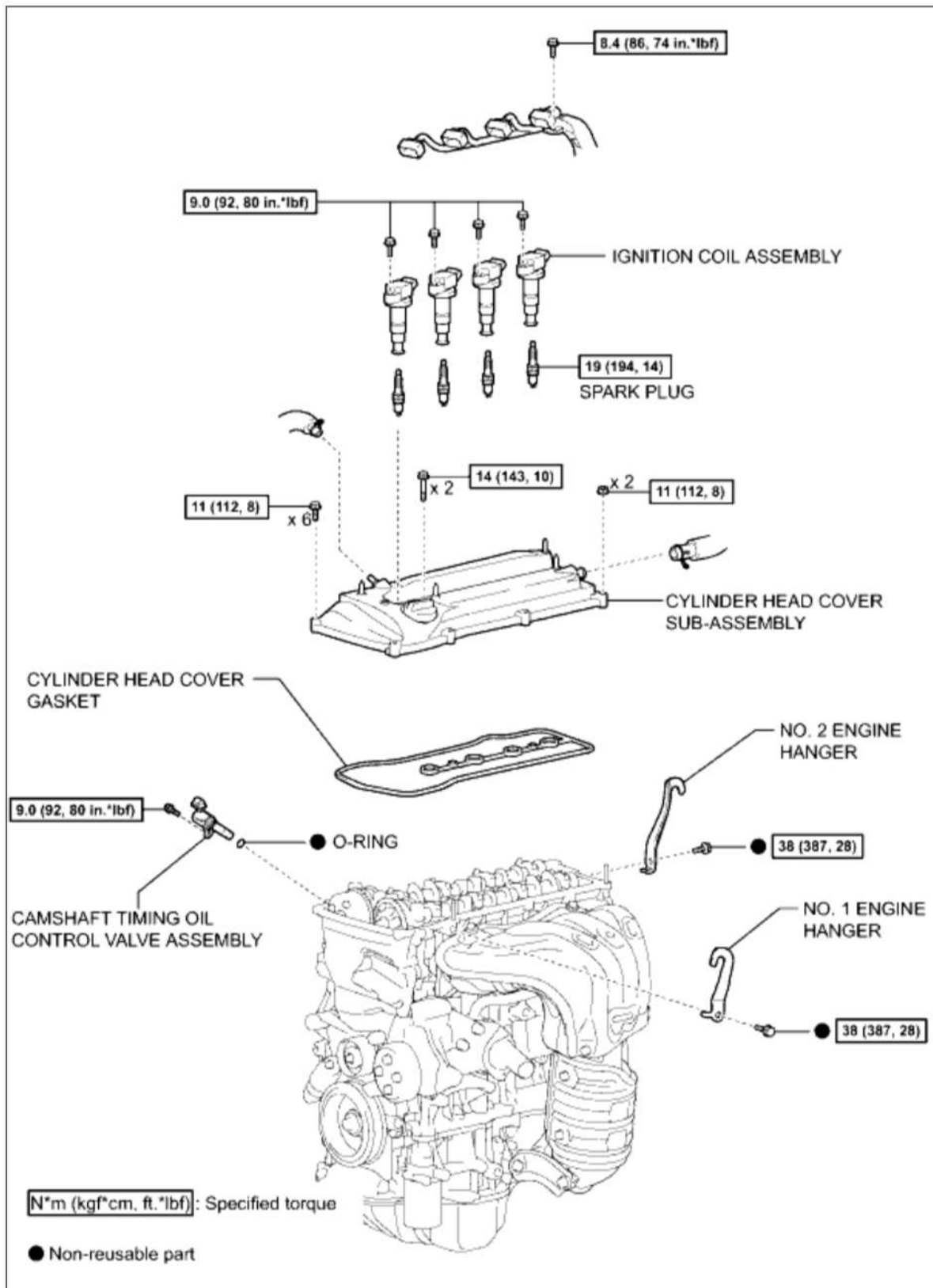
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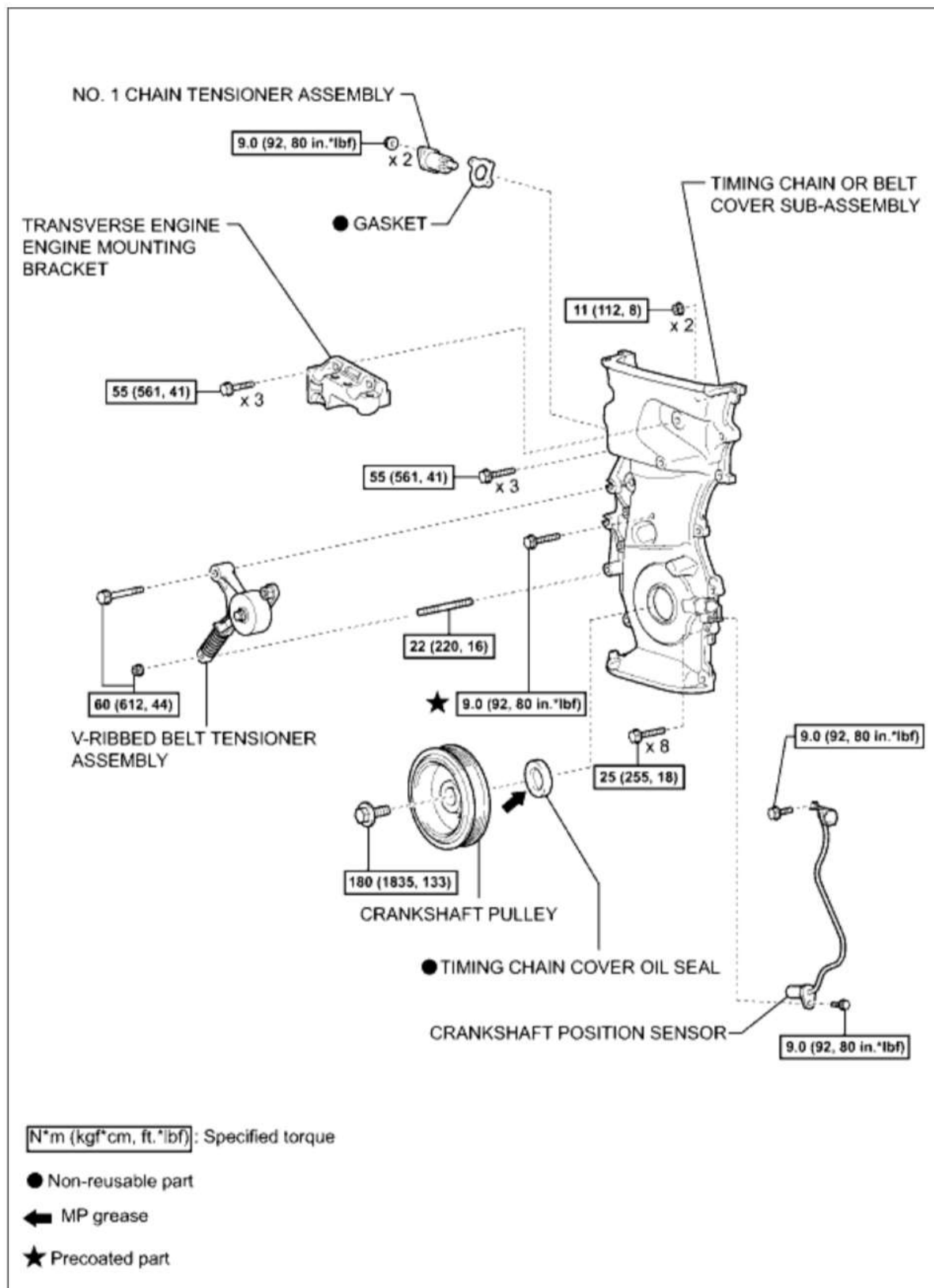
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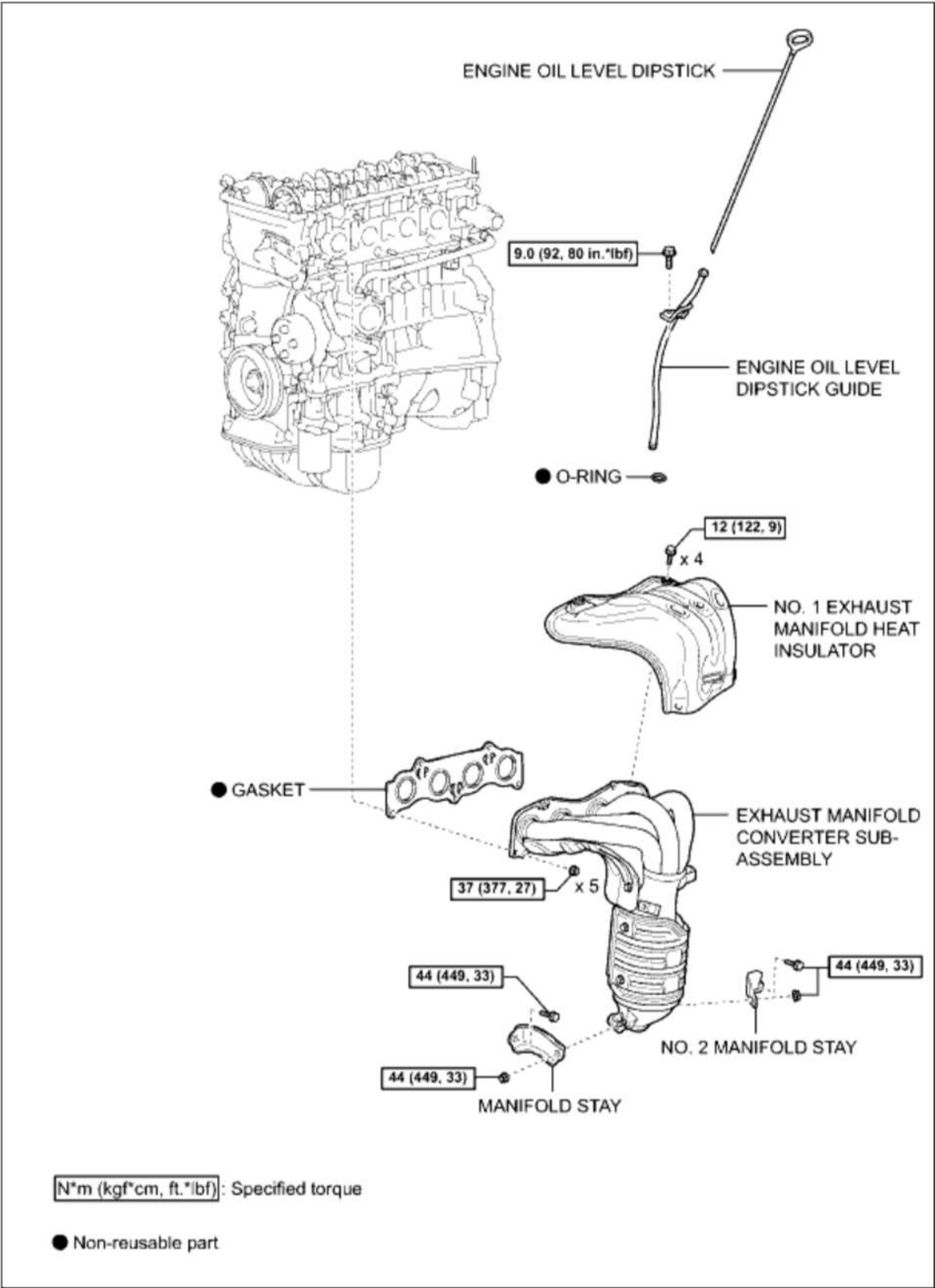
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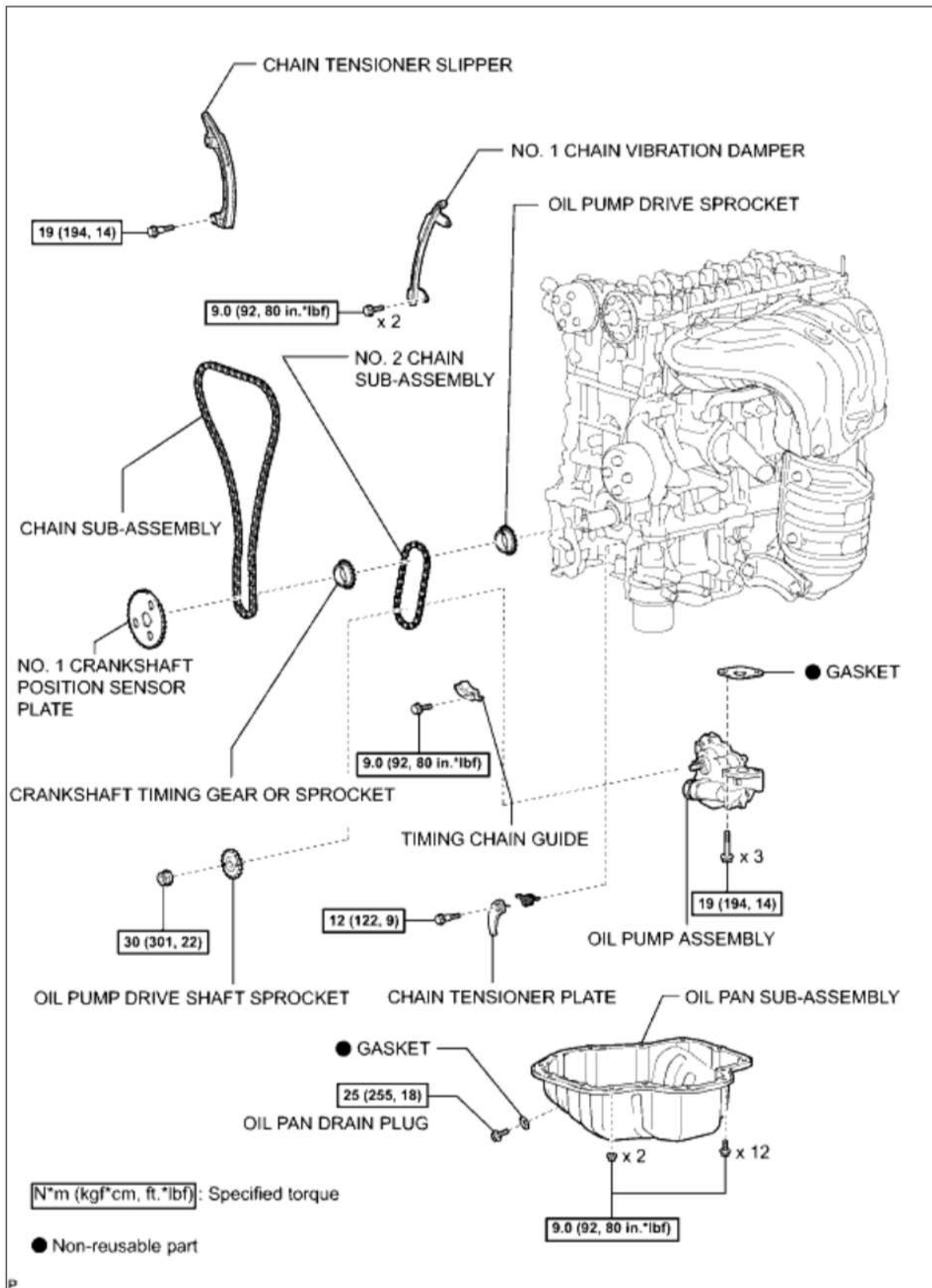
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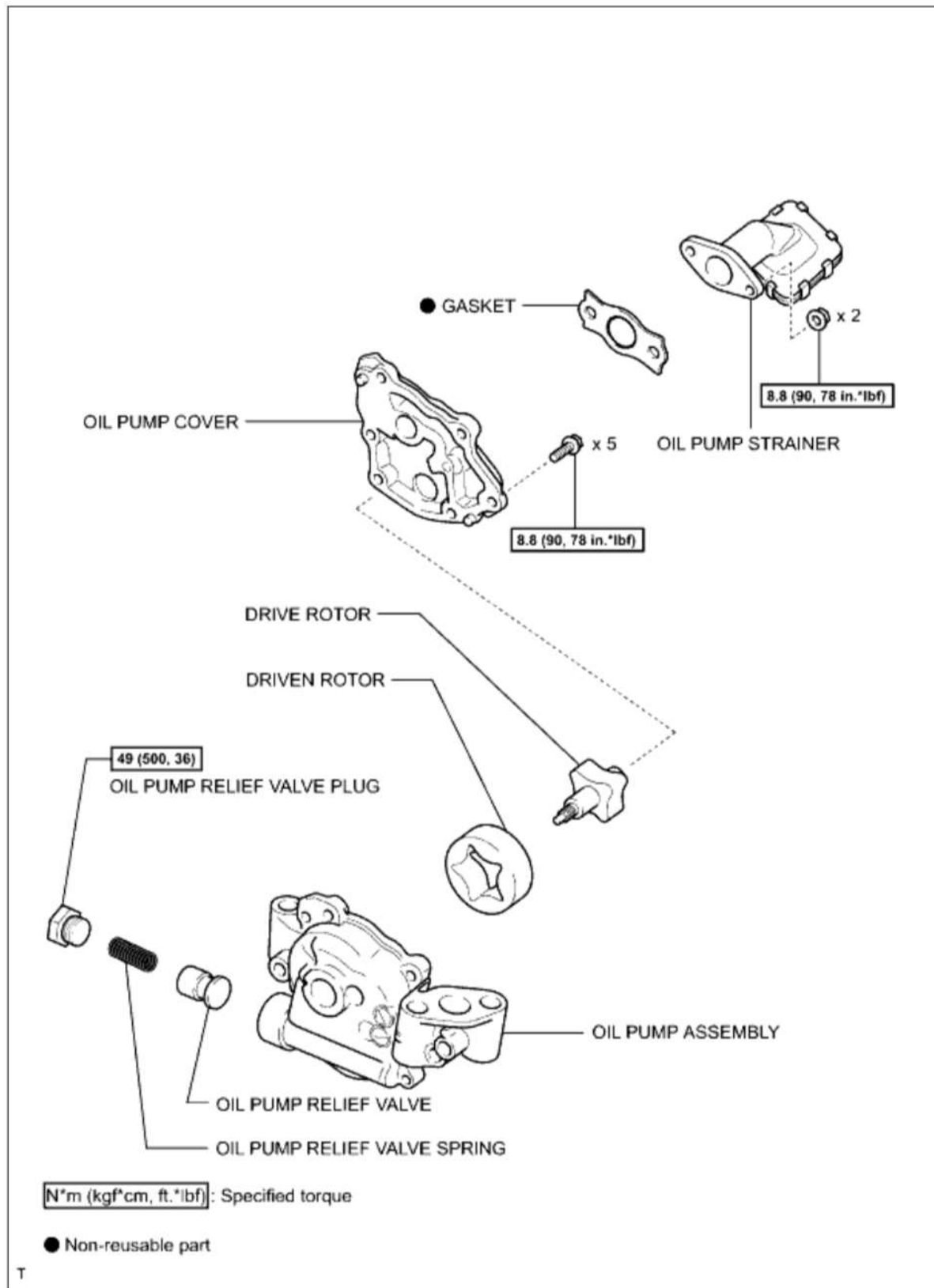
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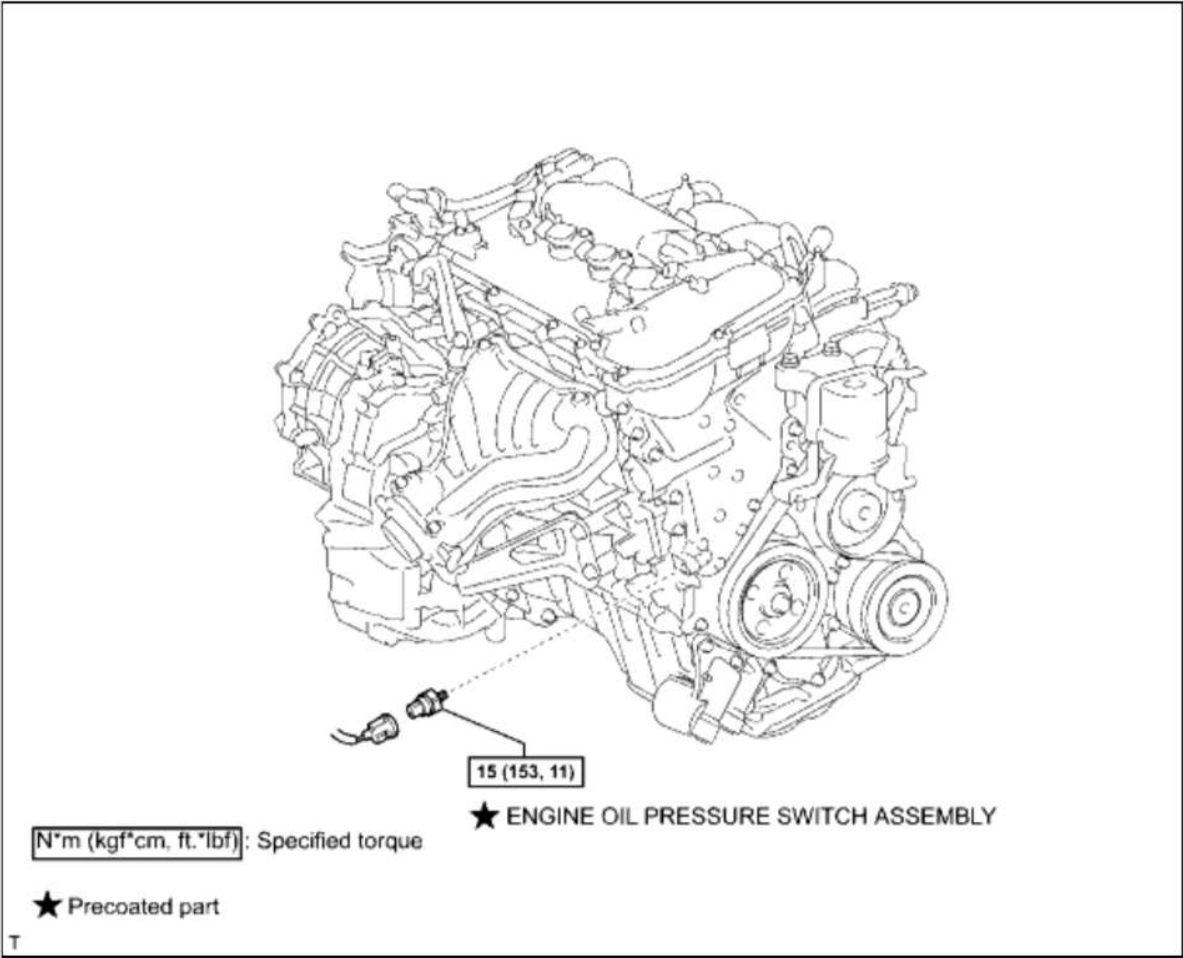
ILLUSTRATION



Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002ZA701PX
Title: 2ZR-FE LUBRICATION: OIL PRESSURE SWITCH: COMPONENTS (2010 Corolla)		

COMPONENTS

ILLUSTRATION



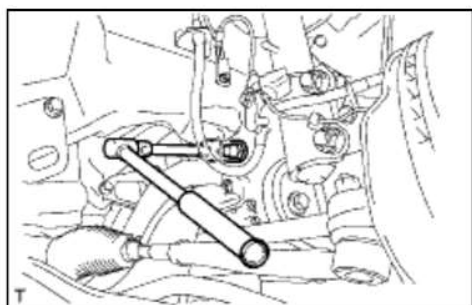
Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002ZA801YX
Title: 2ZR-FE LUBRICATION: OIL PRESSURE SWITCH: REMOVAL (2010 Corolla)		

REMOVAL

1. REMOVE FRONT WHEEL RH

2. REMOVE ENGINE OIL PRESSURE SWITCH ASSEMBLY

- (a) Disconnect the oil pressure switch connector.



- (b) Using a 24 mm deep socket wrench, remove the oil pressure switch.

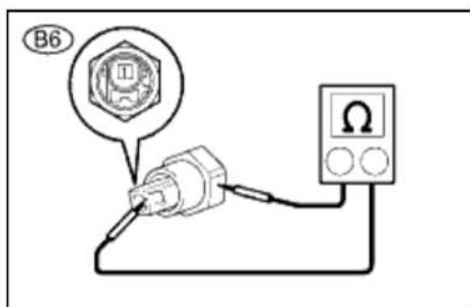


Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002ZA601WX
Title: 2ZR-FE LUBRICATION: OIL PRESSURE SWITCH: INSPECTION (2010 Corolla)		

INSPECTION

1. INSPECT ENGINE OIL PRESSURE SWITCH ASSEMBLY

- (a) Disconnect the oil pressure switch connector.
- (b) Start the engine.



- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
B6-1 - Switch body	Idling	10 k Ω or higher
B6-1 - Switch body	Engine stopped	Below 1 Ω

- (d) Reconnect the oil pressure switch connector.

If the result is not as specified, replace the oil pressure switch assembly.



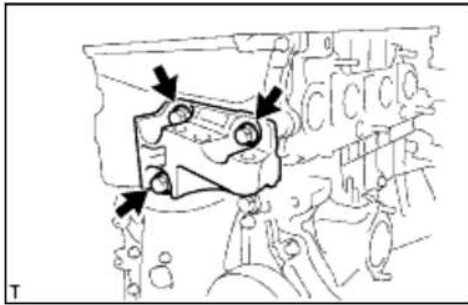
Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0M01IX
Title: 2AZ-FE LUBRICATION: OIL PUMP: REMOVAL (2010 Corolla)		

REMOVAL

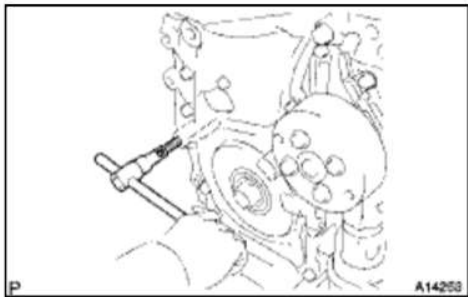
1. DISCHARGE FUEL SYSTEM PRESSURE 
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
3. REMOVE FRONT WIPER ARM HEAD CAP 
4. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH 
5. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH 
6. REMOVE HOOD TO COWL TOP SEAL 
7. REMOVE CENTER NO. 1 COWL TOP VENTILATOR LOUVER 
8. REMOVE COWL TOP VENTILATOR LOUVER LH 
9. REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY 
10. REMOVE OUTER COWL TOP PANEL 
11. REMOVE SUSPENSION TOWER DAMPER ASSEMBLY (w/ Front Strut Bar) 
12. REMOVE FRONT WHEEL RH
13. REMOVE ENGINE UNDER COVER LH
14. REMOVE ENGINE UNDER COVER RH
15. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY 
16. DRAIN ENGINE COOLANT 
17. DRAIN ENGINE OIL 
18. REMOVE CENTER EXHAUST PIPE ASSEMBLY 
19. REMOVE FRONT EXHAUST PIPE ASSEMBLY 
20. REMOVE V-RIBBED BELT 
21. REMOVE GENERATOR ASSEMBLY 
22. DISCONNECT NO. 1 RADIATOR HOSE 
23. DISCONNECT OUTLET HEATER WATER HOSE 
24. DISCONNECT INLET HEATER WATER HOSE 

25. SEPARATE RADIATOR RESERVE TANK ASSEMBLY 
26. REMOVE AIR CLEANER CAP SUB-ASSEMBLY WITH HOSE 
27. REMOVE THROTTLE BODY ASSEMBLY 
28. REMOVE IGNITION COIL ASSEMBLY 
29. REMOVE SPARK PLUG 
30. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY 
31. REMOVE ENGINE OIL LEVEL DIPSTICK
32. REMOVE ENGINE OIL LEVEL DIPSTICK GUIDE 
33. REMOVE FUEL MAIN TUBE 
34. REMOVE FUEL DELIVERY PIPE SUB-ASSEMBLY 
35. REMOVE CAMSHAFT TIMING OIL CONTROL VALVE ASSEMBLY 
36. REMOVE INTAKE MANIFOLD 
37. REMOVE NO. 1 INTAKE MANIFOLD INSULATOR 
38. REMOVE MANIFOLD STAY 
39. REMOVE NO. 2 MANIFOLD STAY 
40. REMOVE NO. 1 EXHAUST MANIFOLD HEAT INSULATOR 
41. REMOVE EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY 
42. REMOVE ENGINE MOUNTING INSULATOR SUB-ASSEMBLY RH 
43. REMOVE IDLER PULLEY SUB-ASSEMBLY 
44. REMOVE OIL PAN SUB-ASSEMBLY 
45. SET NO. 1 CYLINDER TO TDC / COMPRESSION 
46. REMOVE CRANKSHAFT PULLEY 
47. REMOVE NO. 1 CHAIN TENSIONER ASSEMBLY 
48. REMOVE V-RIBBED BELT TENSIONER ASSEMBLY 
49. REMOVE CRANKSHAFT POSITION SENSOR 
50. REMOVE TIMING CHAIN OR BELT COVER SUB-ASSEMBLY

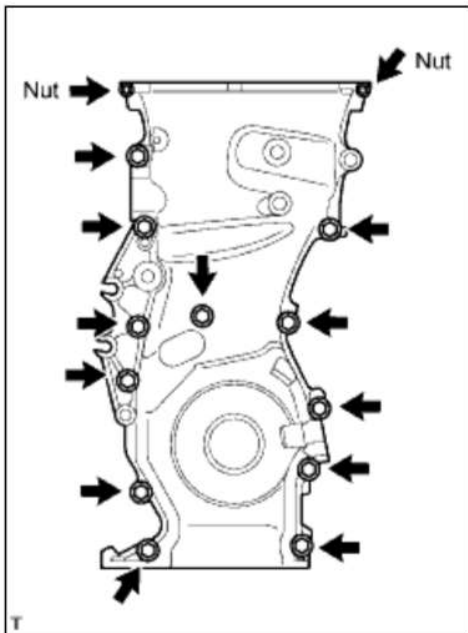
(a) Remove the 3 bolts and transverse engine engine



mounting bracket.



(b) Using an E10 "TORX" socket, remove the stud bolt for the V-ribbed belt tensioner.

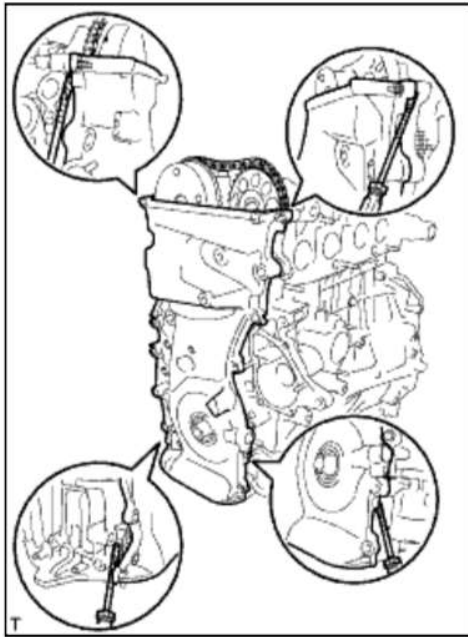


(c) Remove the 12 bolts and 2 nuts.

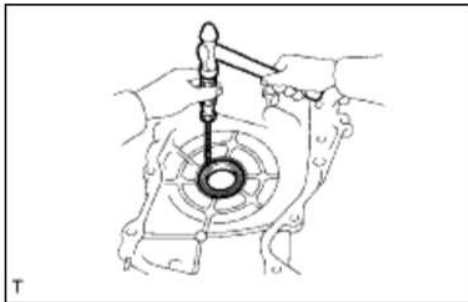
(d) Remove the timing chain cover by prying the portions between the timing chain cover, cylinder head and cylinder block with a screwdriver.

NOTICE:

Be careful not to damage the contact surfaces of the timing chain cover, cylinder head and cylinder block.

**HINT:**

Tape the screwdriver tip before use.

51. REMOVE TIMING CHAIN COVER OIL SEAL

(a) Place the timing chain cover on wooden blocks.

(b) Using a screwdriver, pry out the oil seal.

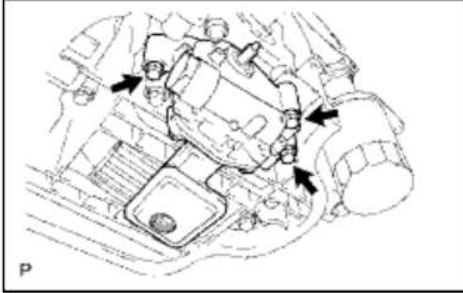
NOTICE:

Do not damage the surface of the oil seal press fit hole.

HINT:

Tape the screwdriver tip before use.

52. REMOVE NO. 1 CRANKSHAFT POSITION SENSOR PLATE**53. REMOVE TIMING CHAIN GUIDE****54. REMOVE CHAIN TENSIONER SLIPPER****55. REMOVE NO. 1 CHAIN VIBRATION DAMPER****56. REMOVE CHAIN SUB-ASSEMBLY**

57. REMOVE CRANKSHAFT TIMING GEAR OR SPROCKET INFO**58. REMOVE NO. 2 CHAIN SUB-ASSEMBLY** INFO**59. REMOVE OIL PUMP ASSEMBLY**

(a) Remove the 3 bolts, oil pump and gasket.

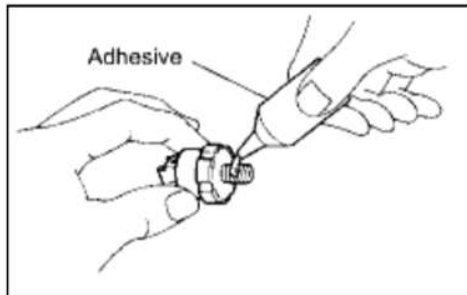


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Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002ZA501YX
Title: 2ZR-FE LUBRICATION: OIL PRESSURE SWITCH: INSTALLATION (2010 Corolla)		

INSTALLATION

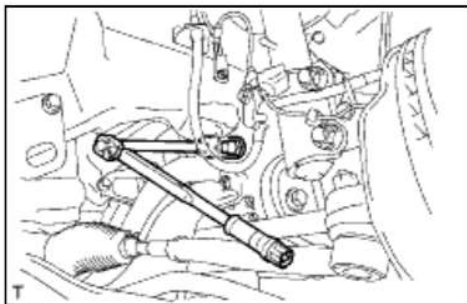
1. INSTALL ENGINE OIL PRESSURE SWITCH ASSEMBLY



- (a) Apply adhesive to the end 2 or 3 threads on the oil pressure switch.

Adhesive:

Toyota Genuine Adhesive 1344, Three Bond 1344 or equivalent



- (b) Using a 24 mm deep socket wrench, install the oil pressure switch.

Torque: 15 N·m (153 kgf·cm, 11ft·lbf)

NOTICE:

Do not start the engine for at least 1 hour after installation.

- (c) Connect the oil pressure switch connector.

2. INSPECT FOR OIL LEAK

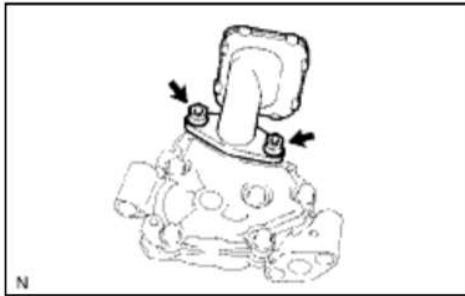
3. INSTALL FRONT WHEEL RH



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0N014X
Title: 2AZ-FE LUBRICATION: OIL PUMP: DISASSEMBLY (2010 Corolla)		

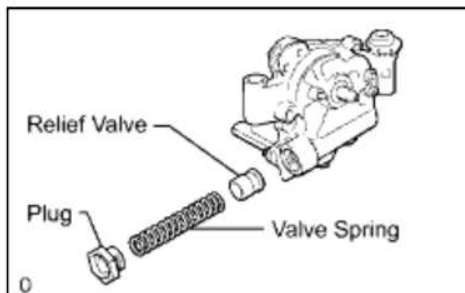
DISASSEMBLY

1. REMOVE OIL PUMP STRAINER



(a) Remove the 2 nuts, oil pump strainer and gasket.

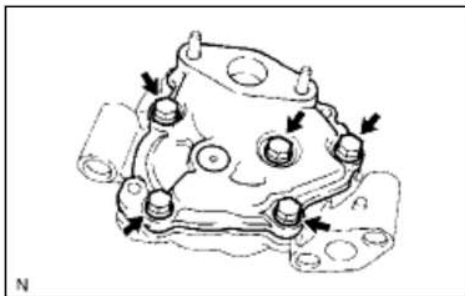
2. REMOVE OIL PUMP RELIEF VALVE



(a) Using a 27 mm socket wrench, remove the plug.

(b) Remove the valve spring and relief valve.

3. REMOVE OIL PUMP COVER



(a) Remove the 5 bolts and oil pump cover.

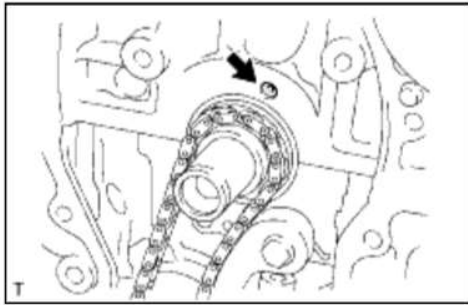
(b) Remove the oil pump drive and driven rotors from the oil pump.



Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0K01EX
Title: 2AZ-FE LUBRICATION: OIL PUMP: INSPECTION (2010 Corolla)		

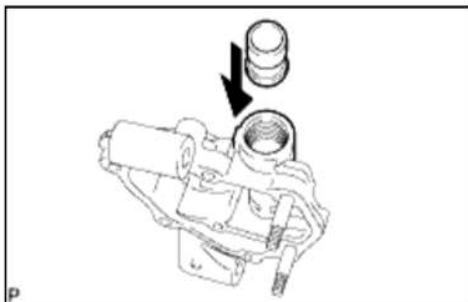
INSPECTION

1. INSPECT OIL JET



- (a) Check the oil jet for damage or clogging.
If necessary, repair the cylinder block.

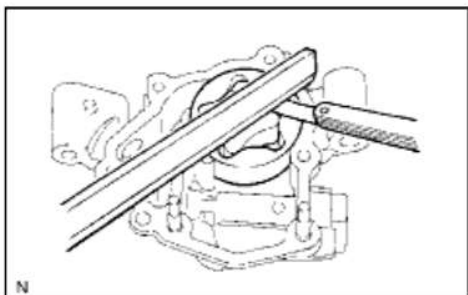
2. INSPECT OIL PUMP RELIEF VALVE



- (a) Check the relief valve.
- (1) Coat the valve with engine oil, and then check that the valve falls smoothly into the valve hole by its own weight.
If it does not, replace the relief valve.
If necessary, replace the oil pump assembly.

3. INSPECT OIL PUMP ROTOR

- (a) Check the side clearance.



- (1) Using a feeler gauge and precision straightedge, measure the clearance between the rotors and precision straightedge.

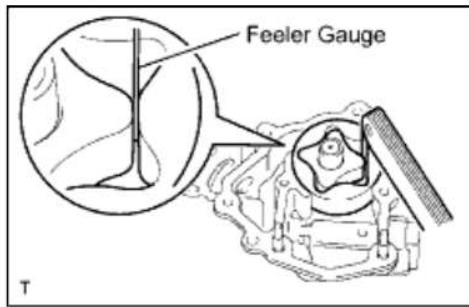
Standard clearance:

0.030 to 0.085 mm (0.00118 to 0.00335 in.)

Maximum clearance:

0.160 mm (0.00630 in.)

If the side clearance is greater than the maximum, replace the oil pump assembly.



(b) Check the tip clearance.

- (1) Using a feeler gauge, measure the clearance between the drive and driven rotor tips.

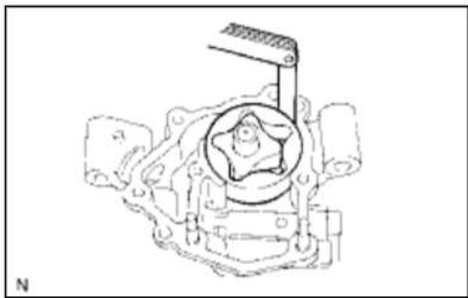
Standard clearance:

0.080 to 0.160 mm (0.00315 to 0.00630 in.)

Maximum clearance:

0.35 mm (0.0138 in.)

If the tip clearance is greater than the maximum, replace the oil pump assembly.



(c) Check the body clearance.

- (1) Using a feeler gauge, measure the clearance between the driven rotor and pump body.

Standard clearance:

0.100 to 0.170 mm (0.00394 to 0.00669 in.)

Maximum clearance:

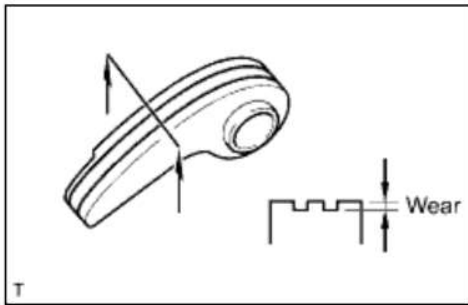
0.325 mm (0.0128 in.)

If the body clearance is greater than the maximum, replace the oil pump assembly.

4. INSPECT NO. 2 CHAIN SUB-ASSEMBLY

INFO

5. INSPECT CHAIN TENSIONER PLATE



(a) Measure the chain tensioner plate wear.

Maximum wear:

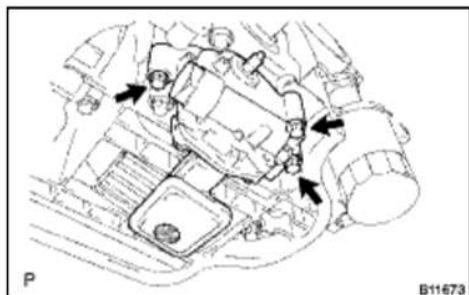
0.5 mm (0.0197 in.)

If the wear is greater than the maximum, replace the chain tensioner plate.

Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R0J01IX
Title: 2AZ-FE LUBRICATION: OIL PUMP: INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL OIL PUMP ASSEMBLY



(a) Install a new gasket and the oil pump with the 3 bolts.

Torque: 19 N·m (194 kgf·cm, 14ft·lbf)

2. INSTALL NO. 2 CHAIN SUB-ASSEMBLY

INFO

3. INSTALL CRANKSHAFT TIMING GEAR OR SPROCKET

INFO

4. INSTALL NO. 1 CHAIN VIBRATION DAMPER

INFO

5. INSTALL CHAIN SUB-ASSEMBLY

INFO

6. INSTALL CHAIN TENSIONER SLIPPER

INFO

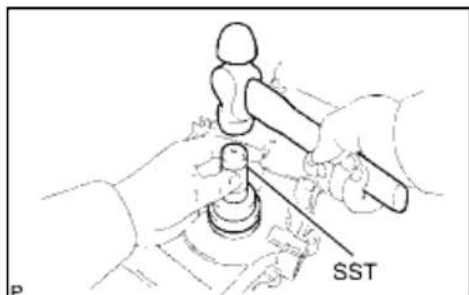
7. INSTALL TIMING CHAIN GUIDE

INFO

8. INSTALL NO. 1 CRANKSHAFT POSITION SENSOR PLATE

INFO

9. INSTALL TIMING CHAIN COVER OIL SEAL



(a) Using SST, tap in a new oil seal until its surface is flush with the timing chain cover edge.

SST: 09223-22010

NOTICE:

- Keep the lip free from foreign matter.
- Do not tap the oil seal at an angle.

(b) Apply MP grease to the lip of the oil seal.

10. INSTALL TIMING CHAIN OR BELT COVER SUB-ASSEMBLY

(a) Remove any old packing material and be careful not to drop any oil on the contact surfaces of the

timing chain cover, cylinder head and cylinder block.

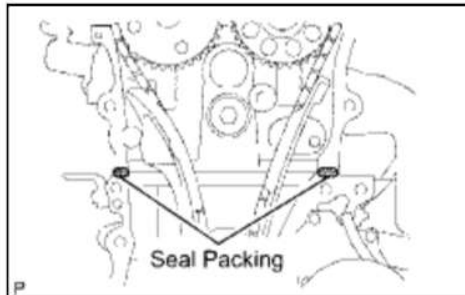
(b) Apply seal packing (Diameter 4.0 to 4.5 mm (0.157 to 0.177 in.)) as shown in the illustration.

Seal packing:

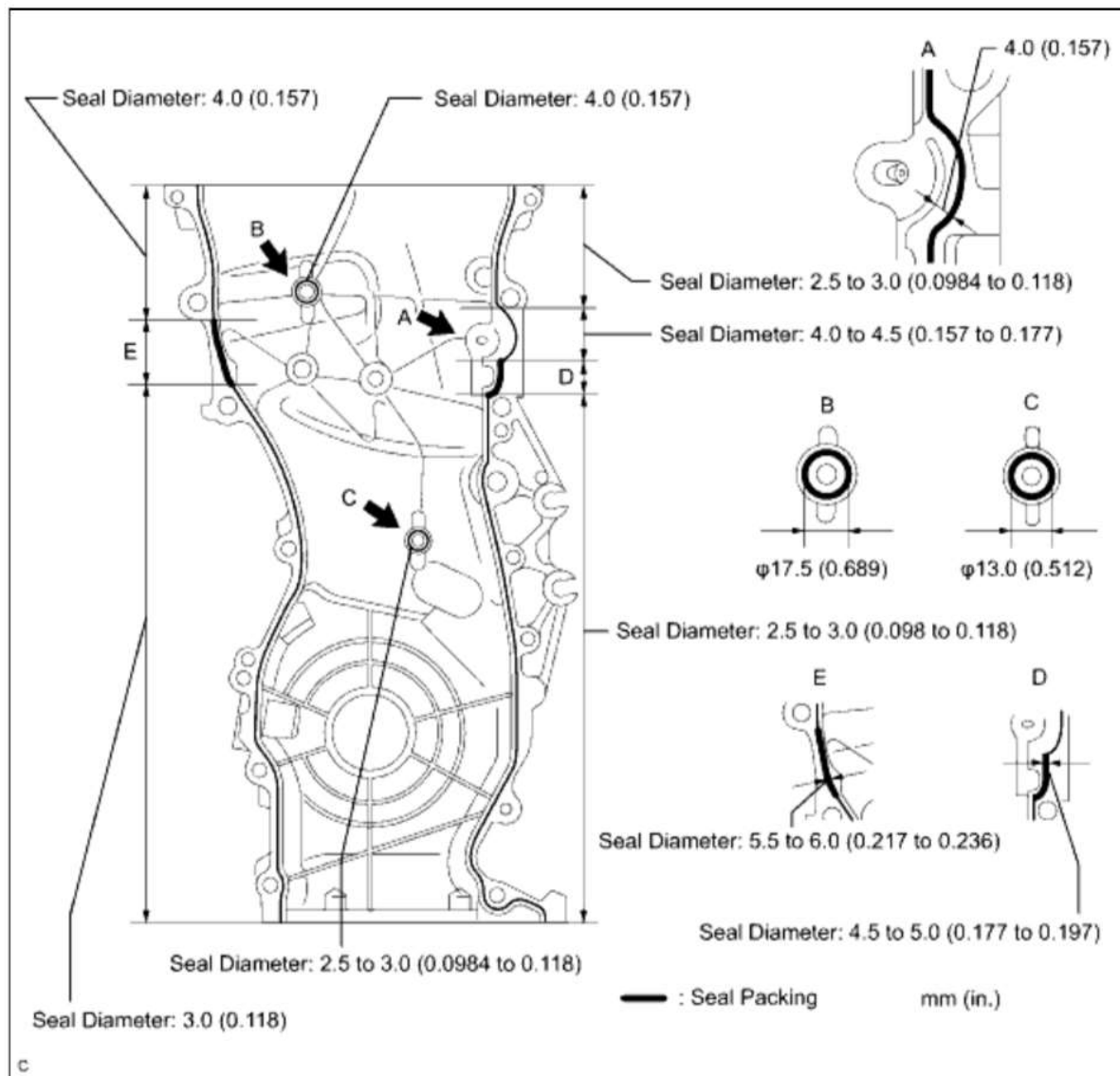
Toyota Genuine Seal Packing Black, Three Bond 1207B or equivalent

NOTICE:

- Remove any oil from the contact surfaces.
- Install the chain cover within 3 minutes of applying seal packing.
- Do not add engine oil for at least 2 hours after installing the chain cover.



(c) Apply a continuous bead of seal packing as shown in the illustration.



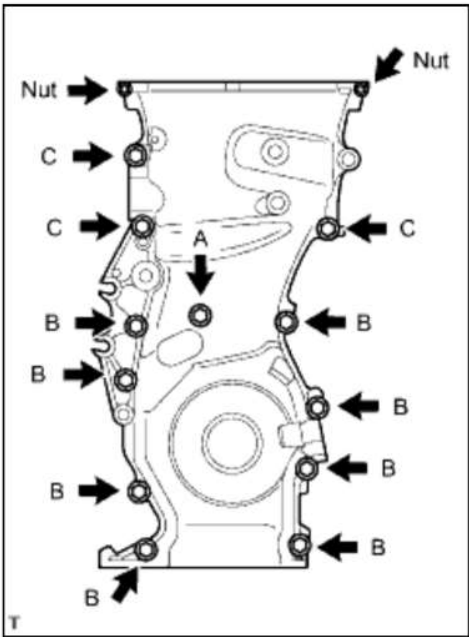
Seal packing:
Toyota Genuine Seal Packing Black, Three Bond 1207B or equivalent

NOTICE:

- Remove any oil from the contact surface.
- Install the chain cover within 3 minutes of applying seal packing.
- Do not add engine oil for at least 2 hours after installing the chain cover.

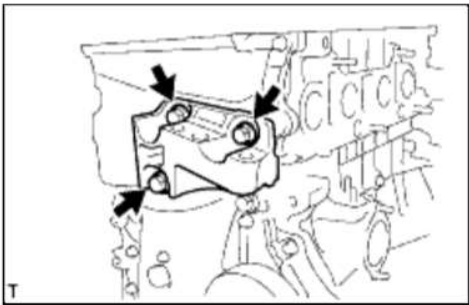
(d) Apply adhesive to the threads of the bolt A.

Seal packing:
Toyota Genuine Adhesive 1324, Three Bond 1324 or equivalent



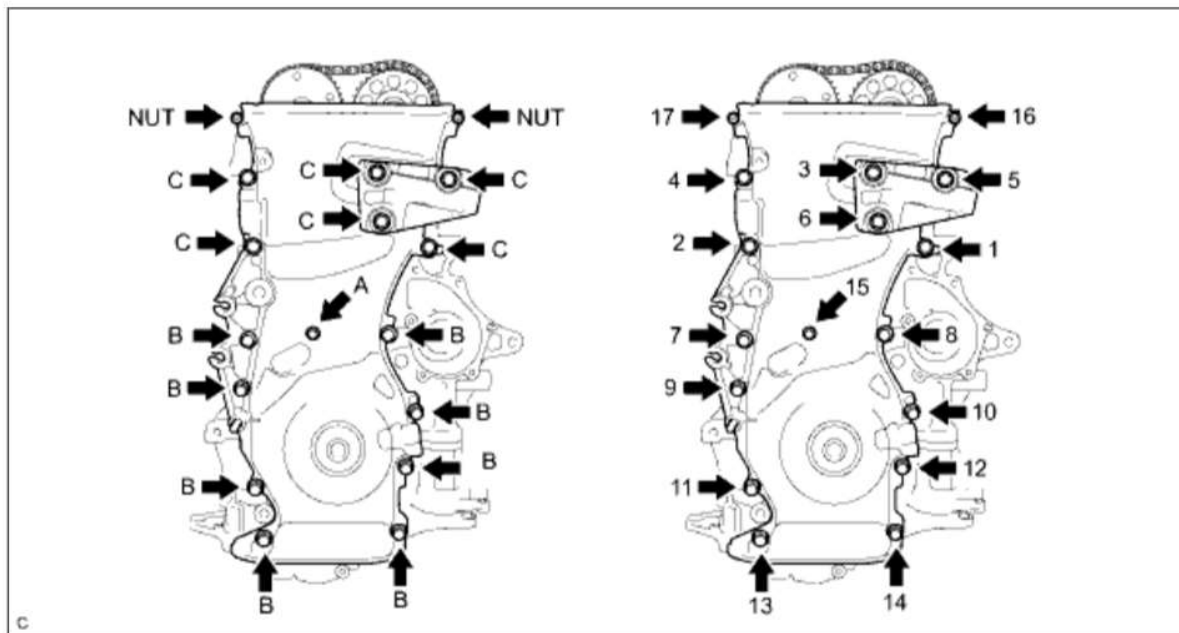
(e) Temporarily install the timing chain cover with the 12 bolts and 2 nuts.
Bolt length:

ITEM	LENGTH
Bolt A	30 mm (1.18 in.) length for 10 mm head
Bolt B	30 mm (1.18 in.) length for 12 mm head
Bolt C	40 mm (1.57 in.) length for 14 mm head



(f) Temporarily install the engine transverse engine engine mounting bracket with the 3 bolts.

(g) Fully tighten the timing chain cover with the 15 bolts and 2 nuts as shown in the illustration.

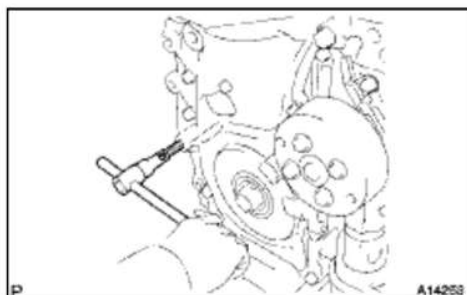


Bolt A - Torque: 9.0 N·m (92 kgf·cm, 80in·lbf)

Bolt B - Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

Bolt C - Torque: 55 N·m (561 kgf·cm, 41ft·lbf)

Nut - Torque: 11 N·m (112 kgf·cm, 8ft·lbf)



(h) Using an E10 "TORX" socket, install the stud bolt for the V-ribbed belt tensioner.

Torque: 22 N·m (220 kgf·cm, 16ft·lbf)

11. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY

INFO

12. INSTALL V-RIBBED BELT TENSIONER ASSEMBLY

INFO

13. INSTALL CRANKSHAFT PULLEY

INFO

14. INSTALL OIL PAN SUB-ASSEMBLY

INFO

15. INSTALL CRANKSHAFT POSITION SENSOR

INFO

16. INSTALL IDLER PULLEY SUB-ASSEMBLY

INFO

17. INSTALL ENGINE MOUNTING INSULATOR SUB-ASSEMBLY RH

INFO

18. INSTALL EXHAUST MANIFOLD CONVERTER SUB-ASSEMBLY

INFO

19. INSTALL NO. 1 EXHAUST MANIFOLD HEAT INSULATOR

INFO

20. INSTALL NO. 2 MANIFOLD STAY 
21. INSTALL MANIFOLD STAY 
22. INSTALL NO. 1 INTAKE MANIFOLD INSULATOR 
23. INSTALL INTAKE MANIFOLD 
24. INSTALL CAMSHAFT TIMING OIL CONTROL VALVE ASSEMBLY 
25. INSTALL FUEL DELIVERY PIPE SUB-ASSEMBLY 
26. CONNECT FUEL MAIN TUBE 
27. INSTALL ENGINE OIL LEVEL DIPSTICK GUIDE 
28. INSTALL ENGINE OIL LEVEL DIPSTICK
29. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY 
30. INSTALL SPARK PLUG 
31. INSTALL IGNITION COIL ASSEMBLY 
32. INSTALL THROTTLE BODY ASSEMBLY 
33. INSTALL AIR CLEANER CAP SUB-ASSEMBLY WITH HOSE 
34. INSTALL RADIATOR RESERVE TANK ASSEMBLY 
35. CONNECT INLET HEATER WATER HOSE 
36. CONNECT OUTLET HEATER WATER HOSE 
37. INSTALL NO. 1 RADIATOR HOSE 
38. INSTALL GENERATOR ASSEMBLY 
39. INSTALL V-RIBBED BELT 
40. INSTALL FRONT EXHAUST PIPE ASSEMBLY 
41. INSTALL CENTER EXHAUST PIPE ASSEMBLY 
42. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL
Torque: 5.4 N·m (55 kgf·cm, 48in·lbf)
43. ADD ENGINE OIL 
44. ADD ENGINE COOLANT 
45. INSPECT FUEL LEAK 
46. INSPECT COOLANT LEAK 

47. INSPECT OIL LEAK

48. INSPECT EXHAUST GAS LEAK

49. INSPECT IGNITION TIMING 

50. INSPECT ENGINE IDLE SPEED 

51. INSPECT COMPRESSION 

52. INSPECT CO / HC 

53. INSTALL SUSPENSION TOWER DAMPER ASSEMBLY (w/ Front Strut Bar) 

54. INSTALL OUTER COWL TOP PANEL 

55. INSTALL WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY 

56. INSTALL COWL TOP VENTILATOR LOUVER LH 

57. INSTALL CENTER NO. 1 COWL TOP VENTILATOR LOUVER 

58. INSTALL HOOD TO COWL TOP SEAL 

59. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH 

60. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH 

61. INSTALL FRONT WIPER ARM HEAD CAP 

62. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY 

63. INSTALL ENGINE UNDER COVER LH

64. INSTALL ENGINE UNDER COVER RH

65. INSTALL FRONT WHEEL RH

Torque: 103 N·m (1050 kgf·cm, 76ft·lbf)

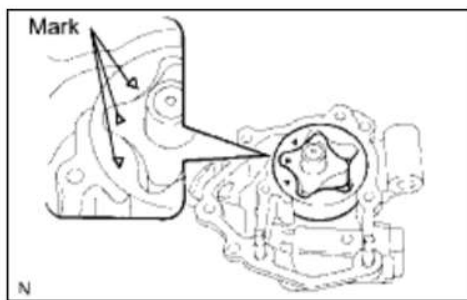


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Model Year: 2010	Model: Corolla	Doc ID: RM000001R00014X
Title: 2AZ-FE LUBRICATION: OIL PUMP: REASSEMBLY (2010 Corolla)		

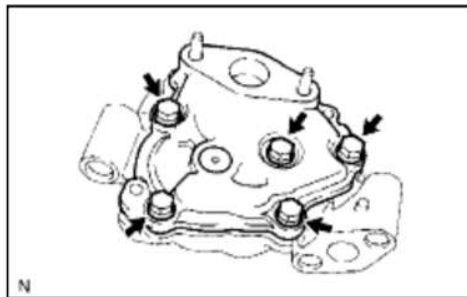
REASSEMBLY

1. INSTALL OIL PUMP COVER

- (a) Coat the drive rotor and driven rotor with engine oil.



- (b) Place the drive and driven rotors into the oil pump with the marks facing the pump cover side.

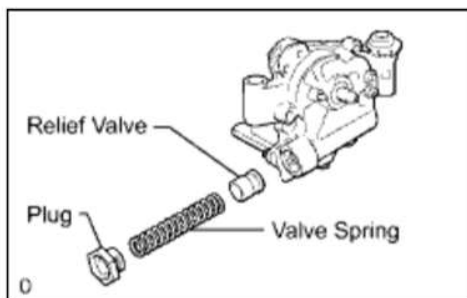


- (c) Install the oil pump cover with the 5 bolts.

Torque: 8.8 N·m (90 kgf·cm, 78in·lbf)

2. INSTALL OIL PUMP RELIEF VALVE

- (a) Coat the relief valve with engine oil.

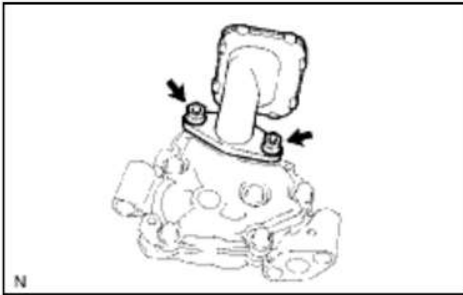


- (b) Insert the relief valve and spring into the pump body hole.

- (c) Using a 27 mm socket wrench, install the plug.

Torque: 49 N·m (500 kgf·cm, 36ft·lbf)

3. INSTALL OIL PUMP STRAINER



(a) Install a new gasket and the oil strainer with the 2 nuts.

Torque: 8.8 N·m (90 kgf·cm, 78in·lbf)

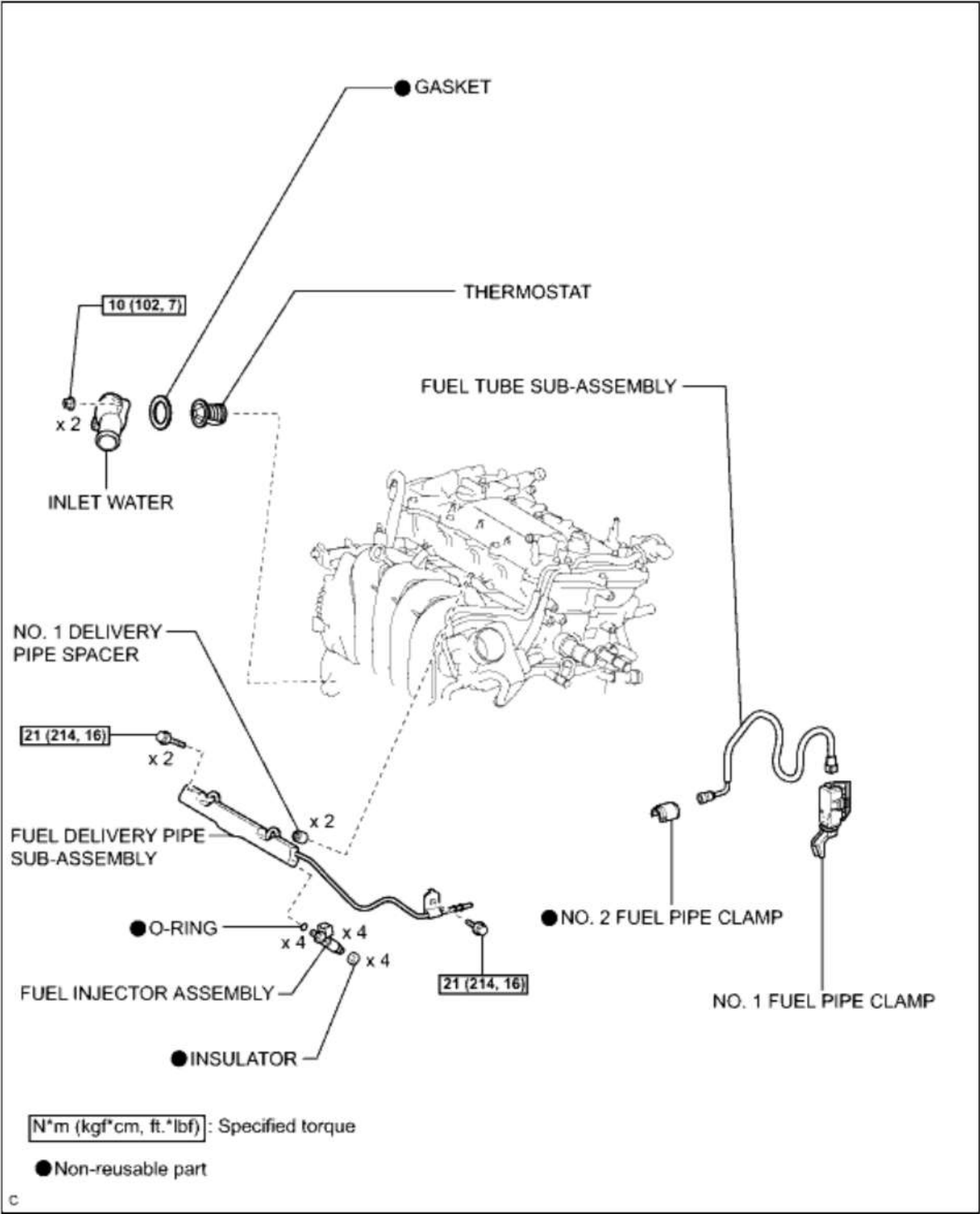


TOYOTA

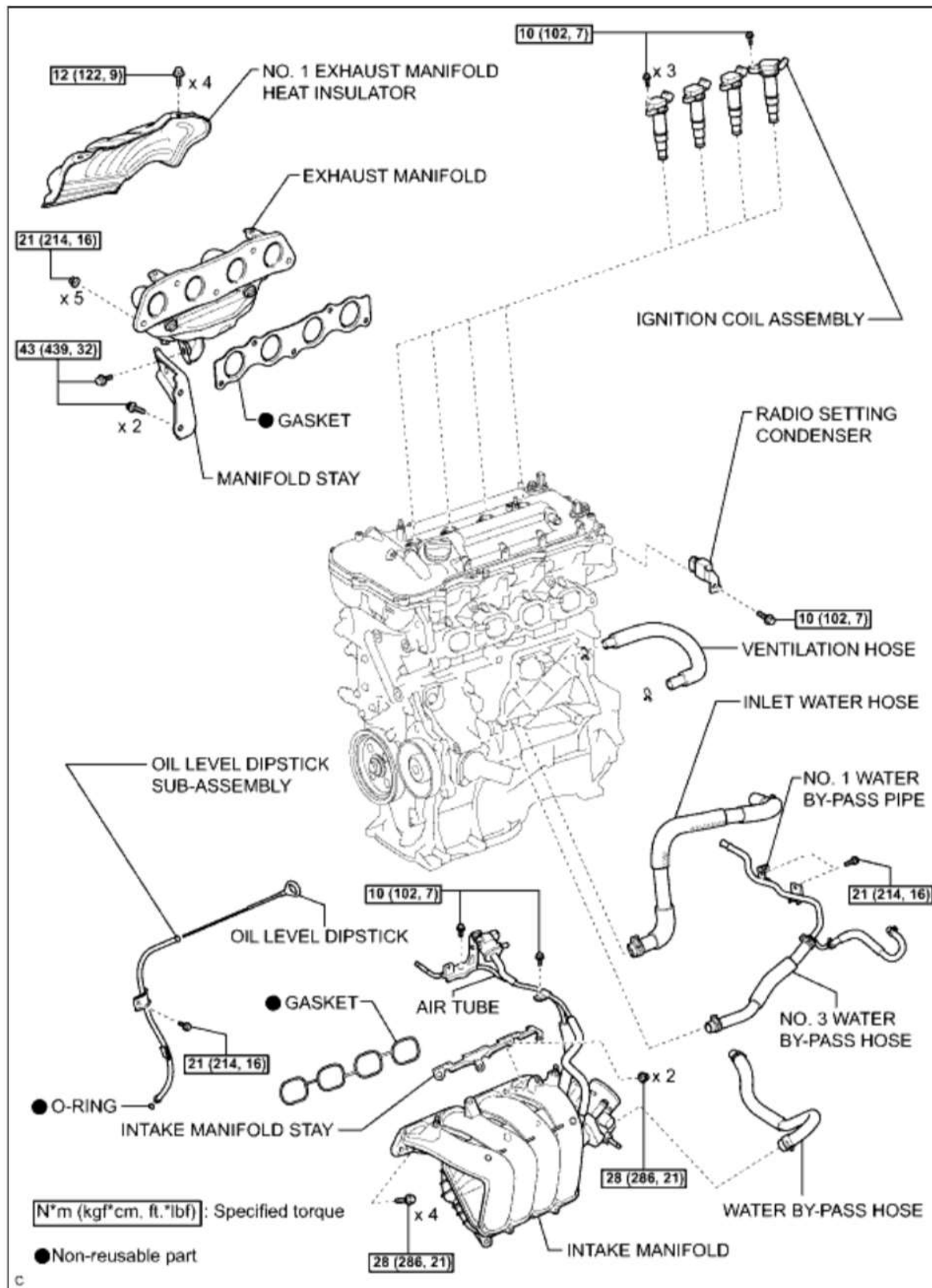
Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002TNV00UX
Title: 2ZR-FE LUBRICATION: OIL PUMP: COMPONENTS (2010 Corolla)		

COMPONENTS

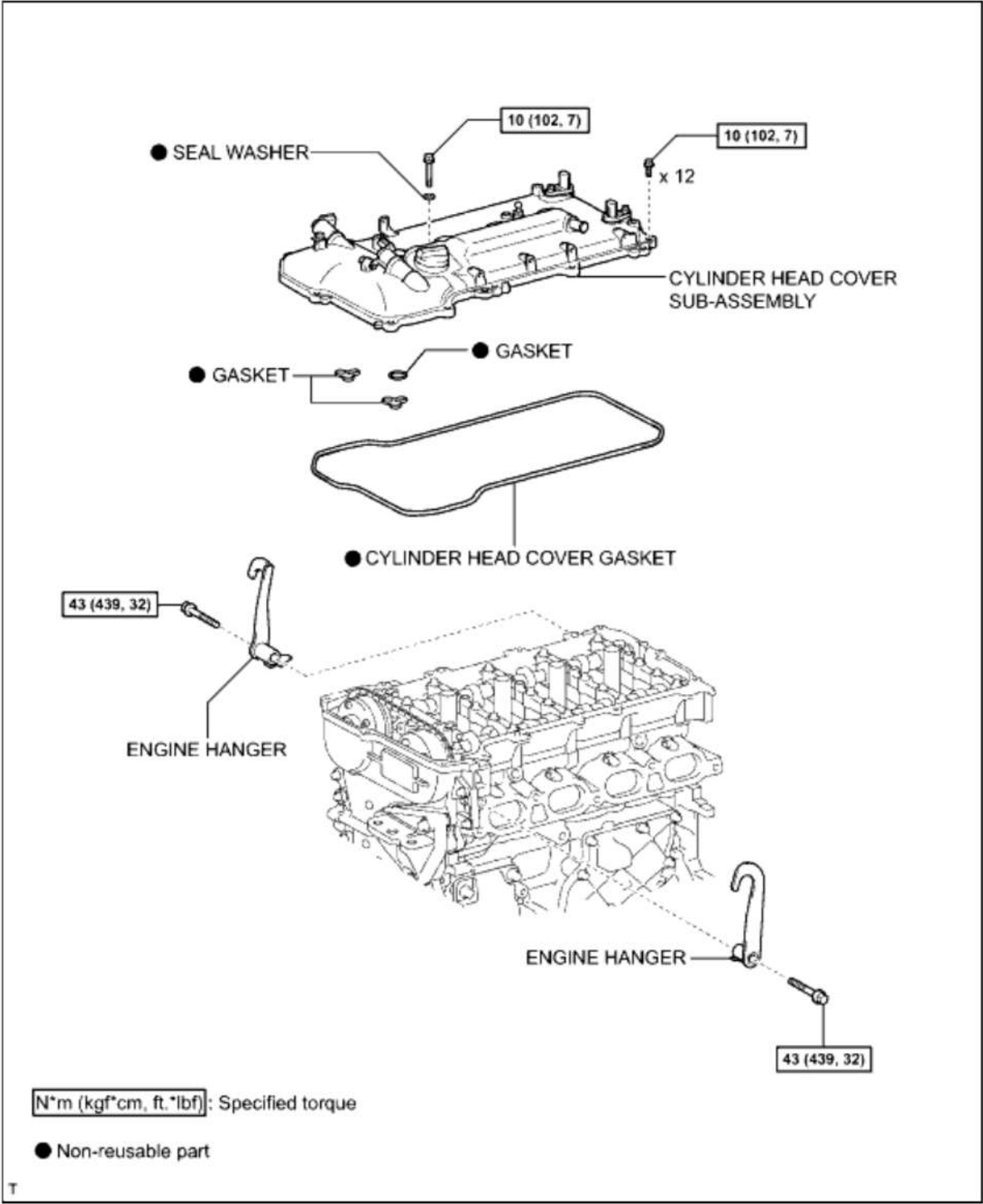
ILLUSTRATION



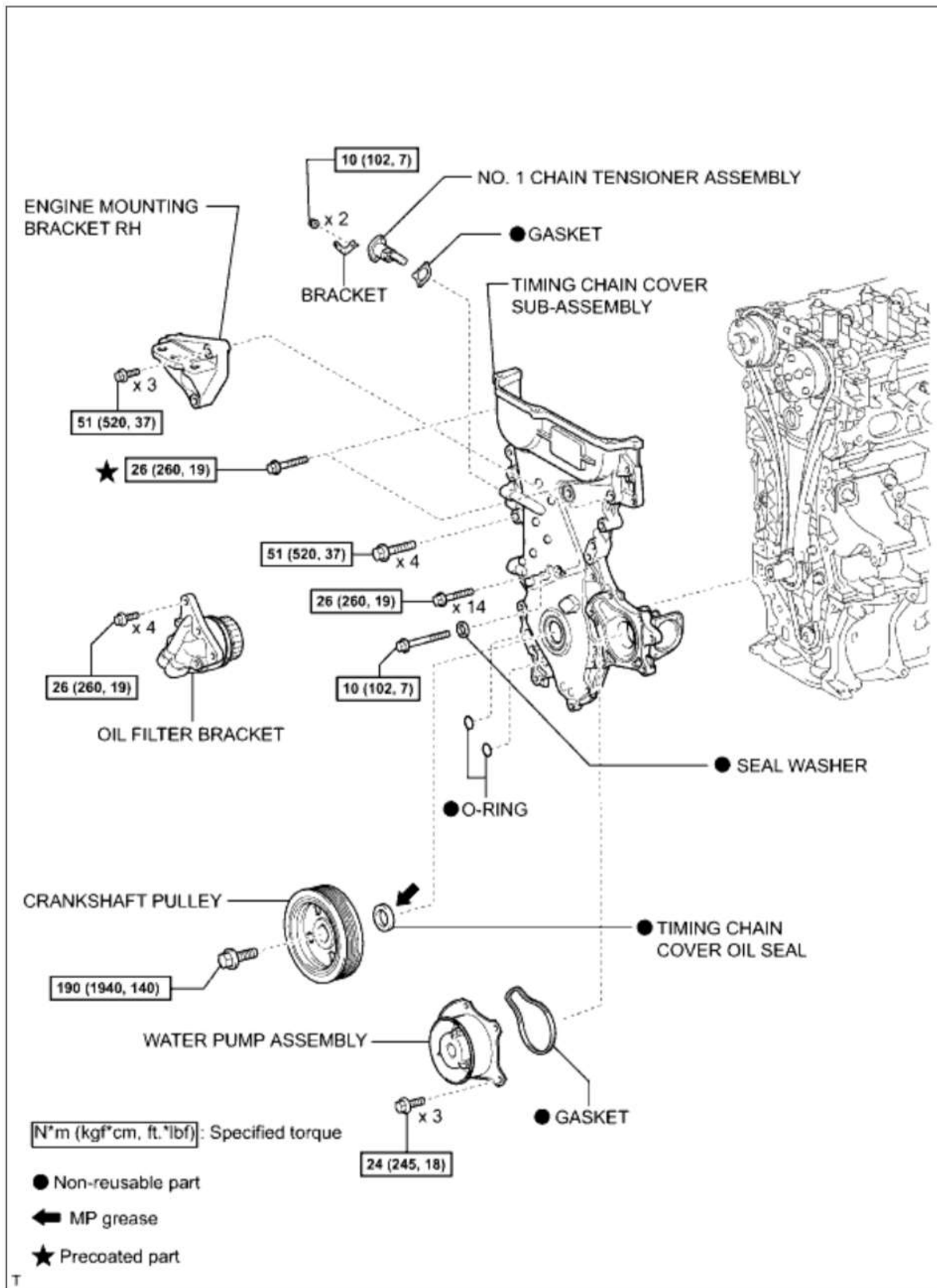
ILLUSTRATION



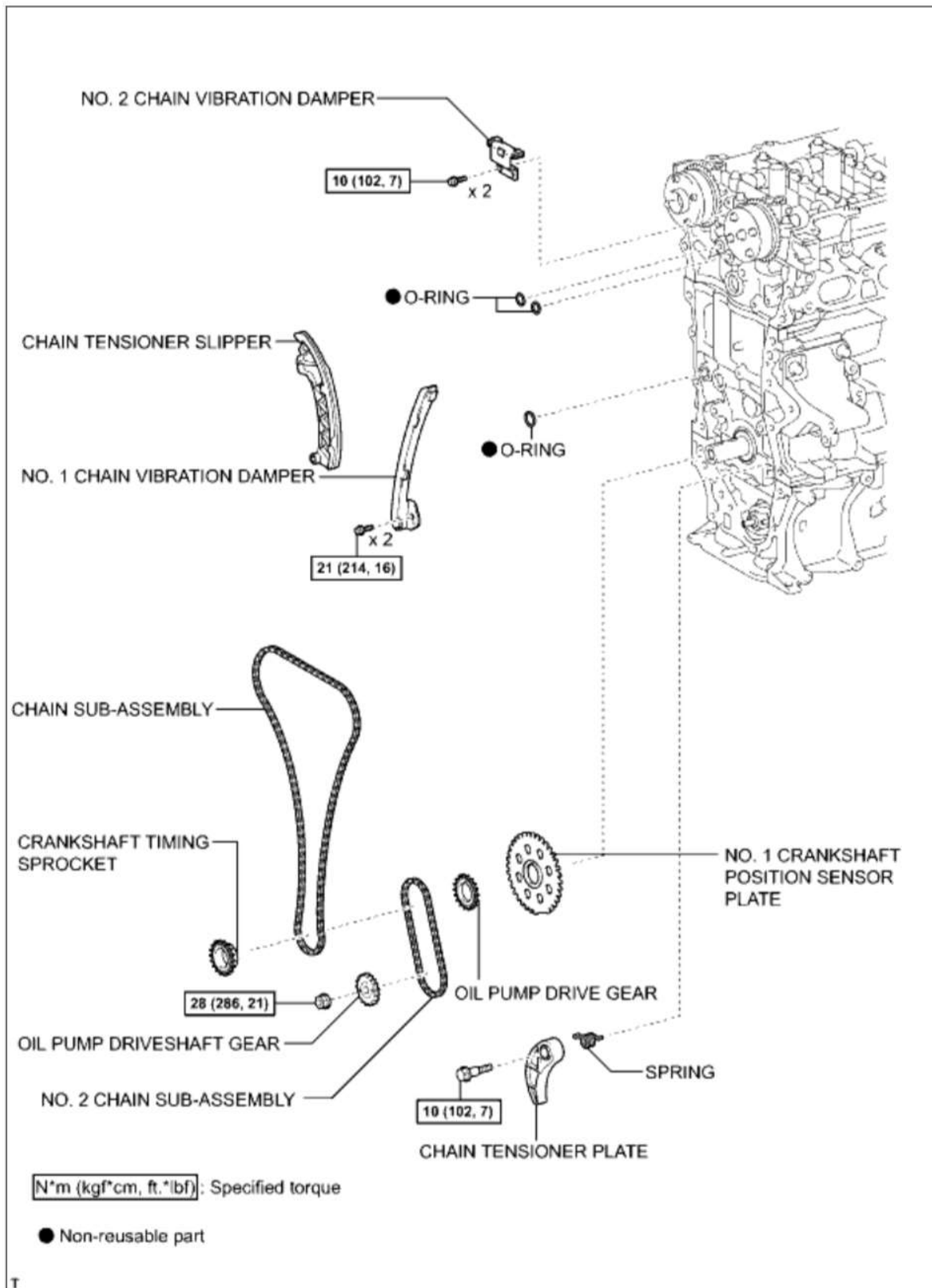
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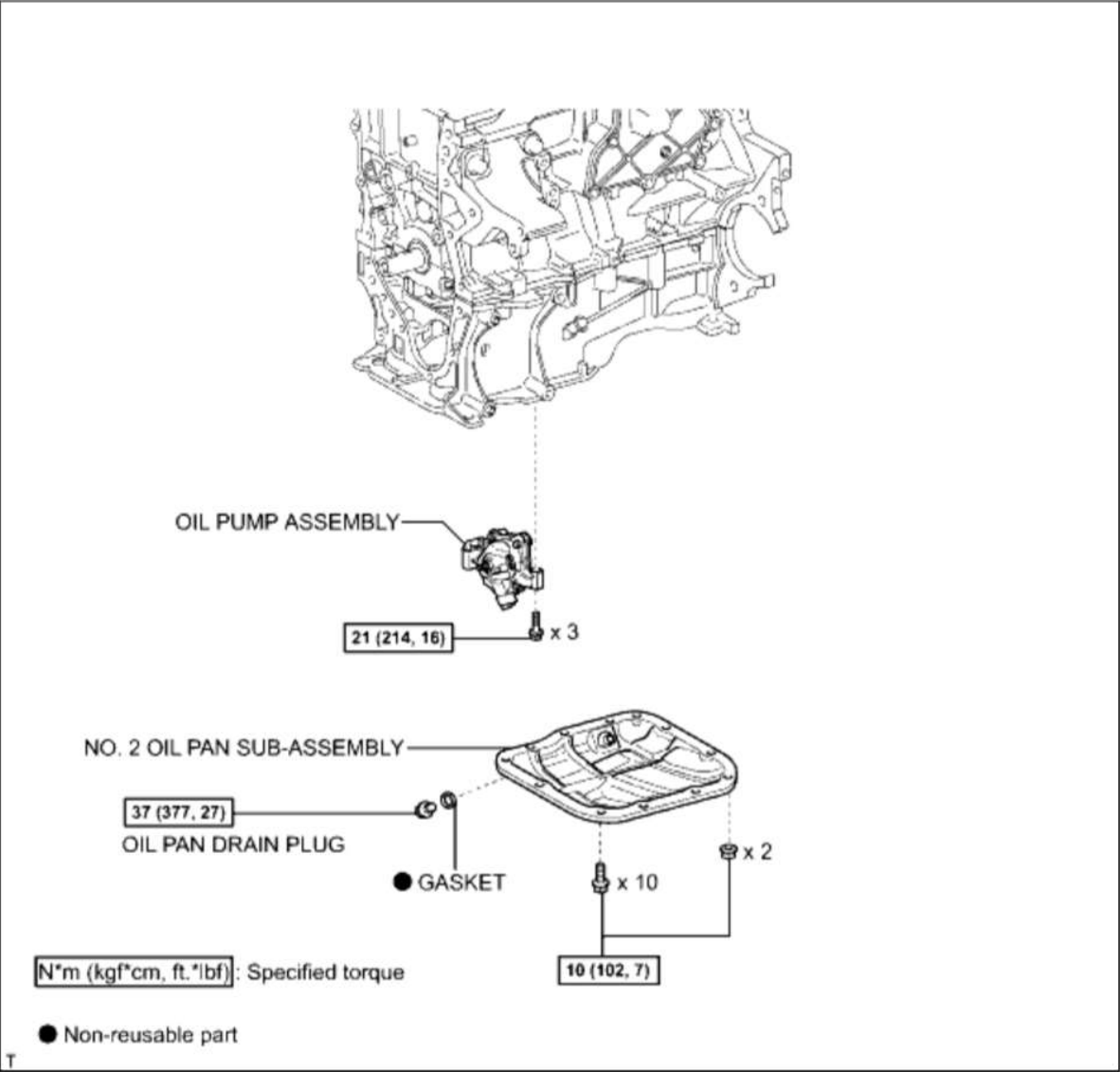
ILLUSTRATION



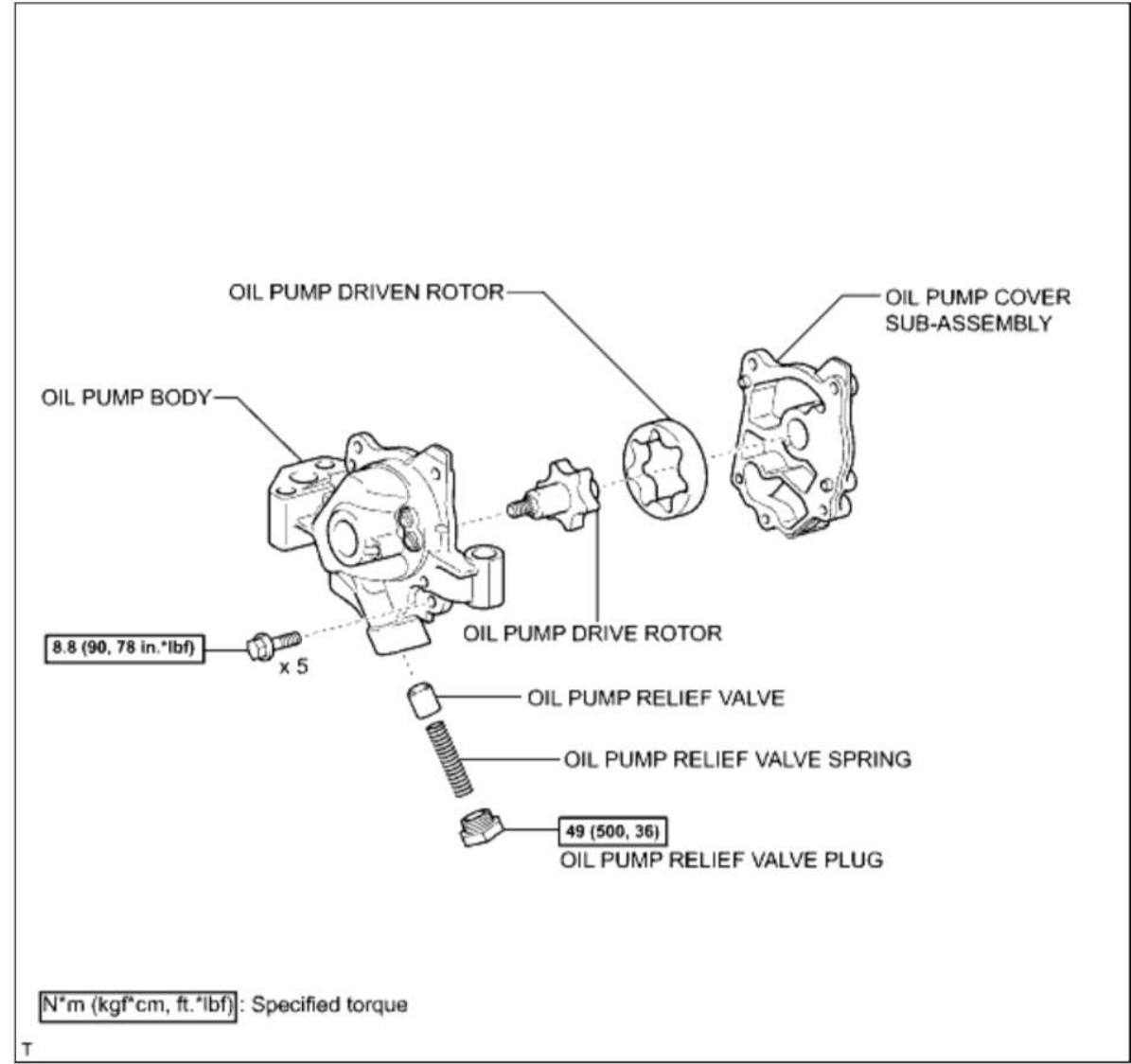
ILLUSTRATION



ILLUSTRATION



ILLUSTRATION



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002TNW010X
Title: 2ZR-FE LUBRICATION: OIL PUMP: REMOVAL (2010 Corolla)		

REMOVAL

1. REMOVE ENGINE ASSEMBLY WITH TRANSAXLE

HINT:  .

2. REMOVE ENGINE STAND

3. REMOVE INTAKE MANIFOLD

4. REMOVE FUEL TUBE SUB-ASSEMBLY

5. REMOVE FUEL DELIVERY PIPE SUB-ASSEMBLY

6. REMOVE FUEL INJECTOR ASSEMBLY

7. REMOVE IGNITION COIL ASSEMBLY

8. REMOVE OIL LEVEL DIPSTICK SUB-ASSEMBLY

9. REMOVE NO. 1 EXHAUST MANIFOLD HEAT INSULATOR

10. REMOVE MANIFOLD STAY

11. REMOVE EXHAUST MANIFOLD

12. REMOVE VENTILATION HOSE

13. DISCONNECT NO. 3 WATER BY-PASS HOSE

14. REMOVE NO. 1 WATER BY-PASS PIPE

15. REMOVE WATER BY-PASS HOSE

16. REMOVE INLET WATER HOSE

17. REMOVE INLET WATER

18. REMOVE THERMOSTAT

19. REMOVE RADIO SETTING CONDENSER

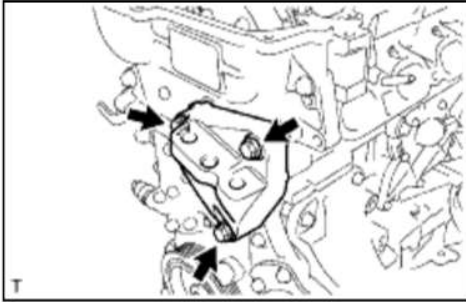
20. REMOVE CYLINDER HEAD COVER SUB-ASSEMBLY

21. REMOVE NO. 1 CYLINDER TO TDC/COMPRESSION

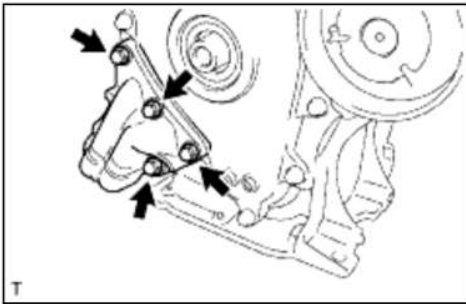
22. REMOVE CRANKSHAFT PULLEY

23. REMOVE NO. 1 CHAIN TENSIONER ASSEMBLY

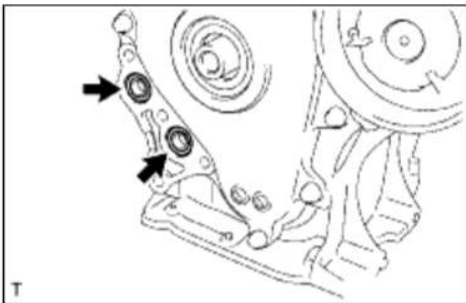
24. REMOVE TIMING CHAIN COVER SUB-ASSEMBLY



(a) Remove the 3 bolts and engine mounting bracket.

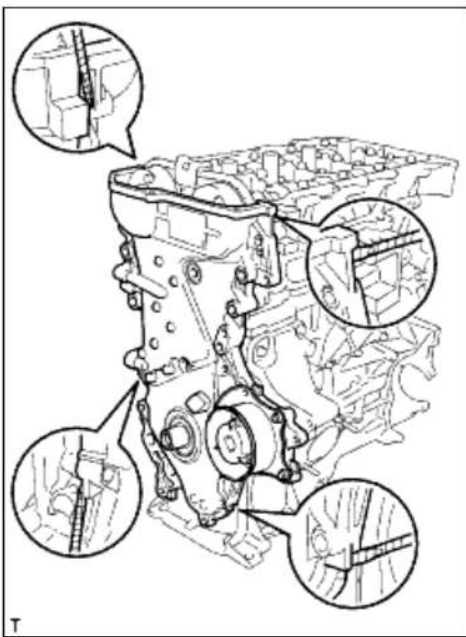
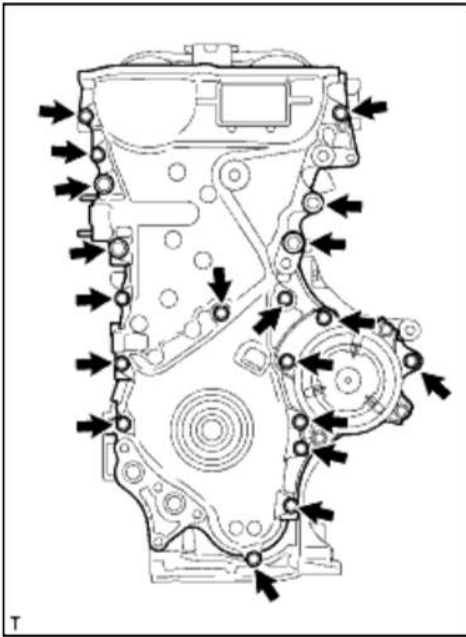


(b) Remove the 4 bolts and oil filter bracket.



(c) Remove the 2 O-rings.

(d) Remove the 19 bolts.



- (e) Remove the timing chain cover by prying between the timing chain cover and cylinder head or cylinder block with a screwdriver.

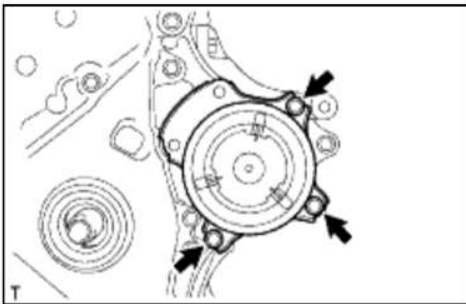
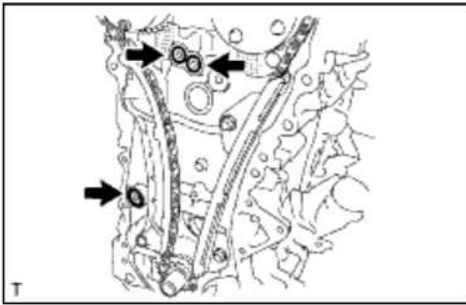
NOTICE:

Be careful not to damage the contact surfaces of the timing chain cover, cylinder block, and cylinder head.

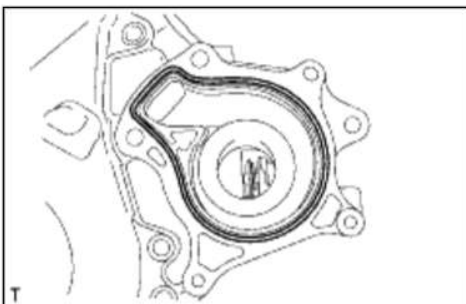
HINT:

Tape the screwdriver tip before use.

- (f) Remove the 3 O-rings.

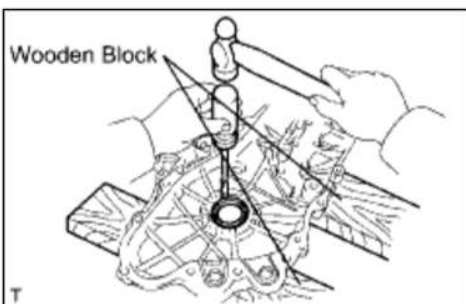


(g) Remove the 3 bolts and water pump.



(h) Remove the gasket.

25. REMOVE TIMING CHAIN COVER OIL SEAL



(a) Place the timing chain cover on wooden blocks.

(b) Using a screwdriver and a hammer, pry out the oil seal.

NOTICE:

Do not damage the surface of the oil seal press fit hole.

HINT:

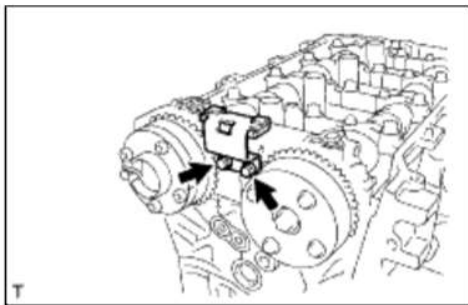
Tape the screwdriver tip before use.

26. REMOVE CHAIN TENSIONER SLIPPER INFO

27. REMOVE NO. 1 CHAIN VIBRATION DAMPER INFO

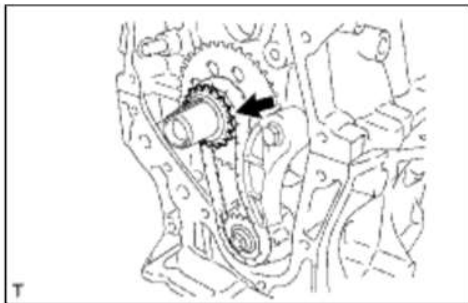
28. REMOVE CHAIN SUB-ASSEMBLY INFO

29. REMOVE NO. 2 CHAIN VIBRATION DAMPER



(a) Remove the 2 bolts and No. 2 chain vibration damper.

30. REMOVE CRANKSHAFT TIMING SPROCKET



(a) Remove the crankshaft timing sprocket.

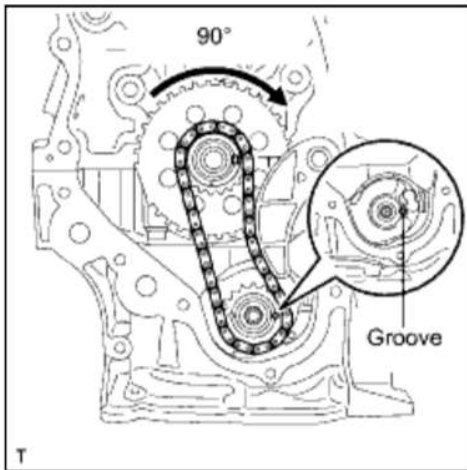
31. REMOVE NO. 2 CHAIN SUB-ASSEMBLY

(a) Temporarily tighten the crank pulley bolt.

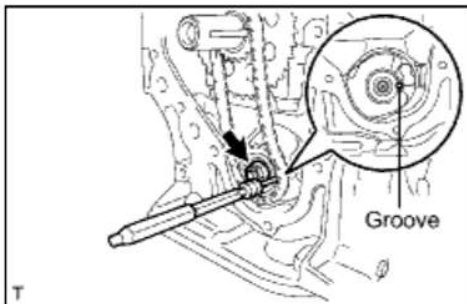
(b) Turn the crankshaft 90° clockwise to align the adjusting hole of the oil pump drive shaft sprocket with the groove of the oil pump.

NOTICE:

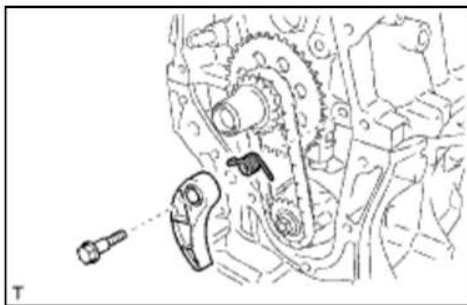
Do not rotate the crankshaft more than 90°. If the crankshaft is rotated too much without the timing chain installed, the valves may hit the pistons and cause damage.



(c) Remove the crank pulley bolt.

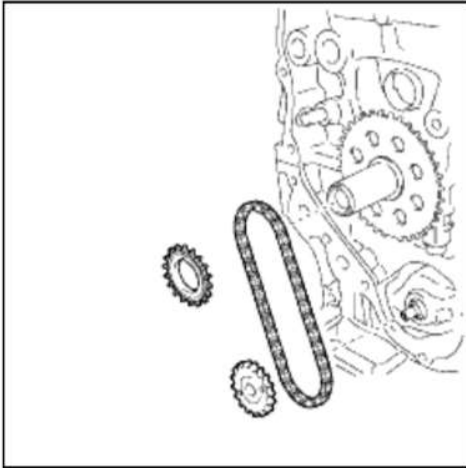


(d) Insert a 3 mm diameter bar into the adjusting hole of the oil pump drive shaft sprocket to lock the gear in position, and then remove the nut.



(e) Remove the bolt, chain tensioner plate, and spring.

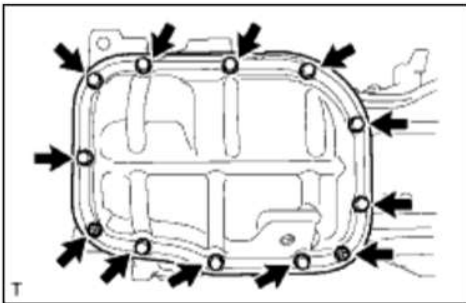
(f) Remove the crankshaft timing sprocket, oil pump drive shaft gear, and No. 2 chain sub-assembly.



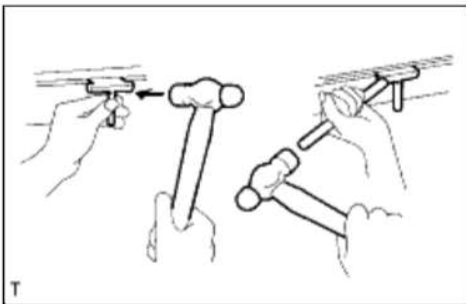
32. REMOVE NO. 1 CRANKSHAFT POSITION SENSOR PLATE



33. REMOVE NO. 2 OIL PAN SUB-ASSEMBLY



(a) Remove the 10 bolts and 2 nuts.



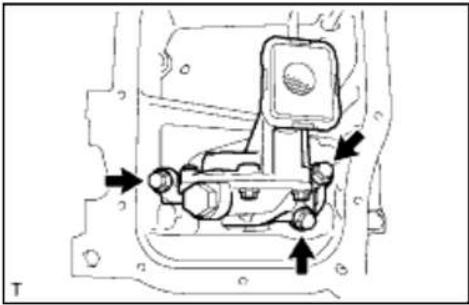
(b) Insert the blade of oil pan seal cutter between the crankcase and oil pan. Cut through the sealer and remove the oil pan.

NOTICE:

Be careful not to damage the contact surfaces of the crankcase and oil pan.

34. REMOVE OIL PUMP ASSEMBLY

(a) Remove the 3 bolts and oil pump.

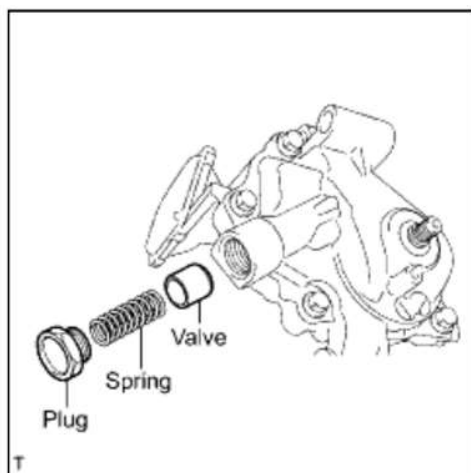


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Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM00000259L01KX
Title: 2ZR-FE LUBRICATION: OIL PUMP: DISASSEMBLY (2010 Corolla)		

DISASSEMBLY

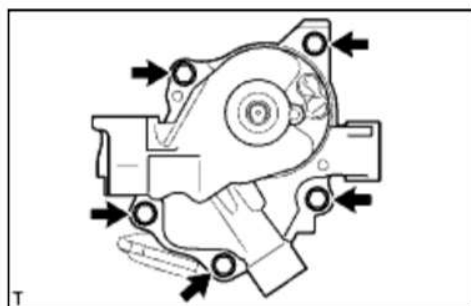
1. REMOVE OIL PUMP RELIEF VALVE



(a) Using a 27 mm socket wrench, remove the plug.

(b) Remove the valve spring and relief valve.

2. REMOVE OIL PUMP COVER SUB-ASSEMBLY



(a) Remove the 5 bolts and oil pump cover.

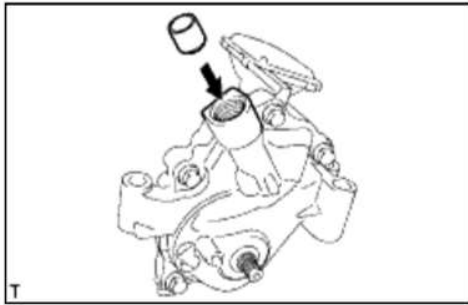
(b) Remove the oil pump drive and driven rotors from the oil pump.



Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM00000259I01KX
Title: 2ZR-FE LUBRICATION: OIL PUMP: INSPECTION (2010 Corolla)		

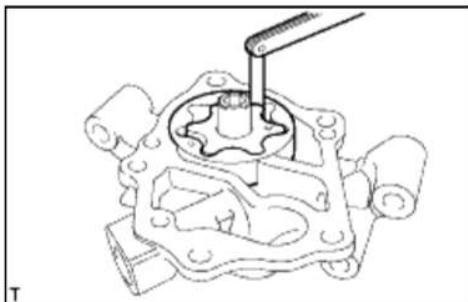
INSPECTION

1. INSPECT OIL PUMP RELIEF VALVE



- (a) Coat the oil pump relief valve with engine oil, then check that it falls smoothly into the valve hole by its own weight.
If this does not occur, replace the oil pump.

2. INSPECT OIL PUMP ROTOR



- (a) Using a feeler gauge, measure the clearance between the drive and driven rotor tips.

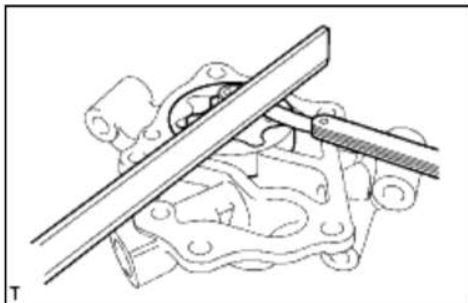
Standard tip clearance:

0.08 to 0.160 mm (0.00315 to 0.00630 in.)

Maximum tip clearance:

0.35 mm (0.0138 in.)

If the tip clearance is greater than the maximum, replace the oil pump.



- (b) Using a feeler gauge and precision straightedge, measure the clearance between the 2 rotors and precision straightedge.

Standard side clearance:

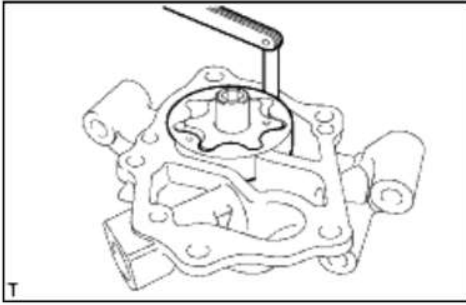
0.03 to 0.08 mm (0.00118 to 0.00315 in.)

Maximum side clearance:

0.16 mm (0.00630 in.)

If the side clearance is greater than the maximum, replace the oil pump.

- (c) Using a feeler gauge, measure the clearance between the driven rotor and oil pump body.



Standard body clearance:

0.12 to 0.19 mm (0.0047 to 0.0075 in.)

Maximum body clearance:

0.325 mm (0.0128 in.)

If the body clearance is greater than the maximum, replace the oil pump.

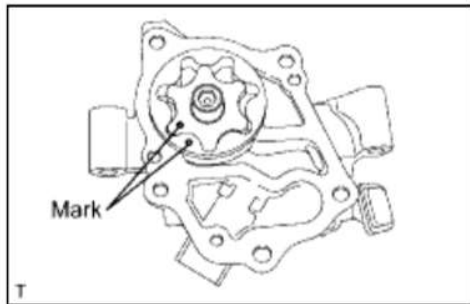


TOYOTA

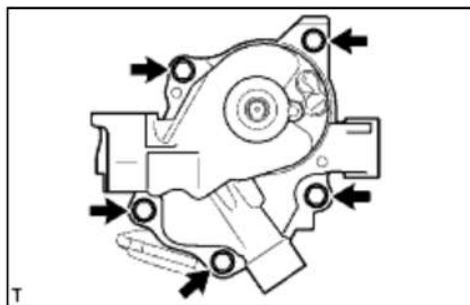
Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM00000259M01KX
Title: 2ZR-FE LUBRICATION: OIL PUMP: REASSEMBLY (2010 Corolla)		

REASSEMBLY

1. INSTALL OIL PUMP COVER SUB-ASSEMBLY

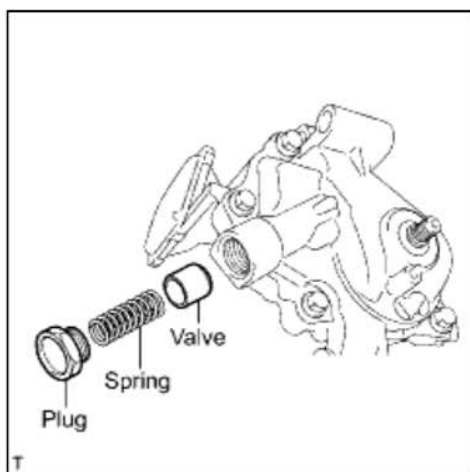


- (a) Coat the oil pump drive and driven rotors with engine oil, and place them into the oil pump with the marks facing the oil pump cover side.



- (b) Install the oil pump cover with the 5 bolts.
Torque: 8.8 N·m (90 kgf·cm, 78in·lbf)

2. INSTALL OIL PUMP RELIEF VALVE



- (a) Coat the relief valve with engine oil.

- (b) Insert the relief valve and spring into the pump body hole.
- (c) Using a 27 mm socket wrench, install the plug.

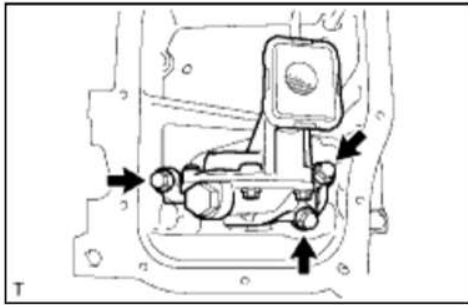
Torque: 49 N·m (500 kgf·cm, 36ft·lbf)



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002TNU010X
Title: 2ZR-FE LUBRICATION: OIL PUMP: INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL OIL PUMP ASSEMBLY

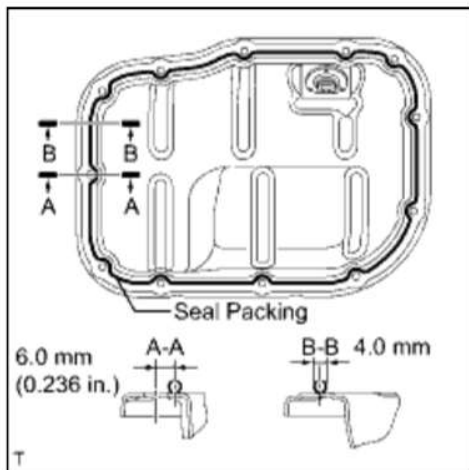


(a) Install the oil pump with the 3 bolts.

Torque: 21 N·m (214 kgf·cm, 16ft·lbf)

2. INSTALL NO. 2 OIL PAN SUB-ASSEMBLY

(a) Remove any old packing material and be careful not to drop any oil on the contact surfaces of the cylinder block and oil pan.



(b) Apply a continuous bead of seal packing (Diameter 4.0 mm (0.157 in.)) as shown in the illustration.

Seal packing:

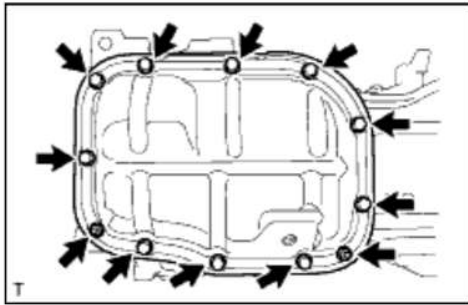
Toyota Genuine Seal Packing Black, Three Bond 1207B or equivalent

NOTICE:

- Remove any oil from the contact surfaces.
- Install the oil pan within 3 minutes after applying seal packing.
- Do not start the engine for at least 2 hours after installing the oil pan.

(c) Install the No. 2 oil pan with the 10 bolts and 2 nuts.

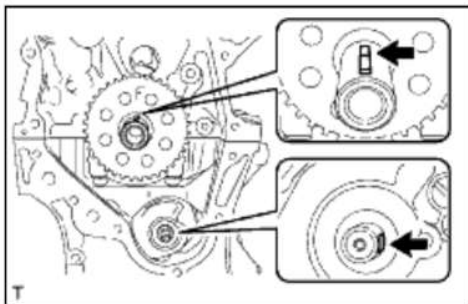
Torque: 10 N·m (102 kgf·cm, 7ft·lbf)



3. INSTALL NO. 1 CRANKSHAFT POSITION SENSOR PLATE

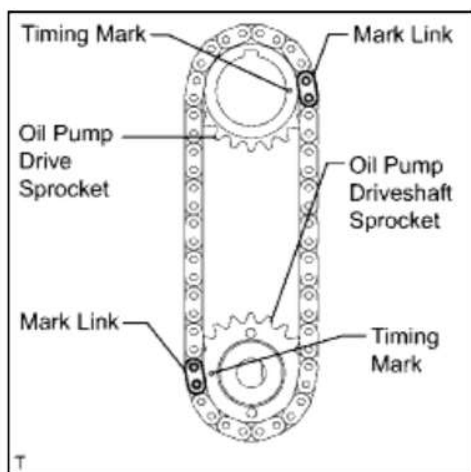
INFO

4. INSTALL NO. 2 CHAIN SUB-ASSEMBLY



(a) Set the crankshaft key as shown in the illustration.

(b) Turn the drive shaft so that the cutout faces the right horizontal position.

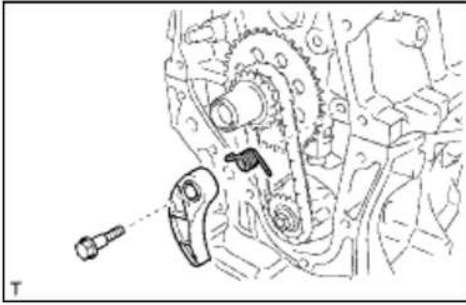


(c) Align the yellow mark links with the timing marks of each gear as shown in the illustration.

(d) Install the sprockets onto the crankshaft and oil pump shaft with the chain on the gears.

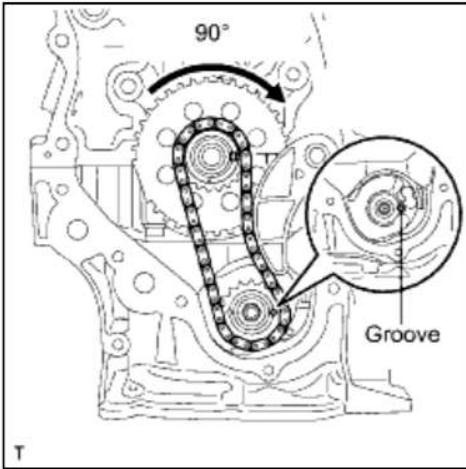
(e) Temporarily tighten the oil pump drive shaft sprocket with the nut.

(f) Insert the damper spring into the adjusting hole, and then

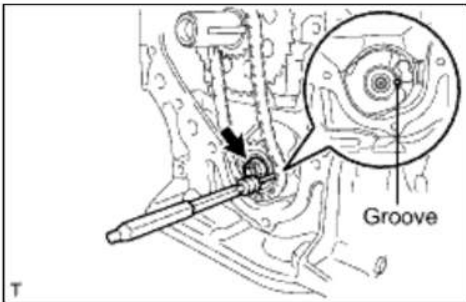


install the chain tensioner plate with the bolt.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)



(g) Align the adjusting hole of the oil pump drive shaft sprocket with the groove of the oil pump.

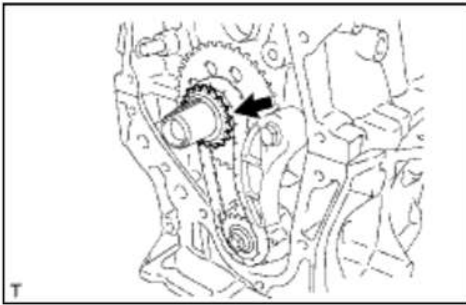


(h) Insert a 3 mm diameter bar into the adjusting hole of the oil pump drive shaft gear to lock the gear in position, and then tighten the nut.

Torque: 28 N·m (286 kgf·cm, 21ft·lbf)

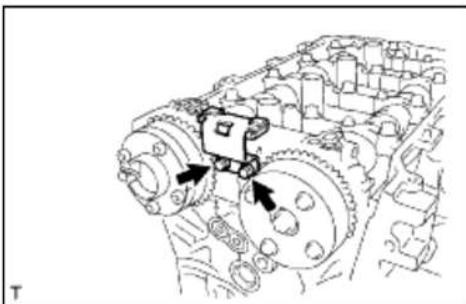
5. INSTALL CRANKSHAFT TIMING SPROCKET

(a) Install the crankshaft timing sprocket.



6. INSTALL NO. 1 CHAIN VIBRATION DAMPER INFO

7. INSTALL NO. 2 CHAIN VIBRATION DAMPER



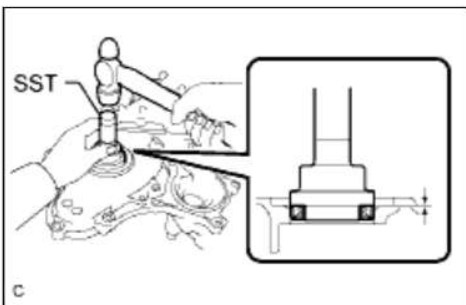
(a) Install the No. 2 chain vibration damper with the 2 bolts.

Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

8. INSTALL CHAIN SUB-ASSEMBLY INFO

9. INSTALL CHAIN TENSIONER SLIPPER INFO

10. INSTALL TIMING CHAIN COVER OIL SEAL



(a) Using SST and a hammer, tap in a new oil seal until its surface is flush with the timing chain cover sub-assembly edge.

SST: 09223-22010

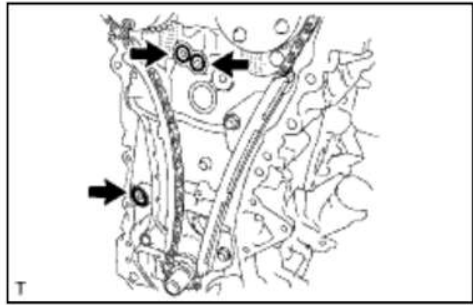
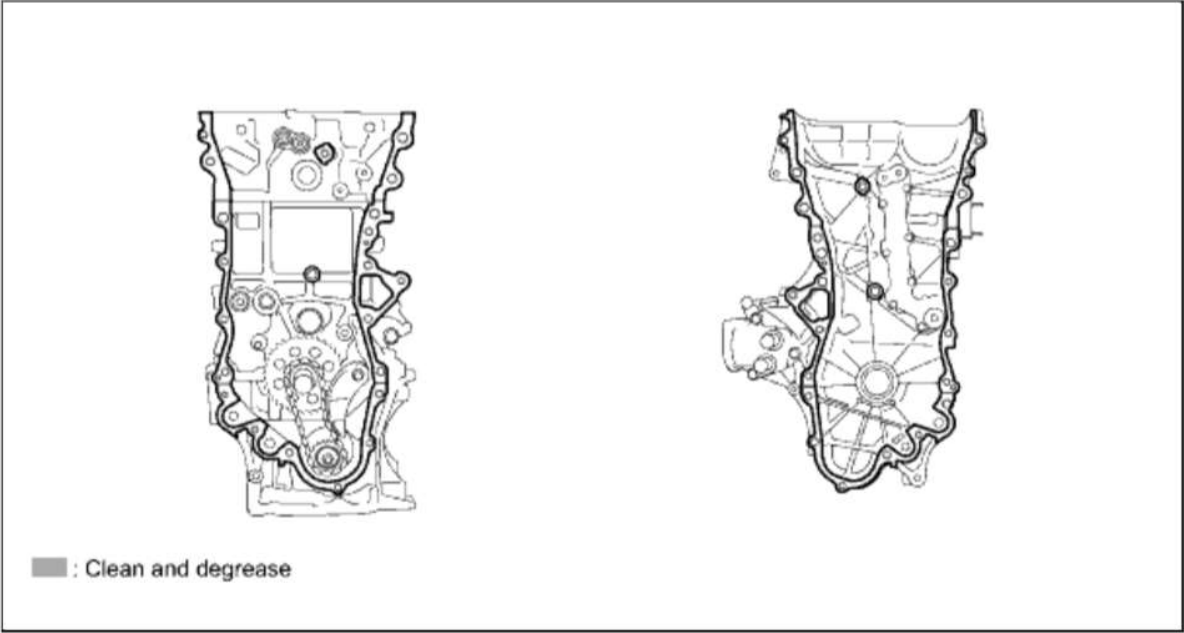
NOTICE:

- Keep the lip free from foreign matter.
- Do not tap the oil seal at an angle.

(b) Apply MP grease to the lip of the oil seal.

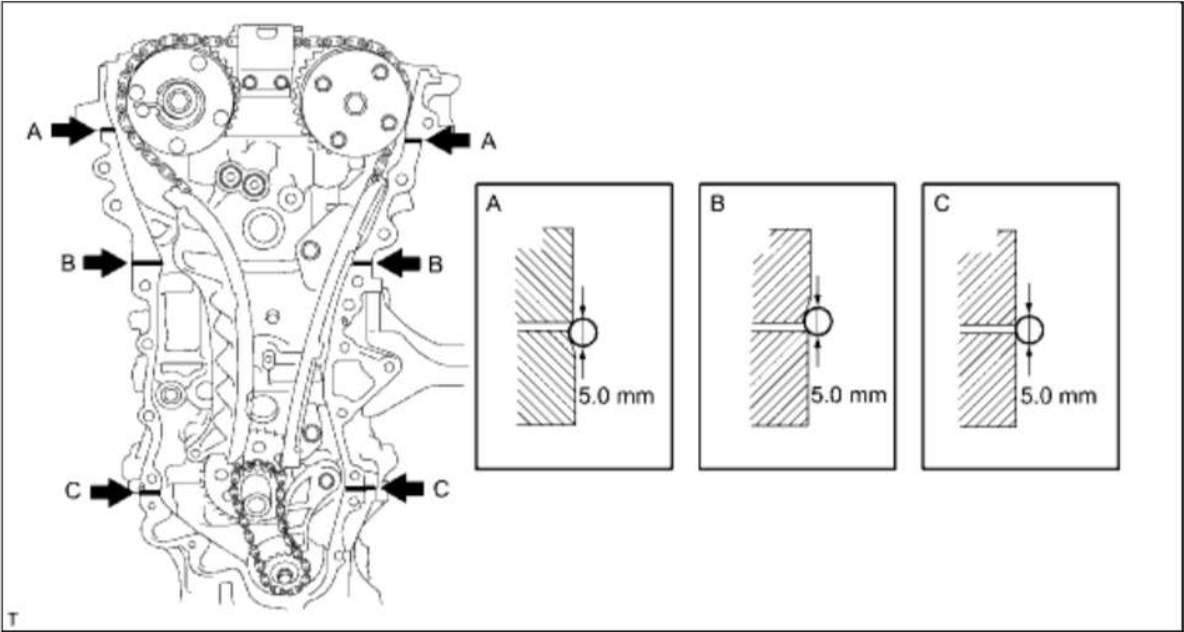
11. INSTALL TIMING CHAIN COVER SUB-ASSEMBLY

(a) Remove any old packing (FIPG) material and be careful not to drop any oil on the contact surfaces of the timing chain cover sub-assembly, cylinder head, and cylinder block.



(b) Install 3 new O-rings.

(c) Apply seal packing as shown in the illustration.



Seal packing:

Toyota Genuine Seal Packing Black, Three Bond 1207B or equivalent

Seal diameter:

5.0 mm (0.196 in.)

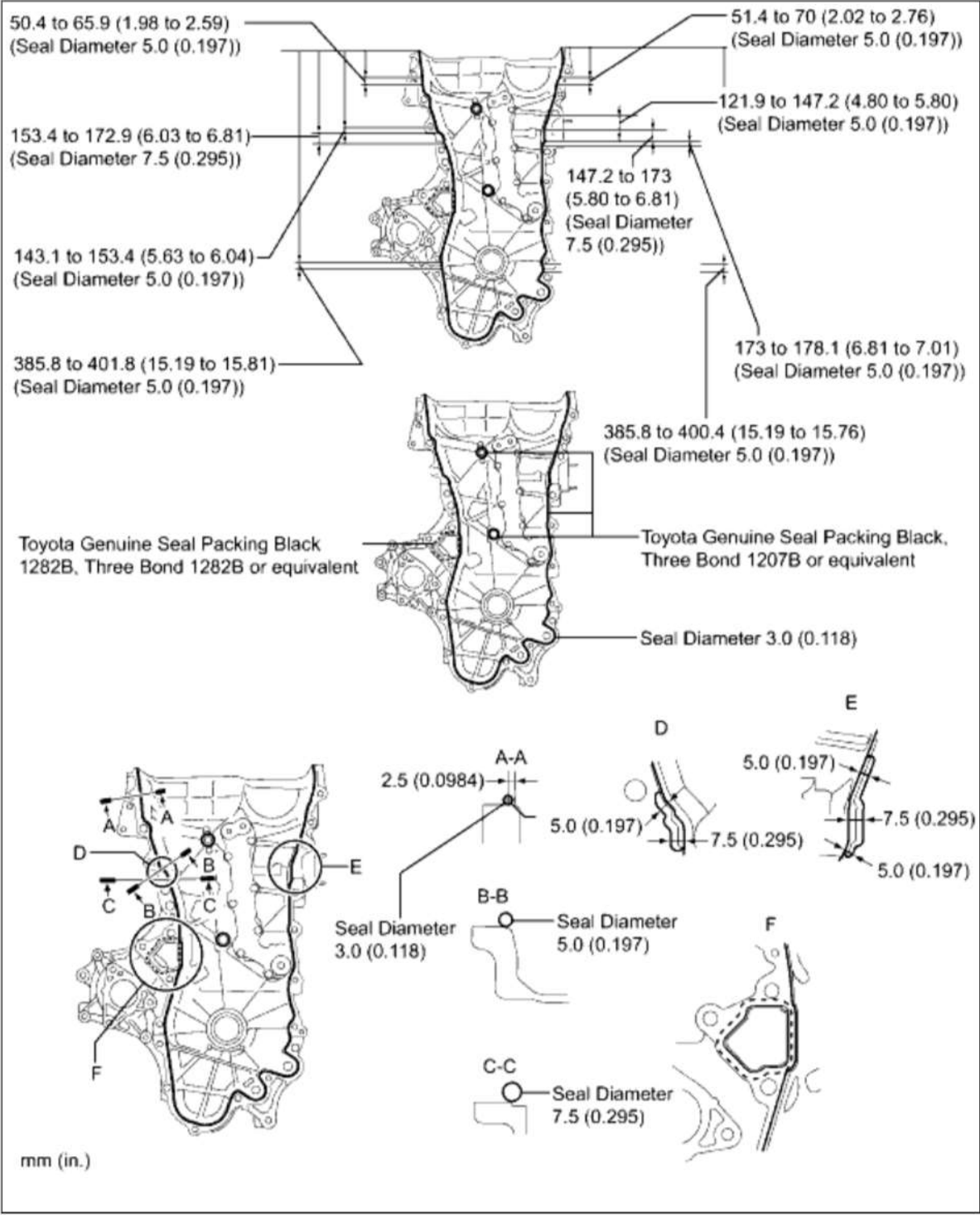
NOTICE:

- Remove any oil from the contact surfaces.
- Install the chain cover within 3 minutes after applying seal packing.
- Do not start the engine for at least 2 hours after installing the timing chain cover sub-assembly.

(d) Apply seal packing to the timing chain cover sub-assembly in a continuous line as shown in the following illustration.

NOTICE:

- When the contact surfaces are wet, wipe them with oil-free cloth before applying seal packing.
- Install the timing chain cover sub-assembly within 3 minutes and tighten the bolts within 15 minutes after applying seal packing.
- Do not start the engine for at least 2 hours after installing.



Apply Seal Packing as Follows:

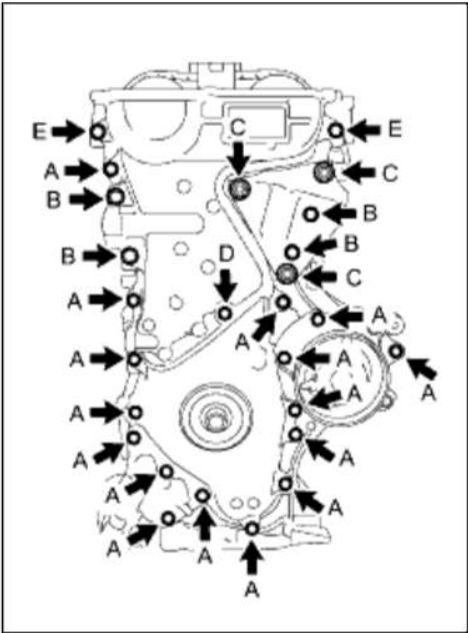
AREA	SEAL PACKING DIAMETER	APPLICATION POSITION FROM INSIDE SEAL LINE	SEAL PACKING
Continuous Line Area	3.0 mm (0.118 in.)	2.5 mm (0.098 in.)	Toyota Genuine Seal Packing Black, Three Bond 1207B or equivalent

AREA	SEAL PACKING DIAMETER	APPLICATION POSITION FROM INSIDE SEAL LINE	SEAL PACKING
Dashed Line Area	4.0 mm (0.156 in.)	3.0 mm (0.118 in.)	Toyota Genuine Seal Packing 1282B, Three Bond 1282B or equivalent

(e) Apply adhesive to the threads of the bolt E.

Adhesive:

Toyota Genuine Adhesive 1324, Three Bond 1324 or equivalent



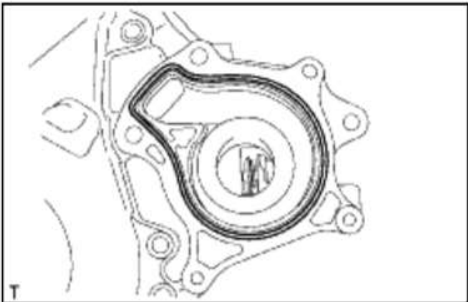
(f) Temporarily install the timing chain cover sub-assembly with 19 bolts.

NOTICE:

- Remove any oil from the contact surfaces.
- Install the chain cover within 3 minutes after applying seal packing.
- Do not start the engine for at least 2 hours after installing the timing chain cover subassembly.

Bolt Length:

ITEM	LENGTH
Bolt A, E	35 mm (1.38 in.)
Bolt B	55 mm (2.16 in.)
Bolt C	80 mm (3.15 in.)
Bolt D	40 mm (1.57 in.)



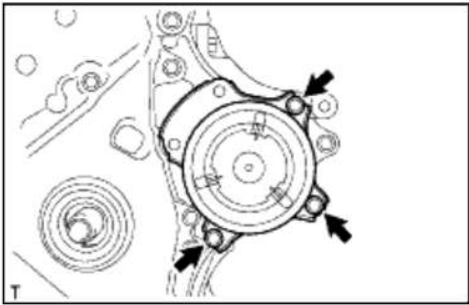
(g) Install a new gasket.

NOTICE:

Remove any oil from the contact surfaces.

(h) Install the water pump with the 3 bolts.

Torque: 24 N·m (245 kgf·cm, 18ft·lbf)



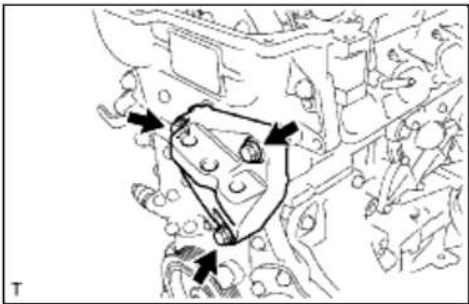
(i) Temporarily install the engine mounting bracket with the 3 bolts.

NOTICE:

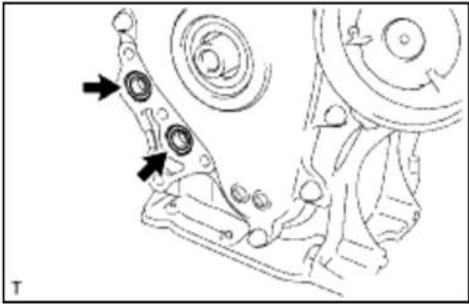
- Install the mounting bracket within 10 minutes after installing the timing chain cover sub-assembly.
- Do not start the engine for at least 2 hours after installation.

Bolt Length:

ITEM	LENGTH
Bolt	80 mm (3.15 in.)



(j) Install 2 new O-rings.

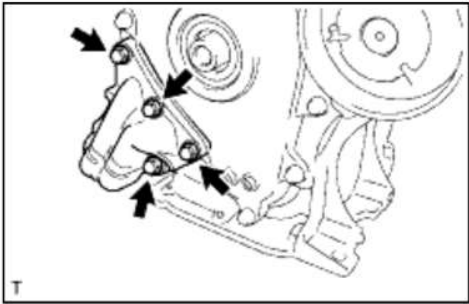


(k) Temporarily install the oil filter bracket with the 4 bolts.

NOTICE:

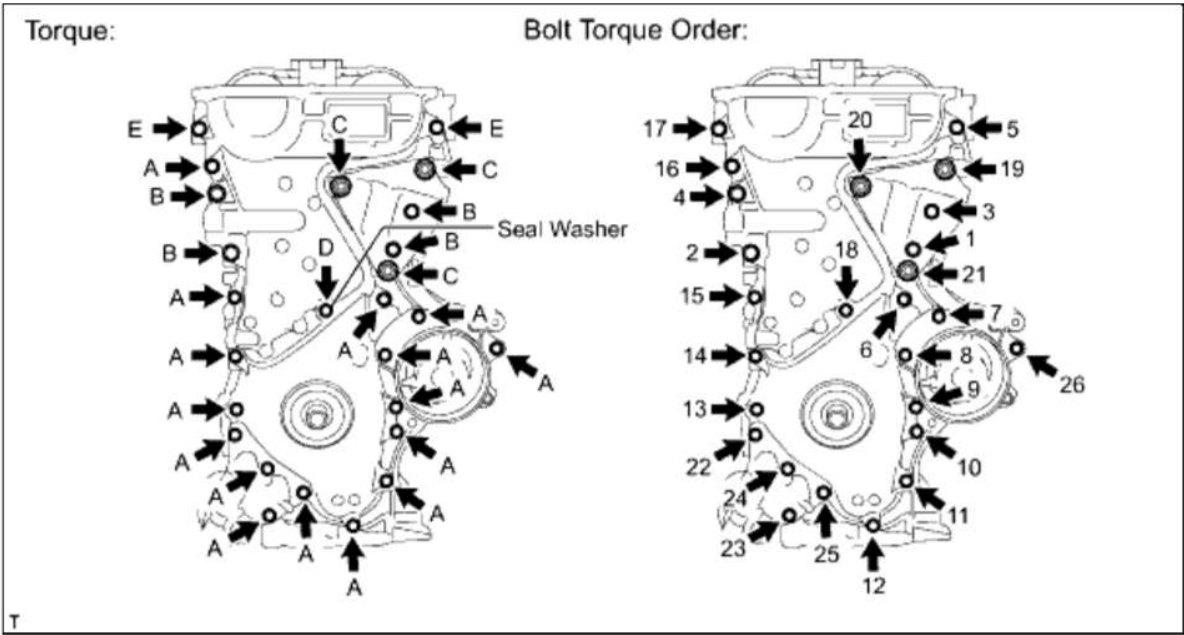
- Install the oil filter bracket within 10 minutes after installing the chain cover.
- Do not start the engine for at least 2 hours after installation.

Bolt Length:



ITEM	LENGTH
Bolt	35 mm (1.38 in.)

(l) Fully tighten the timing chain cover sub-assembly with the 26 bolts as shown in the illustration.



- Bolt A, E - Torque: 26 N·m (260 kgf·cm, 19ft·lbf)**
Bolt B, C - Torque: 51 N·m (520 kgf·cm, 37ft·lbf)
Bolt D - Torque: 10 N·m (102 kgf·cm, 7ft·lbf)

NOTICE:

- When the contact surfaces are wet, wipe them with oil-free cloth before applying seal packing.
- Install the chain cover within 3 minutes and tighten the bolts within 15 minutes after applying the seal packing.
- Do not start the engine for at least 2 hours after installing.

12. INSTALL CRANKSHAFT PULLEY INFO
13. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY INFO
14. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY INFO
15. INSTALL RADIO SETTING CONDENSER INFO
16. INSTALL THERMOSTAT INFO
17. INSTALL INLET WATER INFO
18. INSTALL INLET WATER HOSE INFO
19. INSTALL WATER BY-PASS HOSE INFO

- 20. INSTALL NO. 1 WATER BY-PASS PIPE INFO
- 21. CONNECT NO. 3 WATER BY-PASS HOSE INFO
- 22. INSTALL VENTILATION HOSE INFO
- 23. INSPECT EXHAUST MANIFOLD INFO
- 24. INSTALL EXHAUST MANIFOLD INFO
- 25. INSTALL MANIFOLD STAY INFO
- 26. INSTALL NO. 1 EXHAUST MANIFOLD HEAT INSULATOR INFO
- 27. INSTALL OIL LEVEL DIPSTICK SUB-ASSEMBLY INFO
- 28. INSTALL IGNITION COIL ASSEMBLY INFO
- 29. INSTALL FUEL INJECTOR ASSEMBLY INFO
- 30. INSTALL NO. 1 DELIVERY PIPE SPACER INFO
- 31. INSTALL FUEL DELIVERY PIPE SUB-ASSEMBLY INFO
- 32. INSTALL FUEL TUBE SUB-ASSEMBLY INFO
- 33. INSTALL INTAKE MANIFOLD INFO
- 34. REMOVE ENGINE STAND INFO
- 35. INSTALL ENGINE ASSEMBLY WITH TRANSAXLE

HINT: INFO .



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