

2014 ENGINE

Engine Mechanical (Service Information) (2ZR-FAE) - Corolla

ENGINE

ON-VEHICLE INSPECTION [08/2013 -]

PROCEDURE

1. INSPECT ENGINE COOLANT

Refer to **ON-VEHICLE INSPECTION [08/2013 -]**

2. INSPECT ENGINE OIL

Refer to **ON-VEHICLE INSPECTION [08/2013 -]**

3. INSPECT BATTERY

Refer to **ON-VEHICLE INSPECTION [08/2013 -]**

4. INSPECT AIR CLEANER FILTER ELEMENT SUB-ASSEMBLY

- a. Remove the air cleaner cap with air cleaner hose.

Refer to **PROCEDURE - Step 3**

- b. Remove the air cleaner filter element sub-assembly.
- c. Visually check that the air cleaner filter element sub-assembly is not excessively damaged or oily.

If necessary, replace the air cleaner filter element sub-assembly.

HINT:

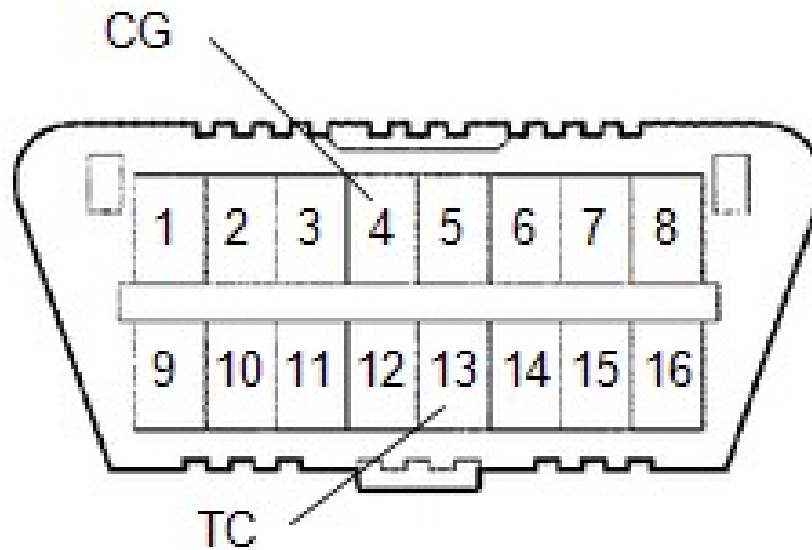
- If there is any foreign matter or clogs in the air cleaner filter element sub-assembly, clean it with compressed air.
 - If any foreign matter or clogs remain even after cleaning the air cleaner filter element sub-assembly with compressed air, replace it.
- d. Install the air cleaner filter element sub-assembly.
 - e. Install the air cleaner cap with air cleaner hose.

Refer to **PROCEDURE - Step 3**

5. INSPECT SPARK PLUG

Refer to **PROCEDURE - Step 3**

*a



A82779

*a

DLC3

- SST: 09843-18040

NOTE:

- Be sure to connect the terminals correctly. Failure to do this can damage the engine.
- Check the ignition timing with the cooling fans off.
- Turn off all electrical systems and the A/C.
- When checking the ignition timing, the transaxle should be in neutral or park.

2. Remove the No. 2 cylinder head cover.

See step 11


3. Connect the clip of the timing light to the wire harness shown in the illustration.

NOTE:

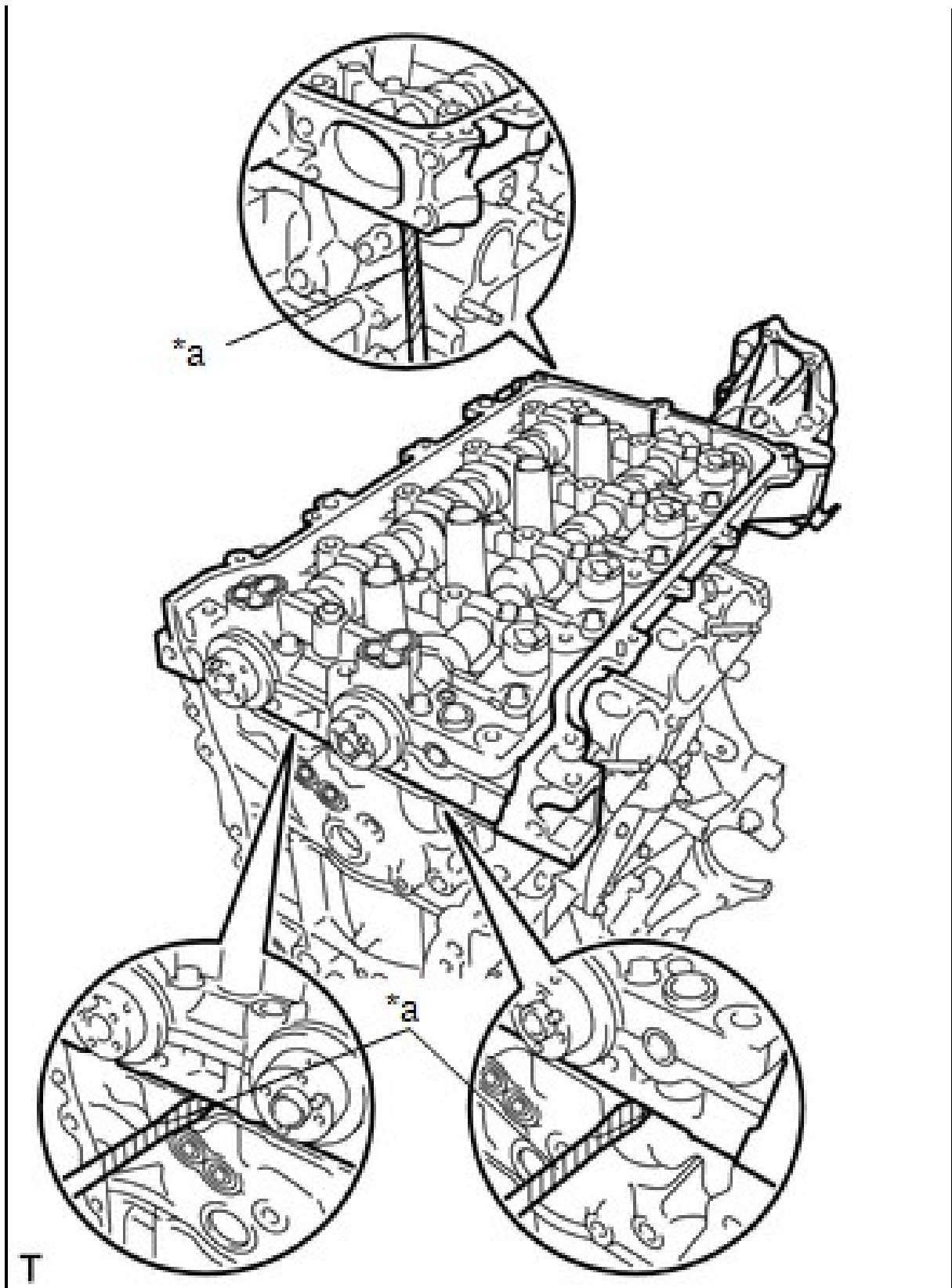
Use a timing light that detects the primary signal.

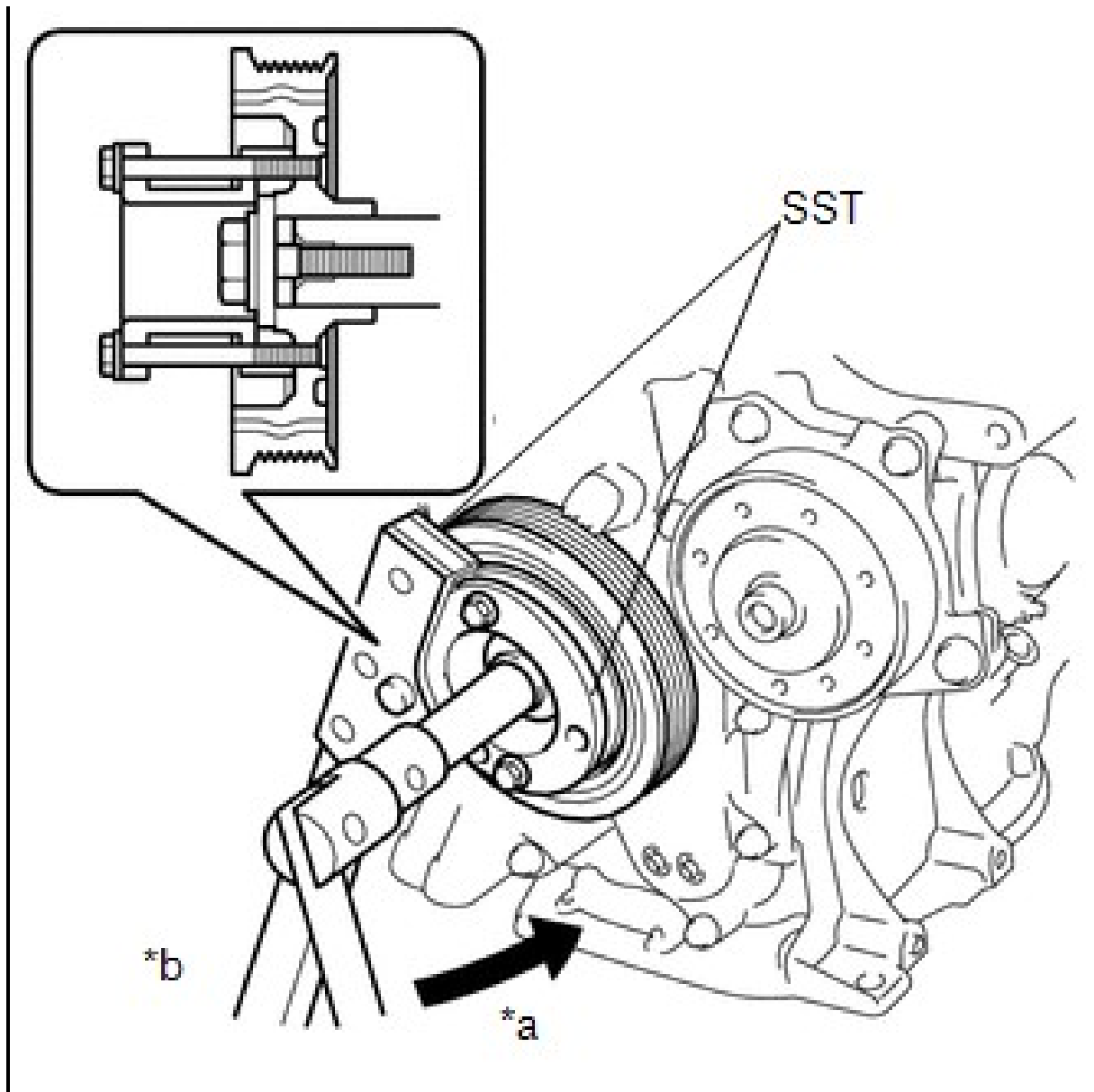
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*1	LEVEL DIPSTICK GUIDE	*2	IGNITION COIL ASSEMBLY
*3	NO. 1 VACUUM PUMP BRACKET	*4	NO. 3 WATER BY-PASS HOSE
*5	WATER INLET HOSE	*6	ENGINE OIL LEVEL DIPSTICK
*7	GASKET	*8	O-RING
		<p>N*m (kgf*cm, ft.*lbf): Specified torque</p> <ul style="list-style-type: none"> • Non-reusable part 	

ILLUSTRATION





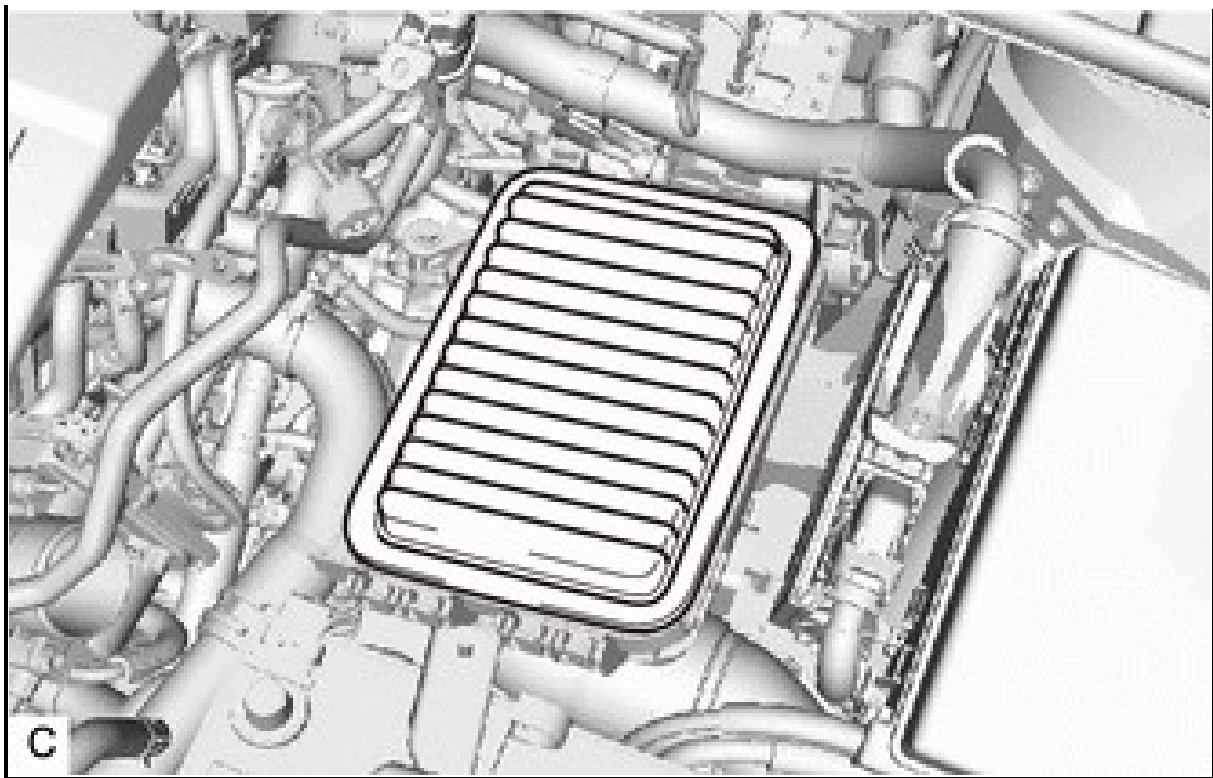
*a	Turn
*b	Hold

- SST: 09213-5401509330-00021

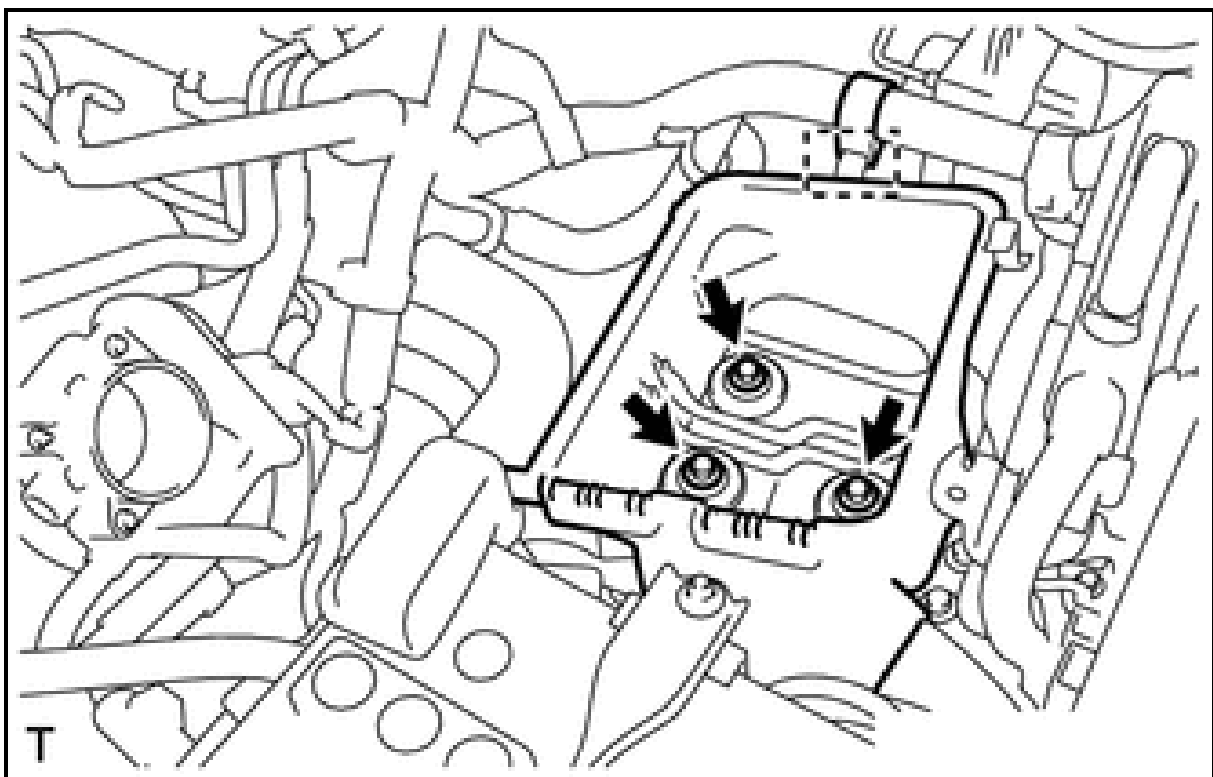
HINT:

For the 64 mm (2.52 in.) bolt pitch type, the part number of the installation bolt for SST (crankshaft pulley holding tool) is 91551-00850 (quantity: 2).

- b. Using SST, remove the crankshaft pulley and crankshaft pulley set bolt.



- b. Disconnect the wire harness clamp from the air cleaner case sub-assembly.



- a. Install the engine under cover LH with the 2 bolts, 2 screws and 3 clips.

59. INSTALL FRONT WHEELS

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

60. INSPECT IGNITION TIMING

See step 8

61. INSPECT ENGINE IDLE SPEED

See step 9

62. INSPECT CO/HC

See step 11

63. ADJUST FRONT WHEEL ALIGNMENT

Refer to **ADJUSTMENT [08/2013 - 04/2014]**

64. INSTALL NO. 2 CYLINDER HEAD COVER

- a. Engage the 2 front clips, then the 2 rear clips to install the No. 2 cylinder head cover.

NOTE:

- Be sure to engage the clips securely.
- Do not apply excessive force or tap the No. 2 cylinder head cover to engage the clips. This may cause the No. 2 cylinder head cover to break.

65. CHECK FOR SPEED SENSOR SIGNAL

Refer to **TEST MODE PROCEDURE [08/2013 -]**

INSTALLATION [04/2014 -]**CAUTION / NOTICE / HINT**

WARNING: The engine assembly with transaxle is very heavy. Be sure to follow the procedure described in the repair information, or the engine lifter may suddenly drop.

PROCEDURE**1. INSTALL ENGINE HANGER**

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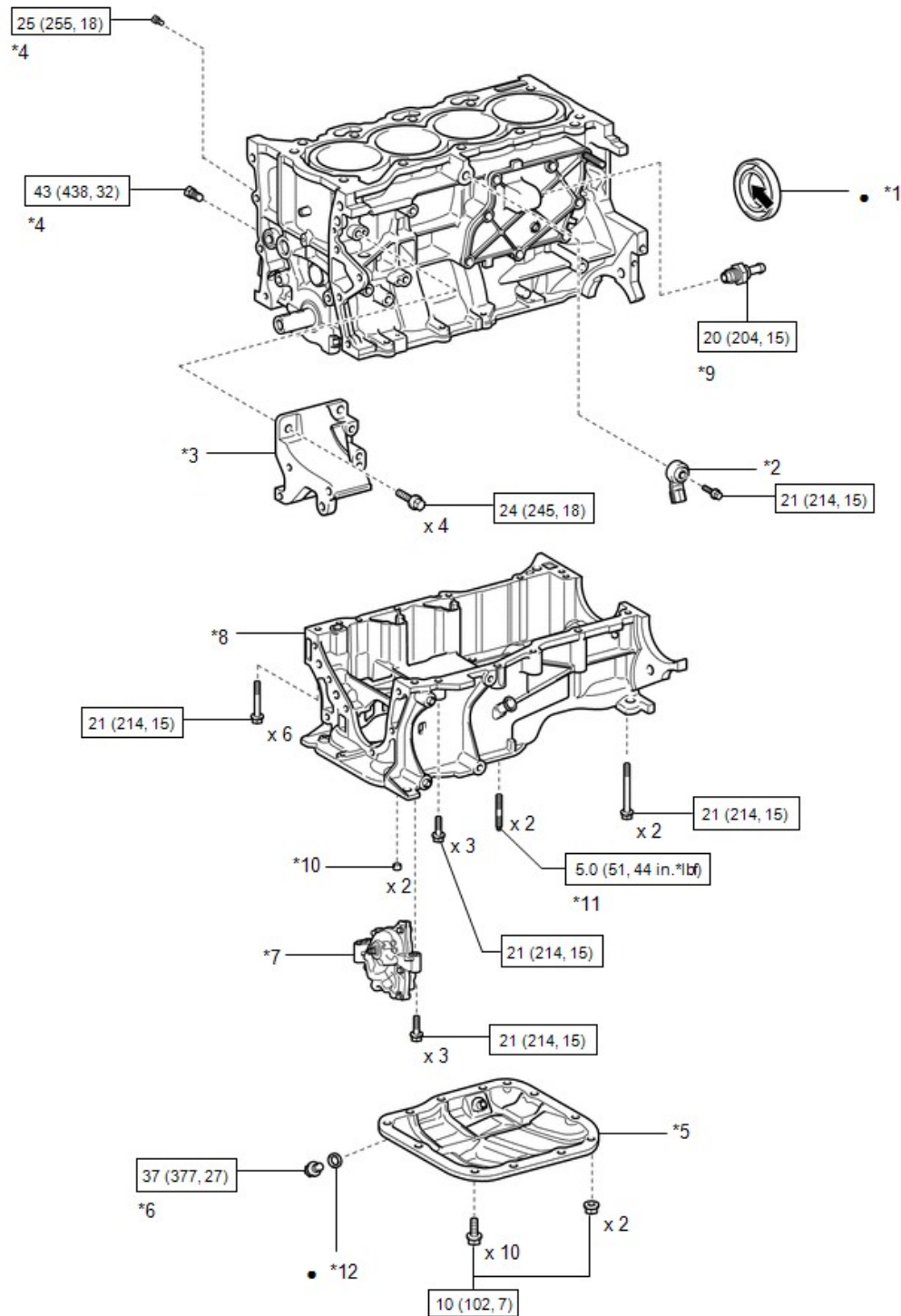
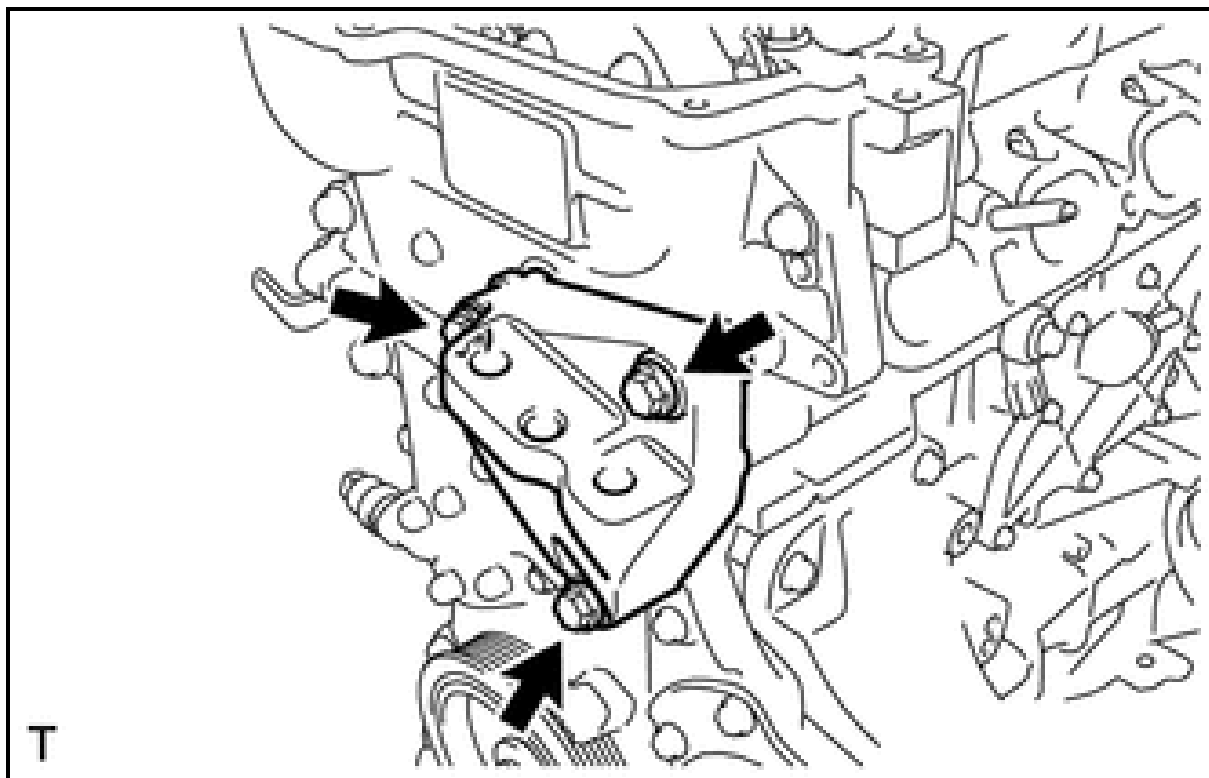
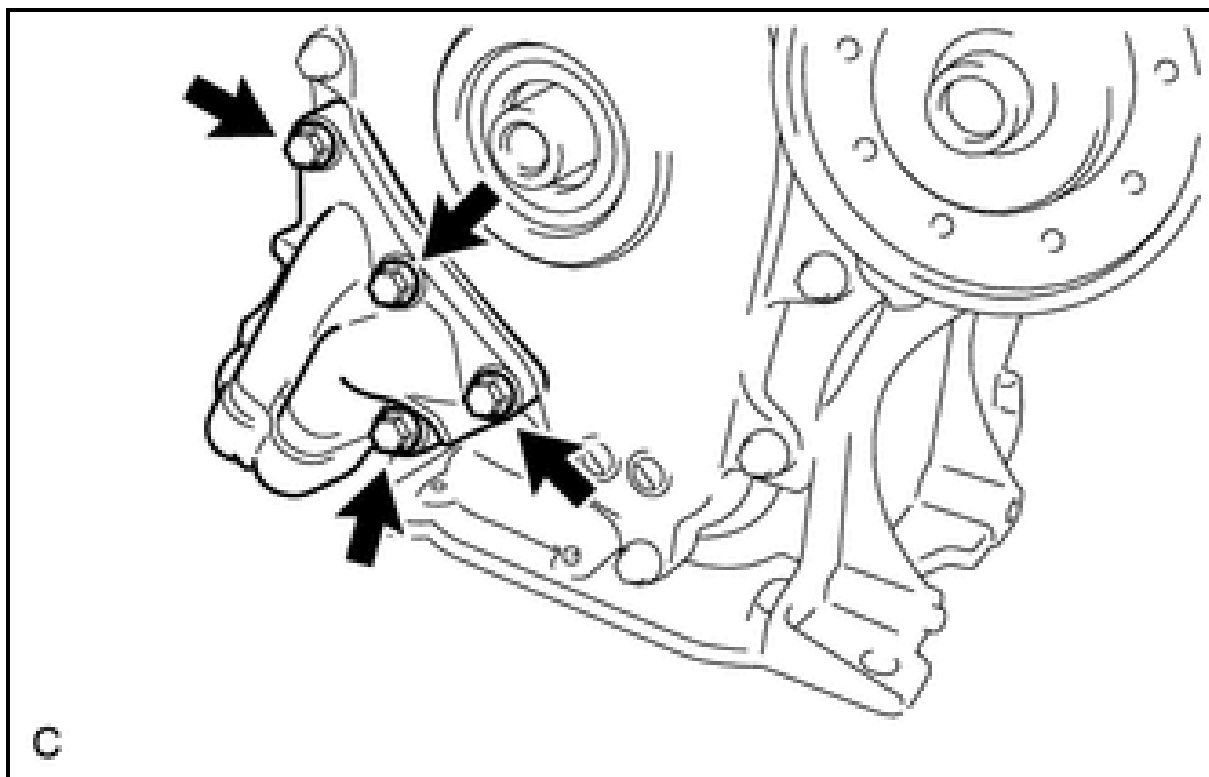
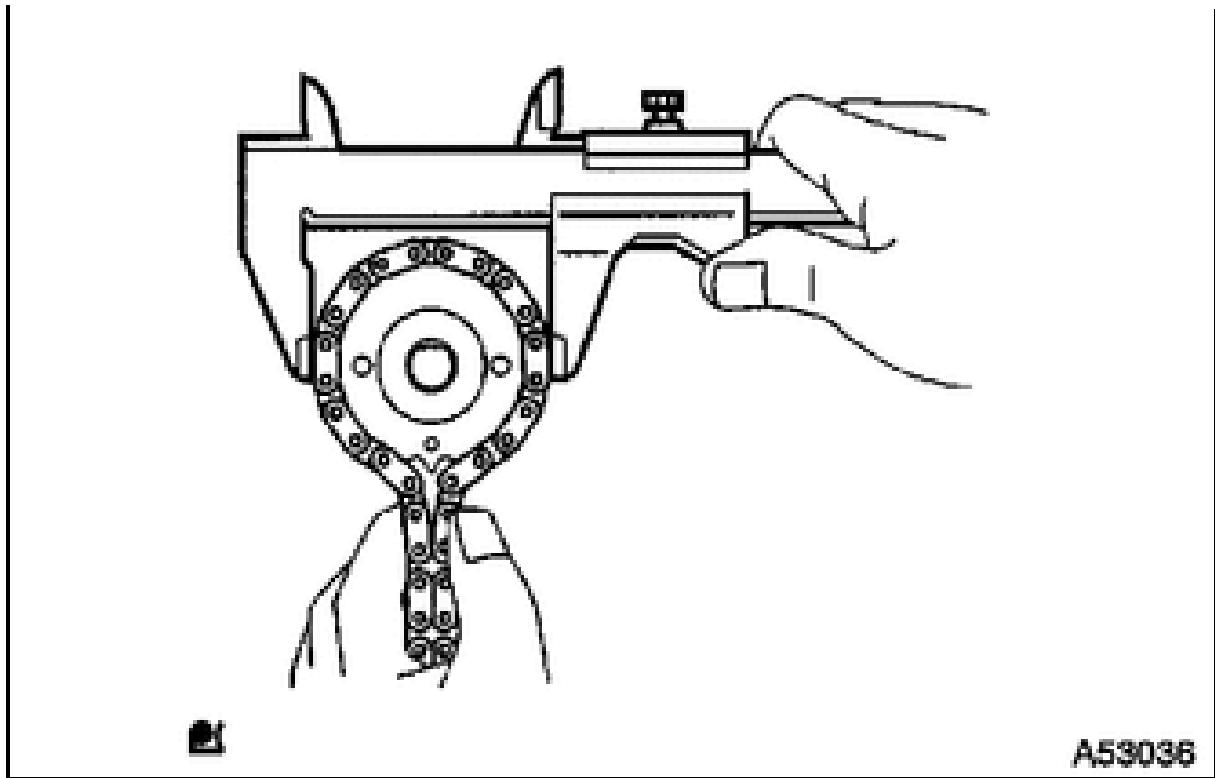


Fig. 26: Engine Unit Replacement Components With Torque Specifications (8 Of 8)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



- b. Remove the 4 bolts and oil filter bracket.





- b. Using a vernier caliper, measure the diameter of the oil pump drive shaft gear and No. 2 chain sub-assembly.

Minimum Gear Diameter (with Chain)

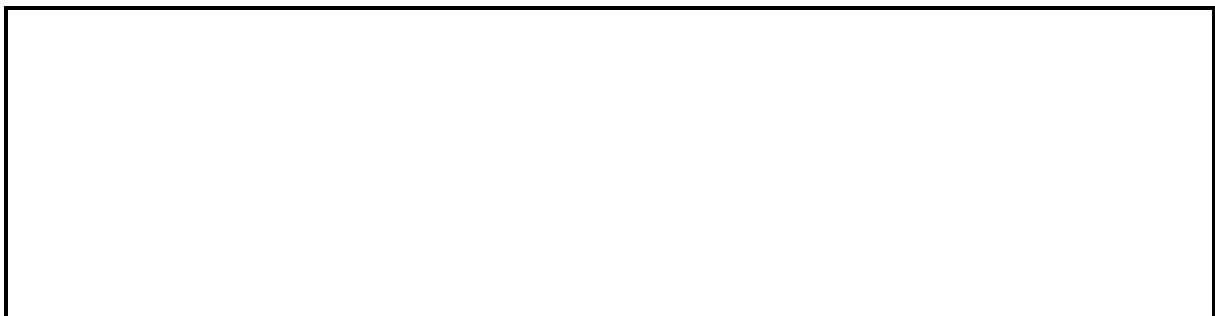
48.2 mm (1.90 in.)

NOTE: The vernier caliper must be in contact with the chain rollers when measuring.

If the diameter is less than the minimum, replace the No. 2 chain sub-assembly and oil pump drive shaft gear.

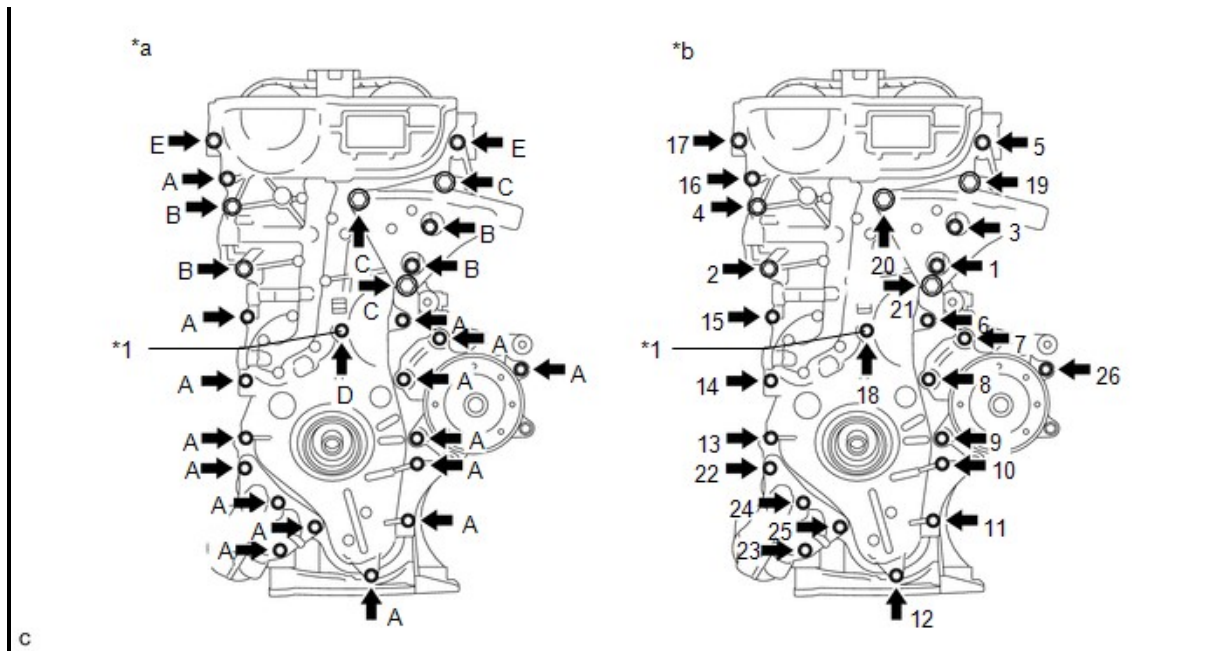
5. INSPECT CAMSHAFT TIMING GEAR ASSEMBLY

- a. Place the chain sub-assembly around the camshaft timing gear assembly.



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*a	Torque	*b	Bolt Tightening Order
*1	Seal Washer	-	-

Bolt A, E

Torque: 25.5 N*m (260 kgf*cm, 19 ft.*lbf)

Bolt B

Torque: 51 N*m (520 kgf*cm, 38 ft.*lbf)

Bolt C

Torque: 51 N*m (520 kgf*cm, 38 ft.*lbf)

Bolt D

Torque: 10 N*m (102 kgf*cm, 7 ft.*lbf)

NOTE:

- If there is oil on the contact surfaces, 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 10 minutes of applying seal packing.
- Do not add engine oil for at least 2 hours after installation.

Bolt Length

23. SET NO. 1 CYLINDER TO TDC/COMPRESSION

See step 7

24. INSTALL CHAIN SUB-ASSEMBLY

See step 8

25. CHECK NO. 1 CYLINDER TO TDC/COMPRESSION

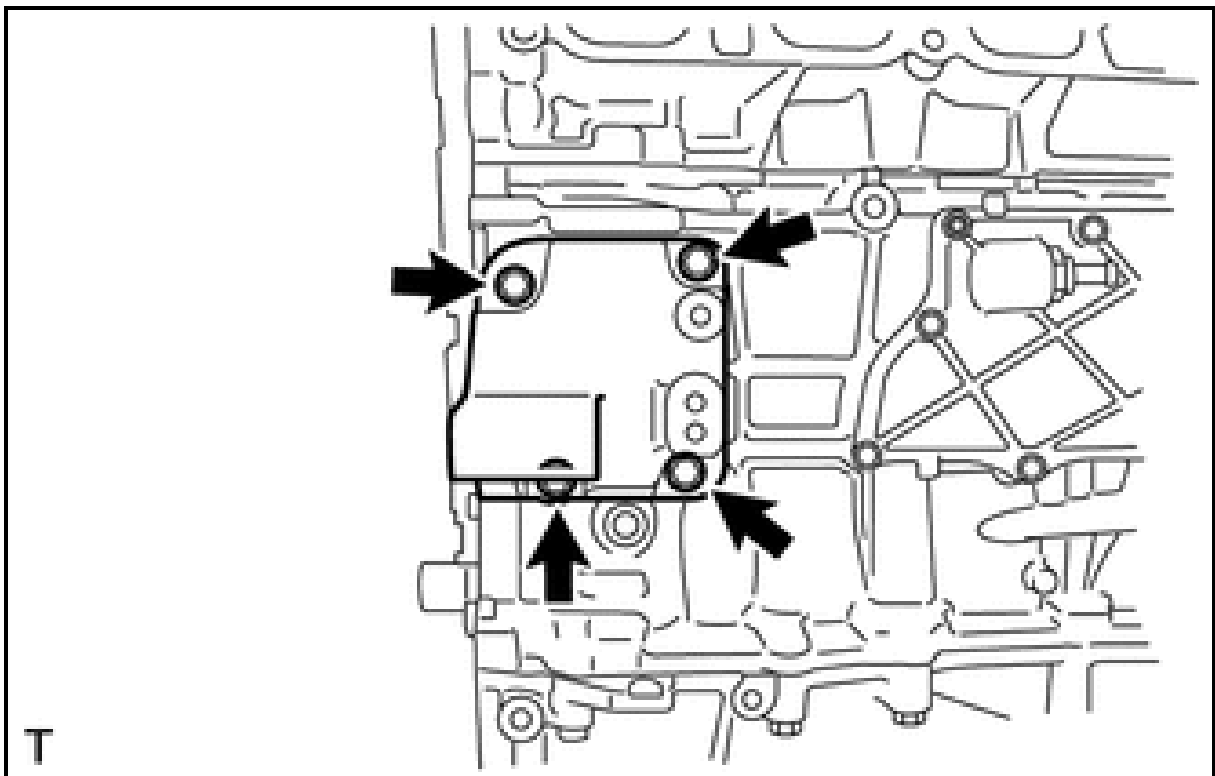
See step 10

26. INSTALL CHAIN TENSIONER SLIPPER

See step 9

27. INSTALL NO. 1 GENERATOR BRACKET

- a. Install the No. 1 generator bracket with the 4 bolts.



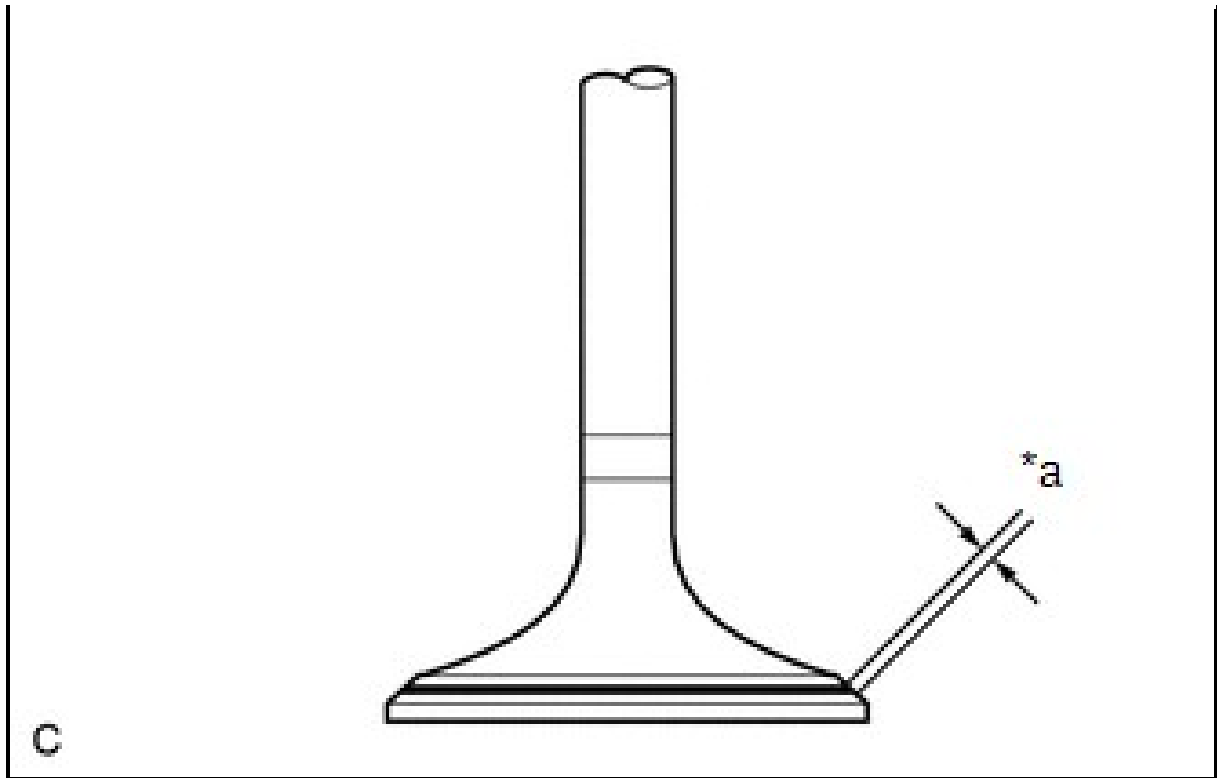
Torque: 24 N*m (245 kgf*cm, 18 ft.*lbf)

28. INSTALL WATER INLET HOUSING

- a. Install a new gasket and the water inlet housing with the 3 bolts.

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*a	Width
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- b. Lightly press the valve face against the valve seat.

HINT:

Do not rotate the valve while pressing the valve.

- c. Check the valve face and valve seat.

1. Intake Side:

Check that the contact surfaces of the valve seat and valve face are in the middle area of their respective surfaces, with the width between 1.0 and 1.4 mm (0.0433 and 0.0551 in.).

If not, resurface the valve seat.

2. Exhaust Side:

Check that the contact surfaces of the valve seat and valve face are in the middle area of their respective surfaces, with the width between 1.0 and 1.4 mm (0.0433 and 0.0551 in.).

If not, resurface the valve seat.

3. Check that the contact surfaces of the valve seat and valve face are even around the entire

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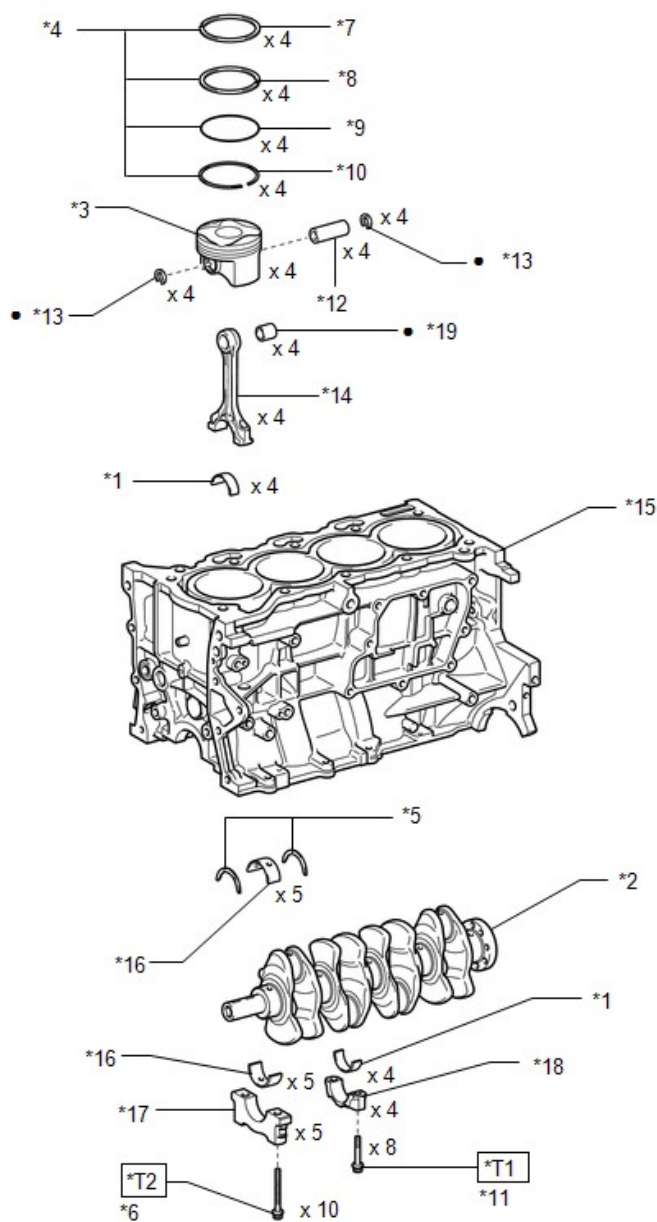
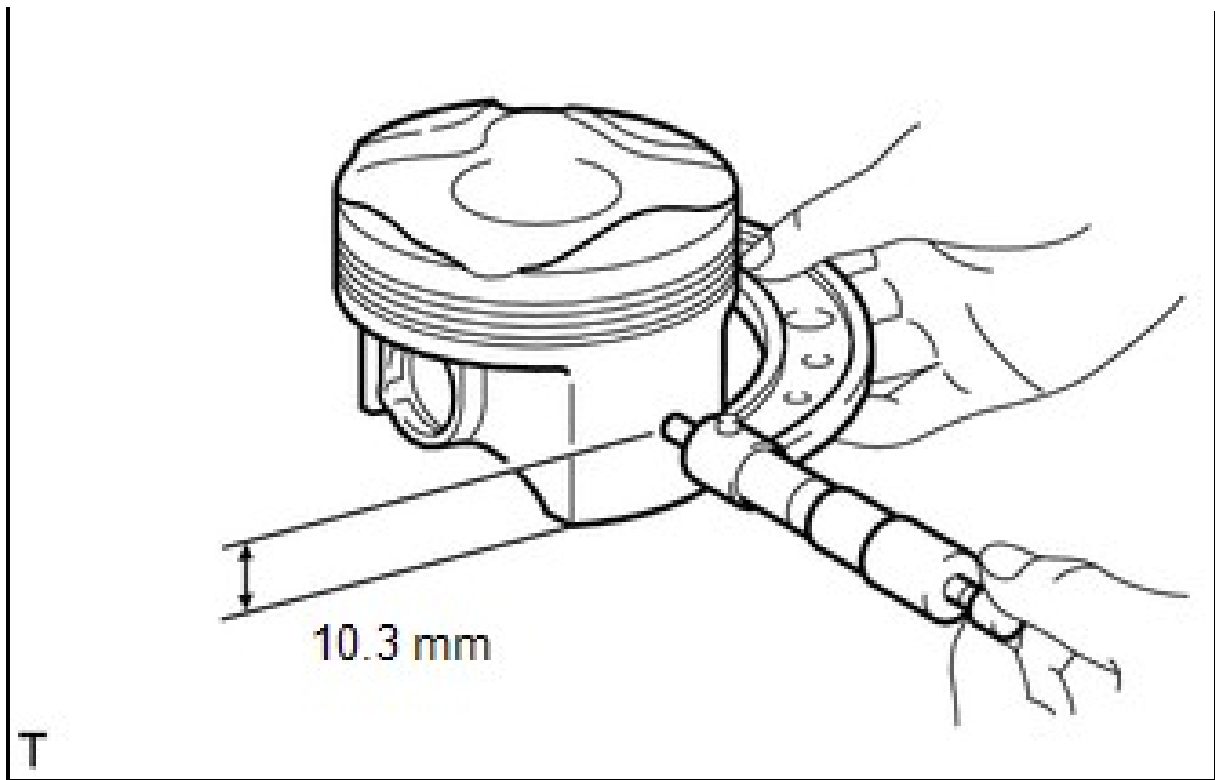


Fig. 29: Cylinder Block Replacement Components With Torque Specifications (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

*1	CONNECTING ROD BEARING	*2	CRANKSHAFT
*3	PISTON	*4	PISTON RING SET
*5	UPPER CRANKSHAFT THRUST WASHER	*6	CRANKSHAFT BEARING CAP SET BOLT
	NO. 1		NO. 2



Reference Piston Diameter (New Parts)

80.476 to 80.496 mm (3.168 to 3.169 in.)

If the diameter is not as specified, replace the piston and piston pin.

4. INSPECT PISTON OIL CLEARANCE

- Subtract the piston diameter measurement from the cylinder bore diameter measurement.

Reference Oil Clearance (New Parts)

0.004 to 0.037 mm (0.000157 to 0.00169 in.)

Maximum Oil Clearance

0.08 mm (0.00315 in.)

If the piston oil clearance is more than the maximum, replace all the pistons with piston pins. If necessary, replace the cylinder block sub-assembly.

5. INSPECT RING GROOVE CLEARANCE

- Using a feeler gauge, measure the clearance between a new piston ring and the wall of the ring groove.