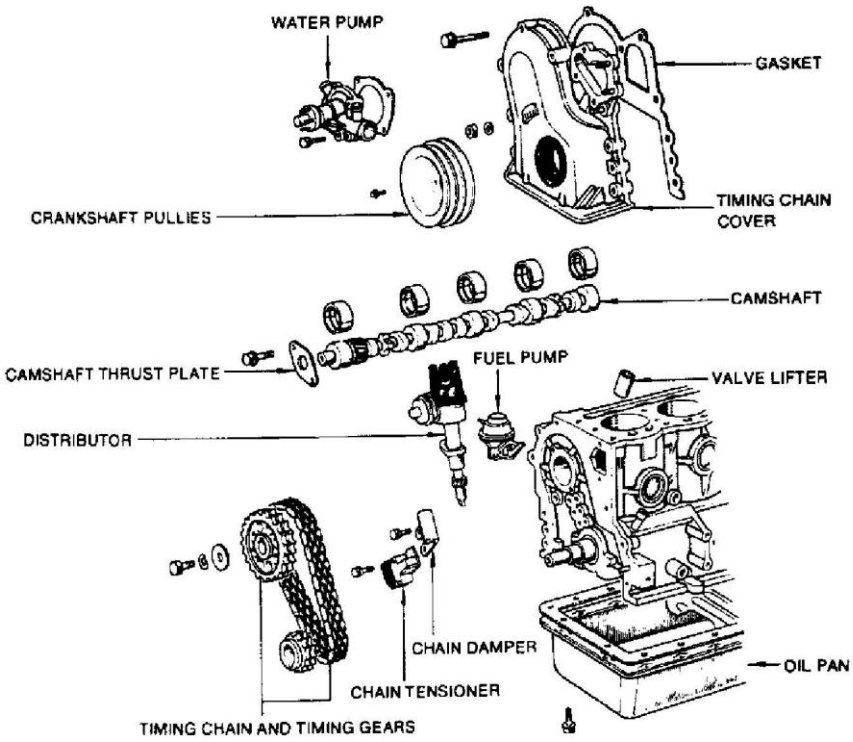
1982 Toyota Corolla RWD L4-1.8L (3TC)

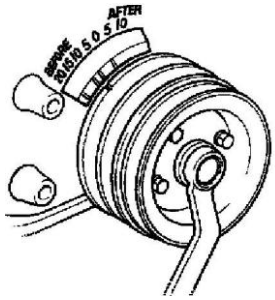
Timing Chain: Service and Repair



Front cover and related components - T-series engines

REMOVAL OF TIMING CHAIN

1. REMOVE CYLINDER HEAD 2. REMOVE DISTRIBUTOR



(a) Set No.1 cylinder to TDC/compression.
(b) Remove the distributor from the cylinder block with the cap.

3. REMOVE FUEL PUMP
4. REMOVE VALVE LIFTERS
   Arrange the valve lifters in order.
5. REMOVE AIR PUMP (WITHOUT AIR CONDITIONING)

(a) Disconnect the air lines from the air pump.
(b) Remove the adjuster bracket by removing three bolts. (c) Remove the drive belt and crankshaft No.2 pulley.

6. REMOVE AIR COMPRESSOR BRACKET AND CRANKSHAFT NO.2 PULLEY (WITH AIR CONDITIONING) 7. REMOVE ALTERNATOR ADJUSTER

Remove the bolt holding the alternator adjuster bracket to the chain cover. Move the bracket toward the alternator.

8. REMOVE WATER PUMP 9. REMOVE CRANKSHAFT PULLEY

(a) Remove the pulley center bolt.
(b) Using a puller*, remove the pulley.
*SST 09213-31021 or Commercial puller

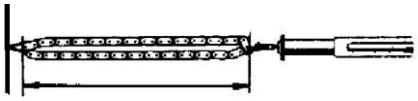
10. REMOVE OIL PAN
11. REMOVE TIMING CHAIN COVER
(a) Remove timing chain cover bolts.
(b) Using a plastic-faced hammer, loosen the timing chain cover and remove it.
12. REMOVE CHAIN DAMPER AND CHAIN TENSIONER
13. REMOVE TIMING CHAIN AND TIMING GEARS

Remove both gears by pulling them out uniformly.

14. REMOVE CAMSHAFT
(a) Remove camshaft thrust plate.
(b) While turning the camshaft, slowly pull out so as not to damage the camshaft bearing.

INSPECTION OF COMPONENTS

1. MEASURE CHAIN AND SPROCKET WEAR

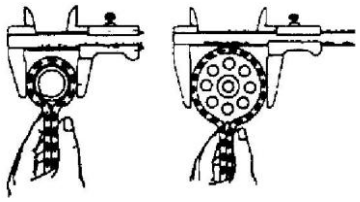


Measuring the timing chain stretch with a spring scale

(a) Using a vernier caliper, measure the elongation of the timing chain. If over the limit at any one place, replace the chain.

Chain elongation limit tension at 5 kg (11 lb): 291.4 mm (11.472 in.)

(b) Wrap the chain around the sprocket.



Measure the outer sides of the chain rollers with a vernier caliper

(c) Using a vernier caliper, measure the outer sides of the chain rollers as shown. Measure both sprockets. If the measurement is less than the minimum, replace the chain and two sprockets.

Crankshaft sprocket minimum: 59.4 mm (2.339 in.)
Camshaft sprocket minimum: 113.8 mm (4.480 in.)

2. CHECK CHAIN TENSIONER
(a) Inspect chain tensioner for wear.
(b) Using a vernier caliper, measure the tensioner as shown.
If the tensioner is worn or less than the minimum, replace the chain tensioner.

Tensioner minimum: 12.5 mm (0.492 in.)

3. CHECK CHAIN DAMPER
   (a) Check chain dampers for wear.
   (b) Using a vernier caliper, measure the damper.

   Damper minimum: 5 mm (0.20 in.)

4. CHECK VALVE LIFTER
   (a) Check valve lifter for wear or damage.
   (b) Using a micrometer, measure the diameter of the valve lifter.
   (c) Using a dial indicator, measure the valve lifter bores.
   (d) Subtract the valve lifter diameter measurement from the valve lifter bore measurement.

Size	Outside Diameter mm (in.)
O/S 0.05	22.229–22.249 (0.8752–0.8759)

   If the clearance is greater than the following value, replace the valve lifter.

   Maximum oil clearance: 0.1 mm (0.004 in.)

5. MEASURE CAM THRUST CLEARANCE
   (a) Install thrust plate and timing gear to the camshaft. Tighten the camshaft timing gear set bolt.

   Torque: 7.0 - 11.0 kg-m (51 - 79 ft-lb)

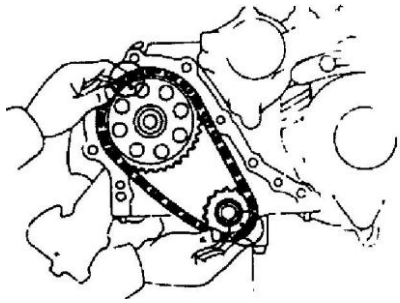
6. CHECK CAMSHAFT AND BEARINGS
7. INSPECT CRANKSHAFT FRONT OIL SEAL
   If the lip of the oil seal is worn, damaged or cracked, replace the seal as follows:
   (a) Using a screwdriver, remove the oil seal.
   (b) Using an oil seal replacer*, install a new oil seal.
   *SST 09223-22010 or Commercial tool
   (c) Coat the seal lightly with multipurpose grease.

INSTALLATION OF TIMING CHAIN

1. INSTALL CAMSHAFT

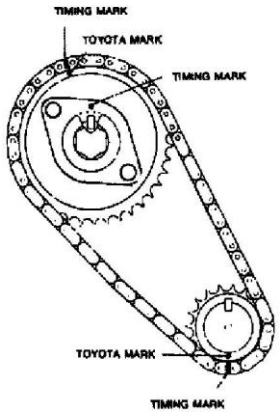
   NOTE: Coat all bearing journals with engine oil.

2. INSTALL CAMSHAFT THRUST PLATE
   (a) Place the camshaft thrust plate with the marked side outward.
   (b) Align the camshaft key with the thrust plate mark. (c) Face the crankshaft key straight up.



Aligning the marks on the sprockets with the bright links on the chain

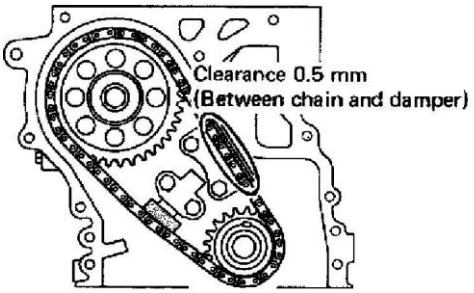
3. ALIGN CHAIN AND GEAR TIMING MARKS



Align the timing marks with the chain and sprocket - T-series engines

4. INSTALL CHAIN AND GEARS
   (a) Install the chain and gears together.
   (b) Torque the camshaft timing gear set bolt.

   Torque: 7.0 - 11.0 kg-m (51 - 79 ft-lb)
5. INSTALL CHAIN TENSIONER
   Before installing, insert oil into the chain tensioner cylinder.
6. INSTALL CHAIN DAMPER



   Install the chain damper parallel with the chain with a 0.5 mm (0.020 in.) space between.

7. INSTALL TIMING CHAIN COVER
   Remove the old cover gaskets. Clean the gasket surface. Install new gaskets over the dowels.
8. INSTALL OIL PAN
   (a) Apply sealer to the new oil pan gasket as shown.
   (b) Install the oil pan over the studs on the block with seventeen bolts and two nuts. Torque the nuts and bolts. Torque: 0.5 - 0.8

   kg-m (44 - 69 in.-lb)

9. INSTALL CRANKSHAFT PULLEY
   (a) Using a driver*, drive in the crankshaft pulley.
   *SST 09214-60010 or Commercial driver (b) Torque
   the crankshaft pulley center bolt.

   Torque: 7.5 - 10.5 kg-m (55 - 75 ft-lb)

10. INSTALL WATER PUMP
11. INSTALL AIR PUMP (WITHOUT AIR CONDITIONING)
   (a) Install the adjuster bracket with three bolts.
   (b) Install the crankshaft No.2 pulley and drive belt.
   (c) Connect the air lines to the air pump.
   (d) Adjust the drive belt

12. INSTALL AIR COMPRESSOR BRACKET AND CRANKSHAFT NO.2 PULLEY (WITH AIR CONDITIONING)
13. INSTALL BOLT HOLDING ALTERNATOR ADJUSTER BRACKET TO CHAIN COVER
14. INSTALL VALVE LIFTERS

    NOTE: Coat all valve lifters with engine oil.
15. INSTALL FUEL PUMP
16. INSTALL DISTRIBUTOR AND SET TIMING
17. INSTALL CYLINDER HEAD