

MODEL: CAMRY 2002-2005. **SERIES:** ACV36
ENGINE: 2AZ-FE; 2.4L

REMOVAL

INTERFERENCE ENGINE. *In the event of timing chain failure, it is probable that valve to piston damage has occurred. A compression test should be carried out on all cylinders before removing the cylinder head.*

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| <ol style="list-style-type: none"> 1. Remove: <ul style="list-style-type: none"> - hood, - right front wheel, - engine under covers, - front fender apron seal. 2. Drain engine oil. 3. Remove: <ul style="list-style-type: none"> - front exhaust pipe, - engine moving control rod with bracket, - right side engine mounting stay No.2 and bracket, - fan and generator V-belt, - engine cover sub-assy No.1, 4. Disconnect engine wire. 5. Remove: | <ul style="list-style-type: none"> - alternator, - vane pump with hoses attached, - ignition coil assy. <ol style="list-style-type: none"> 6. Disconnect ventilation hoses. 7. Remove cylinder head cover. 8. Set No.1 cylinder to TDC on its compression stroke. <ul style="list-style-type: none"> - Rotate crankshaft pulley to align its groove with timing mark "O" of timing chain cover. - Check that timing marks of camshaft sprockets aligned with timing marks of No.1 bearing caps. (Refer to illustration). 9. Remove crankshaft pulley. 10. Remove crank position sensor. 11. Remove oil pan. 12. Remove chain tensioner assembly No.1. 13. Remove V-ribbed belt tensioner. 14. Remove engine mount insulator and bracket. | <ol style="list-style-type: none"> 12. Remove timing chain cover. 13. Remove: <ul style="list-style-type: none"> - crankshaft position sensor plate No.1, - chain tensioner slipper, - chain vibration damper No.1, - timing chain No.1. 14. Remove timing chain No.2. <ul style="list-style-type: none"> - Rotate the crankshaft anti-clockwise 90° to align an adjusting hole of oil pump drive shaft gear with the groove of the oil pump. - Insert a screwdriver into the adjusting hole of the oil pump drive shaft gear to lock the position. Then remove the nut. - Remove bolt, chain tensioner plate and spring. - Remove chain tensioner, oil pump drive shaft gear and No.2 timing chain. |
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INSTALLATION

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| <ol style="list-style-type: none"> 1. Install timing chain No.2. <ul style="list-style-type: none"> - Set crankshaft key to 9 o'clock position. - Rotate the cutout of the drive shaft to the top. - Align yellow links on the chain with timing marks of the gear. - Insert the gears with chain to crankshaft and oil pump shaft. - Tighten oil pump drive shaft gear finger tight. - Insert damper spring into adjusting hole and install chain tensioner plate. - Align adjusting hole of oil pump drive shaft gear with the groove of oil pump, then insert a screw driver into the hole to lock the position. Tighten nut to specification. - Rotate crankshaft anti-clockwise 90°, and align crankshaft key to the | <ol style="list-style-type: none"> 2. Install vibration damper No.1. 3. Install timing chain No.1. <ul style="list-style-type: none"> - Align camshaft sprocket timing marks with the marks on bearing caps. - Rotate crankshaft pulley bolt to set key at 12 o'clock position. <p>Note: <i>At this stage No.1 cylinder is at TDC compression.</i></p> <ul style="list-style-type: none"> - Align the mark link of the chain (blue or orange link) with the timing mark of crankshaft sprocket gear. - Install crankshaft sprocket with the aid of SST. - Align mark links (gold or yellow links) with the timing marks of camshaft sprocket gears. Then install the chain. <ol style="list-style-type: none"> 4. Install chain tensioner slipper. 5. Install crankshaft position sensor | <ol style="list-style-type: none"> 6. Install: <ul style="list-style-type: none"> - timing chain gear cover, - V-ribbed belt tensioner., - V-ribbed belt tensioner, - engine mounting bracket and insulator, - oil pan, - chain tensioner No.1, - crank position sensor. 7. Install crankshaft pulley. Rotate crankshaft pulley anti-clockwise and disconnect plunger knock pin. Then rotate crankshaft clockwise and check that slipper is pushed by the plunger. 8. Install transverse engine mounting insulator. 9. Install the remainder of the components in reverse order of removal. |
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SPECIAL SERVICE TOOLS (SST)

Crankshaft pulley remover:
 09213-54015 (91651-60855), 09330-00021
 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)
 Oil pan remover: 09032-00100
 Crankshaft sprocket installer: 09309-37010

RECOMMENDED REPAIR TIME

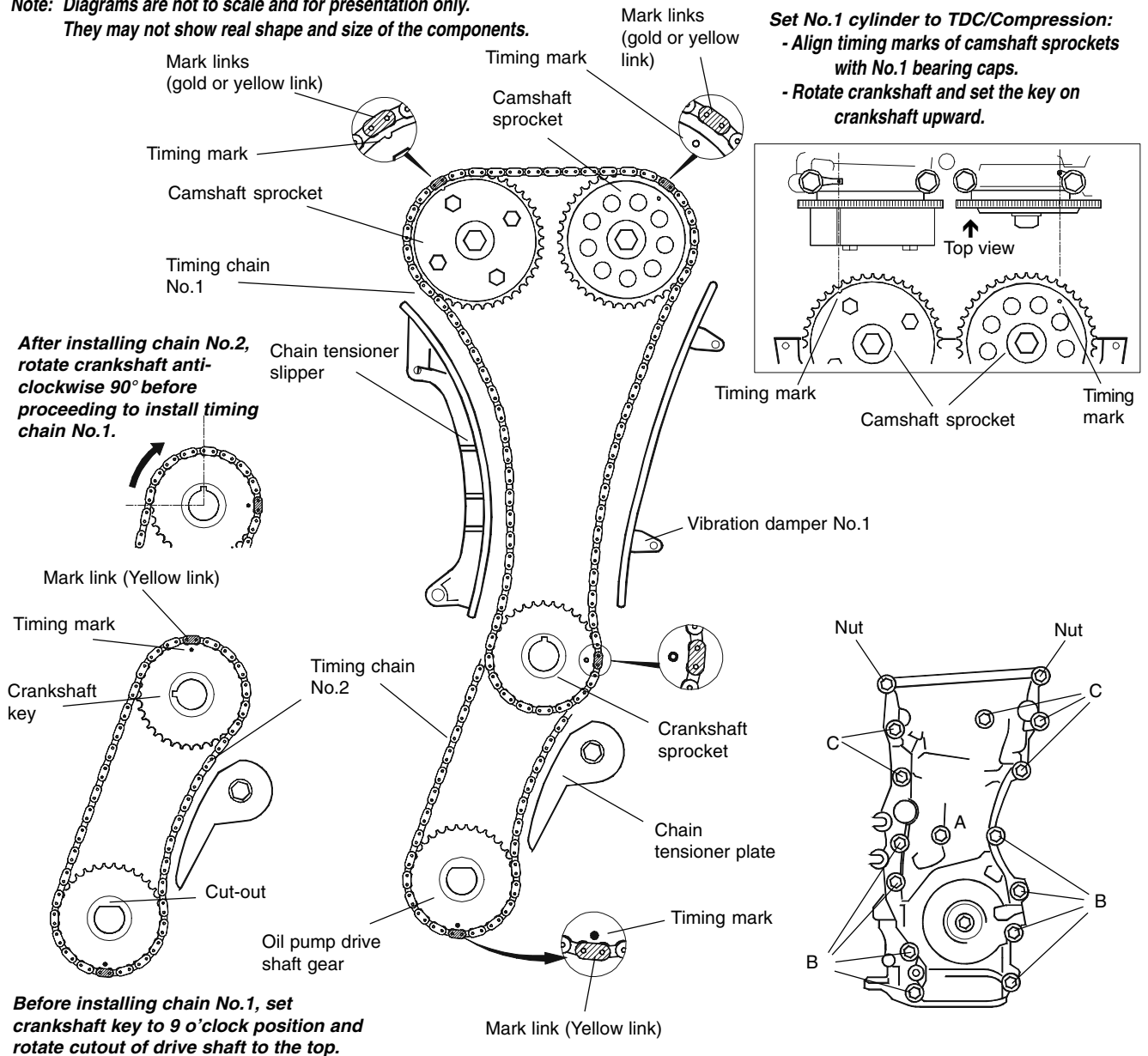
5.85 hours
 *May not include time to remove/install associated component(s).

TIGHTENING TORQUE

Chain tensioner plate nut: 12Nm
 Oil pump drive gear nut: 30Nm
 Timing chain guide bolt: 9Nm
 Chain vibration damper: 9Nm
 Chain tensioner slipper: 19Nm
 Timing chain cover bolts
 Bolts A: 9Nm, Bolts B: 21Nm, Bolts C: 43Nm, Nut: 9Nm
 Crankshaft pulley bolt: 170Nm

Note: Diagrams are not to scale and for presentation only. They may not show real shape and size of the components.

Set No.1 cylinder to TDC/Compression:
 - Align timing marks of camshaft sprockets with No.1 bearing caps.
 - Rotate crankshaft and set the key on crankshaft upward.



After installing chain No.2, rotate crankshaft anti-clockwise 90° before proceeding to install timing chain No.1.

Before installing chain No.1, set crankshaft key to 9 o'clock position and rotate cutout of drive shaft to the top.

AUXILIARY DRIVE BELTS

BELT	DEFLECTION (mm) under 10kg (98N) load		SIZE (WxL)(mm)
	NEW	USED	
NAM	NAM	NAM	NAM

#1. Number of ribs. Poly ribs drive belt.

- AC**- Air conditioning pulley
- ALT** - Alternator pulley
- CS** - Crankshaft pulley
- IP** - Idler pulley
- PS** - Power steering pulley
- TP** - Tensioner pulley
- WP** - Water pump pulley

