

## REMOVAL & INSTALLATION

### TIMING BELT

**CAUTION: This application is an interference engine. Do not rotate camshaft or crankshaft when timing belt is removed, or engine damage may occur.**

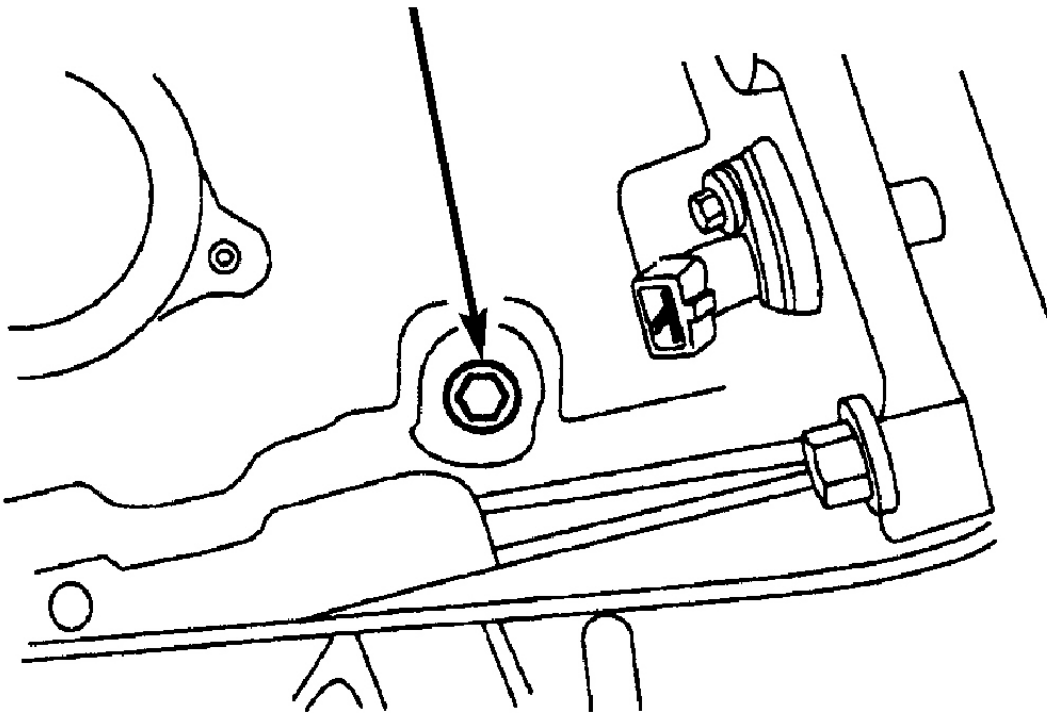
#### Removal

1. Disconnect negative battery cable. Remove spark plugs. Raise and support vehicle. Remove catalytic converter. Remove splash shield. Rotate crankshaft to TDC of No. 1 cylinder. Install TDC Timing Peg (T97P-6000-A) in hole at lower right of block. See **Fig. 1** . Rotate crankshaft clockwise against timing peg. See **Fig. 2** . Lower vehicle.
2. Drain cooling system. Loosen water pump pulley bolts. Remove accessory drive belt. Remove drive belt idler pulley from generator mounting bracket. Remove bolts and position A/C compressor out of the way. Remove water pump pulley.
3. . Disconnect wiring connector at Variable Camshaft Timing (VCT) solenoid. Disconnect crankcase ventilation hose from fitting on valve cover. Position accelerator and speed control cables aside. Disconnect spark plug wires from spark plug wire brackets on valve covers. Remove bolt, nut and front support isolator damper. Remove upper timing belt cover. Remove valve cover bolts in a diagonal pattern working inward. Remove valve cover and gasket.
4. Raise and support vehicle. Remove center timing belt cover. Remove crankshaft pulley. Remove lower timing belt cover. Use Camshaft Alignment Timing Tool (T94P-6256-CH) to align camshafts. Install tool in slots on camshafts at rear of engine. See **Fig. 3** .
5. Loosen timing belt tensioning pulley bolt. Disconnect tensioner tab from timing cover back plate to relieve tension on timing belt. If reusing timing belt, mark direction of rotation before removal. Remove timing belt.

**CAUTION: Do not use camshaft alignment tool to hold camshafts in place when removing or installing camshaft sprocket bolts, or damage to camshaft ears may result. Use open-end wrench to keep camshaft from rotating.**

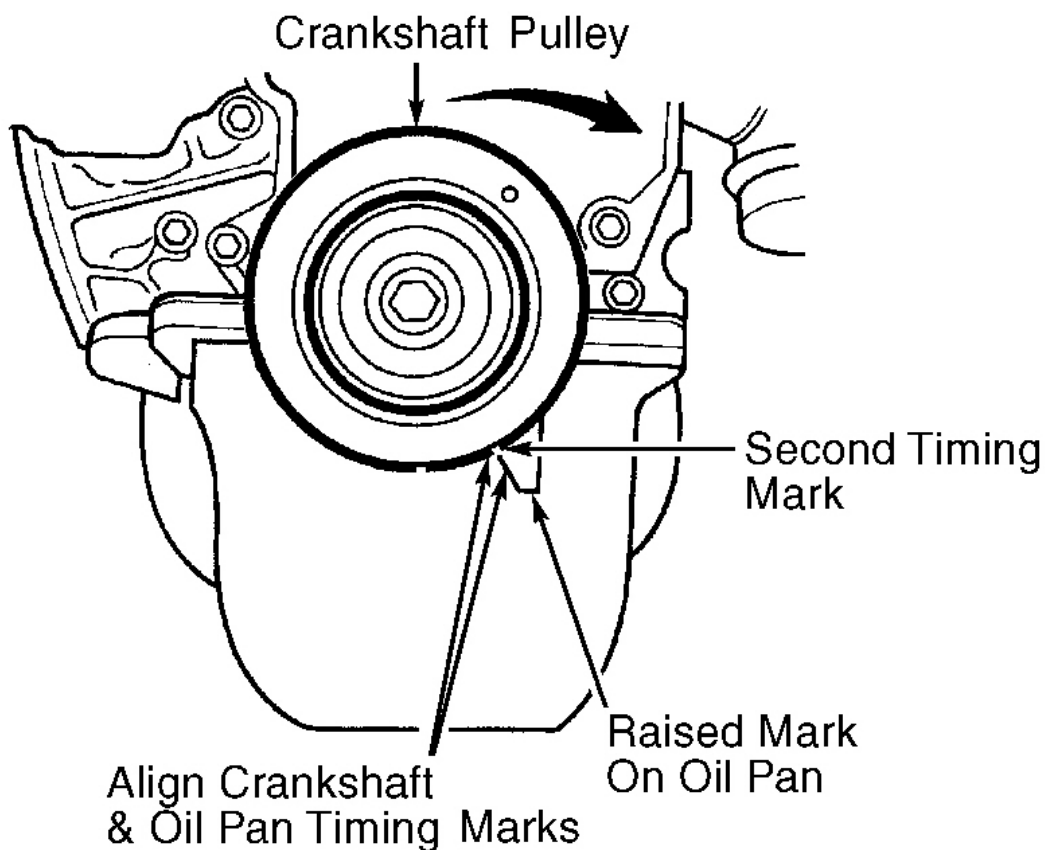
6. Remove camshaft alignment tool. Remove bolt and intake camshaft timing sprocket. Remove VCT oil plug, bolt and exhaust camshaft sprocket.

Crankshaft TDC Timing Peg



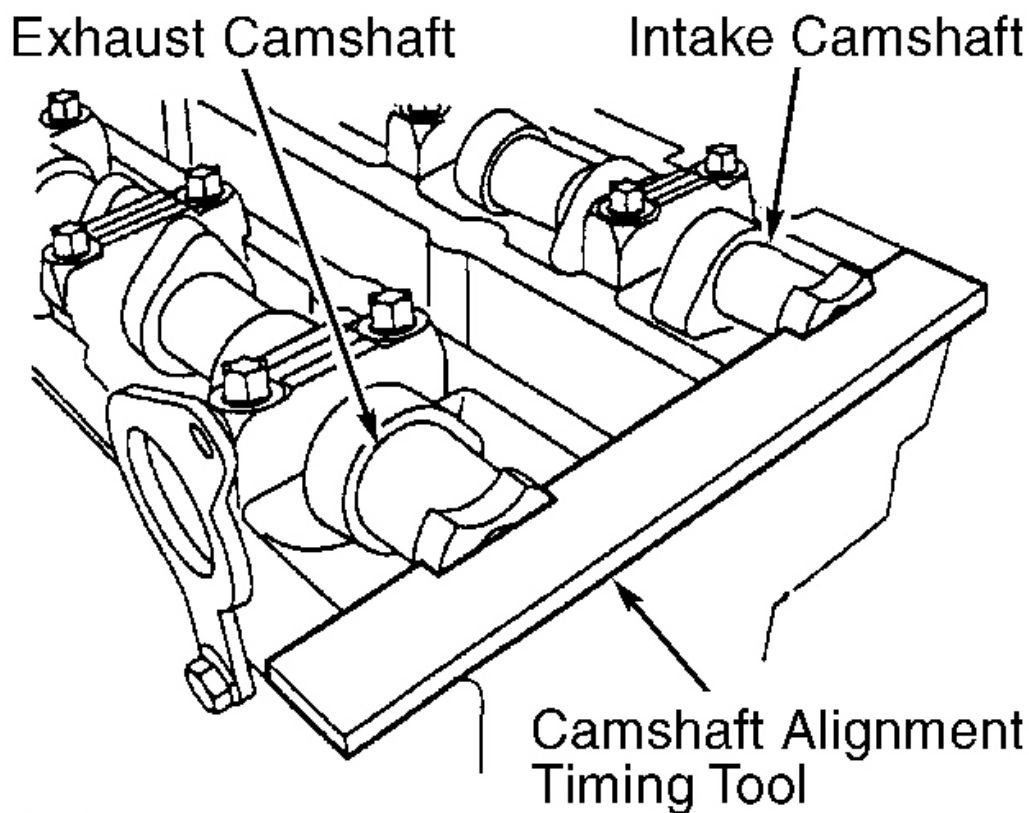
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**Fig. 1: Installing Crankshaft TDC Timing Peg**  
Courtesy of FORD MOTOR CO.



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**Fig. 2: Aligning Crankshaft Timing Marks**  
Courtesy of FORD MOTOR CO.



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**Fig. 3: Installing Camshaft Alignment Timing Tool**  
 Courtesy of FORD MOTOR CO.

#### Installation

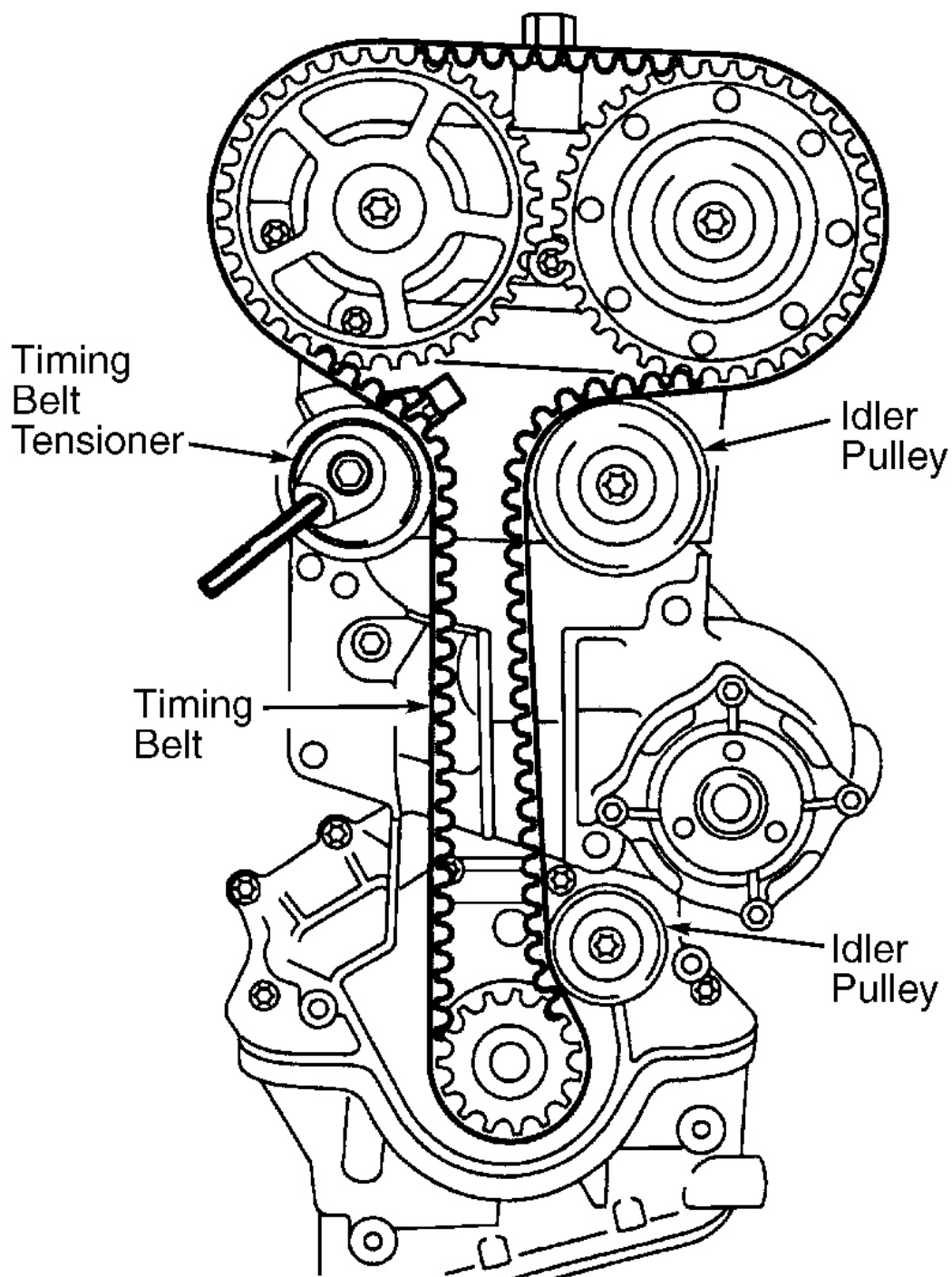
1. Ensure crankshaft pulley timing marks are aligned. See **Fig. 2** . Use Camshaft Alignment Timing Tool (T94P-6256-CH) to align camshafts. Install tool in slots on camshafts at rear of engine. See **Fig. 3** . Ensure camshafts are aligned. Install intake timing sprocket and loosely install bolt. Rotate oil control bushing one complete turn and check for binding. Position bushing with single hole in 12 o'clock position.

**CAUTION:** The VCT sprocket has a rectangular tab on the backside of the sprocket which must align with the hole on the front face of the thrust bushing. Failure to align may result in poor engine performance.

2. Install NEW exhaust sprocket "O" ring. Install exhaust sprocket. Ensure tab on sprocket engages hole in oil control bushing. Loosely install sprocket bolt. Loosely install timing belt tensioner. Install timing belt. See **Fig. 4** . Engage timing belt tensioner tab into upper timing cover backplate. Using 6-mm Allen wrench, adjust timing belt tensioner until marks are aligned. See **Fig. 5** . Tighten bolt to 17-20 ft. lbs. (22-28 N.m).

**NOTE:**        **Camshaft must be held stationary with an open end wrench. DO NOT use alignment tool to hold camshaft in position, as damage to camshaft may occur.**

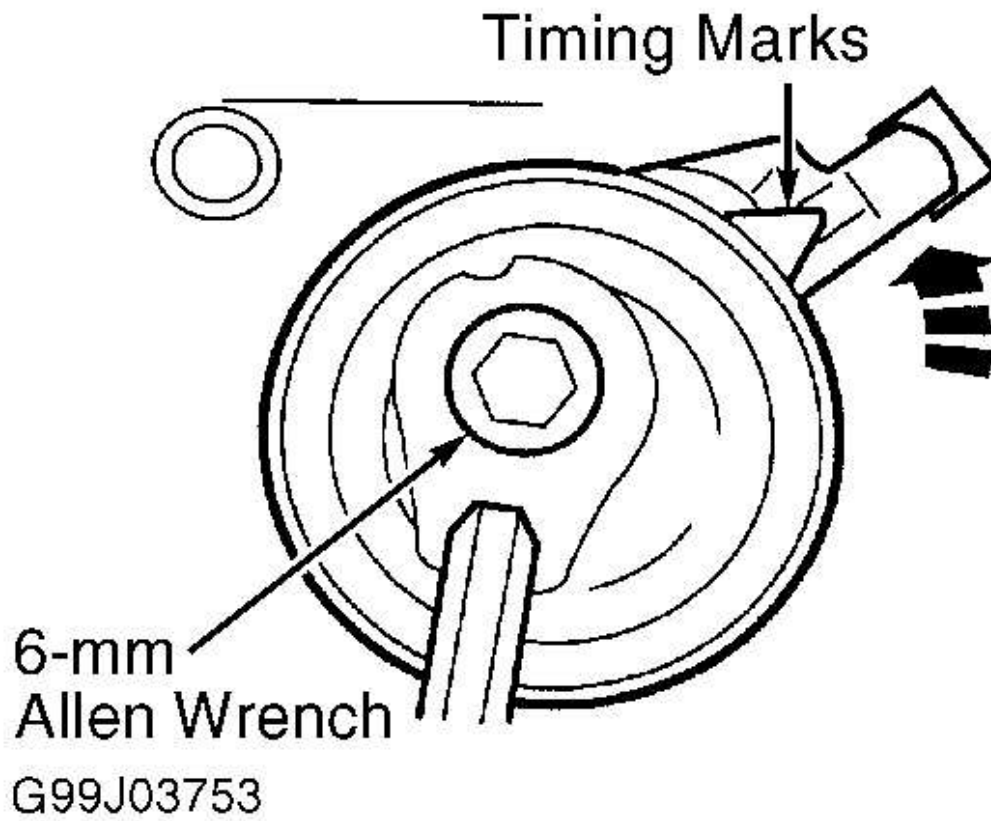
3. Tighten intake camshaft sprocket bolt to 50 ft. lbs. (68 N.m). Tighten exhaust camshaft sprocket bolt to 36 ft. lbs. (50 N.m). Remove camshaft alignment tool and timing peg. Retighten exhaust camshaft sprocket bolt to 85-92 ft. lbs. (115-125 N.m). Install Variable Cam Timing (VCT) oil plug, if necessary.
4. Ensure second crankshaft timing mark is aligned with raised mark on oil pan. Position crankshaft just prior to TDC. Install TDC timing peg. See **Fig. 1** . Rotate crankshaft clockwise against peg. Ensure camshafts are aligned. If crankshaft and camshaft are misaligned, repeat procedure until alignment is correct.
5. When alignment is correct, complete installation by reversing removal procedure. When installing valve cover, clean gasket mating surfaces before installing NEW gasket. Install and tighten valve cover bolts in a diagonal pattern starting from the inside working outward. See **Fig. 6** . Tighten all nuts and bolts to specification. See **TORQUE SPECIFICATIONS** .



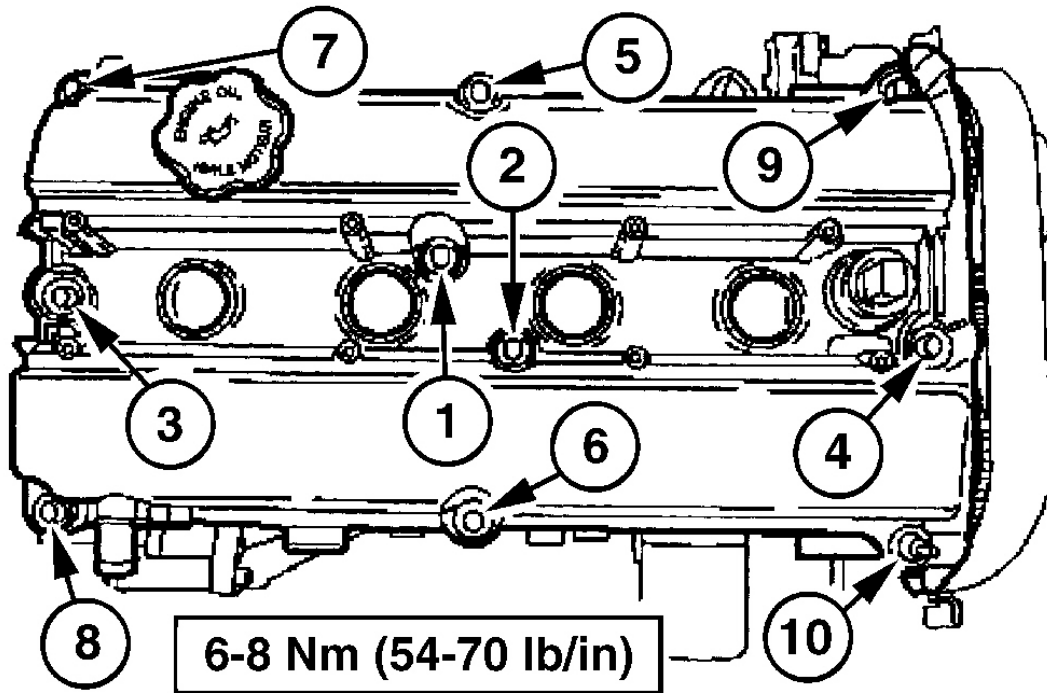
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**Fig. 4: Identifying Timing Belt Installed Position**

Courtesy of FORD MOTOR CO.



**Fig. 5: Index Marks For Timing Belt Tensioner**  
Courtesy of FORD MOTOR CO.



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**Fig. 6: Identifying Valve Cover Torque Sequence**  
 Courtesy of FORD MOTOR CO.

## TORQUE SPECIFICATIONS

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Application	Ft. Lbs. (N.m)
Camshaft Sprocket Bolt	
Intake	50 (68)
Exhaust	88 (120)
Catalytic Converter	
Bracket Bolts	41-47 (55-64)
To-Exhaust Manifold Bolts	41-47 (55-64)
To-Muffler Pipe Flange Bolts	34-39 (46-54)
Crankshaft Pulley Bolt	81-89 (110-120)
Crossmember Bolts	69-93 (94-126)
Engine Front Support Isolator Nut & Bolt	50-68 (67-93)
Exhaust Camshaft (VCT) Sprocket Plug	27 (37)
Serpentine Drive Belt Idler Pulley Bolt	35 (40)

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**2002 Ford ZX2**

FORD 2.0L 4-Cylinder - DOHC, VIN 3 - Escort &amp; ZX2

Spark Plugs	10-12 (13-17)
Timing Belt Idler Pulley Bolt	35 (48)
Timing Belt Tensioner Bolt	17-20 (22-28)
Water Pump Bolt	17 (24)
Wheel Lug Nut	
Alloy Wheel	74-100 (100-135)
Steel Wheel	66-87 (89-117)
	<b>INCH Lbs. (N.m)</b>
Splash Shield Assembly	62-97 (7-11)
Timing Belt Backplate Bolt	80-97 (9-11)
Timing Belt Cover Bolt	
Center	(1)
Lower	61 (7)
Upper	27-44 (3-5)
Valve Cover Bolt	54-70 (6-8)
Valve Cover Appearance Cover	62 (7)
(1) Tighten bolts to 10 ft. lbs. (13 N.m).	