

TIMING BELT & BALANCE SHAFT BELT

Removal

1. Disconnect negative battery cable. Remove engine undercover. Place wooden block between jack and oil pan, and raise engine slightly. Remove engine mount assembly near timing belt cover.
2. Remove clamp for power steering return hose near timing belt cover. Remove all drive belts and tensioner pulley bracket. See **Fig. 1** . Remove power steering and water pump pulleys. Rotate crankshaft clockwise so that No. 1 cylinder is at TDC of compression stroke. Remove crankshaft pulley.

CAUTION: DO NOT rotate crankshaft counterclockwise. Ensure timing marks are aligned. If reusing timing belts, mark timing belts for direction of rotation.

3. Remove upper timing belt cover and gasket. Remove stub bolt of engine support bracket, and remove center timing belt cover. Remove lower timing belt cover.

NOTE: Camshaft sprocket dowel pins will be in 12 o'clock position when timing marks are correctly aligned.

4. Ensure camshaft, crankshaft and oil pump sprocket timing marks are aligned. See **Fig. 2** or **Fig. 3** . Loosen tensioner pulley center bolt. Move tensioner to relieve timing belt tension. Remove timing belt. Remove timing belt auto tensioner. See **Fig. 1** .
5. Remove plug from left side of cylinder block. Install a .31" (8.0 mm) diameter Phillips screwdriver into the hole against balance shaft. See **Fig. 4** . Screwdriver must go in at least 2.36" (60 mm) or more. If screwdriver will only go in about .79-.98" (20-25 mm) before striking balance shaft, turn sprocket one revolution and align timing mark. Keep screwdriver in place until timing belt is installed. This ensures balance shaft driven by oil pump sprocket remains in correct position.
6. To remove timing belt "B" (balance shaft belt), hold crankshaft sprocket stationary with a spanner wrench. Remove crankshaft sprocket bolt. Using gear puller, remove outer crankshaft sprocket.
7. Remove crankshaft sensing blade (if equipped). See **Fig. 5** . Loosen timing belt "B" tensioner bolt. If reusing timing belt "B", mark direction of belt rotation for reassembly reference. Remove timing belt "B".

1996 Mitsubishi Eclipse GS-T

MITSUBISHI '2.0L 4-Cylinder - DOHC - Eclipse & Galant

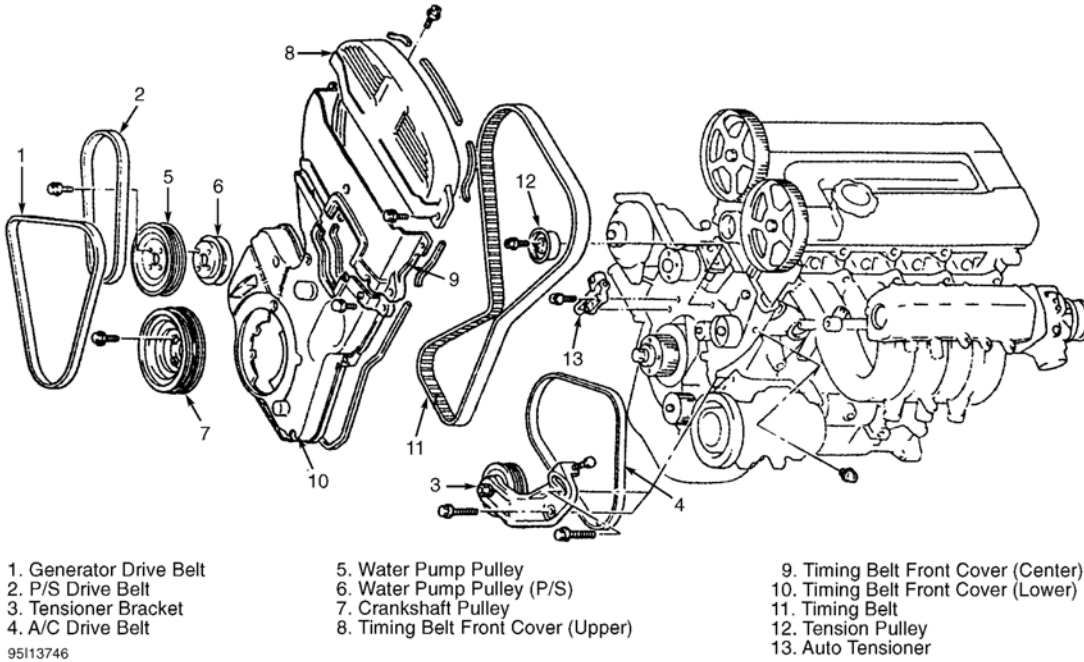


Fig. 1: Exploded View Of Timing Belts & Components
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

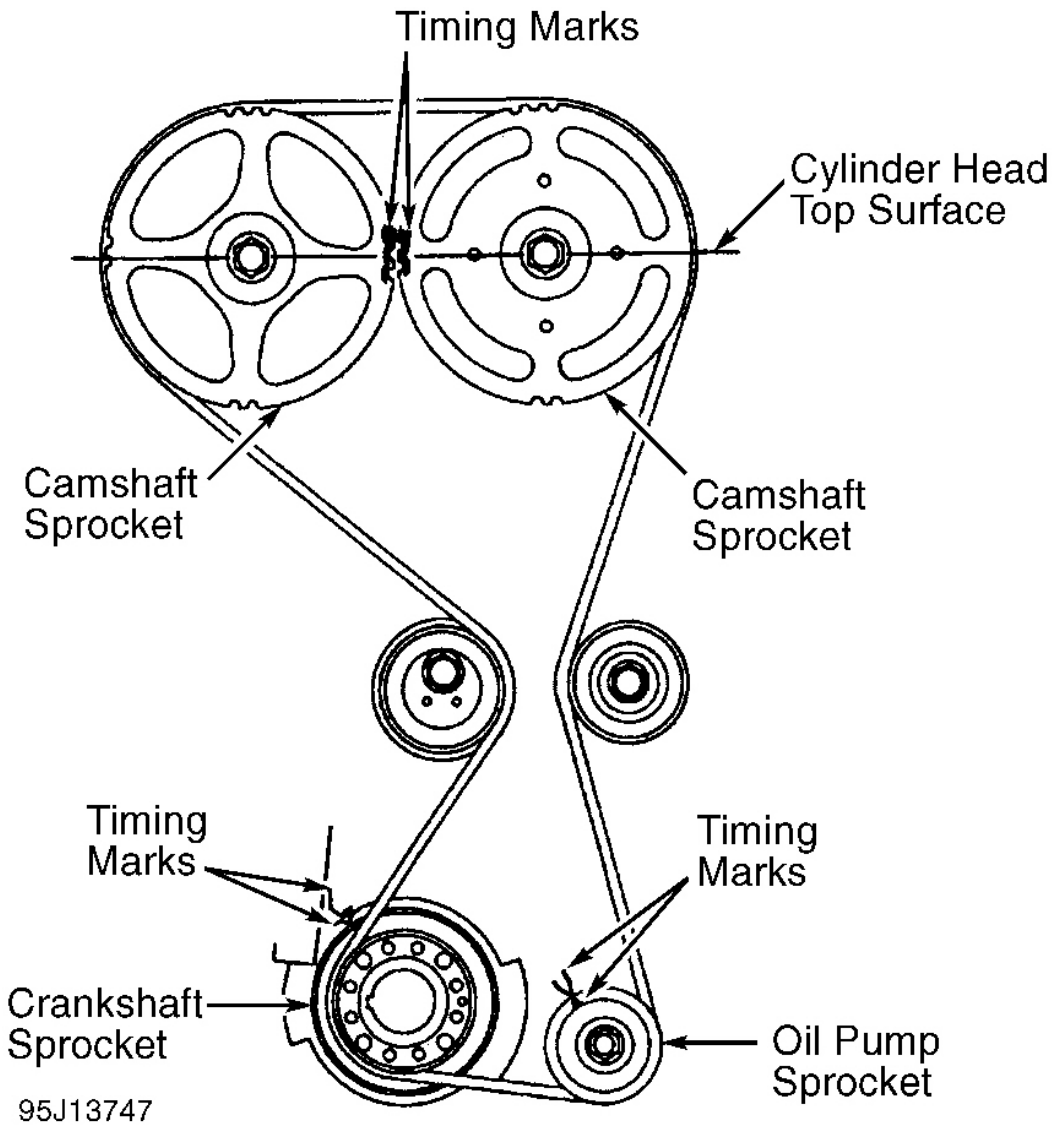
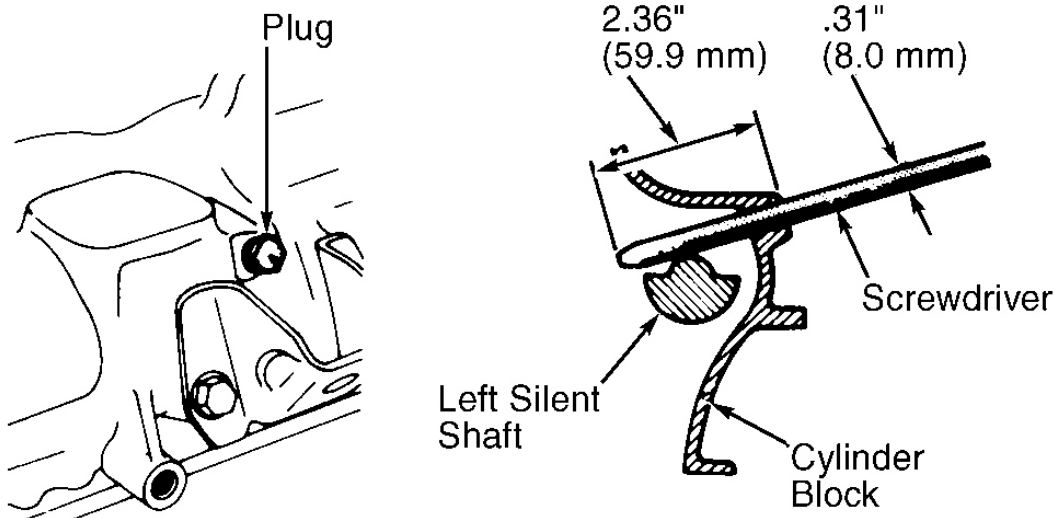


Fig. 3: Aligning Timing Belt "A" Timing Marks (1994-99 Models)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



CAUTION: Ensure this alignment procedure is followed for left silent shaft. If balance weight is incorrectly positioned, excessive engine vibration will result. Weight must be in position, as illustrated, when timing marks are aligned.

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Fig. 4: Holding Balance Shaft Stationary
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

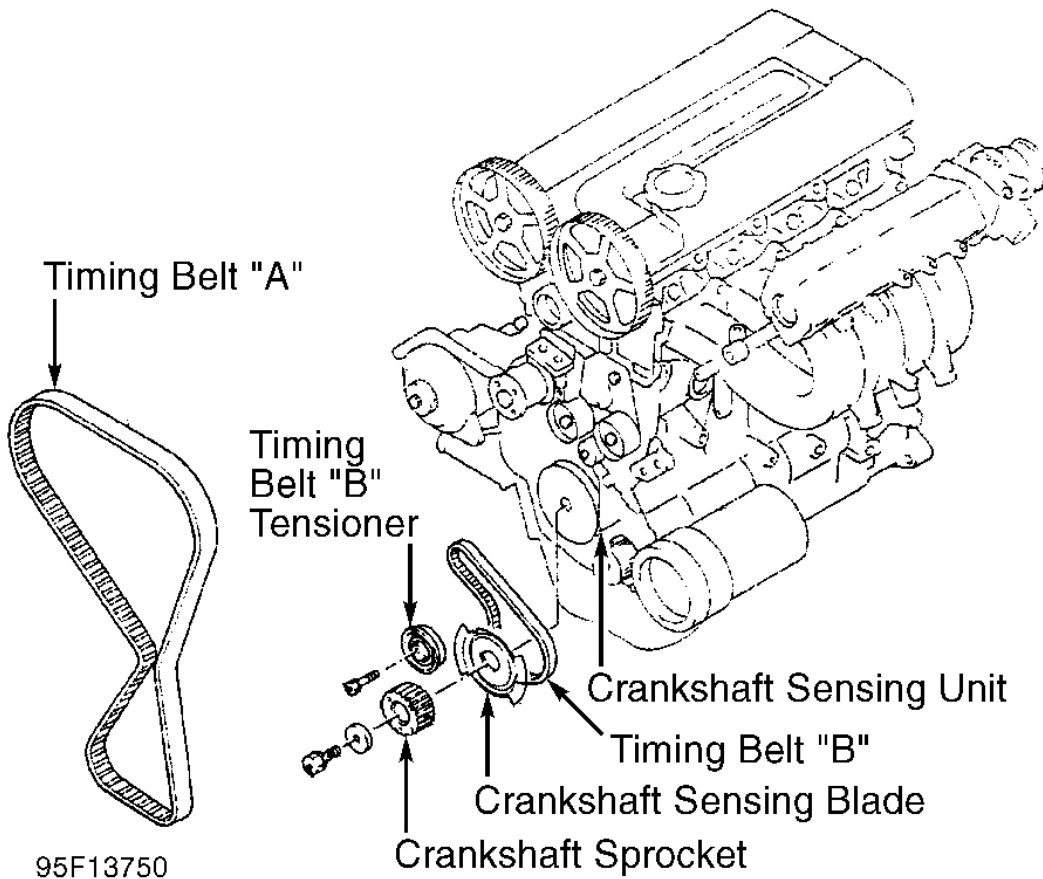


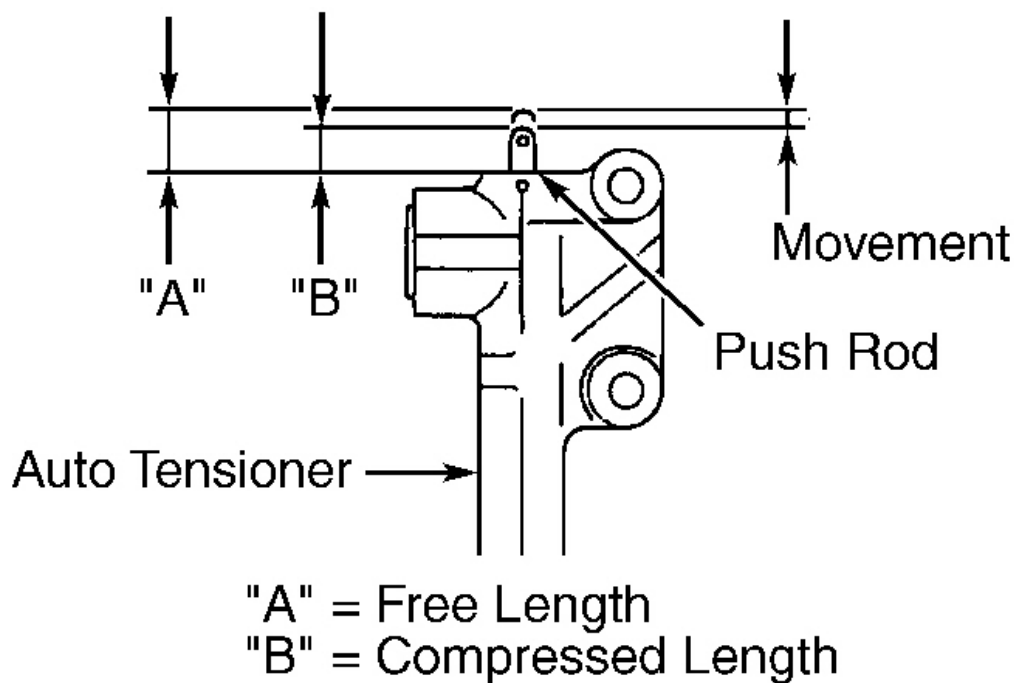
Fig. 5: Timing Belt "B" (Balance Shaft Belt) Components
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Inspection

1. Inspect timing belts for damaged teeth and cracking. Ensure belts are not contaminated with oil. Check tensioners for free rotation and grease leakage. Replace components if damaged or if grease leakage exists.

NOTE: The following revised information for timing belt tensioner inspection is from Mitsubishi technical service bulletin 96-11-006; June, 1996.

2. Check timing belt auto tensioner for leaks. Hold timing belt auto tensioner upright. Measure rod protrusion above edge of housing. See **Fig. 6** . Length should be .47" (12 mm). Apply 22-44 lbs. (10-20 kg) of force to end of rod. If auto tensioner rod moves more than 0.39" (1 mm), replace the auto tensioner.



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Fig. 6: Inspecting Timing Belt Auto Tensioner
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Installation

1. Retract rod into auto tensioner housing by placing auto tensioner assembly in a soft-jawed vise. Close vise SLOWLY to push rod back into auto tensioner housing. When pin hole in cylinder aligns with pin hole in rod, insert set pin. Replace tensioner assembly if rod can be retracted easily into housing. Install auto tensioner on engine with set pin in place.
2. Align balance shaft and crankshaft timing marks with rear cover. See **Fig. 7** or **Fig. 8**. Install timing belt "B" on sprockets. If using old belt, install belt in original direction of rotation. Ensure there is no slack in tension side of belt.

CAUTION: Ensure tensioner pulley shaft does not rotate when bolt is tightened, or excessive pressure will be applied to timing belt.

3. Install timing belt "B" tensioner so center of tensioner pulley is to the left and above of retaining bolt center. See **Fig. 9**. Rotate tensioner inward toward timing belt until belt is tight. Tighten tensioner retaining bolt without letting tensioner pulley rotate out of position. Check belt deflection at designated

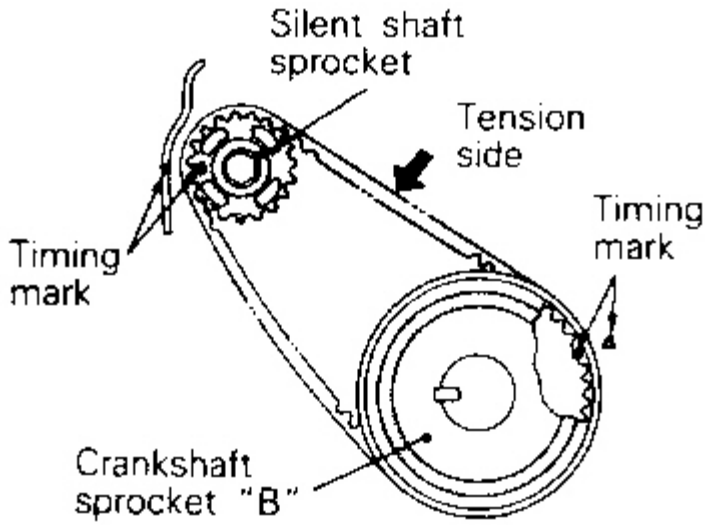
area. Belt deflection should be .20-.28" (5.0-7.0 mm). Readjust timing belt if belt deflection is not within specification.

CAUTION: Install crankshaft sensing blade and crankshaft sprockets in correct positions, or timing belt may be damaged.

4. Install crankshaft sensing blade (if equipped) in front of crankshaft sprocket "B", with offset in proper direction. See **Fig. 10** . Install crankshaft sprocket "A". Apply light coat of engine oil to crankshaft sprocket bolt threads, and tighten bolt to specification. See **TORQUE SPECIFICATIONS** . Install idler pulley (if removed).
5. Ensure camshaft, crankshaft and oil pump timing marks are still aligned. See **Fig. 2** or **Fig. 3** . Do not remove screwdriver from side of engine block until timing belt is installed.

NOTE: Intake and exhaust camshafts use same camshaft sprocket. Camshaft sprockets are provided with 2 timing marks. For exhaust camshaft sprocket, use timing mark on right with dowel pin facing up. On intake camshaft sprocket, use timing mark on the left, with dowel pin hole on top.

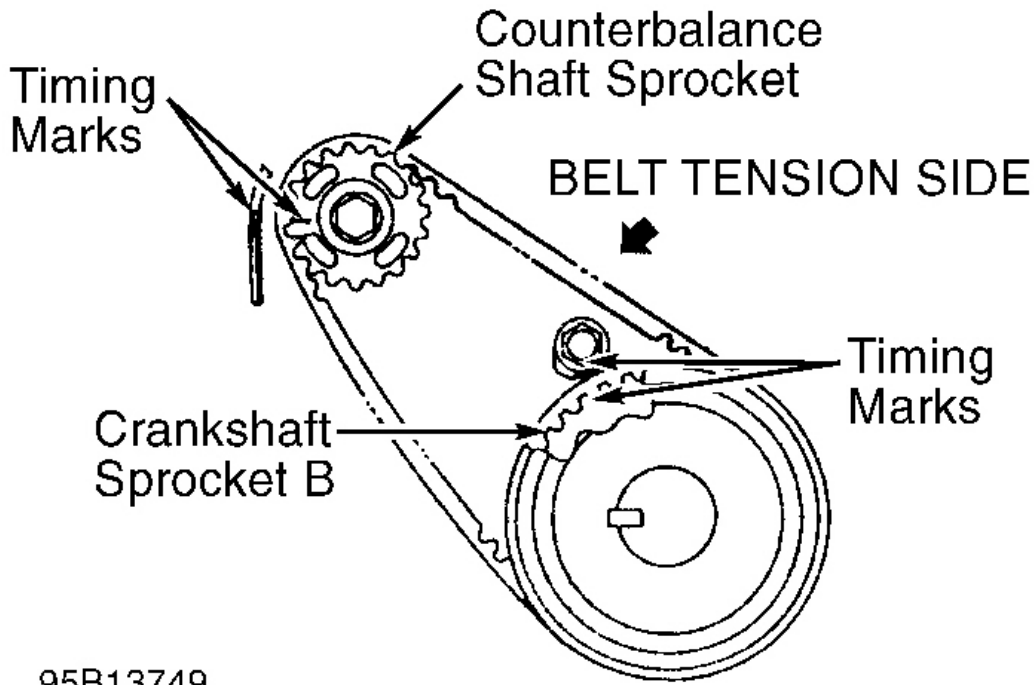
6. Rotate camshaft sprocket so dowel pins are upward and away from cylinder head, and timing marks are aligned with cylinder head surface. Timing marks should face each other. See **Fig. 2** or **Fig. 3** .
7. Install timing belt on intake camshaft sprocket. Install spring clip to retain timing belt on sprocket. See **Fig. 11** . Place a wrench on each camshaft sprocket retaining bolt. Rotate camshafts so timing marks align with each other.
8. Install timing belt over exhaust camshaft. Install spring clip to retain timing belt. Install timing belt over idler pulley, oil pump sprocket, crankshaft sprocket and tensioner pulley. Remove spring clips from camshaft sprockets. Go to **TIMING BELT TENSION ADJUSTMENT (1990-92)** or **TIMING BELT TENSION ADJUSTMENT (1993-99)** .



1990-1992 Models

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Fig. 7: Aligning Timing Belt "B" (1990-92 Models)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 8: Aligning Timing Belt "B" (1993-99 Models)
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

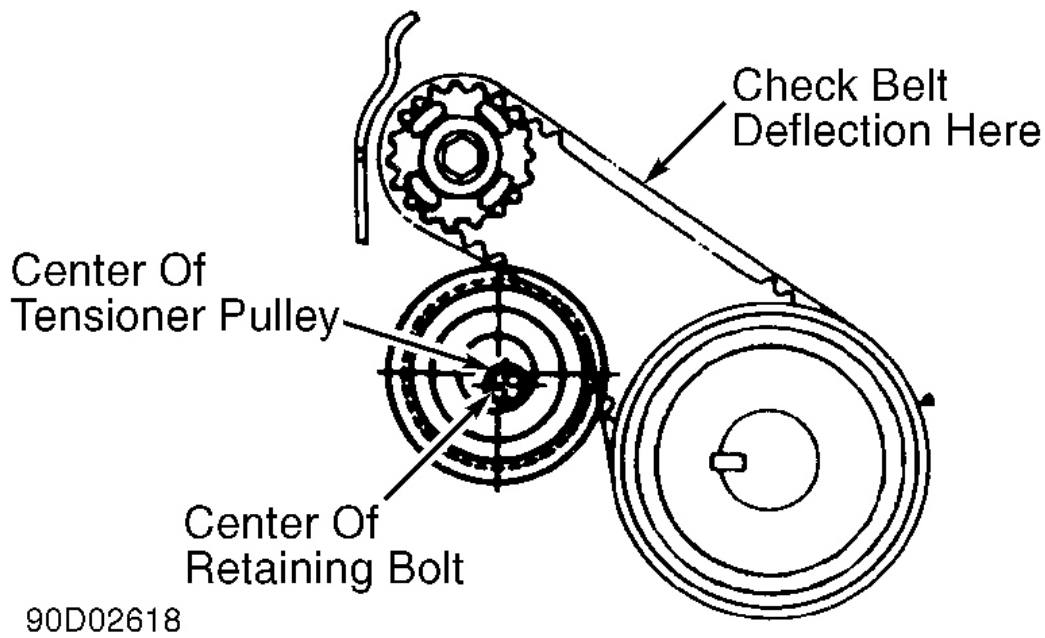
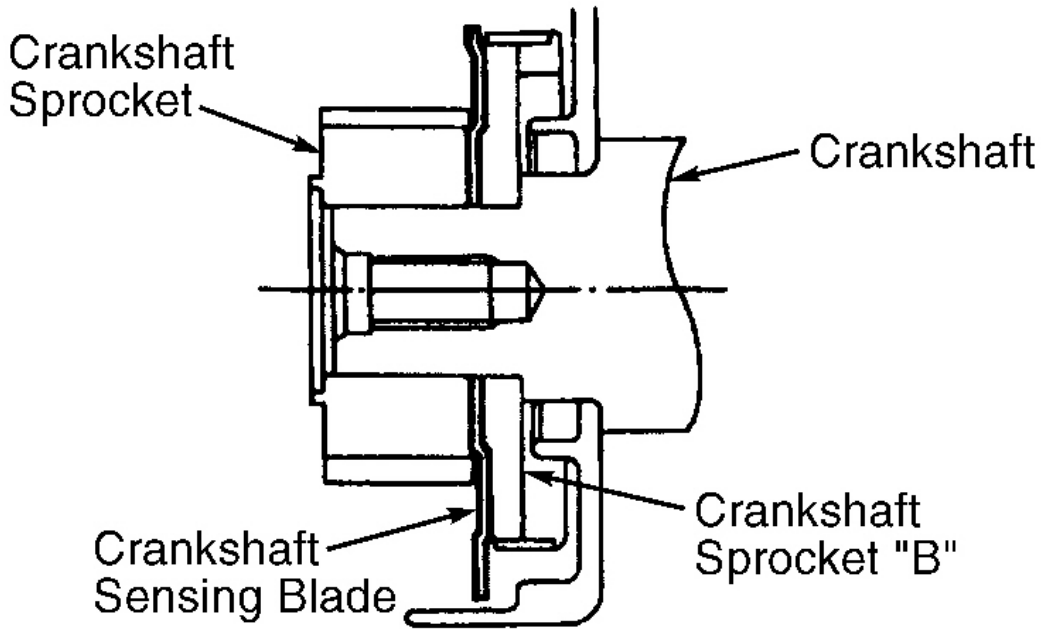
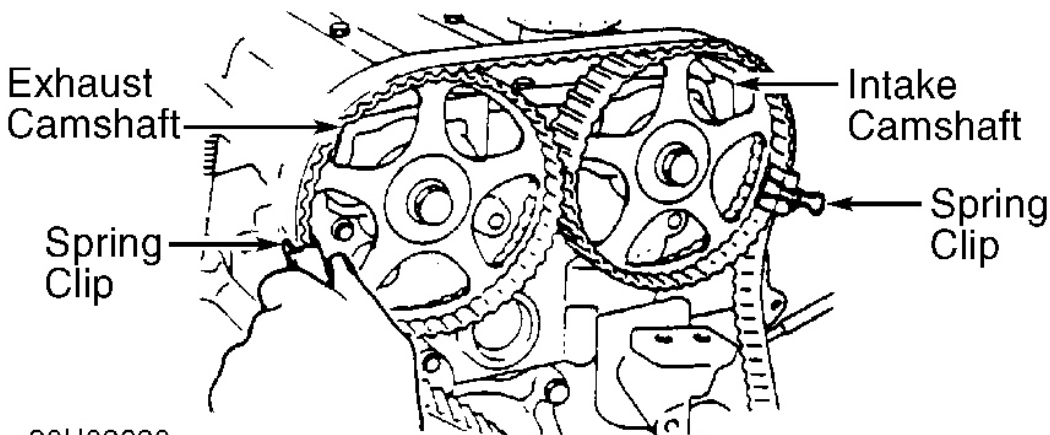


Fig. 9: Installing Timing Belt "B" Tensioner
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 10: Installing Crankshaft Sprocket & Crankshaft Sensing Blade
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.



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Fig. 11: Installing Timing Belt On Intake Sprockets
Courtesy of CHRYSLER CORP.

Timing Belt Tension Adjustment (1993-99)

1. Lift tensioner pulley upward to apply tension on timing belt. The 2 pin holes in the center of the tensioner must face down. See **Fig. 13** . Screw the Set Screw (MD998738) into engine support bracket until it makes contact with tensioner arm. At that point, screw the set screw in a few more threads and remove the set pin from the auto tensioner. Remove the set screw. Tighten timing belt tensioner pulley center bolt to 35 ft. lbs. (48 N.m).
2. Remove screwdriver from side of engine block, and install plug. To tension timing belt, rotate crankshaft about 1/4 turn counterclockwise, then 1/4 turn clockwise until all timing marks align.
3. Loosen tensioner pulley center bolt. Install Adapter (MD998767) or equivalent to tensioner eccentric. Install torque wrench on adapter. See **Fig. 15** . Starting with eccentric pin holes still facing down, apply 31 INCH lbs. (3.5 N.m) of torque counterclockwise on tensioner pulley.
4. Hold tensioner pulley at specified torque, and tighten tensioner center bolt to specification. **DO NOT** let tensioner pulley turn with bolt. See **TORQUE SPECIFICATIONS** .
5. Rotate crankshaft 2 full revolutions clockwise so that timing marks are aligned. Allow engine to stand for 15 minutes without turning crankshaft. Distance between top of auto tensioner housing and tensioner arm should be .15-.18" (3.8-4.5 mm). If distance is incorrect, repeat tensioning procedure until distance is correct. Go to **FINAL ASSEMBLY** .

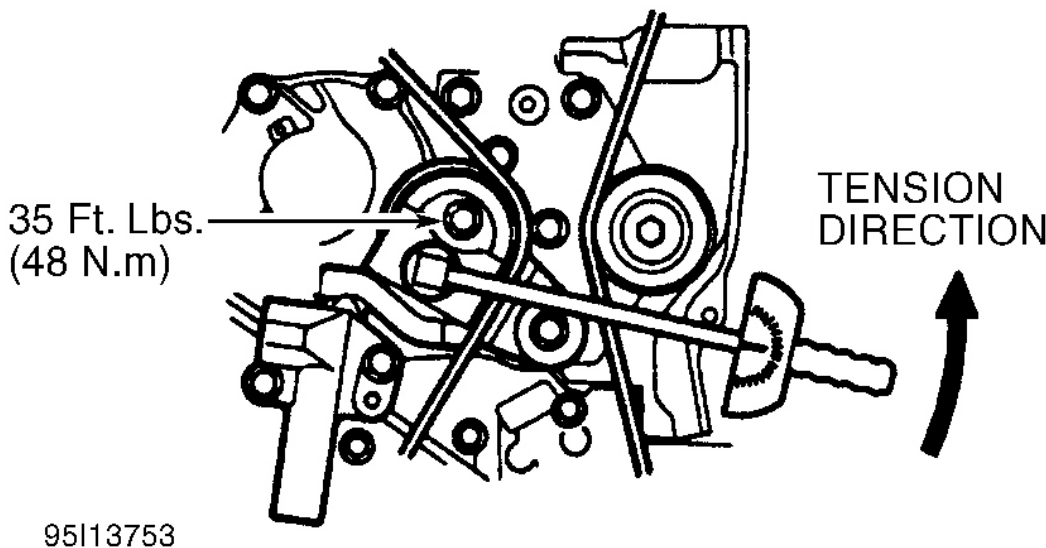


Fig. 15: Adjusting Timing Belt Tension (1993-99)
 Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

Final Assembly

To install remaining components, reverse removal procedure. Ensure proper length bolts are installed in timing belt covers. See **TIMING COVER BOLT LENGTH & TORQUE** table. See **Fig. 16** . Adjust the drive belts

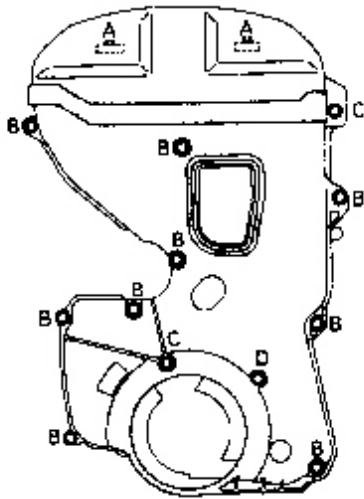
1996 Mitsubishi Eclipse GS-T

MITSUBISHI '2.0L 4-Cylinder - DOHC - Eclipse & Galant

to proper tension.

TIMING COVER BOLT LENGTH & TORQUE

Bolt Length	INCH Lbs. (N.m)
"A": 6 x 16 Flange Bolt	89-106 (10-12)
"B": 6 x 18 Flange Bolt	89-106 (10-12)
"C": 6 x 25 Loose Washer Bolt	58 (6.5)
"D": 6 x 25 Flange Bolt	89-106 (10-12)
"E": 6 x 45 Flange Bolt	89-106 (10-12)



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Thread diameter
x thread length
A: 6 x 16 (.24 x .63)
B: 6 x 18 (.24 x .70)
C: 6 x 25 (.24 x .98)
D: 6 x 28 (.24 x 1.10) mm (in.)

Fig. 16: Installing Timing Belt Cover Bolts
Courtesy of MITSUBISHI MOTOR SALES OF AMERICA.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Auto Tensioner Bolt	17 (24)
Balance Shaft Sprocket Bolt	33 (46)
Camshaft Sprocket Bolt	65 (90)
Crankshaft Pulley Bolt	18 (25)

1996 Mitsubishi Eclipse GS-T

MITSUBISHI '2.0L 4-Cylinder - DOHC - Eclipse & Galant

Crankshaft Sprocket Bolt	80-94 (108-127)
Drive Belt Tensioner Pulley Bracket	17-20 (23-26)
Engine Mount-To-Engine Bolt/Nut (1990-92)	36-47 (50-65)
Engine Mount-To-Engine Bolt/Nut (1993-99)	49 (67)
Engine Mount-To-Body Through-Bolt (1990-92)	43-58 (60-80)
Engine Mount-To-Body Through-Bolt (1993-99)	72-87 (98-118)
Idler Pulley Bolt	27 (38)
Timing Belt "B" (Balance Shaft) Tensioner Bolt	11-16 (15-20)
Timing Belt Tensioner Pulley Center Bolt	35 (48)
Water Pump Bolt	10 (14)
	INCH Lbs. (N.m)
Timing Belt Cover Bolt	89-106 (10-12)
Water Pump Pulley Bolt	80 (9)