HOLDEN

MODEL: ASTRA 1999-2004. SERIES: TS
ENGINE: X18XE1, Z18XE; 1.8L

REMOVAL

INTERFERENCE ENGINE:

In the event of timing belt/ 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.

1. Disconnect earth cable from the battery.
2. Remove air filter housing.
3. Raise the front of the vehicle and place it on support.
4. Remove right front wheel.
5. Remove right inner wing panel.
6. Remove engine top cover.
7. Use ring spanner to rotate drive belt tensioner anti-clockwise to ease the tension. Then insert a 4mm pin through the hole in tensioner and mounting bracket.
8. Remove drive belt.
9. Remove timing belt upper cover.
10. Fit engine support and alignment tool.
11. Remove drive belt tensioner.
12. Remove right side engine mounting and bracket.
13. Lock the flywheel by inserting SST to bell housing.
14. Remove crankshaft pulley.
15. Remove timing belt lower cover.
16. Remove flywheel locking tool.
17. Remove camshaft position sensor (if fitted).
18. Install crankshaft pulley bolt temporarily.
19. Rotate crankshaft pulley (clockwise) until No.1 cylinder is at TDC.

Note: Check crankshaft timing marks aligned.

Check timing marks on camshaft sprockets aligned with each other.

20. Lock camshaft sprockets with SST.
21. Loosen tensioner bolt.
22. Rotate tensioner clockwise until pointer stops (on left side of groove plate).
23. Temporarily tighten tensioner bolt and remove timing belt.

Note: If the timing belt is to be re-used, mark the back of the timing belt to indicate its direction of rotation.

INSTALLATION

1. Check that mark on water pump aligned with mark on cylinder block.
2. Check that all timing marks (on camshaft sprockets and crankshaft sprocket) aligned with their corresponding mark.
3. Install timing belt on crankshaft sprocket then continue anti-clockwise to other sprockets/pulleys.
4. Check that there is tension on the timing belt between sprockets.
5. Loosen tensioner bolt.
6. Rotate tensioner (anti-clockwise) until the pointer stops (on right side of groove plate).
7. Tighten tensioner bolt finger-tight.
8. Remove camshaft sprockets locking pin.
9. Rotate crankshaft 2 revolutions (clockwise) then ensure that all timing marks are aligned.
10. Insert camshaft locking tool.
11. Loosen tensioner bolt.
12. Rotate tensioner (clockwise) until pointer aligned appropriately (see diagrams).
13. Tighten tensioner bolt finger-tight.
14. Remove camshaft sprocket locking tool.
15. Rotate crankshaft 2 revolutions (clockwise). Check that all timing marks are aligned.

Note: Check crankshaft timing marks aligned.

Check timing marks on camshaft sprockets aligned with each other.

16. Check pointer mark on the tensioner (refer to diagrams).
17. Tighten tensioner bolt to specification.
18. Lock flywheel by inserting tool in bell housing.
19. Remove crankshaft pulley bolt.
20. Install components in reverse order of removal.
21. Install new crankshaft pulley bolt and tighten it to specification.
22. Remove flywheel locking tool.

SPECIAL TOOLS (SST)

Flywheel locking: KM-911
Camshaft locking: KM-852
Engine support: KM-6001 (models to 2000), KM-6001-A (from 2000 on)
Engine alignment: KM-909-B (to 2000), KM-6173 (2000 on)
Drive belt tensioner lock: KM-6130

TIGHTENING TORQUE

Tensioner bolt: 20Nm
Crankshaft pulley bolt: 95Nm, +30°, +15°
Timing belt cover bolts: 4Nm

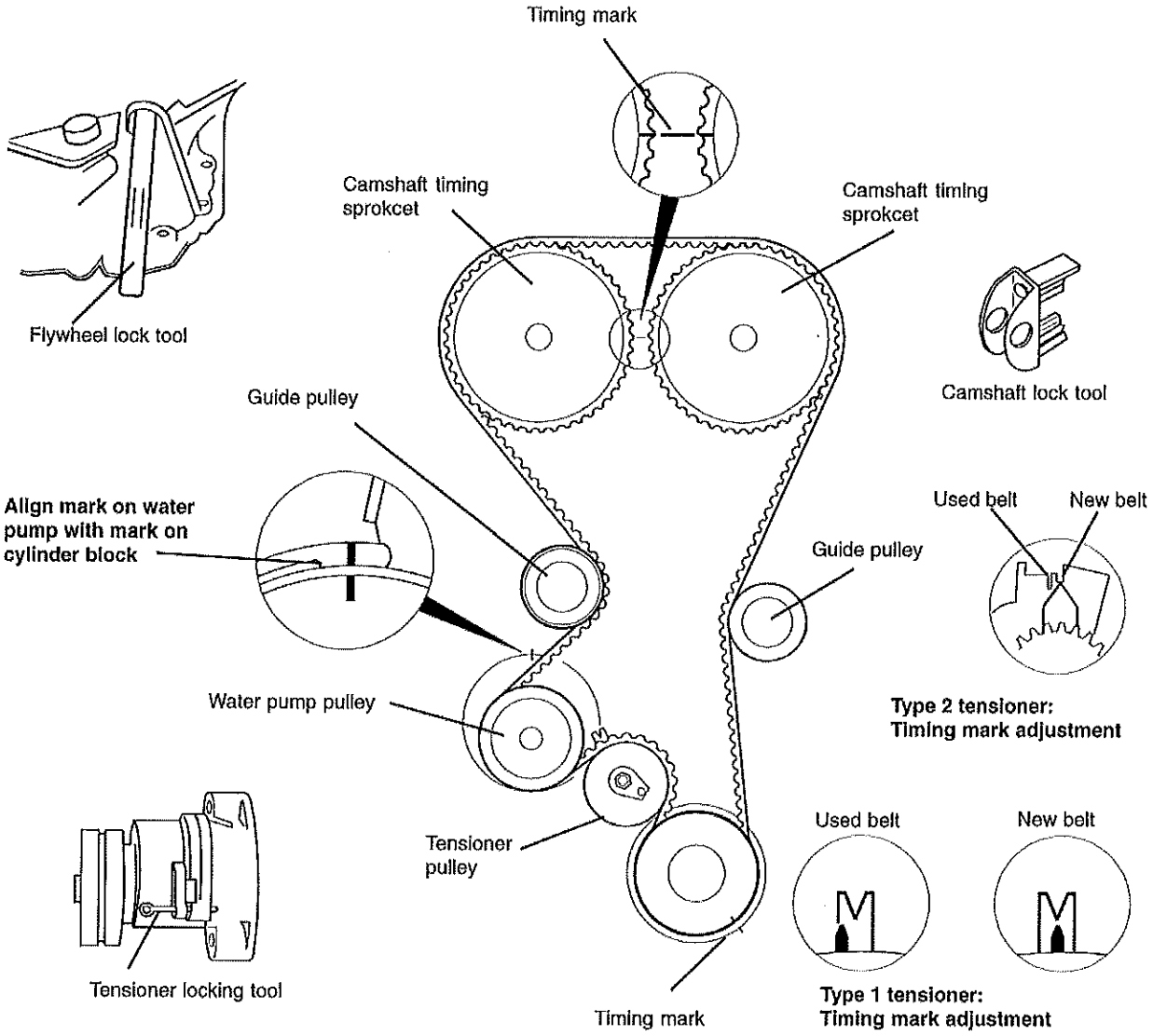
RECOMMENDED REPAIR TIME

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

BELT REPLACEMENT INTERVAL

60,000 km

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



TIMING BELT	
MANUFACTURER NUMBER	90411775 (without ECOTEC), 90411777 (with ECOTEC)
DEFLECTION (mm) at 49 N	DNA (tensioner operated)

AUXILIARY DRIVE BELTS			
BELT	DEFLECTION (mm) under 10kg (98N) load		RIBS x L (mm)
	New	Used	
MULT.ACC.	-	-	5#1x940 (w.o. AC)
MULT.ACC.	-	-	5#1x1675 (with AC)

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

AC- Air conditioning pulley
ALT - Alternator pulley
CS - Crankshaft pulley
FP - Fan pulley
IP - Idler pulley
PS - Power steering pump
TP - Tensioner pulley