Adjustment Data

MAZDA - 626 - 2.5i V6 24V Xerxes - KL

Engine (general)

Item	Values	Units
Engine code	KL	
Capacity	2497	(cc)
Idle speed	650 ± 50	(rpm)
Valve clearance		
Hydraulic		
Compression pressure		
Normal	14.3	(bar)
Minimum	10	(bar)
Oil pressure	3.4 - 5.0/3000	(bar / rpm)
Fuel system (make & type)	Mitsubishi EGI	
Firing order	1-2-3-4-5-6	
Timing stroboscopic (before TDC)	10 ± 1/650	(° / rpm)
Ignition-coil resistance, primary	0.58 - 0.86	(ohms)
Ignition-coil resistance, secondary	11500 - 18500	(ohms)
Spark plugs (make & type)	NGK/ZFR5F-11 Bosch FR7LCX	
Spark-plug gap	1.0 - 1.1	(mm)
Fuel-pump pressure	6.5	(bar)
Injection pressure / system pressure	2.9	(bar)
CO exhaust gas	< 0.5	(%)
CO2	14.5 - 16.0	(%)
HC	100	(ppm)
O2	0.1 - 0.5	(%)
Lambda	0.97 - 1.03	
Lambda change (Delta Lambda)	0.03	
Oil temperature during test	60	(°C)
Fast-idle speed	2500-2800	(rpm)
CO at fast-idle speed	< 0.3	(%)

Cooling system

Item	Values	Units
Cap pressure	0.75 - 1.05	(bar)
Thermostat opens at	80 - 84	(°C)
Fan on at	100	(°C)

Electrical

Item	Values	Units
Battery	65	(Ah)
Alternator	90	(A)

Brakes

Item	Values	Units
Disc thickness, front, min.	22.0	(mm)
Disc thickness, rear, min.	8.0	(mm)

Steering and wheel alignment

Item	Values	Units
Toe-in, front	17' ± 17'	(°)
Camber, front	-36' ± 45'	(°)
Castor, front	2° 37' ± 45'	(°)
K.P.I., front	15 ± 04'	(°)
Toe-in, rear	17' ± 17'	(°)
Camber, rear	-07' ± 45'	(°)

Wheels and tyres

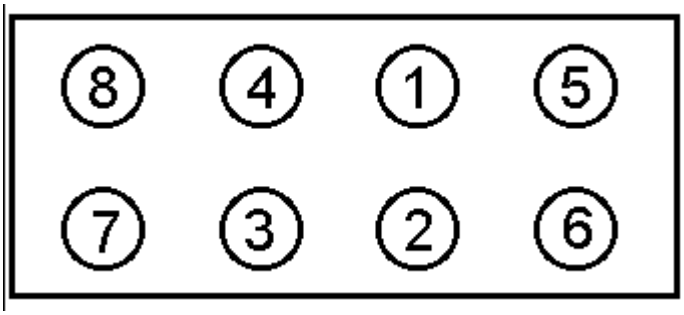
Item	Values	Units
Tyre size	205/55R14	
Front tyre pressure	2.2	(bar)
Rear tyre pressure	1.8	(bar)

Capacities

Item	Values	Units
Engine sump, incl. filter	4.0	(l)
Manual transmission		
Gearbox refill	2.7	(l)
Automatic transmission		
Gearbox refill	8.8	(l)
Cooling system	7.5	(l)
Air-conditioner refrigerant	700	(g)
Air-conditioner compressor oil	175	(ml)

Torque settings

Item	Values	Units
Cylinder head		



Stage 1	23 - 26	(Nm)
Stage 2	90°	(°)
Stage 3	90°	(°)
Front hub	236 - 318	(Nm)

Rear hub	117 - 235	(Nm)
Wheel nuts	88 - 117	(Nm)
Spark plugs	15 - 22	(Nm)

CANISTER PURGE SOLENOID

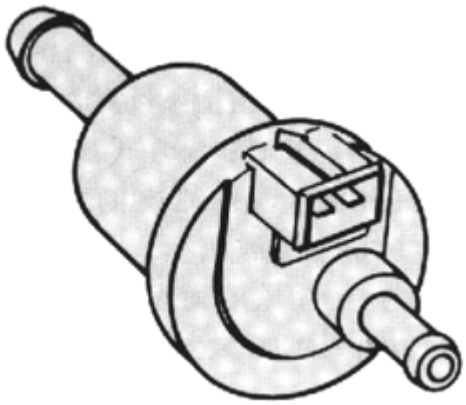
Function

The evaporative gases produced in the fuel tank are absorbed by the activated charcoal in the carbon canister. As The purge control solenoid valve opens these gases are delivered to the intake manifold for combustion purposes. The purge control solenoid valve is controlled by the control unit. The control unit operates this valve during the time the lambda control loop is active.

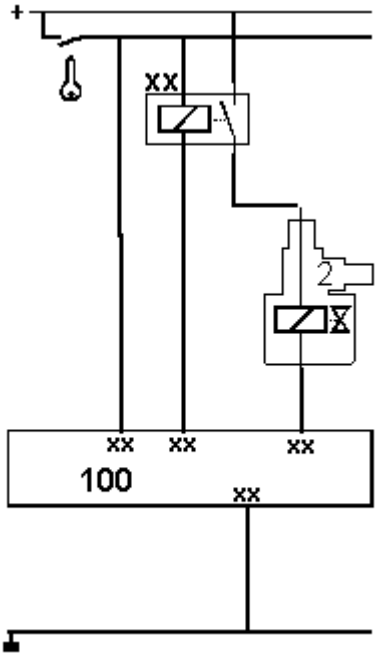
Specifications

RESISTANCE:

resistance:	± 50 ohms
supply voltage:	12 Volts
current:	± 250 mA



Electrical control



Most solenoids are normally closed. This means that the connection between the canister and the intake manifold is closed. The solenoid has a connector with two terminals. On one of those terminals is connected to the battery voltage. This supply-voltage is often switched with a relay. The other terminal leads directly to the control unit. The current through the solenoid is switched on during the time the control unit connects this terminal to ground. The voltage on this terminal is during this time 0 Volts. During the time the solenoid is switched off, the voltage on this terminal is 12 Volts. Some motormanagement systems control the amount gases delivered to the intake manifold switching the solenoid on and of with a certain duty cycle. In this case the duty-cycle depends on engine RPM and engine load.

Electrical diagnosis

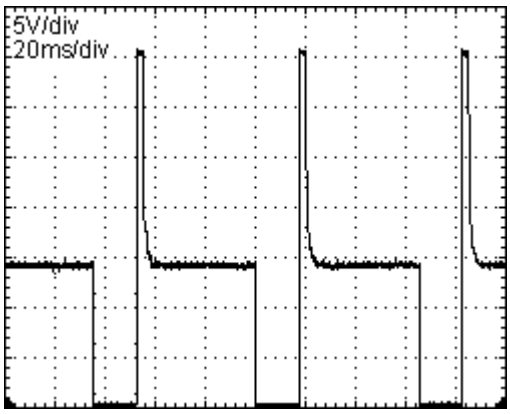
STATIC

General

- To perform this measurements the relay switching the power to the solenoid should be closed. Short circuit the switch in the relay if necessary.

Measurements

- Measure the voltage on the control unit. Use the pin which switches the solenoid.



result: **12 V**

- solenoid and wiring are electrically OK

0 V

- check the relay switching the power to the solenoid
- check the wiring between the relay and the solenoid
- check the solenoid resistance
- check the wiring between the solenoid and the control unit
- check the control unit

Lubricants and Fluids

MAZDA - 626 - 2.5i V6 24V Xerxes - KL

Engine		
Motor oil API SG	Below 0 °C	SAE 5W-30
Motor oil API SG	Above -25 °C	SAE 10W-30
Cooling system		
Coolant	All temperatures	
Manual transmission		
Gear oil API GL-4	All temperatures	SAE 75W-90
Gear oil API GL-5	All temperatures	SAE 75W-90
Gear oil API GL-4	Above 5 °C	SAE 80W-90
Gear oil API GL-5	Above 5 °C	SAE 80W-90
Automatic transmission		
ATF Dexron II	All temperatures	
ATF M-III	All temperatures	
Transfer box		
Gear oil API GL-5	Above -20 °C	SAE 90
Gear oil API GL-5	Below -20 °C	SAE 80W
Differential, rear (4x4)		
Gear oil API GL-5	Above -20 °C	SAE 90
Gear oil API GL-5	Below -20 °C	SAE 80W
Power steering		
ATF Dexron II	All temperatures	
ATF M-III	All temperatures	
Brakes system		
Brake fluid DOT 3	All temperatures	

Capacities

MAZDA - 626 - 2.5i V6 24V Xerxes - KL

Item	Values	Units
Engine sump, incl. filter	4.0	(l)
Manual transmission		
Gearbox refill	2.7	(l)
Automatic transmission		
Gearbox refill	8.8	(l)
Cooling system	7.5	(l)
Air-conditioner refrigerant	700	(g)
Air-conditioner compressor oil	175	(ml)

153. dual ram valve

Function

The solenoid determines which inlet manifold is used to let the air enter the engine. Depending on the engine rpm the long or short inlet manifold will be chosen or a combination of these.

Environmental Data

MAZDA - 626 - 2.5i V6 24V Xerxes - KL

Item	Values	Units
Engine code	KL	
Idle speed	650 ± 50	(rpm)
Fuel system (make & type)	Mitsubishi EGI	
Timing stroboscopic (before TDC)	10 ± 1/650	(° / rpm)
Fuel-pump pressure	6.5	(bar)
Injection pressure / system pressure	2.9	(bar)
CO exhaust gas	< 0.5	(%)
CO2	14.5 - 16.0	(%)
HC	100	(ppm)
O2	0.1 - 0.5	(%)
Lambda	0.97 - 1.03	
Lambda change (Delta Lambda)	0.03	
Oil temperature during test	60	(°C)
Fast-idle speed	2500-2800	(rpm)
CO at fast-idle speed	< 0.3	(%)

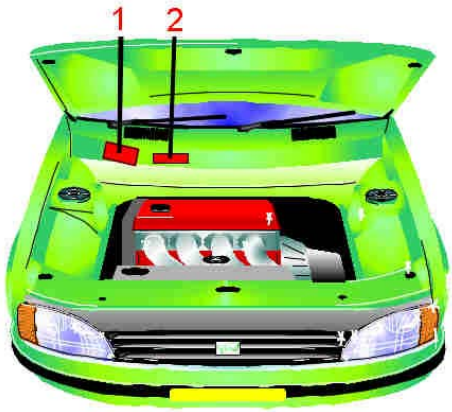
ID Location

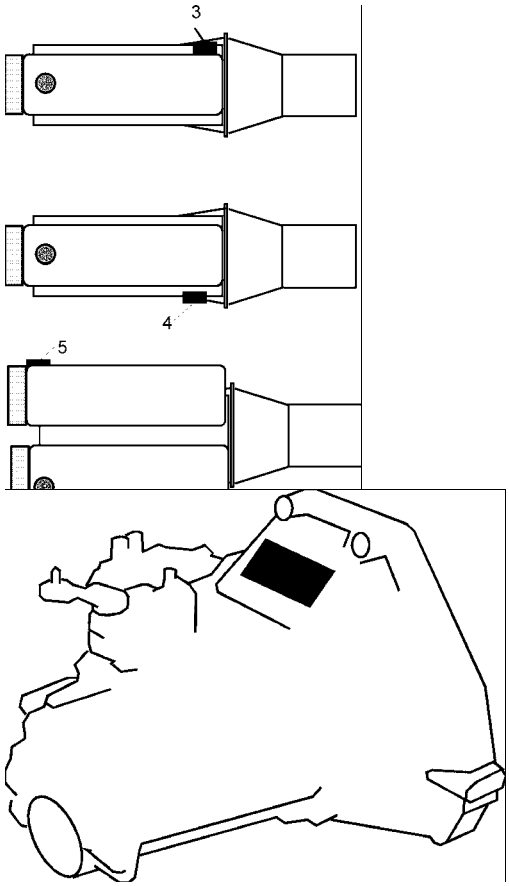
MAZDA - 626 - 2.5i V6 24V Xerxes - KL

1 Identification plate
2 VIN

3 Engine code B3 / B5 / B6 / PN
4 Engine code BP / FP / FS
5 Engine code 6-cylinder

6 Manual transmission code





IGNITION MODULE

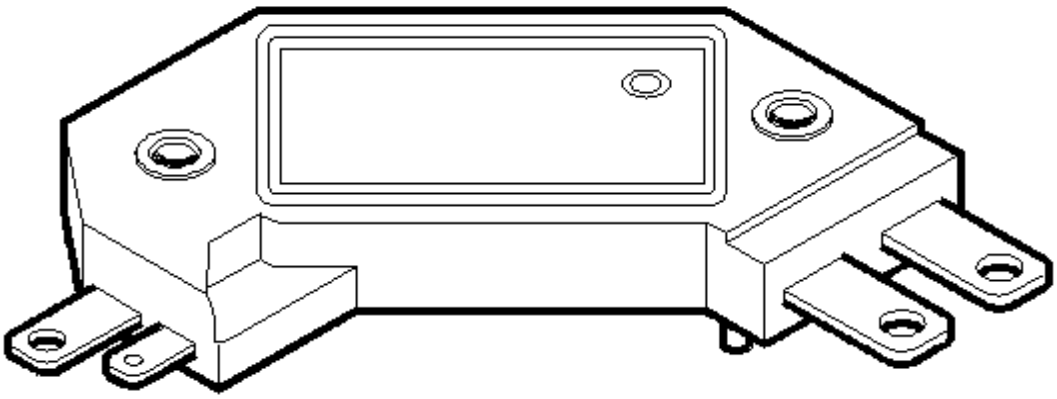
Function

The ignition module switches the current through the primary ignition coil on and off. The ignition module charges the ignition coil during the time the current is switched on. The moment the ignition module switches the current 'off' the ignition coil induces an induction voltage which causes the spark.

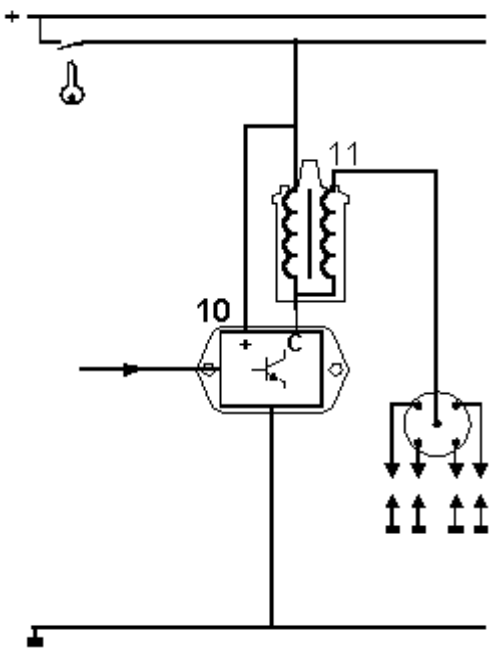
An ignition module switches the current on and off according to an input signal. This input is delivered by the control unit. On older systems the input signal is delivered by an inductive, Hall or opto-coupled sensor mounted in the distributor.

Specifications

resistance	-
supply voltage	-



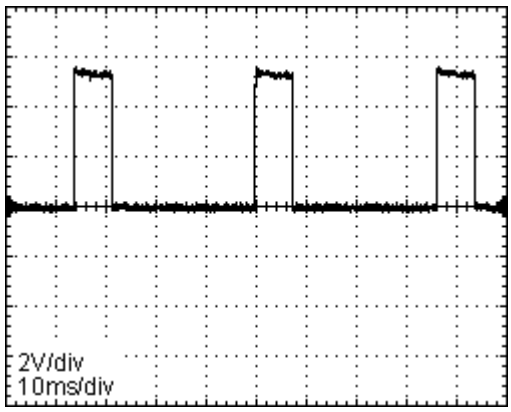
Electrical control



The connector of the ignition module has several terminals. The following terminals are used on common ignition modules.

- a terminal connected with the ignition coil. By this terminal the current through the ignition coil is switched on and of.
- a terminal connected with the supply voltage (12 Volts)
- a terminal connected with ground.
- terminal(s) to receive the input signal. If the input signal is delivered by an inductive sensor two terminals are needed.

The output voltage of an inductive sensor is delivered by an internal coil. This coil induces an almost sine wave output voltage. If the input signal is delivered by an Hall-sensor or opto-coupler three terminals are needed. Two of those three terminals are used to supply the sensor. The supply voltage is either 5 or 12 Volts. The third terminal receives the output signal from the sensor. The output voltage of these sensors is a square wave signal.



Addition terminals are possible. For example to send out a RPM signal to the revolution counter. Sometimes the input signal is delivered by a sensor while the ignition timing is controlled by the control unit. In this case the received input signal from the sensor is converted into a square wave signal by the ignition module and send out to the control unit. The control unit receiving this signal computes this input information and other input information from various engine parameters and sends out a new square wave signal to the ignition module. This signal is used by the ignition module to switch the current through the primary ignition coil on and off.

During the time the input signal for the ignition module is 'high' the current is switched 'on'. The moments this input signals falls to 'low' the current is switched 'off'. This moment the spark will appear

Electrical diagnosis

- Start the engine and measure (using an oscilloscope) the input signal delivered by the control unit or input sensor. The square wave signal or sine wave signal from a inductive sensor should be visible.

signal not OK:

- Disconnect the ignition module's connector and check the wiring between the ignition module and the control unit or input sensor.
- replace the ignition module if the signal appears on the disconnected connector and disappears on the connected connector.

If the output signal remains invisible the failure is not in the component.

signal OK:

- check the power supply of the ignition module.
- check the primary voltage using an ignition oscilloscope or normal oscilloscope with a suitable probe.
- check the wiring between the ignition module and the ignition coil.

The voltage should be nearly 0 Volt during the period the ignition module receives an 'high' input voltage from the sensor or control unit.

Mechanical diagnosis

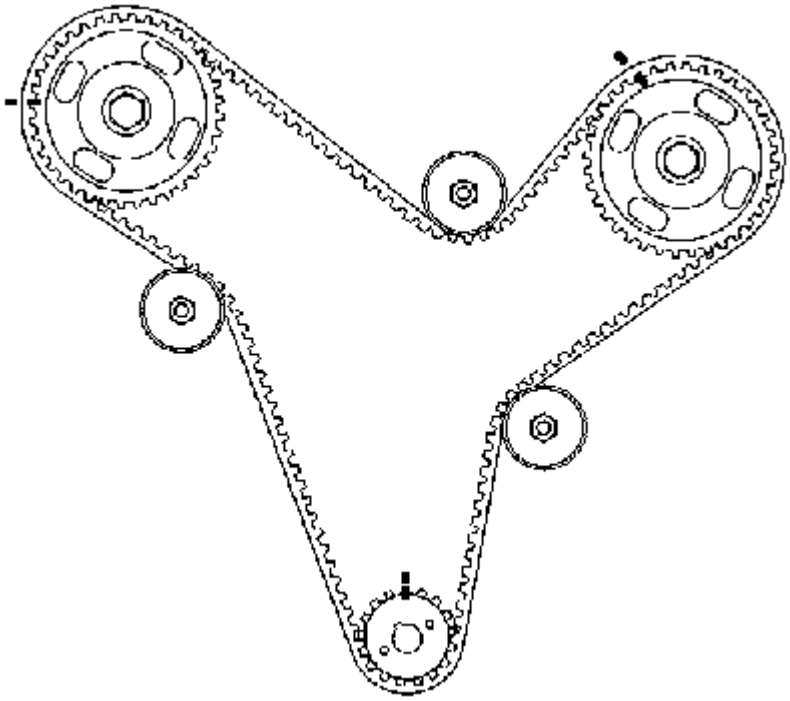
- Remove the auxiliary air valve without disconnecting the connector.
- Turn the ignition on and make sure that the valve closes as the heating element heats-up the bi-metallic strip.

Timing

MAZDA - 626 - 2.5i V6 24V Xerxes - KL

General

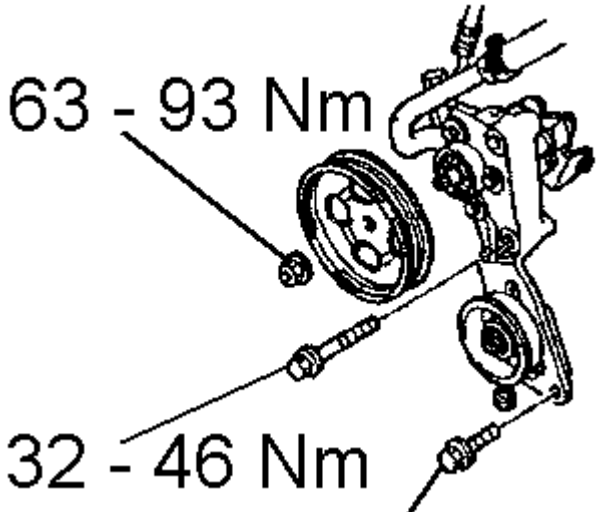
Item	Note
Always check the timing marks before timing belt removal	



Before disconnecting the battery cable, check the audio system security code

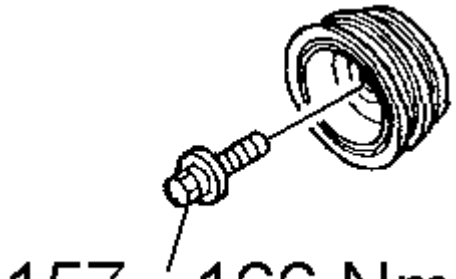
Removal

Item	Note
Disconnect the battery	
Remove the right front wheel	
Remove the engine lower covers	
Remove the ancillary drive belt	
Remove the water pump pulley	
Remove the ancillary pulley bracket	
Remove the power steering pump	

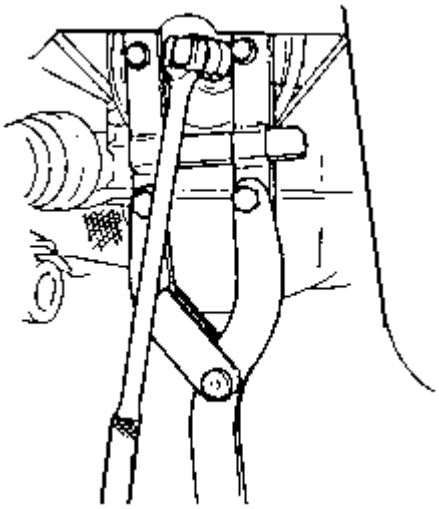


19 - 25 Nm

Remove the crankshaft pulley



Use a special tool: 49 EO11 1A1 / 49 S120 710

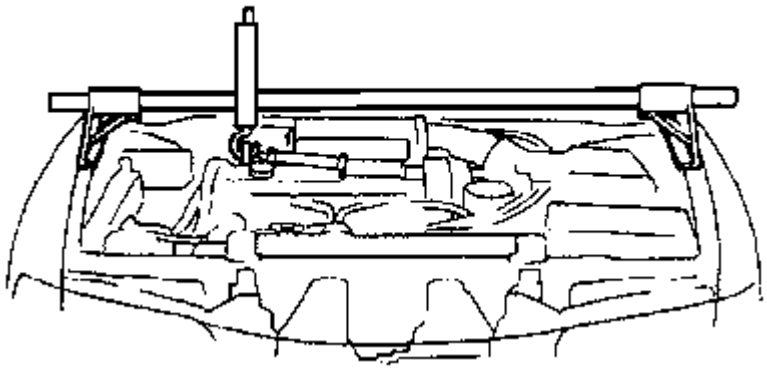


Remove the dipstick

Remove the crankshaft sensor

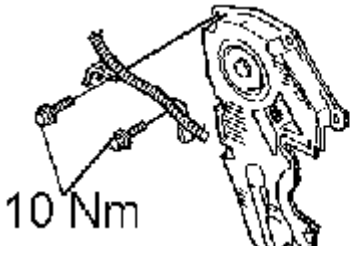
Place the wiring loom to one side

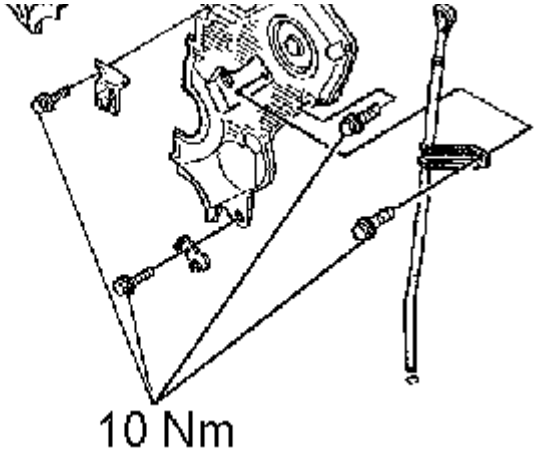
Note: Use a hoist to support the engine



Remove the engine mount

Remove all the timing-belt covers





Turn the crankshaft to TDC for cylinder 1

Align the timing marks

Remove the tensioner

Remove the idler pulley

Remove the timing belt

Check the tensioner and idler pulleys, renew if necessary

Measure the piston protrusion

If out of specification, replace with a new one 14 - 16 mm

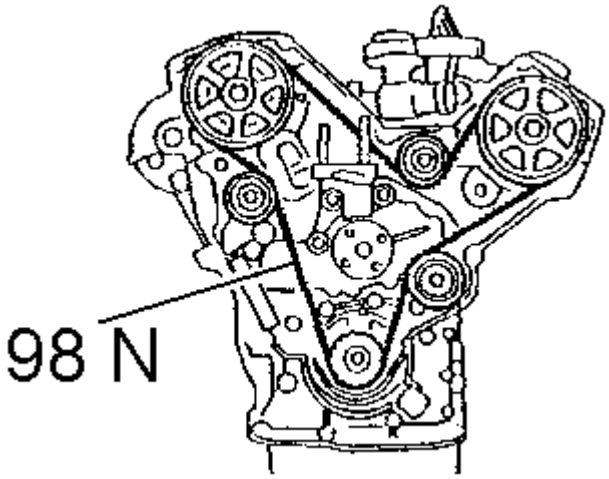
Check for leaks

Compress the tensioner

Lock the tensioner, use a locking pin

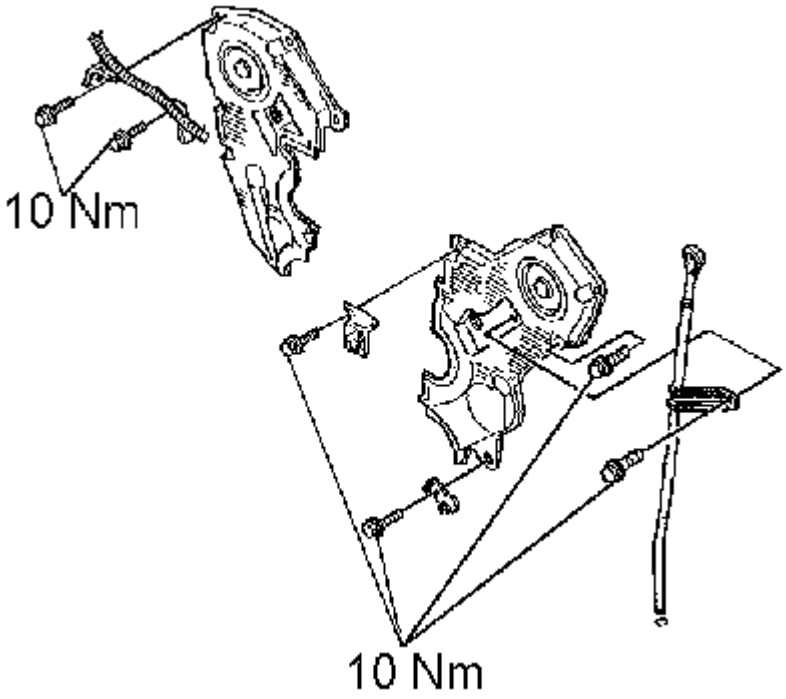
Installation

Item	**Note**
Check the timing marks	
Fit the locked tensioner	
Fit the timing belt anti-clockwise, starting at the crankshaft gearwheel	
Refit the idler pulley	32 - 46 Nm
Remove the locking pin	
Turn the engine 2 rotations by hand	
Check the timing marks	
Measure the timing belt deflection	



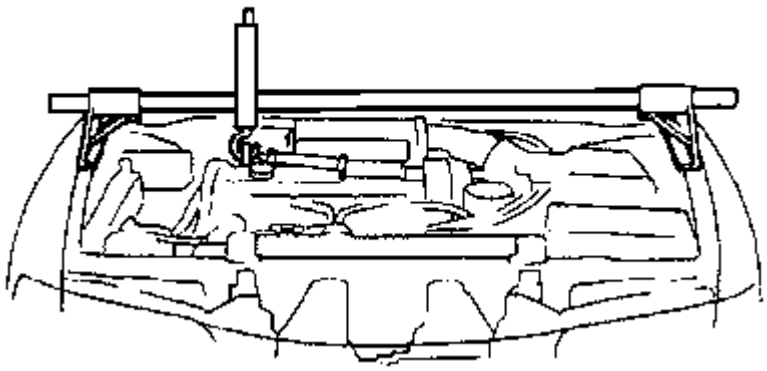
The tension is set at a deflection of: 6 - 8 mm / 98 N

Refit the timing belt covers



Refit the engine mount

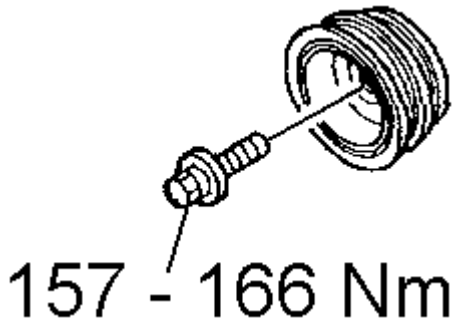
Remove the hoist



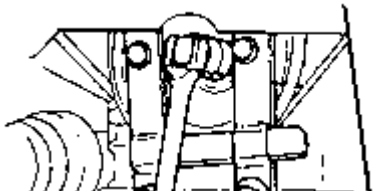
Remove the dipstick

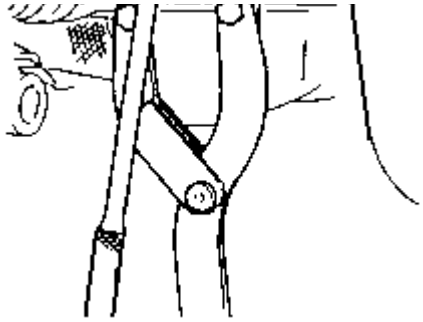
Fit the crankshaft sensor

Refit the crankshaft pulley 157 - 166 Nm

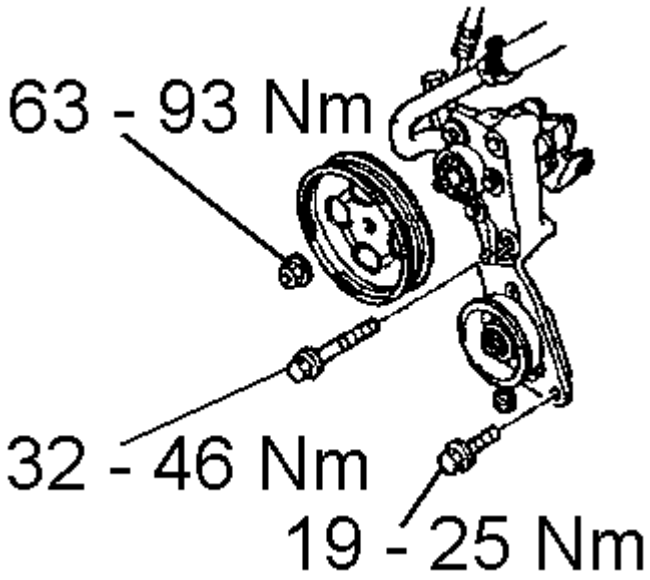


Use a special tool: 49 E011 1A1 / 49 S120 710





Refit the power steering pump



Refit the water pump pulley

Fit the ancillary drive belt

Refit the engine lower covers

Refit the right front wheel

Reconnect the battery earth cable

Torque settings

Item	Note
Tensioner:	19 - 25 Nm
Crankshaft pulley:	157 - 166 Nm
Water pump pulley:	10 Nm
Idler pulley:	32 - 46 Nm

Special tools

Item	Note
Engine hoist:	49 G017 5AO
Crankshaft pulley:	49 EO11 1A1 / 49 S120 710