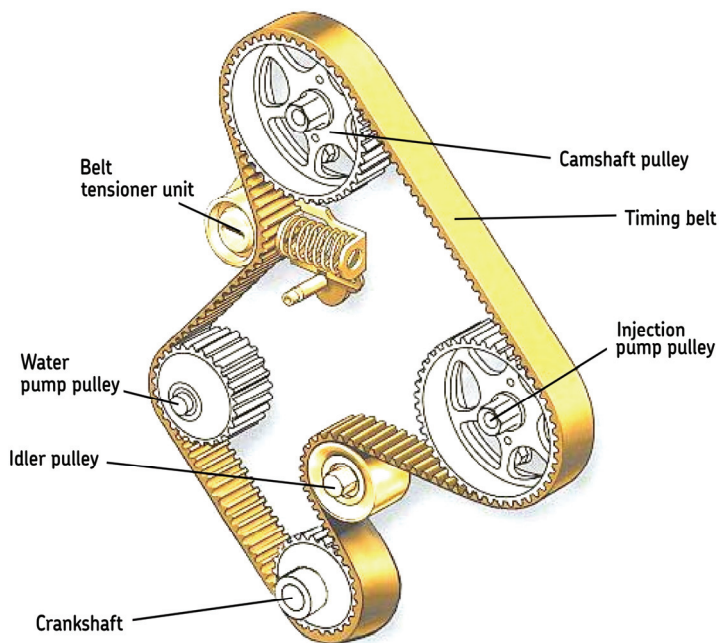


# The first signs of wear is “Noise.”

## Timing belt, tensioner and idler failure

### Tech tip



A tensioner that sounds bad usually is bad. While the engine is running, listen to hear if any noise is coming from the timing cover or front assembly. Bad bearings make a high pitched “whine” or “growling” noise after the engine has been started. If there is noise, and it is identified as coming from behind the timing cover, you should:

- Remove appropriate components in order to remove the timing belt and check the idler pulley for failure. The idler pulley accounts for about half of all tensioner failures.

Misalignment of the timing belt can cause premature failure of the idler pulley or the pulley on the tensioner, as well as the belt. Generally, this indicates that the tensioner or idler is not attached to the mounting location on the engine correctly or the bearings for the tensioner, idler or both, have worn and have excess “play”. It is important that the belt and bearing alignment is correct. Do not re-use the timing belt, tensioner or idler if misalignment is found, replace them with new components to avoid engine damage or failure.

- With the timing belt removed, check for side to side play or “rocking” on both the idler pulley and tensioner pulley. Replace if any movement is detected.
- With the timing belt removed, check both the idler and tensioner pulleys for roughness when rotating the bearing. The idler & tensioner should spin freely & smoothly. Replace bearing(s) if roughness is determined.

SKF recommends replacing timing belts, tensioner and idlers at 60,000 to 80,000 miles to prevent unnecessary damage to your engine. Don’t forget to check for oil leaks while investigating bearing noise. In order to avoid premature seal failure, always make sure the sealing surface is smooth before replacing camshaft or front crankshaft seals that show signs of leaking.





## WARNING!

**SKF**

The timing belt products require installation by an experienced professional mechanic or qualified maintenance professional. You must carefully evaluate the particular application on or into which you intend to install the products. Proper selection and installation of timing belt products are essential to minimize the risk of product failure or severe engine damage.

Read and follow these instructions before removing installed timing belts and before installing, using and maintaining the new timing belts. Correct disassembly and assembly methods and procedures are essential to ensure the personal safety of the individual performing the kit installation. Improper installation due to the failure to correctly follow these instructions or to observe the following safety precautions can cause serious personal injury or death.

There are numerous variation in procedures, techniques, tools, and parts for servicing vehicles, as well as in the skill of the individual doing the work. These instructions cannot possibly anticipate all such variations and provide advice or cautions as to each. Accordingly, anyone who departs from these instructions must first establish that he or she does not compromise personal safety or the vehicle integrity by choosing to follow or use different methods, tools or parts.

DO NOT attempt repairs you do not understand or when you lack the proper tools for the repairs.

DO NOT work on the engine while it is running. Make sure the ignition switch is always in the OFF position, unless otherwise required by the procedure.

DO set the parking brake when working on the vehicle. If you have an automatic transaxle, set in park unless instructed otherwise for a specific operation. Place supporters against the front and rear surfaces of the tires to help prevent the vehicle from moving.

DO use safety stands whenever a procedure requires you to be under the vehicle.

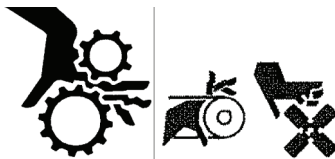
DO use and always wear safety glasses for eye protection.



DO NOT operate the engine if the vehicle is not located in a well-ventilated area to avoid the danger of carbon monoxide poisoning.



DO keep your body, including your hands, hair as well as your clothing away from moving parts when the engine is running. To avoid injury, always remove rings, watches, loose hanging jewelry, and loose clothing before beginning to work on a vehicle.



DO NOT smoke while working on the vehicle. DO NOT use combustible substances in or around the engine either during repair or maintenance or when running the engine.



DO NOT touch any part of the engine while it is hot. Avoid contact with hot metal parts such as the engine block, radiator, exhaust manifold, tail pipe, catalytic converter and muffler. Allow the engine to cool before any repair or maintenance is performed on the engine.



DO keep hands and other objects clear of the radiator fan blades! Your vehicle may be equipped with a cooling fan that may turn on, even though the ignition switch is in the OFF position. For this reason care should be taken to ensure that the radiator fan electric motor is completely disconnected when working under the hood and the engine is not running.





## ADVERTENCIA!

Los productos de correa temporizadora requieren instalación por parte de un mecánico profesional experimentado o un profesional de mantenimiento calificado. Usted debe evaluar atentamente la aplicación particular en la que pretende instalar los productos. La selección e instalación apropiadas de los productos de correas temporizadoras son esenciales para reducir el riesgo de una falla del producto o de serios daños al motor.

Lea y siga estas instrucciones antes de retirar las correas temporizadoras instaladas y antes de instalar, usar y mantener las nuevas correas temporizadoras. Los métodos y procedimientos correctos de desensamblado y ensamblado son esenciales para asegurar la seguridad personal del individuo que realiza la instalación del equipo. La instalación incorrecta, debido a la falta de un seguimiento apropiado de estas instrucciones o el no prestar atención a las siguientes precauciones de seguridad, puede causar lesiones personales graves o la muerte.

Existen numerosas variaciones en procedimientos, técnicas, herramientas y partes para el mantenimiento de vehículos, así como en la experiencia y destreza de la persona que realiza el trabajo. Estas instrucciones no son capaces de anticipar todas aquellas variaciones y brindar consejos o precauciones de acuerdo a cada una de ellas. En consecuencia, cualquier persona que no siga estas instrucciones debe primero demostrar que no pone en peligro la seguridad personal o la integridad del vehículo al optar por seguir o utilizar diferentes métodos, herramientas o partes.

**NO INTENTE** efectuar reparaciones que no entienda o cuando no tenga las herramientas apropiadas para las reparaciones.

**NO TRABAJE** en el motor mientras esté encendido. Asegúrese de que el interruptor de encendido esté siempre en la posición de **APAGADO**, a menos que se indique lo contrario en el procedimiento.

**PONGA** el freno de mano cuando trabaje en el vehículo. Si usted tiene un transeje automático, colóquelo en el modo de parqueo a no ser que se indique lo contrario en una operación específica. Coloque apoyos contra las superficies frontal y posterior de los neumáticos para ayudar a prevenir que el vehículo se mueva.

**UTILICE** soportes de seguridad cuando un procedimiento requiera que usted esté debajo del vehículo.

**UTILICE** siempre gafas de seguridad para protección ocular.

**NO OPERE** el motor si el vehículo no se encuentra en un área bien ventilada para evitar el riesgo de envenenamiento por monóxido de carbono.

**MANTENGA** su cuerpo, incluyendo sus manos, cabello y vestimenta, lejos de las partes móviles cuando el motor esté encendido. Para evitar lesiones, retire siempre anillos, relojes, joyería suelta y ropa holgada antes de empezar a trabajar en un vehículo.

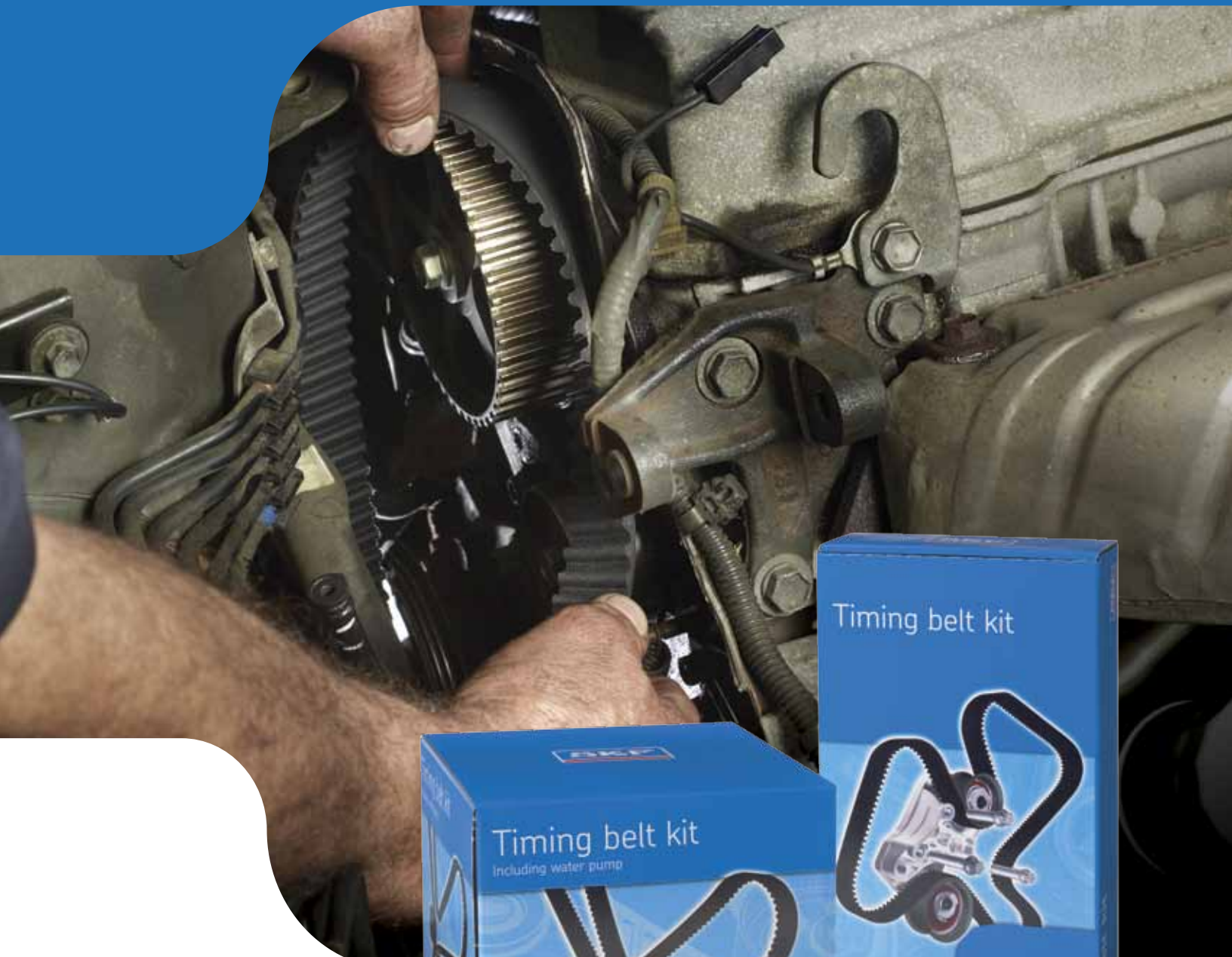
**NO FUME** mientras esté trabajando en el vehículo. **NO UTILICE** sustancias combustibles dentro o alrededor del motor ya sea durante la reparación o mantenimiento o cuando esté haciendo funcionar el motor.

**NO TOQUE** ninguna parte del motor mientras esté caliente. Evite el contacto con partes metálicas calientes como el bloque del motor, el radiador, el colector de escape, el tubo de escape, el catalizador y el silenciador. Permita que el motor se enfríe antes de que cualquier reparación o mantenimiento se realice en el motor.

**¡MANTENGA** las manos y otros objetos alejados de las hojas del ventilador del radiador! Su vehículo puede estar equipado con un ventilador de enfriamiento que puede encenderse, aún si el interruptor de encendido está en la posición de **APAGADO**. Por este motivo se debe tener especial cuidado al asegurarse de que el motor eléctrico del ventilador del radiador esté completamente desconectado al trabajar debajo del capó y que el motor no esté encendido.



# Timing Belt Kits





# The industry's most complete kits

## Over 90% market coverage!

Just over 20 years ago, SKF introduced the timing belt kit concept to the automotive aftermarket. Today, SKF continues to lead the way with the best new technologies and the industry's best timing belt kit coverage – over 90% of U.S., European and Asian models.

When performing a timing belt replacement, it is recommended to replace all the parts of the system to avoid individual component failure. By packaging all the components in one box to perform a complete timing belt replacement, SKF Timing Belt Kits help technicians prevent unnecessary component failure, unwanted comebacks and additional maintenance costs.

More and more repair shops now are taking advantage of SKF's broad product range to enhance the performance of their technicians – and the profitability of their business. By not having to turn away business, you can maximize profitability and build your customer base.

- One carton, one part number for a complete timing belt and component repair
- All seals included in each timing belt kit
- No kit duplication – water pumps are provided in the SKF kits where the water pump is part of the timing system
- Over 90% market coverage
- Save time – no looking up multiple part numbers
- Eliminate mistakes – no danger of installing the wrong parts, or doing the job over for a component that wasn't replaced with the belt
- Prevent engine damage – a broken timing belt can result in complete or partial destruction of the engine
- Protect your customer's investment – and your repair shops reputation
- Install confidence with SKF premium quality parts



### Timing Belt

Premium OE quality belt construction provides durability, performance and reliability in the high-temperature engine compartments of today's vehicles with belt-driven engines.



### Water Pump

New premium quality water pump that meets or exceeds the OE specifications, features a high flow design that provides maximum performance and a long service life.

### Tensioner

Premium quality tensioners provide the correct amount of tension, so the timing belt doesn't slip or jump off track, which could cause a catastrophic failure.



### Idlers

Premium quality idler pulleys help to assure correct tension and operation. Precise engineering helps eliminate over- or under-tension that can cause noise, vibration and early belt failure.

### Camshaft seals/ Timing cover seals

Premium quality seals made to the OE design and material specifications prevent oil leakage onto the timing belt, which would lead to premature belt failure.



## Why a new timing belt?

On vehicles with belt-driven engines, the timing gear is fitted with a grooved or synchronous timing belt that requires no maintenance or lubrication during its life. This belt must function at high temperatures and torques, and at wide variations in speed. Because it runs noiselessly, it is often overlooked until it breaks – causing not only inconvenience but possibly serious engine damage. For this reason, many auto manufacturers recommend replacing the timing belt at approximately 60,000 to 80,000 miles.

## Why a new belt tensioner or idler?

Because the components are subjected to the same extreme conditions as the timing belt, most auto manufacturers recommend replacing them when the belt is changed. This is the only way to assure accurate belt tension – critical to maintaining optimum engine performance.

## Why a new water pump?

Many belt-driven engines have incorporated the water pump into the timing system. It is recommended that you replace the water pump when performing a complete timing belt system installation. Because if the water pump fails after it is replaced, most of the labor costs will be incurred by the customer again to replace it. When they know the facts, most customers will want the complete repair rather than risk the added costs of doing the job twice.

### SKF Timing Belt Kits with a water pump

**Part number:** Includes a “WP” suffix

**About the kit:** Includes all parts necessary to complete the installation, including belts, tensioners, idler pulleys, camshaft and timing cover seals, a water pump and detailed instruction sheets.

### SKF Timing Belt Kits

**Part number:** Includes “P” suffix

**About the kit:** Includes all parts necessary to complete the installation, including belts, tensioners, idler pulleys, camshaft and timing cover seals, and detailed instruction sheets.



## Become an expert in timing belt inspection and installation

A number of factors put greater stress than ever on automotive drive belt systems:

- Today's automotive engines operate at higher temperatures and at greater revolutions per minute.
- Today's engines generate more horsepower loads.
- Today's aerodynamic designs generate higher temperatures under the hood.
- Today's engines need to drive more auxiliary equipment.
- Pulley diameters have been made smaller to save space under the hood.

For optimum performance and safety, SKF and many car manufacturers recommend that the belt,

belt tensioner units, idler pulleys, seals and water pump (when it is part of the timing system) all be changed at the same time. Whatever the source of damage to the belt – too much or too little tension, vibration, high temperature, or misalignment – it is highly probable that other rotating components in the system have been affected. If they are not changed together with the belt, early breakdown may result.

Even worse, a broken timing belt could destroy your customer's engine! If a car has an "interference" engine, a broken timing belt can result in an open valve being struck by a moving piston. This will damage valves, pistons, cylinder head and walls.

Protect your customers' investment – and your repair shop's reputation – by checking and replacing the belt and associated components in the system.

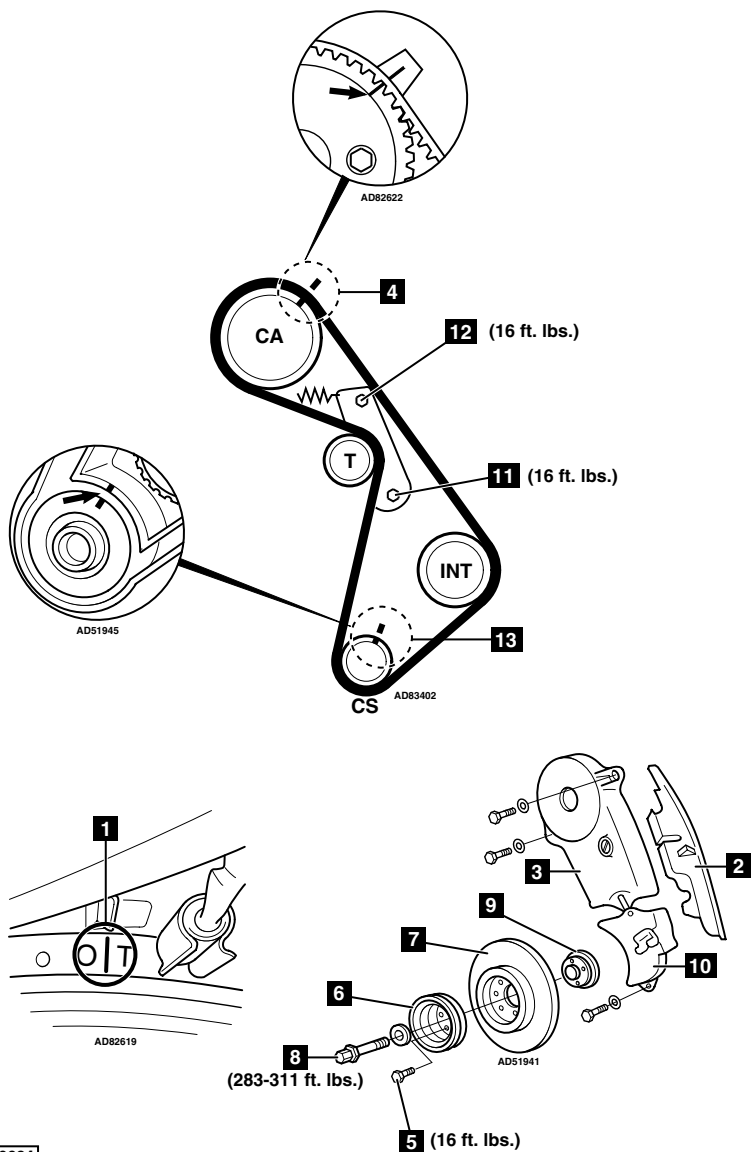


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Model:	Year:	Model:	Year:
325i/iL/iS/ 2.5L	1988-93	525i 2.5L	1989-93
325E/ES 2.7L	1988		

Engine Identification: **M20-B25/B27**



AD10684

**Replacement Interval Guide**

BMW recommends replacement every 50,000 miles or 48 months, whichever occurs first, or whenever belt tension released. *The previous use and service history of the vehicle must always be taken into account.*

**Check For Engine Damage**

**CAUTION:** This engine has been identified as an INTERFERENCE engine in which the possibility of valve-to-piston damage in the event of a timing belt failure is MOST LIKELY to occur. A compression check of all cylinders should be performed before removing the cylinder head.

**Labor Times – hrs**

Remove & install:	
325	2.70
525	2.60

**Special Tools**

- Crankshaft pulley hub holding tool – BMW No.11 2 150.

**Special Precautions**

- Disconnect battery ground cable.
- Do NOT turn crankshaft or camshaft with timing belt removed.
- Remove spark plugs to ease turning engine.
- Turn crankshaft in normal direction of rotation (unless otherwise stated).
- Do NOT turn crankshaft via camshaft or other sprockets.
- Observe all tightening torques.

**Removal**

1. Drain coolant.
2. Remove:
  - Engine splash guard.
  - Accessory drive belts.
  - Viscous fan.
  - Water pump pulley.
  - Radiator.
  - Distributor cap.
  - Rotor arm.
  - Rotor arm adapter (if installed).
3. Turn the crankshaft clockwise until No.1 cylinder at TDC of compression stroke with timing marks 1 aligned.
4. Remove:
  - Rubber guard 2.
  - Upper timing belt cover 3.
5. Ensure the camshaft sprocket timing marks 4 are aligned.
6. If marks not aligned, turn crankshaft one turn clockwise.

7. Remove:
  - Crankshaft pulley bolts 5.
  - Crankshaft pulley 6.
  - Vibration damper 7.
8. Using tool No.11 2 150 to hold the crankshaft hub, remove the crankshaft pulley bolt 8.
9. Remove:
  - Crankshaft pulley hub 9.
  - TDC sensor.
  - Lower timing belt cover 10.
10. Loosen the tensioner bolts 11 & 12, push the tensioner away from belt and lightly retighten bolt 12.
11. Remove the timing belt.

**IMPORTANT:** For maximum timing belt system life, replace all tensioners and pulleys during timing belt replacement.

**Installation**

**NOTE:** DO NOT install a used timing belt. On early engines the timing belt has 128 teeth (127 teeth on later belts). Consult label attached to left hand door pillar and ensure the correct belt is installed.

1. Ensure the timing marks 1 & 2 are aligned.
2. Install the timing belt to the sprockets and pulleys in the following order:
  - Crankshaft sprocket.
  - Intermediate shaft sprocket.
  - Camshaft sprocket.
  - Tensioner pulley.
3. Ensure the timing belt taut between sprockets on non-tensioned side.
4. Loosen the tensioner bolt 11 to allow tensioner to operate.
5. Turn the crankshaft slowly two turns clockwise until No.1 cylinder at TDC of compression stroke with timing marks 1 & 2 aligned.
6. Torque the tensioner bolt 12 first followed by bolt 11 to 16 ft. lbs.
7. Install components in reverse order of removal.
8. Torque the crankshaft pulley bolts 5 to 16 ft. lbs.
9. Torque the crankshaft pulley bolt 8 to 283-311 ft. lbs.
10. Refill cooling system.