

PUBLISHED: 31-JUL-2019

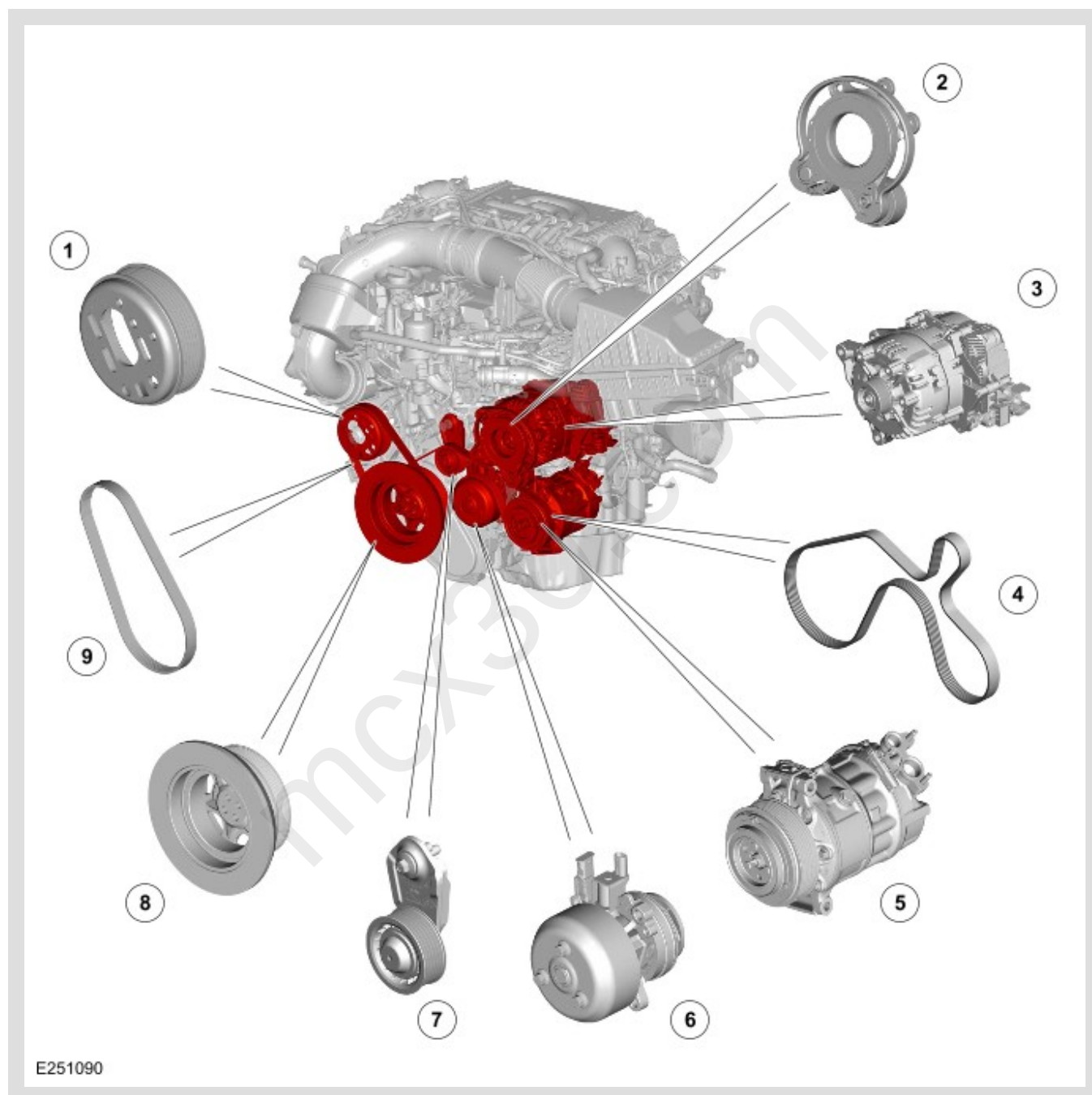
2020.0 DEFENDER (LE), 303-05C

ACCESSORY DRIVE - INGENIUM I6 3.0L PETROL

[G2341940]

mcx30.com

COMPONENT LOCATION



ITEM	DESCRIPTION
1	Viscous cooling fan pulley
2	Belt Integrated Starter Generator (BISG) drive belt tensioner
3	BISG

ITEM	DESCRIPTION
4	BISG drive belt
5	Air Conditioning (A/C) compressor
6	Coolant pump
7	Idler pulley
8	Crankshaft pulley
9	Viscous cooling fan drive belt

OVERVIEW

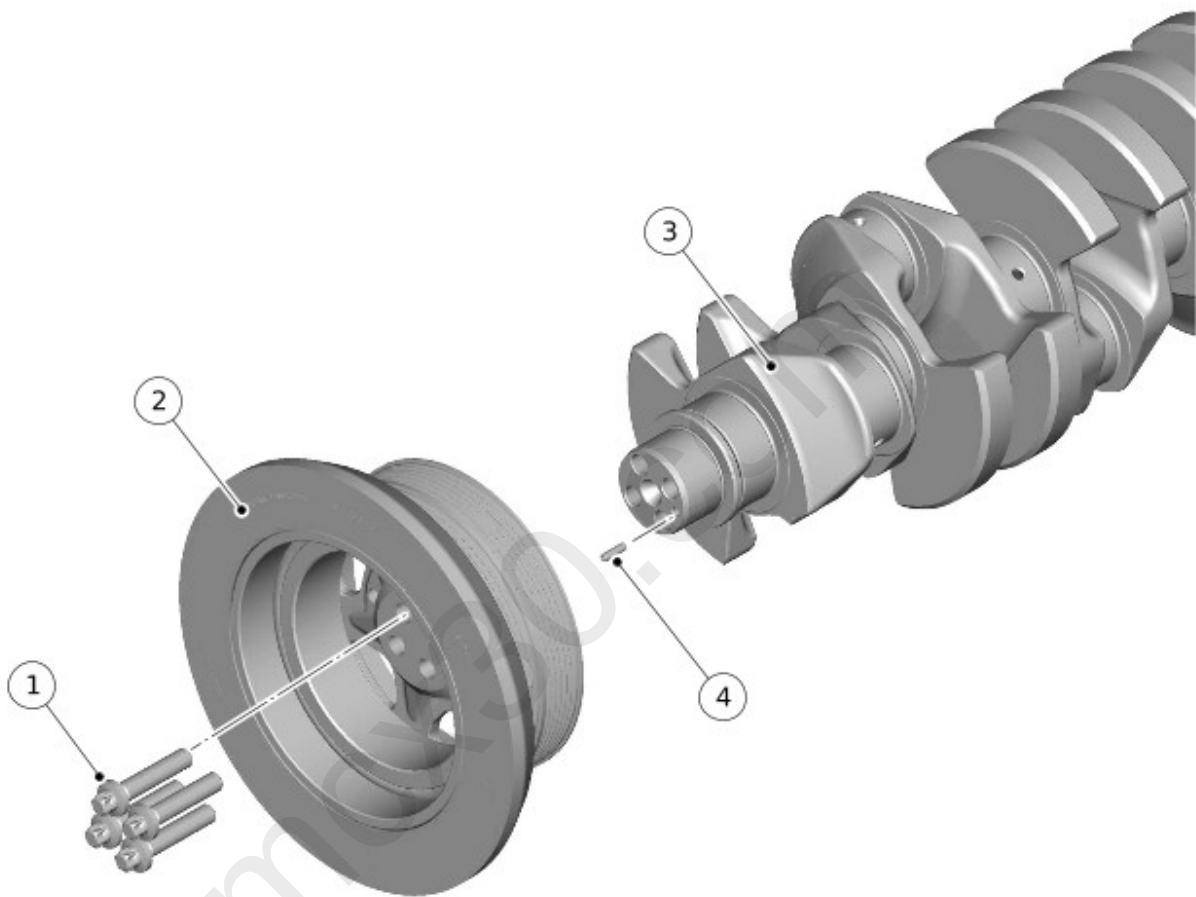
The accessory drive provides power from the crankshaft by the crankshaft pulley through the drive belts, to drive front mounted accessories such as:

- The variable coolant pump
 - For additional information, refer to: [Engine Cooling](#) (303-03C Engine Cooling - INGENIUM I6 3.0L Petrol, Description and Operation).
- The viscous cooling fan
 - For additional information, refer to: [Engine Cooling](#) (303-03C Engine Cooling - INGENIUM I6 3.0L Petrol, Description and Operation).
- The Air Conditioning (A/C) compressor
 - For additional information, refer to: [Air Conditioning](#) (412-01 Climate Control, Description and Operation).
- The Belt Integrated Starter Generator (BISG)
 - For additional information, refer to: [Belt Integrated Starter Generator](#) (414-03 Battery Charging - INGENIUM I6 3.0L Petrol, [+] MHEV, Description and Operation).

The drive belt must be tight to maintain the belt tension for slip-free torque transmission.

DESCRIPTION

CRANKSHAFT PULLEY



E237257

ITEM	DESCRIPTION
1	Bolt (quantity 4)
2	Crankshaft pulley
3	Crankshaft
4	Crankshaft pulley pin

The crankshaft pulley is located at the front end of the crankshaft and turns the drive belts that operate the engine and other accessories. The crankshaft pulley is connected to the crankshaft by 4 bolts and a crankshaft pulley pin aligns them in the correct position.

The crankshaft pulley is a combined pulley and torsional vibration damper. The torsional vibration damper has compressed rubber between its inner and outer diameters to reduce peak levels of torsional vibration inside the crankshaft.

VISCOUS COOLING FAN DRIVE BELT

CAUTION:

Protect the viscous cooling fan drive belt to prevent contamination from engine oil, brake fluid or engine coolant. These items can cause damage to the viscous cooling fan drive belt.

NOTE:

The viscous cooling fan drive belt is a single use component and must be renewed if removed.

The viscous cooling fan drive belt provides drive for the viscous cooling fan pulley. The viscous cooling fan drive belt is a maintenance free multi-V type stretch-fit belt. The tension is provided by the elastic properties of the belt itself.

It is necessary to inspect the viscous cooling fan drive belt at every routine service for excessive wear and damage. If there is damage or wear, install a new viscous cooling fan drive belt.

VISCOUS COOLING FAN DRIVE BELT PULLEY

The viscous cooling fan pulley is located next to the crankshaft pulley and transmits the drive to the viscous cooling fan. The slotted holes and the square drive locator are designed for the installation of the viscous cooling fan drive belt.

BELT INTEGRATED STARTER GENERATOR DRIVE BELT

CAUTION:

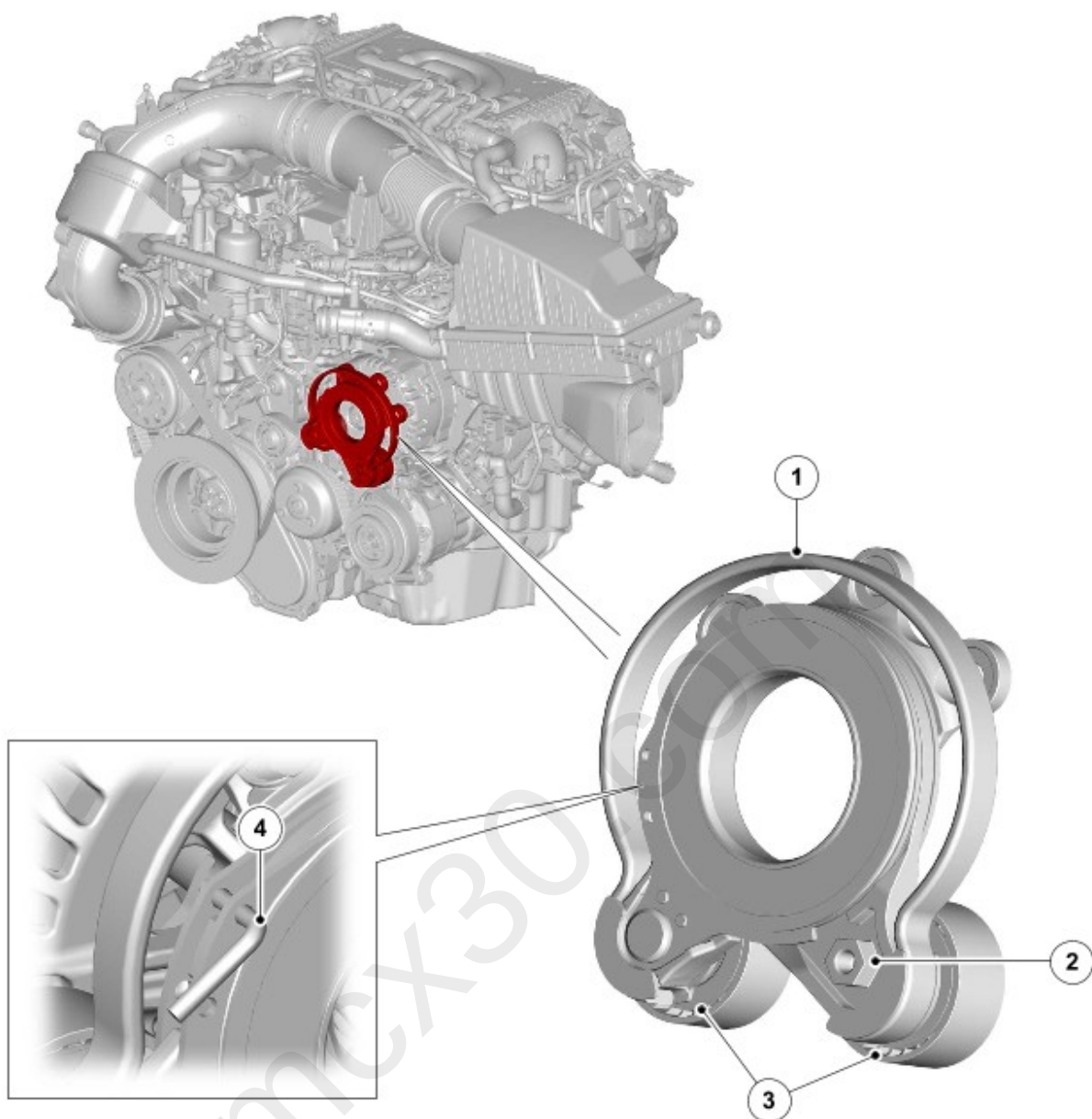
Protect the Belt Integrated Starter Generator (BISG) drive belt to prevent contamination from engine oil, brake fluid or engine coolant. These items can cause damage to the BISG drive belt.

The Belt Integrated Starter Generator (BISG) drive belt is a maintenance free multi-V type belt which must be maintained at the correct tension. The BISG drive belt is automatically preloaded by the BISG drive belt tensioner to maintain the necessary friction around the drive pulleys. This provides slip-free drive of the BISG, the coolant pump and the Air Conditioning (A/C) compressor. You must inspect the BISG drive belt at every routine service for excessive wear and damage.

BELT INTEGRATED STARTER GENERATOR DRIVE BELT TENSIONER

CAUTION:

Use a wrench to release the tension on the Belt Integrated Starter Generator (BISG) pulley before you remove the lock pin. If you do not use a wrench, you can cause damage to the BISG drive belt tensioner and the belt profile.



E251091

ITEM	DESCRIPTION
1	Belt Integrated Starter Generator (BISG) tensioner spring
2	Wrench tool locator
3	BISG tensioner pulley
4	Lock pin

The Belt Integrated Starter Generator (BISG) drive belt tensioner is secured to the front end of the BISG with 3 bolts. The BISG drive belt tensioner is calibrated to give the correct amount of tension to the BISG drive belt.

The BISG drive belt tensioner allows the removal and installation of the BISG drive belt. The BISG drive belt tensioner has 2 spring-loaded pivot arms with a BISG drive belt tensioner pulley at the end of each arm. The BISG drive belt

tensioner pulleys are free to rotate on bearings. You must use a wrench to rotate the BISG drive belt tensioner against its spring to the lock position. In this position, 2 holes and the detent pin allow you to lock the BISG drive belt tensioner to the install position. You must only remove the lock pin when you use the wrench to release the tension on the BISG drive belt tensioner.

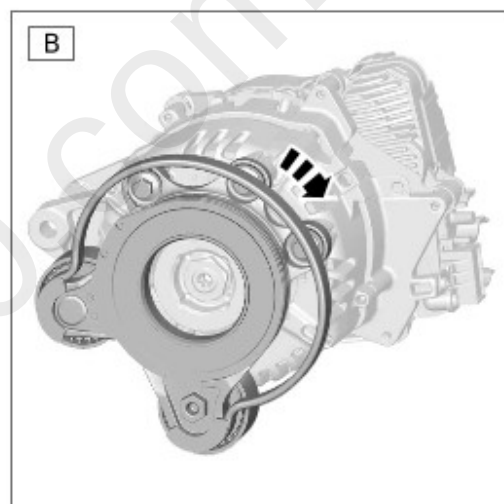
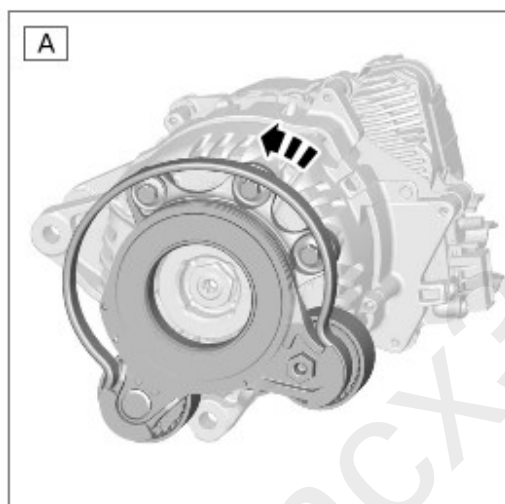
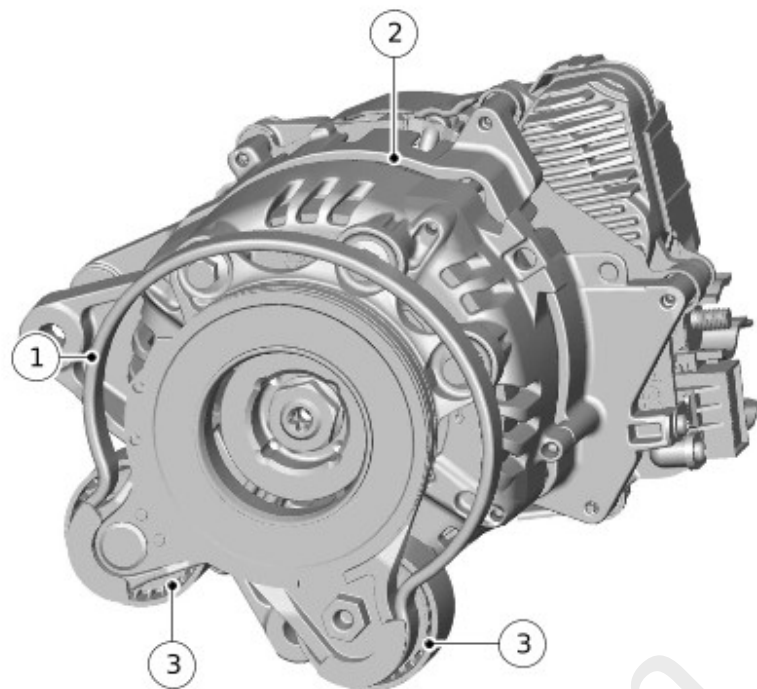
Unless the BISG drive belt tensioner spring breaks, or some other mechanical part fails, there is no need to check the tension of the BISG drive belt.

OPERATION

The crankshaft pulley is attached to and rotates with the crankshaft. The crankshaft pulley gives the drive for the accessory drive belt which in turn gives rotational power for the front-mounted accessories. The drive from the crankshaft pulley to the accessory drive belt is provided by friction. The size of the contact surface between the crankshaft pulley and the accessory drive belt is maximized by the use of 'V' grooves.

On Mild Hybrid Electric Vehicles (MHEV), the Belt Integrated Starter Generator (BISG) can start the engine by turning the crankshaft through the BISG drive belt. Thus there is different load on the BISG drive belt in different operating conditions such as boosting and cranking. The position of the BISG drive belt tensioner is related to if the BISG system is in the boost/crank position, or the energy recovery position.

Belt Integrated Starter Generator Drive Belt Tensioner Operating Conditions

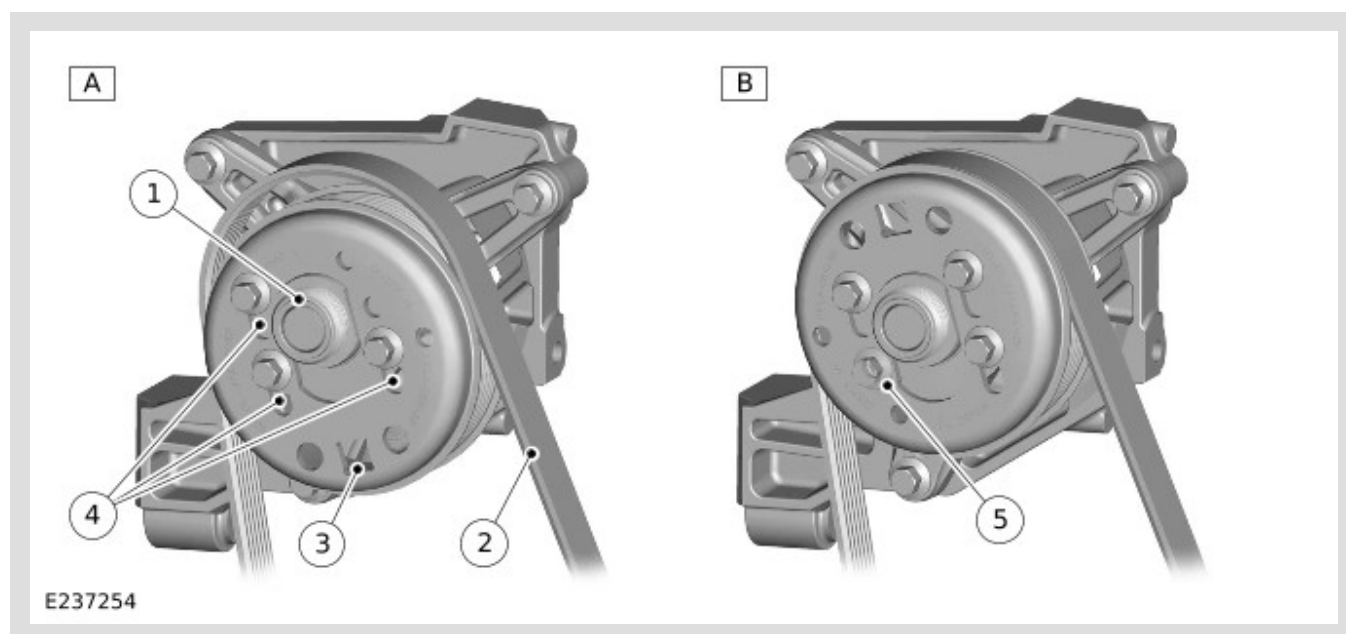


E237256

ITEM	DESCRIPTION
A	Belt Integrated Starter Generator (BISG) drive belt tensioner in energy recovery position
B	BISG drive belt tensioner in boost/crank position
1	BISG drive belt tensioner spring
2	BISG
3	BISG drive belt tensioner pulley

The Belt Integrated Starter Generator (BISG) drive belt tensioner keeps the correct tension when different loads occur on the BISG drive belt. The BISG drive belt tensioner pulleys maximize the contact with the component pulleys to maintain sufficient grip between the belt and the component driven pulleys.

Stretch Belt - Slotted Pulley Installation Process



ITEM	DESCRIPTION
A	Uninstalled position
B	Installed position
1	Viscous cooling fan connection point
2	Viscous cooling fan drive belt
3	Wrench tool locator
4	Slotted holes
5	Fourth bolt in position

The viscous cooling fan pulley comprises of 3 slotted holes and a round hole to install the viscous cooling fan drive belt. There is also a hole for the wrench tool to rotate the pulley 180° between the uninstalled and installed positions during the installation. With only 3 bolts installed loose, the pulley moves along the slotted holes between the positions when rotating, tightening the viscous cooling fan drive belt. As the viscous cooling fan pulley turns, it will start to take up the slack of the viscous cooling fan drive belt due to the eccentric mounting. The fourth securing bolt can only be installed when the pulley is in the installed position. All 4 bolts can be secured when the fourth bolt is installed.