

303-05 : Accessory Drive – 4.2L NA V8 – AJV8/4.2L SV  
V8 – AJV8

Specifications

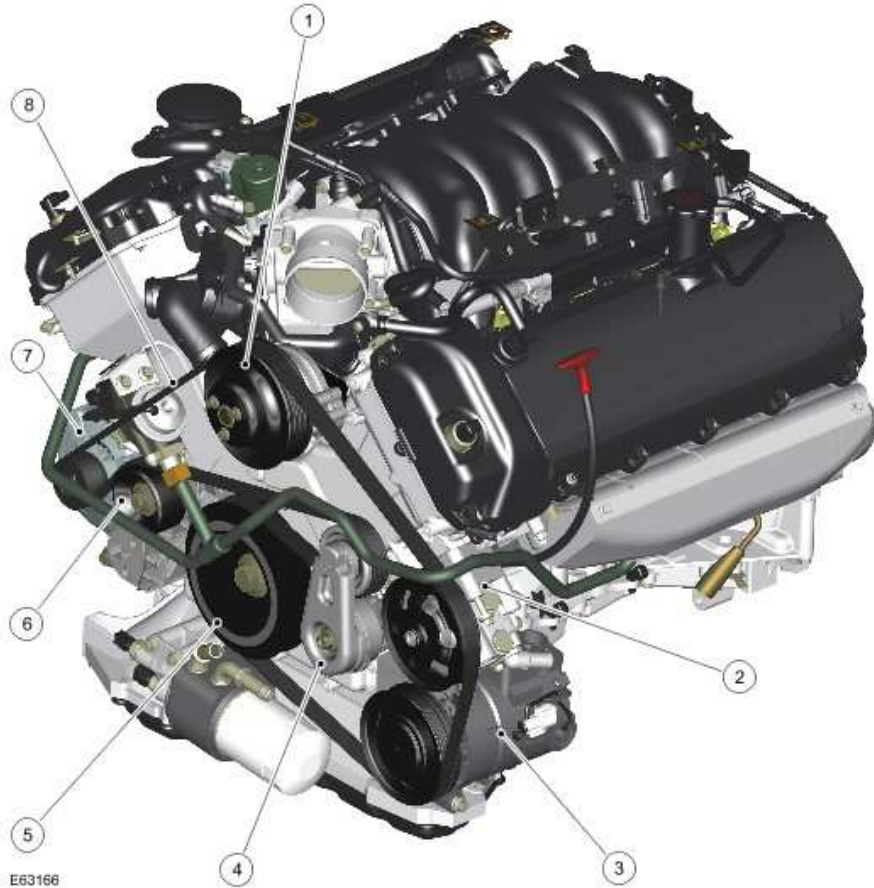
## Specifications

### Torque Specifications

Item	Nm	lb-ft	lb-in
Accessory drive belt, tensioner - bolt	40	30	-
Accessory drive belt, idler pulley - bolt	25	18	-
Accessory drive belt - bolt (Supercharged models)	40	30	-

## Accessory Drive - 4.2L NA V8 - AJV8

### COMPONENT LOCATION



Item	Part Number	Description
1		Engine coolant pump
2		Power steering pump
3		Air Conditioning (A/C) compressor
4		Automatic tensioner
5		Crankshaft damper
6		Idler
7		Generator

8		Drive belt
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## **INTRODUCTION**

A single belt drives the following primary engine mounted accessories:

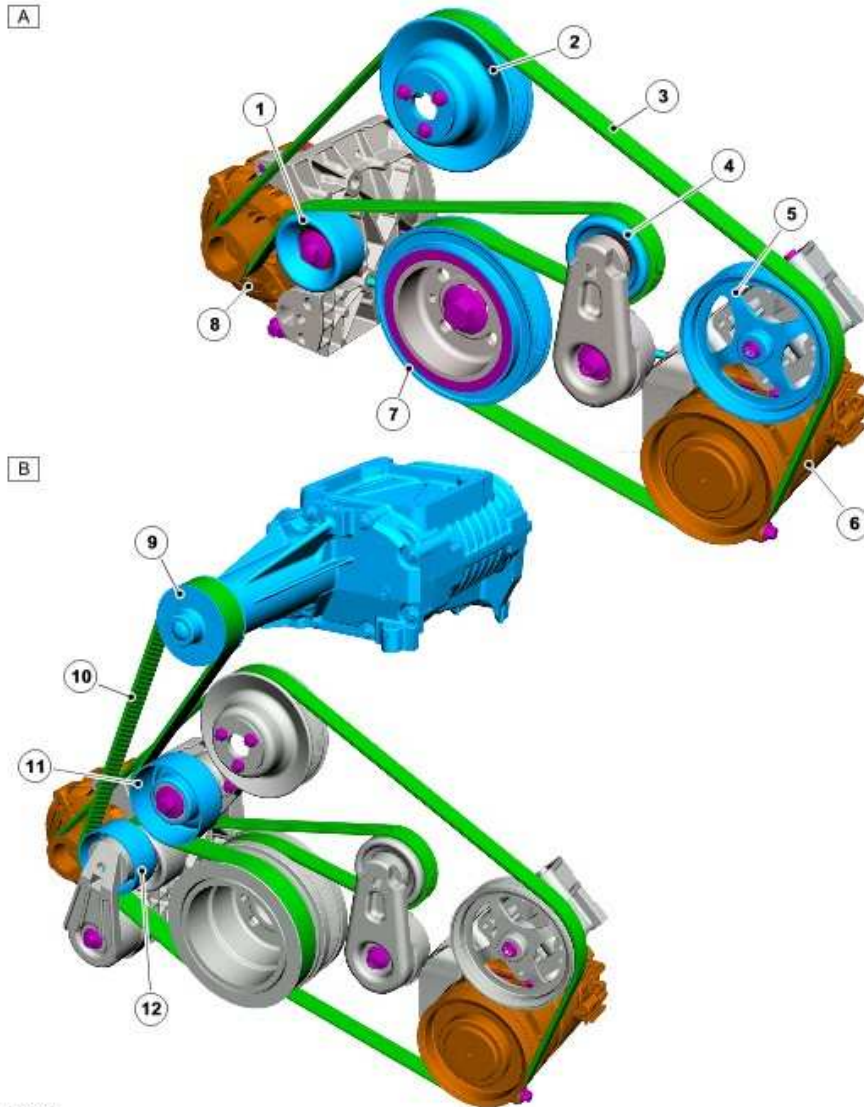
- Engine coolant pump
- Power steering pump
- Air Conditioning (A/C) compressor
- Generator.

A secondary belt drives the engine driven cooling fan.

Both the primary and secondary belts are crankshaft driven with an automatic tensioner keeping the belt at the correct tension. The crankshaft incorporates a torsional vibration damper to absorb vibration and shock loads.

# Accessory Drive - 4.2L SC V8 - AJV8

## COMPONENT LOCATION



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Item	Part Number	Description
A		Primary accessory drive
B		Secondary accessory drive
1		Routing idler
2		Coolant pump

3		Primary accessory drive belt
4		Primary tensioner assembly
5		Power steering pump
6		Air Conditioning (AC) compressor
7		Crankshaft pulley
8		Generator
9		Supercharger pulley
10		Secondary accessory drive belt
11		Routing idler
12		Secondary tensioner assembly

## OVERVIEW

A single six-ribbed belt drives all the primary engine mounted accessories and a secondary single eight-ribbed belt drives the supercharger.

Both the primary and secondary belts are crankshaft driven via the torsional vibration damper.

An automatic tensioner, located on the Left Hand (LH) accessory-mounting bracket, keeps the primary accessory belt at the correct tension. A routing idler on the Right Hand (RH) accessory-mounting bracket increases the wrap angle around the generator pulley.

A second automatic tensioner, located on the generator mounting bracket, keeps the secondary accessory belt at the correct tension. A routing idler located on a timing cover mounting bracket increases the wrap angle around the supercharger pulley.

The automatic tensioner's consist of a routing idler on the end of a spring loaded pivot arm. The pivot arm can be turned counter-clockwise (viewed from the front of the engine) for removal and installation of the belt.

The torsional vibration damper incorporates compressed rubber between its inner and outer diameters to absorb vibration and shock loads.

# Accessory Drive

## Principle of Operation

For a detailed description of the Front End Accessory Drive (FEAD), refer to the relevant Description and Operation section in the workshop manual.

[Accessory Drive - 4.2L NA V8 - AJV8](#)

## Inspection and Verification

- 1 . Verify the customer concern.
- 2 . Visually inspect for obvious signs of mechanical damage and system integrity.

<b>Mechanical</b>
<ul style="list-style-type: none"><li>• FEAD belt</li><li>• FEAD belt tension</li><li>• FEAD belt tensioner</li><li>• FEAD belt pulleys</li></ul>

- 3 . If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
- 4 . If the concern is not visually evident, verify the symptom and refer to the Symptom Chart.

## Symptom Chart

**FEAD belt noise or squeal**

**Possible Source(s):**

- FEAD belt pulley(s)
- Lubricant or other contamination
- FEAD belt

**Action(s) to take:**

- DETERMINE where the noise is coming from. CHECK for pulley alignment, freedom of rotation and damage. REPAIR or INSTALL new parts as necessary.  
[Accessory Drive Belt Idler Pulley - 4.2L NA V8 - AJV8 \(12.10.43\)](#)

- CHECK FEAD belt for contamination. If contaminated, INSTALL a new belt.  
[Accessory Drive Belt - 4.2L NA V8 - AJV8 \(12.10.40\)](#)
- CHECK FEAD belt for correct application

FEAD belt does not hold tension

**Possible Source(s):**

- FEAD belt cracking or damaged
- Tensioner worn or damaged

**Action(s) to take:**

- INSPECT FEAD belt for cracking or damage. INSTALL a new belt as necessary.  
[Accessory Drive Belt - 4.2L NA V8 - AJV8 \(12.10.40\)](#)
- CHECK FEAD belt tensioner for damage and correct operation. INSTALL a new FEAD belt tensioner as necessary.  
[Accessory Drive Belt Tensioner - 4.2L NA V8 - AJV8 \(12.10.41\)](#)

## Component Tests

### FEAD belt tensioner

#### Static

The only checks required for the FEAD belt tensioner are for stick, grab or bind.

- 1 . Remove the drive belt in the area of the tensioner.
- 2 . Using the correct tool, rotate the tensioner from its relaxed position through its full stroke and back to the relaxed position to make sure there is no stick, grab or bind, and to make sure that there is tension on the tensioner spring.
- 3 . If the tensioner meets the above criteria, proceed to the dynamic test. If the tensioner does not meet the above criteria install a new tensioner.  
[Accessory Drive Belt Tensioner - 4.2L NA V8 - AJV8 \(12.10.41\)](#)

#### Dynamic

The FEAD belt tensioner can be checked dynamically as follows:

- 1 . With the engine running, observe drive belt tensioner movement, the FEAD belt tensioner should move (respond) when the air conditioning clutch cycles (if equipped), the FEAD belt tensioner should move (respond) when the engine speed is increased rapidly. If the drive belt tensioner movement is erratic without air conditioning clutch cycling or engine acceleration, a

pulley or shaft may be bent, or distorted. Excessive drive belt rideout (uneven depth of grooves in the drive belt) can also cause excessive drive belt tensioner movement. Check condition by installing a known good belt.

[Accessory Drive Belt - 4.2L NA V8 - AJV8 \(12.10.40\)](#)

## **FEAD belt**

1 . With the engine off, check routing of the drive belt.

[Accessory Drive - 4.2L NA V8 - AJV8](#)


2 . Inspect the drive belt tensioner wear indicator to confirm the drive belt is within operating range. Install a new drive belt as necessary .

[Accessory Drive Belt - 4.2L NA V8 - AJV8 \(12.10.40\)](#)

## Accessory Drive Belt - 4.2L NA V8 - AJV8 (12.10.40)

### Removal

- 1 . Remove the cover and disconnect the battery ground cable.  
For additional information, refer to [Specifications](#)

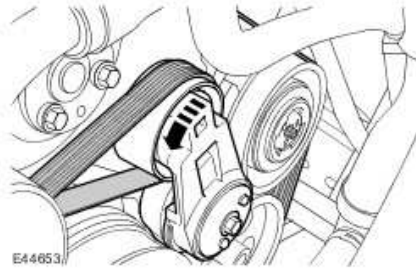
- 2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

- 3 . Remove the engine cover.  
For additional information, refer to [Engine Cover \(76.11.35\)](#)
- 4 . Remove the air deflector.  
For additional information, refer to [Air Deflector \(76.11.41\)](#)
- 5 . Remove the air intake duct.
  - ▶ Remove the bolt.
  - ▶ Release the 2 clips.



- 6 Release the accessory drive belt.
  - ▶ Rotate the accessory drive belt tensioner counter-clockwise, using a 3/8 " drive wrench.



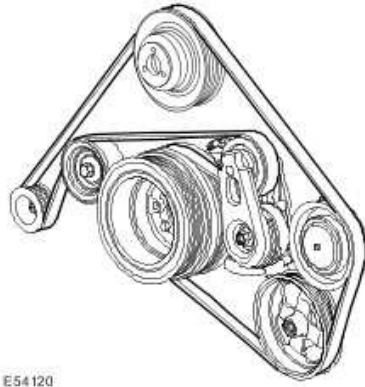
**7 . NOTE:**

Note the fitted position.

Remove the accessory drive belt.

## Installation

- 1 . Install the accessory drive belt.



- 2 . Install the air intake duct.

- ▶ Tighten the clips.
- ▶ Tighten the bolt to 10 Nm (7 lb.ft).

- 3 . Install the air deflector.

For additional information, refer to [Air Deflector \(76.11.41\)](#)

- 4 . Install the engine cover.


For additional information, refer to [Engine Cover \(76.11.35\)](#)

- 5 . Connect the battery ground cable and install the cover.  
For additional information, refer to [Specifications](#)

# Accessory Drive Belt - 4.2L SC V8 - AJV8 (12.10.40)

## Removal

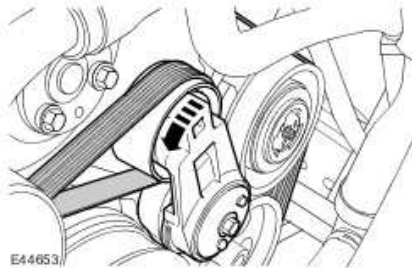
1 . Remove the cover and disconnect the battery ground cable.

- 2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

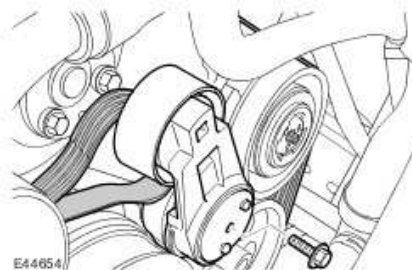
Raise and support the vehicle.

3 . Remove the supercharger belt.  
For additional information, refer to [Supercharger Belt \(18.50.08\)](#)

- 4 Release the accessory drive belt.  
▶ Rotate the accessory drive belt tensioner counter-clockwise, using a 3/8 " drive wrench.



- 5 . Remove the accessory drive belt tensioner.  
▶ Remove the bolt.



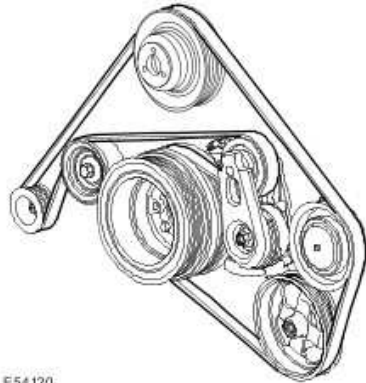
6 . **NOTE:**

Note the fitted position.

Remove the accessory drive belt.

## Installation

- 1 . Install the accessory drive belt.




- 2 . Install the accessory drive belt tensioner.
  - ▶ Clean and inspect the drive pulleys for damage.
  - ▶ Tighten the tensioner bolt to 40 Nm (30 lb.ft).
- 3 . Install the supercharger belt.

For additional information, refer to [Supercharger Belt \(18.50.08\)](#)
- 4 . Connect the battery ground cable and install the cover.

# Accessory Drive Belt Tensioner - 4.2L NA V8 - AJV8 (12.10.41)

## Removal

- 1 . Remove the cover and disconnect the battery ground cable.  
For additional information, refer to [Specifications](#)

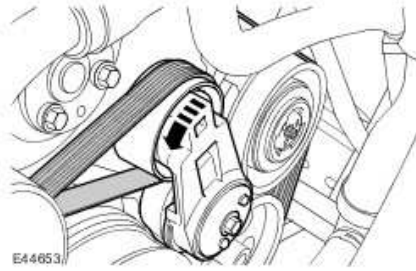
- 2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

- 3 . Remove the engine cover.  
For additional information, refer to [Engine Cover \(76.11.35\)](#)
- 4 . Remove the air intake duct.
  - ▶ Remove the bolt.
  - ▶ Release the 2 clips.

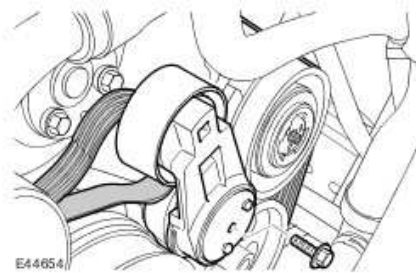


- 5 Release the accessory drive belt.
  - ▶ Rotate the accessory drive belt tensioner counter-clockwise, using a 3/8 " drive wrench.



6 . Remove the accessory drive belt tensioner.

- ▶ Remove the bolt.

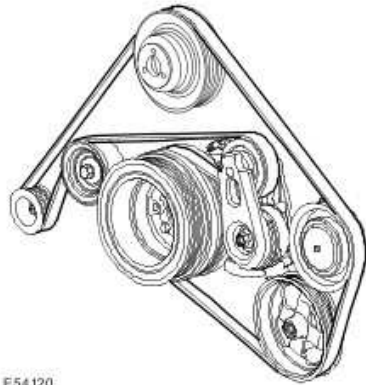


## Installation

1 . Install the accessory drive belt tensioner.

- ▶ Clean and inspect the drive pulleys for damage.
- ▶ Tighten the tensioner bolt to 40 Nm (30 lb.ft).

2 . Install the accessory drive belt.




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- 3 . Install the air intake duct.
  - ▶ Tighten the clips.
  - ▶ Tighten the bolt to 10 Nm (7 lb.ft).
- 4 . Install the engine cover.  
For additional information, refer to [Engine Cover \(76.11.35\)](#)
- 5 . Connect the battery ground cable and install the cover.  
For additional information, refer to [Specifications](#)

# Accessory Drive Belt Tensioner - 4.2L SC V8 - AJV8 (12.10.41)

## Removal

1 . Remove the cover and disconnect the battery ground cable.

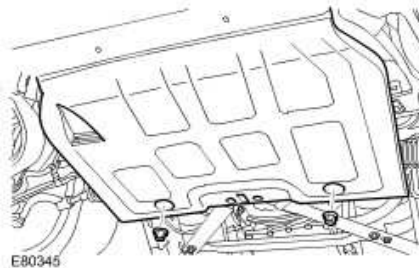
2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**


Raise and support the vehicle.

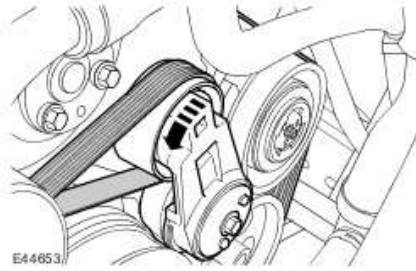
3 . Remove the engine cover.  
For additional information, refer to [Engine Cover \(76.11.35\)](#)

4 . Remove the radiator splash shield.  
For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

5 . Remove the air deflector.  
 Remove the 2 nuts.

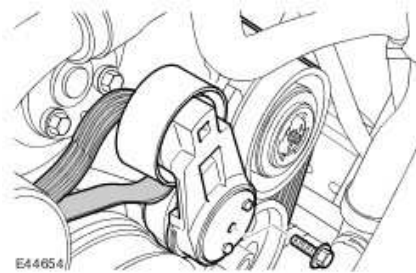


6 Release the accessory drive belt.  
 Rotate the accessory drive belt tensioner counter-clockwise, using a 3/8 " drive wrench.



7 . Remove the accessory drive belt tensioner.

- ▶ Remove the bolt.

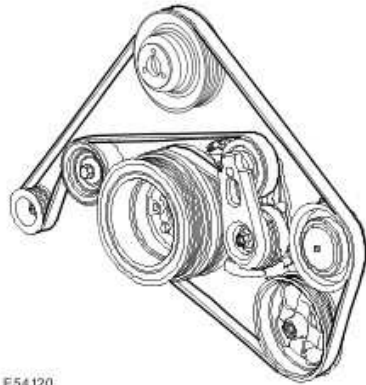


## Installation

1 . Install the accessory drive belt tensioner.

- ▶ Clean and inspect the drive pulleys for damage.
- ▶ Tighten the tensioner bolt to 40 Nm (30 lb.ft).

2 . Attach the accessory drive belt.



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3 . Install the air deflector.

▶ Tighten the nuts.

4 . Install the radiator splash shield.

For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

5 . Install the engine cover.

For additional information, refer to [Engine Cover \(76.11.35\)](#)

6 . Connect the battery ground cable and install the cover.

# Accessory Drive Belt Idler Pulley - 4.2L NA V8 - AJV8 (12.10.43)

## Removal

### All vehicles

1. Remove the cover and disconnect the battery ground cable.  
For additional information, refer to Specifications

2



- **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

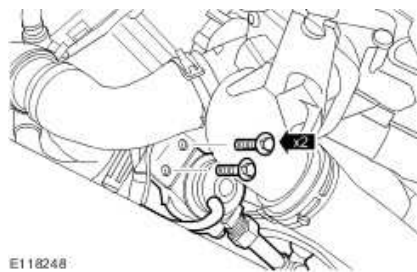
Raise and support the vehicle.

3. Remove the accessory drive belt.  
For additional information, refer to Accessory Drive Belt - 4.2L NA V8 - AJV8 (12.10.40)

### Vehicles with secondary air injection (AIR)

4. Release the AIR control valve.

- ▶ Remove the 2 bolts.

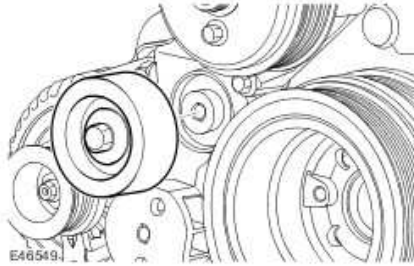


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### All vehicles

5. Remove the accessory drive belt idler pulley.

▶ Remove the bolt.



## Installation

### All vehicles

1. Install the accessory drive belt idler pulley.

▶ Tighten the bolt to 25 Nm.

### Vehicles with secondary air injection (AIR)

2. Secure the AIR control valve.

▶ Tighten the 2 bolts to 25 Nm.

### All vehicles

3. Install the accessory drive belt.

For additional information, refer to Accessory Drive Belt - 4.2L NA V8 - AJV8 (12.10.40)

4. Connect the battery ground cable and install the cover.


For additional information, refer to Specifications

# Accessory Drive Belt Idler Pulley - 4.2L SC V8 - AJV8 (12.10.43)

## Removal

### All vehicles


1. Remove the cover and disconnect the battery ground cable.  
For additional information, refer to Specifications

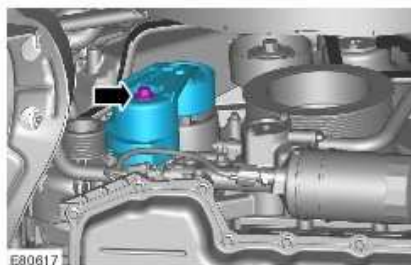
2.  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

3. Remove the accessory drive belt.  
For additional information, refer to Accessory Drive Belt - 4.2L SC V8 - AJV8 (12.10.40)


4. Release the supercharger belt tensioner.

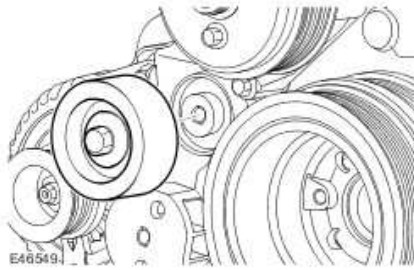
 Loosen the bolt.



### Vehicles without secondary air injection (AIR)

5. Remove the accessory drive belt idler pulley.

 Remove the bolt.



### Vehicles with secondary air injection (AIR)

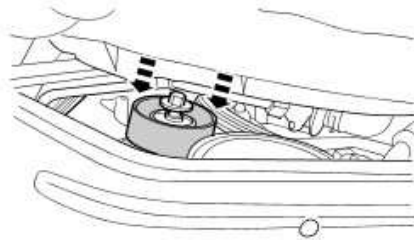
6



**CAUTION:** Take care when removing the idler pulley, as damage to the secondary air injection pipes may occur.

Remove the accessory drive belt idler pulley.

- ▶ Loosen the bolt and pulley assembly by approximately 15 mm.
- ▶ Using suitable tools, apply gentle pressure to the pulley assembly until the pulley separates from the bolt.
- ▶ Remove the bolt.



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### Installation


#### Vehicles without secondary air injection (AIR)

1. Install the accessory drive belt idler pulley.

- ▶ Tighten the bolt to 25 Nm (18 lb.ft).

### Vehicles with secondary air injection (AIR)

2

-  **CAUTION: Make sure that the pulley is correctly centred on the bolt prior to tightening the bolt, failure to follow this instruction may result in damage to the vehicle.**

Install the accessory drive belt idler pulley.

- ▶ Using a suitable tool, release the bolt from the new pulley assembly.
- ▶ Loosely install the pulley and bolt.
- ▶ Check that the pulley is correctly centered on the bolt.
- ▶ Tighten the bolt to 25 Nm (18 lb.ft).

### All vehicles

3 . Secure the supercharger belt tensioner.

- ▶ Tighten the bolt to 40 Nm (30 lb.ft).

4 . Install the accessory drive belt.

For additional information, refer to Accessory Drive Belt - 4.2L SC V8 - AJV8 (12.10.40)


5 . Connect the battery ground cable and install the cover.

For additional information, refer to Specifications

# Supercharger Belt (18.50.08)

## Removal

1 . Remove the cover and disconnect the battery ground cable.


- 2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

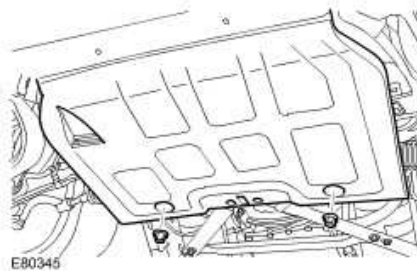
Raise and support the vehicle.

3 . Remove the radiator splash shield.

For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

4 . Remove the air deflector.


-  Remove the 2 nuts.



5 **NOTE:**

- Note the fitted position.

Release the supercharger belt.

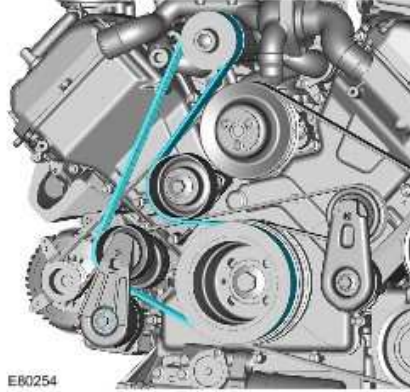
-  Rotate the supercharger belt tensioner clockwise, using a 1/2 " drive wrench.



- 6 . Remove the supercharger belt.

## Installation

- 1 . Install the supercharger belt.




- 2 . Install the air deflector.
  - ▶ Tighten the nuts.
- 3 . Install the radiator splash shield.
  - For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)
- 4 . Connect the battery ground cable and install the cover.

# Supercharger Belt Tensioner (18.50.24)

## Removal

1 . Remove the cover and disconnect the battery ground cable.

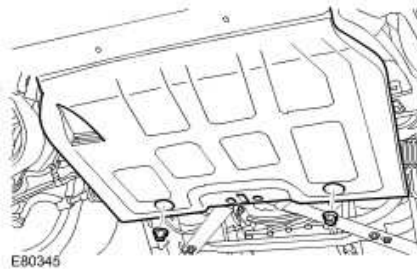
2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

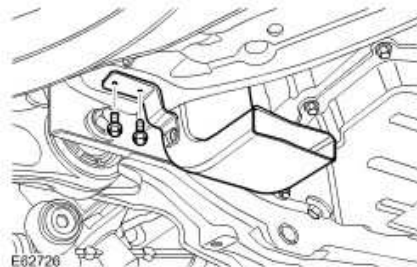
3 . Remove the intake air resonator.  
For additional information, refer to [Intake Air Resonator](#)

4 . Remove the radiator splash shield.  
For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

5 . Remove the air deflector.  
 Remove the 2 nuts.

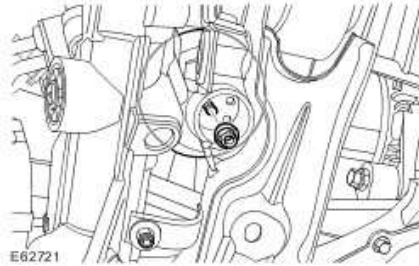


6 . Remove the generator cooling duct.  
 Remove the 2 screws.



7 . Release the engine mounts.

- ▶ Support the engine.
- ▶ Remove and discard the 2 nuts.

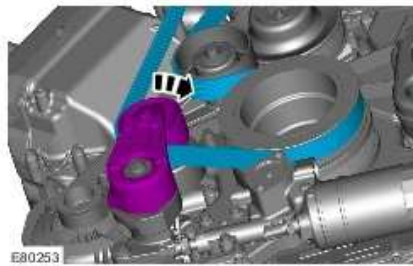


8 **NOTE:**

- Note the fitted position.

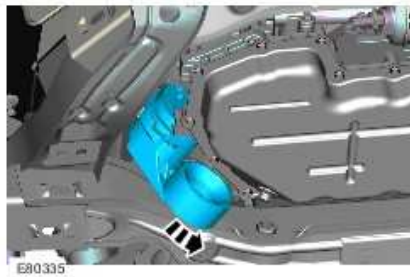
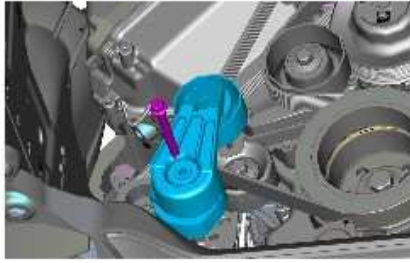
Release the supercharger belt.

- ▶ Rotate the supercharger belt tensioner clockwise, using a 1/2 " drive wrench.



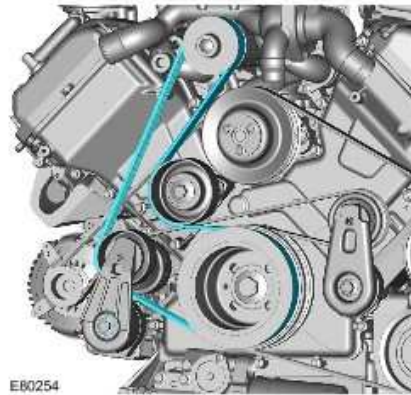
9 . Remove the supercharger belt tensioner.

- ▶ Raise the engine.
- ▶ Remove the bolt.
- ▶ Remove the O-ring seal.



## Installation

- 1 . Install the supercharger belt tensioner.
  - ▶ Install the O-ring seal.
  - ▶ Tighten the bolt to 40 Nm (30 lb.ft).
  - ▶ Lower the engine onto its mounts.
  
- 2 . Secure the engine mounts.
  - ▶ Tighten the new nuts to 55 Nm (41 lb.ft).
  
- 3 . Attach the supercharger belt.



4 . Install the generator cooling duct.

▶ Tighten the screws.

5 . Install the air deflector.

▶ Tighten the nuts.

6 . Install the radiator splash shield.

For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

7 . Install the intake air resonator.


For additional information, refer to [Intake Air Resonator](#)

8 . Connect the battery ground cable and install the cover.

# Supercharger Belt Idler Pulley (18.50.09)

## Removal

1 . Remove the cover and disconnect the battery ground cable.

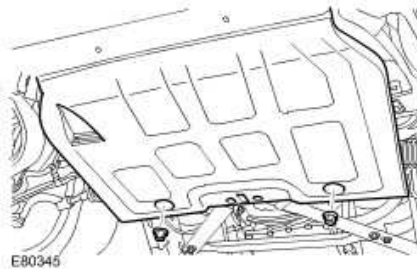
2  **WARNING: Do not work on or under a vehicle supported only by a jack. Always support the vehicle on safety stands.**

Raise and support the vehicle.

3 . Remove the engine cover.  
For additional information, refer to [Engine Cover \(76.11.35\)](#)


4 . Remove the radiator splash shield.  
For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

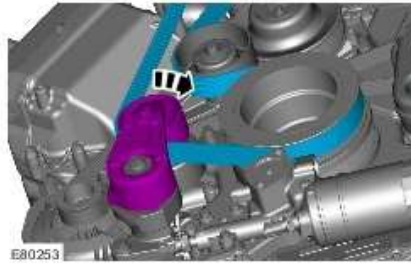
5 . Remove the air deflector.  
 Remove the 2 nuts.



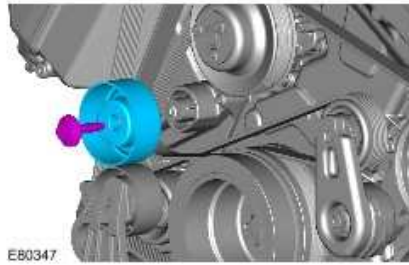
6 **NOTE:**  
· Note the fitted position.

Release the supercharger belt.

 Rotate the supercharger belt tensioner clockwise, using a 1/2 " drive wrench.

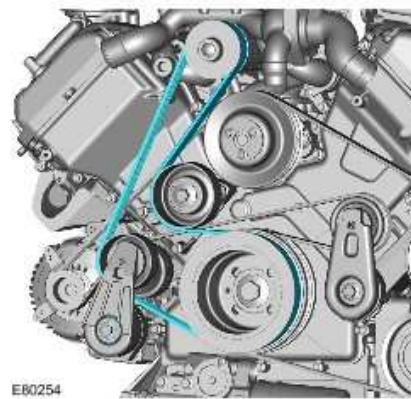


- 7 . Remove the supercharger belt idler pulley.
  - ▶ Remove the bolt.



## Installation

- 1 . Install the supercharger belt idler pulley.
  - ▶ Tighten the bolt to 40 Nm (30 lb.ft).
- 2 . Attach the supercharger belt.



3 . Install the air deflector.

 Tighten the nuts.

4 . Install the radiator splash shield.

For additional information, refer to [Radiator Splash Shield \(76.22.90\)](#)

5 . Install the engine cover.

For additional information, refer to [Engine Cover \(76.11.35\)](#)

6 . Connect the battery ground cable and install the cover.