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2016 Ford E-450 Super Duty Service and Repair Manual

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Air Conditioning (A/C) Compressor Belt

303-05C Accessory Drive - 3.5L EcoBoost (BM)	***2022 F-150***
Removal and Installation	***Procedure revision date: 09/1/2020***

Air Conditioning (A/C) Compressor Belt

Removal

NOTICE

Under no circumstances should the A/C (air conditioning) compressor belt, accessory drive belt, tensioner or pulleys be lubricated as potential damage to the belt material and tensioner damping mechanism will occur. Do not apply any fluids or belt dressing to the A/C (air conditioning) compressor belt, accessory drive belt or pulleys.

NOTE

Removal steps in this procedure may contain installation details.

1. With the vehicle in NEUTRAL, position it on a hoist.

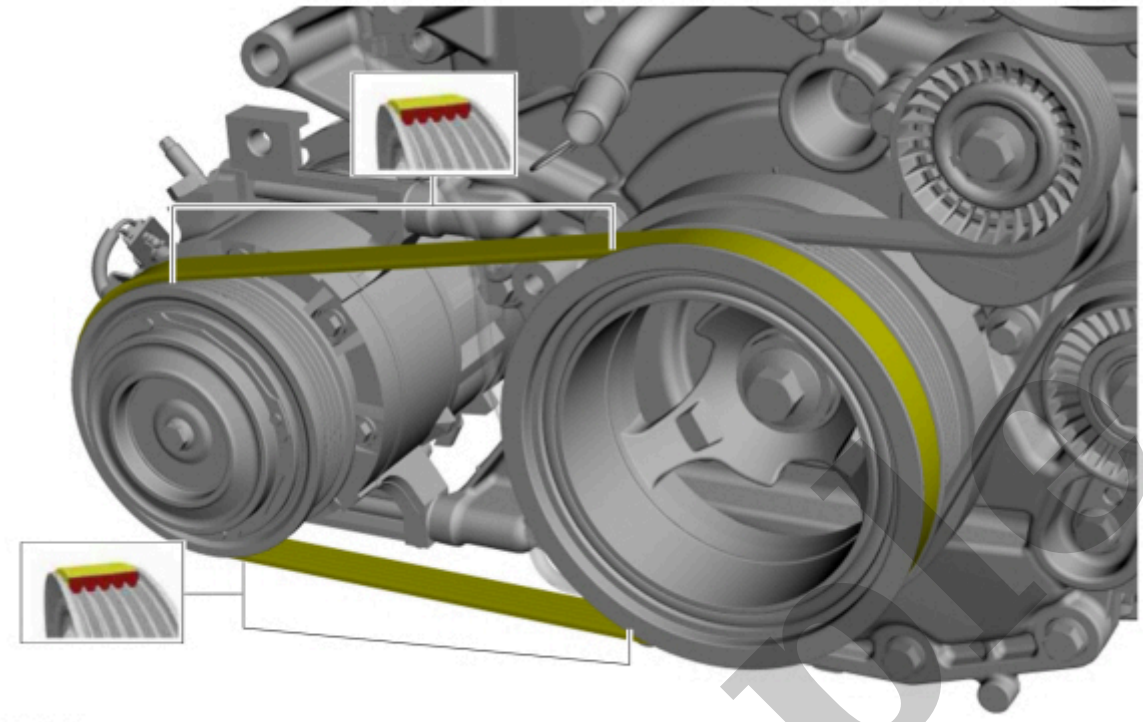
   Refer to: Jacking and Lifting - Overview(100-02 Jacking and Lifting, Description and Operation).

2. Cut the A/C (air conditioning) compressor belt.

   Use the General Equipment: Knife

Click here to learn about symbols, color coding, and icons used in this manual.

2. Make sure the accessory drive belt is correctly seated on all the pulleys.



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3	Belt Integrated Starter Generator pulley
4	Coolant pump pulley
5	Coolant pump belt
6	Crankshaft pulley

PINPOINT TEST A : ACCESSORY DRIVE BELT NOISE

Normal Operation and Fault Conditions

REFER to: Accessory Drive - Component Location(303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Description and Operation).

Possible Sources

- Damaged or contaminated accessory drive belt
- Damaged or contaminated pulley(s)
- Incorrect accessory drive belt
- Incorrect fitment of the accessory drive belt

Visual Inspection and Pre-checks

- Inspect for loose, damaged, contaminated or incorrect components.

A1 CHECK FOR THE SOURCE OF THE NOISE.

- Use a stethoscope or other listening device to determine the source of the noise.

Can the source of the noise be identified?

Yes	INSTALL a new component as necessary.

No	GO to A2

A2 CHECK THE ACCESSORY DRIVE BELT AND COOLANT PUMP BELT FOR CRACKING

NOTE

Accessory drive belts are made from rubber which hardens with time and can develop cracks. As the accessory drive belt runs on the back of some of the pulleys, the cracks are opened up. Small cracks are not considered to be a failure of the accessory drive belt. Only if the crack is deep enough to reach the bottom of the groove to expose the cord or any chunks are found to be missing from the accessory drive belt, is the accessory drive belt condition considered to be unacceptable.

- Check the accessory drive and coolant pump belts for cracking.

Do the drive belts show signs of cracking?

Yes	INSTALL a new accessory drive belt REFER to: Accessory Drive Belt (303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Removal and Installation).

Yes	INSTALL a new accessory drive belt REFER to: Accessory Drive Belt (303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Removal and Installation). or a coolant pump belt REFER to: Coolant Pump Belt (303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Removal and Installation).

No	GO to A6

A5 CHECK FOR INCORRECT, DAMAGED OR CONTAMINATED ACCESSORY DRIVE BELT

- Check the accessory drive belt for incorrect belt, damage or contamination.

Does the accessory drive belt show signs of incorrectness, damage or contamination?

Yes	RECTIFY the source of the leak if necessary and INSTALL a new accessory drive belt REFER to: Accessory Drive Belt (303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Removal and Installation).

No	GO to A6

A6 CHECK FOR INCORRECT, DAMAGED OR CONTAMINATED COOLANT PUMP BELT

- Check the coolant pump drive belt for incorrect belt, damage or contamination.

Does the coolant pump belt show signs of incorrectness, damage or contamination?

Yes	RECTIFY the source of the leak if necessary and INSTALL a coolant pump drive belt REFER to: Coolant Pump Belt (303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Removal and Installation).

No	GO to A7

A7 CHECK THE ACCESSORY DRIVE BELT FOR INCORRECT FITMENT

NOTE

Chirp is defined as a twittering noise, often intermittent

Normal Operation and Fault Conditions

REFER to: Accessory Drive - Component Location(303-05D Accessory Drive - 3.5L V6 PowerBoost (CN), Description and Operation).

Possible Sources

- Damaged or contaminated accessory drive belt
- Damaged or contaminated pulley(s)
- Incorrect fitment of the accessory drive belt
- Pulley misalignment

Visual Inspection and Pre-checks

- Inspect for loose, damaged, contaminated or incorrect components.

B1 CHECK FOR THE SOURCE OF THE NOISE.

- Use a stethoscope or other listening device to determine the source of the noise.

Can the source of the noise be identified?

Yes	INSTALL a new component as necessary.

No	GO to B2

B2 CHECK FOR INCORRECT, DAMAGED OR CONTAMINATED ACCESSORY OR COOLANT PUMP BELT

- Check the accessory drive belt or coolant pump drive belt for incorrect belt, damage or contamination.

Does the accessory drive belt or coolant pump drive belt show signs of incorrectness, damage or contamination?

Yes	GO to Pinpoint Test A

No	GO to B3

B3 CHECK FOR PULLEY MISALIGNMENT

2. Detach the accessory drive belt in the area of the accessory drive belt tensioner.
3. **NOTE**

   The accessory drive belt tensioner has a damping feature, which is usually a friction device, therefore some friction within the system is normal.

   Using the correct tool, move the accessory drive belt tensioner from its relaxed position through its full stroke and back to the relaxed position to make sure there is no excessive stick, grab or bind, and to make sure there is tension on the accessory drive belt tensioner spring.
4. Rotate the accessory drive belt tensioner pulley and check for damage, freedom of rotation and alignment.
5. If the accessory drive belt tensioner meets the above criteria, proceed to test the accessory drive belt tensioner dynamically. If the accessory drive belt tensioner does not meet the above criteria, REFER to the Symptom Chart in this section.

Accessory Drive Belt Tensioner - Dynamic Check

The accessory drive belt tensioner may be checked dynamically as follows:

1. With the engine running, observe the accessory drive belt tensioner movement. The accessory drive belt tensioner should move (respond) when the engine is accelerated rapidly (the degree of movement can be up to 4 mm). If the accessory drive belt tensioner movement is not constant without engine acceleration a pulley or shaft is possibly bent, out of round, or the damping mechanism inside the accessory drive belt tensioner may be damaged.
2. Excessive accessory drive belt rideout (uneven depth of grooves in the accessory drive belt) may cause excessive accessory drive belt tensioner movement. REFER to the Symptom Chart in this section.

2. Pin the lower tensioner arm to the backing plate using a suitable tool.

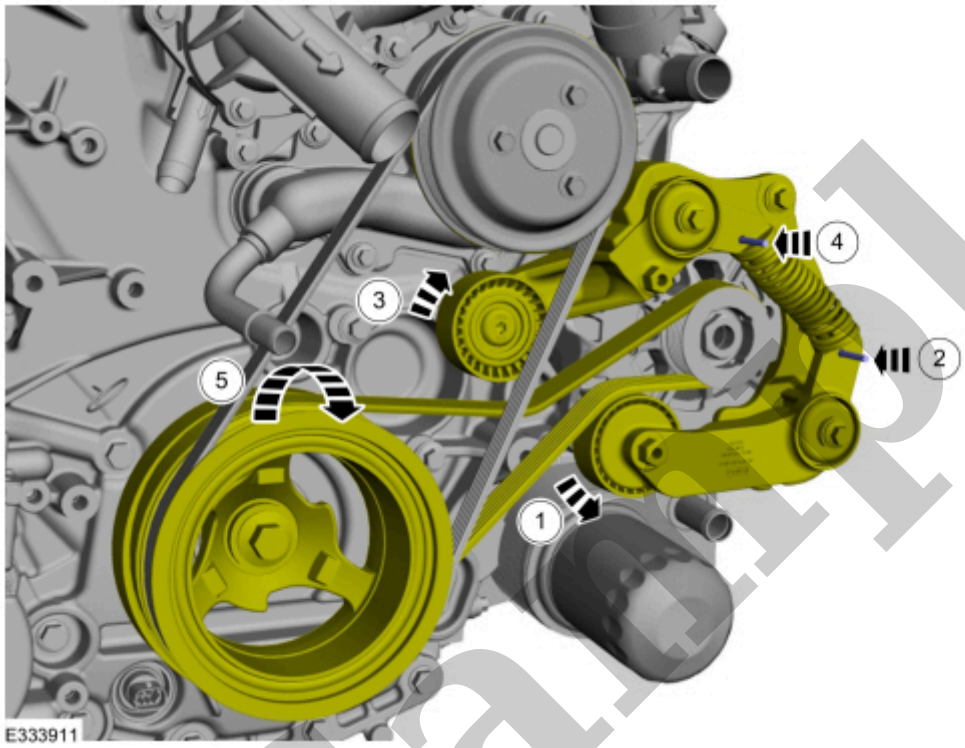
   Use the General Equipment: Dowel with a Diameter of 5 mm

3. Using the 14 mm lift lug feature, rotate upper tensioner arm clockwise (upward).

4. Pin the upper tensioner arm to the backing plate using a suitable tool.

   Use the General Equipment: Dowel with a Diameter of 5 mm

5. Position aside the accessory drive belt.



Click here to learn about symbols, color coding, and icons used in this manual.

4. Remove the bolts and the accessory drive belt tensioner.

Click here to learn about symbols, color coding, and icons used in this manual.

2. **NOTE**

   All FEAD components and fasteners must be installed and torqued before belt installation.

   Install the following items:

   1. Using 14 mm lug feature, rotate the lower tensioner arm counter clockwise (downward).
   2. Pin the lower tensioner arm to the backing plate using a suitable tool.

      Use the General Equipment: Dowel with a Diameter of 5 mm
   3. Using 14 mm lift lug feature, rotate the upper tensioner arm clockwise (upward).
   4. Pin the upper tensioner arm to the backing plate using a suitable tool.

      Use the General Equipment: Dowel with a Diameter of 5 mm
   5. Install the accessory drive belt under the tensioner arm plleys and around the grooved alternator (BiSG) pulley.
   6. Install the accessory drive belt over the grooved crankshaft pulley.
   7. Remove the dowels and release the tensioner arms.