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2018 FORD Expedition Max OEM Service and Repair Workshop Manual

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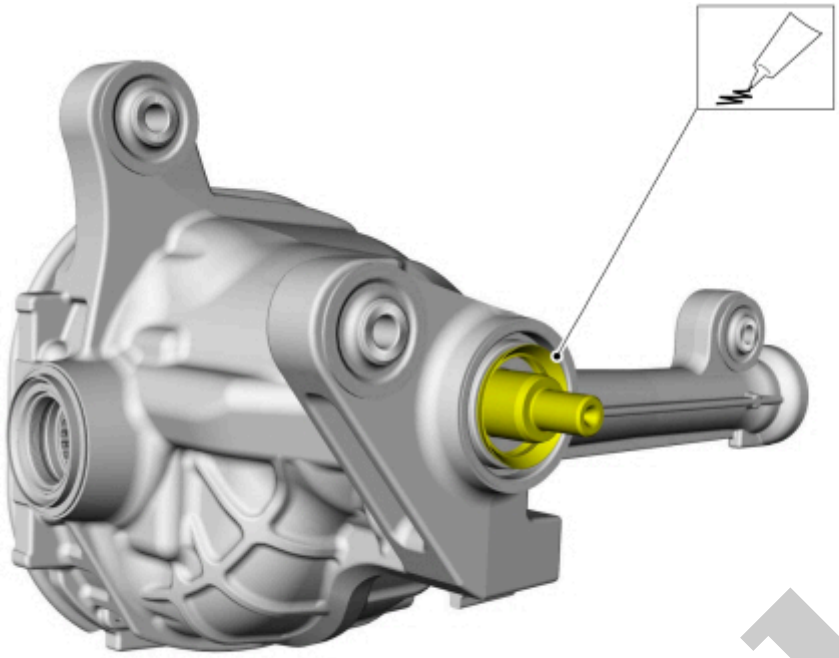


E193391

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

3. **NOTE**

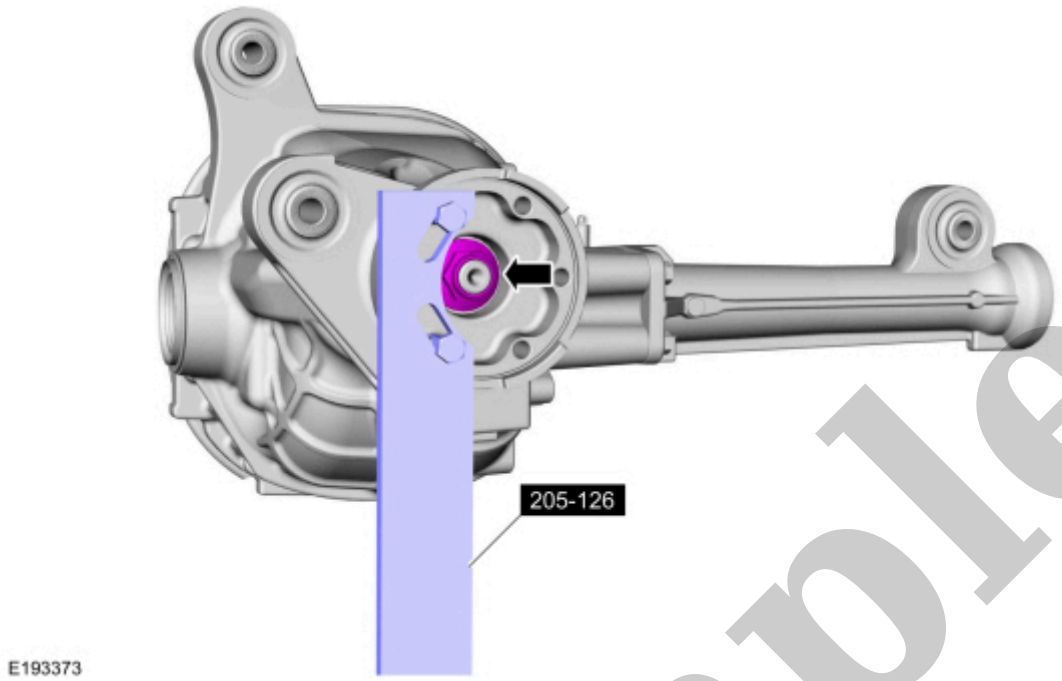
   Make sure drive pinion flange and drive pinion stem are phased correctly using previously applied mark.

   1. Align the index marks made during removal.
   2. Using the special tool, install the pinion flange.

      Use Special Service Tool : 205-002 (TOOL-4858-E) Installer, Drive Pinion Flange

Using the special tool, install the new pinion nut.

Use Special Service Tool : 205-126 (T78P-4851-A) Holding Fixture, Drive Pinion Flange



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5. Check the front differential fluid level.

   Refer to: Differential Fluid Level Check(205-03 Front Drive Axle/Differential, General Procedures).

6. Install the front driveshaft.

   Refer to: Front Driveshaft(205-01 Driveshaft, Removal and Installation).

7. Install the front brake disc.

   Refer to: Brake Disc(206-03 Front Disc Brake, Removal and Installation).

Housing spreader adapter thread engagement	12.5 mm (0.500 in)
Maximum differential housing spread	0.762 mm (0.030 in)
Lubricant Fill Level Checks	
Lubricant level	9.56 mm (0.38 in) below bottom of differential housing fill hole
Rotational Torque Ranges	
Pinion bearing torque preload	1.8-3.3 Nm (16-29 lb-in)

Front Axle Backlash Shim Adjustment Table

Backlash Change Required		**Thickness Change Required**	
mm	**In**	**mm**	**In**
0.025	0.001	0.050	0.002
0.050	0.002	0.050	0.002
0.076	0.003	0.101	0.004
0.101	0.004	0.152	0.006
0.127	0.005	0.152	0.006
0.152	0.006	0.203	0.008
0.177	0.007	0.254	0.010
0.203	0.008	0.254	0.010
0.228	0.009	0.304	0.012
0.254	0.010	0.355	0.014
0.279	0.011	0.355	0.014

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Maximum differential housing spread	0.762 mm (0.030 in)
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0.127	0.005	0.152	0.006
0.152	0.006	0.203	0.008
0.177	0.007	0.254	0.010
0.203	0.008	0.254	0.010
0.228	0.009	0.304	0.012
0.254	0.010	0.355	0.014
0.279	0.011	0.355	0.014

S	0.271	4- WHITE
T	0.273	5- WHITE
U	0.275	1- GREEN
V	0.277	2- GREEN
W	0.279	3- GREEN
X	0.281	4- GREEN
Y	0.283	5- GREEN
Z	0.285	1- PINK
AA	0.287	2- PINK
AB	0.289	3- PINK
AC	0.291	4- PINK
AD	0.293	5- PINK
AE	0.295	1- BLUE
AF	0.297	2- BLUE
AG	0.299	3- BLUE
AH	0.301	4- BLUE
AJ	0.303	5- BLUE
AK	0.305	1- BLACK
AL	0.307	2- BLACK

Driveline clunk (Front Wheel Drive (FWD) vehicles) - occurs during acceleration or from cruise to coast/deceleration	GO to Pinpoint Test C
Driveline clunk or ting - occurs as the vehicle starts to move forward following a stop	GO to Pinpoint Test D
Clicking, popping or grinding - occurs while the vehicle is turning	GO to Pinpoint Test E
Grunting - normally associated with a shudder experienced during acceleration from a complete stop	GO to Pinpoint Test F
Driveline vibration - occurs at cruising speeds	GO to Pinpoint Test G

Pinpoint Tests

PINPOINT TEST A : AXLE HOWLING OR WHINE – FRONT OR REAR AXLE

Normal Operation and Fault Conditions

Halfshafts transmit rotary motion through constant velocity joints in a uniform manner. The outer CV (constant velocity) joints use balls, have no length compensation and engage in the wheel hubs. The intermediate shaft (right side) is correctly positioned and secured in the differential by the intermediate shaft center bearing. The right CV (constant velocity) joint is locked in the intermediate shaft by a snap-ring. The left CV (constant velocity) joint is locked in the differential by a snap-ring.

Possible Sources

- Damaged or worn wheel hub bearings

A1 INSPECT WHEEL HUB BEARINGS

- Check the hub nut torque

Is the hub nut loose?

Yes	Tighten the hub nut to specification. REFER to: Front Halfshaft LH - Electric (205-04 Front Drive Halfshafts, Removal and Installation). REFER to: Front Halfshaft RH - Electric (205-04 Front Drive Halfshafts, Removal and Installation).

No	GO to B2

B2 CHECK THE CONSTANT VELOCITY (CV) BOOTS AND JOINTS FOR WEAR OR DAMAGE

- Check the constant velocity (cv) boots and joints for wear or damage

Was damage found?

Yes	Inspect the CV (constant velocity) joints and halfshaft. Replace components as necessary. REFER to: Inner Constant Velocity (CV) Joint Boot - Vehicles Without: Integrated Wheel End (IWE) (205-04 Front Drive Halfshafts, Removal and Installation). REFER to: Outer Constant Velocity (CV) Joint Boot - Vehicles Without: Integrated Wheel End (IWE) (205-04 Front Drive Halfshafts, Removal and Installation).

No	Inspect the vehicle for any other symptoms related to the halfshafts.

PINPOINT TEST C : DRIVELINE CLUNK (FRONT WHEEL DRIVE (FWD) VEHICLES) - OCCURS DURING ACCELERATION OR FROM CRUISE TO COAST/DECELERATION

Normal Operation and Fault Conditions

Halfshafts transmit rotary motion through constant velocity joints in a uniform manner. The outer CV (constant velocity) joints use balls, have no length compensation and engage in the wheel hubs. The intermediate shaft (right side) is correctly positioned and secured in the differential by the intermediate shaft center bearing. The right CV (constant velocity) joint is locked in the intermediate shaft by a snap-ring. The left CV (constant velocity) joint is locked in the differential by a snap-ring.

Possible Sources

intermediate shaft (right side) is correctly positioned and secured in the differential by the intermediate shaft center bearing. The right CV (constant velocity) joint is locked in the intermediate shaft by a snap-ring. The left CV (constant velocity) joint is locked in the differential by a snap-ring.

Possible Sources

- Loose hub nut
- Damaged halfshaft washer

D1 CHECK THE HUB NUT TORQUE

- Check the hub nut torque.

Is the hub nut loose?

Yes	Tighten to specifications. REFER to: Front Halfshaft LH - Electric (205-04 Front Drive Halfshafts, Removal and Installation). REFER to: Front Halfshaft RH - Electric (205-04 Front Drive Halfshafts, Removal and Installation).

No	GO to D2

D2 CHECK THE HALFSHAFT WASHER FOR DAMAGE AND WEAR

- Check the halfshaft washer for damage and wear

Was damage found?

Yes	Replace the halfshaft washer. REFER to: Front Halfshaft LH - Electric (205-04 Front Drive Halfshafts, Removal and Installation). REFER to: Front Halfshaft RH - Electric (205-04 Front Drive Halfshafts, Removal and Installation).

No	Inspect the vehicle for any other symptoms related to the halfshafts.

PINPOINT TEST E : CLICKING, POPPING OR GRINDING - OCCURS WHILE THE VEHICLE IS TURNING

- Check the halfshafts for contact with another component.

Is there contact between other components with the halfshaft?

Yes	Repair as necessary. REFER to: Front Halfshaft LH - Electric (205-04 Front Drive Halfshafts, Removal and Installation). REFER to: Front Halfshaft RH - Electric (205-04 Front Drive Halfshafts, Removal and Installation).
No	GO to E3

E3 INSPECT THE HALFSHAFT OR HALFSHAFT CIRCLIP

- Inspect the halfshaft or halfshaft circlip.

Was any damage found?

Yes	Install halfshaft or halfshaft circlip as necessary. REFER to: Front Halfshaft LH - Electric (205-04 Front Drive Halfshafts, Removal and Installation). REFER to: Front Halfshaft RH - Electric (205-04 Front Drive Halfshafts, Removal and Installation).
No	Inspect the vehicle for any other symptoms related to the halfshafts.

PINPOINT TEST F : GRUNTING - NORMALLY ASSOCIATED WITH A SHUDDER EXPERIENCED DURING ACCELERATION FROM A COMPLETE STOP

Normal Operation and Fault Conditions

Halfshafts transmit rotary motion through constant velocity joints in a uniform manner. The outer CV (constant velocity) joints use balls, have no length compensation and engage in the wheel hubs. The intermediate shaft (right side) is correctly positioned and secured in the differential by the intermediate shaft center bearing. The right CV (constant velocity) joint is locked in the intermediate shaft by a snap-ring. The left CV (constant velocity) joint is locked in the differential by a snap-ring.

Possible Sources