

# Your Ultimate Source for OEM Repair Manuals

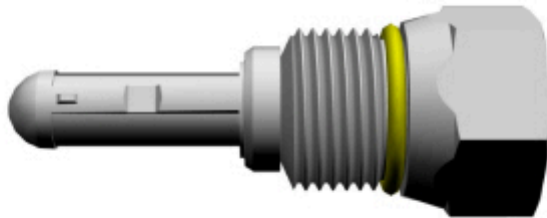
FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

## 1999 FORD Windstar OEM Service and Repair Workshop Manual

[Go to manual page](#)

15. Lubricate the new turbocharger fitting and oil filter assembly O-ring seal with clean engine oil.

Refer to: [Specifications](#)(303-01D Engine - 3.5L V6 PowerBoost (CN), Specifications).



E241570

[Click here to learn about symbols, color coding, and icons used in this manual.](#)

16. 1. **NOTICE**

Do not use any brushes, damage to sealing area will result in leaks and possible internal turbo bearing damage.

Use brake cleaner on a lint free rag to remove the O-ring residue out of the turbocharger fitting to engine block O-ring bore. Inspect the area for deep scratches and gouges. Install new components if necessary.

**Material** : Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

2. Install and tighten the new turbocharger fitting, oil filter assembly.

**Torque** : 24 lb.ft (32 Nm)

18. 1. **NOTICE**

Do not use any brushes, damage to sealing area will result in leaks and possible internal turbo bearing damage.

Use brake cleaner on a lint free rag to remove the O-ring residue out of the turbocharger and the engine oil filter adapter O-ring bores. Inspect the area for deep scratches and gouges. Install new components if necessary.

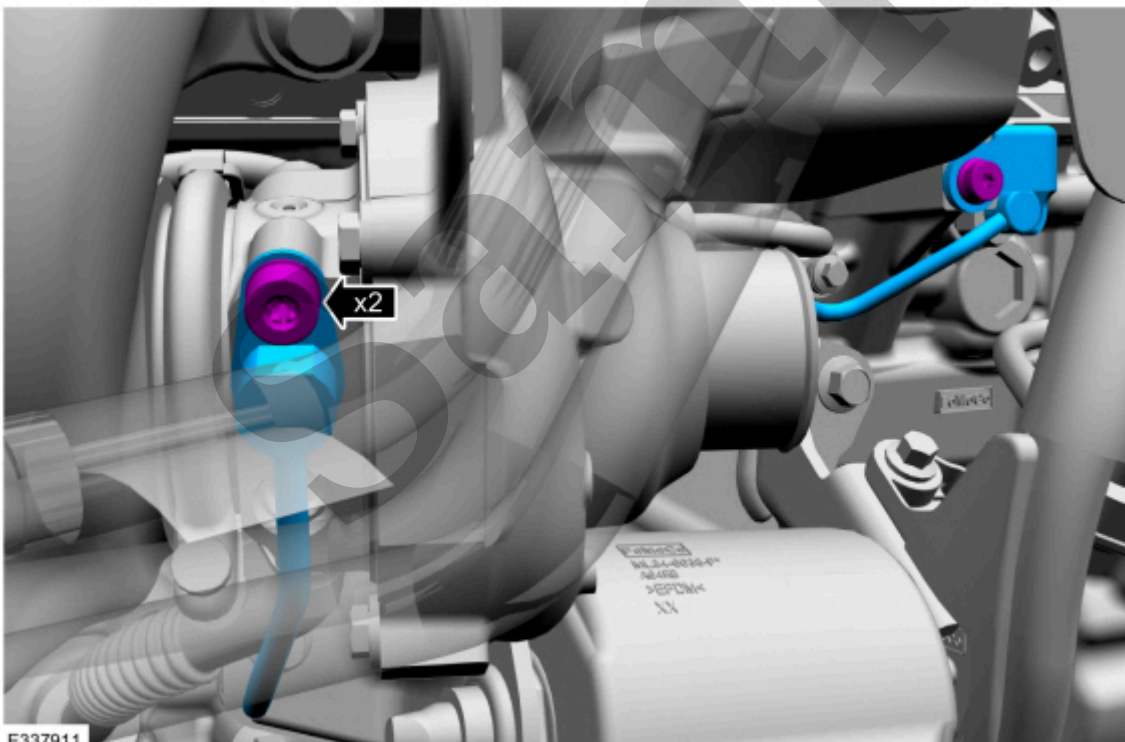
2. Install the oil supply tube and the bolts, by simultaneously fully seating the oil supply tube into the turbocharger bore hole and the engine oil filter adapter bore hole flush to 2.5 mm off the mounting surface prior to tightening the bolts, then tighten the bolts in the following 2 stages.

**Material** : Motorcraft® Metal Brake Parts Cleaner / PM-4-A, PM-4-B

**Torque** :

Stage 1: Tighten to : 89 lb.in (10 Nm)

Stage 2: Tighten an additional : 30°



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

19. Install the charge air cooler intake pipe - right side.

## Wastegate Control Actuator LH

<b>303-04H Fuel Charging and Controls - Turbocharger - 3.5L V6 PowerBoost (CN)</b>	<b>2022 F-150</b>
<b>Removal and Installation</b>	<b>Procedure revision date: 10/1/2020</b>

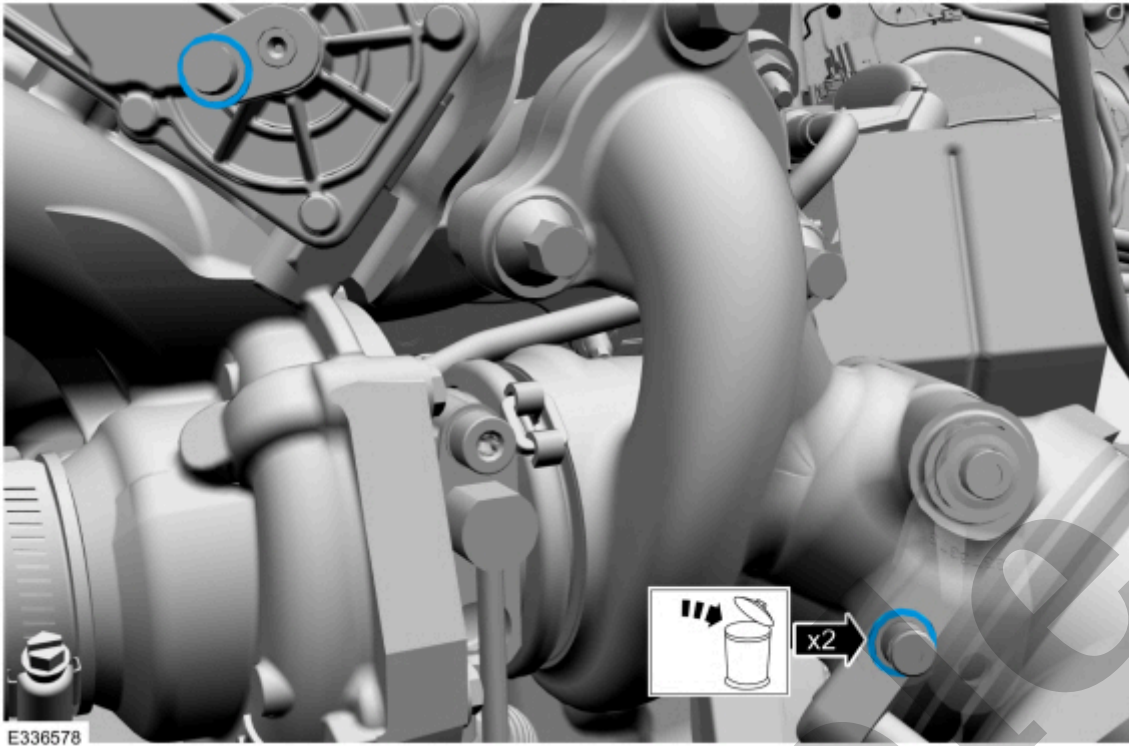
### Wastegate Control Actuator LH

#### Removal

##### NOTICE

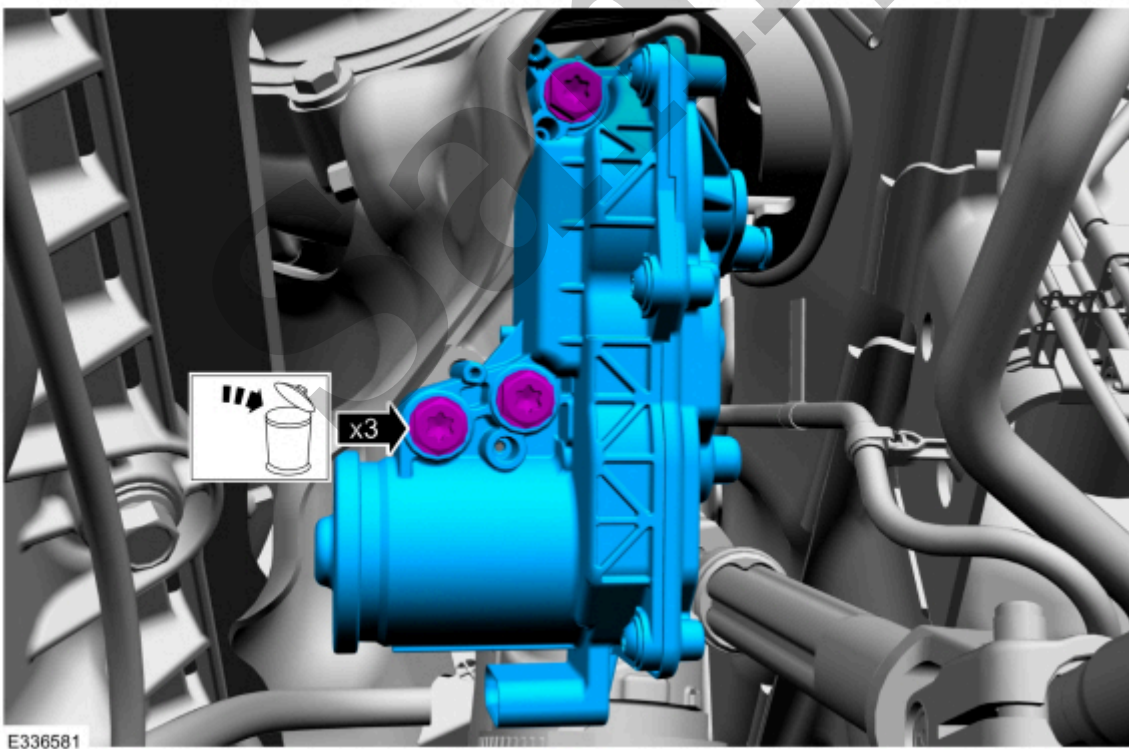
The turbocharger compressor vanes can be damaged by even the smallest particles. When removing any turbocharger or engine air intake system component, ensure that no debris enters the system. Failure to do so may result in damage to the turbocharger.

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. Remove the left front fender splash shield.  
Refer to: [Fender Splash Shield](#)(501-02 Front End Body Panels, Removal and Installation).
3. Disconnect the wastegate control actuator electrical connector.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

6. Remove and discard the wastegate control actuator bolts, then remove the wastegate control actuator.

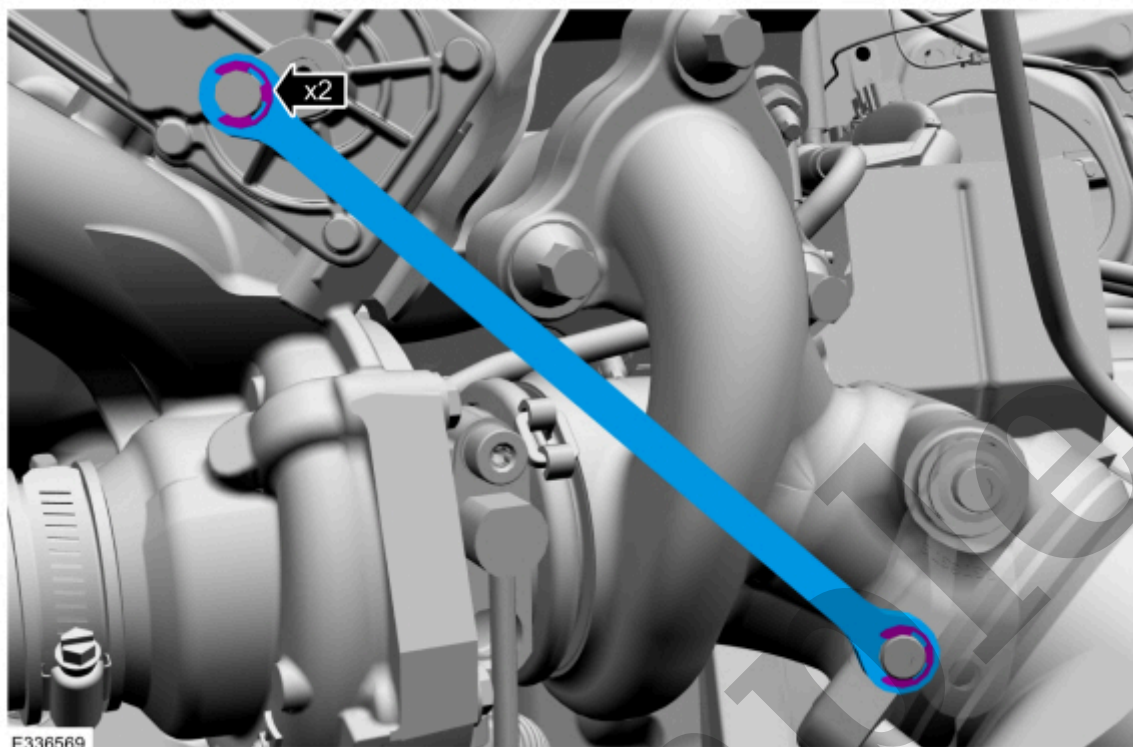


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## Installation

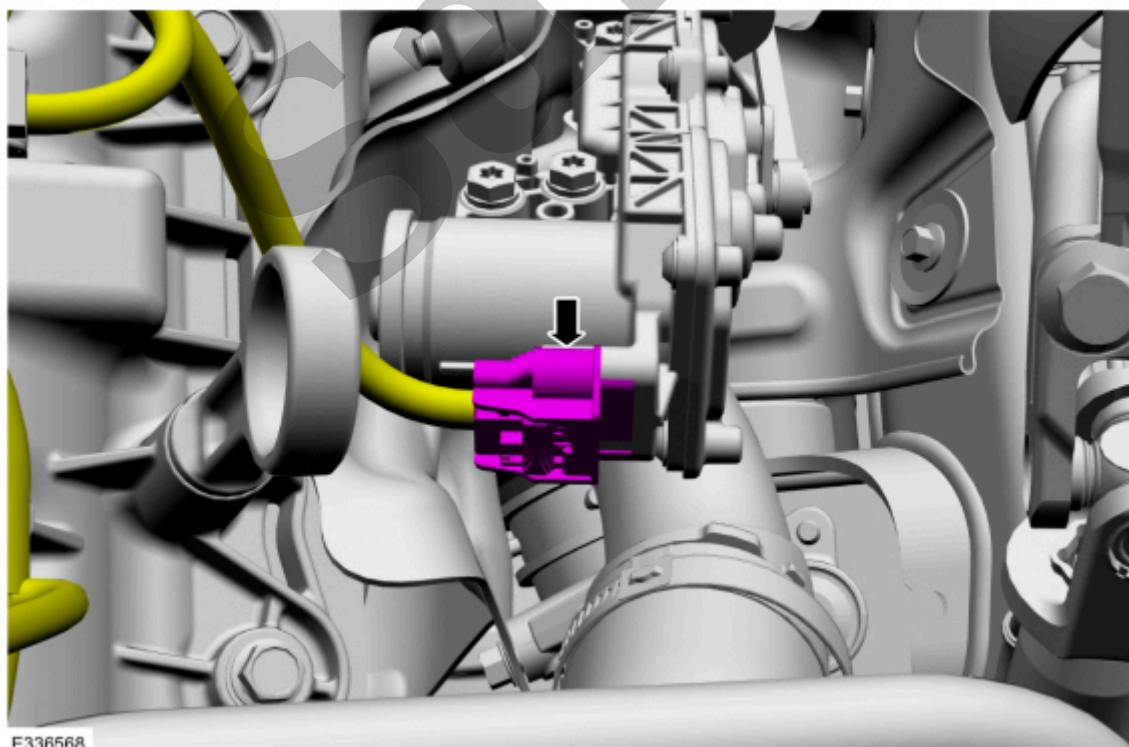
[Click here to learn about symbols, color coding, and icons used in this manual.](#)

3. Install the new wastegate control actuator linkage, then install the new e-clips.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

4. Connect the wastegate control actuator electrical connector.



## Wastegate Control Actuator RH

<b>303-04H Fuel Charging and Controls - Turbocharger - 3.5L V6 PowerBoost (CN)</b>	<b>2022 F-150</b>
<b>Removal and Installation</b>	<b>Procedure revision date: 10/1/2020</b>

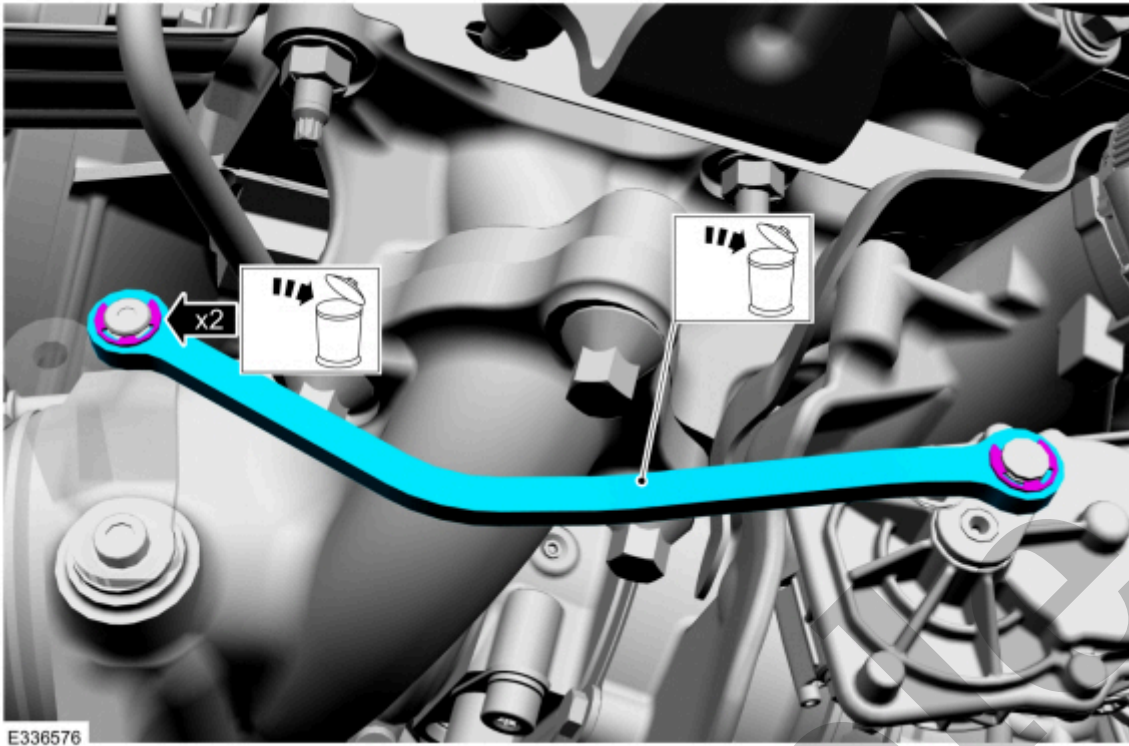
### Wastegate Control Actuator RH

#### Removal

##### NOTICE

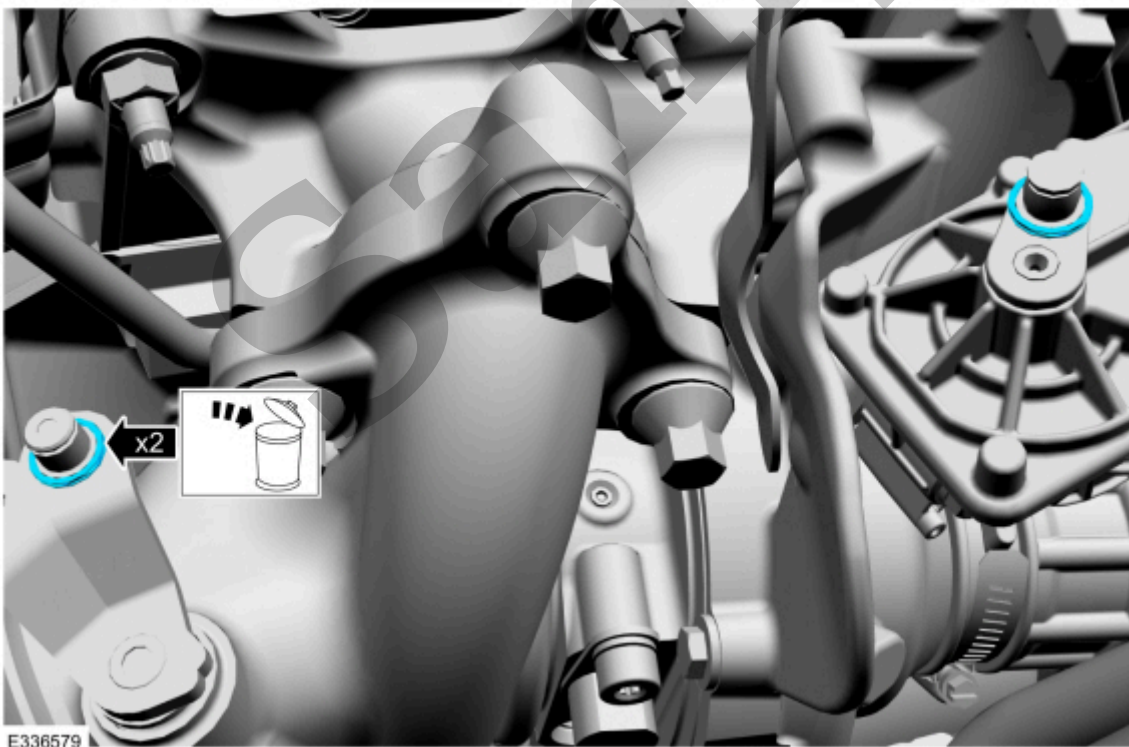
The turbocharger compressor vanes can be damaged by even the smallest particles. When removing any turbocharger or engine air intake system component, ensure that no debris enters the system. Failure to do so may result in damage to the turbocharger.

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. Remove the right front fender splash shield.  
Refer to: [Fender Splash Shield](#)(501-02 Front End Body Panels, Removal and Installation).
3. Disconnect the wastegate control actuator electrical connector.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

5. Remove and discard the wastegate control actuator linkage wave washers.



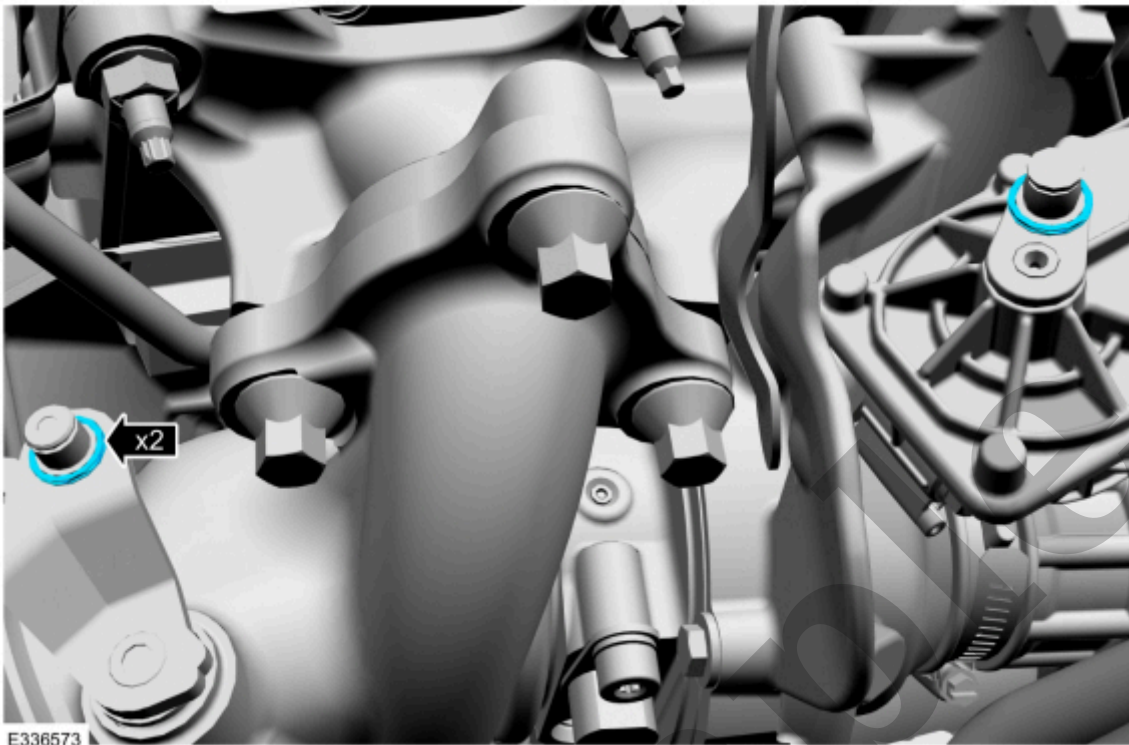
[Click here to learn about symbols, color coding, and icons used in this manual.](#)

6. Remove and discard the wastegate control actuator bolts, then remove the wastegate control actuator.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

2. Install the new wastegate control actuator linkage wave washers.



[Click here to learn about symbols, color coding, and icons used in this manual.](#)

3.
  - The the wastegate control actuator linkage must be installed in the correct orientation with the long section of the linkage towards the actuator, and the curve to the outside away from the engine, as noted in the removal, or the linkage will bind.
  - Install the new wastegate control actuator linkage, then install the new e-clips.

## 5. NOTICE

Substantial opening and closing torque is applied by this system. To prevent injury, be careful to keep fingers away from wastegate mechanism when actuated. Failure to follow these instructions may result in personal injury.

- With the KOEO (key on, engine off) , using a diagnostic scan tool, clear the PCM (powertrain control module) DTC's and reset the KAM (keep alive memory) .

6. Install the right front fender splash shield.

Refer to: [Fender Splash Shield](#)(501-02 Front End Body Panels, Removal and Installation).

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