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2018 Ford Fusion Service and Repair Manual

Go to manual page

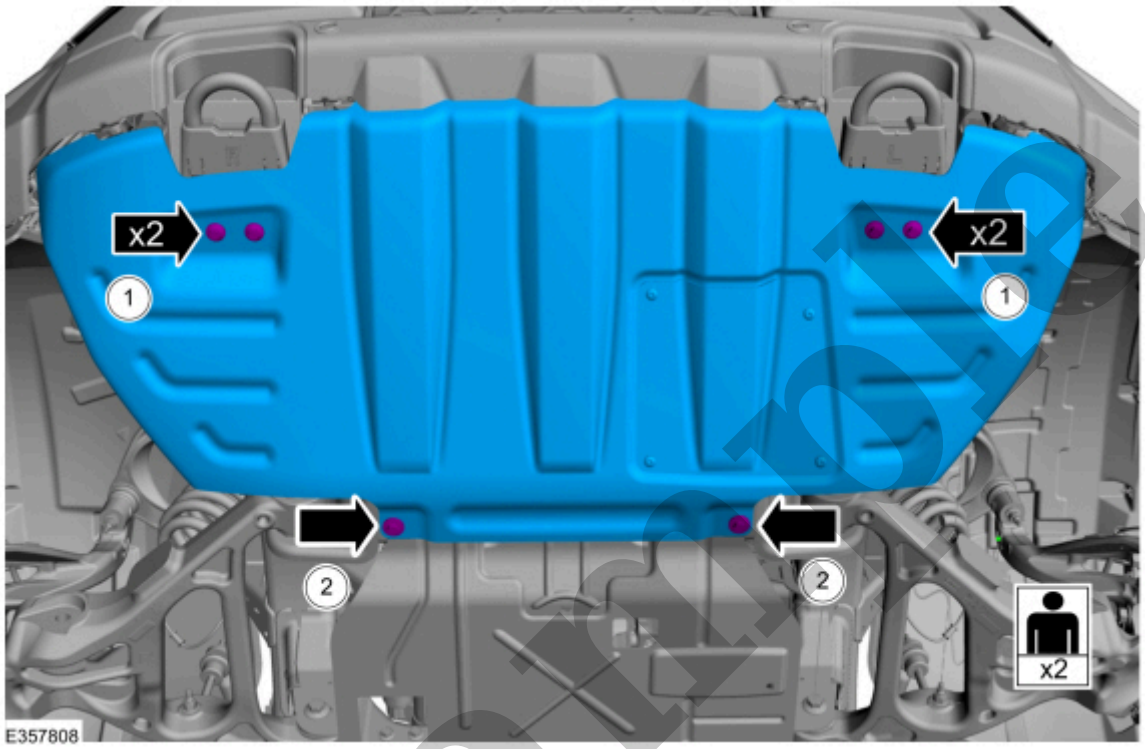
This step requires the aid of another technician.

Remove the skid plate.

Torque :

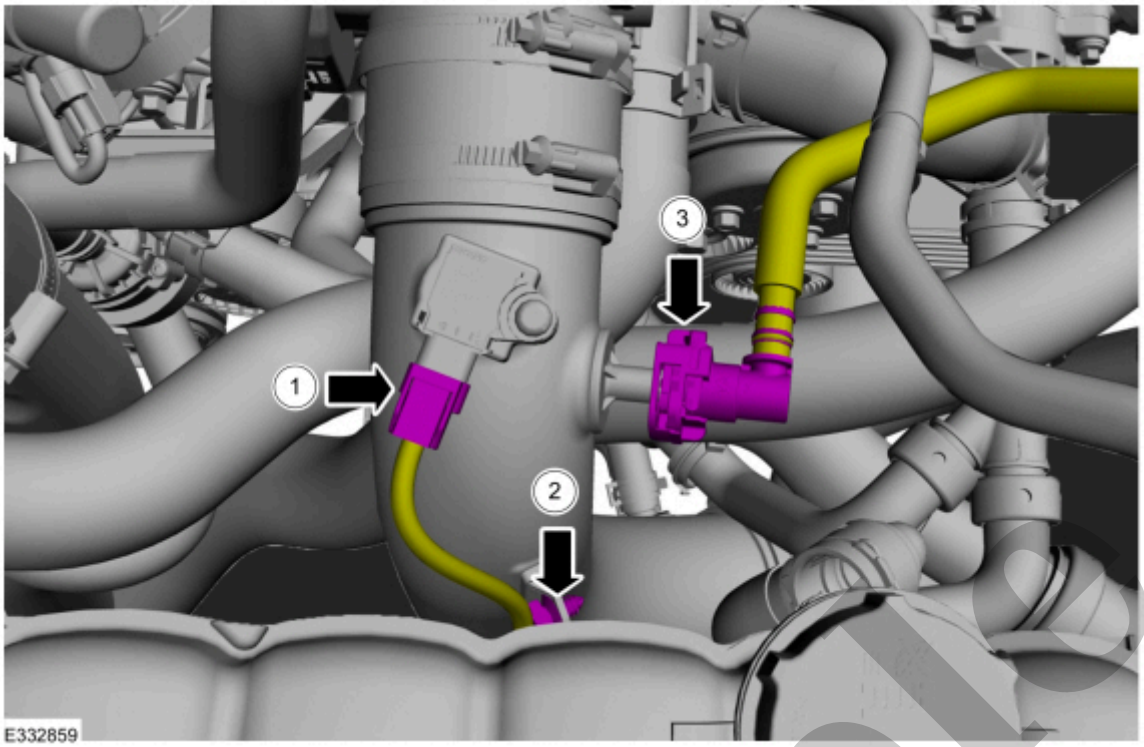
1: 35 lb.ft (48 Nm)

2: 41 lb.ft (55 Nm)



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

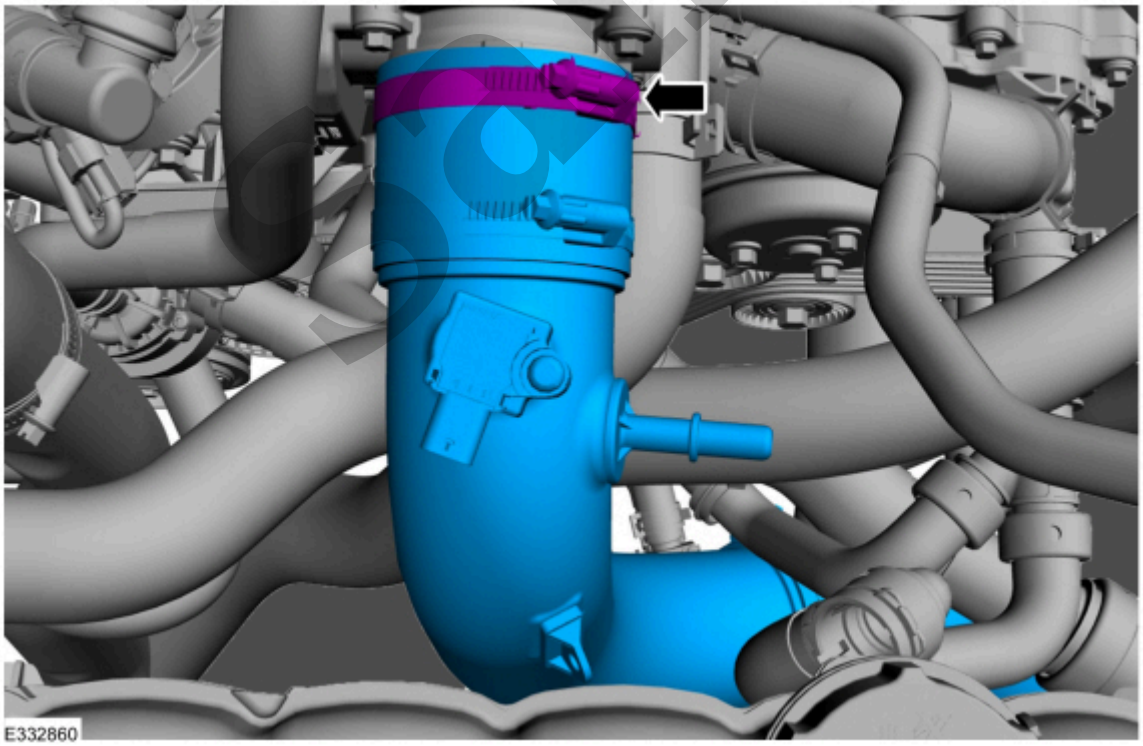
4. Release the clip and disconnect the CAC (charge air cooler) outlet pipe.



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

6. Loosen the clamp, disconnect and remove the CAC (charge air cooler) outlet pipe.

   Torque : 44 lb.in (5 Nm)



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Charge Air Cooler (CAC) Outlet Pipe

303-12C Intake Air Distribution and Filtering - 3.5L EcoBoost (BM)	***2022 F-150***
Removal and Installation	***Procedure revision date: 06/5/2020***

Charge Air Cooler (CAC) Outlet Pipe

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.

NOTE

Removal steps in this procedure may contain installation details.

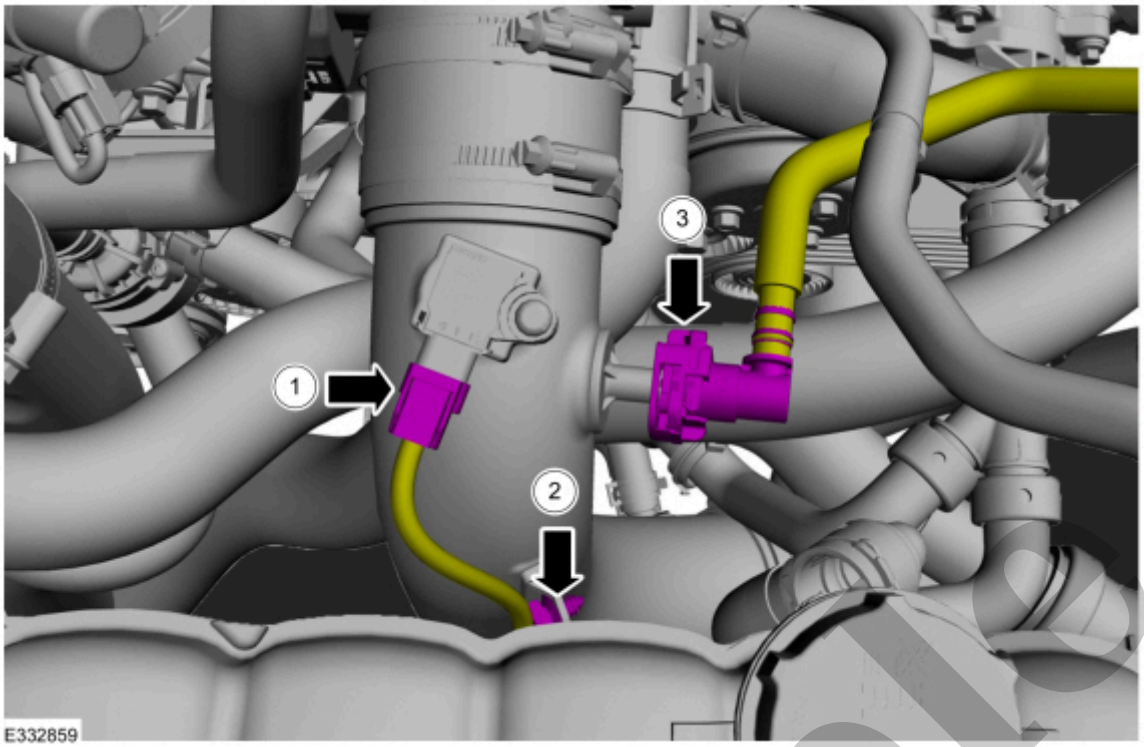
1. With the vehicle in NEUTRAL, position it on a hoist.

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

2. Remove the air cleaner outlet pipe RH (right-hand) .

   Refer to: Air Cleaner Outlet Pipe RH(303-12C Intake Air Distribution and Filtering - 3.5L EcoBoost (BM), Removal and Installation).

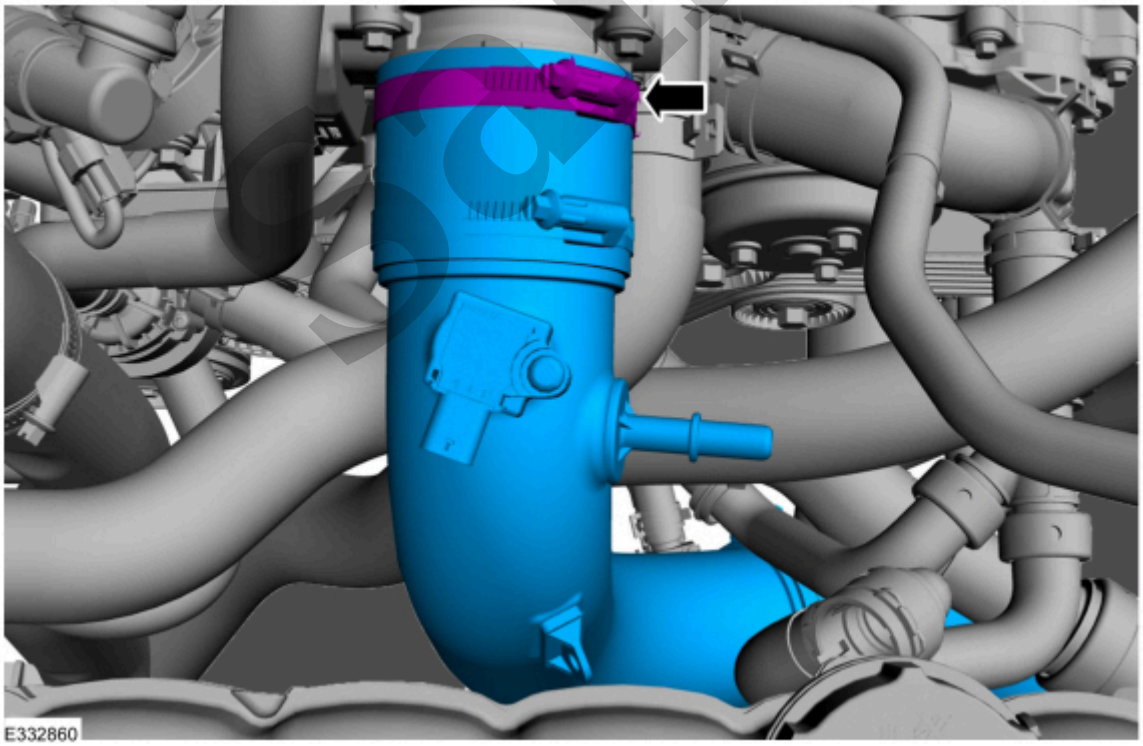
3. Release the clip and disconnect the CAC (charge air cooler) outlet pipe.



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

5. Loosen the clamp, disconnect and remove the CAC (charge air cooler) outlet pipe.

   Torque : 44 lb.in (5 Nm)



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

Charge Air Cooler (CAC)

303-12C Intake Air Distribution and Filtering - 3.5L EcoBoost (BM)	***2022 F-150***
Removal and Installation	***Procedure revision date: 06/5/2020***

Charge Air Cooler (CAC)

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.

NOTE

Removal steps in this procedure may contain installation details.

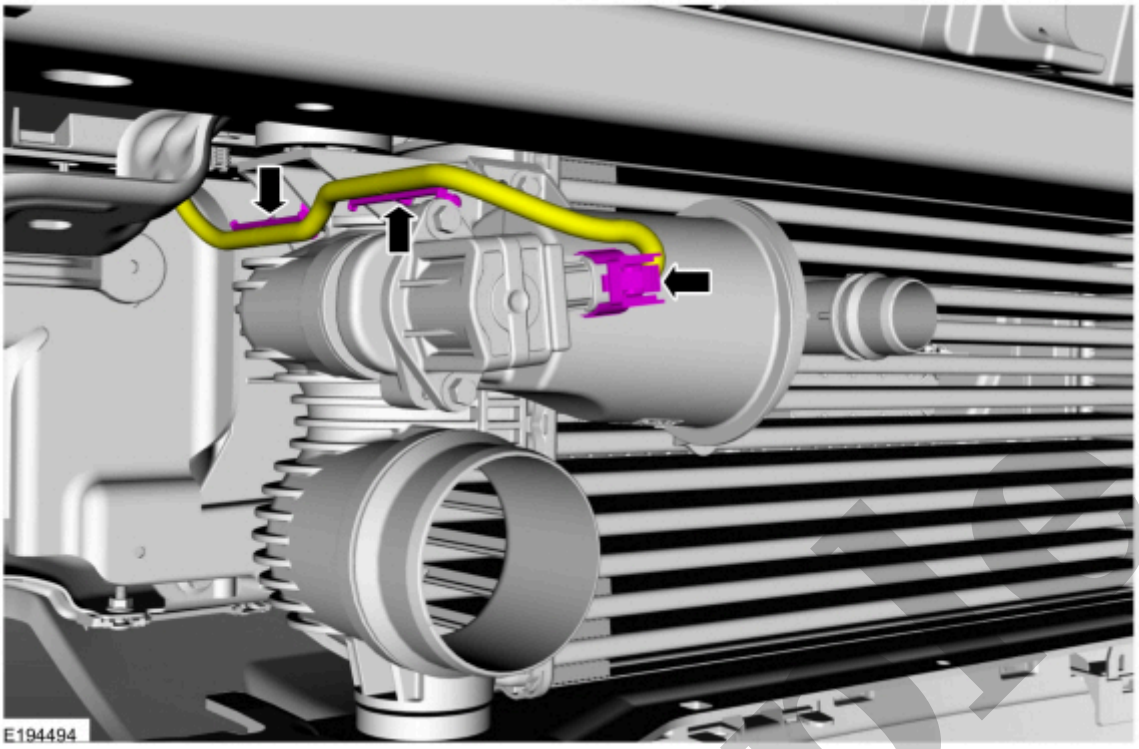
1. With the vehicle in NEUTRAL, position it on a hoist.

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

2. Loosen the intake pipe clamps and position the intake pipes aside.

   Torque : 48 lb.in (5.4 Nm)

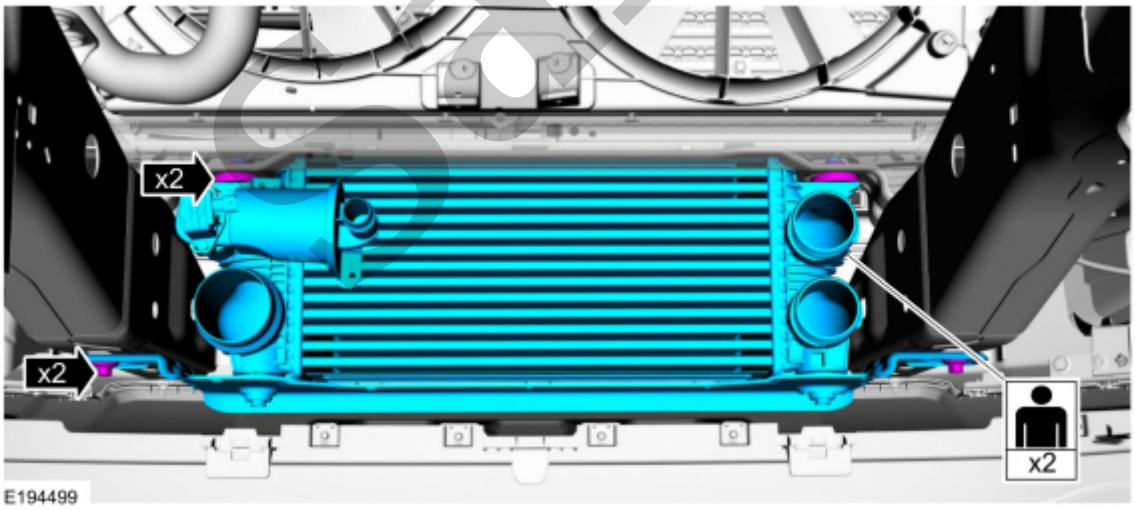
4. Disconnect the turbocharger bypass valve electrical connector and the harness pushpins.



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

5. Remove the bolts and the CAC (charge air cooler) and lower bracket.

   Torque : 30 lb.ft (40 Nm)



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

Charge Air Cooler (CAC) Replacement

6. Remove the lower bracket from the CAC (charge air cooler) .

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

Installation

1. Inspect the turbocharger or engine air intake system components and clean, if necessary.
2. To install, reverse the removal procedure.

Intake Air Distribution and Filtering - System Operation and Component Description

303-12D Intake Air Distribution and Filtering - 3.5L V6 PowerBoost (CN)	***2022 F-150***
Description and Operation	***Procedure revision date: 10/19/2020***

Intake Air Distribution and Filtering - System Operation and Component Description

System Operation

Adaptive Airflow

Vehicles equipped with electronic throttle control (ETC) have an adaptive airflow strategy that allows the PCM (powertrain control module) to correct for changes in the airflow. During idle, the PCM (powertrain control module) monitors the throttle angle and airflow. If the airflow is determined to be less than expected, the PCM (powertrain control module) adjusts the throttle angle to compensate.

The PCM (powertrain control module) only learns the adaptive airflow when the vehicle is at idle and normal operating temperature and the airflow is less than a calibrated limit. Whenever the battery is disconnected or the KAM (keep alive memory) is reset, it is necessary for the PCM (powertrain control module) to learn the new value and not use the default value.

Intake Air Systems

The intake air system provides clean air to the engine, optimizes airflow, and reduces unwanted induction noise. The intake air system consists of an air cleaner assembly, resonator assemblies, and hoses. Some vehicles use a hydrocarbon filter trap to help reduce emissions by preventing fuel vapor from escaping into the atmosphere from the intake when the engine is OFF. It is typically located inside the intake air system. The hydrocarbon trap is part of the EVAP (evaporative emission) system. The intake air system also contains a IAT (intake air temperature) sensor that measures the intake air temperature. Intake air components can be separate components or part of the intake air housing. The function of a resonator is to reduce induction noise. The intake air components are connected to each other and to the throttle body assembly with hoses.

the calculation of fuel, spark, and airflow.

The IAT (intake air temperature) sensor provides a quicker temperature change response time than the CHT (cylinder head temperature) or ECT (engine coolant temperature) sensor.

The IAT2 (intake air temperature 2) sensor is used to measure the intake manifold temperature. The PCM (powertrain control module) uses this information to determine the air charge and provide input for various engine control functions. The IAT2 (intake air temperature 2) sensor is integrated with the MAP (manifold absolute pressure) / IAT2 (intake air temperature 2) sensor.

Manifold Absolute Pressure /Intake Air Temperature 2 (MAP/IAT2) Sensor

The MAP (manifold absolute pressure) sensor is located on the intake manifold and measures the intake manifold pressure. The PCM (powertrain control module) uses this information to determine the air charge and to provide the input for various engine control functions. The MAP (manifold absolute pressure) sensor is integrated with an IAT (intake air temperature) sensor.

Turbocharger Boost Pressure (TCBP) Sensor

The turbocharger boost pressure (TCBP) sensor is located in the intake air tube between the turbocharger and the cylinder head. The turbocharger boost pressure (TCBP) sensor measures the throttle inlet pressure. The PCM (powertrain control module) uses the information from the turbocharger boost pressure (TCBP) sensor to refine the estimate of the airflow rate through the throttle and to determine the desired boost pressure. The turbocharger boost pressure (TCBP) sensor is integrated with a charge air cooler temperature (CACT) sensor.

The turbocharger boost pressure/charge air cooler temperature (TCBP/CACT) sensor has one digital signal output from the sensor. There is one reference voltage circuit and one signal return circuit for the sensor.