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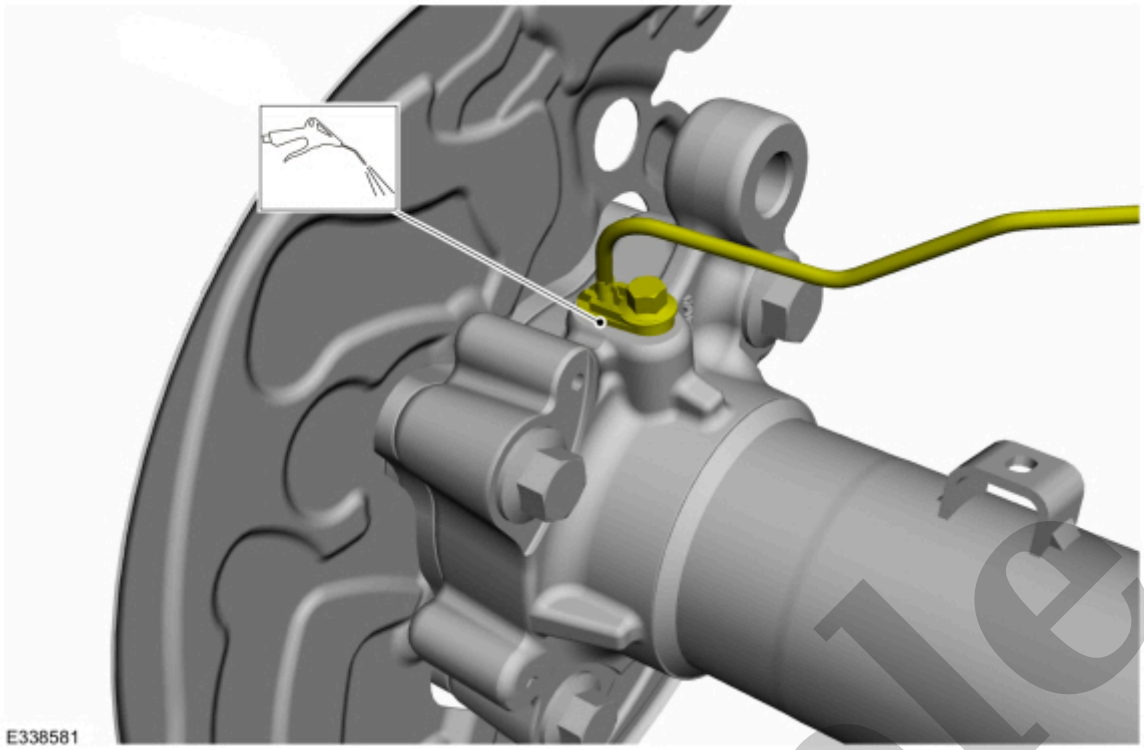
Ford Escape 2018 Manual – Service and Repair Workshop Guide

Go to manual page

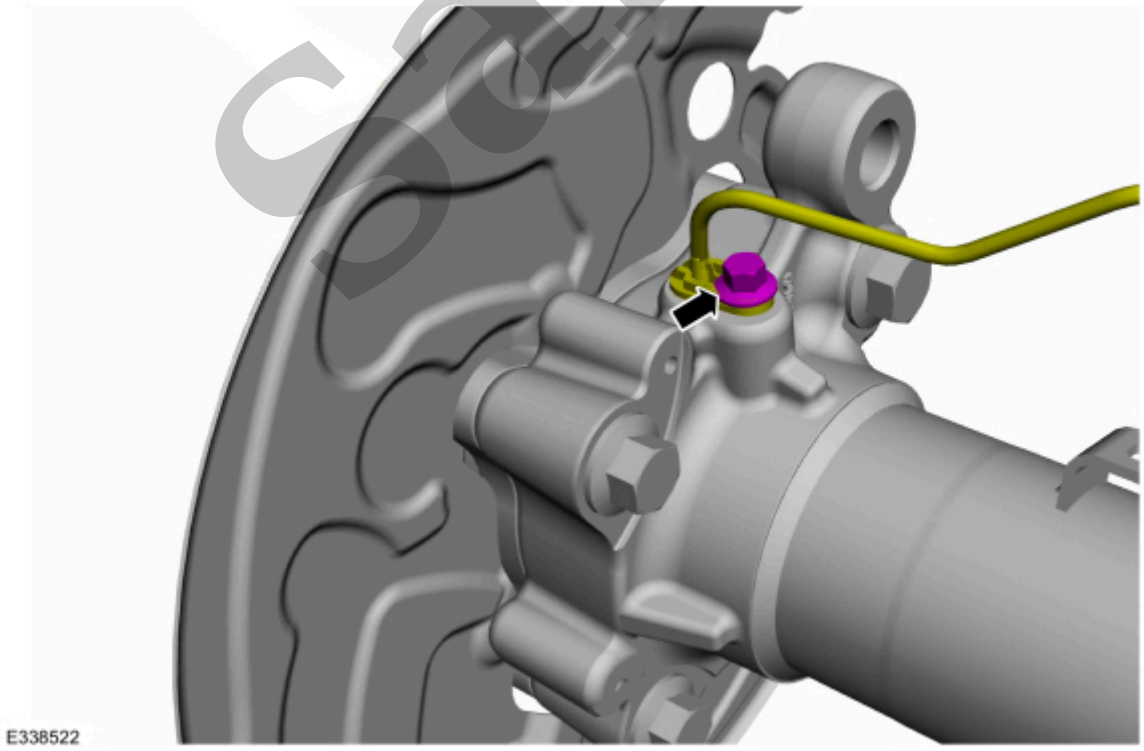


Click here to learn about symbols, color coding, and icons used in this manual.

3. On both sides.

   Remove the wheel speed sensor bolt and position aside the wheel speed sensor.

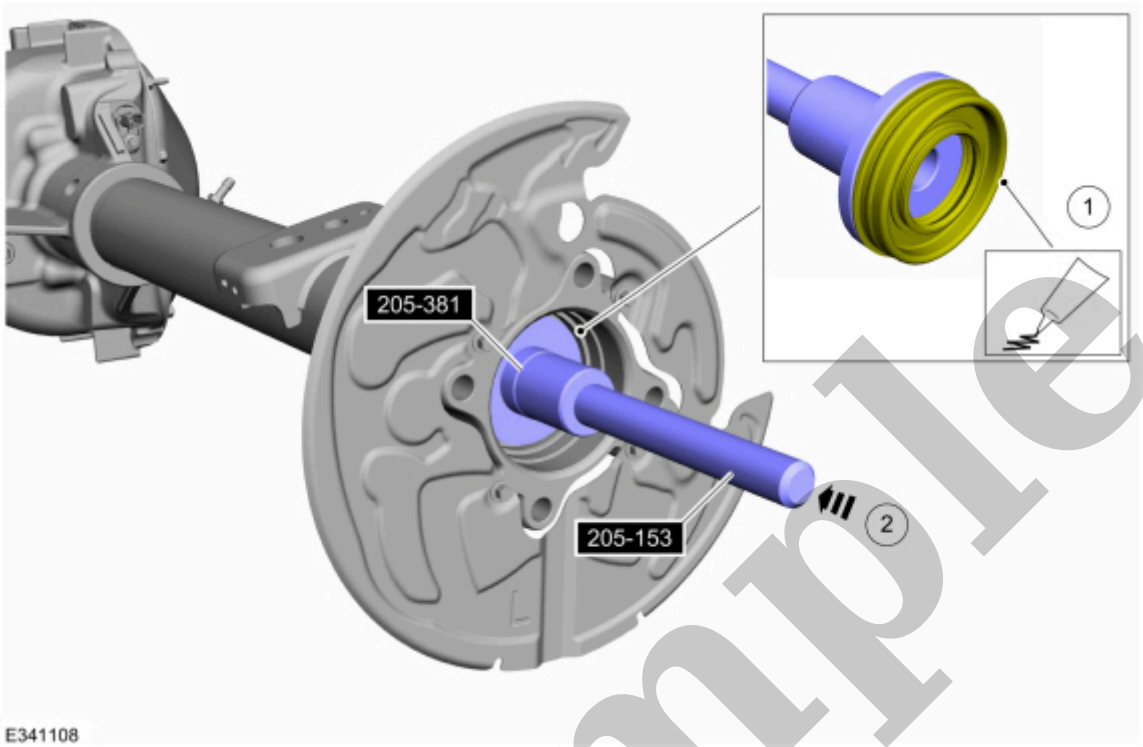
   Torque : 133 lb.in (15 Nm)



Material : Motorcraft® Premium Long-Life Grease / XG-1-E1 (ESA-M1C75-B)

2. Using special tools, install the new axle shaft seal if it is damaged.

   Use Special Service Tool : 205-381 (T97T-1177-A) Installer, Rear Axle Oil Seal , 205-153 (T80T-4000-W) Handle



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

2. Before installing a new sensor, inspect the sensor housing to make sure the sensor cavity is clean and free of foreign material.

Wheel Hub

205-02C Wheel Hubs and Bearings - 3/4 Floating Axle	***2022 F-150***
Removal and Installation	***Procedure revision date: 03/26/2022***

Wheel Hub

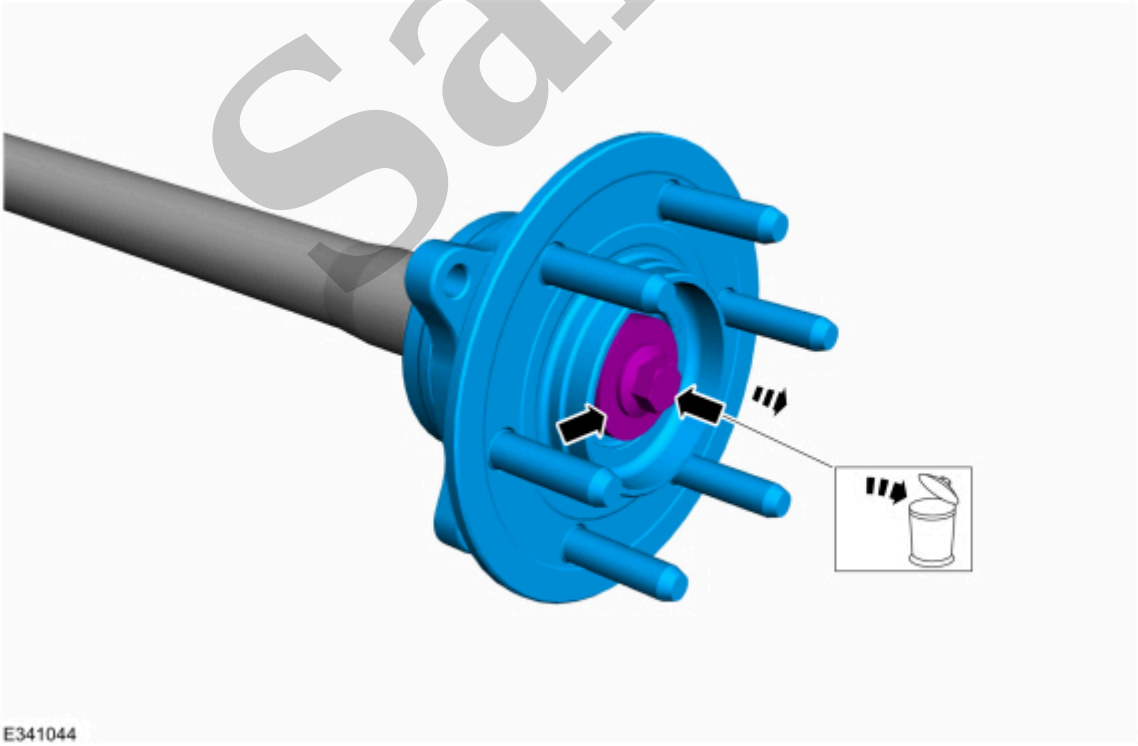
Removal

1. Remove the axle shaft.

   Refer to: Axle Shaft(205-02C Wheel Hubs and Bearings - 3/4 Floating Axle, Removal and Installation).

2. Remove and discard the wheel end hub bolt and separate the axle shaft from the wheel hub assembly.

   Use the General Equipment: Hydraulic Press



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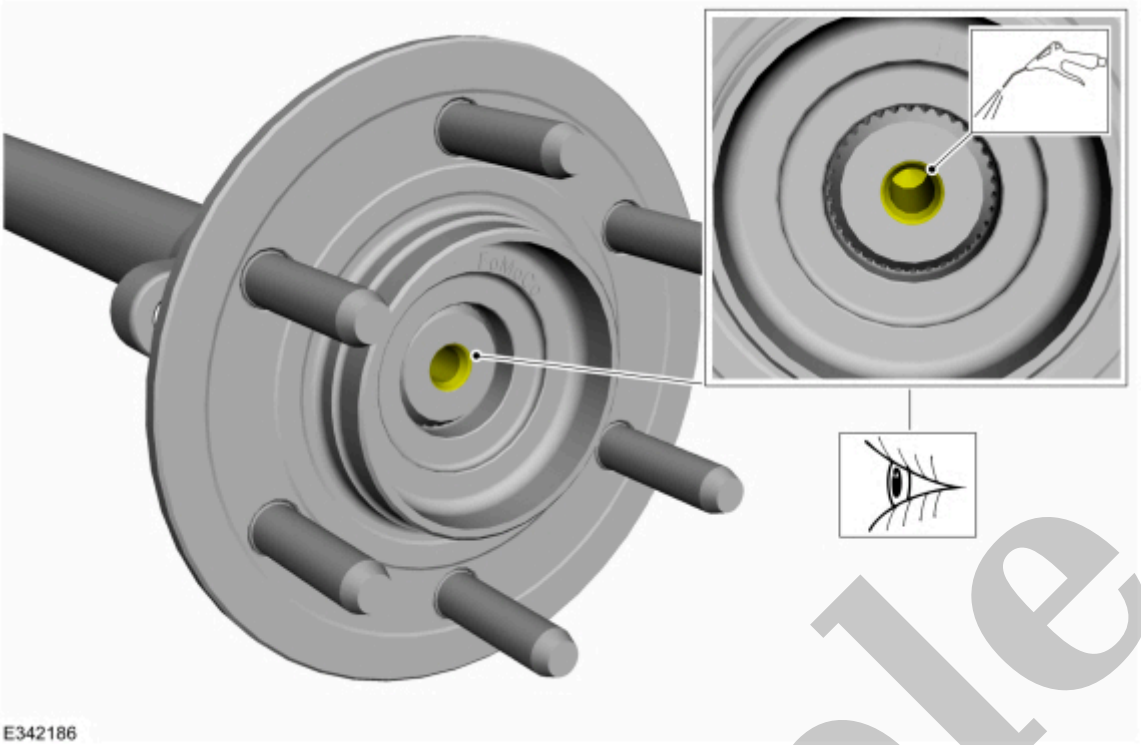


Click here to learn about symbols, color coding, and icons used in this manual.

3. **NOTE**

   Make sure a new bolt is installed.

   Install the washer and tighten the bolt.

   Torque :

   Stage 1: 52 lb.ft (70 Nm)

   Stage 2: 90°

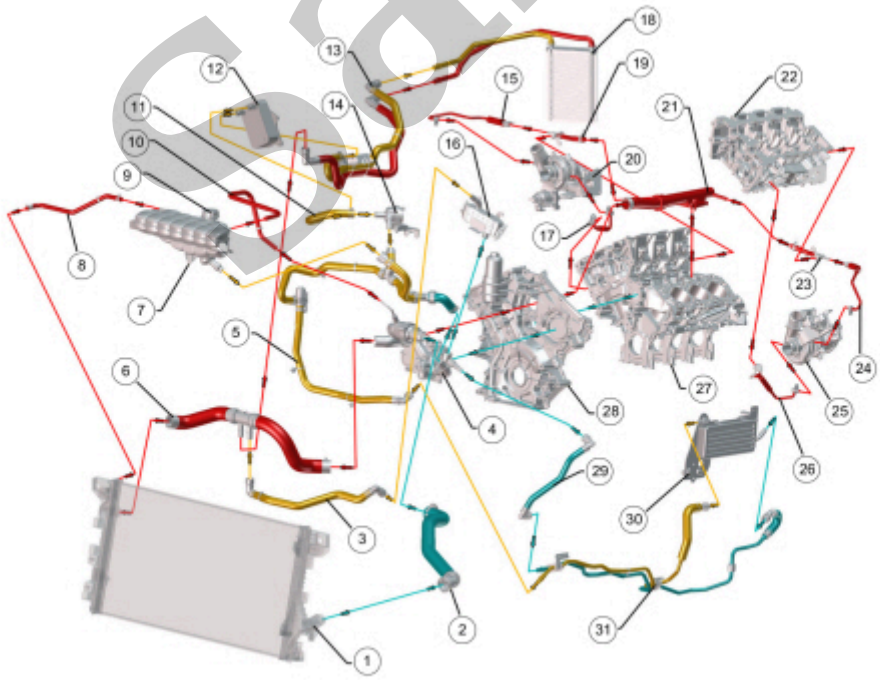
Engine Cooling - Component Location

303-03A Engine Cooling - 2.7L EcoBoost (238kW/324PS)	***2022 F-150***
Description and Operation	***Procedure revision date: 09/16/2020***

Engine Cooling - Component Location

NOTE

Coolant temperature will vary with ambient temperature and load. Temperatures shown are for ambient temperature of 38° C (100° F). Red arrows indicate a temperature over 90° C (194° F), Orange arrows indicate a temperature of approximately 90° C (194° F), Blue arrows indicate a temperature below 90° C (194° F).



E336835

21	Coolant outlet connector
22	Cylinder head LH (left-hand)
23	Cylinder head to coolant outlet connector hose LH (left-hand)
24	Coolant outlet hose
25	Turbocharger LH (left-hand)
26	Coolant outlet tube
27	Cylinder block
28	Engine front cover
29	EGR (exhaust gas recirculation) cooler inlet hose
30	Transmission oil cooler
31	Transmission oil cooler inlet hose

The thermostat monitor is a function of the PCM (powertrain control module) and is designed to verify correct thermostat operation. The monitor executes once per drive cycle and run for a calibrated threshold. If a malfunction occurs, DTC (diagnostic trouble code) P0125 or P0128 sets, and the MIL (malfunction indicator lamp) illuminates.

Fail Safe Cooling

A strategy called Fail Safe Cooling is built into the PCM (powertrain control module) that will control the engine if it starts to overheat.

Fail Safe Cooling has two modes: A 'Closed Loop' mode that relies on CHT (cylinder head temperature) sensor and an 'Open Loop' mode that relies on ECT (engine coolant temperature) sensor. When the engine starts to overheat, the decision to go into closed loop or open loop mode is made based on sensor availability and sensor failures. Closed loop mode takes priority over open loop. The reason is that a good CHT (cylinder head temperature) sensor is able to reliably track engine block temperature at all times, while the ECT (engine coolant temperature) sensor will fail to do so when the engine coolant is dumped.

Closed Loop Mode

Stage 1 of the strategy commences if the engine starts to overheat. The CHT (cylinder head temperature) sensor transmits a signal to the PCM (powertrain control module) , which moves the temperature gauge pointer into the red zone.

If the engine is not switched off and the temperature continues to rise, the Powertrain Check Lamp is illuminated. This indicates to the driver that the engine is approaching critical limits and should be stopped. At this point DTC (diagnostic trouble code) P1285 is set in the PCM (powertrain control module) which can be retrieved using a scan tool.

Stage 2 of the strategy commences if the lamp and temperature gauge are ignored by the driver. The PCM (powertrain control module) will start to control the engine by cutting out 3 cylinders and restricting load. The RPM will be limited below 3,000 RPM initially then will slowly be ramped down with time to as low as 800 RPM. Simultaneously the MIL (malfunction indicator lamp) illuminates. This indicates that long term engine damage can occur and vehicle emissions will be affected. At this point DTC (diagnostic trouble code) P1299 is set in the PCM (powertrain control module) which can be retrieved using a scan tool.

Air is drawn into the deactivated cylinders. This helps to control the temperature of the engine internal components. The deactivated cylinders are alternated to allow even cooling of all the cylinders.

NOTE

If the driver is using a high percentage of throttle travel (for example, an overtaking maneuver) when the PCM (powertrain control module) starts engine deactivation (Stage 2), the deactivation will be delayed for 10 seconds.

temperature. If the engine coolant temperature exceeds this threshold, the thermostat is functioning correctly. If the engine coolant temperature is too low, the thermostat may be stuck open and a DTC (diagnostic trouble code) sets. This monitor is executed once per drive cycle during a cold start and run for a calibrated threshold.

Component Description

Cabin Coolant Heater Pump

The cabin heater coolant pump is available on vehicles equipped with Auto Start-Stop feature to assist in flowing coolant through the heater core.

Refer to: Climate Control System - Vehicles With: Dual Automatic Temperature Control (DATC)

(412-00 Climate Control System - General Information, Diagnosis and Testing).

Refer to: Climate Control System - Vehicles With: Electronic Manual Temperature Control (EMTC)

(412-00 Climate Control System - General Information, Diagnosis and Testing).

Cooling Fan

The PCM (powertrain control module) monitors certain parameters, such as engine coolant temperature, vehicle speed, A/C (air conditioning) ON/OFF status, A/C (air conditioning) pressure to determine engine cooling fan needs.

The PCM (powertrain control module) controls the fan speed and operation using a duty cycle output on the FCV circuit. The fan controller (located at or integral to the engine cooling fan assembly) receives the FCV command and operates the cooling fan at the speed requested (by varying the power applied to the fan motor).

The fan controller is able to detect certain failure modes within the fan motors. Under certain failure modes, such as a motor that is drawing excessive current, the fan controller shuts the fans off. Fan motor concerns may not set a specific DTC (diagnostic trouble code) . With the fan motor disconnected from the fan controller, voltage may not be present at the fan controller.

Cylinder Head Temperature 2 (CHT2) Sensor

NOTE

If the CHT sensor is removed from the cylinder head for any reason it must be replaced with a new sensor.

The CHT (cylinder head temperature) 2 sensor is a thermistor device in which resistance changes with the temperature. The resistance of a thermistor decreases as temperature increases, and the resistance increases as the temperature decreases. The varying resistance affects the voltage drop across the sensor pins and provides electrical signals to the PCM (powertrain control module) corresponding to temperature.

Cooling Fan Control

303-03A Engine Cooling - 2.7L EcoBoost (238kW/324PS)	***2022 F-150***
Diagnosis and Testing	***Procedure revision date: 02/24/2021***

Cooling Fan Control

Diagnostic Trouble Code (DTC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: Diagnostic Methods

(100-00 General Information, Description and Operation).

Diagnostic Trouble Code Chart

Module	DTC (diagnostic trouble code)	Description	Action
PCM (powertrain control module)	P0480:00	Fan 1 Control Circuit: No Sub Type Information	GO to Pinpoint Test KN

Global Customer Symptom Code (GCSC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: Diagnostic Methods

(100-00 General Information, Description and Operation).

Global Customer Symptom Code Chart

Customer Symptom	Action