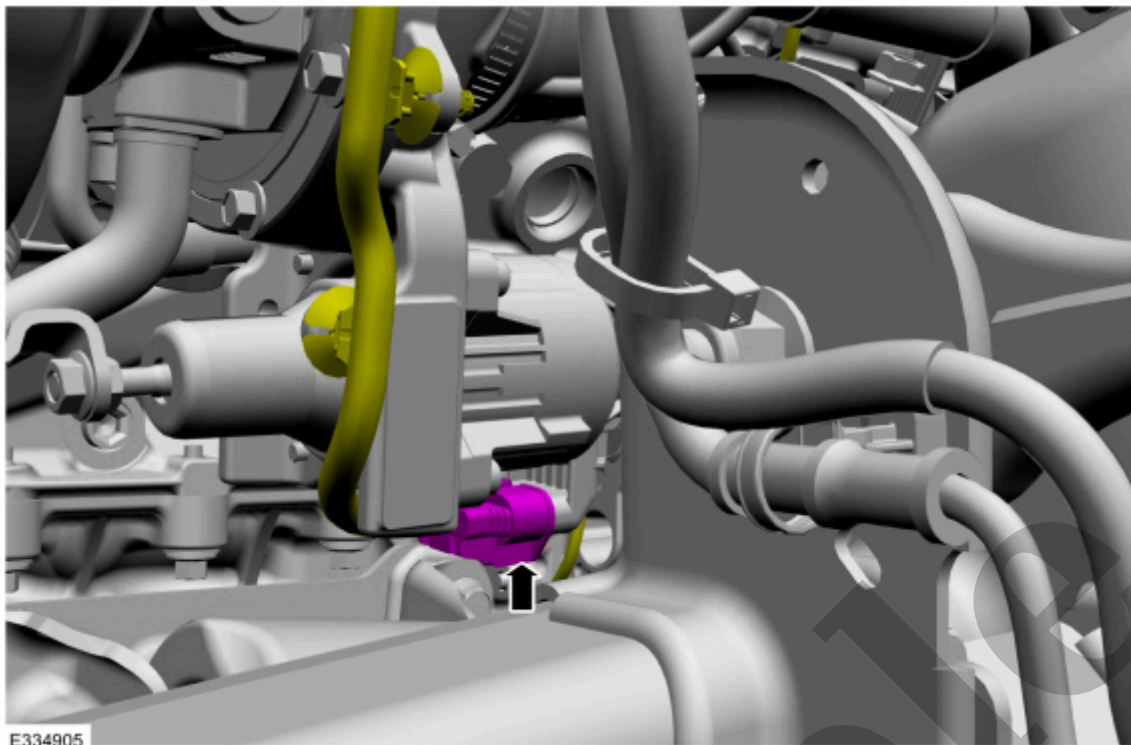


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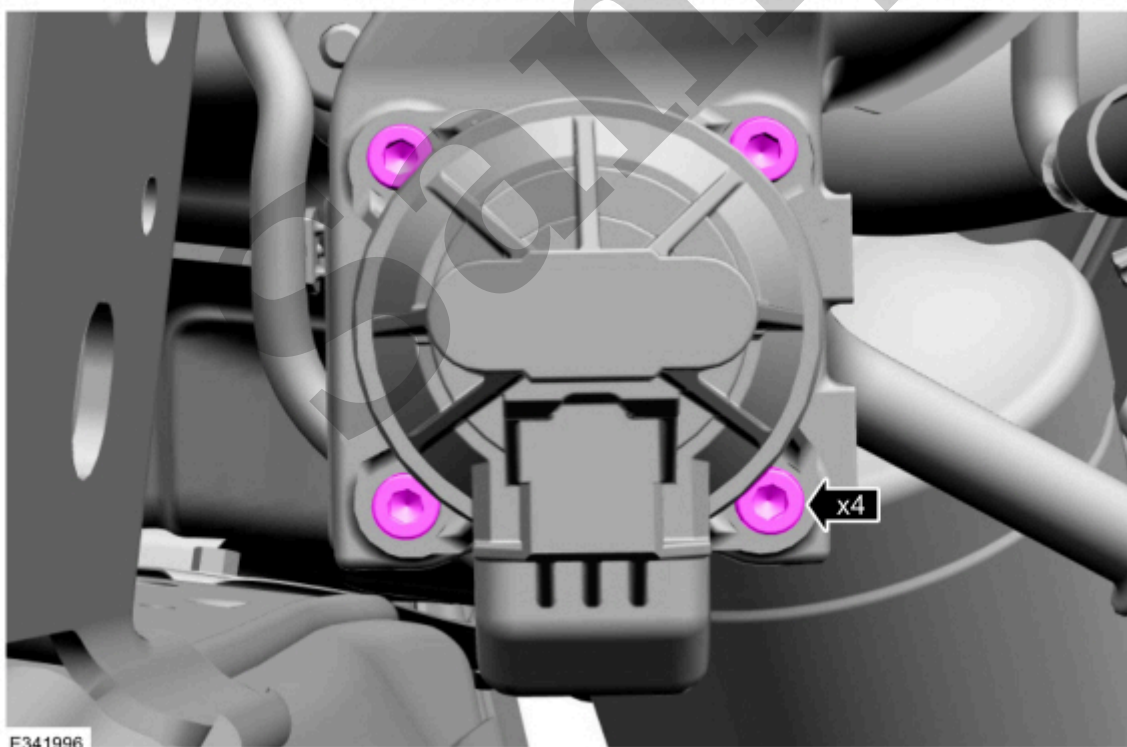
2024 Ford Expedition Service and Repair Manual

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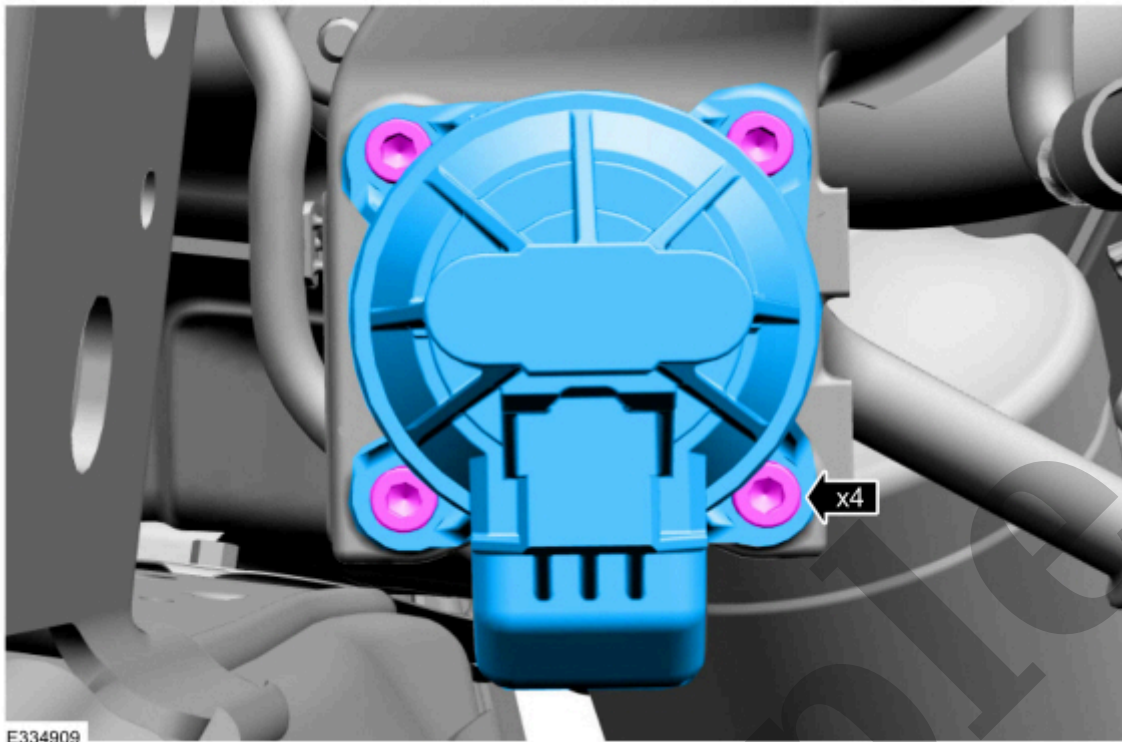
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8. Remove the bolts.



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Torque : 40 lb.in (4.5 Nm)

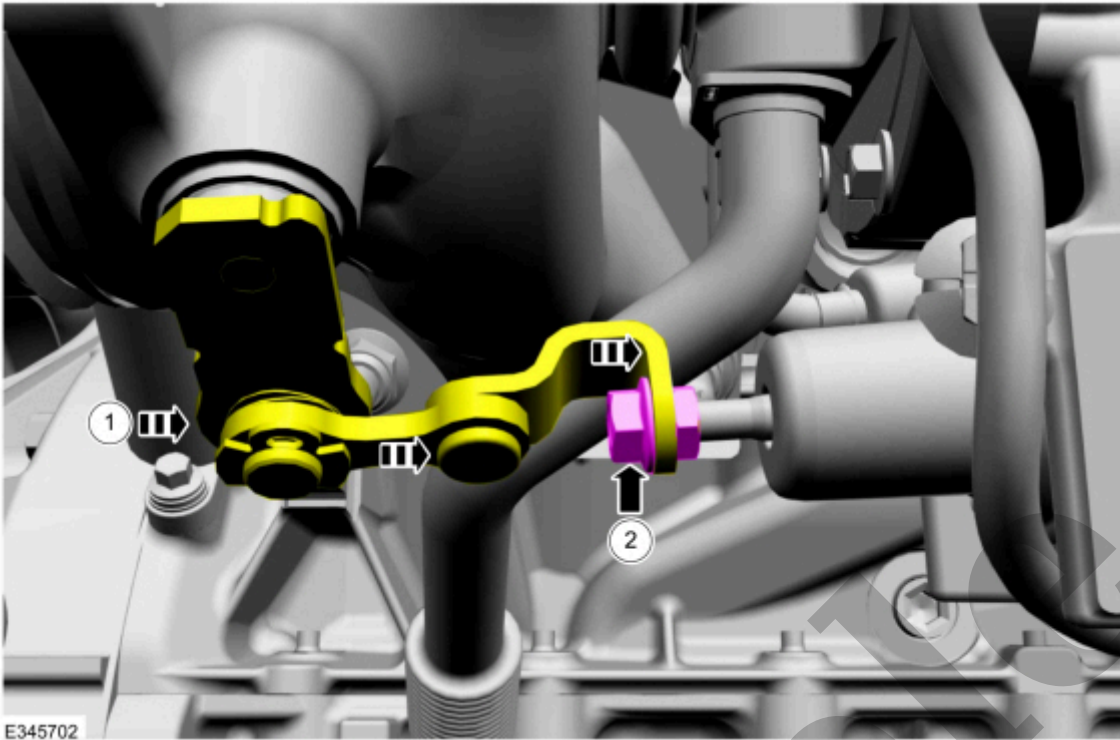


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2. NOTE

Make sure you have the correct orientation as shown, for the question mark upper linkage lever and the lower dog-bone linkage assembly. If reversed, it will bind slightly on the turbocharger housing.

1. Connect the wastegate control actuator question mark upper linkage lever to the wastegate control actuator. Loosely install the new lower wastegate control actuator jam nut.
2. Install the new NVH wave washer, connect the dog-bone linkage to the wastegate lever arm, then install the new E-clip.



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4. 1. Pull the wastegate control actuator shaft, at the wastegate control actuator jam nuts, away from the wastegate control actuator body to put slack into the system.

2. **NOTE**

In this step the upper wastegate control actuator jam nut should still be fully loosened toward the actuator.

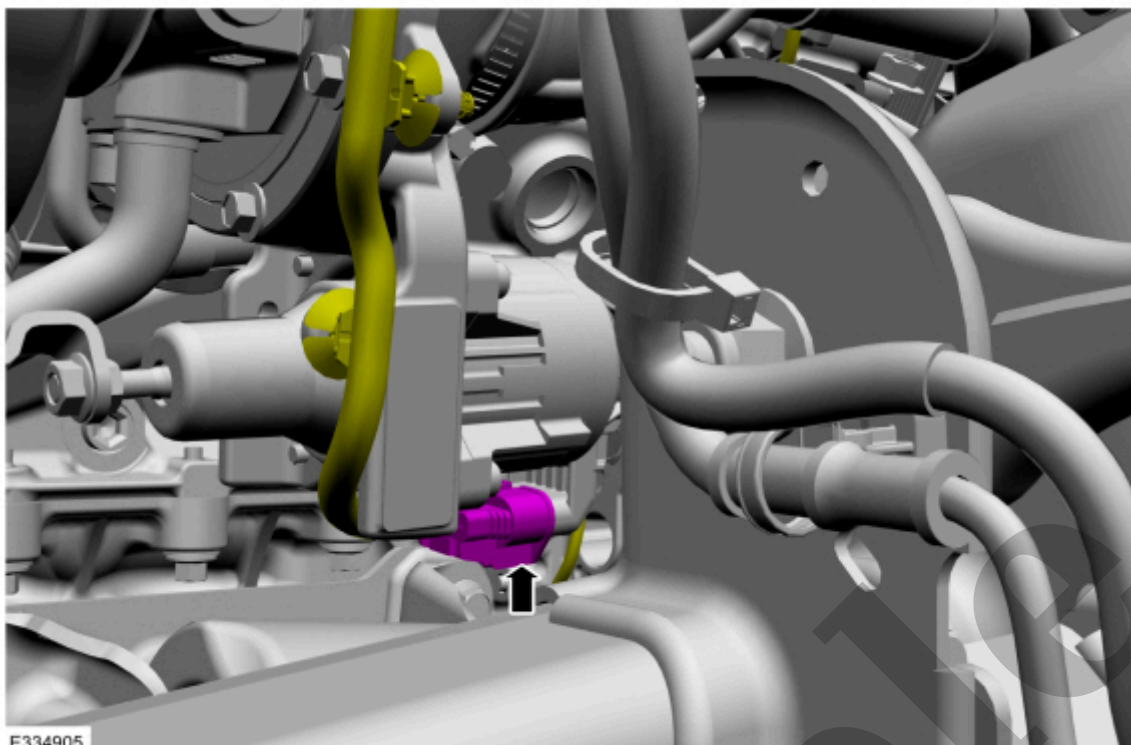
Hold the wastegate control actuator lever arm in the closed position, (rotated toward the wastegate control actuator until it stops).

3. Tighten the lower wastegate control actuator jam nut so that 4 to 5 threads are protruding beyond the lower jam nut.

4. **NOTICE**

2 wrenches must be used in this step, failure to do so may damage the wastegate control actuator.

Hold the lower jam nut in position and tighten the upper jam nut, this will pull the wastegate control actuator shaft and linkage into the correct position.



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

6. **NOTE**

Frame removed for clarity.

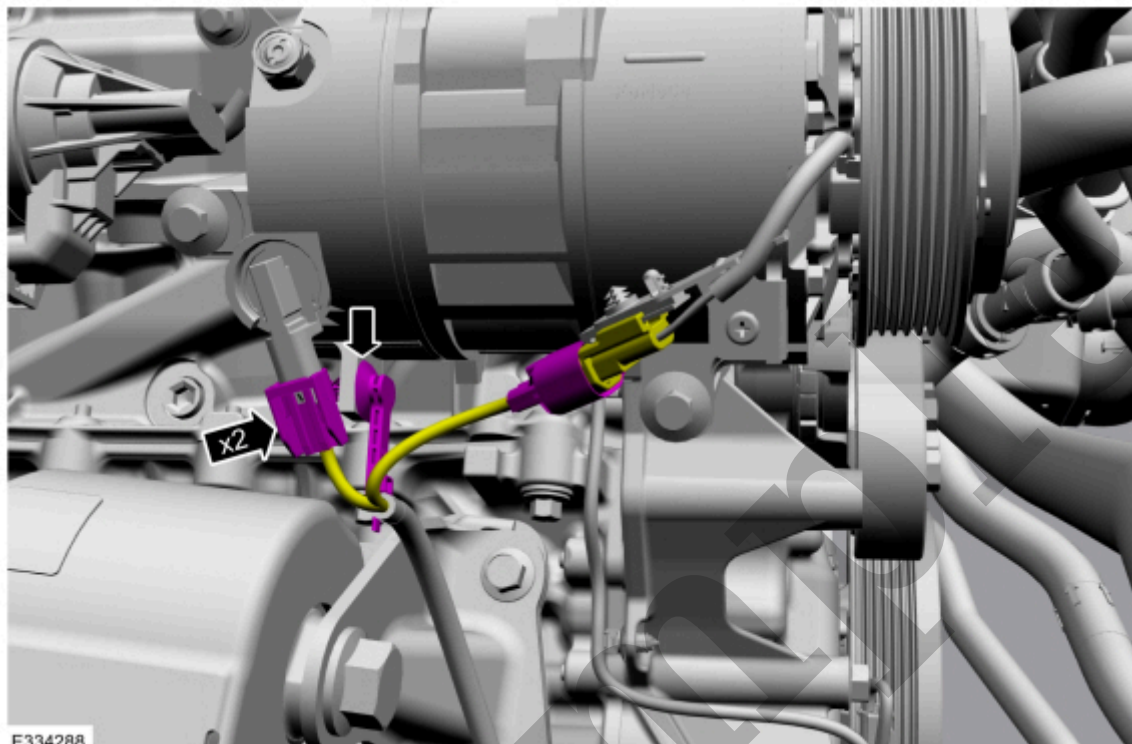
Install the A/C (air conditioning) compressor and bolts, then tighten the bolts in the sequence shown.

Torque : 18 lb.ft (25 Nm)

8. **NOTE**

Frame removed for clarity.

Connect the electrical connectors and attach the wiring harness retainer.



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9. If equipped, install the secondary generator.

Refer to: [Generator - 2.7L EcoBoost \(238kW/324PS\)](#)(414-02 Generator and Regulator, Removal and Installation).

10. **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.

1. 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) .
2. With the KOEO (key on, engine off) , using a diagnostic scan tool, view the PCM (powertrain control module) PID (parameter identification) .

13. Install the right front fender splash shield.

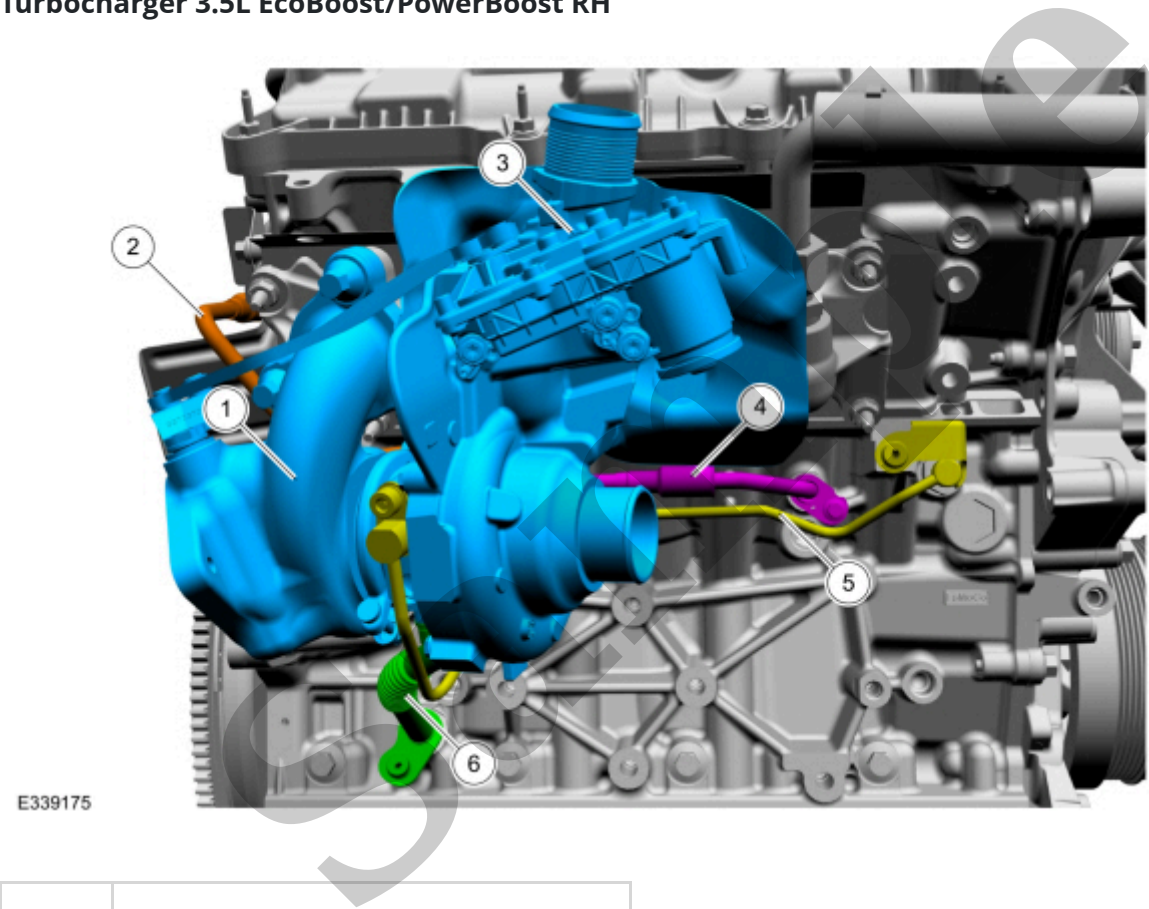
Refer to: [Fender Splash Shield](#)(501-02 Front End Body Panels, Removal and Installation).

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Sample

2	Turbocharger coolant return tube LH
3	Wastegate control actuator LH
4	Turbocharger coolant supply tube LH
5	Turbocharger oil supply tube LH
6	Turbocharger oil return tube LH

Turbocharger 3.5L EcoBoost/PowerBoost RH



Item	Description
1	Turbocharger RH
2	Turbocharger coolant return tube RH
3	Wastegate control actuator RH
4	Turbocharger coolant supply tube RH
5	Turbocharger oil supply tube RH



Turbocharger - System Operation and Component Description

303-04G Fuel Charging and Controls - Turbocharger - 3.5L EcoBoost (BM)	2022 F-150
Description and Operation	Procedure revision date: 10/16/2020

Turbocharger - System Operation and Component Description

System Operation

Turbocharger And Charge Air Cooler (CAC) Systems

Turbocharger System

A turbocharger is an exhaust gas driven device used to increase the power output of an engine by the turbocharger compressor increasing the pressure of the air entering the engine. The turbocharger uses exhaust gas energy to drive the turbine connected to the compressor. Compressing the air causes the temperature to increase. The CAC (charge air cooler) lowers the temperature of compressed air which increases the density of the air before entering the cylinder.

The 6 cylinder engine uses 2 turbochargers in a parallel arrangement with 1 turbine connected to the exhaust of each cylinder bank. This configuration improves engine responsiveness due to the reduced inertia of 2 small rotating assemblies in the place of 1 large rotating assembly while pumping adequate air to achieve the rated power. Emission compliance is achieved by mounting the catalysts very close to the turbo outlet.

The turbocharger bypass valve is used to create a path from the high pressure compressor outlet to the low pressure compressor inlet. This path recirculates airflow to reduce turbocharger lag and prevent unwanted air rush noise from the turbocharger on heavy throttle releases.

The wastegate on the turbocharger turbine side is opened to reduce exhaust gas flow through the turbine when boost pressure is not needed. An electric motor controls the wastegate valve opening. The turbocharger wastegate is controlled by the PCM (powertrain control module) by positive and negative voltage signals to the turbocharger wastegate motor.

wastegate position sensor signal for feedback on the wastegate motor performance, and to detect a stuck wastegate. The turbocharger wastegate position sensor is integral to the turbocharger wastegate motor.

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Sample