



TECHNICAL SERVICE BULLETIN

3.5L PowerBoost - Reduced Engine Power, Illuminated MIL With DTCs P0299, P0301, P0302 And/Or P0303 - Built On Or Before 30-Sep-2021

24-225717 September
2024

This bulletin supersedes 22-2017. Reason for update: update the Parts List.

Model:

Ford 2021 F-150	Engine: 3.5L PowerBoost Built on or before 30-Sep-2021
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Markets: North American market only

Issue: Some 2021 F-150 vehicles equipped with 3.5L PowerBoost engine and built on or before 30-Sep-2021 may experience a reduced engine power condition with an illuminated MIL and DTC P0299, P0301, P0302 and/or P0303 stored in the PCM. The vehicle may also exhibit a right turbocharger turbine shaft broken or binding impellor and/or an oil leakage from the compressor wheel. This may be due to a restriction in the right air cleaner outlet pipe. To correct the condition, follow the Service Procedure steps to replace the right air cleaner outlet pipe.

Action: Follow the Service Procedure steps to correct the condition on vehicles that meet all of the following criteria:

- 2021 F-150
- Built on or before 30-Sep-2021
- 3.5L PowerBoost
- Illuminated MIL with DTCs P0299, P0301, P0302 and/or P0303 stored in the PCM
- Reduced engine power

Parts

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
ML3Z-9R530-E	1	1	1	Right Side Air Cleaner Outlet Pipe

Parts - Parts To Be Replaced Only If The Right Turbocharger Is Replaced

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description	Note
ML3Z-6K682-B	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Right Side Turbocharger	
W720722-S900	Only If Necessary (Up to 3)	Only If Necessary (Up to 1)	4	Turbocharger Retainers	
ML3Z-9T515-A	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Turbocharger Oil Return Tube	
ML3Z-9G440-A	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Right Side Turbocharger Oil supply Tube	
FT4Z-6N652-H	Only If Necessary (Up to 4)	Only If Necessary (Up to 4)	1	Turbocharger Coolant Tubes O-ring seals	

HL3Z-6N652-A	Only If Necessary (Up to 2)	Only If Necessary (Up to 2)	1	Turbocharger Coolant Tubes - Rubber Gaskets	
ML3Z-9450-A	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Turbocharger Gasket	
ML3Z-6L625-A	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Turbocharger Fitting And Oil Filter Assembly	
W520514-S440	Only If Necessary (Single Exhaust requires 4 pieces, Dual exhaust requires 2 pieces)	Only If Necessary (Up to 4)	1	Catalytic Converter Nuts (Left And Right Side)	
W705443-S900	Only If Necessary (Up to 2)	Only If Necessary (Up to 2)	1	Right Side Catalytic Converter Nuts	Dual Exhaust Only
PL3Z-5C226-A	Only If Necessary (Up to 2)	Only If Necessary (Up to 2)	1	Catalytic Converter Gasket	
W714717-S439	Only If Necessary (Up to 2)	Only If Necessary (Up to 1)	4	Muffler Inlet Pipe Bolts	
ML3Z-6775-K	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Self Adhesive Heat Shield Material	
W500120-S439	Only If Necessary (Up to 4)	Only If Necessary (Up to 1)	4	Transmission Support Insulator Bolts	RWD Only
W718926-S900	Only If Necessary (Up to 4)	Only If Necessary (Up to 1)	4	Transmission Support Insulator Bolts	4WD Only
W520114-S442	Only If Necessary (Up to 5)	Only If Necessary (Up to 1)	4	Transmission Support Crossmember Nuts	
W714418-S439	Only If Necessary (Up to 4)	Only If Necessary (Up to 1)	4	Transmission Support Crossmember Bolts	
W709771-S440	Only If Necessary (Up to 2)	Only If Necessary (Up to 2)	1	Transmission Mount Nuts	
W707753-S900	Only If Necessary (Dual Exhaust Requires 4 Pieces, Single Exhaust 2 Pieces)	Only If Necessary (up to 1)	4	Converter Stud bolts	
XL-2	Only If Necessary	Only If Necessary	1	Motorcraft® High Temperature Nickel Anti-Seize Lubricant	
XL-1	Only If Necessary	Only If Necessary	1	Motorcraft® Penetrating and Lock Lubricant	
PM-4-A	Only If Necessary	Only If Necessary	1	Motorcraft® Metal Brake Parts Cleaner	
VC-13DL-G	Only If Necessary	Only If Necessary	1	Motorcraft® Yellow Prediluted Antifreeze/Coolant (All Markets Except Canada)	
CVC-13DL-G	Only If Necessary	Only If Necessary	1	Motorcraft® Yellow Concentrated	

				Antifreeze/Coolant (Canada Only)
XO-5W30-Q1SP	Only If Necessary	Only If Necessary	1	Motorcraft® SAE 5W-30 Motor Oil (All Markets Except Canada)
CXO-5W30-LSP6	Only If Necessary	Only If Necessary	1	Motorcraft® SAE 5W-30 Super Premium Motor Oil (Canada Only)

Parts - Parts To Be Replaced Only If Flywheel Damage Is Found

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description	Note
N800594-S100	Only If Necessary (up to 4)	Only If Necessary (up to 1)	4	Rear Driveshaft-Coupling Assembly Bolts	
W715579-S439	Only If Necessary (up to 4)	Only If Necessary (up to 1)	4	Driveshaft Center Bearing Bolts	2 Piece Driveshaft Only
7L1Z-4B496-C	Only If Necessary (up to 2)	Only If Necessary (up to 2)	1	Front Driveshaft Bolts and Washers	4WD only
ML3Z-3B478-B	Only If Necessary (up to 1)	Only If Necessary (up to 1)	1	Driveshaft Boot Clamp	4WD only
ML3Z-4421-A	Only If Necessary (up to 1)	Only If Necessary (up to 1)	1	Front Axle Drive Boot	4WD only
W520113-S440	Only If Necessary (Up to 4)	Only If Necessary (up to 1)	4	Stabilizer Bar Bracket Nuts	
W704980-S439	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	4	Transmission Park Manual Release Bolt	
L1MZ-7F396-A	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Transmission Oil Pan Gasket	
L1MZ-7N265-A	Only If Necessary (Up to 2)	Only If Necessary (Up to 2)	1	Transmission Oil Pan Seals	
BL8Z-7G199-A	Only If Necessary (Up to 2)	Only If Necessary (Up to 2)	1	Transmission Feed Tube Seals	
L1MZ-7A098-B	Only If Necessary (Up to 2)	Only If Necessary (Up to 2)	1	Transmission Fluid Filter	
7T4Z-7Z302-A	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Transmission Fluid Filter Seal	
L1MZ-7J135-A	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Transmission Auxiliary Pump Seal	
XT-12-QULV	Only If Necessary	Only If Necessary	1	Motorcraft® MERCON® ULV Automatic Transmission Fluid	

ML3Z-6477-A	Only If Necessary (up to 1)	Only If Necessary (up to 1)	1	Flywheel assembly	
W716375-S900	Only If Necessary (up to 12)	Only If Necessary (up to 3)	5	Transfer Case Bolts	
XG-1-E1	Only If Necessary	Only If Necessary	1	Motorcraft® Premium Long-Life Grease	
XT-12-QULV	Only If Necessary	Only If Necessary	1	Motorcraft® MERCON® ULV Automatic Transmission Fluid - Automatic Transmission Fluid (USA And Canada)	
XT-10-QLVC	Only If Necessary	Only If Necessary	1	Motorcraft® MERCON® LV Automatic Transmission Fluid - Transfer Case Fluid (All Markets Except Canada)	
CXT-10-LV6	Only If Necessary	Only If Necessary	1	Motorcraft® MERCON® LV Automatic Transmission Fluid - Transfer Case Fluid (Canda Only)	

Parts - Parts To Inspect And Replace Only If Necessary

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
ML3Z-11002-D	Only If Necessary (Up to 1)	Only If Necessary (Up to 1)	1	Starter Motor

Claim Quantity refers to the total number of individual pieces required to repair the vehicle.

Package Order Quantity refers to the amount of the service part number package(s) required to repair the vehicle.

Number In Package refers to the number of individual pieces included in a service part number package.

As Needed indicates the amount of the part may vary and/or is not a whole number. Parts can be billed out as non-whole numbers, including less than 1.

Only If Necessary indicates the part is not mandatory.

Warranty Status: Eligible under provisions of New Vehicle Limited Warranty (NVLW)/Emissions Warranty/Service Part Warranty (SPW)/Service Part New Vehicle (SPNV)/Extended Service Plan (ESP) coverage. Limits/policies/prior approvals are not altered by a TSB. NVLW/Emissions Warranty/SPW/SPNV/ESP coverage limits are determined by the identified causal part and verified using the OASIS part coverage tool.

Labor Times

Description	Operation No.	Time
2021 F-150 3.5L PowerBoost: Retrieve DTCs, Inspect The Right Air Cleaner Outlet Pipe (Fail) And Right Turbo Charger (Pass) Replace The Right Air Cleaner Outlet Pipe (Do Not Use With Any Other Labor Operations)	242257A	1.1 Hrs.
2021 F-150 3.5L PowerBoost: Retrieve DTCs, Inspect The Right Air Cleaner Outlet Pipe (Fail) And Right Turbo Charger (Fail) Replace The Right Air Cleaner Outlet Pipe And Right Turbocharger (Do Not Use With Any Other Labor Operations)	242257B	7.2 Hrs.

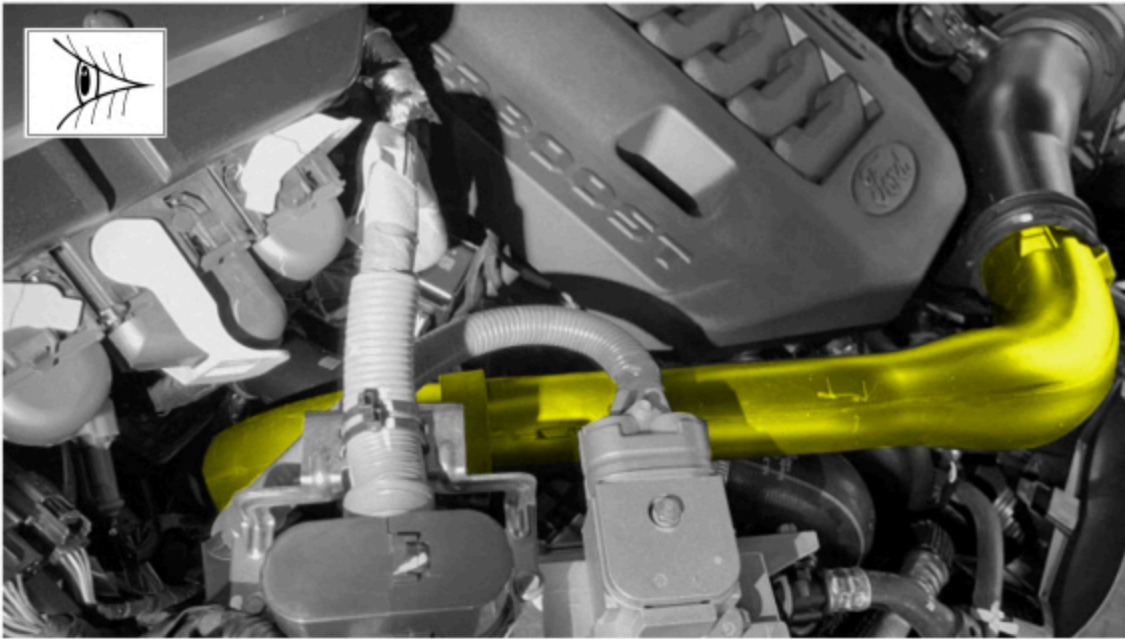
Repair/Claim Coding

Causal Part:	9R530
Condition Code:	D4

Service Procedure

1. Inspect the right air cleaner outlet pipe (Figures 1-2) for a seam line in the section where the duct begins to route downwards towards the turbocharger (Figure 3). Does the right air cleaner outlet pipe exhibit a seam line?

Figure 1



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Figure 2

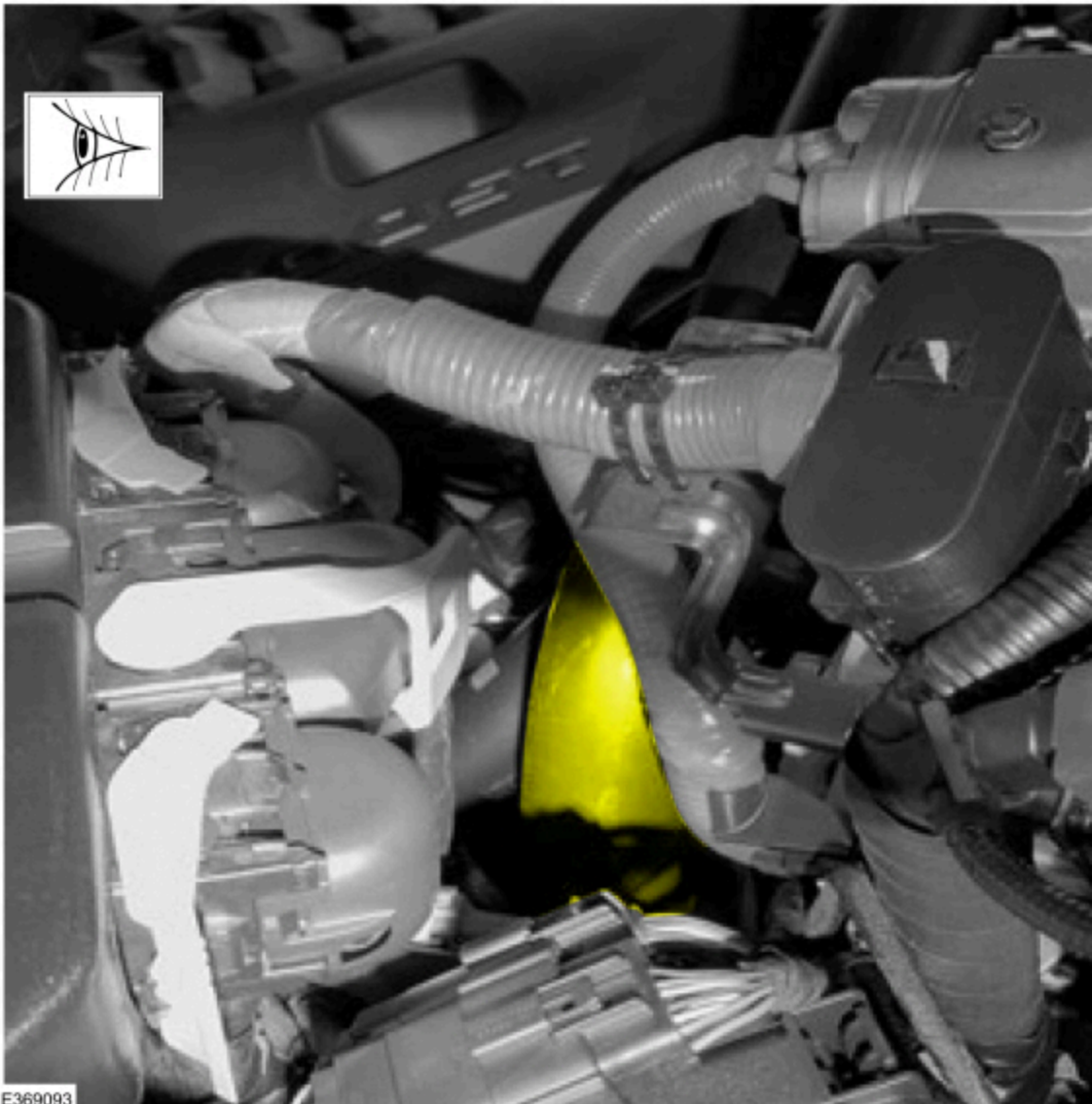
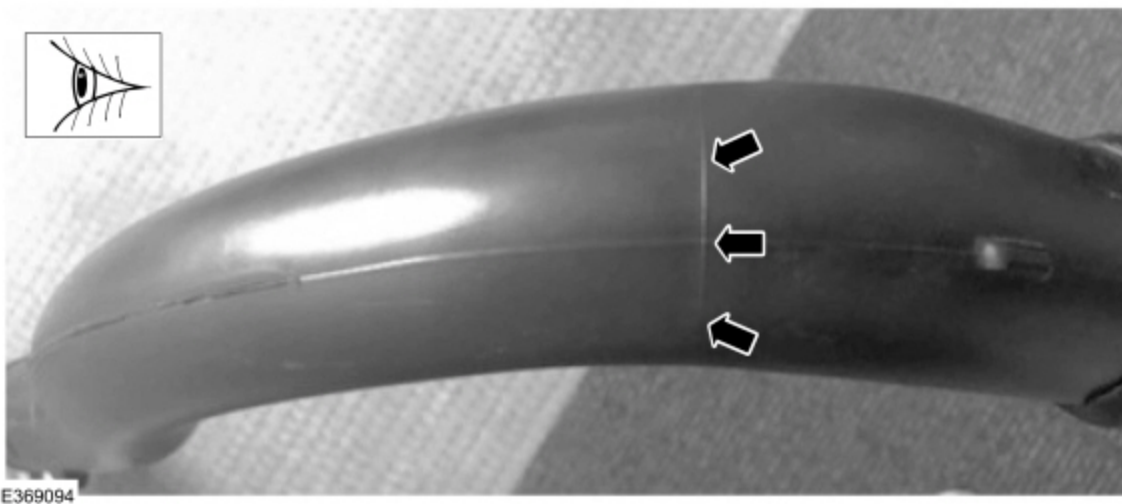


Figure 3



(1). Yes - remove the right air cleaner outlet pipe. Refer to WSM, Section 303-12D > Intake Air Distribution and Filtering > Removal and Installation. Proceed to Step 2.

(2). No - this article does not apply. Refer to WSM, Section 303-04I.

2. Inspect the right turbocharger for damage and/or oil leaking from the compressor wheel. Refer to the WSM, Section 303-04I > pinpoint test Step C6. Does the turbocharger exhibit damage in the turbine shaft or in the

compressor wheel and/or excessive oil leakage?

(1). Yes - replace the right turbocharger and the right air cleaner outlet pipe. Refer to the WSM, Section 303-04I Fuel Charging and Controls > Turbocharger > Removal and Installation. Repair is complete.

(2). No - replace the right air cleaner outlet pipe. Refer to the WSM, Section 303-12D Intake Air Distribution and Filtering > Removal and Installation. Repair is complete.

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NOTE: The information in Technical Service Bulletins is intended for use by trained, professional technicians with the knowledge, tools, and equipment to do the job properly and safely. It informs these technicians of conditions that may occur on some vehicles, or provides information that could assist in proper vehicle service. The procedures should not be performed by "do-it-yourselfers". Do not assume that a condition described affects your car or truck. Contact a Ford or Lincoln dealership to determine whether the Bulletin applies to your vehicle. Warranty Policy and Extended Service Plan documentation determine Warranty and/or Extended Service Plan coverage unless stated otherwise in the TSB article. The information in this Technical Service Bulletin (TSB) was current at the time of printing. Ford Motor Company reserves the right to supersede this information with updates. The most recent information is available through Ford Motor Company's on-line technical resources.