TECHNICAL SERVICE BULLETIN
Harsh/Delayed Engagement And/Or Harsh/Delayed Shift

24-2436
08 January 2025

This bulletin supersedes 24-2304. Reason for update: update the TSB Service Procedure, part list quantities and add missing labor operation

This bulletin supersedes 24-2176. Reason for update: update the TSB Service Procedure, part list quantities and add missing labor operation

Model:

Ford 2022 Expedition	Built on or before 15-Aug 2022 Transmission: 10R80
2020-2022 Explorer	Built on or before 15-Aug 2022 Transmission: 10R80 (does not include 10R80 MHT)
2021-2022 F-150	Built on or before 15-Aug 2022 Transmission: 10R80 (does not include 10R80 MHT)
2021-2022 Mustang	Built on or before 15-Aug 2022 Transmission: 10R80
2020-2023 Transit	Built on or before 15-Aug 2022 Transmission: 10R80
Lincoln 2022 Navigator	Built on or before 15-Aug 2022 Transmission: 10R80

Markets: North American markets only

Issue: Some of the vehicles listed in the Model statement above may exhibit at least one of the following conditions:

- Harsh engagement
- Delayed engagement
- Harsh shift
- Delayed shift
- Illuminated MIL with DTCs P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0771, P0772, P2700, P2701, P2702, P2703, P2704, P2705, P2707, P2708, P0729, P0731, P0732, P0733, P0734, P0735, P0736, P076F, P07D9, P07F6 and/or P07F7 stored in the PCM or TCM

This may be due to axial movement of the CDF clutch cylinder (7H351) sleeve causing hydraulic circuit leaks.

NOTE: If internal transmission service is required to address a concern detected with the CDF clutch cylinder following this article, technicians should carefully inspect and replace other transmission components and flush transmission fluid cooler only as necessary as needed to ensure proper function. Add a new line to the repair order to document any additional repairs needed. M-time can be claimed on the additional repair line to cover labor. Refer to Warranty & Policy Manual for additional information. A thorough understanding of transmission description and operation will assist the technician with proper diagnosis, inspection, and successful repair of the customer concern.

NOTE: The Pressure Vacuum Transducer Kit (Rotunda 164-R9833) and VCMM Transmission Extension Kit (Rotunda 164-R9534) needed to perform this article are no longer included with the VCMM Advanced Kit (Rotunda 164-R9823) and were discontinued in July 2023. Ford has confirmed a high percentage (80%) of Dealers have this equipment available to perform the article. Dealers that do not have this equipment are asked to order from Rotunda as soon as possible due to limited supply.

Action: For vehicles that meet all of the criteria in the Issue and Model statements, follow the Service Procedure to verify hydraulic circuit leakage and replace the CDF clutch cylinder (7H351) if necessary.

Parts - Main Control Removal and Instalation - Parts To Inspect And Replace Only If Necessary - All Vehicles

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
HL3Z-7A191-B	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Fluid Pan Gasket

HL3Z-7A098-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Fluid Filter (F-150/Expedition/Navigator/Mustang/Explorer)
LK4Z-7A098-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Fluid Filter (Transit)
7T4Z-7Z302-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Fluid Filter Seal
HL3Z-7J227-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Auxiliary Pump Tube O-ring (If Equipped)

Parts - CDF Cylinder Replacement

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
HL3Z-7G199-A	1	1	1	Auxiliary Pump Tube Seal (If Equipped With Stop/Start)
HL3Z-7A248-A	1	1	1	Torque Converter Seal
JL3Z-7N134-A	12	12	1	Front Support Bolts
LC3Z-7H223-A	12	12	1	Front Support Bolt Seals
HL3Z-7A248-G	1	1	1	Front Support To Case Seal
HL3Z-7G091-F	5	5	1	Input Shaft Seals (F2)
HL3Z-7B399-C	4	4	1	Sun Gear No. 3 Shaft Seals (F7)
HL3Z-7C099-A	1	1	1	C Clutch Balance Dam Inner Seal
HL3Z-7A548-B	2	2	1	C Clutch Balance Dam And Piston Outer Seal
HL3Z-7D404-A	2	2	1	C And D Clutch Piston Inner Seals
HL3Z-7A262-C	1	1	1	D Clutch Balance Dam
HL3Z-7D403-A	1	1	1	D Clutch Piston Outer Seal
HL3Z-7A548-G	2	2	1	F Clutch Balance Dam And Piston Outer Seal
HL3Z-7A548-A	2	2	1	F Clutch Balance Dam And Piston Inner Seal
HL3Z-7G091-G	5	5	1	Input Shaft To Sun Gear No. 3 Shaft Seals (F8)
HL3Z-7G091-C	1	1	1	Input Shaft Seal (F9)
JL3Z-7H351-B	1	1	1	CDF Cylinder (5.0L Mustang, Transit, 3.0L Explorer)
JR3Z-7H351-B	1	1	1	CDF Cylinder (3.3L Explorer, 2.3L Mustang)
ML3Z-7H351-B	1	1	1	CDF Cylinder (F-150/Expedition/Navigator)

Parts - CDF Cylinder Replacement - Parts To Inspect And Replace Only If Necessary

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description	Note
HL3Z-7B066-AB	Only If Necessary (1 Possible)	Only If Necessary	1	A Pressure Plate	
HL3Z-7B164-E	Only If Necessary (3 Possible)	Only If Necessary	1	A Clutch Friction Plates	
HL3Z-7F220-A	Only If Necessary (2 Possible)	Only If Necessary	1	A Clutch Steel Plates	
HL3Z-7B442-F	Only If Necessary (Transit/Explorer Has 4 Possible, All Others Have 5 Possible)	Only If Necessary	1	C Clutch Steel Plates	
HL3Z-7B164-A	Only If Necessary (Transit/Explorer Have 4 Possible, Mustang Has 5 Possible)	Only If Necessary	1	C Clutch Friction Plates (Explorer/Transit/Mustang)	
ML3Z-7H095-A	Only If Necessary (5 Possible)	Only If Necessary	1	C Clutch Friction Plates (F-150/Expedition/Navigator)	

ML3Z-7B477-A	Only If Necessary (1 Possible)	Only If Necessary	1	C Clutch Pressure Plate	
HL3Z-7B442-D	Only If Necessary (Transit Has 5 Possible, All Others Have 6 Possible)	Only If Necessary	1	D Clutch Steel Plates	Updated to include "All"
HL3Z-7B164-C	Only If Necessary (Transit Has 5 Possible, Mustang/Explorer Have 6 Possible)	Only If Necessary	1	D Clutch Friction Plates (Explorer/Transit/Mustang)	
ML3Z-7B164-A	Only If Necessary (6 Possible)	Only If Necessary	1	D Clutch Friction Plates (F-150/Expedition/Navigator)	
HL3Z-7B066-E	Only If Necessary (1 Possible)	Only If Necessary	1	D Clutch Pressure Plate	
HL3Z-7B164-G	Only If Necessary (4 Possible)	Only If Necessary	1	F Clutch Steel Plates	
HL3Z-7B164-D	Only If Necessary (4 Possible)	Only If Necessary	1	F Clutch Friction Plates	
HL3Z-7B066-A	Only If Necessary (1 Possible)	Only If Necessary	1	F Clutch Pressure Plate	

Parts - 10R80 CDF Cylinder Replacement - Select One Of The Following If Needed

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
HL3Z-7B066-AA	1	1	1	A Clutch Apply Plate 4.1-4.3 mm Selective
HL3Z-7B066-Z	1	1	1	A Clutch Apply Plate 4.4-4.6 mm Selective
HL3Z-7B066-Y	1	1	1	A Clutch Apply Plate 4.7-4.9 mm Selective
HL3Z-7B066-X	1	1	1	A Clutch Apply Plate 5.0-5.2 mm Selective
HL3Z-7B066-W	1	1	1	A Clutch Apply Plate 5.3-5.5 mm Selective
HL3Z-7H032-C	1	1	1	T-3 Bearing (Replace If T-3 Shim Is Replaced)
HL3Z-7A527-Q	1	1	1	T-3 Shim 3.05-3.15 mm Selective
HL3Z-7A527-P	1	1	1	T-3 Shim 3.2-3.3 mm Selective
HL3Z-7A527-R	1	1	1	T-3 Shim 3.35-3.45 mm Selective
HL3Z-7A527-K	1	1	1	T-3 Shim 3.5-3.6 mm Selective
HL3Z-7A527-L	1	1	1	T-3 Shim 3.65-3.75 mm Selective
HL3Z-7A527-M	1	1	1	T-3 Shim 3.8-3.9 mm Selective
HL3Z-7A527-S	1	1	1	T-3 Shim 3.95-4.05 mm Selective
HL3Z-7A527-T	1	1	1	T-3 Shim 4.1-4.2 mm Selective
HL3Z-7A527-N	1	1	1	T-3 Shim 4.25-4.35 mm Selective
HL3Z-7D483-A	1	1	1	D Clutch Snap Ring 1.8 mm Selective
HL3Z-7D483-B	1	1	1	D Clutch Snap Ring 2.0 mm Selective
HL3Z-7D483-C	1	1	1	D Clutch Snap Ring 2.2 mm Selective
HL3Z-7D483-D	1	1	1	D Clutch Snap Ring 2.4 mm Selective
HL3Z-7D483-E	1	1	1	D Clutch Snap Ring 2.6 mm Selective
HL3Z-7D483-F	1	1	1	D Clutch Snap Ring 2.8 mm Selective
HL3Z-7C122-A	1	1	1	C Clutch Snap Ring 1.5 mm Selective
HL3Z-7C122-B	1	1	1	C Clutch Snap Ring 1.7 mm Selective
HL3Z-7C122-C	1	1	1	C Clutch Snap Ring 1.9 mm Selective
HL3Z-7C122-D	1	1	1	C Clutch Snap Ring 2.1 mm Selective
HL3Z-7C122-E	1	1	1	C Clutch Snap Ring 2.3 mm Selective
HL3Z-7C122-F	1	1	1	C Clutch Snap Ring 2.5 mm Selective

HL3Z-7H365-C	1	1	1	F Clutch Snap Ring 1.5 mm Selective
HL3Z-7H365-D	1	1	1	F Clutch Snap Ring 1.7 mm Selective
HL3Z-7H365-E	1	1	1	F Clutch Snap Ring 1.9 mm Selective
HL3Z-7H365-F	1	1	1	F Clutch Snap Ring 2.1 mm Selective
HL3Z-7H365-G	1	1	1	F Clutch Snap Ring 2.3 mm Selective

Parts - F-150/Expedition/Navigator Transmission Removal And Installation

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
7L1Z-4B496-C	2	2	1	CV Joint-To-Pinion Flange Cup Bolts And Retaining Straps (4WD)
FL3Z-6775-D	1	1	1	Self-Adhesive Heat Shield
7L1Z-4B496-D	3	3	1	CV Joint-To-Transfer Case Flange Cup Bolts And Retaining Straps (4WD Expedition/Navigator)
JL1Z-7N134-A	1	1	1	Park Override Lever Bolt (Non-Column Shift Expedition/Navigator)
PL3Z-5C226-A	2	2	1	Left And Right Catalytic Converter Gasket (F-150 2.7L/3.5L, Expedition/Navigator)
W520113-S440	4	1	4	Stabilizer Bar Bracket Nuts
W520214-S440	4	2	2	Transmission Support Crossmember Nuts
W520514-S440	4	4	1	Left And Right Catalytic Converter Nuts (All Gas Engines)
W704980-S439	1	1	4	Park Manual Release Cable Bracket Bolt (2.7L/3.3L/3.5L/5.0L)
W709771-S440	2	2	1	Transmission Mount Nuts
W711140-S901	3	3	1	Transmission Insulator Bolts And Washers (RWD Gas)
W714418-S439	4	1	4	Transmission Support Crossmember Bolts
W715131-S437	1	1	4	Transmission Fluid Cooler Tube Bracket Bolt (Expedition/Navigator)
W715618-S437	F-150 2.7L/3.3L/3.5L/5.0L/Expedition/Navigator Require 4 Pieces, F-150 3.0L Require 6 Pieces	1 For F-150 2.7L/3.3L/3.5L/5.0L/Expedition/Navigator, 2 For F-150 3.0L	4	Torque Converter Nuts
W715798-S442	1	1	4	Fluid Cooler Tube Studbolt 3.0L (Park Manual Release

				Cable Bracket Bolt 3.5L)
W716375-S900	9	2	5	Transfer Case Bolts (4WD)
W718353-S900	4	1	4	Transmission Insulator Bolts (F-150 2.7L/3.3L/3.5L/5.0L 4WD, F-150 3.0L RWD, Expedition/Navigator 4WD)
W718926-S900	4	1	4	Transmission Insulator Bolts (F-150 3.0L 4WD)
W715579-S439	2	1	4	Driveshaft Center Bearing Bolt (If Equipped With Two Piece Driveshaft)
TA-24-B	As Needed	As Needed		Motorcraft® Thread Sealant With PTFE (4WD)
VC-13DL-G	As Needed	As Needed		Motorcraft® Yellow Prediluted Antifreeze/Coolant (All Markets Except Canada)
CVC-13DL-G	As Needed	As Needed		Motorcraft® Yellow Prediluted Antifreeze/Coolant (Canada Only)
XG-1-E1	As Needed	As Needed		Motorcraft® Premium Long-Life Grease
XL-5-A	As Needed	As Needed		Motorcraft® Multi-Purpose Grease Spray
XT-10-QLVC	As Needed	As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4WD) (All Markets Except Canada)
CXT-10-LV6	As Needed	As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4WD) (Canada Only)
XT-12-QULV	As Needed	As Needed		Motorcraft® MERCON® ULV Automatic Transmission Fluid

Parts - F-150/Expedition/Navigator Transmission Removal And Installation - Parts To Inspect And Replace Only If Necessary

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
4W9Z-6397-A	Only If Necessary (2 Possible)	Only If Necessary (2 Possible)	1	Engine Block Dowel Pins (F-150 3.0L)
5L7Z-7D285-A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	Transmission Fluid Cooler Tube Seals (3.0L/3.5L)
5L7Z-7J324-A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	Fluid Cooler Tube Backing Rings

L1MZ-4421-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Front Drive Shaft Boot
W701228-S300	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Engine Block Dowel Pins (5.0L)
W718758-S300	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Engine Block Dowel Pins (2.7L/3.3L/3.5L)

Parts - F-150/Expedition/Navigator Transmission Removal And Installation - Rear Driveshaft Bolts And Straps - Not All Vehicles Will Use All Of The Parts Listed

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
N800594-S100	4 Or 8 (Flange Dependent)	1 Or 2	4	Driveshaft Flange To Flange Bolts (F-150)
N811880-S100	4 Or 8 (Flange Dependent)	1 Or 2	4	Driveshaft Flange To Flange Bolts (Expedition/Navigator)
W500635-S439	1	1	1	Driveshaft Center Bearing Bolt (If Equipped With Two Piece Driveshaft)
W713095-S437	1	1	1	Driveshaft Center Bearing Nut (If Equipped With Two Piece Driveshaft)
W719738-S439	1	1	1	Driveshaft Center Bearing Bracket Mounting Stud (If Equipped With Two Piece Driveshaft)

Parts - Mustang Transmission Removal And Installation

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description	Note
BR3Z-5B266-A	1	1	1	Exhaust Gasket (5.0L)	
W705443-S900	2	1	4	Catalytic Converter Flange Nuts (5.0L)	
W710726-S437	2	1	4	Selector Lever Cable Bracket Bolts	Updated part number
W715131-S437	1	1	4	Transmission Fluid Cooler Tube Bracket Bolt	
W715618-S437	5.0L Requires 4 Pieces, 2.3L Requires 6 Pieces	1 For 5.0L, 2 For 2.3L	4	Torque Converter Nuts	
FR3Z-4B496-B	3	3	1	Driveshaft To Pinion Flange Bolts	
W719298-S439	3	1	4	Driveshaft To Transmission Flange Bolts (If Equipped) (2.3L)	
N800594-S101	4	1	4	Driveshaft To Transmission Flange Bolts (If Equipped) (5.0L)	
W500545-S439	3	1	4	Driveshaft To Transmission Flange Bolts	
W717822-S439	2	1	4	Driveshaft Center Bearing Bolts (If Equipped)	
TA-25-B	As Needed	As Needed		Motorcraft® Threadlock and Sealer (Convertible)	
XL-1	As Needed	As Needed		Motorcraft® Penetrating and Lock Lubricant	
XL-2	As Needed	As Needed		Motorcraft® High Temperature Nickel Anti-Seize Lubricant	
XL-5-A	As Needed	As Needed		Motorcraft® Multi-Purpose Grease Spray	
XT-12-QULV	As Needed	As Needed		Motorcraft® MERCON® ULV Automatic Transmission Fluid	

Parts - Mustang Transmission Removal And Installation - Parts To Inspect And Replace Only If Necessary

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
5L7Z-7D285-A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	Transmission Fluid Cooler Tube Seals
5L7Z-7J324-A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	Fluid Cooler Tube Backing Rings
JR3Z-4782-B	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Flex Coupling Driveshaft

Parts - Transit Transmission Removal And Installation

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
LK4Z-3B498-A	1	1	1	Halfshaft Circlip (AWD)
LK4Z-4B496-A	3	3	1	CV Joint-to-Pinion Flange Cup Bolts And Retaining Straps (AWD)
N800594-S100	4 Or 8 (Flange Dependent)	1 Or 2	4	Driveshaft Flange To Flange Bolts - Refer To The Parts Catalog For The VIN Specific Application
W506434-S439	12	3	4	Lower Load Push Bar Retainers
W520215-S442	4	1	4	Tie Rod End Nut / Front Subframe Forward Nuts (2 Per Application)
W520514-S440	4	4	1	Left And Right Catalytic Converter Nuts
W709176-S300	2	1	4	Splash Shield Push Pins (Step 9, Transit)
W710660-S441	2	1	4	Transmission Support Insulator Nuts
W711076-S442	2	1	4	Lower Ball Joint Nut
W711137-S442	1	1	4	Steering Column Shaft Bolt
W712503-S440	2	2	1	Front Stabilizer Bar Link Rod Nuts
W713078-S439	2 Or 4	1	4	Driveshaft Center Bearing Bolts - Refer To The Parts Catalog For The VIN Specific Application
W715618-S437	4	1	4	Torque Converter Nuts
W716331-S439	4	1	4	Transmission Crossmember Bolts
W718943-S439	2	1	4	Front Subframe Rearward Bolts
W719972-S439	5	2	4	Front Axle Bolts (AWD)
W720688-S439	1	1	4	Front Axle To Transmission Bolt (AWD)
W709653-S303	2	1	4	Front Floor Heat Shield - Pop Rivets
W505264-S442	2	2	1	Driveshaft Safety Strap Bolts (If Equipped)
KK2Z-00811-A	2	2	1	Wheel Hub Nut
W500463-S442	4	1	4	Brake Caliper Anchor Plate Bolt
W719976-S439	2	1	4	Front Axle Tube Bolt
XY-75W140-QL	As Needed	As Needed		Motorcraft® SAE 75W-140 Synthetic Rear Axle Lubricant
VC-13DL-G	As Needed	As Needed		Motorcraft® Yellow Prediluted Antifreeze/Coolant (All Markets Except Canada)
CVC-13DL-G	As Needed	As Needed		Motorcraft® Yellow Prediluted Antifreeze/Coolant (Canada Only)
XG-1-E1	As Needed	As Needed		Motorcraft® Premium Long-Life Grease
XL-5-A	As Needed	As Needed		Motorcraft® Multi-Purpose Grease Spray
XT-10-QLVC	As Needed	As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4WD) (All Markets Except Canada)
CXT-10-LV6	As Needed	As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4WD) (Canada Only)

XT-12-QULV	As Needed	As Needed		Motorcraft® MERCON® ULV Automatic Transmission Fluid

Parts - Transit Transmission Removal And Installation - Parts To Inspect And Replace Only If Necessary

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
LJ9Z-7J227-A	Only If Necessary (4 Possible)	Only If Necessary (4 Possible)	1	Transmission Fluid Cooler Tube Seals
LK4Z-3A427-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Left Inner CV Joint Halfshaft (AWD)
LK4Z-3A428-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Right Outer CV Joint Halfshaft (AWD)
W718758-S300	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Engine Block Dowel Pins (3.5L)
W719583-S900	Only If Necessary (2 Possible For 3.5L EcoBoost, 4 Possible For 3.5L Duratec)	Only If Necessary (1 Possible)	4	Catalytic Converter Studs (3.5L) (AWD)
W720627-S900	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Left Catalytic Converter Studs (3.5L EcoBoost) (AWD)

Parts - Explorer Transmission Removal And Installation

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
W715131-S442	2	1	4	Transmission Fluid Cooler Tube Bracket Bolts
W700714-S437	2	1	2	Selector Lever Cable Bracket Bolts
W715618-S437	3.3L Requires 4 Pieces, All Others Require 6 Pieces	1 For 3.3L, 2 For All Others	4	Torque Converter Nuts
LB5Z-3B498-A	1	1	1	Axle Pinion Stem Circlip
L1MZ-4A015-B	1	1	1	Front Axle Pinion Stem O-ring
L1MZ-3B478-A	1	1	1	Front Driveshaft Boot Clamp
ML3Z-4421-A	1	1	1	Front Driveshaft Boot
W719511-S439	3 Pieces Required If Driveshaft Is Disconnected At Only One End, 6 Pieces Required If Coupler Or Driveshaft Alignment Bush Are Replaced	1 Or 2	4	Driveshaft Flex Coupling Bolts
W716375-S900	8	2	5	Transfer Case Bolts (4WD)
W719431-S439	RWD Requires 2 Pieces, AWD Requires 3 Pieces	1	4	Transmission Mount Bolts
W520214-S440	1	1	2	Transmission Mount Nut
W721083-S439	4	1	4	Transmission Crossmember Bolts
W719413-S439	2	1	4	Middle Subframe Bolts (3.0L)
W716979-S439	2	1	4	Rear Subframe Bolts (3.0L)
W719699-S442	3.0L Requires 2 Pieces, 3.3L Requires 4 Pieces	2 For 3.0L, 4 For 3.3L	1	Catalytic Converter Nuts
L1MZ-6L612-B	1	1	1	Left Catalytic Converter Gasket (3.0L)

W719698-S900	3.0L Require 2 Pieces, 2.3L Require 3 Pieces	2 For 3.0L, 3 For 2.3L	1	Catalytic Converter Studs
W714265-S442	4	1	4	Catalytic Converter Nuts (3.3L)
XL-5-A	As Needed	As Needed		Motorcraft® Multi-Purpose Grease Spray
XT-12-QULV	As Needed	As Needed		Motorcraft® MERCON® ULV Automatic Transmission Fluid
5L3Z-19A506-A	As Needed	As Needed		Slip Yoke Grease (Grease - Chassis Lubrication)
XG-11	As Needed	As Needed		Motorcraft® High Temperature 4x4 Front Axle and Wheel Bearing Grease
XT-10-QLVC	As Needed	As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4WD) (All Markets Except Canada)
CXT-10-LV6	As Needed	As Needed		Motorcraft® MERCON® LV Automatic Transmission Fluid (4WD) (Canada Only)
XG-1-E1	As Needed	As Needed		Motorcraft® Premium Long-Life Grease

Parts - Explorer Transmission Removal And Installation - Parts To Inspect And Replace Only If Necessary

Service Part Number	Claim Quantity	Package Order Quantity	Number in Package	Description
5L7Z-7D285-A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	Transmission Fluid Cooler Tube Seals
5L7Z-7J324-A	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	2	Transmission Fluid Cooler Tube Backing Rings
W525585-S300	Only If Necessary (2 Possible)	Only If Necessary (2 Possible)	1	Engine Block Dowel Pins (3.0L)
W718758-S300	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Engine Block Dowel Pins (3.3L)
W716963-S900	Only If Necessary (4 Possible)	Only If Necessary (1 Possible)	4	Left And Right Catalytic Converter Studs (3.3L)
L1MZ-4650-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Driveshaft Alignment Bushing
L1MZ-4782-A	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Flex Coupling
W717822-S439	Only If Necessary (2 Possible)	Only If Necessary (1 Possible)	4	Driveshaft Center Bearing Bracket Bolts
L1MZ-3B498-F	Only If Necessary (1 Possible)	Only If Necessary (1 Possible)	1	Rear Axle Pinion Stem Circlip

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 part is necessary but 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. Refer to the Service Procedure to determine the inspection/inclusion criteria.

Special Tool(s)

	VCMM Transmission Extension Kit Rotunda 164-R9534
	Pressure Vacuum Transducer Kit

Rotunda 164-R9833
Hydraulic Adapter M10X1.0 male to 1/8 in. FNPT female Snap-On part number EEPV5F-8
Hydraulic Adapter 1/8 in. FNPT male to ¼ in, JIC male Grainger item number 6W433, model number 2021-2-4S

Warranty Status: Eligible under provisions of New Vehicle Limited Warranty (NVLW)/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/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
2021-2022 Mustang 2.3L/5.0L Coupe/Convertible: Run CDF Test (Pass) (Do Not Use With Any Other Labor Operations)	242436A	0.7 Hrs.
2021-2022 Mustang 5.0L Coupe: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436B	11.3 Hrs.
2021-2022 Mustang 5.0L Convertible: Run CDF test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436C	12.0 Hrs.
2021-2022 Mustang 2.3L Coupe: Run CDF test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436D	10.4 Hrs.
2021-2022 Mustang 2.3L Convertible: Run CDF test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436E	11.0 Hrs.
2020-2022 Explorer 3.3L/3.0L: Run CDF Test (Pass) (Do Not Use With Any Other Labor Operations)	242436F	0.8 Hrs.
2020-2022 Explorer 4WD 3.3L TiVCT: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436G	12.4 Hrs.
2020-2022 Explorer 4WD 3.0L EcoBoost: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436H	11.3 Hrs.
2020-2023 Transit 3.5L TiVCT/3.5L EcoBoost: Run CDF Test (Pass) (Do Not Use With Any Other Labor Operations Outside Of This Article) (Can Be Claimed With Operation P)	242436J	0.7 Hrs.
2020-2023 Transit RWD 3.5L TiVCT: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations Outside Of This Article) (Can Be Claimed With Operation(s) P, Q Or R)	242436K	11.4 Hrs.
2020-2023 Transit RWD 3.5L EcoBoost: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations Outside Of This Article) (Can Be Claimed With Operation(s) P, Q Or R)	242436L	11.4 Hrs.
2020-2023 Transit AWD 3.5L TiVCT: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations Outside Of This Article) (Can Be Claimed With Operation(s) P, Q Or R)	242436M	14.2 Hrs.
2020-2023 Transit AWD 3.5L EcoBoost: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations Outside Of This Article) (Can Be Claimed With Operation(s) P, Q Or R)	242436N	14.2 Hrs.
2020-2023 Transit AWD/RWD: Additional Time To Remove And Install Running Boards If Equipped (Can Be Claimed With Operations J-N)	242436P	0.3 Hrs.
2020-2023 Transit AWD/RWD: Additional Time To Check And Correct Front Toe (Can Be Claimed With Operations K-N)	242436Q	1.0 Hrs.
2020-2023 Transit AWD/RWD With Lane Departure Warning: Additional Time To Check And Correct Front Toe Includes Extra Time To Align LDW Camera System (Can Be Claimed With Operations K-N)	242436R	1.4 Hrs.
2022 Expedition/Navigator 4X2/4X4: Run CDF Test (Pass) (Do Not Use With Any Other Labor Operations)	242436S	0.8 Hrs.
2022 Navigator 4X2: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436T	11.7 Hrs.
2022 Navigator 4X4: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436U	12.7 Hrs.
2022 Expedition 4X2: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436V	11.4 Hrs.

2022 Expedition 4X4: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436W	12.4 Hrs.
2021-2022 F-150 4X2/4X4: Run CDF Test (Pass) (Do Not Use With Any Other Labor Operations)	242436X	0.8 Hrs.
2021-2022 F-150 4X2 2.7L EcoBoost: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436Y	12.3 Hrs.
2021-2022 F-150 4X4 2.7L EcoBoost: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436Z	13.1 Hrs.
2021-2022 F-150 4X2 3.5L EcoBoost: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436AA	11.7 Hrs.
2021-2022 F-150 4X4 3.5L EcoBoost: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436BB	13.0 Hrs.
2021-2022 F-150 4X4 5.0L TiVCT: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436CC	12.9 Hrs.
2021-2022 F-150 4X2 5.0L TiVCT: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436DD	11.6 Hrs.
2021-2022 F-150 4X4 3.3L TiVCT: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436EE	12.0 Hrs.
2021-2022 F-150 4X2 3.3L TiVCT: Run CDF Test (Fail) Replace CDF Cylinder (Do Not Use With Any Other Labor Operations)	242436FF	11.0 Hrs.

Repair/Claim Coding

Causal Part:	7H351
Condition Code:	42

Service Procedure

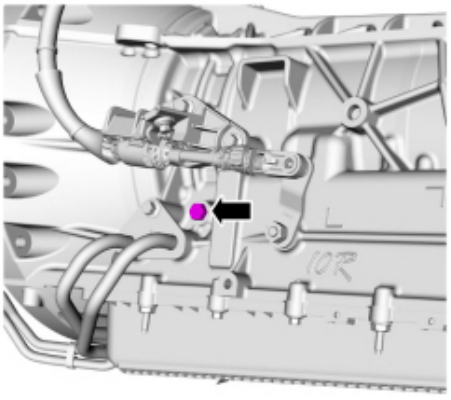
1. Is a VCMM pressure transducer available?

(1). Yes - proceed to Step 2.

(2). No - proceed to Step 22.

2. Install the VCMM pressure transducer to transmission line pressure port. (Figure 1)

Figure 1



E240432

NOTE: Some vehicle models may require the removal of the transmission park manual release cable and bracket to gain access to the line pressure plug. Refer to WSM Section 307-01 > Transmission Line Pressure Test.

NOTE: The line pressure port is an M10X1.0 thread. Do not use a National Pipe Thread (NPT) fitting when installing pressure reading equipment. If an NPT fitting is used, damage to the transmission case will occur.

NOTE: The transmission extension hose kit requires a 1/4 in. Joint Industry Council (JIC) male adapter.

(1). For Explorer, F-150, Mustang, Expedition and Navigator vehicles:

- VCMM Transmission Extension Kit

• Locally obtain the necessary adapter fittings to connect the VCMM pressure transducer to the transmission line pressure port (Figure 2)

Figure 2 - Explorer/F-150/Mustang/Expedition/Navigator

E441751

Item	Description
1	M10X1.0 male to 1/8 in. FNPT female
2	1/8 in. NPT male to 1/4 in. JIC male
3	Extension hose

(2). For Transit vehicles:

• VCMM Transmission Extension Kit

• Locally obtain the necessary adapter fittings to connect the VCMM pressure transducer to the transmission line pressure port (Figure 3)

Figure 3 - Transit only

E441595

Item	Description
1	M10X1.0 male to 1/8 in. FNPT female (Adapter #1)
2	1/8 in. NPT male to 1/4 in. JIC male. (Adapter #2)
3	1.5 in. length extension: 1/8 in. NPT male to 1/8 in. NPT male nipple (Adapter #3)
4	90 degree elbow: 1/8 in. NPT male to 1/8 in. NPT female (Adapter #4)
5	1/8 in. NPT female to 1/8 in. NPT female (Adapter #5)

NOTE: All NPT fittings must be assembled with polytetrafluoroethylene (PTFE) tape or paste to prevent leaks

3. Using the latest software level of the FDRS and VCMM, start a session.

4. Does the vehicle exhibit harsh/delayed engagement and/or harsh/delayed shift symptoms only when TFT is at 50°C (122°F) or below?

(1). Yes - proceed to Step 5.

(2). No - proceed to Step 20.

5. Using FDRS select the following PIDs.

- LINEDSD #
- VMM PVT Pressure (set scale to +/- 3447 kPa)
- RPM
- RPM_DSD #
- SSA_AMP #
- SSB_AMP #
- SSC_AMP #
- SSD_AMP #
- SSE_AMP #
- SSF_AMP #
- TR_Corrected
- TFT

6. Enter Live Display mode. Verify the vehicle is in P, emergency brake applied and TFT is between 35-50°C (95-122°F).

(1). In the settings menu, under the capture tab, set capture timings to duration: 25, pre: 10, post: 15.

(2). For each step below, highlight PID to enable and select #. Then control PID with up/down arrows.

(3). Command SSA_AMP # / SSB_AMP # / SSC_AMP # / SSD_AMP # / SSE_AMP # / SSF_AMP # to 0mA

(4). Decrease RPM_DSD # between 500-600 RPM.

(5). Increase LINEDSD # to 1900-2000kPa (275-290 PSI) or maximum achievable pressure below 2000kPa (290 PSI).

NOTE: Actual line pressure reading is expected to be less than commanded line pressure.

(6). Begin recording.

(7). Wait 1 second.

(8). Command SSA_AMP # to 1.0A (five quick up arrow clicks).

(9). Wait 2 seconds.

(10). Command SSA_AMP # to 0mA (five quick down arrow clicks).

(11). Wait for recording to complete (when red icon clears).

(12). Begin recording again.

(13). Wait 1 second.

(14). Command SSC_AMP # to 1.0A (five quick up arrow clicks).

(15). Wait 2 seconds.

(16). Command SSC_AMP # PID off to 0mA (five quick down arrow clicks).

(17). Wait for recording to complete (when red icon clears).

(18). Test is complete. Release control of all parameters then turn ignition off.

7. Enter Playback mode, then press File Manager.

8. Select the recorded files and enter the VIN and TSB number in the Type Archive Description Text Box, then press the Archive button.

9. Open > FDRS Menu upper right “3-bar” > Go to File Manager > Select recordings by VIN > Select recording and open. Defaults to the last recording taken.

10. Select the file when SSA was commanded.

11. Highlight Ch1-PVT_Pressure > Plot Controls > Increase scale with the “+” 6 clicks. (Figure 4) Triggers and Settings > Settings button > Range Scale adjust High = 2800 and Low = 0 > Ok. (Figures 5-6)

Figure 4

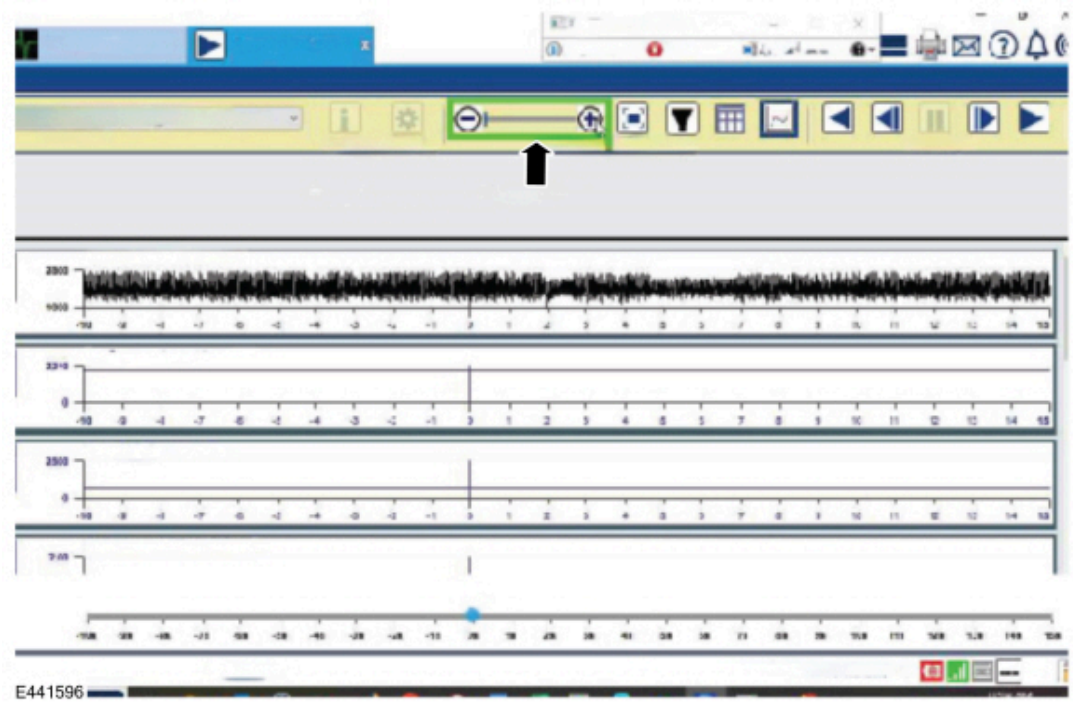


Figure 5

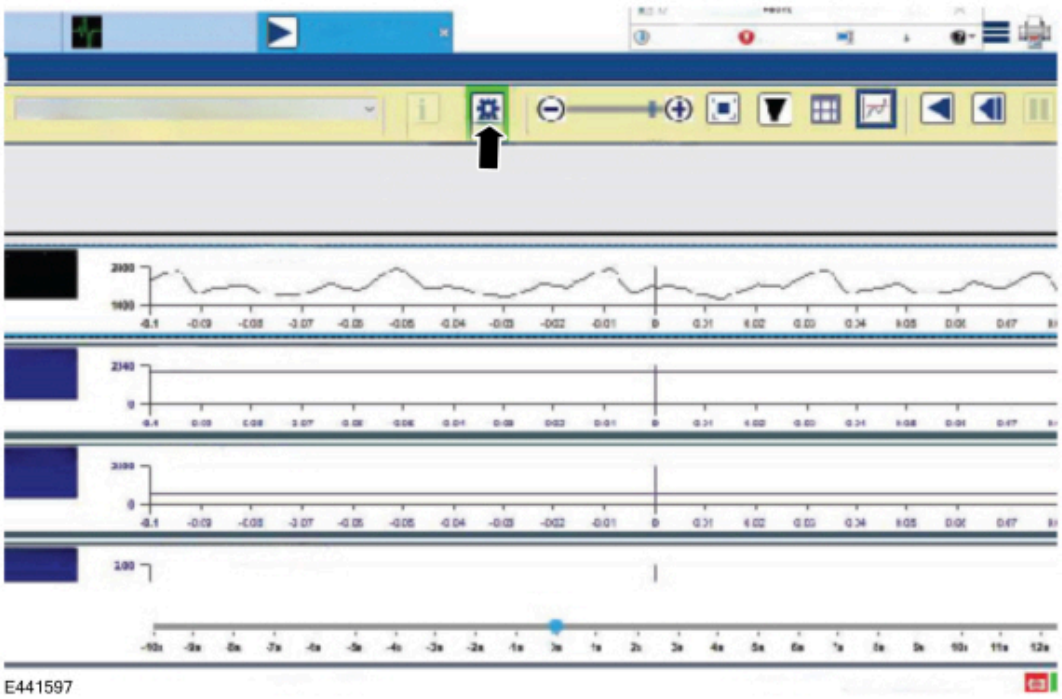
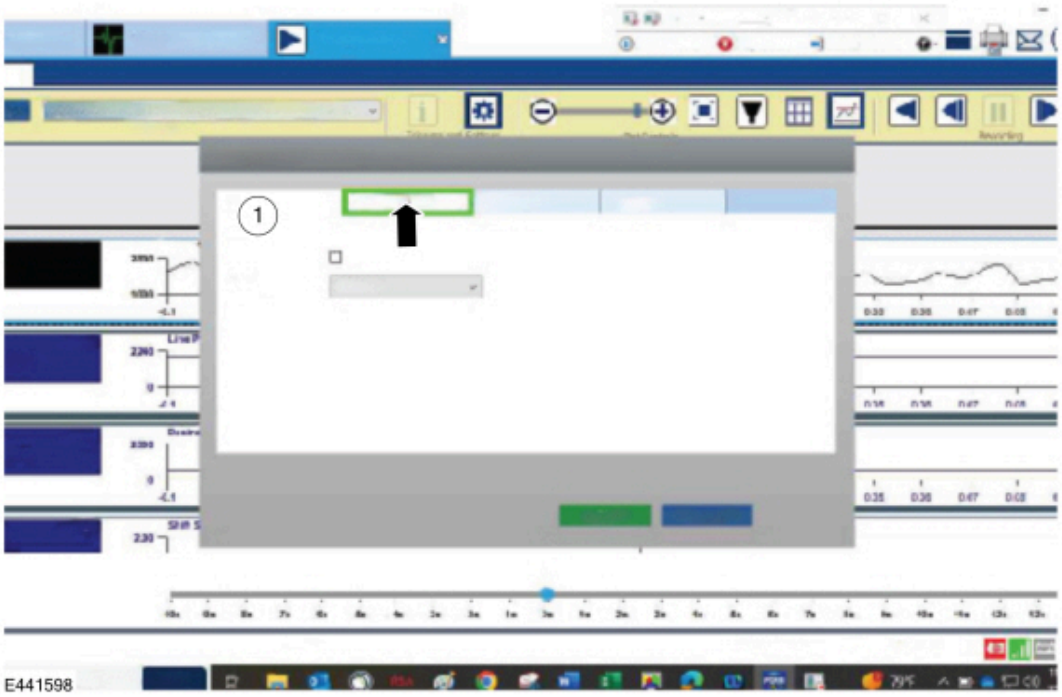


Figure 6



12. Download the CDF calculator tool.

NOTE: The calculator is an ".exe" file type. Make sure the computer firewall is set to allow this type of file to download.

(1). Click here to download the CDF calculator tool in English.

(2). Click here to download the CDF calculator tool in Spanish.

(3). Click here to download the CDF calculator tool in French.

13. Take a measurement when SSA_AMP = 0.00mA of Ch1-PVT_Pressure at any valley (Figure 7) and enter the value into CDF calculator Pre Ramp Valley field. Take a measurement when SSA_AMP = 0.00mA of Ch1-PVT_Pressure at any peak (Figure 8) and enter the value into CDF calculator Pre Ramp Peak field.

Figure 7

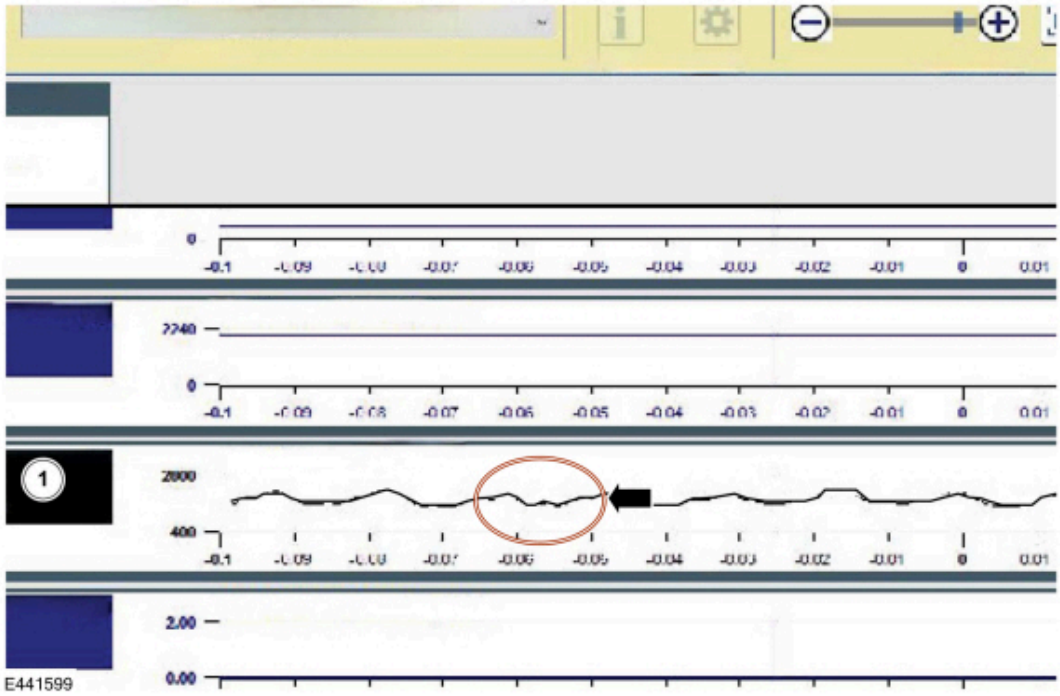
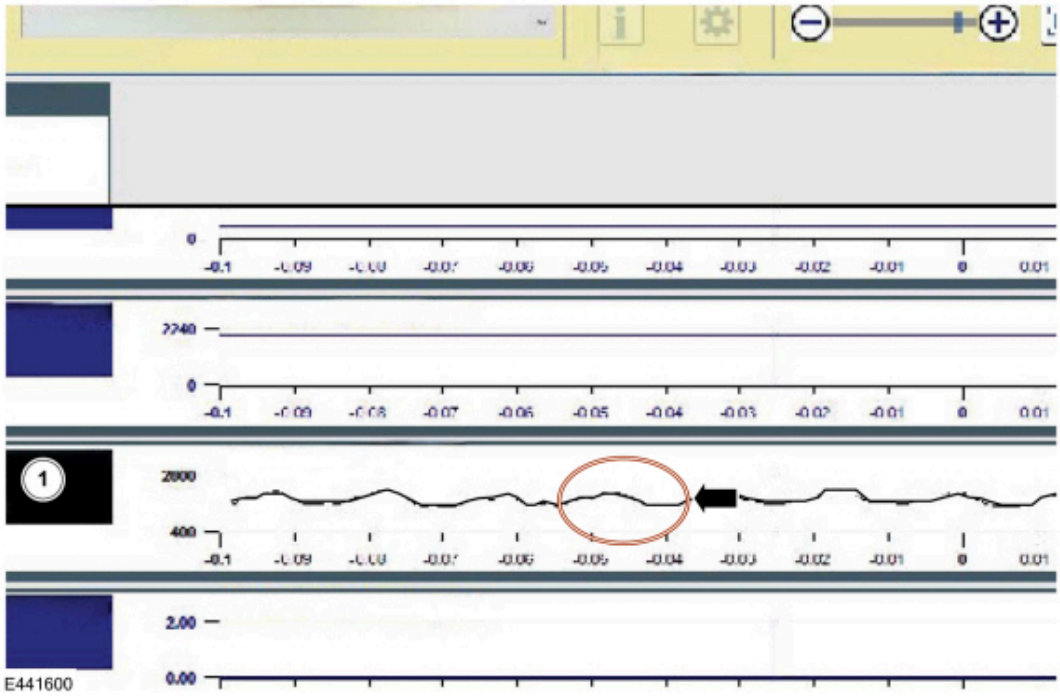


Figure 8



14. Adjust recording cursor until SSA_AMP = 1.00mA and then continue 1 additional second.

(1). Take a measurement of Ch1-PVT_Pressure at any valley (Figure 7) and enter the value into CDF calculator Applied A Valley field.

(2). Take a measurement of Ch1-PVT_Pressure at any peak (Figure 8) and enter the value into CDF calculator Applied A Peak field.

15. File Access > Select the file when SSC was commanded in pulldown menu.

16. Repeat Step 11.

17. Adjust recording cursor until SSC_AMP = 1.00mA and then continue 1 additional second.

(1). Take a measurement of Ch1-PVT_Pressure at any valley (Figure 7) and enter the value into CDF calculator Applied C Valley field.

(2). Take a measurement of Ch1-PVT_Pressure at any peak (Figure 8) and enter the value into CDF calculator Applied C Peak field.

18. Refer to CDF calculator results – does the “A-clutch Leakage Rate %” field display green?

(1). Yes - proceed to Step 19.

(2). No (field displays red) - This article does not apply. Refer to WSM Section 307-01 > Diagnosis and Testing > A Clutch.

19. Does the “C-Clutch vs A-Clutch %” field display green?

(1). Yes - this article does not apply. Refer to WSM Section 307-01 for normal diagnostics.

(2). No (field displays red) - proceed to Step 32.

20. Select and run the FDRS Transmission Clutch Circuit Leak Test routine.

21. Did the transmission test results pass?

(1). Yes - this article does not apply. Refer to WSM Section 307-01 for normal diagnostics.

(2). No - proceed to Step 32.

22. Install a suitable transmission fluid pressure gauge to the line pressure tap using an M10 X 1.00 fitting.

NOTE: Some vehicle models may require the removal of the transmission park manual release cable and bracket to gain access to the line pressure plug. Refer to WSM Section 307-01 > Transmission Line Pressure Test.

NOTE: The line pressure port is an M10X1.0 thread. Do not use a National Pipe Thread (NPT) fitting when installing pressure reading equipment. If an NPT fitting is used, damage to the transmission case will occur.

NOTE: All NPT fittings must be assembled with polytetrafluoroethylene (PTFE) tape or paste to prevent leaks

List of Ford tested suitable transmission fluid pressure gauges. Other suitable gauges may be used.

Table 1 - Ford tested suitable transmission fluid pressure gauges

Description	Source	Part Number
Ashcroft 0-300PSI Vibration Dampened	Grainger	351009SW02LXLL300
Lang Instruments Model 5TUL8 (requires piston-type pressure gauge snubber)	• Rotunda RTTP • Grainger	• Gauge: STATU16A • Snubber: 5TUL8
Snap-On 0-500PSI Gauge and Boot	Snap-On	EEPV5-500G
Waekon Digital Pressure Gauge	Rotunda RTTP	WAE48165
Pressure Pro PC 5000	Rotunda RTTP	300-WAE48365

23. Using FDRS select the following PIDs.

- LINEDSD #
- RPM_DSD #
- SSA_AMP#
- SSB_AMP #
- SSC_AMP #
- SSD_AMP #
- SSE_AMP #
- SSF_AMP #
- TR_Corrected
- TFT

24. Does the vehicle exhibit harsh/delayed engagement and/or harsh/delayed shift symptoms only when TFT is at 50°C (122°F) or below?

(1). Yes - perform Step 25 while TFT is between 35-50°C (95-122°F).

(2). No - perform Step 25 with TFT at or above 50°C (122°F).

25. Enter Live Display mode. Verify the vehicle is in P, emergency brake applied and TFT is the appropriate temperature identified in Step 24.

(1). For each step below, highlight the PID to enable it and select #. Then control the PID with up/down arrows.

(2). Command SSA_AMP # / SSB_AMP # / SSC_AMP # / SSD_AMP # / SSE_AMP # / SSF_AMP # to 0mA.

(3). Decrease RPM_DSD # between 500-600 RPM.

(4). Increase LINEDSD # to 1900-2000kPa (275-290 PSI) or maximum achievable pressure below 2000kPa (290 PSI).

NOTE: Actual line pressure reading is expected to be less than commanded line pressure.

(5). Record the pressure value observed on the gauge as Pre Ramp.

(6). Command SSA_AMP # to 1.0A (five quick up arrow clicks).

(7). Record the pressure value observed on the gauge as Applied A.

(8). Command SSA_AMP # to 0mA (five quick down arrow clicks).

(9). Command SSC_AMP # to 1.0A (five quick up arrow clicks).

(10). Record the pressure value observed on the gauge as Applied C.

(11). Command SSC_AMP # PID off to 0mA (five quick down arrow clicks).

(12). Test is complete. Release control of all parameters then turn ignition off.

26. Download the CDF calculator tool.

NOTE: The calculator is an ".exe" file type. Make sure the computer firewall is set to allow this type of file to download.

(1). Click here to download the CDF calculator tool in English.

(2). Click here to download the CDF calculator tool in Spanish.

(3). Click here to download the CDF calculator tool in French.

27. Enter the value recorded as Pre Ramp into CDF calculator for both fields Pre Ramp Valley and Pre Ramp Peak.

28. Enter the value recorded as Applied A into CDF calculator for both fields Applied A Valley and Applied A Peak.

29. Enter the value recorded as Applied C into CDF calculator for both fields Applied C Valley and Applied C Peak.

30. Refer to CDF calculator results. Does the "A-clutch Leakage Rate %" field display green?

(1). Yes - proceed to Step 31.

(2). No (field displays red) - this article does not apply. Refer to WSM, Section 307-01 > Diagnosis and Testing > A Clutch.

31. Does the "C-Clutch vs A-Clutch %" field display green?

(1). Yes - this article does not apply. Refer to WSM, Section 307-01 for normal diagnostics.

(2). No (field displays red) - proceed to Step 32.

32. Remove the transmission and mount the transmission to the bench. Refer to WSM, Section 307-01.

33. Disassemble the transmission. Perform only the necessary steps to remove the clutch and planetary assembly from the transmission case. Refer to WSM, Section 307-01.

(1). It is only necessary to remove the torque converter or the hybrid drive unit, transmission fluid pan and gasket, transmission fluid auxiliary pump (if equipped), fluid filter and main control valve body assembly, all 4 speed sensors (intermediate speed sensor A [ISSA], intermediate speed sensor B [ISSB], TSS and OSS), transmission fluid pump, front support assembly and the clutch and planetary assembly. Refer to WSM, Section 307-01.

34. Disassemble the clutch and planetary assembly. Perform only the necessary steps to remove the CDF clutch cylinder and the No. 3 sun gear shaft and No. 2 ring gear assembly from the clutch and planetary assembly. Refer to WSM, Section 307-01.

(1). It is only necessary to remove the A clutch assembly, the selective shim and T3 thrust bearing, remove and discard the 5-input shaft front seals.

(2). Remove the No. 1 planetary carrier snap ring, clutch, and planetary container cylinder, the E clutch and input shaft assembly, the No. 3 planetary carrier and No. 3 sun gear, the No. 3 sun gear shaft and No. 2 ring gear assembly. Refer to WSM, Section 307-01.

35. Remove and discard the sun gear No. 3 shaft seals. Install the 4 new sun gear No. 3 shaft seals. Refer to WSM, Section 307-01.

36. Disassemble the C, D and F clutch assemblies from the CDF cylinder. Discard the CDF cylinder. Refer to WSM, Section 307-01.

37. Assemble the C, D and F clutch assemblies into the new CDF clutch cylinder. Refer to WSM, Section 307-01.

38. Perform the C, D and F clutch pack endplay measurements for proper clearance. Refer to WSM, Section 307-01.

39. Remove and discard the input shaft-to-sun gear No. 3 shaft seals. Install the 5 new input shaft-to-sun gear No. 3 shaft seals. Refer to WSM, Section 307-01.

40. Remove and discard the input shaft seal. Install the new input shaft seal. Refer to WSM, Section 307-01.

41. Install the 5 new input shaft front seals. Refer to WSM, Section 307-01.

42. To reassemble the clutch and planetary assembly, reverse the disassembly procedure. Refer to WSM, Section 307-01.

43. Perform the T3 thrust bearing measurement to set transmission front end clearance. Refer to WSM, Section 307-01.

44. Reassemble the transmission. Refer to WSM, Section 307-01.

45. Install the transmission. Refer to WSM, Section 307-01.

46. Perform an adaptive learning drive cycle. Refer to WSM, Section 307-01.

NOTE: Advise the customer that this vehicle is equipped with an adaptive transmission shift strategy which allows the vehicle's computer to learn the transmission's unique parameters and improve shift quality. When the adaptive strategy is reset, the computer will begin a relearning process. This relearning process may result in firmer than normal upshifts and downshifts for several days.
