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2002 FORD Escape OEM Service and Repair Workshop Manual

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0.381	0.015	0.508	0.020

Differential Shim Size Chart 4067

Stripes and Color Code	Dimension A	
	mm	Inch
2 - C-COAL	7.7978-7.8105	0.3070-0.3075
1 - C-COAL	7.7470-7.7597	0.3050-0.3055
5 - BLU	7.6962-7.7089	0.3030-0.3035
4 - BLU	7.6454-7.6581	0.3010-0.3015
3 - BLU	7.5946-7.6073	0.2990-0.2995
2 - BLU	7.5458-7.5565	0.2970-0.2975
5 - PINK	7.4422-7.4549	0.2930-0.2935
4 - PINK	7.3914-7.4041	0.2910-0.2915
3 - PINK	7.3406-7.3533	0.2890-0.2895
2 - PINK	7.2898-7.3025	0.2870-0.2875
1 - PINK	7.2390-7.2517	0.2850-0.2855
5 - GRN	7.1882-7.2009	0.2830-0.2835
4 - GRN	7.1374-7.1501	0.2810-0.2815
3 - GRN	7.0866-7.0993	0.2790-0.2795
2 - GRN	7.0358-7.0485	0.2770-0.2775
1 - GRN	6.9850-7.0485	0.2750-0.2755
5 - WH	6.9342-6.9469	0.2730-0.2735

Rear Drive Axle and Differential

205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear	***2022 F-150***
Description and Operation	***Procedure revision date: 08/4/2017***

Rear Drive Axle and Differential

Rear Drive Axle and Differential

The rear axle assembly consists of the following:

- Integral-type housing hypoid gear design (center of the pinion set below the centerline of the ring gear)
- Hypoid differential ring gear and pinion consisting of a 9.75-inch ring gear and an overhung drive pinion that is supported by 2 opposed tapered roller bearings
- Pinion bearing preload that is maintained by a drive pinion collapsible spacer on the differential pinion shaft and adjusted by the pinion nut
- Cast center section with a stamped steel differential housing cover
- Metal backed gasket between the differential housing cover and the rear axle housing
- Differential pinion shaft that is retained by a threaded differential pinion shaft lock bolt attached to the differential case
- Differential case that is mounted in the rear axle housing between 2 opposing differential bearings that are retained in the rear axle housing by 2 removable bearing caps
- Differential bearing preload and ring gear backlash which are adjusted by differential bearing shims that are located between the differential bearing cups and the rear axle housing
- Optional ELD (electronic locking differential)

Electronic Locking Differential (ELD)

205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear	***2022 F-150***
Diagnosis and Testing	***Procedure revision date: 12/18/2020***

Electronic Locking Differential (ELD)

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
TCCM (transfer case control module)	P0562:00	System Voltage Low: No Sub Type Information	GO to Pinpoint Test A
TCCM (transfer case control module)	P0563:00	System Voltage High: No Sub Type Information	GO to Pinpoint Test A
TCCM (transfer case control module)	P185D:00	Differential Lock-Up Control Circuit Performance: No Sub Type Information	GO to Pinpoint Test B

TCCM (transfer case control module)	U2300:54	Central Configuration: Missing Calibration	GO to Pinpoint Test G
TCCM (transfer case control module)	U2300:55	Central Configuration: Not Configured	GO to Pinpoint Test H
TCCM (transfer case control module)	U2300:56	Central Configuration: Invalid/Incompatible Configuration	GO to Pinpoint Test I
TCCM (transfer case control module)	U2300:64	Central Configuration: Signal Plausibility Failure	GO to Pinpoint Test J
TCCM (transfer case control module)	U3000:04	Control Module: System Internal Failures	GO to Pinpoint Test L
TCCM (transfer case control module)	U3000:46	Control Module: Calibration/Parameter Memory Failure	GO to Pinpoint Test K
TCCM (transfer case control module)	U3000:47	Control Module: Watchdog/Safety µC Failure	GO to Pinpoint Test N
TCCM (transfer case control module)	U3000:49	Control Module: Internal Electronic Failure	GO to Pinpoint Test L
TCU (telematic control unit module)	U0418:00	Invalid Data Received from Brake System Control Module "A": No Sub Type Information	GO to Pinpoint Test F

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

Driver Aides & Information > Warning Indicators/Messages/Chimes > Anti-Lock Brake System > Inoperative	GO to Pinpoint Test B
Driver Aides & Information > Warning Indicators/Messages/Chimes > Anti-Lock Brake System > Inoperative	GO to Pinpoint Test E
Driver Aides & Information > Warning Indicators/Messages/Chimes > Anti-Lock Brake System > Inoperative	GO to Pinpoint Test F
Driver Aides & Information > Warning Indicators/Messages/Chimes > Transmission > Inoperative	GO to Pinpoint Test G
Driver Aides & Information > Warning Indicators/Messages/Chimes > Transmission > Inoperative	GO to Pinpoint Test H
Driver Aides & Information > Warning Indicators/Messages/Chimes > Transmission > Inoperative	GO to Pinpoint Test I
Driver Aides & Information > Warning Indicators/Messages/Chimes > Transmission > Inoperative	GO to Pinpoint Test J
Driver Aides & Information > Warning Indicators/Messages/Chimes > Transmission > Inoperative	GO to Pinpoint Test K
Driver Aides & Information > Instrumentation/Display > Electric Vehicle/Hybrid Charge Level > Inaccurate	GO to Pinpoint Test A
Driver Aides & Information > Instrumentation/Display > Compass > Inaccurate	GO to Pinpoint Test G
Driver Aides & Information > Instrumentation/Display > Compass > Inaccurate	GO to Pinpoint Test H
Driver Aides & Information > Instrumentation/Display > Compass > Inaccurate	GO to Pinpoint Test I
Driver Aides & Information > Instrumentation/Display > Compass > Inaccurate	GO to Pinpoint Test J
Driver Aides & Information > Instrumentation/Display > Compass > Inaccurate	GO to Pinpoint Test K

• A module does not respond to the scan tool	• Wiring, Terminals or Connectors • Scan tool • DLC (data link connector) • TCCM (transfer case control module)	• CHECK the module communications network, module does not respond to the scan tool. REFER to: Controller Area Network (CAN) Module Communications Network(418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).
• Rear wheels binding when turning corners with the ELD (electronic locking differential) MSS (mode select switch) in 2WD (two-wheel drive) or OFF	• Wiring, Terminals or Connectors • ELD (electronic locking differential) field coil • Rear differential • TCCM (transfer case control module)	• GO to Pinpoint Test D

Pinpoint Tests

PINPOINT TEST A : P0562:00 AND P0563:00

Refer to Wiring Diagrams Cell 34for schematic and connector information.
Normal Operation and Fault Conditions If the TCCM (transfer case control module) observes an overpower or underpower voltage condition, a DTC (diagnostic trouble code) is set and all TCCM (transfer case control module) outputs are turned off (IWE (integrated wheel end) engaged). **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
TCCM (transfer case control module) P0562:00	System Voltage Low: No Sub Type Information	This DTC (diagnostic trouble code) sets when the TCCM (transfer case control module) detects battery voltage less

NOTE

DTC P0562:00 or P0563:00 can be set if the vehicle has been recently jump started, the battery has been recently charged or discharged. The battery may become discharged due to excessive load(s) on the charging system from aftermarket accessories or if the battery has been left unattended with the accessories on.

- Ignition ON.
- Enter the following diagnostic mode: Retrieve all CMDTC (continuous memory diagnostic trouble code) s.

Is DTC (diagnostic trouble code) P0562:00 or P0563:00 present in one or more modules or P0563, P0620, P0625, P0626 or P065B present in the PCM (powertrain control module) ?

Yes	For diagnosis of the battery and charging system, REFER to: Charging System - 2.7L EcoBoost (238kW/324PS)/3.5L EcoBoost (BM) (414-00 Charging System - General Information, Diagnosis and Testing). REFER to: Charging System (414-00 Charging System - General Information, Diagnosis and Testing). REFER to: Charging System (414-00 Charging System - General Information, Diagnosis and Testing).

No	GO to A2

A2 CHECK BATTERY CONDITION

	REFER to: Charging System - 3.3L Duratec-V6/5.0L 32V Ti-VCT (414-00 Charging System - General Information, Diagnosis and Testing).

A4 CHECK GROUND TO THE TCCM (TRANSFER CASE CONTROL MODULE)

- Ignition OFF.
- Disconnect TCCM (transfer case control module) C2371B.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2371B-7	Ω	Ground

Is the voltage between 11 and 14 volts?

Yes	GO to A6

No	GO to A5

A5 CHECK VOLTAGE SUPPLY TO THE TCCM (TRANSFER CASE CONTROL MODULE)

Positive Lead	Measurement / Action	Negative Lead
C2371B-7	V	Ground

Is the voltage between 11 and 14 volts?

Yes	REPAIR the ground circuit. CLEAR all CMDTC (continuous memory diagnostic trouble code) s.

the ELD (electronic locking differential) is locked, the indicator illuminates steadily. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
TCCM (transfer case control module) P185D:00	Differential Lock-Up Control Circuit Performance: No Sub Type Information	The TCCM (transfer case control module) sends a signal to the lock up solenoid to lock the differential. After several unsuccessful attempts, the TCCM (transfer case control module) sets this DTC (diagnostic trouble code) alerting the driver the ELD (electronic locking differential) is inoperative. Fault may be due to a wheel speed condition or due to a mechanical failure within the driveline / axle subsystem.

Possible Sources

- Wiring, terminals or connectors
- ELD (electronic locking differential) field coil

B1 CHECK THE ABS (ANTI-LOCK BRAKE SYSTEM) MODULE WHEEL SPEED SENSOR PID (PARAMETER IDENTIFICATION)S

NOTE

Make sure the battery is fully charged before carrying out this pinpoint test.

- Enter the following diagnostic mode on the scan tool: ABS (anti-lock brake system) Module Datalogger
- While driving the vehicle at 30 km/h (18 mph), monitor the following wheel speed sensor PID (parameter identification) s:
  - Left Front Wheel Speed Sensor (LF_WSPD)
  - Left Rear Wheel Speed Sensor (LR_WSPD)
  - Right Front Wheel Speed Sensor (RF_WSPD)
  - Right Rear Wheel Speed Sensor (RR_WSPD)
- Compare the speedometer reading to the wheel speed sensor PID (parameter identification) s.

Do the wheel speed sensor PID (parameter identification) s and speedometer speeds match within 1.5 km/h (1 mph)?

Yes	GO to B2