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2000 FORD Escape OEM Service and Repair Workshop Manual

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	Perform a PMI (programmable module installation) procedure on the TCCM (transfer case control module) using As-Built data. If the PMI (programmable module installation) procedure is unsuccessful or the DTC (diagnostic trouble code) persists, INSTALL a new TCCM (transfer case control module) . REFER to: Transfer Case Control Module (TCCM) (307-07A Four-Wheel Drive Systems, Removal and Installation).

No	The repair is completed.

PINPOINT TEST K : U3000:46

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
TCCM (transfer case control module) U3000:46	Control Module: Calibration/Parameter Memory Failure	Sets when the TCCM (transfer case control module) detects certain calibration parameters are Invalid / Incompatible Configuration.

Possible Sources

- TCCM (transfer case control module)

K1 VERIFY THE CUSTOMER CONCERN

- Ignition ON.
- Verify there is an observable symptom present.

Is the TCCM (transfer case control module) detects certain calibration parameters are Invalid / Incompatible Configuration?

Yes	CLEAR the DTC (diagnostic trouble code) . REPEAT the TCCM (transfer case control module) KOEO (key on, engine off) self-test. If the DTC (diagnostic trouble code) resets, INSTALL a new TCCM (transfer case control module) . REFER to: Transfer Case Control Module (TCCM) (307-07A Four-Wheel Drive Systems, Removal and Installation).

	trouble code) s. Road test the vehicle, if the DTC (diagnostic trouble code) returns, REFER to: All Terrain Control Module (ATCM) - Vehicles With: Center Console (307-07A Four-Wheel Drive Systems, Removal and Installation). . REFER to: All Terrain Control Module (ATCM) - Vehicles Without: Center Console (307-07A Four-Wheel Drive Systems, Removal and Installation).

No	The repair is complete.

PINPOINT TEST M : MISSING OR INVALID DATA RECEIVED FROM ANOTHER MODULE

Refer to Wiring Diagrams Cell 34for schematic and connector information.
Refer to Wiring Diagrams Cell 14for schematic and connector information.
Normal Operation and Fault Conditions The TCCM (transfer case control module) and ATCM (all terrain control module) expect to receive network data from other modules on HS-CAN2 (high-speed controller area network 2) . The TCCM (transfer case control module) and ATCM (all terrain control module) will set a DTC (diagnostic trouble code) when it receives an invalid or incomplete message from other module. Incomplete or corrupted messages typically result from high network traffic preventing the complete message from being received within the calibrated time limit. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
TCCM (transfer case control module) U0439:00	Invalid Data Received From All Terrain Control Module: No Sub Type Information	The TCCM (transfer case control module) received an invalid mode of selection message from the ATCM (all terrain control module) . Mode changes may be prevented when this DTC (diagnostic trouble code) is present.

Possible Sources

- High network traffic event
- Intermittent network connection
- Suspect module

M1 ATTEMPT TO DUPLICATE THE DTC (DIAGNOSTIC TROUBLE CODE)

- Enter the following diagnostic mode: Clear and Retest the TCCM (transfer case control module) or ATCM (all terrain control module) CMDTC (continuous memory diagnostic trouble code) self-test.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
TCCM (transfer case control module) U3000:47	Control Module: Watchdog/Safety µC Failure	This DTC (diagnostic trouble code) sets when the TCCM (transfer case control module) detects an internal electronic failure.

Possible Sources

- TCCM (transfer case control module)

N1 INSTALL A NEW SUSPECT MODULE

- Ignition ON
- Using a diagnostic scan tool, perform the TCCM (transfer case control module) self-test.

Is the TCCM (transfer case control module) detects an internal electronic failure?

Yes	Check the DTC (diagnostic trouble code) . REPEAT the TCCM (transfer case control module) On Demand self-test. If the DTC (diagnostic trouble code) reset, INSTALL a new TCCM (transfer case control module) REFER to: Transfer Case Control Module (TCCM) (307-07A Four-Wheel Drive Systems, Removal and Installation).
No	The repair is complete.

Lubricant leaking from the pinion seal, axle shaft oil seals or support arm to the housing	GO to Pinpoint Test F

Symptom Chart: NVH

Symptom Chart

Condition	Actions
Rotational noise from center of axle including howl, whine, scraping, grinding, whistle, moan, or roar	GO to Pinpoint Test A
Driveline clunk — occurs as the vehicle starts to move forward following a stop	GO to Pinpoint Test A
Grinding, popping or chattering – noise from the rear axle when the vehicle is turning	GO to Pinpoint Test G
Grunting — normally associated with a shudder experienced during acceleration from a complete stop	GO to Pinpoint Test H
Rotational noise from outer ends of axle including howl, whine, grinding, moan, or roar that change in pitch when cornering	GO to Pinpoint Test I
Chuckle – heard at coast/ deceleration. Also described as knock	GO to Pinpoint Test A
Knock – noise occurs at various speeds. Not affected by acceleration or deceleration	GO to Pinpoint Test A
Scraping noise – a continuous low pitched noise starting at low speed	GO to Pinpoint Test A
Driveline shudder – occurs during acceleration from a slow speed or stop	GO to Pinpoint Test J

Pinpoint Tests

PINPOINT TEST A : ROTATIONAL OR KNOCKING NOISE FROM AXLE

Normal Operation and Fault Conditions

No	INSTALL a new ring and pinion gearset, pinion bearings (included in the -4209- kit), differential bearings (-4221-) and differential bearing cups (-4222-). REFER to: Drive Pinion (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Removal and Installation).

PINPOINT TEST B : AXLE OVERHEATING

Normal Operation and Fault Conditions

REFER to: Rear Drive Axle and Differential(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Description and Operation).

Possible Sources

- Axle lubricant low
- Incorrect or contaminated lubricant type
- Bearing preload adjusted too tight
- Excessive gear wear
- Incorrect ring gear backlash

B1 CHECK AXLE LUBRICANT LEVEL

- Check the lubricant level.

Is the lubricant level low?

Yes	REFER to: Differential Fluid Level Check(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, General Procedures).

No	GO to B2

B2 CHECK AXLE CONDITION

- Inspect the axle for damage.
- Inspect axle lubricant.

Was damage found?

Yes	Repair as necessary. Clean and Refill the axle to specification as necessary.

- Inspect the ring gear for scoring.

Was a wear pattern found on the ring and pinion?

Yes	REFER to: Ring Gear Backlash Adjustment(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, General Procedures).
No	Inspect the vehicle for any other symptoms related to the axle.

PINPOINT TEST C : BROKEN GEAR TEETH ON THE RING GEAR OR PINION

Normal Operation and Fault Conditions

REFER to: Rear Drive Axle and Differential(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Description and Operation).

Broken gear teeth on the ring or pinion gear can be the result of vehicle overloading, insufficient axle lubricant, contaminated axle lubricant, or incorrect axle lubricant.

Possible Sources

- Debris in axle
- Overloading the vehicle

C1 INSPECT THE RING GEAR OR PINION GEARS FOR BROKEN GEAR TEETH

- Inspect the ring gear or pinion gears for broken gear teeth.

Was wear or damage found?

Yes	Install new components as necessary. REFER to: Drive Pinion (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Removal and Installation). REFER to: Differential Carrier (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Disassembly and Assembly). REFER to: Differential Carrier - Vehicles With: Electronic Locking Differential (ELD) (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Disassembly and Assembly).

	(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Disassembly and Assembly).

No	Inspect the vehicle for any other symptoms related to the axle.

PINPOINT TEST E : GRAY OR MILKY AXLE LUBRICANT IN LOW MILEAGE VEHICLE

Normal Operation and Fault Conditions

REFER to: Rear Drive Axle and Differential(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Description and Operation).

Possible Sources

- Damaged axle housing
- Damaged axle vent

E1 INSPECT AXLE HOUSING AND VENT

- Inspect axle housing and vent for damage or leaks.

Was any damage or leaks found?

Yes	Repair as necessary.

No	Refer to Axle Fluid Analysis in this section.

PINPOINT TEST F : LUBRICANT LEAKING FROM THE PINION SEAL, AXLE SHAFT OIL SEALS OR SUPPORT ARM TO THE HOUSING

Normal Operation and Fault Conditions

REFER to: Rear Drive Axle and Differential(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Description and Operation).

Possible Sources

- Vent
- Damage in the seal contact area or dust slinger on the pinion flange dust shield

F1 INSPECT AXLE VENT

Yes	Install a new differential carrier and/or differential carrier components as necessary. REFER to: Differential Carrier (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Removal and Installation). REFER to: Differential Carrier - Vehicles With: Electronic Locking Differential (ELD) (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Disassembly and Assembly).

No	Inspect the vehicle for any other symptoms related to the axle.

PINPOINT TEST H : GRUNTING- NORMALLY ASSOCIATED WITH A SHUDDER EXPERIENCED DURING ACCELERATION FROM A COMPLETE STOP

Normal Operation and Fault Conditions

REFER to: Rear Drive Axle and Differential(205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Description and Operation).

Possible Sources

- Loose rear axle mount bolts
- Loose suspension fasteners

H1 CHECK FOR LOOSE BOLTS

- Check for loose bolts.

Are any bolts loose?

Yes	Tighten to specifications. REFER to: Axle Assembly (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Removal and Installation).

No	The system is operating correctly at this time.

PINPOINT TEST I : ROTATIONAL NOISE FROM AXLE THAT CHANGES PITCH WHEN CONERING

- Loose axle bolts
- Driveline angle

J1 CHECK THE AXLE MOUNTS AND THE REAR SUSPENSION FOR DAMAGE OR WEAR

- Check the axle mounts and the rear suspension for damage or wear.

Was wear or damage found?

Yes	Repair as necessary. REFER to: Axle Assembly (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Removal and Installation).

No	GO to J2

J2 CHECK THE REAR AXLE FOR LOOSE BOLTS

- Check the rear axle for loose bolts.

Were any bolts loose?

Yes	Tighten the bolts as necessary. REFER to: Axle Assembly (205-02B Rear Drive Axle/Differential - Vehicles With: Ford 9.75 Inch Ring Gear, Removal and Installation).

No	GO to J3

J3 CHECK FOR CORRECT DRIVELINE ANGLES

- Check for correct driveline angles.
  REFER to: Driveshaft Angle Measurement(205-01 Driveshaft, General Procedures).

Are the driveline angles correct?

Yes	Inspect the vehicle for any other symptoms related to the axle.