



Technical Journal

TITLE:
ERAD (Electric Rear Axle Drive) Fault Tracing

REF NO: TJ 33358.7.0	ISSUING DEPARTMENT: Technical Service	CAR MARKET: United States and Canada	
PARTNER: 3 US 7510 Volvo Car USA		ISSUE DATE: 2020-12-08	STATUS DATE: 2020-12-16
FUNC GROUP: 4632	FUNC DESC: Electrical rear axis drive	Page 1 of 4	

“Right first time in Time”

Attachment

File Name	File Size
Sensor_disc_fault_ERAD.mp4	5.9175 MB
TJ33358_Baseline.mp4	0.7451 MB
TJ33358_Bearing_noise.mp4	0.7789 MB

Rows beginning with * are modified

Note! If using a printed copy of this Technical Journal, first check for the latest online version.

DESCRIPTION:

*Updated in its entirety and adding of vehicle types.

For the purpose of correct fault tracing of the ERAD (Electric Rear Axle Drive), this technical journal has been developed as an overview of the ERAD to indicate possible faults and corresponding solutions.

The ERAD can almost always be repaired by replacing only the ERAD transmission or ERAD motor.

The complete ERAD rarely needs to be replaced.

To determine if the ERAD transmission or ERAD motor needs to be exchanged, follow the instructions under “Service”.



CSC Customer Symptom Codes

Code	Description
YR	Drive mode "AWD"/Disengages automatically/Not available
56	Drive mode "OFF ROAD"/Disengages automatically/Not available
53	Driving, Twin Engine/Propulsion using electric motor not possible
55	Driving, Twin Engine/Propulsion using combustion engine/Always active/Active too often
AJ	Driving/Poor performance/lacks power
DL	Warning lights and chimes/Malfunction Indicator Light ("Check engine" light) indication/no indication
8N	Driving/Unusual noise/Unsure when/at all times
D2	Front/rear axle/Unusual noise

DTC Diagnostic Trouble Codes

Control Module	Code	Fault Type
IEM	P286F00	Intermittent
IEM	P286D00	Intermittent
IEM	P287100	Intermittent

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
224	BA	B1APHEV					2020-9999		-	201946-209952
224	BF	B1CPHEV					2020-9999		-	201920-209952
224	BF	B1CPHEV					2020-9999		-	201920-209952
224	BG	B1DPHEV					2020-9999		-	201920-999952
224	BK	B1LPHEV					2020-9999		-	201920-209952
224	BM	B1EPHEV					2020-9999		-	201920-209952
224	BR	B1FPHEV					2019-9999		-	201850-209952
224	BT	B1MPHEV					2020-9999		-	201920-209952
225	BA	B1APHEV					2021-9999		-	202022-209952
225	BF	B1CPHEV					2019-9999		-	201850-209952
225	BG	B1DPHEV					2019-9999		-	201850-999952
225	BK	B1LPHEV					2020-9999		-	201920-209952
225	BM	B1EPHEV					2019-9999		-	201850-209952
225	BR	B1FPHEV					2019-9999		-	201850-209952
225	BT	B1MPHEV					2020-9999		-	201920-209952
234	BA	B1APHEV					2018-9999		-	201717-209952
234	BC	B1BPHEV					2018-9999		-	201726-999952
234	BM	B1EPHEV					2019-9999		-	201817-209952
234	BR	B1FPHEV					2019-9999		-	201817-209952
235	BA	B1APHEV					2018-9999		-	201717-209952
235	BF	B1CPHEV					2021-9999		-	202022-209952
235	BM	B1EPHEV					2019-9999		-	201817-209952
235	BR	B1FPHEV					2019-9999		-	201817-209952



Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
238	BA	B1APHEV					2018-9999		-	201746-209952
238	BC	B1BPHEV					2018-9999		-	201726-999952
238	BK	B1LPHEV					2020-9999		-	201920-209952
238	BM	B1EPHEV					2019-9999		-	201846-209952
238	BR	B1FPHEV					2018-9999		-	201746-209952
246	BA	B1APHEV					2018-9999		-	201717-209952
246	BF	B1CPHEV					2021-9999		-	202022-209952
246	BK	B1LPHEV					2020-9999		-	201920-209952
246	BM	B1EPHEV					2019-9999		-	201817-209952
246	BR	B1FPHEV					2018-9999		-	201717-209952
246	BT	B1MPHEV					2020-9999		-	201920-209952
246	BU	B1NPHEV					2020-9999		-	201920-209952
256	BA	B1APHEV					2016-9999		-	201526-209952
256	BC	B1BPHEV					2016-9999		-	201526-999952
256	BK	B1LPHEV					2020-9999		-	201920-209952
256	BM	B1EPHEV					2019-9999		-	201817-209952
256	BR	B1FPHEV					2018-9999		-	201717-209952

SERVICE:

Use the information below and video files attached as a guideline to sort out if there is a problem with the ERAD motor or ERAD transmission.

Baseline:

Use this video (TJ33358_Baseline) as a reference for what is considered to be normal ERAD sound while driving.

In order to hear the correct sound profile, a headset or earphones is recommended.

The fault tracing categories are divided by the common symptoms of noise, hesitation or loss of power, and DIM (Driver Information Module) messages.

Noise:

If the customer is driving in electric mode and experiences noise from the rear that increases with vehicle speed according to the attached video (TJ33358_Bearing_noise) it's most likely an electrical motor bearing issue.

In this case the **ERAD motor** is to be exchanged.

No DTCs (diagnostic trouble codes) are set for this issue and no message is visible in the DIM.

If the customer complains about strange sounds when the car is standing still after driving, it might be the sensor disc causing the problem.

Use video (Sensor_disc_fault_ERAD) as reference.

In this case the **ERAD transmission** is to be exchanged.



Hesitation or loss of power:

If the customer experiences hesitation or loss of power when the electrical motor should be engaged or experiences no electrical motor engagement at all, the transmission might be the problem.

This fault may result in one or more of the clutch DTCs indicated in the DTC list and a possible message displayed in the DIM - "Hybrid system failure, Service required".

In this case the **ERAD transmission** is to be exchanged.

Note:

For both the ERAD transmission and ERAD motor replacement, it is necessary to order ERAD transmission oil as this is not included in the repair kit. Please order in accordance with VIDA.

For the electric motor replacement, you also need to order face sealing which is not included in the repair kit. Please order in accordance with VIDA.

Warranty claim info:

To get warranty claim accepted for a job described in this TJ, please use following data:

VST OP number:

Electric motor ERAD replace: 46548-2,31130-2, 31133-3, 36060-3

ERAD transmission replace: 46511-2,31130-2, 31133-3, 36060-3

VST Operation Number

VST Operation Number	Description
46511-2	ERAD transmission replace
31130-2	High Voltage Battery disconnection and connection
36060-3	Calibration with VIDA
46548-2	Electric motor ERAD replace
31133-3	Isolation testing high voltage system

VEHICLE REPORT:

Yes, please submit a Vehicle Report if the service instruction described in this TJ has no effect. Use concern area "Vehicle Report" and sub concern area "Support not needed", use function group 4632.

This TJ has three sound files.