Daimler Truck
North America LLC

Recall Campaign

FL966 A-G

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**

Subject: Brake Modulator Valves

Models Affected: Specific model years 2017-2022 Freightliner 114SD, and Cascadia; and Western Star 47X, and 49X vehicles manufactured June 28, 2016, through April 8, 2022.

General Information

On behalf of the entities listed below, Daimler Truck North America LLC (DTNA) has decided that a defect that relates to motor vehicle safety exists on the vehicles mentioned above.

- Freightliner Trucks Division
- Wholly owned subsidiary, Western Star Truck Sales, Inc.

PROBLEM:	On the affected vehicles, the brake modulator valves on the front axle may corrode, which during a braking event initiated by Electronic Stability Control (ESC) or Roll Stability Control (RSC), may result in full system pressure applied to one front wheel end causing a brake pull differential in braking force. A full system pressure applied to one front wheel end could lead to a brake pull resulting in a sudden change in vehicle direction due to uneven braking on the front axle increasing the risk of a crash.
SOLUTION:	A Daimler Truck North America authorized service facility will inspect and replace the brake modulator valves as required, or on eligible vehicles install diagnostic software that can check for an emerging failure in the valve and will provide the driver with an in-vehicle alert if detected.

There are approximately 90,000 vehicles involved.

REVISION: Group G, work instructions have been updated.

Additional Repairs

Dealers must complete all outstanding Recall and Field Service campaigns prior to the sale or delivery of a vehicle. A dealer will be liable for any progressive damage that results from its failure to complete campaigns before sale or delivery of a vehicle.

Owners may be liable for any progressive damage that results from failure to complete campaigns within a reasonable time after receiving notification.

Please contact Warranty Campaigns for consideration of additional charges prior to performing the repair.

Work Instructions

Please refer to the attached work instructions. Prior to performing the campaign, check the vehicle for a completion sticker (Form WAR260).

Replacement Parts

Replacement parts are now available and can be obtained by ordering the kit and/or part number(s) listed below from your facing Parts Distribution Center.

If our records show your dealership has ordered any vehicle(s) involved in campaign number FL966, a list of the customers

and vehicle identification numbers will be available on DTNA Portal. Please refer to this list when ordering parts for this recall.

IMPORTANT - After Repair is Complete*:
Attach a red completion sticker (WAR260) to the base label (WAR259).

If the vehicle does not have a base label, clean a spot on the appropriate location, and attach a base label, prior to attaching the completion sticker.

If a campaign kit is not required, write the campaign number on a blank sticker and attach it to the base label.

(Failure to install a completion sticker may result in a chargeback of the campaign claim.)

* TBB is exempt from the completion sticker process

Table 1 – Replacement Parts for FL966

Group	Kit Number	Part/Kit Description	Part Number	Qty
A-F	25-FL958-000	SOLENOID,ABS MODULATOR VALVE,	25-FL958-001	2 ea
		WASHER-FLAT,STEEL,HARDENED,3/8 IN	23-09114-002	4 ea
		SPACER-AL,.375 ID.75 O	23-12240-025	4 ea
		SCREW-HEX FLANGE,M8X1.25X90	23-14064-090	4 ea
		NUT	N913023 008003	4 ea
C		NUT-HEX,FLANGE,LOCK,5/16-18,ZINC	23-13861-105	4 ea
D		SCREW	N910105 008042	4 ea
E		SCREW	N910105 008042	4 ea
F		SCREW	23-12489-095	4 ea
		NUT-HEXFLGH,PILOTED,M8X1.25	23-14525-000	
		SPACER-AL,.406IDX1 ODX	23-11427-075	
All		Blank completion sticker	WAR260	1 ea

Table 1 – Replacement Parts for FL966 A-G

Removed Parts

- For U.S. and Canadian Dealers, use the part disposition in OWL to determine how to manage removed parts (return, scrap, etc.). Dispositions are available at the date of the repair.
- For Export Dealers, destroy removed parts unless otherwise advised.

Claim Reimbursement - Labor Allowance

IMPORTANT: OWL must be viewed prior to performing the recall to ensure the vehicle is involved and the campaign has not been previously completed. Also, check for a completion sticker prior to beginning work.

You will be reimbursed for your parts, labor, and handling (landed cost for Export Distributors) by submitting your claim through the Warranty system within 30 days of completing this campaign.

- In OWL, use the 'Retrieve' function and select the appropriate procedure. This will auto-populate the PFP component code, replacement parts, cause, corrective action and SRT code in OWL.

Table 2 - Claim Reimbursement Table

Claim Type	Recall Campaign
Campaign	FL966 A-G
VMRS Component Code	F99-999-005
Cause Code	A1 – Campaign
Primary Failed Part	25-FL966-000

Table 3 – Labor Allowance for FL966 A-G

Groups	Procedure	Time Allowed (hours)	SRT Codes	Corrective Action
B	Inspect brake modulator valves	0.1	996-R215A	06-Inspect
A-F	Inspect and replace brake modulator valves	1.0	996-R215B	12-Repair Recall/Campaign
G	Software update	1.3	996-R215C	12-Repair Recall/Campaign

Table 3 – Labor Allowance

- Claim type is **Recall Campaign**.
- In the Campaign field, enter the campaign number and appropriate group (FL966-A, FL966-B, etc.).
- In the Primary Failed Part field, enter 25-FL966-000.
- In the Parts section, enter the appropriate kit or part number(s) as shown in the Replacement Parts Table.
- In the Labor section, enter the appropriate SRT from the Labor Allowance Table. Administrative time will auto-populate if applicable using SRT 939-6010A, for 0.3 hours.
- The VMRS Component Code is F99-999-005 and the Cause Code is A1 - Campaign.
- U.S. and Canada – Reimbursement for Prior Repairs. When a customer asks about reimbursement, please do the following:
  - Accept the documentation of the previous repair.
  - Make a brief check of the customer's paperwork to see if the repair may be eligible for reimbursement. (See the 'Copy of Owner Letter' section of this bulletin for reimbursement guidelines.)
  - Submit an OWL Recall Pre-Approval Request for a decision.
  - Include the approved amount on your OWL claim in the Other Charges section.

- Attach the documentation to the pre-approval request.
- If approved, submit a 'based on claim' for the pre-approval.
- The Dealer is required to reimburse the customer the appropriate amount.

IMPORTANT: OWL must be viewed prior to performing the recall to ensure the vehicle is involved and the campaign has not been previously completed. Also, check for a completion sticker prior to beginning work.

U.S. and Canadian dealers, contact the Warranty Campaigns Department via Web inquiry at DTNAPortal.com/WSC, if you have any questions or need additional information. Export distributors, submit a Web inquiry or contact your International Service Manager.

U.S. and Canadian Dealers: To return excess kit inventory related to this campaign, U.S. dealers must submit a Parts Authorization Return (PAR) to the Memphis PDC. Canadian dealers must submit a PAR to their facing PDC. All kits must be in resalable condition. PAR requests must include the original purchase invoice number. Export Distributors: Excess inventory is not returnable.

The letter notifying U.S. and Canadian vehicle owners is included for your reference.

Please note that the National Traffic and Motor Vehicle Safety Act, as amended (Title 49, United States Code, Chapter 301), requires the owner's vehicle(s) be corrected within a reasonable time after parts are available to you. The Act states that failure to repair a vehicle within 60 days after tender for repair shall be prima facie evidence of an unreasonable time. However, circumstances of a particular situation may reduce the 60-day period. Failure to repair a vehicle within a reasonable time can result in either the obligation to (a) replace the vehicle with an identical or reasonably equivalent vehicle, without charge, or (b) refund the purchase price in full, less a reasonable allowance for depreciation. The Act further prohibits dealers from selling a vehicle unless all outstanding recalls are performed. Any lessor is required to send a copy of the recall notification to the lessee within 10 days. Any subsequent stage manufacturer is required to forward this notice to its distributors and retail outlets within five working days.

Daimler Truck North America LLC

Recall Campaign

FL966 A-G

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**

Copy of Notice to Owners

Subject: Brake Modulator Valves

For Notice to U.S. Customers: This notice is sent to you in accordance with the requirements of the *National Traffic and Motor Vehicle Safety Act*. **For Notice to Canadian Customers:** This notice is sent to you in accordance with the requirements of the Motor Vehicle Safety Act.

Daimler Truck North America LLC (DTNA), on behalf of its Freightliner Trucks Division, and wholly owned subsidiaries, Freightliner Custom Chassis Corporation, Western Star Truck Sales, Inc., Thomas Built Buses, has decided that a defect, which relates to motor vehicle safety, exists in certain in certain 2017-2023 Freightliner 114SD, Cascadia, and Western Star 47X, and 49X vehicles. See below for additional detail on vehicle applicability:

On the affected vehicles, the brake modulator valves on the front axle may corrode, which during a braking event initiated by Electronic Stability Control (ESC) or Roll Stability Control (RSC) may result in full system pressure applied to one front wheel end causing a brake pull differential in braking force. A full system pressure applied to one front wheel end could lead to a brake pull resulting in a sudden change in vehicle direction due to uneven braking on the front axle increasing the risk of a crash.

A Daimler Truck North America authorized service facility will inspect and replace the brake modulator valves as required, or on eligible vehicles install diagnostic software that can check for an emerging failure in the valve and will provide the driver with an in-vehicle alert if detected. The Recall will take approximately two hours and will be **performed free of charge**.

Please contact an authorized Daimler Truck North America dealer to arrange to have the Recall performed and to ensure that parts are available at the dealership. To locate an authorized dealer, search online at https://northamerica.daimlertruck.com/contact-us. Scroll down to “Locate a Dealer” and select the appropriate brand.

You may also confirm your vehicle’s involvement in this recall at the following URL: https://dtna-dlrinfo.prd.freightliner.com:48518/VinLookup/vin-module/getVinLookupPage.

You may be liable for any progressive damage that results from your failure to complete the Recall within a reasonable time after receiving notification.

If you do not own the vehicle that corresponds to the identification number(s), which appears on the notification, please return the notification to the Warranty Campaigns Department with any information you can furnish that will assist us in locating the present owner. If you have leased this vehicle, Federal law requires that you forward this notice to the lessee within 10 days. If you are a subsequent stage manufacturer, Federal law requires that you forward this notice to your distributors and retail outlets within five working days. **For Notice to US Customers:** If you have paid to have this recall service condition corrected prior to this notice, you may be eligible to receive reimbursement. Please see the reverse side of this notice for details.

If you have questions about this Recall Campaign, please contact the Warranty Campaigns Department at (800) 547-0712, 7:00 a.m. to 4:00 p.m. Pacific Time, Monday through Friday, e-mail address DTNA-War-Campaigns@Daimlertruck.com. For other concerns, you may contact the Customer Assistance Center at (800) 385-4357. **For Notice to US Customers:** If your manufacturer, distributor, or dealer fails to remedy the defect or noncompliance without charge and within a reasonable time, you may wish to submit a complaint to the Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue SE, Washington, DC 20590; or call the Vehicle Safety Hotline at (888) 327-4236 (TTY: 800-424-9153); or go to http://www.nhtsa.gov. **For Notice to Canadian Customers:** If you have a safety concern relating to this Recall, you may wish to contact Transport Canada – Motor Vehicle Safety at, 80 rue Noel, Gatineau, Quebec J8Z 0A1 or phone (800) 333-0510.

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We regret any inconvenience this action may cause but feel certain you understand our interest in motor vehicle safety.

WARRANTY CAMPAIGNS DEPARTMENT
Enclosure

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Reimbursement to Customers for Repairs Performed Prior to Recall

If you have already **paid** to have this condition corrected you may be eligible to receive reimbursement.

Requests for reimbursement may include parts and labor. Reimbursement may be limited to the amount the repair would have cost if completed by an authorized Daimler Truck North America LLC dealer. The following documentation must be presented to your dealer for consideration for reimbursement.

Please provide original or clear copies of all receipts, invoices, and repair orders that show:

- The name and address of the person who paid for the repair
- The Vehicle Identification Number (VIN) of the vehicle that was repaired
- What problem occurred, what repair was done, when the repair was done
- Who repaired the vehicle
- The total cost of the repair expense that is being claimed
- Proof of payment for the repair (such as the front and back of a cancelled check or a credit card receipt)

Reimbursement will be made by check from your Daimler Truck North America LLC dealer.

Please speak with your Daimler Truck North America LLC authorized dealer concerning this matter.

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Work Instructions

Subject: Brake Modulator Valves

Models Affected: Specific model years 2017-2022 Freightliner 114SD, and Cascadia; and Western Star 47X, and 49X vehicles manufactured June 28, 2016, through April 8, 2022.

REVISION: Group G, work instructions have been updated.

FL966B – Front Modulator Valve Inspection

1. Check the base label (Form WAR259) for a completion sticker for FL966 (Form WAR260), indicating this work has been done. The base label is usually located on the passenger-side door, about 12 inches (30 cm) below the door latch. If a completion sticker is present, no work is needed. If a completion sticker is not present, proceed to the next step.
2. Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.
3. Open the hood.

NOTE: Both the left- and right-hand modulator valves must be inspected. If either one of the modulator valves is bad, replace both modulator valves.

4. Remove the connector from the valve, and inspect the part number underneath the connector. See **Fig. 1**.

   Good part numbers → **472 196 046 0** and **472 196 051 0**

   Bad part numbers → **472 196 025 0** and **472 196 037 0**

   - If the part numbers are good, install the connector. Clean a spot on the base label (Form WAR259), and attach a campaign completion sticker for FL966 (Form WAR260), indicating this work has been completed.
   - If at least one of the part numbers is bad, go to the replacement procedure for the specified group, and replace both the modulator valves.

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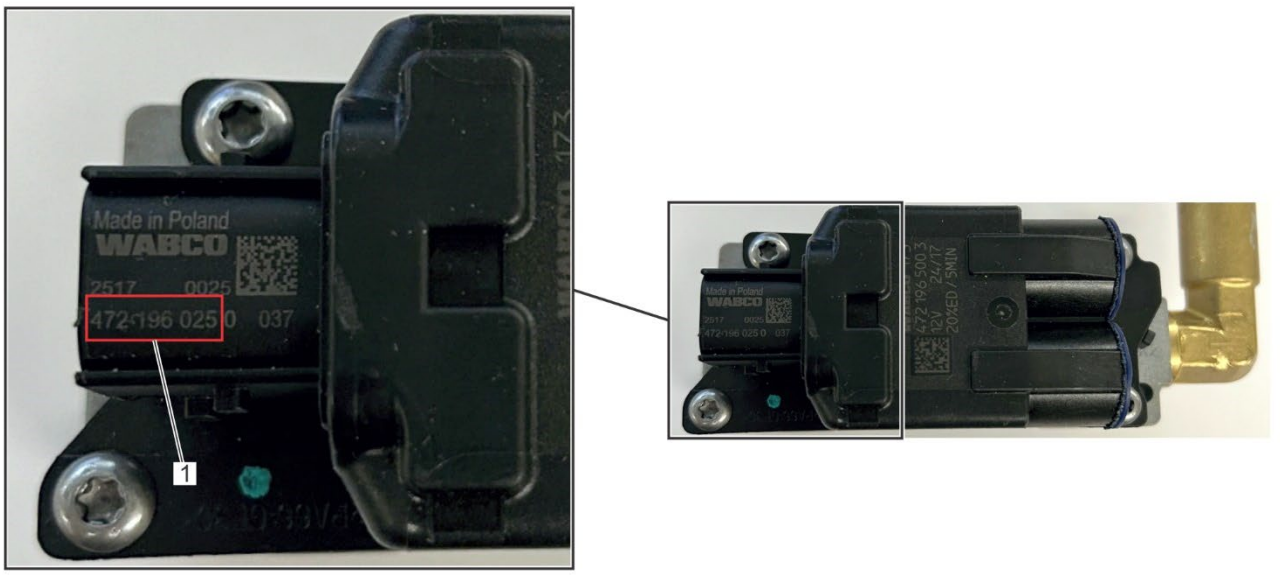

1. Part Number

Fig. 1, Modulator Valve

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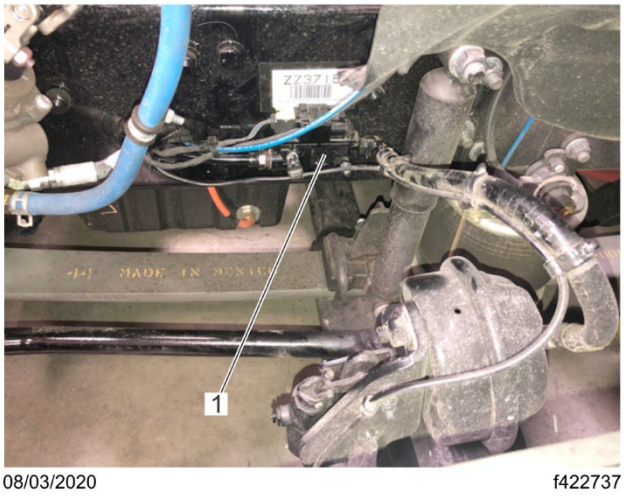
FL966A, B – Front Modulator Valve Replacement

NOTE: Both the left- and right-hand modulator valves must be replaced. Use all of the parts in the recall kit, listed in **Table 4**.

Table 4

Kit Number	Part Description	Part Number	Qty.
25-FL966-000	SOLENOID,ABS MODULATOR VALVE	25-FL958-001	2 ea
	WASHER-FLAT,STEEL,HARDENED,3/8 IN	23-09114-002	4 ea
	SPACER-AL,.375 ID.75 O	23-12240-025	4 ea
	SCREW-HEX FLANGE,M8X1.25X90	23-14064-090	4 ea
	NUT-HEX,FLANGE,LOCK,5/16-18,ZINC	N913023 008003	4 ea

1. Locate the modulator valve on the front-left frame rail, behind the wheel. See **Fig. 2**
2. Use the flat end of a screwdriver to disconnect the modulator valve electrical connector located on the front side of the frame rail, above the front axle. See **Fig. 3**.



1. Modulator Valve

Fig. 2, Location of the Modulator Valve

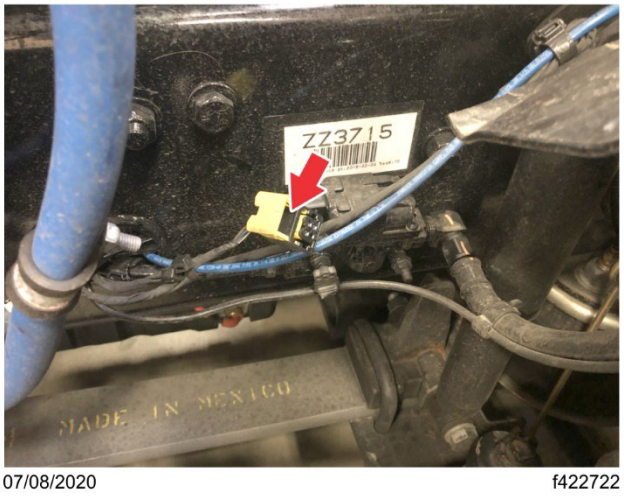
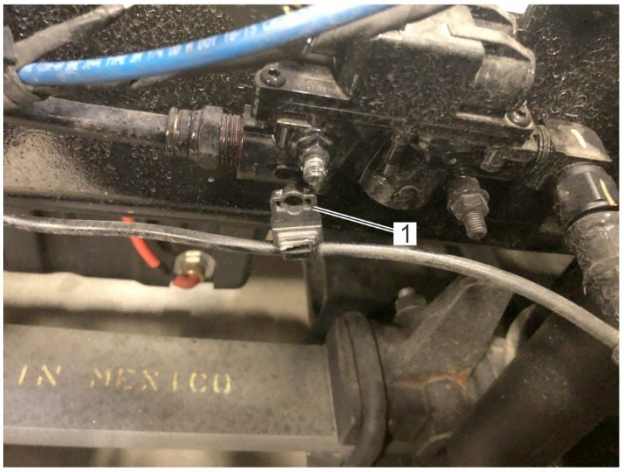


Fig. 3, Location of the Electrical Connector

3. Remove the antilock braking system (ABS) zip tie from the modulator mounting bolt. See **Fig. 4**.



1. Zip Tie

Fig. 4, ABS Zip Tie

4. Use special tool (NQ307001-1) supplied in special tool kit NQ307001, referenced in Tool Letter 18 TL-15, to disconnect the plastic air line from the modulator valve. See **Fig. 5** and **Fig. 6**.

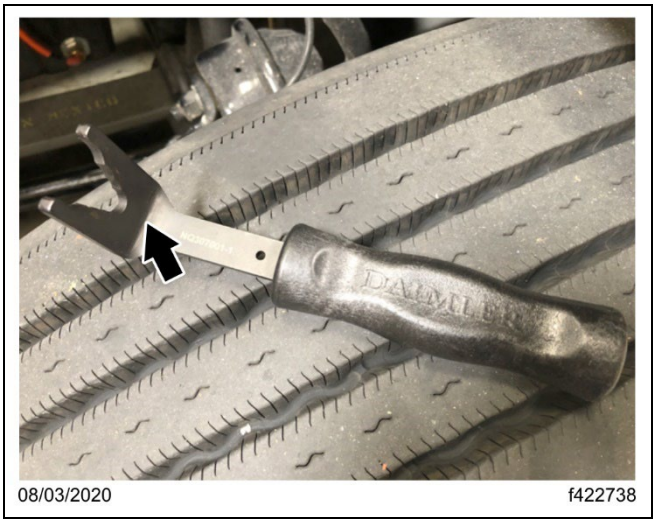


Fig. 5, Special Tool (NQ307001-1)

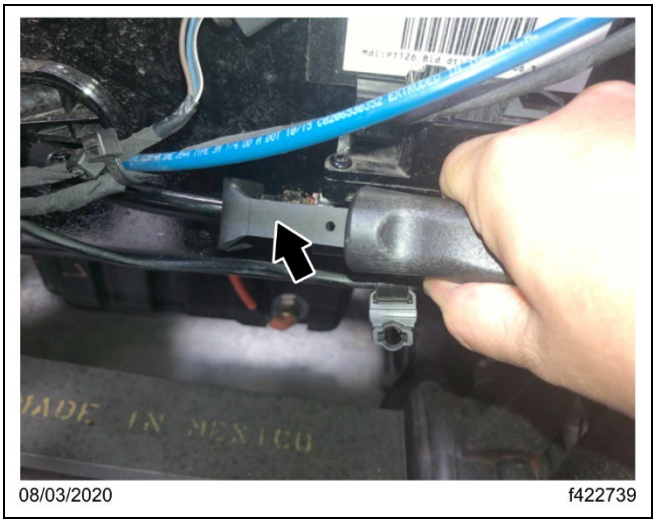


Fig. 6, Disconnecting the Plastic Air Line

5. Use a 7/8-inch wrench to remove the quick-connect fitting from the modulator. See **Fig. 7**.
6. Use a 7/8-inch wrench to remove the threaded air line that connects the modulator to the brake chamber. See **Fig. 8**.

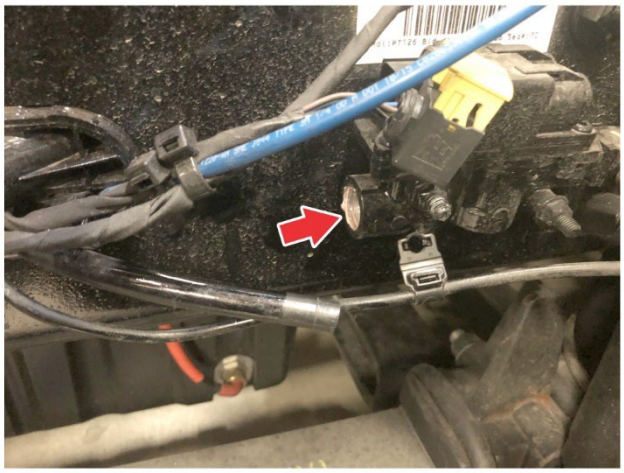
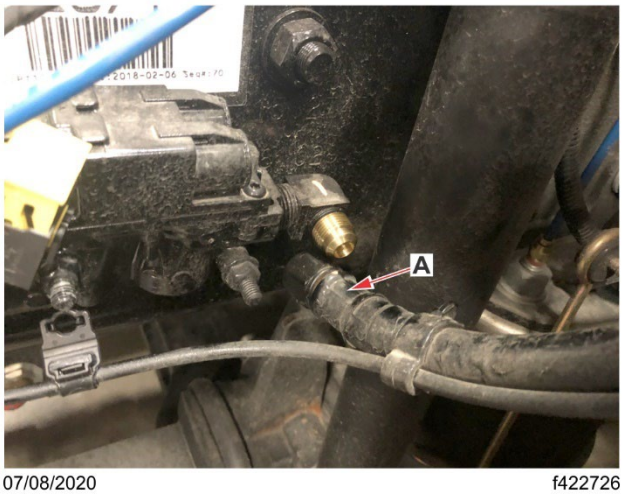


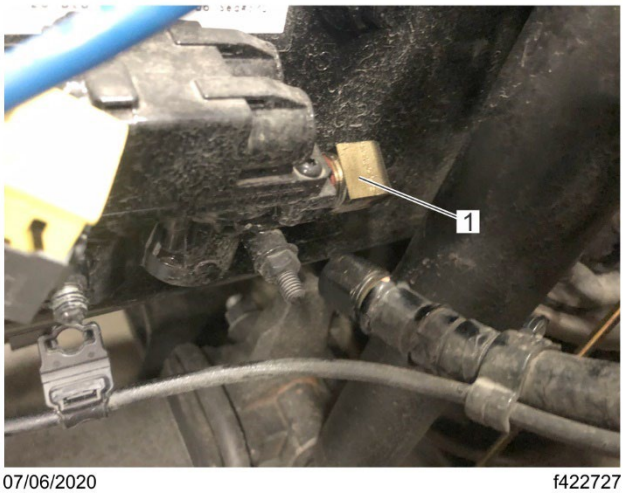
Fig. 7, Disconnecting the Quick-Connect Fitting



A. Remove the threaded air line that connects the modulator valve to the brake chamber.

Fig. 8, Removing the Threaded Air Line

7. Use a 23-mm wrench to loosen the brake chamber air line fitting on the modulator valve. See **Fig. 9**.



1. Air Line Fitting

Fig. 9, Loosening the Brake Chamber Air Line Fitting

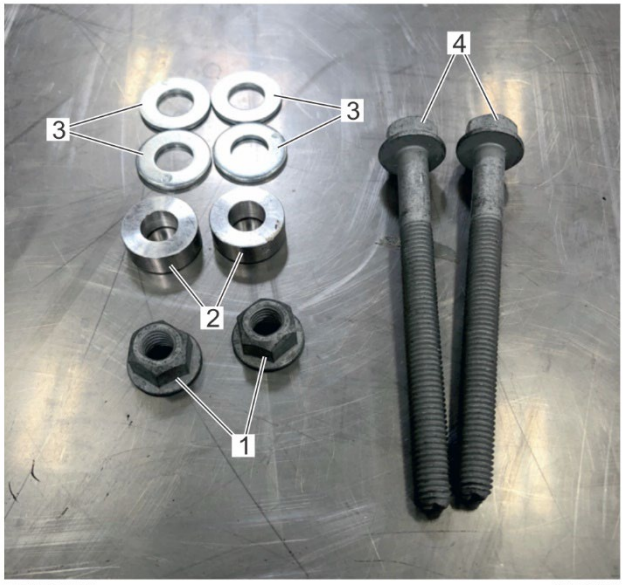
8. Use a 1/2-inch socket wrench to remove the two modulator valve mounting bolts, then remove the modulator valves from the vehicle.

9. Use a 23-mm wrench to remove the brake chamber air line fitting from the modulator valve.

IMPORTANT: The quick connect fittings come with pre-applied dry sealant (Vibra-Seal) which can be reused up to five times. Replace the fitting with a new one if the thread sealant is no longer usable.

10. Use a 23-mm wrench to install the brake chamber air line fitting on the new modulator valve.

11. Use a 1/2-inch socket wrench along with the new bolts, spacers, and washers (supplied in the kit) to install the modulator on the vehicle. Tighten the bolts 11 lbf·ft (15 N·m). See **Fig. 10**, **Fig. 11**, **Fig. 12**, and **Fig. 13**.



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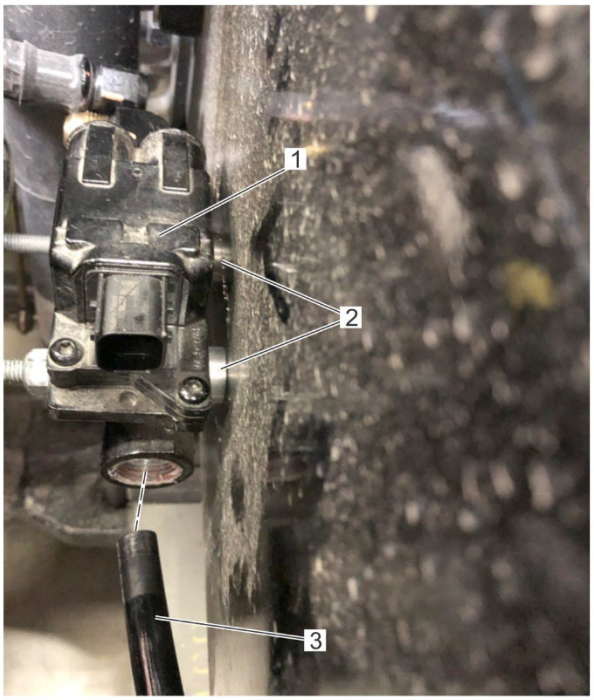
1. Nuts
2. Spacers
3. Washers
4. Bolts

Fig. 10, 25-FL958-000 Kit Components



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1. Modulator Valve
2. Spacers
3. Hose

Fig. 11, Installing the Spacers

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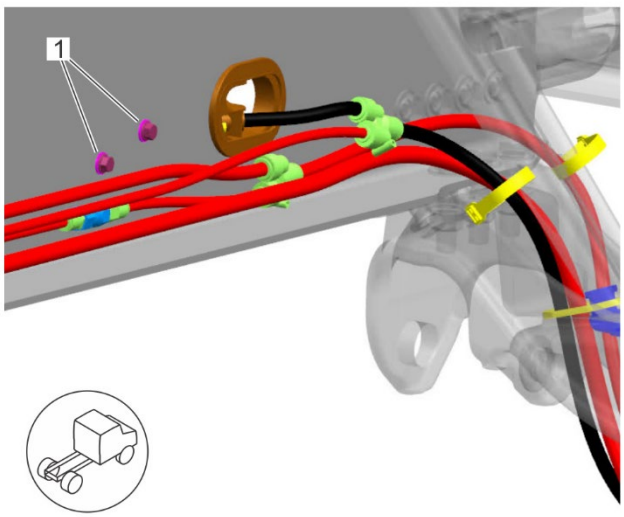
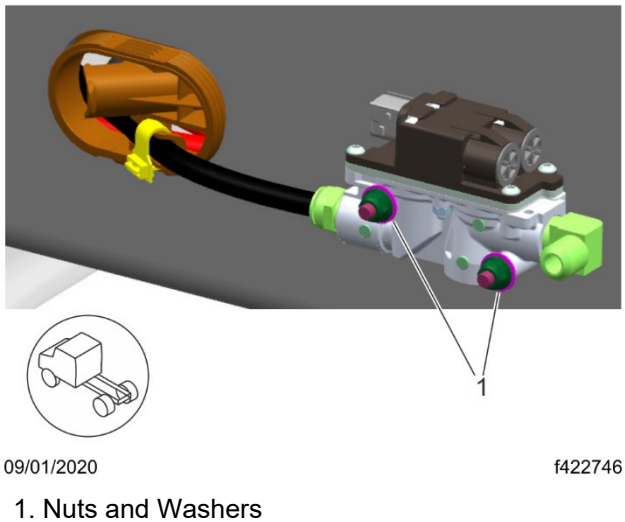


1. Mounting Bolts and Washers

Fig. 12, Modulator Valve Fasteners, Inside Frame Rail View



1. Nuts and Washers

Fig. 13, Modulator Valve Fasteners, Outside Frame Rail View

12. Use a 7/8-inch wrench to install the threaded air line that connects the modulator valve to the brake chamber.

IMPORTANT: The quick connect fittings come with pre-applied dry sealant (Vibra-Seal) which can be reused up to five times. Replace the fitting with a new one if the thread sealant is no longer usable.

13. Use a 7/8-inch wrench to install the quick-connect fitting on the modulator valve.
14. Attach the plastic air line to the modulator.
15. Install the ABS zip tie on the modulator mounting bolt (to prevent chafing).
16. Connect the modulator valve electrical connector.
17. Repeat the procedure for the modulator valve on the other side of the vehicle.
18. Close the hood.
19. Build air pressure to check for leaks and perform six full brake applications in the parking lot to verify proper brake performance.
20. Clean a spot on the base label (Form WAR259), and attach a campaign completion sticker for FL966 (Form WAR260), indicating this work has been completed.

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FL966C – Front Modulator Valve Replacement

For vehicles belonging to group C, the replacement procedure is the same as groups A and B, but the location of the valves is different. Location of the modulator valves is shown in **Fig. 14** and **Fig. 15**.

Use all of the parts in the recall kit, listed in **Table 5**, with the exception of the nut (N913023 008003), spacer (23-12240-025), and screw (23-14064-090). Use the nut (23-13861-105, 4 each) from the group C parts list, listed in **Table 5**.

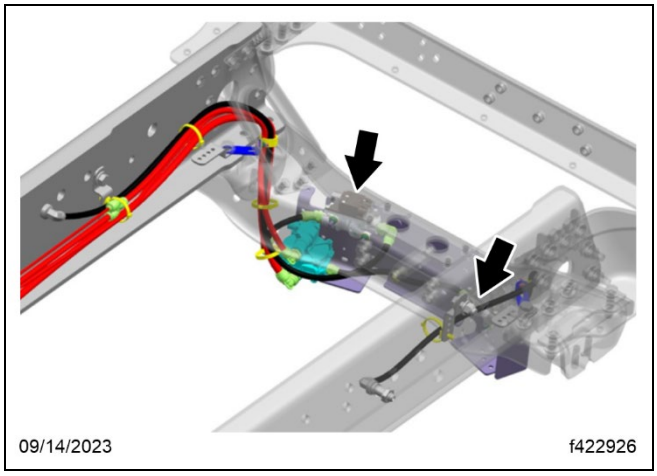

Fig. 14, Modulator Valve Mounting under the Cross Member

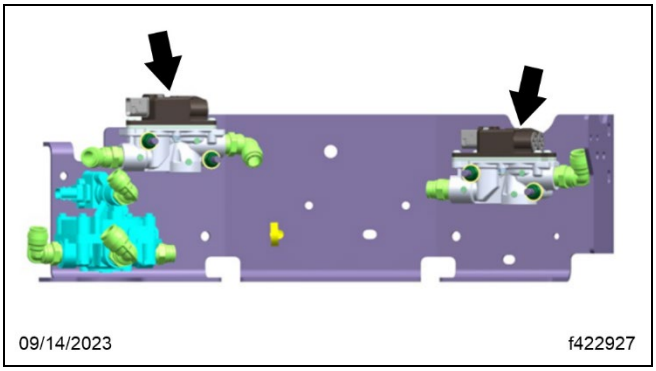

Fig. 15, Modulator Valve Mounting Location

Table 5

Kit Number/Group	Part Description	Part Number	Qty.
25-FL958-000	SOLENOID,ABS MODULATOR VALVE	25-FL958-001	2 ea
	WASHER-FLAT,STEEL,HARDENED,3/8 IN	23-09114-002	4 ea
	~~SPACER-AL,.375 ID.75 O~~	~~23-12240-025~~	~~4 ea~~
	~~SCREW-HEX FLANGE,M8X1.25X90~~	~~23-14064-090~~	~~4 ea~~
	~~NUT-HEX,FLANGE,LOCK,5/16-18,ZINC~~	~~N913023-008003~~	~~4 ea~~
FL966C	NUT	23-13861-105	4 ea

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FL966D – Front Modulator Valve Replacement

For vehicles belonging to group D, the replacement procedure is the same as groups A and B, but the location of the valves is different. Location of the modulator valves is shown in **Fig. 16** and **Fig. 17**.

Use all of the parts in the recall kit, listed in **Table 6**, with the exception of the screw (23-14064-090). Use the screw (N910105 008042, 4 each) from the group D parts list, listed in **Table 6**, instead of the screw in the recall kit. Use only the spacers on the solenoid that is on the engine crossmember and parallel to the engine crossmember. Do not use the spacers on the solenoid that is on the frame rail and perpendicular to the frame rail.

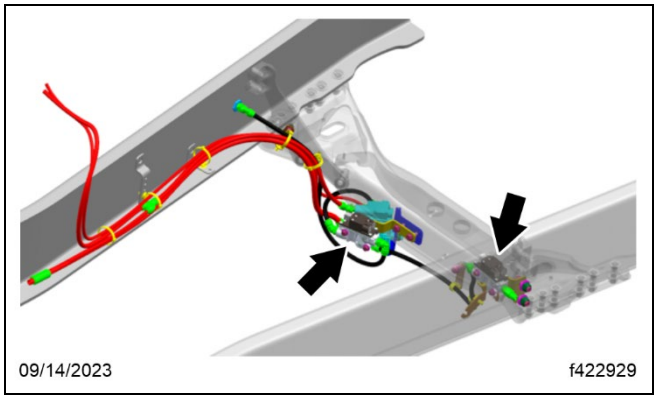


Fig. 16, Modulator Valve Mounting Inside the Frame Rails

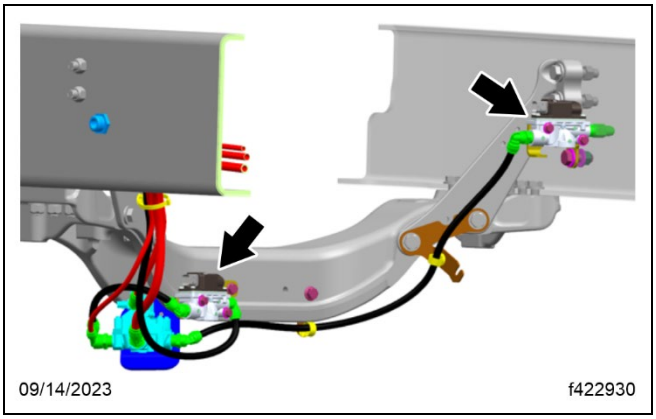


Fig. 17, Modulator Valve Mounting Location

Table 6

Kit Number/Group	Part Description	Part Number	Qty.
25-FL958-000	SOLENOID,ABS MODULATOR VALVE	25-FL958-001	2 ea
	WASHER-FLAT,STEEL,HARDENED,3/8 IN	23-09114-002	4 ea
	SPACER-AL,.375 ID.75 O	23-12240-025	4 ea
	~~SCREW-HEX FLANGE,M8X1.25X90~~	~~23-14064-090~~	~~4 ea~~
	NUT-HEX,FLANGE,LOCK,5/16-18,ZINC	N913023 008003	4 ea
FL966D	SCREW	N910105 008042	4 ea

FL966 A-G

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**

FL966E – Front Modulator Valve Replacement

For vehicles belonging to group E, the replacement procedure is the same as groups A and B, but the location of the valves is different. Location of the modulator valves is shown in **Fig. 18**.

Use all of the parts in the recall kit, listed in **Table 7**, with the exception of the screw (23-14064-090), and spacer (23-12240-025). Use the screw (N910105 008042, 4 each) from the group E parts list, listed in **Table 7**.

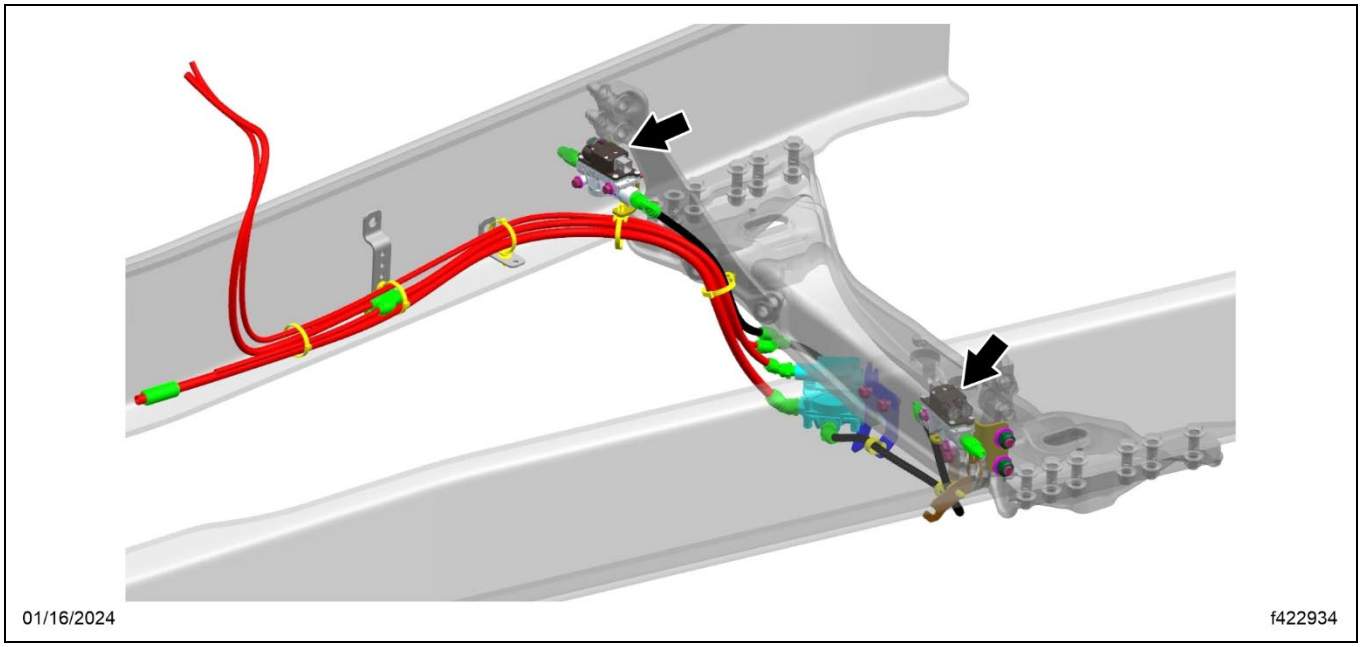


Fig. 18, Modulator Valve Mounting Inside the Frame Rails

Table 7

Kit Number/Group	Part Description	Part Number	Qty.
25-FL958-000	SOLENOID,ABS MODULATOR VALVE	25-FL958-001	2 ea
	WASHER-FLAT,STEEL,HARDENED,3/8 IN	23-09114-002	4 ea
	~~SPACER-AL,.375 ID.75 O~~	~~23-12240-025~~	~~4 ea~~
	~~SCREW-HEX FLANGE,M8X1.25X90~~	~~23-14064-090~~	~~4 ea~~
	NUT-HEX,FLANGE,LOCK,5/16-18,ZINC	N913023 008003	4 ea
FL966E	SCREW	N910105 008042	4 ea

FL966 A-G

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**

FL966F – Front Modulator Valve Replacement

For vehicles belonging to group F, the replacement procedure is the same as groups A and B, but the location of the valves is different. Location of the modulator valves is shown in **Fig. 19**.

Use only the solenoid (25-FL958-001), and washer (23-09114-002) from the recall kit, listed in **Table 8**. Use the spacer (23-11427-075, 4 each), screw (23-12489-095, 4 each), and nut (23-14525-000, 4 each) from the group F parts list, listed in **Table 8**.

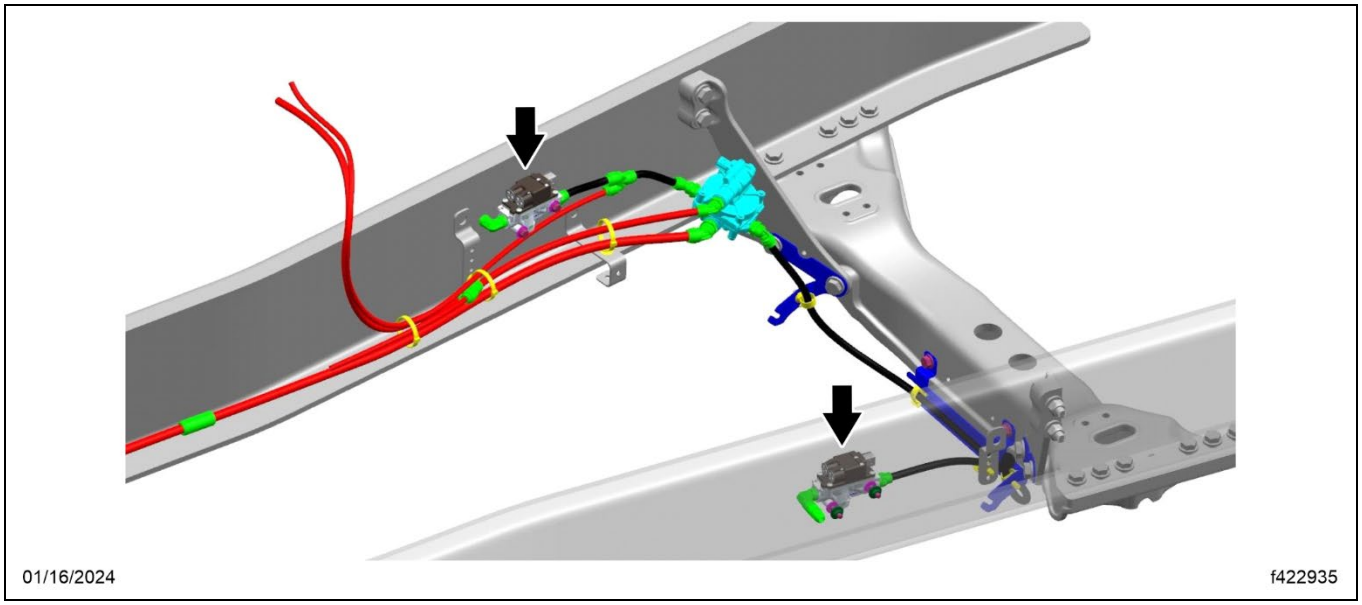


Fig. 19, Modulator Valve Mounting Inside the Frame Rails

Table 8

Kit Number/Group	Part Description	Part Number	Qty.
25-FL958-000	SOLENOID,ABS MODULATOR VALVE	25-FL958-001	2 ea
	WASHER-FLAT,STEEL,HARDENED,3/8 IN	23-09114-002	4 ea
	~~SPACER-AL,.375 ID.75 O~~	~~23-12240-025~~	~~4 ea~~
	~~SCREW-HEX FLANGE,M8X1.25X90~~	~~23-14064-090~~	~~4 ea~~
	~~NUT-HEX,FLANGE,LOCK,5/16-18,ZINC~~	~~N913023-008003~~	~~4 ea~~
FL966F	SPACER-AL,.406IDX1 ODX	23-11427-075	4 ea
	SCREW	23-12489-095	4 ea
	NUT	23-14525-000	4 ea

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**

FL966G – Updating the ABS ECU Software

1. Check the base label (Form WAR259) for a completion sticker for FL966 (Form WAR260), indicating this work has been done. The base label is usually located on the passenger-side door, about 12 inches (30 cm) below the door latch. If a completion sticker is present, no work is needed. If a completion sticker is not present, proceed to the next step.

NOTE: The ABS MBSP+ controller software update flashing process follows the latest version of WABCO Technical Bulletin TP-19072. To review the latest version of TP-19072, go to https://www.wabco-auto.com/americas_en/Get-in-touch/Literature. For issues regarding the flash tool downloading and installation process, call WABCO at 1-855-228-3203 or email wnacustomercare@wabco-auto.com.

NOTICE: Do not flash the ECU if the part number is not listed in **Table 9**. If the flash tool is run on any other part number, the ECU could be damaged and may need to be replaced.

2. Confirm that the ABS ECU part number of the vehicle is listed in **Table 9**.

Table 9 – ABS ECU Part Numbers Covered by FL966

400 864 859 0	400 864 841 0	400 864 836 0	400 864 831 0	400 864 825 0	400 864 821 0	400 864 815 0
400 864 860 0	400 864 842 0	400 864 837 0	400 864 832 0	400 864 826 0	400 864 822 0	400 864 816 0
400 864 861 0	400 864 843 0	400 864 838 0	400 864 833 0	400 864 827 0	400 864 823 0	400 864 817 0
400 864 862 0	400 864 844 0	400 864 839 0	400 864 834 0	400 864 828 0	400 864 824 0	400 864 818 0
400 867 223 0	400 867 183 0	400 867 178 0	400 867 135 0	400 867 130 0	400 867 128 0	400 867 119 0
400 867 224 0	400 867 184 0	400 867 179 0	400 867 136 0	400 867 131 0	400 867 129 0	400 867 120 0
400 867 225 0	400 867 185 0	400 867 180 0	400 867 137 0	400 867 132 0	400 867 125 0	400 867 121 0
400 867 226 0	400 867 186 0	400 867 181 0	400 867 138 0	400 867 133 0	400 867 126 0	400 867 122 0

3. Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires.

4. Check for fault code SPN 520272 FMI 13, Steering Ratio Parameters-Out of Calibration. This fault code MUST be inactive before downloading the flash tool.

   Is the fault code SPN 520272 FMI 13 active?

   YES → Refer to Service Solution 1033682, New Cascadia ABS Fault code SPN for information.

   NO → Proceed to step 5.

IMPORTANT: System administrative rights are required on the computer for installing the flash tool. Contact the local system administrator for assistance.

5. An mBSP flash tool software version v1.85 (or later), as shown in **Fig. 20**, is required to perform this ABS ECU software update procedure.

NOTE: The latest version of mBSP flash tool must be obtained to correctly update the ABS ECU software (v1.85 at time of publication). The version shown in Images below are for reference only and DOES NOT depict the latest version.

If the mBSP flash tool software is already installed, check the software version of the mBSP Flash Tool. From the menu bar, select 'Help,' then select 'Info about...' See **Fig. 21** and **Fig. 22**.

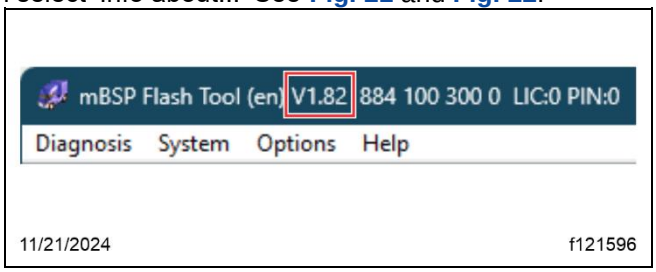


Fig. 20, mBSP Flash Tool Software Version

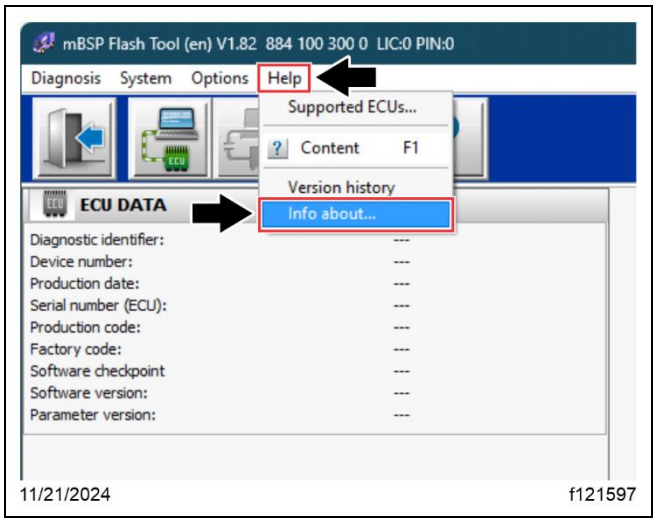


Fig. 21, Opening the Info About Diagnostic Software Window

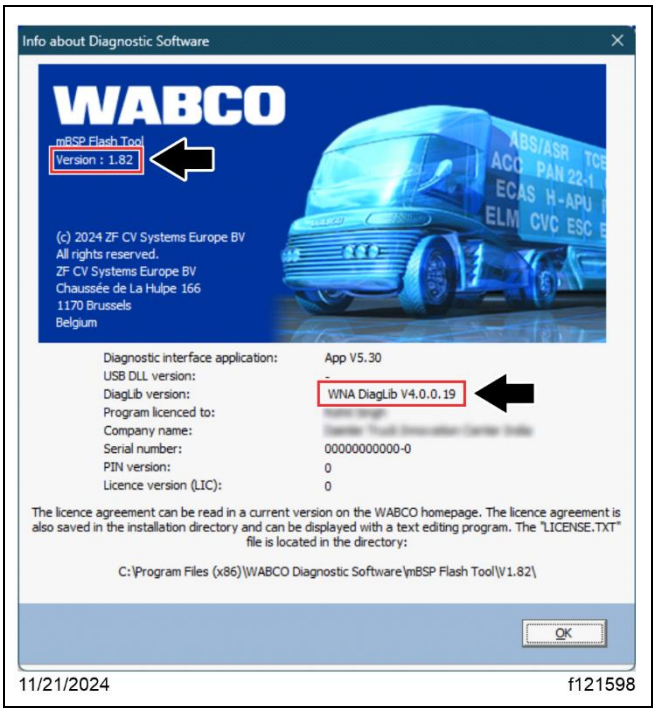


Fig. 22, Info About Diagnostic Software Window

Is the mBSP Flash Tool software version v1.85 (or later) installed in the laptop being used for this update?

YES → Go to step 8, on page 31.

NO → Continue with substep 5.1 to download the latest version of the mBSP Flash Tool.

5.1. Go to https://www.wabco-auto.com/americas_en/Get-in-touch/Literature.

5.2. Scroll down to the 'Downloads' section towards the bottom, and select 'mBSP Flash Tool.' See **Fig. 23**.

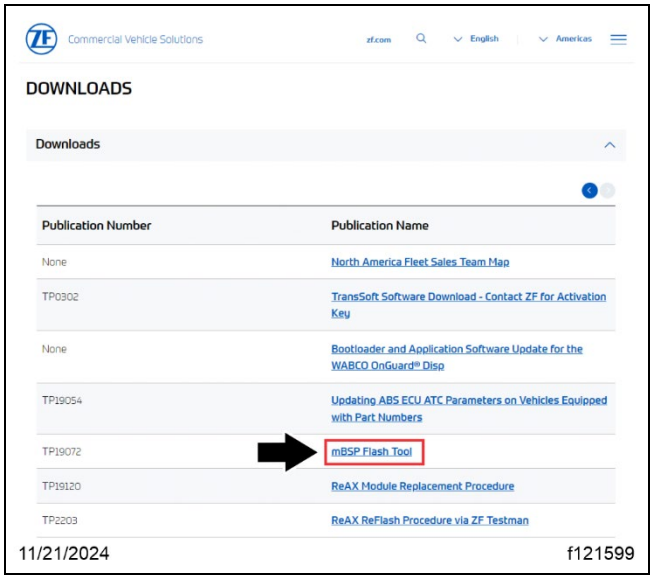


Fig. 23, mBSP Flash Tool Download Link

5.3. The zip file is downloaded on your local hard drive and a 'Downloads' panel appears at the top-right corner of the browser. See **Fig. 24**.

5.4. Select the 'Show in folder' button, shown in **Fig. 24**. The location where the zip file is saved opens in File Explorer.

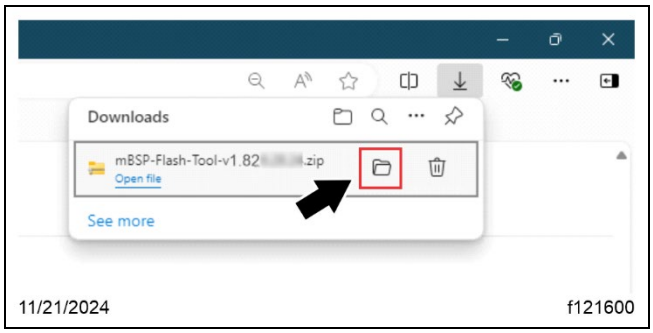


Fig. 24, mBSP Flash Tool Zip File Downloaded

6. Extract the contents of the downloaded zip folder.

6.1. Right-click on the ‘mBSP-Flash-Tool-v1.82.zip’ folder and select ‘Extract All...’ See **Fig. 25**.

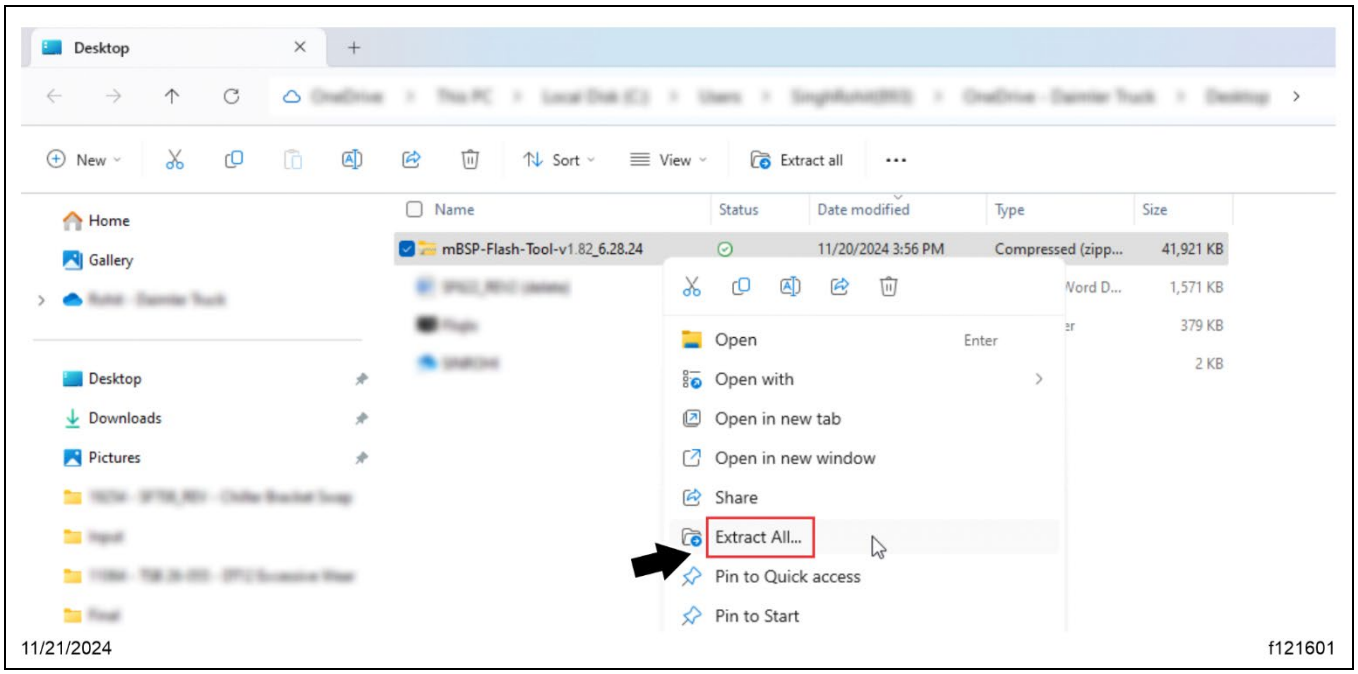


Fig. 25, Extracting the Downloaded Zip File

6.2. The ‘Extract Compressed (Zipped) Folders’ window opens. Select the checkbox next to ‘Show extracted files when complete,’ then select ‘Extract.’ See **Fig. 26**.

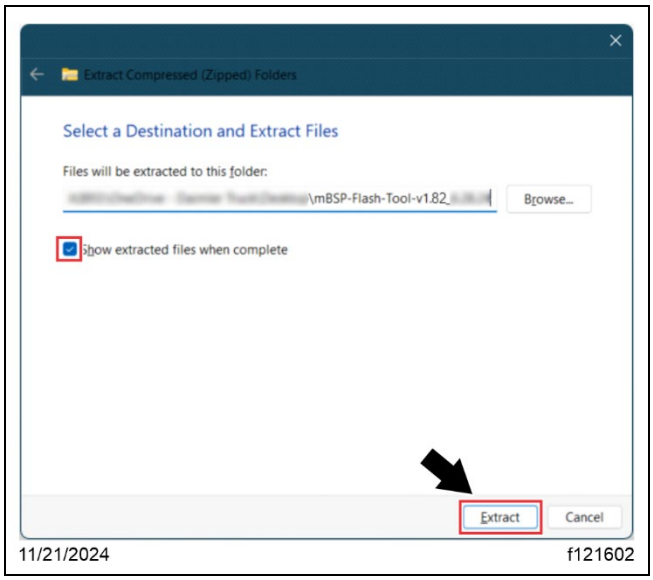


Fig. 26, Extract Compressed Folders Window

6.3. A new File Explorer window opens. Double-click to open the ‘mBSP-Flash-Tool-v1.85’ folder. See **Fig. 27**

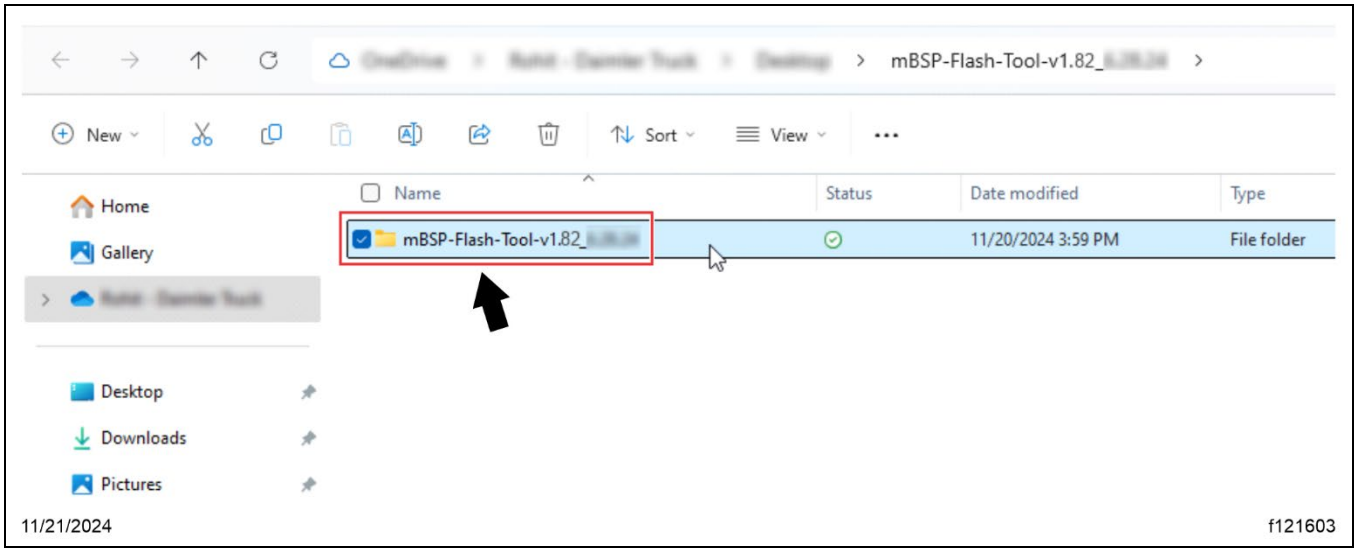


Fig. 27, Extracted Folder

7. Install the mBSP Flash Tool.

7.1. Double-click to run the ‘mbspflashtool300en185.exe (or later)’ application file. See **Fig. 28**.

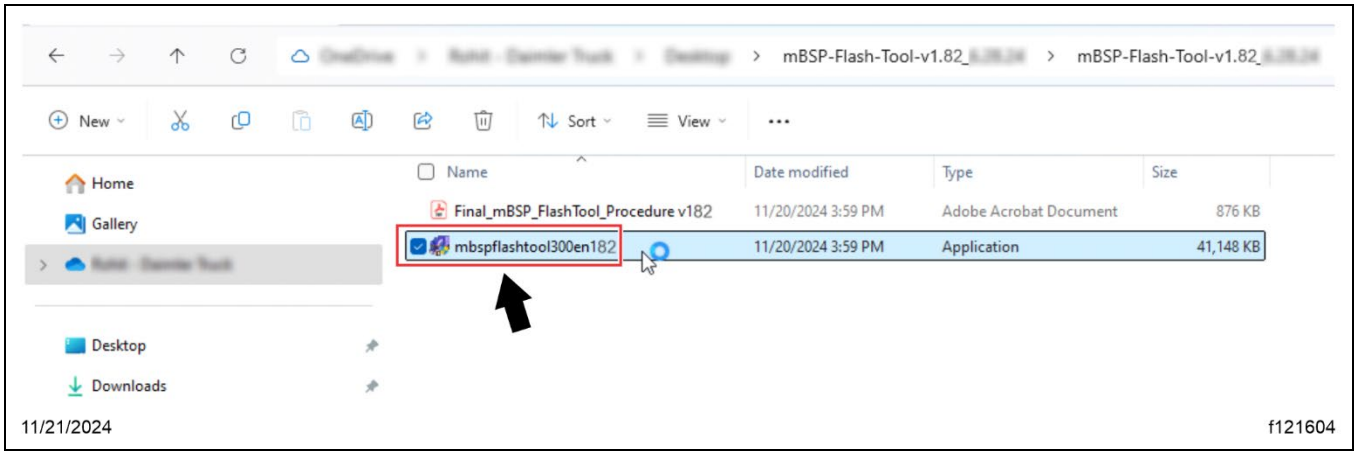


Fig. 28, Launching the Application File

7.2. The ‘WinAce v2.5 Self-Extractor...’ window opens. Select ‘Extract.’ See **Fig. 29** and **Fig. 30**.

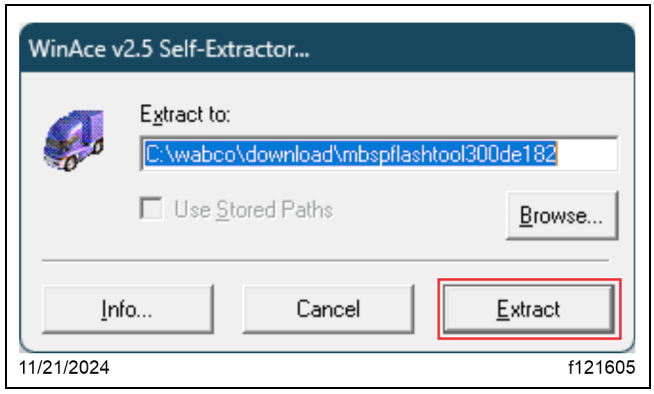


Fig. 29, WinAce v2.5 Self-Extractor Window

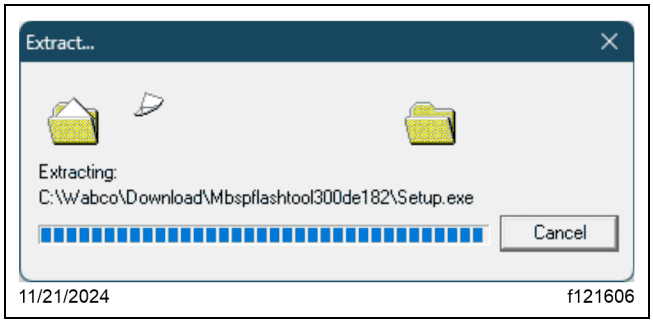


Fig. 30, Extracting the Setup File

7.3. Once the extraction is complete, a ‘Confirmation’ window pops up asking to launch the ‘Setup.exe;’ select ‘Yes.’ See **Fig. 31**.

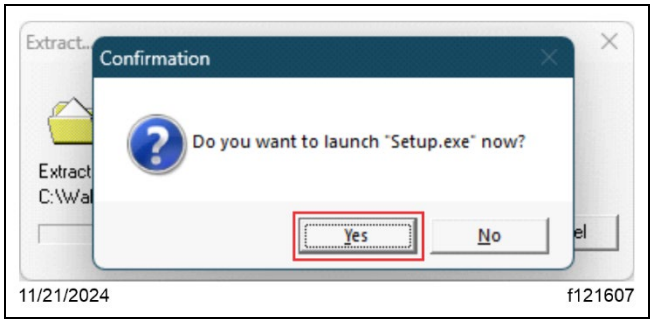


Fig. 31, Launching the Setup.exe File

7.4. In the ‘Select Setup Language’ window, choose ‘English’ and select ‘OK.’ See **Fig. 32**.

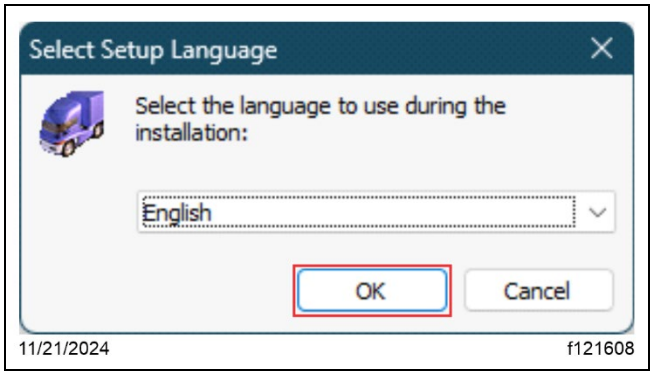


Fig. 32, Selecting the Setup Language

7.5. The ‘Setup - mBSP Flash Tool v1.85 (or later)’ window opens. Select ‘Next’ to continue the setup. See **Fig. 33**.

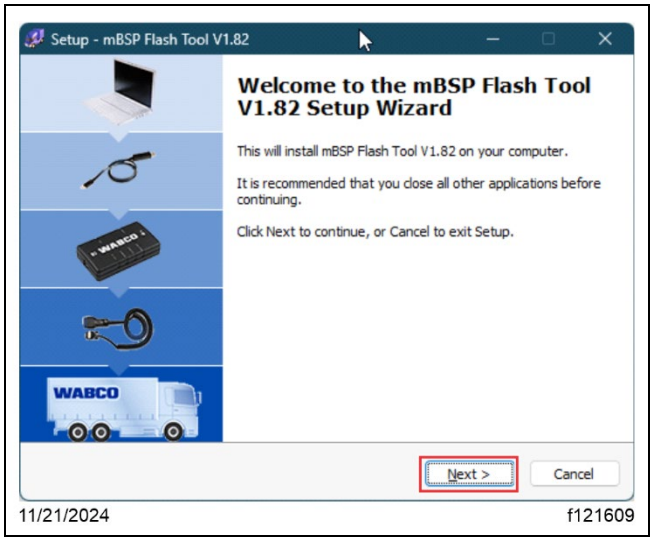


Fig. 33, mBSP Flash Tool Setup Wizard

7.6. On the ‘License Agreement’ screen, select the radio button next to ‘I accept the agreement,’ then select ‘Next.’ See **Fig. 34**.

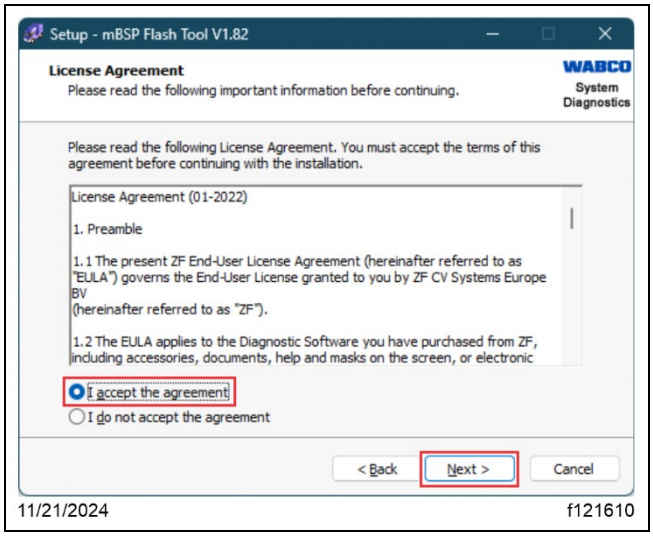


Fig. 34, License Agreement

7.7. On the ‘Information’ screen, read the important information, then select ‘Next.’ See **Fig. 35**.

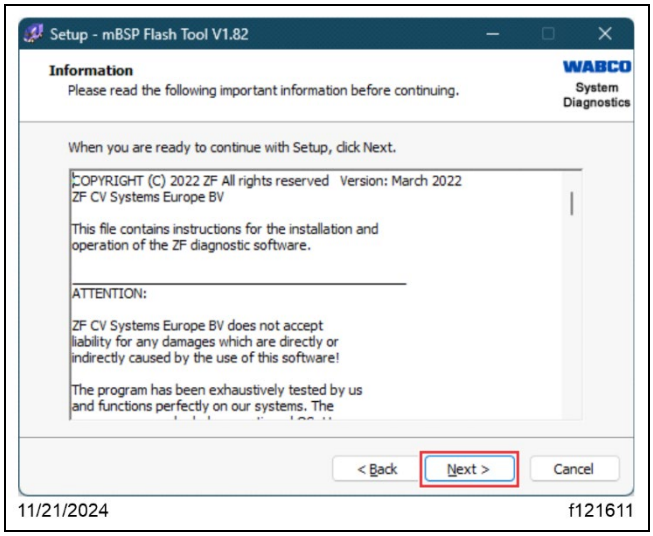


Fig. 35, Reading the Important Information

7.8. On the ‘Select Destination Location’ screen, verify the destination folder, then select ‘Next.’ See **Fig. 36**.

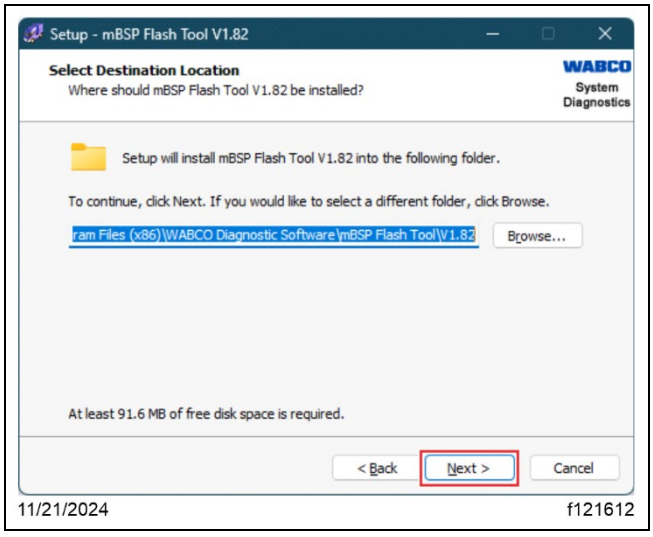


Fig. 36, Selecting the Destination Location

7.9. On the ‘Select Start Menu Folder’ screen, select ‘Next.’ See **Fig. 37**.

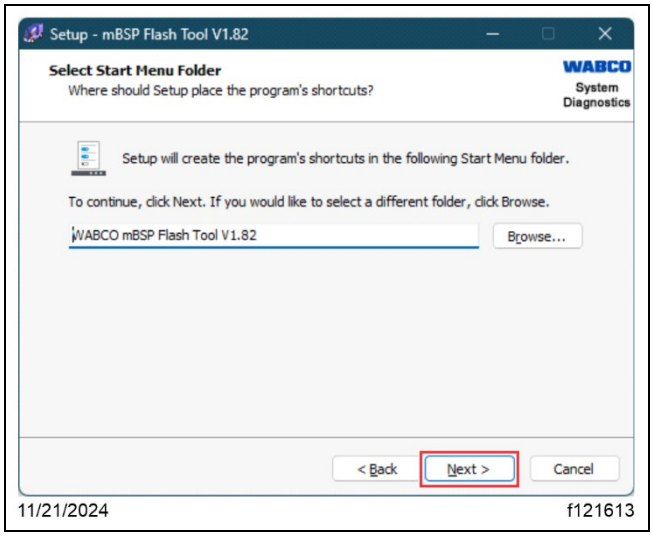


Fig. 37, Selecting the Start Menu Folder

7.10. On the ‘Select Additional Tasks’ screen, select the checkbox next to ‘Create a desktop shortcut,’ then select ‘Next.’ See **Fig. 38**.

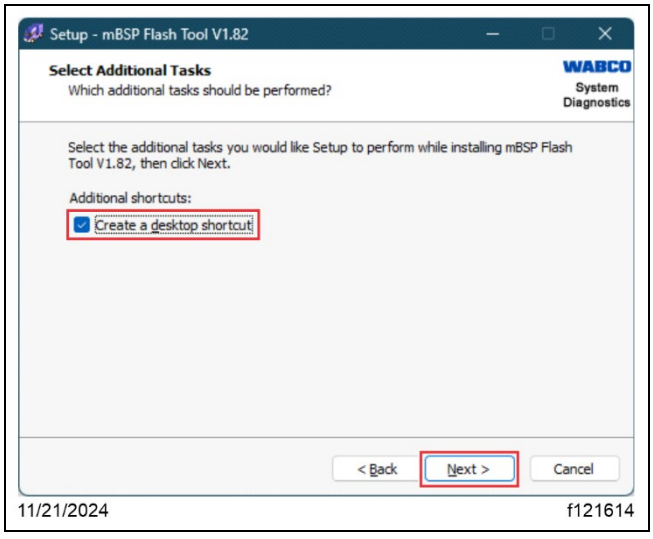


Fig. 38, Creating a Desktop Shortcut

7.11. On the ‘Ready to Install’ screen, select ‘Install’ to continue with the installation. See **Fig. 39**.

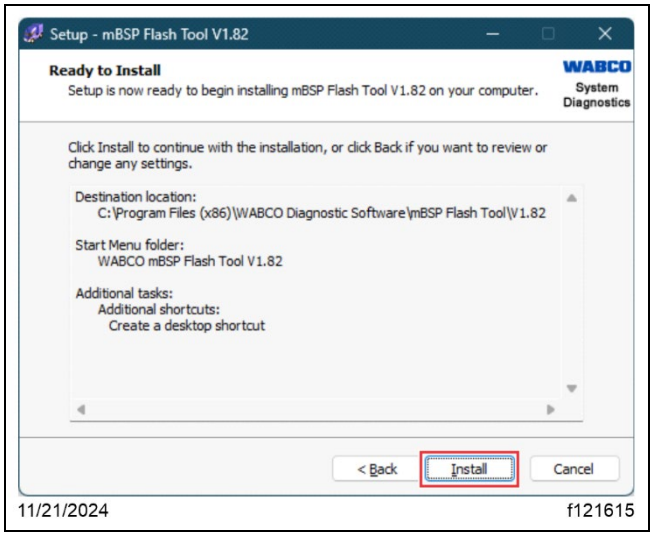


Fig. 39, Starting the Installation

7.12. If a ‘Preparing to Install’ screen appears stating that the files that need to be updated are being used by another application, select the radio button next to ‘Automatically close the applications,’ then select ‘Next.’

7.13. A new Setup window opens for installation of ‘WABCO USB devices v3.30.’ Select ‘Next’ to continue. See **Fig. 40**.

Fig. 40, WABCO USB Devices Setup Wizard

7.14. On the 'Choose Install Location' screen, verify the destination folder, then select 'Install.' See **Fig. 41**.

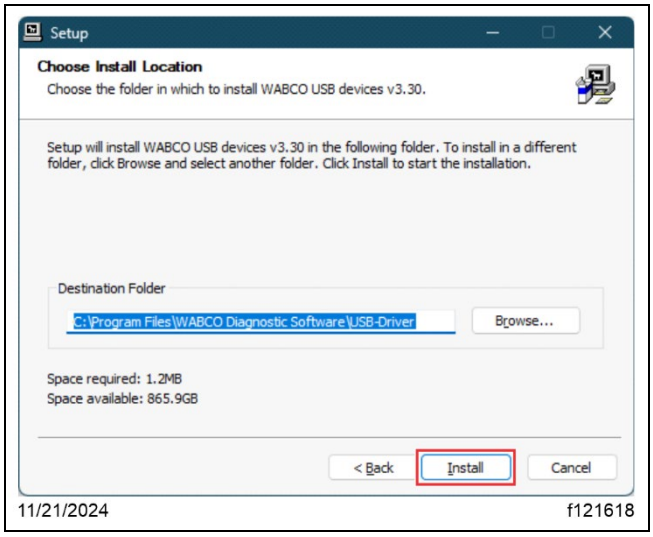


Fig. 41, Choosing the Install Location

7.15. The 'Installation Complete' screen appears once the setup if completed successfully. Select 'Next' to continue. See **Fig. 42**.

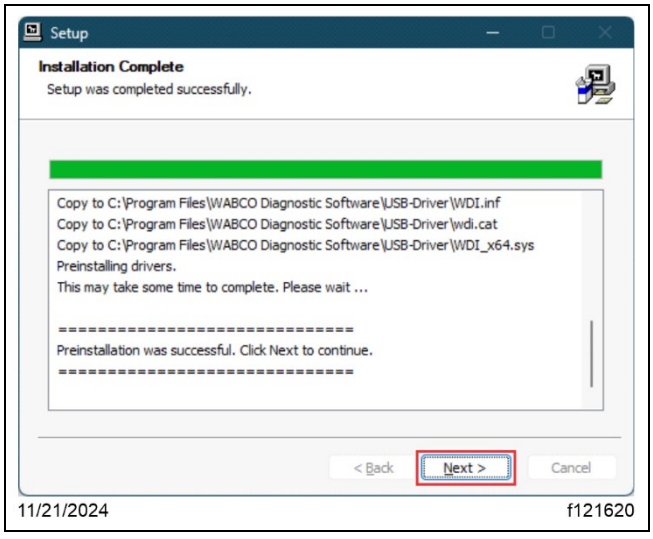


Fig. 42, Installation Complete

7.16. Select ‘Finish’ to complete the WABCO USB v3.30 setup wizard. See **Fig. 43**.

Fig. 43, Completing the WABCO USB Devices Setup Wizard

7.17. A ‘Setup’ window appears, select ‘Yes.’ See **Fig. 44**.

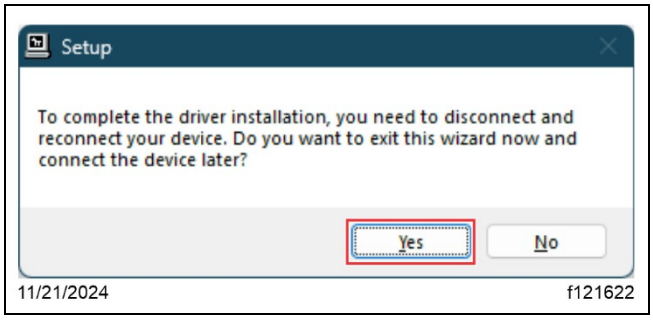


Fig. 44, Completing the Driver Installation

7.18. Select ‘Finish’ to complete the mBSP Flash Tool V1.82 setup wizard. See **Fig. 45**.

Fig. 45, Completing the mBSP Flash Tool Setup Wizard

NOTICE: Before connecting the laptop to the vehicle, disconnect the laptop from the internet, and close all other software, if running. Make sure the laptop DOES NOT enter sleep mode during the process of software update, by verifying the sleep mode settings. If the laptop enters into sleep mode during the process of software update, the download will fail, and the ABS ECU software may not be recovered, resulting in the replacement of the ABS ECU, or shipping it to WABCO for repair.

8. Turn the keyswitch to the ON position.

NOTICE: Ensure the cable is in good condition prior to connecting the laptop to the vehicle. A cable in poor condition may cause the repair to fail, which would result in the replacement of the ABS ECU.

IMPORTANT:

- The vehicle battery voltage must remain at 12.4 volts or above during programming. To ensure good battery voltage during programming, it is recommended to connect an appropriate battery charger to the vehicle batteries.
- Verify that the selected RP1210B-compliant vehicle diagnostic adaptor is updated to the latest driver software. Using an adaptor equipped with an outdated software version may result in update failure.

9. With the mBSP Flash Tool software CLOSED, connect an RP1210B-compliant vehicle diagnostic adaptor to the 9-pin diagnostic connector on the vehicle. If the mBSP Flash Tool software is running, close it before connecting the adaptor. No other diagnostic program should be running on the laptop (ToolBox, DiagnosticLink, etc.).

NOTE: For vehicles configured as 6x4 or 6x2 with updated front SMVs (472 169 051 0), after the flash tool steps are complete, brake performance monitoring (BPM) needs to be disabled in the WABCO TOOLBOX application when prompted in the future steps.

IMPORTANT: mBSP Flash Tool v1.85 (or later) can only be used on 2-pin connector ECUs if the vehicle is a 6x4 or 6x2. If the vehicle is neither a 6x4 nor 6x2, a 2-pin connector ECU cannot be flashed and may damage the ECU. The vehicle must have the correct ABS ECU part number as listed in **Table 9** in step 2 (on page 19).

10. Double-click the ‘mBSP Flash Tool V1.85’ shortcut on the desktop to launch the application. See **Fig. 46**.

Fig. 46, mBSP Flash Tool Desktop Shortcut

11. Select ‘Yes’ to accept the warning reminding of any preconditions that must be adhered to. See **Fig. 47**.

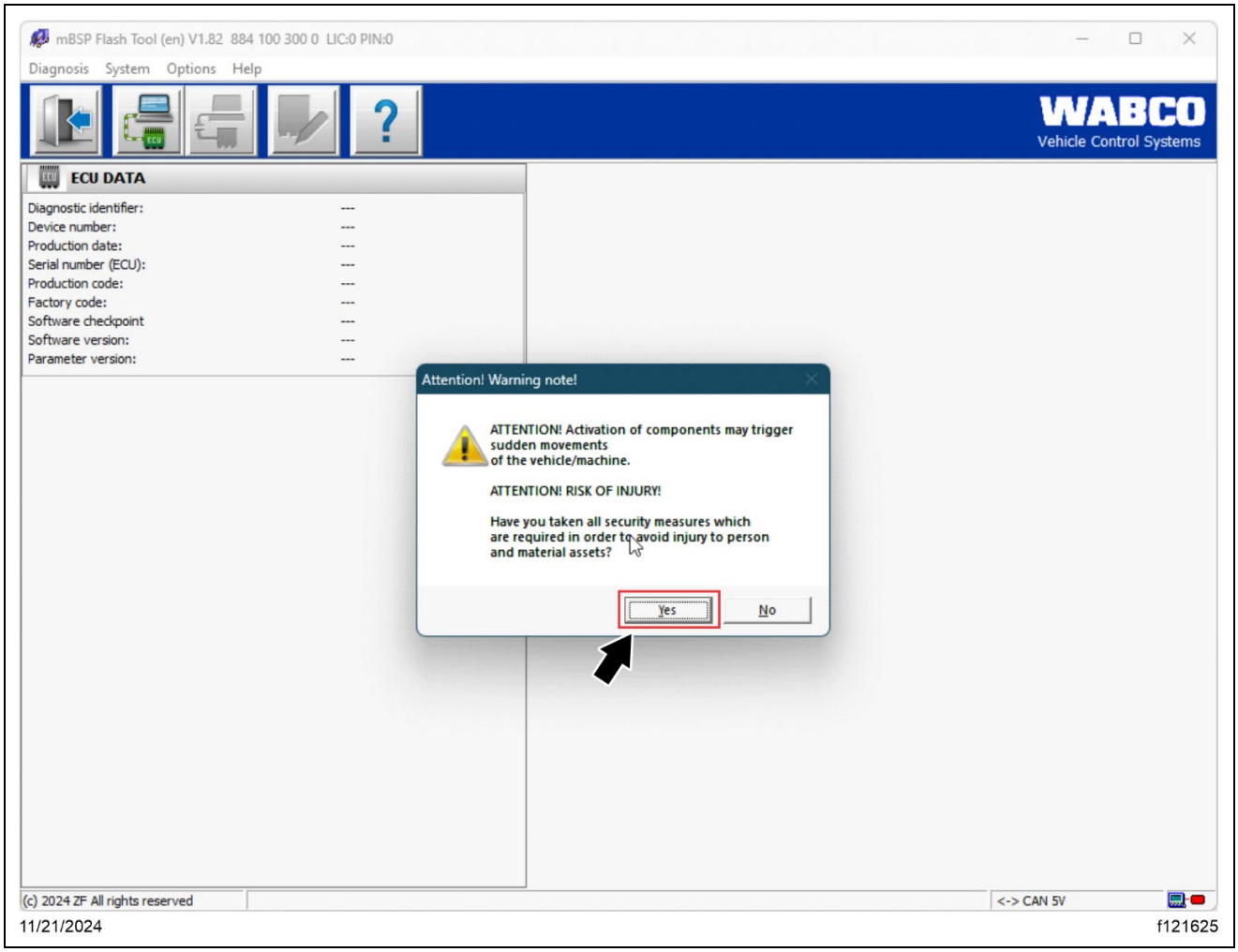


Fig. 47, Accepting the Warning

NOTE: Ensure version 1.85 (or later) of the mBSP Flash Tool is being used. Incorrect software versions may result in errors and increased vehicle downtime. If any other version is present, the software needs to be removed and installed again, starting over from step 5 (on page 20).

12. If the ECU does not automatically connect, select the button, shown in **Fig. 48**, to initialize the ECU and switch to diagnostic mode.

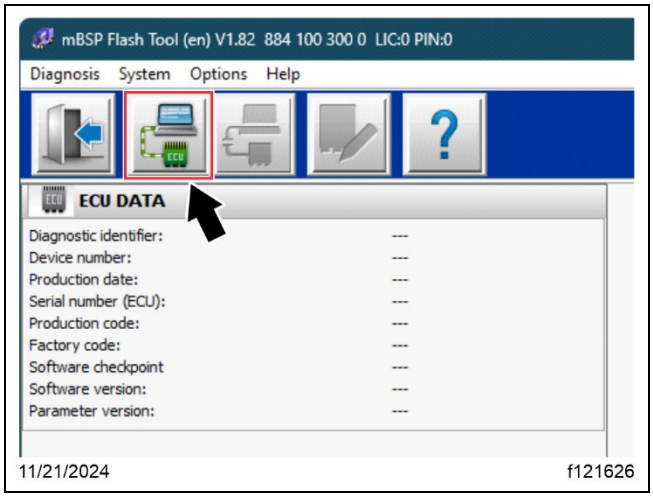


Fig. 48, Initializing the ECU and Switching to Diagnostic Mode

IMPORTANT: The ECU may not connect automatically due to wrong adaptor settings. To make sure the correct adaptor settings are selected, go to ‘Options,’ ‘Settings,’ then ‘Change port.’

13. A window will now open, requesting the chassis number to be entered. The chassis number is the last six characters of the VIN that consists of two letters followed by four numbers (also known as serial number). Enter the vehicle chassis number. See **Fig. 49**.

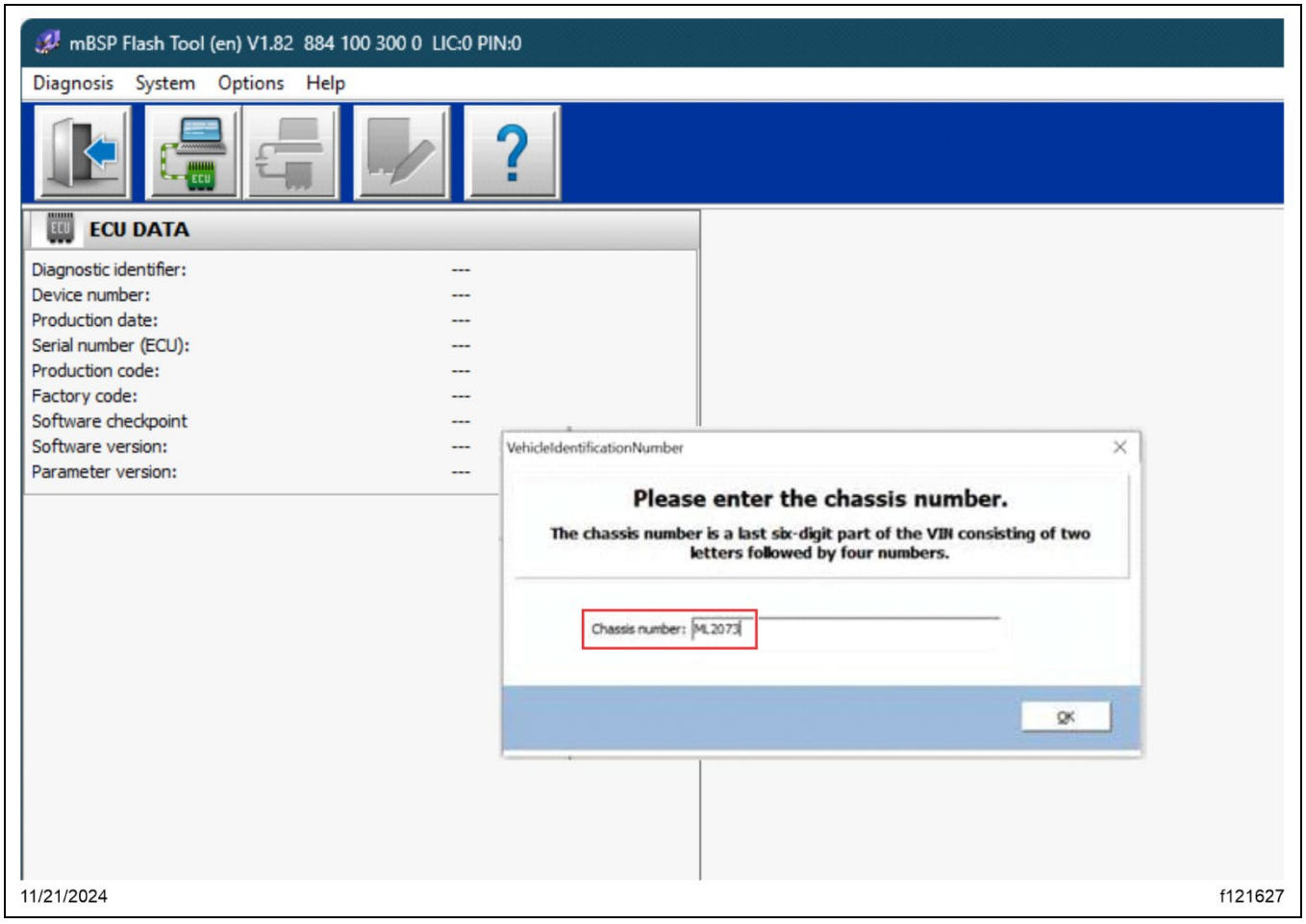


Fig. 49, Entering the Chassis Number

14. Select the ‘ECU software update’ button to begin the ECU update. See **Fig. 50**.

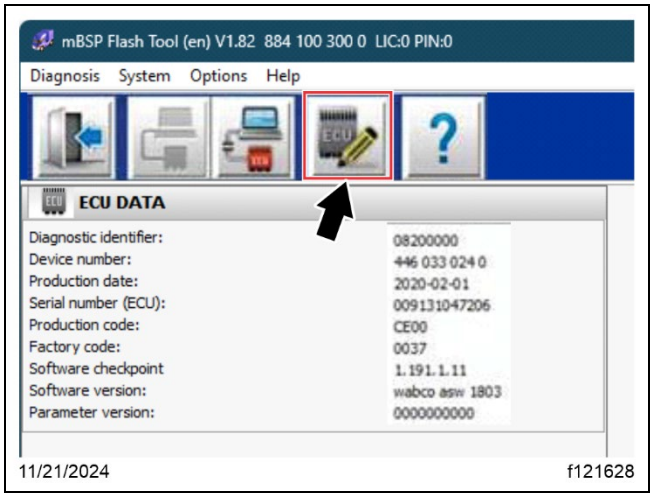


Fig. 50, Beginning the ECU Update

15. In the ‘ECU update’ window, select the ‘Write to ECU’ button to begin the ECU update. Note that pressing the ‘OK’ button cancels the flash tool process. See **Fig. 51**.

    The update may take several minutes (approximately 30 minutes). Do not disconnect the vehicle, turn the key to the OFF position, or allow the laptop to go to sleep during this process.

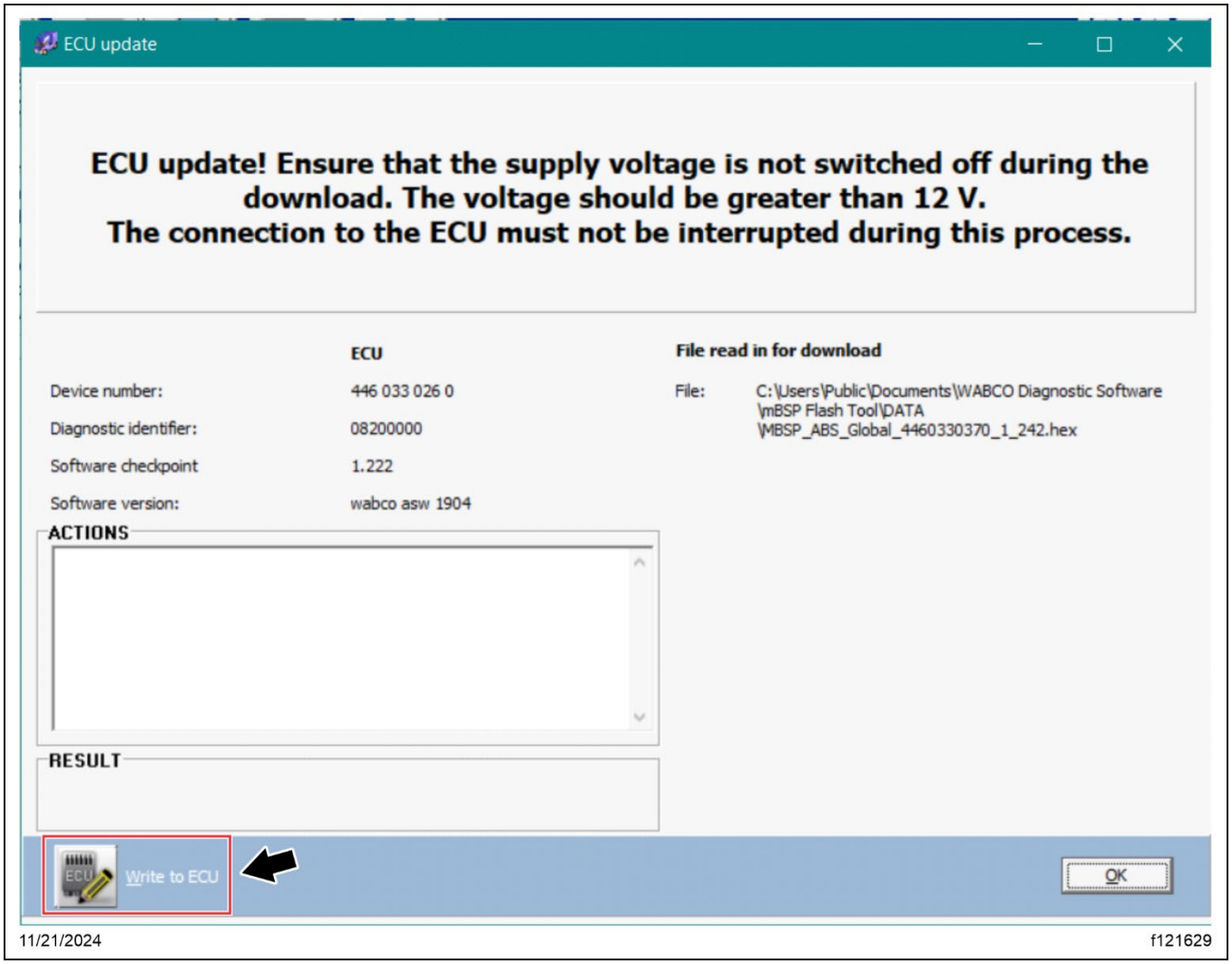


Fig. 51, Selecting the Write to ECU Button

16. If the vehicle is a 6x4 or 6x2, the GUI selection window pops up after selecting the 'Write to ECU' button. A selection must be made to continue flashing the ECU. See **Fig. 52**.

    If the vehicle is not a 6x4 or 6x2 and has a 3-pin connector, the brake chamber or tank size selection is not required. Go to step 17, on page 41.

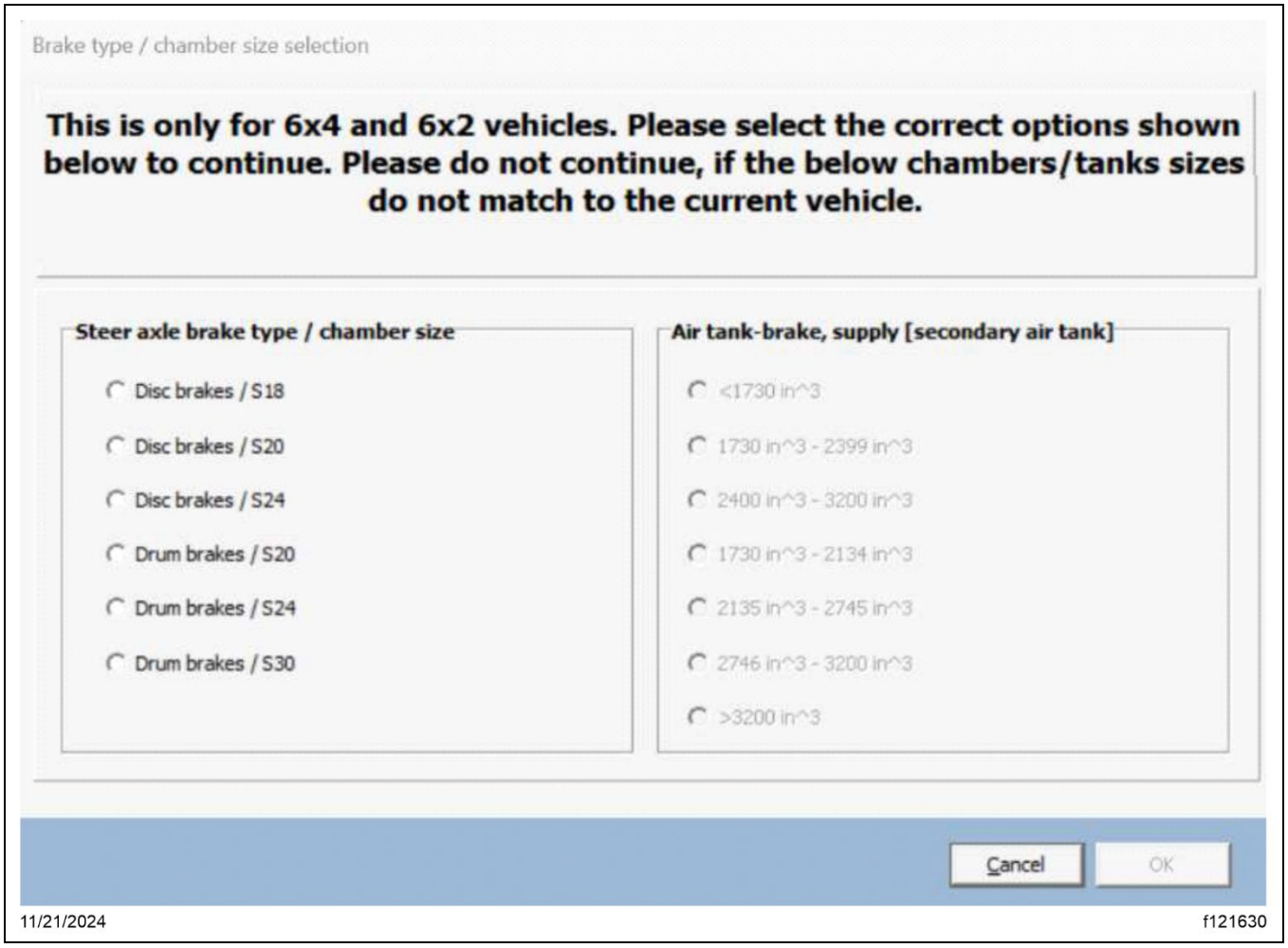
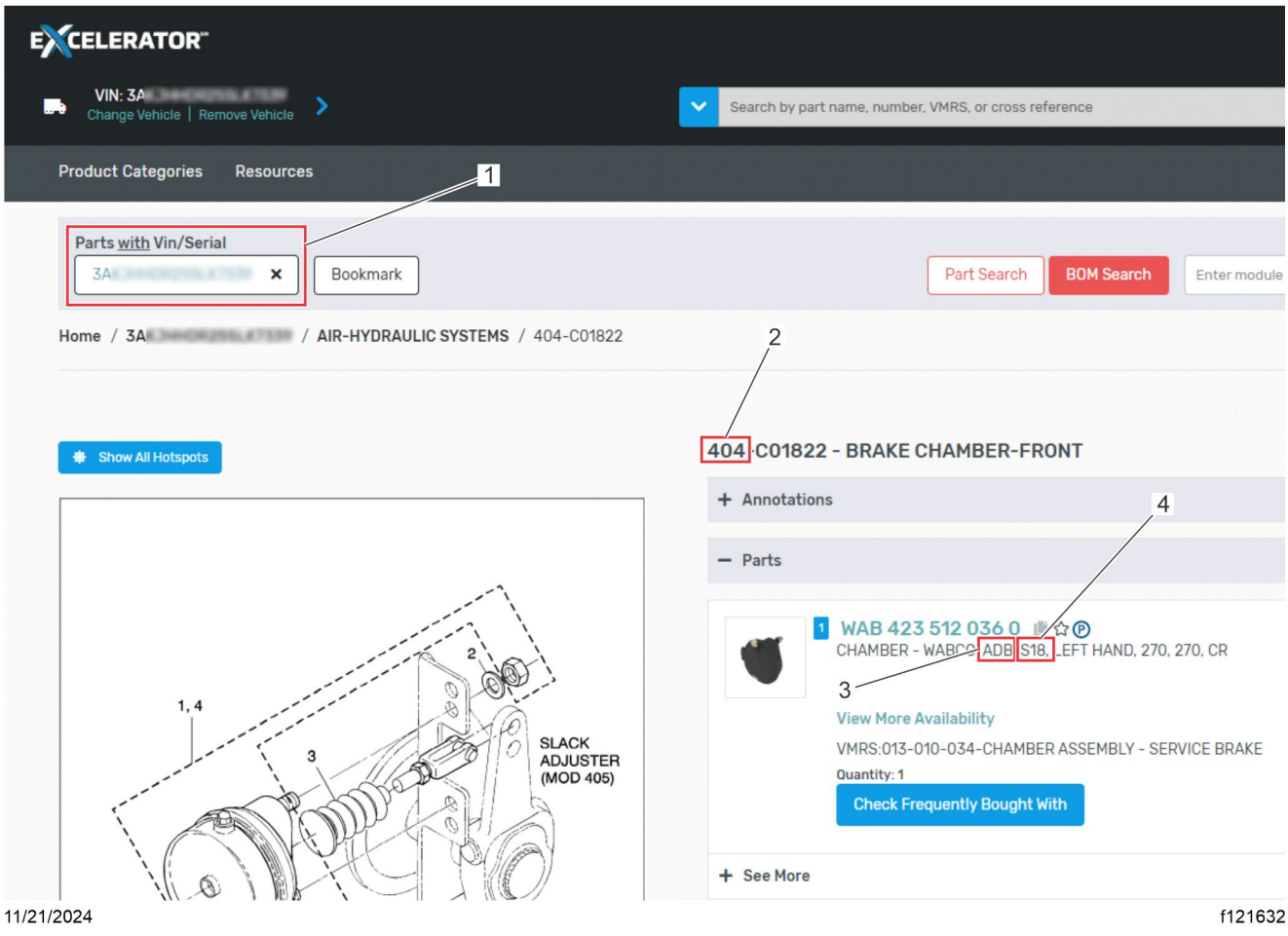


Fig. 52, GUI Selection Window

16.1. For brake chamber type and size, search module ‘404.’ For tank size, search module ‘459’ and ‘462.’ Add the volumes shown for both modules to get the correct tank size. The correct chamber and tank sizes must be entered for the flash tool to match the update to the ABS ECU of the vehicle. If there is no content in module 462, only take the volume from module 459. See **Fig. 53**, **Fig. 54**, and **Fig. 55**.

16.2. Incorrect chamber and tank size selection could result in ECU programming errors that may not be reversible. If more time is needed to determine the selection, select the ‘Cancel’ button to end the flash tool process. On selecting the ‘Cancel’ button, flashing will not occur, and the flash tool program will need to be restarted, starting over from step 10 (on page 32).

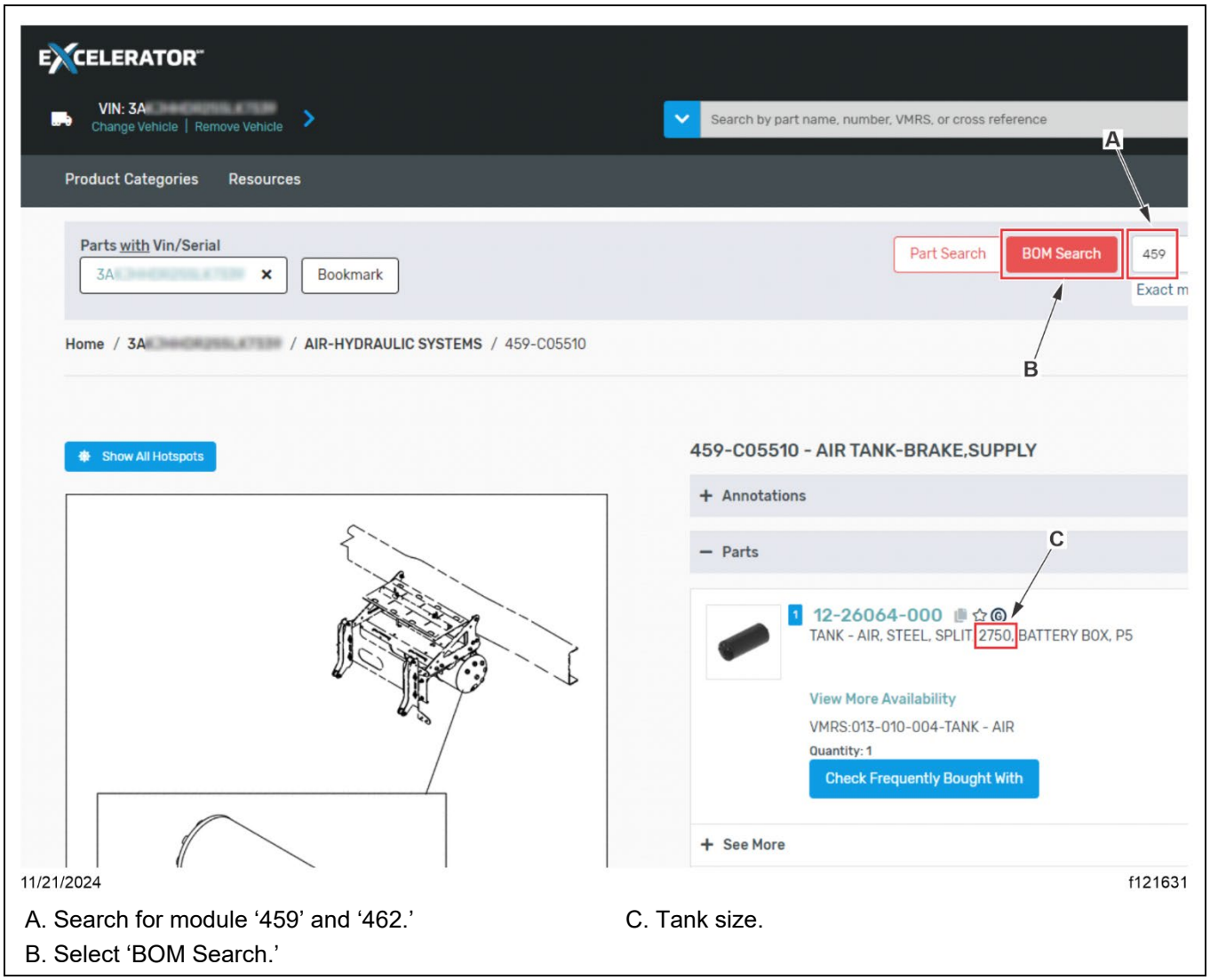


1. VIN
2. Module
3. Advanced Disc Brakes
4. Chamber Size

Fig. 53, Example of a Brake Chamber Size Search

FL966 A-G

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**



A. Search for module '459' and '462.'
B. Select 'BOM Search.'
C. Tank size.

Fig. 54, Example of a Tank Size Search

FL966 A-G

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**

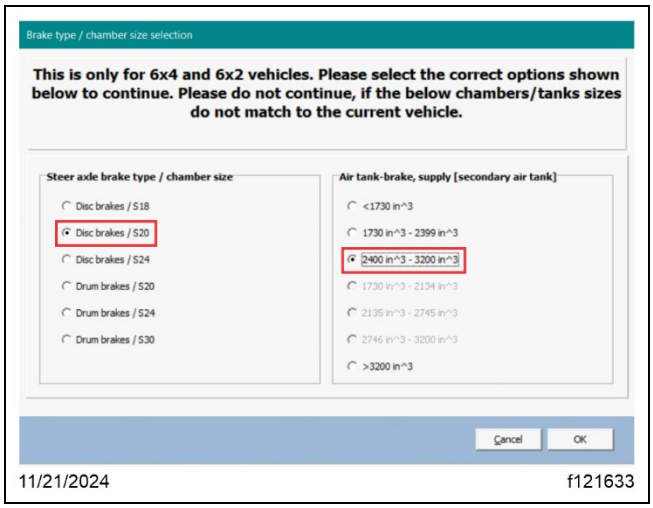


Fig. 55, GUI Selection Completed

17. When the flash tool completes a successful ECU update, an error message is displayed advising that ABS fault codes will be present requiring an ESC Calibration procedure. Select 'OK' and close the flash tool application. In some cases, the flash tool may show an error message, lock up, or close unexpectedly. Follow the substeps to verify the flash tool update has been successfully written to the ABS ECU. See **Fig. 56**.

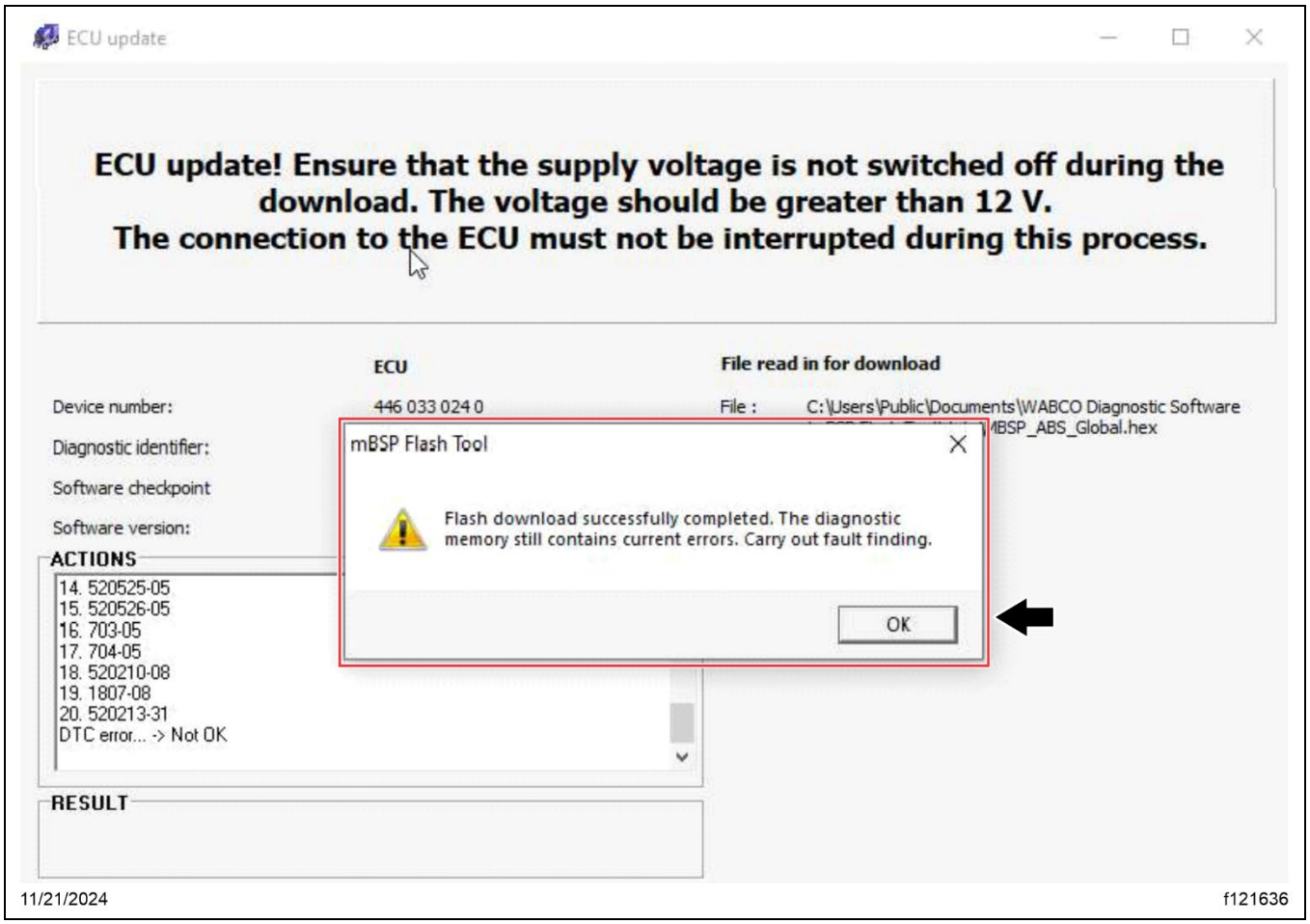


Fig. 56, ECU Update Successful

17.1. Perform a key cycle that completes a vehicle ECU sleep cycle to save the flash tool updated data.

17.2. Go to 'Task Manager' on the computer and make sure the flash tool application is closed. Select 'mBSP Flash Tool,' then select the 'End Task' button. See **Fig. 57**.

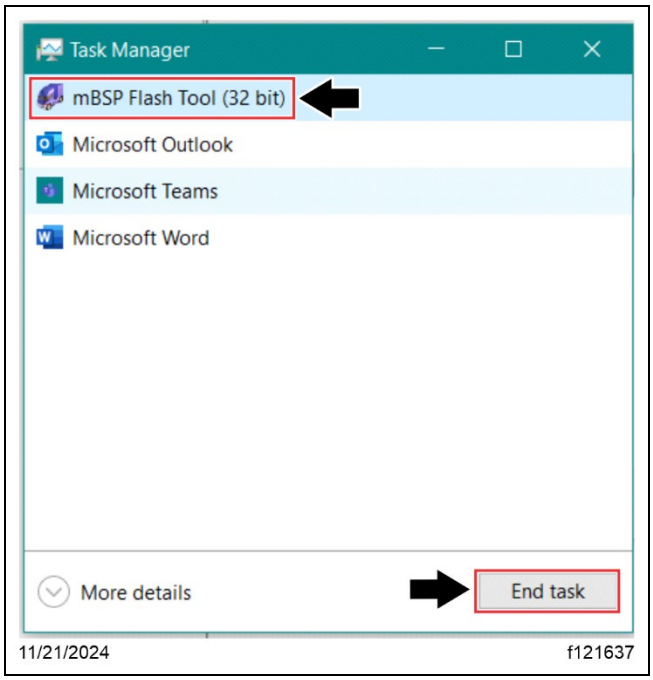


Fig. 57, Task Manager

17.3. Open DiagnosticLink(DL) latest version (8.21 sp1 at time of publication). In order for DL to receive the latest 'cbf' files related to this Recall DL must 'Connect to Server' (via 'Program Device' or 'Tools/Update'). Once DL is connected to server, go to the 'Identification' tab. Navigate to ABS02T - Antilock Braking System, and verify the 'Software Version' is '24.32.0.' See **Fig. 58**.

NOTE: The latest version of DiagnosticLink(v8.21 sp1 or later) is required in order to receive the updated 'cbf' related to this software update. Attempting to use older versions of DiagnosticLink(DL) will create error messages and fault codes. DiagnosticLink (DL) must be updated before checking 'Software Version'.

Creation Date:	**October 2023**
Revised Date:	**January 2025**
NHTSA #	**23V-073**
Transport Canada #	**2023-051**

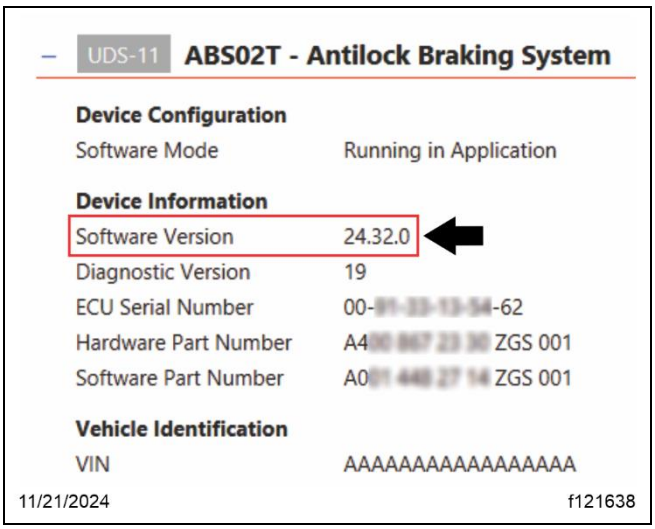


Fig. 58, ABS ECU Software Version

17.4. In DiagnosticLink, go to the 'Fault Codes' tab. Select and expand the ABS02T - Antilock Braking System folder, verify the active fault is '520213/31 ESC-Calibration Procedure', and make sure no other faults exist. See **Fig. 59**.

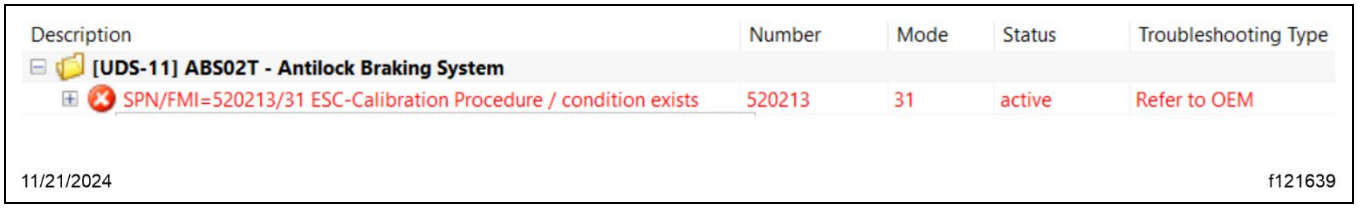


Fig. 59, Active Fault Code

17.5. If the ABS02T software version is '24.32.0,' and only fault code '520213/31' is active, proceed to step 18.

17.6. If the ABS02T software version is anything other than '24.32.0,' AND/OR if any fault codes other than '520213/31' are active, follow the sub-substeps.

17.6.1. Perform the vehicle 'hard reset' by turning off the battery disconnect switch or removing the vehicle battery negative terminals for about one minute.

17.6.2. Reboot the computer and restart DiagnosticLink. Verify the ABS02T software version is '24.32.0,' and only Fault Code '520213/31' is active.

17.6.3. If ABS02T software version is not '24.32.0,' close DiagnosticLink. Verify the flash tool version is v1.85, and run the flash tool again. If issues continue, call Wabco at 1-855-228-3203.

17.6.4. If the ABS02T software version is '24.32.0,' and only fault code '520213/31' is active, proceed to step 18.

NOTE: For issues regarding the flash tool downloading and installation process, call WABCO at 1-855-228-3203 or email wnacustomercare@wabco-auto.com.

NOTE: ESC calibration is required after the flashing process is complete.

18. The ABS ECU is now in the ESC calibration mode. Use either WABCO TOOLBOX or DiagnosticLink to perform the ESC Calibration procedure. Complete the driving portion of the End of Line (EOL) procedure. After approximately 100 yards of straight-line driving and then a 90- to 180-degree turn is recorded by the ABS ECU, the stability lamp on the dash will turn off. See **Fig. 60**.

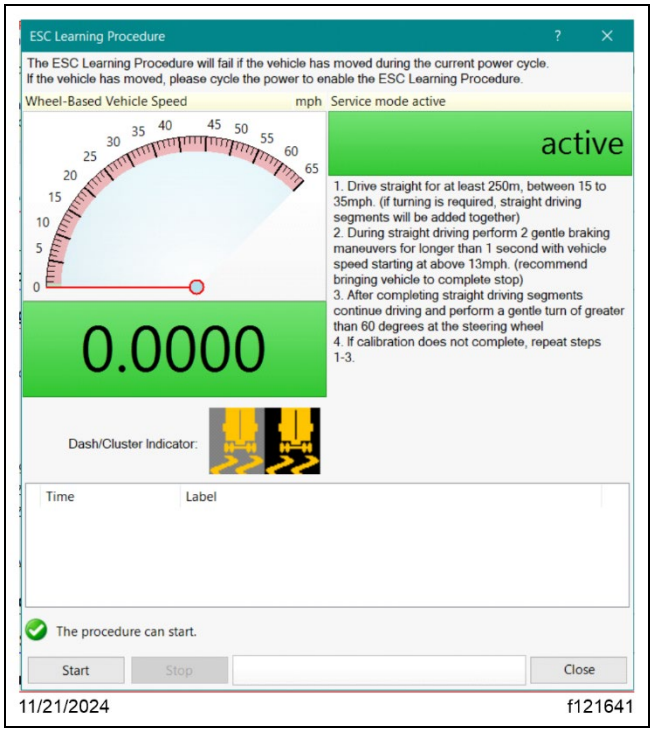


Fig. 60, ESC Calibration in DiagnosticLink

19. Perform a key cycle that completes the vehicle sleep cycle to save the calibration data.

NOTE: After completing the update, while the vehicle is parked with the engine running, an occasional air chuffing from the front modulator and/or the front relay valves may be noticed. This is normal as the system tests the valves and it will not happen while driving.

20. Save a parameter file from the ECU as proof that the parameter update has been successfully completed, and add it to the vehicle repair order. This can be done in WABCO TOOLBOX. Launch the TOOLBOX software and select 'Pneumatic ABS/EBS.' See **Fig. 61**.

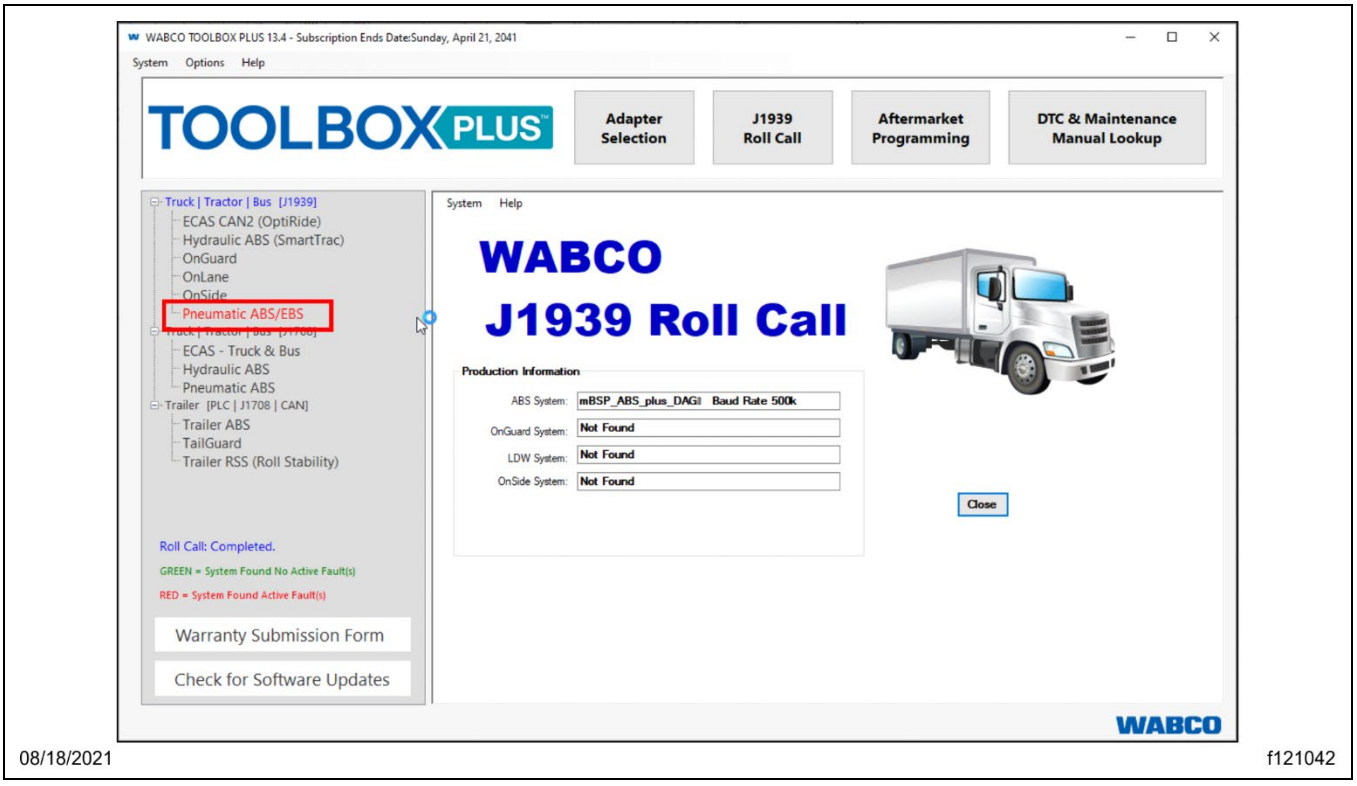


Fig. 61, WABCO TOOLBOX Window

21. From the menu bar, go to ‘Options’ and select ‘Save Parameters to File.’ See **Fig. 62**.

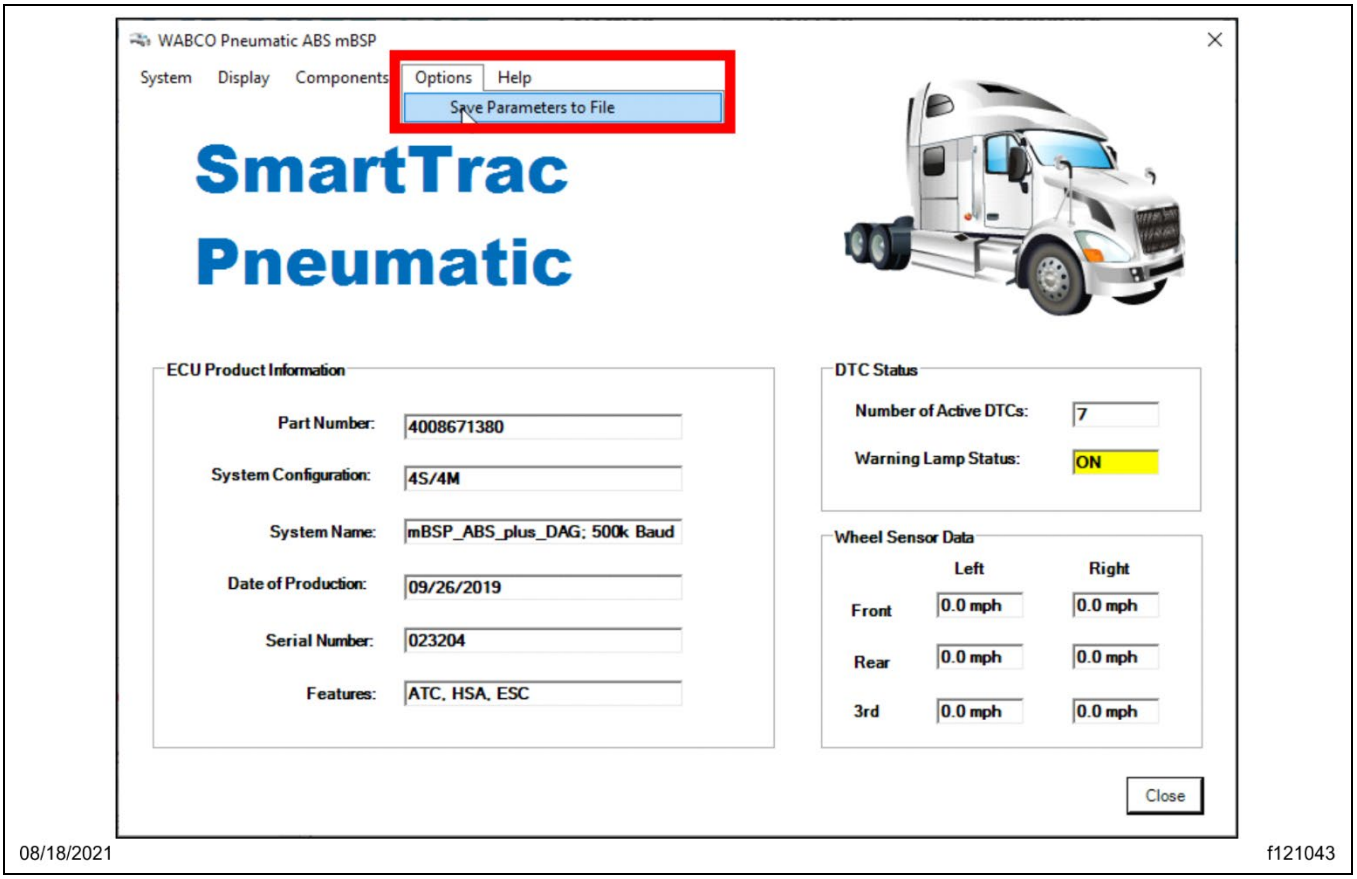


Fig. 62, Choosing the Save Location

22. If the BPM fault (SPN795/FMI13) is detected at any time during or after the software installation or during ESC Driving Calibration process, call WABCO at 1-855-228-3203 or email wnacustomercare@wabco-auto.com for fault code troubleshooting assistance.

23. The ABS ECU update is now complete. Verify that no faults are present, and the ABS ECU part numbers have been updated as listed in **Table 10**.

Table 10 – ABS ECU Part Number Changes

Original Part Number		New Part Number	Original Part Number		New Part Number	Original Part Number		New Part Number	Original Part Number		New Part Number
400 864 801 0	>>	400 864 846 0	400 864 832 0	>>	400 864 867 0	400 867 103 0	>>	400 867 190 0	400 867 133 0	>>	400 867 233 0
400 864 802 0	>>	400 864 847 0	400 864 833 0	>>	400 864 868 0	400 867 104 0	>>	400 867 191 0	400 867 135 0	>>	400 867 230 0
400 864 803 0	>>	400 864 848 0	400 864 834 0	>>	400 864 869 0	400 867 113 0	>>	400 867 192 0	400 867 136 0	>>	400 867 231 0
400 864 804 0	>>	400 864 849 0	400 864 836 0	>>	400 864 866 0	400 867 114 0	>>	400 867 193 0	400 867 137 0	>>	400 867 232 0
400 864 815 0	>>	400 864 866 0	400 864 837 0	>>	400 864 867 0	400 867 115 0	>>	400 867 194 0	400 867 138 0	>>	400 867 233 0
400 864 816 0	>>	400 864 867 0	400 864 838 0	>>	400 864 868 0	400 867 116 0	>>	400 867 195 0	400 867 178 0	>>	400 867 230 0
400 864 817 0	>>	400 864 868 0	400 864 839 0	>>	400 864 869 0	400 867 119 0	>>	400 867 230 0	400 867 179 0	>>	400 867 231 0
400 864 818 0	>>	400 864 869 0	400 864 841 0	>>	400 864 866 0	400 867 120 0	>>	400 867 231 0	400 867 180 0	>>	400 867 232 0
400 864 821 0	>>	400 864 866 0	400 864 842 0	>>	400 864 867 0	400 867 121 0	>>	400 867 232 0	400 867 181 0	>>	400 867 233 0
400 864 822 0	>>	400 864 867 0	400 864 843 0	>>	400 864 868 0	400 867 122 0	>>	400 867 233 0	400 867 183 0	>>	400 867 230 0
400 864 823 0	>>	400 864 868 0	400 864 844 0	>>	400 864 869 0	400 867 125 0	>>	400 867 232 0	400 867 184 0	>>	400 867 231 0
400 864 824 0	>>	400 864 869 0	400 864 859 0	>>	400 864 866 0	400 867 126 0	>>	400 867 233 0	400 867 185 0	>>	400 867 232 0
400 864 825 0	>>	400 864 866 0	400 864 860 0	>>	400 864 867 0	400 867 128 0	>>	400 867 230 0	400 867 186 0	>>	400 867 233 0
400 864 826 0	>>	400 864 867 0	400 864 861 0	>>	400 864 868 0	400 867 129 0	>>	400 867 231 0	400 867 223 0	>>	400 867 230 0
400 864 827 0	>>	400 864 868 0	400 864 862 0	>>	400 864 869 0	400 867 130 0	>>	400 867 230 0	400 867 224 0	>>	400 867 231 0
400 864 828 0	>>	400 864 869 0	400 867 101 0	>>	400 867 188 0	400 867 131 0	>>	400 867 231 0	400 867 225 0	>>	400 867 232 0
400 864 831 0	>>	400 864 866 0	400 867 102 0	>>	400 867 189 0	400 867 132 0	>>	400 867 232 0	400 867 226 0	>>	400 867 233 0

24. Disconnect the RP1210B-compliant vehicle diagnostic adaptor from the 9-pin diagnostic connector on the vehicle.

25. Clean a spot on the base label (Form WAR259), and attach a campaign completion sticker for FL966 (Form WAR260), indicating this work has been completed.