

| | |
|---------------------|--|
| REFERENCE: | Nova Bus Manuals |
| SECTION: | 10: Allison electric drive E ^p -40/50 sytem |
| RS N°: | N/A |
| EFFECTIVE IN PROD.: | N/A |
| TC RECALL N°: | N/A |
| NHTSA RECALL N°: | 20V457 |

APPLICATION DEADLINE: NA
CLAIM REFERENCE NUMBER: SR-4943

| | |
|----------------|--|
| SUBJECT: | Allison electric drive E ^p -40/50 |
| JUSTIFICATION: | Allison Transmission Inc. informed Nova Bus that some pressure switches used in the switch assembly may fracture. This condition may result in a loss of propulsion with no possibility of regaining it. |

| LEVEL | DESCRIPTION | DIRECT CHARGES | | TIME |
|-------|---|----------------|----------|------------|
| | | LABOUR | MATERIAL | |
| 1 | Contact your nearest Allison transmission certified service center. | Allison | Allison | 1,2 to 4 h |
| 2 | — | — | — | — |

MATERIAL

| QTY | PART N° | REV. | DESCRIPTION | REPLACES PART N° |
|---------|---------|------|-------------|------------------|
| LEVEL 1 | | | | |
| — | — | — | — | — |
| LEVEL 2 | | | | |
| — | — | — | — | — |

Materials will be available via the Allison Transmission distribution network.

DISPOSAL OF PARTS

| REMOVED PARTS ARE: | DISCARDED* | RETAINED | * Dispose of the unused parts and the defective parts in accordance with local environmental standards in effect. |
|--------------------|------------|----------|---|
| | Yes | — | |

REVISION HISTORY

| REV. | DATE | CHANGE DESCRIPTION | WRITTEN BY |
|------|----------|--------------------|--------------|
| NR | 2020AU14 | Initial release | Luc Carignan |

| CLIENT | ORDER | ROAD NUMBER | | VIN (2NVY/4RKY...) | | QTY |
|----------------------------------|-------|-------------|------|--------------------|---------------|-----|
| | | FROM | TO | FROM | TO | |
| SEPTA - Pennsylvania | L861 | 7300 | 7484 | S92L5G9775188 | S92L8G9775220 | 32 |
| Duke University - North Carolina | L938 | - | - | L82L8G9775399 | L82L0G9775400 | 2 |

**WARNING**

FOLLOW YOUR INTERNAL SAFETY PROCEDURES.

PROCEDURE

- 1.1. Contact your nearest Allison Transmission Inc. certified service center to have the requirement of this recall campaign done to your vehicles.

**NOTE**

Allison Transmission Inc. has provided the manufacturer defect notice and work instruction included in this document. Nova Bus cannot be held responsible under any circumstances for the content of this procedure.



***** IMPORTANT SAFETY RECALL *****
NHTSA Recall No. 20E049

This notice applies to your [ENTER NAME] set:

| Drive Unit Serial Number | Bus Manufacturer | Bus Vehicle Identification Number (VIN) |
|--------------------------|------------------|---|
| XXXXXXXXXX | XXXXXXXXXX | XXXXXXXXXXXXXXXXXX |

August XX, 2020

Customer
XXXX CENTRAL AVE
ALBANY NY 12205-2457

Dear Allison Transmission Customer:

This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.

Allison Transmission Inc. (ATI) has decided that a defect which relates to motor vehicle safety exists in certain H 40/50 EP Drive Units™ manufactured between January 4, 2016 and December 22, 2016. Our records indicate that your Allison drive unit(s) listed above is (are) affected. This recall expands the scope of a previously announced campaign, NHTSA Recall No. 18E085, to address the same concern. The drive units listed above are in addition to units shipped to you that may have been covered by Recall No. 18E085.

WHY IS A RECALL BEING CONDUCTED?

Due to an out-of-specification material condition at the pressure switch supplier, the plastic molding used in the switch assembly may fracture. This condition may result in a failure of the pressure switch in either an open or closed state, triggering a diagnostic trouble code. In some circumstances, switch failures in the closed position can potentially disable propulsion at any time during a drive cycle without the ability to regain propulsion, presenting an increased risk of a vehicle accident and/or risk related to offloading passengers in the roadway.

WHAT ARE WE DOING ABOUT THE PROBLEM?

ATI's authorized service network will be utilized to replace the C1 and C2 pressure switches used in each affected drive unit at no charge (parts and labor). ATI expects the repair time to range from 1.2 to 4.0 hours, excluding vehicle and shop logistics. [SHOULD WE REFER TO THE TSB?]

WHAT SHOULD YOU DO?

Contact the nearest authorized Allison service outlet to arrange to have this campaign performed on your drive unit. The service outlet will work with you to schedule the best date to complete this repair.

Federal law requires vehicle lessors receiving this recall notice to forward a copy of this notice to the lessee within ten (10) days. Also, it is a violation of Federal law for a dealer to deliver a new vehicle or equipment covered by this recall notice under a sale or lease until the defect has been remedied.

QUESTIONS OR CONCERNS?

If you have questions or concerns about this recall, please contact your local Allison Authorized facility. You may also contact Allison's TAC at (800) 252-5ATD (5283).

If you have a complaint relative to this recall, you may report it to the following:

Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

You may also call the toll-free Vehicle Safety Hotline at 1-888-327-4236 (TTY: 1-800-424-9153); or go to <http://www.safercar.gov>.

If you are no longer the owner of the vehicle(s) listed above, please forward this notice to the new owner or provide the new owner's contact information to Allison's TAC at the number above so that we can notify the new owner of this recall.

Allison is taking this action in the interest of safety and satisfaction with our products. We apologize for any inconvenience and thank you for your attention to this matter.

Sincerely,

Campaign Administrator
Allison Transmission Inc.

FA

FIELD ACTION LETTER



Revisions to this document are noted
by a stripe in the left-hand margin

2018FA07, Rev. C
July 17, 2020
Page 1 of 9

SUBJECT: H 40/50 EP™ Drive Unit C1/C2 Pressure Switch

MODELS AFFECTED: H 40/50 EP™ Drive Unit

Introduction:

Allison Transmission, Inc. (ATI) has identified an issue with the pressure switch (P/N 29506484) used in a specific population of H 40/50 EP™ Drive Units. The Drive Units, within the serial number range specified below, were built with pressure switches that can fail in an either open or closed state. The failure can cause diagnostic trouble codes (DTCs) to set which may disable the corresponding clutch, locking the Drive Unit into the unaffected range with reduced performance, or disable propulsion. Additionally, a subset population of Drive Units within the same serial number range may have debris in valve bodies or internal passages that could prevent proper valve operation. The purpose of this Field Action is to proactively replace the two (2) pressure switches used in each of the affected Drive Units, and inspect and remove debris in the subset population according to the procedure included in this Field Action.

Prior to working on vehicles, please read SIL 21-TR-18, Defective Normally Open Pressure Switch P/N 29506484, for parts information. All replacement pressure switches installed in the affected Drive Unit serial number ranges must be stamped with a date code of 1918 or later.

Serial Number Range:

The serial number range included in this Field Action is 7110008473 through 7110009446. All serial numbers in this range will require the two (2) pressure switches to be replaced.

The serial numbers of the subset population requiring the additional debris inspection and removal are 7110009294 through 7110009445.

Repair Process Overview:

All buses equipped with a Drive Unit serial number 7110008473 through 7110009446 will need to have the oil drained into a clean container for reuse. The oil pan will be removed and the two (2) pressure switches replaced. Refer to Allison Electric Drives Service Manual SM3602 Section 5-12 for pan removal and Section 6-15, C1/C2 Relay Valve Body, for switch replacement.

For buses equipped with a Drive Unit serial number 7110009293 through 7110009445, valve bodies will need removed, inspected for debris, and compressed air blown through the C1 and C2 pressure taps in the rear cover to remove any potential debris, followed by pressure switch replacement. Instructions for Drive Unit serial numbers 7110009293 through 7110009445 are provided at the end of this document. Refer to Allison Electric Drives Service Manual SM3602 Sections 5-13 through 5-17 for disassembly and Sections 6-13 through 6-15 for installation.

ML / FA8182EN

Copyright © 2020 Allison Transmission, Inc. All Rights Reserved.

5217307

Allison Transmission • One Allison Way, Indianapolis, Indiana 46222-3271 • (317) 242-5000 • allisontransmission.com

2018FA07, Rev. C
July 17, 2020
Page 2 of 9

Table 1. ATI Required Service Parts

| Part Description | Part Number | Quantity Per Bus |
|----------------------|-------------|------------------|
| Pressure Switch, N/O | 29506484 | 2 |
| O-Ring, Switch | 29501439 | 2 |
| Gasket, Oil Pan | 29538847 | 1 |
| O-Ring, Drain Plug | 23019664 | 1 |
| O-Ring, Filter | 23018950 | 1 |

Claim Submittal Information:

For all proactive repairs, refer to [Table 2](#) and [Table 3](#) below for claim submittal information.

For all claims made against repairs that are not proactive; where a pressure switch is already failed before it could be pro-actively replaced, refer to [Table 4](#) and [Table 5](#) below for claim submittal information.



NOTE: Drive unit serials 7110008473 through and including 7110008854 may already have a claim for non-proactive pressure switch replacement. Please ensure that any serial in this range with a non-proactive claim has had **both** C1 and C2 pressure switches replaced with new pressure switches.

Table 2. Proactive Repair Claim Information

| | |
|----------------------------|----------|
| Claim Type | 04 |
| Special Activity Indicator | 2018FA07 |
| Primary Failed Part | 29506484 |
| Complaint Code | AT02 |
| Failure Code | CC03 |

Table 3. Proactive Repair Labor Codes

| Labor Code | Labor Hours | Labor Operation |
|------------|-------------|-----------------------|
| 00094100 | 1.2 | R&R Oil Pan and Fluid |
| 00096100 | 0.2 | Switch Replacement |
| 00094700 | 2.8 | Debris Inspection |
| 00096400 | 0.5 | Final Test Drive |

Refer to [Table 4](#) and [Table 5](#) below for non-proactive repair claims.

2018FA07, Rev. C
July 17, 2020
Page 3 of 9

Table 4. Non-Proactive Repair Claim Information

| | |
|----------------------------|----------|
| Claim Type | 01 |
| Special Activity Indicator | 2018FA07 |
| Primary Failed Part | 29506484 |
| Complaint Code | EL02 |
| Failure Code | AC00 |

Table 5. Non-Proactive Repair Labor Codes

| Labor Code | Labor Hours | Labor Operation |
|------------|-------------|---------------------------------|
| 00094100 | 1.2 | R&R Oil Pan and Fluid |
| 00096100 | 0.2 | Switch Replacement |
| 00094700 | 2.8 | Debris Inspection |
| 00096400 | 0.5 | Final Test Drive |
| 00096901 | 0.5 | Troubleshooting and Diagnostics |

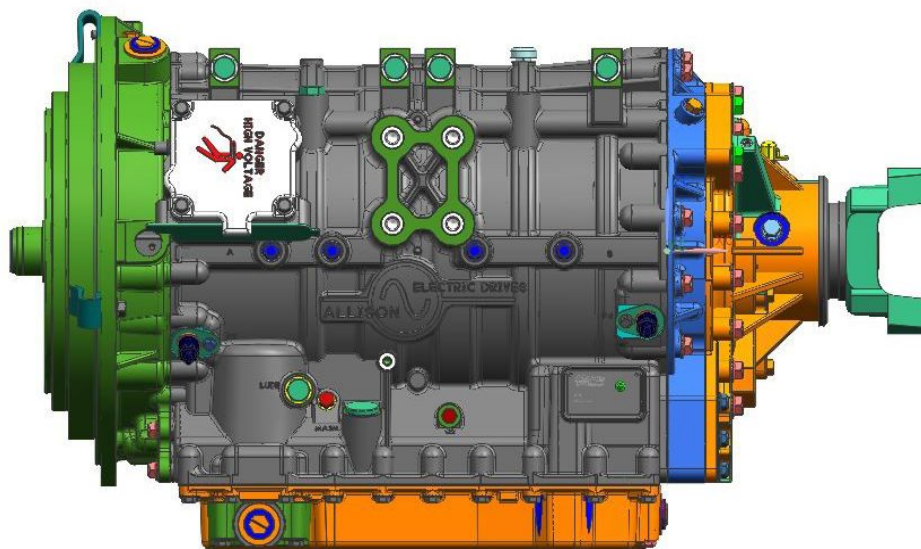
Any additional parts, labor, net items, or travel costs deemed necessary to complete this Field Action must be described in detail in the claim narrative. Unexplained costs will be deducted from the claim.

Authorized Allison service outlets must follow the published Allison Transmission current labor time guide for work performed when adding any additional charges.

2018FA07, Rev. C
July 17, 2020
Page 4 of 9

Procedure for Inspection and Removal of Debris:

1. With the Drive Unit installed, drain the fluid into a clean container for reuse, and drop the oil pan from the Drive Unit.



4268066

Figure 1.

Copyright © 2020 Allison Transmission, Inc. All Rights Reserved.

Allison Transmission • One Allison Way, Indianapolis, Indiana 46222-3271 • (317) 242-5000 • allisontransmission.com

2018FA07, Rev. C
July 17, 2020
Page 5 of 9

2. Remove the suction filter and unplug all connectors on the internal harness.

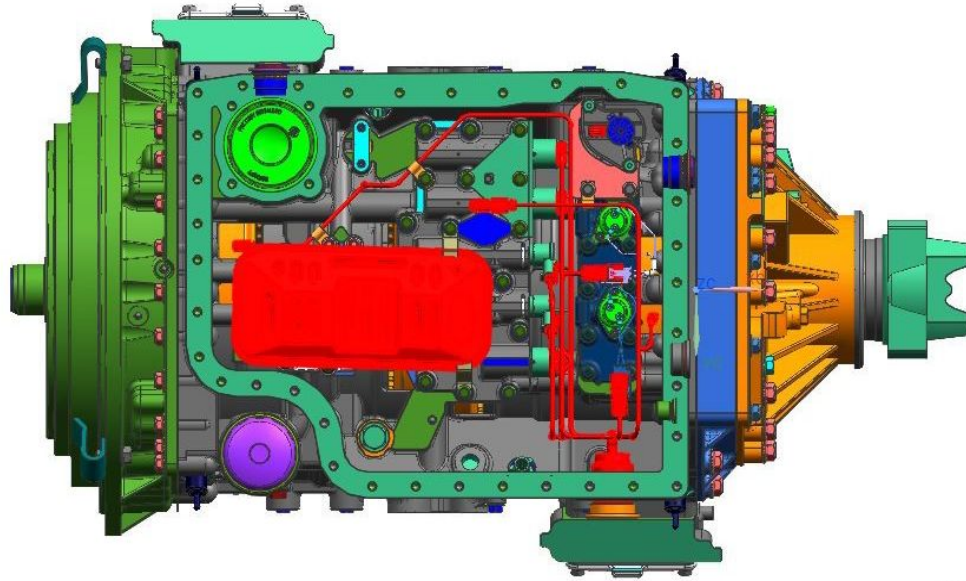


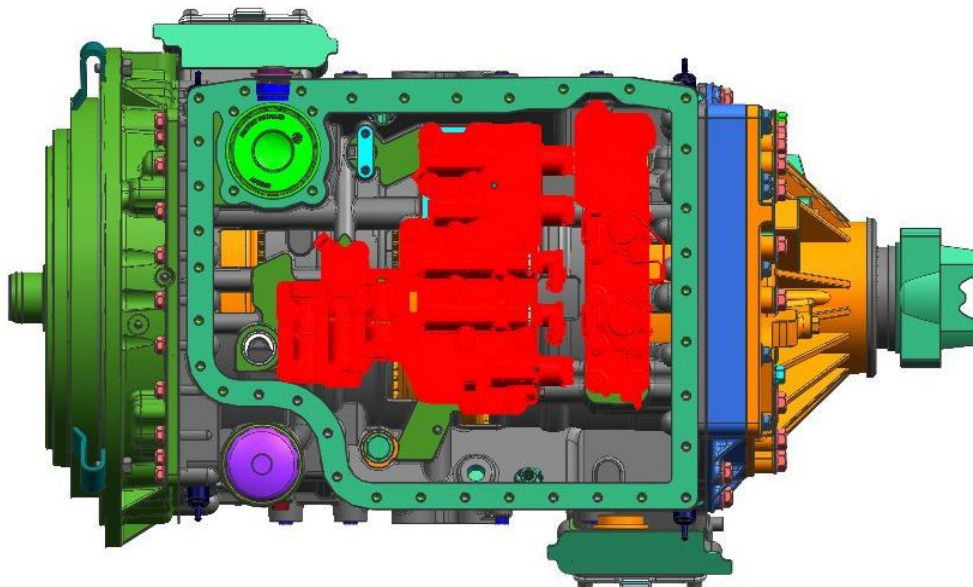
Figure 2.

Copyright © 2020 Allison Transmission, Inc. All Rights Reserved.

Allison Transmission • One Allison Way, Indianapolis, Indiana 46222-3271 • (317) 242-5000 • allisontransmission.com

2018FA07, Rev. C
July 17, 2020
Page 6 of 9

3. Remove the oil level sensor, C1/C2 valve body, shift relay valve body, control main valve body, and separator plate.



4268266

Figure 3.

Copyright © 2020 Allison Transmission, Inc. All Rights Reserved.

Allison Transmission • One Allison Way, Indianapolis, Indiana 46222-3271 • (317) 242-5000 • allisontransmission.com

2018FA07, Rev. C
July 17, 2020
Page 7 of 9

4. Remove the C1 and C2 plugs (shown below) on the backside of the rear cover.

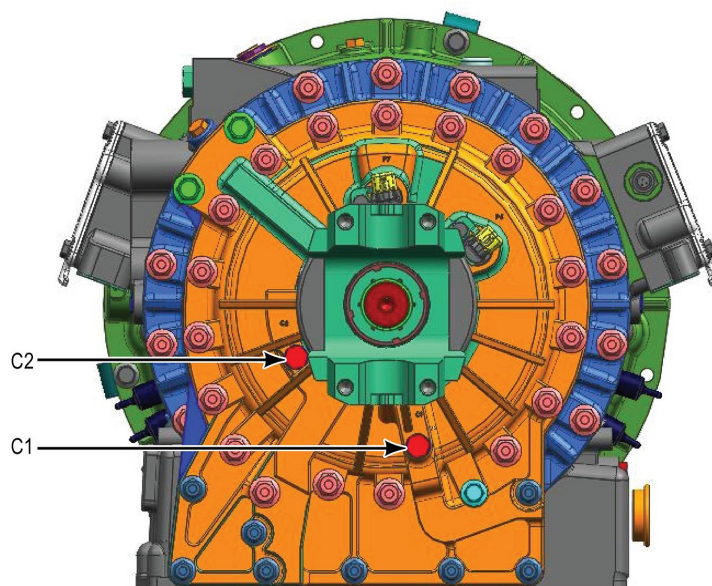


Figure 4.

4268366

Copyright © 2020 Allison Transmission, Inc. All Rights Reserved.

Allison Transmission • One Allison Way, Indianapolis, Indiana 46222-3271 • (317) 242-5000 • allisontransmission.com

2018FA07, Rev. C
July 17, 2020
Page 8 of 9

5. Starting with the C2 pressure circuit, plug the 4mm orifice on the stator housing, as shown below. Pressurize the C2 pressure tap on the rear cover with air to blow out any debris. Check the previously plugged 4mm passage for loose debris and remove if any is found.

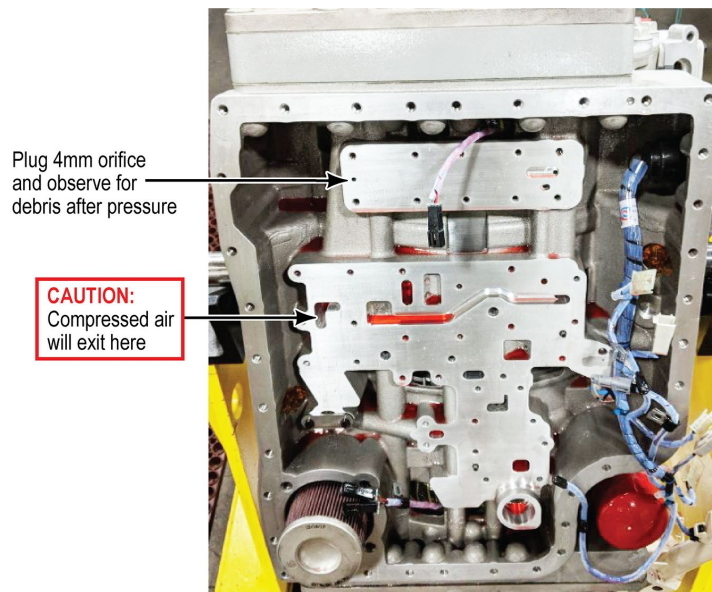


Figure 5.

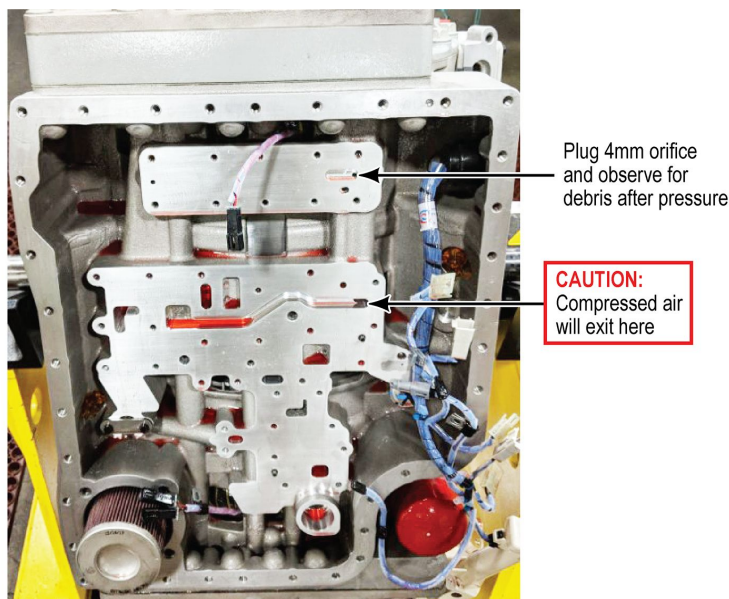
4268486

Copyright © 2020 Allison Transmission, Inc. All Rights Reserved.

Allison Transmission • One Allison Way, Indianapolis, Indiana 46222-3271 • (317) 242-5000 • allisontransmission.com

2018FA07, Rev. C
July 17, 2020
Page 9 of 9

6. To inspect the C1 pressure circuit, plug the 4mm orifice on the opposite side the stator housing, as shown below. Pressurize the C1 pressure tap on the rear cover with air to blow out any debris. Check the previously plugged 4mm passage for loose debris and remove if any is found.



4268586

Figure 6.

7. Inspect the removed valve bodies and the separator plate for any machine chips or debris. Verify proper valve movement. If any debris is found, additional valve body teardown should be performed. Replace any components that may have damage.
8. Reassemble the valve bodies and install two (2) new pressure switches (P/N 29506484) and O-rings (P/N 29501439). New switches must be stamped with date code 1918 or later on the metal retainer ring.

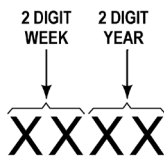


Figure 7. Date Code Format

9. Reassemble remaining parts, refill the Drive Unit, and test drive to verify proper operation.

Copyright © 2020 Allison Transmission, Inc. All Rights Reserved.

Allison Transmission • One Allison Way, Indianapolis, Indiana 46222-3271 • (317) 242-5000 • allisontransmission.com