

REFERENCE:	Nova Bus Manuals
SECTION:	02: Doors and Mechanism
RS N°:	N/A
EFFECTIVE IN PROD.:	N/A

APPLICATION DEADLINE: N/A

SUBJECT:	Lower door spherical bearing and pivot bracket replacement
JUSTIFICATION:	This campaign is being issued to highlight the lower door bearing and pivot bracket replacement done by Vapor.

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Install the new bearing and pivot bracket to the door shaft assembly.	–	–	–
2	–	–	–	–

MATERIAL

QTY	PART N°	REV.	DESCRIPTION	REPLACES PART N°
LEVEL 1				
–	–	–	–	–
LEVEL 2				
–	–	–	–	–

DISPOSAL OF PARTS

REMOVED PARTS ARE:	DISCARDED	RETAINED	–
	–	–	

REVISION HISTORY

REV.	DATE	CHANGE DESCRIPTION	WRITTEN BY
NR	2016MA12	Initial release	Kumaraswamy K S

APPROVED BY:

PAGE 1 OF 19

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
SEPTA - Pennsylvania	L742	7371	7394	S92L6E4500729	S92L1E4500752	21
SEPTA - Pennsylvania	L743	7357	7369	S92L8E4500490	S92L0E4500502	8
SEPTA - Pennsylvania	L744	8601	8688	L82L7E4500570	L82L8E4500660	55
SEPTA - Pennsylvania	L749	7302	7352	S92Y7D4500409	S92L4E4500468	29

**WARNING**

Follow your internal safety procedures.

**NOTE**

The following procedure is provided by Vapor Bus International. Nova Bus cannot be held responsible for its content.

INFORMATION

See Annex 1 - Lower spherical bearing replacement.

See Annex 2 - Lower pivot bracket replacement. ❖

ANNEX 1 - LOWER SPHERICAL BEARING REPLACEMENT



FIELD MODIFICATION INSTRUCTIONS

FMI-14-043A

Page: 1 of 8
Date: 10/07/14
REV: A
MRN: 97023-8
Written by: TB/JM

A. SUBJECT:

Lower Spherical Bearing Replacement at SEPTA.

B. RELATED DOCUMENTS:

FMI 13-032, FMI14-043

C. MODIFIED ASSEMBLIES:

PN	Dwg. #	Description	Qty/Car Set	Total Quantity
51356010-00	51356010	SHAFT & ARM ASSY. (RH)	2	30
51356010-01	51356010	SHAFT & ARM ASSY. (LH)	2	30

D. PARTS REQUIRED:

PN	Dwg. #	Description	Qty/Car Set	Total Quantity
51057015-00	51057015	"BEARING, SPHERICAL, PRESS-IN"	4	60
		ISOPROPYL ALCOHOL 91% FOR BONDING SURFACE PREPARATION	A/R	64 oz.
67110189-00	67110189	"ADHESIVE BLACK MAX"	A/R	1
AS ALTERNATIVE LOCTITE #480 CAN BE USED				
67110007-32	67110007	"ADHESIVE, LOCTITE (#480)"	A/R	1

E. DRAWINGS REQUIRED:

Dwg.#	Revision	Description
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F. MATERIAL DISPOSITION:**G. SPECIAL TOOLING**

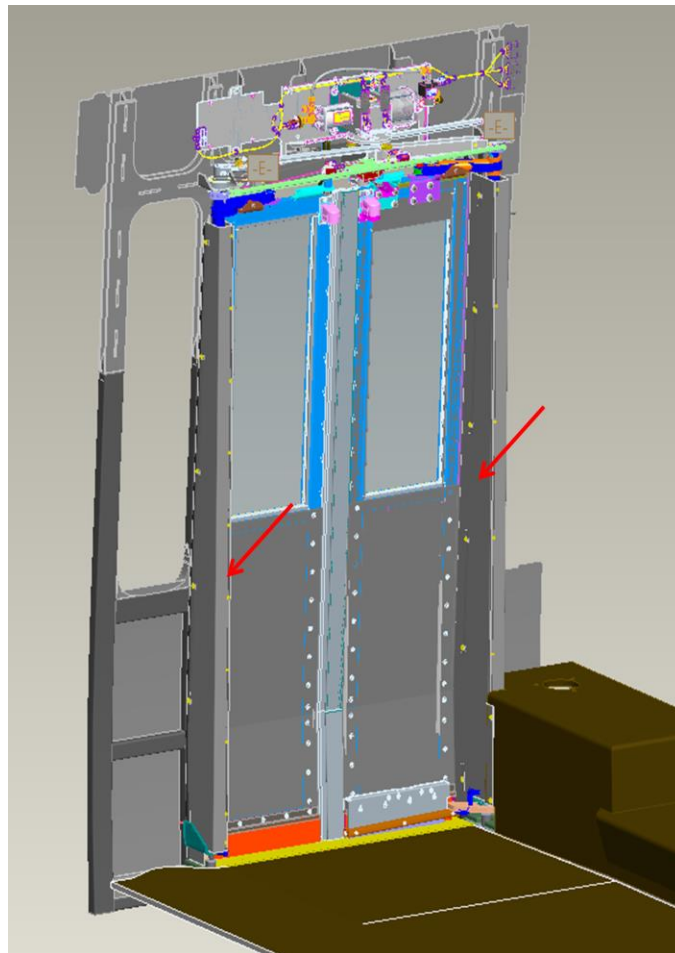
- Philips Screw Driver
- Pair of Pliers
- Set of open end wrenches
- Set of sock wrenches



FIELD MODIFICATION INSTRUCTIONS

H. DETAILED MODIFICATION:

- H.1. **CAUTION: Remove power to the operator before servicing!**
Locate the Emergency Valve Assembly near the entrance door in order to remove air pressure from the entrance door system. Activate this valve to purge air from the system.
- H.2. Remove Door Shaft Cover if installed by removing (6) Philips Head Screws to expose Lower Pivot Bracket

**Figure 1**



FIELD MODIFICATION INSTRUCTIONS

- H.3. Scribe a line to mark the location of the Lower Pivot Bracket. Also note where the pin resides in the slot.

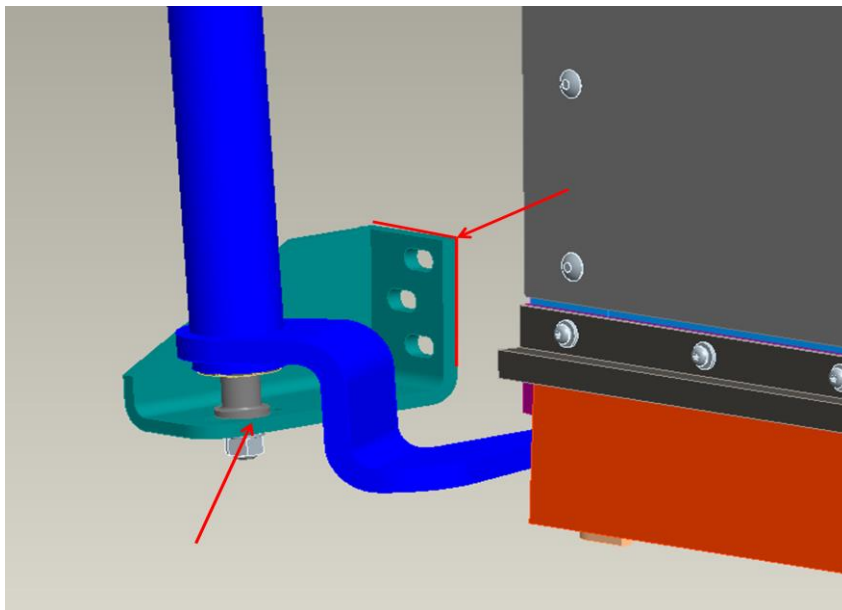


Figure 2

- H.4. Remove 3/8 inch Nut and Washers from bottom of the Shaft and retain

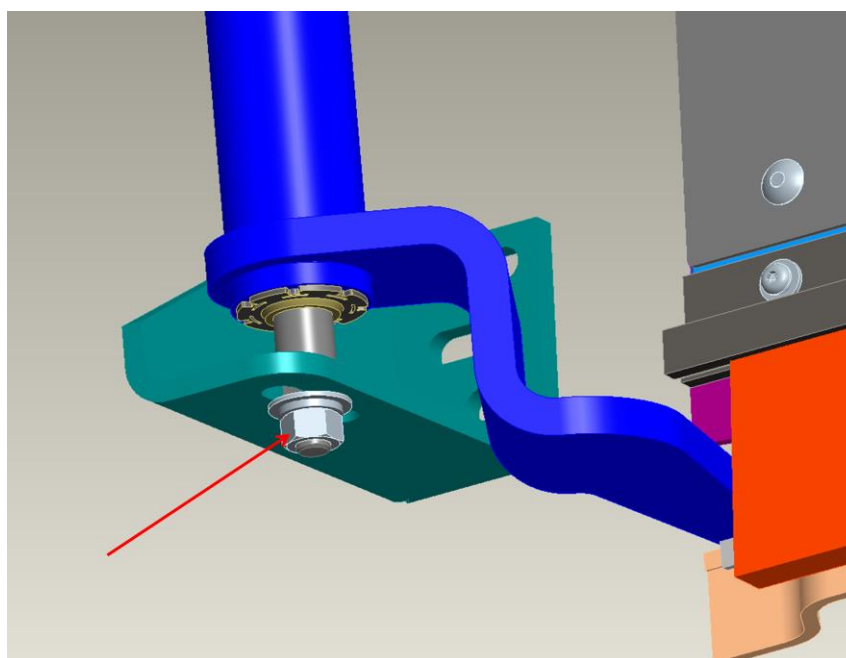


Figure 3



FIELD MODIFICATION INSTRUCTIONS

- H.5. Take out (3) Bolts that hold the Lower Pivot Bracket to the Structure and remove the Lower Pivot Bracket

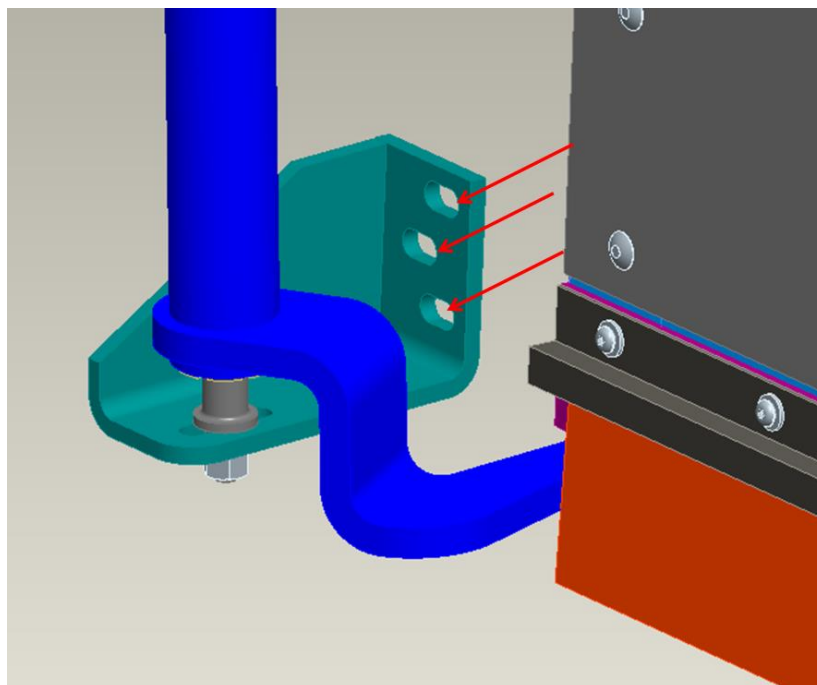


Figure 4

- H.6. Remove the lower Pin to expose the loose Bearing

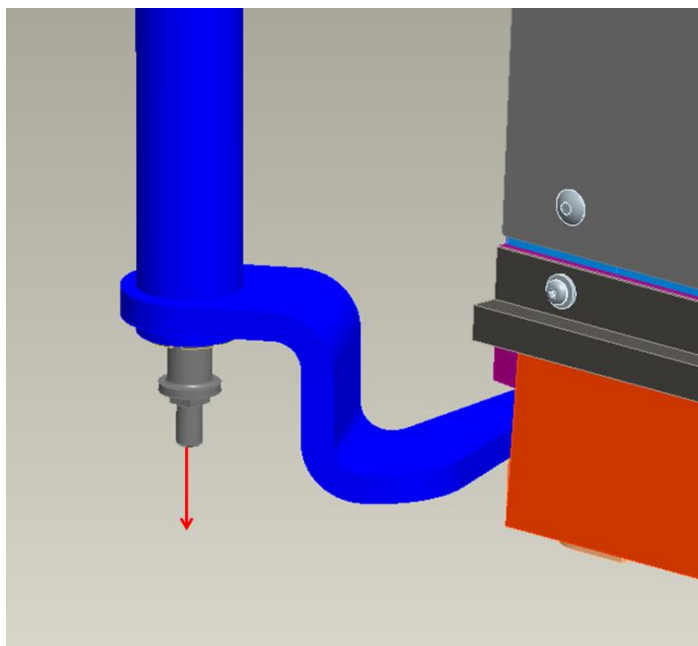


Figure 5



FIELD MODIFICATION INSTRUCTIONS

- H.7. Remove the Bearing from the Shaft and discard. Pliers may be necessary to remove the Bearing.

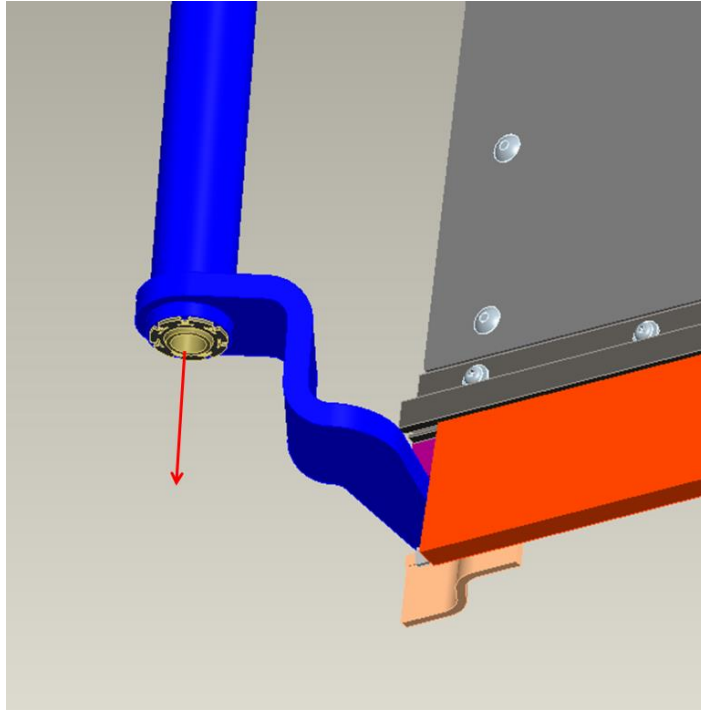


Figure 6

- H.8. After removing the Bearing, clean the internal surface of the Shaft with Isopropyl Alcohol.
- H.9. Retrieve a replacement Bearing (P/N 51057015). Apply a thin coat of Adhesive Black Max or as an alternative Loctite #480 around the leading edge of the Bearing

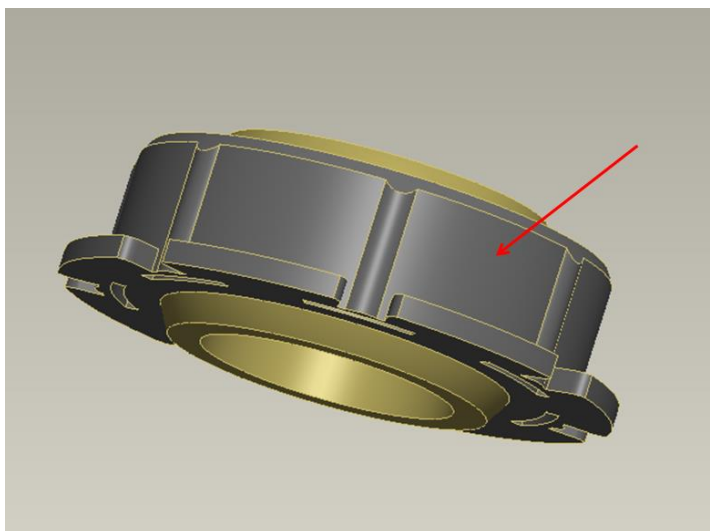


Figure 7



FIELD MODIFICATION INSTRUCTIONS

- H.10. Press the new Bearing into the Shaft Assembly within 90 seconds of adhesive application. The Bearing must be fully seated.

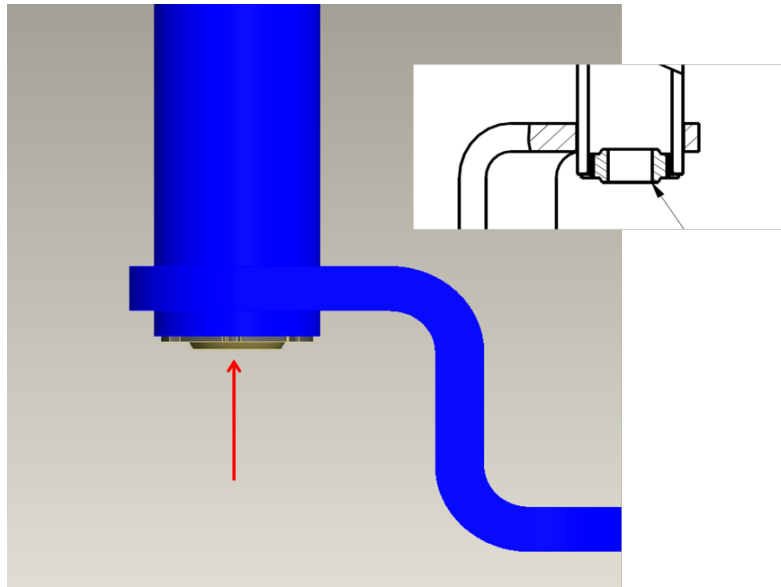


Figure 8

- H.11. Allow the adhesive a minimum of 5 minutes to cure before attempting to reassemble. Note the full strength of the adhesive is reached after 24 hours of application.
- H.12. Reassemble the Lower Pin by sliding it through the Bearing.

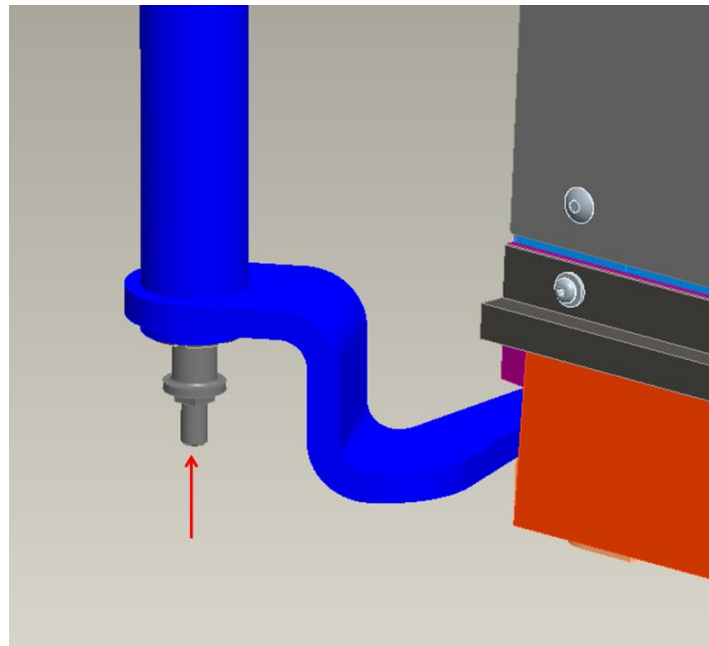


Figure 9



FIELD MODIFICATION INSTRUCTIONS

- H.13. Reattached the Lower Pivot Bracket by aligning it to the scribed lines in step H.3. Make sure the Lower Pin protrudes through the Slot and Bolt to Structure.

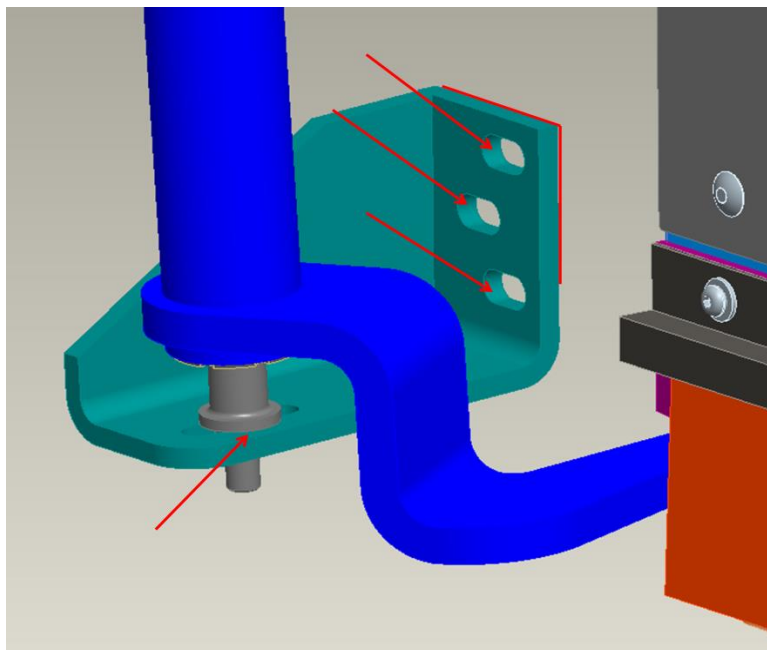


Figure 10

- H.14. Reattach 3/8 inch nut and washers to bottom of Lower Pin. Torque to 20 ft*lbs.

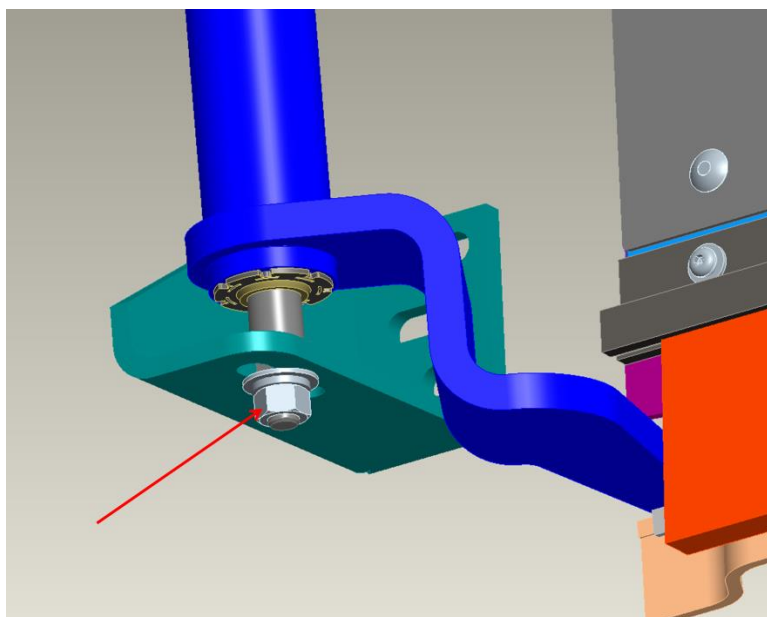


Figure 11



FIELD MODIFICATION INSTRUCTIONS

- H.15. Repeat process for the each Shaft and Arm assembly that has a faulty bearing.
- H.16. Reinstall Door Shaft Cover if applicable by tightening (6) Philips Head Screws.

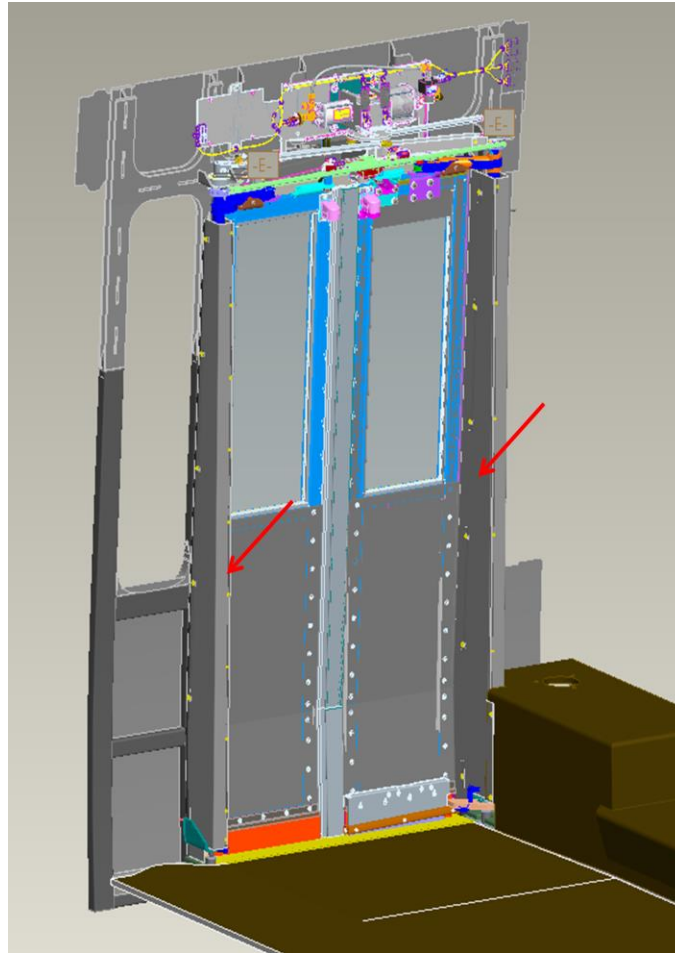


Figure 12

I. TESTING

Entrance
Doors

Restore power and return air to the system using the Emergency Valve from Step H.1. Cycle the door system using the Driver's Door Controller. The doors should open and close.

If adjustment is required refer to OMM 51305055 and OMM 51305056 for further details.

ANNEX 2 - LOWER PIVOT BRACKET REPLACEMENT



FIELD MODIFICATION INSTRUCTIONS

FMI-14-048A

Page: 1 of 8
Date: 01/09/15
REV: B
MRN: 97023-8
Written by: J Malohn

A. SUBJECT:

Lower Pivot Bracket Replacement

B. RELATED DOCUMENTS:

C. MODIFIED ASSEMBLIES:

51356022-00, -01

D. PARTS REQUIRED PER BUS:

51356022-00, -01

E. DRAWINGS REQUIRED:

F. MATERIAL DISPOSITION:

Send old Lower Pivot Brackets to Vapor Bus International

G. TOOLS REQUIRED:

Standard tools required



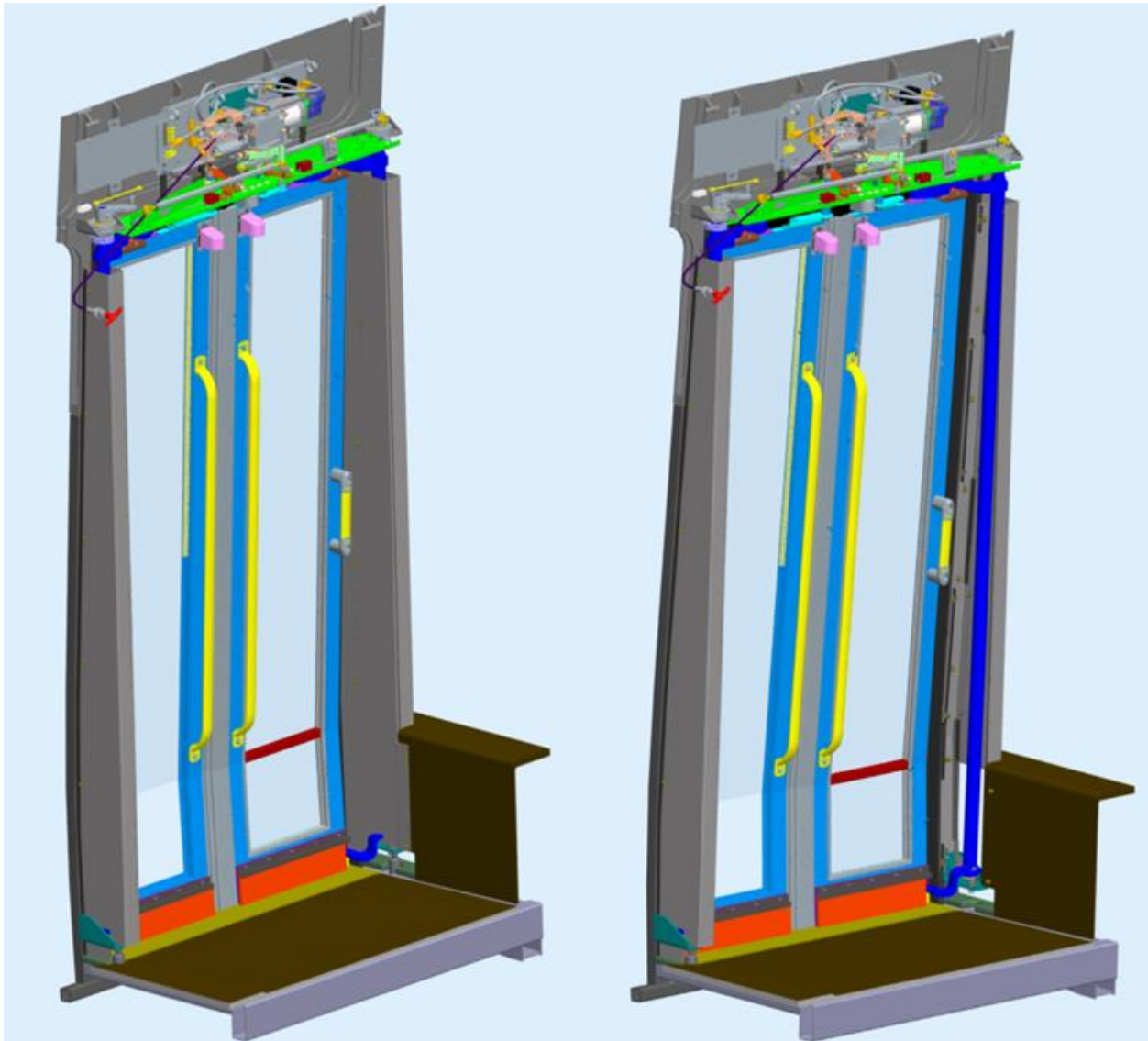
FIELD MODIFICATION INSTRUCTIONS

H. DETAILED MODIFICATIONS

*** CAUTION: Remove Electrical power to the Operator before servicing! ***

*** CAUTION: Remove Pneumatic power to the Operator before servicing! ***

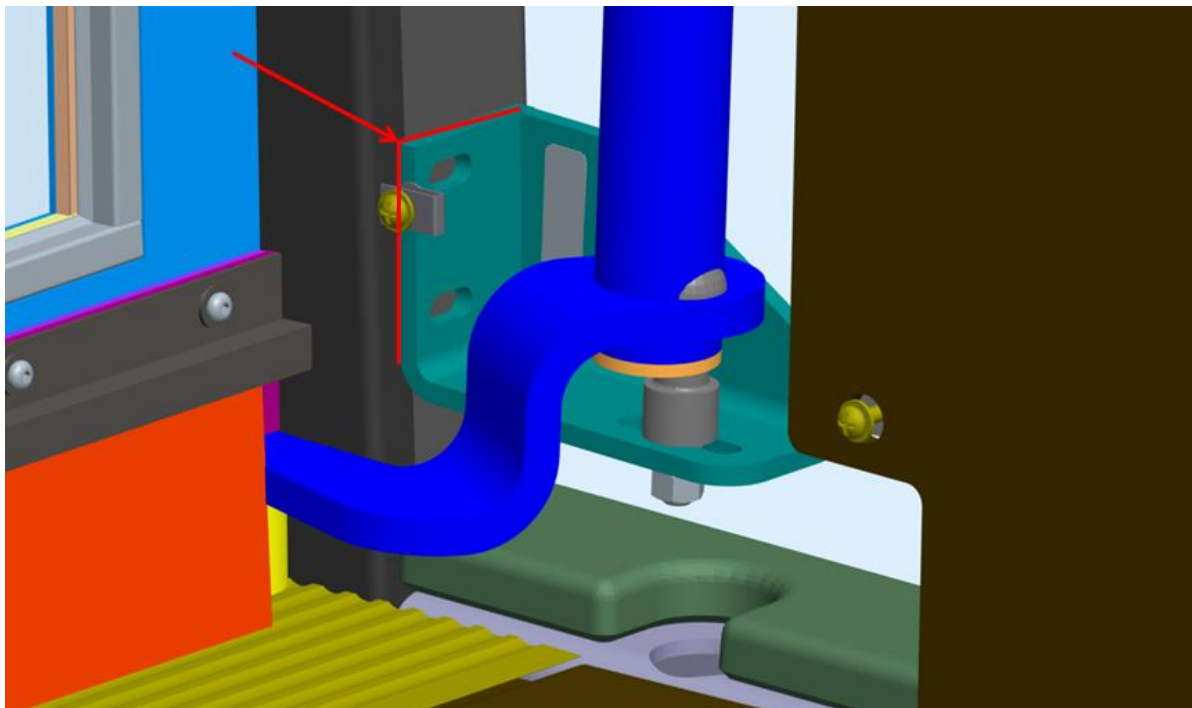
H.1. Remove the Post Capping to expose the Shaft Assembly and the Lower Pivot Bracket. Determine if there is contact between the lower arm and the Lower Pivot Bracket and/or noise when the door opens. If either situation occurs proceed to step H.2. If neither exists replace the Post Capping and move the next Door opening.



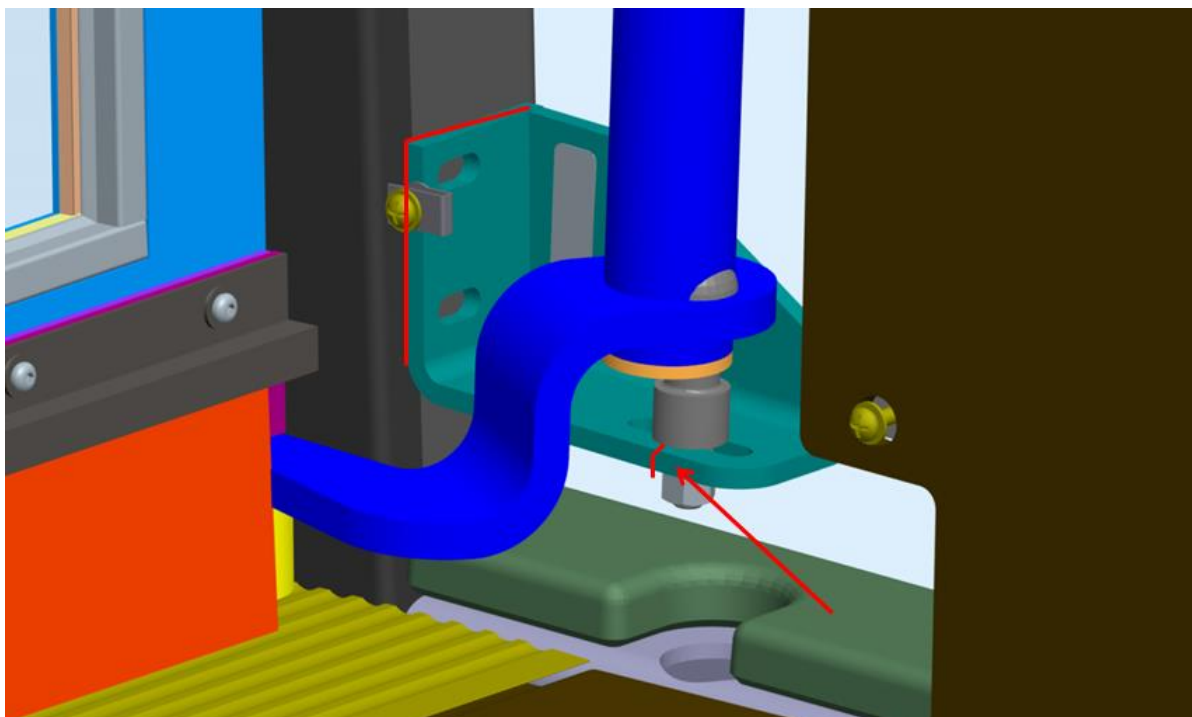


FIELD MODIFICATION INSTRUCTIONS

H.2. Mark the location of the lower pivot bracket.



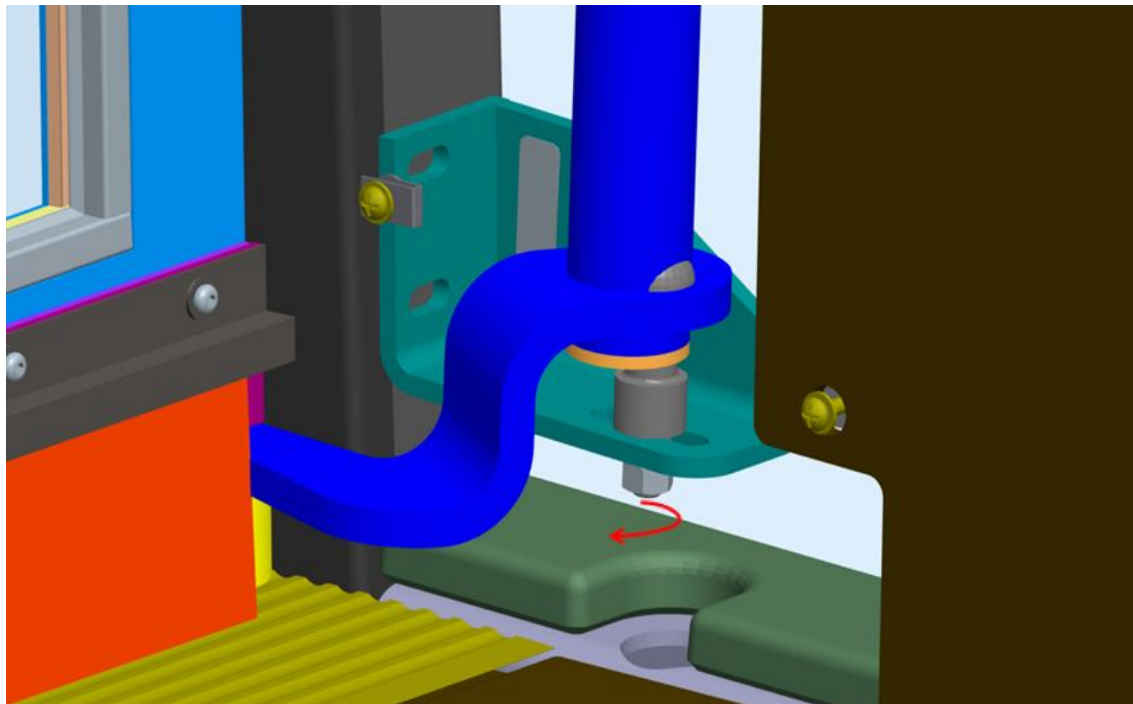
H.3. Mark the location of the center of the bearing on the lower pivot bracket.



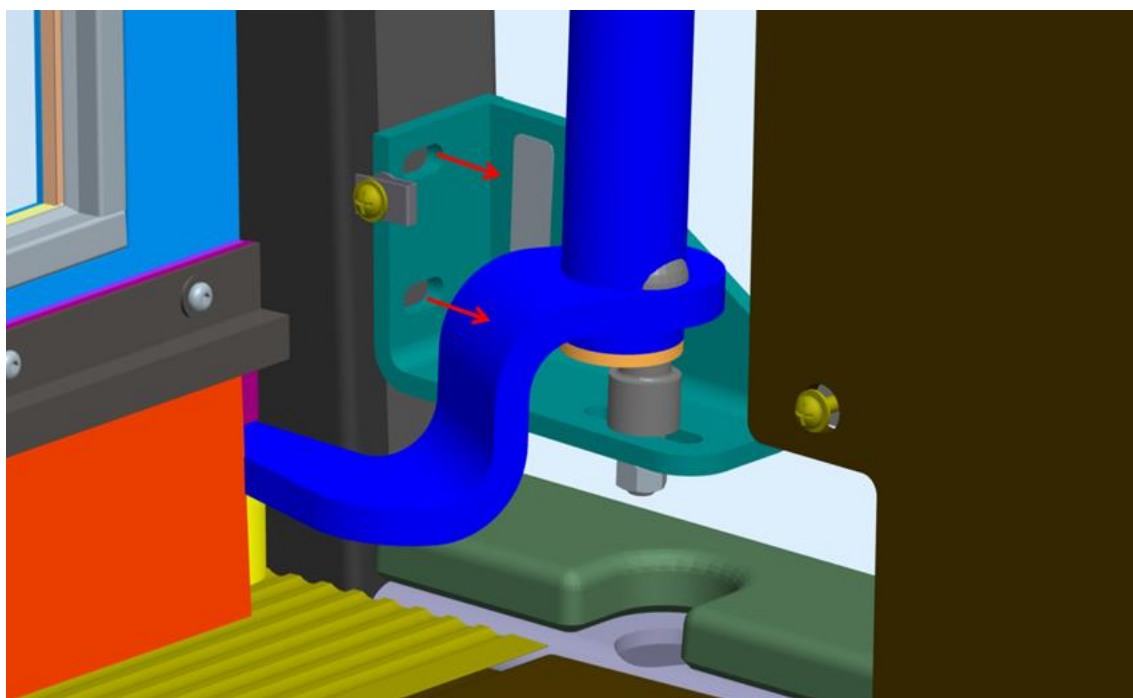


FIELD MODIFICATION INSTRUCTIONS

H.4. Loosen, but do not remove the nut on the bottom of the bracket.



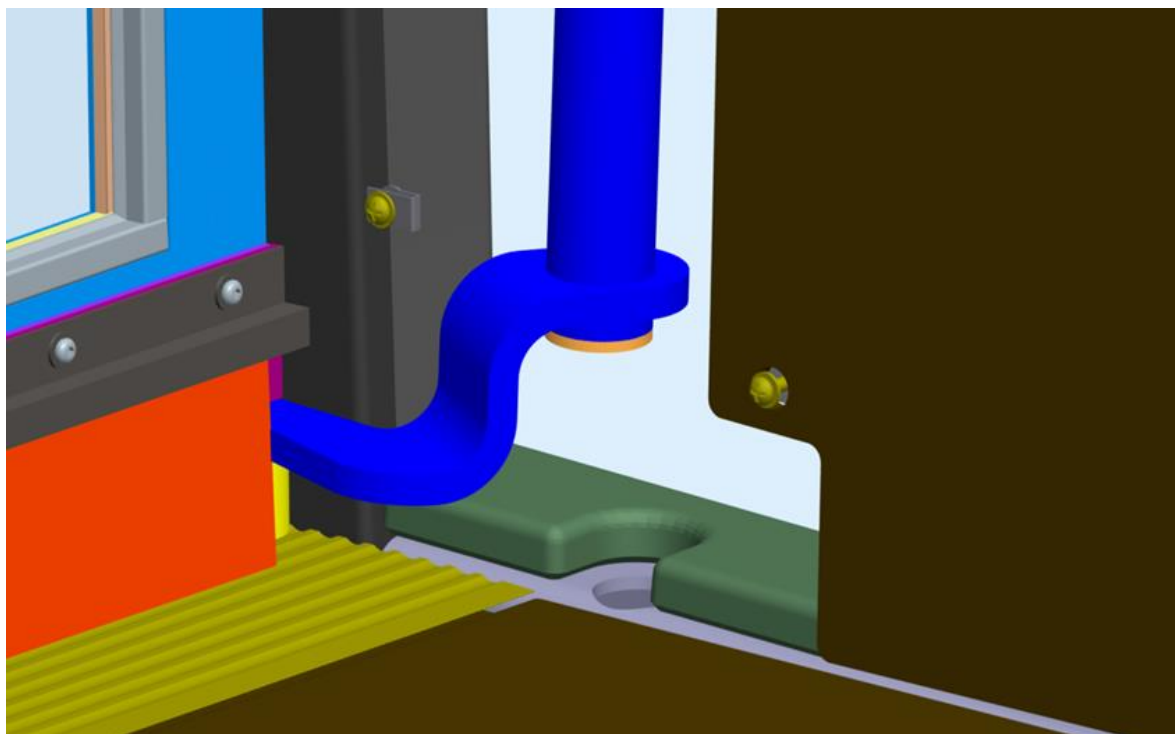
H.5. Remove the Lower Pivot Bracket by removing the two (or three) screws securing the bracket to the bus structure. Retain hardware for later.



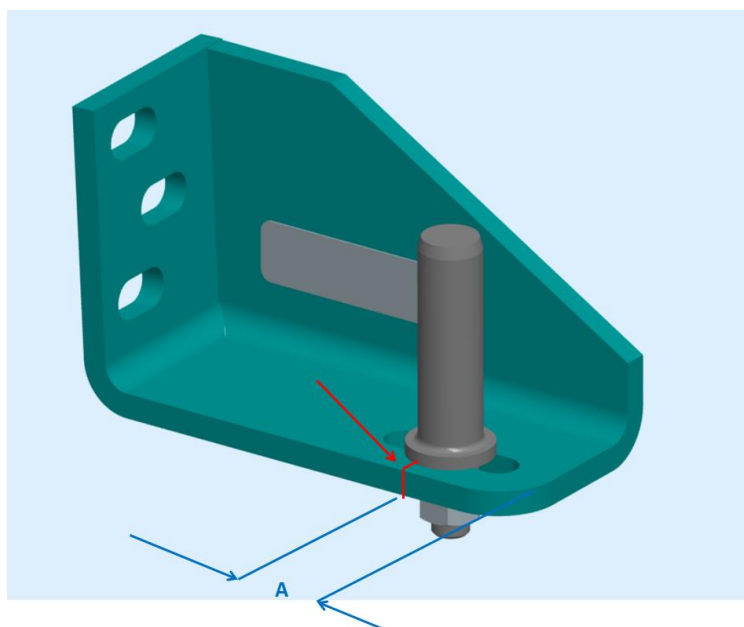


FIELD MODIFICATION INSTRUCTIONS

H.6. Carefully support the door panel while a new bracket is installed.



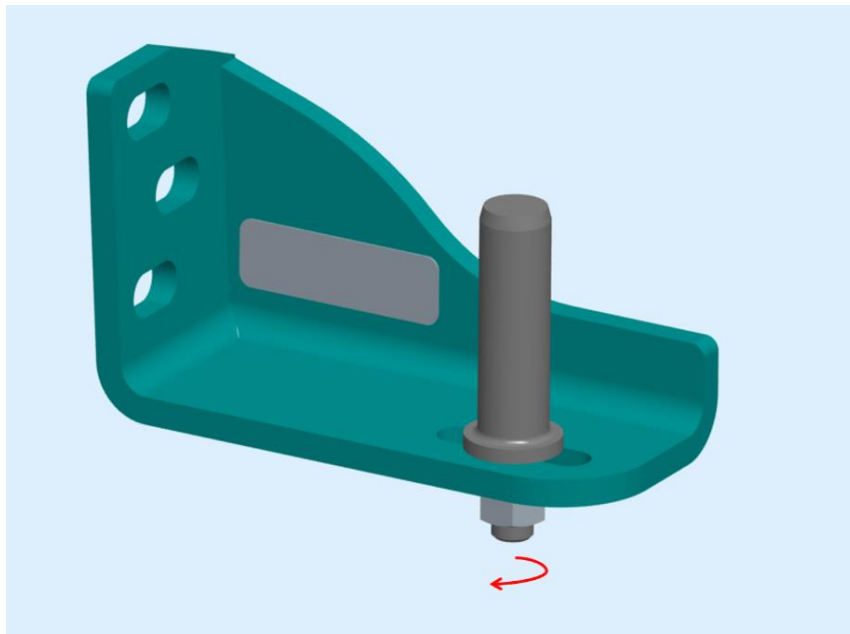
H.7. Measure from the end of the bracket to the mark indicating the center of the bearing. Record dimension A.



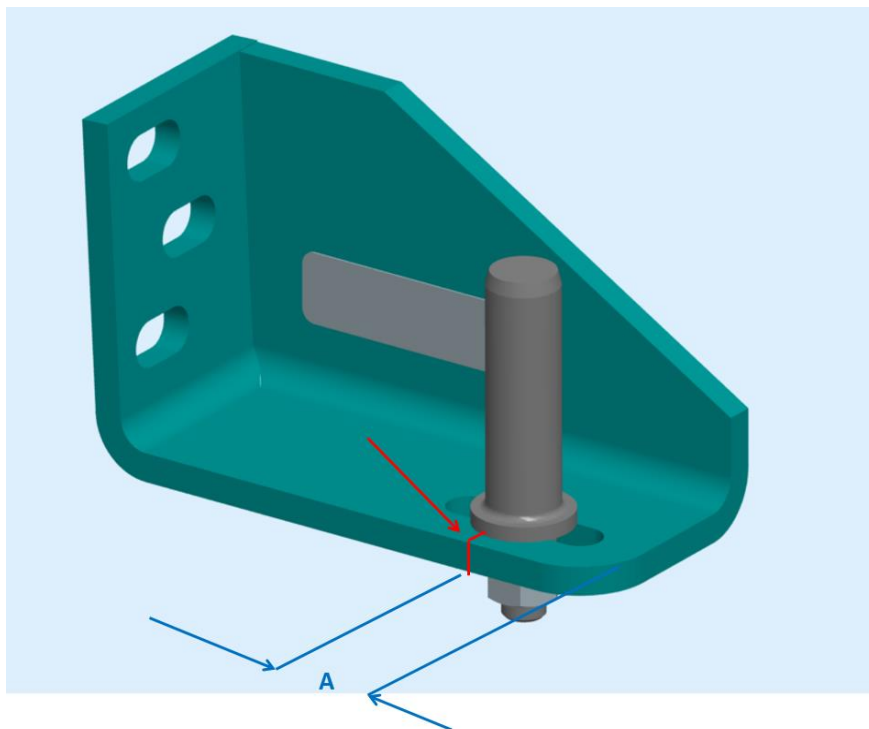


FIELD MODIFICATION INSTRUCTIONS

H.8. Locate the new Lower Pivot Bracket with the rounded wall and loosen, but do not remove the nut on the bottom of the bracket.



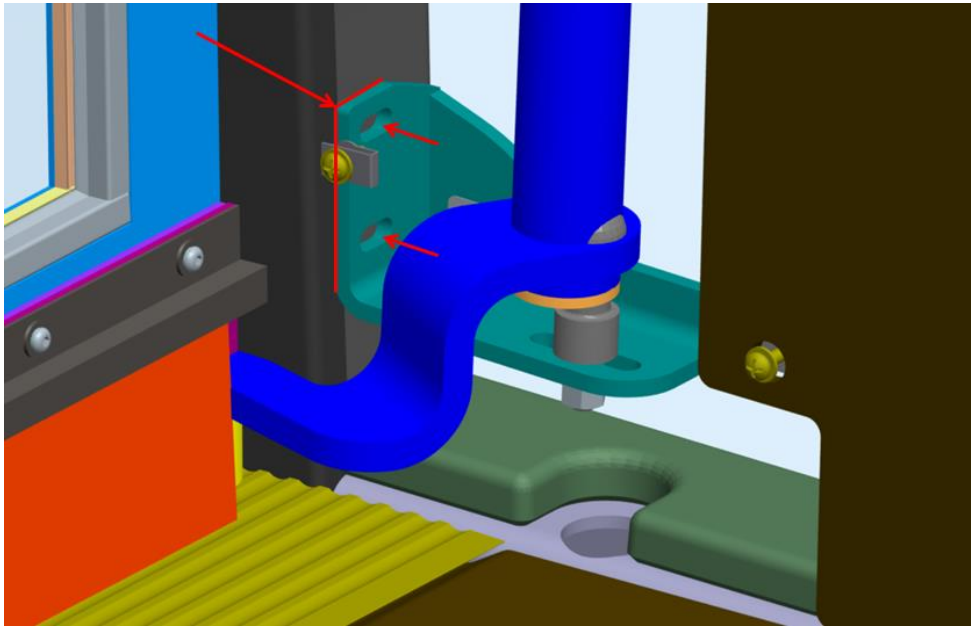
H.9. Transfer the mark from the center of the bearing on the old bracket to the new Lower Pivot Bracket by measuring from the end of the bracket.



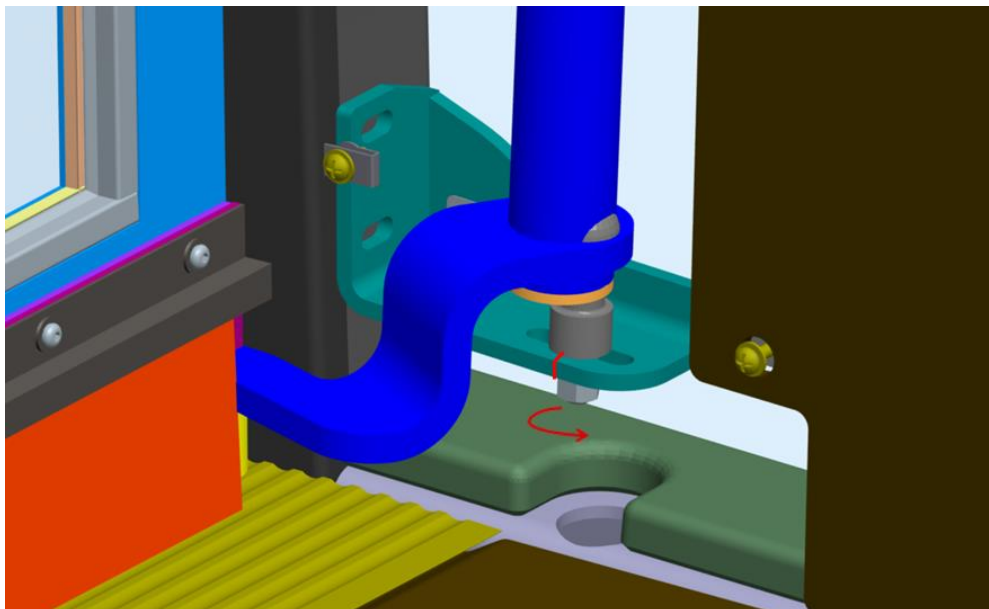


FIELD MODIFICATION INSTRUCTIONS

H.10. Line up the new bracket with the marking from step H.2 and secure with the hardware from step H.5. Torque to 16 ft-lbs (22 Nm) and apply torque mark. Make sure that the Shaft Assembly fits over on the bearing surface before tightening to the bus structure.



H.11. Once the bracket is secure and the Shaft Assembly is resting on the bearing surface, align the center of the bearing to the mark on the bracket. Tighten the bolt on the bottom of the lower pivot bracket. Torque to 20 ft-lbs and apply torque mark.



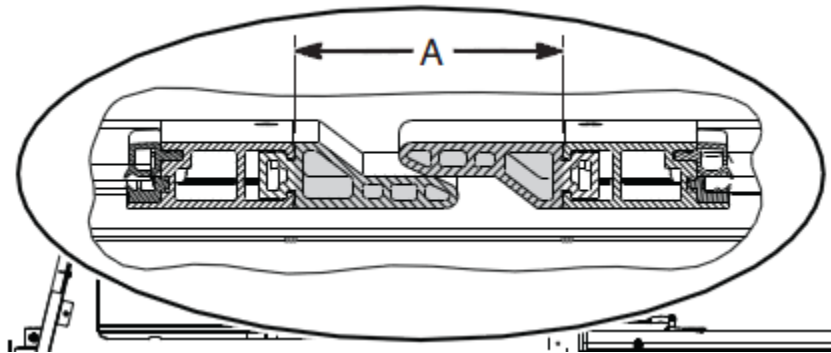


FIELD MODIFICATION INSTRUCTIONS

H.12. Repeat steps H.1. Through H.8. for the opposite side.

H.13. Make sure all hardware is tightened and tools are removed from the area.
3Restore pneumatic and electric power to the operator. Cycle the doors and make sure they are operating properly.

H.14. *** Adjust door panels if necessary *** Make sure the metal to metal gap between the door panels (dimension A below) is 4.13 +/- .125 inches.



H.15. Reattached the post capping.

H.16. Tighten the nut on the bottom of the old pivot bracket and ship to Vapor Bus International.