

REFERENCE:	Nova Bus Manuals
SECTION:	12: Access Ramp
RS N°:	MQR 7621-1618
EFFECTIVE IN PROD.:	LC55 (2019SE)

APPLICATION DEADLINE: 2022AL30
CLAIM REFERENCE NUMBER: WB-4857

SUBJECT:	Hydraulic Power Unit of the Access Ramp
JUSTIFICATION:	The plastic reservoir of the HPU can crack and leak. A leakage could lead to a malfunction of the access ramp.

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Replace the plastic reservoir for a new aluminium reservoir.	Nova Bus	Nova Bus	45 min
2	—	—	—	—

MATERIAL

QTY	PART N°	REV.	DESCRIPTION	REPLACES PART N°
LEVEL 1				
1	N8911795	—	CALMO ALUMINIUM RESERVOIR KIT	—
2	N16757	X	BOLT M8X45 HEX YZ TRIV 96H 8.8	—
2	N21101	X	WASHER FLAT OVS M8 ZP DIN9021	—
4	N10859	T	NUT LOCKNYL M8 YZ TRIV 96H G8	—
LEVEL 1 – SPECIAL TOOLING				
1	N8911794	—	CALMO FIXTURE	—
1 FIXTURE SUPPLIED PER CUSTOMER				
LEVEL 2				
—	—	—	—	—

Materials will be available within 72 days once your order has been placed. To order, please contact Prevost Parts by phone at 1-800-771-6682, by fax at 1-888-668-2555 or by email at prevostparts.commandes@volvo.com. Specify document number, quantity of parts required and shipping address.

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	2020JN26	Initial release	Annie St-Jacques
R1	2021JA22	Client added in Client List	Annie St-Jacques

APPROVED BY: **Jean-Nicolas Fournier**

Digitally signed by Jean-Nicolas Fournier
DN: cn=Jean-Nicolas Fournier, o=Nova Bus, email=jean-nicolas.fournier@volvo.com, c=CA
Date: 2021.01.25 08:20:24 -05'00'

Symbol	Meaning
Empty Field	No changes, the procedure applies
+	Contract added, the procedure applies
–	Contract removed, the procedure does not apply

	CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
			FROM	TO	FROM	TO	
	Austin - CMTA - Texas	L635	5001	5001	S92U7C4500163	S92U7C4500163	1
	Austin - CMTA - Texas	L636	5002	5022	S92U1D4500306	S92U0D4500328	21
	Austin - CMTA - Texas	L704	5051	5068	L82J7E4500471	L82J2E4500488	18
	Austin - CMTA - Texas	LA17	5101	5107	S92J2H9775763	S92J3H9775769	7
	Austin - CMTA - Texas	LA18	5151	5158	L82J0H9775770	L82J3H9775777	8
+	Brampton - Ontario	L941	1614	1623	L82J1G3750123	L82J2G3750132	10
+	Brampton - Ontario	L942	1601	1613	L82J6G3750070	L82J4G3750083	13
	Brampton - Ontario	LA20	1707	1713	L82J5H3750532	L82J6H3750538	7
	Brampton - Ontario	LA21	1701	1706	L82J8H3750539	L82J1H3750544	6
	Brampton - Ontario	LB01	1801	1817	L82J3H3750948	L82J6J3750982	17
	Brampton - Ontario	LB02	1818	1823	L82J3J3751121	L82J2J3751126	6
	Brampton Ontario	LC23	1901	1907	L82J3K3751878	L82J9K3751884	7
	Brampton Ontario	LC54	1908	1916	L82J0K3751885	L82JXK3751893	9
	Halifax - Nova Scotia	LA11	1208	1236	L82J1G9775579	L82J4G9775608	29
	Halifax - Nova Scotia	LA14	1237	1237	L82J1G9775596	L82J1G9775596	1
	Halifax - Nova Scotia	LA27	1238	1276	L82J5H9775778	L82J9H9775816	39
	Halifax - Nova Scotia	LB61	1277	1284	L82J9J9776664	L82J6J9776671	8
	Halifax - Nova Scotia	LB70	1285	1299	L82J4J9776829	L82J9J9776843	15
	Halifax Nova Scotia	LC11	1300	1334	L82JXK9777310	L82J5K9777344	35
	Peterborough - Ontario	L966	67	71	L82J2G3750230	L82JXG3750234	5
	Peterborough - Ontario	LA41	7217	7617	L82J1H3750706	L82J3H3750710	5
	Peterborough - Ontario	LB20	7819	8019	L82J2K3751919	L82J0K3751921	3
	York Regional Transit - Ontario	L964	1770	1774	S92J6G3750420	S92J3G3750424	5
	York Regional Transit Ontario LFX 60'	LC24	1971	1980	S92J0K3752110	S92J3K3752120	10

**WARNING**

FOLLOW YOUR INTERNAL SAFETY PROCEDURES.

PROCEDURE

- 1.1. Lift the vehicle.

**CAUTION**

For information on hoisting and towing of the vehicle, see section 18: *HOISTING AND TOWING* in the Nova Bus maintenance manual. Use appropriate hoisting equipment for your protection and to prevent damage to the vehicle.

HYDRAULIC POWER UNIT REMOVAL

- 1.2. Locate the central access panel and the HPU (Hydraulic Power Unit) of the access ramp (Figure 1).

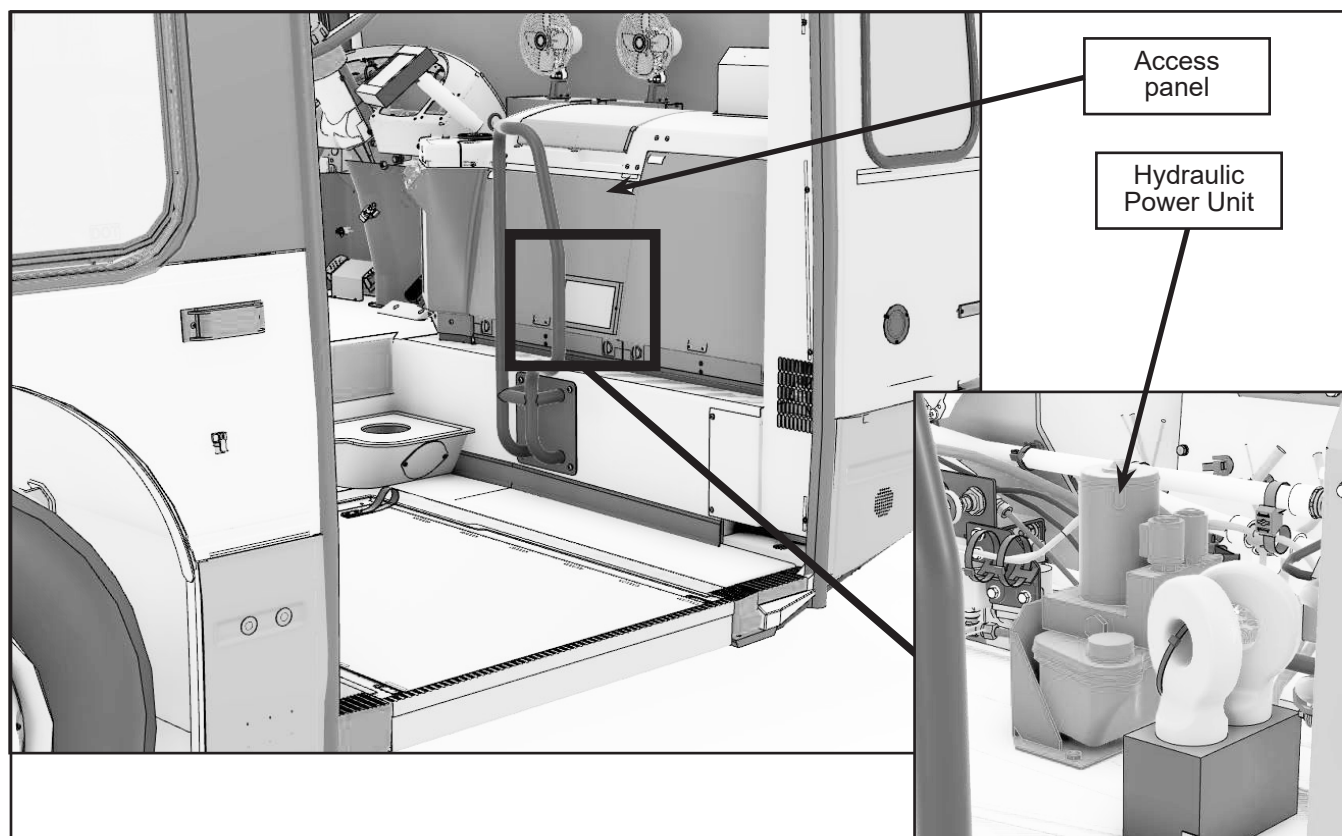


Figure 1 - Central Access Panel and Hydraulic Power Unit Locations (Typical Installation)

- 1.3. Remove the central access panel (Figure 1).
- 1.4. If present, remove the red tool box if front of the HPU. Keep the hardware for reinstallation.
- 1.5. Disconnect the HPU electrical connector
- 1.6. Identify and disconnect the two hydraulic hoses. Install caps on each hose and assembly fitting.
- 1.7. Under the vehicle, unscrew the two lock nuts (Figure 2) and remove the HPU from the vehicle and deposit on a work table. Discard lock nuts. Keep screws and washers for reinstallation.

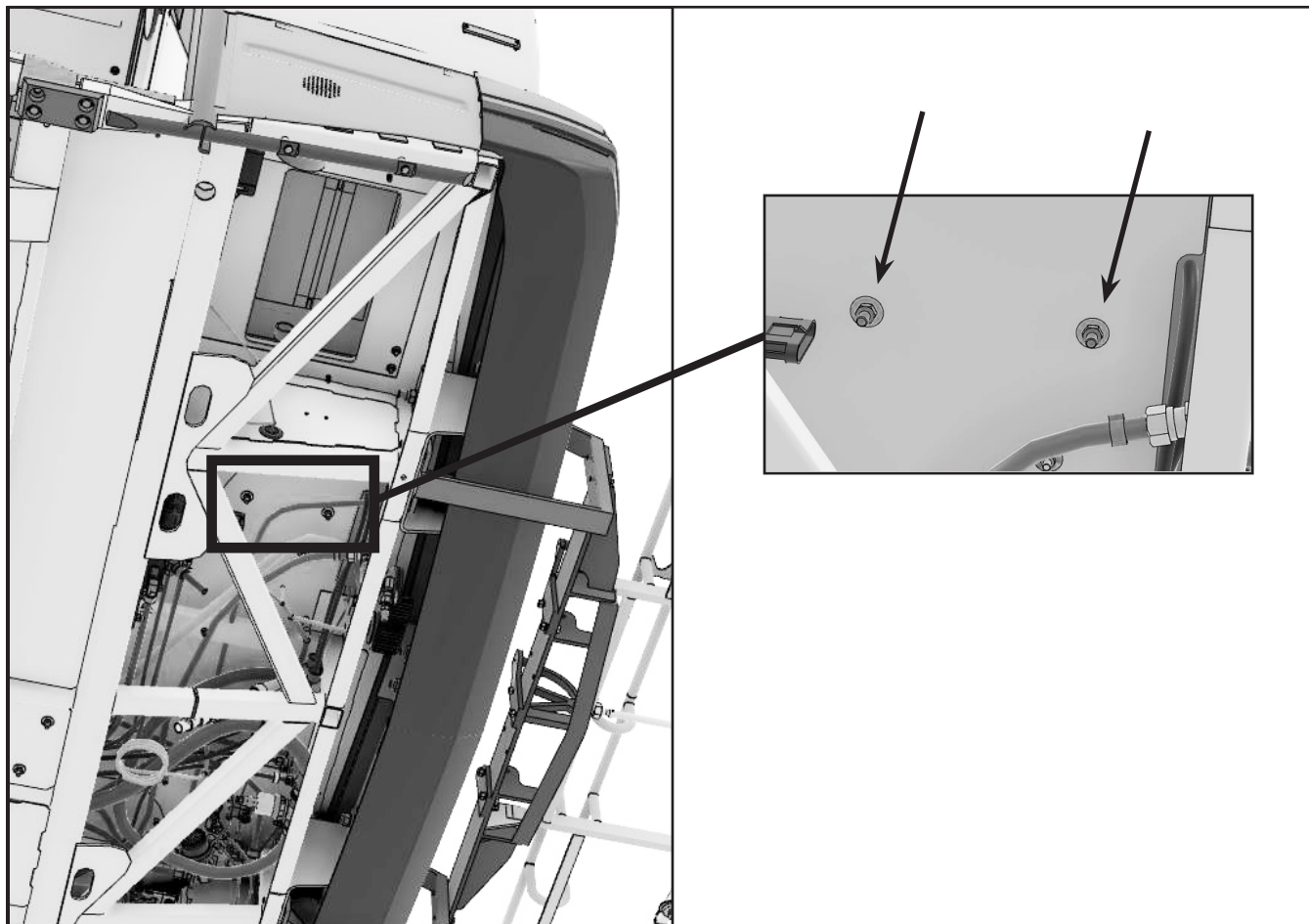


Figure 2 - Remove Lock Nuts and Washers Under the Vehicle

HPU RESERVOIR REPLACEMENT

- 1.8. See Fedico/Calmo procedure shown in Annexe. Execute procedure **from page 7/27 to page 26/27**.



NOTE

The procedure is provided by Fedico/Calmo. Nova Bus cannot be held responsible for its content.

HPU INSTALLATION



NOTE

PROCEED WITH THE HPU INSTALLATION ONLY AFTER THE RESERVOIR REPLACEMENT.

- 1.9. Install the cap with the oil dip stick onto the reservoir (Figure 3).

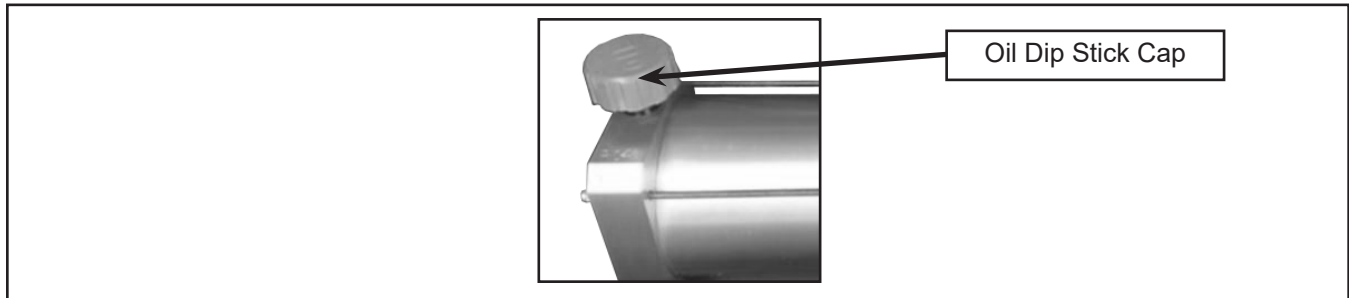


Figure 3 - Install Oil Cap

- 1.10. Inside the vehicle, position the HPU as shown in Figure 4.
- 1.11. Insert the two removed screws in existing holes. Use the HPU support as jig to mark the two other holes. Remove HPU.
- 1.12. Drill two holes of 0.35 po (9 mm) through the floor.

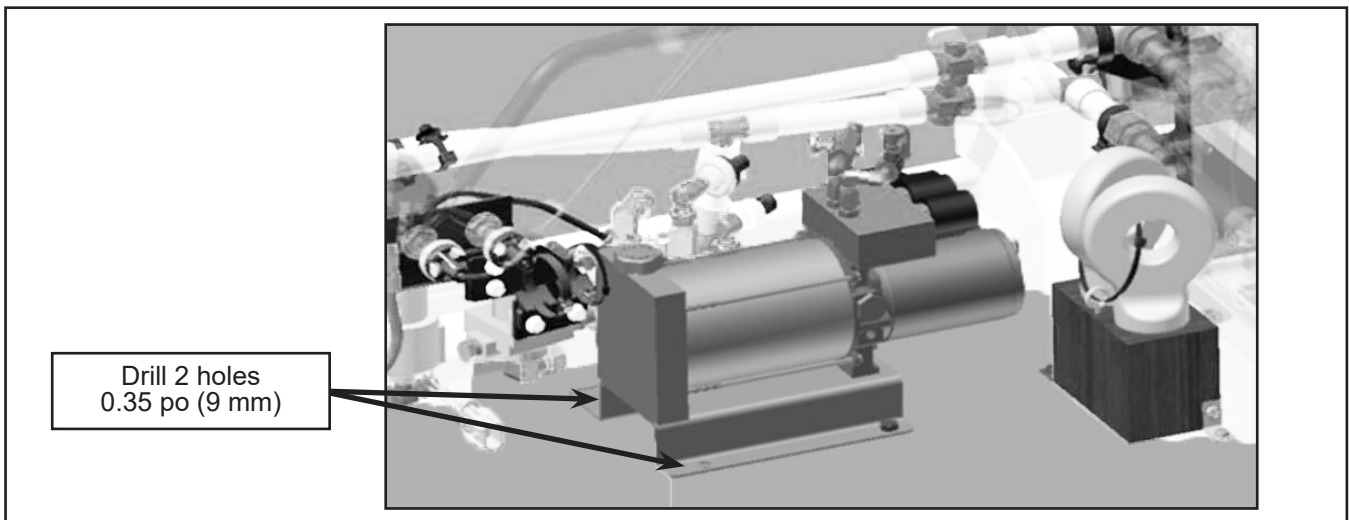


Figure 4 - Drill two new Holes

- 1.13. Reinstall the HPU. Insert the two removed screws and two new ones (N16757).
- 1.14. Under the vehicle, install onto the four screws, four flat washers (the two removed ones at removal and two new ones (N21101)) and four new nylon lock nuts (N10859). Tighten.

- 1.15. Connect the HPU electrical connector to the harness.
- 1.16. Connect the two hydraulic hoses. If the hoses are too short, cut cable ties inside and under the vehicle as required to adjust the lengths and resecure hoses with cable ties.
- 1.17. Lower the vehicle.
- 1.18. Fill up the reservoir with hydraulic oil. Follow the level recommended on the dip stick.
- 1.19. Bleed the hydraulic system of the access ramp. Readjust oil level is needed.

**NOTE**

See section 12: *Wheelchair Access Ramp* of the Nova LFS maintenance manual for the bleeding procedure.

- 1.20. Reinstall the red tool box with the removed hardware and reinstall the central access panel.
- 1.21. The vehicle can return in service. ❖

ANNEXE



NOTE

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

	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 1 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

SCOPE OF THIS PROCEDURE: Change the actual plastic reservoir to a new aluminium reservoir on ramp HPU.

ACTUAL HPU :



NEW ALUMINUM RESERVOIR FOR HPU :



MANUFACTURING ENGINEERING DEPT.		REV	DATE
WRITTEN BY:	PAUL DROLET	0	2019-04-05
REVISED BY:	MICHEL PARE	0	
APPROVED BY:	YVES FONTAINE	0	

	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 2 / 27
		SUBJECT : Alum Reservoir Retrofit

1. DESCRIPTION AND OPERATION OF FINAL ASSY RETROFIT

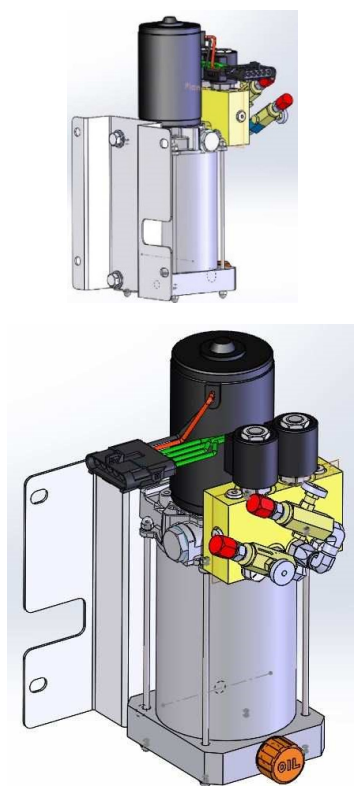


Figure 1 – HPU Assembly

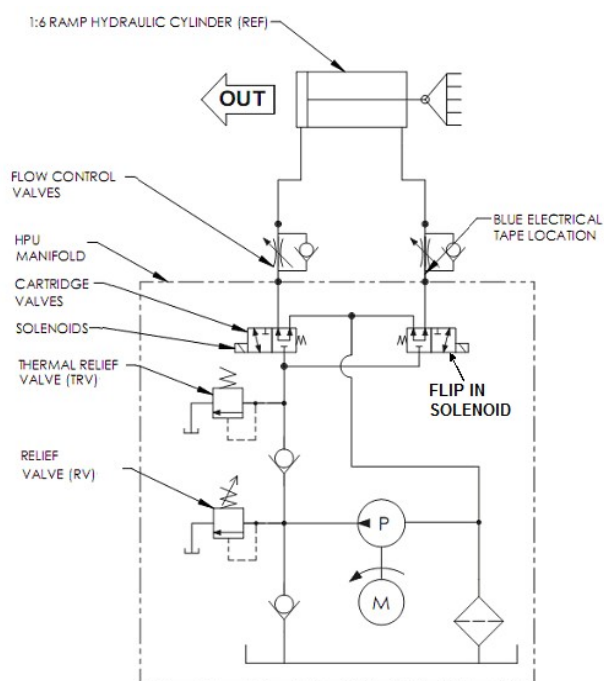


Figure 2 – HPU Schematic

MANUFACTURING ENGINEERING DEPT.		REV	DATE
WRITTEN BY:	PAUL DROLET	0	2019-04-05
REVISED BY:	MICHEL PARE	0	
APPROVED BY:	YVES FONTAINE	0	

	CALMO RETROFIT PROCEDURES		Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit		PAGE : 3 / 27
	ASSEMBLY (P/N 8060-07-A2)		SUBJECT : Alum Reservoir Retrofit

2. RETROFIT PART LIST SUPPLIED

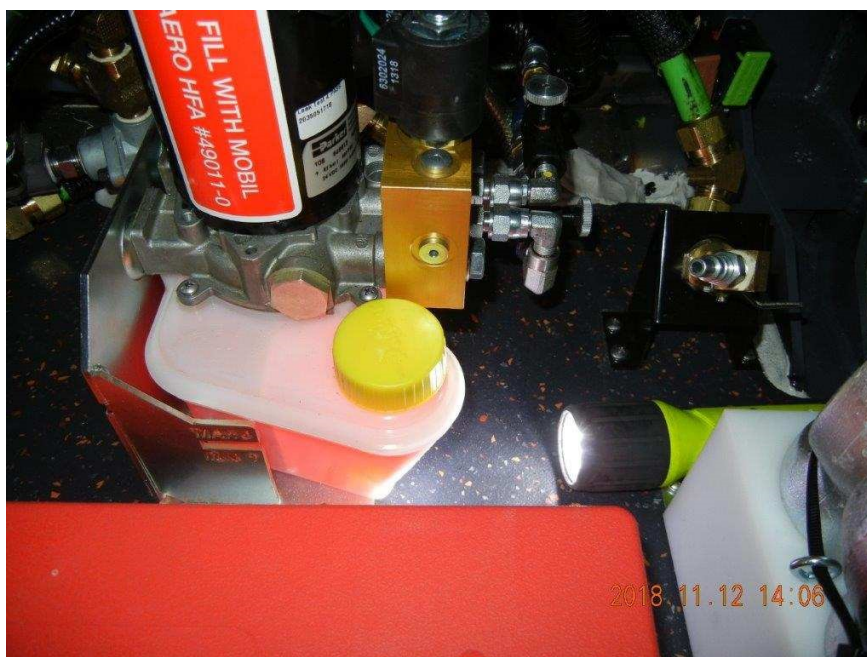
Refer to parts list # 8060-07-A2 for the bill of materials.

ITEM ¹	P/N	DESCRIPTION	QTY
	8060-07-03-R00	HYDRAULIC UNIT SUPPORT	1
	92865A622	SCREW, HEX, 3/8-16, 3/4L, STL, GR5, ZP	2
	91102A760	WASHER, S/LOCK , 3/8, STL ZP	2
	90126A031	SAE F/WASHER, 3/8", OD 13/16" MAX, STL, ZP	2
	9452K189	O'RING 3.609" ID X .139" BUNA N-70 DURO	2
	8060-07-01-R00	CYLINDER	1
	8060-07-02-R00	RESERVOIR END	1
	8060-07-05-R00	OIL DIP STICK MODIFIED	1
	8060-07-04-R00	THREADED ROD	4
	91102A735	STEEL LOCK WASHER # 8, ZINC PLATED	8
	91875A115	STEEL CAP NUT, # 8-32, ZINC PLATED	8
	7619A25_BLUE	TAPE, ELEC, BLUE, 3/4 Wide x 4 in.	1

	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 4 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

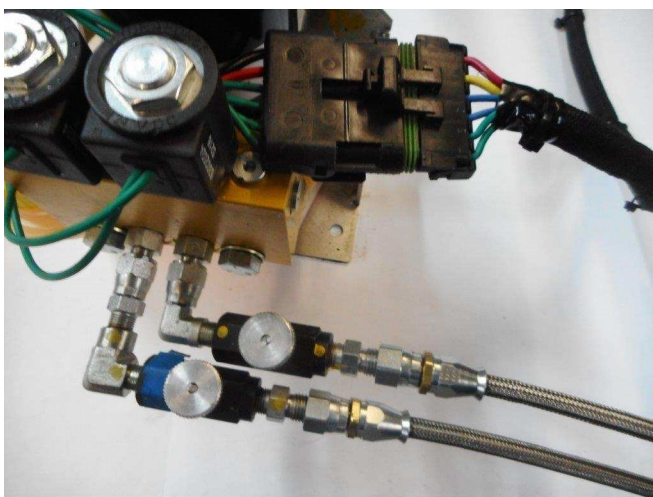
LOCATION OF HPU:

- Remove the vertical access board at center of dash
- The HPU is fixed on floor near front of red tool box

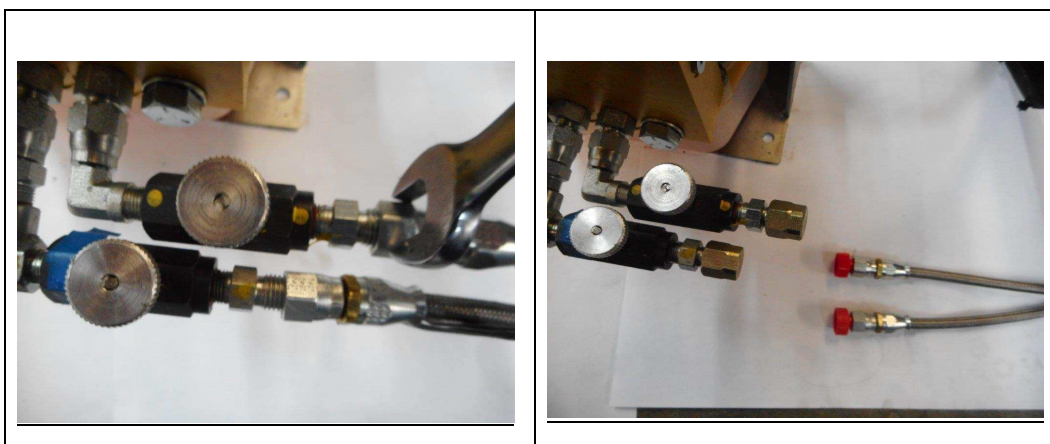
**TOOLING LIST NEEDED TO REMOVE HPU FROM UNDER DASH FLOOR:**

- 9/16 wrench
- 9/16 socket 3/8 drive
- 3/8 drive ratchet wrench
- 6" extension 3/8 drive
- waste oil container (20 oz min.)

	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 5 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

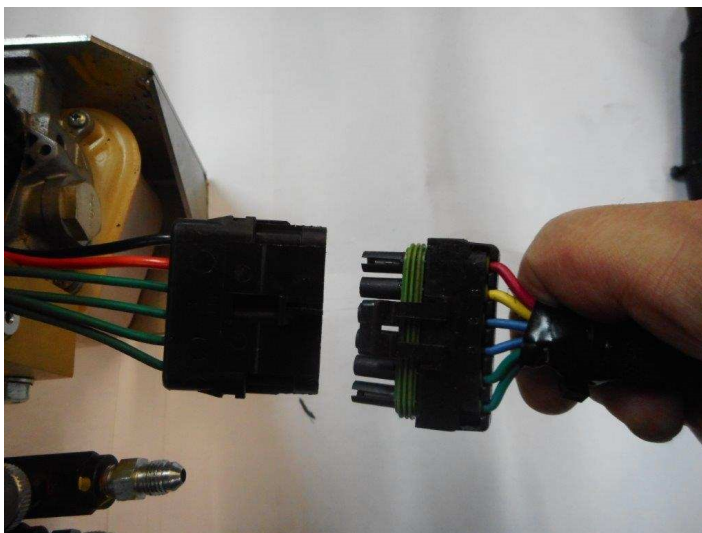
VIEW OF HPU BEFORE REMOVING

- Remove 2 hydraulic hoses with 9/16 wrench



	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 6 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

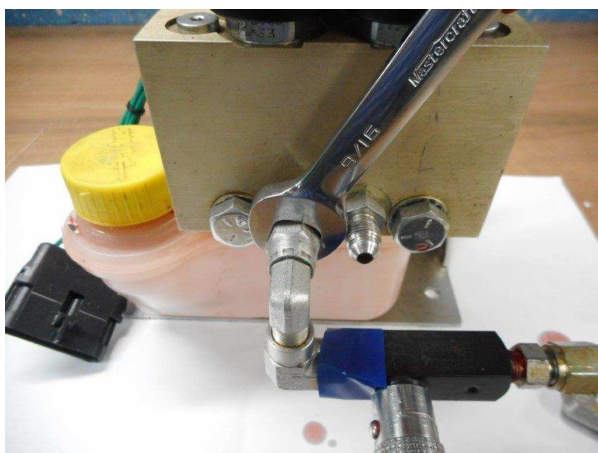
- Unplug the electric connector



- To remove HPU from the bus, remove hex bolts and nuts using:
 - 3/8 drive ratchet wrench
 - 9/16 socket 3/8 drive
 - 6" extension 3/8 drive
 - 9/16 wrench
- Remove HPU from bus and deposit on work table

	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 7 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

Remove the deployment & stow fitting Assy from actual HPU and remove blue tape and keep near



	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 8 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

Empty oil from reservoir into a waste oil container (20 oz min.)

Remove hex bolt behind the pump and remove HPU support



Remove screw on plastic reservoir



	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 9 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

- Remove reservoir and o-ring



	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 10 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

ASSEMBLY PROCEDURE:

List of required tooling

5/16 open end wrench.
Phillips #2 screwdriver.
5/16 Socket-1/4 drive.
Adjustable torque screwdriver ¼ drive (need 15 in-pounds)
or ¼ drive torque wrench.
Hydraulic oil and Q-tips.
Assy jig and C clamp

•
•



•

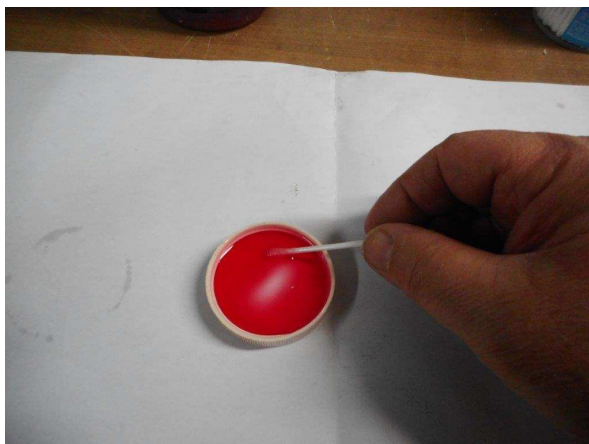
	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 11 / 27
		SUBJECT : Alum Reservoir Retrofit

- Install jig on edge of work table

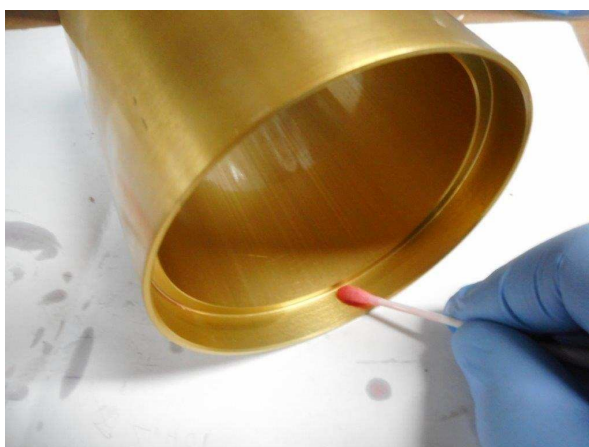


	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 12 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

Parts Preparation with hydraulic oil and Q-tips

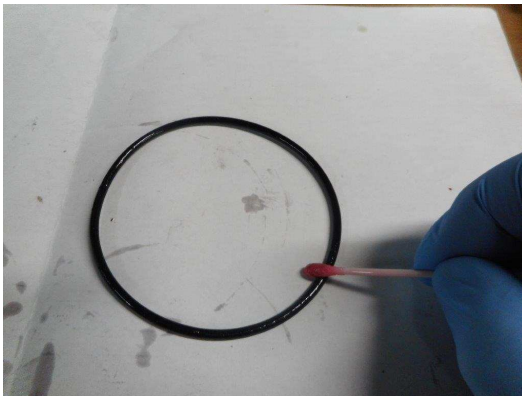


- Apply oil on both ends of cylinder

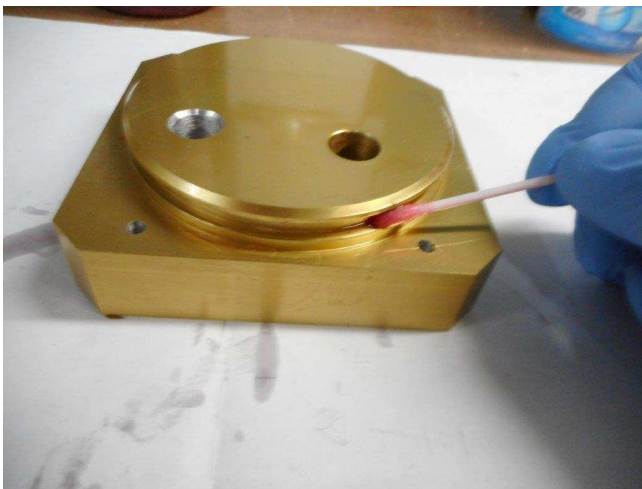


	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 13 / 27
		SUBJECT : Alum Reservoir Retrofit

- Apply oil on o-rings



- Apply oil on groove and chamfer of reservoir end

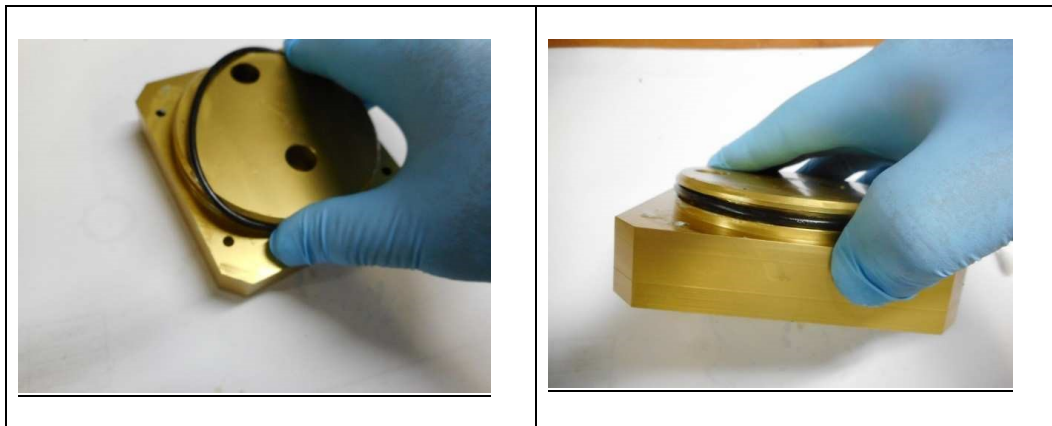


	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 14 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

- Install O ring on HPU

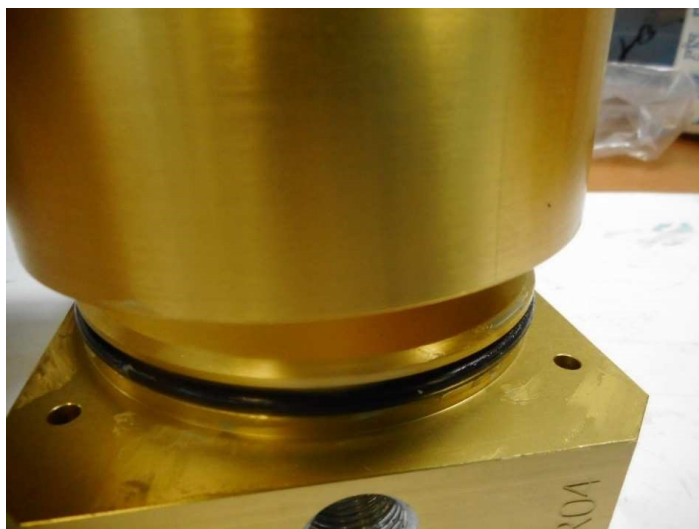
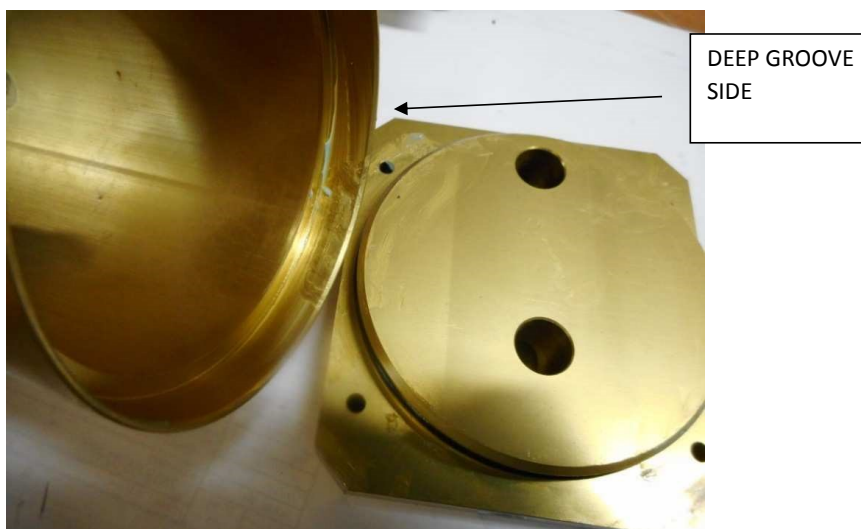


- Install O ring on reservoir end



	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 15 / 27
		SUBJECT : Alum Reservoir Retrofit

- Assemble cylinder with reservoir end



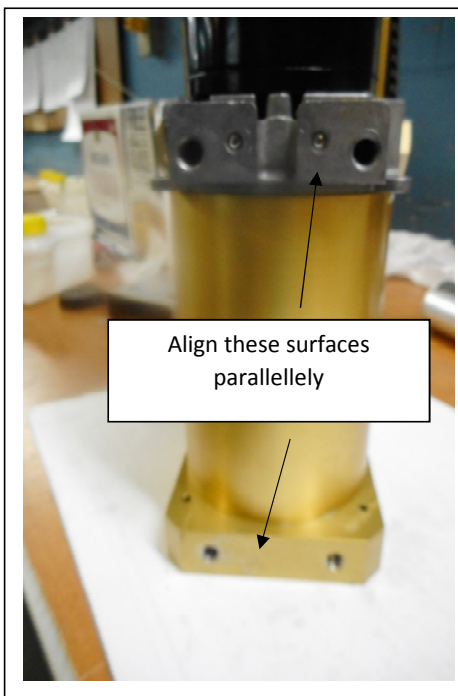
	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 16 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

- Push and twist lightly



	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 17 / 27
		SUBJECT : Alum Reservoir Retrofit

- Assemble HPU with o-ring at other end of cylinder and align fixing holes surfaces in a same plane.
- Keep assy in standing position



	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 18 / 27
		SUBJECT : Alum Reservoir Retrofit

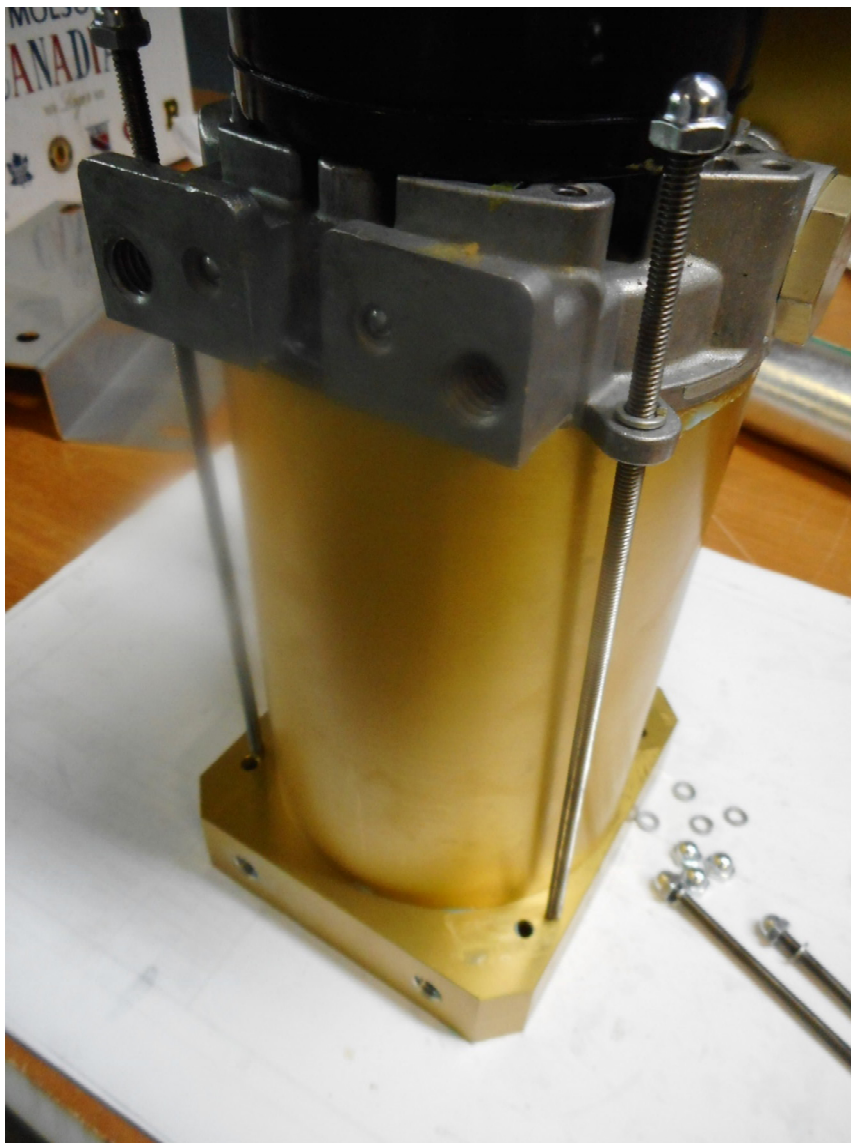
Fastening Preparation

- Assemble threaded rods with nuts and lock washers no. 8 at one end



	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 19 / 27
		SUBJECT : Alum Reservoir Retrofit

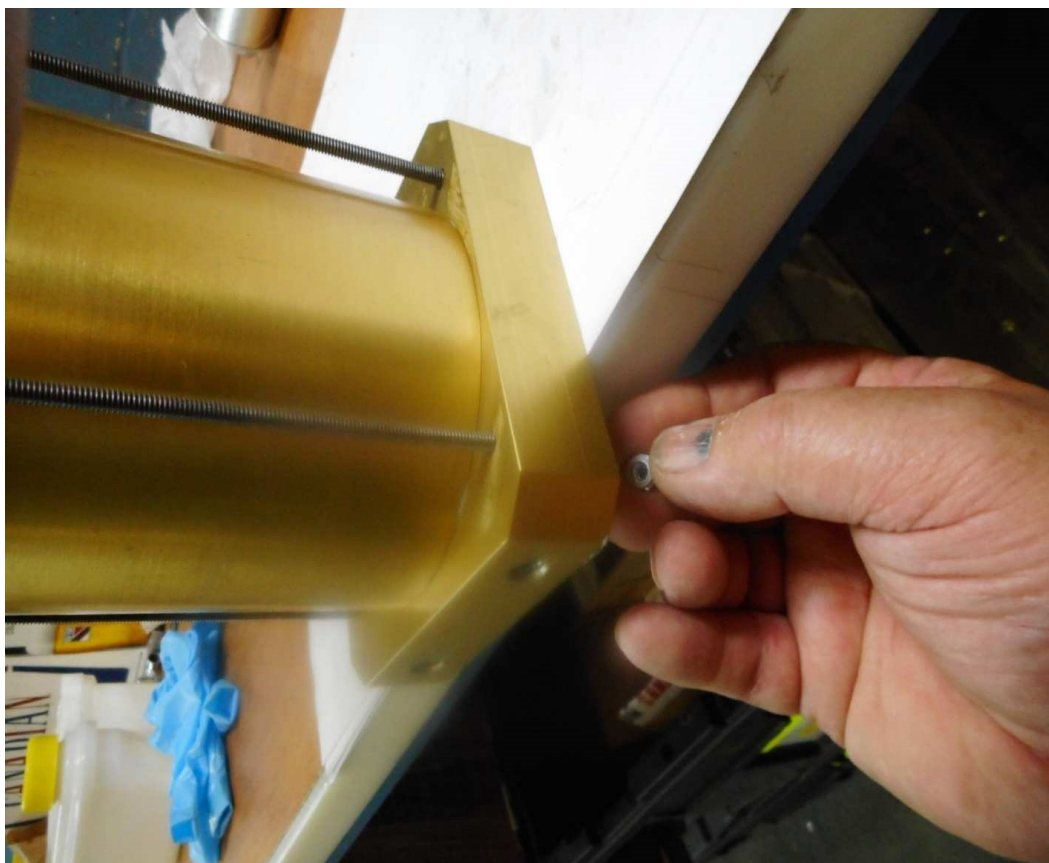
- Insert rods with nut in flange tab on two sides into holes of HPU



	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit	Doc #: Retrofit-Houston
	ASSEMBLY (P/N 8060-07-A2)	PAGE : 20 / 27
		SUBJECT : Alum Reservoir Retrofit

- Slide Assy on the edge of work table and install nut and lock washer no. 8 at other end of threaded rod and tighten BY HAND ONLY. BE CAREFUL NOT TO BREAK TAB OF PUMP: DO NOT USE TOOL.

NOTE: Make Sure to keep cylinder, HPU and cylinder end together and parallel during this operation.



	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 21 / 27
		SUBJECT : Alum Reservoir Retrofit

- Transfer unit into jig: make sure the toggle is retracted before transfer.
- Apply bolting surfaces of HPU on vertical tube of jig

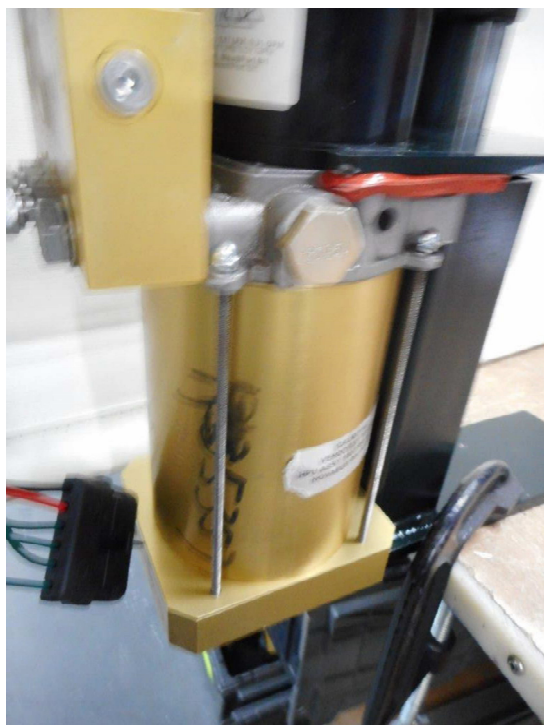


- Push down toggle



	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 22 / 27
		SUBJECT : Alum Reservoir Retrofit

- Install 2 other threaded rods on manifold side



	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 23 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

Apply a 10-in/lb maximum torque on nut with open-end wrench on HPU side and torque wrench at the other end. (BE CAREFUL: YOU CAN BREAK TAB OF PUMP IF YOU TORQUE TOO MUCH)



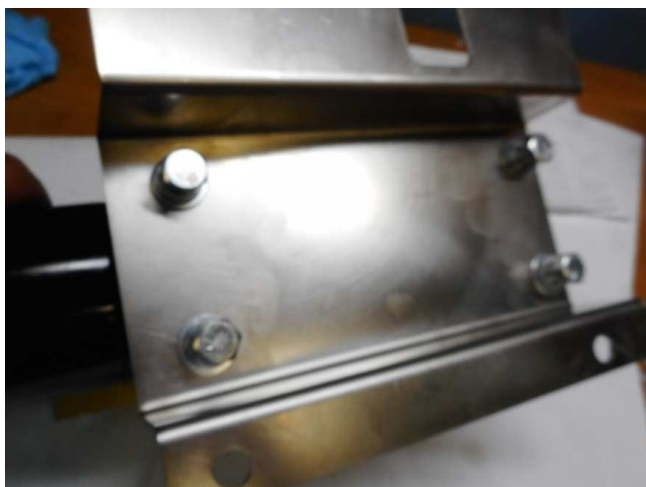
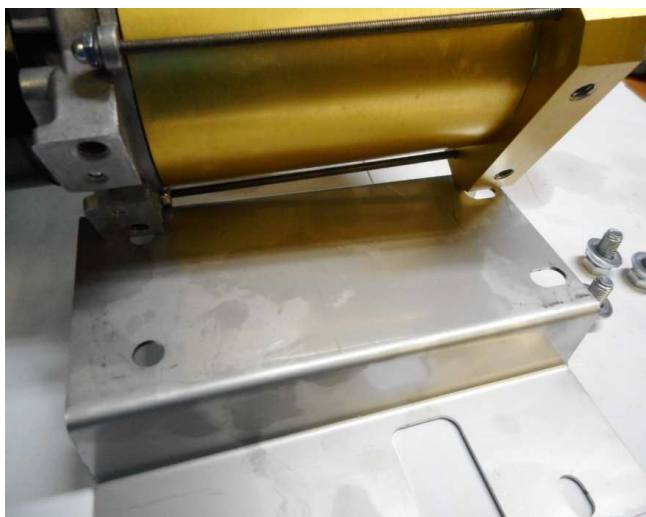
	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 24 / 27
		SUBJECT : Alum Reservoir Retrofit

- Prepare screw, hex, 3/8-16, 3/4l, lock washer 3/8 and flat washer, 3/8.



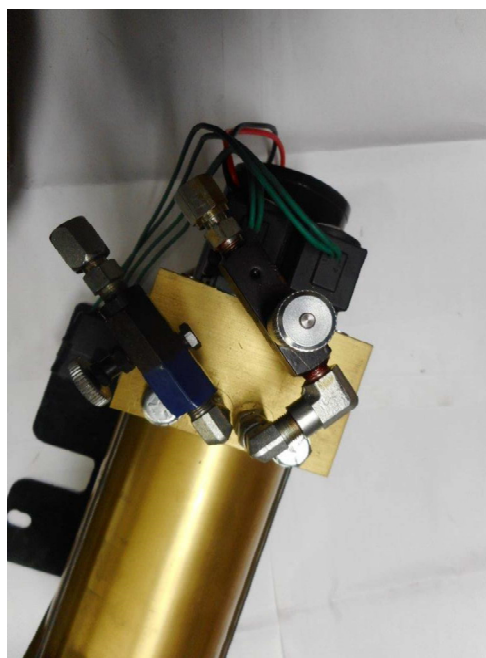
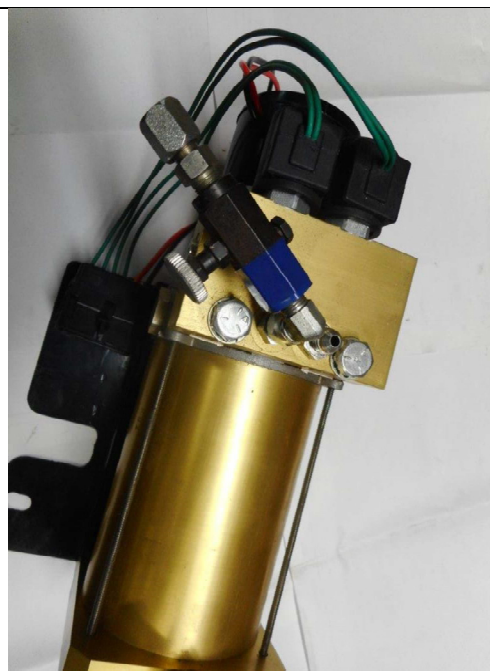
	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 25 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

- Install HPU support under unit and install prepared fasteners and torque at 30 ft-lbs



	CALMO RETROFIT PROCEDURES	Doc #: Retrofit-Houston
	Aluminium Reservoir(HPU) Retrofit	PAGE : 26 / 27
	ASSEMBLY (P/N 8060-07-A2)	SUBJECT : Alum Reservoir Retrofit

- Align, fix, and tighten the flow control fitting assembly at location shown below. With a wrench and the torque wrench, torque the swivel fitting to 10 lbf-ft (14 N-m). Install blue tape



CAUTION: DO NOT OPERATE THE HPU FOR MORE THAN FIVE MINUTES. IF YOU DO, HYDRAULIC OIL WILL BECOME TOO HOT, AND THE TRV WILL BE ACTIVATED. THIS CAN CAUSE DAMAGE TO THE HPU UNIT COMPONENTS.

- REINSTALL THE HPU IN BUS, SEE PROCEDURE “CPP-7287-0059-Pump Installation”.**

RECORD OF REVISIONS

REVISION	DATE	ISSUE DESCRIPTION
----------	------	-------------------

Calmo Product Procedures	Retrofit-Houston/ Emission Date 2018-08-30	Page 26 of 27
--------------------------	--	---------------

	CALMO RETROFIT PROCEDURES Aluminium Reservoir(HPU) Retrofit ASSEMBLY (P/N 8060-07-A2)	Doc #: Retrofit-Houston
		PAGE : 27 / 27
		SUBJECT : Alum Reservoir Retrofit
0	April 16th 2019	New issue

