ISSUE DATE:	07/07/2023
SERVICE BULLETIN SUBJECT:	Hydrovane Air Compressor Snorkel, Coupler, PreFilter, Oil Flush, Air Filter Retrofit
VINs or MODELS AFFECTED:	Service Specified Buses
COMPLETE BY:	Next Service Opportunity
SERVICE BULLETIN #:	SC-23-054 & SC-23-055
LABOR OPERATION CODE:	BC52Z & BC51Z

Labor Table

	Operation	Number of Technicians	Hours	Labor Time (T x H)
1	Step 1 – Step 2 (If Snorkel is NOT Installed)	1	1	1
2	Step 3 – Step 17	1	1.5	1.5
3	Step 18 – Step 34	1	1	1
		Total Labor Time		3.5

Hydrovane Air Compressor Snorkel, Coupler, PreFilter, Oil Flush, Air Filter Retrofit

Description:

The procedure describes the process of assessing snorkel, coupler, pre-filter, oil flush, and air filter needs.

Two kits are referenced:
064563 is for buses that **have not** previously been retrofitted with a snorkel.
064578 is for buses that **have** previously been retrofitted with a snorkel.

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Tools and Supplies Required:

Square Key
Flat Blade Screwdriver
2 large adjustable wrenches
Torque wrench
3/8’’ socket
22mm socket

Kit Parts Required:

064563		KIT, SERVICE, AIR COMPRESSOR, **WITH** SNORKEL (snorkel not installed)	
	048813	CLAMP, CONSTANT TENSION WORM, 1.75" - 2.625"	2 EA
	012138	CABLE TIE, HEAVY DUTY .5WIDE 9.1" BLACK	3 EA
	012108	SWIVEL BUNDLE, SPACER	4 EA
	188-6952	COUPLER, AIR COMP-FILTER, 2.00"/1.75" X 3"	1 EA
	189-5180	FITTING, REDUCER BUSHING, 2" MPT x 1 1/2" FPT, SCH 40	1 EA
	189-5181	FITTING, REDUCER MALE ADAPTER, 1 1/2" MPT x 1 1/4"	1 EA
	189-2562	FILTER, PRELIMINARY, AIR COMPRESSOR	1 EA
	018384	OIL, COMPRESSOR, HYDROVANE HPO	69 FO
	057079	SEAL, OIL DRAIN PLUG	1 EA
	019931	AIR FILTER, LARGE, AIR COMPRESSOR	1 EA
	019932	AIR FILTER, SMALL, AIR COMPRESSOR	1 EA
	172-3302	HOSE, SNORKEL, AIR	48 IN

064578		KIT, SERVICE, AIR COMPRESSOR, **WITHOUT** SNORKEL (snorkel installed)	
	048813	CLAMP, CONSTANT TENSION WORM, 1.75" - 2.625"	2 EA
	188-6952	COUPLER, AIR COMP-FILTER, 2.00"/1.75" X 3"	1 EA
	189-5180	FITTING, REDUCER BUSHING, 2" MPT x 1 1/2" FPT, SCH 40	1 EA
	189-5181	FITTING, REDUCER MALE ADAPTER, 1 1/2" MPT x 1 1/4"	1 EA
	189-2562	FILTER, PRELIMINARY, AIR COMPRESSOR	1 EA
	018384	OIL, COMPRESSOR, HYDROVANE HPO	69 FO
	057079	SEAL, OIL DRAIN PLUG	1 EA
	019931	AIR FILTER, LARGE, AIR COMPRESSOR	1 EA
	019932	AIR FILTER, SMALL, AIR COMPRESSOR	1 EA

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Procedure:

1. Using a Square Key, open the trunk and streetside rear panels to access the air compressor.
2. Determine if the vehicle has a snorkel installed as shown in Figure XX

    a. If a snorkel hose is present and coming from the compressor, kit 064578 (KIT, SERVICE, AIR COMPRESSOR, W/O SNORKEL) should be used. Move on to Step 3.

    b. If there is no snorkel hose present, the snorkel hose will need to be installed with kit 064563 (KIT, SERVICE, AIR COMPRESSOR, W/ SNORKEL). Route the Snorkel, as shown in Figure 1 and Figure 2, as high and close to the HVJB as possible. Apply Swivel Bundle Spacers (PN: 012108) and Cable Ties (PN: 012138) as shown in Figure 1. Disregard the installation of the mushroom cap, as that part will be replaced in following steps.

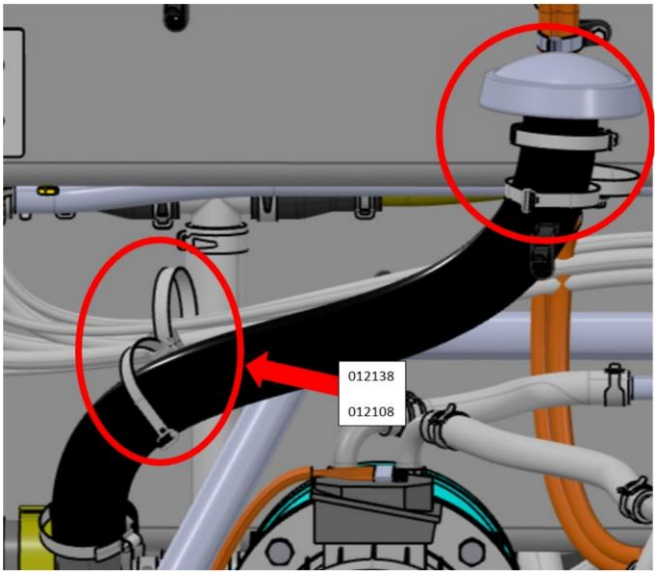

Figure 1: Snorkel Routing with Swivel Spacers and Ties

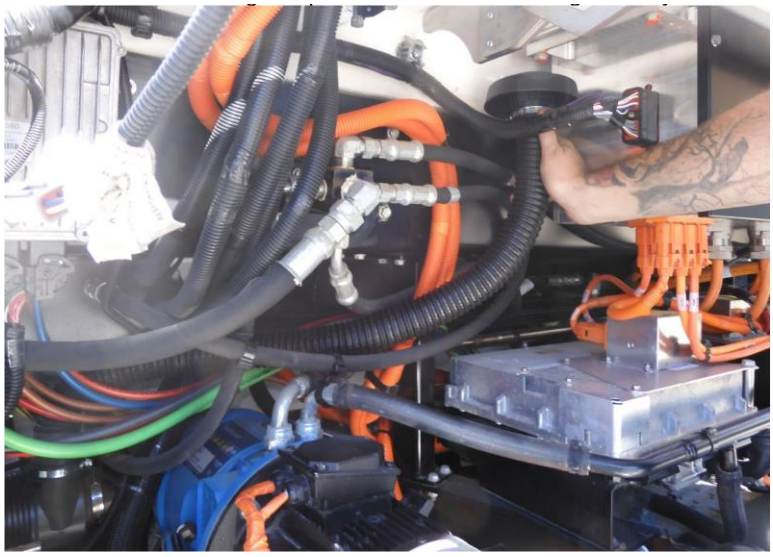

Figure 2: Snorkel Routing Close to HVJB

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Perform Oil Flush

3. Shut down the power to the compressor. Drain the pressure from the oil sump housing by letting the compressor sit for approximately 5 minutes. Compressor should be cool to the touch before moving to the next step.

4. Remove the oil sump temperature probe from the oil fill plug in Figure 3.

5. Remove oil sump fill plug shown in Figure 3.

Figure 3: Oil Sump Fill Plug

6. Remove drain hose from bottom banjo style fitting, shown in Figure 4, on oil sump to allow oil to drain from compressor.

    a. Some newer compressors will have a plug+seal (PN 057078 & 057079) instead of the banjo fitting.

Figure 4: Banjo Style Fitting

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7. Once oil has stopped flowing freely from port on bottom of oil sump, replace plug and gently tighten with the 22mm socket.

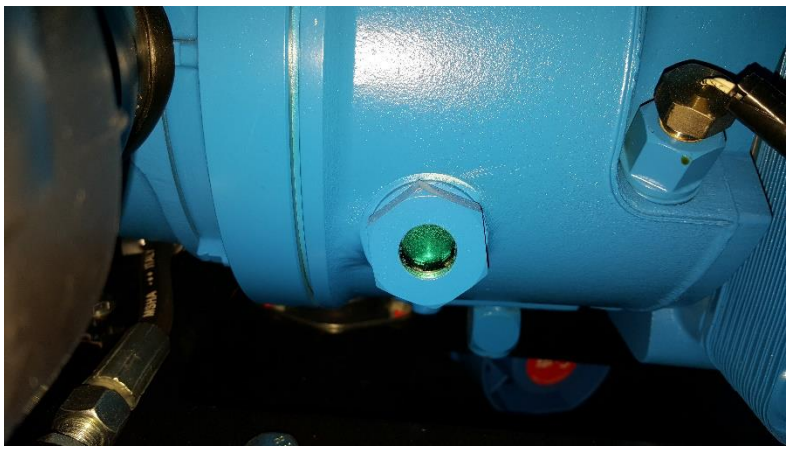

Figure 5: Compressor with Older Banjo Style Fitting

8. Add the Hydrovane HPO lubricant back into the compressor via the oil fill port until oil is at top of sight glass.

9. Reinstall oil fill plug and gently tighten.

10. Power up compressor and startup and allow compressor to run for approximately 5-10 minutes to allow oil to circulate through the compressor. Compressor should be cool to the touch before moving to the next step.

    NOTE: Air may need to be bled from the primary and auxiliary air storage tanks during this run period to keep the compressor from shutting off due to pressure demand in the system being satisfied.

11. Repeat the oil drain procedure as described in steps 6-10.

12. Check oil sump level in sight glass and top off with HPO lubricant if required.

13. Add a small amount of HPO lubricant into the thermal well in the oil fill plug prior to inserting the temperature probe.

14. Reinstall oil temperature probe and tighten to ½ turn past hand tight. Torque the drain and fill plugs or Banjo fittings to 17 ft-lbs (23 Nm).

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Change Filter

15. Complete the Proterra Lock Out/Tag Out procedure to make the bus safe for work.

16. Locate the air compressor filter canister behind the upper streetside rear access panel, release the two latches holding the outer cover, and remove the outer cover from the filter canister as shown in Figure 6.

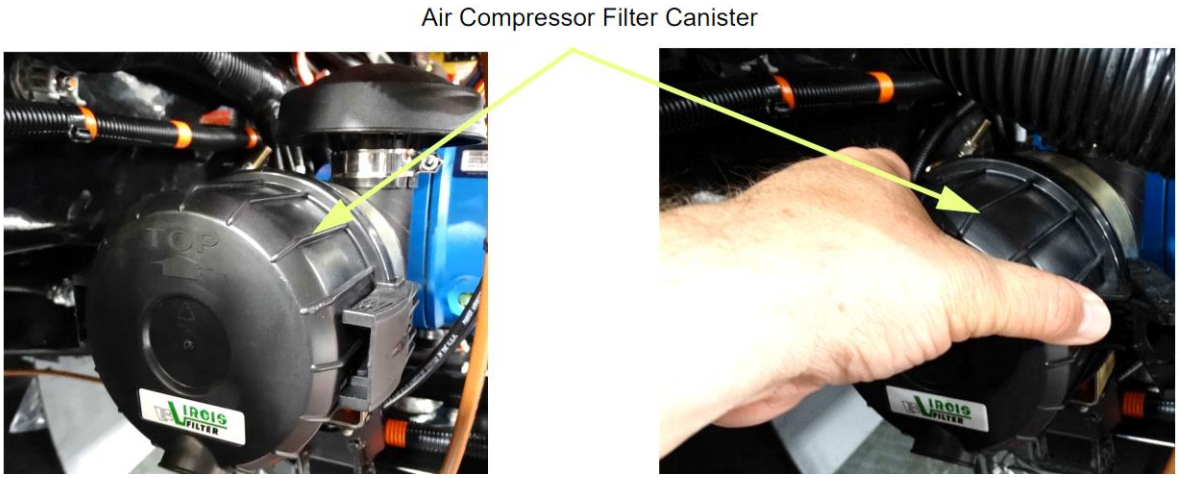

Figure 6: Air Compressor Filter Canister

17. Carefully remove the large outer filter element, shown in Figure 7, from inside the filter canister and discard.

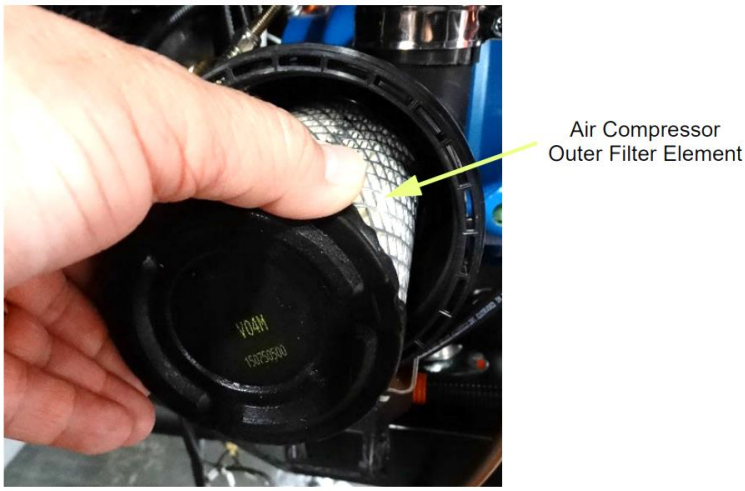

Figure 7: Air Compressor Outer Filter Element

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18. Carefully remove the small inner filter element, shown in Figure 8, from inside the filter canister and discard.

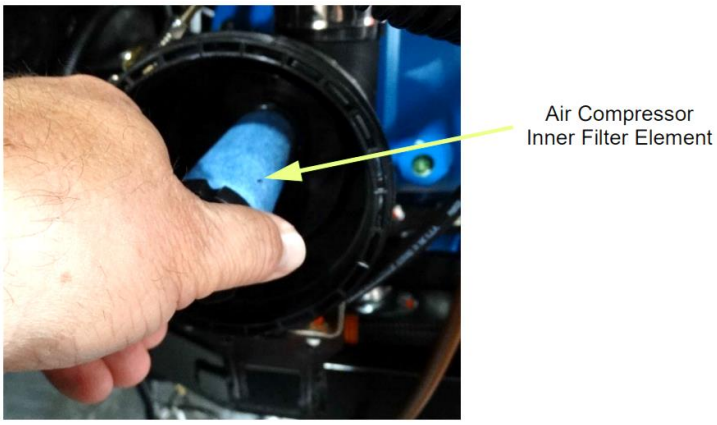

Figure 8: Air Compressor Inner Filter Element

19. Install a new inner filter element into the filter canister, ensuring that it is fully seated.

20. Install a new outer filter element into the filter canister, ensuring that it is fully seated.

21. Install the outer cover onto the filter canister, ensuring that it is properly oriented with the “TOP” arrow pointing up as shown in Figure 9, and secure the two latches.

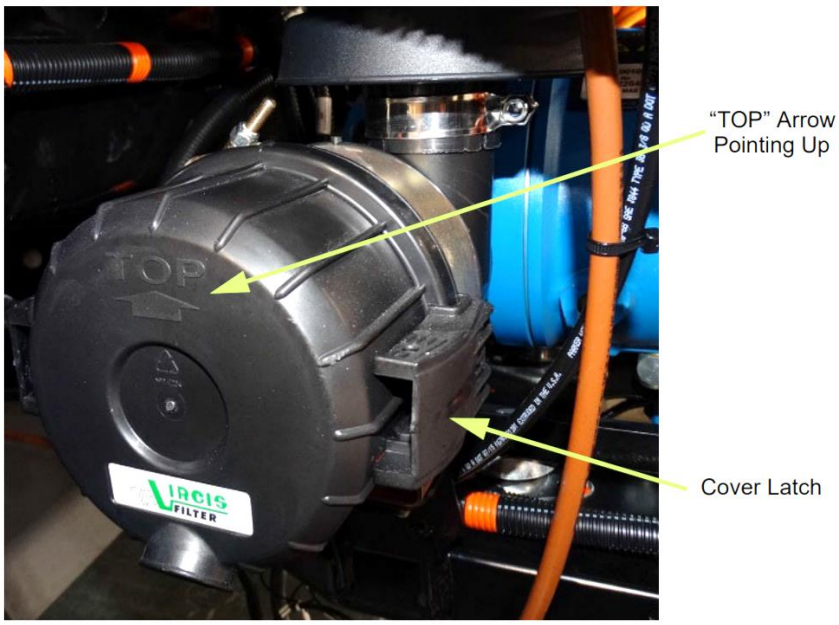

Figure 9: Orientation of Outer Cover of Filter Canister

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Install Snorkel Pre-Filter

22. Remove the rain mushroom cap, shown circled in red on Figure 10, and corresponding hose clamp found at the end of the compressor snorkel. The mushroom cap can be disposed of. Keep the hose clamp for re-use on the pre-filter.

Figure 10: Snorkel Mushroom Cap

23. Assemble the filter, adapter, and bushing parts as shown in Figure 11. **(189-2562 , 189-5181, 189-5180)** to 1 full turn past finger tight

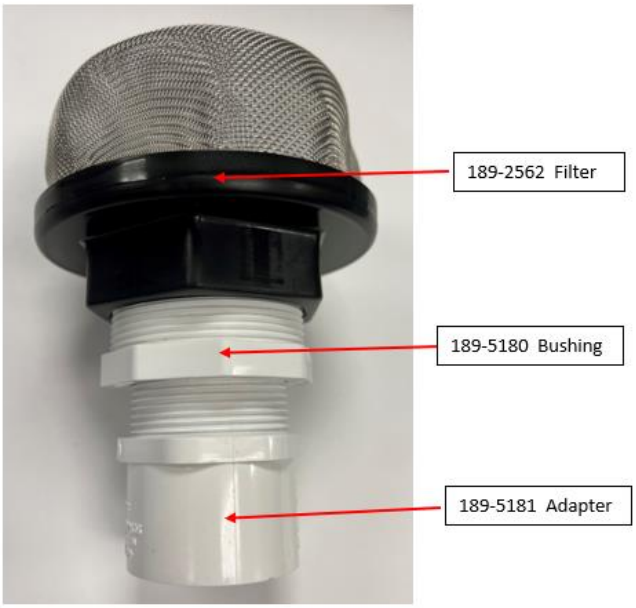

Figure 11: Snorkel Hose Filter Assembly

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24. Reinstall onto snorkel hose on vehicle with pipe clamp that was previously holding the mushroom cap in place and torque to 5-6 Nm. Ensure the mesh cap is secured well enough such that it will not rub other components. A zip tie securement should be installed as close as possible to the pre-filter. Below photos show routing on 35', Figure 12, and 40' models, Figure 13.

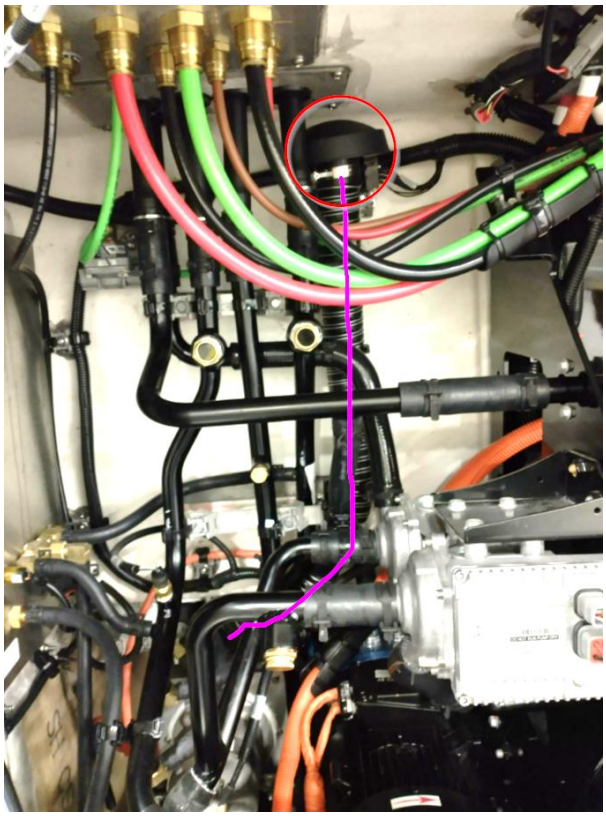

Figure 12: 35' Snorkel Hose Routing

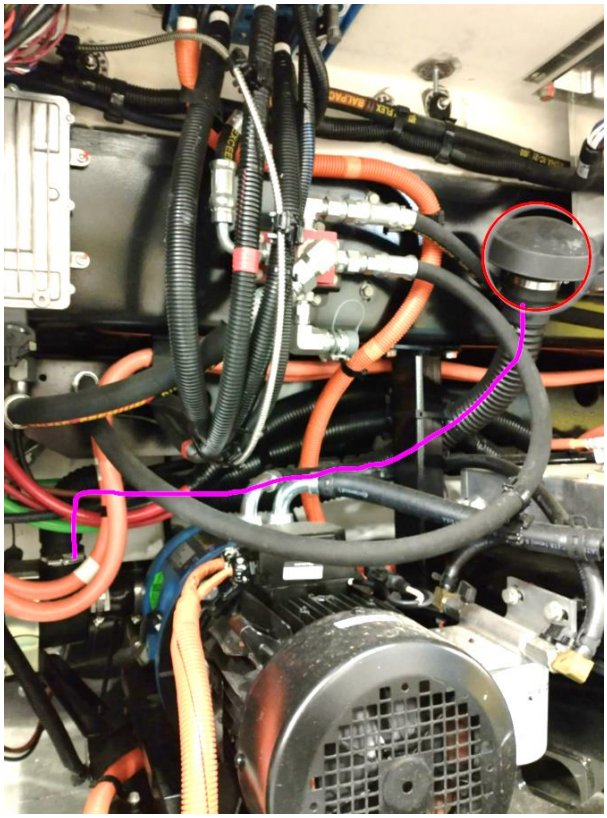

Figure 13: 40' Snorkel Hose Routing

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Install Compressor to Filter Box Coupler

25. This procedure will replace the Coupler indicated by the red arrow shown in Figure 14.

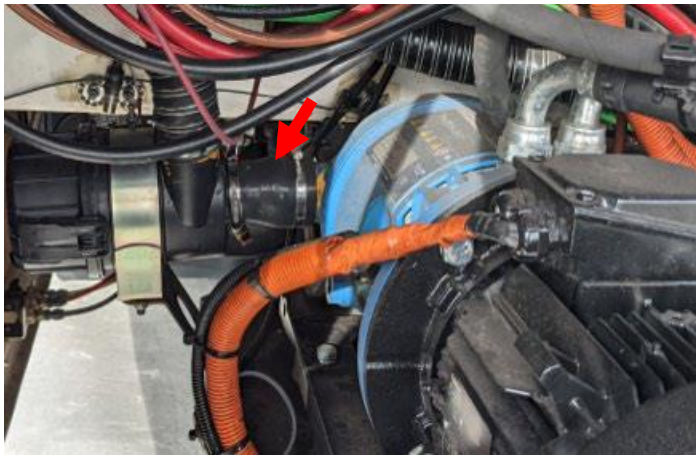

Figure 14: Air Compressor Old Coupler

26. Using a Flat Blade Screwdriver, replace the old coupling (PN varies) with the new Coupling **(188-6952)** and Clamps **(2x 048813).**

27. Ensure that the new Coupler **(188-6952)** is mounted flush against the filter box as shown in Figure 15.

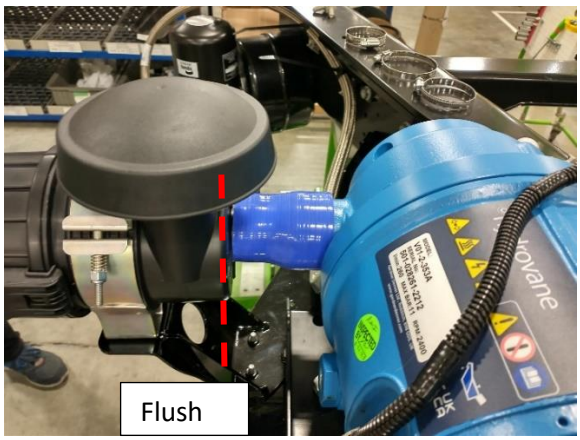

Figure 15: Air Compressor New Coupler

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28. Ensure that the clamp is positioned no more than 3.4 mm from the edge of the filter box as shown in Figure 16. Torque to 6±1Nm

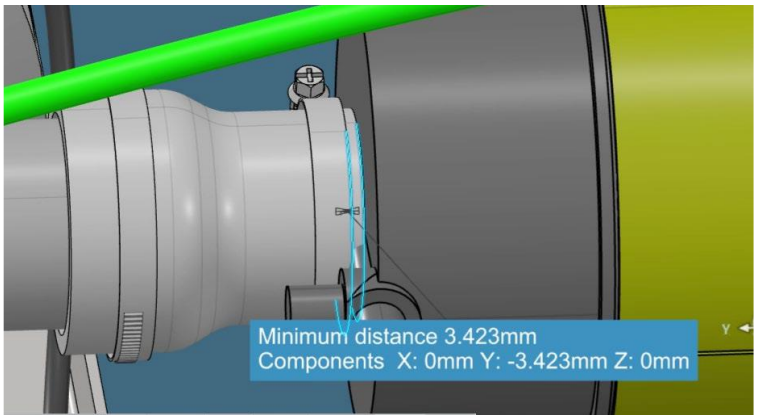

Figure 16: Air Compressor Coupler Clamp to Air Compressor

29. Ensure that other clamp is positioned no more than 12.4 mm from the edge of the clamp as shown in Figure 17. Torque to 6±1Nm.

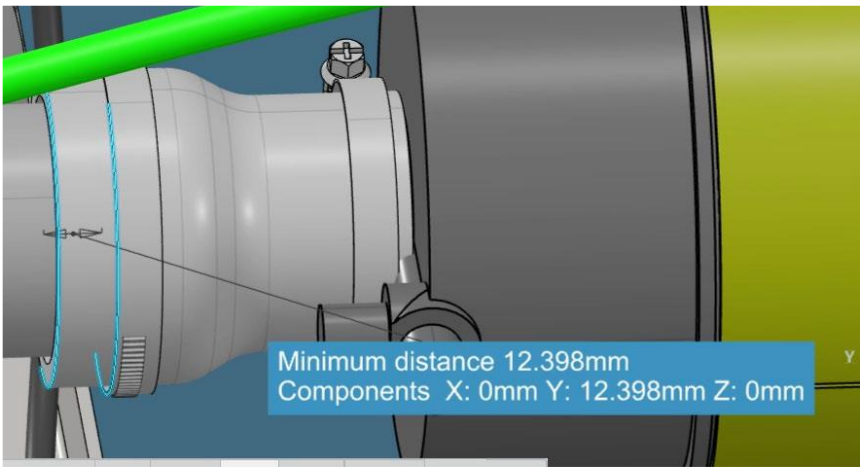

Figure 17: Air Compressor Coupler Clamp to Line

30. Using a Square Key, close and lock the Panels.

31. Remove the Lockout/Tagout devices and return the bus to service.

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