Technical Support

Subject

Lincoln Air Vantage: Compressor Oil in Airstream

SYSTEM OR PARTS AFFECTED

- All VMAC Compressor Systems in Lincoln Air Vantage® 500/566/600/650/750/800 Welders
  - VMAC S700033 in Lincoln AV500 with Cummins® B3.3 Diesel
  - VMAC S700066 in Lincoln AV500 Kubota® V3600-T Turbo-Charged Diesel EPA Tier 4i FLEX
  - VMAC S700157 in Lincoln AV500 with Cummins B3.3T Turbo-Charged Diesel
  - VMAC S700159 in Lincoln AV650/700/800 with Cummins B3.3T Turbo-Charged Diesel EPA Tier 4i
  - VMAC S700162 in Lincoln AV566/AV600/AV600x-I with Deutz® Turbo Charged TD2.94L4 Diesel Engine EPA Tier 4

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OVERVIEW

In an oil flooded rotary screw compressor system, minute amounts of compressor oil will always be present in the discharged air, though normally not visible. If an excessive amount of VMAC Compressor oil is present in discharged air, one can expect the compressor oil level to drop. Oil level should remain constant between services, and not require top-up.
Following are steps to determine the most likely causes of the problem in VMAC compressors in Lincoln Air Vantage products.

BEFORE YOU START

Confirm that the discharged fluid is in fact compressor oil, and not water.

In the process of compressing air, moisture contained within the air can condense in the compressor system and water may be visible in the discharged air.

When the VMAC system reaches normal operating temperature, any moisture present will be vaporized. In high humidity environments, and/or systems that are not run long enough to reach normal operating temperature (short cycle times), that water content may become droplets or visible mist.

Test for oil vs water:

- Direct some air pressure from the VMAC system against a sheet of paper or cardboard and allow some of the fluid in the discharged air to soak in. Water will evaporate with time and warmth, while an oil stain will remain in the paper indefinitely

POTENTIAL CAUSES AND SOLUTIONS

Incorrect Shutdown Procedure:

- Compressor turned off while running at high speed, still building air pressure, inlet open.
  - Full system pressure should have been achieved before shutting down (150 psi factory setting).
  - Follow the shutdown procedure found in the Owner's Manual
  - To find your owner's manual, see Lincoln Air Vantage Manuals at https://www.vmacair.com/support/manuals/

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Excessively high air flow:

- Excessively high air flow is allowing internal system pressure to drop below 65 psi. The compressor system needs minimum of approximately 65 psi to properly coalesce (separate oil from air).
- The air tool in use may require more airflow (cfm) than the compressor system can produce.
  - Ensure the air tool is rated for 60 cfm @ 100 psi, or less.
  - Ensure that there is a Minimum Pressure Check Valve (MPCV) in place after the coalescing manifold and that it is functioning properly. Figure *1*

NOTE ***MPCV is standard equipment in some Lincoln Air Vantage models, and optional in others. See* Figure *2* - Figure *3* for typical installation locations.***

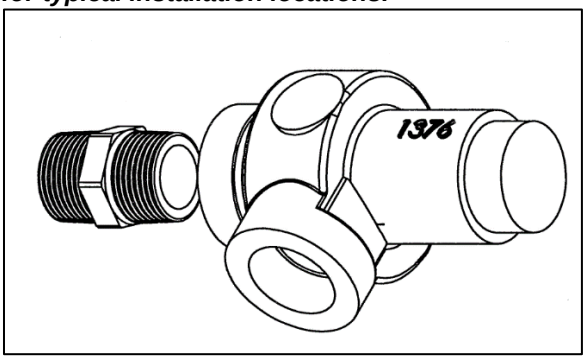

Figure 1

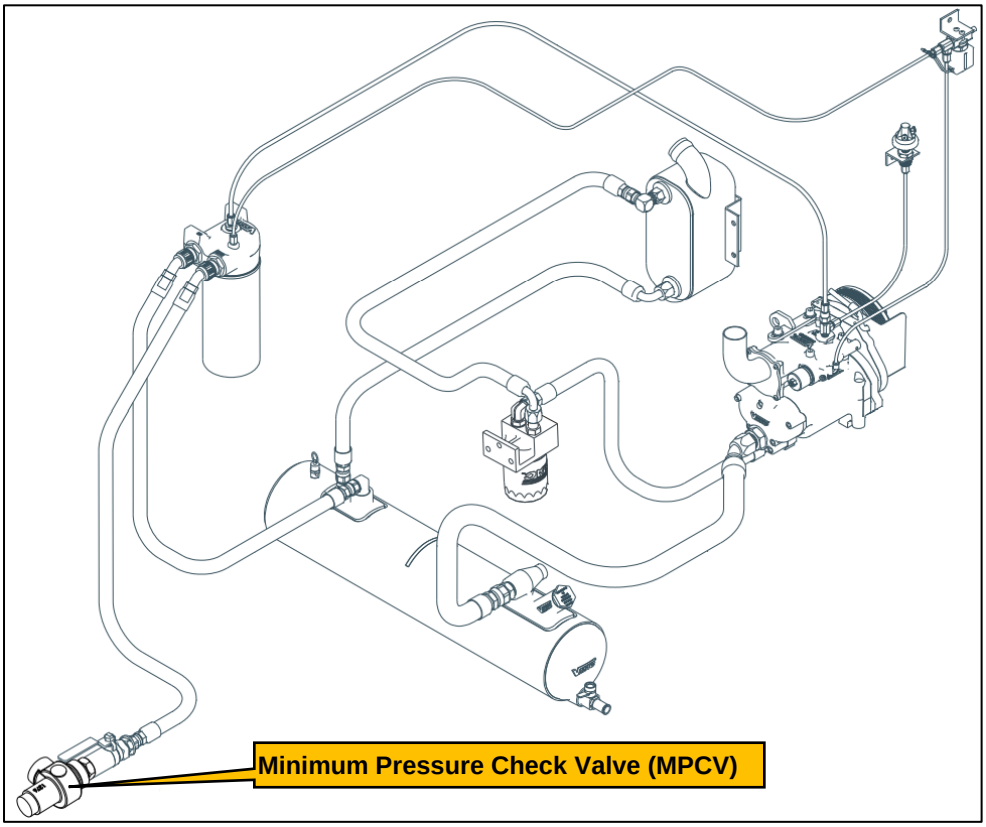

Figure 2

Version	Document	Department	Revision Details	Revised by	Tech	Engineering	Implemented
A	EXT-OEM-002	Tech	Document Release	BDJ	N/A	PD	17 Sept 2020

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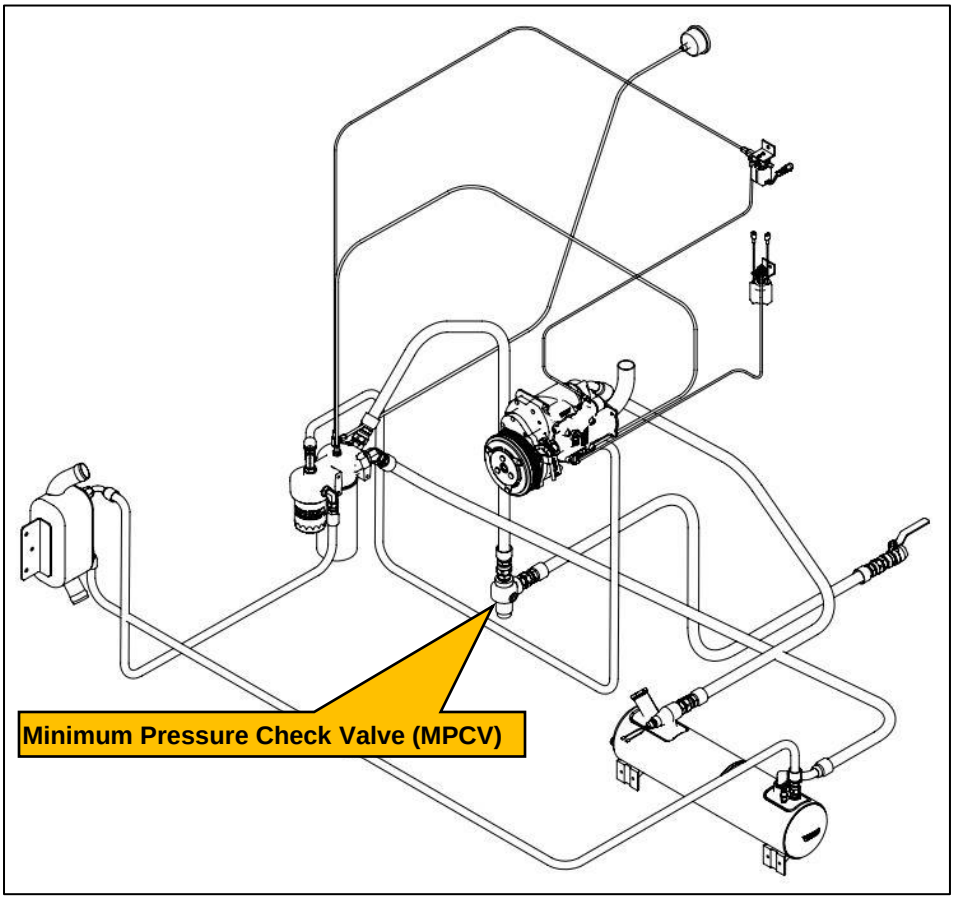

Figure 3

Compressor oil level too high:

- Compressor oil level too high.
  VMAC compressor oil is clear when new which can sometimes make it difficult to read the oil level in the sight glass or on the dip stick.
    - Ensure the compressor is correctly filled as per owner's manual.

Incorrect compressor oil used:

- System has been filled with incorrect oil, or had incorrect oil added to top-up, and will not coalesce properly.
    - Flush system and fill with VMAC compressor oil
    - See https://www.vmacair.com/service-kit/ under “OEM Systems Service Kits” for correct service products for VMAC systems used in Lincoln Air Vantage.

HOSES MIXED-UP AT COALESCING MANIFOLD BLOCK:

- During service/maintenance requiring removing removal of hoses from Coalescing manifold block, hoses may have been re-installed in reverse causing flow through the coalescing filter in the opposite direction to design.
    - Ensure that hoses are installed as per the Owner’s Manual for your specific VMAC system. See Figure 4 below for a *typical installation*
      To find and refer to the owner’s manual for your specific system go to https://www.vmacair.com/support/manuals/ under Lincoln Air Vantage Manuals.

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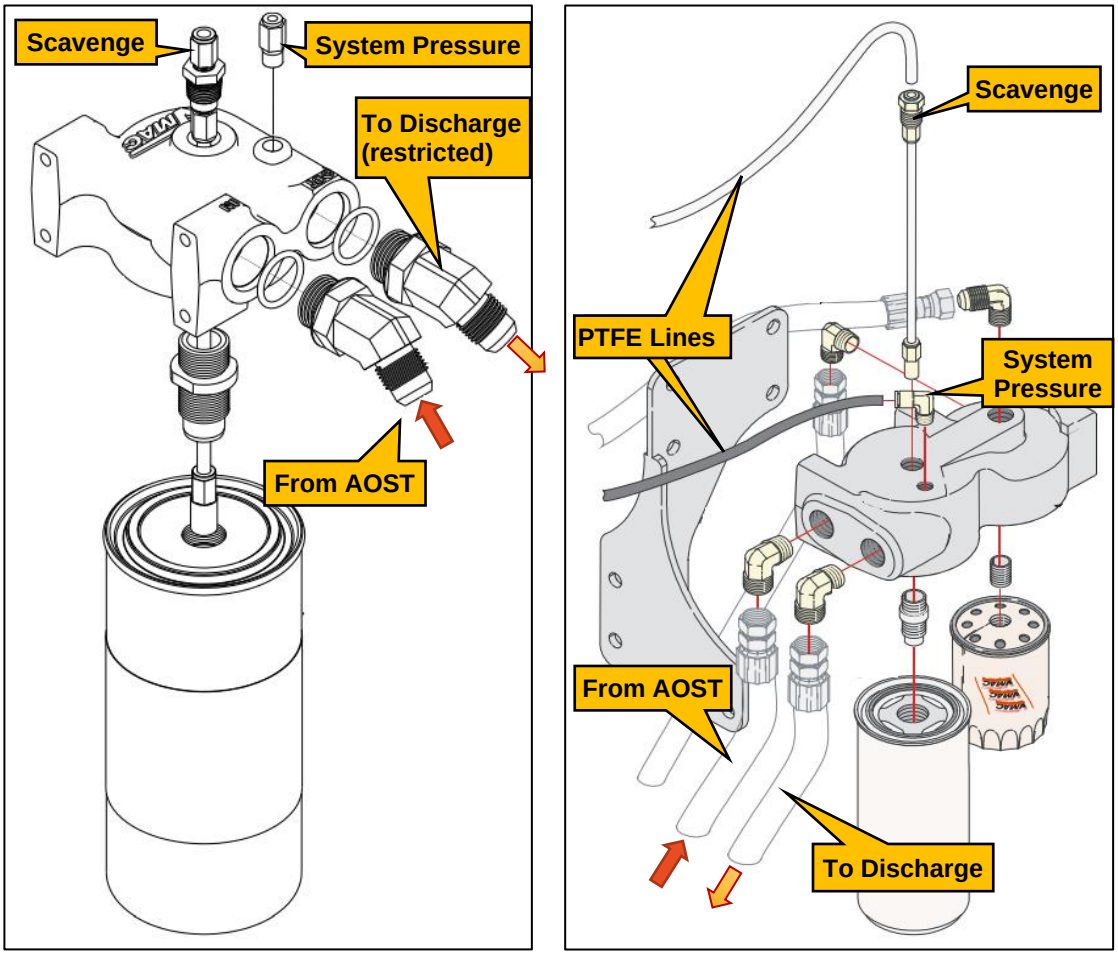

Figure 4

Incorrect discharge hose fitting in Manifold Block:

- The factory installed fitting to connect the discharge hose to the coalescing manifold contains a pressed-in restriction orifice.
    - Ensure this fitting has not been mixed up with the fitting for the AOST hose or replaced with a part without the required orifice.

PTFE tubes Mixed-Up at inlet or Coalescing Manifold Block:

- During service/maintenance requiring removing removal of the PTFE system pressure and scavenging lines from their quick-disconnect fittings at the inlet and/or Coalescing manifold block, hoses have been re-installed in reverse.
  Oil being captured by the coalescing filter will not be removed from the filter and recirculated through the scavenging line, allowing the filter to become oversaturated.
- Ensure that PTFE lines are installed as per the Owner's Manual for your specific VMAC system. See Figure 4 above for examples of *typical installation* .
  To find and refer to the owner's manual for your specific system go to https://www.vmacair.com/support/manuals/ under Lincoln Air Vantage Manuals.

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