Technical Support

Subject
Underhood Pressure Control Except “G” and “Lite” Kits

System or Parts affected

- Underhood70 (V900xxx)
- Underhood150 (V910xxx)

This document is not compatible with “G” or “Lite” systems

Index

Overview

This document is intended to help trouble shoot both over-pressurising and under-pressurizing of the VR70 and VR150 compressor systems. A separate document will cover the “G” and “Lite” systems.

Operation

The amount of air pressure VMAC’s underhood air compressor creates is controlled mechanically by the inlet valve. If the inlet valve is open the compressor will build pressure, if the inlet valve is closed it will not build pressure. (Figure 1)

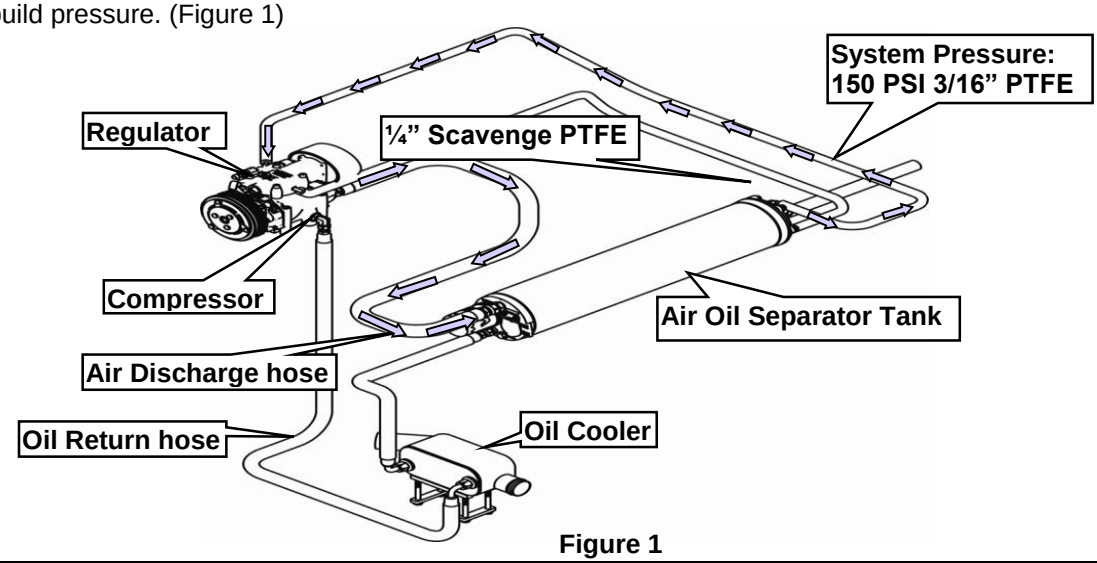

Figure 1

Document	Version	Department	Revision Details	Revised by	Tech	Engineering	Implemented
EXT-VR-033	A	Tech	Document Release	SP 31 Aug 2015	DB 31 Aug 2015	N/A	31 Aug 2015

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Pressure control line

Air pressure is taken from the 3/16” fitting at the top on the back side of the Air Oil Seperator Tank, it then travels down a 3/16” tube to a port on the regulator side of the compressor inlet valve. In extremely cold climates it is possible for ice to build up in this line, and on the older steel 3/16” tubes it was possible for internal corrosion to create a blockage. Any internal blockage or restriction will not allow for air pressure to close the inlet valve and will cause the inlet to stay open and the system to overpressurize.

Freezing lines

In cold conditions it is recommended to install the VMAC heat wrap on the pressure control line. (VMAC part number A700031)

Steel lines

VMAC recommends upgrading the steel lines to the new quick connect PTFE lines (VMAC part number A700153)

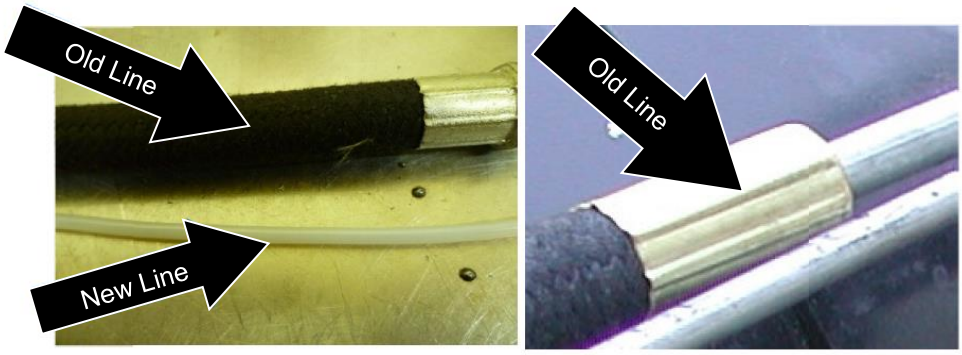

Figure 2

Inlet Valve:

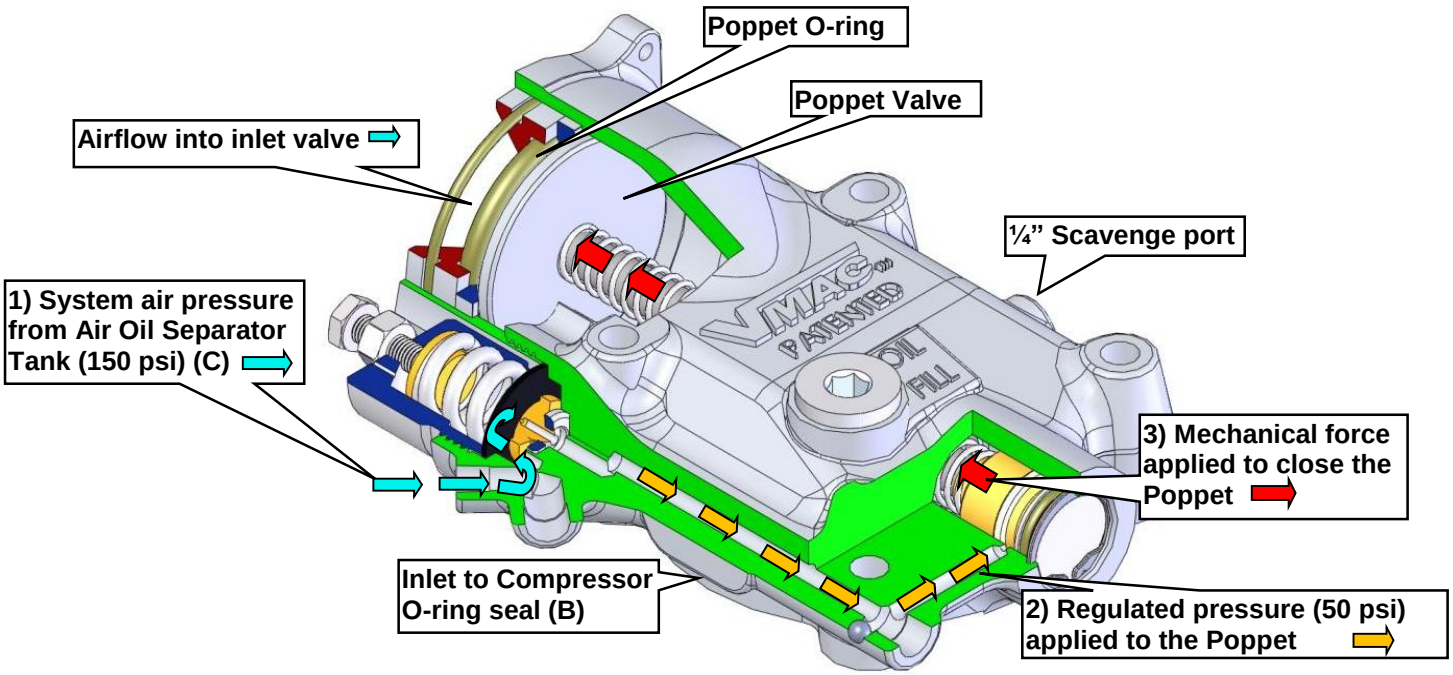

Figure 3

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Inlet valve operation

Air pressure supplied by the pressure control line enters the port on the side of the inlet valve.
Once the pressure has reached approximately 150 psi (pre-set at factory) the regulator spring pressure is overcome and the inlet valve regulator opens and directs a low air pressure (50psi) through the internal passages (drillings) to the piston chamber with the rest of the air pressure relieved through the small bleed hole on the front of the regulator.
The piston chamber converts the air pressure into a mechanical force to close the inlet valve.

Issues which can cause over-pressurizing

Inlet valve O-ring damaged or dislodged (see page 5)
Inlet valve to compressor O-ring damaged or dislodged (remove inlet valve from compressor to inspect)
Air leaks on the pressure control line, control line fittings, or a restriction in the control line. There must be enough air flow supplied to the regulator to operate the regulator and close the inlet valve.
Inlet valve stuck open.

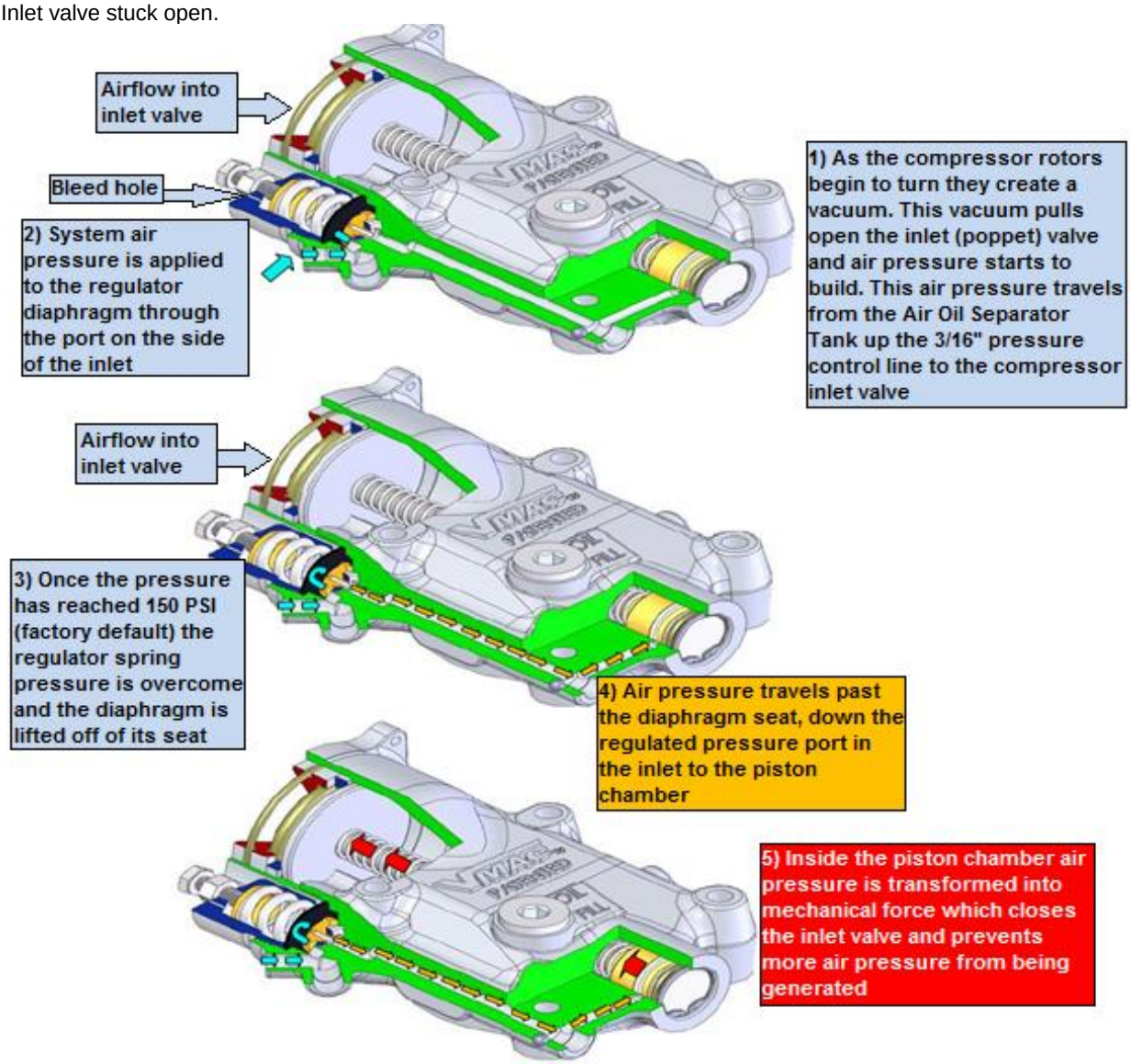

Figure 4

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Regulator removal / replacement (P/N# A700137)

Images

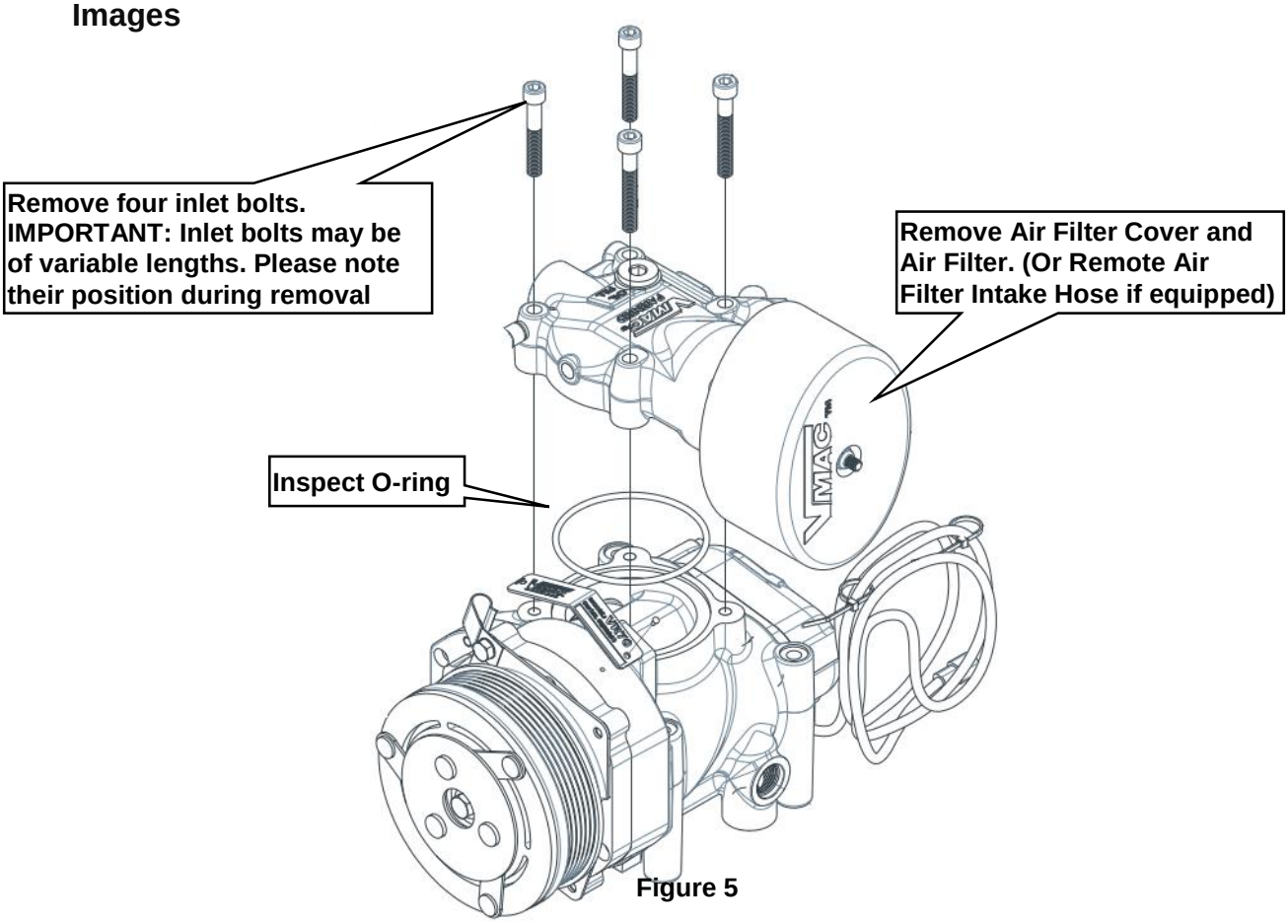

Figure 5

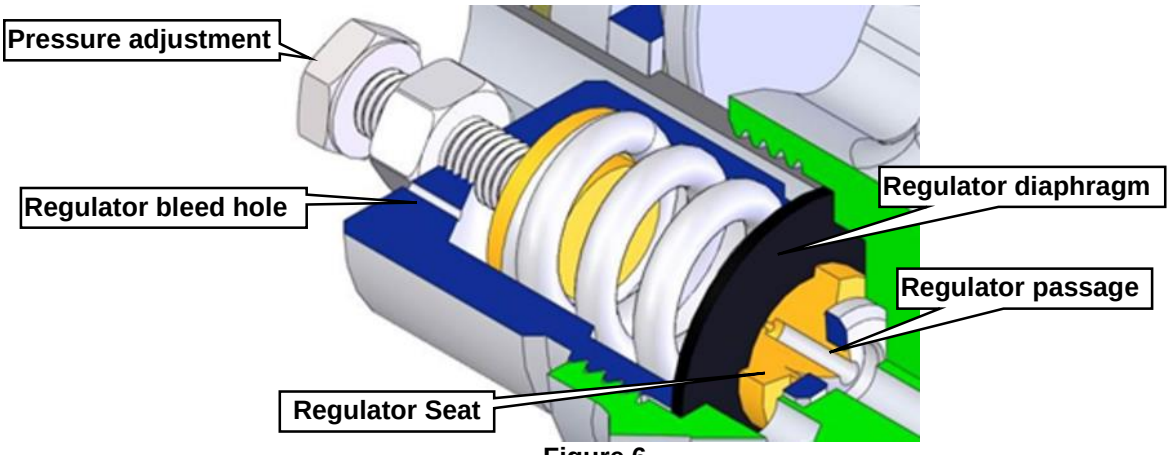

Figure 6

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Description

1) Remove the existing regulator assembly from the inlet valve. On some applications you must remove the four machine screws from the air filter backing plate and remove the backing plate to remove the regulator. **(Note heat must be applied to machine screws to loosen up the Loctite© or the head of the screw could strip.)** Make sure to apply Blue Loctite on screws when reassembling.

The seat may not be able to be removed from the inlet valve depending on the type of valve. If the seat is flush with the lower surface of the regulator do not remove the seat as this will damage the inlet valve. If the seat is sat on the lower surface of the regulator remove the seat with caution.

1) If the seat can be removed install the new seat with the chamfered edge of the seat facing the front of the inlet valve, away from the air filter. Apply a small amount of grease to install. (Figure 7)
2) Install the rubber diaphragm into the regulator on the valve with the ball surface of the diaphragm facing the seat.
3) Lubricate both sides of the edges of the diaphragm with some compressor oil or grease and then install the regulator spring next over the diaphragm ensuring correct placement over the brass guide. (Figure 7)
4) Install the brass spring seat onto the spring with the ball facing the air filter end of the valve.
5) Install the regulator cover, Apply blue Loctite© to threads.
6) Install regulator setting screw. Hand tighten until you feel spring resistance.
7) Set pressure regulator in accordance with owner’s manual instructions. Final pressure setting 150 PSI.

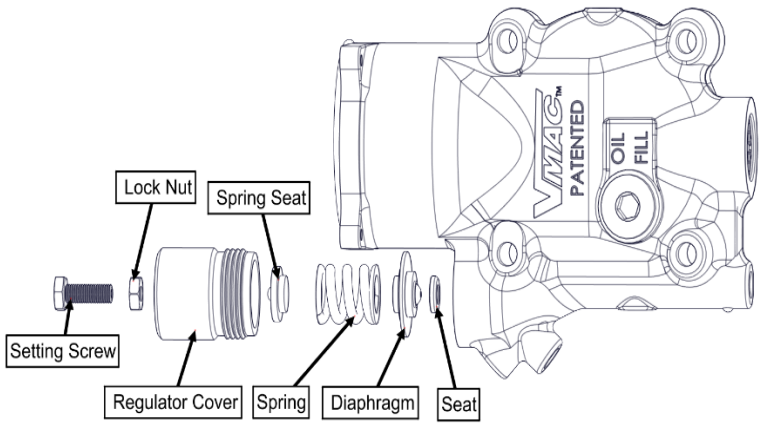
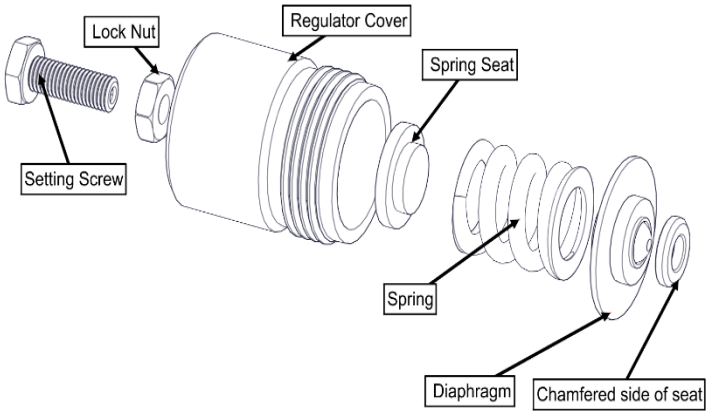


Figure 6



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Inlet valve seat replacement (P/N# A700163)

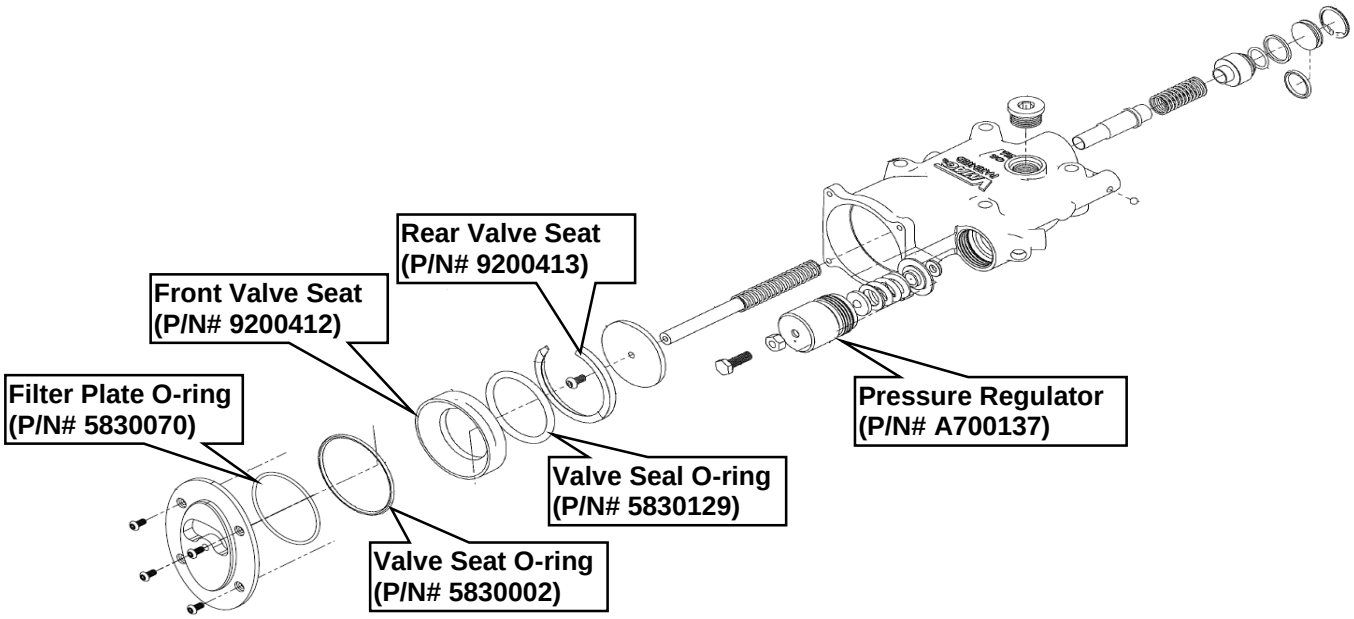
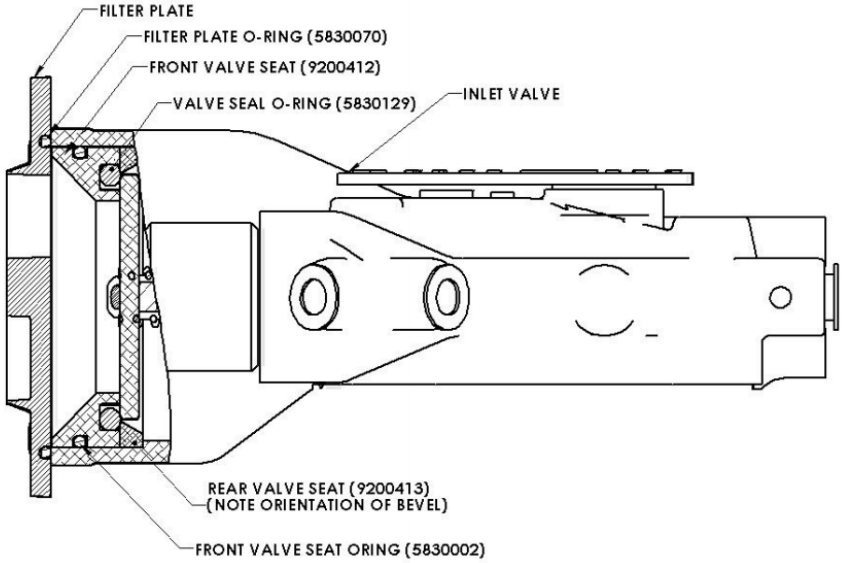


Figure 8

1) Clean the area around the compressor to prevent contamination.
2) Remove the 4 filter plate fasteners, filter plate and filter plate o-ring (5830070) from inlet valve.
3) Remove the front valve seat, which will have the front valve seat o-ring attached.
4) Remove the valve seal o-ring and rear valve seat.
5) Remove old front valve seat o-ring from front valve seat and replace with new o-ring (5830070) from accessory kit. Install front valve seat (9200412), valve seal o-ring (5830129), and rear valve seat (9200413) from accessory kit A700163 into the inlet valve.



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