OIL LUBRICATED SCREW AIR COMPRESSOR

Service Manual

K75-100B
K75-100VSDB

75 & 100 HP
(55 & 75 kW)

Save These Instructions

13-28-612
Version 00
Revision A
November 2024

Table of Contents

1 Scope and Target Audience

The intent of this manual is to provide maintenance, service, & troubleshooting guidelines for the compressors. Target audience includes operators, maintenance personnel, electrical technicians, distributor technicians, & internal DV service technicians.

Safety Requirements

In addition to all the other information in these maintenance and service instructions, the general safety instructions in the Safety Manual must absolutely be read.

For supporting documentation, refer to the Product Manual table below.

Product Manuals	
Safety Manual	13-28-628
Parts List Manual	13-28-512
Owner's Manual	13-28-652
Controller Manual	13-28-624

2 Maintenance and Service

Maintenance and service are decisive factors for the compressor to be able to meet the challenges of trouble-free operation and service life that it faces. Compliance with the specified maintenance interval and the careful performance of maintenance and care tasks are therefore mandatory.

Help is available from your responsible DV Systems representative, who can create an individualized maintenance plan.

2.1 General Notes

Target Group

The measures listed in these instructions for clearing faults may be performed only by specially trained personnel. Any other work beyond this must be performed by the manufacturer's service personnel!

Safety

Follow the safety instructions in the Safety Manual.

⚠ DANGER

High Voltage – Hazard of Electric shock, burns, or death

Deadly electrical voltage

- Exercise extreme caution when working with electrical equipment.
- Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

Protection Measures for Safe Maintenance (Safety Routine)

For all maintenance work, if not expressly otherwise stated:

1. Allow the compressor to come to a stop.
2. Lockout and Tagout.
3. Wait for automatic pressure relief.
4. Close the shutoff valve (customer provided) in the supply line.
5. Wait until the residual electrical energy in the capacitors has dissipated (only units with Variable Speed Drives).
6. Cool the compressor down to room temperature.
7. Wear personal protective equipment.
8. Follow instructions regarding hazardous materials.

Manual Pressure Relief

⚠ WARNING	
	**Pressurized components** Even when the compressor is relieved of pressure, the aftercooler remains pressurized. ➢ Perform pressure relief manually, before maintenance work is performed near the aftercooler.

1. Close the shutoff valve (customer provided) in the supply line.
2. Lockout and Tagout.
3. Open the enclosure, create access.
4. Relieve the pressure in the airend by carefully opening the pressure relief valve at the oil reservoir.
5. After maintenance work is complete, open the shutoff valve in the supply line.

Test Run

After any maintenance work, a test run should be performed to locate any leaks, among other things. For each test run, proper performance of the compressor should also be ensured.

Electrical Components

⚠ DANGER	
	**High Voltage – Hazard of Electric shock, burns, or death** Dangerous electrical voltage ➢ Work on the electrical equipment may be performed only by specialized electrical technicians. ➢ Only units with Variable Speed Drives, there is a risk of electrical shock due to charged capacitors! Isolate the compressor and wait 10 minutes before touching any electrical parts. ➢ Check the DC bus voltage.

Checking the DC bus voltage of the Variable Speed Drive

The DC bus voltage is measured at the ground terminal of the frequency inverter. The exact position of the “DC+” and “DC-” terminals can be found in the included operating instructions for the frequency converter.

1. Ensure there is no power to the unit by checking the DC bus voltage.
2. Measure the voltage between terminals DC+ and DC-.
3. Measure the voltage between the terminal DC+ and the chassis.
4. Measure the voltage between the terminal DC- and the chassis.

The voltage must be zero for all three measurements.

Motor Lubrication - The main motor used in the compressor is pre-greased with Mobil Polyrex EM, and the recommended grease amount is 25g. It is a best practice to use the motor name plate for confirming proper greasing intervals and grease amounts. The fan motor has double shield bearings. Hence re-greasing of the fan motor is not required.

Wiring Diagrams - Reference the wiring diagrams furnished with the unit to be sure it is properly wired.

2.2 Service

In case of questions, problems with compressor or spare parts orders, contact your DV Systems distributor/dealer. Trained expert staff will quickly and properly make repairs with genuine DV Systems replacement parts. Genuine DV Systems replacement parts are manufactured with state-of-the-art technology and guarantee reliable operation.

With inquiries or when ordering replacement parts, please provide the package model name, package serial number, and year of manufacture as listed on the unit nameplate (Figure 2-1). Providing this information helps to ensure that you will receive the right information or the necessary replacement part.

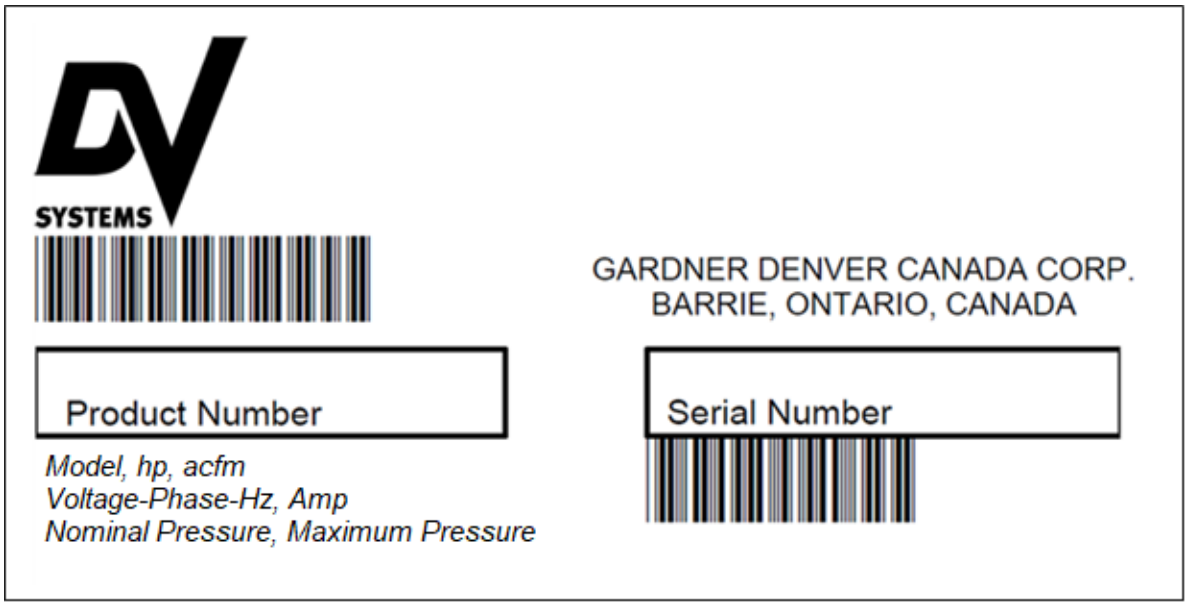

Figure 2-1 Nameplate

Product Number	
Serial Number	
Model	
HP	
ACFM	
Voltage	
Phase	
Amp	
Hz	
Maximum Pressure	

Your DV Systems Distributor:

Name:	
Address: _____	
_____	
_____	
Telephone:	Fax:
Contact:	Spare Parts:
	Service:

2.3 Inspection of Protective and Safety Devices

⚠ WARNING

Risk of burns/scalding
Risk of burns/scalding due to escaping hot oil (oil mist) / hot compressed air.
➢ Wear suitable protective clothing.

NOTICE

➢ The emergency stop function may be actuated only in dangerous situations. Otherwise increased wear, up to and including damage to the compressor, can be expected.

NOTICE

Hearing damage
Increased sound pressure level when operated without noise-reducing enclosure.
➢ Wear hearing protection.

Protective Covers and Enclosure Panels

Ensure that all protective covers and enclosures of the compressor are installed correctly.

- Protective cover for cooling airfans
- Protective cover of the coupling between the drive and compressor
- Compressor housing; especially the openings (doors)

Pressure Relief Valve must be in perfect condition. For example, it must not be blocked by dirt or paint.

Emergency Stop Pushbutton / Emergency Stop Function

The switching function of the contacts can be checked by an electrician.

2.4 Routine Maintenance

All maintenance work and testing listed in the maintenance plan must be performed and documented at the intervals listed in the Maintenance Schedule.

All maintenance, repairs, and service work performed on the compressor must be documented.

Service and maintenance work should be performed by the local DV Systems distributor/dealer.

Cleanliness

The compressor room and the environment of the compressor must always be kept clean.

The compressor must be checked regularly for damage and excessive wear.

Spilled oil must be wiped up immediately. Oil traces must be removed immediately.

Electrical Connections

The condition of cables and terminals must be checked regularly.

- Watch for loose connections or worn wires. All connections must be clean and tight.
- Replace worn or damaged wires or cables immediately.

Leak Points

⚠ WARNING

Risk of injury due to high pressure
➢ Do not use the hand to search for leaking points in the system.
➢ Always use paper or cardboard for this purpose.

- If a leak is suspected, check the appropriate area for leaks.
- Immediately repair or replace damaged or leaking pipe and hose connections.

Emission or Leakage of Consumable Materials

The following consumables are used in the compressor:

- Compressor lubricants
- Polyrex EM

In case of accident or extended contact with consumable materials, follow the instructions on the Safety Data Sheets.

Prevent leakage of operating fluids.

Carefully clean up any operating fluids that escape. Observe the information in the Safety Data Sheets!

Oil Coking in the Lubricating Oil System

High oil temperatures reduce the service life of the oil, which can lead to oil coking in the oil lubrication system. Deposits of oil coke can cause damage to bearings and gearboxes.

2.5 Maintenance Schedule

⚠ DANGER

High Voltage
Hazard of shock, burn or death

- Work on the electrical equipment may be performed only by specialized electrical technicians.
- Only units with Variable Speed Drives, there is a risk of electrical shock due to charged capacitors! Isolate the compressor and wait 10 minutes before touching any electrical parts.
- Be careful of the hot surfaces of machine parts when carrying out checks, making settings and doing maintenance.
- Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

⚠ WARNING

Some parts of the system will still be pressurized after the system has been switched off. Small parts propelled at high speed by compressed air can penetrate the skin or destroy an eye.
Only perform checks and maintenance after observing the following:

- Press the STOP button on the controller and wait until the screw compressor comes to a stop and the screw compressor unit is depressurized.
- The pressure gauge shows 4.4 psig (.3 barg) or less.
- Shortly after shutting off the screw compressor unit a small residual pressure may remain.
- Therefore, before any maintenance work, the screw compressor unit must be relieved by slowly opening the screw plug (oil filling opening) with integrated air vent slots.
- Set the on-site main switch to “O” (OFF) and secure it against being switched on.

Service Check List

Air Filter and Pre-Filter – Operating conditions determine frequency of service.

Every 8 Hours of Operation

1. Check air/oil reservoir oil level, add oil if required. **Do Not Mix Lubricants**.
2. Check operation of the machine, is it loading and unloading properly.
3. Check discharge pressure and temperature.
4. Check control panel for advisory text messages.

Every 125 Hours of Operation

Check for dirt accumulation on oil, aftercooler core faces and the cooling fan. If cleaning is required, clean the exterior fin surfaces of the cores by blowing compressed air carrying a nonflammable safety solvent that will not damage aluminum in a direction opposite that of the cooling air flow. The cleaning operation will keep the exterior cooling surfaces clean and ensure effective heat dissipation.

Service Change List

Component	Change Interval
Oil Filter	Every **2000 hours** or **6 months,** whichever occurs first
Inlet Air Filter	Every **2000 hours** or **6 months,** whichever occurs first
Package Inlet Filter	Every **2000 hours** or **6 months,** whichever occurs first
Motor Grease	Every **2000 hours** or **6 months**, whichever occurs first
Air/Oil Separator	Every **4000 hours** or **12 months,** whichever occurs first
Lubricant	Change per recommendations of the Oil Analysis or hour Life rating of lubricant or as indicated by controller or every **8000 hours** or **12 months,** whichever occurs first. The above requirement is applicable to both **DEV-3000** and **DEV-3500** lubricants.
Oil Sample	As Required

						Whichever occurs first																			
Maintenance Schedule	**As indicated by Controller**	**Every 8 hours of operation**	**Every 50 hours of operation**	**Every 125 hours of operation**	**Per oil analysis results**	**6 months or 2000 hours**	**12 months or 4000 hours**	**18 months or 6000 hours**	**24 months or 8000 hours**	**30 months or 10000 hours**	**36 months or 12000 hours**	**42 months or 14000 hours**	**48 months or 16000 hours**	**54 months or 18000 hours**	**60 months or 20000 hours**	**66 months or 22000 hours**	**72 months or 24000 hours**	**78 months or 26000 hours**	**84 months or 28000 hours**	**90 months or 30000 hours**	**96 months or 32000 hours**	**102 months or 34000 hours**	**108 months or 36000 hours**	**114 months or 38000 hours**	**120 months or 40000 hours**
Check Air/Oil Reservoir oil level **		☐																							
Check operation of the machine, is it loading and unloading		☐																							
Check discharge pressure and temperature		☐																							
Check control panel for advisory text messages		☐																							
Check operation of Condensate Removal Drain Valve		☐																							
Check Package Inlet Filters			☐																						
Inspect, clean if necessary, Cooler/Fan				☐																					
Replace Lubricant *	☐				☐				☐				☐				☐				☐				☐
Replace Air/Oil Separator	☐						☐		☐		☐		☐		☐		☐		☐		☐		☐		☐
Replace Oil Filter Element	☐					☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Replace Air Filter Element	☐					☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Replace Package Inlet Filters						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Oil Sample ***						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Inspect, visually check for Shaft Seal leakage						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Inspect, regrease if necessary Motor Bearings						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Checking/tightening of connecting terminals in the Control Box Cabinet							☐		☐		☐		☐		☐		☐		☐		☐		☐		☐
Check Pressure Relief Valve							☐		☐		☐		☐		☐		☐		☐		☐		☐		☐
Inspect, clean Oil Scavenge Line and Check Valve							☐		☐		☐		☐		☐		☐		☐		☐		☐		☐
Inspect, replace if necessary Solenoid Valves/Vacuum							☐		☐		☐		☐		☐		☐		☐		☐		☐		☐
Inspect, replace if necessary Hoses/Tubes									☐				☐				☐				☐				☐
Service Inlet Valve									☐				☐				☐				☐				☐
Replace Minimum Pressure Check Valve									☐				☐				☐				☐				☐
Inspect, replace if necessary Blow-Down Valve									☐				☐				☐				☐				☐
Inspect, replace if necessary Thermistor Probes									☐				☐				☐				☐				☐
Inspect, replace if necessary Pressure Transducer									☐				☐				☐				☐				☐
Inspect, replace if necessary Control Valves and Pressure Regulator									☐				☐				☐				☐				☐
Inspect, replace if necessary Thermal Mixing Valve									☐				☐				☐				☐				☐
Inspect, replace if necessary Drive Coupling Spider									☐				☐				☐				☐				☐

* Change per recommendations of the Oil Analysis or hour Life rating of lubricant or as indicated by controller or every **8000 hours** or **12 months**, whichever occurs first.
** Must be checked when the compressor is stopped and the air/oil mixture is separated.
*** Oil sampling is recommended, Participation of DV's oil analysis sampling program is one of the requirements for Premium Warranty Coverage.
□ These maintenance intervals must be kept!
☒ It is in your own best interest to check off maintenance work in the maintenance schedule above as it is done.
Electronic controls - Information regarding maintenance points for the electronic controller are found in the operating instructions for the controller.

2.6 Maintenance Work

2.6.1 Cleaning / Replacing the Filter Mat

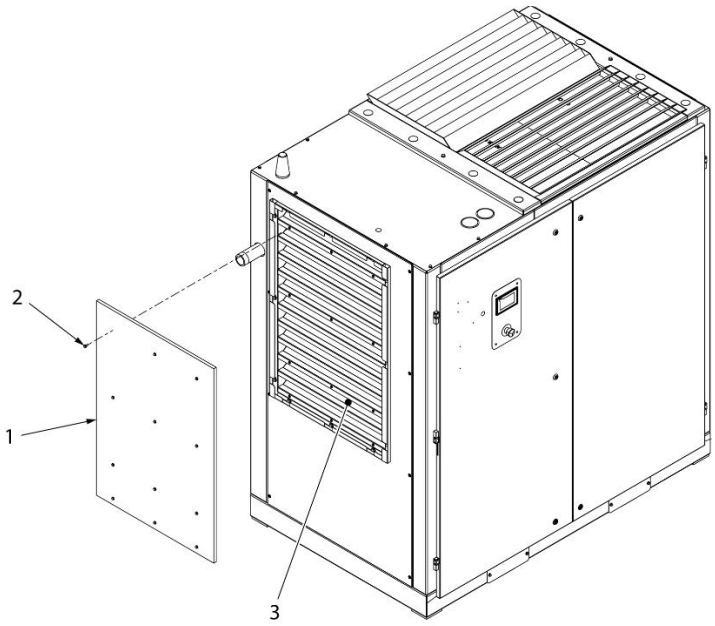

Figure 2-2

1. Filter Mat Cooling Air Inlet
2. Mounting Screws
3. Sound-proofing assembly

Cleaning/Replacing the Filter Mat:

1. Remove the mounting screws (-2- Fig. 2-2).
2. Take out the Filter Mat (-1- Fig. 2-2) and clean it, replace it if damaged. Clean the Filter Mat by brushing or washing.
3. Return the Filter Mat to the silencer chamber (-3- Fig. 2-2).
4. Secure the Filter Mat using the mounting screws.

NOTICE
The Filter Mat may not be installed while wet or moist!

Replacement Times for the Filter Mats

The operating modes and the quality of the suction air (e.g. dust content) have a significant impact on the service life of the filter pad.
The filter Mat should be inspected for dust accumulation at least weekly; daily if possible.
In these usage scenarios, shorter replacement intervals are possible.
As soon as the filter mat shows a defect, it must be replaced.

2.6.2 Changing the Air Intake Filter

DANGER

- Only perform checks and carry out work on the screw compressor when the unit is out of operation, depressurized, and secured from being switched on again!
- Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

NOTICE

Property damage

Operating the compressor without an air filter, even for a short time, can cause severe damage to the compressor.

- Never operate the compressor without an air filter.
- Dirt must not be allowed to enter the clean air side of the air filter!

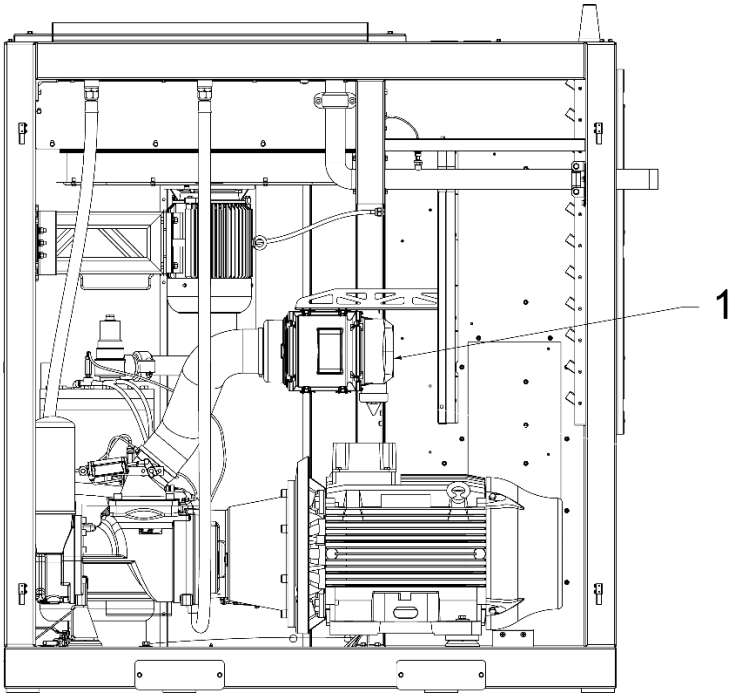

Figure 2-3 Air filter

1. Air Intake Filter

The air filter cartridge should be replaced per the Maintenance Schedule. Check air filter at least once a week or, if required, daily for the accumulation of dust. When carrying out maintenance work, make sure that no dirt gets to the clean air side of the air filter.

Changing intervals for air filter cartridge

The operating conditions (e.g., coolant temperatures), the operating modes and the quality of the intake air (e.g., content of dust, content of gaseous foreign substances such as SO_2 and solvent vapors, etc.) have a strong influence on the service life of the filters (air filters, water filters, fine separators). Where such conditions exist the filter element may require changing more frequently.

Change the air filter element

1. Switch off the main disconnect switch.
2. Open the enclosure, create access.
3. Undo snap latches on the filter housing and remove access door.
4. Pull air filter element outward. Slide safety element to the left and pull outward.
5. Carefully insert new air filter cartridges in the housing.
6. Replace access door and close latches.

2.6.3 Oil Sampling Instructions

⚠ WARNING	
	**Pressurized components** ➢ Oil sampling valve is fitted and designed to allow oil sampling while pressurized. ➢ Risk of burns/scalding due to hot oil.

⚠ DANGER	
	**Air/Oil Under Pressure** ➢ Oil under pressure will cause severe personal injury or death. ➢ Wear suitable Personal Protective Equipment (PPE) – i.e. protective work gloves, clothing, & safety glasses are required.

An oil sampling valve is fitted to the combination cooler. The oil sampling valve is designed to allow for oil sampling to be conducted without shutting down the unit. Oil sampling should be conducted every 2,000 hours of operation or in increased sample intervals in harsh ambient conditions.
Oil sampling should be conducted before shutting down the package for maintenance. Ensure the package is running and is allowed to get up to expected operational temperatures. Typical packages will take 10-20 minutes of loaded operation to get to expected operational temperatures. Oil sample kits will be provided with the package warranty kit.

Oil Sample Kit includes:

- Plastic Oil Sample Bottle
- Cardboard Oil Sample Canister
- Oil Sample Label (for plastic oil sample bottle)
- Mailing Label (for cardboard oil sample canister or separate shipping container)

Oil Sampling Procedure

1. Verify required PPE is used before attempting to take an oil sample.
2. Verify package is running and has reached expected operational temperatures.
3. Locate the oil sampling valve fitted to the combination cooler.
4. Clean any debris or moisture near the oil sampling valve to ensure a successful sample.
5. Unscrew the dust cap on the oil sampling valve.
6. Push to open the sampling valve port (Make sure port is pointed away from personnel)
7. Fill oil sample bottle at least ¾ full and tighten screw cap to allow for a successful sample.
8. Re-fit the oil sampling valve dust cap.
9. Completely fill out the sampling label before sending the sample to the oil laboratory.
10. Apply the sample label **directly** to the plastic sample bottle. (**DO NOT** apply to cardboard canister.)
11. Apply mailing label to cardboard canister, or another appropriate shipping container, if mailing more than one oil sample to the oil laboratory.
12. Clean any oil on external surfaces after completing the oil sample.
13. Immediately ship oil sample to the oil laboratory. Prompt delivery is important.

Access to Lubricant Analysis Website

You can now access your lubricant analysis reports via www.oil-services-lab.com. Register for a new account, if you do not currently have an account. Access to the website allows sample history to be tracked and viewing of test results / maintenance recommendations.

2.6.4 Oil Change

⚠ DANGER

Air/Oil Under Pressure

- Air/oil under pressure will cause severe personal injury or death.
- Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

⚠ CAUTION

Fire hazard and slip hazard!

- **Do not spill any oil!**
- Oil residue and other deposits must be removed from the compressor coolers which are exposed to hot air in accordance with the user manual.
- Look for leaks! Immediately take care of any spilled oil!

NOTICE

- Catch the old oil, do not let it drain onto the floor. Do not spill any oil. Look for leaks.
- Dispose of the used oil in accordance to local jurisdictions.
- With these compressors, the frequency of the oil changes is closely related to how dirty the circulating oil is. Pay close attention that no foreign substances which can damage the oil (dust, steam, gases) make it through the air intake filter into the compressor unit's oil circuit. Very humid intake air and condensation inside the machine have an influence on the life span of lubricating oil so that the oil change times must also be reduced in this case. The change time intervals given are based on intake air which is normally available and if foreign substances (dust, steam, gases) are not present in large amounts.
- When changing the oil, the old oil must be drained as fully as possible, because the used oil strongly decreases the life span of the new oil.
- Different lubricating oils must not be mixed. When changing this type of oil, the oil must be completely drained from the oil circuit.

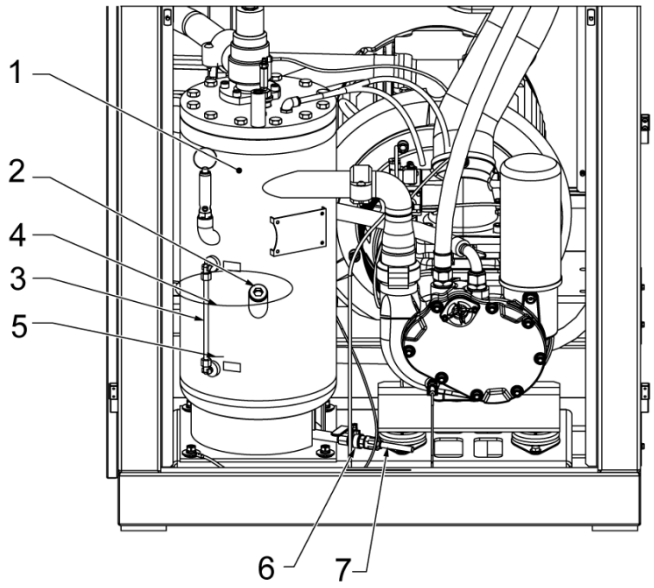

Figure 2-4

1. Oil Reservoir
2. Oil Fill Cap R1"
3. Oil Level Indicator
4. Maximum Oil level
5. Minimum Oil level
6. Bleed Ball Valve R1/2"
7. Drain Hose

Lubricant Recommendation

Please note that proper lubrication can significantly increase the lifespan of your compressor system.

In accordance with valid accident prevention regulations, lubricating oils should be used whose characteristics correspond to the expected operating conditions.

Avoid mixing different lubricating oils, i.e. when changing the oil type, first completely drain the old oil from the oil circuit.

The exact oil change schedule according to the actual operating conditions should be set by performing oil analysis.

Safety Data Sheets (SDS) are available for all DV Systems lubricants from your authorized DV Systems distributor.

The following lubricants to be used:

Lubricant	Default oil change interval	System oil capacity
DEV-3000 (Synthetic)	8000 hours	9 gal (34 L)
DEV-3500 (Food Grade)		

Lubricants can be categorized into two oil types: Standard and High Temp.

Each of the Oil Types use a specific aging algorithm on the compressor controller to determine the oil change interval. The multipliers for the oil aging can be found in the table below.

Standard: Oil Change Timer counts down normally at high temperature. Use with DEV-3000 (Synthetic) and DEV-3500 (Food Grade).

High Temp: Currently not available.

When operating conditions are severe (very dusty, high humidity, etc.), it will be necessary to change the oil more frequently. Operating conditions and the appearance of the drained oil must be surveyed and the oil change intervals planned accordingly by the user. We recommend an oil sample be sent in at 100 hours on a new unit.

Oil Change Multipliers		
Oil Aging Clock Multiplier	Standard Oil Temperature Break Points	High Temp Oil Temperature Break Points
X1	< 180°F (82°C)	< 210°F (99°C)
X 1.3	180°F - 189°F (82°C - 87°C)	210°F - 219°F (99°C - 104°C)
X 2	190°F - 198°F (88°C - 92°C)	220°F - 228°F (104°C - 109°C)
X 4	199°F - 216°F (93°C - 102°C)	> 229°F (109°C)
X 8	217°F - 234°F (103°C - 112°C)	
X 16	> 234°F (112°C)	

The Standard Oil Temperature Break Points in table above are applicable to both DEV-3000 (Synthetic) & DEV-3500 (Food Grade) lubricants.

Lubricant Conversion Procedure - If upgrading to a different lubricant type (e.g., longer life, food grade, etc.), following the proceeding steps:

1. Be sure the unit is completely off and that no air pressure is in the oil reservoir.
2. Disconnect, lockout and tagout the power supply to the starter.
3. Thoroughly drain oil system while hot:
   - Remove the oil fill cap and open the drain valve at the oil reservoir. Once the oil has been drained, close the drain valve and reinstall the oil fill cap.
   - Remove and drain oil from the oil filter. Reinstall the used filter.
4. Fill the system with a 50 percent charge of the new lubricant:
   - Start the machine and monitor its operation.
   - Allow the machine to reach a stable discharge temperature (5-7 minutes), then shut down.
5. Thoroughly drain oil system.
6. Replace used oil filter and air/oil separator element with new ones.
7. Fill the system with a full charge of the new lubricant.
8. Run machine for a range of 2,000 - 4,000 hours (maximum run time of half the lubricant life of a typical oil change). When the 2,000 - 4,000 hour window is completed, drain all lubricant from the system, change the oil filter and air/oil separator, and replace with a full charge of the new lubricant.
9. Subsequent lubricant change-outs should be at normal intervals.

Addition of Oil between changes must be made when the oil level is below the minimum level of the oil level indicator as read while the unit is completely off and blown down, and the foam has settled out.

1. Be sure the unit is completely off and that no air pressure is in the oil reservoir
2. Disconnect, lockout and tagout the power supply to the starter.
3. Wipe away all dirt around the oil filler cap.
4. Remove the oil filler cap and add oil as required to return the oil level to the middle of the oil level indicator.
5. Install oil filler cap, run and check for leaks.

Do Not Overfill (you should see oil slightly above the full line after running fully loaded and then shutting down the machine and allowing the foam to settle out). Repeated addition of oil between oil changes may indicate excessive oil carry-over and should be investigated.

Draining and Refilling the Oil System - Always drain the complete system. Draining when the oil is hot will help to prevent varnish deposits and carry away impurities.

1. Be sure the unit is completely off and that no air pressure is in the oil reservoir.
2. Disconnect, lockout and tagout the power supply to the unit.
3. Thoroughly drain oil system while system is hot:
   - Remove the oil filler cap and open the drain valve at the oil reservoir. Once the oil has been drained, close the drain valve and reinstall the cap. Make sure to provide a suitable pan to catch the 9.0 gal. (34 L) oil charge.
   - If the drained oil and/or oil filter element is contaminated, discontinue this procedure and follow instead the "Lubricant Change Procedure" in this Section.
4. Replace the used oil filter with new one.
   - Switch off the screw compressor unit, secure it against an accidental restart and ensure that it is depressurized.
   - Wait at least 5 minutes until the oil has settled, i.e. until the air has bubbled out.
   - Unscrew the oil filter cartridge with a suitable tool.
   - Dispose of the oil filter cartridge properly.
   - Lightly oil the seal of the new oil filter cartridge.
   - Screw on the new oil filter cartridge and tighten by hand.
   - Let the screw compressor unit run for approx. 2 minutes.
   - Check for leaks.
   - Check the oil level
   - If necessary, top off the oil.
5. Wipe away all dirt around the oil fill cap.
6. Remove the oil fill cap and add oil up to the mark “max oil level”.
7. Install the oil fill cap and operate the unit for about two minutes allowing oil to fill all areas of the system. Check for leaks.
8. Shut down unit, allowing the oil to settle and be certain all pressure is relieved.
9. Check the oil level. The oil level must lie between the “max oil level” and “min oil level”.
10. If necessary, top up the oil.

Use only CLEAN containers and funnels so no dirt enters the reservoir. Provide for clean storage of oils. Changing the oil will be of little benefit if done in a careless manner.

Changing Times for Lubricants

Operating conditions (e.g., oil temperatures), the type of operation, and the quality of the intake air (e.g., dust content, ratio of gaseous foreign substances such as SO_2 and solvent vapors) have a strong influence on the oil change intervals.

In these cases, the operational life of the oil must be checked by performing an oil analysis.

Oil sampling is suggested per the service change list interval. The sampling valve on the cooler allows sampling during operation. It is best practice to obtain the oil sample in the same location every time.

2.6.5 Changing the Oil Filter Cartridge

⚠ DANGER

Air/Oil Under Pressure

- Air/oil under pressure will cause severe personal injury or death.
- Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

⚠ CAUTION

Fire hazard and slip hazard!

- **Do not spill any oil!**
- Oil residue and other deposits must be removed from the compressor coolers which are exposed to hot air in accordance with the user manual.
- Look for leaks! Immediately take care of any spilled oil!

NOTICE

- Dispose of the oil filter cartridge properly, it is hazardous waste! Look for leaks!

⚠ WARNING

Scalding hazard

Scalding hazard from hot oil.

- Change the oil filter only when the compressor is stopped and not pressurized.
- Use caution when draining out the hot oil.

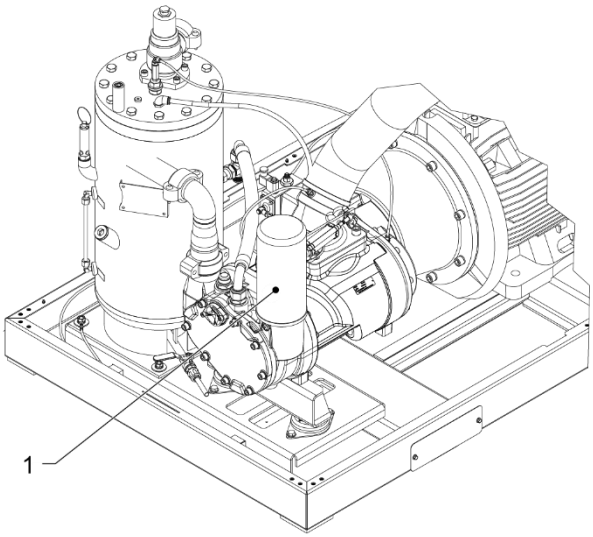

Figure 2-5 Oil Filter

1. Oil Filter

The changing intervals can be found in the maintenance schedule.

Replace the Oil Filter Cartridge as follows:

1. Switch off the screw compressor unit, secure it against an accidental restart and ensure that it is depressurized.
2. Wait at least 5 minutes until the oil has settled, i.e. until the air has bubbled out.
3. Unscrew the oil filter cartridge with a suitable tool.
4. Dispose of the oil filter cartridge properly.
5. Lightly oil the seal of the new oil filter cartridge.
6. Screw on the new oil filter cartridge and tighten by hand.
7. Let the screw compressor unit run for approx. 2 minutes.
8. Check for leaks.
9. Check the oil level.
10. If necessary, top off the oil.

2.6.6 Changing the Fine Oil Separator

DANGER	
	**Air/Oil Under Pressure** ➢ Air/oil under pressure will cause severe personal injury or death. ➢ Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

CAUTION	
	**Fire hazard and slip hazard!** ➢ Do not spill any oil! ➢ Look for leaks! Immediately take care of any spilled oil! ➢ Dispose of the fine oil separator properly, it is hazardous waste! Look for leaks!

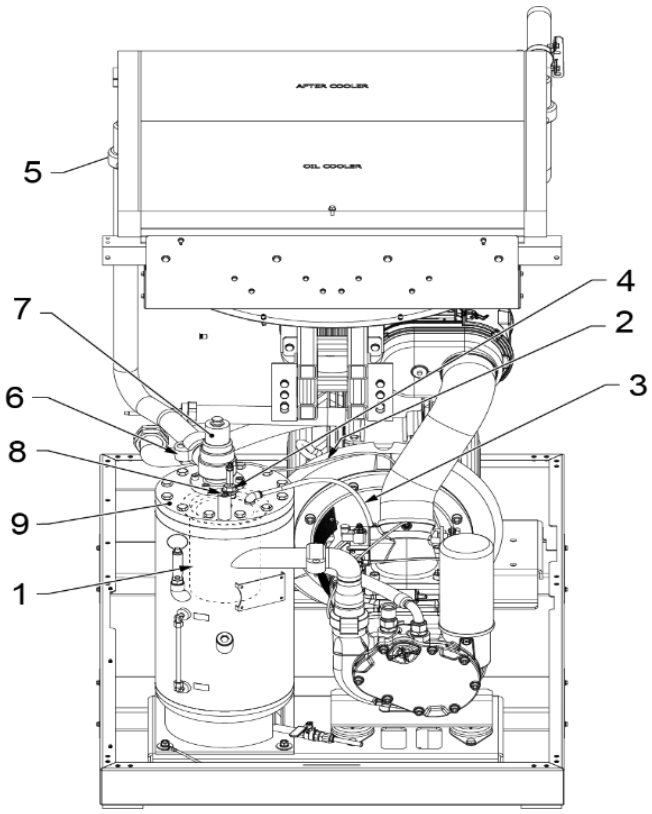

Figure 2-6 Fine Oil Separator

1. Fine oil separator
2. Plastic oil extraction line/Oil scavenge line
3. Plastic control air line
4. Oil scavenge tube assembly
5. Victaulic connection at the cooler
6. Victaulic connection at the minimum pressure valve
7. Minimum Pressure Valve (MPV)
8. Set screw to raise the reservoir cover
9. Reservoir cover

Changing the Fine Oil Separator

The changing intervals can be found in the maintenance schedule.

If the fine oil separator is monitored (optional), then a differential pressure that is too high will be shown in the control panel of the compressor controller. When the corresponding warning lights up, it is time to change the fine oil separator.

Replace the fine oil separator as follows:

1. Switch off the compressor and ensure that it is depressurized.
2. Detach the plastic oil scavenge line (-2- Fig. 2-6).
3. Detach the plastic control air line (-3- Fig. 2-6).
4. Fully remove oil extraction assembly with pressed in extraction tube (-4- Fig. 2-6).
5. Loosen all socket head cap screws from the minimum pressure valve.
6. Loosen the two screws in the swivel direction of the MPV and remove, then the valve can be swiveled inwards.
7. Remove all hexagon screws on the circumference of the pressure reservoir's cover.
8. The set screw (-8- Fig. 2-6) for lifting the reservoir cover must be screwed in clockwise until the cover (-9- Fig. 2-6) starts to separate from the reservoir.
9. Pivot the reservoir cover 180°.
10. Remove the used fine oil separator (-1- Fig. 2-6).
11. Replace the O-rings. The smaller of the two O-rings is to be installed at the bottom of the reservoir cover
12. Install a new fine oil separator.
13. Pivot the reservoir cover back to the starting position.
14. Screw the cheese-head screw counter-clockwise until the reservoir cover is lying loosely on the pressure reservoir flange
15. Screw in and tighten crosswise all hexagonal screws except for the two screws in the pivot area of the MPV.
16. Pivot the MPV back to its starting position and install it with the corresponding screws.
17. Then fit the missing hexagonal head screws in the reservoir cover and tighten to a tightening torque of 218Nm / 161 lbs ft. (screw strength class 8.8).
18. Tighten the cheese-head screw used to raise the reservoir cover slightly to prevent the loosening
19. Properly reinstall all lines to the pressure reservoir and the oil extractor which have been removed.

Changing times for the fine oil separator

Operating conditions (e.g., coolant temperatures), the type of operation and the quality of the intake air (e.g., dust content, ratio of gaseous foreign substances such as SO_2 and solvent vapors) have a strong influence on the filter lifespan (air filter, oil filter, fine separator).

In these cases, the intervals between changes may be shorter.

2.6.7 Combination Cooler (Oil/Air) Inspection and Maintenance

⚠ DANGER	
	➢ Do not attempt inspection or cleaning of air-cooled combination cooler until cooling fan has stopped rotating. ➢ Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

⚠ CAUTION	
	➢ Compressor, air/oil sump and all piping and tubing may be at high temperature during and after operation. ➢ Air-cooled combination cooler cores are fabricated from aluminum. Do not use caustic liquids to cleanse core or permanent damage will take place.

The cooler can either be removed from the front of the package by sliding it out, or extracted from the top of the package.

Perform the following steps to remove the cooler.

1. Disconnect, lockout and tagout the power supply to the unit.
2. Ensure the unit is isolated from the plant's compressed air system and internal pressure is depressurized.
3. Disconnect the pipes and hoses at the cooler.
4. Remove the cooler cover plates and fan box covers.
5. Remove the exhaust louver to access the cooler mounting hardware.
6. Cooler can be either removed from the top or slid out from the front.
    - To remove from the top, use two swivel hoists at the two middle slots of the cooler to lift it out of the unit.
    - To slide cooler from the front, remove the top right cover by removing the four mounting screws (M6).

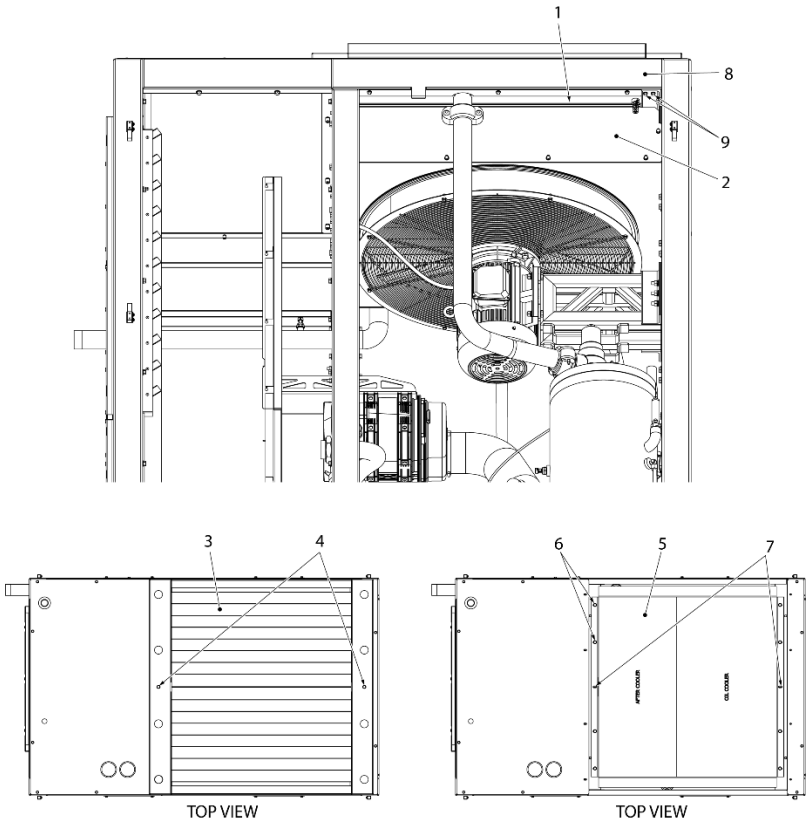

Figure 2-7 Heat Exchanger/Cooler

1 Cooler cover plate (front)
2 Fan box cover (front)
3 Exhaust louver/damper
4 Lift points (M8 threads) for louver only
5 Heat exchanger / cooler
6 Fasteners
7 Lift points for cooler (recommend M8 swivel hoists or equivalent)
8 Top right cover
9 Mounting fasteners for top right cover

All the required hardware, mechanical and electrical connections have been made at the DV Systems factory, thus the only regular maintenance required is to keep the exterior core fins free from dirt and other airborne debris per the following procedure:

1. Be sure the unit is completely off and that the oil reservoir is depressurized.
2. Remove the fan box covers to gain access to the inner finned core surface.
3. Inspect core area. If blocked with debris, use a moderate (e.g., 100 psi) source of compressed air while directing nozzle (pointed to outer core finned surface) to dislodge debris and clean. Vacuum (applied from inner finned core surface) can also be employed to clean the surfaces.
4. Remove all loose debris from inner surfaces of the enclosure, including the main cooling fan area and its pre-filter, after cleaning process is complete.
5. Re-install the removed enclosure door panels.

⚠ CAUTION
➢ The ventilation system for the air-cooled package relies on positive back pressure to cool the heat exchanger. ➢ Make sure that the enclosure panels that surround the combination cooler area are closed during compressor operation, or the compressor discharge temperature will reach shutdown levels quickly.

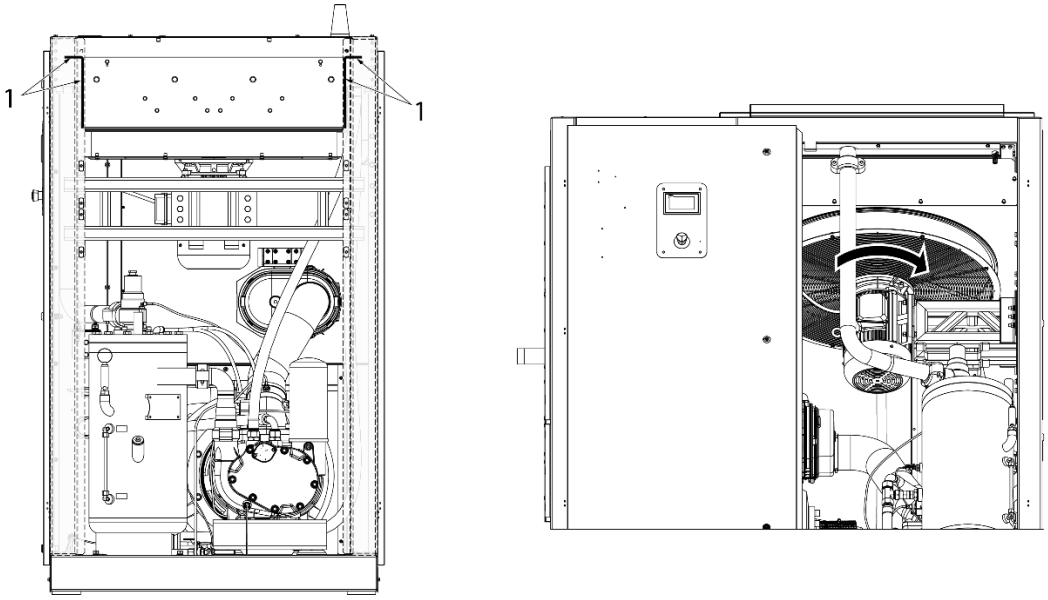

Figure 2-8 Cooler Access

1. Ensure Panels are installed for proper cooling

2.6.8 Checking the Pressure Relief Valve

⚠ DANGER
When checking pressure relief valve, there is an explosive release of pressure. Failure to perform this operation in a safe manner or without safety equipment may result in personal injury or death. ➢ Use the appropriate safety equipment, hearing and eye protection, and use safety precautions when performing this Pressure Relief Valve check on an operating machine. ➢ A defective pressure relief valve may result in pressure that is too high, breaking open parts of the system and causing serious or fatal injury. ➢ Never operate a screw compressor system with a defective pressure relief valve or without pressure relief valve!

⚠ DANGER
Air/Oil Under Pressure ➢ Air/oil under pressure will cause severe personal injury or death. ➢ Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

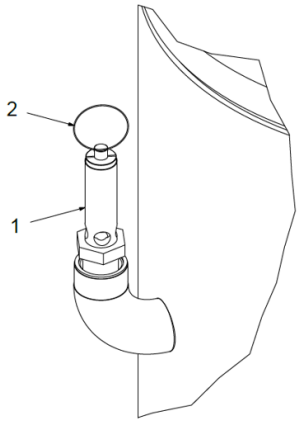

Figure 2-9 Pressure Relief Valve

1. Pressure Relief Valve
2. Pull Ring

The pressure relief valve has no user serviceable or repairable components.

Testing the Pressure Relief Valve

The valve can be tested:

1. On a separate compressed-air system.
2. When raising the system operating pressure to its normal level.
3. Operating the pull ring.

Keep local legislation in mind when testing.

If the pressure relief valve doesn't close itself or is leaking, close the doors of the compressor and push the Stop Button. After the pressure in the pressure reservoir is reduced to ambient pressure, replace the pressure relief valve.

2.6.9 Motor Lubrication

⚠ WARNING	
	Rotating machinery can cause injury or death. Open main disconnect, lockout and tagout power supply to starter before working on the drive coupling.

Long time satisfactory operation of an electric motor depends in large measure on proper lubrication of the bearings. Refer to motor nameplates for Standard greasing intervals when available. Main motor used in the compressor is pre-greased with Mobil Polyrex EM and the recommended grease amount is 25g. For additional information, refer to the motor manufacturer’s instructions. The following procedure should be used in re-greasing:

1. Stop the unit.
2. Disconnect, lockout and tagout the unit from the power supply.
3. Remove the relief plug and free hole of hardened grease.
4. Wipe lubrication fitting clean and add grease with a hand-operated grease gun. Only enough grease should be added to replace the grease used by the bearing. Follow the grease amount noted on the motor nameplate. Too much grease can be as harmful as insufficient grease.
5. Leave the relief plug temporarily off. Reconnect the unit and run for about 20 minutes to expel the excess grease.
6. Stop the unit. Replace the relief plug.
7. Restart the unit.

Electric Motor Re-greasing Interval

Type of Service	Typical	Rating	Re-lubrication Interval
Standard	One or Two Shift Operation (Non-Continuous 8-16 hours per day) Standard Temperature 70°F	Up to 75 HP (55kW)	5.5 Months / 2000 Hours
		Above 100 HP (75kW)	
Severe	Continuous Operation (24 hours per day) Standard Temperature 70°F	Up to 75 HP (55kW)	2.8 Months / 2000 Hours
		Above 100 HP (75kW)	
Very Severe	Dirty Location, Continuous Operation (24 hours per day) High Ambient Temperature 113°F	Up to 75 HP (55kW)	1.4 Months / 1000 Hours
		Above 100 HP (75kW)	

2.6.10 Replacing Drive Coupling Spider

⚠WARNING

Rotating machinery can cause injury or death. Switch off the main disconnect, lockout and tagout power supply to starter before working on the drive coupling.

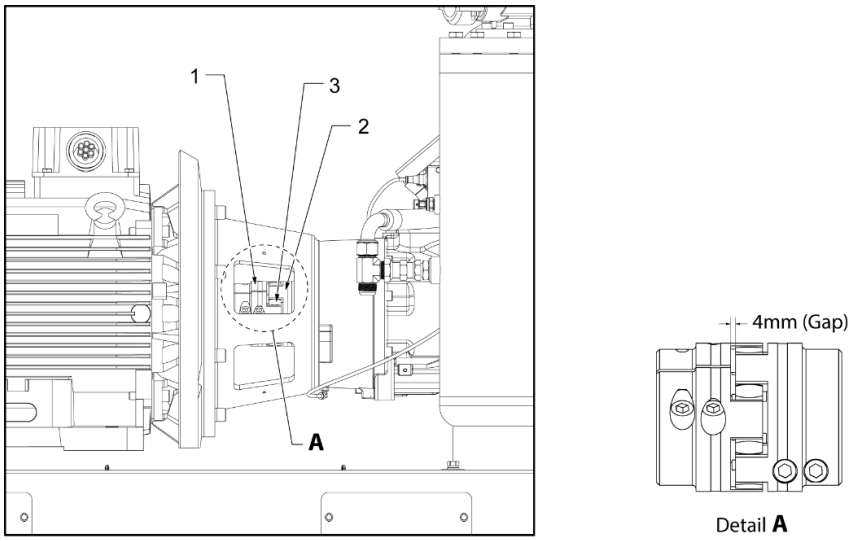

Figure 2-10 Drive Coupling Spider

1. Motor coupling hub
2. Airend coupling hub
3. Coupling spider

Perform drive coupling spider inspection as follows:

- Disconnect, lockout, and tagout the unit from the power supply.
- Remove the coupling cover plate.
- Loosen the set screw from the motor coupling (-1- Fig. 2-10).
- Slide the hub apart. Maneuver the drive coupling spider (-3- Fig. 2-10) out of the connecting housing.
- Inspect the coupling spider for wear or damage. If necessary, replace the coupling spider.
- Reposition the coupling spider between the two hubs and slide the hubs together. Set 4mm clearance gap between the hubs.
- Tighten the coupling hub set screws to a torque of 88.5 ft-lbs (120 Nm).
- Replace the coupling cover plate.

NOTICE

It is critical to have the appropriate clearance gap between the coupling hubs. There must be exactly **4mm** between the coupling hub fingers and the flat of the opposing hub. Failure to follow this will result in airend damage.

2.6.11 Fan Motor Maintenance and Replacement

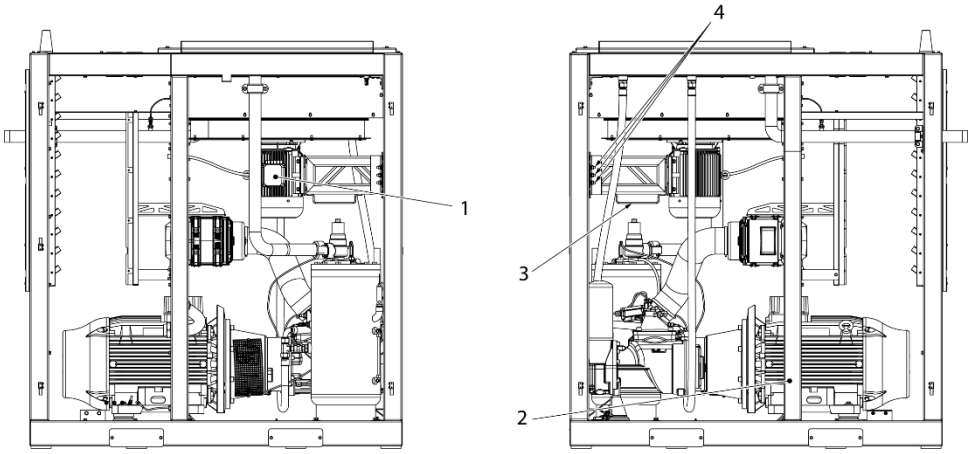

Figure 2-11A Fan Motor Replacement (Rear)

1. Motor connection box
2. Rear middle lower support
3. Lift pockets
4. Mounting bolts

Perform the following steps to take out the Fan motor assembly from the rear:

1. Disconnect, lockout and tagout the power supply to the unit.
2. Open the fan motor connection box (-1-, Fig. 2-11A) and note how leads are connected.
3. Remove fan leads from the motor connectors in the connection box.
4. Remove the rear middle lower support (-2-, Fig. 2-11A) by removing the mounting bolts.
5. Remove the two oil hoses at the cooler and air filter hose.
6. Hold the fan motor assembly in place with forks side by side through the lift pockets (-3-, Fig 2-11A) using a fork lift.
7. Remove the top four mounting bolts (-4-, Fig. 2-11A) at the base of the fan mount assembly.
8. Loosen the bottom two mounting bolts slowly as the assembly is expected to lift.
9. Carefully move fan assembly with motor and fan shroud back out of the package.
10. Remove the fan blade, shroud and the fan guard.
11. Replace the fan motor. Tighten the four mounting bolts to 53.2 ft-lbs (72.1 Nm).
12. Reinstall the guard, shroud and the fan blade assembly.
13. Loosely install the two bottom mounting hardware (2 bolts, 4 washers and 2 lock washers) at the cross support member.
14. Carefully install the fan assembly starting from the two bottom holes and torque all six bolts to 53.2 ft-lbs (72.1 Nm).
15. Reinstall the air intake hose and the two oil hoses to the coder.
16. Reinstall the fan leads.
17. Please make sure to jog the fan to check the fan rotation.

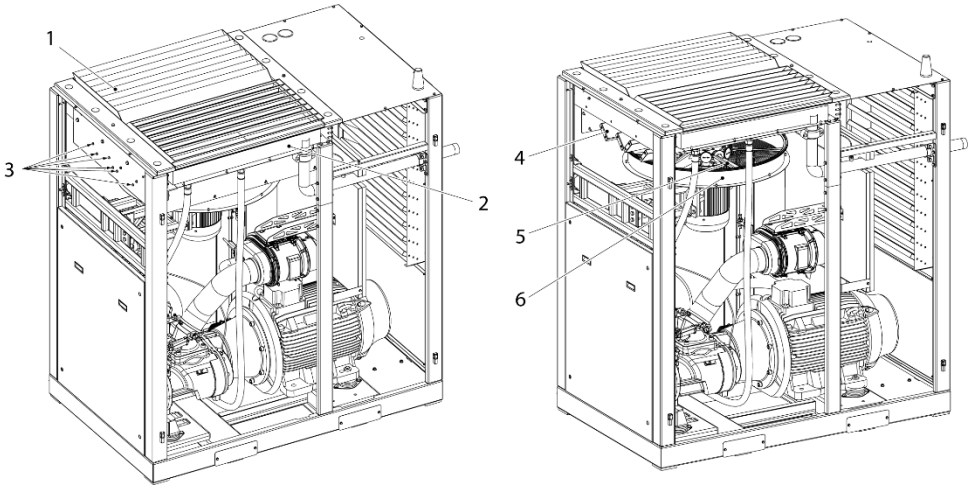

Figure 2-11B Fan Motor Replacement (Top)

1. Exhaust louver / damper assembly
2. Heat exchanger / cooler
3. Fasteners used to secure internal baffles
4. Internal baffles
5. Fan blade assembly
6. Fan shroud

Perform the following steps to take out the fan motor assembly from the top:

1. Remove the louver (-1-, Fig. 2-11B), cooler (-2-, Fig. 2-11B), and the internal baffles (-4-, Fig. 2-11B) by removing the bolts and other hardware.
2. Slide and remove the fan blade assembly (item 5) by loosening the two set screws
3. Remove the fan shroud (item 6) and the guard from the front side or back side of the unit by removing mounting bolts
4. Pull the fan motor from top to carry out any motor maintenance/replacement.

NOTICE
Tighten the motor’s mounting bolts to 53.2 ft-lbs (72.1 Nm).

2.6.12 Replacing Check Valve Damper

⚠ DANGER

Air/Oil Under Pressure

- Air/oil under pressure will cause severe personal injury or death.
- Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

⚠ CAUTION

Fire hazard and slip hazard!

- **Do not spill any oil!**
- Oil residue and other deposits must be removed from the compressor coolers which are exposed to hot air in accordance with the user manual.
- Look for leaks! Immediately take care of any spilled oil!

Check valve damper is included to prevent check disc from resonating when the airend is running unloaded. This damping rod is a service item and it needs to be changed every 8000 hours.

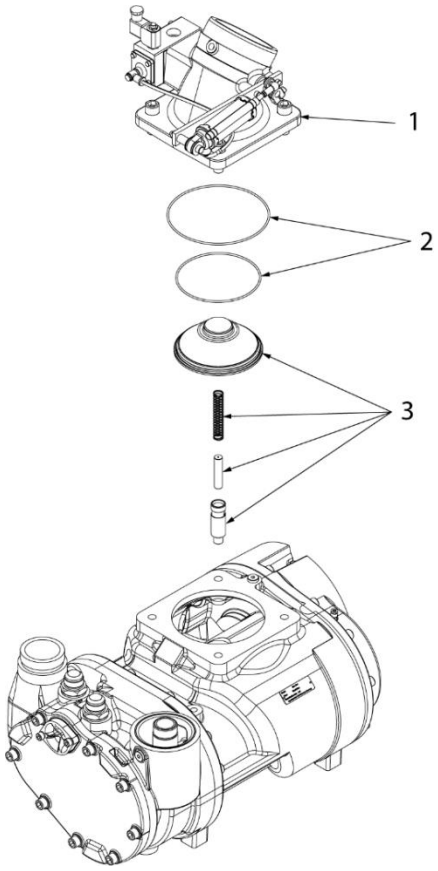

Figure 2-12 Inlet and Check Valve Assembly

1. Inlet valve
2. Seal
3. Check Valve Assembly

Perform the following steps to replace the check valve damper.

1. Disconnect, lockout and tagout the power supply to the unit.
2. Ensure the unit is isolated from the plant's compressed air system and internal pressure is depressurized.
3. Disconnect the inlet hose from the inlet valve by loosening the two bridge clamps.
4. Detach the plastic signal air line and the plastic control air line from the inlet valve.
5. Detach the solenoid cable.
6. Remove the inlet valve.
7. Remove check disc, spring, and damping rod.
8. Inspect the check valve and inlet valve seals, replace them if necessary.

2.6.13 Connecting Terminals in the Switch Cabinet

⚠ DANGER
 **High Voltage – Hazard of Electric shock, burns, or death** Deadly electrical voltage ➢ Exercise extreme caution when working with electrical equipment. ➢ Before starting maintenance work, disconnect the compressor and lock it out to prevent restarting. ➢ Only qualified electricians may work on the control cabinet. ➢ Only perform checks and carry out work on the screw compressor when the unit is out of operation, depressurized, and secured from being switched on again! ➢ Push the STOP button on the compressor controller. After the soft-stop time (30 sec.), set the on-site main switch to “O” (OFF) and secure it against being switched on. ➢ Only units with Variable Frequency Drives, there is a risk of electric shock due to charged capacitors! Disconnect the system from the mains and wait 10 minutes before touching electrical components. The power capacitors need this time to discharge.

The connecting terminals in the switch cabinet must be checked and, if required, re-tightened during first commissioning and afterward according to the maintenance schedule.

2.6.14 General Maintenance Cleaning

⚠ WARNING
 ➢ Danger when cleaning system parts with compressed air: Small parts propelled at high speed by compressed air can penetrate the skin or destroy an eye. ➢ Do not aim the compressed air at people.

⚠ CAUTION
 ➢ Fire hazard from oil residues. ➢ Oil residue and other deposits must be removed from the compressor coolers which are exposed to hot air in accordance with the user manual.

The screw compressor should be blown off with compressed air at the given intervals (do not aim the compressed air at people), especially:

- Controller components
- Fittings
- Air end block
- Cooler
- Electric motor

2.7 Servicing of Miscellaneous Devices

2.7.1 Inspecting the Thermostatic Mixing Valve (TMV)

⚠ DANGER	
	**Air/Oil Under Pressure** ➢ Air/oil under pressure will cause severe personal injury or death. ➢ Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

Thermostatic Mixing Valve (TMV) Inspection – This device has no user-serviceable or repairable components. If it fails to maintain adequate compressor discharge temperature, replace it as follows:

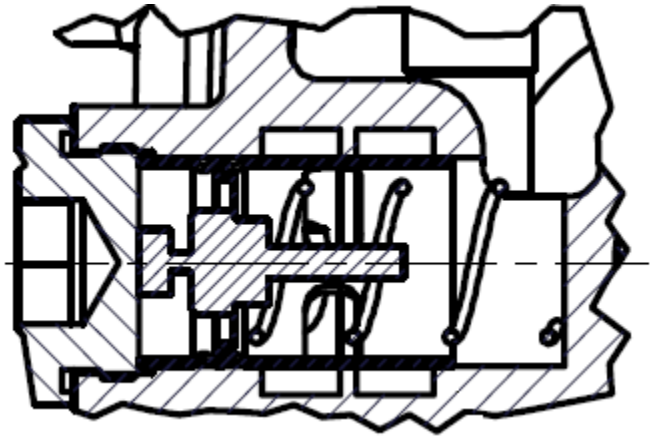

Figure 2-13 Thermostatic Mixing Valve

1. Be sure the unit is completely off and that no air pressure is in the oil reservoir and in the air cooled after cooler. Close the service valve.
2. Disconnect lockout and tagout the power supply to the unit.
3. Unscrew the two cover screws holding the TMV assembly within the manifold block. Retrieve the TMV body and its
4. spring from the compressor housing.
5. Inspect the valve seat surfaces for damage or foreign matter. Note its setting temperature, it is stamped on the valve seat area.
6. Immerse the valve body in a bath of compressor oil; heat the oil slowly and note the temperatures at which seat first starts moving and at it finally stops moving. Replace the device if one of the following conditions is present:
7. The stamped setting on the valve seat is not correct.
8. The seat fails to stroke fully at the correct temperature.
9. Assemble the TMV assembly into the housing in the reverse order.
10. Run the unit and check for leaks.

2.7.2 Hardware, Hose and Piping Connections

Hardware, Hose and Piping connections of the air and oil circuits must be checked and, if required, re-tightened.

Check the hose and piping for unsealed areas.

2.8 Inspection Intervals for Electrical Installations

Electrical installation

After four years, or after each intervention, the electric installation must be tested by an electrician.
Should stricter inspection intervals apply in your country, these must be observed.

2.9 Troubleshooting Voltage Problems

The compressor package has been designed, built, and tested to operate within one of the following standard ranges:

- 460, 575 Volts, 60 Hertz (Fixed and Variable Speed)

Connection to higher voltages will reduce the life of electrical devices within the compressor package. As voltages get further above the design range, other symptoms may show up.

High voltages may lead to high motor currents. The overload relay will sense these and shut down the compressor to protect the motor.

If the power supply and/or control transformer primary fuses blow, check that the devices are properly connected for the incoming line voltage.

Operation with lower voltages will reduce motor life and load capacity. As voltages get further below the design range, other symptoms may show up.

Low voltages may lead to high motor currents. The overload relay will sense these and shut down the compressor to protect the motor. If voltage is low while the compressor is off, locate and correct the cause. If the voltage drops low only while the compressor is running, look for poor connections or undersized wiring.

If any of the starters or contactors within the box chatters, or if the electronic controller drops out while attempting to start, it is a clear indication that the wiring is inadequate for the compressor. Look for poor connections or undersized wiring.

3 Clearing a Fault

Instructions for Clearing a Fault

Potential causes and solutions are listed in the following tables.
Controller operation, set-up instructions, & a full list of fault codes is located in the package controller manual. See supporting documentation list in Section 1.

The measures listed in these instructions for clearing faults may be performed only by specially trained personnel. Any other work beyond this must be performed by the manufacturer's service personnel! Work on the electrical equipment may be performed only by authorized electrical technicians.

Solutions are described in detail in repair instructions, which are transmitted as part of the operator training.

⚠ DANGER

Air/Oil Under Pressure

- Air/oil under pressure will cause severe personal injury or death.
- Shut down compressor, relieve system of all pressure, disconnect, lockout and tagout power supply to the starter before servicing the unit.

NOTICE

Property damage

Property damage due to incorrect/unsuitable measures for fault clearing.

- If the solutions listed here are not sufficient to clear the fault. Contact DV Systems.
- For fault and warning messages that are displayed on the display of the electronic controller, follow the instructions in the chapter "Fault/warning" in the operating instructions for the electronic controller.

NOTICE

- Also note the fault messages on the display of the operator panel.
- The corresponding actions to clear the faults are described in the operating instructions for the electronic controls.

Fault: Unit will not start

Potential root cause	Remedy
Missing operating or control voltage	Check fuses, main disconnect switch, and supply lines.
Fault not acknowledged	Acknowledge a fault in the electronic controller.
Pressure reservoir not depressurized.	Wait for depressurization. Screw compressor does not start up when the reservoir pressure is greater than the preset value.
Drive motor defective	Check connections, windings, etc.
Compressor defective	Rotate compressor by hand, replace if needed.
Ambient temperature < +5°C (41°F)	Ensure that the ambient temperature is at least +5°C (41°F), if necessary, provide stationary heating
The remote control/timer control via terminal strip is activated	Deactivate remote control/timer control
Line pressure is above the lower switching point or the nominal pressure	Wait until the line pressure has fallen below the switching point / nominal pressure
Motor starter overload relay tripped.	Reset and investigate cause of overload.
Pressure in reservoir.	Inspect unload valve.
Wrong lead connections	Change leads.
Emergency stop depressed.	Release button.

Fault: Unit remains stopped during the run-up phase.

Potential root cause	Remedy
Short circuit in the compressor	Determine and correct the cause of the short circuit. Replace defective fuses.
Loose terminal connections	Check terminal connections and tighten if needed.
Switching on and off by hand has exceed the maximum number of motor switching cycles.	Avoid switching on and off frequently by hand. Allow the electric motor to cool down.
Intake regulator does not close completely	Make the intake regulator moveable, replace if needed. Check solenoid valves and pressure reducing valve.
Oil is too viscous	Choose type of oil which suits the environment conditions and replace or install an idle heater.

Fault: Unit does not reach the set network pressure.

Potential root cause	Remedy
Network pressure sensor defective	Check the network pressure sensor, replace if needed.
Too much air captured	Throttle the removal or switch on and use additional compressors.
Oil fine separator soiled	Replace oil fine separator cartridge
Air filter dirty	Replace air filter cartridge
Severe leaking	Check compressor. For example: Check for leaks. Pressure Relief Valve after checking is defective or open. Condensate drain on test function.
Intake regulator does not open completely	Make the intake regulator moveable, replace if needed. Check solenoid valves and pressure reducing valve, replace if necessary.
Minimum pressure valve stuck closed	Replace valve.
Coupling spider broken	Check sheave alignment and replace complete set.
Pressure limits incorrectly set	Check/correct pressure limits in the Controller.
Aftercooler is frozen	Thaw out. This machine cannot operate in temperatures below 32°F (0°C).

Fault: Unit switches off.

Potential root cause	Remedy
Ambient temperature too high	Ventilate the compressor room.
Electric motor defective	Check the electric motor and posistor.
Fan is defective	Check fans, replace if needed.
Sensor, connections, or lines defective	Check sensors, connections, and lines.
Supply cable cross section too small for electrical lines	Measure current draw; replace lines if needed.
Oil level too low	Top up oil in the pressure vessel
Oil injection pressure too low	Replace oil filter cartridge. Clean oil system
Oil temperature too high	Check oil cooler and fan / check oil temperature, check cooling water circuit (only for water-cooled systems)
Compressor defective	Replace compressor
Excessive power consumption	Fine Oil Separator is dirty, replace if needed.

Fault: Compressor starts but stops after a short time.

Potential root cause	Remedy
High separator/ high compressor temperature shutdown event	See “High Discharge Air Temperature,” this section.
Blown fuse in starter/control box.	Replace fuse (investigate if fuses continue to blow).
Motor starter overload relay tripped.	Reset and investigate cause of overload.
Fast pressure buildup due to open inlet valve	Inspect inlet valve and unloader valve operation. Replace if faulty.
High oil viscosity	Review oil type for ambient temperature or provide site heating.

Fault: Compressor does not unload (or load)

Potential root cause	Remedy
Improperly adjusted control.	Refer to Controller Manual and adjust control.
Faulty inlet valve or unloaded valve solenoid.	Inspect and/or replace faulty component.

Fault: Compressor cycles from load to unload excessively

Potential root cause	Remedy
Insufficient receiver capacity.	Increase receiver size.
Restriction in service piping.	Inspect and clean service piping.
Pressure range too narrow.	Extend pressure range.

Fault: Compressor starts too slowly

Potential root cause	Remedy
Minimum Pressure Valve is faulty.	Inspect and/or replace.
Supply voltage is too low.	Check the supply voltage.

Fault: Idle pressure too high

Potential root cause	Remedy
Compressor does not give relief	Check suction regulator, blow-off solenoid valve and pressure-retaining and non-return valve and replace if necessary.
Intake regulator does not close completely	Make the intake regulator moveable, replace if needed. Check solenoid valves and pressure reducing valve.

Fault: Oil in the compressed air

Potential root cause	Remedy
Fine Oil Separator is defective	Replace oil fine separator cartridge
Oil foams	Replace the oil
Oil level is too high	Drain the oil
Faulty minimum pressure non-return valve	Check the minimum pressure non-return valve
Oil extractor orifice is plugged	Remove and clean the orifice

Fault: Oil in the Air Filter

Potential root cause	Remedy
Suction regulator non-return function defective	Check non-return valve; replace if necessary.
Continuous Emergency-Off deactivation	Emergency-Off may only be used for safety-related function problems

Fault: Pressure Relief Valve opens

Potential root cause	Remedy
Pressure Relief Valve defective	Replace pressure relief valve.
Network pressure sensor defective	Replace network pressure sensor.
Final compression pressure sensor defective	Replace final compression pressure sensor
Electronic controls defective	Replace electronic controller.
Oil fine separator soiled	Replace oil fine separator cartridge
Intake regulator does not close completely	Check solenoid valves and pressure reducing valve, replace if necessary. Make the intake regulator moveable, replace if needed.

Fault: High discharge air temperature

Potential root cause	Remedy
Dirty or clogged cooler core or fins.	Clean cooler.
Insufficient cooling air flow.	Provide unrestricted supply of cooling air.
Clogged oil filter or cooler (interior).	Replace filter or clean cooler.
Low compressor oil level.	Add oil to proper level.
Faulty temperature sensor.	Replace sensor.
Thermostatic mixing valve stuck.	Inspect and/or replace valve.

Fault: Excessive oil consumption

Potential root cause	Remedy
Oil carryover through lines.	See “Oil Carryover”, in this section.
Oil leaks at all fittings and gaskets.	Tighten or replace fittings or gaskets.
Shaft seal leaking.	Inspect scavenge orifice

Fault: Oil carryover

Potential root cause	Remedy
Overfilling the reservoir.	Drain excess oil from system.
Clogged scavenge orifice	Inspect and cleanse.
Ruptured oil separator element.	Replace element.
Loose assembly.	Tighten all fittings and gaskets.
Foaming caused by use of incorrect oil.	Use DV Systems lubricating coolant.
Inoperative minimum pressure valve.	Inspect and/or replace.
Operation at elevated discharge temperatures.	Reduce temperature. See “High Discharge Air Temperature”, this section.
Water condensate in oil.	Check oil reservoir temperature and if low, change thermal mixing valve element to one with higher temperature setting.

Fault: Excessive water in air delivery line

Potential root cause	Remedy
Water separator drain (basic unit or Air System receiver and/or dryer) malfunction.	Inspect and cleanse or replace drain float valve
Dryer not energized	Check that dryer is plugged and turned on.
Dryer bypass valve is in bypass position	Inspect and cleanse.
Dryer malfunction	Refer to dryer manual for further details.

For additional information, contact your local representative or visit:
www.dvsystems.com

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