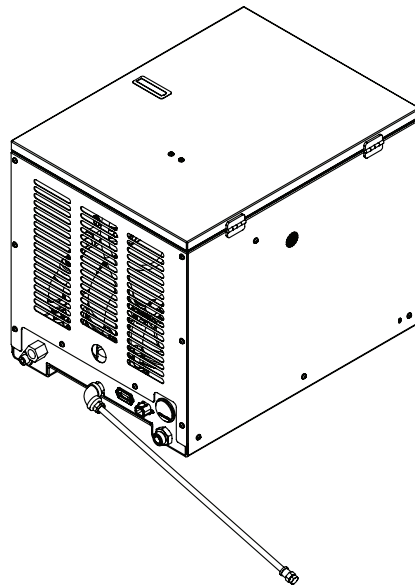
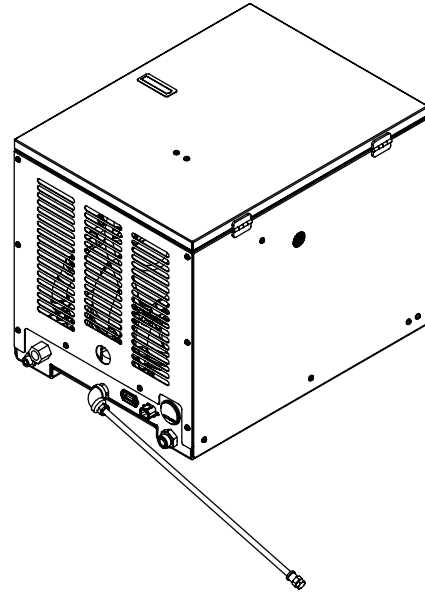
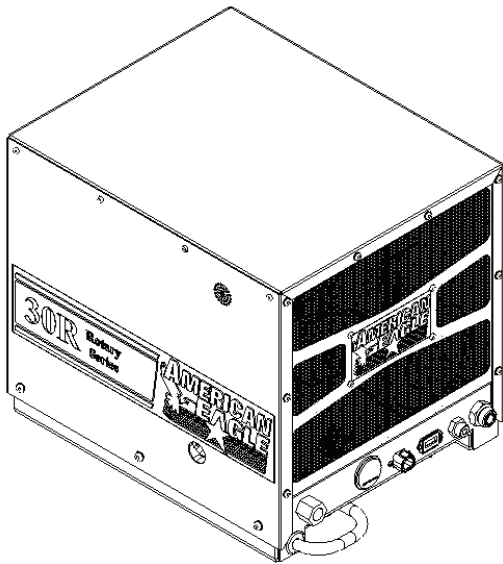




# Rotary Screw Compressor Operation Manual

Safety • Operation • Maintenance • Troubleshooting



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# R Series Operation Manual Revisions

Date of Revision	Section Revised	Description of Revision

**⚠ WARNING** Operating, maintaining, and servicing a Stellar product may expose you to chemicals including, but not limited to, engine exhaust, carbon monoxide, phthalates, and lead. These chemicals are known to the State of California to cause cancer and birth defects (or other reproductive harm). To keep your exposure to a minimum, be sure to avoid breathing exhaust and service your Stellar product in a well-ventilated area while wearing gloves or washing your hands frequently. For more information, go to [www.P65Warnings.ca.gov/passenger-vehicle](http://www.P65Warnings.ca.gov/passenger-vehicle).

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# Introduction

American Eagle® Air Compressors are designed to provide safe and dependable service for a variety of operations. With proper use and maintenance, these air compressors will operate at peak performance for many years.

To promote this longevity, carefully study the information contained in this manual before putting the equipment into service. Though it is not intended to be a training manual for beginners, this manual should provide solid guidelines for the safe and proper usage of the air compressor.

Once you feel comfortable with the material contained in this manual, strive to exercise your knowledge as you safely operate and maintain the air compressor. This process is vital to the proper use of the unit.

## **A few notes on this manual:**

A copy of this manual is provided with every air compressor and can be found in the hard plastic manual case that is installed on the chassis. A copy of this manual shall remain with the air compressor at all times.

Throughout the manual, three signal words will be used to bring attention to important items:

### **NOTICE**

A NOTICE signal word indicates a practice not related to physical injury.

### **⚠ WARNING**

A WARNING signal word indicates a hazardous situation which, if not avoided, could result in death or serious injury.

### **⚠ DANGER**

A DANGER signal word indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Information contained within this manual does not cover all maintenance, operating, or repair instructions pertinent to all possible situations. Please be aware that some sections of this manual contain information pertaining to American Eagle® manufactured air compressors in general and may or may not apply to your specific model.

This manual is not binding. American Eagle reserves the right to change, at any time, any or all of the items, components, and parts deemed necessary for product improvement or commercial/production purposes. This right is kept with no requirement or obligation for immediate mandatory updating of this manual.

## **In closing:**

If more information is required or technical assistance is needed, or if you feel that any part of this manual is unclear or incorrect, please contact the American Eagle Customer Service Department by phone at 800-392-3015 or email at [service@americaneagleacc.com](mailto:service@americaneagleacc.com).

# Chapter 1 - Operation

Safety should be the number one thought on every operator's mind. Three factors should exist for safe operation: a qualified operator, well-maintained equipment, and the proper use of this equipment.

This chapter contains information regarding the safety and operation of American Eagle® manufactured air compressors and should be read and understood completely by everyone working with or near the air compressor before putting the unit into operation.

**⚠ WARNING** Failure to follow operating, maintenance, or safety instructions can result in death or serious injury.

## General Operation

It is the responsibility of the owner to instruct the operator in the safe operation of the equipment and to provide the operator with properly maintained equipment.

**⚠ WARNING** American Eagle® Air Compressor operators must conform to the qualifications specified in this manual. Trainees or untrained persons shall be under the direct supervision of qualified persons.

Operators shall consult with the owner of the equipment regarding current safety regulations and required personal protective equipment.

Operators should never operate the air compressor while under the adverse influence of alcohol, drugs, or medication.

Please take note that American Eagle is not liable for accidents incurred by the air compressor because of non-fulfillment from the operator's side of current rules, laws, and regulations.

## Operator Requirements

**Operation is limited to the following people:**

- A. Qualified individual.
- B. Trainees under direct supervision of the qualified individual.
- C. Test or maintenance individual.
- D. Air compressor inspector.

**Qualified individuals must:**

- A. Demonstrate the ability to understand all decals, the owner's manual, and any other information required for safe operation of the air compressor.
- B. Be able to demonstrate the ability to safely control the air compressor.
- C. Know all safety regulations.
- D. Be responsible for maintenance requirements.
- E. Understand and be fully capable of implementing all emergency procedures.
- F. Understand all operating procedures as outlined by this manual.

## Before Start-Up

Inspect unit for any visible signs of damage. Check hoses (air and hydraulic) for weak or worn condition and make sure that all connections are secure.

**⚠ WARNING** Do not operate the compressor if it is damaged, improperly adjusted or not assembled properly.

**⚠ WARNING** Do not operate the compressor with any of the guards removed.

Check the oil level in the compressor (See Section "Changing the Oil"). If oil is needed, use American Eagle® Synthetic Compressor Oil (P/N C0087) or an equivalent synthetic oil.

Check the air intake filter to make certain that it is clean and unobstructed. A dirty air filter is a possible cause of reduced air output.

**⚠ WARNING** The air taken in by the air compressor must be free of flammable fumes and vapors.

## Cold Start-Up Procedure

If operating in a cold environment, oils can become thick and lead to hard starts.

1. If your unit is equipped with a cold weather kit, engage it when driving to a site or 20 minutes prior to starting the unit.
2. Turn on hydraulics and allow to run for 5-10 minutes.
3. Engage the compressor switch.
4. Proceed with normal start up procedure.

## Start-Up Procedure

To use the compressor:

1. Start the vehicle engine and engage the hydraulic system.
2. The compressor can now be activated using the compressor switch. This energizes the hydraulic solenoid sending oil to the hydraulic drive motor and starts the compressor. The system will now function automatically.
3. Open air valve and let unit run for a few minutes before closing air drain and operating.

**⚠ WARNING** Never use the compressor as a booster pump and/or to compress a medium other than atmospheric air.

4. Once engaged, adjust the engine speed control to ensure that the compressor speed does not exceed 7500 rpm under load. Adjustment instructions are provided with the speed control unit.

# Rotary Screw Air Operations

Activating the compressor switch sends power to the cooling fan, hydraulic solenoid valve and normally closed terminal (87A) on the Bosch relay. The normally open hydraulic solenoid valve closes, sending hydraulic oil to the motor operating the compressor. The fan and compressor operate whenever the hydraulic system is engaged and the compressor switch is on. Power from the common terminal (30) on the Bosch relay goes to the line terminals on the compressor pressure switch. If the air pressure is below the kick out pressure (115 psi minimum/120 psi maximum) the pressure switch closes sending power to the engine speed control and compressor air inlet solenoid valve. The engine speeds up and the compressor begins pumping air. When the air pressure reaches the kick out pressure setting (145 psi minimum/150 psi maximum) the pressure switch opens, shutting the air inlet valve and deactivating the speed control.








The compressor is protected by an air pressure and compressor oil switch gauge. The coil on the Bosch relay is grounded through these two switch gauges. If the air pressure or compressor oil temperature exceeds the switch gauge settings they close, completing the circuit and energizing the relay coil. The normally closed switch on the Bosch relay opens cutting power to the compressor pressure switch. The compressor stops pumping air and the engine slows down. The switch gauges are set at the factory and should not be adjusted.

**NOTICE** Duty cycle for Rotary Screw Compressors is 100%.

## Safety Decals of Note

Safety decals serve to inform the viewer of the hazard type, how to avoid the hazard, and the consequences of not avoiding the hazard.

Decals are considered safety equipment. They must be maintained, as would other safety devices. All safety instruction plates, notices, load charts and any other decal applied to the air compressor or vehicle must be kept legible and in good condition. Replace any decals that are missing, damaged, or illegible.

 <b>WARNING</b>			
Failure to obey the following can result in death or serious injury:			
 <p><b>Untrained Operator Hazard</b> Read and understand all manuals and safety signs before operating or servicing this equipment.</p>	 <p><b>Breathing Hazard</b> Do not use air from compressor for breathing or food processing.</p>	 <p><b>Burn Hazard</b> Do not touch any internal surfaces during or shortly after operation.</p>	 <p><b>Crush Hazard</b> Keep clear while unit is in operation. Do not operate unit without cover attached.</p>
 <p><b>Fluid Hazard</b> Do not search for leaks with hands or other body parts. Relieve pressure before disconnecting lines. Tighten all connections before applying pressure.</p>	 <p><b>Pressure Hazard</b> Do not remove caps, plugs, or other components while unit is running or has pressure in tank. Disconnect power and relieve all pressure prior to maintenance.</p>		

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# Chapter 2 - Maintenance

Maintenance is an important part of extending the life of any American Eagle® Air Compressor. Performing key maintenance items on a scheduled program will prevent unnecessary downtime.

## General Maintenance Guidelines

Before performing any maintenance to the air compressor, consider the following:

- **⚠ WARNING** Only qualified service personnel are to perform maintenance on the Air compressor. Never modify or alter any of the equipment, whether mechanical, electrical, or hydraulic, without explicit approval from American Eagle.
- Shut off the engine and disengage the PTO.
- Place all controls in the off position and secure operating features from inadvertent motion.
- Disable all power to the air compressor and remove any stored energy.
- Before performing any maintenance on the compressor, place a warning tag on the hydraulic power source or disconnect the hoses from the compressor motor to prevent accidental startup of the compressor.
- **⚠ WARNING** Do not disconnect hydraulic hoses while there is still pressure in those components.
- **⚠ WARNING** Do not touch the air compressor or plumbing until the unit has cooled down. The surface of the air compressor and the plumbing between the compressor and the cooler may reach temperatures above 150 degrees.
- Replace parts with American Eagle® approved parts only.
- Keep the air compressor clean and free from grease build-up, oil and dirt to prevent slippery conditions.
- Label or tag parts when disassembling.
- Immediately repair or have repaired any components found to be inadequate.
- Always connect hoses to the compressor before energizing the power source. Be sure all hose connections are tight.
- **NOTICE** Do not attempt to adjust or disable the compressors air pressure relief valve. This valve protects the compressor in the event of blockage or air control system malfunction.

## Service Intervals

The following table is a list of routine maintenance items, including service intervals. Service intervals are listed as hours, days, or weeks, whichever occurs first. If working in dusty, dirty, or hot environments, reduce the recommended time intervals between servicing by half for oil and filter changes. American Eagle recommends that these service intervals be followed. Before performing any maintenance function, turn off compressor, hydraulic system, truck engine and remove keys to assure that compressor is not started. Be sure all air pressure in unit is relieved. Failure to do so may result in injury or equipment damage.

Maintenance Schedule	Daily	Weekly	Monthly	Hourly
Drain air tanks.	☑	☑	☑	☑
Check compressor case oil level.		☑		
Check fittings and airlines.	☑			
Check hydraulic fluid level.	☑			
Inspect and clean air intake filters.		☑		100
Check oil cooler. Clean as needed.		☑		
Replace coalescing/separator cartridge.			12	3000
Change compressor oil and oil filter.			6	1000
Replace hydraulic filter.			6	
Replace air filter.			3	100
Tighten all fittings and fasteners.			3	
Check all electrical connections.			3	

General preventative maintenance includes maintaining proper fluid level in both systems and the general cleanliness of the equipment. Proper fluids according to the specifications are required.

USE AE SYNTHETIC COMPRESSOR OIL P/N 95179. SEE MODEL MANUAL FOR COMPRESSOR CRANKCASE CAPACITY.

## Oil Level

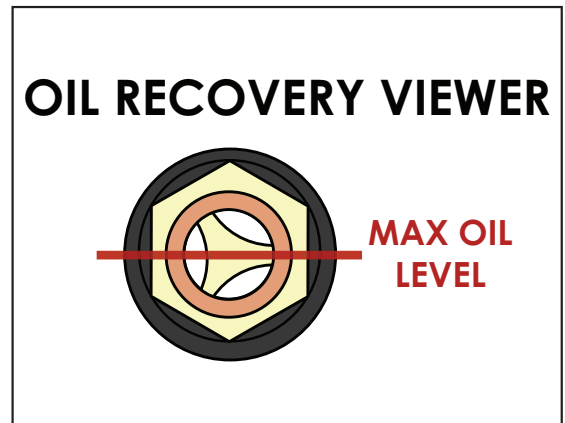
The oil level in the compressor case is an important factor for the operational reliability of the system.

### Check Intervals:

1. Before starting unit.
2. Every 100 operating hours

### Check Procedures:

1. Turn off the compressor, hydraulic system and truck engine to ensure that compressor is not started.
2. Wait for one full minute.
3. Slowly unscrew the oil fill cap on the compressor case (also referred to as the separator receiver).
4. Check the oil level.
5. If the oil level is under the minimum level, add oil to maximum level as shown.
6. Replace cap and hand tighten. Unit is ready to be put into service.



**Note:** The screw-type oil fill cap has a bleed hole which will release pressure in the compressor case. The bleed hole is exposed after the cap is loosened about two turns. If there is still pressure in the case, wait a few minutes for it to bleed off.

## Condensation Drain

Condensation (water) in the oil affects the operation and life of the screw compressor. Screw compressors are especially vulnerable due to the fact that the oil is used for both sealing and lubrication. Both oil and water are removed from the air in the separator cartridge and returned to the compressor case. Condensation builds up faster when the compressor is operated intermittently in humid conditions. Under these conditions, the condensate should be drained each day before start up when the compressor is cold.

### Possible Malfunctions:

Insufficient lubrication.  
Poor air/oil separation and high pressure across the separator cartridge.  
Corrosion and rust formation.

### Maintenance Procedure

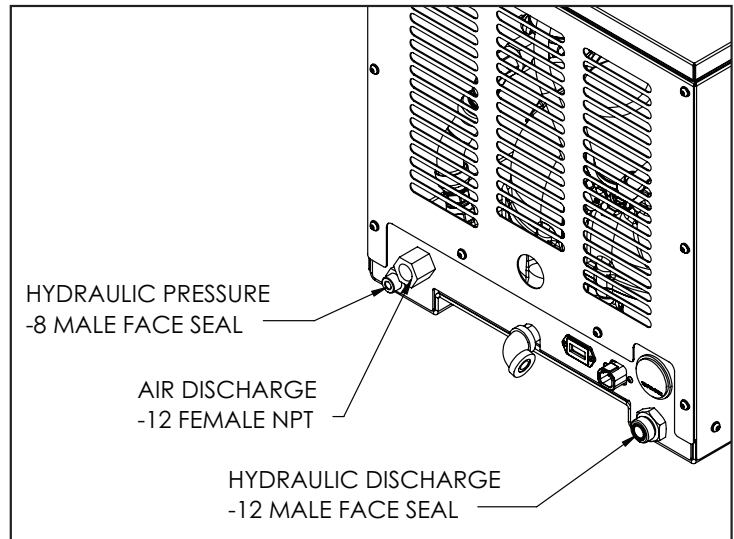
1. Unscrew oil fill cap.
2. Place a container under the oil drain pipe and carefully unscrew the oil drain cap.
3. Drain the water from the compressor case until nothing but oil comes out, replace the cap and tighten.
4. Fill the compressor case with oil to maximum and replace oil fill cap.
5. Turn on compressor and operate for three minutes.
6. Check oil level and fill if low.
7. Dispose of condensate (mixture of water and oil) in accordance with local and federal regulations.

# Changing the Oil

Change the oil with the compressor at operating temperature of 140-175 degrees F (60-80 degrees C).

**⚠ WARNING** Compressor must be stopped and all air receivers discharged before changing oil. Compressor oil is hot and can cause burns.

1. Turn off the compressor, hydraulic system and truck engine to ensure that compressor is not started.
2. Discharge air receiver.
3. Wait for one full minute.
4. Slowly unscrew the oil fill cap on the compressor case.
5. Place a container under the oil drain pipe and carefully unscrew the oil drain cap.
6. Drain the oil from the compressor case, then replace and tighten oil drain cap.
7. Refill with oil to maximum level and replace oil fill cap. See model manual for oil capacity.
8. Operate compressor for 3 minutes.
9. Check oil and fill to maximum if necessary.



## Oil Recommendations

Screw compressors must be operated using the most suitable oil for operation. The compressor manufacturer must approve this oil for use. The oil must also be suitable for use in unfavorable conditions such as: contamination of the intake air by gases, solvent vapors, exhaust gases, and high ambient temperature conditions.

Suitable types and brands of oil may be specified on request. Suitable screw compressor oils can be mineral oils, synthetic oils, and biological degradable oils.

The substances and materials used in the compressor such as seals must be taken into account when selecting the types of oil. Corrosion or other material degradation must not occur.

**NOTICE** Do not mix different types of oil.

**NOTICE** In the case of ambient temperatures close to freezing, prevent the unit from freezing.

Pipeline Materials:  
The oil used in screw compressors can degrade plastics used in air pipelines.

**For cold weather operation:** American Eagle recommends using Summit SH-32 or Rotary screw ISO32 oil (must contain anti-foam additives).

## Oil Requirements

High aging stability

High disperse capacity

Low emulsification tendency

Flash point: above 400°F/ 200°C

Pour-point: 5° below lowest ambient temperature minimum

Minimum foaming

High corrosion protection

Hydraulic or turbine oil

Basic oil: solvate

Operating temperature: up to 230°F / 110°C

Viscosity class: ISO 46 or ISO VG 68

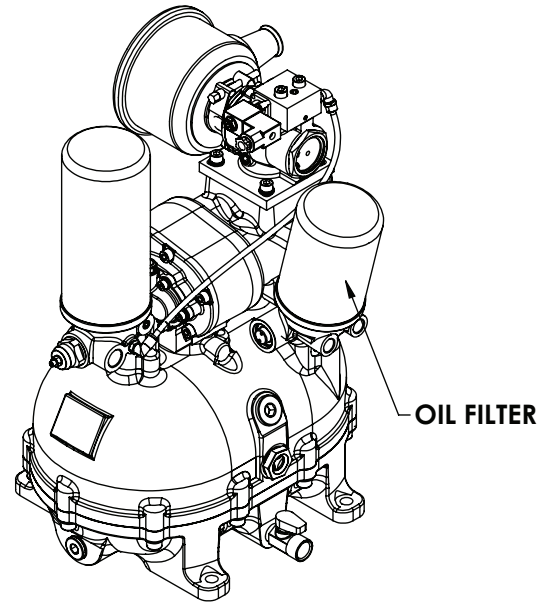
Viscosity at 104°F / 40°C: ca. 42-50 mm<sup>2</sup>/s (cST)

# Oil Filter

The oil filter is located to the front of the unit. When viewing the unit from the oil fill cap end, the oil filter will be to the left front. It is necessary to remove the side panel to access the oil filter. Replace the filter after the first 50 hours of service and every 1,000 hours or every 6 months, whichever comes first.

## Maintenance Procedure

1. Turn off the compressor, hydraulic system and truck engine to ensure that compressor is not started.
2. Slowly unscrew and remove the oil filter with an oil filter wrench.
3. Grease the new filter gasket.
4. Before installing, hold the new filter upright and fill it with the same oil as used in the compressor case.
5. Screw the new filter onto the compressor. Hand tighten, do not use a filter wrench. Turn approximately 3/4 turn after gasket contacts the compressor.
6. Run compressor for 3 minutes.
7. Check oil level and fill if necessary.

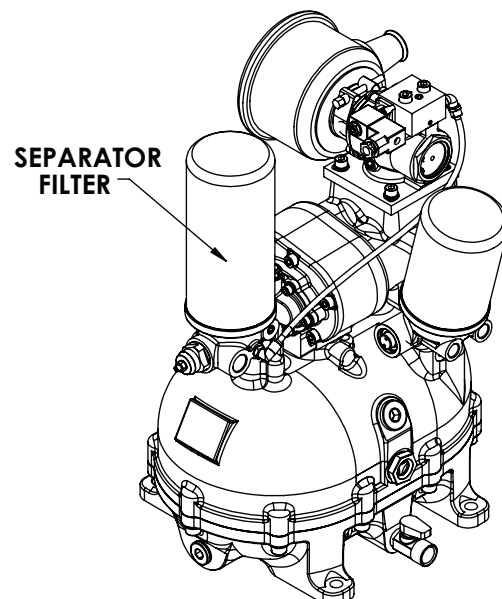


# Separator Cartridge

The separator cartridge is disposable and is located on top of the filter support. The cartridge has to be replaced at least once per year and at a maximum of 3000 operating hours. If intake air is often contaminated or the oil quality is poor, the cartridge will tend to clog earlier and will need to be changed more often.

## Maintenance Procedure:

1. Turn off the compressor, hydraulic system and truck engine to ensure that compressor is not started.
2. Slowly unscrew and remove cartridge with an oil filter wrench.
3. Screw the new cartridge onto the filter support. Hand tighten, do not use a filter wrench. Turn approximately 3/4 turn after gasket contacts the compressor.
4. Write the date of change and operating hours on cartridge.
5. Run compressor for 3 minutes.
6. Check cartridge to ensure that it is tight.



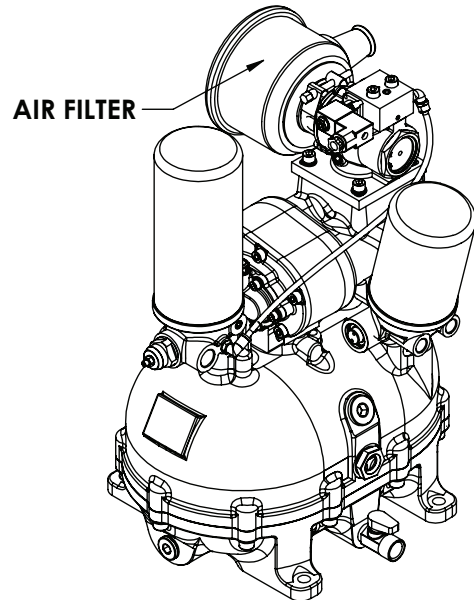
## Air Filter

The air filter should be changed every 100 hours of operation. The filter may require changing or cleaning more frequently if the compressor is operated in a dusty environment.

### Maintenance Procedure:

1. Turn off the compressor, hydraulic system and truck engine to ensure that compressor is not started.
2. Open filter lid and carefully remove filter.
3. Carefully remove dust from the intake housing.
4. Clean and install or install new filter:
  - Clean filter by tapping outside of filter on a hard surface.
  - Clean filter with compressed air by blowing from the inside to the outside. Limit air pressure to 75 psi.
5. Close filter lid.
6. Test run compressor.

**NOTICE** Any dirt or debris that enters the compressor intake when the air filter is removed can cause irreversible damage.

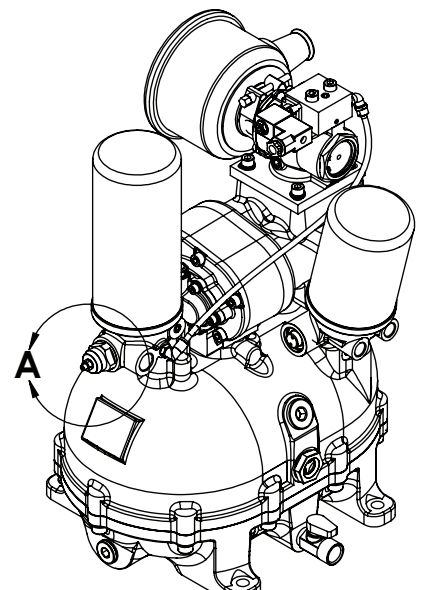
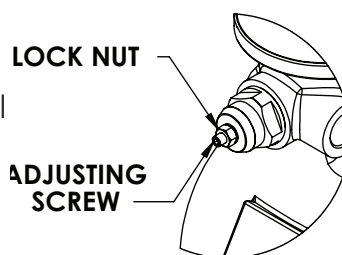


## Minimum Pressure Valve

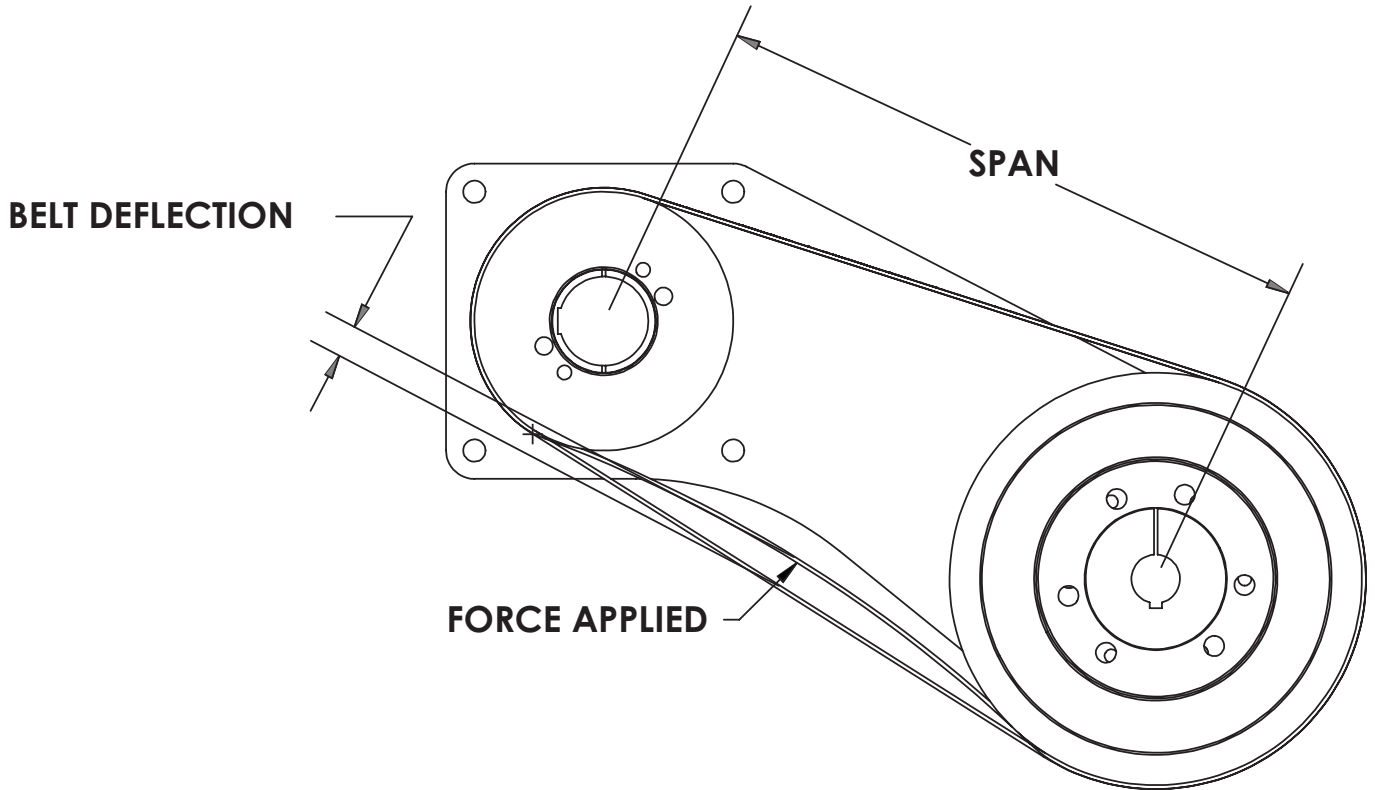
The minimum pressure valve is set at the factory. If oil blows out through the air filter the minimum pressure valve may need to be set.

### Minimum Pressure Valve Set Procedure

1. Remove the lock nut.
2. Turn the adjusting screw in until it just touches.
3. Turn the adjusting screw out three full turns.
4. Replace and tighten lock nut.



# Belt Tension



## New Belt

Installation Tension: 98.0 lbf

Tensioning Force: 6.8 lbf

Belt Deflection: 9/64 in

Span Length: 9.00 in

## Used Belt

Installation Tension: 65.4 lbf

Tensioning Force: 4.8 lbf

Belt Deflection: 9/64 in

Span Length: 9.00 in

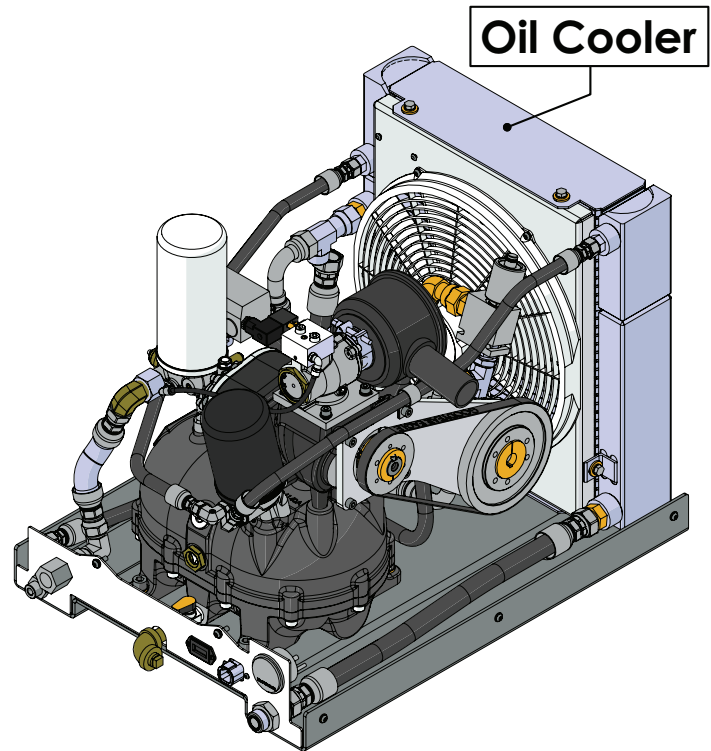


# Hydraulic Oil Cooler/Compressor Oil Cooler

For reliable operation and longevity of both compressor and hydraulic system, the cooler should be kept clean. The compressor system is protected from operation at high temperature by a switch gauge. If the compressor shuts down or is operating close to the shut down temperature, the cooler should be cleaned. The cooler can be cleaned with compressed air, pressure washer or steam cleaner.

## Maintenance Procedure

1. Turn off the compressor, hydraulic system and truck engine to ensure that compressor is not started.
2. Discharge the receiver.
3. Remove the shroud.
4. Drain oil from the compressor.
5. Disconnect:
  - a. Lines to the cooler.
  - b. Lines to the thermo valve.
  - c. Electrical connection to the fan.
6. Remove the cooler.
7. Remove the fan shroud and fan from the cooler.
8. Cap the hydraulic fittings on the cooler and thermo valve.
9. Clean cooler.
10. Reinstall the cooler in reverse order.
11. Refill with oil.
12. Test run compressor and check operating temperature.
13. Check oil level and fill if necessary.





# Chapter 3 - Troubleshooting

If symptoms of poor performance develop, the following chart can be used as a guide to investigate and correct the problem. When diagnosing faults in operations of the air compressor, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure that is listed in the compressor specification section of this manual. **As always, feel free to contact American Eagle® Customer Service at 1-800-321-3741**

Problem	Possible Cause	Solution
Compressor Shuts Down with air demand:	Compressor temperature.	Clean Cooler Fin
	Low oil level.	Add compressor oil to level.
	Fan not operating.	Check ground wire and fan switch/relay.
	Plugged oil filter.	Replace filter.
	Dirty cooler core.	Clean cooler fins.
	Contaminated cooler core.	Remove and clean.
	Hydraulic pressure and flow incorrect	Adjust and reset according to specifications.
Compressor will not build up pressure:	Worn hydraulic motor.	Replace.
	Air demand too great.	Tighten air hose clamps. Repair air leaks.
	Air filter plugged.	Clean or replace.
	Pressure switch out of adjustment.	Readjust to specifications.
	Faulty pressure switch.	Replace.
	Compressor speed too slow.	Check hydraulic flow and pressure.
	Drive belt slipping.	Readjust and tighten.
	Service valve wide open.	Close valve.
Compressor over pressures:	Solenoid valve on.	
	Hydraulic Manifold valve stuck (closed).	Clean or replace.
	Defective pressure switch.	Replace.
	Air control line leaking.	Check and correct.
Compressor Stalls:	Inlet valve stuck.	Clean and replace.
	Restriction in control line (dirt/ice).	Clean and free up.
	Belt Slipping	Readjust and tighten.
	Insufficient hydraulic system pressure or flow.*	Check the following:
		1. Setting on supply pressure system relief valve. 2. Ensure adequate pressure and flow. 3. Check and see if other hydraulic systems activated off the same hydraulic supply.
	Pressure relief set too low.	Readjust.
	Pressure relief seals leaking.	Replace.
	Air pressure set too high for hydraulic system.	Adjust pressure switch to reduce air pressure.
Solenoid valve cartridge seals leaking on hydraulic manifold assembly.	Replace with new cartridge.	
Hydraulic reservoir low on oil.	Add to oil level.	
Compressor noisy or loud when starting compressor in cold weather:	Ice buildup inside compressor from condensation	Engage PTO and allow hydraulic fluid to circulate and warm system up before engaging compressor.
Compressor synthetic oil has a milky appearance:	Coalescing/Separator cartridge clogged or plugged.	Replace cartridge and change compressor oil.
Excessive oil level in compressor:	Internal crack inside oil cooler.	Replace cooler, change filters and compressor oil.

*\*This can occur if another hydraulically activated component is used off the same pump system. Activating the secondary component may drop hydraulic supply system pressure/flow and leave insufficient for compressor. Not: Even a momentary drop in hydraulic supply pressure or flow may initiate compressor blowdown to commence.*







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