

INTRODUCTION

GENERAL

This section has the description and the service procedures for the air compressor.

DESCRIPTION

The air compressor maintains the supply of air for the brake system. The compressor is driven by the engine and can have air or water cooling. The compressor is lubricated with oil from the engine.

OPERATION

The air compressor runs all the time the engine is running. The compression of air is controlled by the governor. As the piston moves down, air enters the

compressor through the inlet valve. As the piston moves up, the air in the cylinder is compressed. The compressed air leaves the compressor through the outlet valve. The air then enters the air tank.

When the pressure of the air reaches the maximum setting of the governor, the governor opens. While the governor is open, air from the air tank returns to the compressor through the governor. The air from the air tank enters the chamber for the release plungers. The plungers move up and hold the inlet valves off of their seats. Now, the air is transferred between the cylinders. There is no compression of the air at this time. When the pressure of the air in the tank reaches the minimum setting of the governor, the governor closes. The air is released from the chambers

REPAIRS

REMOVAL

A. Use the drain valve to remove the air from the air tank.

B. Put tags on the lines at the compressor. Disconnect the air lines and the oil lines at the compressor. Put caps on the open lines. If the compressor has water cooling, disconnect the water lines. Put caps on the open lines.

C. Disconnect the drive shaft coupler at the compressor or remove the drive belt.

D. Remove the compressor from the engine.

E. Clean the exterior of the compressor with solvent. Dry the compressor with compressed air.

DISASSEMBLY (See Figure 1)

A. If the compressor has a pulley, use a puller and remove the pulley.

B. Remove the governor.

C. Put marks for identification on the cylinder head, cylinder block and crankcase (on two piston compressor).

D. Remove the cylinder head. Remove the valve assemblies from the cylinder head.

E. Remove the plate from the bottom of the crankcase.

F. Put marks for identification on the caps of the piston rods. Remove the caps from the piston rods. Push the piston and rod assembly from the cylinder block.

G. Remove the rings from the pistons. remove the pins that hold the rods to the pistons.

H. Remove the cylinder block from the crankcase (on two piston compressor).

I. Remove the crankshaft.

1. On single piston compressor:

Remove the end cover. Remove the crankshaft and bearings from the crankcase.

2. On two piston compressor:

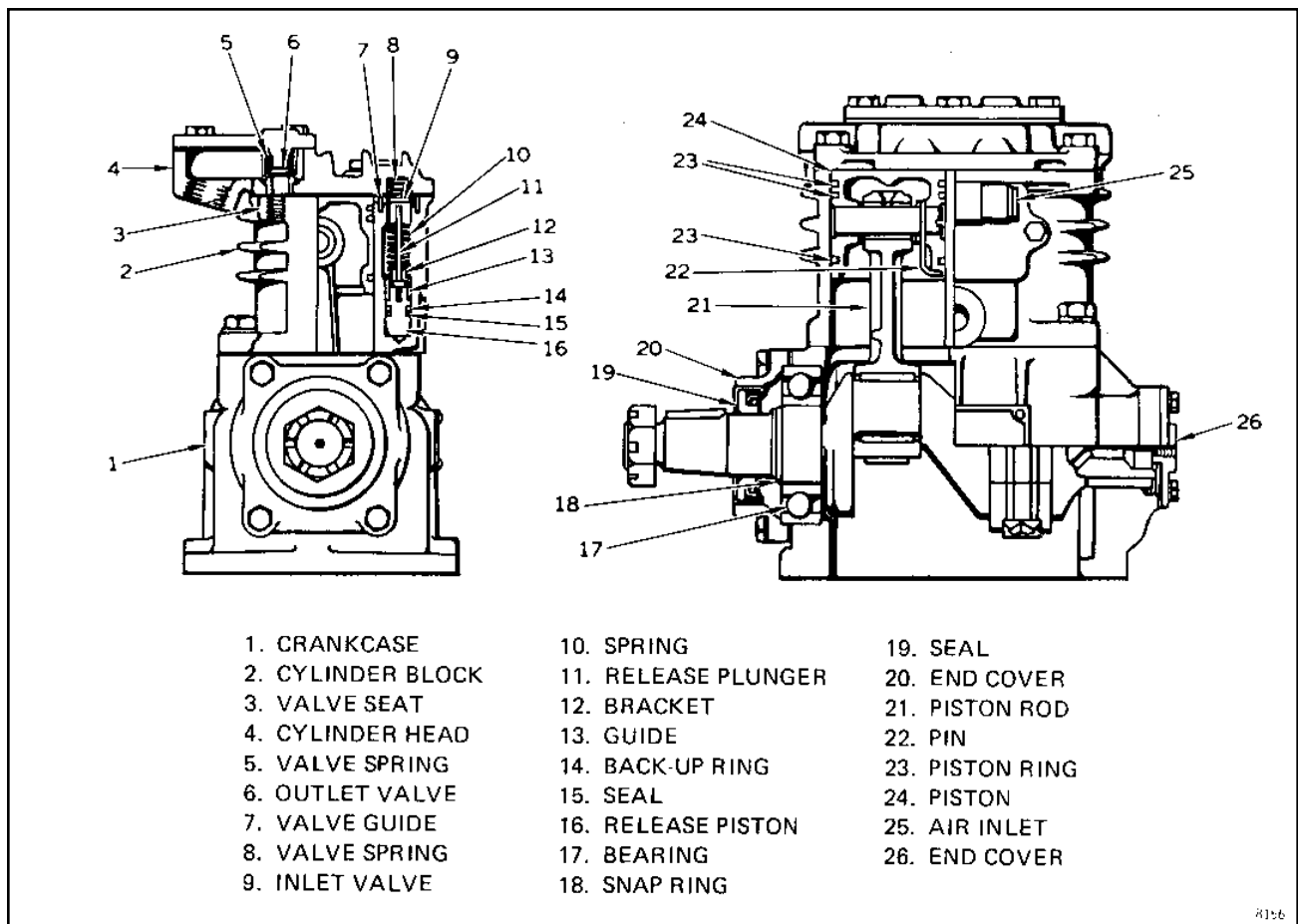


FIGURE 1. AIR COMPRESSOR, TWO PISTON

Put marks for identification on the covers for the crankshaft and on the crankcase. Remove both of the covers from the crankcase. Push the crankcase and bearing from the crankcase.

J. Remove the snap ring and bearings from the crankshaft.

CLEANING

Clean all of the parts in solvent and dry with compressed air. Make sure all carbon is removed from the cylinder head and the cylinder block.

ASSEMBLY (See Figure 1)

A. Use a press to install the bearings on the crankshaft. Install the snap ring (two piston compressor). Install the crankshaft into the crankcase.

B. On single piston compressor:

Install the rear cover, thrust washer and the O-ring on the crankcase. Install the oil seal. Tighten the capscrews on the end cover. Make sure the crankshaft rotates freely.

On two piston compressor:

Install the rear cover and the gasket on the crankcase. Install the front cover with the oil seal and gasket. Tighten the capscrews on the end covers. Make sure the crankshaft rotates freely.

C. Install the cylinder block and the gasket on the crankcase (on two piston compressor).

D. Check the clearances of the piston ring as follows:

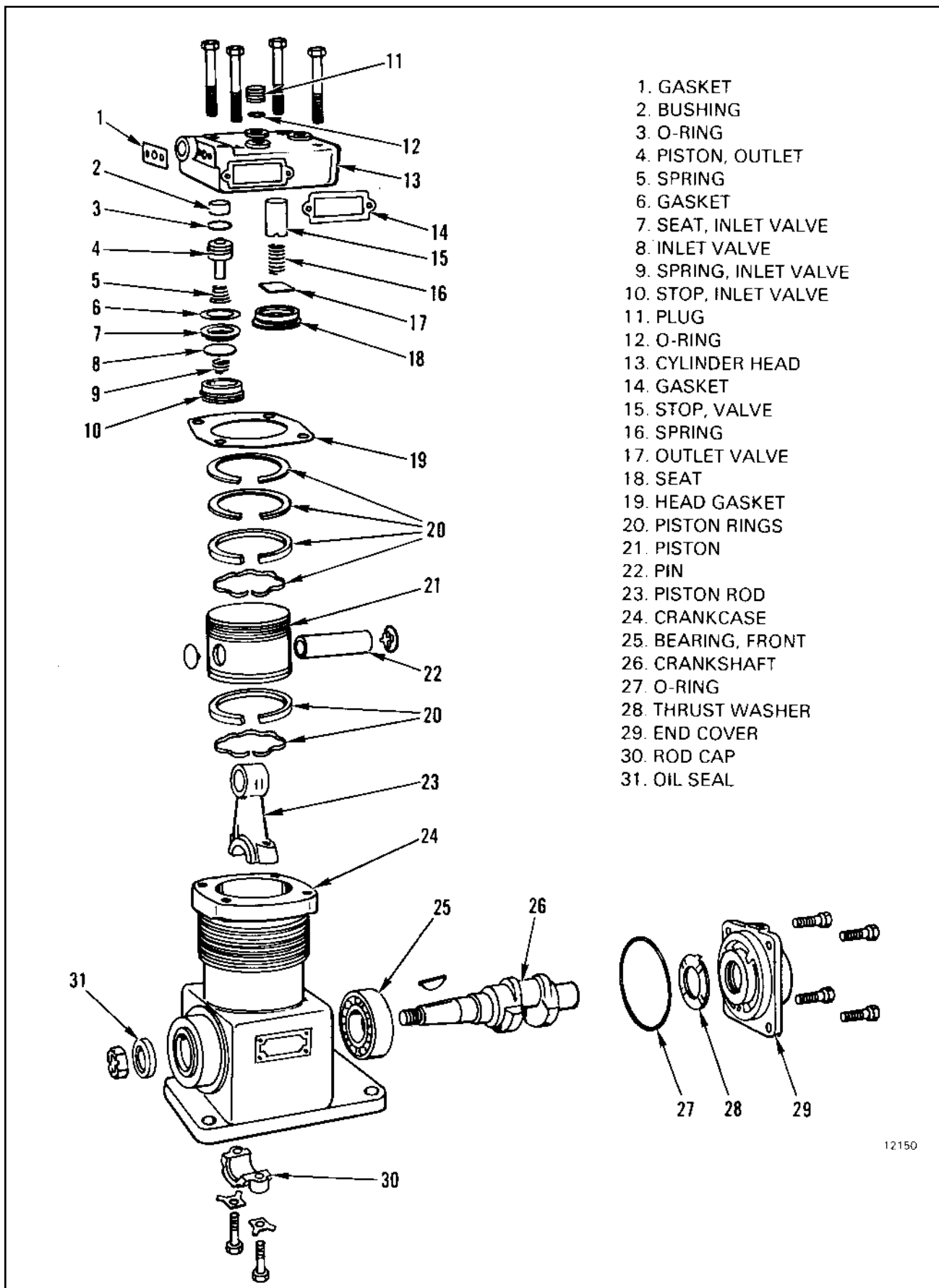
1. Put a piston ring in the cylinder block. The clearance between the ends of the ring is 0.005 to 0.015 inch (0.13 to 0.38mm).

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FIGURE 2. AIR COMPRESSOR, SINGLE PISTON

2. Put the piston rings on the pistons. The clearance between the ring and the groove in the piston is 0.002 to 0.004 inch (0.05 to 0.10mm).

E. Install the pins that hold the piston rods to the pistons. Install the lock wire in the pins for the pistons.

F. Move the rings on the pistons so the clearances on the rings are not aligned. Lubricate the pistons with oil. Install the pistons in the cylinder block.

G. Install the bearings on the piston rods and the caps. Lubricate the bearings and install the caps on the piston rods. Make sure the marks are aligned. Tighten the nuts on the caps to 40 to 50 inch pounds (4.5 to 5.7 N.m).

H. Install the plate on the bottom of the compressor.

1. Lubricate the plunger assemblies (on two piston compressor) with a high temperature lubricant. Install the release plunger assemblies in the cylinder block. Make sure the seals are not damaged.

J. Install the inlet and the outlet valve assemblies in the cylinder head. Install the governor.

K. Install the cylinder and the gasket on the cylinder

block. Tighten the capscrews to 65 to 85 inch pounds (7.4 to 9.6 N.m).

L. If used, install the pulley on the crankshaft.

INSTALLATION

A. Install the air compressor on the engine. Connect the drive shaft coupler to the engine or install the drive belt. Use a straight edge to align the coupler between the engine and the compressor. The maximum difference in alignment is 0.006 inch (0.15 mm).

B. Connect the air lines and the oil lines at the compressor. Connect the lines for water cooling at the compressor.

C. Run the engine and check for oil, water or air leaks. Check for correct operation of the compressor.

D. The relief settings of the governor are as follows:

1. Minimum setting 110 psi (7.59 bar)
2. Maximum setting 125 psi (8.63 bar)

TROUBLESHOOTING

TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
Compressor does not keep correct pressure in the air brake system	Dirt is in the air strainer.	Clean or install a new element in the air strainer.
	A restriction is in inlet or outlet ports of the compressor.	Clean the inlet and outlet ports of the compressor.
	The outlet valve is damaged or dirty.	Clean or install a new outlet valve.
	The air compressor has too much wear.	Repair or install a new compressor.
	The drive belt has wear or is loose.	Tighten the tension or install a new belt.
	Inlet valves stay in the open position.	Clean or install new inlet valves.
	Too much leakage of air in the brake system.	Repair the inlet valve and seat.
Noise in the air compressor during operation	Loose pulley.	Tighten the nut on the end of the crankshaft that holds the pulley.
	Too much carbon in the cylinder head or outlet valve.	Disassemble the compressor, clean the cylinder outlet hose, valve and outlet.
	Too much wear on the bearings or the bearings are burned.	Remove and install new bearings.
	The air compressor has too much wear.	Repair or install a new compressor.
Compressor uses too much oil	The compressor has too much wear.	Repair or install a new compressor.
	Dirt is in the air strainer.	Clean or install a new element in the air strainer.
	The oil pressure is too high.	Clean the oil passages and lines. Install a new release valve
	The oil supply or the return lines to the engine crankcase are full of oil.	Drain and clean the oil lines.
	Piston rings for oil control are not installed correctly	Remove pistons and replace correctly a new set of piston rings.
Compressor does not release	The outlet piston grommet has a defect.	Disassemble the outlet piston and install a new grommet
	The outlet cavity has too much carbon.	Clean the air cavity for the outlet valve.
	Outlet mechanism not working.	Repair the outlet system for easy operation.

TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
Air pressure increases slowly	Foot operated control valve leaks.	Repair valve for the foot control.
	Inlet valve does not close correctly.	Clean or install a new inlet valve.
	Air hoses and connections have leaks.	Inspect the hoses and connections for defects. Tighten or install new fittings or hoses.
	Too much carbon in the compressor, cylinder or outlet hose.	Disassemble compressor and remove the carbon from the compressor, cylinder or outlet hose.
	The air compressor pistons and rings have too much wear.	Disassemble, install new pistons and rings and grind the cyinders.
	The governor is not adjusted correctly.	Adjust the governor.
	The air cleaner is closed.	Clean or install a new element.
Compressor generates too much pressure	Governor hose is closed.	Clean or install a new governor hose.
	Governor diaphragm has defects.	Disassemble governor and install new diaphragm.
	Governor does not work.	Repair or install a new governor.