

# INSTRUCTION MANUAL BOOK FOR - Valve Type Tractor mounted Air-Compressor



PATENT REGD ®



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(Certified By- CFMT&TI  
(Ministry of Agriculture, Govt of India))**

# OWNERS DATA

OWNER 's NAME	
ADDRESS	
COMPRESSOR SERIAL.NO	
MODEL	
DELIVERY DATE	
SERVICE DATE	
COMPRESSOR TYPE	

## Communication Address:

**SRI BALAJI WORKSHOP,**

**449,UTHUKULI ROAD,**

**KUNNATHUR-638103,**

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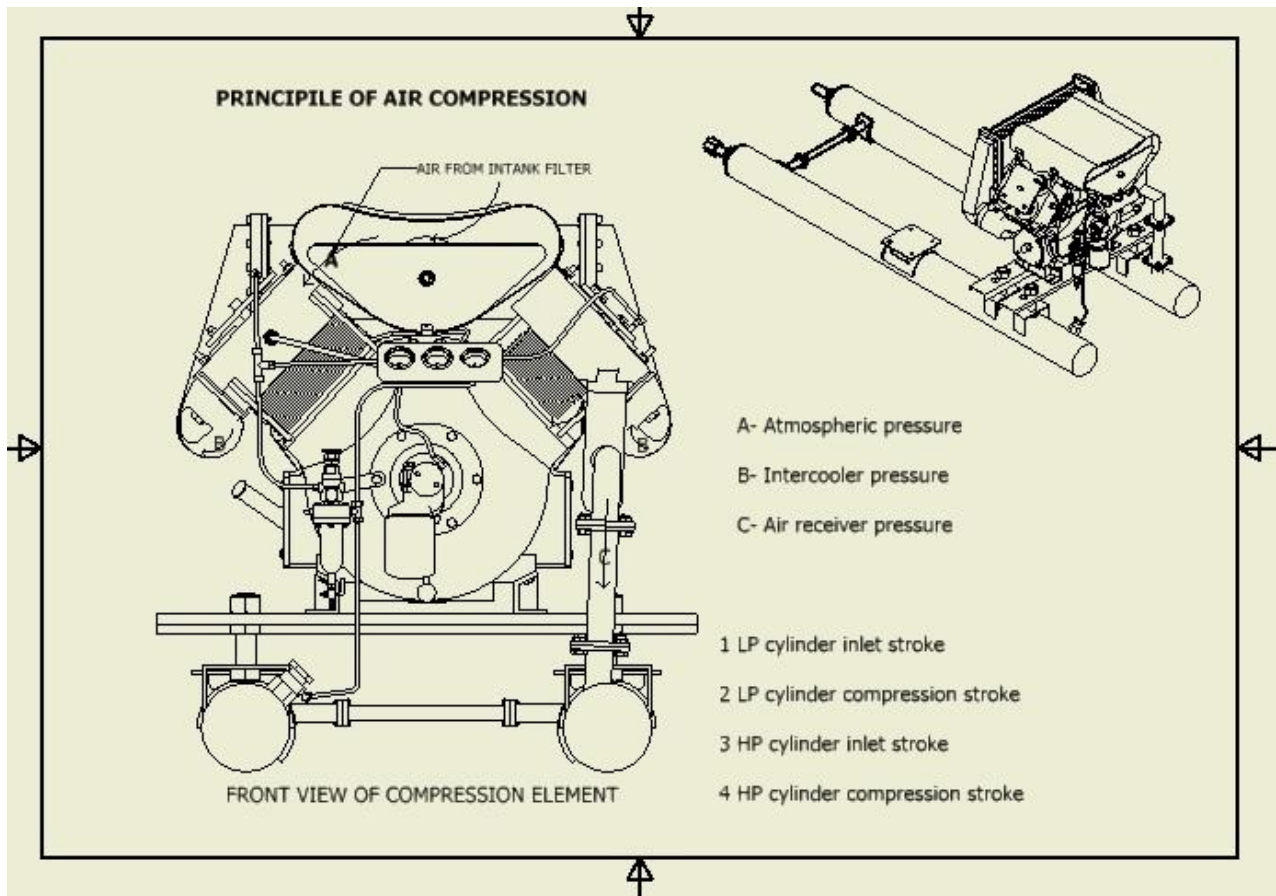
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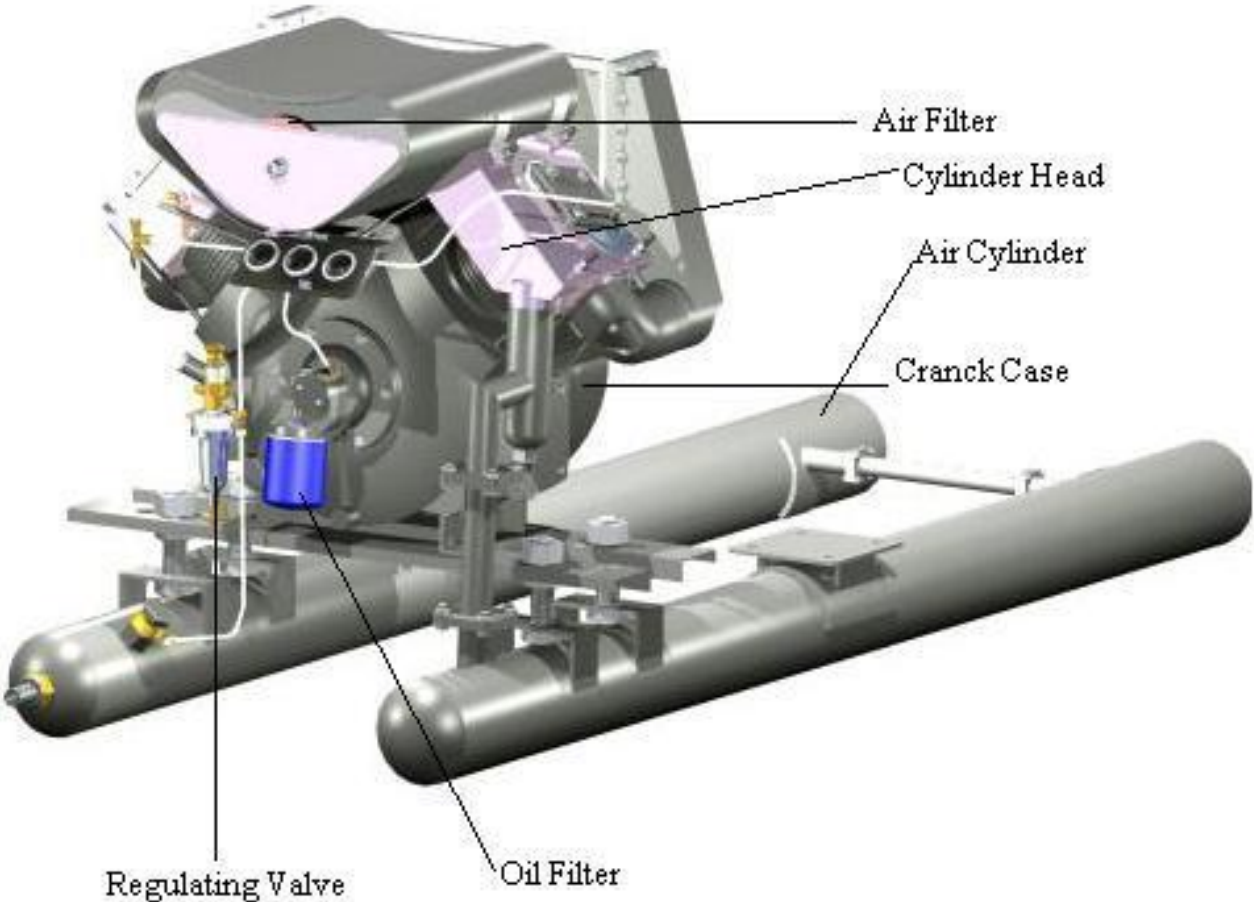
## TECHNICAL SPECIFICATION:

<b>DESCRIPTION</b>	<b>DATA</b>
<b>Maximum working pressure</b>	<b>8.5 kg/cm<sup>2</sup></b>
<b>Normal working pressure</b>	<b>6.5 kg/cm<sup>2</sup></b>
<b>Intercooler pressure at normal working pressure</b>	<b>2.0 kg/cm<sup>2</sup></b>
<b>Normal and maximum operation speed on load</b>	<b>1400 rpm</b>
<b>Speed of tractor power take-off</b>	<b>1400 rpm</b>
<b>Free air delivery at 6.5 kg/cm<sup>2</sup> and working pressure of 1400 rpm</b>	<b>134 cfm</b>
<b>f.a.d</b>	<b>63.4 l/s</b>
<b>Power required for a compressor shaft at full load</b>	<b>42 HP</b>
<b>Air receiver capacity</b>	<b>80 litres</b>
<b>Lubricating oil pump capacity</b>	<b>4.5 litres</b>
<b>Net weight(with mounting)</b>	<b>650 kg</b>

# WORKING PRINCIPLE

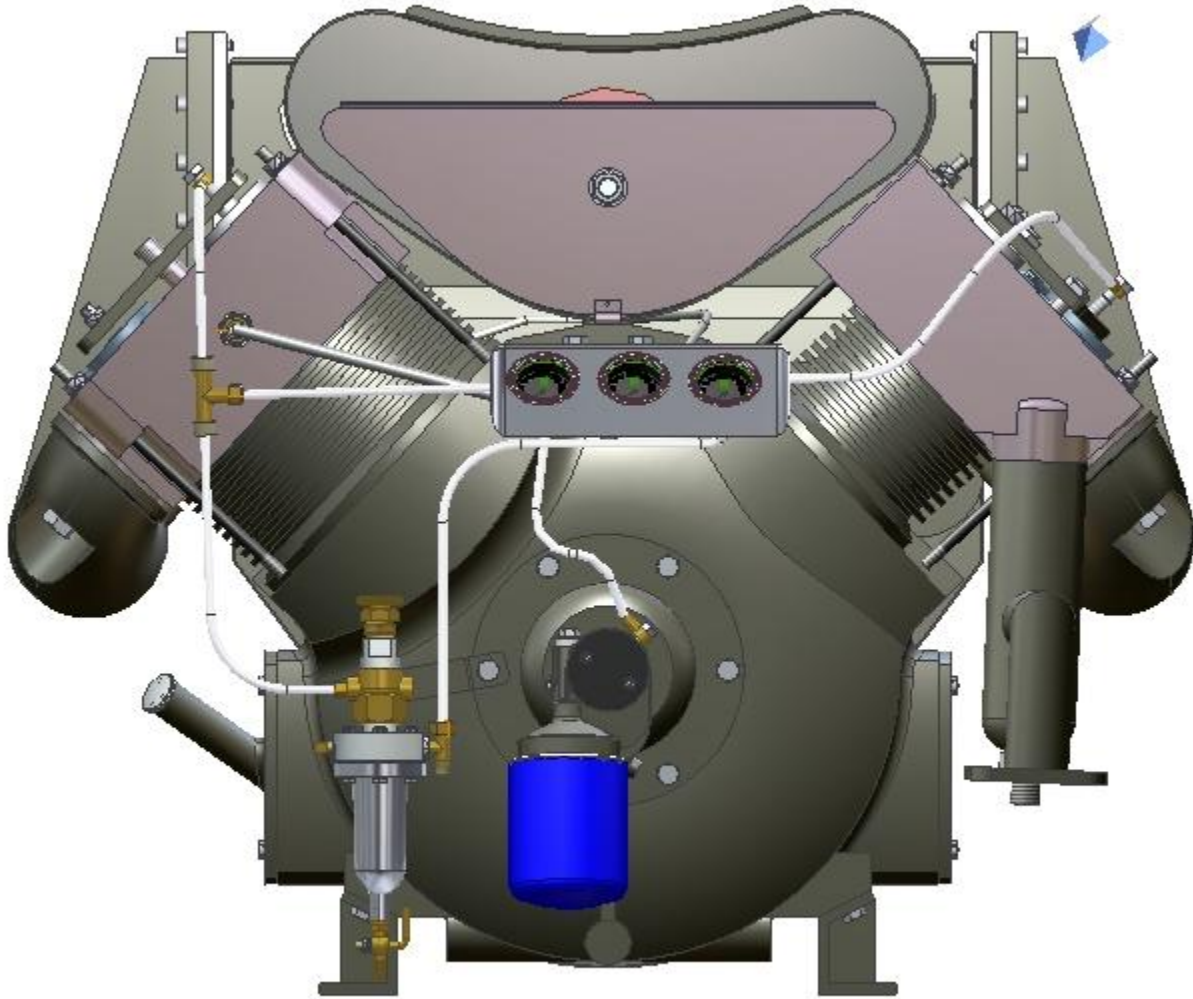


# OVERALL VIEW OF THE COMPRESSOR

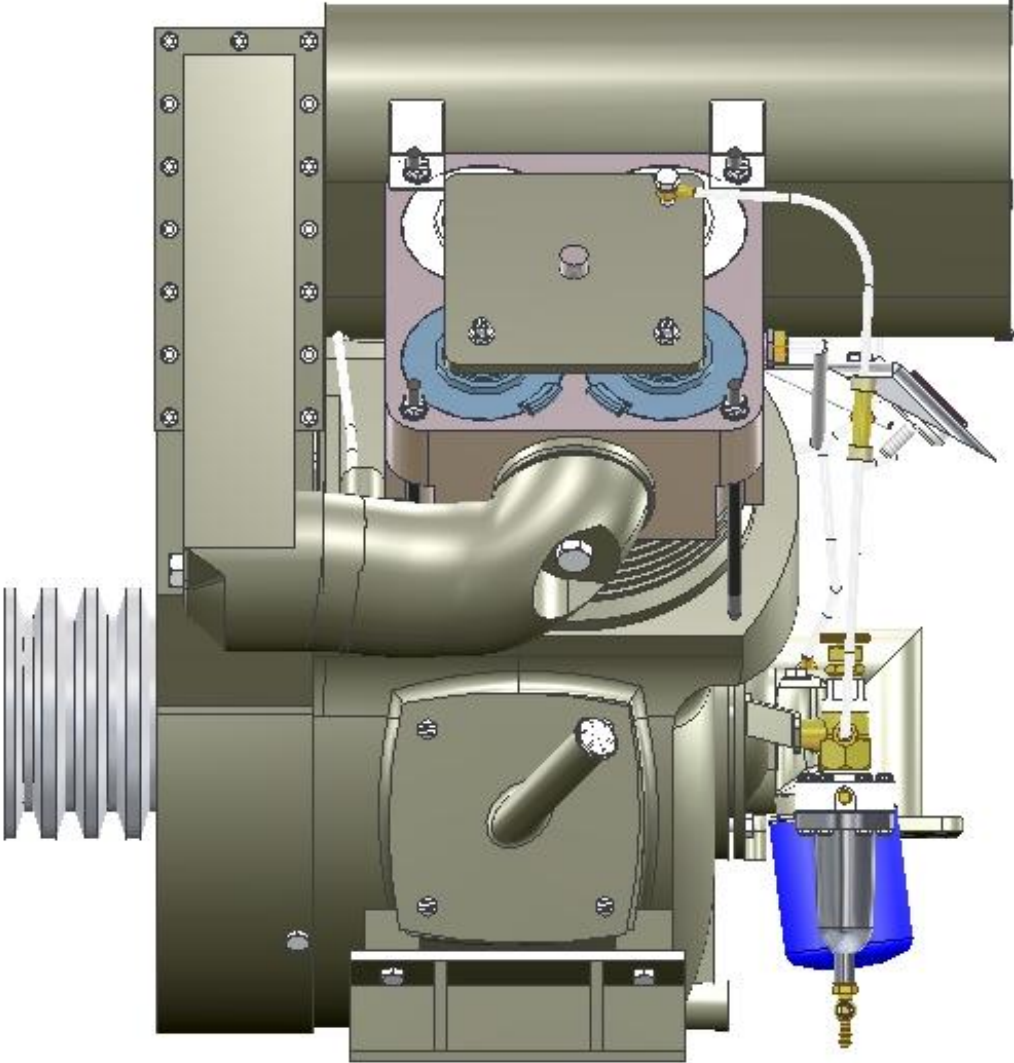


# OPERATING INSTRUCTION

## FRONT VIEW

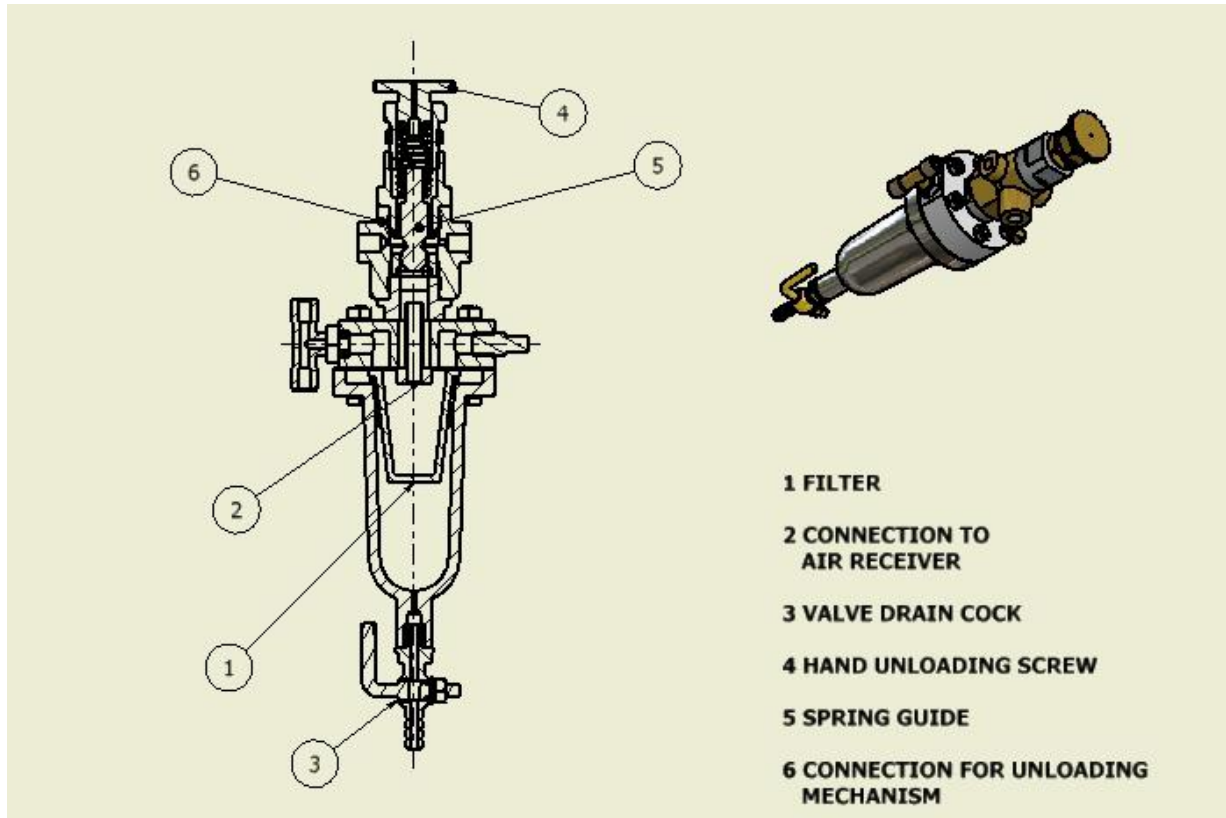


**SIDE VIEW**

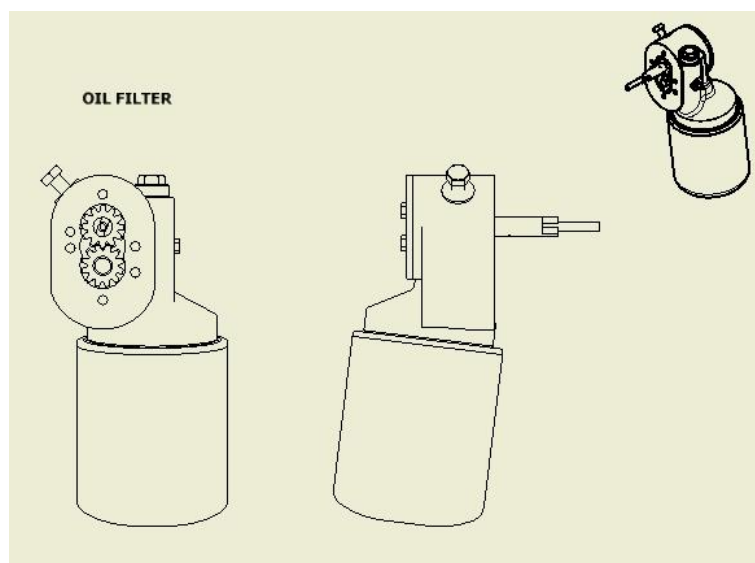




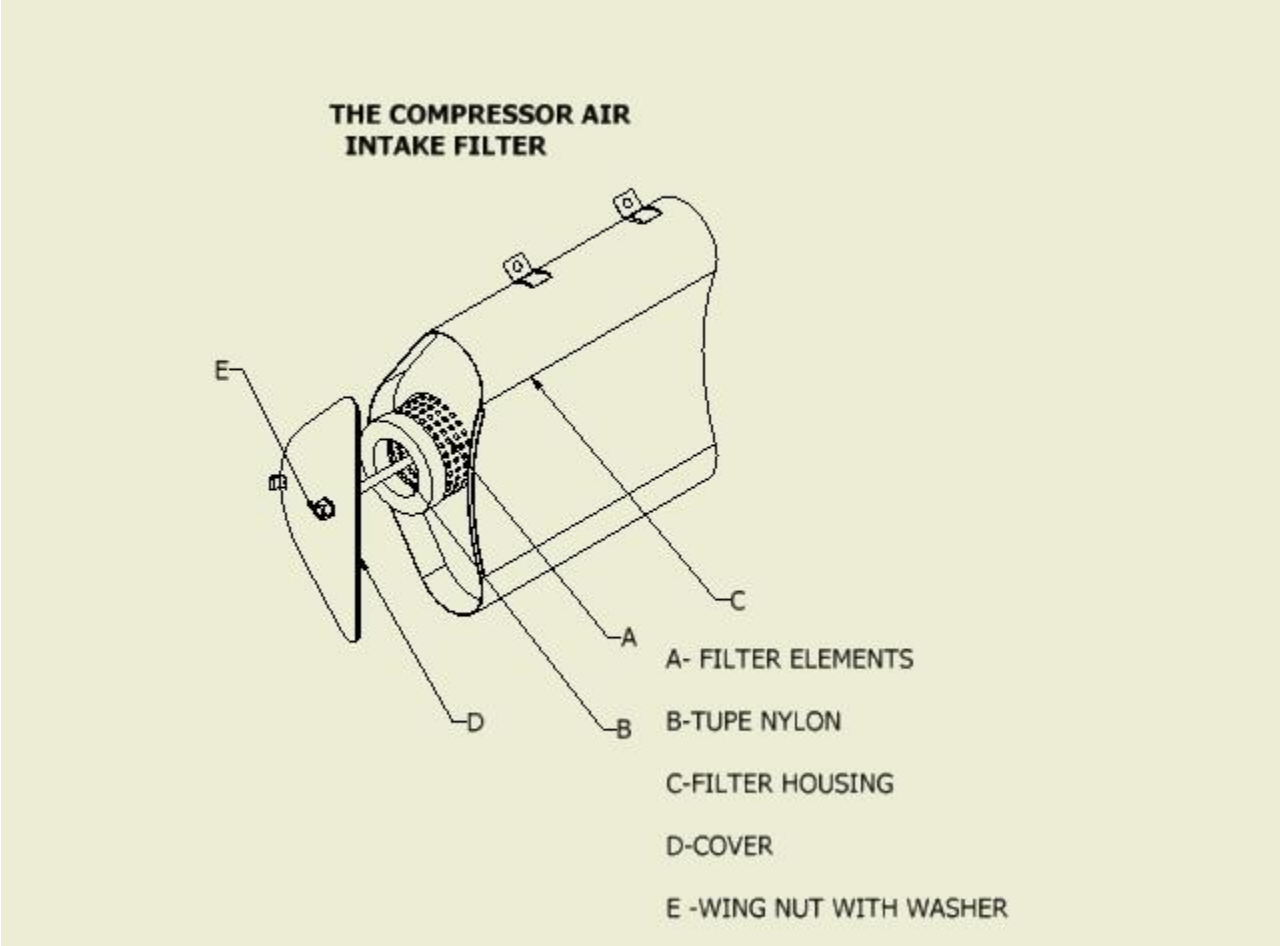
## REGULATING VALVE



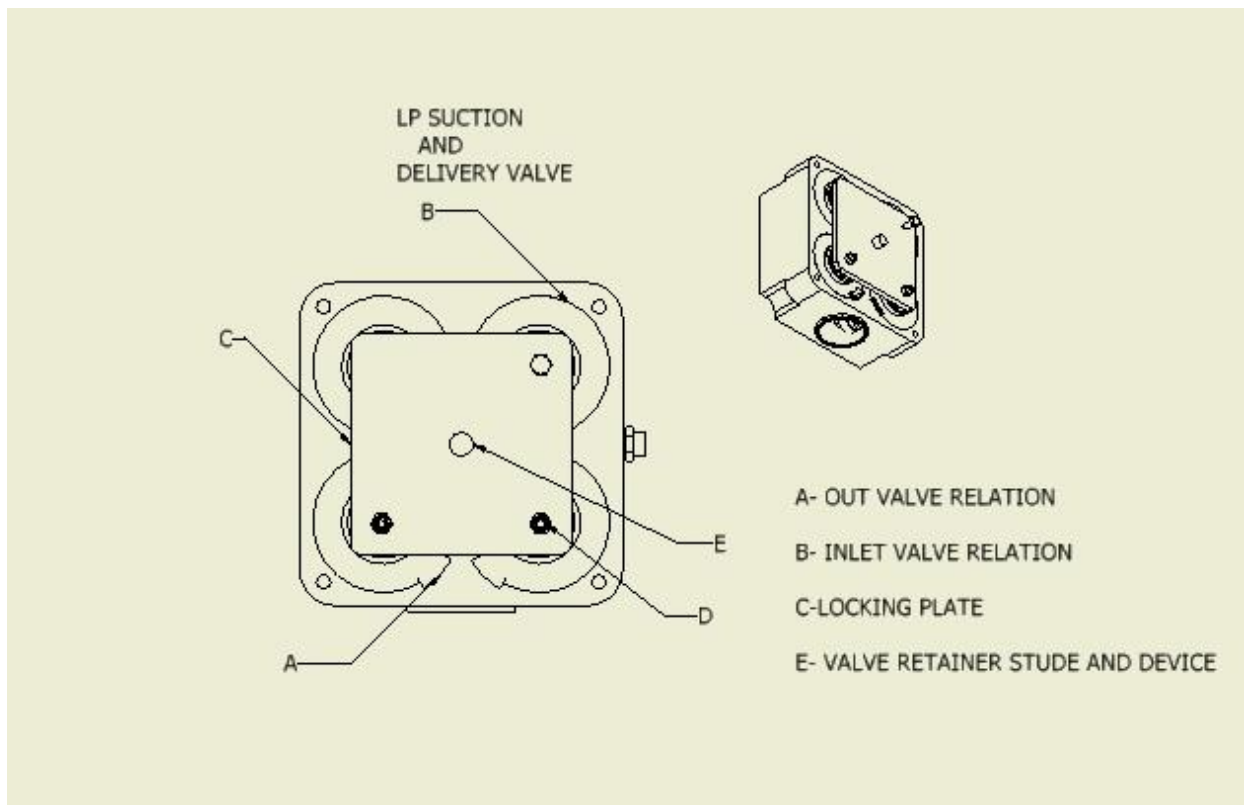
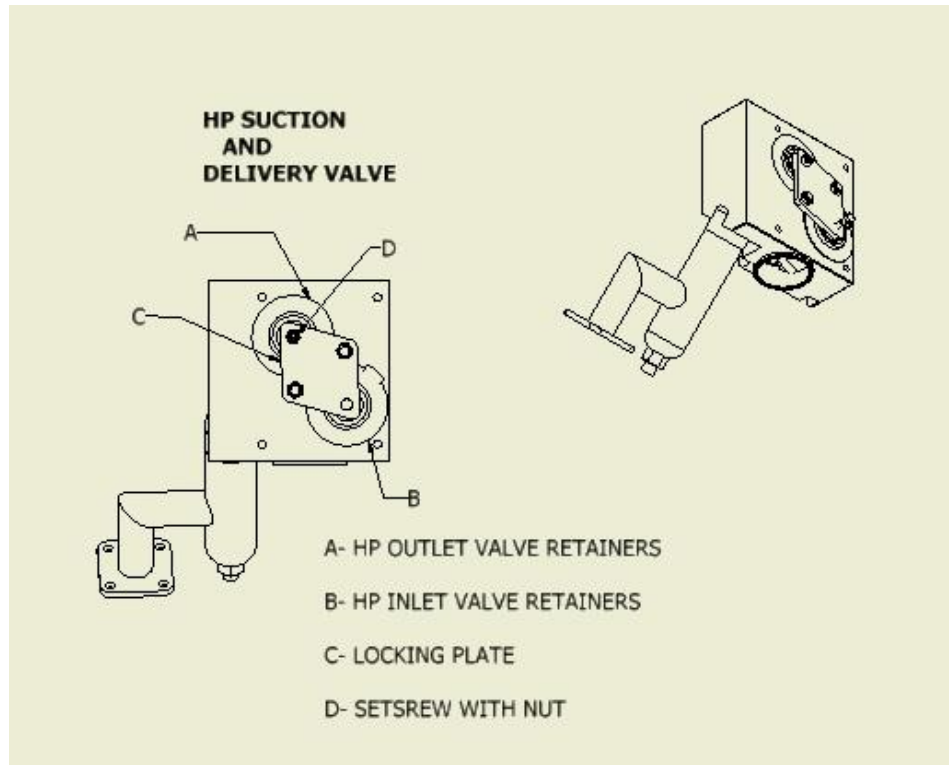
## OIL FILTER



# COMPRESSOR AIR-INTAKE FILTER



# CYLINDER HEAD



## **BEFORE STARTING**

- ❖ Check the level of oil in both the compressor and the tractor engine.
- ❖ Check that the fuel in the tank will be sufficient
- ❖ Check the battery terminals
- ❖ Check the water level
- ❖ Release the air from the outlet valve before starting
- ❖ Check the gauges for Compressor oil pressure, Inter cooler pressure, Air receiver pressure.

## **STARTING**

- ❖ Push the start button
- ❖ Adjust the rpm at 1400- 1480 to engage the pulley, then the compressor starts rotating
- ❖ Check the compressor oil pressure, stop the unit immediately if no pressure indicates on either one of the pressure gauges, and localize the trouble and its remedy.
- ❖ Close the air outlet valve and check the regulating valve when maximum pressure is reached in the air receiver.

## **DURING OPERATION**

- ❖ Check the lubricating oil pressure at regulating intervals. Normal compressor oil pressure should be between 1.5 - 2.5 kg/cm<sup>2</sup> and for engine about 2.1 - 2.8 kg/cm<sup>2</sup>
- ❖ Check the intercooled pressure which should be approx 2.0 kg/cm<sup>2</sup> at 6.5 kg/cm<sup>2</sup> working pressure

- ❖ Check the regulating valve is working normally, i.e. unloading at  $7 \text{ kg/cm}^2$  and loading at  $6.5 \text{ kg/cm}^2$
- ❖ Drain the condensed materials collected in the regulating valve in the warm atmosphere. Drain the valve before stopping in the cold weather in order to avoid freezing

## **STOPPING**

- ❖ Close the air outlet valve and allow the unit to rest for a few minutes to equalize the temperature. Don't stop the engine at full load, then reduce the rpm gradually to minimum and disengage the pulley.
- ❖ Stop the engine using stop control button.

## **MAINTENANCE**

- ❖ Check the oil level in the compressor and the engine.
- ❖ Check the compressor air intake filter and if necessary dip in oil to clean the intake filter
- ❖ Drain the condensed material collected in the regulating valve
- ❖ Check the intercooler pressure
- ❖ Check that the regulating valve is working normally i.e. unloading at  $7.0 \text{ kg/cm}^2$  and loading at  $6.5 \text{ kg/cm}^2$
- ❖ Check the lubricating oil pressure at regular intervals
- ❖ After every 200 hours of operation, clean the compressor air intake filter element.

- ❖ After every 1000 hours of operation, drain the compressor lubricating oil while the unit is warm. Then fill the crankcase to maximum. Renew the air intake element and then check the speed regulator are working properly.
- ❖ After every 3000 hours of operation, check the condition of gudgeon pin bearings and piston rings, check the compressor valves, remove and clean the oil strainer, renew the throwaway type oil filter.
- ❖ After every 6000 hour of operation overhaul the compressor.

## **LUBRICATION**

- ❖ The big end bearings are pressure lubricated by a gear-type pump, which is bolted to crankcase rear bearing cover and directly driven by crankshaft. The compressor lubricating oil pressure should be  $1.2 \text{ kg/cm}^2$
- ❖ The pump draws oil through a strainer from the crankcase and delivers it through full flow throughaway type oil filter and oil ducts in the crankshaft, to the connection rod big end bearings.
- ❖ The cylinder walls, connecting rod small end needle bearings and the main bearings are splash lubricated
- ❖ Every 3000 operating hours of the compressor, the strainer should be cleaned and the oil filter renewed.
- ❖ Renew the oil in the compressor crankcase after every 1000 operating hours.
- ❖ Don't use inferior quality oils for lubrication.

# DIAGNOSIS

## CAUSES AND REMEDIES

<b>CONDITION</b>	<b>CAUSES</b>	<b>REMEDIES</b>
<b>1) Intercooler pressure above normal. Normal pressure is 2.1 kg/cm<sup>2</sup> at 7kg/cm<sup>2</sup> ,air receiver pressure</b>	One of the H.P.cylinder valves damaged	Inspect the valves.recondition the damaged valve
<b>2) Intercooler pressure below normal</b>	One of the L.P. cylinder valves is damaged	Inspect the valves.recondition the damaged valve
<b>3) Unit operates normally but the compressure capacity or air pressure is lower than normal</b>	<ul style="list-style-type: none"> <li>i. Air intake filter choked</li> <li>ii. Bleeder valve in air receiver sticking in open position;"O"ring damaged</li> <li>iii. Unloading mechanism defective</li> <li>iv. Defective L.P. or H.P valves</li> <li>v. Regulating valve incorrectly set</li> <li>vi. Engine speed too low.Normal &amp; max -1400</li> <li>vii. Air consumption exceeds capacity of compressor</li> </ul>	
<b>4) Intercooler relief valve blows</b>	<ul style="list-style-type: none"> <li>i. Valve trouble</li> <li>ii. Leak in regulating</li> </ul>	1. Inspect the valves.Recondition the damaged valve

	system	2. Check all connection.renew "O"rings in unloading mechanism
<b>5) Pressure in air receiver rises above maximum and causes H.P.safety valve to blow</b>	<ul style="list-style-type: none"> <li>i. Regulating valve incorrectly set</li> <li>ii. Unloading mechanism defective</li> </ul>	<ul style="list-style-type: none"> <li>1. Re-adjust the valve</li> <li>2. Check valve unloading diaphragms</li> </ul>
<b>6) Pressure drop insufficient.should be about 0.6 kg/cm<sup>2</sup></b>	Excessive lift of valve cone of regulating valve	Reduce lift by removing one or more shims.
<b>7) The regulating valve continually unloads the compressor not withstanding that the tools connected to the compressor are consuming more air than the volume generated at the minimum operating speed</b>	Speed regulating and unloading system requires adjusting	Adjust the valve with respect to the requirements in which the regulating and unloading meet the needs
<b>8) Low oil pressure in the compressor</b>	<ul style="list-style-type: none"> <li>i. Oil level too low</li> <li>ii. Oil strainer clogged</li> <li>iii. Oil filter clogged</li> <li>iv. By-pass valve of oil pump stuck in open position</li> <li>v. Excessive clearance of big end bearing</li> </ul>	<ul style="list-style-type: none"> <li>1. Fill crankcase with oil to indicated level</li> <li>2. Clean strainer</li> <li>3. Install new filter</li> <li>4. Dismantle valve,clean and inspect</li> <li>5. Inspect bearings.recondition them if necessary</li> </ul>
<b>9) Compressor overheating</b>	<ul style="list-style-type: none"> <li>i. Inter cooler tubes clogged by dirt and dust</li> </ul>	<ul style="list-style-type: none"> <li>1. Clean tubes with compressor air jet.</li> <li>2. Inspect the</li> </ul>



	<ul style="list-style-type: none"> <li>ii. externally Damaged L.O. or H.P valves</li> <li>iii. Low oil pressure in compressor</li> </ul>	<ul style="list-style-type: none"> <li>valves.recondition the damaged valve</li> <li>3. See N0.8</li> </ul>
<b>10)Carbon deposits on valves</b>	<ul style="list-style-type: none"> <li>i. Inferior quality of lubricating oil used</li> <li>ii. Clogged air filter;not cleaned regularly</li> </ul>	<ul style="list-style-type: none"> <li>1. Clean valves.Change to suitable quality oil</li> <li>2. Clean valves.Service filter more often</li> </ul>

## **Overall dimension with tractor: - Approx**

- Total length of tractor along with air compressor – 13 feet(156 inches)
- Total height of tractor along with air compressor(ground level to top) – 90 inches
- Total breadth of tractor along with air compressor – 6 feet(72 inches)
- Total breadth of the compressor body – 36 inches
- Total height of the compressor body – 33 inches
- Distance between the two back wheels – 41 inches
- Length of 1.5 inch planche fitting pipe – 19 inches
- Breadth of 1.5 inch planche fitting pipe – 4.5 inches
- Length of the carrier -50 inches
- Breadth of the carrier -38.5 inches
- Width of the carrier -12 inches
- Length of the tank – 87 inches
- Diameter of the tank pipe – 6.5 inches
- Distance between the two tank – 24.5 inches
- Distance from center of right tank to center of left tank – 31 inches