

AIR COMPRESSORS

Compressed air required for a Pneumatic Control System is produced and conditioned using the following equipments which is termed as the Energy Elements:

- Air Compressor and Accessories
- Air Preparation
- Air Regulation
- Air Lubrication

Energy Elements

Pressure source



Air service unit

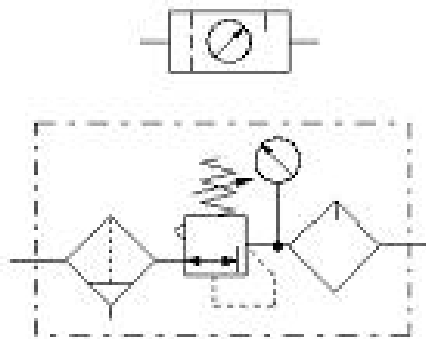


Figure 10.1 Symbol for Air Service Unit

Air Compressors

Air compressor used for generation of compressed air is selected on the basis of desired delivery pressure and flow rate.

The following types of compressors are used depending the required flow rate of air and maximum delivery pressure

- Piston type or Reciprocating Compressors
- Rotary type compressors- Vane type or Screw type
- Centrifugal type compressors
- Axial flow type compressor

Types of Air Compressors

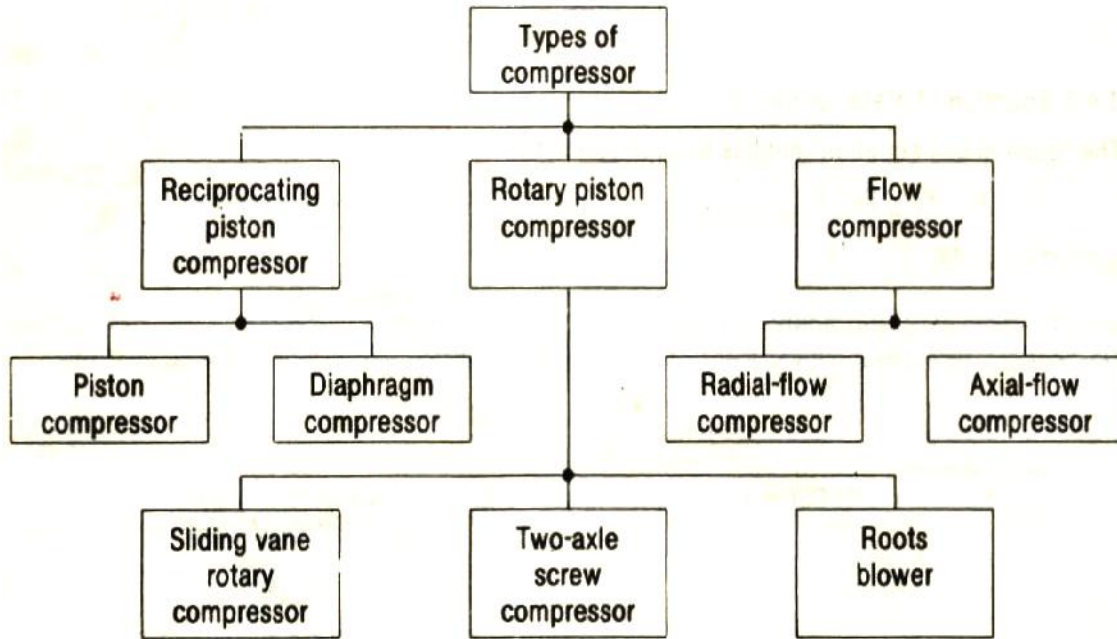
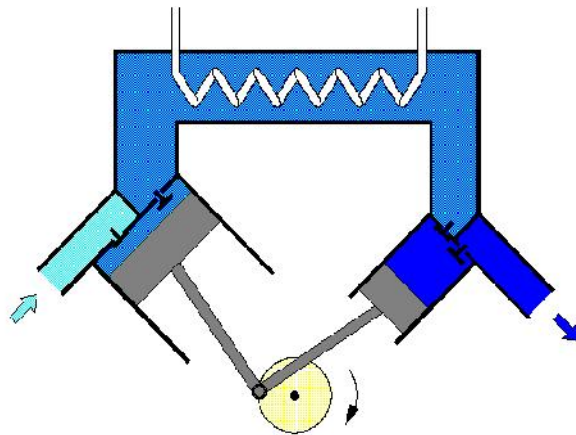


Figure 10.2 Types of Air Compressors

Piston Type –Reciprocating Compressors



Compressed air supply: Piston compressor

Figure 10.3: Reciprocating Compressor

Reciprocating Compressors are preferred for delivery pressure up to 8 bar with relatively low flow rate. Single or Two stage compression with inter cooling between stages is commonly used for air flow rate up to 20,000 cubic meters.

Diaphragm Type Compressor

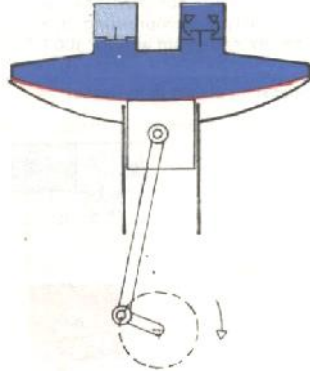


Figure 10.4 Diaphragm Type Compressor

Compression takes place in the space separated by the diaphragm. The advantage of this Compressors the totally oil free compressed air can be produced. Suitable for Food and Pharmaceutical industries.

Screw Compressor

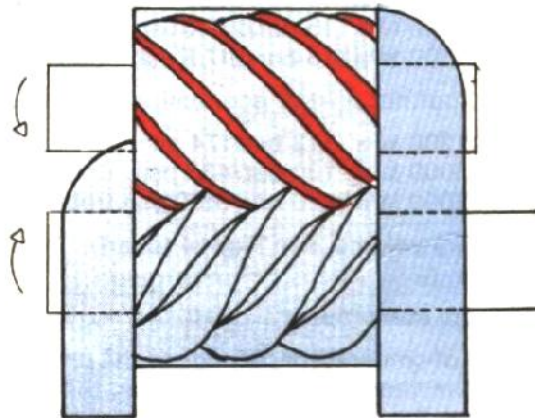


Figure 10.5 Screw Compressor

Screw compressor are used for moderate flow rates and moderate pressures up to 8 bar and flow rates up to 15,000 cubic meters. It has greatest advantage of noise free operation compared to piston type compressors as well as low energy consumption.

Vane Type of Compressor

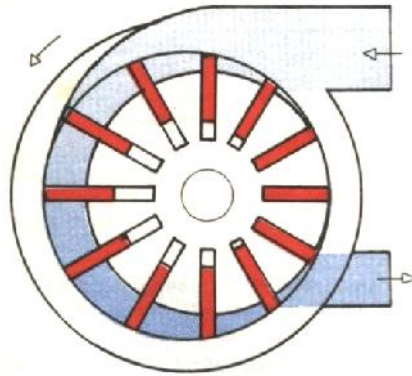
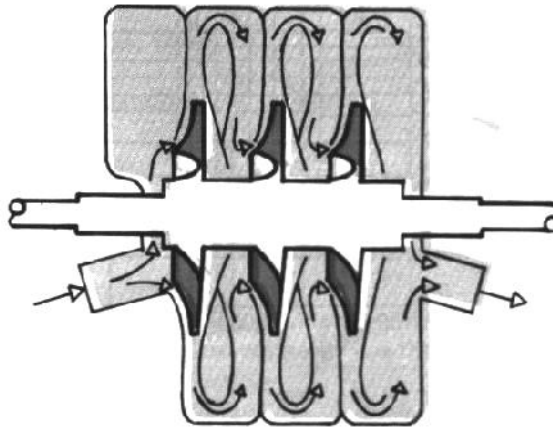


Figure 10.6 Vane Type Rotary Compressor

It is a rotary compressor suitable for moderate pressure ratio and moderate flow rates

Centrifugal Compressor

Figure 10.7 Diaphragm Type Compressor



Centrifugal compressors are ideally suited for large flow rates and low pressure ratio of around 4 per stage. Used only in large installation

Source : <http://elearningatria.files.wordpress.com/2013/10/hydraulics-and-pneumatics.pdf>