Anjuman-I-Islam's

M. H. Saboo Siddik Polytechnic

Industrial Hydraulics & Pneumatics (22655)

Topic Name: ***Internet Survey of accessories of Hydraulic & Pneumatics System***

Subject: ***Industrial Hydraulics & Pneumatics***

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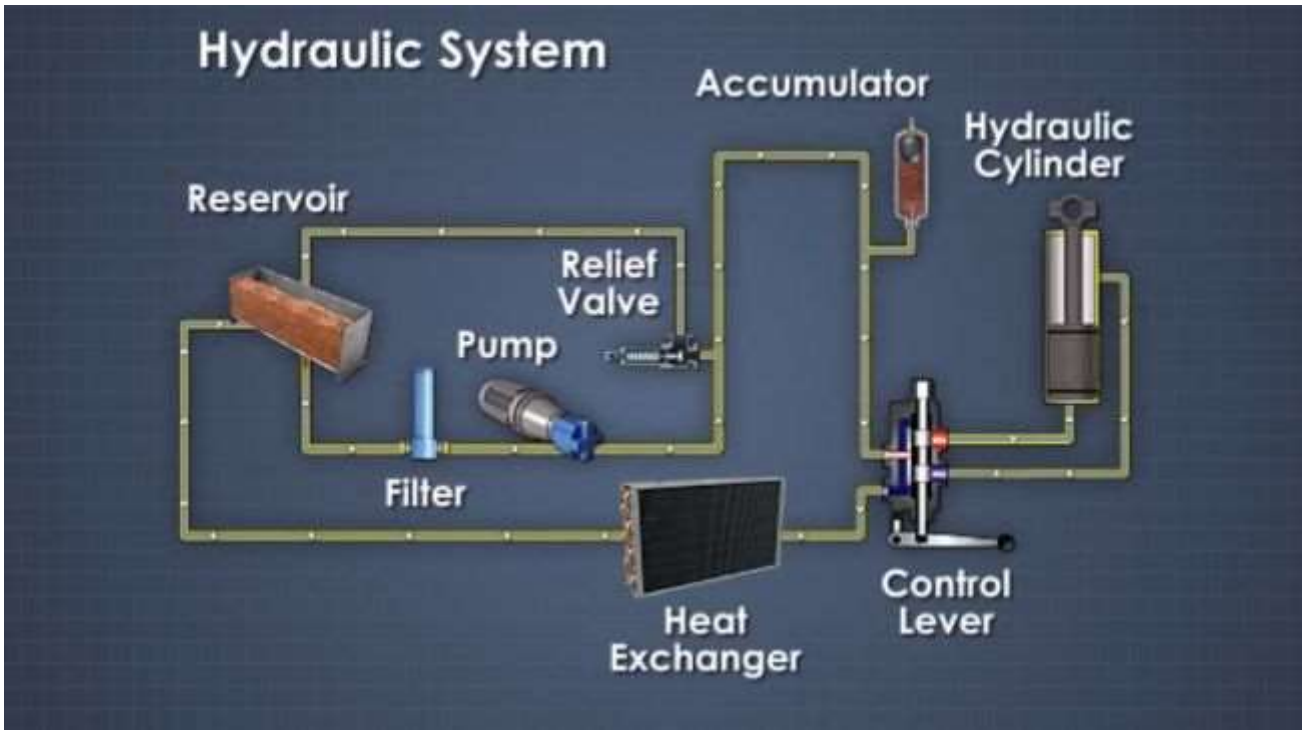
Internet Survey of accessories of Hydraulic & Pneumatics System

(Actuators Mounting, Accumulator & Seals)

CHAPTER 01: Hydraulic System:



What is a hydraulic system?

A hydraulic system is a drive technology where a fluid is used to move the energy from e.g. an electric motor to an actuator, such as a hydraulic cylinder. The fluid is theoretically uncompressible and the fluid path can be flexible in the same way as an electric cable.

What is a hydraulic system used for?

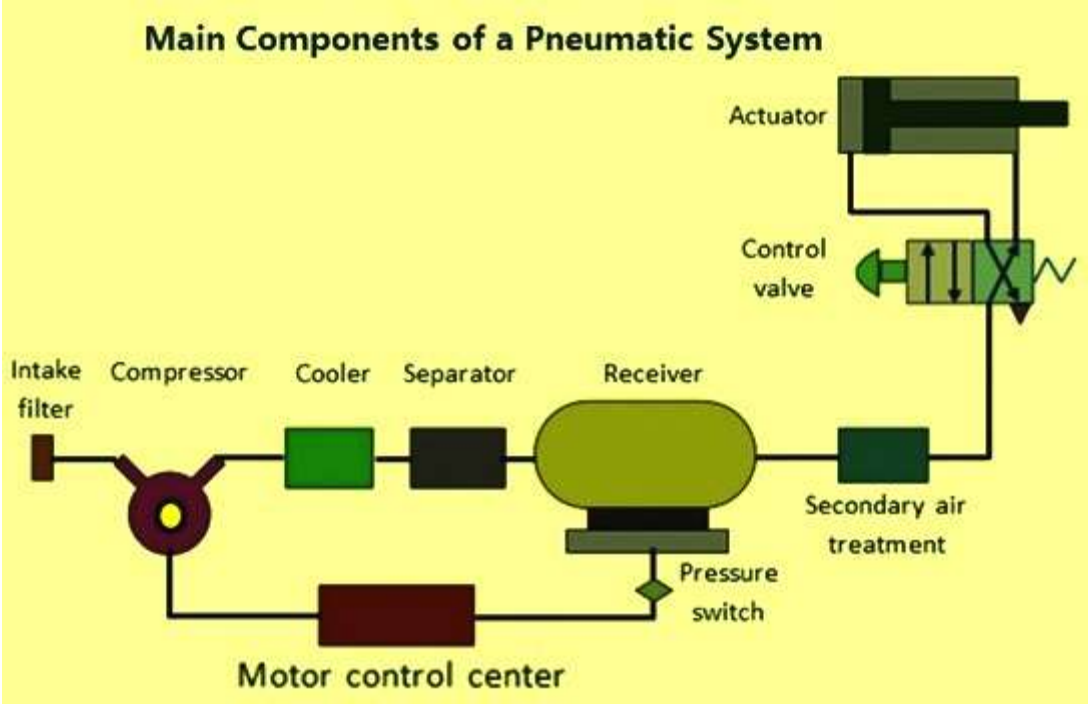
Hydraulic systems are mainly used where a high power density is needed or load requirements chance rapidly. This is especially the case in all kinds of mobile equipment such as excavators and in industrial systems such as presses.

In wind turbines, hydraulics is used for pitch and brake control. In some cases, different auxiliary systems such as hatches and cranes are also powered by hydraulic systems.

Why are hydraulic systems used?

The main reason for using hydraulics is the high power density and secondly the simplicity coming from using few components to realize complex and fast moving machines with a high degree of safety.

CHAPTER 02: Pneumatic System:



What is a Pneumatic system?

Pneumatics has long since played an important role as a technology in the performance of mechanical work. It is also being used in the development of automation solutions. Pneumatic systems are similar to hydraulic systems but in these systems compressed air is used in place of hydraulic fluid.

A pneumatic system is a system that uses compressed air to transmit and control energy. Pneumatic systems are used extensively in various industries. Most pneumatic systems rely on a constant supply of compressed air to make them work. This is provided by an air compressor. The compressor sucks in air from the atmosphere and stores it in a high pressure tank called a receiver. This compressed air is then supplied to the system through a series of pipes and valves.

The word ‘Pneuma’ means air. Pneumatics is all about using compressed air to do the work. Compressed air is the air from the atmosphere which is reduced in volume by compression thus increasing its pressure. It is used as a working medium normally at a pressure of 6 kg/sq. mm to 8 kg/sq. mm. For using pneumatic systems, maximum force up to 50 kN can be developed.

Actuation of the controls can be manual, pneumatic or electrical actuation. Compressed air is mainly used to do work by acting on a piston or vane. This energy is used in many areas of the steel industry.

Which gases are used in Pneumatic Systems?

Pneumatic systems in fixed installations, such as factories, use compressed air because a sustainable supply can be made by compressing atmospheric air. The air usually has moisture removed, and a small quantity of oil is added at the compressor to prevent corrosion and lubricate mechanical components.

Factory-plumbed pneumatic-power users need not worry about poisonous leakage, as the gas is usually just air. Smaller or stand-alone systems can use other compressed gases that present an asphyxiation hazard, such as nitrogen—often referred to as OFN (oxygen-free nitrogen) when supplied in cylinders.

Any compressed gas other than air is an asphyxiation hazard—including nitrogen, which makes up 78% of air. Compressed oxygen (approx. 21% of air) would not asphyxiate, but is not used in pneumatically-powered devices because it is a fire hazard, more expensive, and offers no performance advantage over air.

Portable pneumatic tools and small vehicles, such as Robot Wars machines and other hobbyist applications are often powered by compressed carbon dioxide, because containers designed to hold it such as soda stream canisters and fire extinguishers are readily available, and the phase change between liquid and gas makes it possible to obtain a larger volume of compressed gas from a lighter container than compressed air requires. Carbon dioxide is an asphyxiant and can be a freezing hazard if vented improperly.

CHAPTER 03: Hydraulic System Accessories:

Hydraulic Pump Adapters

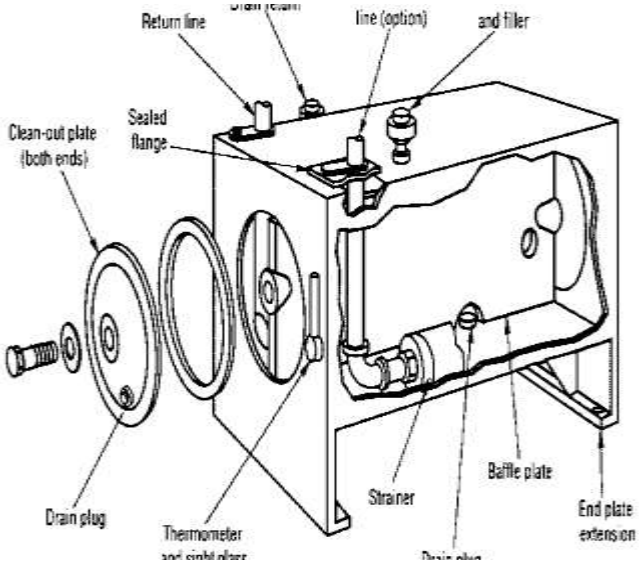
Specifications

- 3-5/8 B.C. Engine Bolt Circle
- 6-1/2 B.C. Engine Bolt Circle
- 7-3/4 B.C. Engine Bolt Circle

Drive Coupling

Specifications

Material: *Carbon Steel*
Transmit Power: *290 Nm to 400, 000 Nm*
Finishing: *Polished*
Transmission Torque: *6.3 ~ 16000 Nm*



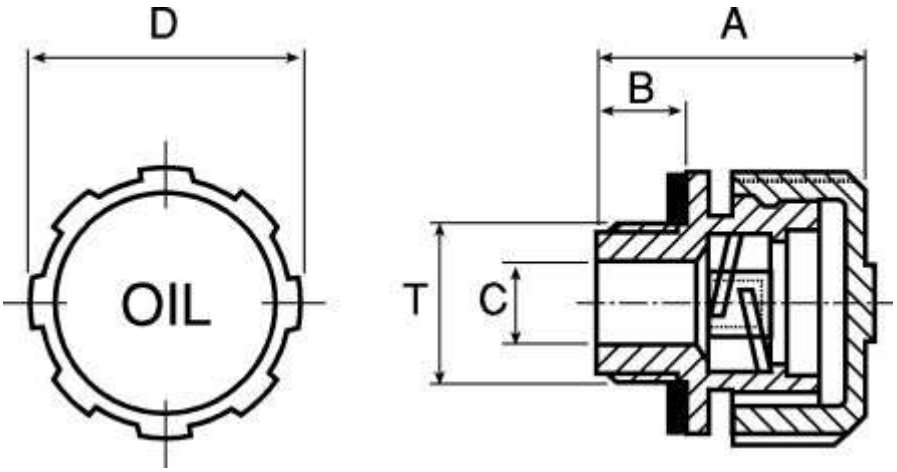
Hydraulic Reservoir

Specifications

Capacity of tank: 5 gallons; Port Sizes: suction Port 1 1/2" NPT, return Port 3/4" NPT, and drain Port 3/4" NPT

Contains an inlet Port with breather cap; features a 150-micron filter to prevent oil contamination, lengthening the life of your equipment
Constructed of 14-gauge welded Steel with a durable, powder-coat finish; includes a mounting flange on both ends for secure and easy transportation
Provides a secure holding tank for hydraulic fluid; measures 19.9" x 8.75" x 8.25" overall

Hydraulic Breathers



Specifications

Finish	Semi Matte
Thread Size	1/4in
Brand	Elesa-Clayton
Maximum Operating Temperature	+120°C
Cap Diameter	31mm
Cap Material	Polyamide
Connection Thread	G 1/4
Colour	Orange

Hydraulic Sight Level Gauge

Specifications

Screws and Fittings Material	Zinc Plated Steel
Brand	Elesa-Clayton
Connection Thread Standard	Metric
Minimum Operating Temperature	-30°C
Maximum Operating Temperature	+80°C
Scale Length	40mm
Connection Thread	M10
Connection Thread Size	10

Specifications

Minimum Operating Temperature	-20°C
Pressure Gauge Type	Bottom Entry
Maximum Pressure Measurement	10bar
Minimum Pressure Measurement	0bar
Case Material	Stainless Steel
Connection Size	G 1/4
Best Accuracy	±1.6 %

Hydraulic Accumulator:

Weight	3.6g
Manufacturer Series	CRVZS
Volume	5L
Brand	Festo
Port Connection	G 1
Minimum Operating Temperature	-10°C
Maximum Operating Temperature	+100°C
Maximum Pressure	16bar
Reservoir Bore	40mm

CHAPTER 04: Pneumatic Accessories:

Manufacturer	SMC
Type of pneumatic module	compressed air filter
Thread	G 1/4"
Kind of thread	inside
Working pressure	10bar
Flow	1500l/min
Filtration accuracy	5µm
Condensate bowl material	polycarbonate
Tank capacity	8ml
Pneumatic components features	manual condensate emptying
Operating temperature	-5...60°C
Weight	80g

Muffler

Manufacturer Series	AMTE
Threaded Inlet Connection Thread Size	1/4 in
Body Material	Metal
Brand	Festo
Minimum Operating Temperature	-10°C
Maximum Operating Temperature	+80°C
Threaded Inlet Connection Thread Standard	G
Inlet Connection Type	Threaded
Material	Brass, Bronze
Maximum Input Pressure	10bar
Noise Reduction	83dB(A)
Type	Silencer
Threaded Inlet Connection	G 1/4 Male
Threaded Inlet Connection Thread Gender	Male

Lubricator

Technical Specifications: -

Product Type -	Air Filter + Regulator + Lubricator
Port Size -	1/2 inch
Pressure Gauge -	Round Type Pressure Gauge
Pipe thread Product Type -	Rc
Nominal Filtration Rating -	5µm
Maximum Operating Pressure -	1.0 Mpa
Fluid -	Air

CHAPTER 05: *REFERENCE*

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