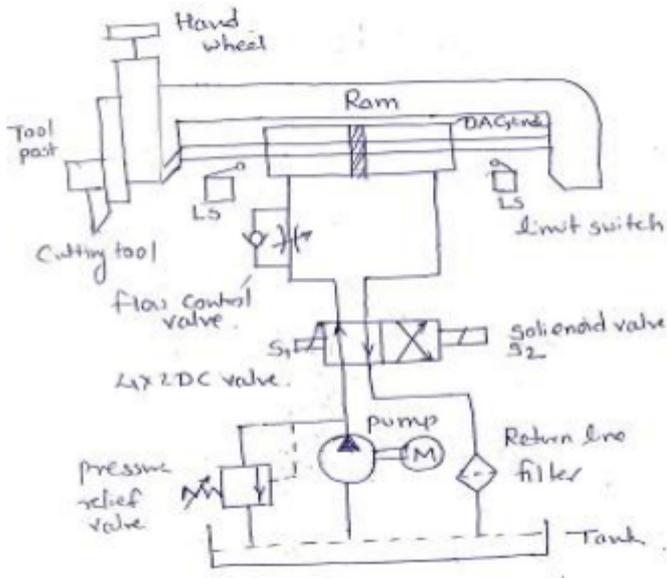


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Draw the hydraulic circuit for shaping machine.....



Compare meter in circuit and meter out circuit

Meter in circuit	Meter out circuit
1. Flow control valve is placed in pressure line.	1. Flow control valve is placed in return line.
2. Rate of flow of oil is controlled at inlet of the actuator	2. rate of flow of oil is controlled at outlet of the actuator
3. Used for opposing load only.	3. used for both opposing load as well as running away load.
4. Pressure drop in FCV may reduce force developed.	4. Pressure drop in FCV will not affect force developed.
5. Suitable for very low piston rod speed	5. Suitable where very stable movement of actuators is needed.
6. Used where finer speed control is required.	6. suitable for drilling, boring or reaming.

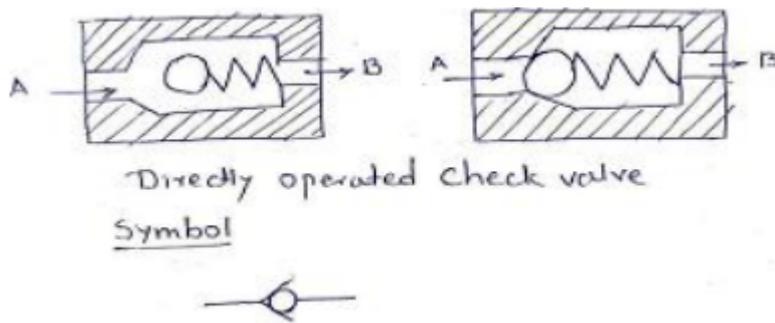
In cold climate why oil tank is equipped with oil heaters?

Explain.

Oil heaters: □ When hydraulic circuit works in cold climate, then oil solidifies below 5 °C temperature. □ To liquefy the oil electrical heater or thermostatic heater are equipped with oil tank. □ This increases the operating and maintenance cost of hydraulic system □ The cost of hydraulic system is higher. □ It heats the oil so that its viscosity increases and it can flow in the system smoothly. □ Thermostatically controlled oil heater commonly used

Explain working of directly operated.....

When oil under pressure is supplied to port A, the oil exerts pressure on the ball against the spring force, hence the ball will be lifted off from its seat and creates a passage for



oil to flow. Hence oil can flow from port A to port B. when under pressure is supplied in opposite direction that is to port B, the oil force the ball to sit firmly in its seat, hence the passage is closed by ball. The oil cannot flow port B to port A.

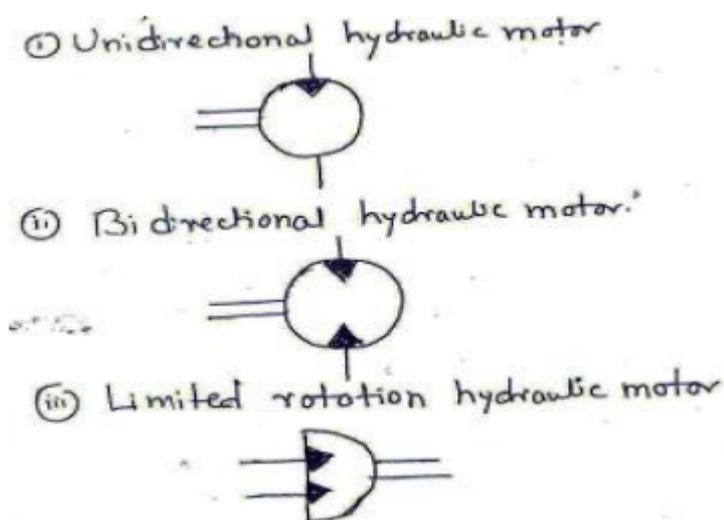
Explain construction and working of gear pump.

It consists of a pump housing in which a pair of precisely machined meshing gears runs with minimal radial and axial clearance as shown in fig. One of the gears, called a driver, is driven by a prime mover. The driver drives another gear called a follower. As the teeth of the two gears separate, the fluid from the pump inlet gets trapped between the rotating gear cavities and pump housing. The trapped fluid is then carried around the periphery of the pump casing and delivered to outlet port.

What is impulse circuit? Explain

the main valve using the impulse of an impulse valve. As shown in fig. in circuit has two valves ; main valve and impulse valve. Main valve is a single pilot operated spring return type 4/2 direction control valve. Impulse valve is palm button operated spring return type 3/2 direction control valve. In normal position of valves, the double acting cylinder is in retracted position. When the palm button of impulsive valve is pressed manually, compressed air flows to the pilot port of main valve. Hence the speed of main valve will be shifted to the second position.

Draw symbol of any three types of Hydraulic motors.

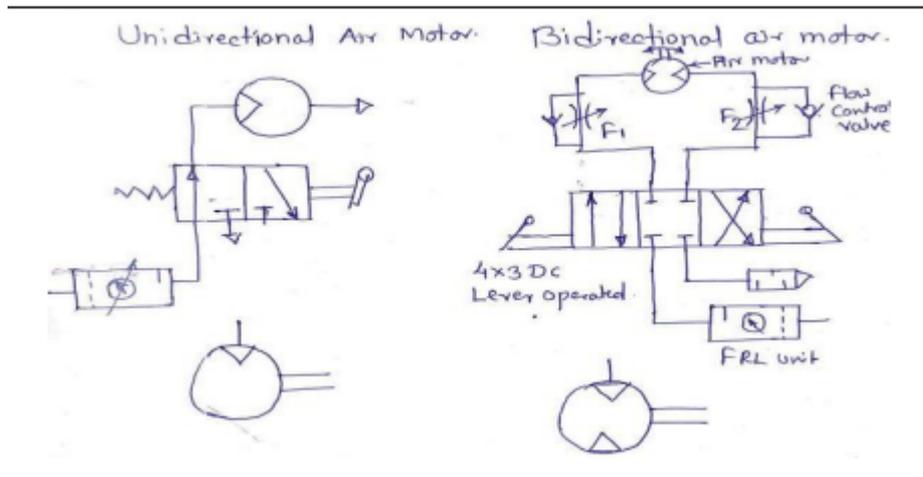


Compare linear actuators and rotary actuators.

Linear Actuators	Rotary actuators
1. These actuators reciprocates in a cylinder	1. These actuators rotate about center.
2. Linear speed measured in m/sec	2. Rotary speed measured in RPM
3. Example- Single acting cylinders, double acting cylinders, Tandem cylinder	3. Example- Vane motors, gear motors, piston motors, air motors
4. Used for pushing ,pulling types of tasks	4. Used where rotary motions are required. Straight grinders, pistol drills.
5. Provide motion along straight line	5. provide motion along center
6. Manufacturing cost is High	6. Manufacturing cost is low

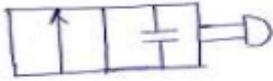
What is the meaning of unidirectional air motor and bi directional air motor.....

Operating or moving or allowing movement in one direction only. It runs in one direction only. It does not run in the other direction. Unidirectional motor can be operated by using 3/2 DC valve as shown in fig. Bidirectional air motor: Functioning or allowing movement in two usually opposite directions. It can runs in both direction. Bi-directional motor can be operated by using 4/3 DC valve as shown in fig



Draw symbol of.....

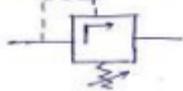
1) 2x2 DC valve.



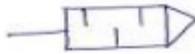
2) fixed type flow control valve.



3) pressure relief valve.



4) Muffler



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