## What is swash plate? What is its use……..

It's an inclined plate in axial piston pump on which all pistons are connected through piston rod. This swash plate is usually inclined. Use – It is helps to reciprocate the piston of axial piston pump while the cylinder block is rotating Working: Motor drives the shaft, which in turn rotates the entire cylinder block. The pistons are connected to inclined swash plate through piston rod. Now since swash plate is inclined and block is rotating, the piston reciprocates inside the barrel.

Explain with neat sketch the working of rotary spool type DC valve.

A rotary spool valve consists of a rotating spool which aligns with ports in stationary valve casing, so that fluid is directed to required port. A/B/P/R are the ports in casing. The port 'P' is a pressure port though which pressurized oil is coming in the valve. 'R' port is the port through which used oil is returning to oil tank. From fig port p is connected to port B and port A is connected to port R
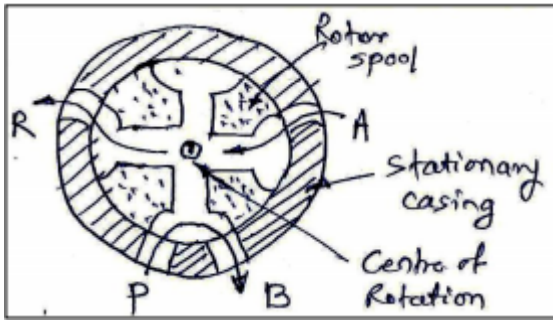
Draw actual hydraulic system and explain its working.

Draw actual hydraulic system and explain its working. Oil hydraulics system uses pressurized oil which is circulated through various components of the hydraulic system to perform the given task. The various components of hydraulic system have to perform its intended function and they are arranged to form a layout of the system as per sequence of operation of hydraulic system. This arrangement of various hydraulic system components as per the nature of equipment/machine is known as actual layout of the system.

Draw the hydraulic circuit showing control of DA cylinder...

Draw the hydraulic circuit showing control of DA cylinder using 4 X 2 DC Valve. Explain the working in brief. Fig shows the circuit used to control DA cylinder using 4 X 2 DC Valve. The operation is described as follows: 1) When the 4/2 way DC valve is in its open center position pump oil flows from port P to port A to the blank end of the cylinder, extending the piston rod against a load. The oil in the rodend of the cylinder is free to flow back to the tank via port B and T. 2) When DC valve is activated then it engaged in cross connection of the ports.

Draw a general layout of pneumatic system and state the function of components

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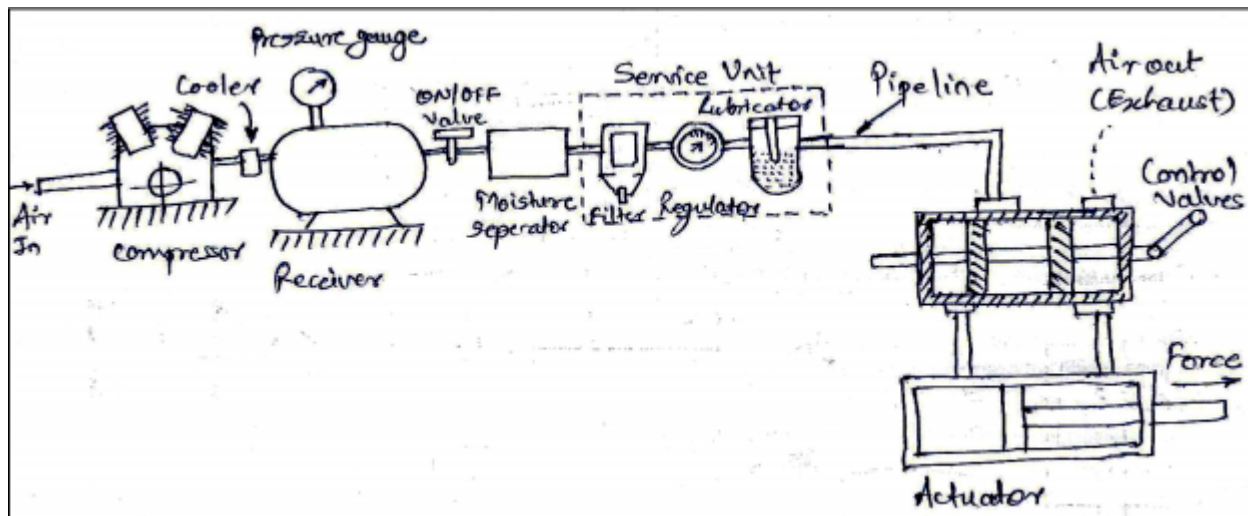
What are the effects of contaminants in the oil?

Following are the effects of contaminants in the oil 1) Contaminants in oil make fluid improper or even hazardous for reuse. 2) Excessive heat gets generated during operation of the hydraulic circuit. 3) Electromagnetic radiation contaminated hydraulic system often generates noise thereby polluting the environment. 4) The system operates at lesser efficiency than the desired.

Write any four applications oil hydraulic systems

Write any four applications of oil hydraulic systems 1. Earth Moving equipments 2. Broaching machine 3. CNC/VMC/HMC Machines. 4.

Hydraulic thread rolling machine 5. Hydraulic press brake. 6. Material handling equipments 7. Hydraulic thread rolling machine 8. Hydraulic cranes

State one application each of (i) Deep groove ball bearing (ii) Taper roller bearing (iii) Thrust roller bearing (iv) Needle roller bearing

Application of bearings : ...... i) Deep Groove Ball bearing : Electric Motor ii) Taper roller bearing : axle housing of automobile iii) Thrust collar bearing: Clutch of automobile iv) Needle roller bearing: Differential of automobile

A taper roller bearing has a dynamic load capacity of 26 kN. The desired life for 90% of the bearing is 8000 hr. and speed is 300 rpm. Calculate equivalent radial load that the bearing can carry

Given:

C=26 KN ,L_{10h}= 8000 h , n=300 rpm

Bearing life (L_{10})

$L10 = \dfrac{60\,n(L10h)}{10^6}$, $L10 = \dfrac{60 \times 300 \times 8000}{10^6}$ = 144 million rev.

Equivalent radial load

$C = P\,(L_{10})^{0.3}$, $P = 26000/(144)^{0.3}$ = 5854.16 N

F_r= P =5854.16 N

Differentiate between sliding contact and rolling contact type

bearings.

SR.NO	Parameter	Sliding contact bearing	Rolling contact bearing
1	Size	large	Small
2	starting torque	High	low
3	noise	Less noise	High noise
4	Life	Less life	Long life
5	Cost	Less cost	More costly
6	Coeff. of friction	High	less

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