

LECTURE 41

ELECTRO PNEUMATIC CIRCUITS

FREQUENTLY ASKED QUESTIONS

1. List seven basic elements used in Electro pneumatic circuits

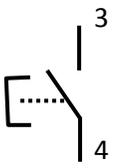
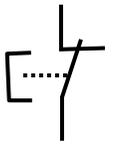
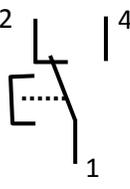
Answer

Seven basic electrical devices commonly used in the control of fluid power systems are

1. Manually actuated push button switches
2. Limit switches
3. Pressure switches
4. Solenoids
5. Relays
6. Timers
7. Temperature switches

2. Draw the symbols for NO, NC and Change over push buttons

Answer:

		
Normally open	Normally closed	Change over type

3. List the advantages of electrical actuation of pneumatic valves over pure pneumatic control

Answer:

1. Signal transmission over long distance is very fast
2. Signalling components are inexpensive
3. Air consumption is less compared to pure pneumatics (compressed air is expensive)
4. Flexible and easy to modify and change the circuit

5. Laying of electrical wires is much easier than tube and tube bending affects the performance.
6. Interfacing of electrical device with PLC and other sensors is much easier
7. It is cost effective and easy to maintain and trouble shoot.

4. List the possible voltages used for electrical components in electro pneumatics

Answer

The possible voltages used for electrical components used in electro pneumatics circuits are 12 VDC, 24VDC, 24 V with 50 or 60 Hertz, 48 V, with 50 or 60 Hertz, 110V/120 V with 50 or 60 Hertz, 220V/230V with 50 or 60 Hertz

5. What is a relay?

Answer

A relay can be considered as an electro magnetically operated switch that operates under the control of an additional electrical circuit. It is a simple electrical device used for signal processing. This switch is designed to withstand heavy power surges and harsh environment conditions.

6. What is a reed switch. Explain briefly its function

Answer

A reed switch is magnetically operated proximity switch. Reed switch consist of two metallic contacts hermetically sealed in glass tube and encapsulated in epoxy resin to prevent moisture and mechanical damage. These types of switches are used on pneumatic cylinders. When piston (which also contains magnet) moves near to the reed contact, contact closes. When piston moves away from the reed contacts, contact opens.

15. Compare Inductive, capacitive and optical diffuse sensor

Answer

Parameter	Inductive	Capacitive	Optical
Operating voltage	30 V DC	30 VDC or 250 VAC	30 VDC or 250 VAC
Objects which can be sensed	Metal	Any object can be sensed	Any opaque body
Maximum Switching distance	10mm	20 mm	2 m
Service life	Very long	Very long	long
Operating temperature	-25 to 70 °C	-25 to 70 °C	-25 to 70 °C
Symbol	