

PNEUMATIC TRAINER KIT

Scope:

Supply, erection and commissioning of Pneumatic Trainer Kit as per specification below:

Purpose: For Engineering College Laboratory – To conduct experiments on fundamental Pneumatics.

Qualifying Criteria:

The vendor should have supplied and commissioned similar capacity laboratory pneumatic kits and it should be in working condition for minimum One year.

Vendor to attach the reference P.O. copies with specification of such supplies made with customer address and contact phone nos. for our verification. Performance certificates from the customers shall be added along with offer. NITT have all the rights to verify the performance of the equipments supplied from the customers.

For the following technical specification, vendor should give point to point confirmation, with a clear mention about the deviation if any. Also complete technical catalogue should be attached along with offer. Without the above details, the **offer will not be considered** for evaluation.

Specification:

1. The Pneumatic kit shall be of Sleek design and portable one with wheels.
2. Provided with standard Aluminium based mounting board (modular type) with all trainer kits so as to make the pick & place of components easier.
3. All the products to be provided with suitable “one touch fittings / Push-in fittings”.
4. All the components used shall be of reputed make like Festo / Janatics / Rexroth or any other make acceptable to NITT. Vendor to specify the make with catalogue.
5. The following experiments should be possible to carry out using the kit:
 - a) To learn about the fundamentals of Pneumatics with components (FRL unit, Compressor, DC valves, Pressure control Valves, Pneumatic Cylinders, accessories, etc) – functions, symbols, working principle & applications.
 - b) To build up a pneumatic circuit with applications like Pick & place, Clamping / de-clamping, Speed & load control in Double Acting cylinder, etc.

6. Vendor to provide The Learning Resources – Basics of pneumatics, Different pneumatic Circuits (minimum 7 experiments) and components for it. Vendor to provide the list of experiments with components required along with offer.
7. Operation & Maintenance manual to be supplied – 2 hard Copies and 1 soft copy with the equipments.

Scope of supply:

Vendor to supply the following items (minimum):

1. Air compressors- Displacement 3cfm, Working pressure – 7kg/cm² (7 bar) with 0.5HP 650RPM electric motor 230V, 50Hz, 1 phase with 0-10 bar pressure gauge & shut off valve with suitable hose and end connector.
2. Filter Regulator and Lubricator (FRL) unit with Pressure gauge (10bar) – 1 No.
3. Direction control valves of different configuration (3/2 way, 5/2 way, 2/2 way & 5/3 way) and different actuations (manual / solenoid operated) of sufficient quantity to execute the experiments. The size of the valves shall be of ¼” BSP. The vendor to list down the type, specification and quantity of valves offered.
4. Set of Pressure control Valves, One way valves, Flow control valves, shut off valves, OR gate & AND gate shuttle Valves, etc. of sufficient quantity to execute the experiments. The size of the valves shall be of ¼” BSP. The vendor to list down the type, specification and quantity of valves offered.
5. Single acting cylinder - Bore 25mm, Stroke 100mm with suitable mounting arrangement – minimum 1No. (If required quantity of cylinder is more to carry out the experiment, the same to be supplied).
6. Double acting cylinder - Bore 25mm, Stroke 100mm with suitable mounting arrangement - minimum 2 Nos. (If required quantity of cylinder is more to carry out the experiment, the same to be supplied).
7. Required length and quantity of pneumatic hoses with suitable end fittings of quick snap type and Ell, Straight & Tee fittings of required quantity to be provided. 50% extra spares of this hoses and fittings to be supplied. Details of supply to be specified in the offer.
8. Hand Tools required for carrying out the experiment – 2 sets to be supplied.
9. Required electrical controls with sockets for solenoids, etc. proposed for supply to be specified and listed in the offer.

10. Any other items required to carry out the basic experiments and proposed for supply to be specified and listed in the offer.
11. Any other optional items required to improve the performance or to carry out additional experiments and proposed for supply shall be specified and quoted as OPTIONAL, which will be selected based on our requirement.

Last date for the tender is 31.07.2009.

Contact address is:

Head of the Department
Department of Production Engineering
National Institute of Technology
Tiruchirappalli-620 015
Tamilnadu, India

HYDRAULIC TRAINER KIT

Scope

Supply, erection and commissioning of Hydraulic Trainer kit as per specification below:

Purpose: For Engineering College Laboratory – To conduct experiments on fundamental Hydraulics.

Qualifying Criteria:

The vendor should have supplied and commissioned similar capacity laboratory hydraulic kits and it should be in working condition for minimum One year.

Vendor to attach the reference P.O copies with specification of such supplies made with customer address and contact phone nos. for our verification. Performance certificates from the customers shall be added along with offer. NITT have all the rights to verify the performance of the equipments supplied from the customers.

For the following technical specification, vendor should give point to point confirmation, with a clear mention about the deviation if any. Also complete technical catalogue should be attached along with offer. Without the above details, the **offer will not be considered** for evaluation.

Specification:

1. The Hydraulic kit shall be of sleek design and portable one with wheels.
2. Provided with standard steel / Aluminium based mounting board (modular type) with all trainer kits so as to make the mounting of components easier.
3. All the products to be provided with suitable quick disconnect couplings.
4. All the components used shall be of reputed make like Rexroth / Vickers or any other make acceptable to NITT. Vendor to specify the make with catalogue.
5. The following experiments should be possible to carry out using the kit:

- a) To learn about the fundamentals of hydraulics with components (DC valves, pressure control valves, Flow control valves, Hydraulic Cylinders, Accessories, etc.)
 - b) To build up a hydraulic circuit with applications like hydraulic press circuit, Clamping / de-clamping, Meter-in / meter-out Speed control & load control in Double Acting cylinder, counter-balance circuit, deceleration circuit, sequencing function, etc.
6. Vendor to provide the learning resources – basics of hydraulics, Different hydraulic circuits (minimum 7 experiments) and components for it. Vendor to provide the list of experiments with components required along with offer.
7. Operation & maintenance manual to be supplied - 2 hard copies and 1 soft copy with the equipments.

Scope of supply:

Vendor to supply the following items (minimum):

- 1) Trolley with Frame
 - No. of wheels - 4, Two fixed & two swivel type.
 - Load mounting capacity: 500 kg

- 2) Hydraulic Power pack with following capacity:
 - Operating pressure: around 40 bar.
 - Flow rate: around 5 lpm.
 - The power pack includes the following components:
 - a) Hydraulic Tank capacity around 50 liters.
 - b) Suitable Pump & electric motor (single phase – 230V, 50 Hz, 1440 rpm induction motor) coupled with bell housing and mounted externally over the tank with vibro-mounts.
 - c) Safety relief valve with variable pressure setting.
 - d) Accessories like Drain plug, Suction Strainer, Return line Filter, electrical power source for solenoid valves, Valve mounting sub-plates, hydraulic fittings, etc.
 - e) Required quantity (min. 8 Nos.) of hydraulic hoses of suitable length with end fittings and quick couplings, transparent hoses on return lines and leakage lines.

- 3) All types of valves to carry out the experiments proposed. The valves include
 - a) Solenoid Operated DC valves – 2 Position and 3 Position types (Solenoid Voltage: 24V DC)
 - b) Manual operated DC valves.
 - c) Pilot operated DC valve
 - d) Pressure Relief valves
 - e) Pressure reducing valves

- f) Pressure sequence valves
- g) Flow control valves
- h) Non-return Valves

4) Hydraulic Cylinders –

- a) Single acting cylinder – spring return type (Size: Bore dia. around 20mm x rod dia. 12mm x stroke 200mm)
- b) Double acting cylinder (Size: Bore dia. around 20mm x rod dia. 12mm x stroke 200mm)

Seals: Bushak & Shamban / Merkel / Freudenberg or any other reputed make acceptable to NITT.

Max operating pressure : 100 bar

Normal operating pressure : 40 bar

Piston rod : Chrome plated and hardened.

5) Hydraulic motor:

Type : Gear motor / Piston motor

Direction of rotation : Bi-directional

Normal Operating pressure : 40 bar

Max. Pressure : 100 bar

6) Flow meter

Type : Acrylic hone type flow meter with scale, Rotameter

Working Pressure : around 40 bar

7) Proximity sensor

Type : Contact less Proximity sensor PNP type

Operating voltage : 24 V DC

8) Equipment trays

The required no. of equipment trays to be supplied. The tray design is such that the supplied components can be kept in the tray. Also the trays have space for each individual component.

- 9) Pressure Gauges – Required quantity of pressure gauges (glycerin filled) of suitable range to measure the pressure at various points (Pressure line, return line, reduced pressure line, suction line, etc.)

10) Cut Models of the following items to demonstrate the functions of each items:

- a) 3-Position Solenoid Operated DC valve.
- b) 2- Position Solenoid Operated DC valve.
- c) Manual operated DC valve.
- d) Pilot operated DC valve
- e) Pressure Relief valves
- f) Pressure reducing valves
- g) Pressure sequence valves
- h) Flow control valves
- i) Non-return Valves
- j) Flow control Check valve

- k) Cartridge Valve (Logic valve)
- l) Double acting Hydraulic Cylinders
- m) Gear Pump
- n) Axial Piston Pump
- o) Bladder / Diaphragm Accumulator
- p) Types of Hose end fittings
- q) Solenoid Coil.

11) Hand Tools required for carrying out the experiment – 2 sets to be supplied.

12) Any other items required to carry out the basic experiments and proposed for supply to be specified and listed in the offer.

13) Any other optional items required to improve the performance or to carry out additional experiments and proposed for supply shall be specified and quoted as OPTIONAL, which will be selected based on our requirement.

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