PHASE 1 INSTRUMENTS

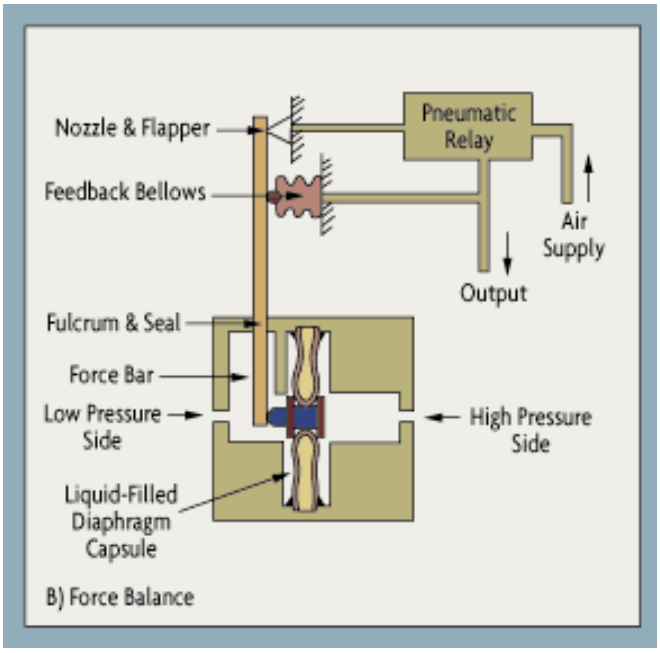
Project Write-up

Name:…… Group:……

Module Title: Transmission of signals MODULE NO: I-4

PROJECT DESCRIPTION: Pneumatic transmitters.

Objective Nos: 2,3,4,6,7, **Project No:Tx 1**



PROJECT WRITE UP SHEET (generic)
Instruments Phase I

Principle/Theory of Operation

What are the most common models of the Foxboro range of D.P. cells?

Name the three types of pressure they can be manufactured to measure.

What does the zero adjustment physically do?

What must the air be in order for these transmitters to work properly?

PHASE 1 INSTRUMENTS

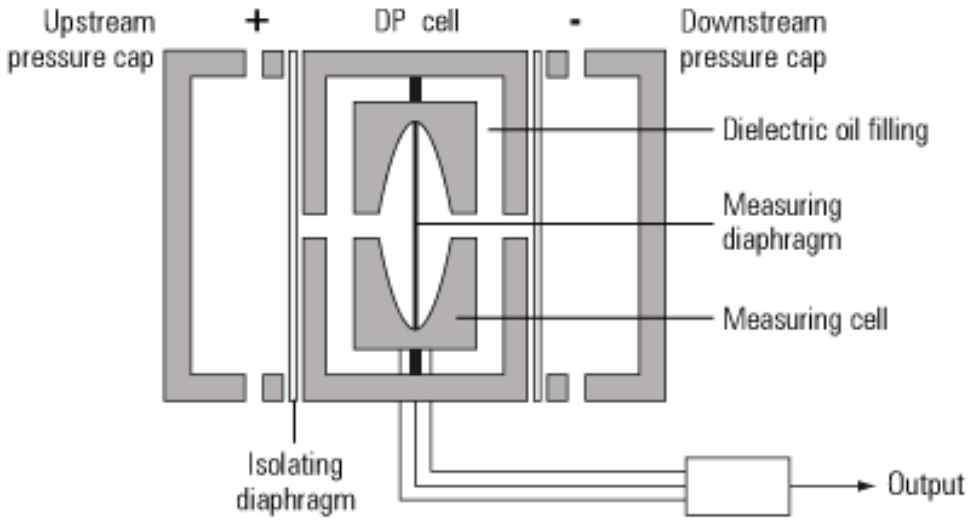
Project Write-up

Name:…… Group:……

Module Title: Transmission of signals MODULE NO: T1 004 1

PROJECT DESCRIPTION: Electronic Transmitter Project No: Tx 2

Objective Nos: 2,7



PROJECT WRITE UP SHEET (generic)
Instruments Phase I

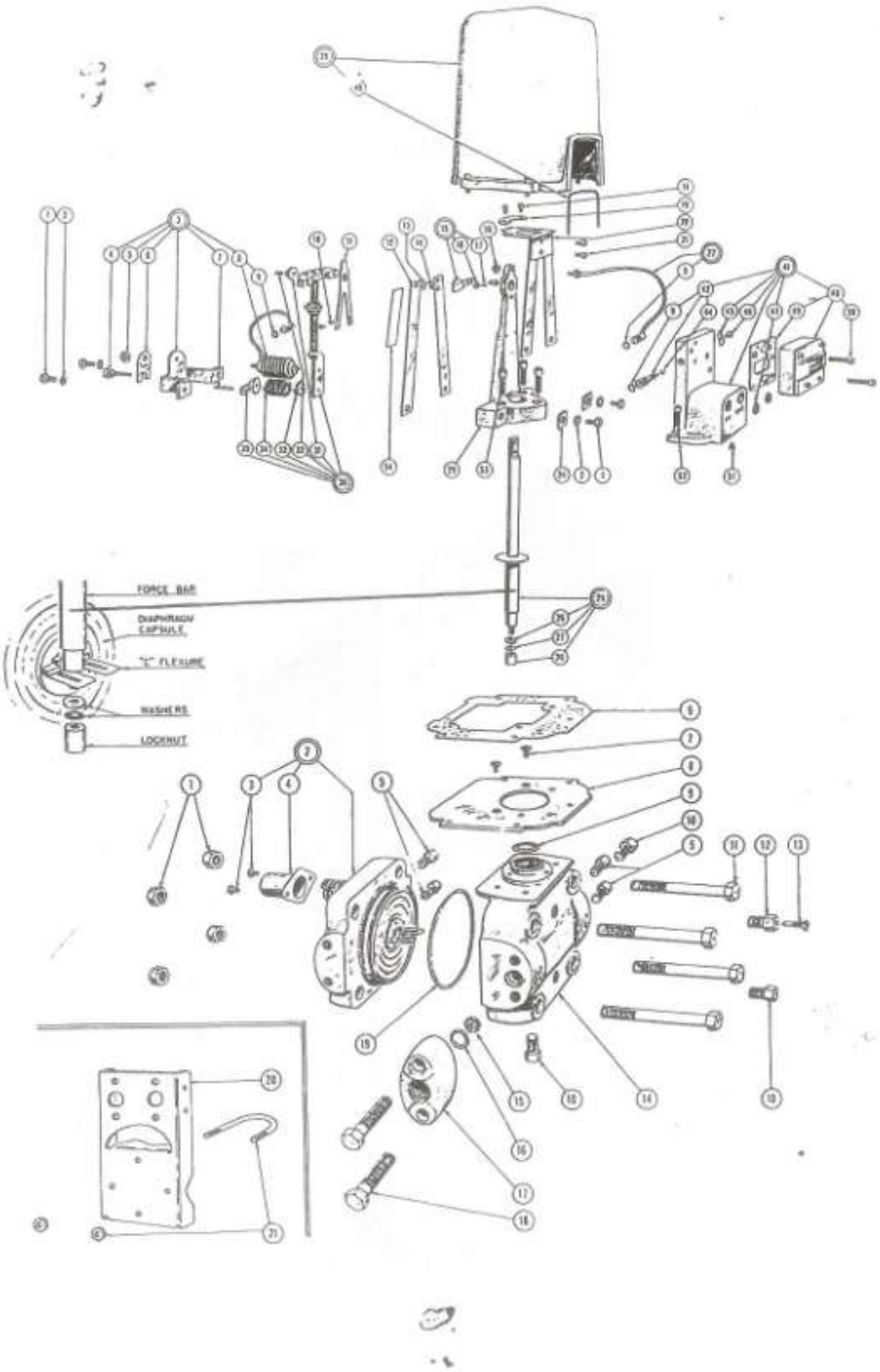
Principle/Theory of Operation

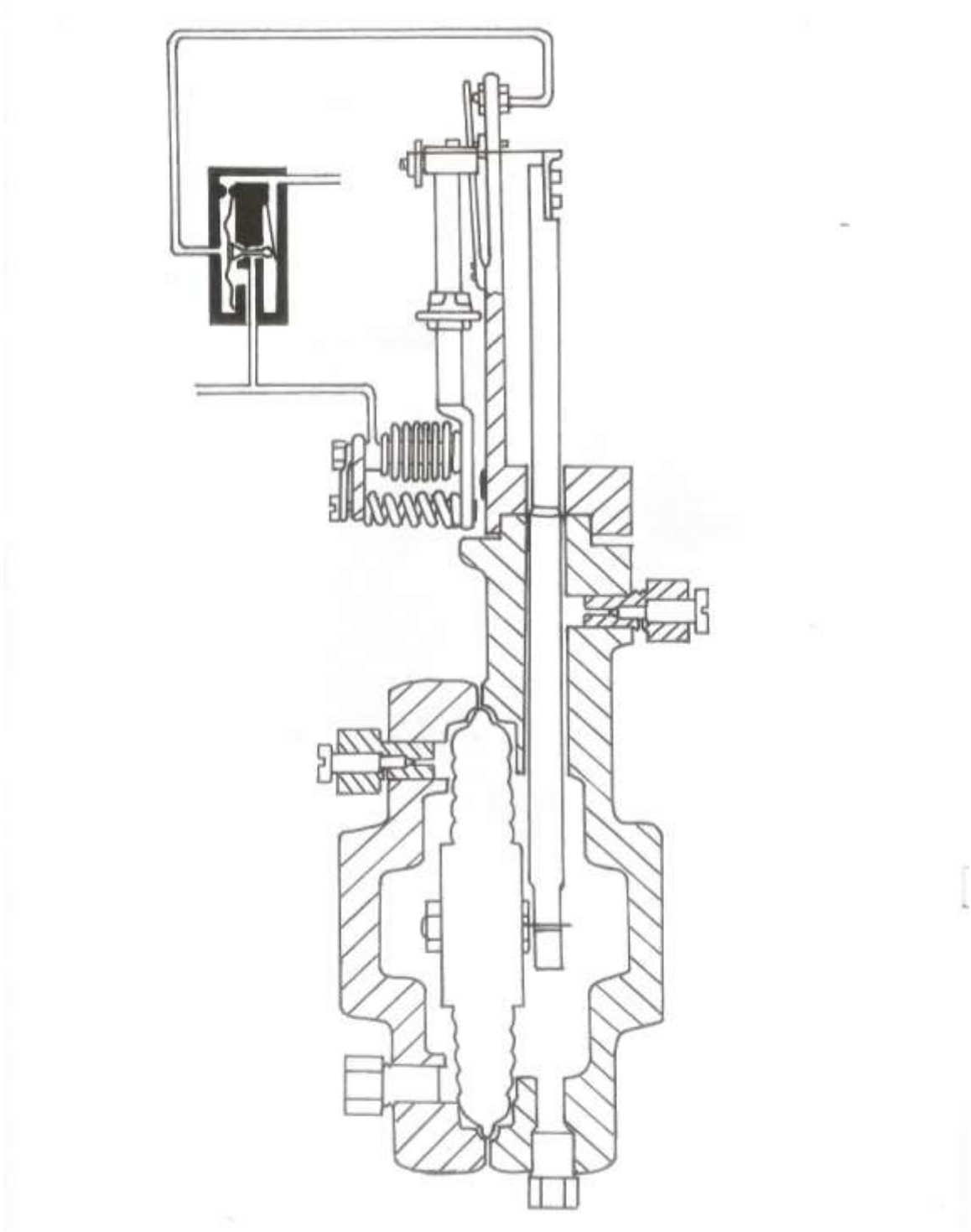
What supply do these transmitter need and what is the signal output range ?

What three parameters affect the value of a capacitor?

Who services the P.C.B.

What does the electronics do?


FORCE BAR
DIAPHRAGM CAPSULE
FLEXURE
LOCKNUT



PHASE 1 INSTRUMENTS

Module Title: Transmission of signals MODULE NO: T1 004 1

SUPPLEMENTARY QUESTIONS:

The successful completion of these questions provide the additional competencies required for Module T1 004 1

1. Draw and label a simple block diagram of a pneumatic measuring and transmission loop.

2. An input of 235" w.g. is applied to a transmitter whose range is 0 – 700"w.g. Calculate what the outputs would be for:

   a. A pneumatic transmitter

   b. An electronic transmitter

3. Why do pneumatic transmitters require air supplies which are clean and dry?

4. Why do we adopt standard instrument signals throughout industry?

5. What are the standard output signals from :-

   a) A pneumatic transmitter

   b) An electronic transmitter

6. What are the standard supplies for :-

   a) A pneumatic transmitter

   b) An electronic transmitter

7. Why do we choose to have the minimum output signal above zero ?

8. A transmitter measuring level in an 18m tank, what would be the standard output signals for the following levels ?

Tank Level	Outputs	
	Pneumatic	Electronic
Empty	…….	
25% full	…….	
50% full	…….	
75% full	…….	
Full	…….	

PRESSURE TRANSMITTER PROJECT
Module I-4 Signal Transmission

Exercise 1

Obtain a Foxboro 13A Differential Pressure transmitter and connect it as follows.

Connect 20 psi supply to supply /in port on D.P. cell

The output port to P3 on the Wally Box

Connect the H.P. side of the cell to P1 or P2 on the Wally Box

The T.O. will then give you a value to calibrate the cell to.

i.e. 0-250 mBar. That means that when no pressure is applied to the cell the output will be 0.2 Bar and when 250 mBar is applied the output will be 1 Bar.

Calibrate the cell and when complete the T.O. will check its accuracy.

Exercise 2

Obtain a Rosemount D.P. cell.
You will need a 24vDC supply and a multimeter set on the mA range.

Wire up the cell as shown on page 5 of the Instrument Signal Transmission

Notes. The loop wires need to be connected to the signal terminals NOT the TEST terminals

The T.O. will then give you a value to calibrate the cell to.

i.e. 0-250 mBar. That means that when no pressure is applied to the cell the output will be 4 mA and when 250 mBar is applied the output will be 20mA.

Calibrate the cell and when complete the T.O. will check its accuracy.

PRESSURE TRANSMITTER PROJECT
Module I-4 Signal Transmission

Additional Exercises

Obtain a Foxboro 13A Differential Pressure transmitter and connect it as follows.

Using the D.P. cell that was used in exercise 1, connect the output to a pressure switch so that when the input pressure rises above 50%, the pressure switch switches on an alarm light.

HINT – Draw a simple circuit containing a bulb, battery and switch so that when the switch if closed the light illuminates.

Transpose this drawing into the equipment on the bench.

Connect a Rosemount D.P. cell as in exercise 2.

Remove the MA meter and connect the digital display in its place.

Apply a pressure to the cell so that the display reads 50%.

With the mA meter connected to the TEST terminals what reading is obtained?