Experiment:10

Describe the Construction and Characteristics of an Air Pressure Transducer.

EQUIPMENTS

- Pressure Transducer Trainer IT-5930
- 2mm Connecting Leads.
- Digital Multimeter.

THEORY

The Air Pressure transducer:

The figure 10.1 shows the electric circuit arrangement of the IT-5930 pressure unit, the device consists of an outer plastic case which is open to the atmosphere via single port. Within this case is an inner container from which the all-has been evacuated and a strain gauge. Wheatstone bridge circuit is fitted on the surface.
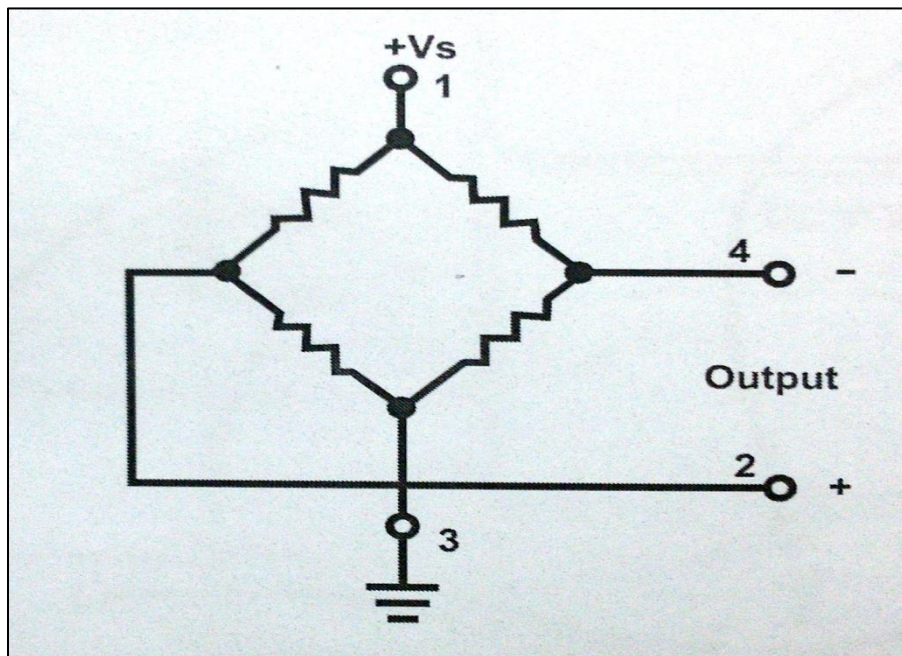

Figure 10.1 (Electric Circuit Arrangement)

The all-pressure in the outer container will produce an output from the bridge and variation of the pressure will produce a variation of this output. The transducer output can be calibrated and may be called an absolute pressure transducer.

EXPERIMENT

Refer to figure 10.2 configure setup for the present experiment.

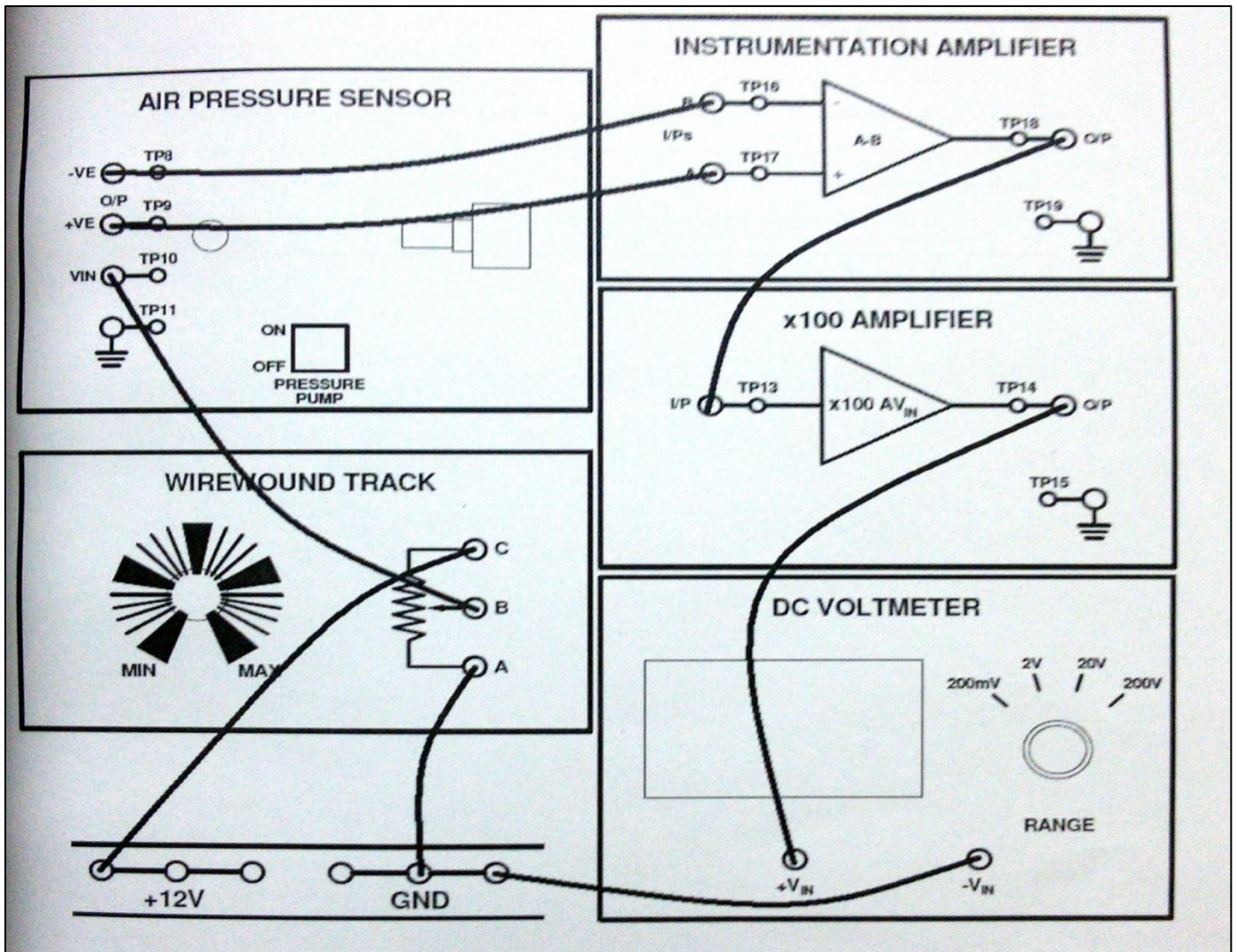- Connect the circuit as shown in the figure 10.2

Figure 10.2 (Experimental Setup)

- After connecting the circuit according to the figure 10.2, set the amplifier # 1 GAIN to 10 and GAIN FINE to 1.0. Ensure that the pump switch is set to OFF.
- Switch ON the power supply and adjust the OFFSET control to Amplifier # 1 for zero output voltage. The unit is now calibrated to zero for the current value of the atmospheric pressure.
- Connect the +12V supply to one end of the Wire wound track and on the other end as shown in the figure 10.2.
- Supply the variable voltages to the input of pump VIN TP4. Turn the Wire wound in a way that it gives 1V at the output.
- The output voltage from the Amplifier # 1 will increase. Note the values of these voltages.
- Similarly repeat the steps for 2V and note the readings and so on to 6V.

Note: A larger amplification is required due to the low magnitude of the pressure transducer output.

RESULTS

Observation Table:

Input Voltage of the Pump (V)	Amplifier # 1 Output Voltages (V)
1	
2	
3	
4	
5	
6	

Table 10.1 (Observation of Air Pressure Transducer)

CONCLUSION

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