

PRODUCTION DRAWING PRACTICE / INSTRUMENTATION LAB

[A] PRODUCING DRAWING PRACTICE:

NEED FOR A PRODUCTION DRAWING:

The graphical representation of a product starts at the transformation stage of ideas into a drawing by a design engineer. A production drawing is a complete working drawing, representing all the details of the product, regarding size, shape, material, process, tools and equipment. The craftsman is completely guided by the production drawing, during the manufacture of the product. Hence, any mistake in a production drawing will result in loss of time, money and decreased productivity.

Further, it is a legal document while going for subcontracting of works. Hence, a production drawing should be prepared without any scope for more than one interpretation. The design engineer uses orthographic or pictorial views to record his ideas, free hand. These are called working sketches. These sketches are used for both the component and assembly drawings. The working drawings are sent to the shop, in the form of blue prints, ammonia prints or other similar forms of reproduction. Therefore, the drawings must be made as tracing.

Elements of production drawing

Following are the basic elements of a production drawing.

1. Format of drawing sheet,
2. Size and shape of the component,
3. Projection method,
4. Material specification and shape such as castings, forgings, plates, rounds, etc.,
5. Indication of surface roughness and other heat treatments, if any,
6. Limits, fits and tolerances of size, form, and position,
7. Production method,
8. Process sheet,
9. Specification of standard components,
10. Conventions used to represent certain machine components, and
11. Inspection and testing methods.

[B] INSTRUMENTATION LAB

Instrumentation & Control is the art and science of measurement and control of industrial variables within a production or manufacturing area. It is a multidisciplinary branch which is fusion of electrical, chemical, mechanical, electronics, communication and computer engineering. The process variables used in industries like Level, Pressure, Temperature, Humidity, Flow, pH, Force, Speed etc.

It applies control theory to design systems with desired behaviors. Instrumentation & Control engineer plays vital role in the research, design, development and control devices/systems, typically in manufacturing facilities and plants. The magnitude of the error and consequently the correction to be applied is determined by making a periodic comparison of the instrument with standards which are known to be constant. The entire procedure laid down for making, adjusting or checking a scale so that readings of an instrument or measurement system conform to an accepted standard is called the calibration.

In instrumentation lab students are trained to calibrate different measuring instruments. The lab is fully established with all the necessary equipments required to conduct calibration.

LIST OF EXPERIMENTS

1. Calibration of Pressure Gauge
2. Calibration of Resistance Temperature Detector for temperature measurement
3. Calibration of Transducer for temperature measurement
4. Calibration of thermocouple for temperature measurement
5. Study and calibration of photo and magnetic speed pickups for the measurement of speed
6. Calibration of Capacitive transducer for angular displacement
7. Study and calibration of LVDT transducer for displacement measurement
8. Calibration of Strain Gauge
9. Calibration of Vibration setup
10. Study and calibration of McLeod Gauge for low pressure
11. Study and calibration of Rotameter for flow measurement