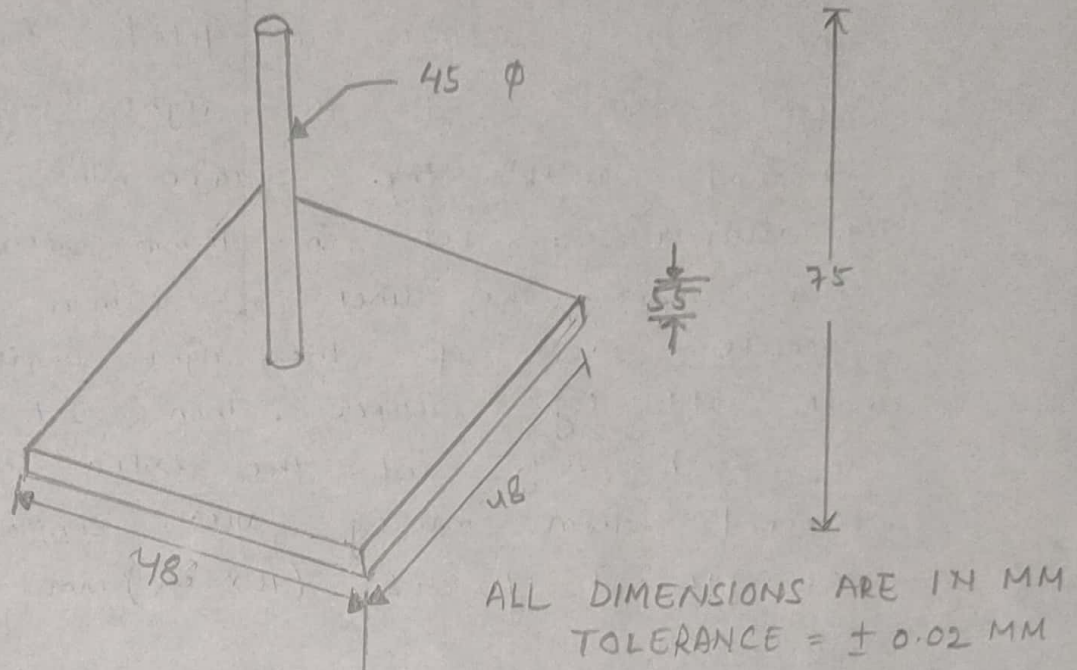


EXPERIMENT - 1

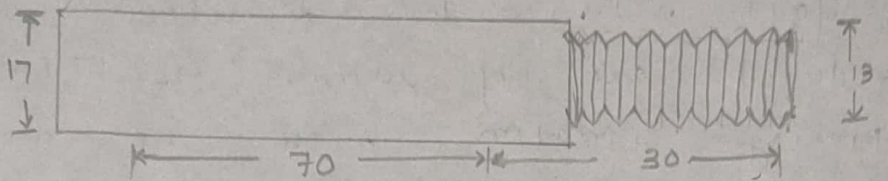


PROCEDURE :-

- **Measuring :-** After the work piece is received, the raw material size is measured by steel rule to check whether it is correct or not as per basic size i.e. (50x50x6)mm for flat and (76x6)mm for rod.
- **Marking :-** After the measurement, a line of length 50mm is marked on MS. Flat using steel rule, try square and scriber. Similarly, another line of length 76mm is marked on MS rod.
- **Cutting :-** After marking, the MS flat is set and rod is bench vice at proper height and the metal is cut as per marking line using Hacksaw.

- **Filing :-** After marking, one side of the job is filed using rough file and the flatness is checked with blade of try square. Then the adjacent side of the base surface is filed for making right angle and the right angle is checked with try square. Then the odd leg caliper is set in 48mm with steel rule. Then mark the lines in 48mm on the opposite side of the right angle surface with odd leg caliper. Then set the job in bench vice and the extra metal is removed from marking area. Similarly prepare the MS rod of size (75X5.5) mm.
- **Drilling :-** After the female part is prepared, draw the diagonals using scriber and steel rule and a centre mark is made on the intersecting point. Then the job is set in machine vice in drilling machine and make a hole using drill bit.
- **Fitting :-** After both male and female parts are prepared the male part (MS Rod) is fit into the female part (MS Hat) using push fit.
- **Finishing :-** Using smooth file both parts are finished.
- **Checking :-** Finally after finishing, dimensions of both parts are checked using vernier caliper.
- **Submitting :-** Roll No. is punched using no. punch and ball peen hammer and submitted for evaluation.

EXPERIMENT - 2



ALL DIMENSIONS ARE IN MM
TOLERANCE = ± 0.02 MM.

PROCEDURE :

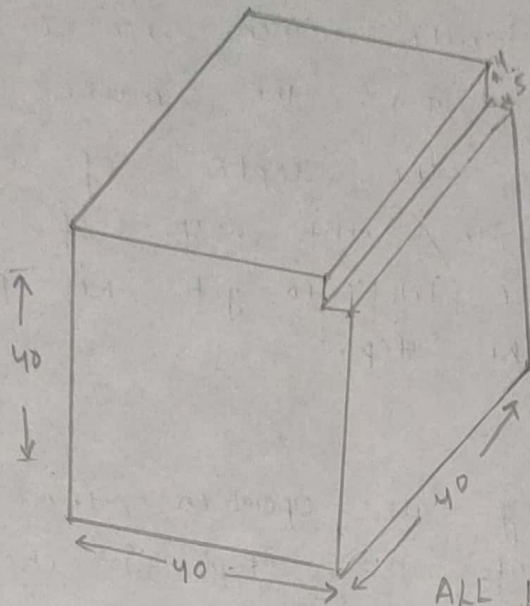
- Measuring and Marking :- After receiving the work piece, first the size of the work piece is measured by vernier caliper.
- Setting the Job and Tool :- After measurement, the job is set in three jaw chuck and tight it properly by chuck key. Then the centre of the job is checked by surface gauge. Then cutting tool is set in tool holder and the tool holder is set in tool post at proper height and centre of the tool is checked by dead centre.

• **Operation :-** After the job and tool is set, first make one end of the workpiece plain by facing operation. Then the job is removed from chuck and line is marked with 100 mm. by scriber and depth bar of the vernier caliper at the opposite end of the facing surface. Then the diameter is reduced out of 20 mm to 17.1 mm by turning operation with the help of right hand turning tool. Then again a line of 30 mm is marked and the diameter is reduced out of 17.1 mm to 13.1 mm. Then surface finishing is done by flat smooth file and also reduce the diameter of all steps. After that the thread is cut on the last step by V-thread cutting tool. Finishing of the thread is done by triangular file.

• **Checking :-** After all operations are completed, check the length and diameter of each step by vernier caliper.

• **Submitting :-** After checking, punching the roll no. and branch on the job by number punch and letter punch and submit for evaluation.

EXPERIMENT - 3



ALL DIMENSIONS ARE IN MM
TOLERANCE = ± 0.02 mm

PROCEDURE :-

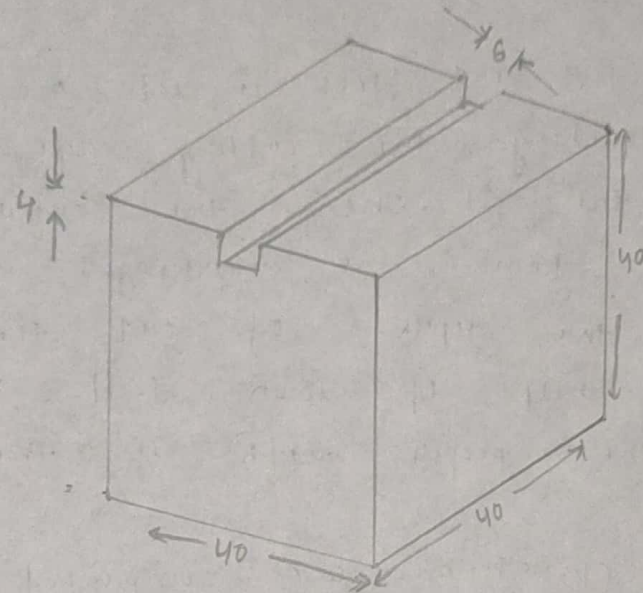
- Measuring and marking :- After the work piece is received, the size of the work piece is measured by vernier caliper. Then the surface is coated by chalk and also lines are marked on the chalking surface by odd leg caliper and steel rule. Then marking lines are punched by dot punch and hammer.
- Setting the Job and Tool :- After measurement, the job is set in a machine vice at proper height and set the turning cutter on arbor.

• Operation :- Then the cutting edge of the cutter is set on 5mm marking area by increasing the line of the job by cross feed handle. Then remove the extra metal from the marking area by increasing the depth of cut time to time with the help of knee elevating handle till to get the proper depth of the step.

• Checking :- After completing all operation, the depth and width of the step is checked by vernier caliper, whether it is correct or not.

• Submitting :- After checking, punching the roll no. and branch of the job by number punch and letter punch and submit it for evaluation.

EXPERIMENT - 4



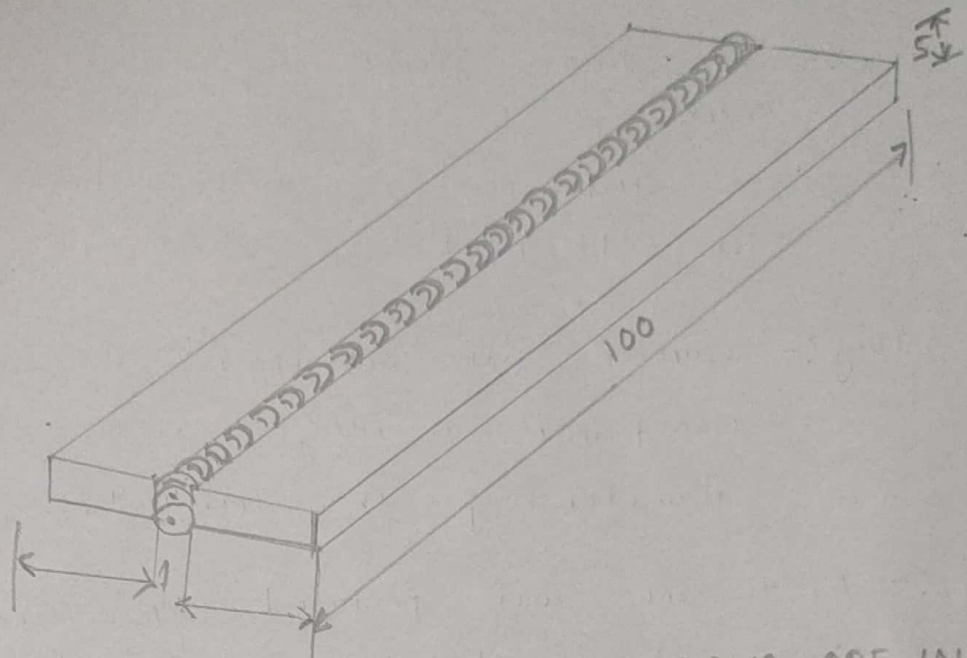
ALL DIMENSIONS ARE IN MM
TOLERANCE = ± 0.02 mm

PROCEDURE :-

- Measuring and marking :- After the work piece is received, first the size of the work piece is measured by vernier caliper whether it is correct or not as per basic size. Then the surface is marked by chalk and also mark the lines of the key way on the chalking surface by odd leg caliper and steel rule. Then punch the marking lines by dot punch and hammer.

- **Setting the Job and Tool** :- After measurement, the job is set in machine vice at proper height and the tool is set in tool post, then the nose of the tool is set in between two marking lines of the key way in the job.
- **Operation** :- After the job and tool is set the depth of cut by touching the cutting edge of the tool on the job. Then the extra metal is removed from the marking area by increasing the depth of cut time to time with the help of down feed handle till to get the proper depth of the key way.
- **Checking** :- After all operation are completed, the depth and width of the key way is checked by vernier caliper, whether it is correct or not.
- **Submitting** :- After checking, punching the roll no. and branch on the job by no. punch and letter punch and submit for evaluation.

EXPERIMENT - 5



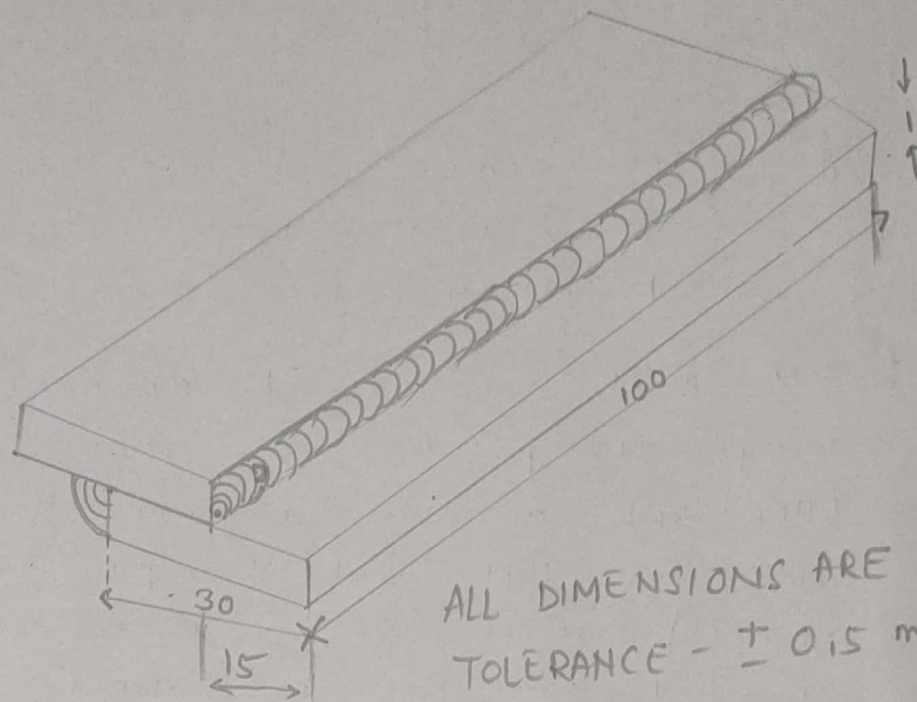
ALL DIMENSIONS ARE IN MM
TOLERANCE - ± 0.5 MM

PROCEDURE :-

- **Measuring :-** A mild steel flat of (19x5)mm was taken and by using steel rule it was measured about 101 mm.
- **Marking :-** chalk was coated on M.S flat then by using scribber and try square the line was marked about 101 mm.
- **cutting :-** The M.S flat was hold with the help of bench vice and marking line was cut by using hacksaw.

- **Edge preparation :-** The edges of M.S flat were prepared by using odd-leg caliper, try square and rough file to obtain required dimension (100x19x5) mm for two piece.
- **Job setting :-** The two piece of the M.S flat were placed in the arc welding booth on flat position with 1mm root gap for butt joint.
- **Current setting :-** Current was set-up (90-120) Amp. by using transformer according to the 3.15mm diameter of the electrode.
- **Welding :-** First arc was produced by scratching method then tack weld in the job. medium arc length was maintained to weld the job in slightly weaving motion.
- **Cooling :-** After welding the job was cooled by air.
- **Chipping :-** The slag was removed by the chipping hammer.
- **Cleaning :-** Spatters were removed by chisel and hammer both side of the bead. Then both side and beads were cleaned by the help of wire brush & rough file.
- **Punching :-** Roll no. was punched by number punch after checking the dimensions.
- **Submitting :-** The job was submitted for assessment.

EXPERIMENT - 6.



PROCEDURE :-

- **Measuring :-** A mild steel sheet 1mm was taken and by using steel rule it was measured about (101 x 31) mm.
- **Marking :-** Chalk was used on M.S sheet then using scribbler and try square the lines were marked for length 101 mm and width 31 mm for two pieces.
- **Cutting :-** The M.S sheet marking lines were cut by using shearing machine.
- **Edge Prep :-** The edges of M.S sheet were prepared by using odd leg caliper, try square and rough file to obtain required dimensions.

length 100mm and breadth 30mm.

- Job setting :- Two pieces of MS sheet were placed one over another on gas welding table in flat position for lap joint.

- ~~Flame Joint~~ &

- Flame setting :- The flame was set up neutral (3200°C) equal amount of oxygen and acetylene gas.

- Welding :- Both piece was tacked by neutral flame during tacking tip of the nozzle and filler rod maintain distance approximately 3mm. Then left hand technique was maintained to weld pieces which angle between filler rod and blow pipe was taken to be $(30-40)$ degree and $(60-70)$ degree.

- Cooling :- After welding the job was cooled in natural air.

- Cleaning :- After cleaning the job was cleaned by rough file and wire brush.

- Punching :- The job was punched by the no. punch after checking the dimensions.

- Submitting :- The job was submitted for assessment.