

## EXPERIMENT:1

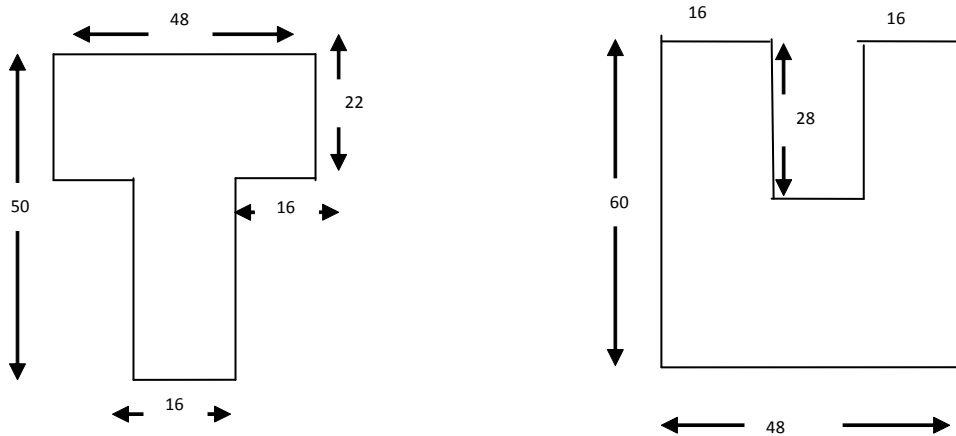
### AIM OF THE EXPERIMENT: -

Prepare a T fitting job

### RAW MATERIAL REQUIRED: -

1. Steel rule
2. Try square
3. File
4. Smooth file
5. Ball peen hammer
6. Hacksaw frame
7. Vernier caliper
8. Scriber
9. Bench vice
10. Surface table
11. Hight gauge
12. Marking table
13. V-block

### JOB FIGURE



### SEQUENCE OF OPERATION: -

1. Check the raw material required
2. Right angle fitting
3. Surface fitting
4. Apply marking media
5. Layout marking
6. Filing
7. Dimension checking and finishing

**PROCEDURE: -**

1. At first check the raw material required.
2. Surface fitting of the job and prepare right angle by using bastard file and 2<sup>nd</sup> cut file.
3. Applying marking media and layout and marking.
4. Permanent marking done using prick punch and hammer.
5. Remove unnecessary parts of the job using hacksaw frame and blade.
6. Drilling the job as per sketch dimension.
7. Filing the job for remove excess material.
8. Then dimension checking of the job using Verniercaliper.

**SAFETY PRECAUTION: -**

1. Always use cool and while drilling.
2. Always use file card before and after use.

**CONCLUSION: -**

The preparation of T fitting job done successfully.

## EXPERIMENT: -2

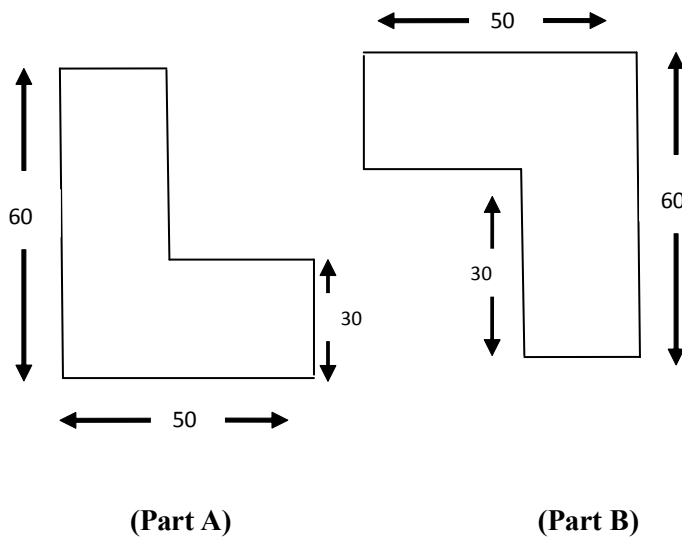
### AIM OF THE EXPERIMENT: -

\*Male and female fitting practice.

### RAW MATERIAL REQUIRED :-

1. Steel rule
2. Try square
3. File
4. Smooth file
5. Scriber
6. Hacksaw and blade
7. Hammer
8. Bench vice
9. MS flat

### JOB FIGURE:



### SEQUENCE OF OPERATION

1. Check raw material required
2. Prepare right angle
3. Surface filling
4. Apply marking media
5. Lay out marking
6. Finishing

## **PROCEDURE;**

1. At first take a raw material required of given size.
2. Prepare right angle any two side of the job properly checked by engineering try square.
3. Both side surface filling of the job using by flat bastard file and 2<sup>nd</sup> cut file.
4. Apply marking media (WHITE WASH).
5. Lay out marking done as per sketch dimension.
6. Hacksawing required size as shown as sketch dimension.
7. Then filling excess material and checking dimension using steel rule.
8. finishing the job using by flat smooth file.

## **SAFETY PRECAUTION**

1. Do not apply any lubricant of face of the file.
2. While sawing the blade is fit up the frame is forward direction.
3. Do not use steel rule as like as scriber.

## **CONCLUSION**

The preparation of male and female job done successfully

### EXPERIMENT: -3

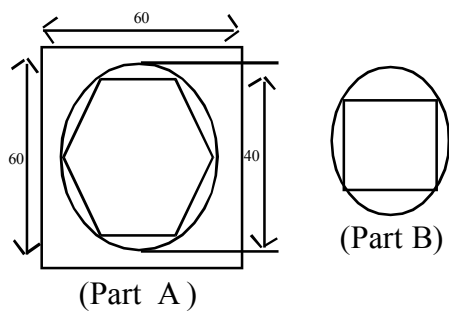
#### AIM OF THE EXPERIMENT: -

To prepare a hexagonal fitting part .

#### RAW MATERIAL REQUIRED: -

- 1.Bastard file
- 2.2<sup>nd</sup> cut file
- 3.Smooth file
- 4.Steel rule
- 5.Try square
- 6.Hacksaw frame and blade
- 7.Vernier caliper
- 8.Prick punch and hammer
- 9.Drill bit and chuck key
- 10.Bench vice
- 11.Surface plate
- 12.Drilling machine
- 13.Marking table
- 14.MS flat

#### SKETCH:-



#### SEQUENCE OF OPERATION:-

- 1.Check raw material required (RMR)
- 2.Surface filling
- 3.Prepare right angle
- 4.Apply marking media
- 5.Lay out marking

6.Punching

7.Drilling

8.Finishing and checking

**PROCEDURE: -**

- 1.Checking the raw material required of given size.
- 2.Holding the job properly in bench vice.
- 3.Prepare right angle of the job using bastard file.
- 4.The surface filling of the job.
- 5.Apply marking media and allow to dry it (WHITE WASH).
- 6.Lay out marking done by using Hight gauge.
- 7.Permanent marking done by using prick punch and ball peen hammer.
- 8.Hacksawing unnecessary parts.
- 9.Drilling the job where required.
- 10.Creat hexagonal inside the job.
- 11.Finishing by using flat smoot file.
- 12.Dimension checking of the job by using Vernier caliper.
- 13.Then fitting the part A and B of the job.

**SAFETY PRECAUTION: -**

- 1.Always cool and while drilling.
- 2.Always use file card before and after use.

**CONCLUSION: -**

The above experiment done successfully.

## EXPERIMENT: -4

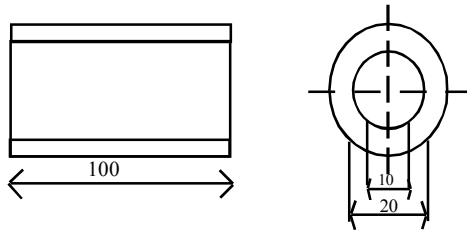
### AIM OF THE EXPERIMENT: -

To prepare plain turning

### RAW MATERIAL REQUIRED: -

1. MS round bar 20\*100
2. Vernier caliper
3. Surface gauge
4. Cutting tool
5. Lathe key

### SKETCH: -



### SEQUENCE OF OPERATION: -

1. Check the raw material required.
2. Check the function of lathe material.
3. Hold the job centering.
4. Plain turning
5. Finishing.

### PROCEDURE: -

1. Checked the raw material required as per sketch dimension.
2. Checked the functioning of lathe machine before starting.
3. Hold the job in a four jaw chuck.
4. Proper centering the job using by surface gauge.
5. The plain turning done in one side using cutting tool (SOLIID TYPE) of a lathe.
6. Checking the dimension as a job as per sketch.
7. Then reset the job and allowed to plain turning.
8. Then finishing the job.
9. Then checked the job using Vernier caliper as per sketch.

### SAFETY PRECAUTION: -

1. Loose cloth should not be wear while working in the lathe machine.
2. While working on the lathe machine always use shoes.
3. Do not wear any ornaments on the work place.

### CONCLUSION: -

The above experiment done successfully.

## EXPERIMENT: -5

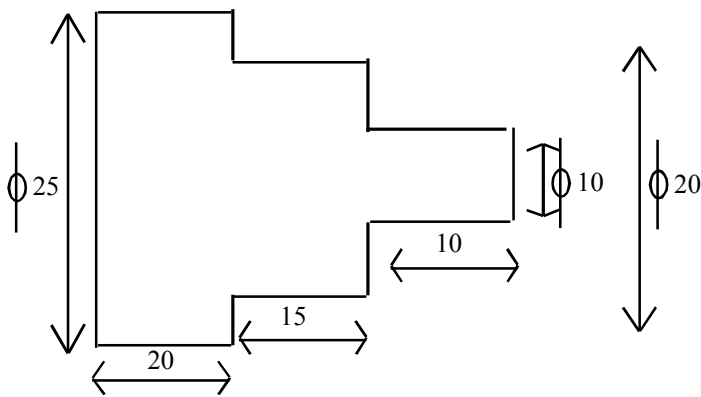
### Aim of the experiment: -

To prepare the step turning.

### RAW MATERIAL REQUIRED: -

1. MS round bar
2. Vernier caliper
3. Surface gauge
4. Cutting tool
5. Lathe machine

### JOB FIGURE: -



### SEQUENCE OF OPERATION: -

1. Checked the function of lathe.
2. Holding centering step turning.
3. Finishing.

### procedure :-

1. Checked the raw material as per sketch dimension.
2. Checked the function of lathe.
3. Hold the job more than half of its length out side the four jaw chuck.
4. Set the cutting tool in the tool post rigidly.
5. Step turn by power feed.
6. Remove the job and check the final dimension using Vernier caliper.

### SAFETY PRECAUTION: -

1. Clean the machine and apply a thin layer of oil on the chip and with a look.

### CONCLUSION: -

The above experiment of step turning job done successfully.



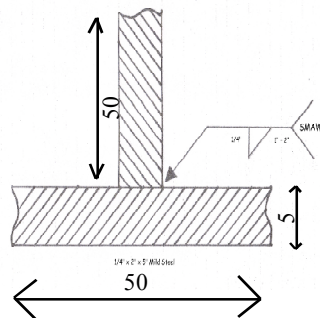
## Experiment : -6

**Aim of the experiment :-** Preparation of T joint by arc welding .

### Raw materials Required :-

- 1) Steel rule
- 2) Arc welding transformer
- 3) Electrode holder
- 4) Chipping hammer
- 5) Welding screen or helmet
- 6) Apron
- 7) Electrodes
- 8) Cable & cable connectory
- 9) Wire brush
- 10) Glooves
- 11) Pedestal grinding machine

**Job figure :-**



**Sequence of operation :-**

- 1) file flat & square .
- 2) clean the job pieces.

### Procedure :-

- 1) Take the 2 mild steel pieces of given dimensions & clean the surface.
- 2) Remove the sharp corners , filling or grinding & prepare the workpiece .
- 3) The workpiece are positioned on the welding table such as T - shape .
- 4) The electrode is fitted in to the electrode holder & welding current is set to a proper value .
- 5) The ground clamp is fasterned to the welding table .
- 6) wearing the apron , hand gloves using the face shield & holding the pieces the arc is struck & the work pieces are track welded at both the ends .
- 7) welding is carried out throughout the length of the T joint .
- 8) Remove the slag , spatters & clean the joint .

**Conclusion :-**

The T joint is thus made, using the tools & equipment as mentioned in the above experiment .

## Experiment :- 7

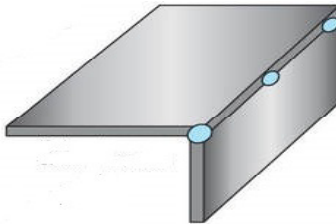
### Aim of the experiment :-

To make a corner joint , using the given mild steel pieces by arc welding .

### Raw material required :-

- 1)Ms flat
- 2)steel rule
- 3)Arc welding transformer
- 4) Electrode holder
- 5) chipping hammer
- 6) welding screen or helmet
- 7)Apron
- 8) Electrodes
- 9)wire brush
- 10)glooves

### Job figure :-



### Sequence of operation .

- 1) cleaning the work piece .
- 2)Tack welding
- 3)full welding
- 4) cooling
- 5) chipping
- 6) finishing

### Procedure :-

- 1) Tack the 2 mild steel pieces of given dimensions & Clean the surface of given dimensions & clean the surface thoroughly from rust , dust .
- 2) Remove the sharp corners & filling or grinding & prepare the work pieces .
- 3) The workpiece are positioned on the welding table such that the L Shape is formed .
- 4) The electrode is fitted in to the electrode holder & the welding current is set to proper Value.
- 5) The ground clamp is fastened to the welding table.
- 6) wearing the apron , hand gloves using the face shield & holding the pieces the arc is struck & the workpieces are tack welded at both the ends .
- 7) welding is then carried out through out the length .
- 8) Remove the slag , spatters & clean the joint.

### Conclusion :-

The corner joint is thus made using the tools & equipment as mentioned above .

## Experiment : - 8

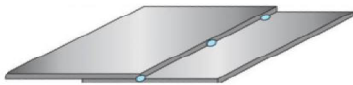
### Aim of the experiment :-

To make a double lap joint using the given mild steel pieces & by arc welding .

### Tools required :-

- 1) Arc welding machine
- 2) mild steel
- 3) Electrodes
- 4) Electrode holder
- 5) Ground lamp
- 6) Apron
- 7) Hand gloves
- 8) Bench vice
- 9) Rough flat file
- 10) Try square
- 11) steel rule
- 12) wire brush
- 13) Ball peen hammer
- 14) chipping hammer
- 15) chisel &
- 16) Grinding machine

### Job figure :-



### Procedure :-

- 1) filling the ms flat & prepare a right angle .
- 2) clean the surface of ms flat .
- 3) set the workpiece on welding table to form a lap joint with correct over lapping .
- 4 ) The electrode is fitted in to the electrode holder & the welding currents is set to a proper value .
- 5 ) wearing the apron , hand gloves using the face shield & holding the overlapped pieces the arc is stuck & the workpiece are tack welded at the end of both sides .
- 6) welding is then carried out throughout the length of the lap joint .
- 7) Remove the slag, spatters & clean the joint.

### Conclusion :-

A double tap lap joint is prepare successfully.

## Experiment :- 9

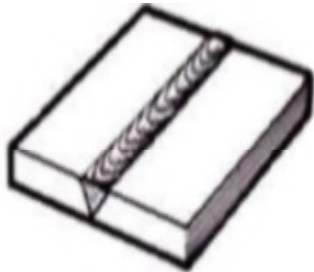
Aim of the experiment:-

To prepare a single v butt joint .

Raw material Required : -

- 1)mild steel
- 2)steel rule
- 3) Electrode
- 4)face shield
- 5) Apron
- 6) Hand gloves
- 7)Rough flat file
- 8)Try square
- 9)wire brush
- 10)Ball peen hammer
- 11) chisel
- 12) Grinding machine
- 13) Bench vice

Job figure : -



Sequence of operation:-

- 1) cleaning the work pieces.
- 2) Tack welding
- 3) Full welding
- 4) cooling
- 5) chipping
- 6) finishing

Procedure :-

- 1) Take the 2 mild steel pieces of given dimensions & clean the surface thoroughly from rust dust particles, oil & grease.
- 2) Remove the sharp corners & by filing or grinding .
- 3) one edge of each piece is beveled to an angle 30 °.
- 4) The 2 piece are positioned on the welding table such that they are separated slightly for better penetration of the weld.
- 5) The electrode is fitted in to the electrode holder & the welding current is set to a proper value.
- 6) The ground clamp is fastened to the welding table the machine is switched on .
- 7) wearing a apron & hand gloves using the face shield the arc is struck & the work piece are tack welded at the ends & holding the two pieces together .
- 8) second run of the welding is done with proper weaving & with uniform movement.
- 9) During the process of welding the electrode is kept at an angle of 15° - 25° from vertical and in the direction of welding .
- 10) The slag formation on the weld is removed by chipping hammer.
- 11) filing is done to remove spatter around the weld .

Conclusion :-

The above experiment done successfully .

## Experiment 10

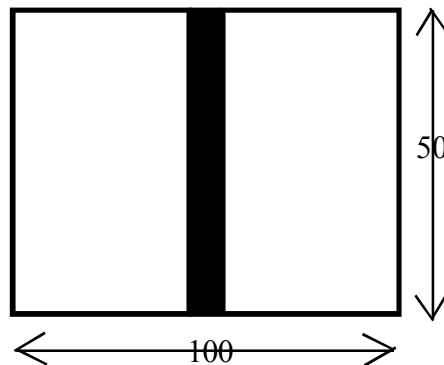
Aim of the experiment:-

To prepare and make a square butt joint by arc welding .

Raw materials required :-

- 1) Arc welding transformer
- 2) Electrode
- 3) Electrode holder
- 4) cable and cable connector
- 5) chipping hammer
- 6) wire brush
- 7) welding screen or helmet
- 8) gloves
- 9) Apron
- 10) pedestal grinding machine
- 11)ms flat
- 12) file
- 13)Bench vice

Job figure :-



Sequence of operation :-

- 1) set the job for square butt joint
- 2)Tack weld 2 piece to form square butt joint .
- 3)weld along the joint with correct arc length , correct electrode angle & uniform welding speed .

Procedure :-

- 1) clean the job pieces .
- 2)check the dimensions of two pieces .
- 3) set the pieces on welding table as butt joint with gap in alignment as per the drawing .
- 4) Tack the 2 pieces at both the ends & at centre .
- 5) place the joint in flat position on the welding table .

6) Deposit the first bead along the joint line with correct arc length , correct electrode angle & uniform welding speed .

7) chip the slag from the bed with a chipping hammer & brush with a wire brush & inspect .

8) clean the backside of the first bead throughly &grid the tacks.

9) Deposit the second bead on this side , using the same settings .

10)chip the slag from the bead with a chipping hammer & brush with a wire brush.

Conclusion :-

The above experiment done successfully.

## Experiment 11:-

Aim of the experiment :-

To prepare a sheet metal tray .

Raw materials required:-

- 1) steel rule
- 2) folding rule
- 3) straight edge
- 4) Try square
- 5) scribe
- 6) Divider
- 7) punch
- 8) chisel
- 9) Ball peen hammer
- 10) snip
- 11) soldering iron
- 12) mallet
- 13) sheet metal

Job figure :-

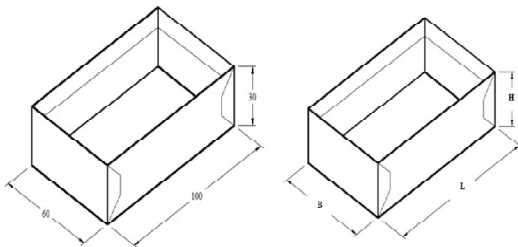


Fig 1: Developed view of the job (tray).

Fig 2: Reference diagram for measurement of job.



Sequence of operation :-

- 1) use snips to cut the sheet for the development of a taper square tray.
- 2) make double hem on the edges.
- 3) Bend the sheet on hatchet stake .
- 4) soft solder lap joint .

Procedure :-

- 1) check the size of the sheet as per the sketch using a steel rule.
- 2) level the sheet on a leveling plate by a mallet .
- 3) mark out the development of the sheet by the parallel line method as per dimension.
- 4) cut away waste material .



- 5) cut the four corners flaps & bend to  $120^\circ$  .
- 6) Bend the 4 edges to double hem on the outside .
- 7) clamp the work on the scribed line .
- 8) Bend the all the 4 sides as per drawing .
- 9) check the size & shape.
- 10) solder the four flaps on the outside each on one corner.
- 11) painting the tray with red oxide by brush paint give a finished coat either by spray painting or hand painting .

Conclusion :-

The above experiment done successfully.