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FITTING SHOP

DRILLING AND TAPPING

EX NO. 8
DATE: November 15, 2021

AIM
To make drill and tap on given mild steel work piece

Application
Filling industries, Fasteners industries, Automobile industries

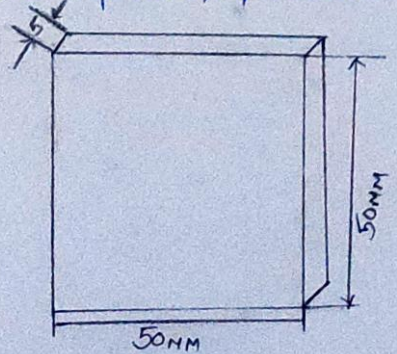
Supplied material specification
Mild steel metal plates of dimension is 50MM X 50MM X 6MM

Tools Required
1) steel rule 2) Try Square 3) Jenny Caliper 4) 12" Flat rough file 5) Center punch
6) bench vice 7) ball peen hammer 8) Drilling M/c 9) 6mm, 8.5mm, 13mm Drill bits
10) 10MM X 1.5 MM Hand Tap set 11) Adjust tap wrench 12) Thread pitch gauge.

Calculation
Tap drill size = tap size - pitch size
= 10mm - 1.5mm = 8.5MM

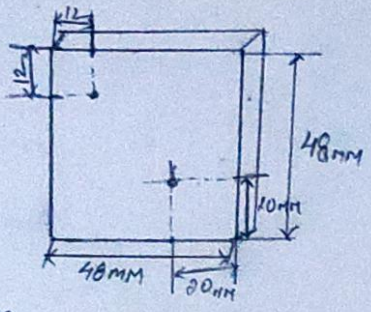
Sequence of operation
1) Preparation 2) Marking 3) Drilling 4) Tapping 5) Finishing

Working Steps:
1) Preparation
   1) Check the initial dimension using steel rule
   2) fix the job on a bench vice and file the two adjacent side using a flat file to form right angles
   3) Check for the perpendicularity with try square



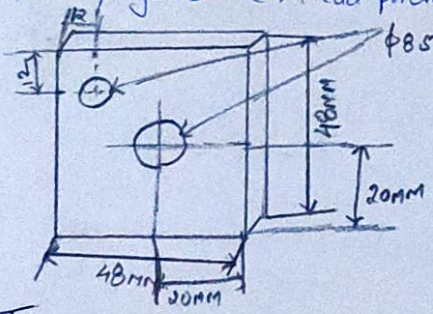
Marking

1) Apply chalk on the work surface
2) Measure 20mm using jenny caliper from the steel rule
3) Transfer the measured dimensions to the work piece with edge 12mm.
4) Draw lines along the dimensions on work piece with scriber
5) Make dots in ter center point using center punch



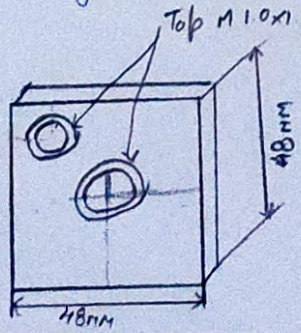
Drilling:

1) Place the work piece on the drilling machine platform
2) Using drilling machine make two holes on the dotted place made by centre punch
3) Pour some oil for smooth drill and drill the work piece properly by adjusting the pilot.
4) Repeat the steps twice for better finishing
5) Lastly go to the thread pitch guage machine & complete the drilling procedures on the work



Tapping

1) Fix the work piece in the bench vice in such a way that it should not move.
2) Using Tapping tool I make threads in the holes
3) Repeat the procedure for both holes, then take the taping tool & and use it carefully by rotating in clockwise, simultaneously do this process for both sides



Finishing

1) Using a 10mm screw, check the accuracy of the finish

PRE LAB Question

1) Define drilling

It is a process of making holes in a solid material using drill

2) List out the types of drilling machine

1) Hand drill machine
2) Sensitive drill machine
3) Radial drill machine
4) Multiple spindle machine
5) Gang drilling machine
6) Hammer drill

3) Mention the type of drilling tool

Cutting tool

4) What is mean by tapping?

It is the process of cutting a thread inside a hole

5) How to calculate tap drill size?

It can be calculated by subtracting the pitch from the diameter of the thread

POST LAB QUESTION

1) What is twist drill cutting angle?

The helix angle of twist drill cutting is 32°

2) Mention the centre punch angle?

The angle of centre punch is 60°

3) How to hold the drill bit?

The drill bit is held in place chuck, drill bit is tightly fixed in chuck using chuck key

4) How to measure the hole diameter in drilling process?

Using jenny caliper

5) How do you determine the pitch for tapped holes?

Pitch is the number of turns per inch.

RESULT

The required holes with proper measurements has been obtained using Drilling & Tapping techniques