

JOB NAME "V" Block

BLUE PRINT NUMBER: 01-A-11

ITEM: Block

INFORMATION: V-blocks are used for holding round or square work, while milling, drilling, grinding or laying out work.

PRIMARY SKILL LEARNED:

1. Shaping work square and to decimal dimensions.
2. Shaping ~~vee~~ shapes.
3. Band sawing stock to a line
4. Surface grind to shoulder
5. Grind steps in vise.
6. Grind angles with magnetic V-block

PRECAUTIONS:

1. Make sure piece is shaped or milled square.
2. Keep base against stationary jaw when milling side slots.
3. Mill  $1/4"$  X  $1/4"$  slot first, then reverse piece in vise and do same operation on opposite side.
4. Put piece of round stock in "V" when holding block in vise to prevent wing from bending in.

STOCK:  $1\ 7/8"$  Square Tool Steel

OPERATIONS:

1. Cut off stock to  $3\ 1/8"$  length.
2. Mill or shape to print size. (Allow for grinding.)
3. Layout for milling.
4. Mill or shape 90 degree angles on top and end.
5. Mill  $1/8"$  recess in bottom of V's.
6. Saw out corner.
7. Mill grinding recess in corner.
8. Mill slots on sides.
9. Mill  $1\ 9/32"$  step on sides.
10. Mill slots on end.
11. Mill  $1\ 9/32"$  step on end.

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ITEM: Clamp

PRIMARY SKILL LEARNED:

1. True center punch mark with wiggler.
2. Shape to shoulder.
3. Shape to layout.

PRECAUTIONS:

1. Notice hub at top of clamp when shaping thickness.
2. Bore hole in 4 jaw chuck.
3. Tapped holes must clear each other at right angles.

STOCK: 7/8" X 2" Machine Steel.

OPERATIONS:

1. Cut off stock to 2 1/8" length.
2. Shape stock to blueprint size.
3. Layout internal radius.
4. Face off, drill and bore 1 5/16" hole.
5. Layout external radius.
6. Saw outside of clamp.
7. File outside of clamp.
8. Saw inside of clamp.
9. File inside of clamp.
10. Layout and drill for clamping screw.
11. Locate and drill center of hub.
12. Tap holes.
13. File radius on hub.



## "V" BLOCK

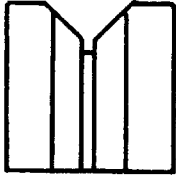


Fig. 1

Shape and grind a tool steel block to  $1\frac{3}{4}'' \times 1\frac{3}{4}'' \times 3''$ . Indicate the milling machine vise and mill the "V" centrally on the top and one end. Use a  $90^\circ$  mill and mill to the print dimensions. Mill a  $\frac{1}{8}''$  grinding recess  $\frac{1}{8}''$  deep in the bottom of the "V" cuts. Fig. 1

Layout. Bandsaw to the outside of the line. Mill square to the dimensions. Fig. 2  
A grinding recess in the "L" may be milled now.

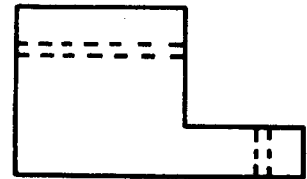


Fig. 2

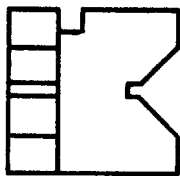


Fig. 3

Place the base of the "V" block against the stationary jaw. Change the cutter to a  $\frac{1}{4}''$  wide mill  $3''$  in diameter. Mill a  $\frac{1}{4}''$  slot  $\frac{1}{4}''$  deep and  $\frac{1}{2}''$  from the base. Fig. 3

Reverse the piece in the vise place the base against the stationary jaw. Mill a  $\frac{1}{4}''$  slot  $\frac{1}{4}''$  deep and  $\frac{1}{2}''$  from the base. Fig. 4

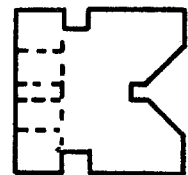


Fig. 4

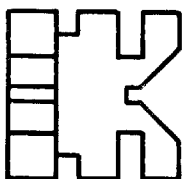


Fig. 5

Mill a  $\frac{1}{4}''$  slot  $\frac{1}{2}''$  deep  $1\frac{1}{8}''$  from the base. Reverse the piece and repeat the operation on the other side. Fig. 5

" V " BLOCK

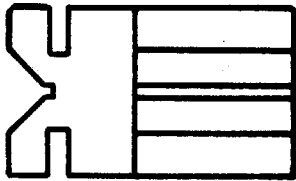


FIG. 6

On the narrow section mill a  $1/4$ " slot,  $1/2$ " deep and  $3/8$ " from the end. Reverse the piece and repeat the operation. FIG. 6

Place the side with the "V" up. Set the edge of the cutter  $15/64$ " in from the stationary jaw and mill off one wing. Fig. 7

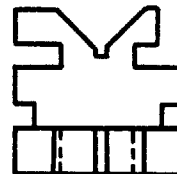


FIG. 7

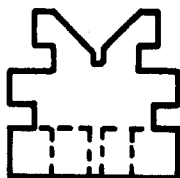


FIG. 8

Place the opposite side against the stationary jaw the "V" up. Mill the other wing. The  $1 \frac{9}{32}$ " dimension will be centrally located. Fig. 8

On the narrow section, complete the same operations for FIG. 9 as was completed in the operations shown in FIG. 8. Mill a grinding recess in the "L" section.

Stamp name and date on the bottom. Harden in oil (water), and temper. Finish grind at later date.

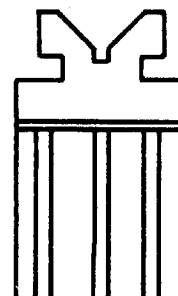


FIG. 9

"V" BLOCK CLAMP

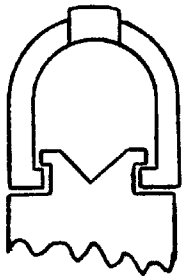


Fig. 2

Consult your blueprint.  
 Select stock  $7/8"$  X  $2"$  X  $2\ 1/8"$ . Layout as illustrated in Fig. 1. Center punch location at intersection. Place the piece in a four jaw chuck and line up the center punch mark with the tail stock center. Face off, center drill, drill up to  $1"$  in diameter and bore to fit the wings on the "V" block. Fig. 2,  $1\ 5/16"$  Dia.

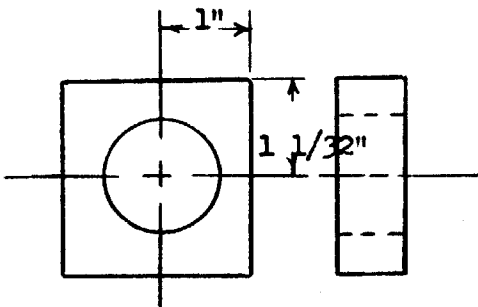
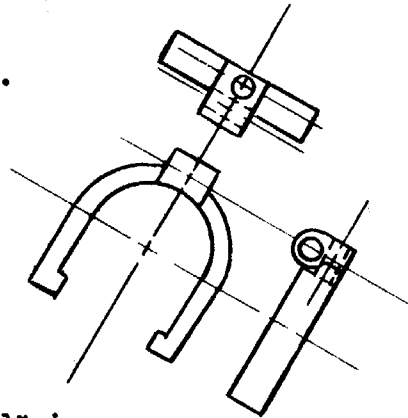


Fig. 1

Layout the outside shape and band saw. Keep the faced off, side down and mill to the  $1/2"$  thickness ( watch the lug ) Fig. 3

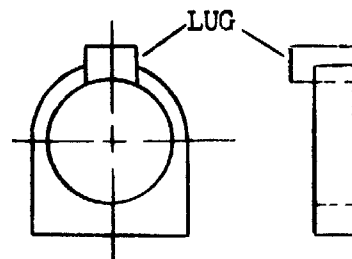


Fig. 3

Layout, drill and tap two  $1/4"$  X 20 holes. ( Note: tapped holes are at right angles and must clear each other, see blueprint.

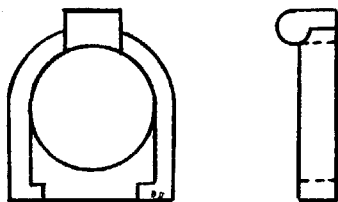


Fig. 4

Layout the inside shape, band saw to the line, file to fit "V" block. Fig. 4