

JOB NAME Bushing Knockout

BLUE PRINT NUMBER: 01-A-5

INFORMATION: This tool is used primarily to knock out standard size, inserted, bushings from castings and fixtures.

PRIMARY SKILL LEARNED:

1. Centering stock.
2. Visual alignment of centers.
3. Facing on centers.
4. Rough turn to caliper dimensions.
5. Turn shoulders to scale dimensions.
6. Turn diameters to micrometer dimensions.
7. Turn shoulders to stop.
8. Knurling.

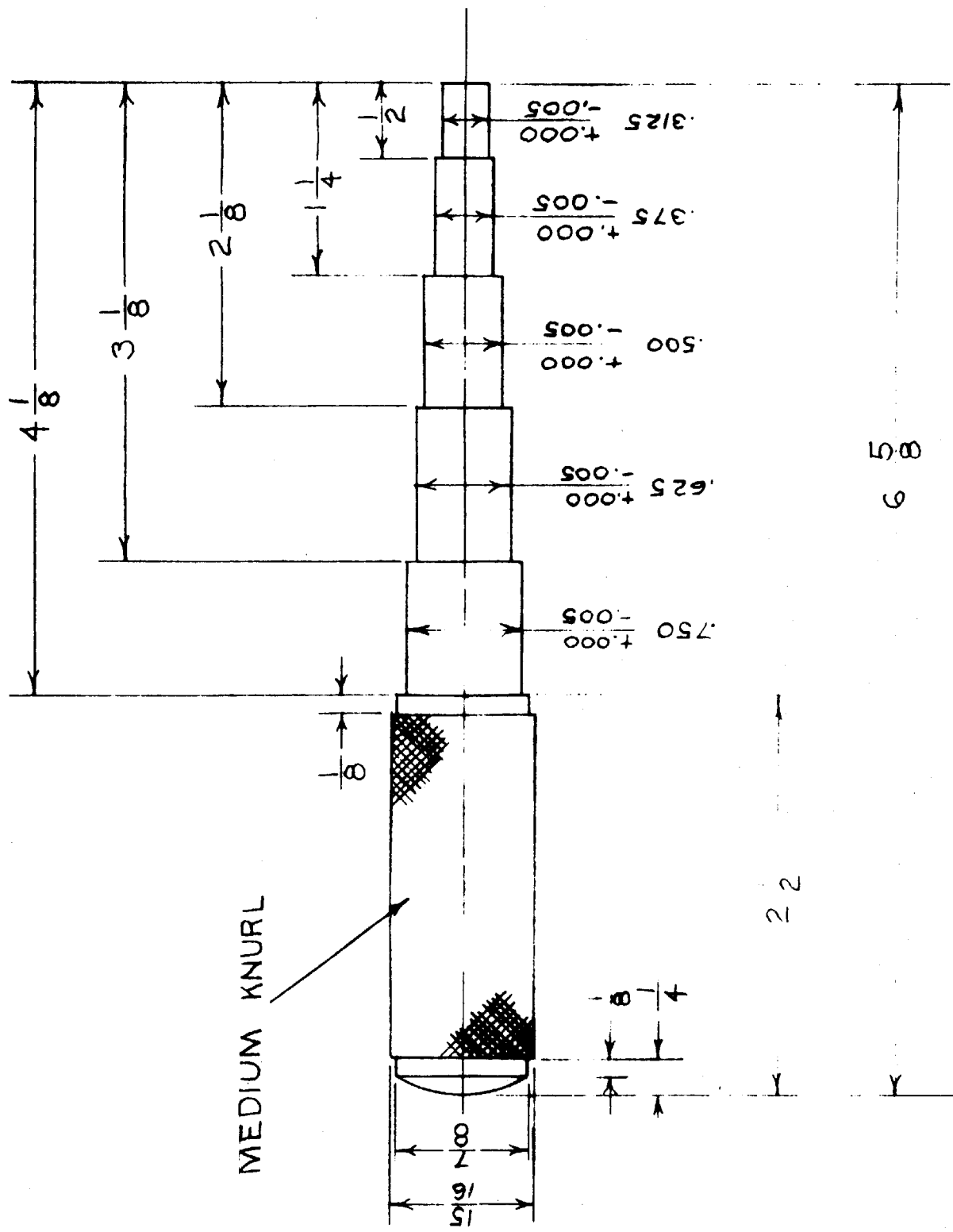
PRECAUTIONS:

1. Set tool bit on center.
2. Oil center hole.
3. Have proper tailstock pressure.
4. Use copper under screw on lathe dogs to protect knurl.
5. Use proper speeds and feeds.
6. Use micrometer dial on lathe to turn diameter to size.
7. Check diameter at beginning of cut.
8. Observe lathe safety precautions.

STOCK: 1 1/8" Diameter Machine Steel.

OPERATIONS:

1. Cut off stock to 6 3/4" length.
2. Center drill both ends.
3. Face ends.
4. Turn 1" diameter 3" long.
5. Knurl 1" diameter
6. Cut radius on end.
7. Reverse piece and turn 3/4" diameter 4 1/8" long.
8. Turn 5/8" diameter 3 1/8" long.
9. Turn 1/2" diameter 2 1/8" long.
10. Turn 3/8" diameter 1 1/4" long.
11. Turn 5/16" diameter.
12. Mill flat on handle.
13. Stamp name and date.
14. Case harden.



MEDIUM KNURL

BREAK ALL UNNECESSARY CORNERS

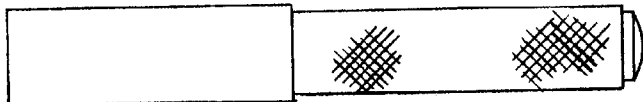
DO NOT SCALE THIS DRAWING

FLI WHITNEY REGIONAL VOCATIONAL TECHNICAL SCHOOL		MATERIAL	PART NAME	BUSHING KNOCK OUT
DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED:-		Cold Rolled Steel	DATE:-	
Fractional $\pm 1/64$	Decimal $\pm .002$	HEAT TREAT	D'WG. No.	D'WG. No.
Angular $\pm 1^\circ$	Concentricity $\pm .001$		01-A-5	01-A-5

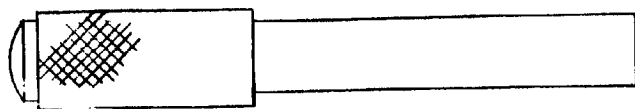
BUSHING KNOCK OUT



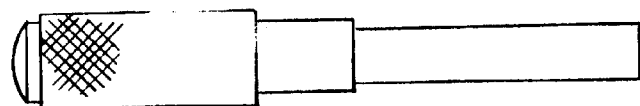
Material: Machine steel - 1 1/8" diameter X 6 3/4" long.
Face and center drill using a three jaw chuck.



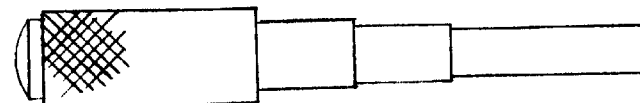
Place on centers, take a test cut for straight turning.
Turn O.D. to 15/16 diameter 3" long. Use form tool to
turn radius on end, medium knurl.



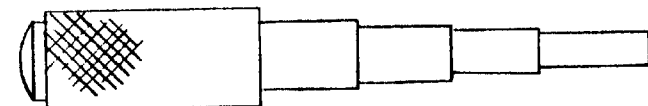
Reverse on centers. protect knurl with soft piece of
copper. Turn to 3/4" diameter, 4 1/8" long.



Turn 5/8" diameter step 3 1/8" long.



Turn 1/2" diameter step 2 1/8" long.



Turn 3/8" diameter step 1 1/4" long.



Turn 5/16" diameter step, 1/2" long.
Undercut handle, 1/8" X 1/8".
Stamp name and date. Case harden and finish.