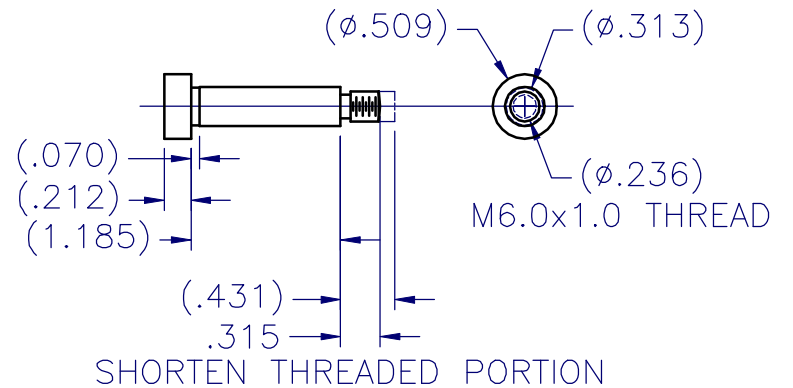
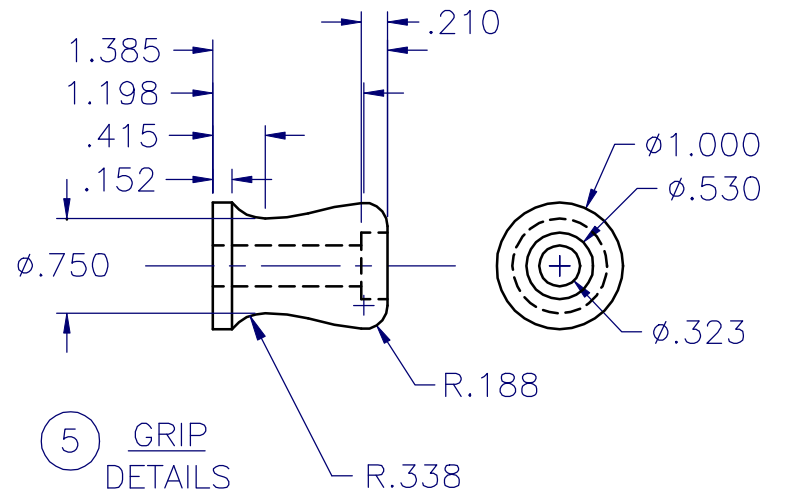
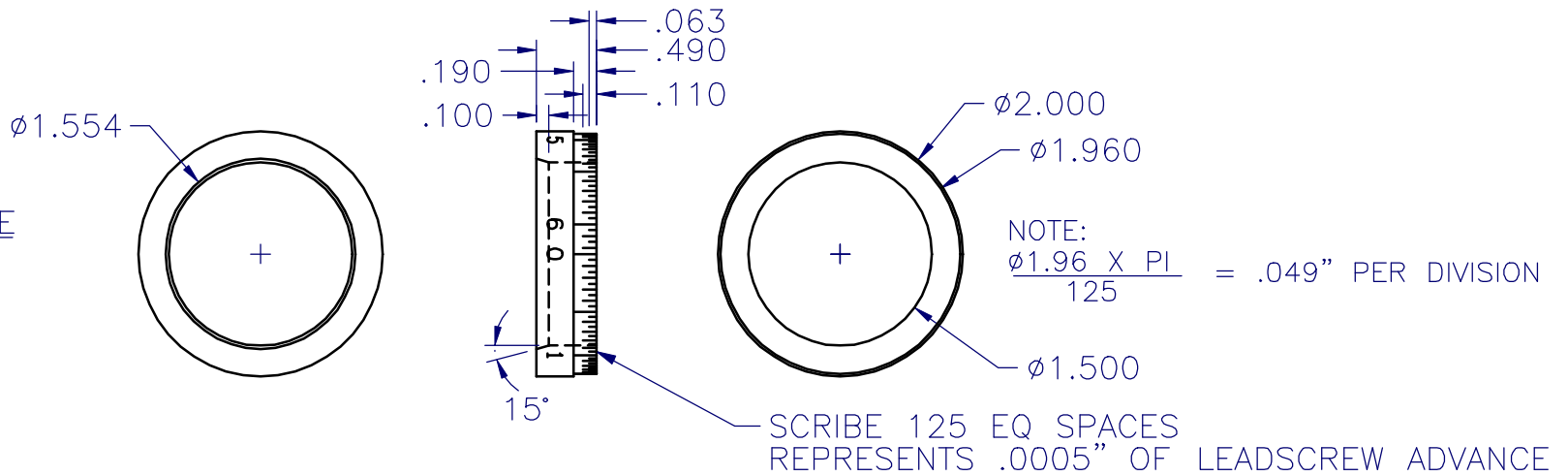


① BRACKET DETAILS

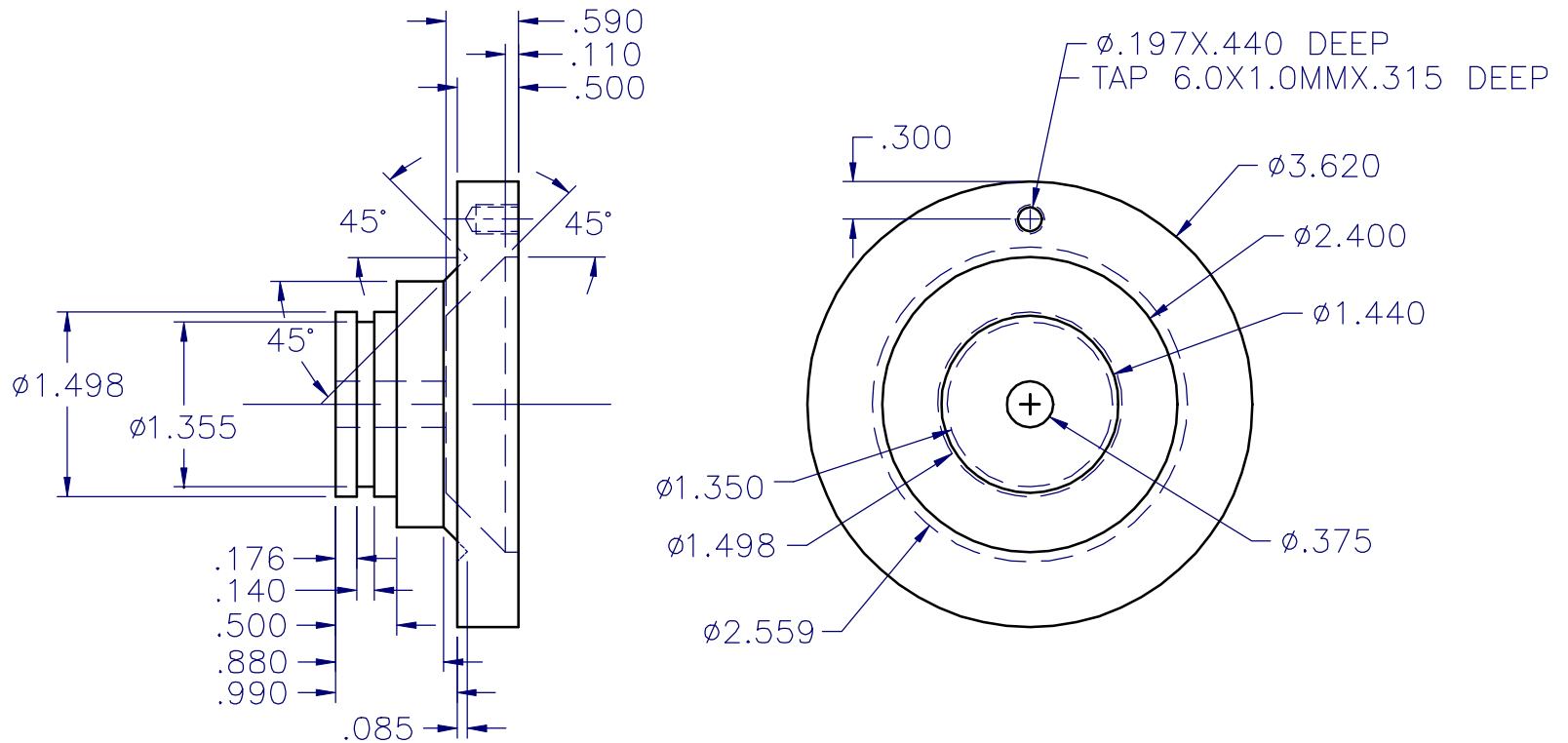


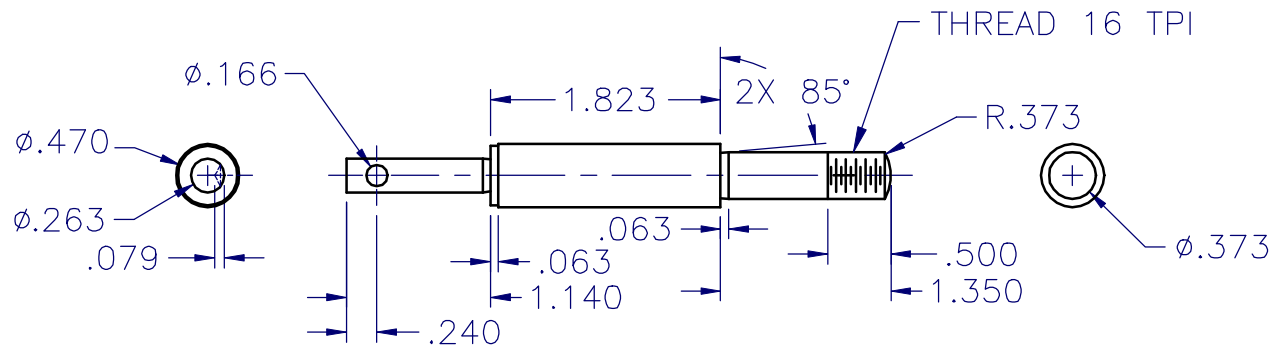
MAKE FROM SHOULDER BOLT
 $\phi 10.0 \times 30.0 \text{MM}$ W/ M6.0x1.0 THREAD

3 RING SCALE
DETAILS

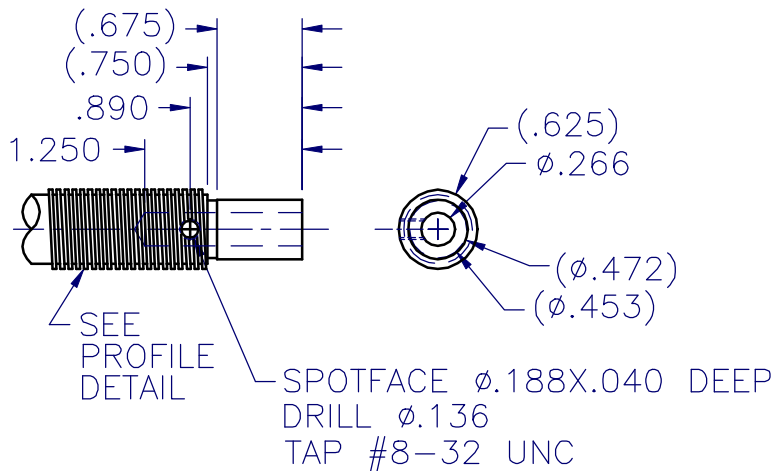


2 HANDWHEEL
DETAILS

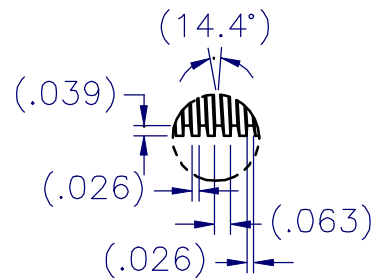




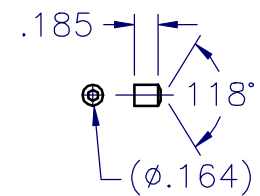
④ LEADSCREW EXTENSION SHAFT
DETAILS



LEADSCREW MODIFICATION
WITH REFERENCE DIMENSIONS



LEADSCREW PROFILE
REFERENCE DIMENSIONS
SCALE: 2:1



⑥ SETSCREW
MAKE FROM $\#8-32$
HEADLESS SETSCREW

					18
					17
					16
					15
					14
AR	ONLY A DAB		PETROLEUM BASE GREASE	O-RING LUBRICANT	13
1	#10		STEEL, ZINC PLATED	FLAT WASHER	12
2	M6.0-1.0 X 16mm		STEEL, BLACK FINISH	SCREW, FH, HEX SOCKET	11
1	3/8-16		STEEL, ZINC PLATED	NUT, HEX	10
1	ø3/8"		STEEL, ZINC PLATED	FLAT WASHER	9
1	1-1/2 O.D. X 3/32 WALL	2-126 ⁷	BUNA-N (NITRILE)	O-RING	8
1	M10X30, M6.0X1.0 THREAD		SHOULDER BOLT, METRIC, BLACK FINISH	PIN, CRANK	7
1	#8-32 X 3/16 PER DETAIL		STEEL, BLACK FINISH	SETSCREW	6
1	ø1" ROUND BAR	HDPE ²	PLASTIC	GRIP, CRANK	5
1	.500 ROUND BAR	1018	COLD FINISHED MILD STEEL (CRS)	LS SHAFT EXTENSION	4
1	.2" O.D. X 1.5" I.D. TUBE	6061-T6	ALUMINUM TUBE	RING SCALE	3
1	ø4" ROUND BAR	6061-T6	ALUMINUM ROUND BAR	HANDWHEEL	2
1	ø.250 X 2" FLAT	6061-T6	ALUMINUM FLAT BAR	BRACKET, LS EXTENSION	1
REQ'D	SIZE	SPEC	MATERIAL	DESCRIPTION	ITEM

COMPONENTS AND MATERIALS REQUIRED FOR ONE ASSEMBLY

NOTES:

1. CLEAN SURFACES TO BE PAINTED WITH ALCOHOL.
2. GRIP WAS TURNED OF HIGH DENSITY POLYETHYLENE (HDPE) BECAUSE IT WAS AVIALABLE.
NYLON, DELRIN, WOOD, OR ACRYLIC MAY BE USED IF AVAILABLE.
3. EXPOSED STEEL COMPONENTS CAN BE FINISHED WITH COLD BLUE OR TOOL BLACK SOLUTIONS.
4. LAY OUT THE 2 BRACKET SCREW HOLES, PILOT DRILL FOR CENTER-PUNCH.
ASSEMBLE W/ PC 4 TO MODIFIED LS, POSITION ON BED, CENTER-PUNCH FOR TWO HOLES IN BED.
USE DRILL BLOCK CLAMPED TO BED END TO GUIDE TAP-DRILL & TAP.
6. TRIAL-ASSEMBLE DIAL W/ GRADUATED RING AND O-RING, TEST FOR FRICTION FIT.
ADJUST GROOVE DEPTH IF TOO TIGHT. O-RING SQUEEZE WILL BE 10-12 THOU. WHEN FIT IS SNUG BUT SMOOTH.
7. INDUSTRIAL O-RING SIZE DESIGNATION.
8. USE CARE WHEN REMOVING TS WITH HANDWHEEL INSTALLED. THERE IS ONLY SMALL CLEARANCE - DON'T SCRATCH IT!
A MEDIUM KNURL ON THE OUTSIDE OF THE WHEEL DOES NOT SHOW SCRATCHES SO MUCH.

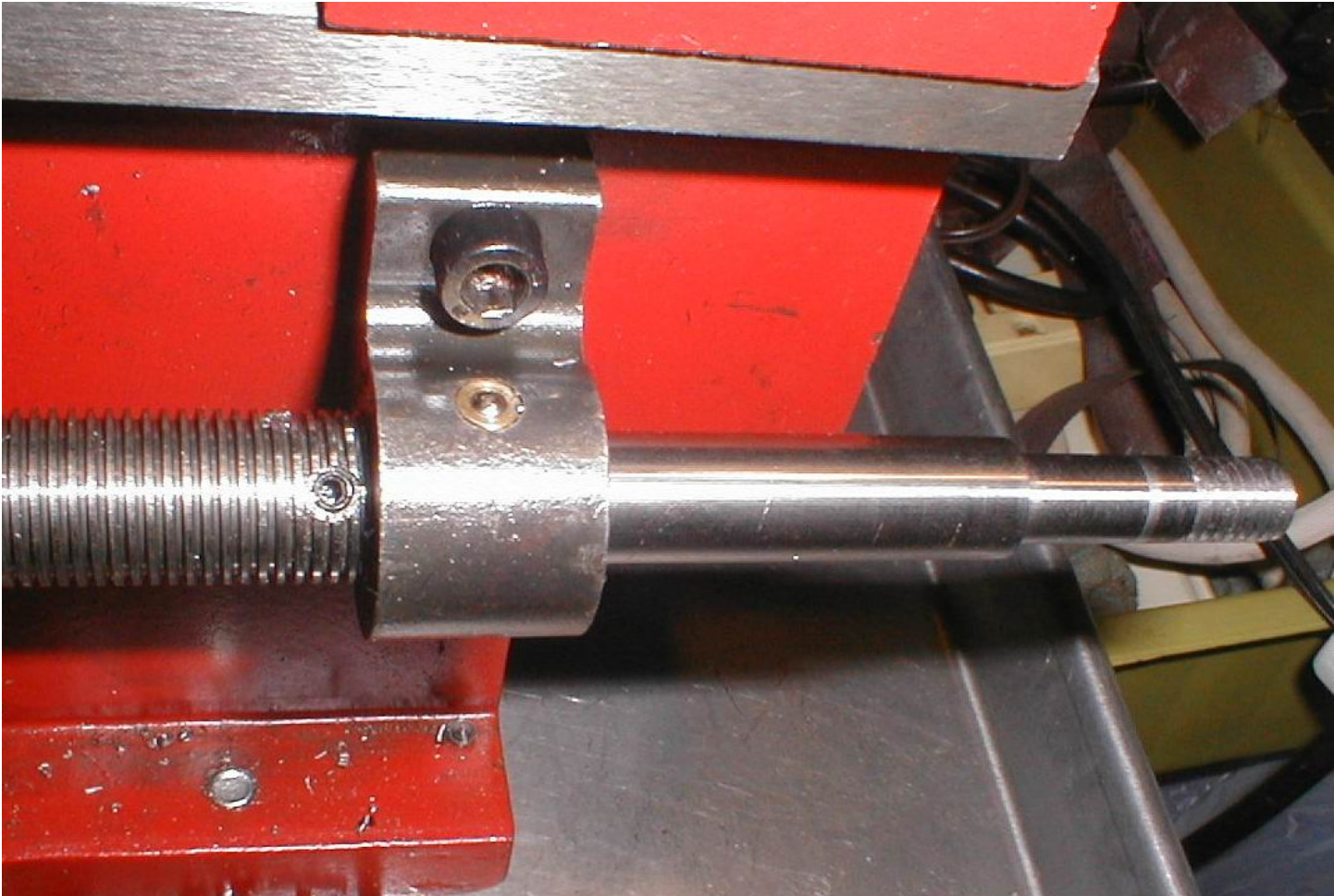
CONSTRUCTION NOTES:

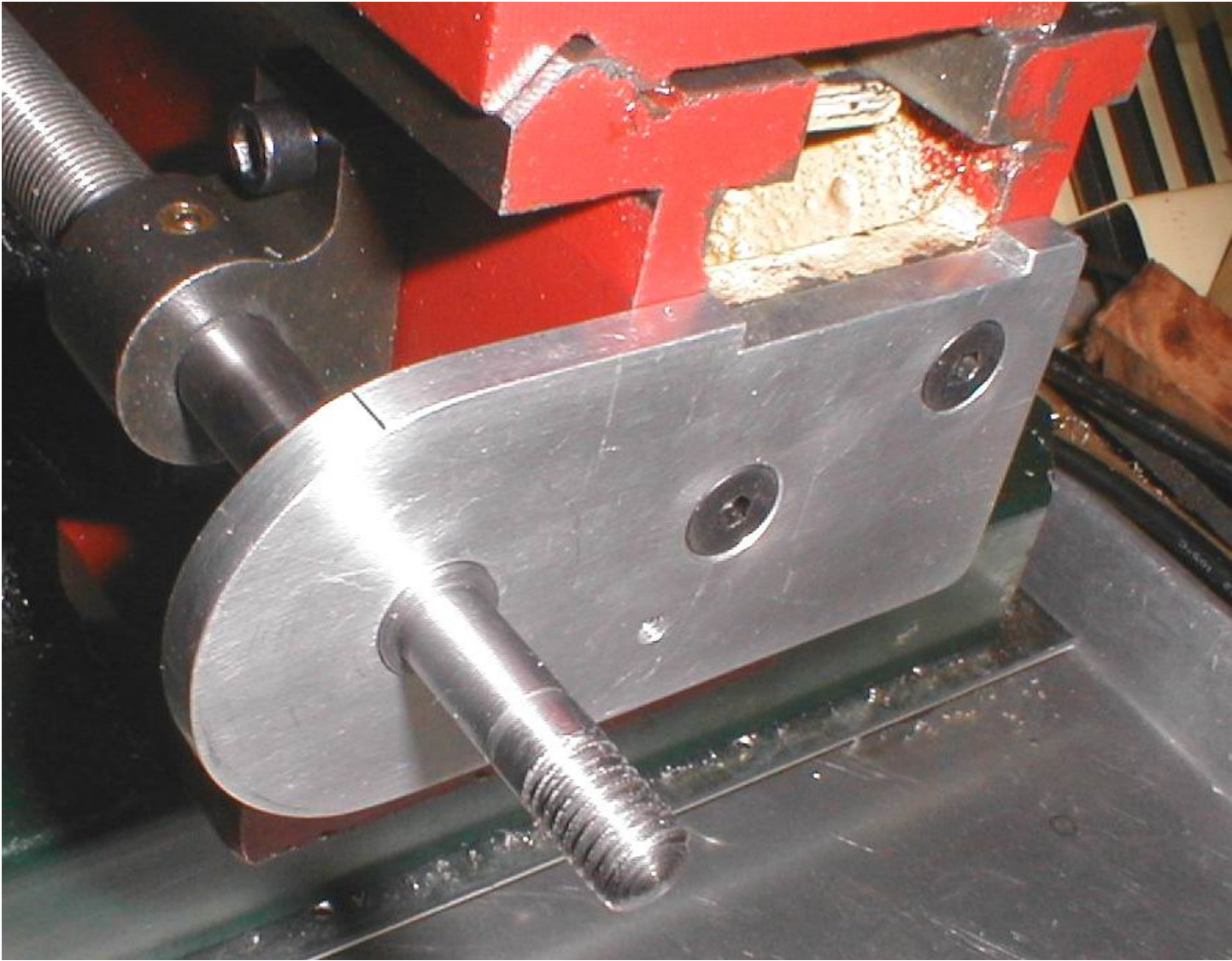
1. MAKE ITEM 1, BRACKET. DRILL 1/2 DIA HOLE, PILOT DRILL SCREW HOLES.
2. DO LEADSCREW MODIFICATION. REMOVE LS FROM LATHE, MOUNT IN CHUCK (4" 3-JAW OR 3" 4-JAW) AND INDICATE THE BEARING NUB FOR DEAD CENTER. CENTER-DRILL, PILOT DRILL TO DEPTH, ENLARGE TO 17/64".
3. TRANSFER TO MILL VISE, LOCATE CENTER FOR SETSCREW. SPOTFACE 3/16 DIA. TO THREAD ROOT. TAP DRILL FOR SETSCREW, DO NOT THREAD YET.
4. MAKE ITEM 4, LEADSCREW EXTENSION SHAFT. SIZE THE SMALL END FOR A CLOSE SLIP FIT INTO LEADSCREW END-BORE.
5. INSERT EXTENSION INTO END OF LS, DIMPLE WITH TAP DRILL THROUGH SETSCREW HOLE.
6. THREAD SETSCREW HOLE IN LS, REMOVE LS FROM MILL VISE.
7. MAKE ITEM 3, SCALE RING. BREAK EDGES OF CHAMFER WITH AN INK ERASER AND POLISH I.D.
8. MAKE ITEM 2, HANDWHEEL. DO THE GROOVE LAST, POLISH CORNERS WITH THE INK ERASER. DO A TRIAL FIT OF THE RING FOR CLOSE, BUT SMOOTH FIT ON THE WHEEL. TEST THE FIT WITH A GREASED O-RING INSTALLED. ADJUST GROOVE DEPTH FOR BEST RUNNING OF RING READJUSTMENT.
9. MAKE THE SHORTENED SETSCREW. CHUCK IN LATHE WITH A COLLAR OF ALUMINUM FLASHING TO AVOID DAMAGE OF THREADS. FILE TIP TO 118 DEG. POINT. SETSCREW TOP MUST BE BELOW THREAD ROOT TO PASS HALF-NUT WITH NO INTERFERENCE.
10. MAKE ITEM 5, GRIP. ANY PLASTIC ROD OR ALUMINUM WILL DO. MAKE BORE AN EASY FIT ON SHANK OF CRANK PIN SHOULDER BOLT.
11. MAKE ITEM 7, CRANK PIN. SHORTEN THREADED SECTION TO FIT THE BLIND THREADS OF WHEEL.
12. RE-INSTALL LS IN LATHE. ASSEMBLE THE EXTENSION SHAFT AND SETSCREW, TEST FOR PROPER FIT.
13. SLIP ITEM 1, BRACKET OVER THE END OF THE SHAFT, ALIGN WITH END OF LATHE BED AND CLAMP TOGETHER. CENTER-PUNCH THE BED FOR THE FLATHEAD MOUNTING SCREWS. REMOVE BRACKET.
14. USE A GUIDE BLOCK FOR THE TAP DRILL AND THE TAP OPERATION. CLAMP IT TO THE BED TO PERFORM THE OPERATIONS TO ENSURE HOLES ARE ON LOCATION AND PERPENDICULAR TO BED.
15. DRILL THE BRACKET HOLES TO SIZE AND COUNTER SINK. MOUNT BRACKET ON LATHE BED WITH TWO PIECES OF ITEM 11. CHECK THAT THE SHAFT ROTATES FREELY IN BRACKET.
16. FIT-UP THE WHEEL, RING, GRIP, CRANK PIN, AND WASHER ON THE LS EXTENSION. TEST CRANK.
17. TRANSFER THE RING TO THE LATHE CHUCK, USING AN INSIDE GRIP. MAKE IT RUN TRUE.
18. USING THE LATHE SPINDLE INDEXER AND CLAMP, CUT THE 125 GRADUATIONS ON THE RING. HINT: A DISK OF WOOD 6" DIA, PRESSED ON THE SPINDLE FLANGE CAN BE WRAPPED WITH A STRIP OF PAPER WHICH HAS BEEN MARKED WITH 125 EQUAL SPACES ALONG THE LENGTH. USE HIGH-SCHOOL DESCRIPTIVE GEOMETRY TO DO THE MARKINGS. OR, WAIT FOR THE NEXT PROJECT DWGS.

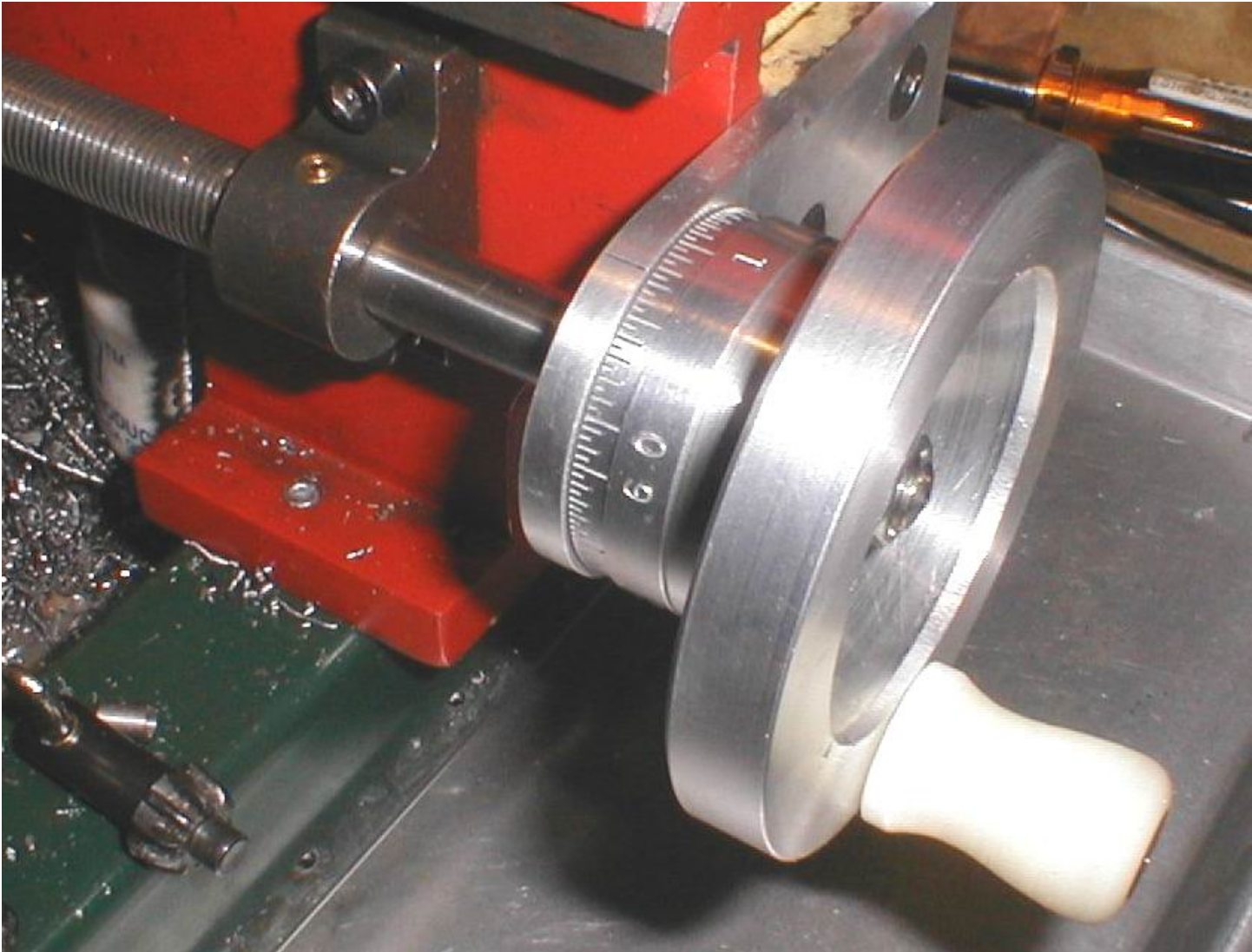
RUBBER-C 6220
3/32" Wall
1-1/2" ID X 1.5" ID
129048
Lincoln Products
INDUSTRIAL, CALIFORNIA 91744











more pdf files available on

www.toolsandmods.com

All ideas, procedures, modifications and whatever is described or shown here is to be used at risk of the reader.

Take care and work safely.