

Turning reel seat components in the lathe

Making seat hardware from drawn cups,
insert turning methods

The reel seat making workshop

given at

The 10th annual Catskill Rodmakers Gathering
The Catskill Fly Fishing Center and Museum
Livingston Manor, New York
September 2005

Gary Dabrowski

Workshop Synopsis

1. Opening Comments

Before starting to machine rod components in the lathe, be sure to become acquainted with basic machinist lathe working skills. Seek the advice of a known competent individual. Take a course at your local adult education center or trade school. Read texts intended to teach these skills and practice them before attempting to make parts for use on rods. In short, be informed. An engine lathe can injure you before you know what is happening.

Be sure to always wear your safety glasses.

Sharp tools not only produce better work with less effort but also are safer to use. Learn what sharp tools look like. Learn how proper tools are ground.

Keep you hair and clothes under control when near rotating machinery. The lathe does not care if you are just going to "make one cut". It will STILL grab your hair or loose clothing and pull you into the rotating work.

If you are not using the lathe, shut it off.

Never leave a chuck key in the chuck after tightening work into the jaws. A key thrown by a lathe can blind you or severely injure you. It is at the very least the behavior of a rank amateur who has no business even being near an engine lathe.

If you truly pursue craftsmanship, you are obliged to know your tools, cutters and machinery.

2. Workshop content

The following pages describe the making of reel seat hardware from drawn cups. It is just one method of making such parts and is presented here as it is the method I employ on my own shop. Certainly one may turn such parts from solid bar or tube and enjoy success. I prefer the cup method as it requires far less time on machine.

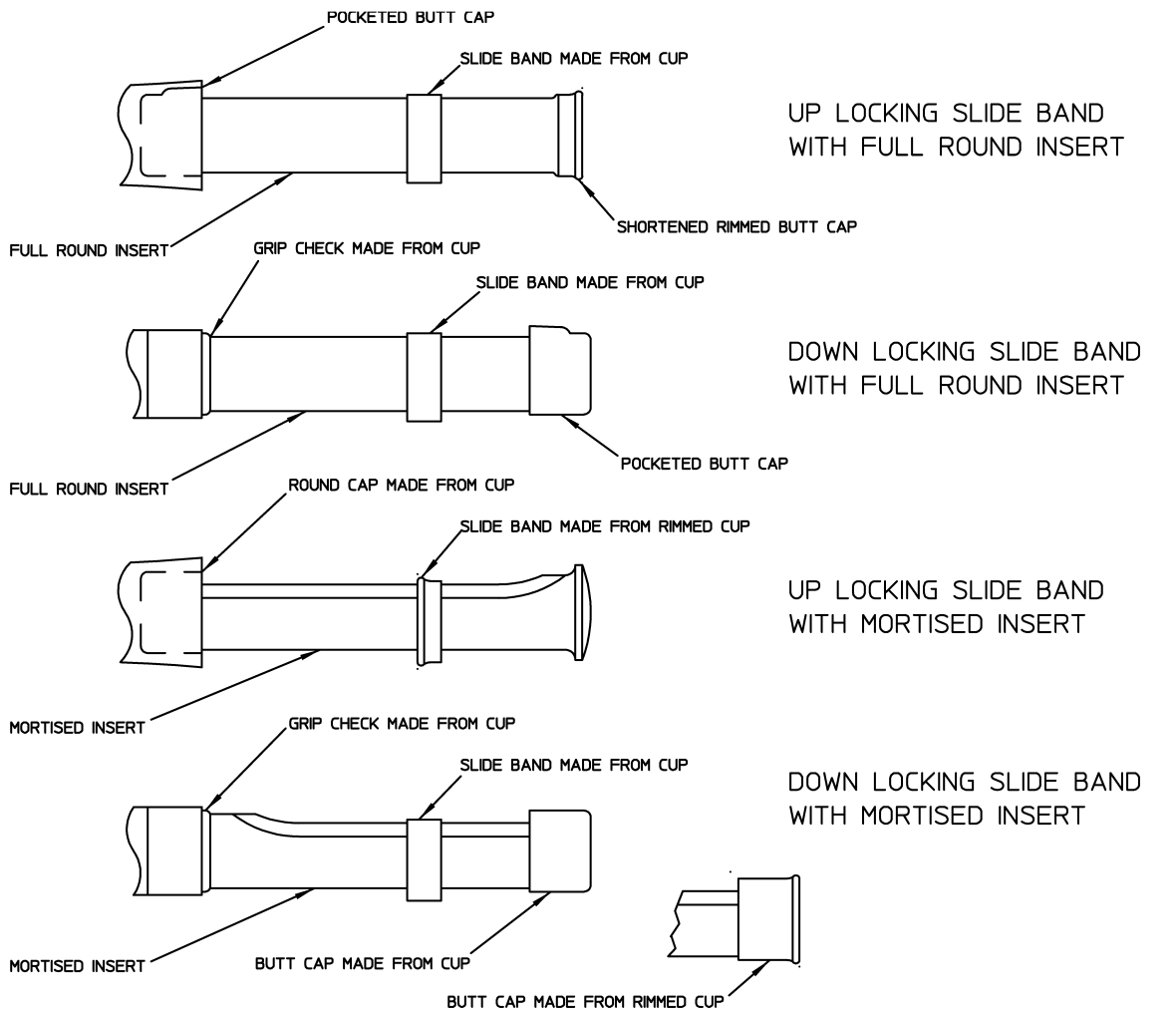
Among the following pages are:

- The drawn cup blank and finished part machining guidelines.
- Insert blank and turned mortise tools
- Machining process sketches.
- Tools and workholding fixtures.

3. Questions and review.

Rodmakers Findings TM are economical drawn metal cups and semi-finished parts from which fishing rod reel seat components may be constructed.

Rodmakers Findings TM permit the rod craftsman with his own machining capability the opportunity to form a reel seat to suit his own view of style and functionality. Using a basic part, a simple drawn cup or a semi-finished component, numerous options may be had merely by making changes to machining and the position of the part in the reel seat assembly. Style and decoration is entirely under the control of the rodmaker. Rodmakers findings TM are made from 18% nickel silver, aluminum or jewelers bronze.



FLY ROD REEL SEAT OPTIONS

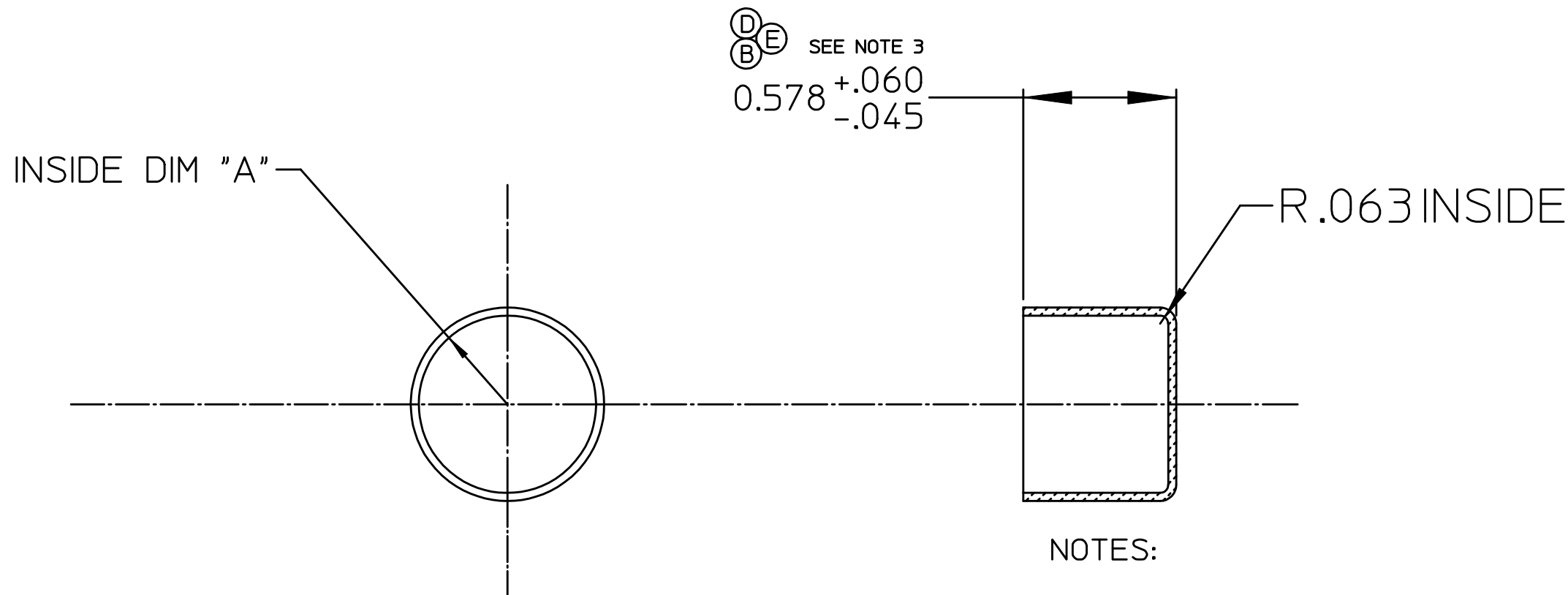
A web catalog is available at: <http://brooksiderod.tripod.com/components.htm>

The Brookside Rod Co.
37 Brook Street
Naugatuck, CT. 06770-3101
(203)729-1505

3. THE HEIGHT DIMENSION OF 3/4 INCH CUPS IS +/- .094 INCH.

NOTES CONTINUED:

| REV | DATE | DESCRIPTION | DWN | APP |
|-----|---------|-------------------------------|-----|-----|
| A | 6/19/00 | NEW DRAWING | GPD | |
| B | 6/11/00 | .625 WAS .593 | GPD | |
| C | 8/22/01 | ADDED CR3, CR4. | GPD | |
| D | 3/25/03 | REVISED HEIGHT | GPD | |
| E | 4/15/03 | ADDED 3/4 IN. CUP & TOLERANCE | GPD | |




NOTES:

1. MATERIAL: NICKEL SILVER 65-18 PER UNS C75200. THICKNESS .031 BEFORE FORMING.
2. FOLDS, CREASES OR SCRATCHES DEEPER THAN .010 ARE NOT PERMITTED.

| PART NUMBER | DESCRIPTION | DIMENSION "A" |
|-------------|--------------|-------------------|
| 000619-CR1 | 11/16 ID REF | DIA .685 +/- .004 |
| 000619-CR2 | 5/8 ID REF | DIA .620 +/- .004 |
| 000619-CR3 | 21/32 ID REF | DIA .656 +/- .004 |
| 000619-CR4 | 23/32 ID REF | DIA .718 +/- .004 |
| 000619-CR5 | 3/4 ID REF | DIA .756 +/- .004 |

SEE NOTE 3

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| | | | |
|--|--------------------|---|---------------|
| POSITIONAL AND FORM SPECIFICATIONS IN ACCORDANCE WITH ANSI Y14.5M REV 1988 | |  37 BROOK STREET, NAUGATUCK, CT. 06770-3101 | |
| UNLESS OTHERWISE SPECIFIED | | | |
| DIMENSIONS ARE: | | DRAWN: G. DABROWSKI | DATE: 6/19/00 |
| DECIMAL TOLERANCES | XX: .010 XXX: .005 | CHECKED: | APPROVED: |
| ANGLES | BASIC | DESCRIPTION: BLANK: BUTT CAPS | |
| FILLET/EDGE | .015 | SHEET 1 OF 1 | |
| SURFACE FINISH RMS | ✓ | SCALE: 2:1 | |
| LAST DATUM USED | A | DRAWING No. 000619 | |
| METL ENGR/DATE: | | REV. E | |
| MFG ENGR/DATE: | | | |
| QA ENGR/DATE: | | | |

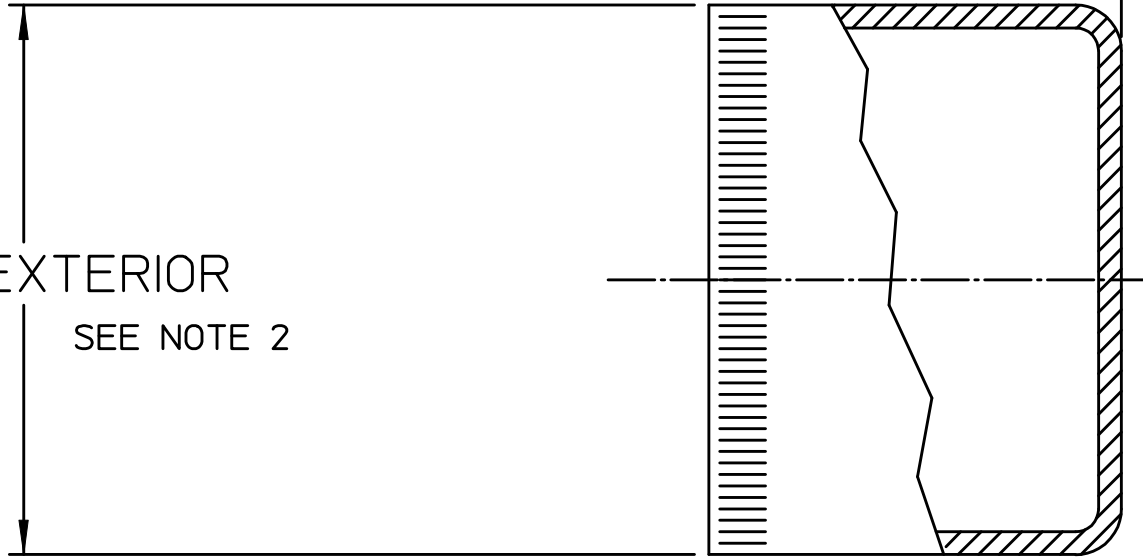
Disclaimer: The successful conversion of purchased nickle silver cups into visually and technically acceptable rod/reel seat components requires personal technical skill in machine operation, knowledge of strength of material issues and of general manufacturing technology. The supplier makes no guarantee that any individual can successfully do so and is specifically not responsible for any injury or damage that may come about as a result of machining or finishing or attempting to machine or finish purchased cups. Machining metal is inherently dangerous.

| REV | DATE | DESCRIPTION | DWN | APP |
|-----|---------|-------------|-----|-----|
| A | 6/14/01 | NEW DRAWING | GPD | |
| | | | | |
| | | | | |

MACHINE HEIGHT TO SUIT
SEE NOTE 3


TURN EXTERIOR
SEE NOTE 2

KNURL AS DESIRED



NOTES:

1. ALWAYS USE SAFETY GLASSES WHEN OPERATING POWER TOOLS.
2. TURN EXTERIOR REMOVING, <.005 TO CLEAN UP O.D.SURFACE. POLISH AS REQUIRED.
3. DETERMINE YOUR DESIRED PART HEIGHT BEFORE MACHINING O.D. AND HEIGHT.
4. POLISH EXTERIOR FOR BEST RESULTS.

| | | | |
|--|--------------------|---|--------------------|
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| UNLESS OTHERWISE SPECIFIED | | | |
| DIMENSIONS ARE: | | DRAWN: G. DABROWSKI | DATE: 6/14/01 |
| DECIMAL TOLERANCES | XX: .010 XXX: .005 | CHECKED: | APPROVED: |
| ANGLES | BASIC | DESCRIPTION: BUTT CAP MACHINING | |
| FILLET/EDGE | .015 | | |
| SURFACE FINISH RMS | ✓ | SCALE: 4:1 | DRAWING No. 010615 |
| LAST DATUM USED | A | | REV. A |
| METL ENGR/DATE: | | | |
| MFG ENGR/DATE: | | | |
| QA ENGR/DATE: | | | |

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| REV | DATE | DESCRIPTION | DWN | APP |
|-----|---------|-------------|-----|-----|
| A | 6/14/01 | NEW DRAWING | GPD | |
| | | | | |
| | | | | |

MACHINE TOP OF CUP
BEFORE ESTABLISHING WIDTH
OF RING.
SEE NOTE 3

WIDTH OF RING


TURN EXTERIOR TO CLEAN UP SURFACE

KNURL AS DESIRED

NOTES:

1. ALWAYS USE SAFETY GLASSES WHEN OPERATING POWER TOOLS.
2. TURN EXTERIOR REMOVING, <.005 TO CLEAN UP O.D.SURFACE. POLISH AS REQUIRED.
3. DETERMINE YOUR DESIRED PART HEIGHT BEFORE MACHINING O.D. AND HEIGHT.
4. POLISH EXTERIOR FOR BEST RESULTS.

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| | | | |
|--|--------------------|---|--------------------|
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| UNLESS OTHERWISE SPECIFIED | | | |
| DIMENSIONS ARE: | | DRAWN: G. DABROWSKI | DATE: 6/14/01 |
| DECIMAL TOLERANCES | XX: .010 XXX: .005 | CHECKED: | APPROVED: |
| ANGLES | BASIC | DESCRIPTION: SLIDE RING MACHINING | |
| FILLET/EDGE | .015 | SHEET 1 OF 1 | |
| SURFACE FINISH RMS | ✓ | REV. A | |
| LAST DATUM USED | A | SCALE: 4:1 | DRAWING No. 010616 |
| METL ENGR/DATE: | | | |
| MFG ENGR/DATE: | | | |
| QA ENGR/DATE: | | | |

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| REV | DATE | DESCRIPTION | DWN | APP |
|-----|---------|-------------------------------|-----|-----|
| A | 6/14/01 | NEW DRAWING | GPD | |
| B | 8/30/01 | SHT 2 ADDED FOR BSRC SHOP USE | GPD | |
| | | | | |

.078

CUP

.078 CHECK PARTING OFF DIMENSION

DRILL / BORE TO SUIT
SEE NOTE 2

FINISHED PART

STEEL SUPPORT FOR CHUCKING
(NOT NEEDED IF COLLETED)

NOTES:

1. ALWAYS USE SAFETY GLASSES WHEN OPERATING POWER TOOLS.
2. HOLE TO BE .005 LARGER THAN INSERT.

POSITIONAL AND FORM SPECIFICATIONS IN ACCORDANCE WITH ANSI Y14.5M REV 1988

UNLESS OTHERWISE SPECIFIED

| | |
|--------------------|--------------------|
| DIMENSIONS ARE: | |
| DECIMAL TOLERANCES | XX: .010 XXX: .005 |
| ANGLES | BASIC |
| FILLET/EDGE | .015 |
| SURFACE FINISH RMS | ✓ |
| LAST DATUM USED | A |
| METL ENGR/DATE: | |
| MFG ENGR/DATE: | |
| QA ENGR/DATE: | |



37 BROOK STREET, NAUGATUCK, CT. 06770-3101

DRAWN: G. DABROWSKI DATE: 6/14/01

CHECKED: APPROVED:

DESCRIPTION: CORK CHECK MACHINING SHEET 1 OF 1

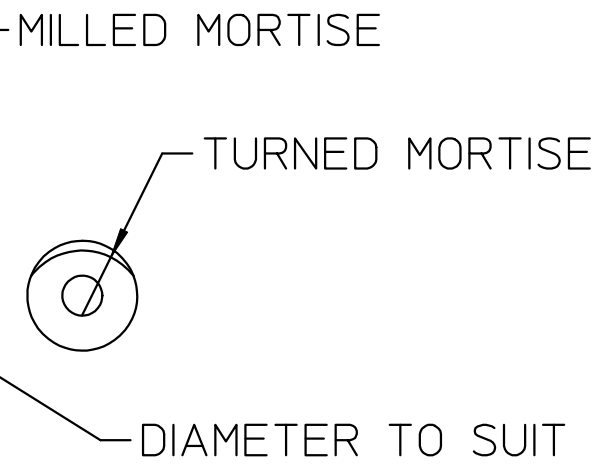
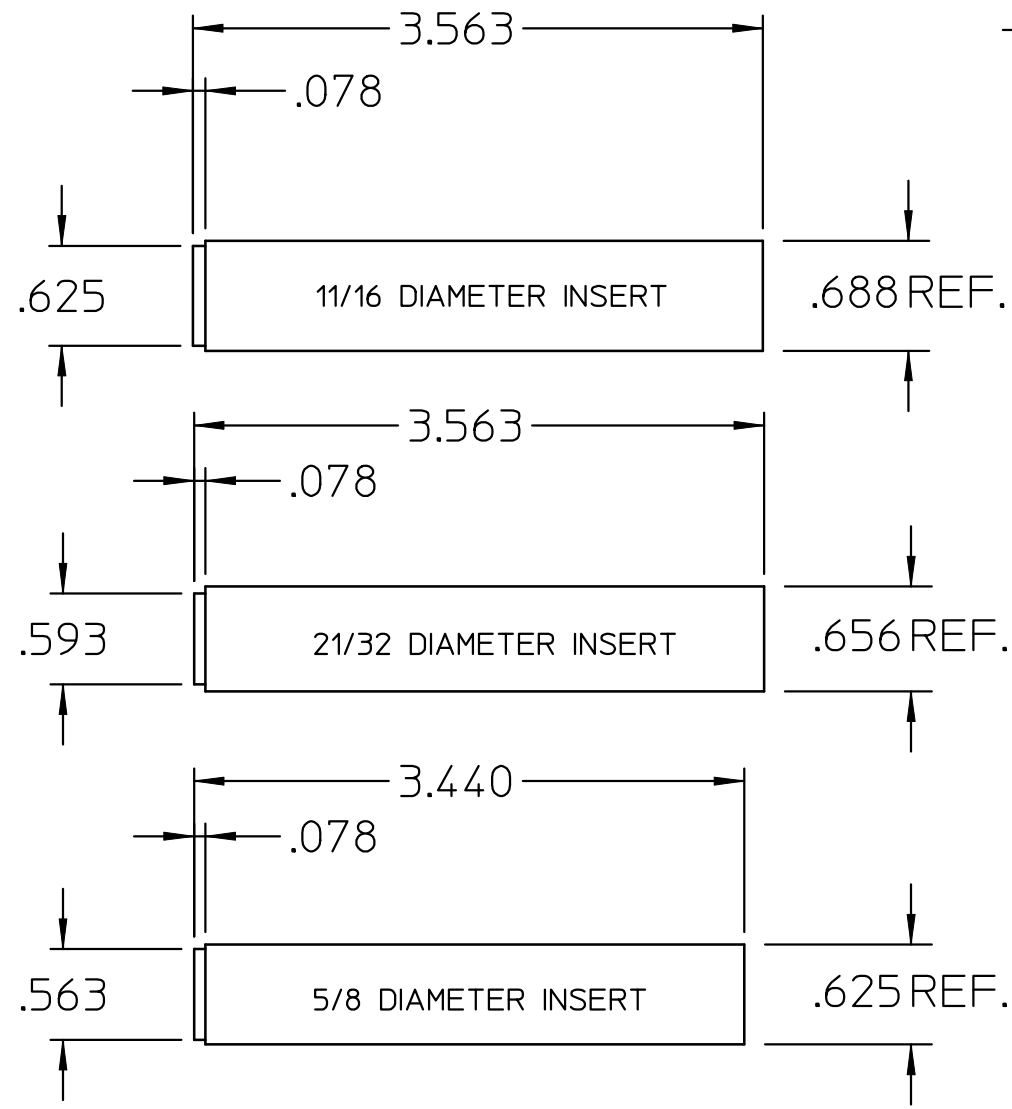
SCALE: 4:1 DRAWING No. 010614 REV. B

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SHEET 1 OF 2

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| REV | DATE | DESCRIPTION | DWN | APP |
|-----|----------|------------------------------|-----|-----|
| A | 6/20/01 | NEW DRAWING | GPD | |
| B | 8/24/01 | ADDED 21/32 INSERT | GPD | |
| C | 10/23/02 | REVISED NOTES, ADDED NOTE 4. | GPD | |

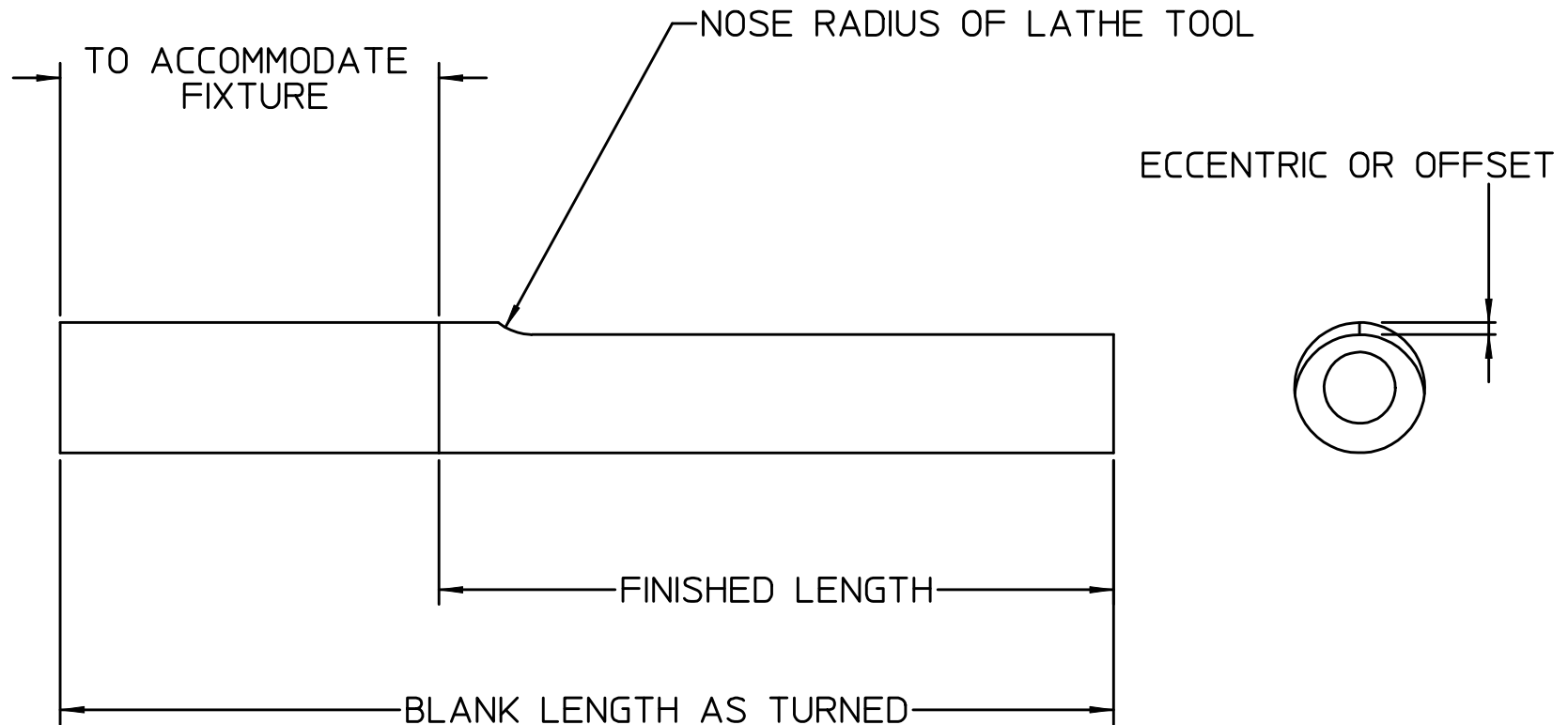


NOTES:



1. ALWAYS USE SAFETY GLASSES WHEN OPERATING POWER TOOLS.
2. TURN INSERT TO FIT PREVIOUSLY MADE HARDWARE. FOR CAP AND RING COMPONENTS, ALLOW .010 MIN CLEARANCE BETWEEN ID OF BAND AND INSERT. FOR PBC COMPONENTS, TURN TO REF. DIMENSION.
3. APPLY FINISH TO INSERT BEFORE MOUNTING ONTO ROD.
4. DO NOT MORTISE INSERT USED WITH POCKETED BUTTCAP.

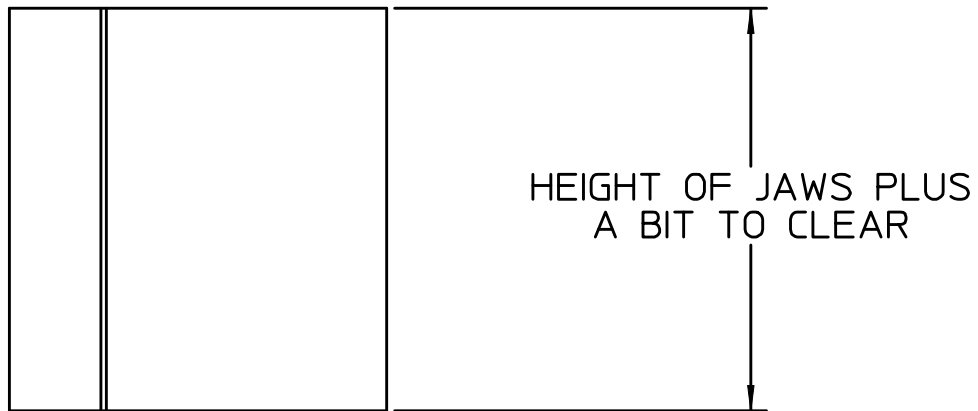
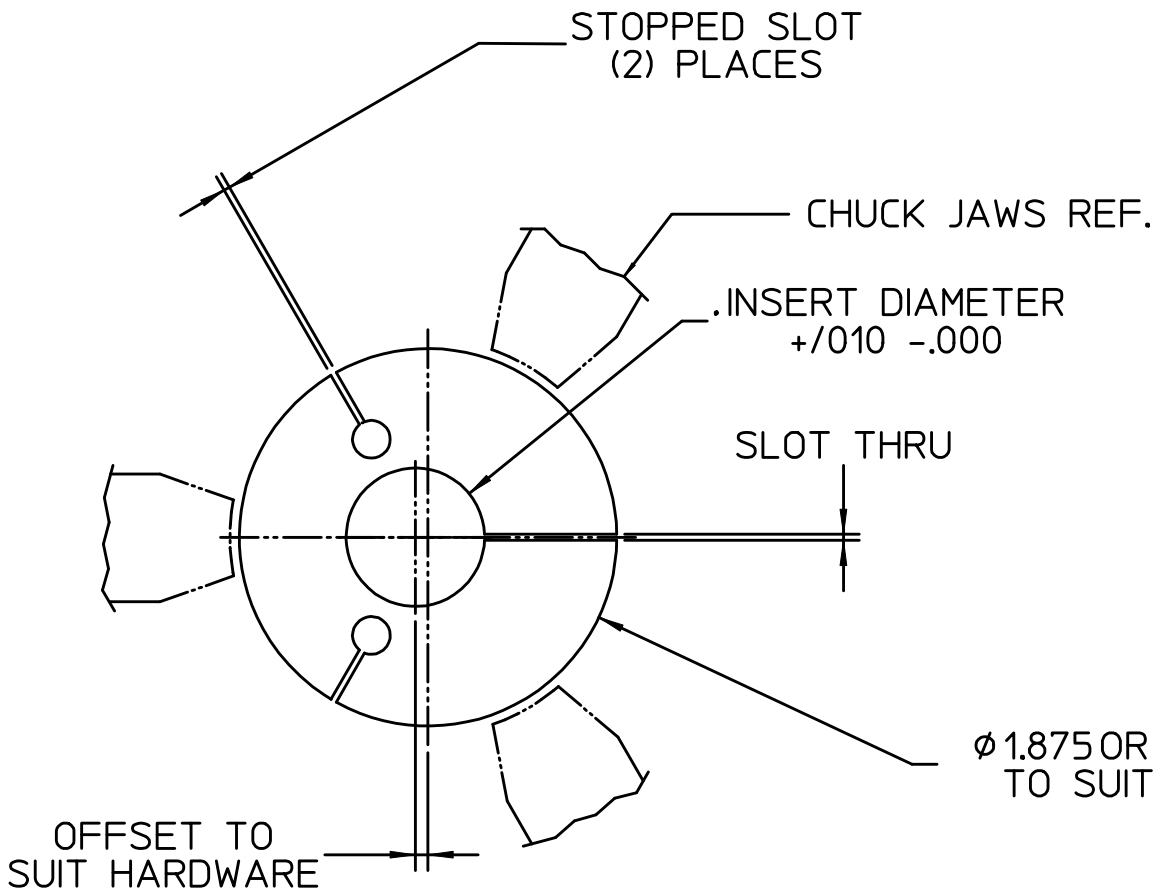
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|--|--------------------|--|--------------------|
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| UNLESS OTHERWISE SPECIFIED | | | |
| DIMENSIONS ARE: | | DRAWN: G. DABROWSKI | DATE: 6/20/01 |
| DECIMAL TOLERANCES | XX: .010 XXX: .005 | CHECKED: | APPROVED: |
| ANGLES | BASIC | DESCRIPTION: INSERT, REEL SEAT SHEET 1 OF 1 | |
| FILLET/EDGE | .015 | | |
| SURFACE FINISH RMS | ✓ | | |
| LAST DATUM USED | A | | |
| METL ENGR/DATE: | | SCALE: 4:1 | DRAWING No. 010620 |
| MFG ENGR/DATE: | | | REV. C |
| QA ENGR/DATE: | | | |



Disclaimer: The successful construction of visually and technically acceptable rod/reel seat components requires personal technical skill in machine operation, knowledge of strength of material issues and of general manufacturing technology. The BSC makes no guarantee that any individual can successfully do so to this sketch and is specifically not responsible for any injury or damage that may come about as a result of machining or finishing or attempting to machine or finish to this reference. Machining metal and wood is inherently dangerous.

| | | |
|---|-----------------------|-----------------|
|  BRC  | | |
| 37 BROOK STREET, NAUGATUCK, CT. 06770-3101 | | |
| DRAWN: G. DABROWSKI | | DATE: 1/6/03 |
| CHECKED: | | APPROVED: |
| DESCRIPTION: GRAPHIC OF REEL SEAT WITH ECCENTRIC TURNED MORTISE | | SHEET 1 of 1 |
| SCALE: NONE | DRAWING No. 030107 | |
| | | REV. A |

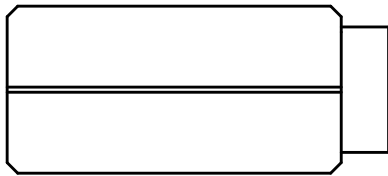
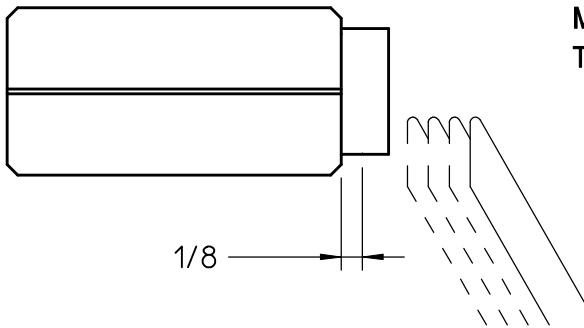


| | |
|--|--------------|
|  BRC  | |
| 37 BROOK STREET, NAUGATUCK, CT. 06770-3101 | |
| DRAWN: G. DABROWSKI | DATE: 1/6/03 |
| CHECKED: | APPROVED: |
| DESCRIPTION: FIXTURE, ECCENTRIC TURNING, REEL SEAT | SHEET |
| SCALE: NONE | REV. A |
| DRAWING No. 030106 | |

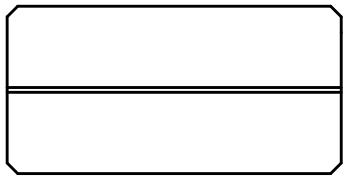
5. REMOVE CUP AND TRANSFER TO EXPANDING MANDRILL.

4. DEBURR OR CHAMFER EDGES.

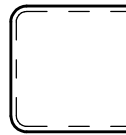
3. MACHINE TO SIZE: FACE MOUTH TO DIMENSION .125 TO MAKE .563 HIGH CAP.



2. PLACE THIS GROUP INTO THREE JAW CHUCK



11/16 I.D. CUP

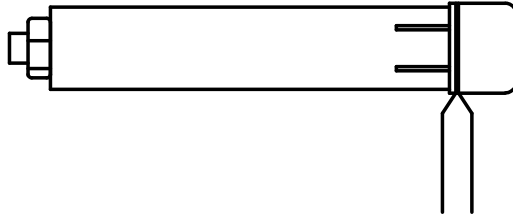


SPLIT BUSHING
3/4 DIA END

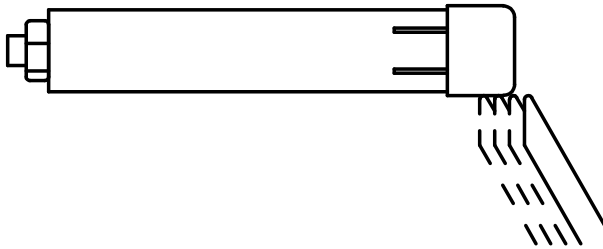
1. PLACE CUP
IN SPLIT BUSHING

11. POLISH, BUFF

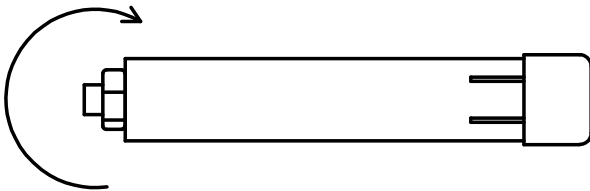
10. CUT INSCRIBED LINE OR
KNURL A DECORATIVE BAND



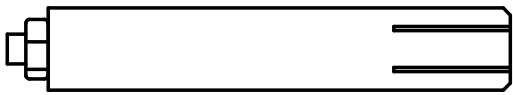
9. TURN OUTSIDE
DIAMETER TO TRUE UP.



8. PLACE MANDRILL IN THREE
JAW CHUCK AND GRIP SECURELY.



7. EXPAND TO GRIP



EXPANDING
MANDRILL

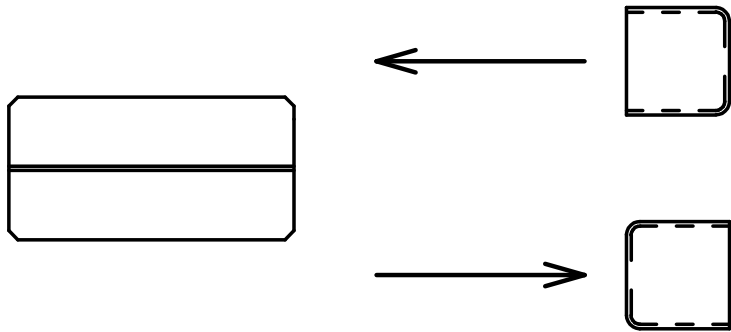
FACED CUP FROM
OPERATION 5



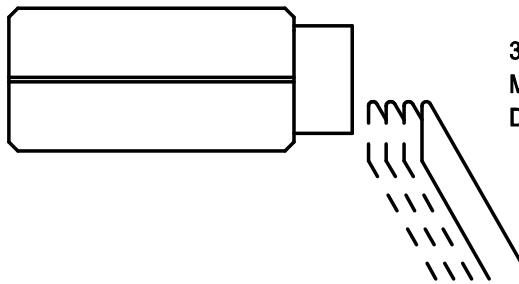
6. PLACE CUP ON
EXPANDING MANDRILL



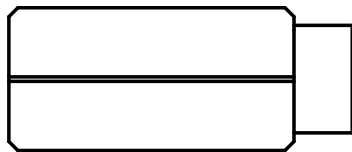
BUTT CAP TURNING
ORDER OF OPERATIONS
PAGE 2 OF 2



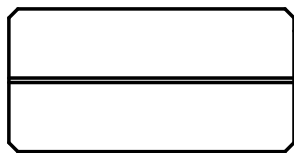
4. REMOVE FIXTURE AND FACED CUP.
TURN AROUND AND RETURN TO
FIXTURE. RETURN TO CHUCK AS BEFORE.



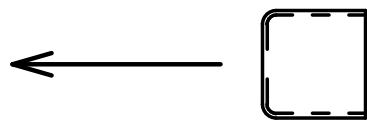
3. MACHINE TO SIZE: FACE
MOUTH TO SQUARE UP.
DEBURR EDGES.



2. PLACE THIS GROUP
INTO THREE JAW CHUCK
AND TIGHTEN SECURELY.

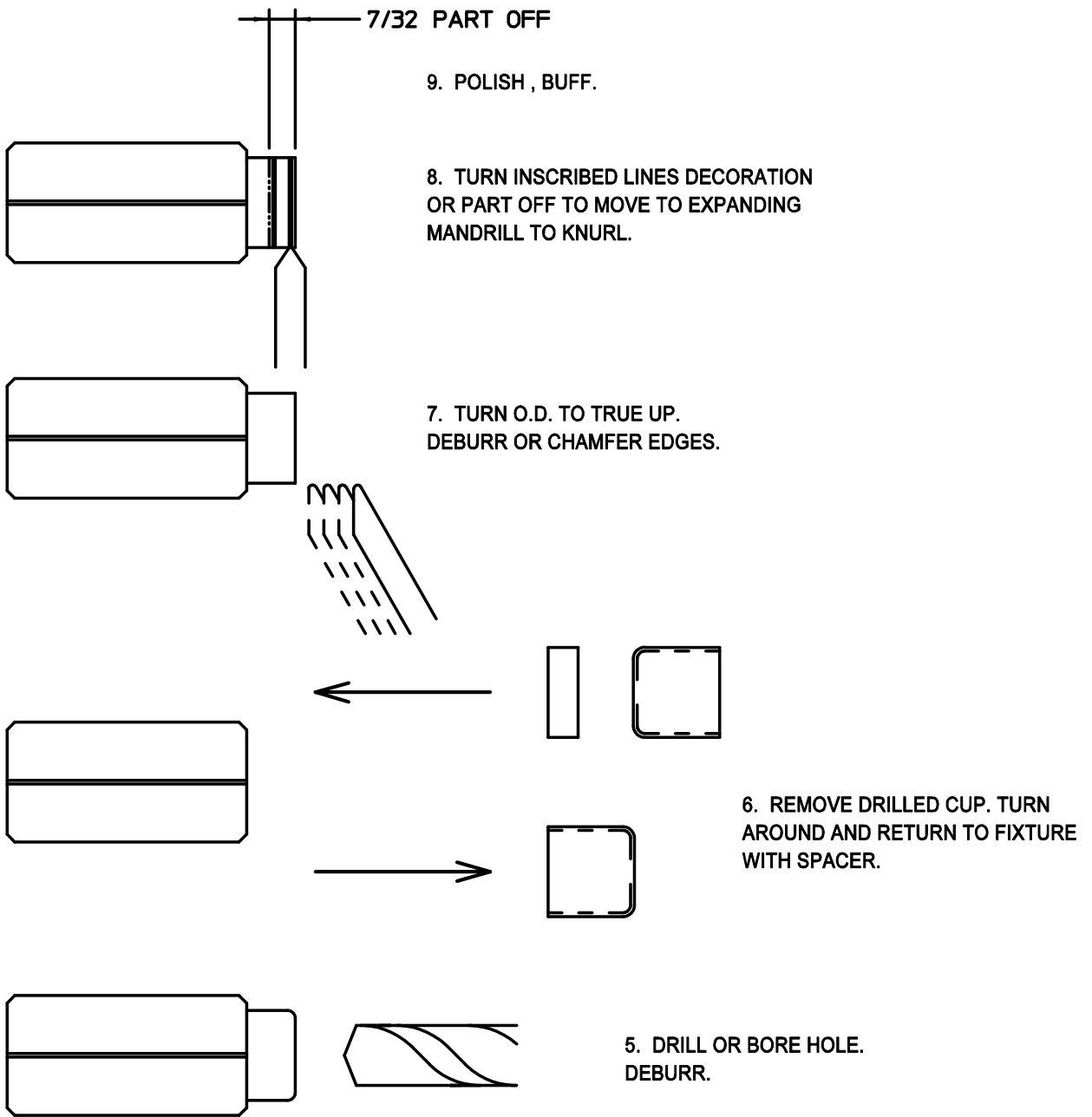


11/16 I.D. CUP

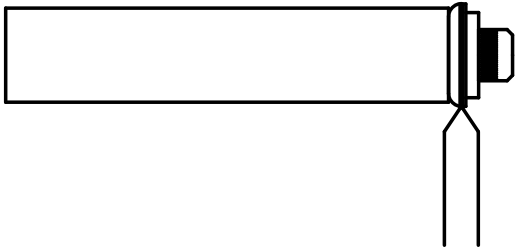


SPLIT BUSHING
11/16 DIA END

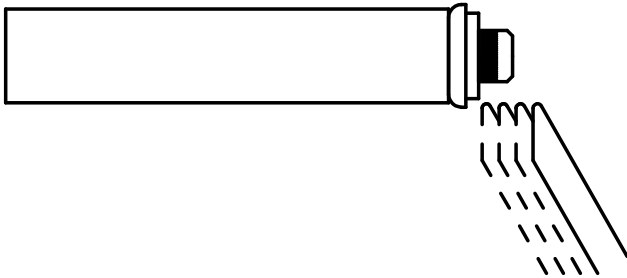
1. PLACE CUP
IN SPLIT BUSHING



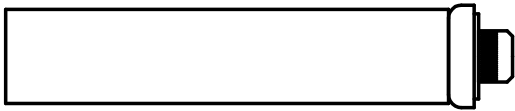
SLIDE BAND TURNING
 ORDER OF OPERATIONS
 PAGE 2 OF 2



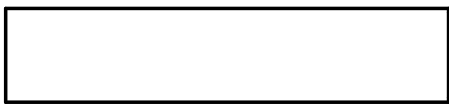
4. APPLY INSCRIBED LINE DECORATION OR KNURL.



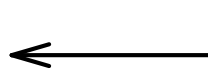
3. FACE END OF CHECK TO DESIRED SIZE.



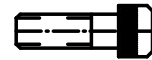
2. PLACE MANDRILL IN THREE JAW CHUCK AND GRIP SECURELY.



CHECK MANDRILL

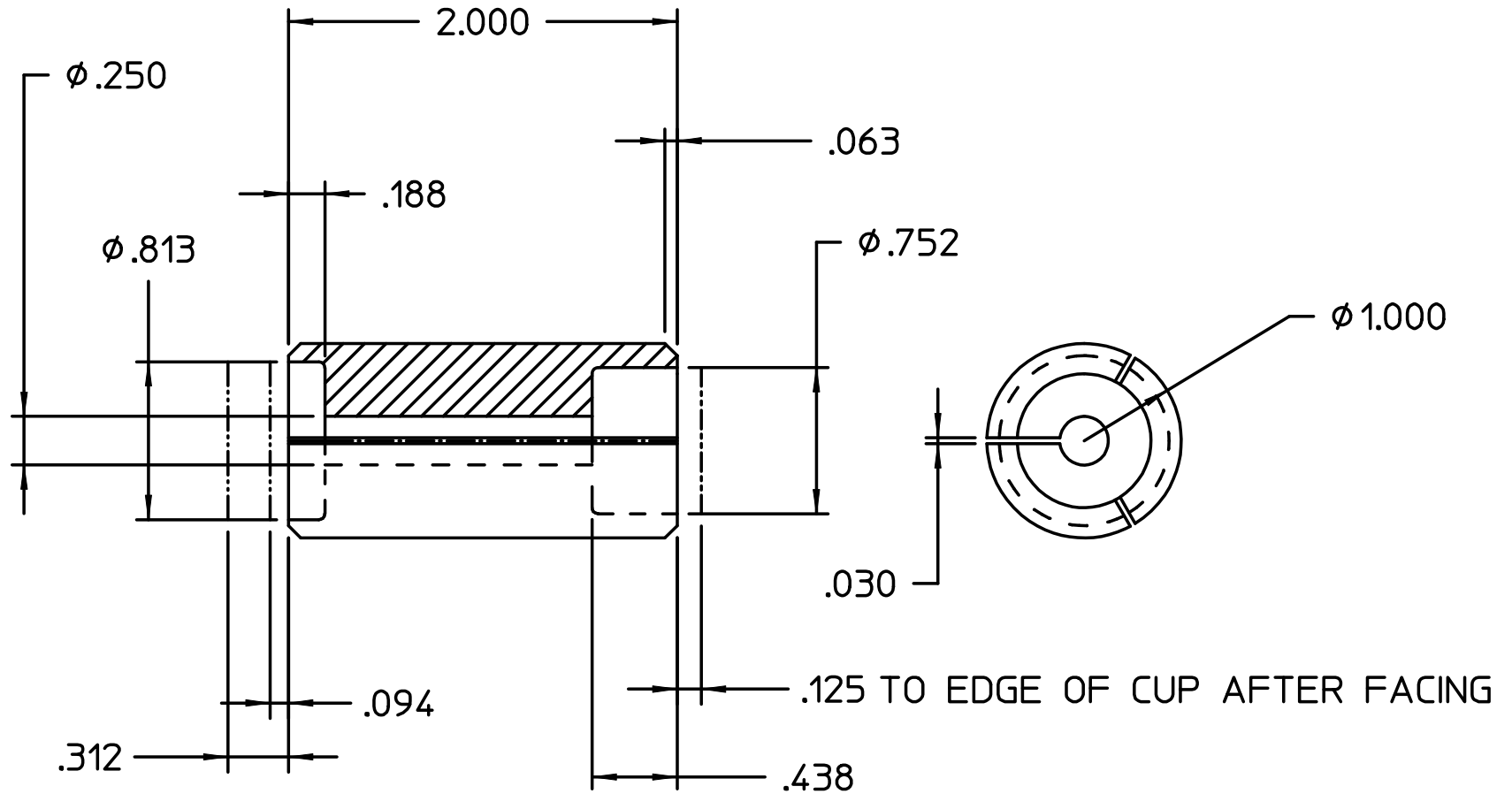


CHECK BLANK

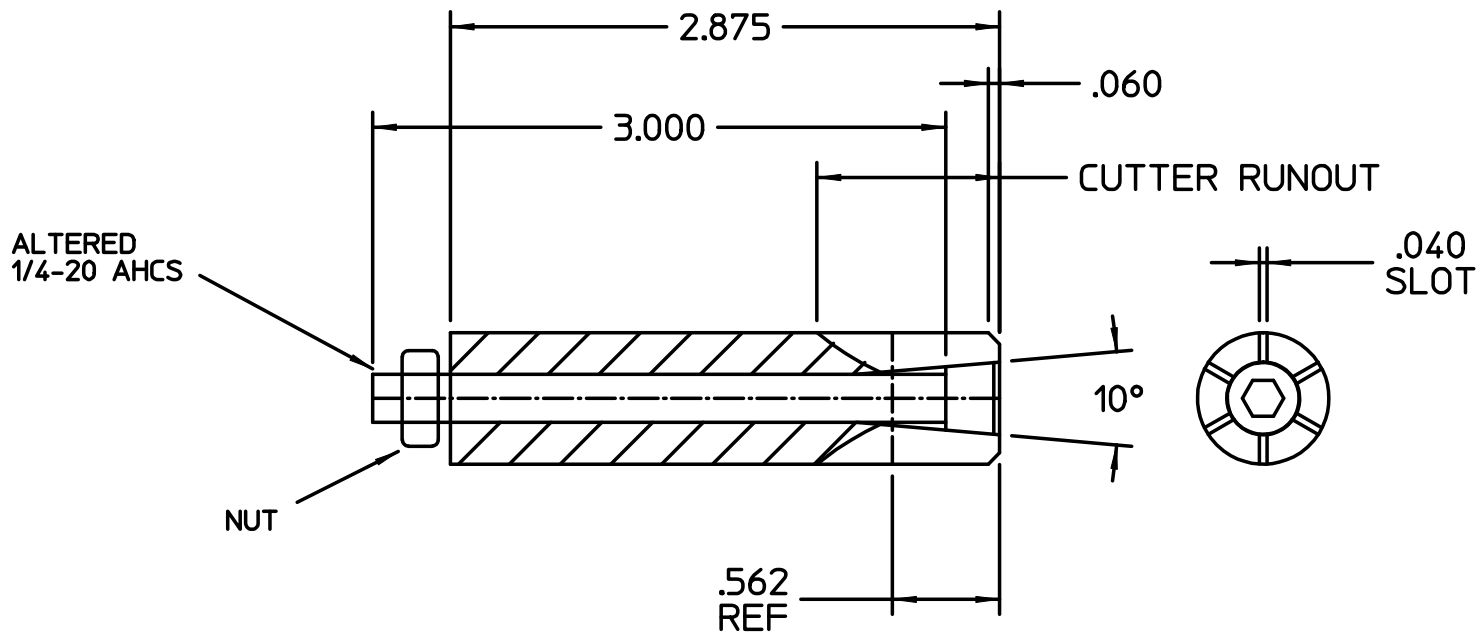


1/4-20 AHCS

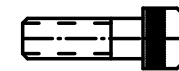
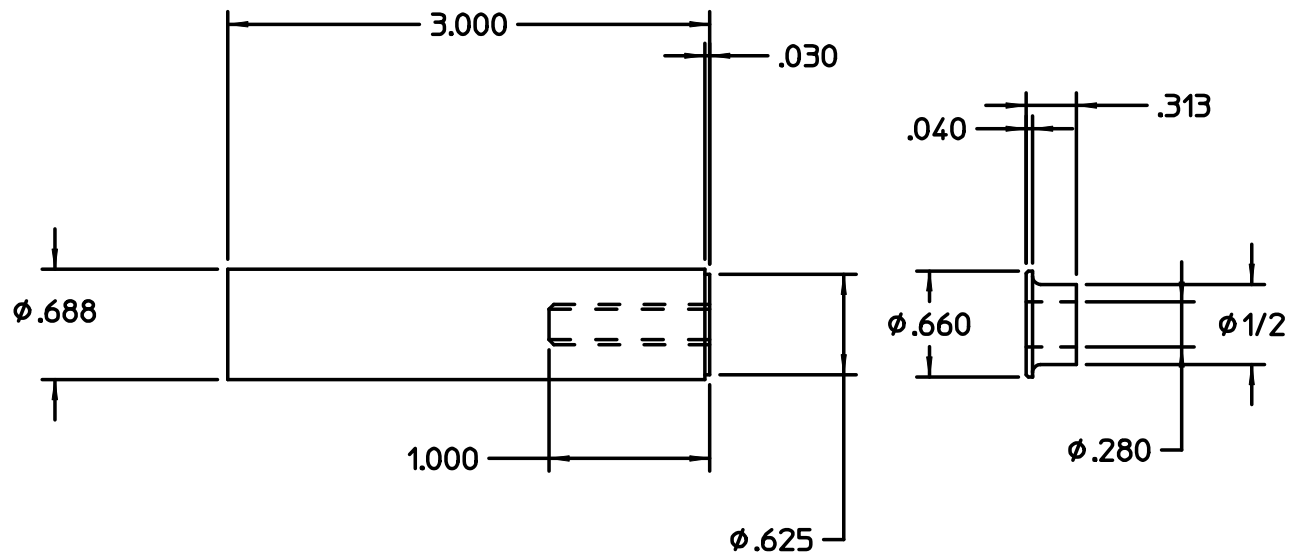
1. APPLY CHECK BLANK AND COMPRESSION SPACER ONTO MANDRILL. RETAIN WITH AHCS.



TOOL: LATHE CHUCK FIXTURE
 OPERATION: HOLD DIA .688 ID
 AND .75 ID CUP FOR END TRIM
 REV: 8/29/05 G.P.D.
 MAKE FROM O-1 STEEL



EXPANDIBLE MANDRILL FOR
TURNING - KNURLING BUT CAPS
MADE FROM 11/16 OD 0-1 STEEL O.D. GROUND
REV 8-29-05 GPD



1/4-20 X 3/4 AHCS

GRIP CHECK HOLDING FIXTURE
 MAKE FROM STEEL
 REV 8-21-05 G.P.D.