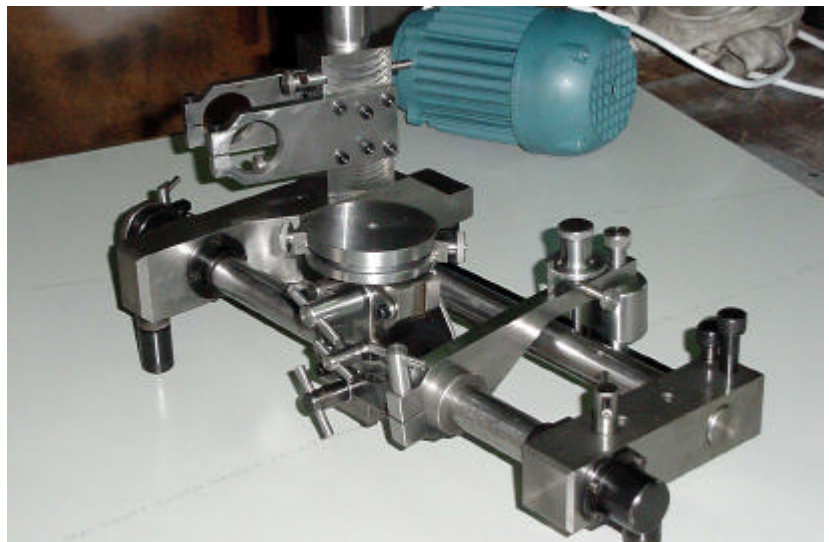


Acknowledgement

The set of drawings has been verified by the construction of a grinder from them. Any mistakes or omissions being corrected when found. This grinder is illustrated below and I would like to thank Laurie Clarke (Melbourne Australia) who made it and kept me informed. The drawings should be reliable but I take full responsibility if this proves not to be the case.

Don Willis





Bonelle TCG Drawing Revisions

20/2/04 G4 rev 1 dim 2 ½ was 2 3/8, G3 rev 2 notch added
21/02/04 L1 minor changes principally to clarify 'where used'
23/02/04 C7 Sketch added to show positioning of components.
24/02/04 L2/2 13/13" was 7/8" Rearranged to show slots more clearly.
25/02/04 Cross references to keys & clamps (Drgs L1 & L2) corrected on drawings :-
B2, B4, D1, G1, G2, G10, H1, H3, K4.
26/02/04 B2 Shape corrected to correspond with B3
28/02/04 C10/2 scale added
01/03/04 C2/4 added
06/03/04 G11 dim 4 7/16" was 4 5/16"
06/03/04 H2 missing dims added
06/03/04 G5 dim1 5/8" was 1 11/16"
30/03/04 H1 assembly clarified
31/03/04 H7 & H8 added
22/05/04 D1 dim 2 1/2" added
00/00/00
00/00/00
00/00/00
00/00/00

Bonelle TCG

Drawings

- A. General Arrangement
- B. Base
- C. Wheel head
- D. Wheel Guard
- E. Dust Containment
- F. Spindle
- G. Workhead
- H. Toolholder
- J. Front Bar
- K. Tooth Rest
- L. Miscellaneous

Conventions used.

The drawings are arranged so that detail drawings follow immediately after the assembly on which they are used and bear the same drawing prefix letter A,B, etc. Details are usually easily identifiable on the assembly by their appearance. Specific reference by detail number is only made when this is not the case.

The drawings do not show tolerances and mating parts have the same dimensions. The necessary clearances must be considered and provided during manufacture.



Conventions used continued

Reference to a detail Example:- F12/3

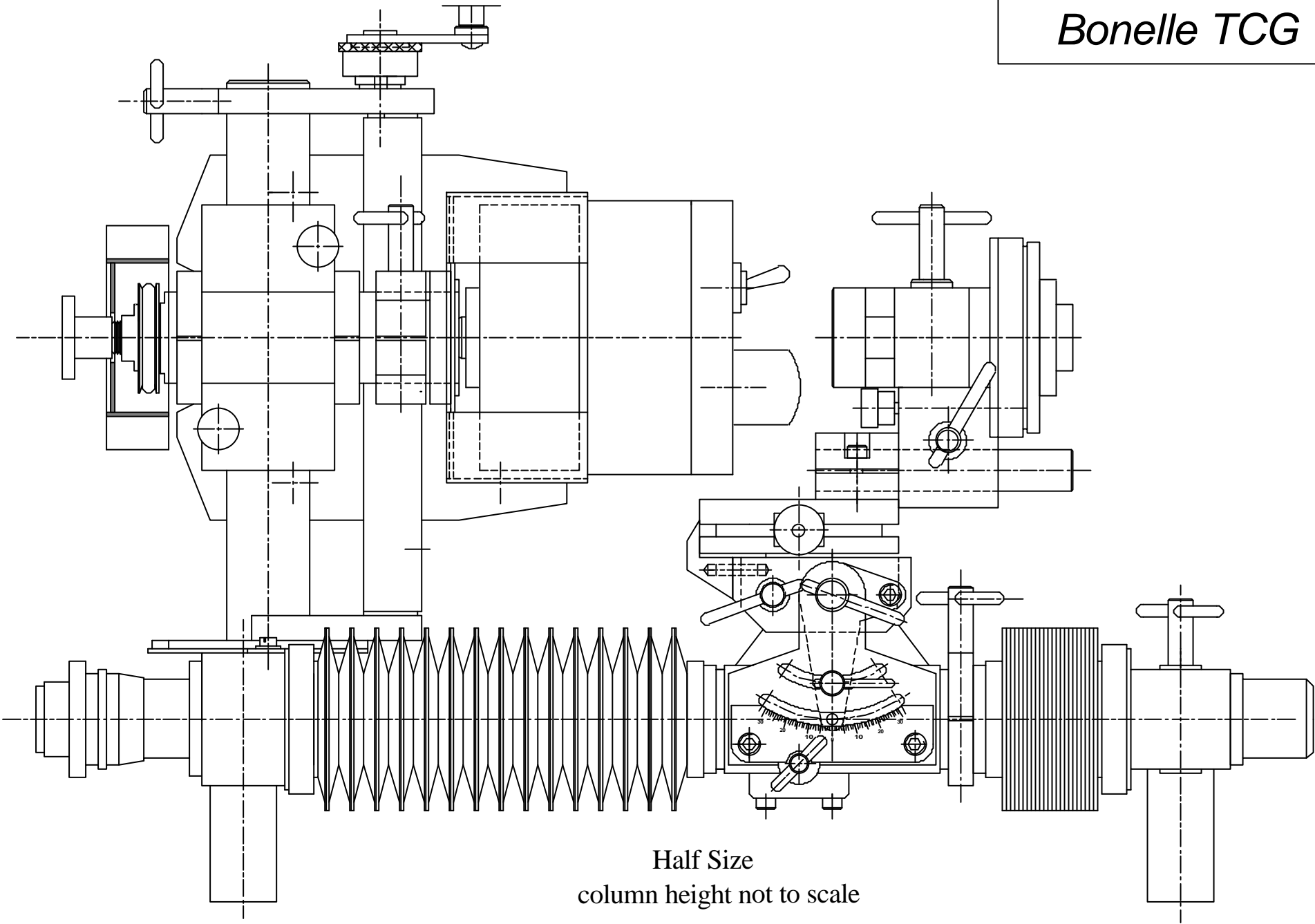
- F12 = Drawing showing that detail.
- 3 = Detail number on that drawing.

Detail Numbers..... Example:- Det3 (2) S.

- Det 3 = Detail number
- (2) = Quantity required
- S = Material.
- B = Brass
- CI = Cast Iron (Continuously Cast Bar)
- S = Bright Mild Steel
- SS = Silver Steel
- L = Leather

Fixings..... The nature of the fixing is shown by the drawing (cheese head screw, cap head screw etc) only the size is specified eg. 2BA X 3/8".

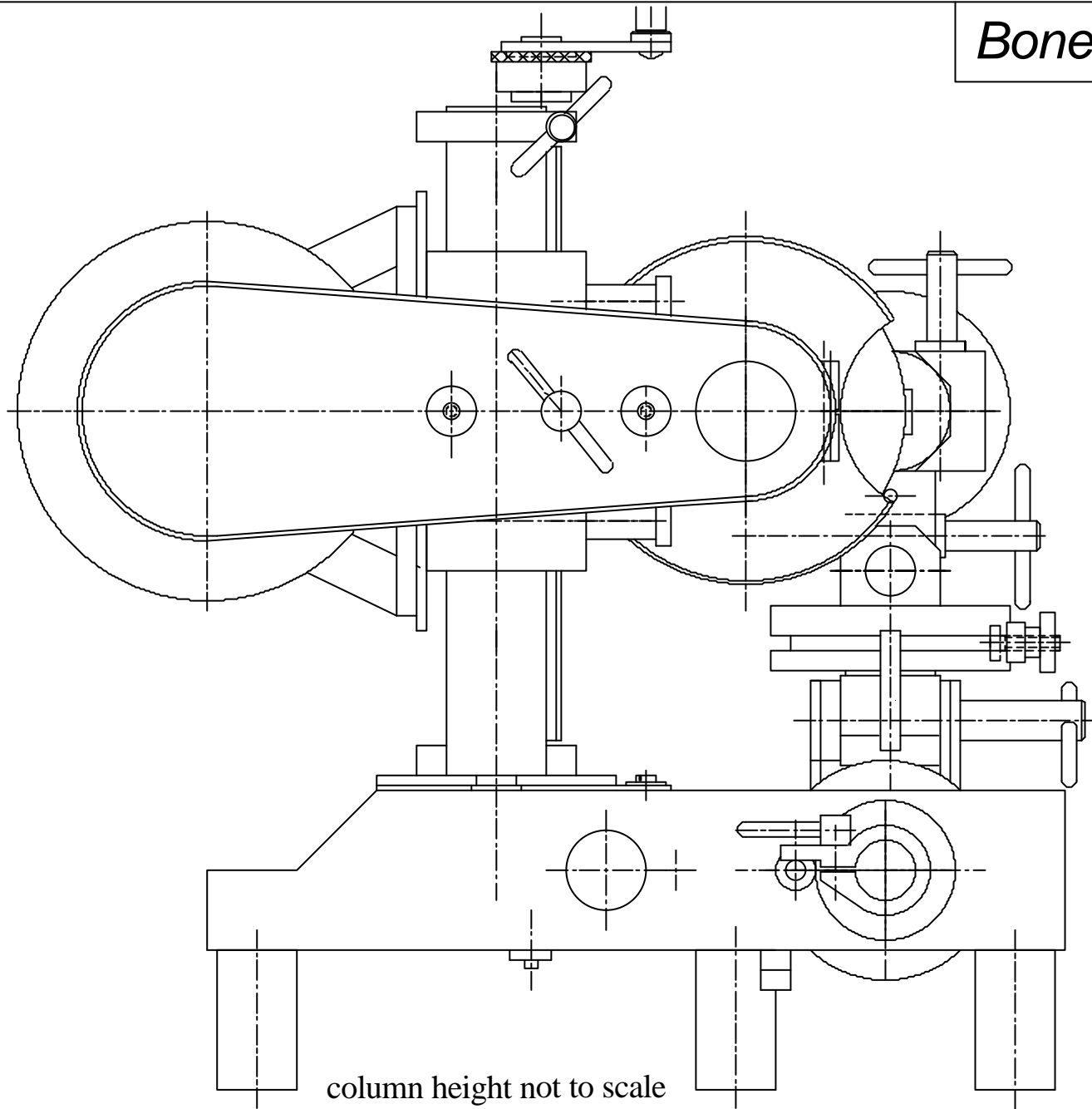
Bonelle TCG



Half Size
column height not to scale

© J.B.D.Willis. <i>J.Willis</i>	Revision 0	Date 22/10/00	General Arrangement (Front Elevation)	Drg No A1
------------------------------------	---------------	------------------	---------------------------------------	-----------

Bonelle TCG



Half Size

column height not to scale

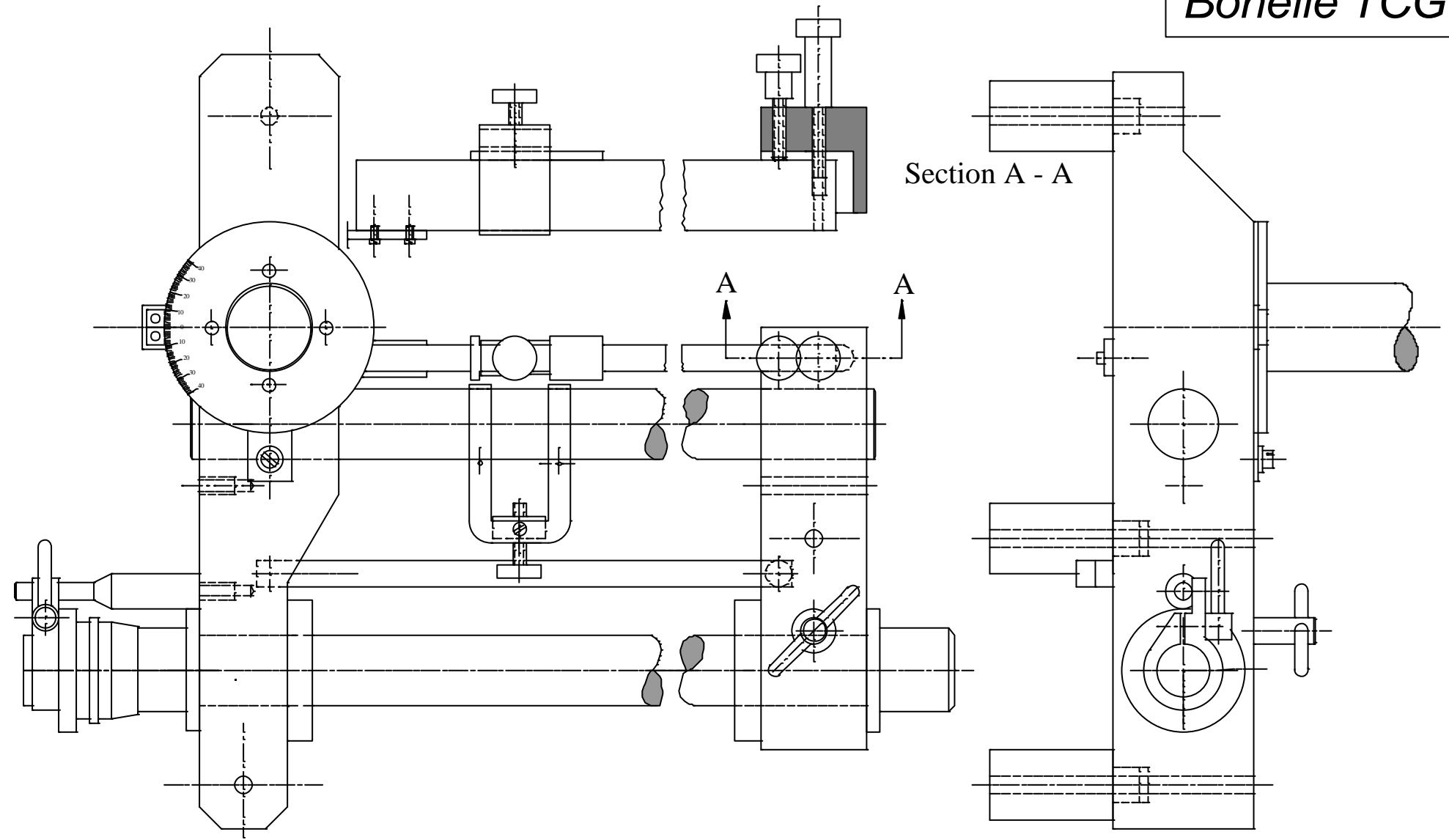
© J.B.D. Willis.
J.B.D. Willis

Revision
0

Date
24/10/00

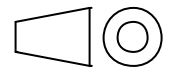
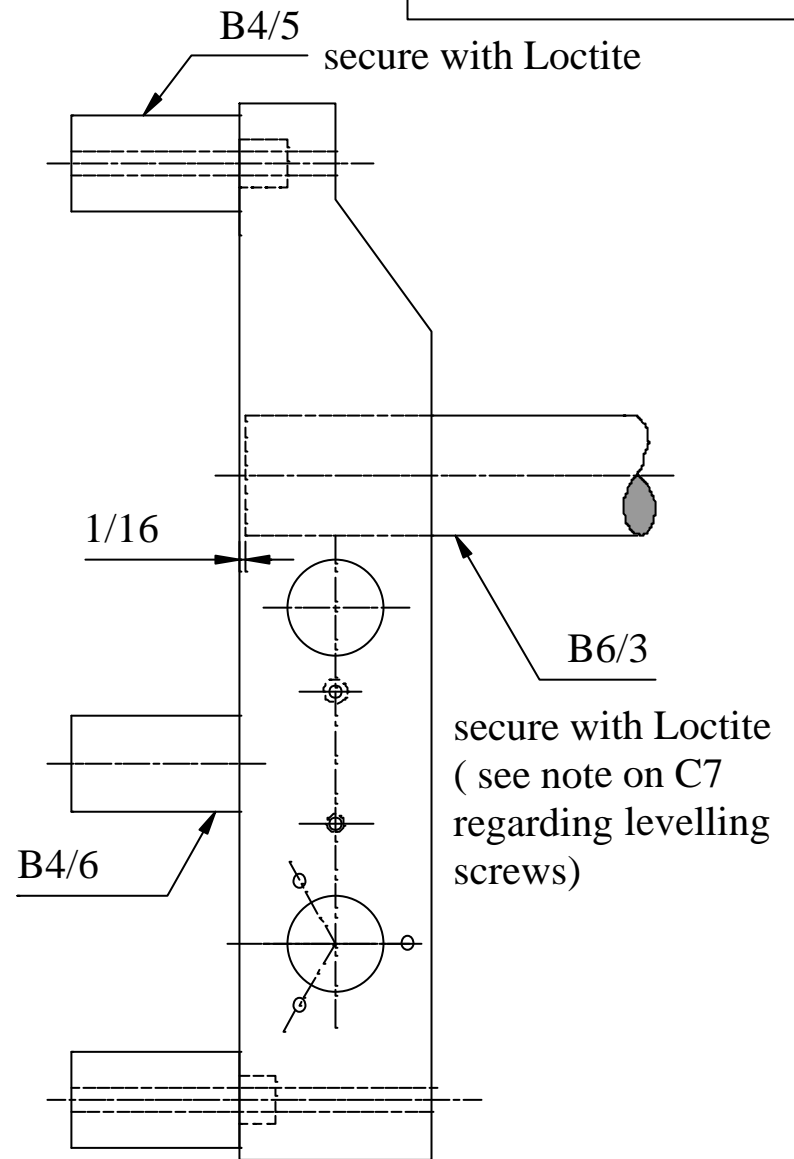
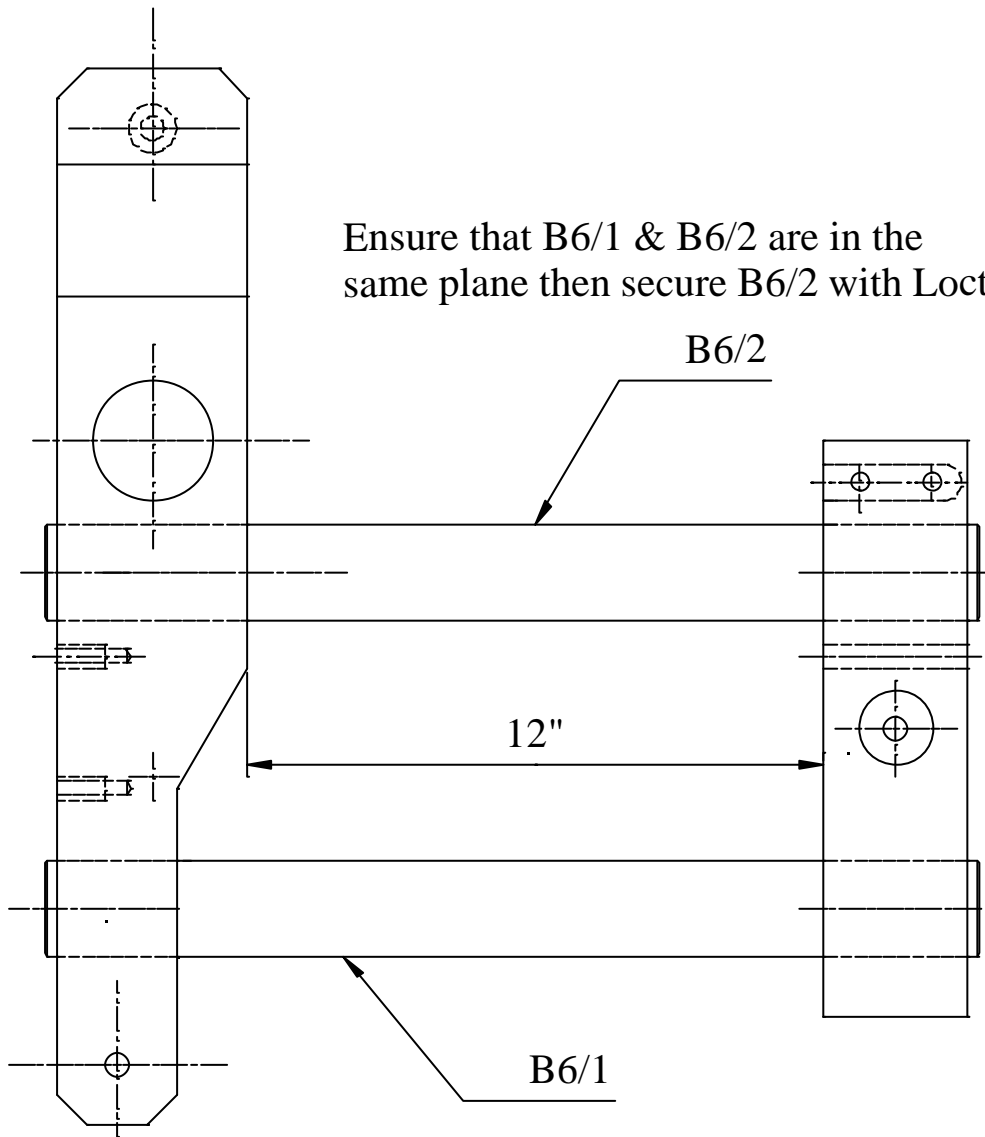
General Arrangement (Side Elevation)

Drg No A2

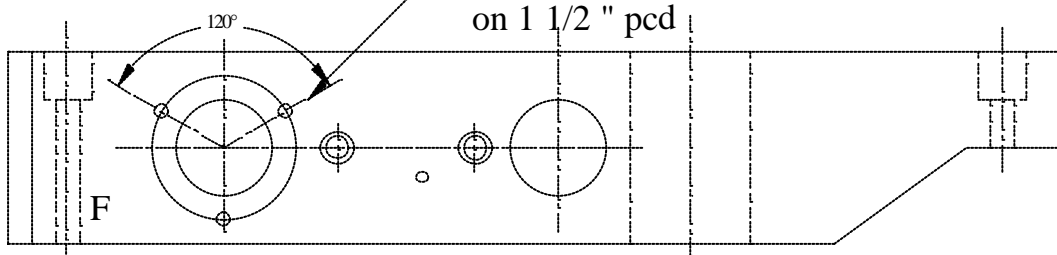
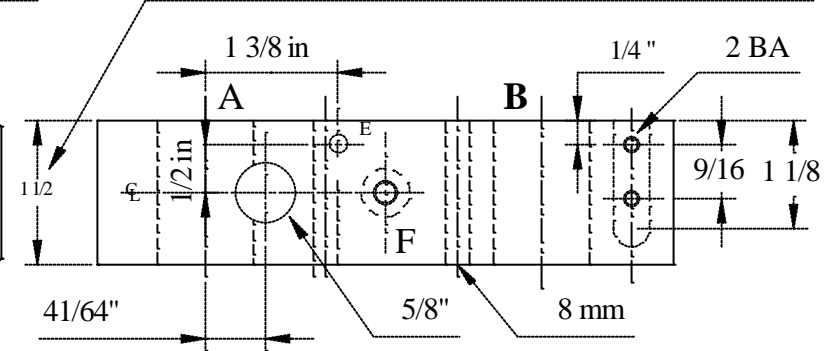
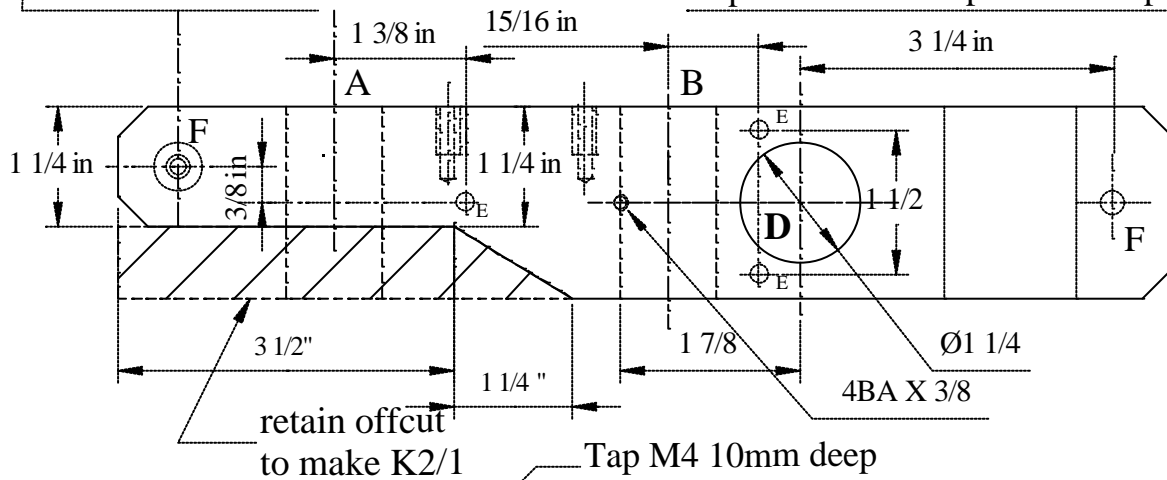
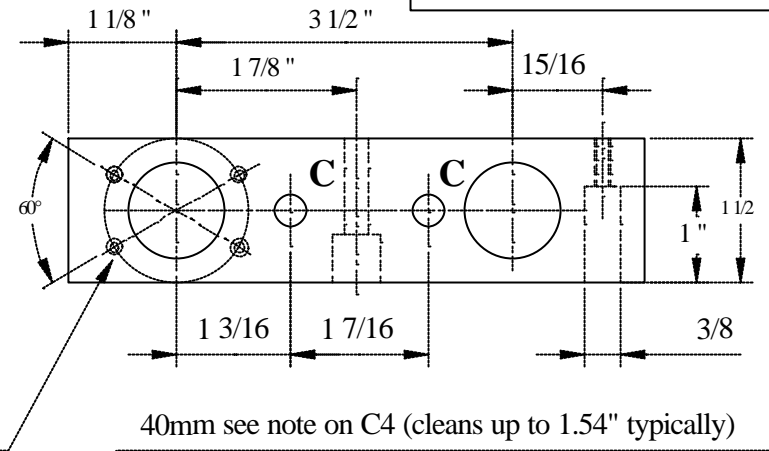
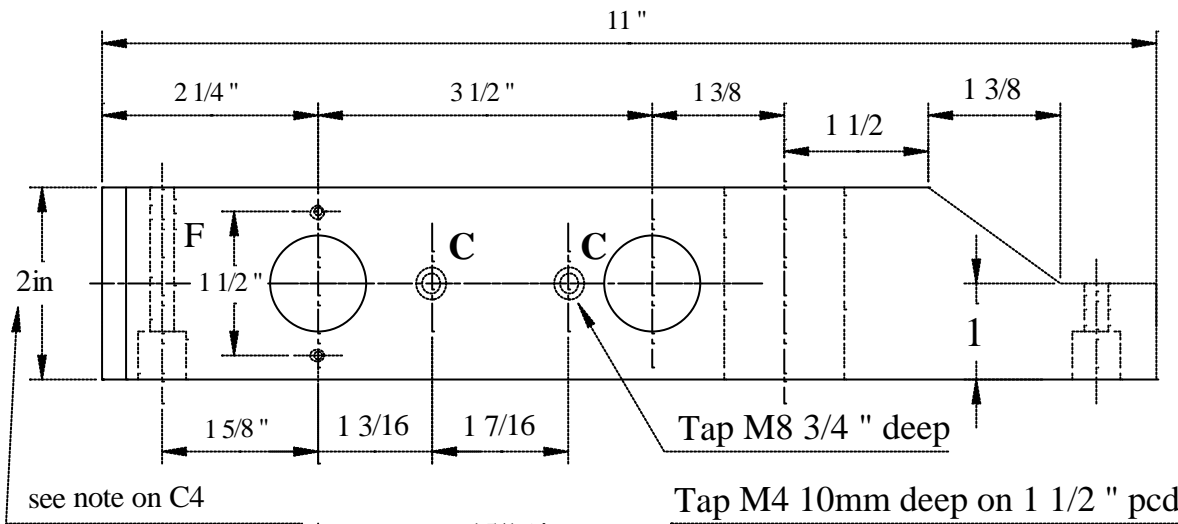


© J.B.D.Willis.	Revision 2	Date 17/03/03	Base Assembly	Drng No B1
-----------------	---------------	------------------	----------------------	-------------------

Bonelle TCG



Bonelle TCG



Det 1 (1) CI

Det 2 (1) CI

Notes

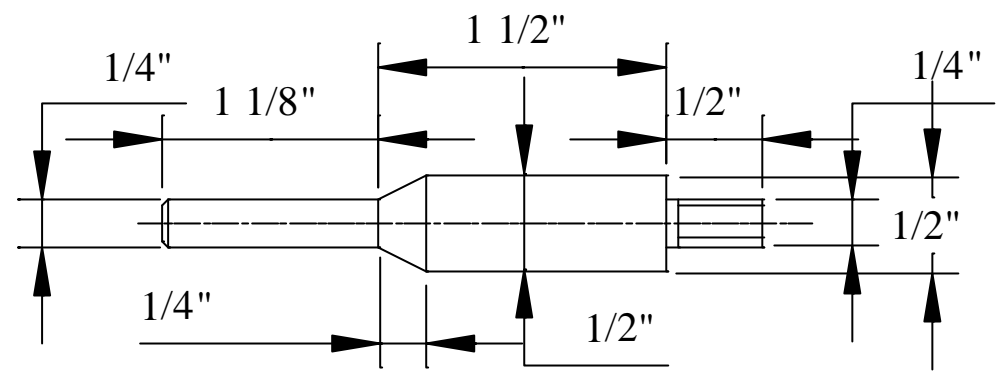
1. Lightly machine faces check that they at 90deg to each other.
2. Bolt together using holes C.
3. Bore holes A to give close slide fit to bar
4. Holes B to be .003" larger than A
5. Hole D to be a push fit on vertical bar
6. Holes E (on underside) 2BA X 3/8"
7. Holes F 9/32" C'Bore 1/2" X 1/2"



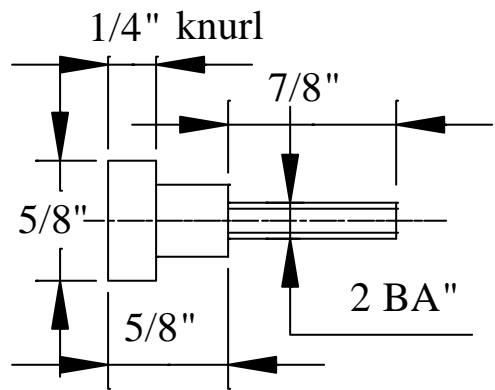
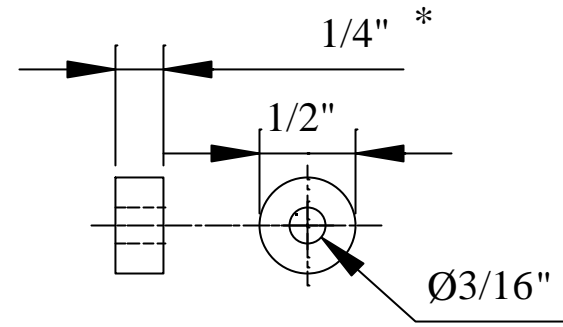
© J.B.D.Willis.	Revision 5	Date 20/03/03
-----------------	---------------	------------------

Base Details (A)

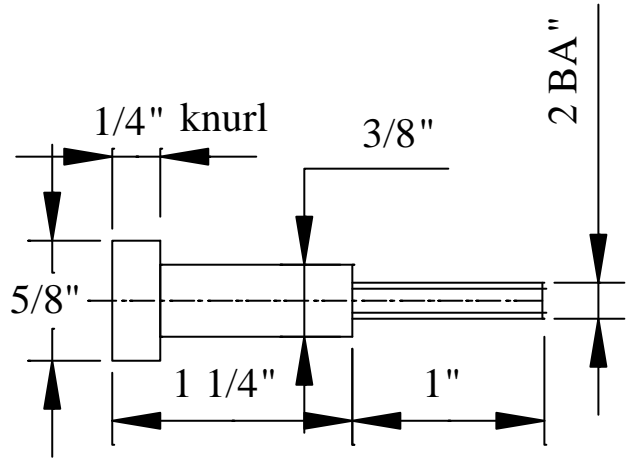
Drg No B3



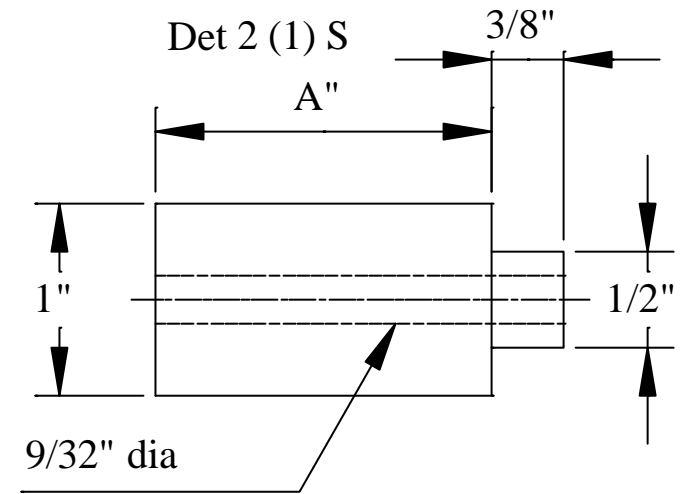
Det 1 (1) S



Det 3 (1) S



Det 4 (1) S

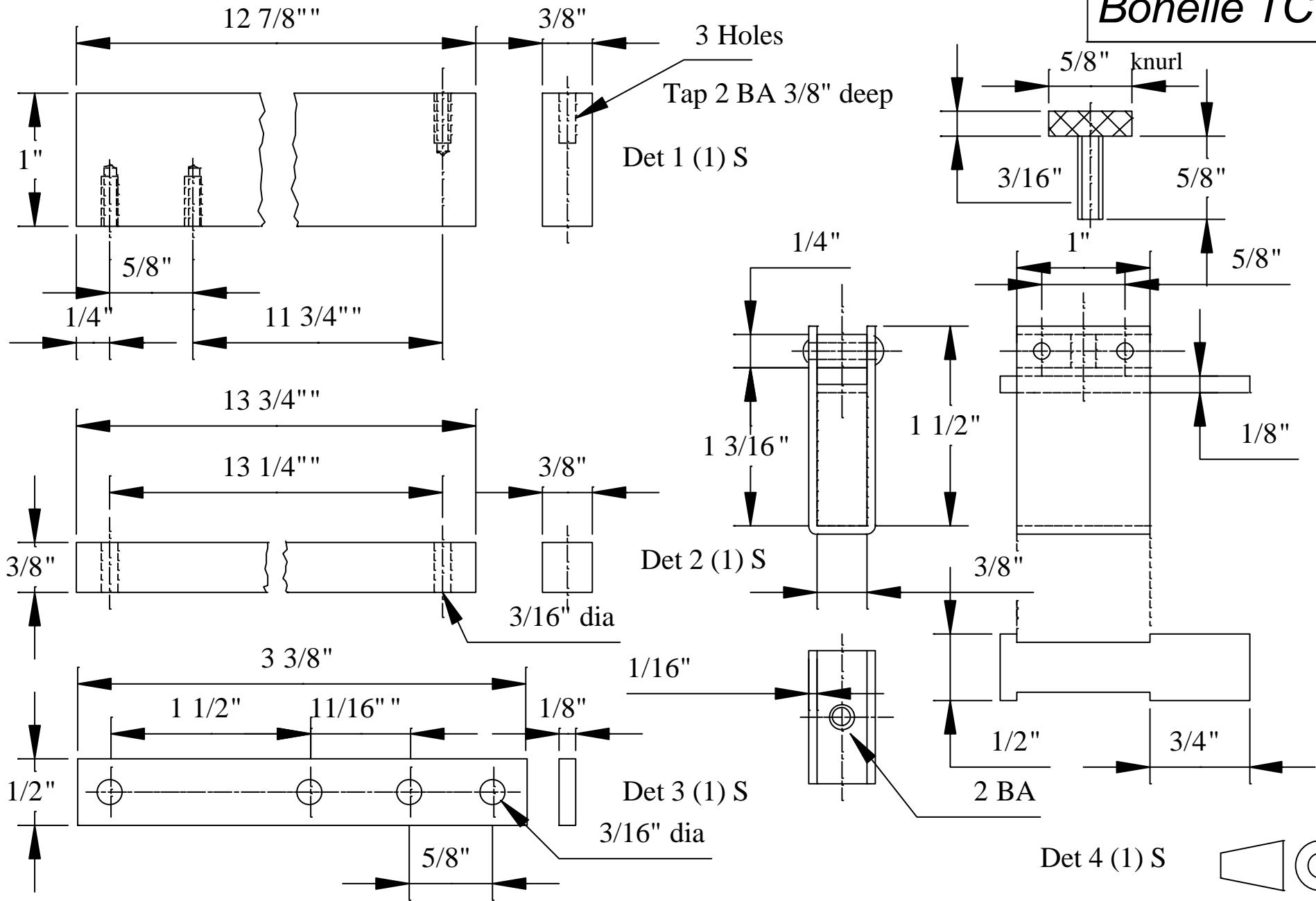


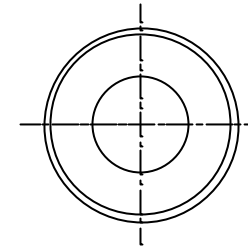
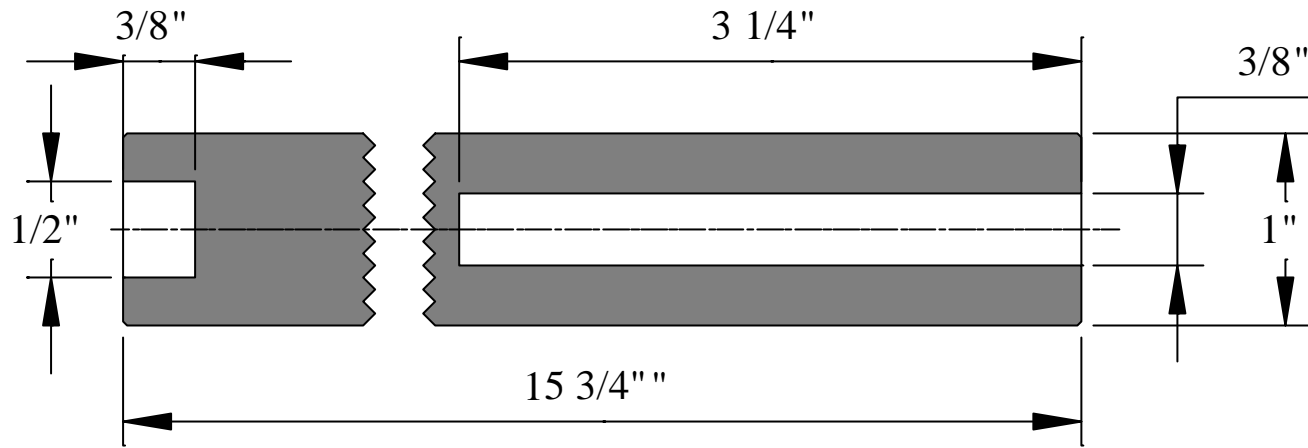
Det 5 (2) S A = 1 3/4"
 Det 6 (1) S A = 2"*

If levelling screws are to be incorporated as shown in Z2 or Z3 then det 5 and 6 to be modified accordingly.

* adjust these dimensions to suite actual sizes of B3/1 & B3/2

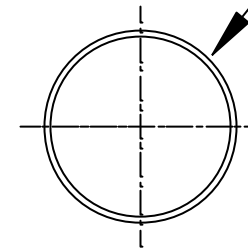
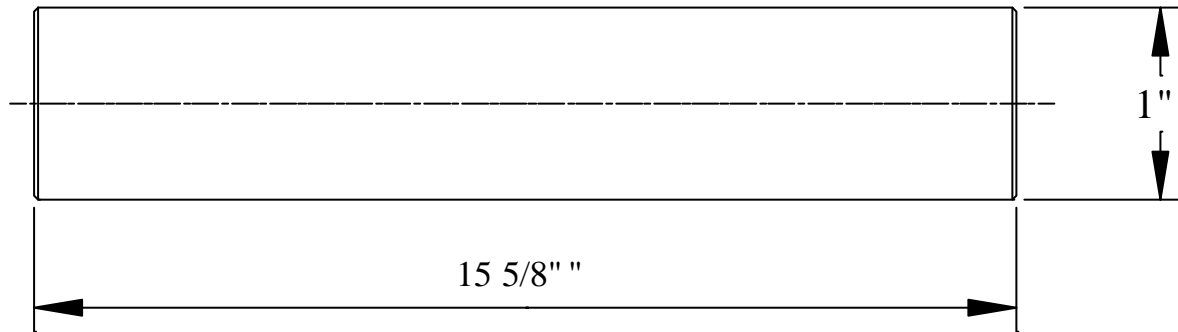




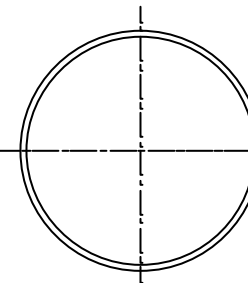
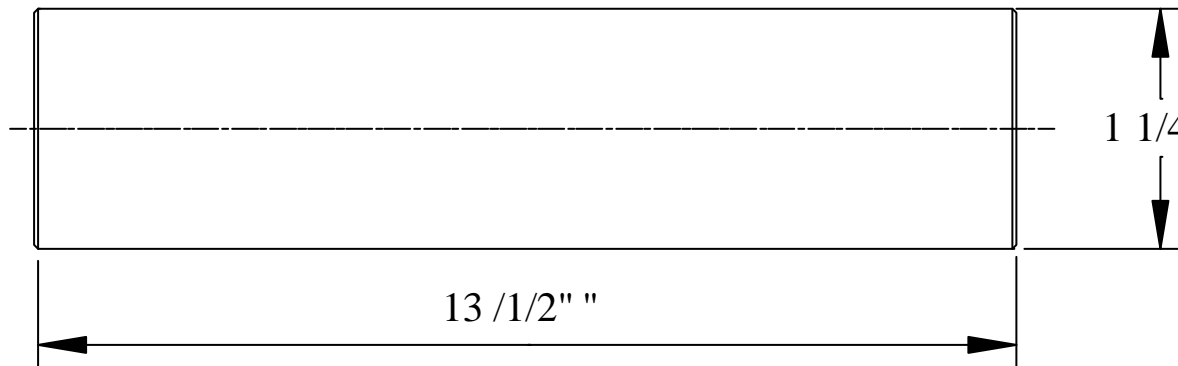


Det 1 (1) S

! /32" chamfer

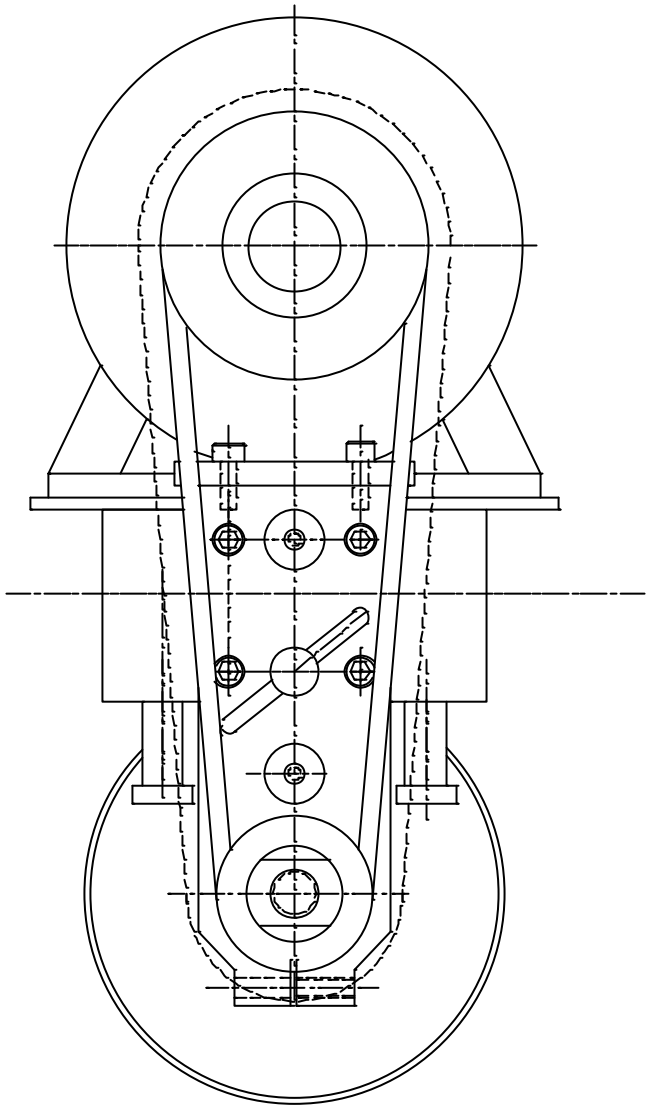
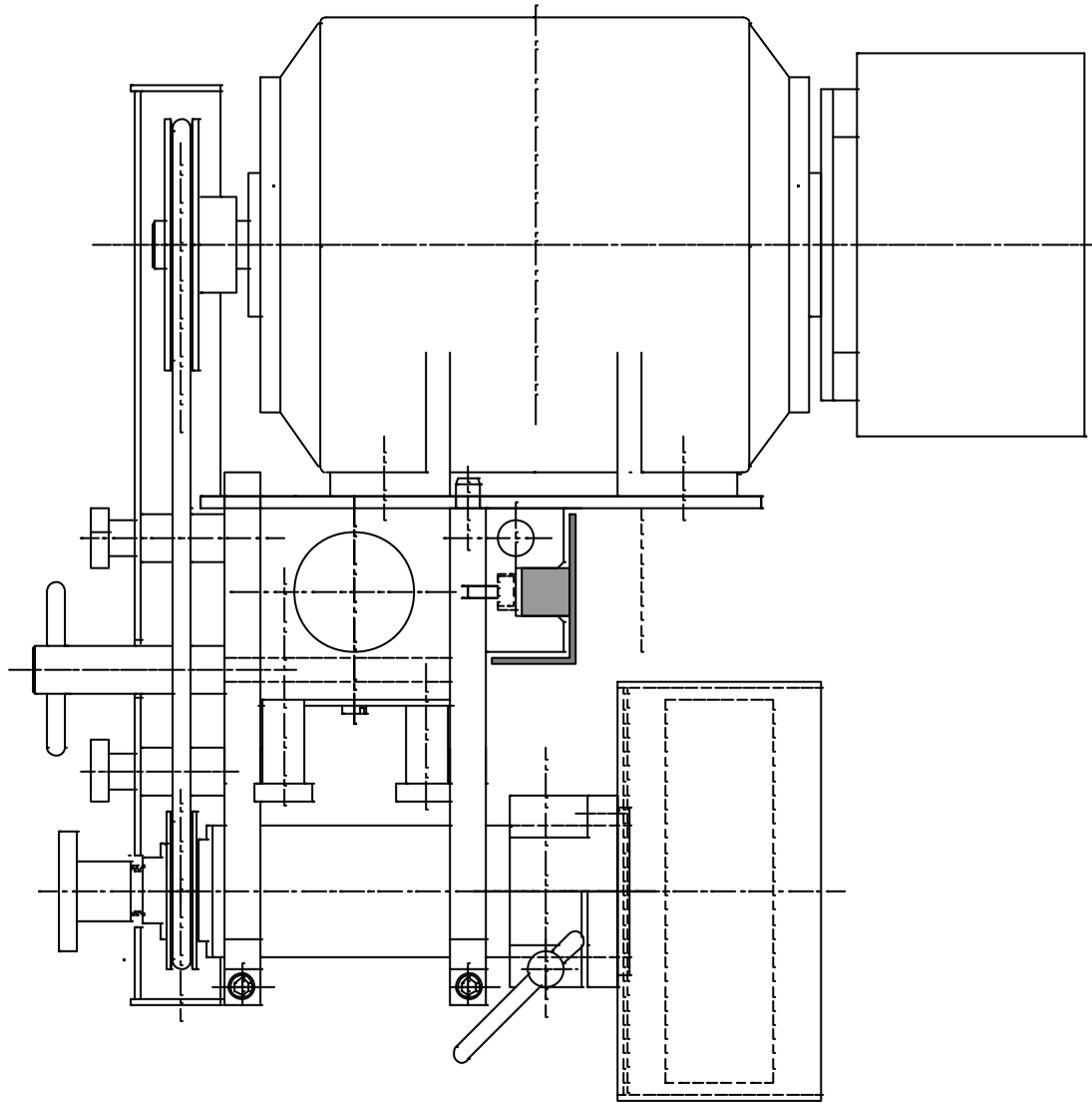


Det 2 (1) S

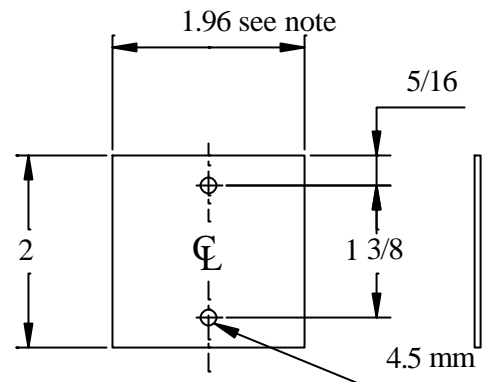
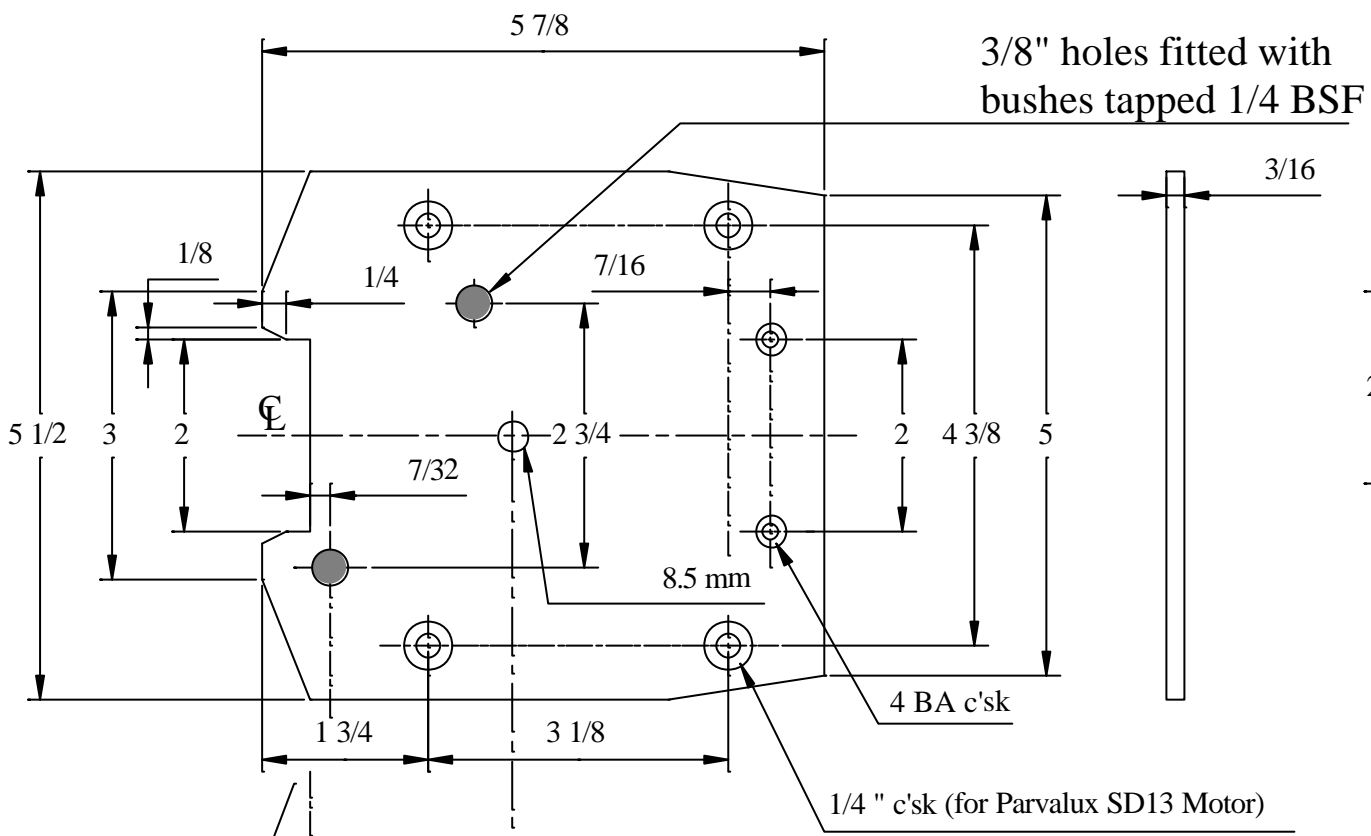


Det 3 (1) S

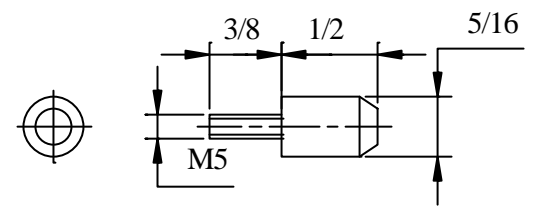




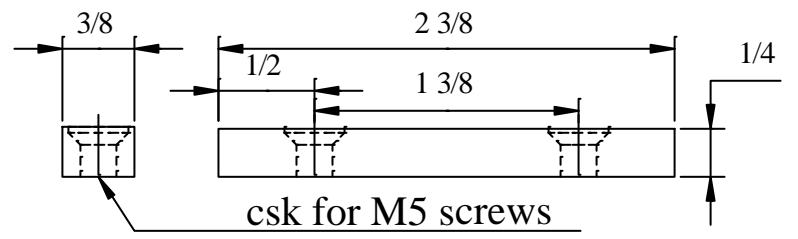
Bonelle TCG



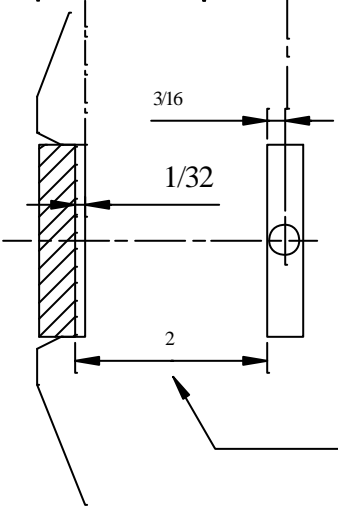
Det 2 (1) S 1/16" thick



Det 3 (1) S



Det 4 (1) S

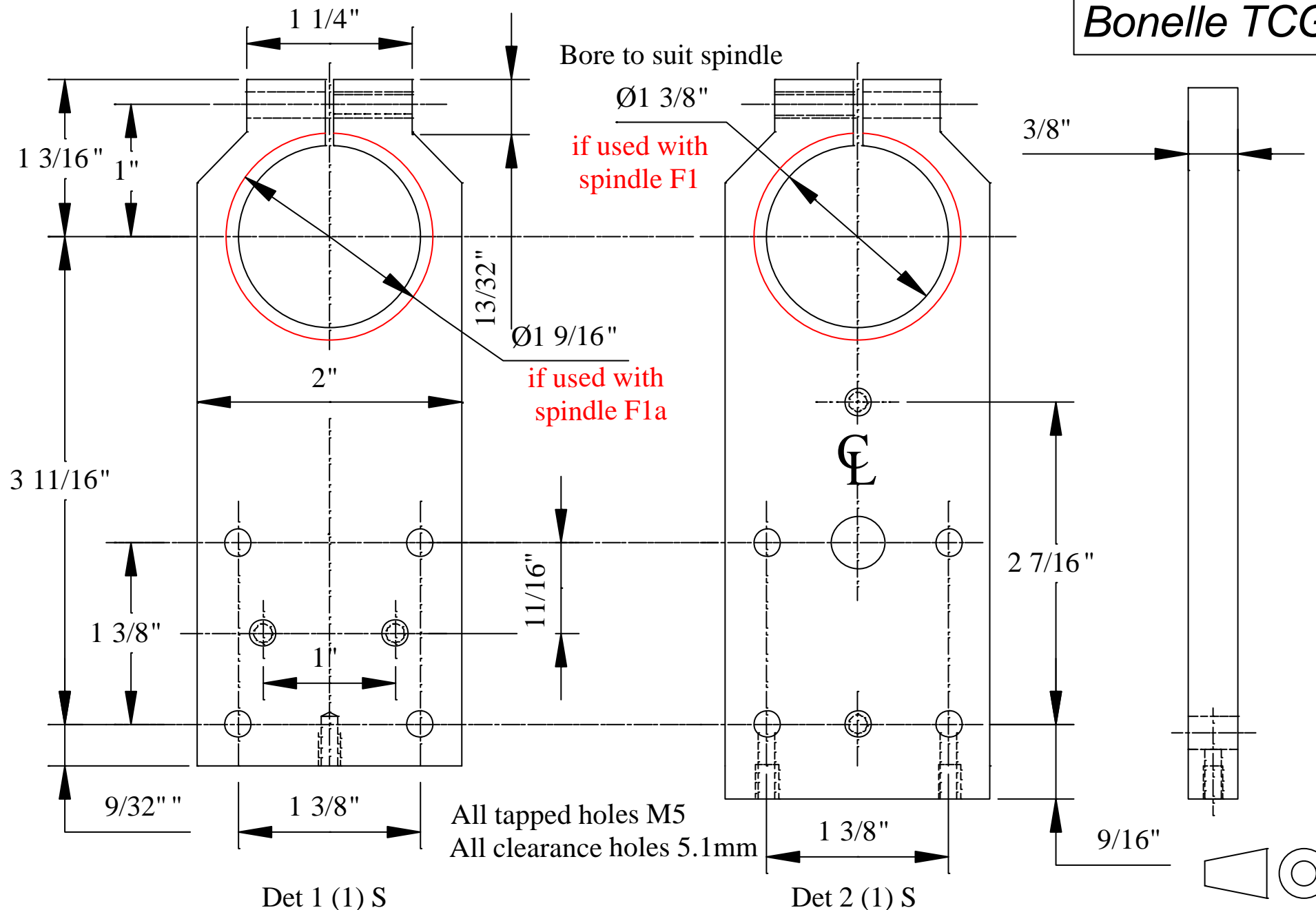


NOTE
The (UK) continuously cast iron bar is metric ie 50 mm and, when cleaned up results typically in a separation between arms of 1.96"

Det 1 (1) S



Bonelle TCG



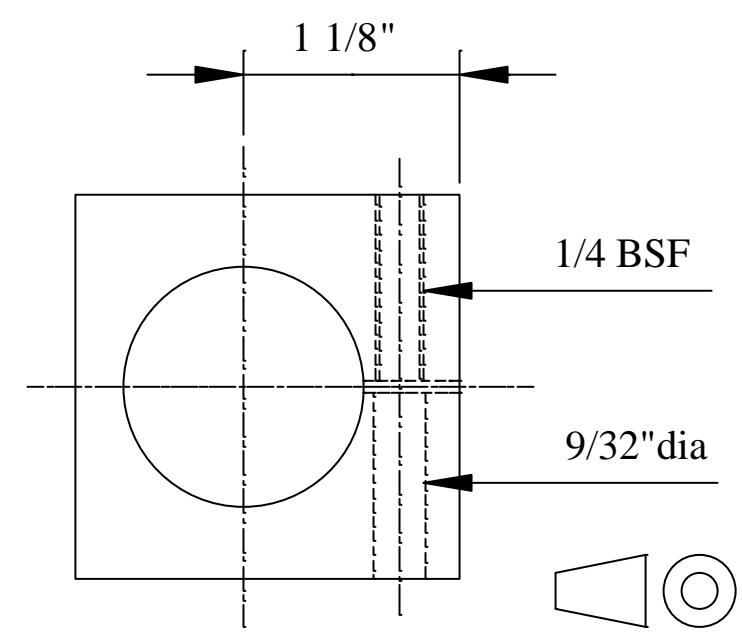
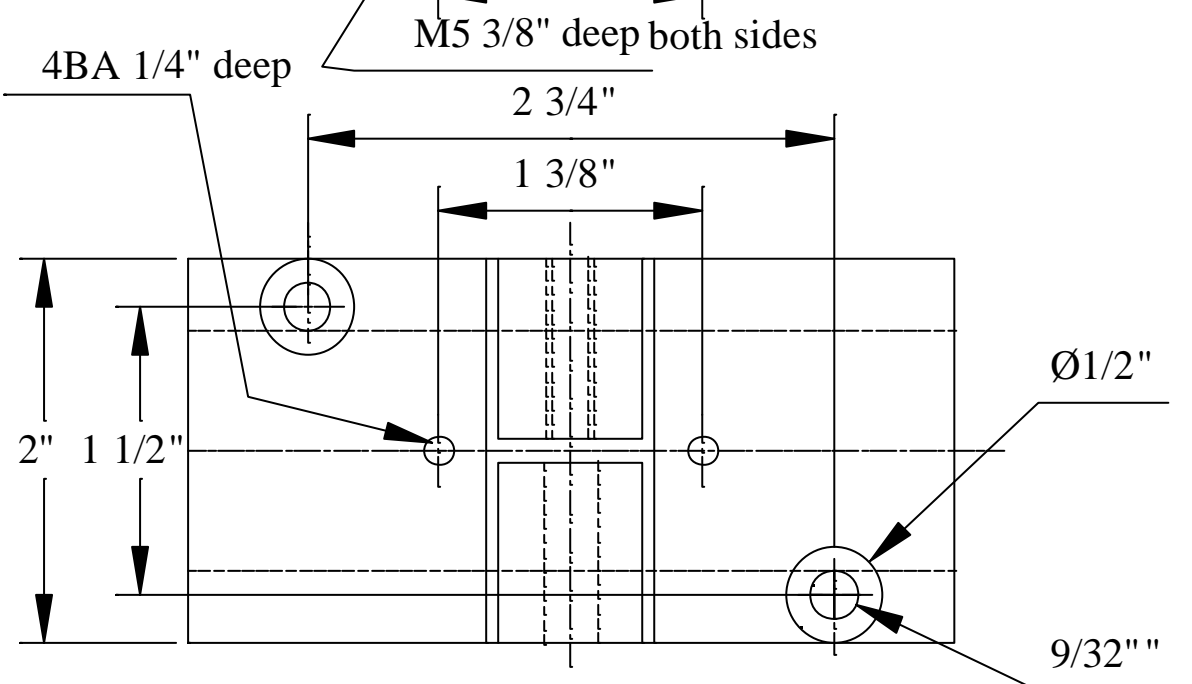
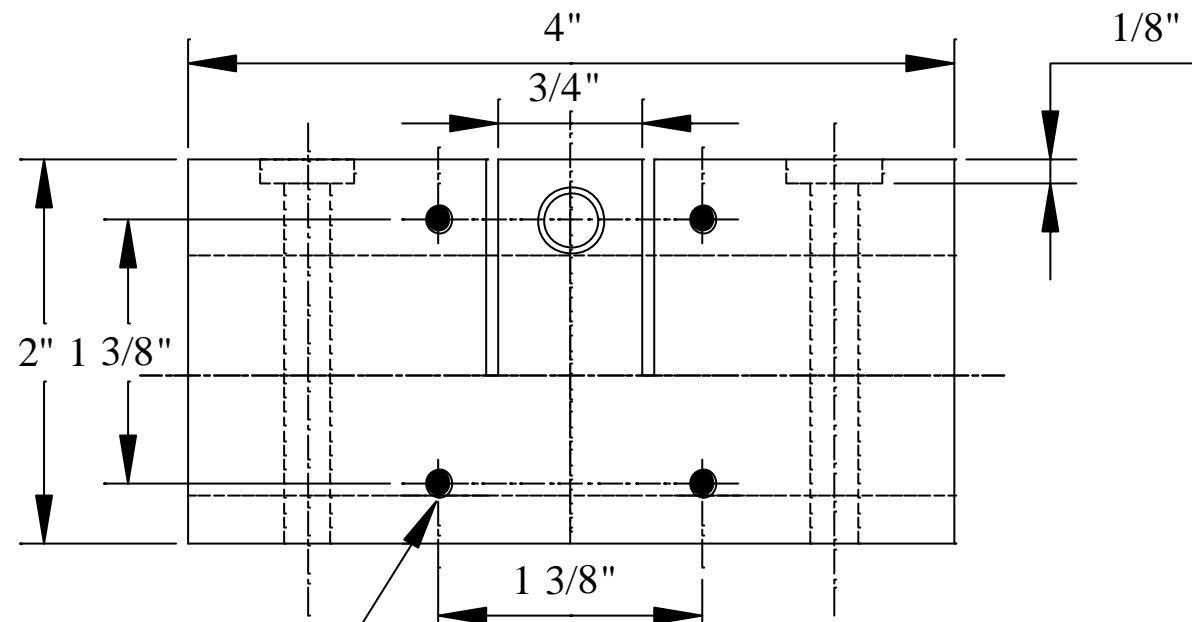
© J.B.D.Willis.

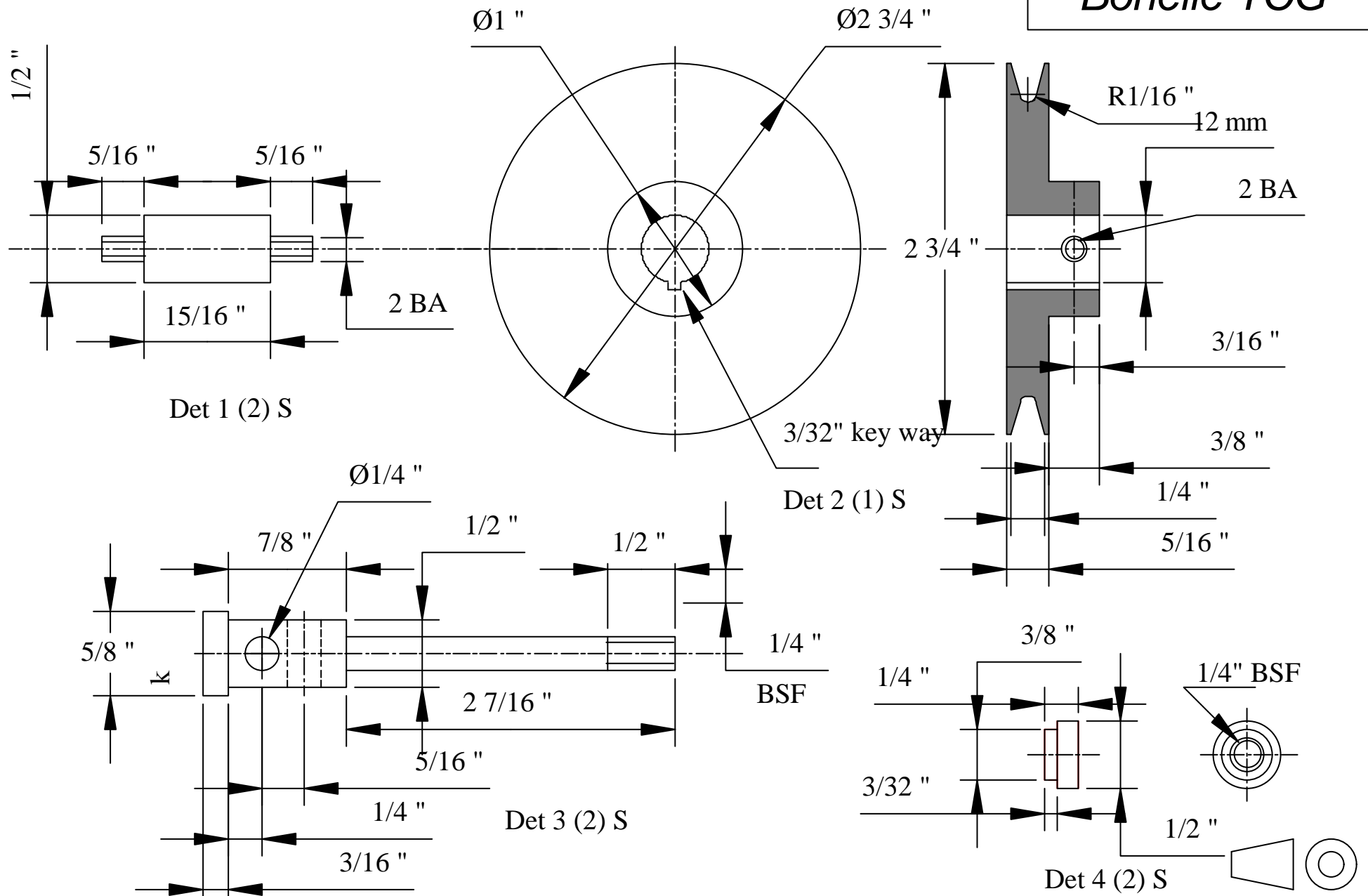
Revision
2

Date
12/2/04

Wheelhead Arms

Drg No C3





© J.B.D.Willis.
J.Willis

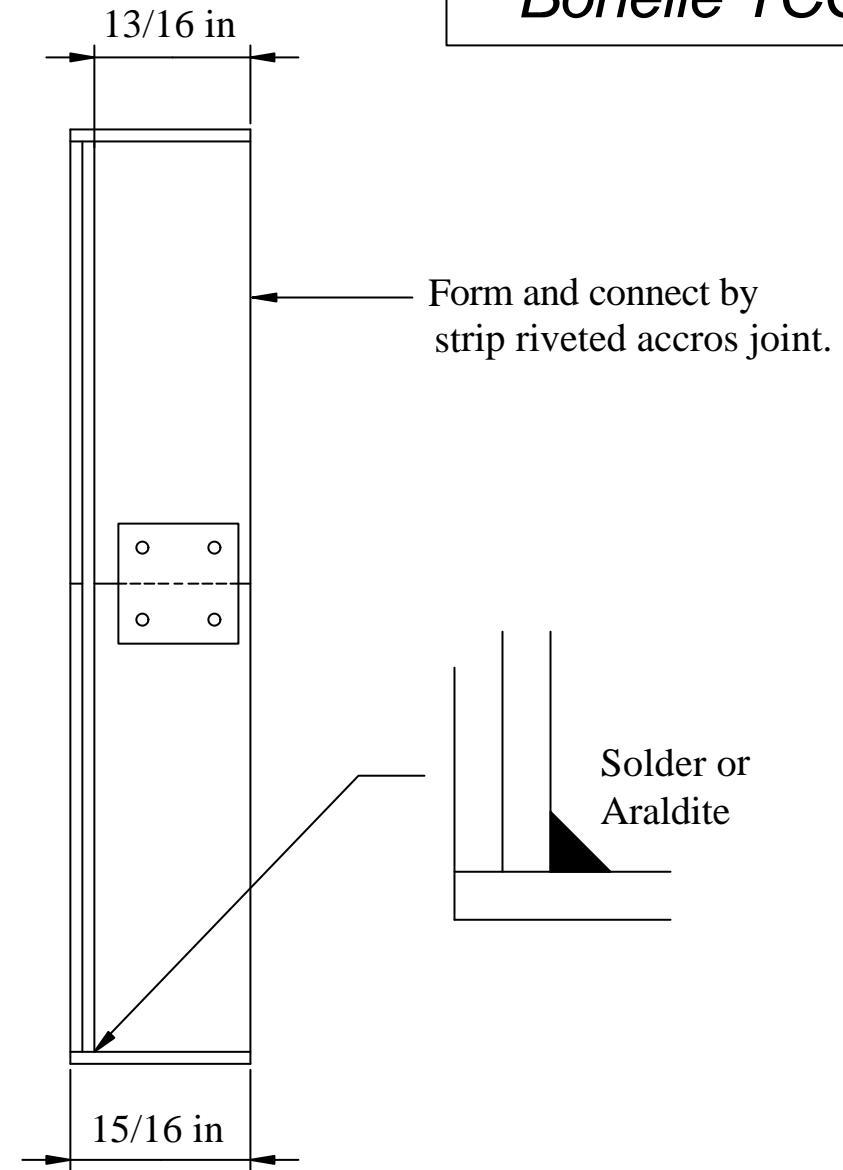
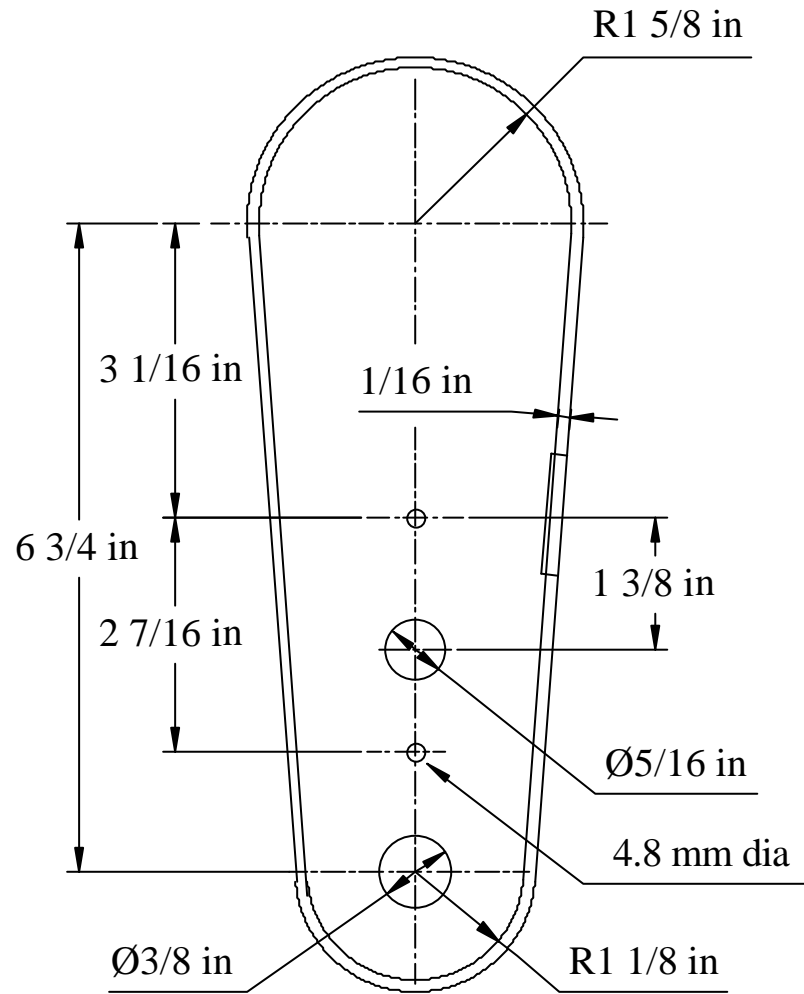
Revision
0

Date
29/10/00

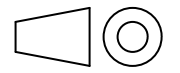
Wheelhead Details

Drg No C5

Bonelle TCG



Section on centreline



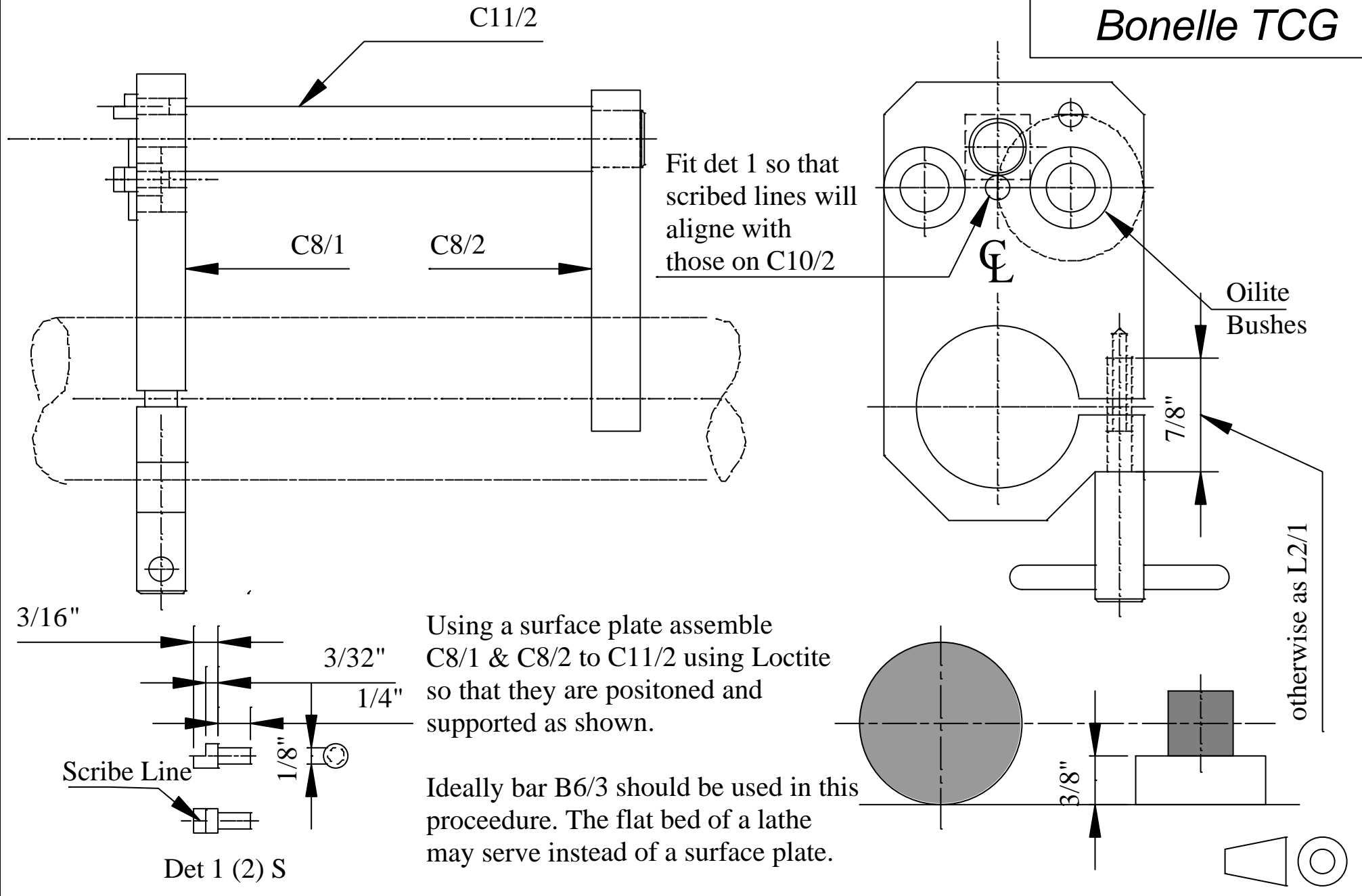
© J.B.D. Willis.
J.B.D. Willis

Revision
0

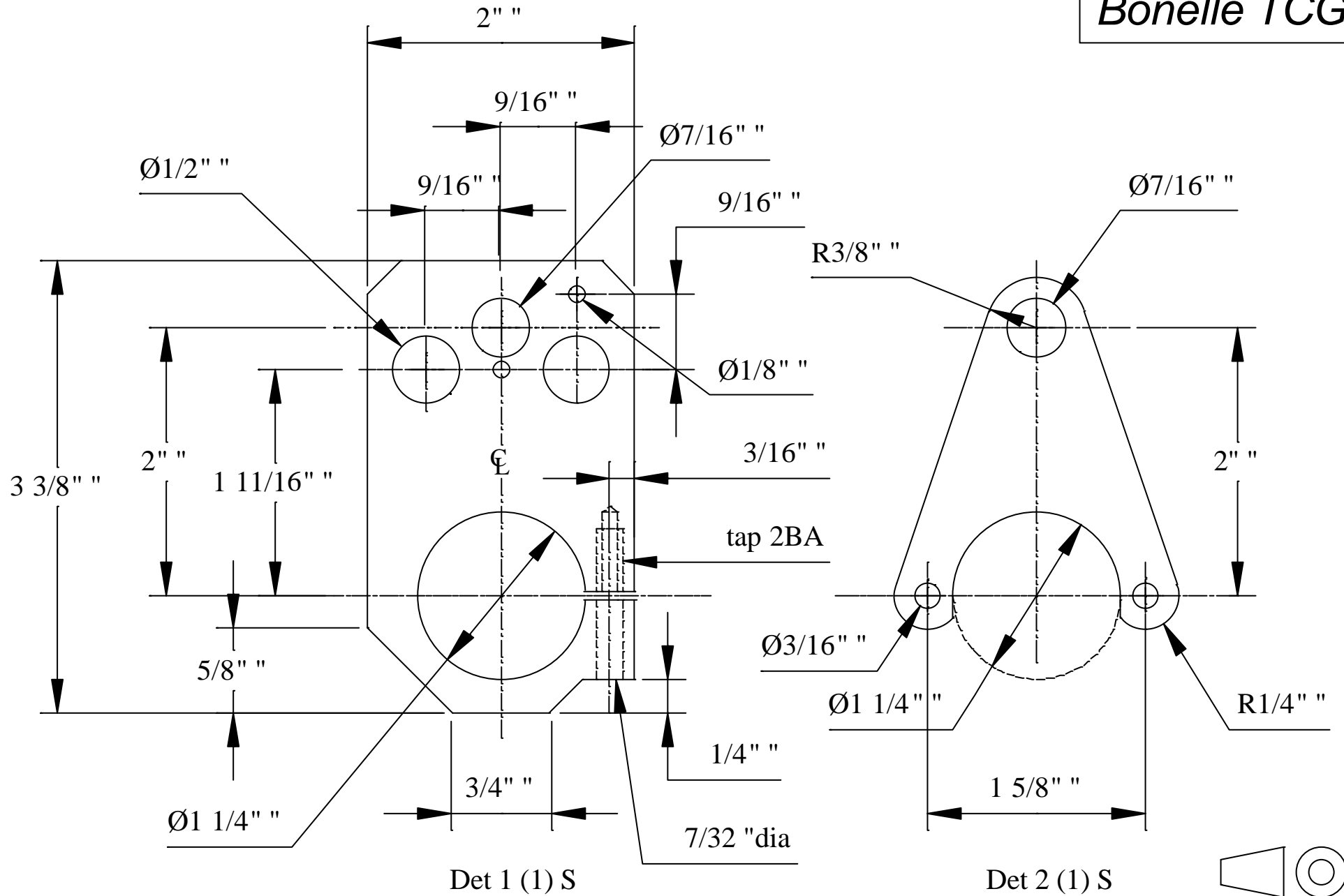
Date
24/10/00

Pulley Cover Assembly

Drg No C6



© J.B.D.Willis.	Revision 1	Date 23/02/04	<h1>Wheelhead Guide Assembly</h1>	Drg No C7
-----------------	---------------	------------------	-----------------------------------	-----------



© J.B.D.Willis.	Revision 0	Date 18/04/03	Wheelhead Guide Details	Drg No C8
-----------------	---------------	------------------	-------------------------	-----------

Holes

Ø3/16" locate on spigot
from det C8/2

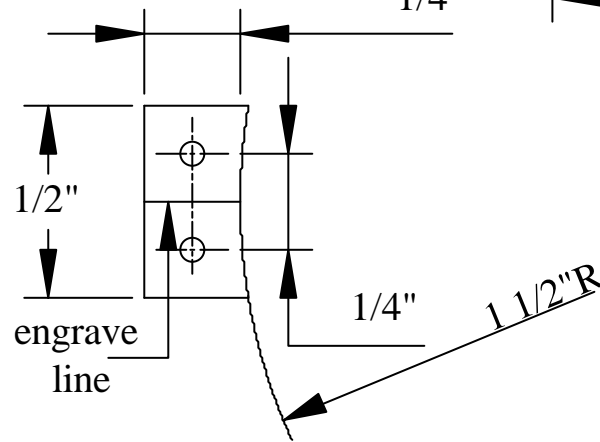
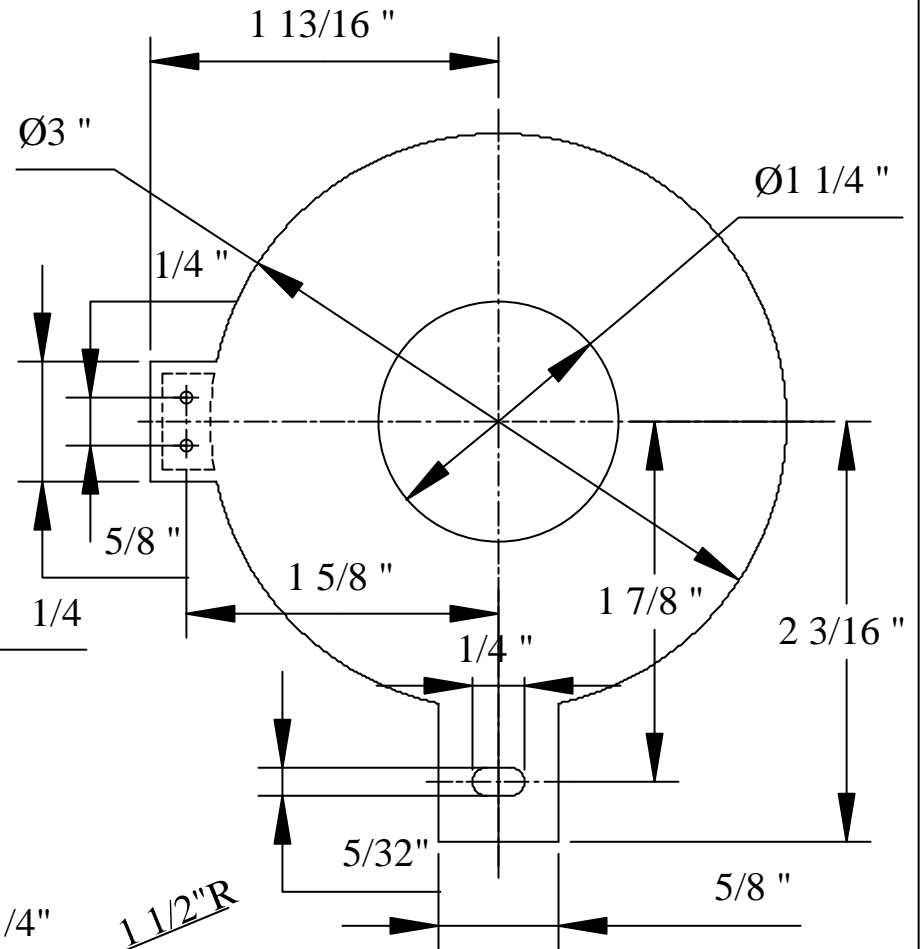
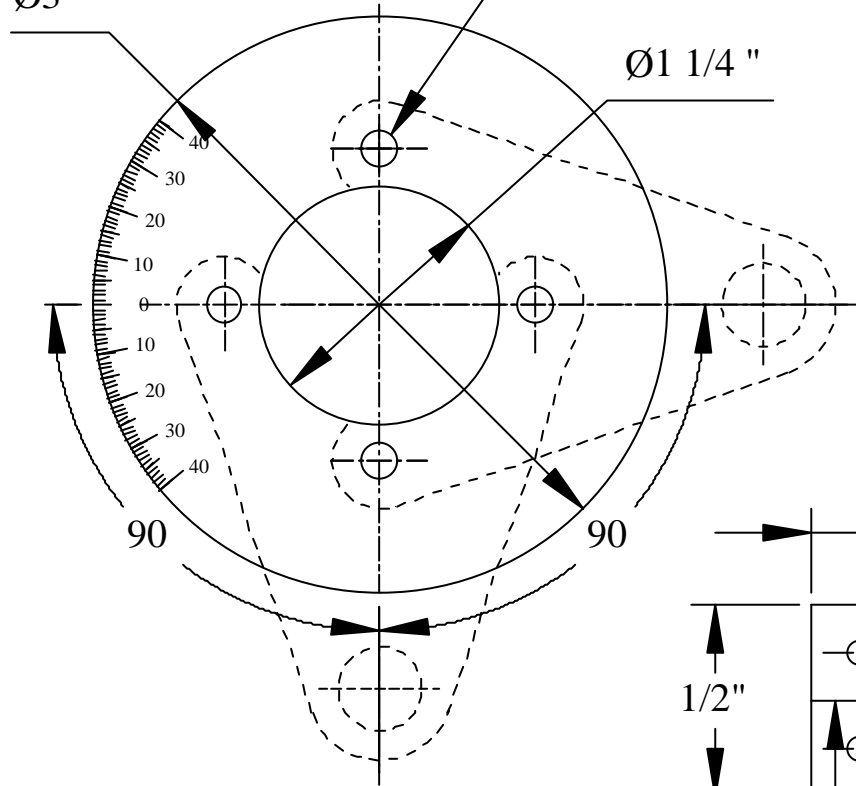
Rivet det2 to det 3 using 1/16" rivets

Ø3"

Ø1 1/4"

Ø3"

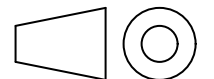
Ø1 1/4"

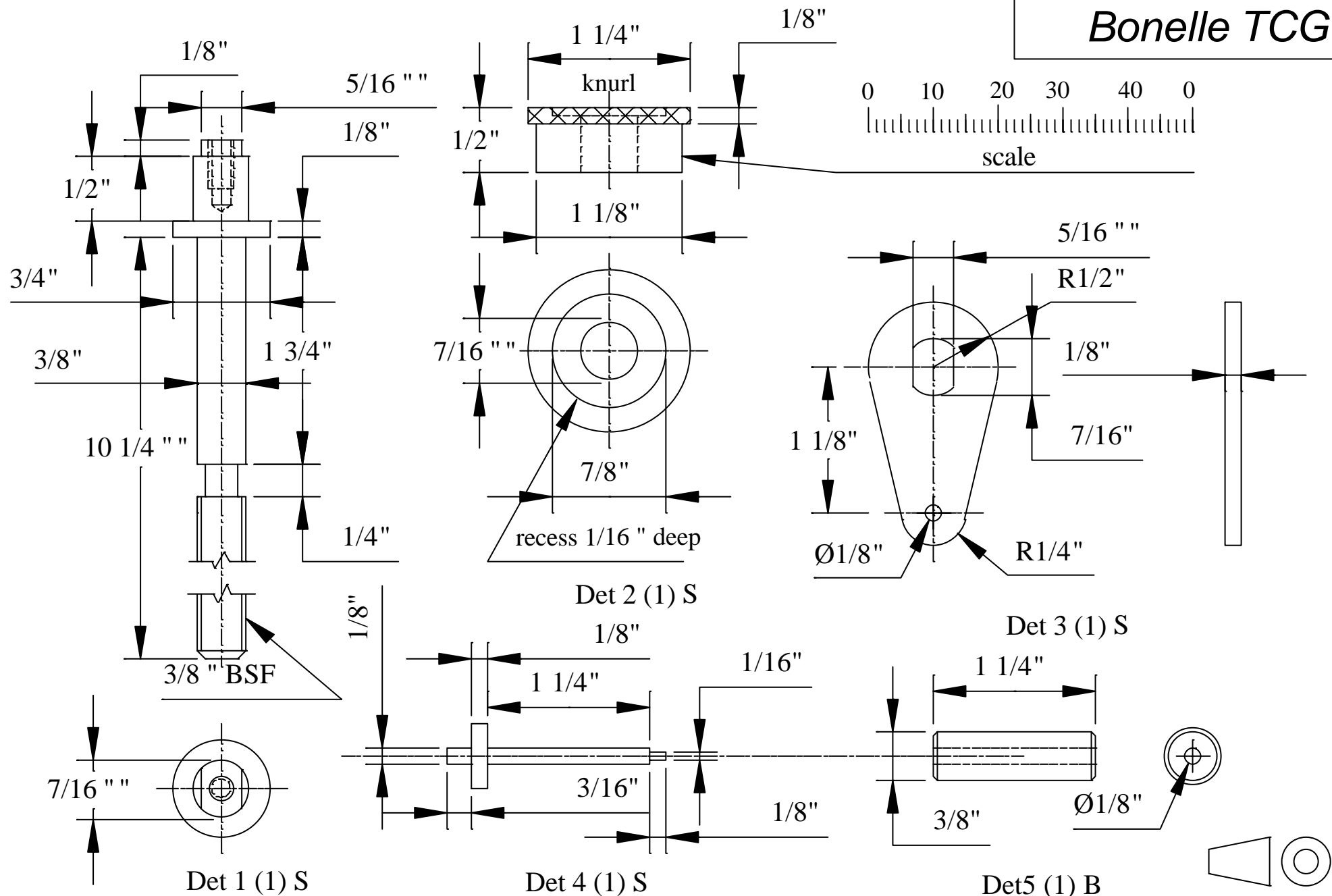


Det 1 (1) B 1/8" thick

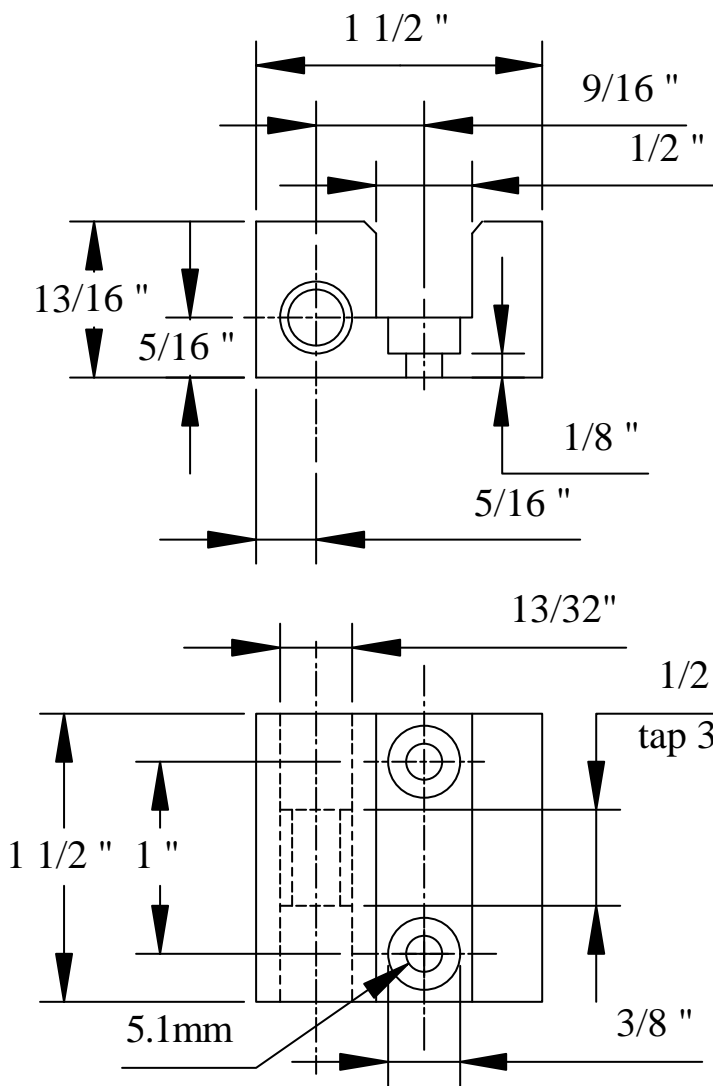
Det 2 (1) S 1/8" thick

Det 3 (1) S 1/16" thick

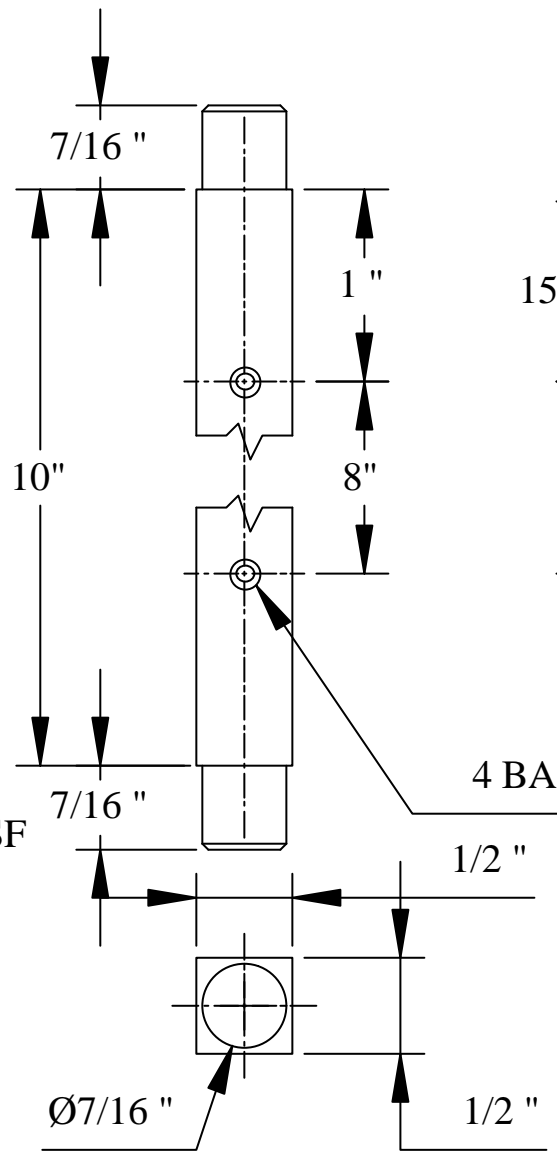




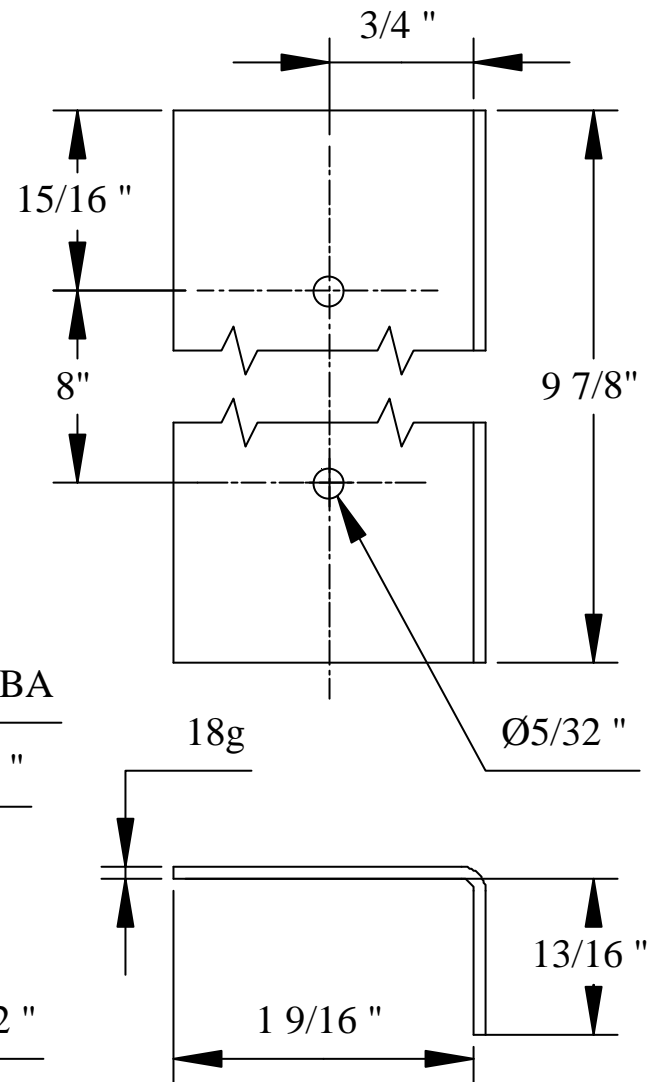
Bonelle TCG



Det 1 (1) CI



Det 2 (1) S

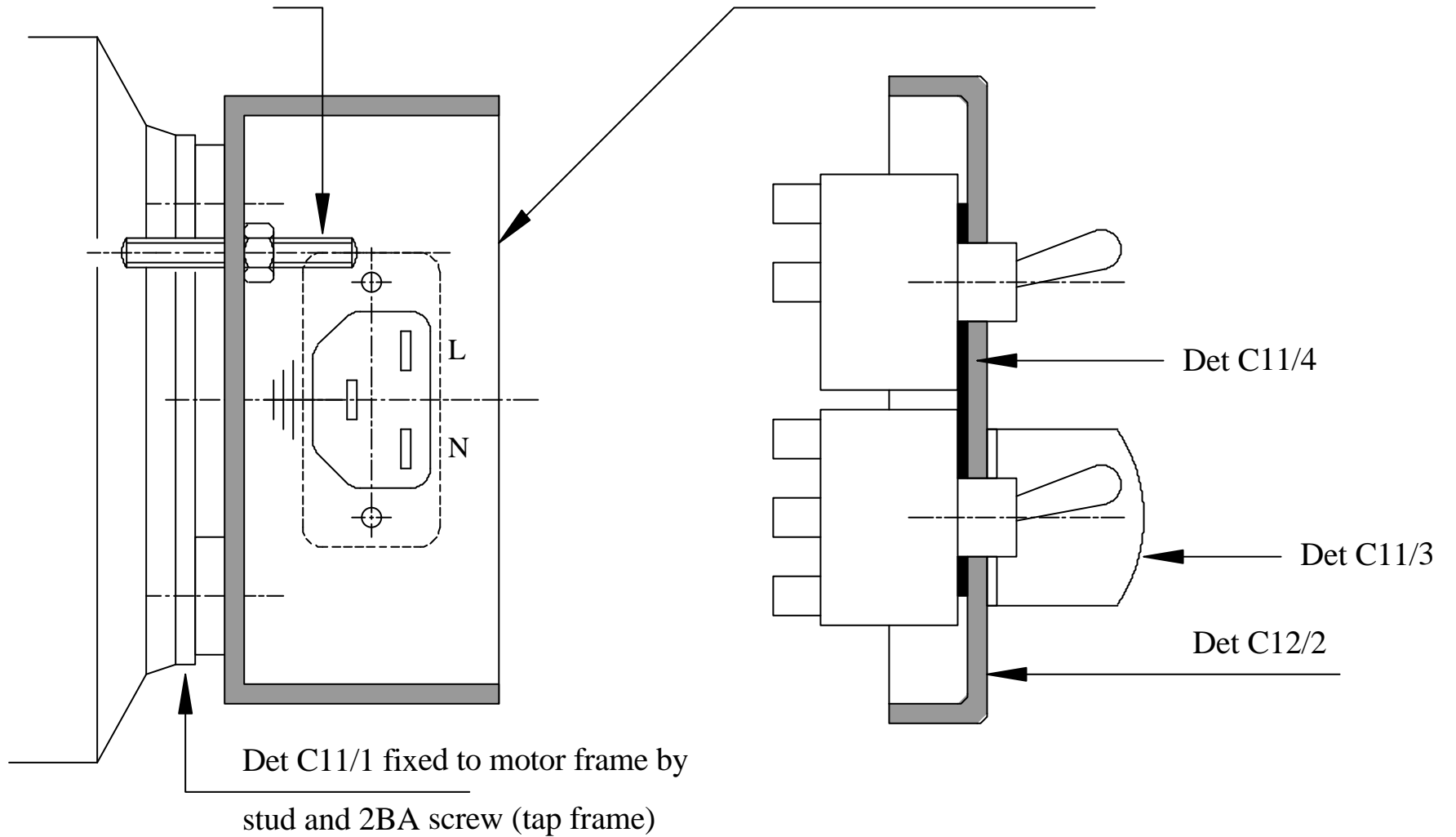


Det 3 (1) S

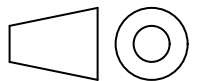


2BA X 1 1/4" brass earthing stud
fixed into tapped hole in motor frame.

Box fixed to Det C11/1
by two 2BA c'sk screws



Det C11/1 fixed to motor frame by
stud and 2BA screw (tap frame)



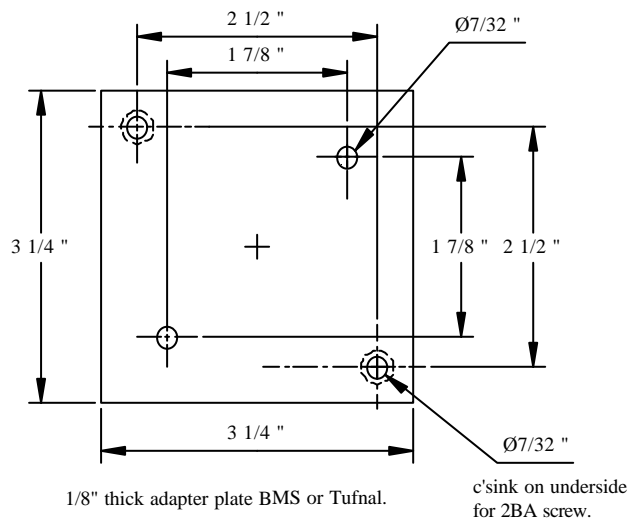
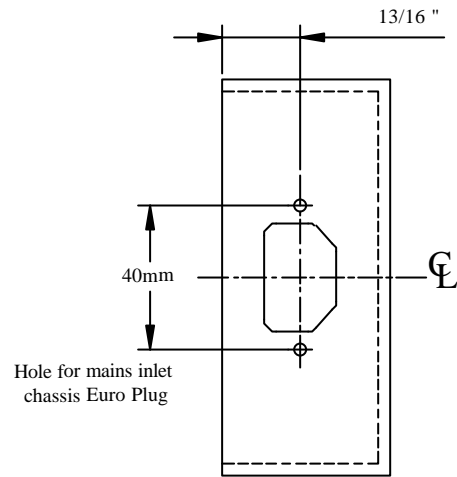
© J.B.D.Willis.
J.B.D. Willis

Revision
0

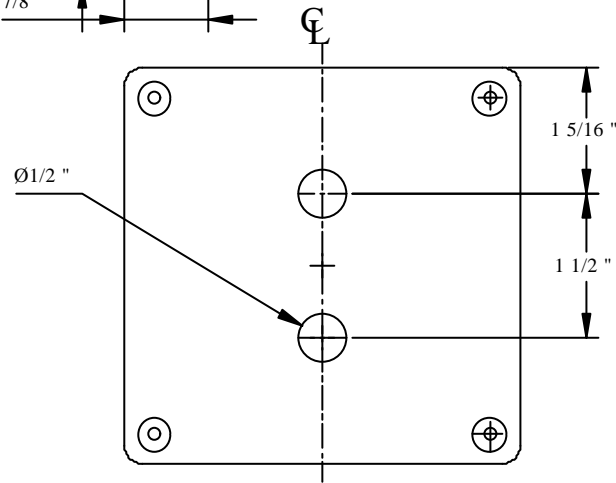
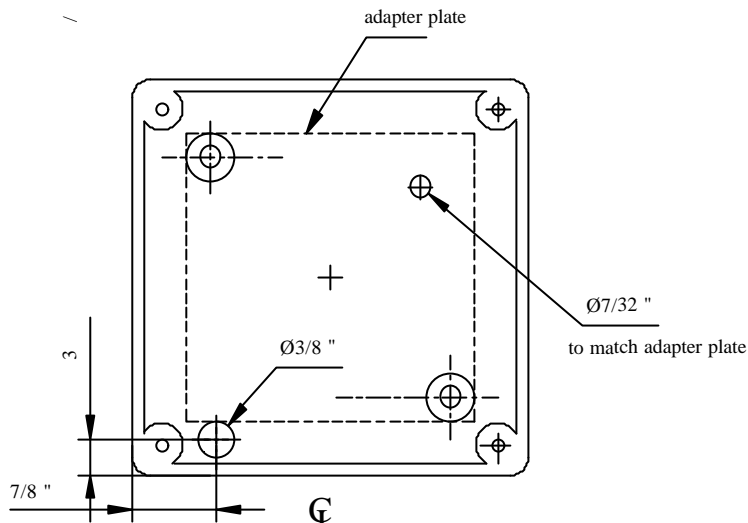
Date
24/10/00

Switchbox Assembly

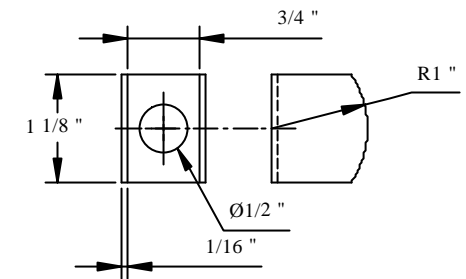
Drg No C12



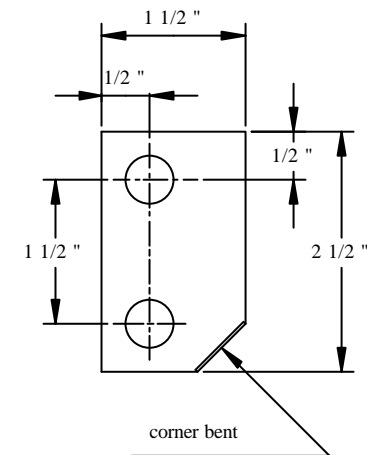
Det 1 (1) S



Det 2 (1)



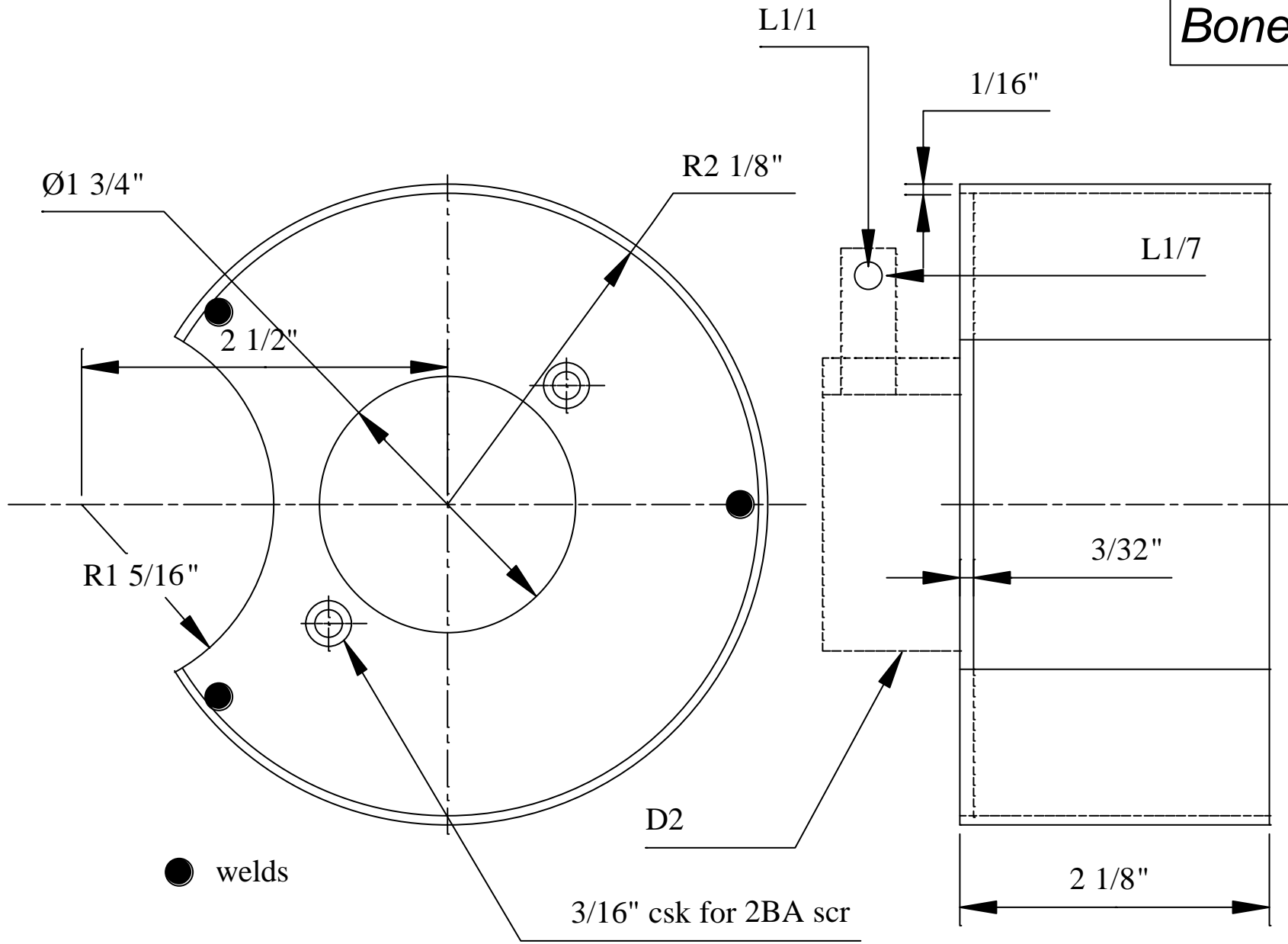
Det 3 (1) S



Earthing plate :- 0.015th brass

Det 4 (1) B

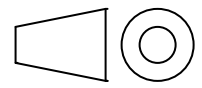




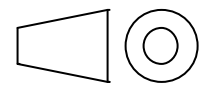
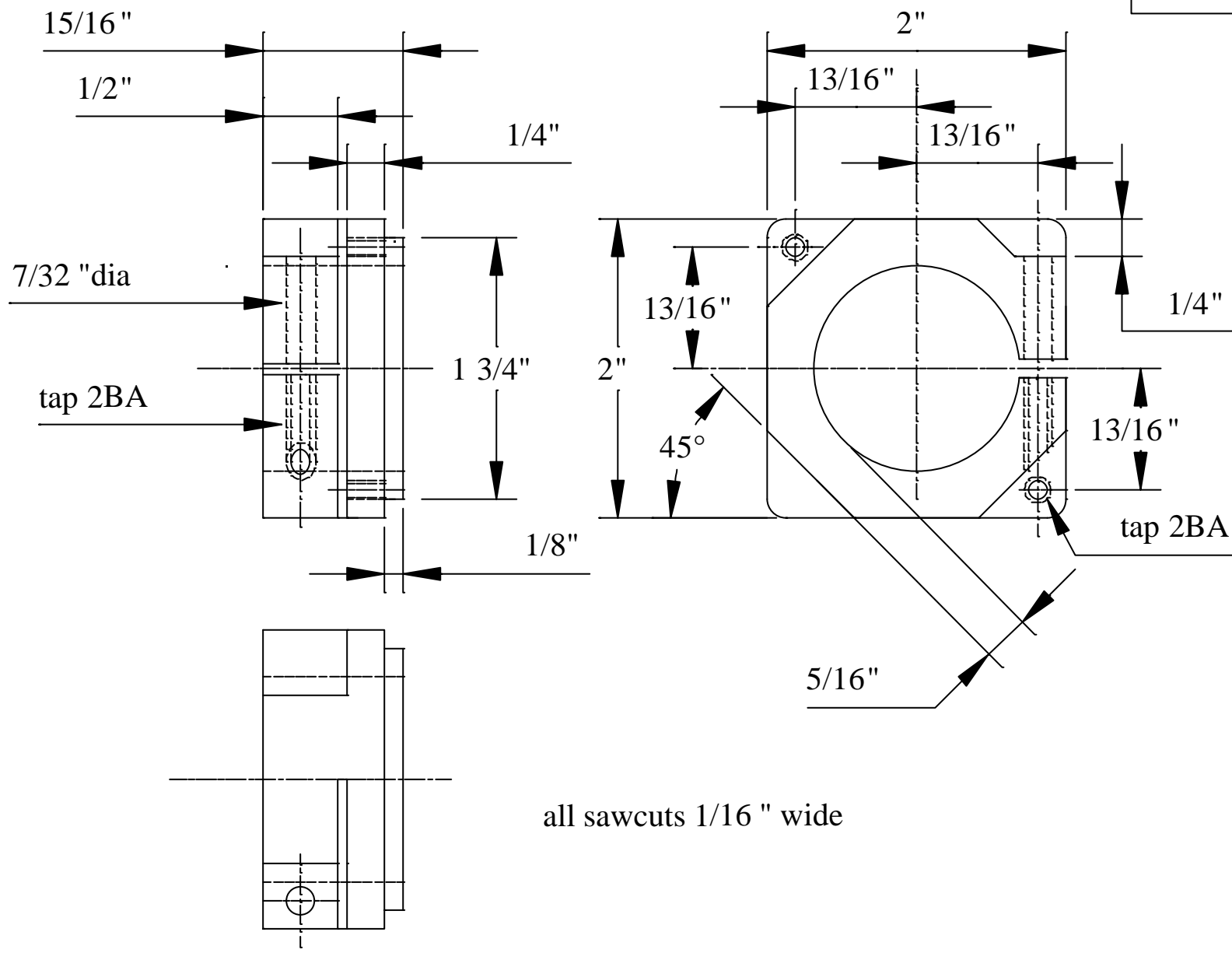
● welds

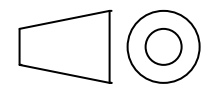
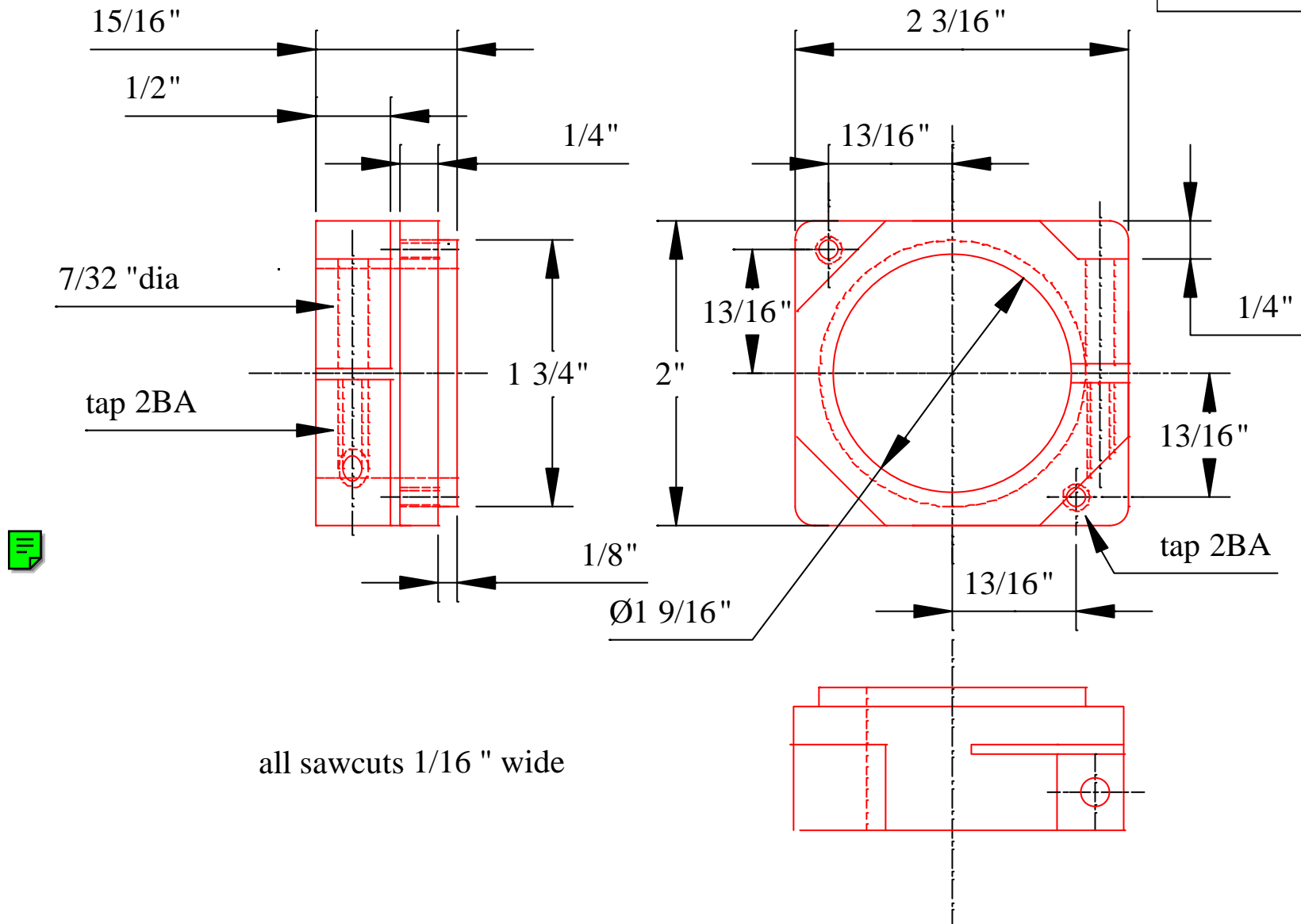
3/16" csk for 2BA scr

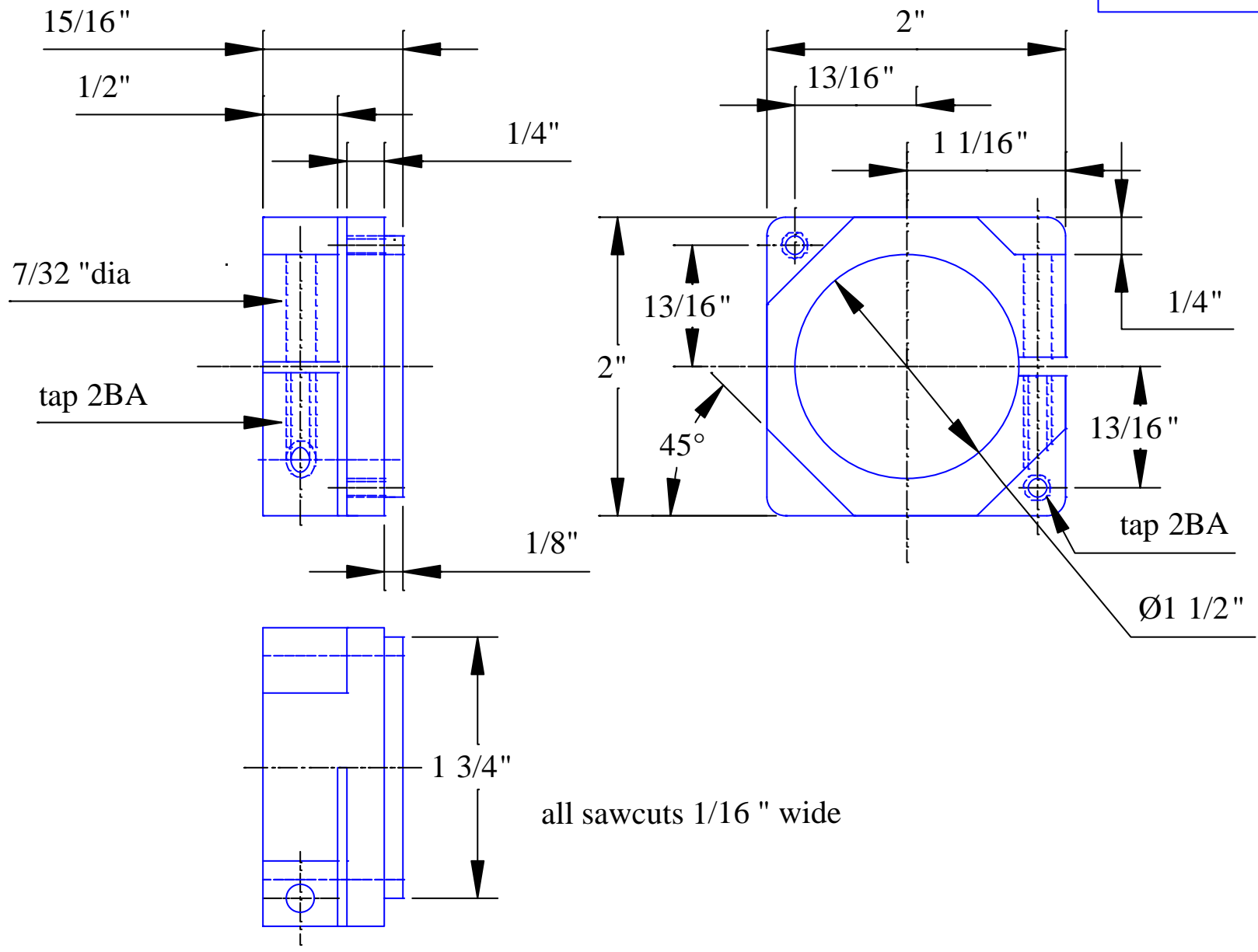
Det1(1)S

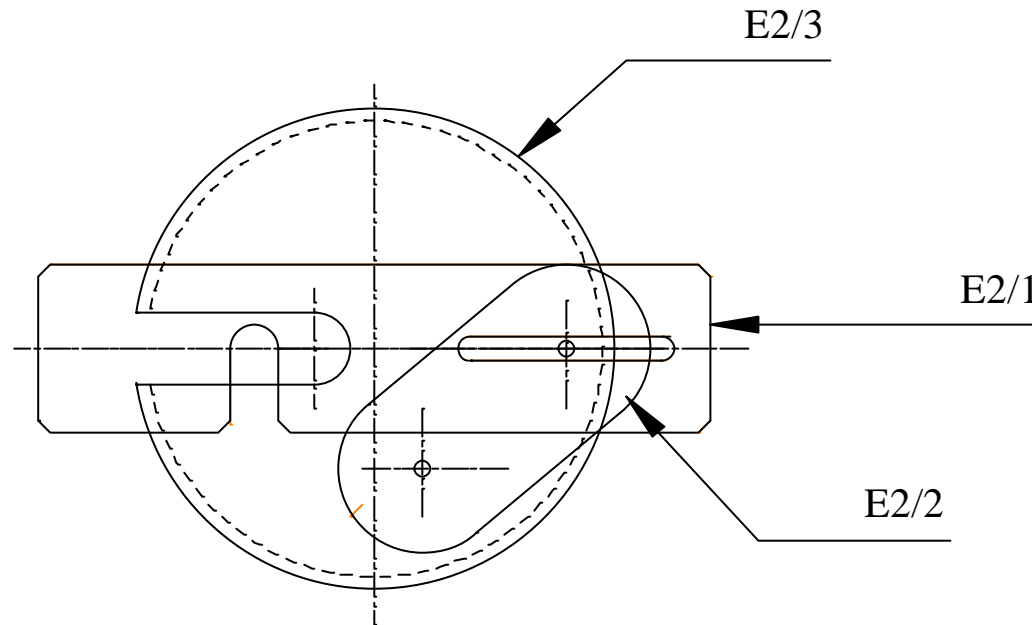


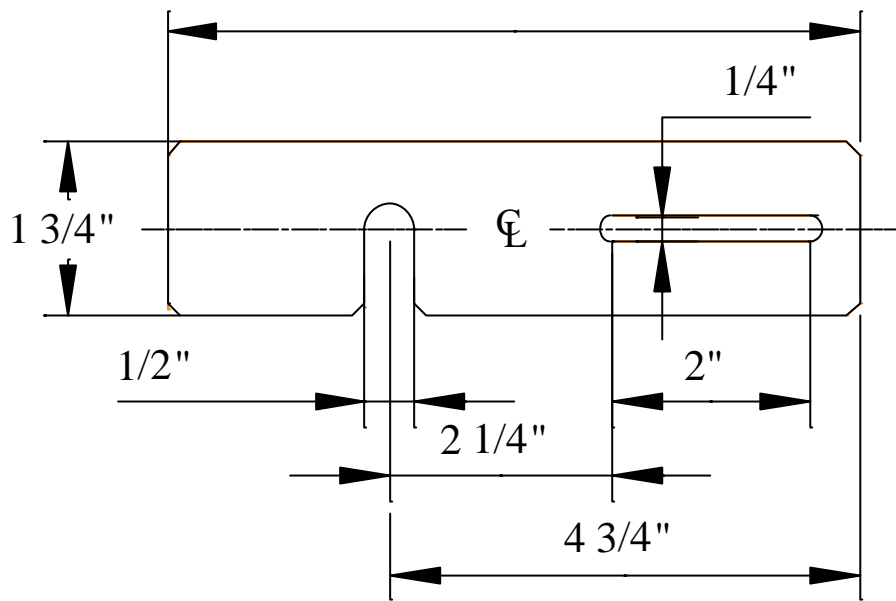
Bonelle TCG



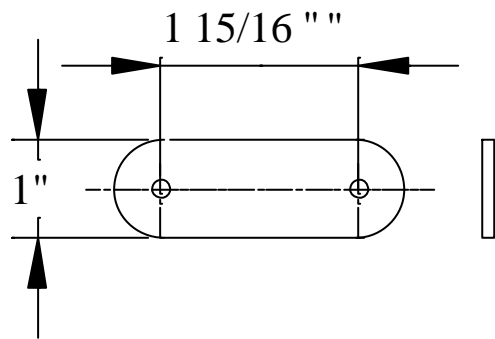




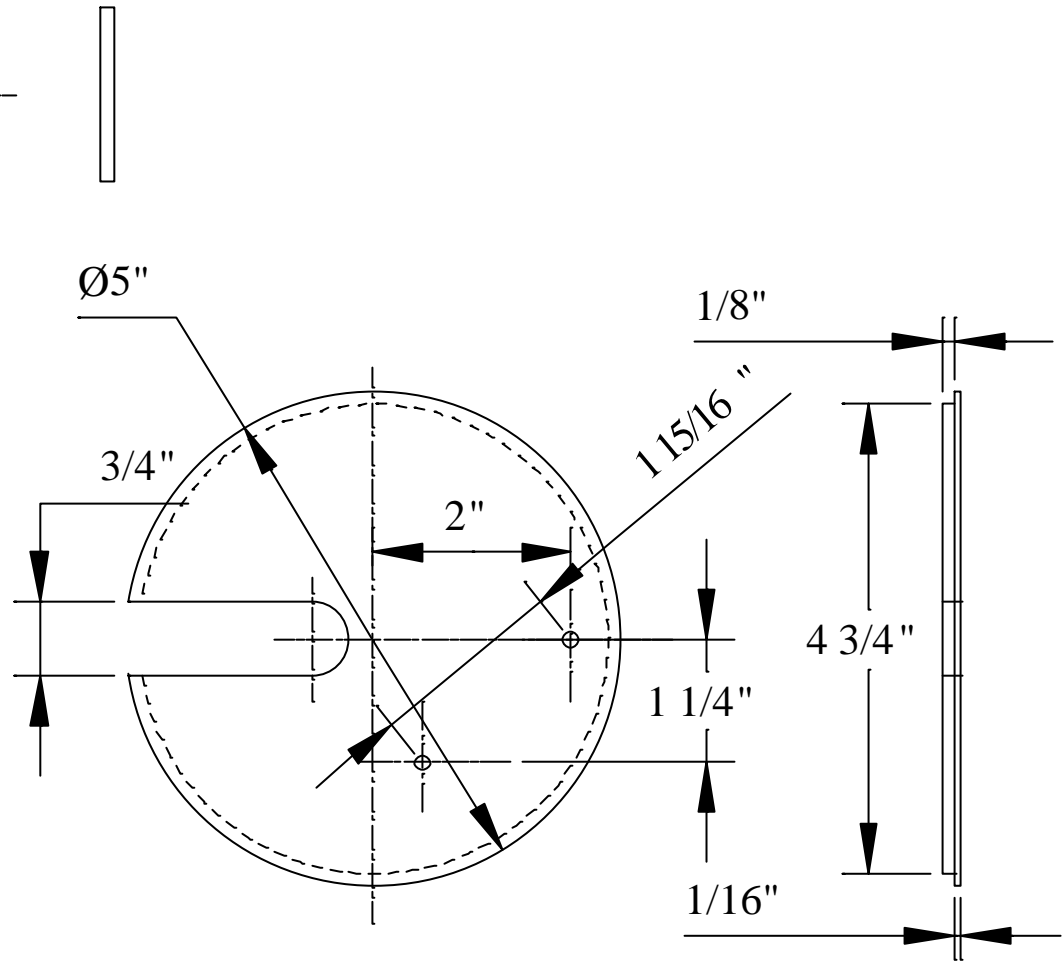




Det 1



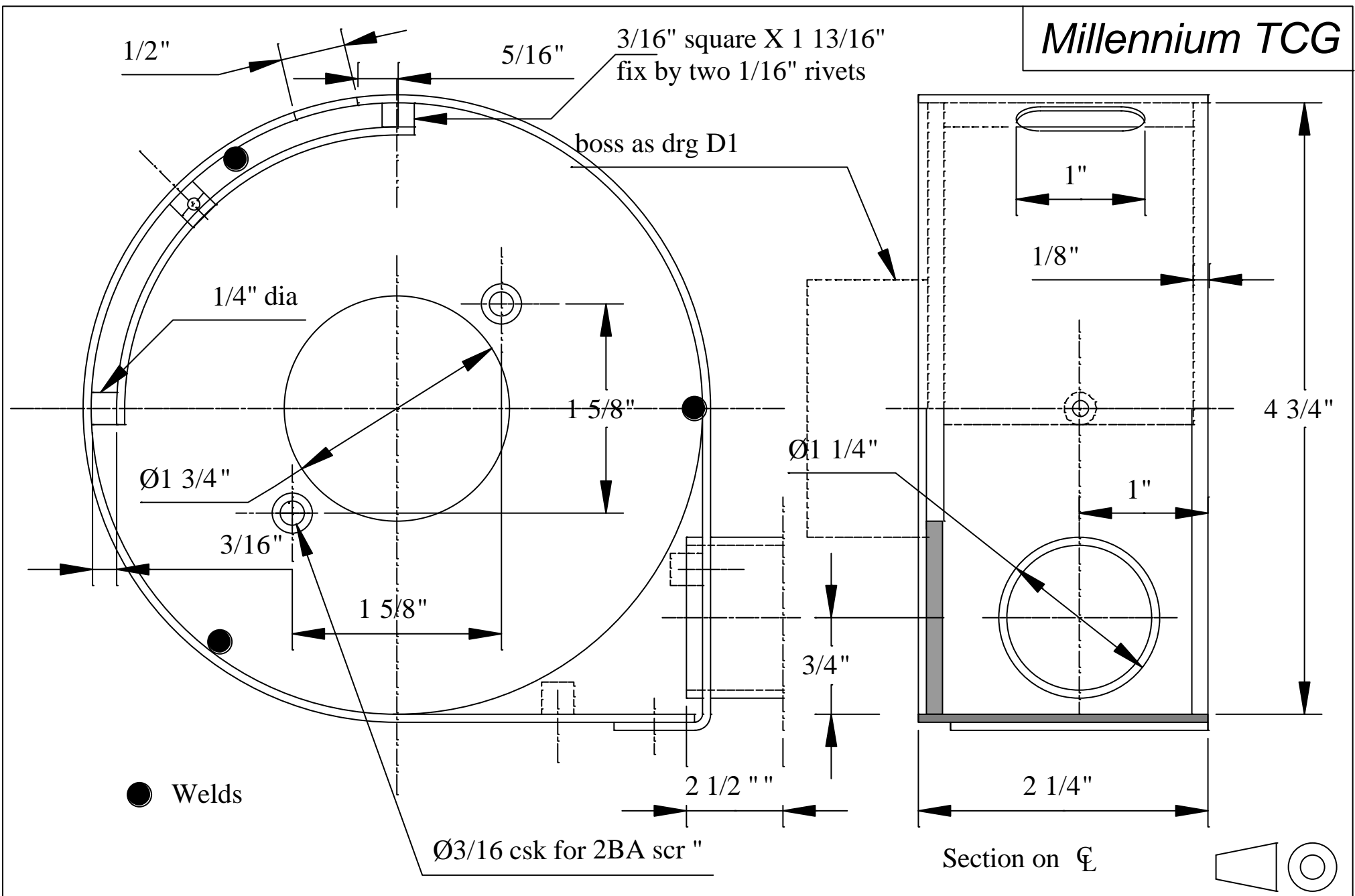
Det 2

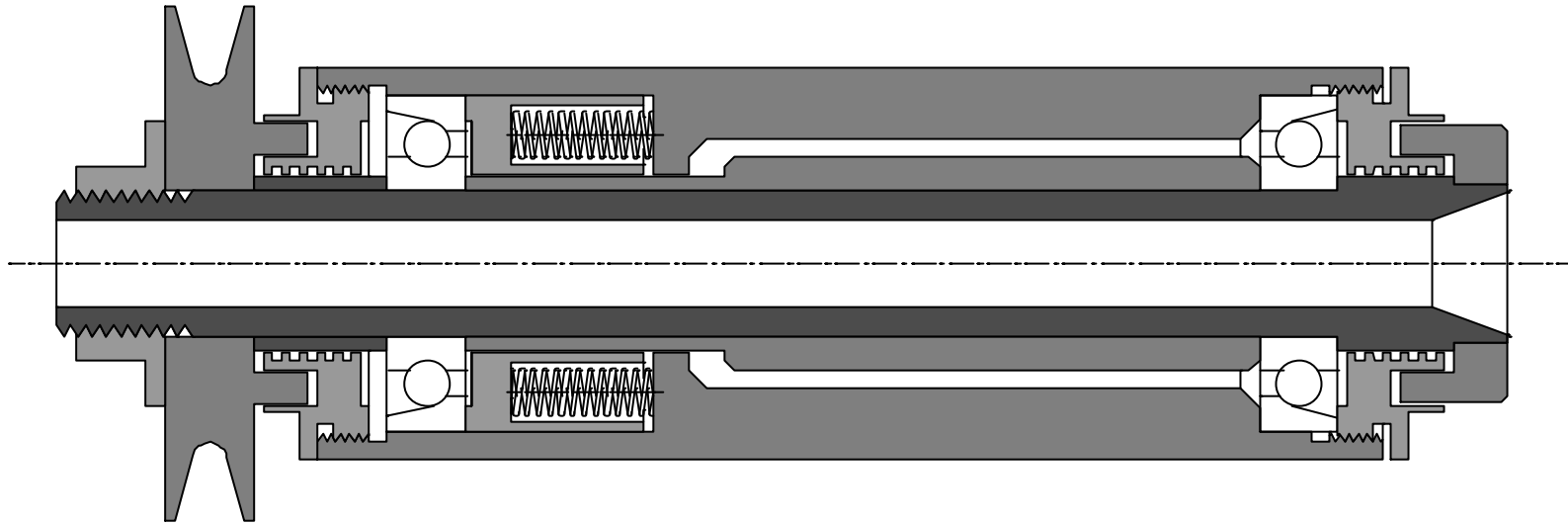


Det 3

Material :- 4mm polycarbonate sheet







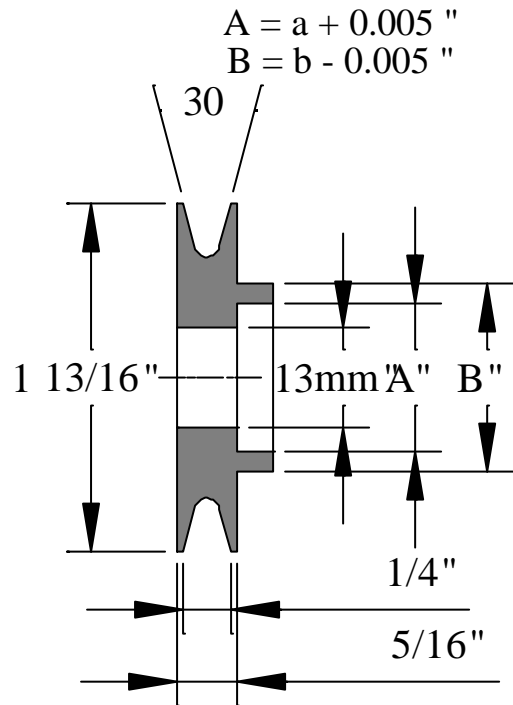
1.5 X F/S

BEARINGS :- BSI series BML EN metric series (EN13)

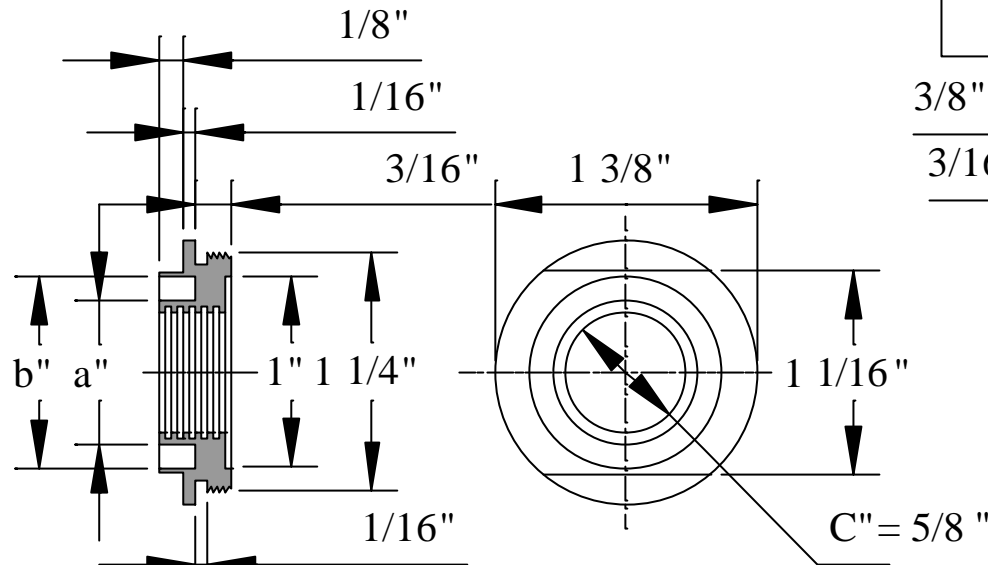


© J.B.D.Willis.	Revision 1	Date 12/2/04	Spindle Assembly	Drg No F1
-----------------	---------------	-----------------	------------------	-----------

Bonelle TCG



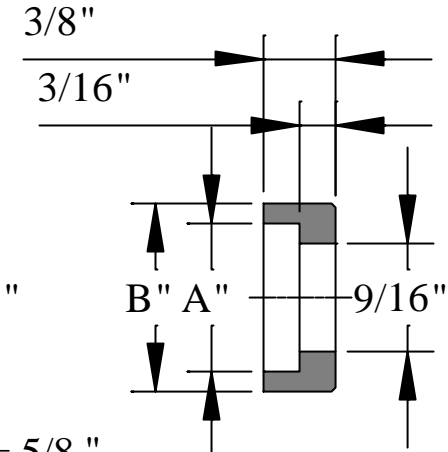
Det 1 (1) S
1/4"



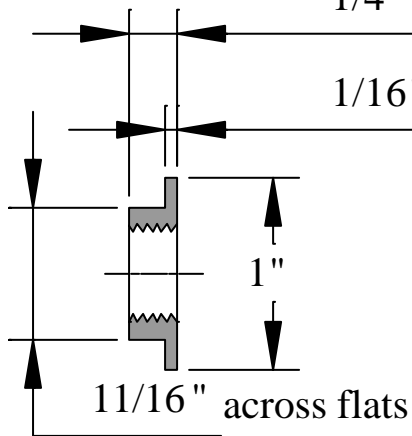
five grooves in bore
 1/32" wide 1/32" deep

$a = 3/4 \text{ "}$
 $b = 1 \text{ "}$

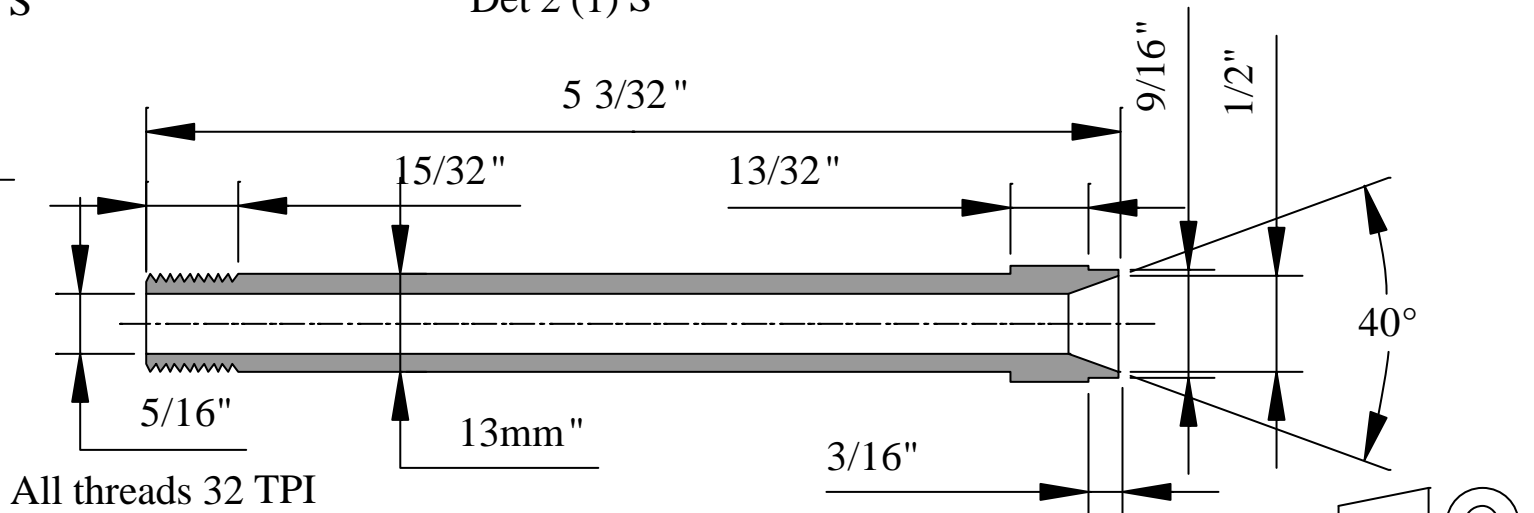
Det 2 (1) S



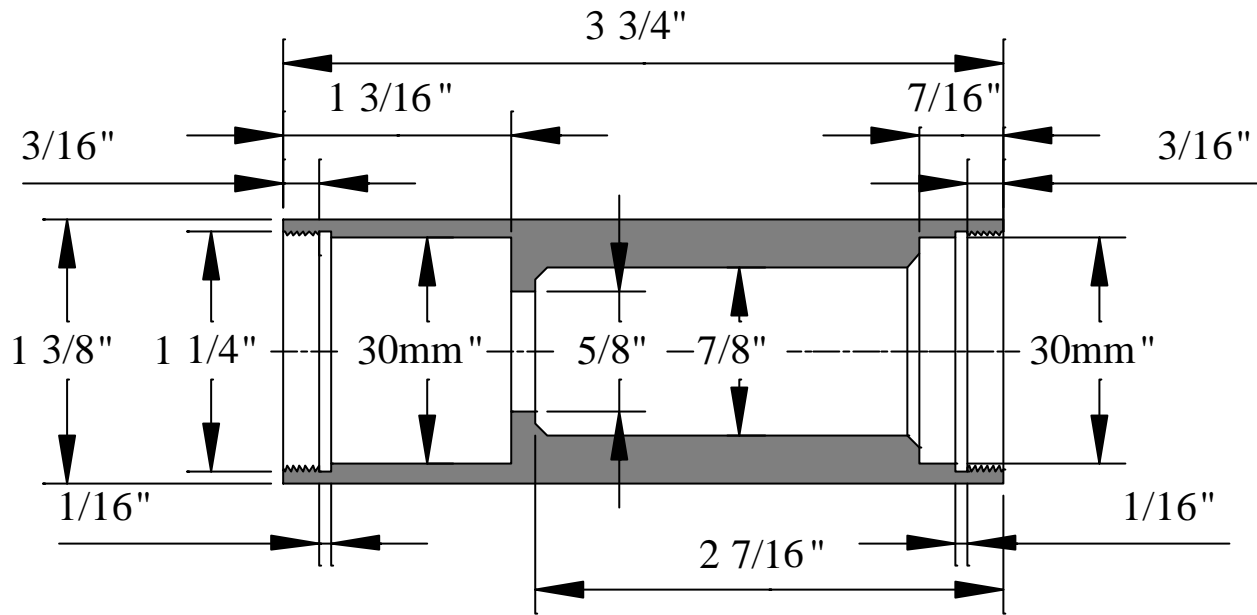
$A = a + 0.005 \text{ "}$
 $B = b - 0.005 \text{ "}$
 Det 3 (1) S



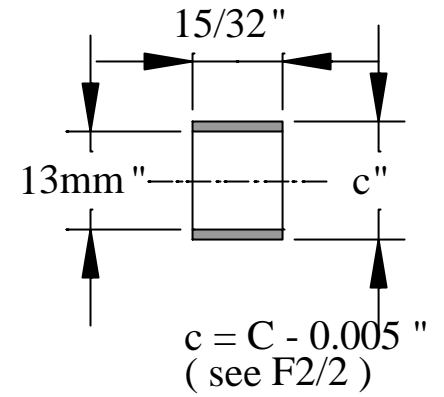
Det 4 (1) S



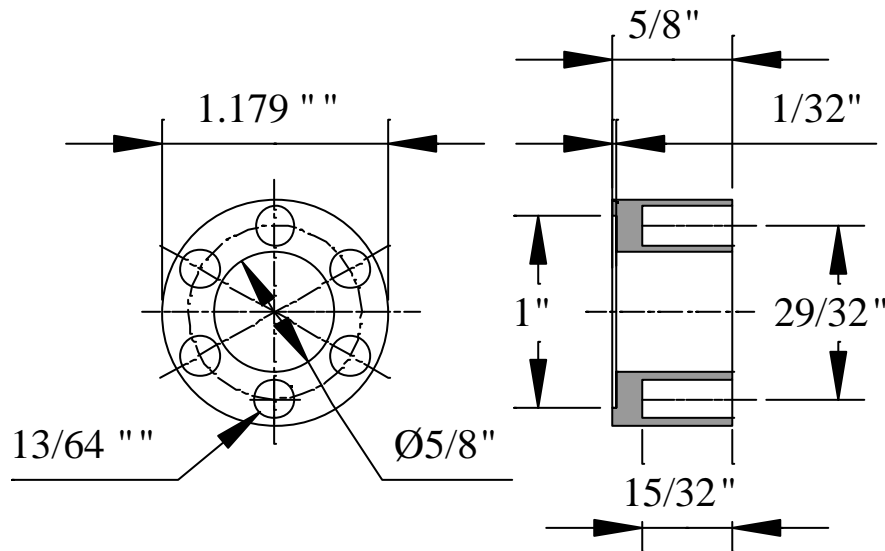
Det 5 (1) S



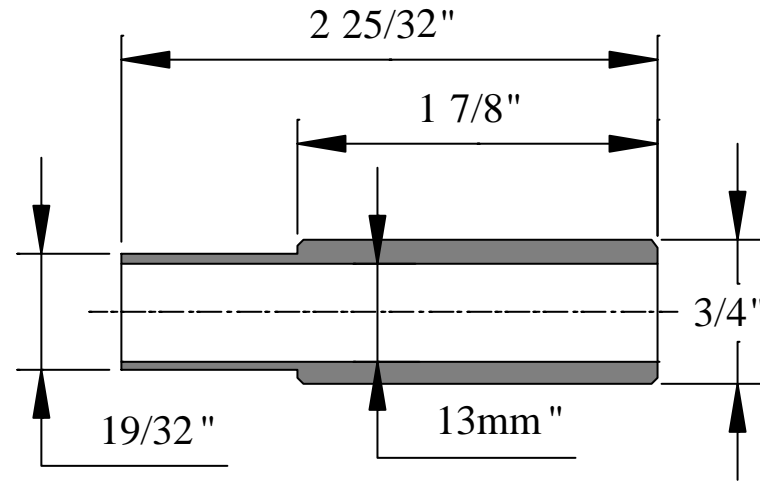
Det 1 (1) S



Det 2 (1) S

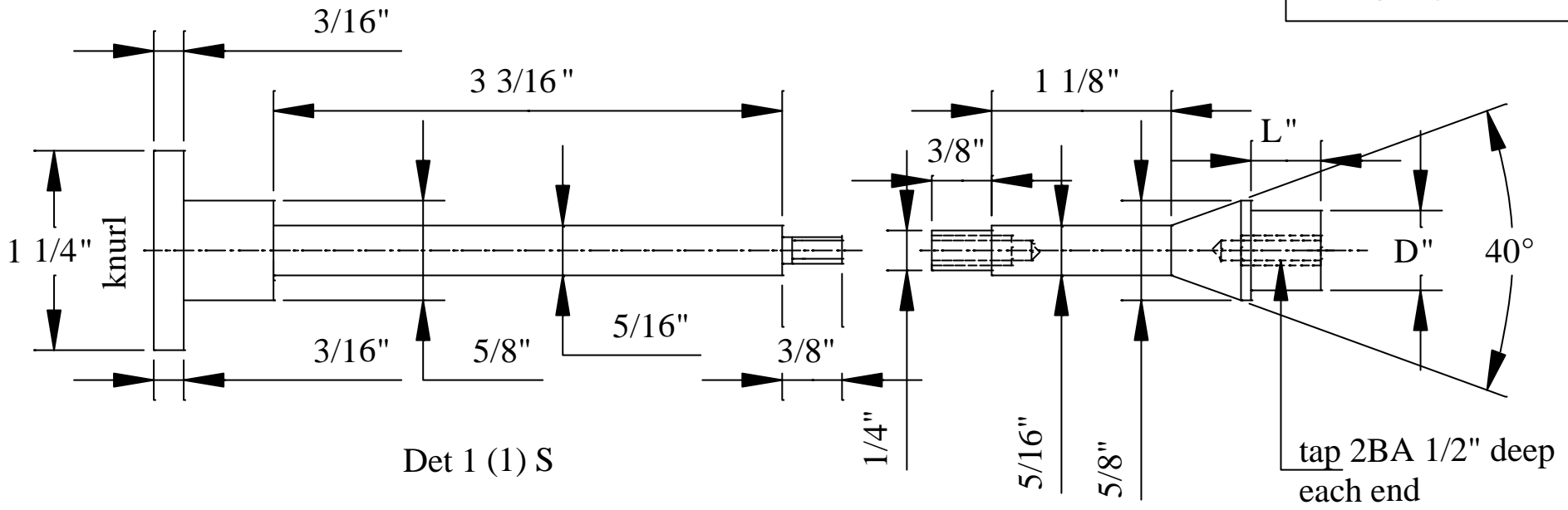


Det 3 (1) S



Det 4 (1) S



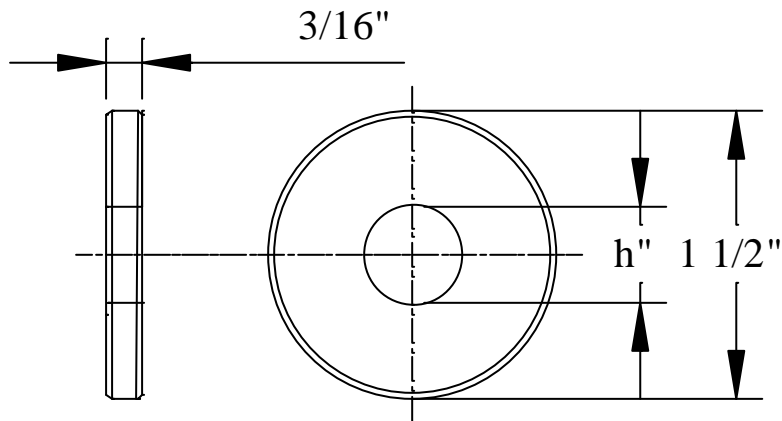


Det 1 (1) S

Det 2 (3) S L = 7/16" D = 1/2"

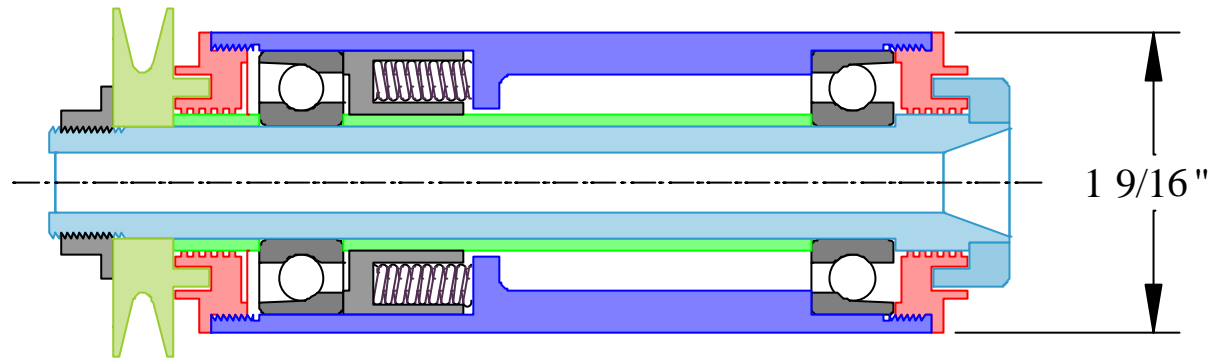
Det 3 (1) S L = 5 1/2" D = 1/2" omit tapped hole

Det 4 (1) S L = 2 3/4" D = 3/8" omit tapped hole



Det 5 (3) S h = 1/2" Det 6 (3) S h = 3/16"





BEARING :- ISO 7202 15mm bore X 35mm outside dia X 11mm wide



© J.B.D.Willis.

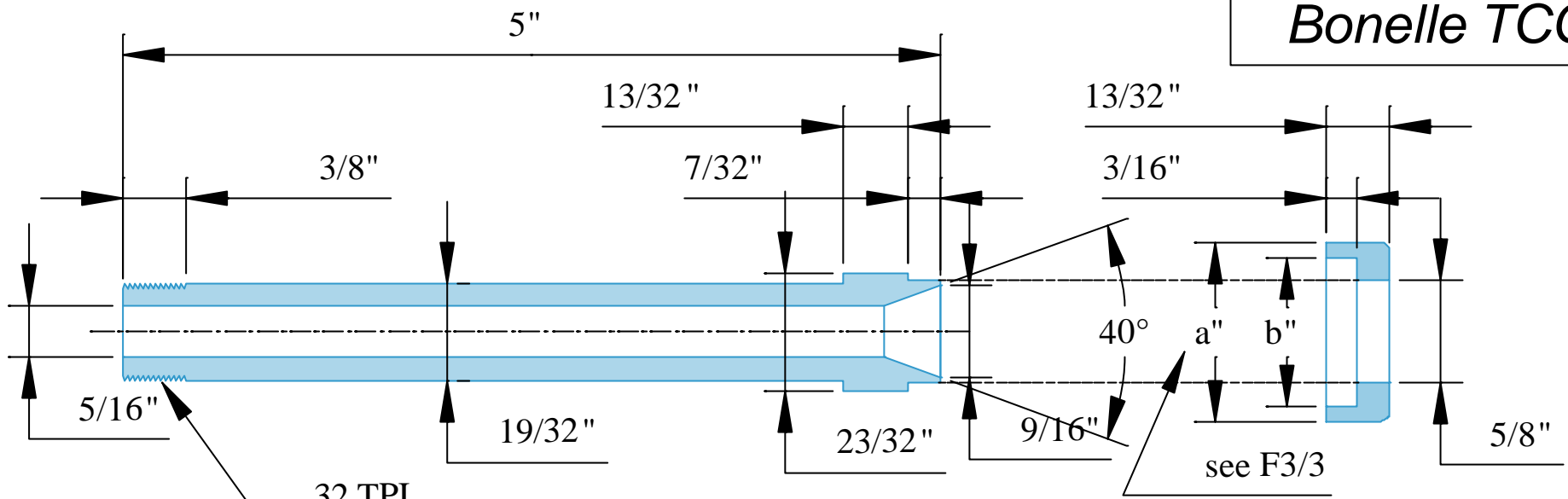
Revision
0

Date
7/2/04

Spindle Assembly (ISO)

Drg No **F1a**

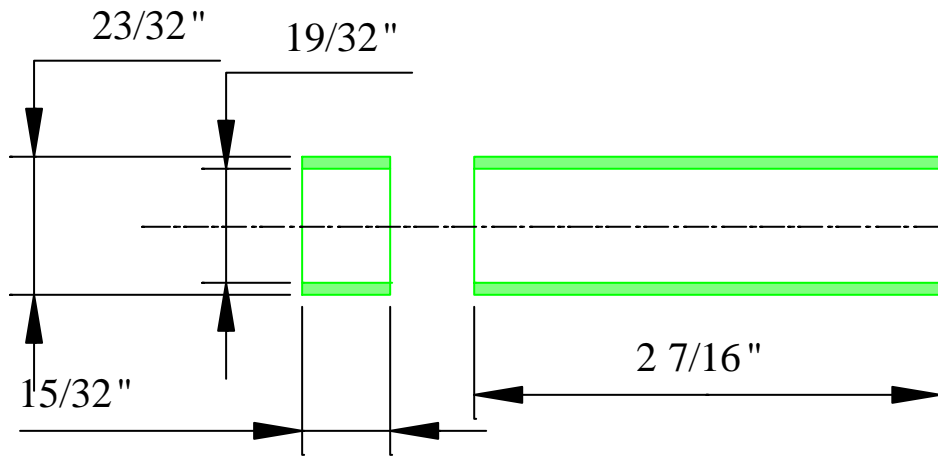
Bonelle TCG



Det 1(S)1

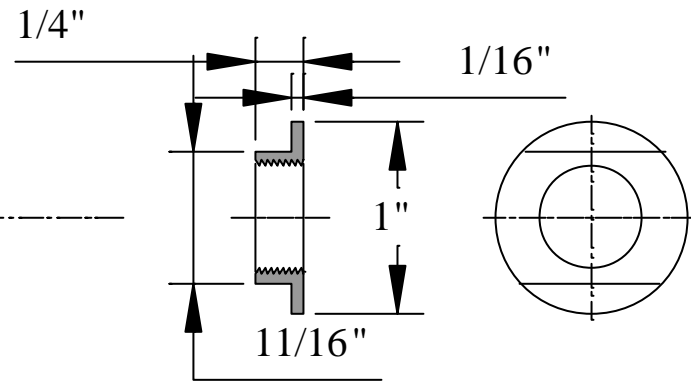
Loctite together

Det 2(S)1



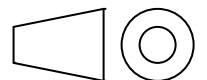
Det 3(S)1

Det 4(S)1

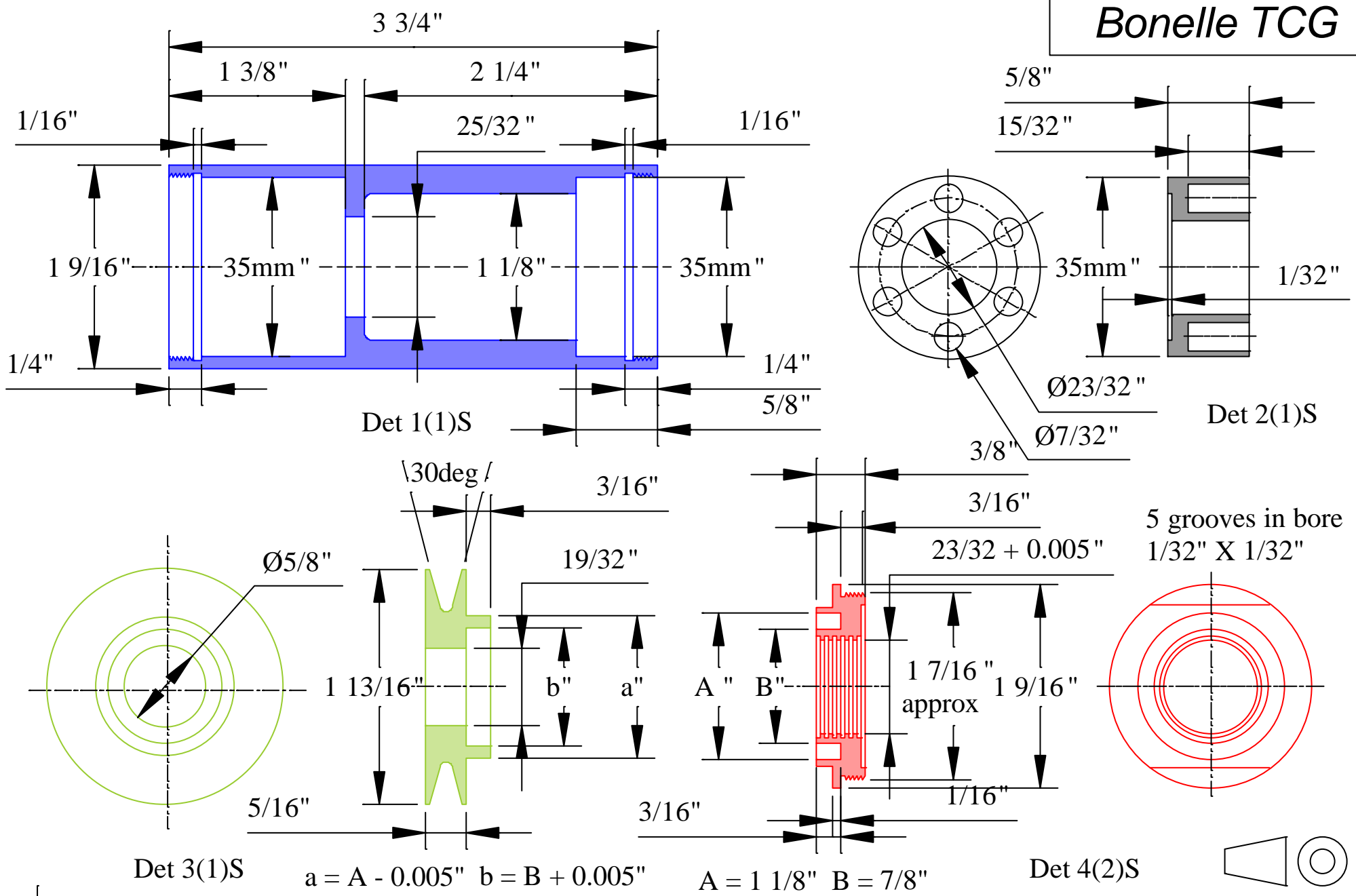


thread to mate with Det 1

Det 5(S)1



Bonelle TCG



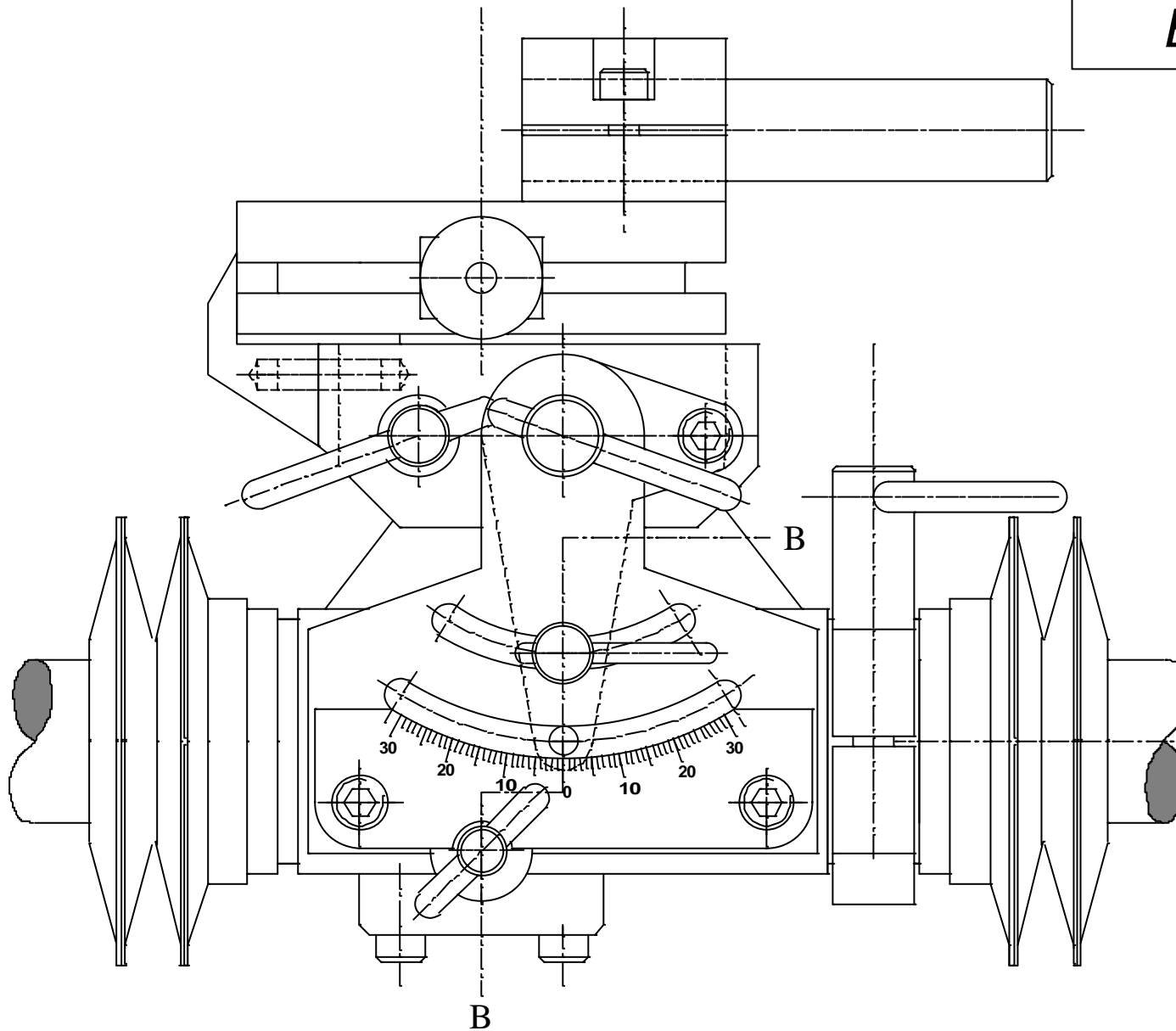
© J.B.D.Willis.

Revision
0

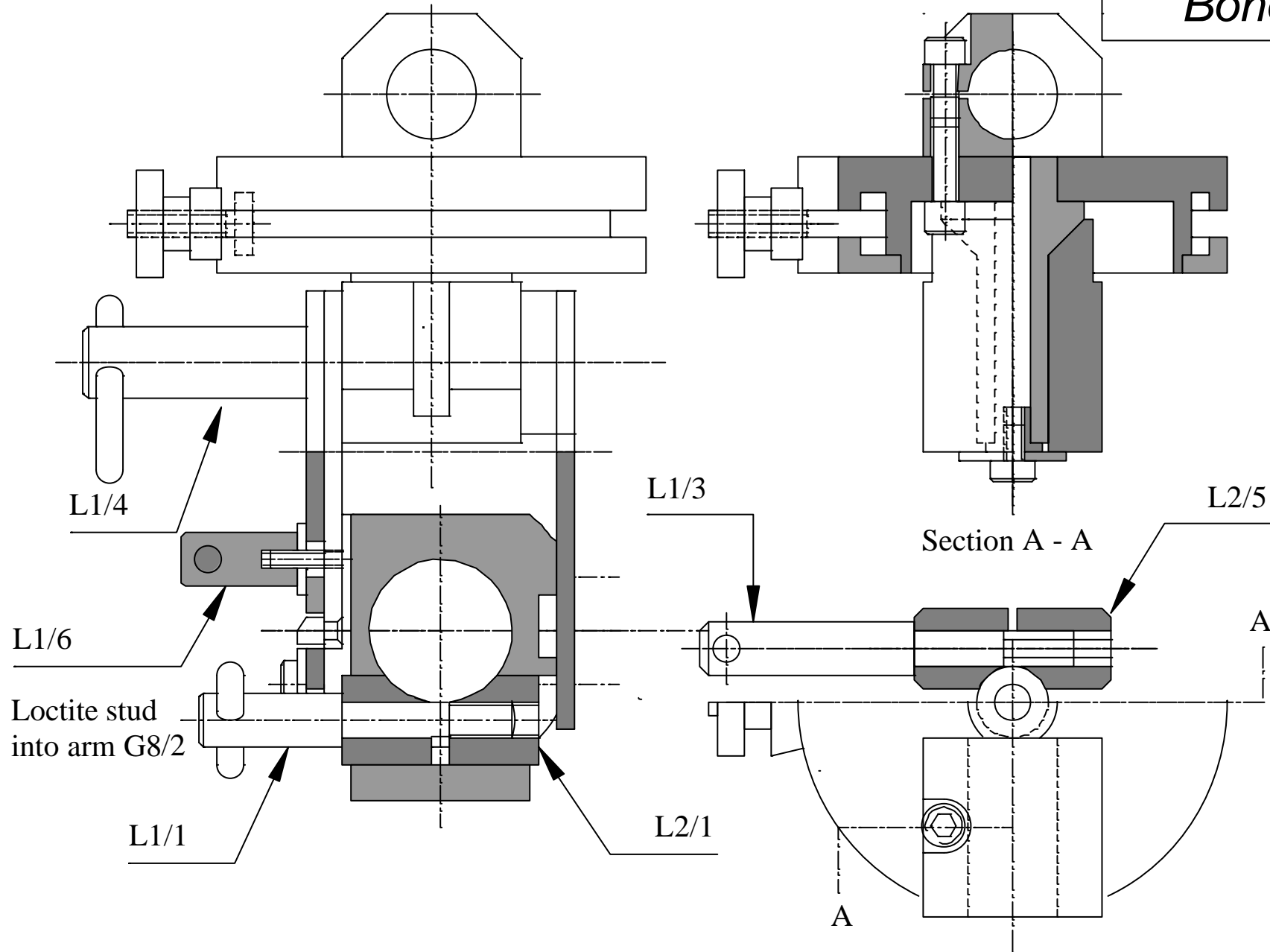
Date
8/2/04

Spindle Details

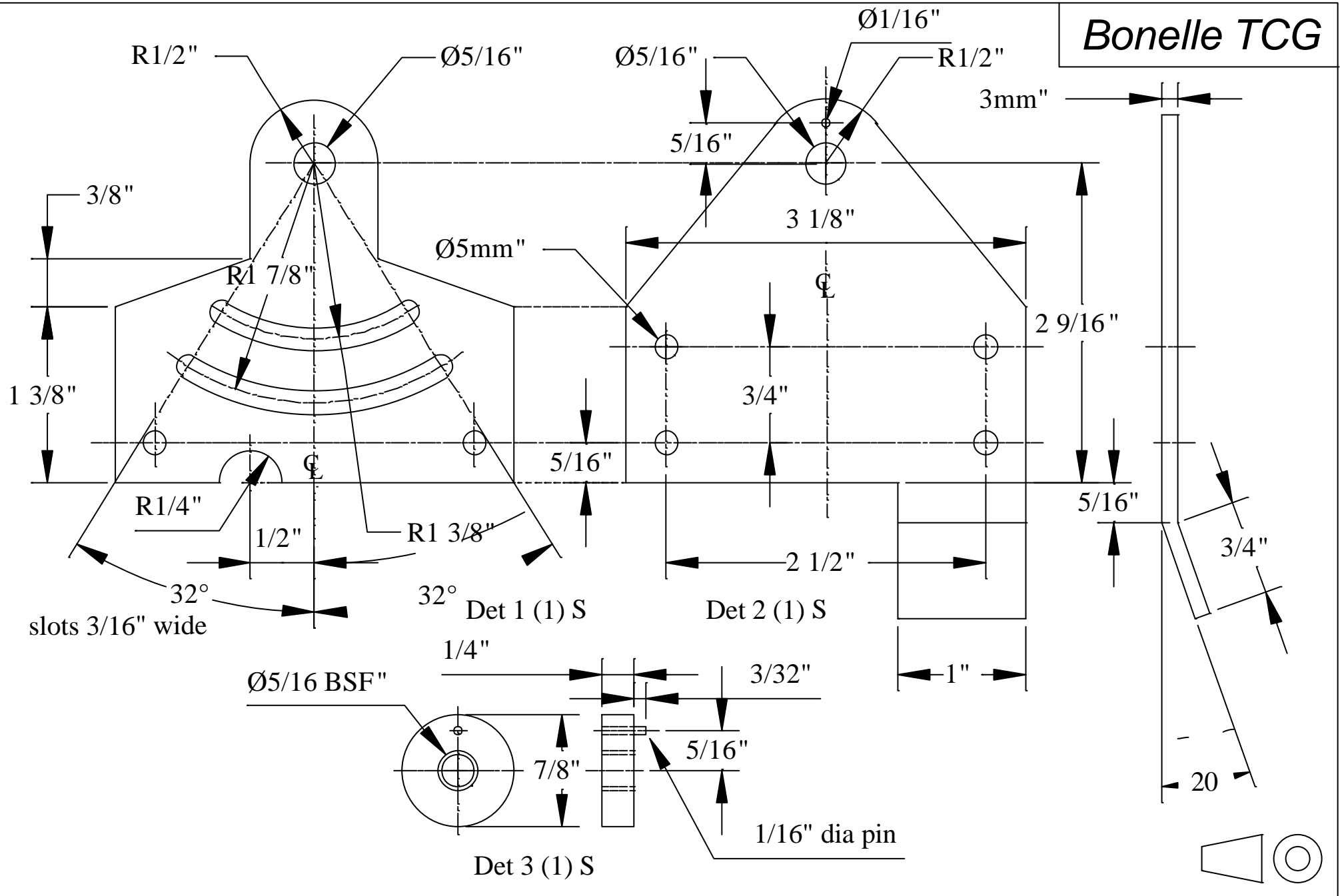
Drg No **F3a**



Bonelle TCG



Bonelle TCG



© J.B.D.Willis.

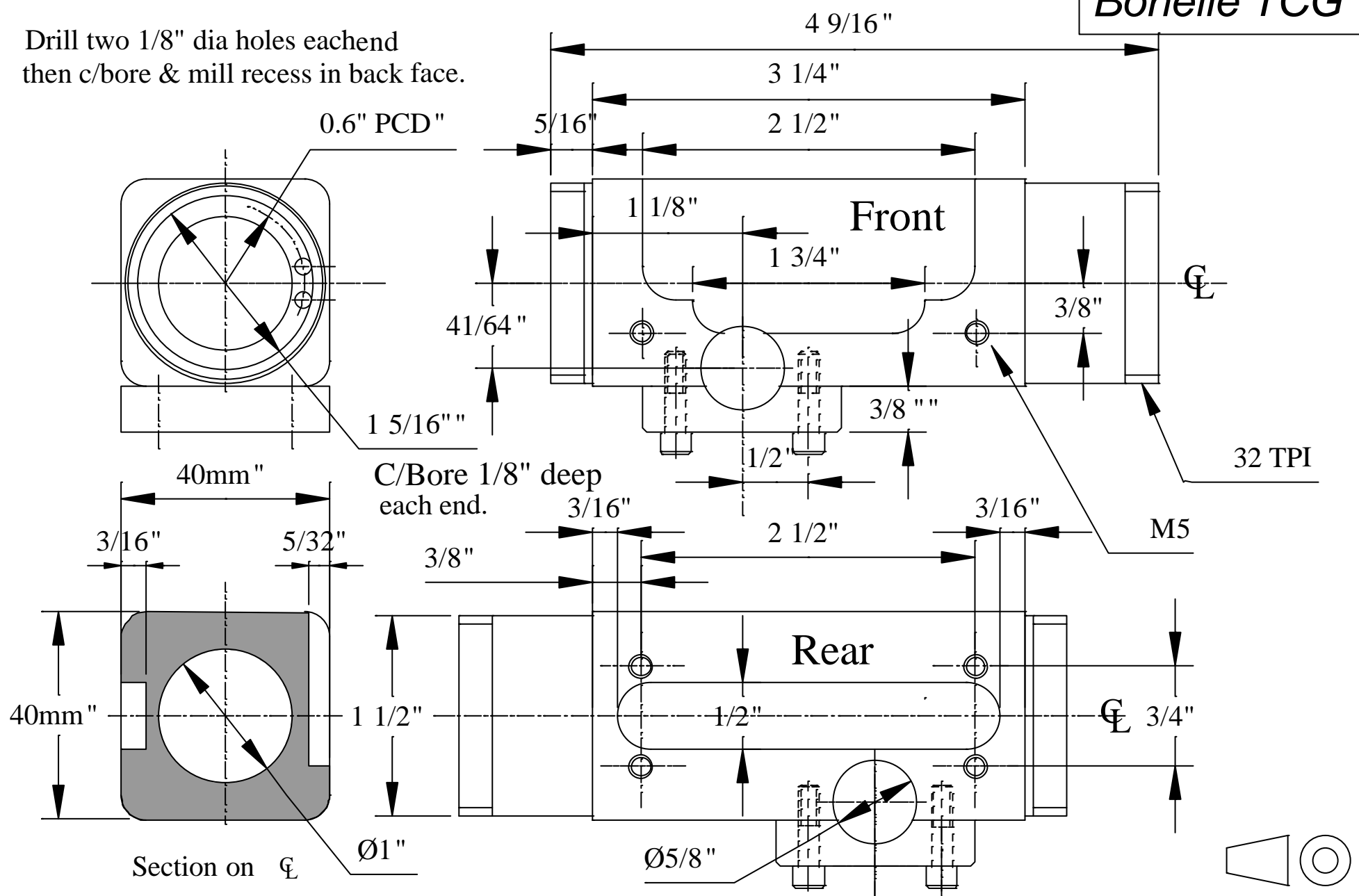
Revision
2

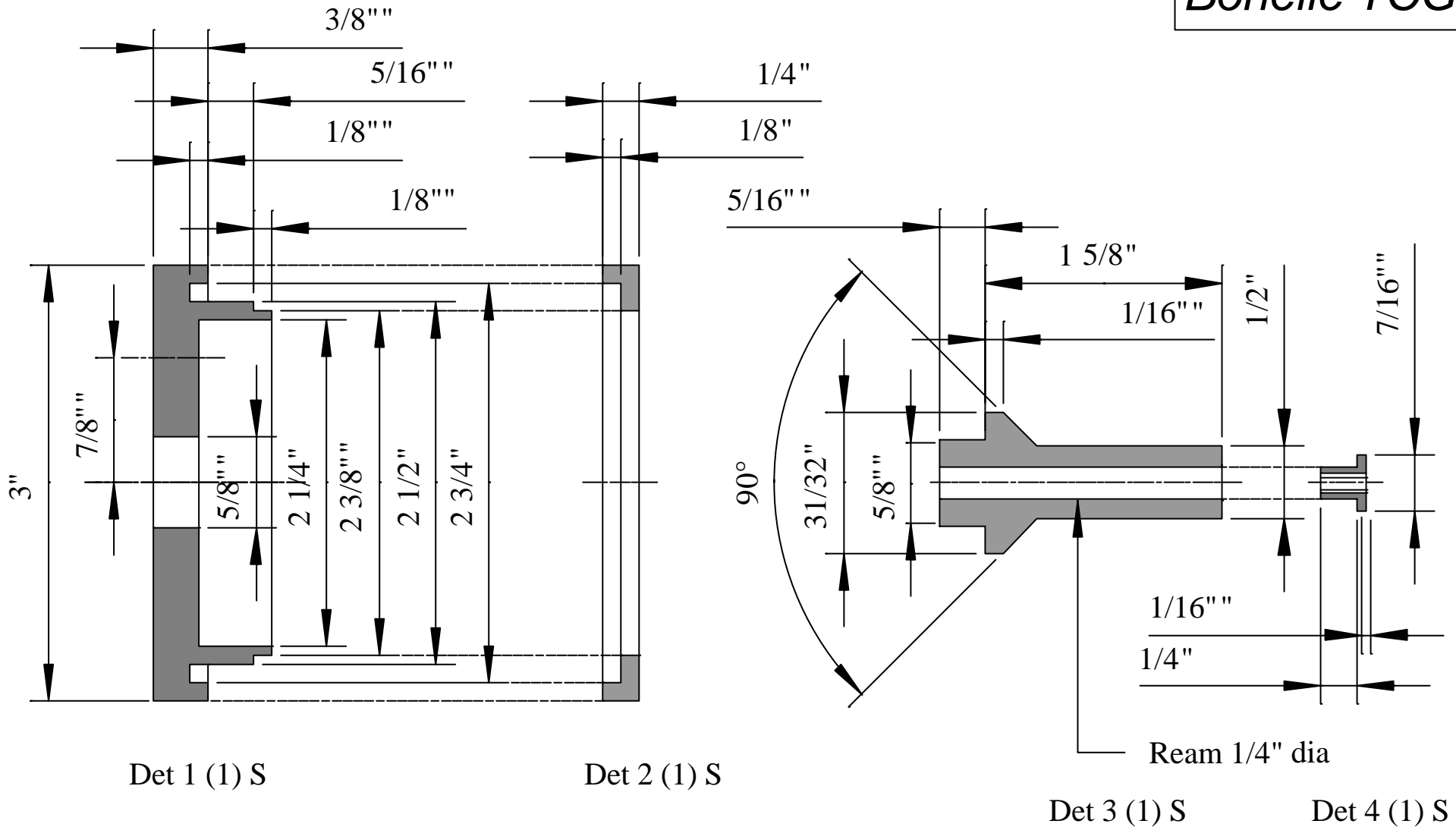
Date
20/02/04

Front and Back Plates

Drg No G3

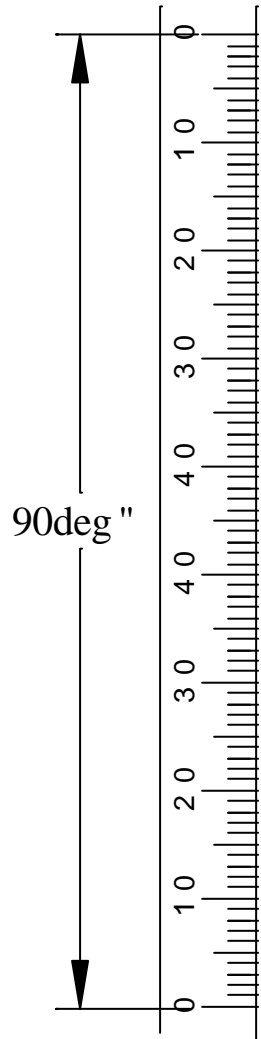
Drill two 1/8" dia holes each end then c/bore & mill recess in back face.



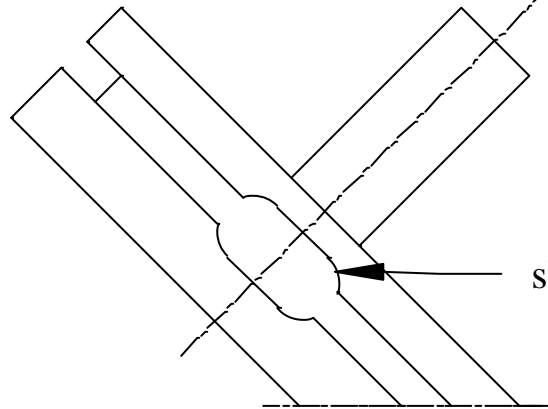
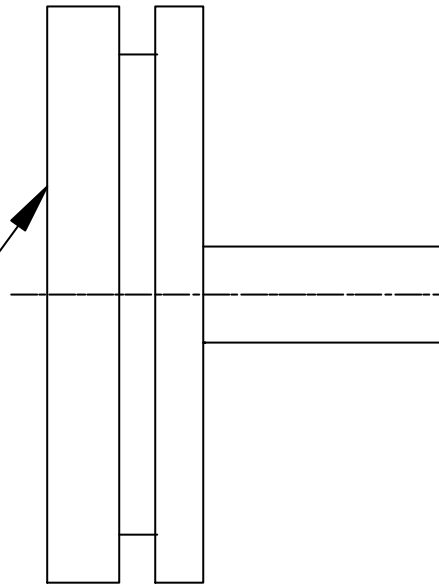


Make det 3 initially oversize then finish overall on mandrel to ensure concentricity of hole and to mate with G9
 Assemble det 1, 2 & 3 using Loctite then lightly machine top face of det 1 with assembly on mandrel
 Assemble det 4

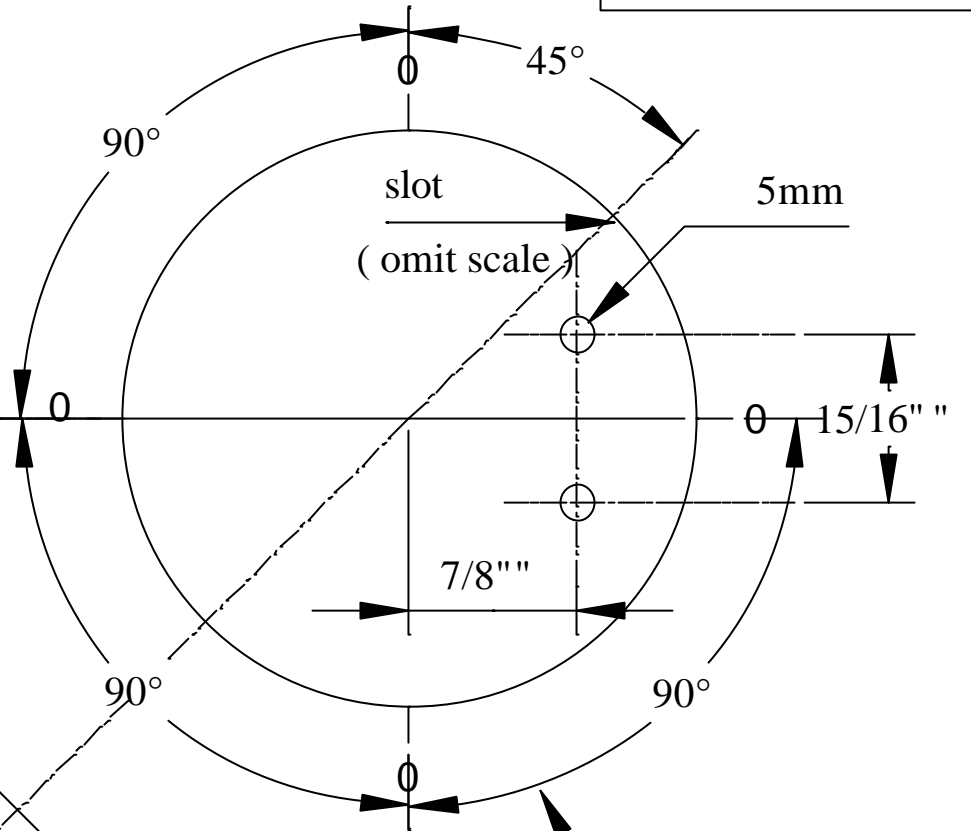




scale marking



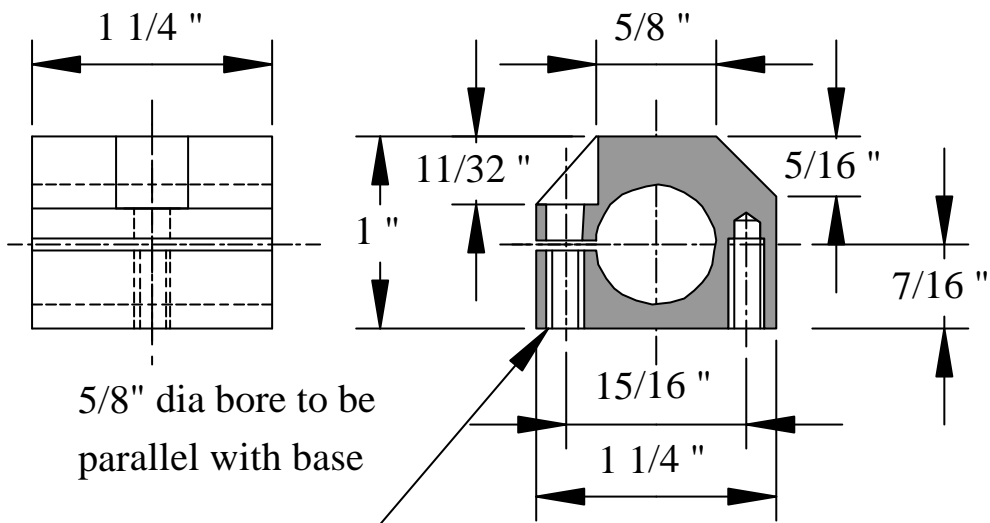
slot 3/8" W X 3/8" L



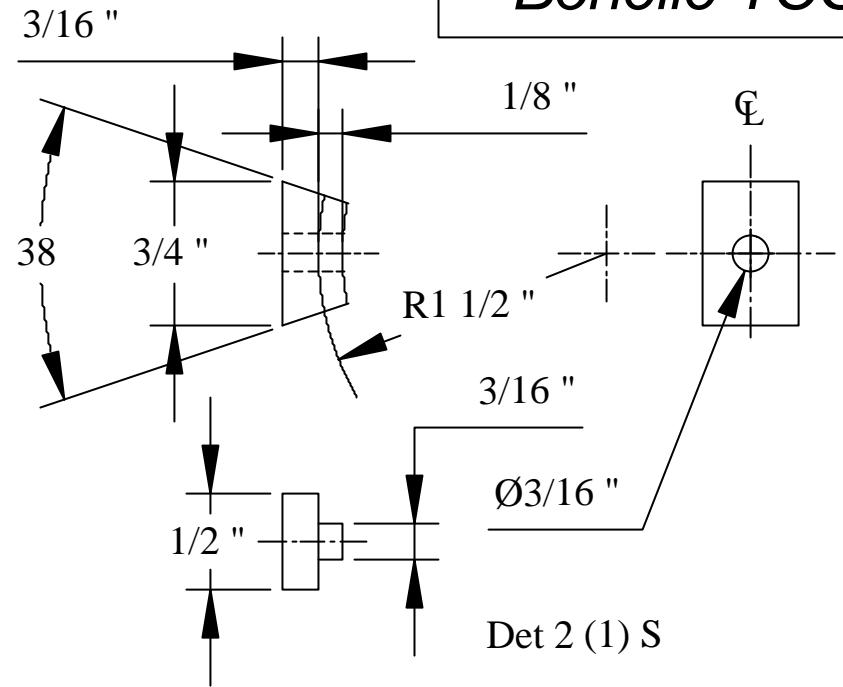
scale repeated in 3 quadrants only



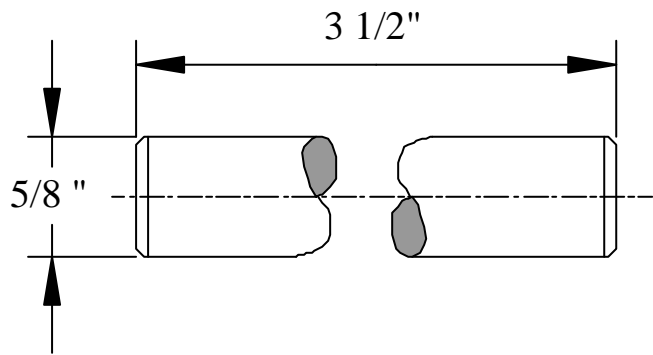
Bonelle TCG



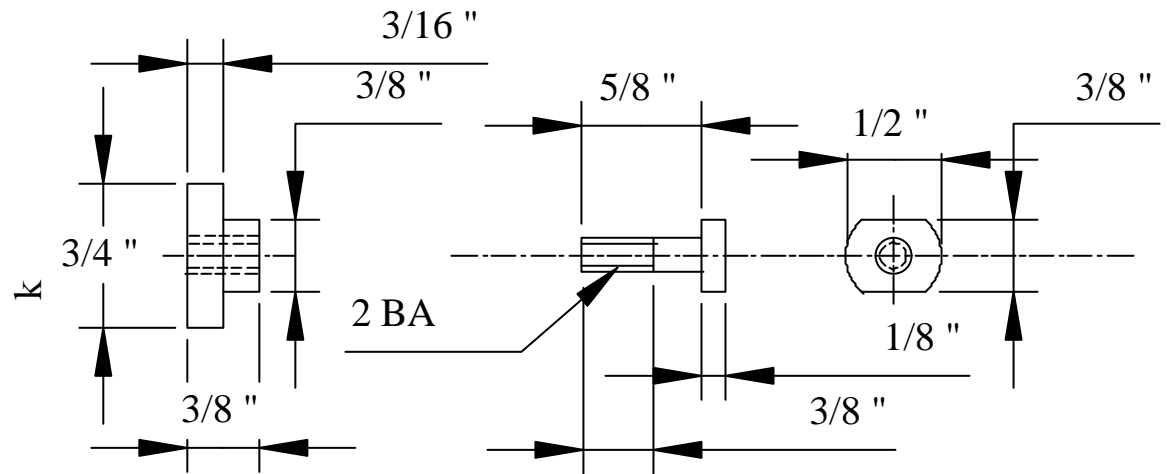
Det 1 (1) S



Det 2 (1) S

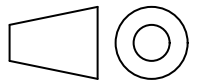


Det 3 (1) S



Det 4 (2) S

Det 5 (2) S



© J.B.D.Willis.
J.B.D. Willis

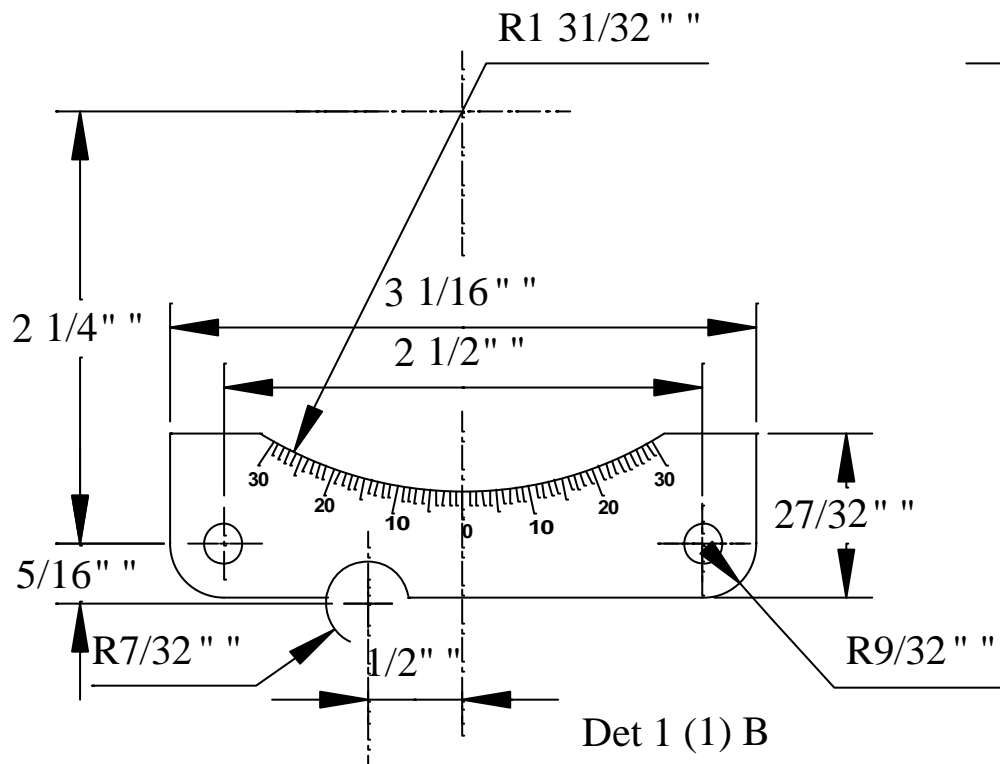
Revision
0

Date
29/10/00

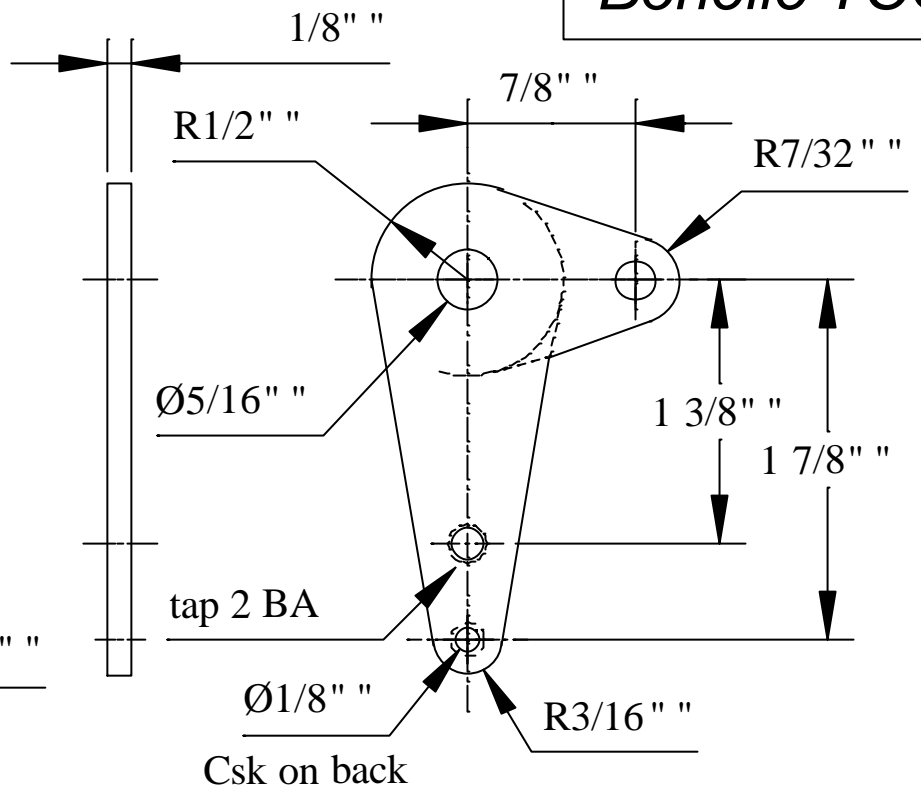
Rotating Base Details

Drg No G7

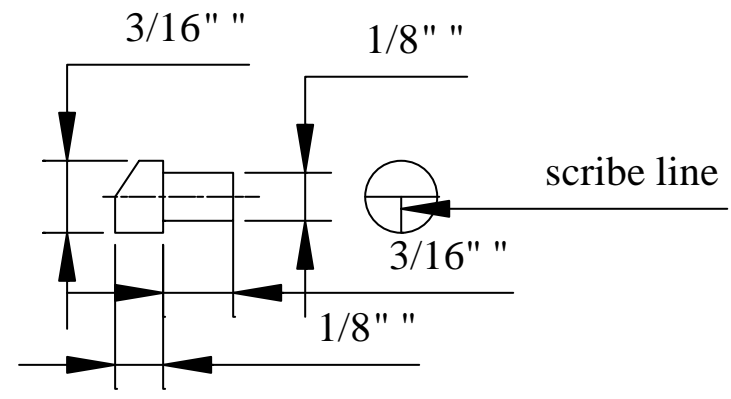
Bonelle TCG



Det 1 (1) B

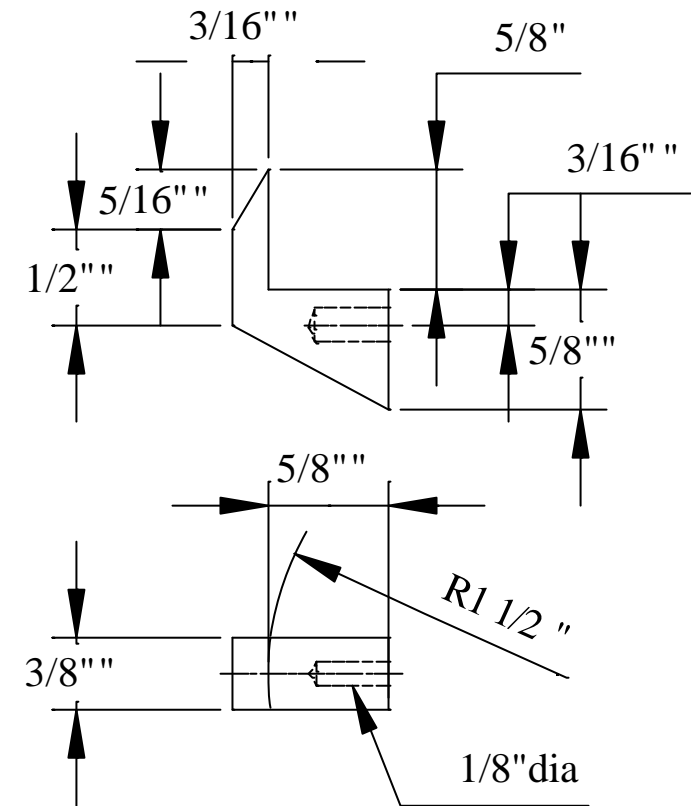
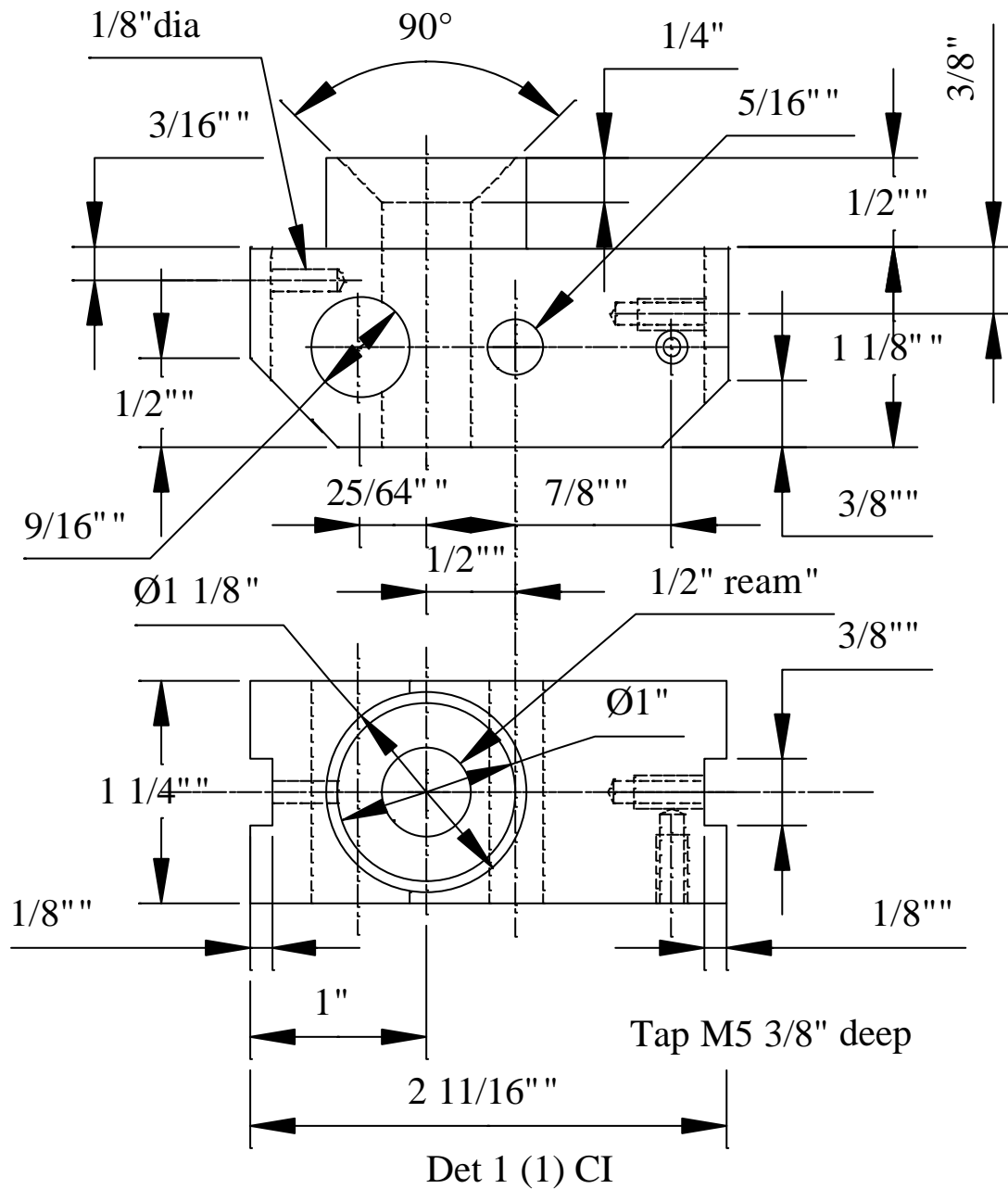


Det2 (1) S



Det 3 (1) S

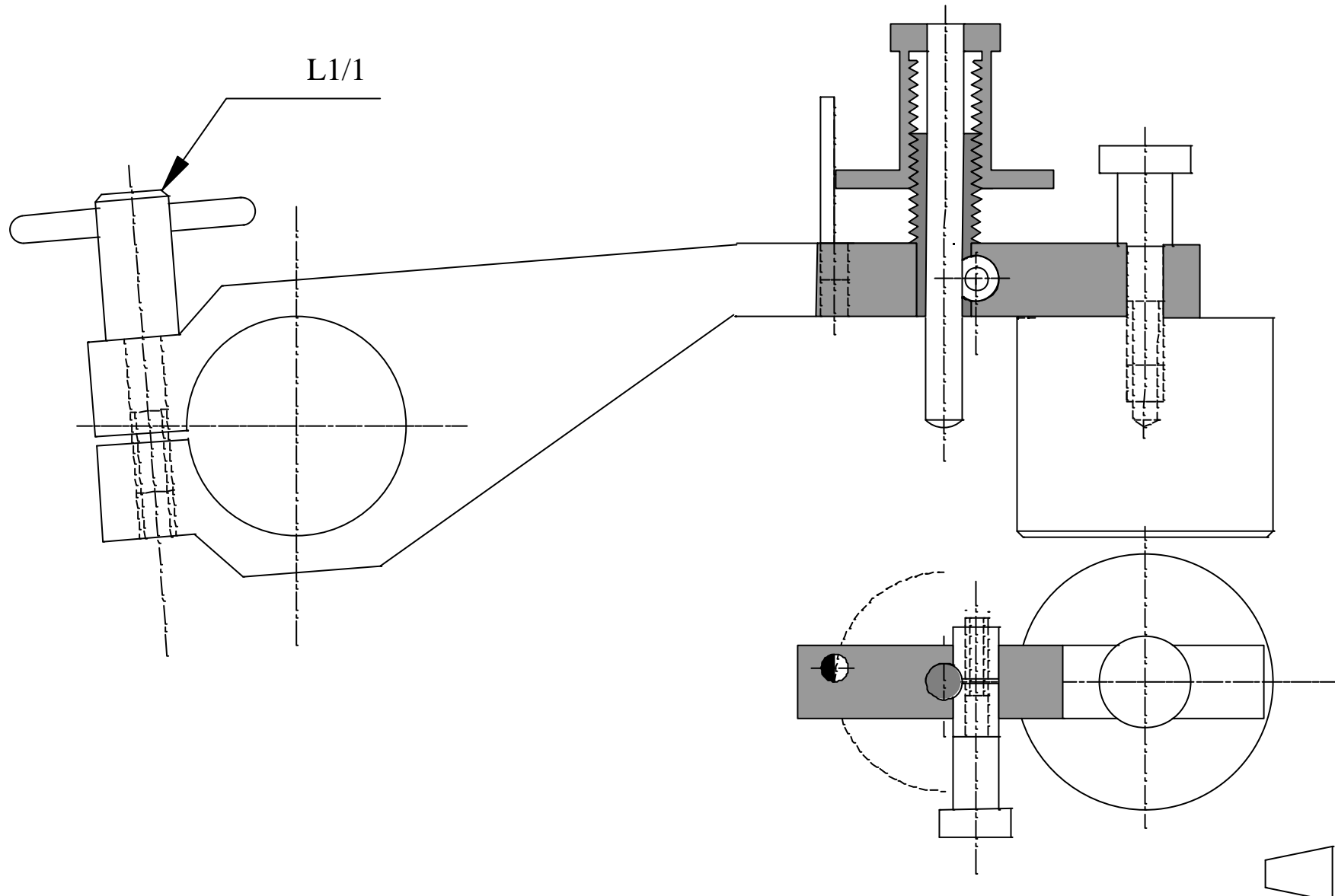




Assemble to det 1 locating on a 1/8" dia pin using Loctite

Det 2 (1) S





© J.B.D.Willis.

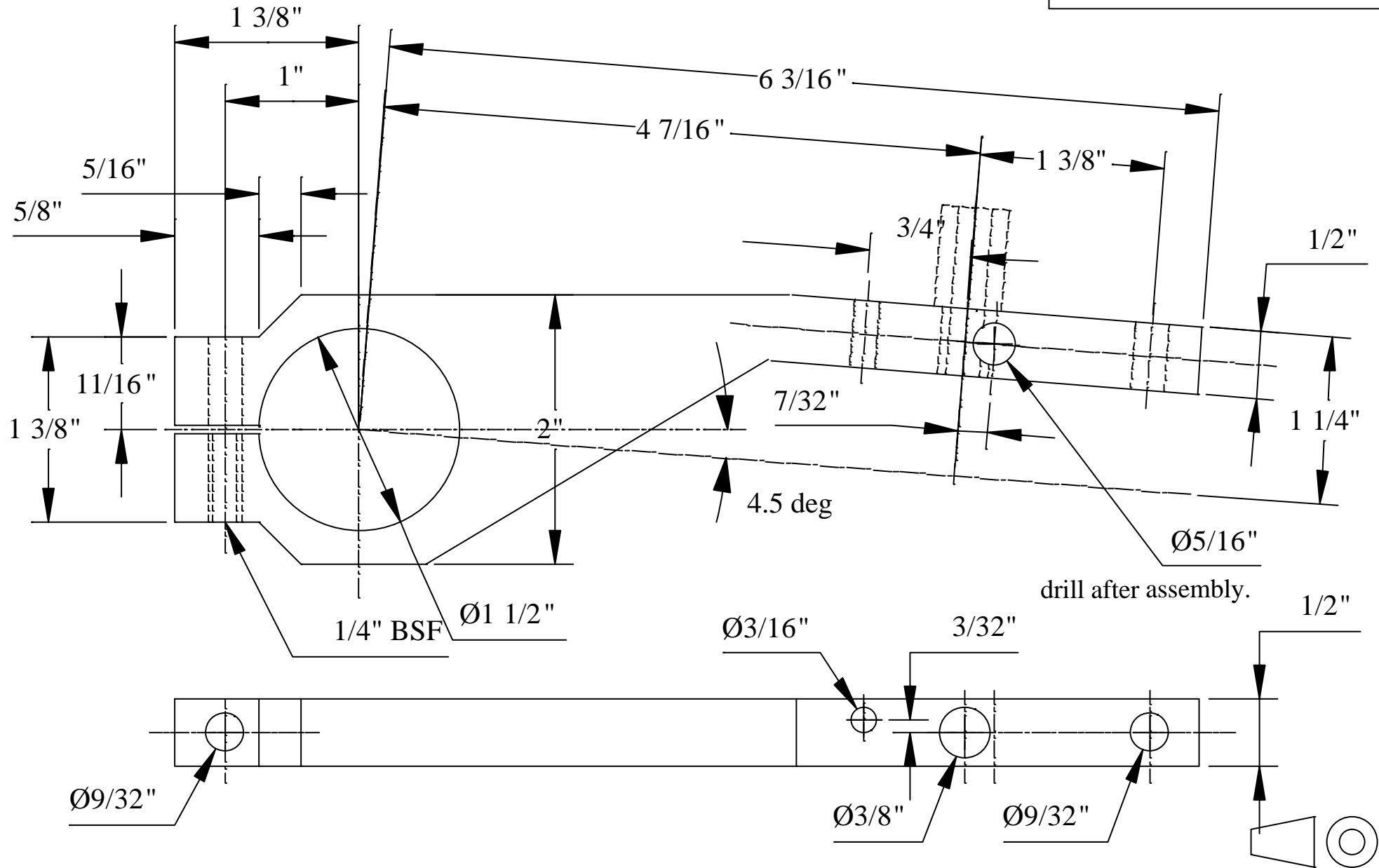
Revision
2

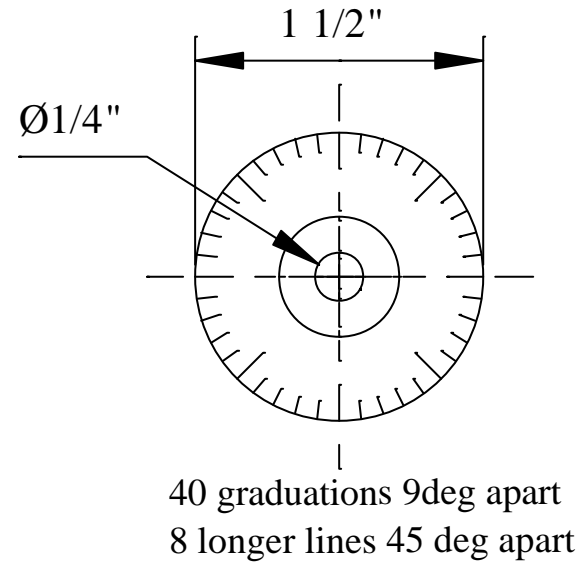
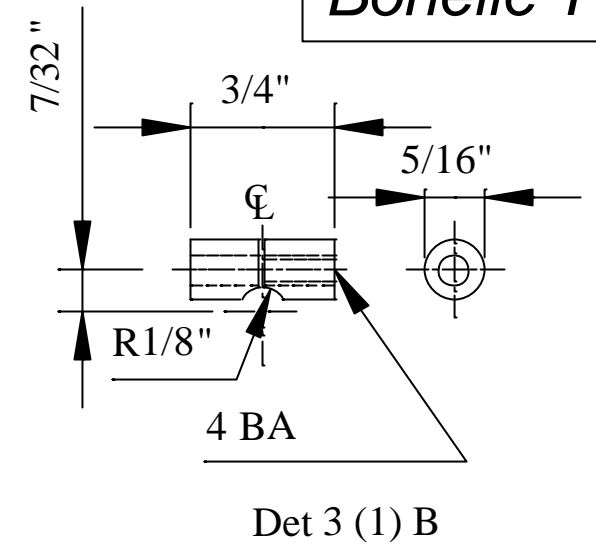
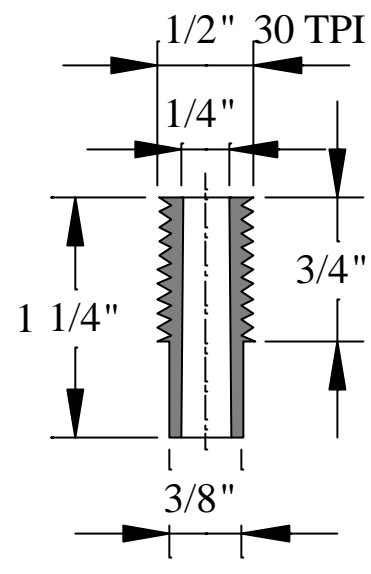
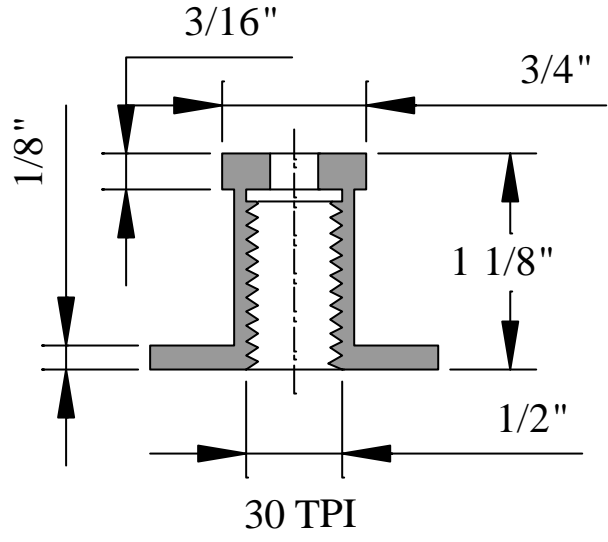
Date
10/03/04

Rocking Arm Assembly

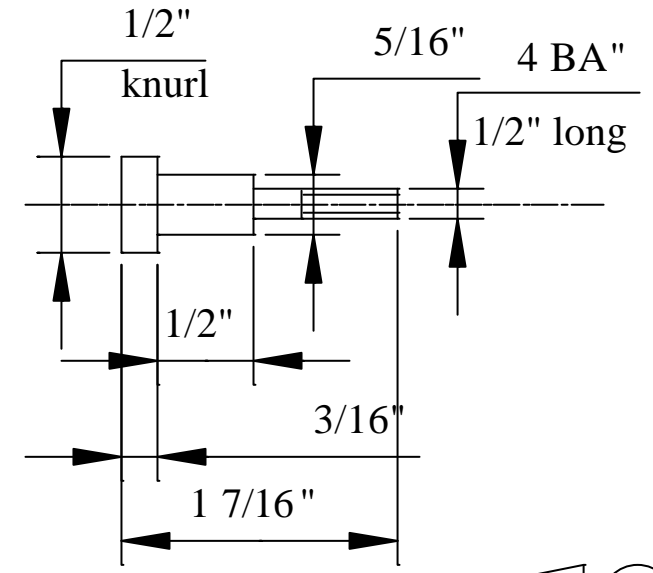
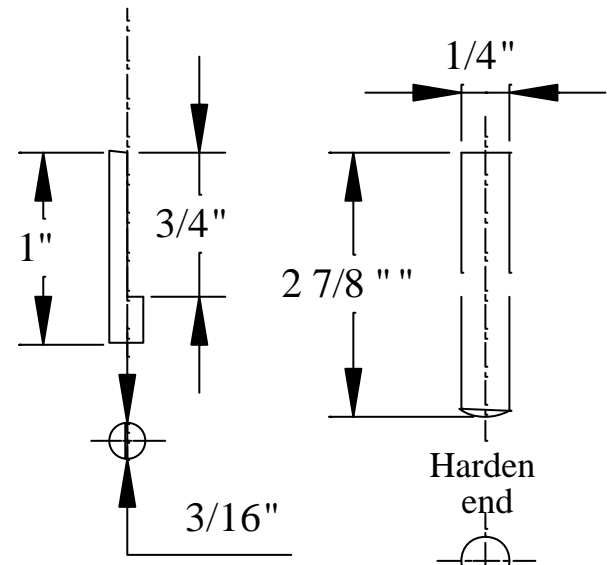
Drg NoG10







Det 2 (1) S

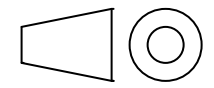


Det 1 (1) S

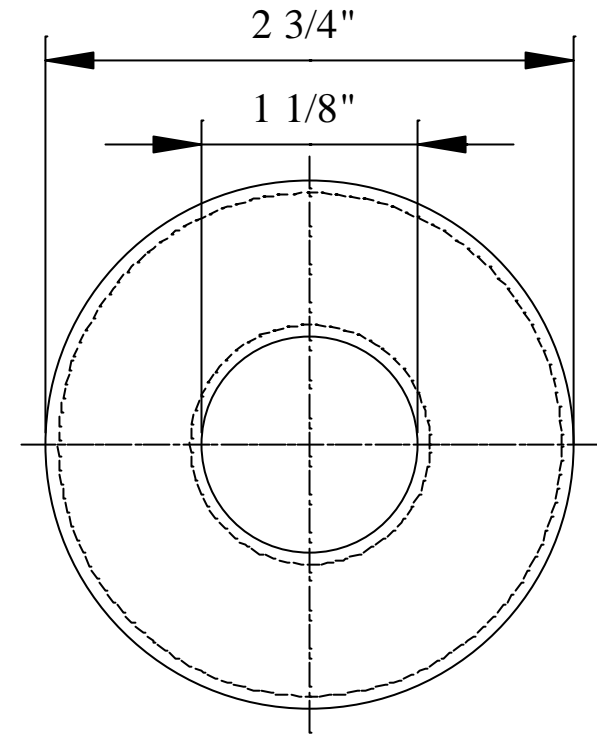
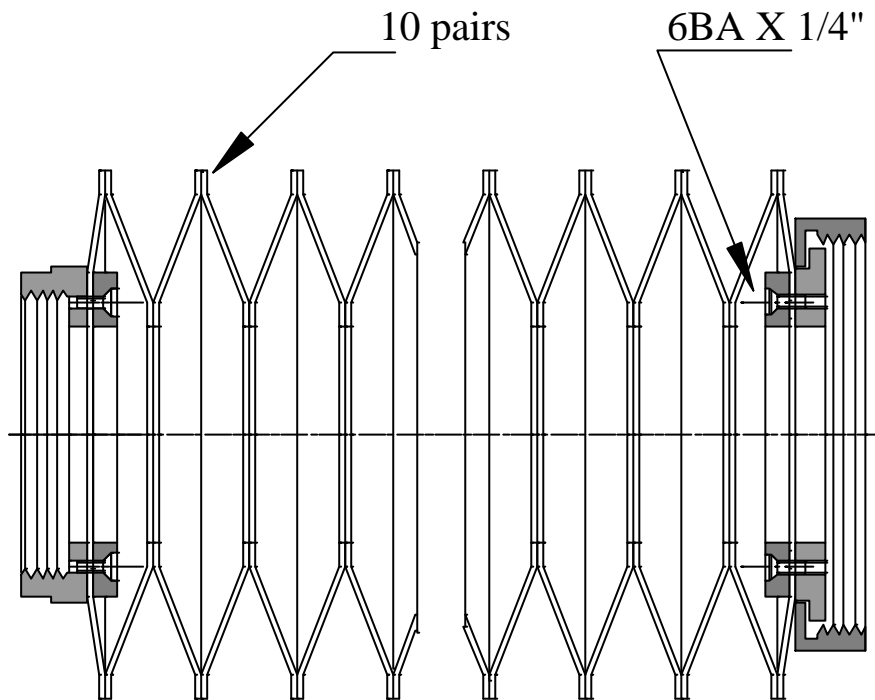
Det 4 (1) S

Det 5 (1) SS

Det6 (1) S

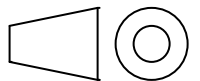


Bonelle TCG



Det 1 (40) L1/32" thick

Apply a 1/8" wide band of impact adhesive to each edge that is to be joined. Join then stitch together 1/16" from the edge. Join initially in pairs at the centre then at the periphery.



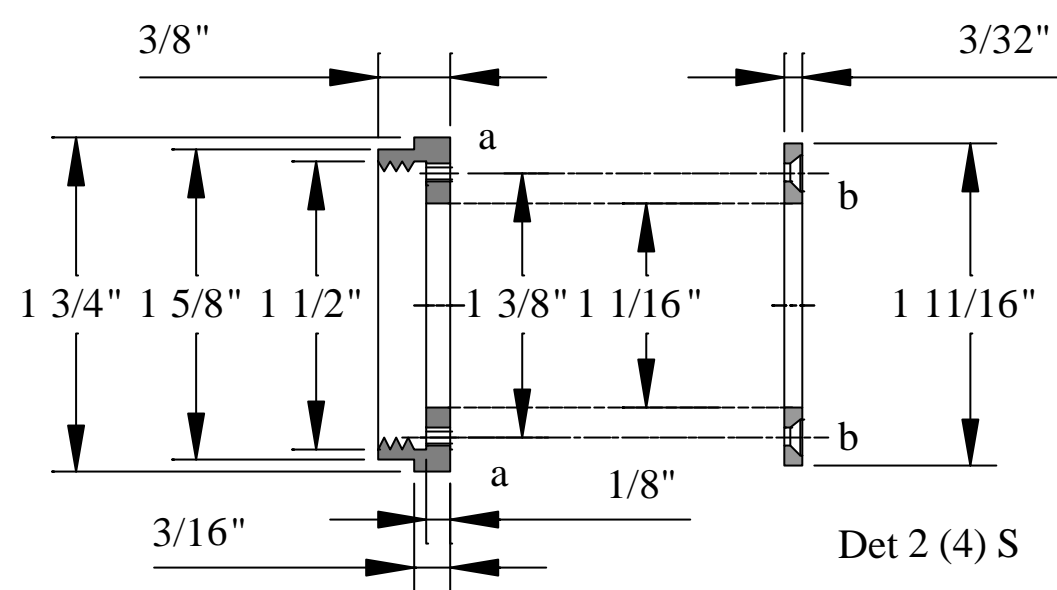
J.B.D.Willis.

Revision
0

Date
11/03/03

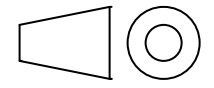
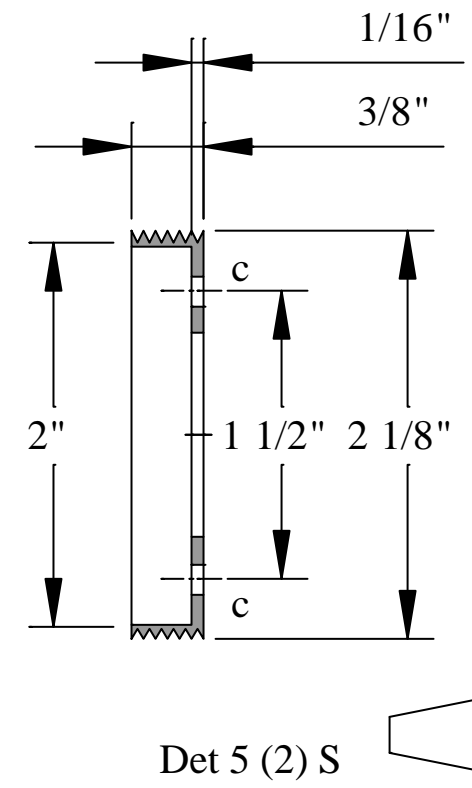
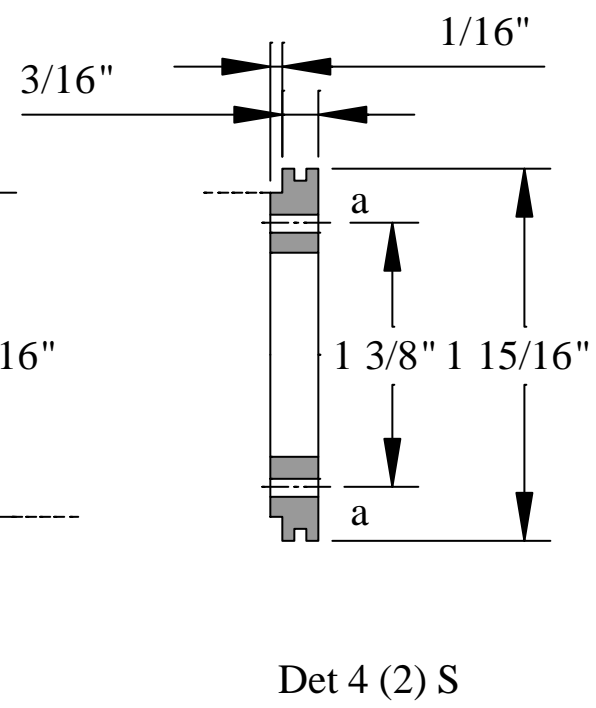
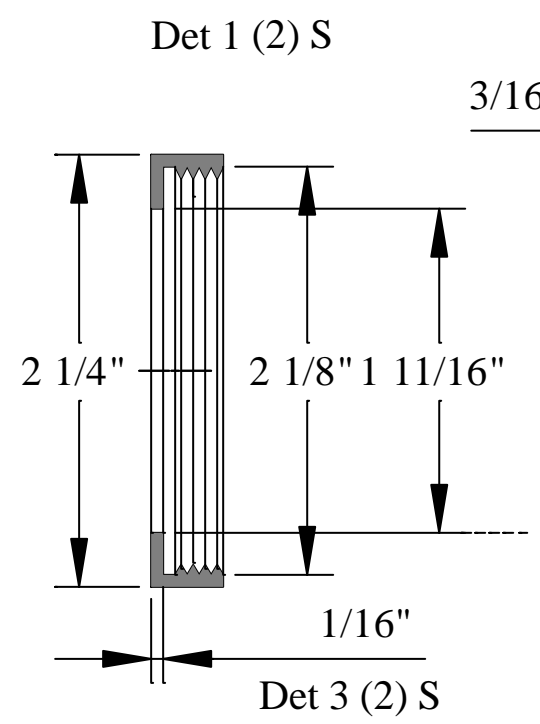
Bellows

Drg NoG13

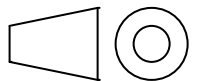
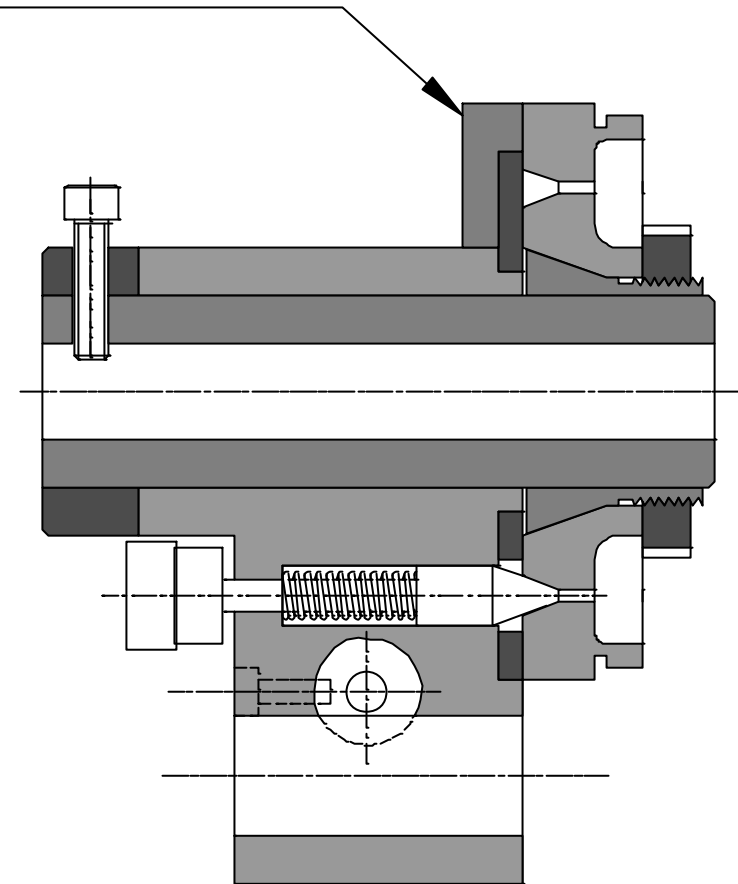
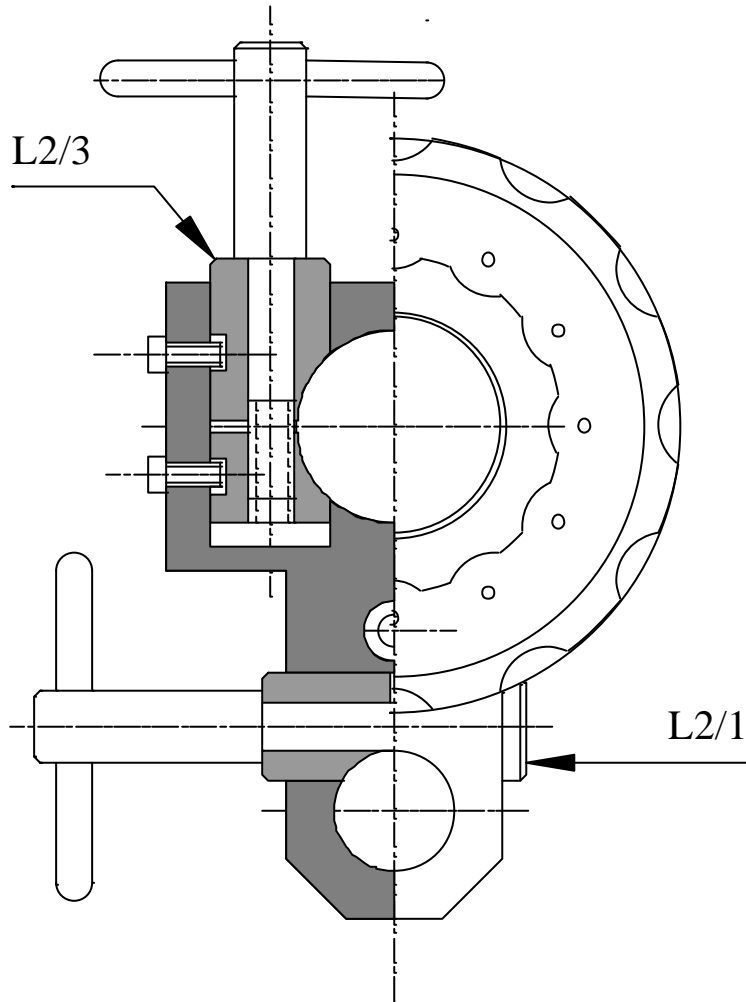


Holes
 a - tap 6BA 90deg apart
 b - 3mm csk 6BA "
 c - 4mm 180deg apart

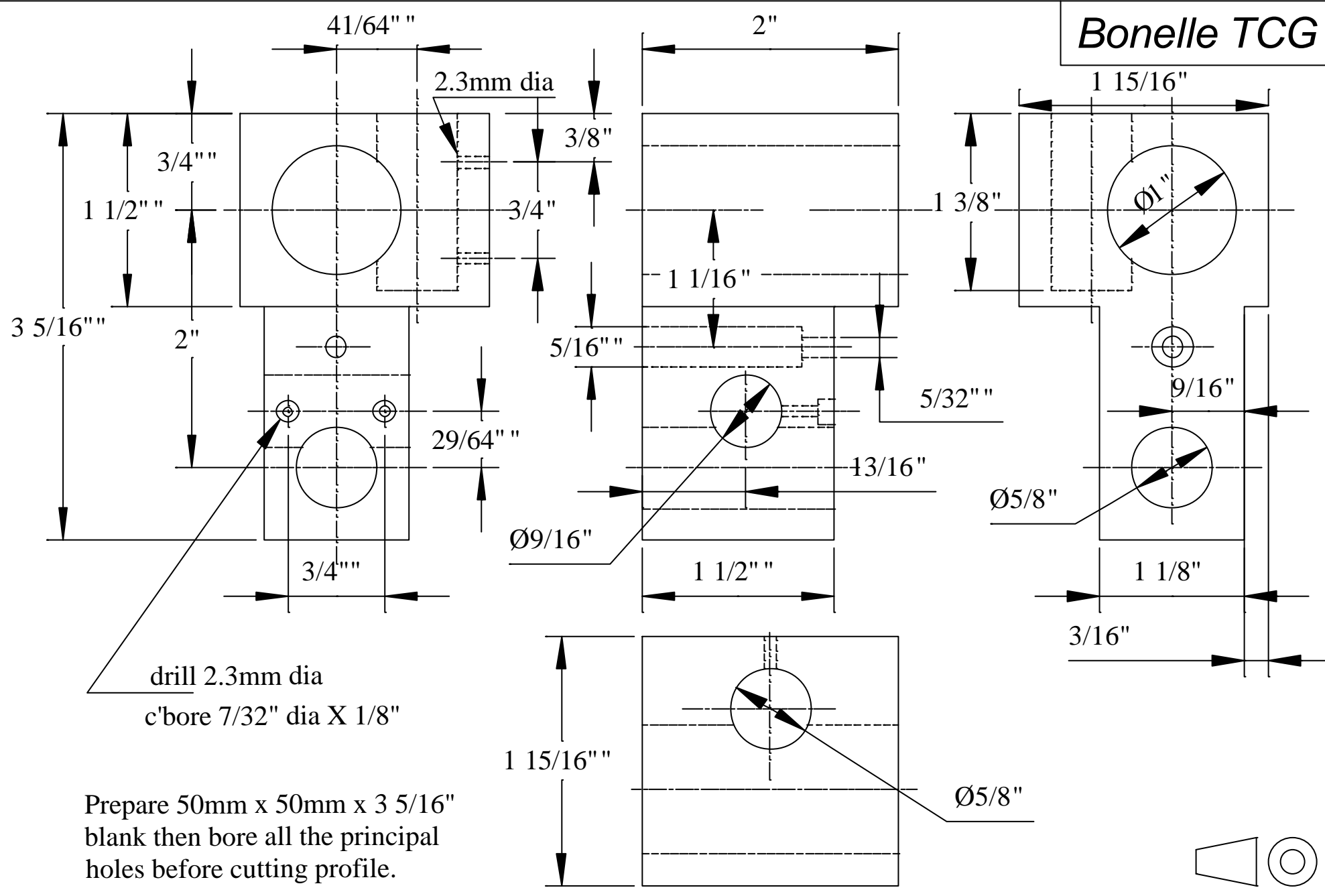
Threads
 24 TPI



Assemble H6/2 & H6/3 using
Loctite with H6/3 vertical



Bonelle TCG



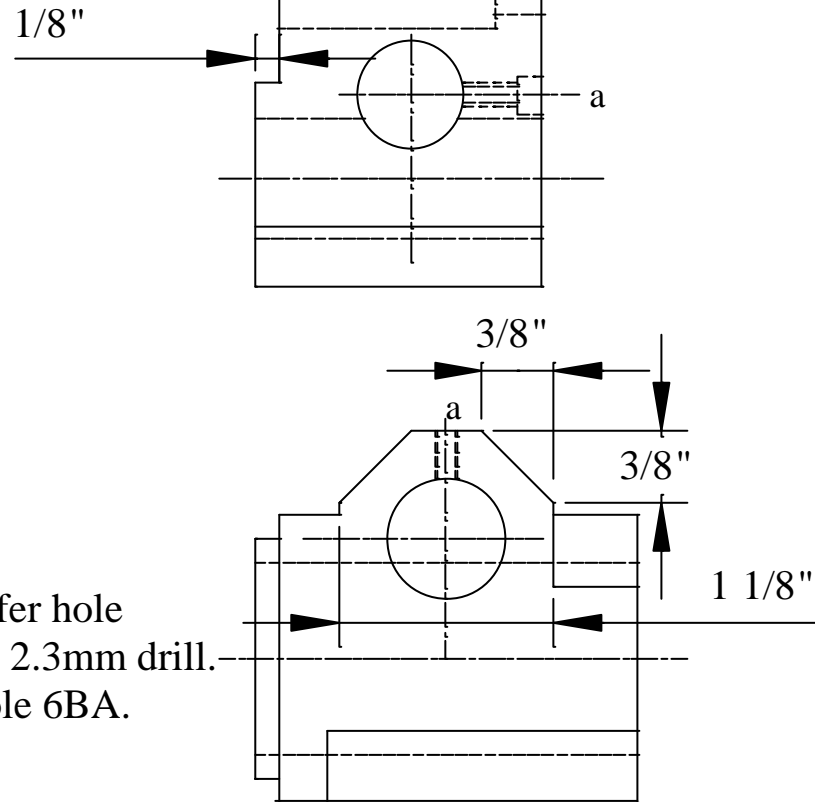
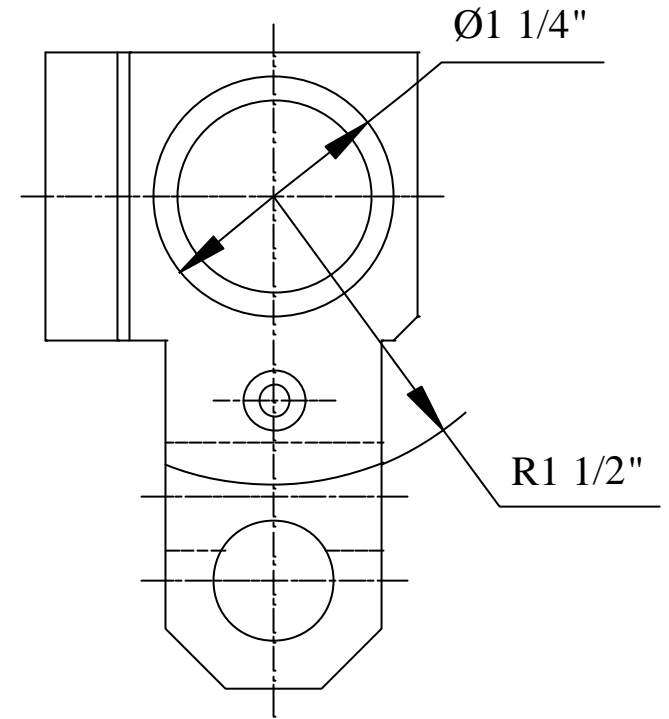
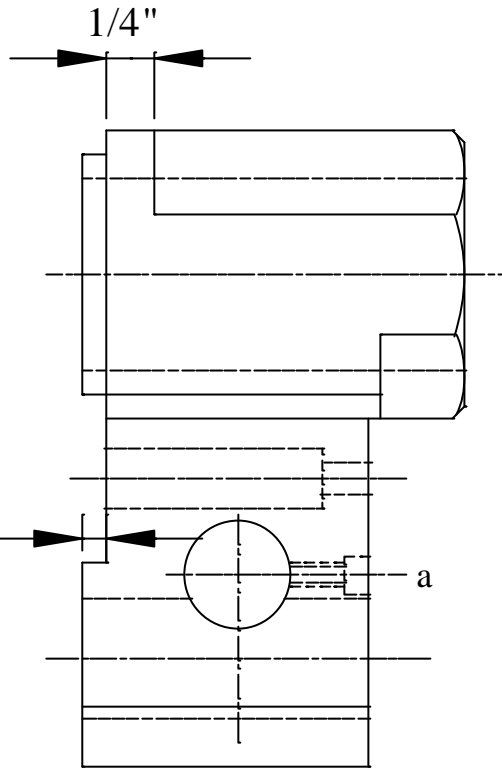
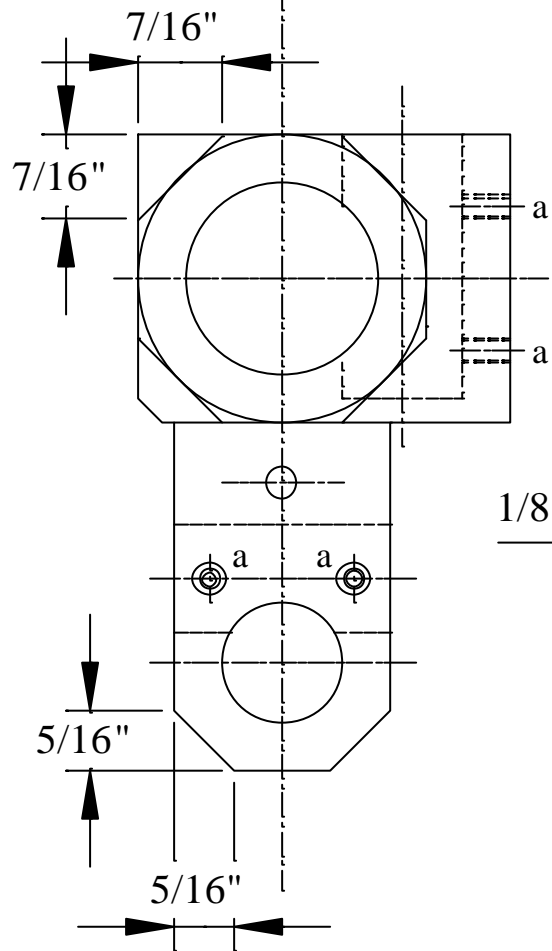
© J.B.D.Willis.

Revision
2

Date
06/03/04

Toolholder (Initial Stage)

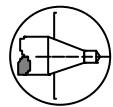
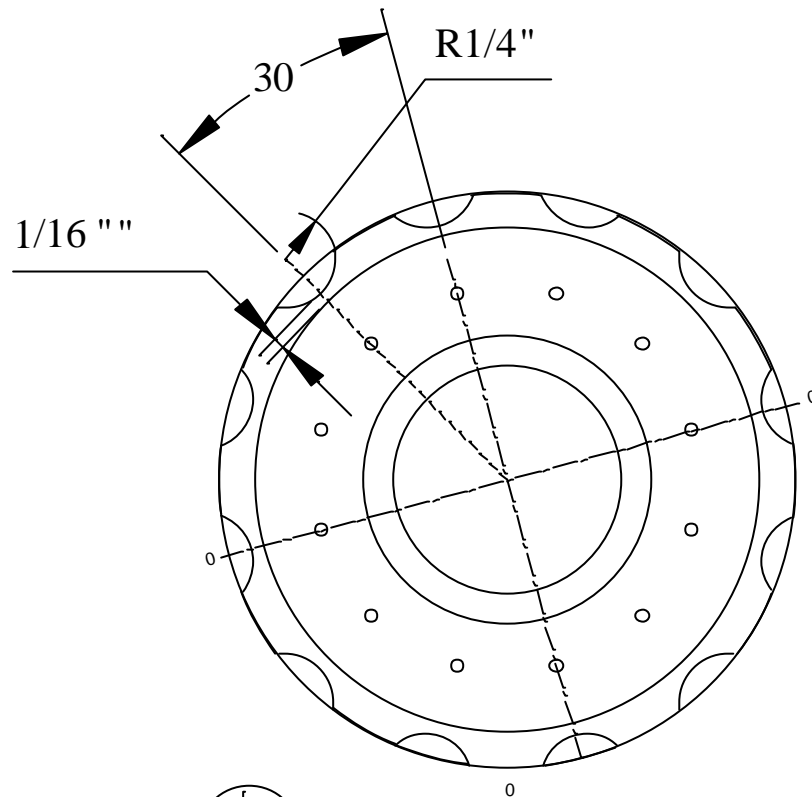
Drg No H2



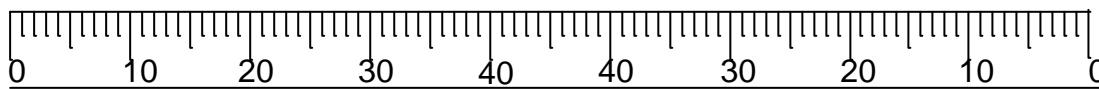
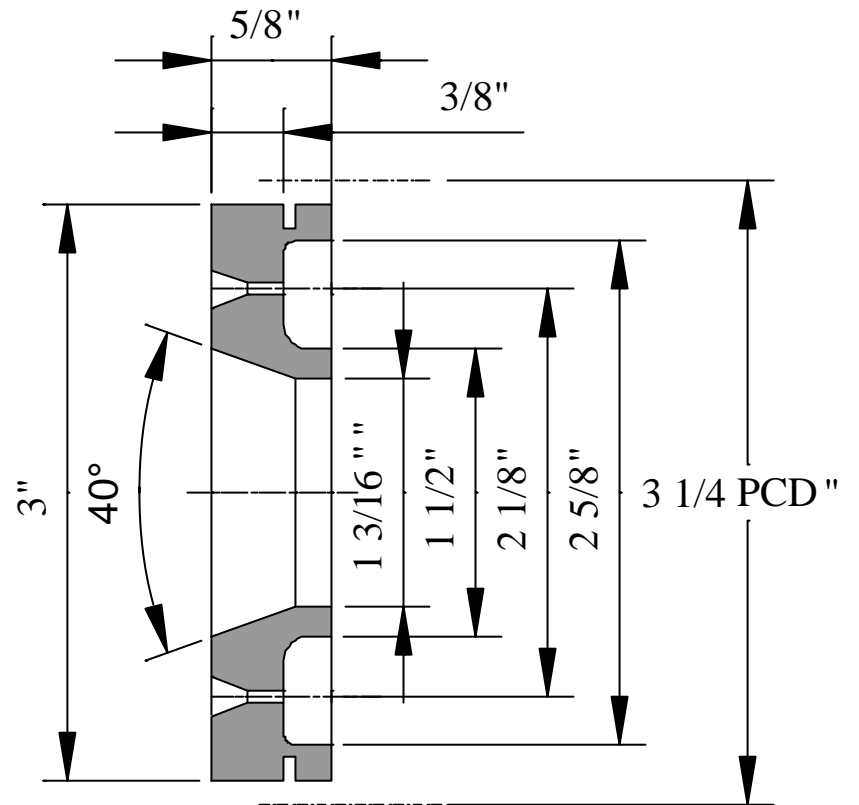
Holes marked a refer to drawing L2. assemble clamp and transfer hole position onto clamp using 2.3mm drill. Remove clamp and tap hole 6BA.

For remaining dimensions see drawing H2





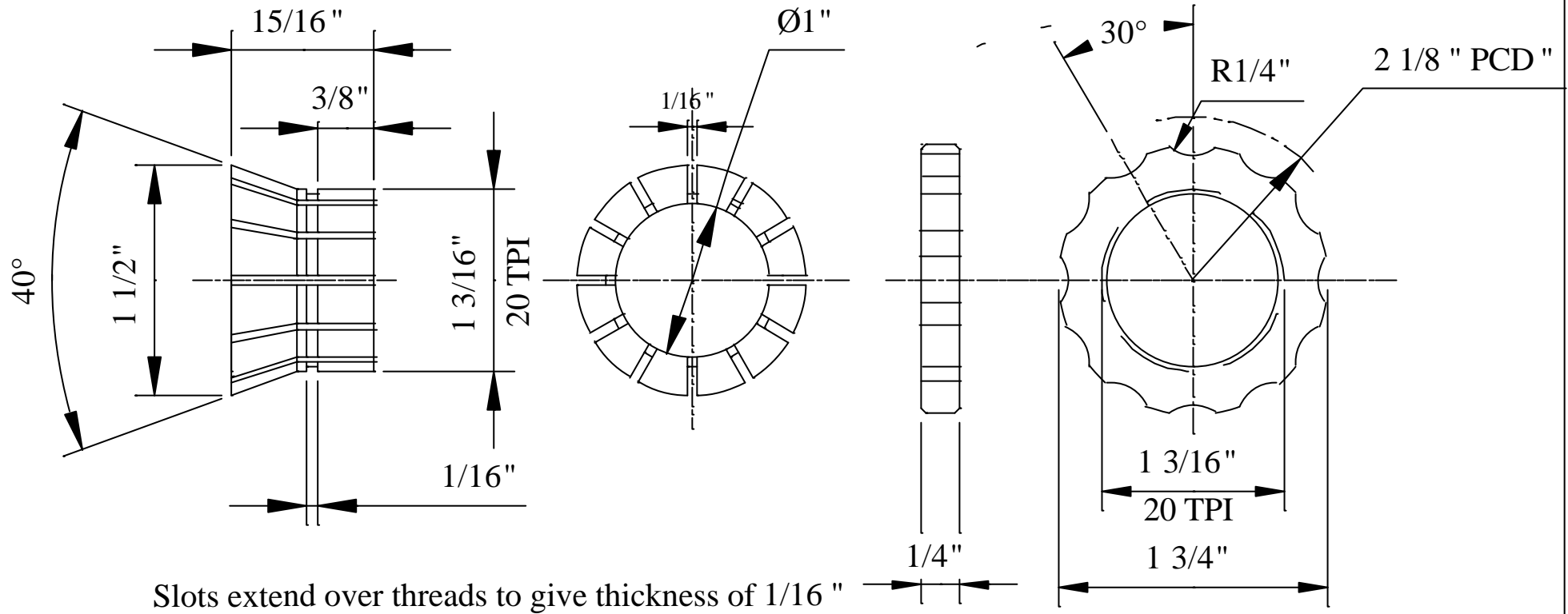
Use S2 centre drill,



Scale (repeated in each quadrant)

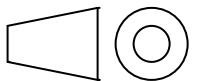


© J.B.D.Willis.	Revision 1	Date 17/03/03	Toolholder Index Plate	Drg No H4
-----------------	---------------	------------------	-------------------------------	------------------

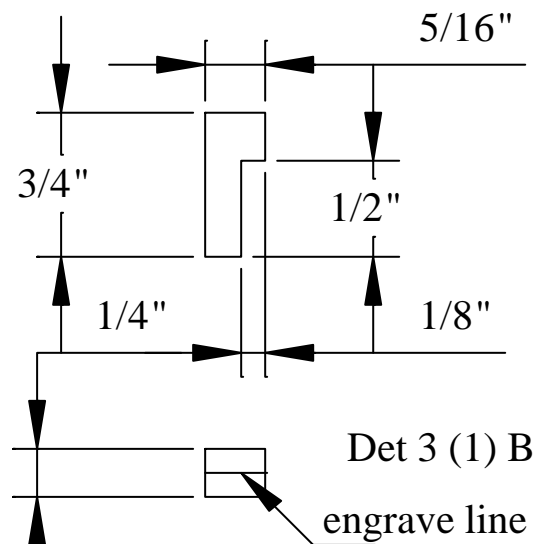
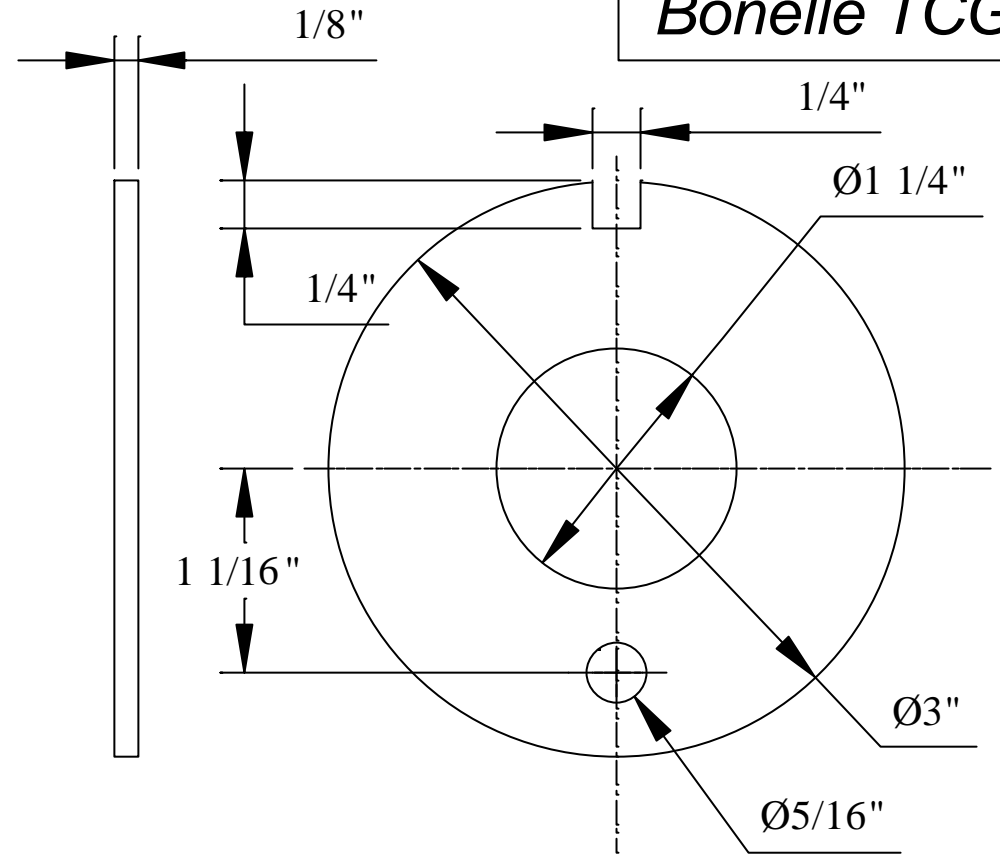
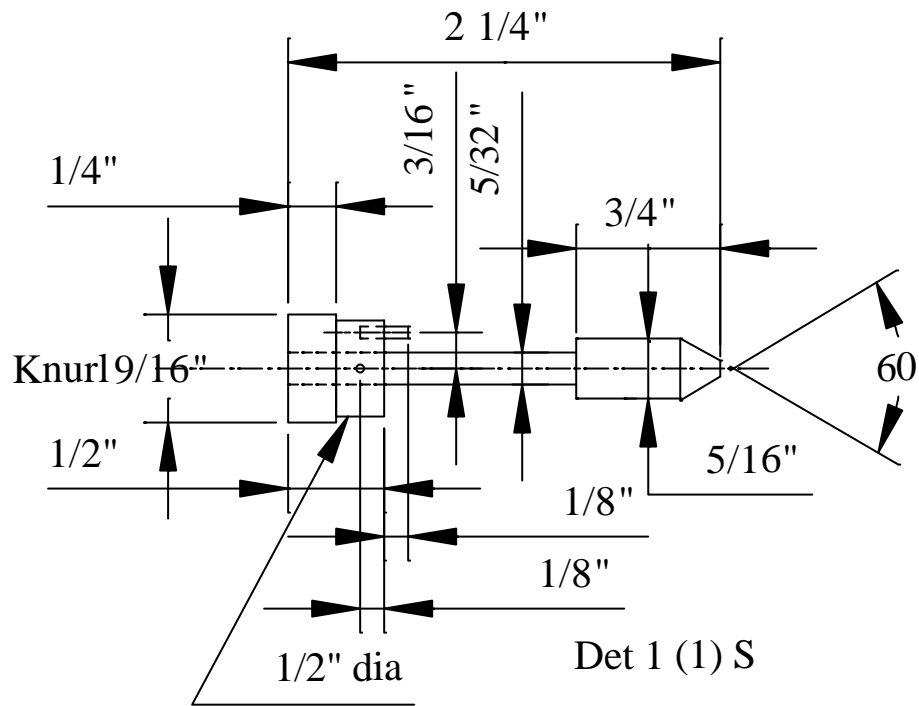


Det 1 (1) S

Det 2 (1) S



Bonelle TCG



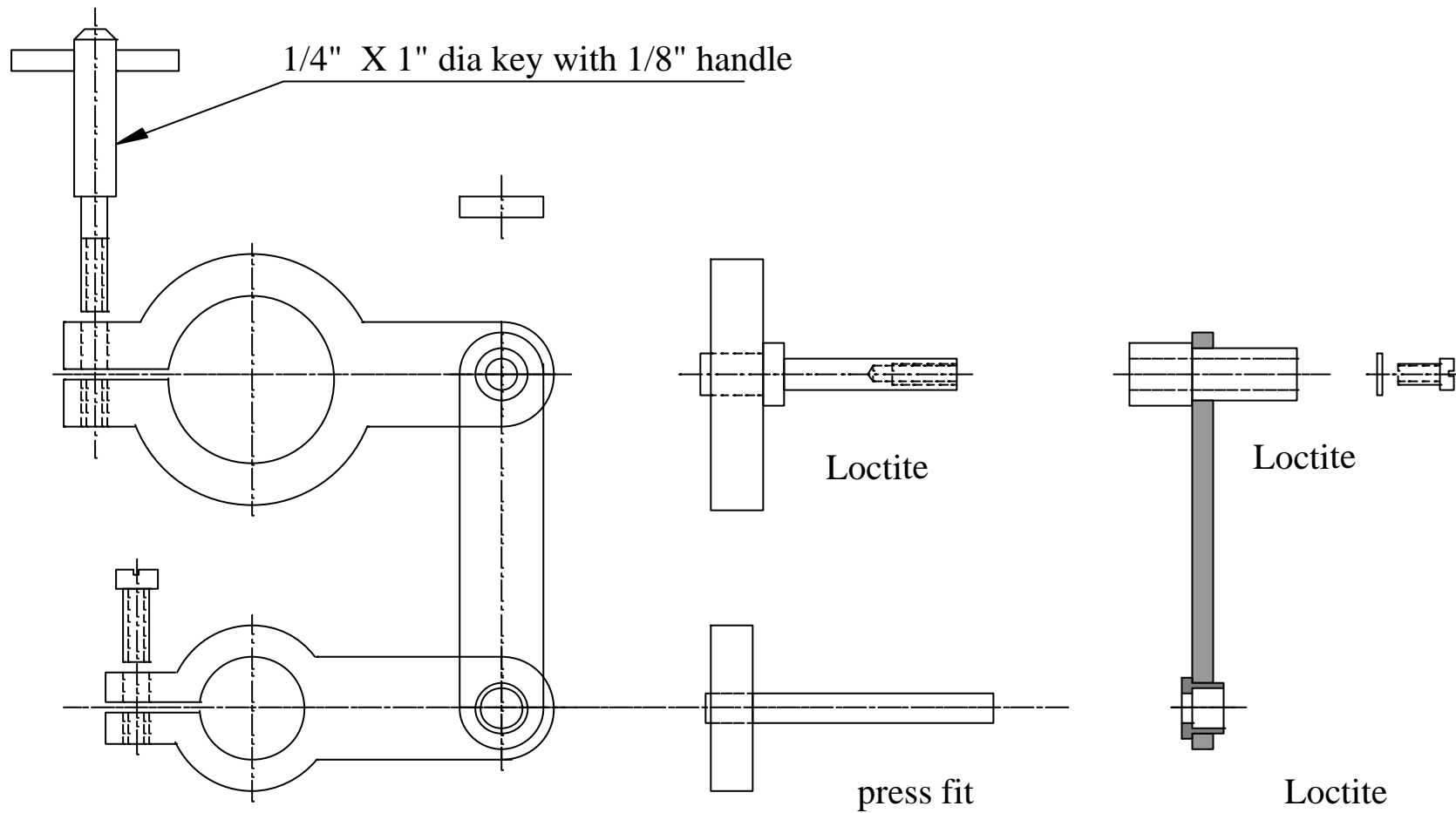
© J.B.D. Willis.

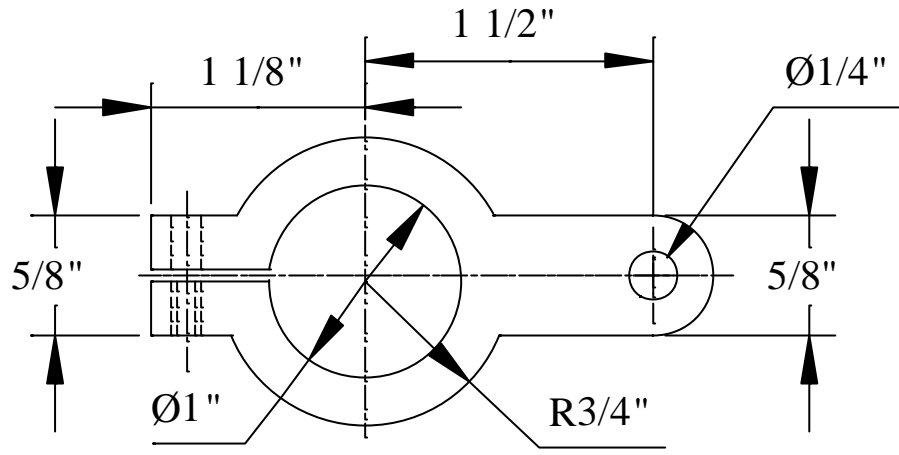
Revision
0

Date
31/03/03

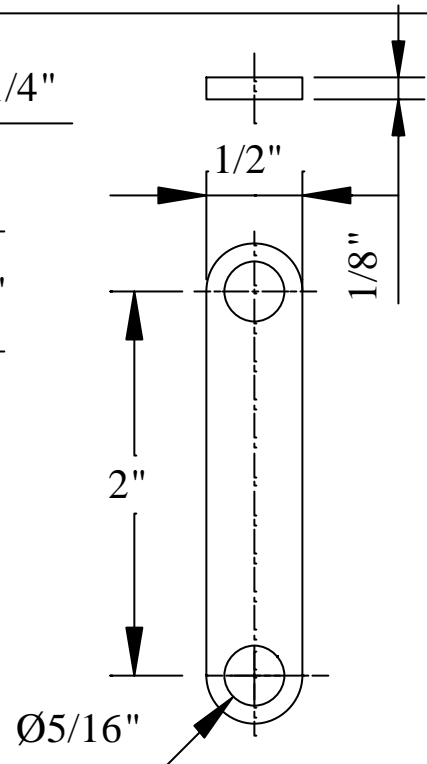
Toolholder Details

Drg No H6

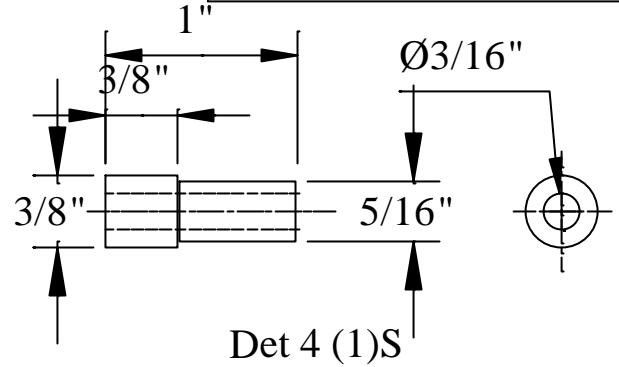




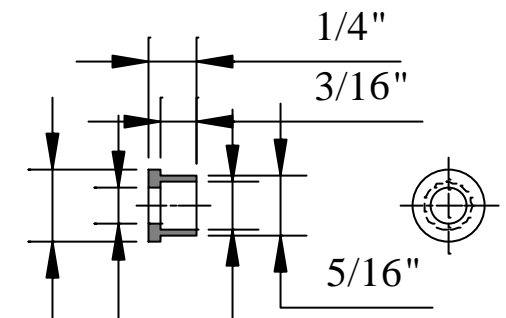
Det 1 (1)S 1/4" thick



Det 3 (1)S

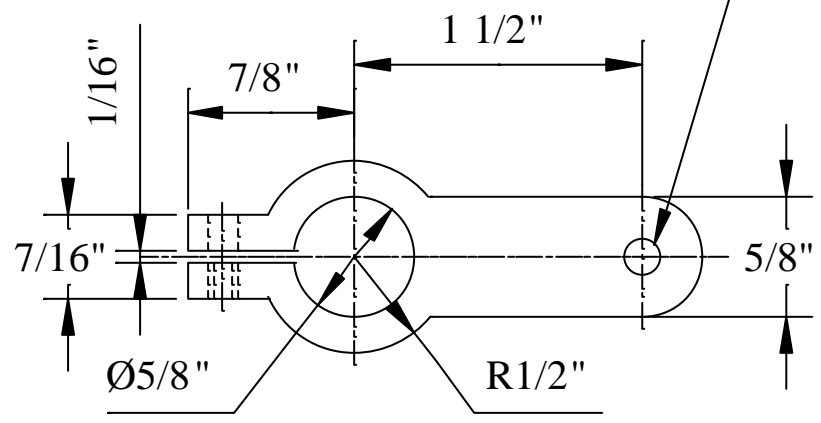


Det 4 (1)S

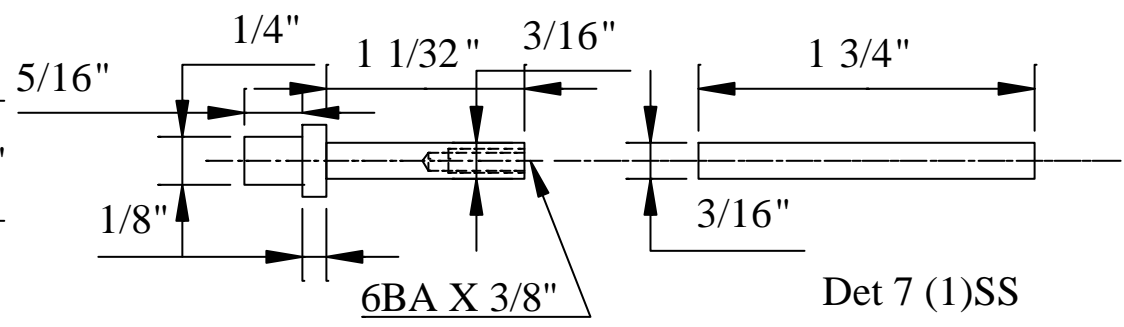


Det 5 (1)B

4.7mm for interference fit of det 7



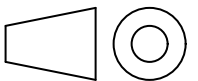
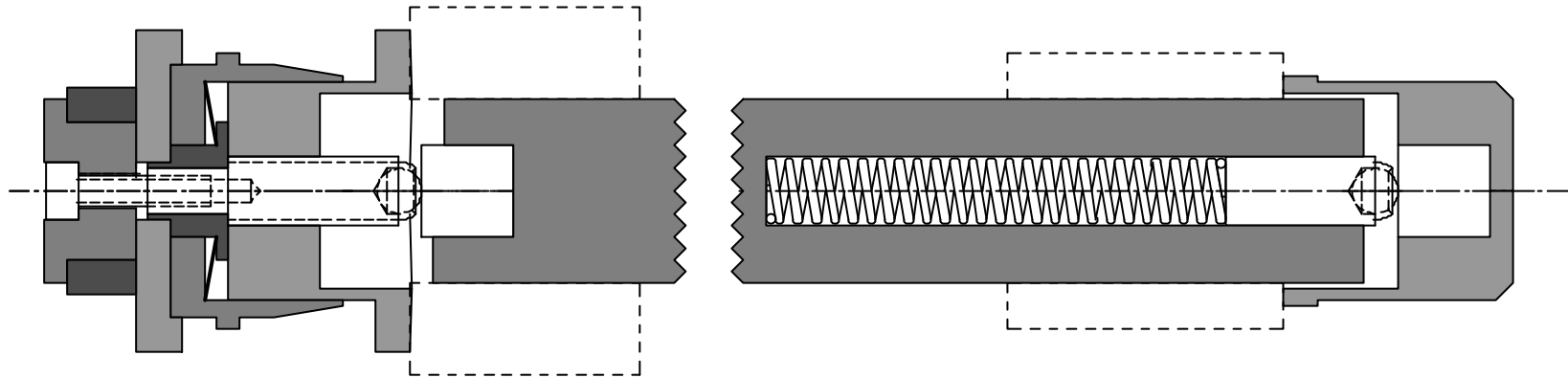
Det 2 (1)S 1/4" thick



Det 6 (1)S

Det 7 (1)SS





© J.B.D. Willis.
J. Willis

Revision
0

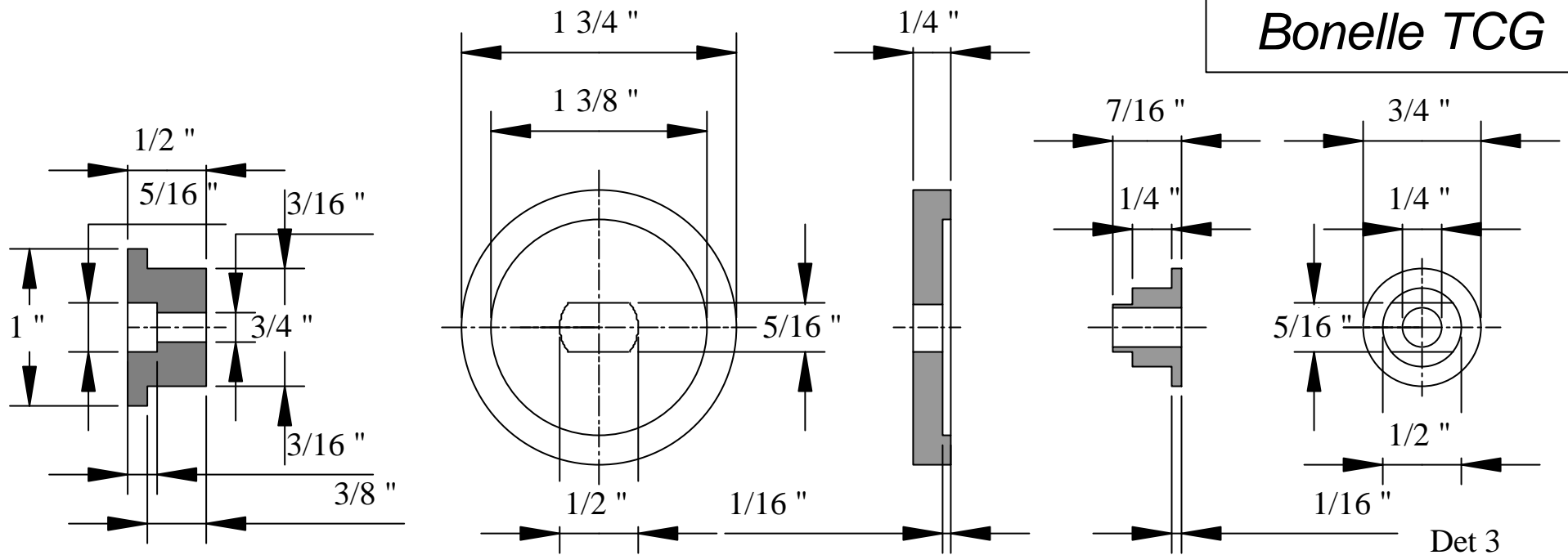
Date
24/10/00

Front Bar Assembly

Drg No J1



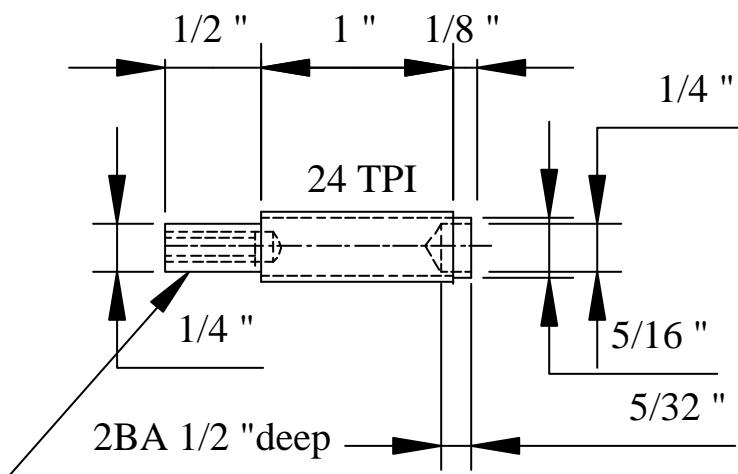
Bonelle TCG



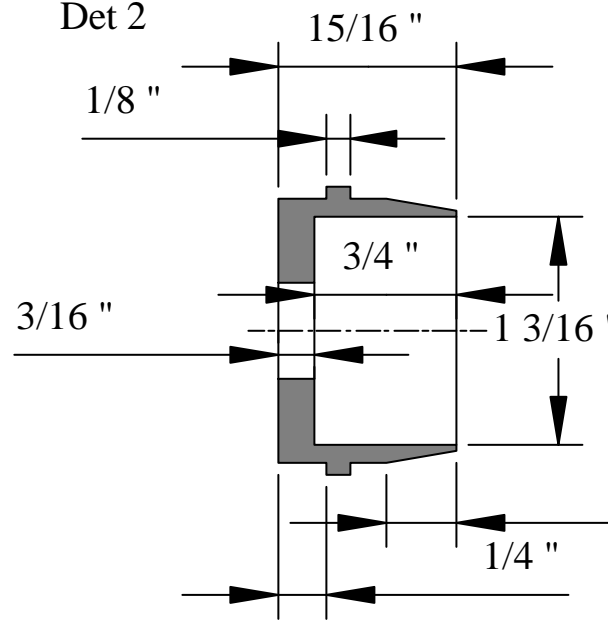
Det1

Det 2

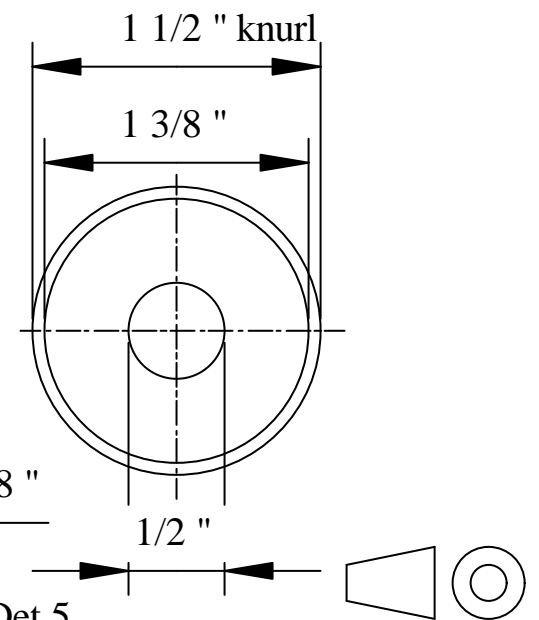
Det 3



Det 4



Det 5



© J.B.D. Willis.
J. Willis

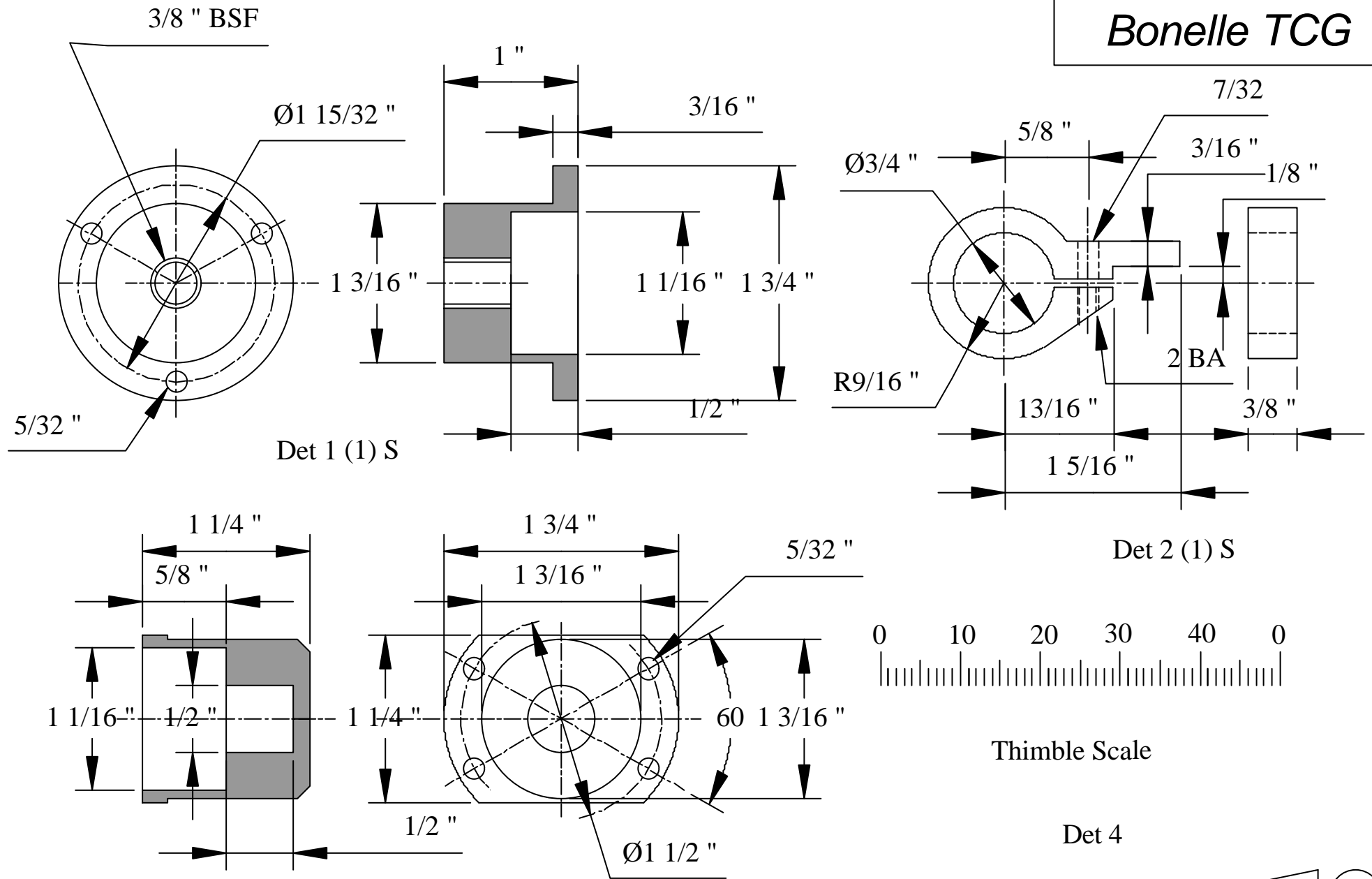
Revision
0

Date
29/10/00

Micrometer Details

Drg No J2

Bonelle TCG



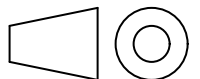
© J.B.D. Willis.
J. Willis

Revision
0

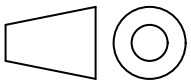
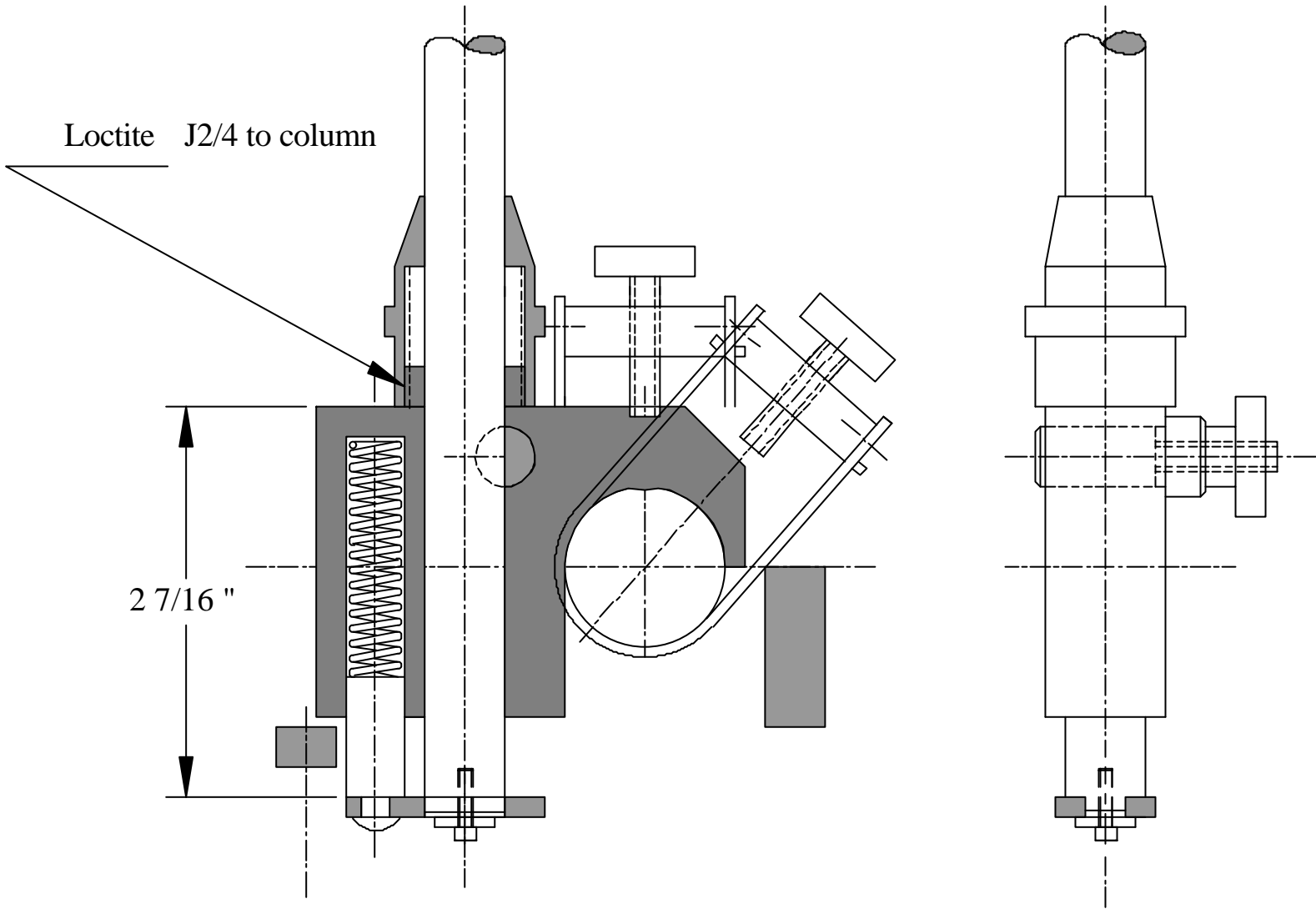
Date
29/10/00

Micrometer Details

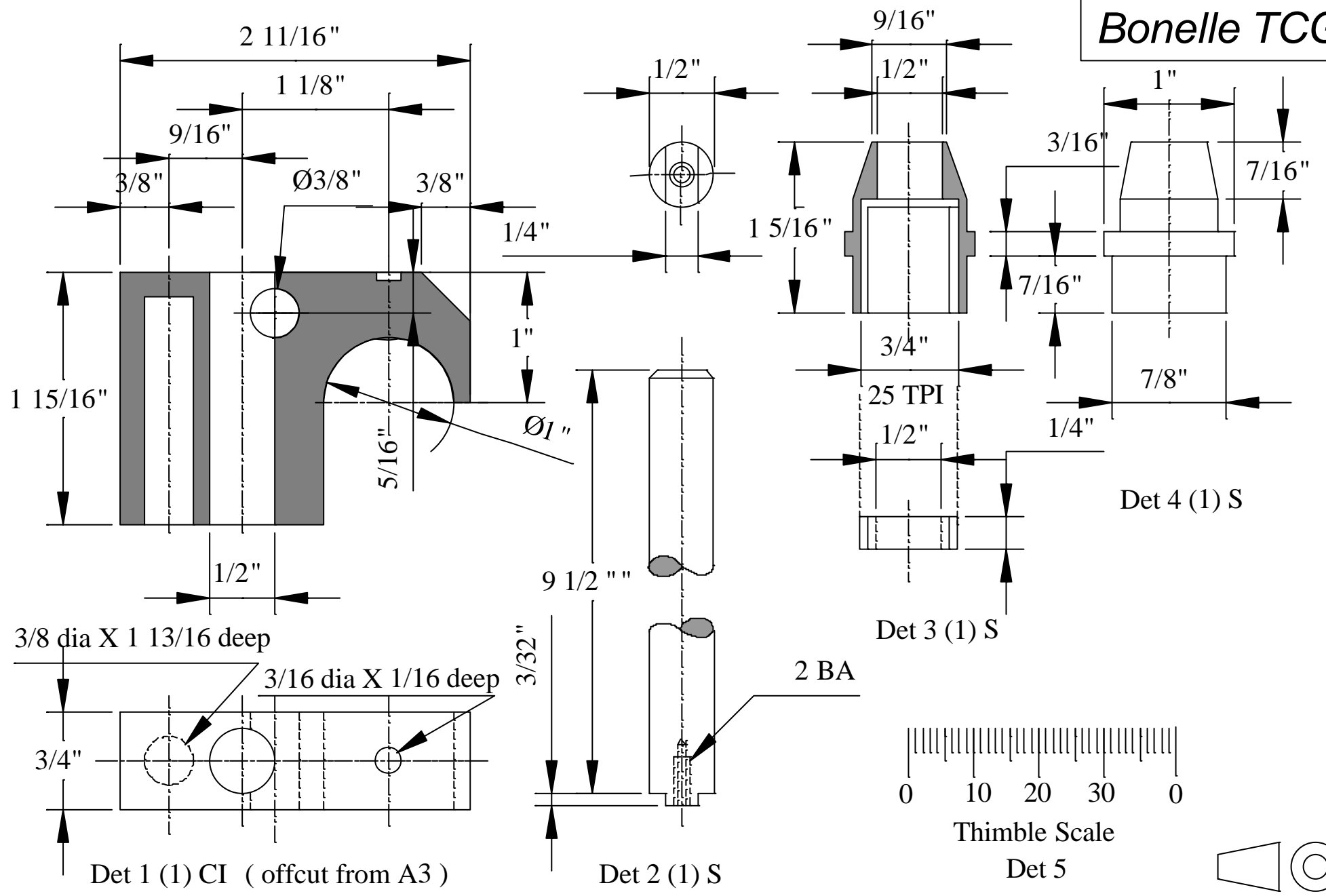
Drg No J3



Bonelle TCG



© J.B.D.Willis. <i>J.B.D. Willis</i>	Revision 0	Date 24/10/00	Tooth Rest Column Assembly	Drg No K1
---	---------------	------------------	----------------------------	-----------



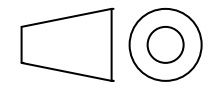
© J.B.D.Willis.

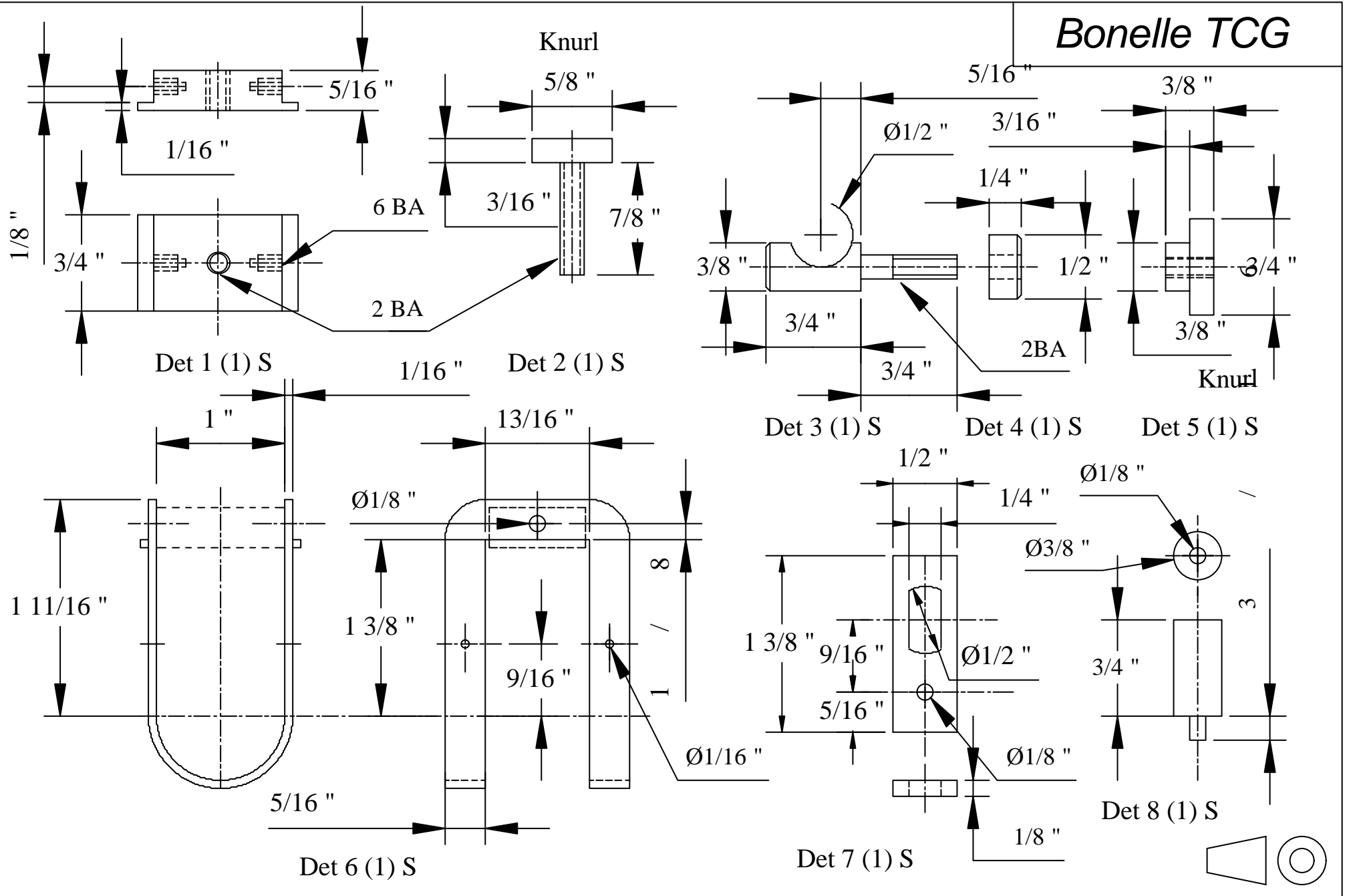
Revision
0

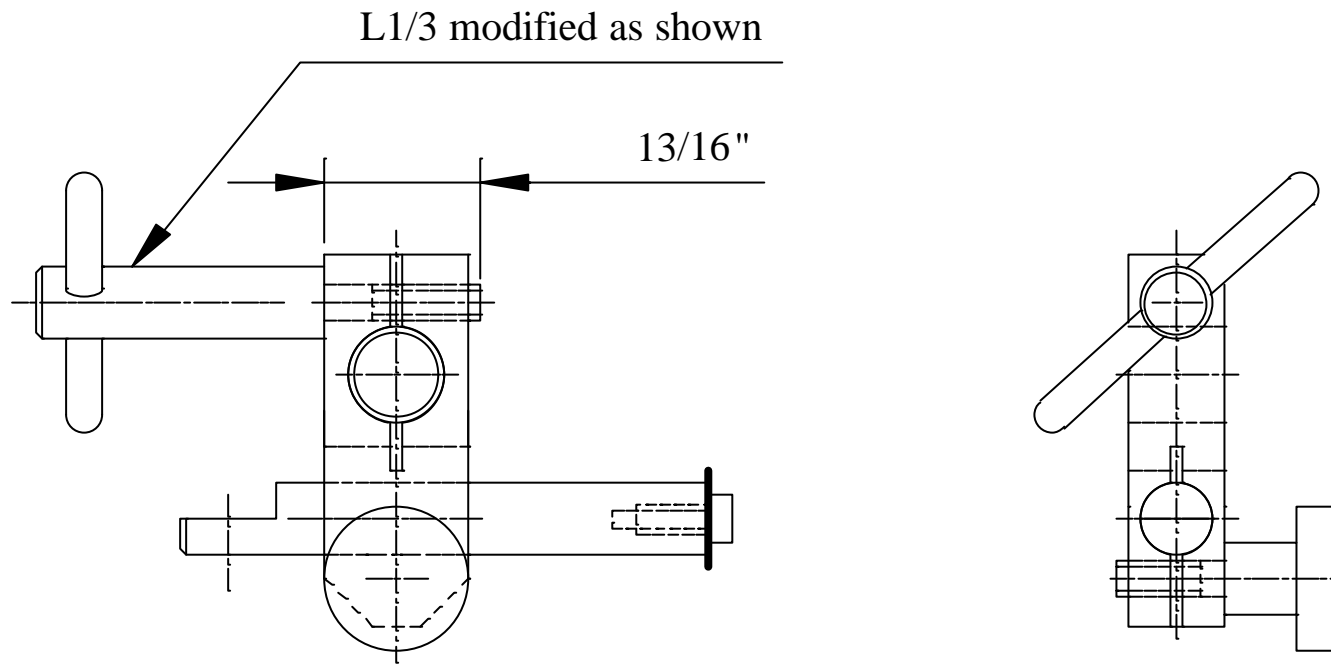
Date
31/03/03

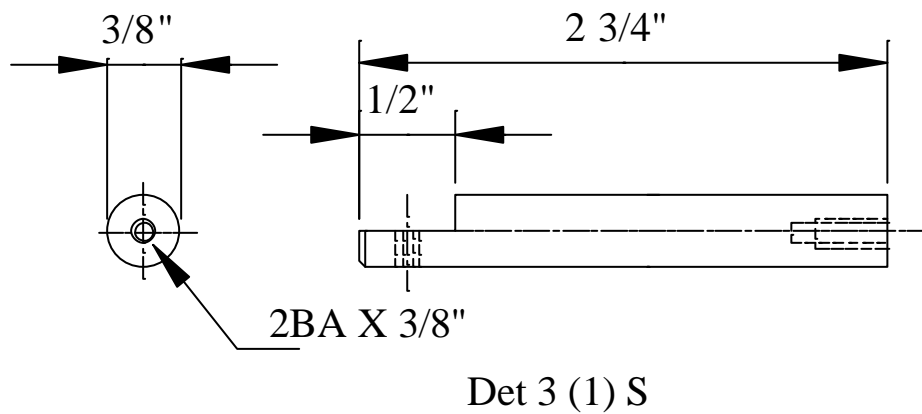
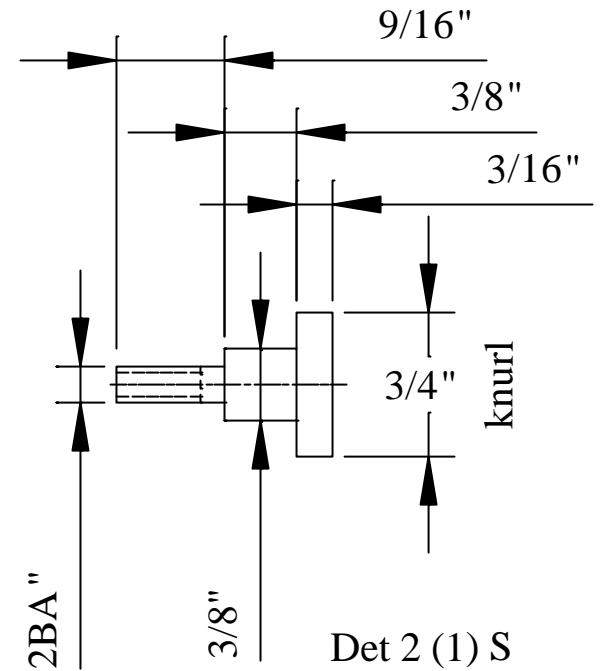
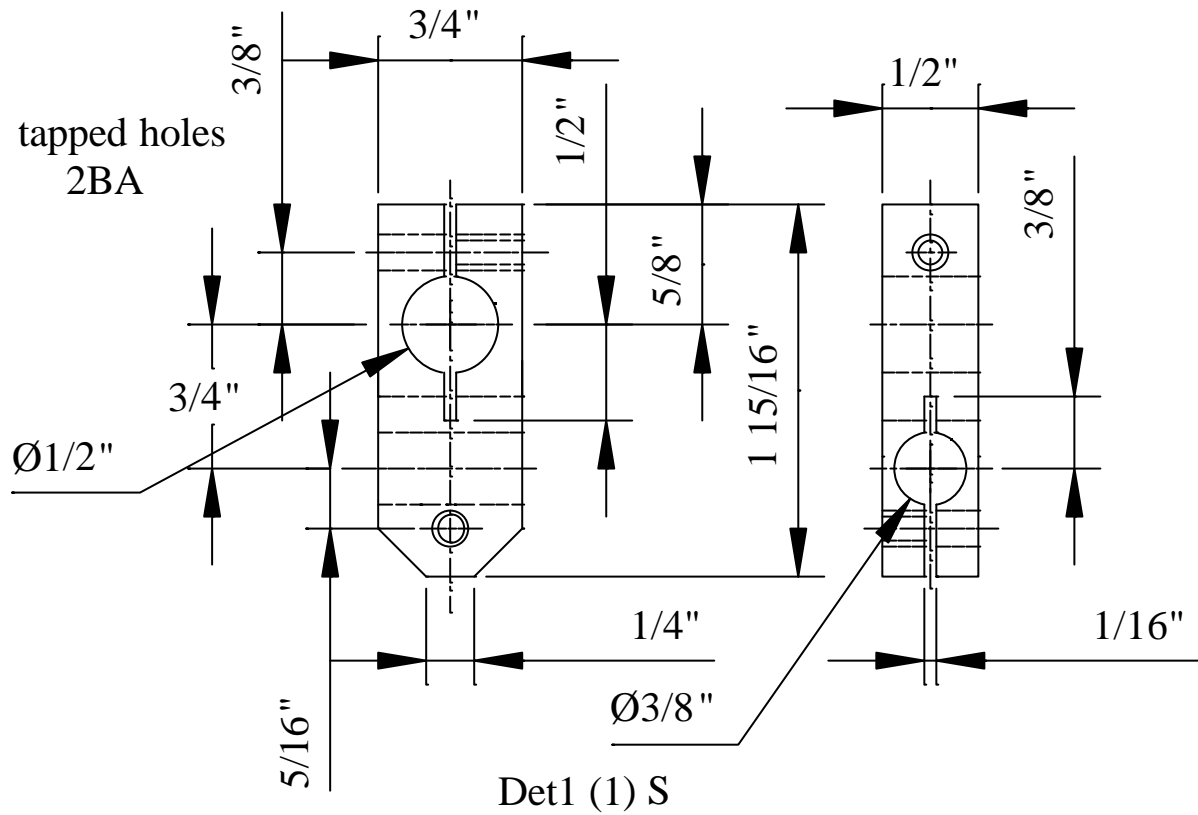
Tooth Rest Column Details

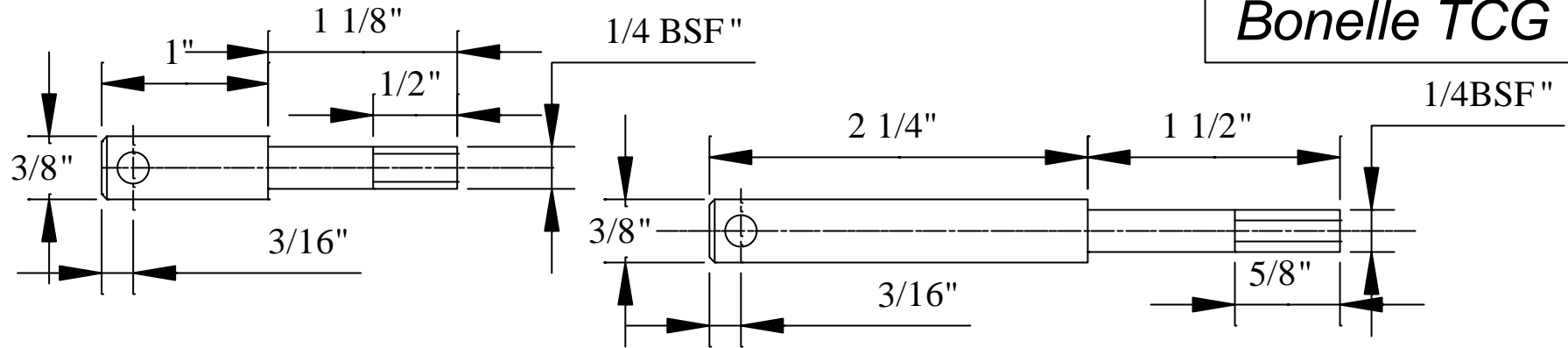
Drg No K2





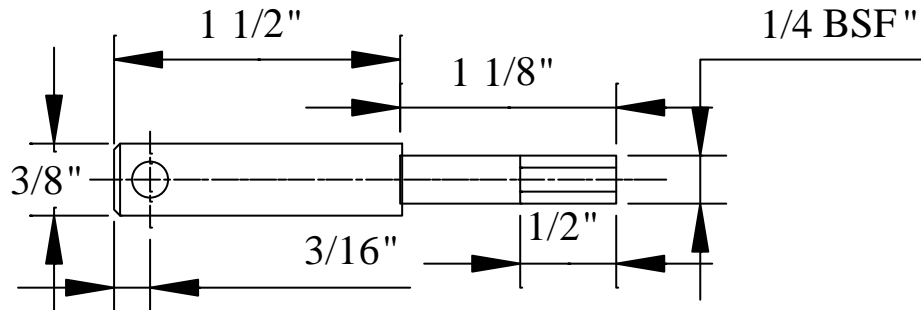




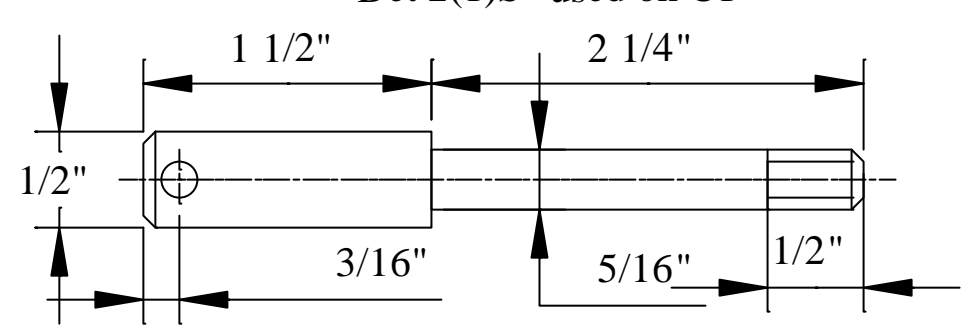


Det 1(6)S used on B1, C7, D1, E1, G2, G10.

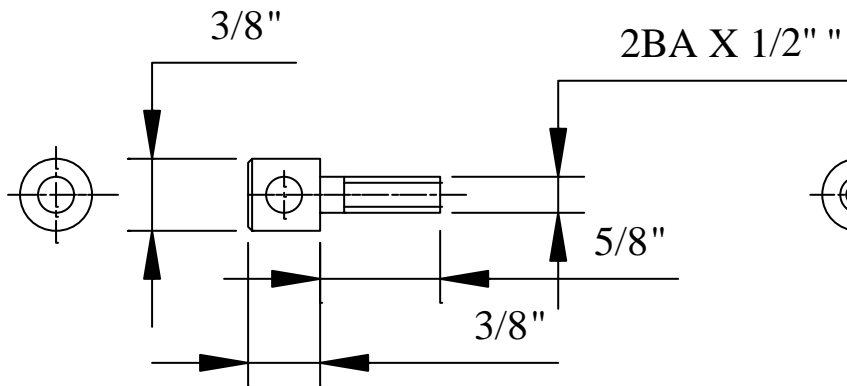
Det 2(1)S used on C1



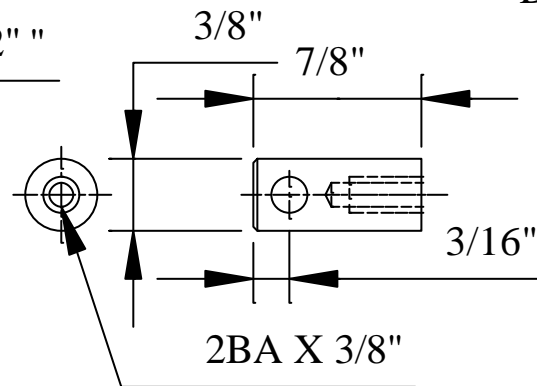
Det 3(2)S used on G2 & K4



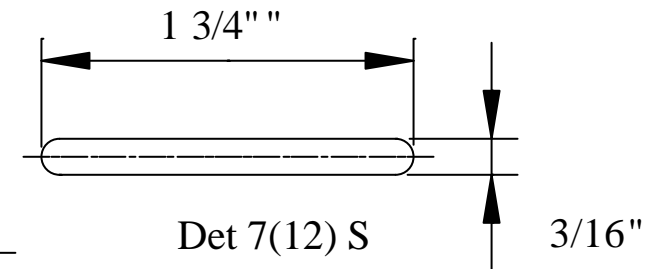
Det 4(1)S used on G2



Det 5 (1) S used on B1

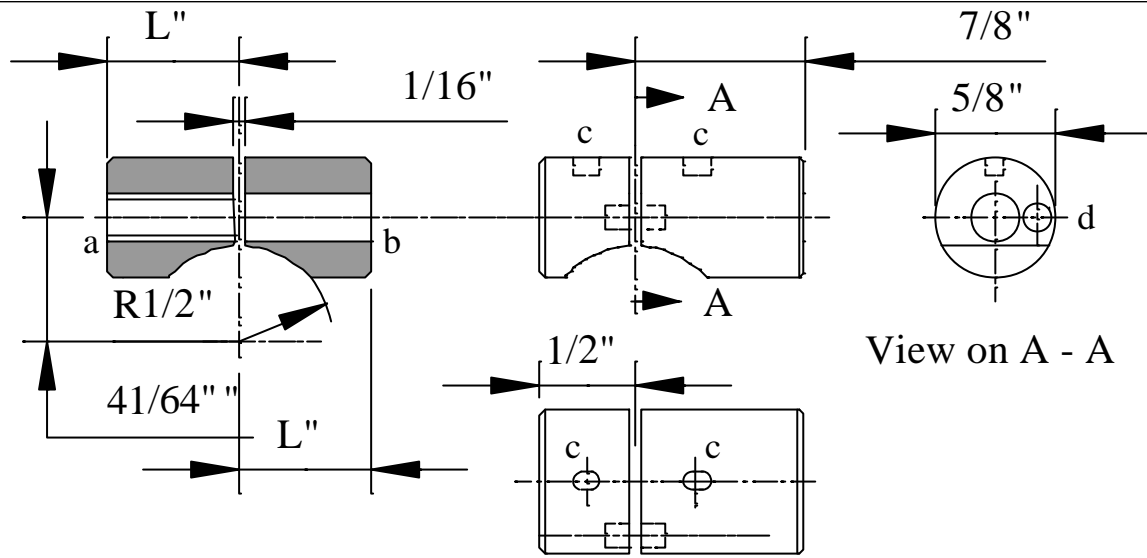


Det 6(1) S used on G2



Det 7(12) S

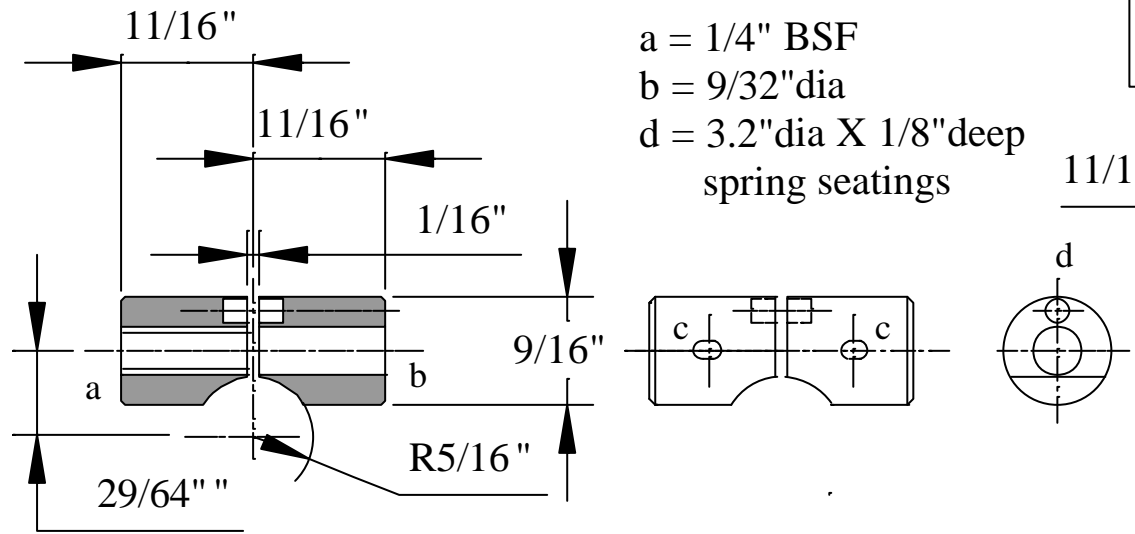
All holes 3/16" dia. To be drilled after trial assembly to determine correct angular position of det 7



View on A - A

Det 1 (1) S L = 11/16" Det 3 (1)
 Det 2 (1) S L = 13/16" (remaining dims as det 1)

a = 1/4" BSF
 b = 9/32" dia
 d = 3.2" dia X 1/8" deep
 spring seatings

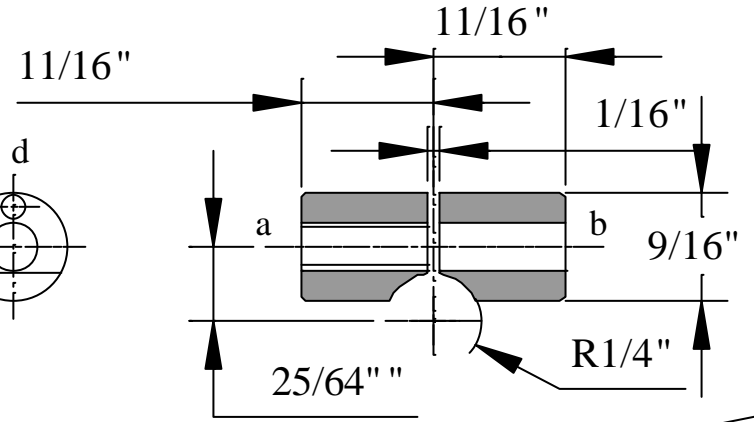


Det 4 (1) S

Bonelle TCG

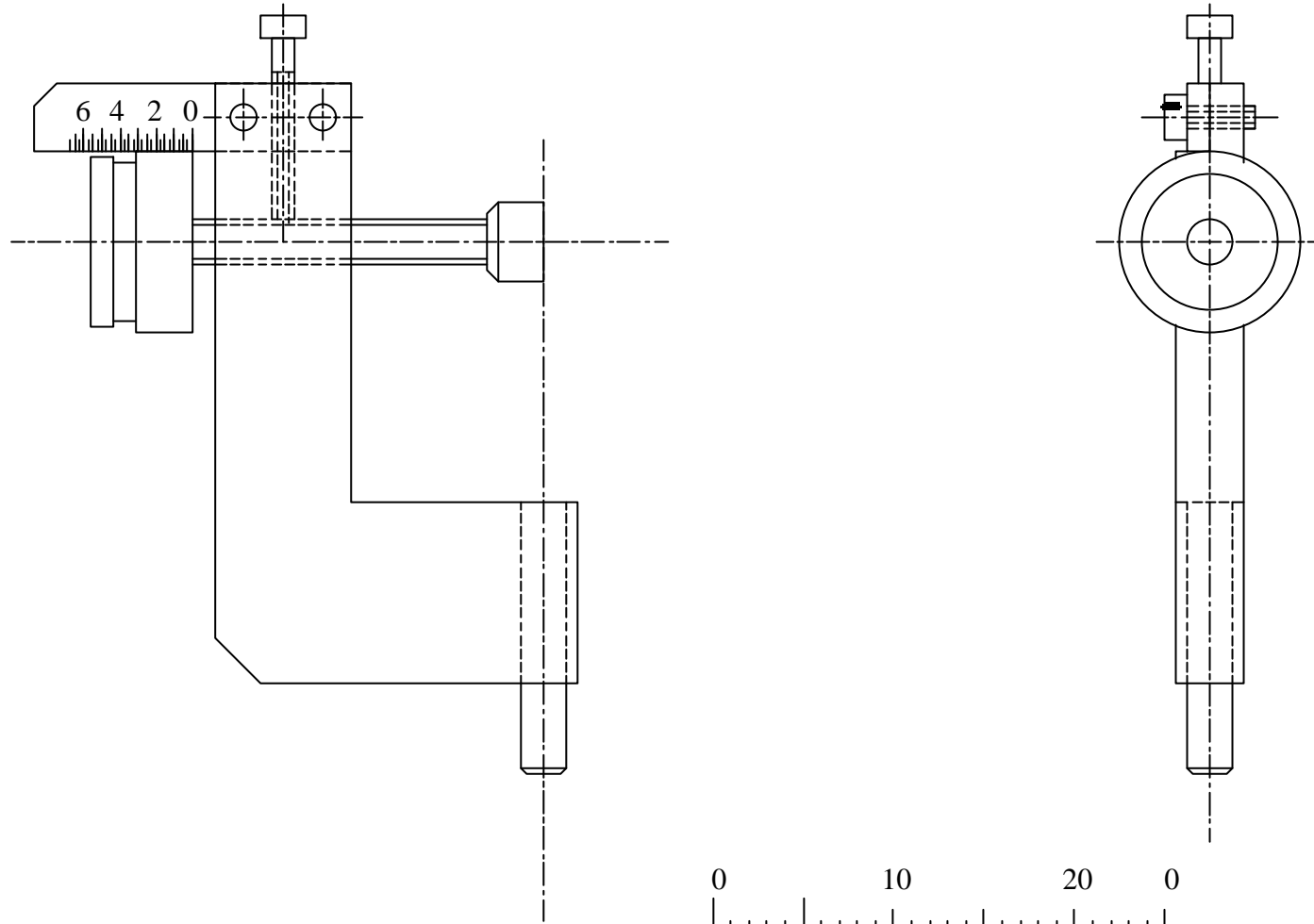
Slots c

Refer to drawings H1 & H2.
 Assemble clamps then transfer positions of the 2.3 mm holes on to them.
 Remove clamps and enlarge holes to 3/32".
 Elongate each hole to a depth of 1/16" as shown.
 Finally tap holes in H2 for 6 BA screws.

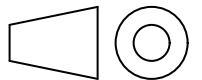


Det 5 (1) S used on G2





Scale around thimble



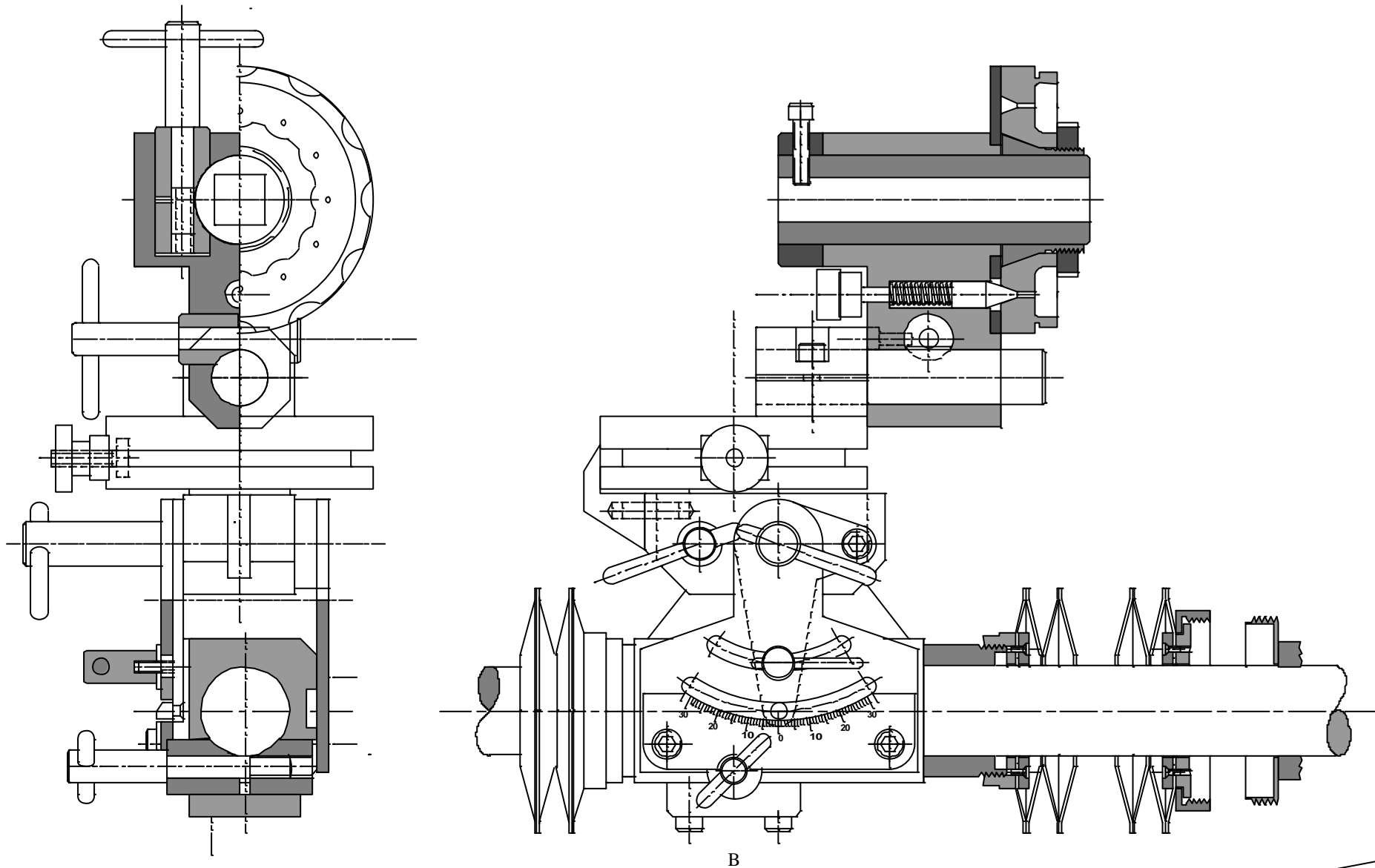
© J.B.D.Willis.
J.B.D. Willis

Revision
0

Date
29/10/00

Micrometer Assy

Drg No L3

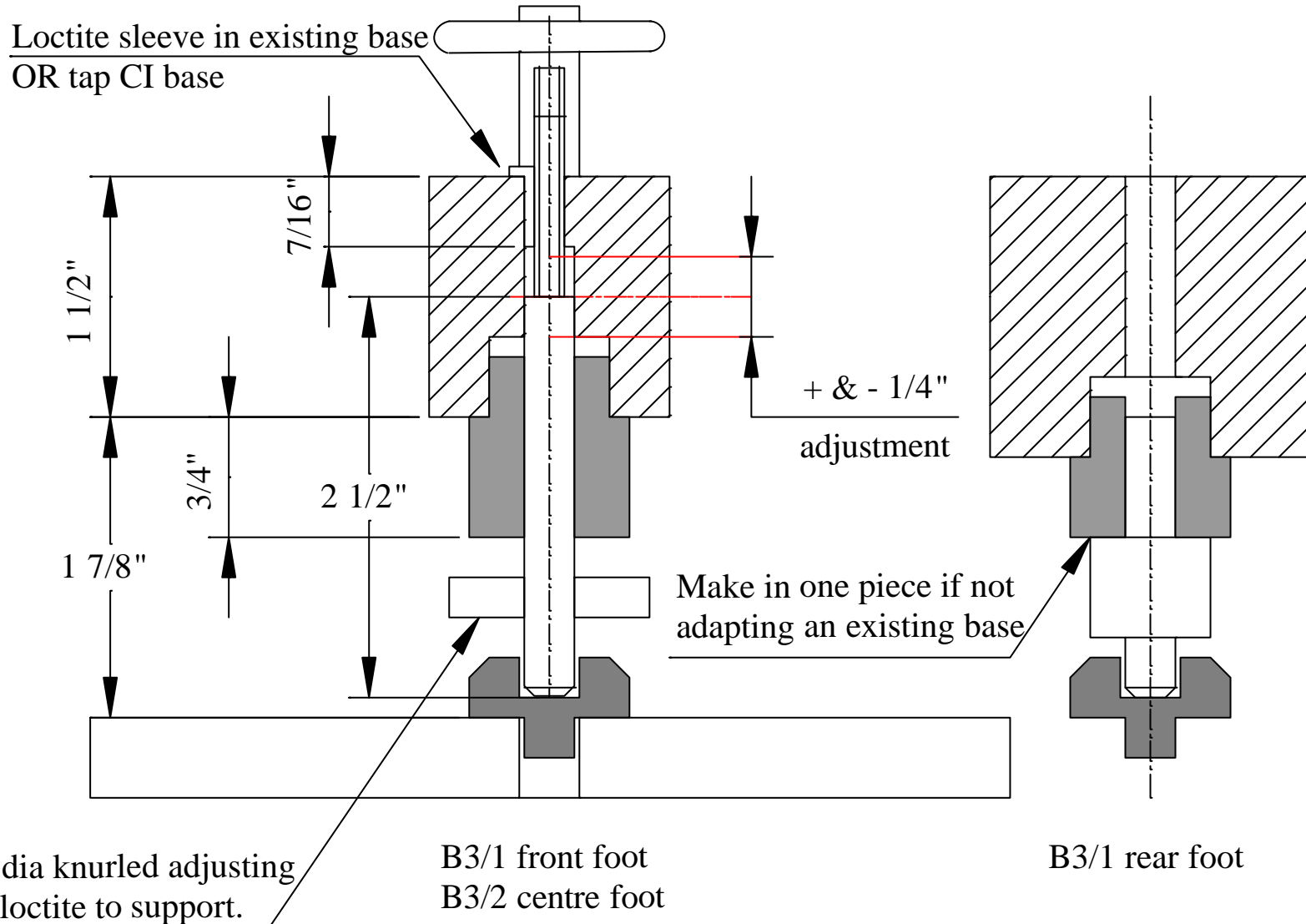


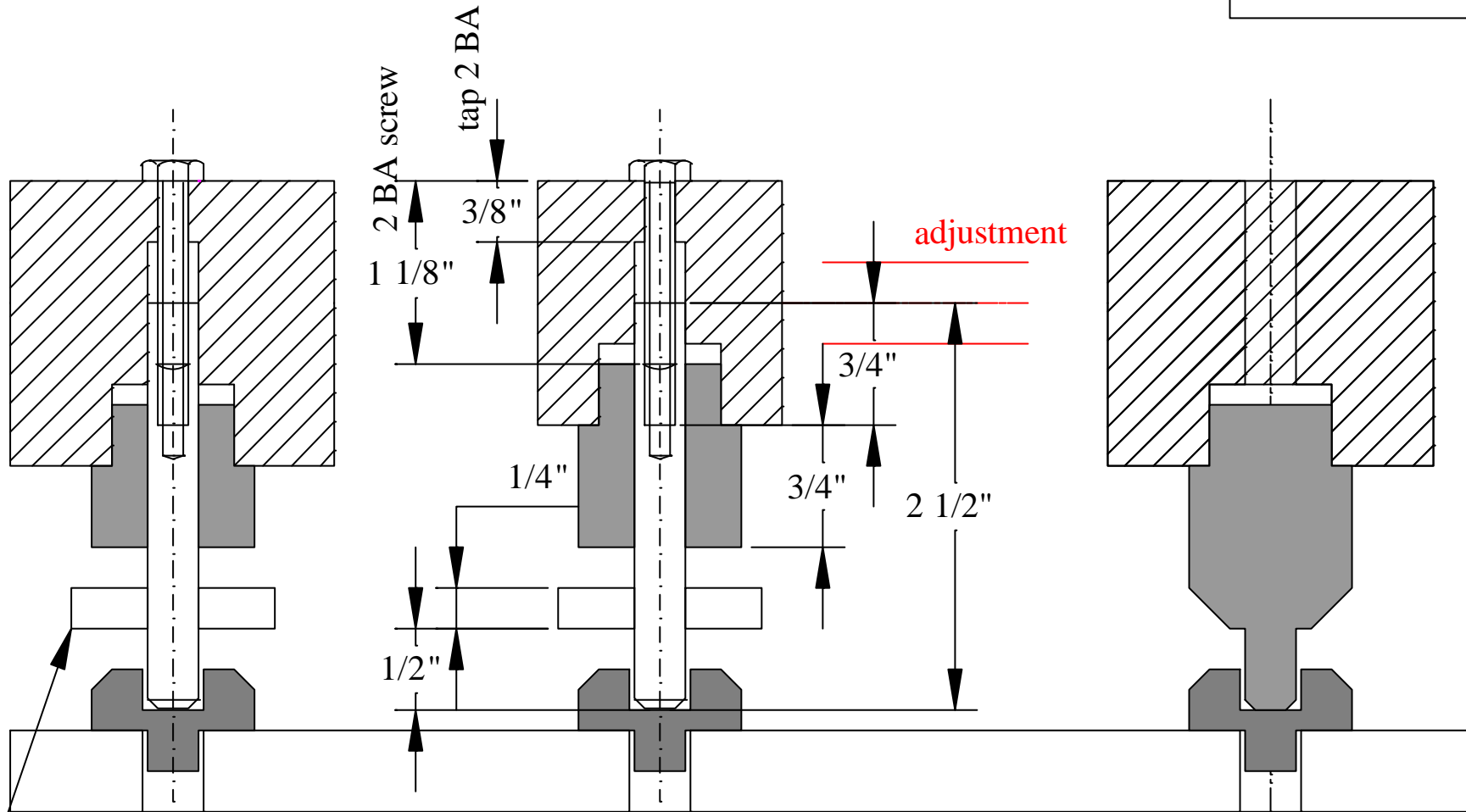
B

© J.B.D.Willis.	Revision 0	Date 10/03/03
-----------------	---------------	------------------

Composite GA of Workhead

Drg No Z1





1 1/4" dia knurled adjusting wheel loctite to support.

B3/1 front foot

B3/2 centre foot

B3/1 rear foot