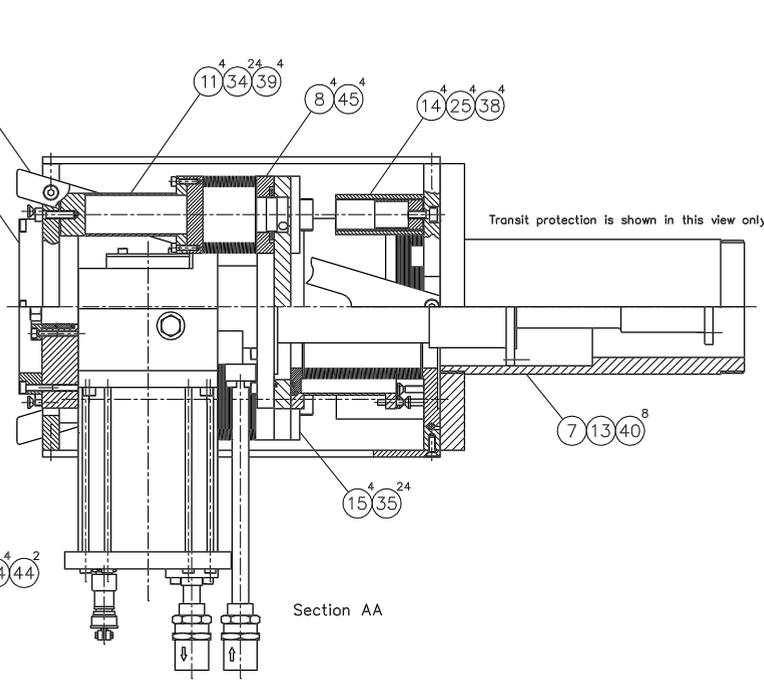
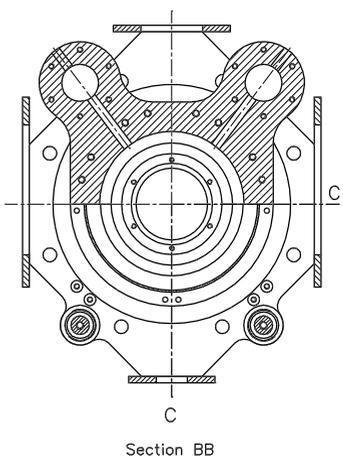
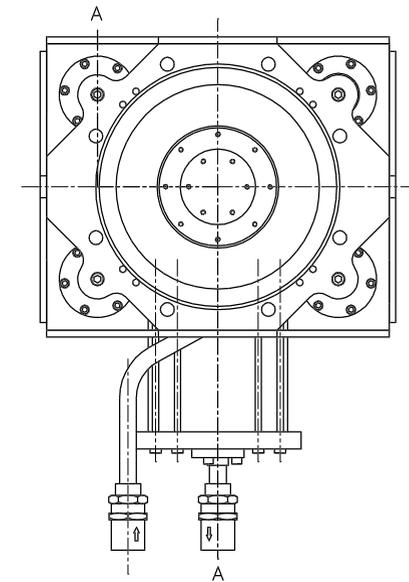


Spring details are shown in this view only.

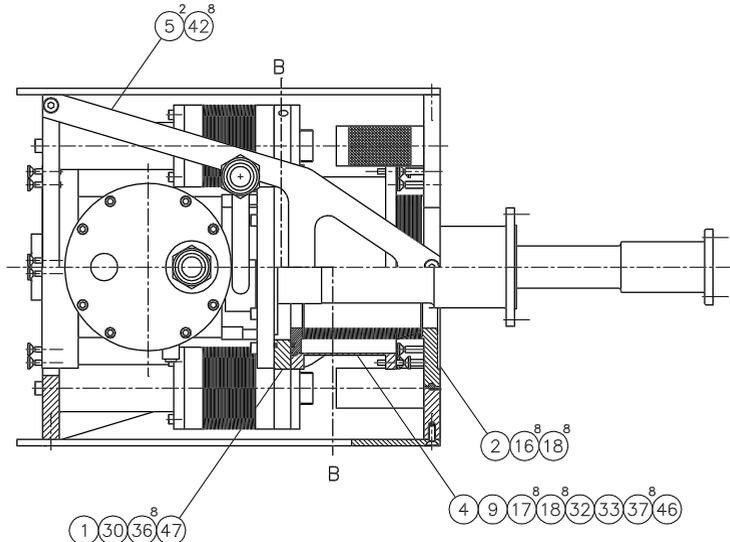


Transit protection is shown in this view only

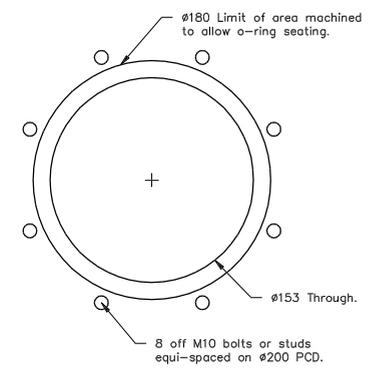
Section AA



Section BB



Section CC



CRYSTAT INTERFACE (DN 160 ISO)

SIZE A1

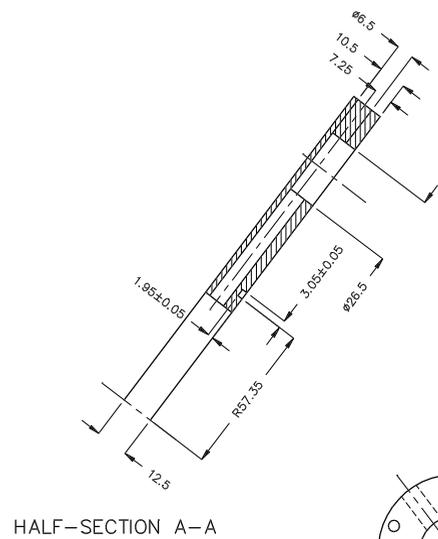


DRAWN BY PRH	ROYAL OBSERVATORY, EDINBURGH		DRAWING No.
CHECKED BY	TITLE CLOSED-CYCLE COOLER (1020CP)		Sheet 3 of 6
SCALE 1/2 SIZE AT A1	GENERAL ASSEMBLY		R.O.E. 13502 B
DATE 7 Jun 91			

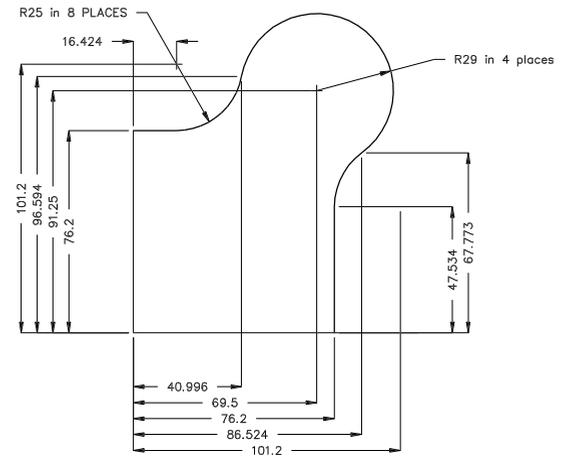
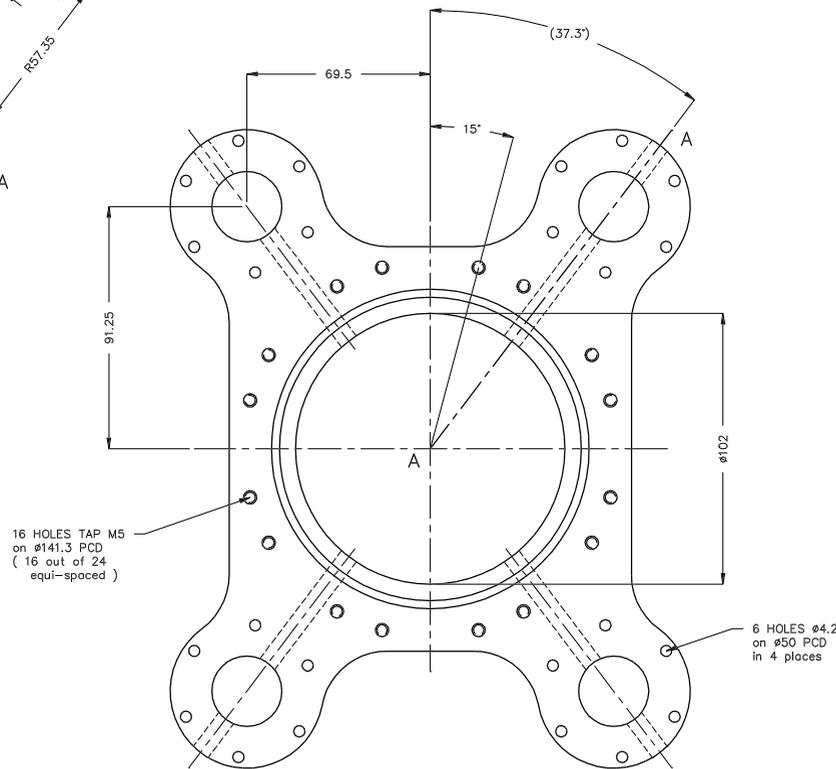
DRAWING No. 13502-1

THIRD ANGLE PROJECTION

DIMENSIONS IN MM



PLUG Ø6.5 DRILLINGS AT OUTER ENDS
AVOIDING TRAPPED VOLUMES AND SEAL WITH
VACUUM-COMPATIBLE EPOXY.

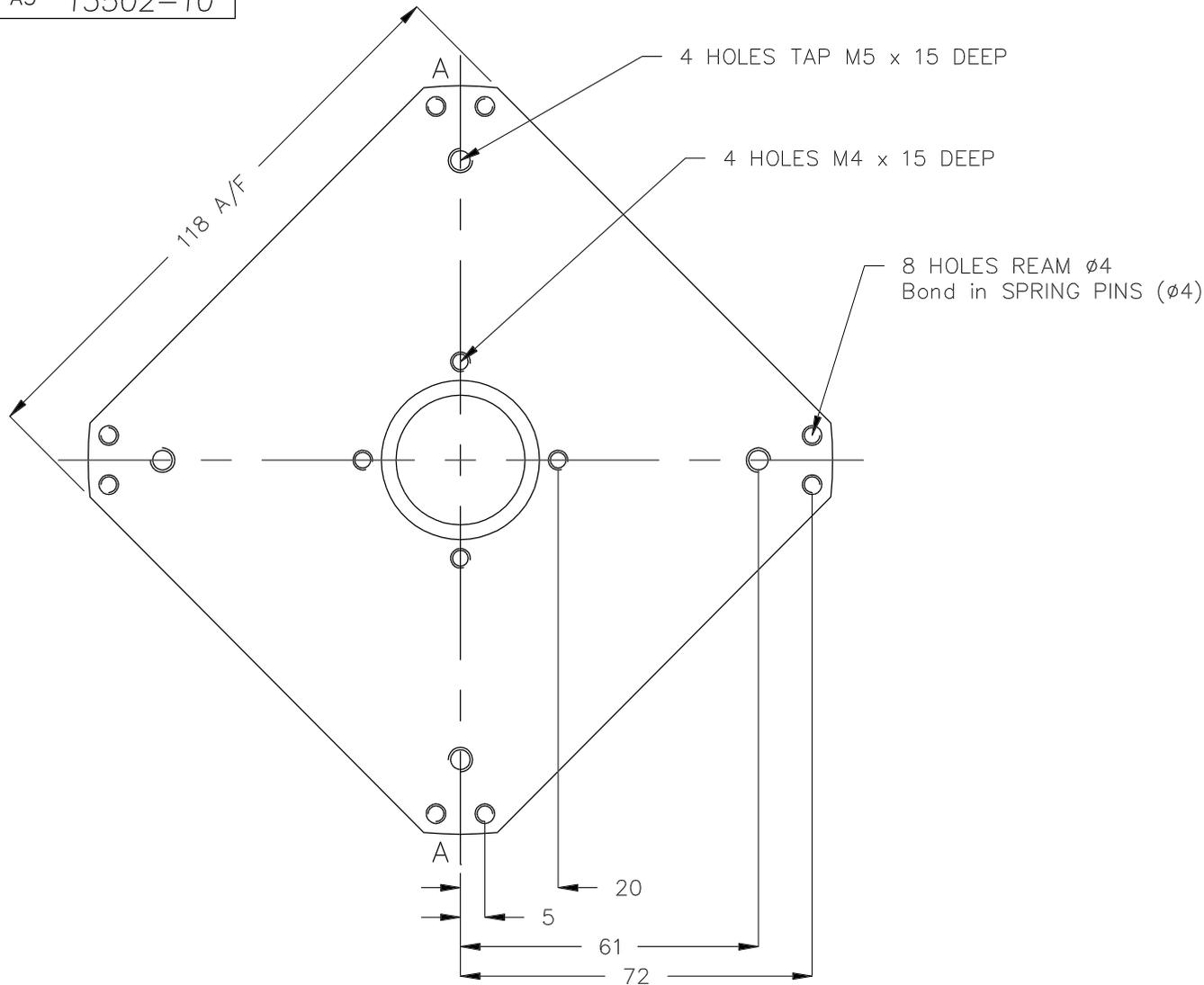


SIZE A1

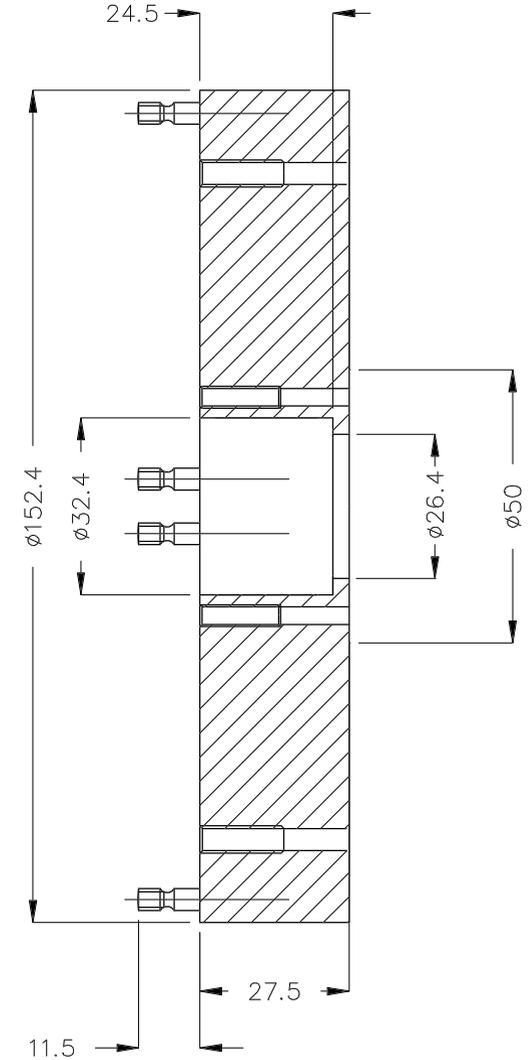
MATERIAL	FINISH	TOLERANCES	DRAWN BY PRH	ROYAL OBSERVATORY, EDINBURGH	
Al Alloy HE30TF	AS MACHINED CLEAN TO UHV	±0.25	CHECKED BY	TITLE	DRAWING No.
		UNLESS OTHERWISE STATED	SCALE FS	CLOSED-CYCLE COOLER	ISSUE
			DATE 29 Aug 90	CENTRAL PLATE	R.O.E. 13502-1 A

DRAWING No.
 SIZE A3 13502-10

THIRD ANGLE PROJECTION



DIMENSIONS IN MM



Section A-A

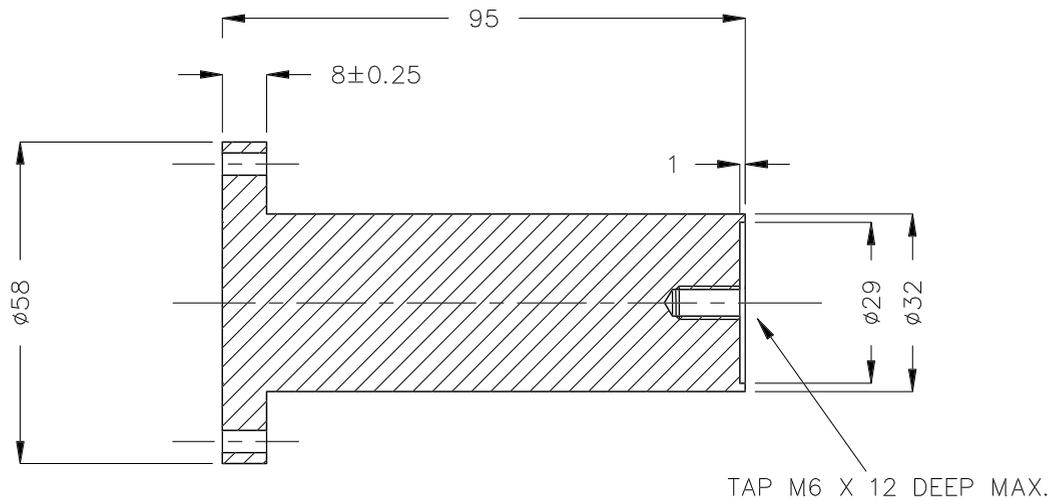
NOTE
 Degrease spring pins and holes thoroughly,
 Bond spring pins in place with retaining
 grade of anaerobic adhesive (e.g. Loctite)

MATERIAL	FINISH	TOLERANCES	DRAWN PRH	ROYAL OBSERVATORY, EDINBURGH		
Stainless steel 316S16	CLEAN	± 0.15 UNLESS OTHERWISE STATED	SCALE FS	TITLE	DRAWING No.	ISSUE
			DATE 29 Aug 90	CLOSED-CYCLE COOLER TAILPLATE	R.O.E. 13502-10	A

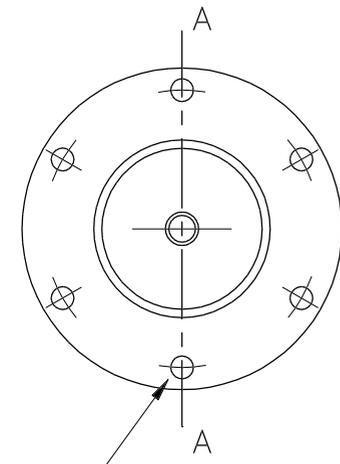
DRAWING No.
13502-11

THIRD ANGLE PROJECTION

DIMENSIONS IN MM



Section A-A



6 HOLES $\phi 4.1$
EQUI-SPACED ON
 $\phi 50$ PCD

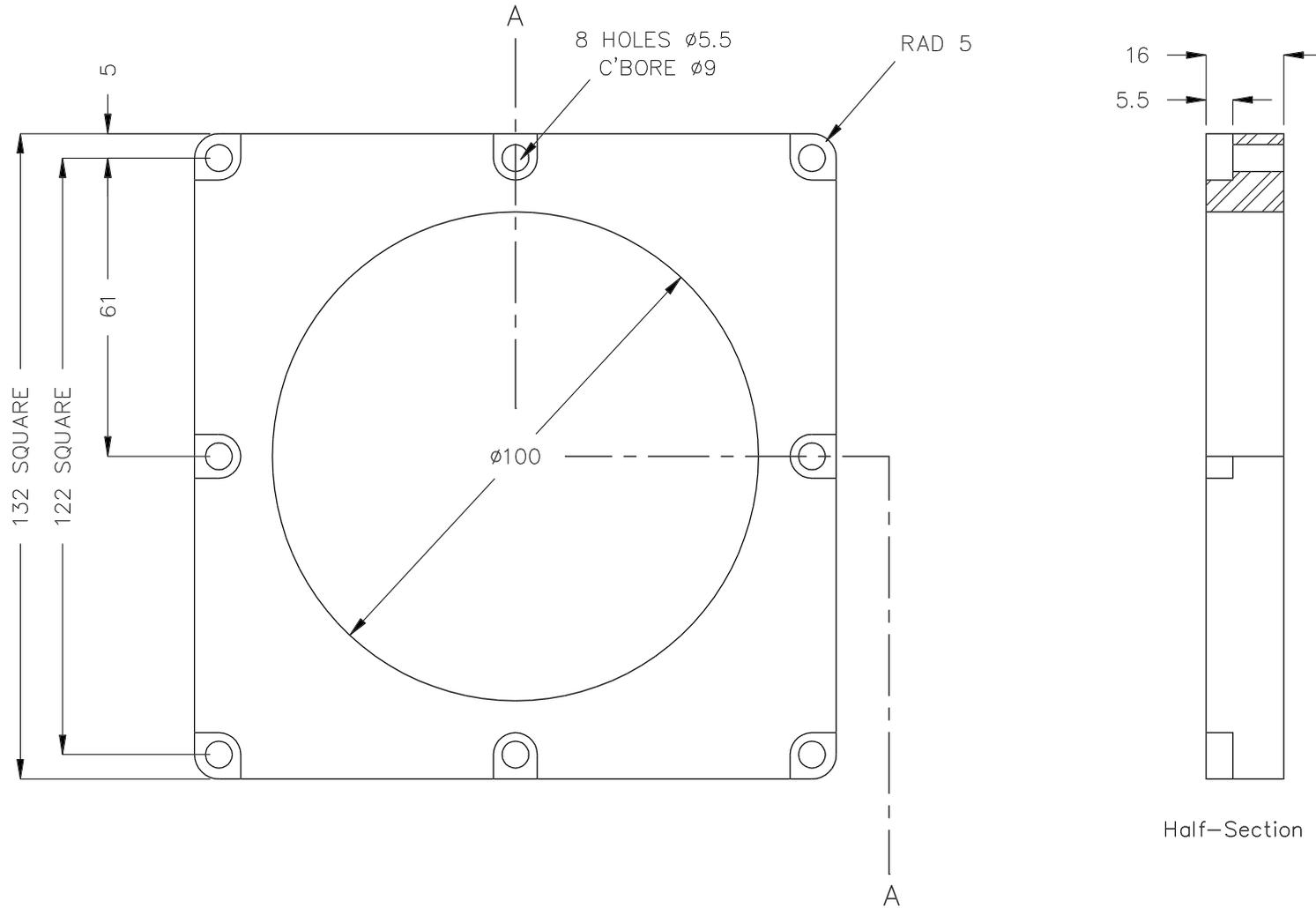
SIZE A3

MATERIAL	FINISH	TOLERANCES	DRAWN J.CLARK	ROYAL OBSERVATORY, EDINBURGH		
Al Alloy HE30TF	CLEAR ANODISE	± 0.15	SCALE 1:1 AT A3	TITLE CLOSED-CYCLE COOLER BELLOWS PILLAR	DRAWING No. R.O.E. 13502-11	ISSUE A
		UNLESS OTHERWISE STATED	DATE 29 Aug 90			

DRAWING No.
13502-12

THIRD ANGLE PROJECTION

DIMENSIONS IN MM



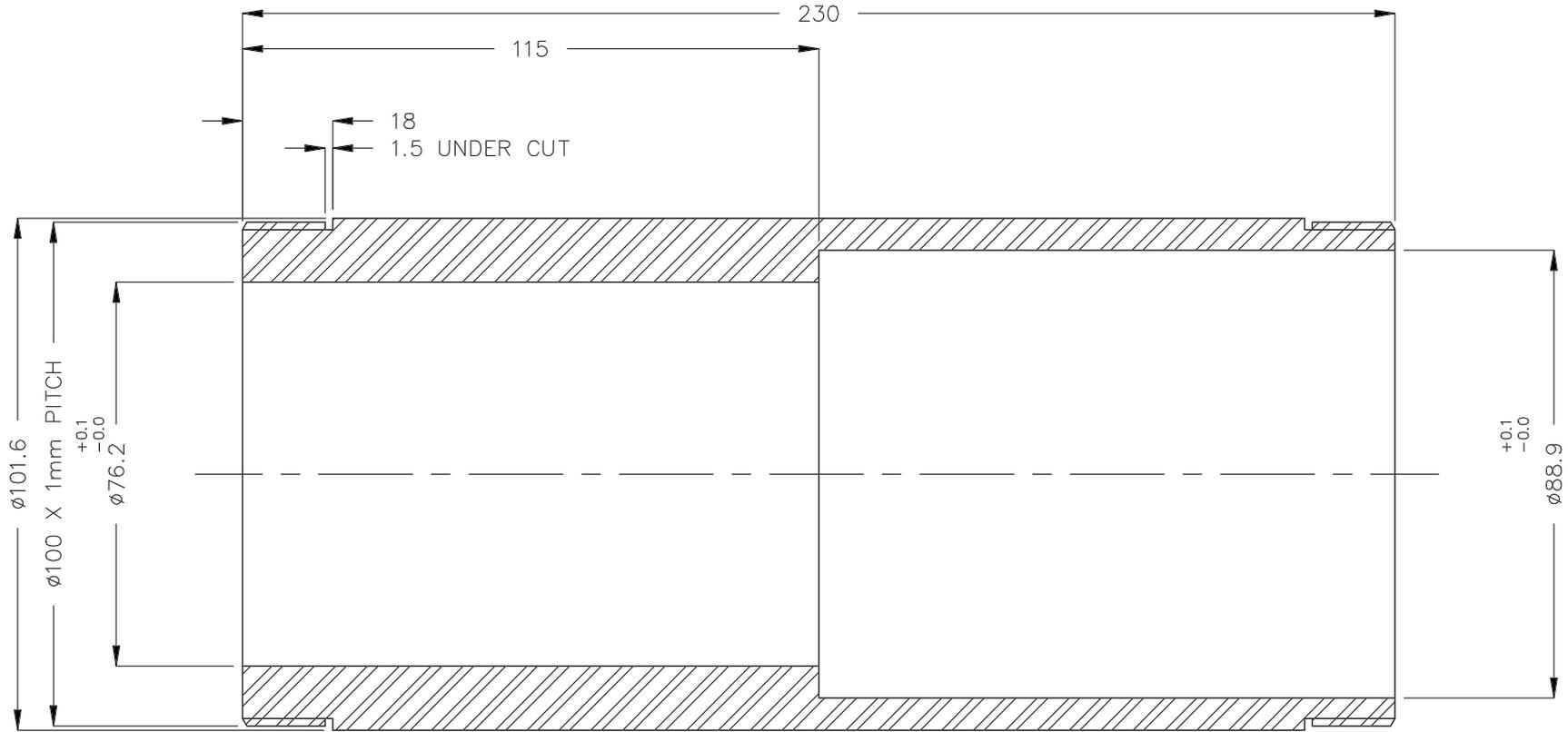
Half-Section AA

SIZE A3

MATERIAL	FINISH	TOLERANCES	DRAWN J. CLARK	ROYAL OBSERVATORY, EDINBURGH		
PVC/DELTRIN/NYLON	AS MACHINED	±0.15 UNLESS OTHERWISE STATED	SCALE 1:1 AT A3	TITLE	DRAWING No.	ISSUE
			DATE 29 Aug 90	CLOSED-CYCLE COOLER TRANSIT END BLOCK	R.O.E. 13502-12	A

DRAWING No.
13502-13

DIMENSIONS IN MM



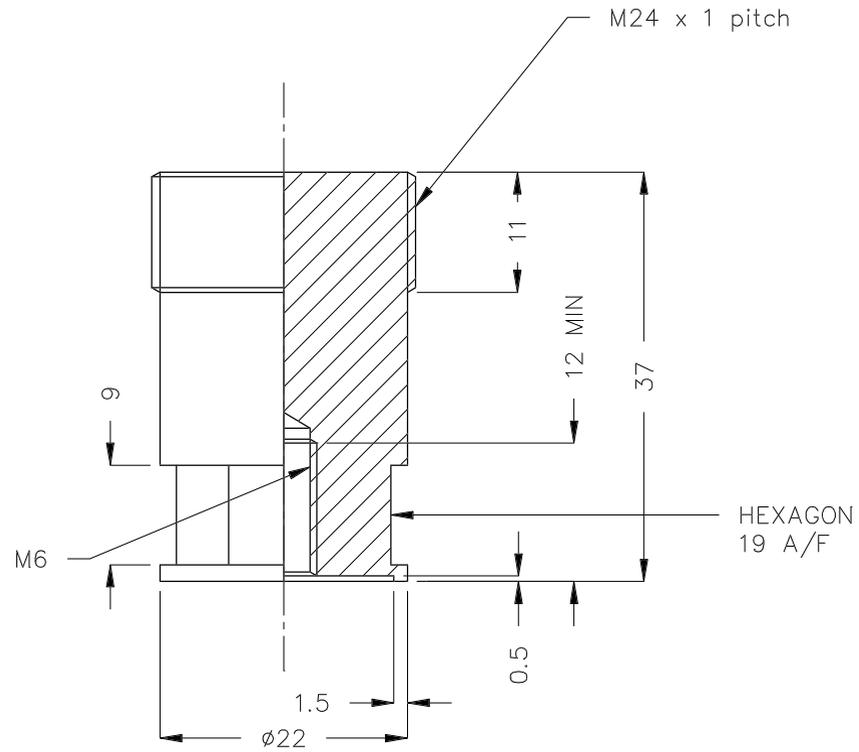
BOTH ENDS OF TUBE
ARE IDENTICAL

SIZE A3

MATERIAL	FINISH	TOLERANCES	DRAWN J.CLARK	ROYAL OBSERVATORY, EDINBURGH		
PVC/DELIN/NYLON	AS MACHINED	±0.15 UNLESS OTHERWISE STATED	SCALE 1:1 AT A3	TITLE CLOSED-CYCLE COOLER TRANSIT TUBE	DRAWING No. R.O.E. 13502-13	ISSUE A
			DATE 29 Aug 90			

MATERIAL : Stainless Steel 316S16
 FINISH : CLEAN
 TOLERANCE : ± 0.15 u.o.s.
 SCALE : 2 x FS
 DRAWN : PRH
 DATE : 29 Aug 90

DIMENSIONS IN MM



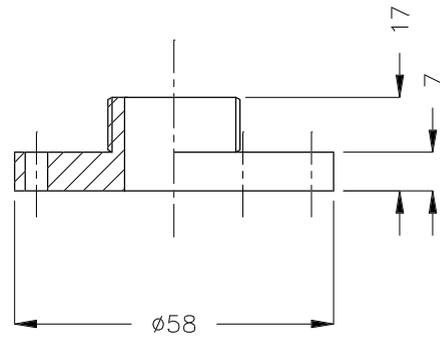
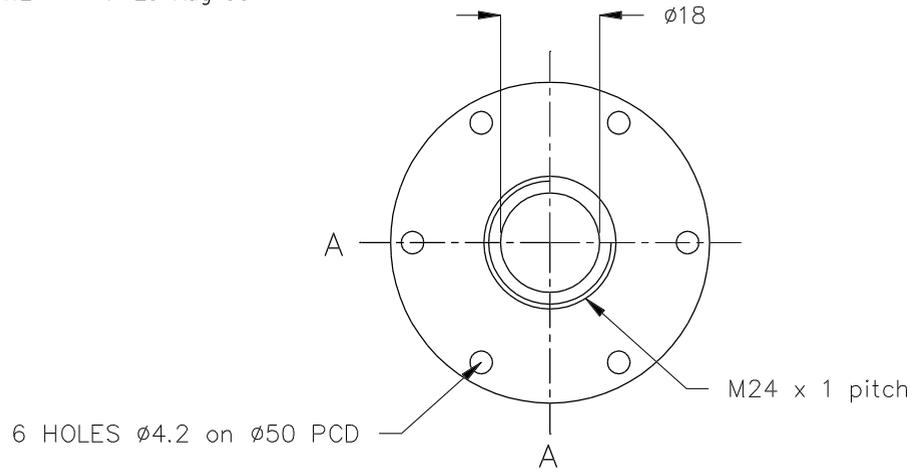
Half Section

ROYAL OBSERVATORY, EDINBURGH

TITLE	DRAWING No.	ISSUE
CLOSED-CYCLE COOLER	R.O.E. 13502-14	A
LOCKING SLEEVE STUD		

MATERIAL : Stainless Steel 316S16
 FINISH : CLEAN
 TOLERANCE : ± 0.15 u.o.s.
 SCALE : FS
 DRAWN : PRH
 DATE : 29 Aug 90

THIRD ANGLE PROJECTION
 DIMENSIONS IN MM



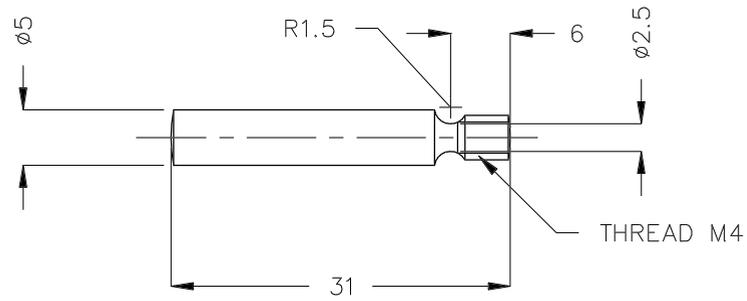
Section AA

ROYAL OBSERVATORY, EDINBURGH

TITLE	CLOSED-CYCLE COOLER	DRAWING No.	ISSUE
LOCKING PLATE	R.O.E.	13502-15	A

MATERIAL : Stainless Steel 316S16
FINISH : Clean
TOLERANCE : ± 0.15 u.o.s.
SCALE : 2 x FS
DRAWN : PRH
DATE : 29 Aug 90

DIMENSIONS IN MM

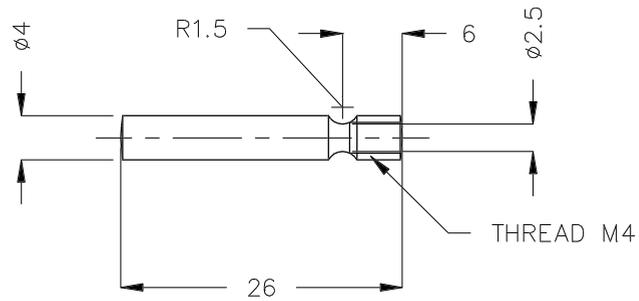


ROYAL OBSERVATORY, EDINBURGH

TITLE	DRAWING No.	ISSUE
CLOSED-CYCLE COOLER SPRING PIN ($\phi 5$)	R.O.E. 13502-16	A

MATERIAL : Stainless Steel 316S16
FINISH : Clean
TOLERANCE : ± 0.15 u.o.s.
SCALE : 2 x FS
DRAWN : PRH
DATE : 29 Aug 90

DIMENSIONS IN MM

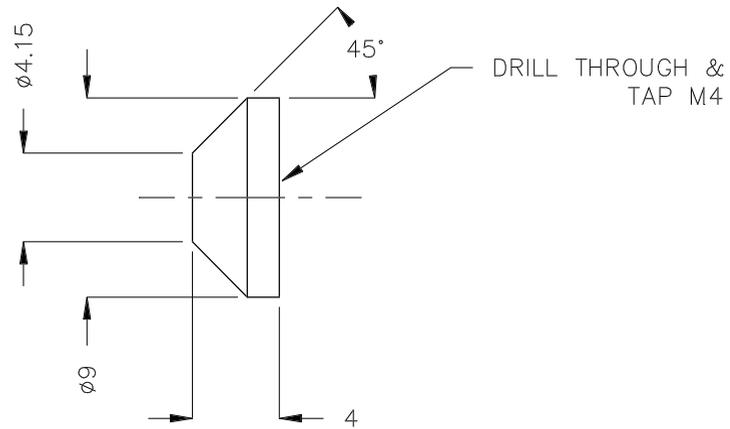


ROYAL OBSERVATORY, EDINBURGH

TITLE	CLOSED-CYCLE COOLER	DRAWING No.	ISSUE
	SPRING PIN ($\phi 4$)	R.O.E. 13502-17	A

MATERIAL : Stainless Steel 316S16
FINISH : Clean
TOLERANCE : ± 0.15 u.o.s.
SCALE : 4 x FS
DRAWN : PRH
DATE : 29 Aug 90

DIMENSIONS IN MM

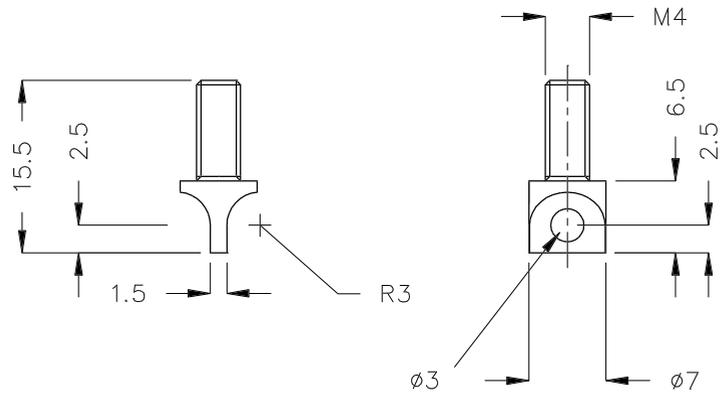


ROYAL OBSERVATORY, EDINBURGH

TITLE	CLOSED-CYCLE COOLER	DRAWING No.	ISSUE
	SPRING PIN COLLAR	R.O.E. 13502-18	A

MATERIAL : STAINLESS STEEL 316 S16
FINISH : AS MACHINED
TOLERANCE : ± 0.15
SCALE : 2:1
DRAWN : JC/PRH
DATE : 29 Aug 90

THIRD ANGLE PROJECTION
DIMENSIONS IN MM



ROYAL OBSERVATORY, EDINBURGH

TITLE CLOSED-CYCLE COOLER

DRAWING No.

ISSUE

SPRING LINK: -MALE

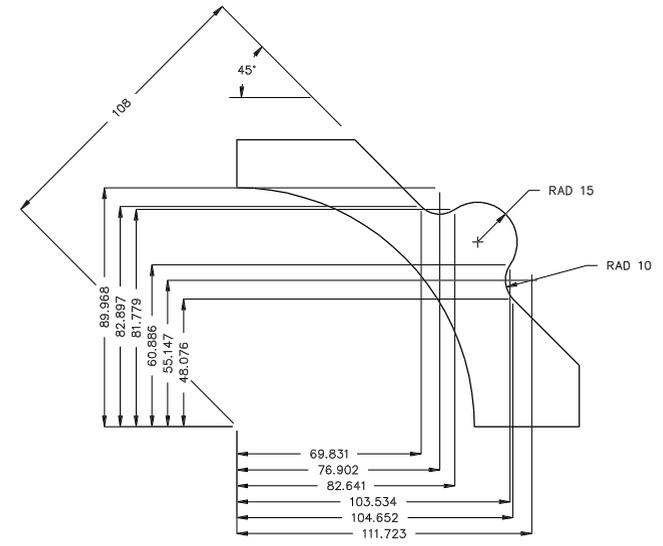
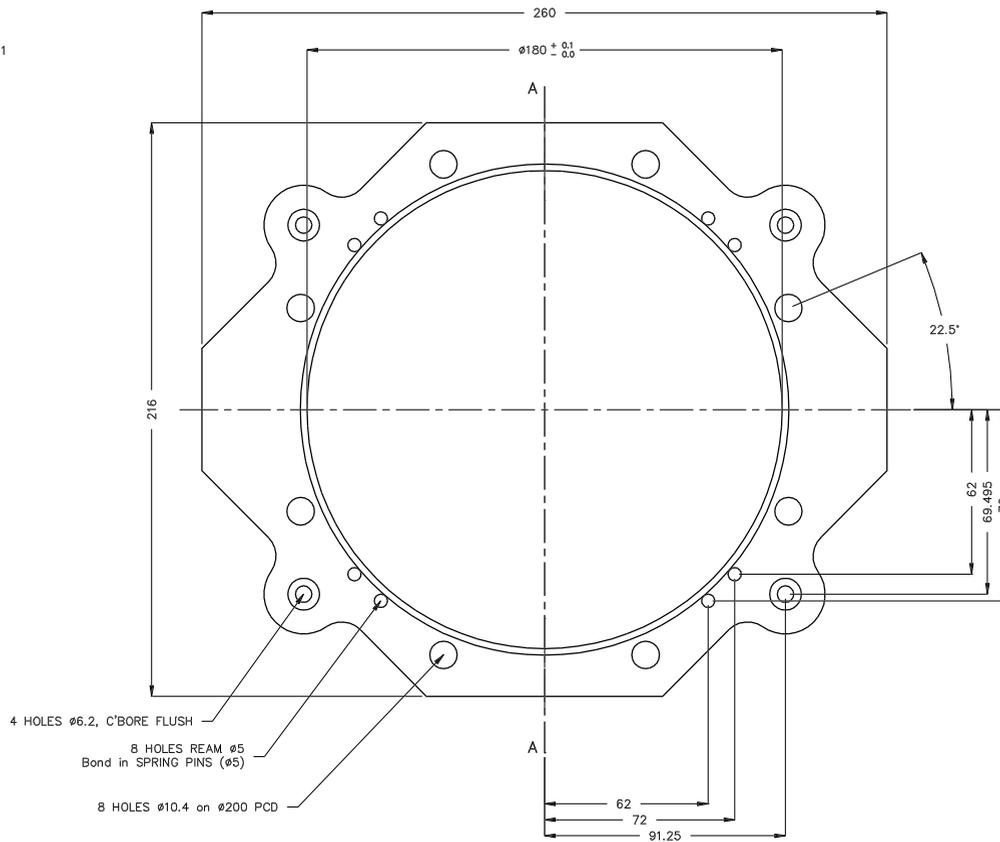
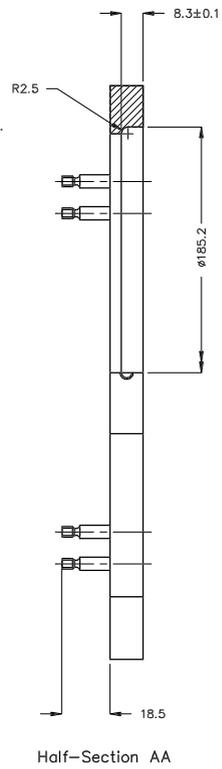
R.O.E. 13502-19

A

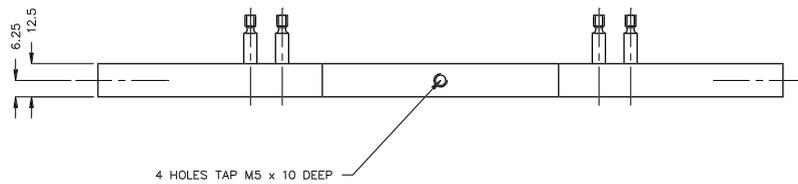
DRAWING No. 13502-2

THIRD ANGLE PROJECTION

DIMENSIONS IN MM



NOMINAL POSITIONS OF TANGENCY POINTS etc.



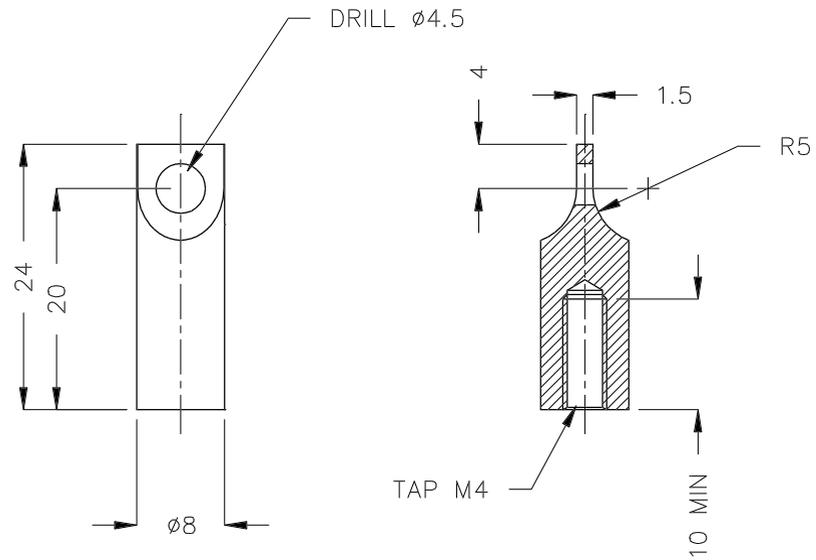
NOTE
 Degrease spring pins and holes thoroughly,
 Bond spring pins in place with retaining
 grade of anaerobic adhesive (e.g. Loctite)

SIZE A1

MATERIAL	FINISH	TOLERANCES	DRAWN BY PRH	ROYAL OBSERVATORY, EDINBURGH	
Al Alloy HE30TF	CLEAR ANODISE	±0.15	CHECKED BY	TITLE CLOSED-CYCLE COOLER	DRAWING No.
		UNLESS OTHERWISE STATED	SCALE 1:1 AT A1	MOUNTING PLATE	R.O.E. 13502-2
			DATE 10 May 91		ISSUE B

MATERIAL : STAINLESS STEEL 316 S16
FINISH : AS MACHINED
TOLERANCE : ± 0.15
SCALE : 2:1
DRAWN : PRH
DATE : 29 Aug 90

THIRD ANGLE PROJECTION
DIMENSIONS IN MM



ROYAL OBSERVATORY, EDINBURGH

TITLE CLOSED-CYCLE COOLER

DRAWING No.

ISSUE

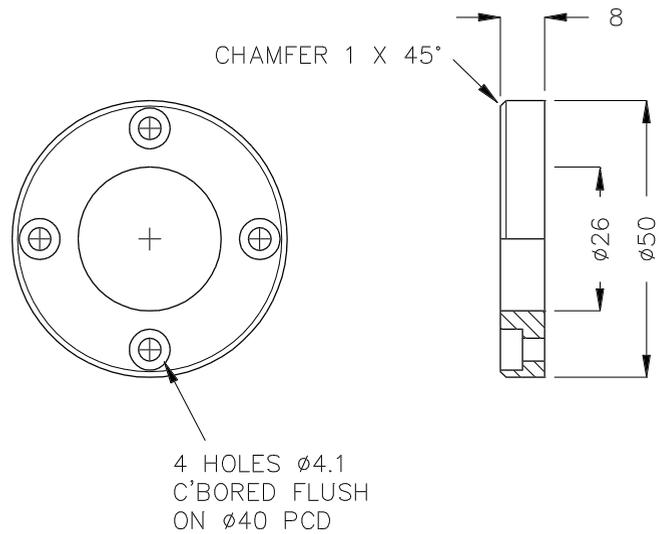
SPRING LINK (FEMALE)

R.O.E. 13502-22

A

MATERIAL : Stainless steel 316S16
FINISH : CLEAN
TOLERANCE : ± 0.15
SCALE : FS
DRAWN : J.CLARK
DATE : 29 Aug 90

THIRD ANGLE PROJECTION
DIMENSIONS IN MM



ROYAL OBSERVATORY, EDINBURGH

TITLE CLOSED-CYCLE COOLER

DRAWING No.

ISSUE

TAILPLATE CLAMP

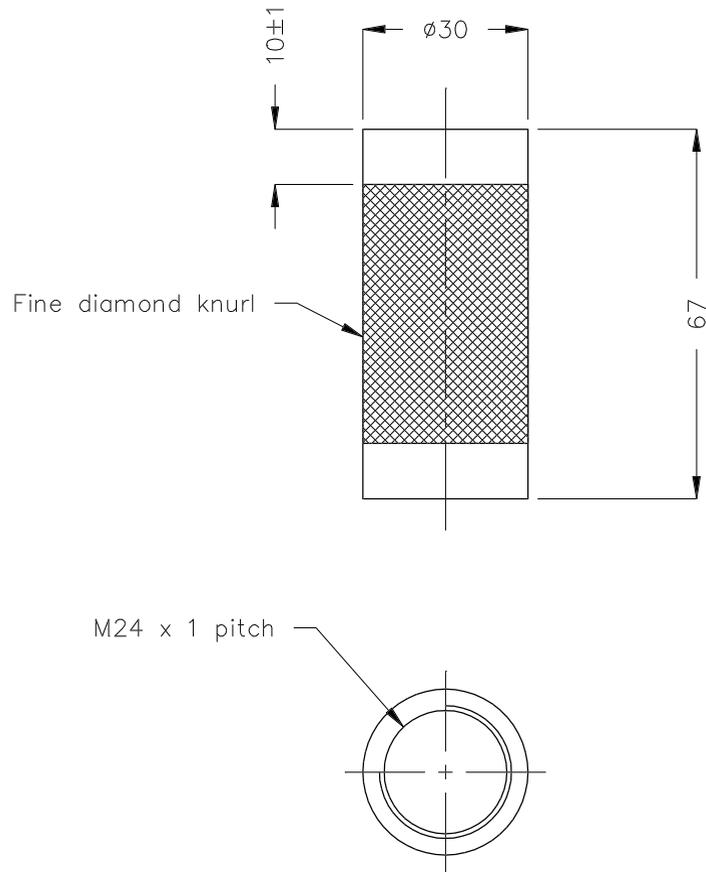
R.O.E.

13502-23

A

MATERIAL : Al Alloy HE30TF
FINISH : CLEAR ANODISE
TOLERANCE : ± 0.15 u.o.s.
SCALE : FS
DRAWN : PRH
DATE : 29 Aug 90

THIRD ANGLE PROJECTION
DIMENSIONS IN MM

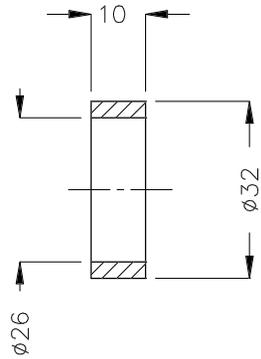


ROYAL OBSERVATORY, EDINBURGH

TITLE	CLOSED-CYCLE COOLER	DRAWING No.	ISSUE
LOCKING SLEEVE	R.O.E.	13502-25	A

MATERIAL : BLACK DELRIN
FINISH : AS MACHINED
TOLERANCE : ± 0.15 unless otherwise stated
SCALE : FS
DRAWN : J.CLARK
DATE : 29 Aug 90

DIMENSIONS IN MM

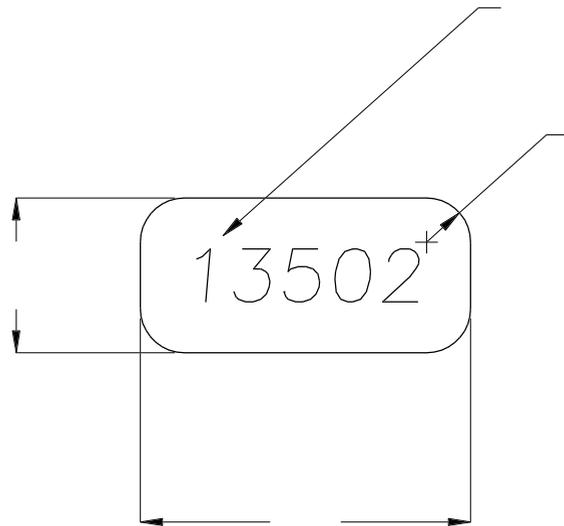


ROYAL OBSERVATORY, EDINBURGH

TITLE	DRAWING No.	ISSUE
CLOSED-CYCLE COOLER TAILPLATE CLAMP SPACER	R.O.E. 13502-27	A

MATERIAL : GRAVOPLY - White, Black figures
FINISH : Clean
TOLERANCE : ± 0.15 u.o.s.
SCALE : 2 x FS
DRAWN : PRH
DATE : 29 Aug 90

DIMENSIONS IN MM



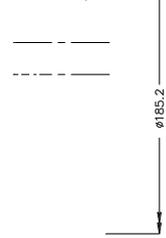
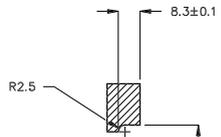
ROYAL OBSERVATORY, EDINBURGH

TITLE	DRAWING No.	ISSUE
CLOSED-CYCLE COOLER (350CP) LABEL	R.O.E. 13502-28	A

DRAWING No.

THIRD ANGLE PROJECTION

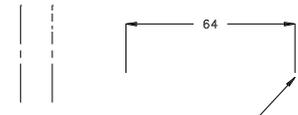
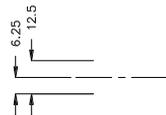
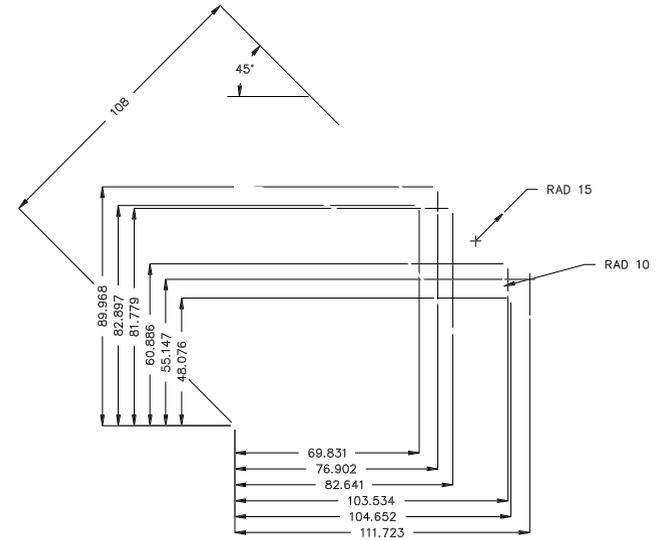
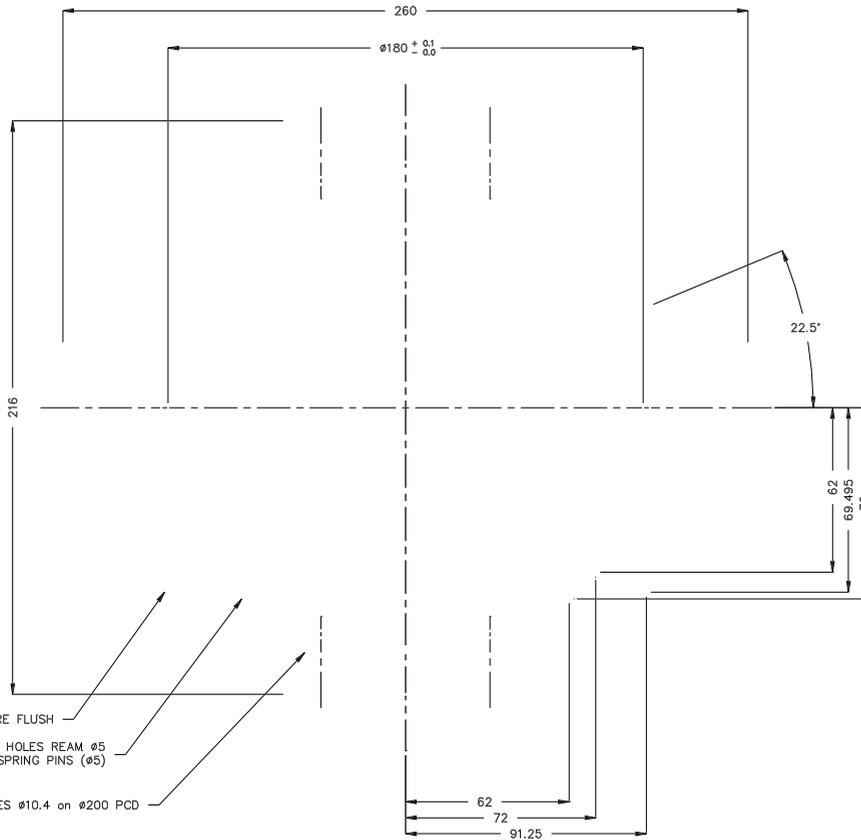
DIMENSIONS IN MM



4 HOLES Ø6.2, C'BORE FLUSH

8 HOLES REAM Ø5
Bond in SPRING PINS (Ø5)

8 HOLES Ø10.4 on Ø200 PCD



6 HOLES TAP M5 x 10 DEEP

MATERIAL

FINISH

TOLERANCES

DRAWN BY

CHECKED BY

SCALE

DATE

ROYAL OBSERVATORY, EDINBURGH

TITLE

DRAWING No.

R.O.E.

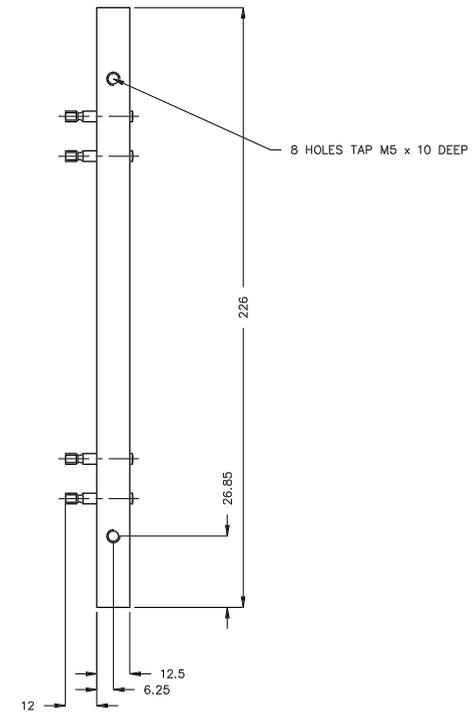
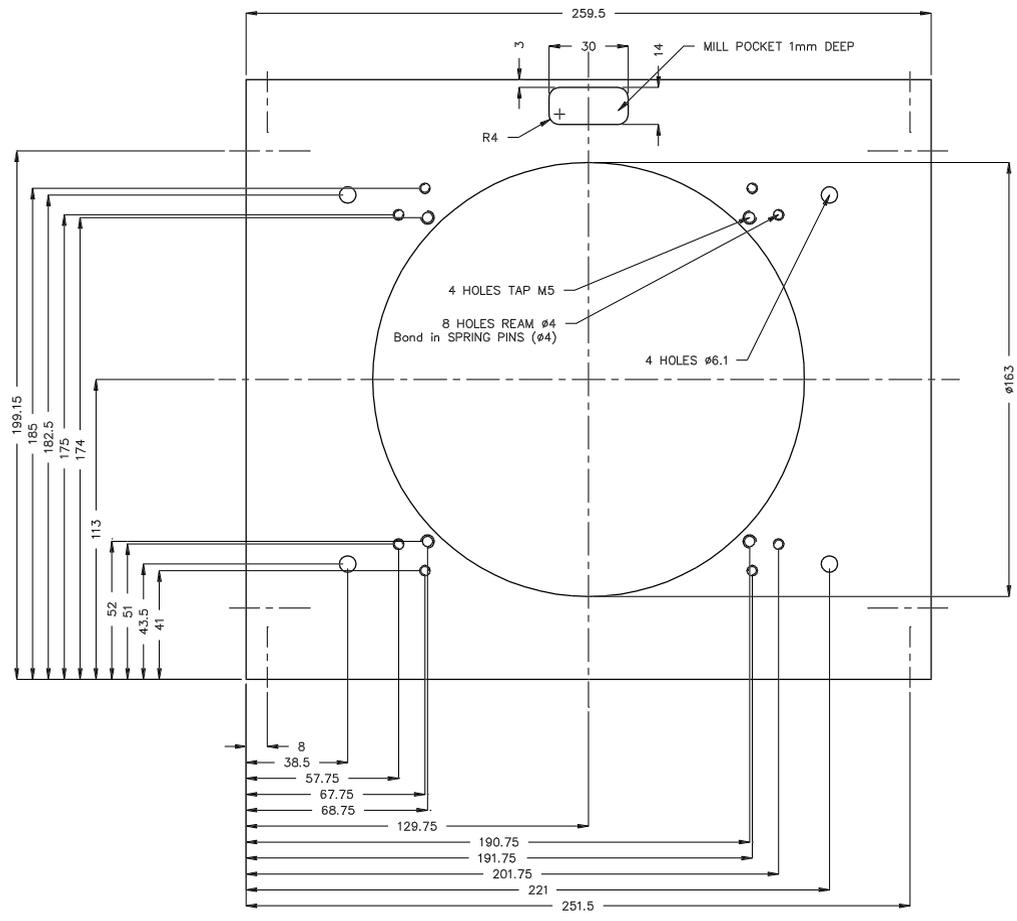
SIZE A1

UNLESS OTHERWISE STATED

DRAWING No.
13502-3

THIRD ANGLE PROJECTION

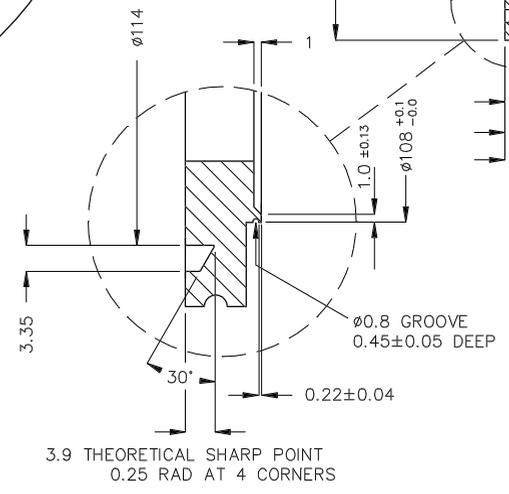
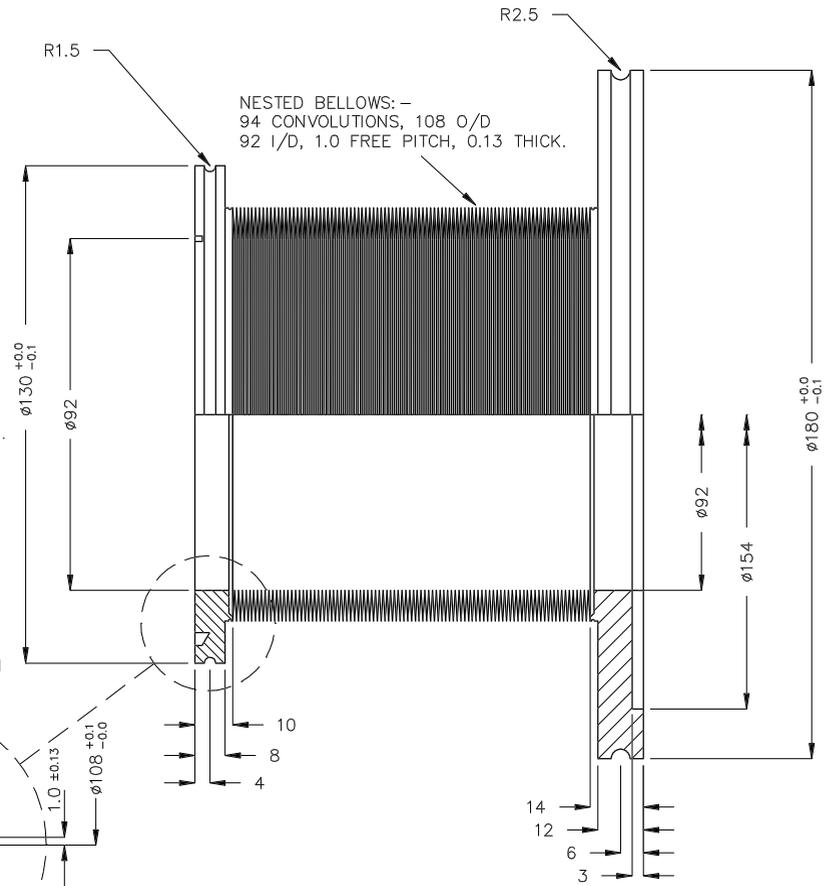
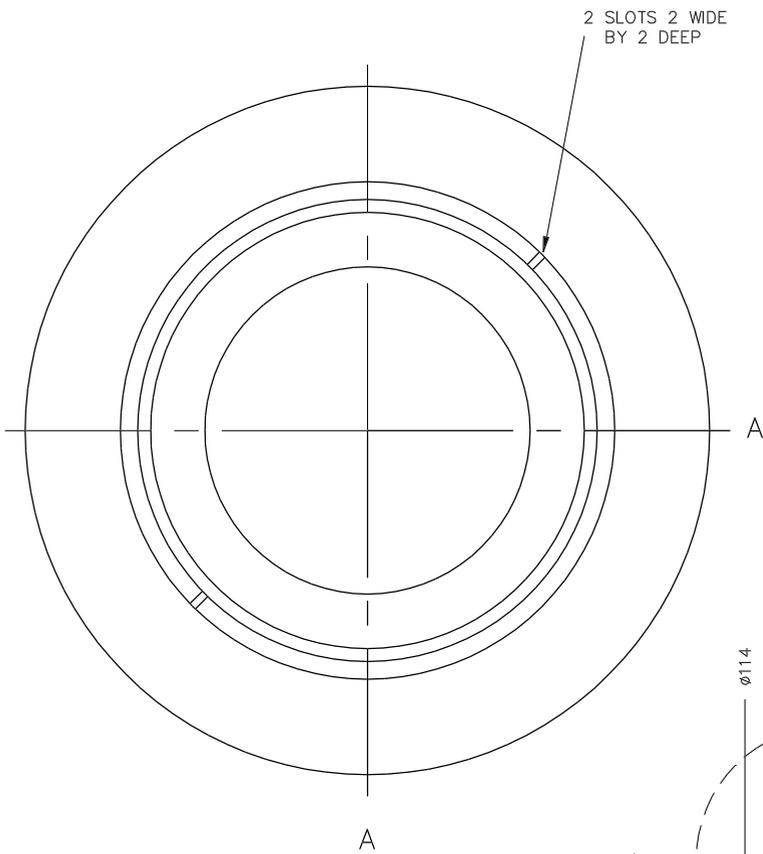
DIMENSIONS IN MM



NOTE
Degrease spring pins and holes thoroughly,
Bond spring pins in place with retaining
grade of anaerobic adhesive (e.g. Loctite)

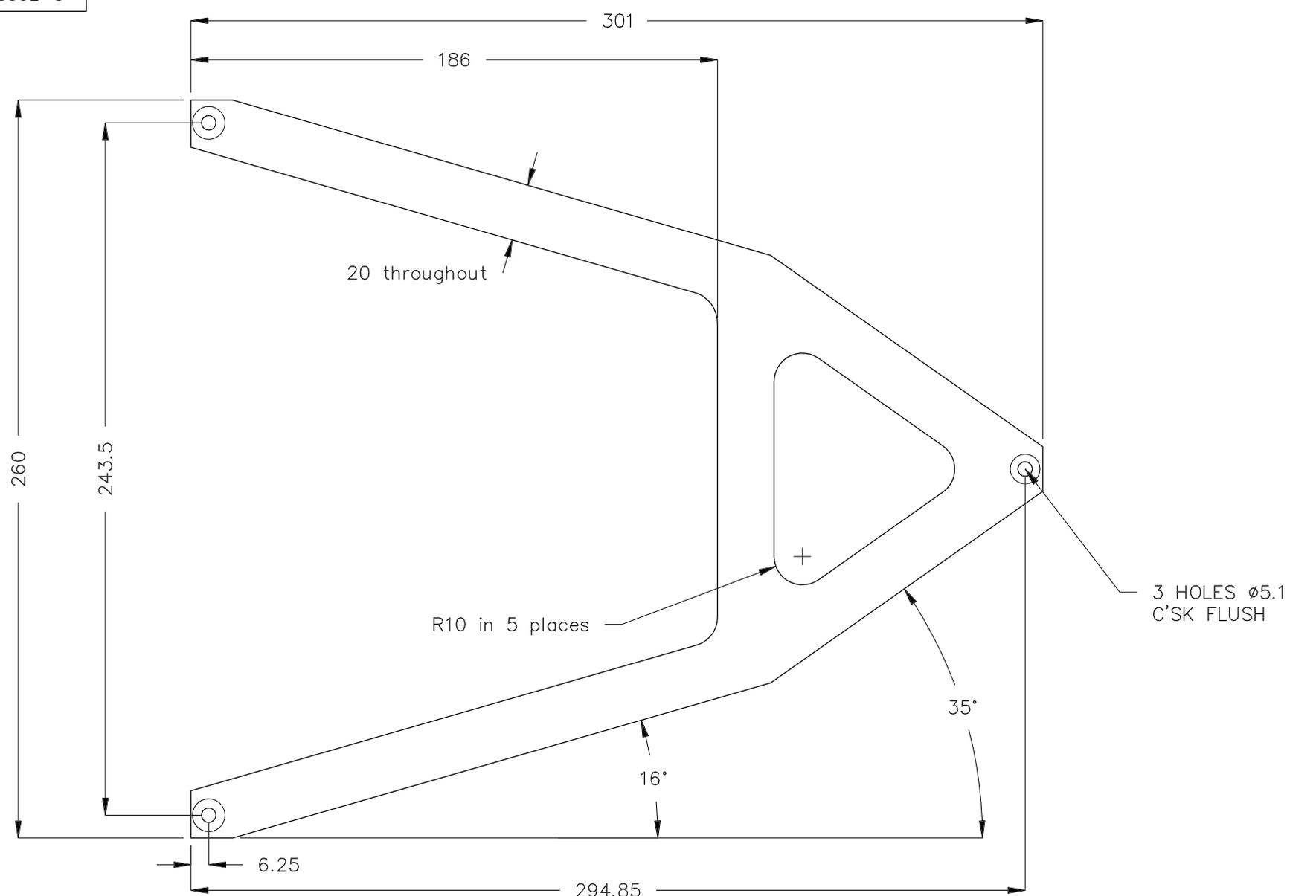
SIZE A1

MATERIAL	FINISH	TOLERANCES	DRAWN BY PRH	ROYAL OBSERVATORY, EDINBURGH	
Al Alloy HE30TF	CLEAR ANODISE	± 0.15	CHECKED BY	TITLE	DRAWING No.
		UNLESS OTHERWISE STATED	SCALE FS	CLOSED-CYCLE COOLER	R.O.E. 13502-3
			DATE 29 Aug 90	ENDPLATE	ISSUE A

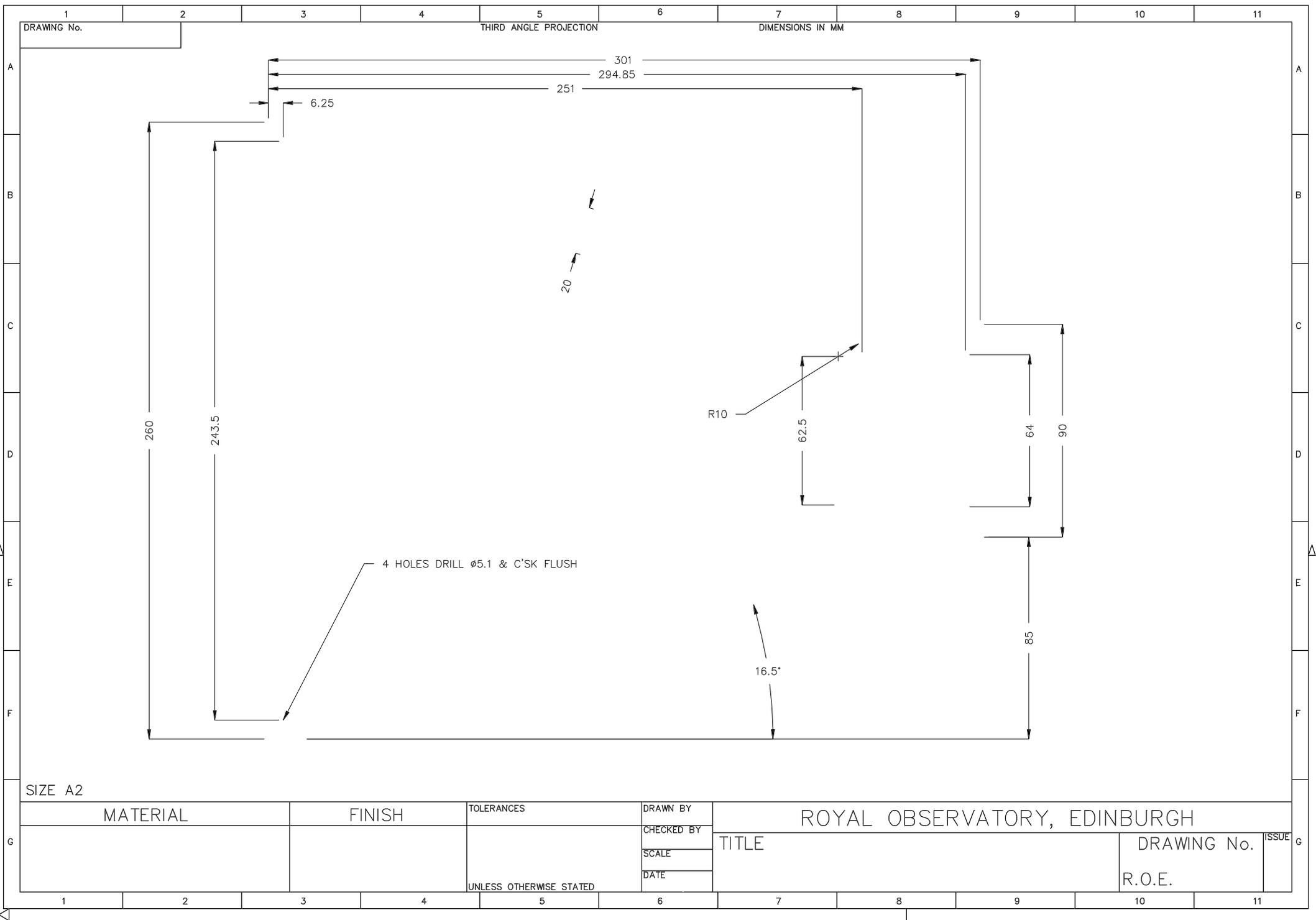


Section A-A

SIZE A2		MATERIAL			FINISH		TOLERANCES		DRAWN BY PRH		ROYAL OBSERVATORY, EDINBURGH			
		STAINLESS STEEL			UHV CLEAN-NATURAL		±0.2		CHECKED BY		TITLE CLOSED-CYCLE COOLER			
							UNLESS OTHERWISE STATED		SCALE FS		DRAWING No. ISSUE			
									DATE 29 Aug 90		MAIN BELLOWS R.O.E. 13502-4 A			



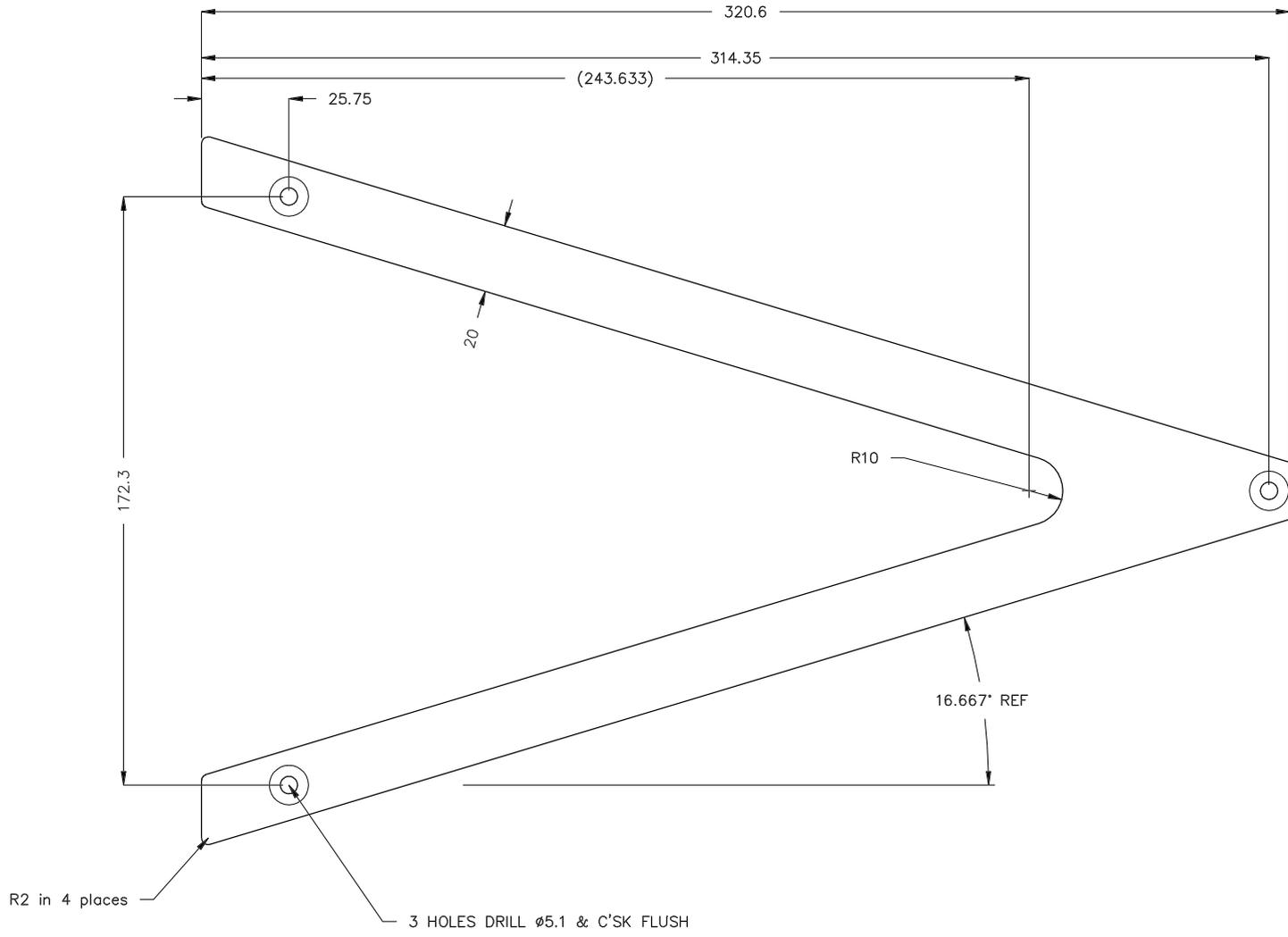
SIZE A2		MATERIAL			FINISH		TOLERANCES		DRAWN BY JC/PRH			ROYAL OBSERVATORY, EDINBURGH		
		ST. STEEL 316S21, 5 thick			CLEAN, BREAK SHARP EDGES		±0.15		CHECKED BY		TITLE			
							UNLESS OTHERWISE STATED		SCALE 1:1 AT A2		CLOSED-CYCLE COOLER			
									DATE 10 May 91		DRAWING No.			
											R.O.E. 13502-5			
											ISSUE			
											C			



SIZE A2

MATERIAL		FINISH		TOLERANCES	DRAWN BY	ROYAL OBSERVATORY, EDINBURGH				
					CHECKED BY	TITLE				
					SCALE					
					DATE					
UNLESS OTHERWISE STATED						DRAWING No.			ISSUE	
						R.O.E.				

1 2 3 4 5 6 7 8 9 10 11



SIZE A2					ROYAL OBSERVATORY, EDINBURGH							
MATERIAL		FINISH		TOLERANCES		DRAWN BY J. CLARK		TITLE CLOSED-CYCLE COOLER			DRAWING No.	ISSUE
St. steel 316s21, 5 thick		CLEAN, BREAK SHARP EDGES		±0.15		CHECKED BY		NARROW SIDE FRAME			R.O.E. 13502-6	B
				UNLESS OTHERWISE STATED		SCALE 1:1 AT A2						
						DATE 29 Aug 90						

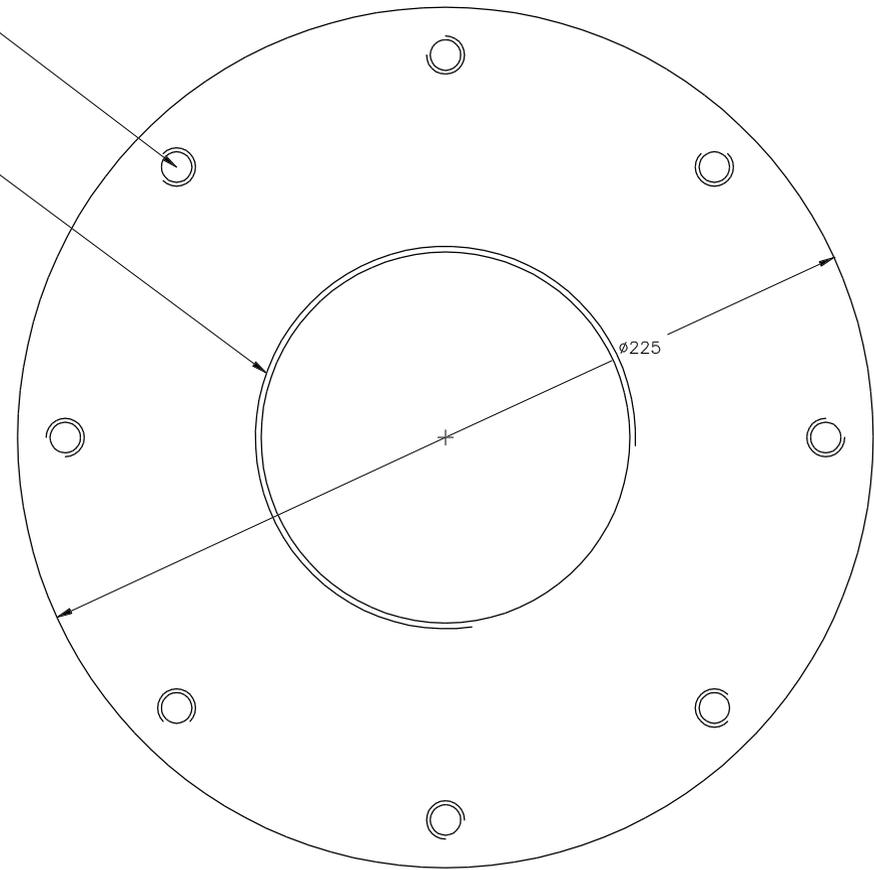
DRAWING No. 13502-7

DIMENSIONS IN MM

8 HOLES TAP M10 on $\phi 200$ PCD

$\phi 100$ x 1 mm PITCH

$\phi 225$



SIZE A2

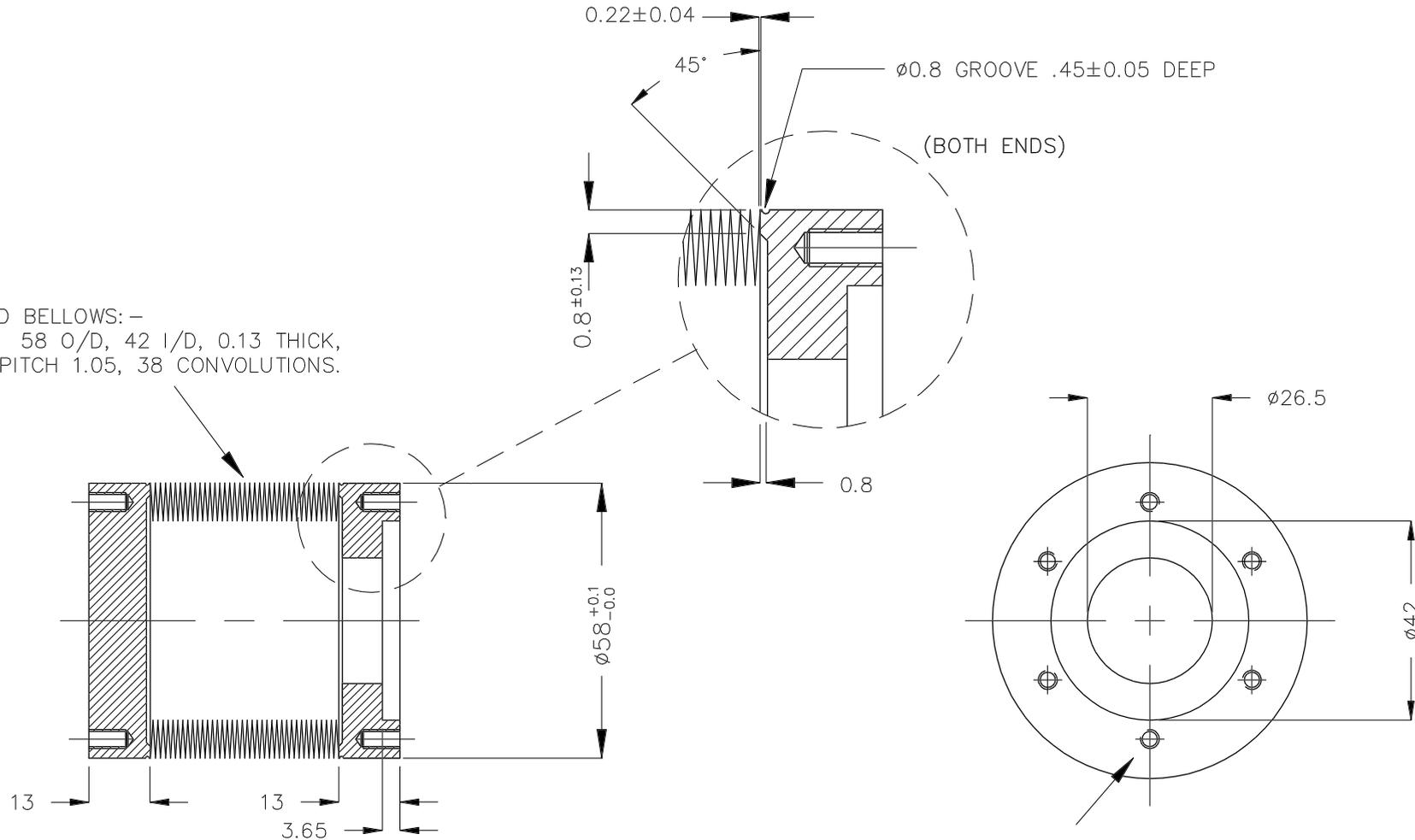
MATERIAL		FINISH		TOLERANCES		DRAWN BY PRH		ROYAL OBSERVATORY, EDINBURGH		
PVC/DELTRIN/NYLON 18 THICK		AS MACHINED		± 0.3		CHECKED BY		TITLE CLOSED-CYCLE COOLER		DRAWING No.
				UNLESS OTHERWISE STATED		SCALE 1:1 AT A2		TRANSIT PLATE		R.O.E. 13502-7
						DATE 29 Aug 90				ISSUE A

DRAWING No.
13502-8

THIRD ANGLE PROJECTION

DIMENSIONS IN MM

NESTED BELLOWS:-
58 O/D, 42 I/D, 0.13 THICK,
FREE PITCH 1.05, 38 CONVOLUTIONS.



6 HOLES TAP M4 X 8 DEEP MAX.
EQU SPACED ON 50 PCD
(BOTH ENDS)

NOTE : ORIENTATION OF TAPPED HOLES END FOR END IS UNIMPORTANT

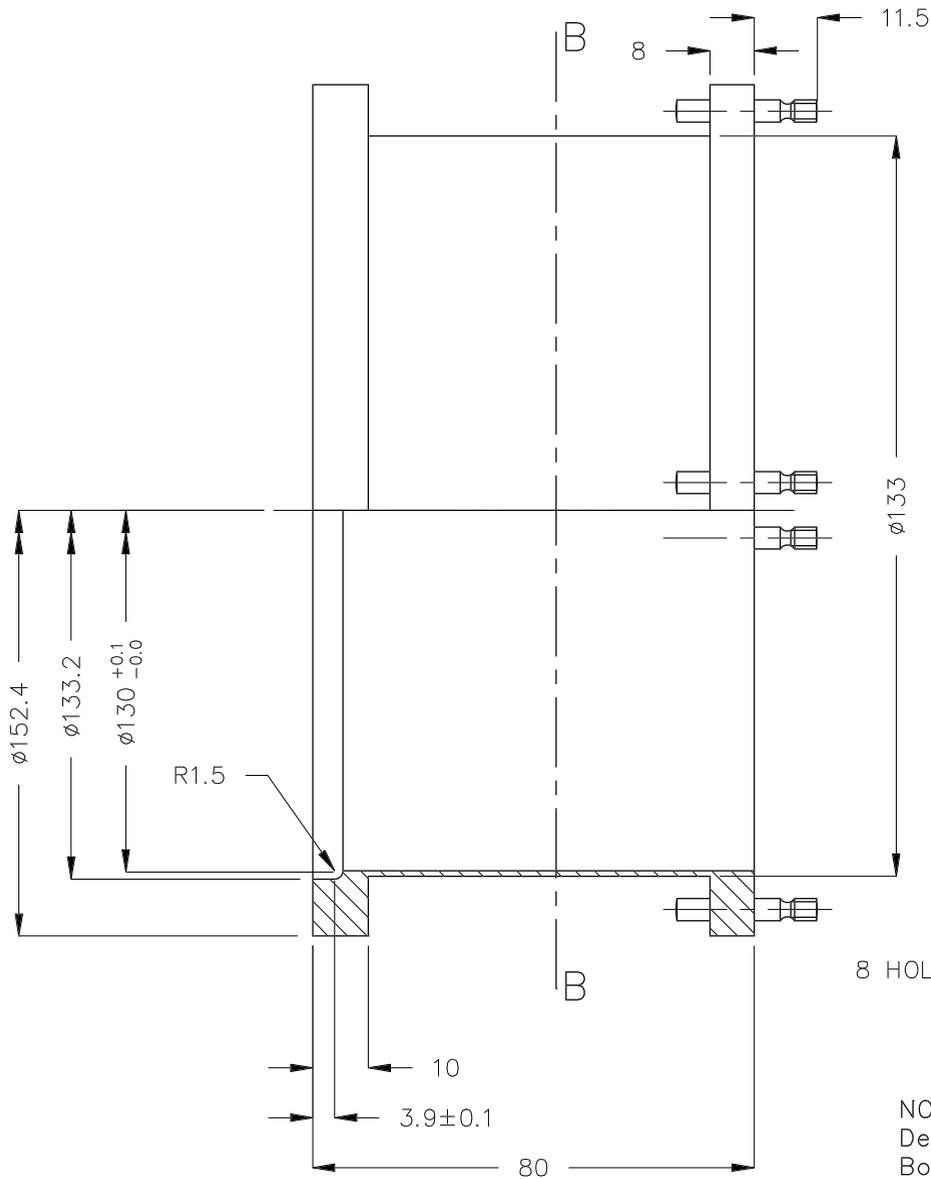
SIZE A3

MATERIAL	FINISH	TOLERANCES	DRAWN PRH	ROYAL OBSERVATORY, EDINBURGH		
STAINLESS STEEL	UHV CLEAN-NATURAL	±0.15 UNLESS OTHERWISE STATED	SCALE	TITLE	DRAWING No.	ISSUE
			1:1	CLOSED-CYCLE COOLER BALANCE BELLOWS	R.O.E. 13502-8	A
			DATE			
			29 Aug 90			

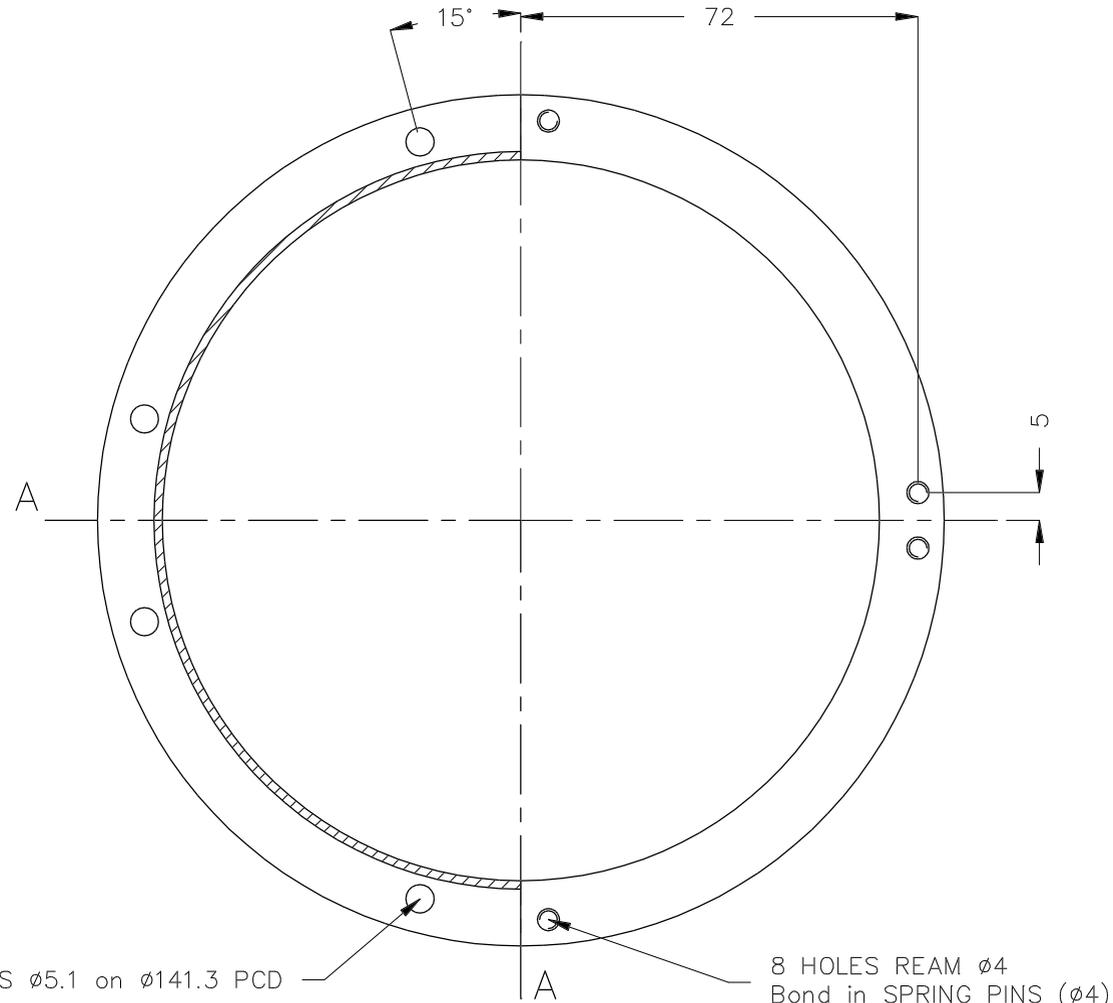
DRAWING No.
13502-9

THIRD ANGLE PROJECTION

DIMENSIONS IN MM



Half-Section AA



Half-Section BB

8 HOLES $\phi 5.1$ on $\phi 141.3$ PCD

8 HOLES REAM $\phi 4$
Bond in SPRING PINS ($\phi 4$)

NOTE
Degrease spring pins and holes thoroughly,
Bond spring pins in place with retaining
grade of anaerobic adhesive (e.g. Loctite)

SIZE A3

MATERIAL	FINISH	TOLERANCES	DRAWN PRH	ROYAL OBSERVATORY, EDINBURGH		
Al Alloy HE30TF	CLEAR ANODISE	± 0.15	SCALE FS	TITLE CLOSED-CYCLE COOLER	DRAWING No. R.O.E. 13502-9	ISSUE A
		UNLESS OTHERWISE STATED	DATE 29 Aug 90	MAIN BELLOWS SLEEVE		

ITEM	DRAWING No.	ITEM NAME	No. OFF	REMARKS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
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22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				

ROYAL OBSERVATORY, EDINBURGH

PARTS LIST FOR	SHEET	DRAWING No.	ISSUE
		R.O.E.	

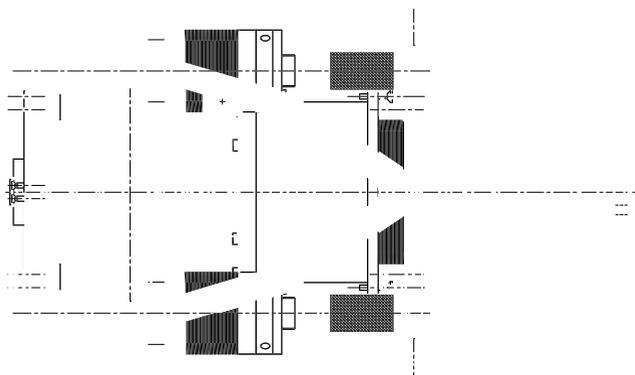
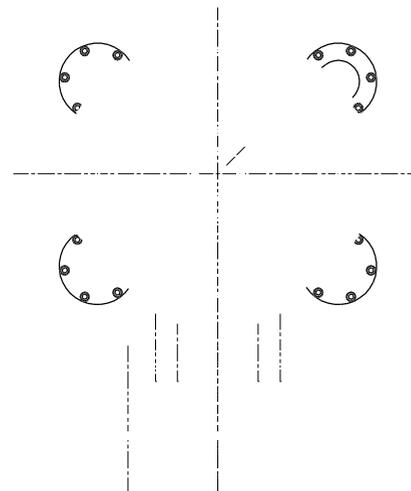
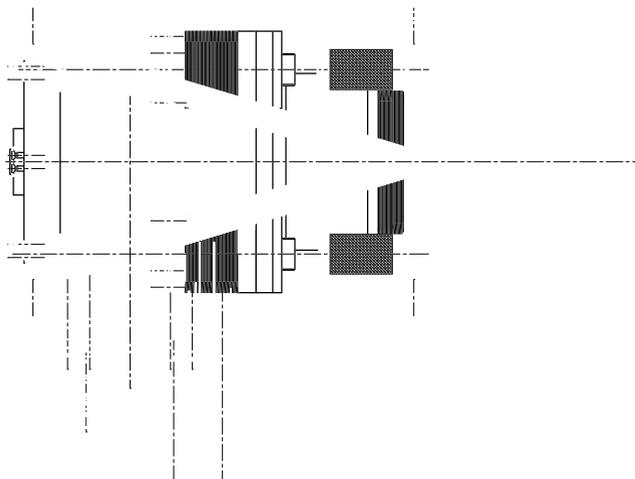
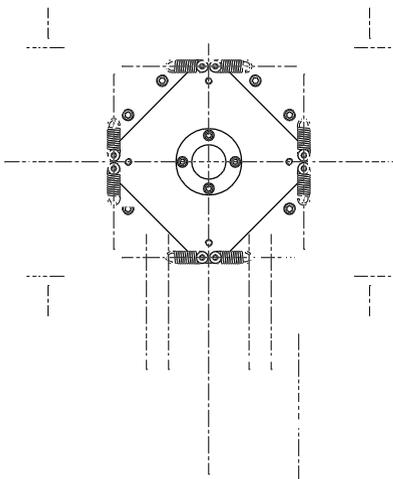
ITEM	DRAWING No.	ITEM NAME	No. OFF	REMARKS
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35				
36				
37				
38				
39				
40				
41				
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46				
47				
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51				
54				
50				
51				
54				

ROYAL OBSERVATORY, EDINBURGH

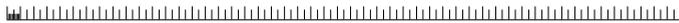
PARTS LIST FOR	SHEET	DRAWING No.	ISSUE
		R.O.E.	

DRAWING No.

THIRD ANGLE PROJECTION



SIZE A1



DRAWN BY	ROYAL OBSERVATORY, EDINBURGH		ISSUE
CHECKED BY	TITLE		DRAWING No.
SCALE			
DATE			R.O.E.

DRAWING No.

THIRD ANGLE PROJECTION

DIMENSIONS IN MM

3 17 18 28

19 22 51

12 36

6 42

11 34 39

8 45

14 25 38

19 22 50

19 22 54

10 17 18 23 27 34 44

7 13 40

15 35

5 42

2 16 18

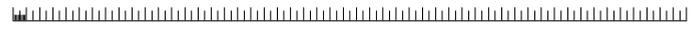
1 30 36 47

4 9 17 18 32 33 37 46

Ø180 Limit of area machined to allow o-ring seating.

Ø153 Through.
8 off M10 bolts or studs equi-spaced on Ø200 PCD.

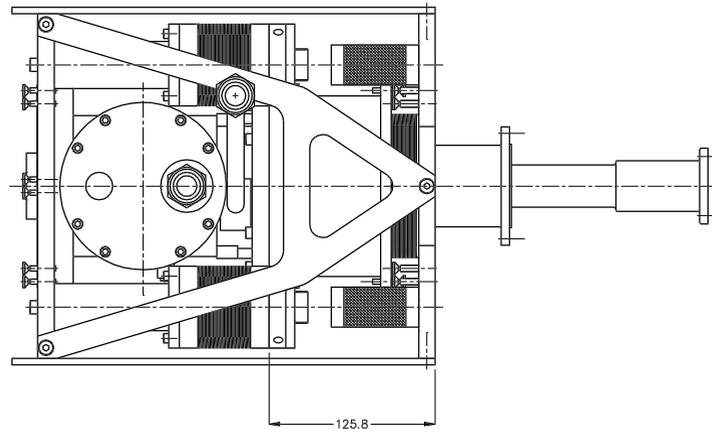
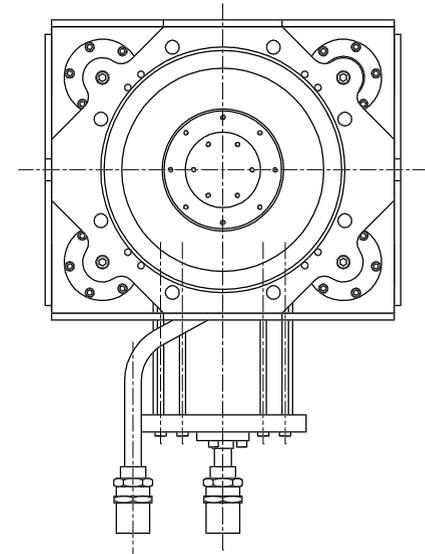
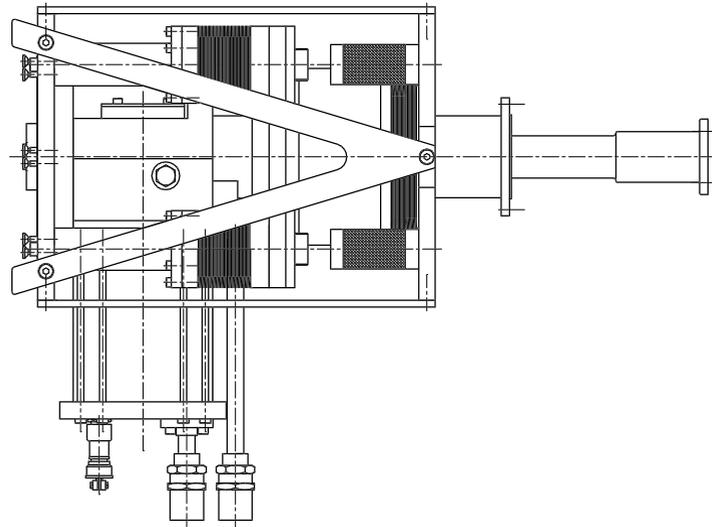
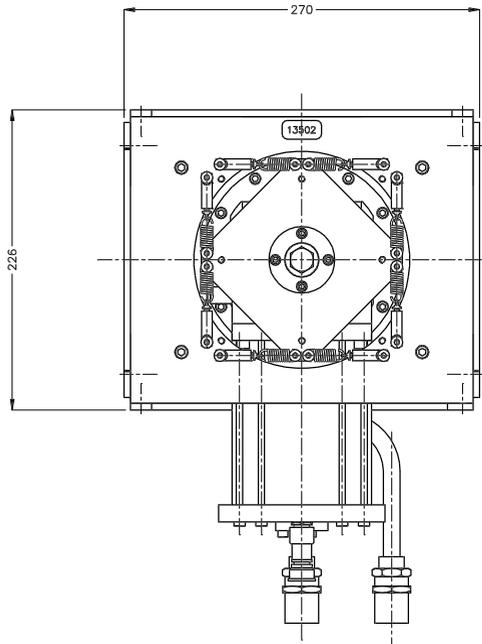
SIZE A1



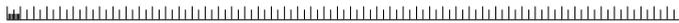
DRAWN BY	ROYAL OBSERVATORY, EDINBURGH		
CHECKED BY	TITLE		DRAWING No.
SCALE			ISSUE
DATE			R.O.E.

DRAWING No.
Sheet 4 of 6 13502

THIRD ANGLE PROJECTION



SIZE A1



DRAWN BY
CHECKED BY
SCALE
DATE

PRH

PRH

1/2 SIZE AT A1

7 Jun 91

ROYAL OBSERVATORY, EDINBURGH
TITLE CLOSED-CYCLE COOLER (1020CP)
EXTERNAL VIEWS
DRAWING No.
Sheet 4 of 6
R.O.E. 13502 B

DRAWING No.

THIRD ANGLE PROJECTION

DIMENSIONS IN MM

3 17 18 28

19 22 51

12 36

6 42

11 34 39

8 45

14 25 38

19 22 50

19 22 54

10 17 18 23 27 34 44

15 35

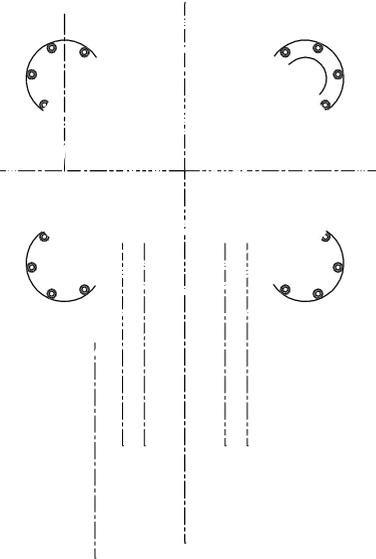
7 13 40

5 42

2 16 18

1 30 36 47

4 9 17 18 32 33 37 46

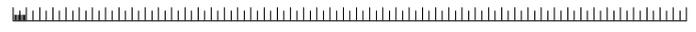


Ø180 Limit of area machined to allow o-ring seating.

Ø153 Through.

8 off M10 bolts or studs equi-spaced on Ø200 PCD.

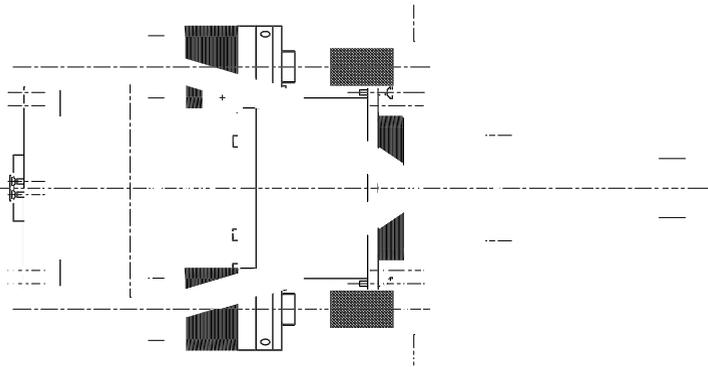
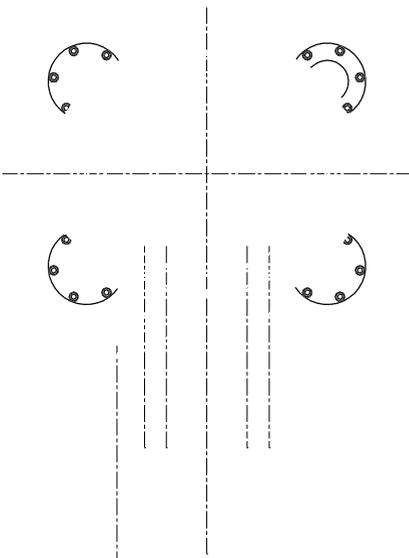
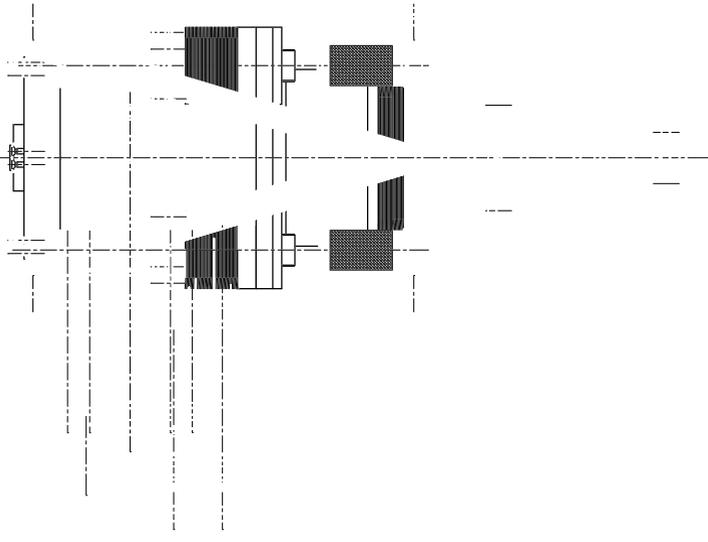
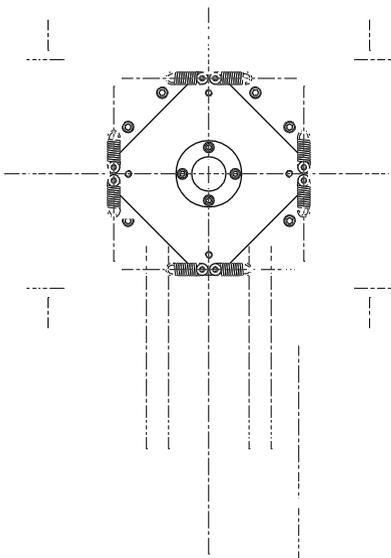
SIZE A1



DRAWN BY	ROYAL OBSERVATORY, EDINBURGH		
CHECKED BY	TITLE		DRAWING No.
SCALE			ISSUE
DATE			R.O.E.

DRAWING No.

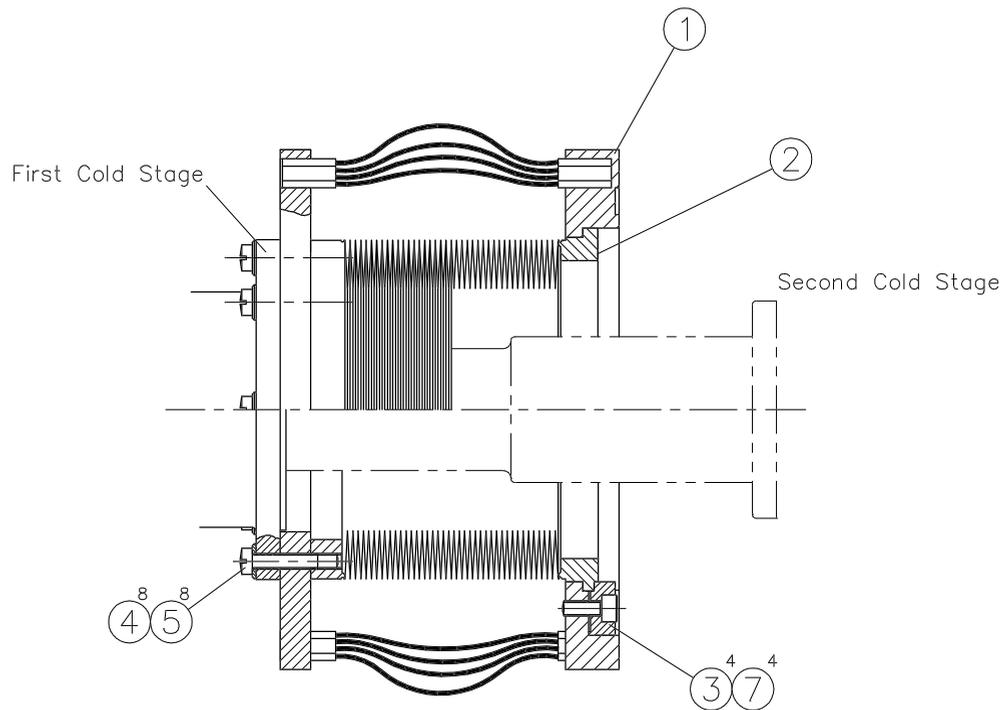
THIRD ANGLE PROJECTION



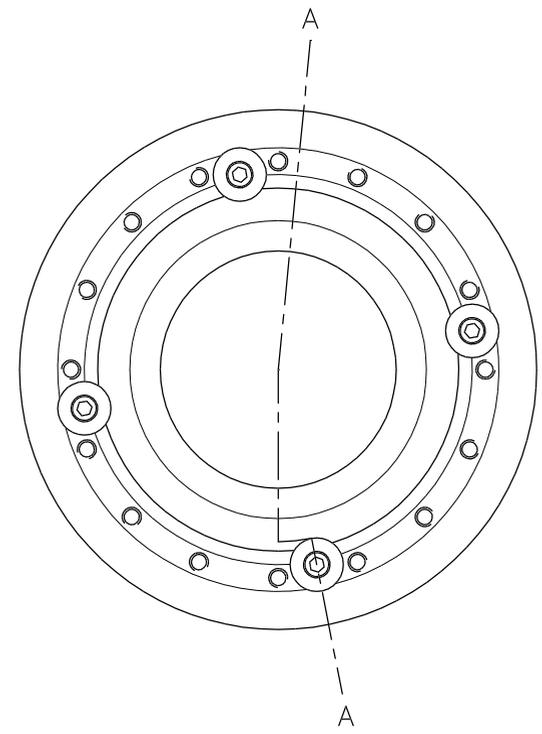
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CHECKED BY	TITLE		DRAWING No.
SCALE			R.O.E.
DATE			

SIZE A1





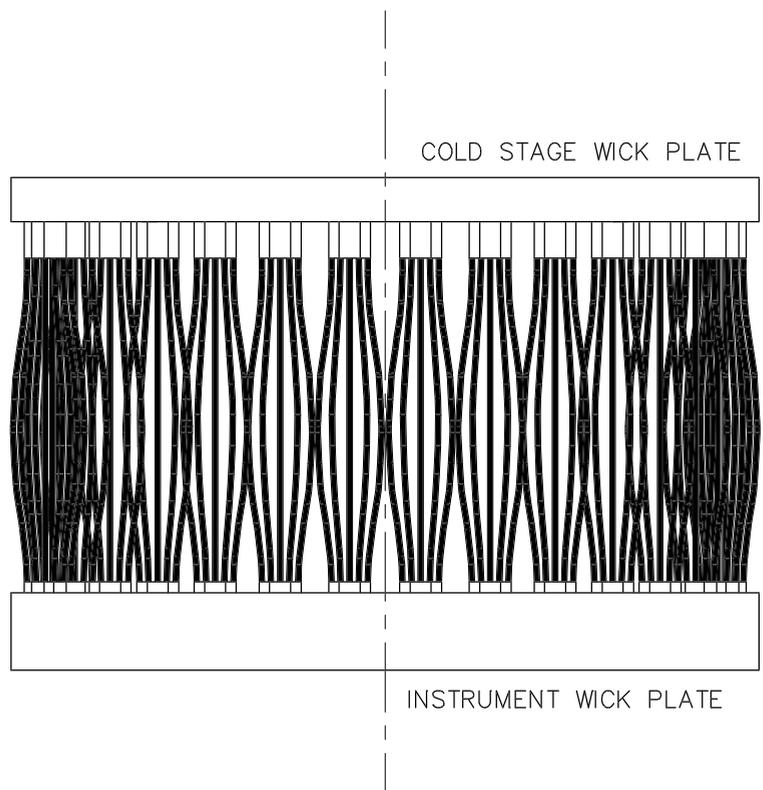
Part Section A-A



SIZE A2

DRAWN BY PRH CHECKED BY SCALE FS at A2 DATE 29 Aug 90	ROYAL OBSERVATORY, EDINBURGH								DRAWING No.	ISSUE
	TITLE		CLOSED-CYCLE COOLER				R.O.E. 13503			
	FIRST-STAGE THERMAL LINK									

SCALE : FS
DRAWN : PRH
DATE : 29 Aug 90



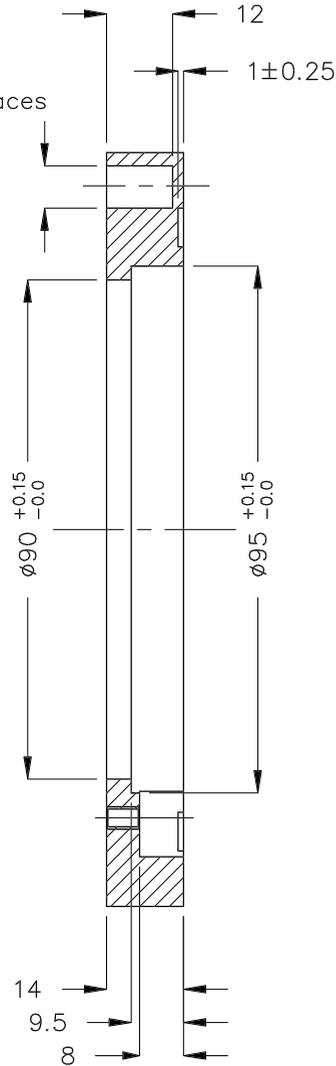
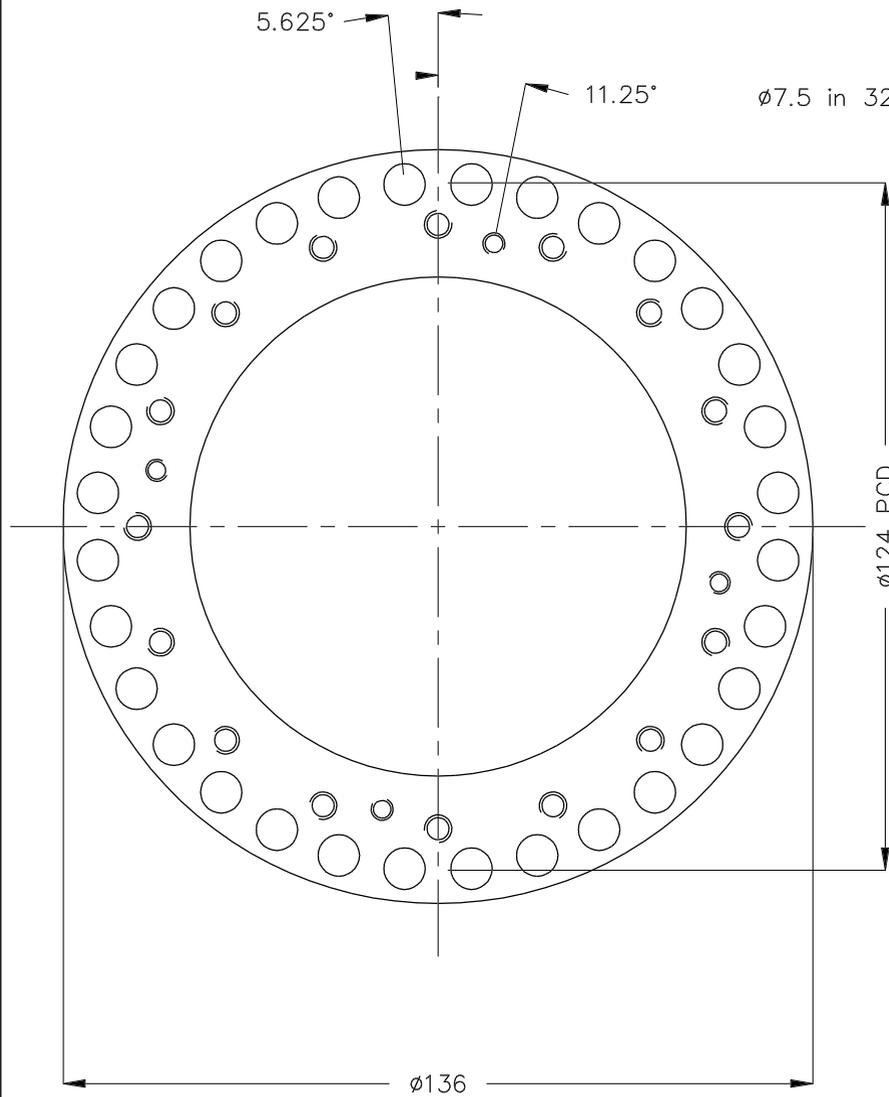
NOTE
Soft solder thirty-two thermal wicks (13503-1 sheet 4) into instrument wick plate (13503-1 sheet 2) and cold stage wick plate (13503-1 sheet 3) using fixture (13503-1 sheet 5).

ROYAL OBSERVATORY, EDINBURGH

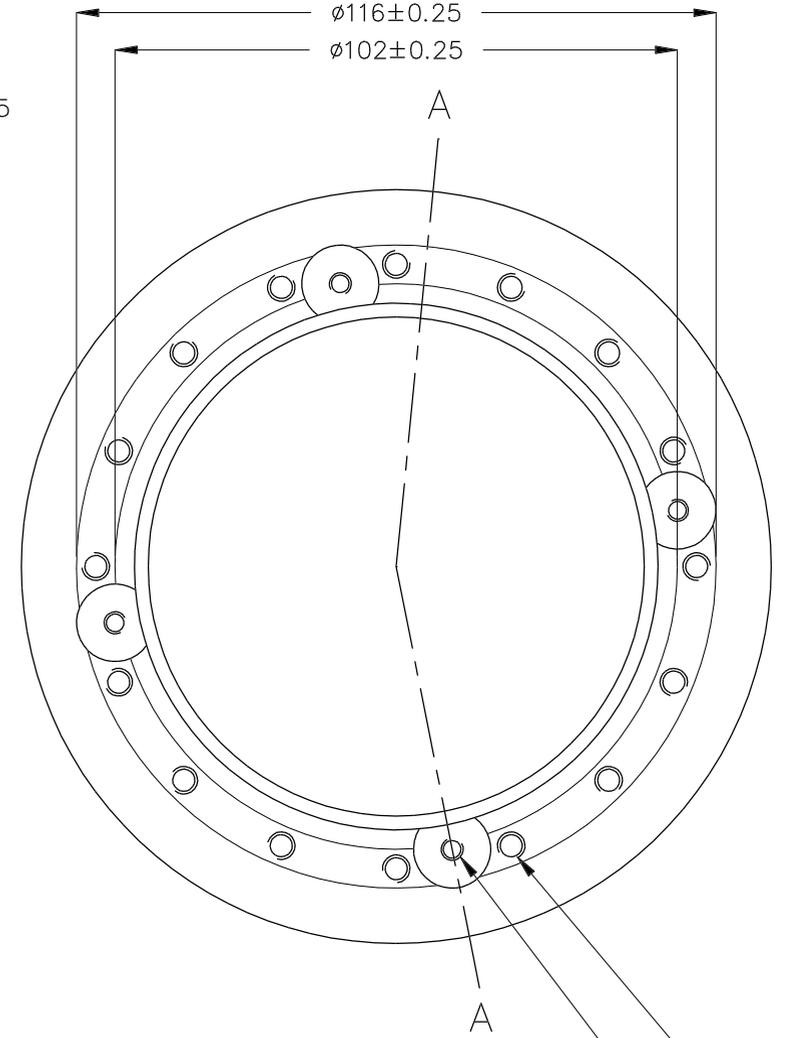
TITLE	CCC FIRST STAGE THERMAL LINK	DRAWING No.	ISSUE
		Sheet 1 of 5	
	WICKS & PLATE FABRICATION	R.O.E. 13503-1	A

THIRD ANGLE PROJECTION

DIMENSIONS IN MM



Section A-A



TAP M4 and C'BORE $\phi 14^{+0.25}_{-0.0}$ in 4 PLACES
EQUI-SPACED on $\phi 104$ PCD

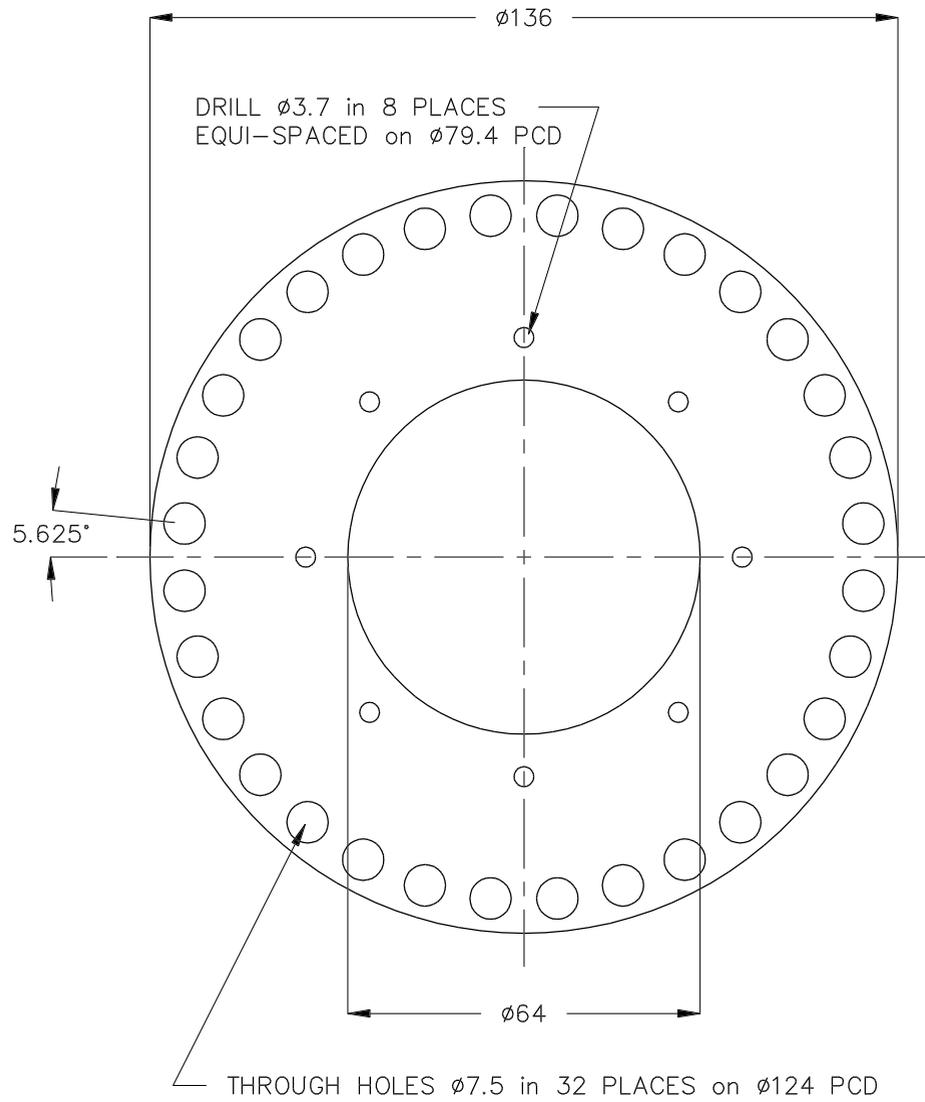
TAP M5 in 16 PLACES on $\phi 109$ PCD

SIZE A3

MATERIAL	FINISH	TOLERANCES	DRAWN	ROYAL OBSERVATORY, EDINBURGH		
COPPER, tough pitch	GOLD PLATE	±0.15 UNLESS OTHERWISE STATED	PRH	TITLE		ISSUE
			SCALE	CCC FIRST STAGE THERMAL LINK		DRAWING No.
			DATE	INSTRUMENT WICK PLATE		Sheet 2 of 5
			29 Aug 90	R.O.E.	13503-1	A

MATERIAL : OFHC COPPER, 8±0.25 THICK
 FINISH : GOLD PLATE
 TOLERANCE : ±0.15 Unless stated otherwise
 SCALE : FS
 DRAWN : PRH
 DATE : 29 Aug 90

DIMENSIONS IN MM

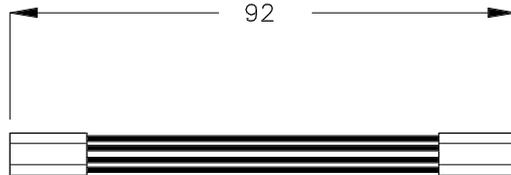


ROYAL OBSERVATORY, EDINBURGH

TITLE	CCC FIRST STAGE THERMAL LINK	DRAWING No.	ISSUE
	COLD STAGE WICK PLATE	Sheet 3 of 5 R.O.E. 13503-1	A

MATERIAL : As described
FINISH : CLEAN
TOLERANCE : ± 1
SCALE : FS
DRAWN : PRH
DATE : 29 Aug 90

DIMENSIONS IN MM



Wick is fabricated by crimping twenty-five
384 strand - 0.05 diameter copper wires (STC) with
Suhner ferrules, part no. 73z-0-0-110

STC Electronic Services
Edinburgh Way
Harlow
Essex
CM20 2DE

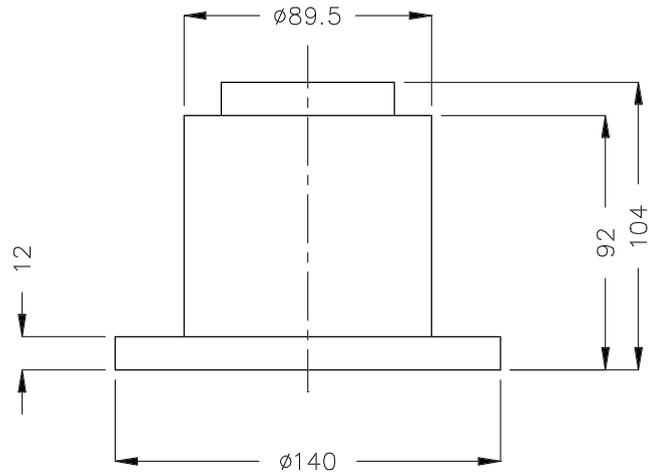
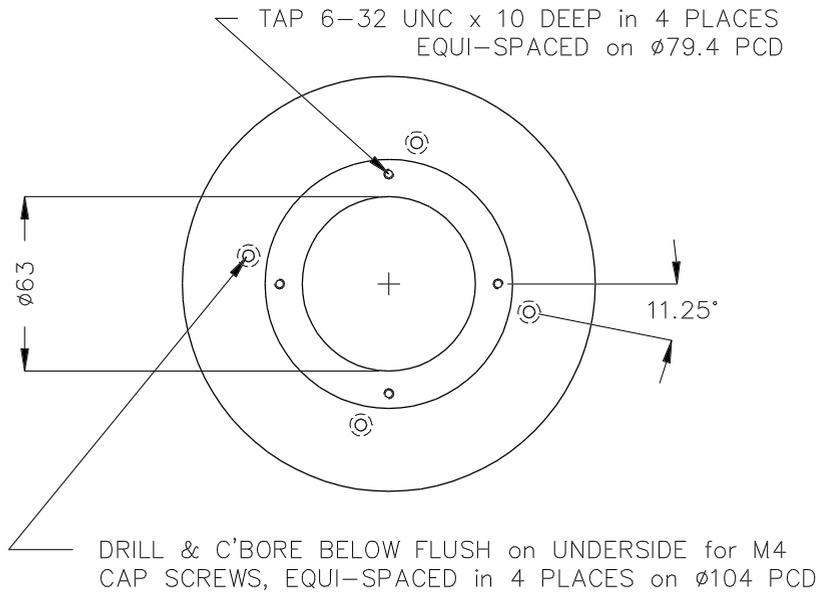
Suhner Electronics Limited
Telford Road
Bicester
Oxfordshire
OX6 0LA

ROYAL OBSERVATORY, EDINBURGH

TITLE	CCC FIRST STAGE THERMAL LINK	DRAWING No. Sheet 4 of 5	ISSUE
	THERMAL WICK	R.O.E. 13503-1	A

MATERIAL : Aluminium alloy
FINISH : Clean
TOLERANCE : ± 0.5 Unless stated otherwise
SCALE : FS/2
DRAWN : PRH
DATE : 29 Aug 90

THIRD ANGLE PROJECTION
DIMENSIONS IN MM



ROYAL OBSERVATORY, EDINBURGH

TITLE CCC FIRST STAGE THERMAL LINK

DRAWING No.
Sheet 5 of 5

ISSUE

SOLDERING FIXTURE

R.O.E. 13503-1

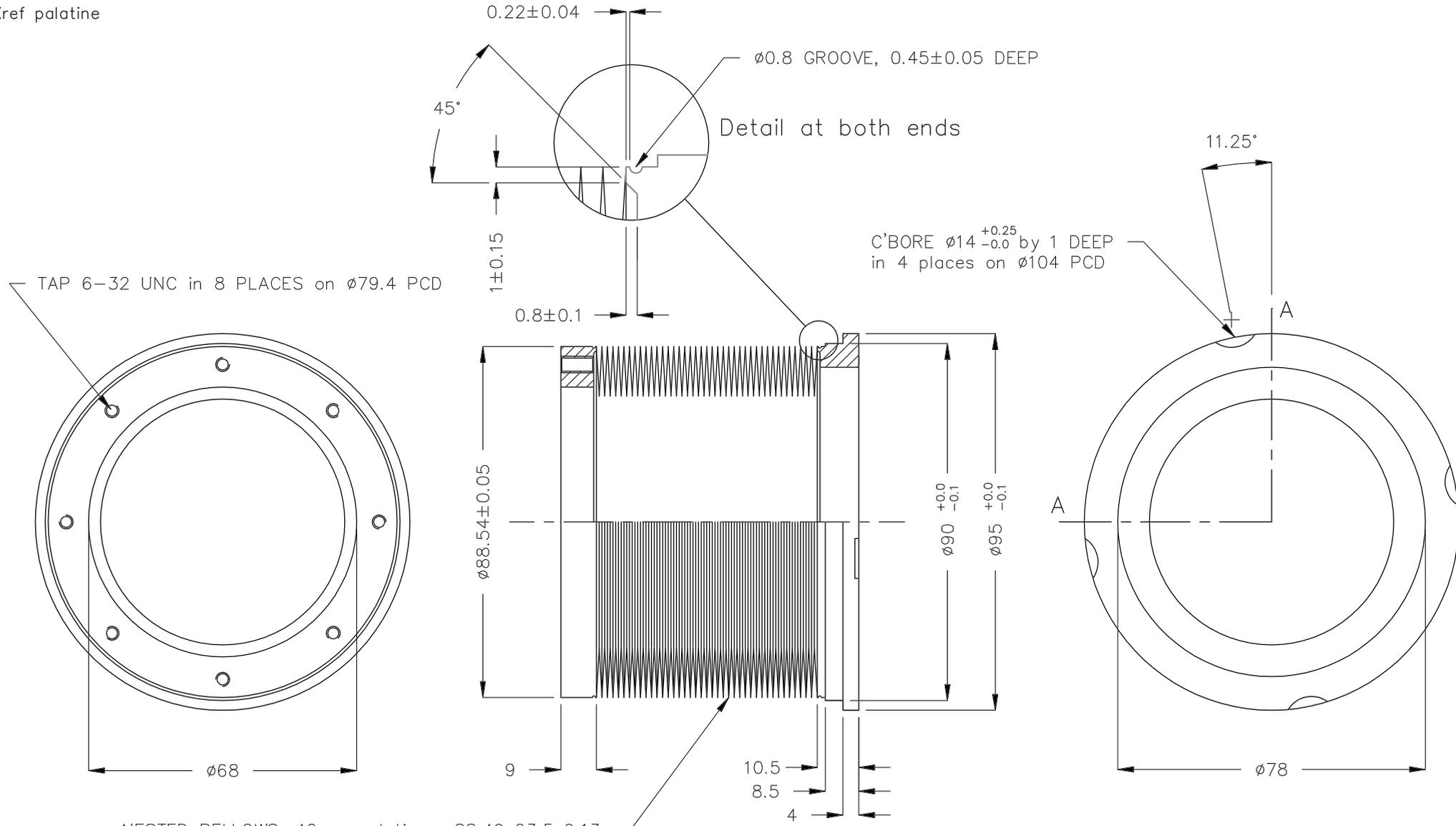
A

DRAWING No.
13503-2

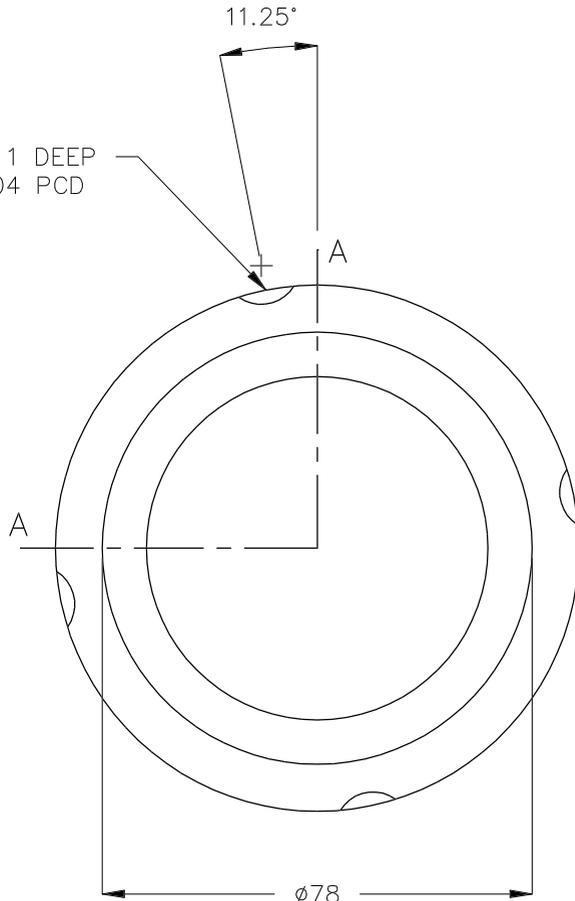
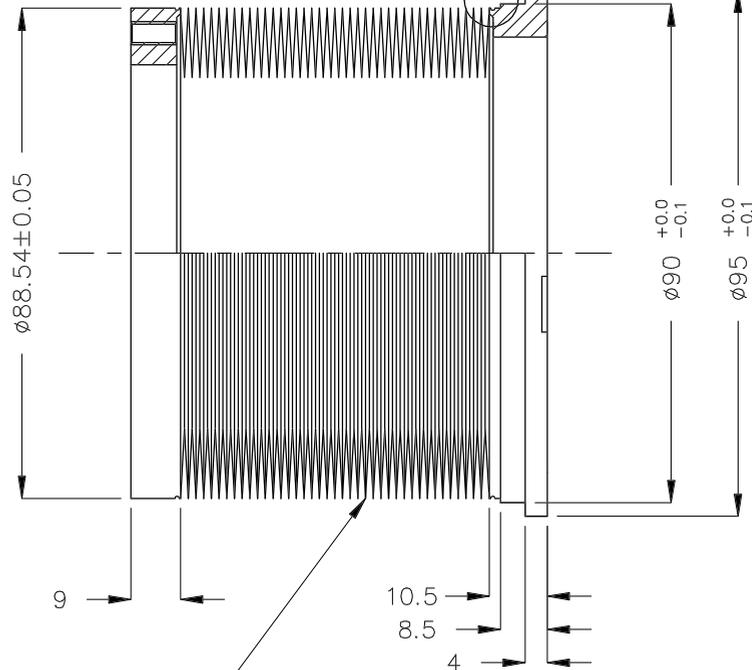
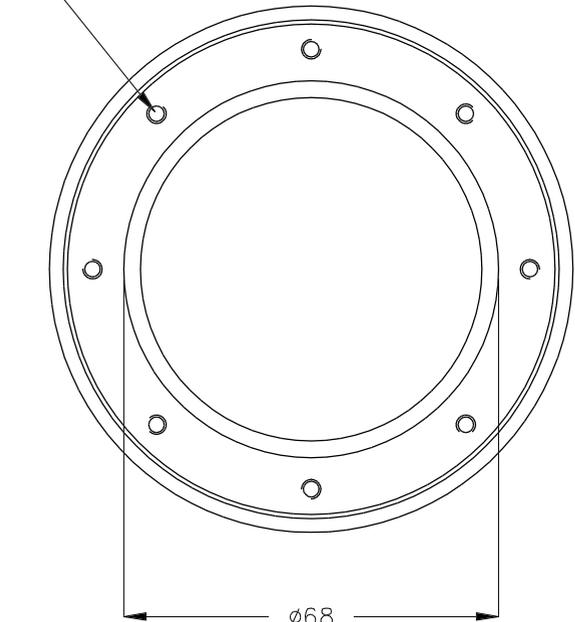
THIRD ANGLE PROJECTION

DIMENSIONS IN MM

Xref palatine



TAP 6-32 UNC in 8 PLACES on $\phi 79.4$ PCD



NESTED BELLOWS, 40 convolutions, 88.49x63.5x0.13
Free height 56 mm, Spring rate 0.108 kg/mm.

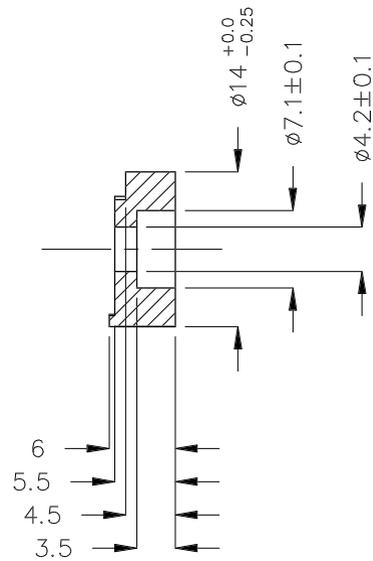
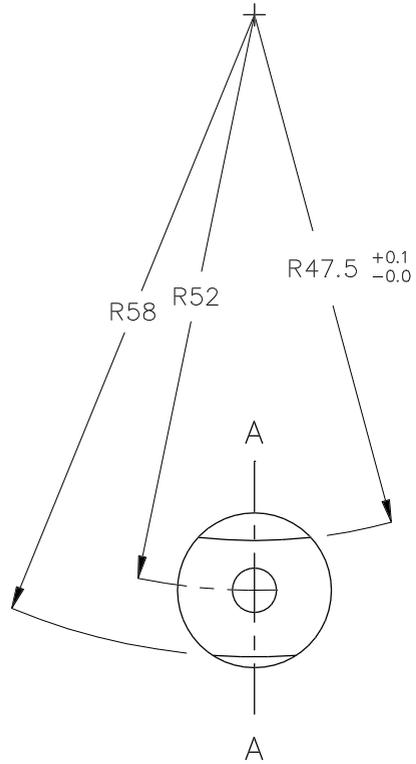
Section A-A

SIZE A3

MATERIAL	FINISH	TOLERANCES	DRAWN	ROYAL OBSERVATORY, EDINBURGH		
316 Stainless Steel	CLEAN TO UHV	±0.15 UNLESS OTHERWISE STATED	PRH	SCALE	TITLE	DRAWING No.
			FS	DATE	CCC FIRST STAGE THERMAL LINK	R.O.E.
			29 Aug 90	THERMAL LINK BELLOWS	13503-2	ISSUE
					A	

MATERIAL : Aluminium alloy HE30TF
 FINISH : CLEAN
 TOLERANCE : ± 0.15 Unless otherwise stated
 SCALE : 2 x FS
 DRAWN : PRH
 DATE : 29 Aug 90

THIRD ANGLE PROJECTION
 DIMENSIONS IN MM



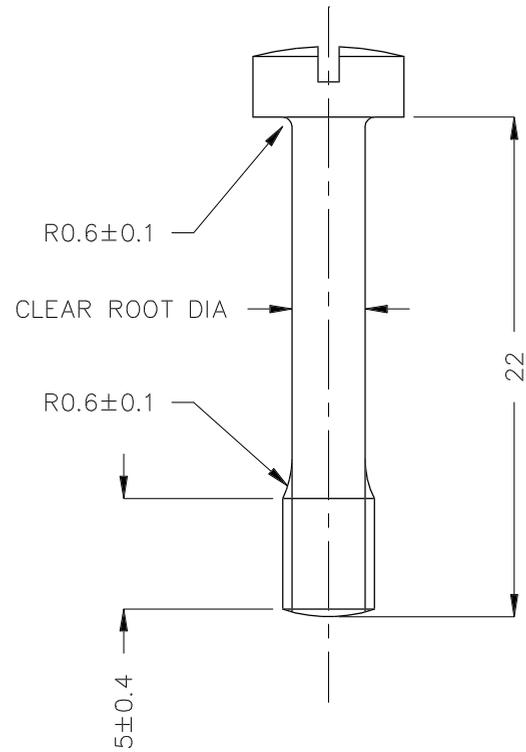
Section A-A

ROYAL OBSERVATORY, EDINBURGH

TITLE	DRAWING No.	ISSUE
CCC FIRST STAGE THERMAL LINK BELLOWS CLAMP BLOCK	R.O.E. 13503-3	A

MATERIAL : 6-32 UNC x 0.875" STAINLESS STEEL SCREW
FINISH : POLISH SHANK OF SCREW
TOLERANCE : ± 0.15 Unless otherwise stated
SCALE : 4 x FS
DRAWN : PRH
DATE : 29 Aug 90

DIMENSIONS IN MM

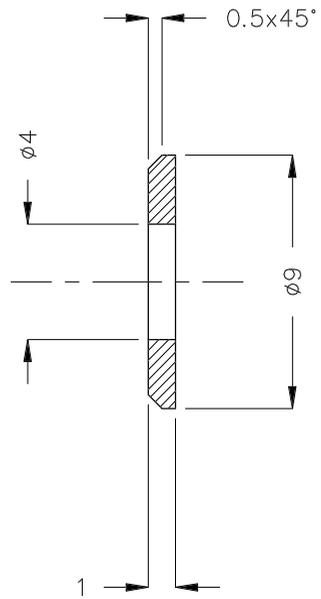


ROYAL OBSERVATORY, EDINBURGH

TITLE	DRAWING No.	ISSUE
CCC FIRST STAGE THERMAL LINK CAPTIVE SCREW	R.O.E. 13503-4	A

MATERIAL : Stainless Steel 316S16
FINISH : Clean
TOLERANCE : ± 0.25
SCALE : 5 x FS
DRAWN : PRH
DATE : 29 Aug 90

DIMENSIONS IN MM



ROYAL OBSERVATORY, EDINBURGH

TITLE	DRAWING No.	ISSUE
CCC FIRST STAGE THERMAL LINK WASHER for CAPTIVE SCREW	R.O.E. 13503-5	A

ITEM	DRAWING No.	ITEM NAME	No. OFF	REMARKS
1	13503-1	WICKS & PLATES	1	5 Sheets showing fabrication details
2	13503-2	BELLOWS	1	A3
3	13503-3	BELLOWS CLAMP	4	A4
4	13503-4	CAPTIVE SCREW	8	A4
5	13503-5	WASHER	8	A4
6				
7		CAP SCREW M4 x 10	4	All fasteners in stainless steel
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

ROYAL OBSERVATORY, EDINBURGH

PARTS LIST FOR CLOSED-CYCLE COOLER	SHEET	DRAWING No.	ISSUE
FIRST STAGE THERMAL LINK		R.O.E. 13503	A

DRAWING No.

THIRD ANGLE PROJECTION

DIMENSIONS IN MM

3 17 18 28

19 22 51

12 36

6 42

11 34 39

8 45 35

19 22 50

19 22 54

10 17 18 23 27 34 44

7 13 40

5 42

2 16 18

1 30 36 47

4 9 17 18 32 33 37 46

Ø180 Limit of area machined to allow o-ring seating.

Ø153 Through.
8 off M10 bolts or studs equi-spaced on Ø200 PCD.

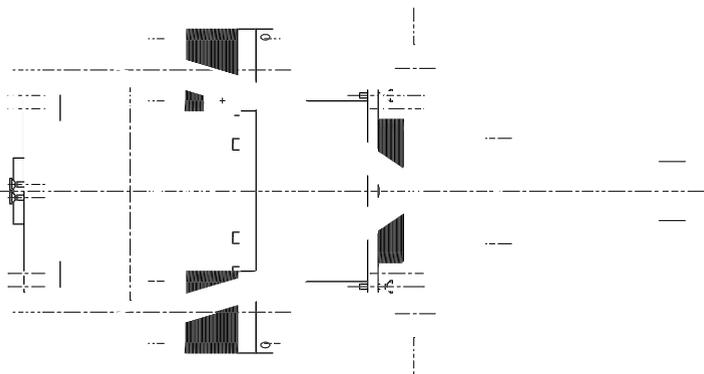
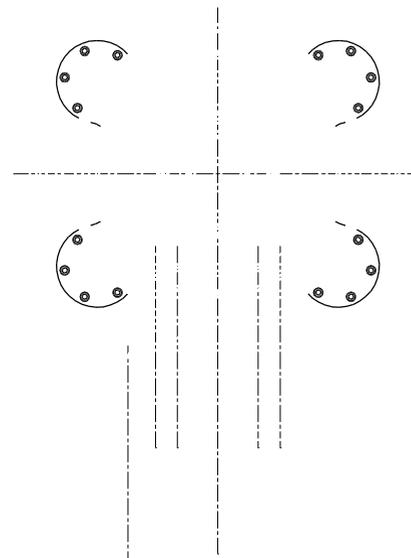
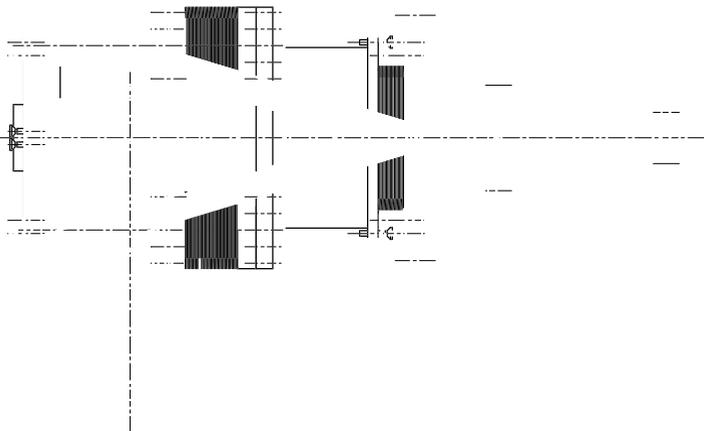
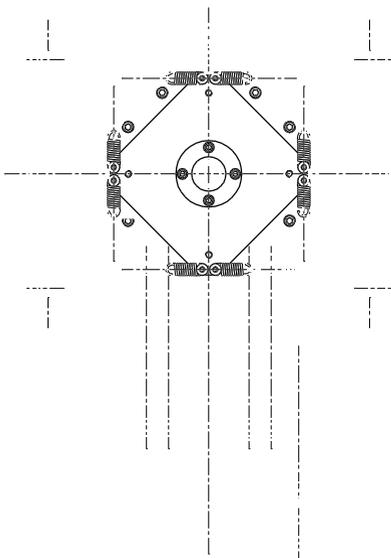
SIZE A1



DRAWN BY	ROYAL OBSERVATORY, EDINBURGH		
CHECKED BY	TITLE		DRAWING No.
SCALE			ISSUE
DATE			R.O.E.

DRAWING No.

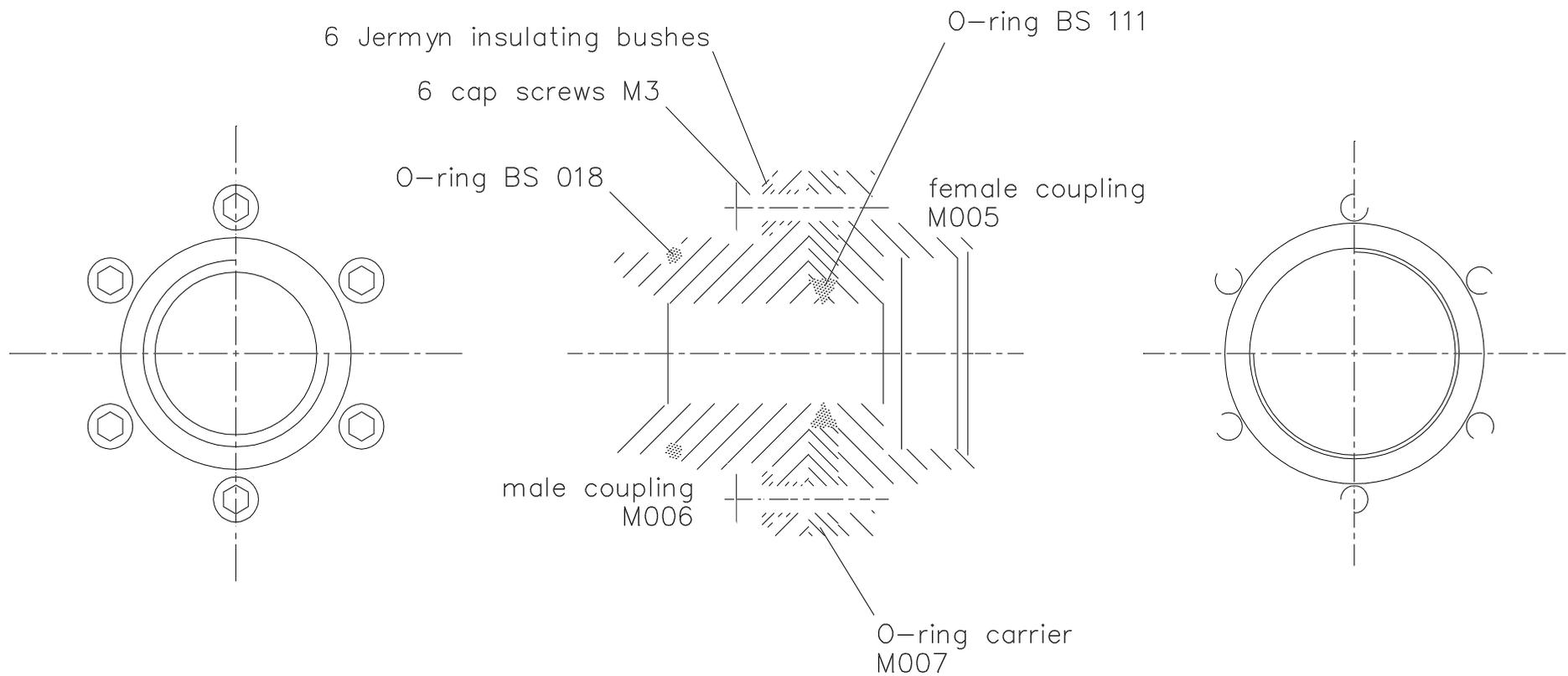
THIRD ANGLE PROJECTION



SIZE A1



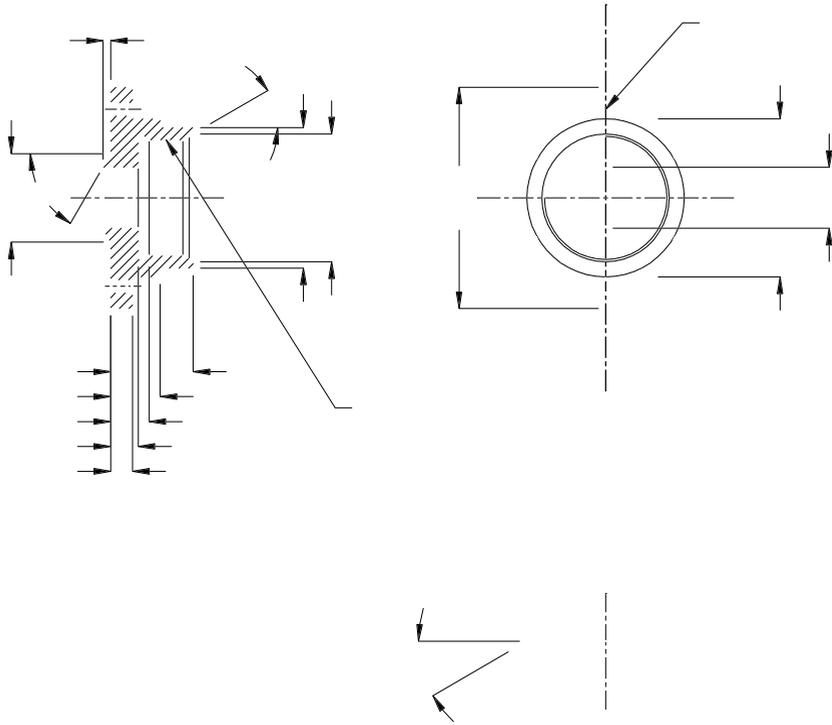
DRAWN BY	ROYAL OBSERVATORY, EDINBURGH		ISSUE
CHECKED BY	TITLE		DRAWING No.
SCALE			R.O.E.
DATE			



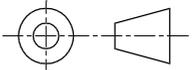
Item description	Maker or source	Maker / Source item code #
Insulating bush Glass-filled Polyester M3 x 4.4 long	Jermyn Distribution Vestry Estate Sevenoaks Kent TN14 5EU Tel - 0732 450144	A1201

THIRD ANGLE PROJECTION DIMENSIONS IN MM		Scale 2:1	SCIENCE & ENGINEERING RESEARCH COUNCIL ROYAL OBSERVATORY EDINBURGH				
Material	n/a						
Finish	n/a						
Last Mod	*						
Tolerances	XYZ	ANG	Approved	*	Issue	A	
U.O.S	n/a	n/a	Drawn by	prh	Date	19-Nov-90	
			Sheet	*	Sheet Size	A3	
Title	isolating hose coupling		Project Code	CCC		Drawing #	M004

Used in assy drg# M004
Assy Name hose coupling



THIRD ANGLE PROJECTION
DIMENSIONS IN MM



Scale
1:1

SCIENCE & ENGINEERING RESEARCH COUNCIL
**ROYAL OBSERVATORY
EDINBURGH**

Material | Stainless steel

Finish | clean

Last Mod | *

Tolerances | XYZ | ANG

Approved | * | Issue | A

U.O.S | +0.15 -0.15 | +0.5 -0.5 deg

Drawn by | prh | Date | 19-Nov-90

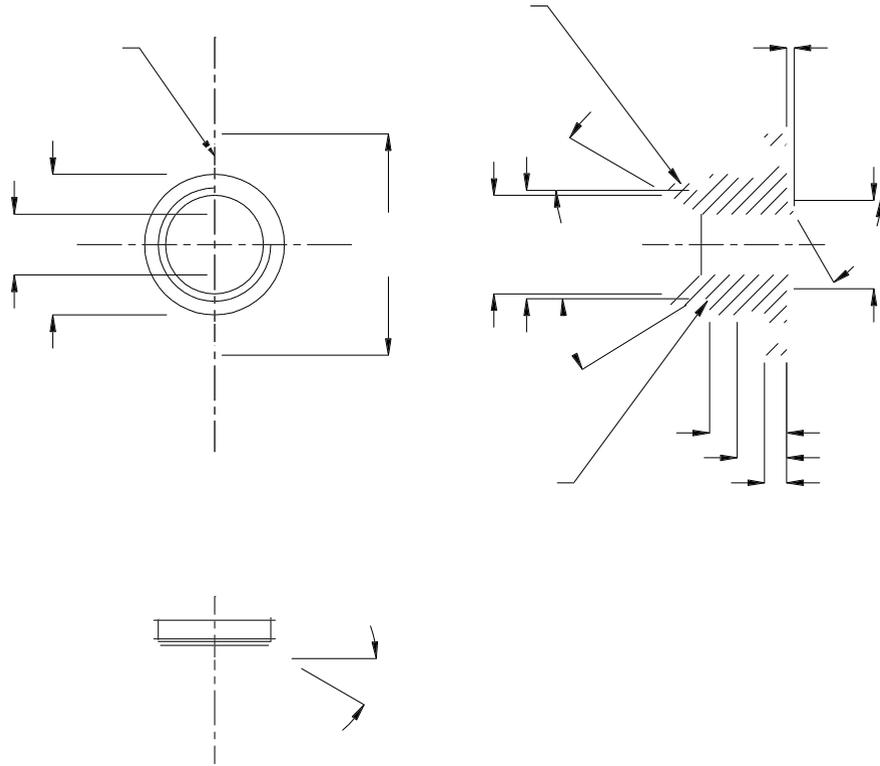
Sheet | *

Sheet Size | A4

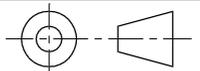
Title
female coupling

Project Code
CCC | Drawing #
M005

Used in assy drg# M004
Assy Name hose coupling



THIRD ANGLE PROJECTION
DIMENSIONS IN MM



Scale
1:1

SCIENCE & ENGINEERING RESEARCH COUNCIL
**ROYAL OBSERVATORY
EDINBURGH**

Material | Stainless steel

Finish | clean

Last Mod | *

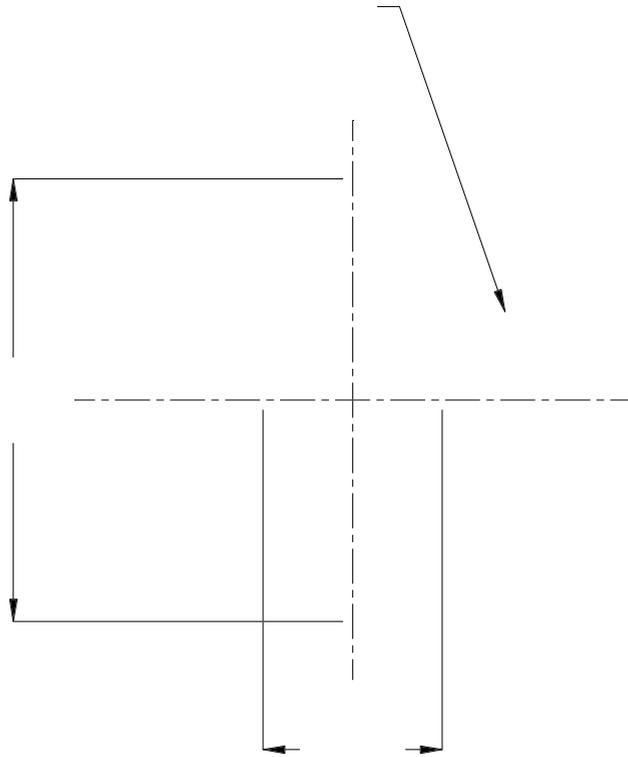
Tolerances	XYZ	ANG
U.O.S	+0.15 -0.15	+0.5 -0.5 deg

Approved	*	Issue	A
Drawn by	prh	Date	19-Nov-90
Sheet	*	Sheet Size	A4

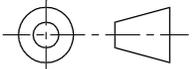
Title
male coupling

Project Code CCC	Drawing # M006
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Used in assy drg# M004
Assy Name hose coupling



THIRD ANGLE PROJECTION
DIMENSIONS IN MM



Scale
2:1

SCIENCE & ENGINEERING RESEARCH COUNCIL
**ROYAL OBSERVATORY
EDINBURGH**

Material | Delrin 3.26±0.05 thick

Finish | clean

Last Mod | *

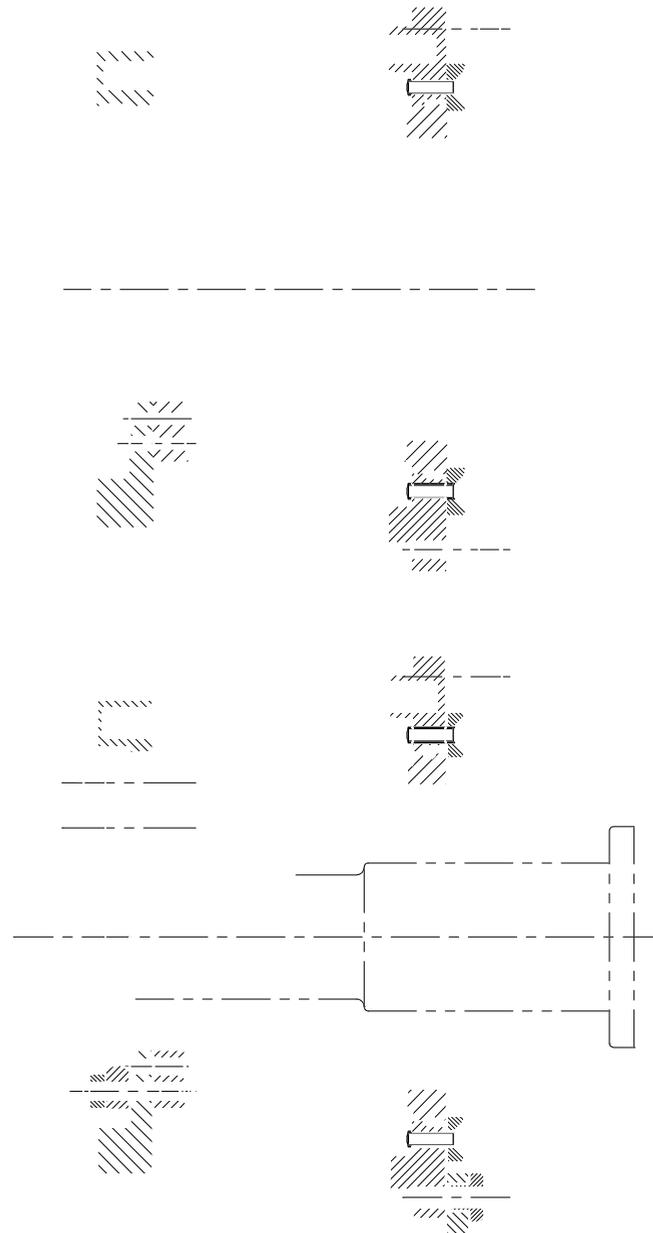
Tolerances	XYZ	ANG
U.O.S	+0.2 -0.0	n/a

Approved	*	Issue	A
Drawn by	prh	Date	19-Nov-90
Sheet	*	Sheet Size	A4

Title
O-ring carrier

Project Code CCC	Drawing # M007
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Part Section A-A



Part Section A-A

A2

M008

THIRD ANGLE PROJECTION DIMENSIONS IN MM				SCIENCE & ENGINEERING RESEARCH COUNCIL ROYAL OBSERVATORY EDINBURGH			
Material	*			Weight		0.0 Kg	
Finish	*						
Last Mod	*						
Tolerances	XYZ	ANG	Approved	*	Issue	A	
U.O.S	*	*	Drawn by	PRH	Date	16-SEP-92	
			Sheet	*	Sheet Size	A2	
Title			Project Code		Drawing #		
first stage thermal link			CCC		M008		