



Technical Report
RAL-TR-96-030

The IRIS Graphite Analyser Cooling System Volume Two - CAD Drawings

J J P Balchin

May 1996

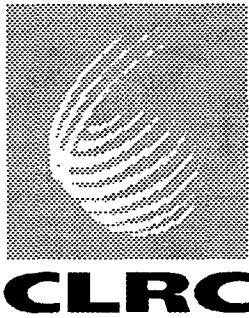
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ISIS FACILITY

Rutherford Appleton Laboratory
Chilton Didcot
Oxfordshire
OX11 0QX
Switchboard + 44 (0) 1235 821900
Telephone + 44 (0) 1235 446654
Fax + 44 (0) 1235 446660

The IRIS Graphite Analyser Cooling System.
Volume Two - C A D Drawings.

A design feasibility study prepared by:

J.J.P. Balchin.

ISIS Target Division - Project Engineering Group.

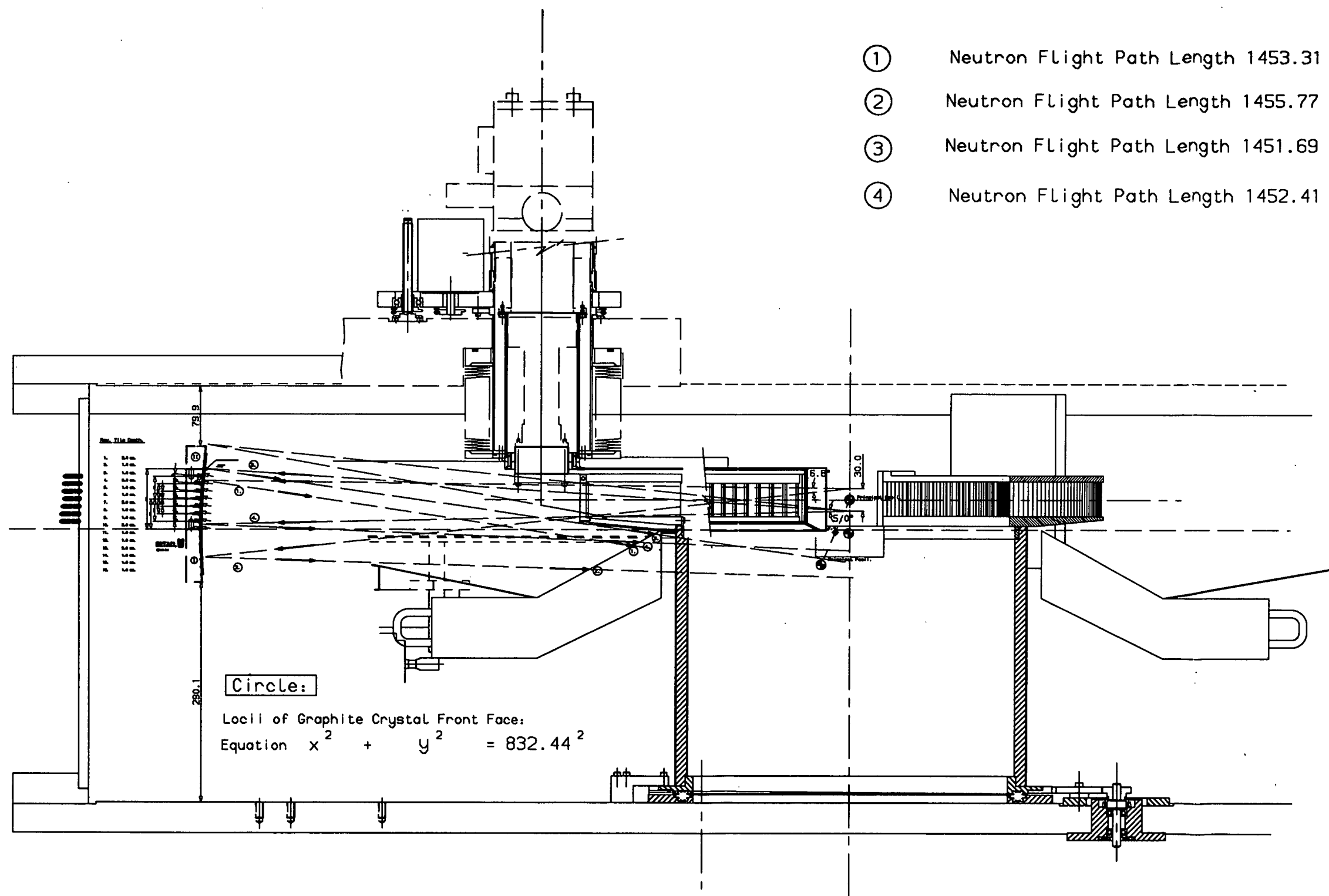
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12 th March 1996.

Ray Diagrams.

Figure 5. Ray Diagram New Tile Geometry 7a.

Figure 6. Ray Diagram New Tile Geometry Plan 5a.



- ① Neutron Flight Path Length 1453.31 mm.
- ② Neutron Flight Path Length 1455.77 mm.
- ③ Neutron Flight Path Length 1451.69 mm.
- ④ Neutron Flight Path Length 1452.41 mm.

Circle:

Loci of Graphite Crystal Front Face:
Equation $x^2 + y^2 = 832.44^2$

Neutron Beams.

- ① Top incident Beam. Views analyser row 4 . Reflected to Detector Bank.
 - ② Top incident Beam. Views analyser row 14 . Reflected to detector Bank.
 - ③ Bottom incident Beam. Views analyser row 2 . Reflected to detector Bank.
 - ④ Bottom incident Beam. Views analyser row 10 . Reflected to detector Bank.
- Analysers rows 15 & 16 not viewed through collimation.

Max View Angle 6.8 degrees.

Max View Angle 5.0 degrees.

(With NO Modification to Detectors
& Collimation assembly.)

SCALE 1/2

DATE	MOD. NO.	DRW. BY	CHKD.	APPR.	STATUS
2 MAR 84		JEB			
TOLERANCES UNLESS STATED	FINISH	SEE DETAILS	ORIGINAL SCALE		
SEE DETAILS	REMOVE ALL BURRS	DO NOT SCALE			
MATERIAL & SPEC.	SURFACE TEXTURE μ m	✓ UNLESS STATED			
SEE DETAILS					
USED ON					
SCIENCE & ENGINEERING RESEARCH COUNCIL, RESEARCH APPLIED LABORATORY, OXFORD, OX1 3PL					
TITLE					
IRIS DETECTOR TANK					
NEW TILE GEOMETRY 7a.					
NEW TILE GEOM7a.					

NEWTILEGEOMPLANSa.

PROJECTION



SIZE SHOWN CORRESPONDING TO U.S. SIZE

Note:

1. Analyser Row 3 Crystals Position shown for clarity. (Original Top Row of Analyser Crystals.)

Current End Crystal.

Current End Crystal.

Projected Impingement
72 956 Sq. mm.

636 BLANK

161.0°

9.5°

9.5°

A

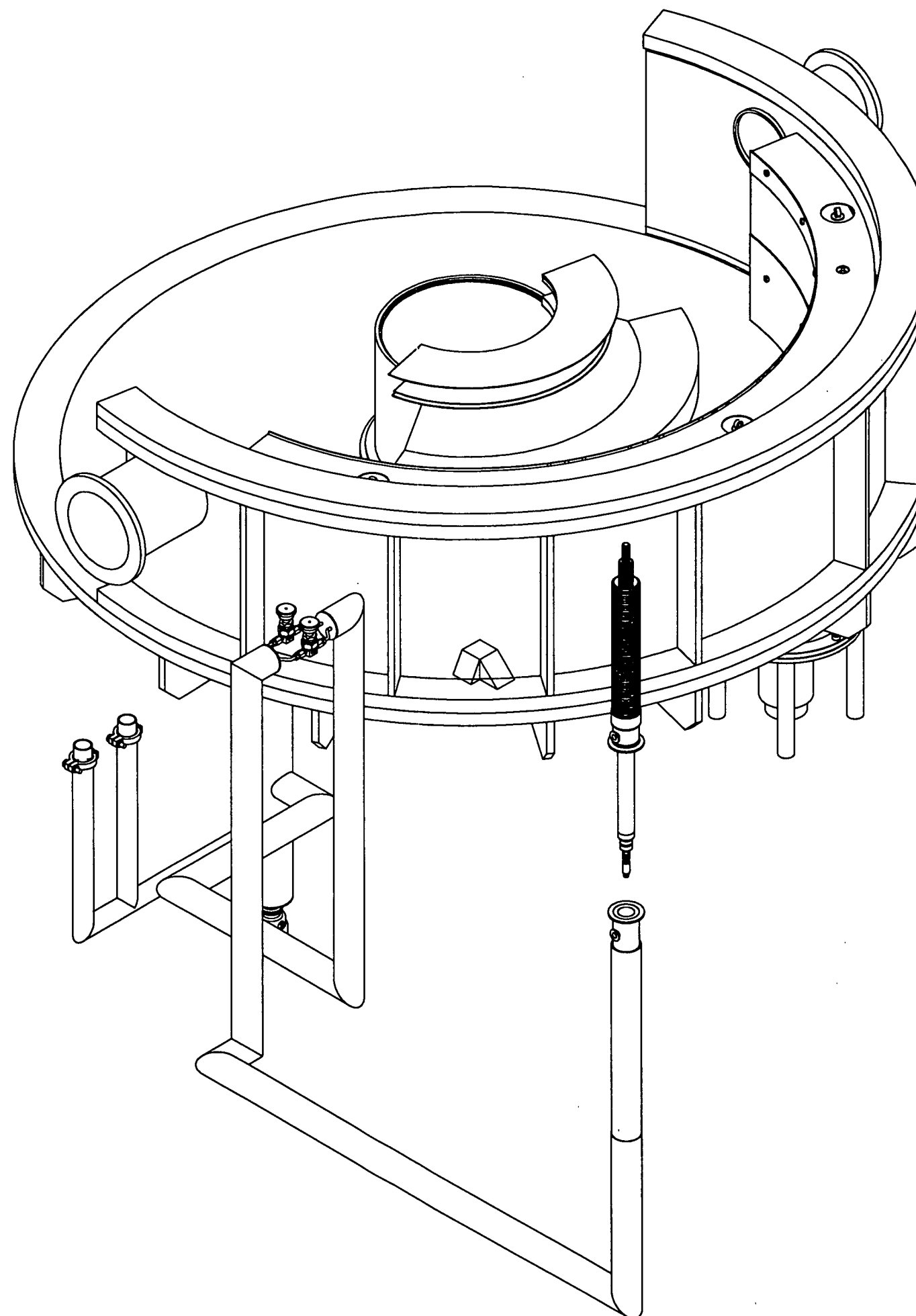
NEWTILEGEOMPLANSa.

DRW K R BRINE	MATERIAL & SPEC. SEE NOTE	TOLERANCES UNLESS STATED GENERAL ± 0.5	FINISH ANODISE AND DYE BLACK	SURFACE TEXTURE μm UNLESS STATED	JOB No	PROJ. No.	USED ON
CHD.					SCIENCE AND ENGINEERING RESEARCH COUNCIL RUTHERFORD APPLINGTON LABORATORY CHILTON OXON		
APPD	REMOVE ALL BURRS		ORIGINAL SCALE 1:2	0 10 50 mm INCHES	TITLE IRIS ANALYSER TILE SUPPORT PLATE		NEWTILEGEOMPLANSa.

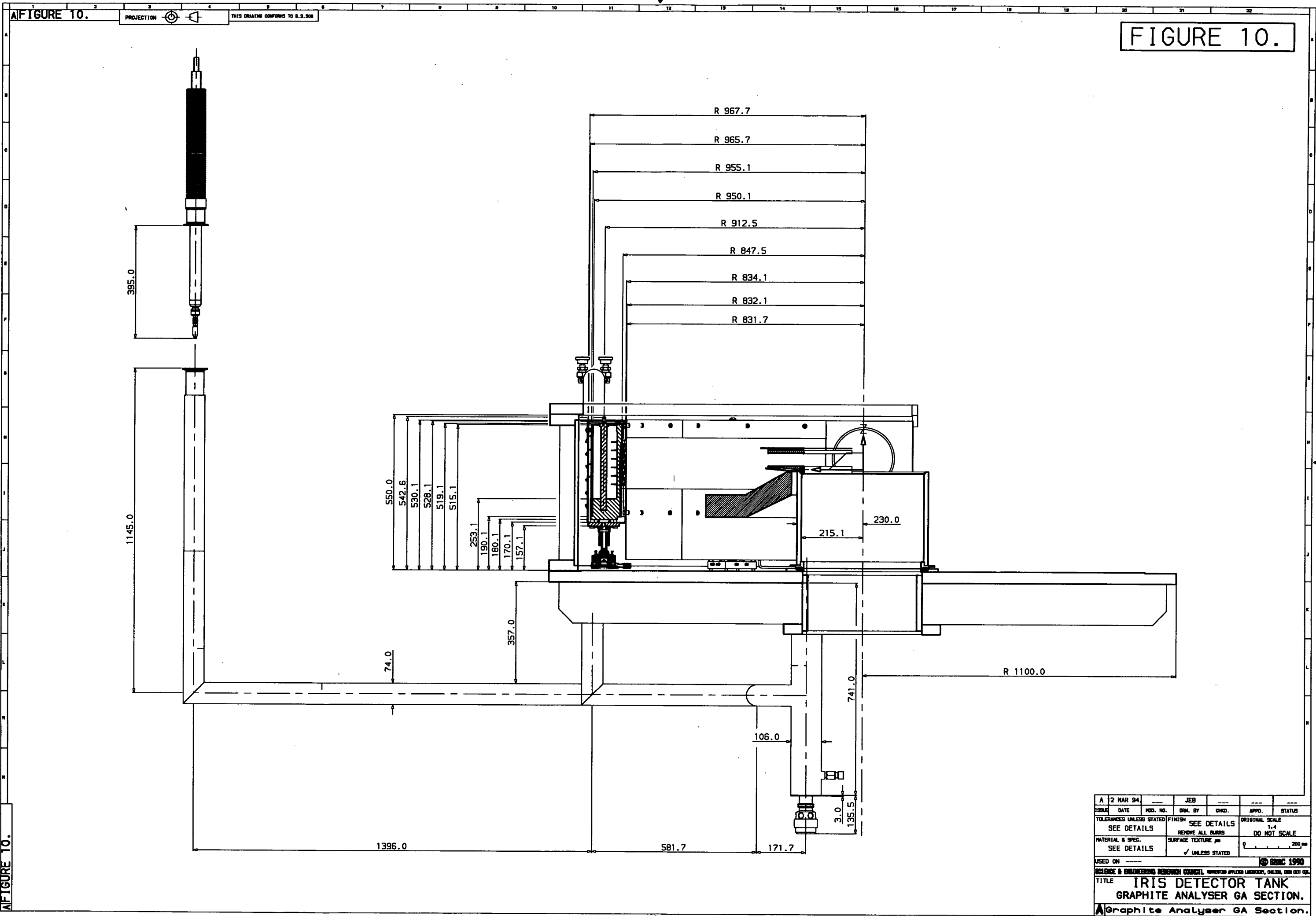
B 30/3/8788
A 22/7/86

Detail Explanatory Views.

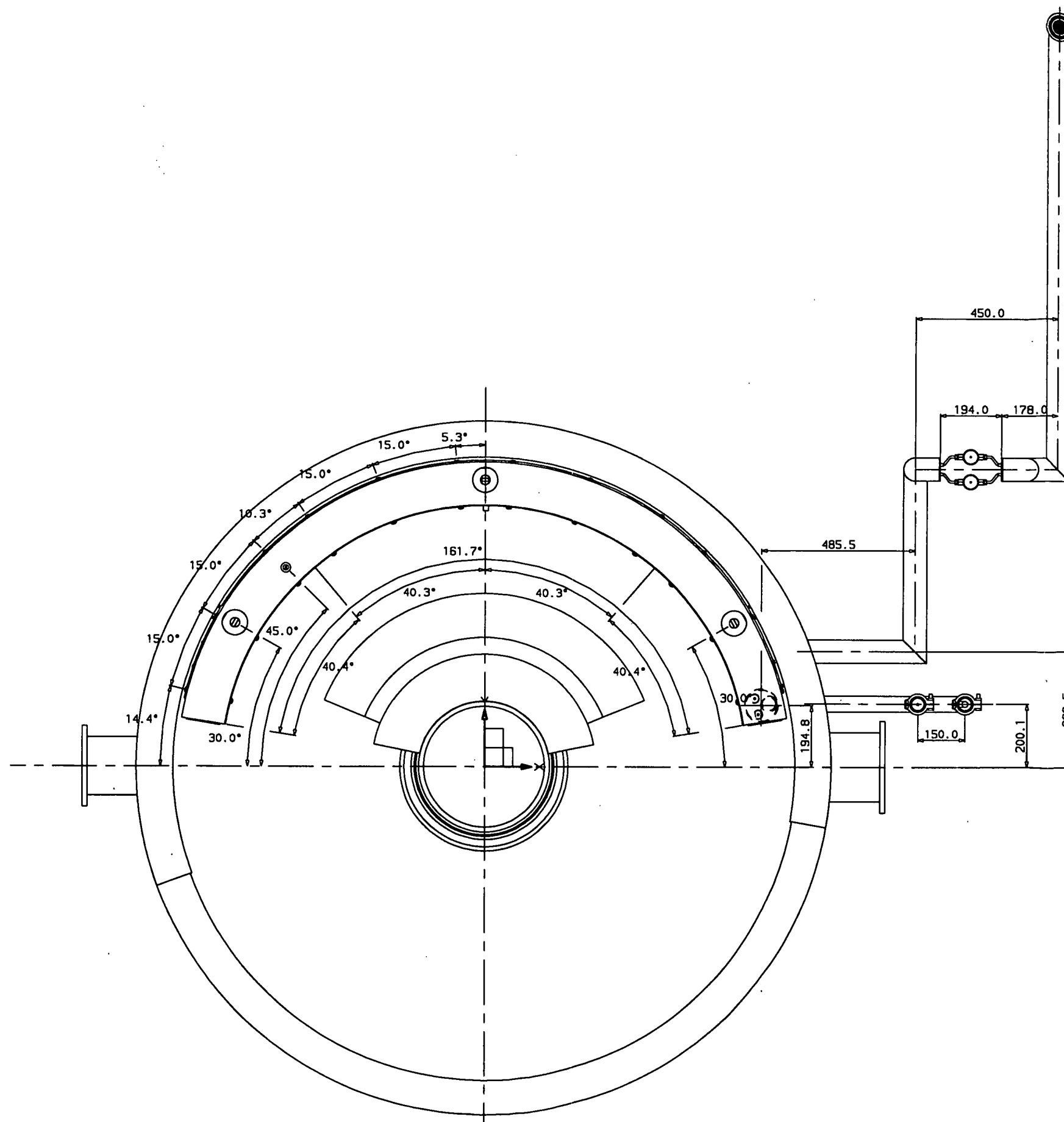
- Figure 7. Graphite Analyser Front Detail.
- Figure 8. Graphite Analyser Isometric GA.
- Figure 9. Graphite Analyser Isometric GA II.
- Figure 10. Graphite Analyser GA Section.
- Figure 11. Graphite Analyser GA Plan View.
- Figure 12. Graphite Analyser GA Front.
- Figure 13. Graphite Analyser Rear GA.



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ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
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			REMOVE ALL BURRS		DO NOT SCALE	
MATERIAL & SPEC.			SURFACE TEXTURE			
SEE DETAILS			✓ UNLESS STATED			
USED ON ----					 REC'D 1990	
SCIENCE & ENGINEERING RESEARCH COUNCIL UNDERSTAND APPLICATIONS, DESIGN, DEVELOP & TEST						
TITLE IRIS DETECTOR TANK GRAPHITE ANALYSER ISO GA II.						
A Graphite Analyser Iso GA II.						



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ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPR.
SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS
TOLERANCES UNLESS STATED	FINISH	REMOVE ALL BURRS	DO NOT SCALE	ORIGINAL SCALE	1:4
MATERIAL & SPEC.	SURFACE TEXTURE μm	✓ UNLESS STATED	0	200 μm	
USED ON	---	---	---	---	---
SCIENCE & ENGINEERING RESEARCH COUNCIL, HANWORTH APPLIED LABORATORY, CHILDS, ORN 001 001	© SEMC 1990				
TITLE	IRIS DETECTOR TANK				
	GRAPHITE ANALYSER GA SECTION.				
	A Graphite Analyser GA Section.				



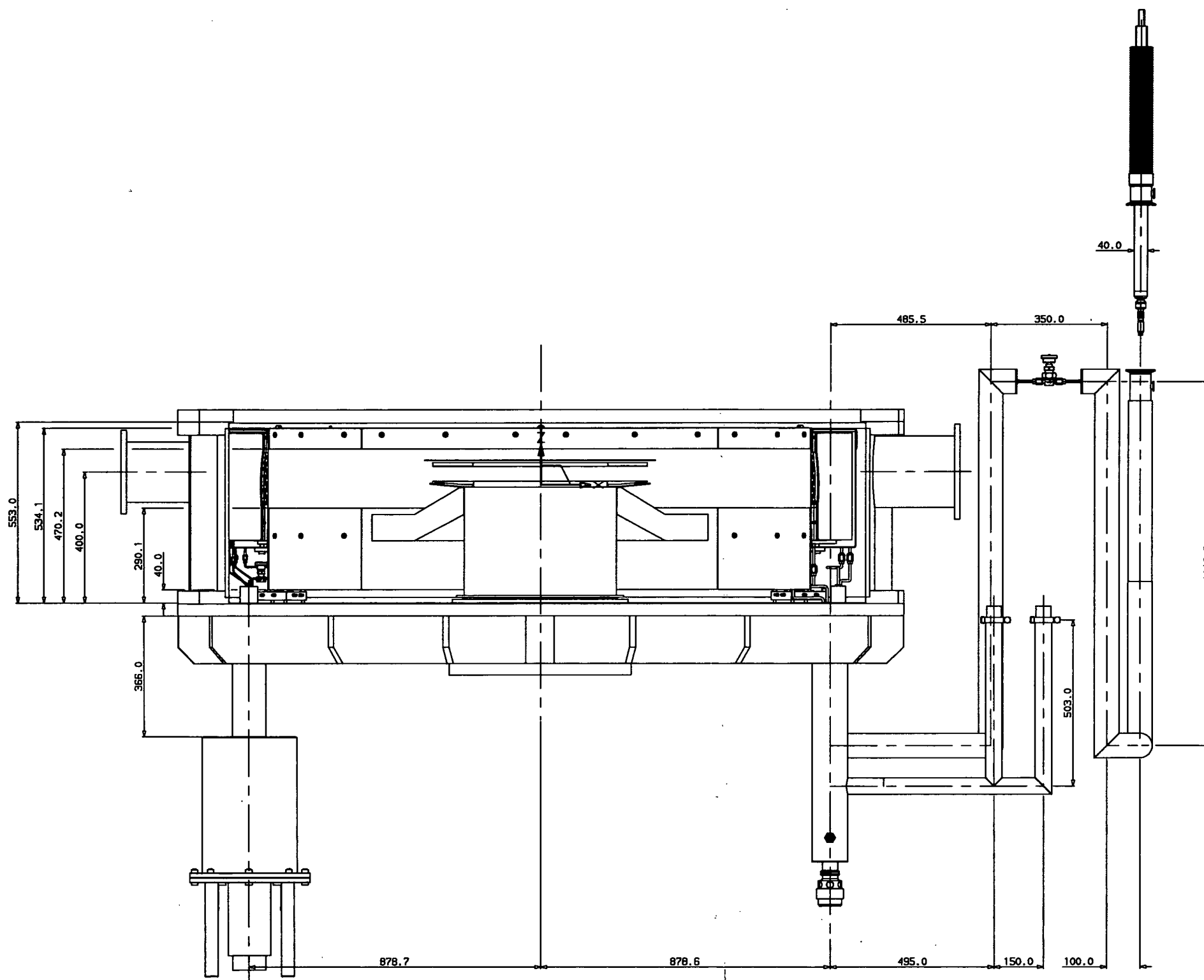
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USED ON -----					© SORC 1990	
SCIENCE & ENGINEERING RESEARCH COUNCIL ROSEBURY APPLIANCE LABORATORY, OXFORD, OX1 0Q						
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A Graphite Analyser GA Plan.						

FIGURE 12.

PROJECTION

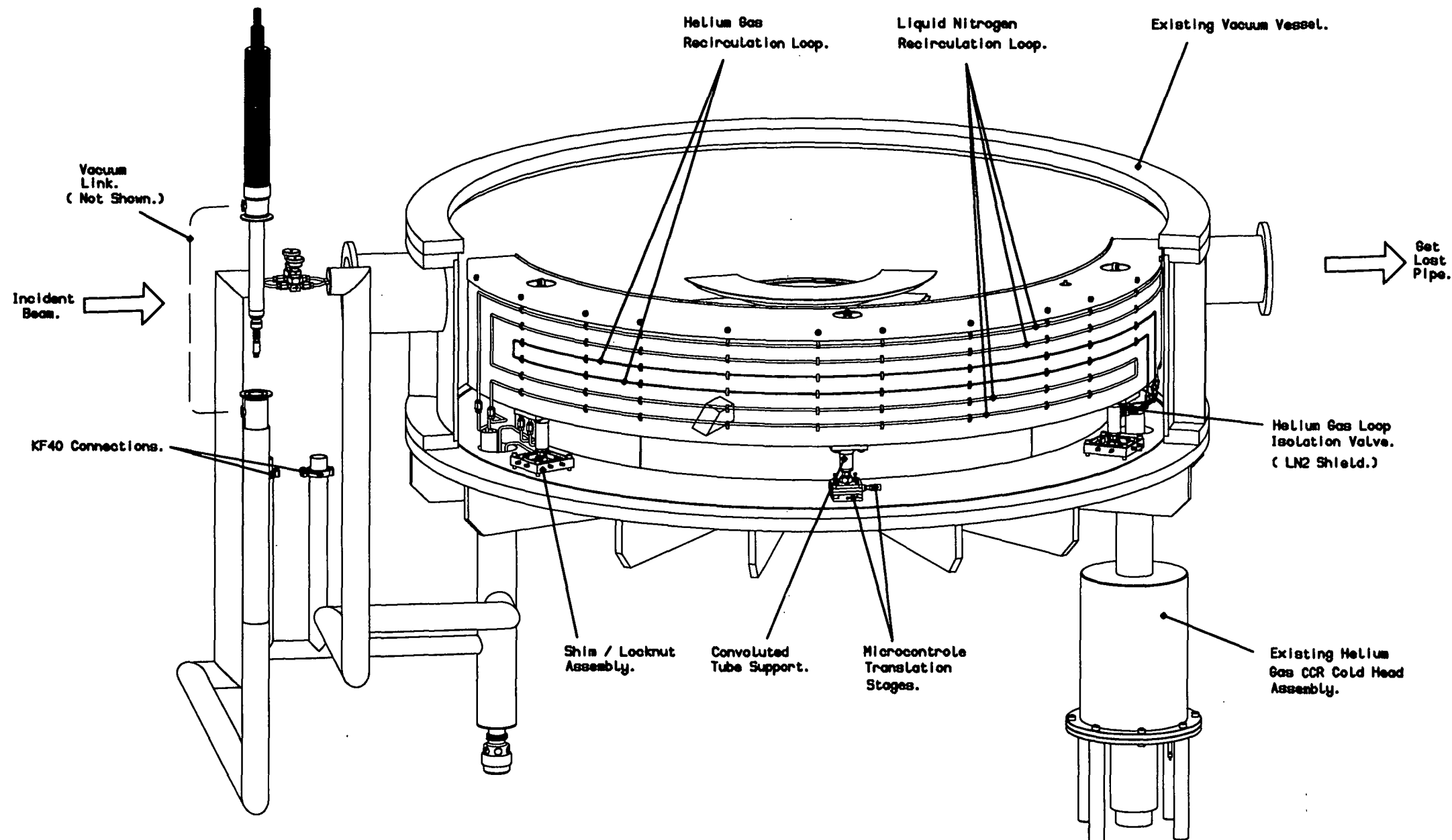
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FIGURE 12.



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SEE DETAILS	REMOVE ALL BURRS	SURFACE TEXTURE μ m	✓ UNLESS STATED	250	---
MATERIAL & SPEC.	SEE DETAILS	---	---	---	---
USED ON	---	---	---	---	---
SCIENCE & ENGINEERING RESEARCH COUNCIL RESEARCH APPLICATION LABORATORY, OXFORD, OX1 3DT					
TITLE IRIS DETECTOR TANK					
GRAPHITE ANALYSER FRONT GA					
A GraphiteAnalyserGAFront.					

FIGURE 13.



A 2 MAR 84		JEB					
DESIG	DATE	MOD. NO.	DRW. BY	CHKD.		APPD.	STATUS
TOLERANCES UNLESS STATED			FINISH		ORIGINAL SCALE		
SEE DETAILS			SEE DETAILS		1:5		
			REMOVE ALL BURRS		DO NOT SCALE		
MATERIAL & SPEC.		SURFACE TEXTURE					
SEE DETAILS		✓ UNLESS STATED					
USED ON					© SSGC 1990		
OFFICE & ENGINEERING RESEARCH COUNCIL, WINNIFORD APLETON LAKESIDE, OXFORD, OX4 0ET GBL							
TITLE							
IRIS DETECTOR TANK							
GRAPHITE ANALYSER REAR GA							
A GRAPHITE ANALYSER REAR GA.							

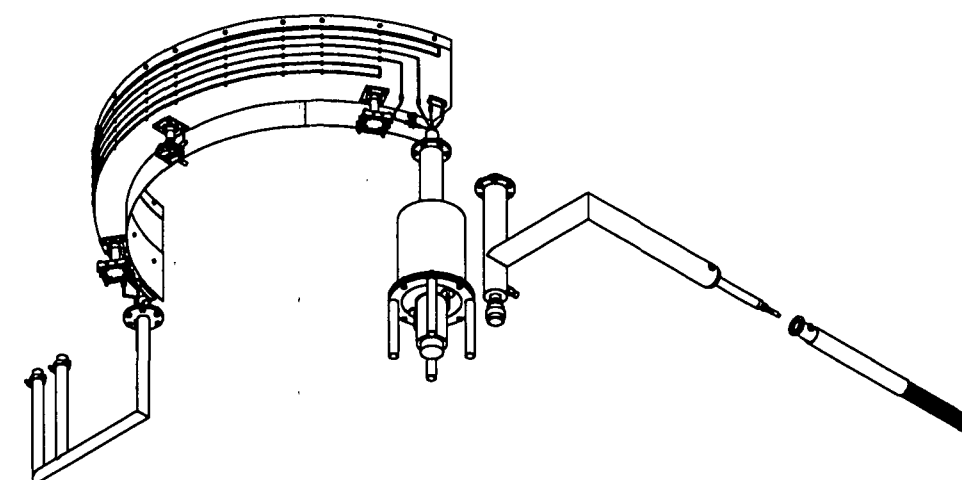
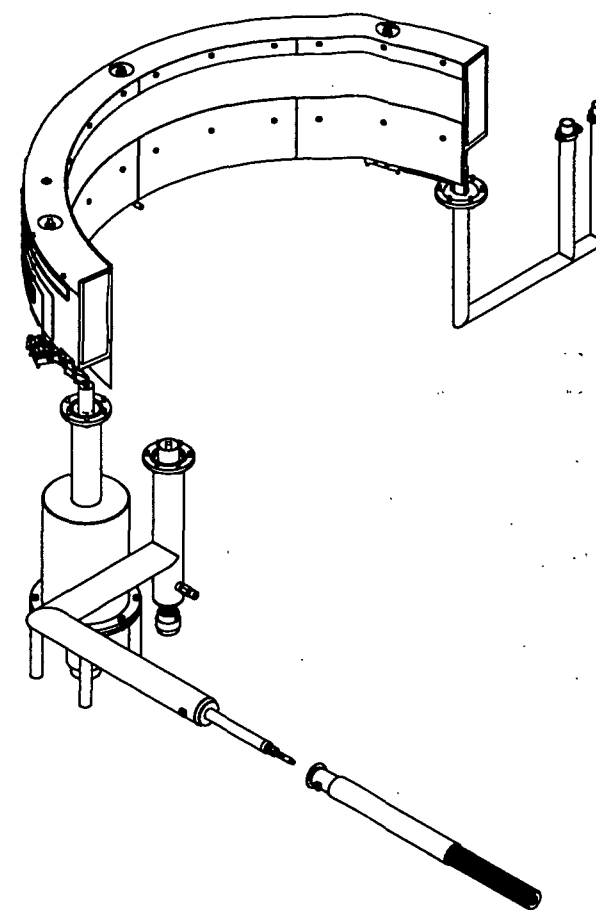
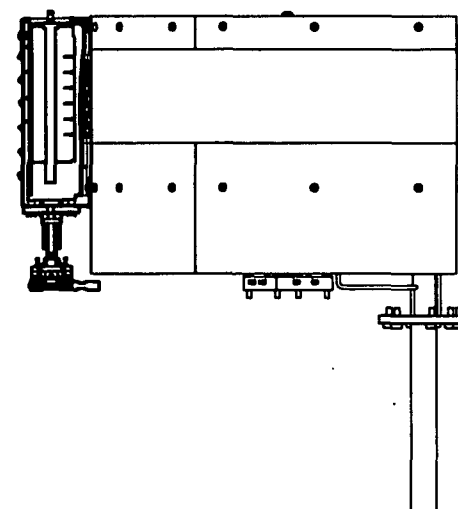
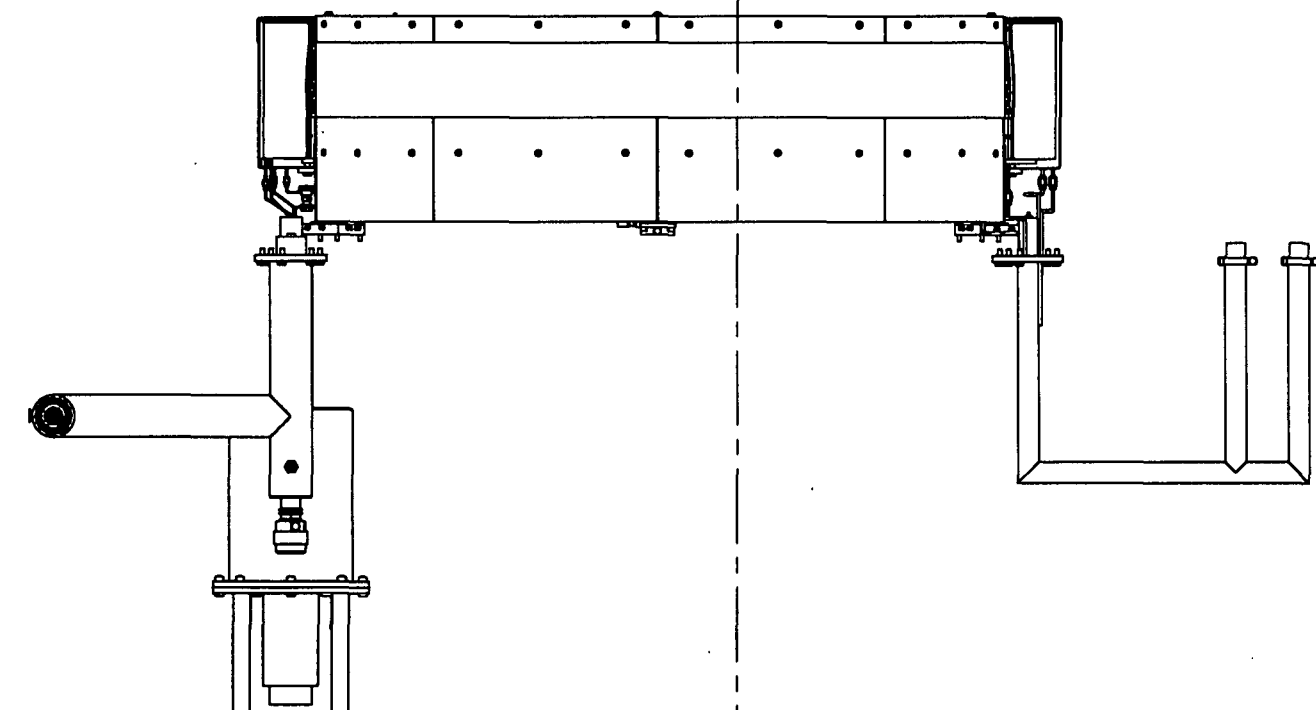
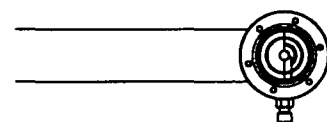
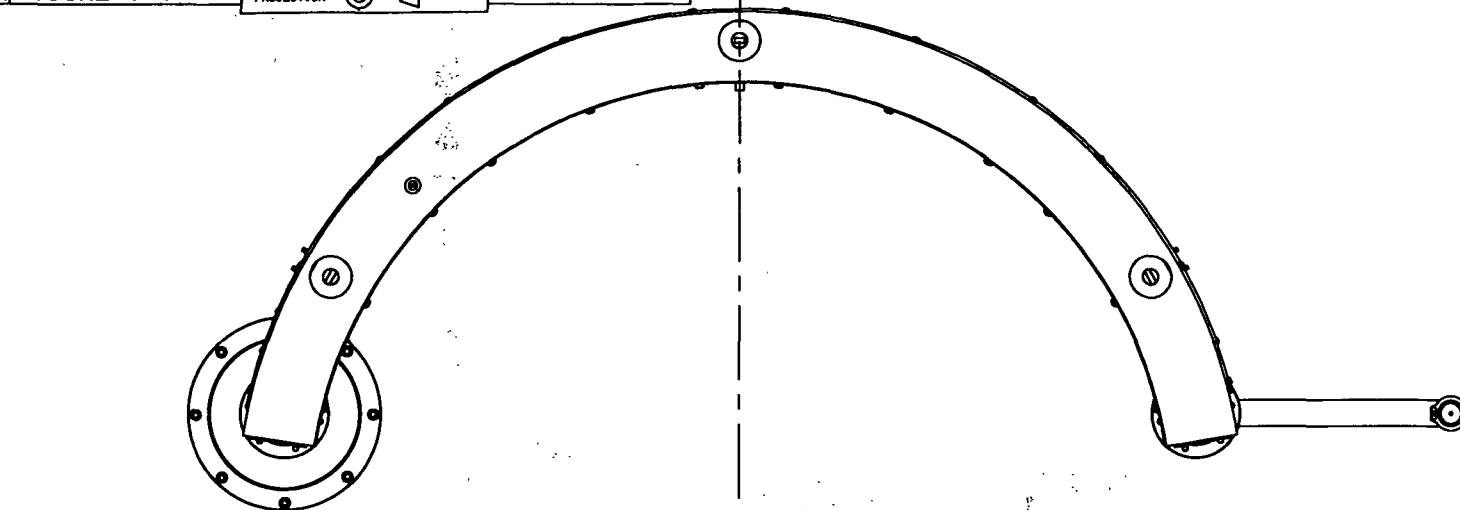
Component Drawings.

General Arrangements.

Figure 14. 3-D Drawing Sheet - 3d Graphite Analyser GA2.

Figure 15. 3-D Drawing Sheet - 3d Graphite Analyser GA3.

Figure 16. 3-D Drawing Sheet - 3d Graphite Analyser GA4.



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TOLERANCES UNLESS STATED SEE DETAILS			FINISH SEE DETAILS REMOVE ALL BURRS		ORIGINAL SCALE 1:5 DO NOT SCALE	
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USED ON -----						
RELEASE & DISSEMINATION RESEARCH COUNCIL WASHINGTON APPLIED LINGUISTICS, COLON, ORC DIST						
TITLE IRIS DETECTOR TANK 3D GRAPHITE ANALYSER GA2. A3dGraphiteAnalyserGA2.						

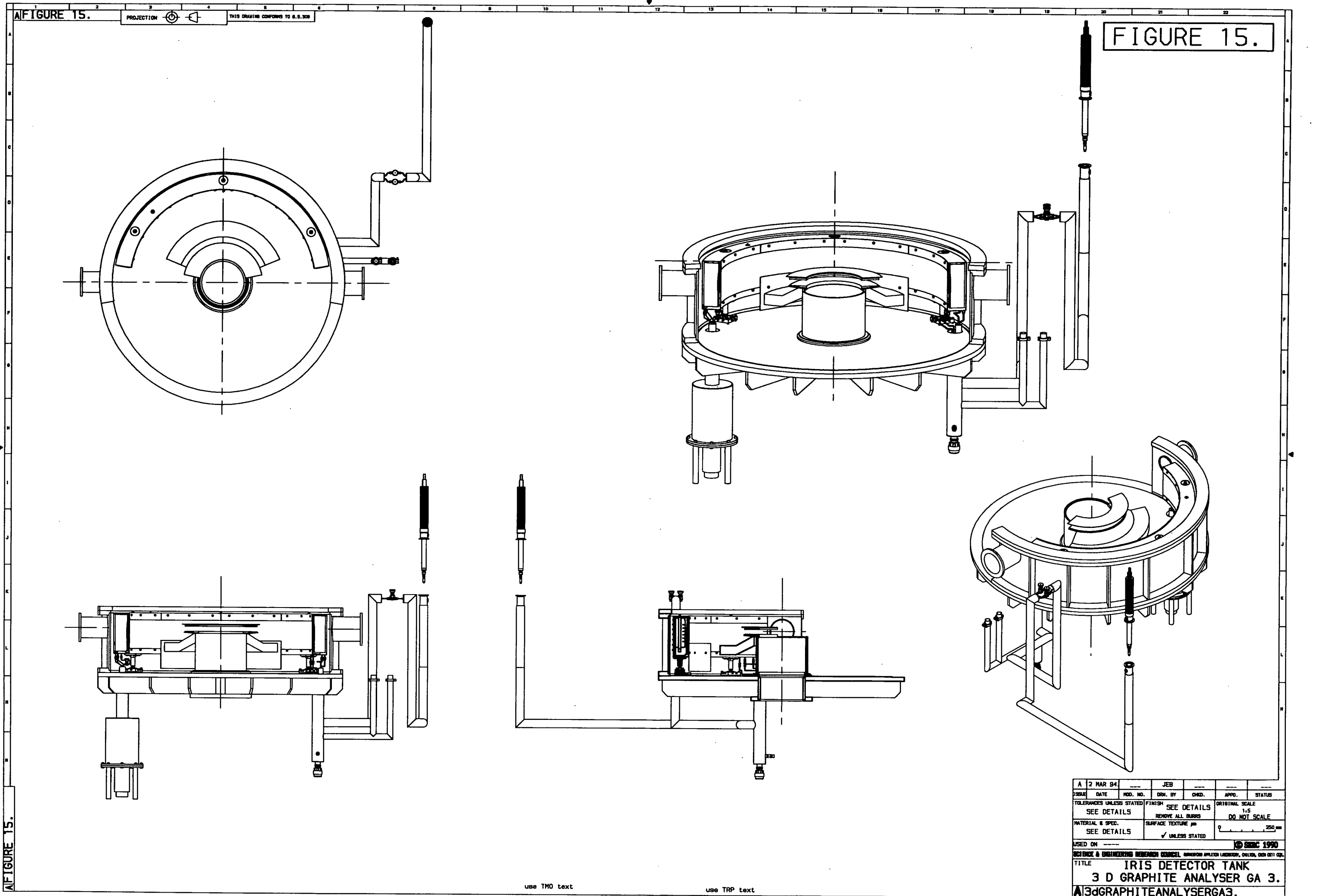


FIGURE 15.

FIGURE 15.

A	2 MAR 94	JEB	1:5	250mm	IRIS DETECTOR TANK 3 D GRAPHITE ANALYSER GA 3. 3dGRAPHITEANALYSERGA3.
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MATERIAL & SPEC.	SURFACE TEXTURE	UNLESS STATED			
BASED ON					
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SEE DETAILS		SEE DETAILS		1:5		
MATERIAL & SPEC.		REMOVE ALL BURRS		DO NOT SCALE		
SEE DETAILS		SURFACE TEXTURE μ m		0 250		
		✓ UNLESS STATED				

USED ON ----  **SERC 1990**

SCIENCE & ENGINEERING RESEARCH COUNCIL BUCKINGHAM AVENUE, LONDON, W11 0BQ, GBR GBT

TITLE **IRIS DETECTOR TANK**

3 D GRAPHITE ANALYSER GA 4.

A13dGRAPHITEANALYSERGA4.

Component Drawings.

Graphite Mounting Components.

Figure 17. 3-D Drawing Sheet - 3d Cadmium Backing Plate.

Figure 18. 3-D Drawing Sheet - 3d Cadmium Pressing b.

Figure 19. 3-D Drawing Sheet - 3d Cadmium Pressing
(LHS) b.

Figure 20. 3-D Drawing Sheet - 3d Cadmium Pressing
(RHS) b.

Figure 21. 3-D Drawing Sheet - 3d Cadmium / Tile Assembly
4.

Figure 22. 3-D Drawing Sheet - 3d Cadmium / Tile Assembly
5.

FIGURE 17.

PROJECTION

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FIGURE 17.

FIGURE 17.

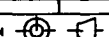
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SEE DETAILS		REMOVE ALL BURRS		1:5		
MATERIAL & SPEC.		SURFACE TEXTURE μ m		DO NOT SCALE		
SEE DETAILS		✓ UNLESS STATED		0 250 mm		
USED ON						© 1990
SCIENCE & ENGINEERING RESEARCH COUNCIL, WINDFORD APPLIANCE LABORATORY, GUILDFORD, GU1 0ET GLE						
TITLE						
IRIS DETECTOR TANK						
3 D CADMIUM BACKING PLATE.						
A13dCadmiumPlate.						

FIGURE 18.

A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	DRN. BY	CHRD.	APPD.	STATUS
TOLERANCES UNLESS STATED SEE DETAILS			FINISH SEE DETAILS REMOVE ALL BURRS		ORIGINAL SCALE 1:5 DO NOT SCALE	
MATERIAL & SPEC. SEE DETAILS			SURFACE TEXTURE μ ✓ UNLESS STATED		0 _____ 250	
USED ON -----					© SDC 1990	
SCIENCE & ENGINEERING RESEARCH COUNCIL, ABERDEEN APPLIED LABORATORY, GILBERT, GLEN GUT						
TITLE IRIS DETECTOR TANK 3 D PRESSED CADMIUM BACKING PLATE.						
A13dCadmiumPressing.b.						

FIGURE 19.

PROJECTION



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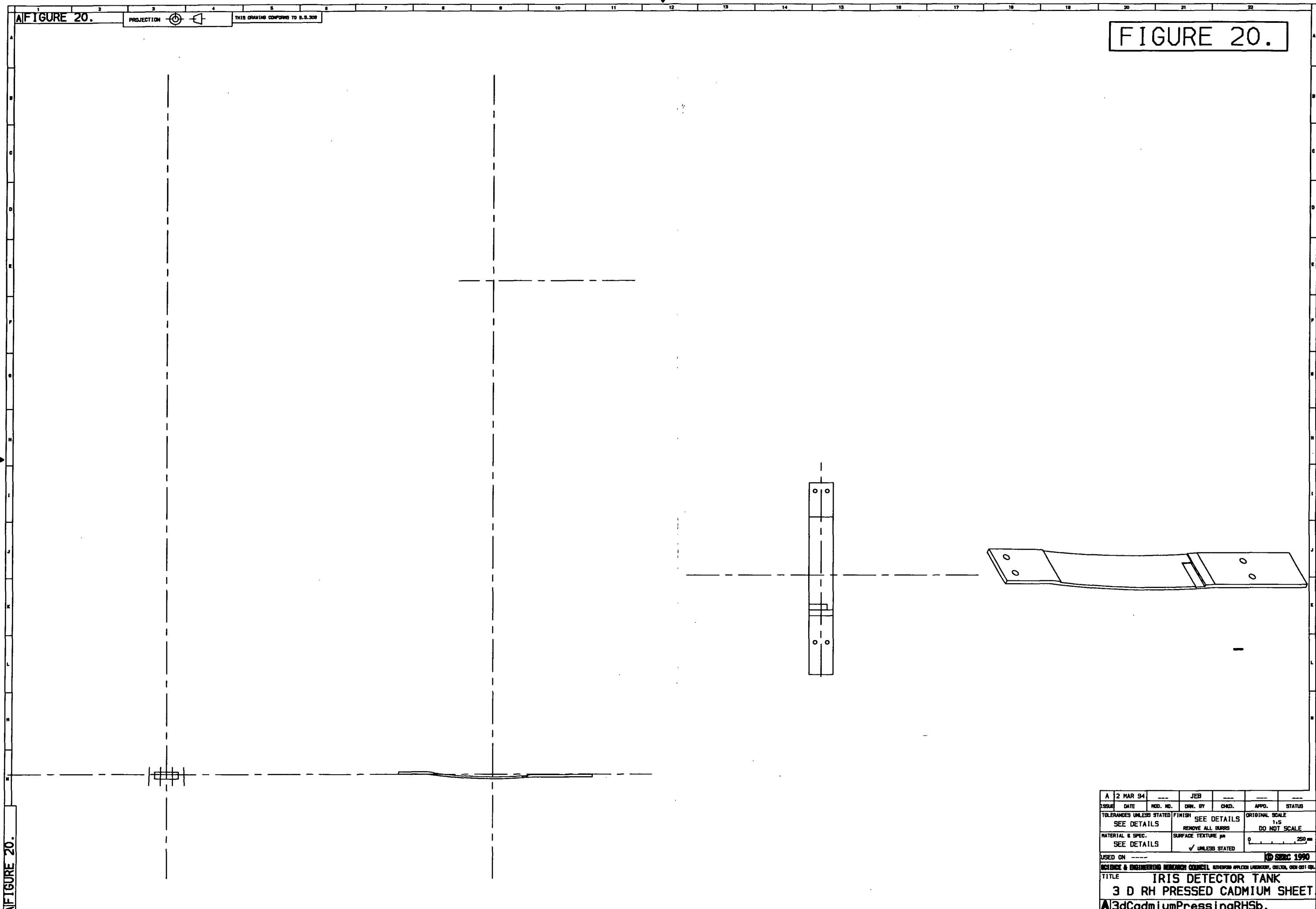
FIGURE 19.

FIGURE 19.

A	2 MAR 94	---	JEB	---	---	---
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SEE DETAILS		SEE DETAILS		1:5		
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SEE DETAILS		SURFACE TEXTURE μm		0 250 mm		
		✓ UNLESS STATED				
USED ON ----- © SERC 1990						
SCIENCE & ENGINEERING RESEARCH COUNCIL, ROYAL ROYAL AIR FORCE, OXFORD, OX1 11Q						
TITLE						
IRIS DETECTOR TANK						
3 D LH PRESSED CADMIUM PLATE						
A13dCadmiumPressingLHsb.						

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Component Drawings.

Helium Reservoir Components.

Figure 23. 3-D Drawing Sheet - 3d Helium Level Gauge.

Figure 24. 3-D Drawing Sheet - 3d Lifting Lug.

Figure 25. 3-D Drawing Sheet - 3d Tile Support Plate 2.

Figure 26. 3-D Drawing Sheet - 3d Tile Support Plate a2

Figure 27. 3-D Drawing Sheet - 3d Helium Reservoir Back /
Ends view 2.

Figure 28. 3-D Drawing Sheet - 3d Helium Reservoir Back /
Ends view 3.

Figure 29. 3-D Drawing Sheet - 3d Helium Reservoir GA a2
(partial assembly).

Figure 30. 3-D Drawing Sheet - 3d Helium Reservoir GA 2
(full assembly).

FIGURE 23.

PROJECTION



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FIGURE 23.



FIGURE 23.

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MATERIAL & SPEC.		SURFACE TEXTURE μm		0 150 mm		
SEE DETAILS		✓ UNLESS STATED				
USED ON		---		© SREC 1990		
SCIENCE & ENGINEERING RESEARCH COUNCIL ROYAL SOCIETY OF OPEN UNIVERSITY, OXFORD, OX1 3AH						
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IRIS DETECTOR TANK						
3 D LIQUID HELIUM LEVEL GAUGE.						
A3dHelLevelGauge.						

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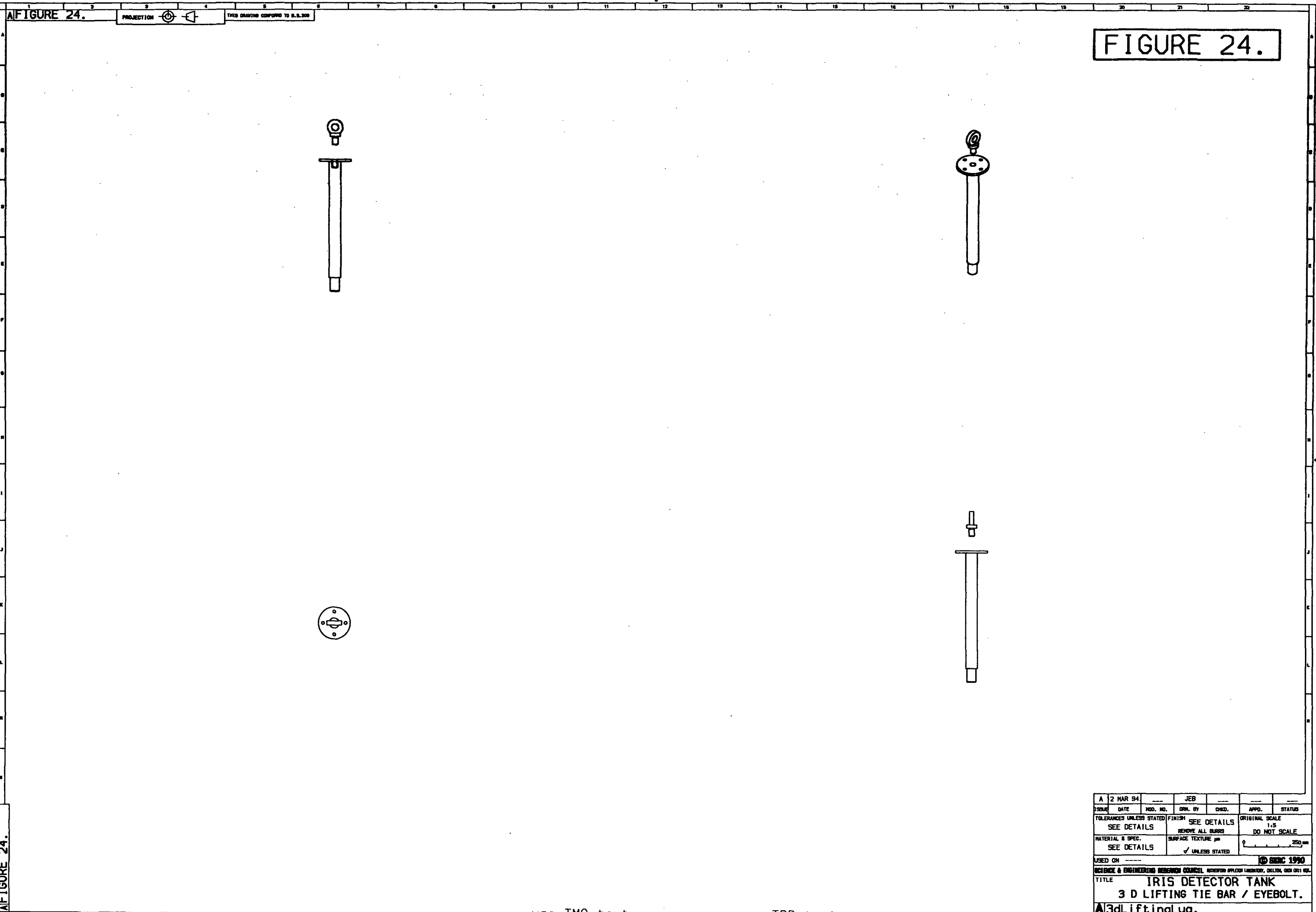


FIGURE 24.

FIGURE 24.

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ISSUE	DATE	ISS. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED		FINISH		ORIGINAL SCALE		
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MATERIAL & SPEC.		SURFACE TEXTURE μ m		DO NOT SCALE		
SEE DETAILS		✓ UNLESS STATED		250 μ m		
USED ON -----				© BMD 1990		
SCIENCE & ENGINEERING RESEARCH COUNCIL, RUTHERFORD APPLIED LABORATORY, CHILTON, OXON OX1 1HQ.						
TITLE						
IRIS DETECTOR TANK						
3 D LIFTING TIE BAR / EYEBOLT.						
3dLiftingLug.						

AFigure 25.

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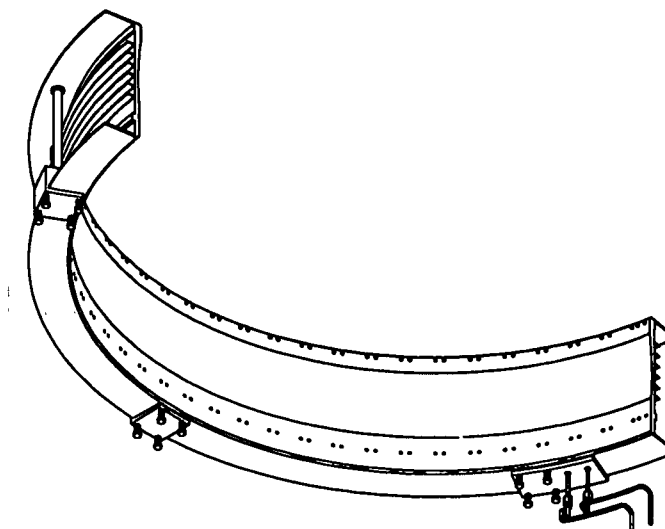
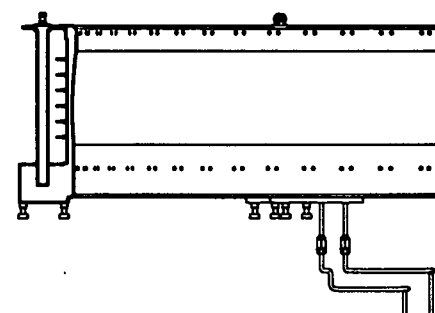
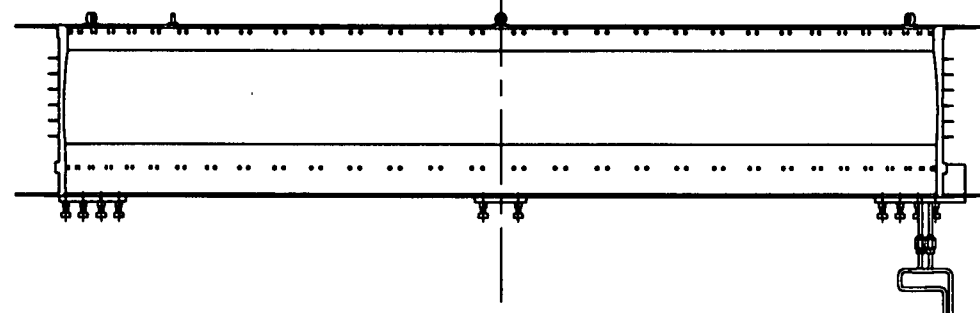
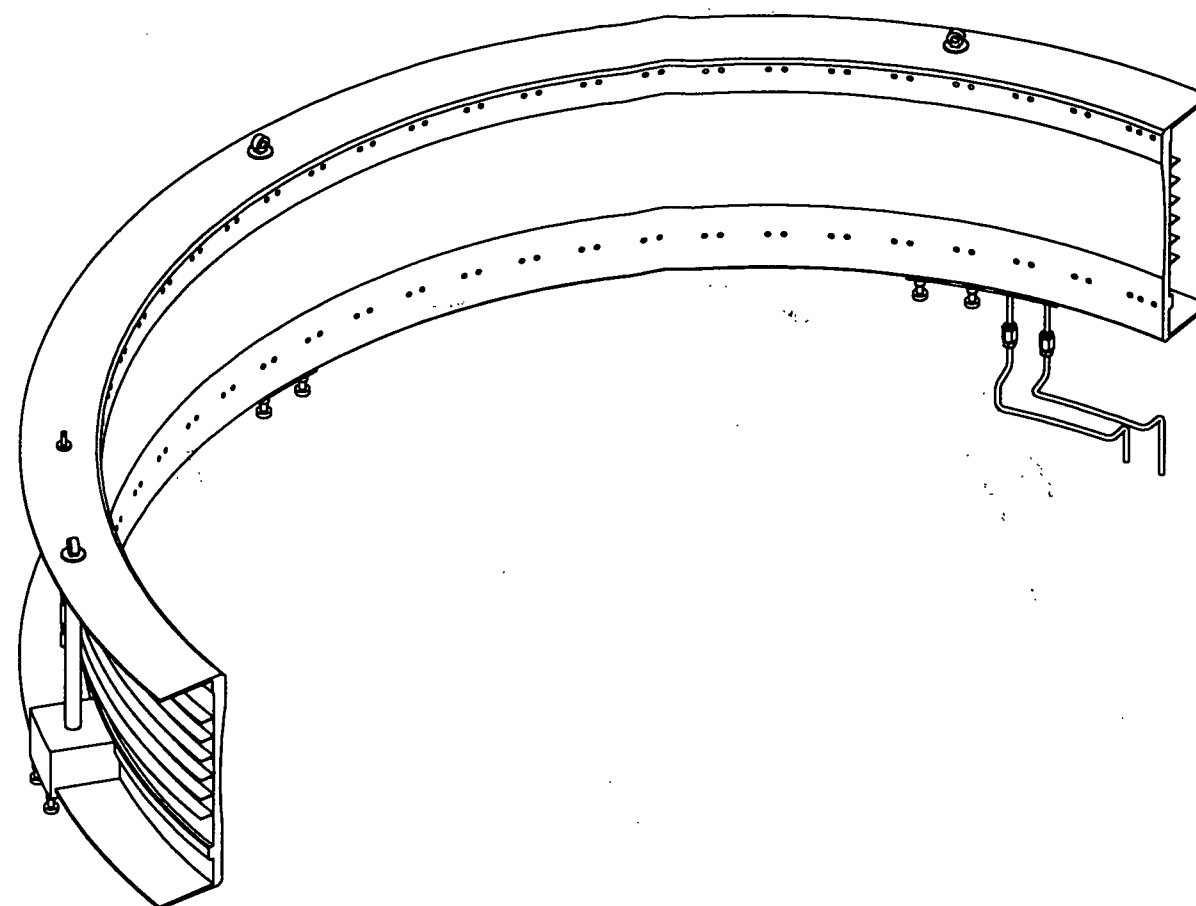
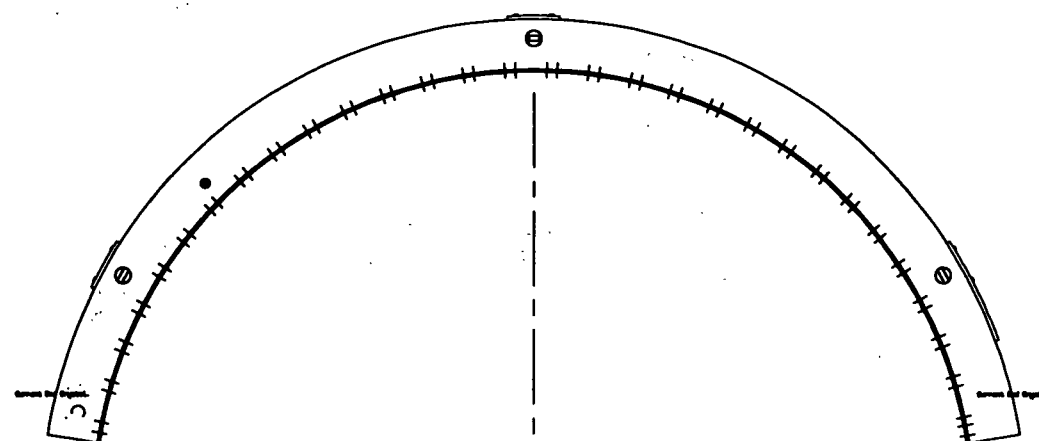


FIGURE 25.

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MATERIAL & SPEC.		SURFACE TEXTURE μ m	UNLESS STATED		250 μ m
SEE DETAILS					
USED ON					
SCIENCE & ENGINEERING RESEARCH COUNCIL RESEARCH APPLIANCE LABORATORY, DULTON, OXON OX11 0BQ					
TITLE					
IRIS DETECTOR TANK					
3 D GRAPHITE TILE SUPPORT VERSION 2.					
A3dTileSupportPlate2					

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AFigure 25.

AFigure 26.

PROJECTION

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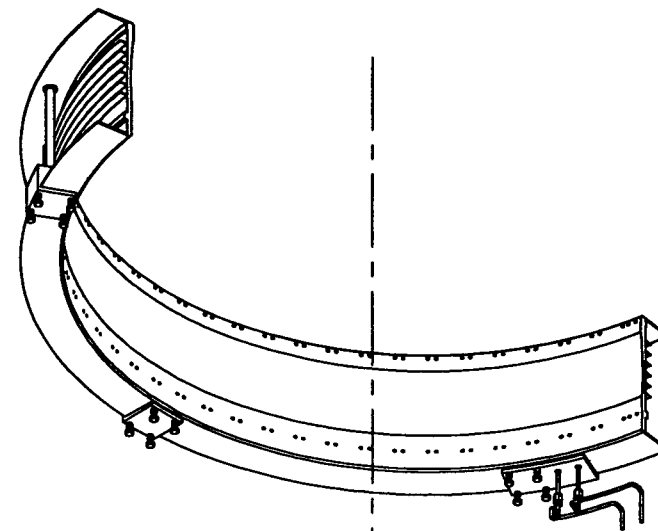
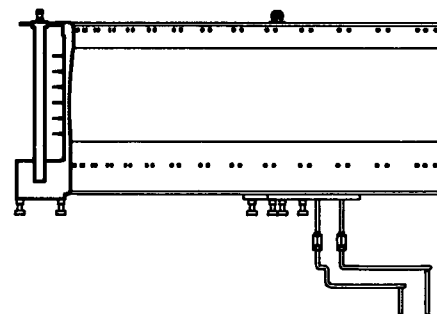
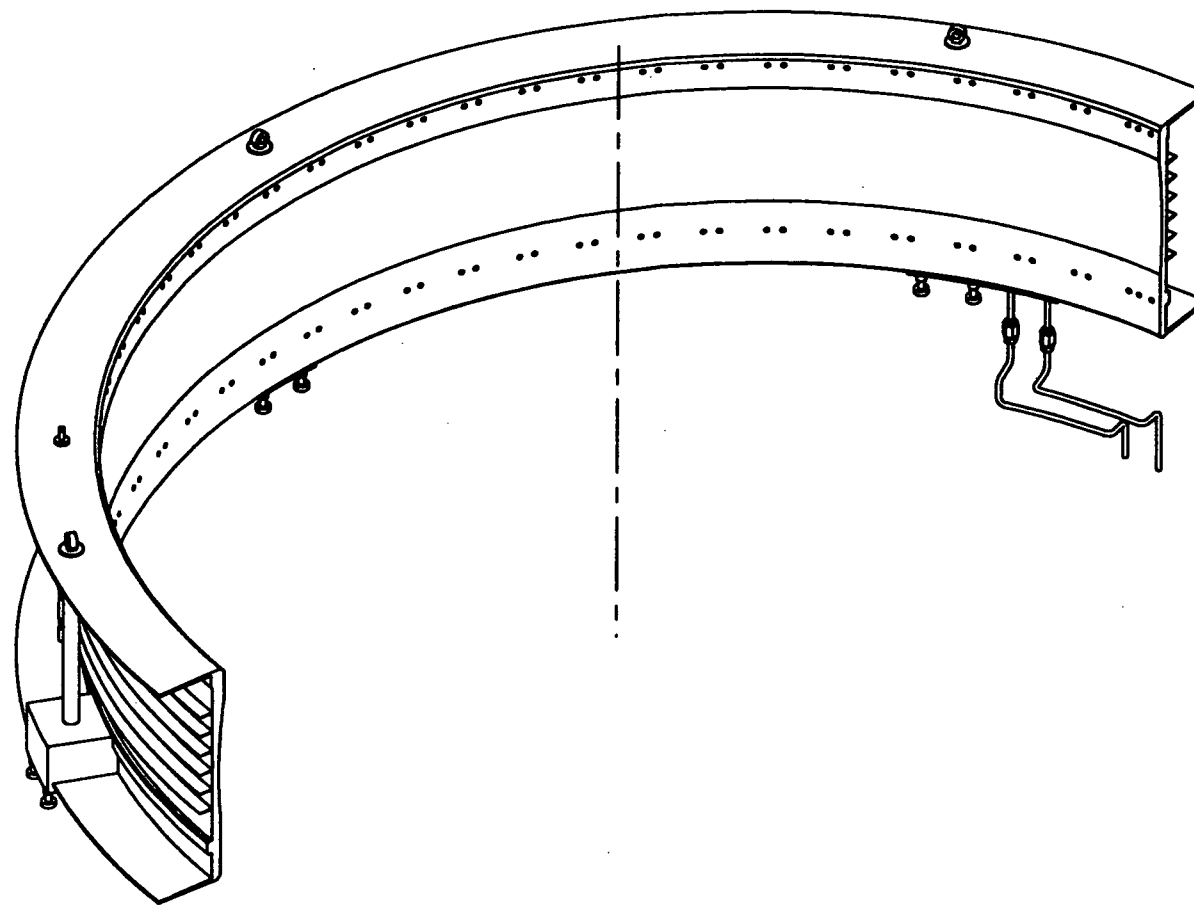
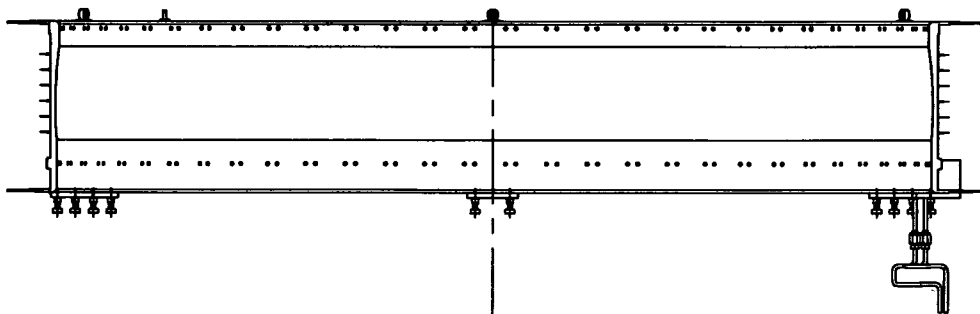
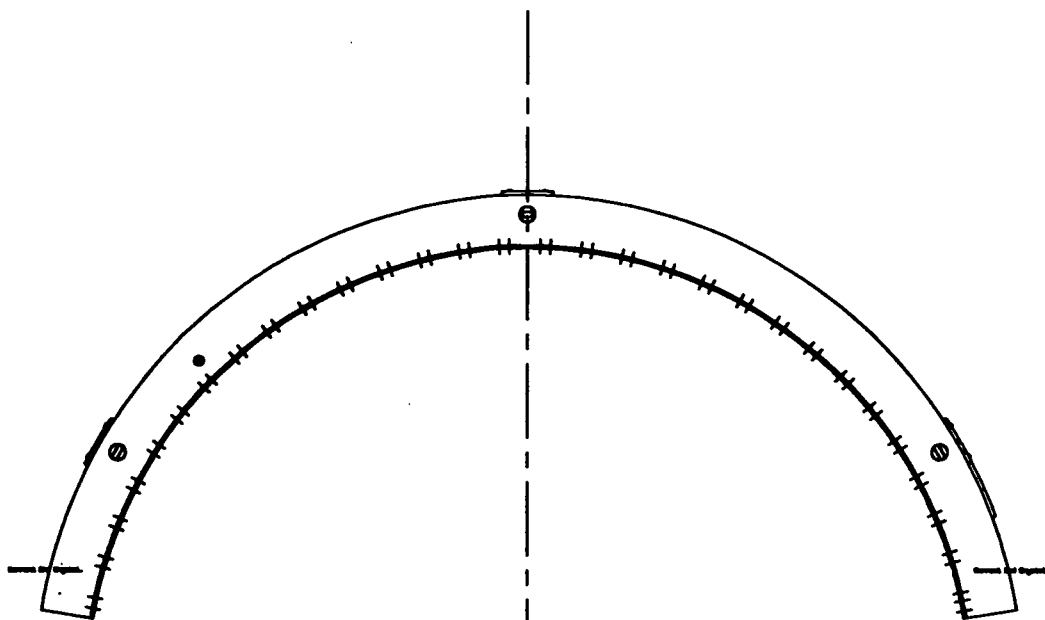


FIGURE 26.

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MATERIAL & SPEC. SEE DETAILS			SURFACE TEXTURE μ m ✓ UNLESS STATED		0 _____ 250		
USED ON				© SENC 1990			
SCIENCE & ENGINEERING RESEARCH COUNCIL, UNIVERSITY OF AUCKLAND, AUCKLAND, NEW ZEALAND							
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3 D GRAPHITE TILE SUPPORT VERSION 2							
A3dTileSupportPlatea2							

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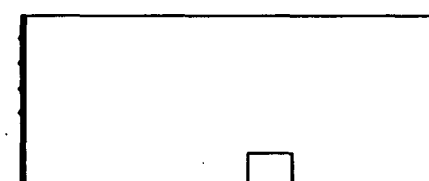
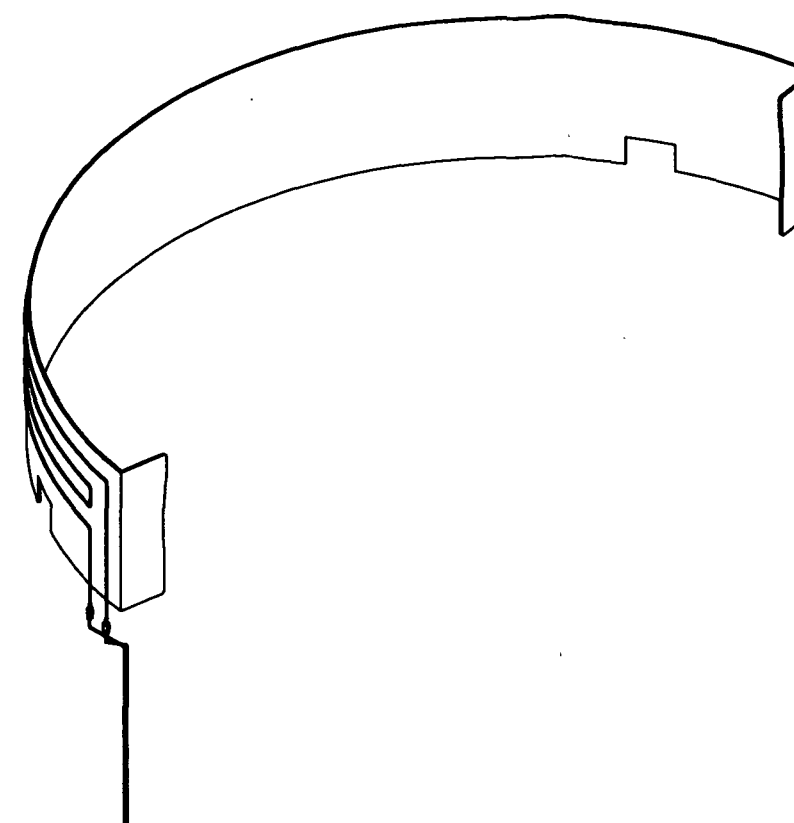
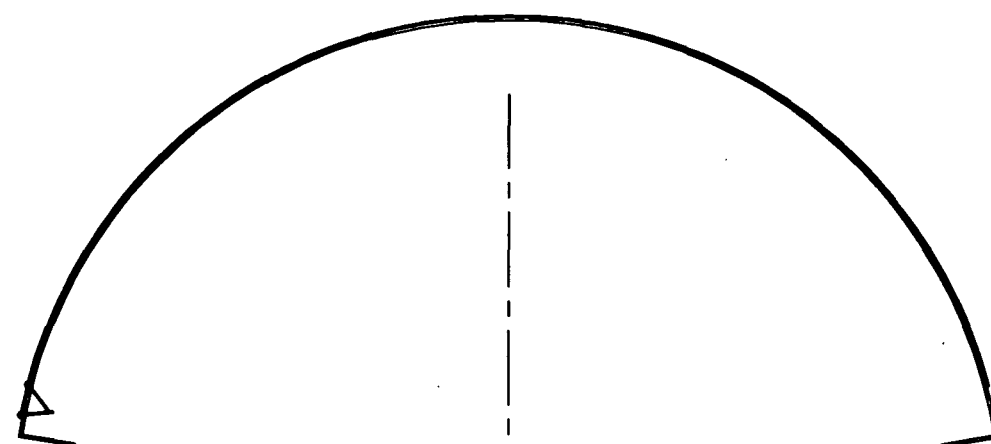


FIGURE 27.

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JEB	DATE	MOD. NO.	DRW. BY	CHGD.	APPD.	STATUS
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SEE DETAILS		SURFACE TEXTURE μ		0 250 mm		
USED ON ----		✓ UNLESS STATED				
SCIENCE & ENGINEERING RESEARCH COUNCIL WINSTON APPLIES LONDON, OXFORD, NEW CASTLE						
TITLE						
IRIS DETECTOR TANK						
3 D HELIUM RESERVOIR BACK / ENDS VIEW 2						
A 3dHeResBackEnds2						

FIGURE 28.

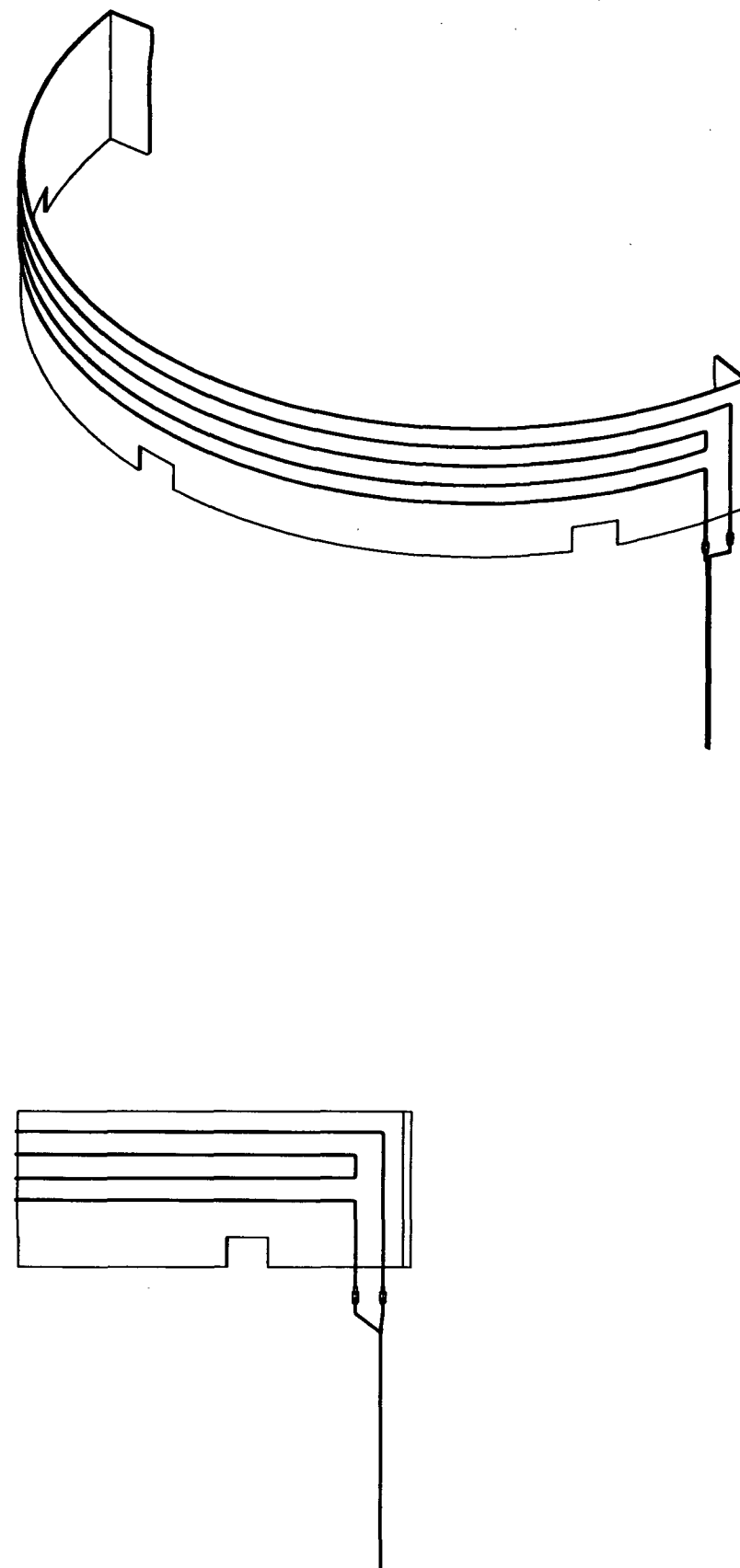
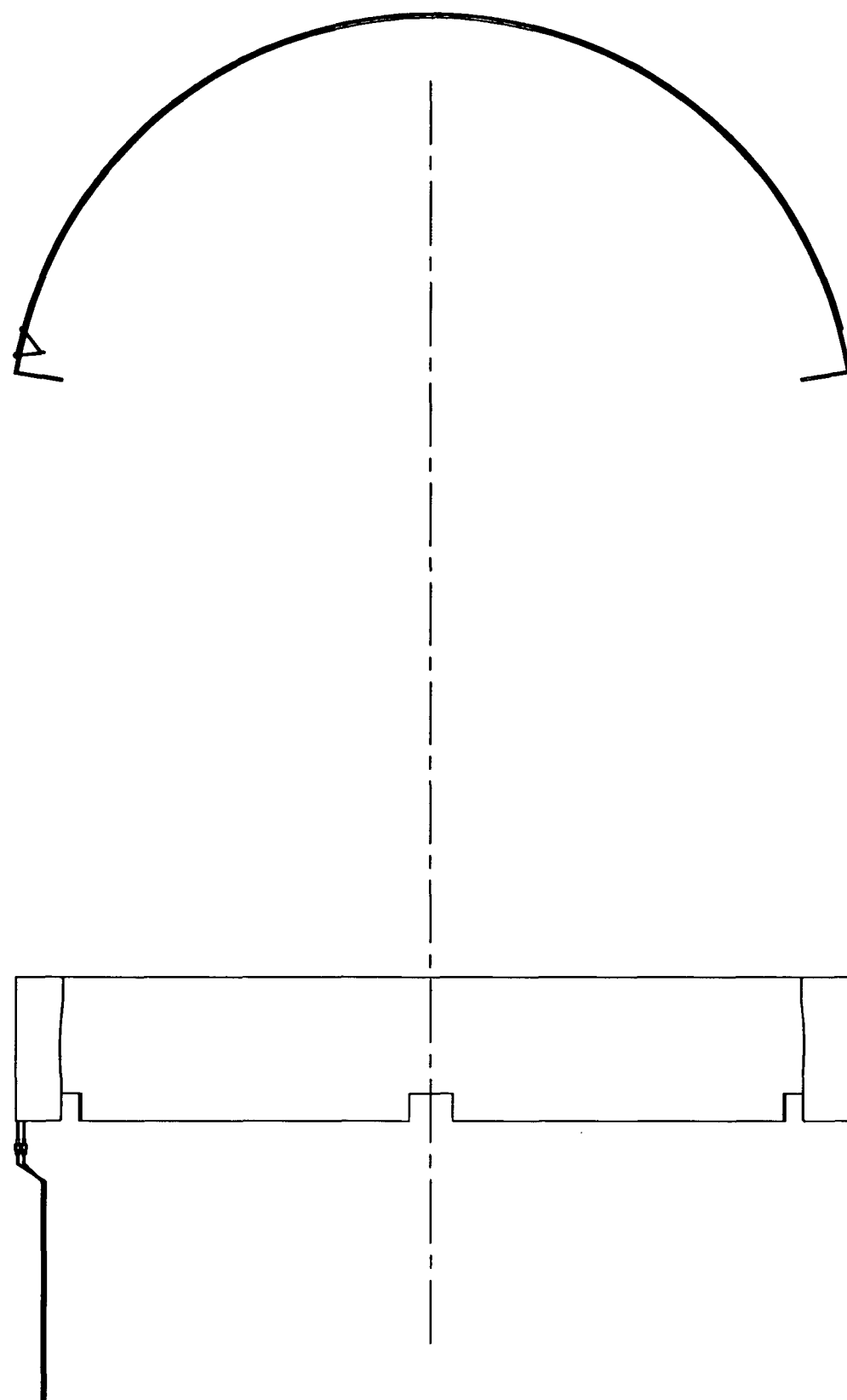


FIGURE 28.

use TMO text

use TRP text

A	2 MAR 94	_____	JEB	_____	_____	_____
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED SEE DETAILS			FINISH SEE DETAILS REMOVE ALL BURRS		ORIGINAL SCALE 1:5 DO NOT SCALE	
MATERIAL & SPEC. SEE DETAILS			SURFACE TEXTURE: μ m ✓ UNLESS STATED			
USED ON _____						
GEORGE & ENGINEERING RESEARCH COUNCIL, GREENFORD APPLIANCES LABORATORY, CHILLYN, GLOS GL51 0GB						
TITLE IRIS DETECTOR TANK 3 D HELIUM RESERVOIR BACK / ENDS VIEW 3 A3dHeResBackEnds3						

FIGURE 29.

PROJECTION

THIS DRAWING CONFORMS TO B.S. 308

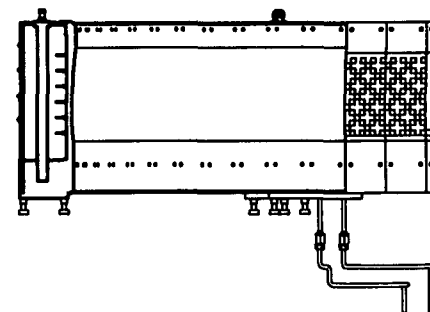
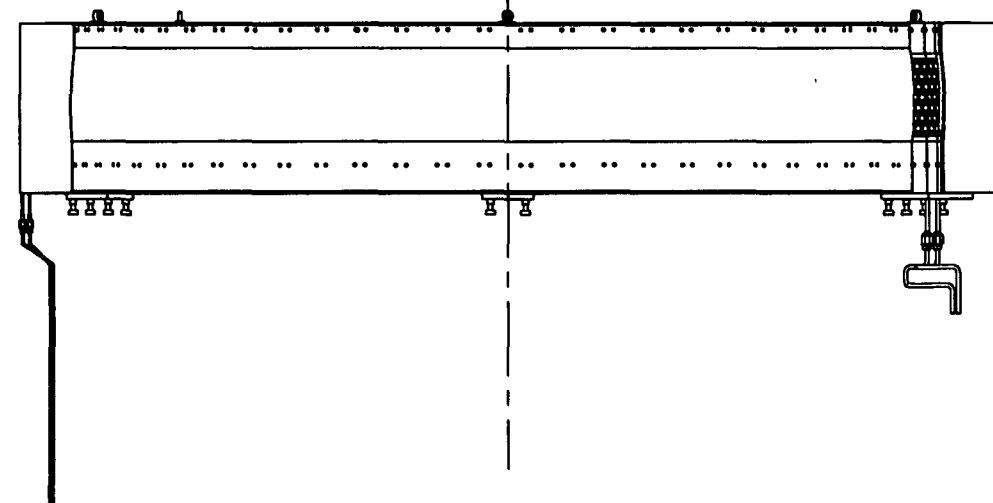
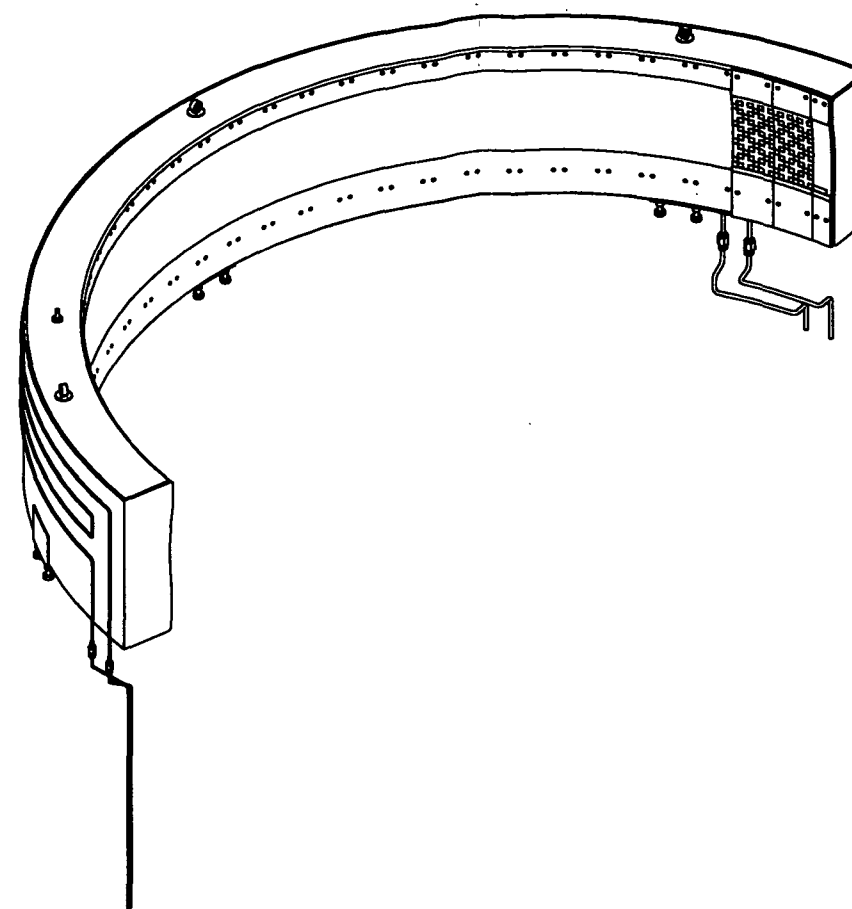
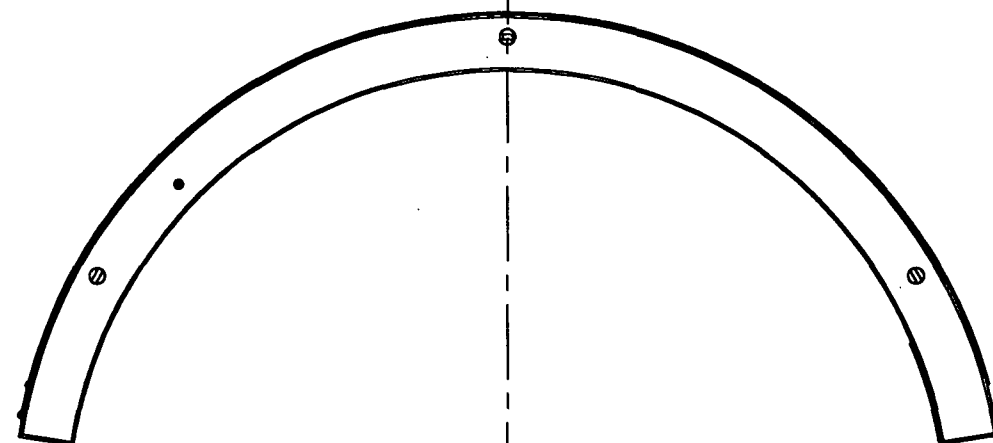


FIGURE 29.

A	2 MAR 84	----	JEB	----	----	----
ISSUE	DATE	MOD. NO.	ORIG. BY	CHKD.	APPR.	STATUS
TOLERANCES UNLESS STATED			FINISH		ORIGINAL SCALE	
SEE DETAILS			SEE DETAILS		1:5	
MATERIAL & SPEC.			REMOVE ALL BURRS		DO NOT SCALE	
SEE DETAILS			SURFACE TEXTURE μm		0 250 500	
			✓ UNLESS STATED			
USED ON ----					© SERC 1990	
SCIENCE & ENGINEERING RESEARCH COUNCIL, BRISTOL APLICA LABORATORY, BRISTOL, GBR GBT 02L						
TITLE						
IRIS DETECTOR TANK						
3 D HELIUM RESERVOIR PARTIAL G						
A3dHeResGAa2						

use TMO text

use TRP text

FIGURE 29.

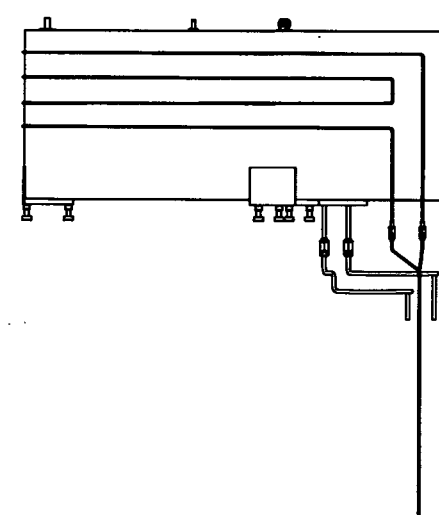
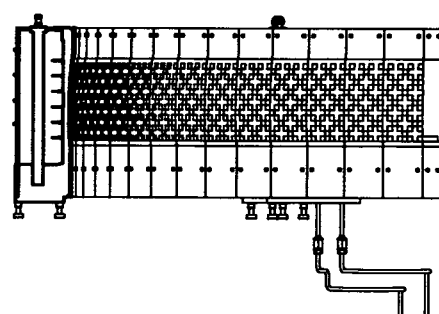
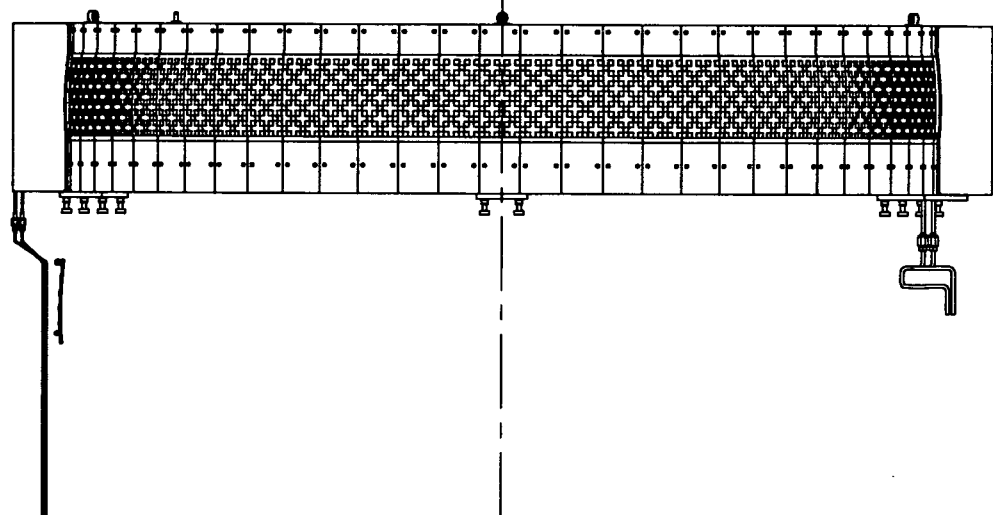
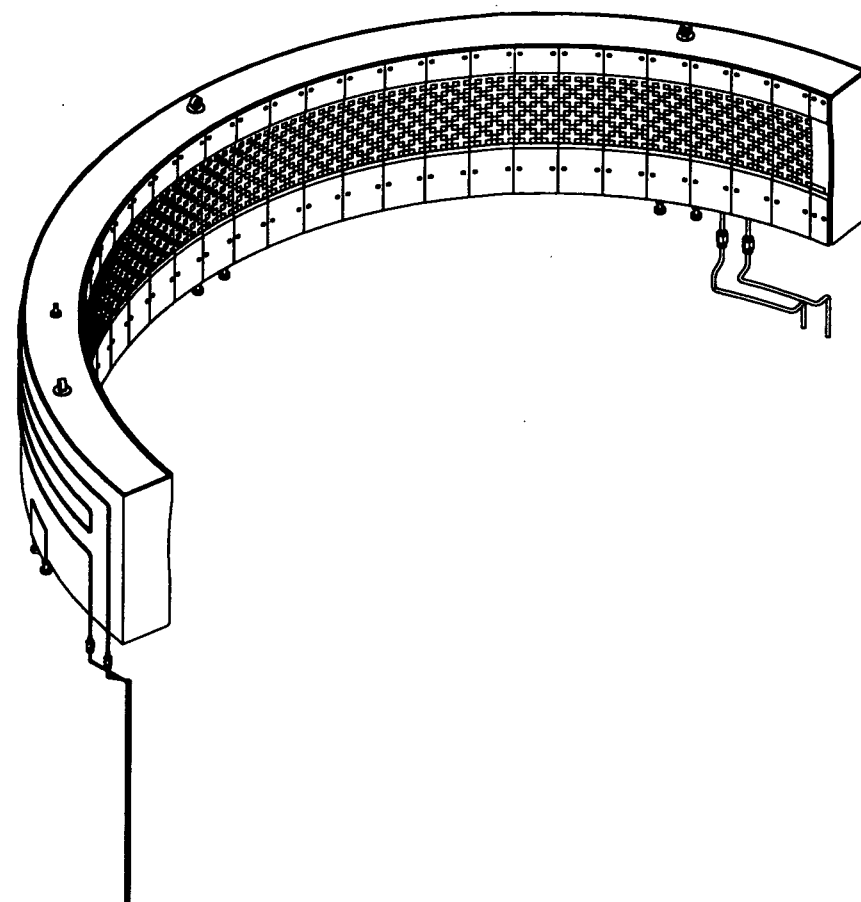
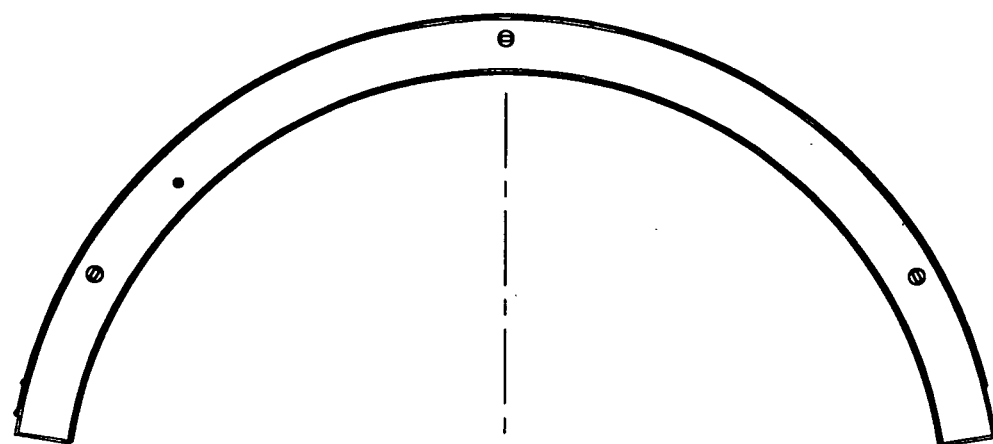


FIGURE 30.

A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	DRW. BY	CHD.	APPD.	STATUS
TOLERANCES UNLESS STATED SEE DETAILS			FINISH REMOVE ALL BURRS SURFACE TEXTURE μ m ✓ UNLESS STATED		ORIGINAL SCALE 1:5 DO NOT SCALE	
MATERIAL & SPEC. SEE DETAILS						
USED ON ----- © SEP 1990 SCIENCE & ENGINEERING RESEARCH COUNCIL MANFORD APPLIED UNIVERSITY, OXFORD, OX11 0AF						
TITLE IRIS DETECTOR TANK 3 D HELIUM RESERVOIR FULL GA A3dHeResGA2						

Component Drawings.

Liquid Nitrogen Shield Components.

Figure 31. 3-D Drawing Sheet - 3d Deelock Mounting Clip.

Figure 32. 3-D Drawing Sheet - 3d Re-circulation Pipe Seat.

Figure 33. 3-D Drawing Sheet - 3d Liquid Nitrogen Supply
Pipes & Shield a2.

Figure 34. 3-D Drawing Sheet - 3d Microcontrole Translation
Stage.

Figure 35. 3-D Drawing Sheet - 3d Graphite Analyser Central
Support.

Figure 36. 3-D Drawing Sheet - 3d Graphite Analyser Outer
Support.

Figure 37. 3-D Drawing Sheet - Drawing 1-SI-2525-032-00-A
(incomplete).

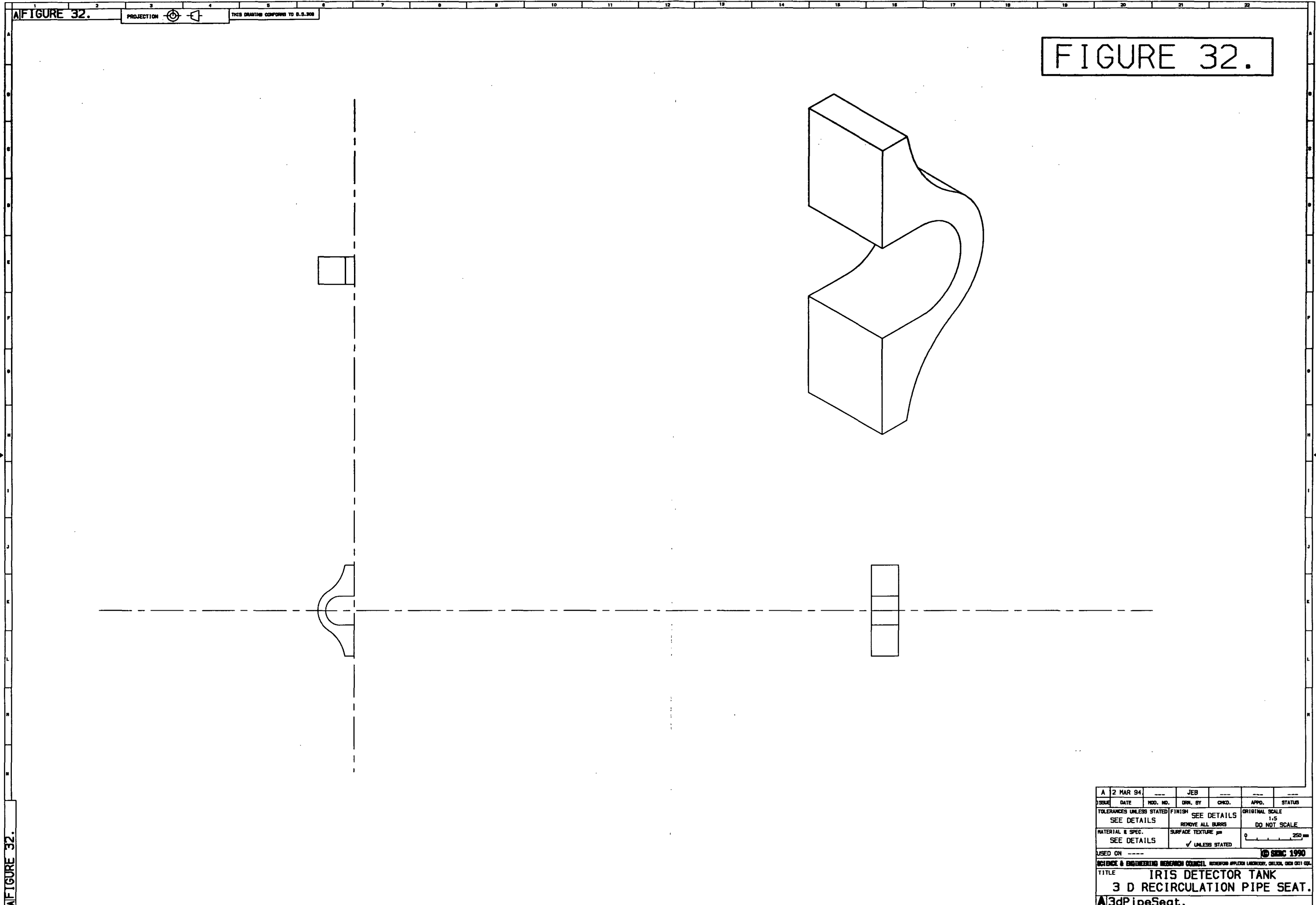
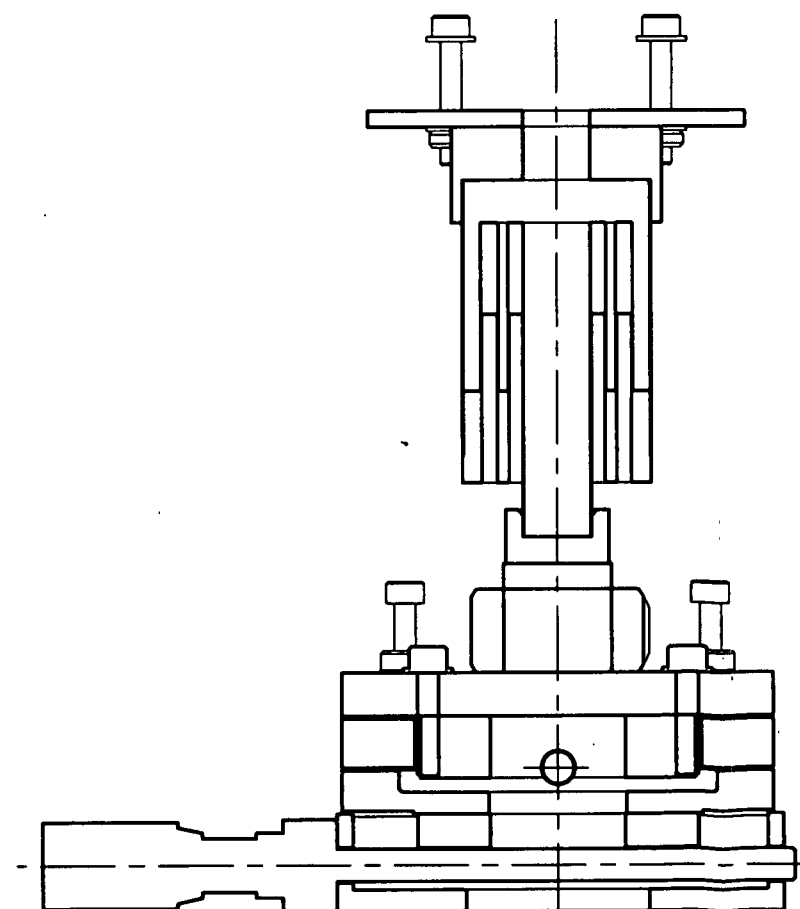
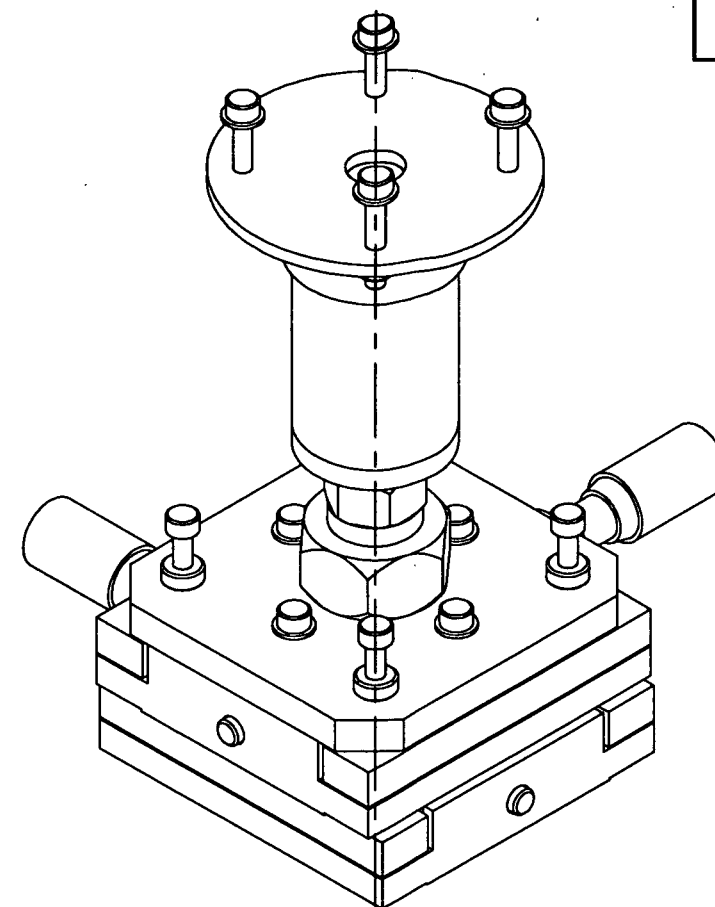
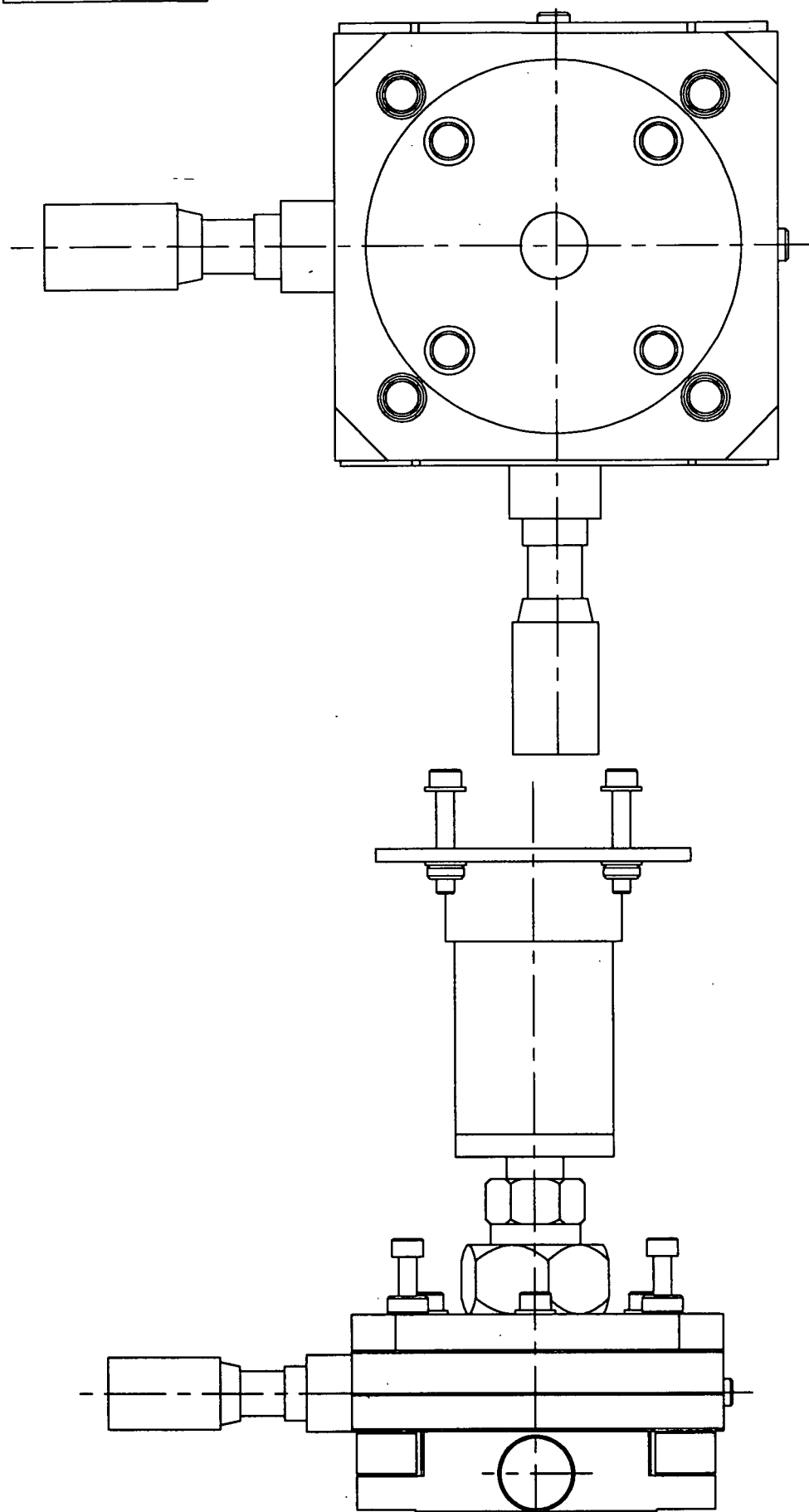


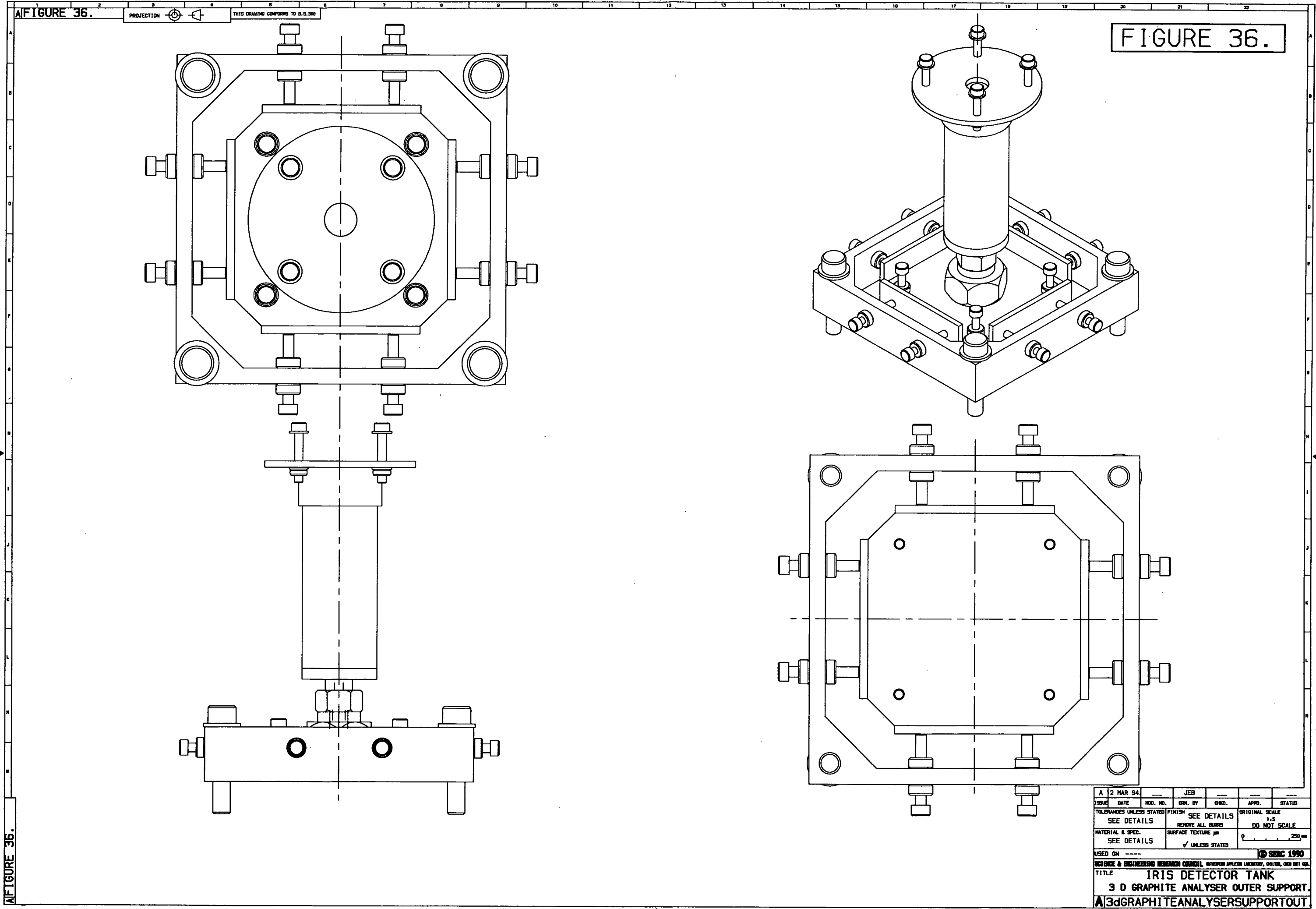
FIGURE 32.

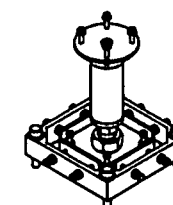
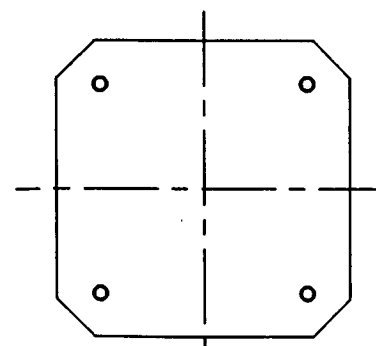
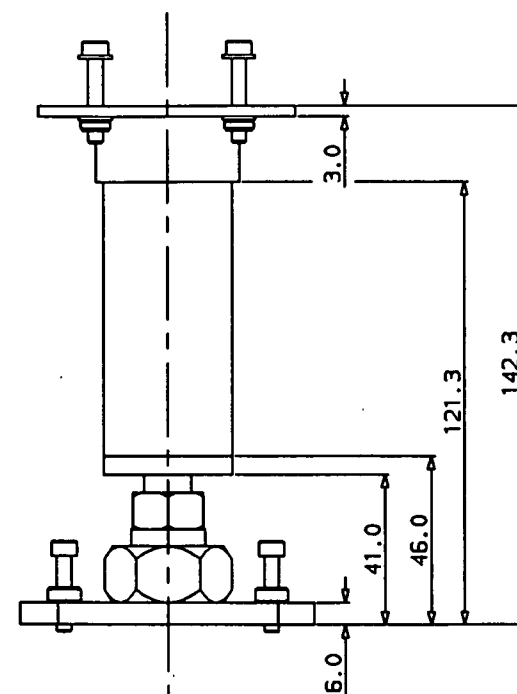
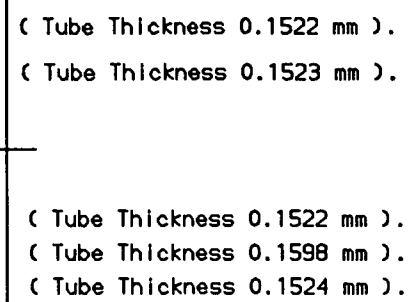
FIGURE 32.

A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED		FINISH		ORIGINAL SCALE		
SEE DETAILS		SEE DETAILS		1:5		
MATERIAL & SPEC.		REMOVE ALL BURRS		DO NOT SCALE		
SEE DETAILS		SURFACE TEXTURE μ m		2 250		
		✓ UNLESS STATED				
USED ON				© SENC 1990		
SCIENCE & ENGINEERING RESEARCH COUNCIL, ROYAL CANADIAN MOUNTED POLICE, OREGON, OREGON 97101						
TITLE						
IRIS DETECTOR TANK						
3 D RECIRCULATION PIPE SEAT.						
A3dPipeSeat.						



A	2 MAR 84	---	JEB	---	---	---
DATE	MOD. NO.	DSN. BY	CHECK.	APPO.	STATUS	
TOLERANCES UNLESS STATED SEE DETAILS			FINISH SEE DETAILS		ORIGINAL SCALE 1:15 DO NOT SCALE	
MATERIAL & SPEC. SEE DETAILS			SURFACE TEXTURE μ m ✓ UNLESS STATED			
USED ON ---				 SERC 1990		
SCIENCE & ENGINEERING RESEARCH COUNCIL, BRIDGEMAN APPLIED UNIVERSITY, OXFORD, OX4 0D1 UK.						
TITLE IRIS DETECTOR TANK						
3 D GRAPHITE ANALYSER CENTRAL SUPPORT						
A13dGRAPHITEANALYSERSUPPORTCEN						





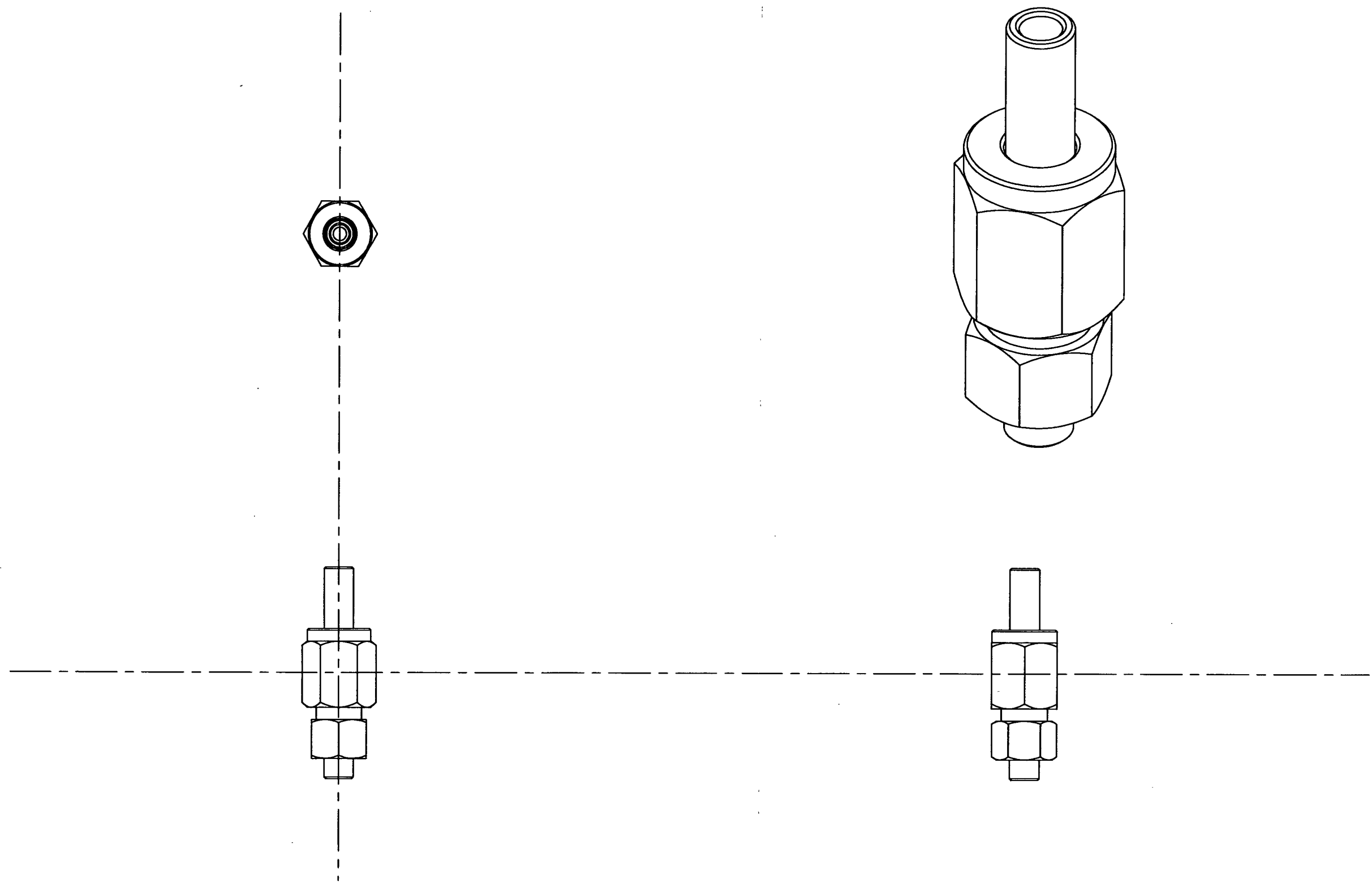
A	12 JAN 96	---	JEB	---	*	INCOMPLETE
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED			FINISH		ORIGINAL SCALE	
			REMOVE ALL BURRS		1:1	
MATERIAL & SPEC.			SURFACE TEXTURE μ m		DO NOT SCALE	
			$\checkmark$ UNLESS STATED			
USED ON		1-91-2526-030-00-A				© CCLRC 1996
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS BUTHERFORD APPLETON LABORATORY, CHILTON, OXON OX11 0QJ.						
TITLE 5 TUBE CONVOLUTED SUPPORT.						
(OUTER) IRIS GRAPHITE ANALYSER.						
A1-91-2526-032-00-A						

Component Drawings.

Cryogen Feed Components.

- Figure 38. 3-D Drawing Sheet - 3d 0.25" VCR Connector fitting.
- Figure 39. 3-D Drawing Sheet - 3d 0.125" VCR Connector fitting.
- Figure 40. 3-D Drawing Sheet - 3d 0.25" VCR Valve fitting.
- Figure 41. 3-D Drawing Sheet - 3d Isolation Valve (Cryogen Feeds).
- Figure 42. 3-D Drawing Sheet - 3d 0.125" Isolation Valve (Helium CCR).
- Figure 43. 3-D Drawing Sheet - 3d Oxford Instruments Pressure Relief Valve.
- Figure 44. 3-D Drawing Sheet - 3d Rupture Disc fitting.
- Figure 45. 3-D Drawing Sheet - 3d Liquid Helium flexible transfer line (Female).
- Figure 46. 3-D Drawing Sheet - 3d Liquid Helium flexible transfer line (Male).
- Figure 47. 3-D Drawing Sheet - 3d Cryogen Feed GA 2a.
- Figure 48. 3-D Drawing Sheet - 3d Cryogen Feed GA 2b.
- Figure 49. 3-D Drawing Sheet - 3d IRIS Vacuum Vessel (Cut-away).

FIGURE 39.



A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED			FINISH	ORIGINAL SCALE		
SEE DETAILS			SEE DETAILS	1:1		
MATERIAL & SPEC.			REMOVE ALL BURRS	DO NOT SCALE		
SEE DETAILS			SURFACE TEXTURE μ m	0 _____ 250 μ m		
USED ON			✓ UNLESS STATED			
© ERDC 1990						
SCIENCE & ENGINEERING RESEARCH COUNCIL, BUCKINGHAM AVENUE, LONDON, W11 0BT, UK						
TITLE						
IRIS DETECTOR TANK						
3 D 0.125" PIPE DIA CAJON VCR CONNECTOR.						
A3dVCRConnectorB.						

A 2 MAR 84		JEB					
ISSUE	DATE	MOD. NO.	DRW. BY	CHKD.	APPD.	STATUS	
TOLERANCES UNLESS STATED			FINISH		ORIGINAL SCALE		
SEE DETAILS			SEE DETAILS		1:5		
			REMOVE ALL BURRS		DO NOT SCALE		
MATERIAL & SPEC.			SURFACE TEXTURE μ		0 250 mm		
SEE DETAILS			✓ UNLESS STATED				
USED ON						DD SINC 1990	
SCIENCE & ENGINEERING RESEARCH COUNCIL, BUCKENFORD APPLION LABORATORY, DELTA, OREN 001 COL.							
TITLE							
IRIS DETECTOR TANK							
3 D 0.25" PIPE DIA CAJON VCR VALVE CONNECTOR							
A3dVCRValve.							

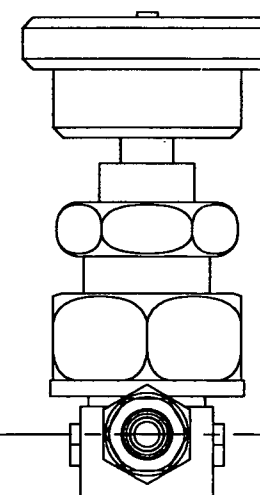
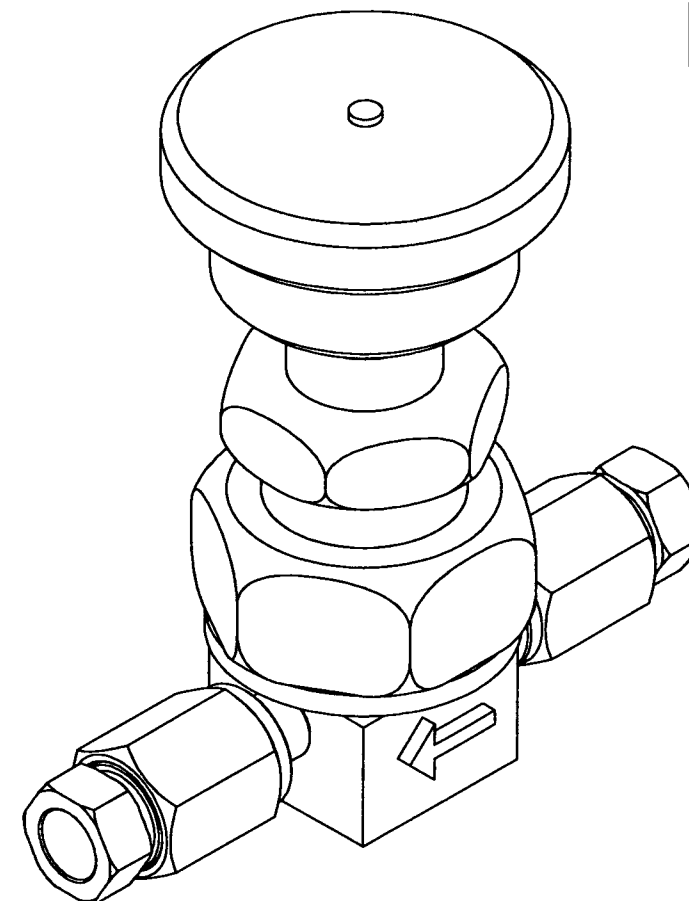
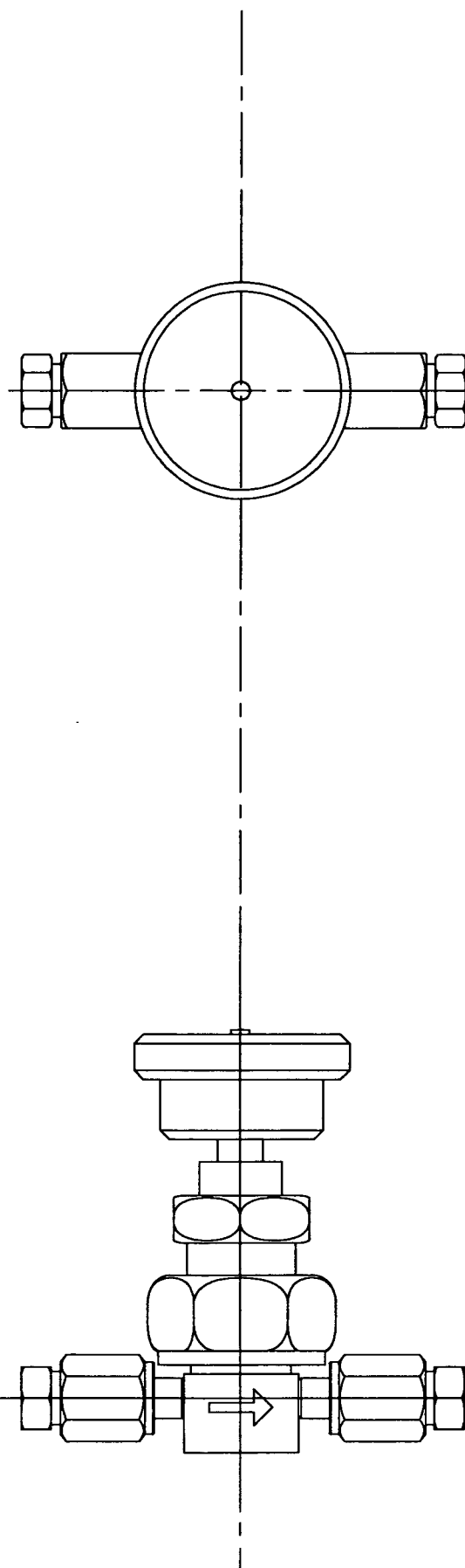
FIGURE 41.

PROJECTION



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FIGURE 41.



A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED			FINISH SEE DETAILS		ORIGINAL SCALE 1:5	
SEE DETAILS			REMOVE ALL BURRS		DO NOT SCALE	
MATERIAL & SPEC.			SURFACE TEXTURE μm		0 _____ 250	
SEE DETAILS			✓ UNLESS STATED			
USED ON -----						
SCIENCE & ENGINEERING RESEARCH COUNCIL, ROSEFORD APPLIED LABORATORY, OXFORD, OX4 0DT GLO.						
TITLE						
IRIS DETECTOR TANK						
3 D NUPRO SS-4BK-VCR ISOLATION VALVE.						
A3dIsolationValve.						

FIGURE 41.

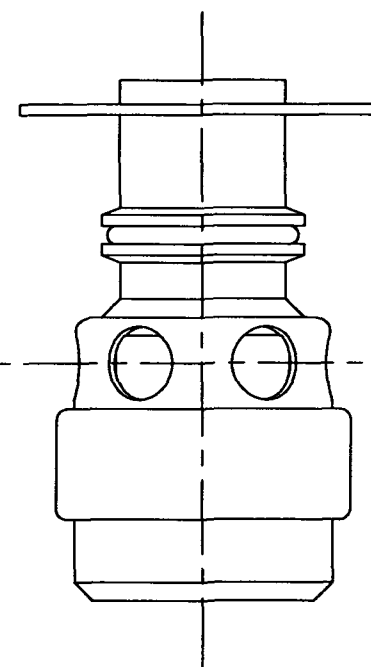
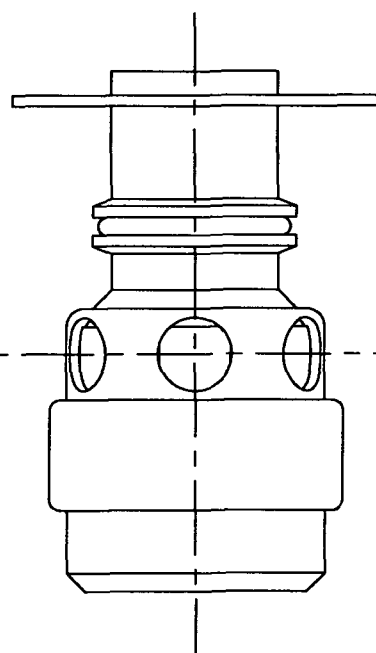
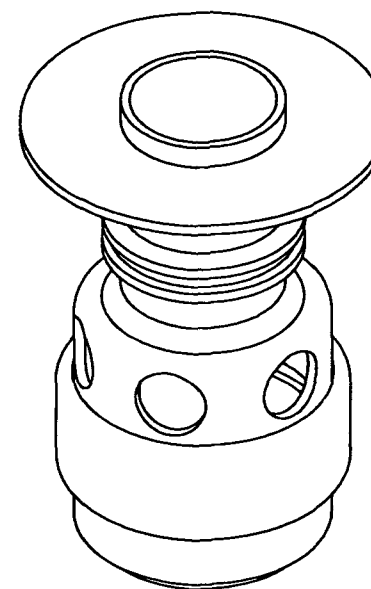
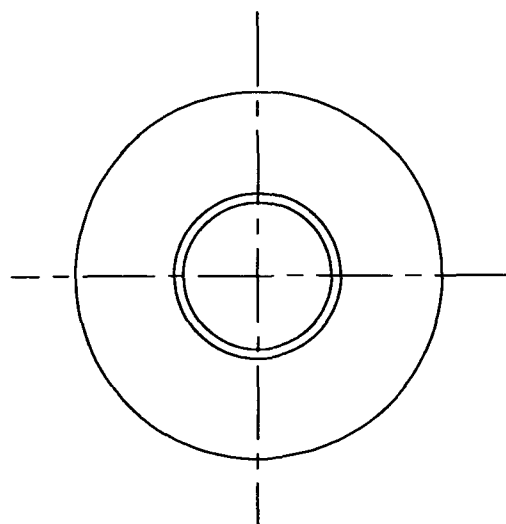
AFigure 43.

PROJECTION



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FIGURE 43.



AFigure 43.

A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED		FINISH		ORIGINAL SCALE		
SEE DETAILS		SEE DETAILS		1:5		
MATERIAL & SPEC.		REMOVE ALL BURRS		DO NOT SCALE		
SEE DETAILS		SURFACE TEXTURE μm		0 250 500		
		✓ UNLESS STATED				
USED ON				© SEMC 1990		
SCIENCE & ENGINEERING RESEARCH COUNCIL, HUNTERDON APPLIED LABORATORY, OXFORD, OX1 0DT, UK.						
TITLE						
IRIS DETECTOR TANK						
3 D OXFORD INSTRUMENTS DCV 0152 PRESSURE RELIEF VALVE.						
A3dPressureRelief.						

FIGURE 44.

PROJECTION

THIS DRAWING CONFORMS TO S.S.308

FIGURE 44.

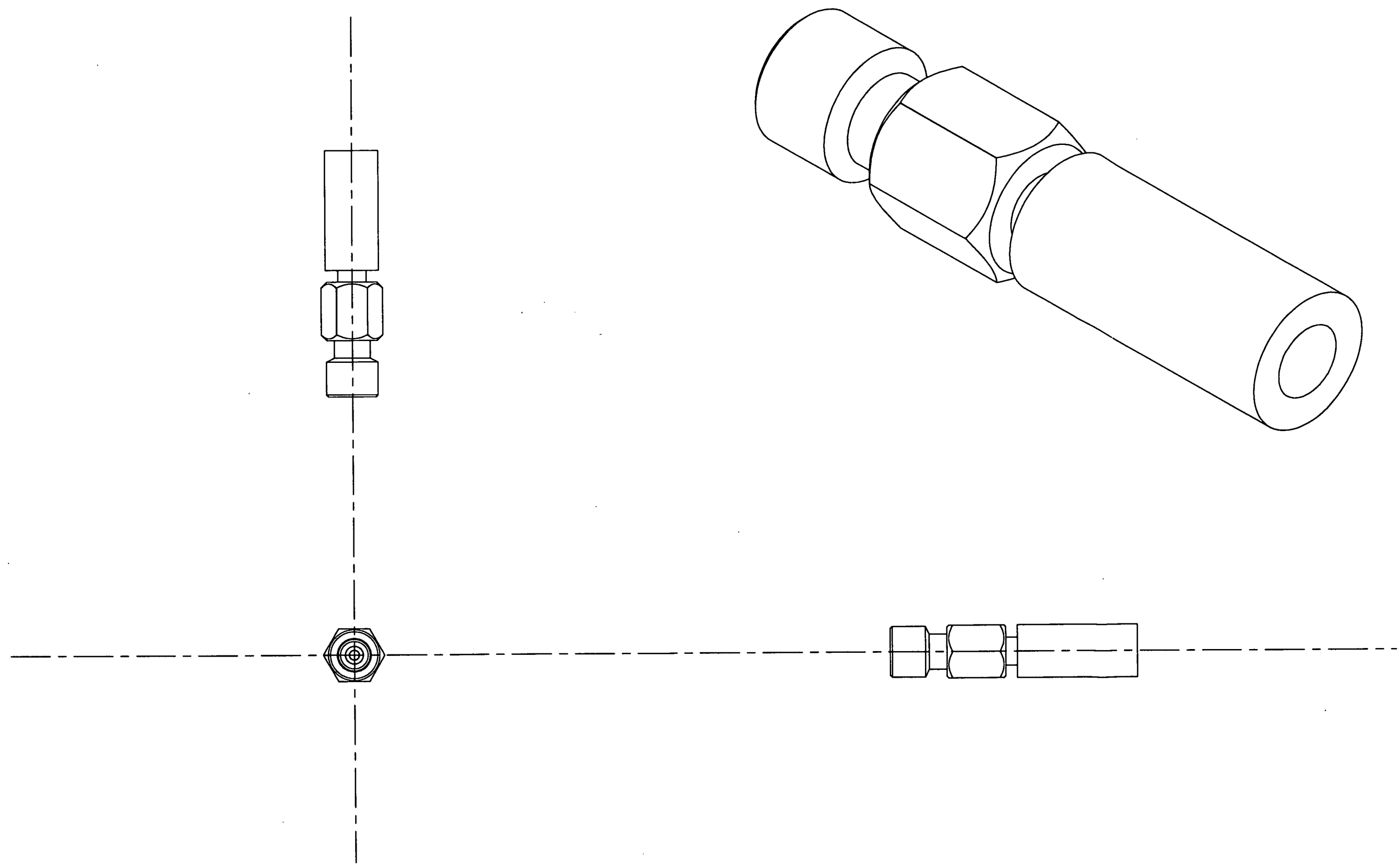


FIGURE 44.

A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	ORN. BY	CHKD.	APPR.	STATUS
SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS
MATERIAL & SPEC.	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS
FINISH	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS
TOLERANCES UNLESS STATED	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS	SEE DETAILS
ORIGINAL SCALE	1:5	DO NOT SCALE	DO NOT SCALE	DO NOT SCALE	DO NOT SCALE	DO NOT SCALE
USED ON	---	---	---	---	---	---
SCIENCE & ENGINEERING RESEARCH COUNCIL, HONGKONG APPLIED UNIVERSITY, CHINA, CHN 001 001						
TITLE						
IRIS DETECTOR TANK						
3 D RUPTURE DISC FITTING.						
A3dRuptureDisc.						

FIGURE 45.

PROJECTION

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FIGURE 45.

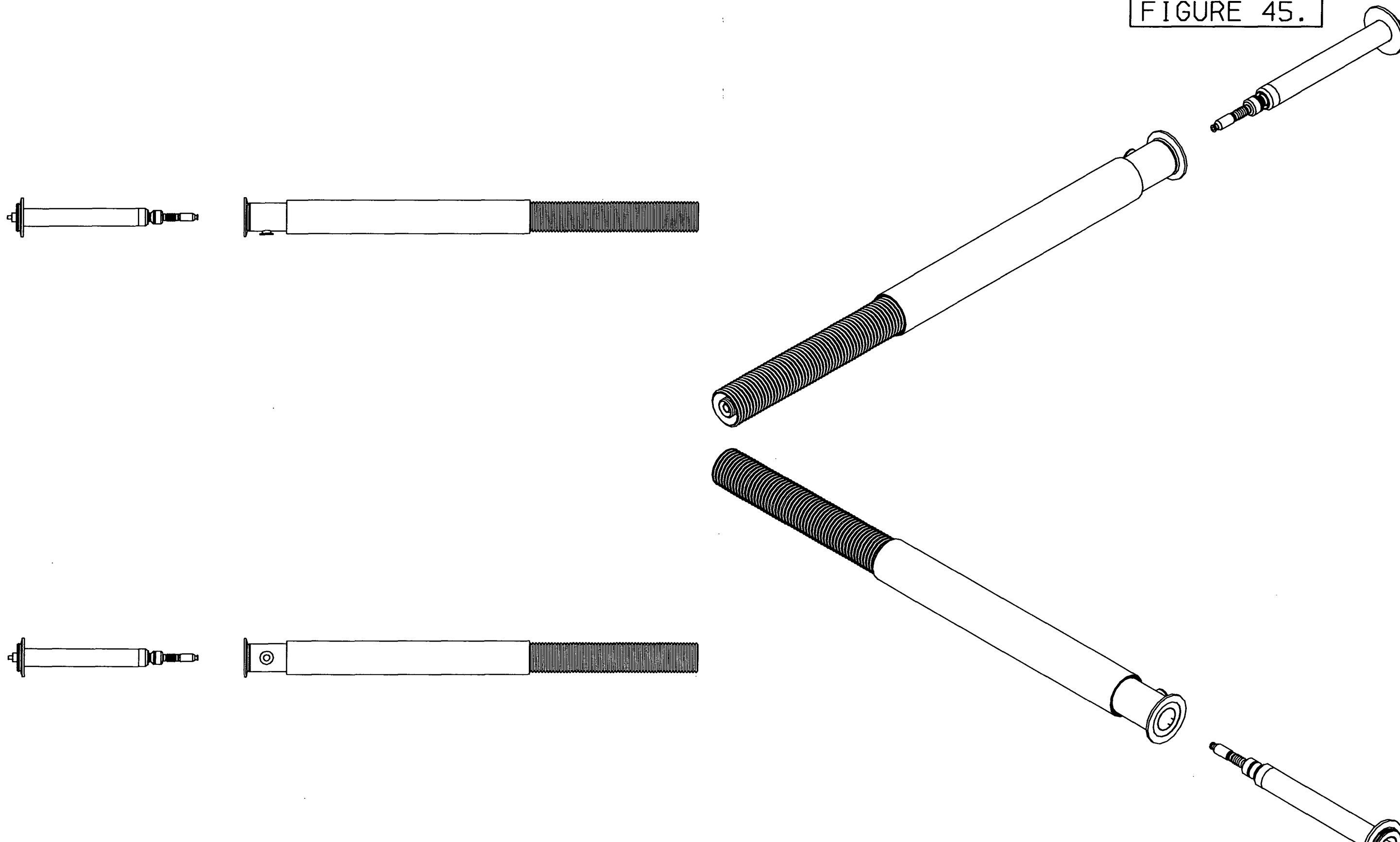


FIGURE 45.

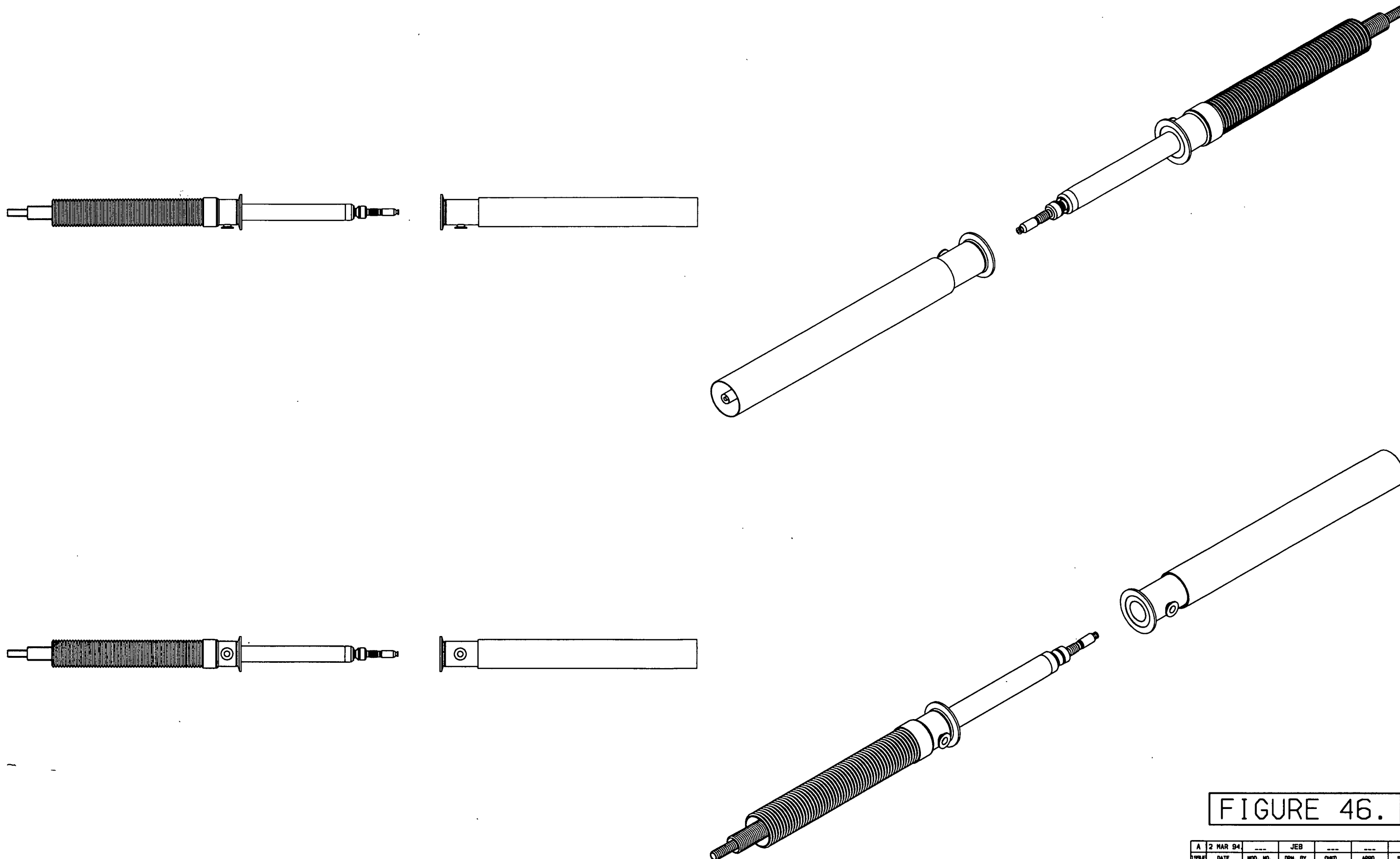
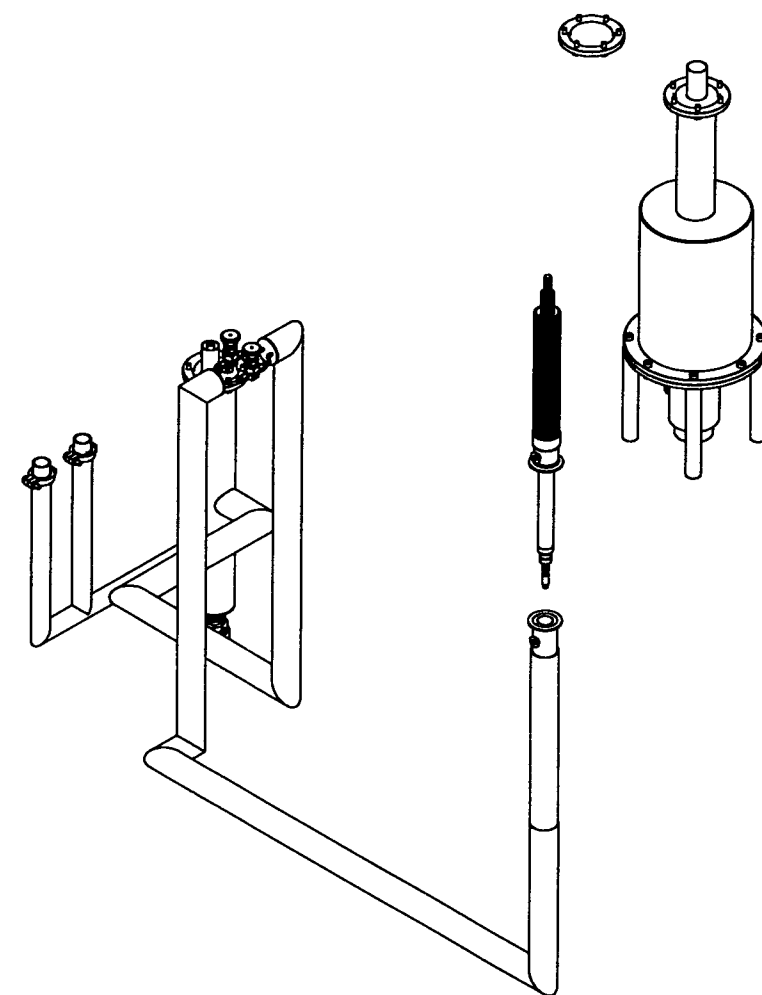


FIGURE 46.

A	2 MAR 94	---	JEB	---	---	---
1	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED			FINISH		ORIGINAL SCALE	
SEE DETAILS			SEE DETAILS		1:5	
			REMOVE ALL BURRS		DO NOT SCALE	
MATERIAL & SPEC.			SURFACE TEXTURE μ			
SEE DETAILS			✓ UNLESS STATED		250 mm	
USED ON -----					SERC 1990	
SCIENCE & ENGINEERING RESEARCH COUNCIL, BIRMINGHAM APPLIED UNIVERSITY, OXFORD, OX4 0DT (U.K.)						
TITLE						
IRIS DETECTOR TANK						
3 D LIQUID HELIUM FLEXIBLE TRANSFER LINE CHALED						
A13dHeL1qFlexable2.						



A 12 MAR 84		JEB			
ISSUE	DATE	MOD. NO.	ORN. BY	CHGD.	APPD.
TOLERANCES UNLESS STATED		FINISH		ORIGINAL SCALE	
SEE DETAILS		SEE DETAILS		1:5	
		REMOVE ALL BURRS		DO NOT SCALE	
MATERIAL & SPEC.		SURFACE TEXTURE μ		0 _____ 250	
SEE DETAILS		✓ UNLESS STATED			

USED ON _____ © SINC 1990

SCIENCE & ENGINEERING RESEARCH COUNCIL, REDEFINING APPLIED LABORATORY, OXFORD, OX1 0DT

TITLE

IRIS DETECTOR TANK

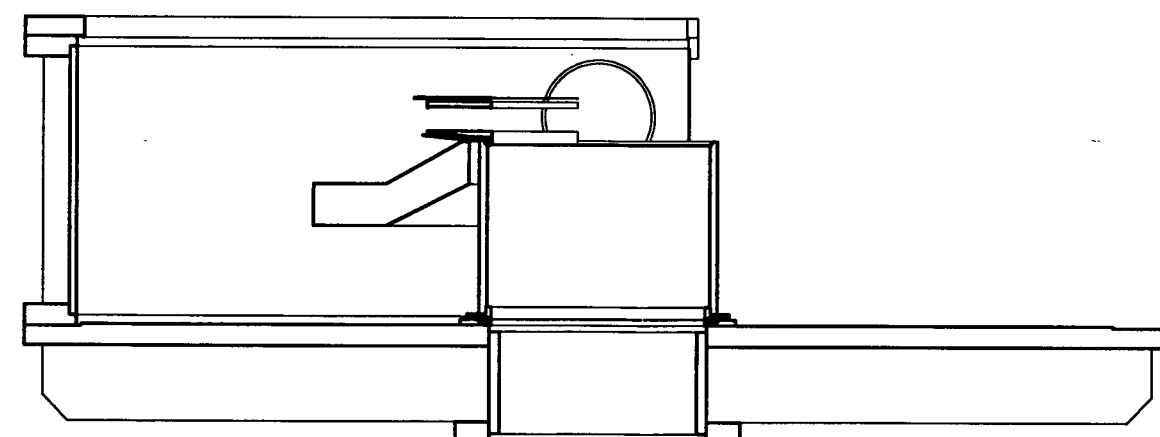
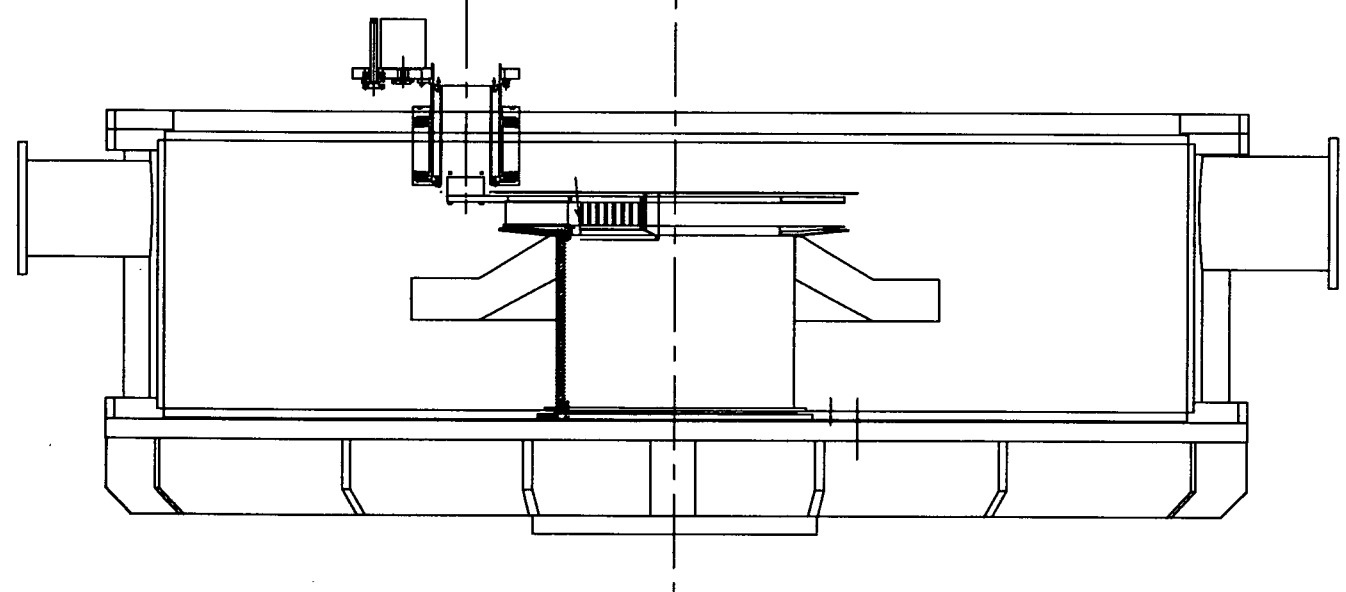
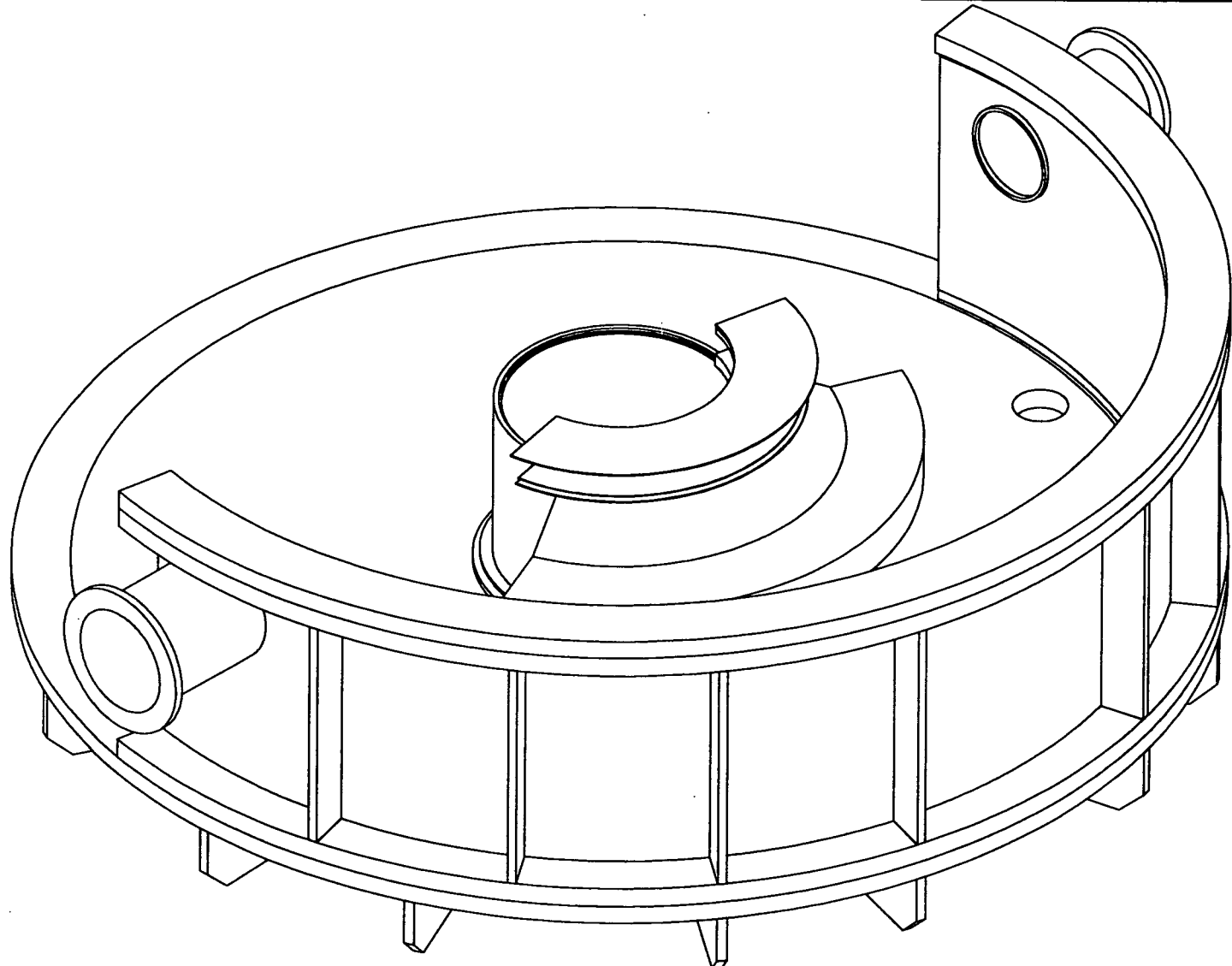
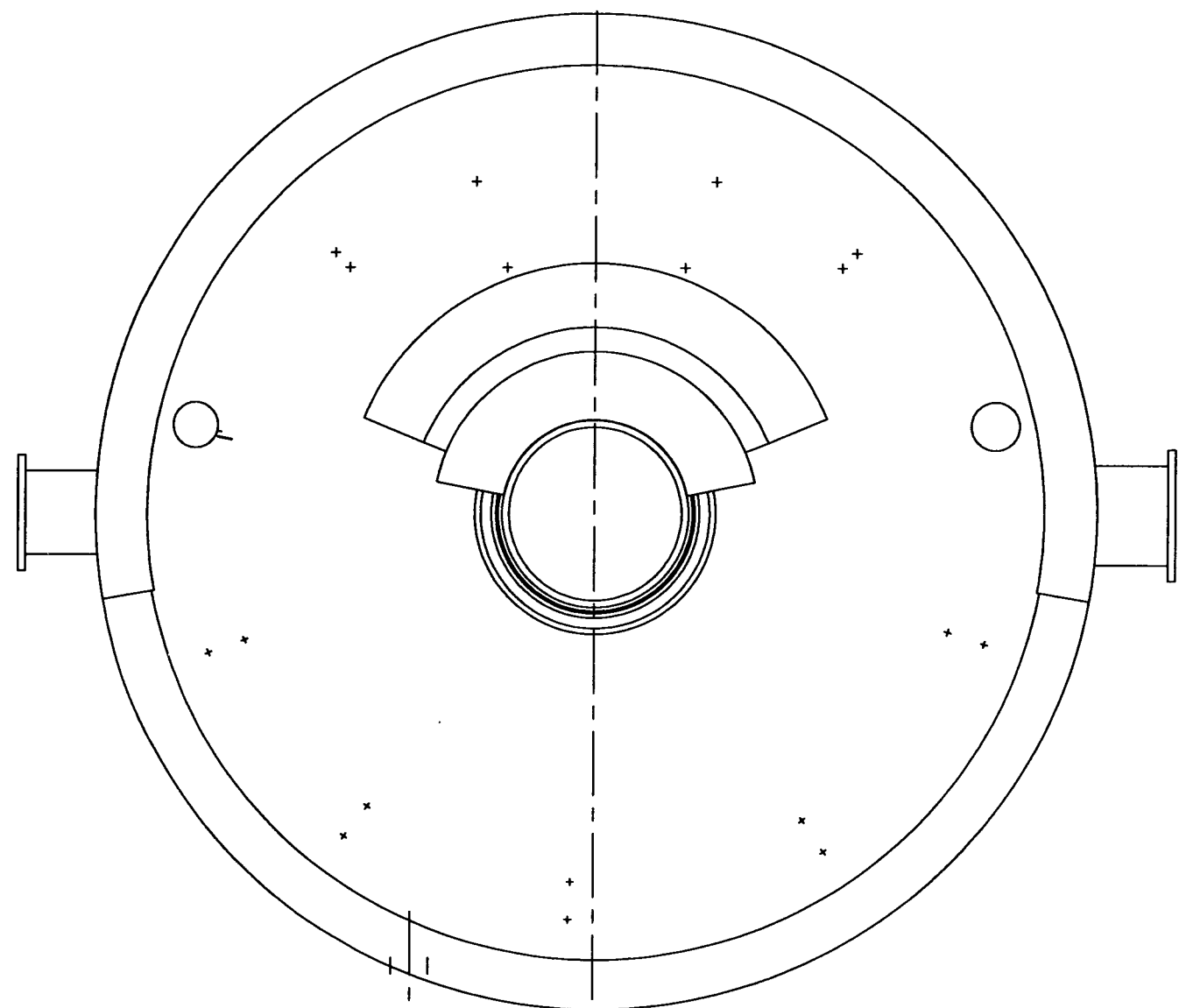
3 D CRYOGEN FEEDS GA VERSION

A13dCRYOGENFEEDS2ga.

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FIGURE 48.

A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	OWN. BY	CHGD.	APPRO.	STATUS
TOLERANCES UNLESS STATED SEE DETAILS			FINISH REMOVE ALL BURRS SURFACE TEXTURE μ m ✓ UNLESS STATED		ORIGINAL SCALE 1:5 DO NOT SCALE 0 250 mm	
MATERIAL & SPEC. SEE DETAILS						
USED ON ----					© SENC 1990	
SCIENCE & ENGINEERING RESEARCH COUNCIL, RESEARCH APPLIED LABORATORY, OXFORD, OX4 9DQ U.K.						
TITLE IRIS DETECTOR TANK 3 D CRYOGEN FEED GA VERSION 2 13dCRYOGENFEEDS2b.						



A	2 MAR 94	---	JEB	---	---	---
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPRD.	STATUS
TOLERANCES UNLESS STATED SEE DETAILS			FINISH SEE DETAILS REMOVE ALL BURRS		ORIGINAL SCALE 1:5 DO NOT SCALE	
MATERIAL & SPEC. SEE DETAILS			SURFACE TEXTURE μ m ✓ UNLESS STATED		0 250 mm	
USED ON ---			© BSC 1990			
SCIENCE & ENGINEERING RESEARCH COUNCIL, RESEARCH APPLICATIONS DIVISION, OXFORD, OX1 3QJ						
TITLE						
IRIS DETECTOR TANK						
3 D IRIS VACUUM VESSEL (CUT-AWAY)						
A3dVacuumVessel.						

Tooling Drawings.

**Figure 50. 3-D Drawing Sheet - Drawing 1-SI-2525-486-00-A
Cadmium Forming Tool.**

**Figure 51. 3-D Drawing Sheet - Drawing 1-SI-2525-486-01-A
Cadmium Forming Tool.**

**Figure 52. 3-D Drawing Sheet - Drawing 1-SI-2525-486-02-A
Cadmium Forming Tool.**

**Figure 53. 3-D Drawing Sheet - Drawing 1-SI-2525-487-00-A
Cadmium Forming Tool.**

**Figure 54. 3-D Drawing Sheet - Drawing 1-SI-2525-487-01-A
Cadmium Forming Tool.**

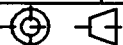
**Figure 55. 3-D Drawing Sheet - Drawing 1-SI-2525-487-02-A
Cadmium Forming Tool.**

**Figure 56. 3-D Drawing Sheet - Drawing 2-SI-2525-488-00-A
Cadmium Press Tool.**

A	20 JUN 95	---	Job	---	PP	ISSUE
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED GEN ± 0.1 MM. ANG $\pm 0.1^\circ$.			FINISH CLEAN & DEGREASE. REMOVE ALL BURRS		ORIGINAL SCALE 1:1 DO NOT SCALE	
MATERIAL & SPEC. B5 970 635M15 En 351. Case Harden & Quench.			SURFACE TEXTURE μm 1.6 $\sqrt{\text{UNLESS STATED}}$		0  50 mm	
USED ON Analyser Rear Shield -						© CCL 1995
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHFORD APPLETON LABORATORY, CHILTON, OXON OX11 0QX						
TITLE CADMIUM FORMING TOOL.						
(MALE). IRIS GRAPHITE ANALYSER						
A 1-SI-2525-486-00-A						

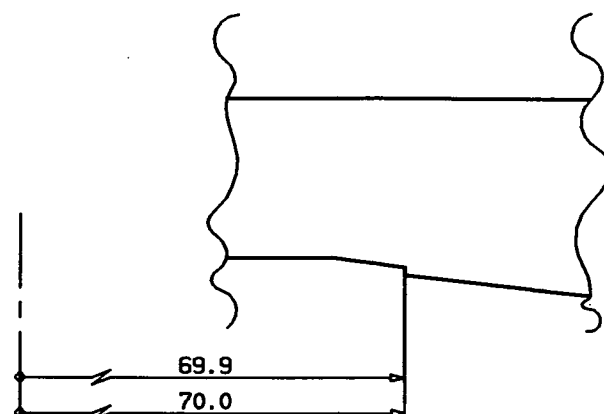
A1-SI-2525-486-00-A

PROJECTION

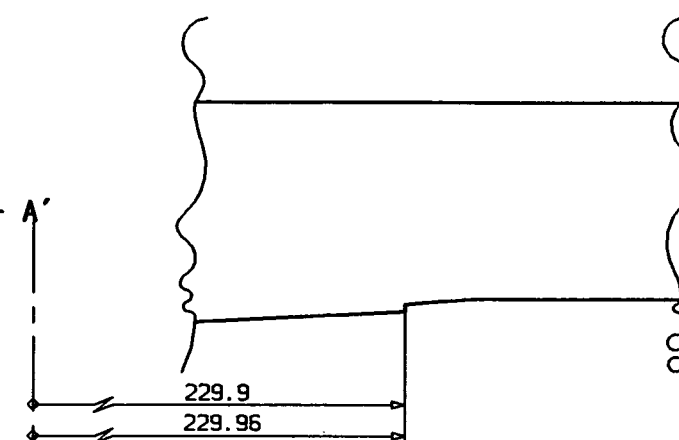


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DETAIL X.
SECTION 'A - A'
SCALE 2:1.



DETAIL Y.
SECTION 'A - A'
SCALE 2:1.



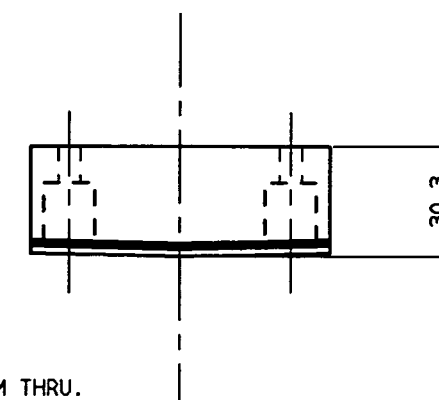
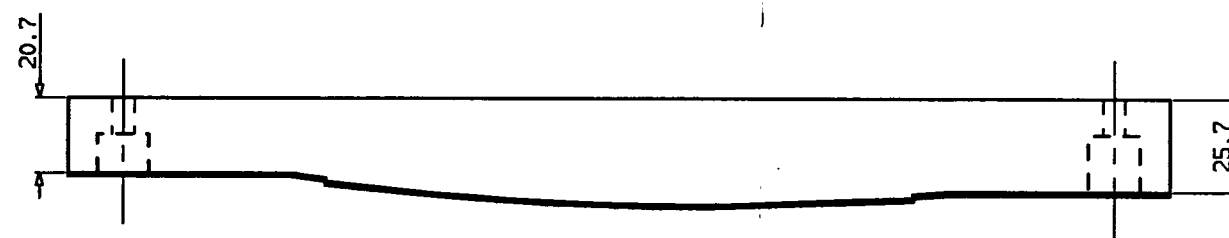
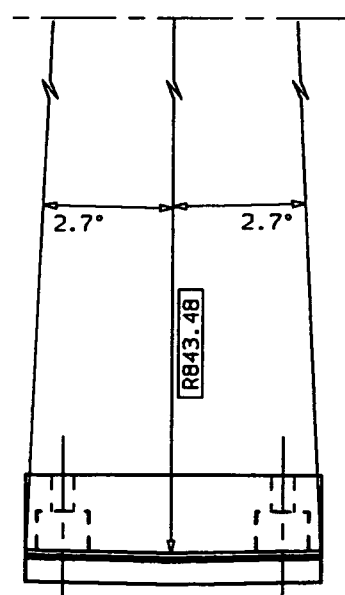
SEE DETAIL X.—

SECTION 'A - A' - SEE SHEET 2.

— SEE DETAIL Y.

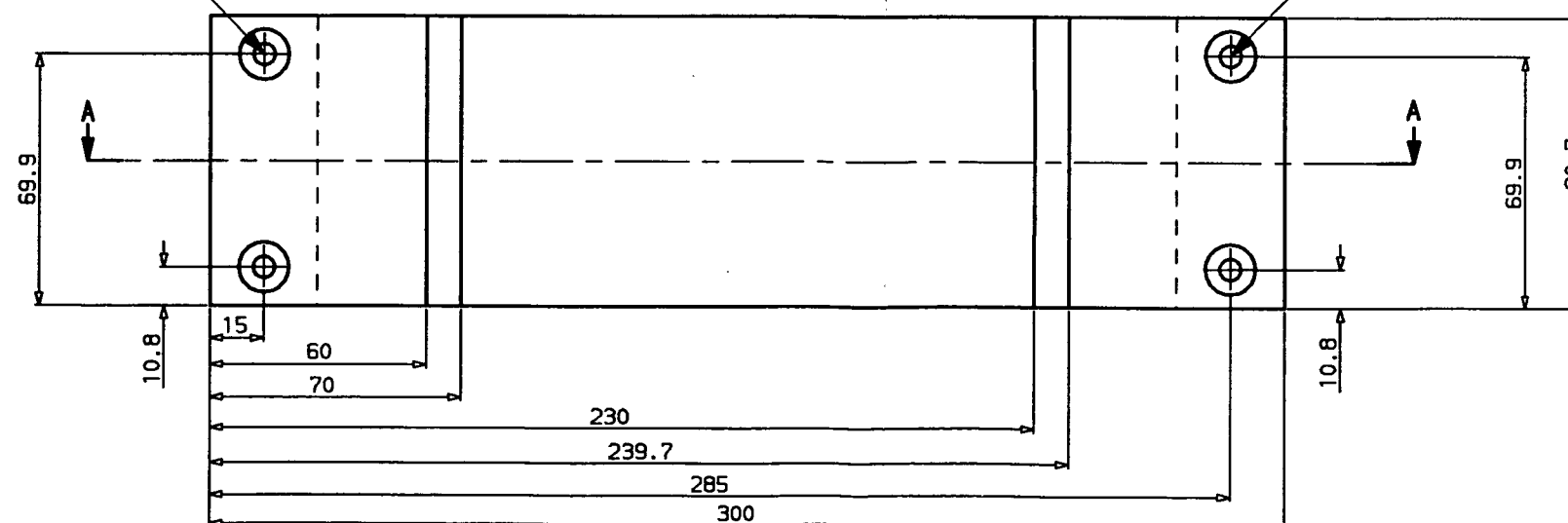
Note:

1. CARBURISE @ 850 - 880°C.
AIR COOL TO 820°C AND OIL QUENCH.



2 DRILL Ø 6.1 MM THRU.
& CBORE Ø14 X 11 DEEP.

2 DRILL Ø 6.1 MM THRU.
& CBORE Ø14 X 16 DEEP.

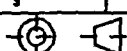


A	20 JUN 95	---	jeb	---	PP	ISSUE
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED GEN ± 0.1 MM. ANG $\pm 0.1^\circ$.			FINISH CLEAN & DEGREASE. REMOVE ALL BURRS		ORIGINAL SCALE 1:1 DO NOT SCALE	
MATERIAL & SPEC. BS 970 635M15 En 351. Case Harden & Quench.			SURFACE TEXTURE μm 1.6 ✓ UNLESS STATED			
USED ON Analyser Rear Shield					© CCL 1995	
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY, CHILTON, OXON OX11 0QX.						
TITLE CADMIUM FORMING TOOL.						
(MALE). IRIS GRAPHITE ANALYSER						
A1-SI-2525-486-01-A						

A1-SI-2525-486-00-A

A1-SI-2525-486-00-A

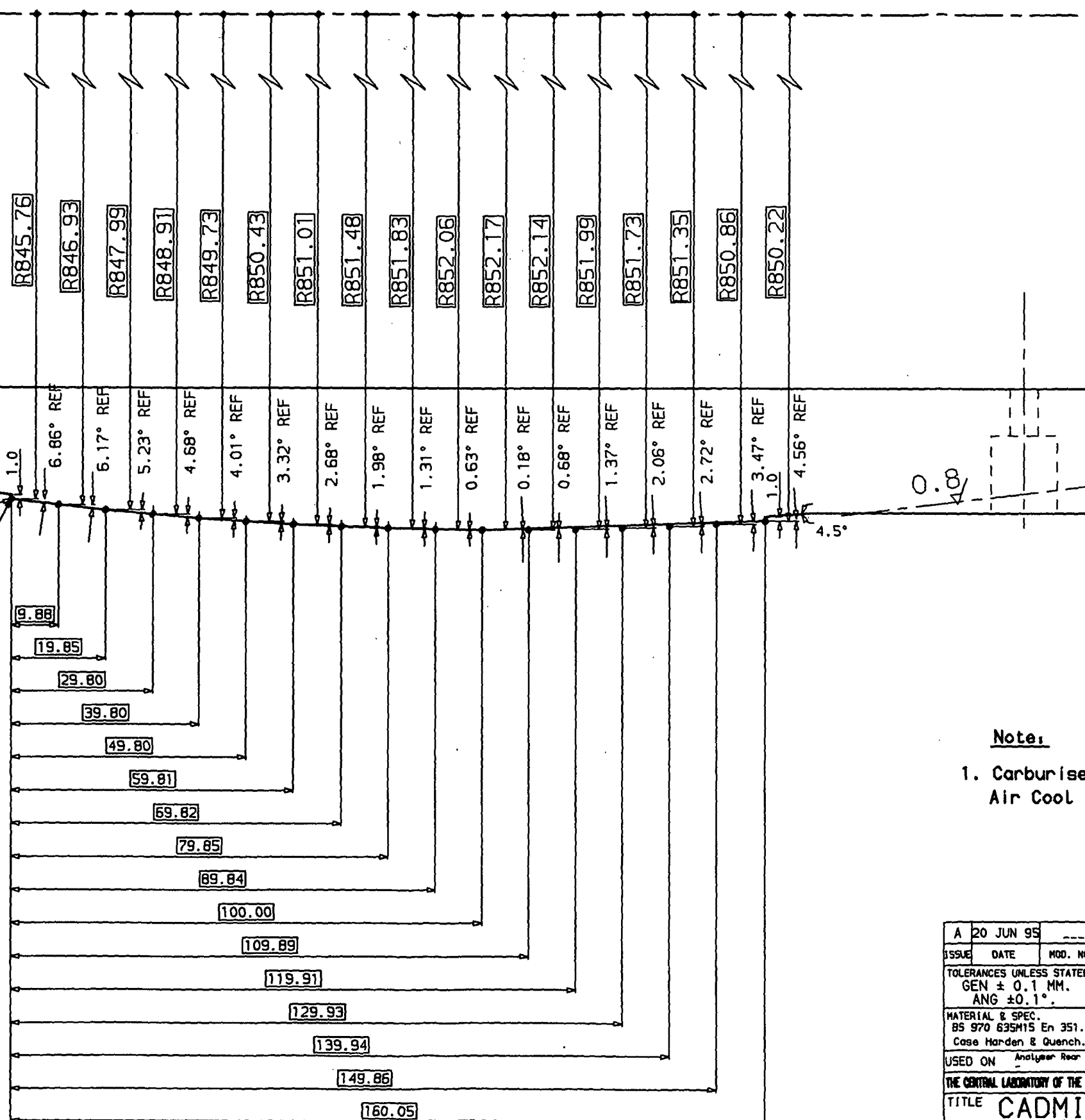
PROJECTION



THIS DRAWING CONFORMS TO B.S.308

DETAIL W. SECTION 'A - A'. SCALE 2:1

FACES BETWEEN DATUM POINTS ARE STRAIGHT

DATUM POINTS $\phi 0.05$ 

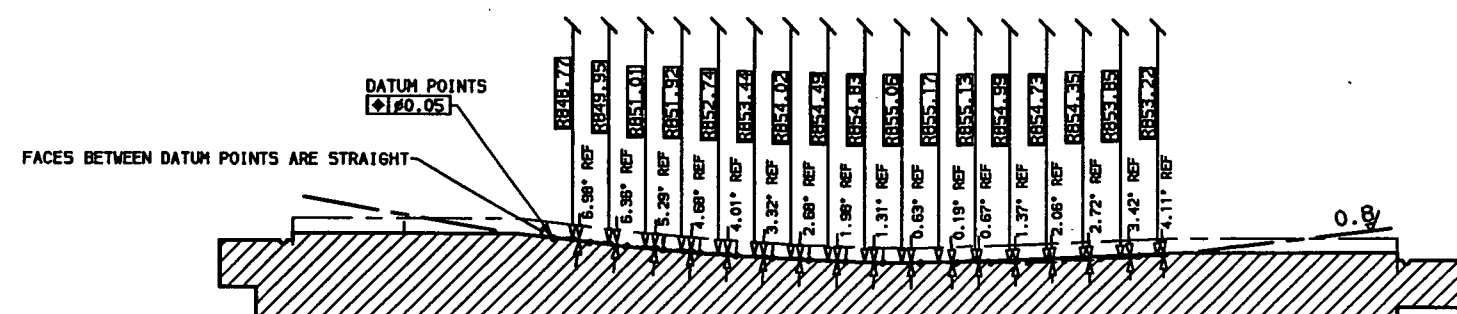
Note:

1. Carburise Item 1@ 850-880°C.
Air Cool to 820°C & Oil Quench.

A	20 JUN 95	---	Jeb	---	PP	ISSUE
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED			FINISH		ORIGINAL SCALE	
GEN ± 0.1 MM.			CLEAN & DEGREASE.		2:1	
ANG $\pm 0.1^\circ$.			REMOVE ALL BURRS		DO NOT SCALE	
MATERIAL & SPEC.			SURFACE TEXTURE μ m		0 _____ 25 mm	
B5 970 635M15 En 351.			1.6 ✓ UNLESS STATED			
Case Harden & Quench.						
USED ON			Analysed Rear Shield			© CCL 1995
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY, CHILTON, OXON OX11 0QJ.						
TITLE CADMIUM FORMING TOOL.						
(MALE). IRIS GRAPHITE ANALYSER						
A1-SI-2525-486-02-A						

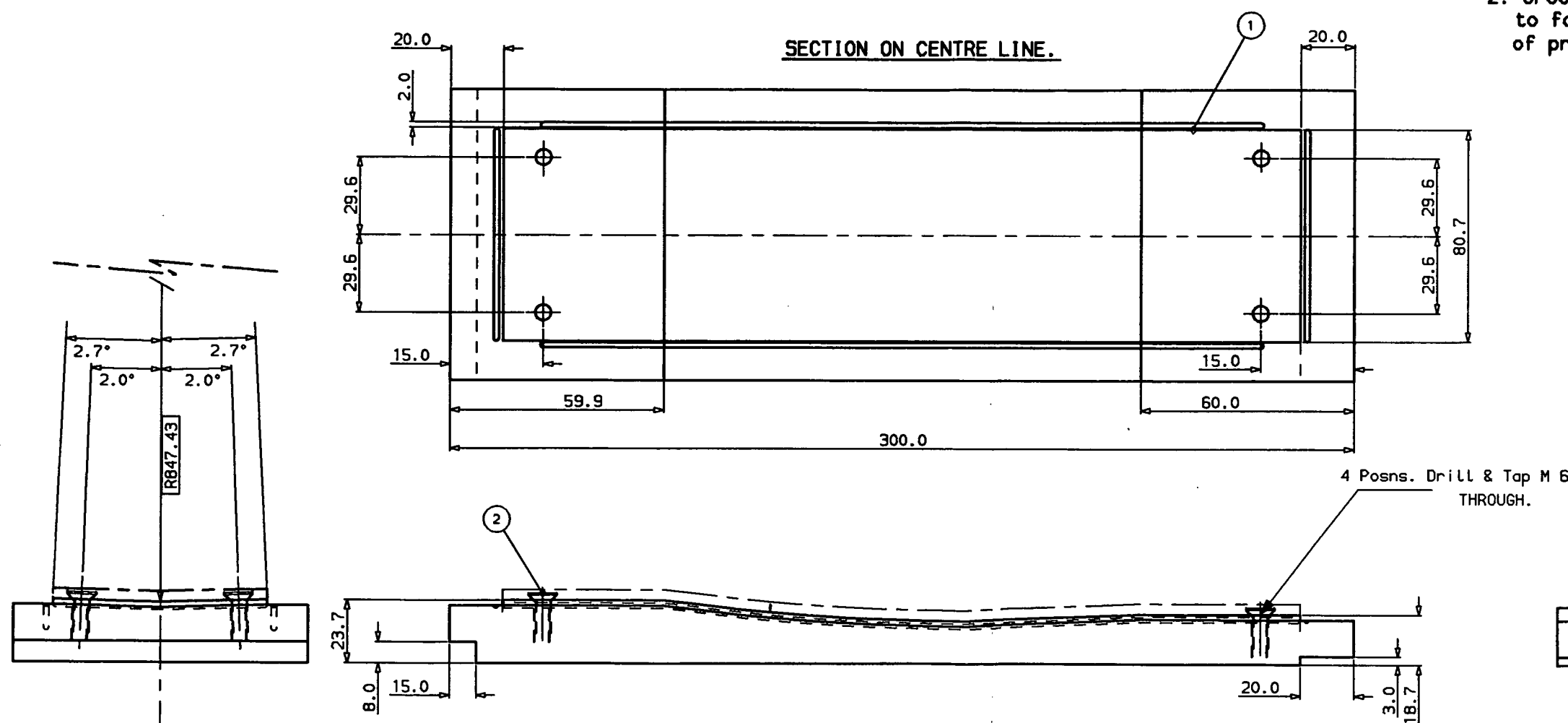
A1-SI-2525-486-00-A

ITEM No.	DRAWING No. CAT No.	DESCRIPTION	No.OFF ASSY.			REMARKS
			a	b	c	
1	THIS	Cadmium Former (Female).	1	-	-	-
2	25 - 47684	CSK SCREW.	4	-	-	ZINC PLATED STEEL



Note:

1. Carburise Item 1 @ 850-880°C.
Air Cool to 820°C & Oil Quench.
2. Groove Machined to 1.0 mm depth
to follow parallel to surface profile
of press tool profile.



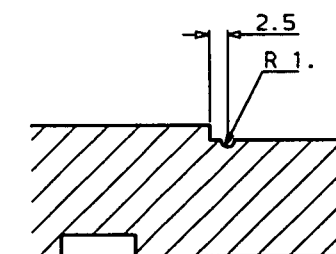
A 20 JUN 95		---		Job		---		PP		ISSUE			
ISSUE		DATE		MOD. NO.		DRN. BY		CHKD.		APPD.		STATUS	
TOLERANCES UNLESS STATED GEN ± 0.1 MM. ANG $\pm 0.1^\circ$.				FINISH CLEAN & DEGREASE REMOVE ALL BURRS				ORIGINAL SCALE 1:1 DO NOT SCALE					
MATERIAL & SPEC. BS 970 635M15 En 351. Case Harden & Quench.				SURFACE TEXTURE μm 1.6 $\checkmark$ UNLESS STATED									
USED ON Cadmium Rear Shield.										© CCL 1995			
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY, CHILTON, OXON OX11 0Q													
TITLE CADMIUM FORMING TOOL. (FEMALE). IRIS GRAPHITE ANALYSER.													
A11-SI-2525-487-00-A													

SECTION 'A - A' - SEE SHEET 2.

SEE DETAIL X.

Note:

1. CARBURISE @ 850 - 880°C.
AIR COOL TO 820°C AND OIL QUENCH.
2. GROOVE MACHINED TO 1.0 MM DEPTH
TO FOLLOW PARALLEL TO SURFACE PROFILE
OF PRESS TOOL (SEE DETAIL X).
3. TAPPED HOLE CENTRES LIE ON CURVED
SURFACE RADIUS, INCLINED AT 2° TO VERTICAL



DETAIL X.

SCALE 2:1.

4 TAP M 6
THROUGH.

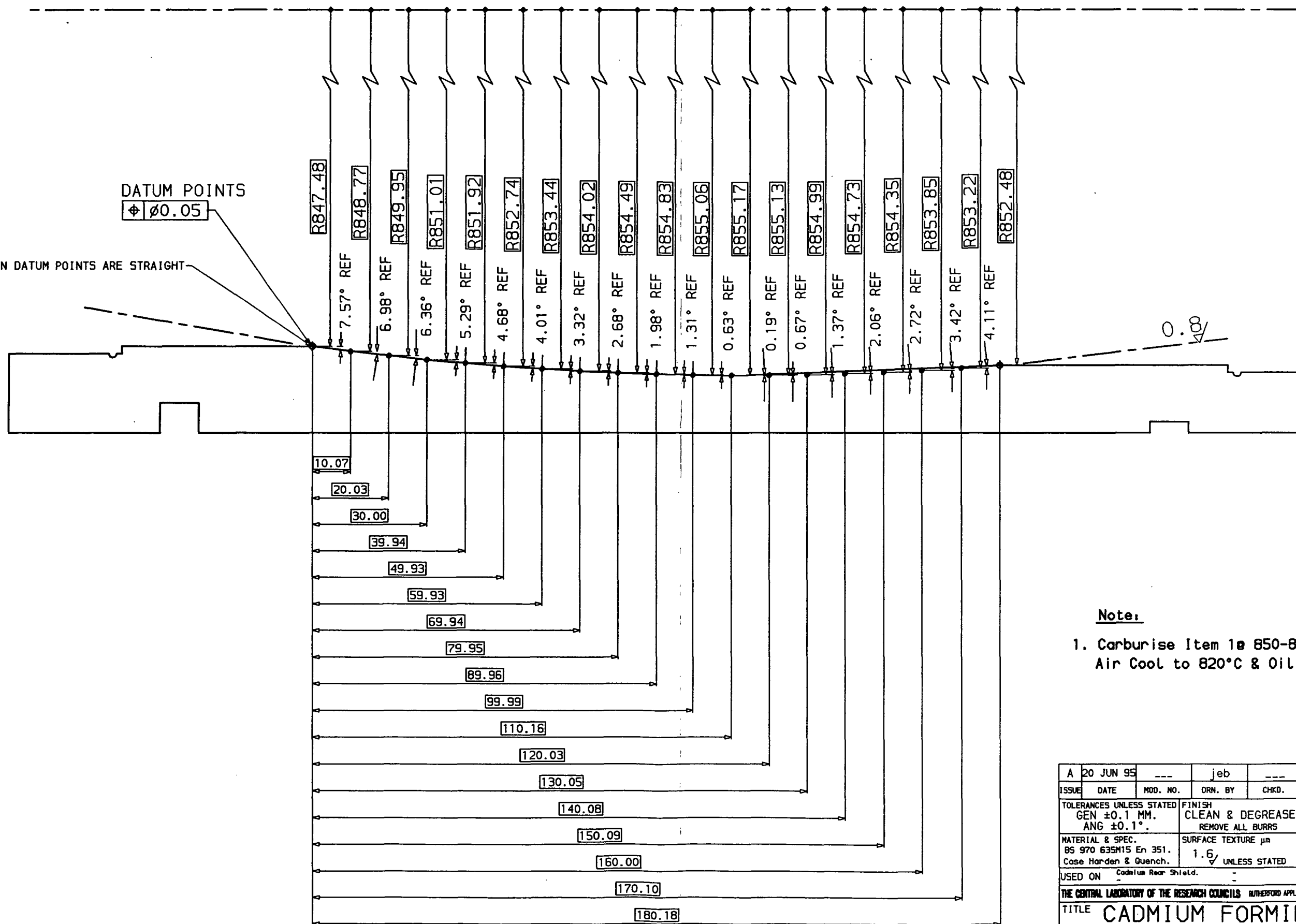
A	20 JUN 95	---	Jeb	---	PP	ISSUE
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPO.	STATUS
TOLERANCES UNLESS STATED GEN ± 0.1 MM. ANG $\pm 0.1^\circ$.			FINISH CLEAN & DEGREASE REMOVE ALL BURRS		ORIGINAL SCALE 1:1 DO NOT SCALE	
MATERIAL & SPEC. BS 970 635M15 En 351. SEE NOTE 1.			SURFACE TEXTURE μm 1.6 $\checkmark$ UNLESS STATED			
USED ON Cadmium Rear Shield.					© CCL 1995	
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY, CHILTON, OXON OX11 0QX						
TITLE CADMIUM FORMING TOOL. (FEMALE). IRIS GRAPHITE ANALYSER.						
A11-SI-2525-487-01-A						

DETAIL W. SECTION ' A - A '. SCALE 2:1

DATUM POINTS

$\Phi \varnothing 0.05$

FACES BETWEEN DATUM POINTS ARE STRAIGHT



Note:

1. Carburise Item 1@ 850-880°C.
Air Cool to 820°C & Oil Quench.

A	20 JUN 95	---	job	---	PP	ISSUE
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED GEN ± 0.1 MM. ANG $\pm 0.1^\circ$.			FINISH CLEAN & DEGREASE REMOVE ALL BURRS		ORIGINAL SCALE 2:1 DO NOT SCALE	
MATERIAL & SPEC. B5 970 635M15 En 351. Case Harden & Quench.			SURFACE TEXTURE μm 1.6 / UNLESS STATED		0 _____ 25 mm	
USED ON Cadizus Rear Shield.			-			© CCL 1995
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS BUTHFORD APPLETON LABORATORY, CHILTON, OXON OX11 0QJ.						
TITLE CADMIUM FORMING TOOL. (FEMALE). IRIS GRAPHITE ANALYSER.						
A1-SI-2525-487-02-A						

A	21 JUN 95	---	Job	---	PP	ISSUE.
ISSUE	DATE	MOD. NO.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED GEN ± 0.1 MM. ANG $\pm 0.1^\circ$.			FINISH CLEAN & DEGREASE. REMOVE ALL BURRS		ORIGINAL SCALE 2:1 DO NOT SCALE	
MATERIAL & SPEC. SEE ABOVE.			SURFACE TEXTURE μ m 1.6 $\checkmark$ UNLESS STATED			
USED ON Analyser Rear Shield.					© CCL 1995	
THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY, CHILTON, OXON OX11 0QX						
TITLE CADMIUM PRESS TOOL.						
IRIS GRAPHITE ANALYSER. CADMIUM REAR SHIELD.						
A2-SI-2525-488-00-A						