

**Southern African Large Telescope  
High-Resolution Spectrograph**

**SALT HRS**

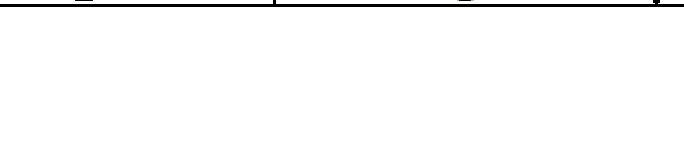
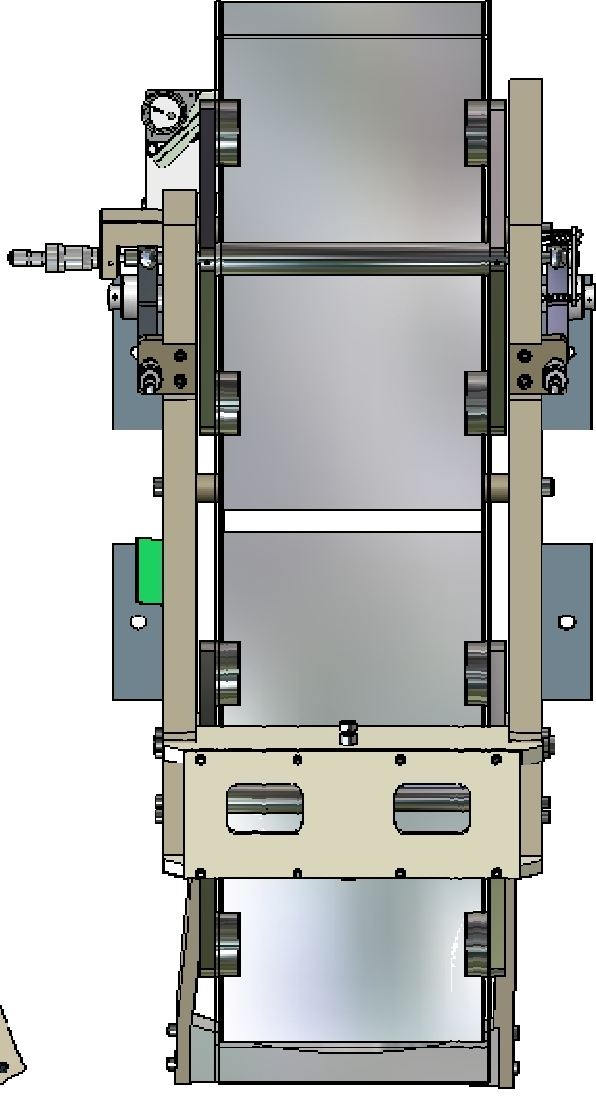
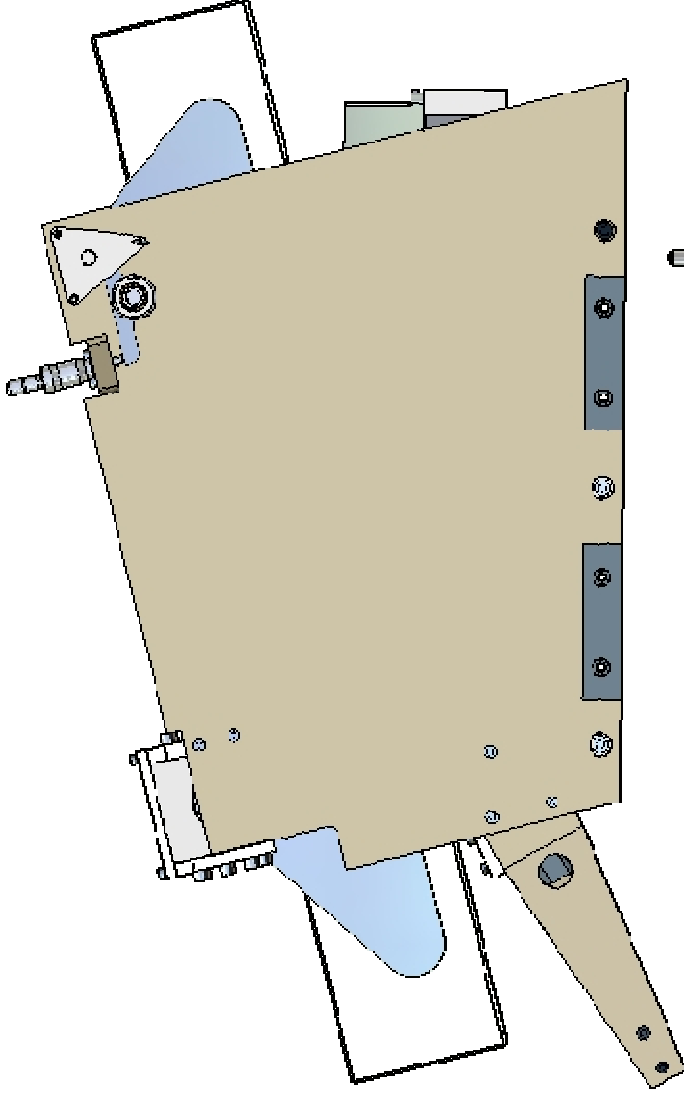
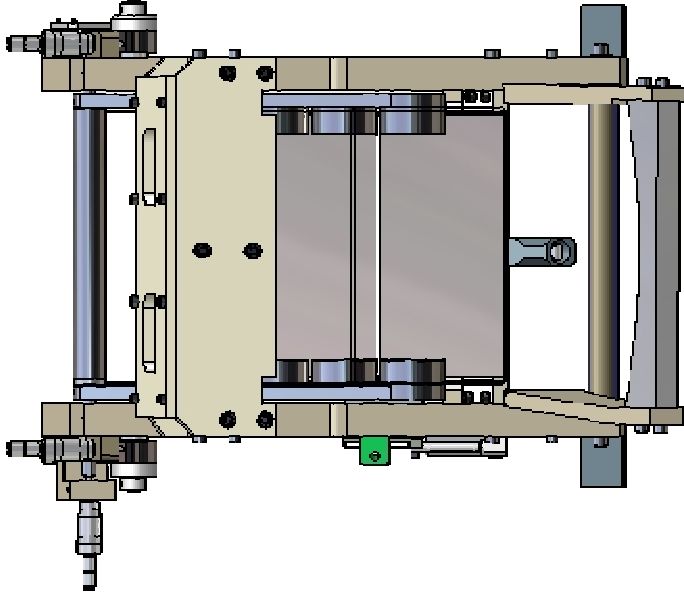
**3220AD0005 Mechanical Specifications**

G. M. Kershaw  
University of Canterbury

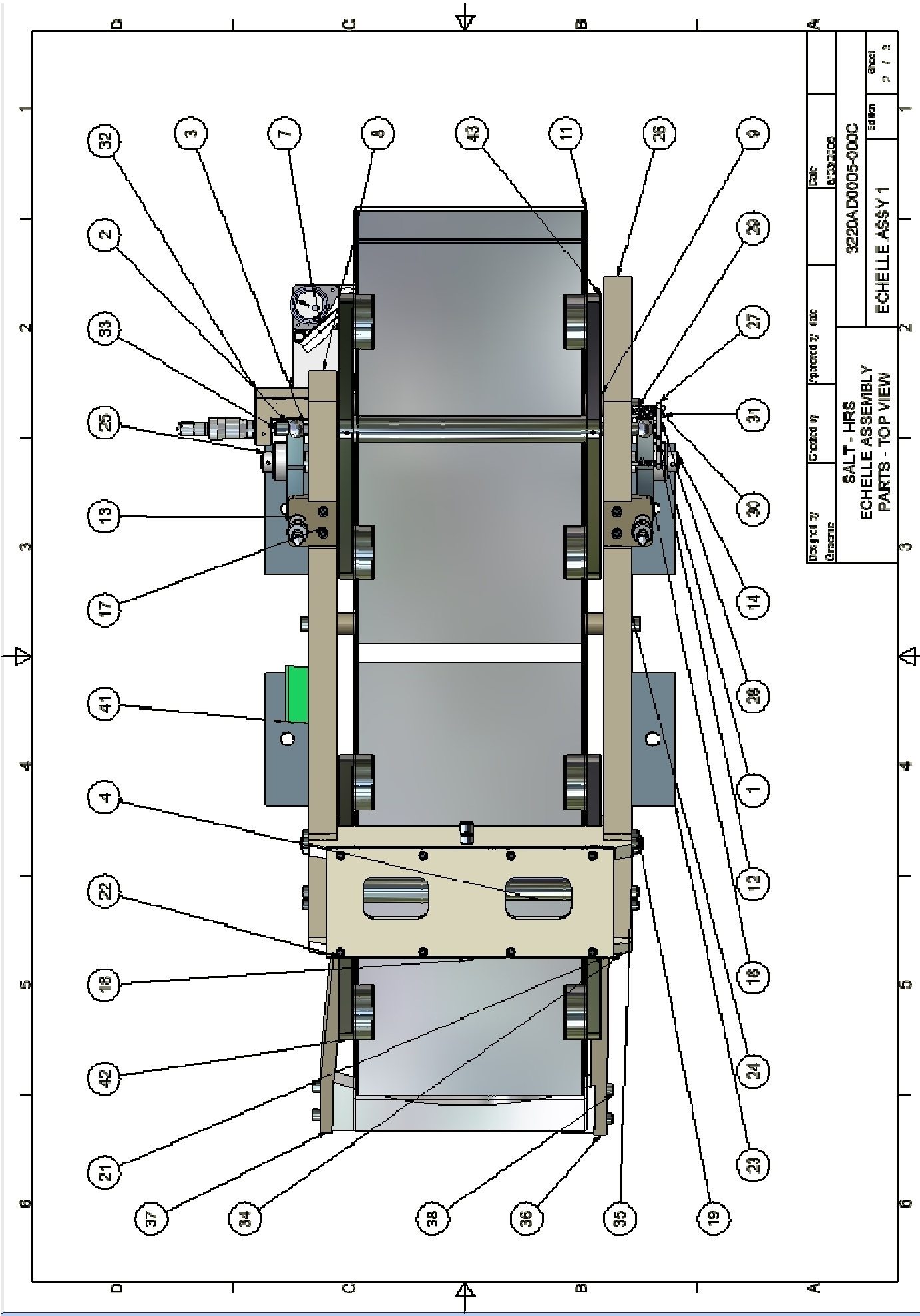
Issue 1.0  
14 March 2005

Issue History

Number and file name	Person	Issue	Date	Status
3220AD0005 Mech Spec	MDA	1.0	14 March 2005	Cover page inserted

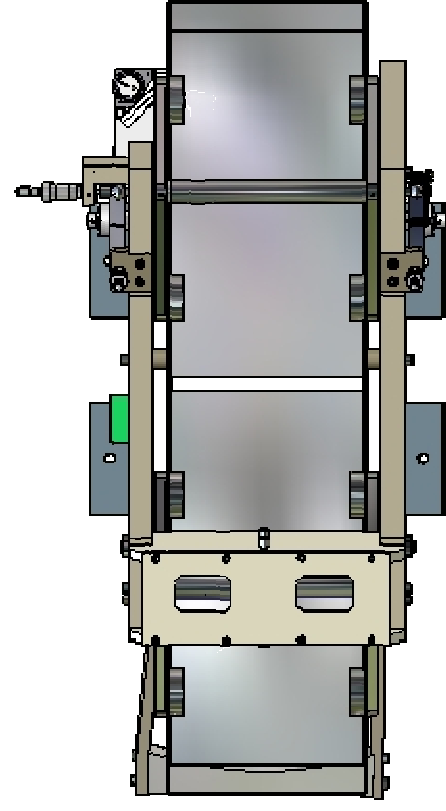


Designed by G183PM6	Checked by	Approved by - date	Date 15/11/2010
SALT - 1 IR3 ECHELLE ASSEMBLY 3 VIEWS		3220AD0005-000E	
ECHELE ASSY 1		Labour	1 / 3



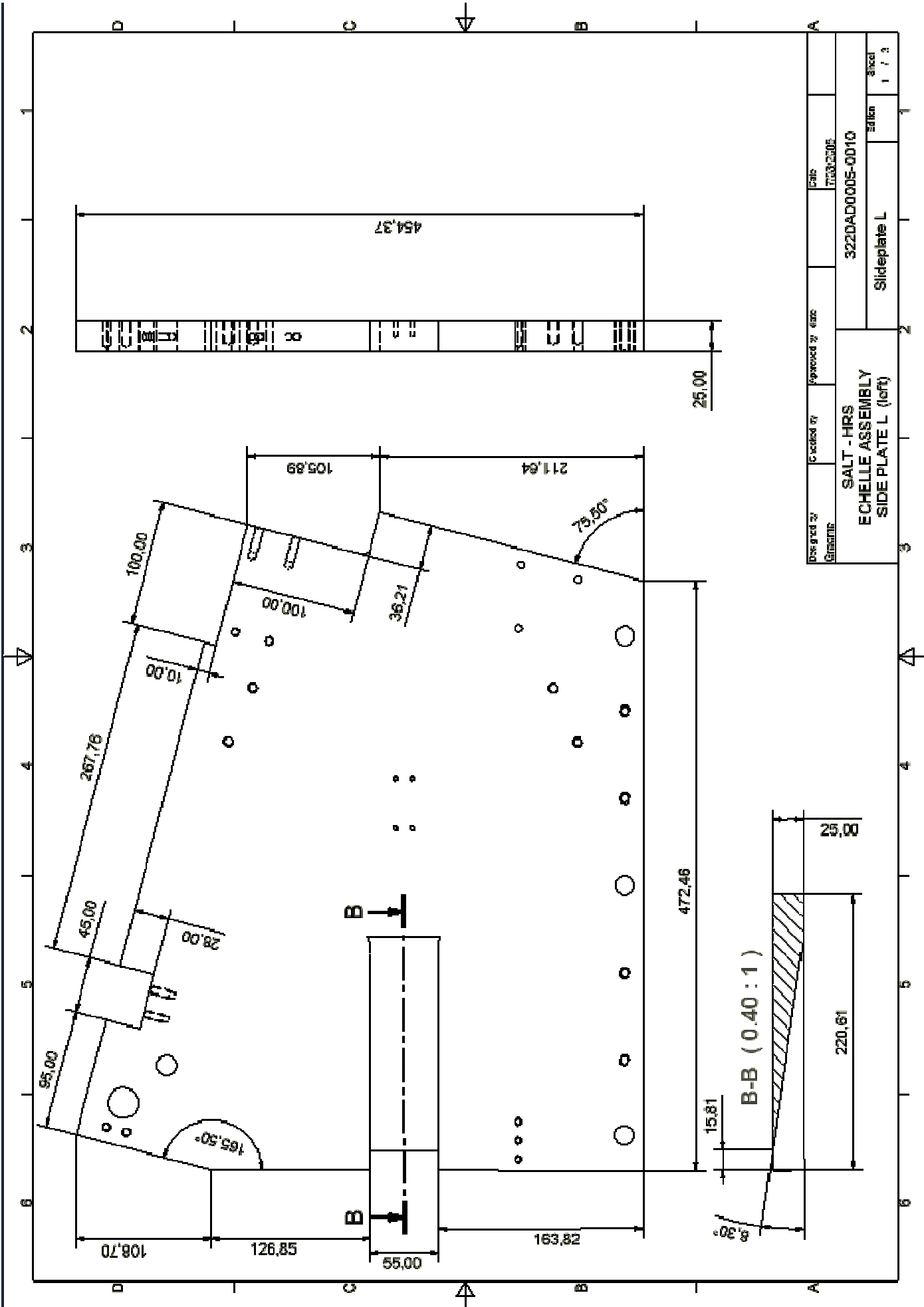
Desig of Drawing	Quantity of	Quantity of	Date
3220AD0005-000C	1	1	15/03/2005
SALT - HIRS		3220AD0005-000C	
ECHELLE ASSEMBLY		ECHELLE ASSY 1	
PARTS - TOP VIEW		REVISION	
		2 / 2	

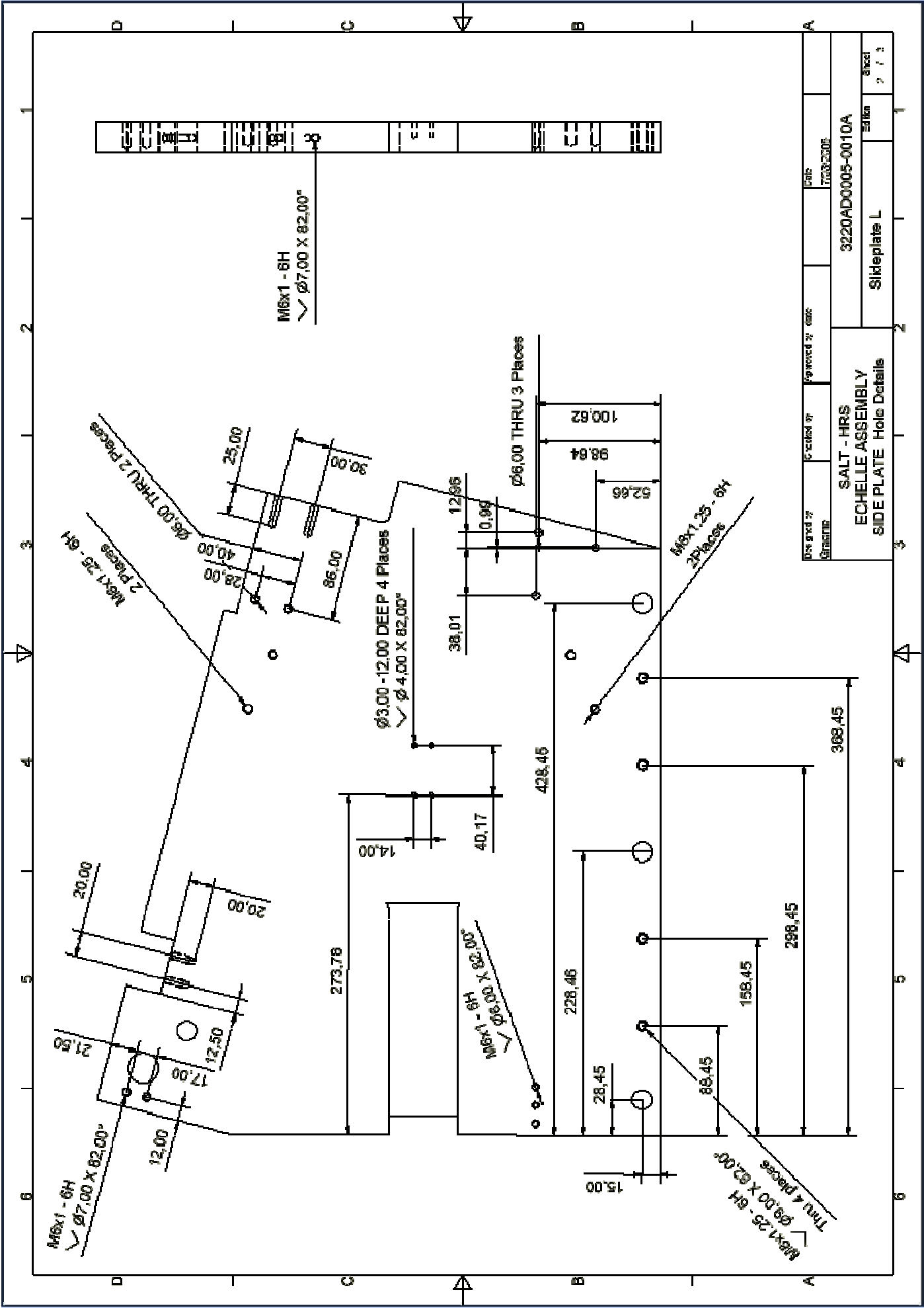
Parts List			Parts List				
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Lever R		23	4	Lugs	
2	1	Lever L		24	8	Washer	
3	1	axle upper assy		25	2	Retainer	
4	1	Axle lower assy		26	1	Slideplate R	
5	1	Spherical bearing		27	1	spring plate	
6	1	EXPOSURE METER		28	1	pad hard	
7	1	Flip mirror		29	3	spring screw	
8	1	Slideplate L		30	3	spring	
9	3	rod		31	3	spring pin	
10	1	Bearing plate		32	1	micro side Brkt	
11	1	Grating820x220x100		33	1	micro pad	
12	2	20mmball		34	1	Mtg Plate 1	
13	3	MICRO1 10-502		35	1	Mtg Plate	
14	2	Shaft lever		36	1	Support Exp	
15	4	bearing21x12x5		37	1	Support1 exp	
16	2	Micro brkt		38	7	Cap6x35	
17	12	Cap6x35		39	1	lens support	
18	16	Cap8x20		40	1	Lens Mount	
19	4	Cap8x35		41	1	Fibre Mtg Sleeve	
20	2	Rullings900x200		42	2	Seesaw ASYM R	
21	1	thrust plate		43	2	Seesaw ASYM L	
22	14	Cap5x20					



USE THIS SHEET WITH 3200AD005-000C

Doc # of Graphic	Issued by	Approved by	Date
			6/23/2005
SALT - HRSS ECHELLE ASSEMBLY PARTS LIST		3220AD0005-000D ECHELLE ASSY 1	
		Sheet	3 / 3





M6x1 - 6H  
 $\sphericalangle$   $\phi$ 7,00 X 82,00"

$\phi$ 3,00 - 12,00 DEEP 4 Places  
 $\sphericalangle$   $\phi$ 4,00 X 82,00"

$\phi$ 6,00 THRU 3 Places

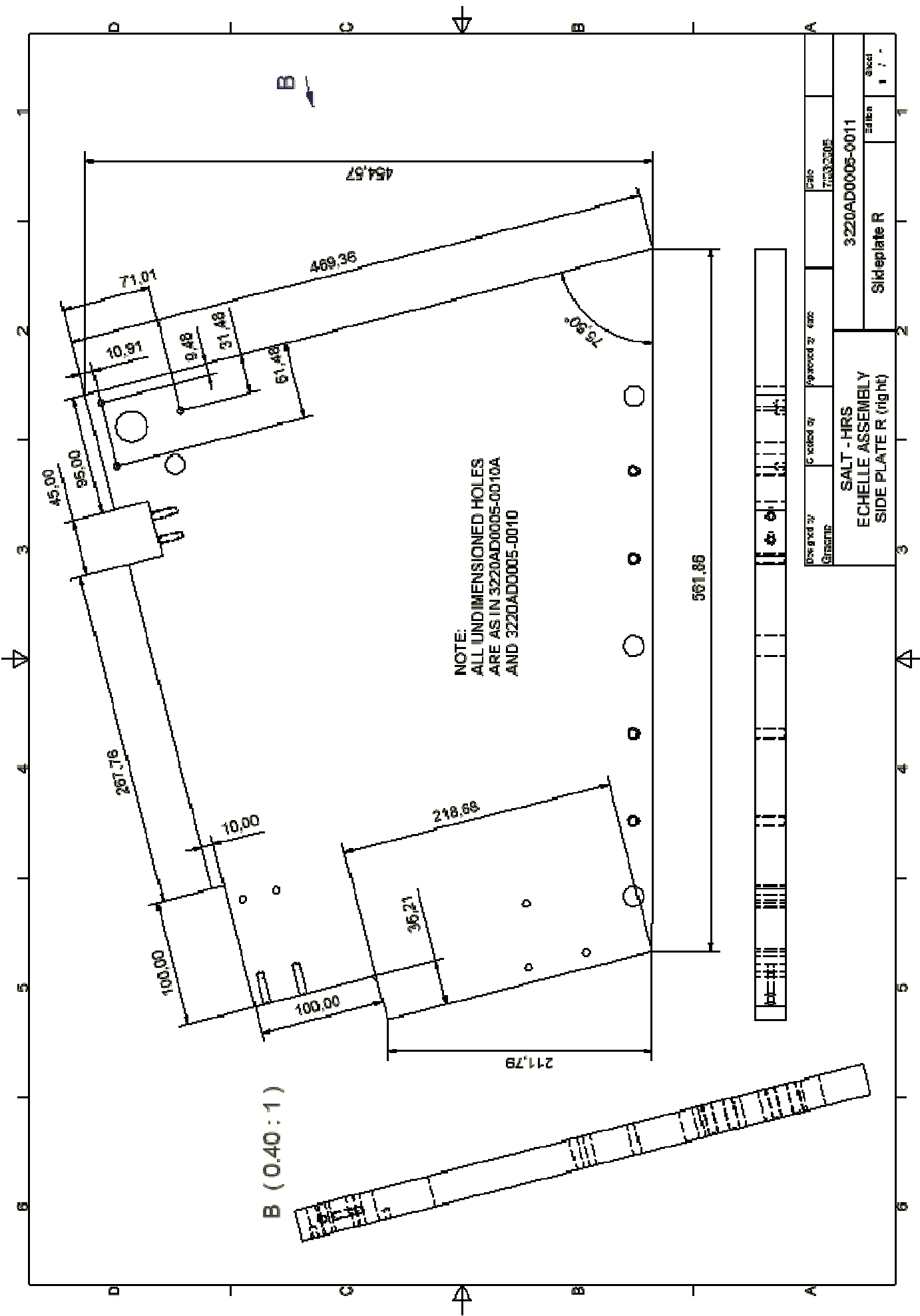
M6x1,25 - 6H  
 2 Places

M6x1,25 - 6H  
 2 Places

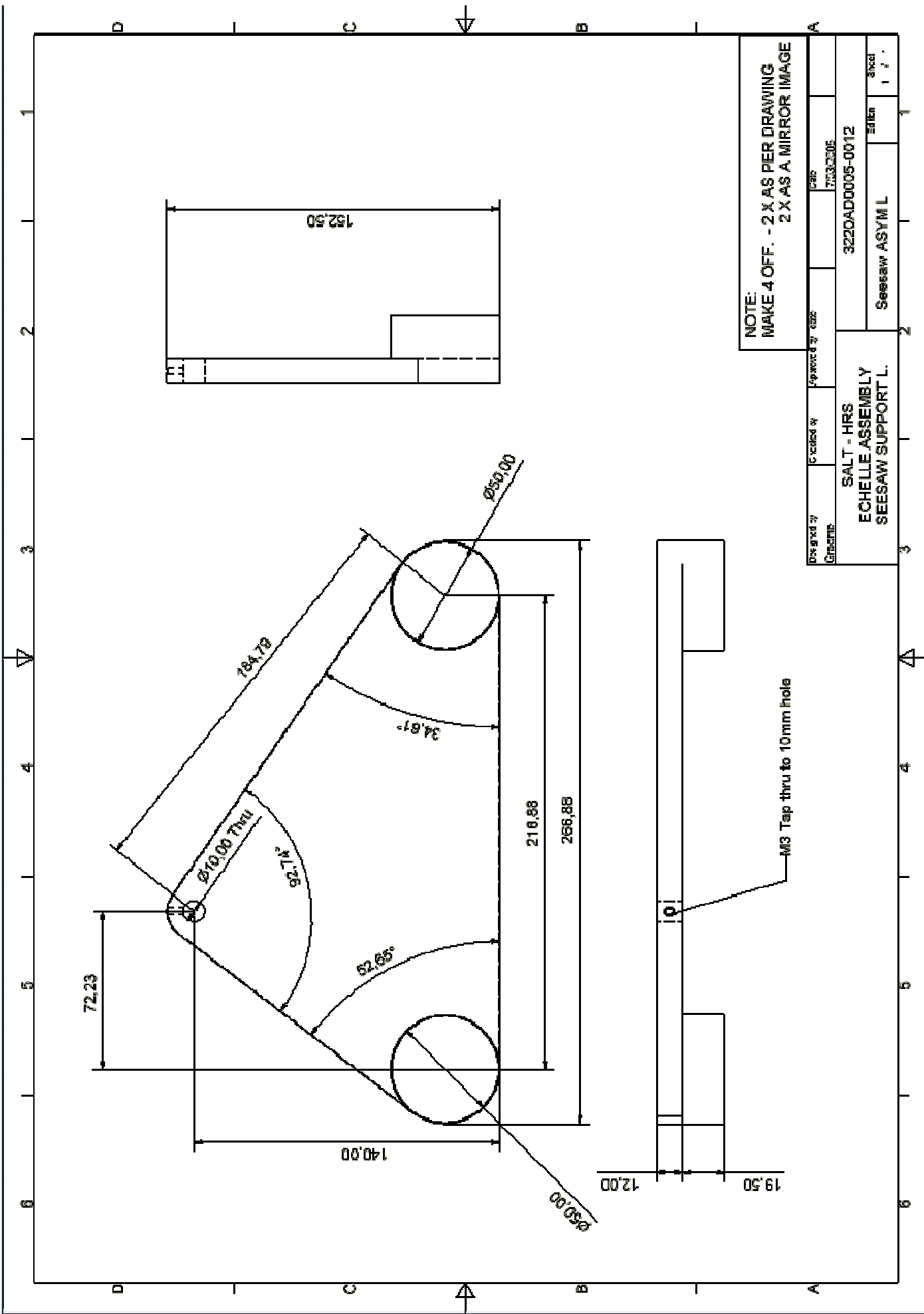
M6x1 - 6H  
 $\sphericalangle$   $\phi$ 7,00 X 82,00"

M6x1,25 - 6H  
 $\sphericalangle$   $\phi$ 6,00 X 92,00"  
 THRU 4 Places

Designé par G. MARIN	Approuvé par G. MARIN	Date 17/03/2005	1
SALT - HRS ECHELLE ASSEMBLY SIDE PLATE Hole Details			Sheet 2 / 3
3220AD0005-0010A			1
Sideplate L			1



Designed by	Checked by	Approved by	Date
Grisette			7/16/2005
SALT - HRS ECHELLE ASSEMBLY SIDE PLATE R (right)		3220AD0005-0011 Sideplate R	
			Sheet 1 / 1

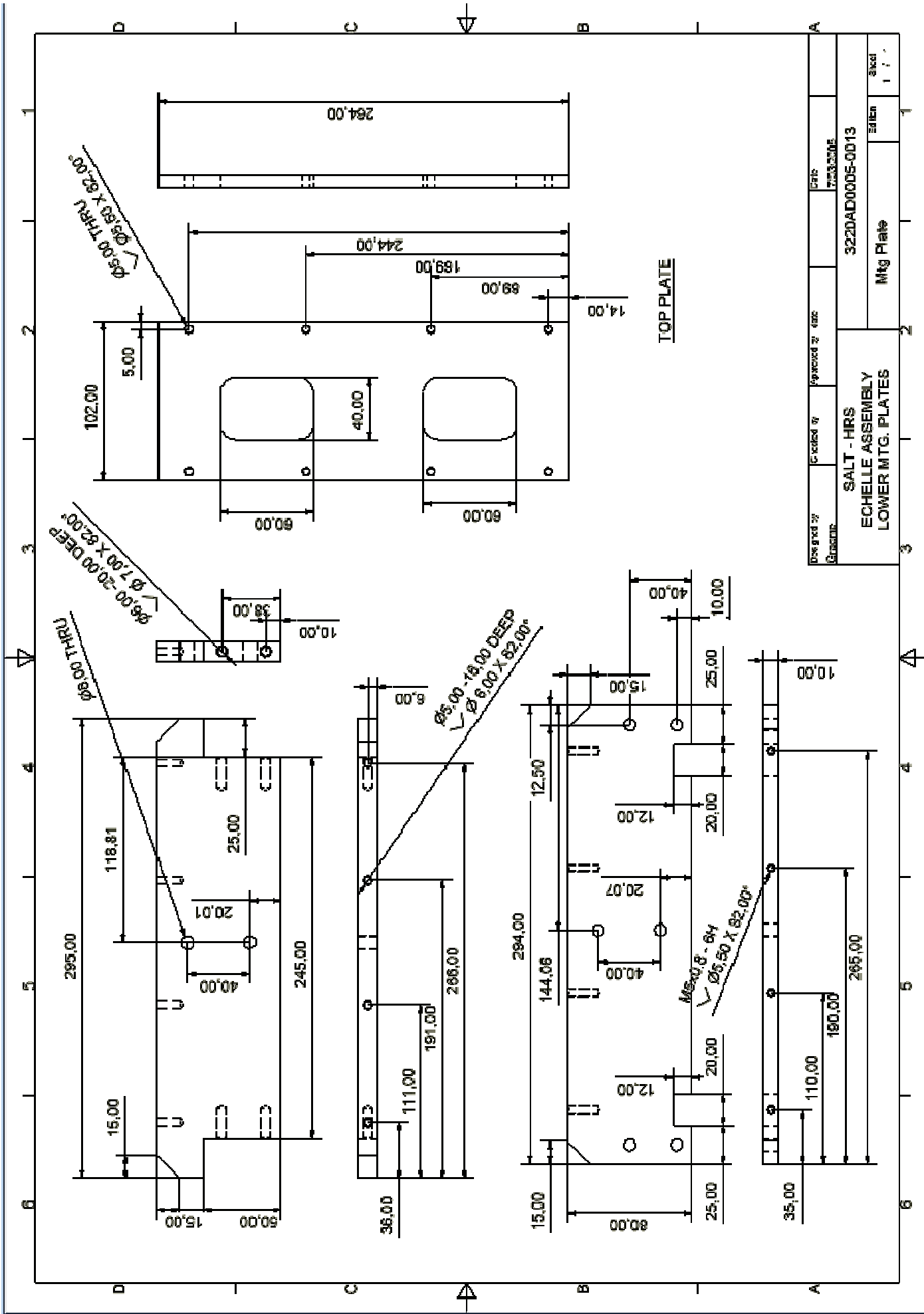


NOTE:  
 MAKE 4 OFF. - 2 X AS PER DRAWING  
 2 X AS A MIRROR IMAGE

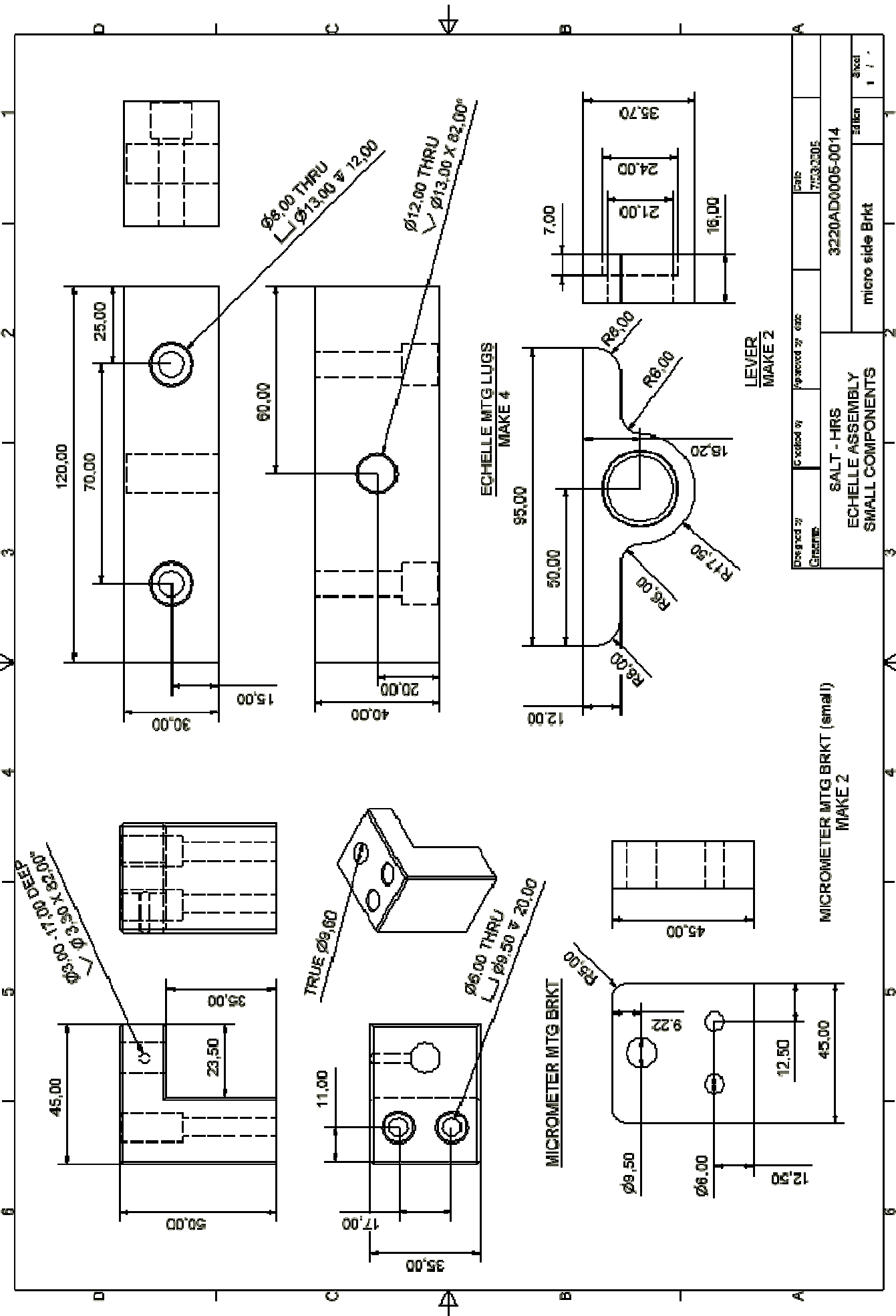
Designed by (Name)	Checked by	Approved by	DATE
			7/3/2005
SALT - HRS ECHELLE ASSEMBLY SEESAW SUPPORT L.		3220AD0005-0012	
		Scale	1:1
		Material	Seesaw ASYMI L

M3 Tap thru to 10mm hole





Designed by Grosche	Checked by	Approved by Date	3220AD0005-0013
SALT - HIRS ECHELLE ASSEMBLY LOWER MTG. PLATES		Mtg Plate	Sheet 1 of 1



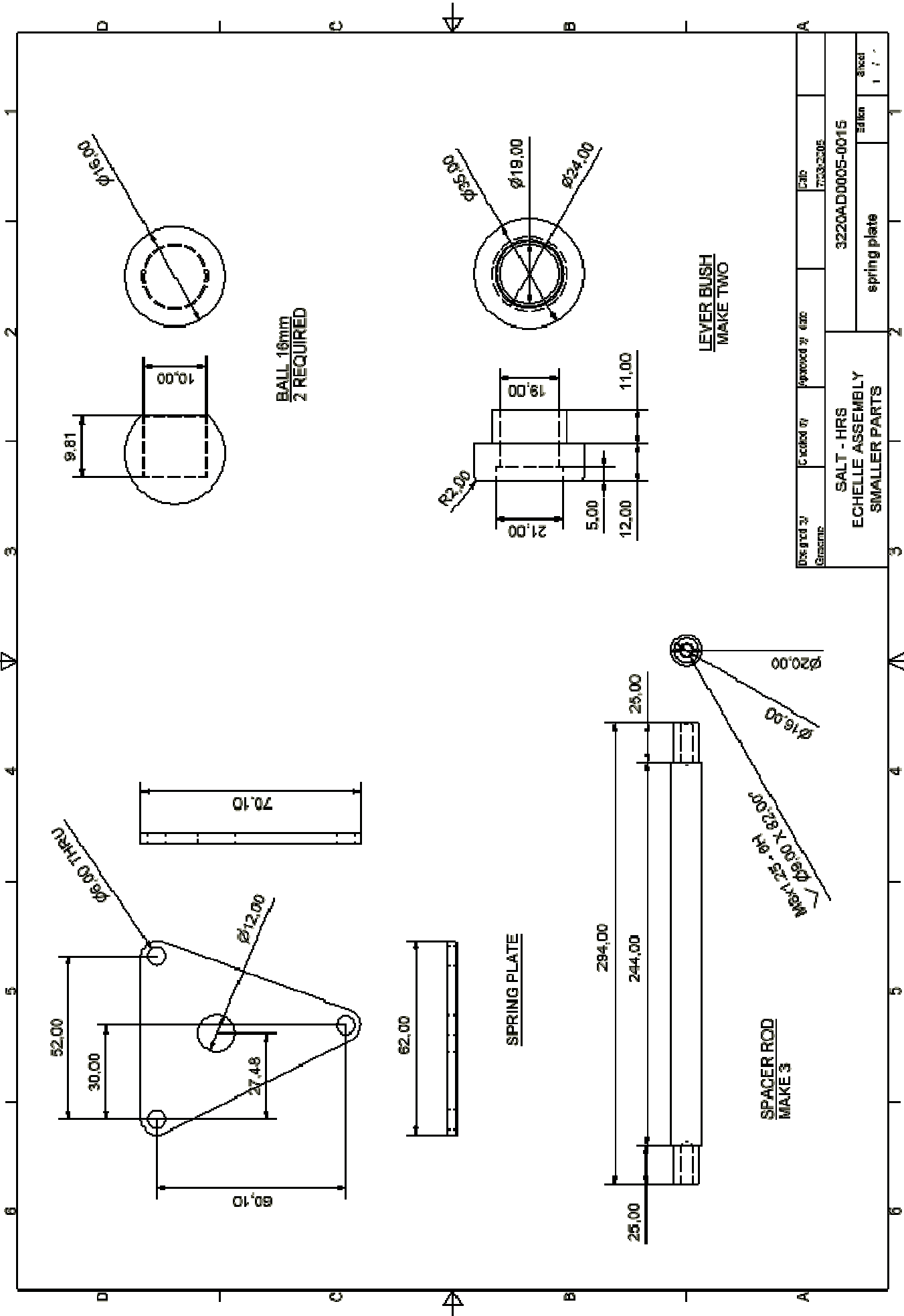
Designed by Christine	Created by [blank]	Reviewed by [blank]	Date 7/13/2005
SALT - HRS ECHELLE ASSEMBLY SMALL COMPONENTS		3220AD0005-0014 micro side Brkt	
			Sheet 1 / 1

LEVER  
MAKE 2

ECHELLE MTG LUGS  
MAKE 4

MICROMETER MTG BRKT (small)  
MAKE 2

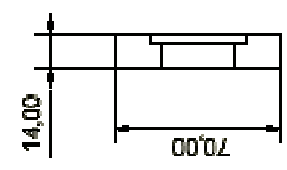
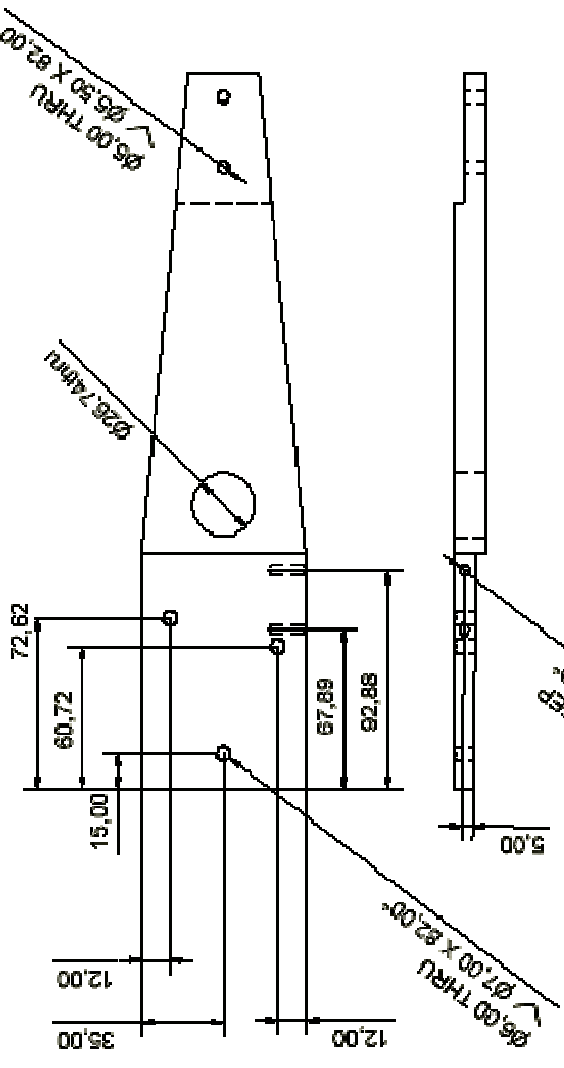
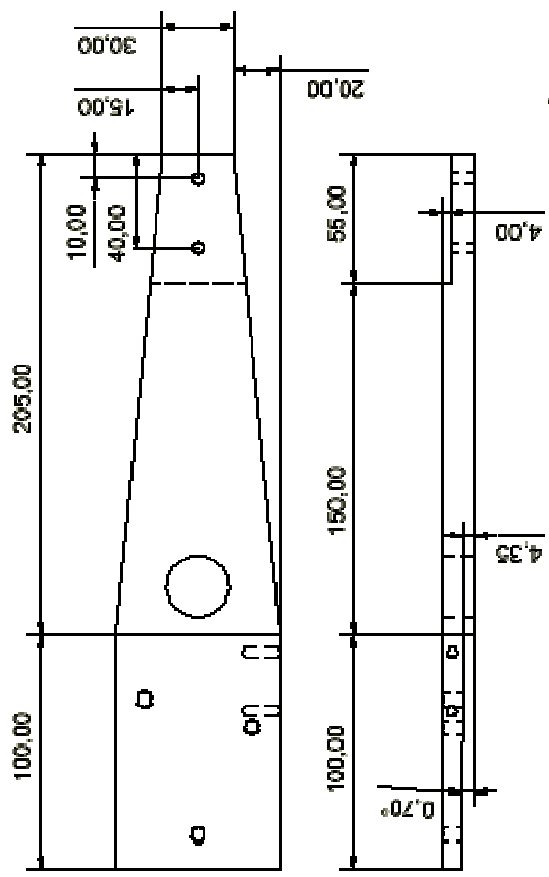
MICROMETER MTG BRKT



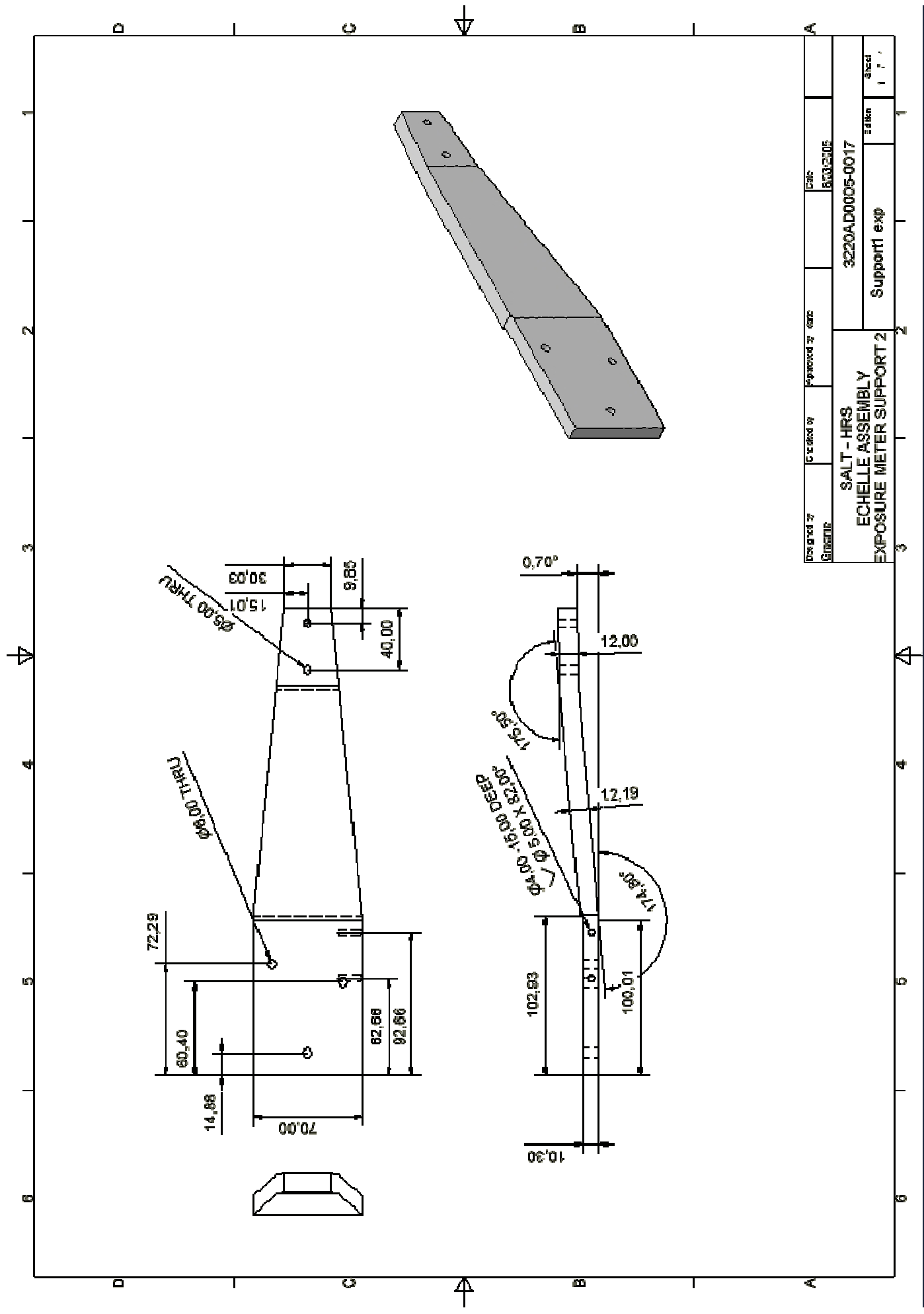
Designed by	Checked by	Approved by	DATE
Graphics			17/03/2005
SALT - HRS		3220AD0005-0015	
ECHELLE ASSEMBLY		spring plate	
SMALLER PARTS		sheet	
		1 / 1	

GENERAL DIMENSIONS

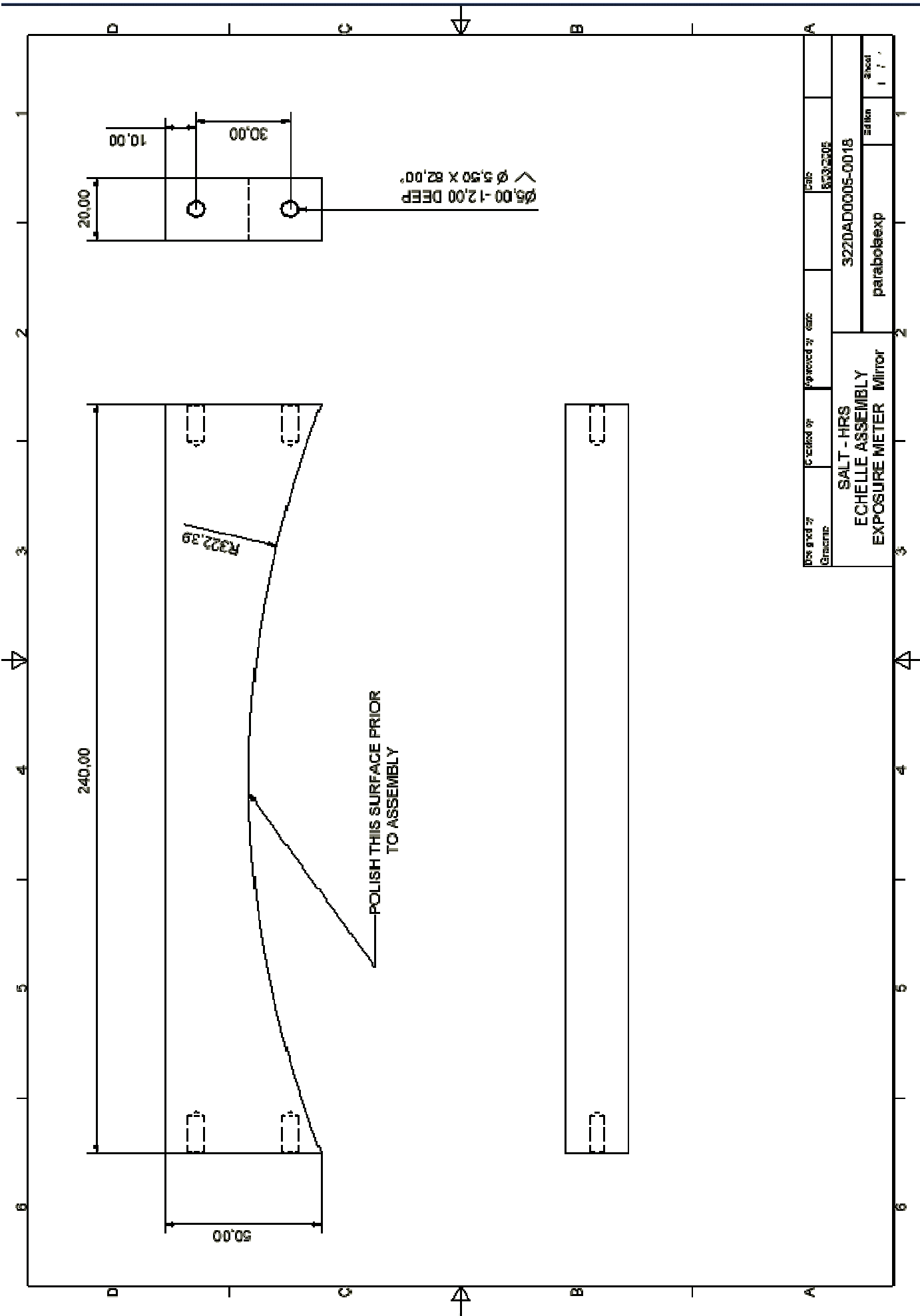
HOLE DIMENSIONS



Designed by Srinivas	Checked by	Approved by date	Part 513323005	Sheet 1 of 1
SALT - HRS ECHELLE ASSEMBLY EXPOSURE METER SUPPORT 1		3220AD0005-0016	Support Exp	



Designed by	Checked by	Prepared by	Date
Genetic		exp	6/23/2005
SALT - HRS		3220AD0005-0017	
ECHELLE ASSEMBLY		Support	
EXPOSURE METER SUPPORT 2		exp	
		sheet	
		1 of 1	



POLISH THIS SURFACE PRIOR TO ASSEMBLY

∠  $\phi 5.50 \times 82.00^\circ$   
 ∅5.00 -12.00 DEEP

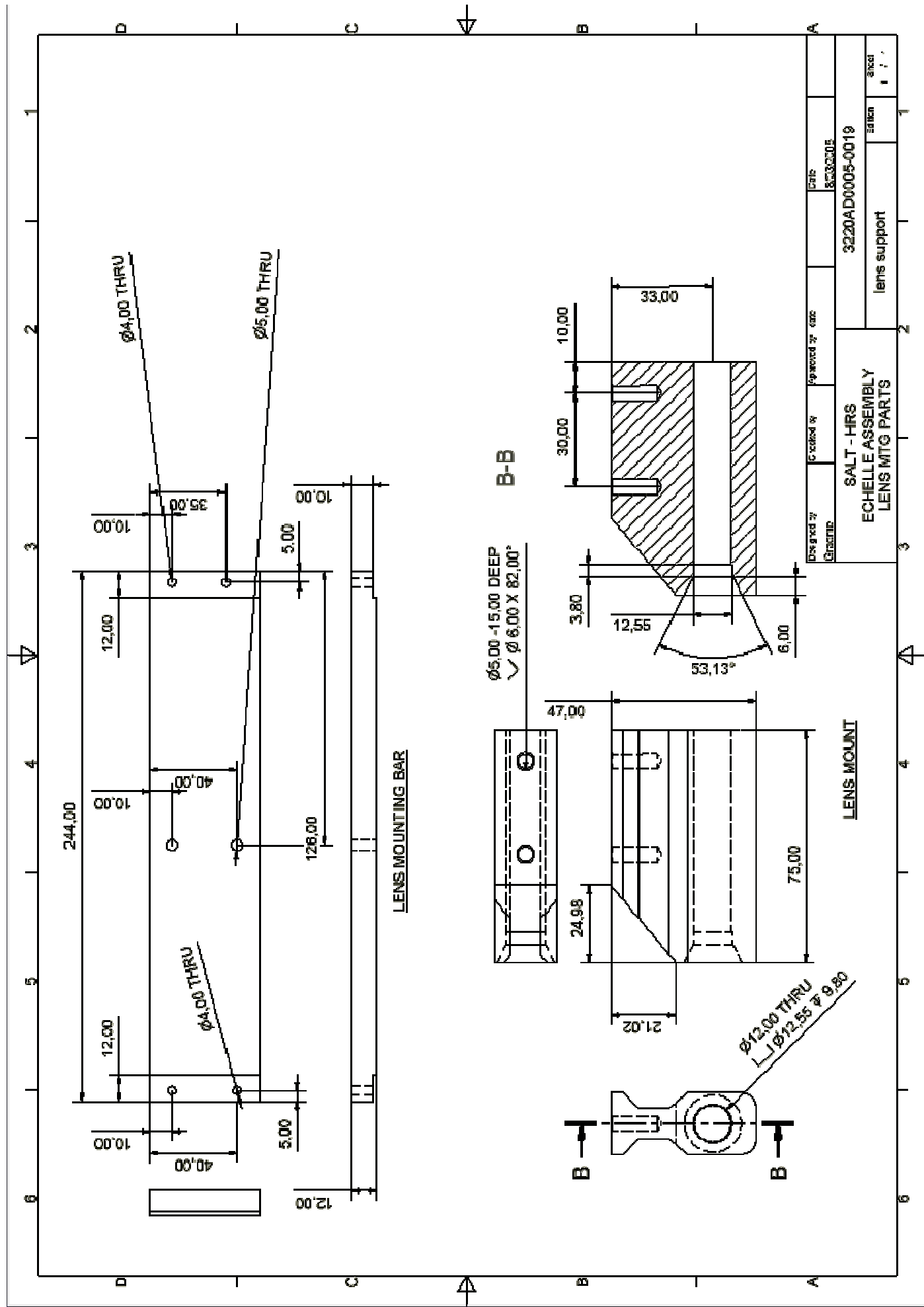
R322.39

240.00

50.00

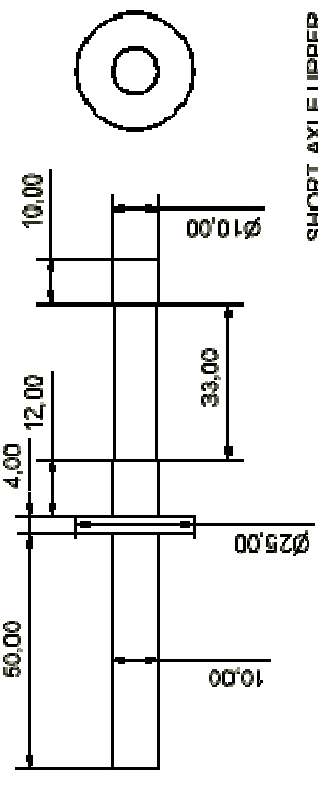
30.00  
 10.00

DESIGNED BY G. S. S. S. S.	CHECKED BY G. S. S. S. S.	DATE 8/23/2005	PROJECT 3220AD0005-001B
SALT - HRS ECHELLE ASSEMBLY EXPOSURE METER Mirror		PARABOL EXP	Sheet 1 / 1

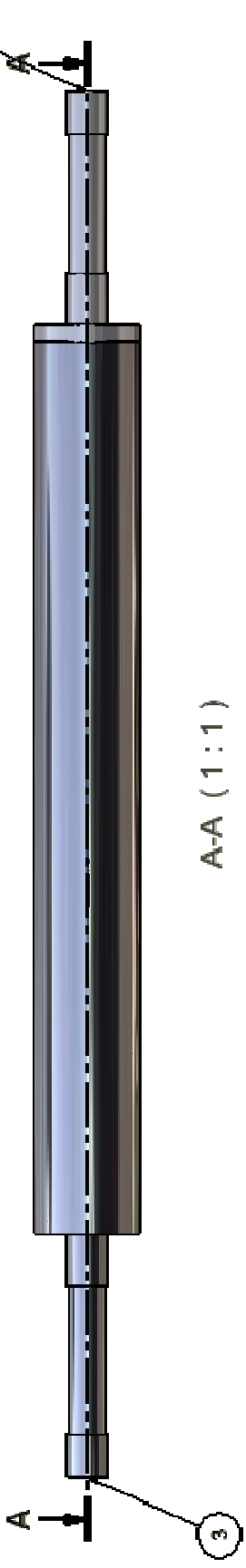


Desig. # of Drawing	Approved # of date	Part 85332305	Sheet 1 / 1
SALT - HRS		3220AD0005-0019	
ECHELLE ASSEMBLY		lens support	
LENS MTG PARTS			

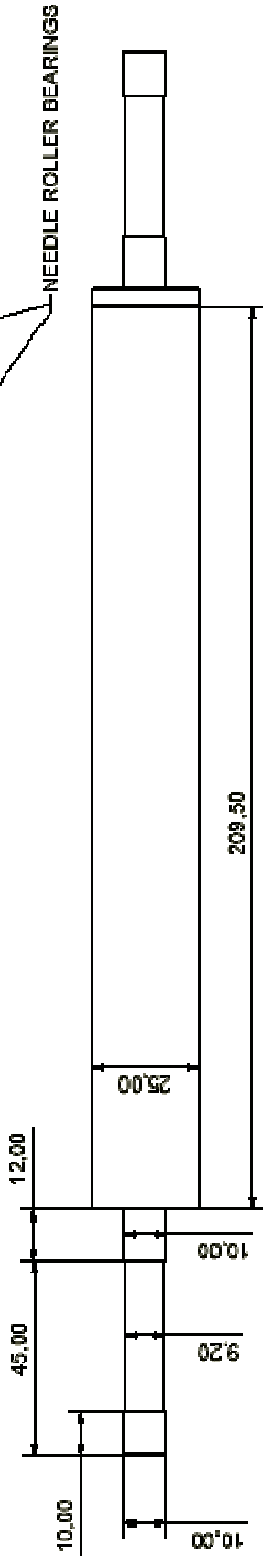
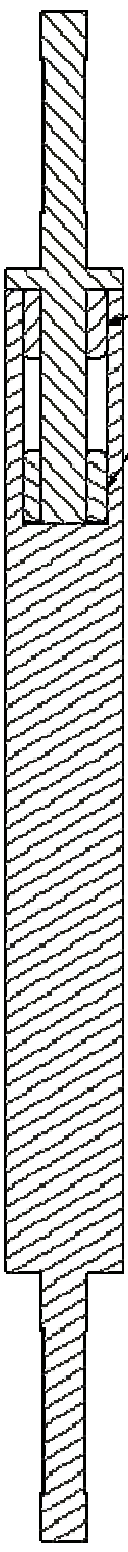
Parts List		
ITEM	QTY	PART NUMBER DESCRIPTION
1	1	Axle upper short
2	2	bearing upper
3	1	Axle upper long



SHORT AXLE UPPER



A-A (1:1)

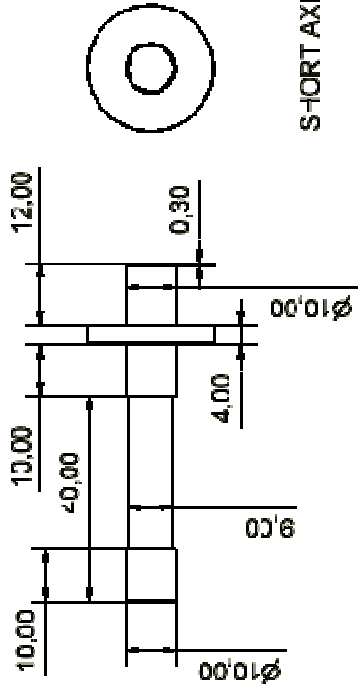


NEEDLE ROLLER BEARINGS

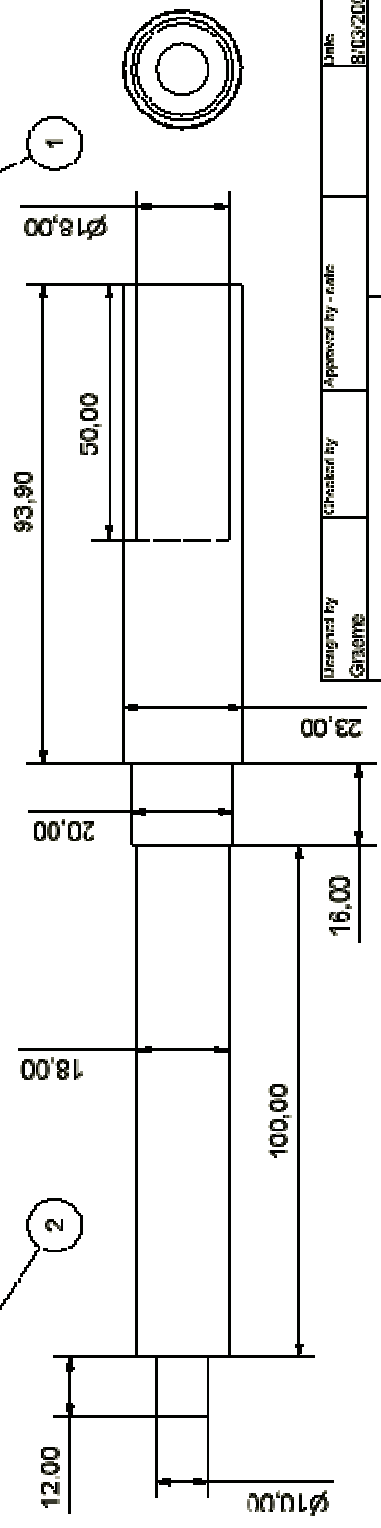
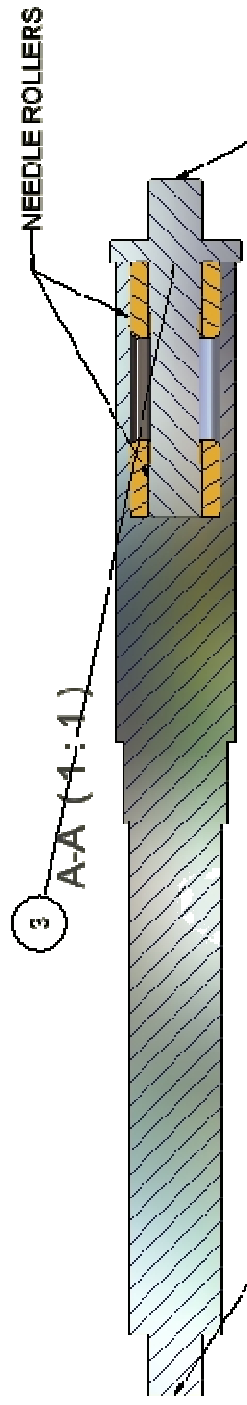
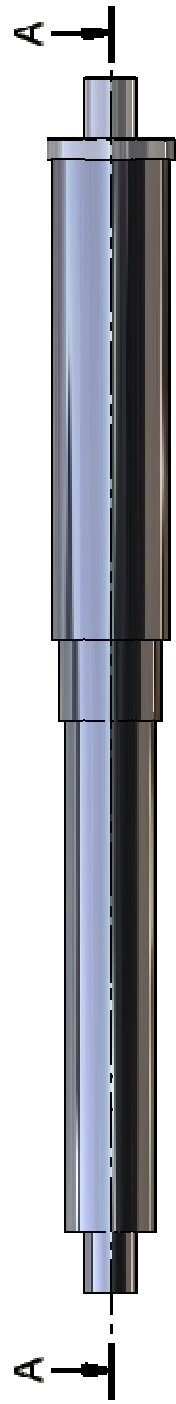
Drawn by Graham	Checked by Graham	Approved by Graham	Date 8/23/2015	Part 322DAD0005-0020 + ASSY
SALT - HRS ECHELLE ASSEMBLY UPPER AXLE ASSEMBLY			axle upper assy	axle upper assy



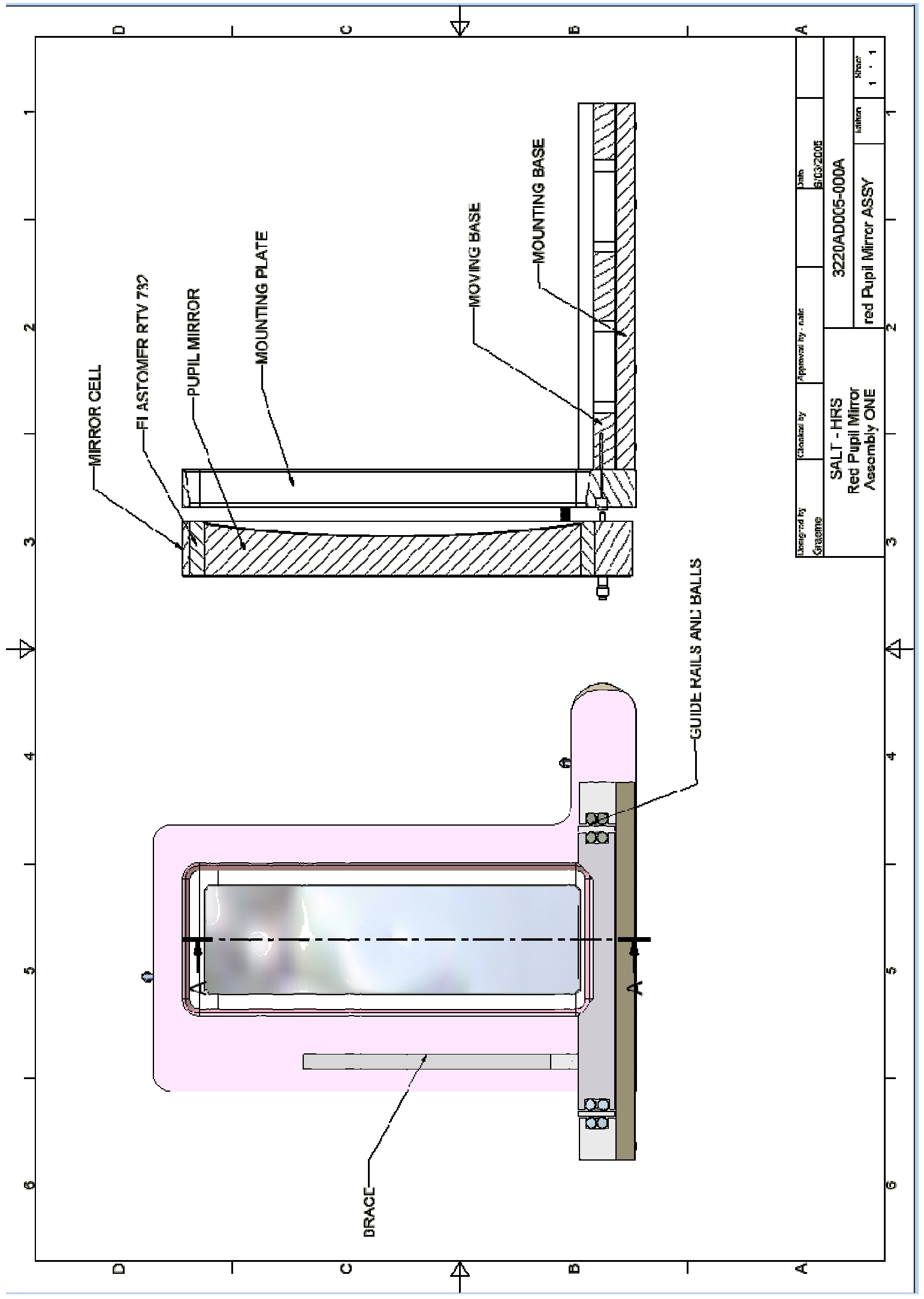
Parts List		
ITEM	QTY	PART NUMBER DESCRIPTION
1	1	Axle lower short
2	1	Lower Rod
3	2	bearing upper



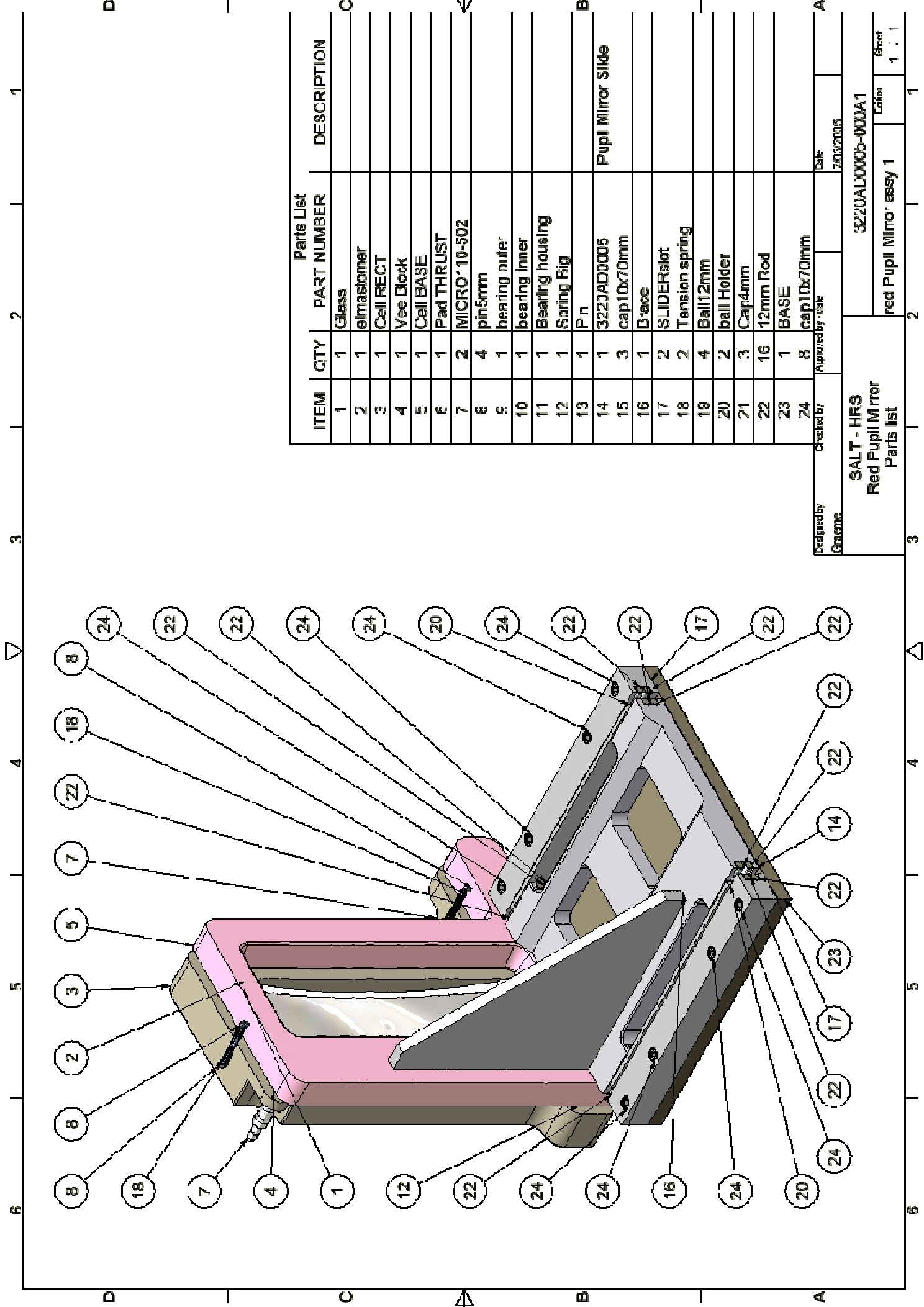
SHORT AXLE LOWER



Designed by Graeme	Checked by	Approved by - date	Drawn S103/2005
SALT - HRS ECHELLE ASSEMBLY LOWER AXLE ASSEMBLY			3220AD0005-0021 + ASSY
Axle lower assy			1 / 1

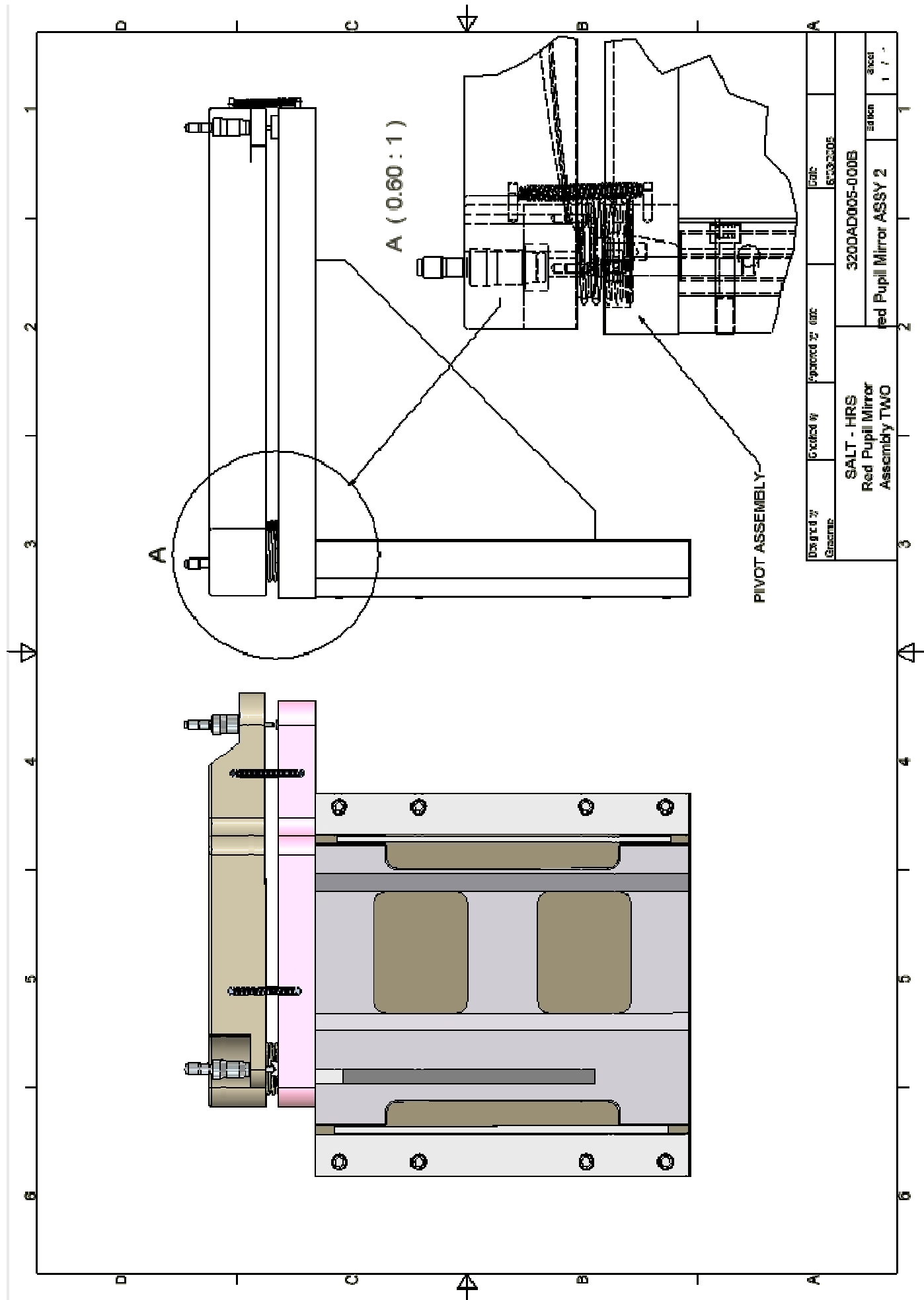


Designed by Grisome	Calculated by	Approved by - name	Date 8/03/2005
SALT - HRS Red Pupil Mirror Assembly ONE		3220AD005-000A	
		Quantity	Drawn
		1	1

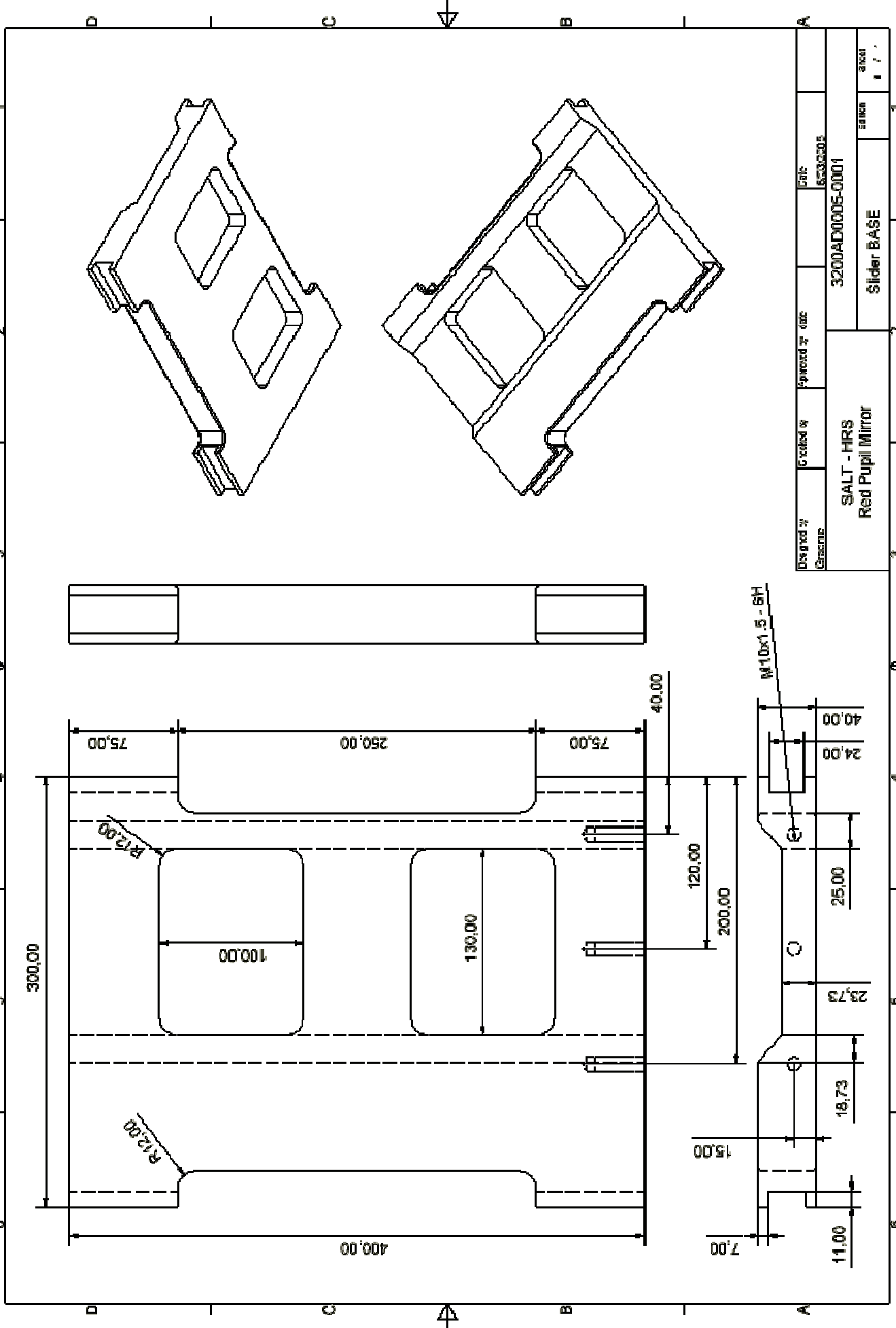


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Glass	
2	1	elmasloner	
3	1	CELLRECT	
4	1	Vee Block	
5	1	Cell BASE	
6	1	Pad THRUST	
7	2	MICRO 10-502	
8	4	pin5mm	
9	1	bearing outer	
10	1	bearing inner	
11	1	Bearing housing	
12	1	Spring Fig	
13	1	P n	
14	1	322AD0005	Pupil Mirror Slide
15	3	cap10x70mm	
16	1	Brace	
17	2	SLIDERSlot	
18	2	Tension spring	
19	4	Ball2mm	
20	2	ball Holder	
21	3	Cap4mm	
22	16	12mm Rod	
23	1	BASE	
24	8	cap10x70mm	

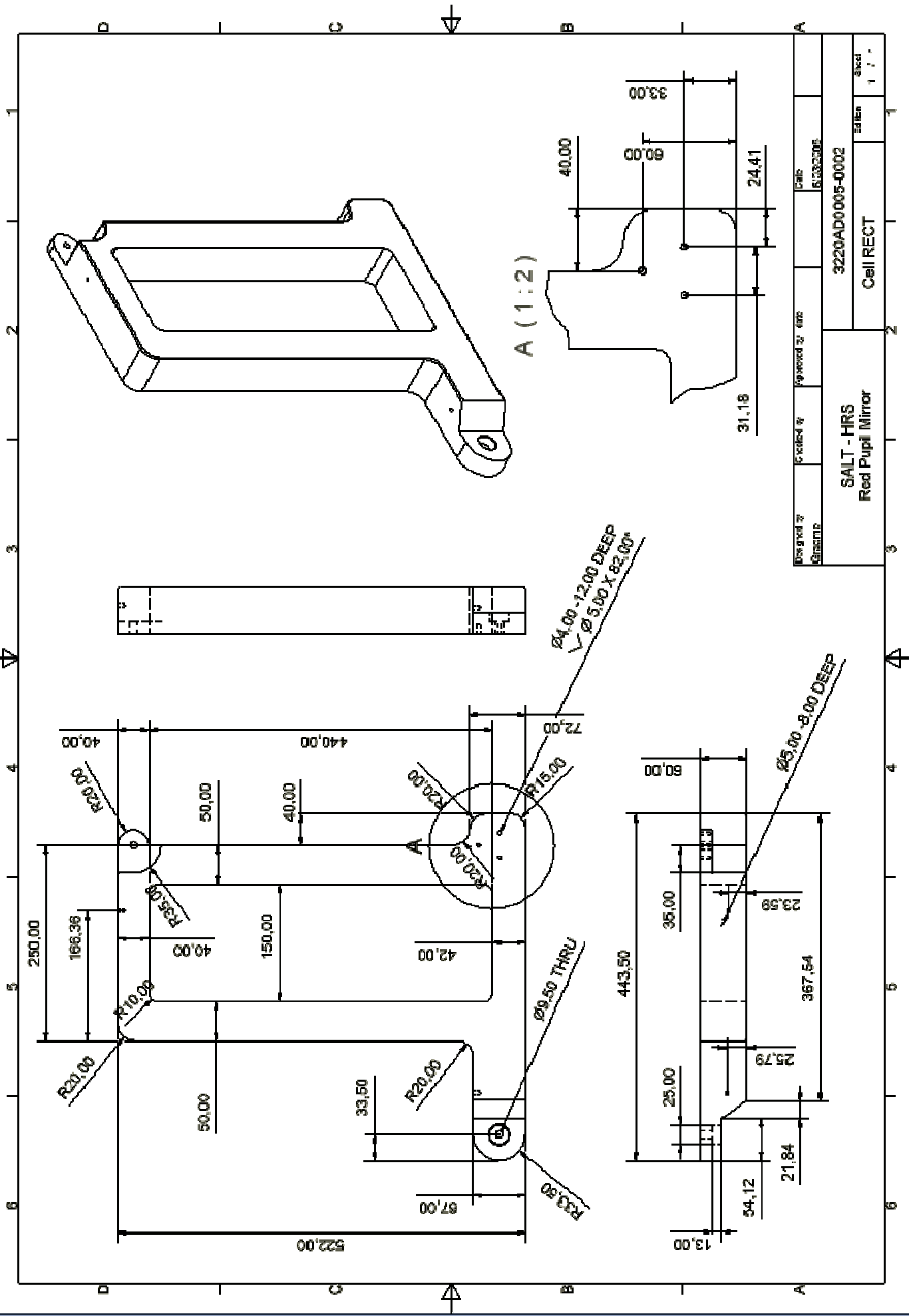
Designed by Graeme	Checked by [ ]	Approved by [ ]	Date 2003/05
SALT - HRS Red Pupil Mirror Parts list		322AD0005-000A1	
		red Pupil Mirror assy 1	1
		Caplin	1
		Shcer	1



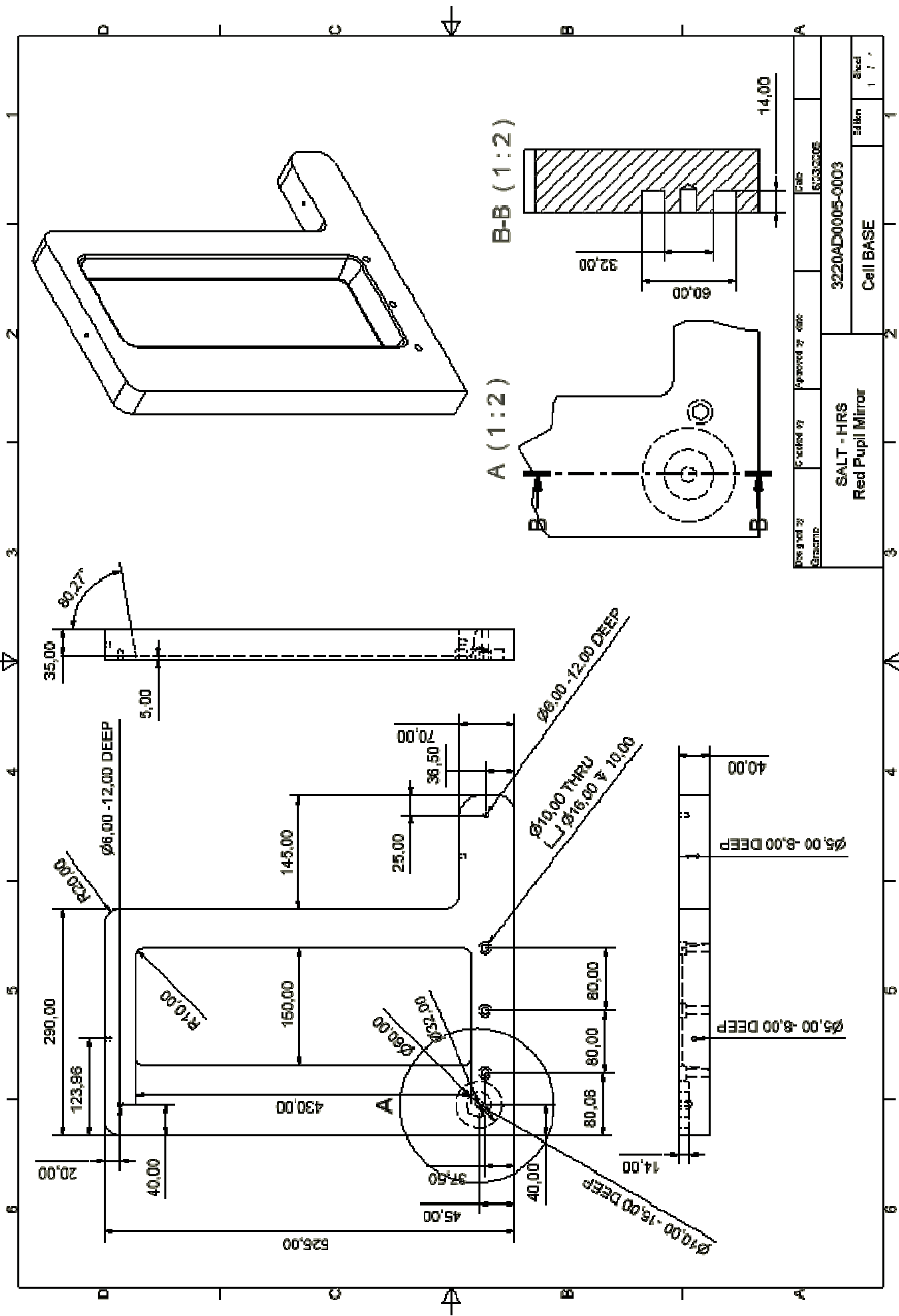
Designed by Graciano	Created by	Approved by (INC)	Date 6/23/2005	Sheet 1 / 1
SALT - HRS Red Pupil Mirror Assembly TWO		3200AD005-000B		Section 1 / 1
			Red Pupil Mirror ASSY 2	



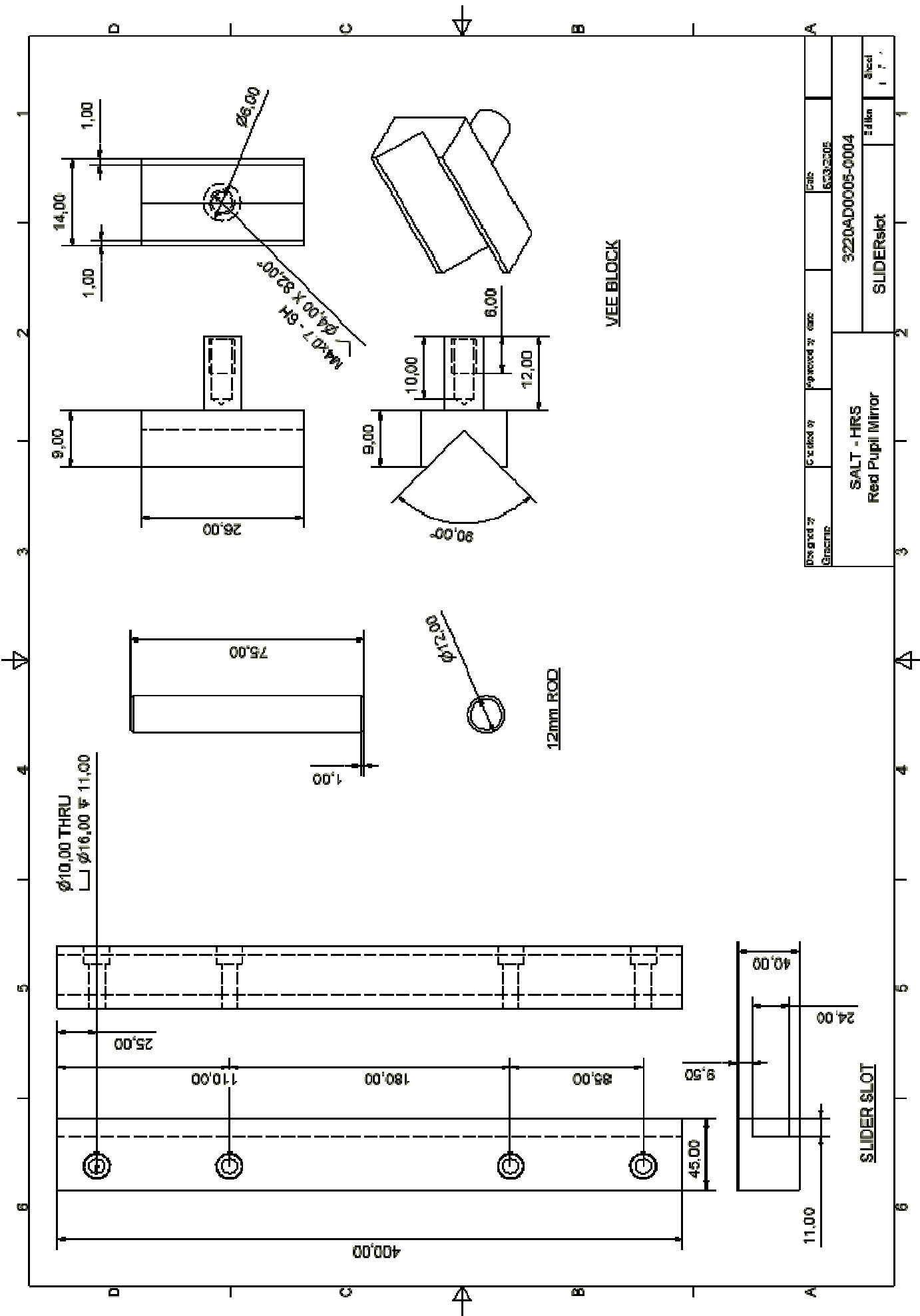
DESIGNED BY	Checked by	Approved by	DATE
			6/23/2005
3200AD0005-0001		Slider BASE	
SALT - HRS		sheet	1 / 1
Red Pupil Mirror		sheet	1 / 1



DESIGNED BY	DESIGNED BY	DATE	1
Checked by	Checked by	DATE	1
SALT - HRS		3220AD0005-0002	Sheet
Red Pupil Mirror		Cell RECT	1 / 1

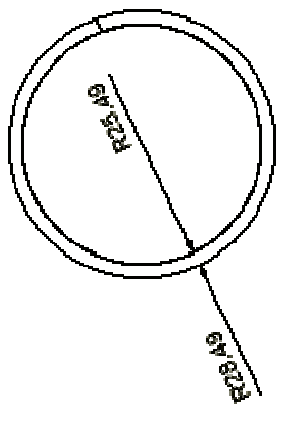
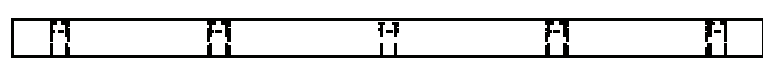
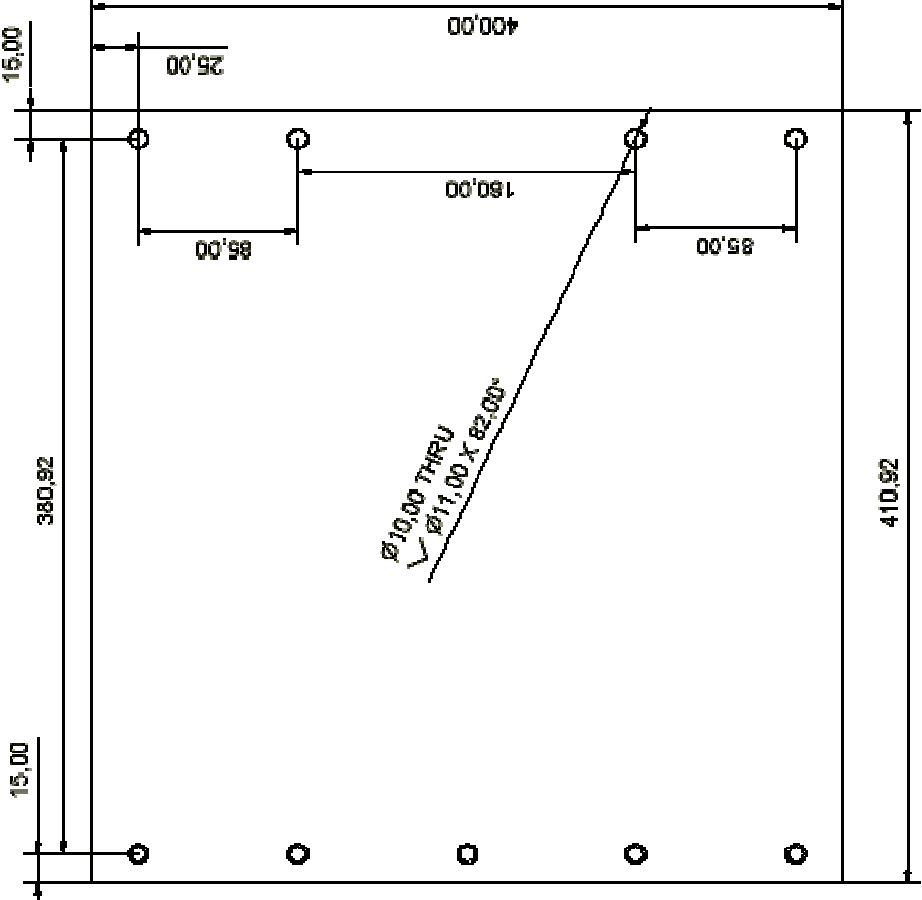
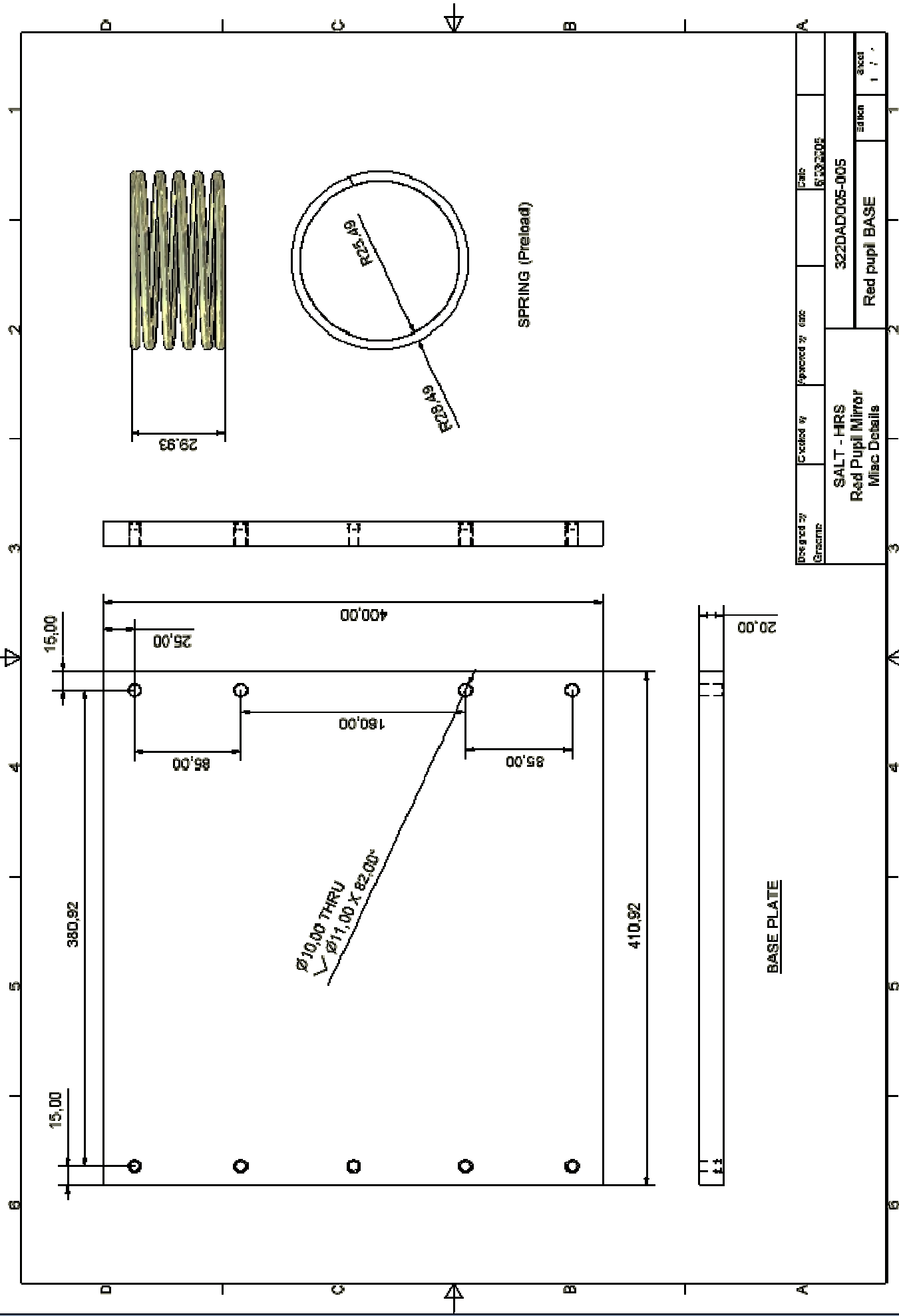


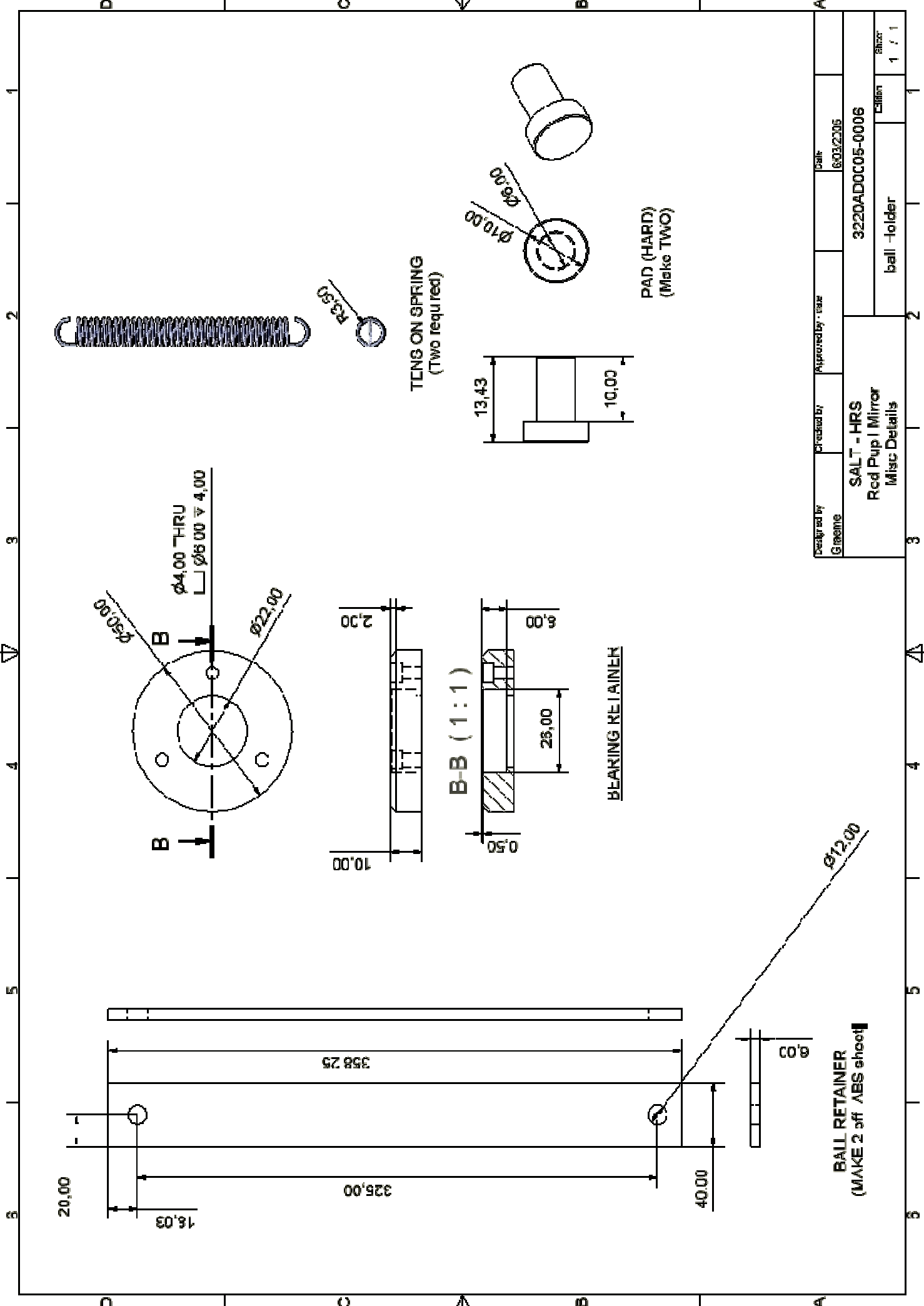
Desig. and by Srinivas	Checked by	Approved by	Part 65030200E	Sheet 1 of 1
SALT - HRS Red Pupil Mirror		3220AD0005-0003 Cell BASE		



Designed by	G. ...	Prepared by	...	Part	6503250E
SALT - HRS Red Pupil Mirror		3220AD0005-0004		SLIDER Slot	
		1.1.1		1	

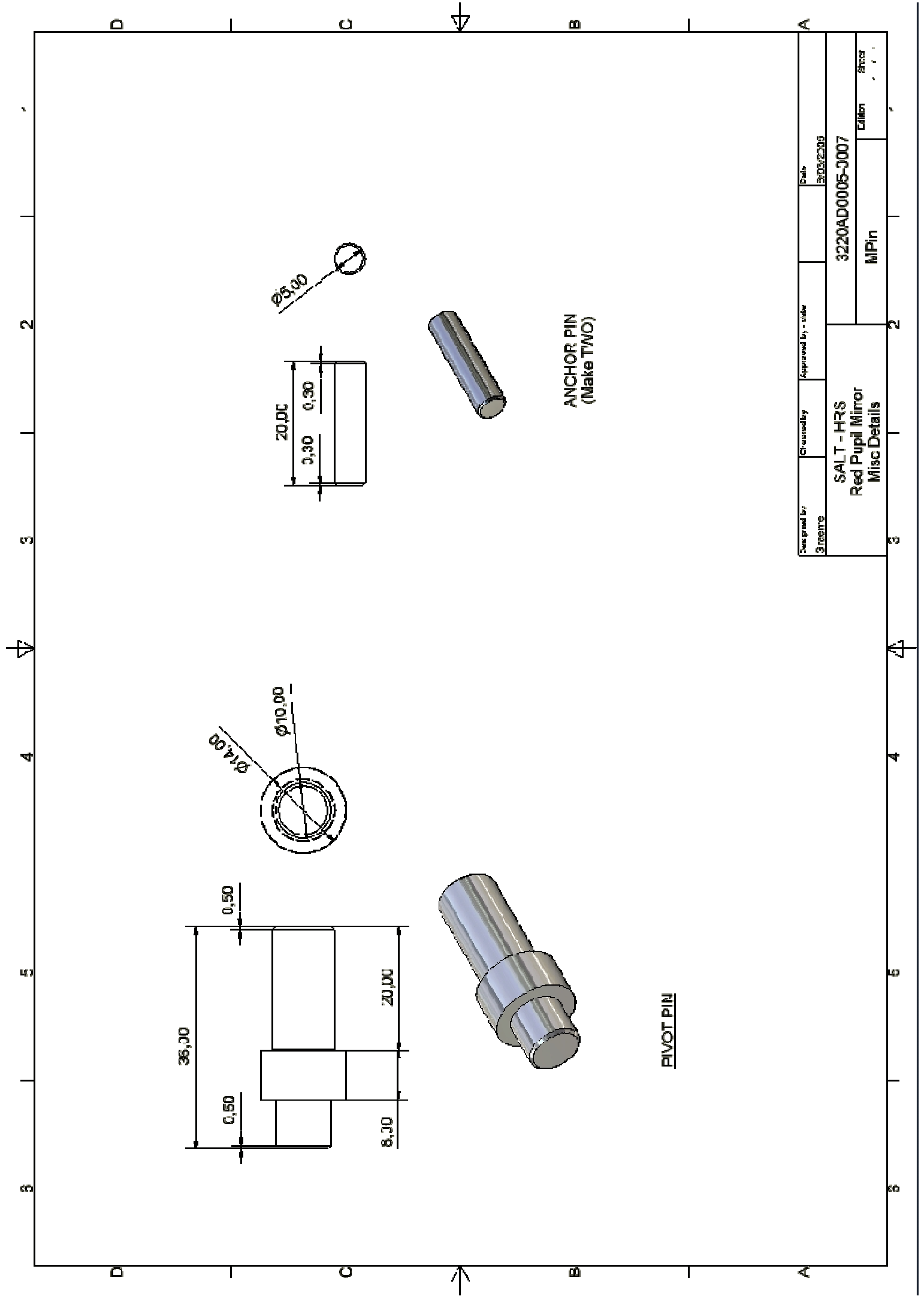






Designed by Graeme	Created by	Approved by - name	Date 6/03/2006
SALT - HRS Red Pup I Mirror Misc Details		322DAD00C05-0006	Client ball folder
		Sheet 1 / 1	

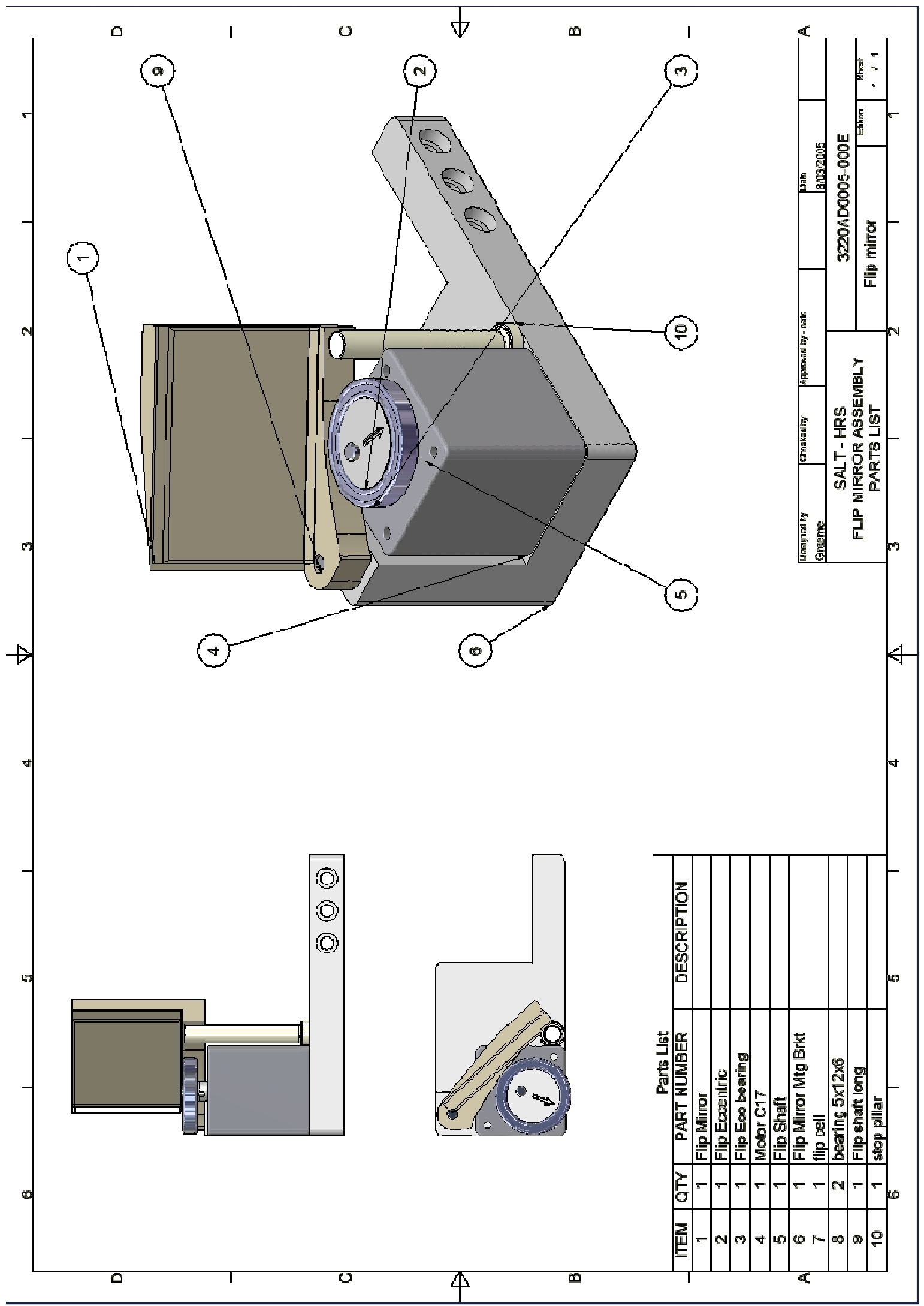
**BALL RETAINER**  
(MAKE 2 off ABS sheet)



ANCHOR PIN  
(Make TWO)

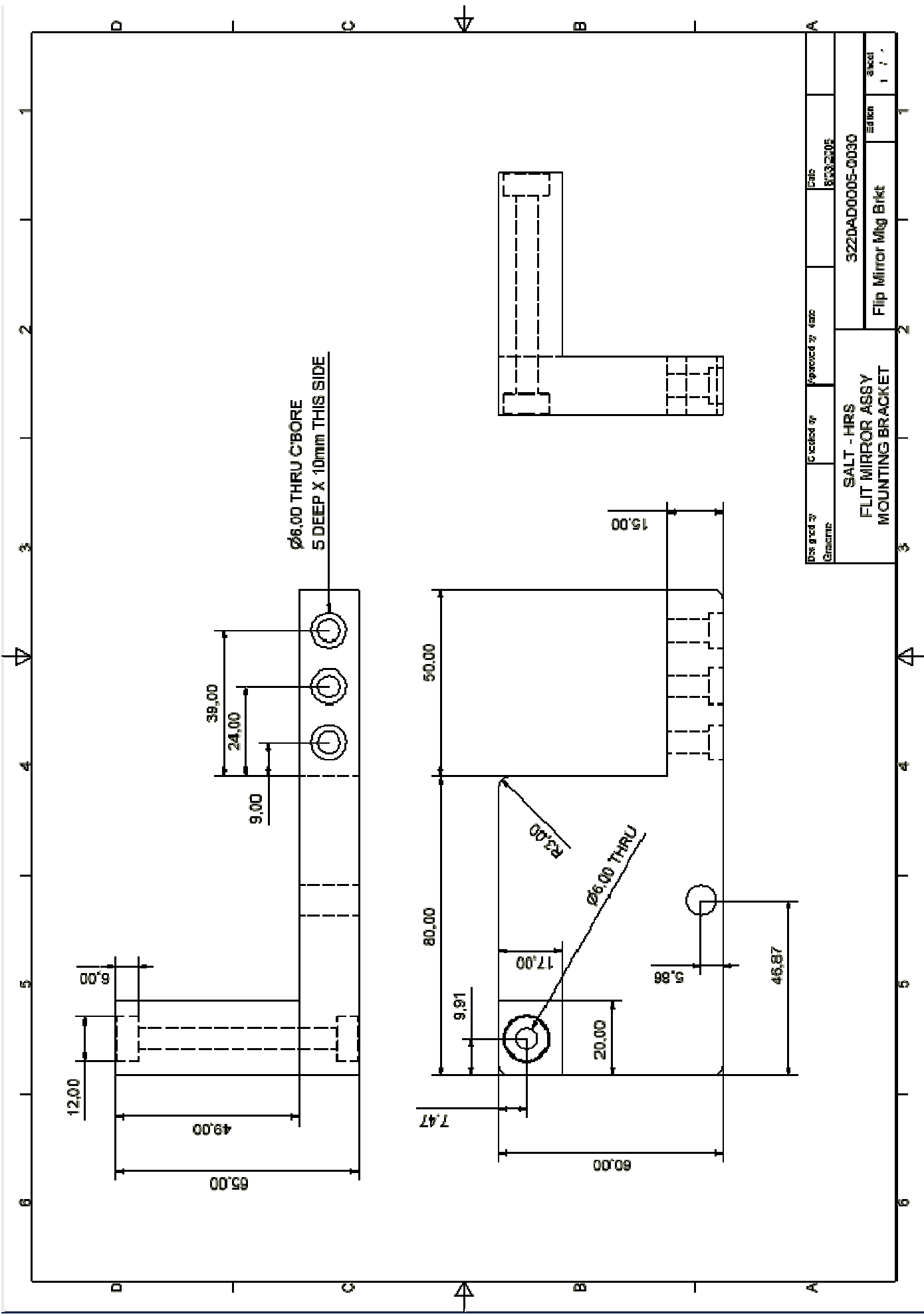
PIVOT PIN

Designed by Greene	Checked by	Approved by - date	Date 3/03/2006
SALT - HRS Red Pupil Mirror Misc Details		3220AD0005-J007	MPin
		Editor	Stator

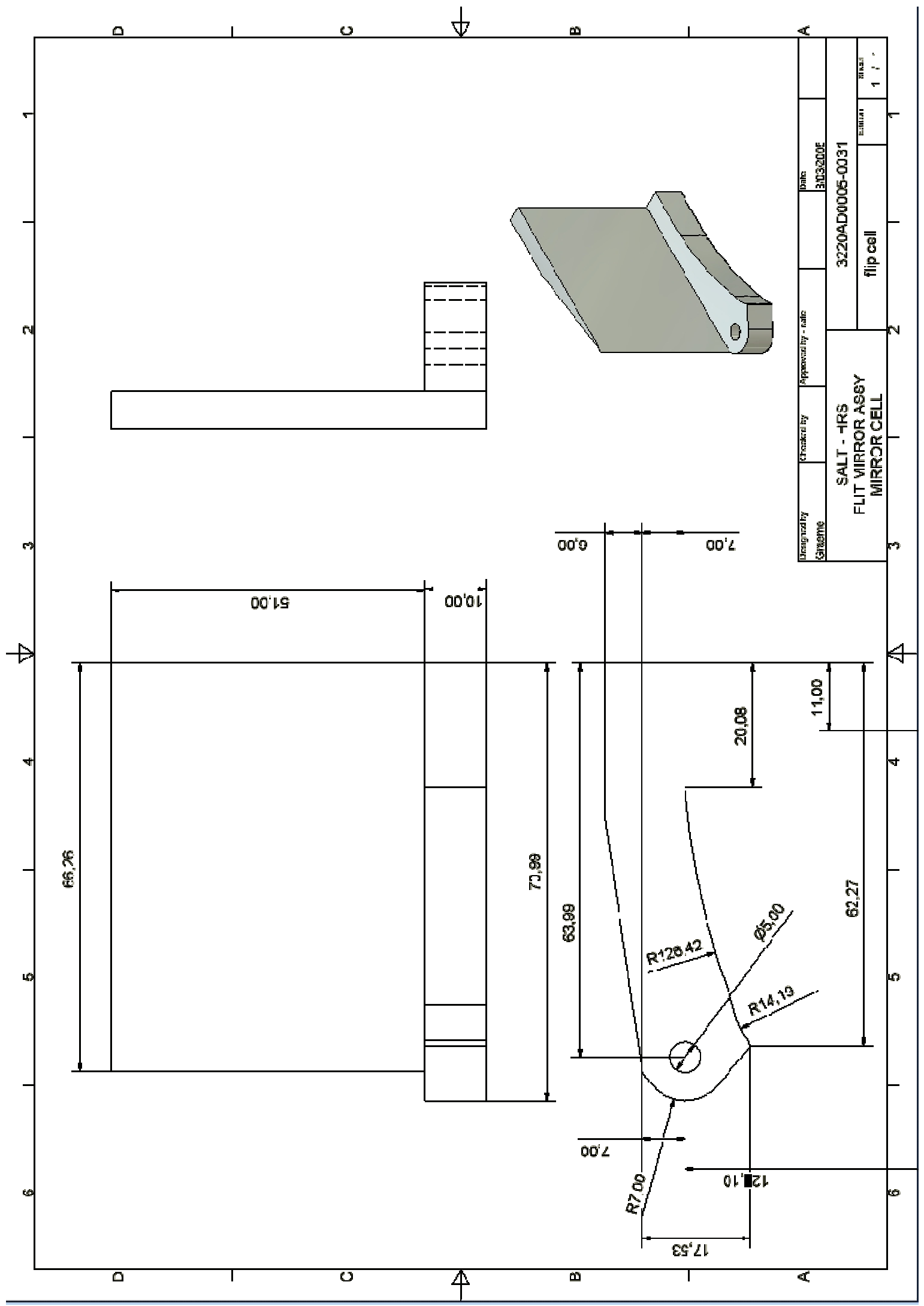


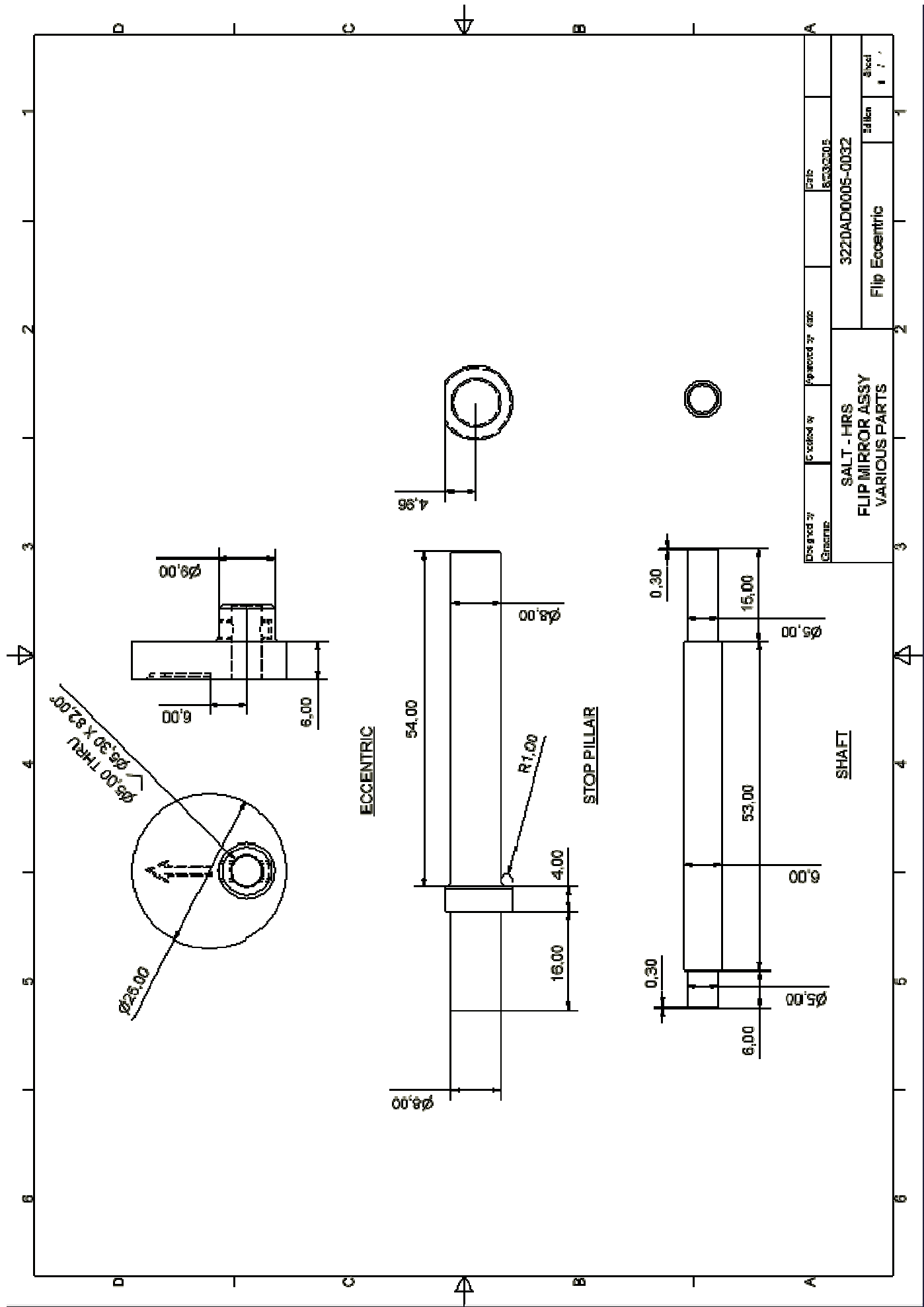
Designed by Graeme	Checked by	Approved by - name	Date 8/03/2005	A	
SALT - HRS		3220AD0005-000E		FLIP mirror	
FLIP MIRROR ASSEMBLY		PARTS LIST		Sheet	1 / 1

Parts List			DESCRIPTION
ITEM	QTY	PART NUMBER	
1	1	Flip Mirror	
2	1	Flip Eccentric	
3	1	Flip Ecc bearing	
4	1	Motor C17	
5	1	Flip Shaft	
6	1	Flip Mirror Mtg Brkt	
7	1	flip cell	
8	2	bearing 5x12x6	
9	1	Flip shaft long	
10	1	stop pillar	
			6



Des. and / or Graphic	Checked by	Approved by	Date
			8/31/2005
SALT - HRS FLIT MIRROR ASSY MOUNTING BRACKET		3220AD0005-0030	
		Edison	Sheet 1 / 1





**ECCENTRIC**

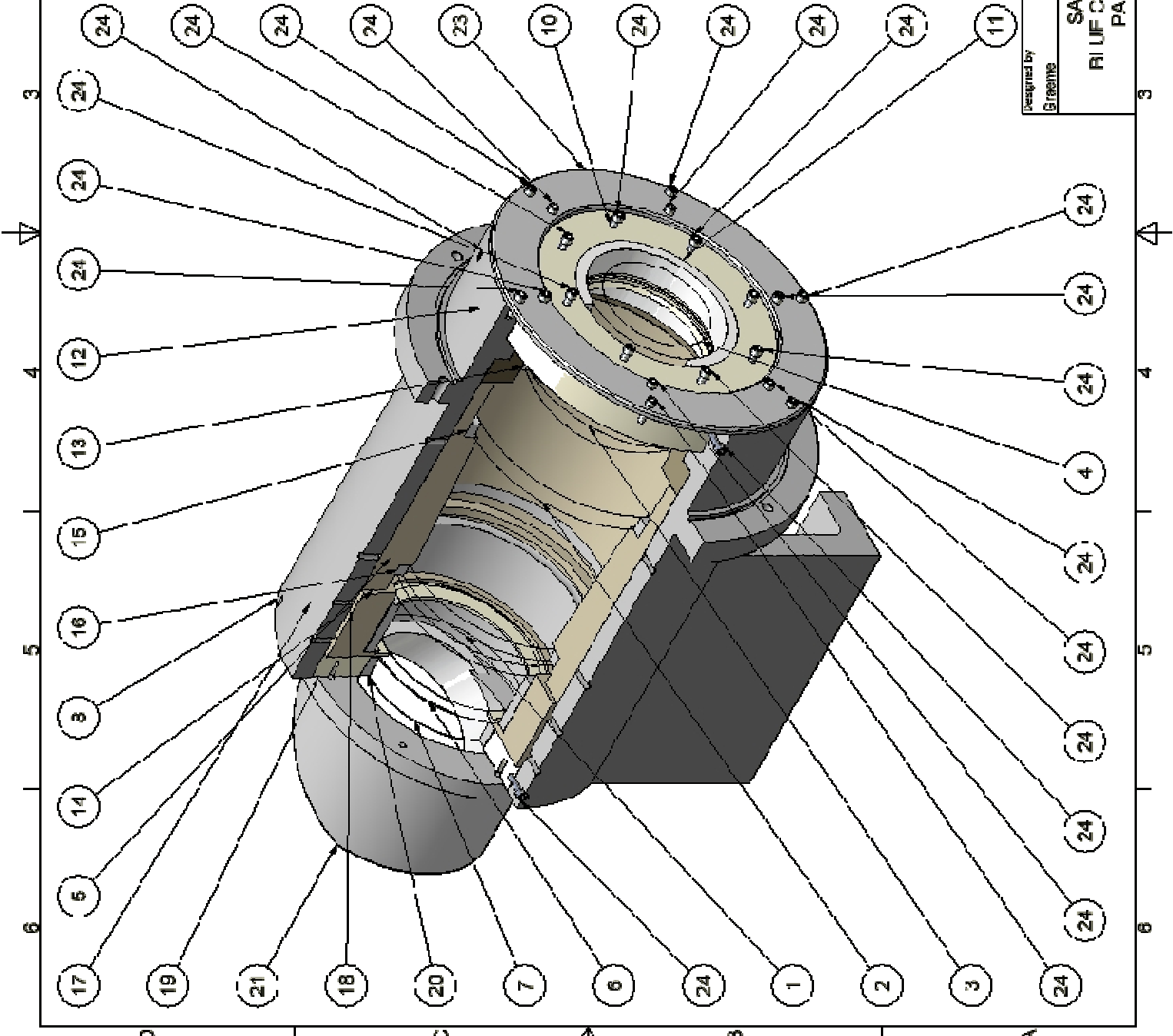
**STOP PILLAR**

**SHAFT**

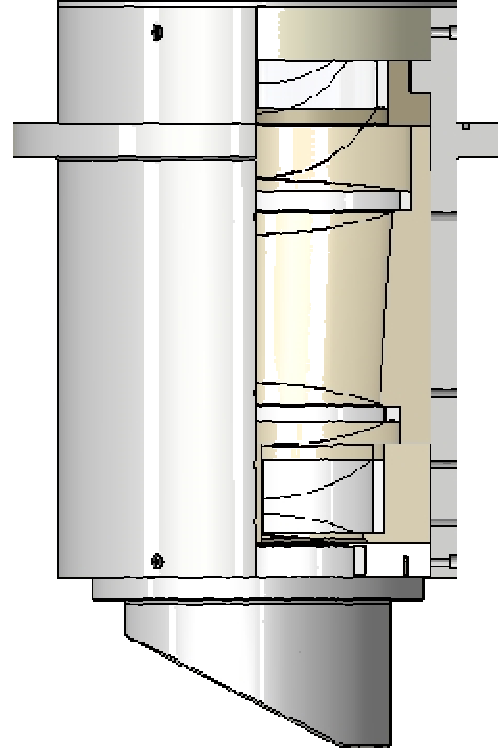
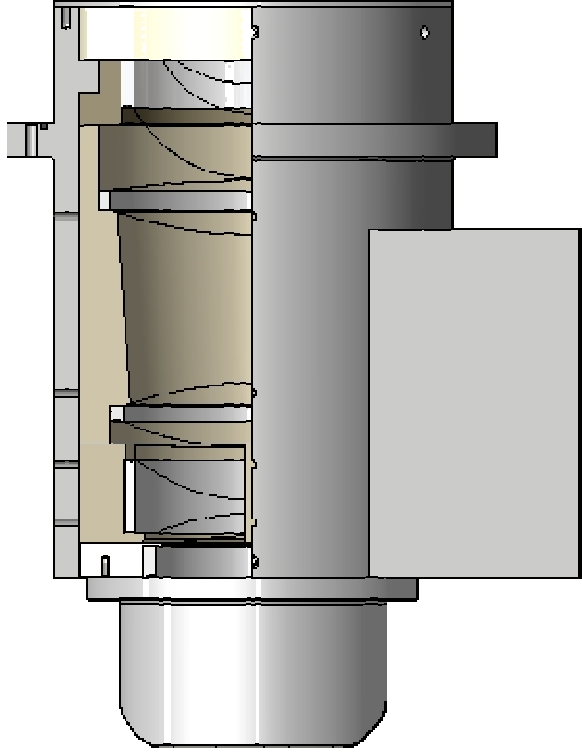
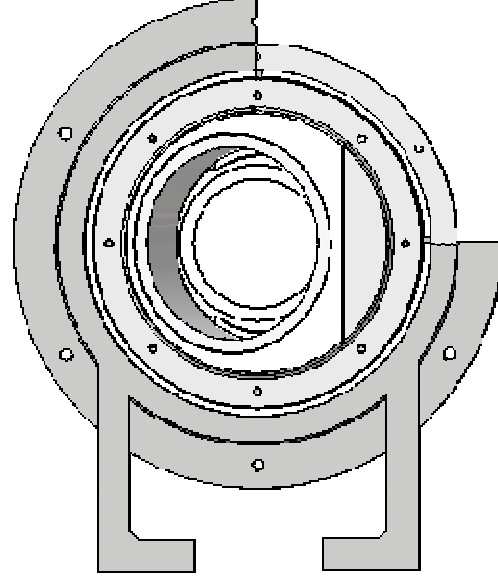
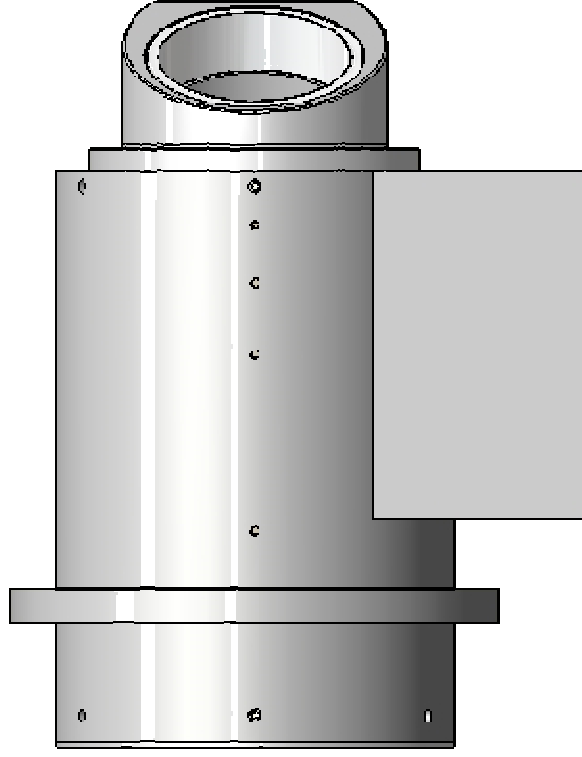
Designed by Ghosh, S.	Checked by Ghosh, S.	Approved by Ghosh, S.	Date 05/03/2005
322DAD0005-0032		Flip Eccentric	
SALT - HRS FLIP MIRROR ASSY VARIOUS PARTS		Bill No	Sheet

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Blue 4th Lens	
2	1	Blue 5th lens	
3	1	Blue 6th Lens	
4	1	Blue 7th Lens	
5	1	Blue 3rd Lens	
6	1	Blue 2nd Lens	
7	1	Blue 1st lens	
8	1	Blue Cam Cell	
9	1	Blue VPH Grating	
10	1	Blue 7th Cell	
11	1	Blue 7th Elast	
12	1	Blue 6th Cell	
13	1	Blue 6th Elast	
14	1	Blue 4th & 5th Cell	
15	1	Blue 5th Elast	
16	1	Blue 4th Elast	
17	1	Blue 2nd + 3rd Cell	
18	1	Blue elast 2 & 3	
19	1	Blue 1st Elast	
20	1	Blue 1st Elast	
21	1	Blue VPH Cell	
22	1	Blue VPH elast	
23	1	Blue retaining ring	
24	27	Cap6x35	

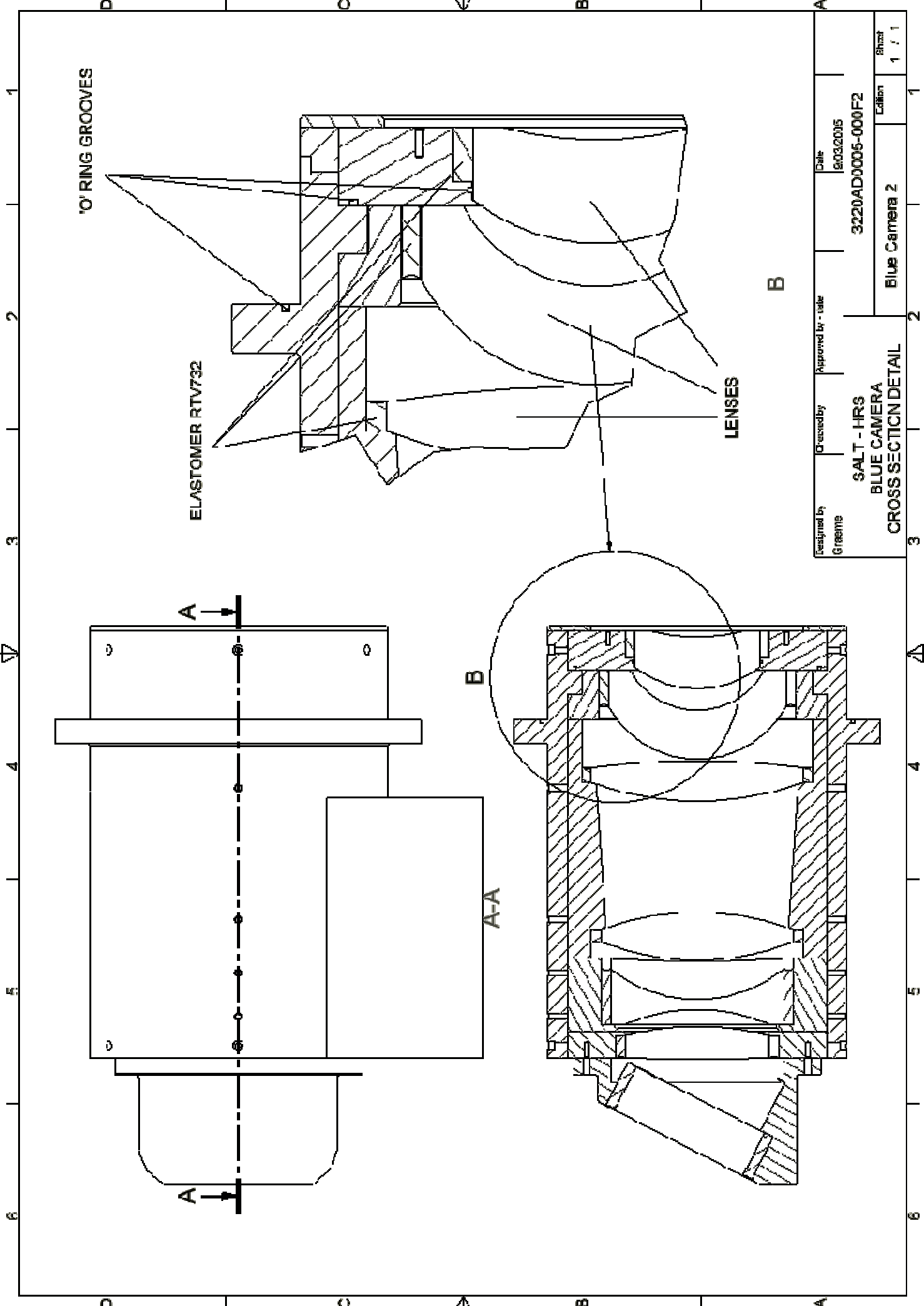
Prepared by: Greene      Checked by: Approved by - rate      Date: 8/13/2006  
**SALT - HRS RIFLE CAMERA ASSY PARTS LIST**      **3220AD0005-000F**  
 Blue Camera      Edition: 1.1







Designed by GURETTE	Checked by	Approved by	Date 18.03.2015	3220AD0005-000F	Sheet 2 / 2
<b>SALT - HRS BLUE CAMERA FOUR VIEW CUTAWAY</b>				<b>Blue Camera</b>	



'O' RING GROOVES

ELASTOMER RTV732

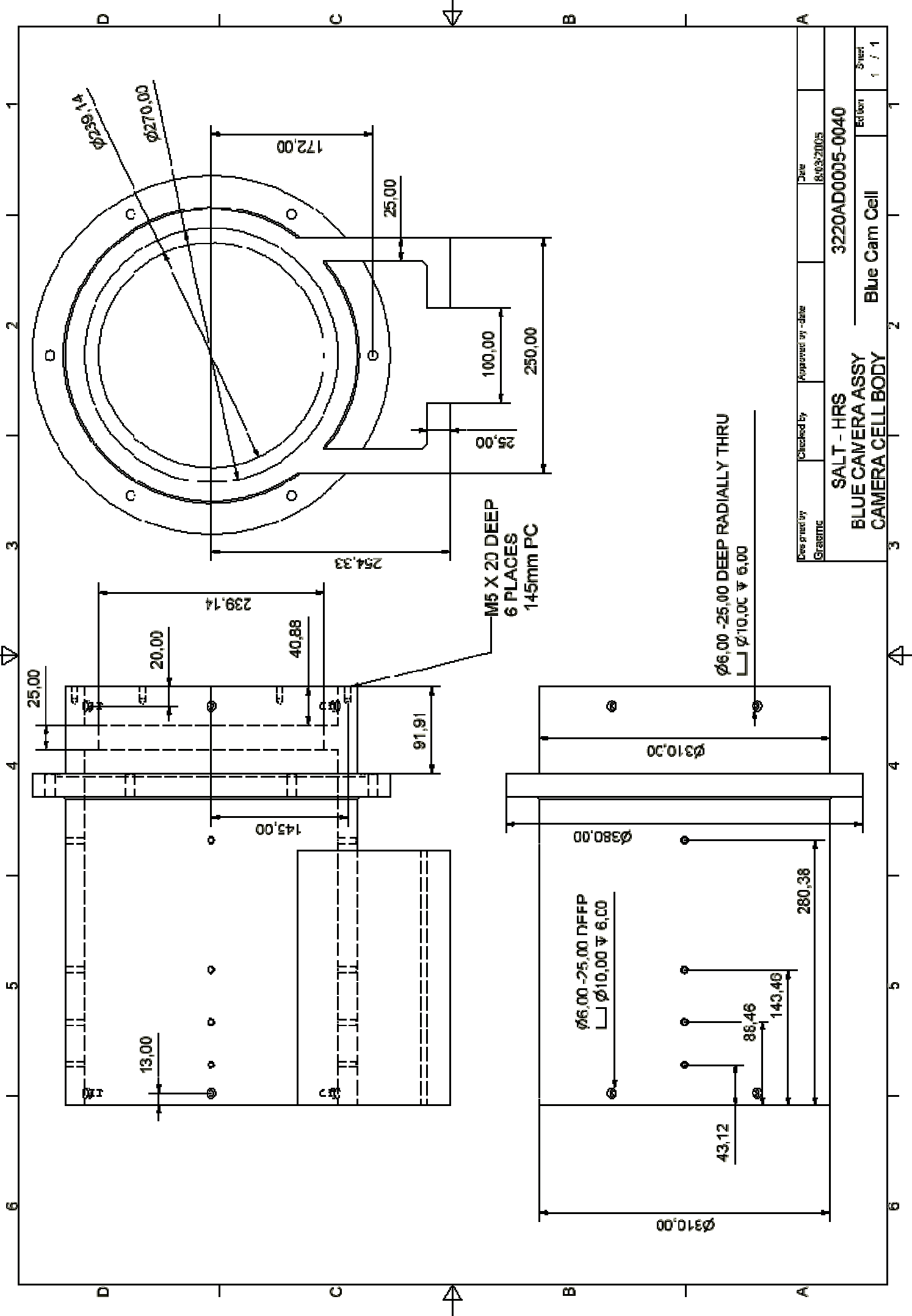
LENSES

B

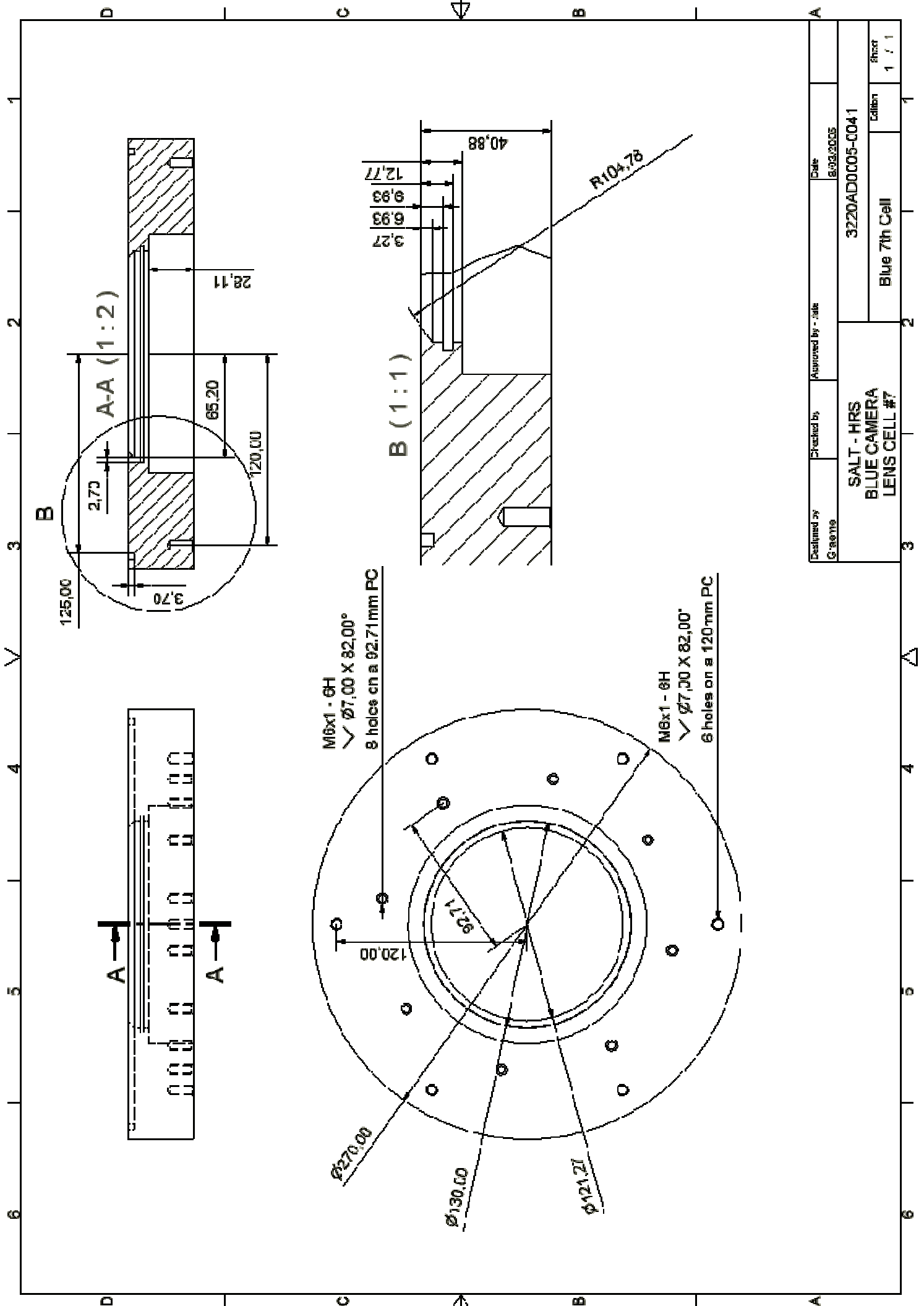
B

A-A

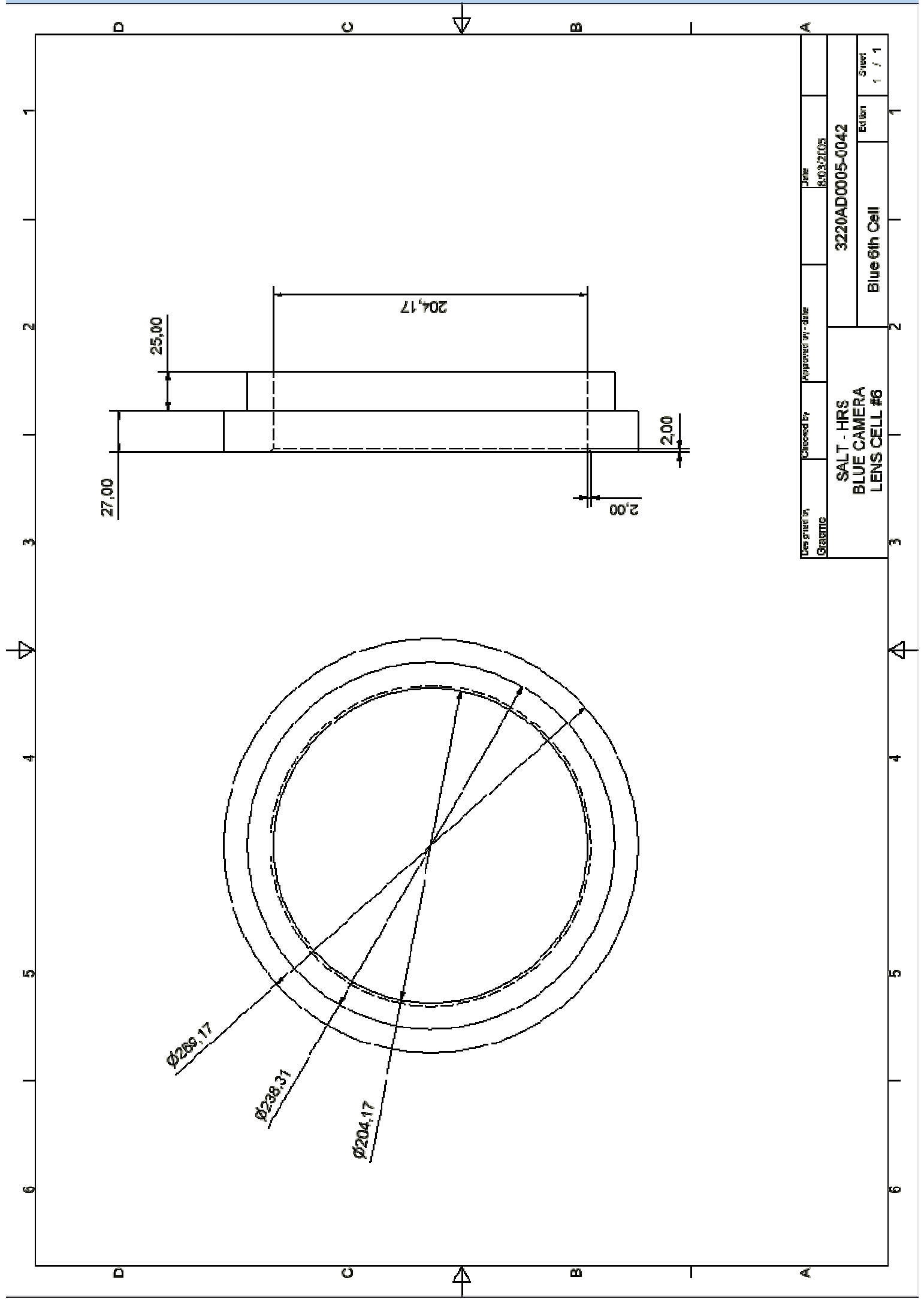
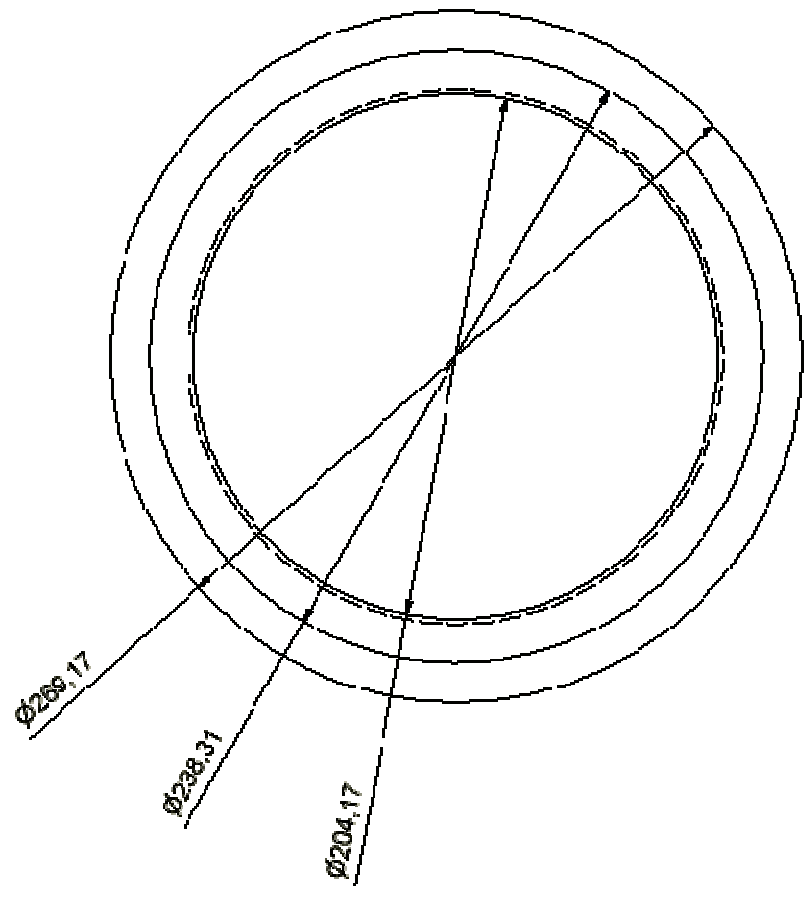
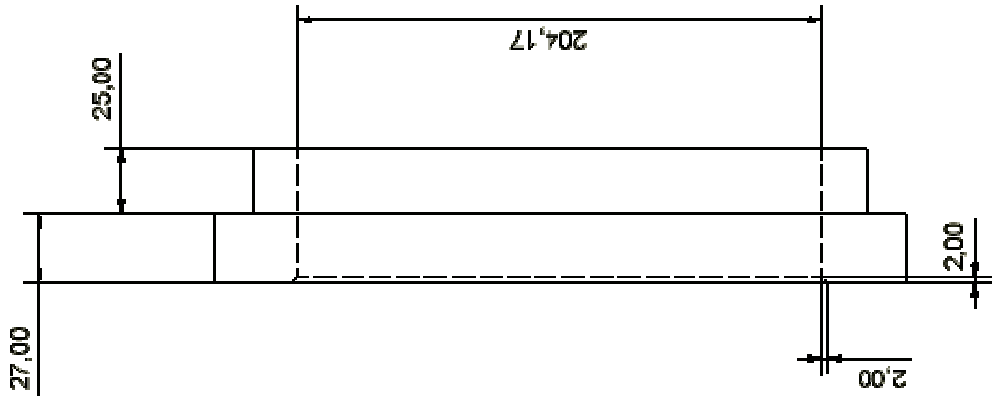
Designed by G resme	Drawn by	Approved by - valle	Date 03/03/05	3220AD0006-000F2	
				Blue Camera 2	Sheet 1 / 1
<b>SALT - HRS BLUE CAMERA CROSS SECTION DETAIL</b>					



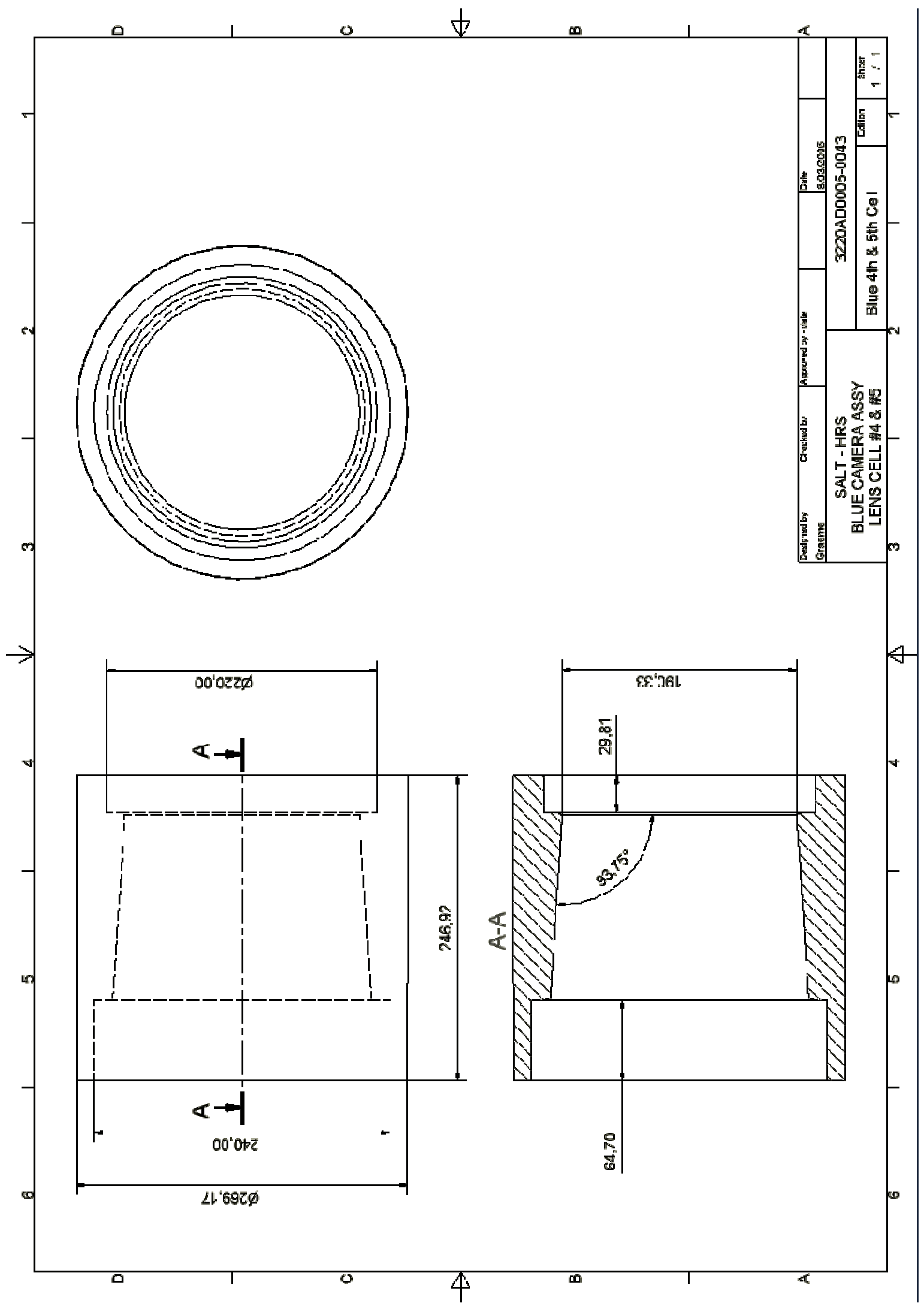
Designed by GRAEMIC	Checked by	Approved by -Date	Date 8/10/2005
3220AD0005-0040		Blue Cam Cell	
SALT - HRS BLUE CAMERA ASSY CAMERA CELL BODY		Edition 1 / 1	



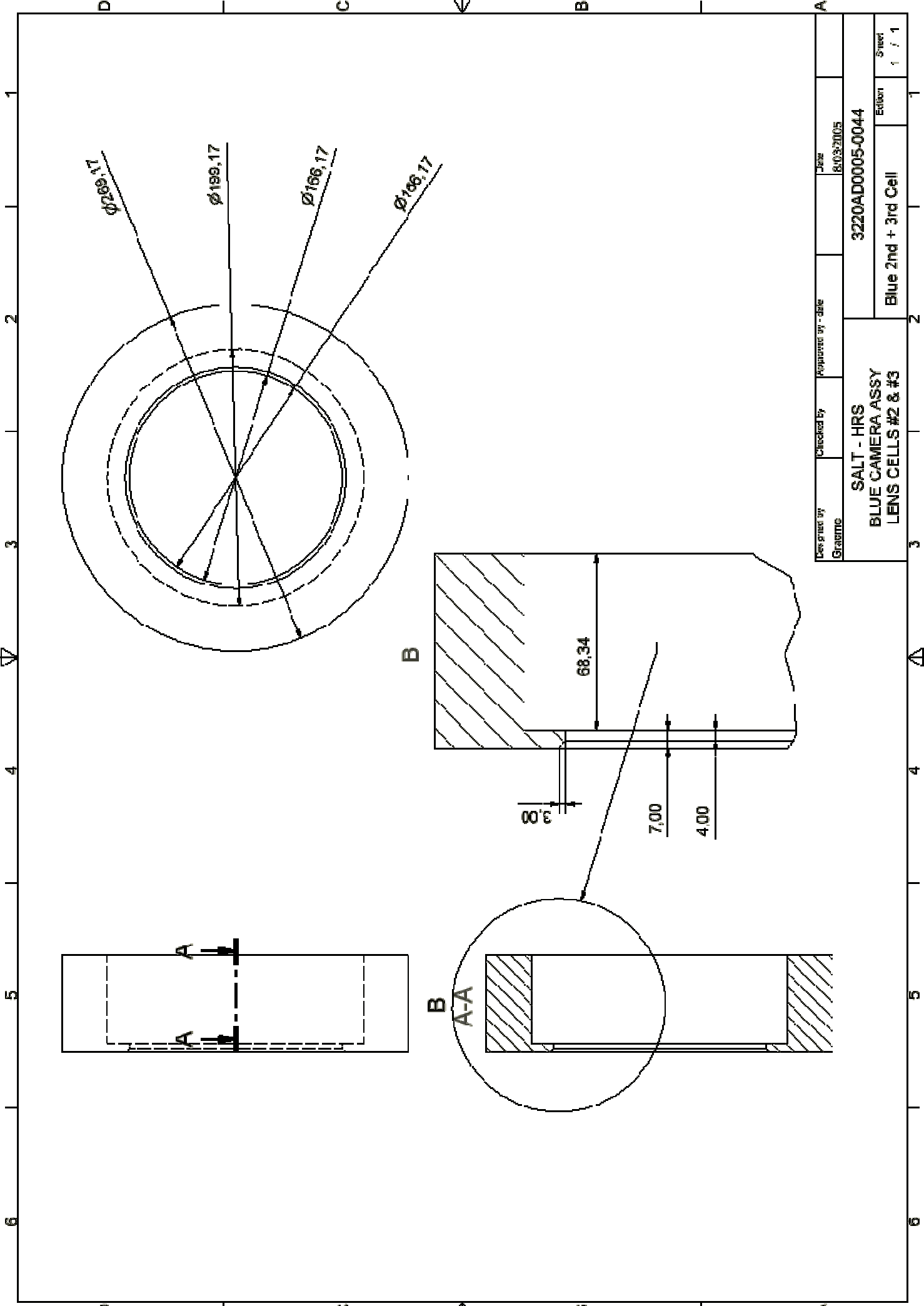
Designed by G. nome	Executed by	Approved by - date	Date 8.03.2005
SALT - HRS BLUE CAMERA LENS CELL #7		3220AD0005-0041	
		Collabn	Sheet 1 / 1



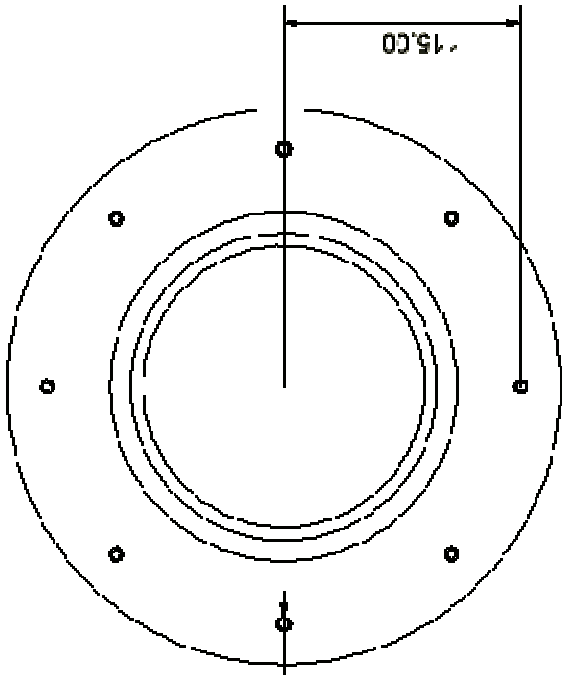
DESIGNER (V)	CHECKED BY	APPROVED BY-DATE	JUNE	8/10/03:21/05	3220AD0005-0042	Sheet	1 / 1
Graphic					Blue 6th Cell	Ed:001	1 / 1
SALT - HRS							
BLUE CAMERA							
LENS CELL #6							



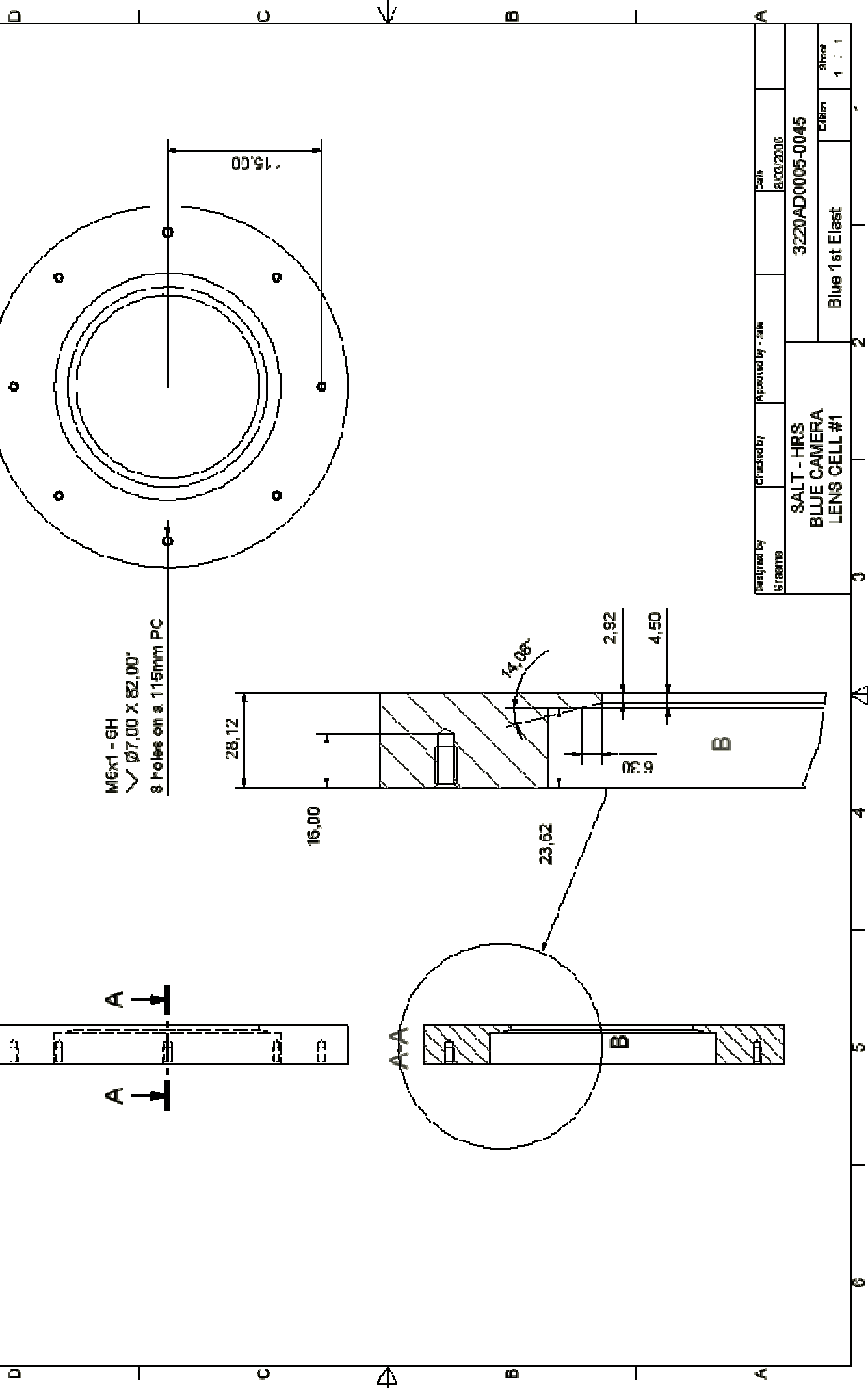
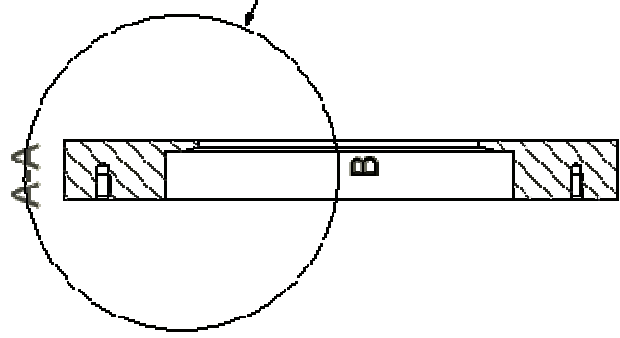
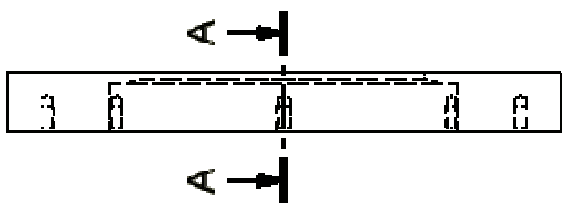
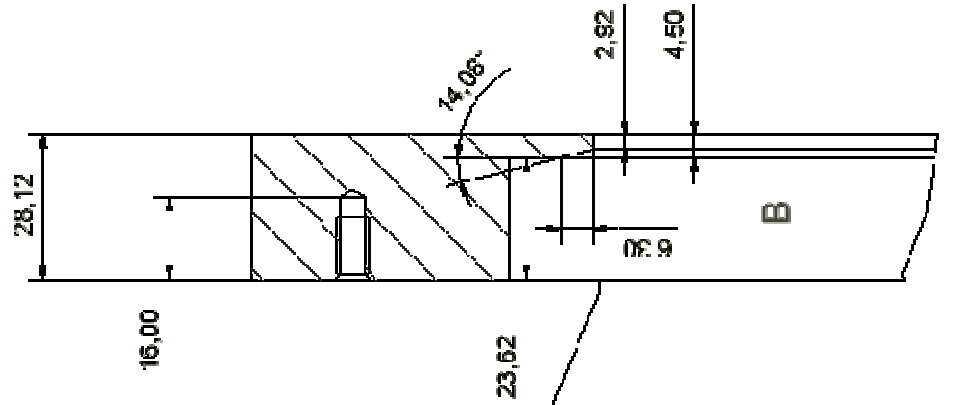
Designed by Graeme	Checked by	Approved by - date	Date 8.03.2005
SALT - HRS BLUE CAMERA ASSY LENS CELL #4 & #5		3220AD0005-0043	
		Blue 4th & 5th Cel	Revision 1 / 1



Designed by Graeme	Checked by	Approved by - Jue	Job No 810321005	Sheet 1 / 1
SALT - HRS BLUE CAMERA ASSY LENS CELLS #2 & #3			3220AD0005-0044	
			Blue 2nd + 3rd Cell	

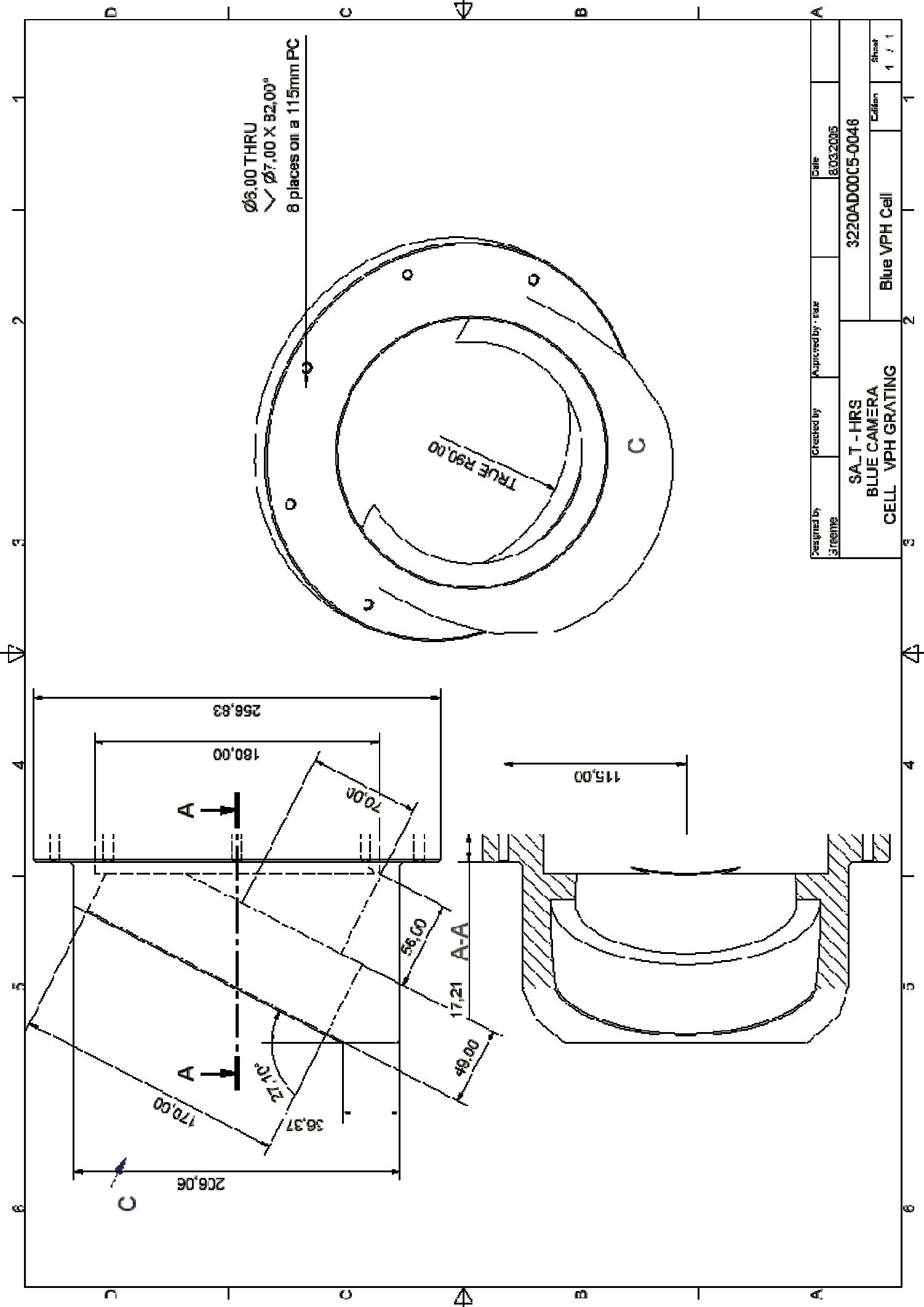


M6x1 - GH  
 $\sphericalangle$   $\varnothing 7,00 \times 62,00$ "  
 8 Holes on a 115mm PC



Designed by M REYNIE	Created by	Approved by - date	Scale 1:1
SALT - HRS BLUE CAMERA LENS CELL #1		3220AD0005-0045	Revision 1 : 1
Blue 1st Elast		Sheet 1 : 1	

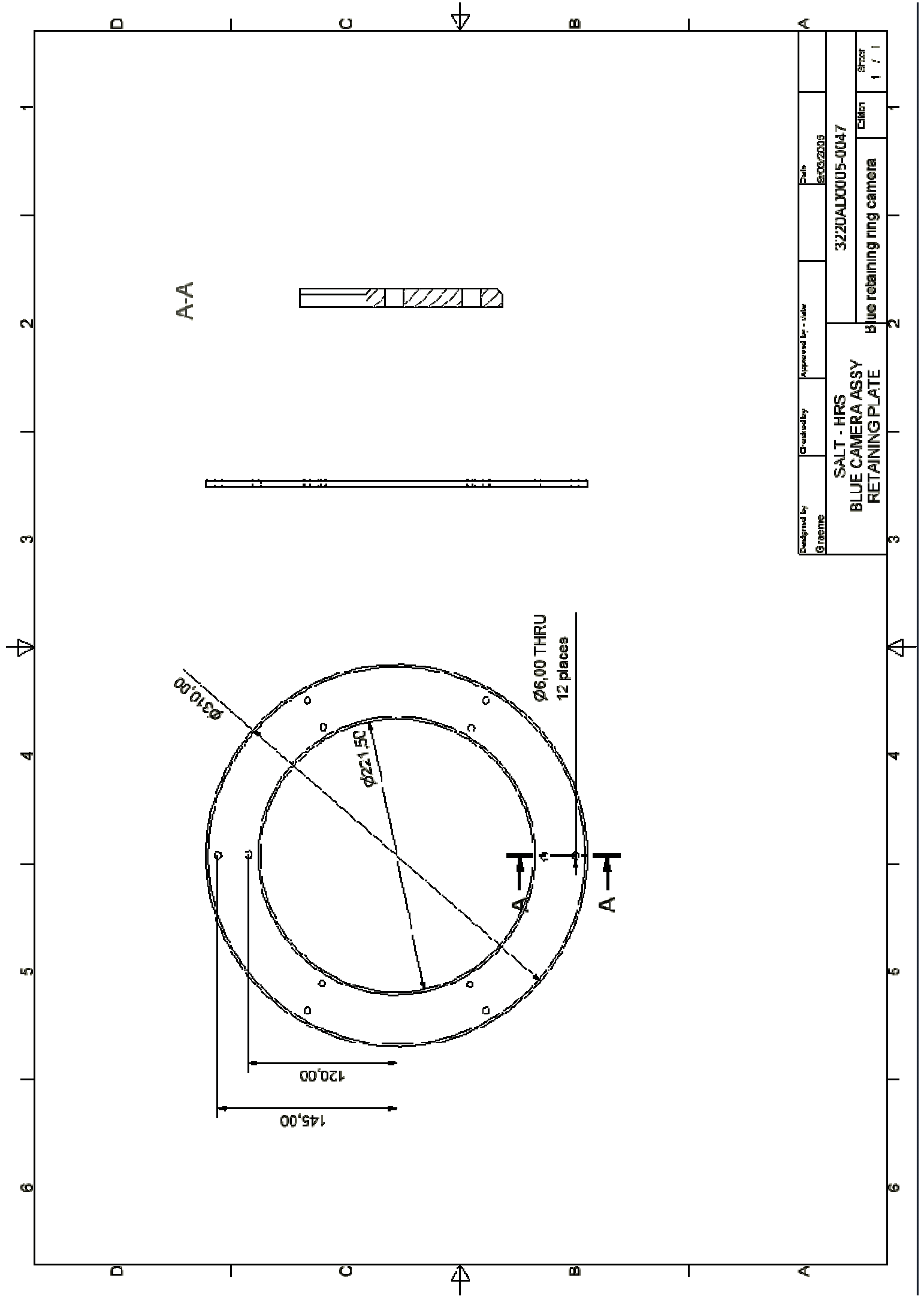




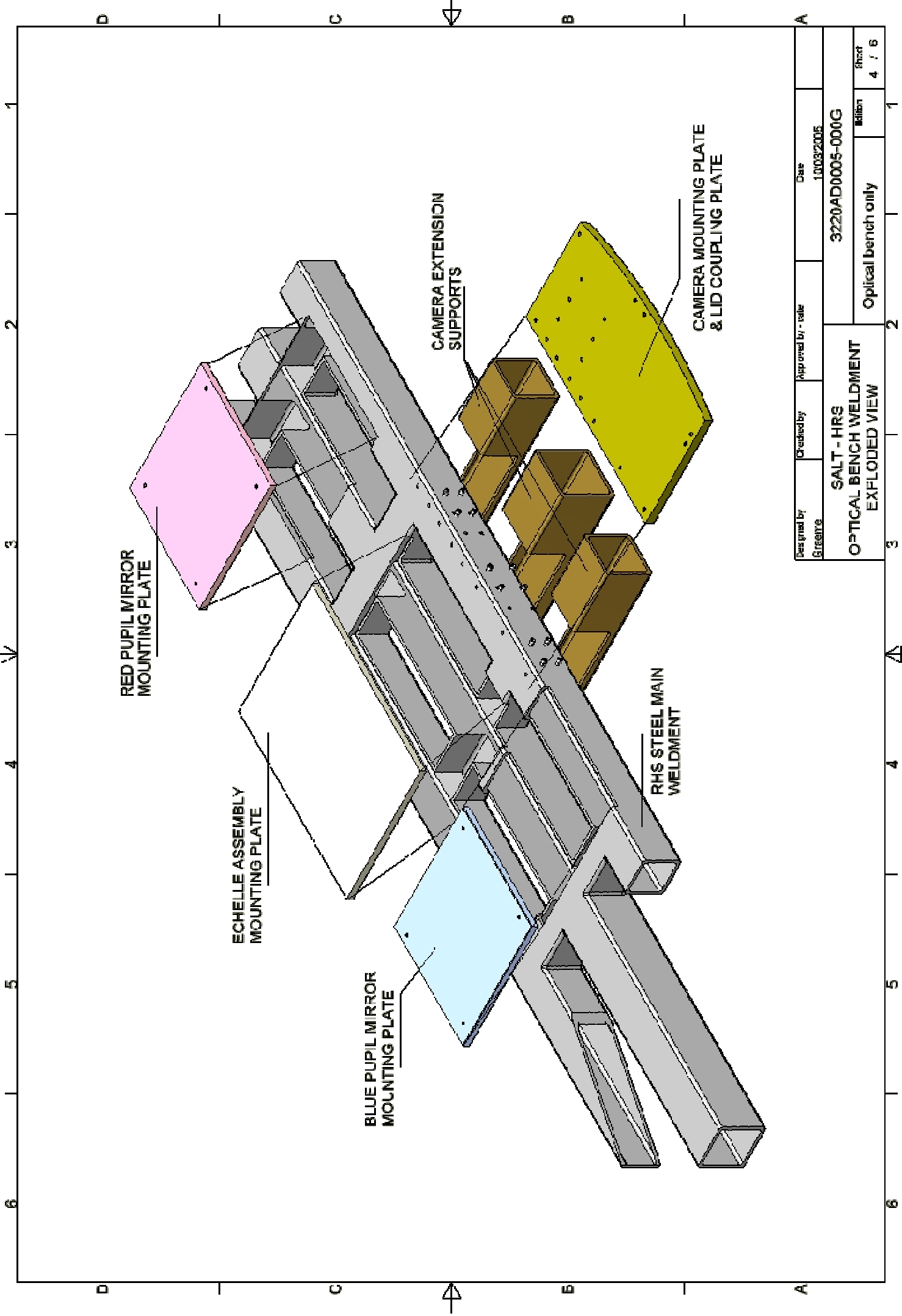
Ø6.00 THRU  
 ✓ Ø7.00 X 92.00°  
 8 places on a 115mm PC

TRUE R90.00

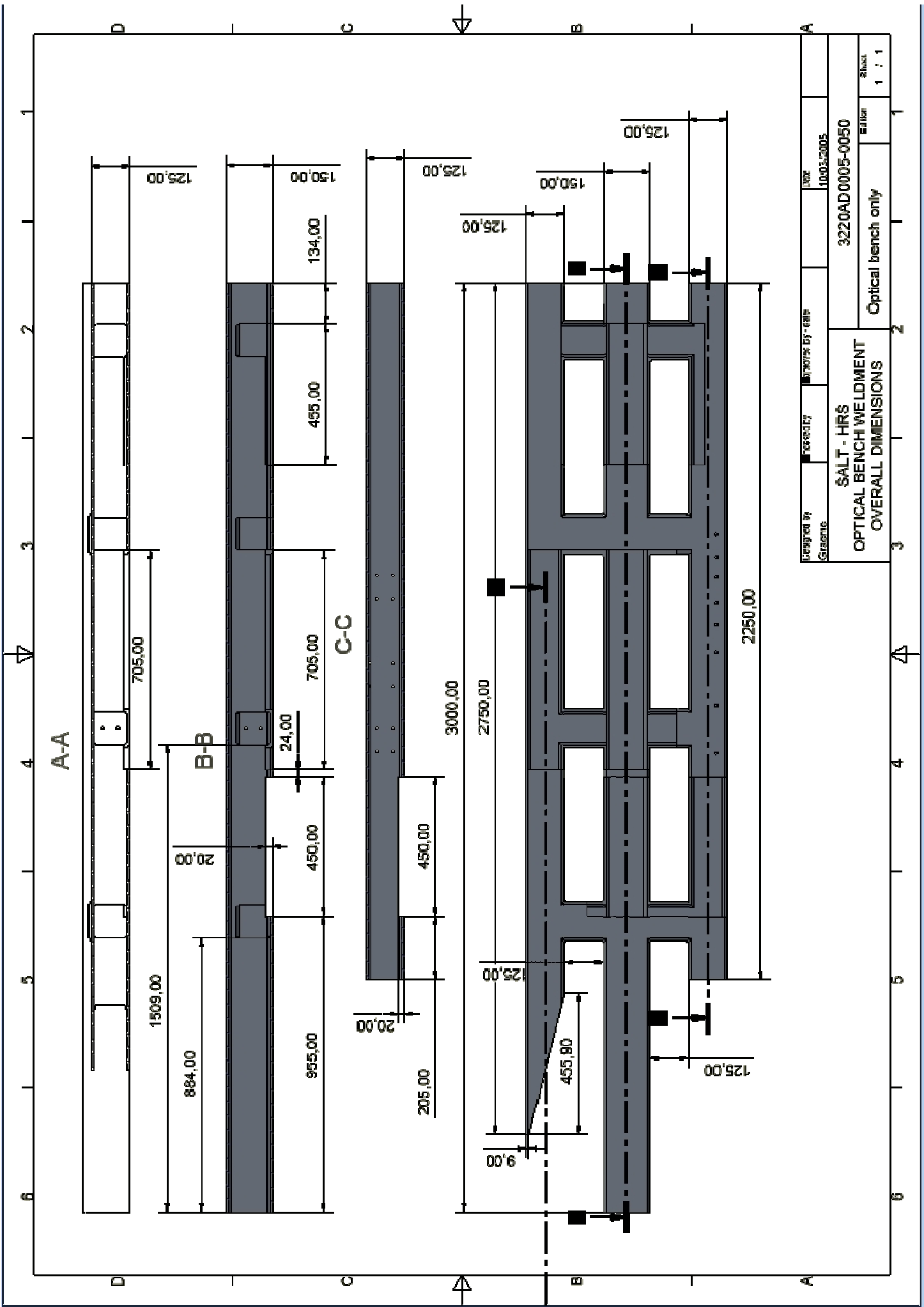
Designed by J. F. S. M.	Created by	Approved by - name	Date 8.03.2005
SALT - HRS BLUE CAMERA CELL VPH GRATING		3220AD0005-0048	
		Blue VPH Cell	Sheet 1 / 1

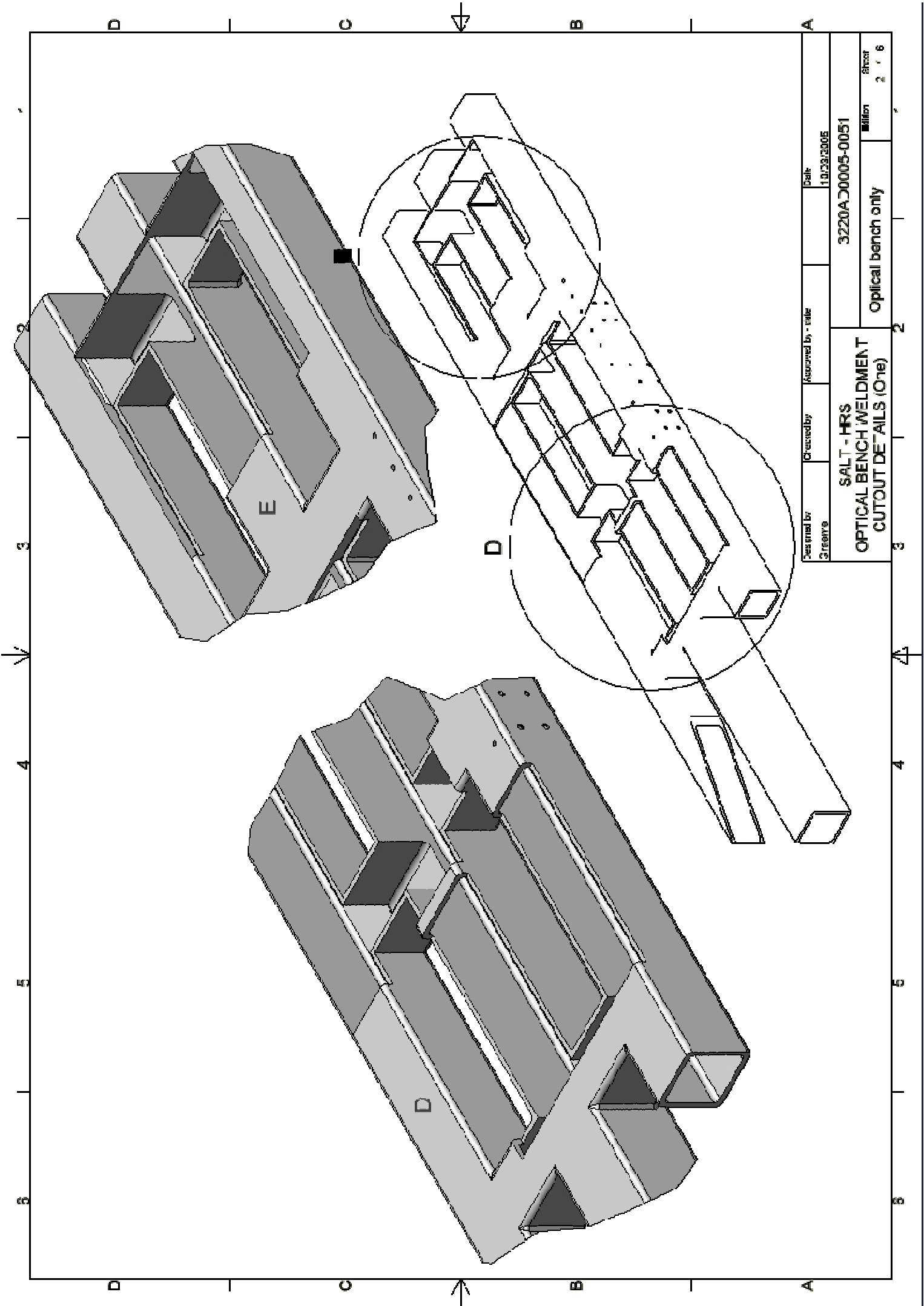


Designed by Graefve	Created by	Approved by - value	Date 05/03/2006
SALT - HRS BLUE CAMERA ASSY RETAINING PLATE		322DADKK005-00047	
		Client Blue retaining ring camera	Sheet 1 / 1



Designed by Greene	Created by	Approved by - rate	Date 1003/2005	3220AD0005-000G	Revision 4 / 6
SALT - HRS OPTICAL BENCH WELDMENT EXPLODED VIEW			Optical bench only		





Designed by Greene	Checked by	Approved by - date 10/23/2006	Date
SALT - HRS OPTICAL BENCH WELDMENT CUTOUT DETAILS (One)		3220A.00005-0051	
		Million	Sheet
		2	6

Optical bench only

3220A.00005-0051

SALT - HRS  
OPTICAL BENCH WELDMENT  
CUTOUT DETAILS (One)

Designed by  
Greene

Checked by

Approved by - date  
10/23/2006

Date

3220A.00005-0051

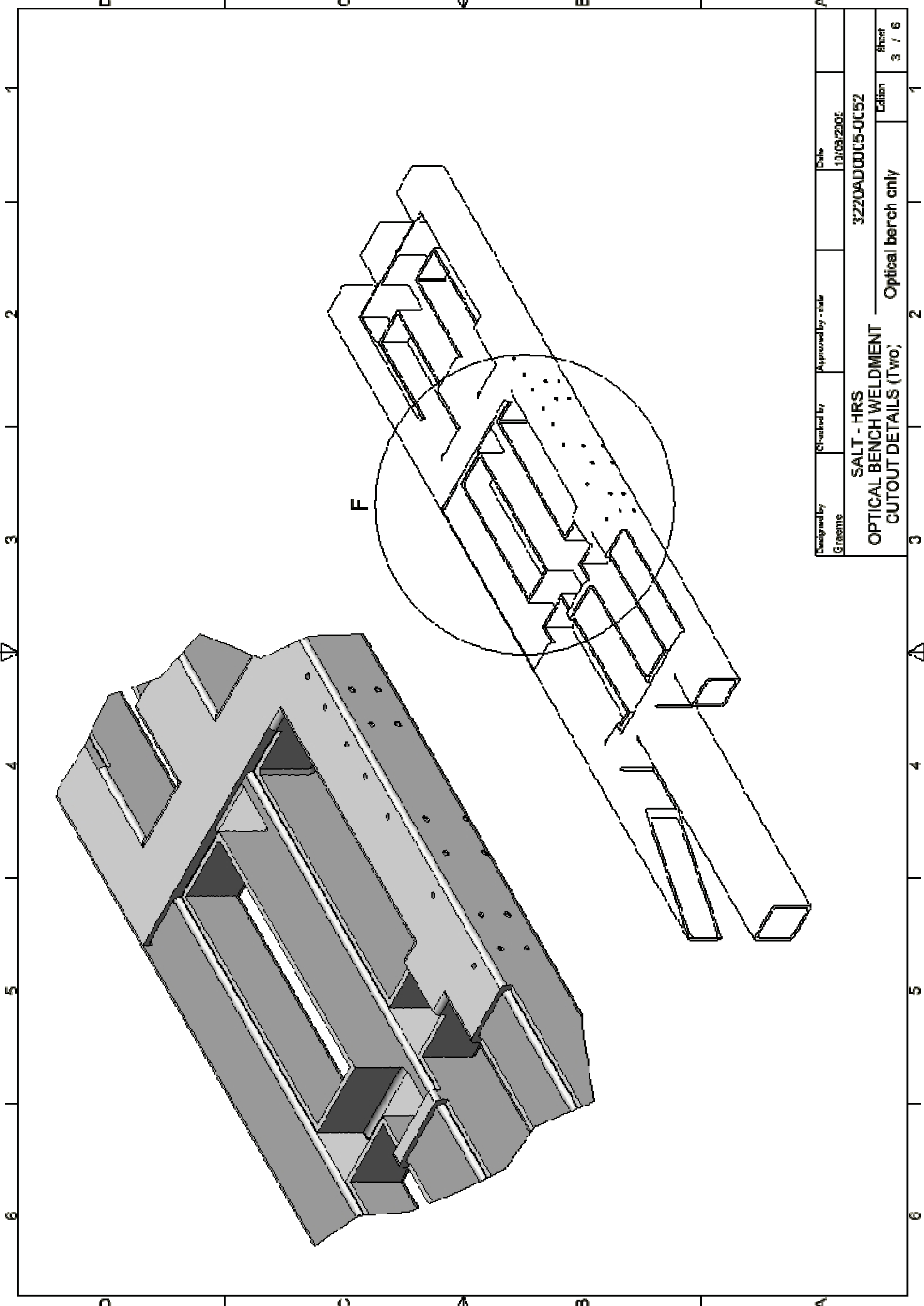
SALT - HRS  
OPTICAL BENCH WELDMENT  
CUTOUT DETAILS (One)

Million

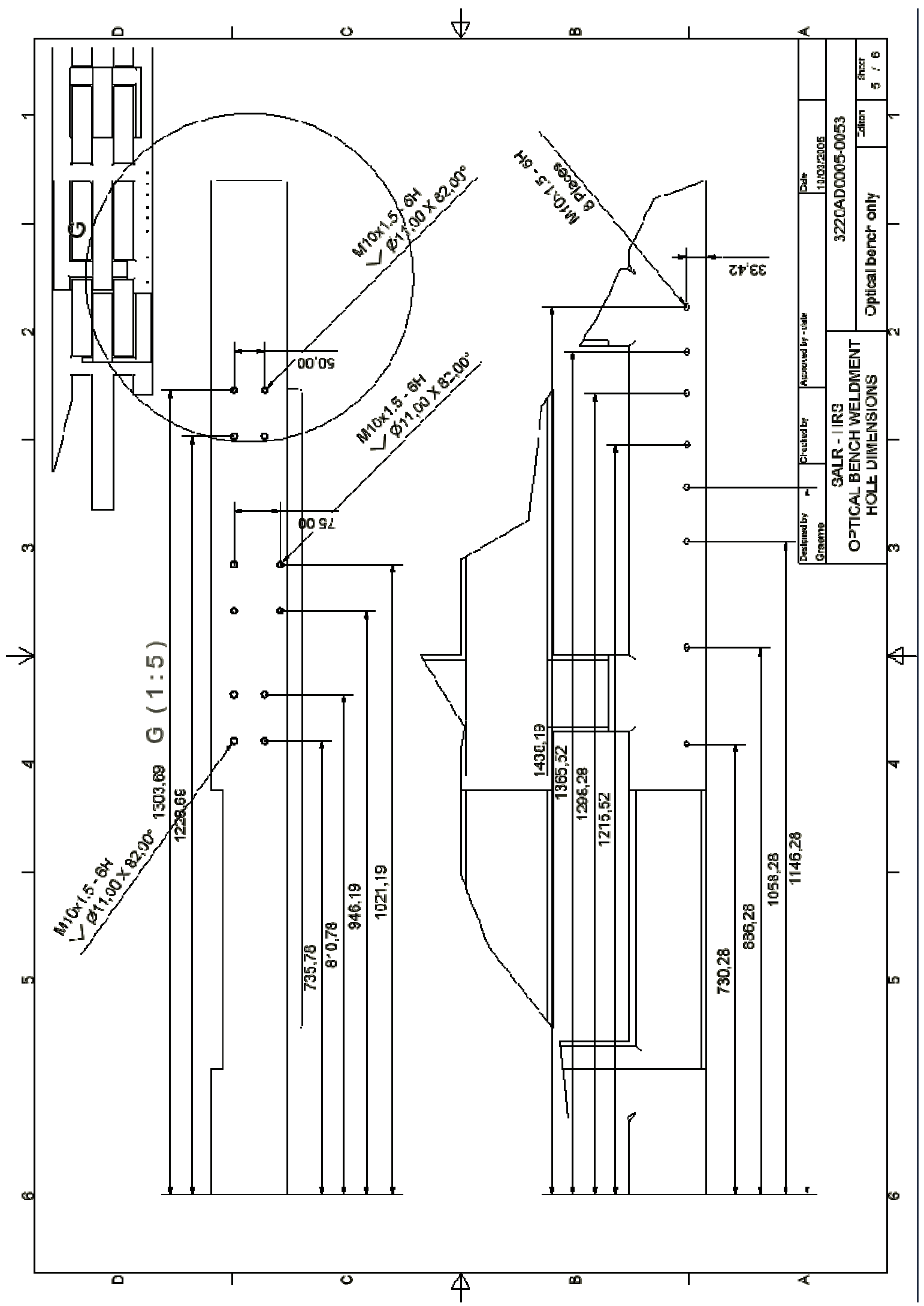
Sheet

2

6

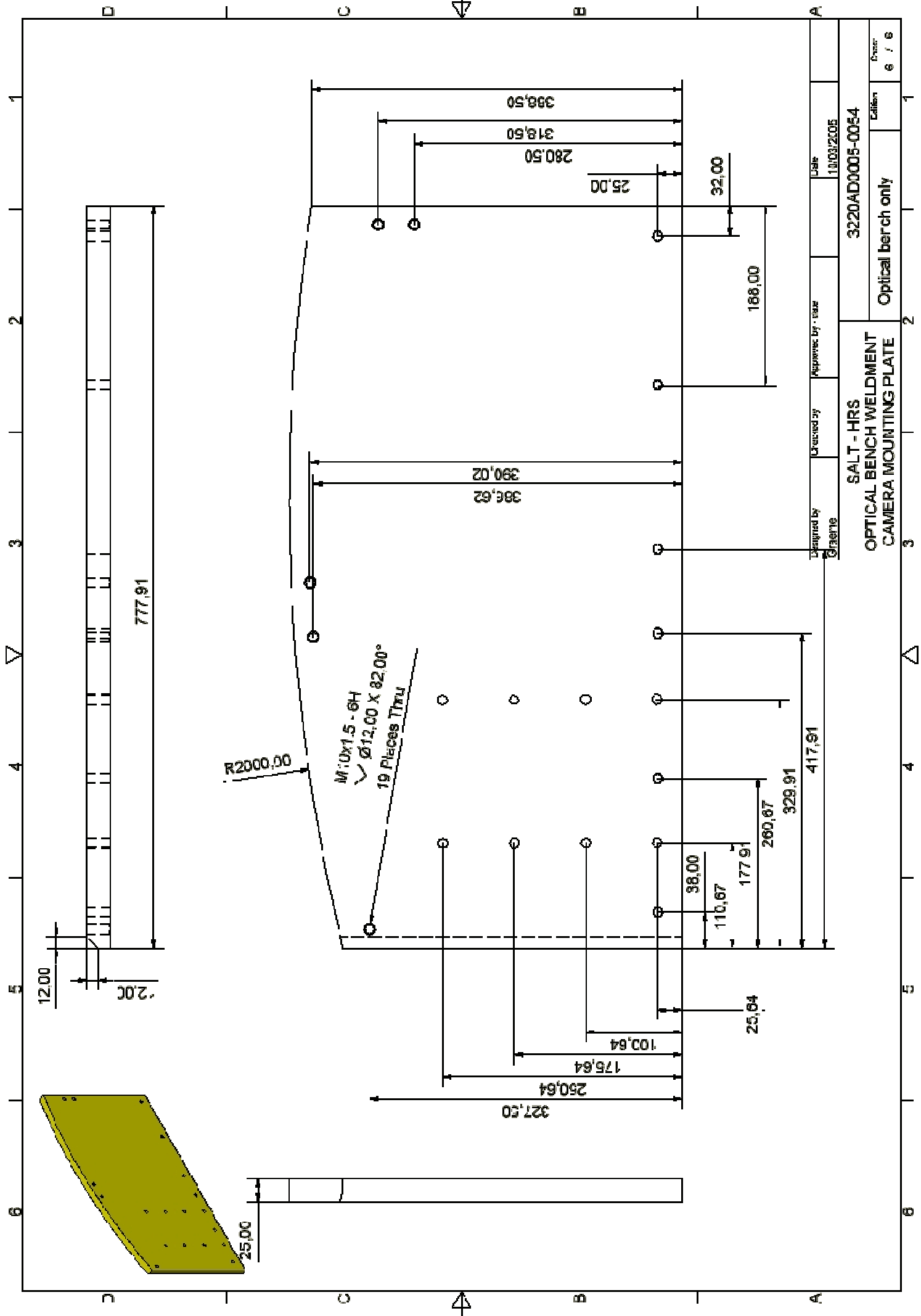


Designed by Greene	Checked by	Approved by - date	Date 13/05/2005
SALT - HRS		3220AD0005-0052	
OPTICAL BENCH WELDMENT		Optical bench only	
CUTOUT DETAILS (Two)		Revision	Sheet
		3	3 / 6



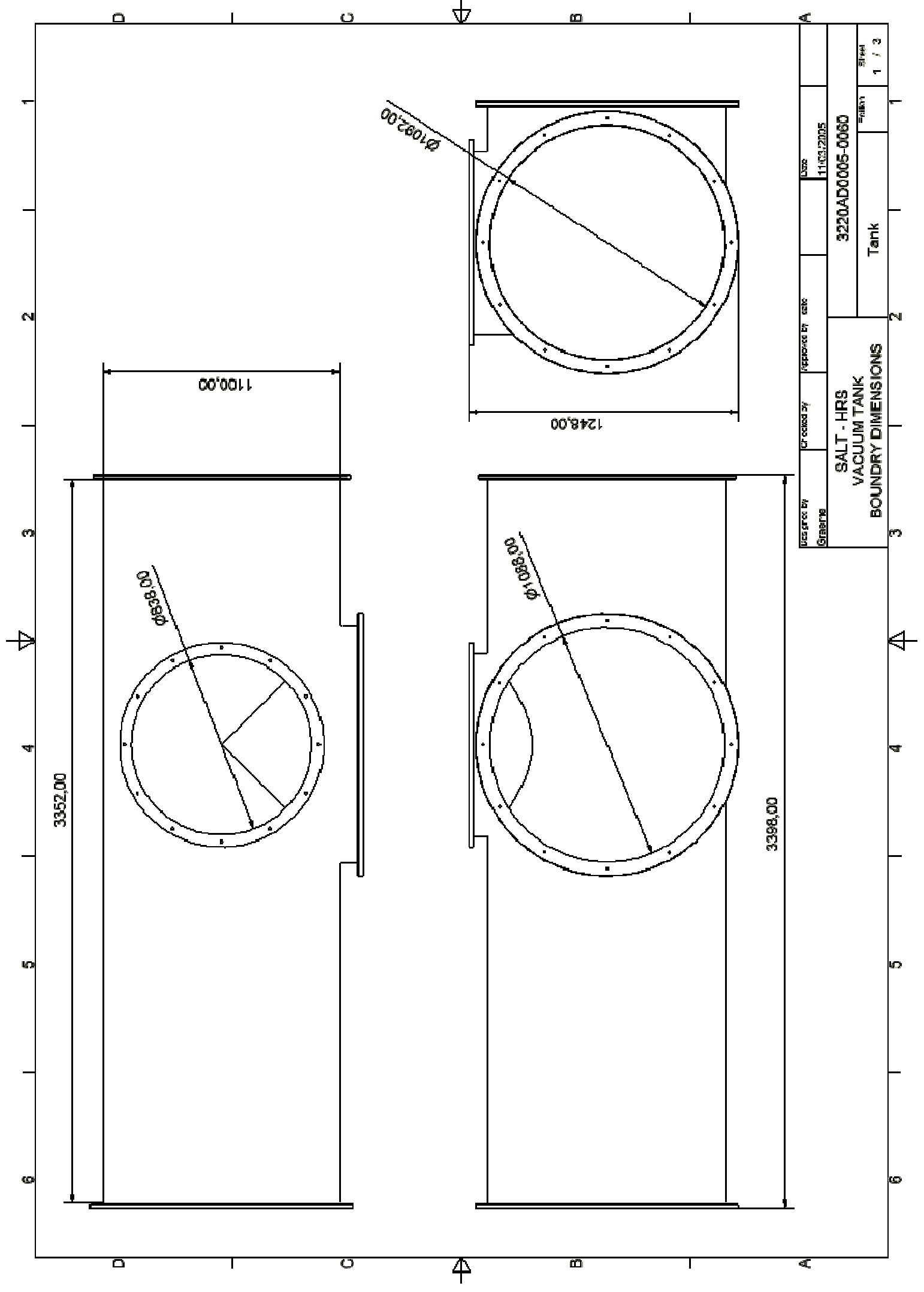
Designed by Graeme	Checked by	Approved by - date	Date 10/03/2006
322CAD0005-0053 Optical bench only		322CAD0005-0053 Edition 5 / 6	

3ALR - IIRG  
 OPTICAL BENCH WELDMENT  
 HOLE DIMENSIONS



Designed by G. Brette	Checked by	Approved by - Date	Date 10/03/2005
SALT - HRS OPTICAL BENCH WELDMENT CAMERA MOUNTING PLATE		3220AD0005-0054	
Optical bench only		Edition	Drawn
		6 / 6	6 / 6





3352.00

Ø1092.00

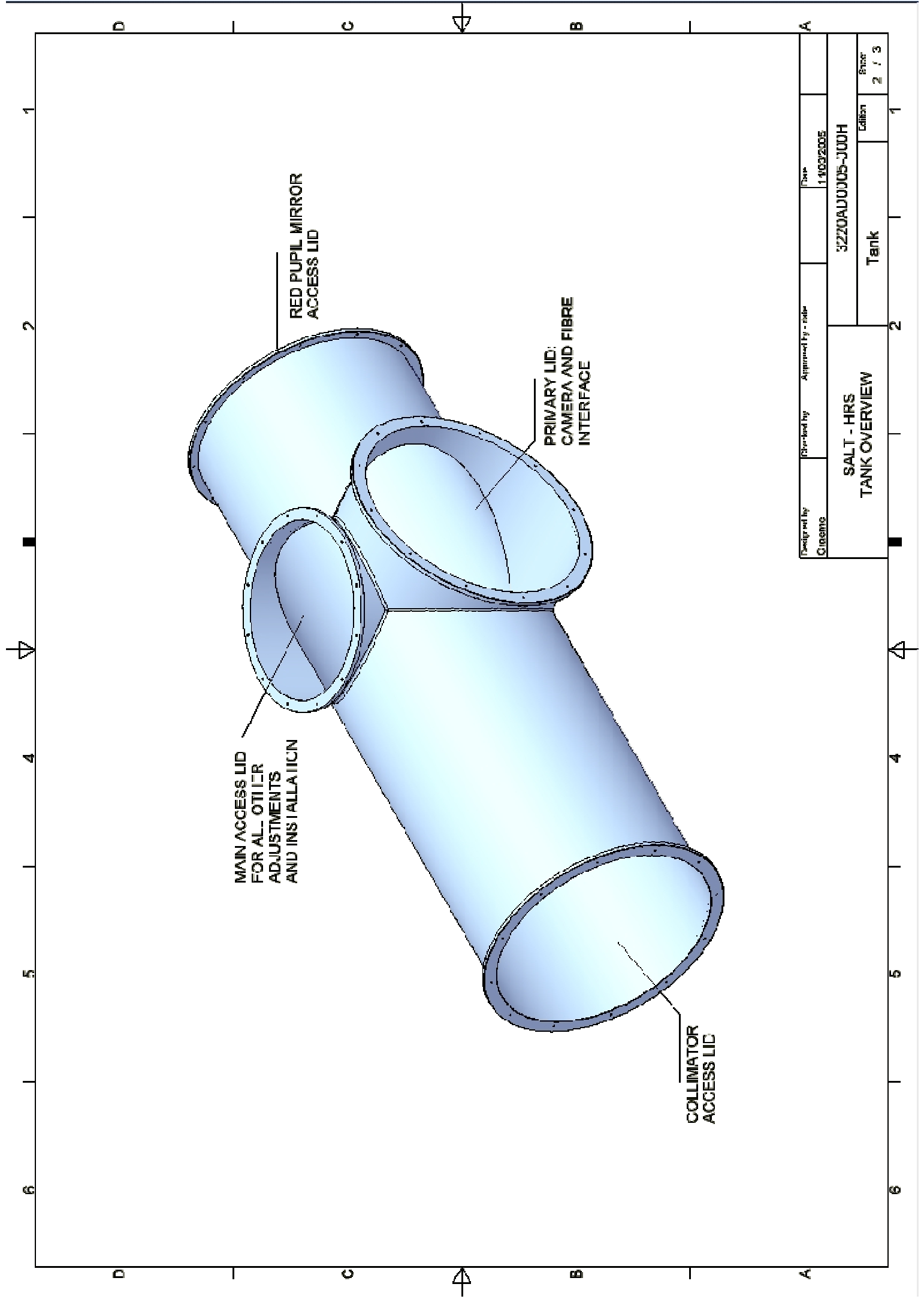
1100.00

Ø1092.00

1248.00

3398.00

DESIGNED BY Graeber	CREATED BY 11/03/2005	REVISION BY DATE	DATE 11/03/2005
SALT - HRS VACUUM TANK BOUNDARY DIMENSIONS		Tank	3220AD0005-0060
		Sheet	1 / 3



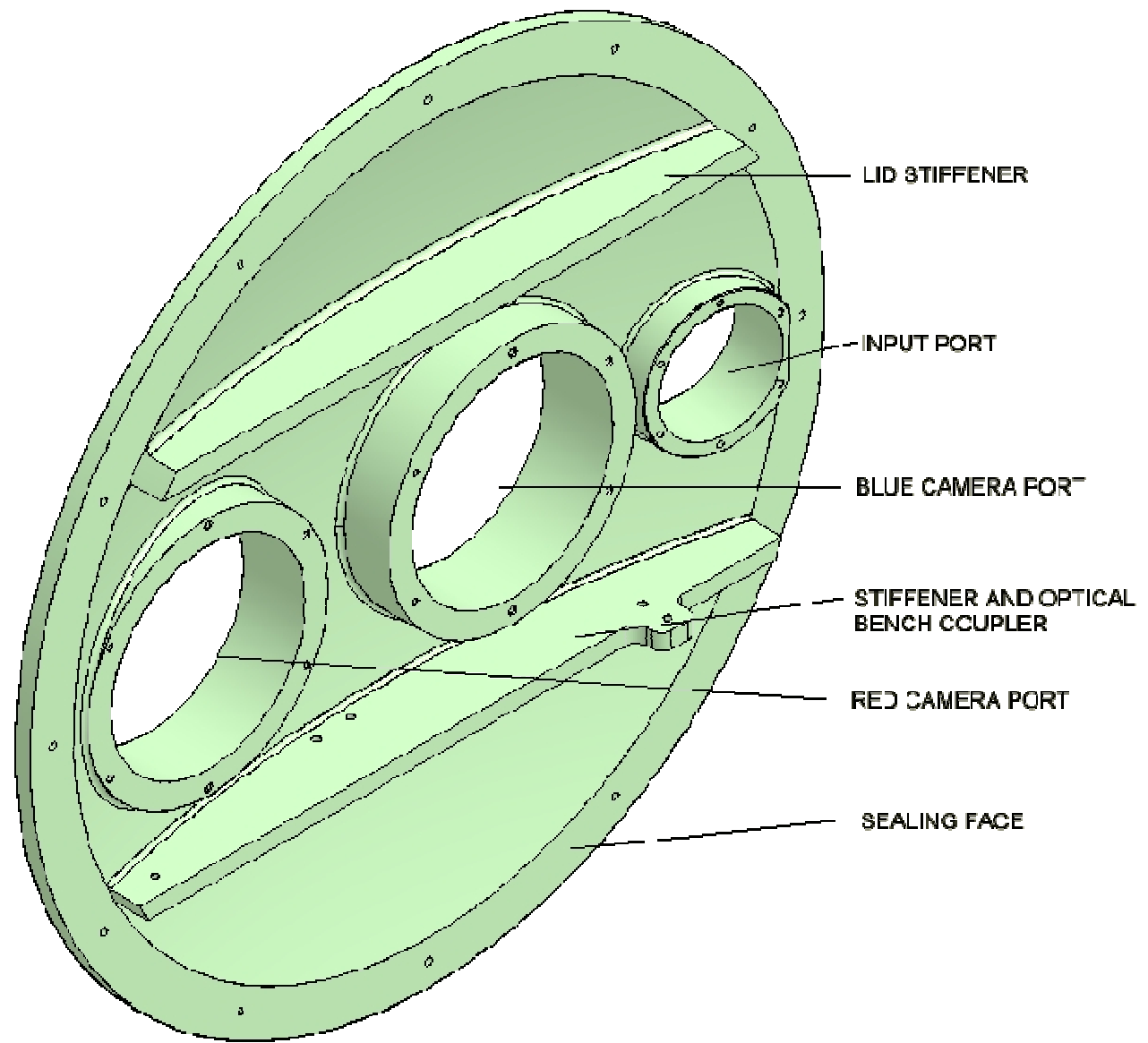
MAIN ACCESS LID  
FOR ALL OTHER  
ADJUSTMENTS  
AND INSTALLATION

RED PUPIL MIRROR  
ACCESS LID

PRIMARY LID:  
CAMERA AND FIBRE  
INTERFACE

COLLIMATOR  
ACCESS LID

Designed by Clement	Reviewed by	Approved by - date	Date 14/03/2005	A
SALT - HRS TANK OVERVIEW		3220ADUU005-J00H		
		Tank	Collim	Star
		2	1	1
		4	5	6



LID STIFFENER

INPUT PORT

BLUE CAMERA PORT

STIFFENER AND OPTICAL BENCH COUPLER

RED CAMERA PORT

SEALING FACE

Designed by Graeme	Created by	Approved by - date	Date 11/03/2005
<b>SALT - HRS PRIMARY LID FEATURES</b>		<b>3220AD0005-0061</b>	
		Tank	Edition 3 / 3