

## SPIRE IID-B Annex: Unit ICDs

Issue 2. Update to status as of 8th October 2002

Issue 3 Update to status as of 1st November 2002

FCU, DCU & Cryogenic ICDs changed, see changelists where provided

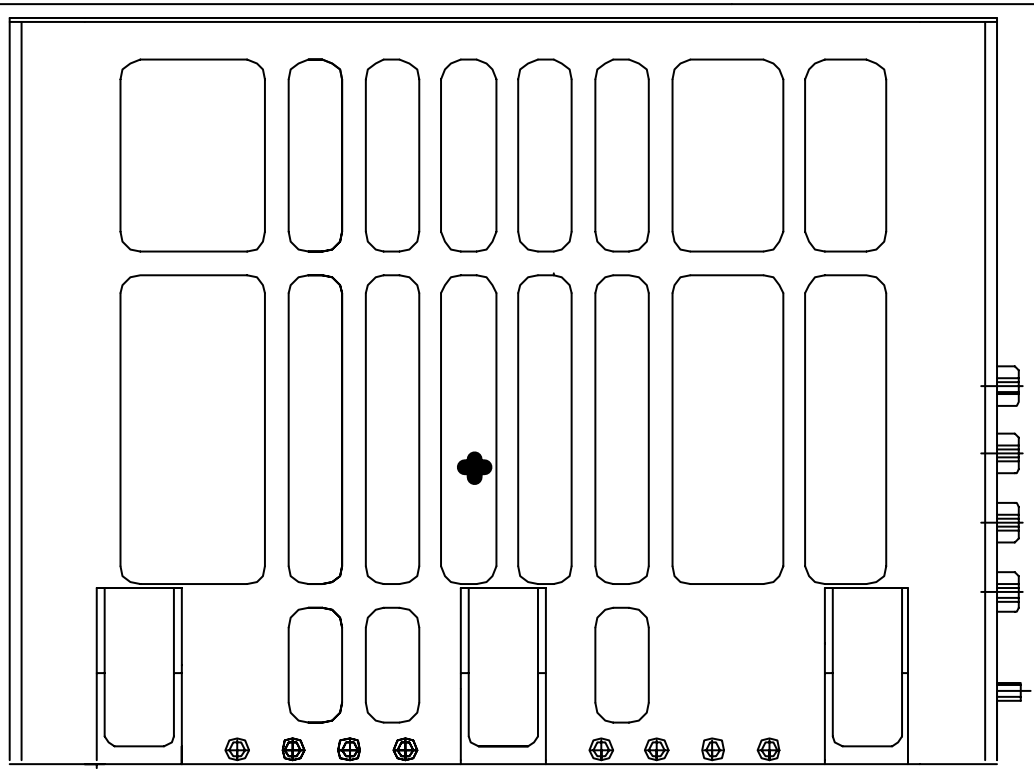
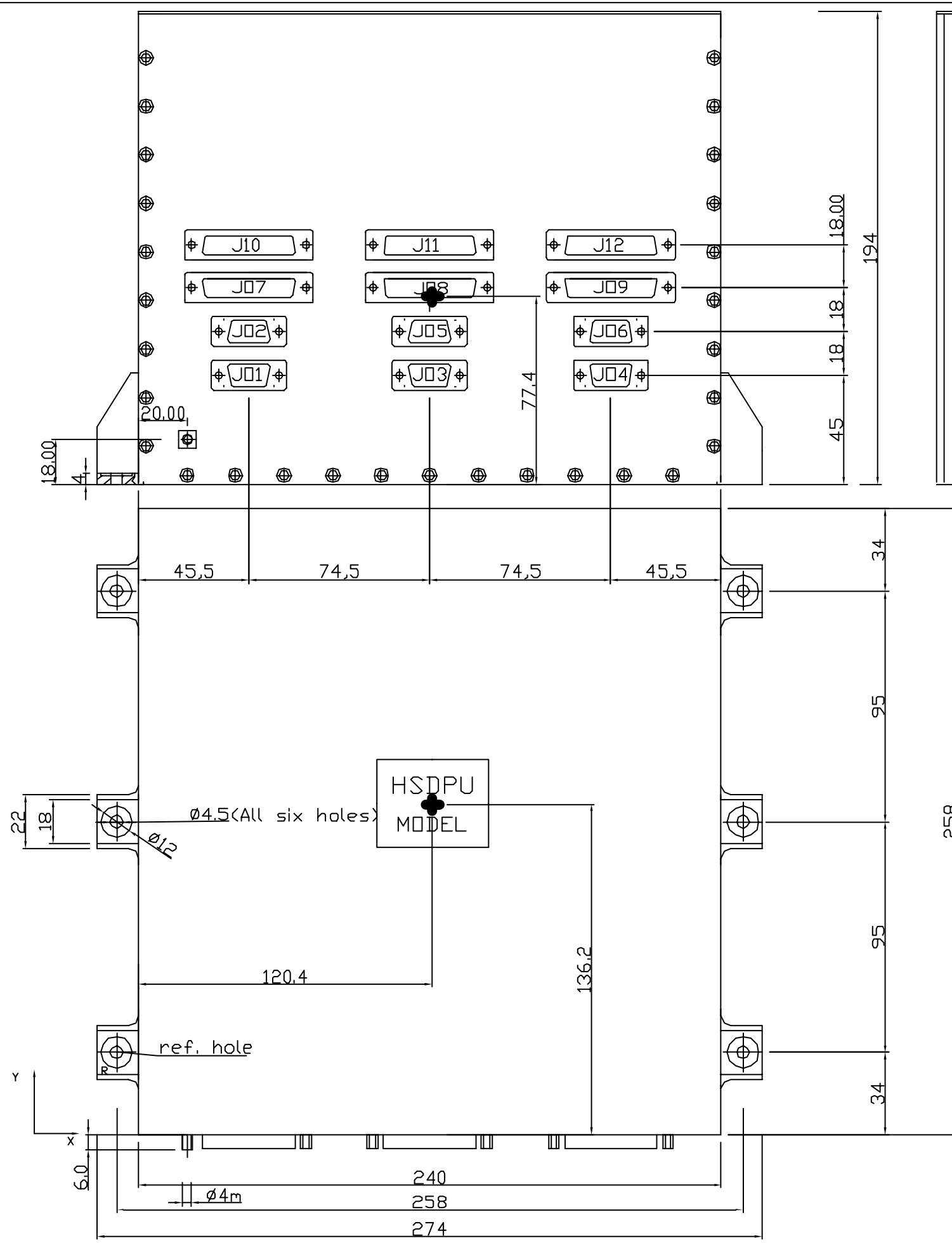
Issue 4 Update to status as of 24/2/03. JFET drawing versions raised.

Issue 5 Updated as to status of 27th March 2003. Non-AVM DPU ICD included. JFET ICDs updated.

Issue 6 Small errors on JFET ICDs fixed.

Issue 7 New versions of FPU and JFET ICDs, see their individual changelists.

✓ John Delderfield 2003.11 .05 15:45:4 9 Z ? John Delderfield 2003.05. 21 17:56:51 +01'00' ? John Delderfield 2003.04. 30 08:52:00 +01'00'



GENERAL TOLERANCE  $\pm 1\text{mm}$   
 WEIGHT 7.177 Kg  $\pm 200\text{g}$   
 DIMENSION 274 X 258 X 194mm<sup>3</sup>  
 CENTRE OF GRAVITY (E): X=120,4; Y=136,2;  
 Z=77,4  
 MOMENT OF INERTIA (E): Jx=6,23X10<sup>-2</sup> Kg<sup>m</sup>  
 Jy=5,73X10<sup>-2</sup> Kg<sup>m</sup>  
 Jz=7,70X10<sup>-2</sup> Kg<sup>m</sup>

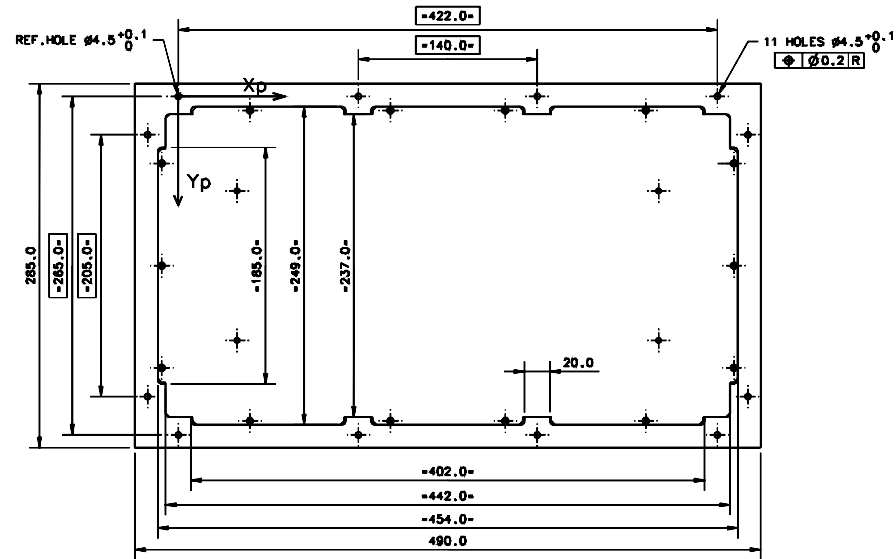
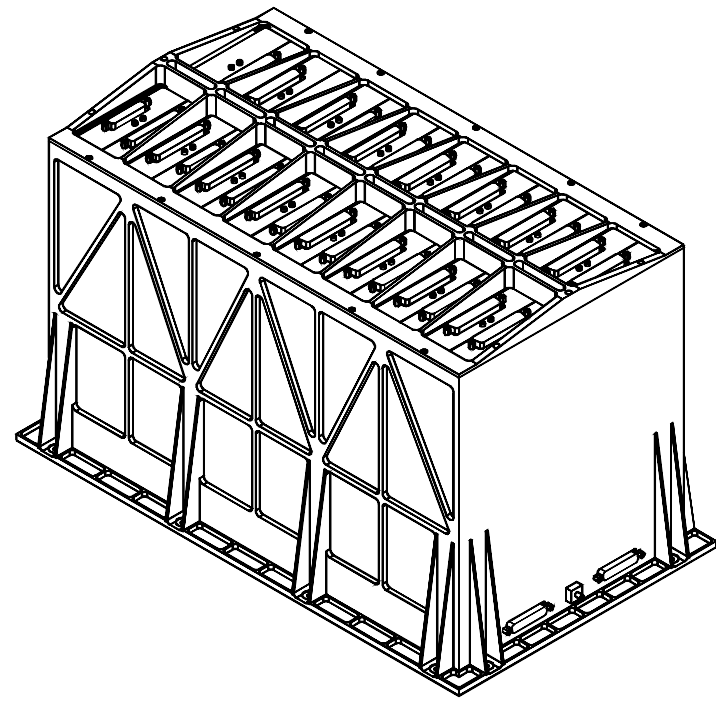
CASING MATERIAL: ANTICORRODAL 6082  
 SURFACE TREATMENT: ALODINE 1200:  
 alfa solar = 0,604  
 R-solar = 0,396  
 epsilon IR = 0,172  
 R-IR = 0,828

THERMAL CAPACITANCE: 7.177J/<sup>o</sup>C (E)  
 CONTACT AREA OF BASEPLATE PLUS FEET 64428mm<sup>2</sup>  
 FLATNESS OF MOUNTING AREA: 0.1mm/100mm  
 CONNECTORS:

- J01= DEMA-9P From DPU Prime to PDU Prime
- J02= DEMA-9P From DPU Red. to PDU Red.
- J03= DEMA-9S From DPU Prime to Bus A Prime
- J04= DEMA-9S From DPU Prime to Bus B Prime
- J05= DEMA-9S From DPU Red. to Bus A Red.
- J06= DEMA-9S From DPU Red. to Bus B Red.
- J07= DBMA-25P From DPU Prime to DCE Prime
- J10= DBMA-25P From DPU Red. to DCE Red.
- J08= DBMA-25P From DPU Prime to MCE Prime
- J11= DBMA-25P From DPU Red. to MCE Red.
- J09= DBMA-25P From DPU Prime to SCE Prime
- J12= DBMA-25P From DPU Red. to SCE Red.

UPDATED: 23/02/2003 P. Baldetti (rev. 4)  
 UPDATED: 10/02/2002 P. Baldetti (rev. 3)  
 UPDATED: 16/01/2002 P. Baldetti UPDATED: 29/01/2002 P. Baldetti

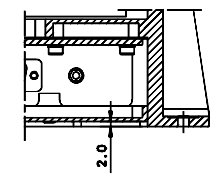
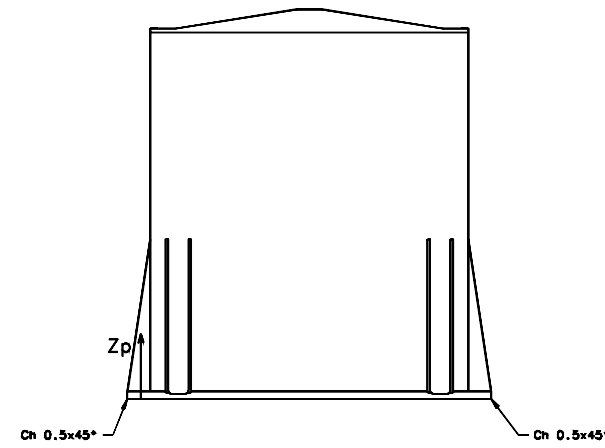
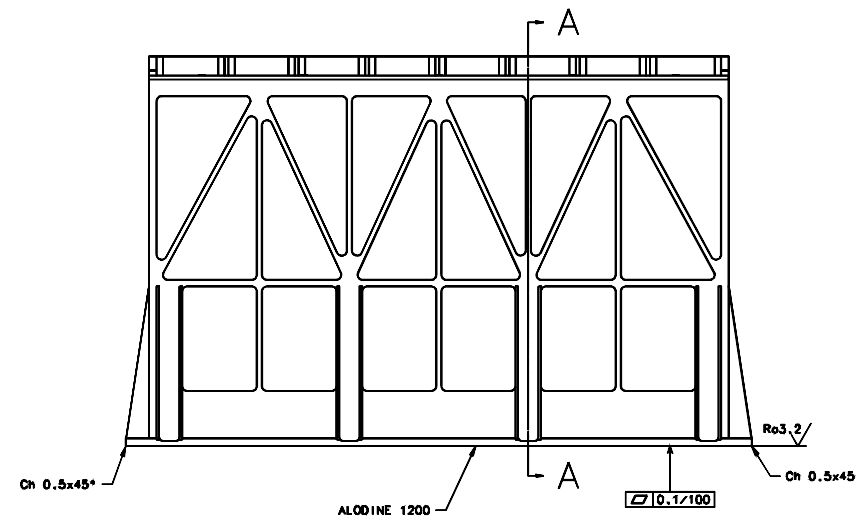
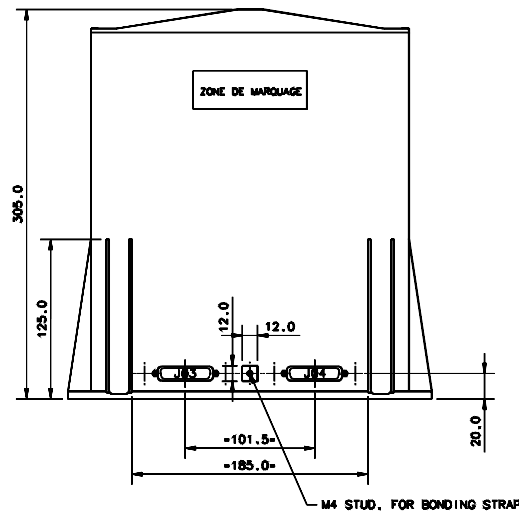
 Consiglio Nazionale delle Ricerche ISTITUTO DI FISICA dello SPAZIO INTERPLANETARIO Via del Passo del Broletto n.100 tel. 06/4993 fax 06/49934398	data 5/04/2001	prog. Baldetti	dis.
			scala
			tratt.
	rev. 4	Progetto: HERSCHEL- HSDPU	
	data 23/02/03	titolo: HSDPU	
			N. dis HER S005/03



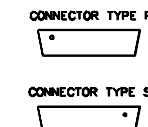
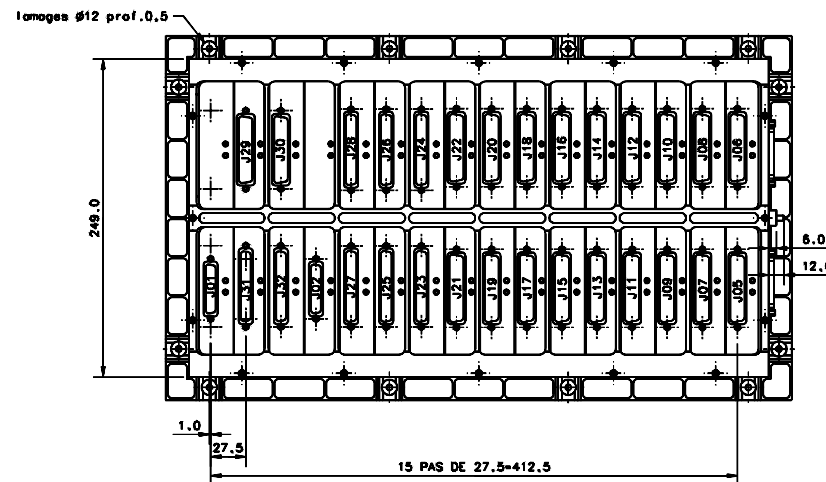
CONNECTORS					
IDENT	TYPE	FUNCTIONS	IDENT	TYPE	FUNCTIONS
J01	DBMA 25S	DAQ_IF_M/DPU_M	J17	DDMA 50P	LIA_P_7/FPU
J02	DBMA 25S	DAQ_IF_R/DPU_R	J18	DDMA 50P	LIA_P_7/FPU
J03	DBMA 25P	DCU/PSU_M	J19	DDMA 50P	LIA_P_8/FPU
J04	DBMA 25P	DCU/PSU_R	J20	DDMA 50P	LIA_P_8/FPU
J05	DDMA 50P	LIA_P_1/FPU	J21	DDMA 50P	LIA_P_9/FPU
J06	DDMA 50P	LIA_P_1/FPU	J22	DDMA 50P	LIA_P_9/FPU
J07	DDMA 50P	LIA_P_2/FPU	J23	DCMA 37P	LIA_S_1/FPU
J08	DDMA 50P	LIA_P_2/FPU	J24	DCMA 37P	LIA_S_1/FPU
J09	DDMA 50P	LIA_P_3/FPU	J25	DCMA 37P	LIA_S_2/FPU
J10	DDMA 50P	LIA_P_3/FPU	J26	DCMA 37P	LIA_S_2/FPU
J11	DDMA 50P	LIA_P_4/FPU	J27	DCMA 37P	LIA_S_3/FPU
J12	DDMA 50P	LIA_P_4/FPU	J28	DCMA 37P	LIA_S_3/FPU
J13	DDMA 50P	LIA_P_5/FPU	J29	DDMA 78S	BIAS_M/FPU
J14	DDMA 50P	LIA_P_5/FPU	J30	DDMA 78S	BIAS_R/FPU
J15	DDMA 50P	LIA_P_6/FPU	J31	DCMA 37S	BIAS_M/FPU
J16	DDMA 50P	LIA_P_6/FPU	J32	DCMA 37S	BIAS_R/FPU

NOTES

MATERIAL AL 6082  
 CENTRE OF GRAVITY REFERRED TO REFERENCE HOLE  
 X=213.2mm Y=132.4mm Z=157.9mm  
 MOMENTS OF INERTIA REFERRED TO CENTRE OF GRAVITY  
 JXp=4.71 N.m<sup>2</sup> JYp=2.50 N.m<sup>2</sup> JZp=4.44 N.m<sup>2</sup>  
 CONTACT AREA MOUNTING FEET=28180mm<sup>2</sup>  
 THERMAL COATING AND BLACK ANODISING ESA.PSS.703  
 SURFACE EMISSIVITY >0.85  
 TORQUE VALUE FOR CONNECTOR FIXATION SCREWS-  
 - MALE=0.3mN  
 - FEMALE=0.45mN  
 SPECIFIC HEAT 1170 J/Kg.\*K  
 ESTIMATED MASS=15676g



COUPE PARTIELLE A-A  
 ECHELLE:1/1



Indice	Modifications	Date	Dessiné par	Vérifié par	Approuvé par
D	Ajout coupe A-A	10/02	DHENAIN		
C	Mise à jour	09/02	DHENAIN		
B	Mise à jour	06/02	DHENAIN		
A	Origine	11/01	DHENAIN		

Spécifications particulières

Indice de rugosité général xxx	SOUS-TRAITANT
Tol.ang.:xxx°	
Casser les angles vifs	

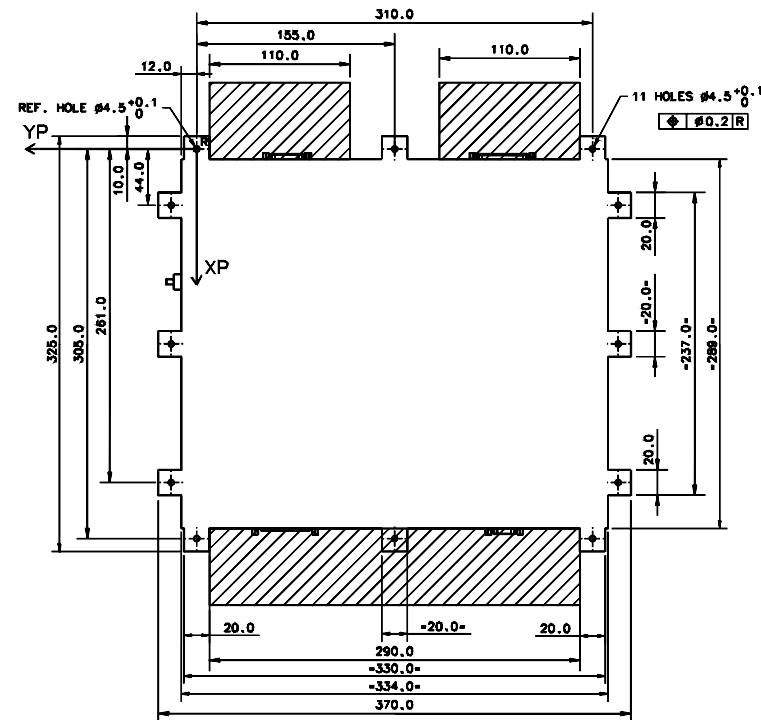
Matière: Protection

Traitement thermique: Echelle: Poids Niveau qualité 1/2

**SPIRE  
 HSDCU ELECTRONIC BOX  
 MECHANICAL INTERFACE CONTROL DRAWING**

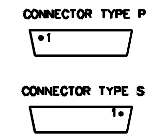
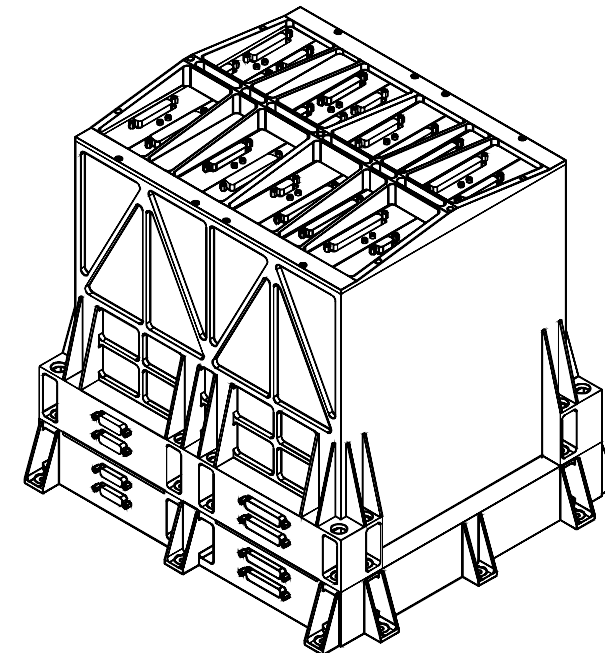
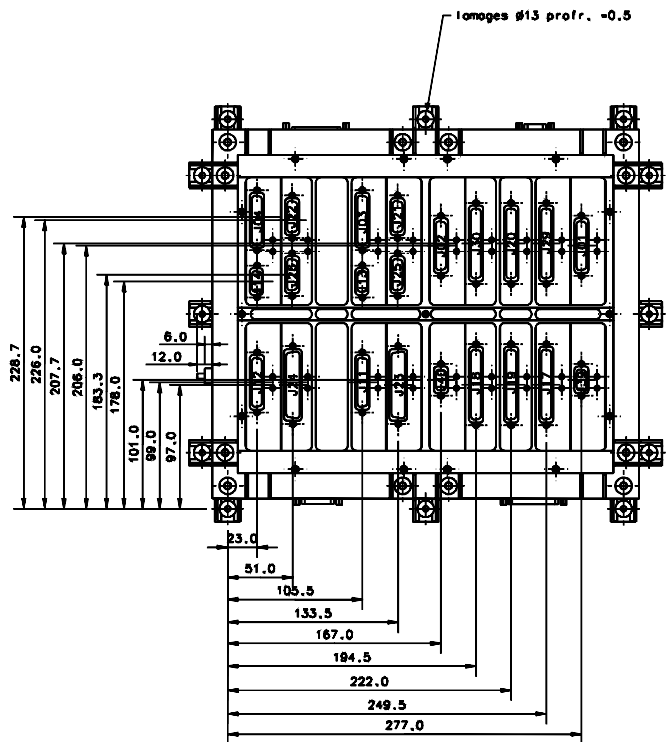
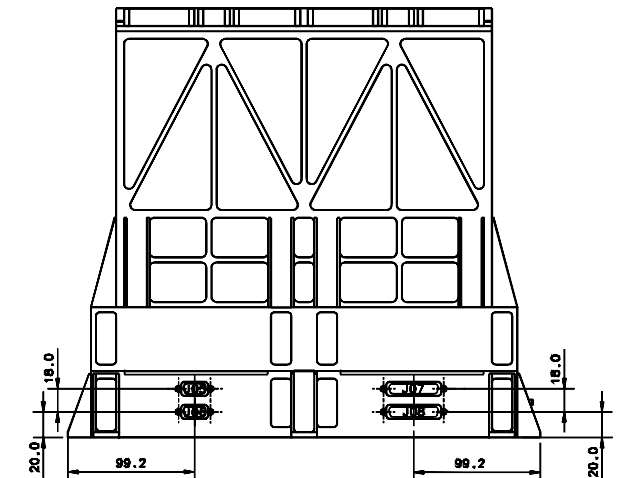
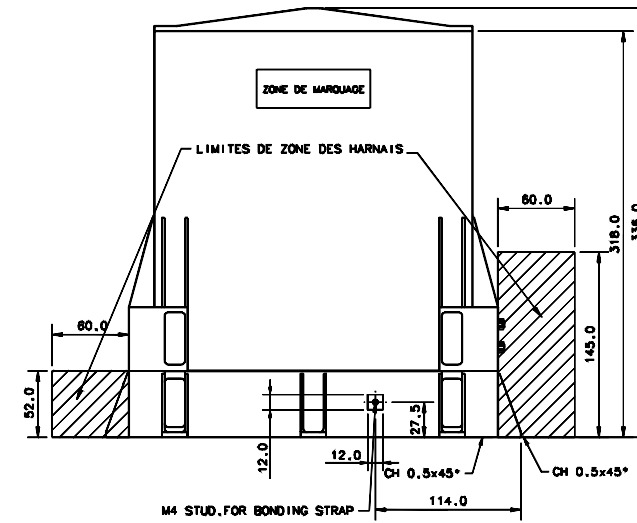
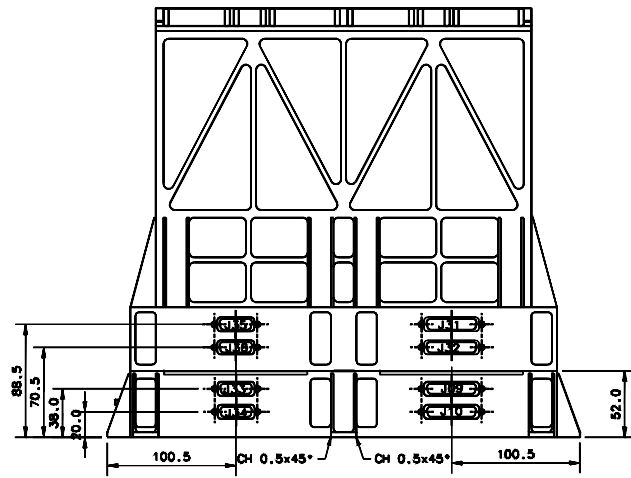
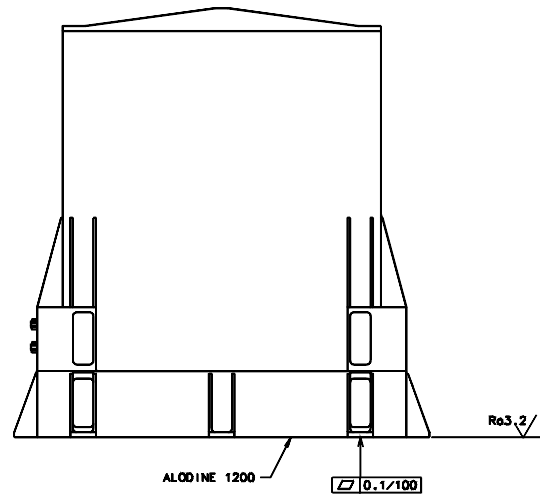
Il n'est permis d'utiliser ce dessin qu'avec l'enceinte spécifiée ou autorisation expresse - tel' du 11 mars 1987

SAP/GERES	COMMISSARIAT A L'ENERGIE ATOMIQUE	C.E.N. SACLAY
Tel:01.69.08.78.25 01.69.08.59.78 Fax:01.69.08.79.96	AO	SPIR-MX-5100 000 D



NOTES  
 MATERIAL AL 6082  
 CENTRE OF GRAVITY REFERRED TO REFERENCE HOLE  
 X=151.6mm Y=-158.2mm Z=142.9mm  
 MOMENTS OF INERTIA REFERRED TO CENTRE OF GRAVITY  
 JX=2.49 N.m<sup>2</sup> JY=2.79 N.m<sup>2</sup> JZ=3.03 N.m<sup>2</sup>  
 CONTACT AREA MOUNTING FEET=100655mm<sup>2</sup>  
 THERMAL COATING AND BLACK ANODISING ESA.PSS.703  
 SURFACE EMISSIVITY >0.85  
 TORQUE VALUE FOR CONNECTOR FIXATION SCREWS-  
 -MALE=0.3mN  
 -FEMALE=0.45mN  
 ESTIMATED MASS=15280g  
 CP=1170j/kg.\*K

CONNECTORS					
IDENT	TYPE	INTERFACE NAME	IDENT	TYPE	INTERFACE NAME
J01	DBMA 25S	MAC-M/DPU-M	J21	DAMA 15S	TEMP-M/FPU-TS-1-M
J02	DBMA 25S	MAC-R/DPU-R	J22	DAMA 15S	TEMP-R/FPU-TS-1-R
J03	DBMA 25S	CCHK-IF-M/DPU-M	J23	DDMA 50S	TEMP-M/FPU-TS-2-M
J04	DBMA 25S	CCHK-IF-R/DPU-R	J24	DDMA 50S	TEMP-R/FPU-TS-2-R
J05	DEMA 9P	PSU-M/PCDU-M	J25	DAMA 15S	TEMP-M/FPU-MEC-TS-M
J06	DEMA 9P	PSU-R/PCDU-R	J26	DAMA 15S	TEMP-R/FPU-MEC-TS-R
J07	DBMA 25S	PSU-M/DCU	J27	NA	NA
J08	DBMA 25S	PSU-R/DCU	J28	NA	NA
J09	DBMA 25S	PSU-M/MCU-M	J29	DCMA 37P	SMEC-M/FPU-SMECm-2-M
J10	DBMA 25S	PSU-R/MCU-R	J30	DCMA 37P	SMEC-R/FPU-SMECm-2-R
J11	DBMA 25S	CCHK-IF-M/FPU-COOL-CAL-M	J31	DBMA 25P	MCU-M/PSU-M
J12	DBMA 25S	CCHK-IF-R/FPU-COOL-CAL-R	J32	DBMA 25P	MCU-R/PSU-R
J13	DEMA 9S	CCHK-IF-M/FPU-PH-STIM-M	J33	DAMA 15S	PSU-M/SCU-M
J14	DEMA 9S	CCHK-IF-R/FPU-PH-STIM-R	J34	DAMA 15S	PSU-R/SCU-R
J15	NA	NA	J35	DAMA 15P	SCU-M/PSU-M
J16	NA	NA	J36	DAMA 15P	SCU-R/PSU-R
J17	DCMA 37S	SMEC-M/FPU-SMECm-1-M	J37	NA	NA
J18	DCMA 37S	SMEC-R/FPU-SMECm-1-R	J38	NA	NA
J19	DCMA 37S	BSM-M/FPU-BSM-M	J39	DEMA 9S	MAC-H/JTAG
J20	DCMA 37S	BSM-R/FPU-BSM-R	J40	DEMA 9S	MAC-R/JTAG



Indice	Modifications	Date	Dessiné par	Verifié par	Approuvé par
F	Mise à jour	10/02	DHENAIN		
E	Mise à jour connecteurs	09/02	DHENAIN		
D	Mise à jour	07/02	DHENAIN		
C	Mise à jour	06/02	DHENAIN		
B	Mise à jour	05/02	DHENAIN		
A	Origine	12/01	DHENAIN		

Spécifications particulières

Indice de rugosité général	SOUS-TRAITANT
Tol.ang.:	
Casser les angles vifs	
Matière:	Protection
Traitement thermique:	Echelle Poids Niveau qualité
	1/2

**SPIRE**  
**FCU ELECTRONIC BOX**  
**MECHANICAL INTERFACE CONTROL DRAWING**

11 n'est permis d'utiliser ce dessin qu'avec l'autorisation écrite - tel' du 11 mars 1987

SAP/GERES	COMMISSARIAT A L'ENERGIE ATOMIQUE	C.E.N. SACLAY
Tel: 01.69.08.78.25		
01.69.08.59.78		
Fax: 01.69.08.79.96	AO	SPIR-MX-5200 000 F

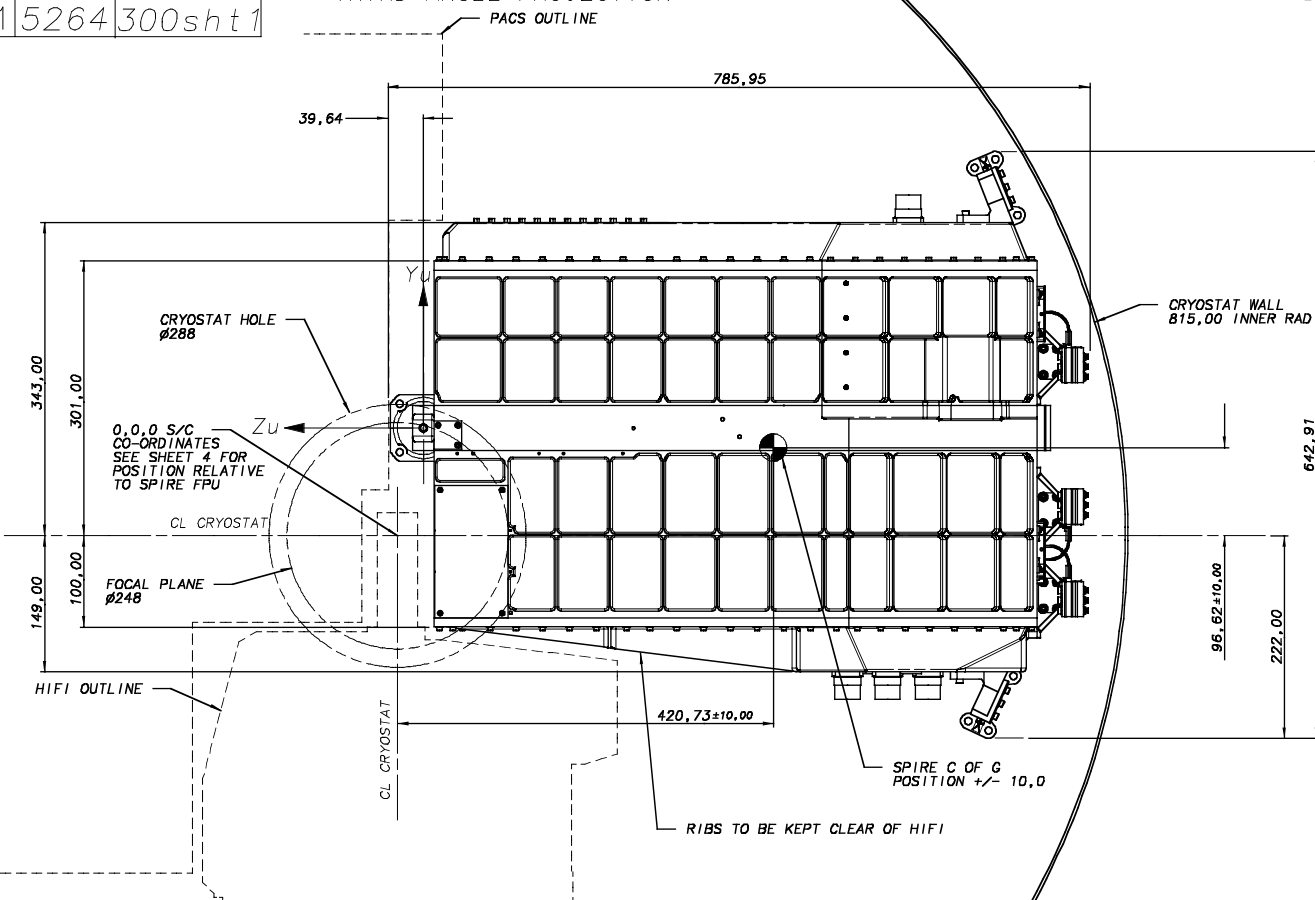


DRAWING No.  
A1 5264 300sht 1

THIRD ANGLE PROJECTION

DO NOT SCALE

USED ON  
HERSCHEL

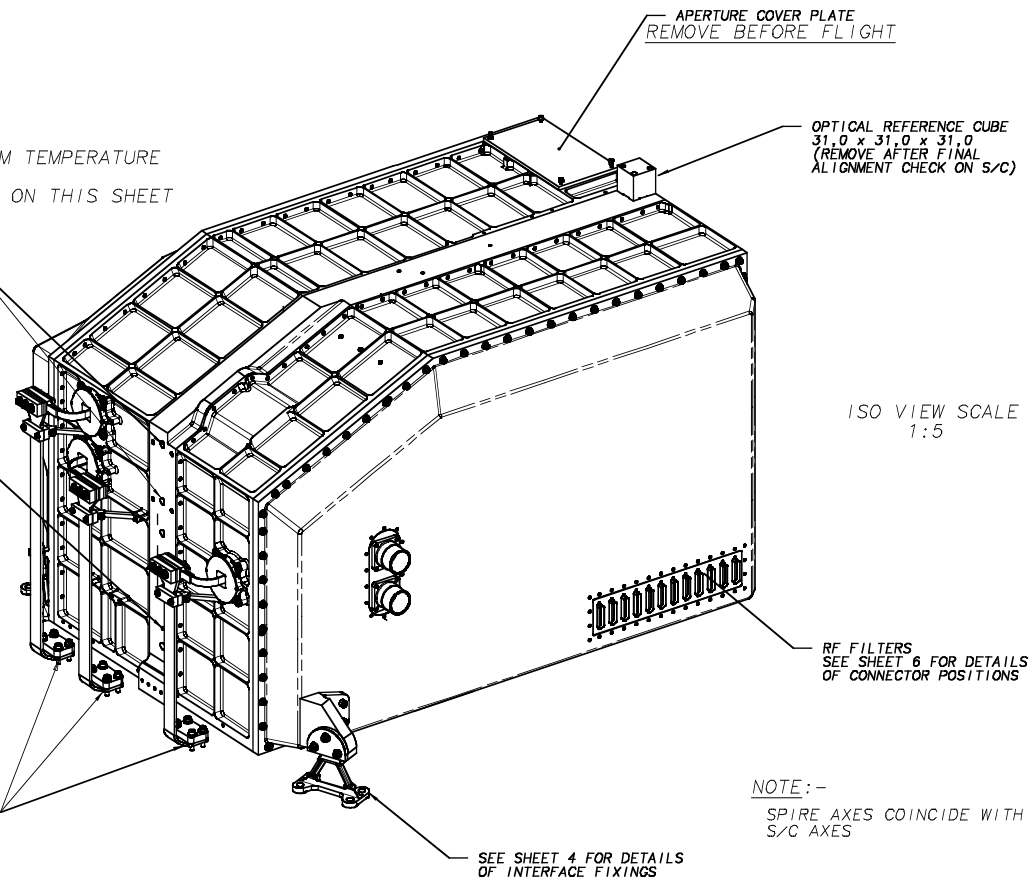


NOTE:-  
1. ALL DIMENSIONS AT ROOM TEMPERATURE  
2. J-FET BOXES NOT SHOWN ON THIS SHEET

S/C LEVEL \*1\* STRAP TO SPIRE OPTICAL BENCH ATTACHMENT POINTS. (ALOCROM 1200 SURFACE) SEE SHEET 5

SPIRE GROUNDING STRAP ATTACHES HERE (ALOCROM 1200 SURFACE) SEE SHEET 6

LEVEL \*0\* STRAP FIXINGS (GOLD SURFACES) SEE SHEET 5 FOR FIXING DETAILS



NOTE:-  
SPIRE AXES COINCIDE WITH S/C AXES

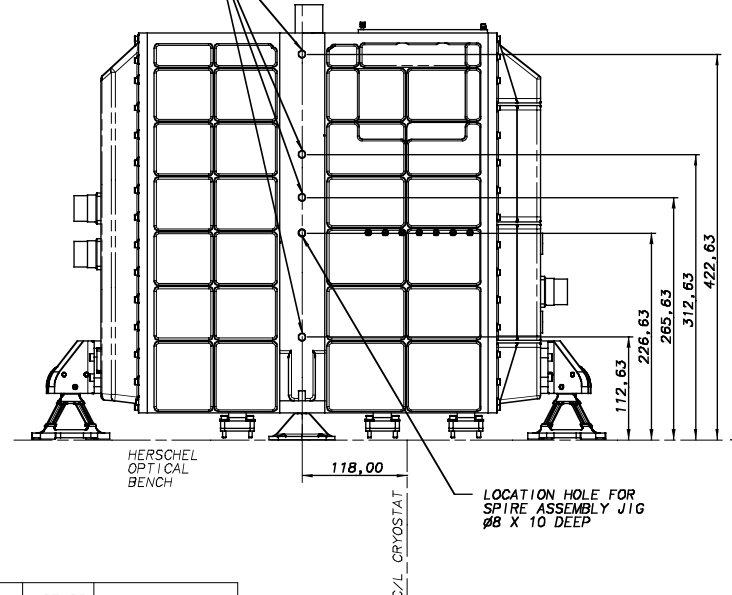
MOMENTS OF INERTIA ABOUT CG:-

(NOTE:- ALL MASS PROPERTIES EXCLUDE JFETS, AND EXTERNAL FPU HARNESS)

$I_{xx} = 2,929 \text{ kg m}^2$   
 $I_{yy} = 2,878 \text{ kg m}^2$   
 $I_{zz} = 1,348 \text{ kg m}^2$

(MASS 45,63 kg)

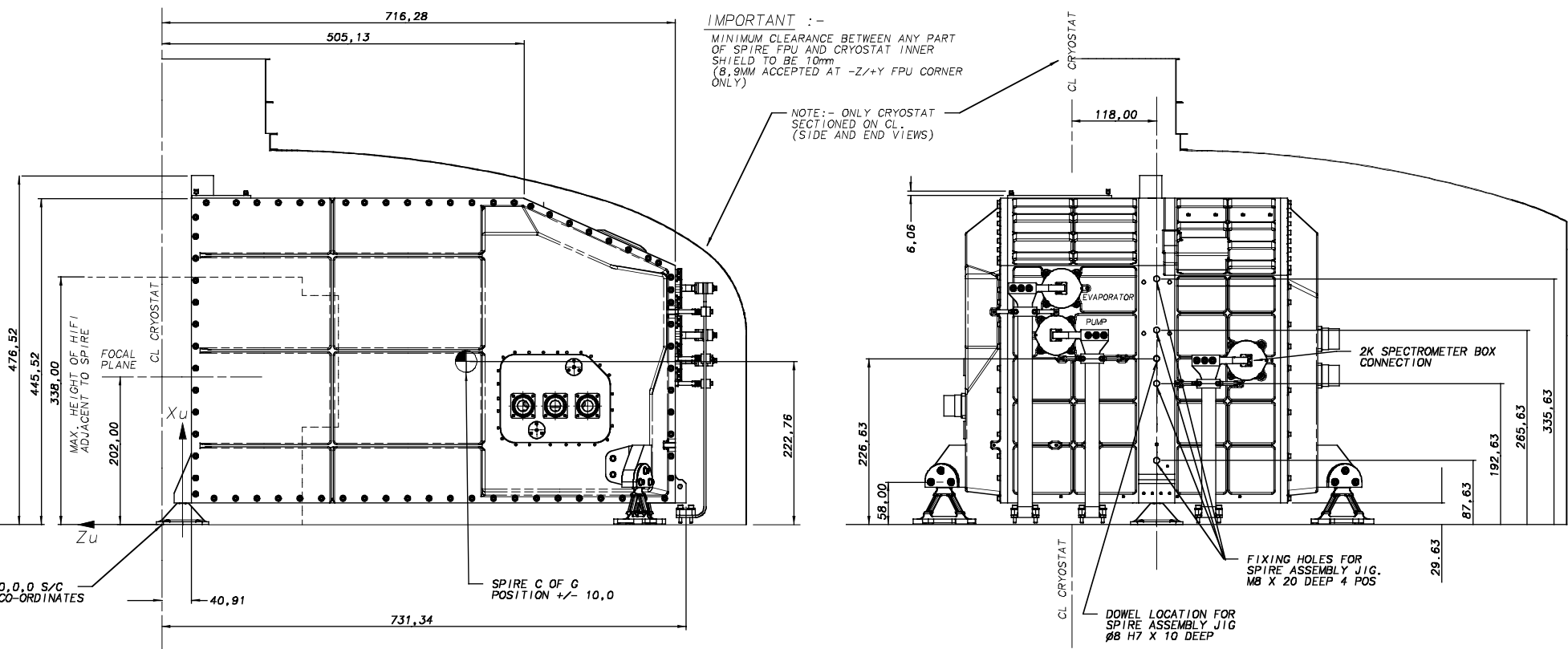
FIXING HOLES FOR SPIRE ASSEMBLY JIG. M8 X 20 DEEP 4 POS



IMPORTANT :-

MINIMUM CLEARANCE BETWEEN ANY PART OF SPIRE FPU AND CRYOSTAT INNER SHIELD TO BE 10mm (8.9MM ACCEPTED AT -Z/+Y FPU CORNER ONLY)

NOTE:- ONLY CRYOSTAT SECTIONED ON CL. (SIDE AND END VIEWS)



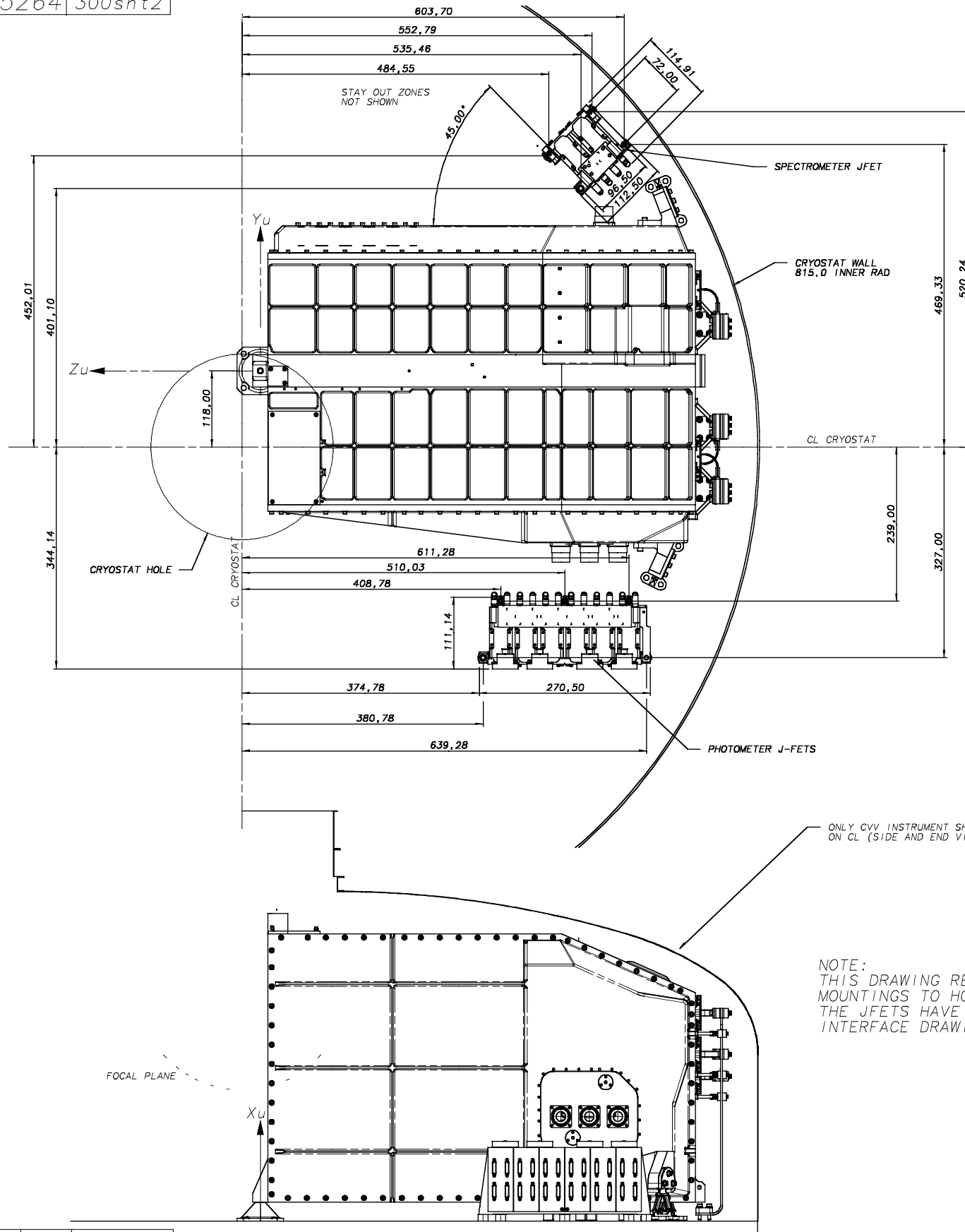
CHECKED	ISSUE	DATE	AMENDMENT	SPIRE Flight Assemblies
	18	4/07/03	SEE CHANGE SHEET	
	17	16/10/02	SEE CHANGE SHEET	
	16	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED. DRAWING UPDATED TO ISSUE 16 THERE-ON.	
	15	27/04/01	THERMAL STRAP INTERFACE MODIFIED. LEVEL 1 STRAP FIXING HOLES MOVED.	
TRACED	14	23/11/01	CENTRE OF GRAVITY ADDED TO SHT 1. J-FET DESIGN UPDATED. STAY OUT HOLES REMOVED.	
PBG	13	19/11/01	UPDATED RFI FILTER & PHOT CONNECTORS ADDED. FOCAL PLANE & *A* FRAME MOUNT DIM ADDED. SHEET 7 ADDED.	
DRAWN	1	24/11/01		
AJC				COMPUTER FILE

NOTE:-  
SEE CHANGE SHEET FOR DETAILS OF CHANGES MADE FROM ISSUE 16 ONWARDS

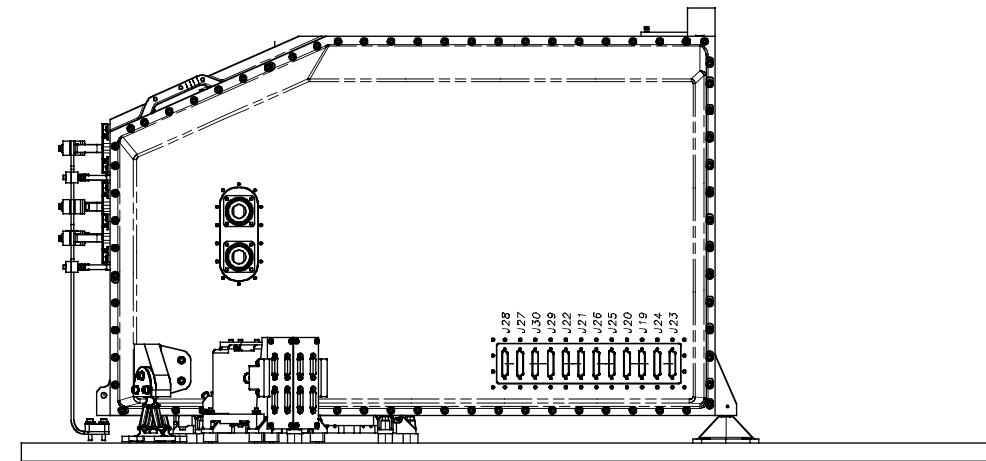
PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED -
ALOCROM 1200 (ST. STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 45,63kg (NO CONT) SEE NOTE SHT.1		
ACTL WT.	DIMENSIONS IN mm	SCALE 1:4

DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.	
TITLE	DRAWING No
SPIRE INTERFACE (GENERAL DIMENSIONS)	A1 5264 300sht 1
SHEET 1 OF 7	

USED ON  
HERSCHEL



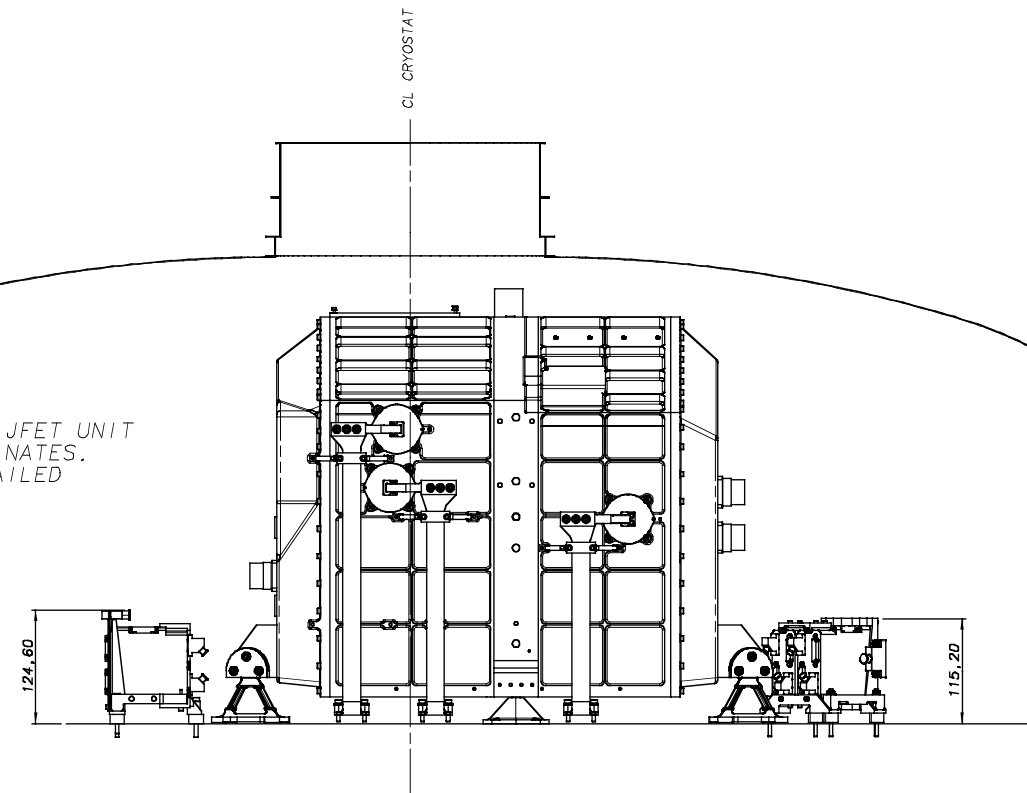
NOTE:-  
1. ALL DIMENSIONS AT ROOM TEMPERATURE



SPECTROMETER SIDE  
(VIEWED IN -Y<sub>u</sub> DIRECTION)

ONLY CVV INSTRUMENT SHIELD SECTIONED  
ON CL (SIDE AND END VIEWS)

NOTE:  
THIS DRAWING REFERENCES THE JFET UNIT  
MOUNTINGS TO HOB S/C CO-ORDINATES.  
THE JFETS HAVE SEPARATE DETAILED  
INTERFACE DRAWINGS.



FOCAL PLANE

X<sub>u</sub>

PHOTOMETER SIDE

18	4/07/03	SEE CHANGE SHEET	
17	16/10/02	SEE CHANGE SHEET	
CHECKED	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED. DRAWING UPDATED TO ISSUE 16 THERE-ON.	
15	27/04/01	THERMAL STRAP INTERFACE MODIFIED. LEVEL 1 STRAP FIXING HOLES MOVED.	
TRACED	14	23/11/01	CENTRE OF GRAVITY ADDED TO SHT 1. J-FET DESIGN UPDATED. STAY OUT HOLES REMOVED.
PBG	13	19/11/01	UPDATED RFI FILTER & PHOT CONNECTORS ADDED. FOCAL PLANE & *A* FRAME MOUNT DIM ADDED. SHEET 7 ADDED.
DRAWN	ISSUE	DATE	AMENDMENT
AJC	1	24/11/01	

NOTE:-  
SEE CHANGE SHEET FOR DETAILS OF CHANGES  
MADE FROM ISSUE 16 ONWARDS

SPIRE Flight  
Assemblies  
COMPUTER FILE

PROTECTIVE FINISH ALOCROM 1200 (ST. STEEL PARTS NATURAL)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 45.63kg (NO CONT) SEE NOTE SHT. 1	DIMENSIONS IN mm	SCALE 1:4
ACTL WT.		

DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.	
TITLE SPIRE INTERFACE (J-FET POSITIONS)	DRAWING No A1 5264 300sht2

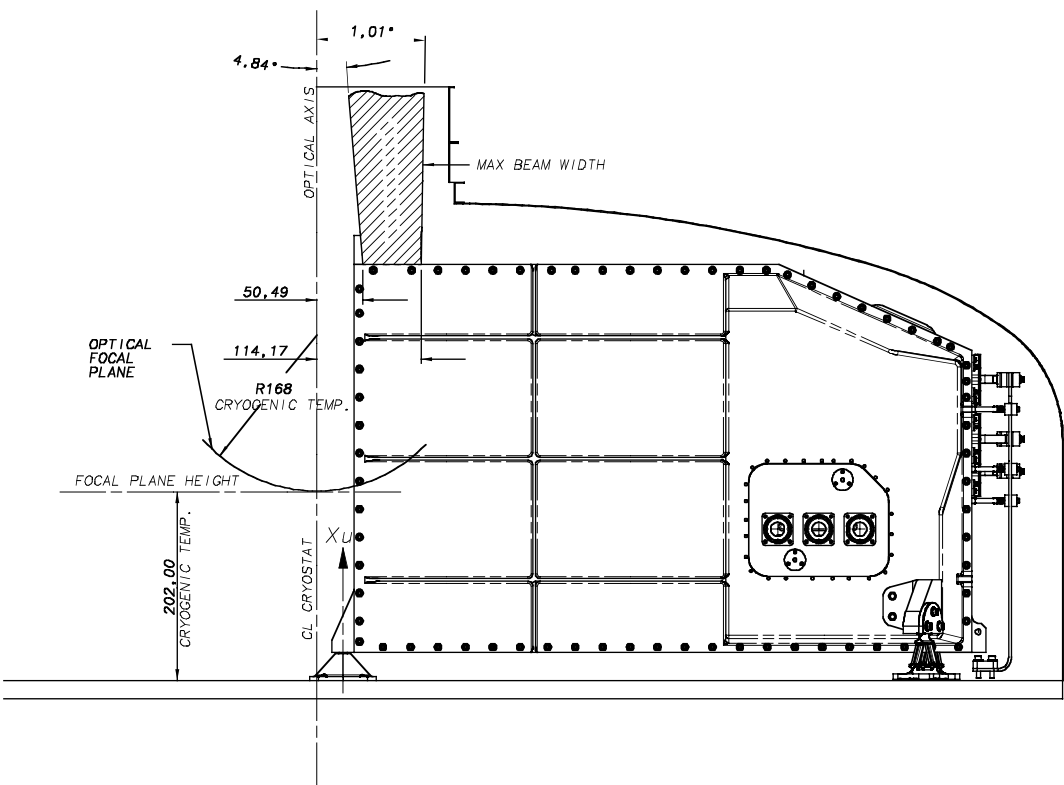
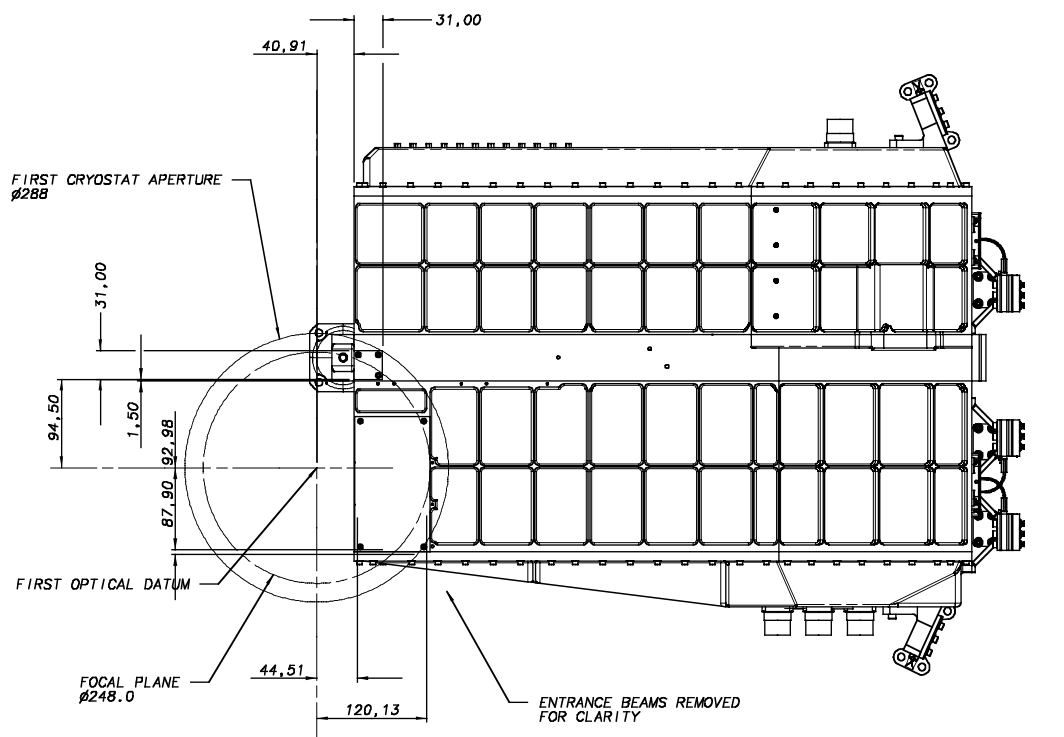
DRAWING No.

A1 5264 300sht3

THIRD ANGLE PROJECTION

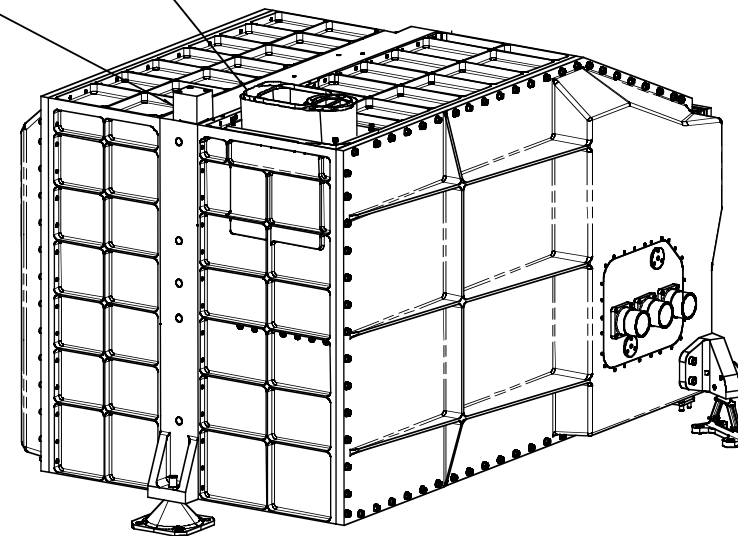
DO NOT SCALE

USED ON  
HERSCHEL

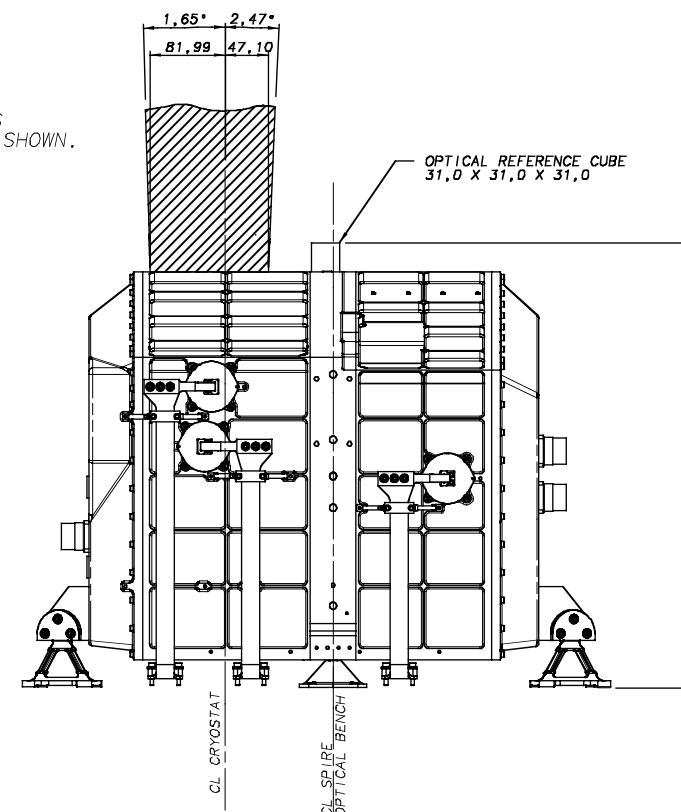


ANGULAR ACCURACY OF OPTICAL CUBE POSITION  
0.05° (3 ARC MIN).  
ANGULAR ACCURACY TO X<sub>u</sub>, Y<sub>u</sub>, Z<sub>u</sub> CO-ORDINATES  
0.05° +/- OPTICAL CUBE ANGULAR TOL. (TBD.)  
REFER TO OPTICAL CUBE DRAWING No. A3/5264/305-16

ENTRANCE BEAMS



ONLY PRIMARY DIMENSIONS FOR THE OPTICAL BEAMS WHICH SHALL REMAIN FREE FROM OBSTRUCTION ARE SHOWN. REFER TO IID-B FOR MORE DETAILED INFORMATION.



NOTE :-

1. ALL DIMENSIONS AT ROOM TEMPERATURE UNLESS OTHERWISE SPECIFIED

	18	4/07/03	SEE CHANGE SHEET
	17	16/10/02	SEE CHANGE SHEET
CHECKED	16	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED. DRAWING UPDATED TO ISSUE 16 THERE-ON.
	15	27/04/01	THERMAL STRAP INTERFACE MODIFIED, LEVEL 1 STRAP FIXING HOLES MOVED.
TRACED	14	23/11/01	CENTRE OF GRAVITY ADDED TO SHT 1. J-FET DESIGN UPDATED. STAY OUT HOLES REMOVED.
PBG	13	19/11/01	UPDATED RF1 FILTER & PHOT CONNECTORS ADDED. FOCAL PLANE & "A" FRAME MOUNT DIM ADDED. SHEET 7 ADDED.
DRAWN	ISSUE	DATE	AMENDMENT
AJC	1	24/11/01	

NOTE :-  
SEE CHANGE SHEET FOR DETAILS OF CHANGES MADE FROM ISSUE 16 ONWARDS

SPiRE Flight Assemblies  
COMPUTER FILE

PROTECTIVE FINISH  
ALOCROM 1200  
(ST. STEEL PARTS NATURAL)

ESTD WT. 45.63kg (NO CONT)  
SEE NOTE SHT. 1

ACTL WT.

MATERIAL & SPEC.  
AS LISTED

DIMENSIONS IN mm

TOLERANCES UNLESS OTHERWISE STATED -  
LINEAR +/- 1.0  
ANGULAR +/- 0°15'

SCALE 1:1

DEPARTMENT OF SPACE AND CLIMATE PHYSICS  
UNIVERSITY COLLEGE LONDON  
MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY,  
DORKING, SURREY.

TITLE  
SPiRE INTERFACE  
(OPTICAL DETAILS)

DRAWING No  
A1 5264 300sht3



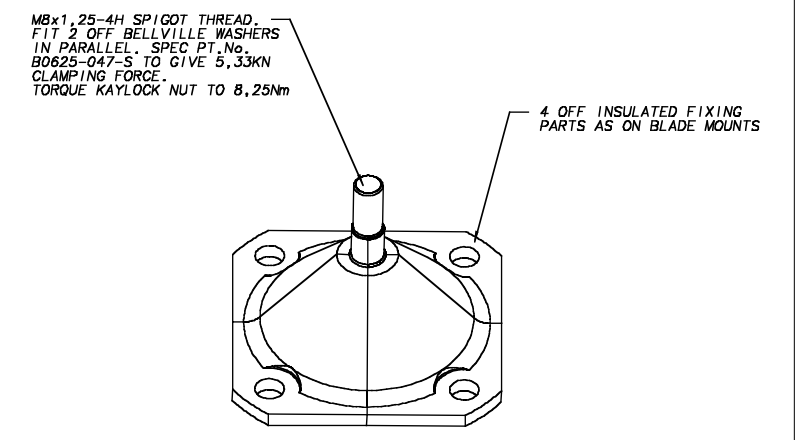
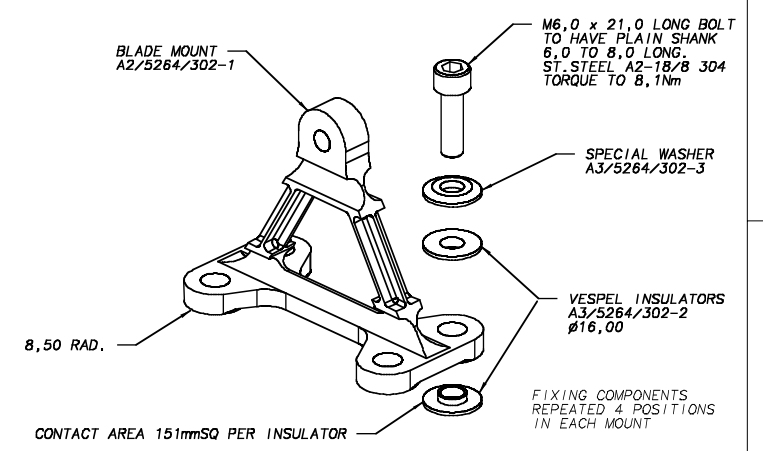
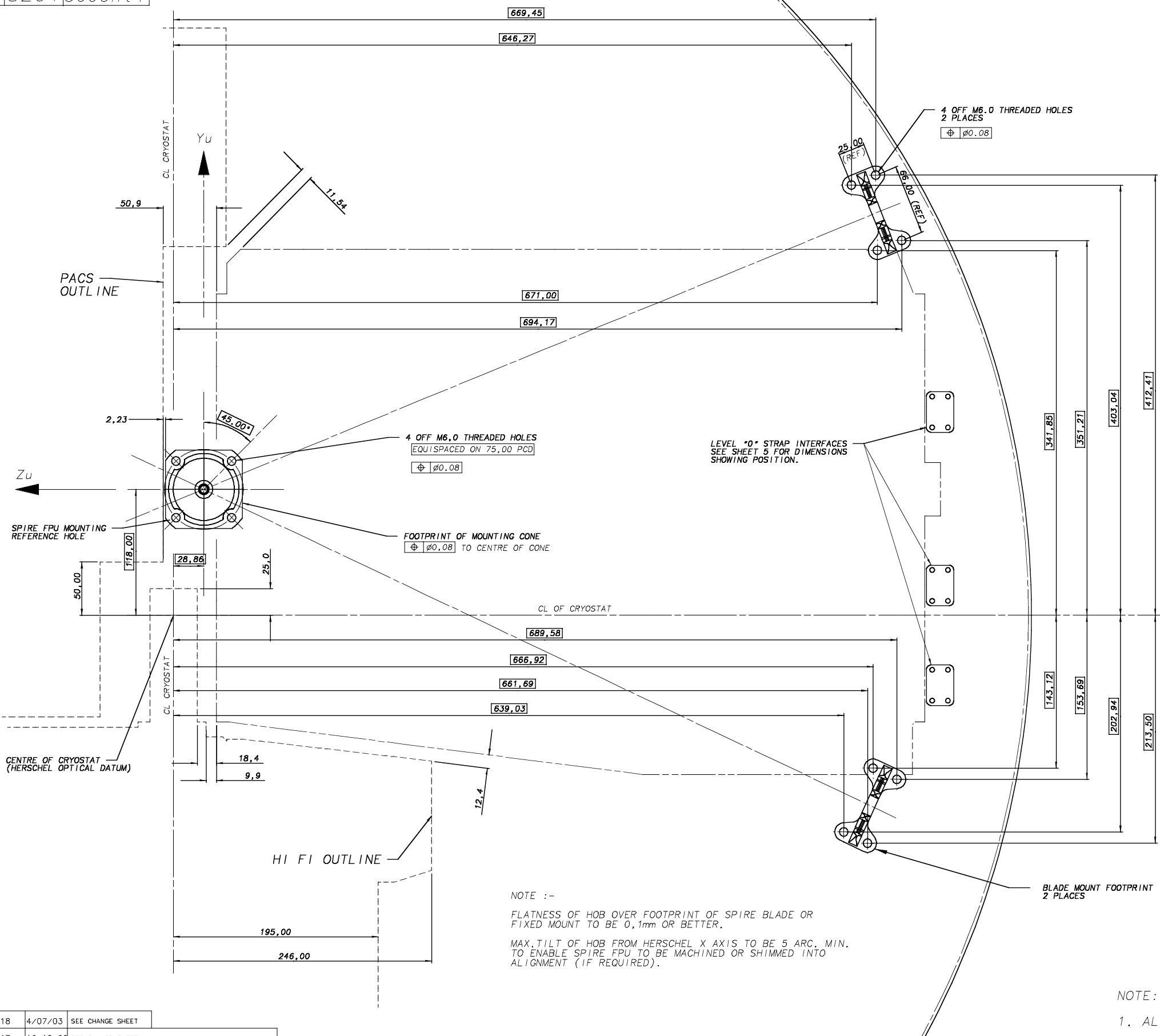
DRAWING No.

A1 5264 300sht4

THIRD ANGLE PROJECTION

DO NOT SCALE

USED ON  
HERSCHEL



NOTE :-  
FLATNESS OF HOB OVER FOOTPRINT OF SPIRE BLADE OR FIXED MOUNT TO BE 0.1mm OR BETTER.  
MAX. TILT OF HOB FROM HERSCHEL X AXIS TO BE 5 ARC. MIN. TO ENABLE SPIRE FPU TO BE MACHINED OR SHIMMED INTO ALIGNMENT (IF REQUIRED).

NOTE :-  
1. ALL DIMENSIONS AT ROOM TEMPERATURE

18	4/07/03	SEE CHANGE SHEET	
17	16/10/02	SEE CHANGE SHEET	
CHECKED	16	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED. DRAWING UPDATED TO ISSUE 16 THERE-ON.
	15	27/04/01	THERMAL STRAP INTERFACE MODIFIED. LEVEL 1 STRAP FIXING HOLES MOVED.
TRACED	14	23/11/01	CENTRE OF GRAVITY ADDED TO SHT 1. J-FET DESIGN UPDATED. STAY OUT HOLES REMOVED
PBG	13	19/11/01	UPDATED RFI FILTER & PHOT CONNECTORS ADDED. FOCAL PLANE & *A* FRAME MOUNT DIM ADDED. SHEET 7 ADDED.
DRAWN	ISSUE	DATE	AMENDMENT
AJC	1	24/11/01	

NOTE :-  
SEE CHANGE SHEET FOR DETAILS OF CHANGES MADE FROM ISSUE 16 ONWARDS

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED -
ALOCROM 1200 (ST. STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 45.63kg (NO CONT) SEE NOTE SHT. 1		
ACTL WT.	DIMENSIONS IN mm	SCALE SCALE 1:2 & 1:1

DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.		
TITLE	DRAWING No	
SPiRE INTERFACE (INTERFACE FIXING DETAILS)	A1 5264 300sht4	
SHEET 4 OF 7		

DRAWING No.

A1 5264 300sht5

THIRD ANGLE PROJECTION

DO NOT SCALE

USED ON  
HERSCHEL

2 x BELLEVILLE WASHERS  
STACKED IN PARALLEL  
PROVIDING 978N CLAMP  
FORCE PER SCREW.  
ST. STEEL SPEC PT. No.  
B0375-020-S

LEVEL \*0\* STRAP  
COPPER  
GOLD PLATE

ST. STEEL  
CLAMP PLATE

4 OFF M4 x 20,0 LONG  
SKT. HD. CAP SCREWS  
ST. STEEL A2-18/B 304  
TORQUE TO 1,5Nm MAX.

HERSCHEL OPTICAL BENCH

DETAIL "B" OF LEVEL "0" TO S/C INTERFACE

SCALE 2:1

Ra 0,4 MICRON OR BETTER.  
(BY VISUAL INSPECTION ONLY)  
GOLD PLATED SURFACE

HSFPU EXTERNAL FINISHES:-

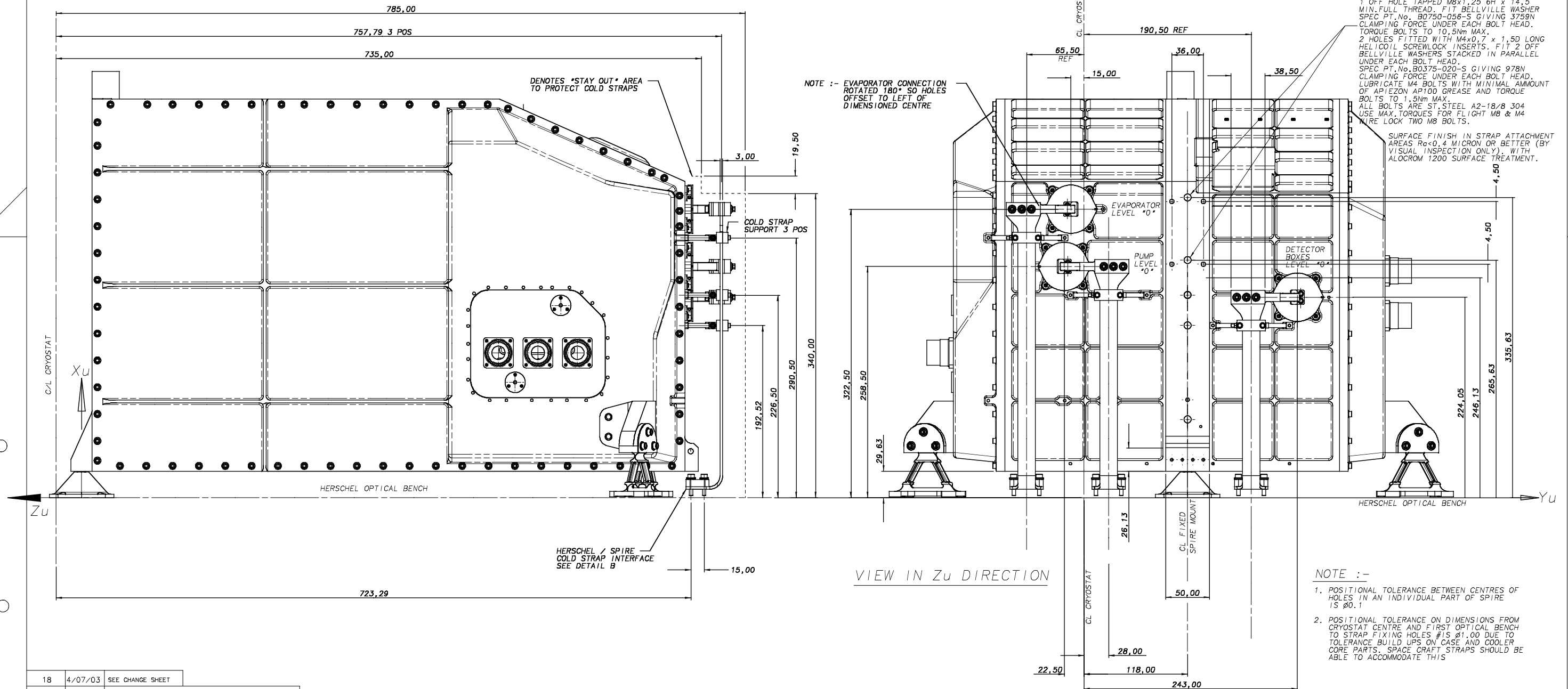
INSTRUMENT CASE AND EXTERNAL COVERS.  
BLADE AND FIXED MOUNTING, EXTERNAL  
FIXINGS,  
COLD STRAPS.

ALOCROM 1200

NATURAL ST. STEEL  
GOLD PLATED

NOTE:-

ANY THERMAL INTERFACE PROVISIONS NEEDED FOR THE JFET  
UNITS ARE SHOWN ON INTERFACE DRAWINGS RELATING TO THOSE  
UNITS.



18	4/07/03	SEE CHANGE SHEET	
17	16/10/02	SEE CHANGE SHEET	
CHECKED	16	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED. DRAWING UPDATED TO ISSUE 16 THERE-ON.
	15	27/04/01	THERMAL STRAP INTERFACE MODIFIED. LEVEL 1 STRAP FIXING HOLES MOVED.
TRACED	14	23/11/01	CENTRE OF GRAVITY ADDED TO SHT 1. J-FET DESIGN UPDATED. STAY OUT HOLES REMOVED
PBG	13	19/11/01	UPDATED RFI FILTER & PHOT CONNECTORS ADDED. FOCAL PLANE & *A* FRAME MOUNT DIM ADDED. SHEET 7 ADDED.
DRAWN	ISSUE	DATE	AMENDMENT
AJC	1	24/11/01	

NOTE:-  
SEE CHANGE SHEET FOR DETAILS OF CHANGES  
MADE FROM ISSUE 16 ONWARDS

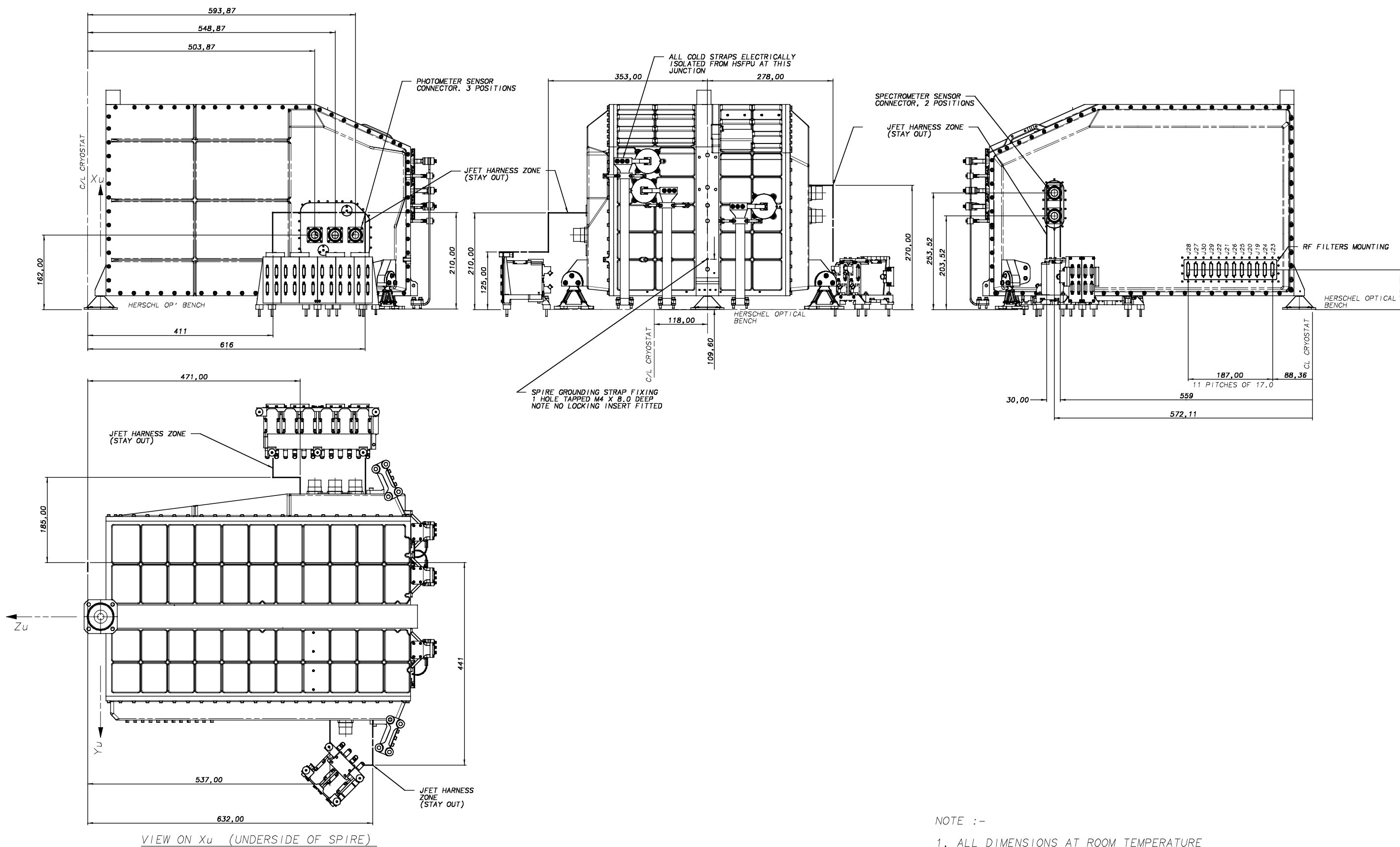
NOTE:-

ALL DIMENSIONS AT ROOM TEMPERATURE

PROTECTIVE FINISH ALOCROM 1200 (ST. STEEL PARTS NATURAL)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 45,63kg(NO CONT) SEE NOTE SHT. 1	DIMENSIONS IN mm	SCALE 1:2 & 1:1
ACTL WT.		

DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.	
TITLE SPIRE INTERFACE (THERMAL STRAP CONNECTIONS)	DRAWING No A1 5264 300sht5
SHEET 5 OF 7	

USED ON  
HERSCHEL



NOTE :-  
1. ALL DIMENSIONS AT ROOM TEMPERATURE

18	4/07/03	SEE CHANGE SHEET	
17	16/10/02	SEE CHANGE SHEET	
16	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED. DRAWING UPDATED TO ISSUE 16 THERE-ON.	
15	27/04/01	THERMAL STRAP INTERFACE MODIFIED. LEVEL 1 STRAP FIXING HOLES MOVED.	
14	23/11/01	CENTRE OF GRAVITY ADDED TO SHT 1. J-FET DESIGN UPDATED. STAY OUT HOLES REMOVED.	
13	19/11/01	UPDATED RFI FILTER & PHOT CONNECTORS ADDED. FOCAL PLANE & *A* FRAME MOUNT DIM ADDED. SHEET 7 ADDED.	
DRAWN	ISSUE	DATE	AMENDMENT
AJC	1	24/11/01	

NOTE :-  
SEE CHANGE SHEET FOR DETAILS OF CHANGES MADE FROM ISSUE 16 ONWARDS

SPIRE Flight Assemblies  
COMPUTER FILE

PROTECTIVE FINISH ALOCROM 1200 (ST. STEEL PARTS NATURAL)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 45.63kg(NO CONT) SEE NOTE SHT. 1	ACTL WT.	DIMENSIONS IN mm
		SCALE 1:4

DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.	
TITLE SPIRE INTERFACE (ELECTRICAL)	DRAWING No A1 5264 300 sht6

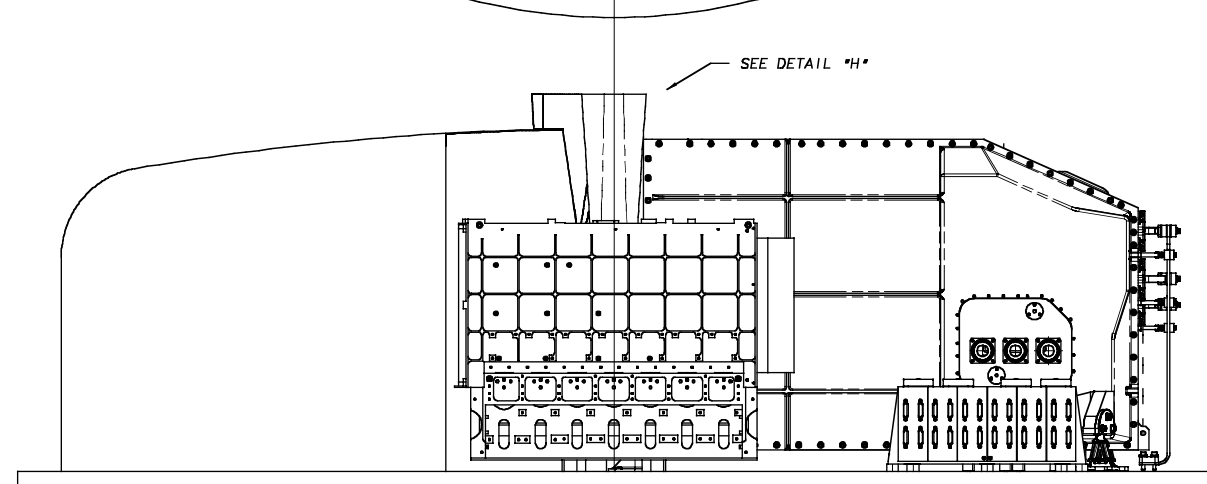
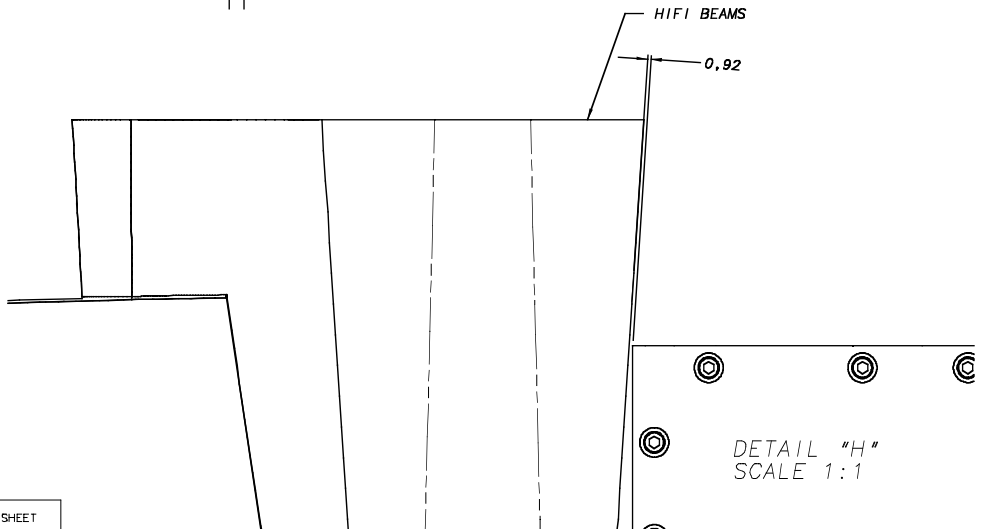
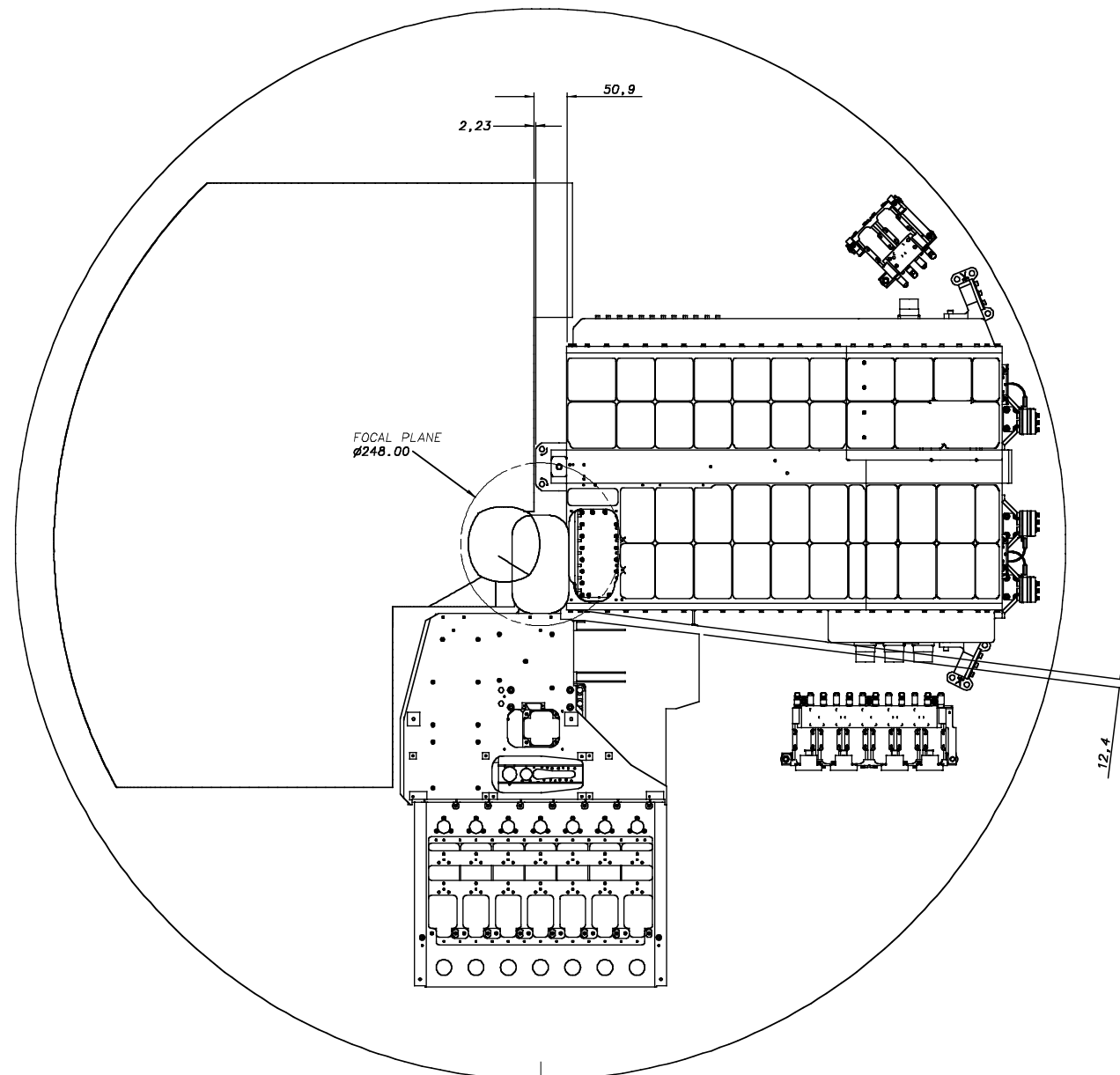
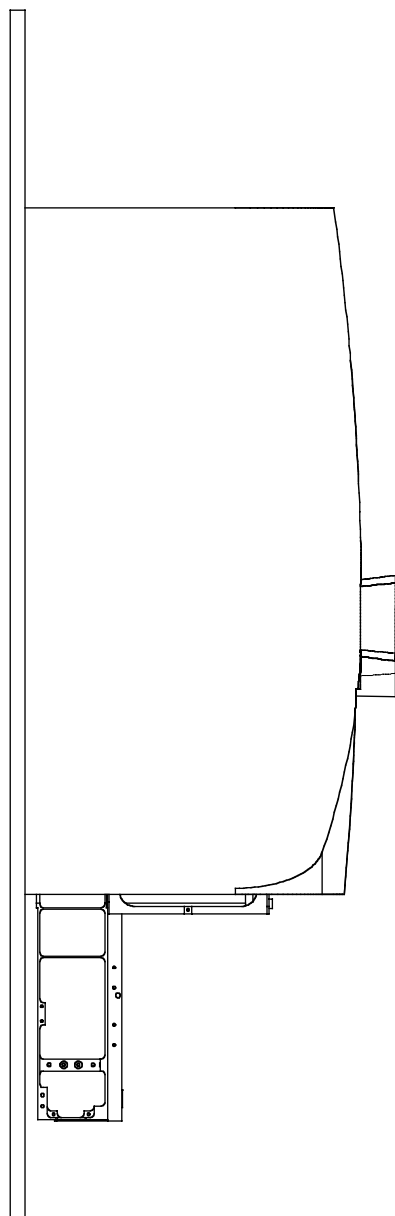
DRAWING No.

A1 5264 300sht7

THIRD ANGLE PROJECTION

DO NOT SCALE

USED ON  
HERSCHEL



18	4/07/03	SEE CHANGE SHEET
17	16/10/02	SEE CHANGE SHEET
16	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED. DRAWING UPDATED TO ISSUE 16 THERE-ON.
15	27/04/01	THERMAL STRAP INTERFACE MODIFIED, LEVEL 1 STRAP FIXING HOLES MOVED.
14	23/11/01	CENTRE OF GRAVITY ADDED TO SHT 1. J-FET DESIGN UPDATED. STAY OUT HOLES REMOVED.
13	19/11/01	UPDATED RFI FILTER & PHOT CONNECTORS ADDED. FOCAL PLANE & "A" FRAME MOUNT DIM ADDED. SHEET 7 ADDED.
<b>DRAWN</b>	<b>ISSUE</b>	<b>DATE</b>
<b>AJC</b>	1	24/11/01
		<b>AMENDMENT</b>

NOTE:-  
SEE CHANGE SHEET FOR DETAILS OF CHANGES  
MADE FROM ISSUE 16 ONWARDS

SPIRE Flight  
Assemblies  
COMPUTER FILE

PROTECTIVE FINISH ALOCROM 1200 (ST. STEEL PARTS NATURAL)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 45,63kg (NO CONT) SEE NOTE SHT. 1	DIMENSIONS IN mm	SCALE
ACTL WT.		

DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.		
TITLE	DRAWING No	
SPIRE INTERFACE PACS AND HIFI OPTICAL & CLEARANCES	A1 5264 300sht7	
	SHEET 7 OF 7	

SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 2 of 5
<b>KE-2952</b>	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-360	
	DRAWING TITLE: 2 JFET RACK INTERFACE DRAWING	

Date:	07-Feb-2003
NCR/ECR:	
Modification Description:	<ol style="list-style-type: none"> <li>Swop connector pairs (MSW)</li> <li>move connector labels (MSW)</li> <li>make back harness into parts (MSW)</li> <li>Dimension and label thread lengths</li> <li>add column to parts list showing drawing numbers (also create repeat region BOM table)</li> <li>replace thermal strap part as an assembly</li> <li>change note 2 – "...dimension and to compensate for actual jfet module sizes,..." and append note 2 with "pads on item 3 will also need machining if trial assembly of rack on flat surface shows gaps before fasteners are tightened"</li> <li>add note 5 "Heat capacity = {0.9 x mass} joules / Kelvin</li> <li>show insulation additions to feet (kapton tape washers)</li> <li>add note to section view showing that fasteners are coated with parylene C</li> <li>put m2.5 washers under various screws</li> <li>change note 3 to say "items 8 to be torqued to 2.1Nm above locking insert running torque</li> <li>add note 6 "fitted back harness to afford open access to to 51 ways as shown"</li> <li>add note 7 "kapton tape insulators shall be cut to fit annuls of thermal standoff to within +/- 1"</li> </ol>
Issue raised to:	F By: IPG
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED	
<b>KE-2952</b>	

SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 3 of 5
<b>KE-2952</b>	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-360	
	DRAWING TITLE: 2 JFET RACK INTERFACE DRAWING	

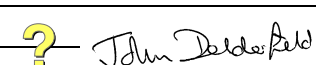
Date:	12-Mar-2003
NCR/ECR:	
Modification Description:	<ol style="list-style-type: none"> <li>Thermal standoff positional dimensions changed to basic dimensions.</li> <li>Thermal strap interface dimensions added</li> <li>Note 3 modified to clarify that stud is set to depth then nut is torqued to 2.1Nm.</li> <li>Height of JFET rack dimension added.</li> <li>Note 8 added regarding the protrusion and trimming of the parylene coating</li> <li>Annotation moved (next to balloon) stating that the KE-0104-357 and 358 should not be confused (as they have different lengths of parylene coating).</li> <li>Typos fixed</li> <li>Unit mounting hole size and positional accuracy added</li> </ol>
Issue raised to:	G By: Iain Gilmour
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED	
<b>KE-2952</b>	

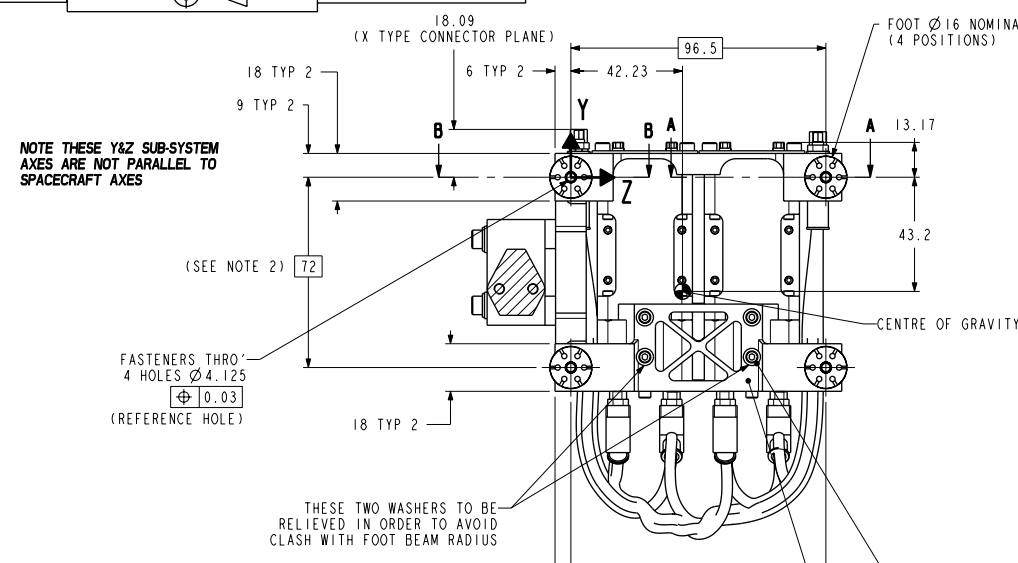
SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 4 of 5
<b>KE-2952</b>	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-360	
	DRAWING TITLE: 2 JFET RACK INTERFACE DRAWING	

Date:	20-May-2003
NCR/ECR:	
Modification Description:	<p>Added note to size of tapped holes for attachment of cooling strap ( L-1/2 )</p> <p>2 HOLES M4x0.7 1.5D LG HELICOIL FASTENER TO ENGAGE 1.5d TORQUE NOT TO EXCEED 2.5Nm</p>
Issue raised to:	H By: Kevin Burke
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED	
<b>KE-2952</b>	

SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 5 of 5
<b>KE-2952</b>	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-360	
	DRAWING TITLE: 2 JFET RACK INTERFACE DRAWING	

Date:	13-Oct-2003
NCR/ECR:	
Modification Description:	<ol style="list-style-type: none"> <li>Reflects new thermal standoff design with additional bush and upper and lower feet washers. Subsequent dimensions in X direction updated to new interface plane. New parts added to Parts List.</li> <li>Reflects new harness layout which simulates actual physical layout. Micro-D 15 way connector added to harness representation. Micro-D 37 way elliptical entry backshells replace standard circular entry versions. Mass of harness increased from 110g to 205g.</li> <li>L3 strap and interface assembly added. Views updated to show interface details and L3 strap hole definition.</li> <li>Mass of JFET modules reduced from 305g to 260g.</li> <li>Kapton tape removed from fastener and stand-off interfaces (note 7 deleted).</li> <li>Moments of inertia updated along with C of G position.</li> <li>Kapton tape note removed from L3 interface area.</li> <li>Incorrectly specified M2.5 x 8 long fasteners used to fasten JFET modules to front plate replaced with M3 x 8 long.</li> <li>Temperature sensor interface shown on both sides of the L3 interface sub-assembly.</li> <li>Distance between S/C connector I/F and rear of JFET harness increased due to addition of 15-way connectors to JFET harness.</li> <li>New dimensions applied to L3 interface area.</li> <li>Connector fasteners and nuts added to spacecraft connectors.</li> </ol>
Issue raised to:	I By: Dave Smart
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED	
<b>KE-2952</b>	

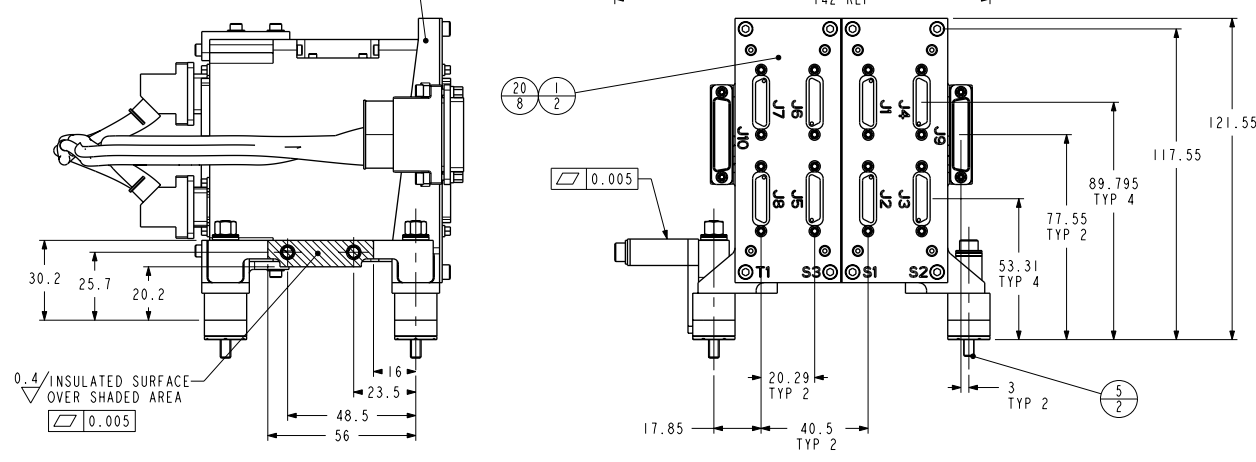
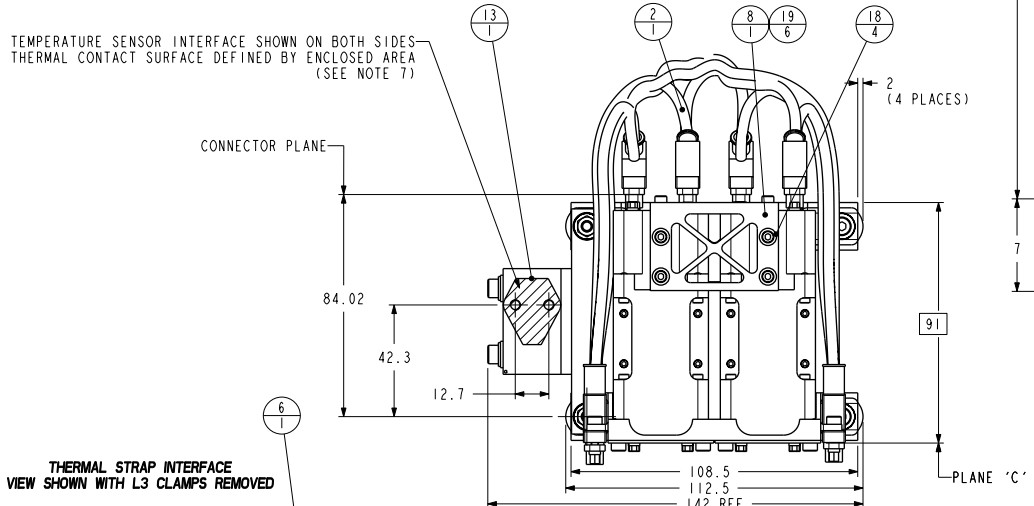
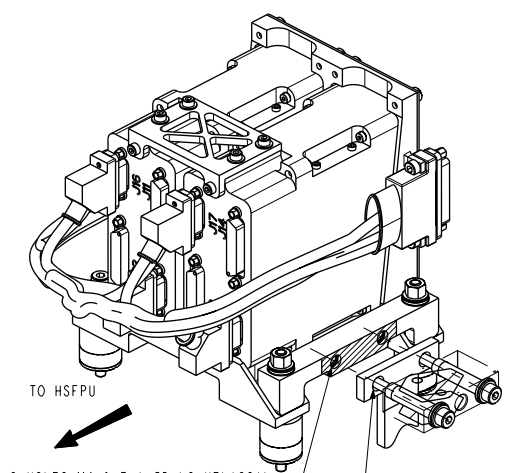
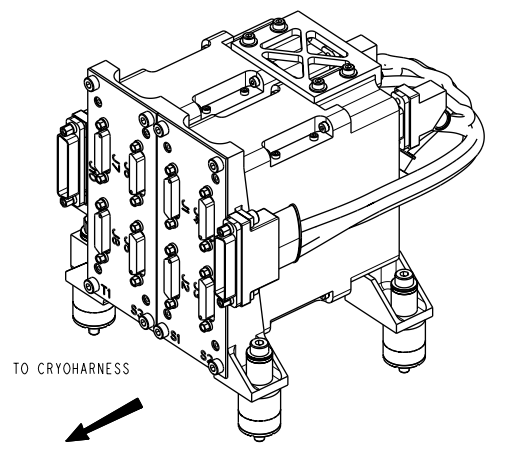
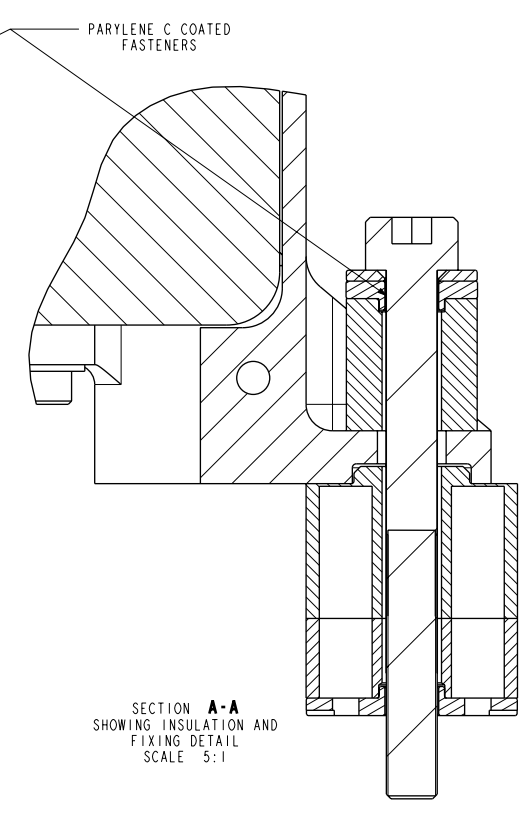
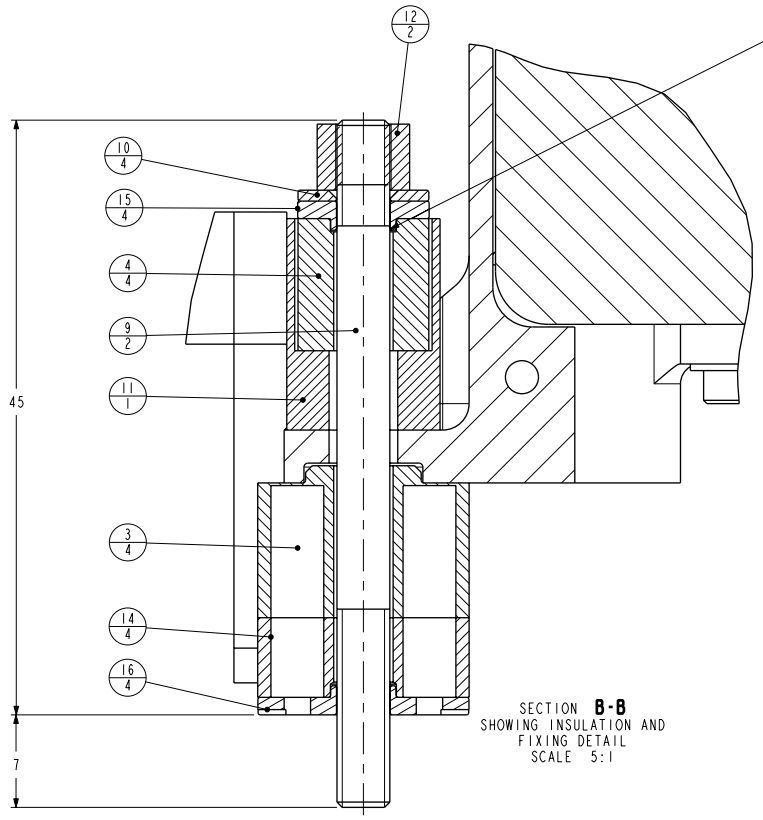
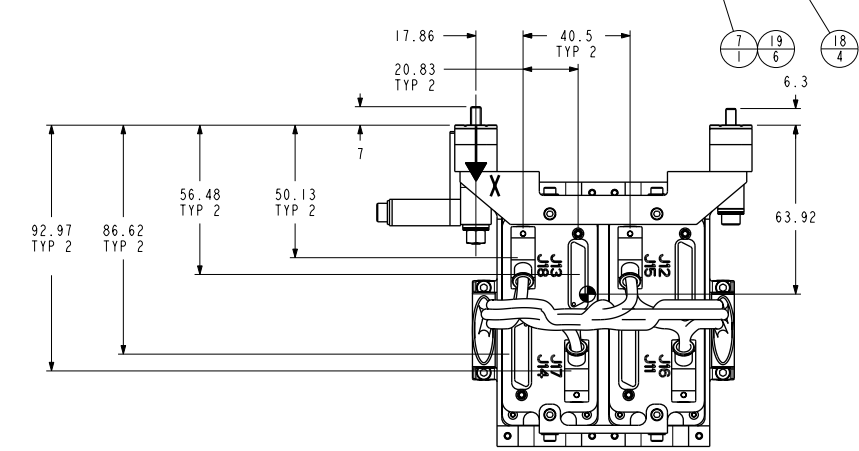

 2003.11.05  
 15:14:39 Z



CONNECTOR TABLE		
LABEL	TYPE	FUNCTION
J1	ALL MDM2SP	ALL SIGNAL FEEDS TO CRYOHARNESS
J2		
J3		
J4		
J5		
J6		
J7		
J8		
J9	MDM3TS	BIAS WIRES FROM CRYOHARNESS
J10	ALL MDM51P	SIGNALS IN FROM DETECTORS
J11		
J12		
J13		
J14		
J15	ALL MDM51P	BIAS FEEDS INTO MODULES
J16		
J17		
J18		

MOMENTS OF INERTIA (Kg mm <sup>2</sup> ) WITH RESPECT TO C OF G	
I <sub>xx</sub>	1.71e+03
I <sub>yy</sub>	1.94e+03
I <sub>zz</sub>	2.31e+03

ITEM	PART NO.	DESCRIPTION	QTY	MASS/ITEM	TOTAL MASS	COMMENTS
1	Z3836-10209722	JFET MODULE	2	260.00	520.00	JPL SUPPLY
2	ZJFET_HARNESS	BACKHARNESS (10209784.1)	1	204.01	204.01	JPL SUPPLY
3	KE-0104-354	STEPPED THERMAL STANDOFF	4	1.70	6.80	
4	KE-0104-355	TOP THERMAL STANDOFF	4	0.87	3.47	
5	KE-0104-358	M4 BOLT (PARYLENE C COATED 26.5mm)	2	4.70	9.39	
6	KE-0104-361	FRONT PLATE - 2 JFET	1	48.01	48.01	
7	KE-0104-362	REAR FOOT BEAM - 2 JFET	1	33.69	33.69	
8	KE-0104-363	REAR TOP BEAM - 2 JFET	1	8.62	8.62	
9	KE-0104-365	M4 STUD (PARYLENE C COATED)	2	5.08	10.16	
10	KE-0104-367	THERMAL STANDOFF WASHER	4	0.39	1.55	
11	KE-0104-368	THERMAL STRAP ASSY - 2 JFET	1	23.28	23.28	
12	KE-0104-386	M4 NUT (5mm LONG)	2	1.31	2.62	
13	KE-0104-393	L3 INTERFACE ASSY	1	64.18	64.18	
14	KE-0104-397	THERMAL STANDOFF BUSH	4	0.94	3.76	
15	KE-0104-398	FOOT UPPER WASHER	4	0.14	0.55	
16	KE-0104-399	FOOT LOWER WASHER	4	0.34	1.35	
17	L3_STRAP_A	L3 STRAP	1	N/A		HERSCHEL SUPPLY
18	M2-5_WASHER	WASHER	8	0.11	0.86	S/STEEL BS970/1501 304S 11/15/31
19	M2-5_X_8LG_CPHD_SKT_SS	FASTENER	12	0.58	6.93	S/STEEL BS3506-1:1998 A2-70
20	M3_X_8LG_CPHD_SKT_SS	FASTENER	8	0.74	5.95	S/STEEL BS3506-1:1998 A2-70
				ASSEMBLY MASS	955.18 GRAMS	



- NOTES:-
- BOND ITEM 15 TO 4 PRIOR TO ASSEMBLY. BOND ITEMS 16 & 14 TO 3 PRIOR TO ASSEMBLY. ITEMS 3 & 4 TO BE PERMANENTLY GLUED TO MATING SURFACES.
  - TO ATTAIN THE CORRECT MOUNTING INTERFACE DIMENSION, AND TO COMPENSATE FOR ACTUAL JFET MODULE SIZES, THE FOLLOWING PROCEDURE MUST BE FOLLOWED: PARTS 1 ARE TO BE MOUNTED TO PART 6. MEASURE FROM THE TOP OF PARTS 1 SHOWN AS PLANE 'C' TO THE TAIL END FACE OF PARTS 6, NOTING THE TWO VALUES. MACHINE RAISED PADS ON PART 7 TO REMOVE (VALUE - 87.7). PADS ON ITEM 8 WILL ALSO NEED MACHINING IF TRIAL ASSEMBLY OF RACK ON FLAT SURFACE SHOWS GAPS BEFORE FASTENERS ARE TIGHTENED.
  - ITEMS 6 TO BE TORQUED TO 2.1 Nm ABOVE LOCKING INSERT RUNNING TORQUE. ITEMS 13 TO BE TORQUED TO 2.1 Nm WITH STUD SET TO DEPTH SHOWN IN HOB LOCKING INSERT.
  - UNIT SHOWN FITTED WITH BACK-HARNESS MATING TO J9 - J10 & J15 - J18 BECAUSE THIS WILL BE FITTED BEFORE ITEM IS INTEGRATED TO HOB.
  - HEAT CAPACITY AT RT = 700 JOULES / KELVIN.
  - FITTED BACKHARNESS TO AFFORD OPEN ACCESS TO 51 WAYS AS SHOWN.
  - AFFIX ONE SENSOR WITH LONG BOLTS AND THEN THE OTHER ON THE REVERSE WITH NUTS

2 HOLES M4x0.7 1.5D LG HELICOIL FASTENER TO ENGAGE 1.5D TORQUE NOT TO EXCEED 2.5Nm

L3 STRAP 2 x Ø6 HOLES THRU 4mm STRAP TO SUIT BUSHES IN SUB-ASSEMBLY 13 (BLOCK SHOWN IN WIREFRAME TO PERMIT VIEW OF BUSHES)

SPIRE MASTER DRAWING					
PROJECT MEMBER	APPROVED				
PROJECT MANAGER					
SYSTEM ENG					
ELECTRONICS ENG					
PA GROUP					
STRESS ENG					
OPTICAL ENG					
THERMAL ENG					
MECHANICAL ENG					
USED ON	CENTRAL LABORATORY OF THE RESEARCH COUNCILS				© CLRC 2003
TITLE	2 JFET RACK INTERFACE DRAWING				
SPIRE	A0-KE-0104-360-1				1 of 1

ISSUE	DATE	MOD. No.	DRN. BY	CHKD.	APPD.	STATUS
1	13-Oct-03	KE-2952	D. SMART			ISSUED
TOLERANCES UNLESS STATED		FINISH CLEAN REMOVE ALL BURRS		ORIGINAL SCALE 1:1 DO NOT SCALE		
MATERIAL & SPEC. SEE DETAILS		SURFACE TEXTURE µm SEE DETAILS UNLESS STATED		0 50mm		

SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 2 of 5
KE-2953	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-350	
DRAWING TITLE: 6 JFET RACK INTERFACE DRAWING		

Date:	7-Feb-2003
NCR/ECR:	
Modification Description:	<ol style="list-style-type: none"> <li>Swop connector pairs (MSW)</li> <li>move connector labels (MSW)</li> <li>make back harness into parts (MSW)</li> <li>Dimension and label thread lengths</li> <li>add column to parts list showing drawing numbers (also create repeat region BOM table)</li> <li>replace thermal strap part as an assembly</li> <li>change note 2 – "...dimension and to compensate for actual jfet module sizes,..." and append note 2 with "pads on item 3 will also need machining if trial assembly of rack on flat surface shows gaps before fasteners are tightened"</li> <li>add note 5 "Heat capacity = {0.9 x mass} joules / Kelvin"</li> <li>show insulation additions to feet (kapton tape washers)</li> <li>add note to section view showing that fasteners are coated with parylene C</li> <li>put m2.5 washers under various screws</li> <li>change note 3 to say "items 8 to be torqued to 2.1Nm above locking insert running torque"</li> <li>add note 6 "fitted back harness to afford open access to to 51 ways as shown"</li> <li>add note 7 "kapton tape insulators shall be cut to fit annuls of thermal standoff to within +/- 1"</li> </ol>
Issue raised to:	D
By:	Iain Gilmour

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED
<b>KE-2953</b>

SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 3 of 5
KE-2953	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-350	
DRAWING TITLE: 6 JFET RACK INTERFACE DRAWING		

Date:	12-Mar-2003
NCR/ECR:	
Modification Description:	<ol style="list-style-type: none"> <li>Thermal standoff positional dimensions changed to basic dimensions.</li> <li>Thermal strap interface dimensions added</li> <li>Note 8 added regarding the protrusion and trimming of the parylene coating</li> <li>Typos fixed</li> <li>2 off thermal strap standard washers replaced with Belleville washers, BOM updated to this effect.</li> <li>Unit mounting hole size and positional accuracy added</li> </ol>
Issue raised to:	E
By:	Iain Gilmour

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED
<b>KE-2953</b>

SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 4 of 5
KE-2953	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-350	
DRAWING TITLE: 6 JFET RACK INTERFACE DRAWING		

Date:	20-May-2003
NCR/ECR:	
Modification Description:	<ol style="list-style-type: none"> <li>Note Associated with tapped holes in the Thermal Strap Interface, first line modified for clarity to read: 2 HOLES M4x0.7 1.5D LG HELICOIL</li> </ol>
Issue raised to:	F
By:	Kevin Burke

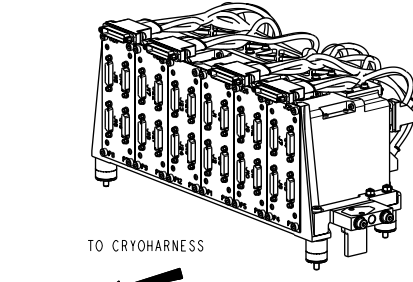
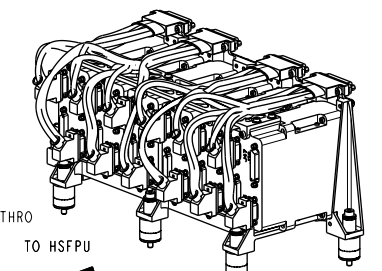
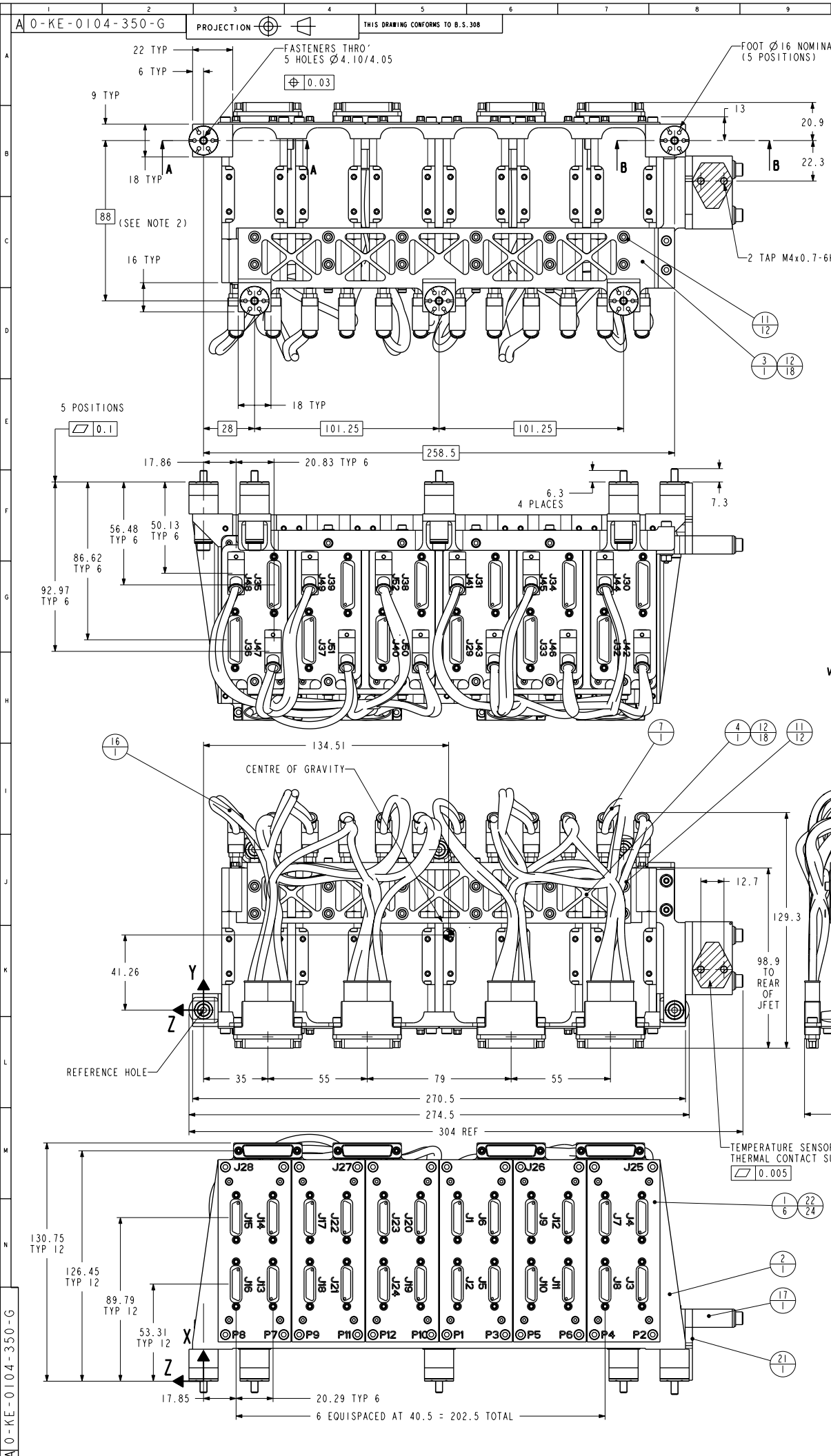
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED
<b>KE-2953</b>

SSTD Rutherford Appleton Laboratory	<b>Space Product Assurance Form</b> <i>Mechanical Design Office</i>	Doc.No. :ISO9:FORM/MECH/006
		Issue : 2 Date : 21/12/2001 Page : 5 of 5
KE-2953	<b>MODIFICATION SHEET</b>	
	THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY	
	DRAWING NUMBER: KE-0104-350	
DRAWING TITLE: 6 JFET RACK INTERFACE DRAWING		

Date:	13-Oct-2003
NCR/ECR:	
Modification Description:	<ol style="list-style-type: none"> <li>Reflects new thermal standoff design with additional bush and upper and lower feet washers. Subsequent dimensions in X direction updated to new interface plane. New parts added to Parts List.</li> <li>Reflects new harness layout which simulates actual physical layout. Micro-D 15 way connector added to harness representation. Micro-D 37 way elliptical entry backshells replace standard circular entry versions. Mass of harnesses increased from 165g to 270g.</li> <li>L3 strap and interface assembly added. Views updated and added to show interface details and L3 strap hole definition.</li> <li>Mass of JFET modules reduced from 305g to 260g.</li> <li>Kapton tape removed from fastener and stand-off interfaces (note 7 deleted).</li> <li>Moments of inertia updated along with C of G position.</li> <li>Fastener for thermal strap assembly changed to non parylene coated M4 x 45mm long.</li> <li>Kapton tape note removed from L3 interface area.</li> <li>Incorrectly specified M2.5 x 8 long fasteners used to fasten JFET modules to front plate replaced with M3 x 8 long.</li> <li>Temperature sensor interface shown on both sides of the L3 interface sub-assembly.</li> <li>Distance between S/C connector I/F and rear of JFET harness increased due to addition of 15-way connectors to JFET harness. Dimension between S/C connector plane and rear face of JFET module added.</li> <li>New dimensions applied to L3 interface area.</li> <li>Connector fasteners and nuts added to spacecraft connectors.</li> </ol>
Issue raised to:	G
By:	Dave Smart

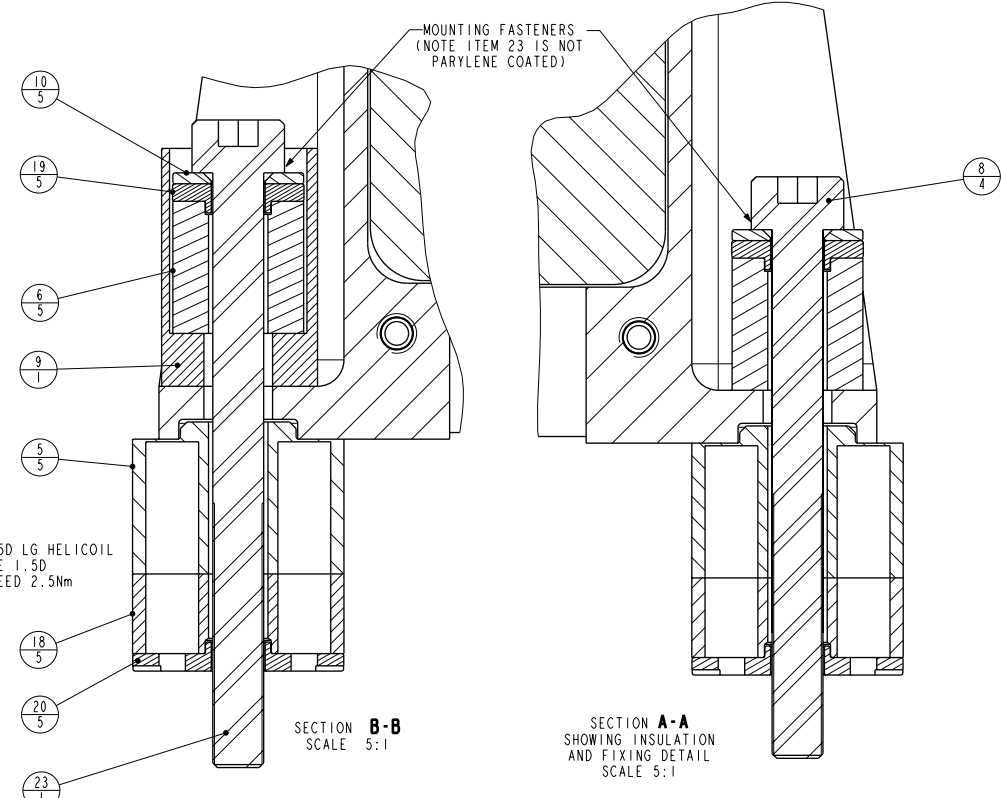
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED
<b>KE-2953</b>

? John Delderfeld 2003.11.05 15:12:23 Z



MOMENTS OF INERTIA (Kg, mm <sup>2</sup> ) WITH RESPECT TO C OF G	
$I_{xx}$	1.70e+04
$I_{yy}$	1.66e+04
$I_{zz}$	4.73e+03

ITEM	PART NO.	DESCRIPTION	QTY	MASS/ITEM	TOTAL MASS	COMMENTS
1	23836-10209722	JFET MODULE	6	260.00	1560.00	JPL SUPPLY
2	KE-0104-351	FRONT PLATE 6 JFET	1	128.66	128.66	
3	KE-0104-352	REAR FOOT BEAM - 6 JFET	1	69.55	69.55	
4	KE-0104-353	REAR TOP BEAM - 6 JFET	1	32.56	32.56	
5	KE-0104-354	STEPPED THERMAL STANDOFF	5	1.70	8.50	
6	KE-0104-355	TOP THERMAL STANDOFF	5	0.87	4.34	
7	10209785_1	BACKHARNESS (10209785_1)	1	265.65	265.65	JPL SUPPLY
8	KE-0104-358	M4 BOLT (PARYLENE C COATED 26.5mm)	4	4.70	18.78	
9	KE-0104-359	THERMAL STRAP ASSY - 6 JFET	1	23.76	23.76	
10	KE-0104-367	THERMAL STANDOFF WASHER	5	0.39	1.94	
11	M2-5_WASHER	WASHER	24	0.11	2.57	S/STEEL BS970/1501 304S 11/15/31
12	M2-5_X_8LG_CPHD_SKT_SS	FASTENER	36	0.58	20.79	S/STEEL BS3506-1:1998 A2-70
13	M3_NUT	NUT	2	0.48	0.97	S/STEEL BS6105 A2-50 DIN 912
14	58-3205	BELLEVILLE WASHER	2	0.17	0.33	BELLEVILLE SPRINGS LTD, BATCH 17415
15	M3_X_20LG_CPHD_SKT_SS	FASTENER	2	1.26	2.52	S/STEEL BS3506-1:1998 A2-70
16	10209786_1	BACKHARNESS (10209786_1)	1	267.70	267.70	JPL SUPPLY
17	KE-0104-393	L3 INTERFACE ASSY	1	64.18	64.18	
18	KE-0104-397	THERMAL STANDOFF BUSH	5	0.94	4.70	
19	KE-0104-398	FOOT UPPER WASHER	5	0.14	0.69	
20	KE-0104-399	FOOT LOWER WASHER	5	0.34	1.69	
21	L3_STRAP_B	L3 STRAP	1	N/A		HERSCHEL SUPPLY
22	M3_X_8LG_CPHD_SKT_SS	FASTENER	24	0.74	17.86	S/STEEL BS3506-1:1998 A2-70
23	M4_X_45LG_CPHD_SKT_SS	FASTENER	1	5.15	5.15	S/STEEL BS3506-1:1998 A2-70
				ASSEMBLY MASS	2502.88 GRAMS	



LABEL	TYPE	FUNCTION
J1	ALL MOMSP	ALL SIGNAL FEEDS TO CRYOHARNESS
J2		
J3		
J4		
J5		
J6		
J7		
J8		
J9		
J10		
J11	MOM3TS	BIAS WIRES FROM CRYOHARNESS
J12		
J13		
J14		
J15		
J16		
J17		
J18		
J19		
J20		
J21	ALL MOMSP	SIGNALS IN FROM DETECTORS
J22		
J23		
J24		
J25		
J26		
J27		
J28		
J29		
J30		
J31	ALL MOMSP	BIAS FEEDS INTO MODULES
J32		
J33		
J34		
J35		
J36		
J37		
J38		
J39		
J40		
J41		
J42		
J43		
J44		
J45		
J46		
J47		
J48		
J49		
J50		
J51		
J52		

- NOTES:-
- ITEM 19 TO BE BONDED TO ITEM 6 PRIOR TO ASSEMBLY. ITEMS 20 & 18 TO BE BONDED TO ITEM 5 PRIOR TO ASSEMBLY. ITEMS 5 & 6 TO BE PERMANENTLY GLUED TO MATING SURFACES.
  - TO ATTAIN THE CORRECT MOUNTING INTERFACE DIMENSION, AND TO COMPENSATE FOR ACTUAL JFET MODULE SIZES, THE FOLLOWING PROCEDURE MUST BE FOLLOWED: PARTS 1 ARE TO BE MOUNTED TO PART 2. MEASURE FROM THE TOP OF PARTS 1 SHOWN AS PLANE 'C' TO THE TAIL END FACE OF PARTS 2, NOTING THE SIX VALUES. MACHINE RAISED PADS ON PART 3 TO REMOVE (VALUE - 87.7). PADS ON ITEM 4 WILL ALSO NEED MACHINING IF TRIAL ASSEMBLY OF RACK ON FLAT SURFACE SHOWS GAPS BEFORE FASTENERS ARE TIGHTENED.
  - ITEMS 22 AND 8 TO BE TORQUED TO 2.1 Nm ABOVE LOCKING INSERT RUNNING TORQUE.
  - UNIT SHOWN FITTED WITH BACK-HARNESS MATING TO J25-28 & J41-52 BECAUSE THIS WILL BE FITTED BEFORE ITEM IS INTEGRATED TO HOB.
  - HEAT CAPACITY AT RT = 2100 JOULES / KELVIN.
  - FITTED BACKHARNESS TO AFFORD OPEN ACCESS TO 51 WAYS AS SHOWN.
  - AFFIX ONE SENSOR WITH LONG BOLTS AND THEN THE OTHER ON THE REVERSE WITH NUTS

SPIRE MASTER DRAWING	
PROJECT MEMBER	APPROVED
PROJECT MANAGER	
SYSTEM ENG	
ELECTRONICS ENG	
PA GROUP	
STRESS ENG	
OPTICAL ENG	
THERMAL ENG	
MECHANICAL ENG	

ISSUE	DATE	MOD. No.	DRN. BY	CHKD.	APPD.	STATUS
G	13-03-03	KE-2953.	D. SMART			ISSUED
TOLERANCES UNLESS STATED		FINISH		ORIGINAL SCALE		
±0.2 mm		CLEAN		1:1		
±0.3		REMOVE ALL BURRS		DO NOT SCALE		
MATERIAL & SPEC.		SURFACE TEXTURE µm		0 50mm		
SEE DETAILS		✓ UNLESS STATED				
USED ON						© CLRC 2003
CENTRAL LABORATORY OF THE RESEARCH COUNCILS						
TITLE						
6 JFET RACK INTERFACE DRAWING						
SPIRE						
A 0-KE-0104-350-G						1 of 1