Forms Annex 1 to SCI-PT-IIDB/SPIRE-02124

Subject: **SPIRE MECHANICAL INTERFACE DRAWINGS**

PREPARED BY: J. DELDERFIELD ……?…. 2005.10.14 11:08:40 + 01'00'

APPROVED BY: ERIC SAWYER pp M.GRIFFIN……?……. Digitally signed by Eric Sawyer Date: 2005.10.14 14:06:45 +01'00'

Signature Not Verified

Issue Drawing Change List

The detailed changes for each drawing are shown just before the drawing.

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 change lists.

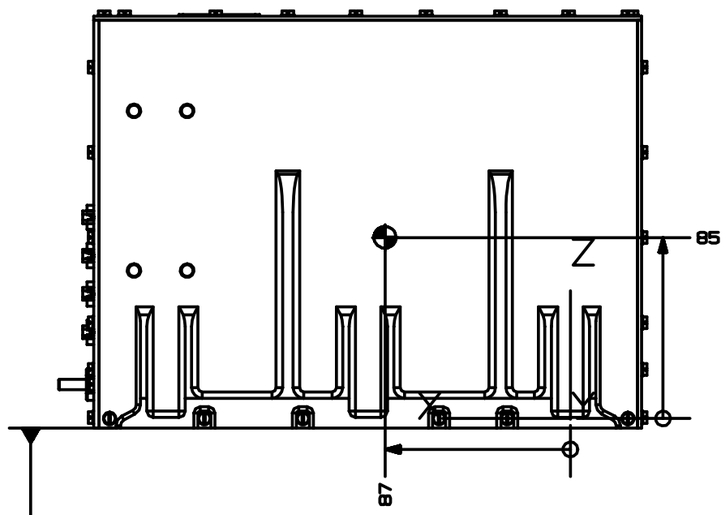
Issue 8. DRCU "QM1" I/F drawings added, red-lined with NCR information. 2Module JFET updated but changes are all internal to unit.

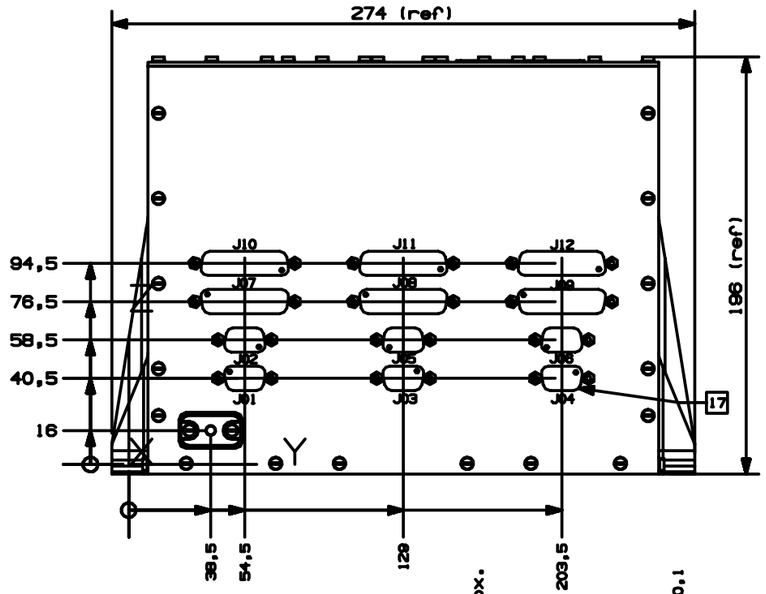
Issue 9. Incorporate updated FM FCU and DCU drawings, including their change control sheets.
DRCU QM1 drawings amended to be like the hardware.

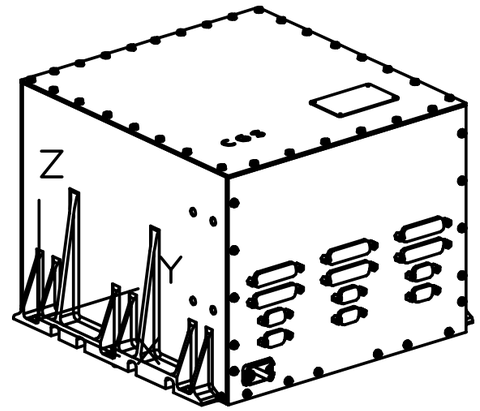
Issue10…Version 19 of Cryogenic unit I/F drawing inserted, implementing latest L0 straps. For detailed change control see drawing's change list included herein.

Issue 11...Omitted connectors and unit ref. holes clarified in QM1 DRCU ICDs
JFET unit drawing minor corrections, see drawings' change lists included herein
Append SPIRE cryogenic integration MGSE drawing sheets.

Issue 12...All drawings now represent FM build…see individual change lists except for DPU and MGSE for which these have failed to be produced

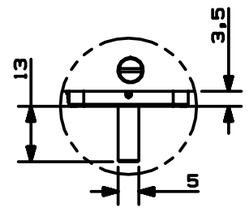






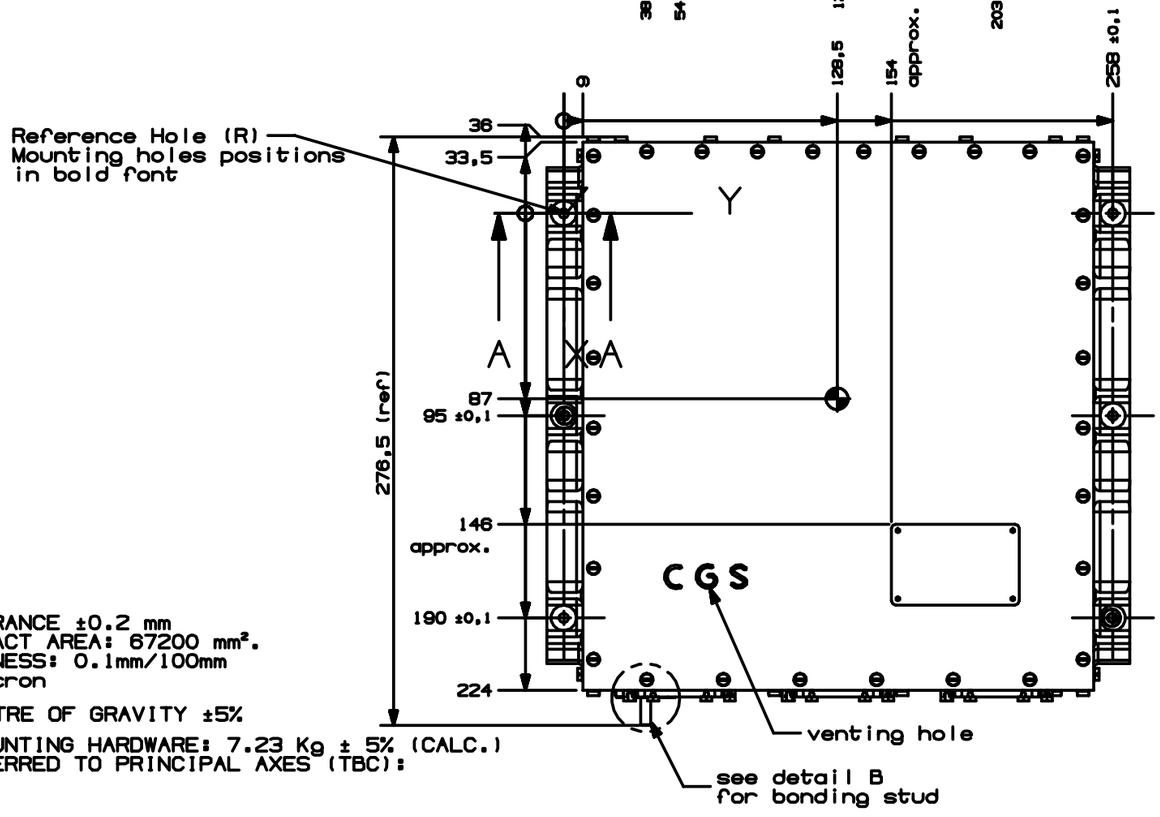
typ for all six
mounting holes

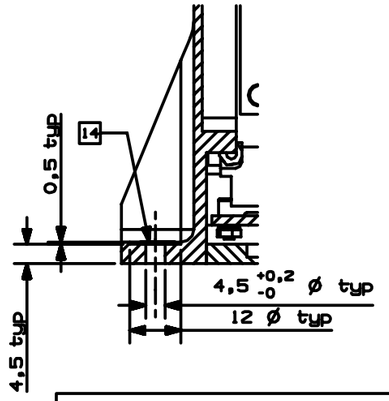
SECTION A-A



DETAIL B
SCALE 1:1

connectors
removed for clarity





CONNECTORS TABLE		
ID	P/N	Function
J01	3401002 01B DEMA9P NMBF0	from DPU Prime to PDU Prime
J02	3401002 01B DEMA9P NMBF0	from DPU Red. to PDU Red.
J03	3401002 01B DEMA9S NMBF0	from DPU Prime to Bus A Prime
J04	3401002 01B DEMA9S NMBF0	from DPU Prime to Bus B Prime
J05	3401002 01B DEMA9S NMBF0	from DPU Red. to Bus A Red.
J06	3401002 01B DEMA9S NMBF0	from DPU Red. to Bus B Red.
J07	3401002 01B DBMA25P NMBF0	from DPU Prime to DCE Prime
J08	3401002 01B DBMA25P NMBF0	from DPU Red to DCE Red.
J09	3401002 01B DBMA25P NMBF0	from DPU Prime to MCE Prime
J10	3401002 01B DBMA25P NMBF0	from DPU Red to MCE Red.
J11	3401002 01B DBMA25P NMBF0	from DPU Prime toSCE Prime
J12	3401002 01B DBMA25P NMBF0	from DPU Red to SCE Red.

NOTES:
1. GENERAL ASSEMBLY TOLERANCE ±0.2 mm
2. MOUNTING SURFACE CONTACT AREA: 67200 mm².
   MOUNTING SURFACE FLATNESS: 0.1mm/100mm
   AND ROUGHNESS: 2.6 micron
3. ⊕ INDICATES THE CENTRE OF GRAVITY ±5%
4. MASS NOT INCLUDING MOUNTING HARDWARE: 7.23 Kg ± 5% (CALC.)
5. MOMENT OF INERTIA REFERRED TO PRINCIPAL AXES (TBC):
   Jxx = 0.8 x 10^{-1} Kgm²
   Jyy = 7.81 x 10^{-1} Kgm²
   Jzz = 9.06 x 10^{-2} Kgm²
6. EMISSIVITY: 0.85 (OUTER WALLS)
7. POWER DISSIPATION MAX 27.85 W
8. SEE FAMILY TREE FOR ENGINEERING DRAWINGS: HERS-HIFI-DT-CGS-001
9. CHO-TERM 1671 P/N 60-12-0808 FOR TERMAL CONTACT
10. ALL WALLS IN AL 7075 T7351 QQ-A 250/12 or EQUIVALENT
11. BONDING STUD IN AISI 316 PASSIVATION ACCORDING TO QQ-P-35
    BONDING STUD FASTENING TORQUE 4 Nm ± 0.1
12. OUTER SURFACE TREATMENT: BLACK ANODIZE ACCORDING TO
    MIL-A-8625 TYPE III CLASS 2. BASEPLATE: ALODINE 1200 MIL-C-5541 CLASS 3
13. ALL CONNECTORS ID ENGRAVINGS ARE LOCATED AS PER DWG 10-SPIRE-00.04
14. MOUNTING BOLTS M4
15. CONNECTORS TORQUE AS PER ESA SCC 3401/022
16. NO EIGEN MODES WITH FREQUENCY LOWER THAN 140Hz AND EFFECTIVE
    ASSOCIATED MASS HIGHER THAN 5% PRESENT IN INSTALLED CONFIGURATION
17. • INDICATES CONNECTOR PIN 1

FILE MODEL: herschel_assy_rev8
FILE DRAWING: cad_spire_dwg_rev8

REV	DRAWN	DATE	MEC CHECK	DATE	EL CHECK	DATE	SYST ENG	DATE	PA	DATE	CoC	DATE	CHANGE AUTHORITY
/	MV	21-03-05											

UNLESS OTHERWISE SPECIFIED DIMENSIONS AND TOLERANCES ARE IN mm

IDENTIFICATION MARKING PER

CARLO GAVAZZI SPACE

DRAWING TITLE

HERSCHEL SPIRE (DPU)
INTERFACE CONTROL DOCUMENT

SCALE N.A. | PROJECTION

GEN. TOLERANCES PER ISO 2768-

SPECIAL TOL. N.A. | FINISH

CARLO GAVAZZI

DASH NUMBER	NEXT ASSY	APPLICATION	SIZE	CAGE CODE	DRAWING NUMBER	REV	SHEET
-01	10-SPIRE-00.00		A2		10-SPIRE-00.02	/	1 OF 1

List of changes

Document identification

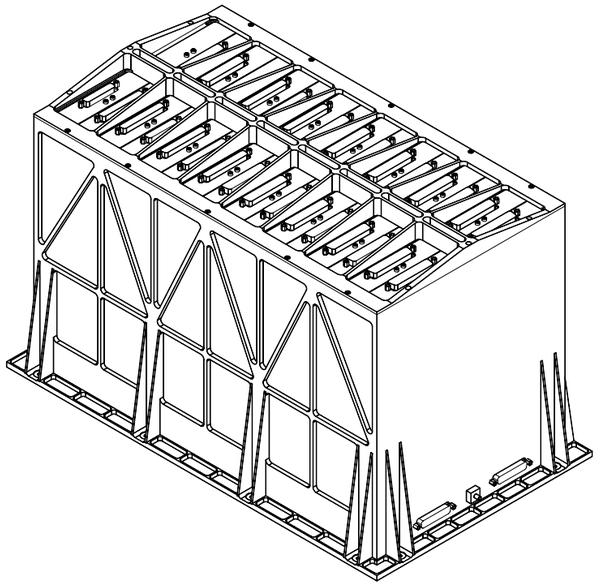
Document n°		SPIR-MX-5100 000
Title of document		SPIRE DCU Electronic box mechanical i/f drawing
Changes	From rev.	Rev. E (01/2004)
	To rev.	Rev. G (08/2004)

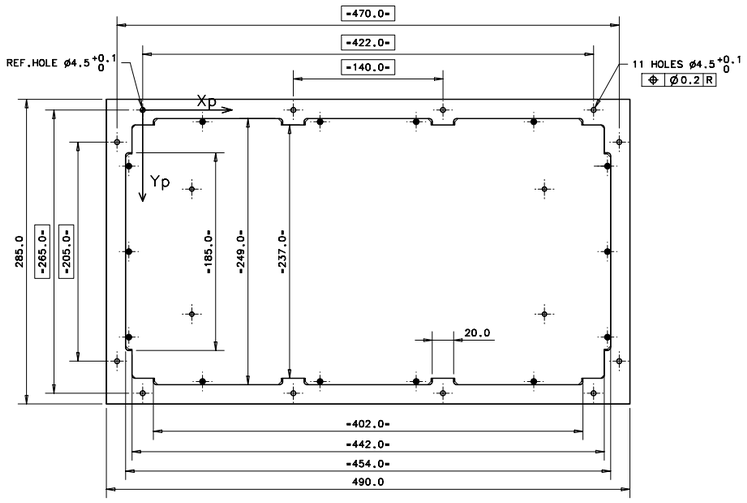
Nota : rev F has not been released.

Detail of changes

Description	Associated RFD / ECR (if any)	Status
No changes introduced, only added follwing informations : - base plate height 4mm ("Coupe partielle A-A") - position of top connectors on Xp and Zp - position of fixation hole on Xp (470mm)	--	--

	Position	Name	Signature
Prepared by	PA manager	J. Fontignie	09/09/04
Verified by	Mechanical Designer	T. Tourrette	27/09/04
Approved by	Project manager	J.L. Auguères	28/09/04

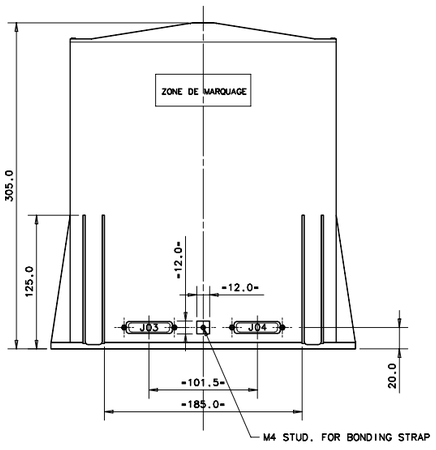


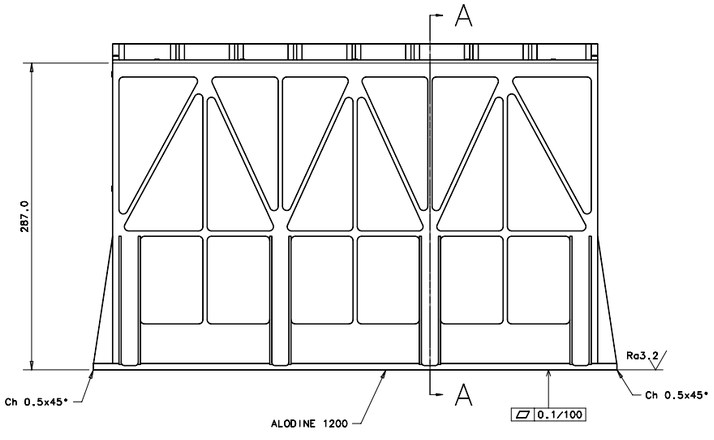


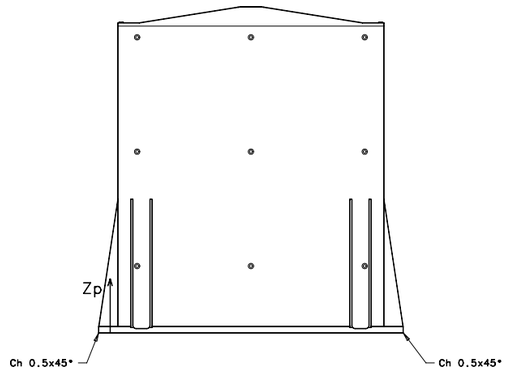
CONNECTORS					
IDENT	TYPE	FUNCTIONS	IDENT	TYPE	FUNCTIONS
J01	DBMA 25S	DAQ_IF_M/DPU_M	J17	DDMA 50P	LIA_P_7/FPU
J02	DBMA 25S	DAQ_IF_R/DPU_R	J18	DDMA 50P	LIA_P_7/FPU
J03	DBMA 25P	DCU/PSU_M	J19	DDMA 50P	LIA_P_8/FPU
J04	DBMA 25P	DCU/PSU_R	J20	DDMA 50P	LIA_P_8/FPU
J05	DDMA 50P	LIA_P_1/FPU	J21	DDMA 50P	LIA_P_9/FPU
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

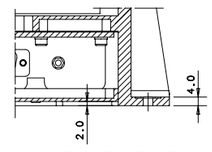
NOTES

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=0.471 Kg.m2 JYp=0.250 Kg.m2 JZp=0.444 Kg.m2
CONTACT AREA MOUNTING FEET=28180mm2
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=14442g

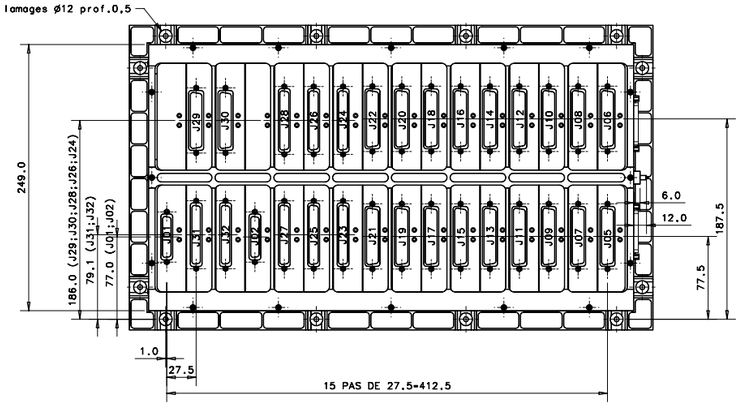








COUPE PARTIELLE A-A
ECHELLE:1/1



CONNECTOR TYPE P

CONNECTOR TYPE S

indice	Modifications	Date	Dessiné par	Vérifié par	Approuvé par
G	Mise à jour	08/04	DHENAIN		
F	Mise à jour	06/04	DHENAIN		
E	Mise à jour	01/04	DHENAIN		
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

tolérances générales: Indice de rugosité général XXXX — SOUS-TRAITANT
Tol.ang.:±XX°
Casser les angles vifs

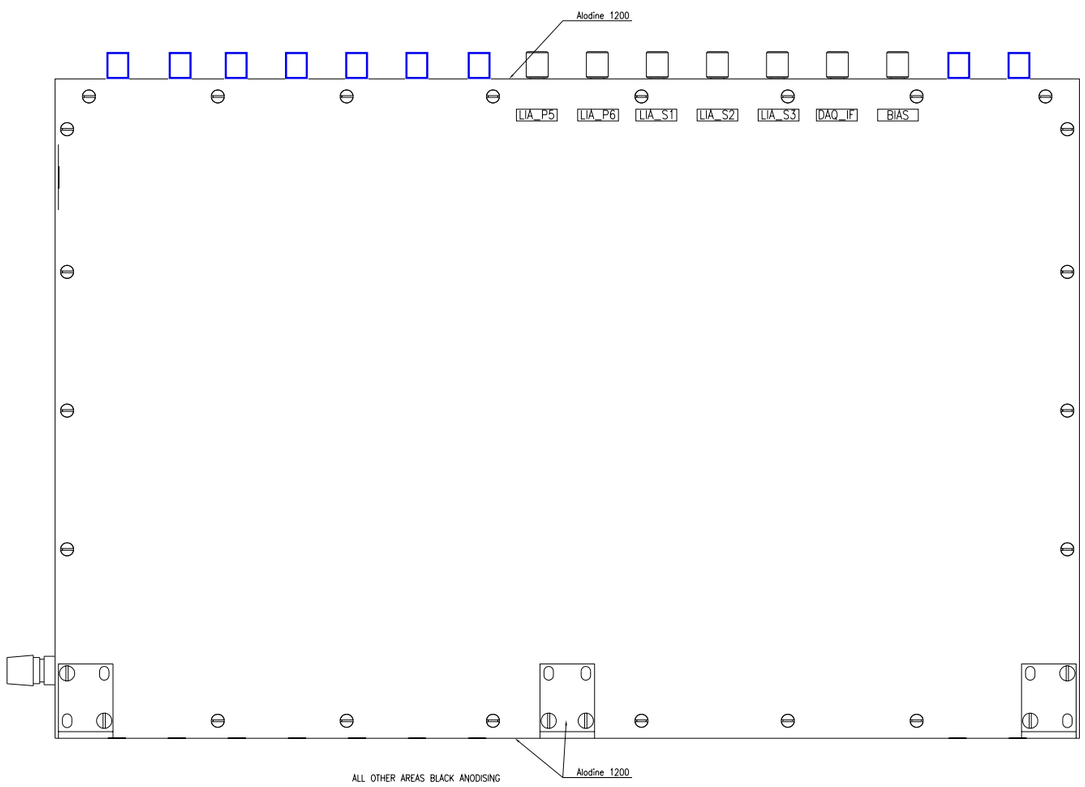
Matière:
Traitement thermique:
Protection
Echelle 1/2 | Poids | Niveau qualité

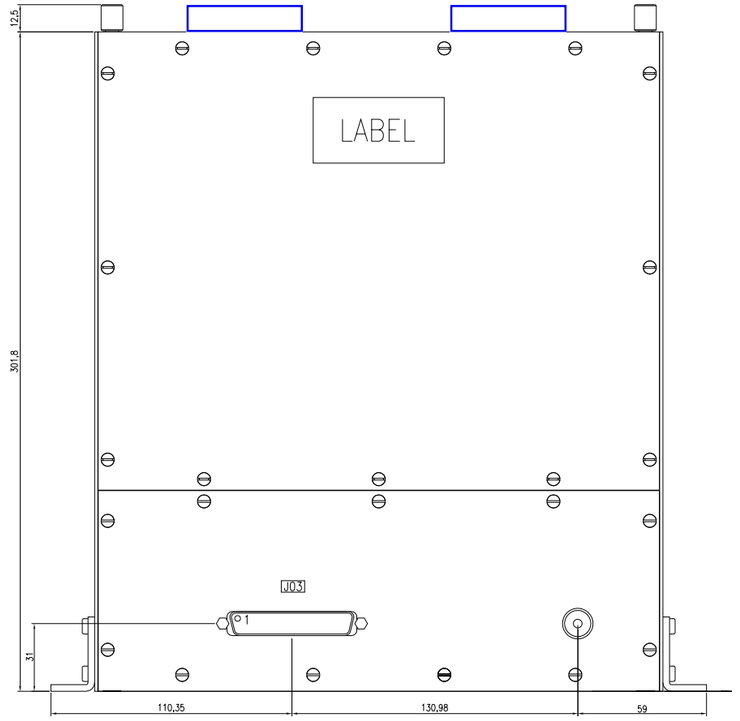
SPIRE
HSDCU ELECTRONIC BOX
MECHANICAL INTERFACE CONTROL DRAWING

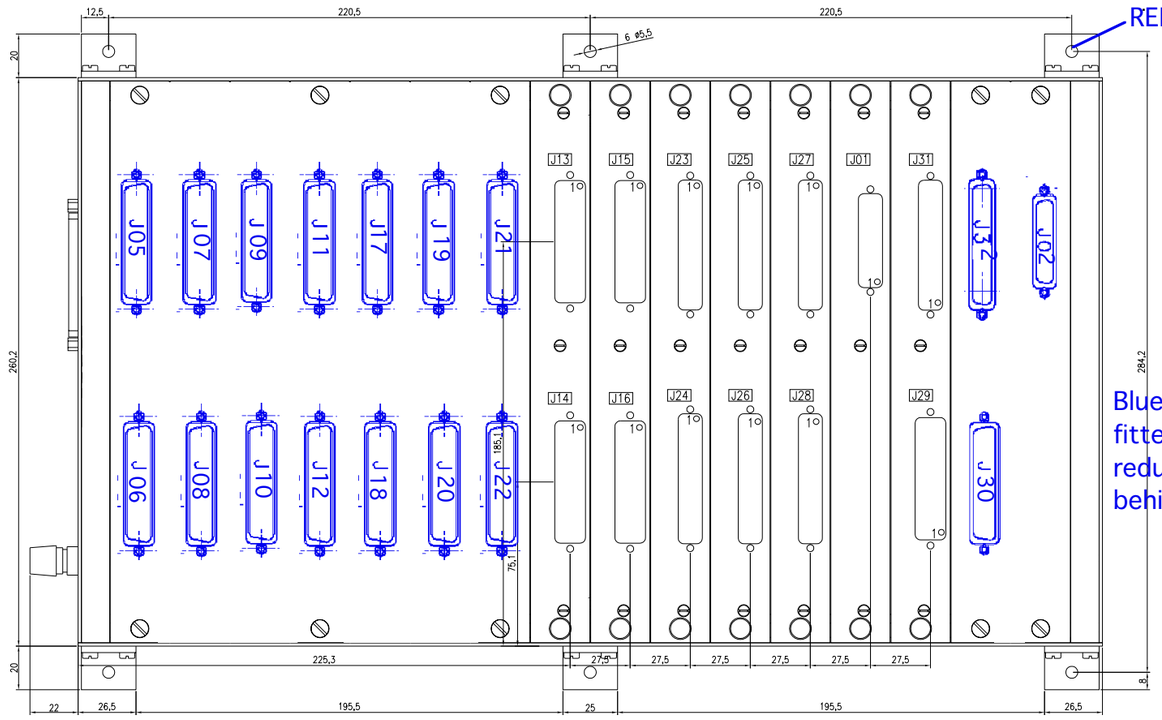
SAP/GERES
Tel:01.69.08.78.25
01.69.08.59.76
Fax:01.69.08.79.96

COMMISSARIAT A L'ENERGIE ATOMIQUE
C.E.N SACLAY

A0 SPIR-MX-5100 000 G

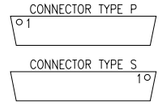






Blue signifies connectors fitted but without redundant side electronics behind them.

CONNECTORS					
IDENT	TYPE	FUNCTION	IDENT	TYPE	FUNCTION
J01	DBMA 25S	DAQ_IF_M/DPU	J24	DCMA 37P	LIA_S_1/FPU
J03	DBMA 25P	DCU/PSU_M	J25	DCMA 37P	LIA_S_2/FPU
J13	DDMA 50P	LIA_P_5/FPU	J26	DCMA 37P	LIA_S_2/FPU
J14	DDMA 50P	LIA_P_5/FPU	J27	DCMA 37P	LIA_S_3/FPU
J15	DDMA 50P	LIA_P_6/FPU	J28	DCMA 37P	LIA_S_3/FPU
J16	DDMA 50P	LIA_P_6/FPU	J29	DDMA 78S	BIAS_M/FPU
J23	DCMA 37P	LIA_S_1/FPU	J31	DCMA 37S	BIAS_M/FPU



ONLY FOR QM1

CEA /SAP 91191 GIF/YVETTE Cedex	MATIERE : Alu 2017A	PROTECTION :	
	TRAITEMENT : Alodine 1200	DESSINE : SREE	
		DATE : 02/12/02	
		VERIFIE :	
		VISA :	

ECHELLE : 3/4	TOLERANCES GENERALES : ±0.2	Ra1.6	
DESIGNATION ICD HS DCU/QM1	SRIR-MX-5101 000 A	0 A1	

List of changes

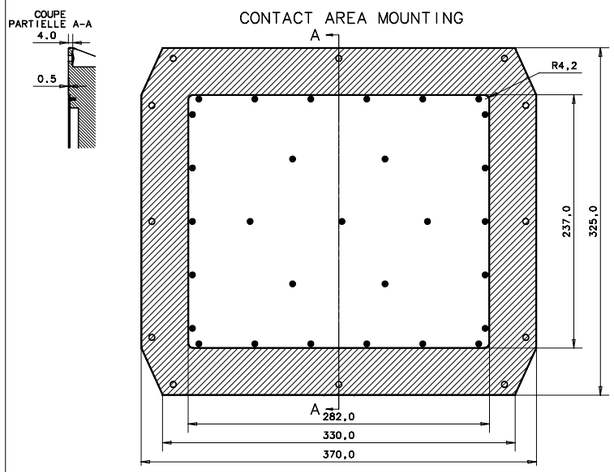
Document identification

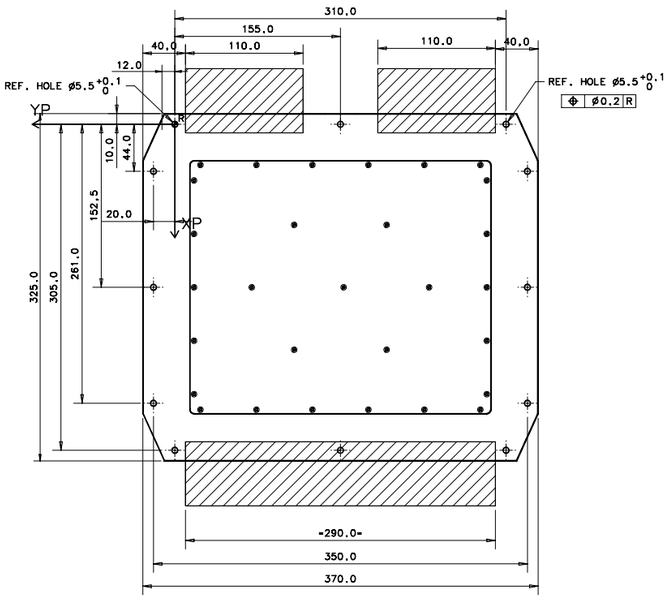
Document n°		SPIR-MX-5200 000
Title of document		SPIRE FCU Electronic box mechanical i/f drawing
Changes	From rev.	Rev. J (01/2004)
	To rev.	Rev. K (08/2004)

Detail of changes

Description	Associated RFD / ECR (if any)	Status
No changes introduced, only added follwong informations : - base plate height 4mm (“Coupe partielle A-A”) - enhanced readability of top connectors position on Xp - position of fixation hole on Xp (350mm)	--	--

	Position	Name	Signature
Prepared by	PA manager	J. Fontignie	09/09/04
Verified by	Mechanical Designer	T. Tourrette	27/09/04
Approved by	Project manager	J.L. Auguères	28/9/04

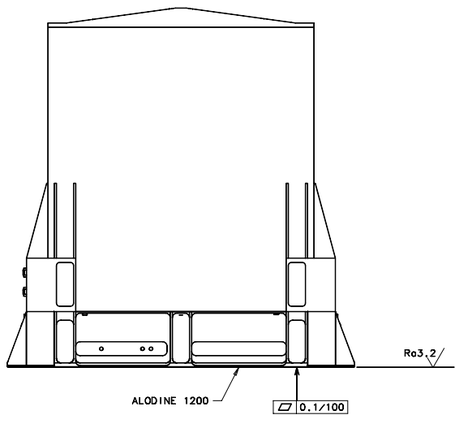


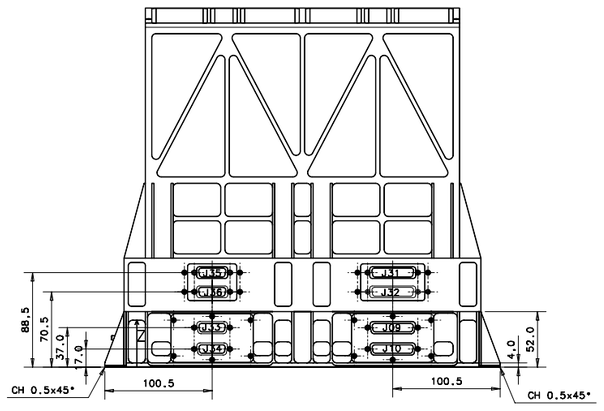


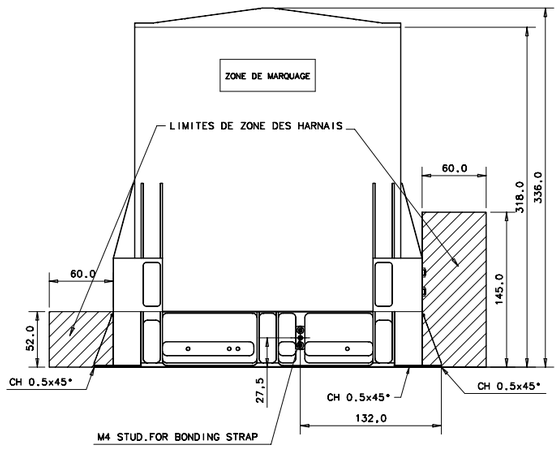
NOTES

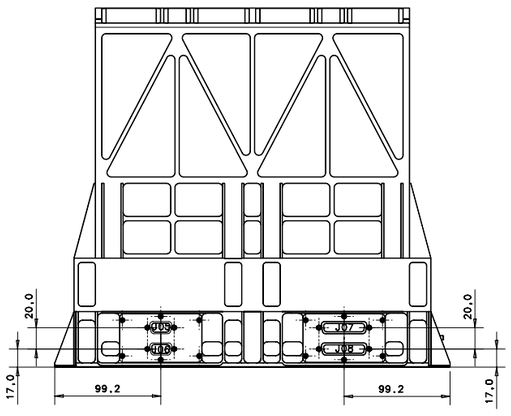
MATERIAL AL 6082
CENTRE OF GRAVITY REFFERED TO REFERENCE HOLE
X=148.8mm Y=-153mm Z=138.5mm
MOMENTS OF INERTIA REFERRED TO CENTRE OF GRAVITY
JX=0.338 Kg.m2 JY=0.318 Kg.m2 JZ=0.282 Kg.m2
CONTACT AREA MOUNTING FEET=51656mm2
THERMAL COATING AND BLACK ANODISING ESA.PSS.703
SURFACE EMISSIVITY >0.85
TORQUE VALUE FOR CONNECTOR FIXATION SCREWS=
-MALE=0.3mN
-FEMALE=0.45mN
ESTIMATED MASS=16254g
CP=1170j/kg.°K

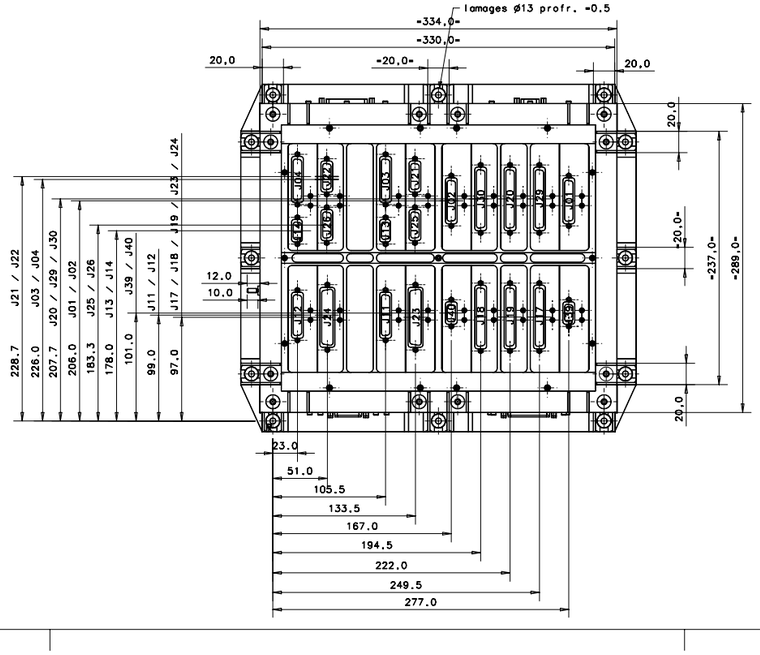
CONNECTORS					
IDENT	TYPE	INTERFACE NAME	IDENT	TYPE	INTERFACE NAME
J01	DBMA 25S	MAC-M/DPU-M	J21	DAMA 15S	TEMP-M/FPU-TS-1-M
J02	DBMA 25S	MAC-R/DPU-R	J22	DAMA 15S	TEMP-R/FPU-TS-1-R
J03	DBMA 25S	CCHK-IF-M/DPU-M	J23	DDMA 50S	TEMP-M/FPU-TS-2-M
J04	DBMA 25S	CCHK-IF-R/DPU-R	J24	DDMA 50S	TEMP-R/FPU-TS-2-R
J05	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

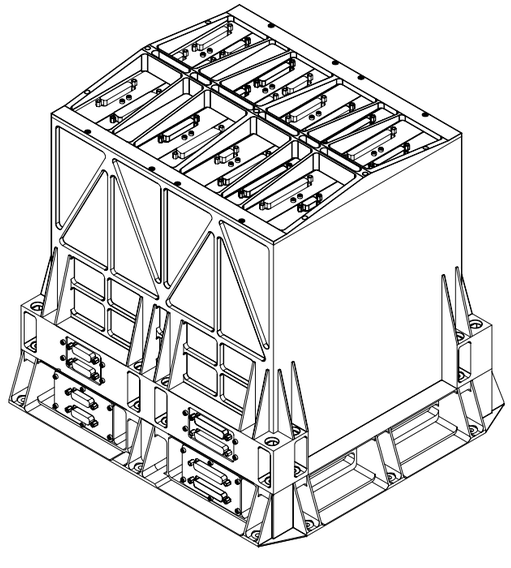












CONNECTOR TYPE P
o1

CONNECTOR TYPE S
1o

indice	Modifications	Date	Dessiné par	Vérifié par	Approuvé par
K	Mise à jour	08/04	DHENAIN		
J	Mise à jour	01/04	DHENAIN		
I	Modif position CdG	12/03	DHENAIN		
H	Mise a jour	11/03	DHENAIN		
G	Mise a jour	04/03	DHENAIN		
F	Mise à jour	10/02	DHENAIN		
E	Mise à jour connecteurs	09/02	DHENAIN		
D	Mise a jour	07/02	DHENAIN		
C	Mise a jour	06/02	DHENAIN		
B	Mise a jour	05/02	DHENAIN		
A	Origine	12/01	DHENAIN	.....	.....

Spécifications particulières

tolérances générales: Indice de rugosité général; Tol.ang.:; Casser les angles vifs — SOUS-TRAITANT

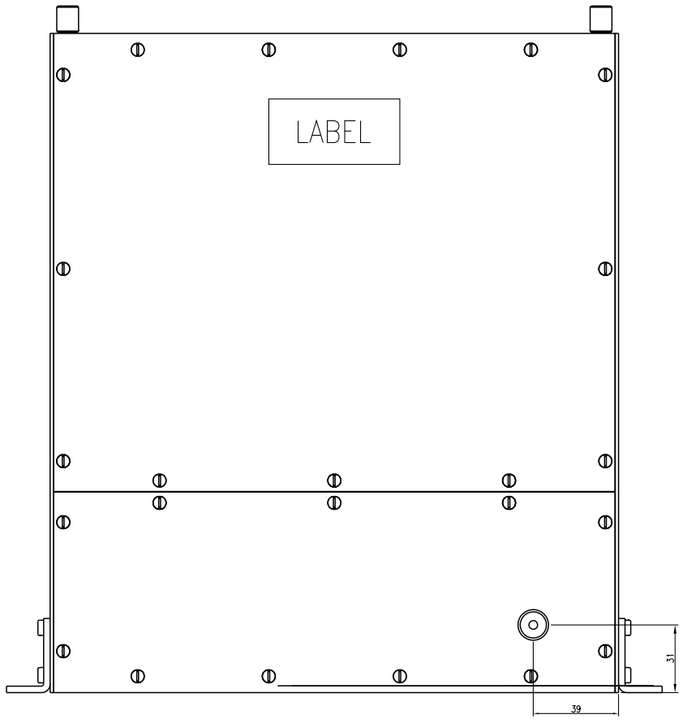
Matière:
Traitement thermique:
Protection
Echelle 1/2 | Poids | Niveau qualité

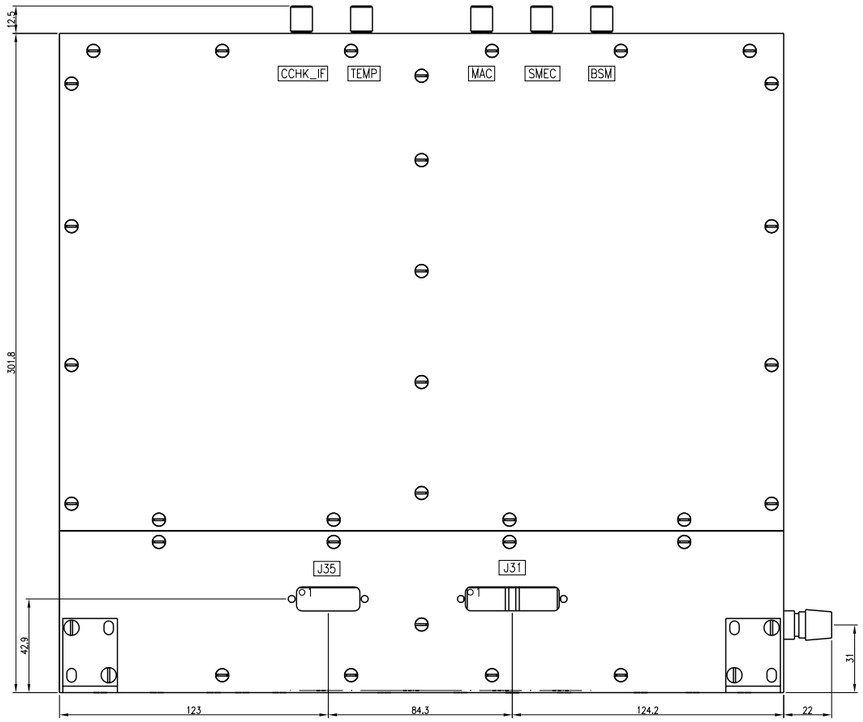
SPIRE
FCU ELECTRONIC BOX
MECHANICHAL INTERFACE CONTROL DRAWING

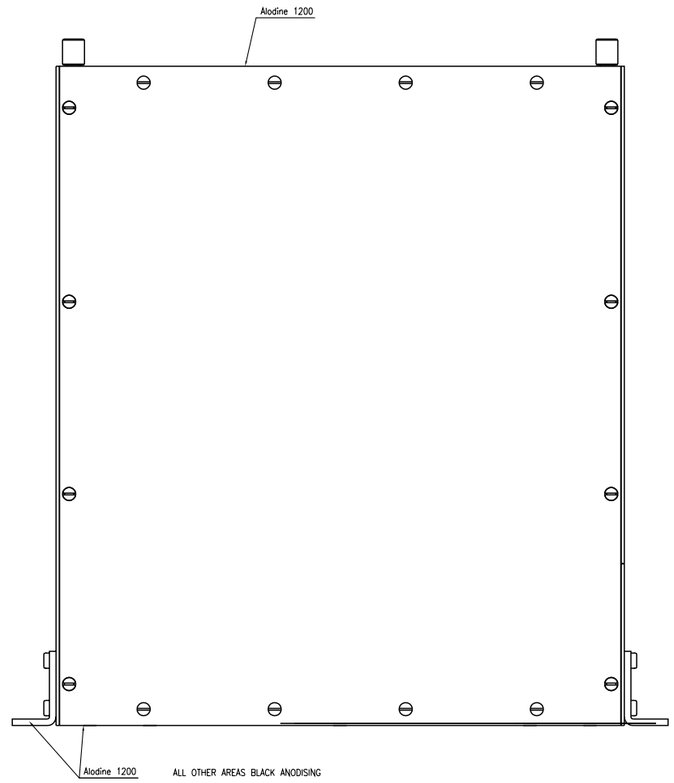
SAP/GERES
Tel:01.69.08.78.25
01.69.08.59.76
Fax:01.69.08.79.96

COMMISSARIAT A L'ENERGIE ATOMIQUE
C.E.N SACLAY

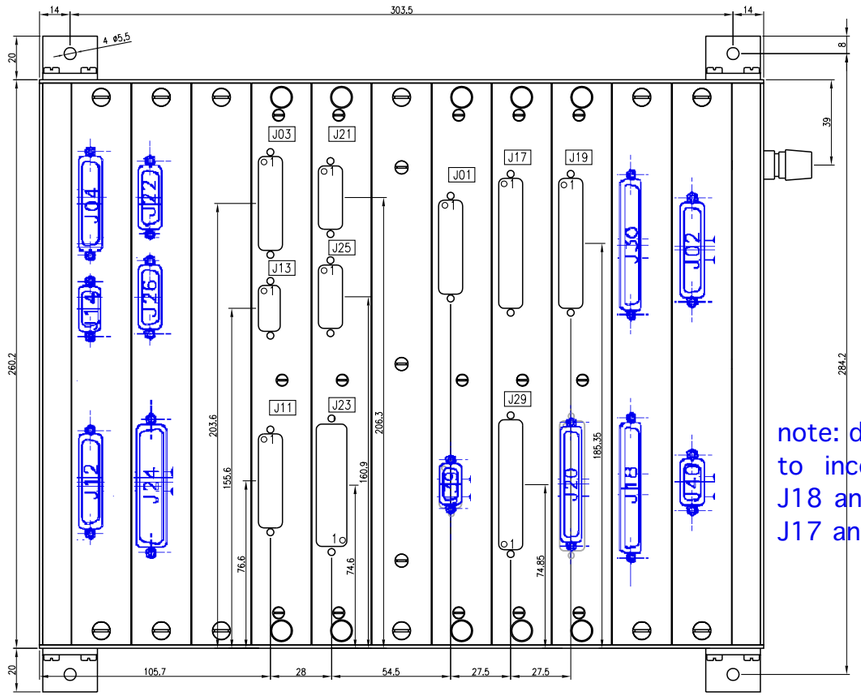
AO SPIR-MX-5200 000 K







ONLY FOR QM1



Blue signifies connectors fitted but without redundant side electronics behind them.

note: do not intend to incorrectly transpose J18 and J30 just because J17 and J39 are swapped!

CONNECTORS					
IDENT	TYPE	FUNCTION	IDENT	TYPE	FUNCTION
J01	DBMA 25S	MAC/DPU	J21	DAMA 15S	TEMP/FPU-TS-1
J03	DBMA 25S	CCHK-IF/DPU	J23	DDMA 50S	TEMP/FPU-TS-2
J11	DBMA 25S	CCHK-IF/FPU-COOL-CAL	J25	DAMA 15S	TEMP/FPU-MEC-TS
J13	DEMA 9S	CCHK-IF/FPU-PH-STIM	J29	DCMA 37P	SMEC/FPU-SMECm-2
J17	DCMA 37S	SMEC/FPU-SMECm-1	J31	DBMA 25P	MCU/PSU
J19	DCMA 37S	BSM/FPU-BSM	J35	DAMA 15P	SCU/PSU

CEA /SAP
91191 GIF/YVETTE Cedex

MATIERE : Alu 2017A
TRAITEMENT : ALODINE 1200
PROTECTION :
DESSINE : SREE
DATE : 08/09/03
VERIFIE :
VISA :

ECHELLE : 3/4
TOLERANCES GENERALES : ±0.2
Ra1.6

DESIGNATION
ICD HS FCU/QM1

SPIR-MX-5201 000 C
0
A1

UCL
MSSL

SPIRE – STRUCTURE INTERFACE DRAWING ISSUE 20 AND MODIFICATION SHEET

Document Number: MSSL/SPIRE/SP005.05 ……30 September 2005

ISSUE 20

SHEET	MODIFICATION
All Sheets	Drawing redrawn due to loss of Computer File
All Sheets	Main Instrument Mounts replaced with CFRP mounts
All Sheets	Details of the Level 1 Thermal Interface added
All sheets	The PFM spectrometer level 0 strap replaed the CAM spec strap.
Sheet 1	Addition of dimension between end of L0 straps and the centre line pf the fixed cone mount
Sheet 1	Addition of dimension at bottom of Evaporator L0 strap (4.5 mm)
Sheet 3	Addition of dimension from centre of fixed cone mount to the First Optical Datum
Sheet 6	Addition of pictorial view and cross section of the Level 1 thermal interface

ISSUE 19

SHEET	MODIFICATION
All Sheets	Level ‘0’ Cold Straps and relevant Dimensions updated.
All Sheets	JFETS and relevant dimensions updated.
1	Mass Properties updated.
1	Dim 202.00 (HOB datum to SPIRE focal plane) “CRYOGENIC” added.
1	Note “SPIRE AXES ETC” - word “DIRECTIONS” added.
1	Level ‘0’ Straps – max rads. added.
3	Optical Beams note added.
3	Optical beam dims note “STAY OUT AREA” note modified.
4	“+ RUNNING TORQUES” added to interface torque figures.
4	Temperature sensor holes added.
5	Notes wrt Level ‘0’ interfaces to S/C modified/deleted/added.
5	Torques for Level ‘0’ straps deleted – note “TORQUE AS SPECIFIED BY ASTRIUM” added.
5	Level ‘1’ fixings torques – “+ RUNNING TORQUES” added.
5	Temp sensor/Level ‘0’ fixings modified
6	JFET Harness zone dimensions modified.
7	PACS & HIFI labelled.

ISSUE 18

SHEET	MODIFICATION
1	Mass properties updated to the latest sub system estimates/measured masses. No mass received for the harnesses (A guess in the model)
1	No weighed masses for Busbar Supports, Light traps, SCAL (Cardiff), SMEC (LAM) and SOB Harness, Photo BDA, Spectro BDA (Techdata)
1	Notes, “Work in Progress” referring to BDA connector panels deleted
1	Note WRT Aperture cover added
1	Notes WRT surface finish at L0 and L1 interfaces added
1	Aperture cover added
1	BDA connector flanges updated
2	Pictorial changes WRT BDA connector flanges ad aperture cover to reflect sheet 1
3	Pictorial changes WRT BDA connector flanges ad aperture cover to reflect sheet 1
4	Pictorial changes WRT BDA connector flanges ad aperture cover to reflect sheet 1
5	Surface roughness on L0 straps added with “BY VISUAL INSPECTION ONLY” note
5	Gold finish on L0 straps
5	Surface roughness and Alochrom 1200 finish note added for L1 straps
5	M4 Torques were 1.26 Nm
6	“Work in progress” notes wrt BDA connector panels deleted
6	Note reminding that M4 grounding hole does not have a locking insert fitted added
6	Dims to BDA connectors added
7	Pictorial changes WRT BDA connector flanges ad aperture cover to reflect sheet 1

ISSUE 17

SHEET	MODIFICATION
1	RF Filter Connector numbers added
1,2,3	Cryostat hole diameter was 270mm
1	Spire axes coincident with Spacecraft axes – note added
1	Reference cube to be dismounted after installation on spacecraft – note added
1	Dimension to ‘A’ Frame top pin centre added
1,3	Redundant dimensions deleted
1	Level 1 grounding strap positions moved and applicable note modified (Reference HR-SP-RAL-ECR-034v1)
1	‘Alternative Level 1’ note deleted
2	Beams removed bottom LH view
3	Optical reference cube note modified – reference to A3/5264/305-6 added
3	Beam angle added (Bottom LH view)
3	‘Cryogenic’ added to two dimensions
ALL	‘UNLESS OTHERWISE SPECIFIED’ added to note wrt. ‘ALL DIMENSIONS AT ROOM TEMPERATURE’
3	Dimension to top of reference cube added
3	Note stating U/S of SOB is Yu & Zu Optical Datum Deleted
4	Front mounting cone centre – positional tolerances added
4	SPIRE interface bolt material and torques added
5	Level ‘O’ cold strap interfaces modified. Bolt types, torques and Belleville types added.
7	Beam clearance dimension 0.92 reviewed
1	Note WRT clearance between FPU and Inner Shield Added
1,2,3	Cryostat Inner shield updated
5	“Stay Out” zone around Level ‘0’ straps added

ISSUE 16

SHEET	MODIFICATION
2	JFET note modified.
1	Dimensions over Blade Mounts added.
1	‘Zu’ axis added. Spacecraft co-ordinates note added.
1	“Optical Datum Pin” note deleted.
4	Mounting referencing hole added (fixed mounting).
2	Section description note changed.
3	10 mm mechanical clearance zone deleted.
3	Shaded optical beams extended.
3	Note wrt. Beam dimensions added.
3	Reference cube angular mounting ad absolute accuracy note added.
4	Floating details removed.
4	Alignment of HOB wrt. Herschel to permit Spire to be aligned.
5	Unit axes added.
5	Cold Straps detail deleted (saved on new drawing A1/5264/300A).
5	JFET thermal Interfaces note added. External to MSSL note added.
5	HSFPU thermal finishes added. Note wrt. JFET thermal interfaces added.
6	Electrical isolation note wrt. Cold straps added.
1	Mass updated. Moments of Inertia added.
4	FPU mounting cone interface holes modified.
4	Contact area of FPU interface Vespel insulators added.
4	Note wrt. HOB flatness and tilt to Herschel X Axis added.
5	Detail of FPU internal Level ‘0’ straps deleted – Now on drawing A1/5264/300A
6	JFET harness “Stay Out” zones added.
7	FPU cone to PACS clearance dimension added.
ALL	BDA- Obsolete harness feedthroughs deleted.
2	Addition of RF Filter connector numbers

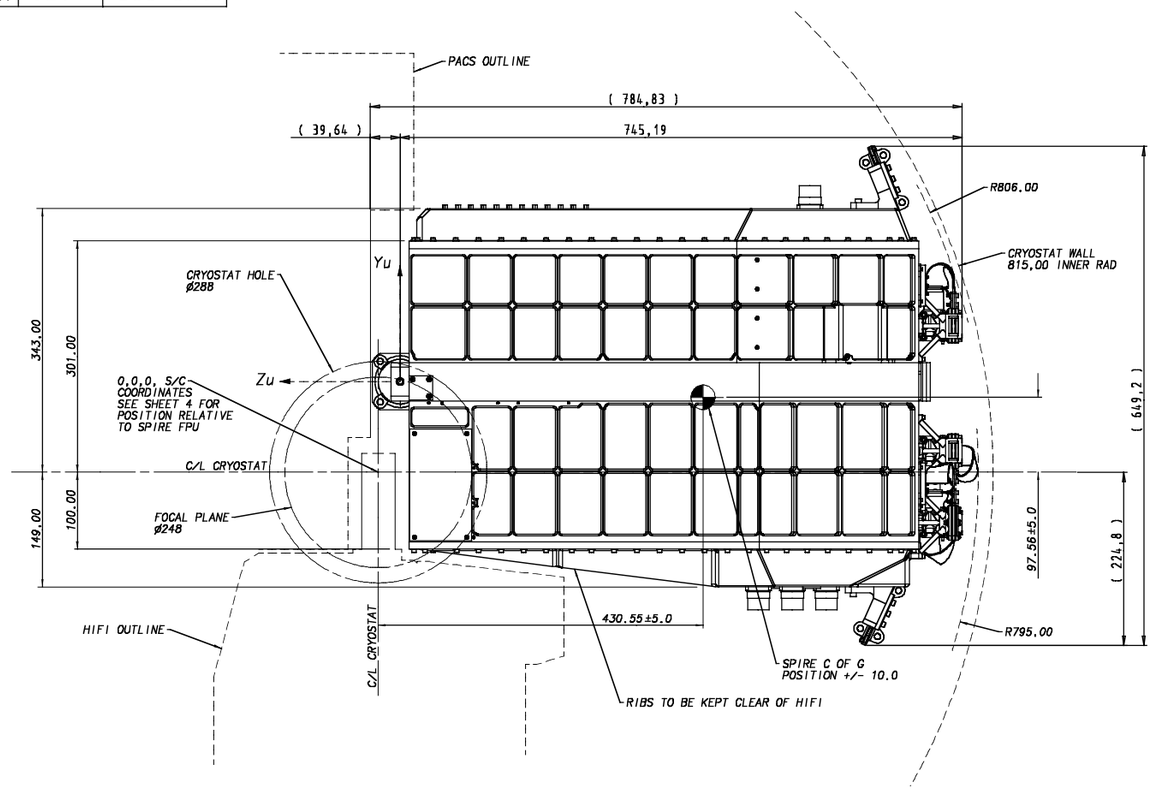
DRAWING No.		
A1	5264	300 sht1

USED ON HERSCHEL

THIRD ANGLE PROJECTION

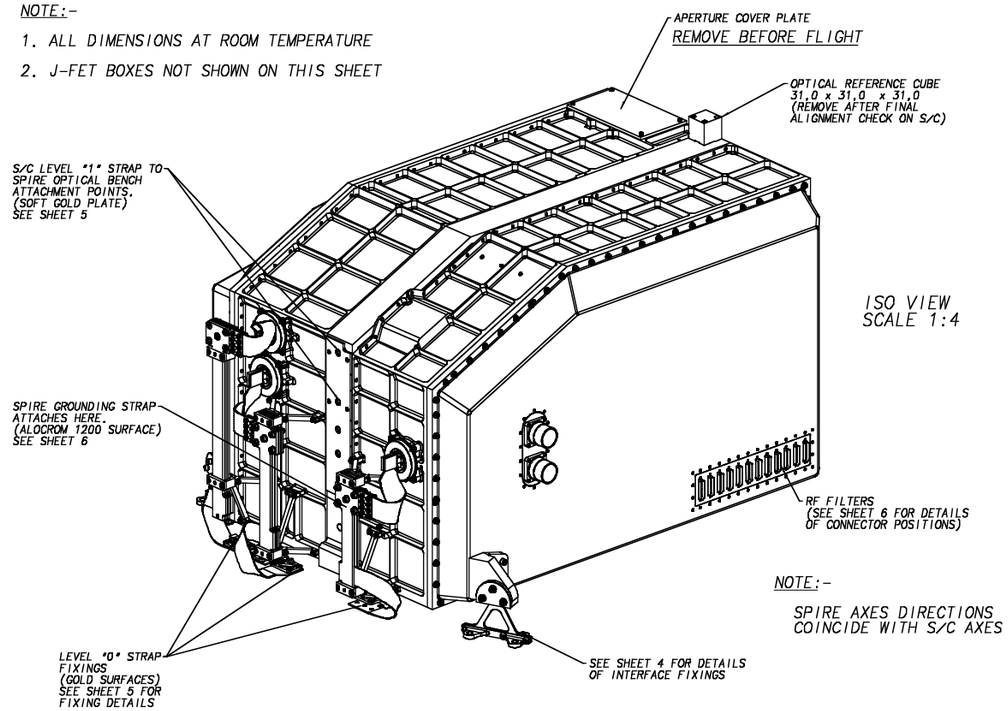
DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES



NOTE:-

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



ISO VIEW
SCALE 1:4

NOTE:-

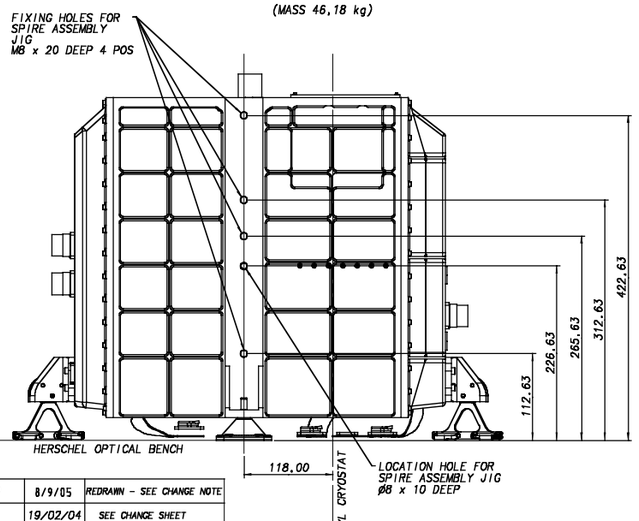
SPIRE AXES DIRECTIONS
COINCIDE WITH S/C AXES

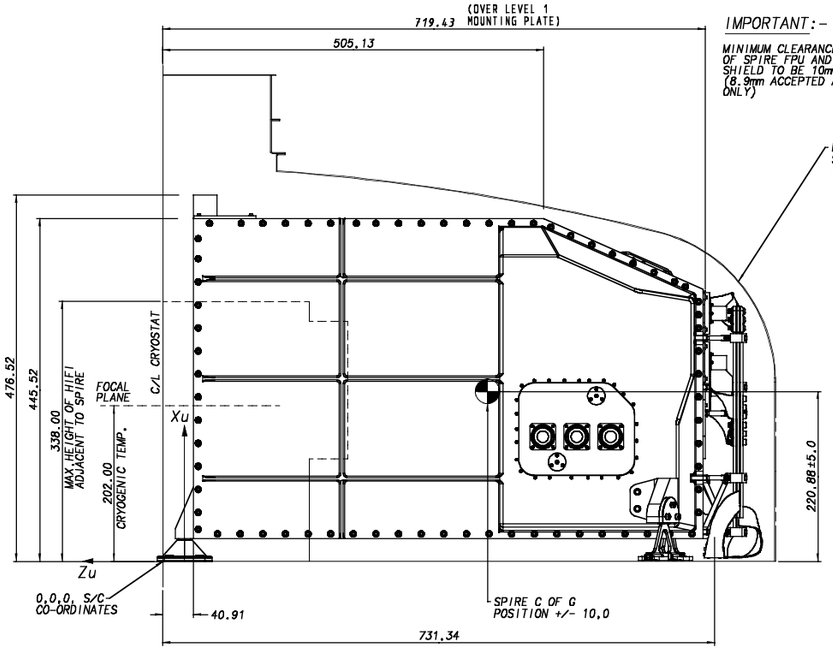
MOMENTS OF INERTIA ABOUT CG:-

(NOTE:- ALL MASS PROPERTIES EXCLUDE JFETS, EXTERNAL FPU HARNESSES AND ASTRIUM SUPPLIED LEVEL "0" INTERFACE PARTS)

Ixx = 3.056 kg m^2
Iyy = 3.008 kg m^2
Izz = 1.559 kg m^2

(MASS 46,18 kg)

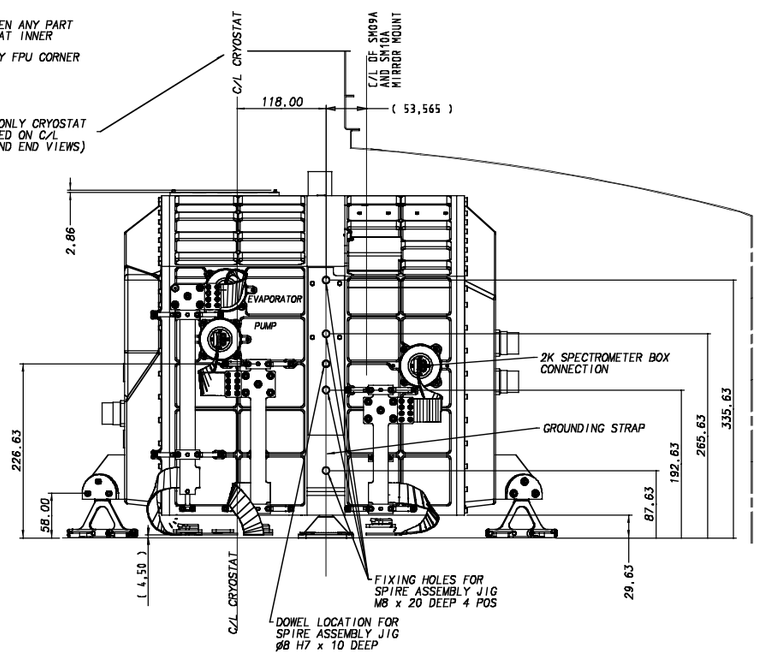




IMPORTANT:-

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 C/L (SIDE AND END VIEWS)



	20	8/9/05	REDRAWN - SEE CHANGE NOTE
	19	19/02/04	SEE CHANGE SHEET
	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 PGC	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 AJC	ISSUE	DATE	AMENDMENT
	1	24/11/01	

NOTE:-

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

SPIRE INTERFACE mar 2002 (ASSEMBLY MODEL)

COMPUTER FILE

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED -
ALOCROM 1200 AL PARTS GOLD PLATED AREAS ON COPPER PARTS (ST.STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 0.10
ESTD WT. 45.63kg (NO CONT) SEE NOTE SHT.1		ANGULAR +/- 0°15'
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 (GENERAL DIMENSIONS)

DRAWING No: A1 5264 300 sht1

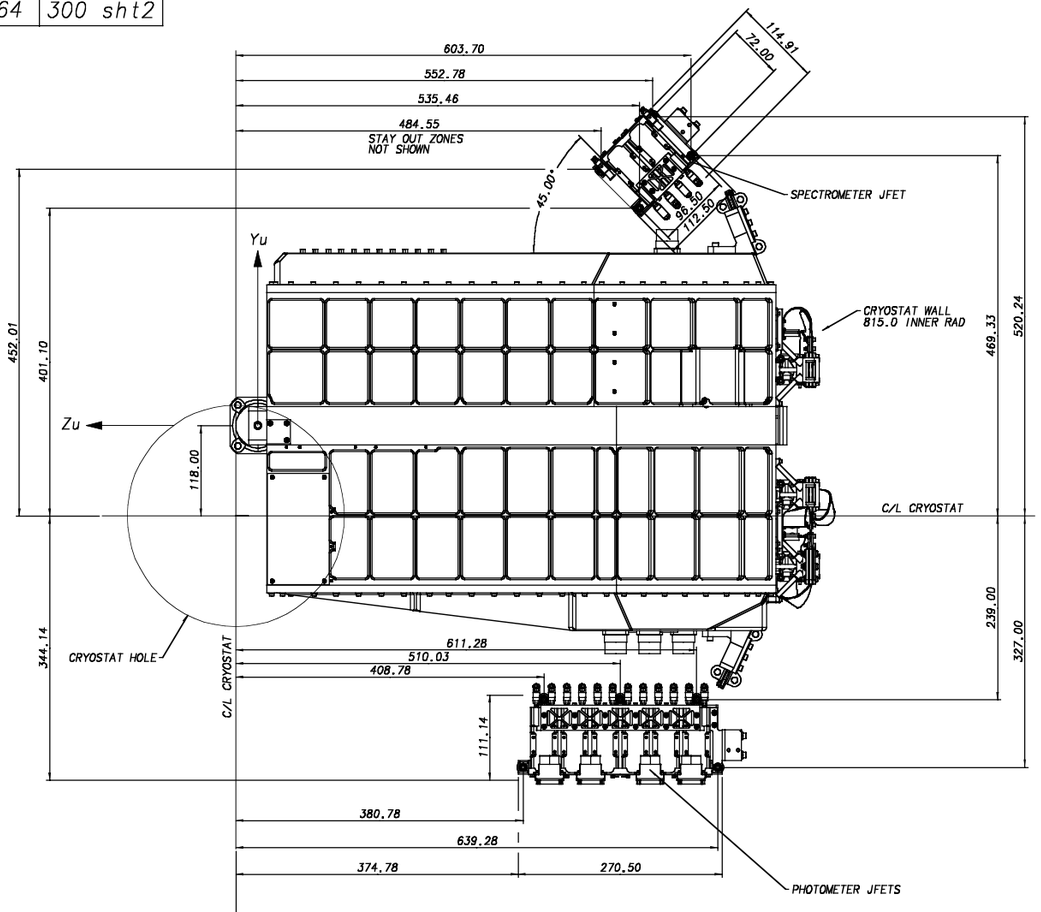
DRAWING No.		
A1	5264	300 sht2

THIRD ANGLE PROJECTION

DO NOT SCALE

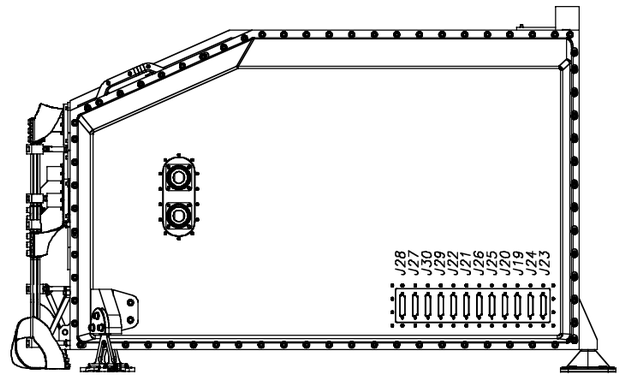
REMOVE ALL BURRS & SHARP EDGES

USED ON HERSCHEL



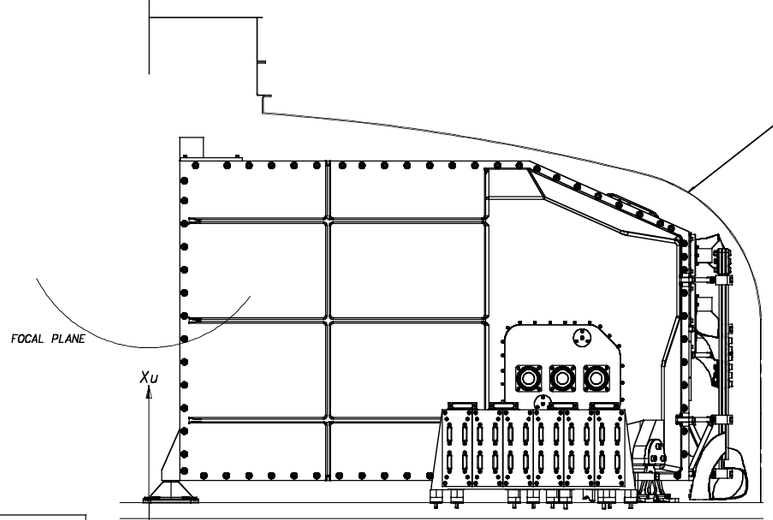
NOTE:-

ALL DIMENSIONS AT ROOM TEMPERATURE



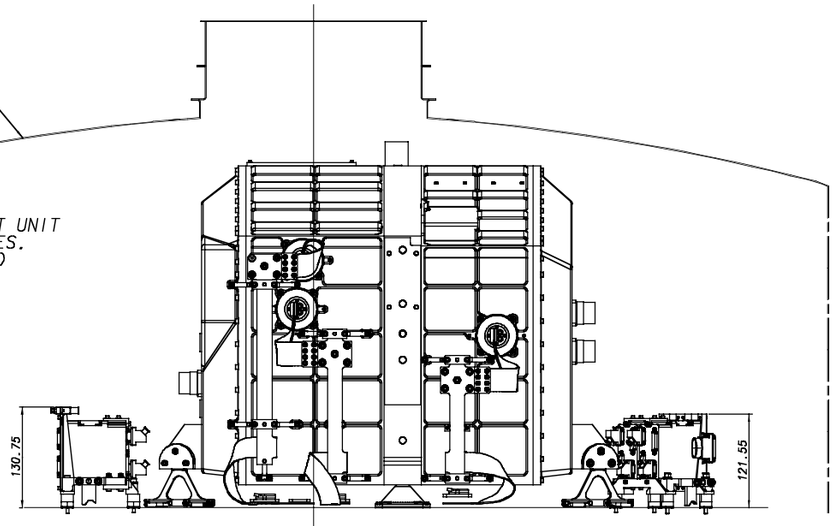
SPECTROMETER SIDE

(VIEWED IN -Yu DIRECTION)



PHOTOMETER SIDE

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



	20	8/9/05	REDRAWN-SEE CHANGE NOTE
	19	19/02/04	SEE CHANGE SHEET
	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
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TRACED PGC	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 AJC	ISSUE	DATE	AMENDMENT
	1	24/11/01	COMPUTER FILE

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

SPIRE INTERFACE mar 2002 (ASSEMBLY MODEL)

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED -	DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.
ALOCROM 1200 (ST.STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 0.10 ANGULAR +/- 0°15'	TITLE: SPIRE INTERFACE (J-FET POSITIONS) — DRAWING No: A1 5264 300 sht2
ESTD WT. 45.63kg (NO CONT) SEE NOTE SHT.1			
ACTL WT.	DIMENSIONS IN mm	SCALE 1:4	

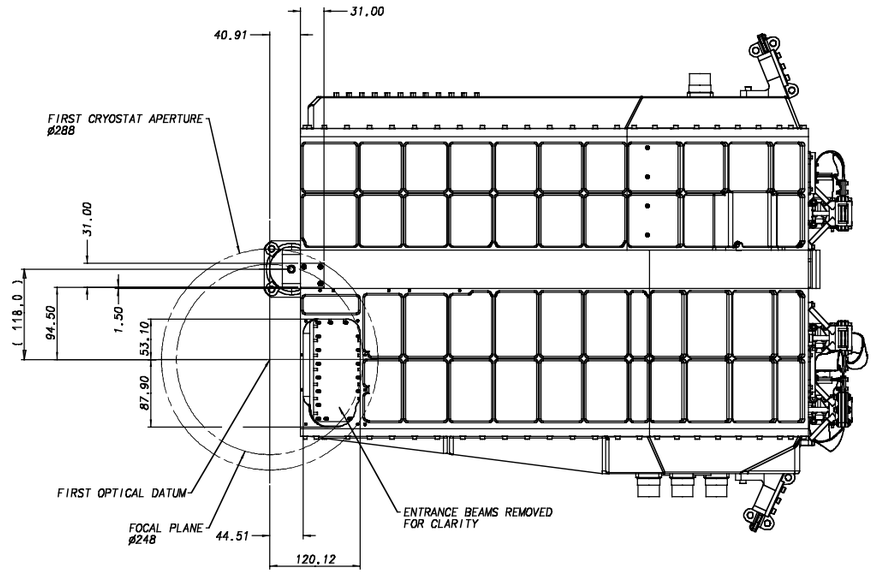
DRAWING No.		
A1	5264	300 sht3

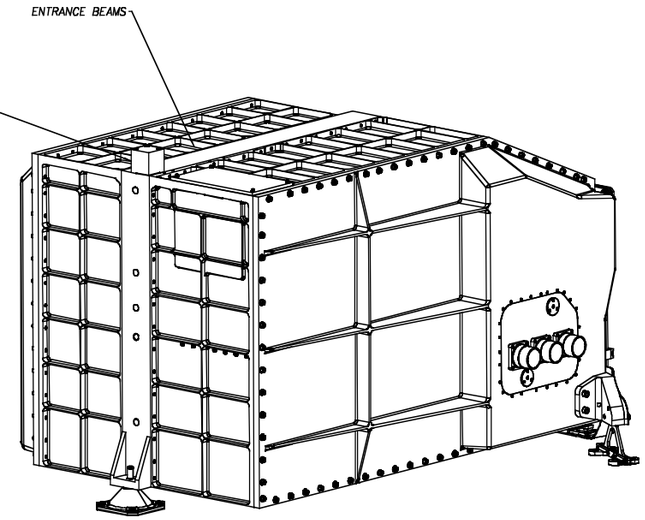
USED ON HERSCHEL

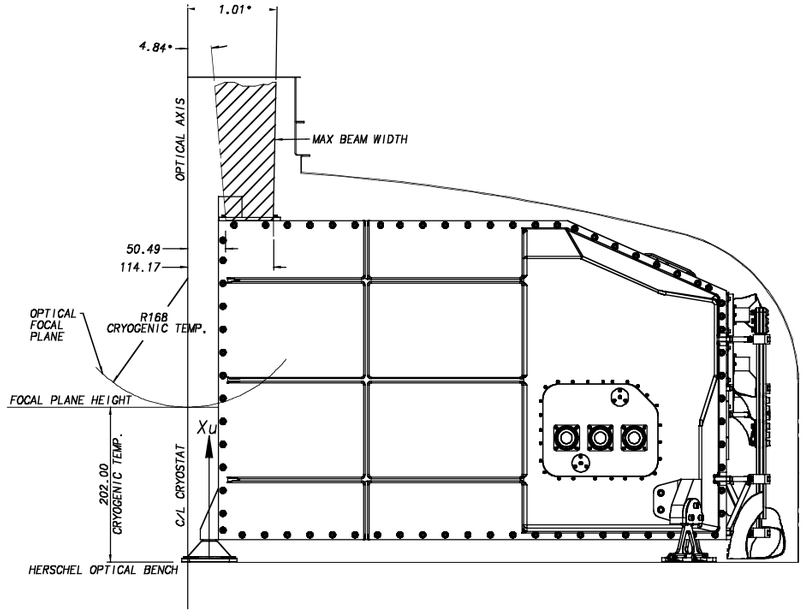
THIRD ANGLE PROJECTION

DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES

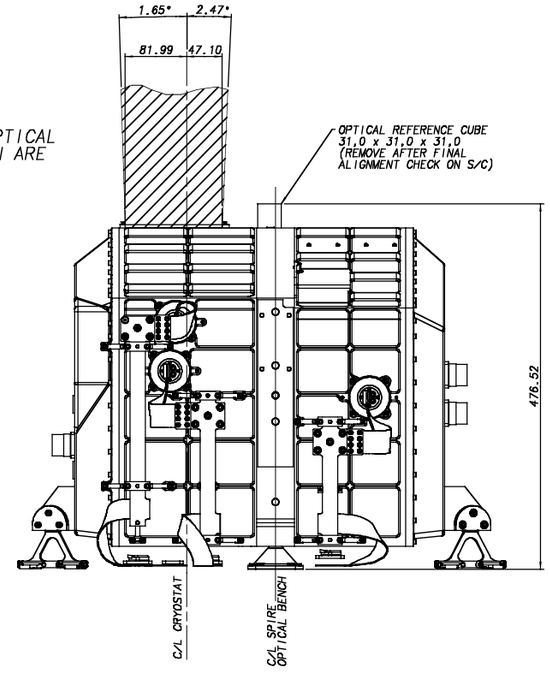






OPTICAL BEAM DIMENSIONS:-

ONLY DIMENSIONS DEFINING THE VOLUME 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

	20	8/9/05	REDRAWN-SEE CHANGE NOTE
	19	19/02/04	SEE CHANGE SHEET
	18	4/07/03	SEE CHANGE SHEET
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CHECKED	16	28/08/02	MODIFICATIONS AND CHANGE SHEET CREATED DRAWING UPDATED TO ISSUE 16 THERE-ON
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DRAWN AJC	ISSUE 1	DATE 24/11/01	AMENDMENT: SPIRE INTERFACE mar 2002 (ASSEMBLY MODEL) / COMPUTER FILE

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

PROTECTIVE FINISH: ALOCROM 1200 (ST.STEEL PARTS NATURAL)	MATERIAL & SPEC.: AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 0.10 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 (OPTICAL DETAILS)

DRAWING No: A1 5264 300 sht3

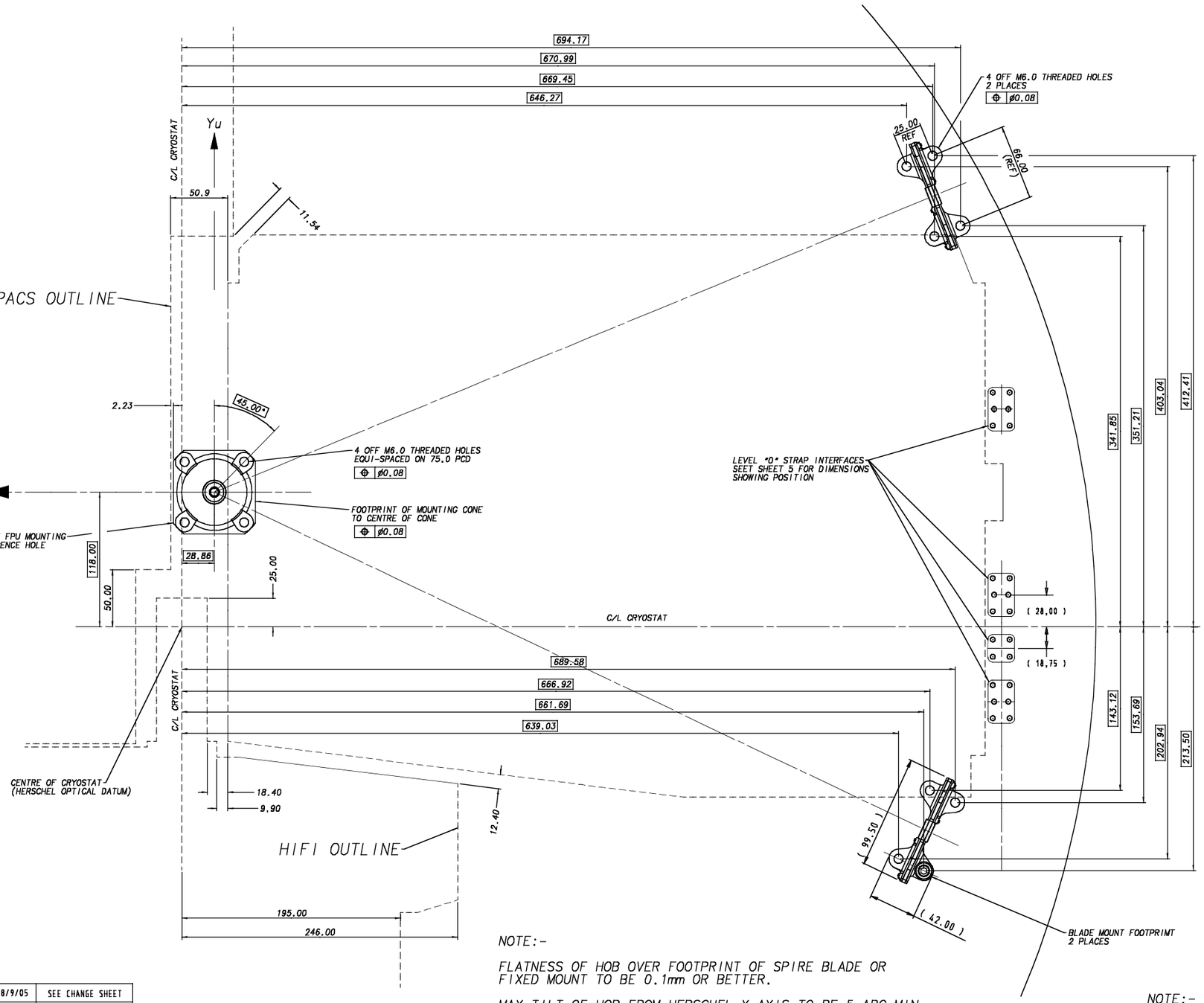
DRAWING No.		
A1	5264	300 sht4

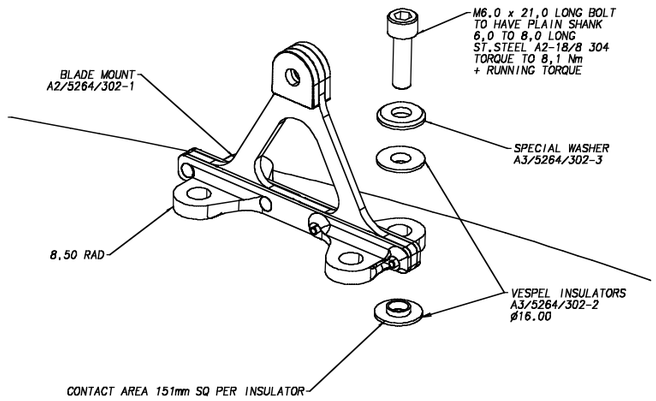
USED ON HERSCHEL

THIRD ANGLE PROJECTION

DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES

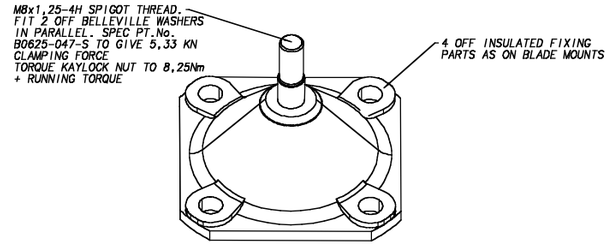




FIXING COMPONENTS
REPEATED 4 POSITIONS
IN EACH MOUNT

DETAIL OF BLADE MOUNT FIXINGS

SCALE 1:1



DETAIL OF FIXED MOUNTING

SCALE 1:1

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

20	8/9/05	SEE CHANGE SHEET	
19	19/02/04	SEE CHANGE SHEET	
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	NOTE:- SEE CHANGE SHEET FOR DETAILS OF CHANGES MADE FROM ISSUE 16 ONWARDS
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	

CHECKED

TRACED PGC

DRAWN	ISSUE	DATE	AMENDMENT	
AJC	1	24/11/01		COMPUTER FILE

SPIRE INTERFACE mar 2002 (ASSEMBLY MODEL)

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED -
ALOCROM 1200 (ST.STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 0.10
ESTD WT. 45.63kg (NO CONT) SEE NOTE SHT.1		ANGULAR +/- 0°15'
ACTL WT.	DIMENSIONS IN mm	SCALE 1:2 & 1:1

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

TITLE: SPIRE INTERFACE (INTERFACE FIXING DETAILS)

DRAWING No: A1 5264 300 sht4

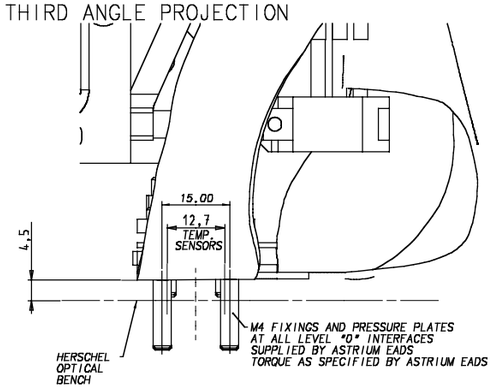
DRAWING No.		
A1	5264	300 sht5

USED ON *HERSCHEL*

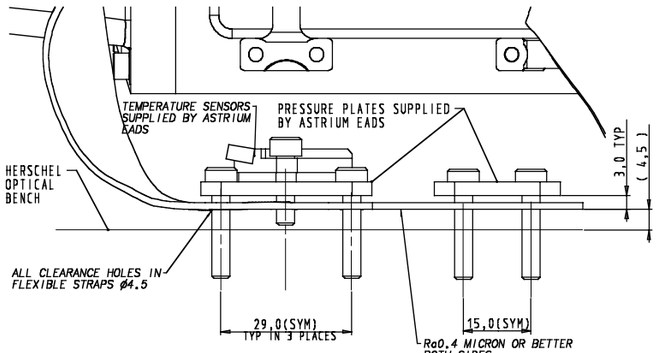
THIRD ANGLE PROJECTION

DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES



DETAIL "B" OF LEVEL "0" TO S/C INTERFACE
(SCALE 1.5:1)



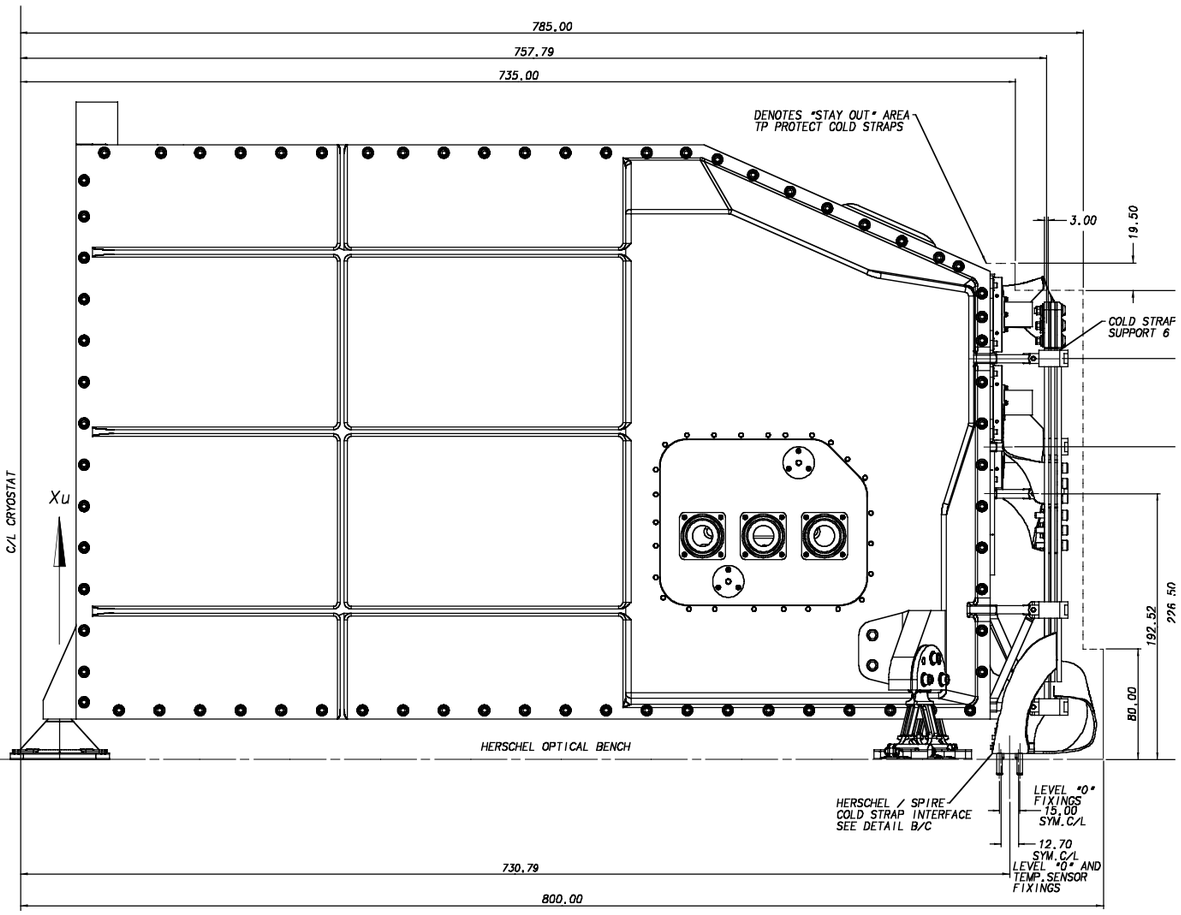
DETAIL C OF LEVEL 0 TO S/C INTERFACE
(SCALE 1.5:1)

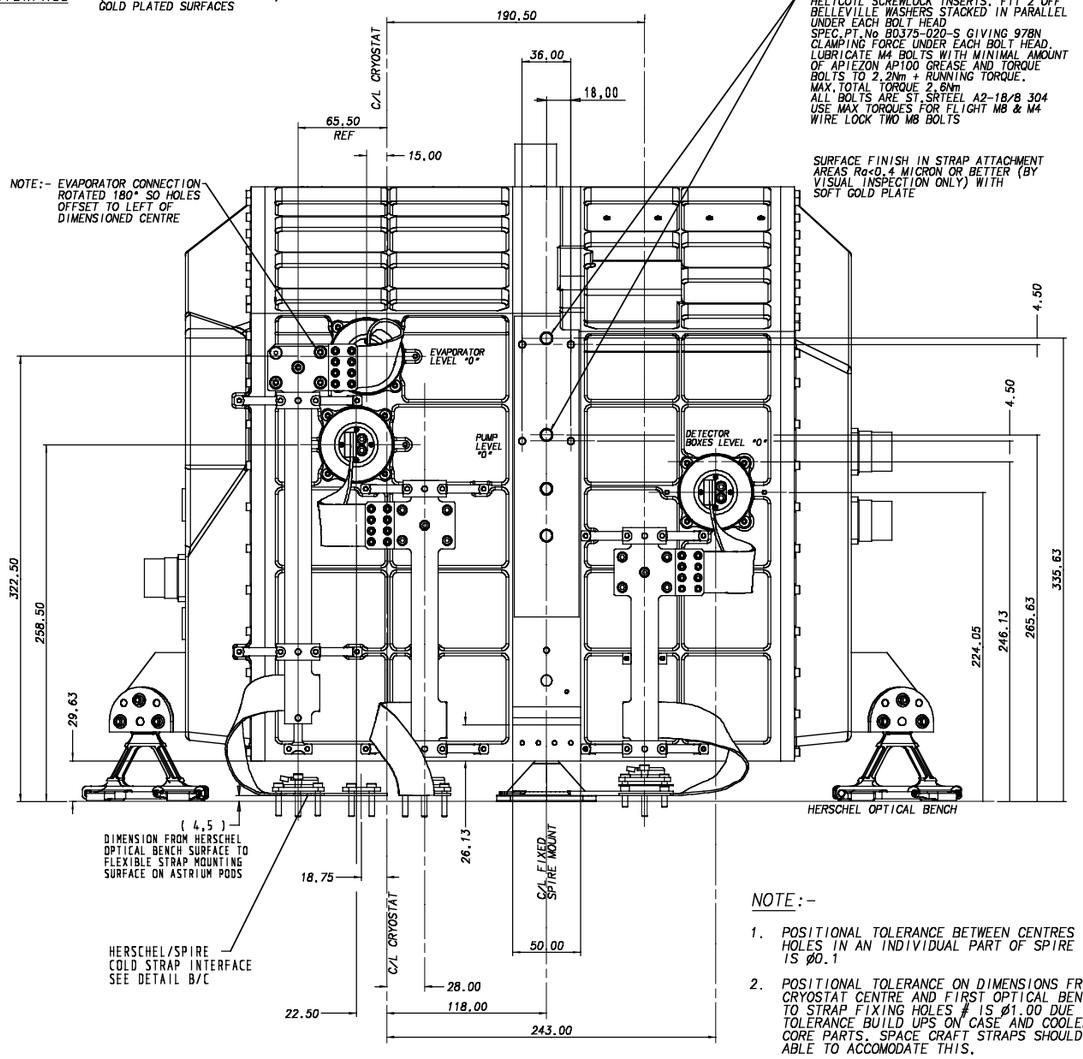
HSFPU EXTERNAL FINISHES:-

INSTRUMENT CASE AND EXTERNAL COVERS. BLADE AND FIXED MOUNTING.	*ALOCROM 1200 NATURAL ST.STEEL & CARBON FIBRE*
EXTERNAL FIXINGS, COLD STRAPS	*NATURAL ST.STEEL GOLD PLATED*

NOTE:-

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





NOTE:-

1. *POSITIONAL TOLERANCE BETWEEN CENTRES OF HOLES IN AN INDIVIDUAL PART OF SPIRE IS Ø0.1*
2. *POSITIONAL TOLERANCE ON DIMENSIONS FROM CRYOSTAT CENTRE AND FIRST OPTICAL BENCH TO STRAP FIXING HOLES # IS Ø1.00 DUE TO TOLERANCE BUILD UPS ON CASE AND COOLER CORE PARTS. SPACE CRAFT STRAPS SHOULD BE ABLE TO ACCOMODATE THIS.*

ISSUE	DATE	AMENDMENT
20	8/9/05	SEE CHANGE SHEET
19	19/02/04	SEE CHANGE SHEET
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
1	24/11/01	SPIRE INTERFACE mar 2002 (ASSEMBLY MODEL)

CHECKED

TRACED PGC

DRAWN *AJC*

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

NOTE:-
ALL DIMENSIONS AT ROOM TEMPERATURE

COMPUTER FILE

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED –
ALOCROM 1200 AND SOFT GOLD PLATE (ST.STEEL PARTS NATURAL)	*AS LISTED*	LINEAR +/- 0.10 ANGULAR +/- 0°15'
ESTD WT. *45.63kg (NO CONT) SEE NOTE SHT.1*		
ACTL WT.	DIMENSIONS IN *mm*	SCALE *0.45:1 & 2:1*

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 300 sht5

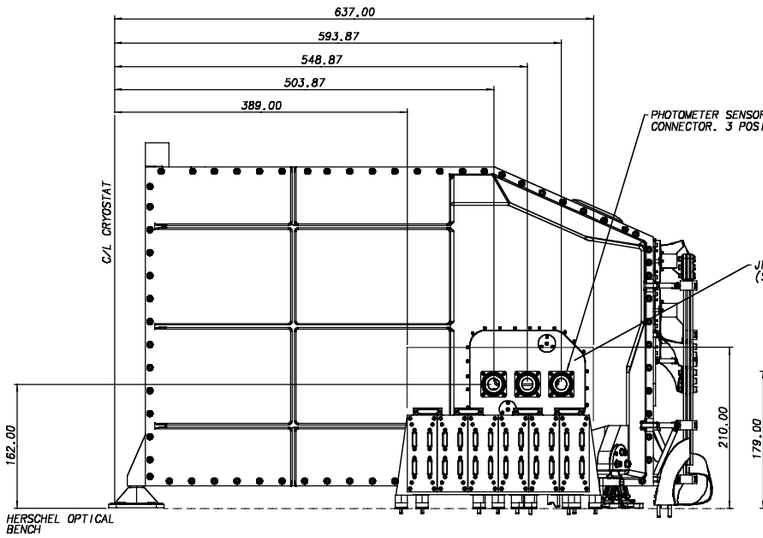
DRAWING No.		
A1	5264	300 sht6

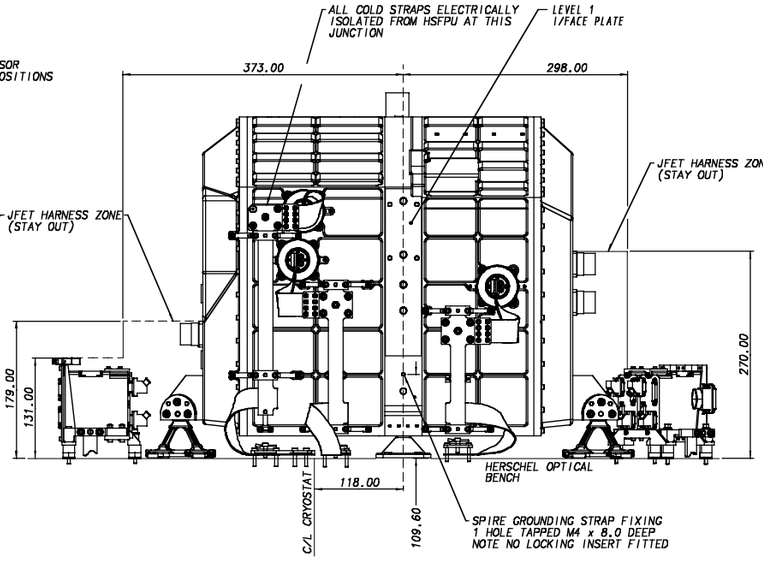
THIRD ANGLE PROJECTION

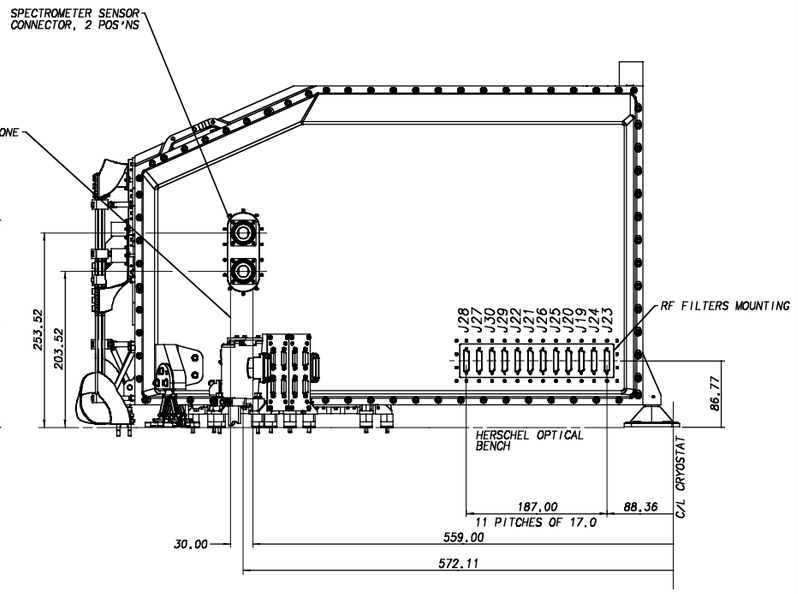
DO NOT SCALE

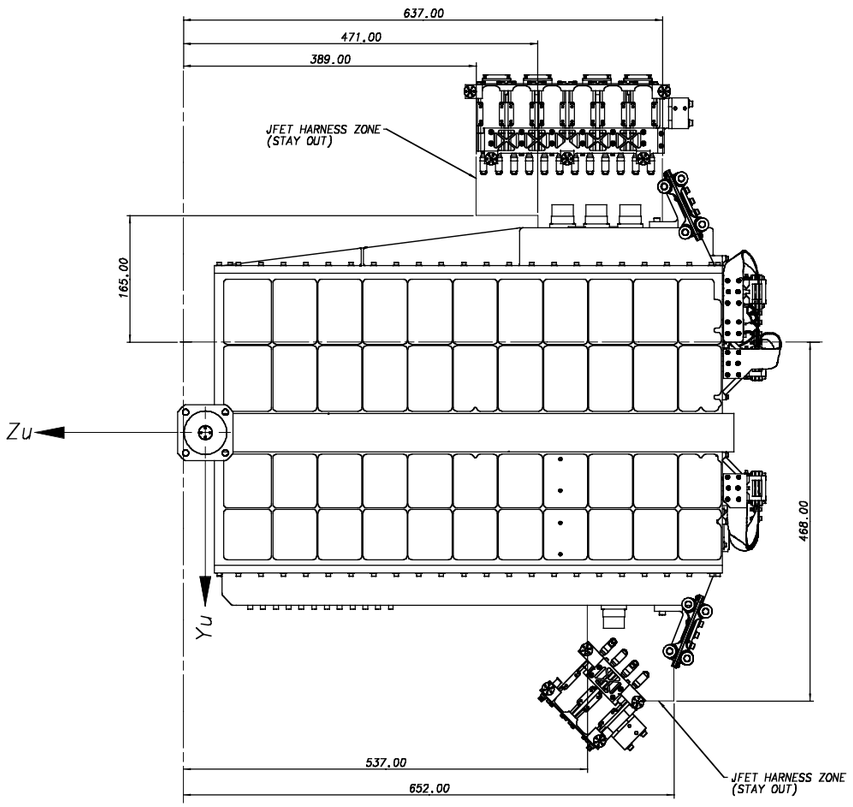
REMOVE ALL BURRS & SHARP EDGES

USED ON HERSCHEL

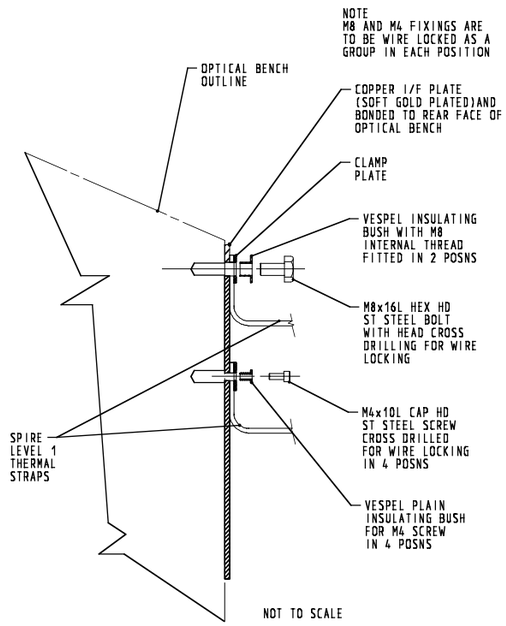


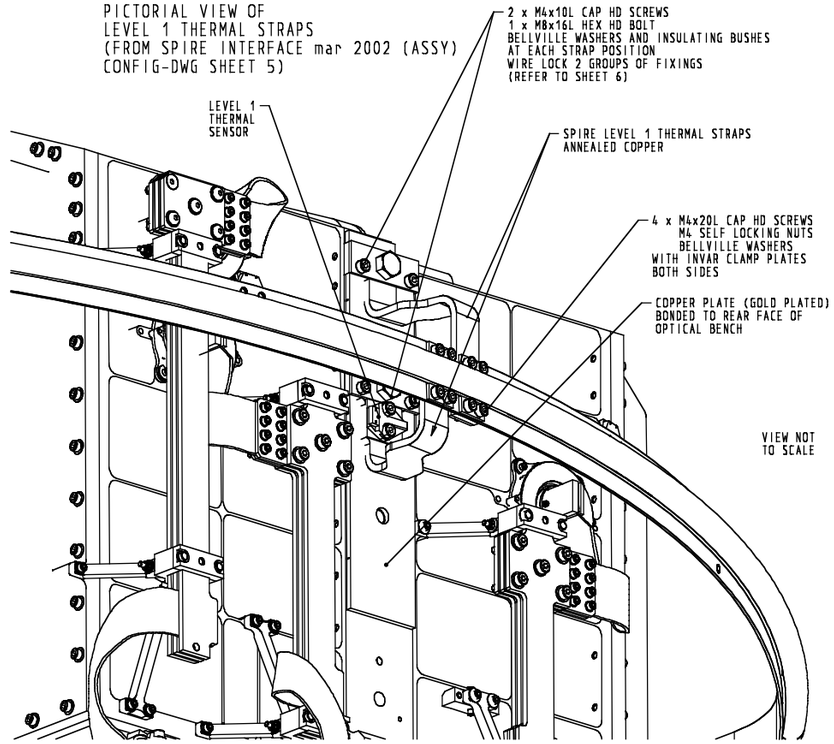






VIEW ON Xu (UNDERSIDE OF SPIRE)





NOTE:-
1. ALL DIMENSIONS AT ROOM TEMPERATURE

	20	13/02/05	REDRAWN-SEE CHANGE SHEET
	19	19/02/04	SEE CHANGE SHEET
	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 PGC	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

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

DRAWN	ISSUE	DATE	AMENDMENT	SPIRE INTERFACE mar 2002 (ASSEMBLY MODEL)
AJC	1	24/11/01		COMPUTER FILE

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED –
ALOCROM 1200 AL PARTS SELECTIVE GOLD PLATE ON COPPER PARTS (ST.STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 0.10
ESTD WT. 45.63kg (NO CONT) SEE NOTE SHT.1		ANGULAR +/- 0°15'
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

DRAWING No		
A1	5264	300 sht6

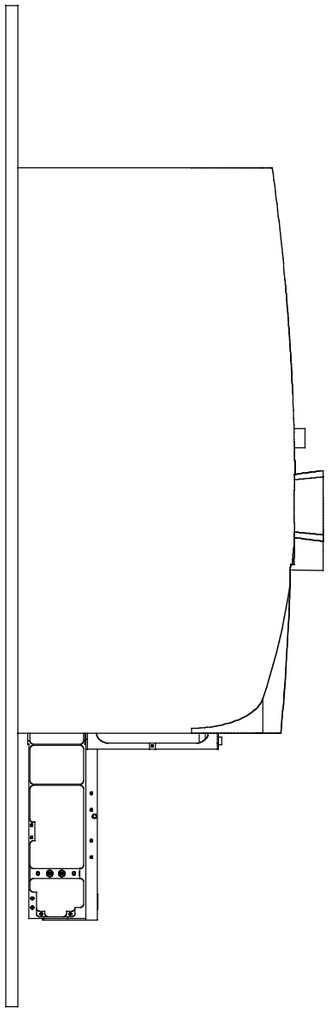
DRAWING No.		
A1	5264	300 sht7

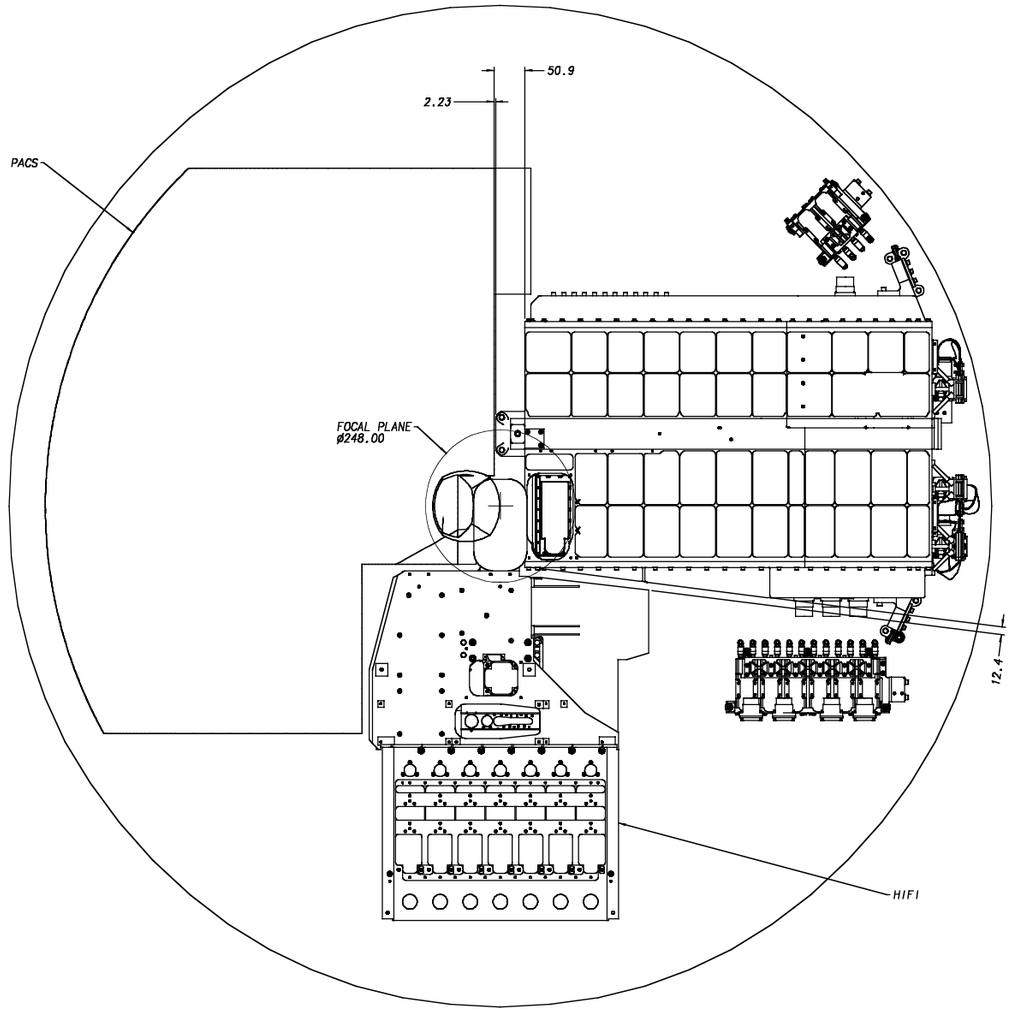
USED ON *HERSCHEL*

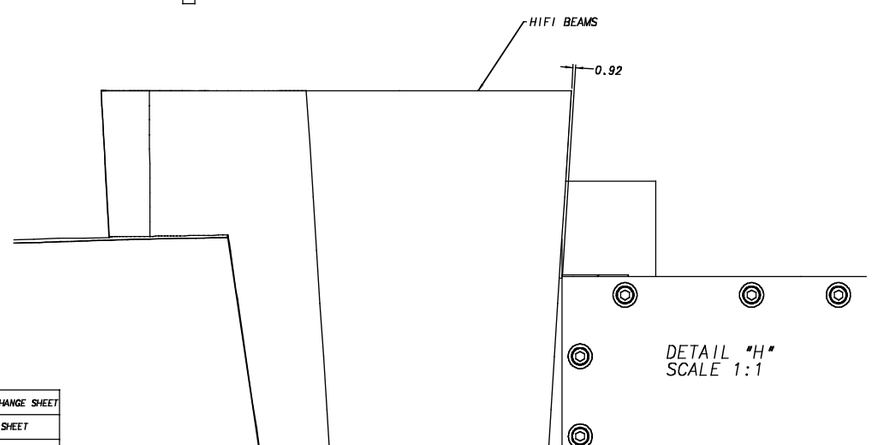
THIRD ANGLE PROJECTION

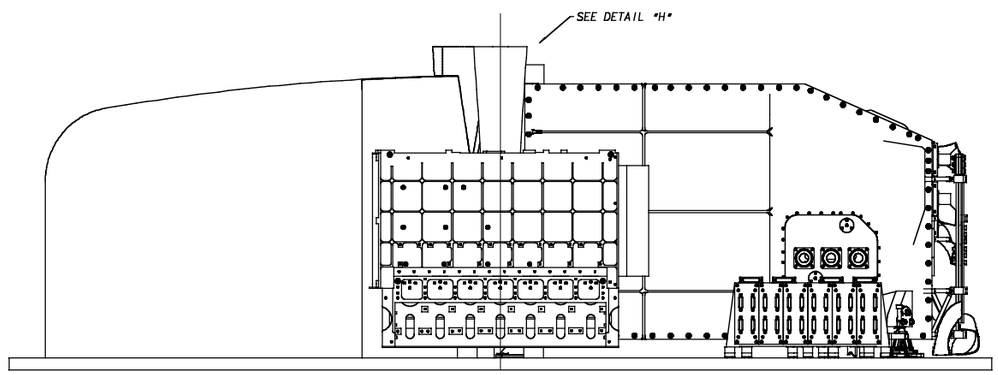
DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES









	20	8/9/05	REDRAWN-SEE CHANGE SHEET
	19	19/02/04	SEE CHANGE SHEET
	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
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DRAWN	ISSUE	DATE	AMENDMENT
AJC	1	24/11/01	

NOTE:-

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

SPIRE INTERFACE mar 2002 (ASSEMBLY MODEL)

COMPUTER FILE

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED -
ALOCROM 1200 (ST.STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 0.10 ANGULAR +/- 0°15'
ESTD WT. 45.63kg (NO CONT) SEE NOTE SHT.1		
ACTL WT.	DIMENSIONS IN mm	SCALE

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

TITLE

SPIRE INTERFACE

(PACS & HIFI OPTICAL & CLEARANCES)

DRAWING No		
A1	5264	300 sht7

MODIFICATION SHEET

KE-2952

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:

1. Thermal standoff positional dimensions changed to basic dimensions.
2. Thermal strap interface dimensions added
3. Note 3 modified to clarify that stud is set to depth then nut is torqued to 2.1Nm.
4. Height of JFET rack dimension added.
5. Note 8 added regarding the protrusion and trimming of the parylene coating
6. 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).
7. Typos fixed

8. Unit mounting hole size and positional accuracy added

Issue raised to:	G	By:	Iain Gilmour

Date: 20-May-2003

NCR/ECR:

Modification Description:

Added note to size of tapped holes for attachment of cooling strap (L-1/2)

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

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

KE-2952

MODIFICATION SHEET

KE-2952

THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY

DRAWING NUMBER: KE-0104-360

DRAWING TITLE: 2 JFET RACK INTERFACE DRAWING

Issue raised to:	H	By:	Kevin Burke

Date: 13-Oct-2003

NCR/ECR:

Modification Description:

1. 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.
2. 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.
3. L3 strap and interface assembly added. Views updated to show interface details and L3 strap hole definition.
4. Mass of JFET modules reduced from 305g to 260g.
5. Kapton tape removed from fastener and stand-off interfaces (note 7 deleted).
6. Moments of inertia updated along with C of G position.
7. Kapton tape note removed from L3 interface area.
8. Incorrectly specified M2.5 x 8 long fasteners used to fasten JFET modules to front plate replaced with M3 x 8 long.
9. Temperature sensor interface shown on both sides of the L3 interface sub-assembly.
10. Distance between S/C connector I/F and rear of JFET harness increased due to addition of 15-way connectors to JFET harness.
11. New dimensions applied to L3 interface area.
12. Connector fasteners and nuts added to spacecraft connectors.

Issue raised to:	I	By:	Dave Smart

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

KE-2952

MODIFICATION SHEET

KE-2952

THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY

DRAWING NUMBER: KE-0104-360

DRAWING TITLE: 2 JFET RACK INTERFACE DRAWING

Date: 12-Nov-2003

NCR/ECR:

Modification Description:

1. Harness re-routed to show clearance required to access connectors on the rear of the JFETS. Reference to note 6 added.
2. Harness tie down parts added.
3. Note 8 added concerning the pre-fitting of the M4 fasteners prior to the assembly of the harness.

Issue raised to:	J	By:	Dave Smart

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

KE-2952

MODIFICATION SHEET

KE-2952

THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY

DRAWING NUMBER: KE-0104-360

DRAWING TITLE: 2 JFET RACK INTERFACE DRAWING

Date: 10-Mar-2004

NCR/ECR:

Modification Description:

1. Note 9 and leaders added indicating 3mm jackscrew length below the mating plane.
2. Label added to Part 23836-10209722 (JFET) to indicate orientation:

SPIRE

10209750

JFET MODULE

JPL

(NOTE: 10209750 is the JPL part number, 10209722 is the JPL ICD drawing number. JD wishes to leave the ProE part name as 23836-10209722)

Issue raised to:	K	By:	Dave Smart

Date: 05-Aug-2005

NCR/ECR:

Modification Description:

1. Note added to describe removal of Carbon Whiskers and coating with D222a

RAISED TO ISSUE L

Issue raised to:	L	By:	Sam Tobin

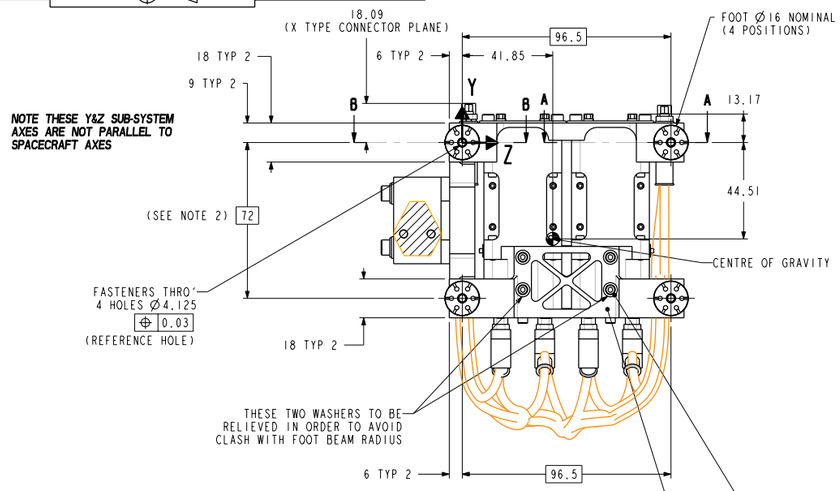
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

KE-2952

A0-KE-0104-360-L

PROJECTION

THIS DRAWING CONFORMS TO B.S.308

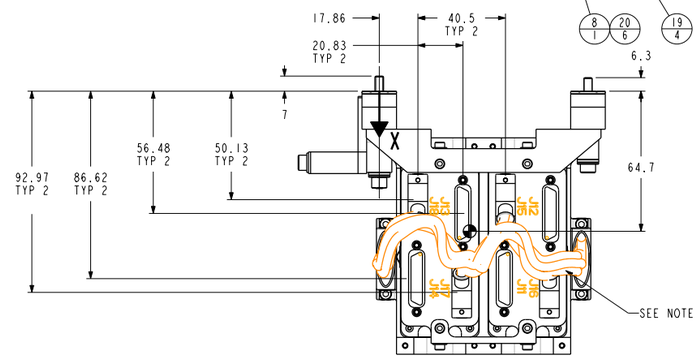


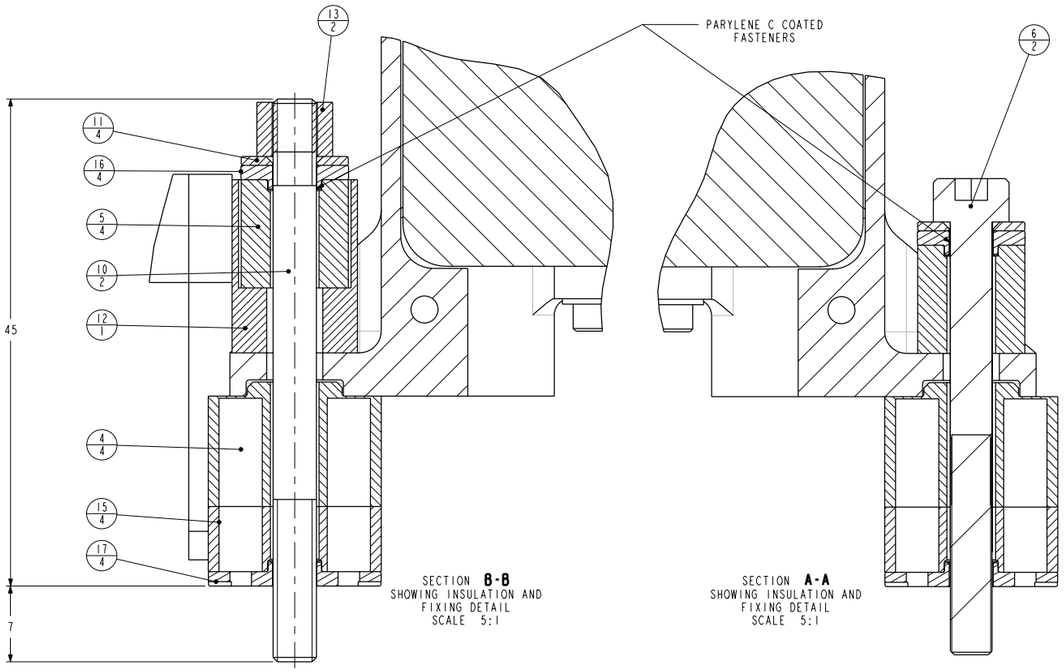
CONNECTOR TABLE

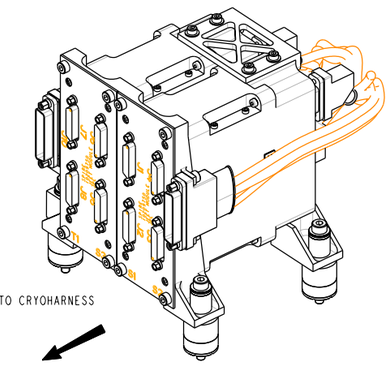
LABEL	TYPE	FUNCTION
J1	ALL MDM25P	ALL SIGNAL FEEDS TO CRYOHARNESS
J2		
J3		
J4		
J5		
J6		
J7		
J8		
J9	MDM37S	BIAS WIRES FROM CRYOHARNESS
J10		
J11	ALL MDM51P	SIGNALS IN FROM DETECTORS
J12		
J13		
J14		
J15	ALL MDM15P	BIAS FEEDS INTO MODULES
J16		
J17		
J18		

MOMENTS OF INERTIA (Kg.mm²) WITH RESPECT TO C OF G	
I_{xx}	1.71e+03
I_{yy}	1.94e+03
I_{zz}	2.31e+03

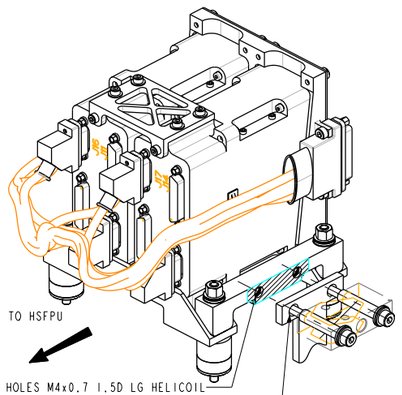
ITEM	PART NO.	DESCRIPTION	QTY	MASS/ITEM	TOTAL MASS	COMMENTS
1	23836-10209722	JFET MODULE	2	260.00	520.00	JPL SUPPLY
2	2JFET_HARNESS	BACKHARNESS (10209784.1)	1	216.95	216.95	JPL SUPPLY
3	HARNESS_CLIP		2			
4	KE-0104-354	STEPPED THERMAL STANDOFF	4	1.70	6.80	
5	KE-0104-355	TOP THERMAL STANDOFF	4	0.87	3.47	
6	KE-0104-358	M4 BOLT (PARYLENE C COATED 26.5mm)	2	4.70	9.39	
7	KE-0104-361	FRONT PLATE - 2 JFET	1	48.01	48.01	
8	KE-0104-362	REAR FOOT BEAM - 2 JFET	1	33.69	33.69	
9	KE-0104-363	REAR TOP BEAM - 2 JFET	1	8.62	8.62	
10	KE-0104-365	M4 STUD (PARYLENE C COATED)	2	5.08	10.16	
11	KE-0104-367	THERMAL STANDOFF WASHER	4	0.39	1.55	
12	KE-0104-368	THERMAL STRAP ASSY - 2 JFET	1	23.28	23.28	
13	KE-0104-386	M4 NUT (5mm LONG)	2	1.31	2.62	
14	KE-0104-393	L3 INTERFACE ASSY	1	64.18	64.18	
15	KE-0104-397	THERMAL STANDOFF BUSH	4	0.94	3.76	
16	KE-0104-398	FOOT UPPER WASHER	4	0.14	0.55	
17	KE-0104-399	FOOT LOWER WASHER	4	0.34	1.35	
18	L3_STRAP_A	L3 STRAP	1	N/A		HERSCHEL SUPPLY
19	M2-5_WASHER	WASHER	8	0.11	0.86	S/STEEL BS970/1501 304S 11/15/31
20	M2-5_X_8LG_CPHD_SKT_SS	FASTENER	12	0.58	6.93	S/STEEL BS3506-1:1998 A2-70
21	M3_X_8LG_CPHD_SKT__SS	FASTENER	8	0.74	5.95	S/STEEL BS3506-1:1998 A2-70
		ASSEMBLY MASS			968.13 GRAMS	

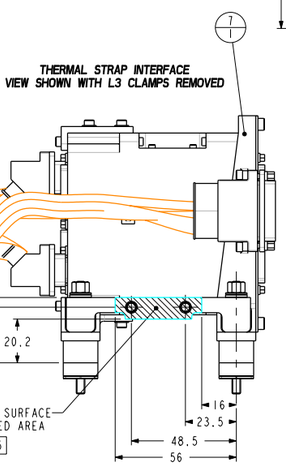


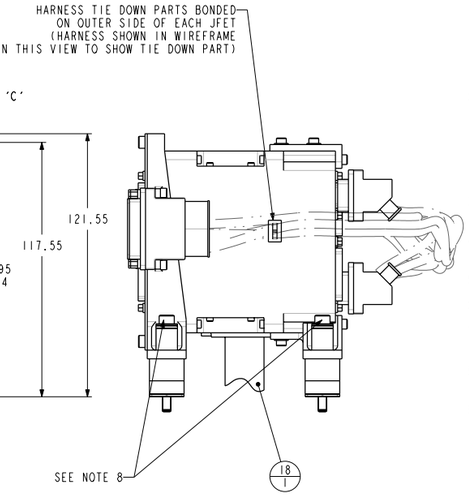




PARTIALLY EXPLODED 3D VIEW
SHOWING THERMAL STRAP INTERFACE
VIEW SHOWN WITH L3 CLAMPS REMOVED







NOTES:-

1. 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.
2. 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.
3. 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.
4. UNIT SHOWN FITTED WITH BACK-HARNESS MATING TO J9 - J10 & J15 - J18 BECAUSE THIS WILL BE FITTED BEFORE ITEM IS INTEGRATED TO HOB.
5. HEAT CAPACITY AT RT = 700 JOULES / KELVIN.
6. FITTED BACKHARNESS TO AFFORD OPEN ACCESS TO 51 WAYS AS SHOWN.
7. AFFIX ONE SENSOR WITH LONG BOLTS AND THEN THE OTHER ON THE REVERSE WITH NUTS
8. ITEMS 6 AND 11 TO BE PRE-FITTED BEFORE ITEM 2 IS FITTED
9. ONLY 3mm JACKSCREW LENGTH GUARANTEED BELOW THE MATING PLANE
10. INNER SURFACES OF PARTS 4, 5 AND 15 TO BE CLEAN OF CARBON WHISKERS AND OVERCOATED WITH D222A AFTER ASSEMBLY.

ISSUE	DATE	MOD. No.	DRN. BY	CHKD.	APPD.	STATUS
L	05-Aug-05	KE-2952.	D. SMART			ISSUED

TOLERANCES UNLESS STATED ±0.2 mm ±0.3 °	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

CENTRAL LABORATORY OF THE RESEARCH COUNCILS

TITLE

2 JFET RACK INTERFACE DRAWING

SPIRE

A	0-KE-0104-360-L	1 OF 1

FORM_MECH_009_Iss1_SSTD_A0

MODIFICATION SHEET

KE-2953

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:

1. Thermal standoff positional dimensions changed to basic dimensions.
2. Thermal strap interface dimensions added
3. Note 8 added regarding the protrusion and trimming of the parylene coating
4. Typos fixed
5. 2 off thermal strap standard washers replaced with Belleville washers, BOM updated to this effect.
6. Unit mounting hole size and positional accuracy added

Issue raised to:	E	By:	Iain Gilmour

Date: 20-May-2003

NCR/ECR:

Modification Description:

1. 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

Issue raised to:	F	By:	Kevin Burke

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

KE-2953

MODIFICATION SHEET

KE-2953

THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY

DRAWING NUMBER: KE-0104-350

DRAWING TITLE: 6 JFET RACK INTERFACE DRAWING

Issue raised to:	G	By:	Dave Smart

Date: 10-Mar-2004

NCR/ECR:

Modification Description:

1. Note 8 and leaders added indicating 3mm jackscrew length below the mating plane.
2. Label added to Part 23836-10209722 (JFET) to indicate orientation:

   SPIRE

   10209750

   JFET MODULE

   JPL

(NOTE: 10209750 is the JPL part number, 10209722 is the JPL ICD drawing number. JD wishes to leave the ProE part name as 23836-10209722)

Issue raised to:	H	By:	Dave Smart

Date: 05-Aug-2005

NCR/ECR:

Modification Description:

1. Note added to describe removal of Carbon Whiskers and coating with D222a

RAISED TO ISSUE J

Issue raised to:	J	By:	Sam Tobin

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

KE-2953

MODIFICATION SHEET

KE-2953

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:

1. 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.
2. 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.
3. L3 strap and interface assembly added. Views updated and added to show interface details and L3 strap hole definition.
4. Mass of JFET modules reduced from 305g to 260g.
5. Kapton tape removed from fastener and stand-off interfaces (note 7 deleted).
6. Moments of inertia updated along with C of G position.
7. Fastener for thermal strap assembly changed to non parylene coated M4 x 45mm long.
8. Kapton tape note removed from L3 interface area.
9. Incorrectly specified M2.5 x 8 long fasteners used to fasten JFET modules to front plate replaced with M3 x 8 long.
10. Temperature sensor interface shown on both sides of the L3 interface sub-assembly.
11. 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.
12. New dimensions applied to L3 interface area.
13. Connector fasteners and nuts added to spacecraft connectors.

SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

KE-2953

MODIFICATION SHEET

KE-2953

THE CENTRAL LABORATORY OF THE RESEARCH COUNCILS RUTHERFORD APPLETON LABORATORY

DRAWING NUMBER: KE-0104-350

DRAWING TITLE: 6 JFET RACK INTERFACE DRAWING

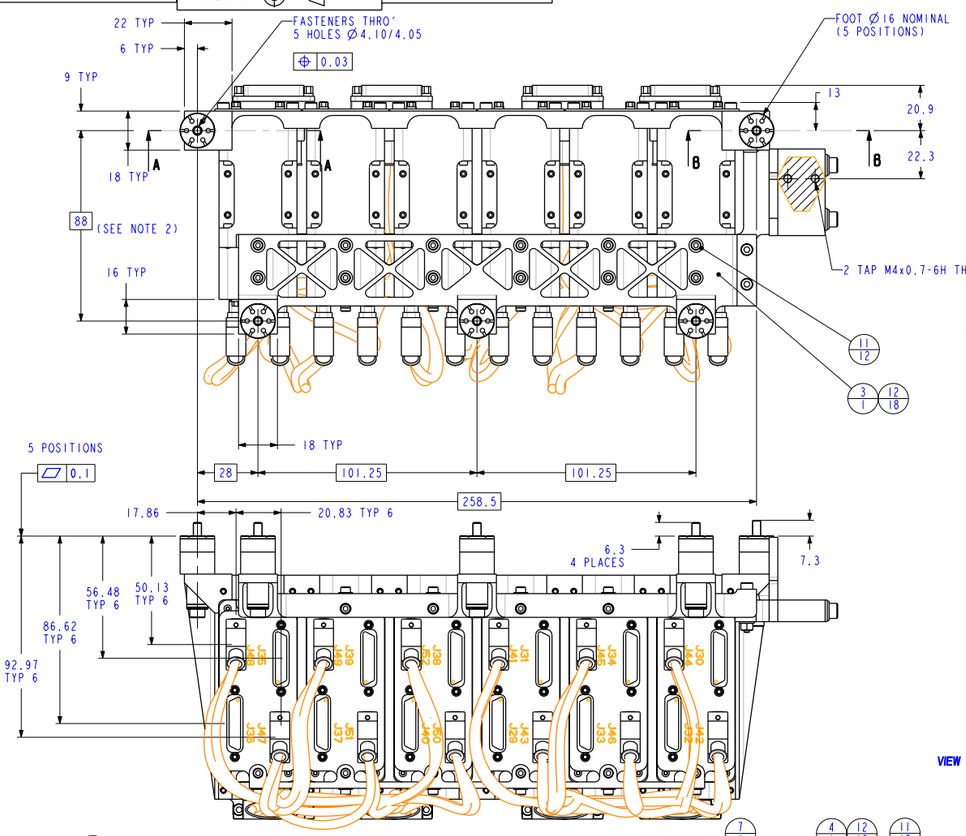
SUPERSEDED ISSUES OF ALL DRAWING HARD COPIES TO BE DESTROYED

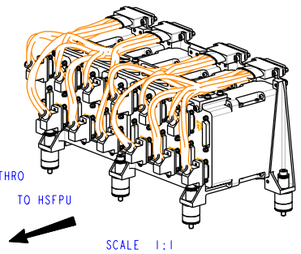
KE-2953

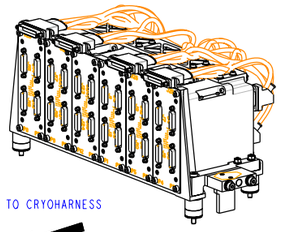
A0-KE-0104-350-J

PROJECTION

THIS DRAWING CONFORMS TO B.S.308

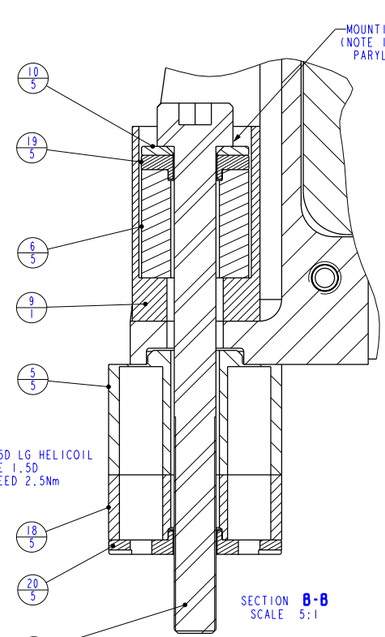


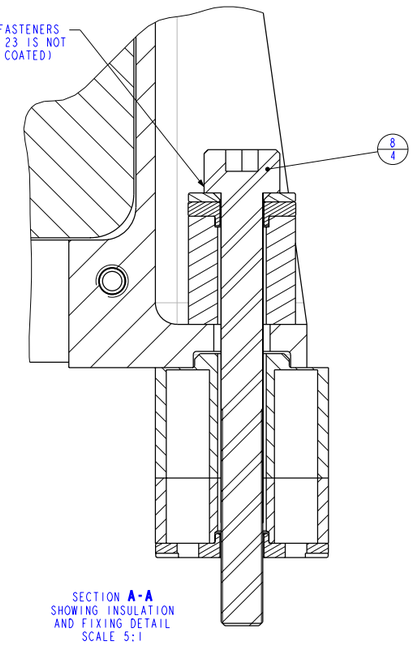


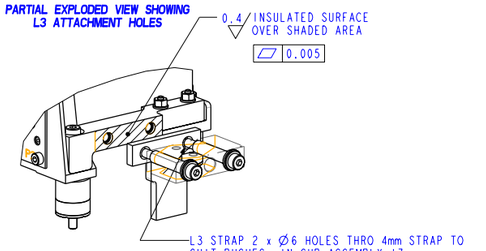


MOMENTS OF INERTIA (Kg.mm²) WITH RESPECT TO C OF G	
I_{xx}	1.70e+04
I_{yy}	1.66e+04
I_{zz}	4.73e+03

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	







NOTES:-

1. 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.
2. 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.
3. ITEMS 22 AND 8 TO BE TORQUED TO 2.1 Nm ABOVE LOCKING INSERT RUNNING TORQUE.
4. UNIT SHOWN FITTED WITH BACK-HARNESS MATING TO J25-28 & J41-52 BECAUSE THIS WILL BE FITTED BEFORE ITEM 1S INTEGRATED TO HOB.
5. HEAT CAPACITY AT RT = 2100 JOULES / KELVIN.
6. FITTED BACKHARNESS TO AFFORD OPEN ACCESS TO 51 WAYS AS SHOWN.
7. AFFIX ONE SENSOR WITH LONG BOLTS AND THEN THE OTHER ON THE REVERSE WITH NUTS
8. ONLY 3mm JACSCREW LENGTH GUARANTEED BELOW MOUNTING PLANE
9. INNER SURFACES OF PARTS 5, 6 AND 18 TO BE CLEAN OF CARBON WHISKERS AND OVERCOATED WITH D222A AFTER ASSEMBLY.

CONNECTOR TABLE

LABEL	TYPE	FUNCTION
J1	ALL MDM25P	ALL SIGNAL FEEDS TO CRYOHARNESS
J2		
J3		
J4		
J5		
J6		
J7		
J8		
J9		
J10		
J11		
J12		
J13		
J14		
J15		
J16		
J17		
J18		
J19		
J20		
J21		
J22		
J23		
J24		
J25	MDM37S	BIAS WIRES FROM CRYOHARNESS
J26		
J27		
J28		
J29	ALL MDM15P	SIGNALS IN FROM DETECTORS
J30		
J31		
J32		
J33		
J34		
J35		
J36		
J37		
J38		
J39		
J40		
J41	ALL MDM15P	BIAS FEEDS INTO MODULES
J42		
J43		
J44		
J45		
J46		
J47		
J48		
J49		
J50		
J51		
J52		

ISSUE	DATE	MOD. No.	DRN. BY	CHKD.	APPD.	STATUS
J	05-AUG-05	KE-2953.	D. SMART			ISSUED

TOLERANCES UNLESS STATED	FINISH	ORIGINAL SCALE
±0.2 mm ±0.3 °	CLEAN REMOVE ALL BURRS	1:1 DO NOT SCALE
MATERIAL & SPEC. SEE DETAILS	SURFACE TEXTURE µM SEE DETAILS ✓ UNLESS STATED	0 50mm

USED ON

CENTRAL LABORATORY OF THE RESEARCH COUNCILS

TITLE

6 JFET RACK INTERFACE DRAWING

SPIRE

A	0-KE-0104-350-J	1 OF 1

FORM_MECH_009_Iss1_SSTD_A0

DRAWING No.		
A1	5264	404 SHT 4

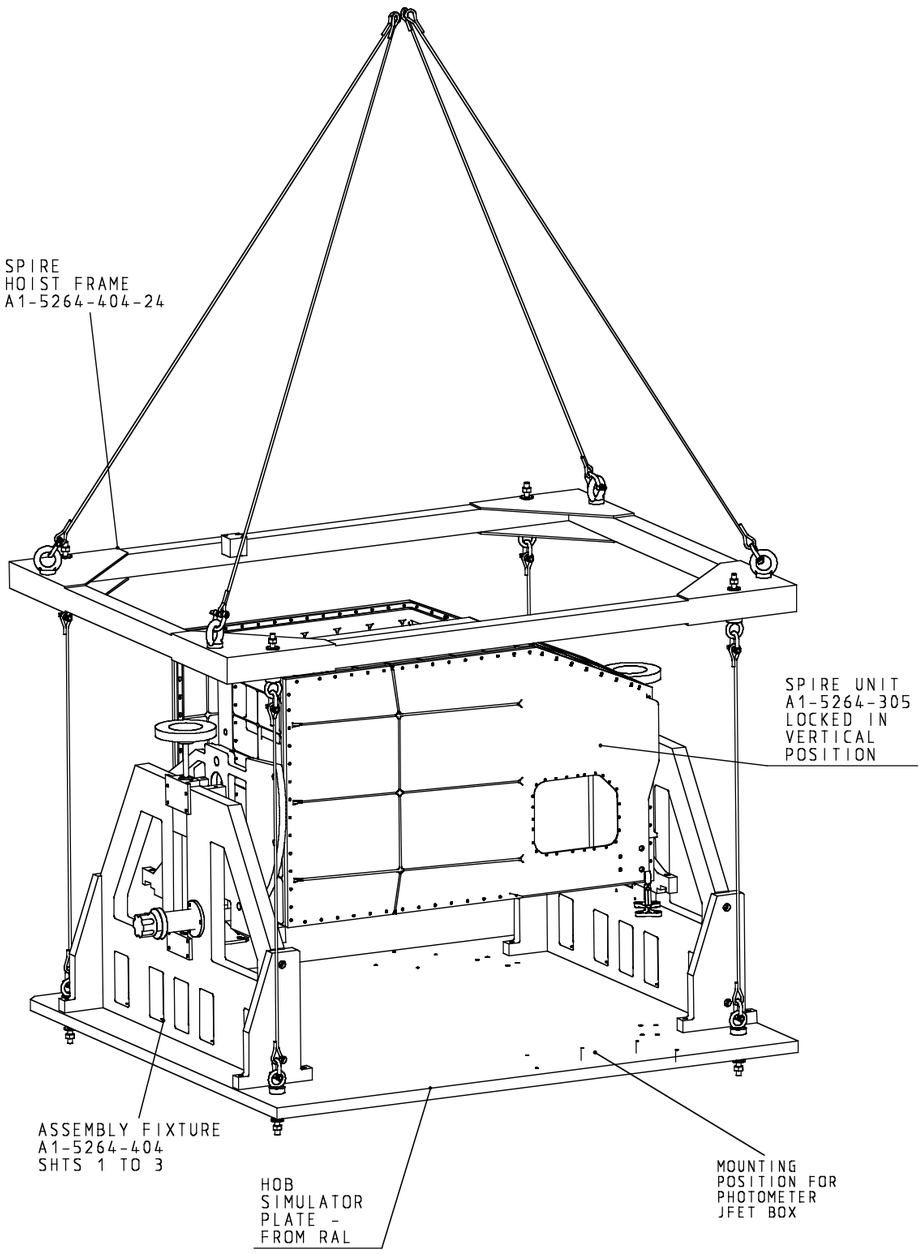
USED ON
SPIRE
MGSE

THIRD ANGLE PROJECTION

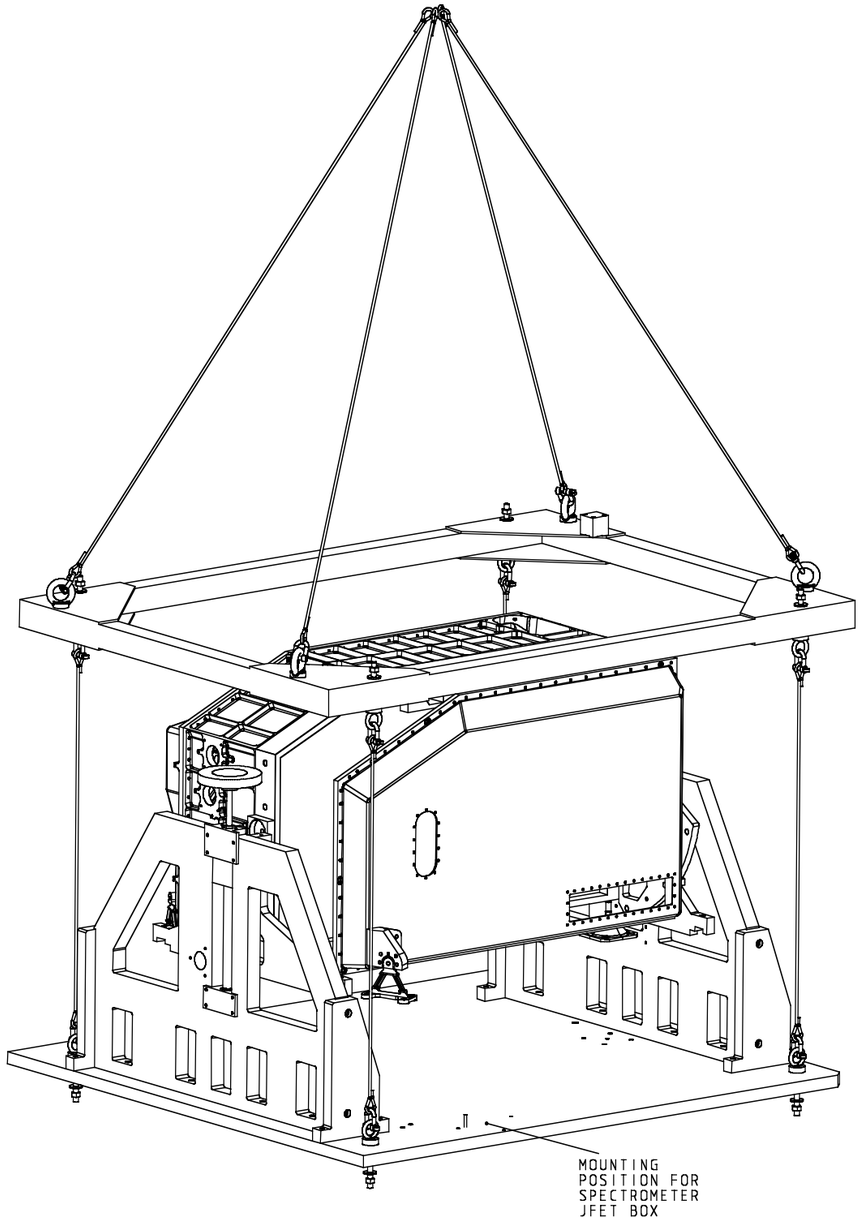
DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES

NOTES
1 SEE SHEET 5 FOR FRAME DETAILS AND PARTS LIST



VIEW TAKEN FROM HOIST-FRAME-KIT CONFIG2-HOIST-SPIRE



VIEW TAKEN FROM HOIST-FRAME-KIT CONFIG2-HOIST-SPIRE

CHECKED					PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 0.10 ANGULAR +/- 0°15'	DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.	
TRACED	3	26/3/04	M10 PLAIN NUTS REPLACED WITH M10 NYLOC NUTS					
	2	28/3/03						
DRAWN	ISSUE	DATE	AMENDMENT	COMPUTER FILE DRAWING A1-5264-404-sht4and5 ASSEMBLY HOIST-FRAME-KIT CONFIG1 AND 2	ESTD WT.			TITLE SPIRE LIFTING HOIST GENERAL ARRANGEMENT	DRAWING No A1 5264 404 SHT 4
PMB	1	2/10/02			ACTL WT.	DIMENSIONS IN mm	SCALE NTS		

DRAWING No.			
A1	5264	404	SHT 6

USED ON SPIRE MGSE

THIRD ANGLE PROJECTION

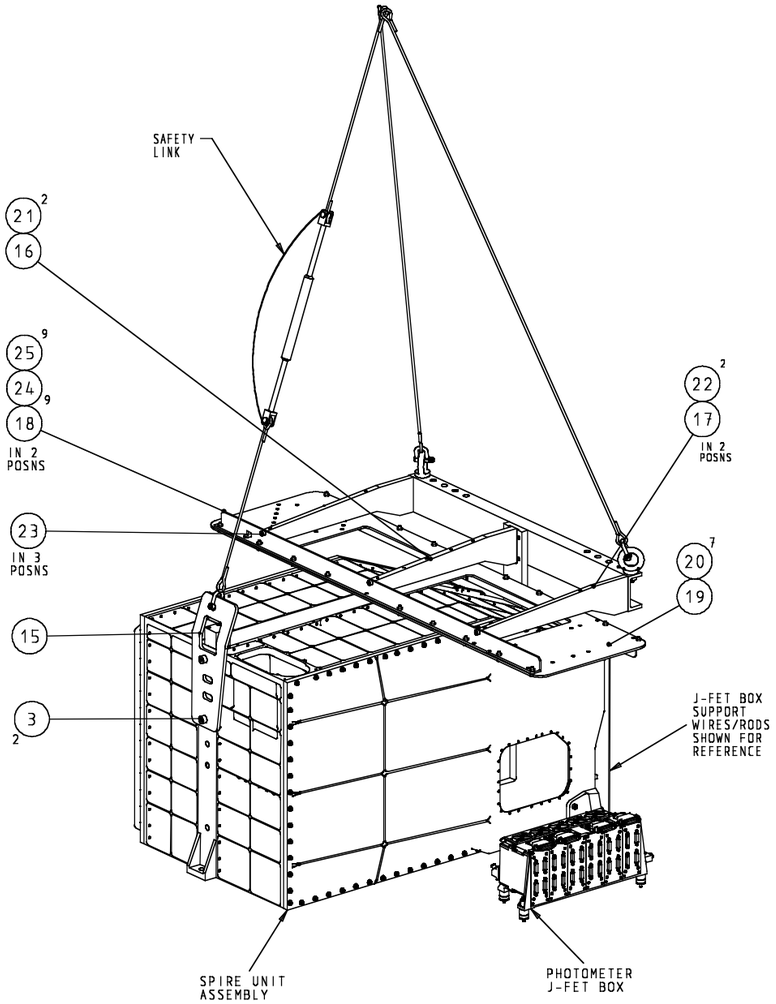
DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES

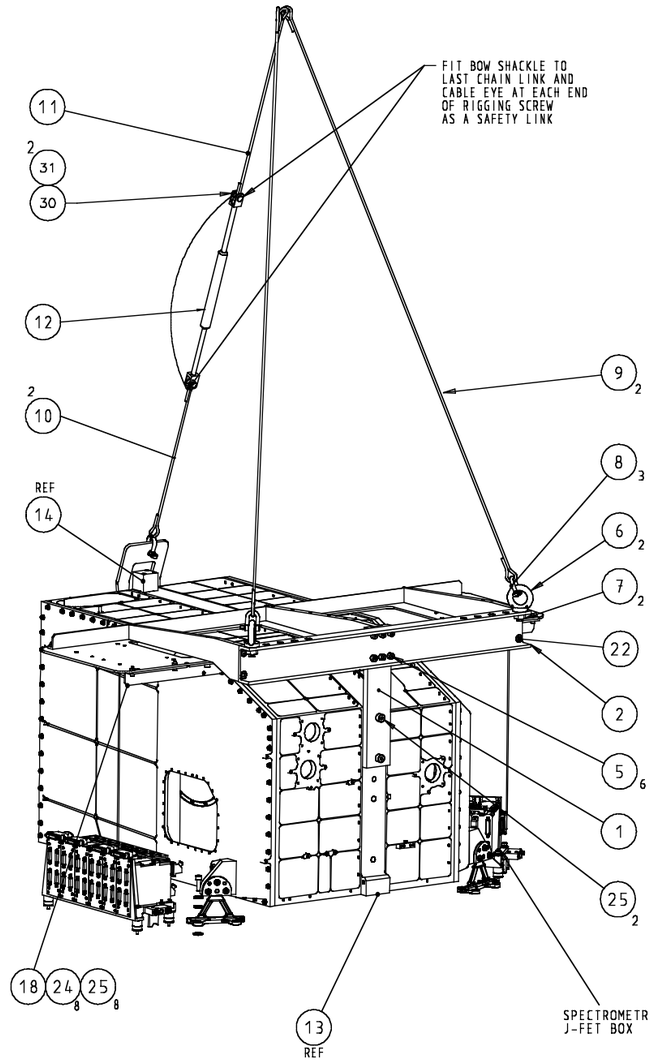
NOTES
1 DIMENSIONS ARE NOMINAL AND MAY VARY DUE TO MANUFACTURING TOLERANCES

NOTE
1 SEE SHEET 7 FOR SPIRE INSTALLATION LIFTING REFERENCE DIMENSIONS

2 PLEASE NOTE THAT BILL OF MATERIALS IS GENERATED FROM THE CORRESPONDING ASSEMBLY MODEL EXCEPT FOR ITEMS 30 AND 31



VIEW SCALE 0.2 : 1



VIEW SCALE 0.2 : 1

Item	Part #	Name	Qty
31	KEY-	BOW SHACKLE	2
30	KEY-	CHAIN	0.5M
29	KE-0104-350_ASM	KE-0104-350_ASM	1
28	KE-0104-360_ASM	KE-0104-360_ASM	1
27	REFERENCE	PHOT COVER ASSEMBLY	1
26	REFERENCE	SPEC COVER ASSEMBLY	1
25		NUT-M4-NYLOC-ST-STL	17
24	ST STL	SCR-M4x12L-CAP-HD	17
23		SCR-M5x12L-CAP-HD	3
22		SCR-M6x20L-CSK-SKT-HD	4
21		SCR-M5x20-SKT-CSK-HD	2
20		SCR-M5x20-SKT-BUTT-HD	7
19	5264-404-37	yoke	1
18	5264-404-39	yoke-stiffener	2
17	5264-404-38	yoke-support-fillet	2
16	5264-404-36	yoke-center-support	1
15		front-lift-strap-2	1
14	REFERENCE	reference cube	1
13	REFERENCE	dummy-SOB	1
12	ANGLIA-HANDLING	RIGGING-SCREW-M12-JAW-JAW-CLOSED	1
11	5264-404-35	hoist-cable-split	1
10	A3-5264-404-36	hoist-cable-short-2	1
9	A3-5264-404-22	hoist-cable-long	2
8	KEY-927A078N	shackle-STD	3
7		NUT-M10-NYLOC-ST-STL	2
6	ANGLIA-HANDLING-ST-STL	shoulder-eyebolt-M10	2
5	ST STL	SCR-M6x20L-CAP-HD	6
4	ST STL	SCR-M8x25L-CAP-HD	2
3	ST STL	SCR-M8x20L-CAP-HD	2
2	5264-404-16	rear-lift-channel	1
1	A3-5264-404-15	rear-lift-plate	1

ISSUE	DATE	AMENDMENT	ISSUE	DATE	AMENDMENT
5	2/2/04	SUPPORT PLATE FOR JFET BOXES ADDED			
4	28/1/04	ASSEMBLY JIG PARTS REMOVED DUE TO SPACE LIMITATIONS	9	23/9/05	ITEMS 30 AND 31 ADDED/SHEET 8 ADDED
3	8/8/03	FRONT LIFT BRACKET REPLACED WITH FRONT LIFT STRAP	8	15/7/05	ITEM BALLOONS REDEFINED
2	28/3/03		7	17/5/05	UPDATED FOR M12 RIGGING SCREW AND NEW SPLIT CABLES
1	2/10/02		6	29/3/04	BOM ADDED

CHECKED

TRACED

DRAWN PMB

COMPUTER FILE SPIRE-LIFT (ASSEMBLY) 3 CONFIGURATIONS A1-5264-404-SHT 6 / 7 and 8(dwg)

PROTECTIVE FINISH

ESTD WT.

ACTL WT.

MATERIAL & SPEC.

DIMENSIONS IN *mm*

TOLERANCES UNLESS OTHERWISE STATED –
LINEAR +/- *0.10*
ANGULAR +/- *0°15'*

SCALE SEE VIEWS

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

TITLE
SPIRE LIFTING FOR INSTALLATION

DRAWING No			
A1	5264	404	SHT 6

DRAWING No.			
A1	5264	404	SHT 7

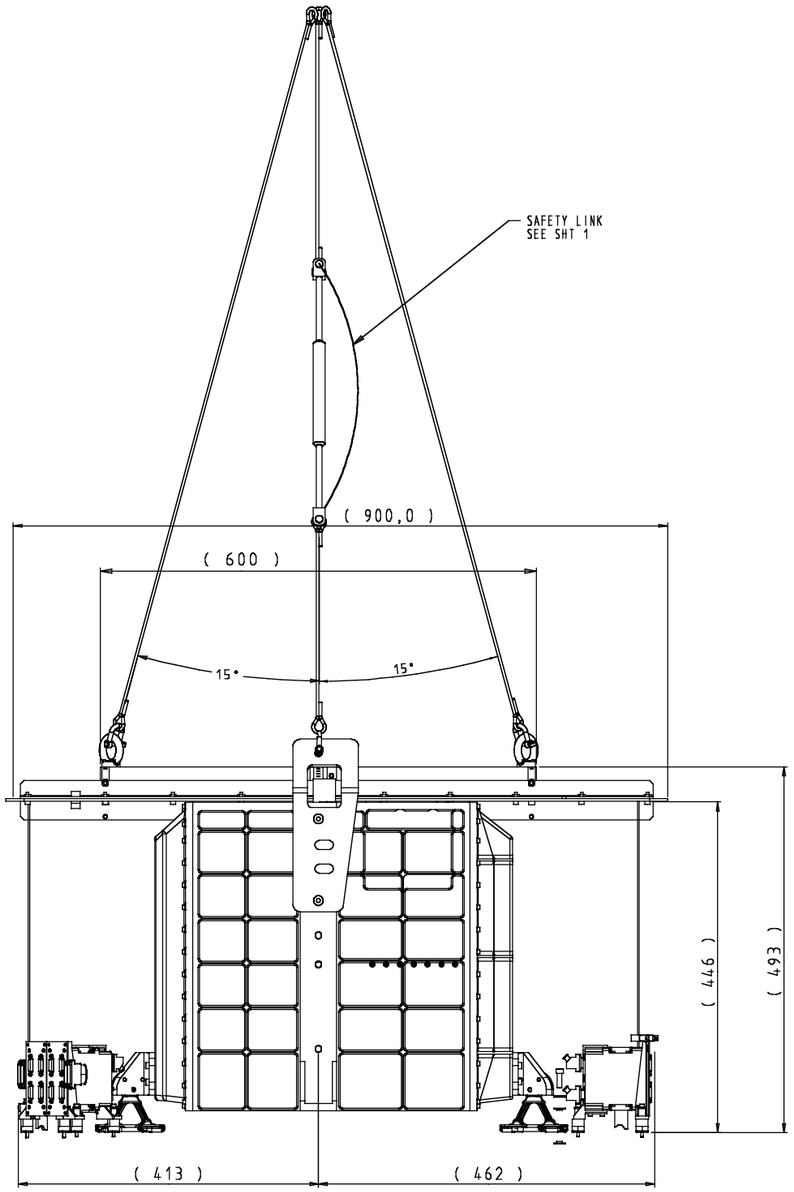
USED ON SPIRE MGSE

THIRD ANGLE PROJECTION

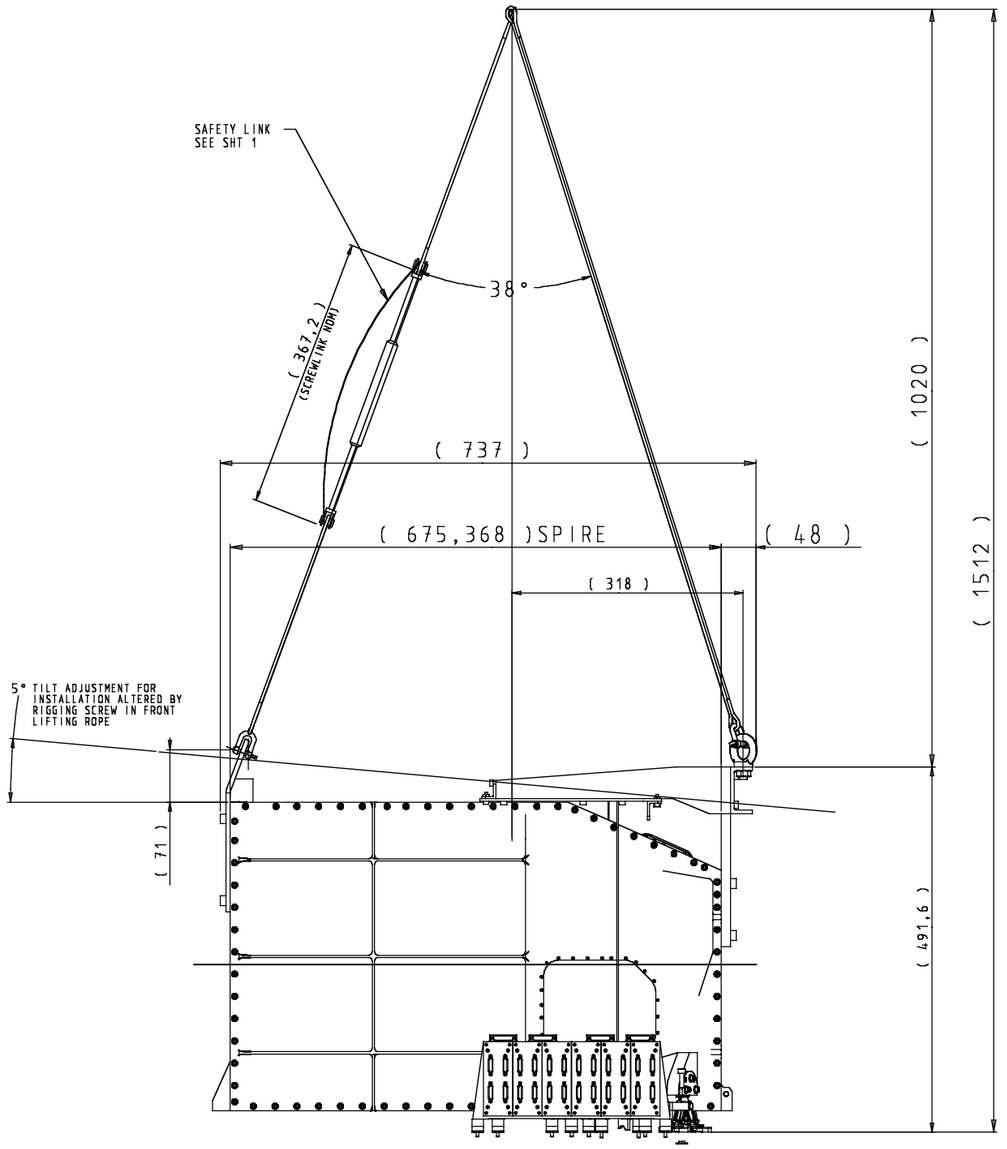
DO NOT SCALE

REMOVE ALL BURRS & SHARP EDGES

NOTES
1 DIMENSIONS ARE NOMINAL AND MAY VARY DUE TO MANUFACTURING TOLERANCES



VIEW SCALE 0.25:1



VIEW SCALE 0.25:1

	ISSUE	DATE	AMENDMENT			
CHECKED	5	2/2/04	SUPPORT PLATE FOR JFET BOXES ADDED			
	4	28/1/04	ASSEMBLY JIG PARTS REMOVED DUE TO SPACE LIMITATIONS	9	23/9/05	ITEMS 30 AND 31 ADDED/SHEET 8 ADDED
TRACED	3	8/8/03	FRONT LIFT BRACKET REPLACED WITH FRONT LIFT STRAP	8	15/7/05	ITEM BALLOONS REDEFINED
	2	28/3/03		7	17/5/05	UPDATED FOR M12 RIGGING SCREW AND NEW SPLIT CABLES
DRAWN PMB	1	2/10/02		6	29/3/04	BOM ADDED
				ISSUE	DATE	AMENDMENT

COMPUTER FILE SPIRE-LIFT (ASSEMBLY)
3 CONFIGURATIONS
A1-5264-404-SHT 6 / 7 and 8(dwg)

PROTECTIVE FINISH	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED –
		LINEAR +/- 0.10
		ANGULAR +/- 0°15'
ESTD WT.		
ACTL WT.	DIMENSIONS IN mm	SCALE SEE VIEWS

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

TITLE: SPIRE LIFTING FOR INSTALLATION

DRAWING No		
A1	5264	404 SHT 7