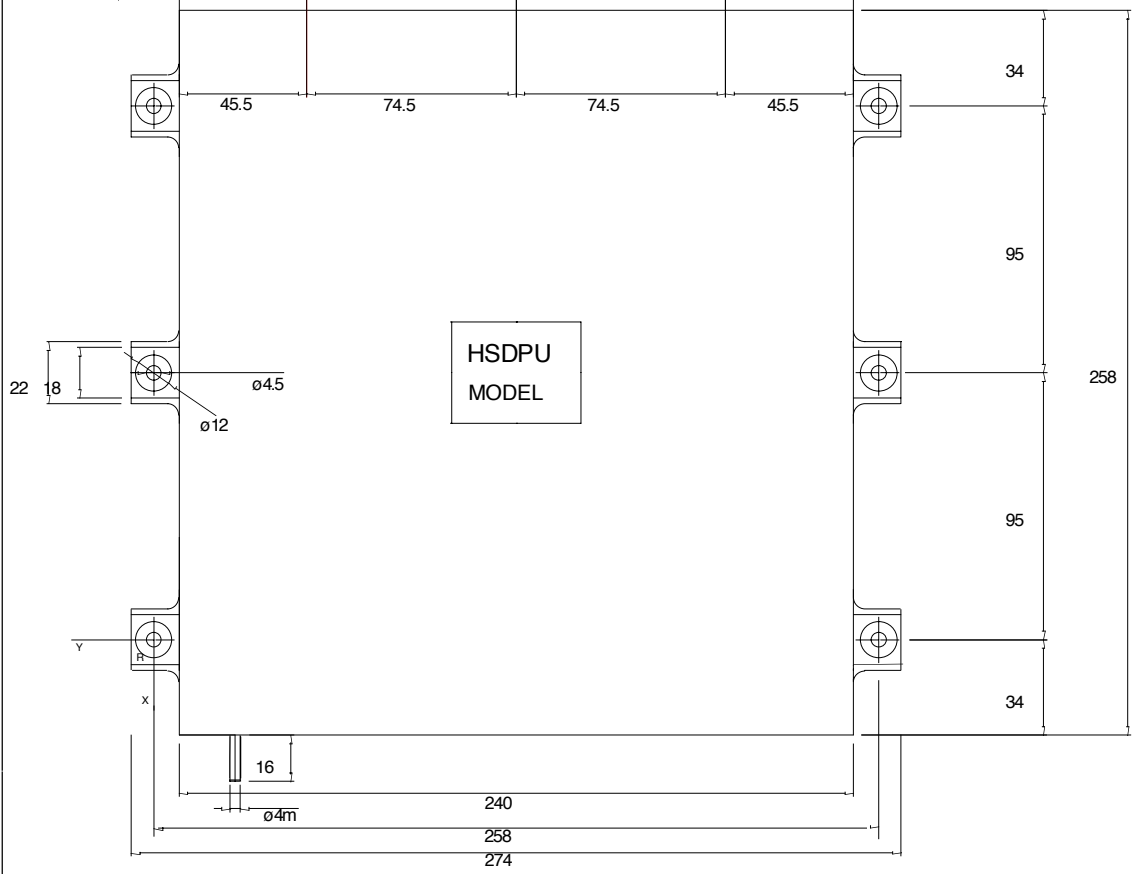
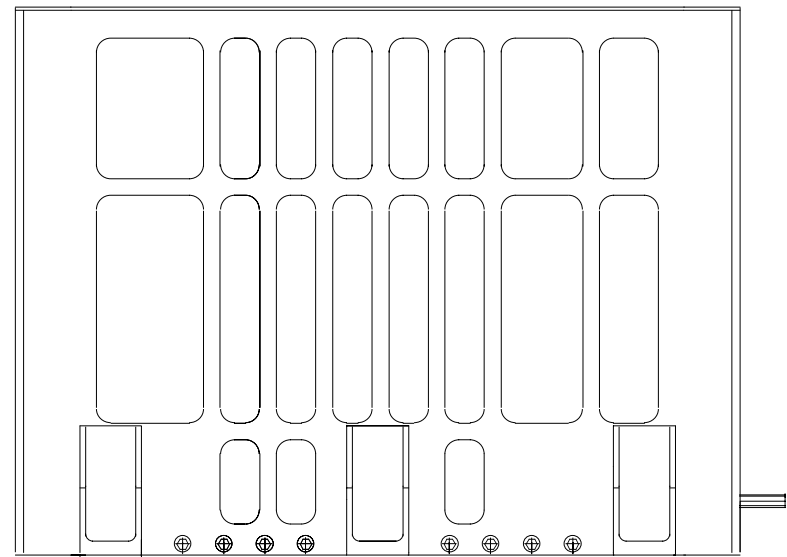
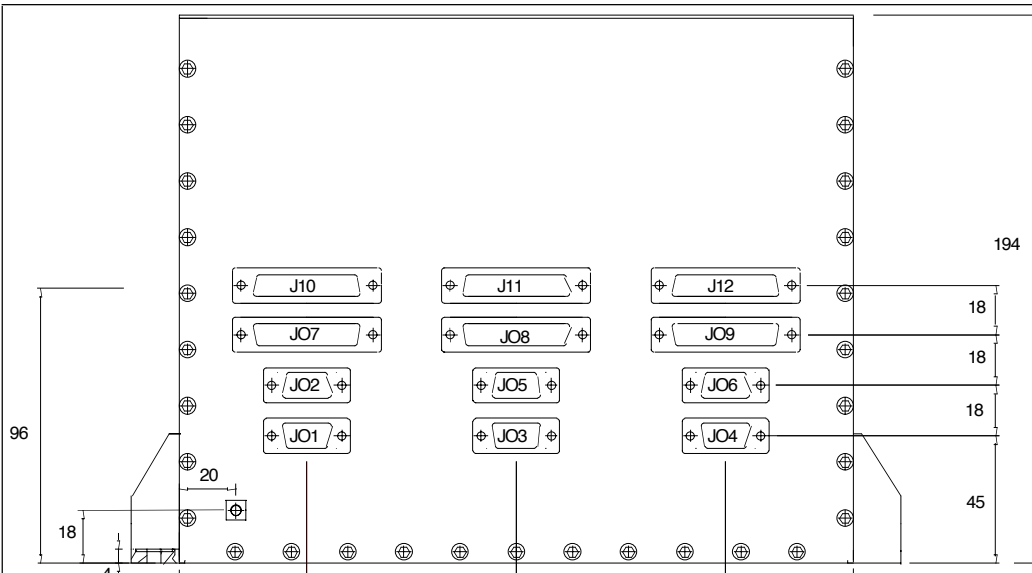


SPIRE IID-B Annex: Unit ICDs

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

Issue 3 Update to status as of 1st November 2002

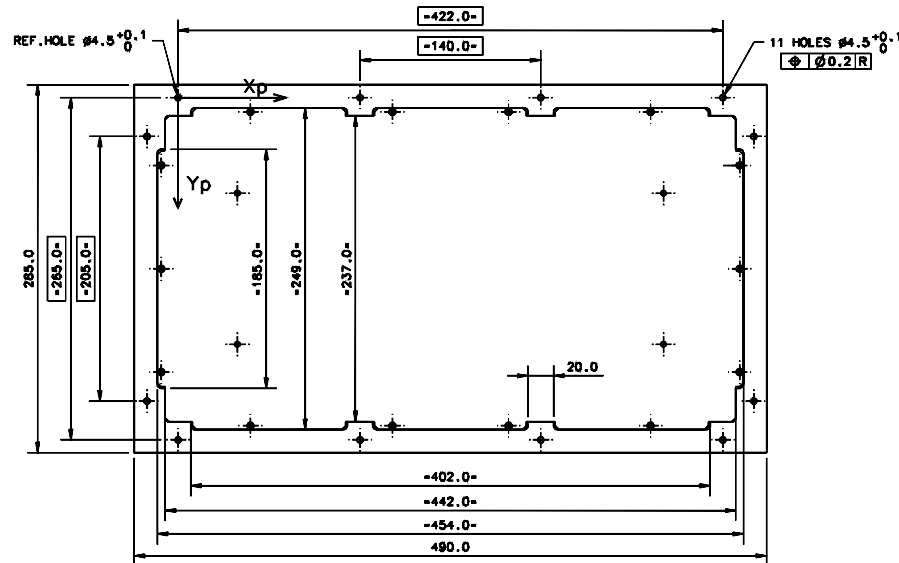
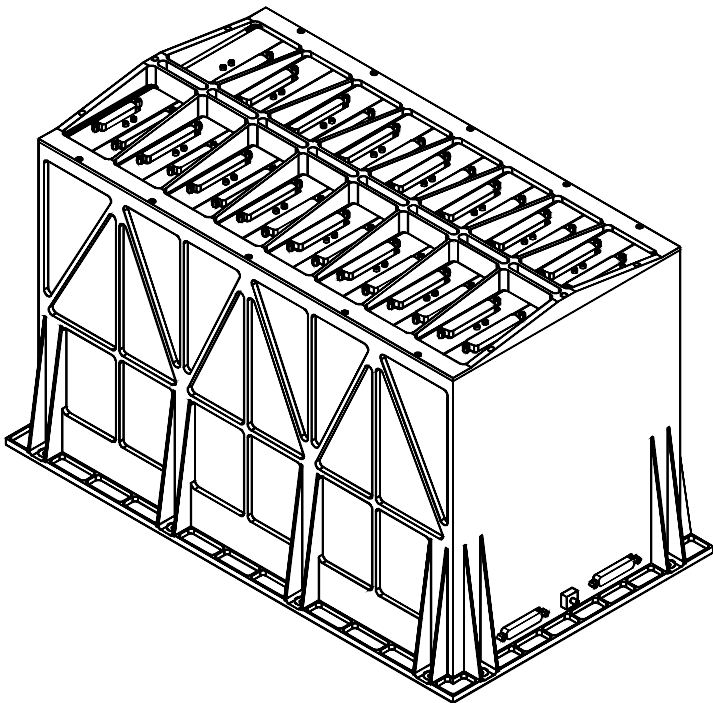
FCU, DCU & Cryogenic ICDs changed, see changelists where provided



GENERAL TOLERANCE ± 1 mm
 WEIGHT 6,621 Kg $\pm 10\%$
 DIMENSION 274 X 258 X 194mm³
 CENTRE OF GRAVITY (E) X=120; Y=110; Z=96(TBC)
 MOMENT OF INERTIA (E) $J_x=5.6 \times 10^{-2} \text{Kgm}^2$ (TBC)
 $J_y=5.40 \times 10^{-2} \text{Kgm}^2$ (TBC)
 $J_z=7.2 \times 10^{-2} \text{Kgm}^2$ (TBC)
 CASING MATERIAL: ANTICORODAL 6082
 SURFACE TREATMENT: ALODINE 1200:
 alfa solar = 0,604
 R-solar = 0,396
 epsilon IR = 0,172
 R-IR = 0,828
 THERMAL CAPACITANCE: 6.621J/°C (TBC)
 CONTACT AREA OF BASEPLATE PLUS FEET 64428 mm²
 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 Prime
 J04= DEMA-9S From DPU Prime to Bus Prime
 J05= DEMA-9S From DPU Red. to Bus Red.
 J06= DEMA-9S From DPU Red. to Bus 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: 10/02/2002P. Baldetti
 UPDATED: 29/01/2002P. Baldetti
 UPDATED: 16/01/2002P. Baldetti

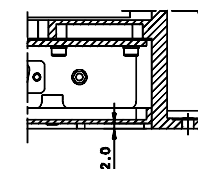
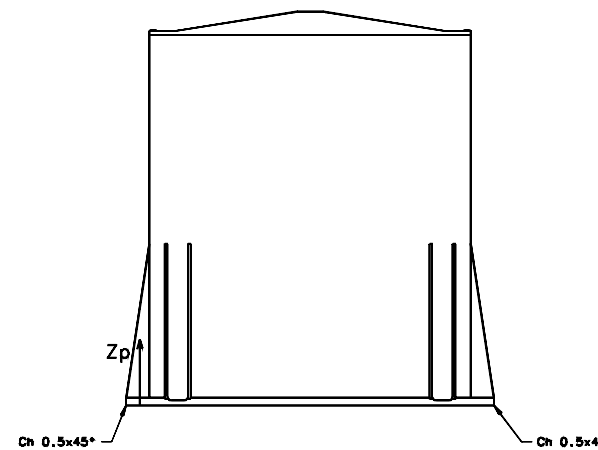
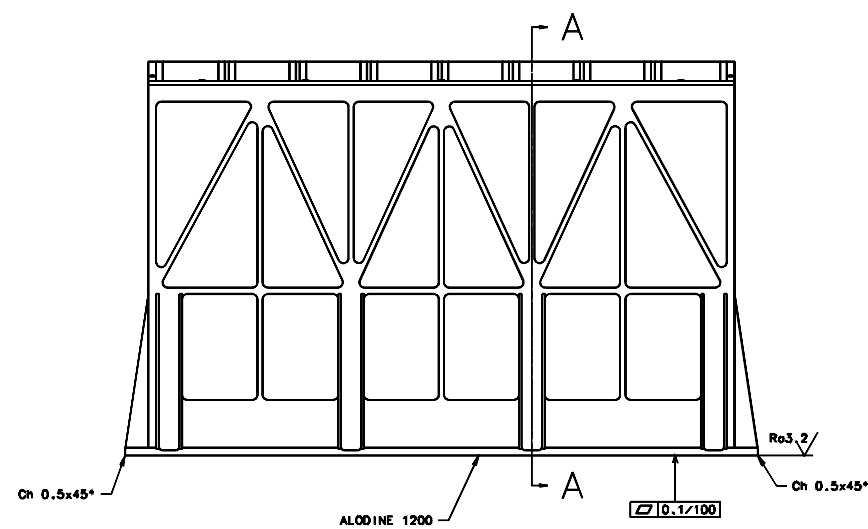
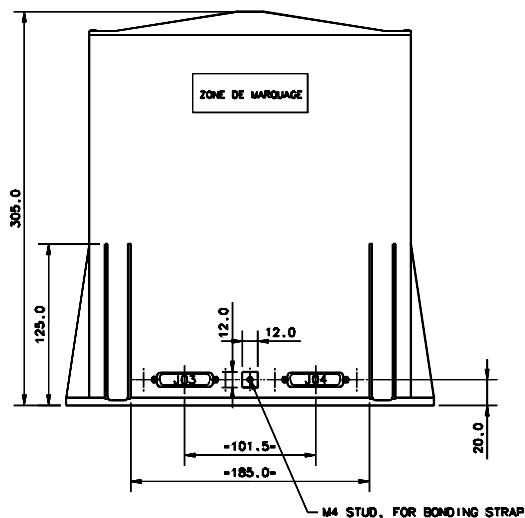
 ISTITUTO FISICA Osservatorio Planetario Via Fossano di Aviano, 100 31045 Montebelluna (TV)	data	5/04/2001	prog.	Baldetti	dis.
		scala		materiale	
		tratt.			
		Progetto:	HERSCHEL-HSDPU		
	REV		titolo:	HSDPUAVM	
	data				N. dis. HER S005/02



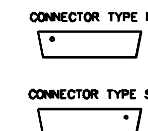
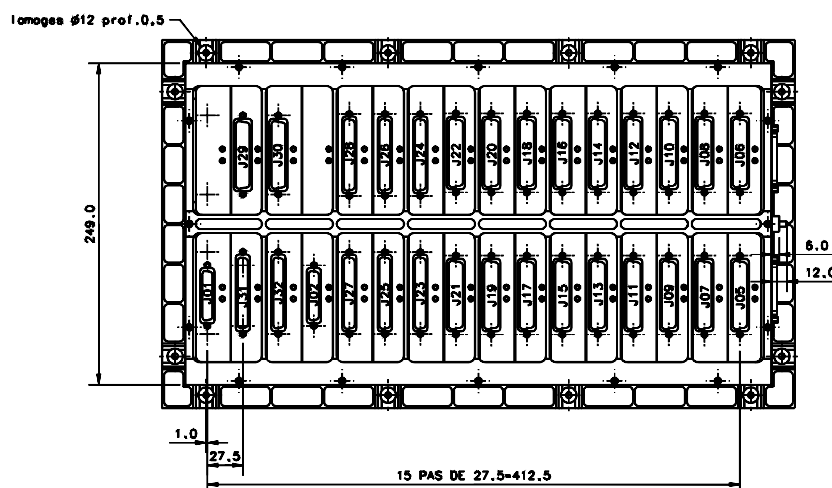
CONNECTORS					
IDENT	TYPE	FUNCTIONS	IDENT	TYPE	FUNCTIONS
J01	DBMA 25S	DAQ_IF_M/DPU_M	J17	DDMA 50P	LIA_P_7/FPU
J02	DBMA 25S	DAQ_IF_R/DPU_R	J18	DDMA 50P	LIA_P_7/FPU
J03	DBMA 25P	DCU/PSU_M	J19	DDMA 50P	LIA_P_8/FPU
J04	DBMA 25P	DCU/PSU_R	J20	DDMA 50P	LIA_P_8/FPU
J05	DDMA 50P	LIA_P_1/FPU	J21	DDMA 50P	LIA_P_9/FPU
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	DDMA 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.m² Jyp=2.50 N.m² Jzp=4.44 N.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=15676g



COUPE PARTIELLE A-A
 ECHELLE:1/1



Indice	Modifications	Date	Dessiné par	Écrité 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

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

Matériau: Protection

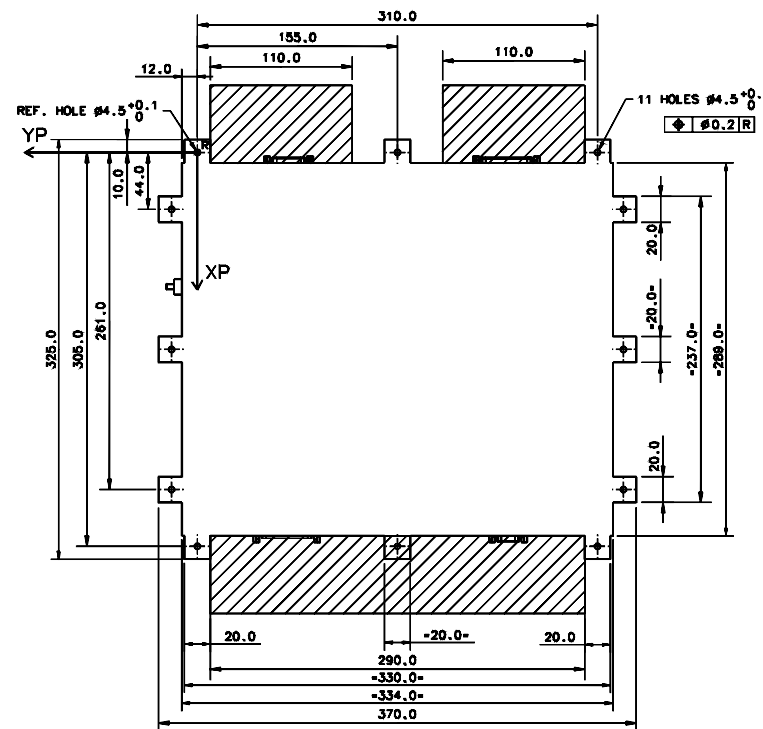
Traitement thermique: Echelle Poids Niveau qualité
 1/2

SPIRE
HSDCU ELECTRONIC BOX
MECHANICAL INTERFACE CONTROL DRAWING

Il n'est permis d'utiliser ce dessin qu'avec l'accord préalable ou autorisation expresse - 1st de 11 mars 1997

SAP/GERES COMMISSARIAT A L'ENERGIE ATOMIQUE C.E.N. SACLAY
 Tel: 01.69.08.79.25
 01.69.08.59.78
 Fax: 01.69.08.79.96

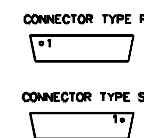
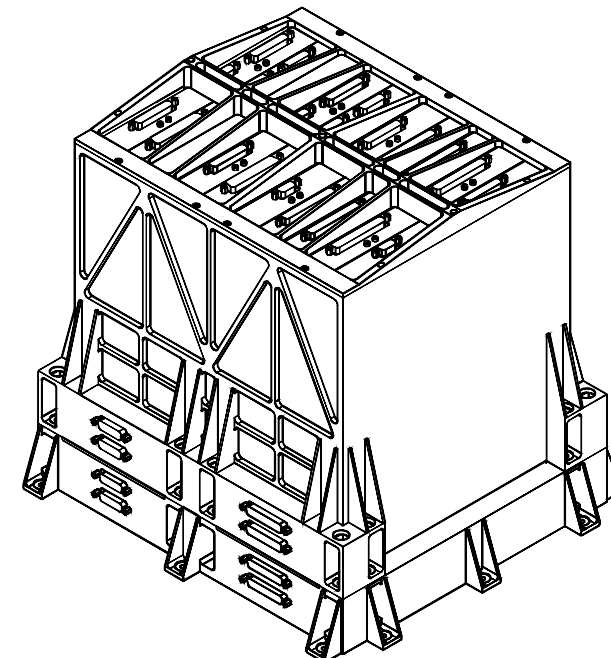
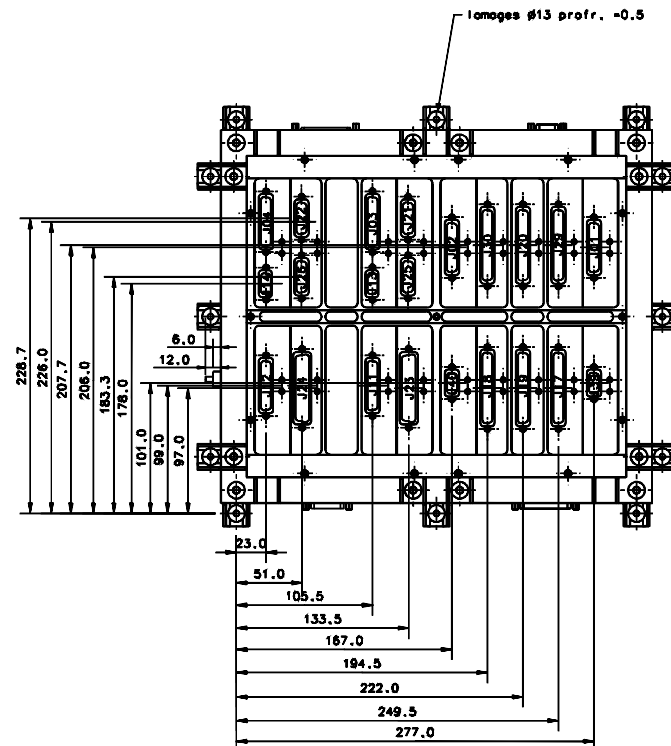
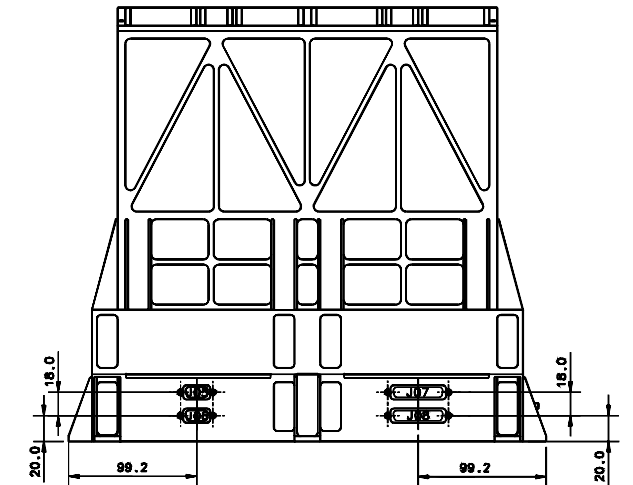
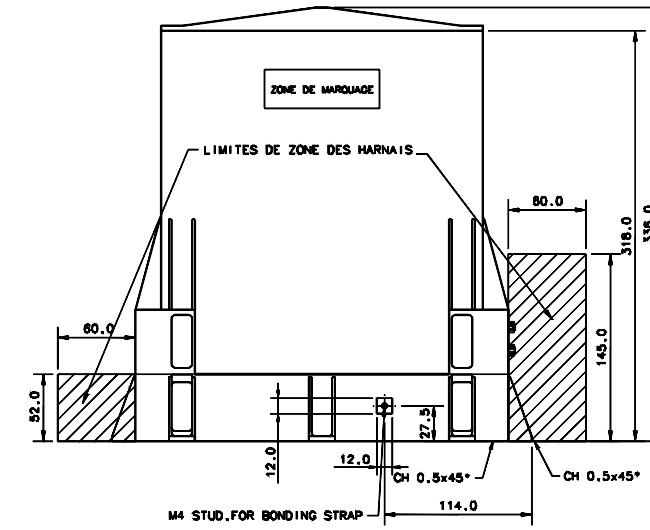
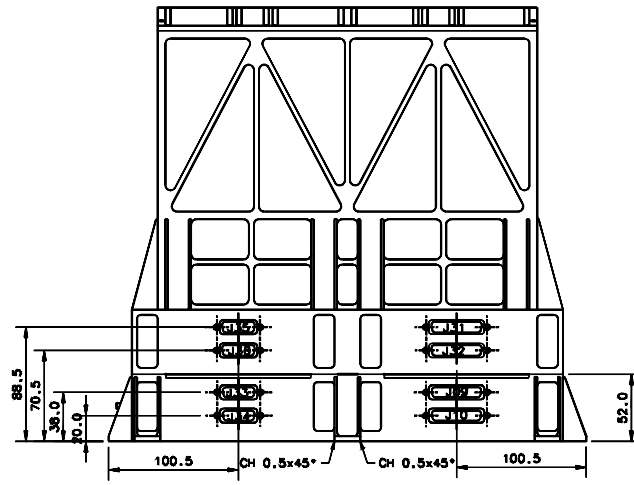
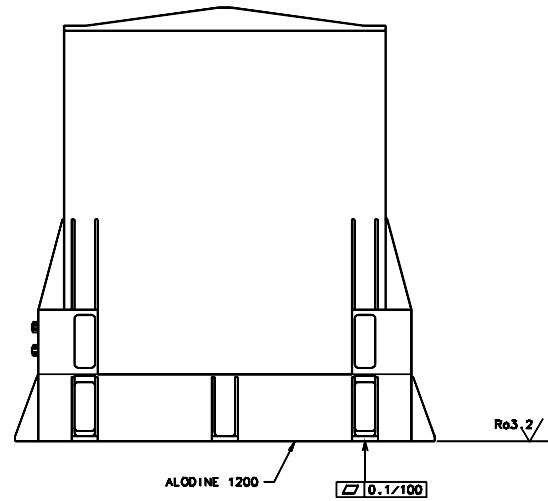
AD SPIR-MX-5100 000 D



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.m2 JY=2.79 N.m2 JZ=3.03 N.m2
 CONTACT AREA MOUNTING FEET=100655mm2
 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	DAMA 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	Écrité 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	
Matériau: Protection	
Traitement thermique:	Echelle Poids Niveau qualité
	1/2

SPIRE
FCU ELECTRONIC BOX
MECHANICAL INTERFACE CONTROL DRAWING

Il est permis d'utiliser ce dessin qu'une fois agréé ou autorisé expressément - 1^{er} de 11 mars 1997

SAP/GERES	COMMISSARIAT A L'ENERGIE ATOMIQUE	C.E.N. SACLAY
Tel: 01.69.08.79.25 01.69.08.59.78 Fax: 01.69.08.79.96	AD SPIR-MX-5200 000 F	

Herschel/SPIRE

MULLARD SPACE SCIENCE LABORATORY
 UNIVERSITY COLLEGE LONDON Author: C BROCKLEY-BLATT

SPIRE – STRUCTURE INTERFACE DRAWING ISSUE 17
 AND MODIFICATION SHEET ISSUE 2.0
 Document Number: MSSSL/SPIRE/SP005 25 October 2002

Distribution:

ESA PX	A Heske	<input type="checkbox"/>
	J Rautakoski	<input type="checkbox"/>
RAL	B Swinyard	<input type="checkbox"/>
	E Sawyer	<input type="checkbox"/>
	T. Richards	<input type="checkbox"/>
	J Long (Project Office)	<input type="checkbox"/>
Mullard Space Science Laboratory	J. Coker	<input type="checkbox"/>
	C Brockley-Blatt	<input type="checkbox"/>
	B. Winter	<input type="checkbox"/>
	A Dibbens	<input type="checkbox"/>
ATC	C Cunningham	<input type="checkbox"/>
	I Pain	<input type="checkbox"/>
	T Paul	<input type="checkbox"/>
Cardiff CSA COMDEV JPL	P Hargrave	<input type="checkbox"/>
	D Peterson	<input type="checkbox"/>
	J Hacket	<input type="checkbox"/>
	J Bock	<input type="checkbox"/>
	J Lilienthal	<input type="checkbox"/>
CEA Herschel Project	L Duband	<input type="checkbox"/>
	Herschel.Planck@esa.int	<input type="checkbox"/>
Astrium/EADS	H. Faas	<input type="checkbox"/>
	Author: C Brockley-Blatt	Date:
Checked: B Winter		Date:
Approved: Tony Dibbens		Date:

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 MSSSL 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

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 dismantled 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
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

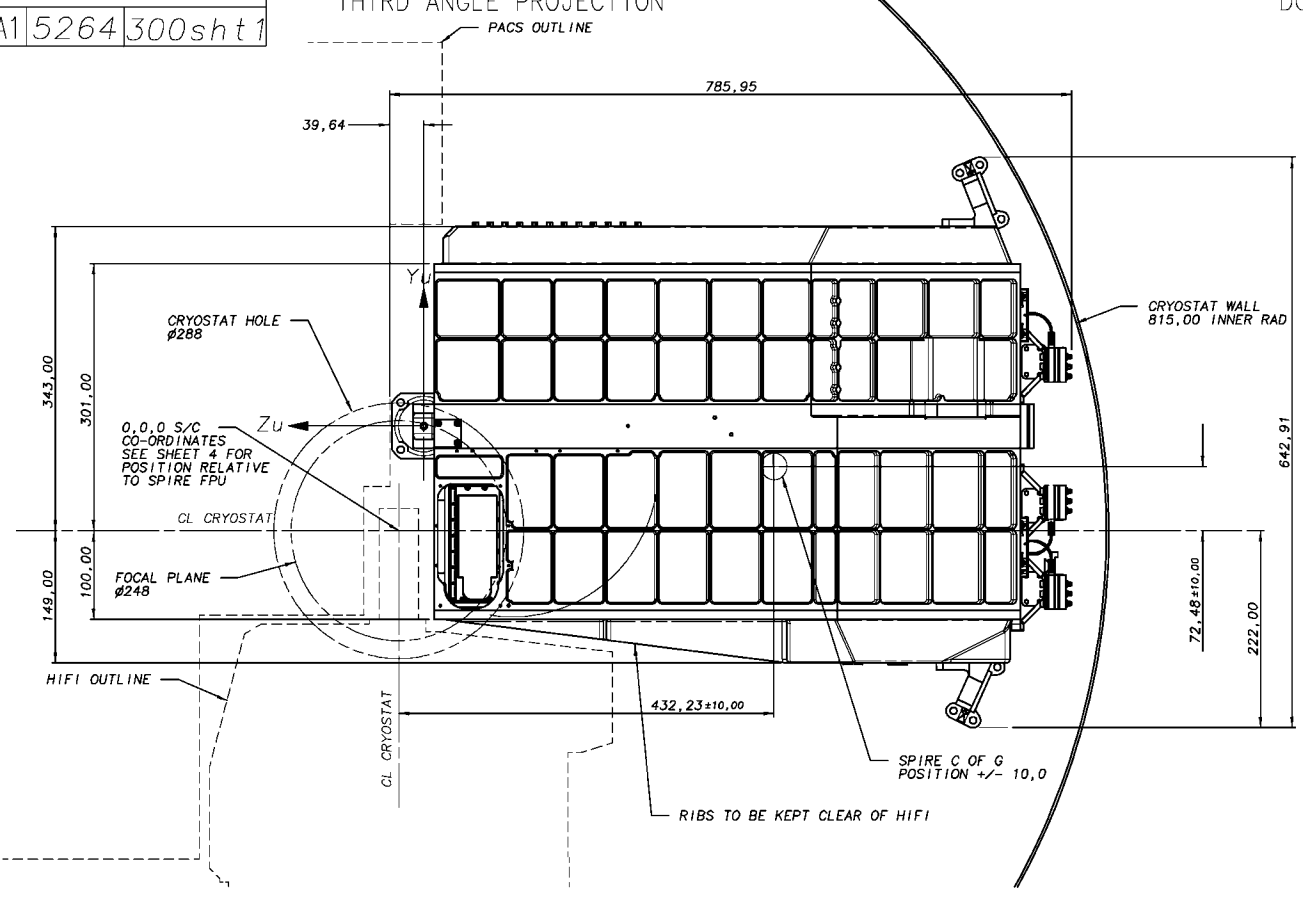
	Belleville types added.
7	Beam clearance dimension not checked, waiting for input from HiFi
1	Note WRT clearance between FPU and Inner Shield Added
1,2,3	Cryostat Inner shield updated
5	"Stay Out" zone around Level '0' straps added

DRAWING No.
A1 5264 300sht 1

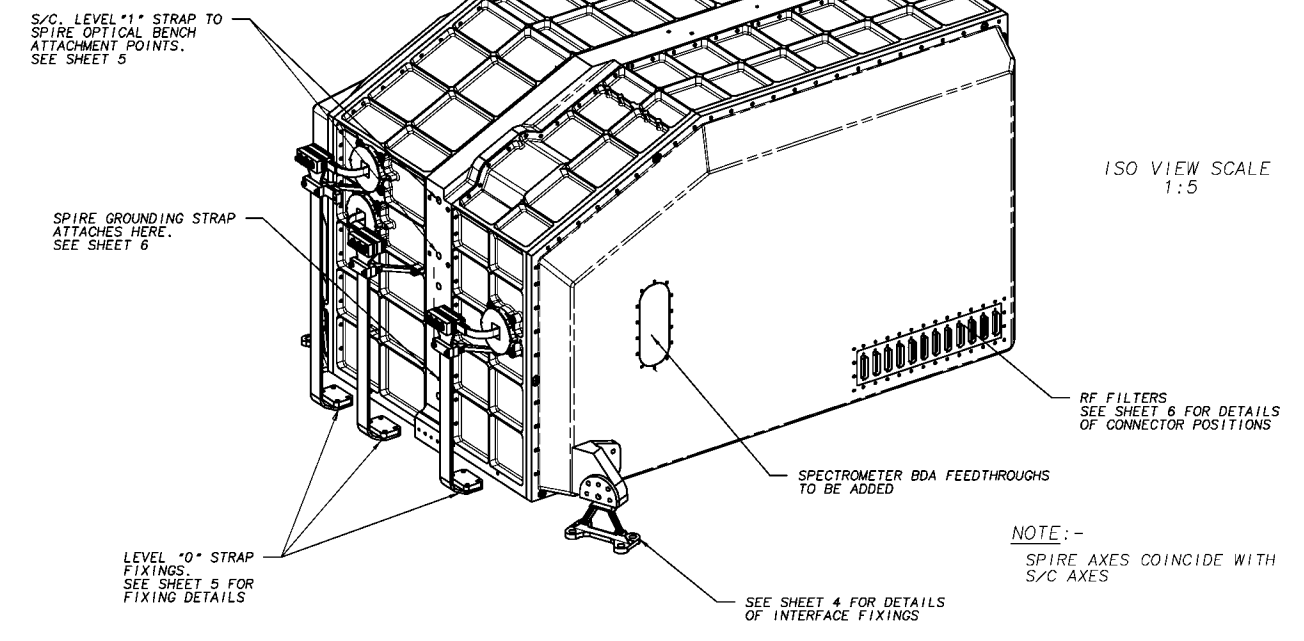
THIRD ANGLE PROJECTION

DO NOT SCALE

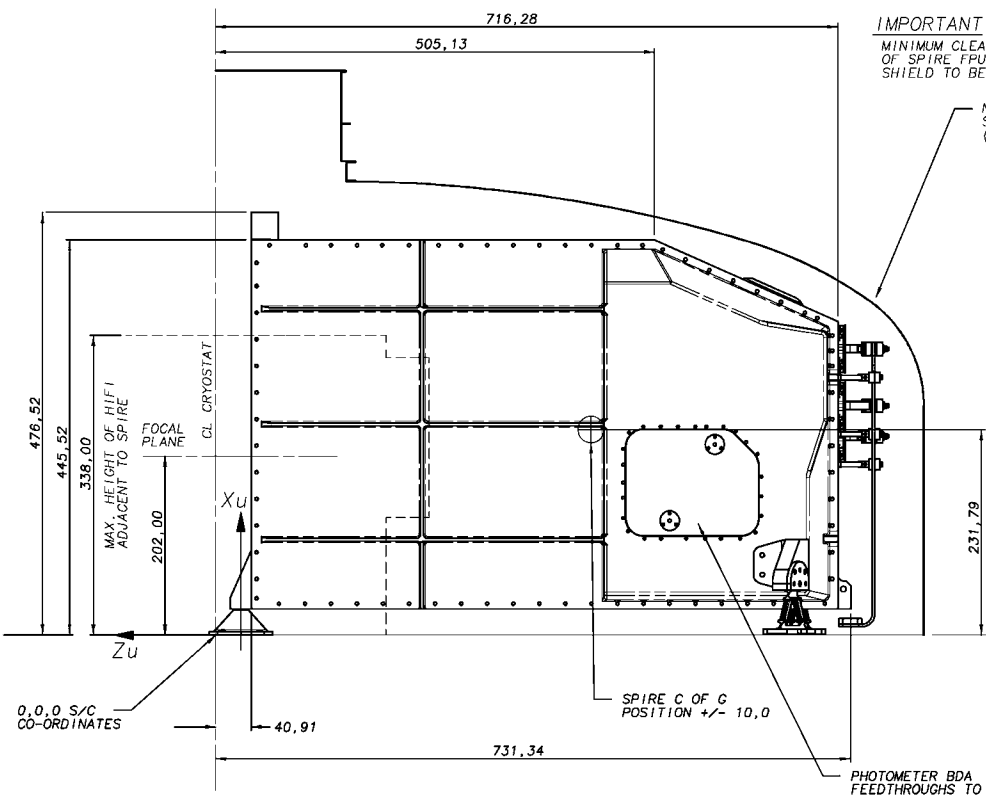
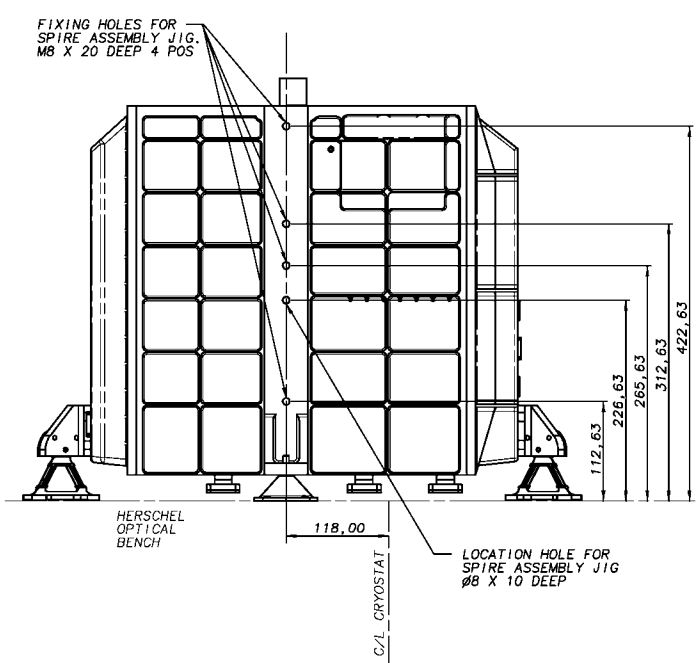
USED ON
HERSCHEL



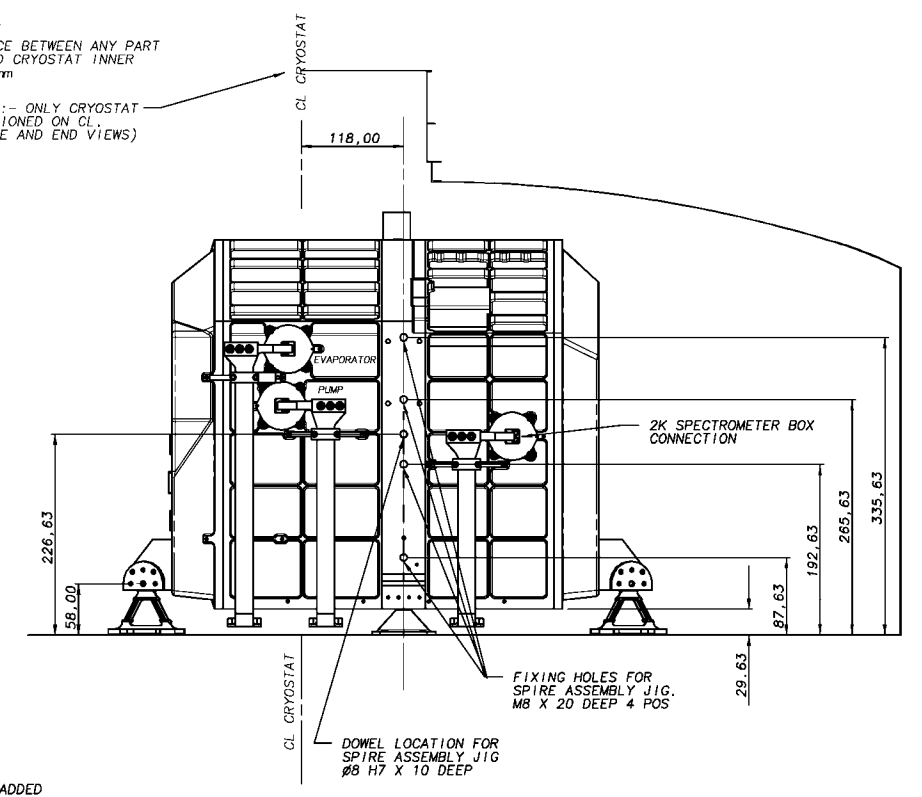
- NOTE:-
 1. ALL DIMENSIONS AT ROOM TEMPERATURE
 2. J-FET BOXES NOT SHOWN ON THIS SHEET



MOMENTS OF INERTIA ABOUT CG:-
 (NOTE:- ALL MASS PROPERTIES EXCLUDE JFETS, HARNESSSES AND PENDING CHANGES TO SMEC AND FPU COOLER)
 Ixx = 2,32881e06 kg mm²
 Iyy = 2,32699e06 kg mm²
 Izz = 1,25748e06 kg mm²



IMPORTANT :-
 MINIMUM CLEARANCE BETWEEN ANY PART OF SPIRE FPU AND CRYOSTAT INNER SHIELD TO BE 10mm
 NOTE:- ONLY CRYOSTAT SECTIONED ON CL. (SIDE AND END VIEWS)



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 RF 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 $\pm 0.15'$
ESTD WT. 40kg(NO. CONT.) SEE NOTE SHT. 1	DIMENSIONS IN mm	SCALE 1:4
ACTL WT.		

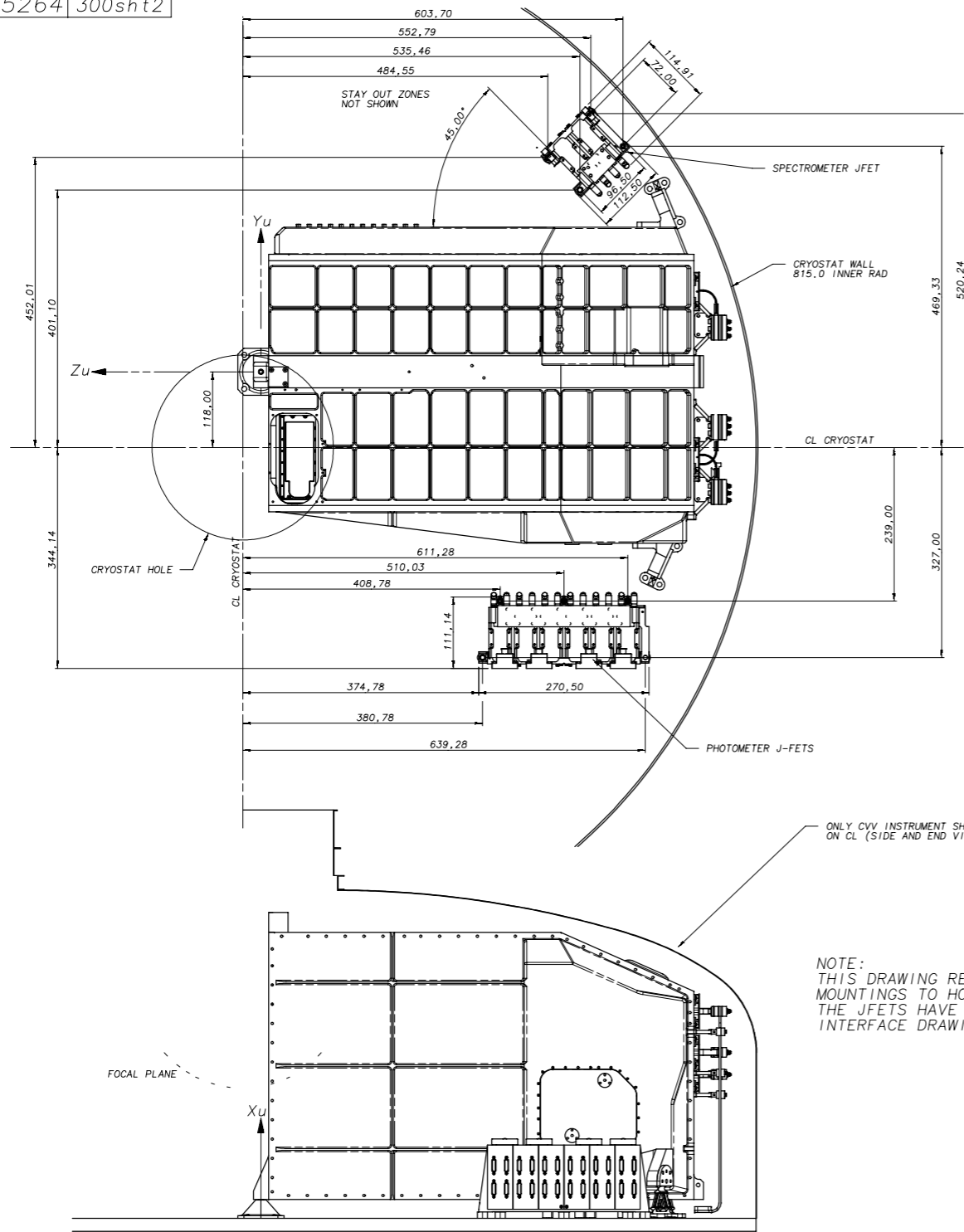
DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.		DRAWING No A1 5264 300sht 1
TITLE SPIRE INTERFACE (GENERAL DIMENSIONS)		SHEET 1 OF 7

USED ON
HERSCHEL

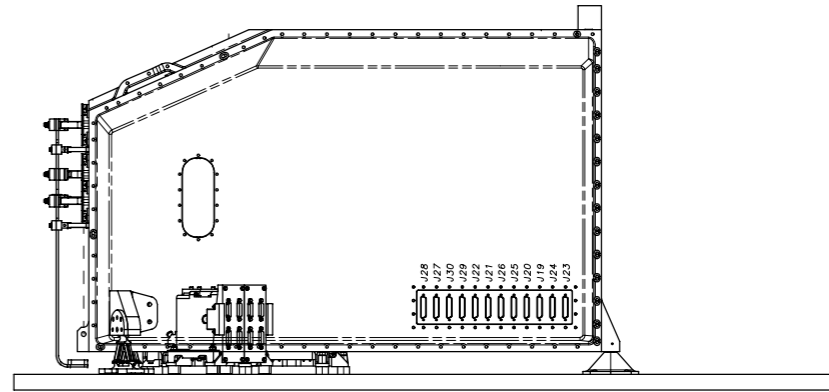
DRAWING No.
A1 5264 300sht2

THIRD ANGLE PROJECTION

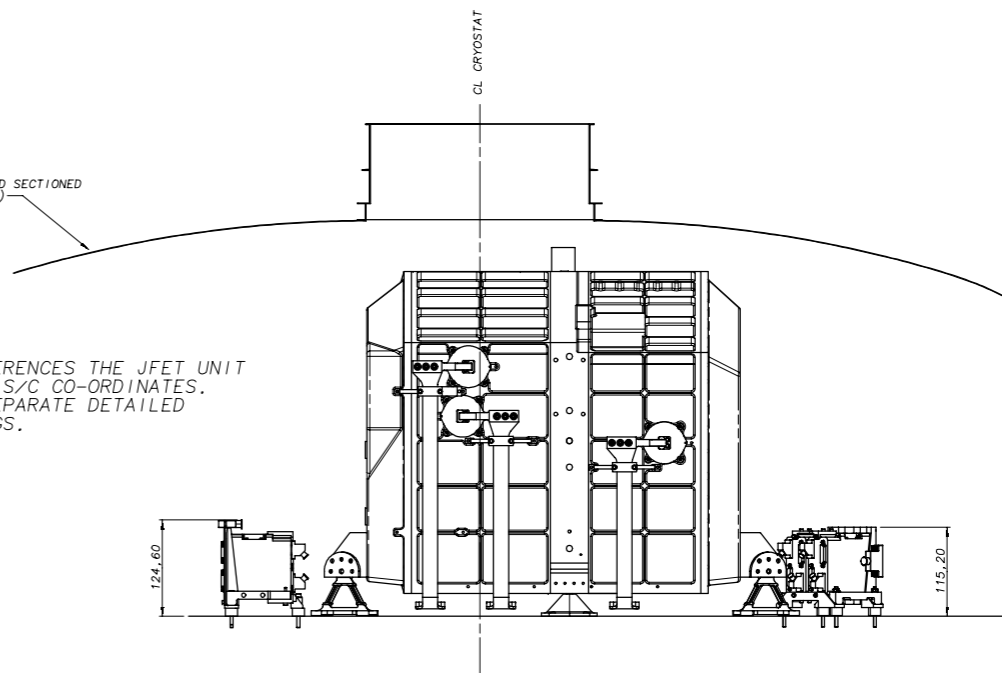
DO NOT SCALE



NOTE:-
1. ALL DIMENSIONS AT ROOM TEMPERATURE



SPECTROMETER SIDE
(VIEWED IN -YU DIRECTION)



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

PHOTOMETER SIDE

CHECKED	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 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	PROTECTIVE FINISH ALOCROM 1200 (ST. STEEL PARTS NATURAL)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
SPiRE Flight Assocs	ESTD WT. 40kg(NO. CONT.) SEE NOTE SHT.1	DIMENSIONS IN mm	SCALE 1:4
COMPUTER FILE	ACTL WT.		

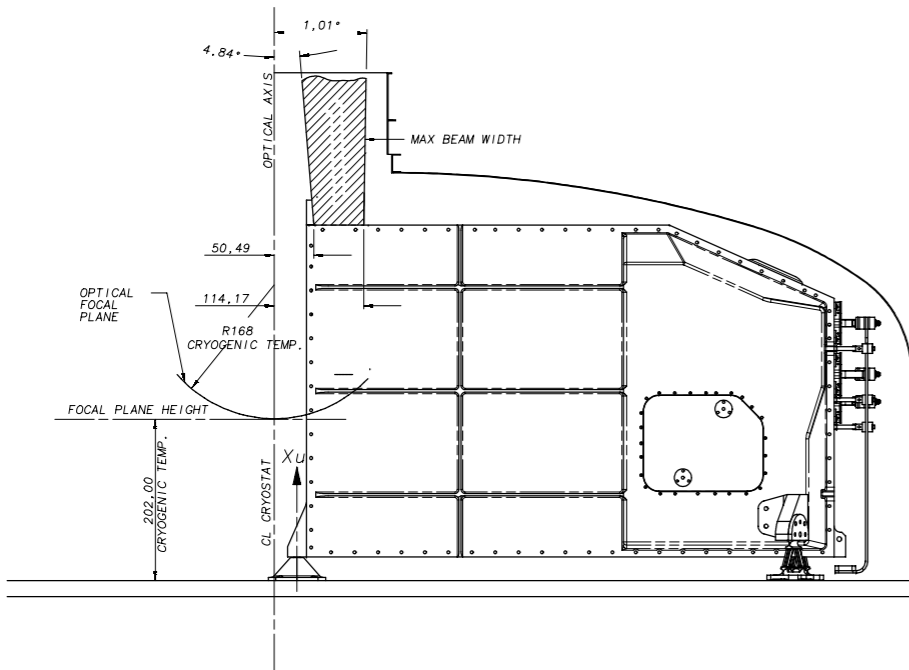
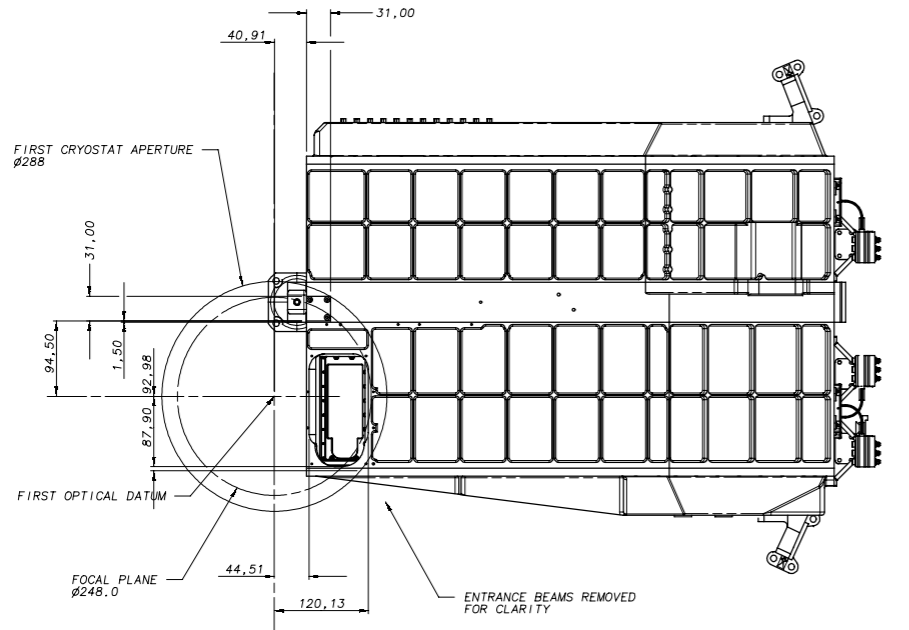
DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.		
TITLE SPiRE INTERFACE (J-FET POSITIONS)	DRAWING No A1 5264 300sht2	SHEET 2 OF 7

USED ON
HERSCHEL

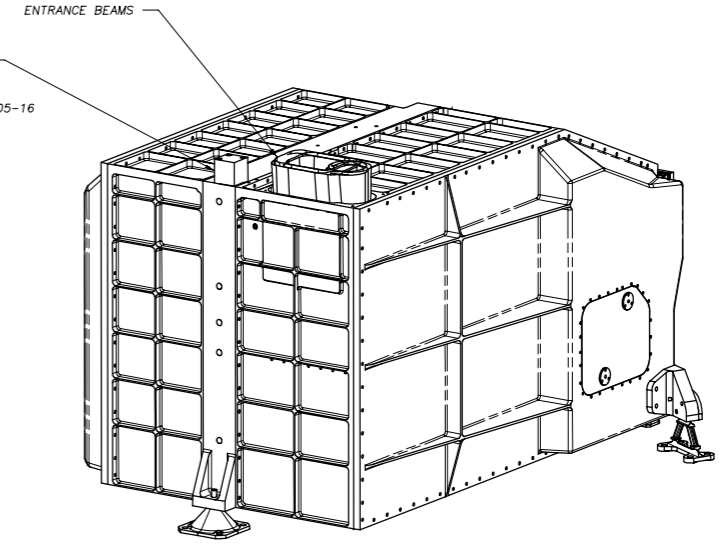
DRAWING No.
A1 5264 300sht3

THIRD ANGLE PROJECTION

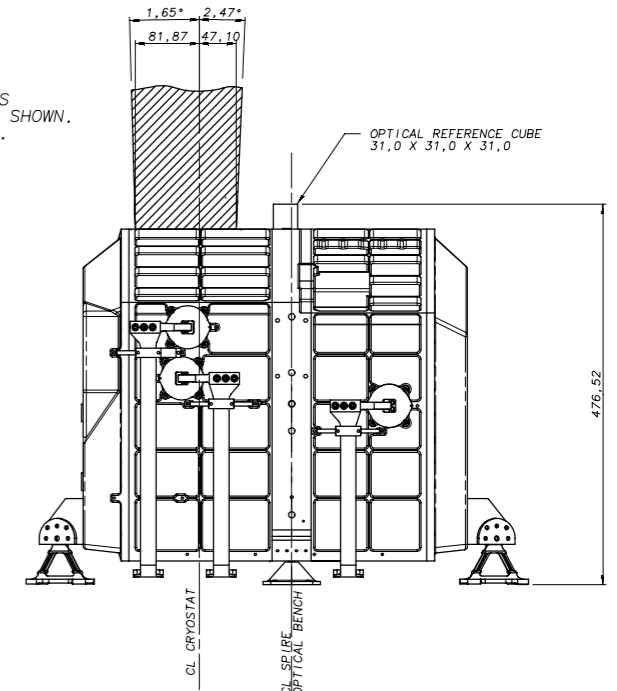
DO NOT SCALE



ANGULAR ACCURACY OF OPTICAL CUBE POSITION
0,05° (3 ARC MIN).
ANGULAR ACCURACY TO X_u, Y_u, Z_u CO-ORDINATES
0,05° +/- OPTICAL CUBE ANGULAR TOL. (TBD.)
REFER TO OPTICAL CUBE DRAWING No. A3/5264/305-16



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

CHECKED	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 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)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 40kg(NO CONT.) SEE NOTE SHT.1		
ACTL WT.	DIMENSIONS IN mm	SCALE 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 (OPTICAL DETAILS)	A1 5264 300sht3

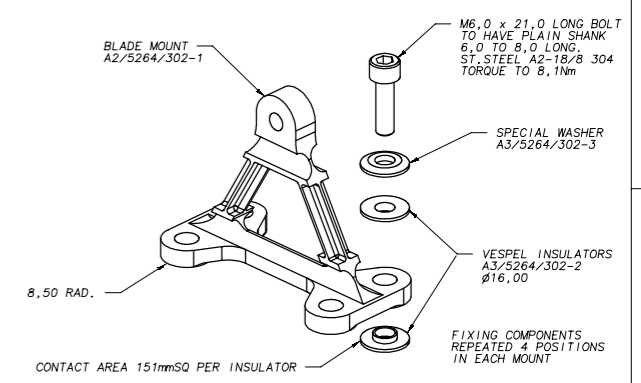
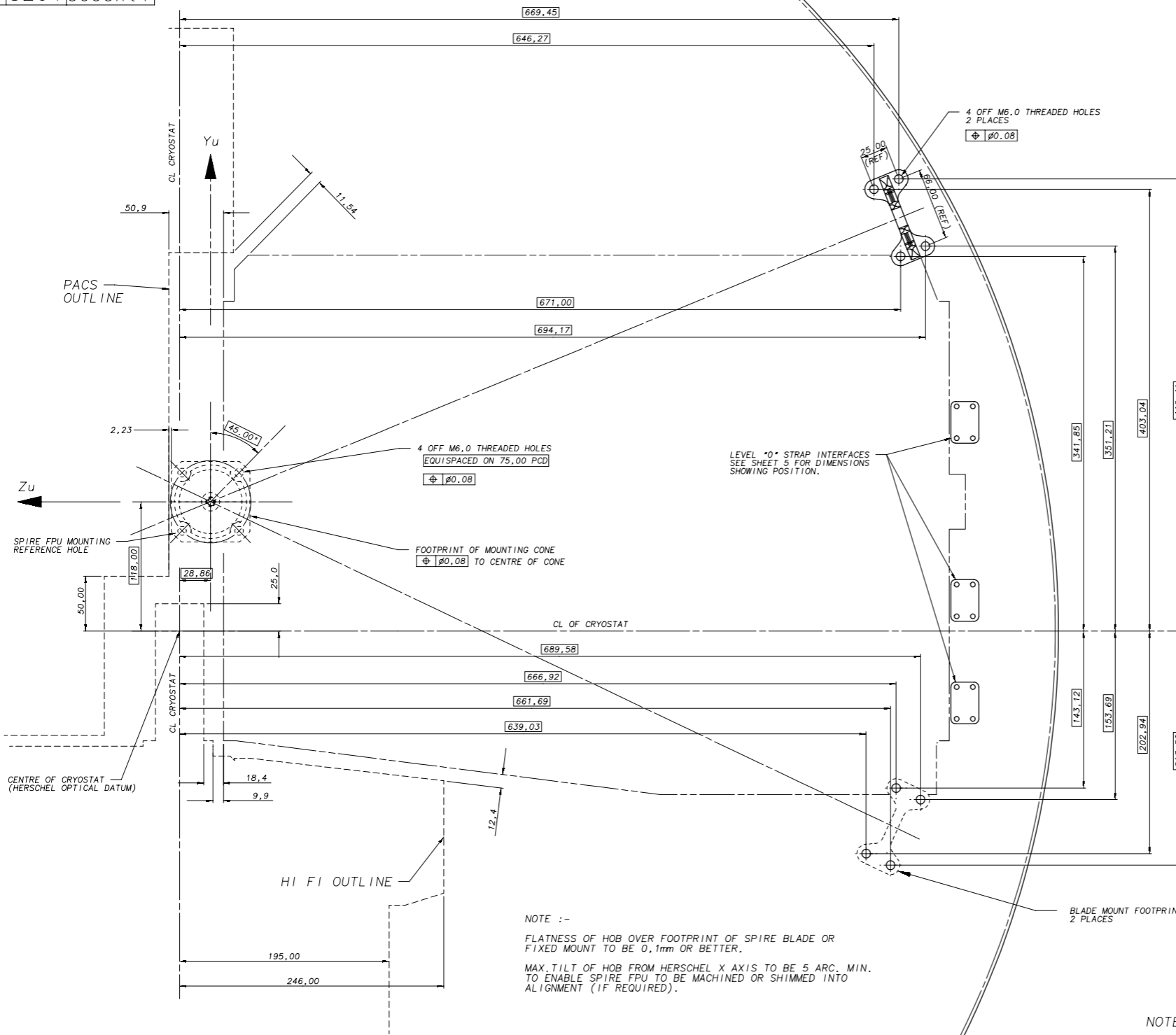
DRAWING No.

A1 5264 300sht4

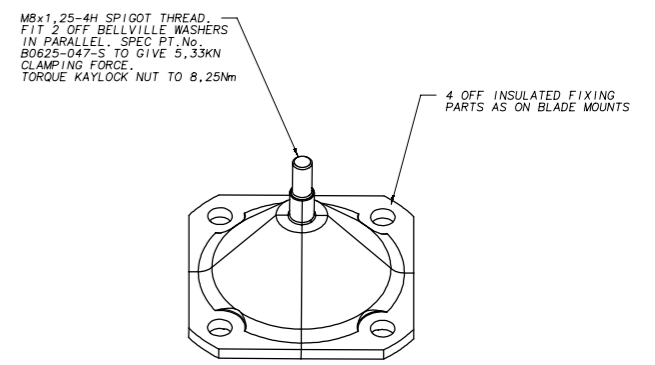
THIRD ANGLE PROJECTION

DO NOT SCALE

USED ON
HERSCHEL



DETAIL OF BLADE MOUNT FIXINGS
SCALE 1 : 1



DETAIL OF FIXED MOUNTING
SCALE 1 : 1

LEVEL *0* STRAP INTERFACES
SEE SHEET 5 FOR DIMENSIONS
SHOWING POSITION.

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

CHECKED	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	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. 40kg(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 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) A1 5264 300sht4

DRAWING No

USED ON
HERSCHEL

DRAWING No.
A1 5264 300sht5

THIRD ANGLE PROJECTION

DO NOT SCALE

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

6.00
9.50
3.00

15.00

LEVEL "0" STRAP
COPPER

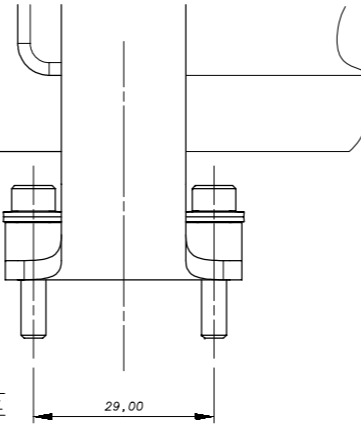
ST. STEEL
CLAMP PLATE

4 OFF M4 x 20.0 LONG
SKT. HD. CAP. SCREWS
ST. STEEL A2-18/8 304
TORQUE TO 1.26Nm

HERSCHEL OPTICAL BENCH

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

SCALE 2:1



HSFPU EXTERNAL FINISHES:-

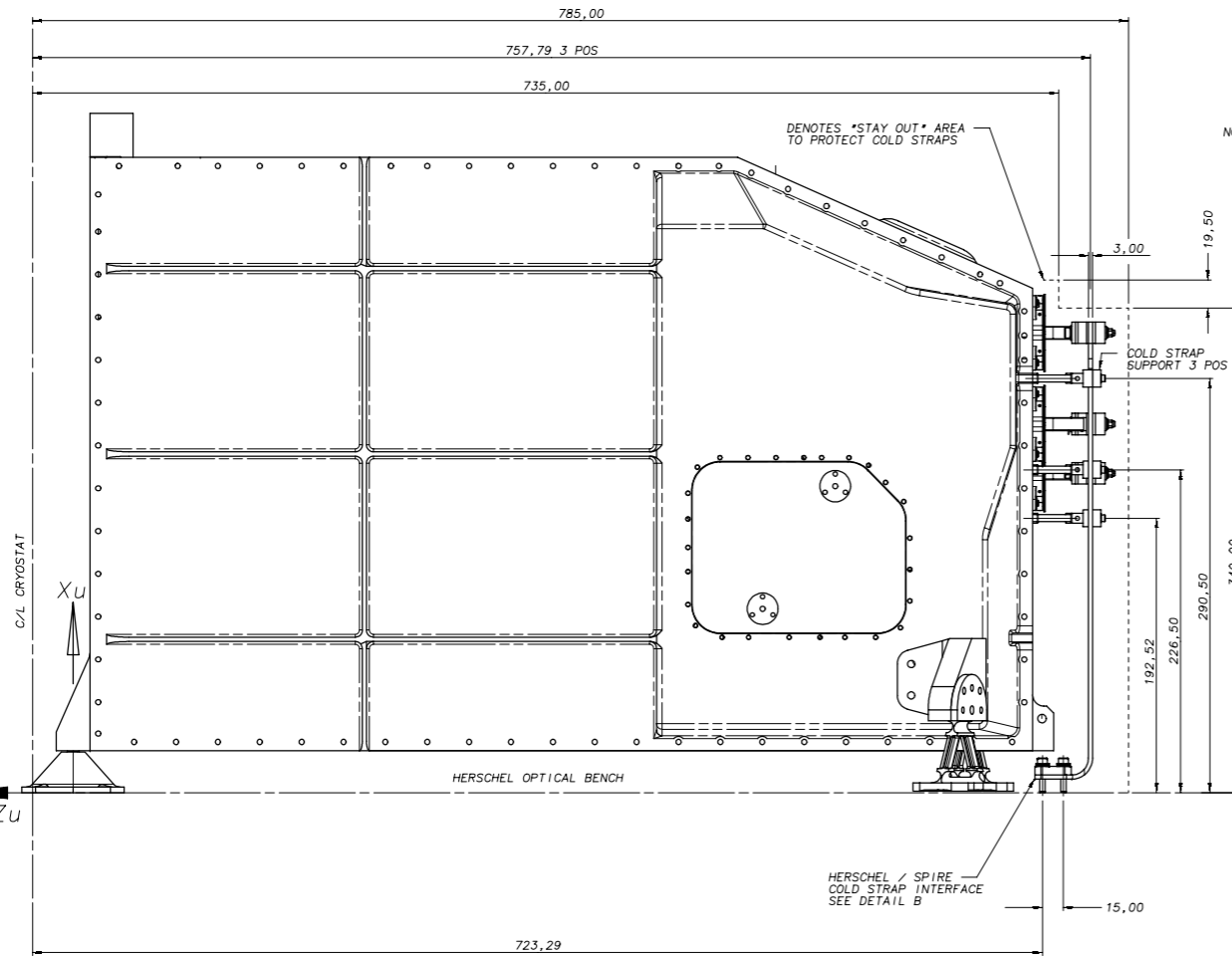
INSTRUMENT CASE AND EXTERNAL COVERS.
BLADE AND FIXED MOUNTING, EXTERNAL
FIXINGS.
COLD STRAPS.

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.



NOTE :-

1. POSITIONAL TOLERANCE BETWEEN CENTRES OF
HOLES IN AN INDIVIDUAL PART OF SPIRE
IS 0.1
2. POSITIONAL TOLERANCE ON DIMENSIONS FROM
CRYOSTAT CENTRE AND FIRST OPTICAL BENCH
TO STRAP FIXING HOLES #1 IS 0.10 DUE TO
TOLERANCE BUILD UPS ON CASE AND COOLER
CORE PARTS. SPACE CRAFT STRAPS SHOULD BE
ABLE TO ACCOMMODATE THIS

CHECKED	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	ISSUE	DATE	AMENDMENT
AJC	1	24/11/01	

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

NOTE:-

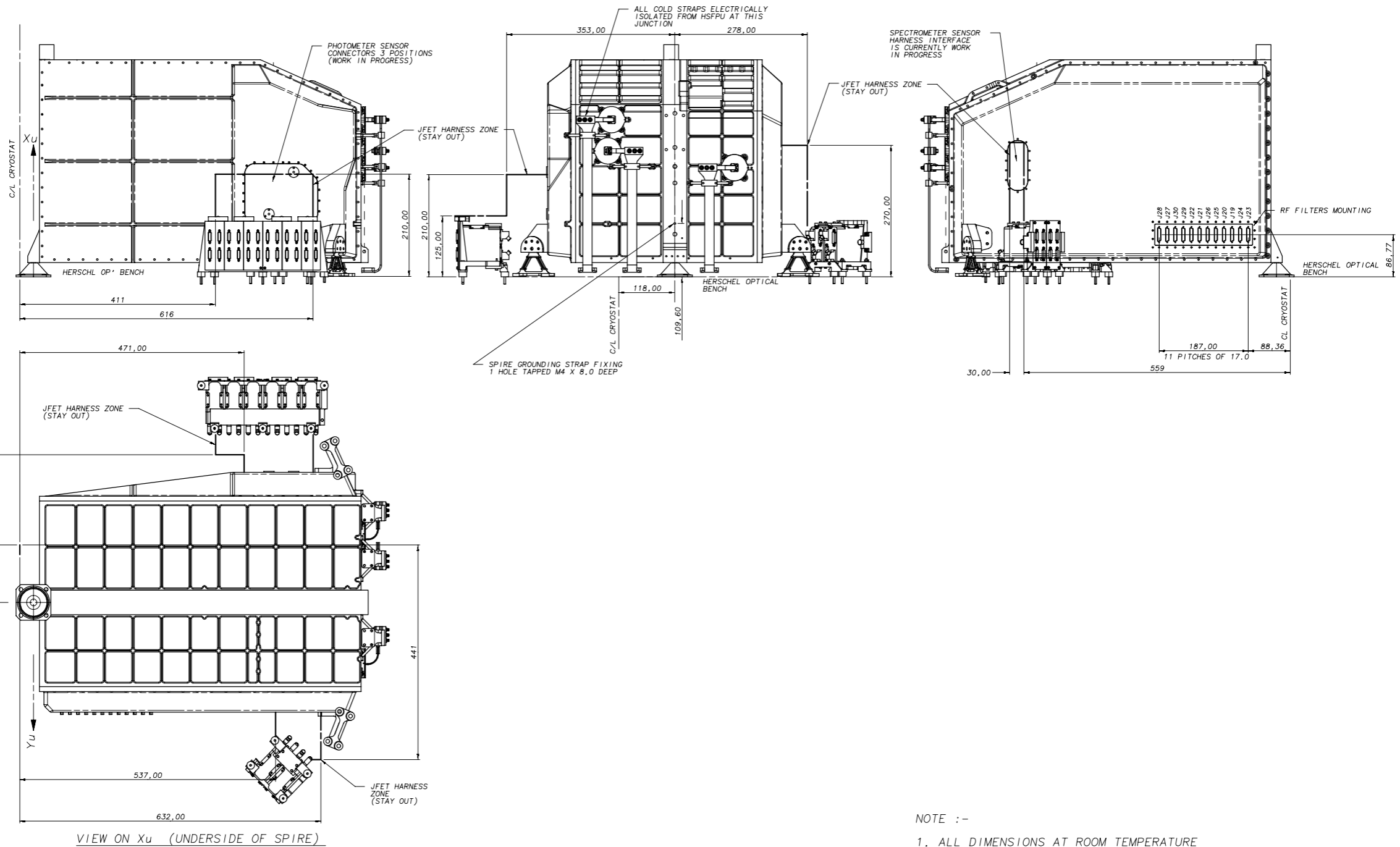
ALL DIMENSIONS AT ROOM TEMPERATURE

PROTECTIVE FINISH ALOCROM 1200 (ST. STEEL PARTS NATURAL)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 40kg(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
---	--------------------------------

USED ON
HERSCHEL



NOTE :-

1. ALL DIMENSIONS AT ROOM TEMPERATURE

CHECKED	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	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	MATERIAL & SPEC.	TOLERANCES UNLESS OTHERWISE STATED -
ALOCROM 1200 (ST. STEEL PARTS NATURAL)	AS LISTED	LINEAR +/- 1.0 ANGULAR +/- 0*15'
ESTD WT. 40kg(NO. CONT.) SEE NOTE SHT. 1		
ACTL WT.	DIMENSIONS IN mm	SCALE 1:4

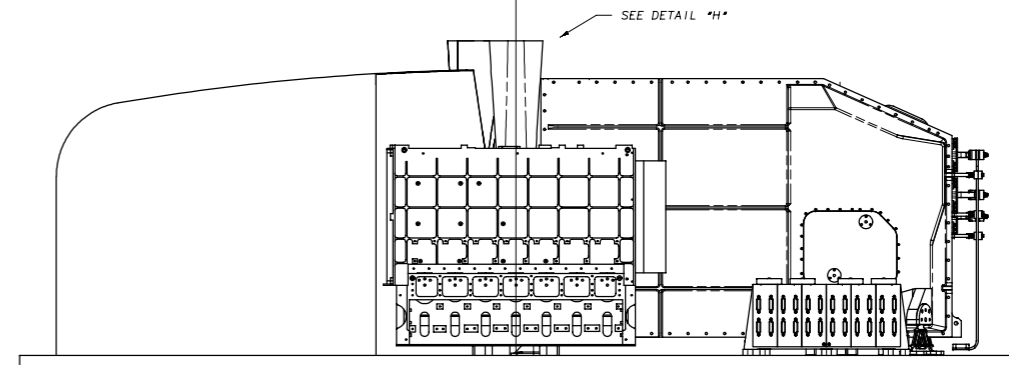
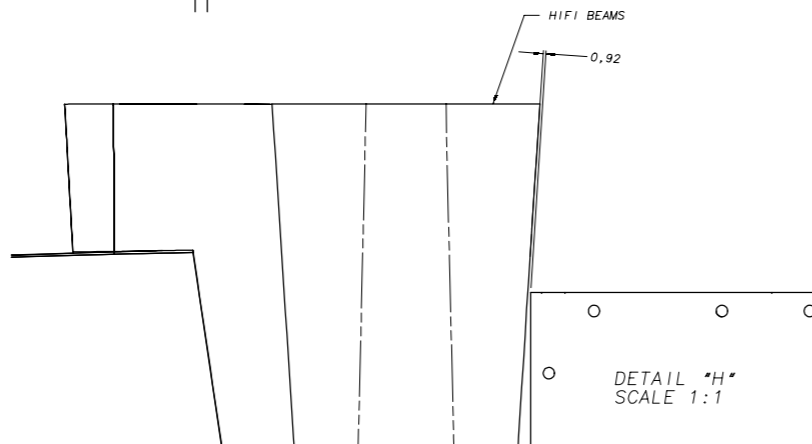
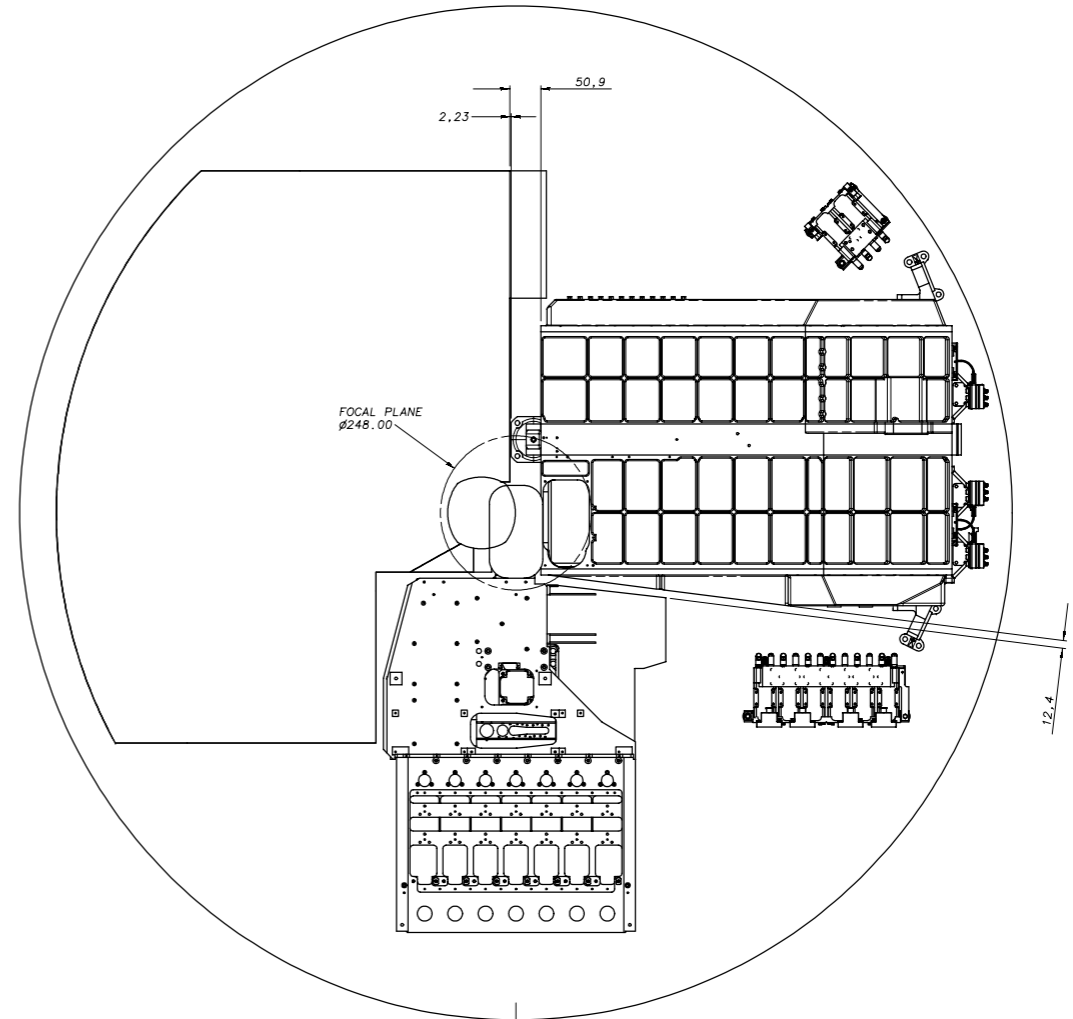
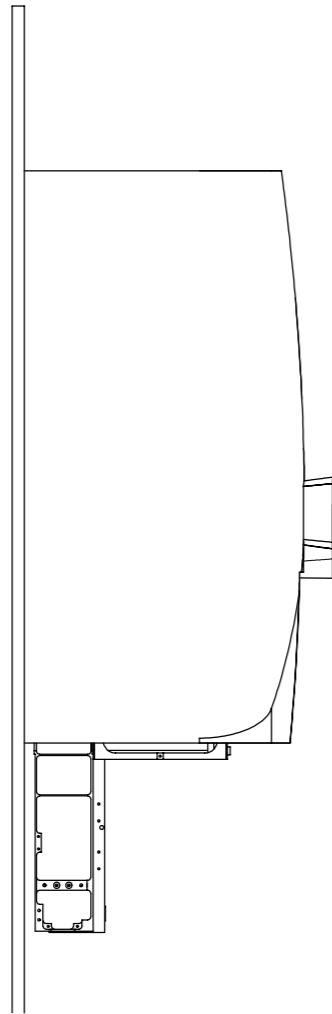
DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.	
TITLE	DRAWING No
SPIRE INTERFACE (ELECTRICAL)	A1 5264 300 sht 6

DRAWING No.
A1 5264 300sht7

THIRD ANGLE PROJECTION

DO NOT SCALE

USED ON
HERSCHEL



CHECKED	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 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

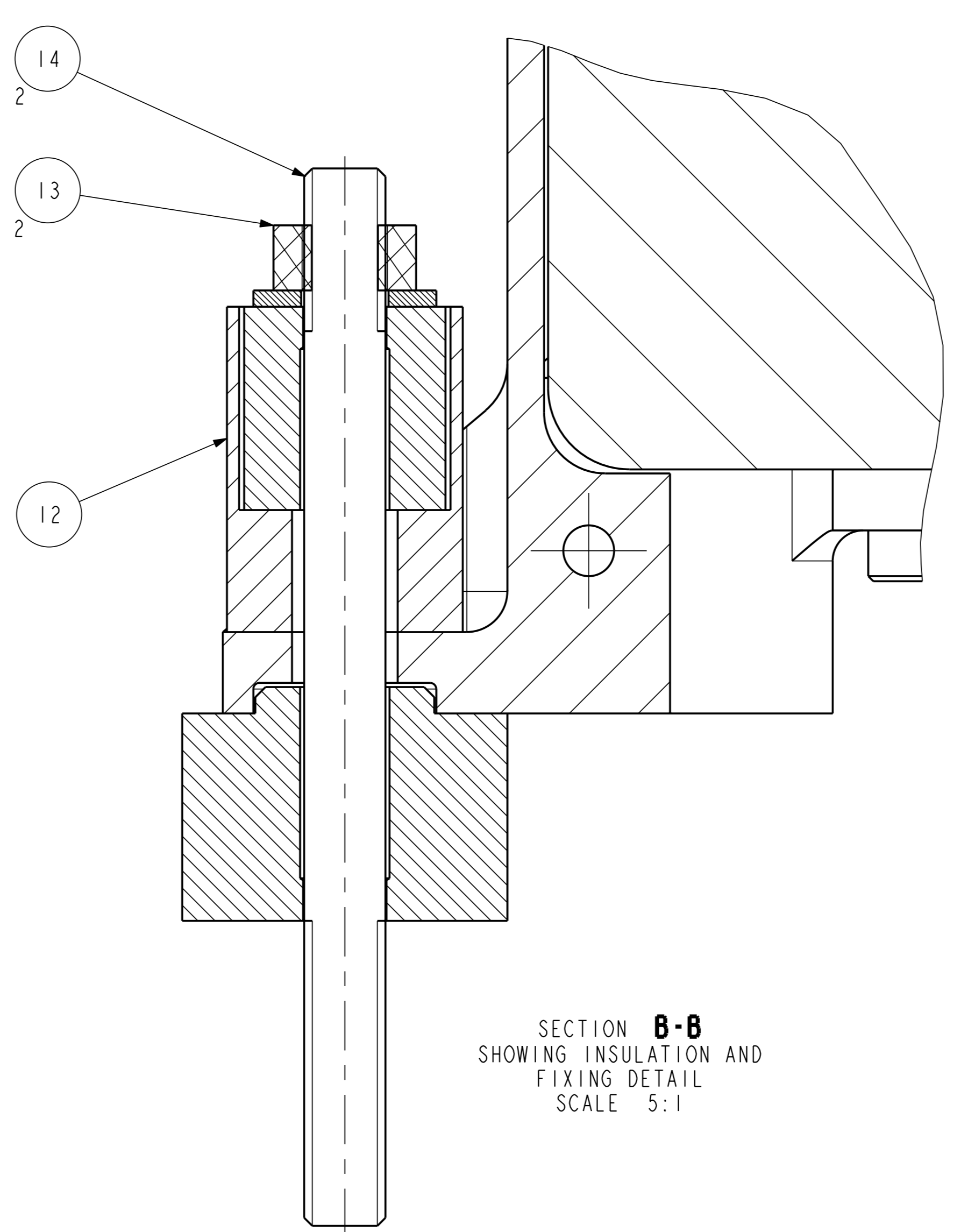
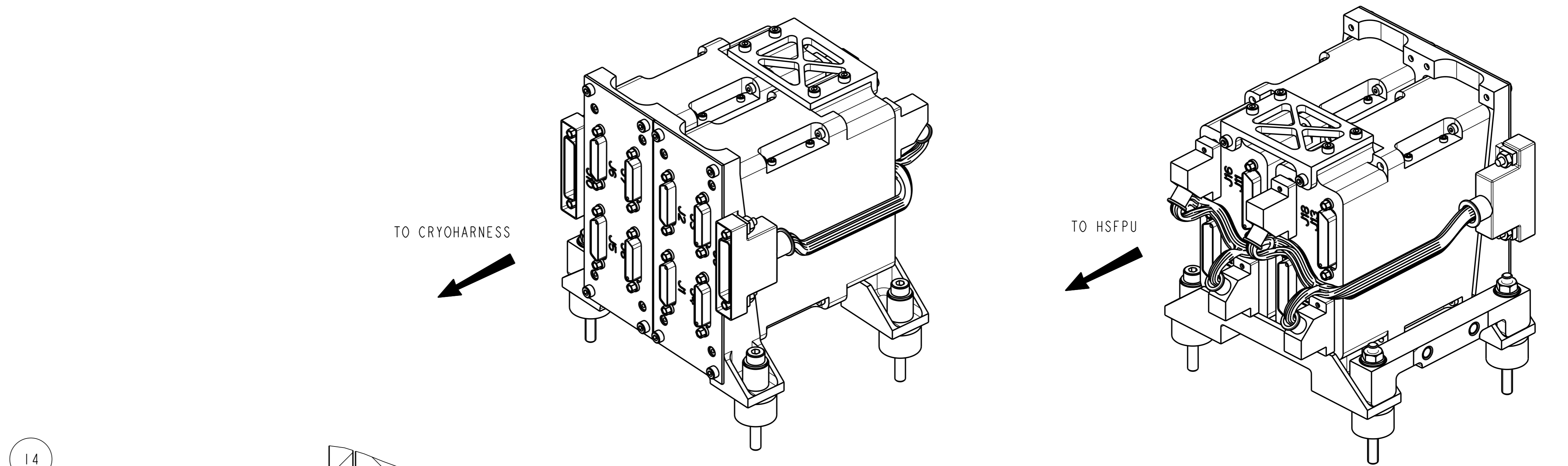
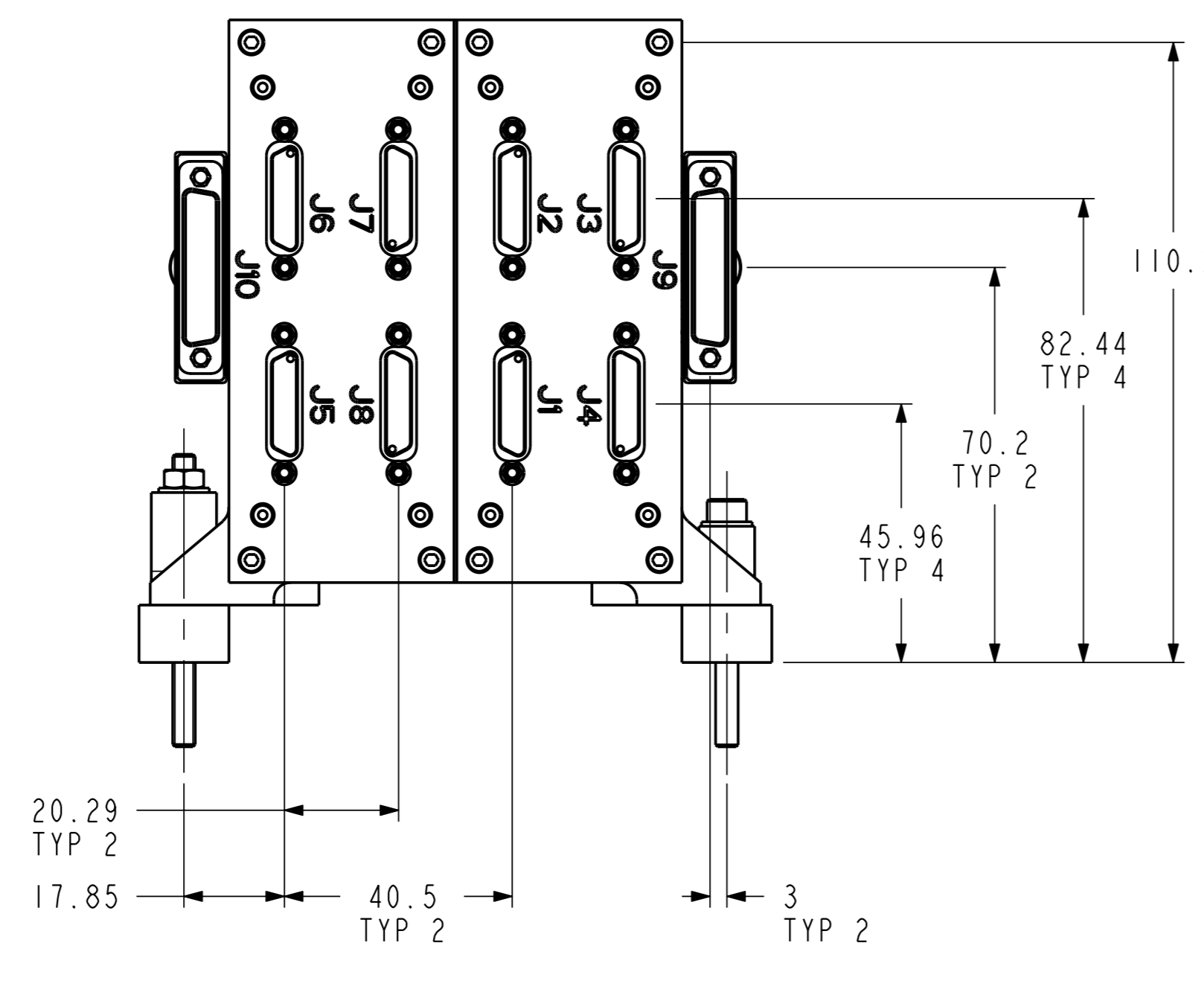
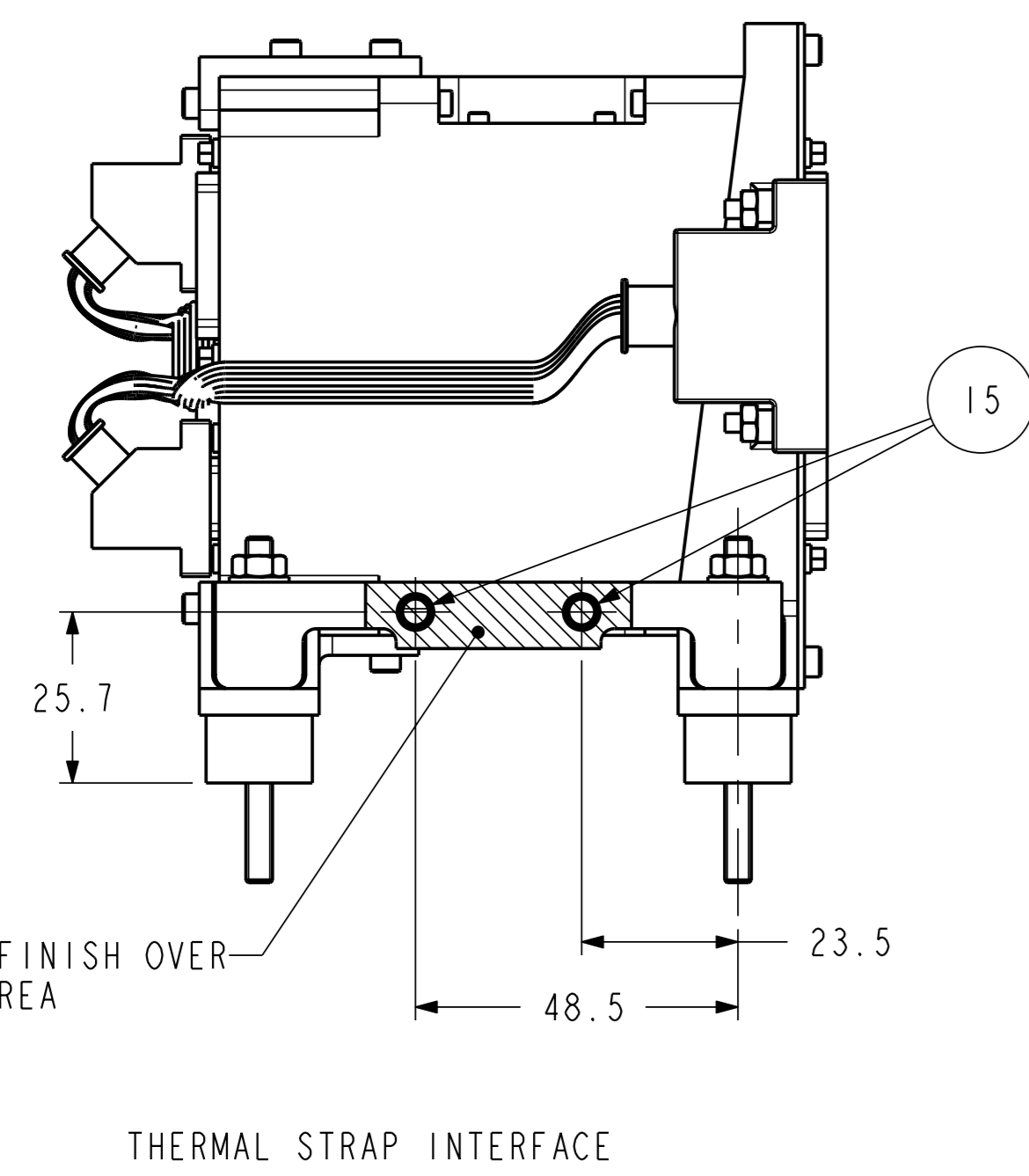
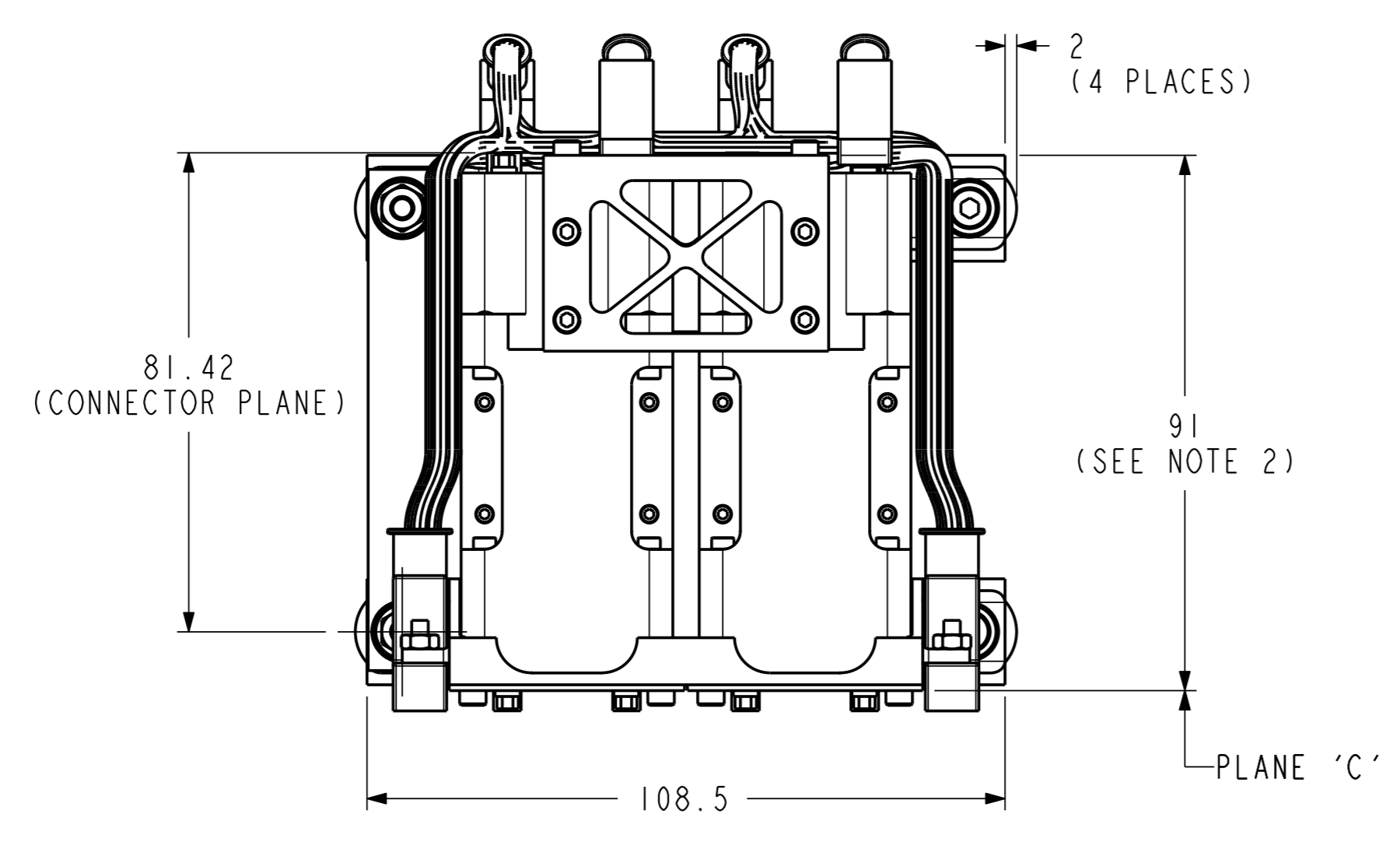
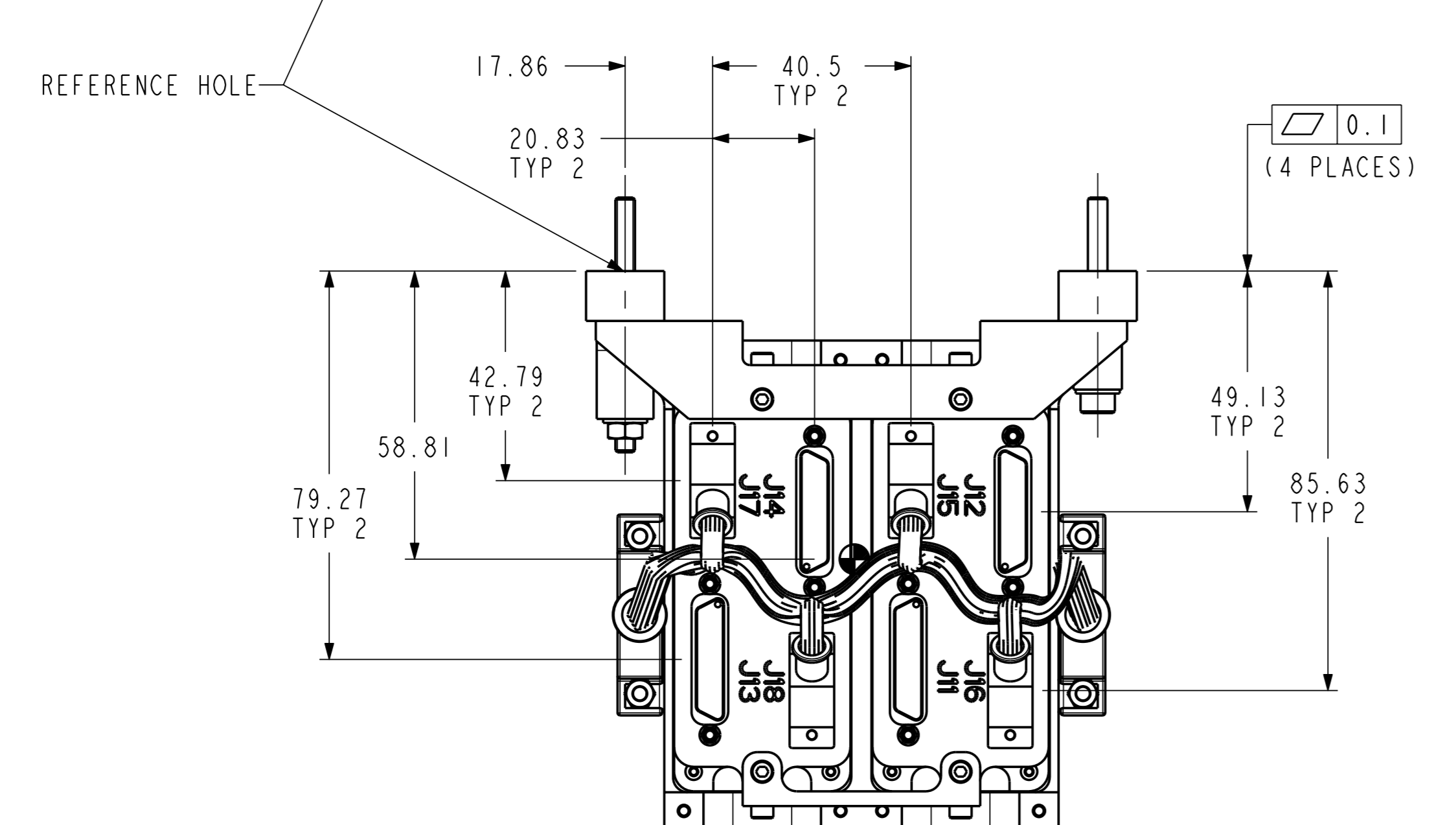
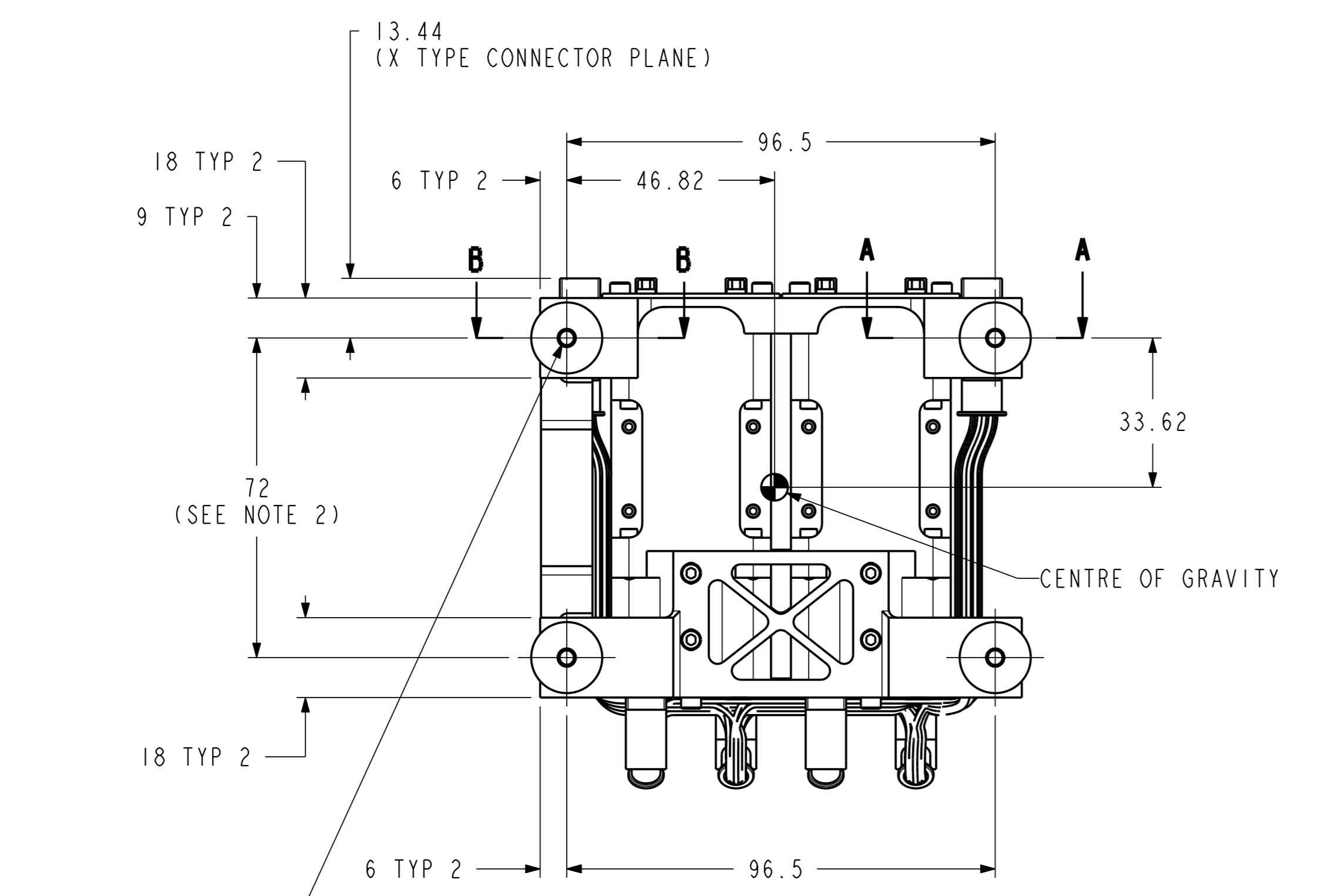
SPIRE Flight
Assemblies
COMPUTER FILE

PROTECTIVE FINISH ALOCROM 1200 (ST. STEEL PARTS NATURAL)	MATERIAL & SPEC. AS LISTED	TOLERANCES UNLESS OTHERWISE STATED - LINEAR +/- 1.0 ANGULAR +/- 0°15'
ESTD WT. 40kg(NO. CONT.) SEE NOTE SHT.1	DIMENSIONS IN mm	SCALE
ACTL WT.		

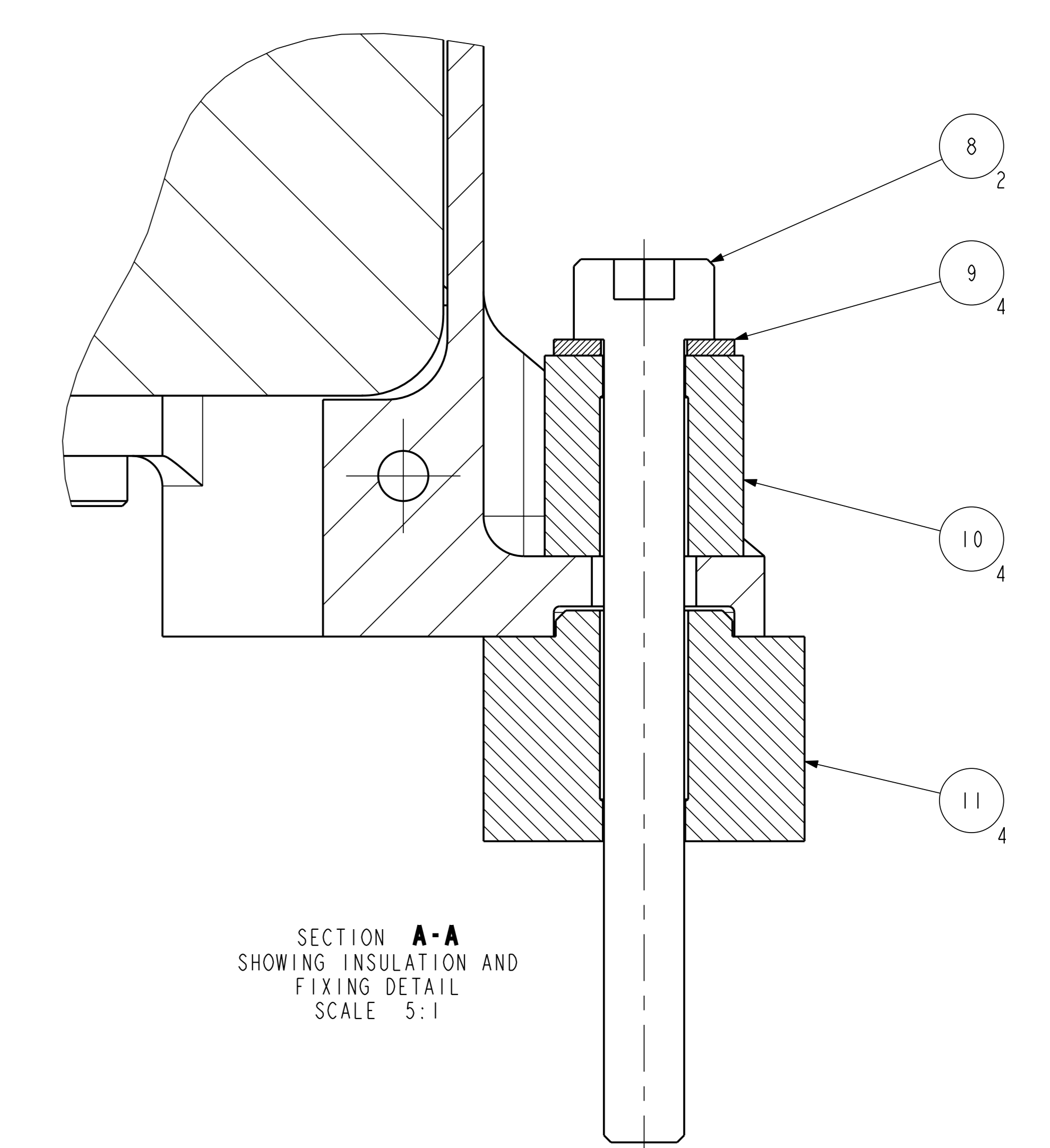
DEPARTMENT OF SPACE AND CLIMATE PHYSICS UNIVERSITY COLLEGE LONDON MULLARD SPACE SCIENCE LABORATORY, HOLMBURY ST. MARY, DORKING, SURREY.		
TITLE SPIRE INTERFACE PACS AND HIFI OPTICAL & CLEARANCES	DRAWING No A1 5264 300sht7	

MOMENTS OF INERTIA (kg.mm²) WITH RESPECT TO C OF G

I _{xx}	1.34e+03
I _{yy}	2.99e+03
I _{zz}	2.95e+03



SECTION B-B SHOWING INSULATION AND FIXING DETAIL SCALE 5:1



SECTION A-A SHOWING INSULATION AND FIXING DETAIL SCALE 5:1

CONNECTOR TABLE

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

PART No.	DESCRIPTION	QTY	MASS (g) / ITEM	MASS (g) TOTAL	REMARKS
1	FRONT PLATE	1	36.0	36.00	
2	REAR FOOT BEAM	1	6.6	6.60	
3	UPPER TOP BEAM	1	23.0	23.00	
4	JFET MODULE	2	305	610.00	JPL SUPPLY
5	37 WAY MICRO-D	2	17.0	34.00	
6	15 WAY MICRO-D	4	8.3	33.20	CONNECTOR AND BACKSHELL
7	CP. HD SCREW	20	0.6	12.00	M2.5 x 8 LONG S/STEEL BS6105 A2-70
8	CP. HD SCREW	4	5.0	20.00	M4 x 40 LONG S/STEEL BS3306-1:1998 A2-80
9	WASHER	4	0.3	1.20	M4 WASHER STAINLESS STEEL
10	TOP INSULATOR	4	0.04	0.16	CFRP
11	BOTTOM INSULATOR	4	0.09	0.36	CFRP
12	THERMAL STRAP	1	23.0	23.00	
13	NUT	2	0.85	1.70	M4 NUT S/STEEL BS3306-1:1998 A2-80
14	M4 STUD	2	5.1	10.20	
15	THREADED INSERTS	2	1.0	2.00	M4 THREADED INSERT PHOSPHOR BRONZE
GRAND TOTAL				813.42	

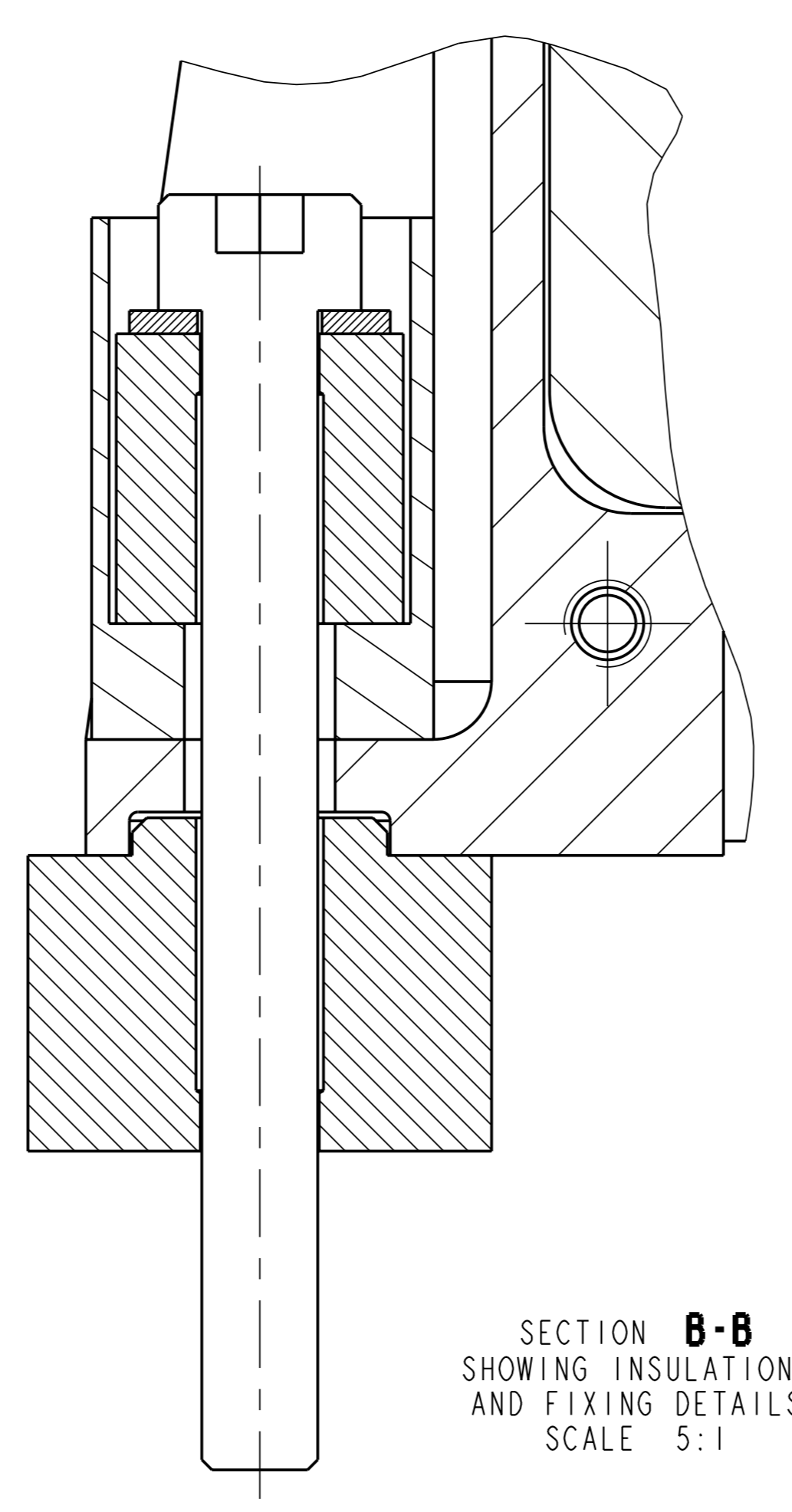
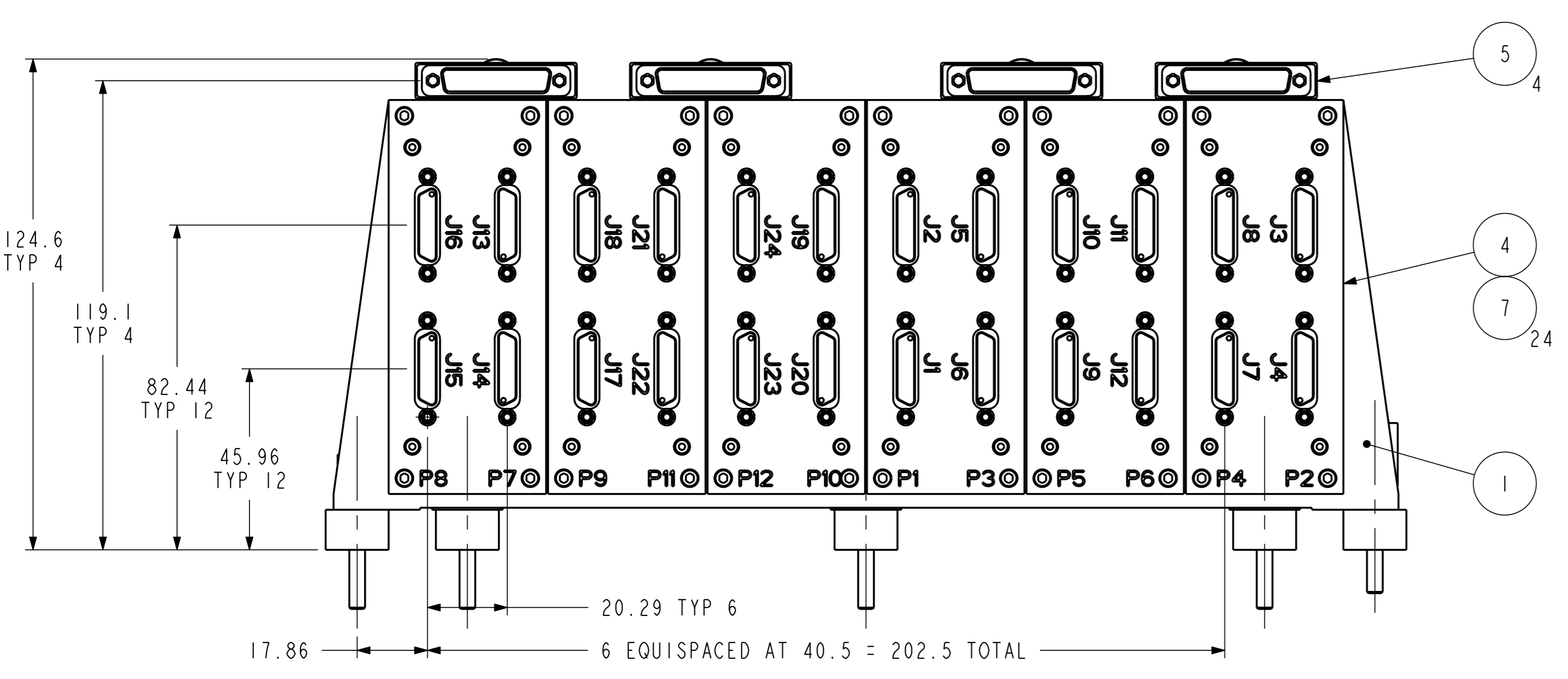
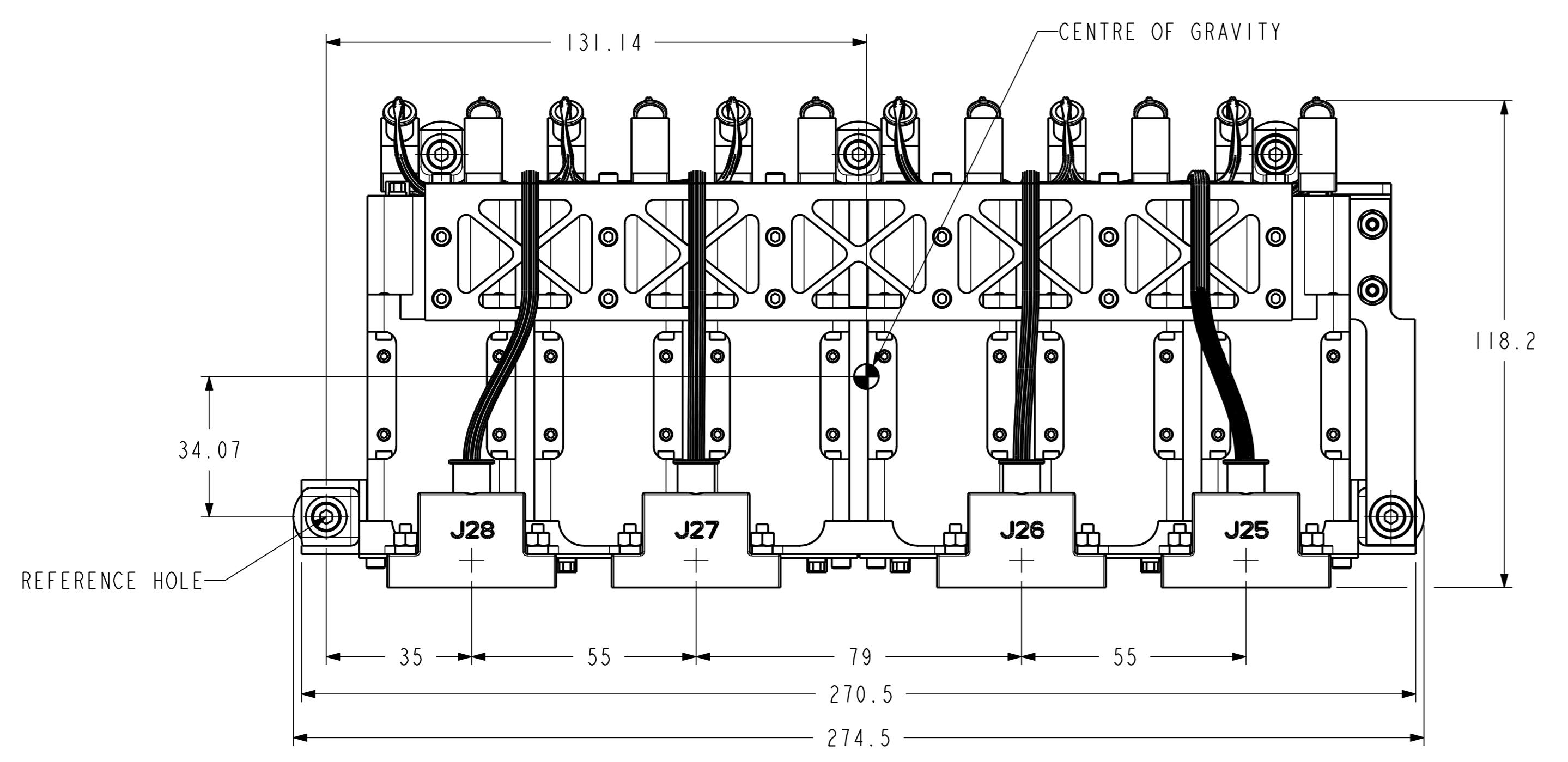
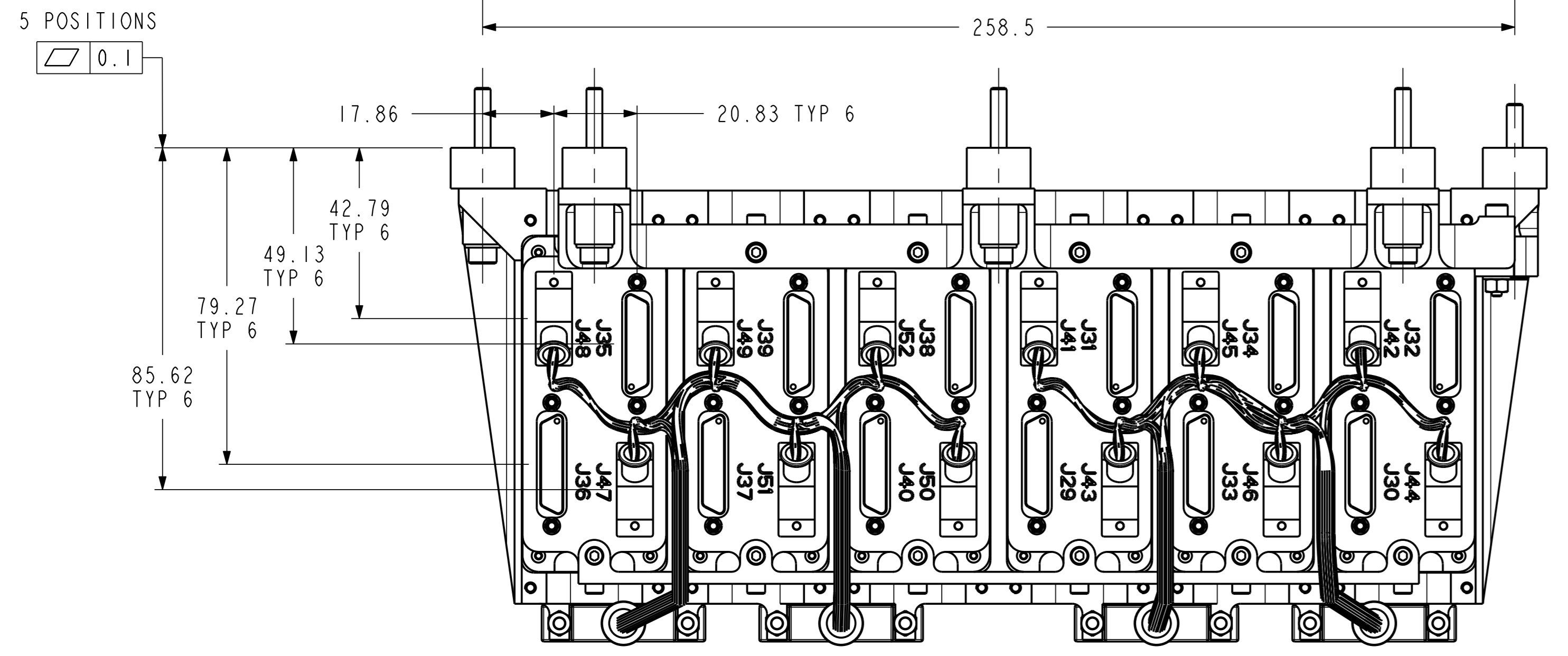
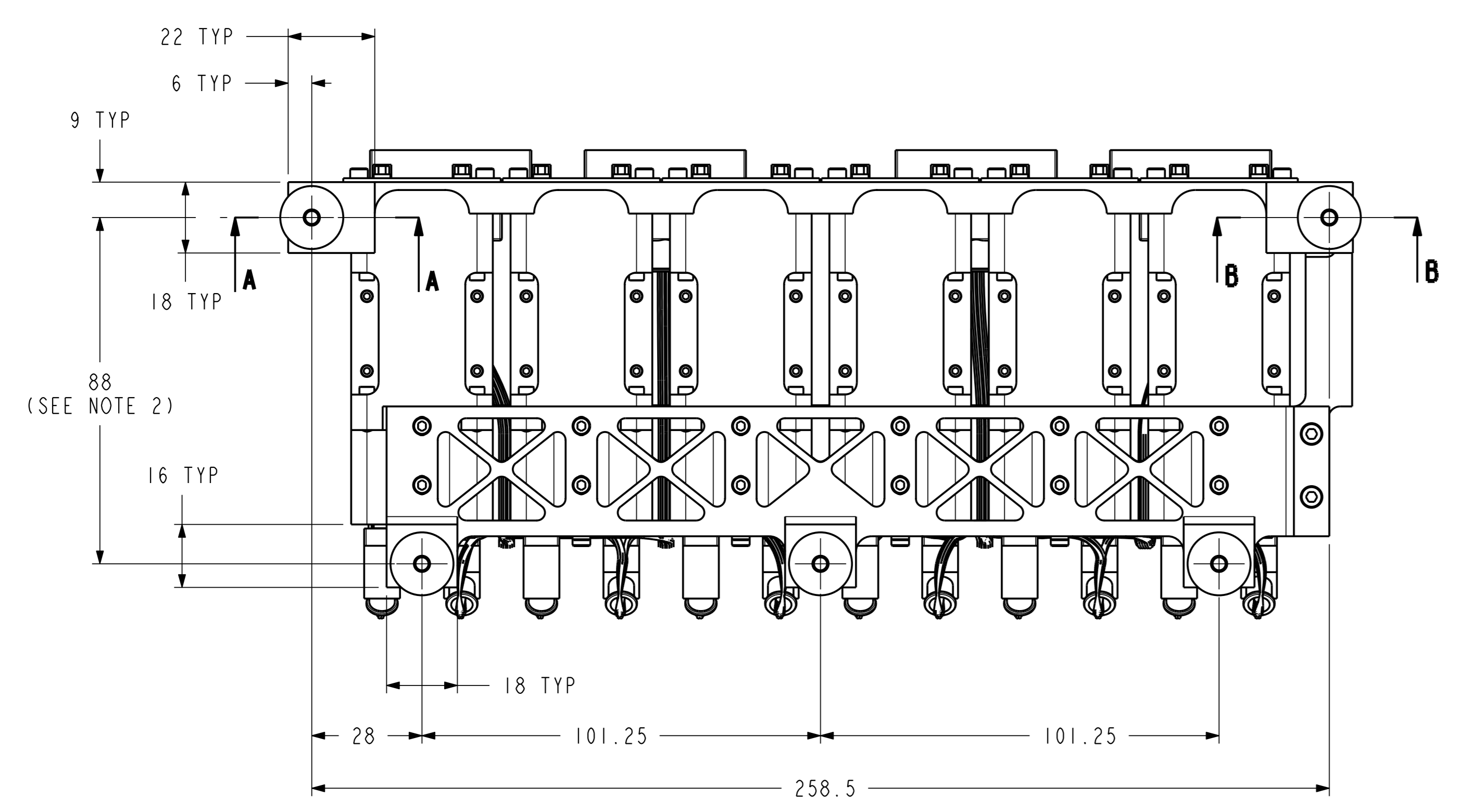
NOTE

- ITEMS 10 & 11 TO BE PERMANENTLY BONDED TO MATING FACES.
- TO ATTAIN THE CORRECT MOUNTING INTERFACE DIMENSION, THE FOLLOWING PROCEDURE MUST BE FOLLOWED: PARTS 4 ARE TO BE MOUNTED TO PART 1. MEASURE FROM THE TOP OF PARTS 4 SHOWN AS PLANE 'C' TO THE TAIL END FACE OF PARTS 4, NOTING THE TWO VALUES. MACHINE RAISED PADS ON PART 2 TO REMOVE (VALUE - 87.7).
- ITEM 14 BONDED/LOCKED INTO HOB. ITEMS 13 & 8 TO BE TORQUED TO 1Nm FOR BEDDING DOWN. LOOSENED AND RETORQUED TO 25cNm FOR WARM VIBRATION TESTING INCREASE TORQUE TO 2.5Nm FOR DURATION OF TESTS AND THEN LOOSEN AND RETORQUE TO 25cNm BEFORE ANY COOLDOWN.
- UNIT SHOWN FITTED WITH BACK-HARNESS MATING TO J9-10 & J15-18 BECAUSE THIS WILL BE FITTED BEFORE ITEM IS INTEGRATED TO HOB. HOWEVER, THIS HARNESS AND ITS CONNECTORS ARE NOT PART OF THE 2 JFET RACK.

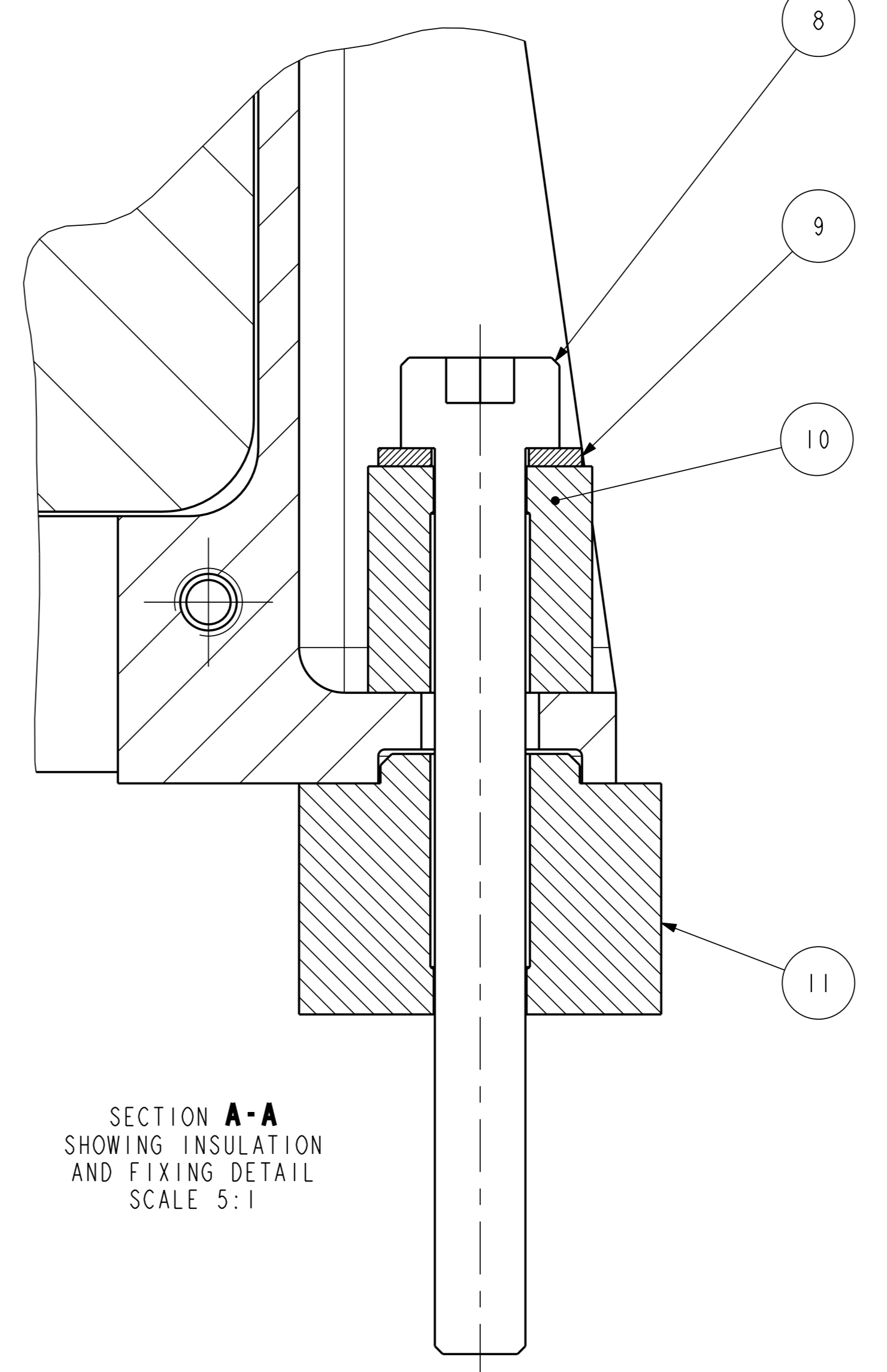
SPIRE MASTER DRAWING

PROJECT MANAGER	APPROVED
SYSTEM ENG	
ELECTRONICS ENG	
PA GROUP	
STRESS ENG	
OPTICAL ENG	
THERMAL ENG	
MECHANICAL ENG	

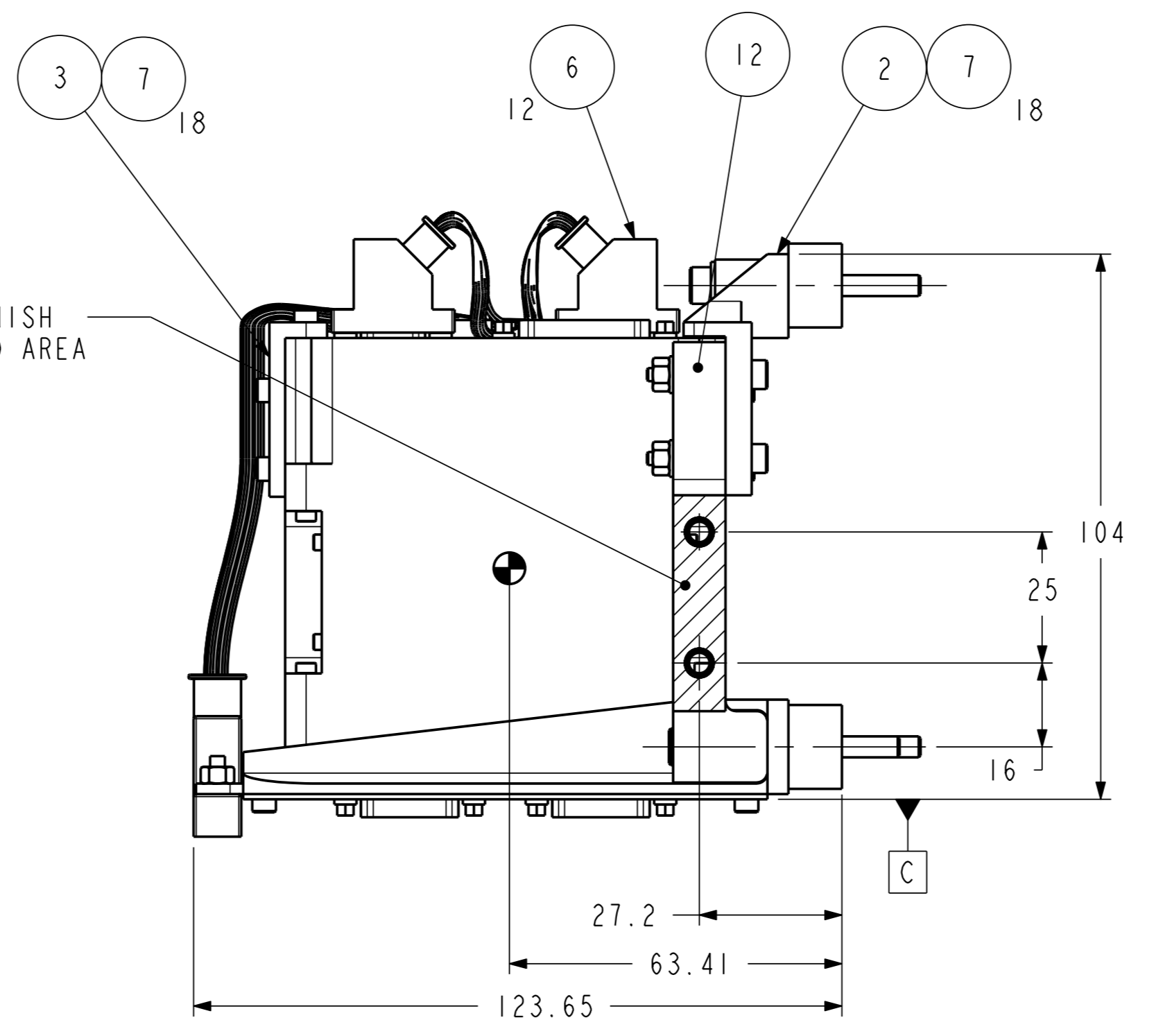
E	4-07-02	KE-2952	T.R.F			ISSUE
ISSUE	DATE	MOD. No.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED			FINISH CLEAN REMOVE ALL BURRS		ORIGINAL SCALE 1:1 DO NOT SCALE	
±0.2 mm ±0.3			SURFACE TEXTURE µm SEE DETAILS		0 50mm	
MATERIAL & SPEC. SEE DETAILS			SURFACE TEXTURE µm SEE DETAILS		UNLESS STATED	
USED ON						©CLRC 2001
CENTRAL LABORATORY OF THE RESEARCH COUNCILS						
TITLE						2 JFET RACK INTERFACE DRAWING
SPIRE						
A 0-KE-0104-360-E						1 of 1



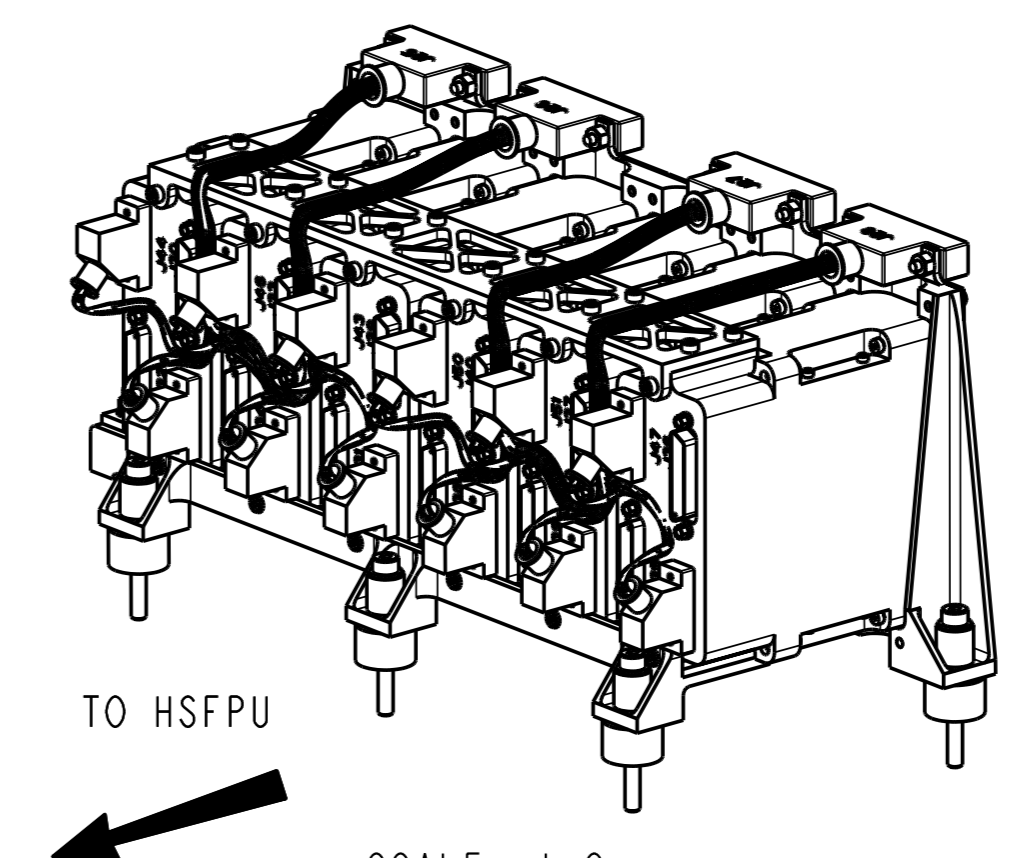
SECTION B-B
SHOWING INSULATION
AND FIXING DETAILS
SCALE 5:1



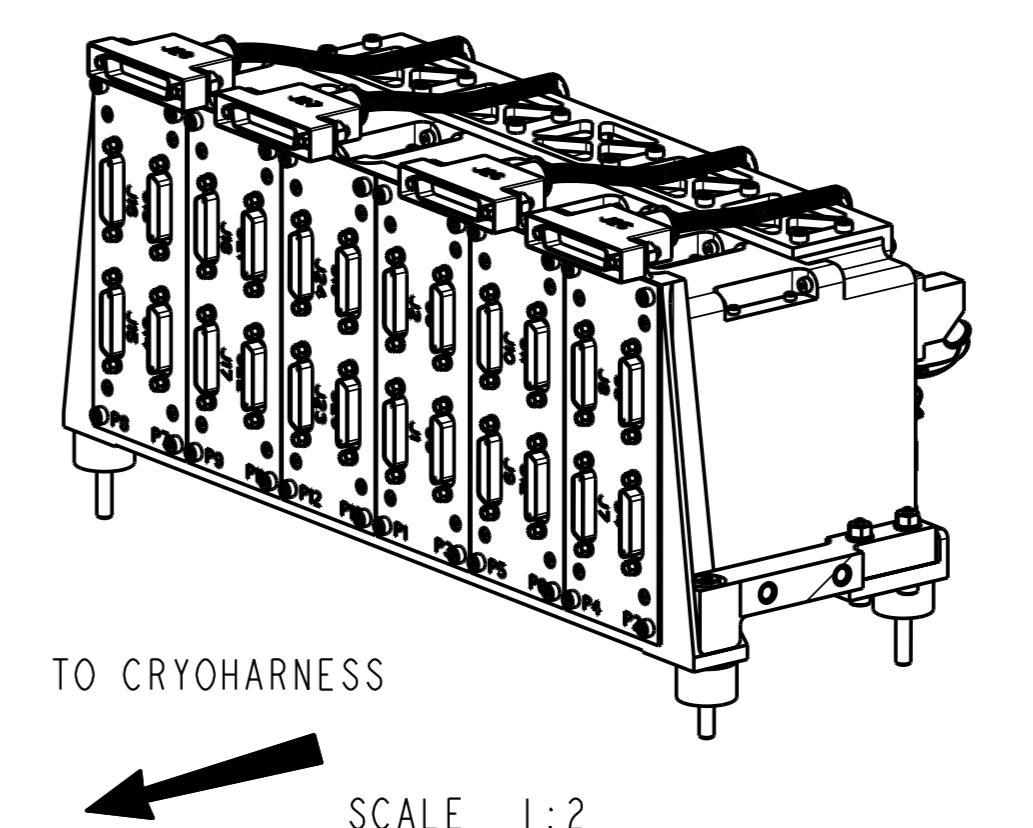
SECTION A-A
SHOWING INSULATION
AND FIXING DETAIL
SCALE 5:1



0.4 SURFACE FINISH
OVER SHADED AREA
0.005



TO HSFPD
SCALE 1:2



TO CRYOHARNESS
SCALE 1:2

NOTE

- ITEMS 10 & 11 TO BE PERMANENTLY BONDED TO MATING FACES.
- TO ATTAIN THE CORRECT MOUNTING INTERFACE DIMENSION, THE FOLLOWING PROCEDURE MUST BE FOLLOWED: PARTS 4 ARE TO BE MOUNTED TO PART 1. MEASURE FROM THE TOP OF PARTS 4 SHOWN AS PLANE 'C' TO THE TAIL END FACE OF PARTS 4, NOTING THE SIX VALUES. MACHINE RAISED PADS ON PART 2 TO REMOVE (VALUE - 87.7).
- ITEM 8 TO BE TORQUED TO 1Nm FOR BEDDING DOWN, LOOSENED AND RETORQUED TO 25cNm. FOR WARM VIBRATION TESTING INCREASE TORQUE TO 2.5Nm FOR DURATION OF TESTS AND LOOSEN AND RETORQUE TO 25cNm BEFORE ANY COOLDOWN.
- UNIT SHOWN FITTED WITH BACK-HARNESS MATING TO J25-28 & J41-52 BECAUSE THIS WILL BE FITTED BEFORE ITEM 15 IS INTEGRATED TO HOB. HOWEVER, THIS HARNESS AND ITS CONNECTORS ARE NOT PART OF THE 6 JFET RACK.

MOMENTS OF INERTIA (Kg mm ²) WITH RESPECT TO C OF G	
I _{xx}	4.07e+03
I _{yy}	1.43e+04
I _{zz}	1.46e+04

No.	DESCRIPTION	QTY	MASS (kg) / ITEM	MASS (kg) TOTAL	REMARKS
1	FRONT PLATE	1	128.8	128.8	
2	LOWER REAR PLATE	1	69.0	69.0	
3	UPPER REAR PLATE	1	32.6	32.6	
4	JFET MODULE	6	305	1830	
5	37 WAY MICRO-D ASSY	4	17.0	68.0	CONNECTOR AND BACKSHELL
6	15 WAY MICRO-D ASSY	12	8.3	99.6	CONNECTOR AND BACKSHELL
7	SCREW M2.5 x 8 LONG	60	0.6	37.2	A2-80 STAINLESS STEEL BS-EN-150-3506-1:1998
8	SCREW M4 x 40 LONG	5	5.0	25.0	A2-80 STAINLESS STEEL BS-EN-150-3506-1:1998
9	WASHER M4	5	0.31	1.5	A2-80 STAINLESS STEEL BS-EN-150-3506-1:1998
10	TOP INSULATOR	5	0.9	4.5	
11	BOTTOM INSULATOR	5	2.8	24.0	
12	THERMAL STRAP ASSY	1	28.0	28.0	
GRAND TOTAL				2348.2	

CONNECTOR TABLE

LABEL	TYPE	FUNCTION
J1	ALL WDMSP	ALL SIGNAL FEEDS TO CRYOHARNESS
J2		
J3		
J4		
J5		
J6		
J7		
J8		
J9		
J10		
J11		
J12	MOM375	BIAS WIRES FROM CRYOHARNESS
J13		
J14		
J15		
J16		
J17		
J18		
J19		
J20		
J21		
J22		
J23		
J24		
J25		
J26		
J27		
J28		
J29		
J30		
J31		
J32	ALL WDMSP	BIAS FEEDS INTO MODULES
J33		
J34		
J35		
J36		
J37		
J38		
J39		
J40		
J41		
J42		
J43		
J44		
J45		
J46		
J47		
J48		
J49		
J50		
J51		
J52		

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

C	03-07-02	KE-2953	T. FROUD			MANUF
ISSUE	DATE	MOD. No.	DRN. BY	CHKD.	APPD.	STATUS
TOLERANCES UNLESS STATED		FINISH CLEAN REMOVE ALL BURRS		ORIGINAL SCALE 1:1 DO NOT SCALE		
±0.2 mm ±0.3		SURFACE TEXTURE µm SEE DETAILS ✓ UNLESS STATED		0 50mm		
MATERIAL & SPEC. SEE DETAILS						
USED ON						©CLRC 2001
CENTRAL LABORATORY OF THE RESEARCH COUNCILS						
TITLE						
6 JFET RACK INTERFACE DRAWING						
SPIRE						
A 0-KE-0104-350-C						1 of 1