EADS Astrium

Procedure

Herschel

Title: PFM SVM CCH - SPIRE SIH + WIH Integration and SVM Harness Mating

CI-No: 12143O

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Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1.0	24.01.07	all	initial issue	

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1 Scope

1.1 Objective

This document covers the PFM SVM UCP SVM and the CVV external Cryo-Harness anchor and stand-off attachments to be performed by ASED prior to CCH and SIH integration.

On PFM the harness attachments have to be placed after MLI stand-off installation.

The PFM Cryo-harness interface-connector brackets are currently mounted on the TTAP with mounted PLM, which will be installed together with the PFM PLM installation on SVM.

Remark:

Temporary the EQM interface-connector brackets will be installed for proper SVM Cry-harness installation in advanced to the SVM warm unit installation.

2 Documents/Drawings

2.1 Applicable Documents

HP-2-ASED-ID-0081	issue: D	Herschel PFM Cryostat Harness CVV external CCH & SIH
HP-2-ASED-ID-0083	issue: B	Herschel PFM Cryostat Harness SVM Internal CCH & SIH
HP-2-CASA TN-0004	Issue: 3	Tooling Configuration SVM internal
HP-2-ASED-TN-0086	Issue: 2	PFM Cryo-Harness Attachment & Coordinate-List
HP-2-ASED-DP-0028	Issue: 2	Drawing DP PFM CCH & SIH Brackets & Attachments
HP-2-ASED-TN-0062	Issue: 1	ESD Rules for Herschel PLM & S/C Integration Activities
HP-2-CASA-DP-0012	Issue: 1.2	CCH SVM PFM EIDP
HP-2-CASA-DP-0015	Issue: 1R1	SIH SVM PFM EIDP
H-P-DP-AI-0033	Issue: 1.0	SVM FM EIDP
06H026-LI-CGT-1474-06	Rev. 01	SPIRE WIH EIDP
INST-CAMAC-090	Rev. 00	WIH Transport & Handling Instructions
H-P-IC-AI-0003	Issue: 06	SVM Electrical ICD
HP-2-ASED-IC-0013	Rev. 2.1	EPLM Cryo-Harness EICD
SPIRE-RAL-PRJ-000608	Rev. 1.2.2	SPIRE Harness Definition Document (EICD)
SPIRE-RAL-NOT-002028	Rev. Dr2	Making SPIRE ESD Safe

2.2 Applicable Drawings

HP-2-ASED-ID-0081	Rev. D	PFM Cryostat Harness CVV ext. CCH & SIH
HP-2-ASED-ID-0083	Rev: B	PFM Cryostat Harness SVM int. CCH & SIH
HP00H-HB0000	Rev. -	Ty-base Layout SVM upper closure panel
HP200CB5301P000100	Rev. -	SVM upper platform Ty-base Location
H-P-4-NXH-RP-0001	Rev. A	MIL-Bus Interconnections
H-P-ICD-07-02-01-KT	Issue: 1	MICD SVM Connector Bracket DB04
HP-ICD-03-05-01-KT	Issue: 1	MICD SVM Connector Bracket DB41
HP-ICD-03-06-01-KT	Issue: 1	MICD SVM Connector Bracket DB42
HP-NXH-DW-1022	Rev. B3	SVM SPIRE Instrument Panel ASSY
HP-NXH-DW-1050	Rev.B2	SVM Lower Floor Instrument Panel ASSY
20-SPIRE-00.02	Rev. -	Herschel DPU ICD
SPIR-MX-5100 000	Rev. G	MICD HSDCU
SPIR-MX-5200 000	Rev. K	MICD HSFCU
HP-2-PANT-IC-0225	Issue: 3	CCU ICD

2.3 Applicable CATIA Models

H-P-2-ASPI-LI-0309	Issue: 41	Herschel SVM CAD Model Baseline
H-P-112301-22-1	Rev. D	-Z Lateral Panel ELT ASSY (SPIRE HRN)
H-P-112301-21-1	Rev. C	-Z Lateral Panel ELT ASSY (SPIRE HRN)
H-P-LI-AI-0022	Issue: 11	List of Herschel & Plank 3D CAD Models

2.4 Reference Documents

H-P-IC-AI-0001	Issue: 7	List of Acronyms

2.5 Other Documents and Drawings

2.5.1 AAS Documents

H-P-TN-AI-0069	Issue: 04	Heaters & Therm. Description & Lay-out

2.5.2 ASED Drawings

HP-2-ASED-DW-0175-01	Rev.0A	Helicoil Block
2547-121432-361-01	Rev: 00	SVM Supports
2547-121432-361-01	Rev. 0A	SVM Support (4x2)
2547-121432-362-01	Rev. 0A	SVM Support (5x2)

2.5.3 CASA Drawings

HP200CE7021P00	Herschel Cryostat Harness Stand-off
HP200CE7022P00	Herschel Cryostat Harness Stand-off
HP200CE7023P00	Herschel Cryostat Harness Stand-off
HP200CE7024P00	Herschel Cryostat Harness Stand-off
HP200CE7025P00	Herschel Cryostat Harness Stand-off
HP200CE7026P00	Herschel Cryostat Harness Stand-off
HP200CK5301P00	Herschel Cryo-Harness I/F-CBs
HP200CK5304P000100P00	Herschel Cryo-Harness SVM Panel SPIRE Ty-base Locations

2.5.4 Meeting Minutes

H-P-ASP-MN-6842	Cryo-harness Dummy Fitcheck
H-P-ASP-MN-6915	IRR Cryo-Harness Dummy on SVM STM
H-P-ASP-MN-8740	PFM SPIRE WIH DRB
06H026/MN/CGT/1167/06	PFM SPIRE W1 to W8 DRB

2.5.5 Alcatel NCR

HP-130000-ASP-NC-1550	Tybase Queries detected during SVM Dummy Fit-check

3 Configuration

3.1 SVM Configuration

The PFM SVM UCP (UP) is opposite to the Lateral Panels not the STM one, therefore all subject harness anchors have to be attached once more.

Harness anchors on the Lateral Panel (LP) already attached during the STM SVM Dummy harness integration will be used for PFM too.

Test-harness attachments need for forthcoming PFM PLM / Satellite environmental tests are not defined in this document.

3.2 STM SVM harness attachment documents with impact on PFM

3.2.1 HP-2-ASED-NC-1550

The harness attachment templates used during STM SVM UP anchor fixation shall be compared with the PFM templates before any attachment is performed.

The CASA as-built harness routing and attachment recommendations identified in the EIDP shall be implemented in the PFM harness anchor attachment templates too.

3.2.2 H-P-ASP-MN-6842 Cryo-Harness Dummy Fit-check

The complete harness anchor attachments on the STM SVM UP & LP have been summarized in this Test readiness review meeting minutes. All anomalies which might be detected in frame of PFM attachments shall be compared prior physical harness attachment on the PFM SVM hardware accordingly.

Further harness anchor positioning corrections shall be correctly recorded in the as-run / log-sheets / photos.

3.2.3 H-P-ASP-MN-6915 STM SVM Integration Readiness Review

The identified harness anchor queries detected during the STM SVM template correlations and recorded in above meeting minutes shall be controlled with the AAS-F provided CATIA files prior to PFM template cutting and physical anchor / stand-off plate attachment.

3.3 *General Precautions for PFM SVM UCP Harness anchor* attachment

The PFM SVM UCP shall provide the SVM-harness and also the CVV external harness stand-off and attachment anchors. For proper harness attachments, the STM attachment pictures are provided herein too.

Since on PFM several thermal blanket stand-offs have been already glued by AAS-I in advanced to the Cryo-harness anchor attachment, the ASED anchor template shall be compared in advanced to the template printing between the following CATIA design files

a) PFM MLI CATIA model contents

b) PFM CASA mechanical SVM structural models

c) STM CASA mechanical SVM attachment models

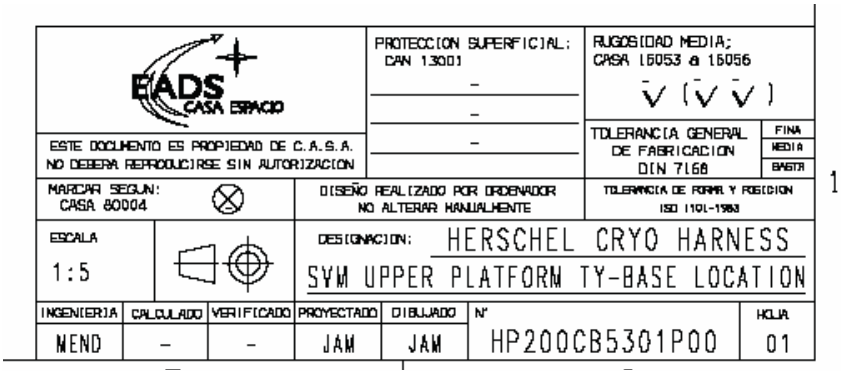
The harness templates to be printed for proper stand-off / anchor positioning and to be fit over already glued MLI stand-offs, the mechanical envelope shall be enlarged by a 2 mm bigger frame around each attachment footprint.

The template(s) shall be printed as foils without distortion, which is able to be cut in several slices for flat placement on the SVM UCP surface in between the already attached MLI stand-offs.

For proper anchor position, the sliced templates shall be adjusted in minimum to 2 centres of identified mechanical helicoil inserts or to adjust the sliced templates to the SVM I/F-CB fixation inserts.

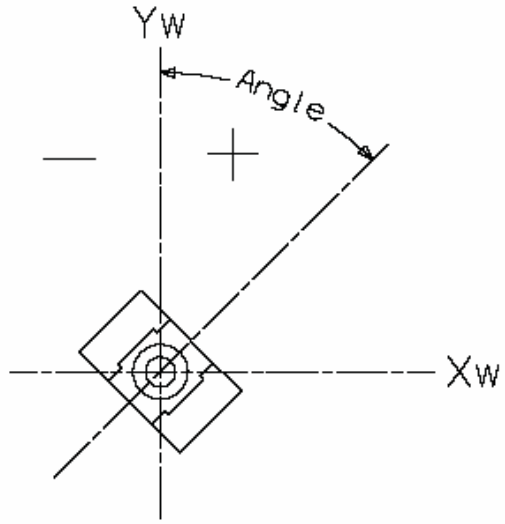
All TC-105 shown on STM pictures shall be ENN 411 anchors on PFM.

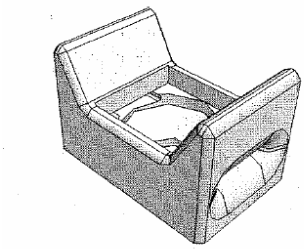
The adhesive mixture reports shall record each attachment identification number as defined in the CASA harness anchor attachment drawing, see § 2.2 and extract below.



3.3.1 ENN 411 Harness Anchor Orientation

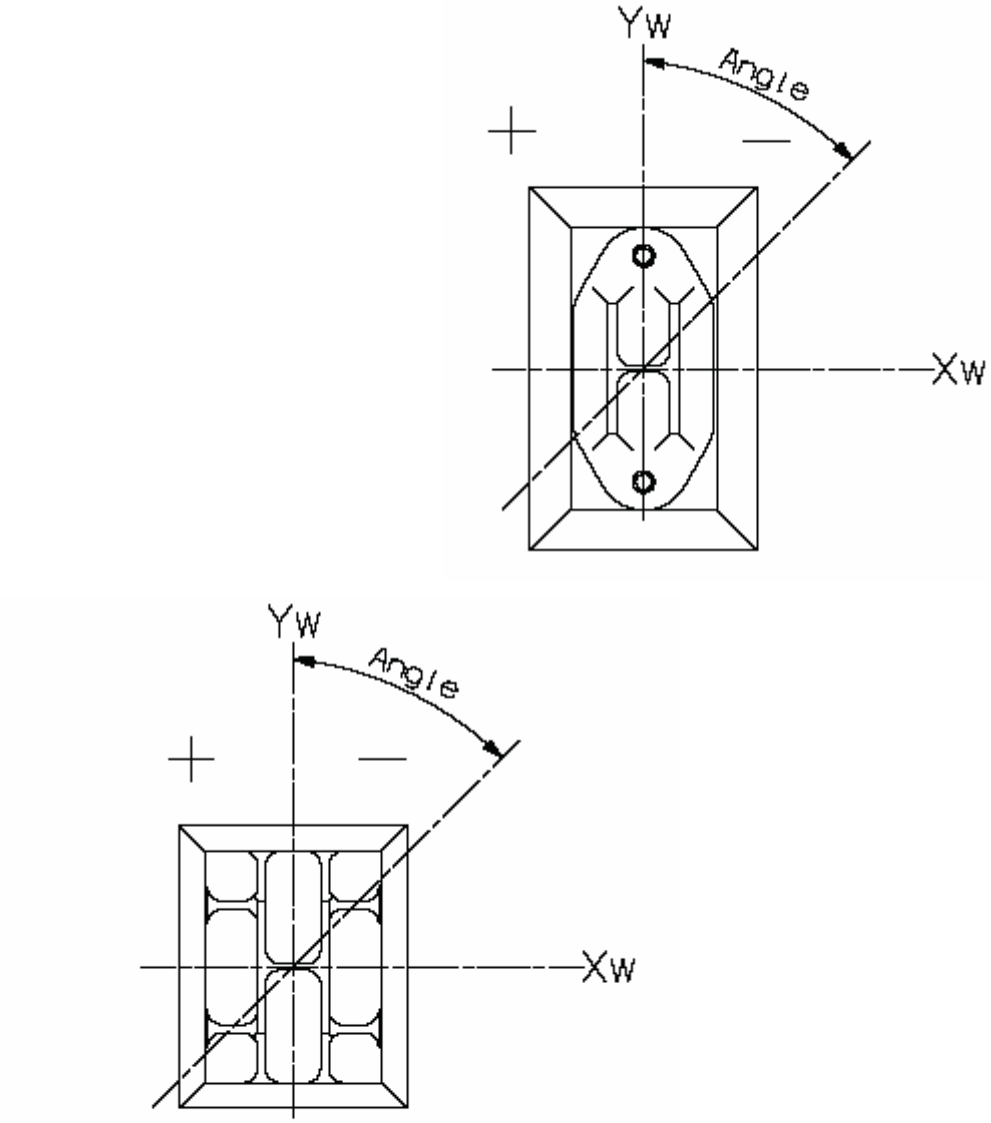
The harness ENN 411 anchor orientation is defined in drawing view (**W**) , see below





Physical ENN 411 anchor

3.3.2 Harness Stand-off Tower & Base-plate Orientation

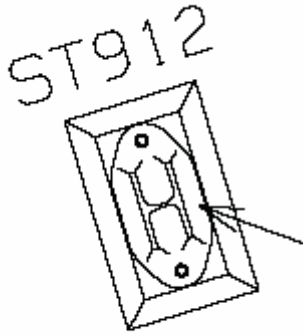


ORIENTATION OF SUPPORT 5 BOND (SCALE 1:1)

NOTE. - The Support position is obtained on its front view.

3.3.3 Bolted Harness Stand-off Tower on glued Stand-off Base-plates

Several harness stand-offs defined after the CASA SVM panel design freezing have been designed as a complementary assembly of a glued helicoil stand-off base-plate with the bolted stand-off on top., see below.



The physical Stand-off assembly used on STM SVM , shall be used on PFM SVM UP too. The attachment shall consist of 2 different gluing processes.

First - Stand-off base-plate attachment by use of non-conductive EC2216 A/B

Second - Stand-off base-plate bonding by use of conductive spot bonding at all **4** base-plate corners with Eccobond 57C (non shown on this picture)

Alternative: Perform bonding by use of conductive Alu-tape between stand-off base-plate & next SVM UCP insert bush.

After the adhesive securing time the bolted stand-off tower shall be installed on top.

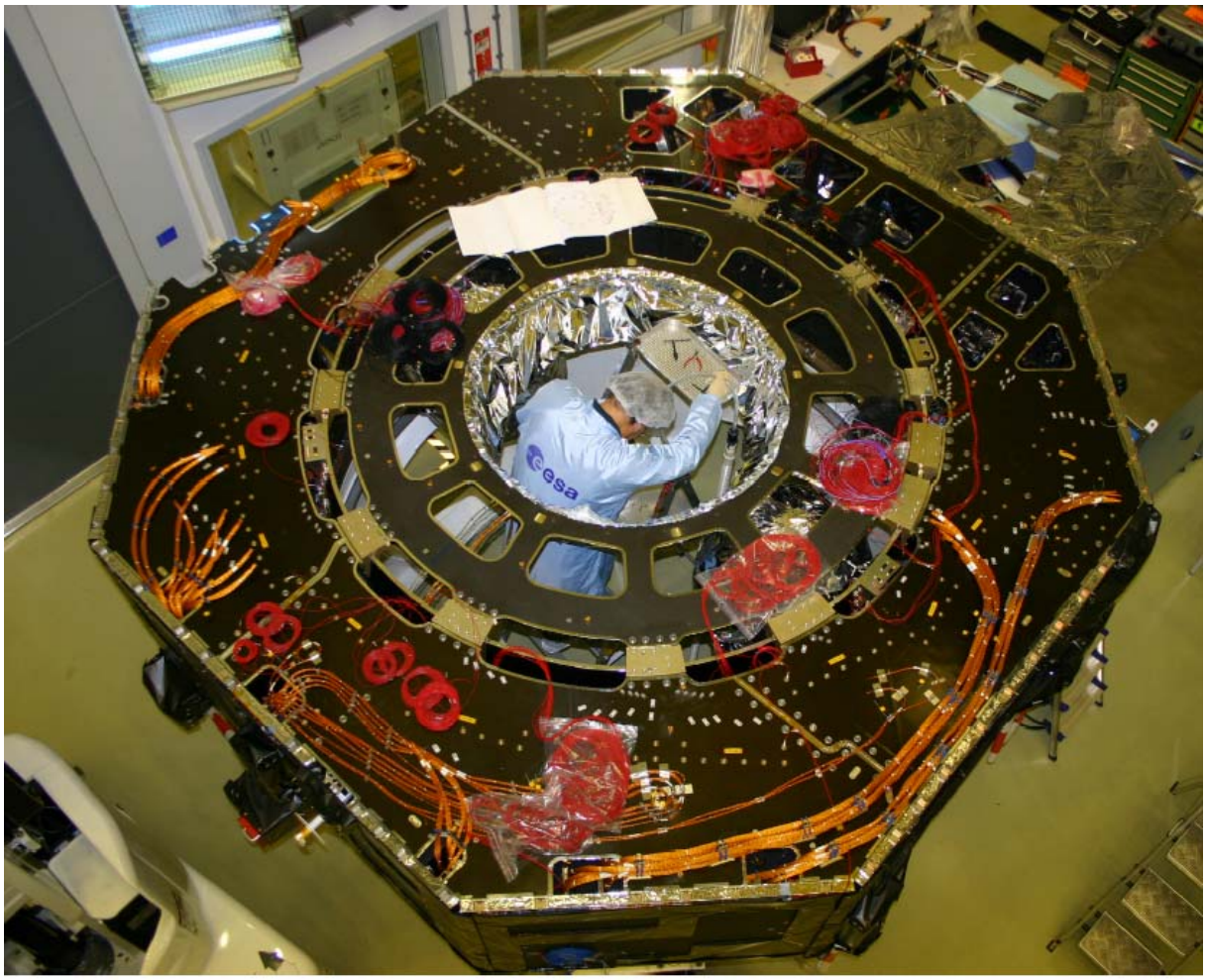
Glued & bolted stand-off

3.4 SVM Upper closure panel (UCP) Harness & Anchor Location Overview

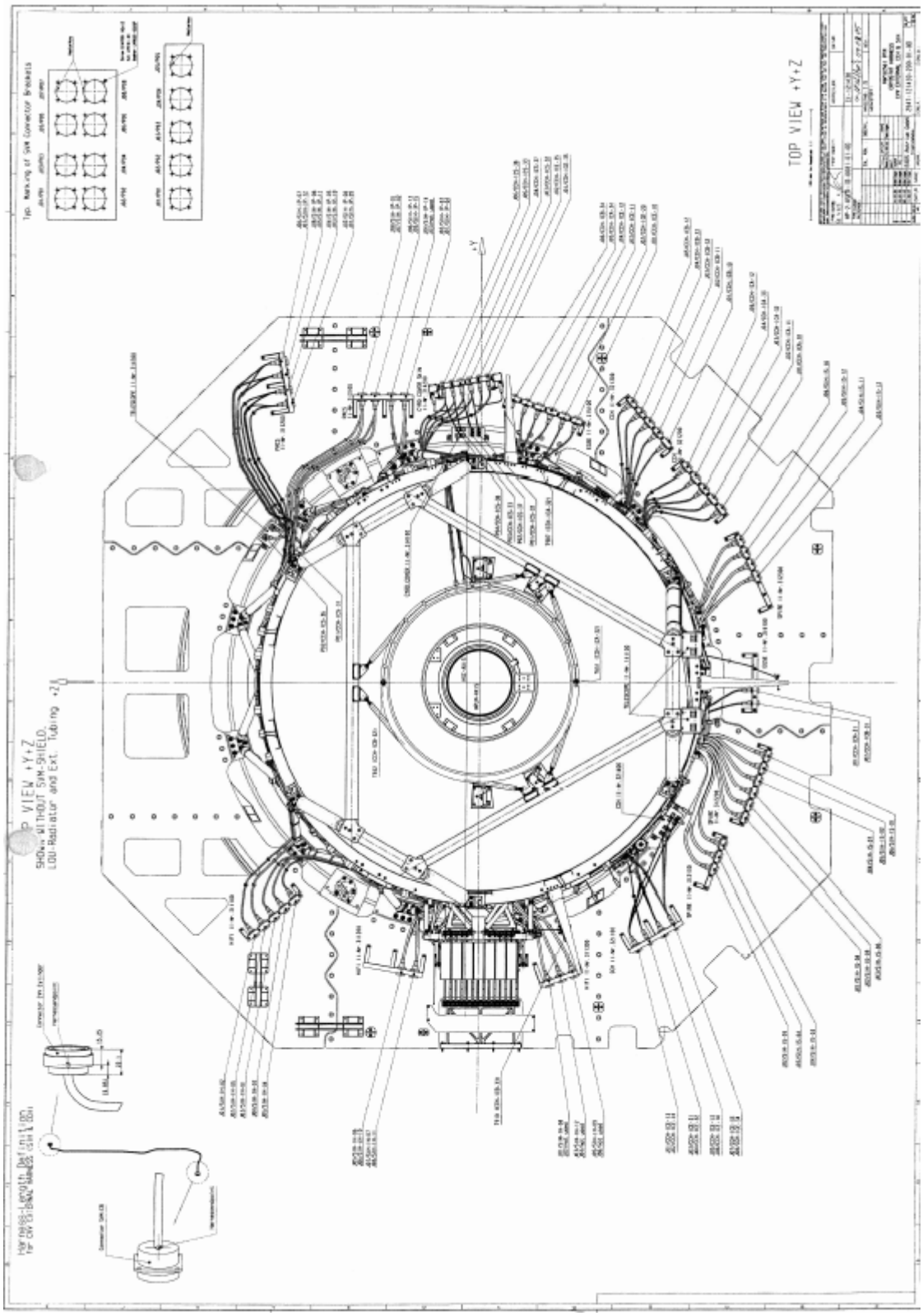
The STM Dummy Harness attachments pictures are provided to support the PFM attachment and proper routing.

3.4.1 STM SVM Harness anchors with attached SVM Dummy CCH & SIH

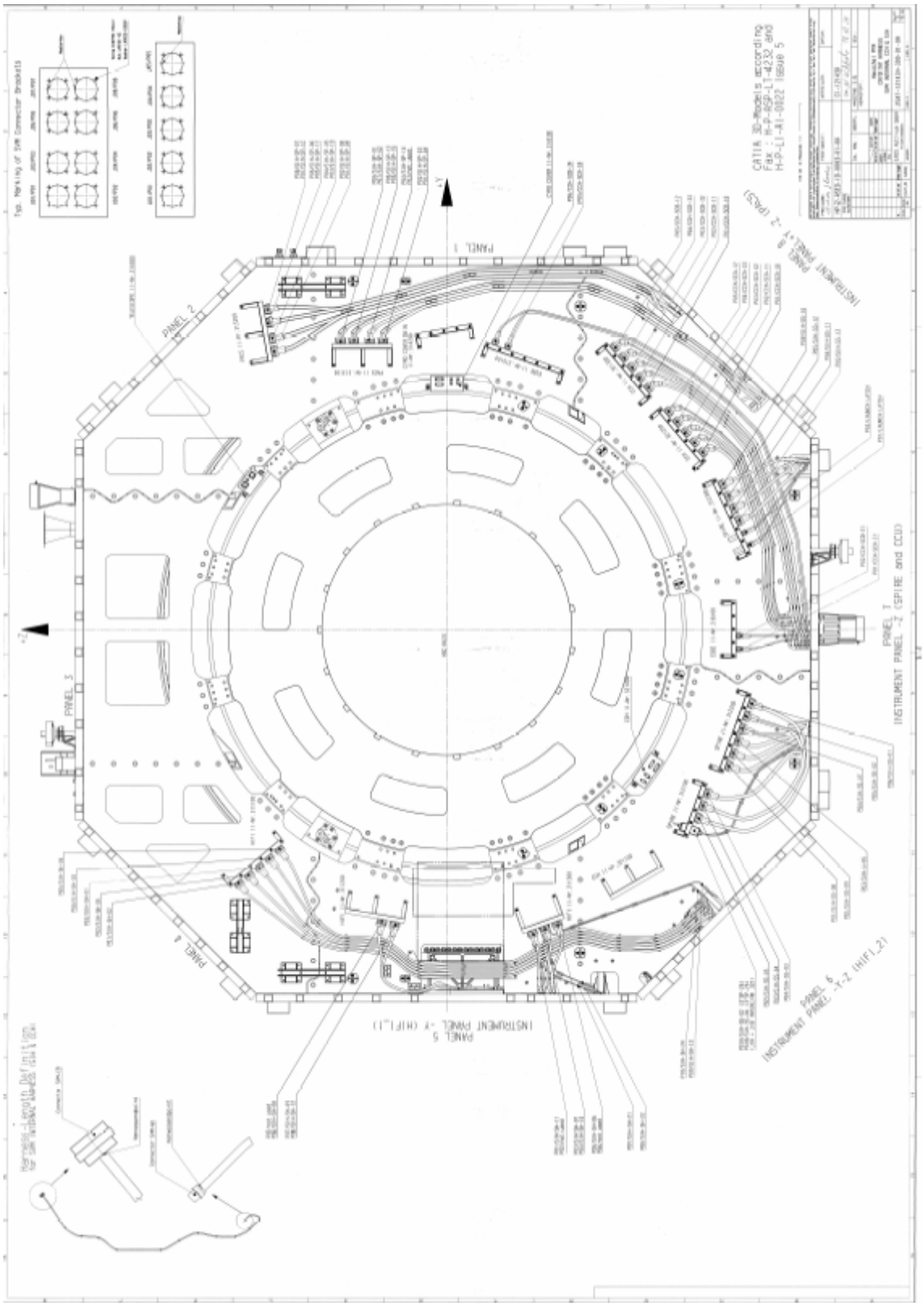
This picture shall be used for comparison of PFM - STM anchor position clarifications



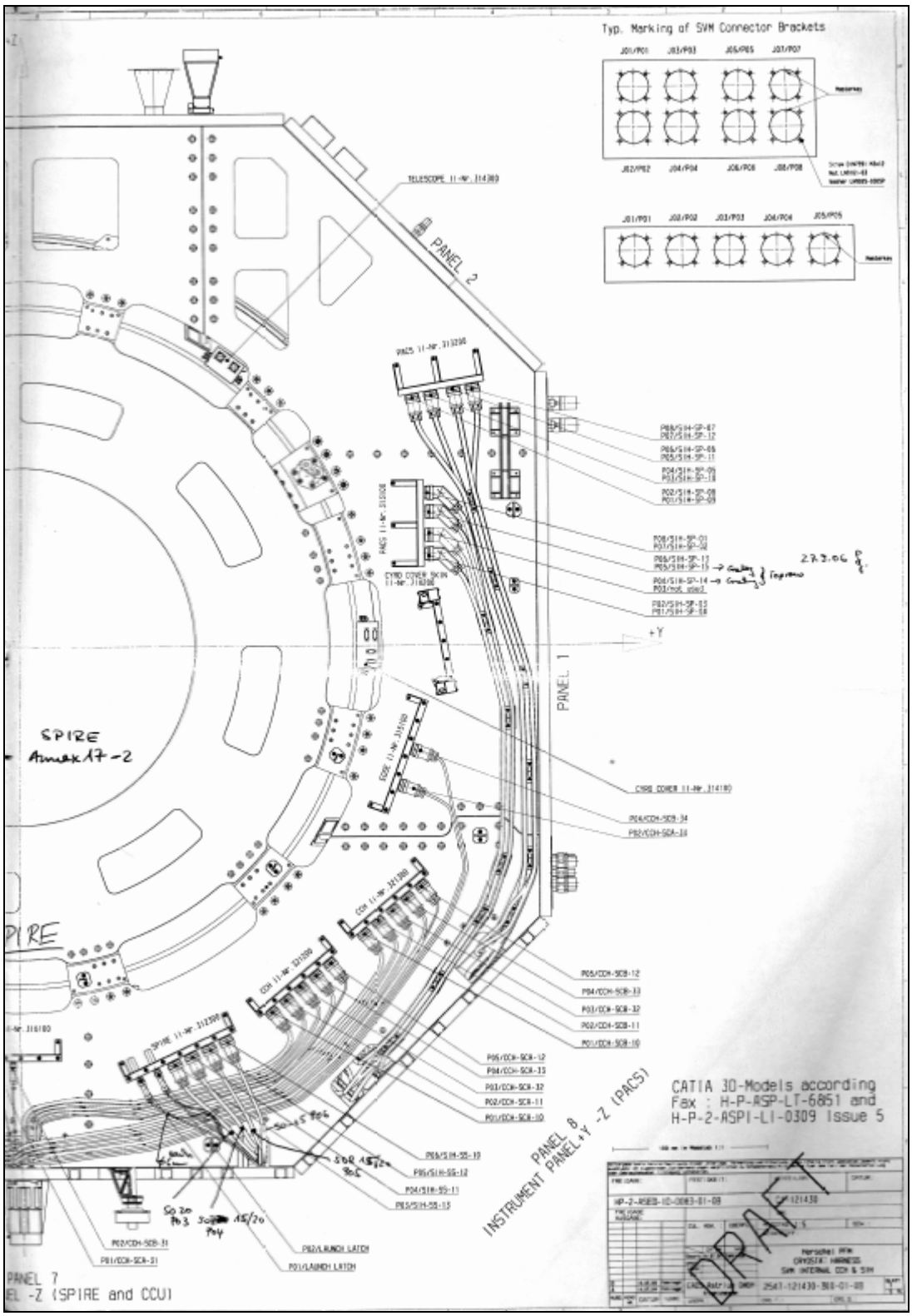
3.4.2 CVV external Cryo-Harness on SVM UCP between I/F-CB & CVV Struts



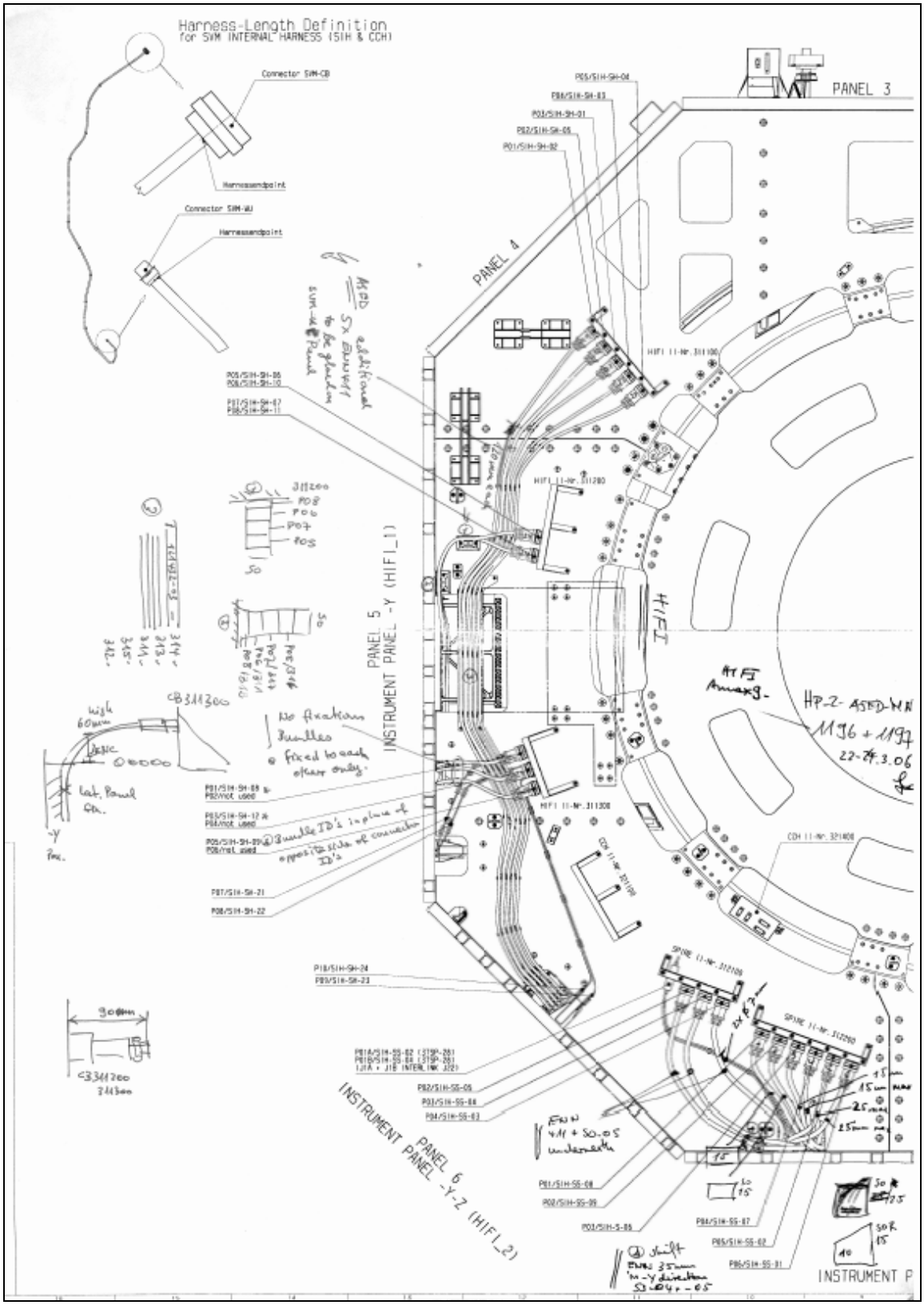
3.4.3 SVM CCH & SIH between SVM UCP and LP allocated Warm-Units



3.4.4 Final adjustments on CASA Mock-up after SVM Manufacturing (+Y)



3.4.5 Final adjustments on CASA Mock-up after SVM Manufacturing (-Y)



3.5 SVM (-Z) Lateral Panel SPIRE SIH & CCH Attachments

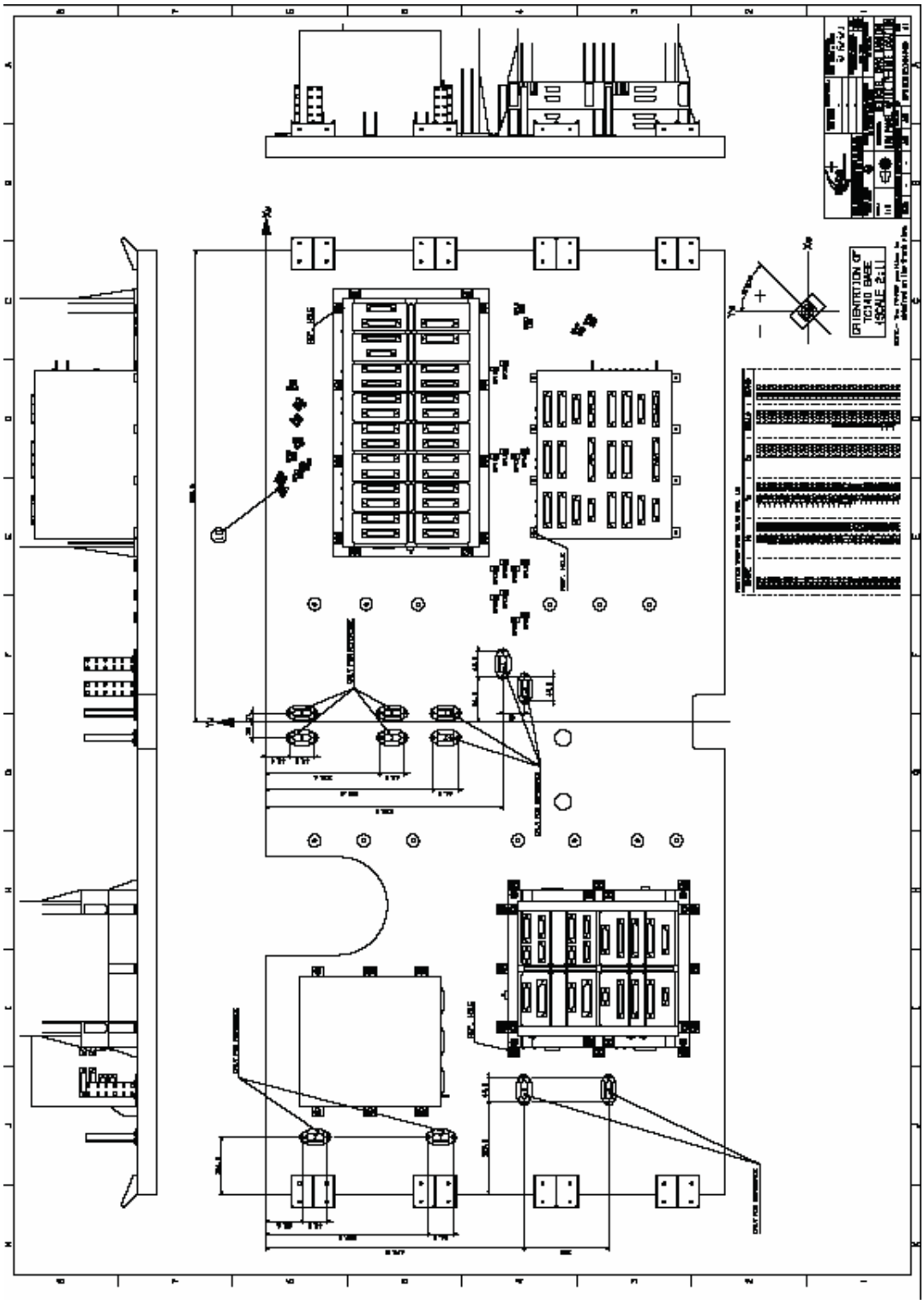
The PFM SVM lateral panel -Z houses the SPIRE Warm units and the CCU-A/B.

The harness anchors have been glued already during the STM 1 Dummy harness integration.

The CCH anchors on the CCU itself shall be glued prior to first integration to this SVM lateral panel.

For CCU CCH bundle attachment, the stand-offs shall be mounted on the defined places, see drawing extracts below.

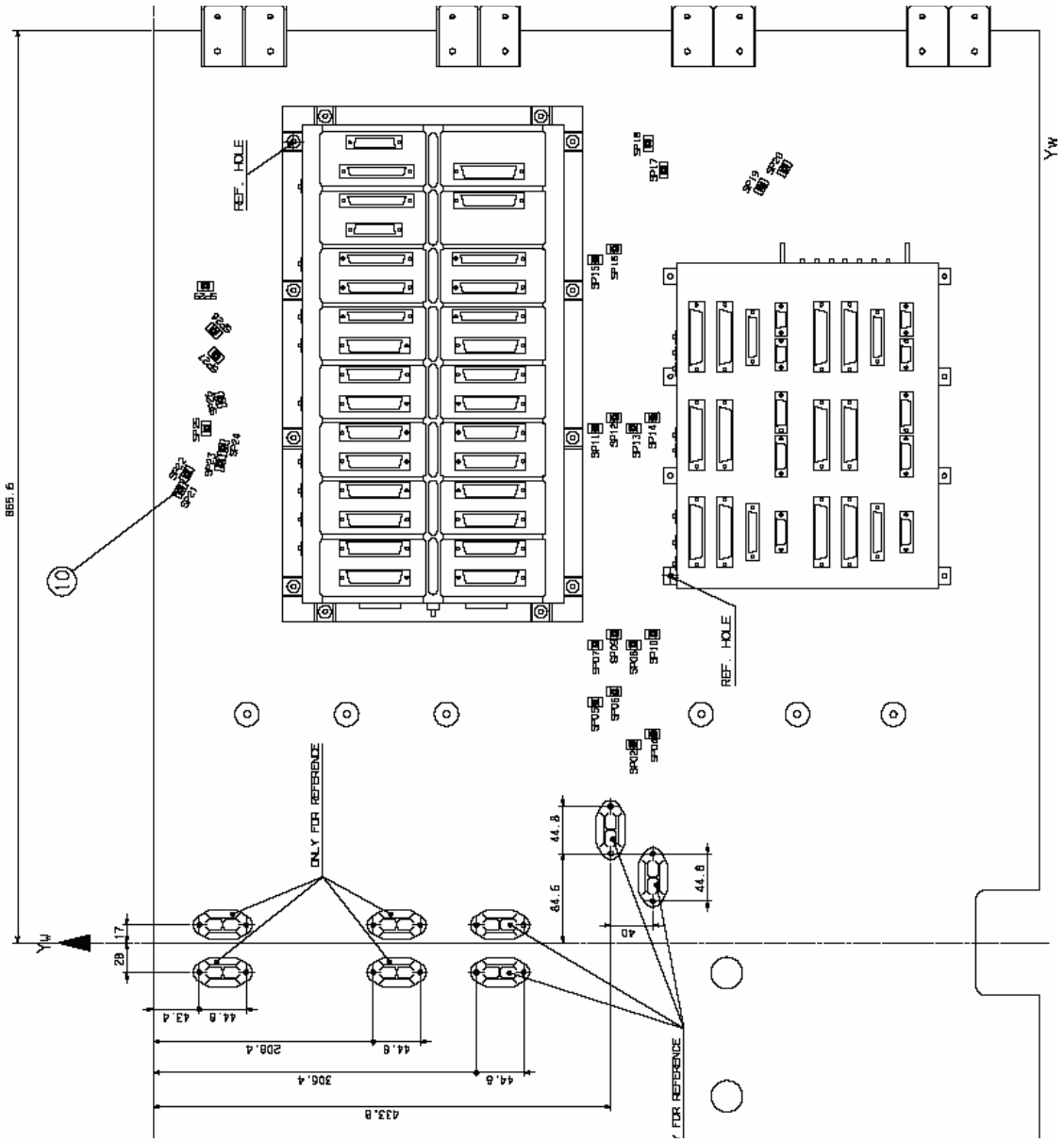
3.5.1 SVM (-Z) Lateral Panel SPIRE SIH & CCH Attachments



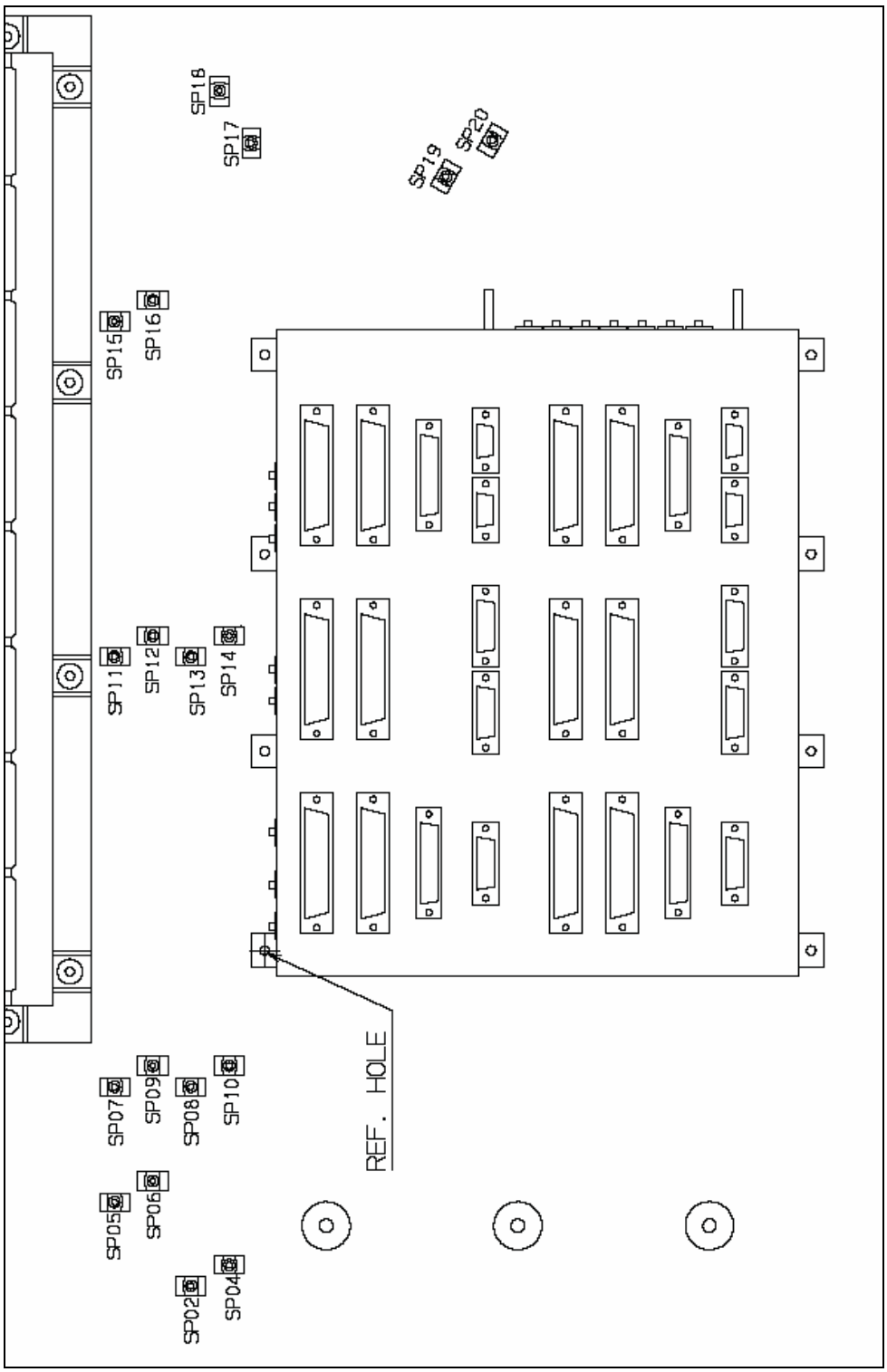
3.5.2 PFM Cryo-Harness anchor and stand-off Identification and Allocations

The PFM CCH and SIH fixation anchors & the stand-offs as defined on the following drawing extracts shall be followed. The STM pictures show the single attachment orientation, which is valid for PFM too. Where ENN 411 harness anchors are identified and TC-105 are shown on the STM pictures, ENN 411 anchors shall be used for PFM Harness attachments.

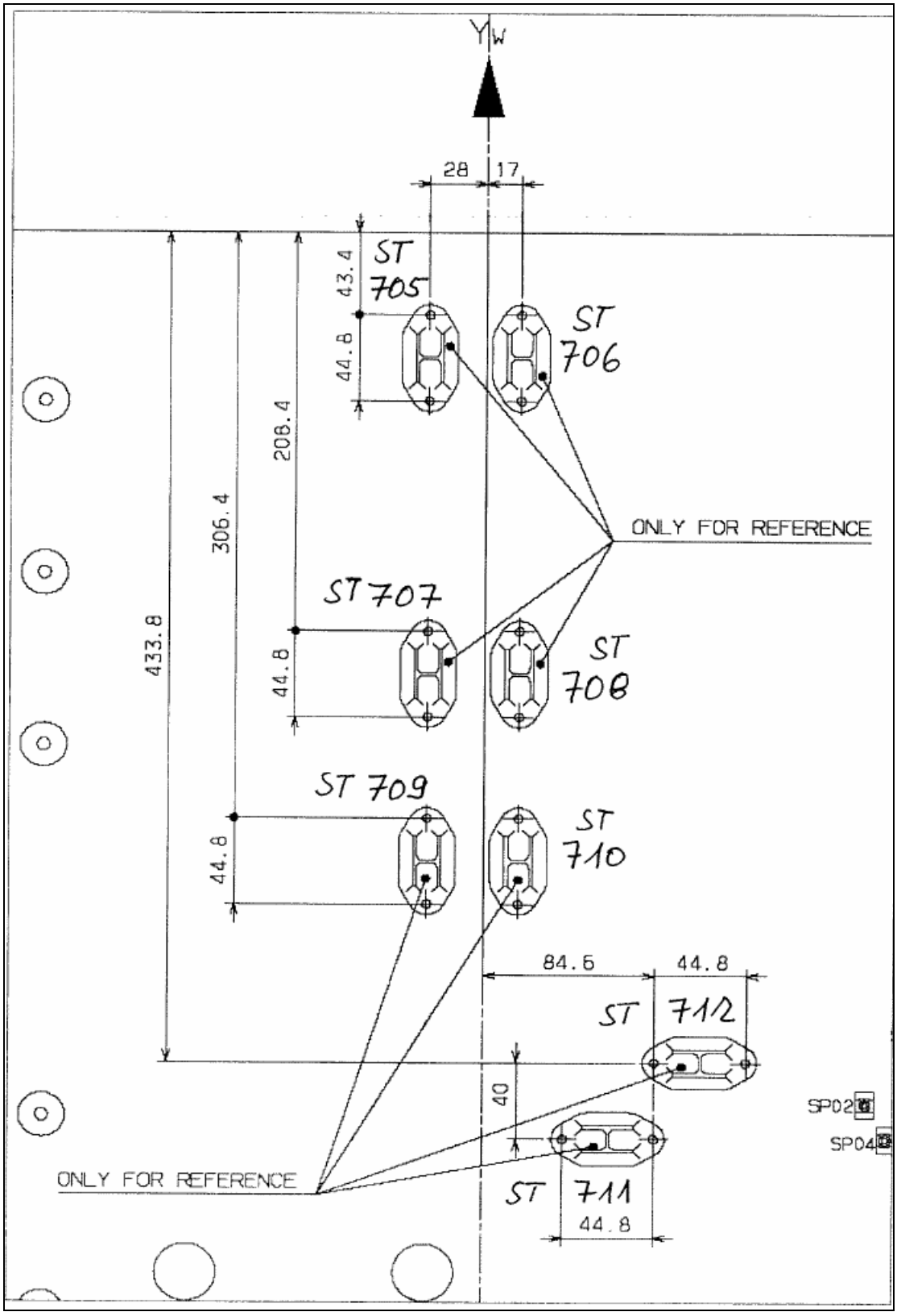
3.5.2.1 SVM SPIRE - DCU & CCU - CCH anchors on Lateral Panel (-Z)



3.5.2.2 SVM CCU - CCH anchors on Lateral Panel (-Z)

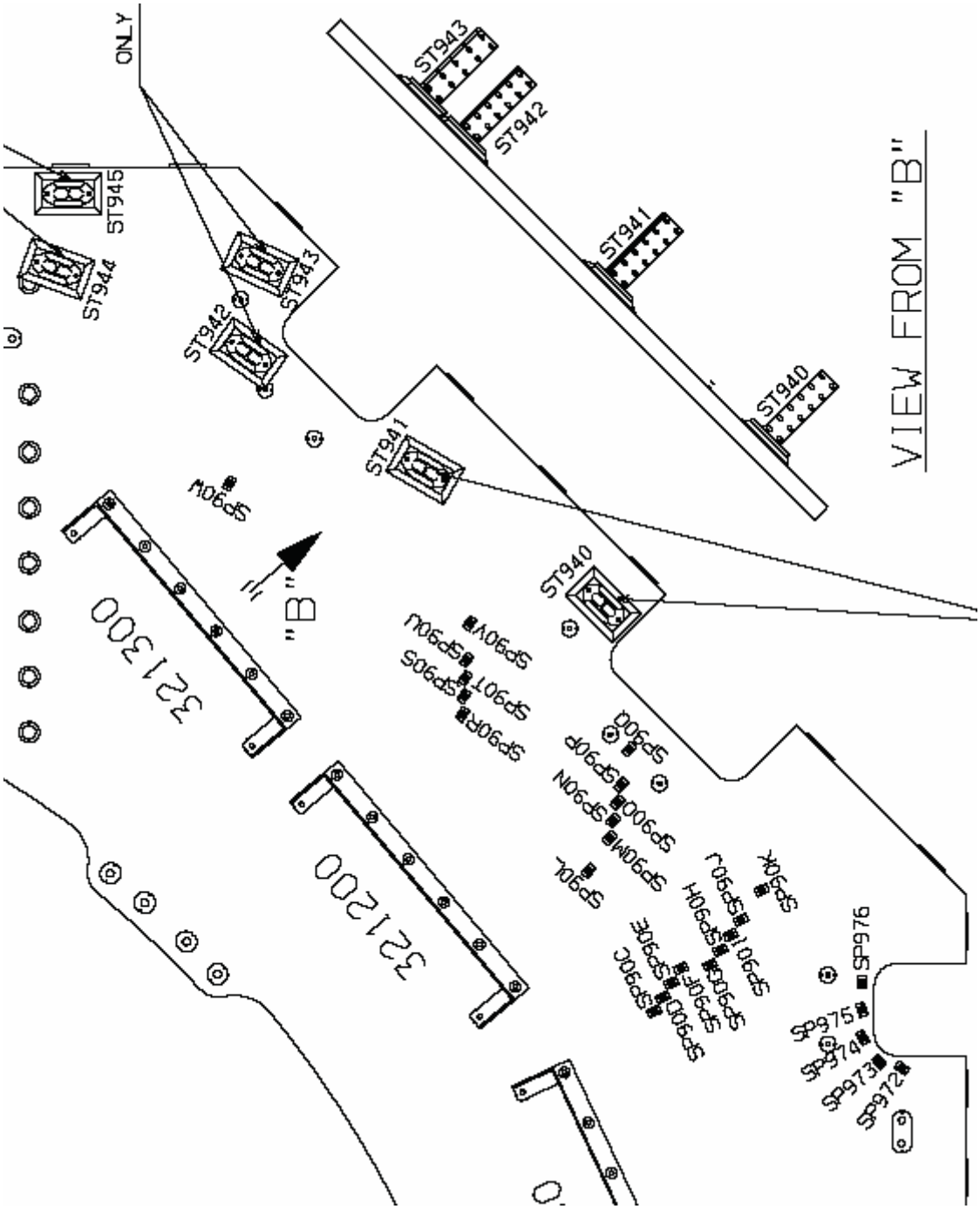


3.5.2.3 SVM -Z lateral panel stand-offs for CCU CCH Attachments

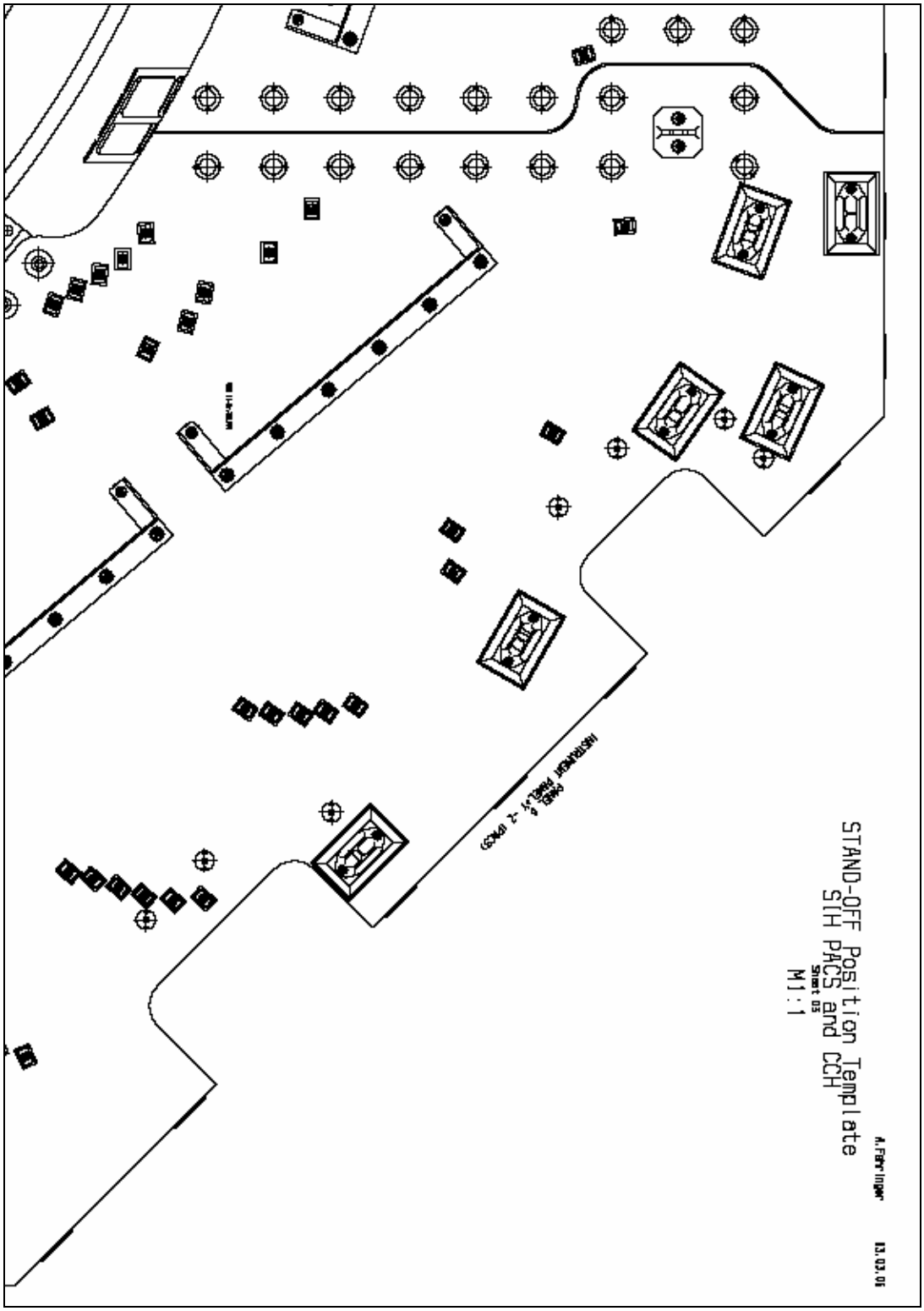


3.5.3 PFM Harness Attachments Anchors on SVM Upper closure panel

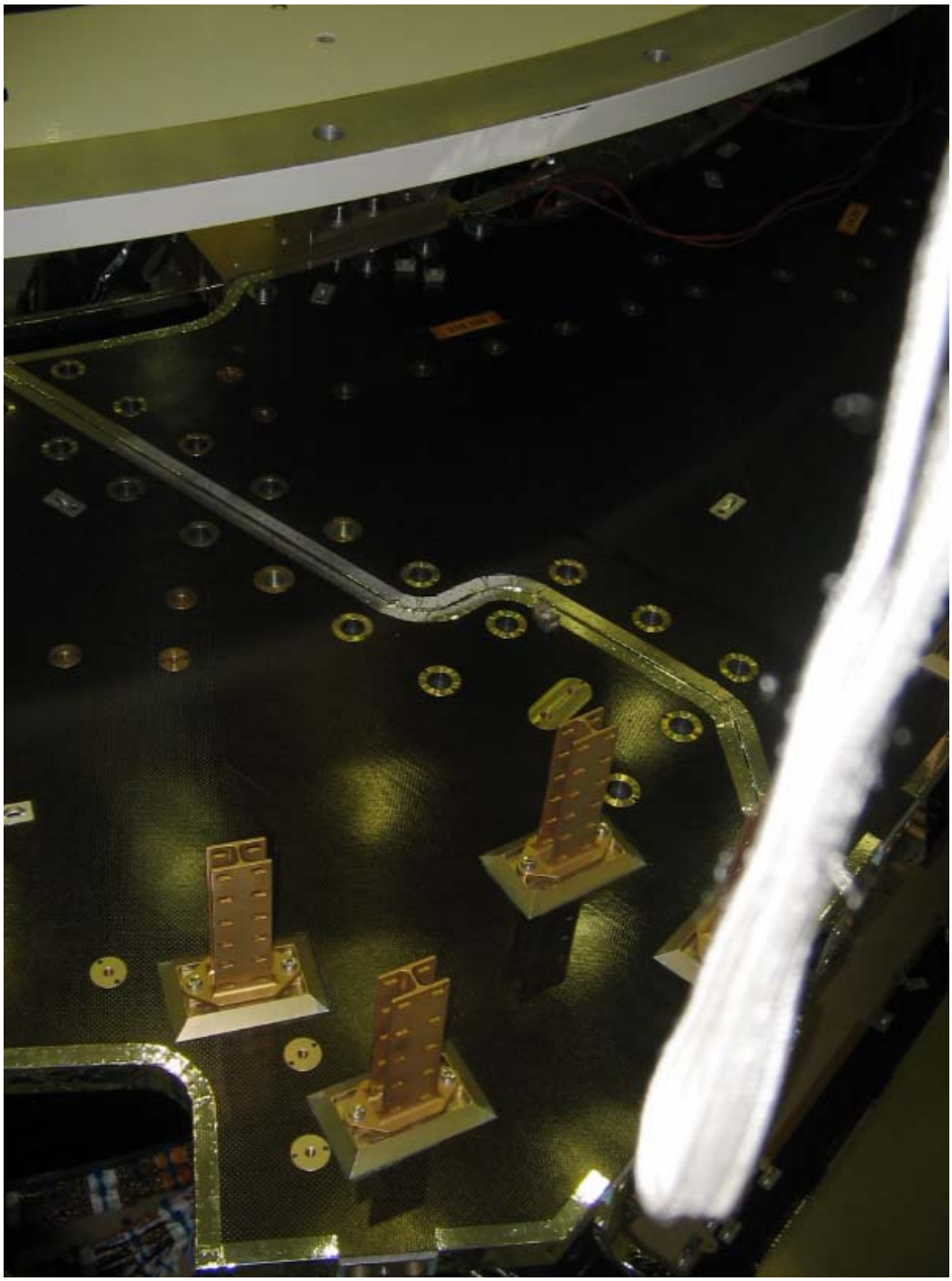
3.5.3.1 CCH anchors from SVM LP (-Z) to I/F-CB 321200 & 321300



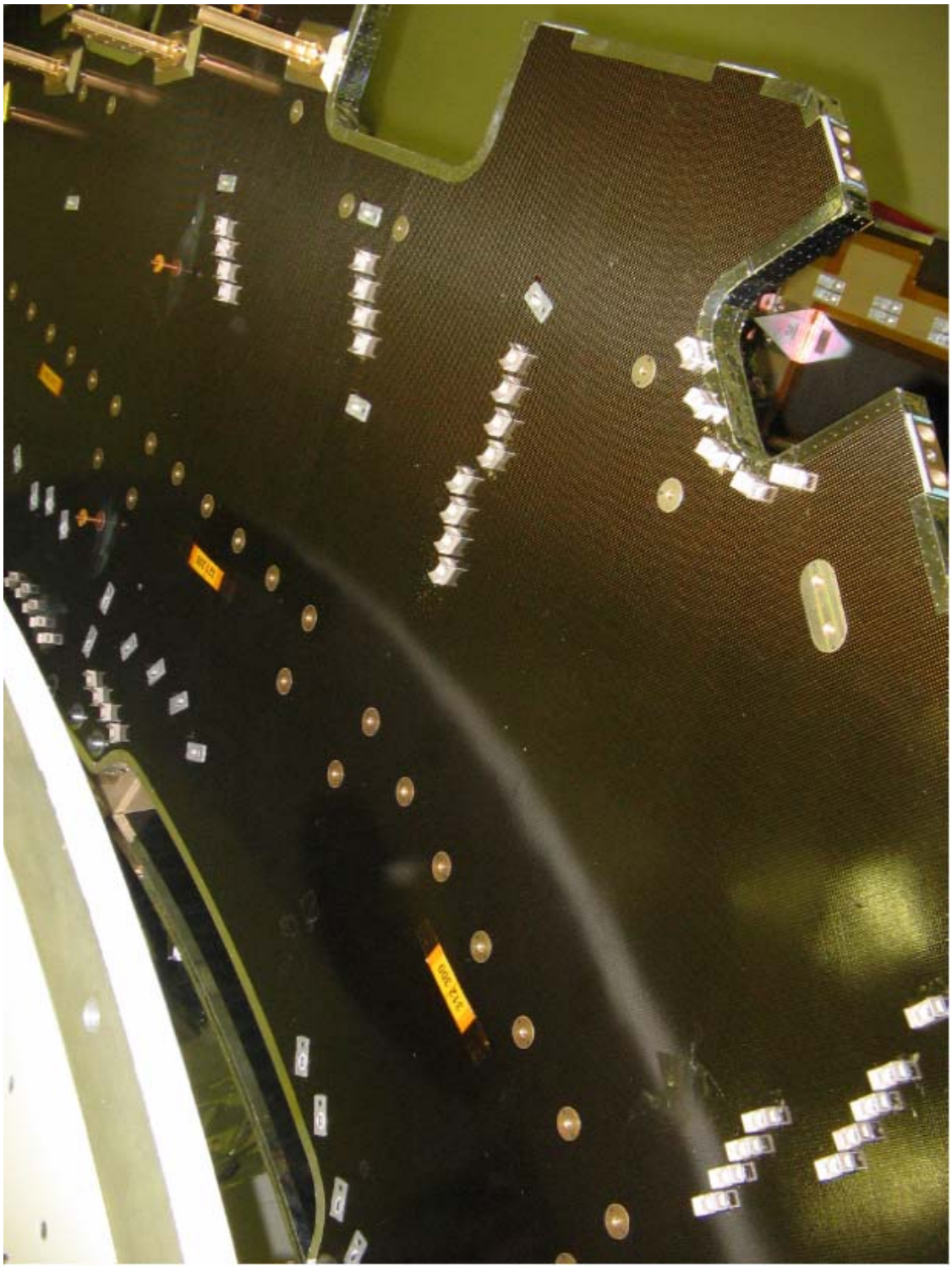
3.5.3.2 PFM CVV ext. & SVM CCH attachment anchors on UCP I/F-CB 321300 and 321200 with PACS SIH SOT in front



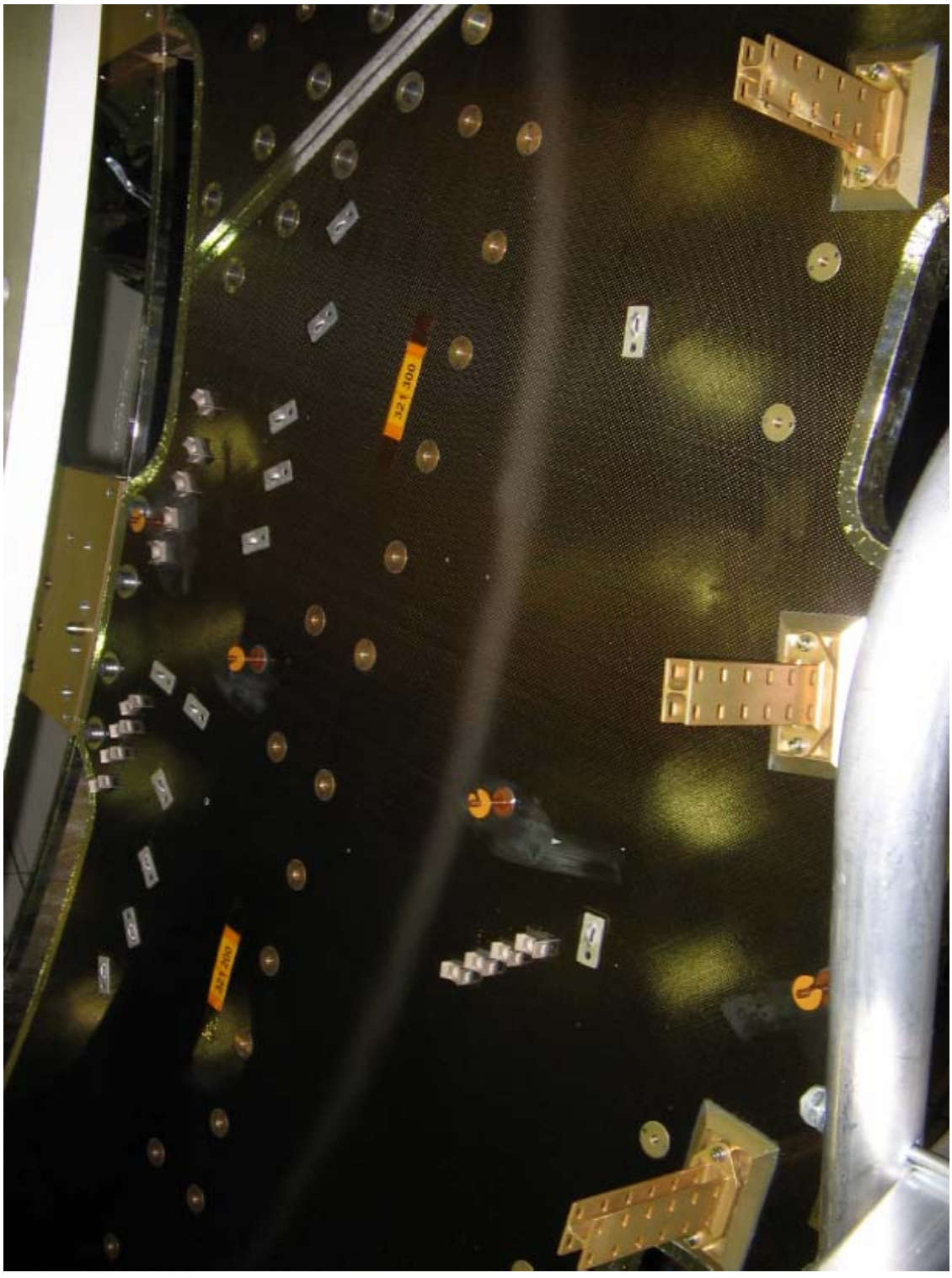
3.5.3.3 STM SVM UCP in area of I/F-CB 321300



3.5.3.4 STM SVM UCP close I/F-CB 321200 CCH & SPIRE SIH 312300



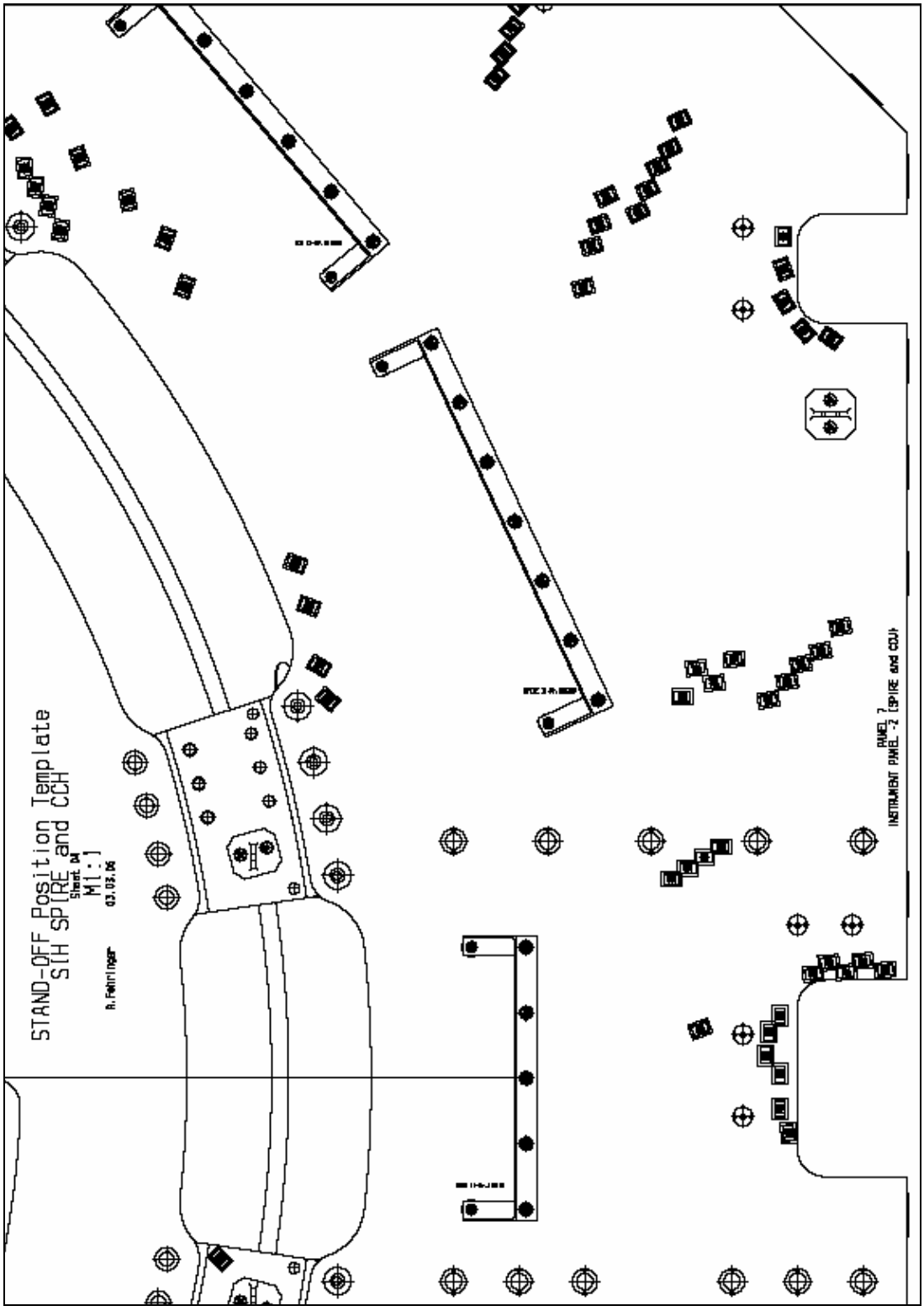
3.5.3.5 STM = PFM SVM UCP in area of CCH I/F-CB 321300



3.5.3.6 STM = PFM SVM UCP in area of CCH I/F-CB 321200

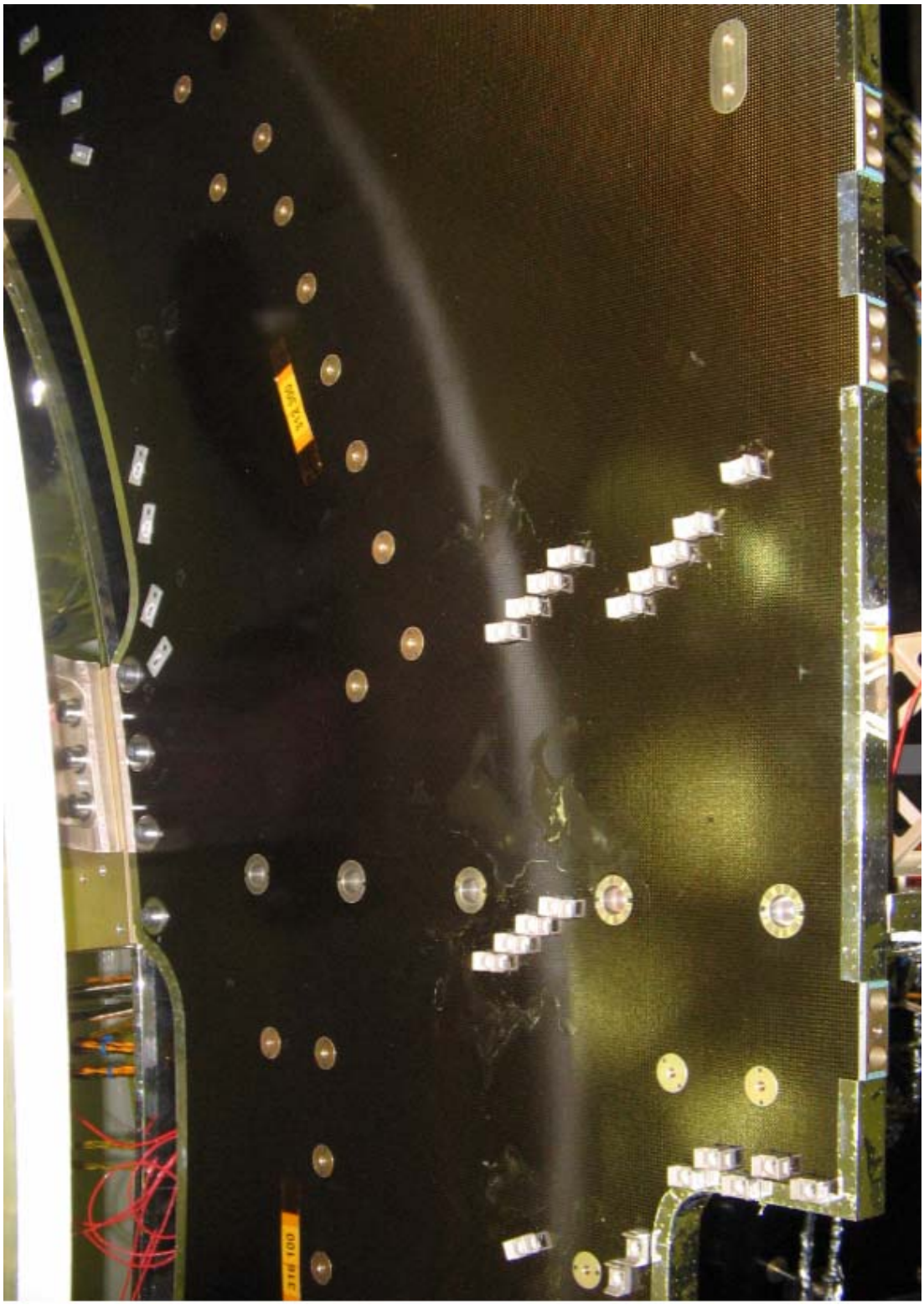
3.5.3.7 STM SVM UCP in area of CCH I/F-CB 321300 and 321200

3.5.3.8 PFM CVV ext. & SVM UCP close to I/F-CB 321200 CCH, SPIRE SIH 312300 & 316100 with Launch Latch I/Fs

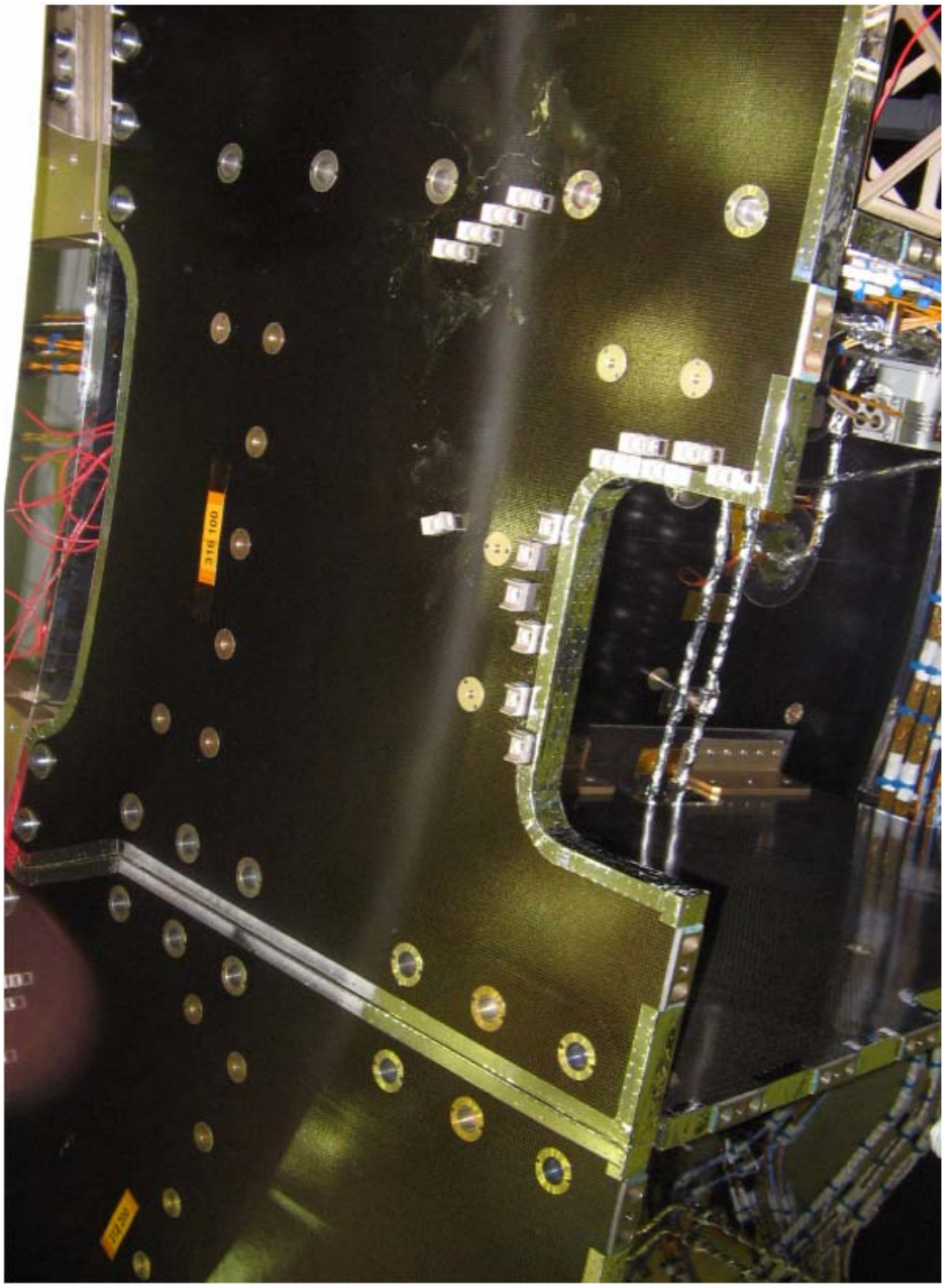


3.5.3.9 STM SVM UCP in area of SPIRE SIH I/F-CB 312300

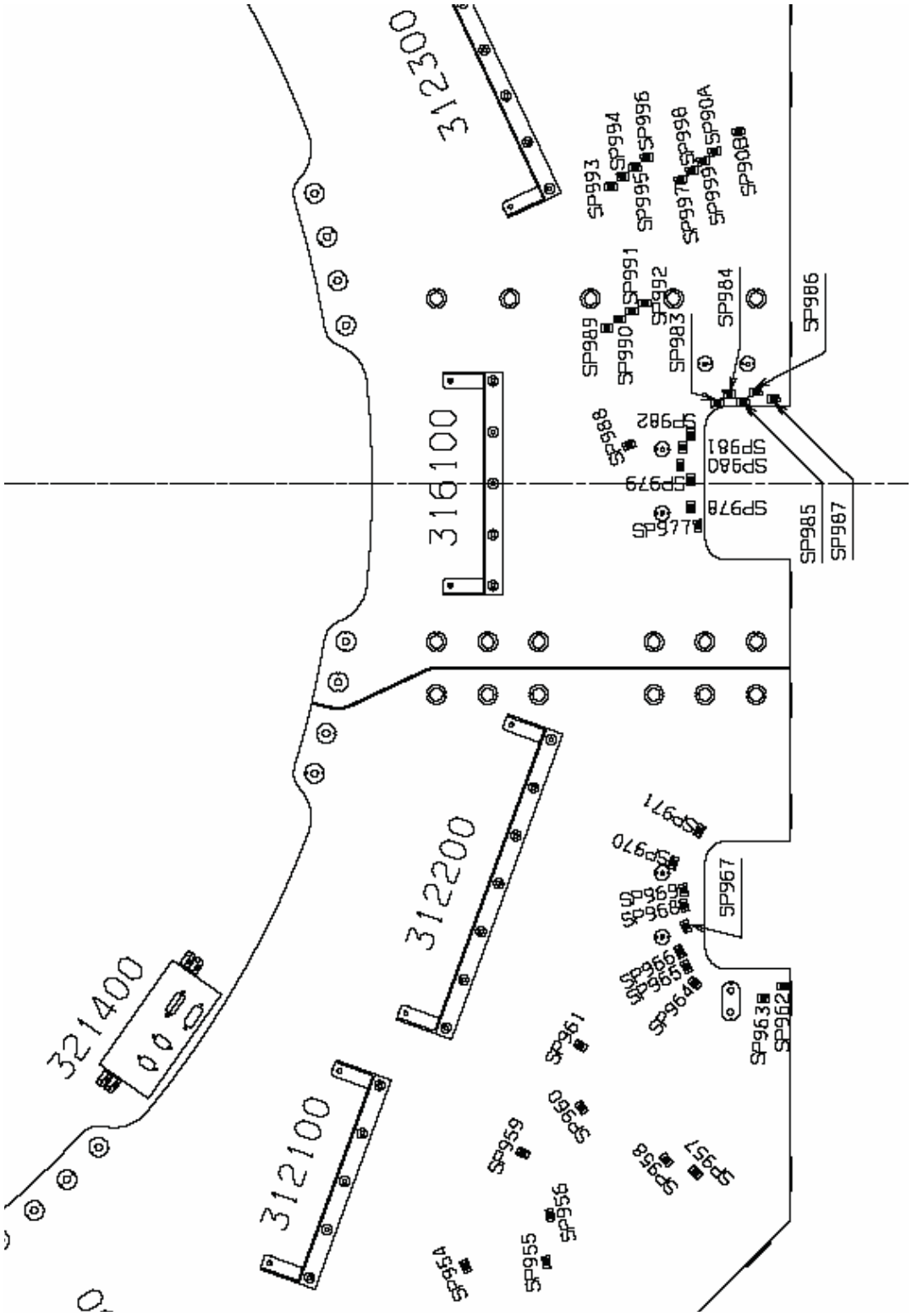
3.5.3.10 STM SVM UCP in area of SPIRE I/F-CB 312300 & 316100



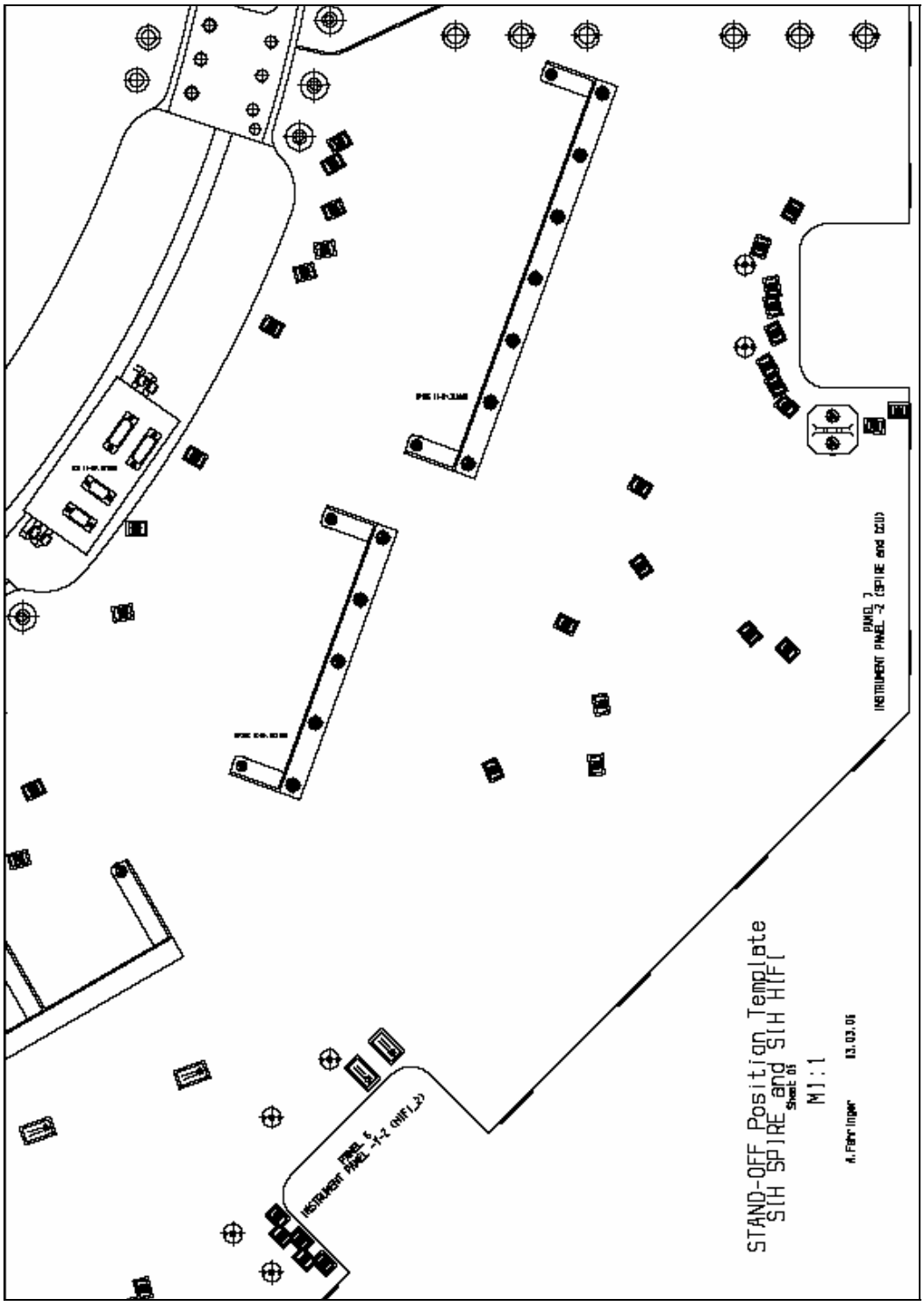
3.5.3.11 STM SVM UCP in area of SPIRE I/F-CB 316100



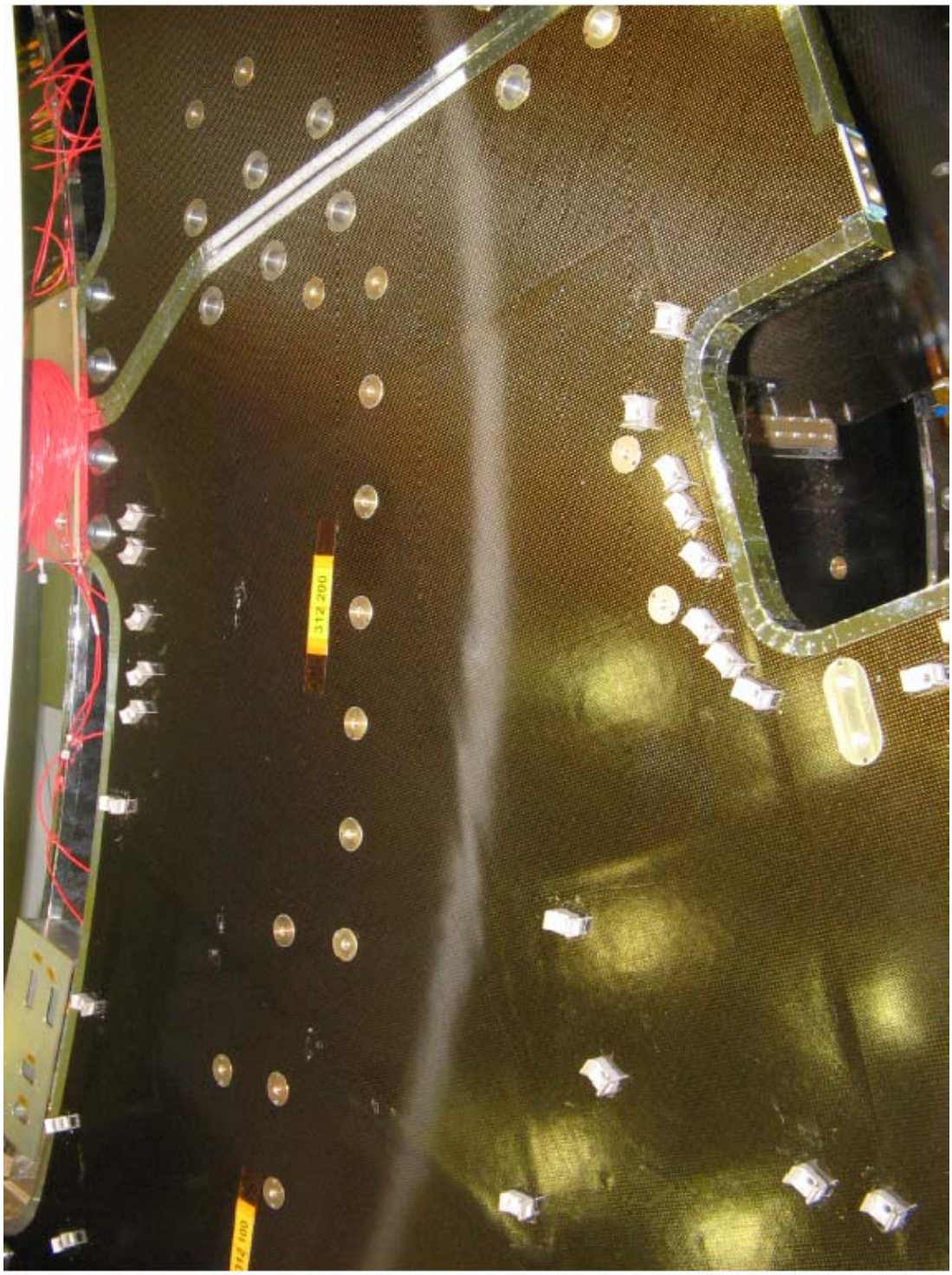
3.5.3.12 SPIRE SIH anchors on SVM UCP close I/F-CB 312200 and 312100



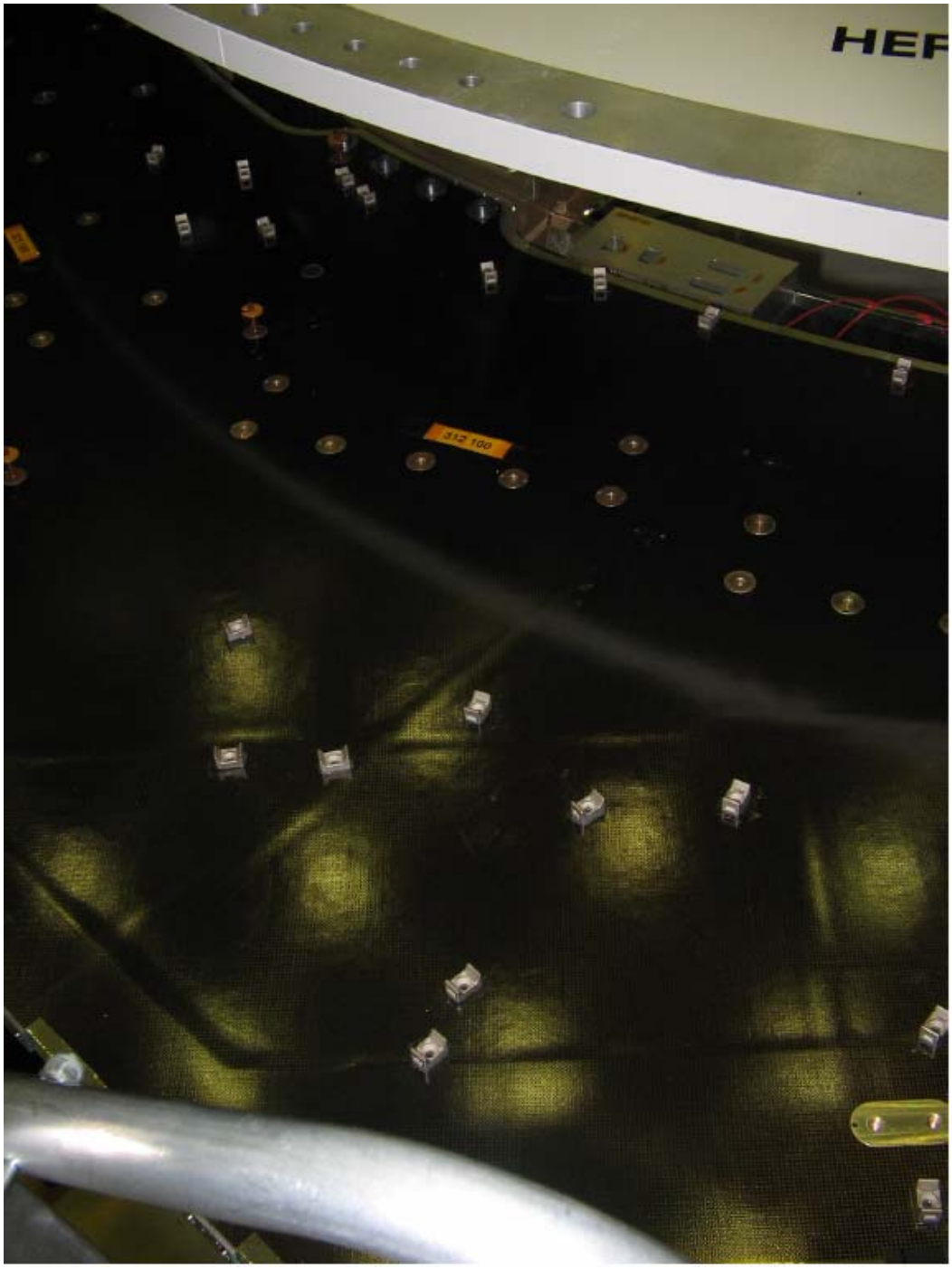
3.5.3.13 PFM CVVext. & SVM SPIRE SIH I/F-CBs 312200 & 312100



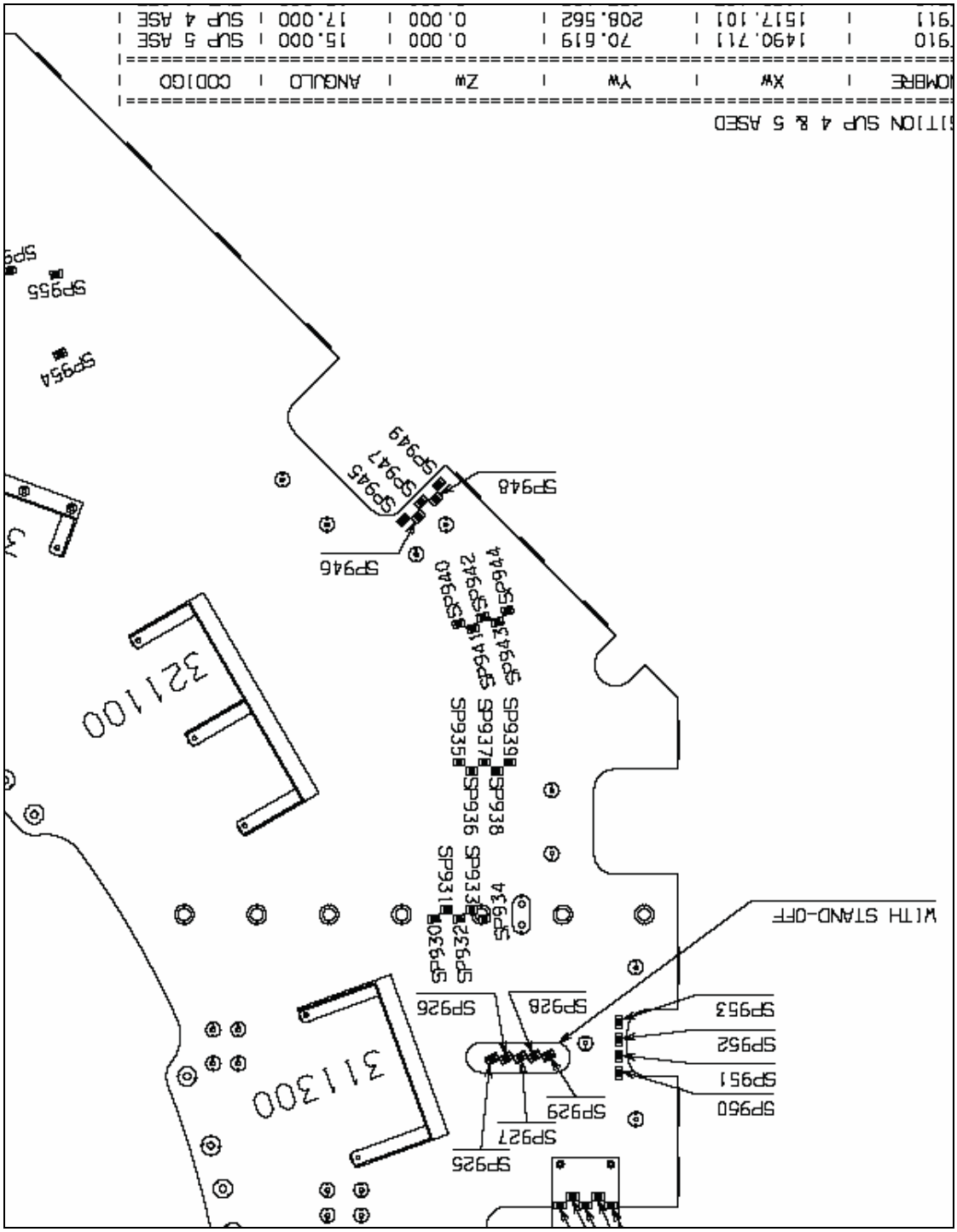
3.5.3.14 STM SVM UCP in area of SPIRE I/F-CB 312200



3.5.3.15 STM SVM UCP in area of SPIRE I/F-CB 312100



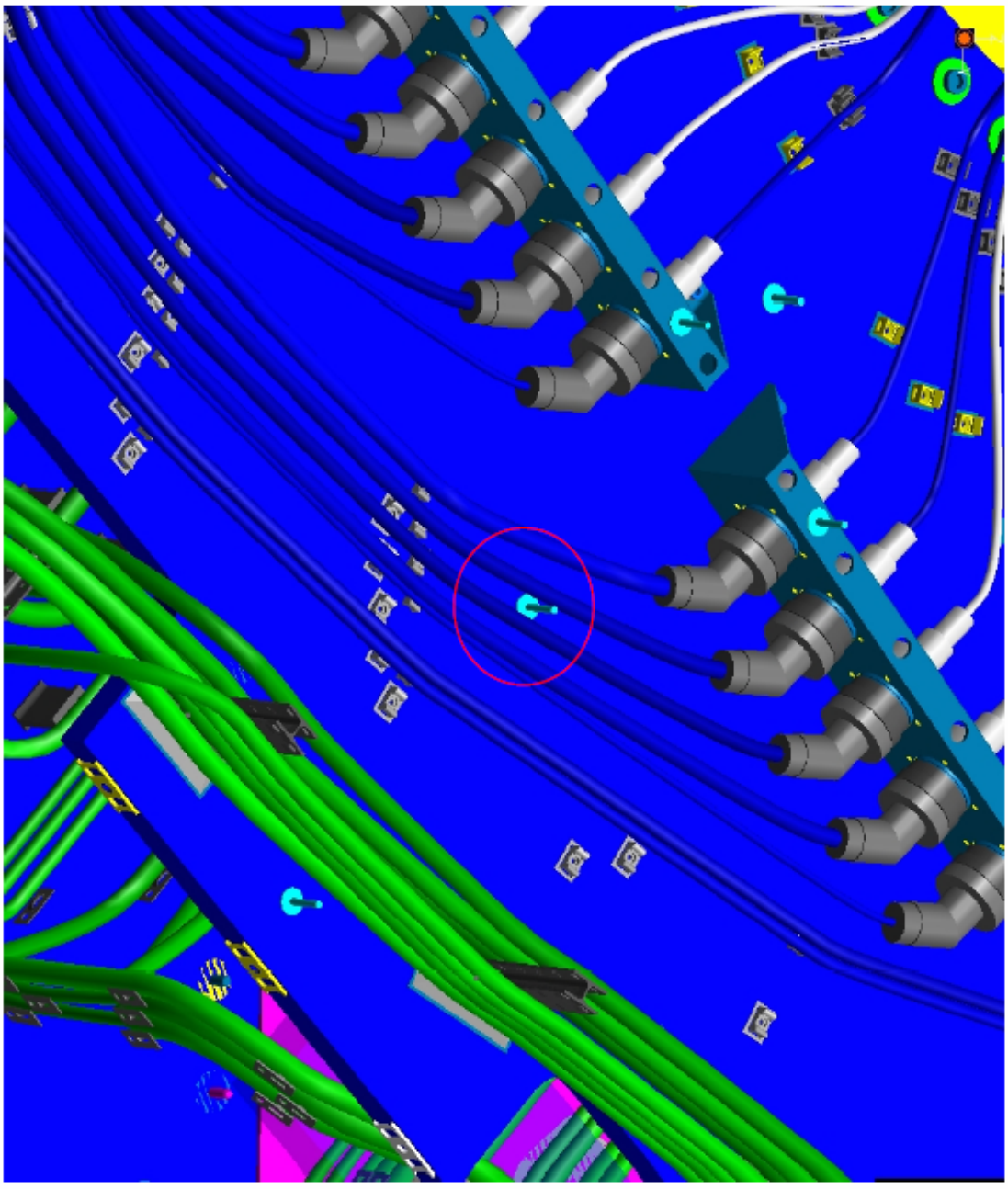
3.5.3.16 CVVext. & SVM UCP attachments in area of CCH I/F-CB 321100 of crossing HIFI LOU SIH



3.5.4 Queries detected by AAS-F during CATIA Design Models Comparizon

3.5.4.1 Query between MLI stand-off & CCH infront of SVM I/F-CB 321300

1



3.5.5 SVM glued Attachment Anchor Log

3.5.5.1 SVM UCP glued Anchor Log (CCU-B & SPIRE)

Anchor No.	Anchor Type	Cryo-Harness Segment	IF-CB	Sub System	CCH SIH	Mix Protocol No EC2216	Mix Protocol No 57C	Sample plate No	Bonding Resistance [mΩ]
SP 163	ENN 411	CVVext	315100	EGSE	CCH				
SP 164	ENN 411				CCH				
SP 165	ENN 411	CVVext			CCH				
SP 123	ENN 411	SVM			CCH				
SP 124	ENN 411	SVM	315100	EGSE	CCH				
SP 166	ENN 411	CVVext	321300	CCU	CCH				
SP 167	ENN 411				CCH				
SP 168	ENN 411				CCH				
SP 169	ENN 411				CCH				
SP 170	ENN 411	CVVext	321300	CCU	CCH				
SP 171	ENN 411	CVVext	321300	CCU	CCH				
SP 172	ENN 411				CCH				
SP 173	ENN 411				CCH				
SP 174	ENN 411				CCH				
SP 175	ENN 411	CVVext	321300	CCU	CCH				
SP 176	ENN 411	CVVext	321200	CCU	CCH				
SP 177	ENN 411				CCH				
SP 178	ENN 411				CCH				
SP 179	ENN 411				CCH				
SP 180	ENN 411	CVVext	321200	CCU	CCH				
SP 181	ENN 411	CVVext	321200	CCU	CCH				
SP 182	ENN 411				CCH				
SP 183	ENN 411				CCH				
SP 184	ENN 411				CCH				
SP 185	ENN 411	CVVext	321200	CCU	CCH				
SP 186	ENN 411	CVVext	312300	SPIRE	SIH				
SP 187	ENN 411				SIH				
SP 188	ENN 411				SIH				
SP 189	ENN 411	CVVext	312300	SPIRE	SIH				
SP 972	ENN 411	SVM	312300	SPIRE	SIH				
SP 973	ENN 411				SIH				
SP 974	ENN 411				SIH				
SP 975	ENN 411				SIH				
SP 976	ENN 411	SVM	312300	SPIRE	SIH				

Table 3.5-1: SVM UCP glued Anchor Log (CCU-B & SPIRE)

3.5.5.2 SVM UCP glued Anchor Log (CCU-A & SPIRE)

Anchor No.	Anchor Type	Cryo-Harness Segment	IF-CB	Sub System	CCH SIH	Mix Protocol No EC2216	Mix Protocol No 57C	Sample plate No	Bonding Resistance [mΩ]
SP 117	ENN 411	SVM	321200	CCU	CCH				
SP 118	ENN 411				CCH				
SP 119	ENN 411				CCH				
SP 120	ENN 411				CCH				
SP 121	ENN 411		321200	CCU	CCH				
SP 122	ENN 411	SVM	321300	CCU	CCH				
SP 111	ENN 411	SVM	321200	CCU	CCH				
SP 112	ENN 411			CCU	CCH				
SP 113	ENN 411			CCU	CCH				
SP 114	ENN 411			CCU	CCH				
SP 115	ENN 411			CCU	CCH				
SP 116	ENN 411	SVM	321200	CCU	CCH				
SP 102	ENN 411	SVM	312200	SPIRE	SIH				
SP 103	ENN 411			SPIRE	SIH				
SP 104	ENN 411			SPIRE	SIH				
SP 105	ENN 411			SPIRE	SIH				
SP 106	ENN 411			SPIRE	SIH				
SP 107	ENN 411			SPIRE	SIH				
SP 108	ENN 411			SPIRE	SIH				
SP 109	ENN 411			SPIRE	SIH				
SP 110	ENN 411	SVM	312200	SPIRE	SIH				
SP 097	ENN 411	SVM	312200	SPIRE	SIH				
SP 098	ENN 411			SPIRE	SIH				
SP 099	ENN 411			SPIRE	SIH				
SP 100	ENN 411			SPIRE	SIH				
SP 101	ENN 411	SVM	312200	SPIRE	SIH				
SP 072	ENN 411	SVM	316100	SPIRE	SIH				
SP 073	ENN 411			SPIRE	SIH				
SP 074	ENN 411			SPIRE	SIH				
SP 075	ENN 411			SPIRE	SIH				
SP 076	ENN 411			SPIRE	SIH				
SP 077	ENN 411			SPIRE	SIH				
SP 078	ENN 411	SVM	316100	SPIRE	SIH				
SP 079	ENN 411	SVM	316100	SPIRE	SIH				
SP 080	ENN 411			SPIRE	SIH				
SP 081	ENN 411			SPIRE	SIH				
SP 082	ENN 411			SPIRE	SIH				
SP 083	ENN 411	SVM	316100	SPIRE	SIH				

Table 3.5-2: SVM UCP glued Anchor Log (CCU-A & SPIRE)

3.5.5.3 SVM UCP glued Anchor Log (SPIRE & HIFI-LOU)

Anchor No.	Anchor Type	Cryo-Harness Segment	IF-CB	Sub System	CCH SIH	Mix Protocol No EC2216	Mix Protocol No 57C	Sample plate No	Bonding Resistance [mΩ]
SP 084	ENN 411	SVM	316100	SPIRE	SIH				
SP 085	ENN 411			SPIRE	SIH				
SP 086	ENN 411			SPIRE	SIH				
SP 087	ENN 411	SVM	316100	SPIRE	SIH				
SP 088	ENN 411	SVM	312300	SPIRE	SIH				
SP 089	ENN 411			SPIRE	SIH				
SP 090	ENN 411			SPIRE	SIH				
SP 091	ENN 411	SVM	312300	SPIRE	SIH				
SP 092	ENN 411	SVM	312300	SPIRE	SIH				
SP 093	ENN 411			SPIRE	SIH				
SP 094	ENN 411			SPIRE	SIH				
SP 095	ENN 411			SPIRE	SIH				
SP 096	ENN 411	SVM	312300	SPIRE	SIH				
SP 190	ENN 411	CVVext	312200	SPIRE	SIH				
SP 191	ENN 411			SPIRE	SIH				
SP 192	ENN 411	CVVext	312200	SPIRE	SIH				
SP 193	ENN 411	CVVext	312100	SPIRE	SIH				
SP 194	ENN 411			SPIRE	SIH				
SP 195	ENN 411			SPIRE	SIH				
SP 196	ENN 411			SPIRE	SIH				
SP 197	ENN 411			SPIRE	SIH				
SP 198	ENN 411	CVVext	312100	SPIRE	SIH				
SP 199	ENN 411	CVVext	321100	UMB	CCH				
SP 200	ENN 411			UMB	CCH				
SP 201	ENN 411			UMB	CCH				
SP 202	ENN 411			UMB	CCH				
SP 203	ENN 411			UMB	CCH				
SP 204	ENN 411			UMB	CCH				
SP 205	ENN 411	CVVext	321100	UMB	CCH				
SP 206	ENN 411	CVVext	311300	HIFI-LOU	SIH				
SP 207	ENN 411			HIFI-LOU	SIH				
SP 208	ENN 411			HIFI-LOU	SIH				
SP 209	ENN 411			HIFI-LOU	SIH				
SP 210	ENN 411	CVVext	311300	HIFI-LOU	SIH				

Table 3.5-3: SVM UCP glued Anchor Log (SPIRE & HIFI-LOU) SVM UCP glued Anchor Log

3.5.5.4 SVM UCP glued Anchor Log (SPIRE & HIFI-LOU)

Anchor No.	Anchor Type	Cryo-Harness Segment	IF-CB	Sub System	CCH SIH	Mix Protocol No EC2216	Mix Protocol No 57C	Sample plate No	Bonding Resistance [mΩ]
SP 062	ENN 411	SVM	312200	SPIRE	SIH				
SP 063	ENN 411			SPIRE	SIH				
SP 064	ENN 411			SPIRE	SIH				
SP 065	ENN 411			SPIRE	SIH				
SP 066	ENN 411			SPIRE	SIH				
SP 067	ENN 411			SPIRE	SIH				
SP 068	ENN 411			SPIRE	SIH				
SP 069	ENN 411			SPIRE	SIH				
SP 070	ENN 411			SPIRE	SIH				
SP 071	ENN 411	SVM	312200	SPIRE	SIH				
SP 054	ENN 411	SVM	312100	SPIRE	SIH				
SP 055	ENN 411			SPIRE	SIH				
SP 056	ENN 411			SPIRE	SIH				
SP 057	ENN 411			SPIRE	SIH				
SP 058	ENN 411			SPIRE	SIH				
SP 059	ENN 411			SPIRE	SIH				
SP 060	ENN 411			SPIRE	SIH				
SP 061	ENN 411	SVM	312100	SPIRE	SIH				
SP 211	ENN 411	CVVext	311100	HIFI	SIH				
SP 212	ENN 411			HIFI	SIH				
SP 213	ENN 411			HIFI	SIH				
SP 214	ENN 411			HIFI	SIH				
SP 215	ENN 411			HIFI	SIH				
SP 216	ENN 411			HIFI	SIH				
SP 217	ENN 411	CVVext	311100	HIFI	SIH				
SP 229	**??**								
SP 230	**??**								
SP 049	ENN 411	SVM	321100	HIFI	SIH				
SP 050	ENN 411			HIFI	SIH				
SP 051	ENN 411			HIFI	SIH				
SP 052	ENN 411			HIFI	SIH				
SP 053	ENN 411	SVM	321100	HIFI	SIH				
SP 226	ENN 411			HIFI	SIH				
SP 227	ENN 411			HIFI	SIH				
SP 228	ENN 411			HIFI	SIH				
SP 229	ENN 411			HIFI	SIH				

Table 3.5-4: SVM UCP glued Anchor Log (SPIRE & HIFI-LOU) SVM UCP glued Anchor Log

3.5.6 PFM SVM UCP CCH & SIH Attachment Adjustments

close SVM I/F CB	attchment ID	Srtand-off type	attachment type on SO	alternative attachment type on SO	Remark to H/W attachment gluing
312300 SPIRE	SP 976	SO-15	ENN 411		
312300 SPIRE	SP 973	SOR-15-20	ENN 411	TC-105	
312300 SPIRE	SP 974	SOR-15-20	ENN 411	TC-105	
312300 SPIRE	SP 975	SOR-15-20	ENN 411	TC-105	
312300 SPIRE	SP 972	SO-20	ENN 411		
312200 SPIRE	SP 970	SOR-15-25	ENN 411	TC-105	
312200 SPIRE	SP 971	SOR-15-25	ENN 411	TC-105	
312200 SPIRE	SP 968	SOR-10-15	ENN 411	TC-105	
312200 SPIRE	SP 969	SOR-10-15	ENN 411	TC-105	
312100 SPIRE	SP 965	SO-15	ENN 411		
312100 SPIRE	SP 966	SO-15	ENN 411		
312100 SPIRE	SP 967	SO-15	ENN 411		
312100 SPIRE	SP 955	SO-15	ENN 411		
312100 SPIRE	SP 956	SO-15	ENN 411		
312100 SPIRE	SP 960	SO-15	ENN 411		
312100 SPIRE	SP 962	SO-15	ENN 411		shift 35 mm far cutout & from current position
312100 SPIRE	SP 963	SO-15	ENN 411		shift 35 mm far cutout & from current position
311300 HIFI LOU	SP 950		ENN 411		skip , do not attach ENN 411 anchors & lace 3 bundles to each other
311300 HIFI LOU	SP 951		ENN 411		skip , do not attach ENN 411 anchors & lace 3 bundles to each other
311300 HIFI LOU	SP 952		ENN 411		skip , do not attach ENN 411 anchors & lace 3 bundles to each other
311300 HIFI LOU	SP 953		ENN 411		skip , do not attach ENN 411 anchors & lace 3 bundles to each other
311100 HIFI FPU	SP 900	additional SP 9	new ENN 411		add 120 mm from this SPin direction to 311100 CB another ENN 411 attachment after 1.SIH integration
311100 HIFI FPU	SP 901	additional SP 9	new ENN 411		add 120 mm from this SPin direction to 311100 CB another ENN 411 attachment after 1.SIH integration
311100 HIFI FPU	SP 902	additional SP 9	new ENN 411		add 120 mm from this SPin direction to 311100 CB another ENN 411 attachment after 1.SIH integration
311100 HIFI FPU	SP 903	additional SP 9	new ENN 411		add 120 mm from this SPin direction to 311100 CB another ENN 411 attachment after 1.SIH integration
311100 HIFI FPU	SP 904	additional SP 9	new ENN 411		add 120 mm from this SPin direction to 311100 CB another ENN 411 attachment after 1.SIH integration

Table 3.5-5: Helicoil Block gluing Attachment Log

3.5.7 Helicoil Block gluing Attachment Log

Stand-off [SOT] No.	Base Plate DW ID 2547-121432	Cryo-Hamess Segment	I/F-CB or Location	Sub System	CCH or SIH	Mix Protocol No EC2216	Mix Protocol No Eccob. 57C	Glueing Sample Plate No	SOT DW ID 2547-121432	SOT Type	SOT M4x8 bolts Torqued [2 Nm]	Bonding Resistance [mΩ]
701	366-01	SVM	LP -Zs	SPIRE	SIH				361-01	2 x 5		
702	366-01	SVM	LP -Zs	SPIRE	SIH				361-01	2 x 5		
703	366-01	SVM	LP -Zs	SPIRE	SIH				361-01	2 x 5		
704	366-01	SVM	LP -Zs	SPIRE	SIH				361-01	2 x 5		
705	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
706	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
707	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
708	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
709	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
710	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
711	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
712	366-01	SVM	LP -Zs	CCH	CCH				362-01	2 x 5		
Date:		Name:					PA:					

Table 3.5-6: SOT Installation and Torque Log

3.5.8 Harness Attachment Drawings

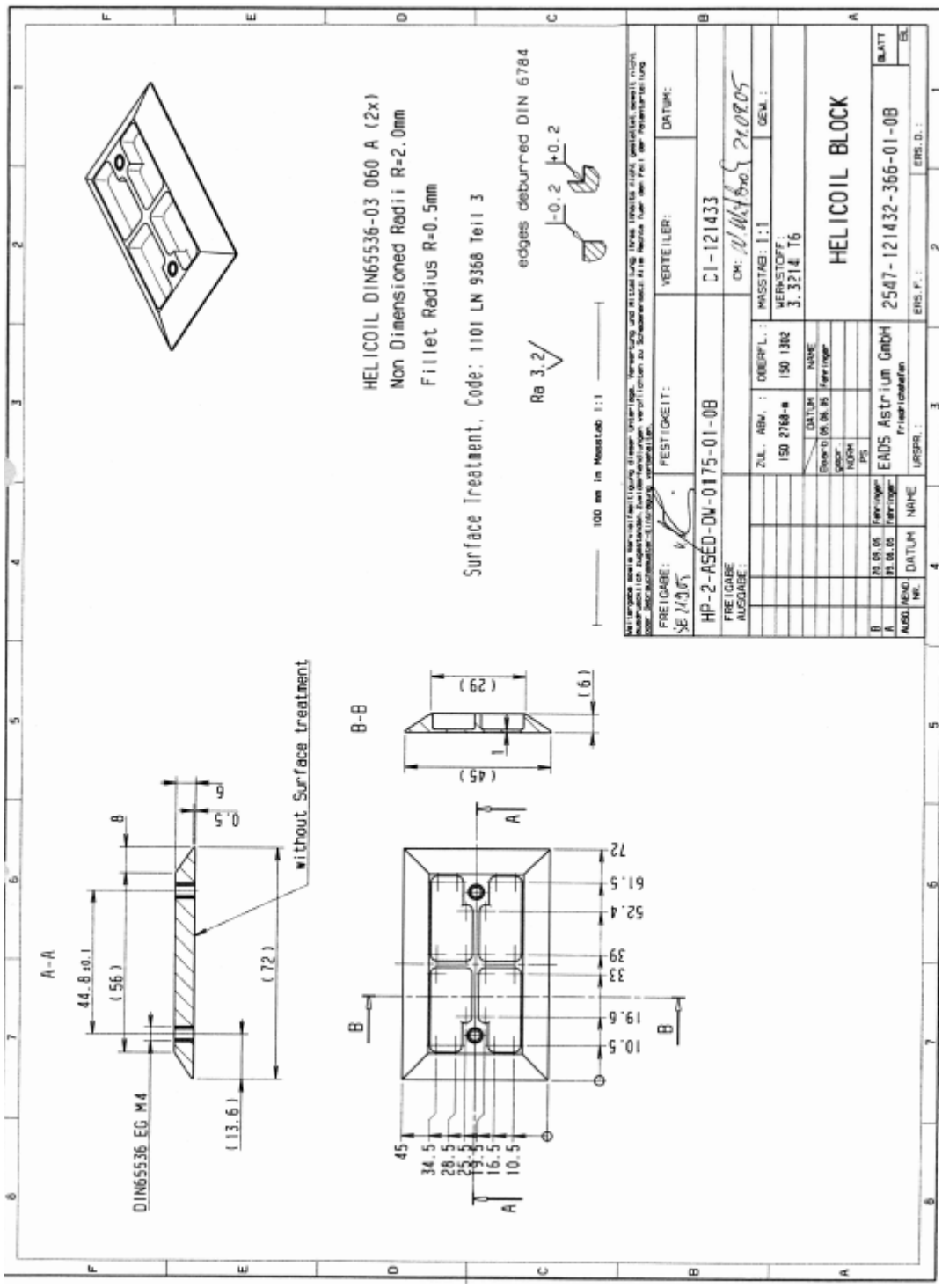


Figure 3.5-1: SVM Harness Stand-off Tower Helicoil Block

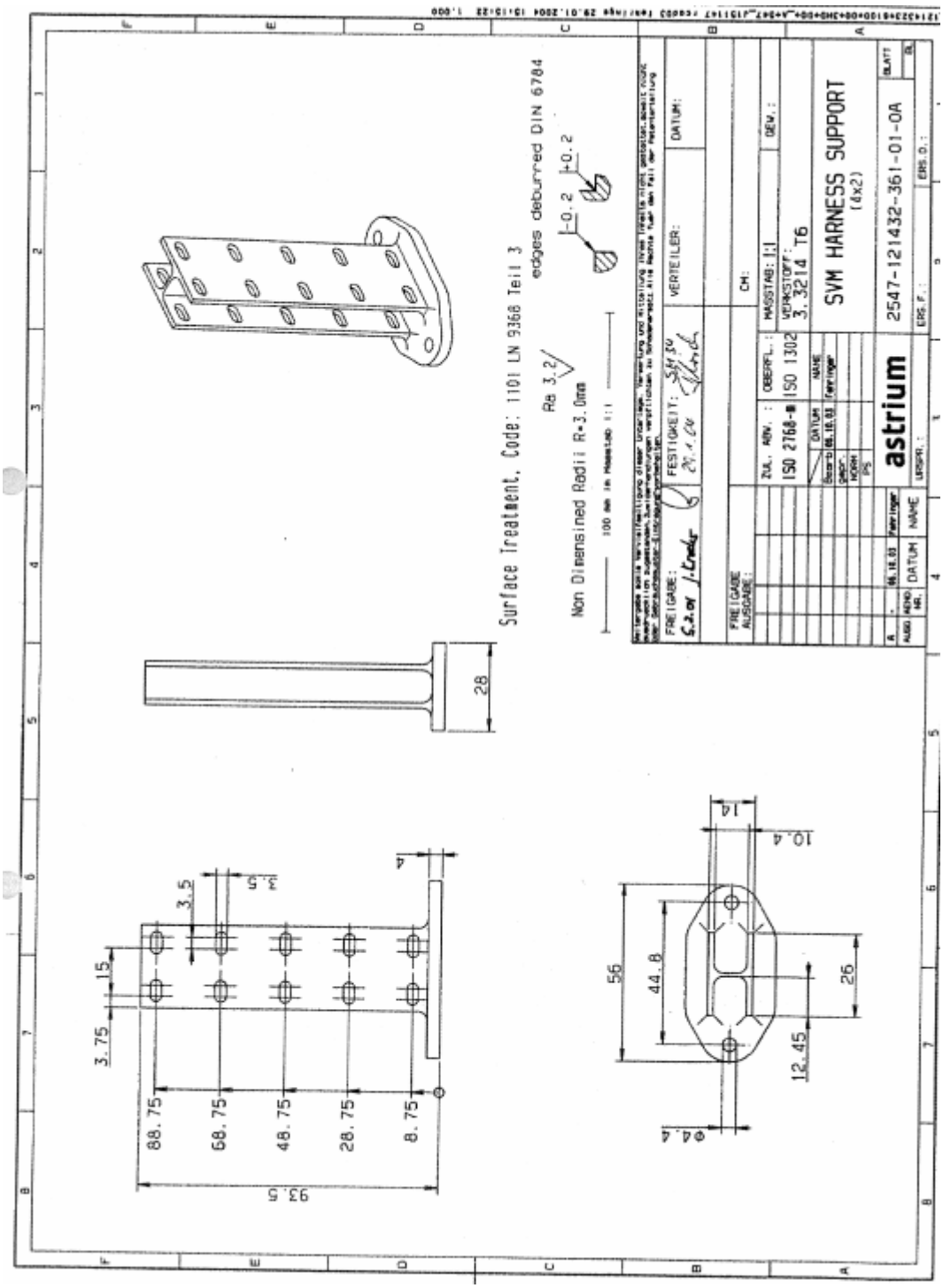


Figure 3.5-2: SVM Harness Stand-off Tower (SOT 4 x 2)

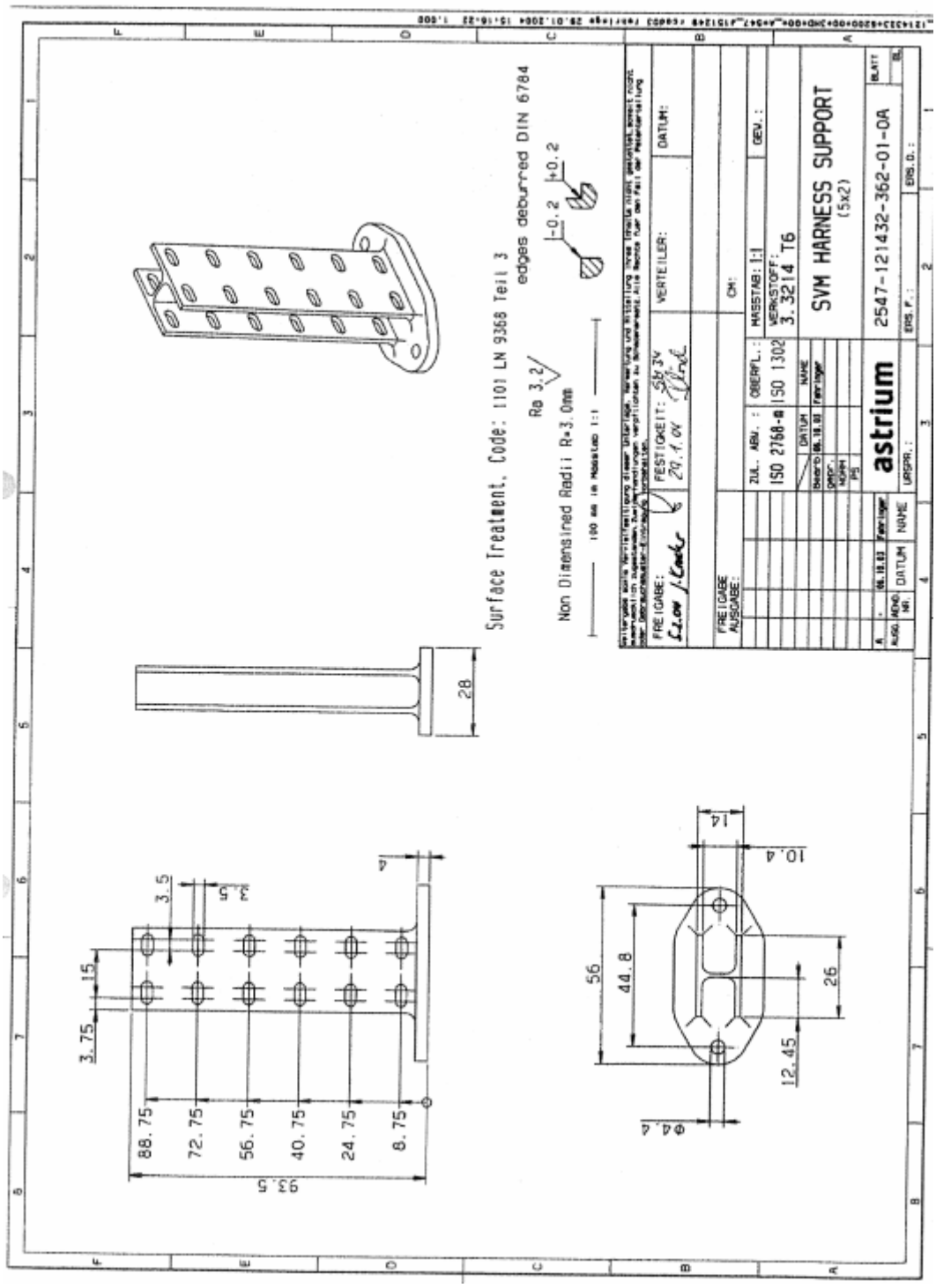


Figure 3.5-3: SVM Harness Stand-off Tower (SOT 5 x 2)

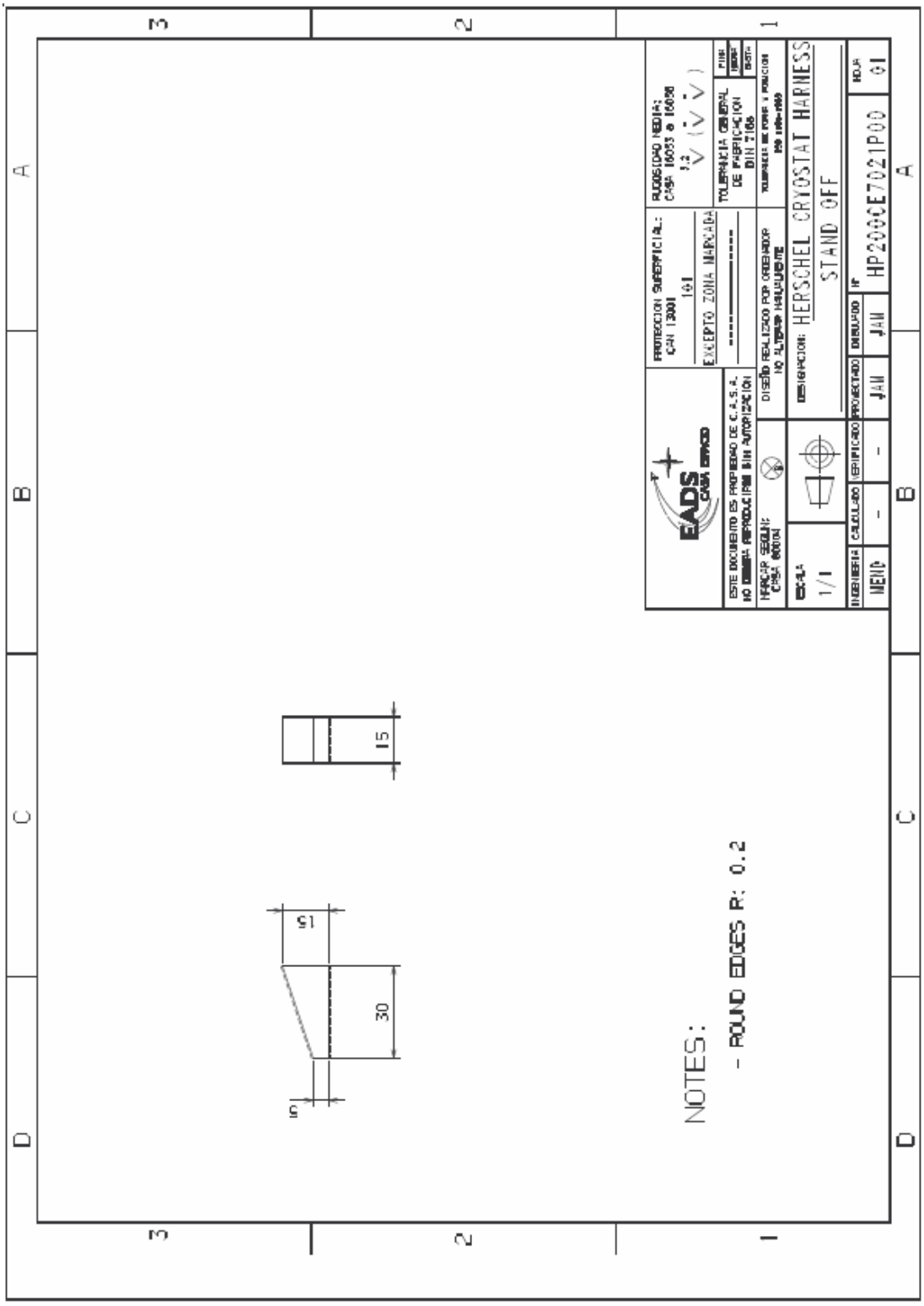


Figure 3.5-4: SVM Harness stand-off (SOR-05-15)

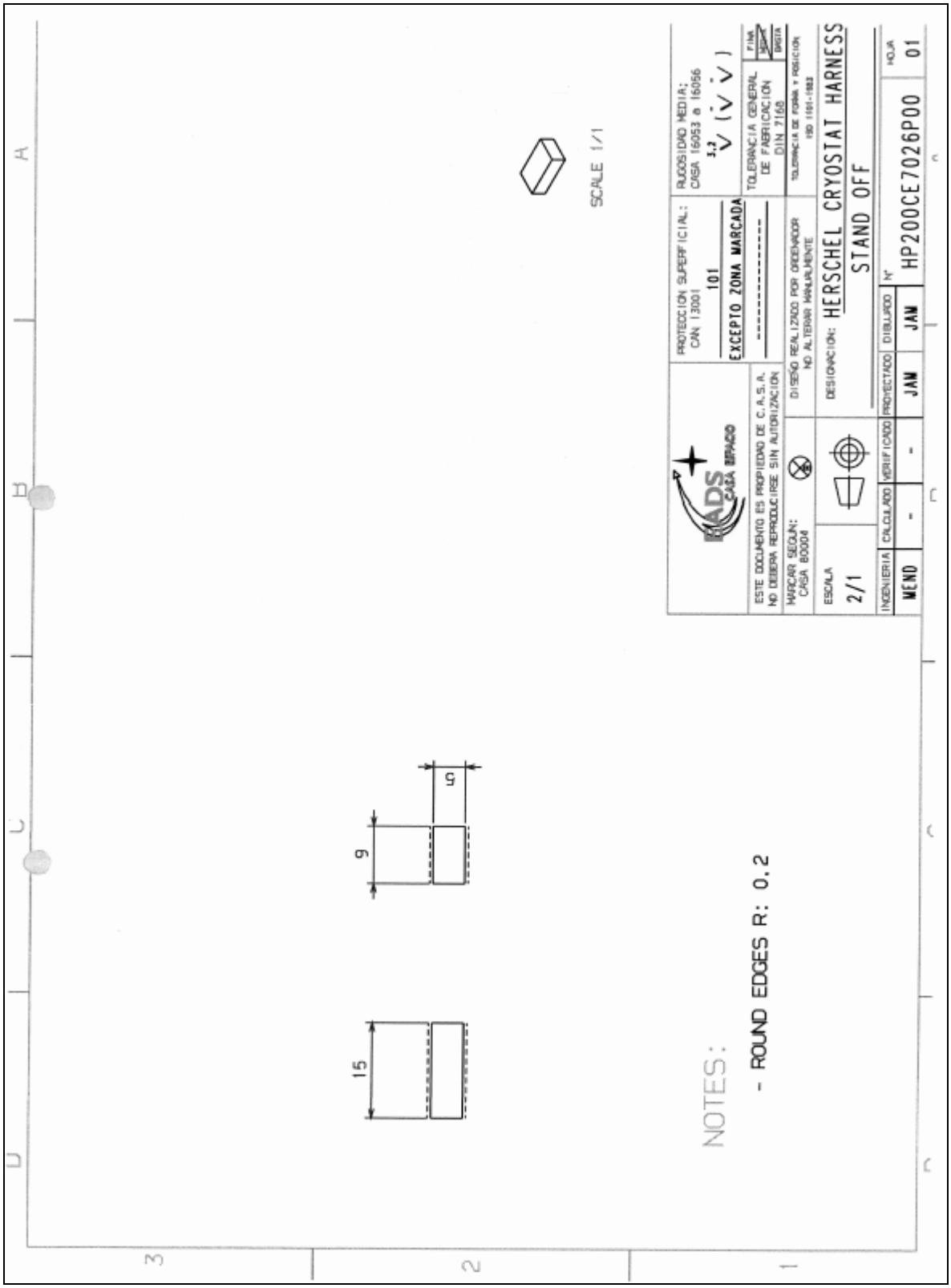


Figure 3.5-5: SVM Harness stand-off for ENN 411 (SO-05)

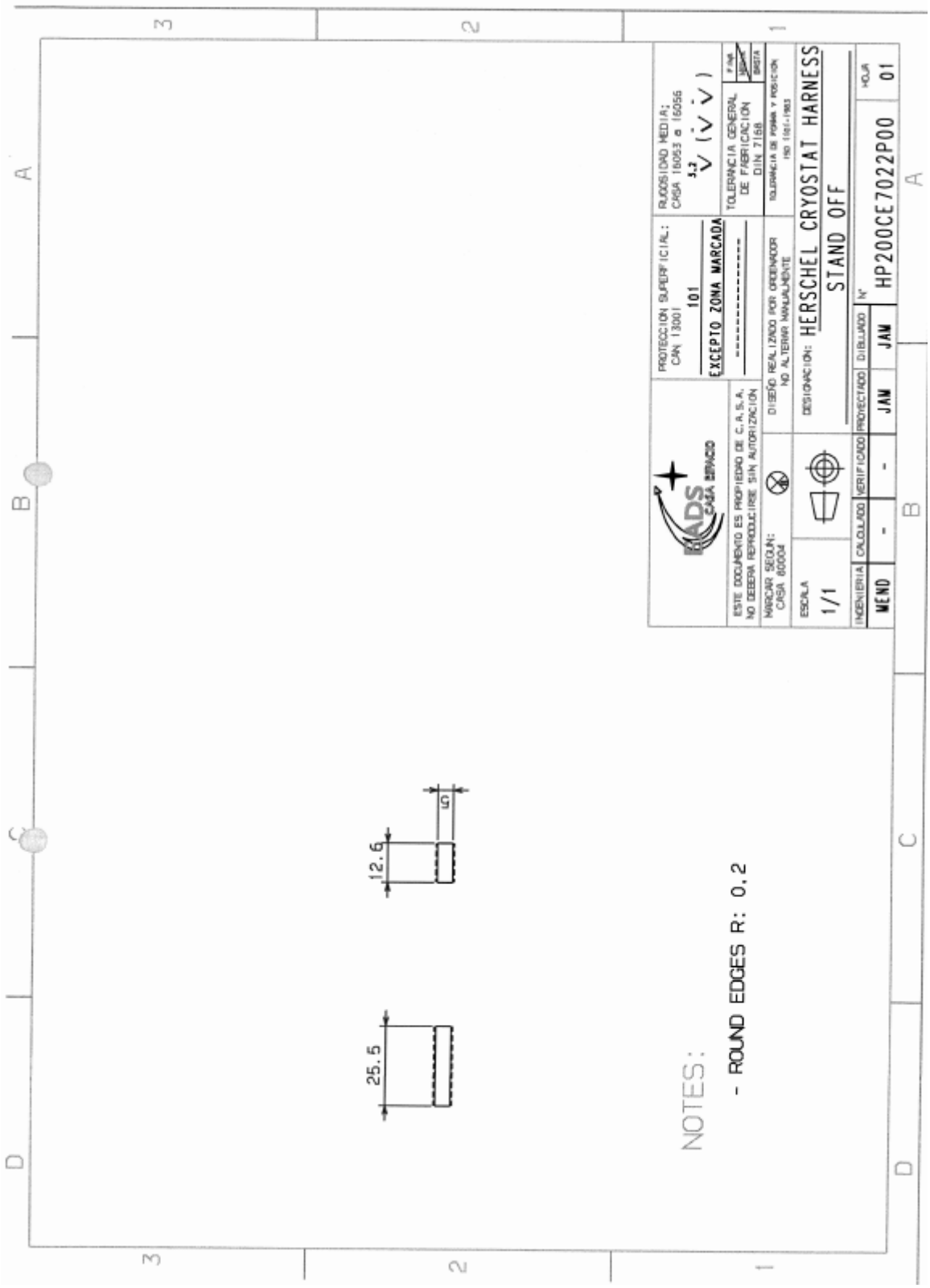


Figure 3.5-6: SVM Harness stand-off for TC-105 (SO-05)

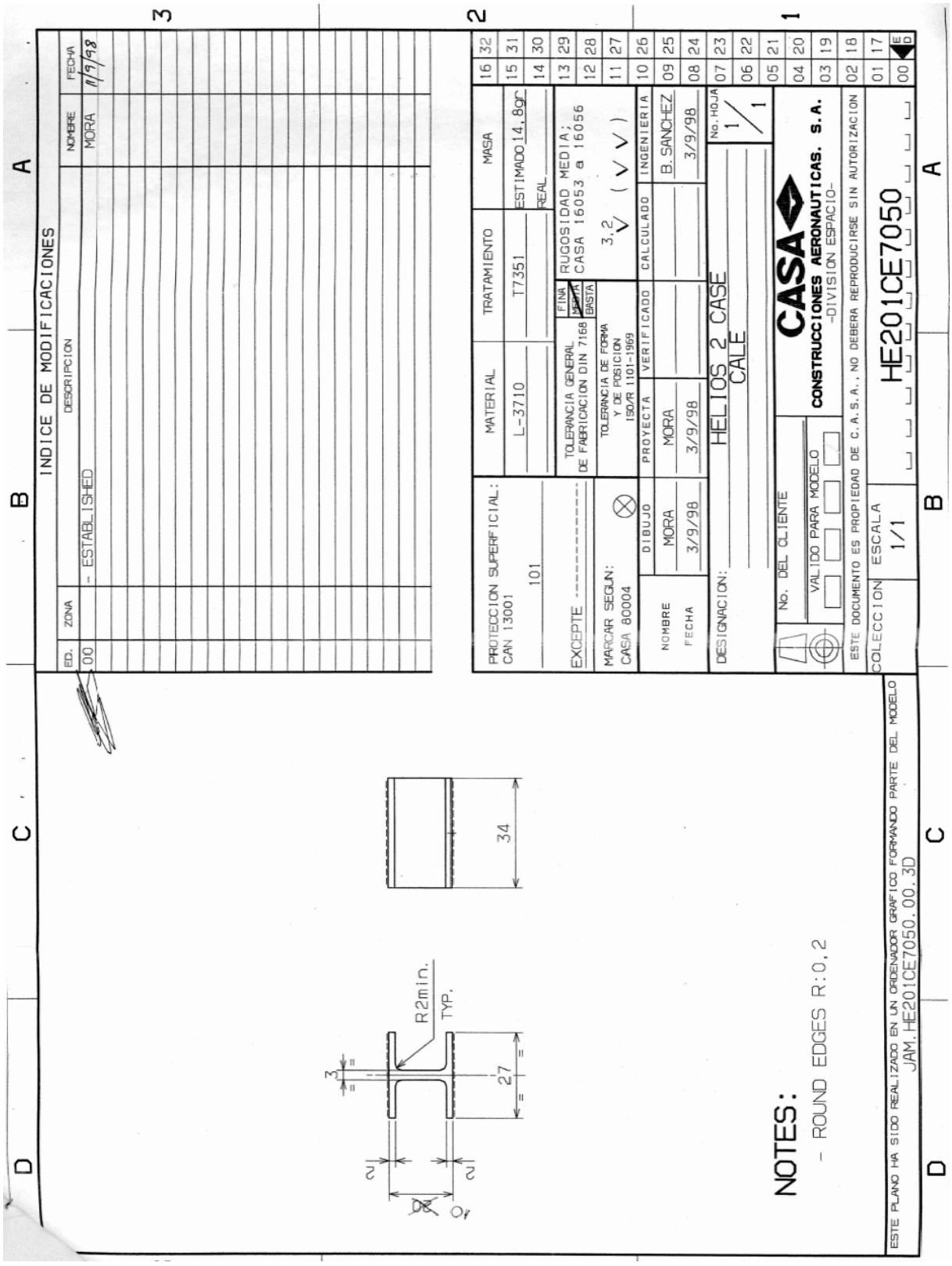


Figure 3.5-7: SVM Harness stand-off (SO-10)

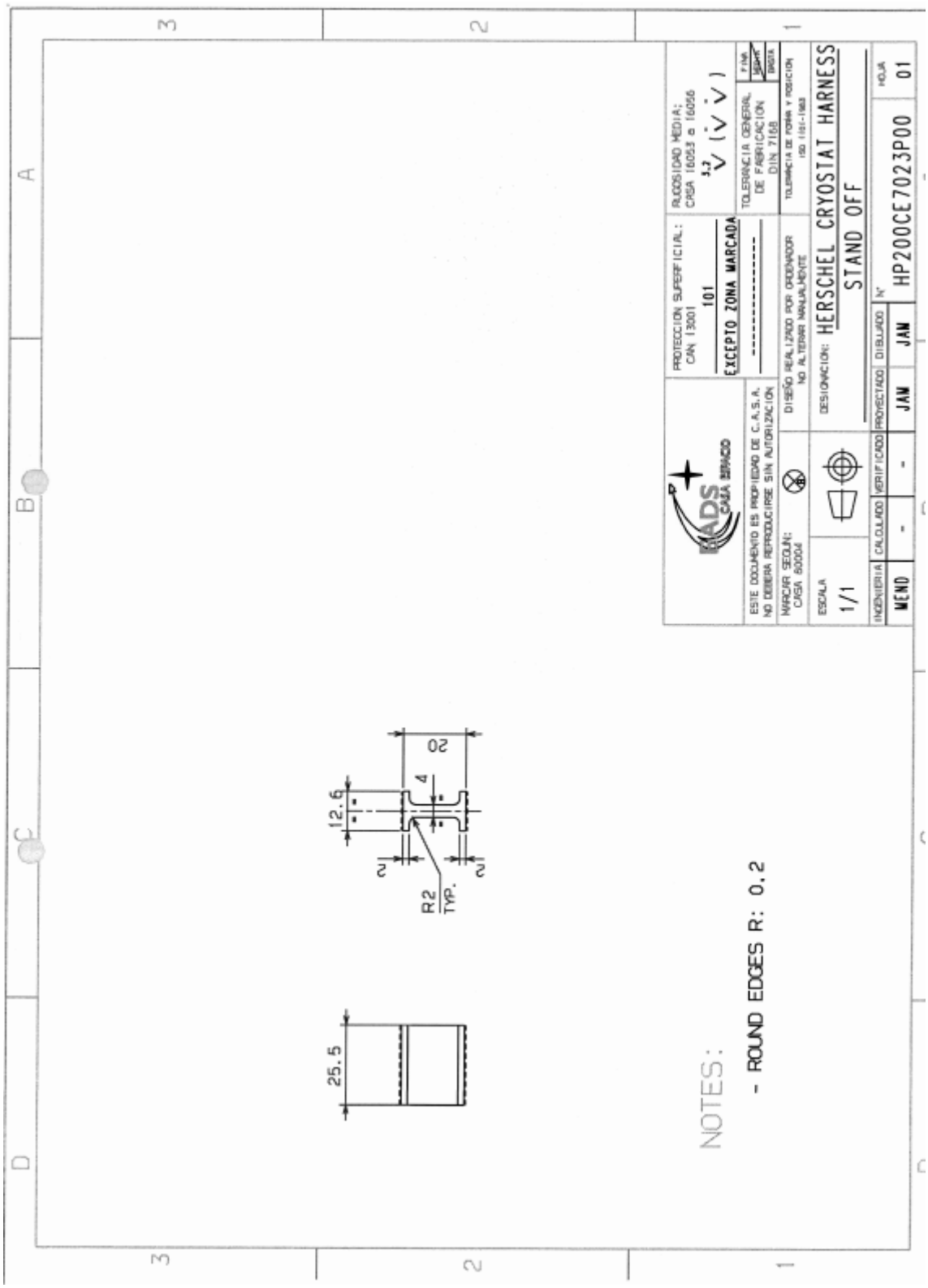


Figure 3.5-8: SVM Harness stand-off (SO-20)

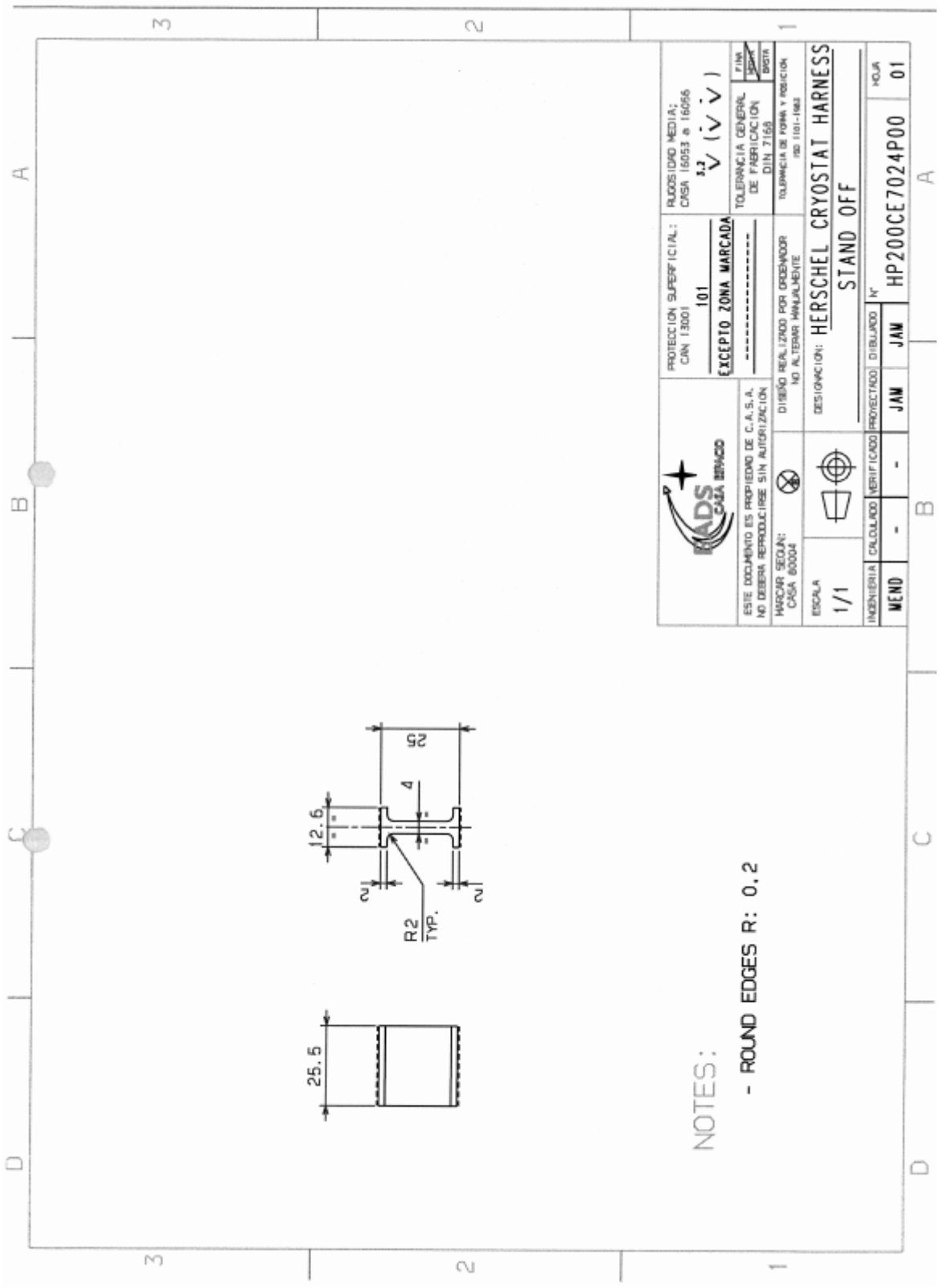


Figure 3.5-9: SVM Harness stand-off (SO-25)

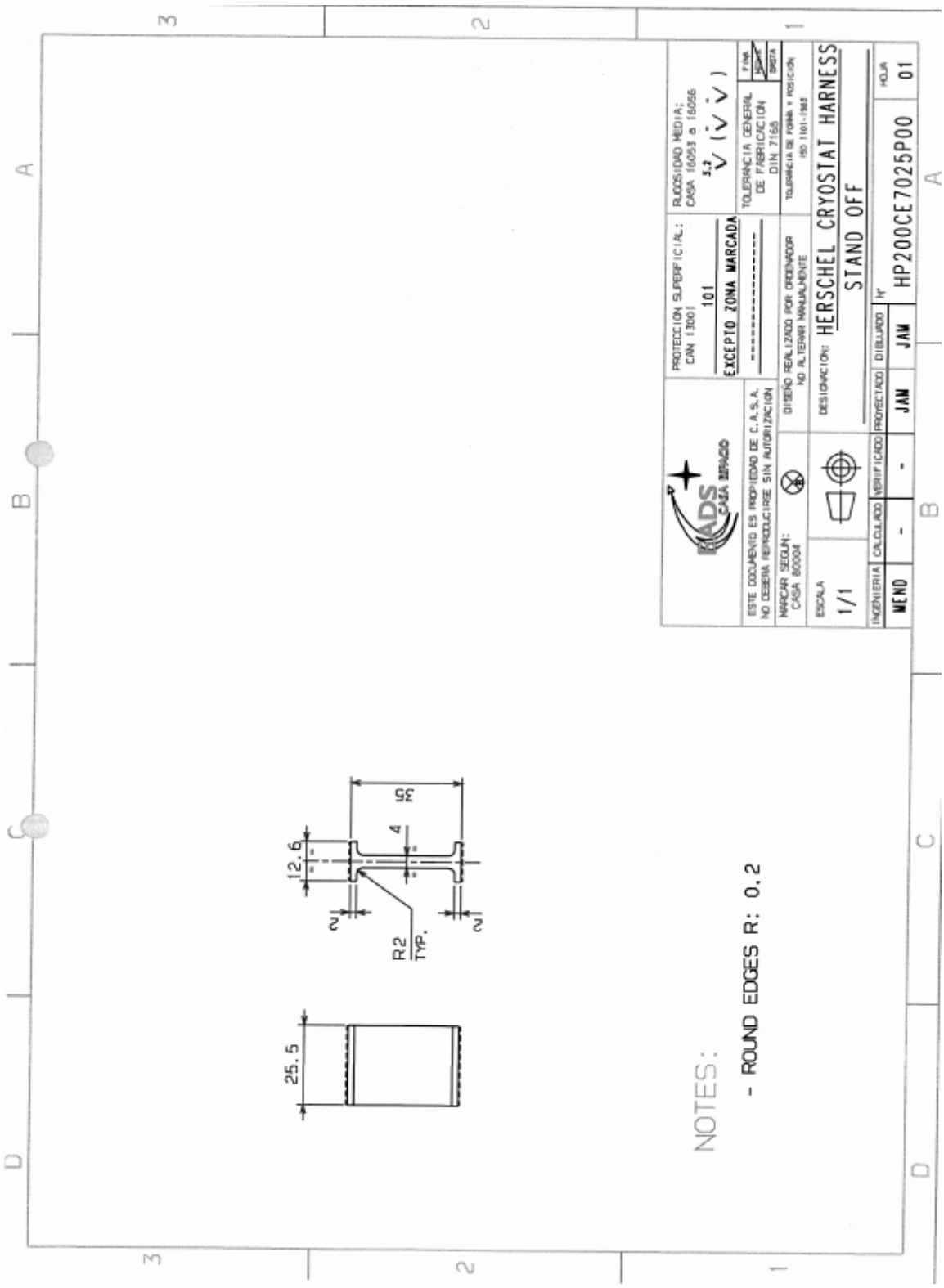
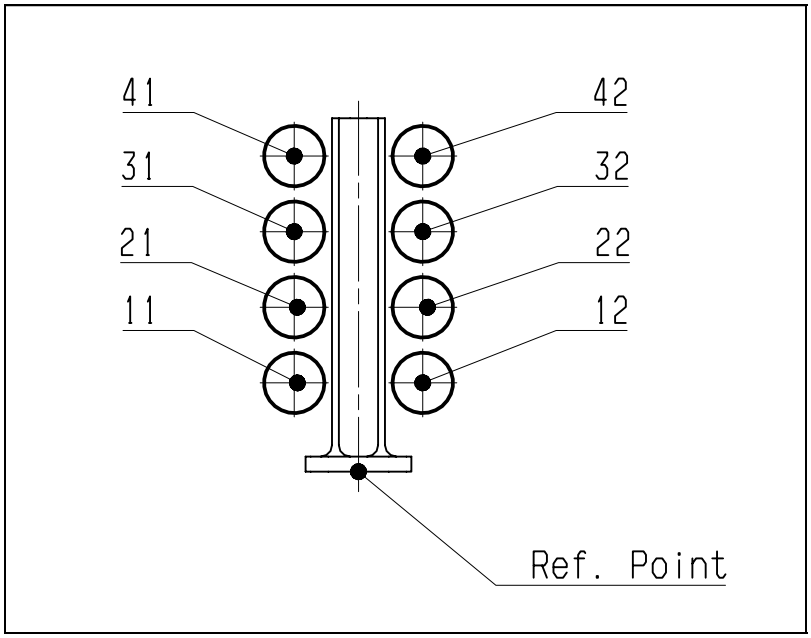


Figure 3.5-10: SVM Harness stand-off (SO-35)

3.6 Stand-off Coding Definition

3.6.1 Harness Bundle Position Coding on Stand-off Towers (SOT)



3.6.2 Harness Stand-off Tower Allocation Coding

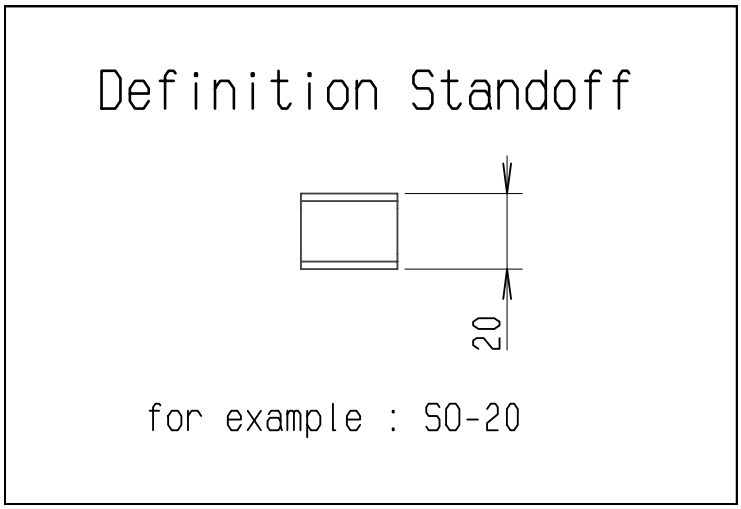
STXYY-ZW

ST = Standoff Tower
X = 5 to 9
- 5 = Panel HIFI (-Y)
- 6 = Panel HIFI (-Y/-Z)
- 7 = Panel SPIRE + CCU (-Z)
- 8 = Panel PACS (+Y/-Z)
- 9 = SVM Upper Closure Panel

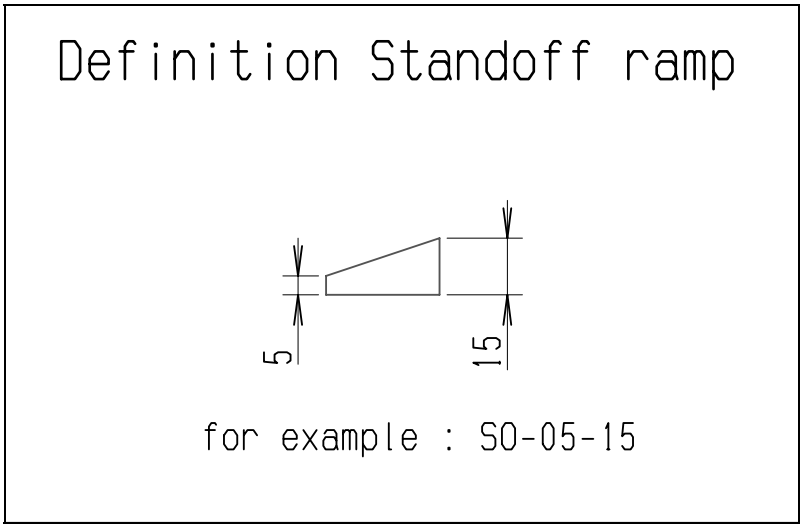
YY = consecutive numbering
Z = 1 to4
W = 1 or 2
- 2 = Unit side

Example : ST503-31

3.6.3 Harness SO Stand-off Coding



3.6.4 Harness SOR Stand-off Ramp Coding



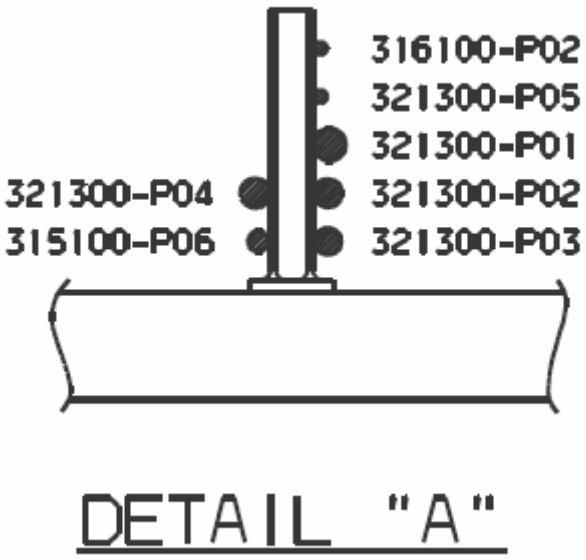
3.6.5 Harness Attachments & Fixations on Stand-off-Towers)

The CCH bundle routing on the -Z SVM LP installed stand-off tower (SOT) is defined detail for each fixation, as identified as sample in detail below.

There are two different high stand-off-towers to be used, the 2 x 4 (10 holes) and the 2x 5 (12 holes) bundle row towers.

On Cryo-Harness routing drawings, the harness bundle position on all stand-off towers are defined in detailed views, see below.

Final bundles fixation on these towers, shall be performed accordingly to avoid a too short integrated harness far from the Warm-unit source connector, when the lateral panel is already closed.



3.6.6 Individual CCH Bundle Routing and Fixations

The single harness bundle routing path is defined by use of fixation anchors for each bundle & also for spliced looms of the same bundle, if routed to different SVM I/F-CB connectors, therefore the Warm-unit I/F connector will appear , not only once, in the routing & fixation tables.

The bundle identifications are related to the CCH interconnection diagrams and obove defined Attachment anchor allocation codes.

3.7 EQM SVM I/F-CB Mounting for advanced SVM Harness Installation

For the advanced SVM harness installation prior to mating of PLM with SVM & delivery of PFM warm-units, the EQM SVM I/F-CBs equipped with dummy-receptacles shall be temporarily mounted for proper Cryo-CCH and SIH positioning between the SVM I/F-CBs and the Warm unit dummies.

4 Fixation bolts in each of the I/F-CB corners shall be mounted. The EQM I/F-CBs are of same configuration than the PFM one.

For SVM Harness plugs, all Dummy receptacle-connectors from CASA Manufacturing-Jig shall be installed on SVM UCP I/F-CBs to perform a proper harness placement in this area.

For ESD reasons, the SVM I/F-CB bond-straps delivered by AAS-F shall be installed too.

Check all CCH and SPIRE SIH dummy receptacles are installed according HP-2-ASED-PR-0072.

For ESD reasons the EQM SVM UCP I/F-CBs shall be bonded by use of the AAS procured PFM Bond-straps to SVM structure.

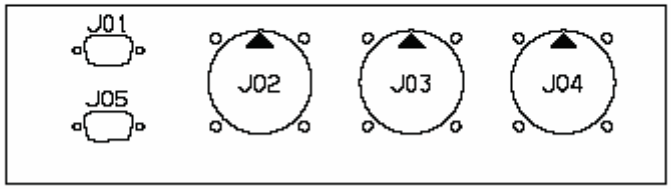
3.7.1 CCH & SPIRE SIH SVM I/F-CB Dummy-Receptacle installation Control

CCH	SVM-CB	mounted H/W	Orientation	installed	missing
CCH	315100 J04	650FS002-M22	master-key top		
CCH	315100 J05	650FS002-M22	master-key top		
CCH	321300 J01	650FS002-M22	master-key top		
CCH	321300 J02	650FS002-M22	master-key top		
CCH	321300 J03	650FS002-M22	master-key top		
CCH	321300 J04	650FS002-M22	master-key top		
CCH	321300 J05	650FS002-M22	master-key top		
CCH	321200 J01	650FS002-M22	master-key top		
CCH	321200 J02	650FS002-M22	master-key top		
CCH	321200 J03	650FS002-M22	master-key top		
CCH	321200 J04	650FS002-M22	master-key top		
CCH	321200 J05	650FS002-M22	master-key top		
SPIRE SIH	312300 J01	650FS002-M12	master-key top		
SPIRE SIH	312300 J02	650FS002-M12	master-key top		
SPIRE SIH	312300 J03	650FS002-M24	master-key top		
SPIRE SIH	312300 J04	650FS002-M24	master-key top		
SPIRE SIH	312300 J05	650FS002-M24	master-key top		
SPIRE SIH	312300 J06	650FS002-M24	master-key top		
SPIRE SIH	316100 J01	650FS002-M10	master-key top		
SPIRE SIH	316100 J02	650FS002-M10	master-key top		
SPIRE SIH	312200 J01	650FS002-M24	master-key top		
SPIRE SIH	312200 J02	650FS002-M24	master-key top		
SPIRE SIH	312200 J03	650FS002-M24	master-key top		
SPIRE SIH	312200 J04	650FS002-M24	master-key top		
SPIRE SIH	312200 J05	650FS002-M24	master-key top		
SPIRE SIH	312200 J06	650FS002-M24	master-key top		
SPIRE SIH	312100 J1A	D-screw-lock assy	N/A		
SPIRE SIH	312100 J1A	D-screw-lock assy	N/A		
SPIRE SIH	312100 J02	650FS002-M24	master-key top		
SPIRE SIH	312100 J03	650FS002-M24	master-key top		
SPIRE SIH	312100 J04	650FS002-M24	master-key top		
Date:		Name:			

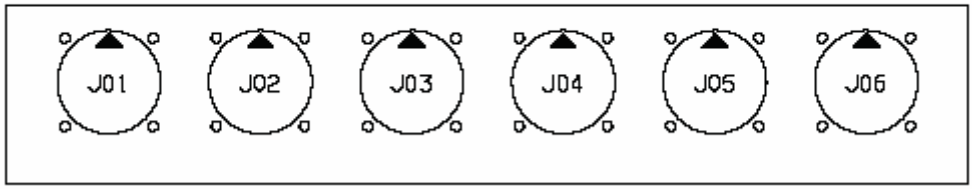
Table 3.7-1: SVM UCP I/F-CB Dummy-Receptacles

3.7.2 SPIRE SIH SVM I/F-CB Dummy-Receptacle Master-key Orientation

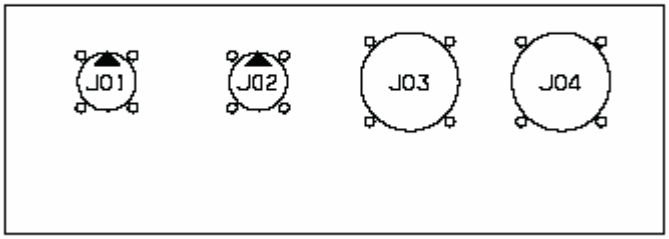
312100



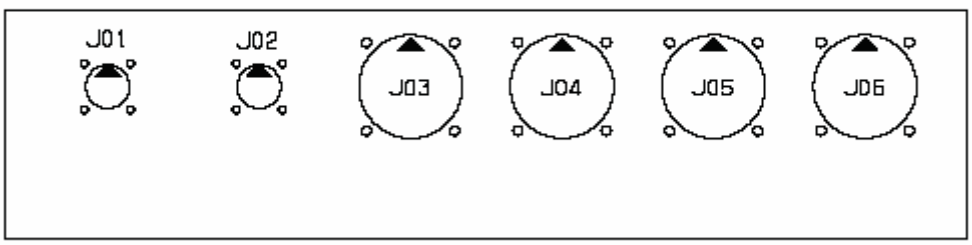
312200



316100



312300



3.7.3 CCH SVM I/F-CB Dummy-Receptacle Master-key Orientation

3.8 PFM SVM CCH Integration

3.8.1 PFM CCU Preparation for S/C-Harness, SIH & WIH Integration

All PFM CCU handling shall be discussed in detail with the ASED CCU responsible engineer.

Place PFM CCU on ESD table and perform & measure proper grounding

Check, that all CCU connectors are protected by plastic ESD connector covers.

Check attachment paint-free areas on CCU envelope. Where not identified, the ty-base attachment "paint-free" areas shall be marked & the Ty-base shall be glued by use of non conductive EC2216 A/B compound first and bonded in the fixation hole by use of conductive Eccobond 57C.

During all CCU handling, the operators shall carry ESD wrist-straps, which are bonding to facility & ESD table-ground. The proper wrist-strap function shall be tested **before & after** all CCU operator handlings.

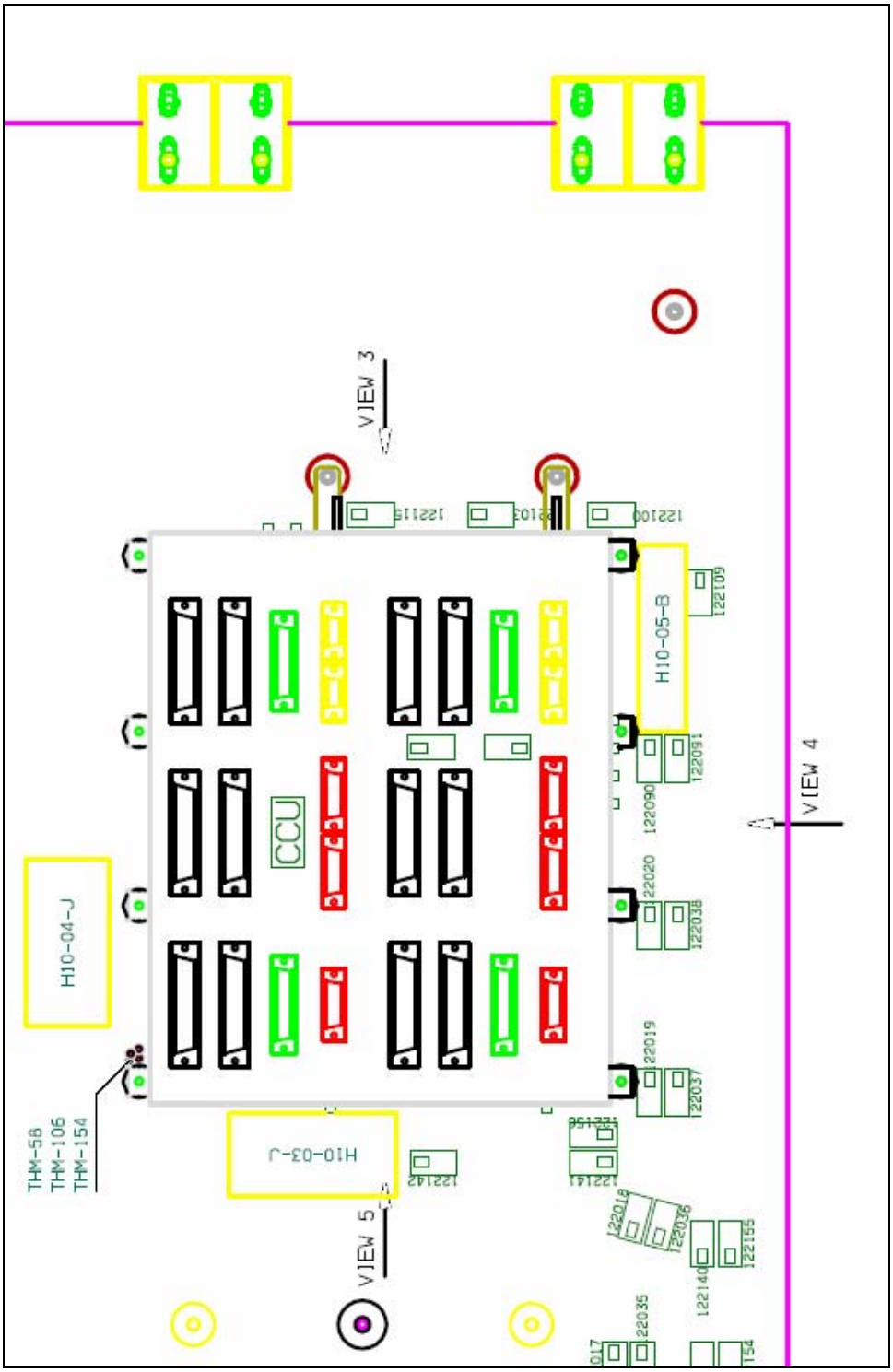
The ty-base gluing attachment & pull-test samples shall be performed and recorded in the Gluing Record.

Pay careful attention for Cleaning of CCU surfaces with IPA before gluing, that no fluid is dropping inside the CCU. Holes shall be closed by tape, before cleaning is started.

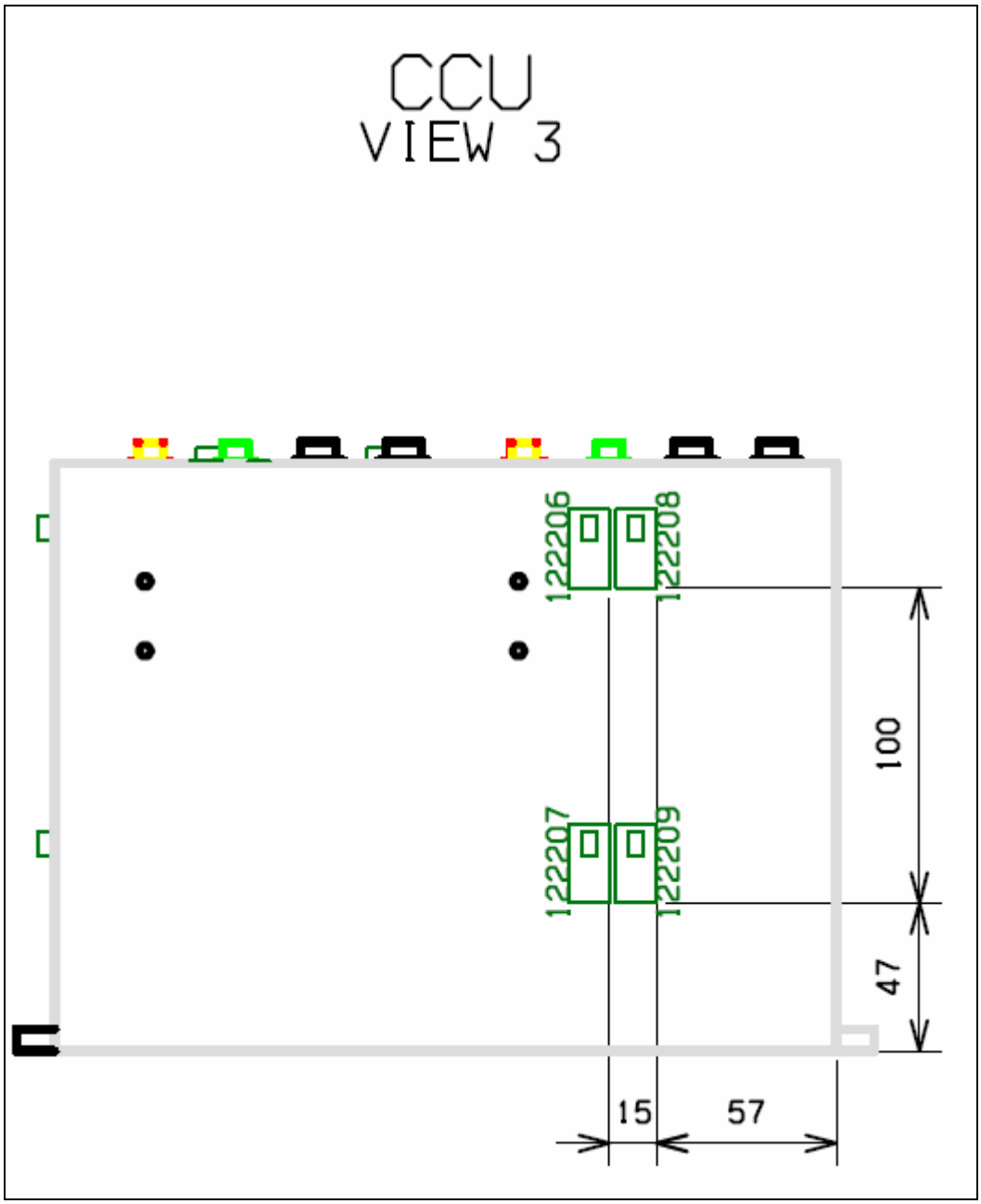
Scratching of CCU surfaces is not permit / not need, because Alodine 1200 surfaces treatment have been performed.

Note: After CCU harness anchor attachments is finished, the CCU mass shall be recorded.

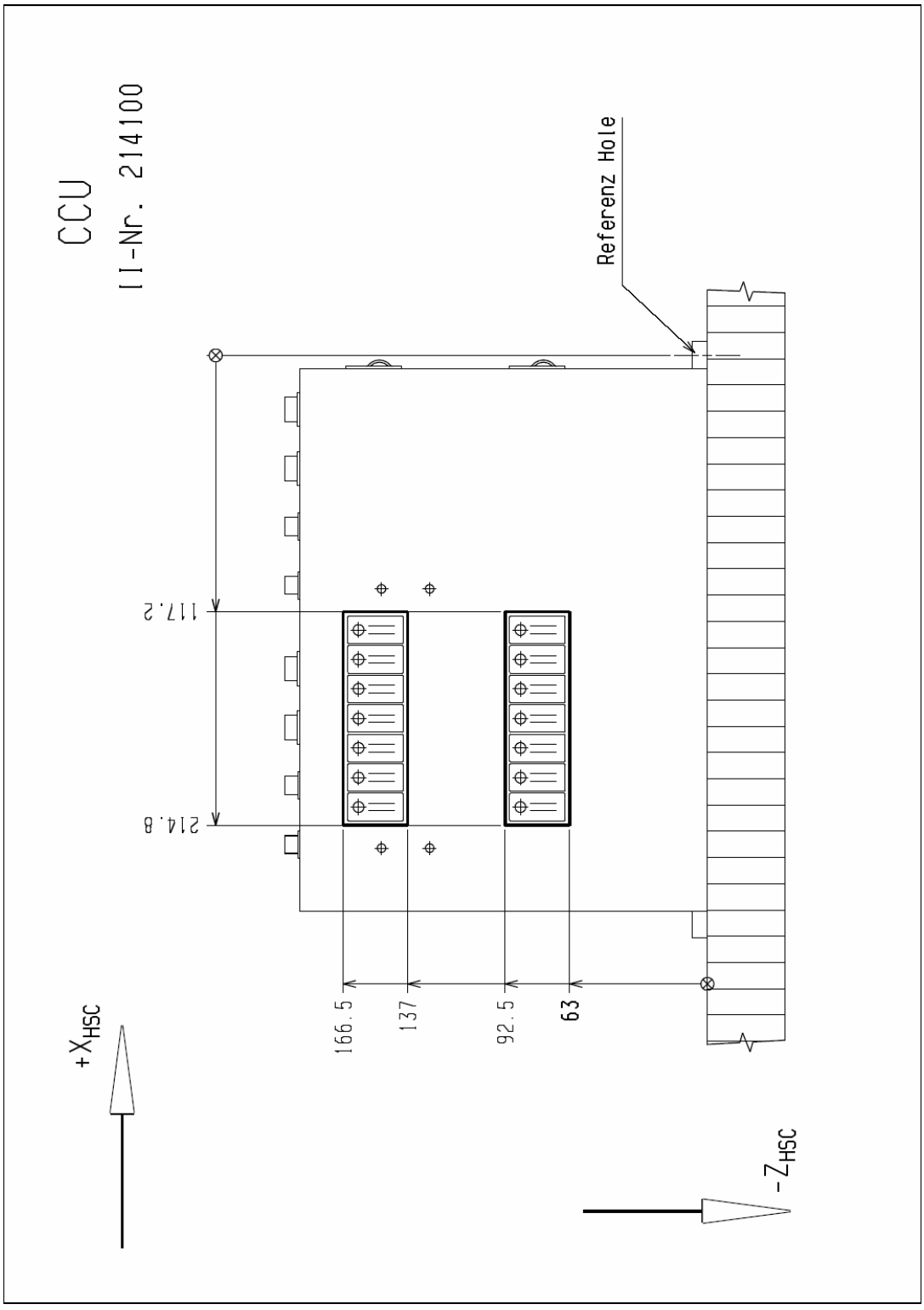
3.8.1.1 PFM SVM -Z LP S/C-Harness Attachments around CCU



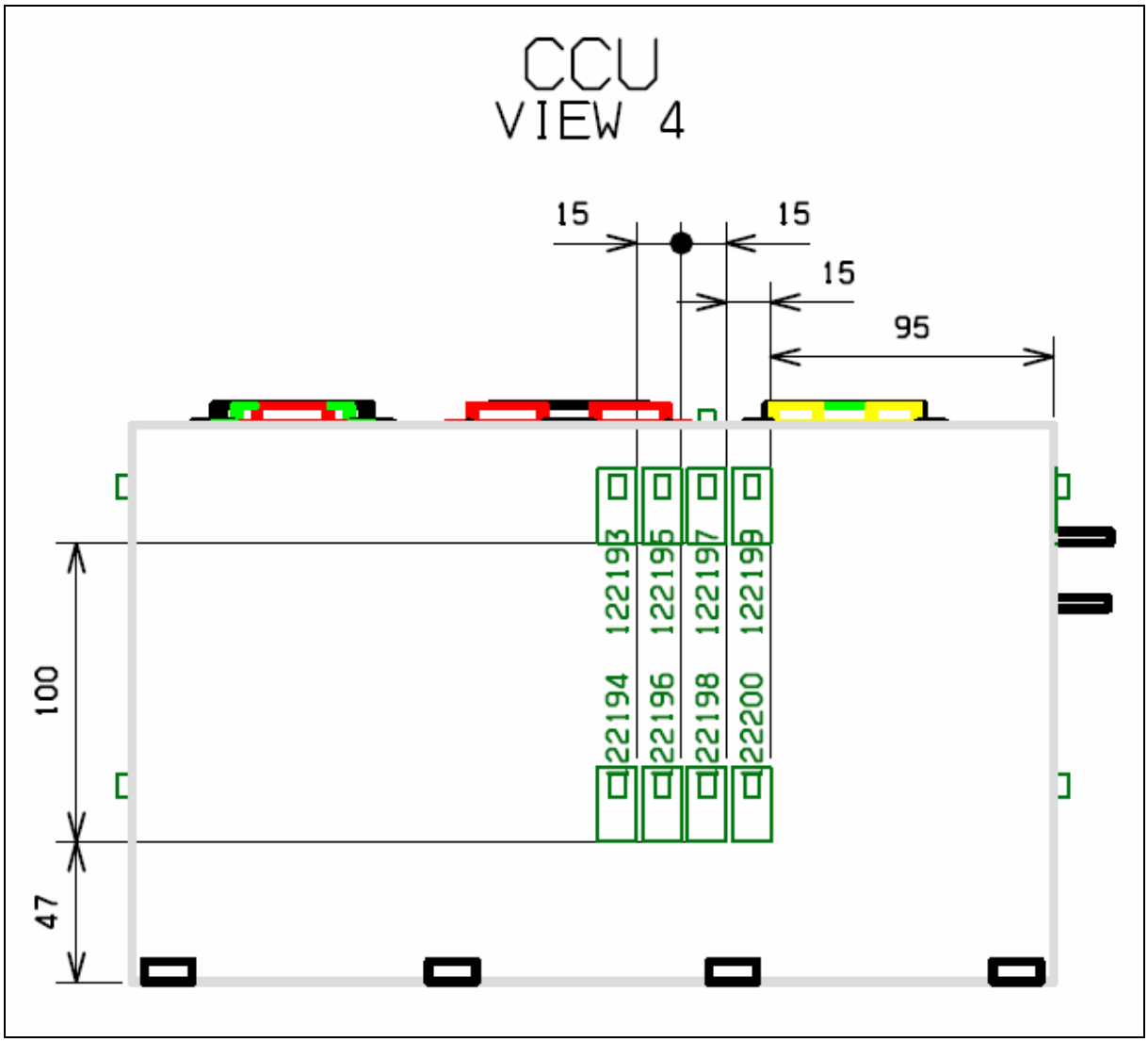
3.8.1.2 PFM CCU Attachments on -Ys side



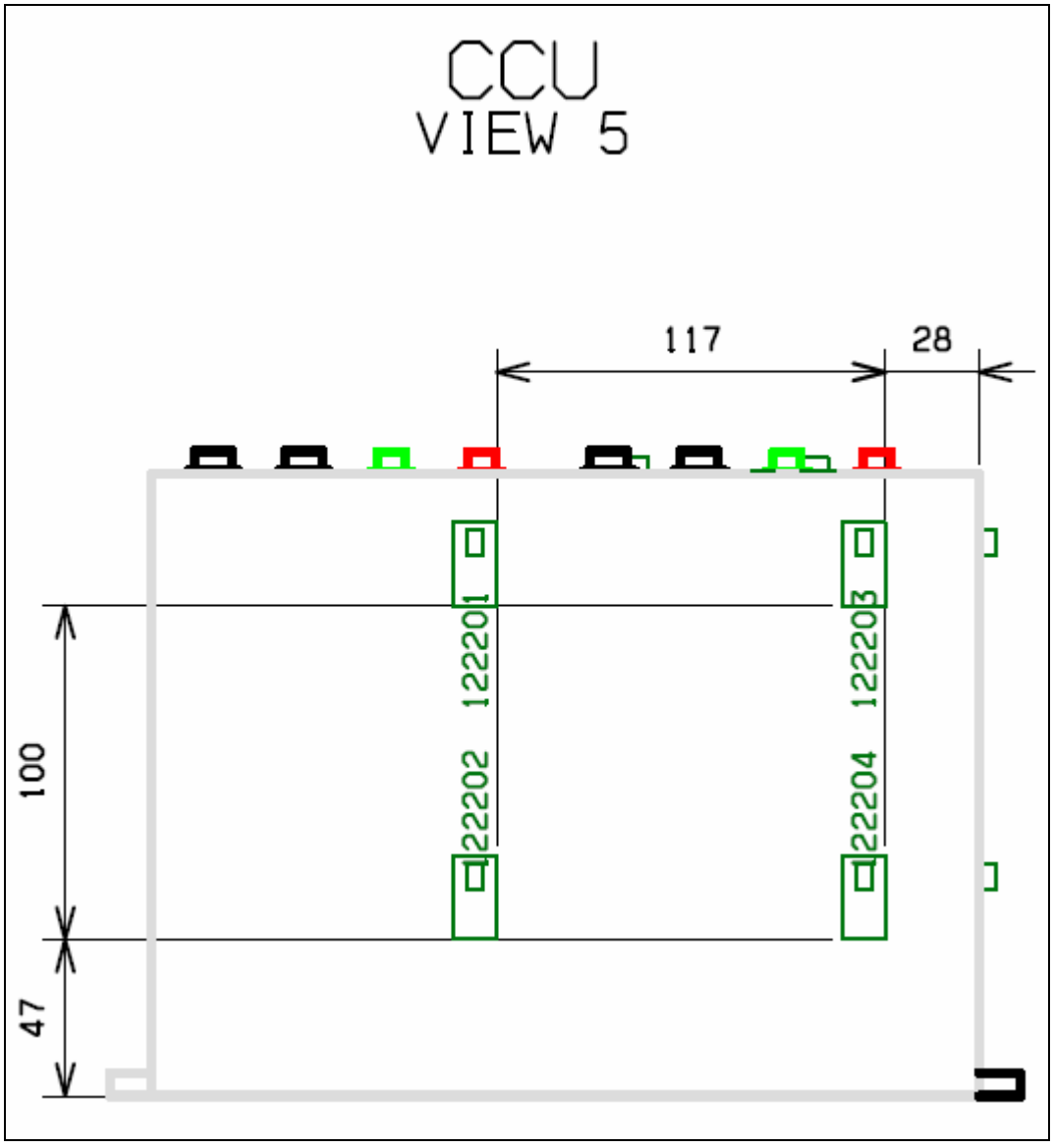
3.8.1.3 PFM SVM CCH-SCB-1 Attachments on CCU -Ys side



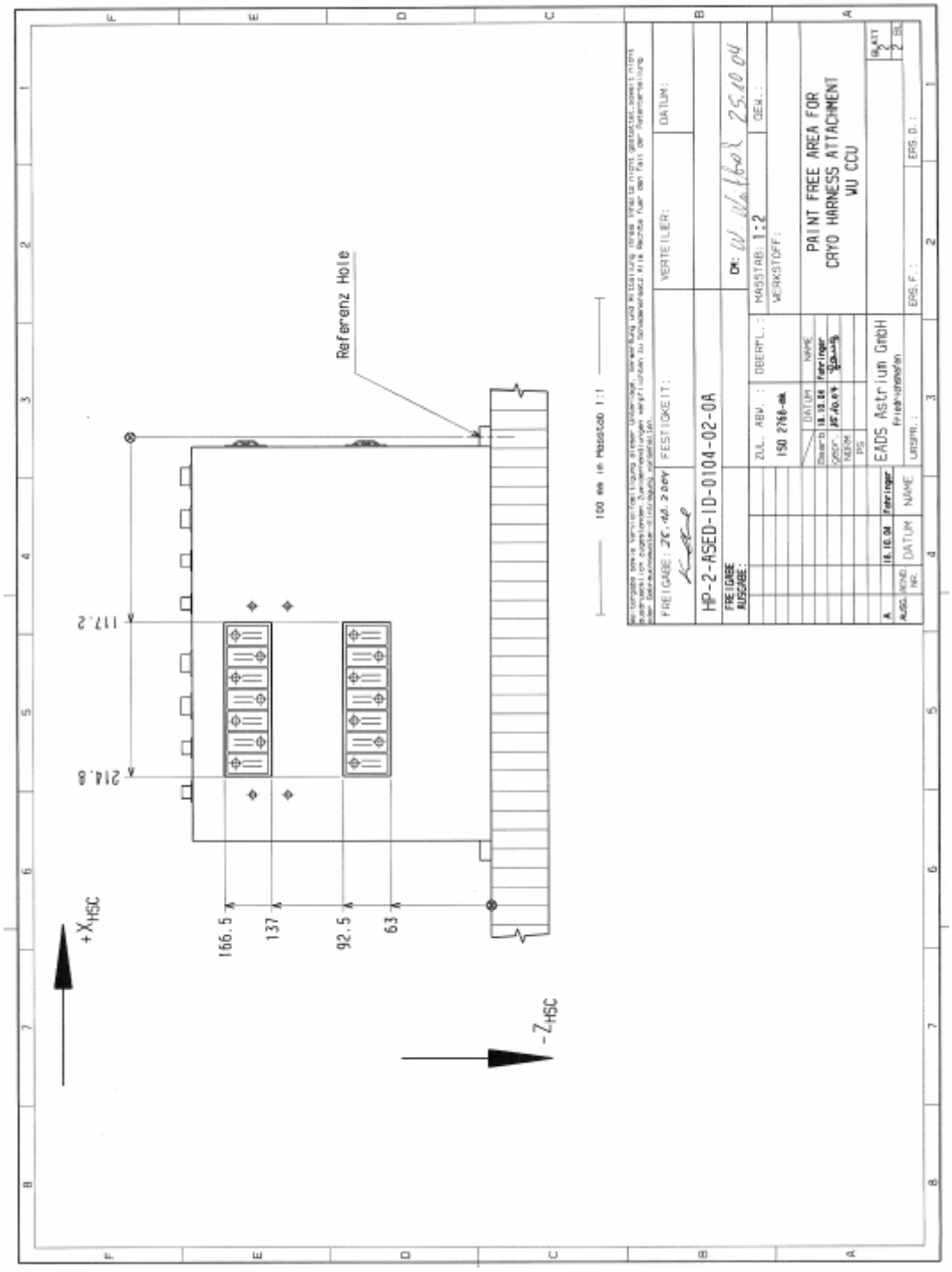
3.8.1.4 PFM CCU Attachments on -Xs side



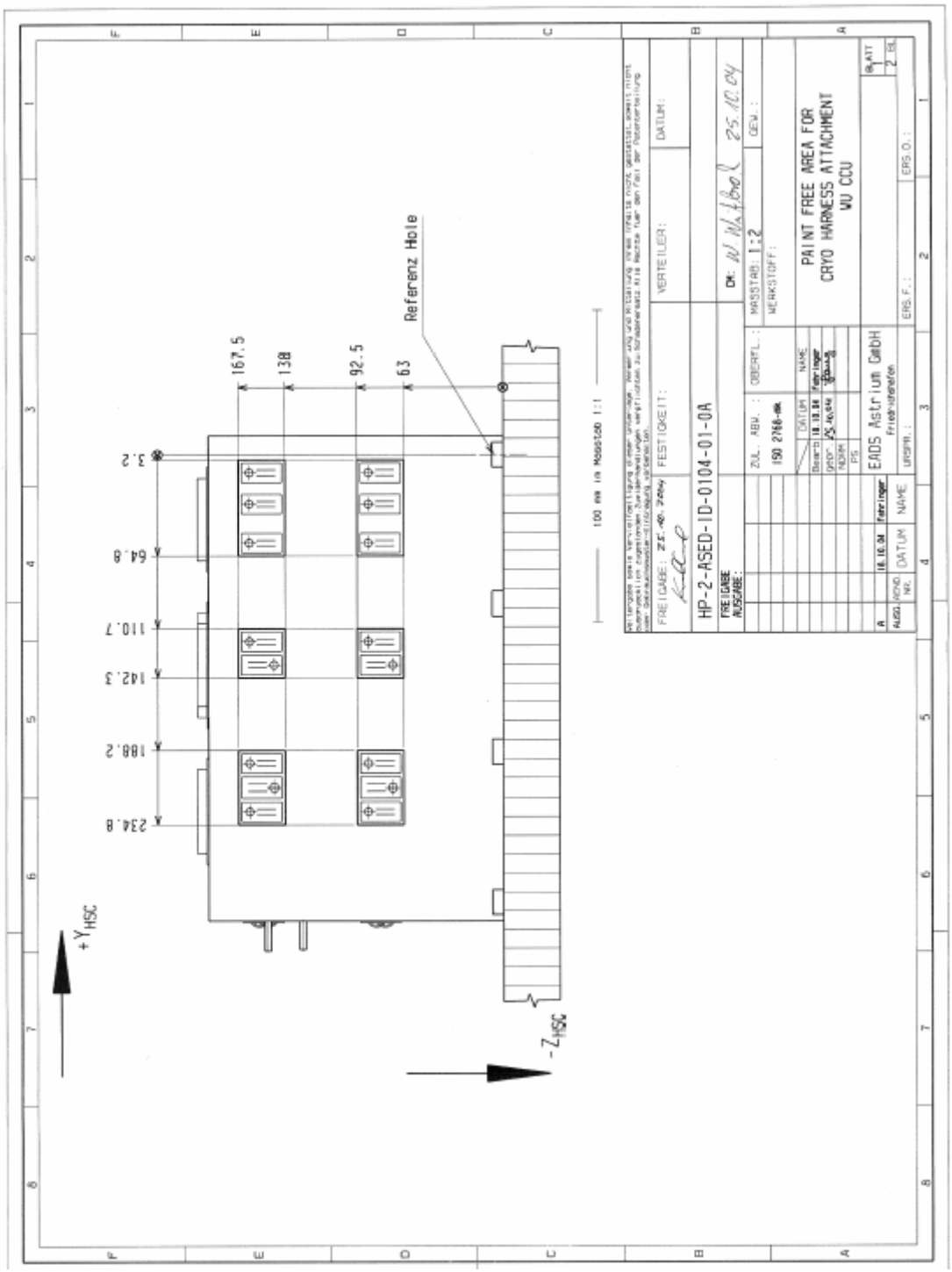
3.8.1.5 PFM CCU Attachments on +Ys side



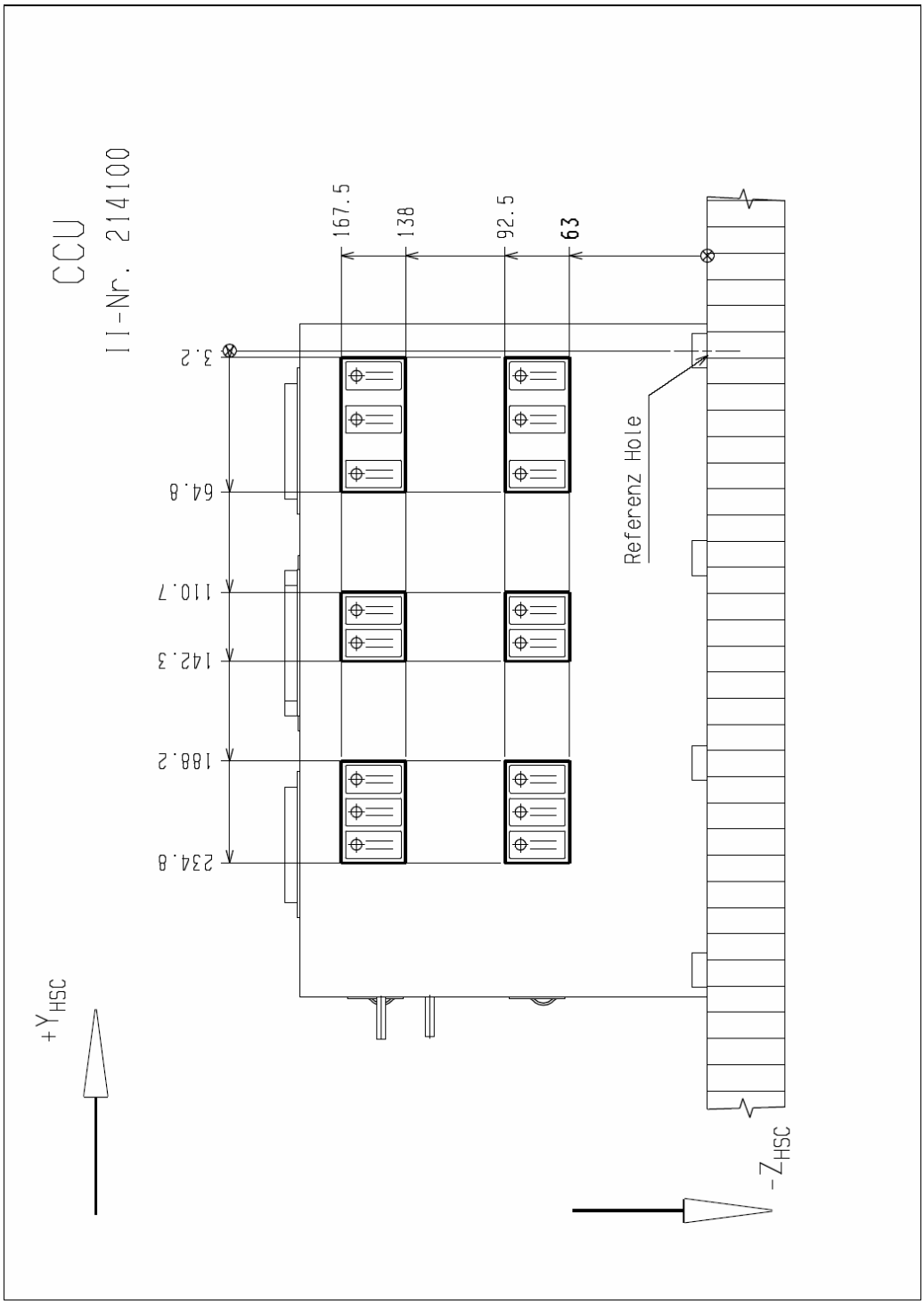
3.8.1.6 PFM SVM CCH-SCB-1 Attachments on CCU +Ys side



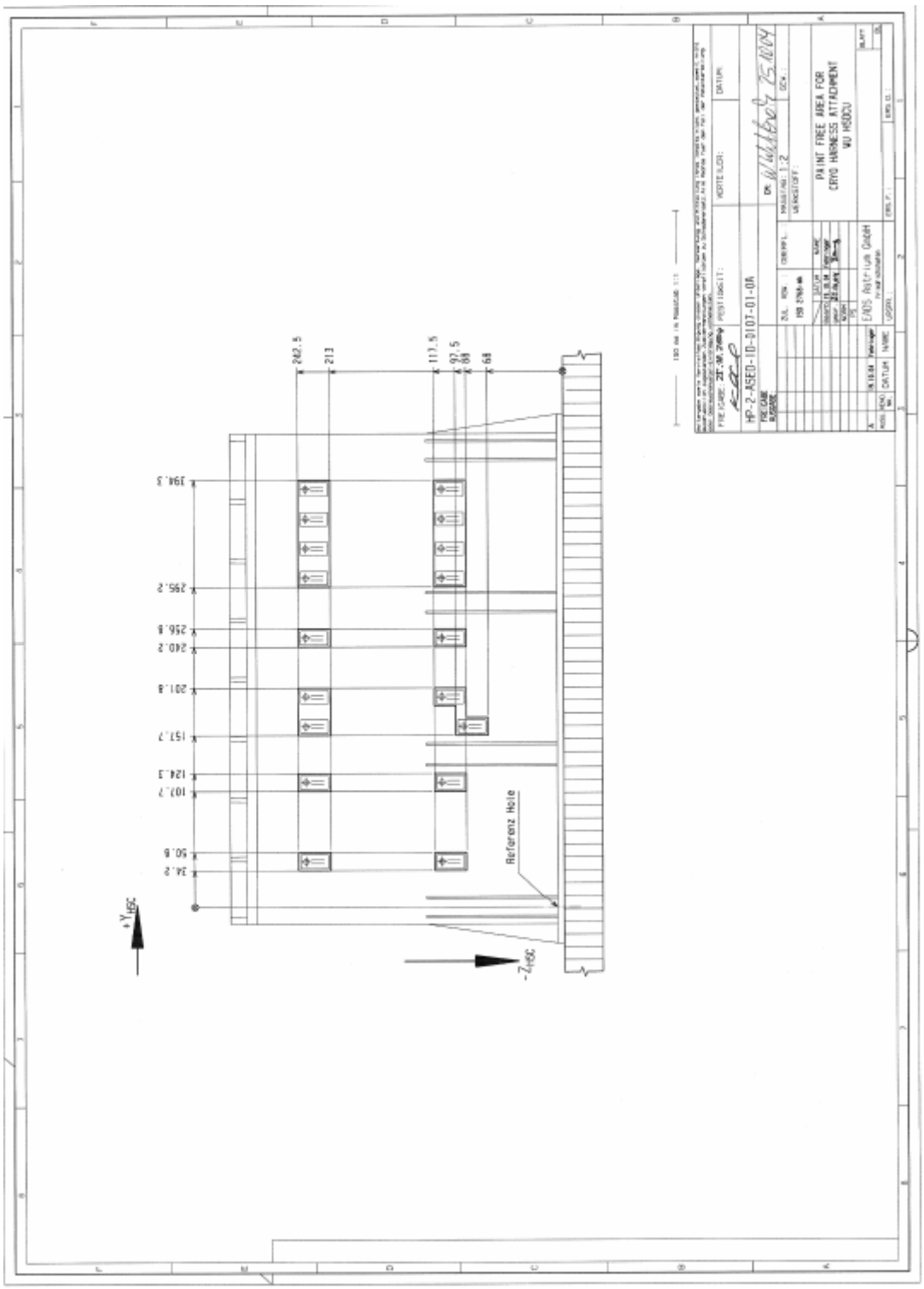
3.8.1.7 PFM SVM CCH-SCA-1 Attachments on CCU +Xs side



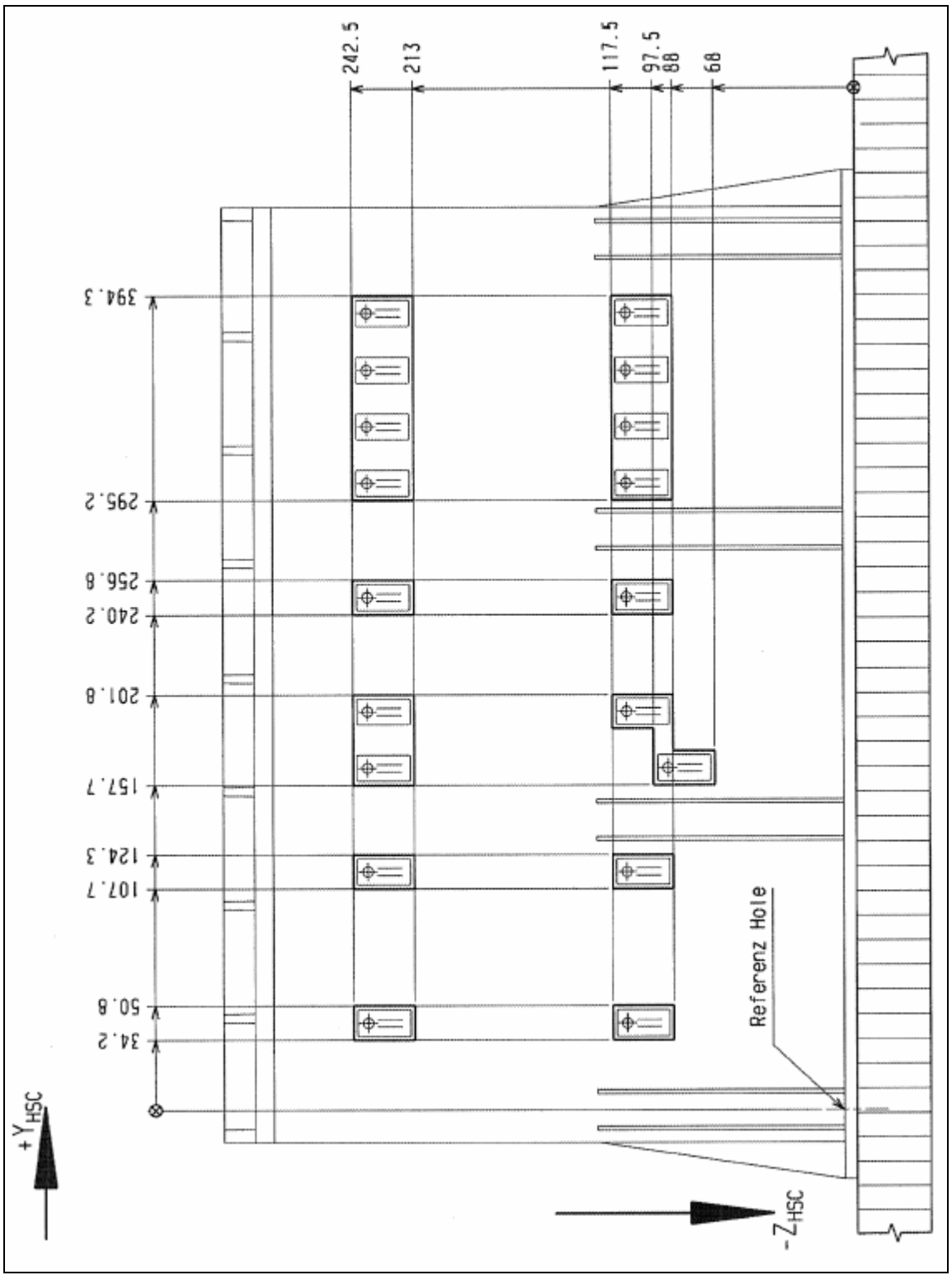
3.8.1.7.1 Detailed PFM SVM CCH-SCA-1 Attachments on CCU +Xs side



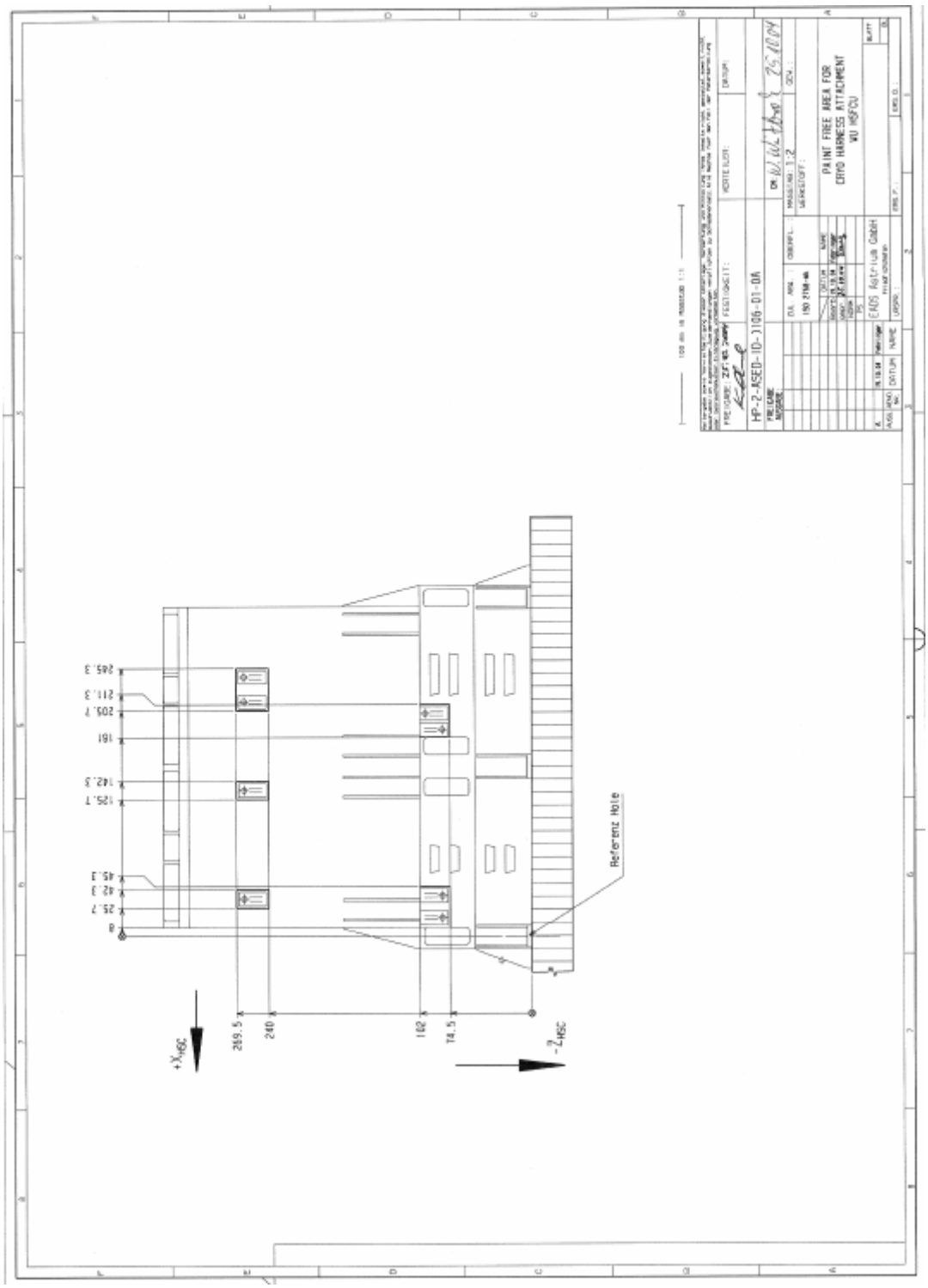
3.8.1.8 SVM S/C-Harness & WIH Attachment Positions on HSDCU



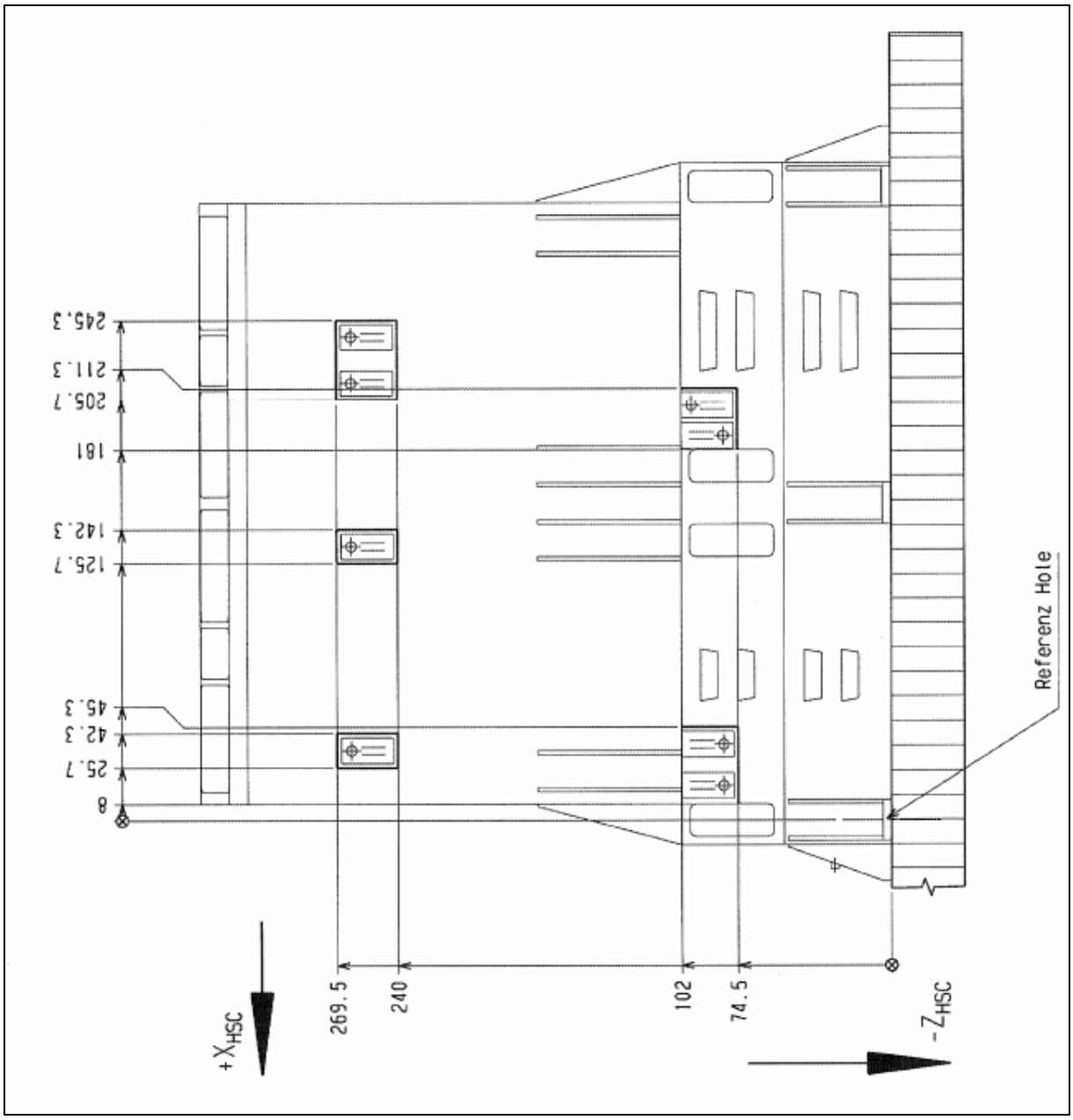
3.8.1.9 Detailed Attachments on SPIRE DCU (+Xs side)



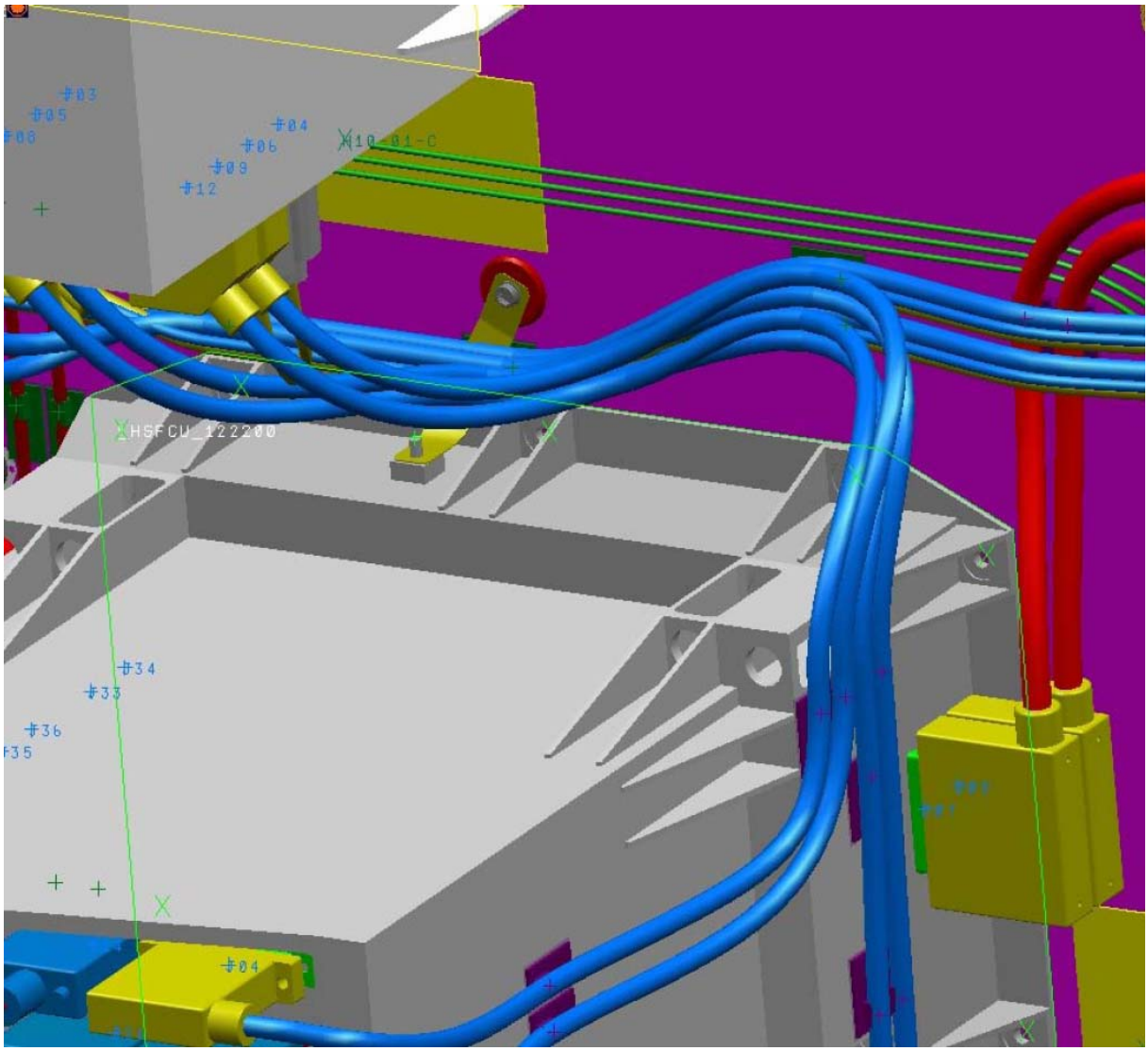
3.8.1.10 SVM SPIRE SIH Attachment Positions on HSFCU (+Ys side)



3.8.1.11 Detailed SVM SPIRE SIH-SS-10-11-12-13 Attachments on FCU



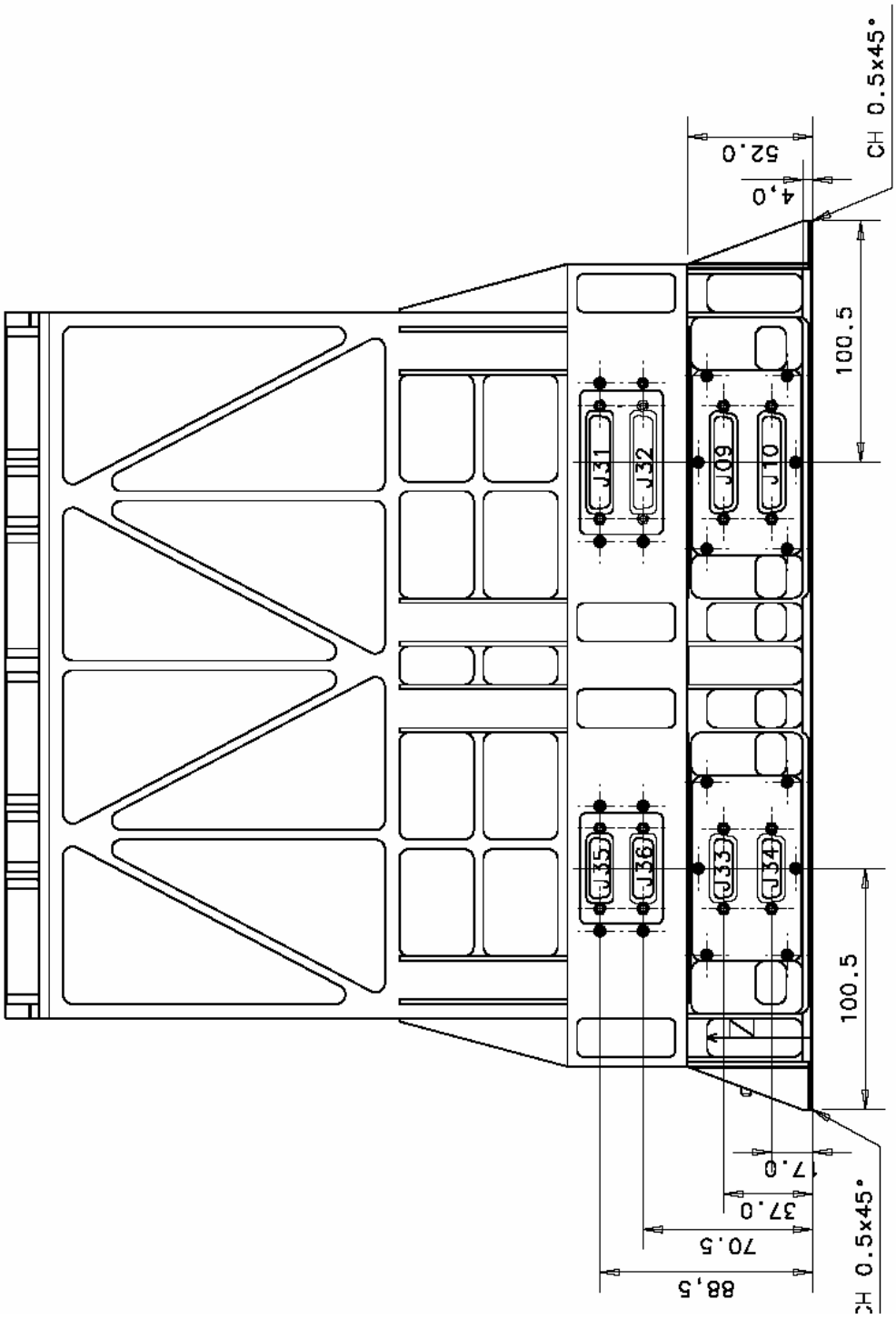
3.8.2 SPIRE WIH Routing & Attachment on FCU (+Xs side) facing DPU



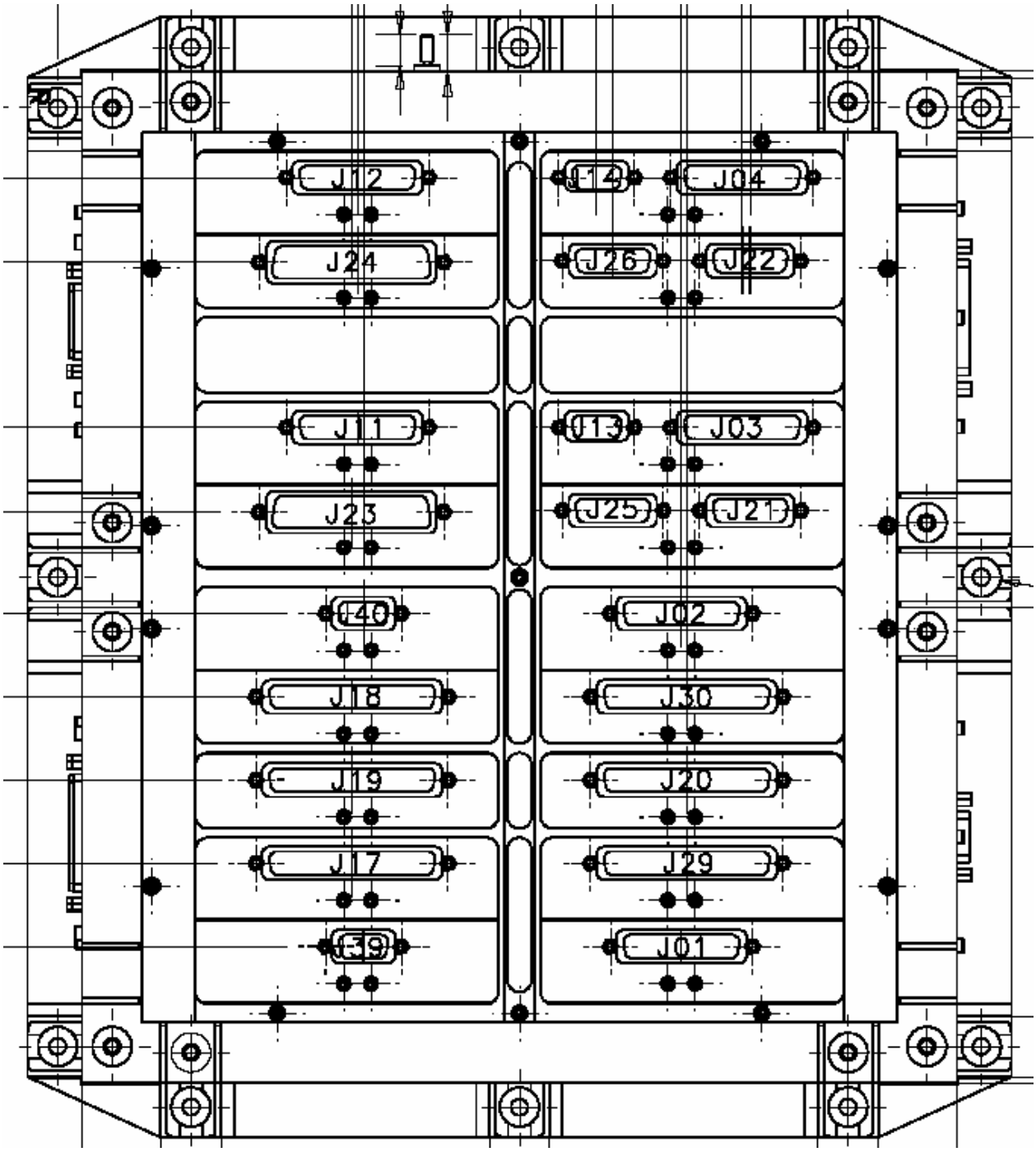
3.9 SVM -Z LP Warm-Unit I/F-Connector Locations

3.9.1 SPIRE HSFCU

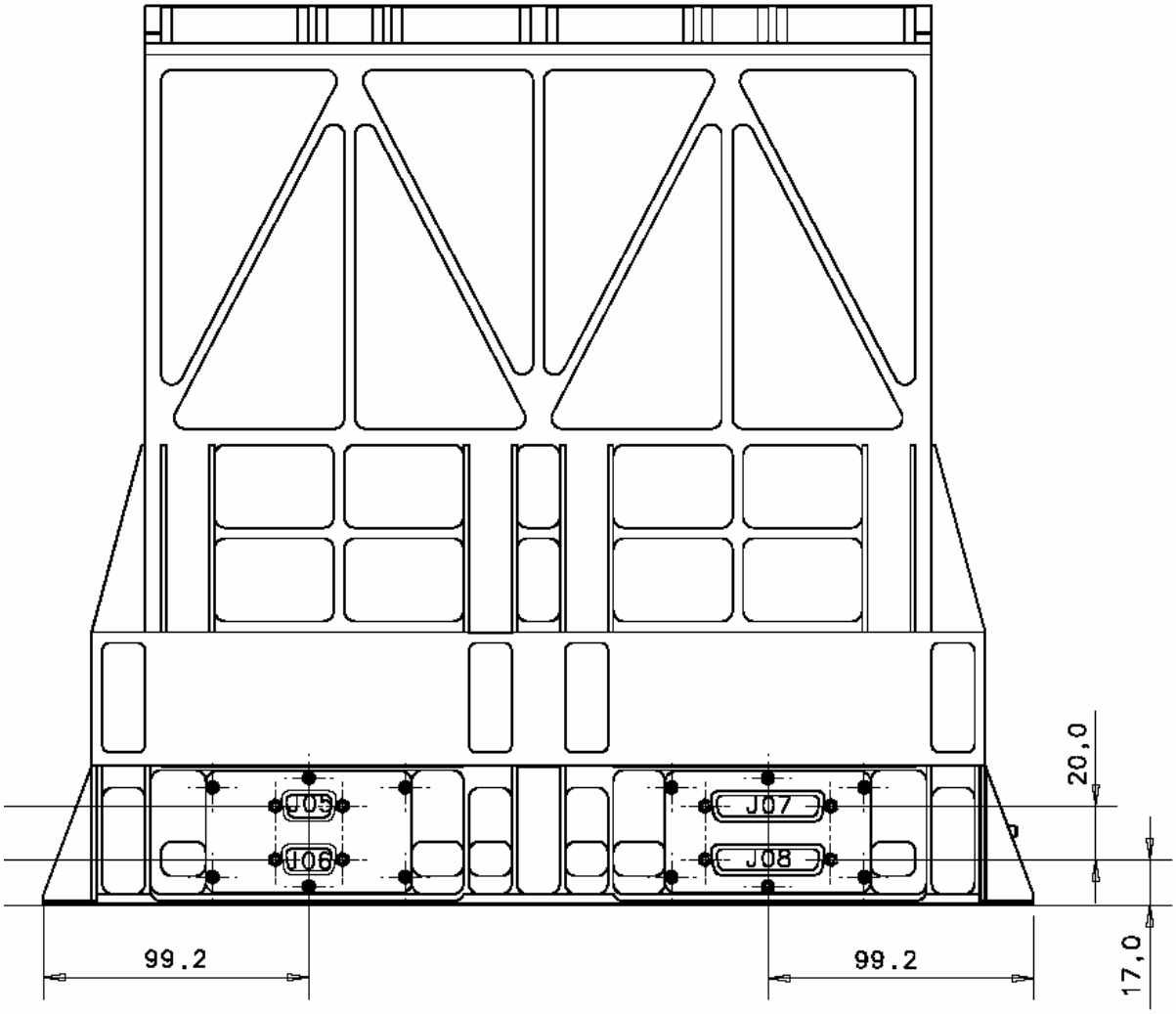
3.9.1.1 SPIRE FCU I/F-Connector Allocation (-Ys)



3.9.1.2 SPIRE FCU I/F-Connector Allocation (+Zs) TOP-side



3.9.1.3 SPIRE FCU I/F-Connector Allocation (+Ys) side

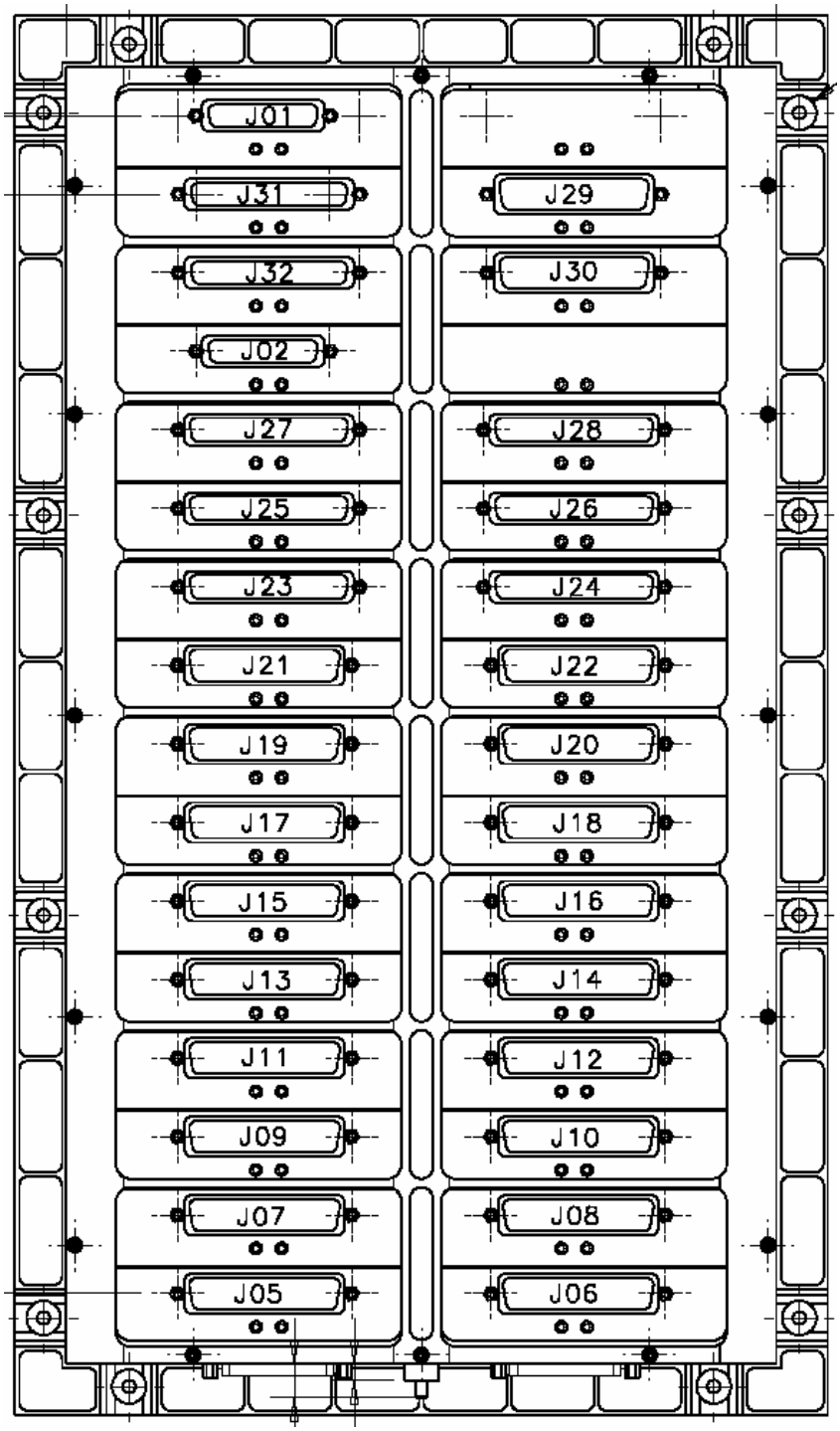


3.9.1.4 HSFCU I/F-Connectors

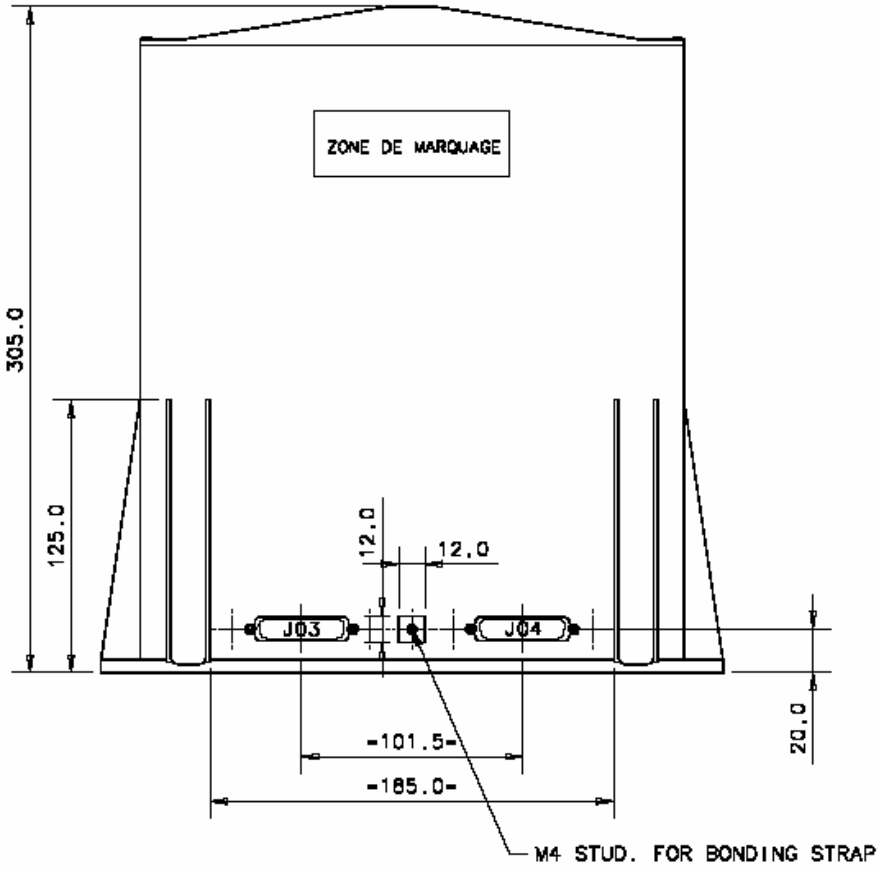
CONNECTORS					
IDENT	TYPE	INTERFACE NAME	IDENT	TYPE	INTERFACE NAME
J01	DBMA 25S	MAC-M/DPU-M	J21	DAMA 15S	TEMP-M/FPU-TS-1-M
J02	DBMA 25S	MAC-R/DPU-R	J22	DAMA 15S	TEMP-R/FPU-TS-1-R
J03	DBMA 25S	CCHK-IF-M/DPU-M	J23	DDMA 50S	TEMP-M/FPU-TS-2-M
J04	DBMA 25S	CCHK-IF-R/DPU-R	J24	DDMA 50S	TEMP-R/FPU-TS-2-R
J05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

3.9.2 SPIRE HSDCU

3.9.2.1 SPIRE DCU I/F-Connector Allocation on TOP



3.9.2.2 SPIRE DCU I/F-Connector Allocation on (+Ys) side

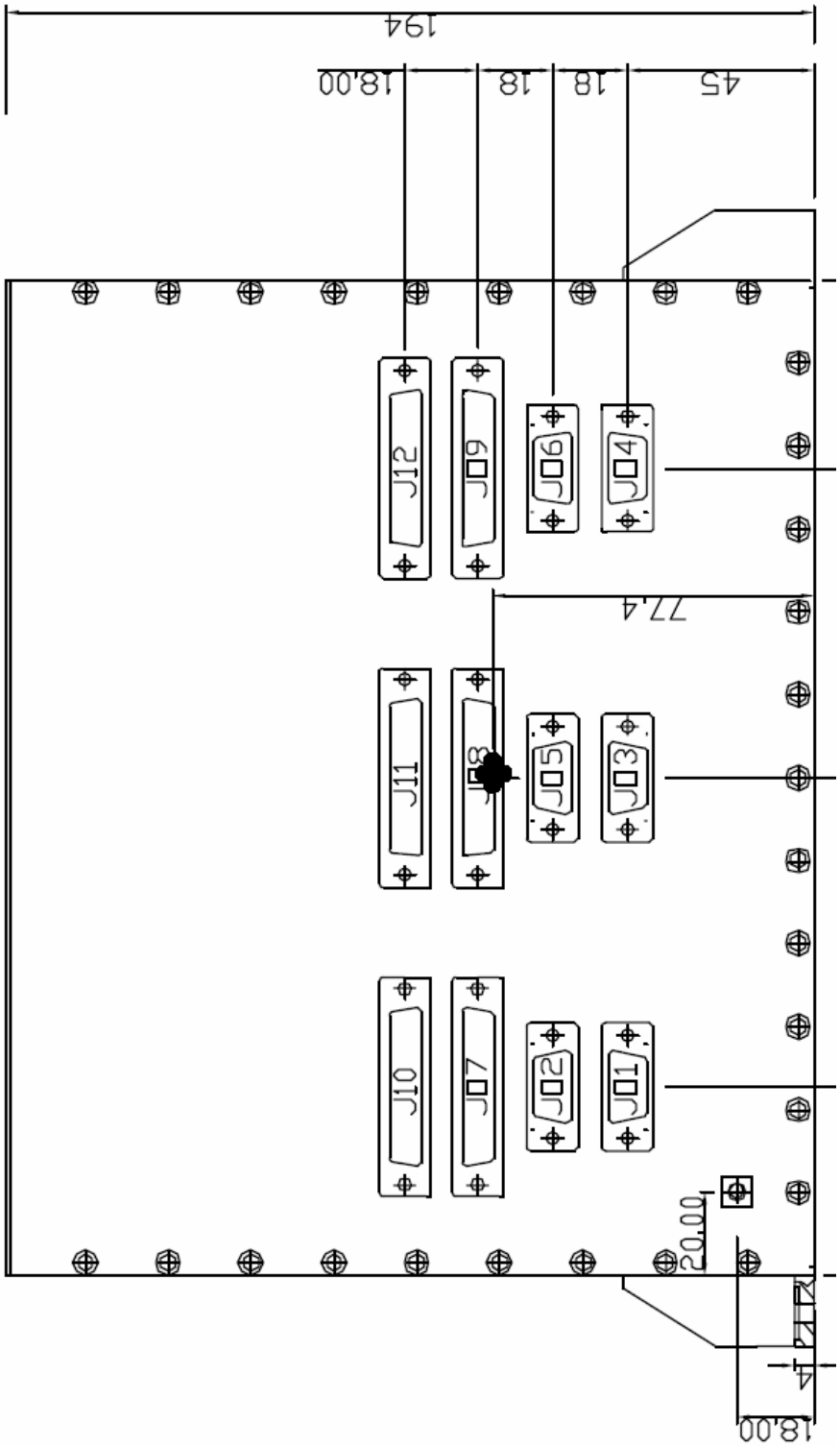


3.9.2.3 HSDCU I/F-Connectors

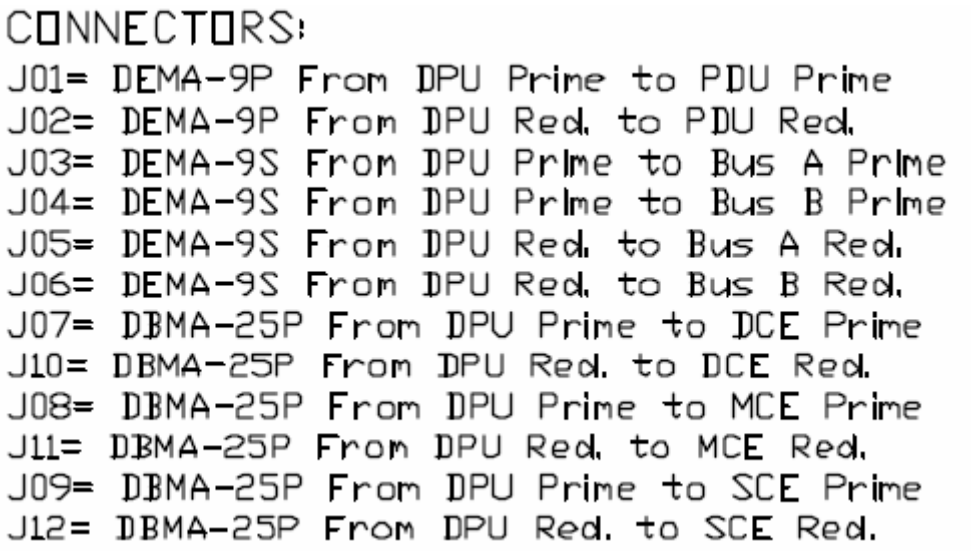
CONNECTORS					
IDENT	TYPE	FUNCTIONS	IDENT	TYPE	FUNCTIONS
J01	DBMA 25S	DAQ_IF_M/DPU_M	J17	DDMA 50P	LIA_P_7/FPU
J02	DBMA 25S	DAQ_IF_R/DPU_R	J18	DDMA 50P	LIA_P_7/FPU
J03	DBMA 25P	DCU/PSU_M	J19	DDMA 50P	LIA_P_8/FPU
J04	DBMA 25P	DCU/PSU_R	J20	DDMA 50P	LIA_P_8/FPU
J05	DDMA 50P	LIA_P_1/FPU	J21	DDMA 50P	LIA_P_9/FPU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

3.9.3 SPIRE HSDPU

3.9.3.1 PFM DPU I/F Connector Allocation & Orientation

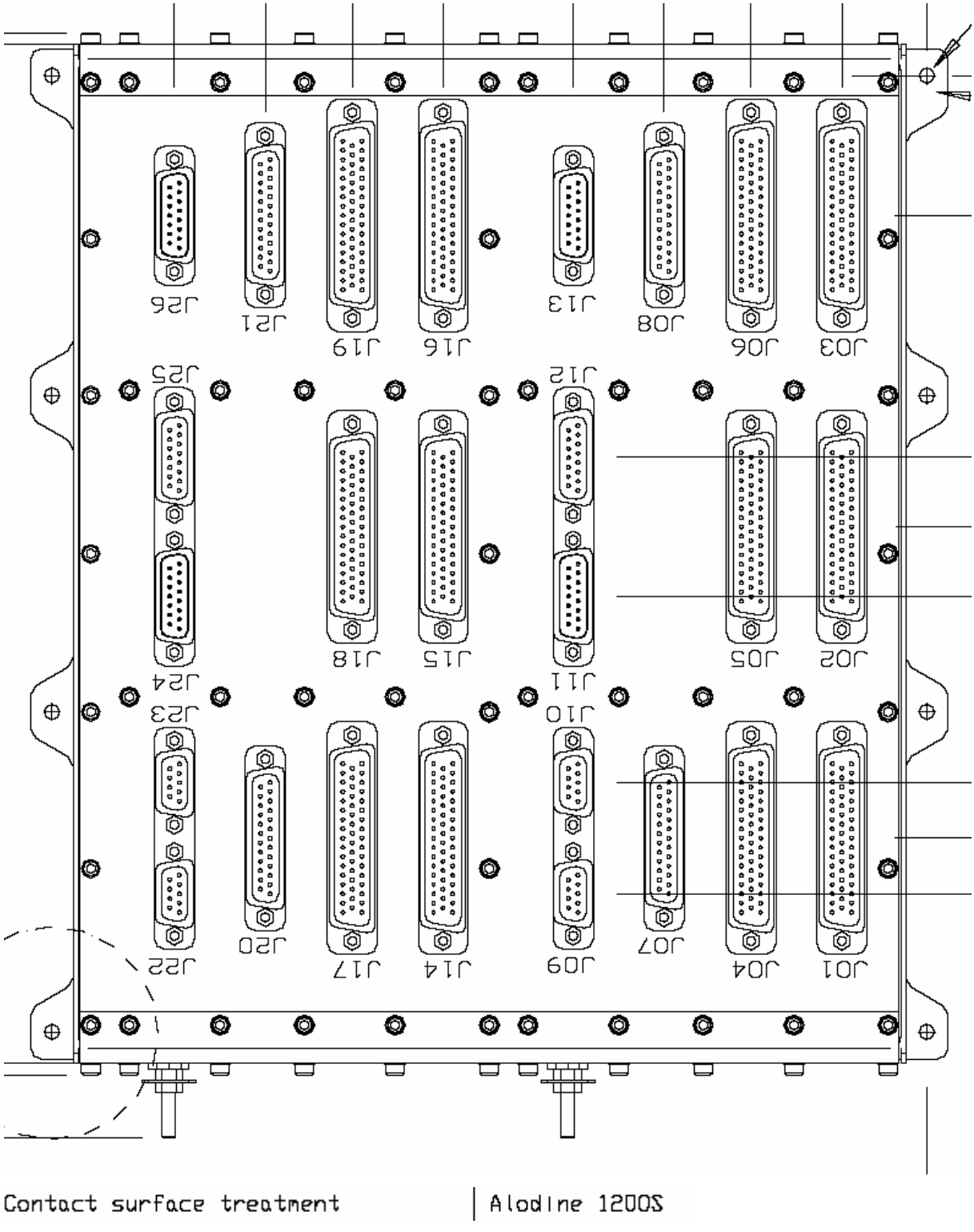


3.9.3.2 SPIRE DPU SIH & SVM-Harness I/F-Connectors



3.9.4 CCU-A / -B

3.9.4.1 PFM CCU I/F Connector Allocation & Orientation

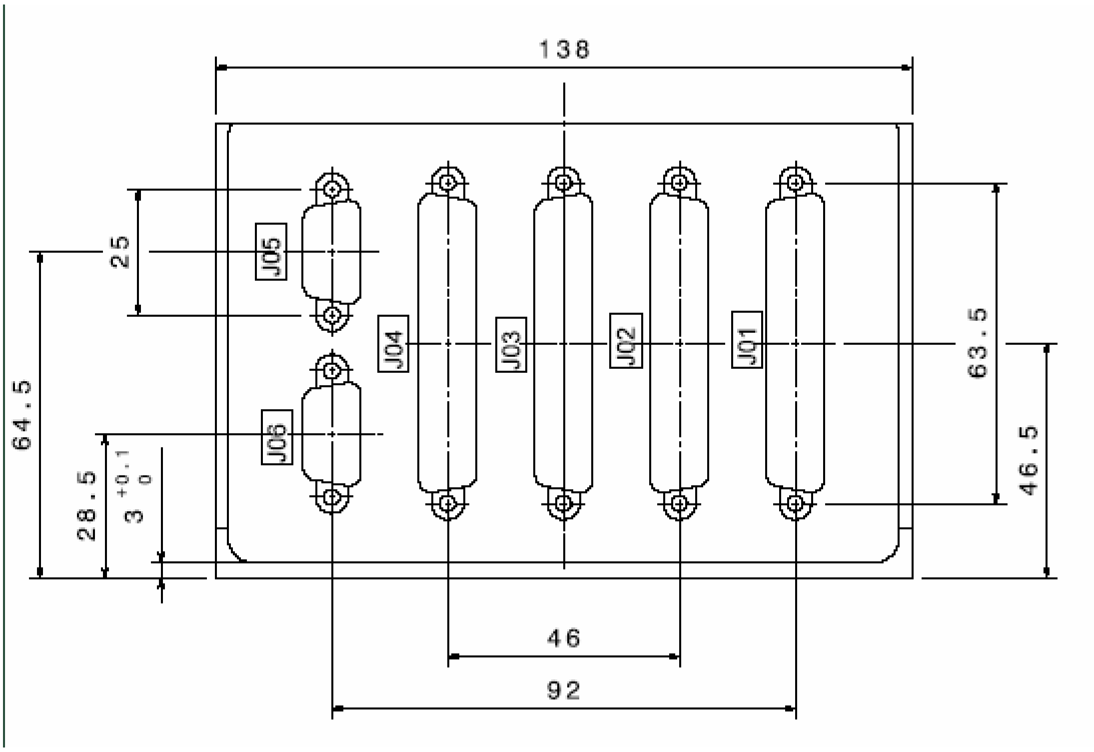


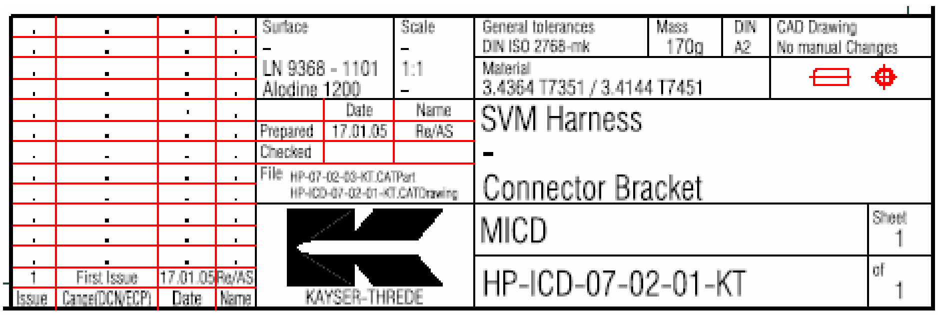
3.9.4.2 CCH & SVM Harness I/F -Connectors of PFM CCU

EXTERNAL CONNECTORS		
CONN.	TYPE	CONNECTOR FUNCTION
J01	DDM-50S-1AON	T-type0 (2), T-type1 (2), T-type2 (5)
J02	DDM-50S-1AON	T-type3 (5), P-sensor I/F (2)
J03	DDM-50S-1AON	T-type4 (7)
J04	DDM-50S-1AON	T-type5 (10)
J05	DDM-50S-1AON	T-type5 (10)
J06	DDM-50S-1AON	T-type5 (10)
J07	DBM-25S-1AON	Valve Control, DLCM Control
J08	DBM-25S-1AON	DLCM Monitoring, Valve Status Monitoring
J09	DEM-09S-1AON	Mil-Std-1553B-A
J10	DEM-09S-1AON	Mil-Std-1553B-B
J11	DAM-15P-1AON	Ariane5 Dry Valve Commands
J12	DAM-15S-1AON	Test Interfaces (internal use), Address
J13	DAM-15P-1AON	Power Line 28V
J14	DDM-50S-1AON	T-type0 (2), T-type1 (2), T-type2 (5)
J15	DDM-50S-1AON	T-type3 (5), P-sensor I/F (2)
J16	DDM-50S-1AON	T-type4 (7)
J17	DDM-50S-1AON	T-type5 (10)
J18	DDM-50S-1AON	T-type5 (10)
J19	DDM-50S-1AON	T-type5 (10)
J20	DBM-25S-1AON	Valve Control, DLCM Control
J21	DBM-25S-1AON	DLCM Monitoring, Valve Status Monitoring
J22	DEM-09S-1AON	Mil-Std-1553B-A
J23	DEM-09S-1AON	Mil-Std-1553B-B
J24	DAM-15P-1AON	Ariane5 Dry Valve Commands
J25	DAM-15S-1AON	Test Interfaces (internal use), Address
J26	DAM-15P-1AON	Power Line 28V

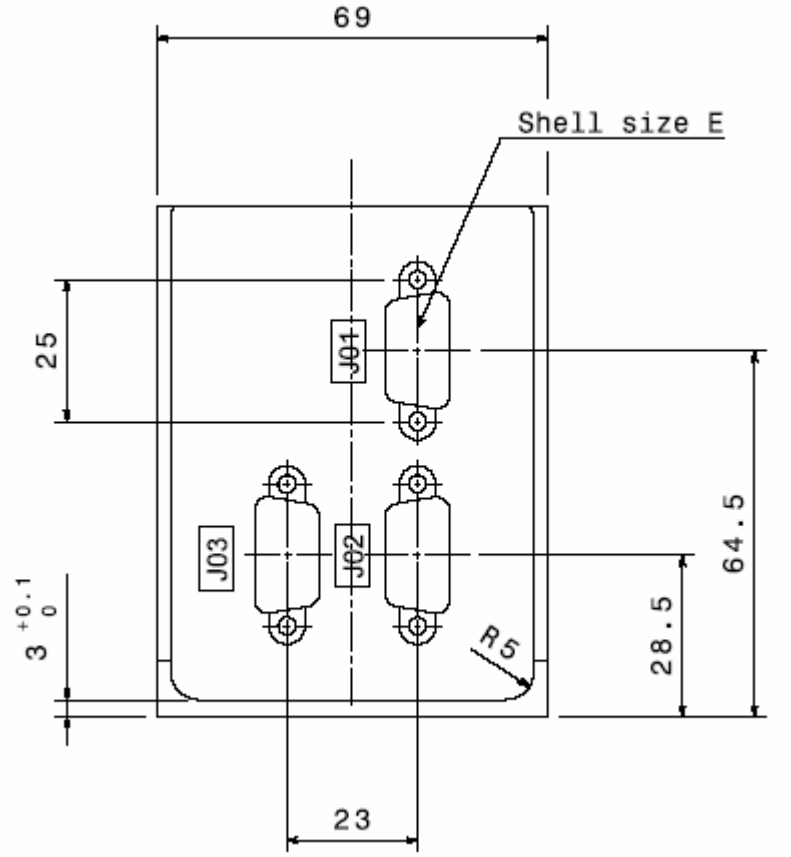
3.9.5 SVM Lower closure panel I/F-CBs

3.9.5.1 SVM-Harness LCP I/F-CB DB04





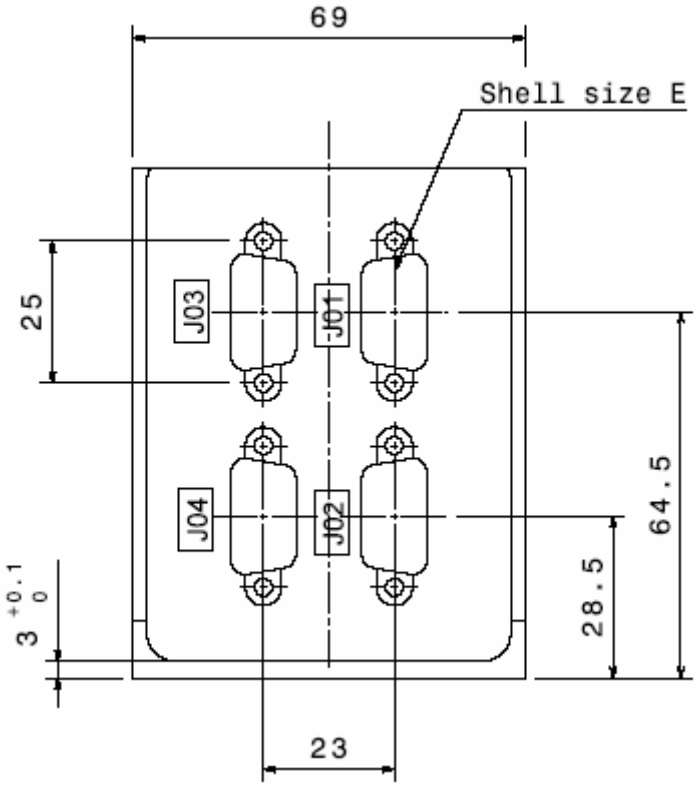
3.9.5.2 SVM-Harness LCP I/F-CB DB41



Bracket ID	Location	Satellite
DB 32	2050	Planck
DB 51	2050	Planck
DB 03	1050	Herschel
DB 41	1050	Herschel
DB 61	1050	Herschel

Surface: - / LN 9368 - 1101 Alodine 1200				Scale: - / 1:1 / -		General tolerances: DIN ISO 2768-mk	Mass: 111g	DIN: A2	CAD Drawing: No manual Changes	
						Material: 3.4364 T7351 / 3.4144 T7451				
					Date	Name	SVM Harness			
				Prepared	14.01.05	Re/AS	-			
				Checked			Connector Brackets			
				File: HP-03-05-02-KT.CATPart						
				HP-ICD-03-05-01-KT.CATDrawing			MICD		Sheet 1	
1	First Issue	14.01.05	Re/AS	KAYSER-THREDE			HP-ICD-03-05-01-KT		of 1	
Issue	Cange(DCN/ECP)	Date	Name							

3.9.5.3 SVM-Harness LCP I/F-CB DB42



Bracket ID	Location	Satellite
DB 31	1050	Herschel
DB 42	1050	Herschel

-	-	-	.	Surface		Scale	General tolerances DIN ISO 2768-mk	Mass 109g	DIN A2	CAD Drawing No manual Changes
.	.	.	.	-		-				
.	.	.	.	LN 9368 - 1101 Alodine 1200		1:1	Material 3.4364 T7351 / 3.4144 T7451			
.	.	.	.		Date	Name	SVM Harness			
.	.	.	.	Prepared	17.01.05	Re/AS				
.	.	.	.	Checked			-			
-	-	-	.	File: HP-03-06-02-KT.CATPart			Connector Bracket			
.	.	.	.	HP-ICD-03-06-01-KT.CATDrawing						
.	.	.	.	KAYSER-THREDE			MICD			Sheet 1
.	.	.	.							
-	-	-	.							
1	First Issue	17.01.05	Re/AS				HP-ICD-03-06-01-KT			of 1
Issue	Cange(DCN/ECP)	Date	Name							

3.10 SVM UCP Cryo-Harness I/F-CB Bond-straps

For proper S/C Harness bonding the EQM SVM I/F-CBs shall be bonded to SVM Ground.

3.10.1 SVM UCP I/F-CB Bond-strap Interconnection Overview

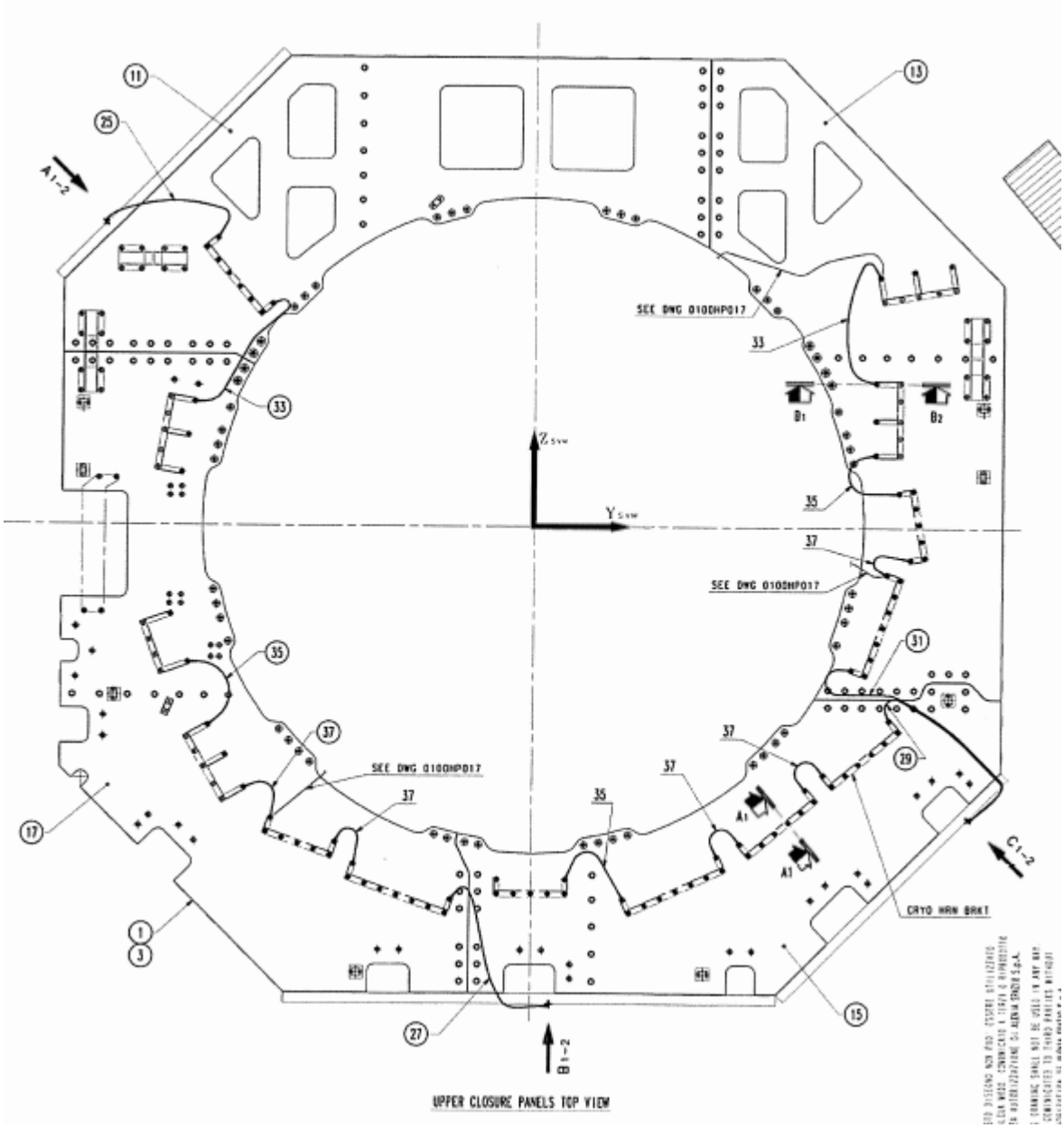


Figure 3.10-1: SVM UCP I/F-CB Bond-strap Interconnection Overview

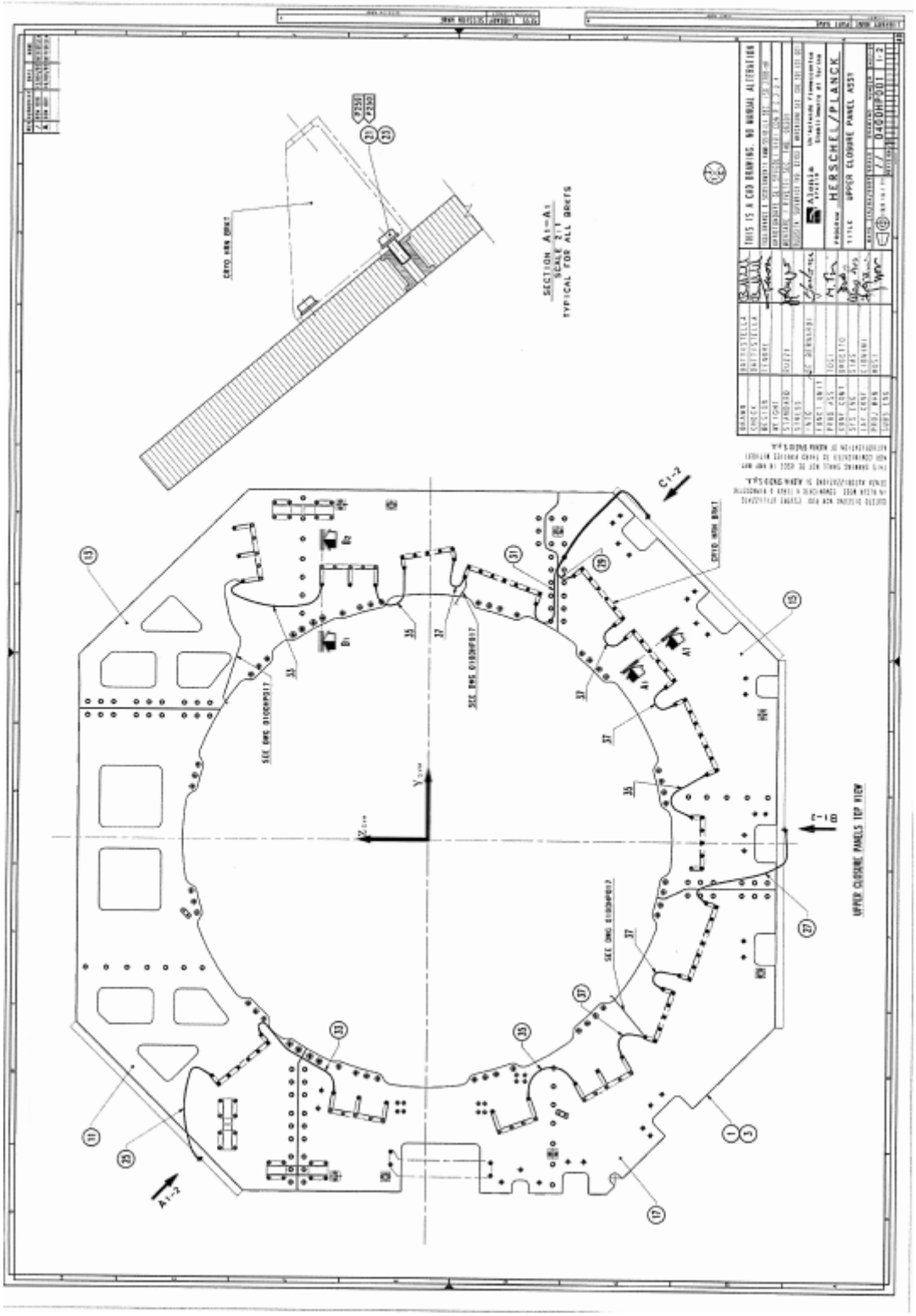


Figure 3.10-2: SVM Connector-bracket Bond-strap ASSY

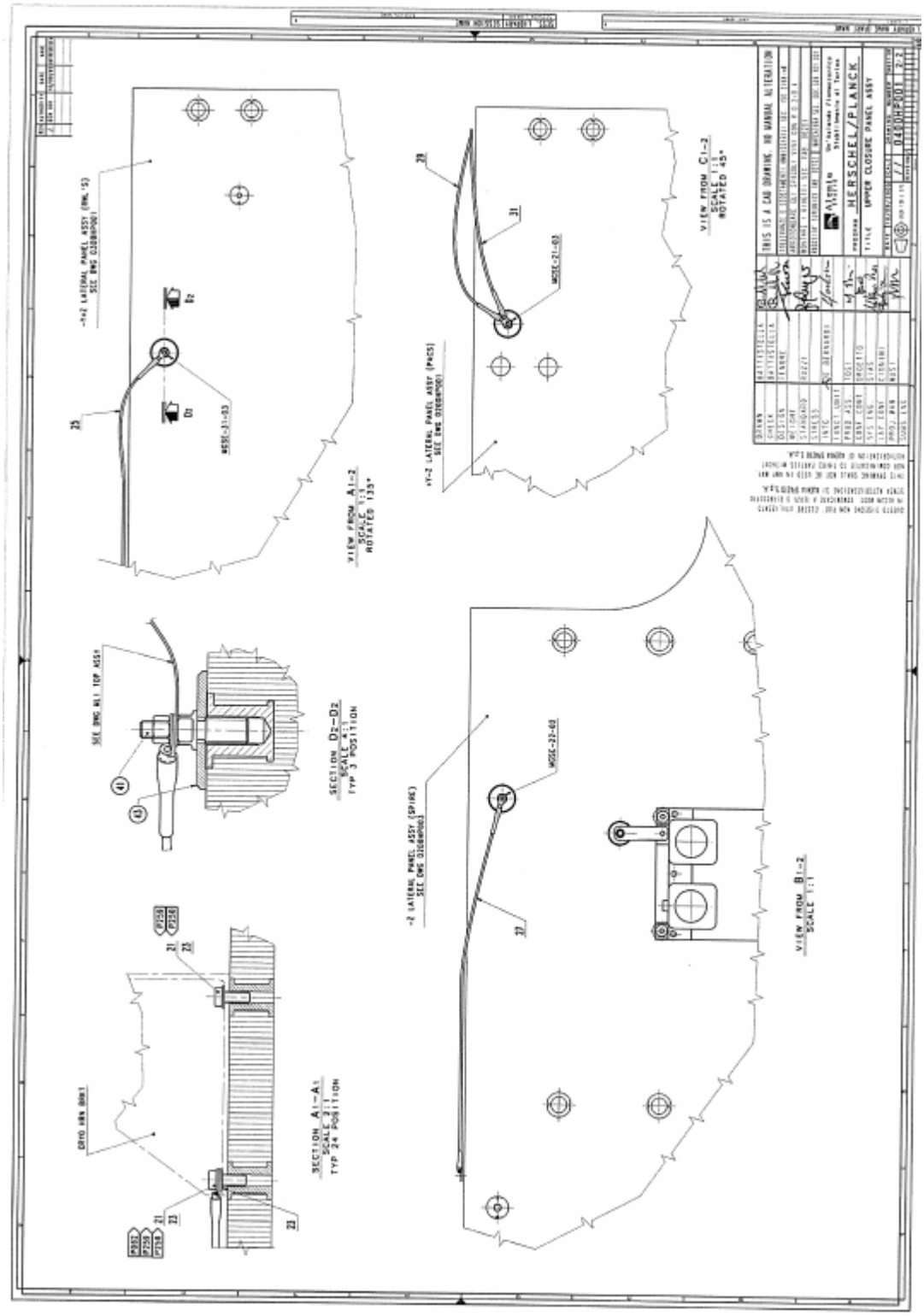


Figure 3.10-3: SVM UCP Bond-strap mounting details

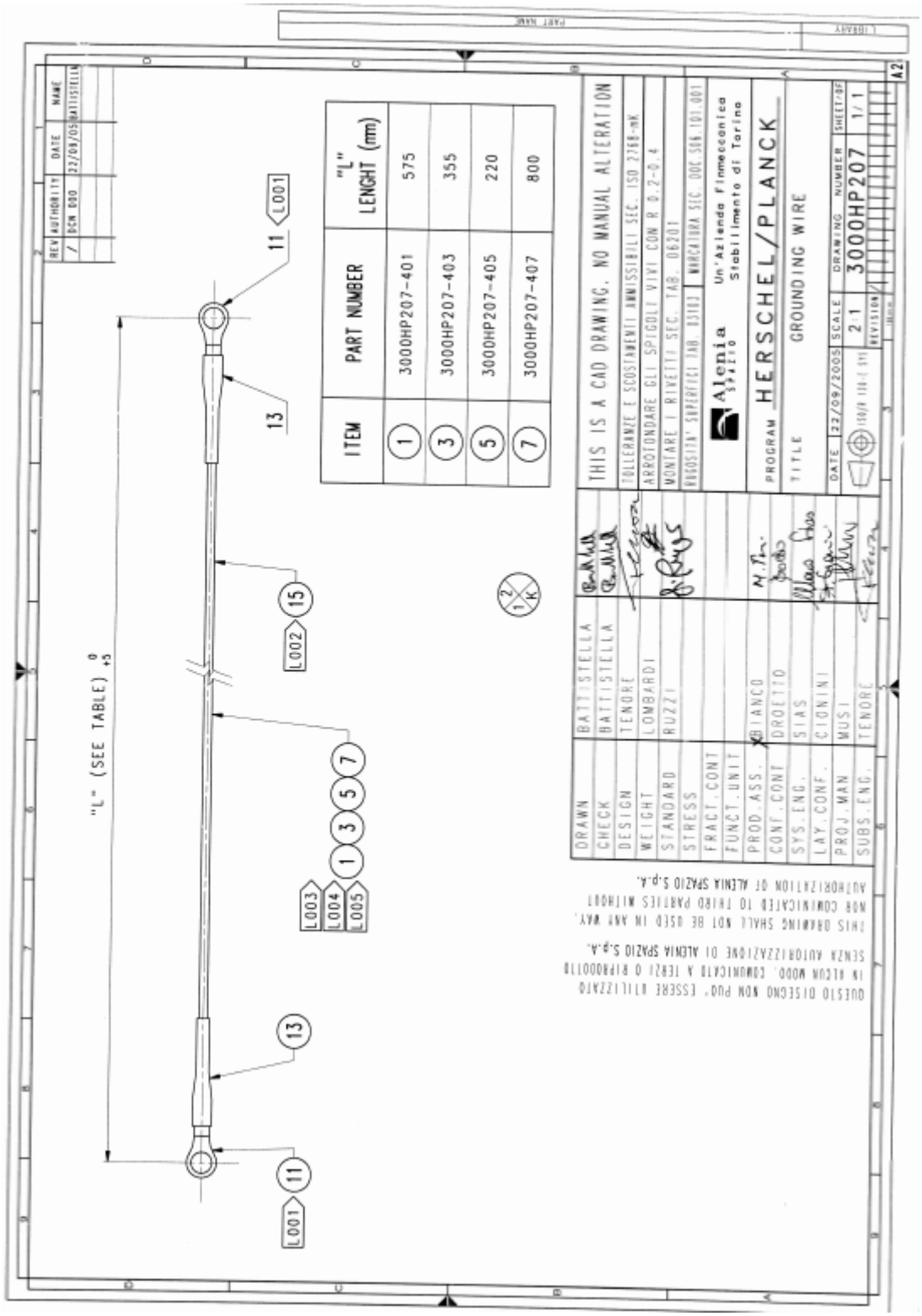


Figure 3.10-4: SVM UCP Bond-strap types and Identification

3.10.2 SVM Upper closure panel Bond-strap Integration

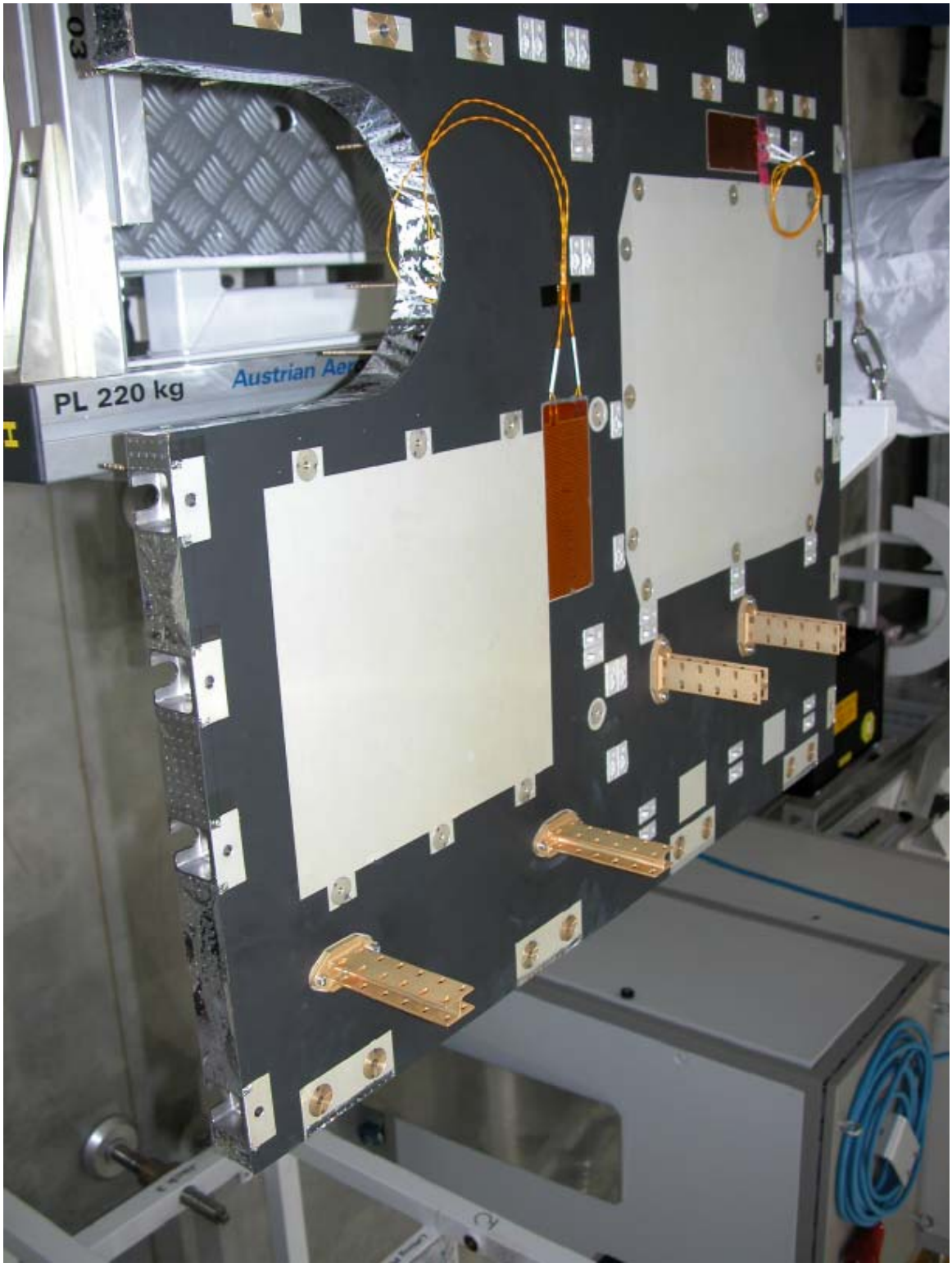
Model	Ident-No	Part No	Length [mm]	Interface	from	to	R [mW]	Integrated	M5_CB Torque [Nm]	M4_LP Torque [Nm]	Date	Operator
SVM	33	3000HP207-401	575	PACS SIH	CB 313200	CB 313100						
SVM	35	3000HP207-403	355	PACS SIH	CB 313100	CB 314200						
SVM	37	3000HP207-405	220	Cryo-Cover	CB 314200	CB 3145100						
SVM	31	3000HP205-407	1070	CCH	**CB 315100**	PACS Sidepanel* / Bonding point						
SVM	29	3000HP205-405	780	CCH	**CB 321300**	PACS Sidepanel* / Bonding point						
SVM	37	3000HP207-405	220	CCH	CB 321300	CB 321200						
SVM	37	3000HP207-405	220	CCH	CB 321200	CB 312300						
SVM	35	3000HP207-403	355	CCH	CB 312300	CB 316100						
SVM	27	3000HP205-403	670	SPIRE SIH	**CB 312200**	SPIRE Sidepanel* / Bonding point						
SVM	37	3000HP207-405	220	SPIRE SIH	CB 312200	CB 312100						
SVM	37	3000HP207-405	220	SIH - CCH	CB 312100	CB 321100						
SVM	35	3000HP207-403	355	LOU - CCH	CB 321100	CB 311300						
SVM	25	3000HP205-401	560	HIFI SIH	**CB 311100**	HIFI Sidepanel* / Bonding point						
SVM	33	3000HP207-401	575	HIFI SIH	CB 311100	CB 311200						
Integrators:			Date:			Testoperators:				Date:		

Table 3.10-1:SVM UCP Bond-strap Integration

3.11 PFM SVM -Z LP with mounting area of DCU (bigger) & CCU (smaller)

3.11.1 PFM SVM -Z LP with Stand-off Towers for CCU-A / B CCH Fixation

3.11.2 PFM SVM -Z LP with mounting area of DPU , FCU & the 4 SOT for FCU SIH Fixation



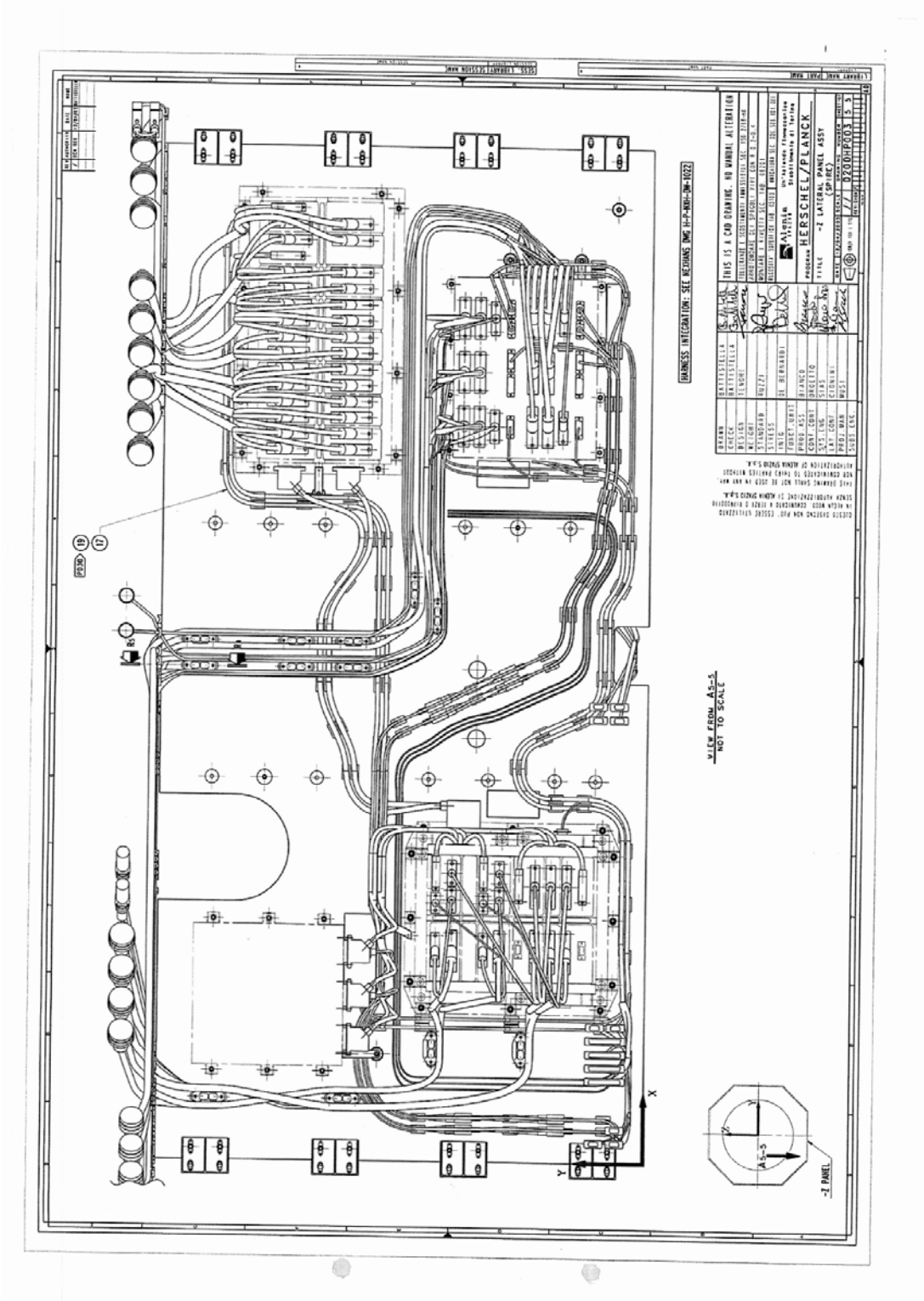
3.12 PFM SVM Lateral Panel (-Z) Harness Integration & Fixation

The SVM lateral panel (LP -Z) houses the following Harness

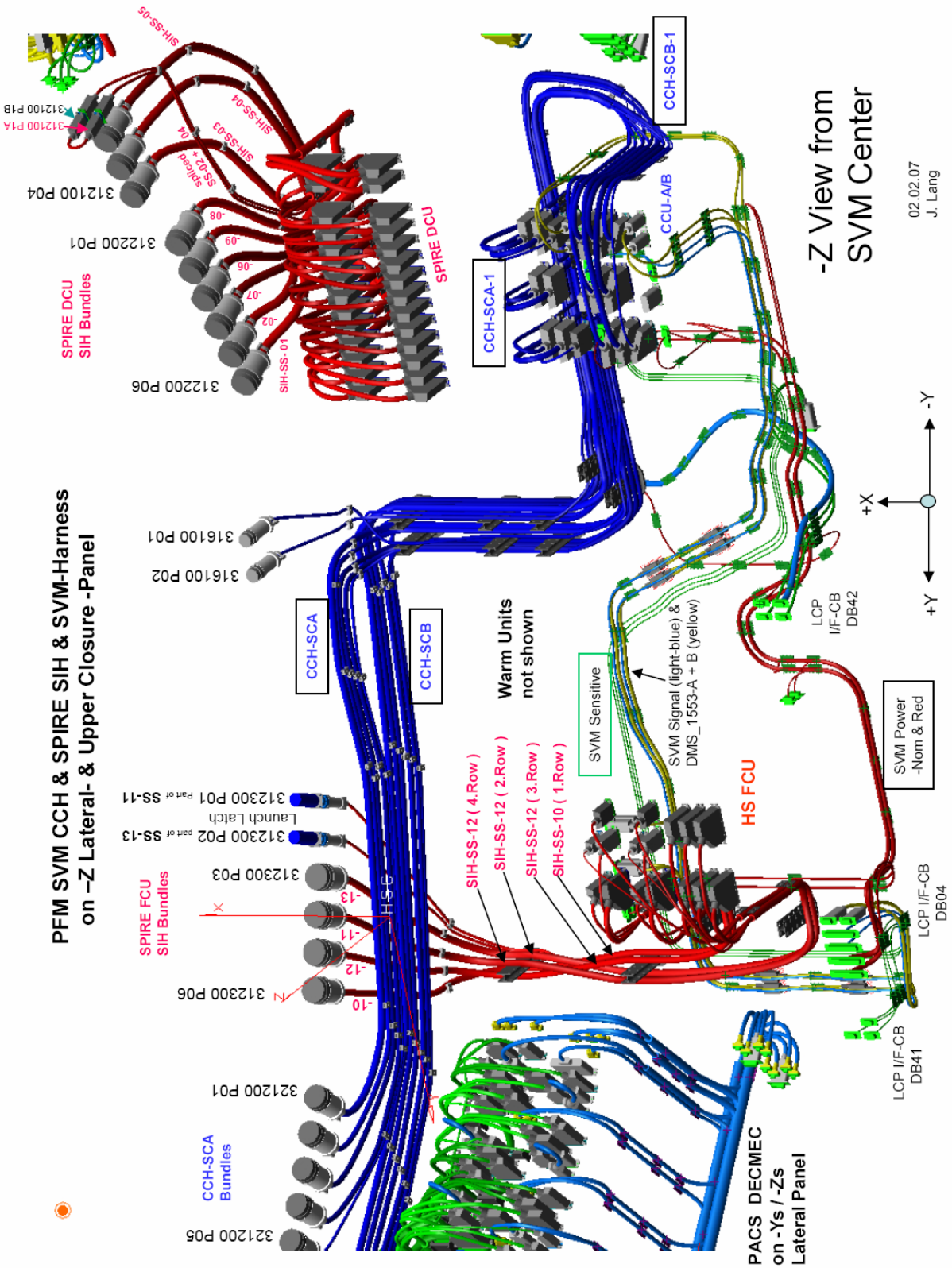
1. SVM Power & Command Harness designed by AAS, Manufactured by Nexans & integrated by AAS
2. SPIRE Warm Interconnecting Harness (WIH) designed by Instrument, Manufactured by Camerin & integrated by ASED
3. Cryo Scientific Instrument Harness (SIH) designed by Instrument & ASED, Manufactured by CASA and integrated by ASED
4. Thermal Control Harness designed by AAS , Manufactured by Nexans & integrated by ASED, Sensor final Interconnection TBD AAS-F.
5. Bonding Harness designed by AAS-F, manufactured by AAS-I & integrated on only SVM UCP by ASED

The single Instrument Warm Interconnecting Harness (WIH) shall be integrated, according Instrument defined Integration sequences, but also taking into account the SIH integration sequence defined by ASED & the SVM-Harness Lay-outs defined by NEXANS for the -Z Lateral panel harness.

3.12.1 SVM -Z Lateral Panel Harness Assembly and Attachments



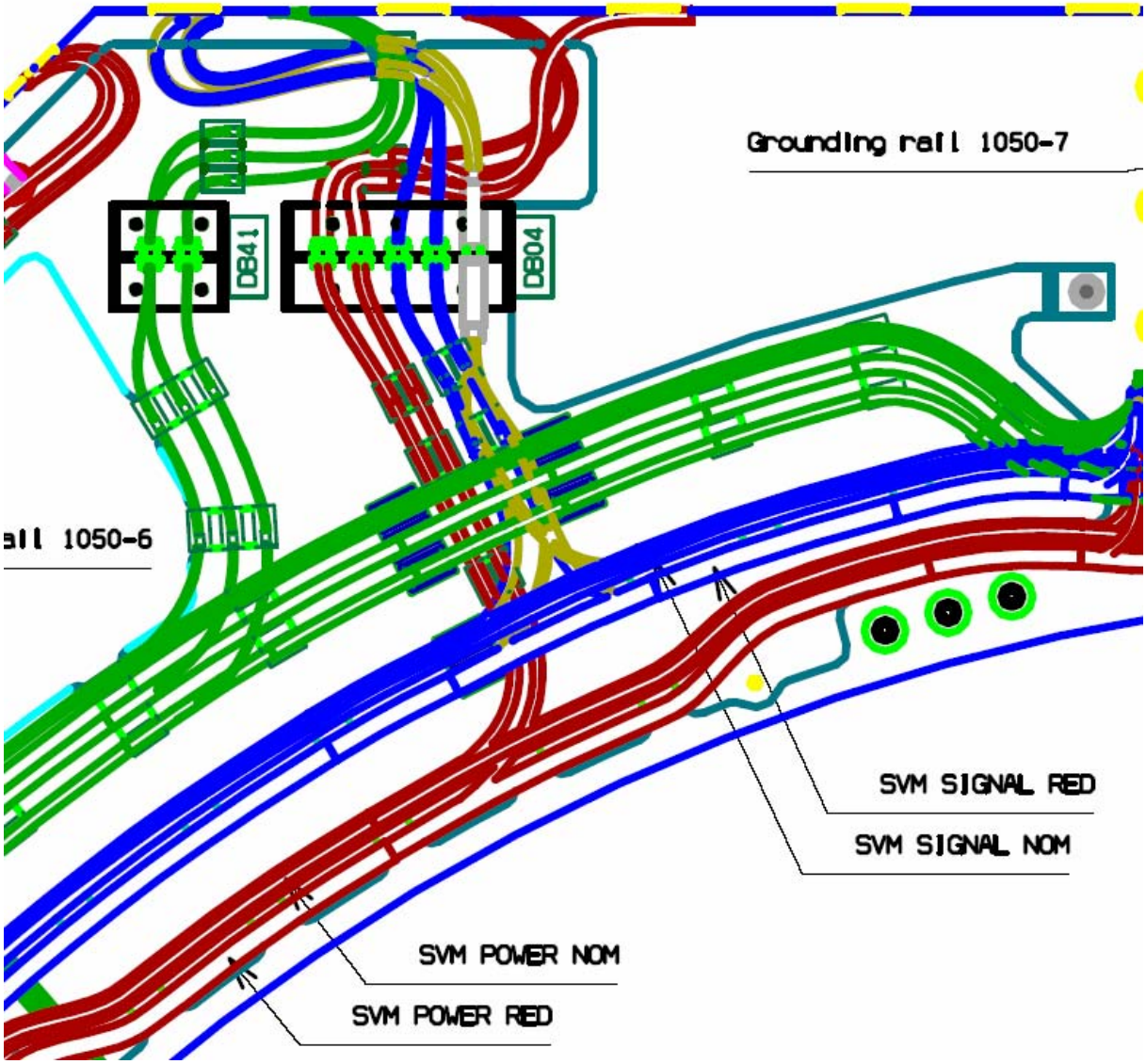
3.12.2 PFM SVM CCH with SPIRE SIH & SVM Harness on -Z LP & UCP exclusive SPIRE WIH



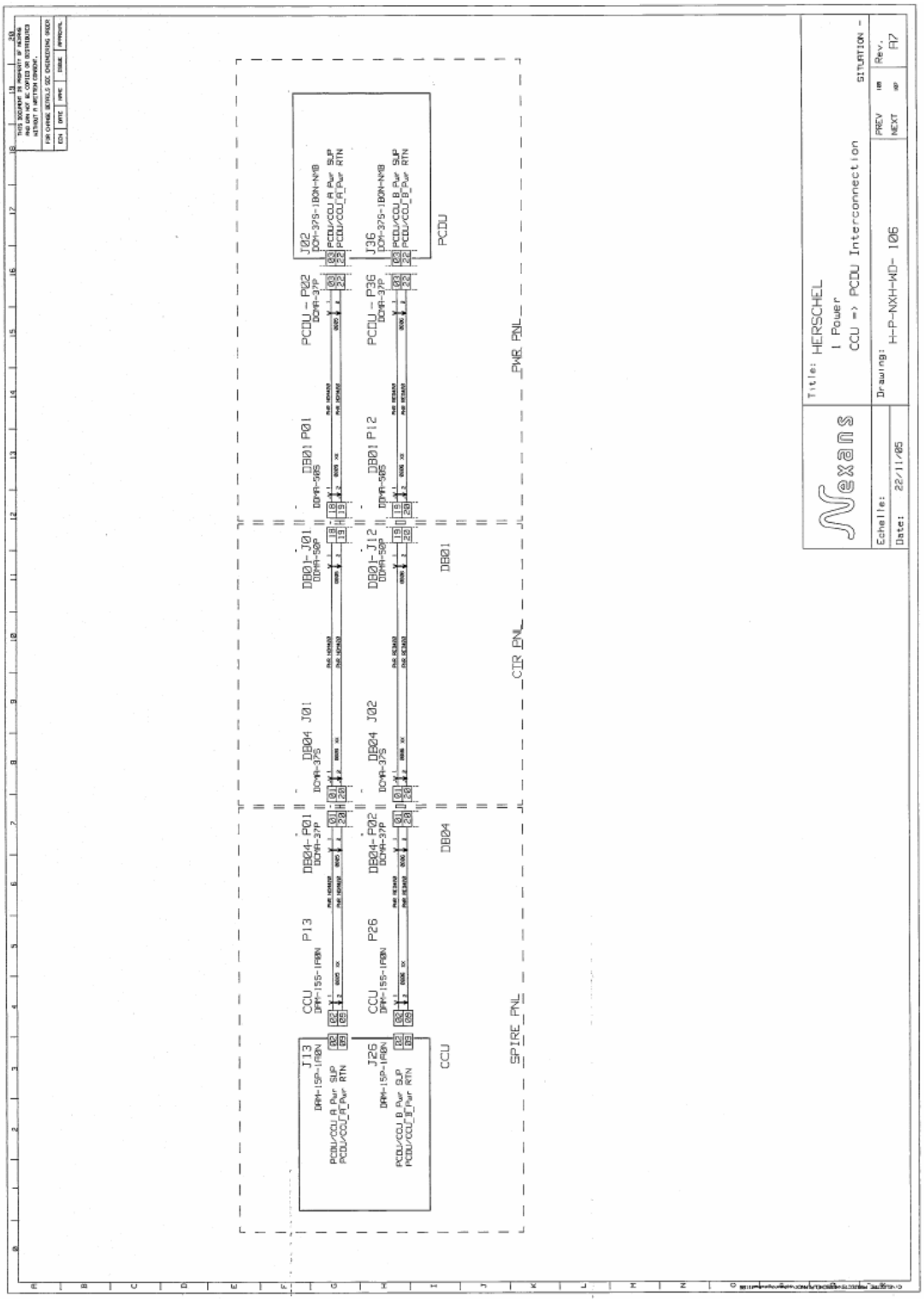
3.12.3 PFM SVM S/C-Harness Routing & Fixation on SVM LCP -Z & LP

The S/C-Harness between SVM Units & LCP I/F-CBs as also on the LP -Z have been performed by AAS-I.

The S/C-Harness CCU I/F connectors shall be mated on the SVM CCU Dummy-unit connectors. The routing & fixation shall be performed according drawing, ref. HP-NXH-DW-1050.



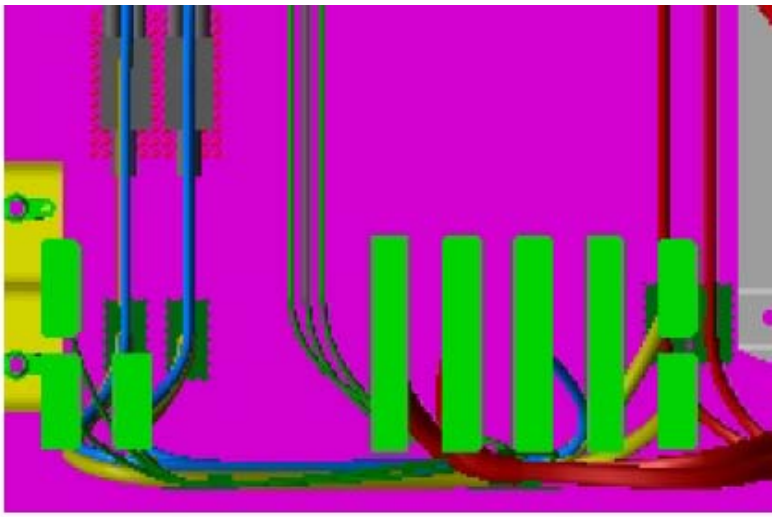
3.12.4 PFM SVM-Harness Interconnections to CCU-A & CCU-B



3.12.5 Principle SVM Harness Integration Sequence

- On SVM -Z lateral panel, the **SVM Sensitive NOM (THM-58), RED (THM-106) & RED2** (THM-154) (green) shall be routed first to the CCU-A corner according to NEXANS drawing ref. HP-2-NXH-DW-1022. The cables shall be taped by use of Tape (Kapton or conductive Alu TBD AAS). Each flying-lead wire shall be isolated by use of sleeves and stored it, left-hand side of CCU-A.
- The SVM Power-harness DB04 P01 & P02 **- SVM POWER NOM & RED** (red) shall be routed from left-hand bottom FCU corner to FCU right-hand corner 122200
- Continued routing to CCU-A 214100 P13 & CCU-B 214100 P26
- Furthermore from left-hand bottom FCU corner to SPIRE DPU 122100
- MIL-Bus **DMS_1553A & DMS_1553B** bundles shall be routed left-hand side of SPIRE FCU , and mated to SPIRE DPU 122100
- Route **SVM SIGNAL NOM & RED** from left-hand bottom FCU corner and follow on top of DMS_1553A & B harness bundles to CCU-B -Xs area and mate to CCU-A 214100 P11 & CCU-B 214100 P24
- Route **SVM SIGNAL NOM on top of DMS_1553A & SVM SIGNAL RED** on top of **DMS_1553B** bundles
- In Mating areas, the harness bundles shall be not fixed in Flight configuration and PFM ty-raps, due to the electrical SVM Power & Signal Tests to be performed in advanced to any Warm-unit Short-Functional-Test (SFT).
- **Warm-unit connector mating in frame of electrical AIT tests are not traced by this document.**

3.12.5.1 SVM-Harness between DB41 & DB04 and SVM -Z LP (CATIA)



3.12.5.2 SVM lower closure panel I/F-CB DB04 I/Fs to SPIRE LP

Hrns Name	*Hrns Conn Part Num HMU*	*Connector Function*
DB04J04	DCMA 37P	SPIRE Panel (Class 2 Signal R)
DB04J05	DEMA 9S	SPIRE Panel (DMS 1553 M)
DB04J06	DEMA 9S	SPIRE Panel (DMS 1553 R)
DB04P01	DCMA 37P	SPIRE Panel (Power M)
DB04P02	DCMA 37P	SPIRE Panel (Class 2 Signal M)
DB04P03	DCMA 37S	SPIRE Panel (Power M)
DB04P04	DCMA 37s	SPIRE Panel (Class 2 Signal R)
DB04P05	DEMA 9P	SPIRE Panel (DMS 1553 M)
DB04P06	DEMA 9P	SPIRE Panel (DMS 1553 R)
DB04J01	DCMA 37S	SPIRE Panel (Power M)
DB04J02	DCMA 37S	SPIRE Panel (Power R)
DB04J03	DCMA 37P	SPIRE Panel (Class 2 Signal M)

3.12.5.3 SVM lower closure panel I/F-CB DB41 I/Fs to SPIRE LP

Hrns Name	*Hrns Conn Part Num HMU*	*Connector Function*
DB41J01	DEMA 15P	SPIRE Panel (Class 4 Signal M)
DB41J02	DEMA 15P	SPIRE Panel (Class 4 Signal R)
DB41J03	DEMA 15P	SPIRE Panel (Class 4 Signal R)
DB41P01	DEMA 15S	SPIRE Panel (Class 4 Signal M)
DB41P02	DEMA 15S	SPIRE Panel (Class 4 Signal R)
DB41P03	DEMA 15S	SPIRE Panel (Class 4 Signal R)

3.12.5.4 SVM lower closure panel I/F-CB DB42 I/Fs to SPIRE LP

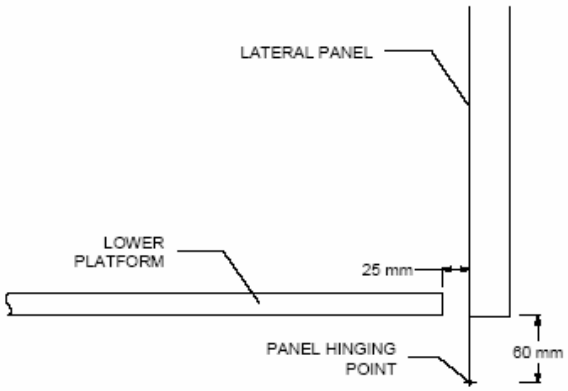
Hrns Name	*Hrns Conn Part Num HMU*	*Connector Function*
DB42J01	DEMA 9P	SPIRE Panel (Class 4 Signal M)
DB42J02	DEMA 9P	SPIRE Panel (Class 4 Signal R)
DB42J03	DEMA 9S	SPIRE Panel (Power M)
DB42J04	DEMA 15P	SPIRE Panel (Class 2 Signal M)
DB42P01	DEMA 9S	SPIRE Panel (Class 4 Signal M)
DB42P02	DEMA 9S	SPIRE Panel (Class 4 Signal R)
DB42P03	DEMA 9P	SPIRE Panel (Power M)
DB42P04	DEMA 15S	SPIRE Panel (Class 2 Signal M)

Hrns Name	*Hrns Conn Part Num HMU*	*Connector Function*
HSDPUP01	DEMA 9S	Power Main
HSDPUP02	DEMA 9S	Power Red
HSDPUP03	DEMA 9P	1553 A Main
HSDPUP04	DEMA 9P	1553 B Main
HSDPUP05	DEMA 9P	1553 A Red
HSDPUP06	DEMA 9P	1553 B Red

Hrns Name	*Hrns Conn Part Num HMU*	*Connector Function*
HSFCUP05	DEMA 9S	Power Main
HSFCUP06	DEMA 9S	Power Red

3.12.5.5 Herschel SVM Harness between LCP and LP

As requisted by MGSE, the SVM Panel harness routing and design allows the lateral panel tilting of 90 degrees as well as a 25mm displacement with the MGSE hinging point as shown in picture below.



The Harness concept is designed to cope with a 25mm total displacement between Lower Floor top edge and the Lateral Panel lower edge, with all Dismountability plug connectors mounted and fixed to respective receptacle connectors in the Flight Configuration.

Harness slacks are foreseen at Lower Floor – Lateral Panel level in order to allow the panel tilting operation. The harness dismountabillity brackets are accomodated such, that the requested slack can be placed in between the bracket and the lateral panel, when the structure is closed (90°).

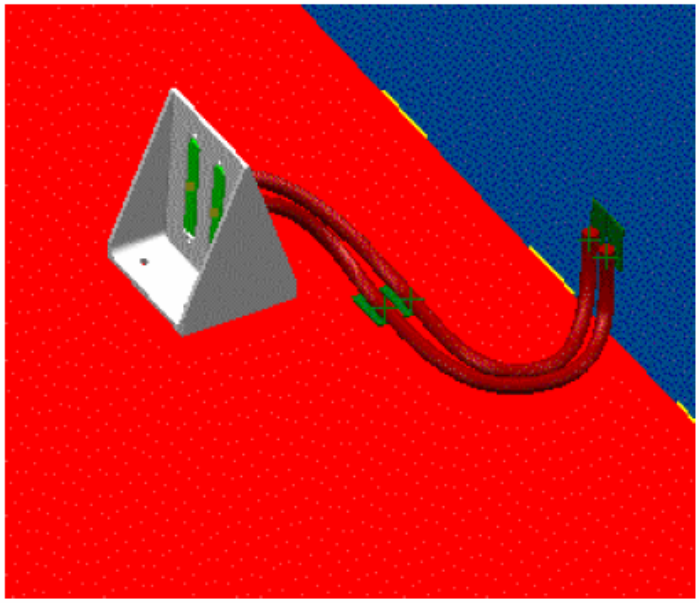


Fig.2 : Bracket and Harness with lateral panel at 90°

In order to limit the amount of free harness between lateral Panel and dismountabillity brackets, the harness is fixed by use of Tie-base(s) and Tie-rap(s). Doing so, mechanical stress at connector level is reduced to a minimum by eliminating as much as possible all vibrations in the harness.

When tilting the harness (opening or closing), this however implies that at a certain angle (preferably 60° to the Lower Floor, depending on accessibillity) of the lateral panels, the available harness slack will have to be fixed on the appropriate Tie-base, after which the closing or opening procedure can be resumed.

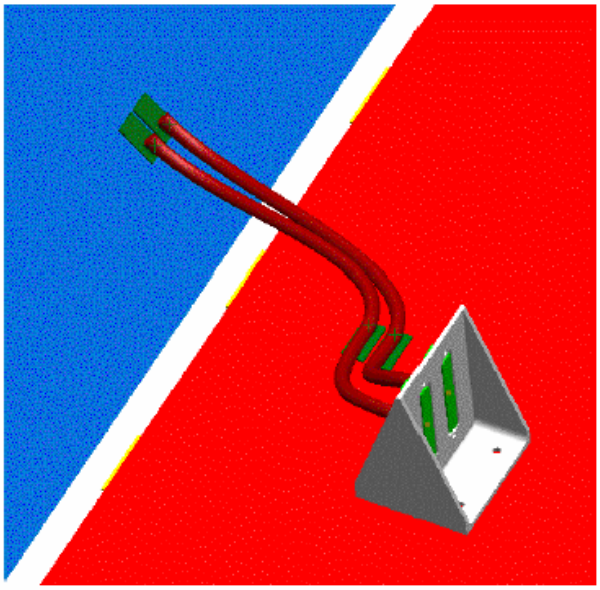


Fig.3 : Bracket and Harness with lateral panel at 45°

With the lateral panel in an 0° position (Lateral panel plane parallel to Lower floor plane), the harness slack is absorbed to a maximum, due to the relative required harness length.

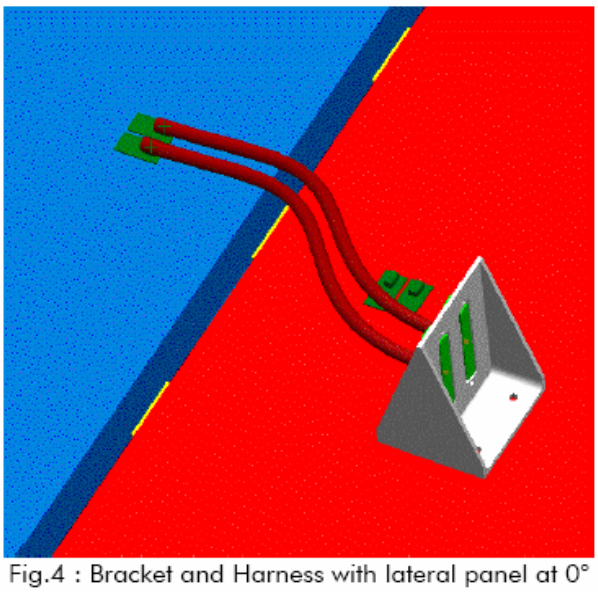


Fig.4 : Bracket and Harness with lateral panel at 0°

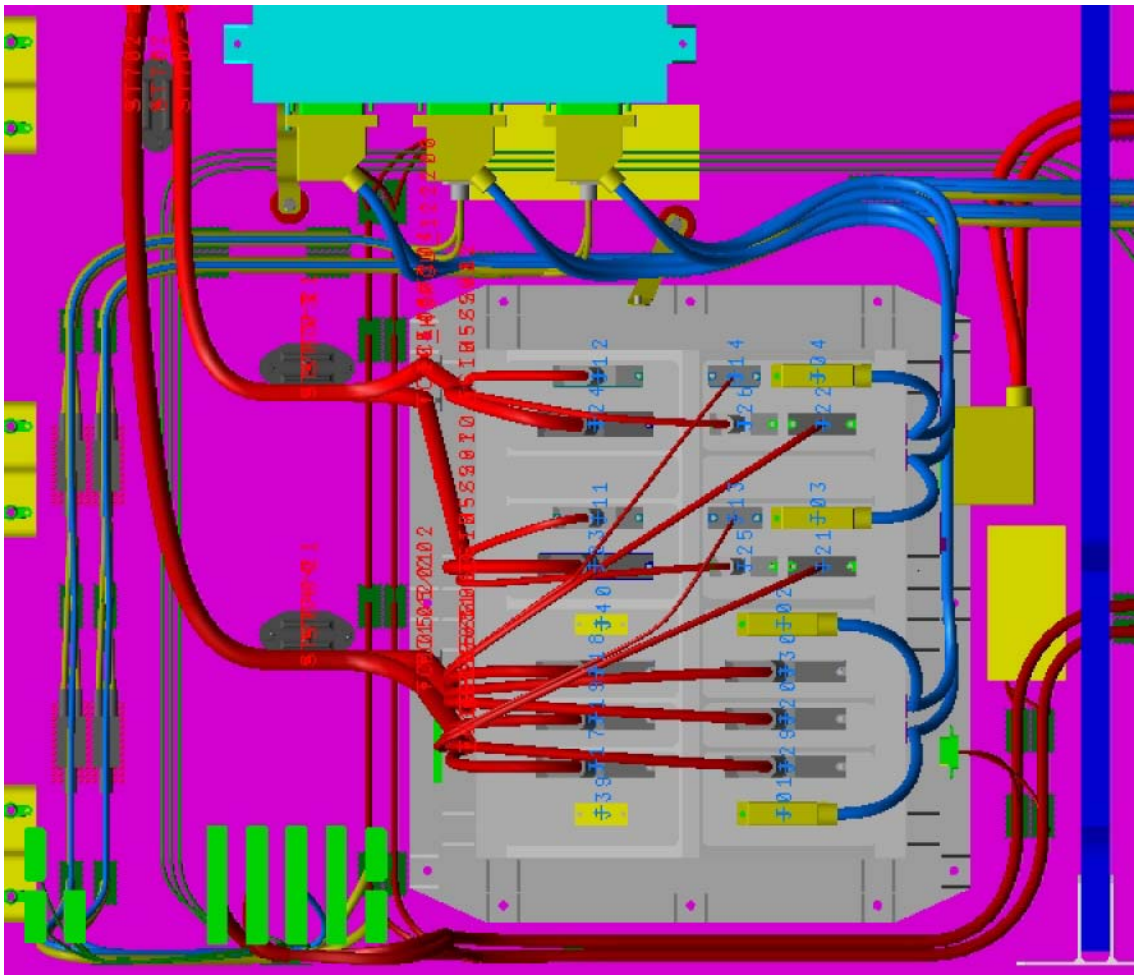
The brackets are physically mounted on the Lower Platform on which the receptacle connectors are fixed.

The lateral panel harnesses terminates with plug connectors. This configuration has been selected being more practical in case of panel harnesses disconnection from the Lower PLT harness.

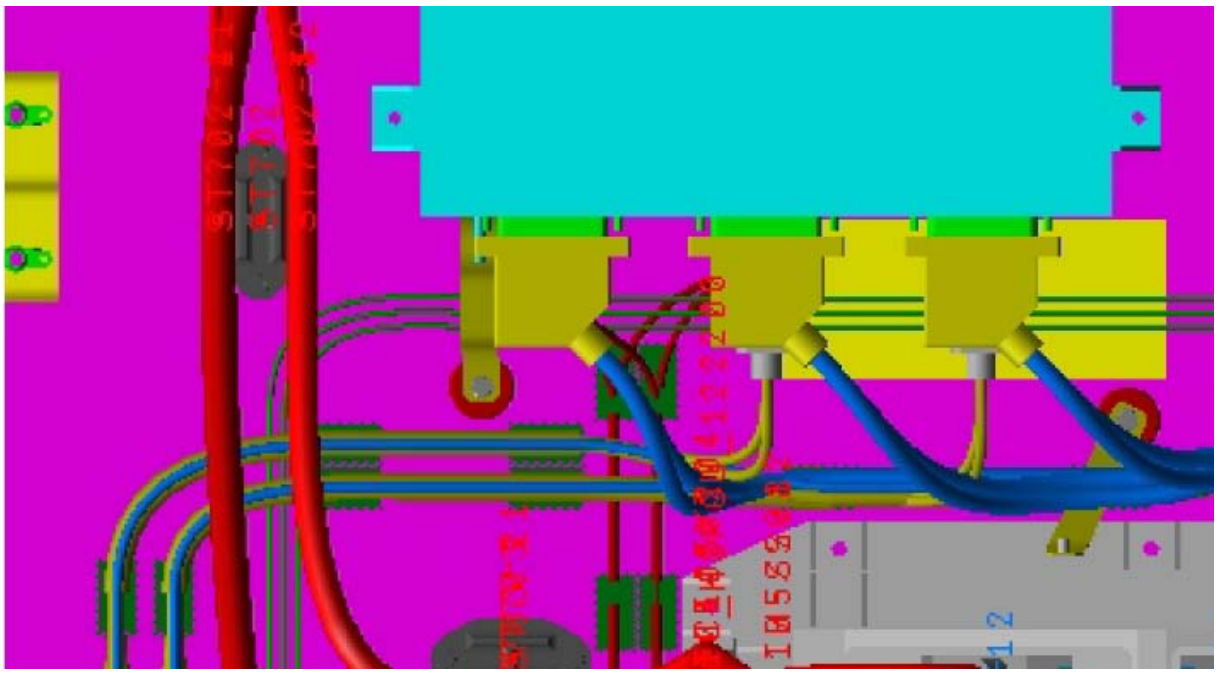
3.12.5.6 -Z LP & LCP SVM-Harness Integration Log

Harness	Location	Bundle ID	color	Sitem	SCon	Titem	TCon	Mated on Dummy-Unit	Mated on PFM Unit	Bdl fixed temp	Bdl fixed final	Date:	Name	PA:
SVM	LP-Z	SVM Sensitive NOM	green	LCP	DB04	THM-58								
SVM	LP-Z	SVM Sensitive RED	green	LCP	DB04	THM-106								
SVM	LP-Z	SVM Sensitive RED2	green	LCP	DB04	THM-154								
SVM	LP-Z	SVM POWER NOM	red	LCP	DB04	HSFCU	122200 P05							
SVM	LP-Z	SVM POWER RED	red	LCP	DB04	HSFCU	122200 P06							
SVM	LP-Z	SVM POWER NOM	red	LCP	DB04	CCU-A	214100 P13							
SVM	LP-Z	SVM POWER RED	red	LCP	DB04	CCU-B	214100 P26							
SVM	LP-Z	SVM POWER NOM	red	LCP	DB04	HSDPU	122100 P01							
SVM	LP-Z	SVM POWER RED	red	LCP	DB04	HSDPU	122100 P02							
SVM	LP-Z	DMS_1553A MAIN	yel	LCP	DB41	HSDPU	122100 P03							
SVM	LP-Z	DMS_1553B MAIN	yel	LCP	DB41	HSDPU	122100 P04							
SVM	LP-Z	DMS_1553A RED	yel	LCP	DB41	HSDPU	122100 P05							
SVM	LP-Z	DMS_1553B RED	yel	LCP	DB41	HSDPU	122100 P06							
SVM	LP-Z	DMS_1553A MAIN	yel	LCP	DB41	CCU-A	214100 P09							
SVM	LP-Z	DMS_1553B MAIN	yel	LCP	DB41	CCU-A	214100 P10							
SVM	LP-Z	DMS_1553A RED	yel	LCP	DB41	CCU-B	214100 P22							
SVM	LP-Z	DMS_1553B RED	yel	LCP	DB41	CCU-B	214100 P23							

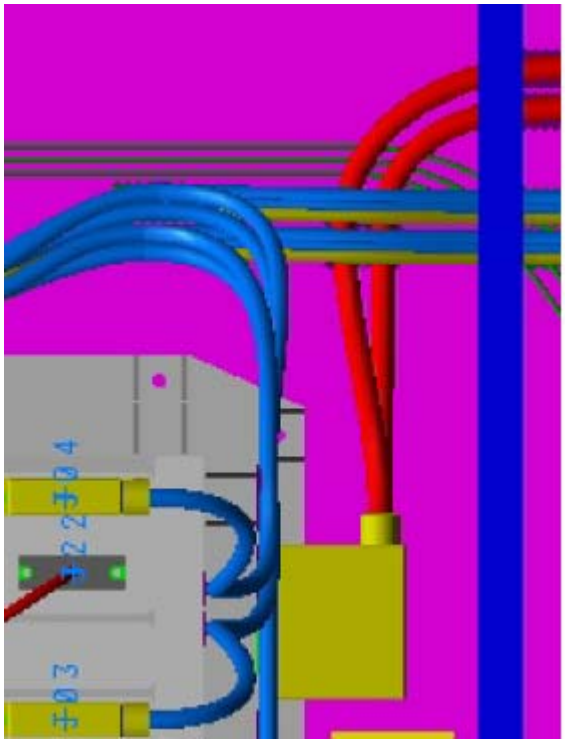
3.12.5.7 SVM-Harness Routing along -Z LP (CATIA Design)



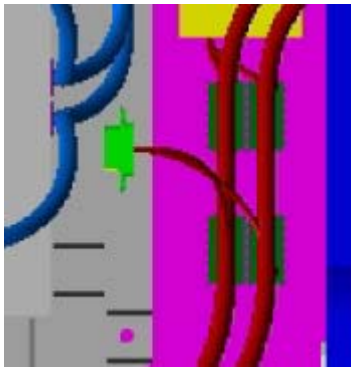
3.12.5.8 SVM-Harness Routing to SPIRE HSDPU (CATIA Design)



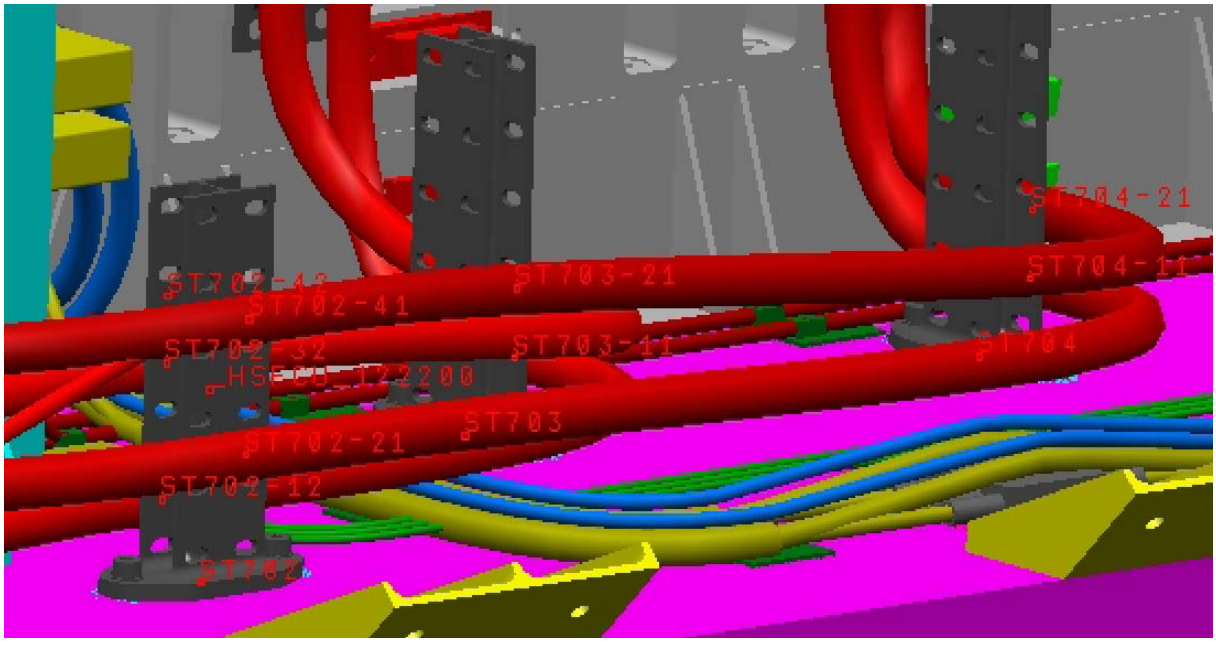
3.12.5.9 SVM-Harness SIGNAL on DMC-1553A/B jumping over crossing SPIRE WIH Bundles W1 & W2 (red)



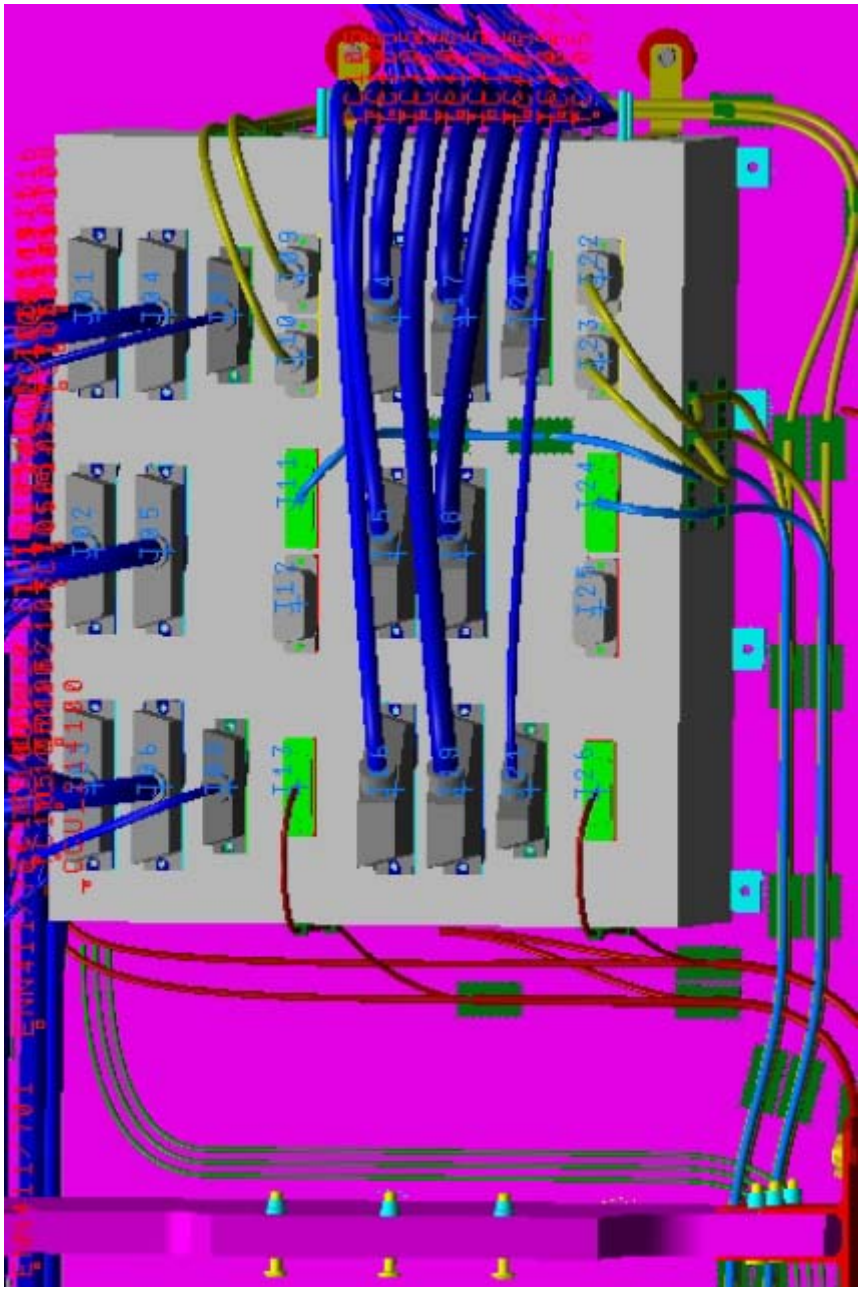
3.12.5.10 SVM POWER NOM & RED Routing to FCU I/F-Connectors (CATIA)



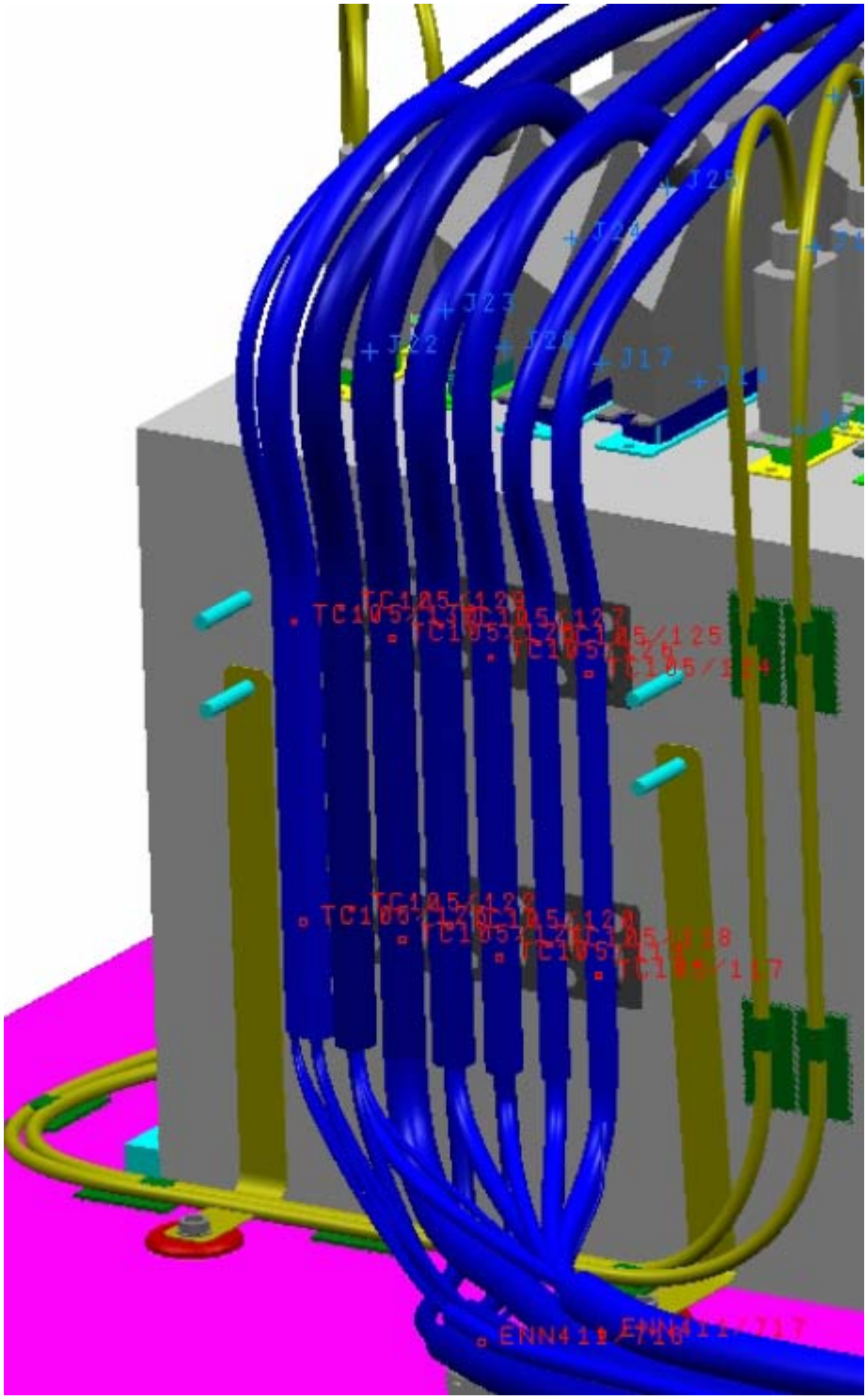
3.12.5.11 SVM Sensitive (green) under DMC-1553A/B (yel) with SVM SIGNAL(blue) on top



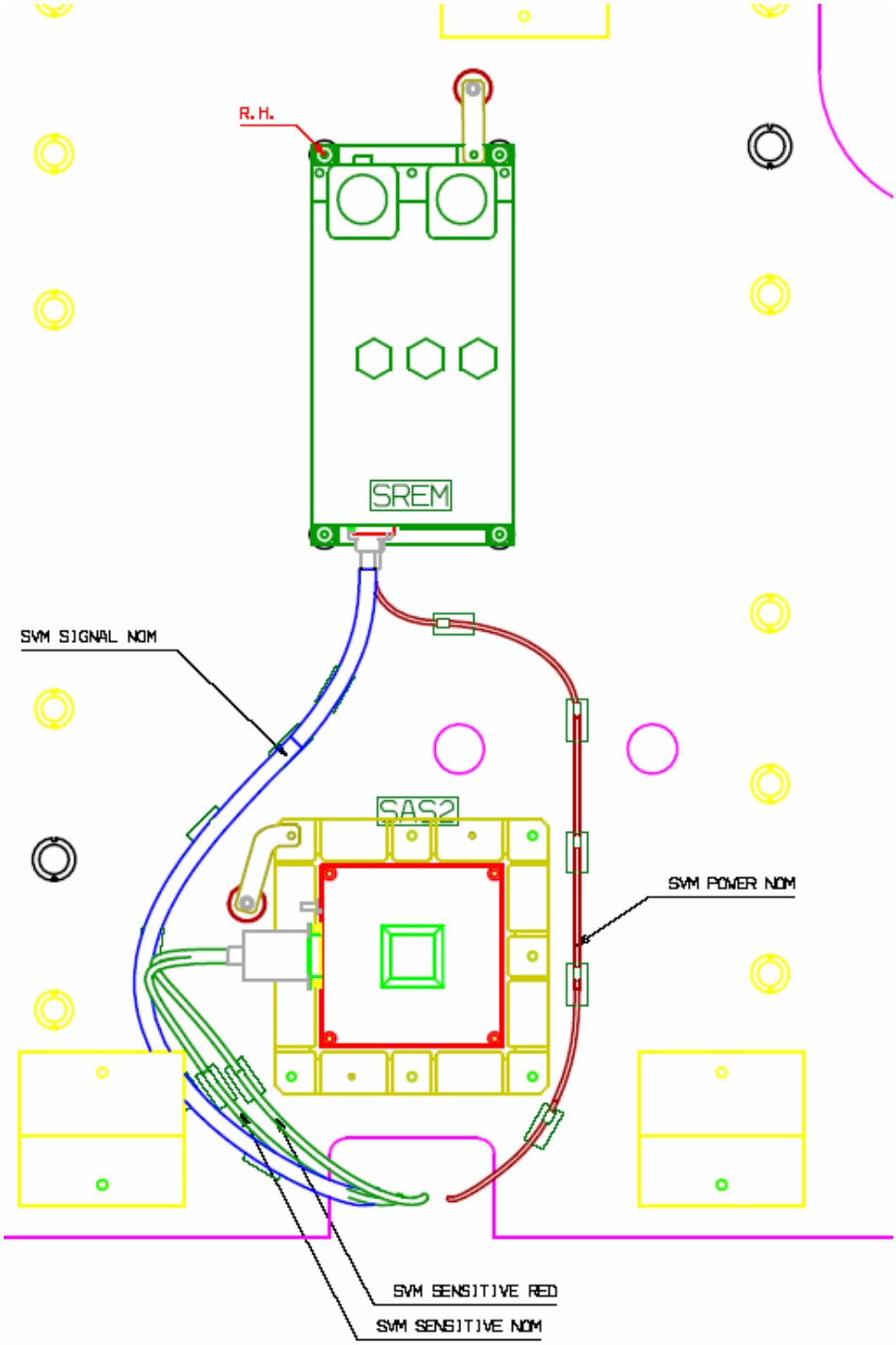
3.12.5.12 SVM POWER-NOM / RED (red) , DMC-1553A/B (yel) & SIGNAL (blue) mated on CCU-A/B (CATIA)



3.12.5.13 Detailed Routing of SVM-Harness DMC-1553A/B (yel) to CCU on -Y side (CATIA)



3.12.5.14 SVM POWER NOM & SVM Sensitive NOM & RED Routing to M & SAS2 & SREM I/F-Connectors (CATIA)



Note: ASSY already integrated by AAS-I. I/F-Connectors shall remain mated during LP tilting.

3.13 PFM SVM CCH Integration & Mating of CCU Dummy or PFM CCU

The CCH-SCA-1 & SCB-1 bundles shall be integrated and fixed on the stand-off towers **after** the SVM S/C-Harness and SPIRE WIH have been integrated.

The CCU-A CCH bundle CCH-SCA-1 bundles shall be routed and fixed as defined in the CASA SVM routing drawing, ref. HP200CB4301 Detail "A" to "D".

The CCU-B CCH bundle CCH-SCB-1 bundles shall be routed and fixed as defined in the CASA SVM Routing & attachment drawing, ref. HP200CB4302 Detail "A" to "D".

In addition the single harness bundle 3D routing flow defined by all anxchor attachments and SOT rows shall be followed too.

On the SVM UCP the CCH-SCA-1 & CCH-SCB-1 bundles shall be first temporary installed, before the SPIRE SIH-SS-10-11-12-13 bundles are connected to 312300 P01 to P06.

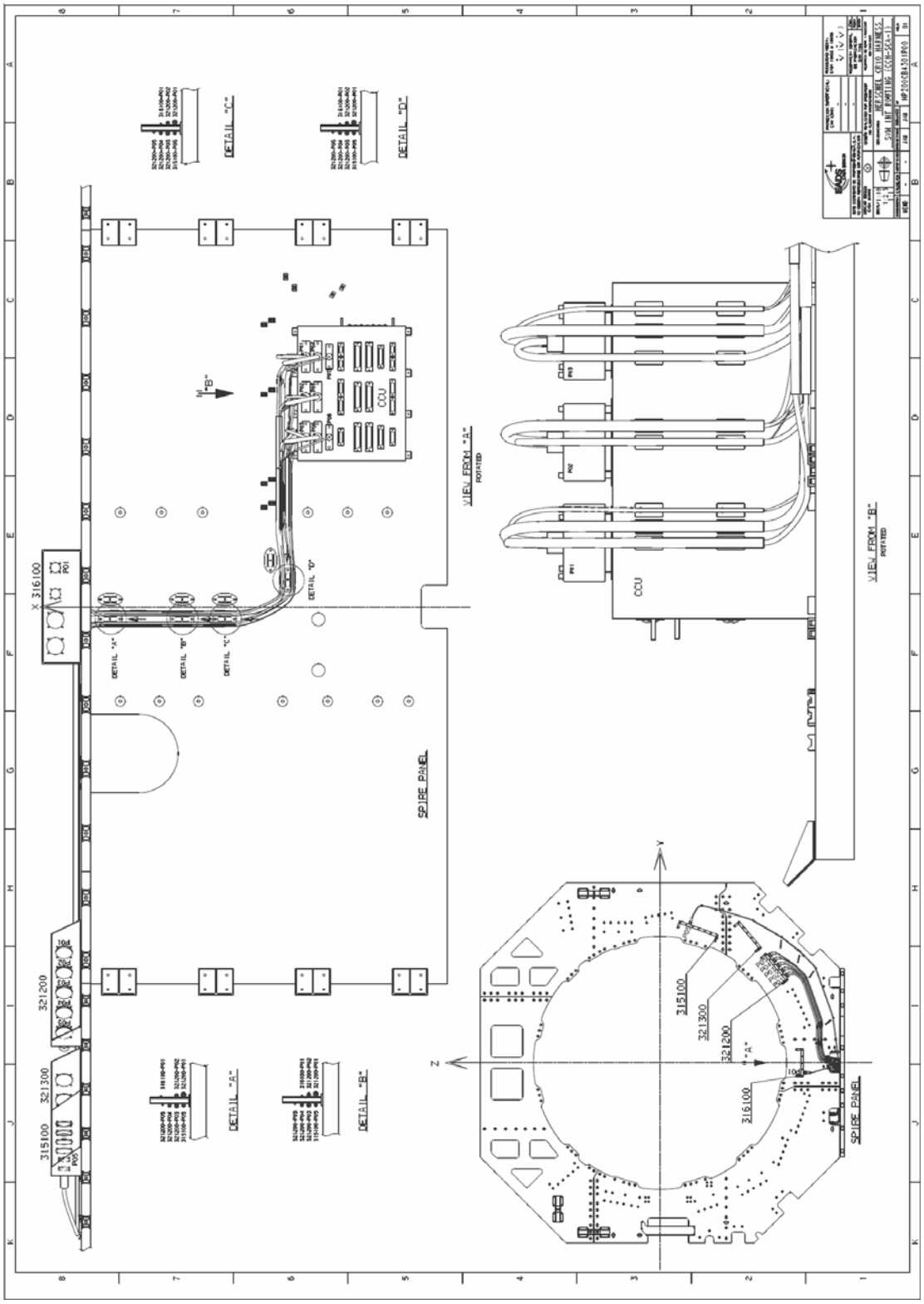
In addition the CCH bundle routing within each UCP cut-out shall be controlled, that bundle shall be not in contact with any structural corner, especially attention shall be taken during closure of SVM Lateral Panel closure / tilting. During tilting the cable bundle bending and sliding over each other and over the lower closure panel close to I/F-CBs and also below the upper closure panel shall be controlled in detail during the whole tilting process.

For SIH bundle protection, no sticky tapes shall be used in sight of the wrapped alu-foil over-shields.

Herschel

Hrns Name	*Hrns Conn Part Num HMU*	*Connector Function*
CCUP10	DEM-9P-1A0N	1553 B Nom
CCUP11	DAM-15S-1A0N	Dry Valve Commands Nom
CCUP12	DAM-15P-1A0N	1553 Address Nom
CCUP13	DAM-15S-1A0N	Power 28V Main
CCUP22	DEM-9P-1A0N	1553 A Red
CCUP23	DEM-9P-1A0N	1553 B Red
CCUP24	DAM-15S-1A0N	Dry Valve Commands Red
CCUP25	DAM-15P-1A0N	1553 Address Red
CCUP26	DAM-15S-1A0N	Power 28V Red
CCUP09	DEM-9P-1A0N	1553 A Nom

3.13.1 CCH SCA-1 Routing & Fixation on SVM LP and UCP



3.13.1.1 CCH-SCA-10

CCH-SCA-10					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P01				
214100	TC105/116	450,05	-574,52	-1504,40	90
214100	TC105/108	450,05	-574,52	-1579,40	90
ENN411	ENN411/710	491,10	-518,02	-1654,40	0
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-12	472,70	-62,00	-1654,40	0
ST709	ST709-12	617,70	28,00	-1654,40	90
ST707	ST707-12	715,70	28,00	-1654,40	90
ST705	ST705-12	880,70	28,00	-1654,40	90
ENN411	ENN411/979	946,50	4,11	-1536,20	90
ENN411	ENN411/988	946,50	45,01	-1463,35	21
ENN411	ENN411/989	946,50	182,11	-1437,20	0
ENN411	ENN411/993	946,50	348,39	-1442,04	175
ENN411	ENN411/90C	946,50	737,94	-1314,46	25
321200	P01				
214100	P02				
214100	TC105/113	450,05	-482,02	-1504,40	90
214100	TC105/105	450,05	-482,02	-1579,40	90
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-12	472,70	-62,00	-1654,40	0
ST709	ST709-12	617,70	28,00	-1654,40	90
ST707	ST707-12	715,70	28,00	-1654,40	90
ST705	ST705-12	880,70	28,00	-1654,40	90
ENN411	ENN411/979	946,50	4,11	-1536,20	90
ENN411	ENN411/988	946,50	45,01	-1463,35	21
ENN411	ENN411/989	946,50	182,11	-1437,20	0
ENN411	ENN411/993	946,50	348,39	-1442,04	175
ENN411	ENN411/90C	946,50	737,94	-1314,46	25
321200	P01				

CCH-SCA-10					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P03				
214100	TC105/111	450,05	-404,52	-1504,40	90
214100	TC105/103	450,05	-404,52	-1579,40	90
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-12	472,70	-62,00	-1654,40	0
ST709	ST709-12	617,70	28,00	-1654,40	90
ST707	ST707-12	715,70	28,00	-1654,40	90
ST705	ST705-12	880,70	28,00	-1654,40	90
ENN411	ENN411/979	946,50	4,11	-1536,20	90
ENN411	ENN411/988	946,50	45,01	-1463,35	21
ENN411	ENN411/989	946,50	182,11	-1437,20	0
ENN411	ENN411/993	946,50	348,39	-1442,04	175
ENN411	ENN411/90C	946,50	737,94	-1314,46	25
321200	P01				
214100	P05				
214100	TC105/112	450,05	-467,02	-1504,40	90
214100	TC105/104	450,05	-467,02	-1579,40	90
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-12	472,70	-62,00	-1654,40	0
ST709	ST709-12	617,70	28,00	-1654,40	90
ST707	ST707-12	715,70	28,00	-1654,40	90
ST705	ST705-12	880,70	28,00	-1654,40	90
ENN411	ENN411/979	946,50	4,11	-1536,20	90
ENN411	ENN411/988	946,50	45,01	-1463,35	21
ENN411	ENN411/989	946,50	182,11	-1437,20	0
ENN411	ENN411/993	946,50	348,39	-1442,04	175
ENN411	ENN411/90C	946,50	737,94	-1314,46	25
321200	P01				

3.13.1.2 CCH-SCA-11

CCH-SCA-11					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P01				
214100	TC105/116	450,05	-574,52	-1504,40	90
214100	TC105/108	450,05	-574,52	-1579,40	90
ENN411	ENN411/710	491,10	-518,02	-1654,40	0
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-22	472,70	-62,00	-1654,40	0
ST709	ST709-22	617,70	28,00	-1654,40	90
ST707	ST707-22	715,70	28,00	-1654,40	90
ST705	ST705-22	880,70	28,00	-1654,40	90
ENN411	ENN411/980	946,50	21,11	-1523,20	90
ENN411	ENN411/990	946,50	192,11	-1452,20	0
ENN411	ENN411/994	946,50	359,66	-1456,11	175
ENN411	ENN411/90D	946,50	753,35	-1323,81	25
321200	P02				
214100	P02				
214100	TC105/113	450,05	-482,02	-1504,40	90
214100	TC105/105	450,05	-482,02	-1579,40	90
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-22	472,70	-62,00	-1654,40	0
ST709	ST709-22	617,70	28,00	-1654,40	90
ST707	ST707-22	715,70	28,00	-1654,40	90
ST705	ST705-22	880,70	28,00	-1654,40	90
ENN411	ENN411/980	946,50	21,11	-1523,20	90
ENN411	ENN411/990	946,50	192,11	-1452,20	0
ENN411	ENN411/994	946,50	359,66	-1456,11	175
ENN411	ENN411/90D	946,50	753,35	-1323,81	25
321200	P02				

CCH-SCA-11					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P05				
214100	TC105/112	450,05	-467,02	-1504,40	90
214100	TC105/104	450,05	-467,02	-1579,40	90
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-22	472,70	-62,00	-1654,40	0
ST709	ST709-22	617,70	28,00	-1654,40	90
ST707	ST707-22	715,70	28,00	-1654,40	90
ST705	ST705-22	880,70	28,00	-1654,40	90
ENN411	ENN411/980	946,50	21,11	-1523,20	90
ENN411	ENN411/990	946,50	192,11	-1452,20	0
ENN411	ENN411/994	946,50	359,66	-1456,11	175
ENN411	ENN411/90D	946,50	753,35	-1323,81	25
321200	P02				
214100	P08				
214100	TC105/109	450,05	-359,52	-1504,40	90
214100	TC105/101	450,05	-359,52	-1579,40	90
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-22	472,70	-62,00	-1654,40	0
ST709	ST709-22	617,70	28,00	-1654,40	90
ST707	ST707-22	715,70	28,00	-1654,40	90
ST705	ST705-22	880,70	28,00	-1654,40	90
ENN411	ENN411/980	946,50	21,11	-1523,20	90
ENN411	ENN411/990	946,50	192,11	-1452,20	175
ENN411	ENN411/994	946,50	359,66	-1456,11	5
ENN411	ENN411/90D	946,50	753,35	-1323,81	25
321200	P02				

3.13.1.3 CCH-SCA-12

CCH-SCA-12					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P07				
214100	TC105/114	450,05	-544,52	-1504,40	90
214100	TC105/106	450,05	-544,52	-1579,40	90
ENN411	ENN411/709	472,90	-508,02	-1654,40	0
ENN411	ENN411/705	472,90	-293,02	-1654,40	0
ENN411	ENN411/701	472,90	-198,02	-1654,40	0
ST711	ST711-41	472,70	-62,00	-1654,40	0
ST709	ST709-41	617,70	28,00	-1654,40	90
ST707	ST707-41	715,70	28,00	-1654,40	90
ST705	ST705-41	880,70	28,00	-1654,40	90
ENN411	ENN411/982	946,50	57,11	-1536,20	90
ENN411	ENN411/992	946,50	211,67	-1482,18	0
ENN411	ENN411/996	946,50	382,20	-1484,25	175
ENN411	ENN411/90F	946,50	784,57	-1343,47	25
ENN411	ENN411/90L	946,50	890,19	-1243,73	50
321200	P05				
214100	P08				
214100	TC105/109	450,05	-359,52	-1504,40	90
214100	TC105/101	450,05	-359,52	-1579,40	90
ENN411	ENN411/705	472,90	-293,02	-1654,40	0
ENN411	ENN411/701	472,90	-198,02	-1654,40	0
ST711	ST711-41	472,70	-62,00	-1654,40	0
ST709	ST709-41	617,70	28,00	-1654,40	90
ST707	ST707-41	715,70	28,00	-1654,40	90
ST705	ST705-41	880,70	28,00	-1654,40	90
ENN411	ENN411/982	946,50	57,11	-1536,20	90
ENN411	ENN411/992	946,50	211,67	-1482,18	0
ENN411	ENN411/996	946,50	382,20	-1484,25	175
ENN411	ENN411/90F	946,50	784,57	-1343,47	25
ENN411	ENN411/90L	946,50	890,19	-1243,73	50
321200	P05				

3.13.1.4 CCH-SCA-31

CCH-SCA-31					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P07				
214100	TC105/114	450,05	-544,52	-1504,40	90
214100	TC105/106	450,05	-544,52	-1579,40	90
ENN411	ENN411/709	472,90	-508,02	-1654,40	0
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-32	472,70	-62,00	-1654,40	0
ST709	ST709-32	617,70	28,00	-1654,40	90
ST707	ST707-32	715,70	28,00	-1654,40	90
ST705	ST705-52	880,70	28,00	-1654,40	90
ENN411	ENN411/977	946,50	-49,99	-1544,02	85
316100	P01				
214100	P08				
214100	TC105/109	450,05	-359,52	-1504,40	90
214100	TC105/101	450,05	-359,52	-1579,40	90
ENN411	ENN411/706	491,10	-283,02	-1654,40	0
ENN411	ENN411/702	491,10	-188,02	-1654,40	0
ST711	ST711-32	472,70	-62,00	-1654,40	0
ST709	ST709-32	617,70	28,00	-1654,40	90
ST707	ST707-32	715,70	28,00	-1654,40	90
ST705	ST705-52	880,70	28,00	-1654,40	90
ENN411	ENN411/977	946,50	-49,99	-1544,02	85
316100	P01				

3.13.1.5 CCH-SCA_32

CCH-SCA-32					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P04				
214100	TC105/115	450,05	-559,52	-1504,40	90
214100	TC105/107	450,05	-559,52	-1579,40	90
ENN411	ENN411/709	472,90	-508,02	-1654,40	0
ENN411	ENN411/705	472,90	-293,02	-1654,40	0
ENN411	ENN411/701	472,90	-198,02	-1654,40	0
ST711	ST711-21	472,70	-62,00	-1654,40	0
ST709	ST709-21	617,70	28,00	-1654,40	90
ST707	ST707-21	715,70	28,00	-1654,40	90
ST705	ST705-21	880,70	28,00	-1654,40	90
ENN411	ENN411/981	946,50	42,11	-1526,20	90
ENN411	ENN411/991	946,50	202,11	-1467,20	0
ENN411	ENN411/995	946,50	370,93	-1470,18	175
ENN411	ENN411/90E	946,50	768,75	-1333,19	25
321200	P03				

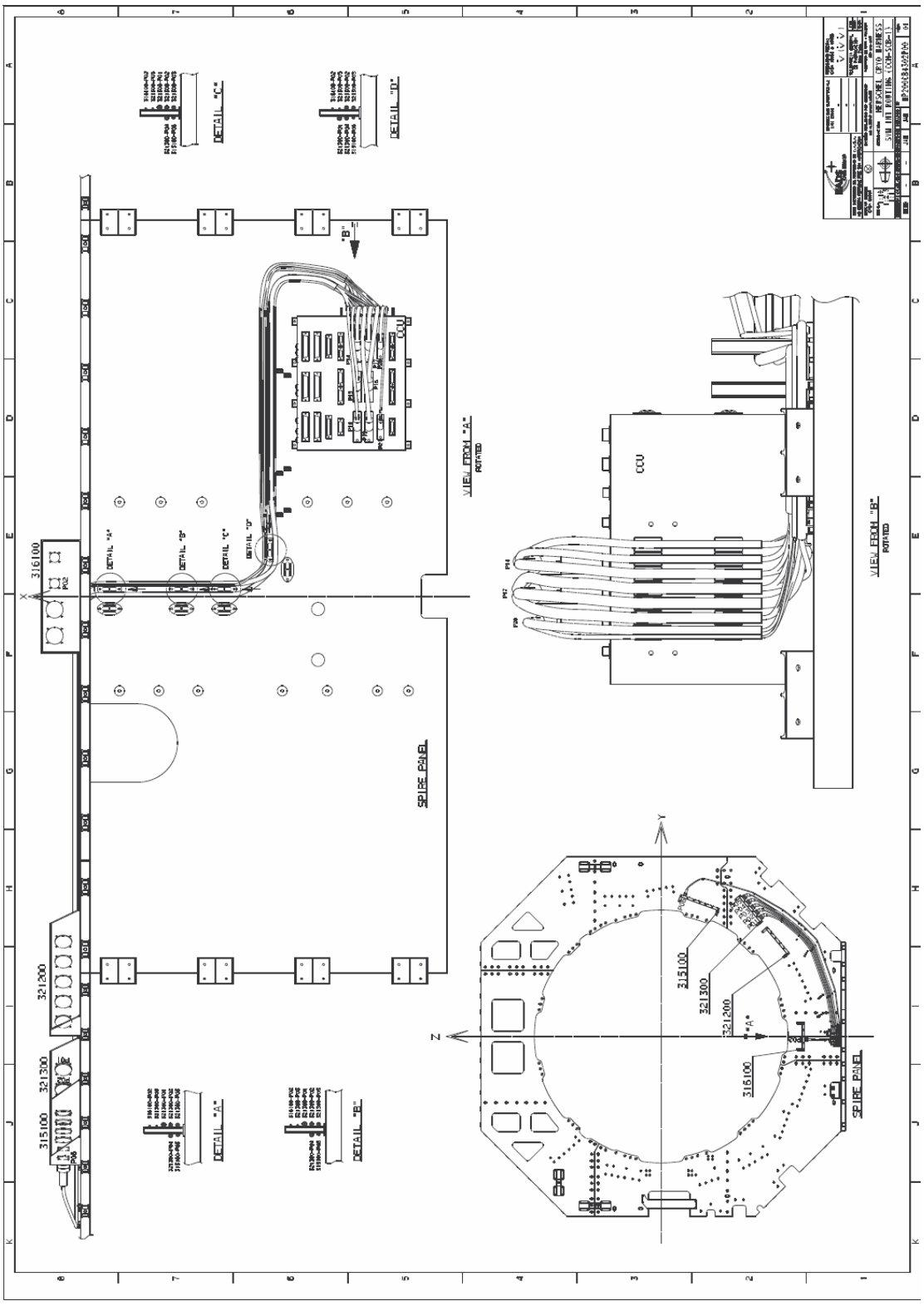
3.13.1.6 CCH-SCA-33

CCH-SCA-33					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P05				
214100	TC105/112	450,05	-467,02	-1504,40	90
214100	TC105/104	450,05	-467,02	-1579,40	90
ENN411	ENN411/705	472,90	-293,02	-1654,40	0
ENN411	ENN411/701	472,90	-198,02	-1654,40	0
ST711	ST711-31	472,70	-62,00	-1654,40	0
ST709	ST709-31	617,70	28,00	-1654,40	90
ST707	ST707-31	715,70	28,00	-1654,40	90
ST705	ST705-31	880,70	28,00	-1654,40	90
ENN411	ENN411/982	946,50	57,11	-1536,20	90
ENN411	ENN411/992	946,50	211,67	-1482,18	0
ENN411	ENN411/996	946,50	382,20	-1484,25	175
ENN411	ENN411/90F	946,50	784,57	-1343,47	25
ENN411	ENN411/90L	946,50	890,19	-1243,73	50
321200	P04				
214100	P06				
214100	TC105/110	450,05	-379,52	-1504,40	90
214100	TC105/102	450,05	-379,52	-1579,40	90
ENN411	ENN411/705	472,90	-293,02	-1654,40	0
ENN411	ENN411/701	472,90	-198,02	-1654,40	0
ST711	ST711-31	472,70	-62,00	-1654,40	0
ST709	ST709-31	617,70	28,00	-1654,40	90
ST707	ST707-31	715,70	28,00	-1654,40	90
ST705	ST705-31	880,70	28,00	-1654,40	90
ENN411	ENN411/982	946,50	57,11	-1536,20	90
ENN411	ENN411/992	946,50	211,67	-1482,18	0
ENN411	ENN411/996	946,50	382,20	-1484,25	175
ENN411	ENN411/90F	946,50	784,57	-1343,47	25
ENN411	ENN411/90L	946,50	890,19	-1243,73	50
321200	P04				

3.13.1.7 CCH-SCA-34

CCH-SCA-34					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P06				
214100	TC105/110	450,05	-379,52	-1504,40	90
214100	TC105/102	450,05	-379,52	-1579,40	90
ENN411	ENN411/705	472,90	-293,02	-1654,40	0
ENN411	ENN411/701	472,90	-198,02	-1654,40	0
ST711	ST711-11	472,70	-62,00	-1654,40	0
ST709	ST709-11	617,70	28,00	-1654,40	90
ST707	ST707-11	715,70	28,00	-1654,40	90
ST705	ST705-11	880,70	28,00	-1654,40	90
ENN411	ENN411/987	946,50	99,13	-1632,59	175
ENN411	ENN411/90B	946,50	412,55	-1591,59	175
ENN411	ENN411/90K	946,50	869,43	-1430,79	25
ENN411	ENN411/90Q	946,50	1021,94	-1287,67	47
ENN411	ENN411/90V	946,50	1158,03	-1114,94	55
ENN411	ENN411/90W	946,50	1309,63	-854,85	60
ENN411	ENN411/90X	946,50	1404,71	-552,62	75
ENN411	ENN411/90Y	946,50	1443,87	-384,62	90
315100	P05				

3.13.2 CCH SCB-1 Routing & Fixation on SVM LP and UCP



3.13.2.1 CCH-SCB-10

CCH-SCB-10					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P14				
214100	TC105/126	303,55	-644,22	-1505,40	90
214100	TC105/119	303,55	-644,22	-1579,40	90
ENN411	ENN411/717	369,82	-717,04	-1654,40	45
ENN411	ENN411/715	457,50	-733,02	-1654,40	90
ENN411	ENN411/713	509,30	-658,02	-1654,40	0
ENN411	ENN411/711	509,30	-498,02	-1654,40	0
ENN411	ENN411/707	509,30	-293,02	-1654,40	0
ENN411	ENN411/703	509,30	-238,02	-1654,40	0
ST712	ST712-31	512,70	-107,00	-1654,40	0
ST710	ST710-32	617,70	-17,00	-1654,40	90
ST708	ST708-32	715,70	-17,00	-1654,40	90
ST706	ST706-32	880,70	-17,00	-1654,40	90
ENN411	ENN411/983	946,50	94,38	-1566,75	175
ENN411	ENN411/997	946,50	355,79	-1523,93	170
ENN411	ENN411/90G	946,50	788,19	-1374,88	25
ENN411	ENN411/90M	946,50	925,68	-1266,27	47
ENN411	ENN411/90R	946,50	1059,73	-1107,14	55
321300	P01				
214100	P15				
214100	TC105/125	317,05	-644,22	-1499,90	90
214100	TC105/118	317,05	-644,22	-1573,90	90
ENN411	ENN411/717	369,82	-717,04	-1654,40	45
ENN411	ENN411/715	457,50	-733,02	-1654,40	90
ENN411	ENN411/713	509,30	-658,02	-1654,40	0
ENN411	ENN411/711	509,30	-498,02	-1654,40	0
ENN411	ENN411/707	509,30	-293,02	-1654,40	0
ENN411	ENN411/703	509,30	-238,02	-1654,40	0
ST712	ST712-31	512,70	-107,00	-1654,40	0
ST710	ST710-32	617,70	-17,00	-1654,40	90
ST708	ST708-32	715,70	-17,00	-1654,40	90
ST706	ST706-32	880,70	-17,00	-1654,40	90
ENN411	ENN411/983	946,50	94,38	-1566,75	175
ENN411	ENN411/997	946,50	355,79	-1523,93	170
ENN411	ENN411/90G	946,50	788,19	-1374,88	25
ENN411	ENN411/90M	946,50	925,68	-1266,27	47
ENN411	ENN411/90R	946,50	1059,73	-1107,14	55
321300	P01				

CCH-SCB-10					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P16				
214100	TC105/124	330,55	-644,22	-1505,40	90
214100	TC105/117	330,55	-644,22	-1579,40	90
ENN411	ENN411/717	369,82	-717,04	-1654,40	45
ENN411	ENN411/715	457,50	-733,02	-1654,40	90
ENN411	ENN411/713	509,30	-658,02	-1654,40	0
ENN411	ENN411/711	509,30	-498,02	-1654,40	0
ENN411	ENN411/707	509,30	-293,02	-1654,40	0
ENN411	ENN411/703	509,30	-238,02	-1654,40	0
ST712	ST712-31	512,70	-107,00	-1654,40	0
ST710	ST710-32	617,70	-17,00	-1654,40	90
ST708	ST708-32	715,70	-17,00	-1654,40	90
ST706	ST706-32	880,70	-17,00	-1654,40	90
ENN411	ENN411/983	946,50	94,38	-1566,75	175
ENN411	ENN411/997	946,50	355,79	-1523,93	170
ENN411	ENN411/90G	946,50	788,19	-1374,88	25
ENN411	ENN411/90M	946,50	925,68	-1266,27	47
ENN411	ENN411/90R	946,50	1059,73	-1107,14	55
321300	P01				
214100	P18				
214100	TC105/129	263,05	-644,22	-1499,90	90
214100	TC105/122	263,05	-644,22	-1573,90	90
ENN411	ENN411/717	369,82	-717,04	-1654,40	45
ENN411	ENN411/715	457,50	-733,02	-1654,40	90
ENN411	ENN411/713	509,30	-658,02	-1654,40	0
ENN411	ENN411/711	509,30	-498,02	-1654,40	0
ENN411	ENN411/707	509,30	-293,02	-1654,40	0
ENN411	ENN411/703	509,30	-238,02	-1654,40	0
ST712	ST712-31	512,70	-107,00	-1654,40	0
ST710	ST710-32	617,70	-17,00	-1654,40	90
ST708	ST708-32	715,70	-17,00	-1654,40	90
ST706	ST706-32	880,70	-17,00	-1654,40	90
ENN411	ENN411/983	946,50	94,38	-1566,75	175
ENN411	ENN411/997	946,50	355,79	-1523,93	170
ENN411	ENN411/90G	946,50	788,19	-1374,88	25
ENN411	ENN411/90M	946,50	925,68	-1266,27	47
ENN411	ENN411/90R	946,50	1059,73	-1107,14	55
321300	P01				

3.13.2.2 CCH-SCB-11

CCH-SCB-11					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P14				
214100	TC105/126	303,55	-644,22	-1505,40	90
214100	TC105/119	303,55	-644,22	-1579,40	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-22	512,70	-107,00	-1654,40	0
ST710	ST710-22	617,70	-17,00	-1654,40	90
ST708	ST708-22	715,70	-17,00	-1654,40	90
ST706	ST706-22	880,70	-17,00	-1654,40	90
ENN411	ENN411/984	946,50	104,65	-1580,91	175
ENN411	ENN411/998	946,50	366,77	-1537,16	170
ENN411	ENN411/90H	946,50	804,44	-1386,06	25
ENN411	ENN411/90N	946,50	944,93	-1270,55	47
ENN411	ENN411/90S	946,50	1079,39	-1108,70	55
321300	P02				
214100	P16				
214100	TC105/124	330,55	-644,22	-1505,40	90
214100	TC105/117	330,55	-644,22	-1579,40	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-22	512,70	-107,00	-1654,40	0
ST710	ST710-22	617,70	-17,00	-1654,40	90
ST708	ST708-22	715,70	-17,00	-1654,40	90
ST706	ST706-22	880,70	-17,00	-1654,40	90
ENN411	ENN411/984	946,50	104,65	-1580,91	175
ENN411	ENN411/998	946,50	366,77	-1537,16	170
ENN411	ENN411/90H	946,50	804,44	-1386,06	25
ENN411	ENN411/90N	946,50	944,93	-1270,55	47
ENN411	ENN411/90S	946,50	1079,39	-1108,70	55
321300	P02				

CCH-SCB-11					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P18				
214100	TC105/129	263,05	-644,22	-1499,90	90
214100	TC105/122	263,05	-644,22	-1573,90	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-22	512,70	-107,00	-1654,40	0
ST710	ST710-22	617,70	-17,00	-1654,40	90
ST708	ST708-22	715,70	-17,00	-1654,40	90
ST706	ST706-22	880,70	-17,00	-1654,40	90
ENN411	ENN411/984	946,50	104,65	-1580,91	175
ENN411	ENN411/998	946,50	366,77	-1537,16	170
ENN411	ENN411/90H	946,50	804,44	-1386,06	25
ENN411	ENN411/90N	946,50	944,93	-1270,55	47
ENN411	ENN411/90S	946,50	1079,39	-1108,70	55
321300	P02				
214100	P21				
214100	TC105/130	249,55	-644,22	-1505,40	90
214100	TC105/123	249,55	-644,22	-1579,40	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-22	512,70	-107,00	-1654,40	0
ST710	ST710-22	617,70	-17,00	-1654,40	90
ST708	ST708-22	715,70	-17,00	-1654,40	90
ST706	ST706-22	880,70	-17,00	-1654,40	90
ENN411	ENN411/984	946,50	104,65	-1580,91	175
ENN411	ENN411/998	946,50	366,77	-1537,16	170
ENN411	ENN411/90H	946,50	804,44	-1386,06	25
ENN411	ENN411/90N	946,50	944,93	-1270,55	47
ENN411	ENN411/90S	946,50	1079,39	-1108,70	55
321300	P02				

3.13.2.3 CCH-SCB-12

CCH-SCB-12					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P20				
214100	TC105/130	249,55	-644,22	-1505,40	90
214100	TC105/123	249,55	-644,22	-1579,40	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-32	512,70	-107,00	-1654,40	0
ST710	ST710-42	617,70	-17,00	-1654,40	90
ST708	ST708-42	715,70	-17,00	-1654,40	90
ST706	ST706-42	880,70	-17,00	-1654,40	90
ENN411	ENN411/986	946,50	107,35	-1611,79	175
ENN411	ENN411/90A	946,50	388,73	-1563,62	170
ENN411	ENN411/90J	946,50	836,93	-1408,43	25
ENN411	ENN411/90P	946,50	983,44	-1279,11	47
ENN411	ENN411/90U	946,50	1118,71	-1111,82	55
321300	P05				
214100	P21				
214100	TC105/130	249,55	-644,22	-1505,40	90
214100	TC105/123	249,55	-644,22	-1579,40	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-32	512,70	-107,00	-1654,40	0
ST710	ST710-42	617,70	-17,00	-1654,40	90
ST708	ST708-42	715,70	-17,00	-1654,40	90
ST706	ST706-42	880,70	-17,00	-1654,40	90
ENN411	ENN411/986	946,50	107,35	-1611,79	175
ENN411	ENN411/90A	946,50	388,73	-1563,62	170
ENN411	ENN411/90J	946,50	836,93	-1408,43	25
ENN411	ENN411/90P	946,50	983,44	-1279,11	47
ENN411	ENN411/90U	946,50	1118,71	-1111,82	55
321300	P05				

3.13.2.4 CCH-SCB-31

CCH-SCB-31					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P20				
214100	TC105/130	249,55	-644,22	-1505,40	90
214100	TC105/123	249,55	-644,22	-1579,40	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-42	512,70	-107,00	-1654,40	0
ST710	ST710-52	617,70	-17,00	-1654,40	90
ST708	ST708-52	715,70	-17,00	-1654,40	90
ST706	ST706-52	880,70	-17,00	-1654,40	90
ENN411	ENN411/978	946,50	-27,89	-1536,20	90
316100	P02				
214100	P21				
214100	TC105/130	249,55	-644,22	-1505,40	90
214100	TC105/123	249,55	-644,22	-1579,40	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-42	512,70	-107,00	-1654,40	0
ST710	ST710-52	617,70	-17,00	-1654,40	90
ST708	ST708-52	715,70	-17,00	-1654,40	90
ST706	ST706-52	880,70	-17,00	-1654,40	90
ENN411	ENN411/978	946,50	-27,89	-1536,20	90
316100	P02				

3.13.2.5 CCH-SCB-32

CCH-SCB-32					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P15				
214100	TC105/125	317,05	-644,22	-1499,90	90
214100	TC105/118	317,05	-644,22	-1573,90	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-12	512,70	-107,00	-1654,40	0
ST710	ST710-12	617,70	-17,00	-1654,40	90
ST708	ST708-12	715,70	-17,00	-1654,40	90
ST706	ST706-12	880,70	-17,00	-1654,40	90
ENN411	ENN411/985	946,50	96,00	-1596,73	175
ENN411	ENN411/999	946,50	377,75	-1550,39	170
ENN411	ENN411/90I	946,50	820,68	-1397,24	25
ENN411	ENN411/90O	946,50	964,18	-1274,83	47
ENN411	ENN411/90T	946,50	1099,05	-1110,26	55
321300	P03				
214100	P19				
214100	TC105/127	290,05	-644,22	-1499,9	90
214100	TC105/120	290,05	-644,22	-1573,90	90
ENN411	ENN411/718	347,62	-734,24	-1654,40	45
ENN411	ENN411/716	477,50	-758,02	-1654,40	90
ENN411	ENN411/714	527,50	-648,02	-1654,40	0
ENN411	ENN411/712	527,50	-488,02	-1654,40	0
ENN411	ENN411/708	527,50	-283,02	-1654,40	0
ENN411	ENN411/704	527,50	-228,02	-1654,40	0
ST712	ST712-12	512,70	-107,00	-1654,40	0
ST710	ST710-12	617,70	-17,00	-1654,40	90
ST708	ST708-12	715,70	-17,00	-1654,40	90
ST706	ST706-12	880,70	-17,00	-1654,40	90
ENN411	ENN411/985	946,50	96,00	-1596,73	175
ENN411	ENN411/999	946,50	377,75	-1550,39	170
ENN411	ENN411/90I	946,50	820,68	-1397,24	25
ENN411	ENN411/90O	946,50	964,18	-1274,83	47
ENN411	ENN411/90T	946,50	1099,05	-1110,26	55
321300	P03				

3.13.2.6 CCH-SCB-33

CCH-SCB-33					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P17				
214100	TC105/128	276,55	-644,22	-1505,40	90
214100	TC105/121	276,55	-644,22	-1579,40	90
ENN411	ENN411/717	369,82	-717,04	-1654,40	45
ENN411	ENN411/715	457,50	-733,02	-1654,40	90
ENN411	ENN411/713	509,30	-658,02	-1654,40	0
ENN411	ENN411/711	509,30	-498,02	-1654,40	0
ENN411	ENN411/707	509,30	-293,02	-1654,40	0
ENN411	ENN411/703	509,30	-238,02	-1654,40	0
ST712	ST712-21	512,70	-107,00	-1654,40	0
ST710	ST710-21	617,70	-17,00	-1654,40	90
ST708	ST708-21	715,70	-17,00	-1654,40	90
ST706	ST706-21	880,70	-17,00	-1654,40	90
ENN411	ENN411/986	946,50	107,35	-1611,79	175
ENN411	ENN411/90A	946,50	388,73	-1563,62	170
ENN411	ENN411/90J	946,50	836,93	-1408,43	25
ENN411	ENN411/90P	946,50	983,44	-1279,11	47
ENN411	ENN411/90U	946,50	1118,71	-1111,82	55
321300	P04				

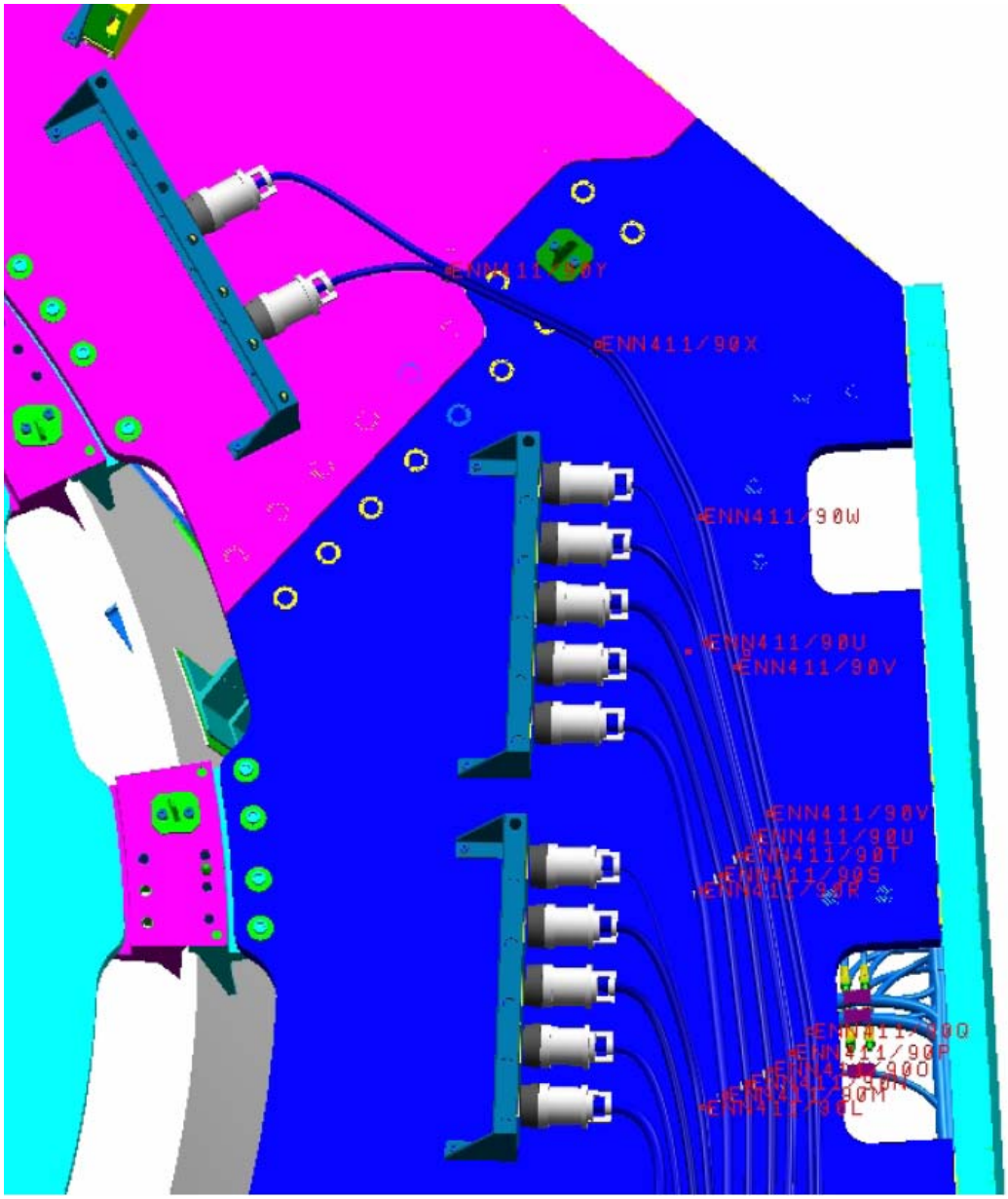
3.13.2.7 CCH-SCB-34

CCH-SCB-34					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
214100	P18				
214100	TC105/129	263,05	-644,22	-1499,90	90
214100	TC105/122	263,05	-644,22	-1573,90	90
ENN411	ENN411/717	369,82	-717,04	-1654,40	45
ENN411	ENN411/715	457,50	-733,02	-1654,40	90
ENN411	ENN411/713	509,30	-658,02	-1654,40	0
ENN411	ENN411/711	509,30	-498,02	-1654,40	0
ENN411	ENN411/707	509,30	-293,02	-1654,40	0
ENN411	ENN411/703	509,30	-238,02	-1654,40	0
ST712	ST712-11	512,70	-107,00	-1654,40	0
ST710	ST710-11	617,70	-17,00	-1654,40	90
ST708	ST708-11	715,70	-17,00	-1654,40	90
ST706	ST706-11	880,70	-17,00	-1654,40	90
ENN411	ENN411/987	946,50	99,13	-1632,59	175
ENN411	ENN411/90B	946,50	412,55	-1591,59	175
ENN411	ENN411/90K	946,50	869,43	-1430,79	25
ENN411	ENN411/90Q	946,50	1021,94	-1287,67	47
ENN411	ENN411/90V	946,50	1158,03	-1114,94	55
ENN411	ENN411/90W	946,50	1309,63	-854,85	60
ENN411	ENN411/90X	946,50	1404,71	-552,62	75
ENN411	ENN411/90Y	946,50	1443,87	-384,62	90
315100	P06				
214100	P19				
214100	TC105/127	290,05	-644,22	-1499,9	90
214100	TC105/120	290,05	-644,22	-1573,90	90
ENN411	ENN411/717	369,82	-717,04	-1654,40	45
ENN411	ENN411/715	457,50	-733,02	-1654,40	90
ENN411	ENN411/713	509,30	-658,02	-1654,40	0
ENN411	ENN411/711	509,30	-498,02	-1654,40	0
ENN411	ENN411/707	509,30	-293,02	-1654,40	0
ENN411	ENN411/703	509,30	-238,02	-1654,40	0
ST712	ST712-11	512,70	-107,00	-1654,40	0
ST710	ST710-11	617,70	-17,00	-1654,40	90
ST708	ST708-11	715,70	-17,00	-1654,40	90
ST706	ST706-11	880,70	-17,00	-1654,40	90
ENN411	ENN411/987	946,50	99,13	-1632,59	175
ENN411	ENN411/90B	946,50	412,55	-1591,59	175
ENN411	ENN411/90K	946,50	869,43	-1430,79	25
ENN411	ENN411/90Q	946,50	1021,94	-1287,67	47
ENN411	ENN411/90V	946,50	1158,03	-1114,94	55
ENN411	ENN411/90W	946,50	1309,63	-854,85	60
ENN411	ENN411/90X	946,50	1404,71	-552,62	75
ENN411	ENN411/90Y	946,50	1443,87	-384,62	90
315100	P06				

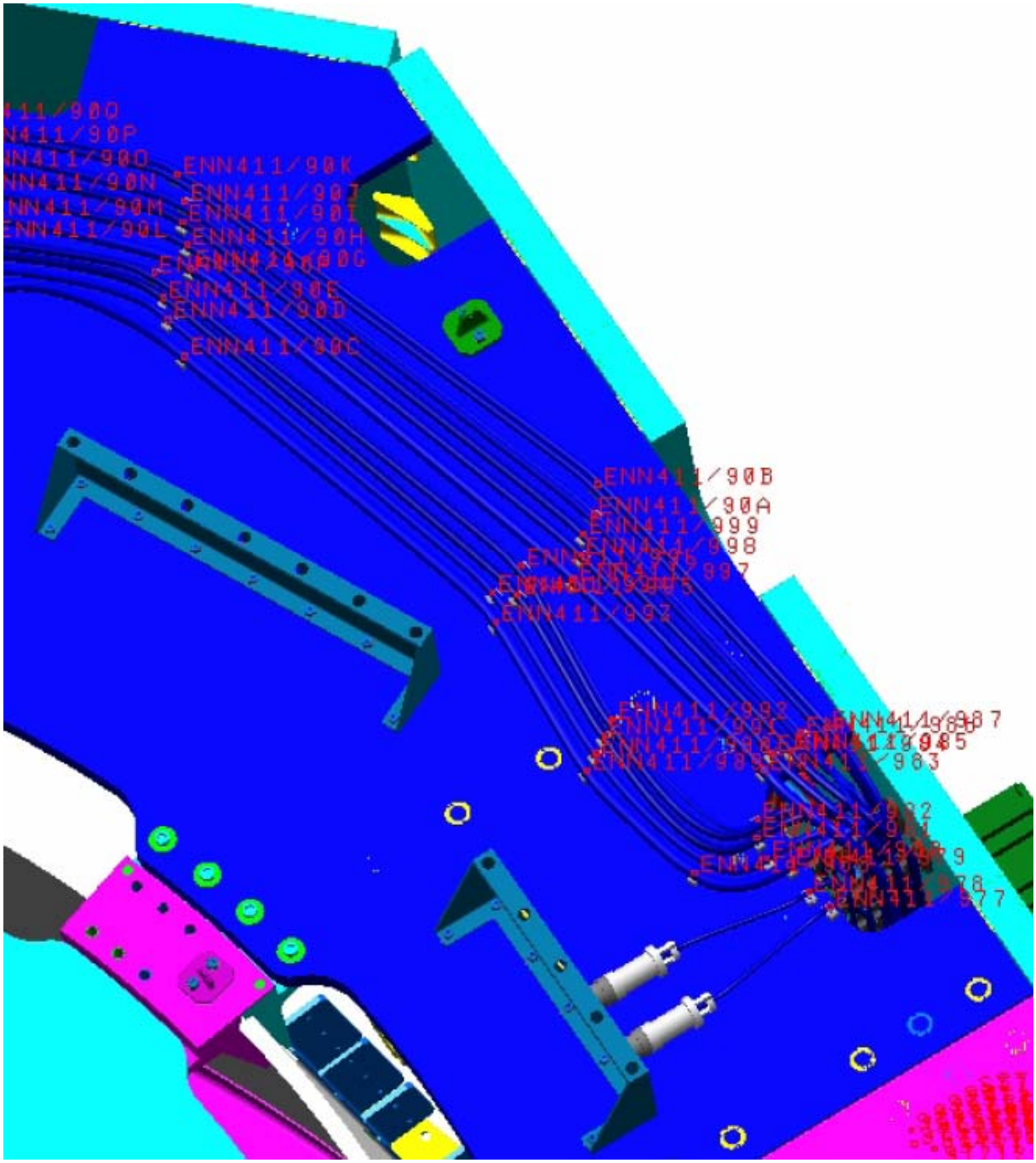
3.14 CATIA SIH & CCH Routing & Attachment Design

To support the SIH bundle integration w.r.t. the single bundle crossings and positioning in narrow areas, the CATIA routing pictures , as extract from the overall harness design model are provided

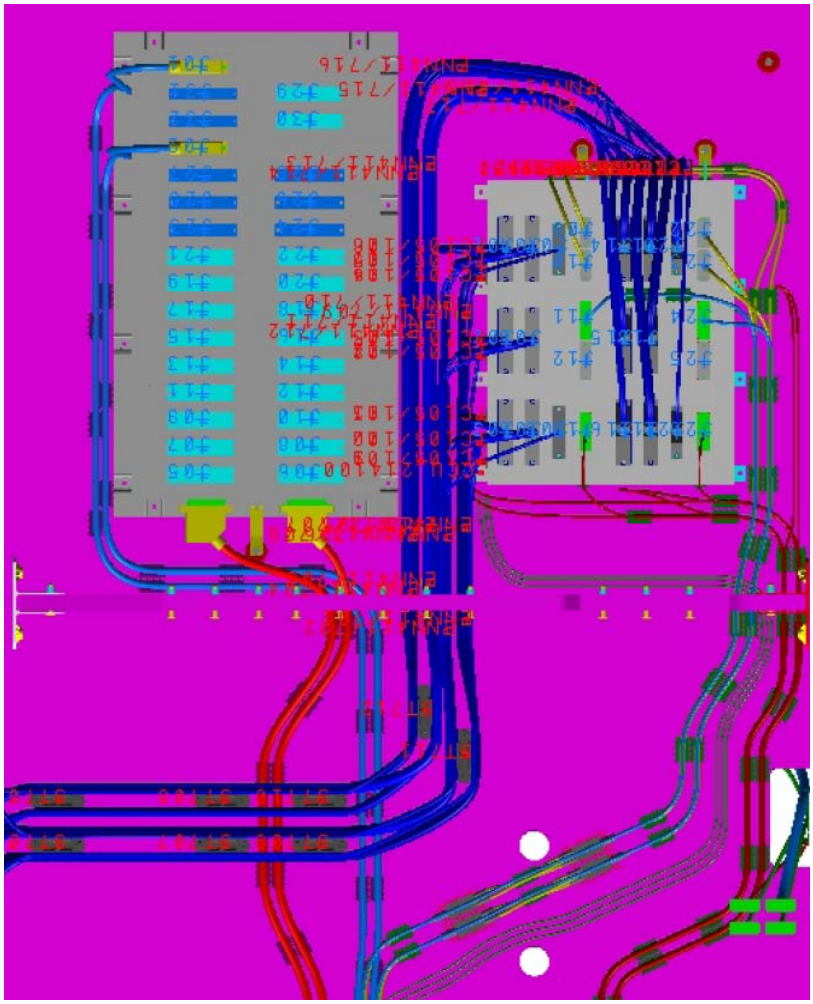
3.14.1 PFM CCH to SVM UCP I/F-CB 312200 / 312300 P01 to P05 & 315100 P02 & P04

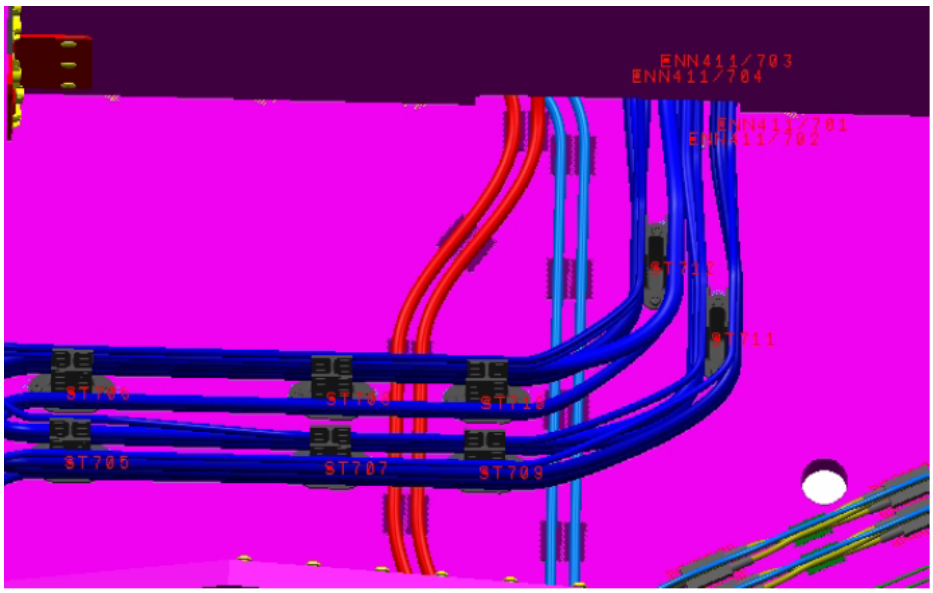


3.14.2 PFM CCH to SVM UCP I/F-CB Connectors 316100 P01 & P02

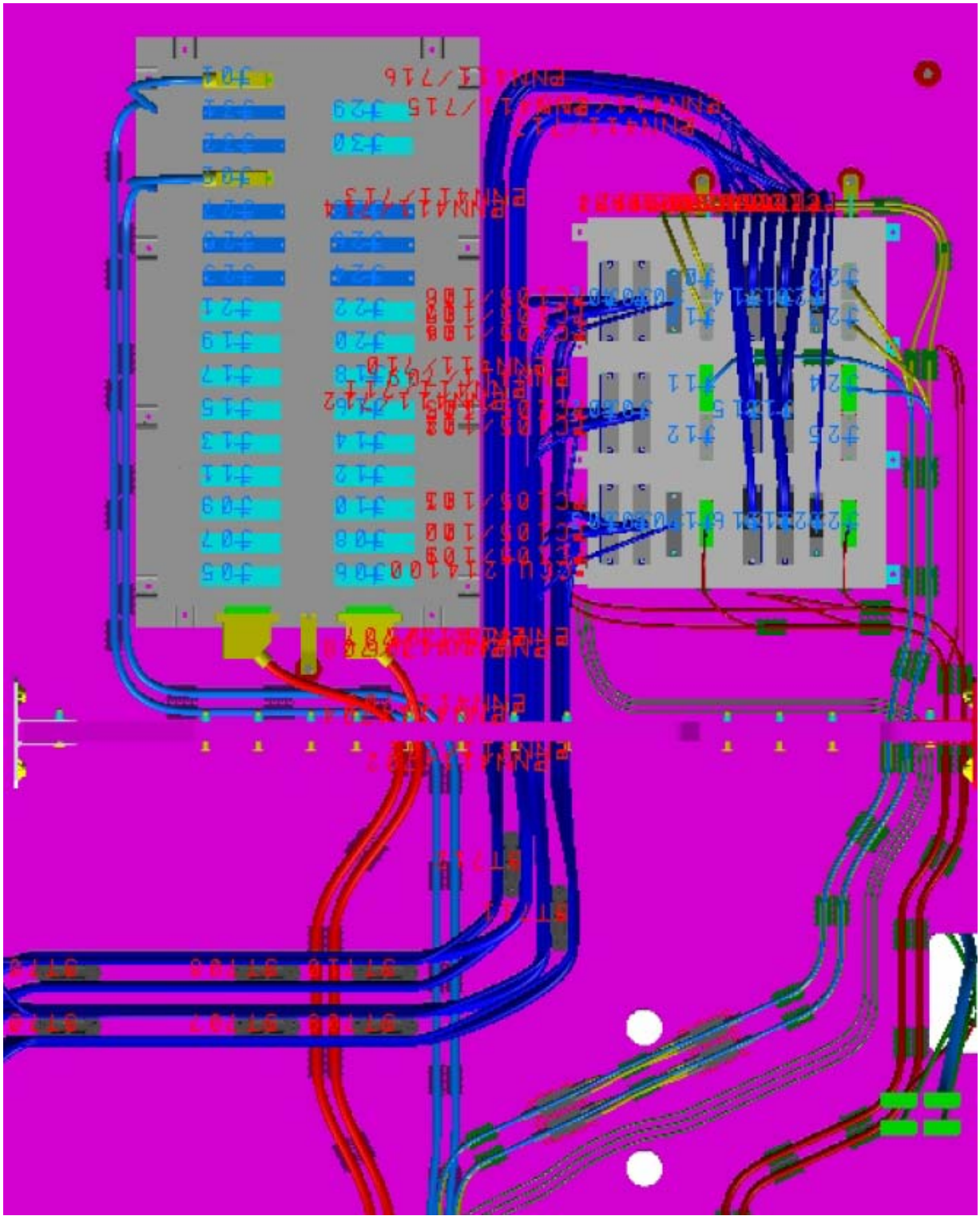


3.14.3 PFM CCU-A / CCU-B CCH on SVM LP -Z towards UCP cut-out

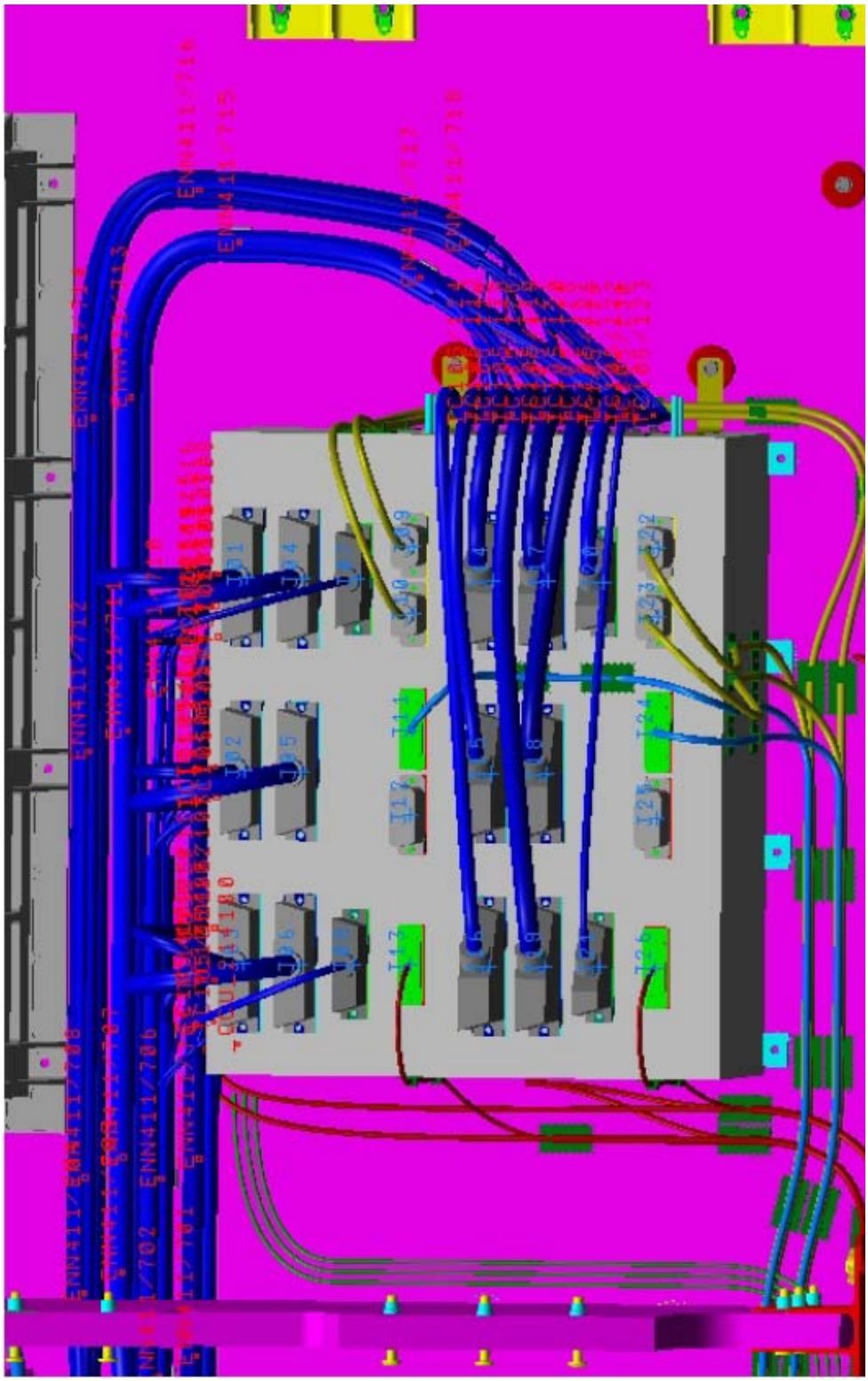




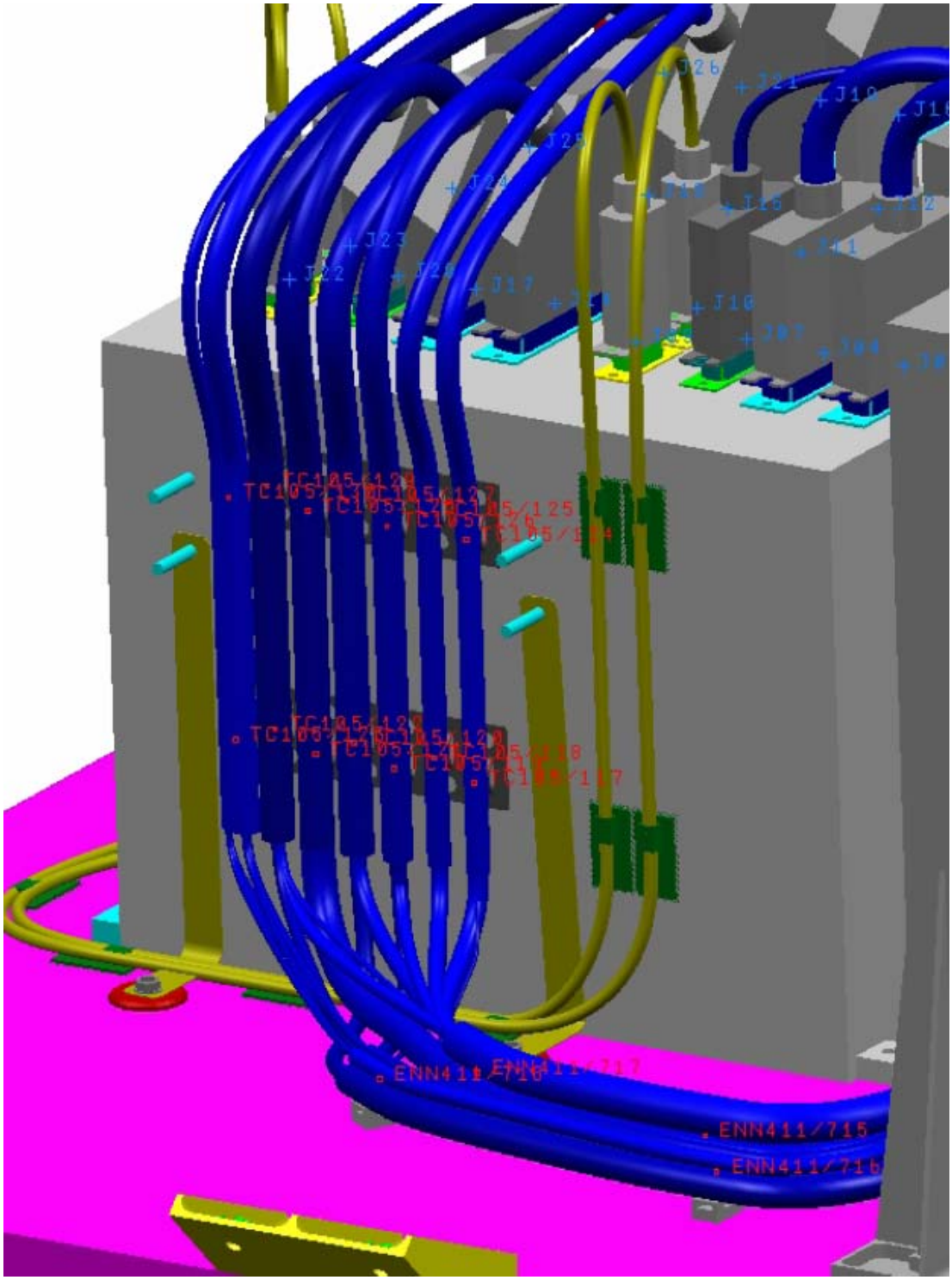
3.14.4 PFM CCU-A & -B CCH close SPIRE DCU on SVM LP -Z towards UCP cut-out



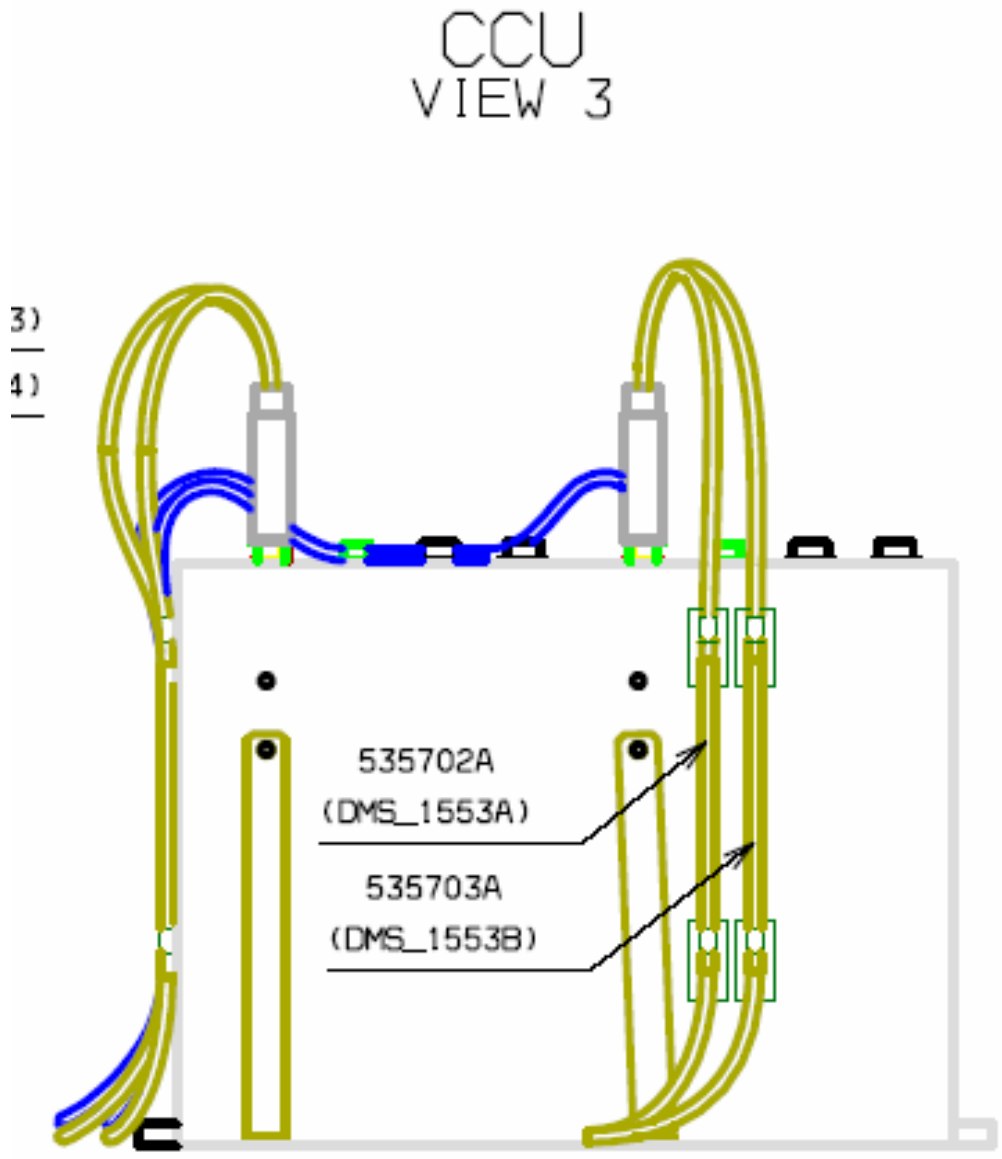
3.14.5 PFM CCU-A / -B CCH Bundle routing & Attachments on SVM LP -Z



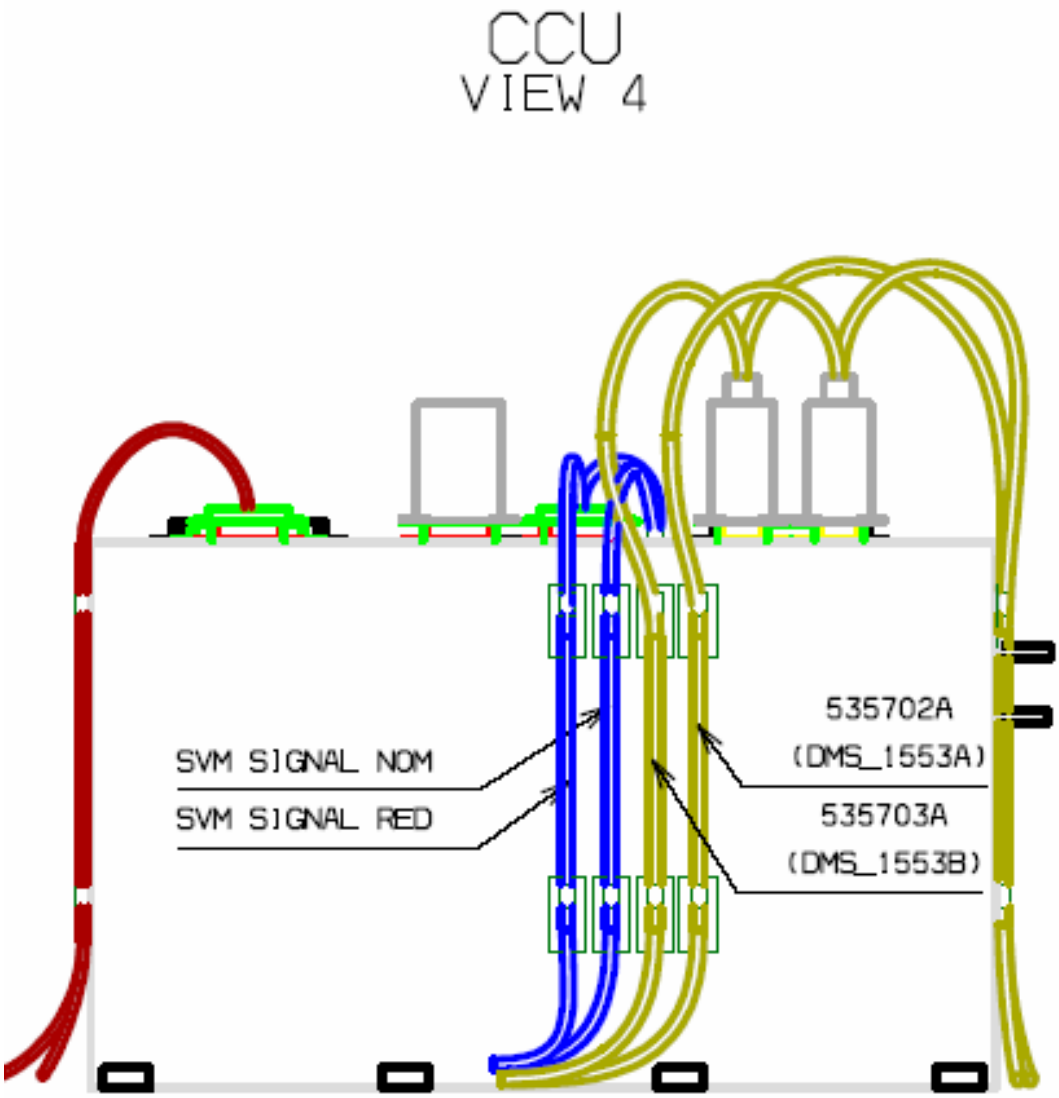
3.14.6 PFM CCH & SVM-Harness Bundle Fixations on CCU-B between the CCU Bonding-studs



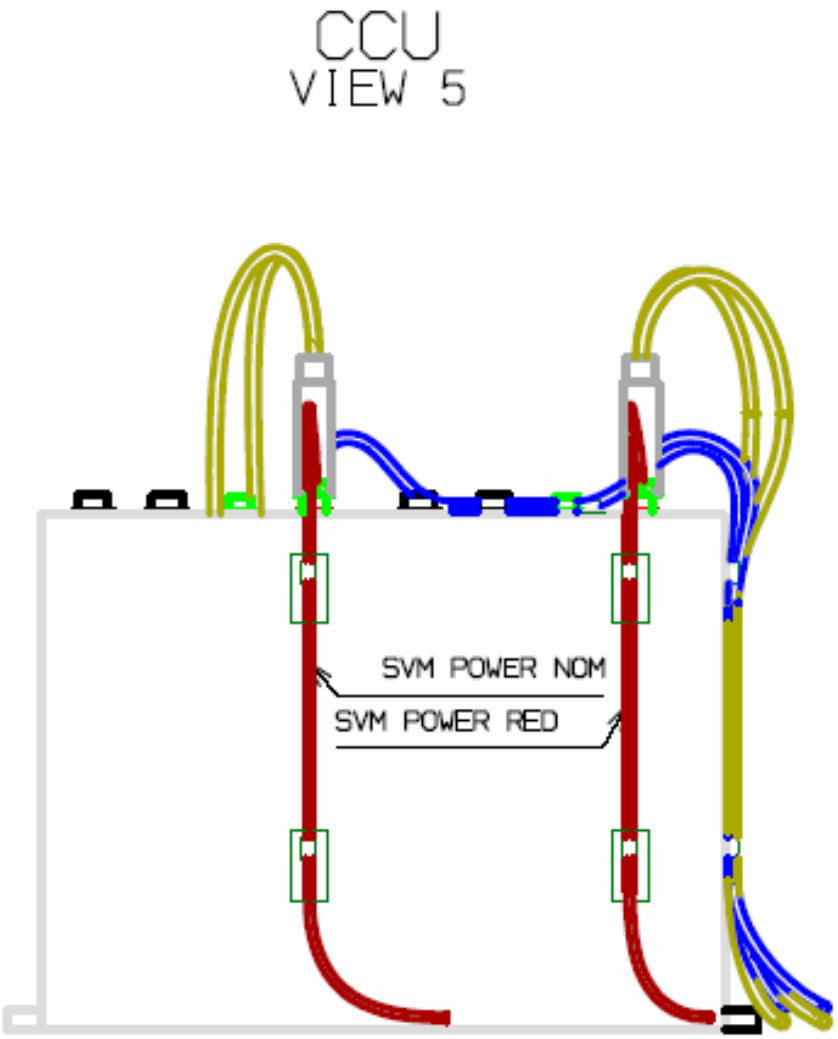
3.14.7 PFM SVM DMS Harness Routing & Attachment on CCU-A/B (-Ys) side



3.14.8 PFM SVM Power, Signal & DMS Harness Routing & Attachment on CCU-A/B (-Xs) side



3.14.9 PFM SVM Power, Signal & DMS Harness Routing & Attachment on CCU-A/B (+Ys) side



3.15 PFM SVM internal SPIRE WIH Integration & Fixation

The SPIRE Warm Interconnecting Harness (WIH) shall be integrated from the connector mating point-of-view , as defined in the SPIRE instrument integration procedure, provided by RAL.

Harness bundle crossings close to Warm unit I/F-connectors, shall be routed and fixed according the Nexans LP Harness lay-out & attachment drawings, to support AIT handling in frame of first electrical WU connection. Perform the PFM SPIRE WIH bundle routing & attachment according, Nexans drawing, ref. HP-NXH-DW-1021 Rev. B3.

The advanced WIH SIH bundle integration with mating to WU Dummy-units, shall be exercised according the SPIRE defined sequence. All deviations detected, shall be record in sight of PFM WU installation & need connector access for proper mating.

The PFM mating shall be performed according the common agreed mating sequence, which shall be implemented in the SPIRE WU & WIH integration procedure.

During PFM Warm-unit integration the SPIRE & S/C ESD rules shall be followed.

The PFM SPIRE WIH bundle integration sequence is defined in document, ref. HP-

3.15.1 SPIRE-RAL-PRC-002806 Issue 1 - WIH Handling- & Integration Instructions

The SPIRE WIH bundle handling instructions & integration sequence shall be recorded in the following SPIRE Log-sheets. The integration sequence instructions shall be followed as far as it does not conflict neither with the SVM-Harness nor the SIH integration. Variations shall be recorded.

SPIRE

SUBJECT: SPIRE PFM WIH MECHANICAL INTEGRATION PROCEDURE

PREPARED BY: Doug Griffin

Validity unknown

Digitally signed by Douglas Griffin
DN: cn=Douglas Griffin, o=RAL, ou=SET, c=GB
Date: 2007.01.30 11:59:59 Z

DOCUMENT No: SPIRE-RAL-PRC-002806

ISSUE: 1.0 **Date:** 30/01/2007

CHECKED BY: Eric Sawyer

Validity unknown

Digitally signed by Eric Sawyer
Date: 2007.01.30 12:15:36 Z

Date: .....

APPROVED BY: Eric Clark **Date:** .....

Digitally signed by Eric Clark
Date: 2007.01.30 12:11:47 Z

3.15.1.1 SPIRE WIH Handling & ESD Precautions

1. SCOPE

This document describes the procedures to be followed when handling and mating the spacecraft and instrument harnesses to the SPIRE Warm Units.

2. PREREQUISITES:

1. The eight SPIRE WIH harnesses (W1, W2, W3, W4, W5, W6, W7 and W8) have been delivered and accepted.
2. The WIH harnesses are mounted on their transportation GSE
3. The dummy SPIRE warm units are integrated onto the SVM panel
4. The harness fixation tie bases are mounted on the SVM and on the dummy units
5. The SVM panel is folded out in the horizontal position so that the WIH can be temporarily placed on the panel with sliding off

3. NOTES:

1. The WIH are not ESD sensitive, but conductive wrist straps and ESD safe smocks are to be worn while handing the harness.
2. The harnesses are to susceptible to damage from mechanical handling. Flexure/straining of the harness is to be kept to a minimum.
3. The dummy SPIRE warm units have jackposts mechanically form and fit to SPIRE ICDwgs in IID-B Issue 4.0
4. The connector covers are removed to visually inspect the integrity of the connectors. After the inspection, the covers are replaced to prevent mechanical damage to the contacts.
5. It is not mandatory to use the tie bases mounted on the dummy DCU and FCU during this sequence of harness integration.
6. It may not be possible to secure the SPIRE WIH-XX at all the designated fixation points due to conflicts with the integration of other harnesses on the SVM panel. If this is the case, then the securing of the remaining harnesses is to be recorded in open work

3.15.2 SPIRE-RAL-PRC-002806 Issue 1 - WIH Handling- & Integration Instruction Log

The SPIRE WIH bundle handling instructions & integration sequence shall be recorded in the following SPIRE Log-sheets. The integration sequence instructions shall be followed as far as it does not conflict neither with the SVM-Harness nor the SIH integration. Variations shall be recorded.

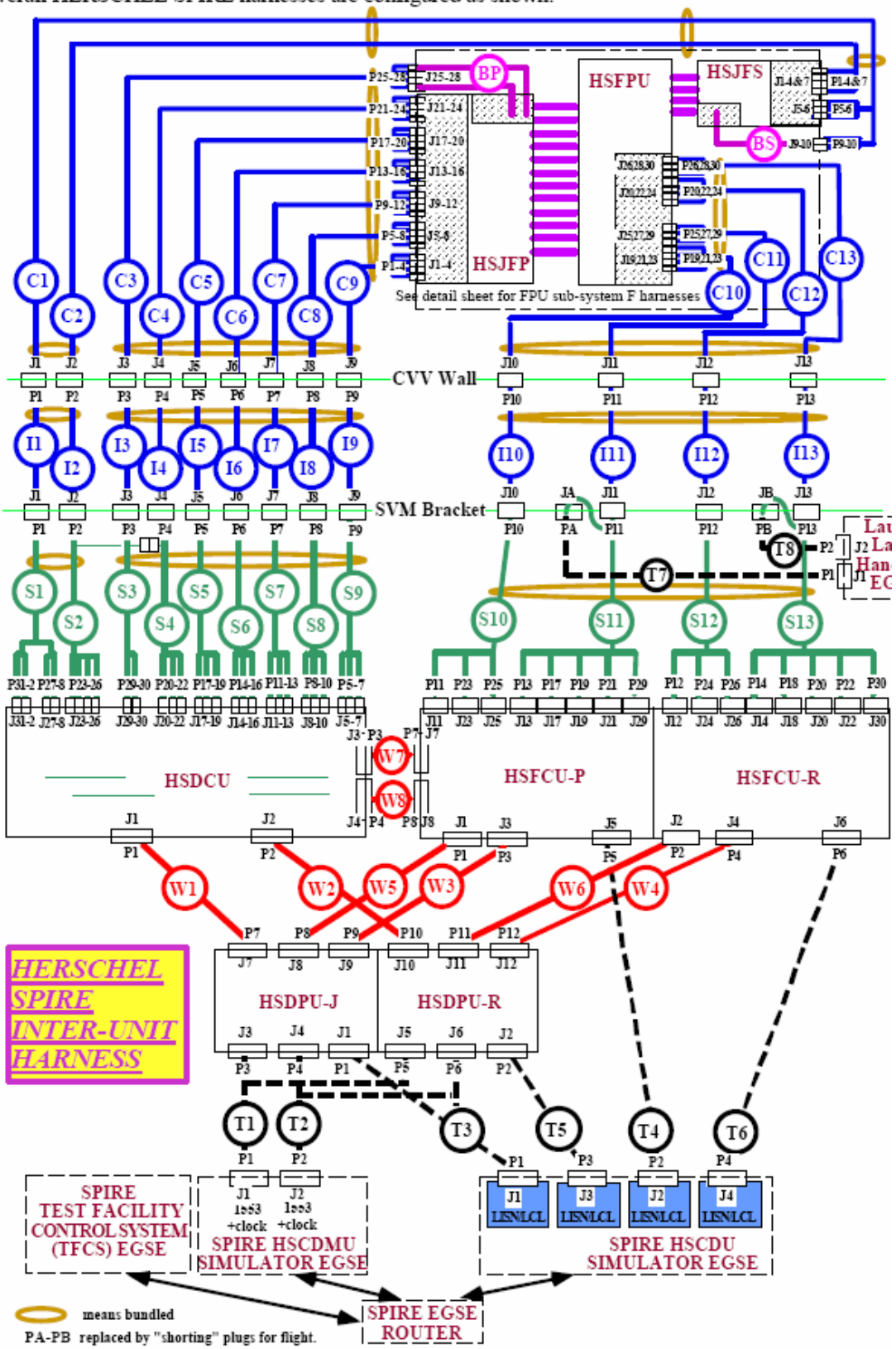
No:	Activity	Proc/Dwg	Remarks/Results	Sign off
	De-integration from transportation GSE			
1.	Remove the cable ties from the tie bases on the transportation GSE			
	W8 Integration			
2.	Remove W8 from the transportation GSE			
3.	Demate the dissipative dust cover from FCU P08			
4.	Inspect contacts on FCU P08 for bent pins, debris etc.			
5.	Re-install dissipative dust cover over contact of FCU P08			
6.	Demate the dissipative dust cover from DCU P04			
7.	Inspect contacts on DCU P04 for bent pins, debris etc.			
8.	Re-install dissipative dust cover over contact of DCU P04			
9.	Lay the W8 harness on the SVM panel and secure the FCU P08 and DCU P04 connectors to the dummy connector jackposts.			
	W7 Integration			
10.	Remove W7 from the transportation GSE			
11.	Demate the dissipative dust cover from FCU P07			
12.	Inspect contacts on FCU P07 for bent pins, debris etc.			
13.	Re-install dissipative dust cover over contact of FCU P07			
14.	Demate the dissipative dust cover from DCU P03			
15.	Inspect contacts on DCU P03 for bent pins, debris etc.			
16.	Re-install dissipative dust cover over contact of DCU P03			
17.	Lay the W7 harness on the SVM panel and secure the FCU P07 and DCU P03 connectors to the dummy connector jackposts.			
	W1 Integration			
18.	Remove W1 from the transportation GSE			
19.	Demate the dissipative dust cover from DPU P07			

No:	Activity	Proc/Dwg	Remarks/Results	Sign off
20.	Inspect contacts on DPU P07 for bent pins, debris etc.			
21.	Re-install dissipative dust cover over contact of DPU P07			
22.	Demate the dissipative dust cover from DCU P01			
23.	Inspect contacts on DCU P01 for bent pins, debris etc.			
24.	Re-install dissipative dust cover over contact of DCU P01			
25.	Lay the W1 harness on the SVM panel and secure the DPU P07 and DCU P01 connectors to the dummy connector jackposts.			
	W2 Integration			
26.	Remove W2 from the transportation GSE			
27.	Demate the dissipative dust cover from DPU P10			
28.	Inspect contacts on DPU P10 for bent pins, debris etc.			
29.	Re-install dissipative dust cover over contact of DPU P10			
30.	Demate the dissipative dust cover from DCU P02			
31.	Inspect contacts on DCU P02 for bent pins, debris etc.			
32.	Re-install dissipative dust cover over contact of DCU P02			
33.	Lay the W2 harness on the SVM panel and secure the DPU P10 and DCU P02 connectors to the dummy connector jackposts.			
	W3 Integration			
34.	Remove W3 from the transportation GSE			
35.	Demate the dissipative dust cover from DPU P09			
36.	Inspect contacts on DPU P09 for bent pins, debris etc.			
37.	Re-install dissipative dust cover over contact of DPU P09			
38.	Demate the dissipative dust cover from FCU P03			
39.	Inspect contacts on FCU P03 for bent pins, debris etc.			
40.	Re-install dissipative dust cover over contact of FCU P03			
41.	Lay the W3 harness on the SVM panel and secure the DPU P09 and FCU P03 connectors to the dummy connector jackposts.			
	W4 Integration			
42.	Remove W4 from the transportation GSE			
43.	Demate the dissipative dust cover from DPU P12			

No:	Activity	Proc/Dwg	Remarks/Results	Sign off
44.	Inspect contacts on DPU P12 for bent pins, debris etc.			
45.	Re-install dissipative dust cover over contact of DPU P12			
46.	Demate the dissipative dust cover from FCU P04			
47.	Inspect contacts on FCU P04 for bent pins, debris etc.			
48.	Re-install dissipative dust cover over contact of FCU P04			
49.	Lay the W4 harness on the SVM panel and secure the DPU P12 and FCU P04 connectors to the dummy connector jackposts.			
	W5 Integration			
50.	Remove W5 from the transportation GSE			
51.	Demate the dissipative dust cover from DPU P08			
52.	Inspect contacts on DPU P08 for bent pins, debris etc.			
53.	Re-install dissipative dust cover over contact of DPU P08			
54.	Demate the dissipative dust cover from FCU P01			
55.	Inspect contacts on FCU P01 for bent pins, debris etc.			
56.	Re-install dissipative dust cover over contact of FCU P01			
57.	Lay the W5 harness on the SVM panel and secure the DPU P08 and FCU P01 connectors to the dummy connector jackposts.			
	W6 Integration			
58.	Remove W6 from the transportation GSE			
59.	Demate the dissipative dust cover from DPU P11			
60.	Inspect contacts on DPU P11 for bent pins, debris etc.			
61.	Re-install dissipative dust cover over contact of DPU P11			
62.	Demate the dissipative dust cover from FCU P02			
63.	Inspect contacts on FCU P02 for bent pins, debris etc.			
64.	Re-install dissipative dust cover over contact of FCU P02			
65.	Lay the W6 harness on the SVM panel and secure the DPU P11 and FCU P02 connectors to the dummy connector jackposts.			
	Secure Harness to SVM panel			
66.	Secure harness to remaining tie-bases on the SVM panel and record any that cannot be fastened in outstanding work.			

3.15.3 SPIRE SIH & WIH Overview

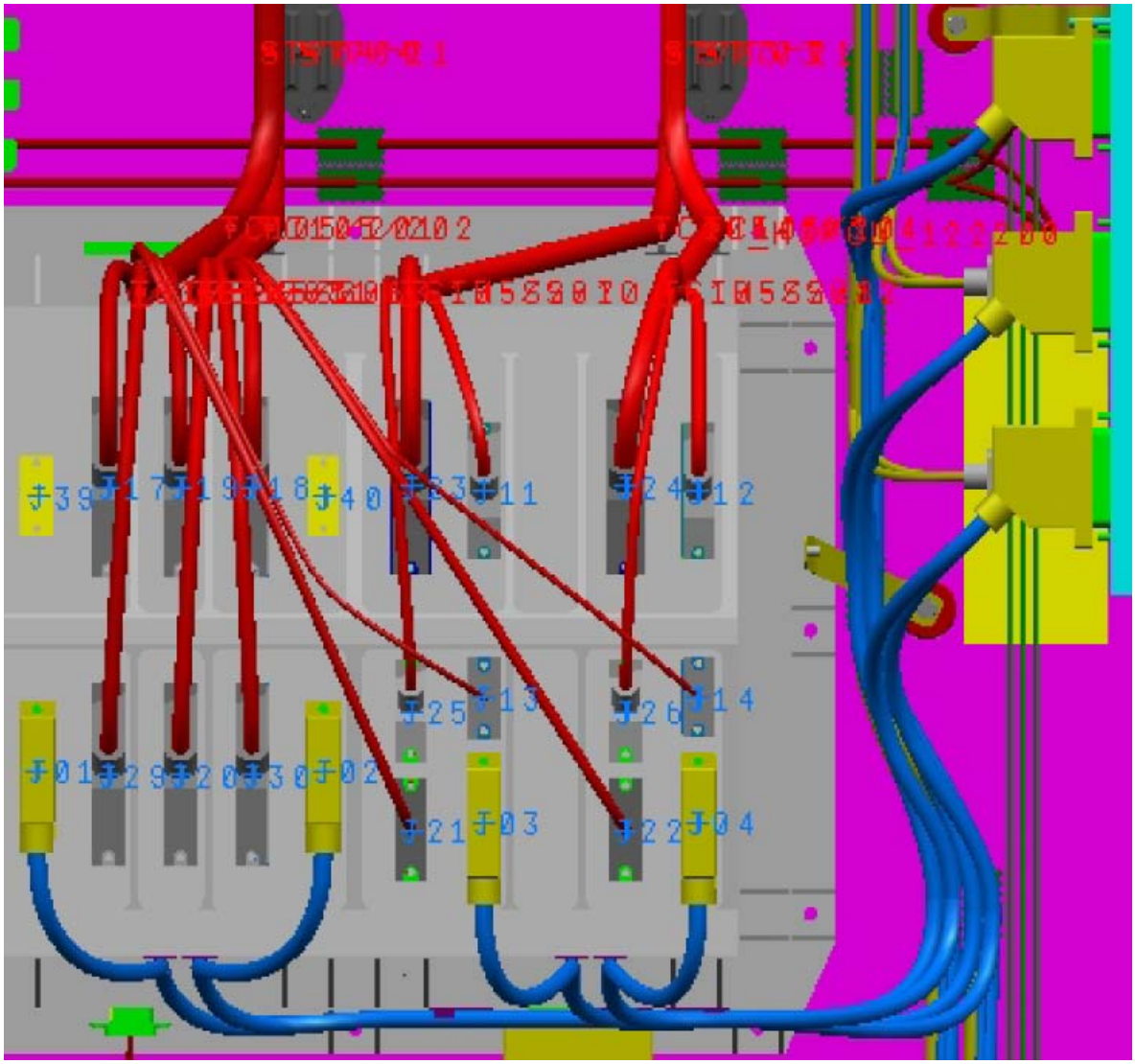
The overall HERSCHEL SPIRE harnesses are configured as shown:



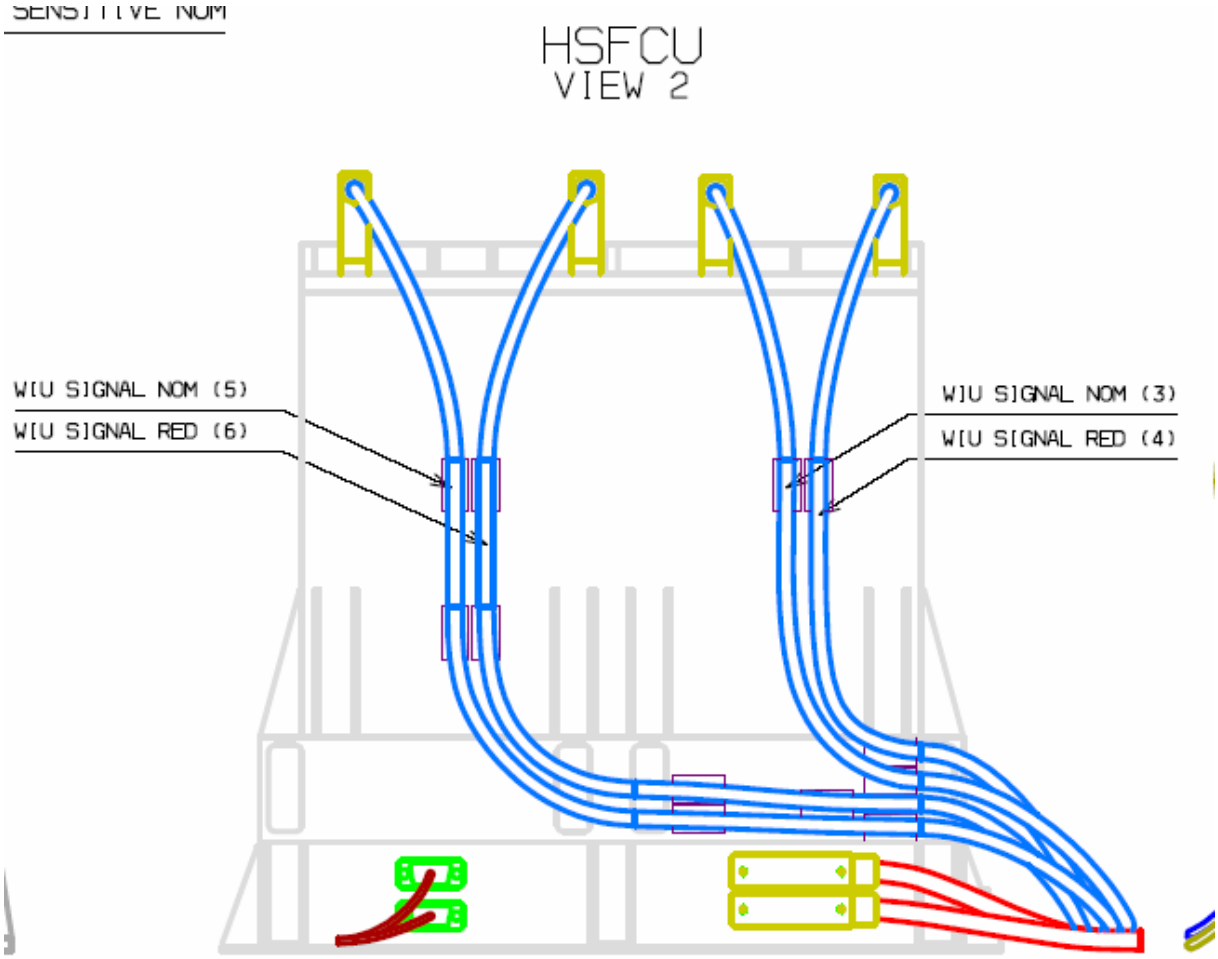
3.15.4 SVM -Z LP Harness Bundle Integration & Sequence Log

Part of	from WU Connector	to connector	CASA DRW No	Bundle ID	LP ASED CCH Integration sequence	LP ASED SIH Integration sequence	LP SVM Harness Integration sequence	SPIRE WIH on LP Integration sequence	overall harness Integration sequence on LP	SVM-CB SIH Mating sequence
SPIRE SIH	DCU_P31-32-27-28	312200_P06	HP200CB2301P00	SIH-SS-01		3				8
SPIRE SIH	DCU_P23-25-24-26	312100_P1A & 312200_P05	HP200CB2302P00	SIH-SS-02		1				9
SPIRE SIH	DCU_P29-30	312100_P04	HP200CB2303P00	SIH-SS-03		4				1
SPIRE SIH	DCU_P21-20-22	312100_P1B-P03	HP200CB2304P00	SIH-SS-04		2				2
SPIRE SIH	DCU_P17-18-19	312100_P02	HP200CB2305P00	SIH-SS-05		5				3
SPIRE SIH	DCU_P15-14-16	312300_P03	HP200CB2306P00	SIH-SS-06		6				5
SPIRE SIH	DCU_P12-11-13	312200_P04	HP200CB2307P00	SIH-SS-07		7				4
SPIRE SIH	DCU-P08-10-09	312200_P01	HP200CB2308P00	SIH-SS-08		8				6
SPIRE SIH	DCU_P06-05-07	312200_P02	HP200CB2309P00	SIH-SS-09		9				7
SPIRE SIH	FCU_P11-23-25	312300_P06*	HP200CB2310P00	SIH-SS-10		10				13
SPIRE SIH	FCU_P19-17-29-21-13	312300_P01*-P04*	HP200CB2311P00	SIH-SS-11		13				11
SPIRE SIH	FCU_P24-26-12	312300_P05*	HP200CB2312P00	SIH-SS-12		12				12
SPIRE SIH	FCU_P20-30-18-22-14	312300_P02*-P03*	HP200CB2313P00	SIH-SS-13		11				10
		Note *: Mate first after CCH underneath is installed								
SPIRE WIH	DPU-M_P07	DCU_P01		W1				3		
SPIRE WIH	DPU-R_P10	DCU_P02		W2				4		
SPIRE WIH	DPU-M_P09	FCU-P_P03		W3				5		
SPIRE WIH	DPU-R_P12	FCU-R_P04		W4				6		
SPIRE WIH	DPU-M_P08	FCU-R_P01		W5				7		
SPIRE WIH	DPU-R_P11	FCU-R_P02		W6				8		
SPIRE WIH	DCU_P03	FCU-P_P07		W7				2		
SPIRE WIH	DCU_P04	FCU-P_P08		W8				1		
CCH	CCU-A_P01 to P07	316100_P01 & 321200_P01 to P05 & 315100_P05	HP200CB4301P00	CCH-SCA-1	1					1
CCH	CCU-B_P14 to P21	316100_P02 & 321300_P01 to P05 & 315100_P06	HP200CB4302P00	CCH-SCB-1	2					2
SVM S/C-Power-N	LCP-CB DB04_P01	CCU-A_P13	HP-NXH-DW-1022							
SVM S/C-Power-R	LCP-CB DB04_P02	CCU-B_P26	HP-NXH-DW-1022							

3.15.5 SPIRE FCU WIH W5 + W6 & W3 + W4 (blue) to DPU Connectors (yel)

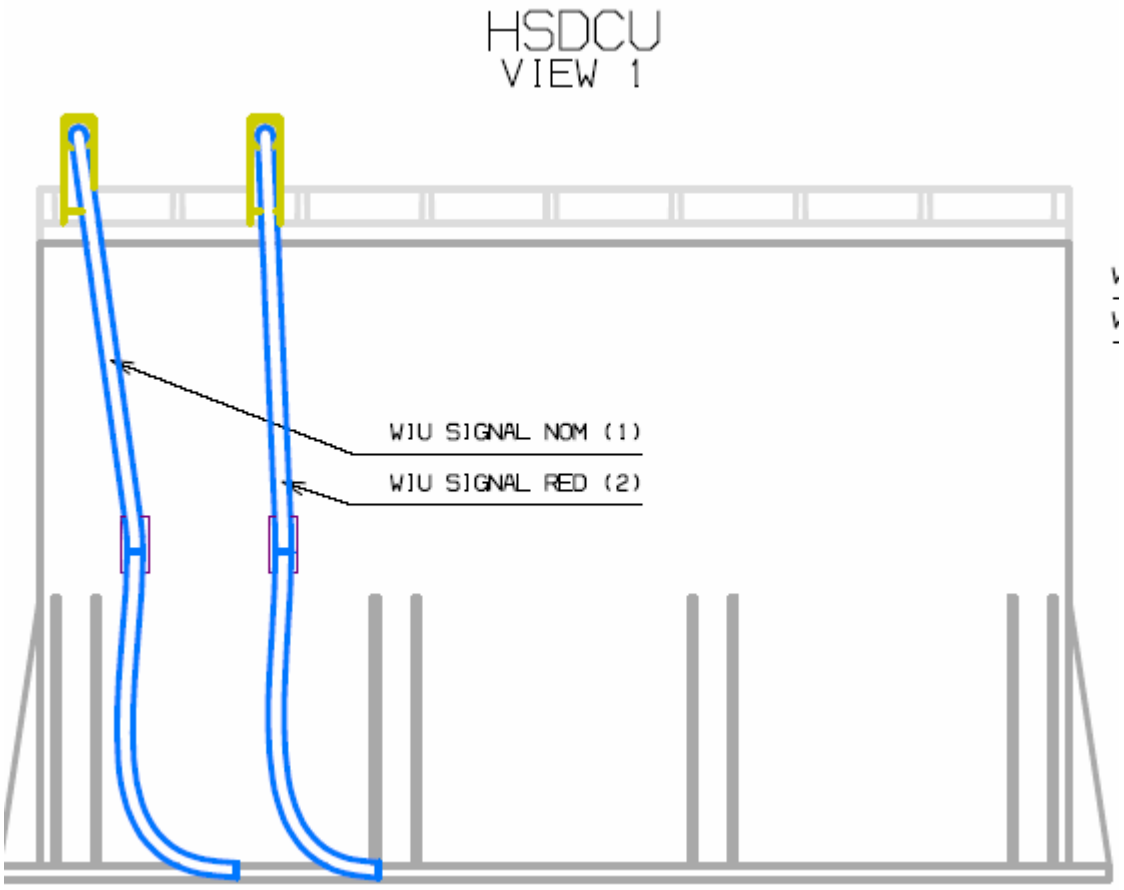


3.15.6 SPIRE WIH W3+4 & W5+ W6 bundles (blue) to DPU P08 to P12



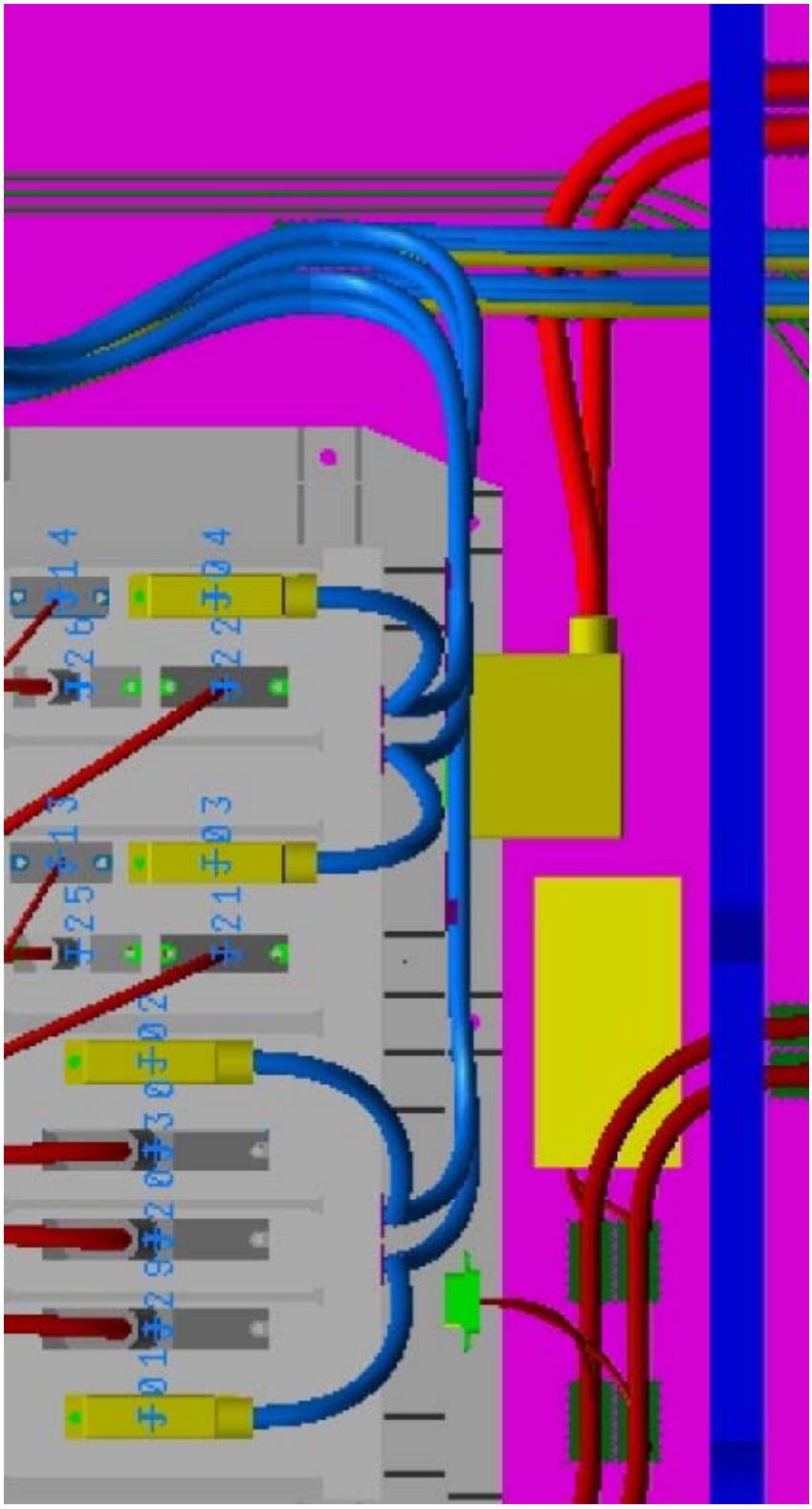
NOTE: (1) Bundle id: W1 *
(2) Bundle id: W2 *
(3) Bundle id: W3 *
(4) Bundle id: W4 *
(5) Bundle id: W5 *
(6) Bundle id: W6 *
(7) Bundle id: W7 *
(8) Bundle id: W8 *
* In reference with H-P-4-NXH-RP-0022 iss. A1

3.15.7 SPIRE WIH W1 & W2 bundles (blue) to DCU P01 & P02

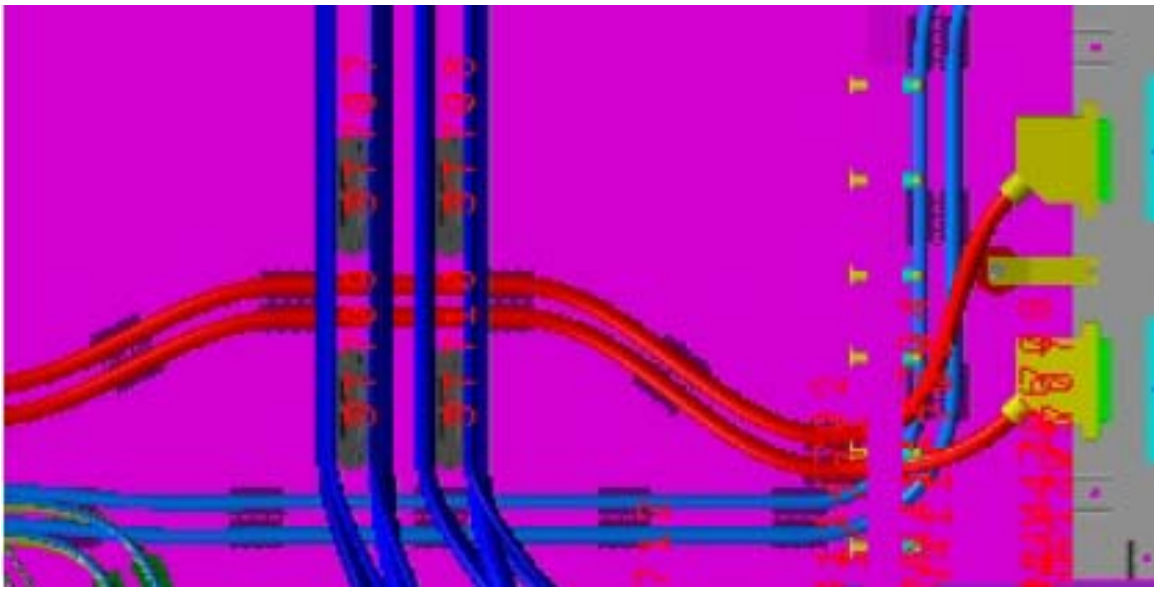


Rev. B2	Date 21/01/05	Scale N/A	Format A1	Sht 1/5
exans HARNESSES		Title: SVM SPIRE INSTRUMENT PANEL ASSY		
		DWG N°: HP-NXH-DW-1022		

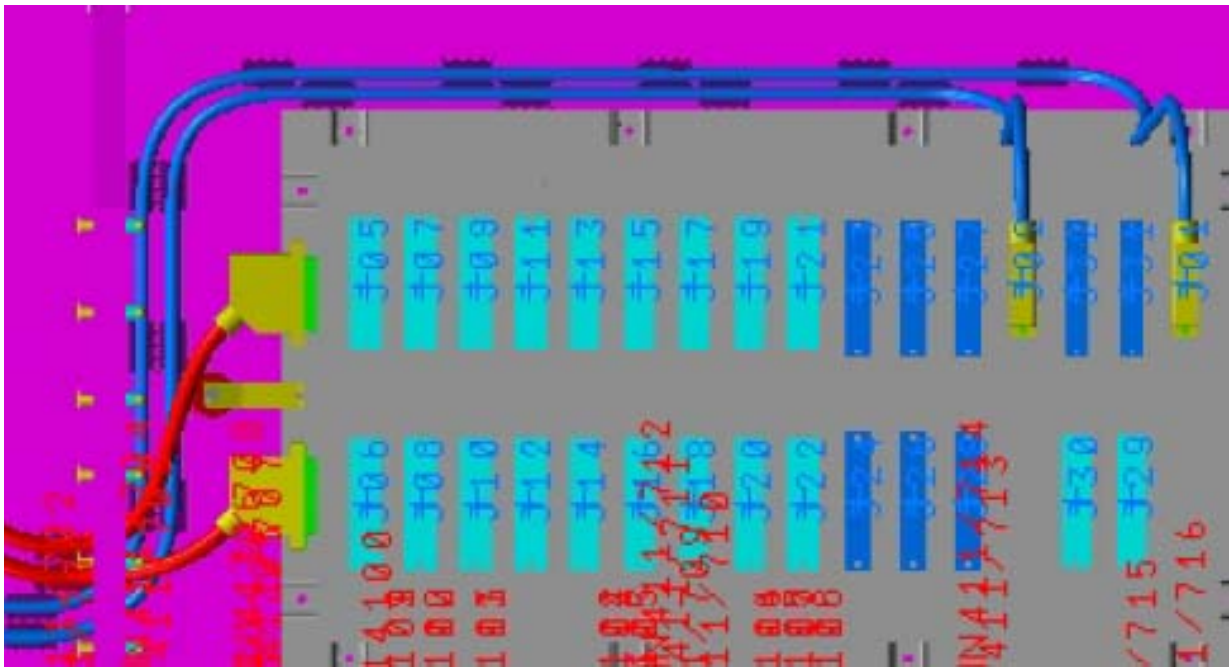
3.15.8 SPIRE WIH bundles W7 & W8 Routing (red) from FCU Connectors (yel) to DCU



3.15.9 SPIRE WIH bundles W7 & W8 Routing to HS DCU Connectors (yel)

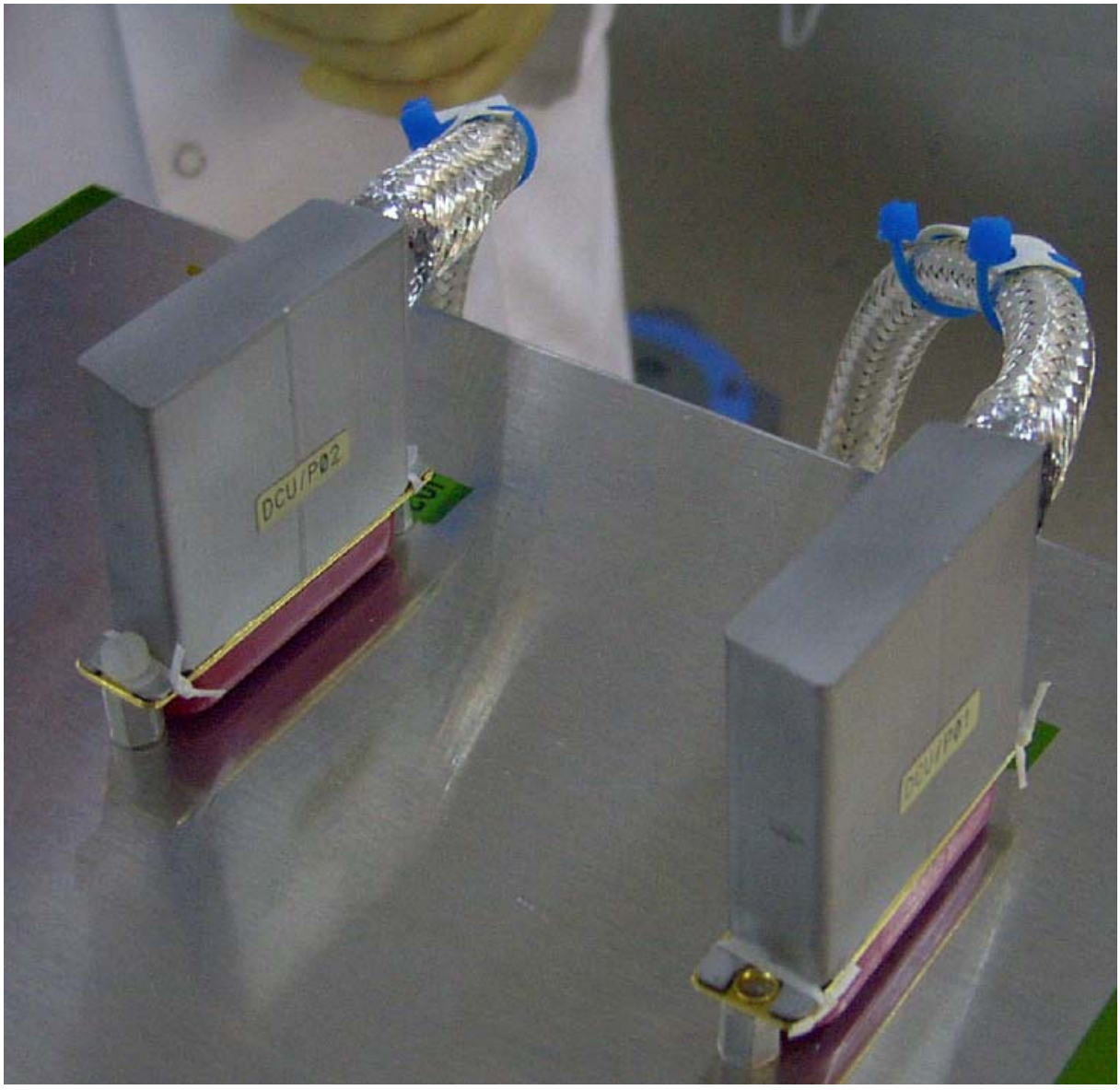


3.15.10 SPIRE WIH W1 & W2 bundles (blue) to DCU P01 & P02



3.15.11 SPIRE WIH W1 & W2 DCU P01 & P02 fixation on Transport-Jig

The SPIRE WIH connectors installed on the transport-jig are bolted with plastic bolts and the back-shells are fixed by lacing cord to the connector shell. In frame of WIH bundle removal from the transport-jig, the origin screw-locks delivered by SPIRE shall be installed prior to bundle integration.



3.15.12 SPIRE WIH W1 to W8 DRB Open-Work

3.15.12.1 Changed WIH connector labels prior shipment to ASED

	Harness ICD in EIDP			HDD 1.3			comments
W 1--HERSCHEL/SPIRE/DCU	DCU/P01	-->	DPU/P07	DCU J01	-->	DPU J07	clarify J/P
W 2--HERSCHEL/SPIRE/DCU	DCU/P02	-->	DPU/P10	DCU J02	-->	DPU J10	
W 3--HERSCHEL/SPIRE/FCU	SCU/P03	-->	DPU/P09	FCU J03	-->	DPU J09	SCU not known to industry, use FCU
W 4--HERSCHEL/SPIRE/FCU	SCU/P04	-->	DPU/P12	FCU J04	-->	DPU J12	SCU not known to industry, use FCU
W 5--HERSCHEL/SPIRE/FCU	MCU/P01	-->	DPU/P08	FCU J01	-->	DPU J08	MCU not known to industry, use FCU
W 6--HERSCHEL/SPIRE/FCU	MCU/P02	-->	DPU/P011	FCU J02	-->	DPU J11	MCU not known to industry, use FCU
W 7--HERSCHEL/SPIRE/DCU	DCU/P03	-->	PSU/P07	FCU J07	-->	DPU J03	typo in connactor names: HDD to be corrected ?
W 8--HERSCHEL/SPIRE/DCU	DCU/P04	-->	PSU/P08	FCU J08	-->	DPU J04	typo in connactor names: HDD to be corrected ?

3.16 SVM SPIRE SIH Bundle Integration

The 13 SPIRE SVM SIH bundles shall be routed and fixed in accordance to the CASA manufacturing and routing drawings defined below. Advanced SIH integration by use of Warm-unit dummies shall not be fixed with PFM Flight fixation H/W, before the PFM WU is installed. Main attention shall be taken to WU I/F connectors, which have to be handled / mated during the first WU SVM Harness electrical I/F-Test. The bundle fixations in these areas shall allow mating & de-mating of AIT test-adaptors in between the WU & SIH connectors.

The SVM harness routed between the LCP servicing the SPIRE WUs on the -Z SVM LP, the bundle routing shall be controlled and where necessary to be adjusted, that no harness get damaged during these tilting operations.

The SPIRE bundles SIH-SS-01 to SIH-SS-09 routed between the SPIRE DCU and the SVM UCP cut-outs shall be installed such, that the SIH envelope over the DCU +X /+Z corner will **not** get in contact to the UCP during LP tilting.

SPIRE SIH bundles routed to 312300 P01 & P02 shall be fixed on SIH-SS-13 bundle.

3.16.1 PFM SVM SPIRE SIH Bundle Integration & Mating to WU Dummies

In advanced to PFM Warm-Unit installation, the SIH & CCH shall be integrated on the SVM -Z LP by use of WU Dummy units with simplified harness connector fixations. After Incomming inspection of SPIRE SIH installed on the transportation-jig, a photo documentation shall be performed for each SIH bundle taken from the jig, to re-install the bundle in same configuration on the lateral panel. Each SIH bundle shall be taken to the grounded ESD table. The dust-caps shall be removed & the contact shall be inspected. Afterwards the dust-cap shall be re-installed.

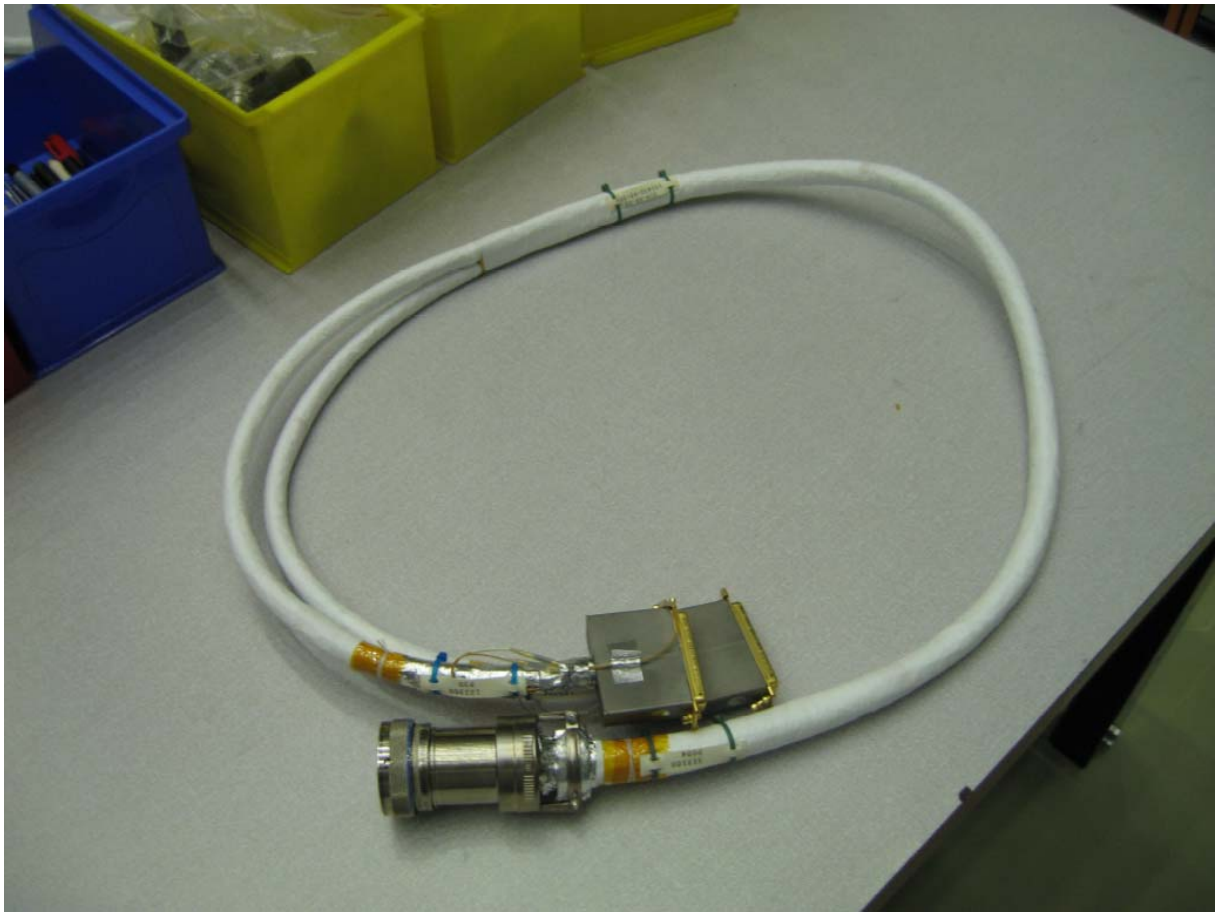
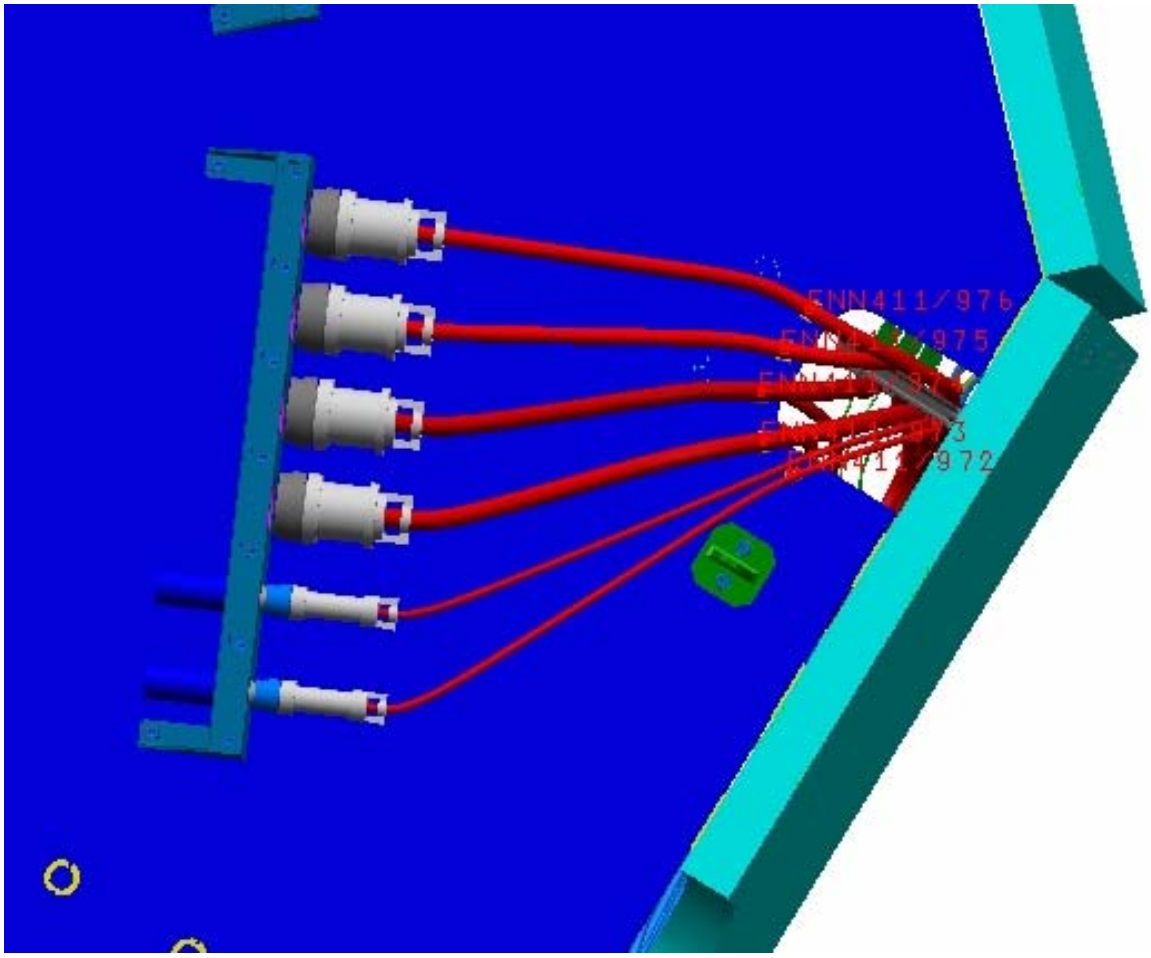
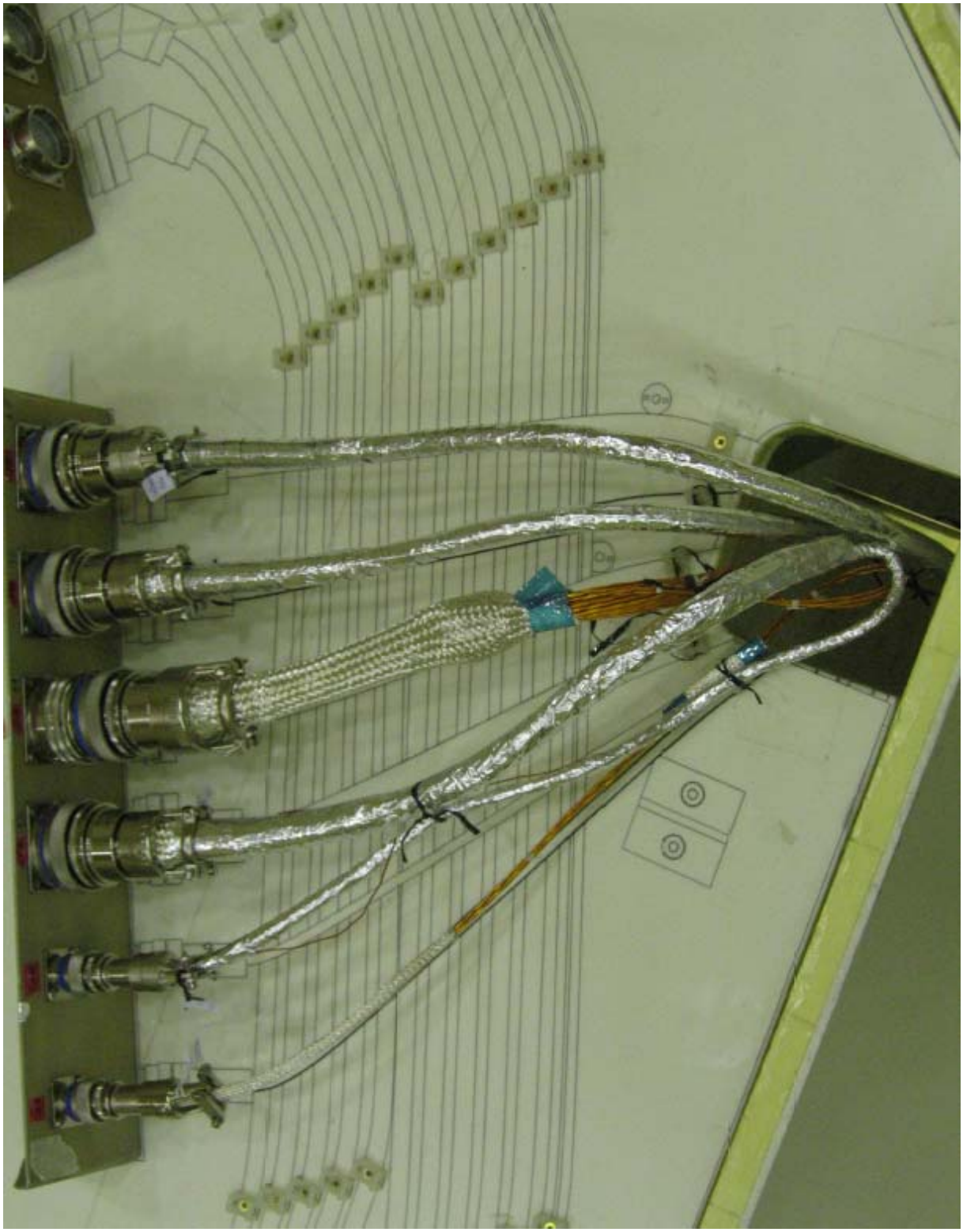


Figure 3.16-1: SPIRE SVM SIH Bundle with wrapped Gore-tex Isolation (EQM / PFM Configuration)

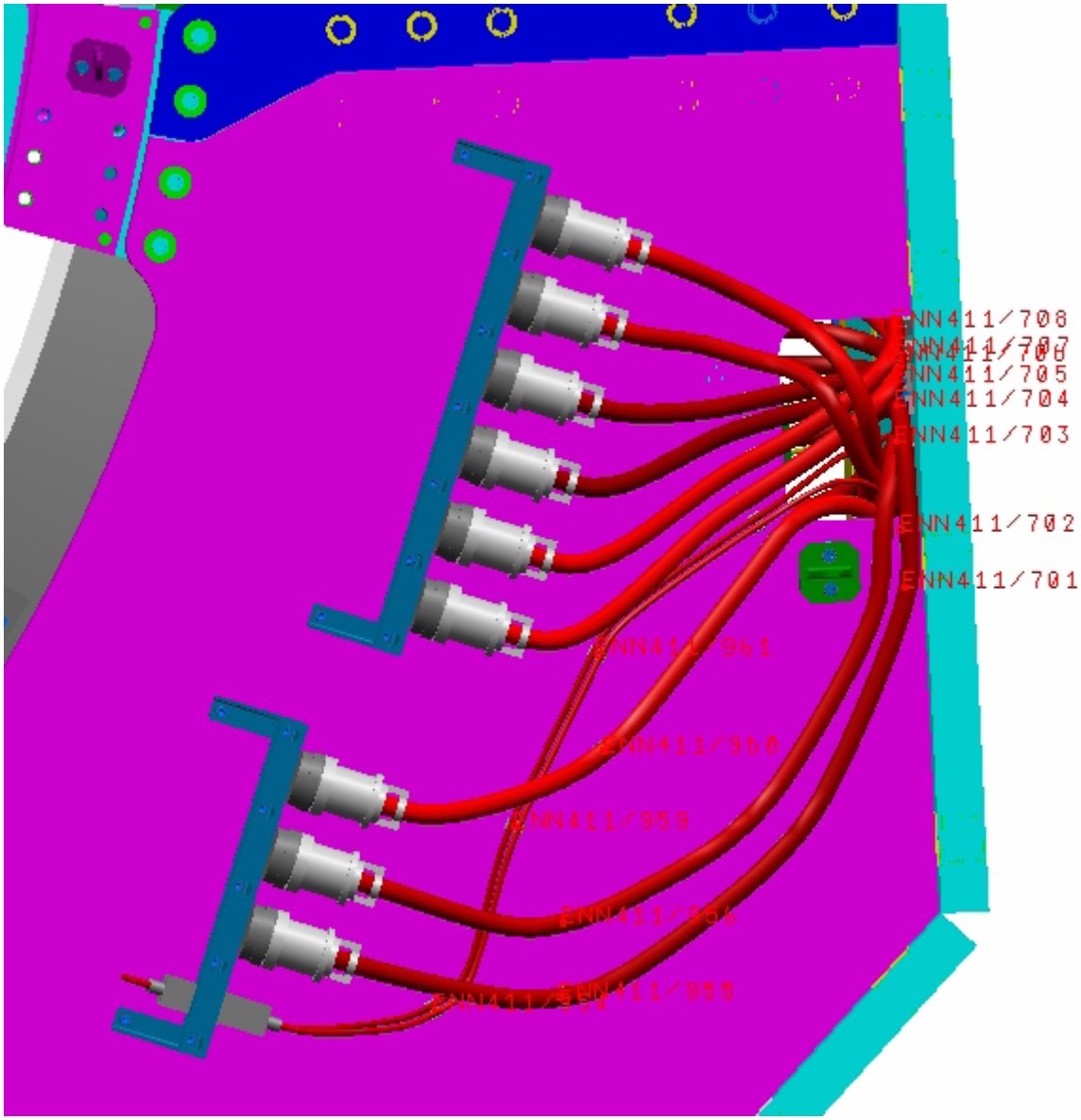
3.16.2 SPIRE SIH Routing to 312300 on SVM UCP (CATIA Design)



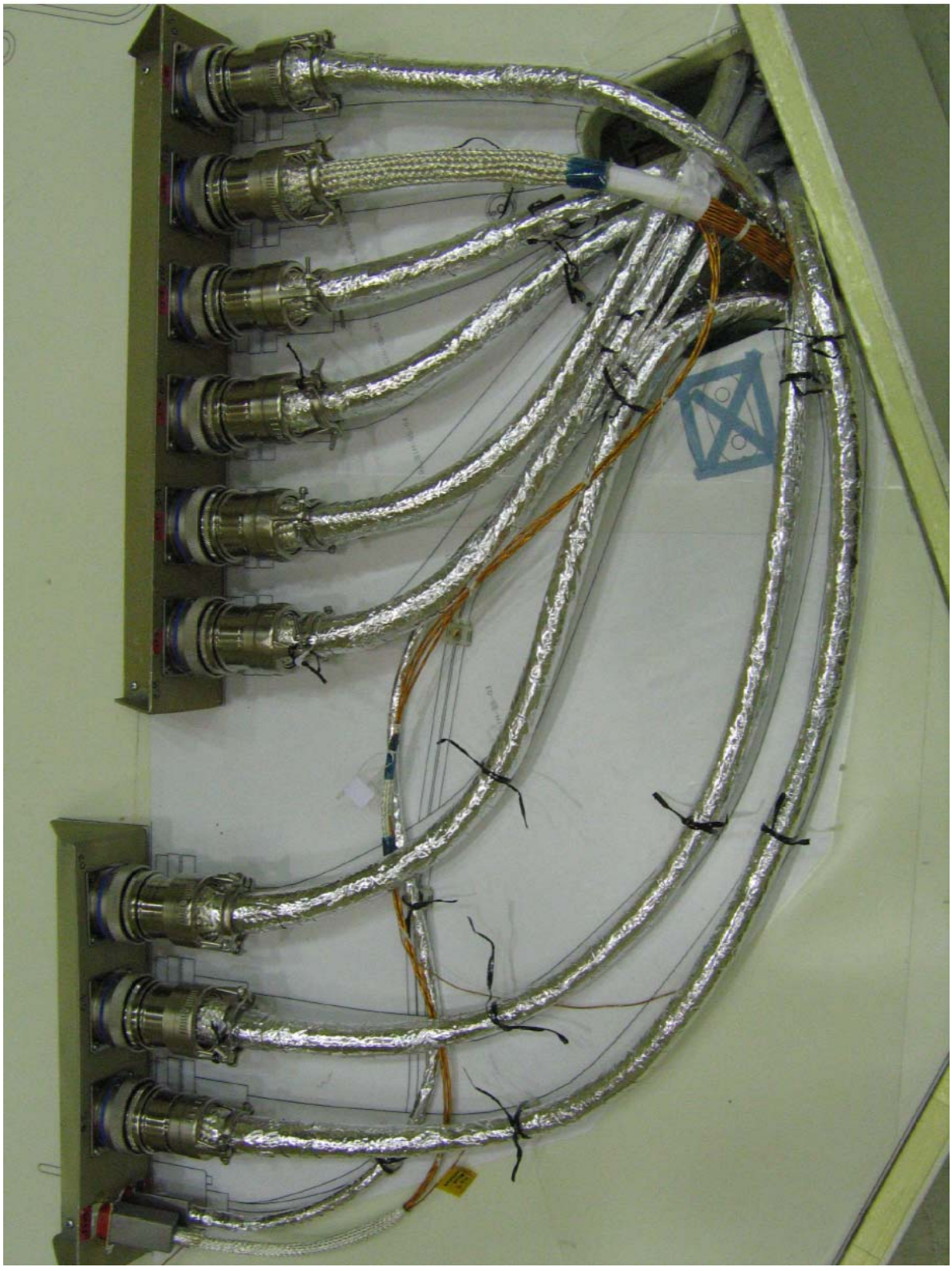
3.16.2.1 SPIRE SIH Routing to 312300 on SVM UCP on CASA Manufacturing-Jig



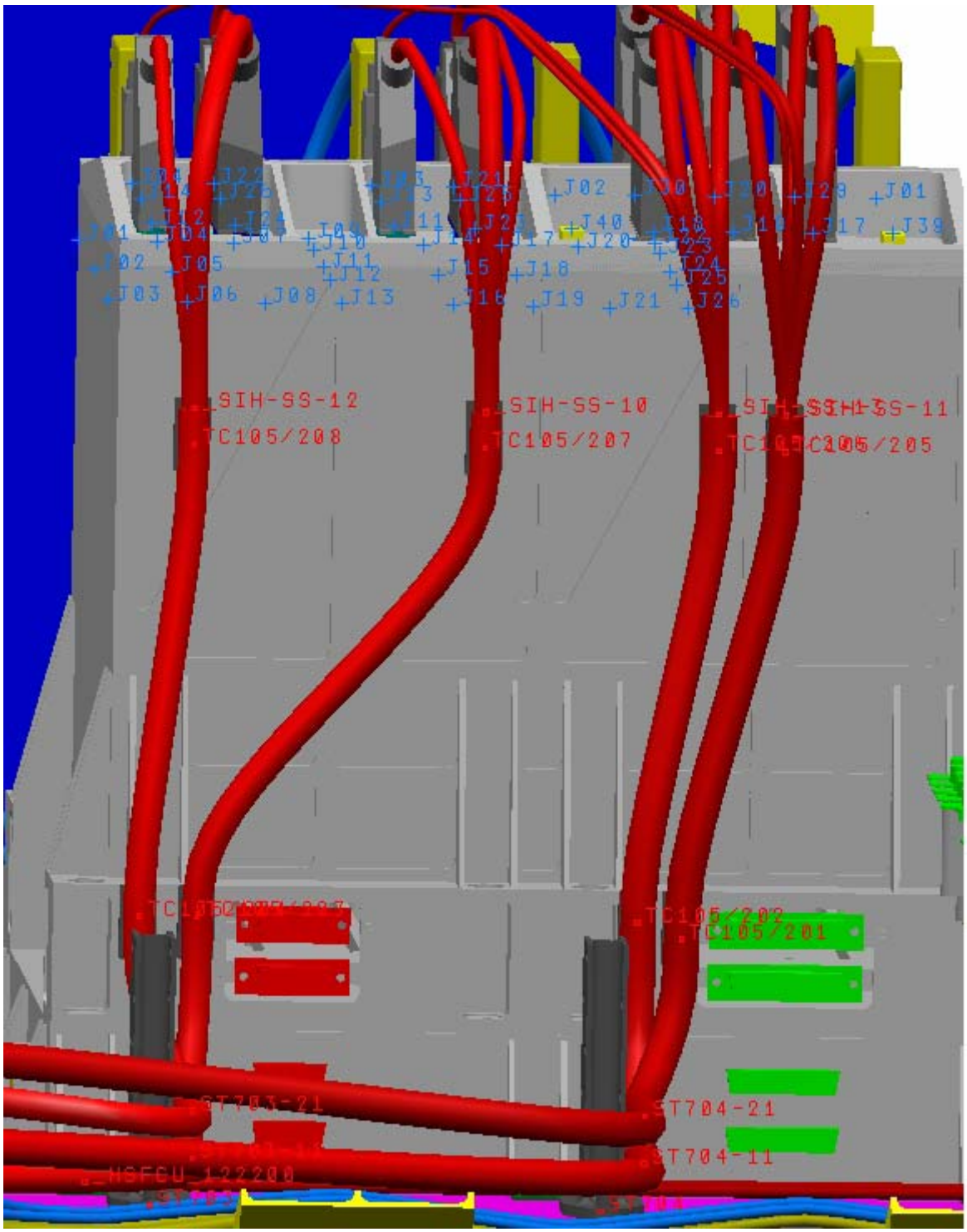
3.16.3 SPIRE SIH Routing to 312100 on SVM UCP (CATIA Desihn)



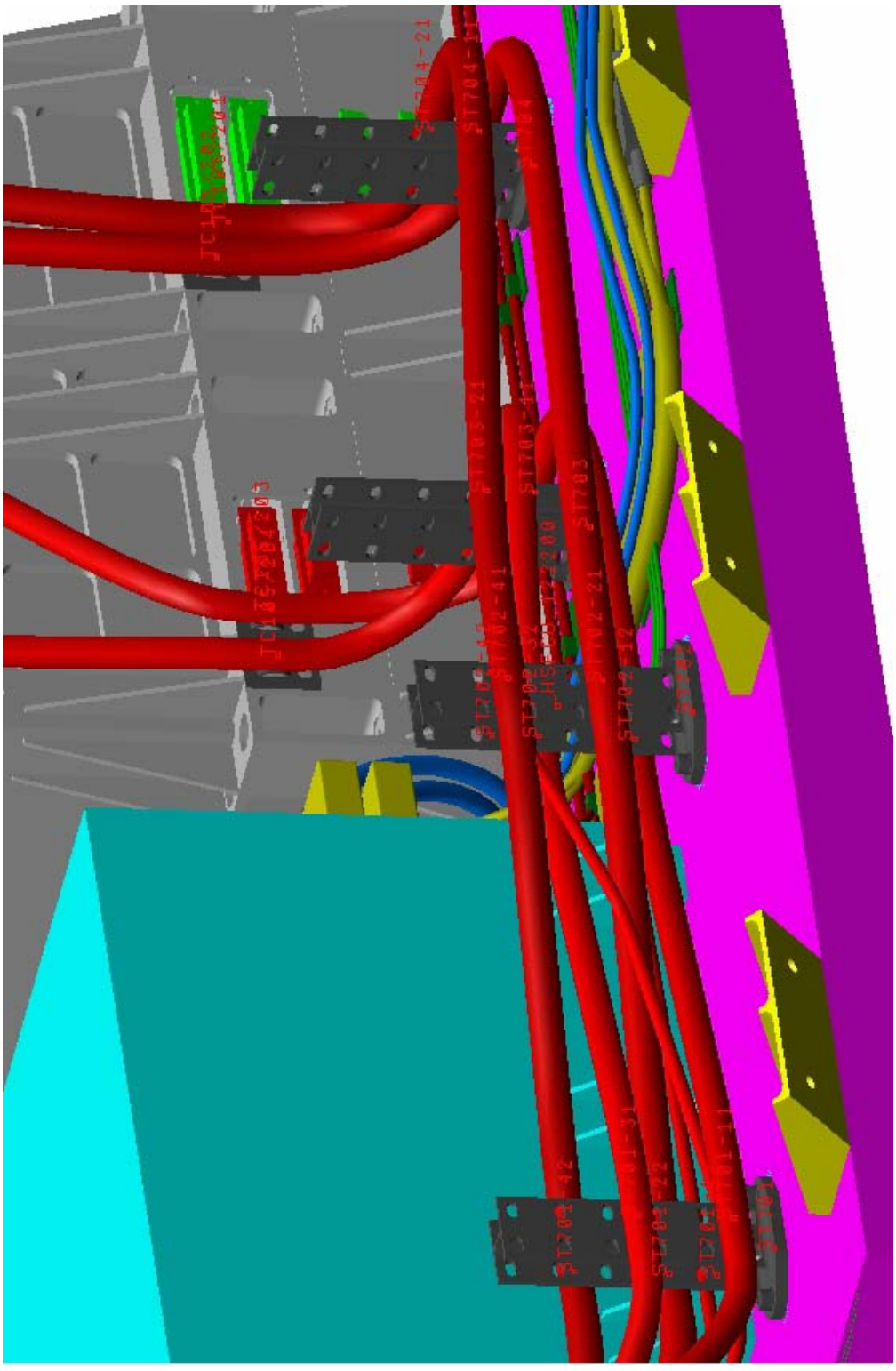
3.16.3.1 SPIRE SIH Routing to 312100 on SVM UCP on CASA Manufact.-Jig



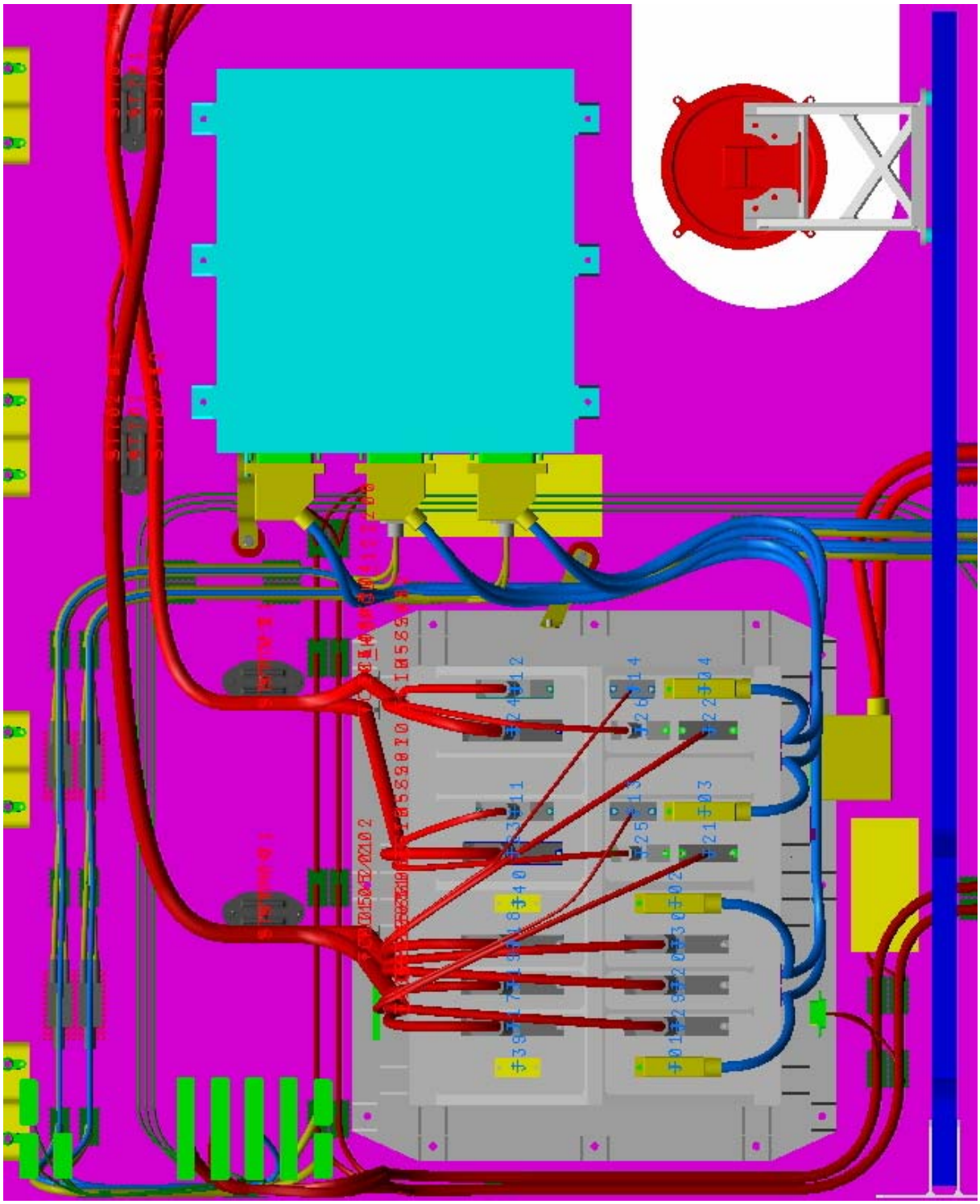
3.16.4 SPIRE SIH Routing from FCU towards SVM LP (CATIA Design)



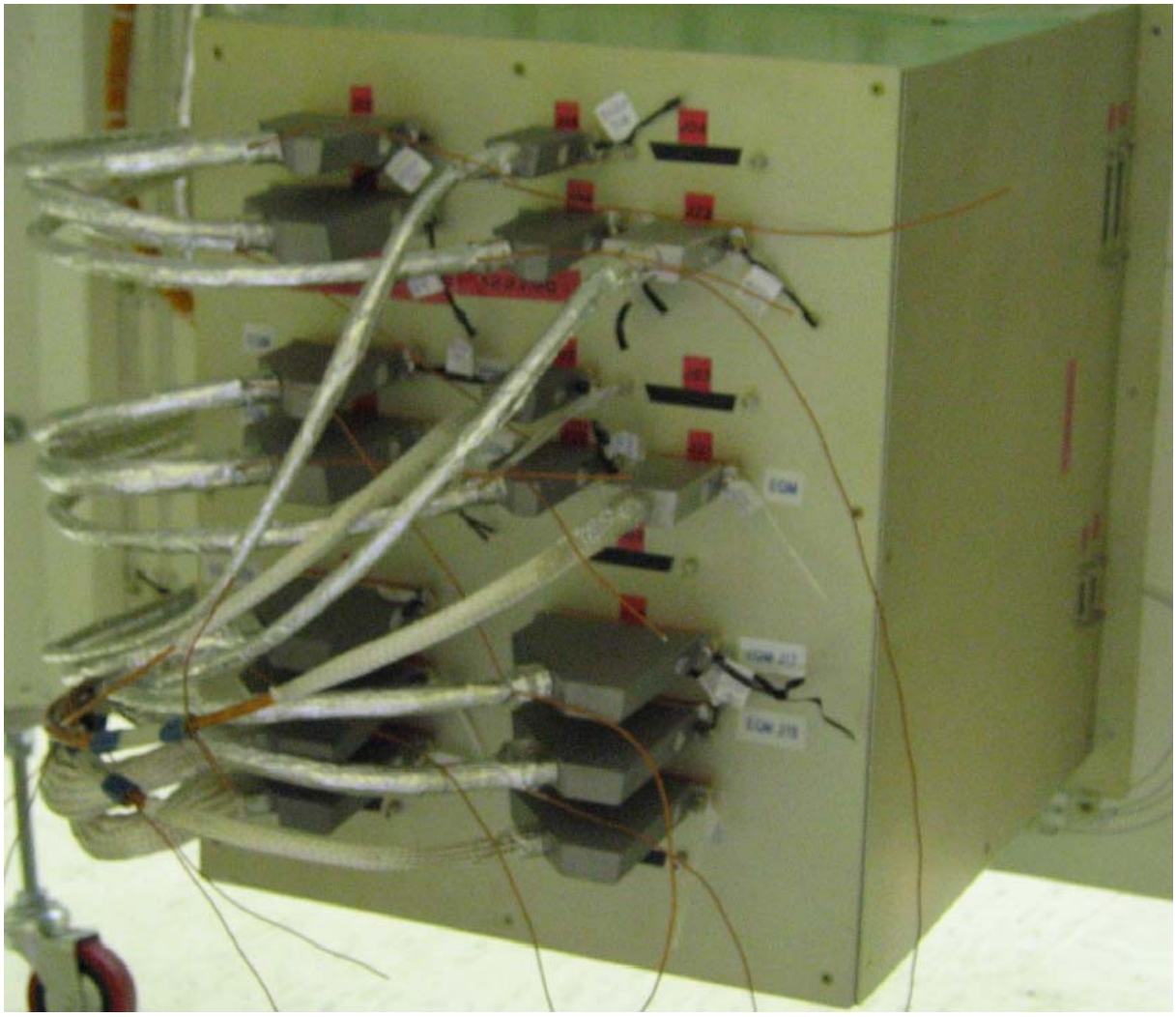
3.16.4.1 SPIRE SIH from FCU along Stand-off-towers (CATIA Design)



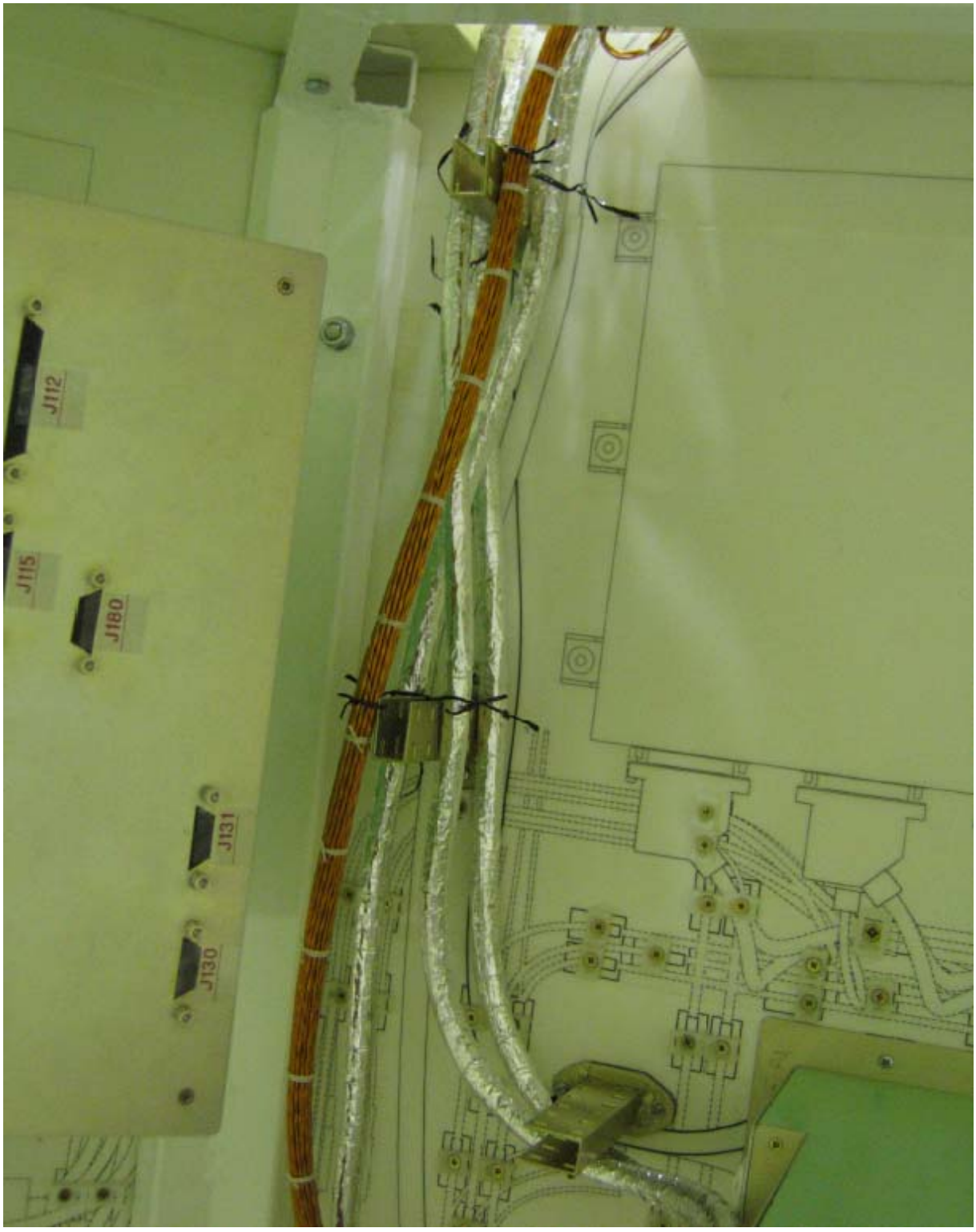
3.16.4.2 SPIRE SIH between FCU and SVM UCP (CATIA Design)



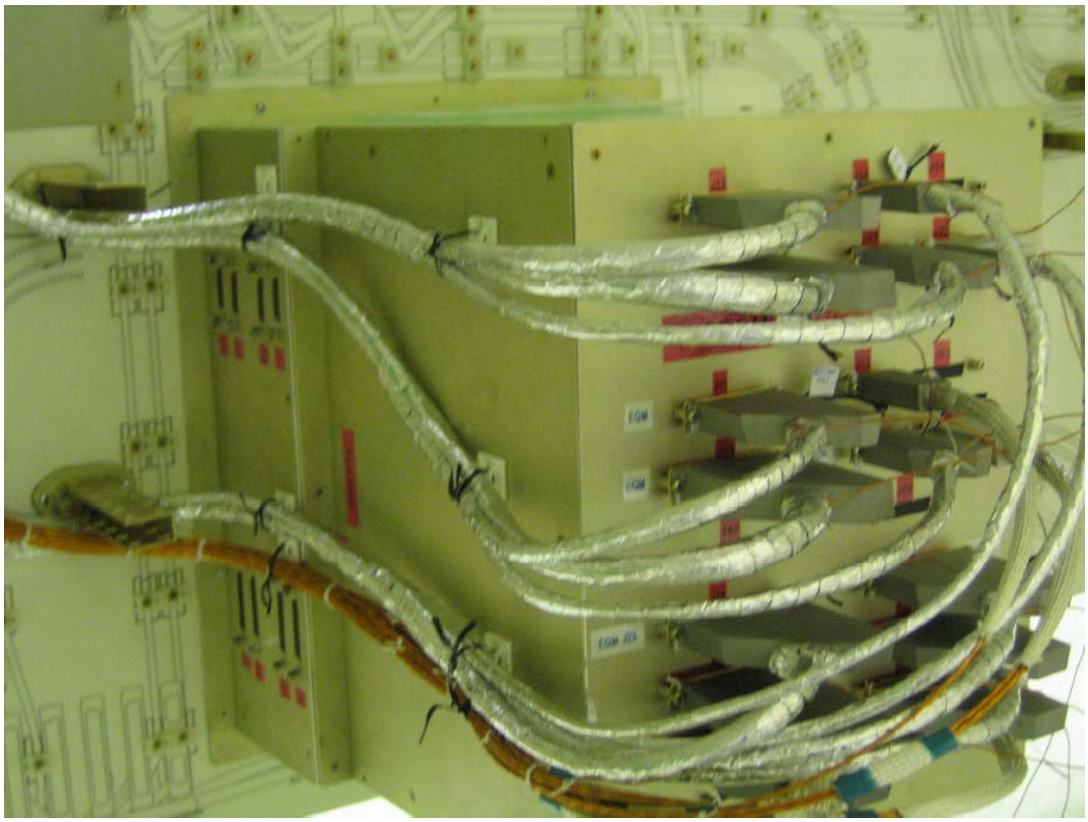
3.16.4.3 SPIRE SIH on top of FCU on CASA Manufacturing-Jig (EQM = PFM)



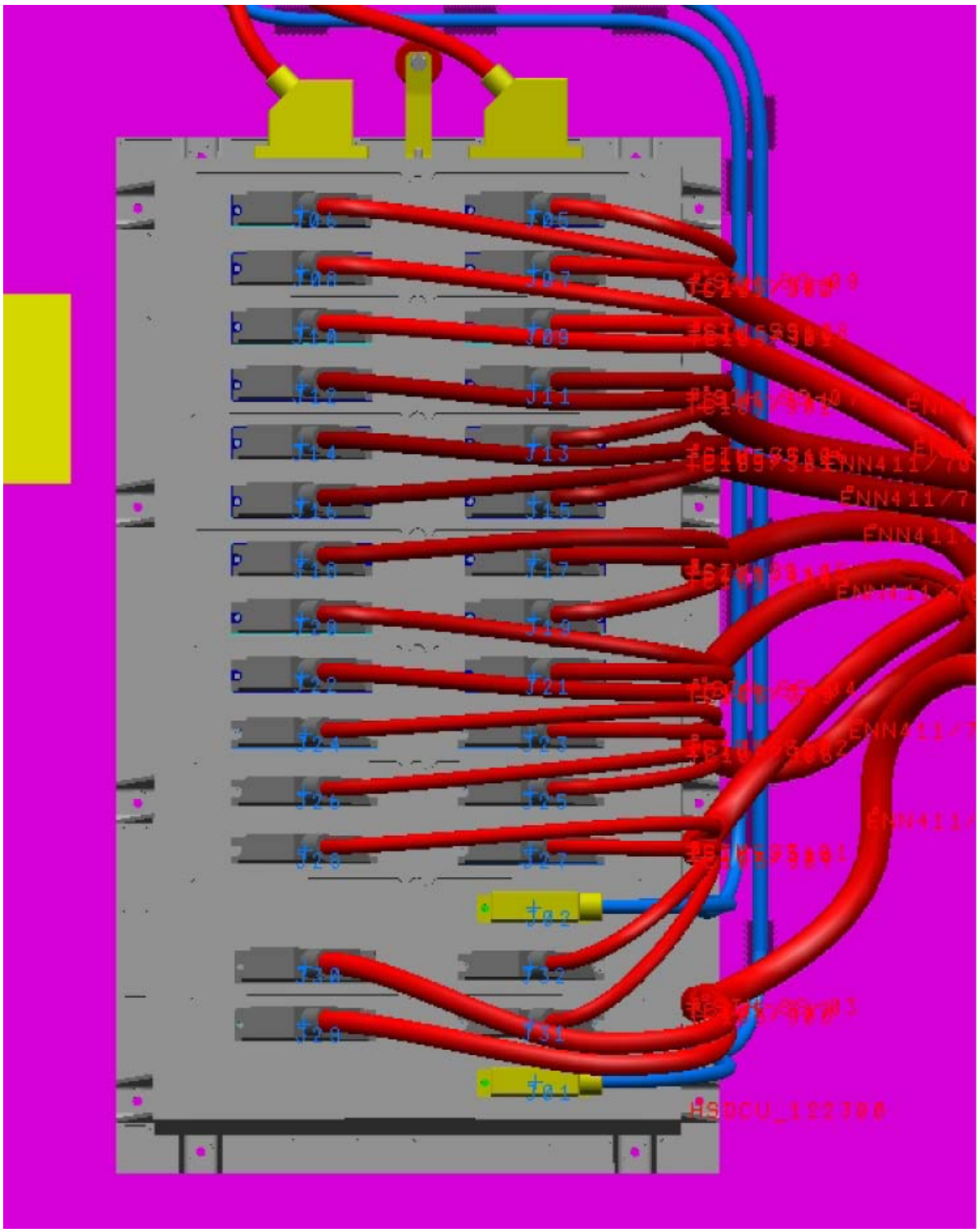
3.16.4.4 SPIRE SIH between FCU and SVM UCP on CASA Manufacturing-Jig



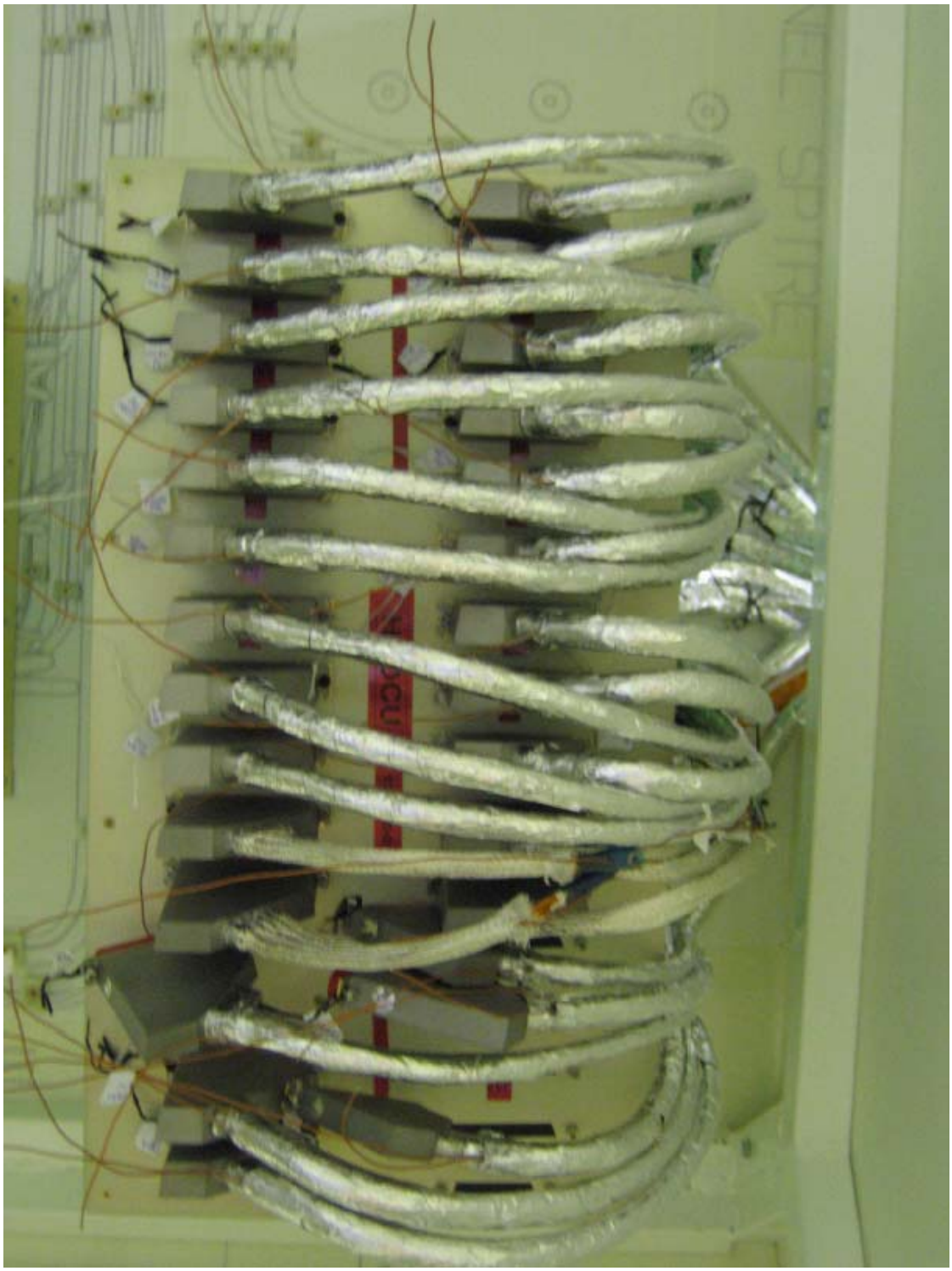
3.16.4.5 SPIRE SIH Routing from FCU toward SVM LP on CASA Manufact.-Jig



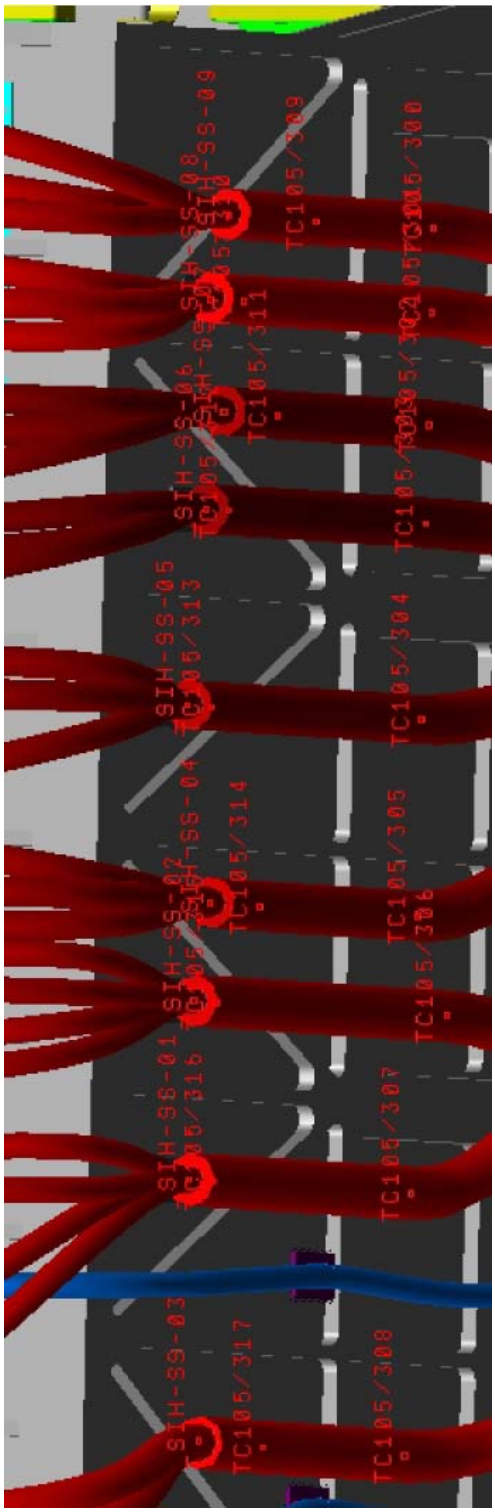
3.16.5 SPIRE SIH Routing from DCU to SVM UCP (CATIA Design)



3.16.5.1 SPIRE SIH Routing from DCU to SVM UCP on CASA Manufact-jig



3.16.5.2 Detailed SPIRE SIH Routing from DCU SVM UCP Cut-out (CATIA Design)



3.16.5.3 Detailed SPIRE SIH Routing from DCU SVM UCP Cut-out on CASA Manufacturing-Jig

3.16.6 SPIRE SIH Bundle Routing & Fixation from SVM LP WU & UCP I/F-CB

3.16.6.1 SIH-SS-01

SIH-SS-01					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P27				
122300	P28				
122300	P31				
122300	P32				
122300	TC105/316	801,20	-643,94	-1429,40	90
122300	TC105/307	801,20	-643,94	-1554,40	90
ENN411	ENN411/971	946,50	-407,40	-1545,78	60
312200	P06				

3.16.6.2 SIH-SS-02

SIH-SS-02					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P23				
122300	P24				
122300	P25				
122300	P26				
122300	TC105/315	801,20	-593,94	-1429,40	90
122300	TC105/306	801,20	-593,94	-1574,40	90
ENN411	ENN411/702	889,23	-580,42	-1654,40	45
ENN411	ENN411/970	946,50	-445,04	-1515,13	70
312200	P05				
122300	P23				
122300	P24				
122300	P25				
122300	P26				
122300	TC105/315	801,20	-593,94	-1429,40	90
122300	TC105/306	801,20	-593,94	-1574,40	90
ENN411	ENN411/702	889,23	-580,42	-1654,40	45
ENN411	ENN411/965	946,50	-566,94	-1530,67	120
ENN411	ENN411/961	946,50	-659,57	-1406,59	150
ENN411	ENN411/959	946,50	-785,34	-1338,99	155
ENN411	ENN411/954	946,50	-918,16	-1272,14	115
312100	P1A				

3.16.6.3 SIH-SS-03

SIH-SS-03					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P29				
122300	P30				
122300	TC105/317	801,20	-717,46	-1464,40	90
122300	TC105/308	801,20	-717,46	-1554,40	90
ENN411	ENN411/701	897,22	-623,04	-1654,40	0
ENN411	ENN411/964	946,50	-585,94	-1540,37	140
ENN411	ENN411/960	946,50	-732,13	-1407,76	125
312100	P04				

3.16.6.4 SIH-SS-04

SIH-SS-04					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P20				
122300	P21				
122300	P22				
122300	TC105/314	801,20	-566,44	-1454,40	90
122300	TC105/305	801,20	-566,44	-1554,40	90
ENN411	ENN411/703	883,13	-514,97	-1654,40	75
ENN411	ENN411/963	946,50	-604,07	-1620,84	175
ENN411	ENN411/958	946,50	-793,61	-1507,03	130
ENN411	ENN411/956	946,50	-858,37	-1370,91	100
312100	P03				
122300	P20				
122300	P21				
122300	P22				
122300	TC105/314	801,20	-566,44	-1454,40	90
122300	TC105/305	801,20	-566,44	-1554,40	90
ENN411	ENN411/703	883,13	-514,97	-1654,40	75
ENN411	ENN411/965	946,50	-566,94	-1530,67	120
ENN411	ENN411/961	946,50	-659,57	-1406,59	150
ENN411	ENN411/959	946,50	-785,34	-1338,99	155
ENN411	ENN411/954	946,50	-918,16	-1272,14	115
312100	P1B				

3.16.6.5 SIH-SS-05

SIH-SS-05					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P17				
122300	P18				
122300	P19				
122300	TC105/313	801,20	-511,44	-1421,40	90
122300	TC105/304	801,20	-511,44	-1554,40	90
ENN411	ENN411/704	896,13	-487,97	-1654,40	90
ENN411	ENN411/962	946,50	-589,89	-1643,84	0
ENN411	ENN411/957	946,50	-808,30	-1541,36	135
ENN411	ENN411/955	946,50	-913,49	-1366,45	95
312100	P02				

3.16.6.6 SIH-SS-06

SIH-SS-06					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P14				
122300	P15				
122300	P16				
122300	TC105/312	801,20	-456,44	-1429,40	90
122300	TC105/303	801,20	-456,44	-1554,40	90
ENN411	ENN411/705	885,10	-470,31	-1654,40	100
ENN411	ENN411/968	946,50	-495,03	-1527,93	105
312200	P03				

3.16.6.7 SIH-SS-07

SIH-SS-07					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P11				
122300	P12				
122300	P13				
122300	TC105/311	801,20	-428,94	-1459,40	90
122300	TC105/302	801,20	-428,94	-1554,40	90
ENN411	ENN411/706	878,20	-454,10	-1654,40	100
ENN411	ENN411/969	946,50	-477,17	-1527,25	100
312200	P04				

3.16.6.8 SIH-SS-08

SIH-SS-08					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P08				
122300	P09				
122300	P10				
122300	TC105/310	801,20	-397,44	-1434,40	90
122300	TC105/301	801,20	-401,44	-1554,40	90
ENN411	ENN411/707	919,44	-447,07	-1654,40	120
ENN411	ENN411/966	946,50	-549,19	-1523,06	120
312200	P01				

3.16.6.9 SIH-SS-09

SIH-SS-09					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122300	P05				
122300	P06				
122300	P07				
122300	TC105/309	801,20	-373,94	-1479,40	90
122300	TC105/300	801,20	-373,94	-1554,40	90
ENN411	ENN411/708	916,61	-426,98	-1654,40	120
ENN411	ENN411/967	946,50	-519,56	-1530,04	115
312200	P02				

3.16.6.10SIH-SS-10

SIH-SS-10					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122200	P11				
122200	P23				
122200	P25				
122200	TC105/207	358,30	571,49	-1402,40	0
122200	TC105/203	455,30	595,99	-1562,40	0
ST703	ST703-11	474,04	673,91	-1654,40	0
ST702	ST702-12	626,50	760,76	-1654,40	90
ST701	ST701-11	856,50	760,76	-1654,40	90
ENN411	ENN411/976	946,50	769,46	-1539,56	90
312300	P06				

3.16.6.11 SIH-SS-11

SIH-SS-11					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122200	P13				
122200	P17				
122200	P19				
122200	P21				
122200	P29				
122200	TC105/205	255,30	571,49	-1402,40	0
122200	TC105/201	289,30	595,99	-1567,90	0
ST704	ST704-21	319,04	673,91	-1654,40	0
ST702	ST702-41	626,50	760,76	-1654,40	90
ST701	ST701-42	856,50	760,76	-1654,40	90
ENN411	ENN411/974	946,50	709,67	-1540,20	120
312300	P04				
122200	P13				
122200	P17				
122200	P19				
122200	P21				
122200	P29				
122200	TC105/205	255,30	571,49	-1402,40	0
122200	TC105/201	289,30	595,99	-1567,90	0
ST704	ST704-21	319,04	673,91	-1654,40	0
ST702	ST702-41	626,50	760,76	-1654,40	90
ST701	ST701-12	856,50	760,76	-1654,40	90
ENN411	ENN411/972	946,50	676,57	-1582,69	145
312300	P01				

3.16.6.12 SIH-SS-12

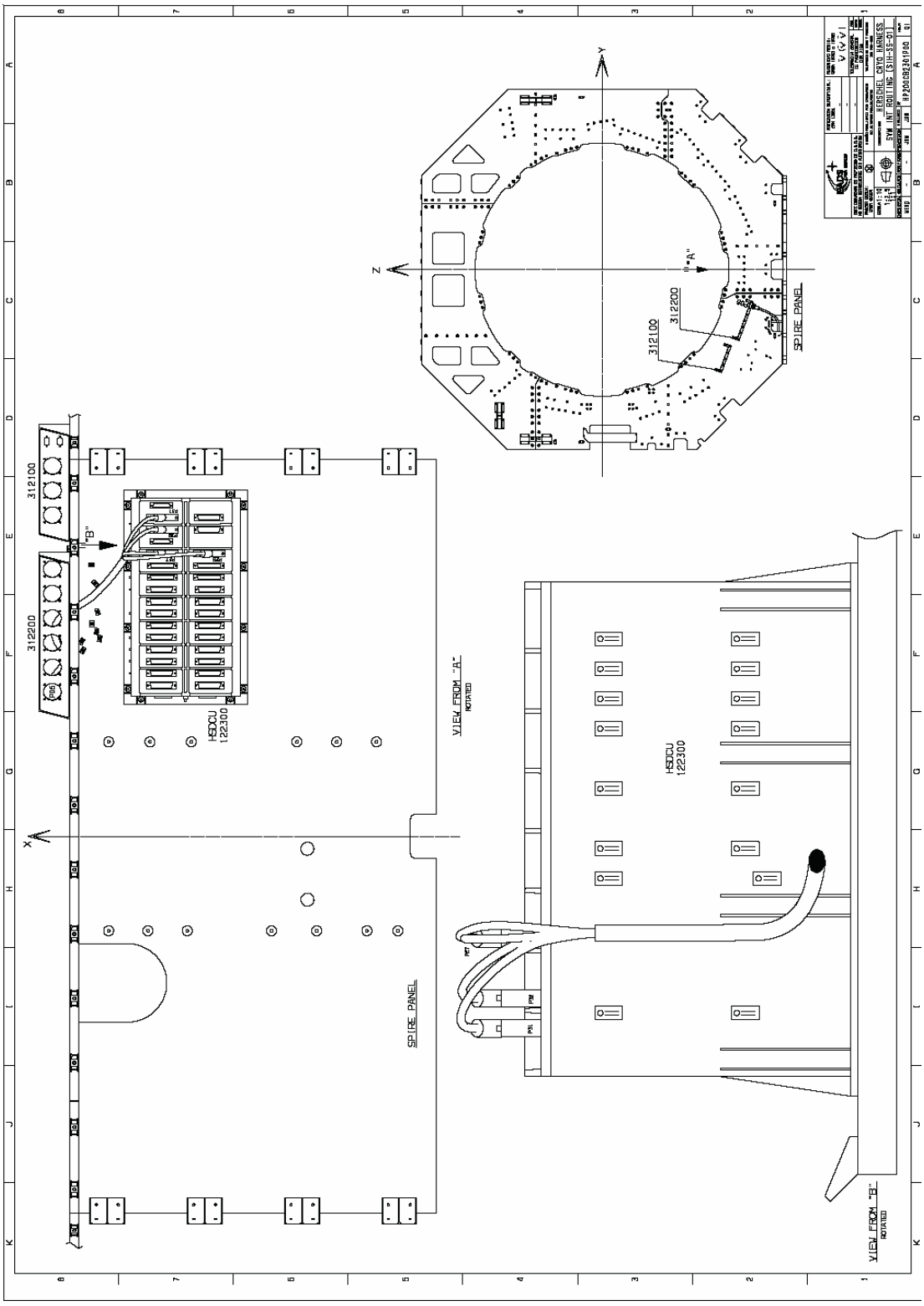
SIH-SS-12					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122200	P12				
122200	P24				
122200	P26				
122200	TC105/208	458,30	571,49	-1402,40	0
122200	TC105/204	475,30	595,99	-1562,40	0
ST703	ST703-21	474,04	673,91	-1654,40	0
ST702	ST702-32	626,50	760,76	-1654,40	90
ST701	ST701-31	856,50	760,76	-1654,40	90
ENN411	ENN411/975	946,50	739,81	-1539,37	110
312300	P05				

3.16.6.13 SIH-SS-13

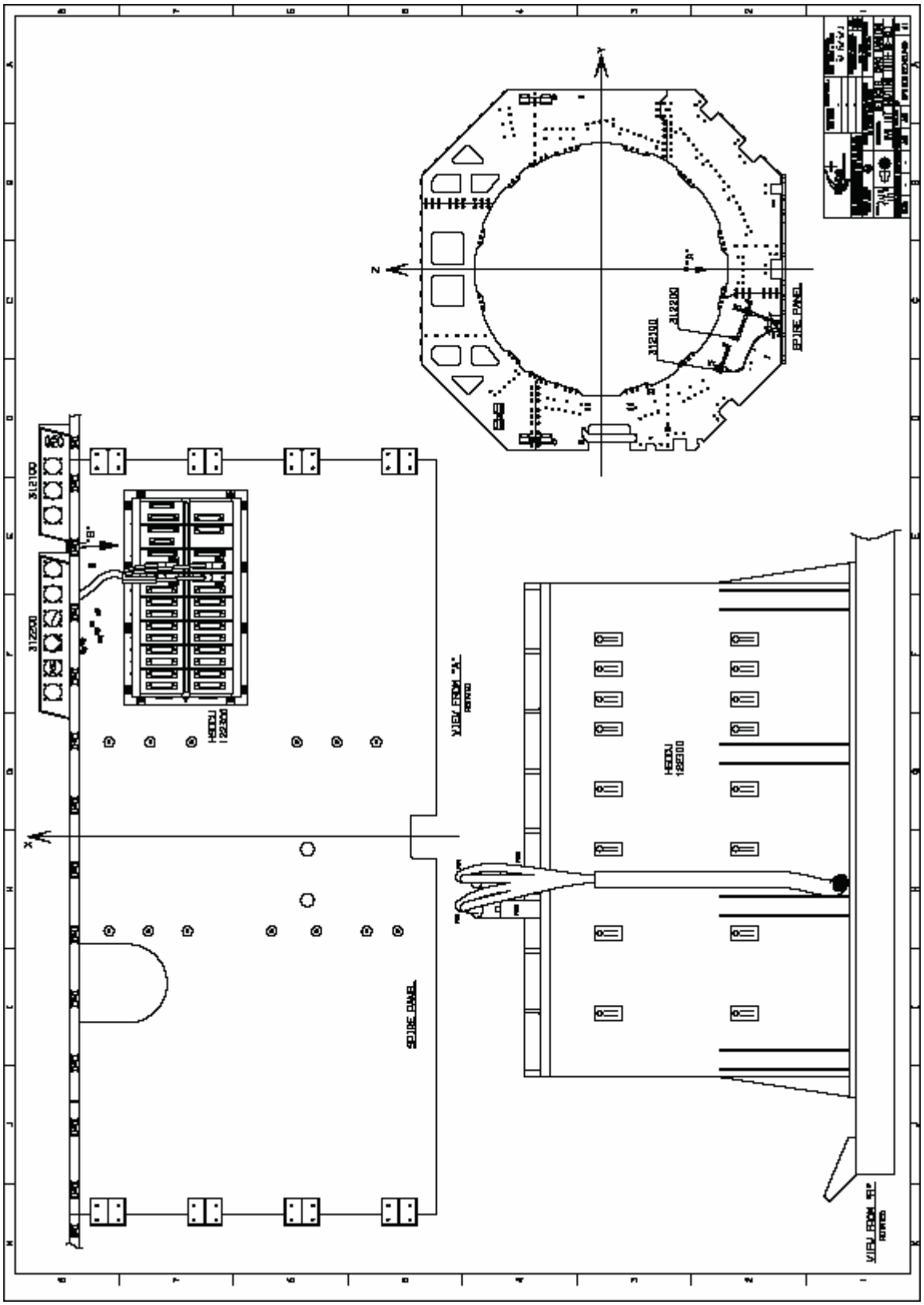
SIH-SS-13					
ID-Number :		Coordinate : Ref.: HSC-AXS			Angle Orientation
		X	Y	Z	[°]
122200	P14				
122200	P18				
122200	P20				
122200	P22				
122200	P30				
122200	TC105/206	278,30	571,49	-1402,40	0
122200	TC105/202	304,30	595,99	-1562,40	0
ST704	ST704-11	319,04	673,91	-1654,40	0
ST702	ST702-21	626,50	760,76	-1654,40	90
ST701	ST701-22	856,50	760,76	-1654,40	90
ENN411	ENN411/973	946,50	683,43	-1558,02	130
312300	P03				
122200	P14				
122200	P18				
122200	P20				
122200	P22				
122200	P30				
122200	TC105/206	278,30	571,49	-1402,40	0
122200	TC105/202	304,30	595,99	-1562,40	0
ST704	ST704-11	319,04	673,91	-1654,40	0
ST702	ST702-21	626,50	760,76	-1654,40	90
ST701	ST701-12	856,50	760,76	-1654,40	90
ENN411	ENN411/972	946,50	676,57	-1582,69	145
312300	P02				

3.16.7 Detailed SPIRE SIH Bundle Routing & Fixation Lay-outs

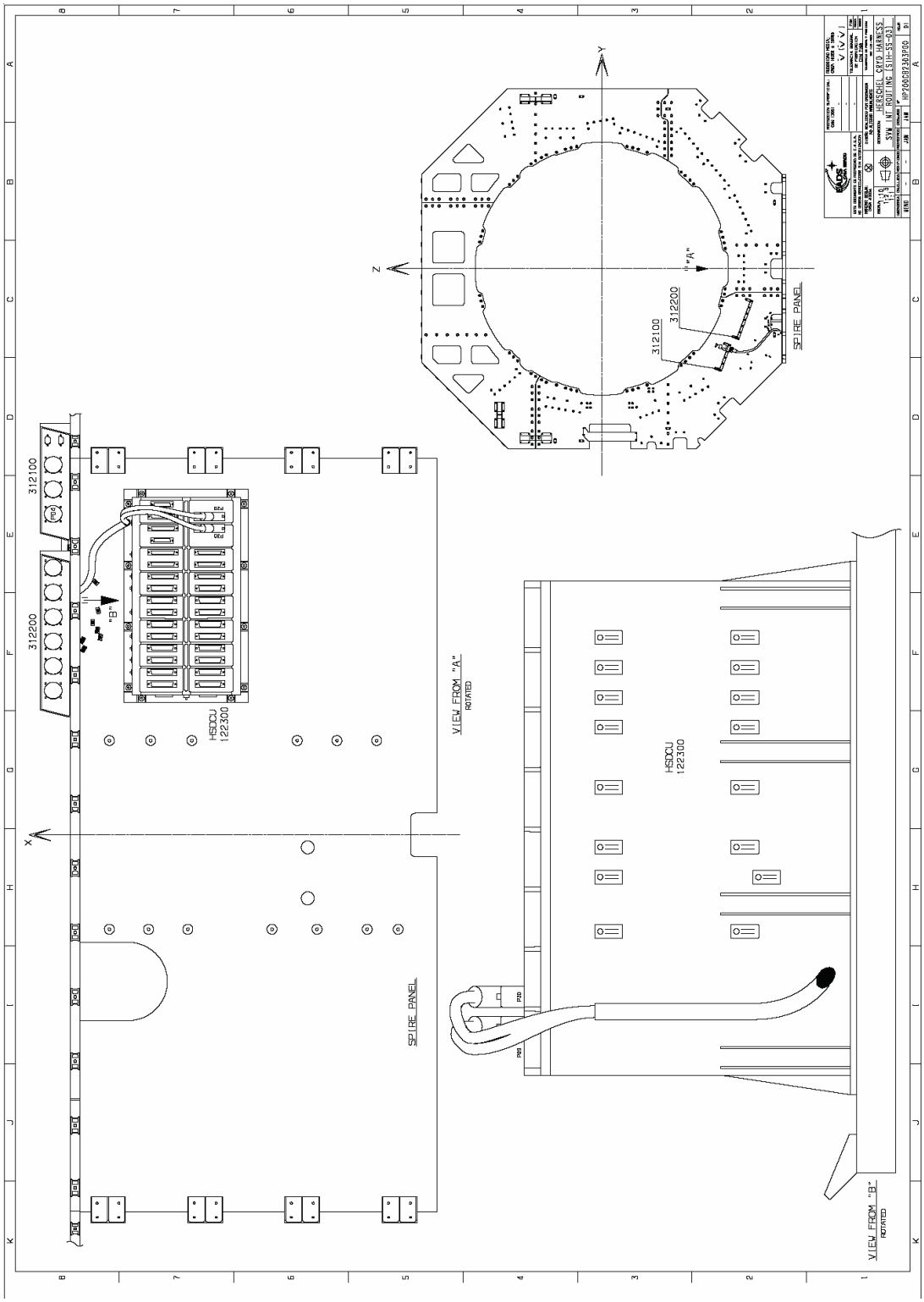
3.16.7.1 SPIRE SIH-SS-01 Routing & Fixation on SVM LP and UCP



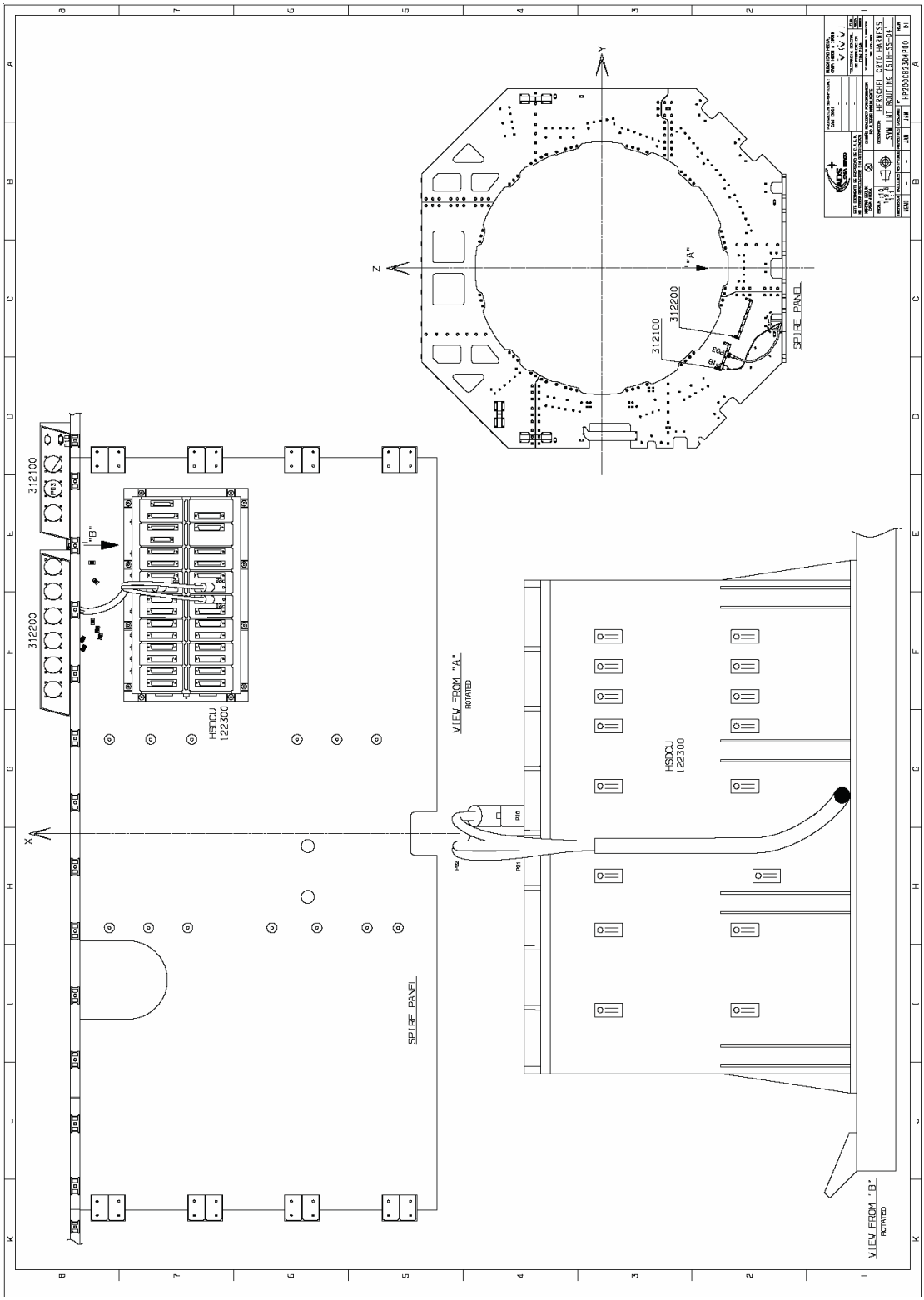
3.16.7.2 SPIRE SIH-SS-02 Routing & Fixation on SVM LP and UCP



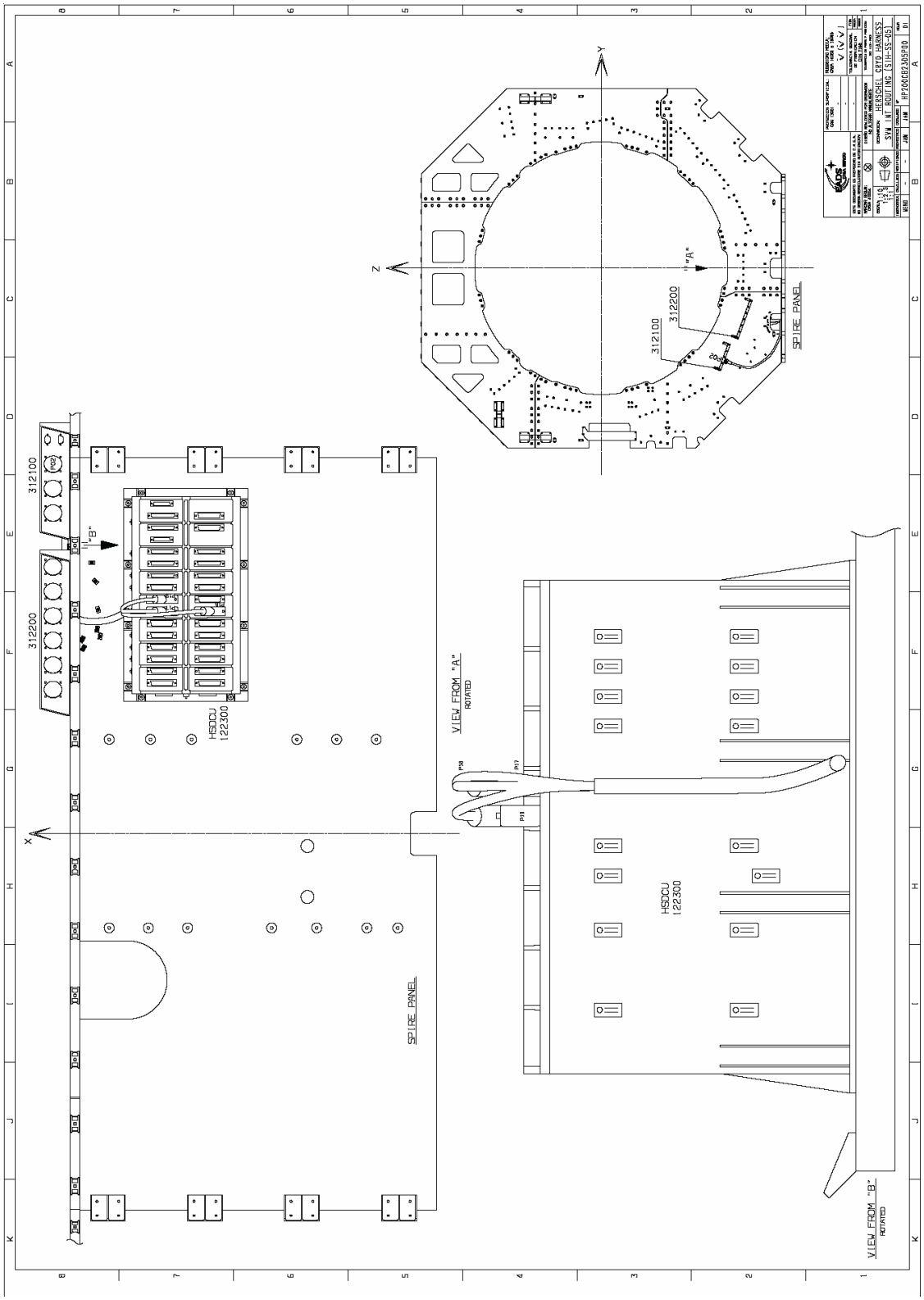
3.16.7.3 SPIRE SIH-SS-03 Routing & Fixation on SVM LP and UCP



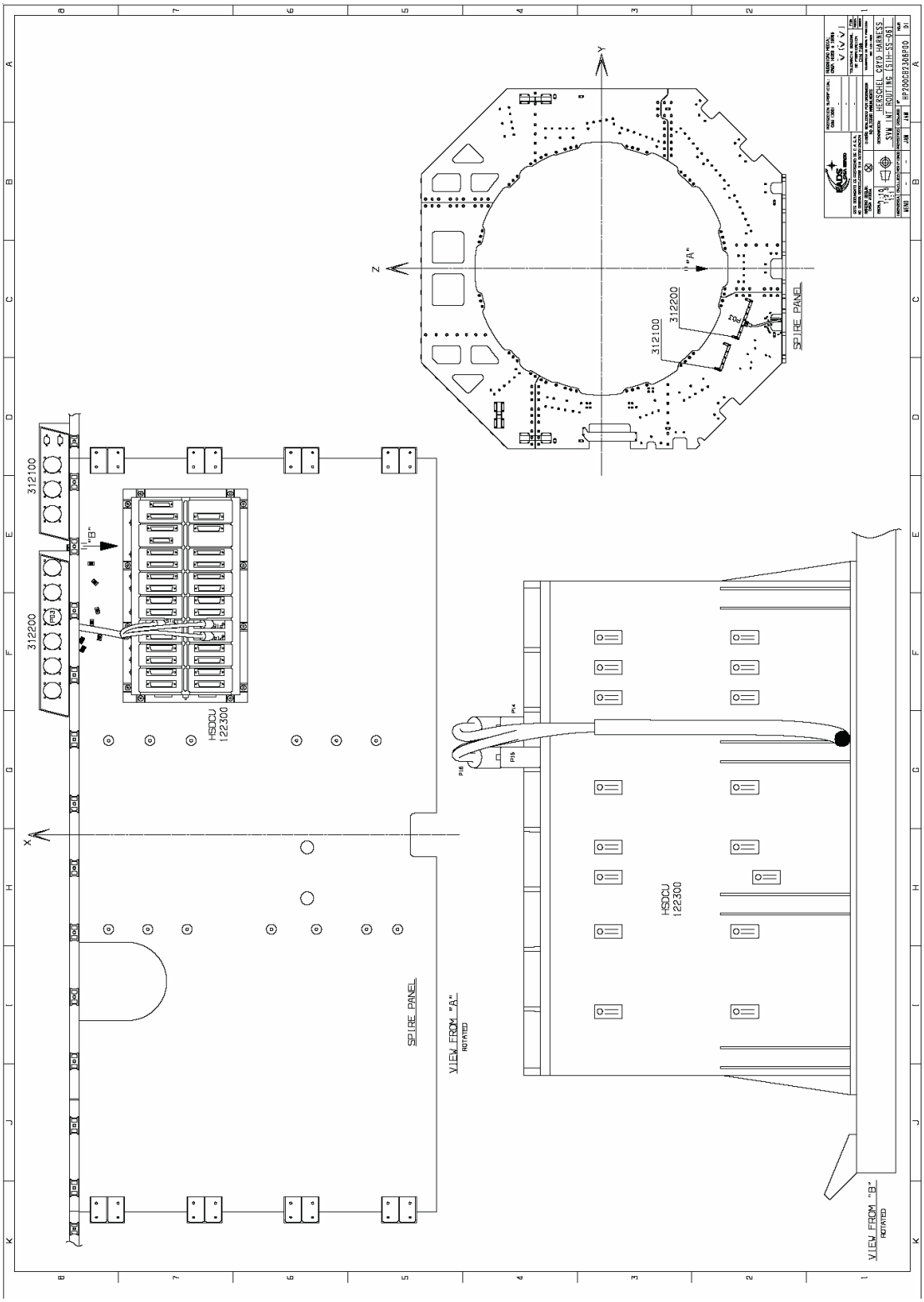
3.16.7.4 SPIRE SIH-SS-04 Routing & Fixation on SVM LP and UCP



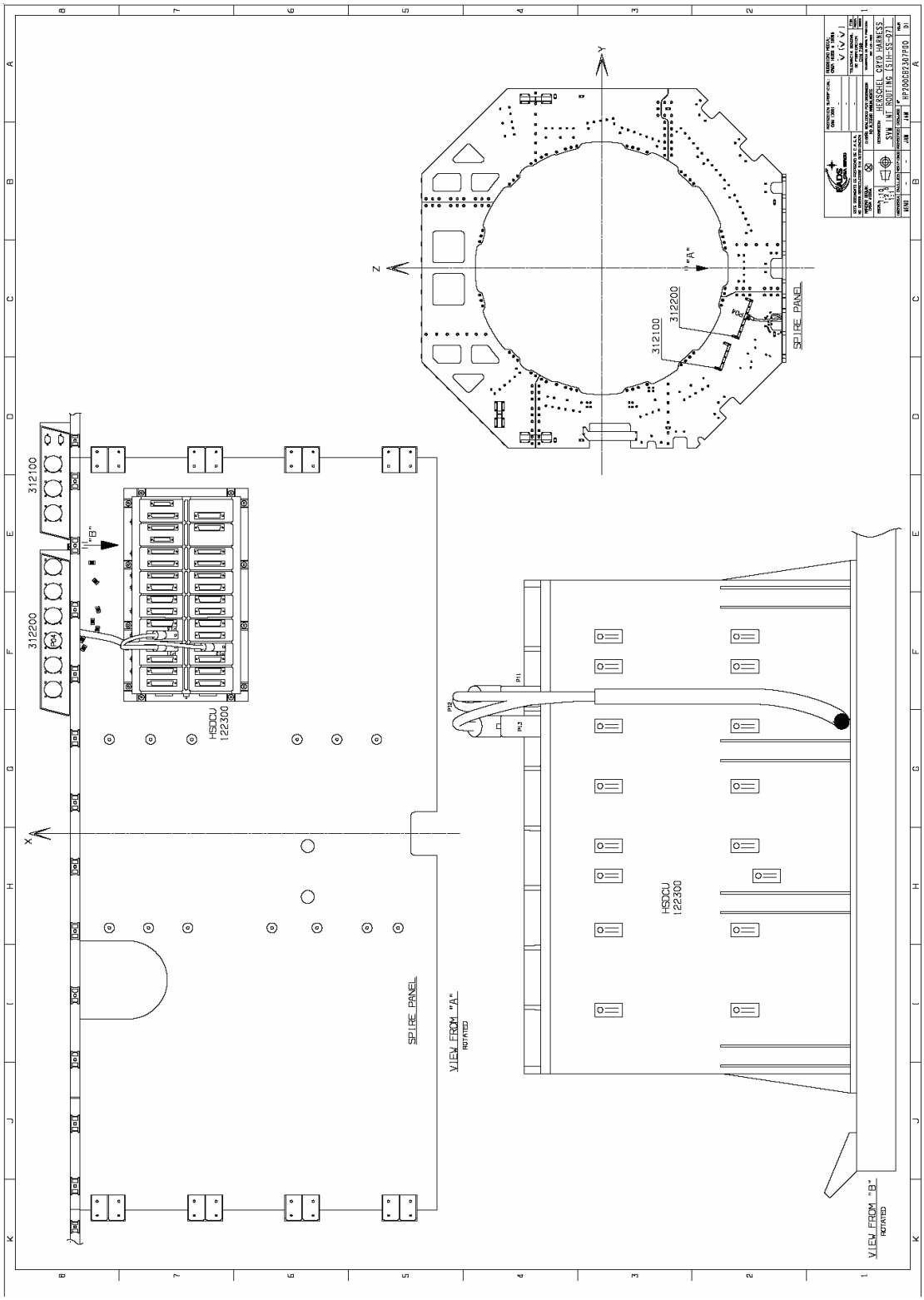
3.16.7.5 SPIRE SIH-SS-05 Routing & Fixation on SVM LP and UCP



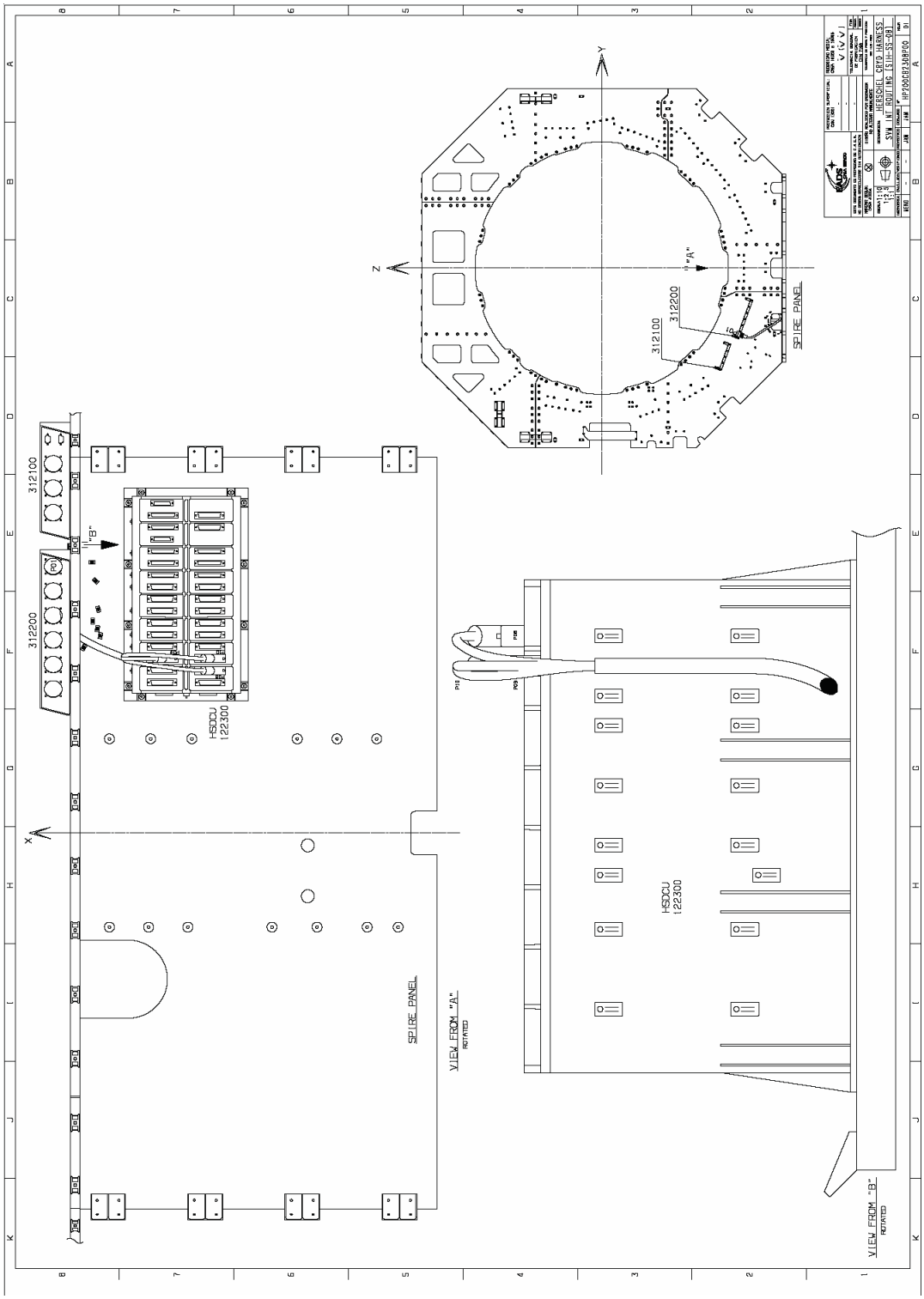
3.16.7.6 SPIRE SIH-SS-06 Routing & Fixation on SVM LP and UCP



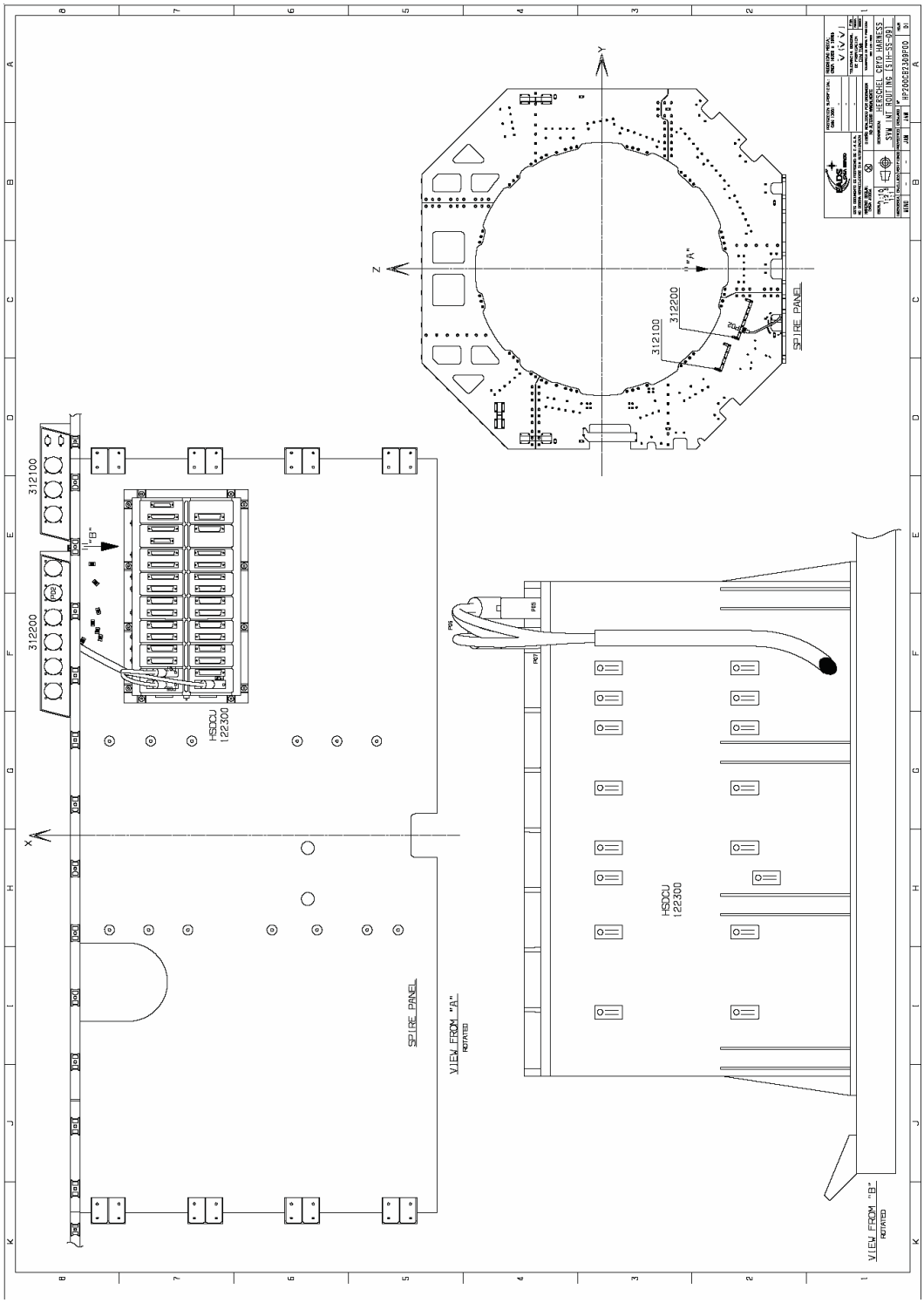
3.16.7.7 SPIRE SIH-SS-07 Routing & Fixation on SVM LP and UCP



3.16.7.8 SPIRE SIH-SS-08 Routing & Fixation on SVM LP and UCP



3.16.7.9 SPIRE SIH-SS-09 Routing & Fixation on SVM LP and UCP



3.16.7.10 SPIRE SIH-SS-10 Routing & Fixation on SVM LP and UCP

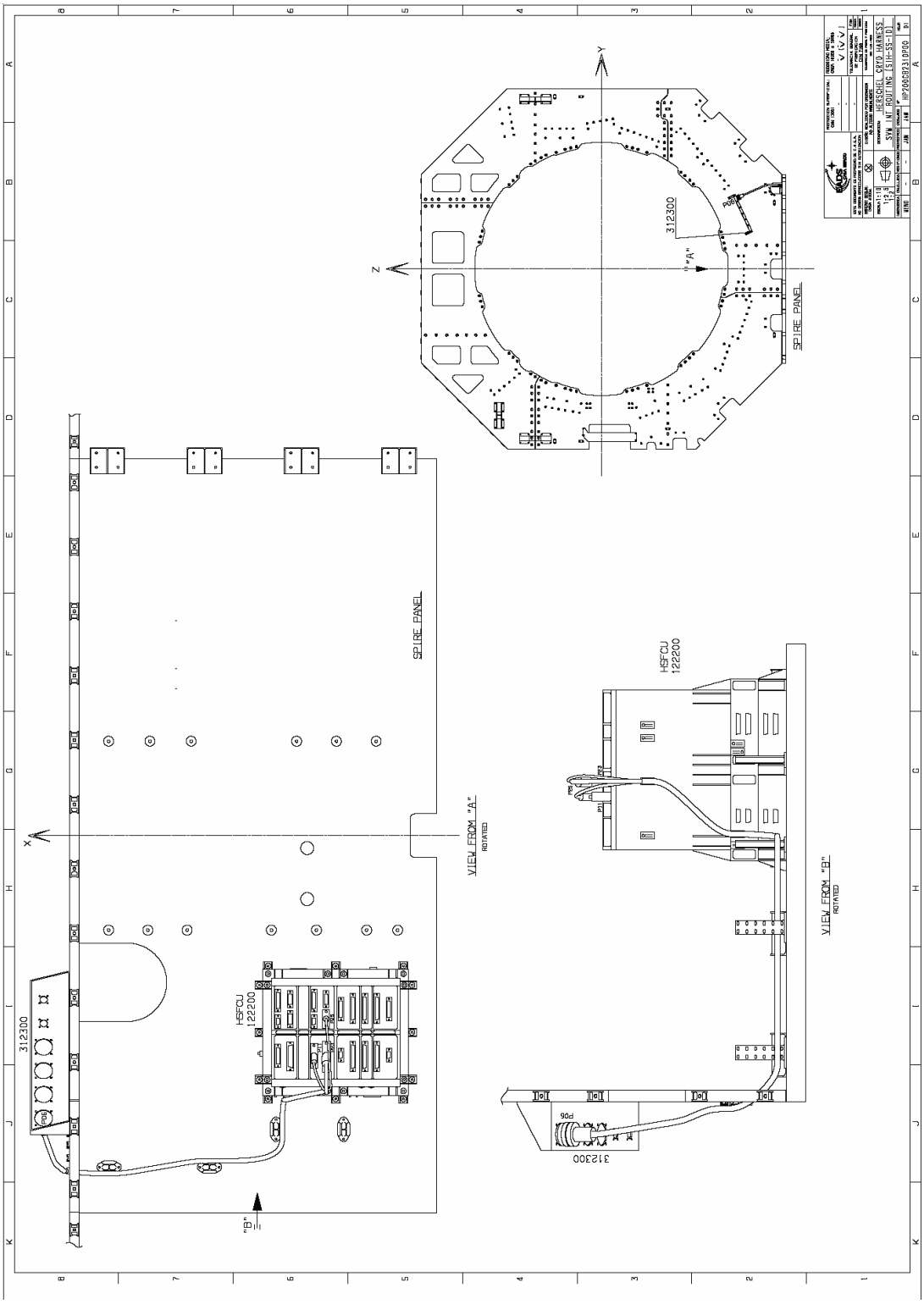
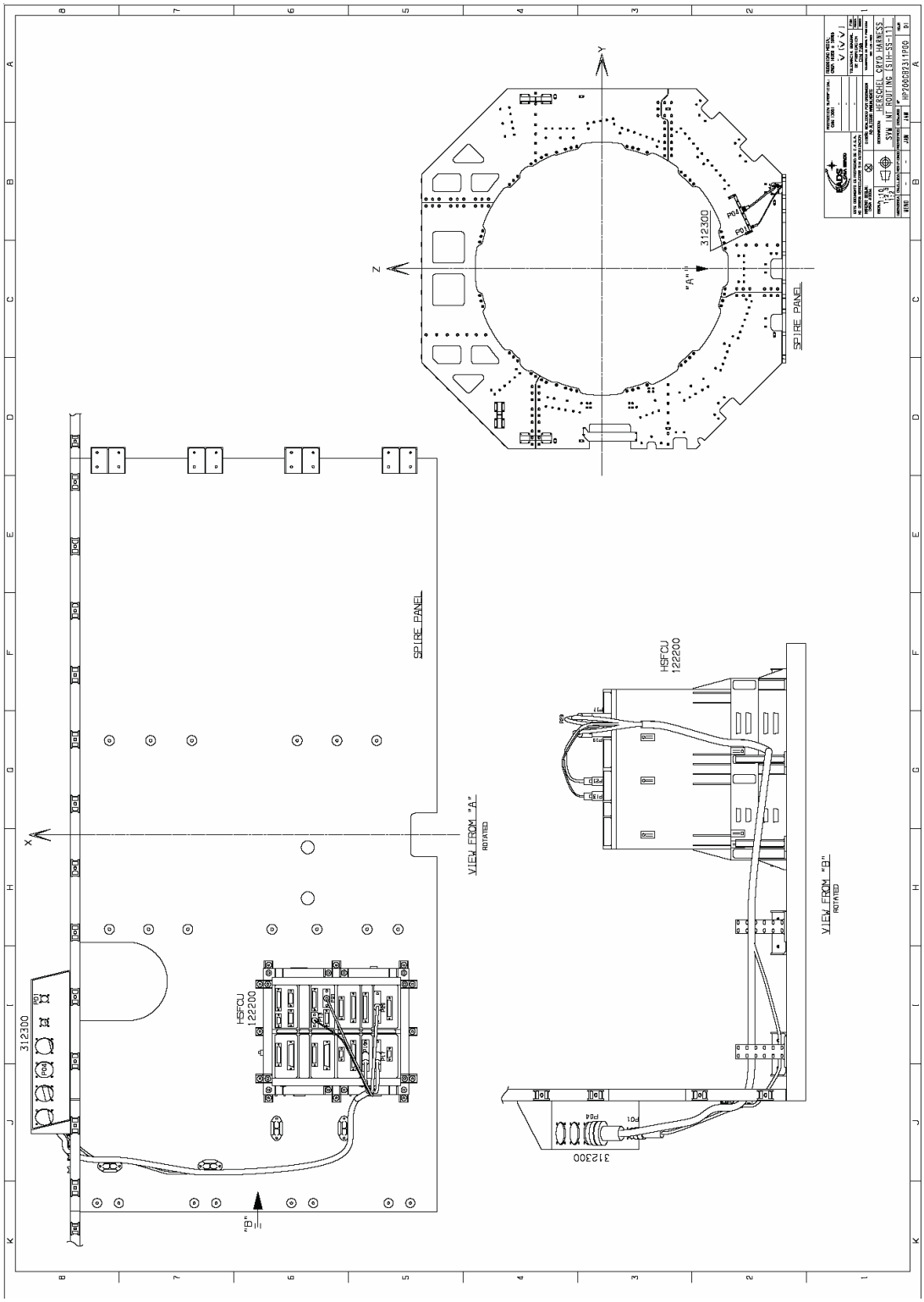
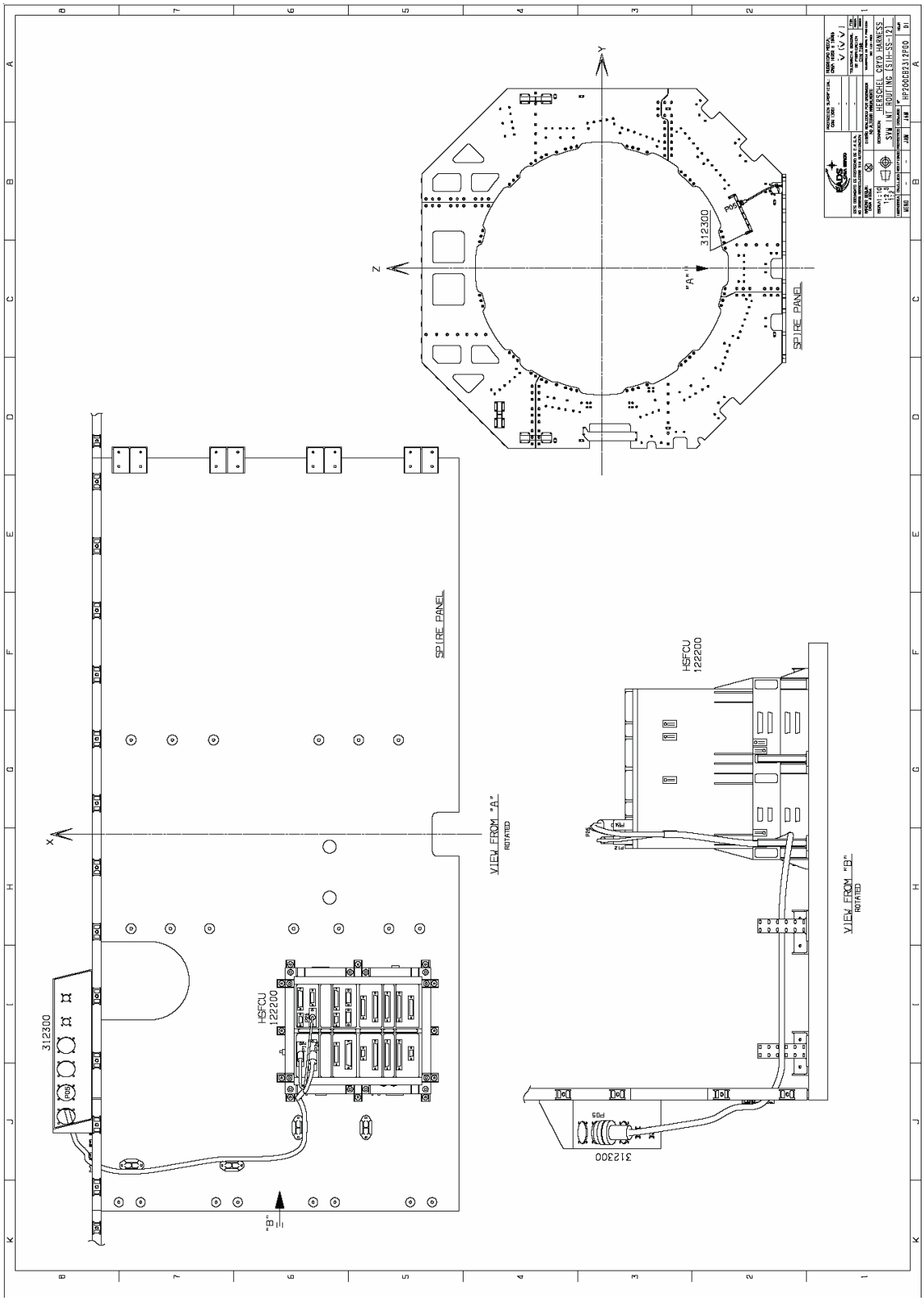


Figure 3.16-1: SOT-701 -702 -703 -704 [ST = SOT]

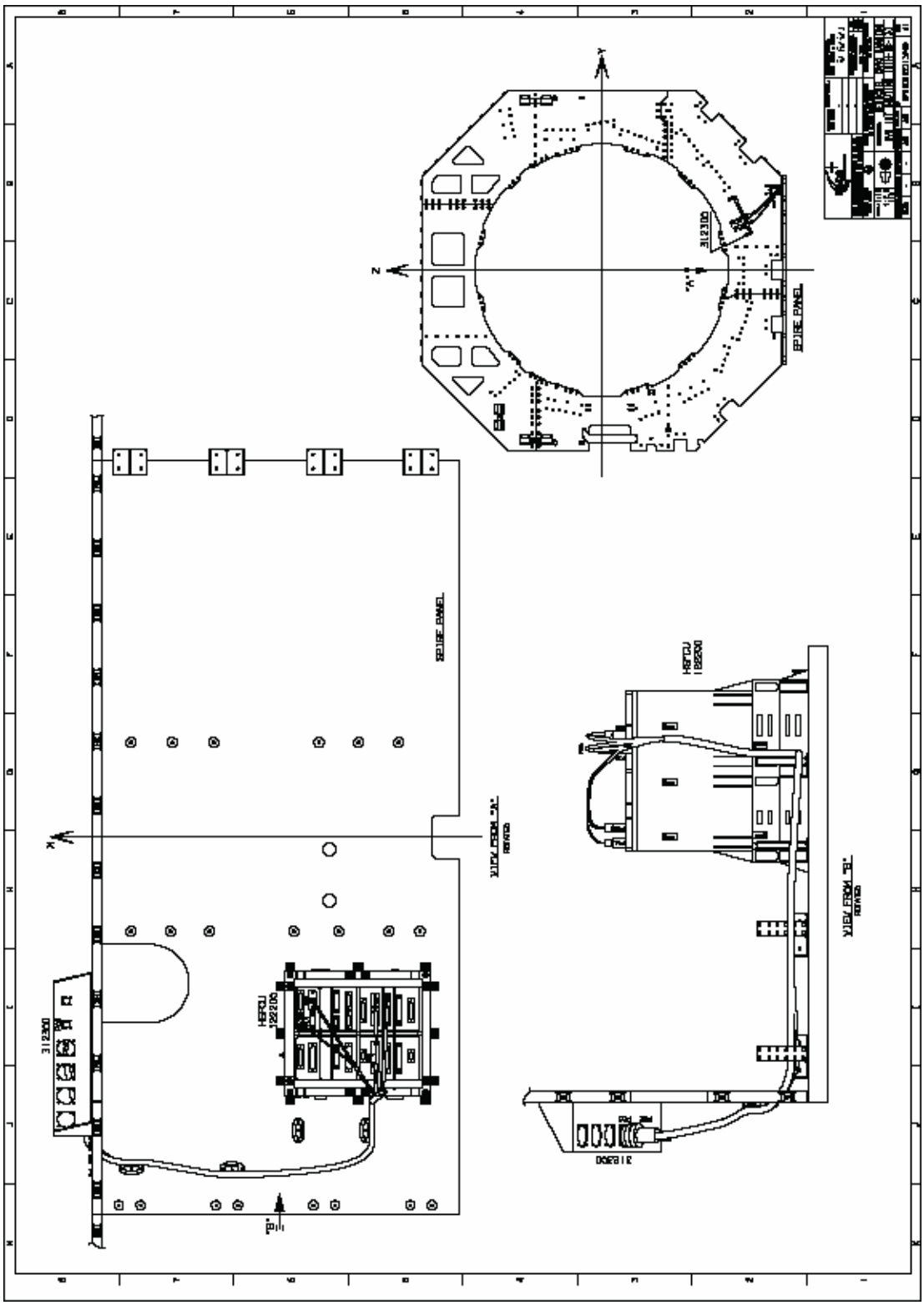
3.16.7.11SPIRE SIH-SS-11 Routing & Fixation on SVM LP and UCP



3.16.7.12SPIRE SIH-SS-12 Routing & Fixation on SVM LP and UCP



3.16.7.13SPIRE SIH-SS-13 Routing & Fixation on SVM LP and UCP

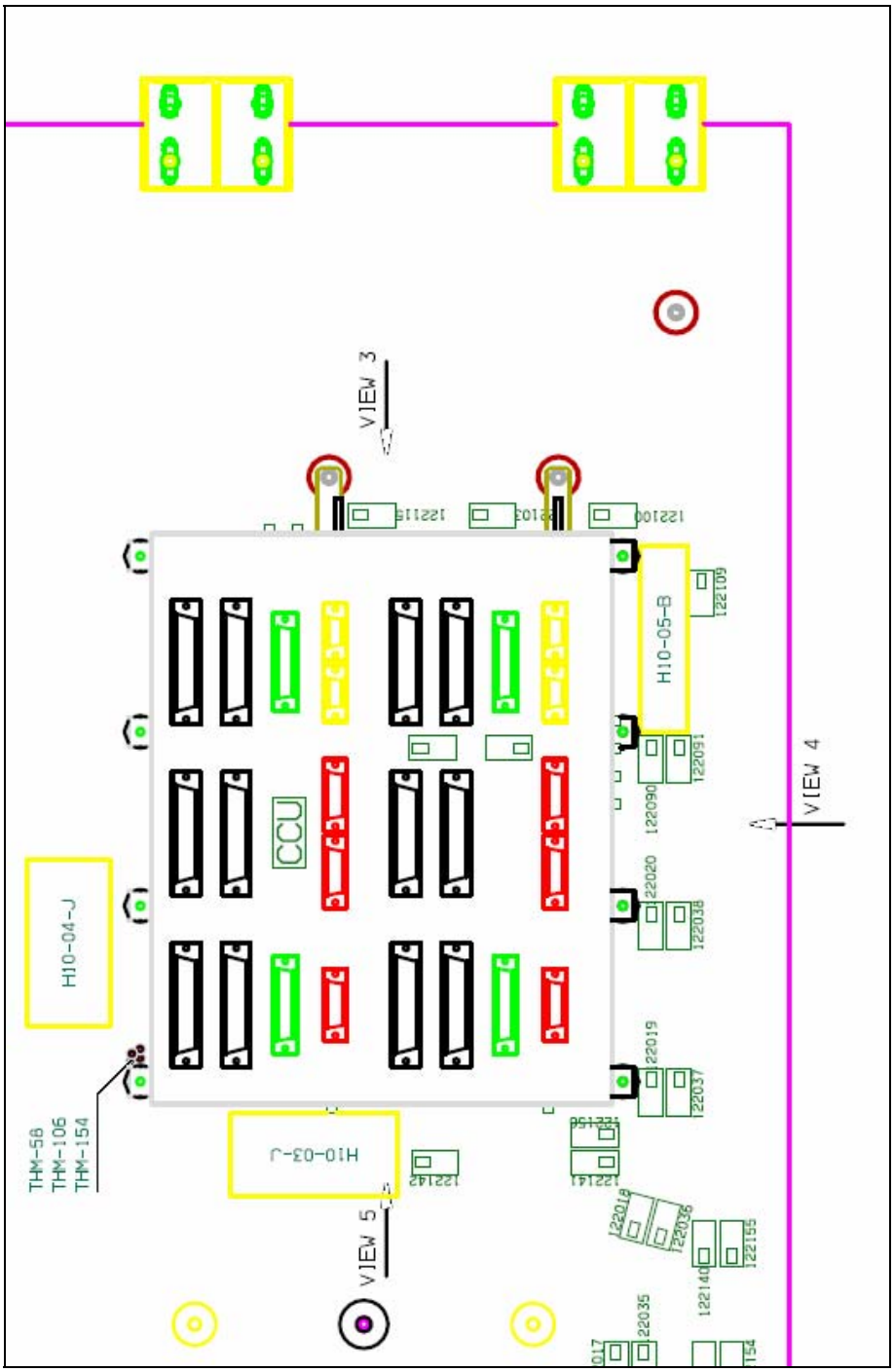


3.17 AAS Manufacturing & Attachment of PFM T-Sensors on SVM Instrument Lateral Panels after S/C-Harness , SIH & WIH Integration

AAS will complete the T-Sensor fixation and wire interconnection manufacturing after all other harness bundles are already integrated. The wiring will be directly connected without junctions like PIN/Sockets in between. 3x T-Sensors will be place in areas close to or on SVM Warm-units as roughly identified in NEXANS drawings, ref. HP-NXH-DW-1021 -1022 - 1023 - 1024.

3.17.1 PFM Temperature Sensors on SVM Lateral Panels

3.17.2 PFM THM-58 - 106 - 154 Sensor Allocation close to CCU-A



3.18 ESD Wrist-strap test prior & after PFM Warm-Unit Harness Connector Mating

Vor Betreten von ESD -Schutz-Zonen
immer Personenerdung überprüfen !!!!

Vorgeschriebene Kleidung/Ausrüstung beim Betreten von ESD-Schutz-Zonen:
- **ESD-Wrist Strap mit Spiralkabel**
- **ESD - Handschuhe**
- **ESD - Schuhe**

ESD-Personenerdungsmessungen
mit Wandgerät muß in 2 Schritten
durchgeführt werden:

Messung 1:
- **Wrist Strap an Wandgerät gemäß Bild anschließen**
- **Linke Metallelektrode drücken**

Es erfolgt Verifikation der Widerstandskette:
Wrist-Strap/Spiralkabel -- Handschuh -- Körper --- Handschuh

Es muß grüne "OK-LED" aufleuchten,
dann Messung 2 durchführen

Wenn rote LED leuchtet,
darf ESD-Schutz-Zone
NICHT BETRETEN WERDEN !!

In diesem Falle, Armband wechseln (aussondern) bzw. mit mobilem Gerät prüfen.
Überpfüfen, ob korrekte ESD-Handschuhe verwendet werden.
Dann Messung 1 wiederholen.

Messung 2:
- **Mit beiden ESD- Schuhen**
  auf Metallplatte stehen
- **Rechte Metallelektrode drücken**

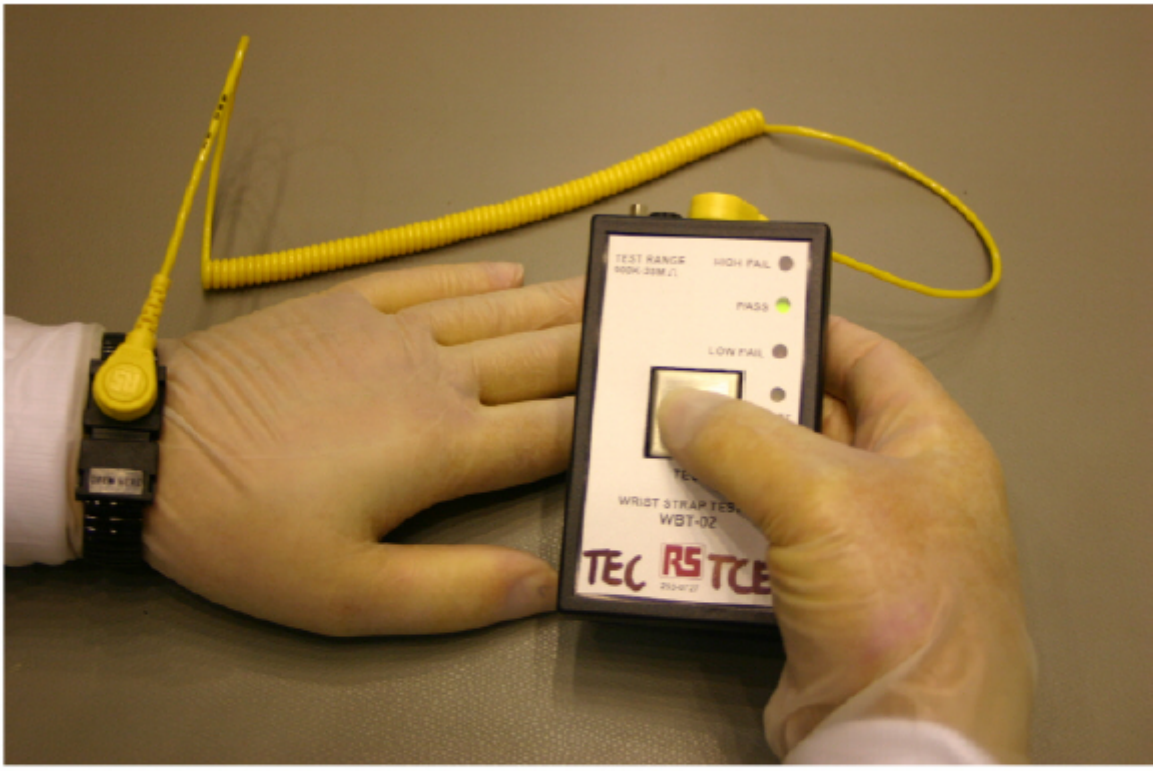
Es erfolgt Verifikation der Widerstandskette:
ESD Handschuh - - Körper/Hand - - ESD Schuhe

Wenn grüne "OK-LED" aufleuchtet,
darf ESD-Schutz-Zone betreten werden.

Wenn rote LED leuchtet,
darf ESD-Schutz-Zone
NICHT BETRETEN WERDEN !!

In diesem Falle überprüfen, ob korrekte Handschuhe getragen werden
oder ESD-Schuhe überprüfen/wechseln.
Dann Messung 2 wiederholen.

Wrist Strap Verifikation mit mobilem Testgerät:



1. Wrist-Strap (mit Spiralkabel) auf ESD-Handschuhe aufziehen
2. Spiralkabel an mobiles Testgerät anschließen
3. Metallelektrode drücken ☐

Es muß grüne "Pass-LED" leuchten, ⇒ PASS
dann darf Wrist Strap verwendet werden.

Wenn rote LED leuchtet, darf Wrist-Strap mit Spiralkabel nicht verwendet werden.
⇒ NO PASS

In diesem Falle, Wrist-Strap mit Spiralkabel aussondern für weitere spezielle Vermessungen.

3.19 Set-up

Environmental	Nominal	Actual	P	N
Clean Room Class	100.000			
Temperature	22°C ± 3°C			
Rel. Humidity	40% to 55%			
Pressure				

NO.	Daily Integration Record	Steps or §	Remarks

4 Conditions

4.1 Personnel

Responsibility	Name / Organization
Harness Attachment Integration	J. Lang & W. Hund
Support Engineer	U. Wössner
Support Engineer	T. Bayer
PA Responsible	B. Barlage / A. Zumstein
Customer Representative	Alcatel

4.2 Environmental

The SVM harness attachment activities shall be performed in the clean-room class 100.000.

4.3 General Precautions and Safety

Mixing of adhesive shall be not take place close to SVM allocated hardware.

4.3.1 General Safety Requirements, Precautions

Take care to connector and harness bundles during Harness attachment activities in parallel to ongoing SVM electrical SFT, that no I/F will get interrupted.

4.3.2 ESD constraints

Harness attachment operators shall wear grounding lanyards all time of handling on SVM panels & structures, due to already integrated PFM units within the SVM.

The operator shall follow the ESD rules for Herschel PLM and S/C integration Activities, ref. HP-2-ASED-PR-0062 (final review in progress, doc. not issued yet).

4.3.3 Special QA Requirements

Attachment preparations during anchor gluing preparations shall be performed by use of vacuum-cleaner all time.

SVM upper closure panel structural holes shall be covered by conductive protection foils. Where gluin g is in progress, special care shall be taken, that nothing will drop down into the SVM S/C.

4.3.3.1 Unpacking of Harness Bundles

Recommendation card / Fiche de recommandation
HERSCHEL SPIRE – DC harness
Ref : O6H026/NT/JCU/1497/06

Instruction of Unpacking (/ Consignes de déballage)

- Open the container in SAS clean room
  / Ouvrir le container dans le SAS de la salle blanche.
- Remove the 1st polyethylene in SAS before entry in clean room
  / Retirer la 1er housse en polyéthylène dans le SAS avant l'entrée en salle blanche
- Remove the 2nd polyethylene in the clean room
  / Retirer l'emballage (2ième poche en polyéthylène) en salle blanche
- The two packets should be cut along the length and along the width (2 sides) at the time of the unpacking
  / Les deux poches seront découpées sur la longueur et sur la largeur au moment du déballage

Disassembling / Handling (/ Démontage / Manipulation)

- Handling should be done carefully and with adapted protection (gloves)
  / Les manipulations se feront avec soin et avec les protections adaptées (gants)
- Using pliers and not a cuter for remove the tyraps that maintain the harness
  / Utiliser une pince coupante et pas un cutter pour enlever les tyraps qui maintiennent le harnais
- Caution do not hurt the over shielding braid
  / Attention de ne pas blesser la tresse de surblindage
- Withdraw the Teflon screws which fix the connectors to their dummy model
  / Retirer les vis téflon qui fixent les connecteurs sur la maquette d'équipement
- Handle the harnesses with precaution
  / Manipuler les harnais avec precaution
  - Do not shock / Ne pas choquer
  - Do not fold / Ne pas plier

Cleaning in clean room (/ Nettoyage en salle blanche)

- Cleaning can be done by aspiration with a vaccum cleaner
  / Un nettoyage pourra être fait par aspiration avec un aspirateur
- Cleaning can be done with a nonfluffy rag soaked with alcohol ISO
  / Un nettoyage pourra être fait avec un chiffon non pelucheux imbibé d'alcool ISO
- The backshells need to be cleaned with particular attention and they must be cleaned gently
  / Le nettoyage au niveau des capots sera realise avec une attention particulière

CAMERIN CABLAGE

Décember 05th 2006

4.4 GSE

Test Equipment List					
Item	**Manuf.**	**Model No.**	**SN No.**	**Invent No.**	**Next Calib.**
DVM					
Milli-Ohmmeter	Megger				

5 Verification Requirements and Test Criteria

5.1 Control of mechanical Fixation Tightness

After securing of the 2 adhesives, all ty-base plates and anchors samples shall be prove loaded by pull tests.

The EC 2216 gluing attachments shall withstand pull forces **> 12 Kp**

The glued Eccobond 57C gluing attachments shall withstand pull forces **> 10 Kp**

5.2 Control of electrical Bonding Attachments & Bond-straps

The PFM harness anchor bonding resistances of all bonded harness attachments glued with Eccobond 57C shall be controlled

Where conductive harness anchor bonding shall be performed, the either the center hole bonding for ENN 411 and for TC-105 , the 4-corner point methode shall be used. The conductivity between the harness anchor and the SVM CFRP structure shall be R **< 1 Ohm , if no harness bundle is attached. (bonding is pending on SVM CFRP surface) .**

For direct bolted harness anchors on SVM upper closure inserts, the bonding resistance shall be

In between the conductive SVM insert and the anchor R < 10 m Ohm.

Where temporary EQM or PFM SVM I/F-CB`s & all SVM I/F-CB Bond-straps are installed, the bonding resistance between I/F-CB and next SVM upper closure panel structural Ground insert , shall be R **< 2,5 m Ohm.**

6 Step by Step Procedure

Step-No.	Integration-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
001	**Integration Preparation for CCH & SPIRE SIH**						
002	Control SVM UCP harness attachments placed and those not attached are identified						
003	Control SVM lateral panel harness anchors in place and those not attached are identified						
004	Control Warm-unit I/F-Harness attachments anchors placed in correct position & Orientation. a) Dummy-WU: Stick TC-105 instead of ENN 411 for bundles with <10 mm dia. b) **PFM DCU SO-35:** Do not glue the stand-offs prior 1.Integration ! c) Check SPIRE SIH 3D Bundle Movement during LP tilting and adjust SO hight accordingly. [CATIA Design & Manufacturing-jig to PFM Structure Tolerances can react in a different 3D Harness movement]				**Reason:** Strong twice double-shielded bundle over-shields with internal isolation layer shall not get damaged at fixation or crack SO adhesive on fixation base.		
005	Compare Dummy Warm-unit connectors orientation , fixations and proper connector identifications						
006	Store harness bundles to be integrated on ESD table, perform connector inspection and correct labelling						
007	Check mass property is recorded, else perform bundle weighing and record						

Step-No.	Integration-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
008	Perform mass record at start of Harness integration and after installation for all miscellaneous parts for overall mass property control						
009	Perform mass record of typically used fixation H/W, as fixation bolts, washers, stand-off towers, base-plates, ty-raps of all sizes, TC-105 & ENN 411 for overall mass property control						
010	Harness anchors, attached after first I/F-Harness adjustments, shall be performed according HP-2-ASED-PR-0072. Fitting shall be recorded in this document in the PR variation sheets						
011	Check STM installed stand-off towers on PFM panels						
012	Install stand-off towers on **glued** base-plates, not installed , according drawing & integration log sheet	M4 x 8					
013	Torque fixation bolts on glued base-plates & Record in integration in Log-sheet	2,0 Nm					
014	Torque fixation bolts on SVM inserts & Record in integration in Log-sheet	2,3 Nm					
	CCH & SPIRE SIH Integration						
015	Operator wrist-band control before & after each installation shall be performed, if working on SVM panels already connected to active SVM PFM units						
016	Discharge harness bundle prior integration						

Step-No.	Integration-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
017	Mount on WU I/F-harness connectors the plastic dust covers a) Non conductive - if connected to Dummy Warm units b) Conductive ESD caps - if connected to PFM Warm units						
018	Mate Shorting-plugs on SVM I/F-CB connectors & ground it to SVM structure => ESD Protection for I/F-Harness handling & mating to PFM WU connectors						
019	Mark characteristic harness attachments along the path, to identify correct bundle splice locations on panel or where the bundle has to jump over / under other bundles						
020	Route I/F-Harness along ty-bases and fix the bundle temporary						
021	Control proper connector mating access to WU I/F connector a) **Dummy WU:** Connect I/F-Harness connector to WU fixation bolts, but perform hand-torque ONLY, due installed dust-cap ! b) **PFM WU** : Store I/F-connector on side of bundle for other bundles routed on top , but DO NOT Mate with WU ! c) **PFM WU Mating:** Connector Mating on request of AIT shall be performed only a) when operator is properly grounded by tested wrist-band and b) SIH Termination connector is placed c) CCH Shorting-plug are mated on SVM UCP I/F-connector-plugs d) SVM Panels are connected to Clean-ground				**NOTE:** In case the SVM is switched on , some connectors contacts are under voltage !!		

Step-No.	Integration-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
022	Perform connector srew-lock torque according Torque table - functional pending on connector type & assembly used						
023	Perform Integration of all I/F-Harness bundles according provided integration list and identified integration sequences Variations need shall be recorded by pictures and recorded						
024	Perform I/F-Harness Routing & temporary fixations of all SVM-Harness WU I/F-connector mating areas, w.r.t. Test-adaptor fitting						
025	Perform SVM LP tilting to control proper 3D I/F-Harness routing & movements a) between Lower closure panel (LCP) & Lateral panel (LP)						
026	Perform SVM LP tilting to control proper 3D I/F-Harness routing & movements b) between WU on +Xs LP through UCP cut-outs! **The SIH shall not get in touch with the -Xs SVM UCP corner !**						
027	Record I/F-Harness bundle integration status in log-sheet & open Work in AIT Log-book too for PA configuration control						
028	Perform pictures from each single harness bundle integrated for configuration and PA control						
029	Perform pictures of 3D I/F-Harness movements in area of LCP & LP						
030	Perform pictures of 3D I/F-Harness movements in area of LP & UCP						
031	Control all steps performed						
032							

Step-No.	Integration-Step-Description	Nominal Value	Tolerance	Actual Value		P	N
033	END						

7 Summary Sheets

7.1 Gluing Report

EADS astrium		**HERSCHEL**

Gluing Report

Panel / Unit PFM UCP

Adhesive Mixture No.	**Date**:
Start of mixing : **Date:** **Time:**	**End of mixing :** **Date: .** **Time:**
Start of gluing : **Date:** **Time:**	**End of gluing :** **Date:** . **Time:**

Items to be glued:

Mass of mixture at Start of attachment: _____

Mass of mixture rest after securing time : _____

Note:

1. **Securing time for EC2216 A/B glued base-plates with bolted SOT afterwards: => 30 h**
2. **Securing time for EC 2216 A/B glued SO hight > 20 mm & anchor on top : => 30 h**
3. **Securing time for EC2216 A/B glued TC-105 & ENN 411 : => 24 h**

Securing time for Eccobond 57 C : => 24 h

Operator: Date:	PA: Date:

Table 7.1-1: Gluing Report

7.2 Anchor Attachment Control Log

Anchor ID	Stand-off ID	Mixture Batch	R_ Bonding [m Ω]	Y/N	PA sig.

Table 7.2-1: Anchor Sample Pull-Test Summary

7.3 Anchor Sample Pull-Test Summary

Anchor	Sample Plate	Pullforce [> 10 Kp]	Pullforce [> 12 Kp]	Y/N	PA sig.

Table 7.3-1: Anchor Sample Pull-Test Summary

7.4 Stand-off Installation & Torque Control sheet

Anchor	Sample Plate	Pullforce [> 10 Kp]	Pullforce [> 12 Kp]	Y/N	PA sig.

Table 7.4-1: Anchor Sample Pull-Test Summary

7.5 PFM SVM -Z LP & UCP Harness Connector Mating Log

7.5.1 SPIRE DCU I/F- Harness Connectors

Chain	HRN_plug	ConType	Mated on Dummy	Female Screw-lock [0,45 Nm]	Male srew-lock [0,3 Nm]	Yes	No	EC2216 Locking	Date:	Name	PA
HS DCU											
NOM	122300 P01	DBMA-25P									
NOM	122300 P02	DBMA-25P									
NOM	122300 P03	DBMA-25S									
NOM	122300 P04	DBMA-25S									
NOM	122300 P05	DDMA-50S									
NOM	122300 P06	DDMA-50S									
NOM	122300 P07	DDMA-50S									
NOM	122300 P08	DDMA-50S									
NOM	122300 P09	DDMA-50S									
NOM	122300 P10	DDMA-50S									
NOM	122300 P11	DDMA-50S									
NOM	122300 P12	DDMA-50S									
NOM	122300 P13	DDMA-50S									
NOM	122300 P14	DDMA-50S									
NOM	122300 P15	DDMA-50S									
NOM	122300 P16	DDMA-50S									
HS DCU											
RED	122300 P17	DBMA-25P									
RED	122300 P18	DBMA-25P									
RED	122300 P19	DBMA-25S									
RED	122300 P20	DBMA-25S									
RED	122300 P21	DDMA-50S									
RED	122300 P22	DDMA-50S									
RED	122300 P23	DDMA-50S									
RED	122300 P24	DDMA-50S									
RED	122300 P25	DDMA-50S									
RED	122300 P26	DDMA-50S									
RED	122300 P27	DDMA-50S									
RED	122300 P28	DDMA-50S									
RED	122300 P29	DDMA-50S									
RED	122300 P30	DDMA-50S									
RED	122300 P31	DDMA-50S									
RED	122300 P32	DDMA-50S									

Table 7.5-1: SPIRE DCU I/F-Connector Mating Log

7.5.2 SPIRE DPU and FCU I/F-Harness Connectors

Chain	HRN_plug	ConType	Mated on Dummy	Female Screw-lock [0,45 Nm]	Male srew-lock [0,3 Nm]	Yes	No	EC2216 Locking	Date:	Name	PA
HS DPU											
NOM	122100 P01	DEMA-09S									
NOM	122100 P03	DEMA-09P									
NOM	122100 P04	DEMA-09P									
NOM	122100 P07	DBMA-25S									
NOM	122100 P08	DBMA-25S									
NOM	122100 P09	DBMA-25S									
DPU RED											
RED	122100 P02	DEMA-09S									
RED	122100 P05	DEMA-09P									
RED	122100 P06	DEMA-09P									
RED	122100 P10	DBMA-25S									
RED	122100 P11	DBMA-25S									
RED	122100 P12	DBMA-25S									
HS FCU											
NOM	122200 P01	DBMA-25P									
RED	122200 P02	DBMA-25P									
NOM	122200 P03	DBMA-25P									
RED	122200 P04	DBMA-25P									
NOM	122200 P05	DEMA-09S									
RED	122200 P06	DEMA-09S									
NOM	122200 P07	DBMA-25P									
RED	122200 P08	DBMA-25P									
NOM	122200 P09	DBMA-25P									
RED	122200 P10	DBMA-25P									
NOM	122200 P11	DBMA-25P									
RED	122200 P12	DBMA-25P									
NOM	122200 P13	DEMA-09P									
RED	122200 P14	DEMA-09P									
NC	122200 P15	N/A									
NC	122200 P16	N/A									

Chain	HRN_plug	ConType	Mated on Dummy	Female Screw-lock [0,45 Nm]	Male srew-lock [0,3 Nm]	Yes	No	EC2216 Locking	Date:	Name	PA
HS FCU continued											
NOM	122200 P17	DCMA-37P									
RED	122200 P18	DCMA-37P									
NOM	122200 P19	DCMA-37P									
RED	122200 P20	DCMA-37P									
NOM	122200 P21	DAMA-15P									
RED	122200 P22	DAMA-15P									
NOM	122200 P23	DDMA-50P									
RED	122200 P24	DDMA-50P									
NOM	122200 P25	DAMA-15P									
RED	122200 P26	DAMA-15P									
NC	122200 P27	N/A									
NC	122200 P28	N/A									
NOM	122200 P29	DCMA-37S									
RED	122200 P30	DCMA-37S									
NOM	122200 P31	DBMA-25S									
RED	122200 P32	DBMA-25S									
NOM	122200 P33	DAMA-15P									
RED	122200 P34	DAMA-15P									
NOM	122200 P35	DAMA-15S									
RED	122200 P36	DAMA-15S									
NC	122200 P37	N/A									
NC	122200 P38	N/A									
NOM	122200 P39	DEMA-09P									
RED	122200 P40	DEMA-09P									

Table 7.5-2: SPIRE SIH DPU & FCU I/F-Connector Mating Log

7.5.3 CCU-A & CCU-B I/F-Harness Connectors

Chain	HRN_plug	ConType	Mated on Dummy	Female Screw-lock [0,45 Nm]	Male srew-lock [0,3 Nm]	Yes	No	EC2216 Locking	Date:	Name	PA
CCU-A											
NOM	214100 P01	DDMA-50P									
NOM	214100 P02	DDMA-50P									
NOM	214100 P03	DDMA-50P									
NOM	214100 P04	DDMA-50P									
NOM	214100 P05	DDMA-50P									
NOM	214100 P06	DDMA-50P									
NOM	214100 P07	DBMA-25P									
NOM	214100 P08	DBMA-25P									
NOM	214100 P09	DEMA-09P									
NOM	214100 P10	DEMA-09P									
NOM	214100 P11	DAMA-15S									
NOM	214100 P12	DAMA-15P									
NOM	214100 P13	DAMA-15S									
CCU-B											
RED	214100 P01	DDMA-50P									
RED	214100 P02	DDMA-50P									
RED	214100 P03	DDMA-50P									
RED	214100 P04	DDMA-50P									
RED	214100 P05	DDMA-50P									
RED	214100 P06	DDMA-50P									
RED	214100 P07	DBMA-25P									
RED	214100 P08	DBMA-25P									
RED	214100 P09	DEMA-09P									
RED	214100 P10	DEMA-09P									
RED	214100 P11	DAMA-15S									
RED	214100 P12	DAMA-15P									
RED	214100 P13	DAMA-15S									

Table 7.5-3: CCH CCU-A/B I/F-Connector Mating Log

7.5.4 SPIRE SIH & CCH SVM UCP IF-CB Connectors

Chain	HRN_plug	ConType	Mated on EQM-CB	Female Screw-lock [0,45 Nm]	Male srew-lock [0,3 Nm]	Yes	No	EC2216 BS Locking	Date:	Name	PA
SVM I/F-CB of SIH HS DCU											
SS-02	312100 P1A	DEMA-09S									
SS-04	312100 P1B	DEMA-09S									
SS-05	312100 P02	R-24-35 SN									
SS-04	312100 P03	R-24-35 SN									
SS-03	312100 P04	R-24-35 SN									
SVM I/F-CB of SIH HS DCU											
SS-08	312200 P01	R-24-35 SN									
SS-09	312200 P02	R-24-35 SN									
SS-06	312200 P03	R-24-35 SN									
SS-07	312200 P04	R-24-35 SN									
SS-02	312200 P05	R-24-35 SN									
SS-01	312200 P06	R-24-35 SN									
SVM I/F-CB of SIH HS FCU											
SS-11	312300 P01	R-10-35 SB									
SS-13	312300 P02	R-10-35 SN									
SS-13	312300 P03	R-24-35 SN									
SS-11	312300 P04	R-24-35 SN									
SS-12	312300 P05	R-24-35 SN									
SS-10	312300 P06	R-24-35 SN									
SVM I/F-CB of CCH CCU-A											
SCA-1	**321200** P01	R-22-35 SN									
SCA-1	321200 P02	R-22-35 SN									
SCA-1	321200 P03	R-22-35 SN									
SCA-1	321200 P04	R-22-35 SN									
SCA-1	321200 P05	R-22-35 SN									
SCA-1	**316100** P01	R-12-35 SA									
SVM I/F-CB of CCH CCU-B											
SCB-1	**321300** P01	R-22-35 SN									
SCB-1	321300 P02	R-22-35 SN									
SCB-1	321300 P03	R-22-35 SN									
SCB-1	321300 P04	R-22-35 SN									
SCB-1	321300 P05	R-22-35 SN									
SCB-1	**316100** P02	R-12-35 SB									

Table 7.5-4: SPIRE SIH & CCH SVM UCP I/F-CB Connector Mating Log

7.5.5 SVM-Harness LCP IF-CB Connectors for -Z LP int. & ext. WU`s

Chain	HRN_plug	ConType	Mated on Dummy	Female Screw-lock [0,45 Nm]	Male srew-lock [0,3 Nm]	Yes	No	EC2216 Locking	Date:	Name	PA
SVM LCP I/F-CB for SPIRE Signal (4)											
	DB41 P01	DAMA-15S									
	DB41 P02	DAMA-15S									
	DB41 P03	DAMA-15S									
SVM LCP I/F-CB for SPIRE Power & DMS											
	DB04 P01	DCMA-37P									
	DB04 P02	DCMA-37P									
	DB04 P03	DCMA-37S									
	DB04 P04	DCMA-37S									
	DB04 P05	DEMA-09P									
	DB04 P06	DEMA-09P									
SVM LCP I/F-CB for SPIRE Power(2) & Signal (2)											
	DB42 P01	DEMA-09S									
	DB42 P02	DEMA-09S									
	DB42 P03	DEMA-09P									
	DB42 P04	DAMA-15S									

Table 7.5-5: SVM-Harness LCP I/F-CB Connector Mating Log

Procedure Variation Summary

	Test Change	Curr. No.: Date Page of	
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		
Prepared by:	Resp. Test Leader	Project Engineer	
PA/QA	Prime	Customer	

Table 7.5-6: Procedure Variation Sheet

7.6 Non Conformance Report (NCR) Summary

NCR - No.	NCR - Title	Date	Open Closed	PA sig.

Table 7.6-1: Non-Conformance Record Sheet

7.7 Harness Responsibility Matrix (IIDA Extract)

5.10.2.2 Harnesses responsibilities

The responsibility for procurement of the harness is as follows:

Item		Procurement Responsible	Routing
Spacecraft Harness		Alenia	Alenia (Nexans)
Instrument Warm Interconnecting Harness (WIH)		Instruments	Alenia (Nexans)
Cryoharness	Herschel	Astrium	Astrium
	Planck	Instruments	iterations Industry/Instruments

Table 5.10.2-1: Harnesses responsibilities

Concerning the design , routing and attachment, the routing of the harness routed in the SVM (S/C harness and WIH) is proposed by the SVM architect Alenia.

The design and routing of the Herschel cryoharness is made by Astrium. The interface between cryoharness and warm units is at the warm unit connector.

The following tables give the detailed responsibilities for each parts related to Harnesses.

ITEM		Preliminary Definition	Approval of prelim. Def.	Detailed definition	Approval before procurement	Procurement	Integration Herschel	Integration Planck
WIH - Instrument Warm Interconnect Harnesses (procured by Instruments)	Routing (harness routing, length & support definition).	ALS	ASPI / Instrum	ALS.	Instrum.+ASPI	**Harness : Instrum**	ASED	ASPI
	WIH connectors to WUs	**Instrum.**	N/A	**Instrum.**	N/A	**Instrum.**	ASED	ASPI
	Attachment part on SVM (paint free areas, tie-bases, insert, support, screw).	ALS	ASPI / Instrum	ALS	N/A	ALS	ALS	ALS
	Attachment part on WIH (tie-wraps).	ALS	ASPI/Instrum	ALS	ASPI/Instrum	ALS	ASED	ASPI
	Harness supports on WU.	ALS	ASPI/Instrum	ALS		ALS	ASED	ASPI
	Paint free areas on WU	ALS	ASPI/Instrum	ALS		**Instrum**	N/A	NA
	Brackets (including brackets grounding) for instruments panels dismountability purposes	ALS	ASPI/Instrum	ALS	N/A	ALS	ALS	ALS
	WIH intermediate connectors on brackets (disconnection needed for handling of panels).	**Instrum**	**Instrum**	**Instrum**	N/A	**Instrum**	ASED	ASPI
	Brackets fixation screws.	N/A	N/A	ALS	N/A	ALS	ALS	ALS
	Brackets fixation inserts on SVM.	N/A	N/A	ALS	N/A	ALS	ALS	ALS

Table 5.10.2-2: WIH detailed responsibilities

Table 7.7-1: Harness Responsibility Matrix - IIDA Extract of § 5.10.2.2

7.8 Sign-off Sheet

	Date	Signature
Test Manager		
Operator		
PA Responsible		
ESA Representative		

END OF DOCUMENT

	Name	Dep./Comp.		Name	Dep./Comp.
X	Alberti von Mathias Dr.	ASG22	X	Sonn Nico	ASG51
	Barlage Bernhard	AED13		Steininger Eric	AED32
X	Bayer Thomas	ASA42	X	Stritter Rene	AED11
	Brune Holger	ASA45		Suess Rudi	OTN/ASA44
	Edelhoff Dirk	AED2		Wagner Klaus	ASG22
X	Fehringer Alexander	ASG13	X	Wietbrock Walter	AET12
X	Fricke Wolfgang Dr.	AED 65		Wöhler Hans	ASG22
	Geiger Hermann	ASA42	X Color	Wössner Ulrich (single page copy)	ASE252
X	Grasl Andreas	OTN/ASA44	X	Zumstein, Armin	AED 11
	Grasshoff Brigitte	AET12			
	Hamer Simon	Terma			
X	Hendry David	Terma			
	Hengstler Reinhold	ASA42			
	Hinger Jürgen	ASG22			
X	Hohn Rüdiger	AED65			
	Hölzle Edgar Dr.	AED32			
	Huber Johann	ASA42			
X	Hund Walter	ASE252			
X	Idler Siegmund	AED312			
	Ivády von András	FAE12			
	Jahn Gerd Dr.	ASG22			
X	Kalde Clemens	ASM2			
X	Kameter Rudolf	OTN/ASA42			
	Kettner Bernhard	AET42			
X	Knoblauch August	AET32			
X	Koelle Markus	ASA43	X	Alcatel Alenia Space Cannes	ASP
	Koppe Axel	AED312	X	ESA/ESTEC	ESA
X	Kroeker Jürgen	AED65			
X	La Gioia Valentina	Terma			
X Color	Lang Jürgen (Ringgebunden)	ASE252		**Instruments:**	
X	Langenstein Rolf	AED15		MPE (PACS)	MPE
X	Langfermann Michael	ASA41	X	RAL (SPIRE)	RAL
	Maukisch Jan	ASA43		SRON (HIFI)	SRON
	Much Christoph	ASA43			
	Müller Jörg	ASA42			
X	Müller Martin	ASA43		**Subcontractors:**	
X	Peltz Heinz-Willi	ASG13		Alcatel Alenia Space Antwerp	ABSP
	Pietroboni Karin	AED65		Austrian Aerospace	AAE
	Platzer Wilhelm	AED2		Austrian Aerospace	AAEM
X	Reichle Konrad	ASA42		BOC Edwards	BOCE
	Runge Axel	OTN/ASA44		Dutch Space Solar Arrays	DSSA
	Schink Dietmar	AED32		EADS Astrium Sub-Subsyst. & Equipment	ASSE
X	Schlosser Christian	OTN/ASA44		EADS CASA Espacio	CASA
	Schmidt Rudolf	FAE12		EADS CASA Espacio	ECAS
X	Schmidt Thomas	ASA42		European Test Services	ETS
	Schuler Günter	ASA42		Patria New Technologies Oy	PANT
	Schweickert Gunn	ASG22		SENER Ingenieria SA	SEN