
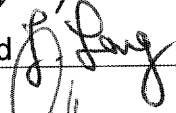

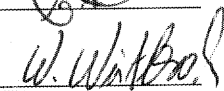
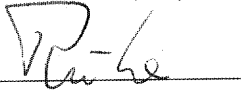


Title: **PFM Cryo-Harness Attachment and Coordinate List**

CI-No: 121430

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Issue	Date	Sheet	Description of Change	Release
1.0	21.10.03		First issue	

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1 Introduction

The Herschel instruments harness and cryo control harness data summarized within this document have been established as input for harness routing, manufacturing, mass determination, cable quantity and connector size and backshell size definition.

The harness bundle dimensions are calculated in accordance to cable data from GORE (GORE data sheets GSC-05-82-xxx-00).

The cable branch length have been taken from the 3D CATIA CH harness models. For row cable cutting an attrition of 300 mm have been taken on top.

All cable types and quantity of cables are specified in AD1 to AD7

The document contains three Harness Sections.

Cryostat Harness SVM Internal

Cryostat Harness CVV External

Cryostat Harness CVV Internal

Each Section include the CCH and SIH Harness. The SIH Harness is split up in the PACS, Spire and HIFI Harness. The HIFI Harness have two parts one to the OBA and one to the LOU.

Pro CH Branch from Source connector on the Warm Unit to Drain connector on the Cold Unit all Harness attachments per CH Branch is defined in this List.

2 Documents

2.1 Applicable Documents

- AD-1 First/Planck Instrument Interface Document – Part B, SCI-PT-IIDB/SPIRE-02124, Issue 2/0, 31/07/01
- AD-2 First/Planck Instrument Interface Document – Part B, SCI-PT-IIDB/PACS-02126, Issue 2/Rev.1 01/07/02
- AD-3 First/Planck Instrument Interface Document – Part B, SCI-PT-IIDB/HIFI-02125, Issue 2/2, 26/06/02
- AD-4 PACS Cryo-Harness Interface Meeting
HP-2-ASED-MN-0111
- AD-5 SPIRE Cryo-Harness Interface Meeting
HP-2-ASED-MN-0112
- AD-6 HIFI Cryo-Harness Interface Meeting
HP-2-ASED-MN-0114
- AD-7 HIFI LOU Cryo-Harness Interface Meeting
HP-2-ASED-MN-0123
- AD-8 CIDL
HP-2-ASED-LI-0022 Issue 3
- AD-9 PFM Cryo-Harness Branch Characteristics
HP-2-ASED-TN-0085 Issue 1

2.2 Reference Documents

- RD-1 HIFI Interconnection Diagram HP-2-ASED-ID-0090-01-0B
- RD-2 PACS Interconnection Diagram HP-2-ASED-ID-0089-01-0B
- RD-3 SPIRE Interconnection Diagram HP-2-ASED-ID-0091-01-0B
- RD-4 CCH Interconnection Diagram HP-2-ASED-ID-0088-01-0C
CCH Interconnection Diagram HP-2-ASED-ID-0088-02-0B
CCH Interconnection Diagram HP-2-ASED-ID-0088-03-0C
- RD-5 Cryo Harness Wires and Cable Configuration(HP-2-ASED-DS-0001 Iss. 1

3 General Remarks

3.1 Harness Branch Tables

The harness cable data from diameters and mass figures per branch have been used to calculate the harness according to RD-5. For connectors and back-shells, data sheets from the manufactures concerning the mechanical dimensions have been used.

The single harness bundles have been calculated for the following harness sections:

Cryo Harness SVM internal

Cryo-Harness CVV external

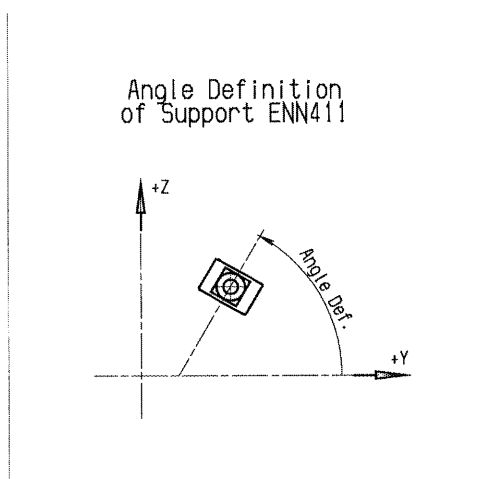
Cryo-Harness CVV internal

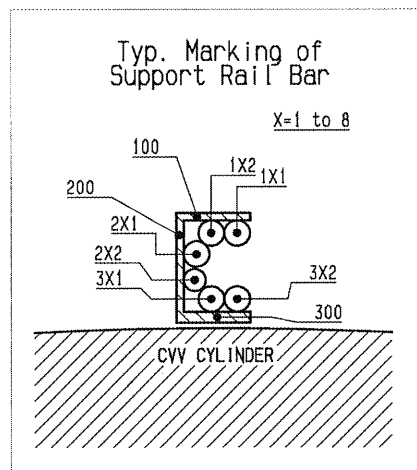
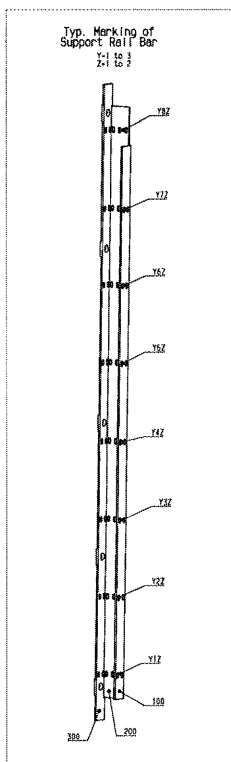
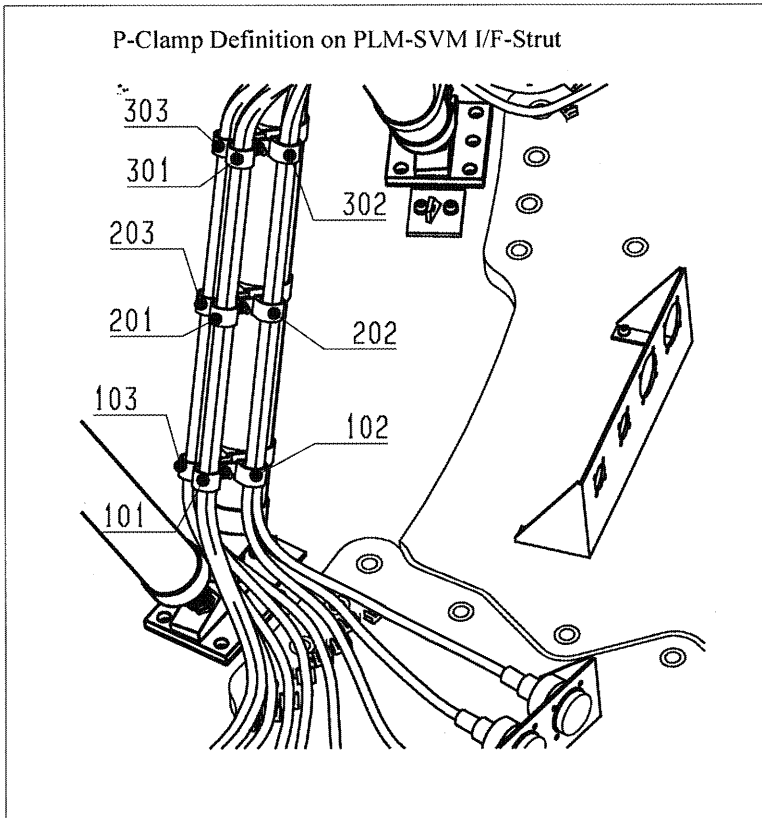
After finishing the single harness branches, CASA and ASSE will update the tables upon the H/W measured data, like bundle diameter, routed cable length resistance and mass.

3.2 Harness Branch Length

For the harness branch calculations, length determination performed on the CATIA model have been taken into account according to AD-8.

3.3 Harness Attachment Definitions





3.4 Conclusions

All defined Data shall be controlled by CASA/ASSE and compared with the manufactured harness branch H/W and attachment locations. This Data have to be provide to ASED for I/F Control and AIT activities for EQM and PFM

4 Annex 1 : Cryostat Harness SVM Internal CCH & SIH

(to be issued after design freeze)

5 Annex 2 : Cryostat Harness CVV External CCH & SIH

SVM-I/F Connector Bracket Jxx-Side

Cryo-Harness Attachment and Coordinate List
HP-2-ASED-TN-0086

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Harness Bundle :		SIH-IP-04		Coordinate :			Angle Orientation	P-Clamp Size
Location :		ID-Number :		Ref.: HPLM-AXS				
			X	Y	Z	[°]		
Connector Bracket on SVM		313100						
PLM-SVM I/F Strut		22	154.10	1035.89	368.56		MS21122-12	
PLM-SVM I/F Strut		22	430.36	945.90	443.28		MS21122-12	
Lower Bulkhead ENN411		211132	542.00	919.77	443.24	0		
Lower Bulkhead ENN411		211131	680.00	939.13	378.15	90		
Lower Bulkhead ENN411		211131	680.00	980.45	252.33	90		
Support Rail		2122	743.00	1002.25	169.60			
Support Rail		2122	1253.00	1002.25	169.60			
CVV Cylinder Connector		211121						

Harness Bundle :		SIH-IP-03		Coordinate :			Angle Orientation	P-Clamp Size
Location :		ID-Number :		Ref.: HPLM-AXS				
			X	Y	Z	[°]		
Connector Bracket on SVM		313100						
Support on SVM ENN411		360100	0.0	1133.17	351.02	85		
PLM-SVM I/F Strut		22	154.10	1035.89	368.56		MS21122-12	
PLM-SVM I/F Strut		22	430.36	945.90	443.28		MS21122-12	
Lower Bulkhead ENN411		211132	550.00	911.89	459.23	0		
CVV Cylinder ENN411		211123	695.50	924.33	381.60	90		
CVV Cylinder ENN411		211123	695.50	966.23	257.69	90		
Support Rail		2122	743.00	1002.25	169.60			
Support Rail		2122	1253.00	1002.25	169.60			
CVV Cylinder Connector		211121						

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Harness Bundle :		SIH-IP-14			
Location :	ID-Number :	Coordinate : Ref.: HPLM-AXS			P-Clamp Size
		X	Y	Z	Angle Orientation [°]
Connector Bracket on SVM	313100				
Support on SVM ENN411	360101	0.0	1117.60	399.08	95
PLM-SVM I/F Strut	22	154.10	1035.89	368.56	MS21122-12
PLM-SVM I/F Strut	22	430.36	949.90	443.28	MS21122-12
Lower Bulkhead ENN411	211132	550.00	911.89	459.23	0
CVV Cylinder ENN411	211123	695.50	924.33	381.60	90
CVV Cylinder ENN411	211123	695.50	966.23	257.69	90
Support Rail	2122	743.00	1002.25	169.60	
Support Rail	2122	1253.00	1002.25	169.60	
CVV Cylinder Connector	211121				
	P03				

Harness Bundle :		SIH-IP-15			
Location :	ID-Number :	Coordinate : Ref.: HPLM-AXS			P-Clamp Size
		X	Y	Z	Angle Orientation [°]
Connector Bracket on SVM	313100				
Support on SVM ENN411	360102	0.0	1080.74	532.48	27
Support on SVM ENN411	360122	0.0	880.98	821.02	75
PLM-SVM I/F Strut	24	146.02	764.62	841.95	MS21122-09
PLM-SVM I/F Strut	24	408.03	617.22	853.05	MS21122-09
Lower Bulkhead ENN411	211132	550.00	569.37	847.56	0
Support Rail	2400	743.00	559.50	848.67	
Support Rail	2400	1253.00	559.50	848.67	
CVV Cylinder ENN411	211121	1310.00	617.45	789.15	90
CVV Cylinder ENN411	211121	1310.00	756.68	656.84	90
CVV Cylinder Connector	211121				
	P04				

Cryo-Harness Attachment and Coordinate List
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Harness Bundle :		SIH-IP-05				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS	X	Y		
Connector Bracket on SVM	313200	J04				
Support on SVM ENN411	360112	112	0.0	1256.19	1075.32	45
Support on SVM ENN411	360128	128	0.0	801.60	935.40	58
PLM-SVM I/F Strut	24	104	122.46	660.22	879.58	MS21122-07
PLM-SVM I/F Strut	24	304	411.97	620.91	814.61	MS21122-07
Lower Bulkhead ENN411	211132	102	542.00	585.83	836.21	0
Support Rail	2400	311	743.00	559.50	848.67	
Support Rail	2400	361	1253.00	559.50	848.67	
CW Cylinder ENN411	211121	101	1310.00	683.88	732.34	90
CW Cylinder Connector	211121	P05				

Harness Bundle :		SIH-IP-06				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS	X	Y		
Connector Bracket on SVM	313200	J06				
Support on SVM ENN411	360114	114	0.0	1332.39	1105.03	40
Support on SVM ENN411	360130	130	0.0	775.60	963.49	60
PLM-SVM I/F Strut	24	104	122.46	660.22	879.58	MS21122-07
PLM-SVM I/F Strut	24	304	411.97	620.91	814.61	MS21122-07
Lower Bulkhead ENN411	211132	102	542.00	585.83	836.21	0
Support Rail	2400	212	743.00	559.50	848.67	
Support Rail	2400	262	1253.00	559.50	848.67	
CW Cylinder ENN411	211121	102	1310.00	617.45	789.15	90
CW Cylinder Connector	211121	P06				

Cryo-Harness Attachment and Coordinate List
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Harness Bundle :		SIH-IP-13				P-Clamp Size
Location :		Coordinate :				
ID-Number :		X	Y	Z	Angle Orientation [°]	
Connector Bracket on SVM	J06					
Support on SVM ENN411	313100	0.0	1086.99	553.91	32	
Support on SVM ENN411	360103	0.0	870.85	839.43	80	
PLM-SVM I/F Strut	360123	146.02	764.62	841.95		MS21122-09
PLM-SVM I/F Strut	24	408.03	617.22	853.05		MS21122-09
Lower Bulkhead ENN411	24	550.00	569.37	847.56	0	
Support Rail	211132	743.00	559.50	848.67		
Support Rail	2400	1253.00	559.50	848.67		
CVV Cylinder Connector	261					
	P07					

Harness Bundle :		SIH-IP-02				P-Clamp Size
Location :		Coordinate :				
ID-Number :		X	Y	Z	Angle Orientation [°]	
Connector Bracket on SVM	J07					
Support on SVM ENN411	313100	0.0	1082.57	592.99	32	
Support on SVM ENN411	360104	0.0	858.03	858.78	85	
PLM-SVM I/F Strut	360124	140.28	698.25	880.47		MS21122-12
PLM-SVM I/F Strut	24	410.95	569.46	893.14		MS21122-12
Lower Bulkhead ENN411	24	550.00	467.66	907.60	0	
CVV Cylinder ENN411	211132	695.50	375.69	926.74	90	
Support Rail	2526	743.00	235.50	988.84		
Support Rail	2526	1253.00	235.50	988.84		
CVV Cylinder Connector	161					
	P08					

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Harness Bundle : Location :	SIH-IP-01 ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS				
		X	Y	Z		
Connector Bracket on SVM	313100					
Support on SVM ENN411	360105	0.0	1093.71	615.91	32	
Support on SVM ENN411	360125	0.0	848.10	878.3	90	
PLM-SVM I/F Strut	24	140.28	698.25	880.47		MS21122-12
PLM-SVM I/F Strut	24	410.95	569.46	893.14		MS21122-12
Lower Bulkhead ENN411	211132	550.00	467.66	907.60	0	
CVV Cylinder ENN411	211123	695.50	375.69	926.74	90	
Support Rail	2400	743.00	235.50	988.84		
Support Rail	2400	1253.00	235.50	988.84		
CVV Cylinder Connector	211121					

Harness Bundle : Location :	SIH-IP-07 ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS				
		X	Y	Z		
Connector Bracket on SVM	313200					
Support on SVM ENN411	360114	0.0	1332.39	1105.03	40	
Support on SVM ENN411	360130	0.0	775.60	963.49	60	
PLM-SVM I/F Strut	24	122.46	660.22	879.58		MS21122-07
PLM-SVM I/F Strut	24	411.97	620.91	814.61		MS21122-07
Lower Bulkhead ENN411	211132	542.00	554.40	857.37	0	
CVV Cylinder ENN411	211123	695.50	501.02	865.44	90	
CVV Cylinder ENN411	211123	695.50	375.69	926.74	90	
Support Rail	2526	743.00	235.50	988.84		
Support Rail	2526	1253.00	235.50	988.84		
CVV Cylinder Connector	211121					

Cryo-Harness Attachment and Coordinate List
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Harness Bundle :		SIH-IP-08		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	313200							
Support on SVM ENN411	360110	0.0	1215.70	1034.98			50	
Support on SVM ENN411	360126	0.0	829.06	903.69			120	
PLM-SVM I/F Strut	24	123.93	665.56	897.74				MS21122-09
PLM-SVM I/F Strut	24	394.60	536.78	910.41				MS21122-09
Lower Bulkhead ENN411	211132	542.00	444.19	919.31			0	
Lower Bulkhead ENN411	211131	680.00	375.69	926.74			90	
Lower Bulkhead ENN411	211131	680.00	209.06	977.90			90	
Lower Bulkhead ENN411	211131	680.00	36.07	999.35			90	
Lower Bulkhead ENN411	211131	680.00	-138.01	990.43			90	
Lower Bulkhead ENN411	211131	680.00	-291.25	956.65			90	
Support Rail	2728	743.00	-357.71	951.48				
Support Rail	2728	1253.00	-357.71	951.48				
CW Cylinder ENN411	211121	1310.00	-207.64	980.25			90	
CW Cylinder Connector	211121							

Harness Bundle :		SIH-IP-09		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	313200							
Support on SVM ENN411	360111	0.0	1235.12	1059.51			45	
Support on SVM ENN411	360127	0.0	806.12	915.65			120	
PLM-SVM I/F Strut	24	123.93	665.56	897.74				MS21122-09
PLM-SVM I/F Strut	24	394.60	536.78	910.41				MS21122-09
Lower Bulkhead ENN411	211132	542.00	444.19	919.31			0	
Lower Bulkhead ENN411	211131	680.00	375.69	926.74			90	
Lower Bulkhead ENN411	211131	680.00	209.06	977.90			90	
Lower Bulkhead ENN411	211131	680.00	36.07	999.35			90	
Lower Bulkhead ENN411	211131	680.00	-138.01	990.43			90	
Lower Bulkhead ENN411	211131	680.00	-291.25	956.65			90	
Support Rail	2728	743.00	-357.71	951.48				
Support Rail	2728	1253.00	-357.71	951.48				
CW Cylinder ENN411	211121	1310.00	-308.97	953.18			90	
CW Cylinder Connector	211121							

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Harness Bundle :		SIH-IP-10		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	313200							
Support on SVM ENN411	360111	0.0	1235.12	1059.51		45		
Support on SVM ENN411	360127	0.0	806.12	915.65		120		
PLM-SVM I/F Strut	24	123.93	665.56	897.74			MS21122-09	
PLM-SVM I/F Strut	24	394.60	536.78	910.41			MS21122-09	
Lower Bulkhead ENN411	211132	106	444.19	919.31		0		
Lower Bulkhead ENN411	211131	102	680.00	375.69		90		
Lower Bulkhead ENN411	211131	103	680.00	209.06		90		
Lower Bulkhead ENN411	211131	104	680.00	36.07		90		
Lower Bulkhead ENN411	211131	200	680.00	-138.01		90		
Lower Bulkhead ENN411	211131	201	680.00	-291.25		90		
Support Rail	2728	211	743.00	-357.71		951.48		
Support Rail	2728	261	1253.00	-357.71		951.48		
CW Cylinder Connector	211121	P13						

Harness Bundle :		SIH-IP-11		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	313200							
Support on SVM ENN411	360113	0.0	1301.38	1086.69		45		
Support on SVM ENN411	360129	0.0	797.87	954.40		120		
PLM-SVM I/F Strut	24	123.93	665.56	897.74			MS21122-09	
PLM-SVM I/F Strut	24	394.60	536.78	910.41			MS21122-09	
Lower Bulkhead ENN411	211132	106	444.19	919.31		0		
Lower Bulkhead ENN411	211131	102	680.00	375.69		90		
Lower Bulkhead ENN411	211131	103	680.00	209.06		90		
Lower Bulkhead ENN411	211131	104	680.00	36.07		90		
Lower Bulkhead ENN411	211131	200	680.00	-138.01		90		
Lower Bulkhead ENN411	211131	201	680.00	-291.25		90		
Support Rail	2728	212	743.00	-357.71		951.48		
Support Rail	2728	262	1253.00	-357.71		951.48		
CW Cylinder ENN411	211121	203	1471.50	-426.83		904.33		90
CW Cylinder ENN411	211121	204	1471.50	-489.89		871.78		90
CW Cylinder Connector	211121	P14						

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Harness Bundle :		SIH-IP-12		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	313200							
Support on SVM ENN411	360113	0.0	1301.38	1086.69			45	
Support on SVM ENN411	360129	0.0	797.87	954.40			120	
PLM-SVM I/F Strut	24	123.93	665.56	897.74				MS21122-09
PLM-SVM I/F Strut	24	394.60	536.78	910.41				MS21122-09
Lower Bulkhead ENN411	211132	542.00	444.19	919.31			0	
Lower Bulkhead ENN411	211131	680.00	375.69	926.74			90	
Lower Bulkhead ENN411	211131	680.00	209.06	977.90			90	
Lower Bulkhead ENN411	211131	680.00	36.07	999.35			90	
Lower Bulkhead ENN411	211131	680.00	-138.01	990.43			90	
Lower Bulkhead ENN411	211131	680.00	-291.25	956.65			90	
Support Rail	2728	743.00	-357.71	951.48				
Support Rail	2728	1253.00	-357.71	951.48				
CW Cylinder ENN411	211121	1471.50	-426.83	904.33			90	
CW Cylinder ENN411	211121	1478.00	-574.15	821.19			90	
CW Cylinder Connector	211121							

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Harness Bundle :		SIH-IH-02		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	311100							
Support on SVM ENN411	360205	0.0	-919.49	1058.80		75		
Support on SVM ENN411	360200	0.0	-803.38	957.32		45		
PLM-SVM I/F Strut	29							
PLM-SVM I/F Strut	29							
Lower Bulkhead ENN411	211132	550.00	-567.96	848.69		0		
Support Rail	2900	743.00	-547.72	856.31				
Support Rail	2900	1253.00	-547.72	856.31				
CVV Cylinder ENN411	211121	1310.00	-588.39	811.05		90		
CVV Cylinder ENN411	211121	1310.00	-669.95	745.10		90		
CVV Cylinder Connector	211121							

Harness Bundle :		SIH-IH-05		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	311100							
Support on SVM ENN411	360206	0.0	-918.89	1022.40		75		
Support on SVM ENN411	360201	0.0	-808.47	928.50		45		
PLM-SVM I/F Strut	29							
PLM-SVM I/F Strut	29							
Lower Bulkhead ENN411	211132	550.00	-567.96	848.69		0		
Support Rail	2900	743.00	-547.72	856.31				
Support Rail	2900	1253.00	-547.72	856.31				
CVV Cylinder ENN411	211121	1310.00	-588.39	811.05		90		
CVV Cylinder ENN411	211121	1310.00	-755.76	657.90		90		
CVV Cylinder Connector	211121							

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Harness Bundle : Location :	SIH-IH-01 ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS X	Y	Z		
Connector Bracket on SVM	311100					
Support on SVM ENN411	360202	0.0	-824.55	910.80	50	
PLM-SVM I/F Strut	30					
PLM-SVM I/F Strut	30					
Lower Bulkhead ENN411	211132	542.00	-895.80	919.31	90	
Lower Bulkhead ENN411	211131	680.00	-926.74	375.69	90	
Lower Bulkhead ENN411	211131	680.00	-965.05	262.05	90	
Support Rail	3132	743.00	-993.75	213.88		
Support Rail	3132	1253.00	-993.75	213.88		
CW Cylinder Connector	211121					

Harness Bundle : Location :	SIH-IH-03 ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS X	Y	Z		
Connector Bracket on SVM	311100					
Support on SVM ENN411	360203	0.0	-830.97	889.53	60	
PLM-SVM I/F Strut	30					
PLM-SVM I/F Strut	30					
Lower Bulkhead ENN411	211132	542.00	-895.80	919.31	90	
Lower Bulkhead ENN411	211131	680.00	-926.74	375.69	90	
Lower Bulkhead ENN411	211131	680.00	-965.05	262.05	90	
Support Rail	3132	743.00	-993.75	213.88		
Support Rail	3132	1253.00	-993.75	213.88		
CW Cylinder Connector	211121					

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Harness Bundle :		SIH-IH-04			
Location :	ID-Number :	Coordinate :			P-Clamp Size
		X	Y	Z	Angle Orientation [°]
Connector Bracket on SVM	311100				
Support on SVM ENN411	360204	0.0	-850.88	875.04	60
PLM-SVM I/F Strut	30				
PLM-SVM I/F Strut	300				
Lower Bulkhead ENN411	211132	542.00	-895.80	919.31	90
Lower Bulkhead ENN411	211131	680.00	-926.74	375.69	90
Lower Bulkhead ENN411	211131	680.00	-965.05	262.05	90
Support Rail	3132	743.00	-993.75	213.88	
Support Rail	3132	1253.00	-993.75	213.88	
CW Cylinder Connector	211121				

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Harness Bundle :		SIH-IS-04		Coordinate :			Angle Orientation	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS	[°]		
Connector Bracket on SVM	312100							
Support on SVM ENN411	360301	0.0	-642.63	-964.32		105		
Support on SVM ENN411	360304	0.0	-388.41	-1042.53		90		
PLM-SVM I/F Strut	38	169.05	-275.35	-976.92			MS21122-12	
PLM-SVM I/F Strut	38	434.13	-145.92	-979.85			MS21122-12	
Lower Bulkhead ENN411	211132	542.00	-86.44	-1017.33		0		
Lower Bulkhead ENN411	211131	680.00	-142.49	-989.80		90		
Lower Bulkhead ENN411	211131	680.00	-645.35	-763.89		90		
Lower Bulkhead ENN411	211131	680.00	-940.83	-338.87		90		
Support Rail	3334	743.00	-986.93	-243.40				
Support Rail	3334	1253.00	-986.93	-243.40				
CVV Cylinder Connector	211121							

Harness Bundle :		SIH-IS-05		Coordinate :			Angle Orientation	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS	[°]		
Connector Bracket on SVM	312100							
Support on SVM ENN411	360300	0.0	-672.56	-940.77		110		
Support on SVM ENN411	360304	0.0	-388.41	-1042.53		90		
PLM-SVM I/F Strut	38	169.05	-275.35	-976.92			MS21122-12	
PLM-SVM I/F Strut	38	434.13	-145.92	-979.85			MS21122-12	
Lower Bulkhead ENN411	211132	542.00	-86.44	-1017.33		0		
Lower Bulkhead ENN411	211131	680.00	-142.49	-989.80		90		
Lower Bulkhead ENN411	211131	680.00	-645.35	-763.89		90		
Lower Bulkhead ENN411	211131	680.00	-940.83	-338.87		90		
Support Rail	3334	743.00	-986.93	-243.40				
Support Rail	3334	1253.00	-986.93	-243.40				
CVV Cylinder Connector	211121							

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SIH-IS-06		Coordinate :					Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	312200							
Support on SVM ENN411	360308	0.0	-301.86	-1077.23		125		
PLM-SVM I/F Strut	38	162.35	-261.23	-959.43			MS21122-12	
PLM-SVM I/F Strut	38	427.43	-131.80	-962.36			MS21122-12	
Lower Bulkhead ENN411	211132	550.00	-67.73	-1018.75		0		
Support Rail	3800	743.50	-73.28	-1013.86				
Support Rail	3800	1422.50	-73.28	-1013.86				
CW Cylinder ENN411	211121	1478.00	-191.88	-983.46		90		
CW Cylinder ENN411	211121	1471.50	-457.62	-889.15		90		
CW Cylinder ENN411	211121	1471.50	-751.65	-659.56		90		
CW Cylinder Connector	211121							

SIH-IS-07		Coordinate :					Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	312200							
Support on SVM ENN411	360309	0.0	-283.91	-1087.10		130		
PLM-SVM I/F Strut	38	155.26	-247.76	-1006.61			MS21122-12	
PLM-SVM I/F Strut	38	420.33	-118.33	-1009.54			MS21122-12	
Lower Bulkhead ENN411	211132	550.00	-67.73	-1018.75		0		
Support Rail	3800	743.50	-73.28	-1013.86				
Support Rail	3800	1422.50	-73.28	-1013.86				
CW Cylinder ENN411	211121	1478.00	-191.88	-983.46		90		
CW Cylinder ENN411	211121	1471.50	-457.62	-889.15		90		
CW Cylinder Connector	211121							

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Harness Bundle :		SIH-IS-03						
Location :	ID-Number :	Coordinate :			Angle	P-Clamp		
		Ref.: HPLM-AXS			Orientation	Size		
		X	Y	Z	[°]			
Connector Bracket on SVM	312100							
Support on SVM ENN411	360303	0.0	-560.88	-1006.93	105			
Support on SVM ENN411	360305	0.0	-373.57	-1057.26	105			
PLM-SVM I/F Strut	38	169.05	-275.35	-976.92		MS21122-12		
PLM-SVM I/F Strut	38	434.13	-145.92	-979.85		MS21122-12		
Lower Bulkhead ENN411	211132	542.00	-86.44	-1017.33	0			
Support Rail	3800	743.50	-73.28	-1013.86				
Support Rail	3800	1228.50	-73.28	-1013.86				
CVV Cylinder ENN411	211121	1310.00	-226.09	-976.16	90			
CVV Cylinder Connector	211121							

Harness Bundle :		SIH-IS-08						
Location :	ID-Number :	Coordinate :			Angle	P-Clamp		
		Ref.: HPLM-AXS			Orientation	Size		
		X	Y	Z	[°]			
Connector Bracket on SVM	312200							
Support on SVM ENN411	360306	0.0	-356.52	-1067.14	110			
PLM-SVM I/F Strut	38	162.35	-261.23	-959.43		MS21122-12		
PLM-SVM I/F Strut	38	427.43	-131.80	-962.36		MS21122-12		
Lower Bulkhead ENN411	211132	542.00	-86.44	-1017.33	0			
Support Rail	3800	743.50	-73.28	-1013.86				
Support Rail	3800	1228.50	-73.28	-1013.86				
CVV Cylinder Connector	211121							

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Harness Bundle :		SIH-IS-09		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z				
Connector Bracket on SVM	312200							
Support on SVM ENN411	360307	0.0	-325.64	-1079.88		115		
PLM-SVM I/F Strut	38	162.35	-261.23	-959.43			MS21122-12	
PLM-SVM I/F Strut	38	427.43	-131.80	-962.36			MS21122-12	
Lower Bulkhead ENN411	211132	550.00	-67.73	-1018.75		0		
Support Rail	3800	743.50	-73.28	-1013.86				
Support Rail	3800	1228.50	-73.28	-1013.86				
CVV Cylinder Connector	211121							

Harness Bundle :		SIH-IS-13		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z				
Connector Bracket on SVM	312300							
Support on SVM ENN411	360400	0.0	346.43	-1062.91		50		
PLM-SVM I/F Strut	39	159.90	245.65	-997.11			MS21122-10	
PLM-SVM I/F Strut	39	429.46	114.03	-1000.09			MS21122-10	
Lower Bulkhead ENN411	211132	542.00	82.16	-1017.69		0		
Support Rail	3900	743.50	69.83	-1014.10				
Support Rail	3900	1228.50	69.83	-1014.10				
CVV Cylinder Connector	211121							

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Harness Bundle :		SIH-IS-11				
Location :	ID-Number :	Coordinate : Ref.: HPLM-AXS			Angle Orientation [°]	P-Clamp Size
		X	Y	Z		
Connector Bracket on SVM	312300					
Support on SVM ENN411	360401	0.0	376.88	-1055.01	50	
PLM-SVM I/F Strut	39	159.90	245.65	-997.11		MS21122-10
PLM-SVM I/F Strut	301	429.46	114.03	-1000.09		MS21122-10
Lower Bulkhead ENN411	211132	542.00	82.16	-1017.69	0	
Support Rail	3900	743.50	69.83	-1014.10		
Support Rail	3900	1228.50	69.83	-1014.10		
CVV Cylinder ENN411	211121	1310.00	138.76	-992.35	90	
CVV Cylinder Connector	211121	P30				

Harness Bundle :		SIH-IS-02				
Location :	ID-Number :	Coordinate : Ref.: HPLM-AXS			Angle Orientation [°]	P-Clamp Size
		X	Y	Z		
Connector Bracket on SVM	312200					
Support on SVM ENN411	360310	0.0	-259.11	-1085.30	145	
PLM-SVM I/F Strut	38	155.26	-247.76	-1006.61		MS21122-12
PLM-SVM I/F Strut	38	420.33	-118.33	-1009.54		MS21122-12
Lower Bulkhead ENN411	211132	550.0	64.57	-1018.96	0	
Support Rail	3900	743.50	69.83	-1014.10		
Support Rail	3900	1422.50	69.83	-1014.10		
CVV Cylinder ENN411	211121	1478.00	191.19	-983.59	90	
CVV Cylinder Connector	211121	P31				

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Harness Bundle :		SIH-IS-01		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	312200							
Support on SVM ENN411	360311	0.0	-259.11	-1085.30			160	
PLM-SVM I/F Strut	38	155.26	-247.76	-1006.61				MS21122-12
PLM-SVM I/F Strut	38	420.33	-118.33	-1009.54				MS21122-12
Lower Bulkhead ENN411	211132	550.0	64.57	-1018.96			0	
Support Rail	3900	743.50	69.83	-1014.10				
Support Rail	3900	1422.50	69.83	-1014.10				
CW Cylinder ENN411	211121	1478.00	191.19	-983.59			90	
CW Cylinder ENN411	211121	1471.50	453.99	-891.01			90	
CW Cylinder Connector	211121							

Harness Bundle :		SIH-IS-12		Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS			
Connector Bracket on SVM	312300							
Support on SVM ENN411	360402	0.0	431.48	-1045.49			70	
PLM-SVM I/F Strut	40	136.90	359.00	-986.61				MS21122-07
PLM-SVM I/F Strut	40	411.94	462.34	-925.97				MS21122-07
Lower Bulkhead ENN411	211132	550.00	559.89	-863.79			0	
Lower Bulkhead ENN411	211131	680.00	550.96	-834.53			0	
Support Rail	4041	743.00	522.76	-871.77				
Support Rail	4041	1253.00	522.76	-871.77				
CW Cylinder ENN411	211121	1310.00	574.15	-821.19			90	
CW Cylinder Connector	211121							

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Harness Bundle :		SIH-IS-10			Coordinate :			Angle Orientation [°]	P-Clamp Size
Location :	ID-Number :	X	Y	Z	Ref.: HPLM-AXS				
Connector Bracket on SVM	312300								
Support on SVM ENN411	360403	0.0	470.59	-1033.36			70		
PLM-SVM I/F Strut	40	136.90	359.00	-986.61				MS21122-07	
PLM-SVM I/F Strut	40	411.94	462.34	-925.97			0	MS21122-07	
Lower Bulkhead ENN411	211132	550.00	559.89	-853.79			0		
Lower Bulkhead ENN411	211131	680.00	550.96	-834.53			0		
Support Rail	4041	743.00	522.76	-871.77					
Support Rail	4041	1253.00	522.76	-871.77					
CW Cylinder ENN411	211121	1310.00	574.15	-821.19			90		
CW Cylinder ENN411	211121	1310.00	669.95	-745.10			90		
CW Cylinder Connector	211121								

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Harness Bundle :		CCH-ICA-10						
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size		
		Ref.: HPLM-AXS	X	Y			Z	
Connector Bracket on SVM	321200							
Support on SVM ENN411	360404		0.0	775.14	-818.64	170		
PLM-SVM I/F Strut	41							
PLM-SVM I/F Strut	41							
Lower Bulkhead ENN411	211132		542.00	572.53	-845.37	0		
CVV Cylinder ENN411	211123		695.500	600.88	-799.34	90		
CVV Cylinder ENN411	211123		695.500	753.94	-656.94	90		
CVV Cylinder ENN411	211123		695.500	808.33	-588.73	90		
Support Rail	4200		743.00	870.19	-525.39			
Support Rail	4200		1253.00	870.19	-525.39			
CVV Cylinder Connector	211121							

Harness Bundle :		CCH-ICB-10						
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size		
		Ref.: HPLM-AXS	X	Y			Z	
Connector Bracket on SVM	321300							
Support on SVM ENN411	360409		0.0	900.78	-703.42	70		
PLM-SVM I/F Strut	42							
PLM-SVM I/F Strut	42							
Lower Bulkhead ENN411	211132		550.00	847.52	-569.34	0		
Support Rail	4200		743.00	870.19	-525.39			
Support Rail	4200		1253.00	870.19	-525.39			
CVV Cylinder ENN411	211121		1471.50	869.21	-494.45	90		
CVV Cylinder ENN411	211121		1471.50	904.33	-426.83	90		
CVV Cylinder Connector	211121							

Harness Bundle :		CCH-ICE-10				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS	X	Y		
Connector Bracket on SVM	315100					
PLM-SVM I/F Strut	43					
PLM-SVM I/F Strut	43					
Lower Bulkhead ENN411	211132		542.00	918.51	-445.85	0
Lower Bulkhead ENN411	211131		680.00	920.05	-391.81	90
Support Rail	4344		743.00	984.58	-252.72	
Support Rail	4344		1253.00	984.58	-252.72	
CVV Cylinder Connector	211121					

Harness Bundle :		CCH-ICE-20				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS	X	Y		
Connector Bracket on SVM	315100					
PLM-SVM I/F Strut	43					
PLM-SVM I/F Strut	43					
Lower Bulkhead ENN411	211132		542.00	918.51	-445.85	0
Lower Bulkhead ENN411	211131		680.00	920.05	-391.81	90
Support Rail	4344		743.00	984.58	-252.72	
Support Rail	4344		1253.00	984.58	-252.72	
CVV Cylinder Connector	211121					

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Harness Bundle :		CCH-ICE-11				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		X	Y	Z		
Connector Bracket on SVM	315100					
PLM-SVM I/F Strut	44					
PLM-SVM I/F Strut	44					
Lower Bulkhead ENN411	211132	542.00	1019.21	-60.41	0	
Lower Bulkhead ENN411	211131	680.00	998.06	-62.22	0	
CW Cylinder ENN411	211123	865.00	982.80	-37.10	47	
CVV Cylinder ENN411	211123	865.00	957.79	145.06	12	
CVV Cylinder ENN411	211123	865.00	951.12	250.28	152	
CVV Cylinder Connector	211123	P01				

Harness Bundle :		CCH-ICE-12				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		X	Y	Z		
Connector Bracket on SVM	315100					
PLM-SVM I/F Strut	44					
PLM-SVM I/F Strut	44					
Lower Bulkhead ENN411	211132	542.00	1019.21	-60.41	0	
Lower Bulkhead ENN411	211131	680.00	998.06	-62.22	0	
CVV Cylinder ENN411	211123	865.00	982.80	-37.10	47	
CVV Cylinder ENN411	211123	865.00	957.79	145.06	12	
CVV Cylinder ENN411	211123	865.00	918.04	309.17	22	
CVV Cylinder ENN411	211123	865.00	850.41	463.89	32	
CVV Cylinder ENN411	211123	865.00	819.45	543.85	171	
CVV Cylinder Connector	211123	P02				

Harness Bundle :		CCH-ICE-13				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS				
		X	Y	Z		
Connector Bracket on SVM	321100					
Support on SVM ENN411	360314	0.0	-886.93	-727.96	110	
PLM-SVM I/F Strut	36					
PLM-SVM I/F Strut	36					
Lower Bulkhead ENN411	211132	541.00	-581.03	-839.56	0	
CWV Cylinder Connector	211123					

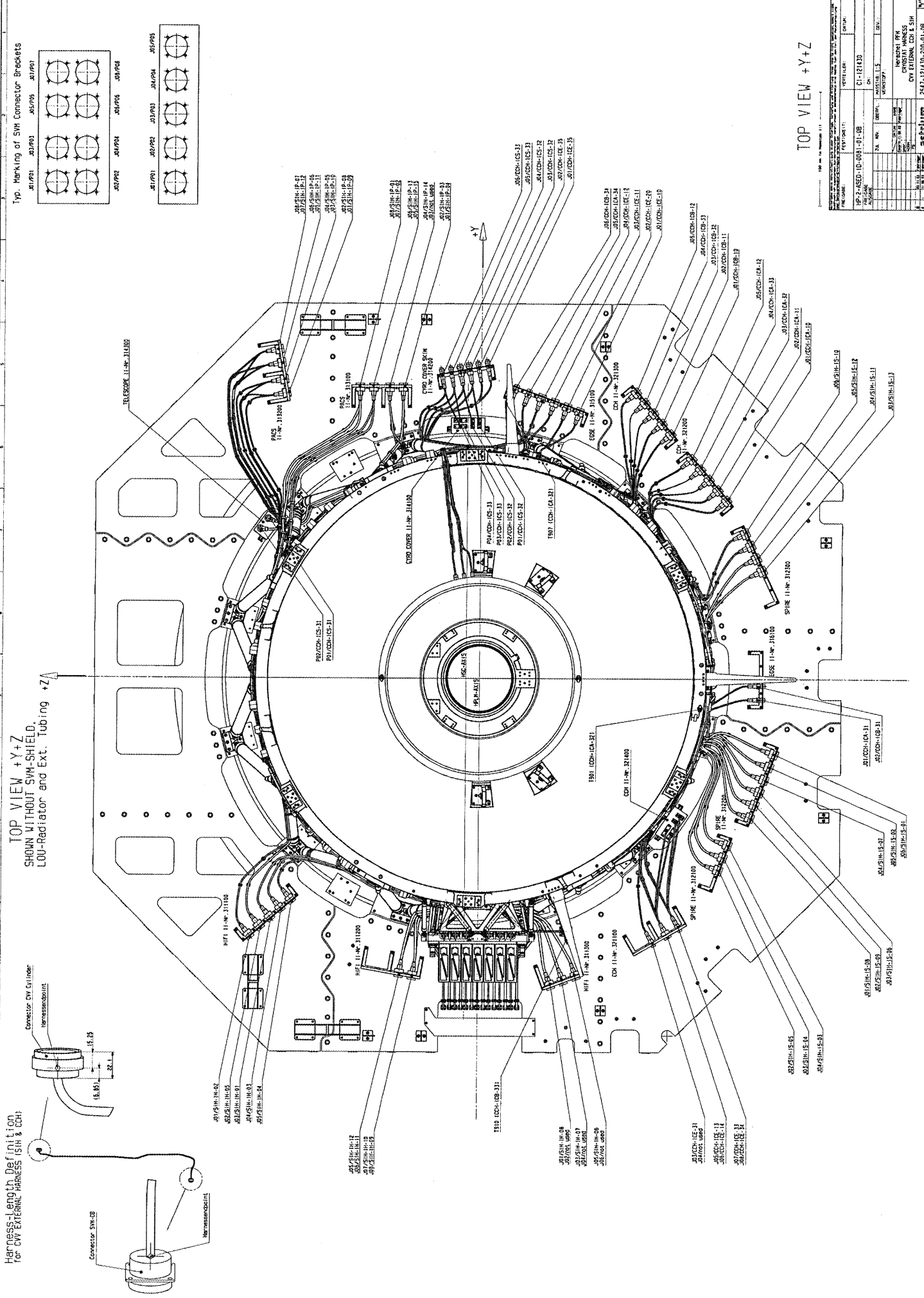
Harness Bundle :		CCH-ICE-14				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS				
		X	Y	Z		
Connector Bracket on SVM	321100					
Support on SVM ENN411	360314	0.0	-886.93	-727.96	110	
PLM-SVM I/F Strut	36					
PLM-SVM I/F Strut	36					
Lower Bulkhead ENN411	211132	550.00	-453.89	-914.56	70	
CWV Cylinder ENN411	211123	695.00	-377.71	-925.93	90	
CWV Cylinder Connector	211123					

Harness Bundle :		CCH-ICA-12				
Location :	ID-Number :	Coordinate :			Angle Orientation [°]	P-Clamp Size
		Ref.: HPLM-AXS				
		X	Y	Z		
Connector Bracket on SVM	321200					
Support on SVM ENN411	360408	0.0	864.34	-773.44	145	
PLM-SVM I/F Strut	41					
PLM-SVM I/F Strut	41					
Lower Bulkhead ENN411	211132	542.00	572.53	-845.37	0	
CWV Cylinder ENN411	211123	865.00	531.35	-835.32	98	
CWV Cylinder ENN411	211123	865.00	463.89	-850.41	63	
CWV Cylinder ENN411	211123	865.00	380.03	-914.16	162	
CWV Cylinder Connector	211123					

Harness Bundle :		CCH-ICB-12				P-Clamp Size
Location :	ID-Number :	Coordinate : Ref.: HPLM-AXS			Angle Orientation [°]	
		X	Y	Z		
Connector Bracket on SVM	J05					
Support on SVM ENN411	413	0.0	984.53	-638.77	85	
PLM-SVM I/F Strut	42					
PLM-SVM I/F Strut	300					
Lower Bulkhead ENN411	404	542.00	837.46	-584.05	0	
Lower Bulkhead ENN411	402	680.00	787.29	-616.59	90	
Lower Bulkhead ENN411	401	680.00	668.26	-743.93	90	
CVV Cylinder Connector	P08					

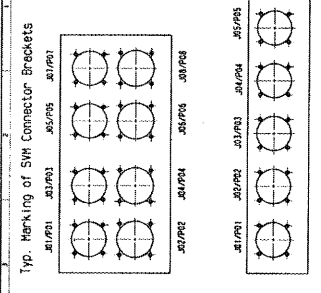
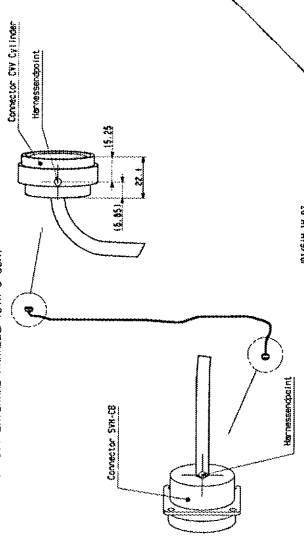
Harness Bundle :		CCH-ICA-11				P-Clamp Size
Location :	ID-Number :	Coordinate : Ref.: HPLM-AXS			Angle Orientation [°]	
		X	Y	Z		
Connector Bracket on SVM	J02					
Support on SVM ENN411	405	0.0	797.44	-807.34	170	
PLM-SVM I/F Strut	41					
PLM-SVM I/F Strut	41					
Lower Bulkhead ENN411	403	542.00	572.53	-845.37	0	
CVV Cylinder ENN411	400	695.50	600.88	-799.34	90	
CVV Cylinder ENN411	401	695.50	753.94	-656.94	90	
CVV Cylinder Connector	P09					

Harness Bundle :		CCH-ICB-11				P-Clamp Size
Location :	ID-Number :	Coordinate : Ref.: HPLM-AXS			Angle Orientation [°]	
		X	Y	Z		
Connector Bracket on SVM	J02					
Support on SVM ENN411	410	0.0	921.72	-689.76	75	
PLM-SVM I/F Strut	42					
PLM-SVM I/F Strut	42					
Lower Bulkhead ENN411	405	550.00	847.52	-569.34	0	
CVV Cylinder ENN411	403	695.50	874.05	-485.84	90	
CVV Cylinder ENN411	404	695.50	905.81	-423.68	90	
CVV Cylinder Connector	P10					



TOP VIEW +Y+Z
 SHOWN WITHOUT SW-SHIELD,
 LOU-Radiator and Ext. Tubing +Z

Harness-Length Definition
 for DW EXTERNAL HARNESS (SW & CCH)



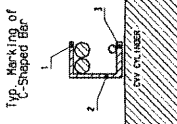
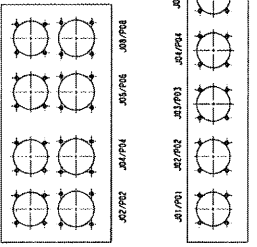
TOP VIEW +Y+Z

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REV.:	03
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REV.:	08
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REV.:	100

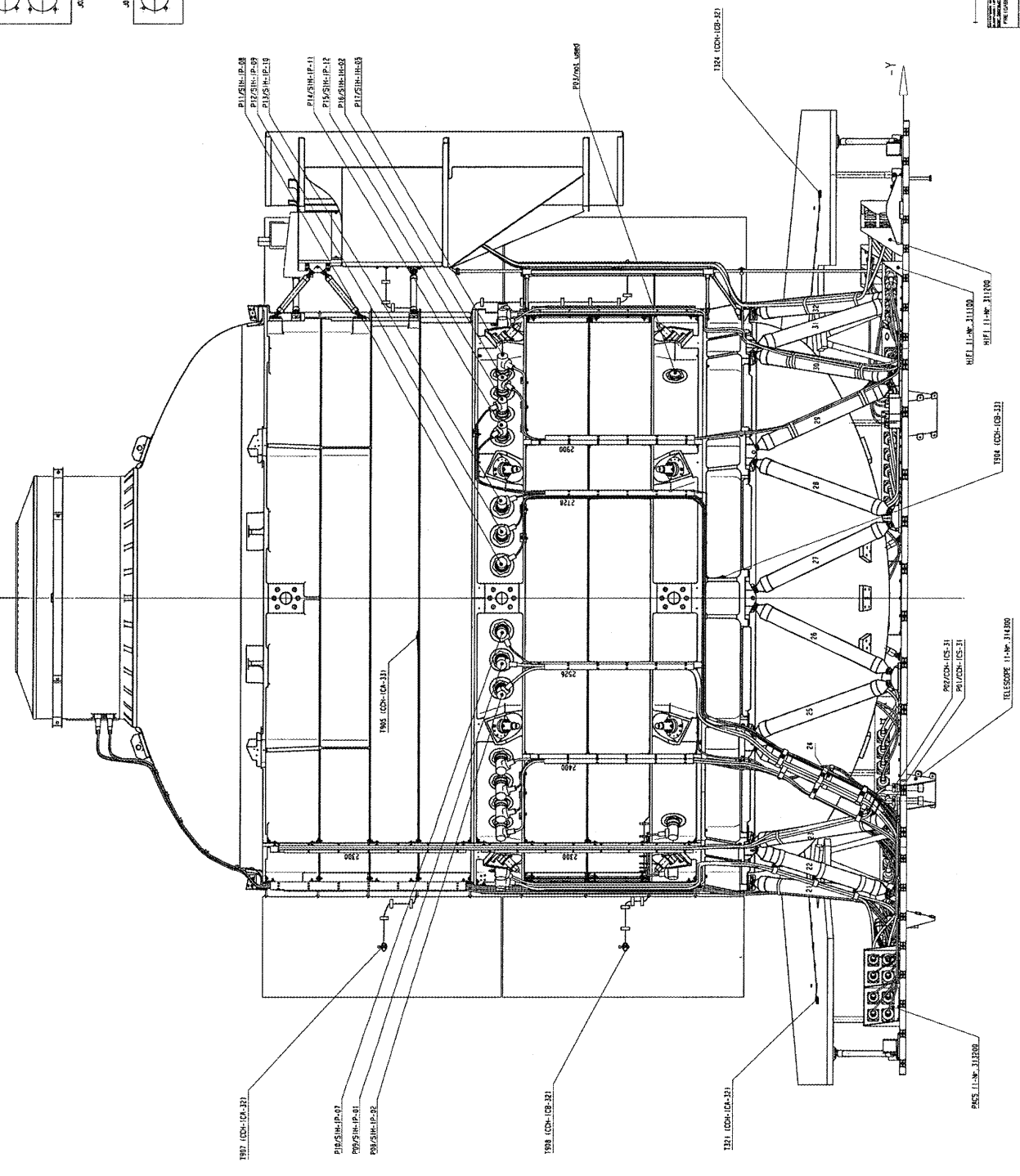
View from +Z

+X

Typ. Marking of SM Connector Brackets



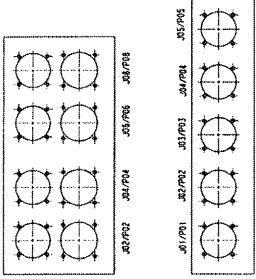
View from +Z



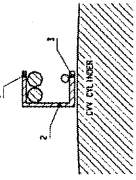
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DESIGNER		CHECKER	
DRAWN BY		APPROVED	
PROJECT NAME		SCALE	
CITY		COUNTRY	
COMPANY NAME		ADDRESS	
TELEPHONE		FAX	
E-MAIL		WEBSITE	
DRAWING NO.		REV.	
DESIGNER		CHECKER	
DRAWN BY		APPROVED	
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E-MAIL		WEBSITE	

astrium

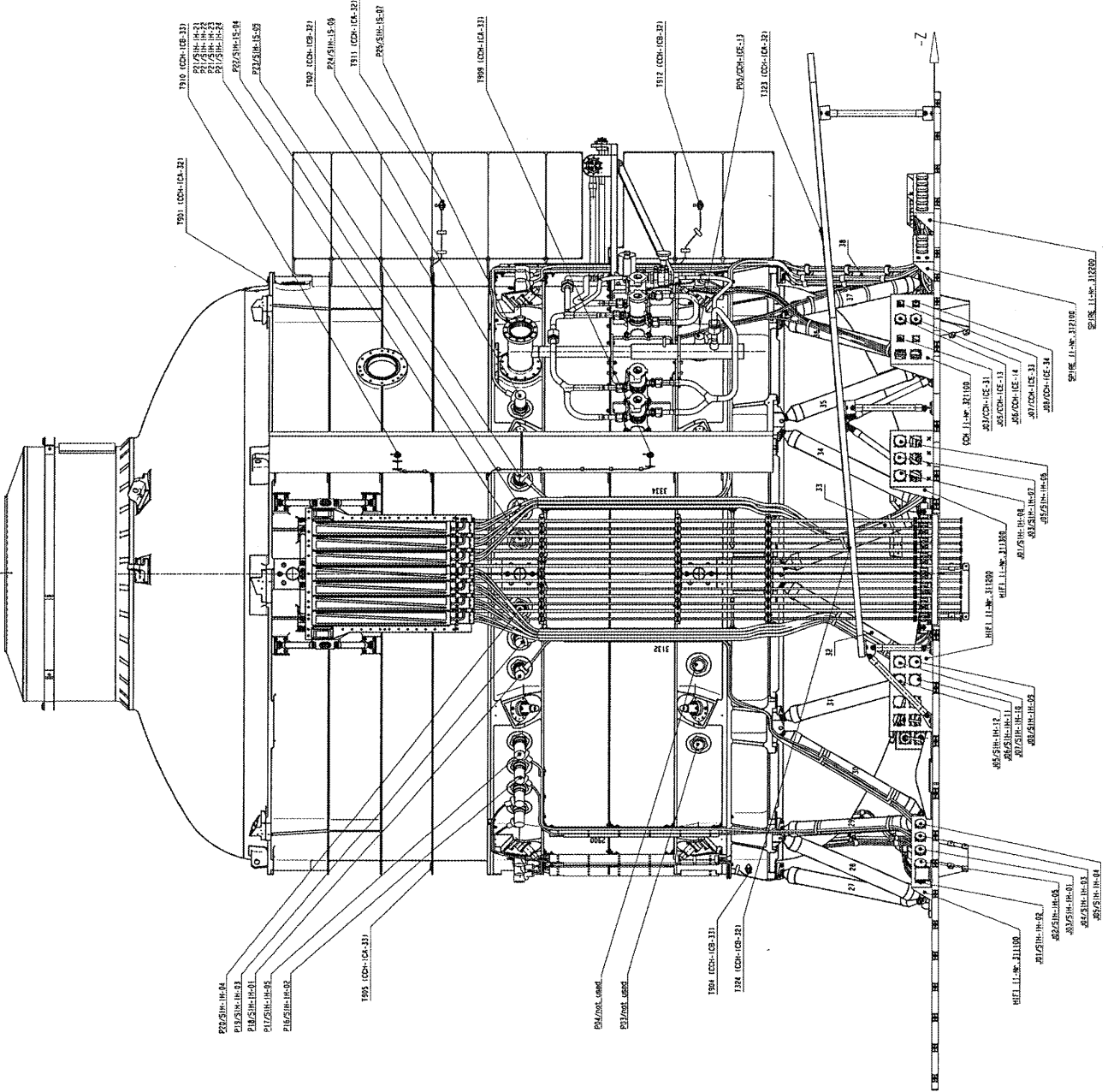
Typ. Marking of SWM Connector Brackets



Typ. Marking of U-Shaped BR



View from -Y
 SHOWN WITHOUT LCU-Radiator +X

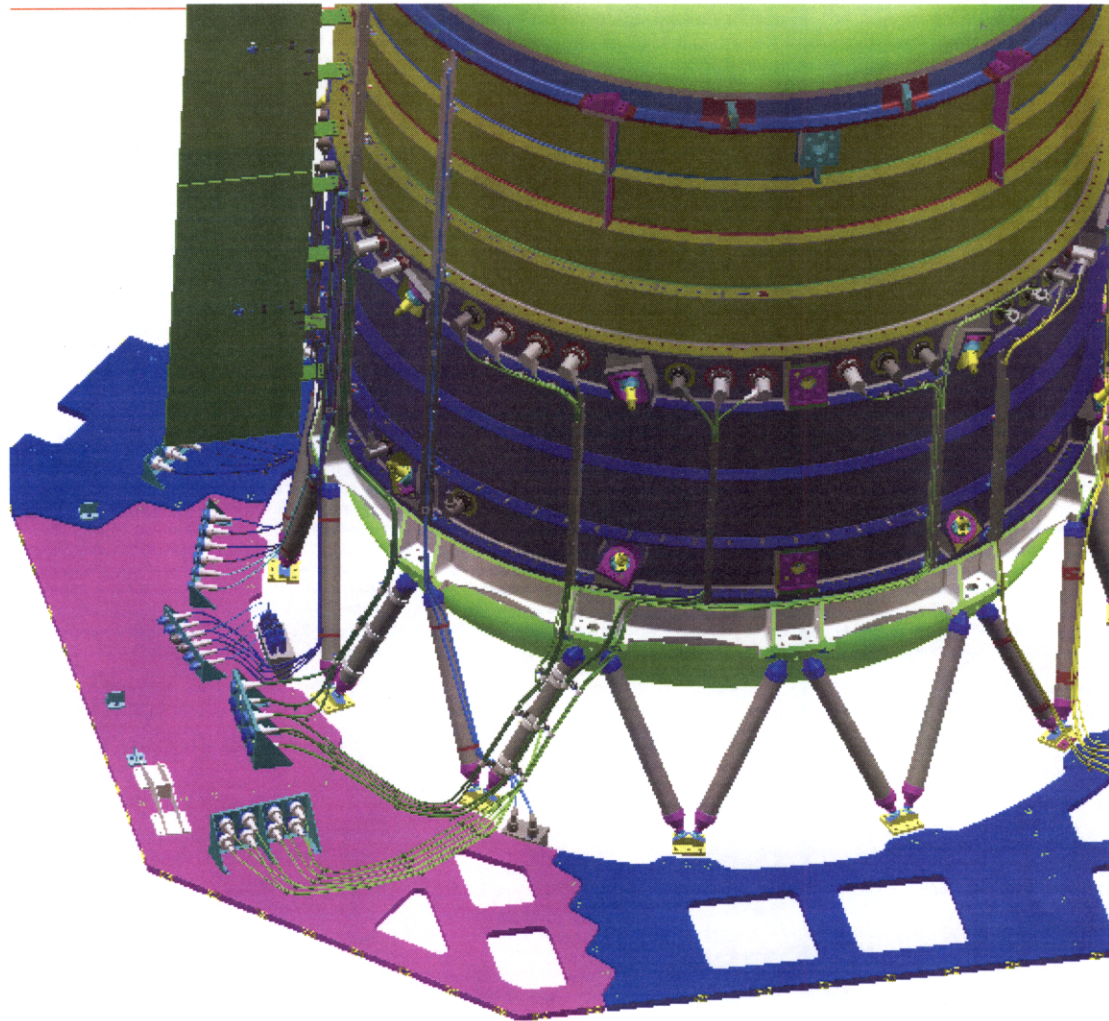


View from -Y

100 mm to 1000 mm (1:1)	
PART NAME: HP-2-ASED-10-0081-04-08	
DATE: 01-12-10	REV: 01
DESIGNER: [Name]	CHECKER: [Name]
DRAWN BY: [Name]	
SCALE: 1:1	
MATERIAL: [Material]	
QUANTITY: [Quantity]	
UNIT: [Unit]	
DRAWING NO: 2541-12130-004-08	
REV: 01	
DATE: 01-12-10	
BY: [Name]	
CHK: [Name]	
APP: [Name]	
MATERIAL: [Material]	
QUANTITY: [Quantity]	
UNIT: [Unit]	
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REV: 01	
DATE: 01-12-10	
BY: [Name]	
CHK: [Name]	
APP: [Name]	

ASTrium

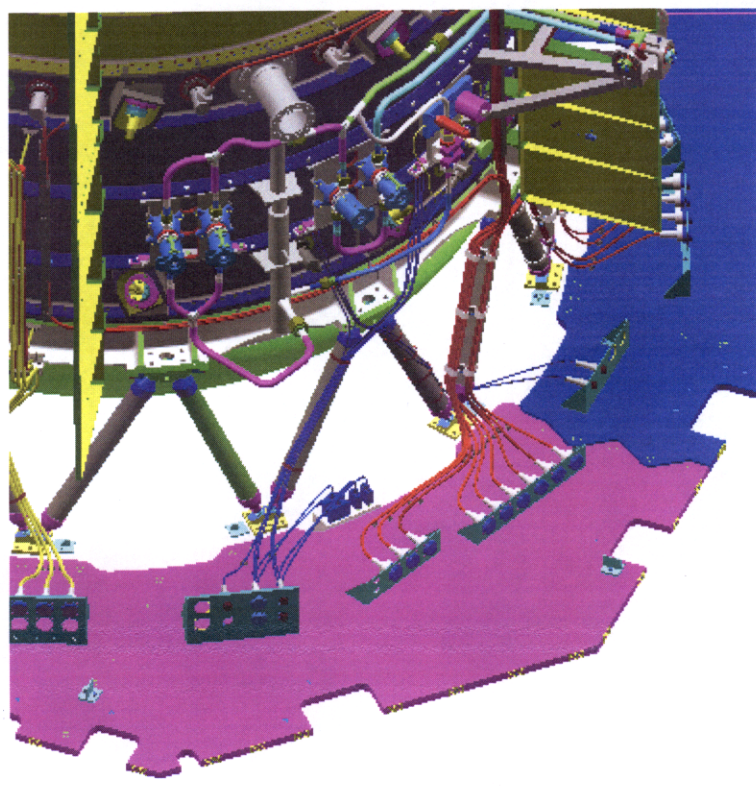
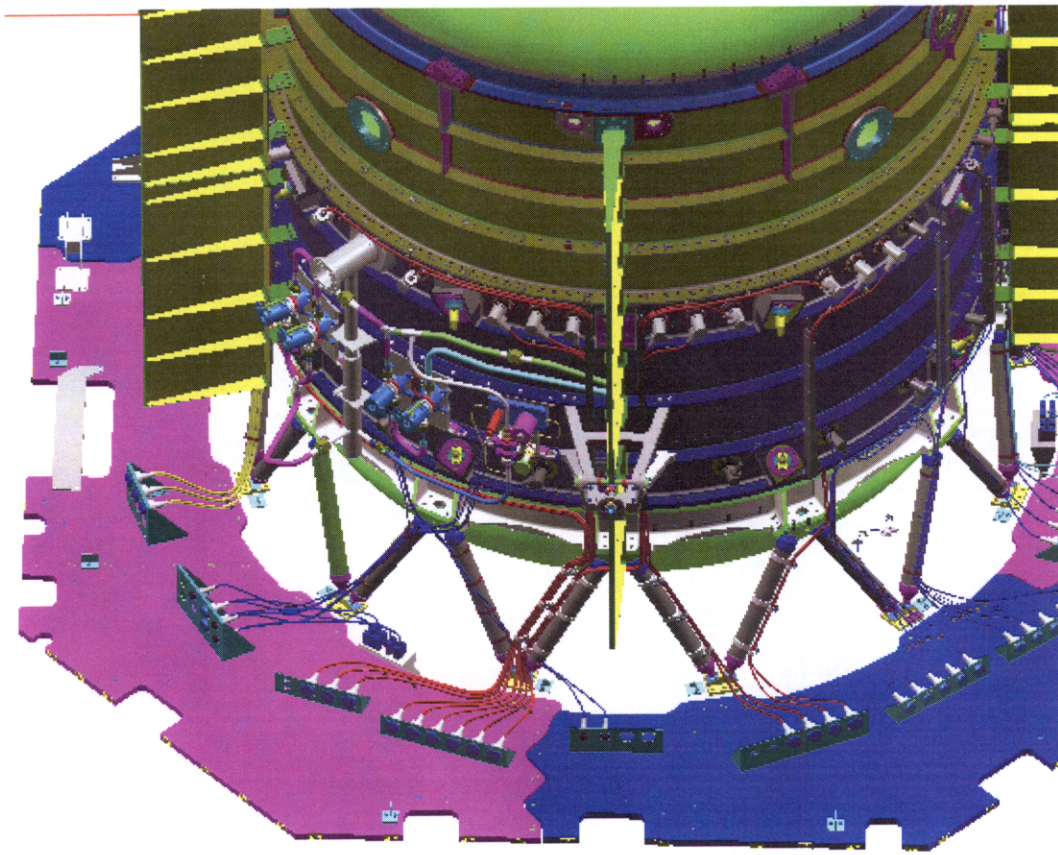
Overall View on PACS CVV External Harness



6 Annex 3 : Cryostat Harness CVV Internal CCH & SIH

(to be issued after CDR)

Overall View on SPIRE CVV External Harness



	Name	Dep./Comp.		Name	Dep./Comp.
	Alberti von Mathias Dr.	SM 34	X	Stauss Oliver	SM 33
/	Alo Hakan	OTN/LP 45	/	Steininger Eric	ED 422
	Barlage Bernhard	ED 11	/	Stritter Rene	ED 11
X	Bayer Thomas	ED 541		Tenhaeff Dieter	SM 34
/	Faas Horst	EA 65		Thörmer Klaus-Horst Dr.	OTN/ED 65
/	Fehringer Alexander	SM 33		Wagner Adalbert	OTN/LP 45
	Frey Albrecht	ED 422		Wagner Klaus	SM 31
	Gerner Willi	ED 11	/	Wietbrock, Walter	ED 521
/	Grasl Andreas	OTN/EN 64		Wöhler Hans	SM 34
	Grasshoff Brigitte	ED 521		Zipf Ludwig	ACE 32
	Hartmann Hans Dr.	ED 422			
/	Hauser Armin	SM 31			
	Hinger Jürgen	SM 31			
/	Hohn Rüdiger	ED 541			
/	Hölzle Edgar	ED 421	X	Alcatel	ASP
	Huber Johann	ED 543	X	ESA/ESTEC	ESA
/	Hund Walter	SE 76			
/	Idler Siegmund	ED 432		Instruments:	
	Ivány von András	ACE 32	/	MPE (PACS)	MPE
	Jahn Gerd Dr.	SM 31	/	RAL (SPIRE)	RAL
/	Kalde Clemens	ED 532	/	SRON (HIFI)	SRON
/	Kameter Rudolf	OTN/EN 64		Subcontractors:	
/	Kersting Stefan	OTN/EN 63		Air Liquide, Space Department	AIR
	Kettner Bernhard	SM 34		Air Liquide, Space Department	AIRS
/	Knoblauch August	ED 531		Air Liquide, Orbital System	AIRT
	Koelle Markus	ED 523		Alcatel Bell Space	ABSP
/	Kroeker Jürgen	ED 542		Astrium Sub-Subsyst. & Equipment	ASSE
	Kunz Oliver	SM 31		Austrian Aerospace	AAE
	Lamprecht Ernst	OTN/SM 222		Austrian Aerospace	AAEM
/	Lang Jürgen	SE 76		APCO Technologies S. A.	APCO
	Langfermann Michael	ED 541		Bieri Engineering B. V.	BIER
	Mack Paul	OTN/EN 64		BOC Edwards	BOCE
	Muhl Eckhard	OTN/EN 64		Dutch Space Solar Arrays	DSSA
/	Pastorino Michel	ASPI Resid.	/	EADS CASA Espacio	CASA
	Peitzker Helmut	ED 65		EADS CASA Espacio	ECAS
X	Peltz Heinz-Willi	SM 33		EADS Space Transportation	ASIP
	Pietroboni Karin	ED 65		Eurocopter	ECD
	Puttlitz Joachim	OTN/EN 64		HTS AG Zürich	HTSZ
	Rebholz Reinhold	ED 541		Linde	LIND
	Reuß Friedhelm	ED 62		Patria New Technologies Oy	PANT
/	Rühe Wolfgang	ED 65		Phoenix, Volkarsen	PHOE
	Runge Axel	OTN/EN 64		Prototech AS	PROT
	Sachsse Bernt	ED 21		QMC Instruments Ltd.	QMC
	Schäffler Johannes	OTN/EN 64		Rembe, Brilon	REMB
/	Schink Dietmar	ED 422		SENER Ingenieria SA	SEN
X	Schlosser Christian	OTN/EN 64		Stöhr Königsbrunn	STOF
	Schmidt Rudolf	ACE 32		Rosemount Aerospace GmbH	ROSE
	Schweickert Gunn	SM 34		RYMSA, Radiación y Microondas S.A.	RYM