

RFD/RFW Number:
FLX-RFD-ALM-CU-0005
Issue
1.0

Spacecraft / Project	FLORIS	Originator's Name	Marco Lai	
System / Experiment / Model	FLEX	Signature / Date		
Sub-System		Request Type (Highlight applicable request)	Waiver (RFW)	Deviation (RFD)
Assembly	EQM/PFM	Organisation	Almatech	
Sub-Assembly	Calibration Unit	Ref. Doc. / Drwg No.	ALM-PRO-4158	
Item	-	References	-	
Serial No.	EQM/PFM			

RFW/RFD Title	Number of Interface screws different from requirements
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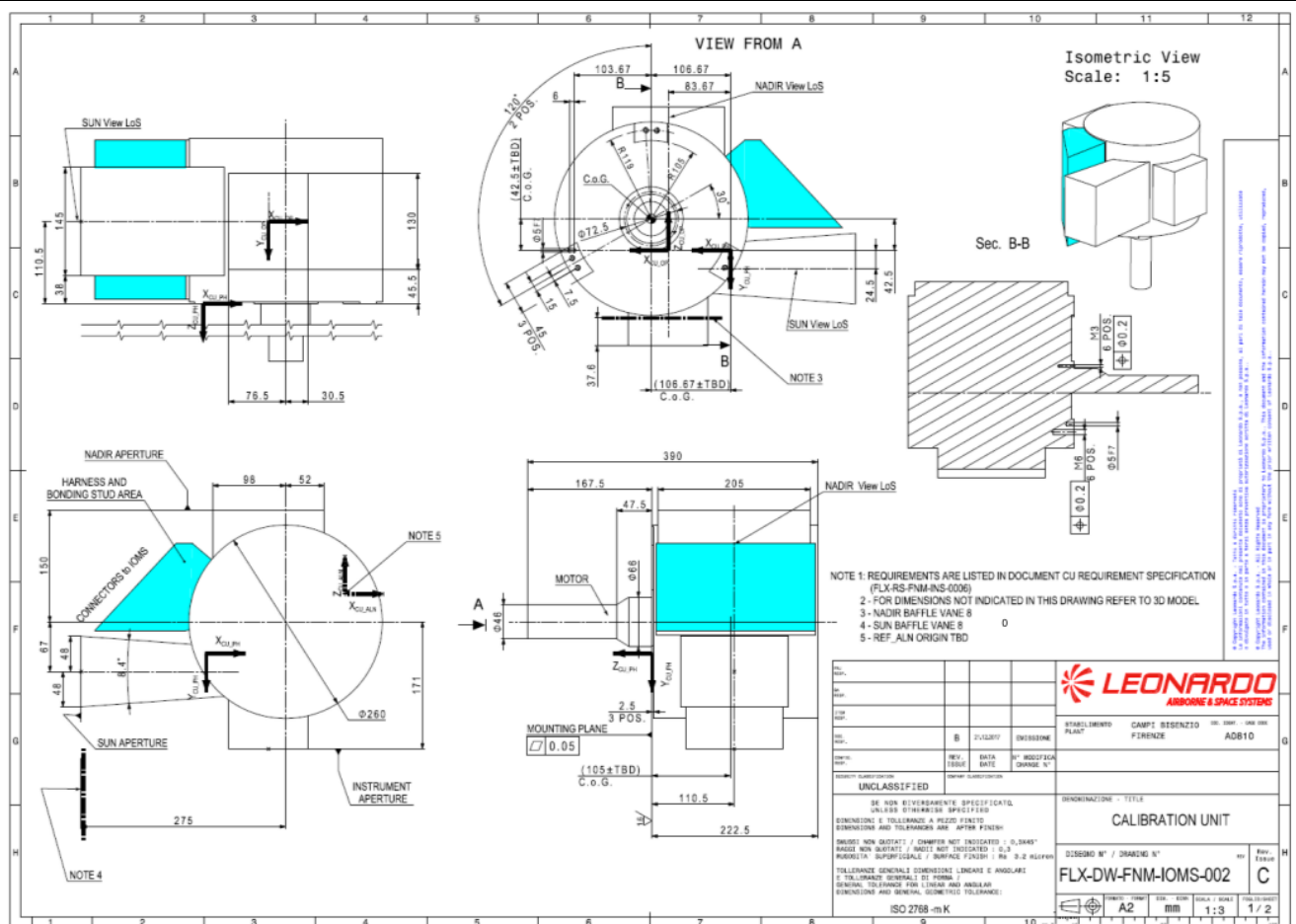
End Items(s) Affected (Hardware, Software)				
Name	CI-Number	Model(s)		
Calibration Unit		EQM/PFM		
Requirement / Interface Documents Affected				
Specification/Drawing Title	Number	Issue	Date	App. Paragraph
FLORIS Calibration Unit URD	FLX-RS-FNM-INS-0006	5	09.05.2018	5.3.1.3
Description of Deviation / Discrepancy / Non-Conformance				
<p>According to FLO-CU-URD-REQ-0385 requirement and linked interface drawing attached here below, 6 M3 interface screws are required.</p> <p>Mechanical calculations showed that 12 M3 interface screws are necessary.</p> <p># FLO-CU-URD-REQ-0385 Verification: A,T</p> <hr/> <p>The mechanical interface of the CU (including also attachment point type and geometry) with the instrument shall be according to the drawing reported in Figure 17 (APPENDIX 1 CALIBRATION UNIT ENVELOPE & INTERFACE REQUIREMENT DRAWING).</p> <hr/>				
# Parents: Design*				

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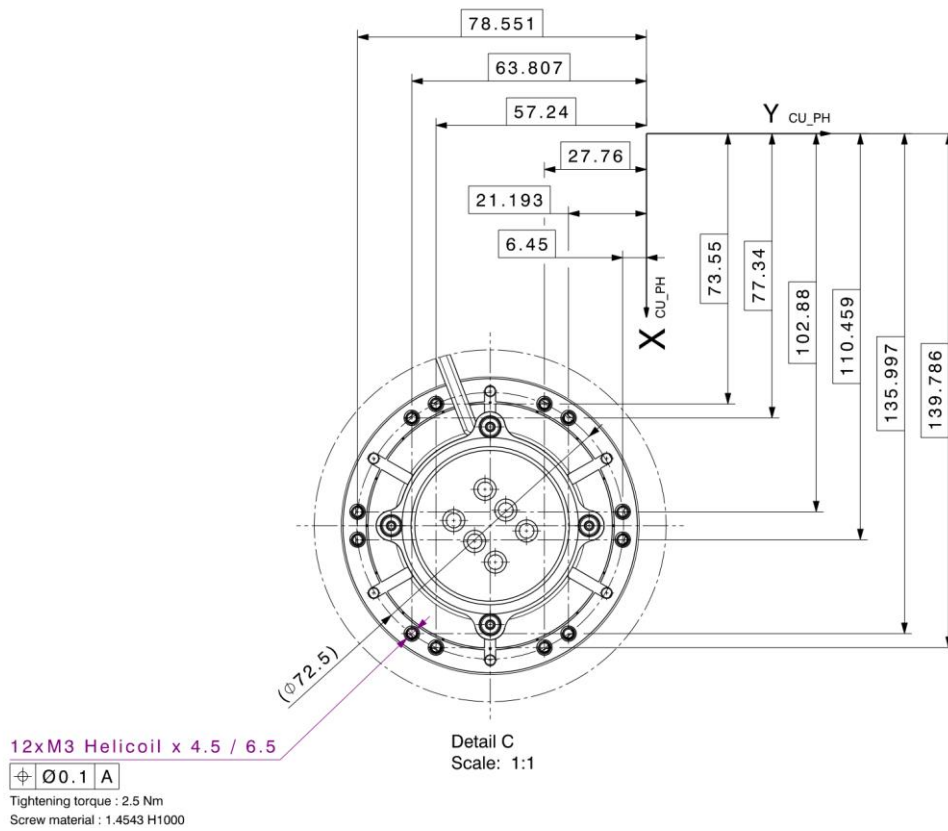


Figure 1: New interface for 12xM3

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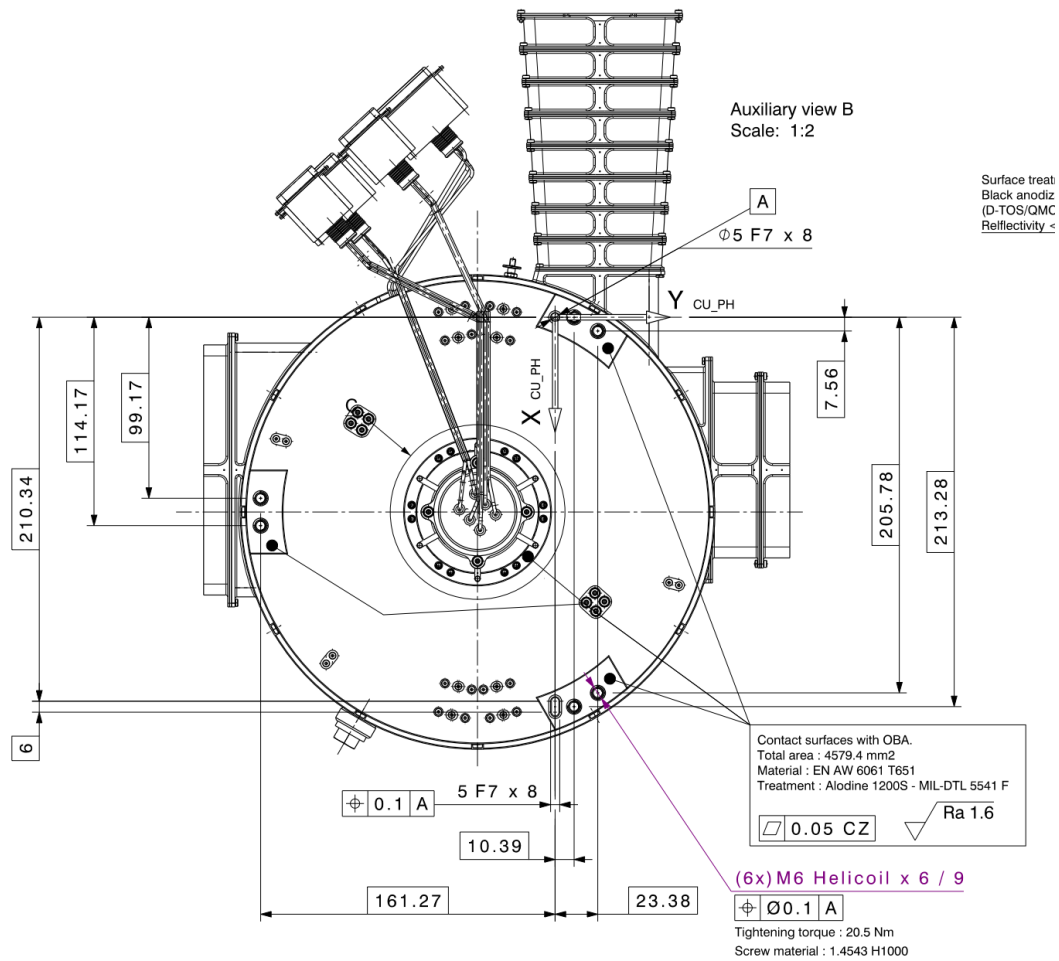


Figure 2: Interface for 6xMJ6 (unchanged with respect to Baseline)

Other Items or Requirements (Potentially) Affected

None

Need for RFW/RFD and Rationale for Acceptance

Analysis showed that 6 M3 interface screws are not sufficient to survive the loads.
See MICD in attachment.

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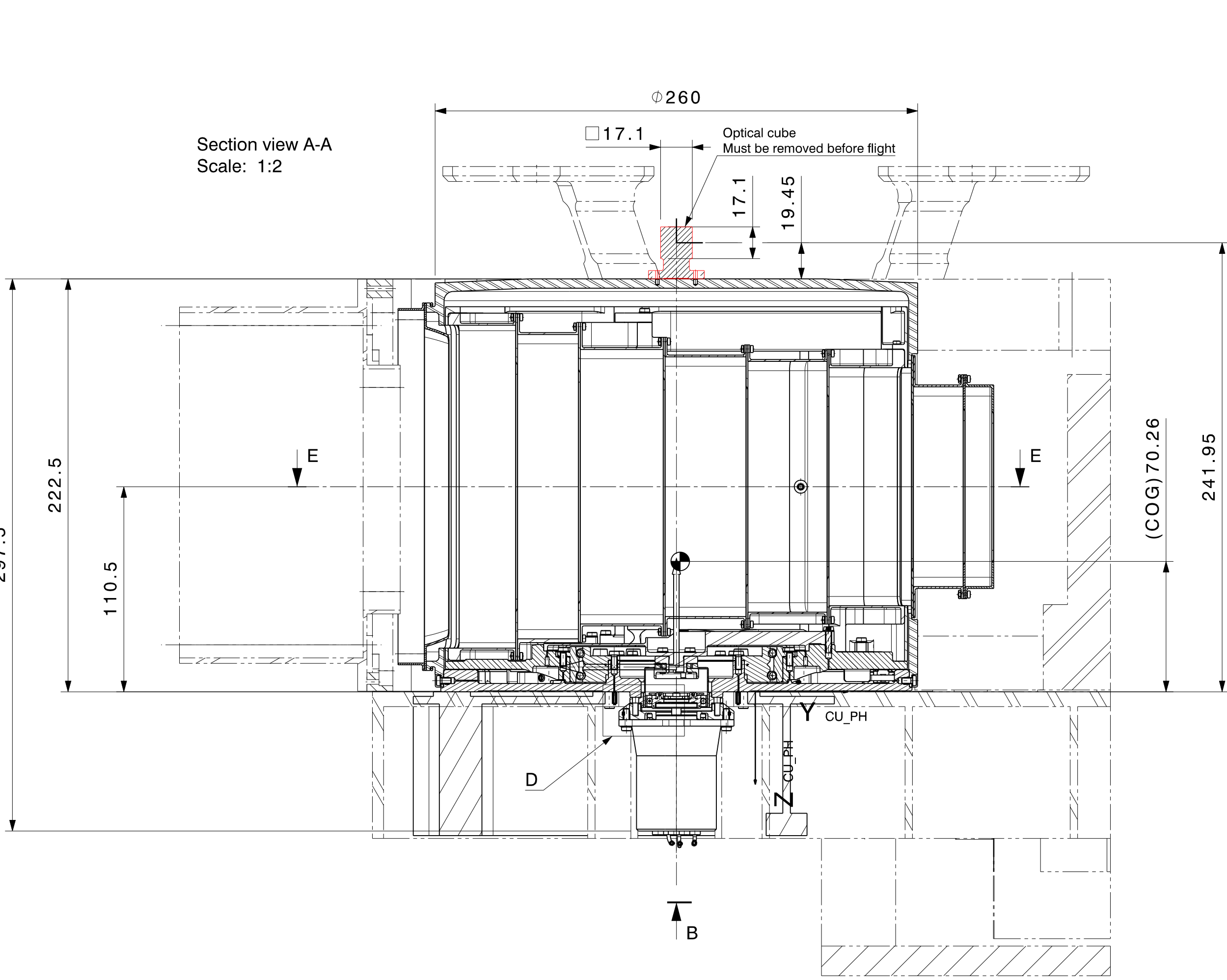
Issue

1.0

RFD/RFD CLOSED	Name	Sign & Date	
		Approved	Rejected
Project Manager / Engineering: (Sub System)	Gianluigi Capo		
Engineering: (Almatech)	Marco Lai		
Product Assurance: (Almatech)	Thomas Gandy		
Project Manager: (Leonardo)			
Engineering: (Leonardo)			
Product Assurance: (Leonardo)			
Engineering (ESA)			
Contract Manager (ESA)			

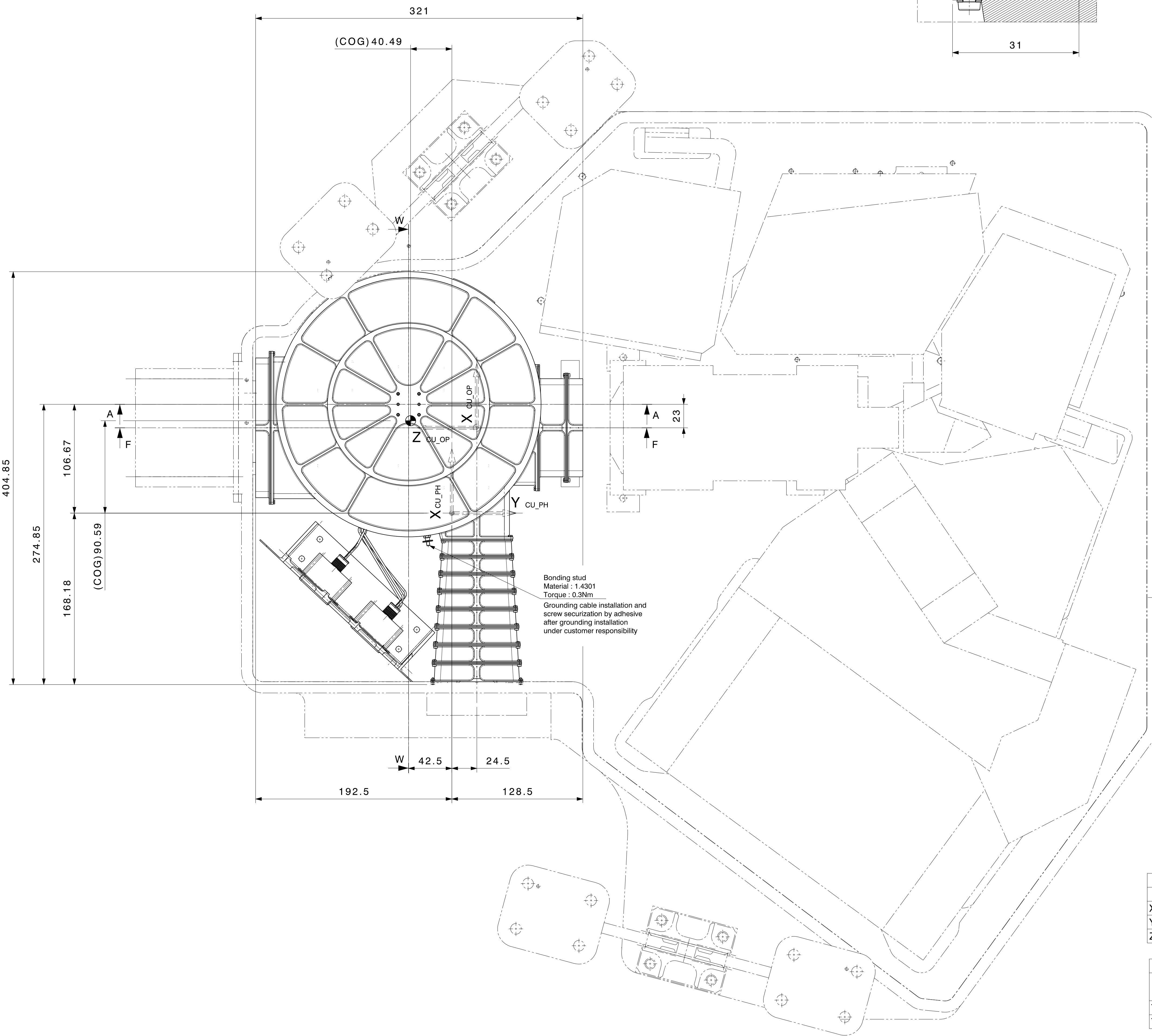
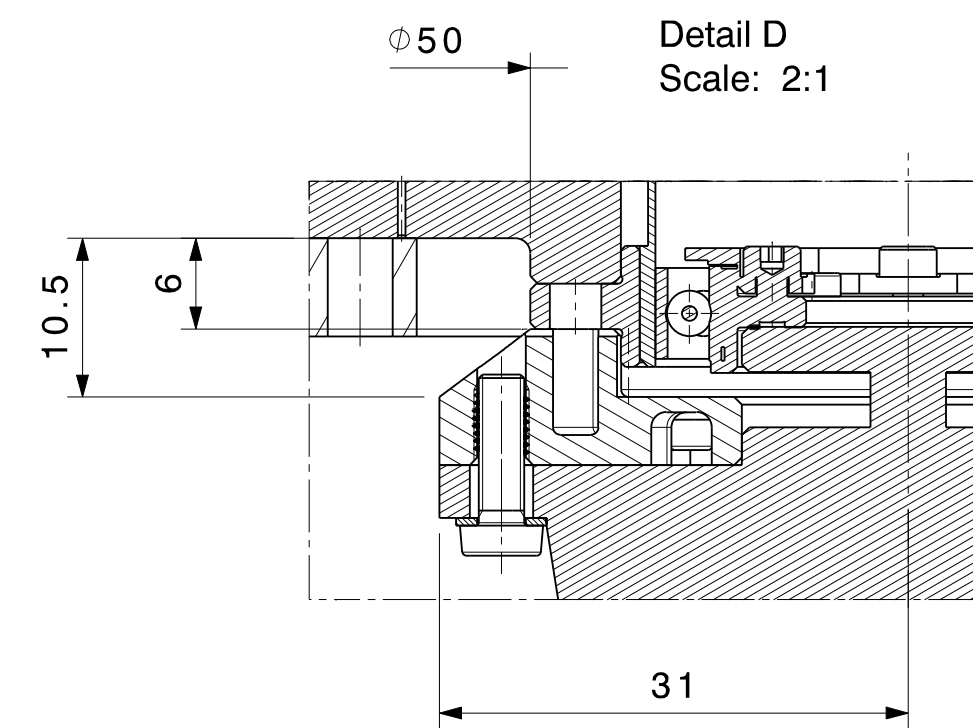
Continuation sheet:

A	31.05.2017 JJ	First issue
B	21.11.2017 JJ	Add page 4 for four switches configuration
C	23.01.2018 JJ	Add dimension of 11 threads (6x M6 (P)). Update configuration of sensors and magnets (P3). Electrical informations displace on FLX-ICD-ALM-CU-0002 (E/C0)
D	20.08.2018 JJ	Global Update
E	12.01.2019 JJ	Global update for MRR



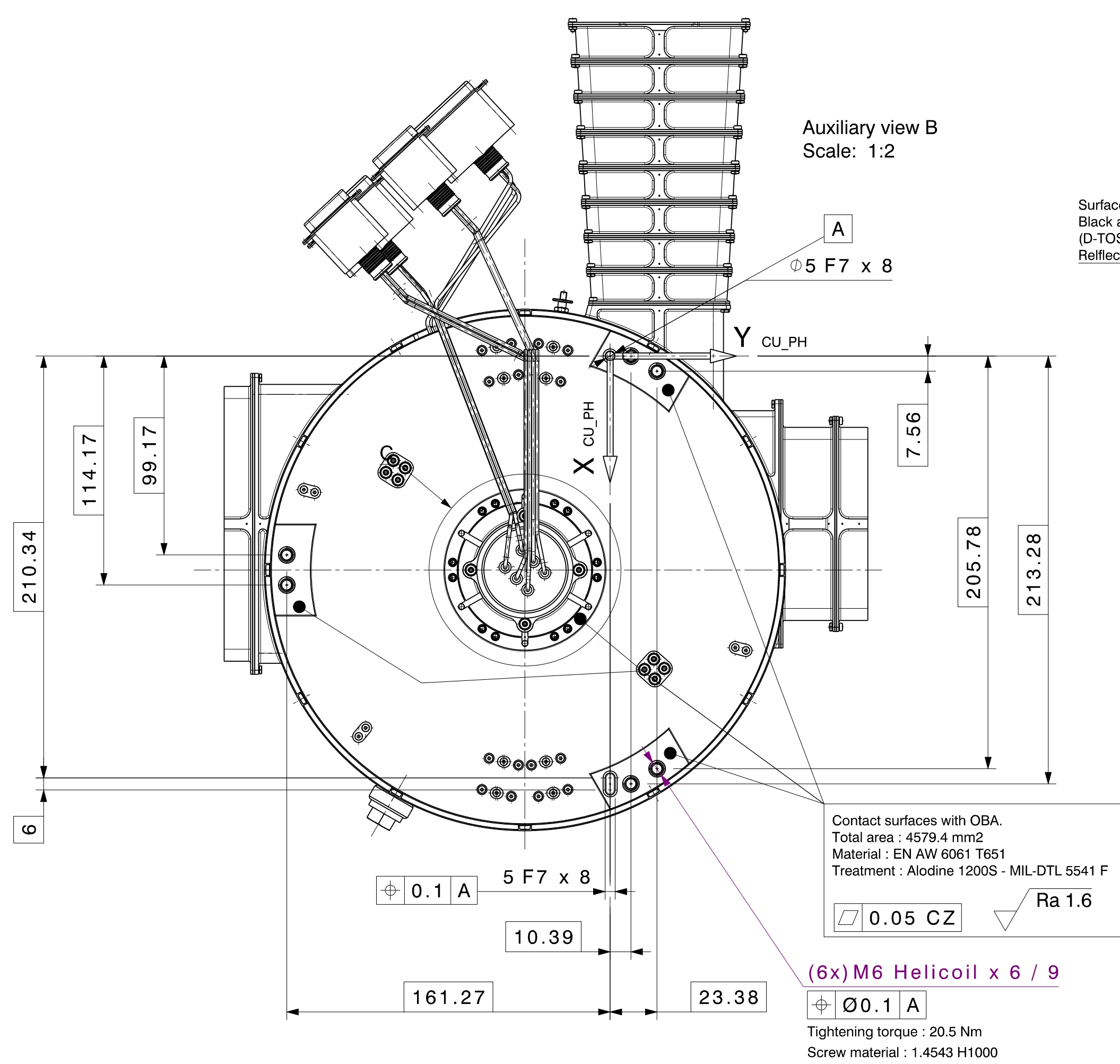
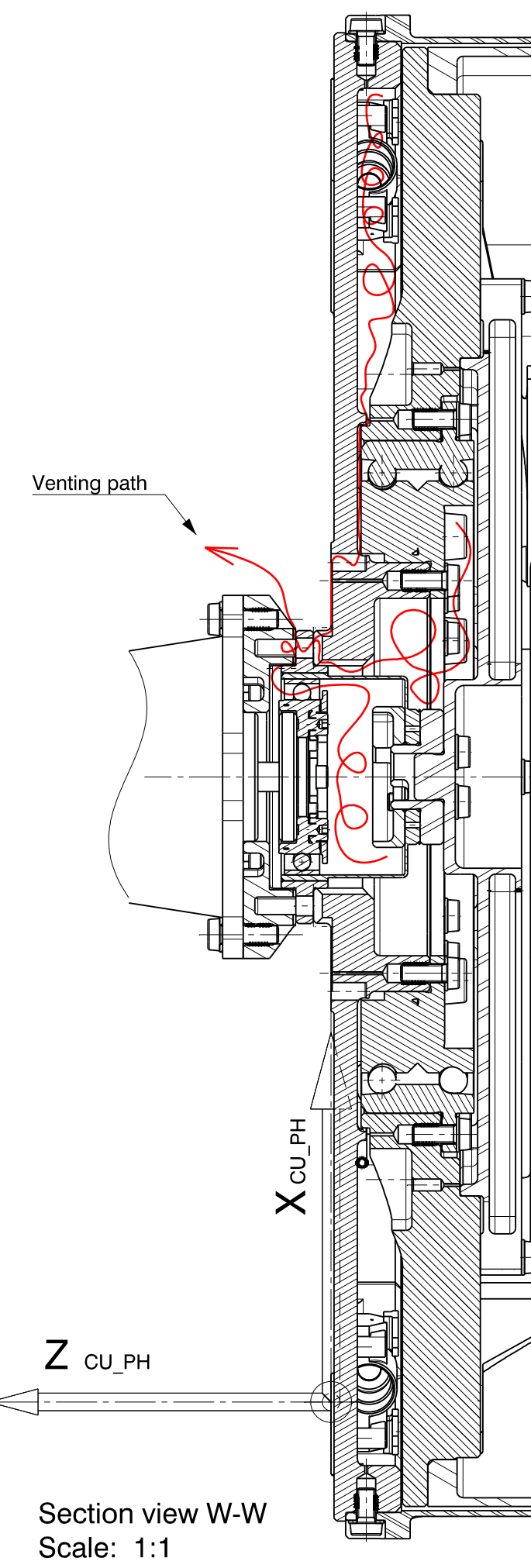
12xM3 Helicoil x 4.5 / 6.5
±0.1 A
Tightening torque : 2.5 Nm
Screw material : 1.4543 H1000

Detail C
Scale: 1:1



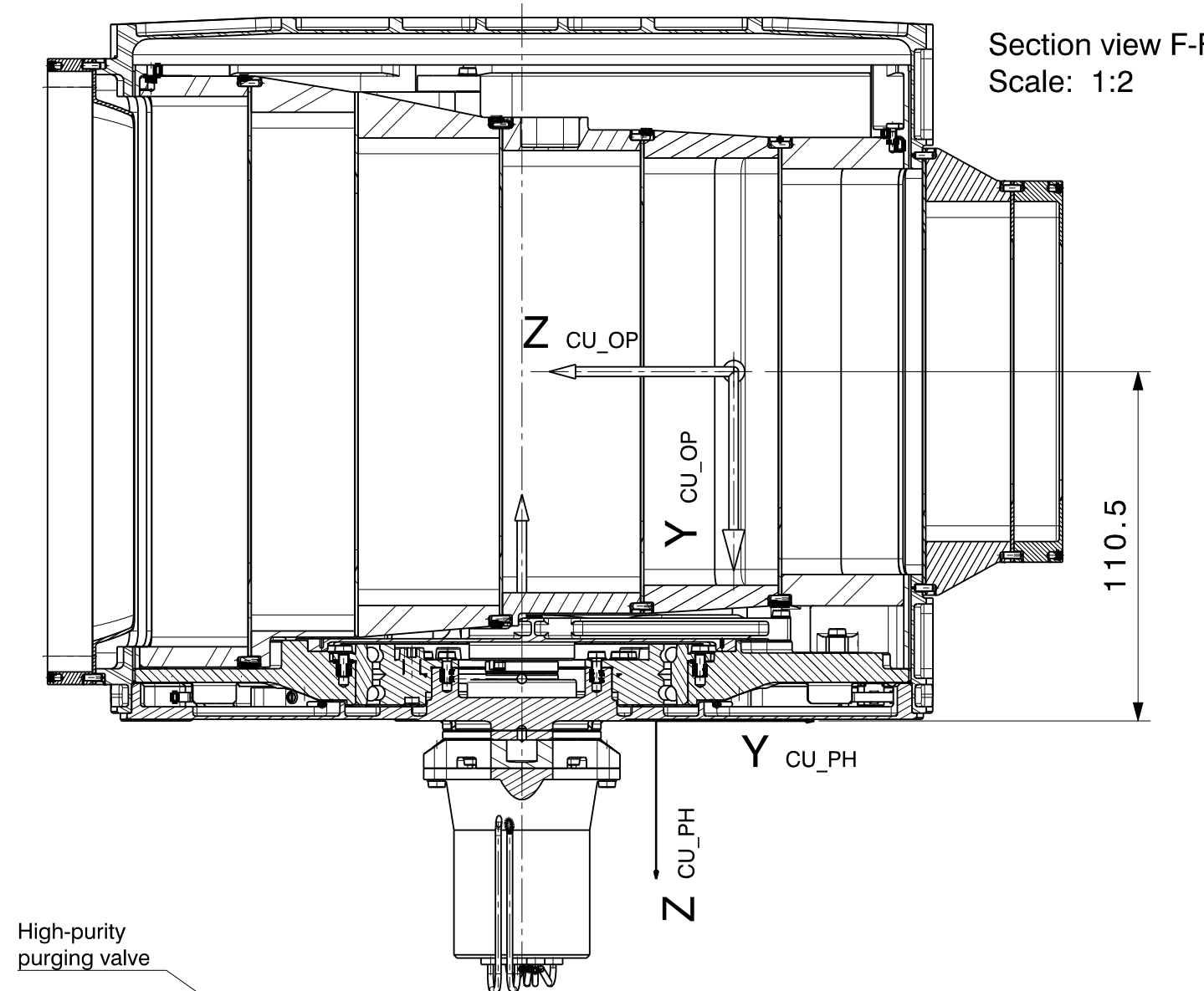
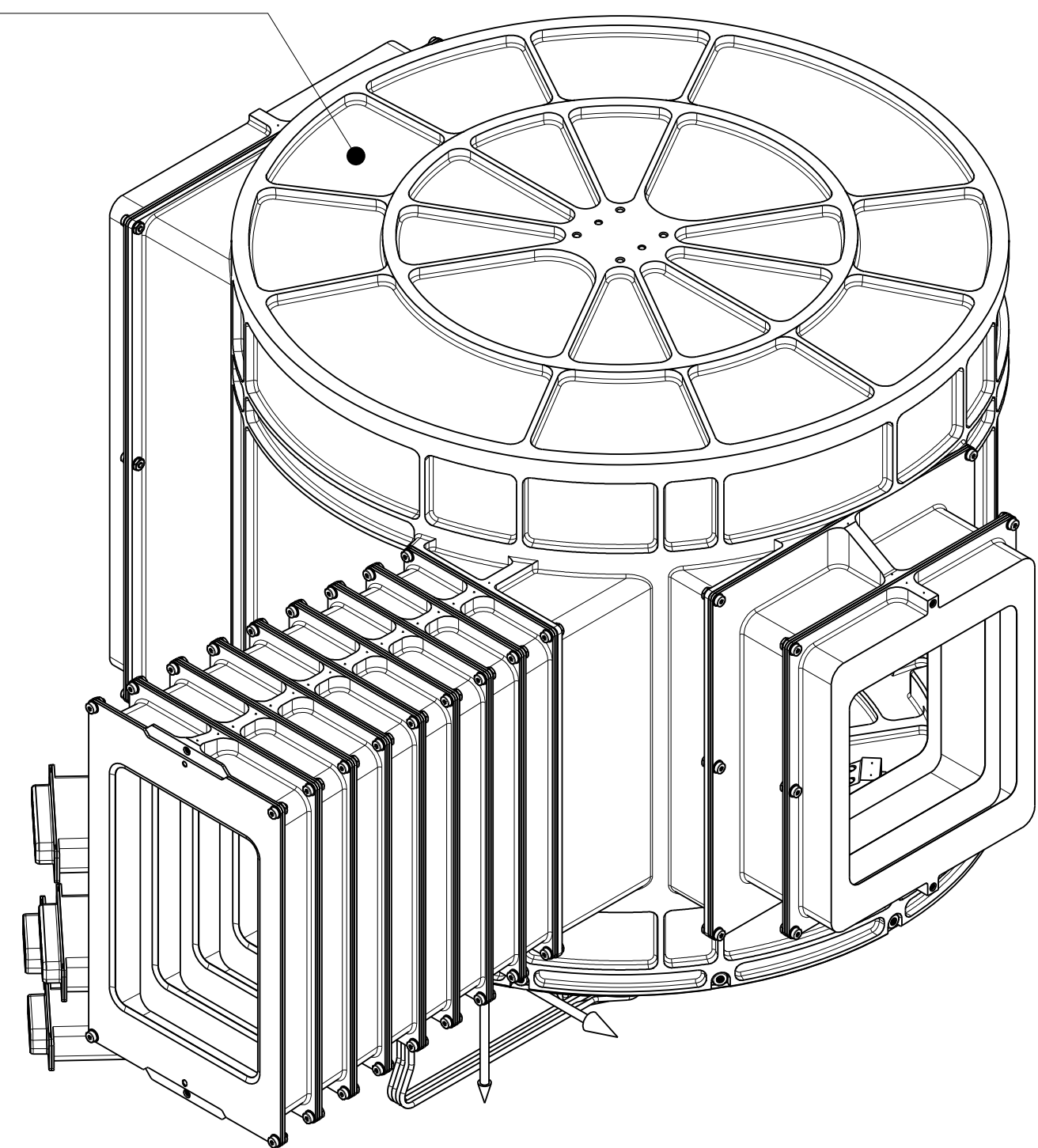
GENERAL PROPERTIES			
COG (From CU_PH) MOI (From CU_PH)			
X	90.587 [mm]	0.12 [kgxm2]	
Y	-40.492 [mm]	0.186 [kgxm2]	
Z	-70.259 [mm]	0.157 [kgxm2]	

TEMPERATURE TABLE				
	Operational		Non-operational	
	Cold	Hot	Cold	Hot
TRP1	+7°C	+37°C	-24°C	+64°C
TRP2	+7°C	+37°C	-24°C	+64°C

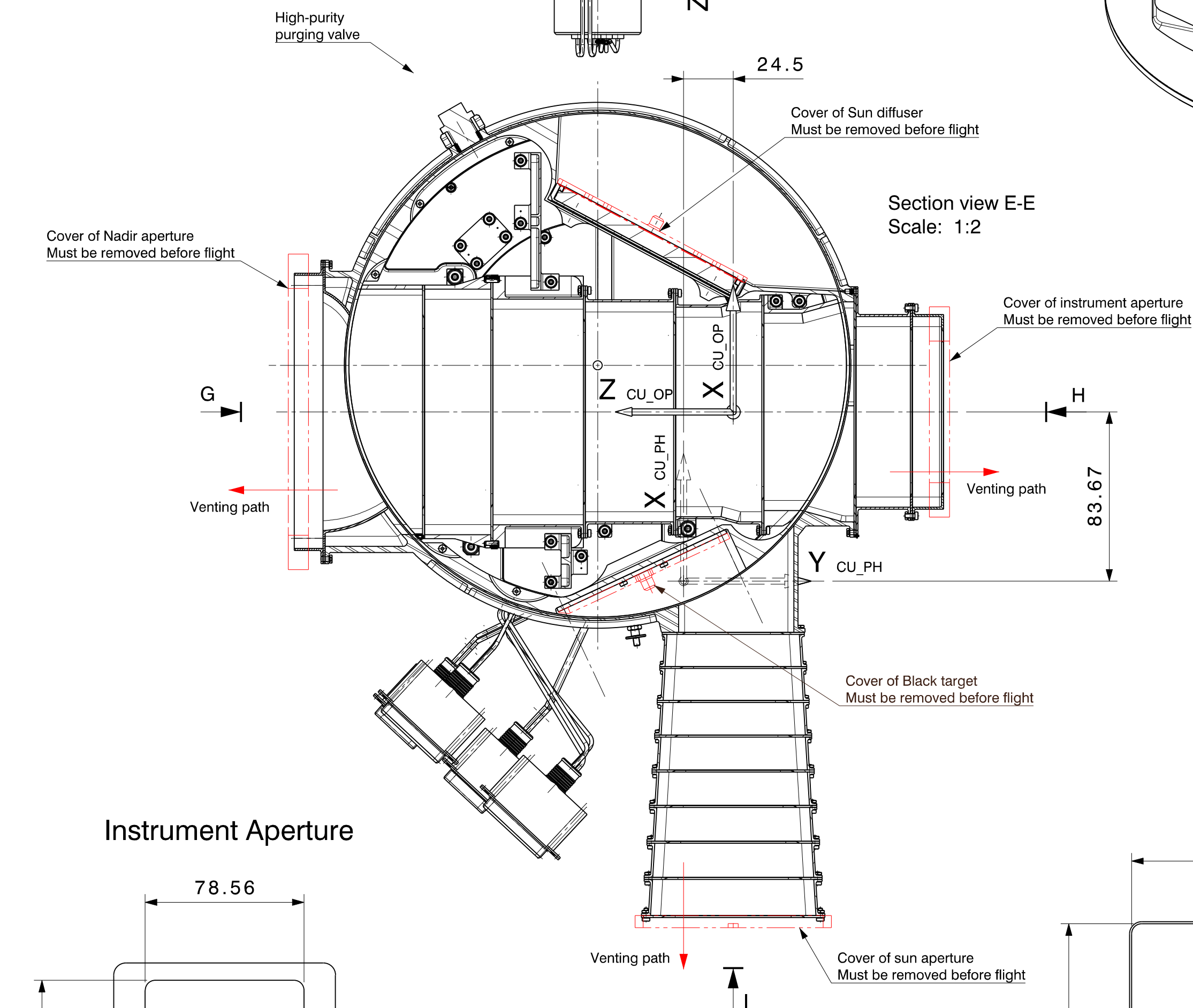
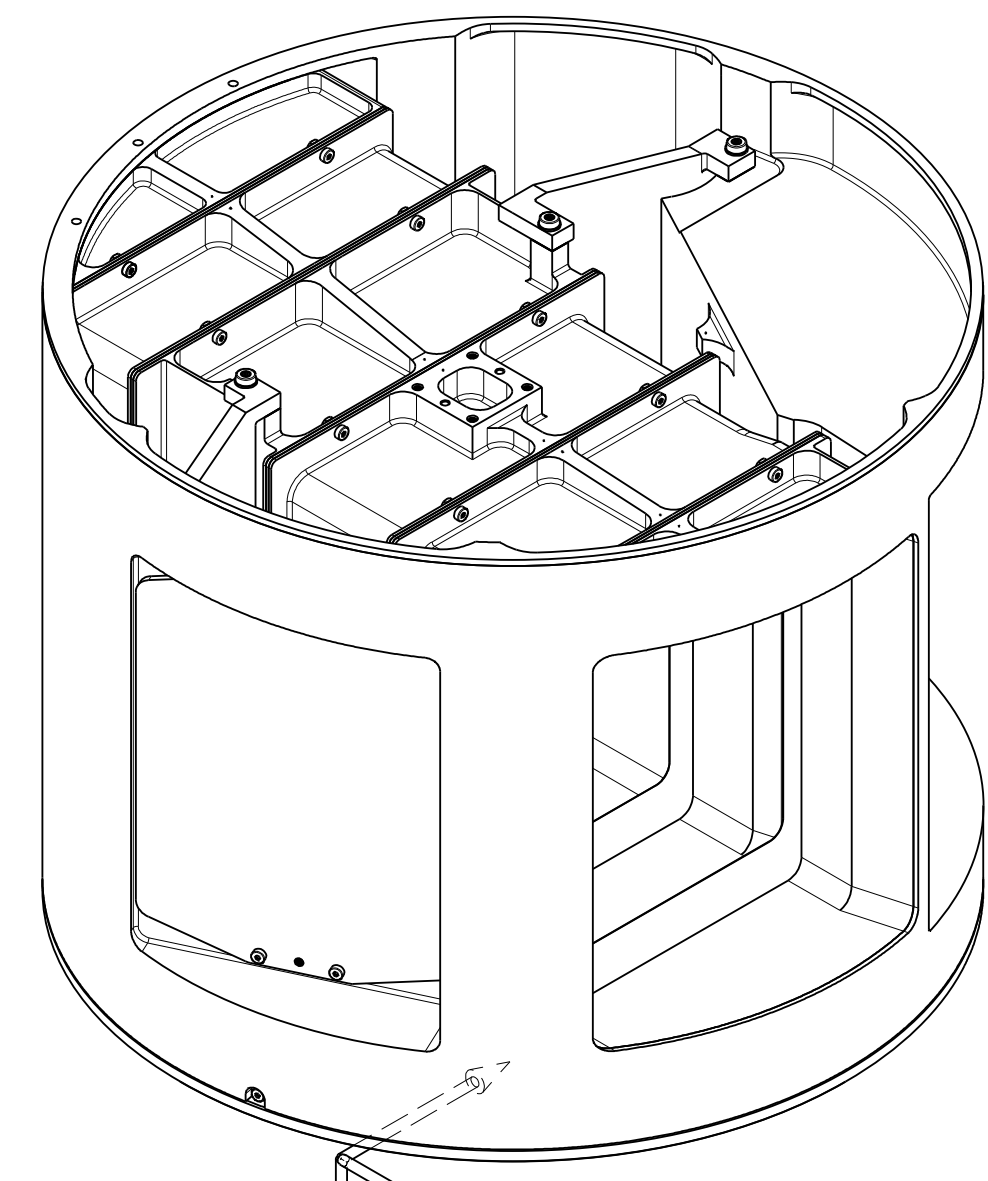


Surface treatment for external surfaces :
Black anodization according to ESA document
(D-TOS/GMC report 00/065 of the 5th May 2000)
Reflectivity : <2%

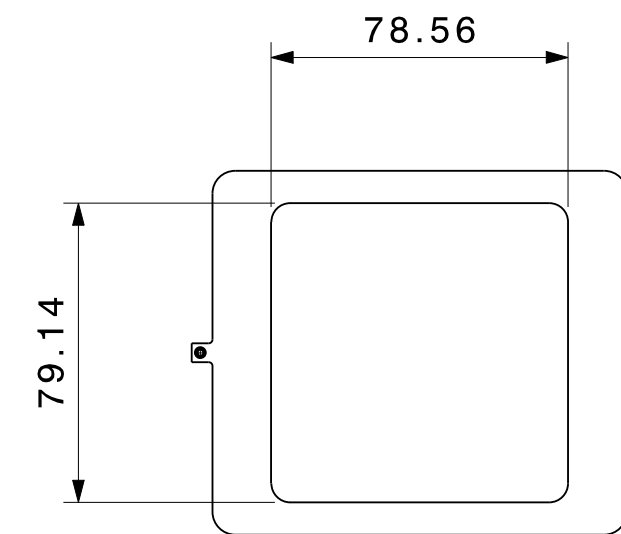
CU - Stator



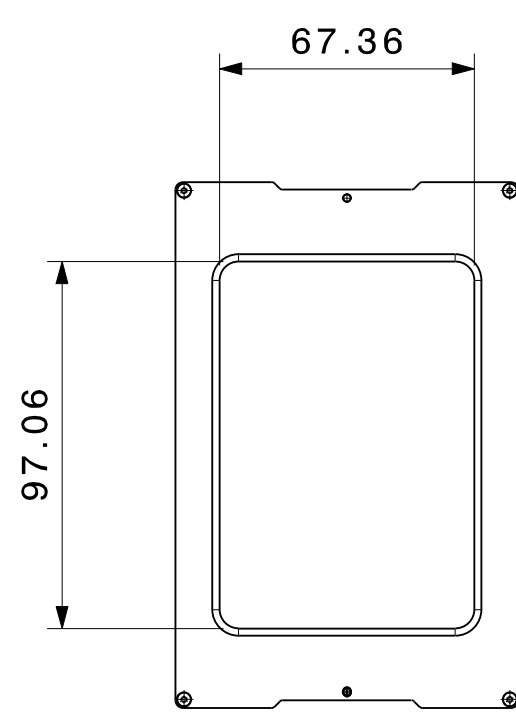
CU - Rotor



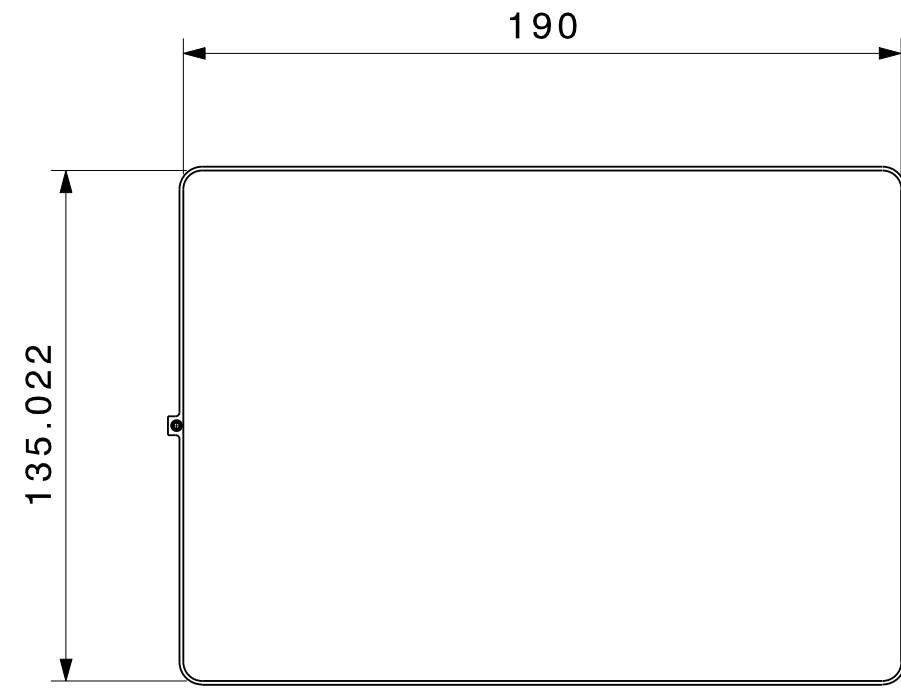
Instrument Aperture



Sun Aperture



Nadir Aperture



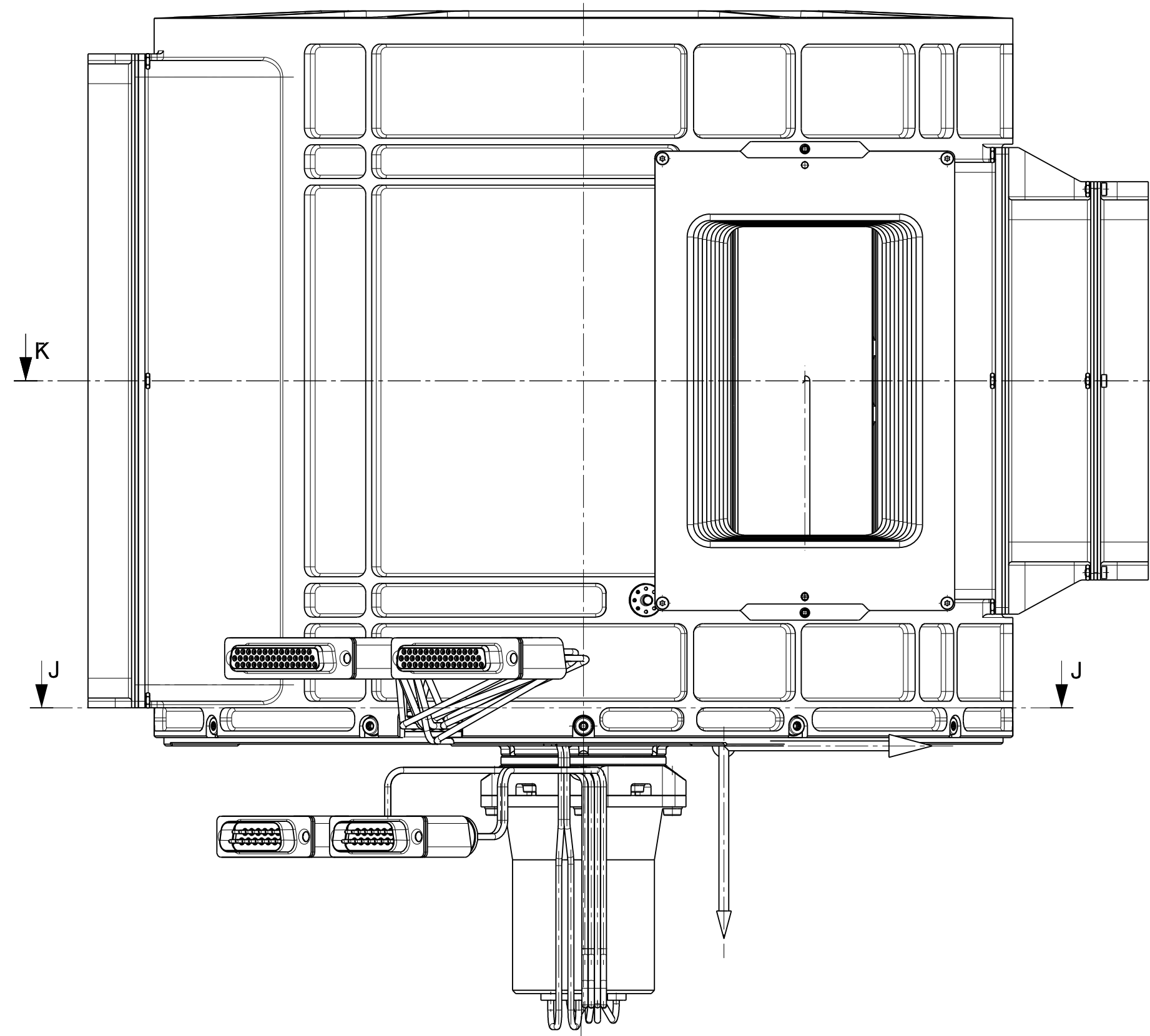
General tolerances / Tolérances générales (ISO 2768)				N Class roughness Classe de rugosité N			
Linear dimensions (in mm)				Angular dimensions (°)			
Nominal	≤ 0.5	> 0.5	> 1.6	> 1.6	> 1.6	> 1.6	> 1.6
Dimension	3	6	30	120	120	120	120
Tolerance	± 0.05	± 0.05	± 0.1	± 0.15	± 0.2	± 0.3	± 0.5
Project	17-10P-225	17-10P-225	17-10P-225	17-10P-225	17-10P-225	17-10P-225	17-10P-225
Separate RPL Nb	---	---	---	---	---	---	---
Internal Drawing Nb	ALM-DES-225-0001	ALM-DES-225-0001	ALM-DES-225-0001	ALM-DES-225-0001	ALM-DES-225-0001	ALM-DES-225-0001	ALM-DES-225-0001
Released	12.01.2019	12.01.2019	12.01.2019	12.01.2019	12.01.2019	12.01.2019	12.01.2019
Released	12.01.2019	12.01.2019	12.01.2019	12.01.2019	12.01.2019	12.01.2019	12.01.2019
This drawing is the property of Almatech and must not be used for reproduction without prior written authorization. All rights reserved.				Tot. Mass 7.2kg / 1/3 A0			
FLORIS Calibration Unit - MICD				Drawing Number			

SUN DIFFUSER POSITION

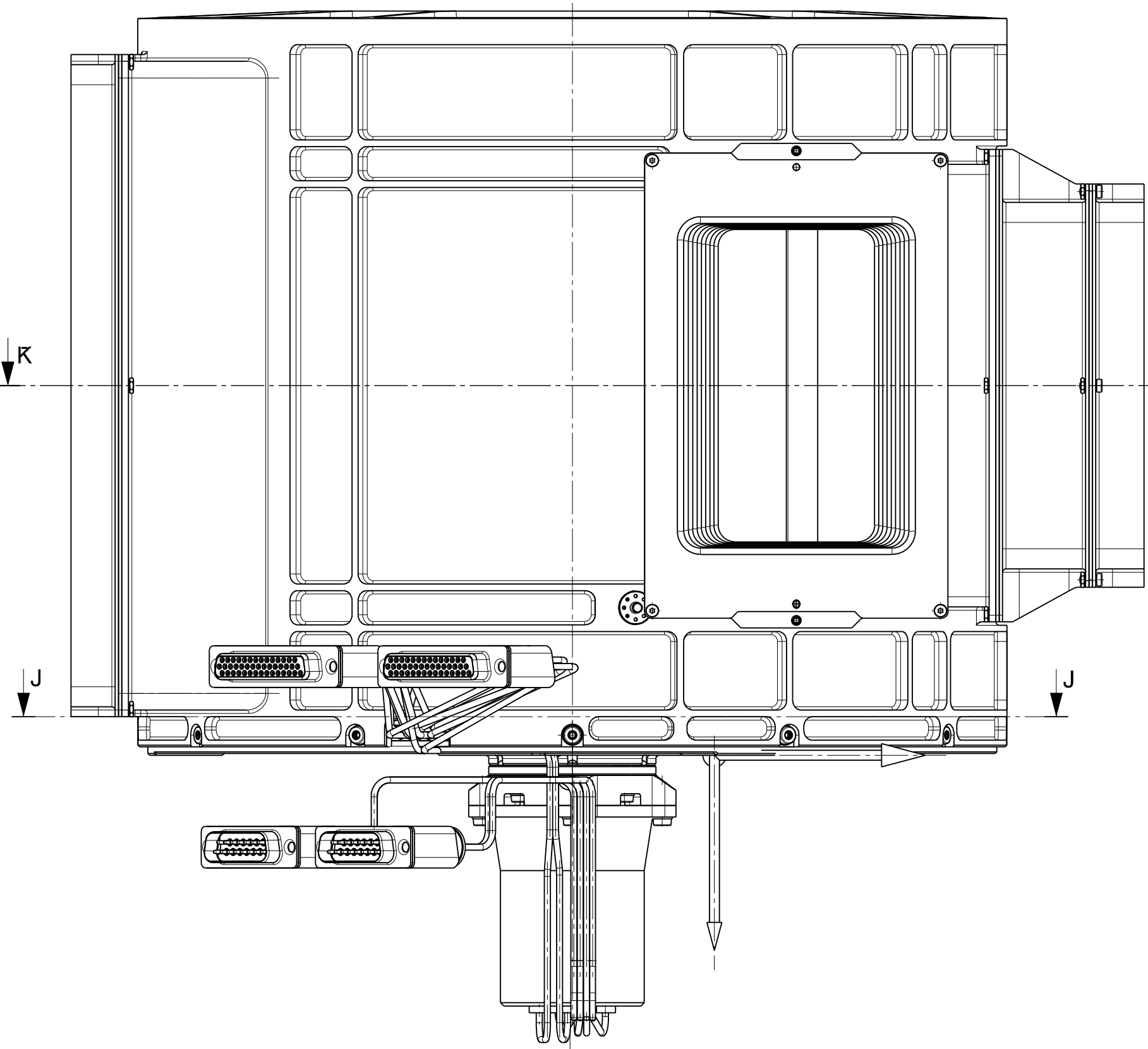
NADIR OBSERVATION POSITION

BLACK TARGET POSITION

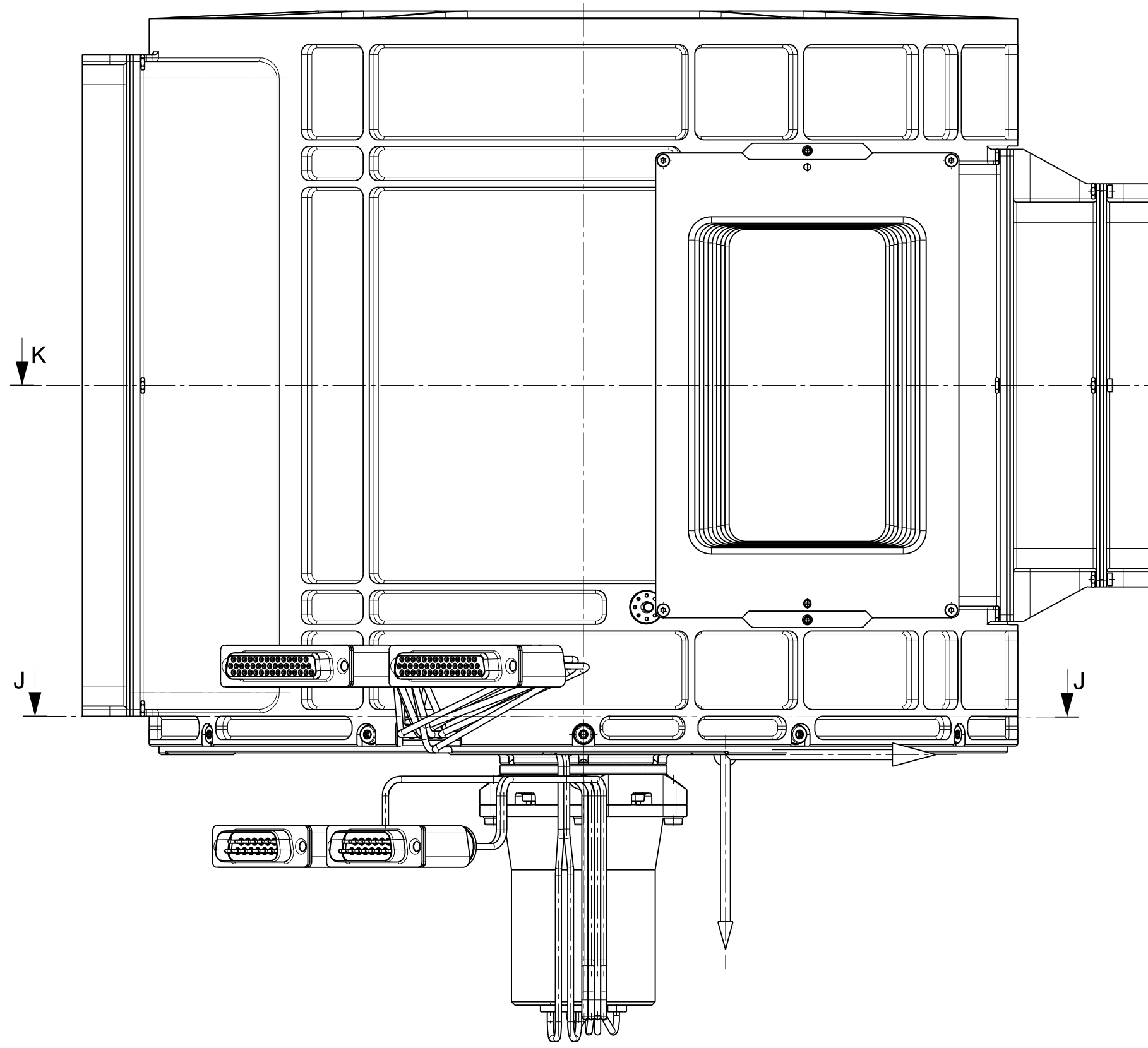
RESET SWITCHES POSITION



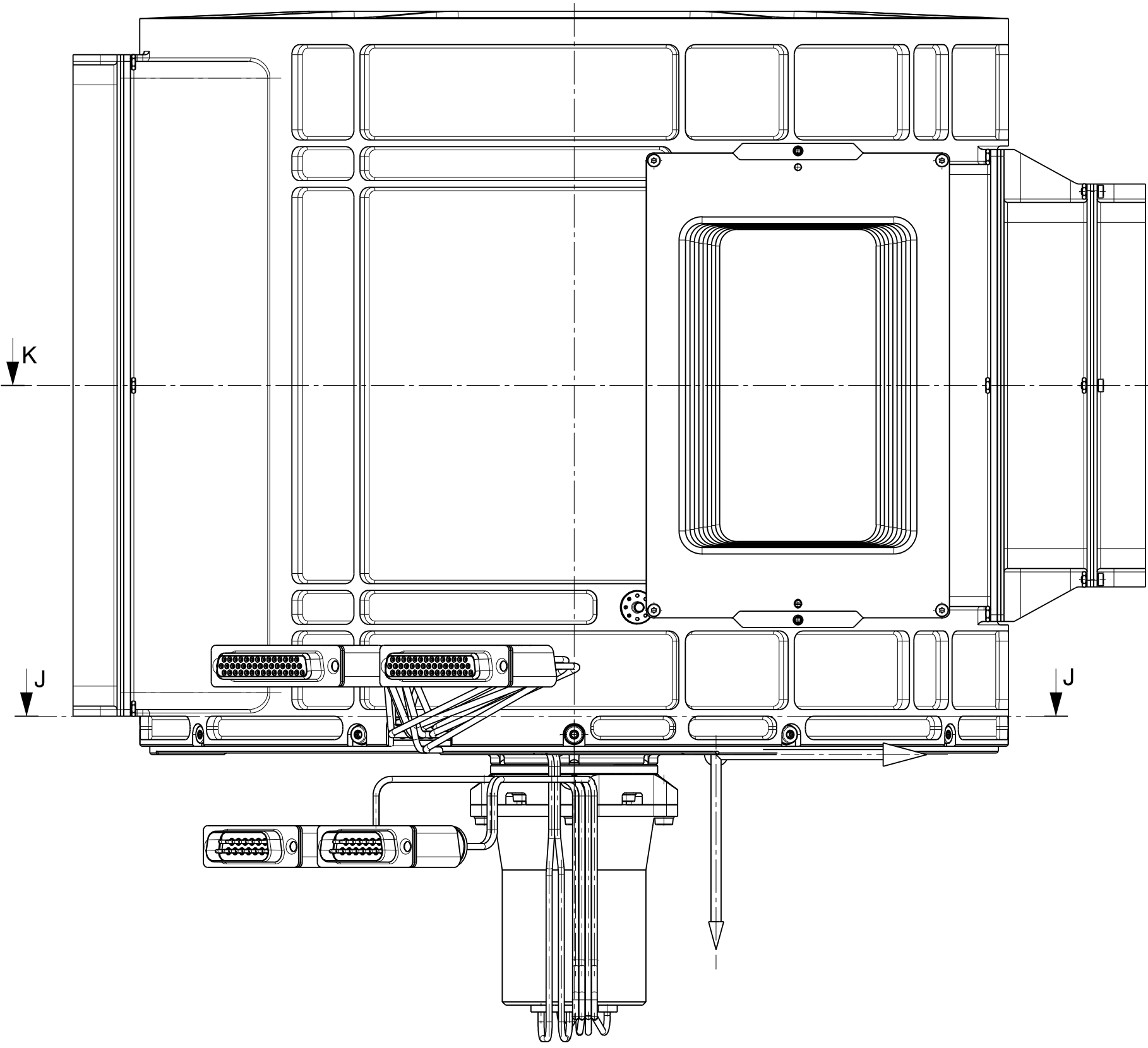
Section view J-J - 3
Scale: 7:10



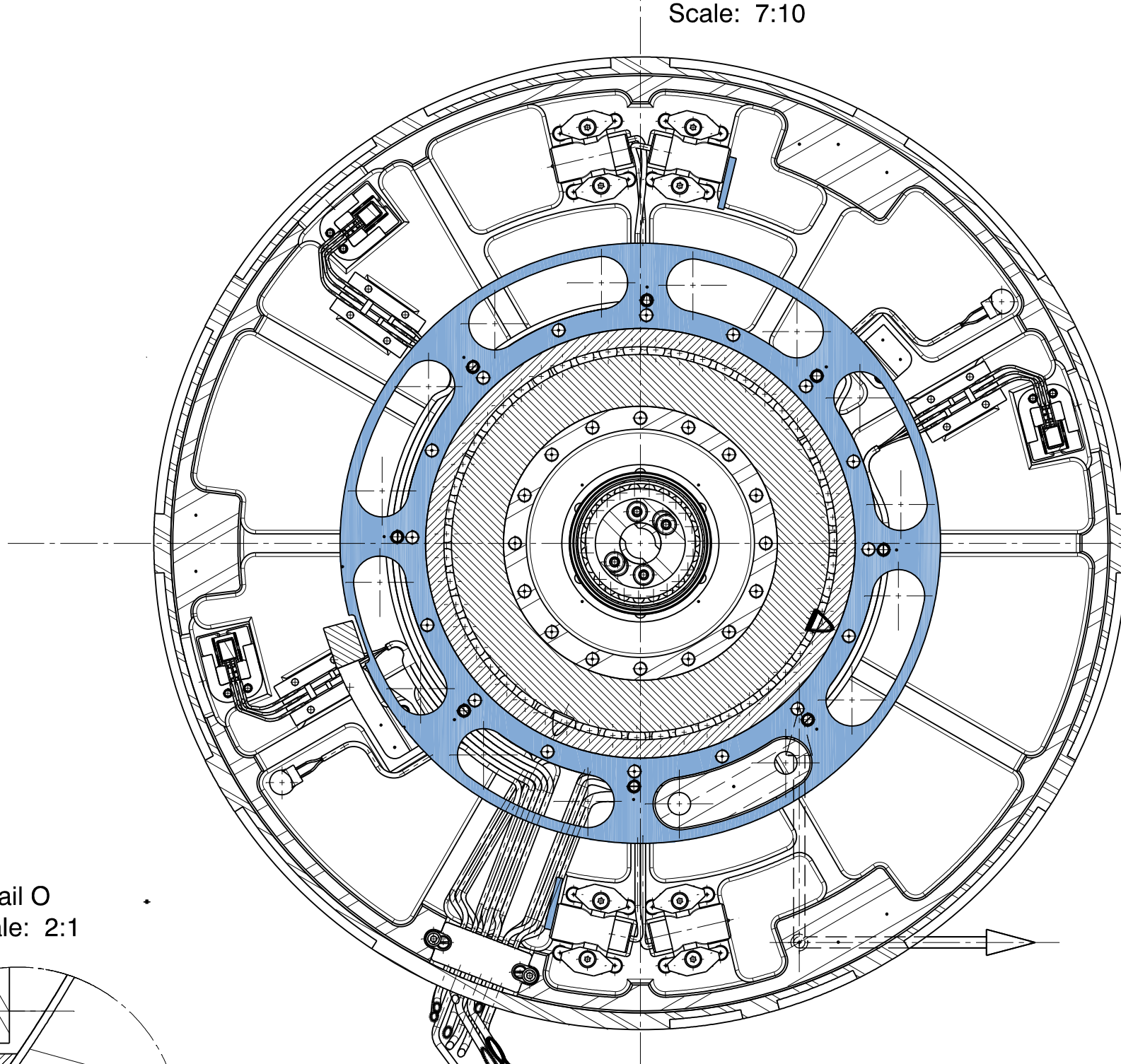
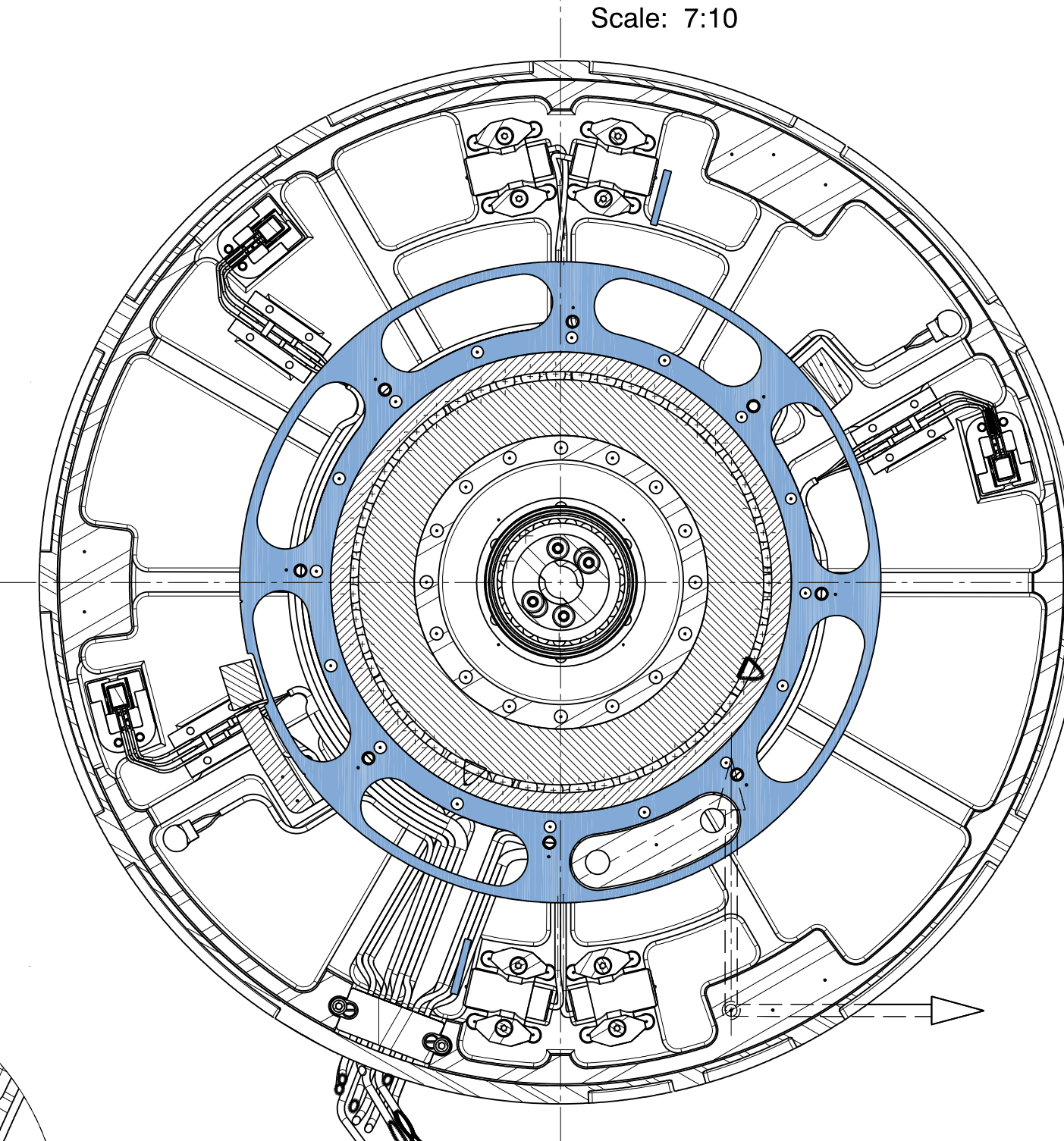
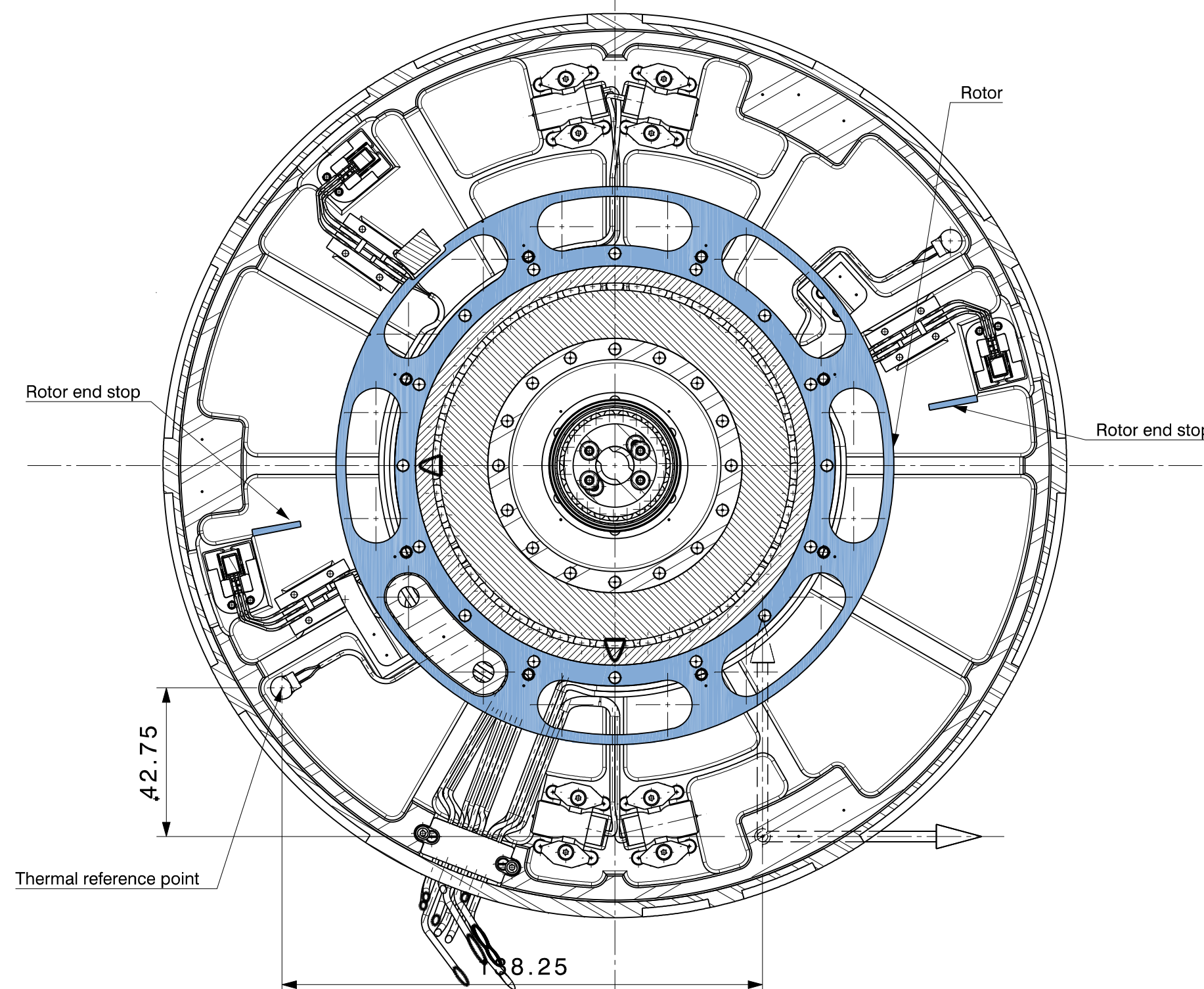
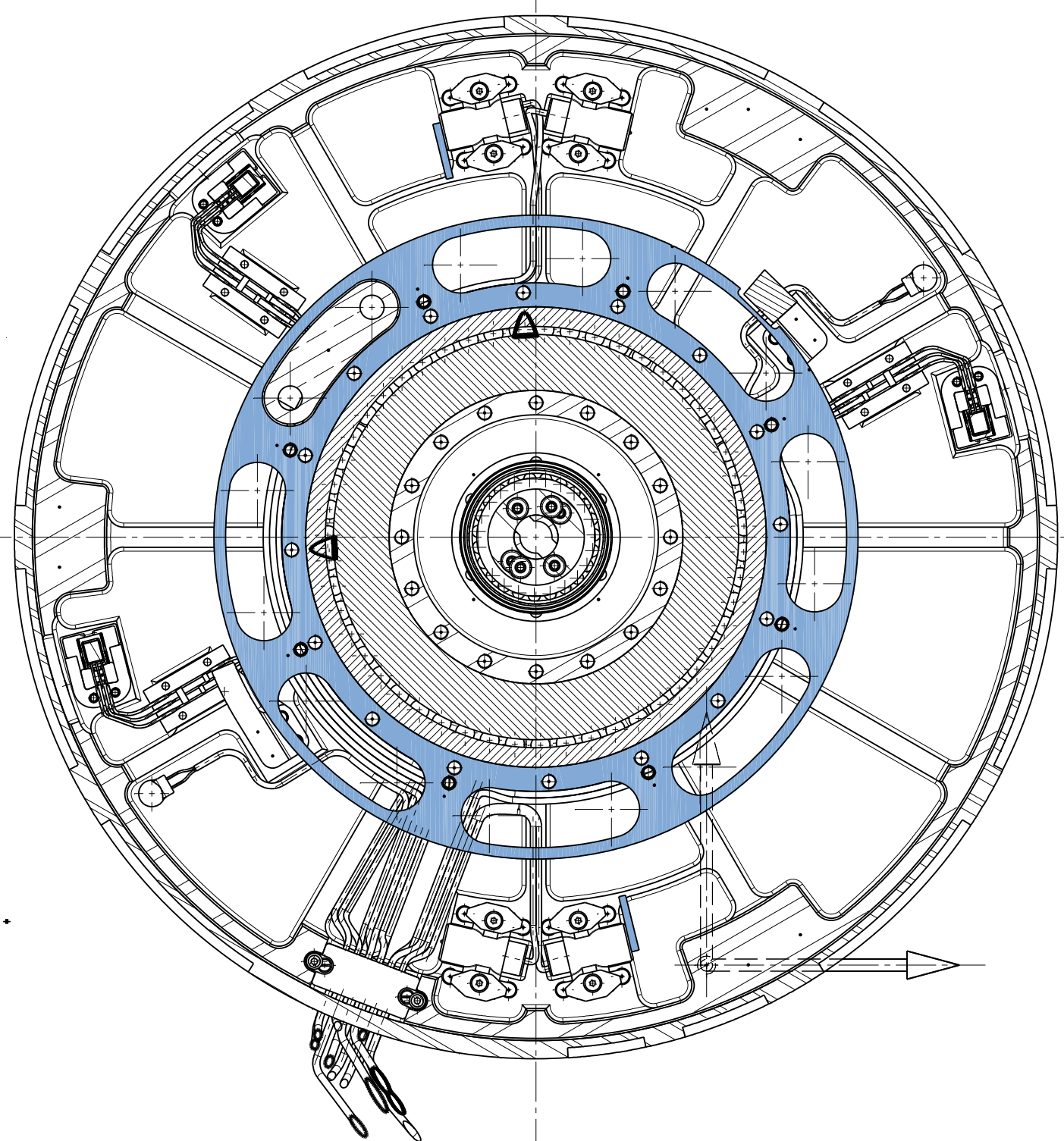
Section view J-J
Scale: 7:10



Section view J-J - 1
Scale: 7:10

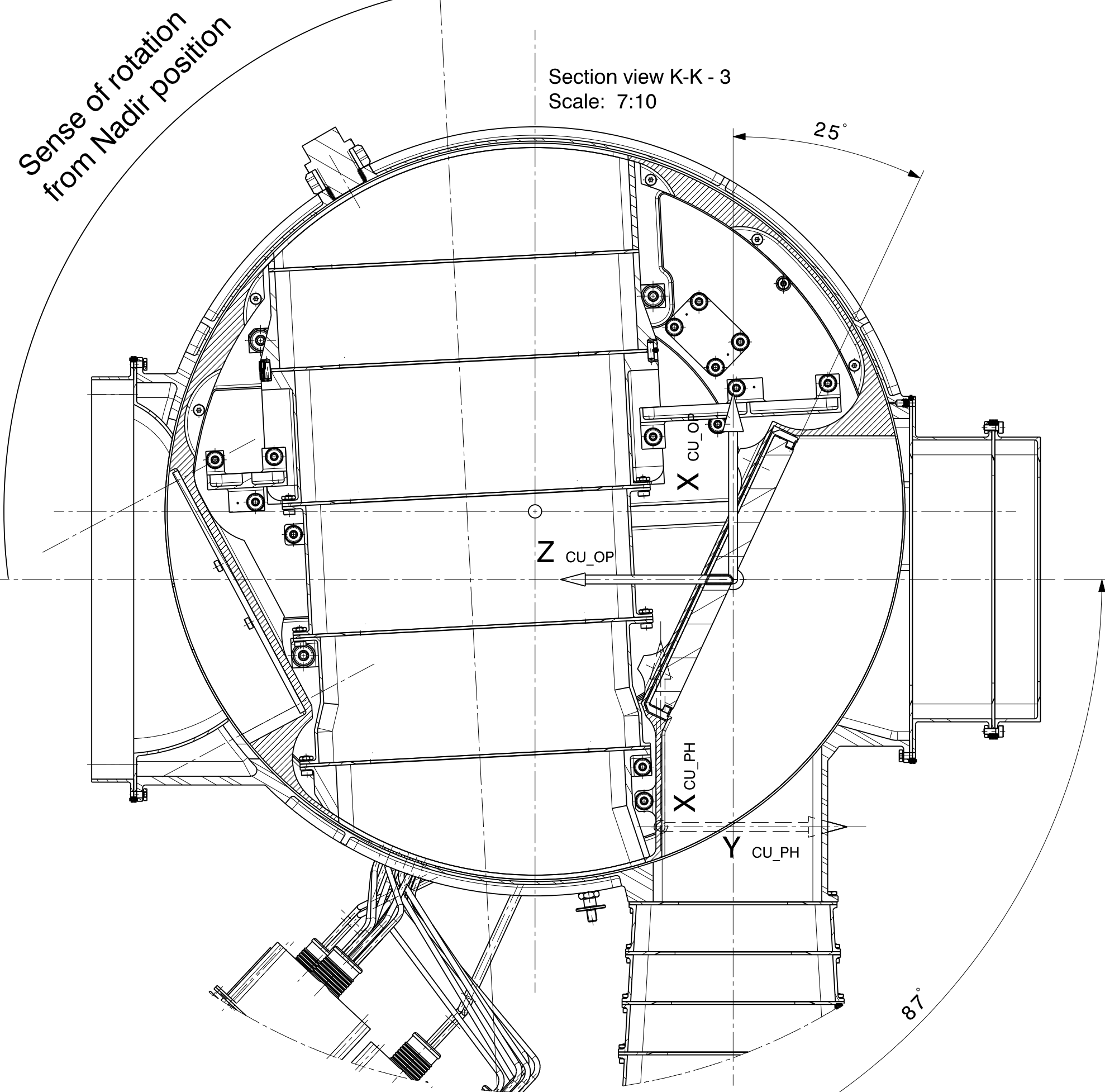


Section view J-J - 2
Scale: 7:10

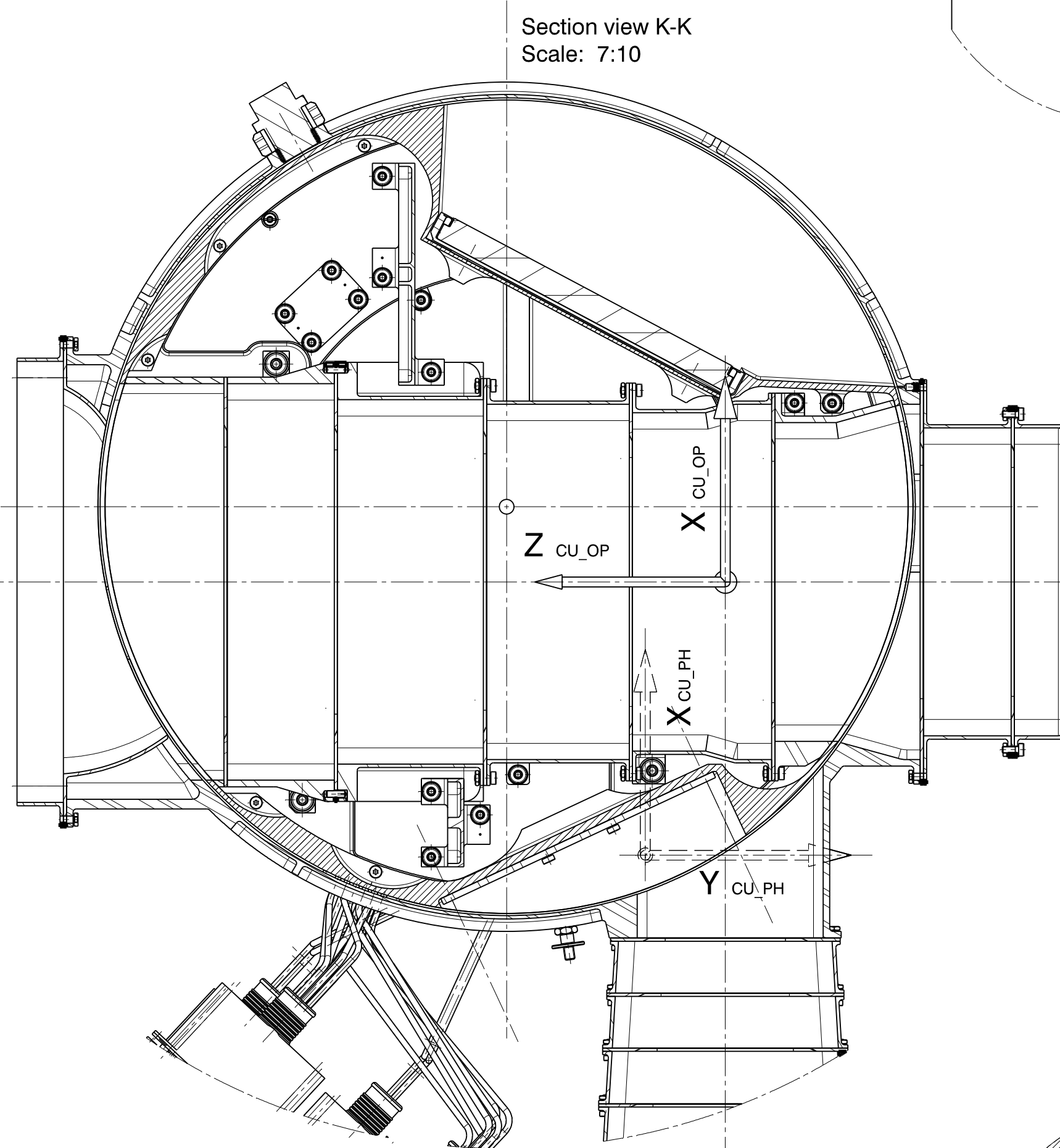


Detail M
Scale: 2:1

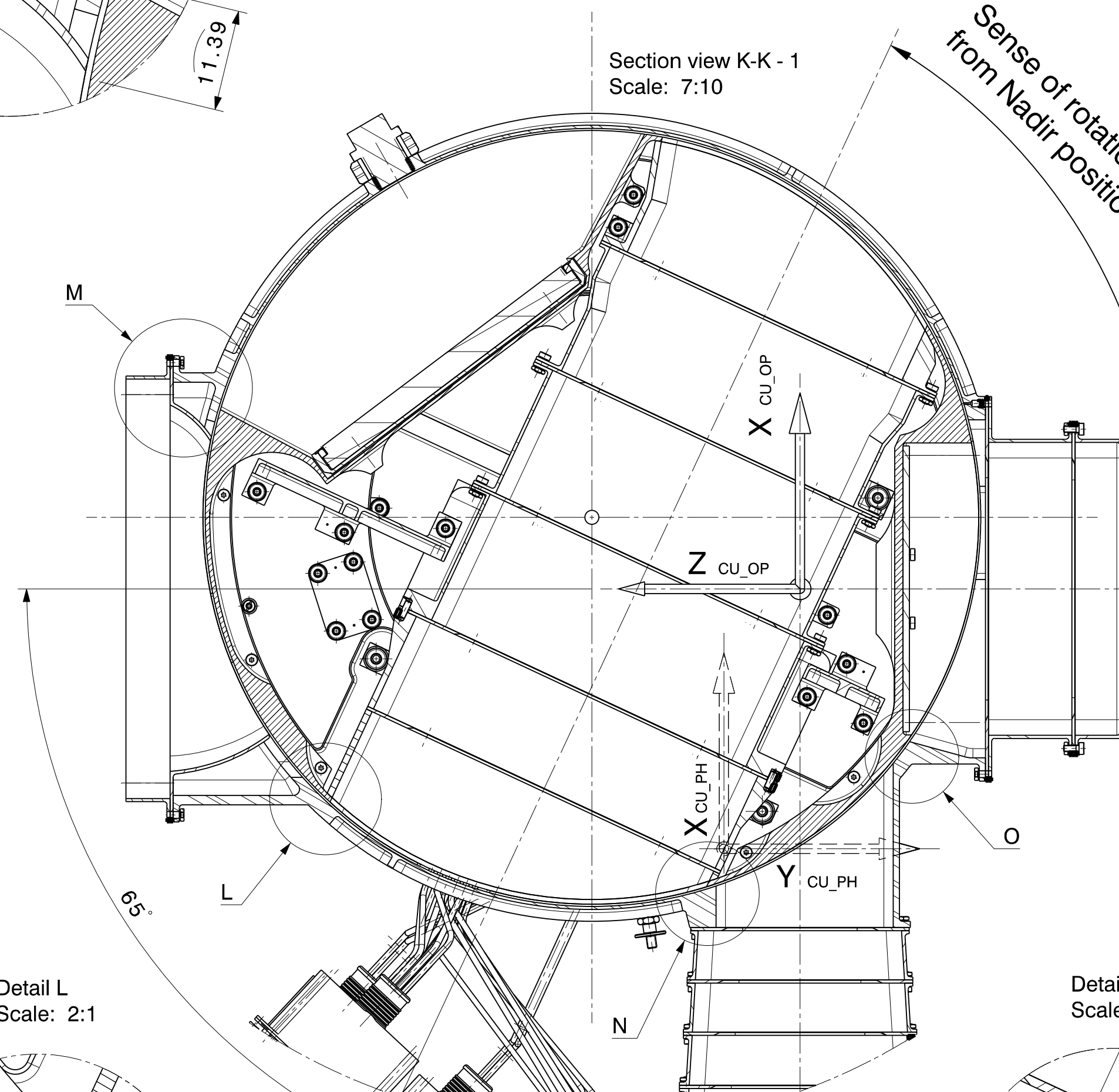
Detail O
Scale: 2:1



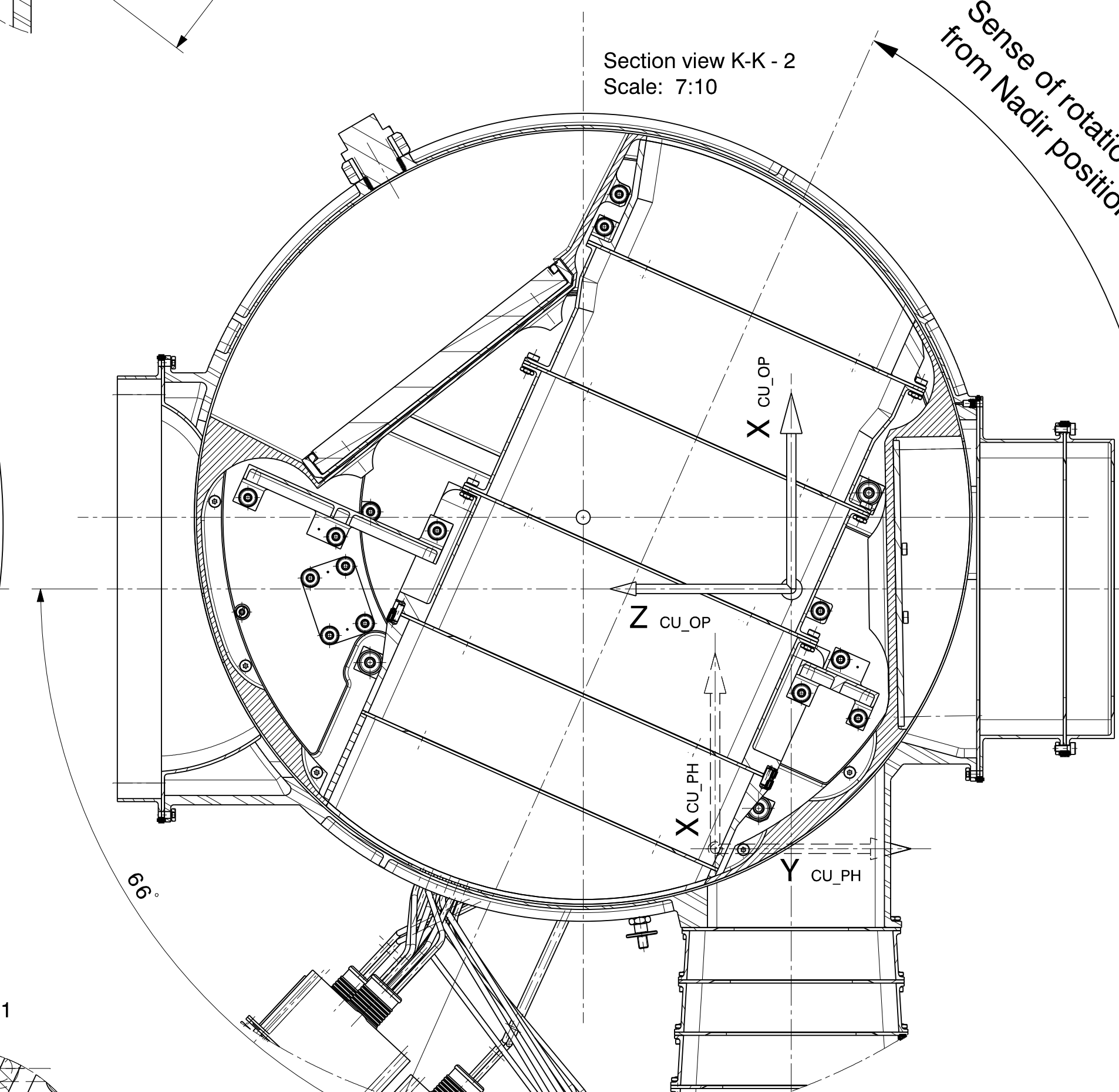
Section view K-K - 3
Scale: 7:10



Section view K-K
Scale: 7:10



Section view K-K - 1
Scale: 7:10



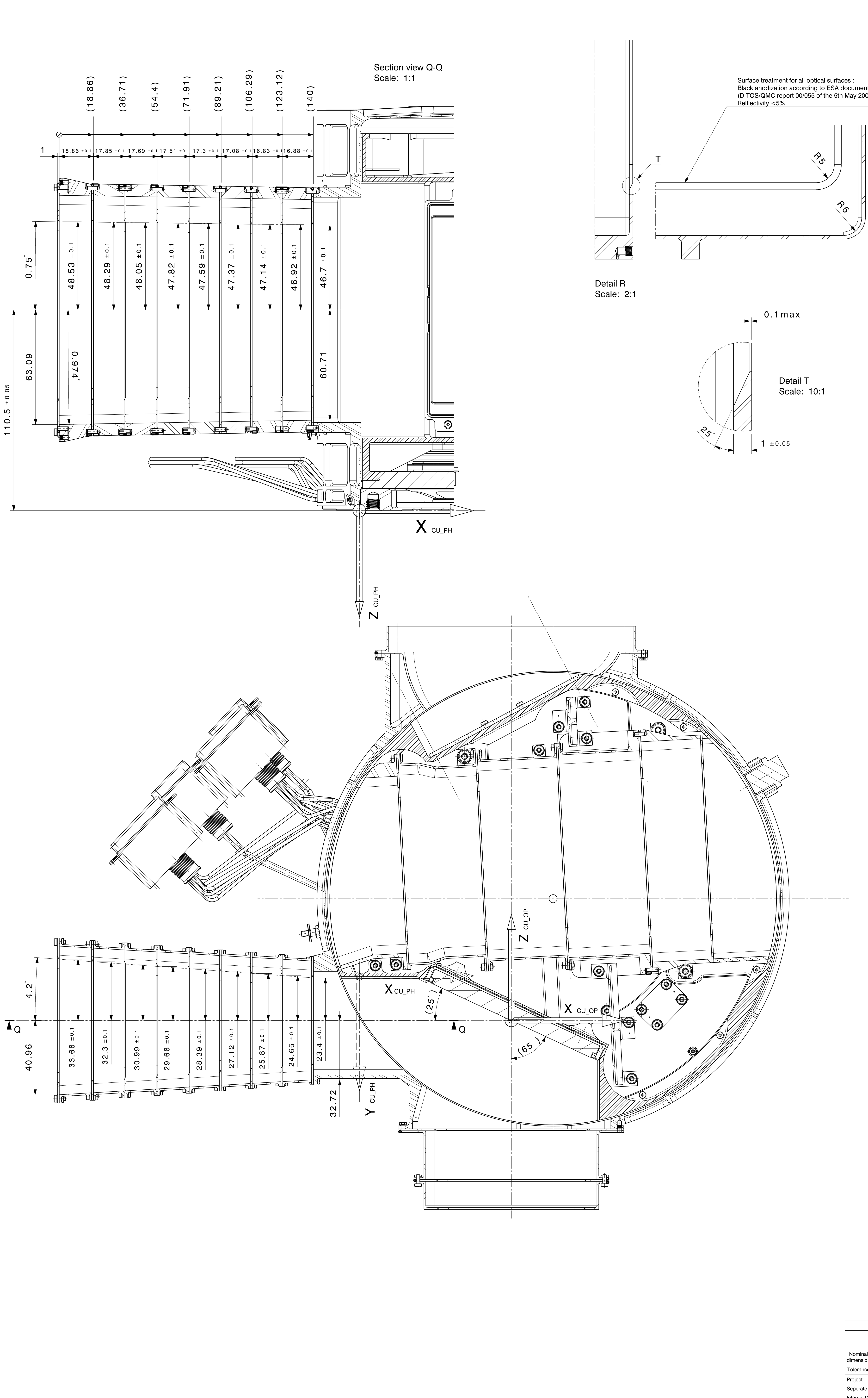
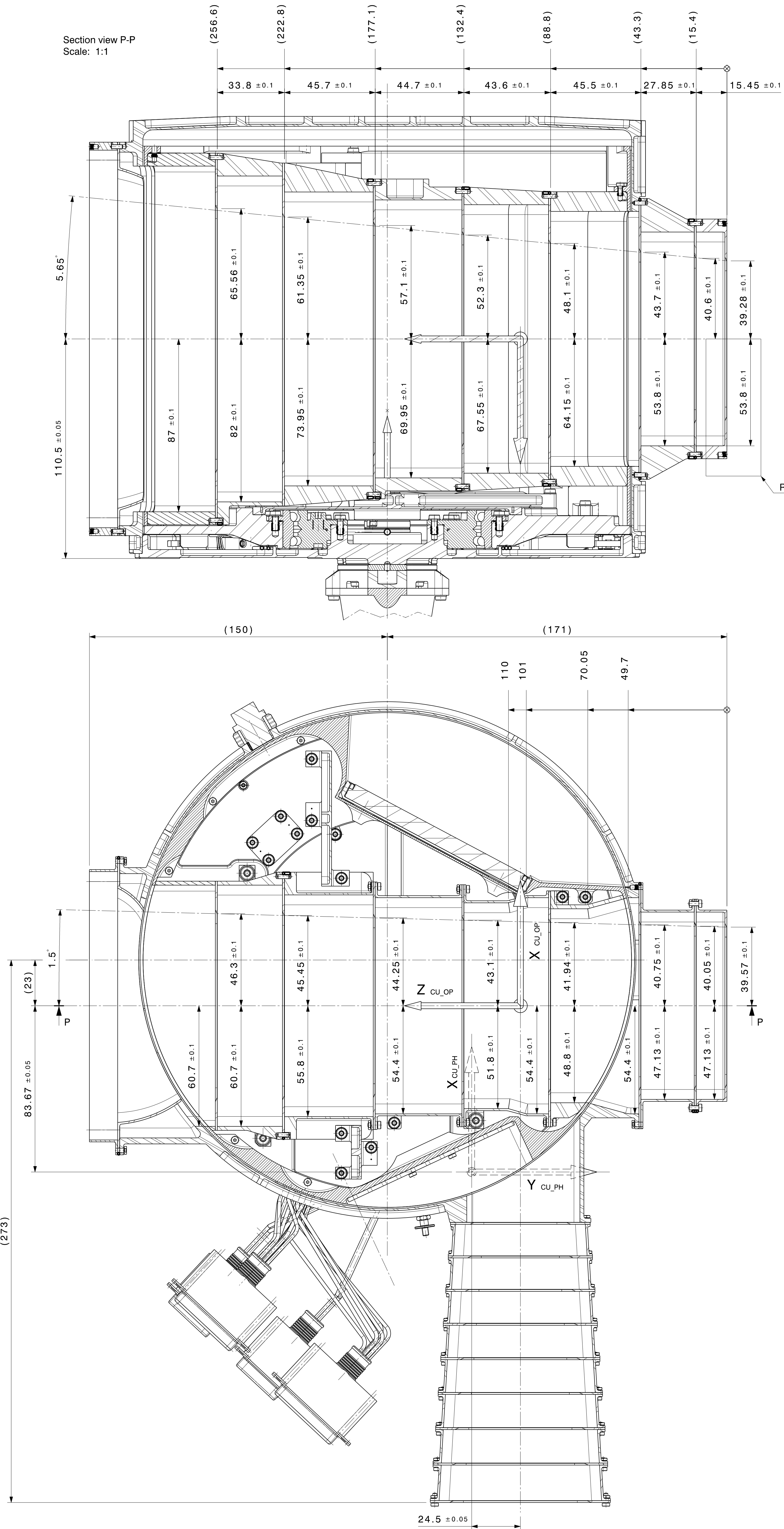
Section view K-K - 2
Scale: 7:10

Detail L
Scale: 2:1

Detail N
Scale: 2:1

General tolerances / Tolérances générales (ISO 2768)										N Class roughness Classe de rugosité N	
Linear dimensions (in mm)										Ra in µm	
Dimension	≤ 0.5	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5	N10	N12.5
Tolerance	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	N6	N6
Project	17-10P-225									N3	N3
Drawn	12.01.2019										
Checked											
Released											
Internal Drawing Nb	ALM-DES-225-0001										
Part scientifique EPFL CH-1015 Lausanne										Tot. Mass 7.2kg	
Title FLORIS Calibration Unit - MICD										Format A0	
										Revision E	

OPTICAL INTERFACE CONTROL DOCUMENT



General tolerances / Tolérances générales (ISO 2768)										N Class roughness Classe de rugosité N	
Linear dimensions (in mm)										Angular dimensions	
Nominal dimension	≤ 0.5	> 0.5	> 1	> 10	> 100	> 1000	> 10000	> 100000	> 1000000	N10	N12.5
Tolerance	± 0.05	± 0.05	± 0.1	± 0.15	± 0.2	± 0.3	± 0.5	± 0.7	± 1.0	N8	N6.3
Project	17-10P-225										N4
Separate RPL Nb	ALM-DES-225-0001										N3
Internal Drawing Nb	ALM-DES-225-0001										N2
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