



EUROPEAN UNION  
European Structural and Investing Funds  
Operational Programme Research,  
Development and Education



## PURCHASE CONTRACT

This purchase contract ("**Contract**") was concluded pursuant to section 2079 *et seq.* of the act no. 89/2012 Coll., Civil Code ("**Civil Code**"), on the day, month and year stated below by and between:

- (1) **Institute of Physics of the Academy of Sciences of the Czech Republic, a public research institution,**

with its registered office at: Na Slovance 2, Praha 8, PSČ: 182 21,

registration no.: 68378271,

represented by: RNDr. Michael Prouza, Ph.D., director

("Buyer"); and

- (2) **STREICHER, spol. s.r.o. Plzeň**

with its registered office at: Plzeňská 565, 332 09 Štěnovice

registration no.: 14706768

represented by: Dr. Jiří Lopata, director

("Seller").

(The Buyer and the Seller are hereinafter jointly referred to as "**Parties**" and individually as "**Party**".)

### WHEREAS

- (A) The Seller wishes to provide the Object of Purchase to the Buyer for consideration.
- (B) The Seller's bid for the public procurement entitled "*Manufacture of L1 vacuum chambers FE1 and FE2 TP20\_099*", whose purpose was to procure the Object of Purchase ("**Public Procurement**"), was selected by the Buyer as the most suitable.

### IT WAS AGREED AS FOLLOWS:

#### 1. BASIC PROVISIONS

- 1.1 Under this Contract the Seller shall hand over to the Buyer the device (including all accessories) that is described in Annex 1 (*Technical Specification*) to this Contract in the quality described therein ("**Object of Purchase**") and shall transfer to the Buyer the ownership right to the Object of Purchase, and the Buyer shall take over the Object of Purchase and shall pay the Seller the Purchase Price (as defined below), all under the terms and conditions stipulated in this Contract.



- 1.2 Under this Contract the Seller shall also:
- a) prepare manufacturing drawings of the Object of Purchase as further described in Annex 1 (*Technical Specification*);
  - b) provide all materials needed for the manufacturing of the Object of Purchase;
  - c) manufacture, inspect, clean, test and assembly the Object of Purchase;
  - d) verify that the Object of Purchase meets all requirements stipulated in this Contract;
  - e) transport the Object of Purchase to the place of delivery;
  - f) to elaborate and hand over to the Buyer the Object of Purchase in the extent specified in Annex 1 (*Technical Specification*) or other documents which are necessary for the proper takeover and use of the Object of Purchase in Czech or English language;
  - g) cooperate with the Buyer during the performace of this Contract
- (**“Related Activities”**).
- 1.3 The Seller promises to the Buyer that if for the fulfillment of the requirements of the Buyer under this Contract or the proper operation of the Object of Purchase are necessary other deliveries and activities not mentioned in this Contract, the Seller shall procure such deliveries or shall carry out such activities at its own expense without any effect on the Purchase Price.
2. **THE PLACE OF DELIVERY**
- The place of delivery is at the address: Fyzikální ústav AV ČR v.v.i/ELI beamlines, Průmyslová 836, 252 41 Dolní Břežany, Czech Republic.
3. **THE TIME OF DELIVERY**
- The Seller shall deliver the Object of Purchase and shall carry out Related Activities in accordance with the detailed time schedule as specified in Annex 1, Table 2 (*Technical Specification*).
4. **THE OWNERSHIP RIGHT**
- The ownership right to the Object of Purchase shall be transferred to the Buyer upon the signature of the acceptance protocol by both Parties.
5. **PRICE AND PAYMENT TERMS**
- 5.1 The purchase price for the Object of Purchase is stated in Annex 2 (*Price table*).



- 5.2 The Purchase Price can not be exceeded and includes all costs and expenses of the Seller related to the performance of this Contract. The Purchase Price includes, among others, all expenses related to the handover and acceptance of the Object of Purchase and execution of Related Activities, costs of copyright, insurance, customs, warranty service and any other costs and expenses connected with the performance of this Contract.
- 5.3 The Purchase Price for the Object of Purchase shall be paid in CZK on the basis of a tax document – invoice, to the account of the Seller designated in the invoice. The Supplier is entitled to issue the invoice after signature of the Acceptance Protocol of the Object of Purchase. Copy of the Acceptance Protocol must be attached to the invoice. The invoice must be delivered to the Buyer without undue delay after the signature of the Acceptance Protocol. The invoice shall have only the electronic form and shall be submitted to the email address: [efaktury@fzu.cz](mailto:efaktury@fzu.cz).
- 5.4 The Buyer shall realize payments on the basis of duly issued invoices within 30 days from their receipt. The invoice shall be considered to be paid for on the day when the invoiced amount is deducted from the Buyer's account on behalf of the Seller's account.
- 5.5 The invoice issued by the Seller as a tax document must contain all information required by the applicable laws of the Czech Republic. Invoices issued by the Seller in accordance with this Contract shall contain in particular following information:
- a) name and registered office of the Buyer,
  - b) tax identification number of the Buyer,
  - c) name and registered office of the Seller,
  - d) tax identification number of the Seller,
  - e) registration number of the tax document,
  - f) scope of the performance (including the reference to this Contract),
  - g) the date of the issue of the tax document,
  - h) the date of the fulfilment of the Contract,
  - i) Purchase Price,
  - j) registration number of this Contract, which the Buyer shall communicate to the Seller based on Seller's request before the issuance of the invoice,

and must comply with the double tax avoidance agreements, if applicable.

- 5.6 In case that the invoice shall not contain the above mentioned information, the Buyer is entitled to return it to the Seller during its maturity period and this shall not be considered



as a default. The new maturity period shall begin from the receipt of the supplemented or corrected invoice to the Buyer.

## 6. COPYRIGHT OF THE BUYER

- 6.1 Parties acknowledge that at the time of the conclusion of this Contract the Object of Purchase does not exist and the Seller must design, manufacture and assemble the Object of Purchase.
- 6.2 For the purposes of design and manufacture, the Buyer already provided (during the award procedure) or shall provide to the Seller after the signature of this Contract drawings and conceptual designs of the Object of Purchase ("**Buyer's Drawings**"). The Seller acknowledges that Buyer's Drawings are protected by the act no. 121/2000 Coll., on Copyright and Rights Related to Copyright and on Amendment to Certain Acts ("**Copyright Act**") as an author's work. The Seller may use Buyer's Drawings only and solely for the purposes of the fulfilment of this Contract, i.e. for the manufacture and assembly of the Object of Purchase for the Buyer.
- 6.3 The Buyer considers Buyer's Drawings to be confidential information.
- 6.4 The Seller must ensure that Buyer's Drawings will be accessed only by persons (e.g. employees and subcontractors) that need such access for the fulfilment of this Contract and shall take all reasonable steps to ensure that drawings will not be accessed by any unauthorized person.

## 7. DESIGN AND MANUFACTURE OF THE OBJECT OF PURCHASE

- 7.1 The Seller, as a professional business entity, must verify whether the Buyer's Drawings have any deficiencies. The Seller must ensure that the Object of Purchase complies with all the requirements stipulated in this Contract and is fully functional. If any part of the Buyer's Drawings or any other requirement of the Buyer related to the Object of Purchase is not suitable or appropriate and there exists a more convenient solution for the Buyer, the Seller shall propose and realize such solution without any effect on the Purchase Price, if the Buyer consents to it.
- 7.2 The Parties acknowledge that the Seller has to create and prepare its own manufacturing drawings and designs in accordance with Annex 1 (*Technical Specification*) to this Contract and other documents necessary for the manufacture and assembly of the Object of Purchase ("**Seller's Drawings**").
- 7.3 The Seller's Drawings must comply with this Contract and shall be approved by the Buyer prior to the manufacture and assembly of the Object of Purchase. If the Buyer suggests modifications to Seller's Drawings, the Seller shall incorporate such modifications or shall explain why it refuses to do so.
- 7.4 The Seller shall hand over to the Buyer all Seller's Drawings.



## 8. COPYRIGHT OF THE SELLER

- 8.1 The Seller grants to the Buyer a right to use Seller's Drawings in the original or modified version, in connection with other work or independently ("License").
- 8.2 License is granted
- a) free of charge;
  - b) as exclusive;
  - c) for all manners of use within the meaning of the Section 12(4) of the Copyright Act, as amended;
  - d) without any time restriction;
  - e) for the whole world (i.e. without any geographical restriction); and
  - f) under following conditions: i) the Buyer is entitled not to use the License, and ii) the Buyer is entitled to grant wholly or partially the License any third party (sublicense) or to transfer the License on a third person in case that the ownership of the Object of Purchase shall pass on such third person.
- 8.3 The Seller hereby grants permission to the Buyer to change or modify the Seller's Drawings. The Buyer is entitled to realize the changes or modifications alone, or with the assistance of third persons (contractors). The Buyer is entitled to combine Seller's Drawings with other drawings and designs, alone or with the assistance of third persons (contractors).
- 8.4 The Seller hereby represents and warrants to the Buyer that:
- a) is entitled to use and enforce all author's rights to Seller's Drawings, in particular if the Seller's Drawings were created by employees or by more than one author, and, therefore, the Seller received all consents and permissions from authors and ensured that the Buyer may use the Seller's Drawing properly and without any interference;
  - b) all rewards to the authors of Seller's Drawings were provided;
  - c) did not grant license to Seller's Drawings to any other person in the extent that could disturb the License of the Buyer; and
  - d) is entitled to grant License to the Buyer in the extent specified in this Contract.

## 9. SELLER'S DUTIES

- 9.1 The Seller shall ensure that the Object of Purchase and Related Activities are in compliance with this Contract including all its annexes and applicable legal (e.g. safety), technical and quality norms.



- 9.2 During the performance of this Contract the Seller proceeds independently. If the Seller receives instructions from the Buyer, the Seller shall follow such instructions unless these are against the law or in contradiction to this Contract. If the Seller finds out or should have found out if professional care was exercised that the instructions are for any reason inappropriate or illegal or in contradiction to this Contract, then the Seller must notify the Buyer.
- 9.3 All things necessary for the performance of this Contract shall procure the Seller, unless this Contract stipulates otherwise.
- 9.4 The Seller is aware that the Buyer does not have at its disposal premises for the storage of packaging and, therefore, shall not store packaging of the Object of Purchase. The absence of original packaging cannot be an excuse for refusal of elimination of defects of the Object of Purchase.

#### 10. **HANDOVER AND ACCEPTANCE OF THE OBJECT OF PURCHASE**

- 10.1 The Object of Purchase shall be delivered to the place of delivery and handed over to the Buyer within the time stipulated in Annex 1 (*Technical Specification*) to this Contract. The Object of Purchase shall be handed over to the Buyer along with delivery note or other similar document confirming the delivery. By delivering the Object of Purchase to the place of delivery the Buyer only takes custody of the Object of Purchase (i.e. the Buyer does not accept the Object of Purchase).
- 10.2 The acceptance of the Object of Purchase shall be realized on the basis of the acceptance protocol within the time stipulated in Annex 1 (*Technical Specification*) to this Contract in accordance with Annex 1 (*Technical Specification*) to this Contract.
- 10.3 If the Seller fails to duly carry out all Related Activities or if the Object of Purchase does not meet requirements of this Contract, the Buyer is entitled to refuse the acceptance of the Object of Purchase. In such a case the Seller shall remedy the deficiencies within ten (10) working days, unless Parties agree otherwise. The Buyer is entitled (but not obliged) to accept the Object of Purchase despite the above mentioned deficiencies, in particular if such deficiencies do not prevent the Buyer in the proper operation of the Object of Purchase. In such a case the Seller and the Buyer shall list the deficiencies in the acceptance protocol, including the manner and the date of their removal (remedy). If the Parties do not reach agreement in the acceptance protocol regarding the date of the removal, the Seller shall remove the deficiencies within ten (10) working days.
- 10.4 Parties exclude the application of the Section 2126 of the Civil Code.

#### 11. **WARRANTY**

- 11.1 The Seller shall provide a warranty of quality of the Object of Purchase for the period of 24 months. If on the warranty list or other document is the warranty period of longer duration, then this longer warranty period shall have priority over the period stated in this Contract.



- 11.2 The warranty period shall begin on the day of the signature of the acceptance protocol by both Parties. If the acceptance protocol lists any deficiencies, the warranty period shall begin on the day, which follows the day, in which the last deficiency was removed.
- 11.3 The Seller shall remove defects that occur during the warranty period free of charge and in the terms stipulated in this Contract.
- 11.4 If the Buyer ascertains a defect of the Object of Purchase during the warranty period, the Buyer shall notify such defect without undue delay to the Seller. Defects may be notified on the last day of warranty period, at the latest.
- 11.5 The Buyer notifies defects in writing via e-mail. The Seller shall accept notifications of defects on the following e-mail address: [krch@streicher-machinery.cz](mailto:krch@streicher-machinery.cz). The Seller shall confirm within 24 hours from the receipt of the notification.
- 11.6 In the notification the Buyer shall describe the defect and the manner of removal of the defect. The Buyer has the right to:
- a) ask for the removal of the defect by the delivery of new Object of Purchase or its individual parts, or
  - b) ask for the removal of the defect by repair, or
  - c) ask for the reasonable reduction of the Purchase Price.
- The choice among the above mentioned rights belongs to the Buyer. The Buyer is also entitled to withdraw from this Contract, if by delivering the Object of Purchase with defects this Contract is substantially breached.
- 11.7 The Seller shall remove the defect within 6 weeks from its notification, unless Parties agree otherwise.
- 11.8 Parties shall execute a protocol on the removal of the defect, which shall contain the description of the defect and the confirmation that the defect was removed. The warranty period shall be extended by a period of time that elapses between the notification of the defect until its removal.
- 11.9 In case that the Seller does not remove the defect within stipulated time or if the Seller refuses to remove the defect, then the Buyer is entitled to remove the defect at his own costs and the Seller shall reimburse these costs within 10 days after the Buyer's request to do so.
- 11.10 The warranty does not cover defects caused by unprofessional manipulation or by the failure to follow Seller's instructions for the operation and maintenance of the Object of Purchase.
- 11.11 Parties exclude the application of Section 1925 of the Civil Code.



## 12. PENALTIES

- 12.1 If the Seller is in delay with the delivery of the Object of Purchase – No. T6 in the detailed time schedule which is specified in Annex 1 (*Technical Specification*) more than 3 weeks, the Seller shall pay to the Buyer a contractual penalty in the amount of 0,1 % of the Purchase Price for every (even commenced) day of delay.
- 12.2 If the Seller is in delay with the removal of the defect, the Seller shall pay to the Buyer a contractual penalty in the amount of 0,05% of the Purchase Price for every (even commenced) day of delay.
- 12.3 The Seller shall pay contractual penalties within fifteen (15) days from the day, on which the Buyer enumerated its claims. The payment of contractual penalties shall not affect the right of the Buyer to damages even to the extent to which such damages exceeds the contractual penalty.
- 12.4 The Buyer is entitled to unilaterally set off claims arising from the contractual penalties against the claim of the Seller for the payment of the Purchase Price.
- 12.5 Parties exclude the Section 2050 of the Civil Code.

## 13. RIGHT OF WITHDRAWAL

- 13.1 The Buyer is entitled to withdraw from this Contract without any penalties, if any of the following circumstances occur:
- a) the Seller shall be in delay with the delivery of the Object of Purchase – No. T6 in the detailed time schedule which is specified in Annex 1 (*Technical Specification*) and such delay lasts more than 2 months;
  - b) The Object of Purchase shall not fulfil the requirements stipulated in this Contract, in particular in Annex 1 (*Technical Specification*);
  - c) the insolvency proceeding is initiated against the Seller; or
  - d) the Buyer ascertains that the Seller provided in its bid for the Public Procurement information or documents that do not correspond to the reality and that had or could have had impact on the result of the tendering procedure, which preceded the conclusion of this Contract.

## 14. REPRESENTATIVES OF THE PARTIES

- 14.1 The Seller appoints following representatives for the communication with the Buyer:

In technical matters:

Name: Bc. Ivanna Čech

E-mail: [cech@streicher-machinery.cz](mailto:cech@streicher-machinery.cz)

Tel.: +420 773 898 633



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MINISTRY OF EDUCATION,  
YOUTH AND SPORTS

14.2 The Buyer appoints following representatives for the communication with the Seller:

In technical matters:

Jméno: Petr Strkula

E-mail: Petr.Strkula@eli-beams.eu

Jméno: Pavel Bakule

E-mail: Pavel.Bakule@eli-beams.eu

The appointed representatives of the Buyer are entitled to communicate with the Seller regarding all technical aspects of this Contract including issuing all the approvals foreseen by this Contract and signing the acceptance protocol. The appointed representatives of the Buyer are not entitled to change or supplement this Contract.

## 15. FINAL PROVISIONS

15.1 This Contract is governed by the laws of the Czech Republic, especially by the Civil Code.

15.2 Parties acknowledge that this Contract shall be published in the Register of Contracts in accordance with the Act no. 340/2015 Coll., on the Register of Contracts.

15.3 All disputes arising out of this Contract or out of legal relations connected with this Contract shall be preferable settled by a mutual negotiation. In case that the dispute is not settled within sixty (60) days, such dispute shall be decided by courts of the Czech Republic in the procedure initiated by one of the Parties.

15.4 The Seller bears the risk of changed circumstances within the meaning of Section 1765 of the Civil Code.

15.5 The Seller is not entitled to set off any of its claims or his debtor's claims against the Buyer's claims. The Seller is not entitled to transfer its claims against Buyer that arose on the basis or in connection with this Contract on third parties. The Seller is not entitled to transfer rights and duties from this Contract or its part on third parties.

15.6 All modifications and supplements of this Contract must be in writing.

15.7 If any of provisions of this Contract are invalid or ineffective, the Parties are bound to change this Contract in such a way that the invalid or ineffective provision is replaced by a new provision that is valid and effective and to the maximum possible extent correspond to the original invalid or ineffective provision.

15.8 This Contract is executed in four (4) counterparts and every Party shall receive two (2) counterparts.



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- 15.9 An integral part of this Contract is Annex 1 (*Technical Specification*) including all its annexes and Annex 2 (*Price table*). If Annex 1 (*Technical Specification*) uses the term “Contracting Authority”, it means Buyer and if it uses the term “Supplier”, it means Seller.
- 15.10 This Contract shall be valid on the date of the signature of both Parties and effective on the day, on which it is published in the Register of Contracts.

**IN WITNESS WHEREOF** attach Parties their handwritten signatures:

**Buyer**

Signature: \_\_\_\_\_

Name: RNDr. Michael Prouza, Ph..D.

Position: director

Date:

**Seller**

Signature: \_\_\_\_\_

Name: Dr. Jiří Lopata

Position: director

Date:



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## **ANNEX 1**

### **TECHNICAL SPECIFICATION**

<b>Confidentiality Level</b>	<i>BL - Restricted for internal use</i>	<b>TC ID / Revision</b>	00274630/C
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<b>PBS code</b>	<i>RA1.L1.L1_2.BT.IRT2</i>		
<b>Project branch</b>	<i>Engineering &amp; Scientific documents (E&amp;S)</i>		
<b>Document Type</b>	<i>Specification (SP)</i>		

*[RSD for the category "C" of the product]*

## **Manufacture of L1 vacuum chambers**

### **FE1 and FE2**

### **TP20\_099**



#### **Keywords**

Seed beam transport, vacuum chamber

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021509/A.004	15.09.2020	15.09.2020	A. Grudinová

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<i>Name (Approver)</i>	<i>Position</i>	<i>Date</i>	<i>Signature</i>
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### *Revision History / Change Log*

<i>Change No.</i>	<i>Made by</i>	<i>Date</i>	<i>Change description, Pages, Chapters</i>	<i>TC rev.</i>
1	P. Bakule, P. Strkula	23.07.2020	<i>Draft</i>	A
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3	A. Grudinová	15.9.2020	<i>Final version for procurement</i>	C

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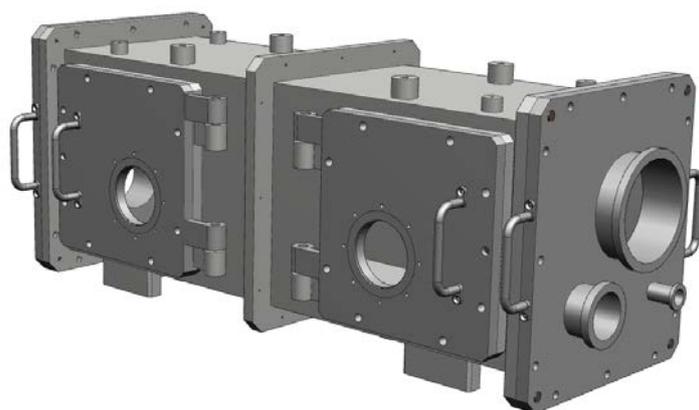
## 1. Introduction

The CA is undertaking the ELI project with the objective of building a facility using cutting-edge laser technologies and to implement research and application projects in the field of laser-matter interaction using ultra-short laser pulses at high repetition rates and/or with high energy. Part of the project realization is the construction of the so called “L1 image relay transport” (IRT) which includes two vacuum chambers housing steering and focusing mirrors. The mirrors are mounted on internal optical breadboard that is mechanically decoupled from the vacuum chamber.

The Contracting Authority seeks delivery of clean vacuum components of the IRT for the L1 Allegra laser system, consisting of vacuum chambers, and accessories.

The scope of work includes final production design (manufacturing drawings), manufacture, final cleaning, leak testing, packaging and delivery to ELI Beamlines. **The mirrors, window holders, internal optomechanics and breadboards are not part of the delivery.** On-site installation is not required with this delivery.

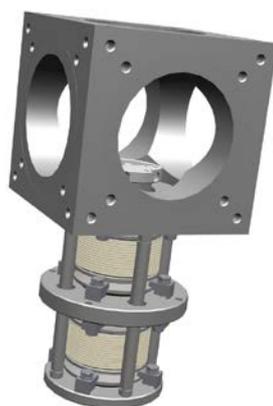
The conceptual 3D models of the main assemblies to be manufactured are shown in Figure 1, Figure 2 and Figure 3 respectively.



**Figure 1: Conceptual model of FE1 chamber**



**Figure 2: Conceptual model of FE2 chamber**



**Figure 3: Conceptual model of periscope mirror chamber**

### 1.1. Purpose

This Requirements Specification Document (RSD) lists the technical requirements on manufacture of vacuum components - **Manufacture of L1 vacuum chambers FE1 and FE2** used in the “L1 image relay transport” of ELI Beamlines project.

### 1.2. Scope

The RSD contains all of the technical requirements: functional, performance and design, delivery, safety and quality requirements for the following product (*PBS code: RA1.L1.L1\_2.BT.IRT2*): **Vacuum chambers FE1 and FE2, periscope chambers and accessories.**

### 1.3. Terms, Definitions and Abbreviations

For the purpose of this document, the following abbreviated terms are applied:

Abbreviation	Meaning
A	Analysis (as a verification method)
AMU	Atomic mass unit
CA	Contracting Authority
CPR	Cleaning Procedure Report
CTR	Cleanliness test report
DIR	Delivery Inspection Report
DVR	Dimension Verification Report
ELI	Extreme Light Infrastructure
FEM	Final Element Method analysis
I	Inspection (as a verification method)
MDR	Manufacturing Drawings Report
PBS	Product breakdown structure (code of ELI-Beamlines)
R	Review (as a verification method)
RSD	Requirements Specification Document
RGA	Residual gas analysis
T	Test (as a verification method)
TR	Technical report
ULO	Ultra-low outgassing
VCD	Verification Control Document
VP	Verification plan
VTR	Vacuum Leak Test Report

## 2. Functional, Performance and Design requirements

### 2.1. General Requirements

The scope of the contract will include all materials, preparation of manufacturing drawings, manufacture, inspection, cleaning, testing, assembly, packing and subsequent delivery to the Contracting Authority's premises located in Dolní Břežany.

REQ-030443/A

The Supplier shall manufacture and deliver to ELI Beamlines all assemblies and components listed in Table 1 with dimensions and parameters defined in this RSD and in the associated drawings and 3D models.

*NOTE: The detailed 3D models of the chambers will be given to the Supplier after the contract signature.*

---

Verification method: I – inspection

**Table 1: List of clean vacuum chambers and components to be delivered to ELI Beamlines (see REQ-030443/A)**

Line		Reference Drawing ID/rev.:	Quantity
1	Vacuum Chamber <b>FE1</b> Assy (for component drawings see <b>RD-01</b> ) with all flanges blanked off - see Line 4	00274013/00	1 assembly
2	Vacuum Chamber <b>FE2</b> Assy (for component drawings see <b>RD-02</b> ) with all flanges blanked off - see Line 4	00274027/00	1 assembly
3	Periscope mirror PER1 chamber with vacuum isolator assembly (for component drawings see <b>RD-03</b> ) with all flanges blanked off – see Line 4	00274160/00	4 assemblies
4	Set of blank flanges for Lines 1-3		1 set

REQ-030444/A

As part of the preparation of manufacturing drawings the Supplier shall perform FEM analysis of the FE1 and FE2 chamber deformations due to atmospheric pressure differential and show that the design is consistent with REQ-030456/A. The supplier shall provide **FEM analysis summary report (FEM)** – see test plan Line 2 in Table 3.

---

Verification method: R - review of report

REQ-030445/A

The completed assembly of the FE1 and FE2 chambers shall be supplied without the window holders and assembled with a full set of blanking flanges (Line 4 of Table 1).

---

Verification method: I - inspection

REQ-030446/A

All parts heavier than 15 kg shall be supplied with lifting eyes to aid safe installation.

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Verification method: I – inspection

REQ-030447/A

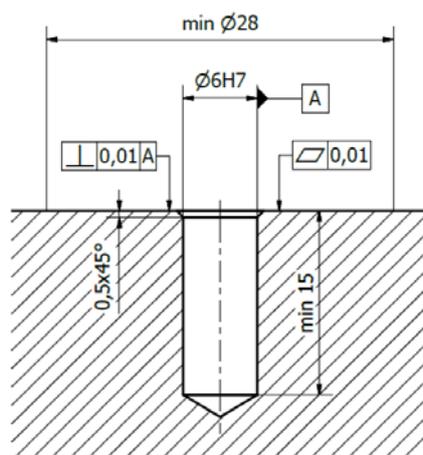
The chambers FE1 and FE2 shall each be delivered with four alignment reference holes with dimensions shown in Figure 4.

*NOTE 1: Flat contact surface of 28 mm diameter shall be available around the hole.*

*NOTE 2: The exact positions the alignment references will be included by the CA in the 3D model (REQ-030451/A).*

---

Verification method: I - inspection



**Figure 4:** Reference hole: Diameter 6H7 hole, 28 mm contact surface, 15 mm depth.

REQ-030468/A

The surface finish of all components shall be as specified in the drawings supplied by the CA. Where this is not specified then surface finish of any vacuum side surfaces shall have roughness better than Ra 0,8  $\mu\text{m}$  and surface finish on any other surfaces shall be uniform Ballotini (blasting with glass beads).

*NOTE: Other finish technologies on some or all parts are possible if agreed with the CA.*

---

Verification method: R-review (of manufacturing drawings), I-inspection (on delivery of finished chamber)

## 2.2. Manufacturing drawings

REQ-030449/A

The Supplier shall prepare and supply manufacturing drawings in \*.pdf format and one of the following file formats:

- Native data \*.prt for NX version 11 or older;
- Native data \*.idw for Autodesk Inventor version 2020 or older;
- \*.dwg.

---

Verification method: R - review

REQ-030450/A

The Supplier shall prepare and supply an updated 3D model of the supplied Assemblies (lines 1-3 of Table 1) in one of the following formats:

- Native data NX \*.prt for NX version 11 or older.
- Native data \*.ipt, \*.iam for Autodesk Inventor version 2020 or older;
- Universal format: Parasolid \*.x\_t, or step \*.STP.

---

Verification method: R - review

REQ-030451/A

The manufacturing drawings shall be based on the 3D model supplied by the CA within the time limit specified in Table 2 (see section 6.2.2).

*NOTE: The conceptual design will be provided in CAD .stp file format, or if requested by the Supplier, it can be provided in Native Autodesk Inventor file formats (\*.ipt, \*.iam).*

---

Verification method: R - review

REQ-030452/A

Any dimensional or design modifications that may arise as part of detailed manufacturing design shall be consulted with and approved by the CA.

---

Verification method: R - review

REQ-030453/A

The final manufacturing drawings shall be approved by the CA before commencement of manufacturing.

---

Verification method: R - review

REQ-030454/A

If at any stage of the design or manufacturing it is clear to the Supplier that an advantage could be gained by a modification of the original design then the Supplier shall bring it to the attention of the CA.

---

Verification method: Not To Be Tracked within VCD

REQ-030455/A

Precautions shall be taken in design vacuum components to avoid trapped volumes in vacuum spaces which could result in virtual leaks and these spaces shall be suitably vented.

---

Verification method: R – review

### 2.3. Vacuum components manufacture

REQ-030456/A

Maximal deformations of the chamber's walls under vacuum shall be lower than 1 mm in comparison to the vented status.

---

Verification method: A - analysis

REQ-030457/A

The assembly shall be designed and manufactured for operation at vacuum level better than 1E-6 mbar.

---

Verification method: R – review

REQ-030458/A

All vacuum components shall be high vacuum compatible to comply with REQ-030457/A and shall be manufactured using materials and procedures that will guarantee low outgassing rate (including seal and weld integrity) as might be reasonably expected for such vacuum components.

---

Verification method: R - review

REQ-030459/A

The materials used for manufacture shall be as specified on the drawings.

*NOTE: Material change is possible if agreed by the CA.*

---

Verification method: R - review

REQ-030460/A

Assembly of vacuum parts shall take place under controlled conditions in a cleanroom environment of at least Class 8 according to ČSN EN ISO 14644 (certification is not required).

---

Verification method: I – inspection (*site visit of manufacturing premises if deemed necessary by the CA*)

REQ-030461/A

All chemicals and solvents (such as cutting fluids, greases etc.) used during manufacture shall be capable of being removed entirely by subsequent cleaning operations.

---

Verification method: R – review (*these materials to be listed in the final technical report*)

## 2.4. Vacuum flanges and seals

REQ-030462/A

The flanges shall be compatible with “ISO 1609:1986 - Vacuum technology - Flange dimension” and “ISO 2861:2013 - Vacuum technology - Dimensions of clamped - type quick-release couplings”.

---

Verification method: R – review

REQ-030463/A

The surface finish of seal faces shall be compatible with the requirements of the ISO-K and ISO-KF seals used.

---

Verification method: R – review

REQ-030464/A

Sealing surfaces shall be in particular free of scratches or dents.

---

Verification method: I - inspection

REQ-030465/A

Seal faces shall be suitably protected (e.g. with plastic caps) immediately after final machining to minimise the risk of damage.

*NOTE: This protection should only be removed for the purposes of cleaning and inspection, prior to final assembly.*

---

Verification method: I - inspection

REQ-030466/A

Sealing shall be made of fluoroelastomer polymer (Viton) material.

---

Verification method: R – review (*specification sheet and part number of sealing included in final technical report*)

REQ-030467/A

Hardness of o-rings shall be 60 or 70 Shore A unless agreed otherwise with the CA.

---

Verification method: R – review (*specification sheet and part number of sealing included in final technical report*)

## 2.5. Cleaning of vacuum components

REQ-030470/A

The Supplier shall provide the CA the description of the cleaning procedure for vacuum components which will be reviewed and approved by CA.

---

Verification method: R - review

REQ-030471/A

Prior to cleaning, all swarf, burrs, etc. from the machined surfaces shall be physically removed. The procedures may include high pressure air blasting, water jet, scraping, swabbing etc.

---

Verification method: I – inspection

REQ-030472/A

All vacuum components must be cleaned separately. Cleaning of assembled components and systems is not allowed.

---

Verification method: Not to be tracked via VCD

REQ-030473/A

The cleaning procedure shall remove contaminants that adhere to the surface such as oils, greases, dirt, corrosion products, or finger prints.

---

Verification method: I - inspection

REQ-030474/A

The cleaning procedure shall include at minimum the following steps unless agreed otherwise with the CA (see REQ-030470/A):

- General pre-clean, removal of gross contamination, fluxes etc. by wiping/scraping;
- Degrease with solvent by rinsing, swabbing or immersion;

- Wash with domestic water and detergent;
- Vapor degrease or soak cleaning;
- Degrease with solvent. Small and complex items shall be immersed and ultrasonically agitated;
- Wash with domestic water;
- Wash with 80°C Demineralized water (resistivity  $\geq 15 \text{ M}\Omega/\text{cm}$  at 25°C);
- Drying (clean dry air or Nitrogen);
- Immediate packaging.

---

Verification method: R - review

REQ-030475/A

Clean components shall be handled wearing clean, dry, lint-free gloves.

---

Verification method: Not To Be Tracked within VCD

REQ-030476/A

Chemicals used in the cleaning process shall not affect the material properties or cause colour change, corrosion or other damage.

---

Verification method: R – review

REQ-030477/A

Any use of solvents in cleaning O-rings shall be avoided. The allowed technique for cleaning O-rings from hydrocarbons is baking in vacuum oven at temperatures  $< 180^\circ\text{C}$ .

---

Verification method: R – review

REQ-030478/A

The supplier shall perform RGA tests of the chamber assemblies (Lines 1-3 of Table 1). *The measured amplitude of any peak in the interval between 45 AMU and 200 AMU shall be no higher than 1/50 of the 44 AMU peak and the peak at 43 AMU shall be no higher than 1/10 of the 44 AMU peak.*

---

Verification method: R – review, T - test

## 2.6. Welding

REQ-030479/A

Vacuum sealing welds made externally shall have full penetration leaving a smooth surface on the vacuum side and shall meet acceptance criteria EN ISO 5817, class B.

---

Verification method: I - inspection

REQ-030480/A

The parts to be welded shall be thoroughly cleaned and degreased.

---

Verification method: I - inspection

REQ-030481/A

Inert shielding and backing gases shall be used during welding to minimise oxidation.

---

Verification method: R – review of the welding technology

REQ-030482/A

Only qualified welders according EN ISO 9606-1 or EN 287-1 or EN ISO 14 732 shall execute the welding.

---

Verification method: R – review (*qualification certificates to be supplied to the CA*)

REQ-030483/A

Qualified welding supervision according EN ISO 14 731 and qualified welding procedures shall be present and used for manufacturing.

---

Verification method: R – review

## 2.7. Vacuum leak tests

REQ-030484/A

The Supplier shall perform leak test of the assemblies FE1, FE2 and the periscope mirror chambers (Lines 1-3 of Table 1) and provide to the CA the results of this test.

*NOTE 1: Single leak test (spray test) shall be according to ČSN EN 1779, method A.3 (equivalent to EN 1779).*

*NOTE 2: Total leak test shall be performed according to ČSN EN 1779, method D.2 (equivalent to EN 1779). If this is not possible, other methods may be proposed by the Supplier.*

---

Verification method: T - test

REQ-030485/A

The measured single leak rate using He detector shall be less than **1.0E-9 mbar l/sec.**

---

Verification method: T - test

REQ-030486/A

The total leakage rate measured shall be better than **5.0E-4 mbar l/sec.**

---

Verification method: T – test

### 3. Delivery Requirements

#### 3.1. General Requirements

REQ-030487/A

The transportation to the final destination at the ELI Beamlines in Dolní Břežany shall be conducted by the Supplier.

---

Verification method: Not To Be Tracked within VCD

#### 3.2. Packaging for transport

REQ-030488/A

Cleaned components/assemblies shall be double packaged in ULO foil and sealed.

Verification method: R – review, I - inspection

REQ-030489/A

All delivered components (or assemblies) shall be packaged for transport in a way that prevents any damage or contamination (including water contamination).

*NOTE 1: Where practical, components should be entirely enclosed in polyethylene which is heat sealed.*

*NOTE 2: Isolator post must be mechanically fixed during transport to prevent damage of the bellows.*

---

Verification method: I – inspection

REQ-030490/A

Each separate crate or package shall be labelled on the outer packaging with the contents, i.e. with all part numbers of the contained components.

Verification method: I - inspection

### 4. Safety Requirements

REQ-030491/A

The Supplier shall supply a Declaration of Conformity or any other equivalent document legally recognized and accepted in the Czech Republic for each product type if the appropriate legislation determines the Supplier's obligation to have a Declaration of Conformity (or the equivalent document) for the purposes of a Device sale in the Czech Republic to fulfil the requirements of 2001/95/EC directive or applicable Czech law.

---

Verification method: R – review

## 5. Quality Requirements

### 5.1. General Quality Requirements

REQ-030492/A

The Supplier shall carry out dimension verification measurements for FE1 and FE2 chambers and include the results in the **Dimension verification report (DVR)**.

*NOTE: The dimensions that are to be verified in this way will be mutually agreed during the review of manufacturing drawings.*

---

Verification method: R – review (*review of technical reports*)

### 5.2. Documentation

REQ-030493/A

All documentation shall be supplied in either English or Czech language in both hardcopy and electronic format.

---

Verification method: Not To Be Tracked within VCD

REQ-030494/A

The Supplier shall provide the following relevant manufacturing documents:

- Final updated manufacturing drawings in electronic form and updated 3D model – see REQ-030449/A, REQ-030450/A)
- All reports listed in Table 3 - Verification Plan
- Declaration of Conformity (REQ-030491/A)
- Declaration of Conformity with technical requirements

---

Verification method: I – inspection

REQ-030495/A

The Supplier shall use following data formats:

- \*.JPG, \*.PNG and \*.PDF;
- CAD 2D: \*.dwg;
- CAD 3D: STEP type files (\*.stp; \*.ste; \*.step) and original supplier CAD data;
- NX version 11 or older: \*.prt;
- Autodesk Inventor version 2020 or older: \*.ipt, \*.iam;
- Parasolid 3D: \*.x\_t;
- text processors \*.doc, \*.docx; OpenDocument Format;

- spreadsheet processors \*.xls, \*.xlsx; OpenDocument Format;
  - presentations \*.ppt, \*.pptx; OpenDocument Format;
- 

Verification method: Not To Be Tracked within VCD

REQ-030448/A

The Supplier shall prepare a **technical report (TR)** that will contain:

- Full list of components delivered
  - Material certificates
  - Description of welding procedure specifications
  - Fluoroelastomer polymer (VITON) material specification for o-rings used.
- 

Verification method: R - review

### 5.3. Marking

REQ-030496/A

The FE1 chamber shall be marked on the outside with the following information:

- L1 ALLEGRA FE1 chamber (FSYNC);
  - Manufacturer;
  - Date of manufacture;
  - Manufacturer reference (e.g. serial number).
- 

Verification method: I – inspection

REQ-030497/A

The FE2 chamber shall be marked on the outside with the following information:

- L1 ALLEGRA FE2 chamber (FSYNC);
  - Manufacturer;
  - Date of manufacture;
  - Manufacturer reference (e.g. serial number).
- 

Verification method: I - inspection

REQ-030498/A

The font size for the marking shall be between 8 mm and 16 mm.

---

Verification method: I – inspection

REQ-030499/A

If the manufacturer wishes to mark any of the manufactured chambers with their logo, then ELI beamlines logo of same size shall be marked alongside the manufacturer's logo.

---

Verification method: I – inspection

## 5.4. Non-Conformance Control System

REQ-030500/A

The Supplier shall establish and maintain a non-conformance control system compatible with ČSN EN ISO 9001 (equivalent to EN ISO 9001).

---

Verification method: Not To Be Tracked within VCD

## 6. Verification requirements for the Supplier

### 6.1. General

REQ-030501/A

The verification process shall demonstrate that the deliverable product meets the specified requirements of the CA through:

1. **Verification planning and reporting;**
2. **Verification execution;**
3. **Verification close-out** (acceptance).

---

Verification method: Not To Be Tracked within VCD

### 6.2. Verification planning and reporting

#### 6.2.1. Verification Control Document (VCD) and Verification Plan (VP)

**The Verification Control Document (VCD)** lists for each requirement the selected method(s) of verification, overall verification result (pass/fail) and reference to relevant report where necessary. The VCD is a living (versioned) document and provides an overview of the mutually agreed verification methods during the project execution and overview of the results at the contract end to support the acceptance of the manufactured products.

**The Verification Plan (VP)** proposes how the verification of requirements is most efficiently grouped together, and how is the verification staged during production and delivery.

REQ-030504/A

The technical consultation between the Supplier and the CA (REQ-030502/A) shall involve agreement on the methods, levels of verification, and verification tools to be used for verifying individual requirements.

---

Verification method: R - review

REQ-030505/A

The verification of requirements shall be carried out according to the VP given in Table 3 (see Section 6.2.3).

*NOTE 1: This table lists how the verifications should be grouped together and specifies who is responsible for the reports preparation.*

*NOTE 2: This table can be updated during contract execution if agreed by the CA.*

---

Verification method: R - review

REQ-030506/A

The Supplier and the CA shall follow the time limits given in the Table 2 (see the Section 6.2.2) for supplying the information for the requirement verification into the VCD and the time limits for the reports according to the VP (Table 3; see Section 6.2.3).

---

Verification method: Not to be tracked within the VCD

REQ-030507/A

The Supplier shall carry out with support from the CA the final verification of requirements according to the VP and VCD and record the results in the final VCD issue (VCD issue for the acceptance stage purposes).

---

Verification method: R – review

### 6.2.2. TABLE 2: Time limits for supplying information and deliverables

No.	Description of time limit	Requirement	Limit	Responsibility
T0	Contract signature			
T1	Detailed 3D models with the design of chamber assemblies (Lines 1-3 of Table 1)	REQ-030451/A	T0 + 1 week	CA (ELI)
T2	Manufacturing drawings delivery	REQ-030449/A	T1 + 4 weeks	Supplier

T3	Manufacturing drawings review	REQ-030453/A	T2 + 1 week	CA (ELI)
T4	Final release of manufacturing drawings (after incorporating review comments)	REQ-030453/A	T3 + 2 weeks	Supplier
T5	Factory test reports (VTR, CTR, DVR)	REQ-030508/A REQ-030492/A	T4 + 8 weeks	Supplier
T6	Delivery to the CA completed / handover	REQ-030443/A	T5 + 1 week	Supplier
T7	Final issue of the VCD and TR	REQ-030507/A	T6 + 4 weeks	Supplier
T8	Acceptance by CA		T7 + 1 week	CA (ELI)

### 6.2.3. TABLE 3: Verification plan (VP)

No.	VM	Description of verification	Requirement	Report	Prepared by
1	I	Inspection after delivery	REQ-030443/A REQ-030445/A REQ-030446/A REQ-030447/A REQ-030450/A REQ-030468/A REQ-030479/A REQ-030498/A REQ-030499/A	DIR	CA (ELI)
2	A	FEM analysis of FE1 and FE2 chambers	REQ-030444/A	FEM	Supplier
3	R	Review of manufacturing drawings	REQ-030449/A REQ-030451/A REQ-030452/A REQ-030453/A REQ-030455/A REQ-030456/A REQ-030468/A	MDR	CA (ELI)
4	R	Cleaning procedure	REQ-030470/A	CPR	Supplier
5	T	Dimension Verification report	REQ-030492/A	DVR	Supplier
6	T	Vacuum leak test report	REQ-030484/A	VTR	Supplier
7	T	RGA test report	REQ-030478/A	CTR	Supplier
8	R	Technical report for the manufactured products	REQ-030448/A REQ-030459/A REQ-030467/A REQ-030491/A	TR	Supplier
9	I	Inspection of manufacturer's premises (if requested by the CA)	REQ-030460/A	IMP	CA (ELI)

### 6.3. Verification execution (verification methods)

REQ-030508/A

The verification execution process shall consist of following stages:

- Review of manufacturing drawings (MDR);
- Verification of technical documentation (TR, VTR, CTR);
- Acceptance by the CA at the ELI Beamlines premises.

*NOTE 1: Manufacturing drawings review is intended to verify that the design meets corresponding requirements (could be accepted) and/or identify required corrective actions needed to accept the design and start manufacturing phase of the contract.*

*NOTE 2: Verification of final product is executed at the end of manufacturing phase by inspection and tests (see REQ-030509/A). This verification stage is intended for the check of product readiness to shipment to the CA.*

---

Verification method: Not To Be Tracked within VCD

REQ-030509/A

Verification shall be accomplished by the Supplier through one or more of the following verification methods:

1. **Review of design**; Verification by Review (**R**) shall consist of using approved records (examples of such approved records are design documents and reports, technical descriptions, and engineering drawings, manuals and accompanying operation documentation) or evidence that unambiguously shows that the requirement is met.
2. **Inspection**; Verification by Inspection (**I**) shall consist of visual determination of physical characteristics.
3. **Test**; Verification by Test (**T**) shall consist of measuring product performance and functions under realistic operating conditions.
4. **Analysis**; Verification by Analysis (**A**) shall consist of performing theoretical or empirical evaluations using defined methods.

---

Verification method: Not To Be Tracked within VCD

REQ-030510/A

The results of the Review of design, Inspection, Test and Analysis shall be documented in the appropriate Reports (see Verification plan Table 3) and tracked in the VCD (see section 6.2.1).

---

Verification method: R - review

#### 6.4. Acceptance (verification close-out)

In the acceptance stage the verification shall demonstrate that the product is free of fabrication errors and is ready for the intended operational use.

REQ-030512/A

The verification process shall be considered completed when the CA approves the VCD by confirming that:

1. Identified requirements have successfully been verified;
2. All detected non-conformances have been solved according to REQ-030500/A;
3. Documented evidence is recorded in the VCD (see the Section 6.2.1).

---

Verification method: Not To Be Tracked within VCD

REQ-030513/A

The basis for acceptance shall be completed VCD summarizing the overall verification results together with relevant reports supporting the verification (see Table 3 within the Section 6.2.3).

---

Verification method: R – review

REQ-030515/A

In case of unsuccessful acceptance stage the Supplier shall provide to the CA Non-Conformance Report (NCR) and ELI non-conformance control process shall be applied (see REQ-030500/A).

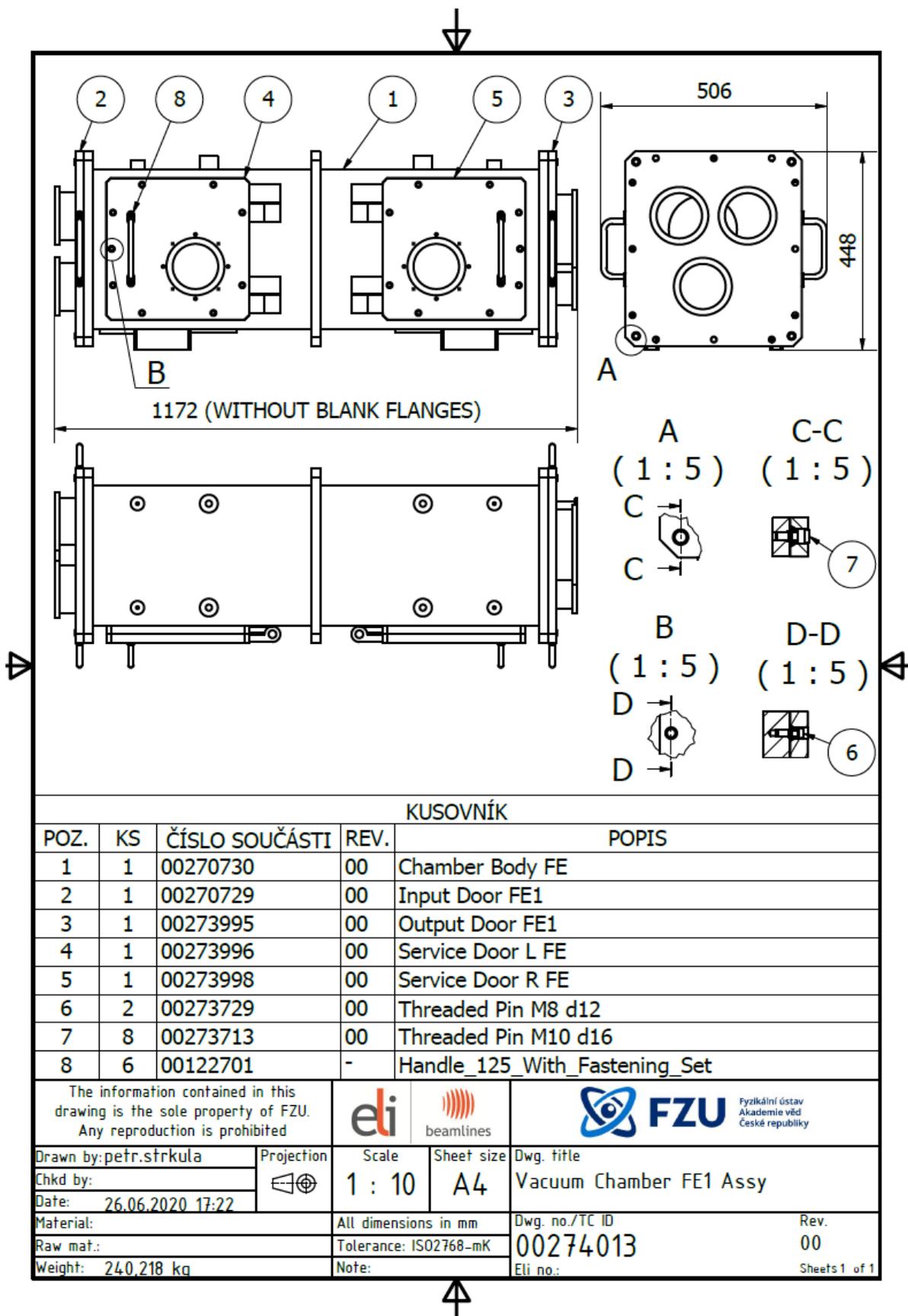
*NOTE: In case of successful acceptance stage (confirmation by Inspection, see REQ-030509/A) the CA shall provide to the Supplier signed acceptance protocol.*

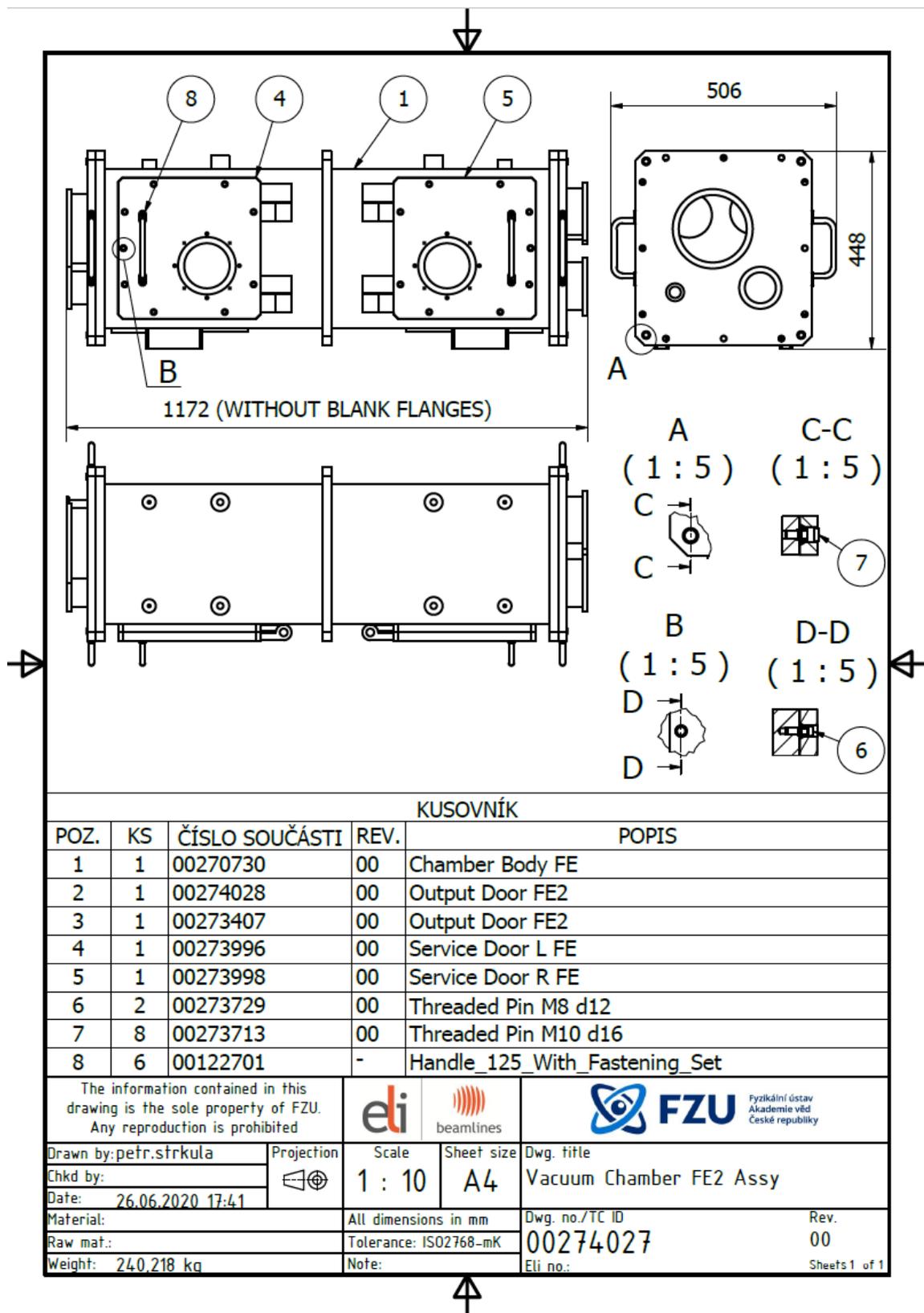
---

Verification method: Not To Be Tracked within VCD

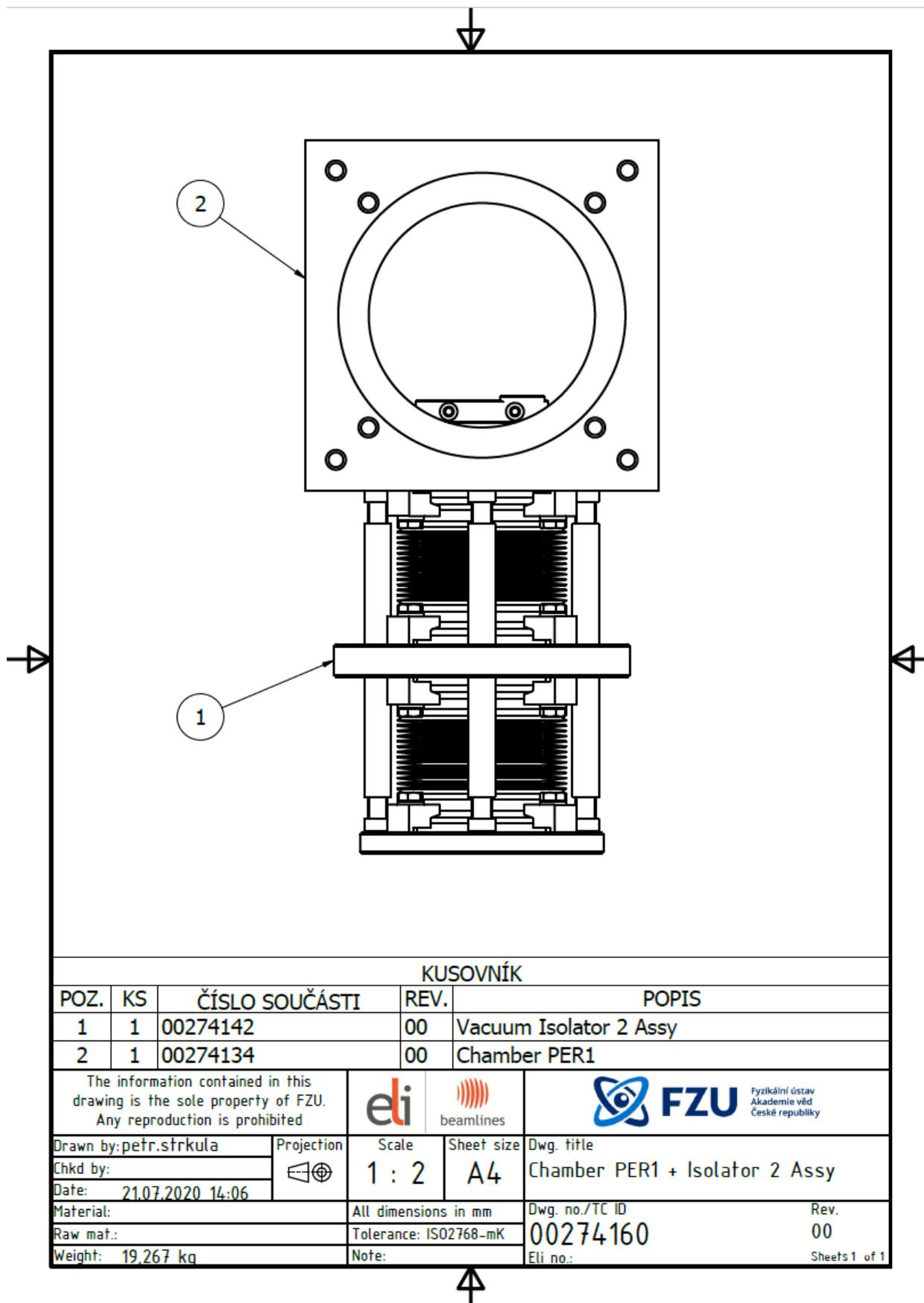
## 7. Reference drawings

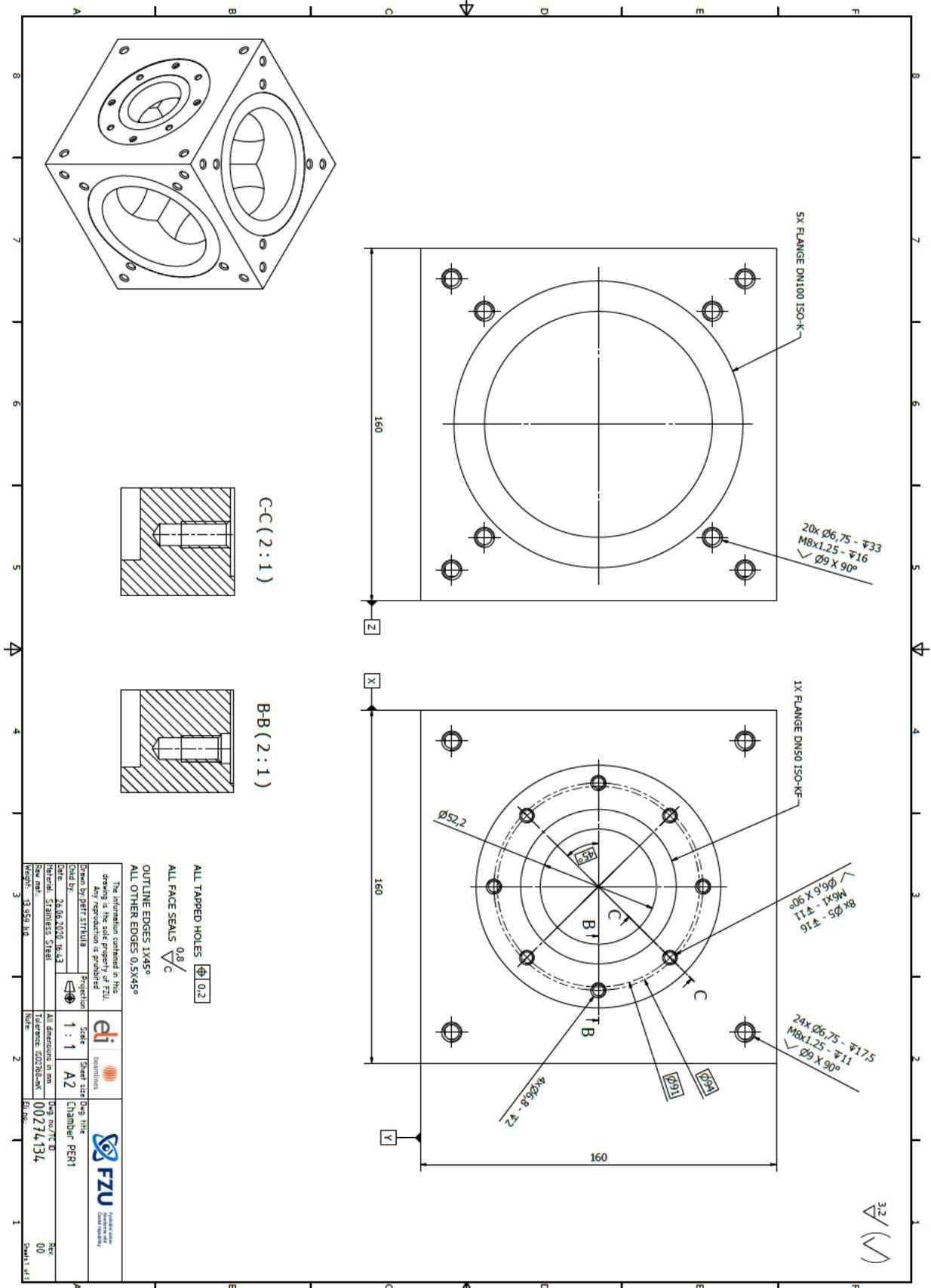
Below are given assembly drawings for the assemblies listed in Table 1, Lines 1-5. Detailed drawing of individual components will be supplied to the manufacturer together with the 3D model after the contract signature.

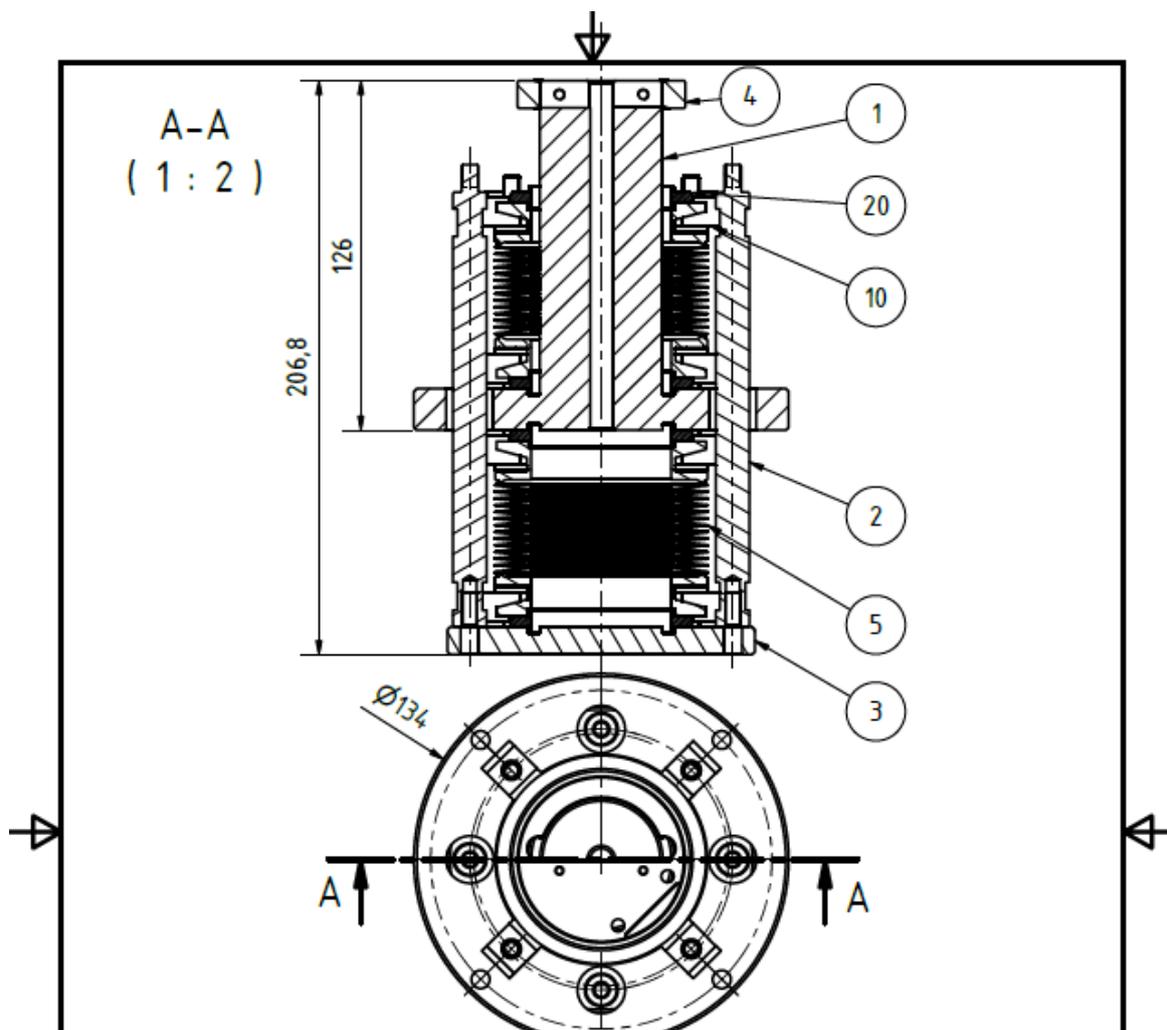












## PARTS LIST

ITEM	QTY	PART NUMBER	REV.	DESCRIPTION
1	1	00274143	00	Isolator Post 2
2	4	00274149	00	Isolator Spacer
3	1	00274144	00	Isolator Blank Flange
4	1	00274161	00	Adaptor Block
5	2	00100281	00	Bellows DN50 ISO-KF
10	4	00100284	-	Claw Clamps DN50 ISO-KF Assy
20	4	00100278	-	Centering ring DN50 ISO-KF Al/FPM

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**Fyzikální ústav**  
Akademie věd ČR, v. v. i.

 Drawn by: pefr.strkula

Projection:

Scale:

Sheet size:

Dwg. title:

Checked by:



1:2

A4

Vacuum Isolator 2 Assy

Date:

Material:

All dimensions in mm

Dwg. no./TC ID

Rev.

Raw mat.:

Tolerance: ISO2768-mK

0027414.2

00

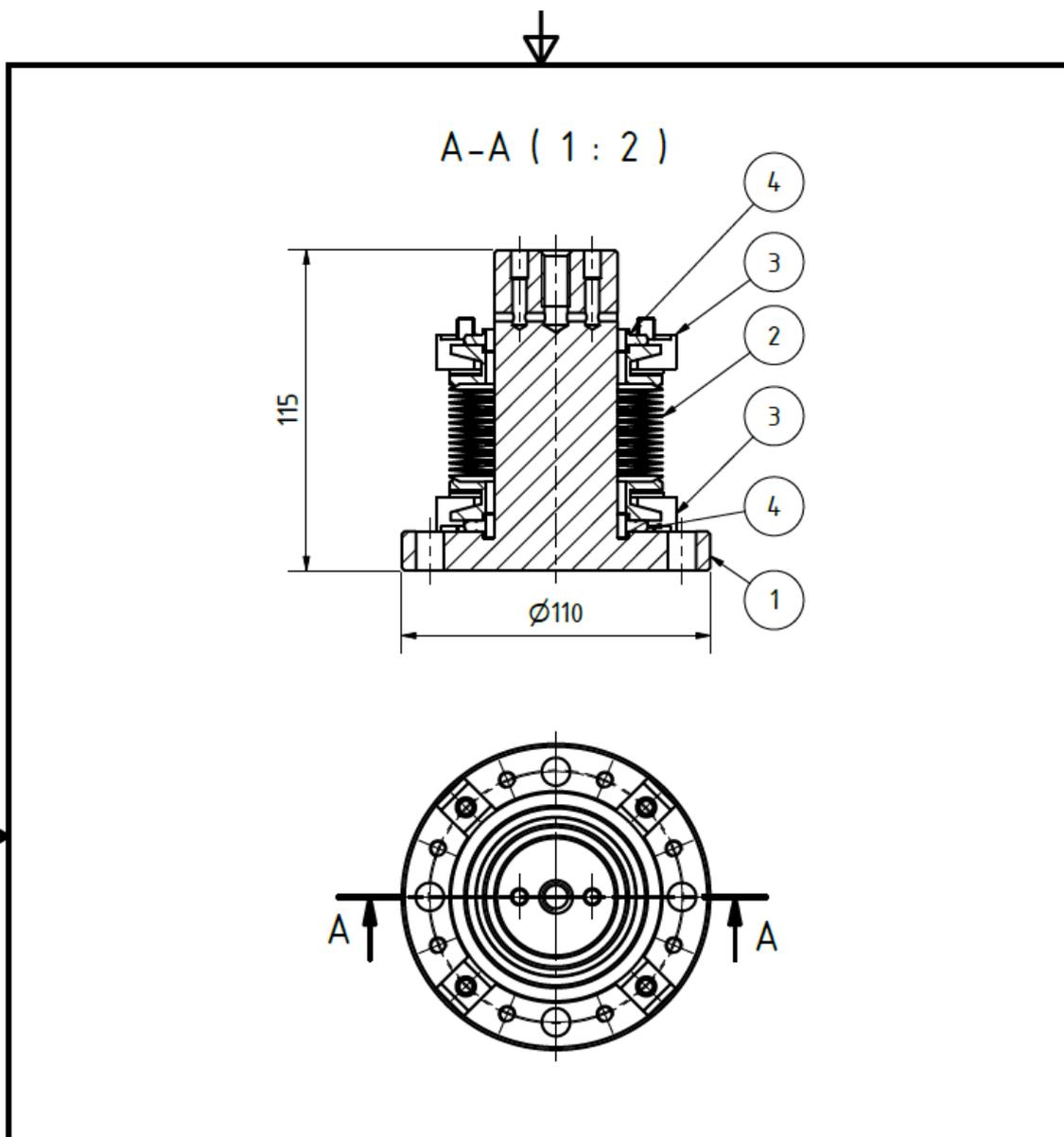
Weight: 5,308 kg

Note:

Eli no.:

Sheets 1 of 1





## PARTS LIST

ITEM	QTY	PART NUMBER	REV.	DESCRIPTION
1	1	00273310	00	Isolator Post
2	1	00100281	00	Bellows DN50 ISO-KF
3	2	00100284	-	Claw Clamps DN50 ISO-KF Assy
4	2	00100278	-	Centering ring DN50 ISO-KF AL/FPM

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Drawn by: petr.strkula	Projection 	Scale 1:2	Sheet size A4	Dwg. title Vacuum Isolator Assy
Checked by:		All dimensions in mm	Dwg. no./TC ID 00273309	Rev. 00
Date:				
Material:				
Raw mat.:		Tolerance: ISO2768-mK		
Weight: 2.802 kg				Sheets 1 of 1



EUROPEAN UNION  
European Structural and Investing Funds  
Operational Programme Research,  
Development and Education



MINISTRY OF EDUCATION,  
YOUTH AND SPORTS

**ANNEX 2**  
**PRICE TABLE**

Line	Item	Reference Drawing ID/rev.:	Quantity	Unit	Unit price in CZK excl. VAT	Total price per item in CZK excl. VAT
1	Vacuum Chamber FE1 Assy (for component drawings see RD-01) with all flanges blanked off - see Line 4	00274013/00	1	assembly	639 000,00	639 000,00
2	Vacuum Chamber FE2 Assy (for component drawings see RD-02) with all flanges blanked off - see Line 4	00274027/00	1	assembly	639 000,00	639 000,00
3	Periscope mirror PER1 chamber with vacuum isolator assembly (for component drawings see RD-03) with all flanges blanked off - see Line 4	00274160/00	4	assemblies	156 000,00	624 000,00
4	Set of blank flanges for Lines 1-3		1	set	82 000,00	82 000,00
<b>Total bid price in CZK excl. VAT:</b>						<b>1 984 000,00</b>