



**UK Research  
and Innovation**

**TBA  
TBA**

Attn: TBA

By email to: TBA

Date: TBA

Your ref: TBA

Our ref: RE20558

Dear Sirs,

**Award of contract for the supply of SANDALS Slit System**

Following your tender/ proposal for the supply of SANDALS Slit System to UKRI, we are pleased to award this contract to you.

This letter (Award Letter) and its Schedule(s) set out the terms of the Contract between:

- (1) **United Kingdom Research and Innovation**, a statutory corporation whose registered office is at Polaris House, North Star Avenue, Swindon, England, SN2 1FL ("**UKRI**"); and
- (2) **TBA**, a business with its trading address at TBA (the "**Supplier**").

Unless the context otherwise requires, capitalised expressions used in this Award Letter have the same meanings as in the terms and conditions of contract set out in Schedule 1 to this Award Letter (the "**Conditions**"). In the event of any conflict between this Award Letter and the Conditions, this Award Letter shall prevail. Please do not attach any Supplier terms and conditions to this Award Letter as they will not be accepted by UKRI and may delay conclusion of the Contract.

For the purposes of the Contract, UKRI and the Supplier agree as follows:

**Term**

- 1 Commencement Date: Wednesday, 13 January 2021
- 2 Expiry Date: Wednesday, 28 July 2021

**Description of Goods and/or Services**

- 3 The Specification of the Goods and/or Services to be delivered is as set out in Schedule 2.
- 4 The Services shall be performed at Rutherford Appleton Laboratory, Harwell Campus, Didcot OX11 0QX
- 5 The Goods shall be Delivered in accordance with the following instructions:

**Delivery Address**

Rutherford Appleton Laboratory, Harwell Campus, Didcot OX11 0QX

**Date of Delivery**

Wednesday, 28 July 2021

**Charges & Payment**

- 6 The Charges for the Goods and/or Services shall be as set out in Schedule 3.
- 7 All invoices should be sent, quoting a valid purchase order number (PO Number) provided by UKRI, to: [finance@uksbs.co.uk](mailto:finance@uksbs.co.uk).
- 8 To avoid delay in payment it is important that the invoice is compliant and that it includes a valid PO Number, PO Number item number (if applicable) and the details (name and telephone number) of your UKRI contact (i.e. Contract Manager). Non-compliant invoices will be sent back to you, which may lead to a delay in payment. If you have a query regarding an outstanding payment please contact our Accounts Payable section either by email to [finance@uksbs.co.uk](mailto:finance@uksbs.co.uk) or by telephone 01793 867004 between 09:00-17:00 Monday to Friday.

**Supplier's Limit of Liability**

- 9 The Limit of Liability of the Supplier under this Contract shall be: 125% of the total Charges paid and payable to the Supplier under this Contract.

**Notices**

- 10 The address for notices of the Parties are:

**UKRI**

Polaris House, North Star Avenue,  
Swindon, England, SN2 1FL

Attention: Commercial Business Partner

Email: [commercial@ukri.org](mailto:commercial@ukri.org)

**Supplier**

TBA

Attention: TBA

Email: TBA

**Liaison**

- 11 For general liaison your contact will continue to be TBA or, in their absence, [scientificresearch@uksbs.co.uk](mailto:scientificresearch@uksbs.co.uk).

We thank you for your co-operation to date, and look forward to forging a successful working relationship resulting in a smooth and successful supply of the Goods and/or Services. Please confirm your acceptance of the award of this contract by signing and returning the enclosed copy of this letter to [scientificresearch@uksbs.co.uk](mailto:scientificresearch@uksbs.co.uk) at the above address. No other form of acknowledgement will be accepted. Please remember to quote the reference number above in any future communications relating to this contract.

Yours faithfully,



Tim Johnston  
Category Specialist  
UK SBS

Signed for and on behalf of **United Kingdom Research and Innovation**

Signature:

.....

Name:

.....

Position:

.....

Date:

.....

We accept the terms set out in this Award Letter and the Schedule(s).

Signed for and on behalf of **TBA**

Signature:

.....

Name:

.....

Position:

.....

Date:

.....

## Terms and Conditions of Contract for Goods and/or Services

### **1 INTERPRETATION**

#### **1.1 In these terms and conditions:**

- "Award Letter" means the letter from UKRI to the Supplier printed above these terms and conditions;
- "Central Government Body" means a body listed in one of the following sub-categories of the Central Government classification of the Public Sector Classification Guide, as published and amended from time to time by the Office for National Statistics:
- (a) Government Department;
  - (b) Non-Departmental Public Body or Assembly Sponsored Public Body (advisory, executive, or tribunal);
  - (c) Non-Ministerial Department; or
  - (d) Executive Agency;
- "Charges" means the charges for the Goods and/or Services as specified in the Award Letter;
- "Commencement Date" means the date for the start of the Contract as set out in the Award Letter;
- "Confidential Information" means:
- (a) all confidential information and data which is acquired from or made available (directly or indirectly) by the Disclosing Party or the Disclosing Party's representatives however conveyed or presented, including but not limited to any information or document relating to the Disclosing Party's business, affairs, operations, budgets, policies, processes, initiatives, plans, product information, pricing information, technical or commercial know-how, trade secrets, specifications, strategies, inventions, designs, software, market opportunities, personnel, customers or suppliers (whether relating to this Contract or otherwise) either orally, in writing, or in whatever form obtained or maintained;
  - (b) any information or analysis derived from the Confidential Information;
  - (c) anything marked as confidential and any other information notified by or on behalf of the Disclosing Party to the Receiving Party as being confidential;
  - (d) the existence and terms of this Contract and of any subsequent agreement entered into in relation to this Contract;
  - (e) the fact that discussions and negotiations are taking place concerning this Contract and the status of those discussions and negotiations; and
  - (f) any copy of any of the information described in (a), (b), (c), (d) or (e) above, which shall be deemed to become Confidential Information when it is made. For the purposes of this definition, a copy shall include, without limitation, any notes or recordings of the information described in (a), (b), (c), (d) or (e) above (howsoever made);
- "Contract" means the contract between (i) UKRI and (ii) the Supplier constituted by the Supplier's

countersignature of the Award Letter and includes the Award Letter and Schedules;

"Data Protection Legislation"	means, for the periods for which they are in force, all laws giving effect or purporting to give effect to the GDPR, the Data Protection Act 2018, or otherwise relating to data protection, including the Regulation of Investigatory Powers Act 2000, the Telecommunications (Lawful Business Practice) (Interception of Communications) Regulations 2000 (SI 2000/2699), the Electronic Communications Data Protection Directive (2002/58/EC), the Privacy and Electronic Communications (EC Directive) Regulations 2003 (SI 2426/2003) and all applicable laws and regulations relating to the processing of personal data and privacy, including where applicable the guidance and codes of practice issued by the Information Commissioner, in each case as amended or substituted from time to time;
"Data Subject"	shall have the same meaning as in the Data Protection Legislation;
"Date of Delivery"	means that date by which the Goods must be Delivered to UKRI, as specified in the Award Letter.
"Deliver"	means hand over the Goods to UKRI at the address and on the date specified in the Award Letter, which shall include unloading and any other specific arrangements agreed in accordance with Clause 6. Delivered and Delivery shall be construed accordingly.
"Disclosing Party"	means a Party that makes a disclosure of Confidential Information to another Party;
"EIR"	means the Environmental Information Regulations 2004 (or if applicable the Environmental Information Regulations (Scotland) 2004);
"Expiry Date"	means the date for expiry of the Contract as set out in the Award Letter;
"FOIA"	means the Freedom of Information Act 2000 (or if applicable the Freedom of Information (Scotland) Act 2002);
"GDPR"	means: <ul style="list-style-type: none"><li>(a) the General Data Protection Regulations (Regulation (EU) 2016/679); or</li><li>(b) any equivalent legislation amending or replacing the General Data Protection Regulations (Regulation (EU) 2016/679);</li></ul>
"Good Industry Practice"	means all relevant practices and professional standards that would be expected of a well-managed, expert service provider performing services substantially similar to the Services or substantially similar to the Goods provided to customers of a substantially similar size and nature as UKRI;
"Goods"	means the goods to be supplied by the Supplier to UKRI under the Contract;
"Information"	has the meaning given under section 84 of the FOIA;
"Intellectual Property Rights"	means: <ul style="list-style-type: none"><li>(a) copyright, rights related to or affording protection similar to copyright, rights in databases, patents and rights in inventions, semi-conductor topography rights, trade marks, rights in Internet domain names and website addresses and other rights in trade names, designs, know-how, trade secrets and other rights in Confidential Information;</li></ul>

	(b)	applications for registration, and the right to apply for registration, for any of the rights listed at (a) that are capable of being registered in any country or jurisdiction; and
	(c)	all other rights having equivalent or similar effect in any country or jurisdiction;
"Limit of Liability"		means the limit of liability identified in the Award Letter;
"Party"		the Supplier or UKRI (as appropriate) and "Parties" shall mean both of them;
"Personal Data"		means the personal data (as defined in the Data Protection Legislation) which relates to or originates from UKRI, or any of UKRI's employees, contractors or customers and which is processed by or on behalf of the Supplier under this Contract;
"Personal Data Breach"		shall have the meaning given in the Data Protection Legislation;
"Purchase Order Number"		means UKRI's unique number relating to the order for Goods and/or Services to be supplied by the Supplier to UKRI in accordance with the terms of the Contract;
"Receiving Party"		means a Party to which a disclosure of Confidential Information is made by another Party;
"Request for Information"		has the meaning set out in the FOIA or the EIR as relevant (where the meaning set out for the term "request" shall apply);
"Services"		means the services to be supplied by the Supplier to UKRI under the Contract;
"Specification"		means the specification for the Goods and/or Services to be supplied by the Supplier to UKRI (including as to quantity, description and quality) as specified in the Award Letter;
"Staff"		means all directors, officers, employees, agents, consultants and contractors of the Supplier and/or of any sub-contractor of the Supplier engaged in the performance of the Supplier's obligations under the Contract;
"Staff Vetting Procedures"		means vetting procedures that accord with good industry practice or, where requested by UKRI, UKRI's procedures for the vetting of personnel as provided to the Supplier from time to time;
"Term"		means the period from the Commencement Date to the Expiry Date as such period may be extended or terminated in accordance with the terms and conditions of the Contract;
"TUPE"		means the Transfer of Undertakings (Protection of Employment) Regulations 2006 as amended or replaced from time to time;
"VAT"		means value added tax in accordance with the provisions of the Value Added Tax Act 1994; and
"Working Day"		means a day (other than a Saturday, Sunday, public holiday or 27, 28, 29, 30 and 31 December) when banks in London are open for business.

1.2 In these terms and conditions, unless the context otherwise requires:

- (a) references to numbered clauses are references to the relevant clause in these terms and conditions;
- (b) any obligation on any Party not to do or omit to do anything shall include an obligation not to allow that thing to be done or omitted to be done;

- (c) the headings to the clauses of these terms and conditions are for information only and do not affect the interpretation of the Contract;
- (d) any reference to an enactment includes reference to that enactment as amended or replaced from time to time and to any subordinate legislation or byelaw made under that enactment; and
- (e) the word 'including' shall be understood as meaning 'including without limitation'.

## **2 BASIS OF CONTRACT**

- 2.1 The Award Letter constitutes an offer by UKRI to purchase the Goods and/or Services subject to and in accordance with the terms and conditions of the Contract.
- 2.2 The offer comprised in the Award Letter shall be deemed to be accepted by the Supplier on receipt by UKRI of a copy of the Award Letter countersigned by the Supplier.

## **3 SUPPLY OF GOODS AND SERVICES**

- 3.1 In consideration of UKRI's agreement to pay the Charges, the Supplier shall supply the Goods and/or Services to UKRI subject to and in accordance with the terms and conditions of the Contract.
- 3.2 In supplying the Goods and/or Services, the Supplier shall:
  - (a) co-operate with UKRI in all matters relating to the supply of Goods and/or Services and comply with all UKRI's instructions; and
  - (b) comply with all applicable laws.
- 3.3 The Supplier shall supply the Goods in accordance with the Specification. The Supplier warrants, represents, undertakes and guarantees that the Goods supplied under the Contract shall:
  - (a) be free from defects (manifest or latent), in materials and workmanship and remain so for 12 months after Delivery;
  - (b) be of satisfactory quality (within the meaning of the Sale of Goods Act 1979) and comply with any applicable statutory and regulatory requirements relating to the manufacture, labelling, packaging, storage, handling and delivery of the Goods;
  - (c) conform with the specifications (including the Specification), drawings, descriptions given in quotations, estimates, brochures, sales, marketing and technical literature or material (in whatever format made available by the Supplier) supplied by, or on behalf of, the Supplier;
  - (d) be free from design defects; and
  - (e) be fit for any purpose held out by the Supplier or made known to the Supplier by UKRI expressly or by implication, and in this respect UKRI relies on the Supplier's skill and judgement. The Supplier acknowledges and agrees that the approval by UKRI of any designs provided by the Supplier shall not relieve the Supplier of any of its obligations under this clause 3.3.
- 3.4 In supplying the Services, the Supplier shall:
  - (a) perform the Services with all reasonable care, skill and diligence in accordance with good industry practice in the Supplier's industry, profession or trade;

- (b) use Staff who are suitably skilled and experienced to perform tasks assigned to them, and in sufficient number to ensure that the Supplier's obligations are fulfilled in accordance with the Contract;
- (c) ensure that the Services shall conform with all descriptions and specifications set out in the Specification;
- (d) not do or allow anything to be done that would, or would be likely to, bring UKRI into disrepute or adversely affect its reputation in any way; and
- (e) provide all equipment, tools and vehicles and other items as are required to provide the Services.

#### **4 TERM**

- 4.1 The Contract shall take effect on the date specified in the Award Letter and shall expire on the Expiry Date, unless it is otherwise extended in accordance with the provisions of the Award Letter or terminated early in accordance with the terms and conditions of the Contract.

#### **5 CHARGES, PAYMENT AND RECOVERY OF SUMS DUE**

- 5.1 The Charges for the Goods and/or Services shall be as set out in the Award Letter and shall be the full and exclusive remuneration of the Supplier in respect of the supply of the Goods and/or Services. Unless otherwise agreed in writing by UKRI, the Charges shall include every cost and expense of the Supplier directly or indirectly incurred in connection with the supply of the Goods and/or performance of the Service.
- 5.2 All amounts stated are exclusive of VAT which shall be charged at the prevailing rate. UKRI shall, following the receipt of a valid VAT invoice, pay to the Supplier a sum equal to the VAT chargeable in respect of the Goods and/or Services.
- 5.3 The Supplier shall invoice UKRI as specified in the Contract. Each invoice shall include such supporting information required by UKRI to verify the accuracy of the invoice, including the relevant Purchase Order Number and a breakdown of the Goods and/or Services supplied in the invoice period.
- 5.4 In consideration of the supply of the Goods and/or Services by the Supplier, UKRI shall pay the Supplier the invoiced amounts no later than 30 days after verifying that the invoice is valid and undisputed and includes a valid Purchase Order Number. UKRI may, without prejudice to any other rights and remedies under the Contract, withhold or reduce payments in the event of unsatisfactory performance.
- 5.5 If UKRI fails to consider and verify an invoice in a timely fashion the invoice shall be regarded as valid and undisputed for the purpose of clause 5.4 after a reasonable time has passed (which shall be no less than 14 calendar days).
- 5.6 If there is a dispute between the Parties as to the amount invoiced, UKRI may reject the invoice in its entirety. The Supplier shall not suspend the supply of the Goods and/or Services unless the Supplier is entitled to terminate the Contract for a failure to pay undisputed sums in accordance with clause 18.5. Any disputed amounts shall be resolved through the dispute resolution procedure detailed in clause 21.
- 5.7 Where the Supplier enters into a sub-contract, the Supplier shall include in that sub-contract:
  - (a) provisions having the same effects as clauses 5.3 to 5.6 (inclusive) of this Contract; and



- (b) a provision requiring the counterparty to that sub-contract to include in any sub-contract which it awards provisions having the same effects as clauses 5.3 to 5.7 (inclusive) of this Contract.
  - (c) In this clause 5.7, "sub-contract" means a contract between two or more suppliers, at any stage of remoteness from UKRI in a subcontracting chain, made wholly or substantially for the purpose of performing (or contributing to the performance of) the whole or any part of this Contract.
- 5.8 If any sum of money is recoverable from or payable by the Supplier under the Contract (including any sum which the Supplier is liable to pay to UKRI in respect of any breach of the Contract), that sum may be deducted unilaterally by UKRI from any sum then due, or which may come due, to the Supplier under the Contract or under any other agreement or contract with UKRI. The Supplier shall not be entitled to assert any credit, set-off or counterclaim against UKRI in order to justify withholding payment of any such amount in whole or in part.
- 6 DELIVERY**
- 6.1 The Supplier shall Deliver the Goods to UKRI on or by the Date of Delivery. Unless otherwise agreed in writing by UKRI, Delivery shall be on the date and to the address specified in the Award Letter. Delivery of the Goods shall be completed once the completion of unloading the Goods from the transporting vehicle at the Delivery address has taken place and UKRI has signed for the Delivery.
- 6.2 Any access to UKRI's premises and any labour and equipment that may be provided by UKRI in connection with Delivery of the Goods shall be provided without acceptance by UKRI of any liability in respect of any actions, claims, costs and expenses incurred by third parties for any loss or damages to the extent that such loss or damage is not attributable to the negligence or other wrongful act of UKRI or its servant or agent. The Supplier shall indemnify UKRI in respect of any actions, suits, claims, demands, losses, charges, costs and expenses, which UKRI may suffer or incur as a result of or in connection with any damage or injury (whether fatal or otherwise) occurring in the course of Delivery or installation to the extent that any such damage or injury is attributable to any act or omission of the Supplier or any of his sub-Suppliers.
- 6.3 Delivery of the Goods shall be accompanied by a delivery note which shows the Purchase Order Number and the type and quantity of the Goods and, in the case of part Delivery, the outstanding balance remaining to be Delivered.
- 6.4 Unless otherwise stipulated by UKRI in the Award Letter, Deliveries shall only be accepted by UKRI on Working Days and during normal business hours.
- 6.5 Where (i) the Supplier fails to Deliver the Goods or part of the Goods or (ii) the Goods or part of the Goods do not comply with the provisions of clause 3, then without limiting any of its other rights or remedies implied by statute or common law, UKRI shall be entitled:
- (a) to terminate the Contract;
  - (b) to require the Supplier, free of charge, to deliver substitute Goods within the timescales specified by UKRI;
  - (c) to require the Supplier, free of charge, to repair or replace the rejected Goods, or to provide a full refund of the Charges of the rejected Goods (if paid);
  - (d) to reject the Goods (in whole or part) and return them to the Supplier at the Supplier's own risk and expense and UKRI shall be entitled to a full refund on those Goods or part of Goods duly returned;

- (e) to buy the same or similar Goods from another supplier; and
- (f) to recover any expenses incurred in respect of buying the goods from another supplier which shall include but not be limited to administration costs, chargeable staff time and extra delivery costs.

## 7 **PROPERTY AND GUARANTEE OF TITLE**

7.1 Without prejudice to any other rights or remedies of UKRI, title and risk in the Goods shall pass to UKRI when Delivery of the Goods is complete (including off-loading and stacking).

7.2 The Supplier warrants that:

- (a) it has full clear and unencumbered title to all the Goods;
- (b) at the date of Delivery of any of the Goods it shall have full and unrestricted right, power and authority to sell, transfer and deliver all of the Goods to UKRI; and
- (c) on Delivery UKRI shall acquire a valid and unencumbered title to the Goods.

## 8 **STAFF**

8.1 If UKRI reasonably believes that any of the Staff are unsuitable to undertake work in respect of the Contract, it may, by giving written notice to the Supplier:

- (a) refuse admission to the relevant person(s) to UKRI's premises;
- (b) direct the Supplier to end the involvement in the provision of the Goods and/or Services of the relevant person(s); and/or
- (c) require that the Supplier replace any person removed under this clause with another suitably qualified person and procure that any security pass issued by UKRI to the person removed is surrendered,

and the Supplier shall comply with any such notice.

8.2 The Supplier shall:

- (a) ensure that all Staff are vetted in accordance with the Staff Vetting Procedures and if requested, comply with UKRI's Staff Vetting Procedures as supplied from time to time;
- (b) ensure that no person who discloses that he/she has a conviction that is relevant to the nature of the Contract, relevant to the work of UKRI, or is of a type otherwise advised by UKRI (each such conviction a "**Relevant Conviction**"), or is found by the Supplier to have a Relevant Conviction (whether as a result of a police check, the Staff Vetting Procedures or otherwise) is employed or engaged in the provision of any part of the supply of the Goods and/or Services;
- (c) if requested, provide UKRI with a list of the names and addresses (and any other relevant information) of all persons who may require admission to UKRI's premises in connection with the Contract; and
- (d) procure that all Staff comply with any rules, regulations and requirements reasonably specified by UKRI.

## **9 TUPE**

- 9.1 The Supplier warrants that the provision of the Goods and/or Services shall not give rise to a transfer of any employees of the Supplier or any third party to UKRI pursuant to TUPE.

## **10 ASSIGNMENT AND SUB-CONTRACTING**

- 10.1 The Supplier shall not without the written consent of UKRI assign, sub-contract, novate or in any way dispose of the benefit and/ or the burden of the Contract or any part of the Contract. UKRI may, in the granting of such consent, provide for additional terms and conditions relating to such assignment, sub-contract, novation or disposal. The Supplier shall be responsible for the acts and omissions of its sub-contractors as though those acts and omissions were its own.
- 10.2 Where UKRI has consented to the placing of sub-contracts, the Supplier shall, at the request of UKRI, send copies of each sub-contract, to UKRI as soon as is reasonably practicable.
- 10.3 UKRI may assign, novate, or otherwise dispose of its rights and obligations under the Contract without the consent of the Supplier provided that such assignment, novation or disposal shall not increase the burden of the Supplier's obligations under the Contract.

## **11 INTELLECTUAL PROPERTY AND INDEMNITY**

- 11.1 All Intellectual Property Rights in any materials provided by UKRI to the Supplier for the purposes of this Contract shall remain the property of UKRI but UKRI hereby grants the Supplier a royalty-free, non-exclusive and non-transferable licence to use such materials as required until termination or expiry of the Contract for the sole purpose of enabling the Supplier to perform its obligations under the Contract.
- 11.2 The ownership of all Intellectual Property Rights in any materials created or developed by the Supplier pursuant to the Contract or arising as a result of the provision of the Goods and/or Services shall vest in UKRI. If, and to the extent, that the ownership of any Intellectual Property Rights in such materials vest in the Supplier by operation of law, the Supplier hereby assigns ownership of such Intellectual Property Rights to UKRI by way of a present assignment of future rights that shall take place immediately on the coming into existence of any such Intellectual Property Rights all its Intellectual Property Rights in such materials (with full title guarantee and free from all third party rights).
- 11.3 UKRI hereby grants the Supplier a royalty-free, non-exclusive and non-transferable licence to use any Intellectual Property Rights in the materials created or developed by the Supplier pursuant to the Contract and any Intellectual Property Rights arising as a result of the provision of the Goods and/or Services as required until termination or expiry of this Contract for the sole purpose of enabling the Supplier to perform its obligations under the Contract
- 11.4 Without prejudice to clause 11.2, the Supplier hereby grants UKRI a perpetual, royalty-free, irrevocable and non-exclusive licence (with a right to sub-license) to use any Intellectual Property Rights vested in or licensed to the Supplier on the date of the Contract or during the Term to the extent not falling within clause 11.2 including any modifications to or derivative versions of any such Intellectual Property Rights, which UKRI reasonably requires in order to exercise its rights and take the benefit of the Contract including the Goods and/or Services provided.
- 11.5 The Supplier shall indemnify, and keep indemnified, UKRI in full against all cost, expenses, damages and losses (whether direct or indirect), including any interest, penalties, and reasonable legal and other professional fees awarded against or incurred or paid by UKRI as a result of or in connection with any claim made against UKRI for actual or alleged infringement of a third party's intellectual property arising out of, or in

connection with, the supply or use of the Goods and/or Services, to the extent that the claim is attributable to the acts or omission of the Supplier or any Staff.

- 11.6 UKRI shall promptly notify the Supplier of any infringement claim made against it relating to any Goods and, subject to any statutory obligation requiring UKRI to respond, shall permit the Supplier to have the right, at its sole discretion to assume, defend, settle or otherwise dispose of such claim. UKRI shall give the Supplier such assistance as it may reasonably require to dispose of the claim and shall not make any statement which might be prejudicial to the settlement or defence of the claim.

## 12 RECORDS

- 12.1 If required by UKRI, the Supplier shall:

- (a) attend progress meetings with UKRI at the frequency and times specified by UKRI and shall ensure that its representatives are suitably qualified to attend such meetings; and
- (b) submit progress reports to UKRI at the times and in the format specified by UKRI.

- 12.2 The Supplier shall keep and maintain until 6 years after the end of the Contract, or as long a period as may be agreed between the Parties, full and accurate records of the Contract including the Goods and/or Services supplied under it, and all payments made by UKRI. The Supplier shall on request afford UKRI or UKRI's representatives such access to those records as may be reasonably requested by UKRI in connection with the Contract.

## 13 CONFIDENTIALITY, TRANSPARENCY AND PUBLICITY

- 13.1 Subject to clause 13.2, each Party shall:

- (a) treat all Confidential Information it receives as confidential, safeguard it accordingly and not disclose it to any other person without the prior written permission of the disclosing Party; and
- (b) not use or exploit the Disclosing Party's Confidential Information in any way except for the purposes anticipated under the Contract.

- 13.2 Notwithstanding clause 13.1, a Party may disclose Confidential Information which it receives from the other Party:

- (a) where disclosure is required by applicable law or by a court of competent jurisdiction;
- (b) to its auditors or for the purposes of regulatory requirements;
- (c) on a confidential basis, to its professional advisers;
- (d) to the Serious Fraud Office where the Party has reasonable grounds to believe that the other Party is involved in activity that may constitute a criminal offence under the Bribery Act 2010;
- (e) where the Receiving Party is the Supplier, to the Staff on a need to know basis to enable performance of the Supplier's obligations under the Contract provided that the Supplier shall procure that any Staff to whom it discloses Confidential Information pursuant to this clause 13.2(e) shall observe the Supplier's confidentiality obligations under the Contract; and
- (f) where the Receiving Party is UKRI:

- (i) on a confidential basis to the employees, agents, consultants and contractors of UKRI;
- (ii) on a confidential basis to any Central Government Body, any successor body to a Central Government Body or any company to which UKRI transfers or proposes to transfer all or any part of its business;
- (iii) to the extent that UKRI (acting reasonably) deems disclosure necessary or appropriate in the course of carrying out its public functions; or
- (iv) in accordance with clause 14.

and for the purposes of the foregoing, references to disclosure on a confidential basis shall mean disclosure subject to a confidentiality agreement or arrangement containing terms no less stringent than those placed on UKRI under this clause 13.

13.3 The Parties acknowledge that, except for any Information which is exempt from disclosure in accordance with the provisions of the FOIA, the content of the Contract is not Confidential Information and the Supplier hereby gives its consent for UKRI to publish the Contract in its entirety to the general public (but with any Information that is exempt from disclosure in accordance with the FOIA redacted) including any changes to the Contract agreed from time to time. UKRI may consult with the Supplier to inform its decision regarding any redactions but shall have the final decision in its absolute discretion whether any of the content of the Contract is exempt from disclosure in accordance with the provisions of the FOIA.

13.4 The Supplier shall not, and shall take reasonable steps to ensure that the Staff shall not, make any press announcement or publicise the Contract or any part of the Contract in any way, except with the prior written consent of UKRI.

## 14 FREEDOM OF INFORMATION

14.1 The Supplier acknowledges that UKRI is subject to the requirements of the FOIA and the EIR and shall:

- (a) provide all necessary assistance and cooperation as reasonably requested by UKRI to enable UKRI to comply with its obligations under the FOIA and the EIR;
- (b) transfer to UKRI all Requests for Information relating to the Contract that it receives as soon as practicable and in any event within 2 Working Days of receipt;
- (c) provide UKRI with a copy of all Information belonging to UKRI requested in the Request for Information which is in its possession or control in the form that UKRI requires within 5 Working Days (or such other period as UKRI may reasonably specify) of UKRI's request for such Information; and
- (d) not respond directly to a Request for Information unless authorised in writing to do so by UKRI.

14.2 The Supplier acknowledges that UKRI may be required under the FOIA and the EIR to disclose Information concerning the Supplier or the Goods and/or Services (including commercially sensitive information) without consulting or obtaining consent from the Supplier.

14.3 Notwithstanding any other provision in the Contract, UKRI shall be responsible for determining in its absolute discretion whether any Information relating to the Supplier or the Goods is exempt from disclosure in accordance with the FOIA and/or the EIR.

**15 PROTECTION OF PERSONAL DATA AND SECURITY OF DATA**

- 15.1 In this Clause 15, the terms, "processes", "data controller" and "data processor" shall have the same meanings given to them under Data Protection Legislation.
- 15.2 The Parties acknowledge that for the purposes of Data Protection Legislation, UKRI is the data controller and the Supplier is the data processor of any Personal Data.
- 15.3 The Supplier shall and shall procure that its staff and sub-contractors shall comply with all Data Protection Legislation in relation to any Personal Data processed.
- 15.4 Without limiting Clauses 15.2 and 15.3, the Supplier shall at all times (and shall ensure that at all times its staff):
- (a) process Personal Data only in accordance with the documented instructions received from UKRI and during the Term of this Contract. The Supplier shall immediately inform UKRI if, in the Supplier's opinion, an instruction from UKRI infringes the Data Protection Legislation or any other applicable law;
  - (b) ensure that any person to whom it provides the Personal Data is subject to appropriate confidentiality obligations;
  - (c) disclose any Personal Data only on a need to know basis to staff directly concerned with the provision of the Goods and/or Services;
  - (d) not transfer or direct the transfer of any Personal Data to any third party or process or direct the processing of Personal Data outside of the European Economic Area in each case without UKRI's prior written consent (which consent may be subject to conditions as directed by UKRI);
  - (e) keep all Personal Data confidential, and have in place now and shall on a continuing basis take all reasonable appropriate technical and organisational measures to keep all Personal Data confidential and secure and to protect against unauthorised or unlawful processing, accidental loss, destruction, damage, alteration, disclosure or access;
  - (f) upon request by UKRI, promptly do such other acts in relation to the Personal Data, or any part thereof, as UKRI shall request to enable UKRI to comply with its obligations under the Data Protection Legislation;
  - (g) notify UKRI promptly (and at least within 24 hours) if it receives a request from a Data Subject or a complaint relating to a Data Subject and promptly provide UKRI with all such data, information, cooperation and assistance as is required by UKRI in order to respond to and resolve the request or complaint within any applicable time frames;
  - (h) provide such information and allow for and contribute to audits, including inspections, conducted by UKRI or an auditor mandated by UKRI, as is reasonably necessary to enable UKRI to satisfy itself of the Supplier's compliance with this Clause 15 and the Data Protection Legislation
  - (i) on termination or expiry of this Contract, and at any other time on UKRI's request, either return or destroy (as elected by UKRI) the Personal Data (including all copies of it) and confirm in writing that it has complied with this obligation; and
  - (j) notify UKRI without undue delay on becoming aware of any Personal Data Breach and promptly following notification, provide such data, information and assistance as is required by UKRI in order for UKRI to notify the Personal Data Breach to the

Information Commissioner and/or Data Subject(s) and otherwise fulfil its obligations under Data Protection Legislation.

## **16 LIABILITY**

- 16.1 UKRI shall not be responsible for any injury, loss, damage, cost or expense suffered by the Supplier if and to the extent that it is caused by the negligence or wilful misconduct of the Supplier or the Staff or breach by the Supplier of its obligations under the Contract. The Supplier shall not be responsible for any injury, loss, damage, cost or expense suffered by UKRI if and to the extent that it is caused by the negligence or wilful misconduct of UKRI or by breach by UKRI of its obligations under the Contract.
- 16.2 Subject always to clause 16.5 and 16.6 in no event shall either Party be liable to the other Party for any:
- (a) loss of profits;
  - (b) loss of business;
  - (c) loss of revenue;
  - (d) loss of or damage to goodwill;
  - (e) loss of savings (whether anticipated or otherwise); and/or
  - (f) any indirect, special or consequential loss or damage.
- 16.3 Subject always to clause 16.5 and 16.6, the aggregate liability of the Supplier in respect of all defaults, claims, losses or damages howsoever caused, whether arising from breach of the Contract, the supply or failure to supply of the Goods and/or perform the Services, misrepresentation (whether tortious or statutory), tort (including negligence), breach of statutory duty or otherwise shall in no event exceed the Limit of Liability.
- 16.4 Subject to clause 16.5, the aggregate liability of UKRI in respect of all defaults, claims, losses or damages howsoever caused, whether arising from breach of the Contract, misrepresentation (whether tortious or statutory), tort (including negligence), breach of statutory duty or otherwise shall in no event exceed a sum equal to the Charges.
- 16.5 Nothing in the Contract shall be construed to limit or exclude either Party's liability for:
- (a) death or personal injury caused by its negligence or that of its Staff;
  - (b) fraud or fraudulent misrepresentation by it or that of its Staff;
  - (c) breach of any obligation as to title implied by section 12 of the Sale of Goods Act 1979 or section 2 of the Supply of Goods and Services Act 1982; or
  - (d) any other matter which, by law, may not be excluded or limited.
- 16.6 The Supplier's liability under the indemnities in clauses 11.5, 15 and 20.3 shall be unlimited.
- 16.7 The Supplier shall effect and maintain an adequate level of insurance cover in respect of all risks that may be incurred by it in the performance of this Contract. On request from UKRI, the Supplier shall provide UKRI with copies of the insurance policy certificates and details of the cover provided.

**17 FORCE MAJEURE**

Neither Party shall have any liability under or be deemed to be in breach of the Contract for any delays or failures in performance of the Contract which result from circumstances beyond the reasonable control of the Party affected. Each Party shall promptly notify the other Party in writing when such circumstances cause a delay or failure in performance and when they cease to do so. If such circumstances continue for a continuous period of more than 30 days, either Party may terminate the Contract by written notice to the other Party.

**18 TERMINATION**

18.1 UKRI may terminate the Contract in whole or in part at any time before the Goods and/or Services are provided with immediate effect by giving the Supplier written notice, whereupon the Supplier shall discontinue the provision of the Goods and/or Services (in whole or in part as applicable). UKRI shall pay to the Supplier:

- (a) such Charges or that part of the Charges for Goods which have been Delivered to UKRI or, on the deemed date of service of the notice of cancellation, are already in transit and the costs of materials which the Supplier has purchased to fulfil the order for the Goods and which cannot be used for other orders or be returned to the supplier of those materials for a refund; and/or
- (b) such Charges or that part of the Charges for Services provided and a fair and reasonable portion of the Charges for work-in-progress in performing the Services at the time of termination,

but UKRI shall not be liable for any loss of anticipated profits or any consequential loss and the Supplier shall have a duty to mitigate its costs and shall on request provide proof of work-in-progress claimed.

18.2 UKRI may terminate the Contract at any time by notice in writing to the Supplier to take effect on any date falling at least 1 month (or, if the Contract is less than 3 months in duration, at least 10 Working Days) later than the date of service of the relevant notice.

18.3 Without prejudice to any other right or remedy it might have, UKRI may terminate the Contract by written notice to the Supplier with immediate effect if the Supplier:

- (a) (without prejudice to clause 18.3(e)), is in material breach of any obligation under the Contract which is not capable of remedy;
- (b) repeatedly breaches any of the terms and conditions of the Contract in such a manner as to reasonably justify the opinion that its conduct is inconsistent with it having the intention or ability to give effect to the terms and conditions of the Contract;
- (c) is in material breach of any obligation which is capable of remedy, and that breach is not remedied within 30 days of the Supplier receiving notice specifying the breach and requiring it to be remedied;
- (d) undergoes a change of control within the meaning of section 1124 of the Corporation Tax 2010, unless UKRI has given its prior written consent to the change of control or does not raise an objection within 6 months of the Supplier's written notice to UKRI that a change of control has occurred;
- (e) breaches the provisions of clauses 8.2, 13, 14, 15 and 19;
- (f) becomes insolvent, or if an order is made or a resolution is passed for the winding up of the Supplier (other than voluntarily for the purpose of solvent amalgamation



or reconstruction), or if an administrator or administrative receiver is appointed in respect of the whole or any part of the Supplier's assets or business, or if the Supplier makes any composition with its creditors or takes or suffers any similar or analogous action (to any of the actions detailed in this clause 18.3) in consequence of debt in any jurisdiction; or

- (g) fails to comply with legal obligations in the fields of environmental, social or labour law.
- 18.4 The Supplier shall notify UKRI as soon as practicable of any change of control as referred to in clause 18.3(d) or any potential such change of control.
- 18.5 In addition to the Supplier's statutory rights, the Supplier may terminate the Contract by written notice to UKRI if UKRI has not paid any undisputed invoice within 90 days of it falling due.
- 18.6 Termination or expiry of the Contract shall be without prejudice to the rights of either Party accrued prior to termination or expiry and shall not affect the continuing rights of the Parties under clauses 2, 3.2, 3.3, 8, 11, 12.1, 13, 14, 15, 16, 18.7, 19.4, 20.3, 21 and 22.9 and any other term or condition of the Contract that either expressly or by implication has effect after termination.
- 18.7 Upon termination or expiry of the Contract, the Supplier shall:
- (a) give all reasonable assistance to UKRI and any incoming supplier of Goods and/or Services; and
  - (b) return all requested documents, information and data to UKRI as soon as reasonably practicable.
- 19 **COMPLIANCE**
- 19.1 The Supplier shall promptly notify UKRI of any health and safety hazards which may arise in connection with the performance of its obligations under the Contract. UKRI shall promptly notify the Supplier of any health and safety hazards which may exist or arise at UKRI's premises and which may affect the Supplier in the performance of its obligations under the Contract.
- 19.2 The Supplier shall:
- (a) comply with the reasonable requirements of UKRI's security arrangements;
  - (b) comply with all UKRI's health and safety measures;
  - (c) notify UKRI immediately in the event of any incident occurring in the performance of its obligations under the Contract on UKRI's premises where that incident causes any personal injury or damage to property which could give rise to personal injury;
  - (d) perform its obligations under the Contract in accordance with all applicable equality law and UKRI's equality and diversity policy as provided to the Supplier from time to time;
  - (e) take all reasonable steps to secure the observance of clause 19.2(d) by all Staff; and
  - (f) supply the Goods and any packaging in accordance with UKRI's environmental policy as provided from time to time.

- 19.3 The Goods shall be packed and marked in a proper manner and in accordance with any instructions specified in the Award Letter, any statutory requirements and any requirements of the carriers. All packaging materials shall be considered non-returnable. The Supplier shall indemnify UKRI against all actions, suits, claims, demands, losses, charges, costs and expenses which UKRI may suffer or incur as a result of, or in connection with, any breach of this clause 19.3.
- 19.4 If notified by UKRI, the Supplier shall comply with, and shall ensure that its Staff shall comply with, the provisions of:
- (a) the Official Secrets Acts 1911 to 1989; and
  - (b) section 182 of the Finance Act 1989.

## 20 PREVENTION OF FRAUD AND CORRUPTION

- 20.1 The Supplier shall not offer, give, or agree to give anything, to any person an inducement or reward for doing, refraining from doing, or for having done or refrained from doing, any act in relation to the obtaining or execution of the Contract or for showing or refraining from showing favour or disfavour to any person in relation to the Contract.
- 20.2 The Supplier shall take all reasonable steps, in accordance with Good Industry Practice, to prevent fraud by the Staff and the Supplier (including its shareholders, members and directors) in connection with the Contract and shall notify UKRI immediately if it has reason to suspect that any fraud has occurred or is occurring or is likely to occur.
- 20.3 If the Supplier or the Staff engages in conduct prohibited by clause 20.1 or commits fraud in relation to the Contract or any other contract with the Crown (including UKRI) UKRI may:
- (a) terminate the Contract and recover from the Supplier the amount of any loss suffered by UKRI resulting from the termination, including the cost reasonably incurred by UKRI of making other arrangements for the supply of the Goods and/or Services and any additional expenditure incurred by UKRI throughout the remainder of the Contract; or
  - (b) recover in full from the Supplier any other loss sustained by UKRI in consequence of any breach of this clause.

## 21 DISPUTE RESOLUTION

- 21.1 The Parties shall attempt in good faith to negotiate a settlement to any dispute between them arising out of or in connection with the Contract and such efforts shall involve the escalation of the dispute to an appropriately senior representative of each Party.
- 21.2 If the dispute cannot be resolved by the Parties within one month of being escalated as referred to in clause 21.1, the dispute may by agreement between the Parties be referred to a neutral adviser or mediator (the "**Mediator**") chosen by agreement between the Parties. All negotiations connected with the dispute shall be conducted in confidence and without prejudice to the rights of the Parties in any further proceedings.
- 21.3 If the Parties fail to appoint a Mediator within one month, or fail to enter into a written agreement resolving the dispute within one month of the Mediator being appointed, either Party may exercise any remedy it has under applicable law.

## 22 GENERAL

- 22.1 Each of the Parties represents and warrants to the other that it has full capacity and authority, and all necessary consents, licences and permissions to enter into and perform

its obligations under the Contract, and that the Contract is executed by its duly authorised representative.

- 22.2 The Supplier warrants and represents that during the Term it shall not accept work from other sources that will in any way impair or affect its ability to provide the Goods and/or Services and comply with the terms of this Contract.
- 22.3 The Supplier must make sure that neither it nor any of its Staff or sub-contractors are placed in a position where there is or may be an actual conflict, or a potential conflict, between their interests or the interests of its Staff or sub-contractors and the Supplier's obligations under this Contract. You must disclose to us the particulars of any conflict of interest that arises.
- 22.4 A person who is not a party to the Contract shall have no right to enforce any of its provisions which, expressly or by implication, confer a benefit on him or her, without the prior written agreement of the Parties.
- 22.5 The Contract cannot be varied except in writing signed by a duly authorised representative of both the Parties.
- 22.6 The Contract contains the whole agreement between the Parties and supersedes and replaces any prior written or oral agreements, representations or understandings between them. The Parties confirm that they have not entered into the Contract on the basis of any representation that is not expressly incorporated into the Contract. Nothing in this clause 22.6 shall exclude liability for fraud or fraudulent misrepresentation.
- 22.7 Any waiver or relaxation either partly, or wholly of any of the terms and conditions of the Contract shall be valid only if it is communicated to the other Party in writing and expressly stated to be a waiver. A waiver of any right or remedy arising from a breach of contract shall not constitute a waiver of any right or remedy arising from any other breach of the Contract.
- 22.8 The Contract shall not constitute or imply any partnership, joint venture, agency, fiduciary relationship or other relationship between the Parties other than the contractual relationship expressly provided for in the Contract. Neither Party shall have, nor represent that it has, any authority to make any commitments on the other Party's behalf.
- 22.9 Except as otherwise expressly provided by the Contract, all remedies available to either Party for breach of the Contract (whether under the Contract, statute or common law) are cumulative and may be exercised concurrently or separately, and the exercise of one remedy shall not be deemed an election of such remedy to the exclusion of other remedies.
- 22.10 If any provision of the Contract is prohibited by law or judged by a court to be unlawful, void or unenforceable, the provision shall, to the extent required, be severed from the Contract and rendered ineffective as far as possible without modifying the remaining provisions of the Contract, and shall not in any way affect any other circumstances of or the validity or enforcement of the Contract.

## **23 NOTICES**

- 23.1 Any notice to be given under the Contract shall be in writing and may be served by personal delivery, first class recorded or, subject to clause 23.3, e-mail to the address of the relevant Party set out in the Award Letter, or such other address as that Party may from time to time notify to the other Party in accordance with this clause.
- 23.2 Notices served as above shall be deemed served on the Working Day of delivery provided delivery is before 5.00pm on a Working Day. Otherwise delivery shall be deemed to occur

on the next Working Day. An email shall be deemed delivered when sent unless an error message is received.

- 23.3 Notices under clauses 17 and 18 may be served by email only if the original notice is then sent to the recipient by personal delivery or recorded delivery in the manner set out in clause 23.1.

24 **GOVERNING LAW AND JURISDICTION**

- 24.1 The validity, construction and performance of the Contract, and all contractual and non-contractual matters arising out of it, shall be governed by English law and shall be subject to the exclusive jurisdiction of the English courts to which the Parties submit.

## Specification

- 1 The Suppliers shall provide the Goods and/or Services in accordance with this Schedule
- 2.

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# 1 Introduction

## 1.1 Introduction to the Project

### 1.1.1 ISIS Neutron and Muon Source

ISIS Neutron and Muon Source is a world-leading centre for research located at the Rutherford Appleton Laboratory near Oxford. Our suite of neutron and muon instruments give unique insights into the properties of materials on the atomic scale.

### 1.1.2 SANDALS overview

SANDALS is a diffractometer specially built for investigating the structure of liquids and amorphous materials.

The Small Angle Neutron Diffractometer for Amorphous and Liquid Samples (SANDALS) is located on the north side of ISIS Target Station 1 and views the liquid methane moderator, making use of neutrons with wavelengths ranging from 0.05 – 4.95 Å. The instrument is optimized for investigating the structure of liquids and amorphous materials formed from light element components, and the delivered wavelength band-pass combined with the detector angle coverage delivers in a practical operating Q-range of  $0.1 \text{ Å}^{-1} \leq Q \leq 50 \text{ Å}^{-1}$ . This delivers sub-Angstrom distance resolution ( $\sim 0.1 \text{ Å}$ ) for pair distribution studies of liquids and disordered materials out to a length scale of 30 Å.

### 1.1.3 The science

Understanding the physical, chemical, biological, and materials science properties of liquids and amorphous materials requires a detailed understanding of the interatomic and intermolecular correlations that define these structurally disordered systems. To address this challenge, materials characterisation techniques that do not depend on regular periodic placement of the atomic and molecular components are necessary. SANDALS has been designed to accurately measure total scattering structure factors that allow us to derive atomic pair distribution functions that can characterise disordered atomic and molecular networks. A particular strength of the instrument is its ability to study hydrogenous materials using the techniques of first and second order difference hydrogen-deuterium isotopic substitution. These methods allow unprecedented levels of information to be extracted from many aqueous and organic systems that would otherwise defy comprehensive atomically resolved characterisation by radiation scattering methods. This capability makes the instrument a particularly potent international resource that delivers significant impact in many fields of modern technological importance, e.g. chemical synthesis, biochemical interactions, and advanced materials development etc.

### 1.1.4 Slits

Slits are used to cut the neutron beam down to different sizes to meet the requirements of each experiment. Slits consist of four neutron-absorbing blades; two horizontal and two

vertical, as seen in Figure 1-1. These blades can be moved with a motion controller to precisely define the neutron beam size.

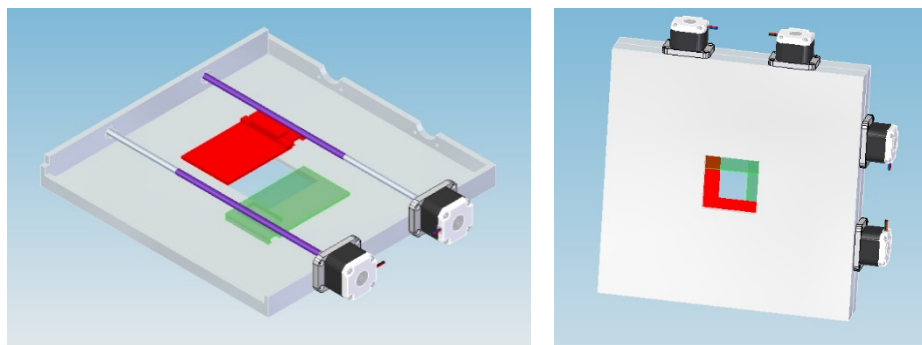


Figure 1-1 - A CAD mock-up of a slit assembly: inside (left) and outside (right)

SANDALS will require three vacuum slit assemblies between the neutron source and the sample, Figure 1-2.

To reduce neutron scatter between the target and the sample, the neutrons travel along an evacuated series of assemblies. The vacuum is  $10^{-3}$  mbar and is considered rough. The slit housings will maintain the integrity of the vacuum for the neutrons to pass through.

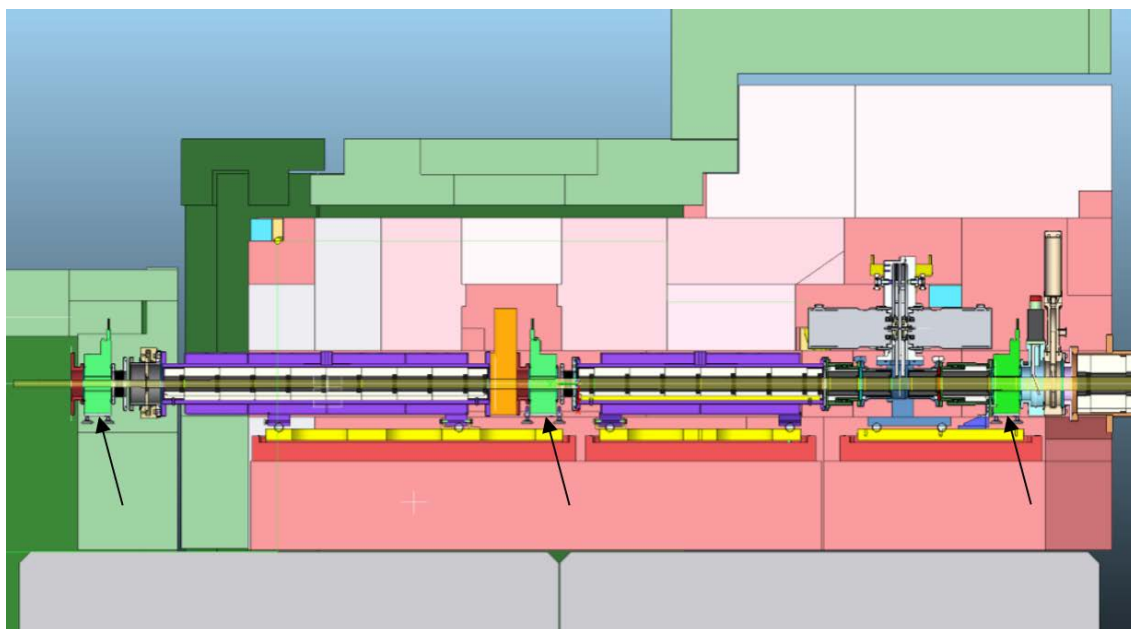


Figure 1-2 - The three slit assemblies (indicated with arrows) are located in the front end shielding

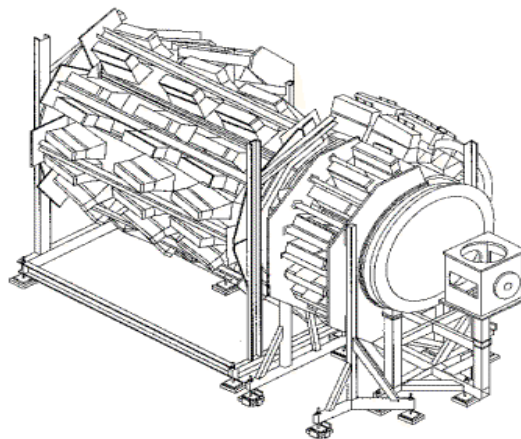
### 1.1.5 Use case

Good scattering and diffraction measurements require the delivery of well-collimated beams of radiation to the sample position. To facilitate the delivery of variable collimation along the 11m



primary radiation flight path of the instrument, the opening of each slit will need to be continuously variable from a closed position up to fully open (either 30x30mm or 60x60mm). This variability is required to allow the instrument performance (in terms of delivered neutron flux and resolution) to be tuned to the requirements posed by the different sizes of sample and sample environment, and associated sample properties, that vary from experiment to experiment. As SANDALS operates via the use of a wide range of neutron wavelengths (0.05 – 4.95 Å), the slits need to be capable of stopping and cleanly shaping beams of epithermal neutrons with energies up to 50eV.

The desired beam sizes at the sample position will lie within the range 3 – 30 mm and steps in beam sizes between experiments are of the order of a few mm. In a diffraction experiment, we keep the slits fixed throughout the whole batch of measurements since we perform a series of background and calibration runs that have to apply to all our sample measurements equally. We thus need to keep everything fixed for the full duration of a set of measurements (up to 14 days). The typical experiment on SANDALS will last around 4 – 5 days and the slits would usually only be moved between experiments. However, several adjustments are required at the beginning of an experiment to find the best settings. Therefore, it should be assumed that each slit would on average be moved twice per week over a period of 30 years. At the other extreme, we do experience periods of several months without the requirement to move the slits. For such times, the slits must stably hold their position; the desired stability should be available over periods of up to six months, regardless of potential power cuts during that time.



**Figure 1-3 - A 3D CAD model of the SANDALS detector banks and vacuum vessel**

As slit movements are very unlikely to be the rate-limiting factor on SANDALS, their speed is not particularly critical. A minute or two would be acceptable for the slit blades to move into their specified positions.

Repeatability and accuracy of position and angle are crucial for our experiments. Over a lifetime of 30 years, it is essential that the blades maintain parallelism – when they are closed, they should be closed. We cannot afford to see some slight triangular opening due to misalignment. Also, the unit needs to be installed level. Considering the beam sizes used on SANDALS, the precision of their angular installation is important. When we are setting our

aperture sizes we need to be confident that we do not clip material that surrounds the sample in complex sample environments. These materials could be as close as 1 mm from the edge of the beam and the positioning accuracy is required to be at least an order of magnitude greater, as a safety margin.

## 1.2 Subject of this Technical Specification

The requirement is for the design, supply of material, manufacture, assembly, testing, and delivery of 3 YZ vacuum slit assemblies to STFC, RAL.

## 2 Scope

Included within the scope of work is:

- the design of the equipment that is to be supplied;
- all sourcing, manufacturing, and assembly activities associated with the supply of the equipment (unless stated otherwise in Section 2.3);
- the delivery of the slits to STFC, RAL, and all packaging and handling activities associated with this delivery;
- defining, implementing, and documenting the results of the quality control and assurance plan;
- the documentation listed in Section 2.2; and
- the activities and deliverables needed for the approval steps listed in Section 3.4.

### 2.1 Equipment

Included within the scope of the supply are:

- three vacuum slit assemblies;
- transparent covers for the vacuum faces of each slit, to allow visual inspection during testing whilst stopping dirt ingress and unnecessary damage to the vacuum faces;
- a full set of cables required to operate the slits, these cables shall be up to 50m long, (*optional*); and
- A full set of neutron-absorbing blades, (*optional*).

### 2.2 Documentation

The contract shall include the supply of the following documentation, all of which should be clearly presented in English and submitted in PDF format unless otherwise stated:

1. Preliminary Design Review (PDR) documentation and minutes

2. Critical Design Review (CDR) documentation and minutes
3. Final Design Review (FDR) documentation and minutes
4. Factory Acceptance Test Procedures
5. Factory Acceptance Test Reports
6. Survey report describing blade positions in XYZ in relation to the external datum of the slit (negative XY, negative ZX, negative YZ planes, see Figure 4-1)
7. Full support documentation of equipment supplied, including installation, operation, and maintenance manuals
8. Programme of work
9. A full set of technical drawings for all equipment supplied (all dimensions to be metric)
10. A complete 3D CAD model of the assembly (STEP format)
11. A list of recommended spare items and costs
12. Safety report
13. Hazard ID documenting residual risks
14. Quality Assurance Plan (including calculations and validation processes)
15. Quality Assurance report
16. Declaration of Incorporation; in accordance with the Machinery Directive 2006/42/EC

### **2.2.1 Manuals**

A detailed technical file and user manual are required. Installation, operation, and maintenance manuals shall be supplied (as electronic and hard copy versions) as part of this Contract. The manuals shall include and/or detail:

1. Installation manual
2. Operation manual
3. Detailed assembly and disassembly instructions
4. Routine maintenance requirements – including a detailed description of tasks, the conditions under which it shall be performed, and the estimated time to complete the task
5. Fault diagnosis instructions
6. Relevant mechanical and electrical drawings
7. Residual risks

### **2.2.2 Programme of work**

Shall include:

1. The total duration of the Contract
2. Details of the design, procurement, manufacturing, assembly, testing, and delivery of the systems
3. The milestones listed in Section 3.4
4. List of the significant work packages to be undertaken by the Supplier, and by any sub-contractors, together with their names

## **2.3 Items Supplied by STFC**

### **2.3.1 Outline test document**

ISIS will include this.

### **2.3.2 Electrical pinouts**

ISIS will provide details of how the slits should be wired. The Supplier should collaborate with ISIS to design and confirm a solution that performs well.

### **2.3.3 Neutron-absorbing blades**

The neutron blades required for each slit will either be provided by ISIS or may be quoted for separately by the Supplier. The Supplier must collaborate with ISIS to determine the YZ dimensions of each blade and any additional mechanical features required.

## **3 Contract Execution**

### **3.1 Responsibility for Design, Components, and Performance**

The Supplier shall be responsible for the correct performance of all items supplied, irrespective of whether they have been chosen by the Supplier or suggested by STFC. STFC's approval of the design and STFC's component selection does not release the Supplier from their responsibilities in meeting the Technical Specification.

STFC assumes responsibility for the performance of items and sub-systems supplied by STFC.

### **3.2 Contract Engineer**

The Supplier shall assign an engineer to be responsible for the technical execution of the Contract and its follow-up throughout the duration of the Contract.

### **3.3 Progress Report**

The Supplier shall supply, within two weeks of notification of the Contract, a written programme detailing the manufacturing and testing schedules. The programme shall include preliminary dates for inspections and tests.

A written progress report shall be sent to STFC every month via email until completion of the Contract.

### **3.4 Design Approvals**

The following program details the hold points along the design process. For the preliminary, critical, and final design reviews, STFC will deliver the review verdicts within 10 working days.

1. Preliminary Design Review (HOLD POINT)
2. Critical Design Review (HOLD POINT)
3. Final Design Review (HOLD POINT)
4. Manufacture of Final Design
5. Pre-factory Acceptance Test (HOLD POINT)
6. Factory Acceptance Test (HOLD POINT)
7. Site Acceptance Test (HOLD POINT) (FULL PAYMENT RELEASED)

#### **3.4.1 Preliminary Design Review**

Review of the conceptual design. This review shall be deemed satisfactory before significant commitment to detailed engineering analysis or the generation of full 3D models.

Objectives:

1. Confirm the requirements and specification, technically as well as time
2. Present the outline concept design or designs – with a clear preferred option, if multiple designs are presented
3. Review and agree the technical viability of the chosen conceptual design and its suitability to advance to the engineering design phase
4. Review and agree the expected timescale
5. Review the risk profile and agree its acceptability
6. Review how the slits will be tested at the Pre-factory Acceptance Test

#### **3.4.2 Critical Design Review**

Review of the engineering design. This review should take place when engineering calculations and 3D modelling (or general assembly drawings) have been completed, but before significant commitment is made to the detailed design.

Objectives:

1. Reconfirm that the design satisfies the project requirements and specification
2. Review and agree the technical viability of the engineering design and its suitability to advance to the detailed design phase (the expectation is that there will be no significant changes)
3. Review the risk profile and agree its acceptability
4. Initiate purchase of long lead time items, as appropriate

### **3.4.3 Final Design Review**

Review of the detailed design. This review should take place when the 2D detailed drawings have been completed but before committing to significant procurement.

Objectives:

1. Reconfirm that the design satisfies the project requirements and specification
2. Review any changes to the design since the CDR
3. Review and agree the technical viability of the design and its suitability to advance to the procurement phase

### **3.4.4 Manufacture of final design**

Following a successful final design review, the technical documentation will be developed so that the system components can be procured and assembled.

### **3.4.5 Pre-factory Acceptance Tests**

These tests will be performed at the Supplier's site and the results sent to STFC. Once STFC are satisfied with these results, the Factory Acceptance Test will be organised.

The 1<sup>st</sup> part of the test will be to run the axes back and forth a desired amount of times to simulate running the slits for a number of months on the beamline. This shall involve driving axes 100 times from one limit switch to the other. This shall be done to help the slits bed in. Once this is completed, accuracy and repeatability tests shall be performed.

The control system used for this test does not need to be the ISIS standard Beckhoff system. The supplier can choose the control system to be used for this test.

### **3.4.6 Factory Acceptance Tests**

These tests shall be performed at the Supplier's site. STFC will witness these tests. This will be a repeat of the Pre-factory Acceptance Test, although the test may be shortened with STFC-approval. For this test, the Supplier can choose the control system to be used to perform the tests. Once STFC are happy with results of the Factory Acceptance Test, shipping to the UK can be organised.

The Supplier shall perform part of the Factory Acceptance Tests with the slits under vacuum ( $10^{-3}$  mbar).

### **3.4.7 Site Acceptance Tests**

These tests will be carried out at STFC's RAL site, these will be similar to the Factory Acceptance Tests. These will verify that the specification is still met by the slits and that they have not suffered any damage during transport.

The slits will be tested under vacuum to check suitability for the required vacuum. A shortened version of the Factory Acceptance Test will be performed to check that the slits will operate in vacuum.

Once the tests are completed satisfactorily, full payment will be released. These tests will be performed within 4 weeks of STFC taking delivery of the slits.

## **3.5 Factory Access**

STFC and its representatives shall have free access during normal working hours to the manufacturing or assembly sites, including any subcontractor's premises, during the Contract period.

This access may need to be provided remotely by video conferencing, such as Zoom.

## **3.6 Tests to be Carried Out at the Supplier's Premises**

STFC reserves the right to be present, or to be represented by an organization of its choice, to witness any tests carried out at the Supplier's or subcontractors' premises. The Supplier shall give at least 10 working days' notice of the proposed date of any such tests.

## **3.7 Testing**

When the slits are tested, each blade shall be measured simultaneously by the encoder and two external measurement devices.

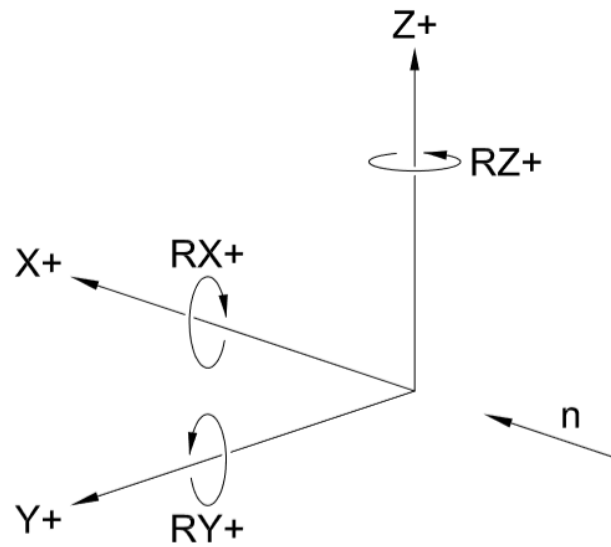
# **4 Technical Requirements**

The requirement is for three fully assembled vacuum slits for defining the beam aperture. Each slit will consist of four independently controlled axes of motion (consisting of two Y and two Z axes) mounted within a vacuum-tight structure (once mated with the vacuum assembly on the front and back faces). Each axis will position a neutron-absorbing blade in order to define the aperture.

## **4.1 Coordinate System and Naming Conventions**

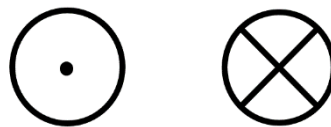
The following diagrams detail the coordinate system and naming conventions used.

The neutron beam travels along the X-axis, from the neutron source or target to the sample, Figure 4-1. The Z-axis is vertical.

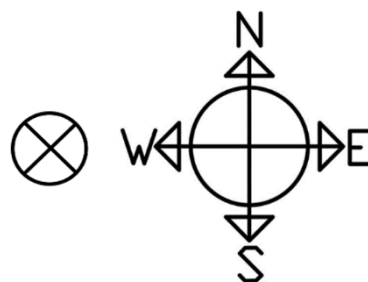


**Figure 4-4 - The motion coordinate system: specifying the axis naming convention, and the positive directions and rotations, with the neutron beam entering from the right**

An individual blade is sometimes most easily referred to by the side of the beam it acts on. Figure 4-3 shows how this is achieved using the compass naming convention with the beam heading into the page. The blades can then be described as North, South, East, and West, Figure 4-4. 'Into' and 'out of' the page are defined in Figure 4-2.



*Figure 4-5 - The beam coming out of (left) and into (right) the page*



*Figure 4-6 - The compass naming convention for blades*

The North and South blades define the slit apertures in the Z axis, or the beam's 'height', and the axes are defined as Z2 and Z1 respectively. The East and West blades define the slit apertures in the Y axis, or the beam's 'width', and the axes are defined as Y1 and Y2 respectively.



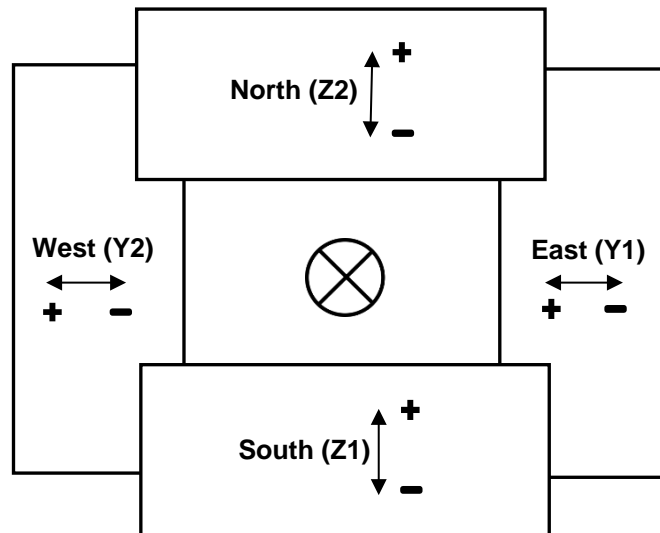


Figure 4-7 - Blade naming convention

## 4.2 Space Envelope

There is a different space envelope associated with each slit, see Table 4-1. Combined with Figure 4-5, the space available for each is defined from the centre of the beam.

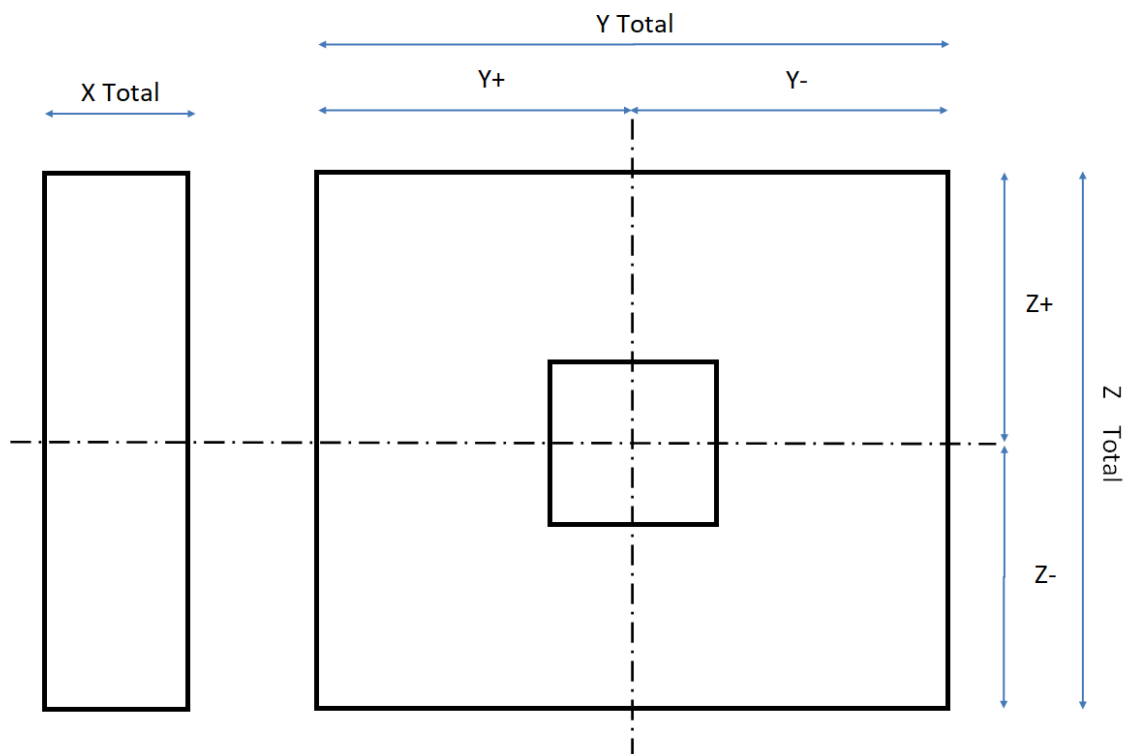


Figure 4-8 – The space envelopes dimensioned from the origin or the centre of the beam

There are mechanical interfaces on the front, back, and bottom of the slit and these are defined in Section 4.5.1. These are both of the external YZ planes and the bottom XY plane.

	Slit 1	Slit 2	Slit 3
X (mm)	122	122	122
Y (mm)	-275, +275	-150, +150	-210, +387
Z (mm)	-134, +750	-134, +450	-134, +215
Electrical Interface	XY-plane, Z+	XY-plane, Z+	XZ-plane, Y+
Total (X) x (Y) x (Z)	122x550x884	122x300x584	122x597x349

*Table 4-1 - Space envelopes*

The electrical interfaces, defined in Section 4.5.2, shall be situated on the external planes specified in Table 4-1. The location of the fixed sockets on each slit must allow for the cables to be plugged in and complete one full 90 degree bend in the YZ plane within the space envelope, Figure 4-6. It should be assumed that two of the cables each have a fixed bend radius of ~100mm and will be terminated into plugs that are each 75mm long. The other two cables will have smaller connectors and cables that are more flexible.

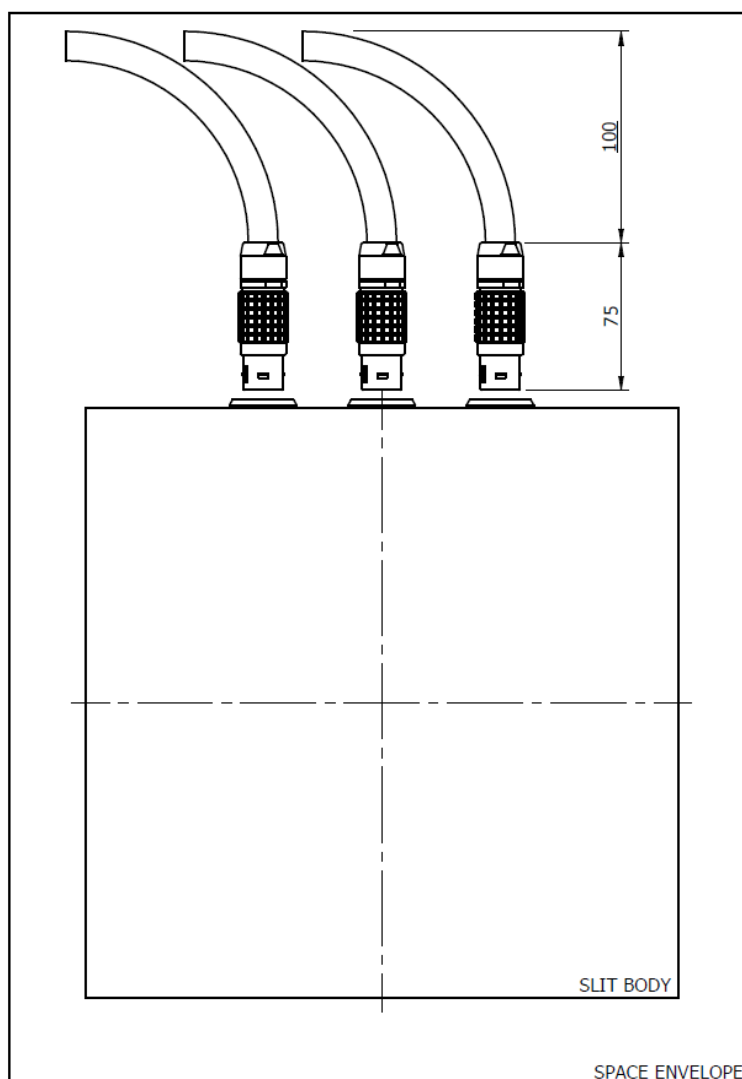


Figure 4-9 - Accommodating Cables within the Space Envelope

## 4.3 Apertures and Blades

### 4.3.1 Aperture dimensions

The three slits do not all have the same aperture and their maximum sizes are detailed in Table 4-2. Each slit shall also be able to block the beam completely. To ensure a completely closed aperture, each blade must be able to translate to 5mm past the beam centre, Figure 4-7. For example, the North/Z2 blade on slit 1 must be able to travel from -5mm to +30mm.

	Slit 1	Slit 2	Slit 3
Y (mm)	60	30	30
Z (mm)	60	30	30
Travel (mm)	35	20	20

Table 4-2 - Slit apertures

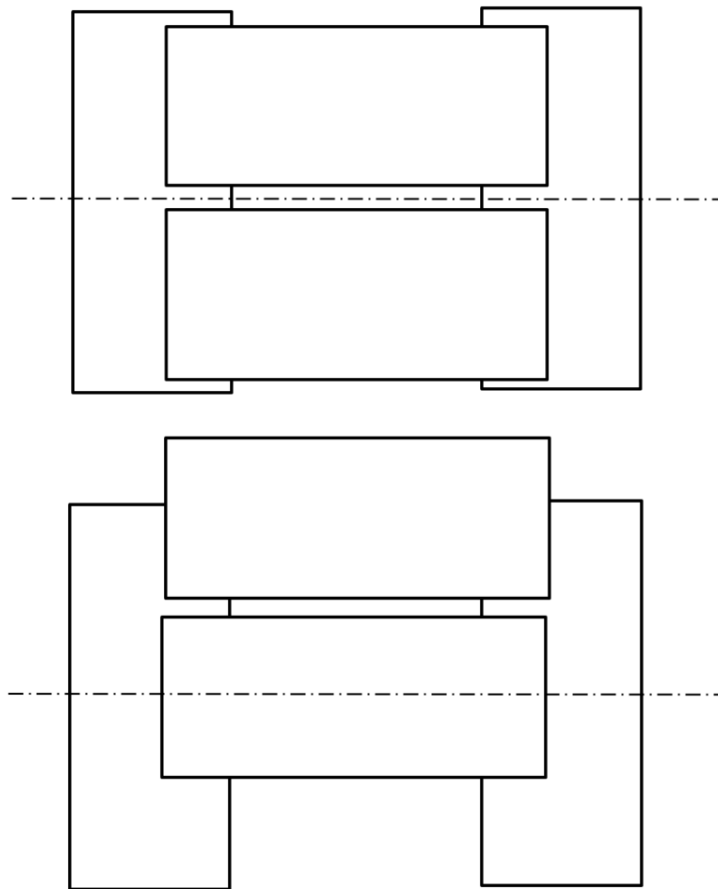
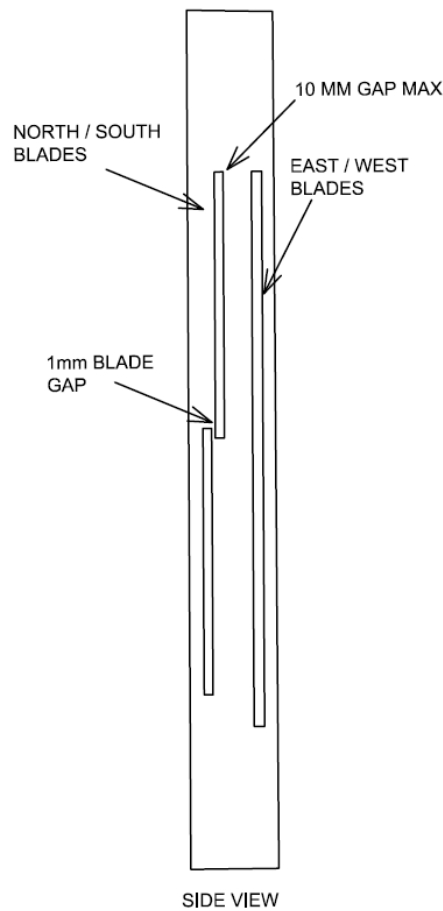


Figure 4-10 - Blades passing over the beam centre

### 4.3.2 Blade order and separation

The North and South blades should be closer to the sample than their orthogonal pair, East and West.

It is preferred that each blade should be able to overlap its partner, to close the beam entirely, without clashing. The gap between a blade pair (for example, North and South) should be kept to a minimum (less than 1mm), see Figure 4-8. The gap between the two pairs should be no more than 10mm (back of one pair to the front of the other). It is anticipated that these gaps may be even smaller, due to the thick blades and the limited Z-dimension of the space envelopes.

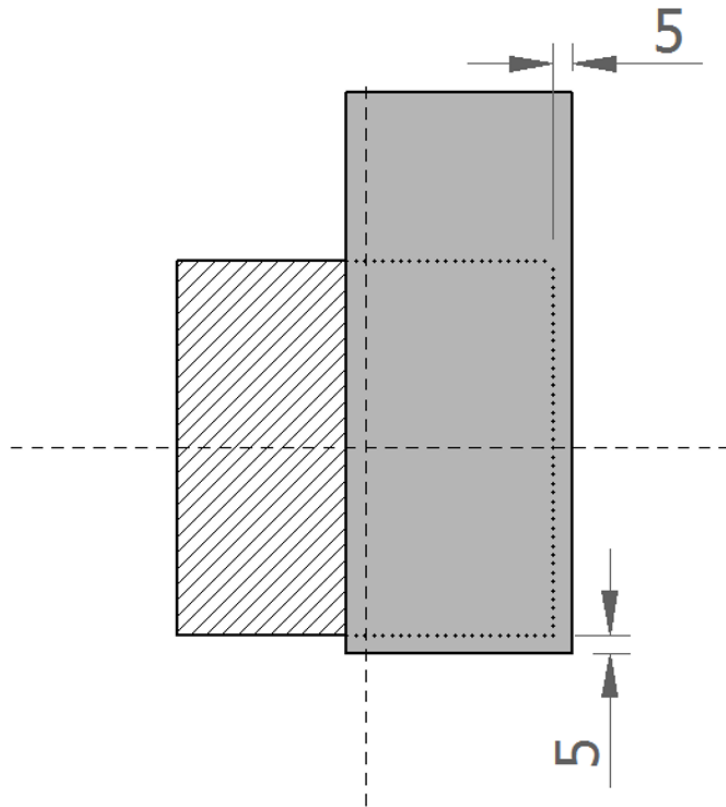


**Figure 4-11 - Gaps between blades**

The design shall ensure that the blades are unable to clash with each other or any other surface. If the blades must act on the same plane, anti-clash limit switches or some other mechanism will be required to prevent clashes occurring. A design utilising anti-clash limit switches would require different connectors to those specified in Section 4.5.2.

### **4.3.3 Blades**

To ensure there are never any shine paths around the blades, a border providing 5mm of overlap outside the maximum aperture will be required at all times, Figure 4-9. This includes when the blades are at the 5mm over-travel position which, together with the aperture sizes, allows us to define a minimum blade size, Table 4-3. In addition to the minimum, the Supplier will require additional material to interface with the blade carrier mechanism.



*Figure 4-12 - Maintaining a border around the maximum aperture*

The Supplier is responsible for ensuring that the design of the blade carrier mechanism is such that only the blade material pass into the active area (within the maximum beam aperture) at any position within the required range of motion.

The Supplier shall design a mechanism for aligning the blades to the base of the slit assembly to within the given tolerance. The blade aligning mechanism shall also allow ISIS staff to realign these the blades with the base in the future.


	Slit 1	Slit 2	Slit 3
Minimum YZ dimensions (mm)	40 x 70	25 x 40	25 x 40
X dimension and material(s)	10mm Nimonic alloy 10mm Sintered B4C	20mm Sintered B4C	20mm Sintered B4C
Estimated blade mass	300-600g	50-100g	50-100g
All dimensions $\pm 0.1\text{mm}$ . Nimonic alloy density taken as $8.2\text{g/cm}^3$ Sintered B4C density taken as $2.5\text{g/cm}^3$			
The long edge that defines the slit opening is to have a flatness form tolerance:			0.05mm

Table 4-3 - Blade details

## 4.4 Motion Requirements

### 4.4.1 Motion overview

The following specification points, in Table 4-4, apply to all axes except where stated otherwise.

Motor type	Stepper
Speed	0.5mm/s
Local positional accuracy	$\pm 50\mu\text{m}$
Positional repeatability	$\pm 5\mu\text{m}$
Resolution of motion	$2\mu\text{m}$
Blade pair parallelism or orthogonality to the datum face	$100\mu\text{m}$
Parallelism within a blade pair	$100\mu\text{m}$
Travel range per blade	Slit 1 = 35mm Slit 2 = 20mm Slit 3 = 20mm
Travel restrictions	Limit switch at each end of all axes, which can be overrun Adjustable hard stop at each end of all axes, if limit switches fail
Position feedback	Slit 1 = Resolver Slit 2 = Resolver Slit 3 = Absolute linear encoder
Power-off condition	Self-supporting mechanism capable of maintaining blade position without a brake

Table 4-4 - Motion overview

#### 4.4.2 Motor type

- Each axis will be driven by a stepper motor:
  - Each motor shall also be fitted with a PT100
  - The stepper motor drive will provide 5A, 48VDC max
  - Torque and speed performance shall be achievable whilst microstepping

#### 4.4.3 Speed

Speed to be the nominated value or faster.

#### 4.4.4 Local positional accuracy

The accuracy is local and taken from the zero position at the centre of the slit aperture. This will be tested in multiple positions along the travel and measured at two points on the blade surface, Figure 4-10. These two positions on the blade surface shall be within 5mm of the extremes of the maximum aperture for that slit.

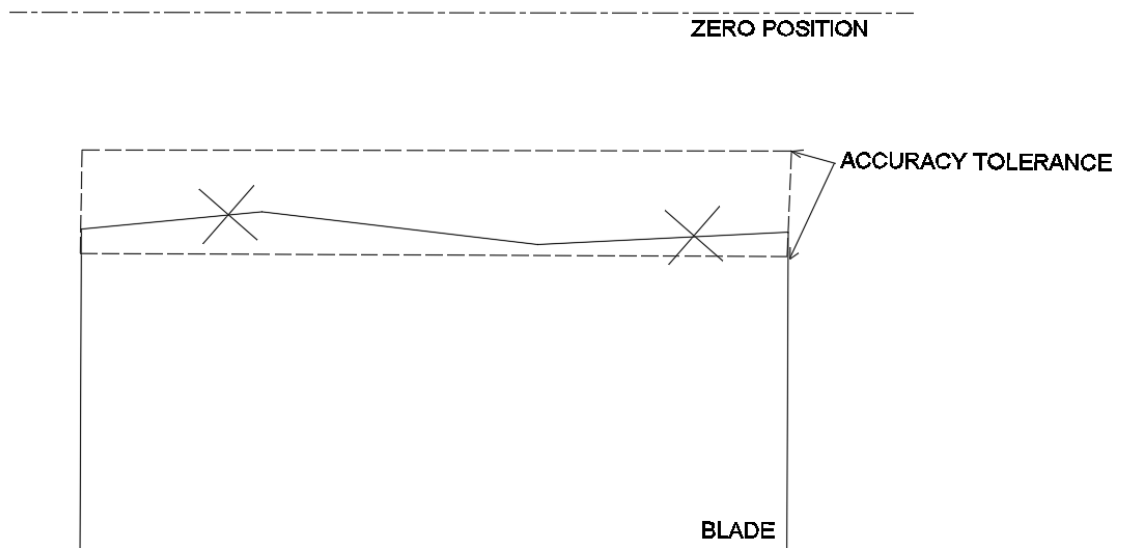


Figure 4-13 – Measuring that the positional accuracy of the blade (solid line) at two points (crosses) is within the tolerance window (dashed line)

#### 4.4.5 Positional repeatability

The blade shall move to the same position, within the nominated value, on at least 10 consecutive occasions as measured at a minimum of two positions, as in Section 4.4.4.

#### 4.4.6 Resolution of motion

The resolution is the distance travelled by the blade from the movement of a single full motor step; microstepping will be not considered. The travel shall be either the same or smaller than the nominated value.

It must be possible to read this move on the encoder.



#### 4.4.7 Blade pair parallelism or orthogonality to the datum face

To make sure that all the slits are parallel, it is important that the North and South blades are parallel throughout their whole travel to a known datum, Figure 4-11. This datum face shall be the bottom mounting face of the slit housing and is to be set horizontal with respect to the ground.

For the East and West blades they shall be orthogonal to this datum to within the nominated tolerance.

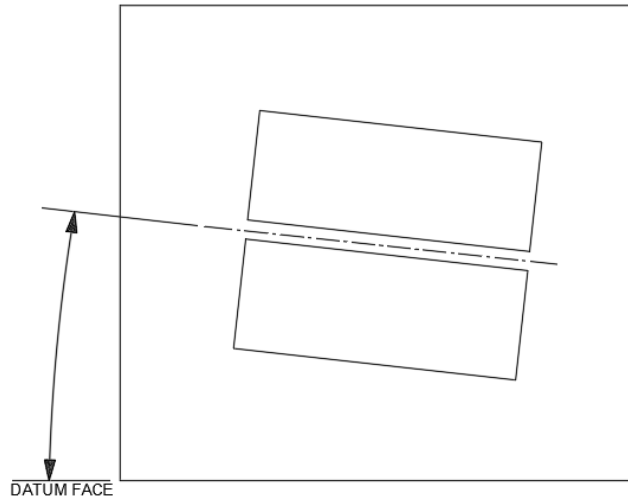


Figure 4-14 - Blade gap orientation relative to the datum face

#### 4.4.8 Parallelism within a blade pair

The slit blades shall remain parallel to each other across the motion to within the nominated value.

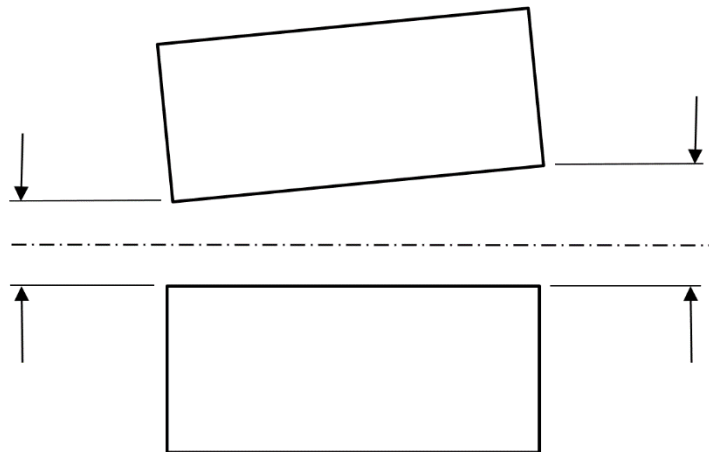


Figure 4-15 - Blade parallelism

#### 4.4.9 Travel range per blade

As detailed in Section 4.3.1, there are different aperture requirements, and therefore travel ranges per blade, for each slit.

#### 4.4.10 Travel restrictions

The travel shall be restricted at each end of each axis using a limit switch, which is actuated by a ramped cam and triggered side on, Figure 4-13. The stage must be able to overrun the switch, in case the switch malfunctions, and then hit an adjustable hard stop.

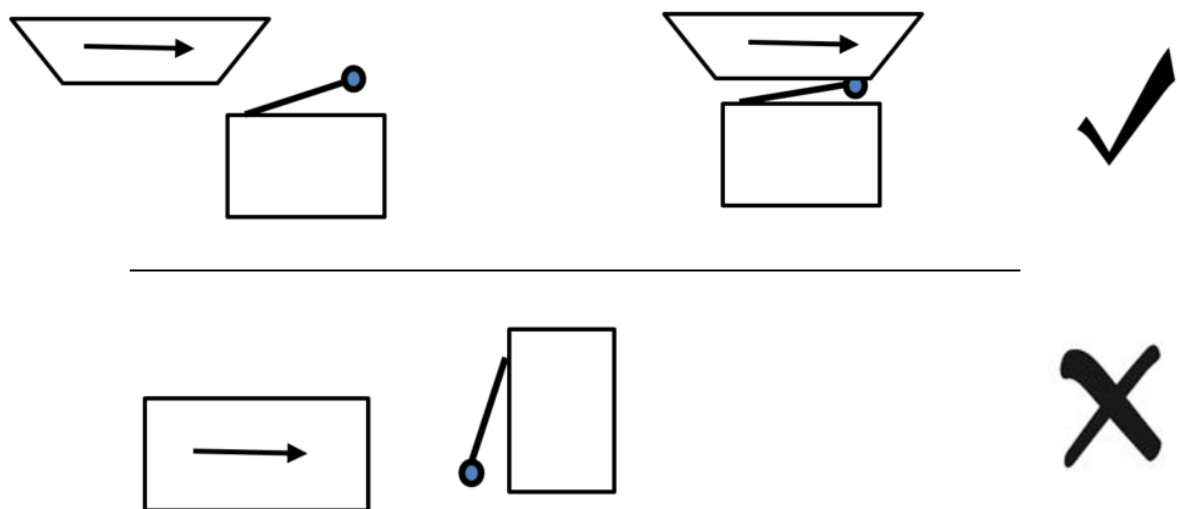


Figure 4-16 - Limit switches correctly (above) and incorrectly (below) orientated

#### 4.4.11 Position feedback

The position feedback for slits 1 and 2 will be a resolver attached to either the rear shaft of the motor or directly onto the axis screw.

The position feedback for slit 3 shall be an absolute linear encoder meeting the specification in Table 4-5, and attached as close to the moving blade as possible. The encoder resolution should be smaller than the resolution of motion.

Technology	Supply voltage	Interface
Optical or Magnetic	5, 9, or 24VDC	BISS-C, EnDat 2.2, SSI

Table 4-5 - Absolute encoder specification

#### 4.4.12 Power-off conditions

The axes shall not be able to move when they are powered off. This should be achieved by producing a system with a low enough drive efficiency. Lead screws may provide adequate friction to hold their position when unpowered, whereas a ball screw may fall if the load is

larger than the detent torque of the stepper motor. It is acceptable to use a ball screw with a gearbox, if it produces enough friction to hold the load.

## **4.5 Critical Interfaces**

### **4.5.1 Mechanical interfaces**

The slits performance in parallelism will be measured from the base of the slits, this surface shall be machined to a suitable tolerance to achieve these accuracies. The slits will then be mounted to a base plate.

Each slit shall be fitted front and back with an O-ring seal, with a DN160 ISO-K centering ring and secured with 8x M10 claw clamps on a 200PCD, see Figure 4-14. The diagram also details two location features, which will be required on the front and back of each slit.

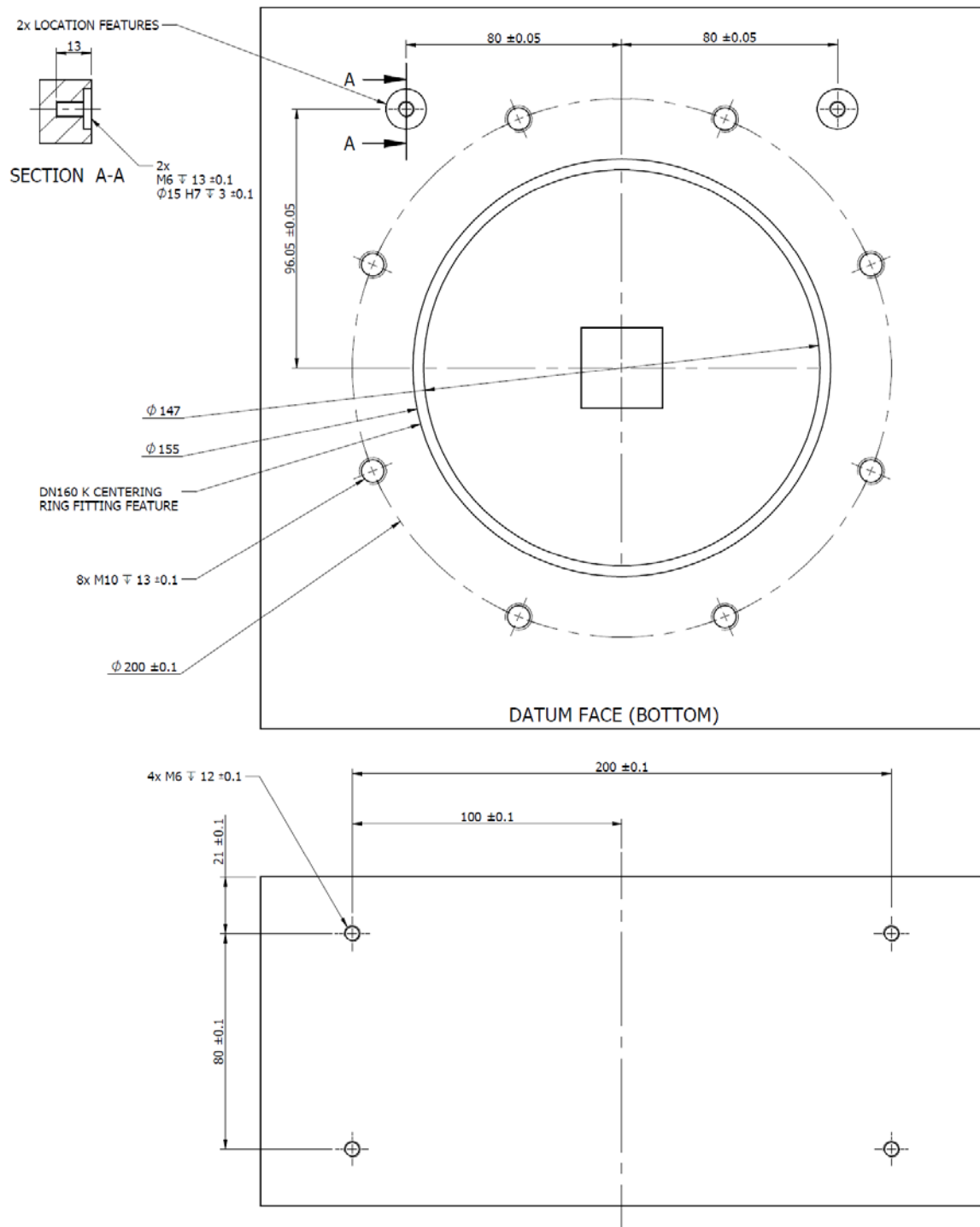


Figure 4-17 - Mechanical interfaces including vacuum and location features (above) and base (below)

## 4.5.2 Electrical interfaces

The control system will connect to the electrical devices (motors, Pt100s, feedback, and switches) in the slit assemblies using four cables per slit. The cables will be permanently installed in the rack, without connectors. At each slit there will be an electrical break, consisting of fixed sockets and free plugs, for ease of installation and maintenance.

The connectors used in the electrical break should be selected from the LEMO B series. It is strongly recommended that they are chosen from the proposal in Table 4-6. The switches and Pt100 connectors will be size 2B, whilst the motor and feedback connectors will be size 4B. The exact selection (EGJ or HGJ fixed sockets) will depend on whether the Supplier's design has all of the electrical devices in vacuum or some in and some out of vacuum.

The table includes recommended cables for each device type from Helukabel. Alternatives with a higher specification may also be proposed to STFC by the Supplier.

The final digit of the part number for free sockets (for devices in air) relate to crimp size and will be dictated by the wiring of the devices selected by the Supplier. Internal wiring sizes should be agreed with STFC.

In the UK, all of these components have lead times of 4-12 weeks, at the time of writing.

The cables may be required to be up to 50m in length.

	Cable	Free Plug	Fixed Socket (for devices in air)	Fixed Socket (for devices in vacuum)
Motor	(8 x 2 x 0.5) Part # 19125 Ø13.4mm	FGJ.4B.316.CYMD13Z GMA.4B.013.DS	EGJ.4B.316.CY# GCA.4S.255.LT	HGJ.4B.316.CLAPV GCA.4S.255.LT
Pt100	(4 x 2 x 0.25) Part # 21036 Ø7.4mm	FGJ.2B.308.CYMD82Z GMA.2B.070.DR	EGJ.2B.308.CY# GCA.2S.255.LT	HGJ.2B.308.CLAPV GCA.2S.255.LT
Feedback (Slit 1 & 2)	10 x (2 x 0.25) Part # 21329 Ø11.7mm	FGJ.4B.340.CYMD12Z GMA.4B.010.DV	EGJ.4B.340.CY# GCA.4S.255.LT	HGJ.4B.340.CLAPV GCA.4S.255.LT
Feedback (Slit 3)	(20 x 2 x 0.25) Part # 21047 Ø14.5mm	FGJ.4B.340.CYMD15Z GMA.4B.013.DV	EGJ.4B.340.CY# GCA.4S.255.LT	HGJ.4B.340.CLAPV GCA.4S.255.LT
Switches	(6 x 2 x 0.25) Part # 21038 Ø8.9mm	FGJ.2B.312.CYMD92Z GMA.2B.070.DJ	EGJ.2B.312.CY# GCA.2S.255.LT	HGJ.2B.312.CLAPV GCA.2S.255.LT

Table 4-6 - Electrical interface components

## 4.6 Materials

The bulk material of the slit housing, and any large parts within it, should be made from aluminium alloys. Stainless steels are permitted for fasteners and small fittings only. Bronzes are permitted for use within the motion mechanics.

## 4.7 Safety

The slits should be designed in way to keep risks to personnel to a minimum.

The slits will form their own vacuum containment when in operational use, which will likely provide an element of protection, but personnel will also need to interact with the slits during commissioning and maintenance.

Lower torque motors should be used where possible.

The assembly should be free of sharp edges.

All electrical contacts should be suitably insulated to avoid electric shock or short circuit.

During an emergency stop situation power may be removed from motors. Removal of power to the motors should not cause any other hazardous situation due to stored energy etc.

## 4.8 Operational Conditions

### 4.8.1 Lifespan and duty cycle

The SANDALS beamline will be in use for 30 years. The slits shall be in operation for this time.

ISIS has 200 operational days through the year and the slits will be driven 10 times during an operational week. For the purpose of this specification, it should be assumed that each axis will complete 285 moves a year and roughly 8500 moves in its lifetime.

All axes must be driven from one limit switch to the other 100 times during the pre-factory tests.

### 4.8.2 Environmental conditions

#### 4.8.2.1 Vacuum environment

All three slit assemblies will act as their own vacuum chamber enclosures when interfaced with the wider front end vacuum assembly. They shall not introduce additional vacuum windows that the neutron beam must pass through.

The vacuum will be  $1 \times 10^{-3}$  mbar.

The slit housings should achieve a leak rate of less than  $1 \times 10^{-5}$  mbar\*l/s.

All items shall be cleaned for vacuum and all trapped volumes are to be vented. All equipment to be used within vacuum shall have a proven ability to perform well within a similar vacuum

range. Evidence will be required for any equipment without a vacuum rating. Lubricants, greases, and outgassing materials should be kept to a minimum.

The slit vacuum faces must be provided with simple covers to keep them clean and free of scratches during testing and commissioning. The material selected should be readily recyclable and clearly engraved with its material.

#### **4.8.2.2 Radiation environment**

The slits will operate within a moderate neutron and gamma radiation environment. Such radiation; can damage parts and materials, thereby limiting the reliability of a system; and can cause materials to activate, which can create a hazard during maintenance and other work. The materials and parts specified have been selected to appropriately limit this risk. The materials selected by the Supplier as a part of the detailed design will be reviewed by STFC with regard to this risk.

#### **4.8.2.3 Operational temperature**

The slit assemblies shall meet specification at temperatures of  $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$  but will be operated at a wider range.

## **5 Quality Assurance**

The system components and completed assembly must be inspected and validated to verify compliance to the specification. The Supplier will be responsible for defining, implementing, and documenting the results of the quality control and assurance plan. The Supplier must provide a detailed quality control and assurance plan at the CDR. The completeness of which shall form part of the review approval criteria. The plan submitted at CDR must demonstrate how the quality control and quality assurance steps planned and taken will ensure compliance to each specification clause.

All characteristics listed in Table 4-4 must be ensured as part of the quality control process.

In accordance with the Machinery Directive 2006/42/EC, a complete Hazard Identification & risk assessment, including residual risks, must be generated. These documents must be submitted as part of the documentation scope and will be reviewed at the design reviews.

## 6 Delivery and Commissioning

### 6.1 Provisional Delivery Schedule

Supplier may adapt the intermediate steps in the provisional schedule below to suit their programme of work. Schedule below assumes contract commences on 13/01/21.

Final design documentation submitted for Final Design Review no later than:	30/03/21	11 weeks
Final design approval given no later than:	21/04/21	13 weeks
Successful Factory Acceptance Test completed no later than:	14/07/21	26 weeks
Successful delivery to RAL site no later than:	28/07/21	28 weeks

Installation is due to commence from 18 weeks and the tender delivery weighting reflects this. The dates above reflect the possible float in the plan but earlier delivery is preferred.

### 6.2 Items delivered

The items shall be delivered to STFC's RAL site within 28 weeks of the Contract being placed.

### 6.3 Acceptance and Guarantee

Provisional acceptance will be given by STFC only after all items have been delivered in accordance with the conditions of the Contract including documentation referred to in this Technical Specification, all tests specified have been successfully completed, and all test or other certificates have been supplied to STFC.

The Supplier shall offer a minimum warranty period of 24 month.



### **Schedule 3**

#### **Charges**

1 The Charges for the Goods and/or Services shall be as set out in this Schedule 3.

2 The Charges for the Goods and/or Services shall be:

TBA