

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
VIKRAM SARABHAI SPACE CENTRE (VSSC)
THIRUVANANTHAPURAM**

Tender for Floating frame balance

Bids to be submitted online

**Tender No.: VSSC/PURCHASE UNIT I (MAIN PURCHASE)/VS202300253001 dated
08-09-2023**

A. Tender Details

Tender No :	VSSC/PURCHASE UNIT I (MAIN PURCHASE)/VS202300253001
Tender Date :	08-09-2023
Tender Classification:	GOODS
Purchase Entity :	PURCHASE UNIT I (MAIN PURCHASE)
Centre :	VIKRAM SARABHAI SPACE CENTRE (VSSC)

Floating frame balance

- 1.Last minute clarification on tenders will not be entertained.
- 2.This is E tender. Hence postal/fax/email tenders will not be accepted.
- 3.This is a Two Part tender - Techno Commercial (Containing Documents Solicited vendor [available in Bid forms] & Vendor Specified Terms) and Price Bid. Hence all Technical & commercial details shall be furnished in the Documents Solicited from Vendor & Vendor Specified Terms Fields while price shall be indicated only in the Price Bid.
- 4.IMPORTANT NOTE: This being a Two part tender, cost shall be mentioned in the Price Bid only. All documents being uploaded like quote split up details. AMC cost etc should not contain the rates/costs. However a copy of your PRICE BID, AMC quote etc WITHOUT PRICE SHALL BE UPLOADED in the Documents Solicited from the Vendor Field [available in Bid forms] TO KNOW THE PATTERN OF THE QUOTE. [ENSURE NOT TO MENTION ANY PRICE, OTHERWISE THE QUOTE WILL BE INVALID. NOTE/CONFIRM.

A.1 Tender Schedule

Bid Submission Start Date :	11-09-2023 11:15
Bid Clarification Due Date :	10-10-2023 10:00
Bid Submission Due Date :	18-10-2023 14:00
Bid Opening Date :	18-10-2023 14:30
Price Bid Opening Date :	25-10-2023 14:00

B. Tender Attachments

Technical Write-up/Drawings

Document : Specification

Instructions To Vendors

2. INSTRUCTIONS TO TENDERERS AND TERMS & CONDITIONS OF TENDER for imported stores items

1. I. INSTRUCTIONS TO TENDERERS

1. The Tenderers should submit quotations in duplicate in a sealed envelope, super scribing the Tender No. and due date of opening and complete in all respects with technical specifications, including pamphlets and catalogues.
2. A Proforma Invoice may also be given which should contain the following information:
 - a) The FOB/FCA value, the C & F value for import by Sea freight / Air freight up to and for air parcel post up to should be separately indicated.
 - b) Agency Commission: The amount of commission included in the price and payable to the Indian Agent of the Contractor shall be paid directly to the Indian Agent by the Purchaser in equivalent Indian Rupees on the basis of an Invoice from him applying T.T. buying rate of exchange ruling on the date of placement of the Purchase Order and which shall not be subject to any further exchange variations. This payment will be released to the Indian Agent immediately after Customs clearance of the goods in India.
 - c) The Contractor shall invoice only for the net amount payable to him, after deducting the amount of Agency Commission included in the invoice which will be paid to the Indian Agent directly by the Purchaser. However, the Contractor's invoice should separately reflect the amount of commission payable to his Indian Agent.
 - d) The earliest delivery period and country of origin of the Stores.
 - e) Banker's name, address, telephone/fax Nos. & e-Mail ID of the Contractor.
 - f) The approximate net and gross weight and dimensions of packages / cases.
 - g) Recommended spares for satisfactory operation for a minimum period of one year.
 - h) Details of any technical service, if required for erection, assembly, commissioning and demonstration.
3. The FOB/FCA and C & F prices quoted should be inclusive of all taxes, levies, duties arising in the tenderer's country.
4. The offer should be valid for a minimum period of 120 days from the due date of opening of the tender.
5. Samples, if called for, should be sent free of all charges.
6. Late and delayed tenders will not be considered. Quotations by cable must be followed by detailed offers.

7. Offers made by Indian Agents on behalf of their Principals, should be supported by the proforma invoice of their Principals.
8. The details of Import Licence will be furnished in the Purchase Order.
9. The authority of person signing the tender, if called for, shall be produced.
10. Instructions / Operation Manual containing all assembly details including wiring diagrams should be sent wherever necessary in duplicate. All documents / correspondence should be in English language only.
11. The Purchaser reserves the right to accept or reject the lowest or any offer in whole or part without assigning any reason.
12. It is expressly agreed that the acceptance of the Stores Contracted for is subject to final approval in writing by the Purchaser.
13. a) Part shipment is not allowed unless specifically agreed to by us.
b) As far as possible stores should be despatched by Indian Flag Vessels / Air India through any Agency nominated by us.
14. Inspection / Test Certificate should be provided for the goods after testing it thoroughly at the Contractor's works. If any Inspection by Lloyds or any other testing agency is considered necessary, it shall be arranged by Contractors.
15. Where erection or assembly or commissioning is a part of the Contract, it should be done immediately on notification. The Contractor shall be responsible for any loss/damage sustained due to delay in fulfilling this responsibility.
16. For items having shelf life, those with maximum shelf life should be supplied if order is placed.

II. TERMS AND CONDITIONS

1. DEFINITIONS:

- (a) The term 'Purchaser' shall mean the President of India or his successors or assignees.
- (b) The term 'Contractor' shall mean, the person, firm or company with whom or with which the order for the supply of stores is placed and shall be deemed to include the Contractor's Successors, representatives, heirs, executors and administrators unless excluded by the Contract.
- (c) The term 'Purchase Order' shall mean the communication signed on behalf of the Purchaser by an officer duly authorised intimating the acceptance on behalf of the Purchaser on the terms and conditions mentioned or referred to in the said communication accepting the Tender or offer of the Contractor for supply of stores of plant, machinery or equipment of part thereof.
- (d) The term 'Stores' shall mean what the Contractor agrees to supply under the Contract as specified in the Purchase Order.

2. PRICES:

Tenders offering firm prices will be preferred. Where a price variation clause is insisted upon by a tenderer, quotations with a reasonable ceiling should be submitted. Such offers should invariably be supported by the base price taken into account at the time of tendering and also the formula for any such variations.

3. TERMS OF PAYMENT:

3.1 Being a Department of the Government of India, the normal terms of payment are by Sight Draft. However other terms of payment like establishment of Letter of Credit may be considered by the Purchaser on such terms and conditions as may be agreed upon.

3.2 The Sight Draft / Letter of Credit will be operative on presentation of the undermentioned documents:

a) Original Bill of Lading / Airway Bill b) Commercially certified invoices describing the stores delivered, quantity, unit rate and their total value, in triplicate. The invoice should indicate the discounts, if any, and Agency Commission separately. c) Packing List showing individual dimensions and weight of packages. d) Country of Origin Certificate in duplicate. e) Test Certificate. f) Declaration by the Seller that the contents in each case are not less than those entered in the invoices and the quality of the Stores are guaranteed as per the specifications asked for by the Purchaser. g) Warrantee and guarantee Certificate/s vide Clause 20 hereinbelow

4. IMPORTANT LICENCE:

Reference to Import License No. & date and Contract number & date shall be prominently indicated in all the documents vide para 3.2

5. DEMURRAGE:

Supplier shall bear demurrage charges, if any, incurred by the purchaser due to delayed presentation of shipping documents as prescribed in para 3.2 to the bankers within a reasonable time (say within 10-12 days) from the date of bill of lading for sea consignments and within 3-4 days from the date of Air Way Bill for air consignments.

6. ADDRESS OF INDIAN AGENTS:

7. GUARANTEED TIME DELIVERY:

The time for and the date of delivery stipulated in the Purchase Order shall be deemed to be the essence of the Contract. Delivery must be completed within the date specified therein.

8. INSPECTION AND ACCEPTANCE TEST:

8.1 The Purchaser's representatives shall also be entitled at all reasonable times during manufacture to inspect, examine and test on the Contractor's premises the material and workmanship of all stores to be supplied under this Contract and if part of the said stores is being manufactured on other premises, the Contractor shall obtain for the purchaser's representative permission to inspect, examine and test as if the equipment were being manufactured on the Contractor's premises. Such inspection, examination and testing shall not release the Contractor from the obligations under this Contract.

8.2 For tests on the premises of the Contractor or of any of his subcontractors, the Contractor shall provide free of cost assistance, labour, material, electricity, fuel and instruments as may be required or as may be reasonably needed by the purchaser's representative to carry out the tests efficiently.

8.3 When the stores have passed the specified test, the purchaser's representative shall furnish a certificate to the effect in writing to the Contractor. The Contractor shall provide copies of the test/s certificates to the purchaser as may be required.

9. MODE OF DESPATCH:

Generally, stores should be despatched through Indian Flagged Vessel / Air India or through any other Agency nominated by the purchaser. A copy of the invoice and packing list should invariably be kept inside each of the packages.

10. PORT OF ENTRY:

Thiruvananthapuram/Chennai/Mumbai/Hyderabad/Bangalore

11. CONSIGNEE:

Purchase & Stores Officer, Stores, _____,

12. SHIPPING MARKS.

The mark on the shipping documents such as invoice, bill of lading and on the packages should be as follow:

PURCHASE ORDER NO. DATED. GOVERNMENT OF INDIA DEPARTMENT OF SPACE

..... (name of the Centre/Unit) Destination: & Port of Entry:
.....

13. INSURANCE OF THE STORES:

The necessity or otherwise of insurance will be as indicated in the Purchase Order.

14. CONTRACTOR'S DEFAULT LIABILITY:

14.1 The purchaser may upon written notice of default to the Contractor terminate the Contract in whole or in part in circumstances detailed hereunder:

a) If in the judgement of the Purchaser the Contractor fails to make delivery of Stores within the time specified in the Contract/agreement or within the period for which extension has been granted by the Purchaser to the Contractor.

b) If in the judgment of the Purchaser the Contractor fails to comply with any of the other provisions of this Contract.

15. In the event the Purchaser terminates the Contract in whole or in part as provided in Clause 14 the Purchaser reserves the right to Purchase, upon such terms and in such a manner as he may deem appropriate, stores similar to that terminated and the Contractor shall be liable to the Purchaser for any additional costs for such similar stores and/or for liquidated damages for delay as defined in Clause 19 until such reasonable time as may be required for the final supply of stores.

15.1 If this Contract is terminated as provided in Clause 14 the Purchaser in addition to any other rights provided in this Article, may require the Contractor to transfer title and deliver to the Purchaser under any of the following clauses in the manner and as directed by the Purchaser:

a) Any completed stores.

b) Such partially completed stores, drawing, information and Contract rights (hereinafter called manufacturing material) as the Contractor has specifically produced or acquired for the performance of the Contract as terminated. The Purchaser shall pay to the Contractor the Contract price for completed stores delivered to and accepted, by the purchaser and for manufacturing material delivered and accepted.

15.2 In the event the Purchaser does not terminate the Contract as provided in Clause 14, the Contractor shall continue the performance of the Contract in which case he shall be liable to the purchaser for liquidated damages for delay as set out in Clause 19 until the stores are accepted.

16. REPLACEMENT:

If the stores or any portion thereof is damaged or lost during transit, the Purchaser shall give notice to the Contractor setting forth particulars of such stores damaged or lost during transit. The replacement of such stores shall be effected by the Contractor within a reasonable time to avoid unnecessary delay in the intended usage of the Stores. In case the purchaser agrees, the price towards replacement items shall be paid by the purchaser on the basis of original price quoted in the tender or as reasonably worked out from the tender.

17. REJECTION:

In the event that any of the stores supplied by the Contractor is found defective in material or workmanship or otherwise not in conformity with the requirements of the Contract specifications, the purchaser shall either reject the stores or request the Contractor, in writing, to rectify the same. The Contractor, on receipt of such notification, shall either rectify or replace the defective stores free of cost to the purchaser. If the Contractor fails to do so, the purchaser may at his option either

- a) replace or rectify such defective stores and recover the extra cost so involved from the Contractor, or
- b) terminate the Contract for default as provided under clause 14 above, or
- c) acquire the defective stores at a reduced price considered equitable under the circumstances. The provision of this article shall not prejudice the Purchaser's rights under clause 19.

18. EXTENSION OF TIME:

If the completion of supply of stores is delayed due to reason of force majeure such as acts of god, acts of public enemy, acts of Government, fires, floods, epidemics, quarantine restriction, strikes, freight embargoes, etc., the Contractor shall give notice within 15 days to the purchaser in writing of his claim for an extension of time. The purchaser on receipt of such notice after verification, if necessary, may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the Contract.

19. DELAY IN COMPLETION / LIQUIDATED DAMAGES:

If the Contractor fails to deliver the stores within the time specified in the Contract or any extension thereof, the purchaser shall recover from the Contractor as liquidated damages a sum of one-half of one percent (0.5 percent) of the Contract price of the undelivered stores for each calendar week of delay. The total liquidated damages shall not exceed ten percent (10 percent) of the Contract price of the unit or units so delayed. Stores will be deemed to have been delivered only when all their component parts are also delivered. If certain components are not delivered in time, the stores will be considered as delayed until such time as the missing parts are delivered.

20. GUARANTEE & REPLACEMENT:

- a) The Contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down for material, workmanship and performance.
- b) For a period of twelve months after the acceptance of the stores, if any defects are discovered therein or any defects therein are found to have developed under proper use arising from faulty materials, design or workmanship, the Contractor shall remedy such defects at his own cost provided he is called upon to do so within a period of 14 months from the date of acceptance thereof by the Purchaser who shall state in writing in what respect the stores or any parts thereof are faulty.
- c) If in the opinion of the purchaser it becomes necessary to replace or renew any defective stores, such replacements or renewals shall be made by the Contractor free of all costs to the purchaser provided the notice informing the Contractor of the defect is given by the purchaser in this regard within the said period of 14 months from the date of acceptance thereof.
- d) Should the Contractor fail to rectify the defects, the purchaser shall have the right to reject or repair or replace at the cost of the Contractor the whole or any portion of the defective stores.
- e) The decision of the Purchaser, notwithstanding any prior approval or acceptance or inspection thereof on behalf of the purchaser, as to whether or not the stores supplied by the Contractor are defective or any defects has developed within the said period of 12 months or as to whether the nature

of the defects requires renewal or replacement shall be final, conclusive and binding on the Contractor.

f) To fulfil guarantee conditions outlined in Clause 20 (a) to (e) above, the Contractor shall, at the option of the purchaser, furnish a Bank Guarantee (as prescribed by the purchaser - Bank Guarantee format enclosed) from a Bank approved by the purchaser for an amount equivalent to 10% of the value of the Contract along with first shipment documents. On the performance and completion of the Contract in all respects, the Bank Guarantee will be returned to the Contractor without any interest.

g) All the replacement stores shall also be guaranteed for a period of 12 months from the date of arrival of stores at purchaser's site.

h) Even while the 12 months guarantee applies to all stores, in case where a greater period is called for by our specifications, then such a specification shall apply, and in such cases, the period of 14 months referred to in Clause 20 (b) and (c) shall be asked for guarantee period plus two months.

21 REQUIREMENTS OF ADDITIONAL NUMBERS OF THE STORES/SPARE PARTS ORDERED:

The Contractor shall also undertake the supply of additional number of items covered by the order as considered necessary by the purchaser at a later date, the actual price to be paid shall be mutually agreed to after negotiations.

22. PACKING:

a) The Contractor wherever applicable shall pack and crate all stores for sea / air shipment as applicable in a manner suitable for export to a tropical humid climate, in accordance with internationally accepted export practices and in such a manner so as to protect it from damage and deterioration in transit by road, rail or sea for space qualified stores. The Contractors shall be held responsible for all damages due to improper packing.

b) The Contractor shall ensure that each box / unit of shipment is legible and properly marked for correct identification. The failure to comply with this requirement shall make the Contractor liable for additional expenses involved.

c) The Contractor shall notify the purchaser of the date of shipment from the port of embarkation as well as the expected date of arrival of such shipment at the designated port of arrival.

d) The Contractor shall give complete shipment information concerning the weight, size, content of each packages, etc.

e) Transshipment of equipment shall not be permitted except with the written permission of the purchaser.

f) Apart from the despatch documents negotiated through Bank, the following documents shall also be airmailed to the purchaser within 7 days from the date of shipment by sea and within 3 days in case of air-consignments: a) Commercial Bill of Lading / Air Way Bill / Post parcel Receipt. (Two non-negotiable copies) b) Invoice (3 copies) c) Packing List (3 copies) d) Test Certificate (3 copies) e) Certificate of Origin.

The Contractor shall also ensure that one copy of the packing list is enclosed in each case.

23. ARBITRATION:

If at any time any question, dispute or difference whatsoever shall arise between the purchaser and the Contractor upon or in connection with this Contract, either party may forthwith give to the other notice in writing of the existence of such question, dispute or difference and the same shall be referred

to the adjudication of two arbitrators, one to be nominated by purchaser, other by a Contractor and in the event of any difference of opinion, the arbitrators will refer the matter to the umpire. The arbitration shall be conducted in accordance with the rules and procedure for arbitration of the International Chamber of Commerce at Paris. The expenses of the arbitrators and umpire shall be paid as may be determined by them. However, the venue of such arbitration should be in India.

24. LANGUAGE AND MEASURES:

All documents pertaining to the Contract including specification, schedule, notice, correspondence, operating and maintenance instructions, drawings or any other writings shall be written in English language. The metric system of measurement shall be used exclusively in the Contract.

25. INDEMNITY:

The Contractor shall warrant and be deemed to have warranted that all Stores supplied against this Contract are free and clean of infringement of any patent, copyright or trade mark and shall at all times indemnify the purchaser against all claims which may be made in respect of stores for infringement of any right protected by Patent, Registration of design or Trade Mark, and shall take all risk of accident or damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for the sufficiency of all the means used by him for the fulfilment of the Contract.

26. COUNTER TERMS AND CONDITIONS OF SUPPLIERS:

Where counter terms and conditions/printed or cyclostyled conditions have been offered by the supplier, the same shall not be deemed to have been accepted by the purchaser unless specific written acceptance thereof is obtained.

27. SECURITY INTEREST:

On each item to be delivered under this Contract, including an item of work in progress in respect of which payments have been made in accordance with the terms of the Contract, purchaser shall have a security interest in such items which shall be deemed to be released only at the time when the applicable deliverable item is finally accepted and delivered to the purchaser in accordance with the terms of the Contract. Such security interest of the purchaser shall constitute a prior charge as against any other charge or interest created in respect of such items by any entity.

28. BANK CHARGES:

While the purchaser shall bear the bank charge payable to his Bankers (State Bank of India), the Contractor shall bear the Bank charges payable to his Bankers including the cheques towards advising amendment commissions.

29. TRAINING: The Contractor shall, if required by the purchaser, provide facilities for the practical training of Purchaser's engineering / technical personnel from India and for their active association on the manufacturing processes throughout the manufacturing period of the Contract / stores, number of such personnel to be mutually agreed upon.

30. APPLICABLE LAW:

The Contract shall be interpreted, construed and governed by the laws of India.

C. Bid Templates

C.1 Technical Bid - Floating frame balance

1. Floating Frame balance : dummy balance for 1.5 inch dia

Item specifications for Floating Frame balance

SI No	Specification	Value	Compliance	Offered Specification	Remark
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1	<p>1. Balance to be designed for a minimum factor of safety of 2.0 on yield stress of material.</p> <p>2. Overall accuracy shall be maximum of $\pm 0.10\%$ of full scale or $\pm 0.25\%$ of applied load.</p> <p>3. Percentage interactions on any gage member caused by the application of full design load on any other gage member shall fall within the following values: Seventy percent of the possible first order interactions will be less than or equal to 0.5%. An additional 20% of the first order interactions will be less than or equal to 1.0%. The remaining 10% of the first order interactions will be less than or equal to 3.0%. All interactions in excess of 1.0% will be linear within $\pm 10\%$ of the interaction output.</p> <p>4. Full load output of any gage member shall be 1 mill volt per volt input.</p> <p>5. Strain gauge bridges to be wired to measure five forces and one moment, i.e. N1, N2, S1, S2, AF and RM.</p> <p>6. Balance length shall be within the specified length in table 1.</p> <p>7. All the gauge elements should be temperature compensated or transient temperature errors in</p>				
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any gauge element do not exceed 1.0% of full load output when the sting temperature is constant or changing and the outer case temperature is changing at a rate of 50 deg F per minute between 60 deg F and 180 deg F. At 34 stabilized temperatures, the error in any gauge element does not exceed 0.5% of full load output between 60 deg F and 180 deg F.

8. Balance stiffness shall be as high as possible. Details of balance deflection calculations, the flexibility and stiffness matrices from FEA shall be provided. The angular deformation of each balance shall be measured during calibration and the same shall be provided.

9. Factor of safety the balances shall be designed with a FOS of 3 to yield stress.

10. The tensile strength report of Specimens to be supplied along with Ultrasonic test report of all the components to ascertain it is defect free

11. Cable of diameter less than 6mm and length of about 8m to be supplied along with the balance and the quality of the wire shall be in level of 32 AWG

12. Spare fasteners of proper length (15

	Nos. for each element) along with appropriate hexagon wrenches (5 Nos.) to be supplied 13.Torque level specifications of fasteners to be supplied 14.Proper care must be taken so that fasteners head has sufficient depth for torquing, if required				
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2. Floating Frame balance: six component and 1.5inch dia

Item specifications for Floating Frame balance

SI No	Specification	Value	Compliance	Offered Specification	Remark
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1	<p>1. Balance to be designed for a minimum factor of safety of 2.0 on yield stress of material.</p> <p>2. Overall accuracy shall be maximum of $\pm 0.10\%$ of full scale or $\pm 0.25\%$ of applied load.</p> <p>3. Percentage interactions on any gage member caused by the application of full design load on any other gage member shall fall within the following values: Seventy percent of the possible first order interactions will be less than or equal to 0.5%. An additional 20% of the first order interactions will be less than or equal to 1.0%. The remaining 10% of the first order interactions will be less than or equal to 3.0%. All interactions in excess of 1.0% will be linear within $\pm 10\%$ of the interaction output.</p> <p>4. Full load output of any gage member shall be 1 mill volt per volt input.</p> <p>5. Strain gauge bridges to be wired to measure five forces and one moment, i.e. N1, N2, S1, S2, AF and RM.</p> <p>6. Balance length shall be within the specified length in table 1.</p> <p>7. All the gauge elements should be temperature compensated or transient temperature errors in</p>				
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8. Balance stiffness shall be as high as possible. Details of balance deflection calculations, the flexibility and stiffness matrices from FEA shall be provided. The angular deformation of each balance shall be measured during calibration and the same shall be provided.

9. Factor of safety the balances shall be designed with a FOS of 3 to yield stress.

10. The tensile strength report of Specimens to be supplied along with Ultrasonic test report of all the components to ascertain it is defect free

11. Cable of diameter less than 6mm and length of about 8m to be supplied along with the balance and the quality of the wire shall be in level of 32 AWG

12. Spare fasteners of proper length (15

	Nos. for each element) along with appropriate hexagon wrenches (5 Nos.) to be supplied 13.Torque level specifications of fasteners to be supplied 14.Proper care must be taken so that fasteners head has sufficient depth for torquing, if required				
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3. Floating Frame balance : Calibration body and accessories

Item specifications for Floating Frame balance

SI No	Specification	Value	Compliance	Offered Specification	Remark
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1	<p>1. Balance to be designed for a minimum factor of safety of 2.0 on yield stress of material.</p> <p>2. Overall accuracy shall be maximum of $\pm 0.10\%$ of full scale or $\pm 0.25\%$ of applied load.</p> <p>3. Percentage interactions on any gage member caused by the application of full design load on any other gage member shall fall within the following values: Seventy percent of the possible first order interactions will be less than or equal to 0.5%. An additional 20% of the first order interactions will be less than or equal to 1.0%. The remaining 10% of the first order interactions will be less than or equal to 3.0%. All interactions in excess of 1.0% will be linear within $\pm 10\%$ of the interaction output.</p> <p>4. Full load output of any gage member shall be 1 mill volt per volt input.</p> <p>5. Strain gauge bridges to be wired to measure five forces and one moment, i.e. N1, N2, S1, S2, AF and RM.</p> <p>6. Balance length shall be within the specified length in table 1.</p> <p>7. All the gauge elements should be temperature compensated or transient temperature errors in</p>				
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8. Balance stiffness shall be as high as possible. Details of balance deflection calculations, the flexibility and stiffness matrices from FEA shall be provided. The angular deformation of each balance shall be measured during calibration and the same shall be provided.

9. Factor of safety the balances shall be designed with a FOS of 3 to yield stress.

10. The tensile strength report of Specimens to be supplied along with Ultrasonic test report of all the components to ascertain it is defect free

11. Cable of diameter less than 6mm and length of about 8m to be supplied along with the balance and the quality of the wire shall be in level of 32 AWG

12. Spare fasteners of proper length (15

	Nos. for each element) along with appropriate hexagon wrenches (5 Nos.) to be supplied 13.Torque level specifications of fasteners to be supplied 14.Proper care must be taken so that fasteners head has sufficient depth for torquing, if required				
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4. Floating Frame balance: female taper gauge, stop block option, AIAA type calibration matrix and report

Item specifications for Floating Frame balance

SI No	Specification	Value	Compliance	Offered Specification	Remark
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1	<p>1. Balance to be designed for a minimum factor of safety of 2.0 on yield stress of material.</p> <p>2. Overall accuracy shall be maximum of $\pm 0.10\%$ of full scale or $\pm 0.25\%$ of applied load.</p> <p>3. Percentage interactions on any gage member caused by the application of full design load on any other gage member shall fall within the following values: Seventy percent of the possible first order interactions will be less than or equal to 0.5%. An additional 20% of the first order interactions will be less than or equal to 1.0%. The remaining 10% of the first order interactions will be less than or equal to 3.0%. All interactions in excess of 1.0% will be linear within $\pm 10\%$ of the interaction output.</p> <p>4. Full load output of any gage member shall be 1 mill volt per volt input.</p> <p>5. Strain gauge bridges to be wired to measure five forces and one moment, i.e. N1, N2, S1, S2, AF and RM.</p> <p>6. Balance length shall be within the specified length in table 1.</p> <p>7. All the gauge elements should be temperature compensated or transient temperature errors in</p>				
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Common Specifications (Applicable for all items)

SI No	Specification	Value	Compliance	Offered Specification	Remark
1	Type: Floating Frame balances of 5 Force (N1, N2, S1, S2 & AF) and 1M type (RM)	5 Forces and one Moment	Yes / No / Explain		
2	Floating frame Balance diameter	dia 1.5inch	Yes / No / Explain		
3	Normal Force NF	2500 lb	Yes / No / Explain		
4	Side Force SF	1000 lb	Yes / No / Explain		
5	Axial Force AF	400 lb	Yes / No / Explain		
6	Rolling moment RM	600 lb-in	Yes / No / Explain		
7	Pitching moment PM	6250 lb-in	Yes / No / Explain		
8	Yawing Moment YM	2000 lb-in	Yes / No / Explain		
9	Balance length	6-7 inches	Yes / No / Explain		
10	Sting taper	0.625in/ft	Yes / No / Explain		
11	Sting gauge diameter	1.12 in	Yes / No / Explain		
12	Distance OS to end of Gauge diameter	2.56 in	Yes / No / Explain		

13	Overall accuracy	maximum of $\pm 0.10\%$ of full scale or $\pm 0.25\%$ of applied load.	Yes / No / Explain		
14	Percentage interactions on any gauge member	the application of full design load on any other gauge member shall fall within the following values: Seventy percent of the possible first order interactions will be less than or equal to 0.5%. An additional 20% of the first order interactions will be less than or equal to 1.0%. The remaining 10% of the first order interactions will be less than or equal to 3.0%. All interactions in excess of 1.0% will be linear within $\pm 10\%$ of the interaction output.	Yes / No / Explain		
15	Full load output of any gauge member is	1 mv per volt input.	Yes / No / Explain		
16	Strain gauge bridges to be wired to measure five forces and one moment	N1, N2, S1, S2, AF and RM.	Yes / No / Explain		
17	All the gauge elements should be temperature compensated	temperature compensated or transient temperature errors in any gauge element do not exceed 1.0% of full load output when the sting temperature is constant or changing and the outer case temperature is changing at a rate of 50 deg F per minute between 60 deg F and 180 deg F. At 34 stabilized temperatures, the error in any gauge element does not exceed 0.5% of full load output between 60 deg F and 180 deg F.	Yes / No / Explain		

18	Balance stiffness shall be as high as possible.	Details of balance deflection calculations, the flexibility and stiffness matrices from FEA shall be provided. The angular deformation of each balance shall be measured during calibration and the same shall be provided.	Yes / No / Explain		
19	Factor of safety the balances shall be designed	Factor of safety the balances shall be designed with a FOS of 3 to yield stress.	Yes / No / Explain		
20	The tensile strength report of 'Specimens' to be supplied along with Ultrasonic test report of all the components to ascertain it is defect free	Report to be submitted	Yes / No / Explain		
21	Cable of diameter and length	Cable of diameter less than 6mm and length of about 8m to be supplied along with the balance and the quality of the wires shall be of 32 AWG silver plated multi stranded copper wires	Yes / No / Explain		
22	Spare fasteners	Spare fasteners of proper length (15 Nos. for each element) along with appropriate hexagon wrenches (5 Nos.) to be supplied	Yes / No / Explain		
23	Torque level specifications of fasteners to be supplied	Report to be submitted	Yes / No / Explain		
24	Proper care must be taken so that fasteners head has sufficient depth for torqueing, if required	to be provided	Yes / No / Explain		

25	Proper environmental protection shall be given to all strain gauges, cables and wiring	to be provided	Yes / No / Explain		
26	Strain gauge resistance	higher than 500Ω	Yes / No / Explain		
27	insulation resistance between gauge and ground	more than 100MΩ	Yes / No / Explain		
28	Manufacturing Quality requirements	<p>1.The balance to be concentric with aft taper within 0.02mm</p> <p>2.Balance must be symmetric about axis of symmetry within 0.010mm</p> <p>3.The balance outer diameter to be within \pm 0.005 mm of nominal diameter</p> <p>4.Roll angle orientation of corresponding axes of 3.8mm roll lock pin slots on taper, and 4.7mm holes (Model mounting pin) should lie within a band of 0.040mm as shown in Fig. 2. in report</p> <p>5.Fillets of suitable radii (about 2R) to be provided to avoid stress concentration at places with abrupt changes in section. Care to be taken to properly merge the radii with adjacent surfaces</p> <p>6.The balances shall have a life period of 30 years without any loss of performance.</p>	Yes / No / Explain		

29	Factory acceptance Test procedure (FAT)	<p>1.The supplier shall calibrate the balance with single and multi-point loadings. The individual component accuracy and overall balance calibration accuracy as defined by standard deviation of residual loads (= load calculated – applied load) should be typically better than 0.1% of FS or 0.25% of applied loading in all the six elements</p> <p>2.Randomly certain multi point loadings (mutually agreed) shall be applied on the balance and the error shall be within 0.15%FS on all the elements.</p> <p>3.Inspection report of critical dimensions of the balance</p> <p>4.VSSC/ISRO personal at VSSC/ISRO cost will Participate during inspection / calibration of the balances at manufacturer's site and based on the test results shall provide the clearance for dispatch.</p>	Yes / No / Explain		
30	Site Acceptance Tests (SAT):	<p>1. After balance is cleared in FAT, the balance shall be shipped to VSSC. The balance will be loaded randomly and the SAT results should be in line with the FAT results. After successful completion SAT, the balance is accepted by the purchaser.</p>	Yes / No / Explain		
31	Warranty	<p>1. The balance shall be provided warranty for 2 years from the date of acceptance.</p>	Yes / No / Explain		
32	Delivery schedule	<p>1. Supply of balance within 12 months of issue of PO</p>	Yes / No / Explain		

33	Deliverables	<ol style="list-style-type: none"> 1. 1.5" Balance along with cable of diameter less than 6mm and length of about 8m with wire clamp at balance end 2. Calibration body and dummy balances for 1.5" balance 3. A set of approved Engineering drawings of each balance, calibration body and dummy balance. 4. A detailed design report containing Stress analysis calculations, FE Analysis results, stiffness and flexibility matrices for each balance, expected outputs from each element and deflection. 5. Tensile strength report of 'Specimens' along with Ultrasonic test report of all the components 6. Spare Fasteners of proper length (15 Nos for each element) along with appropriate hexagon wrenches (5Nos.) 7. Torque level Specifications of fasteners 8. Mill Test Certificate for the material used 9. Heat treatment records and Hardness check 10. Dimensional inspection reports for balance, calibration body and dummy balance 11. Calibration reports / Manufactures certificate and data sheets for the strain gauge and bonding material, compensation resistors and protection coating etc 12. Wheatstone bridge circuit details and color coding of output wiring 	Yes / No / Explain		
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		<p>cable</p> <p>13. Calibration report for balance including the angular deformations measured during calibration.</p> <p>14. An operational and instruction manual for safe handling & storage of the balance.</p> <p>15. Any other document not mentioned above needed for operation / maintenance of the balance.</p> <p>16. All the documents shall be in English language and party shall provide 2 sets of Hardcopy and a soft copy in a pen drive.</p> <p>17. FAT test reports</p>			
34	overall requirements	specification and other terms and conditions given in the document	Yes / No / Explain		

Supporting Documents required from Vendor

1. Payment milestone details

2. Compliance for Warranty

3. cost break up and deliverables details

4. Technical compliance details

5. Vendor catalogue

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	Details given in the specification with required documents	Yes / No / Explain	
2	dia 1.5inch internal floating frame balance with all accessories , cables, calibration body, dummy balance, additional screws, calibration report	Yes / No / Explain	
3	Taxes and other costs,	Yes / No / Explain	
4	Security Deposit (Applicable if Offer Value is Rs. 5 Lakhs or above. MSME/NSIC Units are NOT EXEMPTED from the payment of SD. Bank Guarantee @ 3% of Order Value valid till 60 days from the date of supply to be submitted. Mandatory compliance required. Only Government Bodies/PSUs/PSEs can submit Indemnity Bond in lieu of BG. In the event of non-performance of contractual obligations, SD will be forfeited).	Yes / No / Explain	
5	Delivery Terms.(FOR VSSC)	Yes / No / Explain	
6	Delivery Period	Yes / No / Explain	
7	Liquidated Damages (Applicable beyond the delivery period mentioned in this tender @ 0.5% per week or part thereof on the undelivered portion subject to a maximum of 10% of the contract value. Mandatory compliance required).	Yes / No / Explain	
8	Warranty - 2 Years	Yes / No / Explain	
9	Performance Bank Guarantee (PBG) Bank Guarantee @ 3% of Order Value valid till the completion of warranty period plus 2 months claim period to be submitted. Mandatory compliance required. Only Government Bodies/PSUs/PSEs can submit Indemnity Bond in lieu of BG. In the event of non-performance of warranty obligations, PBG will be forfeited).	Yes / No / Explain	

10	Payment Term: (Our Default payment term: For indigenous orders: 100% within 30 days after receipt and acceptance of item at our site. NOTE: CONSEQUENT TO COVID 19 PANDEMIC AND AS PER EXTANT GUIDELINES FROM DEPARTMENT OF SPACE, NO ADVANCE PAYMENT IS PAYABLE TO THIS TENDER).	Yes / No / Explain	
11	Definitions: A supplier or service provider, whose goods, services or works offered for procurement, has local content: a) Equal to or more than 50% : Class-I local supplier. b) More than 20% but less than 50% : Class-II local supplier. c) Less than or equal to 20% : Non-local supplier. Mention your category.	Yes / No / Explain	
12	Local content means the amount of value added in India (i.e. indigenous items/services added in the offered products/services/works) be the total value of the item offered (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties/IGST) as a proportion of the total value (excluding net domestic indirect taxes), in percent. Indicate extent of Minimum Local Content in offered product/service and location of such value additions.	Yes / No / Explain	
13	The Class-I & II local supplier should provide a Self Certification along with your offer in PDF format indicating that the item offered meets the minimum local content as called for in the tender as mentioned above and provide the % of local content along with details of the location(s) at which the local value addition is made. In case of two part tenders, it is mandatory to indicate compliance to MLC(minimum local content) in technical bid itself. Confirm attachment of Self declaration along with the offer.	Yes / No / Explain	
14	PO Placement Address (with Name and Contact Details of sales person concerned).	Yes / No / Explain	
15	Any Other Terms	Yes / No / Explain	
16	Offer Validity	Yes / No / Explain	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	Floating Frame balance : dummy balance for 1.5 inch dia	1.00 Nos.		-		
2	Floating Frame balance: six component and 1.5inch dia	1.00 Nos.		-		
3	Floating Frame balance : Calibration body and accessories	1.00 Nos.		-		
4	Floating Frame balance: female taper gauge, stop block option, AIAA type calibration matrix and report	1.00 Nos.		-		

Common charges (Applicable for all items)

Freight charge	
P&F Charges	