



ITER-India
(Institute For Plasma Research)

Tender Notice No.

I-ITN19009

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Title	<u>Fabrication and Assembly of 12 inch Gas Barrier and Inner Conductor Joint (IC Joint)</u>
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Distribution list	Interested Bidders
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Signature/s in sequence	Signature/s in sequence	Signature/s in sequence



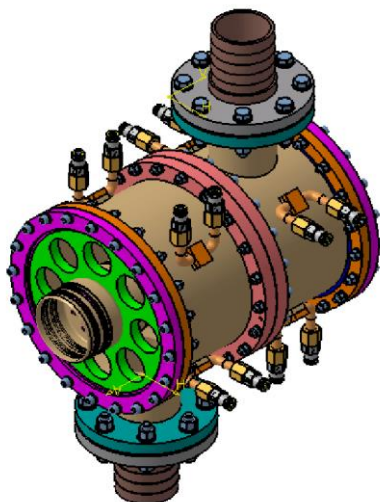
Amendment Record

Version No.	Date dd/mm/yyyy	Section affected	Description of Changes	Made by

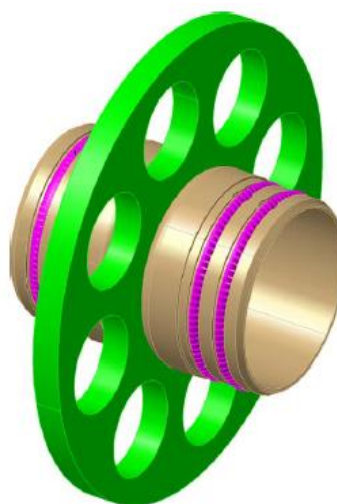
Part-A(II): Scope of Supply & Work and Technical Specifications

1. Introduction

ITER-India is seeking a vendor for manufacturing and assembly of 12 inch gas barrier and inner conductor joint (IC joint). The arrangements of components are shown in below figure:



Gas barrier assembly



IC joint


2. Scope of Work

Supplier's scope of work includes:

- a) **Preparation and submission of manufacturing (shop floor) drawings ~ 2 months from the date of purchase order for ITER-India approval based on below table:**

Sr. No	Assembly Details
1	12-inch Gas Barrier (Drawing no : II/ICH/12 INCH/GAS BARRIER/00)
2	12-inch IC joint (Drawing no : II/ICH/12 INCH/IC JOINT/00)

- b) **Procurement of material required for all the assemblies and submission of test certificates to ITER-India for approval.**
- c) **Preparation and submission of MIP (manufacturing and inspection plan) and all documents related to welding and brazing.**

	Title: Fabrication and assembly of 12 inch Gas Barrier and Inner Conductor Joint (IC Joint)	Tender Notice No.
		I-ITN19009

- d) After ITER-India approval of above mentioned requirements, fabrication/ manufacturing of following assemblies shall be started:

Sr. No	Assembly Details	Quantity
1	12-inch Gas Barrier As per approved manufacturing drawing.	4
2	12-inch IC joint As per approved manufacturing drawing.	20

- e) All the fastener and heli-coil inserts required for assembly are under the supplier scope and material of fastener & Heli-coil insert should be SS 304.
- f) Inspection & testing of individual components shall be done at supplier's site in presence of ITER-India representative. The fabricated components shall conform to the technical specifications, drawings and standards as per tender document.
- g) Factory Acceptance Test (FAT) of whole assembly shall be conducted at Supplier's site to conform the mechanical assembly.
- h) Submission of pre-dispatch inspection report to ITER-India for dispatch clearance certificate.
- i) Delivery of items to ITER-India lab/ITER-India site with adequate packing to avoid damage during transportation.
- j) Un-packing, Assembly & Testing at ITER-India site.
- k) Preparation of final acceptance test report and submission to ITER-India for approval.

3. Material Procurement

The system is fabricated from the following grades of materials:

- Copper – grade ETP (99.9%Cu) -in accordance with- ASTM C11000
- SS 304
- Aluminum alloy 6061-T6 grade -in accordance with- ASTM B308
- Forged Brass 60-40 commercial grade -in accordance with- ASTM B111
- Teflon rod PTFE ASTM D1710-8,11B/ Teflon plate PTFE ASTM D3294-03, 11A
- ULTEM 2300 ASTM D 638 ASTM D 790 & D 792 ASTM D 1525
- Mild Steel -in accordance with- ASTM A 36

It is highly recommended that supplier need to check the requirements from the attached engineering drawings for completeness.

4. Precaution during Fabrication and Assembly

- No modification in the drawing or design is permitted except in case where it is necessary to facilitate manufacturing without changing the function, accuracy and strength of the component. Vendor shall provide prior justification and drawings to the ITER-India representatives for approval before implementing on it.
- All sharp edges should be avoided and rounded off as per supplied drawings.
- Surface irregularities, scratches, dents and tool marks are not acceptable on the surfaces.
- Holes should be drilled with essential matching of various parts, wherever applicable.
- The inner surface of outer conductor and outer surface of inner conductor should be machined up to $\nabla\nabla\nabla$ wherever mentioned in the drawings, otherwise $\nabla\nabla$ finishes if not mentioned in the drawings.
- Necessary machining shall be done to get the required straightness, roundedness, perpendicularity and concentricity (as applicable).
- All the welding joints are to be TIG welded with full penetration.
- In case fabrication of components depends upon external agencies, it will be the responsibility of the vendor to get the items manufactured as per the tolerances required for this assembly.

5. Coating/ Plating

Silver plating as mentioned in Annexure I and submit certificate of plating thickness & contents of plating (in %) to ITER-India.

6. Inspection & Testing

I. Quality checks:

- (a) The fabrication drawings, indicating all dimensions and tolerances based upon the assembly requirements shall be checked by ITER India representative and only after ITER India approval; the fabrication/manufacturing of system shall be started.
- (b) The material used in the system will be reviewed for its required properties to conform on the material grade, based on the test certificate submitted by the vendor.
- (c) All the individual components shall be inspected for its dimensional accuracy, brazing/welding, assembly performance and surface finish requirements as per the drawings and specifications.

- (d) Vendor shall arrange all calibrated gauges and measurement tools for measurements and inspection at their site.

II. Factory Acceptance Tests/Pre-dispatch Inspection:

- (a) Pre-dispatch inspection and testing (including stage wise inspection) at manufacturer's / fabricator's site shall be carried out in presence of ITER India representative (s) for checks as per Table-I

Table-I

1	Dimensional Check
2	Mechanical assembly check
3	4 bar Static Pressure test for gas barrier assembly for 1 hour. There should be no drop in static pressure during this 1-hour test. Air leak to be checked by soap bubble test.

III. Site Acceptance Test

Following site acceptance test will be carried out at ITER India site as per Table-II:

Table-II

1	Dimensional Check
2	Mechanical assembly check
3	4 bar Static Pressure test for gas barrier assembly for 1 hour. There should be no drop in static pressure during this 1-hour test. Air leak to be checked by soap bubble test.

7. General Requirements:

1. All the machined surfaces should be 2 -delta finish or otherwise as mentioned.
2. All the threads should be in metric system or otherwise as mentioned in Drawings.
3. Suitable fasteners for assembly should be made of SS 304.
4. The tolerances mentioned in the drawing should be followed. In case tolerances are not mentioned please follow the ISO 2768.

8. Technical Compliance:

The vendor should fill the below table and return back along with the offers;

Sr. Nos.	ITER-India Specifications	Vendor Specifications	Complied? Yes / No	Remarks
1	Preparation and submission of manufacturing (shop floor) drawings for ITER-India approval. Drawing no: II/ICH/12 INCH/gas barrier/00 Drawing no: II/ICH/12 INCH/IC joint/00			
2	Procurements of material required for all assemblies.			
3	Preparation and submission of MIP (manufacturing and inspection plan) and all documents related to welding and brazing.			
4	Submission of material test certificate to ITER India for approval.			
5	Fabrication of 12 inch gas barrier quantity – 4 Nos. as per approved manufacturing drawing.			
6	Fabrication of 12 inch IC joint quantity – 20 Nos. as per approved manufacturing drawing.			
7	All the SS 304 fastener & heli-coil insert are under vendors scope			
8	Inspections and testing of individual components at vendors site as per section 6			
9	Assembly of entire system to conform the mechanical integrity. Integration & testing of entire system at the vendor's site in presence of ITER India representative(s) as per section 6.			
10	Static pneumatic test at pressure 4 bar (Gauge			



Title: Fabrication and assembly of 12 inch Gas Barrier and Inner Conductor Joint (IC Joint)

Tender Notice No.

I-ITN19009

	pressure) of gas barrier as per section 6.			
11	Submission of pre-dispatch inspection report to ITER-India for dispatch clearance certificate			
12	Delivery of items to ITER India Lab site with adequate packing to avoid damage during transportation.			
13	Un-packing, Assembly, and testing at ITER India site			
14	Preparation of final acceptance test report and submission to ITER India for acceptance.			
15	Providing one year warranty from the date of final acceptance.			



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Tender Notice No.

I-ITN19009

Annexure-I Engineering drawings