

SCOPE OF WORK- INSOURCING OF MEMU SIDE WALL ASSEMBLY

Brief Description of the Scope of Work:

The vendor has to do welding as per drawing and required grinding to suit on Next Assembly, inspect as per the Inspection Check Sheets and supply 10 types of Side Walls Assembly for MEMU DM Shells. Work to be carried out inside factory premises of BEML Palakkad.

All the Input Components and Weld Fixtures required for Manufacturing of 10 Types of Sidewall Assemblies mentioned in Table No- 1 will be supplied by BEML.

The work involves assembly of the components on weld fixtures by MIG Welding process with Required Quality and Suitable Grinding, Spatter Removal and Application of Primer Painting in Hidden Areas.

Final Deliverables and Quantities:

Vendor has to Manufacture, Inspect and Supply the Side wall Assemblies as per the below mentioned Drawing Number.

| S. No | Drawing Number | Description | Qty/ Shell (Nos) | PR Qty (Nos) | Item Serial Nos. Not Required to Install | Remarks |
|-------|----------------|--|------------------|---------------|--|---|
| 1 | 84943001 | SIDE WALL ASSY FOR DRIVER CAB LH | 1 | 25 | 2 | |
| 2 | 84943002 | SIDE WALL ASSY FOR DRIVER CAB RH | 1 | 25 | 2 | |
| 3 | 84943003 | SIDE WALL ASSY FOR EQUIPMENT COMPT LH | 1 | 25 | 4,5,6 | Drg. Item No 22 to be Supplied in Tack weld Condition |
| 4 | 84943004 | SIDE WALL ASSY FOR EQUIPMENT COMPT RH | 1 | 25 | 4,5,6 | Drg. Item No 22 to be Supplied in Tack weld Condition |
| 5 | 84943005 | SIDE WALL ASSY FOR PASSENGER COMPT LH | 1 | 25 | 4,5,11,12 | Drg. Item No 6 to be Flat Grinded and Leak Proof |
| 6 | 84943006 | SIDE WALL ASSY FOR PASSENGER COMPT RH | 1 | 25 | 4,5,11,12 | Drg. Item No 6 to be Flat Grinded and Leak Proof |
| 7 | 84943007 | SIDE WALL ASSY FOR PASSENGER COMPT LH | 1 | 25 | 4,5,11,12 | Drg. Item No 6 to be Flat Grinded and Leak Proof |
| 8 | 84943008 | SIDE WALL ASSY FOR PASSENGER COMPT RH | 1 | 25 | 4,5,11,12 | Drg. Item No 6 to be Flat Grinded and Leak Proof |
| 9 | 84943009 | SIDE WALL ASSY FOR PASSENGER COMPT LH (N | 1 | 25 | 2 | Drg. Item No 9,10 to be Flat Grinded and Leak Proof |
| 10 | 84943010 | SIDE WALL ASSY FOR PASSENGER COMPT RH (N | 1 | 25 | 2 | Drg. Item No 9,10 to be Flat Grinded and Leak Proof |

BEML Scope :

- 1) All the detail Level Input components
- 2) Weld Fixtures
- 3) SS Welding Coils (1.0 mm Dia/ 1.2 mm Dia) and MS Welding Coils (1.2 mm Dia), Electrodes, Anti Spatters Spray and Gases
- 4) Electric power & Lighting
- 5) Pedestal Grinding Machines
- 6) Assistance for movement of Materials through Forklift and Cranes
- 7) Required Cotton Waste/ Banian Cloth etc to clean Oil Surface before welding
- 8) Red oxide Primer, Thinner and Passivation Gel (Scale Remover)
- 9) Canteen facilities will be provided for workers and amount will be deducted at actuals as per attendance register signed at the gate.

Vendor Scope:

- 1) Certified Welders in the following category to be engaged for the welding
 - a) SS to MS for **2F Position**, Electrode: **ER309L (1.0 mm Dia/ 1.2 mm Dia)**, Shielding Gas: **AoM)**
 - b) MS to MS for **2F Position**, Electrode: **ER70S-6, (1.2 mm Dia)** Shielding Gas: **Co2/ ACM)**
 - c) Sheet thickness range: **2 mm to 5 mm**
- 2) Welder Qualification certificates for the welders deployed for manufacturing of Sidewall Assy to be provided
- 3) Supervisory Staff to be Positioned by Vendor to monitor work in Progress/ inspection and Co-ordinate with BEML Staff for Movement of Materials etc
- 4) Required MIG/ MAG Welding Machines with Suitable Plugs for tapping of Power from existing Power points in BEML Shop floor. The existing Power points in BEML for welding Machine is **3 phase 415V**. The welding Machines should be calibrated and in proper working condition. The firm should submit calibration report of the welding machines to BEML before starting Production. The required Welding cables, Power cables, Regulators/ Flow meter and Spares and Consumables (Welding Tip, Tip Adaptor, Gas Nozzles and Insulator etc) are to be arranged by Vendor.
- 5) Calibrated Measuring instruments
- 6) Accessories like coveralls, safety kits, Welding Shield, Welding Glass, welding Leather Gloves, Leather Apron and Any other Personal Protective Equipment (PPE) etc. are to be arranged by the Vendor. Vendor has to ensure workers are wearing **necessary PPE's** inside BEML Premises
- 7) COVID-19 Protocol is to be strictly followed by workers deputed inside BEML Premises
- 8) Chipping Hammers, Wire Brush, Paint Brush, Portable/ Angle Grinding Machines and Grinding wheels etc
- 9) Minor grinding Operation is to be carried out in SS Pillars cutout Area to suit the Pillar in Light/ Waist Rails.
- 10) Vendor has to ensure optimum utilization of welding Consumables without wastages (i.e., Welding Coils, Electrodes, Anti Spatters Spray, Gases, Primer Paints and Passivation Gel) provided by BEML.
- 11) Pickling and passivation of all weld joints of SS with MS components are to be carried out by the vendor.
- 12) Vendor should pay ESI/ PF for their employees deputed in BEML Premises at par with the minimum wages specified by the Government and submit proof of remittance every month for clearance of the bills. Personnel with valid ESI number only will be allowed to work inside BEML premises.
- 13) Vendor has to fulfil other statutory/ ISO requirement as per procedure of the company
- 14) Material Arrangements pertaining to sidewall Assembly Components are to be ensured at work Place.
- 15) Housekeeping to be ensured in Work Place.

Quality Requirements:

- 1) Assemblies to be offered to BEML Quality in Tack weld Condition and full welding to be carried after getting Necessary approval from BEML-Quality.
- 2) All the weld Joints of Side Wall Assembly should be water Tight which should be ensured by Vendor and there should not be any leakage in weld joints.
- 3) BEML will provide the quality check sheet, which is to be followed for every Sidewall Assy.
- 4) Segregation and Storing of Completed Assemblies to be ensured properly at BEML Premises for easy Retrieval.
- 5) Before taking up manufacturing activity, Self-Inspect BEML supplied components well in advance. In case of any defects same has to be informed to BEML Staff well in advance in order to provide Replacement.
- 6) The vendor shall engage dedicated supervisory staff 1 each for production and Quality related work in each shift (I and II shift). The staff should be Technically Qualified (Degree in Mechanical/Production Engineering with 3 years experience OR Diploma with 5 years experience) in similar nature of work. The proof of Qualification & work experience should be submitted to BEML at the time of Quote.
- 7) The supervisory staffs deployed by the firm should monitor the Production, Perform internal inspection, preparation of Inspection reports and Co-ordinate with BEML Staff for movement of Materials etc.
- 8) Register to be maintained and updated every day to keep records of Completion of Side wall Assemblies with Sl. Nos (Serial no. to be punched on the assembly)
- 9) The Side wall Assembly completed in all respect has to be offered to BEML- Quality for inspection. BEML Quality will co-ordinate in the register after the acceptance of the assembly. Further, Planning / Progress will co-ordinate in the Register for physical receipt of the assembly and movement to designated area. This is to be mandatorily maintained by Vendor to forward/ Process the Payment bills.
- 10) Inspection Report / Dimension Check-Sheet are required to be provided, mentioning the PO number along with each completed assy.
- 11) Vendor shall ensure the proper fitment of aggregates during shell integration. In case of any fitment issues, vendor has to engage their workmen for necessary correction and implementation of those corrections in further supplies
- 12) Any minor scope Changes / Modifications in drawing or during inspection if any to be taken up by vendor without any additional cost
- 13) Vendor Invoice to mention clearly the PO number, quantity with S. Nos

ACCEPTANCE CRITERIA FOR MEMU SIDE WALL STRUCTURE :

Drawing Nos: 849-43001/02/03/04/05/06/07/08/09/10

[Refer latest revision of drawings provided by BEML]

| S NO | PROCESS | ACCEPTANCE CRITERIA |
|------|--|--|
| 1 | <u>WELDING:</u> | |
| | a) Visual check | BEML STD: RD 230, FINE CLASS |
| | b) Finish | Strictly no spatters or other irregularities |
| | c) Window Sealing Arrangement (CC14401) | Welding to be ground flat and ensure leak Proof |
| | d) 100% Water Leak Test on welding joints between Sidewall Skin Assy and Structure assy. Pressurized water at 4 Bar pressure shall be sprayed over the skin for 5 mins. (Note: Care shall be taken to mask all the threaded holes using dummy plugs before starting water leak test.) | No Leakage of water inside the structure. |
| 2 | <u>CRITICAL TO QUALITY DIMENSIONS:</u> | |
| | a) Width of Sidewall | As per corresponding sidewall drg |
| | b) Height of Sidewall | As per corresponding sidewall drg |
| | c) Stich / Skip Welding | Length of bead and in-between (pitch) distance shall be maintained as per drawing |
| | d) Fillet / Butt Welding Size | Size of weld shall be maintained strictly as per drawing requirement. Shall be checked using Weld Gauge. |
| | e) Flatness to be checked at 2 stages: i) Stage 1: After completion of structure Assy ii) Stage 2: After completion of skinning | a) Within 1 mm over the skin b) Within 1 mm over structure Check using Straight Edge |
| 3 | <u>PAINTING:</u> | Red-oxide Painting on hidden areas |
| 4 | <u>FUNCTIONAL:</u> | i) ON SITE FIT UP – No Mismatch ii) Free from damages, dents or holes |
| 5 | <u>IDENTIFICATION & TRACEABILITY:</u> | Name Plate details (to be welded) i) Vendor Code ii) SL.NO FORMAT DMC-L1- (01 to 25) & DMC-R1-(01 to 25) |