

RFx No.: **NA**

NIT No.: TPCODL/P&S/1000001421/2024-25

Corrigendum-I

dt.25.11.2024

NIT – RC for supply of Wedge connector & Paddle Clamp

Please ignore the specification attached in Uploaded complete Tender documents.

Request to go ahead with the Updated Specification attached along with Corrigendum-I below.

CONFIDENTIAL

 TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Doc. Title	Specification for C Type Wedge Connector & Paddle Clamp		
Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 1 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

CONTENTS

1. SCOPE
2. APPLICABLE STANDARDS
3. CLIMATIC CONDITIONS OF THE INSTALLATION
4. GENERAL TECHNICAL REQUIREMENTS
5. GENERAL CONSTRUCTIONS
6. MARKING
7. TESTS
8. TYPE TEST CERTIFICATES
9. PRE-DISPATCH INSPECTION
10. INSPECTION AFTER RECEIPT AT STORES
11. GUARANTEE
12. PACKING
13. TENDER SAMPLE
14. QUALITY CONTROL
15. TESTING FACILITIES
16. MANUFACTURING ACTIVITIES
17. SPARES, ACCESSORIES AND TOOLS
18. DRAWINGS AND DOCUMENTS
19. SCHEDULE “A” GUARANTEED TECHNICAL PARTICULARS
20. SCHEDULE “B” DEVIATIONS

TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Doc. Title	Specification for C Type Wedge Connector & Paddle Clamp		
Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 2 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

1. SCOPE

This Specification covers the design, engineering, manufacture, testing at manufacture's works packaging, forwarding, supply and unloading at site/store and performance of supply of C-Type Wedge Connectors suitable for line jumpers, cut-points, T-connections, making connection to the equipment's like isolators, circuit breakers, CTs and PTs, Lightning Arresters, Busbars etc. for trouble free and efficient operation.

2. APPLICABLE STANDARDS

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions/amendment of the following Indian, International standards and shall confirm to the regulations of the local authorities.

IS 5082	Wrought aluminium and aluminium alloy bars, rods, tubes and sections for electrical purposes
IS 5561	Electric Power Connectors
IS 617	Cast aluminium and its alloys - Ingots and castings for general engineering purposes

3. CLIMATIC CONDITIONS OF THE INSTALLATION:

1	Maximum ambient temperature	50 deg C
2	Max. Daily average ambient temp	35 deg C
3	Min Ambient Temperature	0 deg C
4	Maximum Humidity	95%
5	Average Annual Rainfall	150 cm
6	Average No. of rainy days per annum	120
7	Altitude above MSL not exceeding	1000m
8	Wind Speed	300 Km/hr
9	Earthquakes of an intensity in horizontal direction	equivalent to seismic acceleration of 0.3g
10	Earthquakes of an intensity in vertical direction	equivalent to seismic acceleration of 0.15g (g being acceleration due to gravity)

TPCODL service area has heavy saline conditions along the coast and High cyclonic Intensity winds with speed upto 300 Kmph. The atmosphere is generally laden with mild acid and dust in suspension during the dry months and is subjected to fog in cold months.

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	TECHNICAL SPECIFICATION		
Doc. Title	Specification for C Type Wedge Connector & Paddle Clamp		
Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 3 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

4. GENERAL TECHNICAL REQUIREMENTS

WEDGE CONNEECTOR:-

S.No.	Description	Requirement
1	Type of Connector	Bolt Less C Type Fired Wedge Connector
2	Application	Overhead Bare network for line jumpers, cut-points, T-connections, as equipment connectors to the equipment's like isolators, circuit breakers, CTs and PTs, Lightning Arresters, Busbars, service connections etc.
3	Material of Connectors - C-Member - Wedge Member	Aluminium Alloy
4	Rated Current Capacity	As per conductor size for AAAC conductor
5	Rated Frequency	50 Hz
6	Conductor Sizes Suitable for connection	Main: 55, 80, 100, 148, 232, 400 sqmm Tap: 55, 80, 100, 148, 232, 400 sqmm
7	Non-Metallic Material of connector	Anti-Corrosion inhibitor contain metallic abrasive grit
8	Rated Voltage	Upto 33kV
9	Rated Tensile Strength	110 kgf
10	Limits of Temperature Rise	Not exceed 45°C when carrying rated current at an ambient temperature of 40°C
11	Corrosion Protection	An oxidation inhibitor shall be applied to the surface there by elimination of oxidation of metallic surface. By providing environment friendly pre-coated corrosion/oxidation inhibiting compound
12	Freedom free from defects	The power connectors shall be smooth and free from cavities, blow holes and such other defects.
13	Short Time Current Capacity	When power connectors are directly associated with a circuit breaker or switch, the rated short-time current of the power connectors shall be not less than the corresponding rating for the circuit-breaker or switch.

PADDLE CLAMP:-

S.No.	Description	Requirement
1	Type	Terminal Paddle Clamp Suitable for ACSR/ AAAC 55, 80, 100, 148, 232, 400 sqmm Conductor (with Hole)
2	Applicable Standard	IS 5561
3	Material	Aluminium Alloy
4	Dimension	Manufacturer Design (Type Tested Design)
5	Rated Frequency	50 Hz

TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Doc. Title	Specification for C Type Wedge Connector & Paddle Clamp		
Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 4 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

6	Rated Slip Strength	110 kgf
7	Electrical Resistance	As per IS 5561
8	Rated Voltage	Upto 33kV
9	Tolerance	±5%
10	Limits of Temperature Rise	Not exceed 45°C when carrying rated current at an ambient temperature of 40°C
11	Short Time Current Capacity	When power connectors are directly associated with a circuit breaker or switch, the rated short-time current of the power connectors shall be not less than the corresponding rating for the circuit-breaker or switch.
12	Ampacity	In-line with Conductor requirements

5. GENERAL CONSTRUCTIONS

- The wedge connector shall consist of 'C' component and a 'wedge', both of aluminium alloy. All the material to be used in manufacturing of the connectors shall confirm to IS 617. All castings shall be free from blow holes, surface blisters, cracks and cavities. All sharp edges and corners shall be blurred and rounded off.
- Wedge connectors shall connect conductors of Aluminum, Copper and their alloys regardless of the combination (i.e. Al to Al, Al to Cu, Cu to Cu). These connectors shall provide a non-corrosive connection and that is protected against temperature variation and overloading. Also, connector shall provide a reliable electrical as well as mechanical connection for AAAC.
- The 'C' component shall have an adjustable design configuration to act as a spring so as to allow the adjustability of the conductor. 'C' member shall have a surface that provides superior grip on the conductors for higher tensile and vibration resistance. There should not be any possibility of crimping arrangement.
- The wedge shall have a suitable arrangement, so as to prevent its movement further into the 'C' member during installation. It shall be easy to remove without damaging the conductors and conductor as well as the connector can be used again.
- The material of the C-component as well as wedge shall be pre-coated with corrosion inhibiting compound thereby eliminating oxidation of metallic surface. The wedge shall be inserted so as to be effective in abrading all sliding surface and disrupting surface oxide film to generate large number of contact spot in the electrical interfaces. The mechanical stresses during the wedge insertion shall increase the geometrical conformation of the clamp to the conductor. The normal current carrying capacity of the connector shall not be less than the specified.
- 'C' Member:** This shall be formed from Al. alloy or better. This orientation of grain direction provides for lower rates of stress relaxation in the metal and will maintain the level of contact pressure at or near the value at initial installation for the life of connection. The material used shall be specially designed with close tolerances on the chemical composition to ensure consistency of the C- member production regarding dimensions & mechanical properties
- Wedge:** This shall be formed from Al. alloy or better. It is manufactured to close tolerances to ensure repeatability and reliability of the connection.
- Inhibitor:** An oxidation inhibitor shall be applied to the surface there by elimination of oxidation of metallic surface. The chemical composition of the inhibitor shall be synthetic and compatible with the rubber gloves used by the utilities. This inhibitor shall contain special conducting abrasive particles, optimized in size and quantity, to ensure repeatability and reliability of the electrical contact made in every connection.
- FREEDOM FROM DEFECTS:**
 - The wedge type connectors shall be smooth and free from cavities, blowholes, and such other defects, which would likely cause them to be unsatisfactory in service.

TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Doc. Title	Specification for C Type Wedge Connector & Paddle Clamp		
Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 5 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

- ii. The wedge type connectors shall be so designed and proportioned that they are capable of safely withstanding stresses to which they may be subjected (including those due to short circuit and climatic conditions) and that the effects of vibration on both conductor and connector itself are minimized.
- iii. They shall be designed, manufactured, and finished as to avoid sharp radius of curvature, ridges and excrescences, which might lead to, localized pressure on or damage to the conductor in service.
- iv. The joint should be such that the pressure is maintained within this range under all conditions of service.

6. MARKING

The wedge connector shall be indelibly marked with the following details:

- a) Name of Manufacturer
- b) Rated Current
- c) ISI Mark

7. TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All Acceptance Tests shall be witnessed by the TPCODL/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the components in additions to others specified in the IS/IEC Standards. All these Type Test should be conducted at CPRI/ERDA/Any NABL Accredited Govt. Lab

Type Test

Following tests shall be necessarily conducted on the equipment and its component:

- a) Tensile Test
- b) Temperature Rise Test
- c) Short Time Current Test
- d) Resistance Test
- e) Dimensional Check

Acceptance test and Routine test

Following tests shall be necessarily conducted on the equipment and its components:

- a) Tensile Test
- b) Resistance Test
- c) Dimensional Check

Routine test

Following tests shall be necessarily conducted on the equipment and its components:

- a) Visual Inspection with regard to finishing, meeting design etc.
- b) Dimensional Check

8. TYPE TEST CERTIFICATES

The Bidder shall furnish the type test certificates of the quoted item for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at Internationally Accredited testing Laboratory, CPRI/ERDA/ Any NABL Accredited Govt. Lab as per the relevant standards. Type tests should have been conducted in certified Test laboratories during the period not exceeding time span as per CEA Guideline from the date of opening the bid. In the event of

TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Doc. Title	Specification for C Type Wedge Connector & Paddle Clamp		
Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 6 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to TPCODL.

9. PRE DISPATCH INSPECTION

The Material shall be subject to inspection by a duly authorized representative of the TPCODL. Inspection may be made at any stage of manufacture at the discretion of the purchaser and the equipment, if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to TPCODL's representatives at all times when the work is in progress. Inspection by the TPCODL or its authorized representatives shall not relieve the bidder of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by TPCODL.

Following documents shall be sent along with material

- Test reports
- MDCC issued by TPCODL
- Invoice in duplicate
- Packing list
- Drawings & catalogue
- Guarantee / Warrantee card
- Delivery Challan
- Other Documents (as applicable).

10. INSPECTION AFTER RECEIPT AT STORES

The material received at TPCODL store will be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Engineering department.

11. GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process/manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 60 months from the date of commissioning or 66 months from the date of last supplies made under the contract whichever is earlier. Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the "Security cum Performance Deposit" as the case may be.

In case of product fails within the guarantee period the purchaser will immediately inform the bidder who shall take back the defective product within 15 days from the date of intimation at his own cost and replace product within 45 days of date of intimation with a roll over guarantee. The outage period i.e. period from the date of failure till unit is repaired / replaced shall not be counted for arriving at the guarantee period.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser

12. PACKING

Bidder shall ensure that all equipment covered under this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit.

TPCODL TP CENTRAL ODISHA DISTRIBUTION LIMITED	TATA POWER CENTRAL ODISHA DISTRIBUTION LIMITED, ODISHA		
	TECHNICAL SPECIFICATION		
Doc. Title	Specification for C Type Wedge Connector & Paddle Clamp		
Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 7 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

13. TENDER SAMPLE

Bidder should submit sample (non-returnable without any cost implication to TPCODL) of connector 6 Nos. of each sizes to TPCODL.

14. QUALITY CONTROL

The bidder shall submit with the offer Quality Assurance Plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections. The bidder shall ensure that the material supplied is as per the Guaranteed Technical Particulars as specified in the specifications.

15. MINIMUM TESTING FACILITIES

Bidder shall have adequate in-house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards.

16. MANUFACTURING ACTIVITIES

The successful bidder will have to submit the required documents & drawing as mentioned in clause no-19, to get the CAT-A/B approval before mass manufacturing as a mandatory requirement.

17. SPARES, ACCESSORIES AND TOOLS

Not Applicable.

18. DRAWINGS AND DOCUMENTS

Following documents shall be prepared based on TPCODL specifications and statutory requirements with Drawing including complete BOM and shall be submitted with the bid:

- Signed & stamped copy of clause-wise compliance on Technical Specification
- Complete equipment drawing with BOM
- Type test Certificates with drawings
- Experience List
- Drawing with complete BOM
- Signed & stamped copy of pre-bid queries
- Signed & stamped copy of No deviation certificate

After the award of the contract, following documents shall be submitted by the successful Bidders before starting of manufacturing

- Signed & stamped copy of clause-wise compliance on Technical Specification including Filled GTP as per Clause no. 4
- Complete equipment drawing with BOM
- Spare list
- Compliances on undertaking provided during technical evaluation as applicable
- O&M/Instruction Manual
- QAP

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	TECHNICAL SPECIFICATION		
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Doc. No	ENG-ELC-114	Eff. Date: 28.10.2024	
Rev. No	00	Page 8 of 8	
Prepared by: Yashobanta Rout	Reviewed By: Jeevan Sangram	Approved By: Khajan Bhardwaj	Issued By: Pourush Garg

19. GUARANTEED TECHNICAL PARTICULARS

Bidder shall have to comply & submit clause wise compliance of this specification

20.

SCHEDULE OF DEVIATIONS (TO BE ENCLOSED WITH TECHNICAL BID)

All deviations from this specification shall be set out by the Bidders, clause by Clause in this schedule. Unless specifically mentioned in this Schedule, the tender shall be deemed to confirm the purchaser's specifications:

S. No	Clause No.	Details of deviation with justifications

We confirm that there are no deviations apart from those detailed above.

Seal of the Company:

Signature

Designation