

STANDARD TECHNICAL SPECIFICATION COVER SHEET

Specification No.: ENG-EHV-1018-R1

Specification Name: Technical Specification for 33 kV AB switch (400 A)

Revision: R0					
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Rev. #	Date of revision	Clause No.	Summary of revisions/ comments (Attach separate sheet if required)	Initiated by	Revised /Reviewed by	Approved by
R1	02-02-2026	4. GTP 5. Construction 6. Marking 7. Type Test 8. Tests 13.Sample Evaluation	Attached in separate Sheet. Annexure-I	Pallavi Routray (CEG-TPSODL)	Smaranika Acharya (CEG-TPWODL) Udit Sankar Das (TPNODL) Santosh Patra (TPWODL) Sandeep Saurav (TPSODL)	
R2						

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1. SCOPE

This specification covers design, manufacturing, testing at manufacturer's works, inspection, packing & delivery of 33 kV Air Break Switch with accessories for out-door installation for use on transformer centers and tap line in Central Odisha. Aforesaid item(s) shall include loading and unloading at anywhere in Odisha.

It is not the intent to specify completely herein all the details of design and construction of Air Break Switches. However, AB Switches will confirm in all respects to high standards of engineering design and workmanship and shall be capable of performing in continuous Commercial operation up to the supplier's guarantee, in a manner acceptable to the purchaser, who will interpret the meanings of drawings and specifications and shall have the power to reject any material, which in his judgment i.e. not in accordance with the specifications/drawings.

The AB Switches offered shall be complete with all components necessary for its effective and trouble-free operation along with associated equipment etc. such components shall be deemed to be within the scope of supplier's supply, irrespective of whether those are specifically brought out in the specification and/or in order or not. Also similar parts particularly removable ones shall be inter-changeable.

2. APPLICABLE STANDARDS

The equipment covered by this specification shall unless otherwise stated, be designed, manufactured and tested in accordance with the latest editions of the following Indian, International Standards and shall conform to the regulations of the local authorities:

Ref. IS	Description
IS 9920 (part-I to V)	Specification for helically formed fittings for Overhead lines up to 33 kV
IS 2633 (Part 1)	Method for testing uniformity of coating on zinc coated
IEC 62231	Composite station post insulators for substations with a.c. voltages greater than 1 000 V up to 245 kV – Definitions, test methods and acceptance criteria
IEC 60168:1994+AMD1: 1997+AMD2:2000 CSV	Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1000 V

IS 9530	Recommended practice for silver plating
IS 5925	Recommended practice for silver plating for general engineering purposes
BS 2816	Testing of silver plating thickness
IS 1239	GI pipe('B' class or Medium class)
IS: 5561	Electrical Power Connectors
IS 2062	Hot rolled medium and high tensile structural steel — specification

3. CLIMATIC CONDITIONS OF THE INSTALLATION

SL.NO.	CONDITONS	VALUES
1	Max. altitude above sea level	1200m
2	Max. Ambient Temperature	50 °C
3	Max. Daily average ambient temp	35 °C
4	Min Ambient Temp	0 °C
5	Maximum temperature attainable by an object exposed to sun	60 °C
6	Maximum Humidity	95%
7	Minimum Humidity	10%
8	Average No. of thunderstorm days per annum	70
9	Average Annual Rainfall	150 cm
10	Average No. of rainy days per annum	120
11	Thermal Resistivity of soil	150 Deg. Ccm/W
12	Wind Pressure	126 kg/sq. m up to an elevation of 10 meter.
14	Earthquakes of intensity in horizontal direction	equivalent to seismic acceleration of 0.3g
15	Earthquakes of intensity in vertical direction	equivalent to seismic acceleration of 0.15g
16	Wind velocity	300 km/hr.

TPCODL/TPNODL/TPSODL/TPWODL 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.

4. GENERAL TECHNICAL REQUIREMENTS

SL. NO.	TECHNICAL PARTICULARS	DESIRED VALUE
1	Rating of AB Switch	400 Amps AB Switch
1.a	Reference standards (latest amend.)	IS 9920, IEC 129, IEC 62231 with up-to-date amendments, IS 1239 , IEC 61109 with up-to-date amendments
2	Installation	Outdoor
3	Suitable for Mounting	Horizontal Rotating Type
4	Type	3 Pole
5	Service Voltage	33 kV
6	Rated Voltage	36 kV
7	Rated Frequency	50 Hz
8	Current Carrying Capacity	400 Amps
9	Rated short time current	16 kA for 1sec
10	Rated peak withstand current	40 kA
11	Rated Short circuit making capacity	25 KA RMS
12	Rated Cable Charging breaking capacity	40 A RMS
13	Rated line charging breaking capacity	5.3 A RMS
14	Rated Transformer off load breaking Capacity	16 A RMS
15	One-minute power frequency with stand voltage Dry	95 KV RMS
16	One-minute power frequency withstand voltage Wet	75 KV RMS
17	Power Frequency puncture withstand voltage	1.3 times of actual dry flashover voltage
A	Visible Discharge Voltage	27 KV RMS
B	Dry flashover Voltage	95 kV
18	Power Frequency withstand voltage between pole and earth	70 KV RMS
19	Power frequency withstand voltage across the isolation distance	80 KV RMS
20	Impulse with stand voltage for positive and negative polarity (1.2 / 50) micro second wave)	
A	Across Isolating distance	195 KV Peak
B	To earth and between poles	170 KV Peak

21	No. of Post Per Phase (Polymeric, IEC 62231)	02
22	Total No. of post The percentage of silicon content on the polymeric post insulator should be above 40%)	06
22.a	Make of Insulator	Sun Kouture / Scenario / Prithvi Industries / Yamuna Power/ Jainco Transmission/ Navitas Insulators/ Deccan Electricals Complete type test reports of insulator to be provided during tender evaluation process. Year of manufacturing to be properly engraved on the Insulator
22.b	FRP Dia of the Post Insulator (min)	32mm
22.c	Dai of Weather sheds	>100mm
22.d	Thickness of Housing (min)	3mm
22.e	PCD of Insulator	76mm
22.f	Type of Sheds	Aerodynamic
23	Minimum Creepage Distance	900 mm (one post)
24	Phase to Phase Clearance	1200 mm
25	Isolation Distance in switch open condition	640 mm
26	Vertical clearance from Top of Insulator cap to mounting channel	508 mm (Minimum)
27	Copper contacts Temp in Air should not exceed	65 Degree
28	Fixed & Moving Contact Material	Electrolytic Copper Grade (Min 99.9% Cu) silver plating of 15 Microns thickness
29	Size of fixed contacts (Copper Type Electrolytic with silver plated) (coating thickness not less than 15 microns)	80mmx50mmx8mm Jaw assemblies are to be bolted through stainless steel flat and spring washer (Min 6 nos. of phosphor bronze high-pressure spring to be used on each post).
30	Size of Moving contacts (Copper Type Electrolytic with silver plated) (coating thickness not less than 15 microns)	250mmx50mmx8mm (a Min deposit of 15 micron of Silver on copper contact)
31	Moving Contact supporting Angle	50mmx50mmx6mm
32	Size of rods used for arcing horns	10 mm
33	Insulation for tinned Copper braid/rope	Polyolefin, (RSFR-H) type
34	Copper Flexible BRAIDED Tape - 420 mm Long, Tined plated with Brass Nut, bolt & Washers both ends shall be crimped with copper socket through brass bolts and nuts	450gm /Mtr M12 Brass Nut, bolt & Washers

35	Minimum size*Length of Coupling Hot Dip GI Solid Pipe for Phase coupling pipe, B Class (IS 1239) (Nominal Bore)	MS HDG 25 NB, 2500mm long for 3 Pole (as per IS 1239) Class: Medium OD (max): 34.2mm and (min): 33.3mm Thickness: 3.2mm Tolerance: +/-10% on thickness Make: Jindal
36	Operating Down Pipe, B Class (IS 1239) (Nominal Bore)	MS HDG 32 NB, 7Mtr Long (Without Welding/joints) as per IS 1239 Class: Medium OD (max): 42.9 mm and (min): 42.0 mm Thickness: 3.2mm Tolerance: +/-10% on thickness Make: Jindal
37	Temperature Rise Limit (w.r.t ambient temp) - Tinned Copper contacts - Terminals - Metal Parts	65°C 65°C 40°C
38	Arching Horns	10 mm dia GI rod
39	Locking Arrangement (LOTO)	Provision for pad locking at both 'ON' & 'OFF' position LOTO arrangement lock required
40	Earth Terminal	M12 Bolts with nuts and flat washer shall be provided at base channel as earthing Terminal.
41	'T' Connection	The T connection provided on the channel having 'moving contact' shall be G.I Nut & bolt at the bottom end to facilitate replacement of this unit only during requirements & avoid entire change of arm.
42	'I' bolt	2 Nos of 'I' Bolt for down operating pipe to be provided. Threaded portion shall be 75mm. M12 Dia, Double nuts for each 'I' bolt to be provided.
43	Supporting Channel HDG	100x50x6 mm Hot dip galvanized channel (C/C slotted 18x36 hole 250 mm) Min. 760 mm length Zinc coating thickness: Min 100 Microns (Make- TATA/ SAIL/ JINDAL/ RINL)
44	Moving & Fixed Terminals Material	Terminal connectors for both movable and fixed should be of copper flats Connectors Electrolytic copper (Min 99.9% Cu) with silver plating of 15 microns thickness.

45	Cross sectional Dimension of Fixed and Moving Terminal	Fixed Connector Size: 80 x 50 x 8 Moving Connector Size: (80 x 50) x (80 x 50) x 8 mm with 2 no. of 14 mm dia holes provided with suitable brass bolts, double nuts, washers & spring washers
46	SOCKET:	SOCKET: One no. of bimetallic copper sockets shall be used at both ends suitable for 100-232 sqmm AAC conductor. One no. of 12 mm dia. brass bolts, double nuts, plain washers & spring washers to be provided for socket
47	Bearing	4 nos. self-lubricating bearing to be provided with grease nipple including 4 th bearing being a thrust bearing. (Bearing make shall be SKF/ FAG)
48	Pressure Spring	Stainless steel
49	Nuts, Bolts & Washers	For current carrying parts: Brass For non-current carrying parts: SS 316 nuts & bolts
50	Marking/Engraving (Parameters should be embossed on Aluminium Sheet of thickness 0.4 mm with black background. It should be riveted on MS channel of AB switch) per each phase	1. Rated Voltage 2. Manufacturer Name 3. Month/Year of Manufacture 4. Serial No. 5. PO No. 6. Rated Normal Current in Amps 7. Rated One Second Short-Time Current 8. Property of TPCODL/ TPNODL/ TPWODL/ TPSODL

5. GENERAL CONSTRUCTIONS/REQUIREMENTS

- The Air break switch shall be outdoor type, rotating type gang operated and shall be suitable for horizontal installation having 2 no. of polymeric post insulators per phase.
Make of the insulator- Sun Kouture / Scenario / Prithvi Industries / Yamuna Power/ Jainco Transmission/ Navitas Insulators/ Deccan Electricals
- The Rotating type operating mechanism shall be suitable for manual operation from ground level and shall be designed in such way that all the three phases shall open and close simultaneously in smooth way.
- The air break switch shall be with the arcing horns, 10mm for 33 kV 400 A AB switch of GI rod.
- The current carrying connectors should be two-bolt type having nuts and bolts, with spring washer and plane washer.
- Each joint shall be provided with one plane and one spring of not less than 2mm thickness.
- Connectors shall be of H D electrolytic copper or Brass.
- Tinned Copper braid/rope shall be insulated by Polyolefin (RSFR-H) type to prevent animal electrocution. It shall be 420 mm long minimum and shall weigh 450 G/M. It shall be punched at both ends.

8. All ferrous parts shall be hot dip galvanized with heavy coating after proper surface treatment as per standards. Coating thickness shall not be less than 100 microns at any point.
9. All Copper parts shall be silver plated as per relevant standards and coating thickness not less than 15 microns at any point.
10. Equipment grounding shall be provided by bidder at two points with terminals.
11. All the nut bolt used must be Hot dip Galvanized and of size not less than M10 until and unless specified.
12. A rigid base of galvanized steel channel (**Make- TATA/ SAIL/ JINDAL/ RINL**) of size approx.100x50x6 mm Length 760 mm min. (C/C slotted hole 18x 36 mm- 250mm shall be provided with clamps and bolts for Horizontal mounting firmly on steel structure.
13. Each member of the switch shall be free from Rust, sharp edges, burr and any kind of deformation.
14. The phase coupling rod, operation rod with intermediate guide braided with flexible electrolytic copper, tail piece of required current carrying capacity and operation mechanism with 'ON' & 'OFF' positions shall be provided. Make: Jindal
15. The operation rod shall be medium gage of 32mm diameter nominal bore G.I. pipe single length 7 meters (welding or jointing is not accepted). The phase coupling rod for gang operation shall be of medium gauge 25 mm dia & 2500 mm length nominal bore G.I. pipe. Make: Jindal
16. Spacing: The Minimum clearance between phase to switch shall be 1200 mm. The operating down rod shall be at a transverse distance of 300 mm from the outer limb of the switch. The center spacing between two post insulators of the same phase shall be 560 mm. in open position of the AB switches the moving blade shall rotate through an angle of 90 degree. This shall be exhibited in the drawing.
17. Non-threaded type spindle shall be provided for connection with down pipe.
18. Provision for operating handle earth with flexible copper wire shall be provided.
19. Two Nos of 'I' Bolt for down operating pipe to be provided. Threaded portion shall be 75mm. M12 Dia, Double nuts for each 'I' bolt to be provided.

6. MARKING

Below parameters should be embossed on Al sheet of thickness 0.4 mm with black background. It should be riveted on MS channel of AB switch: There shall be three name plate for each phase.

1. Rated Voltage
2. Manufacturer's Name
3. Month/Year of Manufacture
4. Serial Number
5. PO no.
6. Rated normal current in Amps
7. Rated one second short-time current in Amps
8. Property of TPCODL/ TPNODL/ TPWODL/ TPSODL

7. TESTS CERTIFICATE

7.1. Type Test:

The A.B. switches shall be subjected to the following type tests in accordance with clause No. 6 of IS-9920 (Part-1)/2002.

- (i) Tests to prove that the temperature rise of any parts does not exceed the values specified in part-2 of this standard.
- (ii) Tests to prove the capability of the switch to carry the rated peak withstand current and the rated short time current.

- (iii) Measurement of the resistance of the main circuit.
- (iv) Tests to prove the ability of the switch to make and break the specified currents.
- (v) **Short Circuit withstand Test**
- (vi) Tests to verify the insulation level including withstand tests at power frequency voltages on auxiliary equipment if any. Di-electric tests include impulse withstand tests, power frequency voltage withstand tests, and power frequency voltage withstand tests.
- (vii) Tests to prove satisfactory operation and Mechanical endurance.
- (viii) Tests to prove the integrity of the external insulation under conditions of the air pollution.

7.2. Type Test for post Insulator

- i. Dry Lightning impulse with-stand voltage test
- ii. Wet power frequency test
- iii. Mechanical failing load test.
- iv. Radio interference test
- v. Recovery of hydrophobicity test
- vi. Salt fog test: On insulators for 1000 hr as per IEC
- vii. Chemical composition test for silicon content (Min 40%)
- viii. Galvanization test
- ix. Brittle fracture resistance test

Note 1: The type test certificate should not be more than 5 years old as on due date of opening of tender.

Note 2: Type test certificate of polymeric post Insulator shall be submitted and shall be issued from CPRI/ERDA or Government lab only. Make of the insulator- Sun Kouture / Scenario / Prithvi Industries / Yamuna Power/ Jainco Transmission/ Navitas Insulators/ Deccan Electricals

The manufacturing year of the post insulator should not exceed one year from the date of tender.

7.2 Acceptance Tests

The following acceptance test should be carried out as per IS: 9920 (P4/1985) on number of samples selected from the offered lot.

- (i) Visual Inspection.
- (ii) Checking of Dimensions (of all parts as per the approved drawing).
- (iii) Power frequency voltage dry test.
- (iv) Measurement of the resistance of the main circuit.
- (v) Test to prove satisfactory operation
- (vi) Galvanizing test as per IS: 2633.
- (vii) Temperature rise test.

7.3 Routine Tests:

Supplier shall provide a control plan, which will be implemented on AB switches. Routine test reports should be submitted by the manufacturer with inspection call.

The following routine tests as outlined in clause No.4 of IS: 9920 (Part4/1985) shall be carried out by the manufacturer on each unit to check certain essential requirements.

- i) Power frequency voltage dry tests.
- ii) Measurement of the resistance of the main circuit. iii) Test to prove satisfactory operation.
- iv) Dimension check
- v) Galvanization test

The tenderer shall clearly indicate what testing facilities are available in the works of manufacturer & whether facilities are adequate to carry out all Acceptance & Routine Tests. These facilities should be available to TPCODL/TPNODL/TPSODL/TPWODL's representative if deputed or carry out or witness the tests in the manufacturer works.

8. TESTS

Along with the bid, the bidder must submit Type Test Reports on AB switches as per this technical specification, carried out within last five years from the date of opening of techno-commercial bid of the tender from CPRI/ERDA/ Govt Owned Labs only.

Otherwise, the tender may be rejected.

9. PRE DISPATCH INSPECTION

Equipment shall be subject to inspection by a duly authorized representative of the TPCODL/TPNODL/TPSODL/TPWODL. Inspection may be made at any stage of manufacture at the option of the TPCODL/TPNODL/TPSODL/TPWODL and the equipment if found unsatisfactory as to workmanship or material is liable to rejection.

Supplier shall grant free access to the places of manufacture to TPCODL/TPNODL/TPSODL/TPWODL's representatives at all times when the work is in progress. Inspection by the TPCODL/TPNODL/TPSODL/TPWODL authorized representatives shall not relieve the supplier 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/TPNODL/TPSODL/TPWODL. Following documents shall be sent along with material

- a) Routine Test reports
- b) MDCC issued by TPCODL/TPNODL/TPSODL/TPWODL
- c) Invoice in duplicate
- d) Packing list
- e) Drawings

- f) Delivery Challan
- g) Installation and maintenance Manual soft copy for all components
- h) Other Documents (as applicable)

10. INSPECTION AFTER RECEIPT AT STORES/SITE

The material received at TPCODL/TPNODL/TPSODL/TPWODL Store/Site will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection. If any deviation or anomaly observed at this stage same need to be rectified by bidder at bidders own cost at earliest.

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 12 months from the date of commissioning or 24 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.

12. PACKING

Bidder shall ensure that all equipment covered by 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. The packing should be in such manner that during storage and its components should not be damaged. No single use plastic to be used in packing material. Packing should be done with environment friendly recyclable materials

13. TENDER SAMPLE

Bidder shall submit the sample of material with the offer (in case of first supply to

TPCODL/TPNODL/TPSODL/TPWODL).

During tender evaluation, Socket/lug sample needs to be submitted by bidder for sample evaluation.

14. QUALITY CONTROL

The bidder shall submit with the offer, 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 after finishing, bought out items and fully assembled component and equipment including drives. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The TPCODL/TPNODL/TPSODL/TPWODL's or its nominated representative engineer shall have free access to the manufacturer/sub-supplier's works

to carry out inspections. To ensure proper operation of Product the bidder shall provide onsite training of TPCODL/TPNODL/TPSODL/TPWODL teams as and when required. To ensure quality of installations bidder shall provide supervision support during impartation.

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 bidder shall get the approved drawing and GTP before start of manufacturing activity. The successful bidder will have to submit details of the offered design & components for approval as per specification. CAT-A/CAT-B is mandatory to start manufacturing.

17. SPARES, ACCESSORIES AND TOOLS

Not applicable.

18. DRAWINGS AND DOCUMENTS

Following documents to be submitted along with the bid for evaluation: a) Completely filled-in clause wise compliance of this specification.

- b) Signed and stamped copy of drawing
- c) Complete Type test reports
- d) Completely filled signed and stamped copy of tender document.
- e) Any other requisite document
- f) Experience List.

Following documents shall be submitted after award of RC/PO before manufacturing: a) Completely filled-in clause wise compliance of the specification.

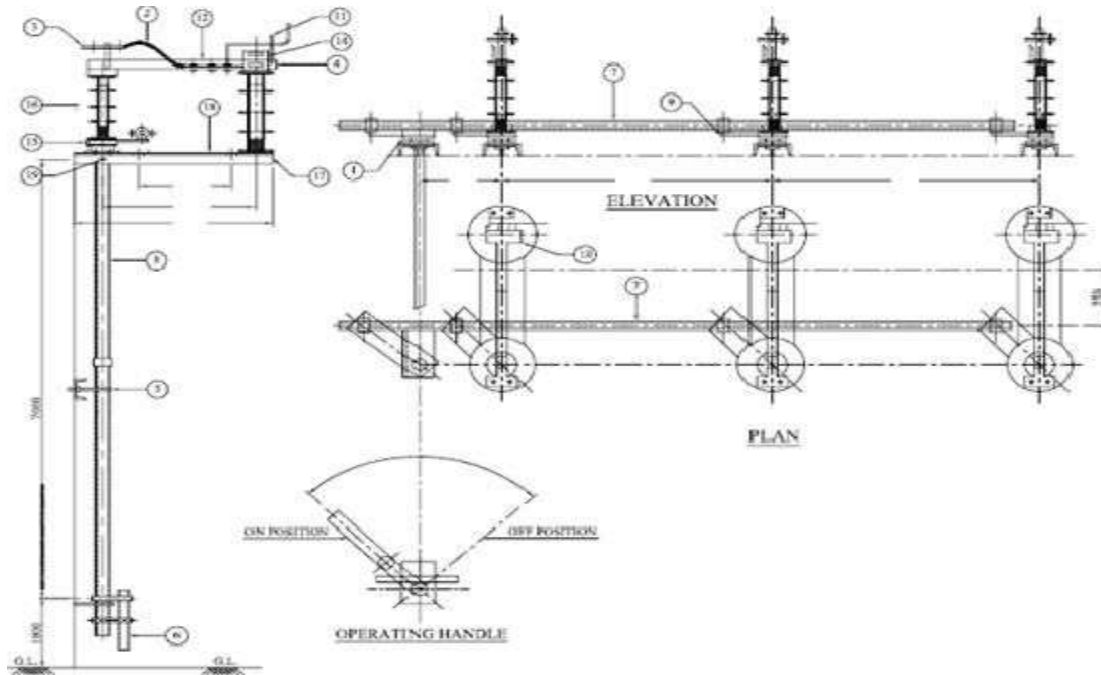
- b) Signed and stamped copy of GA drawing
- c) Signed and stamped copy of installation drawing
- d) Compliance of all undertaking submitted during technical evaluation, if any
- e) Type test Certificates for each specified test if not submit during technical evaluation

Following Drawings/Documents shall be submitted after the award of the contract.

S. No	Description	For Approval	For Review Information	Final Submission
1	Technical Parameters	√		√
2	Manual/Catalogues/drawings for all components.		√	
3	Technical details and test certificates.		√	√
4	Installation Instructions		√	√
5	Transport/shipping dimension drawing		√	√
6	QA & QC Plan	√	√	√

7	Routine, Acceptance and Type test Certificates	√	√	√
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All the Documents and Drawings shall be in English Language.



Indicative drawing of 33 KV 400A AB Switch

19. GUARANTEED TECHNICAL PARTICULARS

Completely filled-in clause wise compliance of this specification along with bid.

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:

SL. 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

Annexure-I

Summary of Revisions/ Comments

Sl. No.	Clause No.	Parameter	Description
1	4.22.a	Make of Insulator	Sun Kouture / Scenario / Prithvi Industries / Yamuna Power/ Jainco Transmission/ Navitas Insulators/ Deccan Electricals Complete type test reports of insulator to be provided during tender evaluation process. Year of manufacturing to be properly engraved on the Insulator
2	4.28	Fixed & Moving Contact Material	Terminal connectors for both movable and fixed should be of copper flats Connectors Electrolytic Copper Grade (Min 99.9% Cu) silver plating of 15 Microns thickness
3	4.35 & 36	Class of Coupling Pipe & Operating down Pipe.	Medium Duty, B Class, 3.2mm thickness (as per IS 1239)
4	4.42	'I' bolt	2 Nos of 'I' Bolt for down operating pipe to be provided. Threaded portion shall be 75mm. M12 Dia, Double nuts for each 'I' bolt to be provided.
5	4.46	Socket	One number solder less bimetallic socket (Electrolytic Copper tin plated) for each connector suitable sockets for each connector suitable up to 55- 100 mm ² AAA conductor. One no. of 10mm dia. brass bolts, double nuts, plain washers & spring washers to be provided for socket.
6	4.50	Nuts, Bolts & Washers	For current carrying parts: Brass For non-current carrying parts: SS 316 nuts & bolts
7	4.51	Name Plate	Aluminium Sheet of thickness 0.4 mm with black background. It should be riveted on MS channel of AB switch) per each phase
8	5.	General Constructions/ Requirements:	According to changes in clause no 4 similar changes done in clause no 5 of point no 1, 18.
9	7.	Type Test	Short Circuit withstand Test added in the list
10	8.	Tests	Test reports from CPRI/ERDA/ Govt Owned Labs only.
11	13.	Tender Sample	During tender evaluation, Socket/lug sample needs to be submitted by bidder for sample evaluation.