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# TECHNICAL SPECIFICATIONS

# AND

# GUARANTEED TECHNICAL PARTICULARS

# FOR

# 33 kV, 800 A ISOLATORS WITH AND WITHOUT

# EARTHING SWITCH

| Prepared by | Checked by | Checked by | Checked by | Approved by |
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**This Tender Specification and Guaranteed Technical Particulars are for tendering purpose only and may be subjected to the modification by the purchaser as per actual field requirement. Contractor/Supplier to submit the Guaranteed Technical Particulars (GTP) and Drawings, after the award of the Contract, for approval of the Purchaser.**

**In case any discrepancy is noticed in this Specification/GTP, please report to Chief Engineer P&P, KPDCL.**

# CLIMATIC AND ISOCERAUNIC CONDITIONS (CIC)

| | | |
|---|---|---|
| **1.** | The climatic and Isoceraunic conditions at the site of work are approximately given as under: | |
| | **Description** | Kashmir |
| i) | Max. temp of air in shade | $30.6^0$ C |
| ii) | Min. temp of air in shade | $-20^0$ C |
| iii) | Max. temp of air in sun | $45^0$ C |
| iv) | Height above sea level (App.) | 1600 meter |
| v) | Max. relative humidity | 90% |
| vi) | Min. relative humidity | 15% |
| vii) | Average no. of thunderstorm days per year | 54 |
| viii) | Average rainfall | 80 cm |
| ix) | Wind Zone | WZ –3 |
| x) | Average number of rainy days per year | 106 |
| xi) | Seismic Zone | SZ–5 |
| xii) | Area of installation | Heavy Snow Zone |

**2.** **Communication and Transport:**

The nearest railway station is Udhampur on the broad gauge line and is connected to the Divisional Stores by a metal road. The equipment is required to pass en-route through various tunnels on NH-44 (Nandni, Nashri and Jawahar Tunnel). The weight and maximum dimensions of the packages suitable for transportation through tunnel route are as follows: -

1. Length =7.0 m
2. Width =3.0 m
3. Height =4.55 m
4. Weight =40 MT

The supplier shall get the permissible weight and dimensions confirmed from the Highway Authorities before proceeding with the manufacture of the equipment. It will be the responsibility of the supplier to ensure timely and proper delivery of the equipment on door delivery basis, at Srinagar, through road transport. The supplier shall also ensure that the weight and dimensions of the packages which are suitable to be carried by road transport up to Srinagar.

| | | |
|---|---|---|
| **3.** | **Additional conditions** | |
| i | Permitted Noise Level | 45 dB |
| ii | Induced Electromagnetic disturbance | 1.6 kV |
| iii | Pollution class/Creepage distance | III/ 25 mm/ kV |
| iv | Isoceraunic Level (days/year) | 50 |
| v | Condensation | Occasional |

## TECHNICAL SPECIFICATIONS FOR 33 kV ISOLATORS WITH AND WITHOUT EARTHING SWITCH

### 1. SCOPE:

**1.1** This specification covers design, manufacture, testing before dispatch, packing, supply and delivery of 33 kV outdoor type double break centre post rotating type (DBCR) Isolators with and without earthing blades, accessories and auxiliary equipment for installation in various substations of KPDCL in UT of Jammu and Kashmir (India).

**1.2** It is not the intent to specify completely herein all details of the design and construction of the equipment/material. However, the equipment/material shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation up to the bidder's guarantee in a manner acceptable to the purchaser, who will interpret the meanings of drawings and specifications and shall have the discretion to reject any work or material which, in his judgment, is not in accordance there with.

The equipment/material offered shall be complete with all components necessary for its effective and trouble free operation along with associated parts, interlocks, protection schemes etc. Such components shall be deemed to be within the scope of bidder's supply, irrespective of whether those are specifically brought out in this specification and/or the commercial order or not. All similar parts particularly removable ones shall be interchangeable.

### 2. STANDARDS:

The isolator shall comply in all respects with regard to the technical specifications, the rating, performance and testing with the latest revisions of relevant standards as listed in the table below or any other International Standards which ensure equal or higher quality material.

| S .No. | Standard No. | Title |
|---|---|---|
| 1 | IS:1818 | Alternating current isolators and earthing switches |
| 2 | IS:9921 | -do- |
| 3 | IEC:129 | -do- |
| 4 | IS:2544 | Insulators |
| 5 | IS 13947 | Degree of protection provided by enclosures |
| 6 | IS:4691 | -do- |
| 7 | IS:4722 | Rotating Electrical Machines |
| 8 | IS:2629 | Recommended practice for hot dip galvanising of iron and steel |
| 9 | IS:4759 | Hot dip galvanisation coating on Structural Steel. |
| 10 | IS:2633 | Method of testing weight thickness and uniformity of coating on fasteners |
| 11 | IS:1573 | Electro plated coating of zinc on Iron & Steel. |
| 12 | IS:3033 | Spring Washers |
| 13 | IS:2016 | Plain washers |
| 14 | IE Rules 1956 | Indian Electricity Rules |
| 15 | IEC:168 | Tests on Indoor and Outdoor post Insulator |

| | | |
|---|---|---|
| 16 | IS:3961 | Recommended current rating for PVC Insulated and PVC Sheathed heavy Duty Cables. |
| 17 | IS: 5561 | Power Connectors |
| 18 | IS:1554 | PVC Cables |
| 19 | IS:5578 | Guide for marking of Insulated conductors and arrangement for switchgear bus bar main connectors & Auxiliary wirings. |
| 20 | IS:11353 | Guide for Uniform system of marking and identification of conductors and apparatus terminals. |

## 3. PRINCIPAL TECHNICAL PARAMETERS:

The equipment covered in this specification shall meet the technical requirements listed in Annexure A.

## 4. GENERAL TECHNICAL REQUIREMENTS:

### 4.1 Type and Rating of Isolators:

Isolators shall have three posts per phase, triple pole single throw, gang operated out-door type silver plated contacts with horizontal operating blade and isolators posts arranged vertically. The isolators will be double break type. Rotating blade feature with pressure relieving contacts is necessary. Isolators shall operate through 90 degrees from their fully closed position to fully open position, so that the break is distinct and clearly visible from the ground level.

The equipment shall be designed for a normal current rating of 800 A, for 33 kV suitable for continuous service at the system voltage specified herein. The isolators are not required to operate under load but they must be called upon to handle magnetization currents of the power transformers and capacitive currents of bushings, bus-bars connections, very short lengths of cables and current of voltage transformers.

The rated insulation strength of the equipment shall not be lower than the levels specified in IS:9921 IEC publication No. IEC:62271-102 (IEC:60129), which are reproduced below:

| Standard Declared Voltage (kV rms) | Rated Voltage of the Isolator (kV rms) | Lightening Impulse withstand Voltage kV (peak) | | One-minute power frequency withstand voltage kV (rms) | |
|---|---|---|---|---|---|
| | | Across the Isolating Distance | To Earth and between Poles | Across the Isolating Distance | To Earth and between Poles |
| 33 | 36 | 195 | 170 | 80 | 70 |

The 33 kV isolators are required with post insulators. The isolators should be suitable for mounting on the Boards standard structures. The isolators shall be supplied with base channels along with fixing nuts, bolts and washers for mounting on the structure.

**4.2 Current carrying parts:**

Material of earthing blades and contacts shall be the same as those of main switch moving blades and contacts respectively. Cross sectional area of earthing blades and contacts shall not be less than 50% of cross sectional area of main blades and contacts.

The earthing blades shall have the same short time current rating (thermal and dynamic) as that of main switch.

**4.3 Current density:**

Current density, to be adopted, for alll the parts of isolator and terminal connector shall not exceed the following limits:

a. Hollow tube sections - Copper - 2.0 A/Sq.mm
b. Flat sections - Copper - 1.6 A/Sq.mm
c. Terminal connectors - Aluminum - 1.0 A/Sq.mm

**4.4 Insulators**:

i. The isolators shall have solid core insulators. Poly cone insulators shall not be acceptable. Porcelain insulators shall have a creepage distance of 25 mm/kV. All insulators shall be outdoor post type conforming to IS:2544.

ii. The insulators shall be provided with a completely galvanized steel base design for mounting on the support. The base and mounting arrangement shall be such that the insulator shall be rigid and self- supporting and no guying or cross bracings between phases shall be necessary.

iii. The insulator shall be made of homogeneous and vitreous porcelain of high mechanical and dielectric strength. It shall have sufficient mechanical strength to sustain electrical and mechanical loading on account of wind load, short circuit stresses etc. Glazing of the porcelain shall be of uniform brown or dark brown colour with a smooth surface arranged to shed away rainwater. The porcelain shall be free from lamination and other flaws or imperfections that might affect the mechanical or dielectric quality. It shall be thoroughly vitrified, tough and impervious to moisture. The porcelain and metal parts shall be assembled in such a manner and with such material that any thermal differential expansion between the metal and porcelain through the range of temperature specified in this specification shall not loosen the parts or create undue internal stresses which may affect the mechanical or electrical strength or rigidity. The assembly shall not have excessive concentration of electrical stresses in any section or across leakage surfaces. The cement used shall not give rise to chemical reaction with metal fittings. The insulator shall be suitable for water washing by rain or artificial means in service condition.

iv. Cap to be provided on top of the insulator shall be of high grade cast iron/malleable steel casting or aluminum alloy. It shall be machine faced and hot dip galvanized. The cap shall have four no. of tapped holes pierced on a pitch circle diameter of 76 mm. to accommodate the terminal clamp for supporting the purchasers bus bars. The holes shall be suitable for bolts with threads having anticorrosive protection. The effective depth of threads shall not be less than the nominal diameter of the bolt.

v. The casting shall be free from blow holes, cracks and such other defects.

vi. All the ferrous metal parts shall be hot dip galvanized smoothly as per I S 3638 (as amended up to

date), IS:2623 or any other equivalent authoritative standard. The material shall be galvanized only after shop operations upon it have been completed. The metal parts before galvanization should be thoroughly cleaned of any paint, grease, rust, scales or alkalies or any foreign deposits which are likely to come in the way of galvanization process. The metal parts coating shall withstand minimum four one minute dips in copper sulphate solution as per IEC-168. likely

vii. The insulator unit shall be assembled in a suitable jig to ensure correct positioning of the top and bottom metal fittings relative to one another. The faces of the metal fittings shall be parallel and at right angle to the axis of the insulator and corresponding holes in the top and bottom metal fittings shall be in a vertical plane containing the axis of the insulator.

**Each 33 KV Post Insulators used in the isolators should have technical particulars as detailed below:**

| S.No. | System Parameters | Values |
|---|---|---|
| 1 | Nominal System Voltage kV (rms) | 33 |
| 2 | Highest System Voltage kV (rms) | 36 |
| 3 | Dry P.F. One minute withstand Voltage kV (rms) | 75 |
| 4 | Wet PF one minute withstand Voltage kV (rms) | 75 |
| 5 | P.F. Puncture withstand test Voltage kV | 1.3 time the actual dry flash over Voltage of the unit |
| 6 | Impulse Voltage withstand test kV (peak) | 170 |
| 7 | Visible discharge test kV Voltage | 27 |
| 8 | Creepage distance mm (min) | 900 |
| 9 | Tensile strength in kN | 30 |
| 10 | Short time current rating for 3 secs (kA) | 25 |

In place of 33 kV post insulator the composition of 2 units of 22 kV post insulators per stack complying the following parameters are acceptable:

| S.No. | System Parameters | Values |
|---|---|---|
| 1 | Nominal System Voltage kV (rms) | 33 |
| 2 | Highest System Voltage kV (rms) | 36 |
| 3 | Power frequency wet withstand Voltage (kV) | 75 |
| 4 | Impulse voltage withstand (kV) | 170 |

| | | |
|---|---|---|
| 5 | Height of Stack (mm) | 500 |
| 6 | Creepage distance mm (min) | 900 |
| 7 | Tensile strength in kN | 30 |
| 8 | Bending strength (kN) | 4.5 |

**4.5 Operating mechanism:**

**i.** Manual operating mechanism gang operated through Lever/Hand shall be provided for main switch.

**ii.** Manual operating mechanism gang operated through a lever / hand on the operating shaft shall be provided for earth switch.

**iii.** The operating mechanism shall provide quick, simple and effective operation. The design shall be such that one man shall be able to operate the isolator without undue effort. The earth switch shall close or open by rotation of lever / hand through 90 degrees. The operating mechanism shall be suitable to hold the main switch or earth s witch in closed or opened position to prevent operation by gravity, wind, short circuit, seismic acceleration, vibration, shock, accidental touching etc.

**iv. Control cabinet**:

The control cabinet of each operating mechanism shall be made out of 12 SWG (2.64 mm thick) sheet steel in the form of plate or casting. Control cabinet shall be provided with hinged door along with pad locking arrangement. Sloping rain hood shall be provided to cover all sides. 15 mm thick neoprene or better type of gaskets shall be provided to ensure highest degree of protection of at least IP55 as per IS 13947. The cabinet shall be suitable for fixing on support structure with adjustment for vertical, horizontal and longitudinal alignment.

**v. Gland plate and glands:**

A removable gland plate with double compression type brass cable glands shall be provided with each operating mechanism for terminating all cables.

**vi. Auxiliary switch**:

1. Each isolator shall be equipped with reliable auxiliary switch with all necessary contacts (with 4 NO & 4 NC contacts) exclusively for purchaser's interlocking, indication and protection scheme. The purchaser shall use this switch either directly or through contact multiplication relays for various protection schemes
2. The auxiliary switch and auxiliary circuits shall be capable of carrying a continuous current of at least 10 Amps.
3. Quick make and break (QMB) type auxiliary switch shall have snap action built in within the switch.
4. The auxiliary switches shall be actuated by a cam or similar arrangement directly mounted on the isolator shaft without any intermediate levers, linkages etc. to ensure fool-proof operation.
5. The auxiliary switch is required for main operating mechanism only.
6. Each Isolator and earthing switches shall be provided with auxiliary switches suitable for 30 V D.C.

7. Mechanically coupled auxiliary contacts shall not slip during smooth operation of the Isolator.
8. The contacts of the auxiliary switches shall be used for remote indication of open or close position in the control panel as well as for electrical interlocking with other equipment.

**Vii) Interlocking**:-

Mechanical interlocking between main switch and earth switch shall be provided.

**4.6 Accessories:**

The accessories to be provided on the isolator shall include but not to be limited to the following:

**4.6.1 Position Indicator:**

A position indicator to show whether the isolator is in ON or OFF position.

**4.6.2 Counter Balance Springs:**

Counter balance springs, cushions etc. shall be provided to prevent impact at the end of travel both on opening and closing of the isolator. The springs shall be made of durable and non-rusting type alloy.

**4.7 Name Plates:**

The isolator shall be provided with a name plate. The name plate shall be weather proof and corrosion-proof. It shall be mounted in such a position that it shall be visible in the position of normal service and installation. It shall carry the following information duly punched or engraved on it.

**4.7.1 Isolators base**:

KPDCL:

Name of manufacturer:
Type, Designation:
Serial number:
Rated voltage:
Rated normal current:
Rated short time current:
(kA rms and duration in sec.)
Rated short time peak current :
(kA p)
Weight:

**4.7.2** Operating mechanism:

KPDCL

Name of manufacturer:
Type, Designation:

Auxiliary contacts quantity and rating:

Terminal blocks quantity and rating.

**4.8 Pad locking device**:

The isolator and earthing switch shall be provided with padlocking device to permit locking of the isolator and earthing switch in both fully open and fully closed positions.

**4.9 Signaling:**

**4.9.1** Signaling of the close position shall not take place unless the movable contact has set in a position in which the rated normal current, the peak withstand current and the short time withstand current can be carried safely.

**4.9.2** Signaling of open position shall not take place unless the movable contact has reached the position such that the clearance between the contacts is at least 80% of the isolating distance.

**4.10 Earthing:**

**4.10.1** Flexible copper braided connections shall be provided between rotating earth blades and the frame which shall have a cross section of at least 200 $mm^2$ and shall be tinned or suitably treated against corrosion.

**4.10.2** The frame of each isolator and earthing switch shall be provided with two reliable earthing terminals for connection to the earthing conductor / flat through clamping screw suitable for carrying specified short time current. Flexible ground connectors shall be provided for connecting operating handle to the earthing flat. The diameter of clamping screw shall be at least 12 mm. The connecting point shall be marked with earth symbol.

**4.11 Design and construction:**

**4.11.1** All live parts shall be designed to have smooth surfaces without any sharp points, edges and other corona producing surfaces so as to eliminate corona at specified extinction voltage or at 1.1 x rated voltage if extinction voltage is not specified.

**4.11.2 Fasteners:**

Nuts, bolts and washers of 5/8" and higher size shall be hot dip galvanized. The bolts used on tapped holes of insulator cap shall be galvanized by centrifuge process to avoid excess deposition of zinc on threads. Nuts, bolts and washers of less than 5/8" size shall be of stainless steel when used on live parts and nickel plated brass in other parts.

**4.11.3 Contacts:**

Contacts shall be made out of hard drawn electrolytic grade copper. Arcing contacts wherever provided shall close first and open last. The contact surface shall be silver plated (10 to 15 microns). Fabrication shall be made with suitable jig to avoid deviations during production. Details of size and shape of contacts, springs, back plate, fixing arrangements, design of contact pressure, life of contacts, limit of temperature rise etc. shall be furnished.

**4.11.4 Terminal pad:**

It shall be made out of electrolytic copper heavily silver plated (25 microns). The terminal pad shall be suitable for connection to long barrel bimetallic Lugs.

**4.11.5 Mounting of contacts:**

Fixed contacts shall be mounted on a block or channel welded to 10 mm thick M.S. plate with holes for fixing on insulators. Slots shall be provided for marginal adjustment of height of contacts. The contacts shall rest on a brass block and with initial tension. Suitable device shall be provided to prevent dashing. Fabrication, welding etc. s hall be done in suitable jig to avoid deviations during production.

**4.11.6 Moving blades:**

**i)** The switch blades forming the moving contacts shall be made from tubular/flat (square or rectangular) section of hard drawn electrolytic copper having outer diameter not less than 38 mm and thickness 3.75 mm. These contacts shall be liberally dimensioned so as to withstand safely the highest short circuit and over voltage that may be encountered during service. The surfaces of the contacts shall be rendered smooth and silver plated. The thickness of silver plating shall not be less than 15 microns. In nut shell, the male and female contact assemblies shall be of robust construction and design of these assemblies shall ensure the same.

**ii)** Electro-dynamic withstands ability during short circuit without any risk of repulsion of contacts.

**iii)** The current density in the copper parts shall be less than 2 Amp/ $mm^2$ and aluminium parts shall be less than 1 Amp/$mm^2$.

**iv)** Thermal withstand ability during short circuit.

**v)** Constant contact pressure even when the live parts of the insulator stacks are subjected to tensile stresses due to linear expansion of connected bus bar of flexible conductors either because of temperature verification or strong winds.

**vi)** Wiping action during closing and opening.

**vii)** Self-alignment assuring closing of the switch without minute adjustment.

**viii)** The earthing switch should be provided with three sets of suitable type of fixed contacts below the fixed contacts assemblies of the main switch on the incoming supply side and the sets of moving contacts having ganged operation. These contacts shall be fabricated out of electrolytic copper with earth switch and designed to withstand current on the line.

**4.11.7 Bearings:**

Rotating insulator shall be mounted on a housing with bearings. The housing s hall be made of gravity die cast metal with smooth surfaces and suitably machined for s eating the bearings. Two nos. of bearings with adequate shaft diameter and di stance between the bearings shall be provided to avoid wobbling during operations. The bearings shall be of at least 50 mm internal diameter. The bearings shall be of reputed make and lubricated for life. All other friction locations shall be provided with suitable bearings or stainless or brass bushes. The bearings bushes, joints, springs etc. shall be so designed that no lubrication shall be required during the service.

**4.11.8 Tandem pipe:**

Tandem pipes shall be of at least 25 mm ID and class B. One tandem pipe shall be used for phase

coupling of double break isolators. Base plate of insulators for connection of tandem pipe shall be made out of one piece of at least 10 mm thick M.S. plate. Bolt and shackle device shall be used to connect tandem pipe to the base plate. Wherever unavoidable sliding clamps may be used. These clamps shall be made out of at least 10 mm thick M.S. flat with four nos. of nuts and bolts. A grub screw shall be provided for securing connection on tandem pipes. The tandem pipes shall be suitable to connect the isolator in any position.

**4.11.9 Down pipe:**

50 mm ID class B pipe shall be provided for operating isolators. The pipe shall be terminated into a suitable swivel or universal type joint between the insulator bottom
bearing and the operating mechanism to take care of marginal angular misalignment at site. All brackets, guides etc. shall be mounted on the base of the isolator. Arrangement of mounting any guide, bracket, part etc. on support structure except the operating mechanism and the base shall not be accepted.

**4.11.10 Base:**

Each phase of isolator shall be provided with a rigid base fabricated from steel sections of adequate size not less than 100x50x6 mm channel. The base shall be suitable for mounting on support structures. Fabrication, welding etc. shall be done by suitable jig, power press, templates to avoid deviations during production.

**4.11.11 CONNECTORS**:

The connectors for 33KV isolator shall be made of Aluminium alloy LM-9 or LM-25 and shall be suitable for Panther/Wolf/Dog ACSR Conductors with horizontal and vertical takeoff arrangement. The details in regard to dimensions, the number of bolts to be provided, material and manufacture shall be furnished for owner approval before manufacturing. The groove provided in the connection should be able to accommodate conductor size mentioned above smoothly. The clamps to be offered should be manufactured by gravity die-casting method only and not by sand casting process. It is necessary that suitable clamps are offered along with the isolator and also it is obligatory to give complete technical particular of clamps along with the drawing, as per details given above and also as per following detail:

a) The terminal connector shall be manufactured and tested as per IS: 5561.

b) All castings shall be free from blow holes, surface blisters, cracks and cavities.

c) All the sharp edges shall be blurred and rounded off.

d) No part of the clamp shall be less than 12 mm thick.

e) All current carrying parts shall be designed and manufactured to have minimum contact resistance.

f) Connectors shall be designed to be corona free in accordance with the requirement of IS: 5561.

g) All nuts and bolts shall be made of stainless steel only. Bimetallic sleeve/liner shall be 2 mm thick. Wherever necessary, bi-metallic strip of standard quality and adequate dimension shall be used.

**5. Assembly:**

The isolator shall be fully assembled. Typical operations shall be carried out on each type of fully assembled isolator to ascertain that all parts fit correctly and function satisfactorily.

**6. Galvanizing and Climate Proofing**:

All ferrous parts shall be hot dip galvanized. Galvanization shall be done after completion of fabrication which s hall be capable to prevent corrosion in view of the severe climatic conditions. Thickness of zinc coating s hall not be less than 610 gm of zinc per Sq m surface. Zinc coating s hall be smooth clean and of uniform thickness and free from defect. Preparation of galvanizing and the galvanizing itself shall not adversely affect the mechanical properties of the coated material. The quality shall be established by tests as per IS2633. Galvanizing of nuts and bolts shall be carried out by centrifugal or suitable process so that the bolts will easily fit into the tapped holes/nuts.

All components shall be given adequate treatment of climate proofing so as to withstand corrosion and severe service conditions.

**7. TESTS:**

All Routine, Acceptance & Type tests shall be carried out by the bidder in accordance with relevant IS/IEC. All Routine and Acceptance tests shall be witnessed by Purchaser's authorized representative. Providing of all facilities to the Purchaser's authorized representative nominated by KPDCL to carry out tests including to and fro air travel, lodging and boarding are to be borne by the supplier. All the components should also be type tested as per the relevant standards.

Following tests shall be necessarily conducted on the Isolator:

**7.1 ROUTINE TESTS:**

a) Power Frequency Voltage Withstand Test (Dry and Wet) on Control and Auxiliary circuit.
b) Voltage control tests on auxiliary circuit
c) Operation Tests
d) Measurement of resistance of main circuit.
e) Mechanical Endurance Test.
f) Galvanizing Measurement.
g) Tinning Thickness Measurement.
h) Insulation Resistance Test.

**7.2 ACCEPTANCE TESTS:**

a) Verify the Insulation level, including withstand tests at Power frequency voltages on Auxiliary equipment.
b) Voltage tests on auxiliary circuit
c) Operation Tests
d) Measurement of resistance of main circuit
e) Visual checks
f) Dimensional checks
g) Alignment check of post insulator check
h) Galvanization test
i) Mechanical operation test

**7.3 Type Tests:**

7.3.1 **Type Tests for Isolator:**

a) Lightning impulse voltage test (Dry)
b) Power frequency voltage withstand test (Dry)
c) Power-frequency voltage withstand test (Wet)
d) Short time withstand current test

e) Peak withstand current test
f) Temperature rise test
g) Measurement of contact resistance
h) Short time withstand current test for Earth Switch
i) Peak withstand current for Earth Switch
j) Satisfactory Operation & Mechanical endurance test

**7.3.2 Types Tests for Insulator:**

a) Visual check
b) Dimensional check
c) Visible discharge test
d) 50% lightning impulse voltage flashover test
e) Lightning impulse voltage withstand test -
f) Power frequency voltage flashover test(dry)
g) Power frequency voltage withstand test(dry)
h) Power frequency voltage flashover test(wet)
i) Power frequency voltage withstand test(wet)
j) Temperature cycle test
k) Mechanical strength test
l) Porosity test
m) Galvanizing test
n) Artificial pollution test by salt fog method

**8.0 TYPE TEST CERTIFICATES:**

Bidder shall submit Type test Certificates for the tests as mentioned above. All the tests should have been conducted during the period not exceeding ten years from the date of opening the bidand at CPRI/ ERDA accredited lab as per the relevant standards.
In the event of any discrepancy in the test reports i.e. any test report not acceptable or any/all typetests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to the Purchaser.

**. 9.0 INSPECTION:**

9.1 The Purchaser's representative shall, at all times, be entitled to have access to the works and all places of manufacture where conductor shall be manufactured and the representative shall have full facilities for unrestricted inspection of the Bidder's works, raw materials and process of manufacture and conducting necessary tests as detailed herein.

9.2 The Bidder shall keep the Purchaser informed in advance of the time of starting and of the progress of manufacture of conductor in its various stages so that arrangements can be made for inspection. The stage and final inspections will be carried by third party agency in presence of Purchaser's representative.

9.3 The contractor will intimate the Purchaser about carrying out of the tests at least 45 days in advance of the scheduled date of tests during which the Purchaser will arrange to depute his representative/s to be present at the time of carrying out of the tests. Six (6) copies of the test reports shall be submitted.

9.4 No material shall be dispatched from its point of manufacture before it has been satisfactorily inspected and tested, Unless the inspection is waived off by the employer in writing. In the latter case also, the material/equipment shall be dispatched only after satisfactory testing for all tests specified herein has been completed and approved by the Purchaser.

9.5 The acceptance of any quantity of material shall in no way relieve the Bidder of any of his responsibilities for meeting all requirements of the specification, and shall not prevent subsequent rejection if such material is later found to be defective.

**10 PRE-DISPATCH INSPECTION:**

The Material shall be subject to inspection by the Third Party Agency in presence of duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the discretion of the Purchaser and the equipment/material, if found unsatisfactory as to workmanship or material, the same is liable to be rejected.

Following documents shall be sent along with material

a) Test reports
b) Material Dispatch Clearance Certificate (MDCC) issued by KPDCL.
c) Invoice in duplicate
d) Packing list
e) Drawings & catalogue
f) Guarantee / Warrantee card
g) Delivery Challan
h) Other Documents (as applicable).

**11.0 INSPECTION AFTER RECEIPT AT STORES:**

The material received at Purchaser's Site/Stores shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection .

**12.0 PACKING:**

The equipment shall be packed in crates suitable for vertical/horizontal transport, as the case may be and suitable to withstand bundling during transport and outdoor storage during transit. The supplier shall be responsible for any damage to the equipment during transit due to improper and inadequate packing. The easily damageable material shall be carefully packed and marked with the appropriate caution symbols. Wherever necessary, proper arrangement for lifting, such as lifting hooks etc., shall be provided. Any material found short inside the packing cases shall be supplied by Supplier without any extra cost.

Each consignment shall be accompanied by a detailed packing, list containing the following information:-

a) Name of the consignee.
b) Details of consignment.
c) Destination.
d) Total weight of consignment.
e) Handling and unpacking instructions.
f) Bill of material indicating contents of each package.

The supplier shall ensure that the packing list and bill of material are approved by the purchaser before dispatch.

**13.0 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. Purchaser shall reserve the sole rights for the type test of a random sample from the lot and in case of any discrepancy or deviation from theType test certificates submitted along with the Bid, the complete Lot shall be rejected.

The Purchaser's representative or its nominated representative shall have free access

to the Bidder'sworks to carry out inspections.

**14.0 MINIMUM TESTING FACILITIES:**

Bidder shall have adequate in house testing facilities for carrying out the following test at the factory.

a. Power frequency voltage test
b. Voltage tests on auxiliary circuit
c. Operation Tests
d. Measurement of resistance of main circuit.
e. Temperature rise test
f. Mechanical endurance test.

**15. CHALLENGE CLAUSE:**

Purchaser reserves the right to have the material, received after the inspection by the authorized inspecting officer, again tested for any parameter(s) from the approved/NABL Accredited testing house/in house technique of the Purchaser. The results if found deviating/unacceptable or in non-compliance with the approved GTP, the lot shall be rejected and bidder shall arrange to replace the rejected LOT within thirty (30) days of such detection at his cost including to and fro transportation.

**ANNEXURE-A**

# GUARANTEED TECHNICAL PARTICULARS OF 33 kV ISOLATORS (800 AMPS) WITH AND WITHOUT EARTHING BLADES

| S. No. | Description | Required Values for 33 KV Isolators with earthing blades | Required Values for 33 kV Isolators without earthing blades |
|---|---|---|---|
| **1** | Name of Manufacturer | | |
| **2** | Manufacturers Type | | |
| **3** | Nominal system voltage kV (rms) | 33 | 33 |
| **4** | Highest system voltage kV (rms) | 36 | 36 |
| **5** | Rated normal current (Amps) | 800 | 800 |
| **6** | Rated Frequency(Hz) | 50 | 50 |
| **7** | System Neutral Earthing | Solidly earthed | Solidly earthed |
| **8** | No of Phases | 3 | 3 |
| **9** | Temperature Rise $^{o}$C | As per relevant IS | As per relevant IS |
| **10** | **Safe duration of overload** | | |
| **i** | 150% of rated current | 5 minutes | 5 minutes |
| **ii** | 120% of rated current | 30 minutes | 30 minutes |
| **11** | Type of Isolator (AB) | Double Break Centre Post Rotating (DBCR) | |
| **12** | Rated short time withstand current of Main Switch and Earthing Blade for 3 sec (kA rms) | 25 | 25 |
| **13** | Rated peak current of Main Switch and `Earthing Blade (kA p) | 63 | 63 |
| **14** | Rated short circuit making current of Earthing Blade (kA p) | 63 | 63 |
| **15** | De-Rating Factor | Unity | Unity |
| **16** | **P.F. Withstand Voltage for one minute (Dry)** | | |
| **i** | Between Poles and Earth (kV rms) | 70 | 70 |
| **ii** | Across Isolating Distance (kV rms) | 80 | 80 |
| **17** | **Dry Lightening Impulse withstand voltage test:** | | |
| **i** | Between Poles and Earth ( kV p) | 170 | 170 |
| **ii** | Across isolating distance ( kV p) | 195 | 195 |

| | | | |
|---|---|---|---|
| **18** | **Material and size of contacts: Main isolator** | | |
| **i** | Fixed contacts | Hard Drawn Electrolytic Copper Flat Flat 25x4 mm-3No | |
| **ii** | Moving contacts | Hard Drawn Electrolytic Copper tube OD :38 mm & 3.75 mm thickness | |
| **19** | Material of Terminal Pad | HDEC Cu Flat | HDEC Cu Flat |
| **20** | Surface treatment (microns) | Silver plating (25) | Silver plating (25) |
| **21** | Size of down pipe (mm) | 50 ID, Class B | 50 ID, Class B |
| **22** | Size and quality of tandem ( mm) | 25 ID (min), Class B | 25 ID(min), Class B |
| **23** | Material & Diameter of Arching Horn (mm) | Galvanized Iron Rod 10 | Galvanized Iron Rod 10 |
| **24** | Type of Mounting | Horizontal | Horizontal |
| **25** | Base channel mounting dimensions (mm) | 100x50x6 | 100x50x6 |
| **26** | Phase to phase spacing ( mm) | 1500 | 1500 |
| **27** | Minimum Clearances (mm) | | |
| **i** | Phase to earth (mm) | 430 | 430 |
| **ii** | Between the rotating post and fixed post on one phase (mm) | 485 | 485 |
| **28** | Type of operating mechanism | Manual | Manual |
| **29** | Type of interlock between main isolator and earth | Mechanical | Mechanical |
| **30** | Material & Type of terminal pad cum connector | Connectors of Aluminium alloy LM-9 or LM-25 suitable for Panther/Wolf/Dog ASCR conductor | Connectors of Aluminium alloy LM-9 or LM-25 suitable for Panther/Wolf/Dog ASCR conductor |
| **31** | Number of NO,NC contacts of Auxiliary Switch | 4 each | 4 each |
| **32** | Continuous Current to be carried by Auxiliary Circuit (A) | At least 10 | At least 10 |
| **33** | Applicable standard | IS-9921 | IS-9921 |
| **34** | **Particulars of Insulator:** | | |
| **i** | Rated Voltage (kV) | 33 | 33 |
| **ii** | Type | Post Insulator | Post Insulator |
| **iii** | Make | | |

| | | | |
|---|---|---|---|
| **iv** | Creepage Distance and<br>Min Height of Stack (mm) | 900<br>508 | 900<br>508 |
| **v** | Color | Brown | Brown |
| **vi** | No. of post insulators<br>33 kV or<br>22 kV (2 units per stack) | <br>9<br>9x2 | <br>9<br>9x2 |
| **vii** | Applicable Standard | As per IS:2544 &5350 (Part III) | As per IS:2544 &5350 (Part III) |
| **35** | Minimum Cross section area of copper braidings for earth switch ($mm^2$) | 200 | 200 |
| **36** | **Special Requirements** :<br>a) Earthing blades shall be capable to discharge the trapped charge of the line.<br>b) Isolator Main switch shall be required to make or break the line charging current when no significant change in voltage occurs across the isolating distance on account of make or break.<br>c) Control Cabinet for isolator shall be made out of 12 SWG (3 mm thick) sheet steel. | | |

**ANNEXURE-B**

**GUARANTEED TECHNICAL PARTICULARS OF 33KV ISOLATORS (800 AMPS) WITH AND WITHOUT EARTHING BLADES**

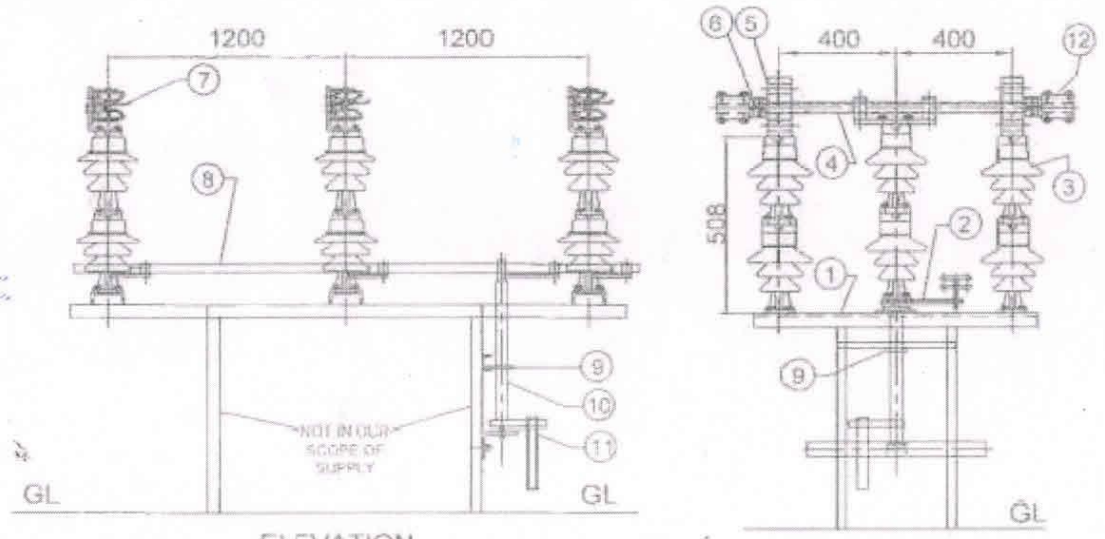
**(To be filled by the Bidder)**

| S. No. | Description | Required Values for 33 KV Isolators with earthing blades | Required Values for 33 kV Isolators without earthing blades |
|---|---|---|---|
| **1** | Name of Manufacturer | | |
| **2** | Manufacturers Type | | |
| **3** | Nominal system voltage kV (rms) | | |
| **4** | Highest system voltage kV (rms) | | |
| **5** | Rated normal current (Amps) | | |
| **6** | Rated Frequency(Hz) | | |
| **7** | System Neutral Earthing | | |
| **8** | No of Phases | | |
| **9** | Temperature Rise $^{o}$C | | |
| **10** | **Safe duration of overload** | | |
| **i** | 150% of rated current | | |
| **ii** | 120% of rated current | | |
| **11** | Type of Isolator (AB) | | |
| **12** | Rated short time withstand current of Main Switch and Earthing Blade for 3 sec (kA rms) | | |
| **13** | Rated peak current of Main Switch and `Earthing Blade (kA p) | | |
| **14** | Rated short circuit making current of Earthing Blade (kA p) | | |
| **15** | De-Rating Factor | | |
| **16** | **P.F. Withstand Voltage for one minute (Dry)** | | |
| **i** | Between Poles and Earth (kV rms) | | |
| **ii** | Across Isolating Distance (kV rms) | | |
| **17** | **Dry Lightening Impulse withstand voltage test:** | | |
| **i** | Between Poles and Earth ( kV p) | | |
| **ii** | Across isolating distance ( kV p) | | |

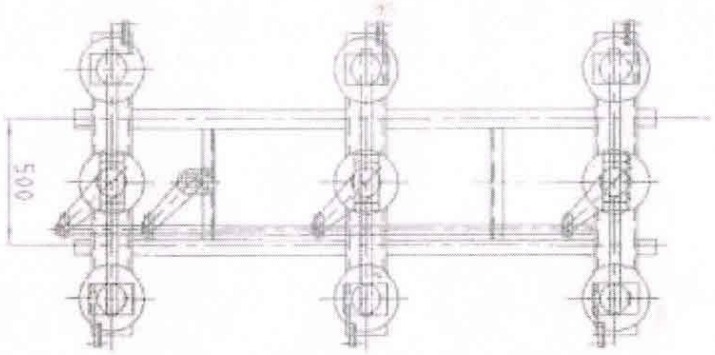
| | | | |
|---|---|---|---|
| **18** | **Material and size of contacts: Main isolator** | | |
| **i** | Fixed contacts | | |
| **ii** | Moving contacts | | |
| **19** | Material of Terminal Pad | | |
| **20** | Surface treatment (microns) | | |
| **21** | Size of down pipe (mm) | | |
| **22** | Size and quality of tandem mm | | |
| **23** | Material & Diameter of Arching Horn ( mm) | | |
| **24** | Type of Mounting | | |
| **25** | Base channel mounting dimensions ( mm) | | |
| **26** | Phase to phase spacing ( mm) | | |
| **27** | Minimum Clearances (mm) | | |
| **i** | Phase to earth (mm) | | |
| **ii** | Between the rotating post and fixed post on one phase (mm) | | |
| **28** | Type of operating mechanism | | |
| **29** | Type of interlock between main isolator and earth | | |
| **30** | Material & Type of terminal pad cum connector | | |
| **31** | Number of NO,NC contacts of Auxiliary Switch | | |
| **32** | Continuous Current to be carried by Auxiliary Circuit (A) | | |
| **33** | Applicable standard | | |
| **34** | **Particulars of Insulator:** | | |
| **i** | Rated Voltage (kV) | | |
| **ii** | Type | | |
| **iii** | Make | | |
| **iv** | Creepage Distance and Min Height of Stack (mm) | | |
| **v** | Color | | |

| | | | |
|---|---|---|---|
| **vi** | No. of post insulators<br>33 kV or<br>22 kV (2 units per stack) | | |
| **vii** | Applicable Standard | | |
| **35** | Minimum Cross section area of copper braidings for earth switch ($mm^2$) | | |
| **36** | **Special Requirements**: | | |

# 33 KV 800A DOUBLE BREAK MANNUAL OPERATED ISOLATOR WITHOUT EARTHING BLADE




ELEVATION




PLAN

| NO | DESCRIPTION | MATERIAL | QTY. |
|---|---|---|---|
| 1. | BASE CHANNEL 100X50X900 | MS GALVANISED | 3 |
| 2. | HOUSING & ROTATING LEVER ASSEMBLY | CI/AL/FIBRE /MS GALV | 3 |
| 3. | POST INSULATOR (2X22 KV PER STACK) | PORCELAIN | 9 STACK |
| 4. | MOVING CONTACT BLADE (38 □ D X 32 I D) | COPPER | 6 |
| 5. | FIXED CONTACT ASSEMBLY | COPPER MS | 6 |
| 6. | MALE ARCING HORN 10 Ø | MS GI | 6 |
| 7. | FEMALE ARCING HORN 10 Ø | MS GI | 6 |
| 8. | PHASE COUPLING PIPE | 25 DIA GI PIPE | 1 |
| 9. | PIPEGUIDE FOR ISOLATOR | MS GALVANISED | 1 |
| 10. | OPERATING PIPE | 38 DIA GI PIPE | 1 |
| 11. | OPERATING MECHANISM ASSEMBLY FOR ISOLATOR | MS GI | 1 |
| 12. | TERMINAL CONNECTOR ACSR WOLF | AL | 6 PAIRS |

Notes:

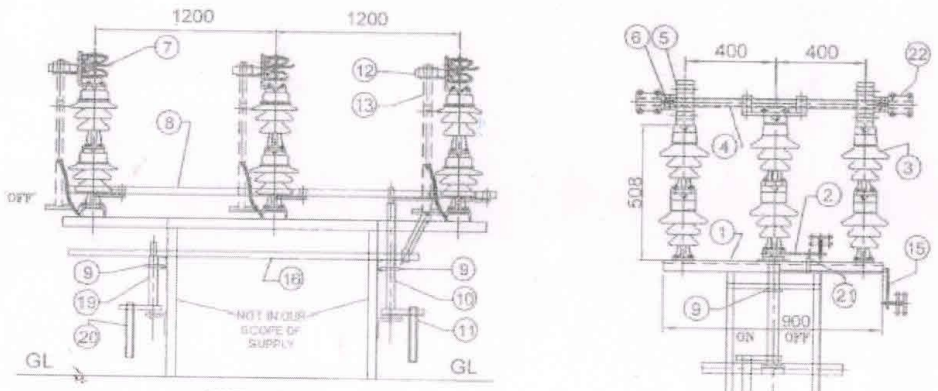
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. MANUFACTURING TOLERANCE ±5%
3. ALL FERROUS PARTS SHALL BE HOT DIP GALVANISED
4. CONTACT SERVICES OF CURRENT CARRYING PARTS SHALL BE TINNED/SILVER PLATED.
5. INCASE OF ANY DISCREPANCY, PLEASE REPORT CE P&P WING KPDCL
6. THESE ARE TENDER DRAWINGS SUBJECT TO MODIFICATION BY THE OWNER AS PER FIELD REQUIREMENTS. CONTRACTOR HAS TO SUBMIT HIS DRAWINGS AFTER THE AWARD OF CONTRACT FOR APPROVAL OF THE OWNER.

P&P Wing,
Kashmir Power Distribution Corporation Ltd.

| | Name | Signature | Date |
|---|---|---|---|
| DRAWN BY | Er. Javid (AEE) | | 18/01 |
| CHECKED BY | Er. Manzoor (EE) | | 18/01 |
| CHECKED BY | Er. Aaqulb (SE) | | 18/01 |
| APPROVED BY | Er. Muzafar (CE) | | 18/01 |

| | | | |
|---|---|---|---|
| 33 KV 800A DOUBLE BREAK MANNUAL OPERATED ISOLATOR WITHOUT EARTHING BLADE | | Scale | NTS |
| | | Rev | 00 |
| Drawing no | CE/P&P/DRG./2023/33kVDBI/001 | Sheet 1 of 5 | |
| Date of Issue | 20-01-2023 | | |

# GENERAL ARRANGEMENT FOR 33 KV 800A DOUBLE BREAK MANNUAL OPERATED ISOLATOR WITH EARTHING SWITCH

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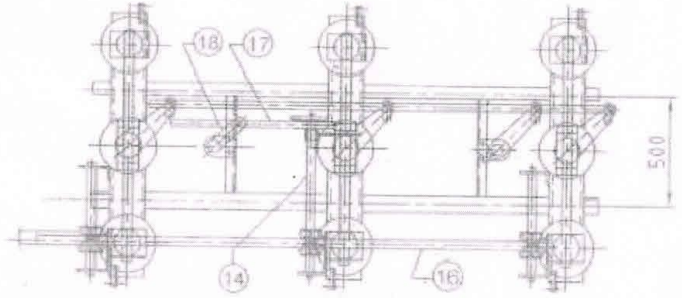



PLAN

| NO | DESCRIPTION | MATERIAL | QTY. |
|---|---|---|---|
| 1. | BASE CHANNEL 100X50X900 | MS GALVANISED | 3 |
| 2. | HOUSING & ROTATING LEVER ASSEMBLY | CI/AL/FIBRE /MS GALV | 3 |
| 3. | POST INSULATOR (2X22 KV PER STACK) | PORCELAIN | 9 STACK |
| 4. | MOVING CONTACT BLADE (38 O D X 32 I D) | COPPER | 3 |
| 5. | FIXED CONTACT ASSEMBLY | COPPER MS | 6 |
| 6. | MALE ARCING HORN 10 mm dia | MS GI | 6 |
| 7. | FEMALE ARCING HORN 10 mm dia | MS GI | 6 |
| 8. | PHASE COUPLING PIPE | 25 DIA GI PIPE | 1 |
| 9. | PIPE GUIDE FOR ISOLATOR AND EARTH SWITCH | MS GALVANISED | 2 |
| 10. | OPERATING PIPE | 38 DIA GI PIPE | 1 |
| 11. | OPERATING MECHANISM ASSEMBLY FOR ISOLATOR | MS GI | 1 |
| 12. | EARTH FIXED CONTACT ASSEMBLY | COPPER MS | 3 |
| 13 | EARTH MALE CONTACTBLADE ASSEMBLY | COPPER MS | 3 |
| 14 | PHASE COUPLING SHAFT | MS GALVANISED | 3 |
| 15 | PHASE COUPLING LEVER | MS GALVANISED | 3 |
| 16 | PHASE COUPLNG PIPE FOR EARTH SWITCH | 25 DIA GI PIPE | 1 |
| 17 | LINK PIPE FOR EARTH SWITCH | 25 DIA GI PIPE | 1 |
| 18 | OPERATING LEVER FOR EARTH SWITCH | MS GALVANISED | 1 |
| 19 | OPERATING PIPE FOR EARTH SWITCH | 38 DIA GI PIPE | 1 |
| 20 | OPERATING MECHANISM FOR EARTH SWITCH | MS GI | 1 |
| 21 | INTERLOCKING ROD | MS GALVANISED | 1 |
| 22 | TERMINAL CONNECTOR ACSR WOLF | AL | 6 PAIRS |

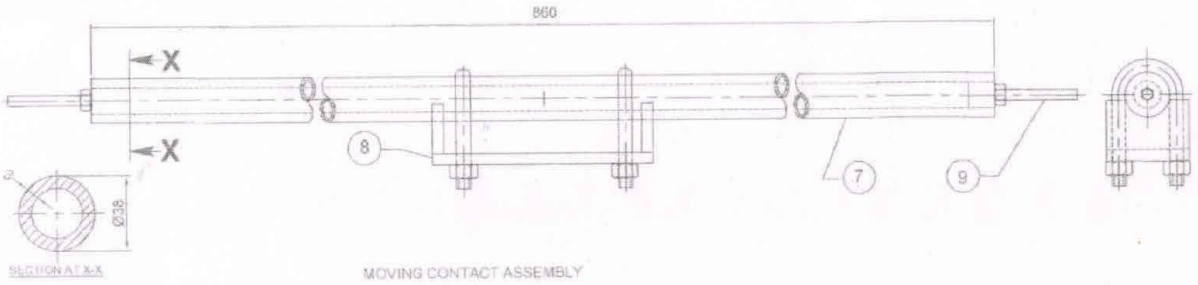
Notes:
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. MANUFACTURING TOLERANCE ±5%
3. ALL FERROUS PARTS SHALL BE HOT DIP GALVANISED
4. CONTACT SERVICES OF CURRENT CARRYING PARTS SHALL BE TINNED/SILVER PLATED.
5. INCASE OF ANY DISCREPANCY, PLEASE REPORT CE P&P WING KPDCL
6. THESE ARE TENDER DRAWINGS SUBJECT TO MODIFICATION BY THE OWNER AS PER FIELD REQUIREMENTS. CONTRACTOR HAS TO SUBMIT HIS DRAWINGS AFTER THE AWARD OF CONTRACT FOR APPROVAL OF THE OWNER.

P&P Wing,
Kashmir Power Distribution Corporation Ltd.

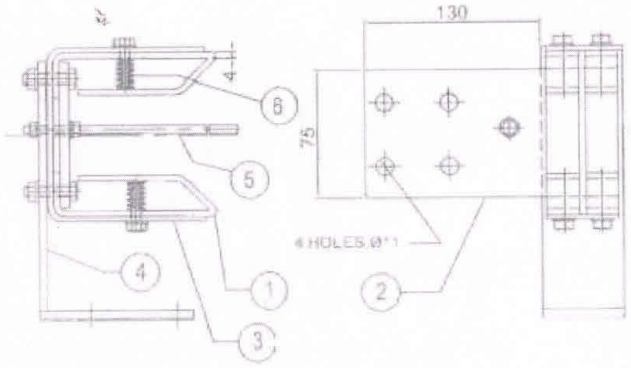
| | Name | Signature | Date |
|---|---|---|---|
| DRAWN BY | Er. Javid (AEE) | | 18/01 |
| CHECKED BY | Er. Manzoor (EE) | | 18/01 |
| CHECKED BY | Er. Aaqulb (SE) | | 18/01 |
| APPROVED BY | Er. Muzafar (CE) | | 18/01 |

| | | | |
|---|---|---|---|
| GENERAL ARRANGEMENT FOR 33 KV 800A DOUBLE BREAK MANNUAL OPERATED ISOLATOR WITH EARTHING SWITCH | | Scale | NTS |
| | | Rev | 00 |
| Drawing no | CE/P&P/DRG./2023/33kVDBI/001 | Sheet 2 of 5 | |
| Date of issue | 20-01-2023 | | |

# FIXED CONTACT AND MOVING CONTACT ASSEMBLY FOR 33KV 800 A DOUBLE BREAK ISOLATOR




MOVING CONTACT ASSEMBLY




FIXED CONTACT ASSEMBLY

| NO | DESCRIPTION | MATERIAL |
|---|---|---|
| 1. | FIXED FEMALE CONTACT | COPPER (25X4) X 2 PAIR |
| 2. | TERMINAL PAD | ALUMINIUM 75X10 |
| 3. | CONTACT GUARD | MS GALVANISED |
| 4. | CONTACT BASE | MS GALVANISED |
| 5. | FEMALE ARCING HORN | MS GALV 10 Ø |
| 6. | COIL SPRING | SS |
| 7. | MOVING CONTACT BLADE | COPPER TUBE 38 ODX32IDX860 LONG |
| 8. | MOVING CONTACT BASE | MS GALVANISED |
| 9. | MALE ARCING HORN | MS GALVANISED |

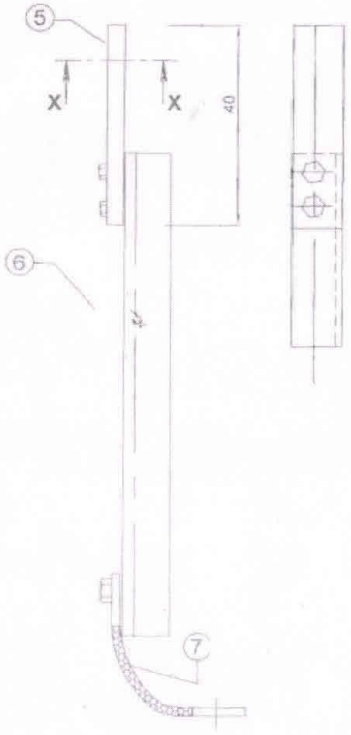
Notes:
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. MANUFACTURING TOLERANCE ±5%
3. ALL FERROUS PARTS SHALL BE HOT DIP GALVANISED
4. CONTACT SERVICES OF CURRENT CARRYING PARTS SHALL BE TINNED/SILVER PLATED.
5. INCASE OF ANY DISCREPANCY, PLEASE REPORT CE P&P WING KPDCL
6. THESE ARE TENDER DRAWINGS SUBJECT TO MODIFICATION BY THE OWNER AS PER FIELD REQUIREMENTS. CONTRACTOR HAS TO SUBMIT HIS DRAWINGS AFTER THE AWARD OF CONTRACT FOR APPROVAL OF THE OWNER.

P&P Wing,
Kashmir Power Distribution Corporation Ltd.

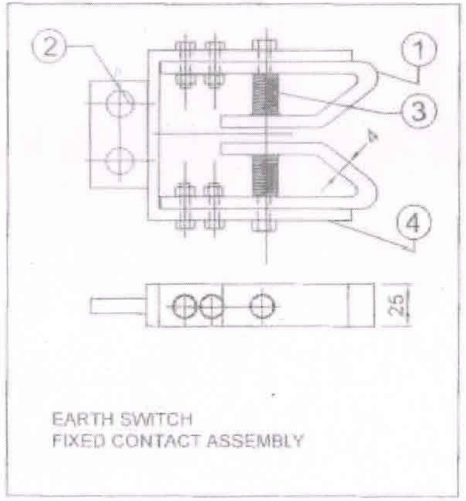
| | Name | Signature | Date |
|---|---|---|---|
| DRAWN BY | Er. Javid (AEE) | | 18/01 |
| CHECKED BY | Er. Manzoor (EE) | | 18/01 |
| CHECKED BY | Er. Aaquib (SE) | | 18/01 |
| APPROVED BY | Er. Muzafar (CE) | | 18/01 |

| | | | |
|---|---|---|---|
| FIXED CONTACT AND MOVING CONTACT ASSEMBLY FOR 33 KV 800A DOUBLE BREAK ISOLATOR | | Scale | NTS |
| | | Rev | 00 |
| Drawing no | CE/P&P/DRG./2023/33kVDBI/001 | Sheet 3 of 5 | |
| Date of Issue | 20-01-2023 | | |

# FIXED CONTACT AND MOVING CONTACT ASSEMBLY OF EARTH SWITCH FOR 33 KV 800 A DOUBLE BREAK ISOLATOR




EARTH SWITCH
MOVING CONTACT ASSEMBLY



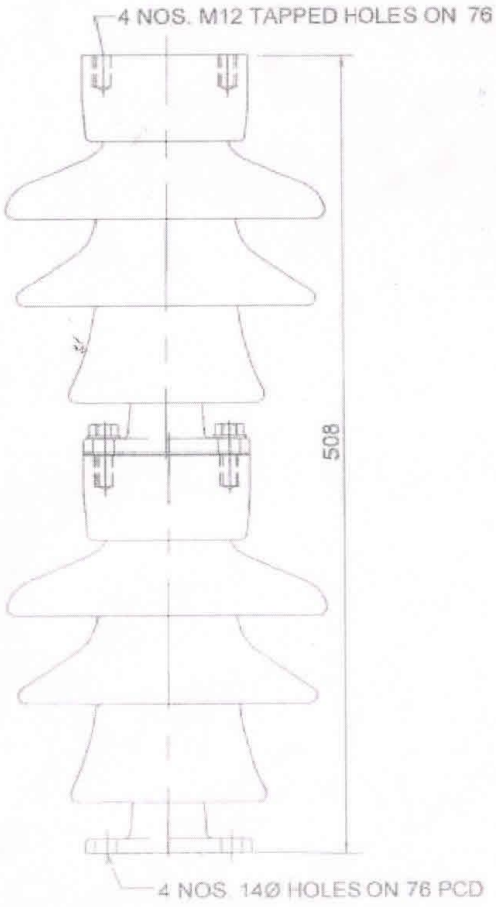

EARTH SWITCH
FIXED CONTACT ASSEMBLY

| NO | DESCRIPTION | MATERIAL |
|---|---|---|
| 1. | FIXED FEMALE CONTACT | COPPER (25X4) X 2 PAIR |
| 2. | TERMINAL PAD | ALUMINIUM 75X10 |
| 3. | CONTACT GUARD | MS GALVANISED |
| 4. | CONTACT BASE | MS GALVANISED |
| 5. | FEMALE ARCING HORN | MS GALV 10 Ø |
| 6. | COIL SPRING | SS |
| 7. | MOVING CONTACT BLADE | COPPER TUBE 38 ODX32IDX860 LONG |
| 8. | MOVING CONTACT BASE | MS GALVANISED |
| 9. | MALE ARCING HORN | MS GALVANISED |

Notes:
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. MANUFACTURING TOLERANCE ±5%
3. ALL FERROUS PARTS SHALL BE HOT DIP GALVANISED
4. CONTACT SERVICES OF CURRENT CARRYING PARTS SHALL BE TINNED/SILVER PLATED.
5. INCASE OF ANY DISCREPANCY, PLEASE REPORT CE P&P WING KPDCL
6. THESE ARE TENDER DRAWINGS SUBJECT TO MODIFICATION BY THE OWNER AS PER FIELD REQUIREMENTS. CONTRACTOR HAS TO SUBMIT HIS DRAWINGS AFTER THE AWARD OF CONTRACT FOR APPROVAL OF THE OWNER.

| P&P Wing, Kashmir Power Distribution Corporation Ltd. | | Name | Signature | Date |
|---|---|---|---|---|
| | DRAWN BY | Er. Javid (AEE) | | 08/01 |
| | CHECKED BY | Er. Manzoor (EE) | | 18/01 |
| | CHECKED BY | Er. Aaquib (SE) | | 18/01 |
| | APPROVED BY | Er. Muzafar (CE) | | 18/01 |
| FIXED CONTACT AND MOVING CONTACT ASSEMBLY OF EARTH SWITCH FOR 33 KV 800A DOUBLE BREAK ISOLATOR | | | Scale | NTS |
| | | | Rev | 00 |
| Drawing no | CE/P&P/DRG./2023/33kVDBI/001 | | Sheet 4 of 5 | |
| Date of Issue | | 20-01-2023 | | |

# POST INSULATOR STACK FOR 33 KV 800 A DOUBLE BREAK MANUAL OPERATED ISOLATOR




| TECHNICAL PARAMETERS | |
|---|---|
| CONFIRMING STANDARD | IS:2544 |
| NOMINAL SYSTEM VOLATAGE | 33 KV |
| HIGHEST SYSTEM VOLATAGE | 36 KV |
| IMPULSE WITHSTAND VOLTAGE | 170 KV |
| WET PF ONE MINUTE WITHSTAND VOLTAGE | 75 KV |
| HEIGHT OF STACK | 508 mm (254 mmX2) |
| MINIMUM CREEPAGE DISTANCE | 860 mm |
| TENSILE STRENGTH | 30 KN |
| BENDING STRENGTH | 4.5 KN |

Notes:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. MANUFACTURING TOLERANCE ±5%
3. ALL FERROUS PARTS SHALL BE HOT DIP GALVANISED
4. CONTACT SERVICES OF CURRENT CARRYING PARTS SHALL BE TINNED/SILVER PLATED.
5. INCASE OF ANY DISCREPANCY, PLEASE REPORT CE P&P WING KPDCL
6. THESE ARE TENDER DRAWINGS SUBJECT TO MODIFICATION BY THE OWNER AS PER FIELD REQUIREMENTS. CONTRACTOR HAS TO SUBMIT HIS DRAWINGS AFTER THE AWARD OF CONTRACT FOR APPROVAL OF THE OWNER.

| P&P Wing, Kashmir Power Distribution Corporation Ltd. | | Name | Signature | Date |
|---|---|---|---|---|
| | CHECKED BY | Er. Javid (AEE) | | 18/01 |
| | CHECKED BY | Er. Manzoor (EE) | | 18/01 |
| | APPROVED BY | Er. Aaqulb (SE) | | 18/01 |
| | APPROVED BY | Er. Muzafar (CE) | | 18/01 |
| POST INSULATOR STACK FOR 33 KV 800 A DOUBLE BREAK MANUAL OPERATED ISOLATOR | | | Scale | NTS |
| | | | Rev | 00 |
| Drawing no | CE/P&P/DRG./2023/33kVDBI/001 | | Sheet 5 of 5 | |
| Date of Issue | | 20-01-2023 | | |