Maharashtra State Electricity Distribution Company Limited

SPECIFICATION NO. MMC: MSC/LTDB/SMC/Rural/2018/04

TECHNICAL SPECIFICATION

FOR

63, 100 kVA SMC LT DISTRIBUTION BOX with Kitkat for Rural Areas

FOR

DISTRIBUTION SYSTEM

IN

MSEDCL

I N D E X

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY

Technical Specifications for
63,100 KVA SMC L.T. DISTRIBUTION BOX with KITKAT.
SPECIFICATION NO. MMC: MSC/LTDB/ SMC/Rural/2018/04

1. SCOPE:

Specification covers the design, manufacture, testing at works and supply of Distribution Boxes made out of thermosetting plastic i.e **glass reinforced polyester sheet moulding compound (S_3 grade) conforming IS : 13410-1992** for controlling the L.T. feeders from the L.T. side of Distribution Transformers. The system shall be A.C. 3 phase, 4 wires, 433 V, 50 HZ with effectively grounded neutral.

2. SERVICE CONDITIONS:

The equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

2.1	Maximum ambient temperature (Degree C)	50
2.2	Maximum temperature in shade (Degree C)	45
2.3	Minimum Temperature (Degree C)	3.5
2.4	Relative Humidity (percent)	10 to 95
2.5	Maximum Annual rain fall (mm)	1450
2.6	Maximum wind pressure (kg/sq.m)	150
2.7	Maximum altitude above mean sea level (Meter)	1000
2.8	Isoceranic level (days per year)	50
2.9	Siesmic level (Horizontal Acceleration)	0.3 g

Moderately hot and humid tropical climate conductive to rust and fungus growth ….

3. SYSTEM DETAILS:

Distribution Boxes are meant for control and protection of Distribution Transformers with relevant parameters as under:-

S. N.	Particulars	Details	
1.	KVA rating	63 KVA	100 KVA
2.	Voltage	433 V, 3 Ph, (3x 250 V)	
3.	Frequency	50 HZ	
4.	Phases	3 phase, solidly grounded neutral	
5.	Approximate full load current of transformer	84 A	133 A
6.	No. of Outgoing circuits	2 nos	

4. Applicable Standards:

a. IS :13947/1993 (Part 3) for Isolator (Switch Disconnector)
b. IS: 2086/1993(amended upto date) for L.T. KITKATs.
c. IS: 8623/1993 (amended upto date) for enclosure Box & for degree of protection provided by enclosures of electrical equipments.
d. IS: 4237/1982 IS: 8623/1993 (amended upto date) – for general requirement of L.T. switchgears.
e. IS 13703/1993 (Part I & II amended upto date) for HRC Fuse Base and HRC Fuse Link.
f. IS: 13410: 1992 - Sheet Moulding compound (SMC) Enclosure.
g. IS: 13411: 1992 - Glass Reinforced Polyester Dough Moulding Compounds.

5. MANUFACTURE/CONSTRUCTION OF BOXES:

a. Distribution Boxes shall have Isolator (Switch Disconnector) and HRC fuse base with HRC fuse links on incoming circuit and single pole MCCBs & Link Disconnector on outgoing circuits with necessary interconnecting Bus Bars/ Links.

6. Standard General Arrangement of Isolators, HRC fuse base with HRC fuse links, MCCBs, Link Disconnector, Neutral Links, Bus Bars, connecting links, Cable termination arrangement etc inside the Box is shown in the enclosed drawing No. Dist /DB/06 for 63/100 KVA.

7. INCOMING CIRCUIT –

6.1 Isolator (Switch Disconnector) -

Each distribution box shall have one triple pole Isolator (Switch Disconnector), conforming to relevant IS and MSEDCL specification. The bidder shall indicate makes and types of offered isolator in GTP. The **successful** bidder shall submit Type Test Report of the Isolator as specified in Cl. No. 12.3 (II) for approval of CE (MMC) before commencement of supply. The Switch disconnector to be provided in the Distribution Box will be as per MSEDCL's approval given in the detailed purchase order .

The Isolator should be front operated triple pole type. The casing of Isolator shall be of non-tracking, heat resistant insulating material of Dough Moulding Compound (DMC) of D_3 Grade as per IS:13411/1992, no separate enclosure is required. Isolator should withstand the breaking capacity of 80 kA. To extinguish the arc immediately in isolators, in each phase archutes with minimum 12 strips shall be provided.

The isolator shall be robust in construction and easy for operation. The handle of the isolator should be detachable easily for security purpose while working on L.T. circuits.

The characteristics of Isolator shall be as follows:

S. N	Characteristics	Rating	
		63 KVA	100 KVA
1.	Basic uninterrupted duty	250 A	
2.	Mechanism	Manual quick make quick break	
3.	Standard applicable	IS : 13947 /1993 amended upto date	
4.	Utilization category	AC –23 A	
5.	Mechanical Endurance	As per IS 13497 /1993 amended upto date	

6.	Electrical Endurance	As per IS: 13947 /1993 amended upto date
7.	Rated Duty	Uninterrupted
8	Making /Breaking capacity	Not less than requirement of AC –23 A category
9.	Two seconds rating	4 KA
10.	Rated insulation voltage	660 V

The terminal connector strips of the isolator shall be projecting out of isolator of 80 mm (minimum) in length on cable connection side and 60mm (minimum) on HRC fuse base side as shown in the drawings. In 63 /100 KVA distribution box, the cross section of the strips on outside of the isolator shall be provided as below:

63/100 KVA - 25X5 mm.

The material of isolator strips shall be EC grade tin-plated copper. The terminal strips shall be continuous from the point of contact separation inside the Isolator.

6.2 HRC FUSE :

HRC Fuse of suitable capacity shall be provided between outgoing terminal of Switch Disconnector (Isolator) and incoming Busbar as shown in the Drg.No. Dist/DB/08 to facilitate electrical breaking of the circuit. Each Distribution Box shall have 3 Nos. of HRC Fuse Base with HRC Fuse Links (Blade type Contacts).

The bidder shall indicate in GTP, the make, type and capacity of HRC Fuse Base and Fuse Links offered.

6.2.1 HRC FUSE BASE

The base of the HRC Fuse shall be of non-tracking, heat resistant insulating material of Dough Moulding Compound (DMC) of D_3 Grade as per IS:13411/1992. The Fuse Base shall be sturdy in construction.

The extension terminal connector strips of the Fuse Base shall be projecting out on both sides, made with two pieces (half portion of the terminal contact and extension strip should be continuous in one piece), as shown in the drawing. The dimensions shall be as shown in the drawing. The material for both strips shall be Silver Plated EC Grade copper. HRC Fuse Base & fuse link should have withstand the breaking capacity of 80 kA.

6.2.2 HRC FUSE LINK

The HRC Fuse Links shall be sturdy in construction of "Din Type". Breaking Capacity shall be 80 kA. For fault indication red pop up indicator should come out instantly on fusing. Manufacturer's name, current rating, breaking capacity and type shall be marked on HRC fuse link.

HRC Fuse link Current rating for 63/100 KVA distribution box shall be as follows:

63 KVA - 100 A

100 KVA - 160 A

The **successful** bidder shall submit Type Test Report of the HRC fuse base and HRC fuse link as specified in Cl. No. 12.3 (III) for approval of CE(MMC) before commencement of supply. The HRC fuse base with HRC fuse links to be provided in the Distribution Box will be as per MSEDCL's approval given in the detailed purchase order.

7. OUTGOING

7.1 KITKAT Fuses:

7.1.1 GENERAL REQUIREMENTS :

In the outgoing circuit, 6 nos of kitkats of rating 63 A for 63 KVA Box and 100 A for 100 KVA in each distribution box shall be provided. The bidder shall be have to indicate makes of offered Kitkats in GTP. The successful bidder shall submit type test report of the Kitkat as specified in Cl.No.12.3 (IV) for approval of CE (MMC) before commencement of supply. The Kitkats to be provided in the distribution box will be as per MSEDCL's specification.

Rewirable fuse unit:

The rewirable fuse unit and Fuse Base shall be made of non-tracking, heat resistant insulating material of Dough Moulding Compound (DMC) of D3 Grade as per IS:13411/1992. The Fuse Base and rewirable fuse unit shall be sturdy in construction

The design and dimensions of Fuse Base and rewirable fuse unit shall be in accordance with the drawing enclosed with this specification. i.e. MSEDCL's design.
Breaking Capacity of DMC part shall be 80 kA.

c. The asbestos paper to be provided in the fuse base shall be fire proof and insulating. The thickness of asbestos paper shall be as per manufacturer design.

d. The insulating compound shall conform to the requirements of B.S.1858/57or equivalent I.S.

7.1.2 RATED CURRENT : The rated current shall be 63/100 Amps.

7.1.3. CONTACTS:

A) For 100 Amp Kitkats - Tinned brass contacts of the fuse base, fuse carrier and Continuous extension terminal strip shall be as per drawing No. CE/Dist/MM-II/MSEDCL/KITKAT/100/02/rev 02 attached with specification.

B) For 63Amp Kitkats - Tinned brass contacts of the fuse base, fuse carrier and Continuous extension terminal strip/block shall be as per drawing No. CE/Dist/MM-II/MSEDCL/KITKAT/100/02/rev 02 attached with specification..

Current carrying pointed screws and washers shall be of tinned brass, while the Screws / washers not carrying current shall be of MS Electro galvanized. Brass (tinned) used for contacts of KITKATs shall conform to IS as stated below :

It shall conform to grade DCB-I/DCB-II as per IS 1264/1981 (amended up to date)/IS 410 of 1977 (amended up to date). However, the metal composition as given below will be acceptable.

Copper %		Tin, Lead, Nickel, Iron, Aluminum, Manganese and other Impurities put together %	Zinc %
Min.	Max.	Max.	
58.00	63.00	8.6	Remainder

7.1.4 MARKING :

On top of the every Fuse carrier following minimum information. shall be clearly and indelibly marked.

a. Rated current.

b. Rated Voltage.

c. Manufacturer’s name or trade mark.

d. The words `M.S.E.D.C.L .

And every Fuse Base the words ‘ MSEDCL’ shall be clearly and indelibly marked as shown in the Kikat drawing.

7.1.5 TOLERANCES TO THE DIMENSION OF REWIRABLE FUSES :

1. Dimensional tolerances for DMC parts shall be + 0.3mm + 0.01 x length

2. Dimensional Tolerance for all contacts/current carrying parts shall be:

i. Upto and including 20 = + 0.5

ii. Above 20 = +1

iii. For thickness = Negative tolerance is not permissible.

3. Extension Terminal strips:

The terminal connector strips of the KITKAT shall be projecting out of the KITKAT for minimum length of 65 mm on Link Disconnector side and 65 mm on busbar side as shown in the drawings. The cross section of the strips shall be 25 X 4 mm on outside of the KITKAT and the length and cross section inside the KITKAT shall be provided as per manufacturer design. The material shall be EC grade tined brass.

4. Terminal block:

Busbar droppers on Kitkat side shall be rounded off suitably to fix at terminal block of Kitkat and link disconnectors strips shall be rounded off on Kitkat side to fit at terminal block of Kitkat. The design shall be such that the current carrying capacity should be remain as per capacity of Kitkat.

7.2 LINK DISCONNECTOR :

Link Disconnector of 200 A capacity shall be provided between outgoing terminal of KITKAT & cable connection as shown in the Drg.No.Dist/DB/09 to facilitate mechanical breaking (manual isolation) of the circuit. 63 /100 kVA Distribution Box shall have 6 Nos. of link Disconnectors.

The bidder has to indicate the makes and types of Link Disconnector offered in GTP. The **successful** bidder shall submit Type Test Report of Link Disconnector as specified in Cl. No. 12.3 (V) for approval of CE (MMC) before commencement of supply. The link Disconnectors to be provided in the Distribution Box will be as per MSEDCL's approval given in the detailed purchase order.

The base of the Link Disconnector shall be of non-tracking, heat resistant insulating material of Dough Moulding Compound (DMC) of D_3 Grade as per IS:13411/1992. The Link Disconnector shall be sturdy in construction and easy in operation.

The link of Link Disconnector shall be of Tin-plated E.C. grade copper. The construction of the Link Disconnector shall be such that it shall be hinged type on cable connection end and disconnectable at the MCCB end. The disconnection will be with the help of special handle/puller. One handle/puller shall be supplied along with each Distribution Box. The terminal connector strips of the Link Disconnector of 25 x 5 mm cross section, shall be projecting out of Link disconnector for minimum length of 80 mm. on cable connection side and 40 mm on MCCB outgoing side (as shown in the Drg DIST/DB/09). The cross section of knife edge link shall be 20 x 4 mm. The material for both the strips and links shall be tin-plated E.C. grade copper. The size

of bimetallic lugs hole & the hole on the disconnectors strip on cable side should be same. The base of Link Disconnectors for 63 /100 kVA distribution box shall be rated as follows :

63 and 100 KVA - 150 A .

8 BUSBARS AND CONNECTIONS:

As shown in Drg. DIST/DB/03 & DIST/DB/07, the Incomer feeder should be on right side of the distribution box and all outgoing feeders will be on left side of the distribution box, with phase sequence RYB to be maintained. The phase busbars and feeder droppers from busbars shall be of electric grade aluminum. Incomer dropper of 25 x 8 mm cross section for 63 /100 KVA box be provided. The phase busbar strips shall be of size 25X8 mm for 63/100 KVA box. Feeder droppers shall be 25X8 mm. All busbars and droppers shall be properly drilled and deburred. Each busbars shall be of one single strip without any joint. At the joint with copper part the aluminum end piece shall be bimetallic with sufficient thickness.

Busbars shall be provided with durable PVC insulating sleeves of standard colour code for different phases. Corrugated/Spring & Plain washers shall be used for Nut-Bolt connections.

Busbars shall be mounted on suitable size support insulators which should be tightened from inside. i.e. once fitted , should not be able to removed.
Minimum clearances, wherever shown, shall be as per General Arrangement Drawing enclosed with this specifications. Other clearances shall be as per requirement of IS: 4237/1982 amended upto date.

9 ENCLOSURE:

9.1 The enclosure shall be made up of thermosetting plastic i.e. glass reinforced polyester sheet moulding compound (SMC) (S_3 grade) conforming IS: 13410-1992 SMC material of 3 mm thickness.

9.2 The manufacturing process of Box shall be moulding type..

9.3 SMC distribution boxes, the rounding of corners and slope on Top shall be as shown in the drawing. No joints in the body of the Box are permitted

9.4 The enclosure shall be dust proof, rust proof, vermin and water proof, ultra violet stabilized and flame retardant property.

9.5 The general clear dimensions of 63 / 100 KVA Distribution Box shall be 1000 x 1010 x 325 (LXHXW)mm without considering color of box. The center height of distribution box on front side shall be 1010 mm and right & left side of the box shall be 995 mm without considering collar of the box. (Drg No. Dist/DB/01/B)

9.6 The Colour of inside & outside of the SMC distribution box shall be **Brown for 63 KVA box** and **Dark Admiralty Gray for 100 KVA box**.

9.7 The Base and doors of enclosure shall be individually in one piece without any welding, except for fixing of the accessories like hinges, clamps, mounting clamps, bolts etc.

A. 63/100 kVA boxes shall have one door as shown in the drawing fixed on right side of the box with four hinges provided from inside of box.

Base and doors shall have flange / collars as shown in drawing. Collar of Base and doors shall overlap by 10mm. Rubber gasket of suitable size shall be provided in between base and doors, such that it provides proper sealing between the door and base of box to avoid penetration of dust & ingress of water. Degree of protection shall be **IP- 33** as per IS-

8623/1993 (amended up to date). Rubber Gasket shall be fixed with suitable adhesive. Four hinges on each side shall be provided from inside of the box to fix the doors. Hinges shall be minimum 50 mm in length & made from 2mm thick sheet. Hinge stainless steel pin diameter shall be 4mm. The hinges shall not be visible from outside.

9.8 The KITKATs, Link Disconnector, Isolator and HRC fuse base with HRC fuse link shall be housed inside the enclosure. Isolator operating handle shall be accessible only after opening of the doors.

9.9 Four set of Louvers (two sets on each side) of suitable size shall be provided as shown in drawing. The louvers shall be provided such that heat dissipation is proper. The perforated sheet of 20 SWG with 2.5 mm holes shall be welded from inside of the louvers.

9.10 Mounting of components inside the enclosure shall allow free air circulation keeping the clearances as per drawings No. Dist/DB/02 & Dist/DB/05 attached with specification.

9.11 Locking Arrangement to the Box:

The locking arrangements to boxes shall be such that the door (s) shall be automatically closed without applying external force. The door should be front operated with a common handle provided outside the door. In addition to this, C&R panel door locks shall be provided to the door at top & bottom. Key way shall be provided on the door for operating the lock from out side. Key way shall be provided with cover. A nylon washer shall be provided between the handle and door to avoid penetration of water.

9.12 A suitable cable termination arrangement with support insulators shall be provided on Isolators and Link Disconnectors. The bimetallic lugs of adequate size, as per enclosed specification & drawing, shall be provided. Clearances, Creepages and convenience in making connections shall be ensured.

9.13 Electric grade aluminum neutral busbar of 300 x 30 x 8 mm for 63/100 KVA Box capable of carrying for full load current. Neutral Busbar shall be isolated with respect to body. The bimetallic lugs of adequate size, as per enclosed specification & drawing, shall be provided. Neutral Busbar shall be as shown in the drawing attached with the specifications.

9.14 Two galvanized earthing Bolts of M12 x 50 mm size shall be fixed from inside and projecting outside of the box as shown in the drawing. There should be no powder coating on the earthing bolts. Two Nuts with washers shall be provided on each bolt.

9.15 Three bottom plates of the size 125mm x 125mm fixed with four screws from inside shall be provided for incoming and outgoing cables. Bottom plates shall be provided with suitable holes and rubber glands for the cables. Rubber glands shall be made such that internal diameter of glands provided for cables should be closed with the rubber film of minimum 1mm thickness. Cable will go through the glands by cutting the film of the glands. Bottom plates shall also be provided with cable clamps as shown in drawing.

9.16 Necessary fixing arrangement shall be provided at the back of the enclosure to ensure proper fixing on double pole structure by means of suitable clamps at 4 places.

9.17 Danger Board as shown in drawing no.Dist/DB/14 attached with specifications shall be riveted on the box as per IS:2551. Danger board marking by painting shall not be accepted.

9.18 All the components inside the Box shall be mounted on CRCA MS strips of 2mm thickness. The mounting strips shall be provided with required bends or ribs to give the extra strength and shall be powder coated or zinc plated.

9.19 All joints of current carrying parts shall be bolted with 8.8 grade High Tensile MS Nuts & Bolts, Corrugated/spring & Plain Washers. The nuts & bolts should be of hexagonal type. All the nuts, bolts & washers should be properly zinc plated.

9.20 Each distribution box shall be supplied with proper packing in five ply - corrugated box.

9.21 Name plate having details such as Month & year of manufacturing, Name of manufacturer/Trade mark, Sr.No, and rating of Distribution box, shall be riveted on the Distribution box door. The name plate should be of stainless steel of thickness 1 mm. Mahavitaran logo in Marathi Language shall be embossed on the door of the distribution box. Marathi slogans as per attached Annexure – I shall be painted in glowing colour (Red/ Yellow/ Bright Green/Orange). The letter size, font, height & length shall be suitable to the size of distribution boxes such that slogan can be clearly readable from 30 feet distance. There are total 15 nos Marathi slogans, out of them one slogan has to be painted per box. All slogans shall be covered equally on the ordered quantity. All above shall be so placed to give box good look.

9.22 Incoming and outgoing circuit should be duly highlighted with paint by stencil printing.

9.23 Adequate slope on the top of box shall be provided to drain out rainwater from the top.

9.24 3 Nos. KIKATs and 3 Nos. HRC fuse links in spare should be invariably provided with each box.

9.25 Good-quality plastic sticker leaflet should be pasted inside of distribution box door. The matter of instruction leaflet is given along with this specification. All the instructions in leaflet should be in Marathi language.

10 CABLE TERMINATION:

Adequate size of Bimetallic lugs shall be provided for 3½ core, LT XLPE cable on incoming side and out going side for 63/100/200 KVA boxes as below :

Incoming side	Outgoing Side	
63 KVA	120 sq.mm	50/ 70 sq.mm
100 KVA	120 sq.mm	50/70 sq.mm

11. SMC Sheet properties:

The Enclosure Sheet Moulding Compound (SMC) conforming IS: 13410-1992 should have following properties :

Sr. no	Test Details	Requirement for S3 electrical Grade	Type of test	Reference standard
1.	Glass Content , % by mass , minimum	*20*	Type	Annexure –A of IS : 13411: 1992

2.	Flow, mm, Min	*170*	Acceptance	Annexure – C of IS : 13411: 1992
3.	Mould shrinkage , linear percent, Max	*0.25*	Acceptance	Annexure – B of IS : 13411: 1992
4.	Density of Moulding , g/ml	*1.8 to 2.1*	Routine	IS:8543 (part 1/Sec2:1970)
5.	Water Absorption, % Max.	*0.01*	Acceptance	Annex. D of of IS : 13411: 1992
6.	Izod Impact Strength (Notched), KJ/m2, Min	*55*	Type, Acceptance for S2	Annex.E of IS : 13411: 1992
7.	Tensile Strength , MPa, Min	*70*	Type, Acceptance for S2	IS:8543 (part 4/1984)
8.	Flexural Strength, MPa	*170*	Type	Annex. F of IS 13411:1992.
9	Modulus of Elasticity, 103 MPa	*12 to 15*	Type	IS 8543 (Part 4/Sec 1) : 1984
10	Surface Resistivity (24H in Water), Ohm, Min	$1x10^{13}$	Routine	IS3396:1979
11	Volume Resistivity , Ohm-cm, Min	$1x10^{14}$	Routine	IS3396:1979
12	Tracking Resistance CTI, Min	*1000*	Type	IS2824:1975
13	Power Arc Resistance, sec, Min	*180*	Type (Acceptance for S2)	Annex. G of IS 13411:1992
14	Dielectric Strength at 90°C In Oil KV/Min	*11*	Type	IS 6262:1971
15	Dissipation factor (4 days at 80% RH & 1 KHz)	*0.01*	Type	IS4486:1967
16	Heat Distortion Temperature, C, Min	*150*	Type	Annex. H of 13411:1992
17	Oxygen Index, % Min	*24*	Type	IS 13360 (Part6/Sec6):1992
18	Flammability (Vo)	-	Type	UL 94 or IS : 11731 (Pt.II)
19	Glow wire test	-	Type	IEC – 695 –2-1 or IS :11000(Pt 2/sec.1)
20	Ball pressure test	-	Type	IEC : 335
21	Mechanical Strength	-	Type	IS : 14772
22	Marking, Dimensions and construction	-	Routine	IS : 14772
23	Spirit burner test (Self Extinguishing)	-	Type	IS : 4249
24	Melting point (to test up to 400ºC) should not melt		Type	IS :13360

12. TESTS & TEST CERTIFICATES:

In case of bought out items, routine and acceptance tests as per relevant IS and this specification shall be carried out at the original manufacturers' works.

12.1 Routine Test (Carried out on all boxes):

12.1.1 Overall Dimensions Checking.

12.1.2 Insulation Resistance Tests.

12.1.3 High Voltage Test at 2500 V, 50 Hz AC for one minute.

12.1.4. Operation Test on MCCB/Isolator/Link Disconnector / HRC fuse base and HRC fuse links.

12.2. Acceptance Tests (on complete Distribution Box):

Following tests shall be carried out as per acceptance tests in addition to routine tests on one random sample of each rating out of the lot offered for inspection:

i) Temperature rise test on one sample of each rating.

Temperature rise test will be carried out as per the procedure given below:

For temperature rise test, a distribution box with all assembly of KITKATs / Link Disconnectors / Isolator / HRC fuse base with HRC fuse link shall be kept in an enclosure such that the temperature outside the box shall be maintained at 50 ° C.

20% more current than transformer secondary capacity i.e. for 63 KVA Distribution Transformers full load current 84A, 20 % more is 100 A shall be kept in incoming circuit keeping outgoing circuits short, till the temperature stabilizes and maximum temperature rise should be recorded.

ii) Tests in line with Cl. 11.1 and IS: 13410-1992 for Sheet Moulding Compound (SMC) Enclosure for conformance to the values specified therein

12.3. TYPE TESTS :

I ON COMPLETE BOX:

a. Temperature rise test:- The temperature rise test should be carried out as per IS: 8623 -1993

b. High voltage test shall be carried out as per IS:8623/ 1993 amended upto date.

c. Short Time Withstand Current Test on Distribution Box shall be carried out as per IS 8623 or latest version.

d. The Distribution Box should be subjected to Short Time Withstand Current Test for 4KA for 2 seconds for 63/100 KVA Box all the circuits independently. The test should be carried out after by- passing KITKATs.

e. Degree of protection for **IP- 33** on complete box shall be carried out as per IS: 13947/1993 or the latest version thereof.

f. Tests in line with Cl. 11.1 and IS: 13410-1992 for Sheet Moulding Compound (SMC) Enclosure for conformance to the values specified therein.

II) ON ISOLATOR (SWITCH DISCONNECTOR):

All type tests on Isolator (Switch Disconnector) as per IS: 13947/1993 (Part III) amended up to date shall be carried out.

III) ON HRC fuses base and HRC fuse links :

All type tests on HRC fuses and HRC fuse links IS 13703/1993 (Part I & II amended upto date) for HRC Fuse Base and HRC fuse link shall be carried out.

IV) ON KITKAT:

All type tests on KITKAT as per IS-2086-1993 amended upto date shall be carried out.

V) ON Link Disconnector:

Following tests shall be carried out on link disconnector as per IS:

1. Short Circuit Withstand Strength
2. Temperature rise Limits
3. Mechanical Operations

12.4 TYPE - TEST CERTIFICATES:

The Distribution Box, Isolator (Switch Disconnector), HRC fuse, HRC Fuse Link, KITKAT and Link Disconnector offered shall be fully type tested as per relevant IS and this specification. The successful Bidder shall furnish detailed type test reports before commencement of supply. The detailed Type Test Reports shall be furnished with relevant oscillogram and certified Drawings of the equipment tested. The purchaser reserves the right to demand repetition of some or all the Type Tests in presence of purchaser's representative at purchaser's cost.

All the type tests shall be carried out from laboratories accredited by National Accreditation Board of Testing and Calibration Laboratories (NABL), Department of science & technology , Govt. of India to prove that the complete Box, Isolator, HRC fuse, Link Disconnector & KITKAT meet the requirements of the specification. The tenderer should also furnish certificate from laboratories that laboratories are having all the requisite test facility available in house. The type test Reports conducted in manufacturers own laboratory and certified by testing institute shall not be acceptable.

The type test certificate during last five years from the date of opening of the tender shall be valid.

The Tenderer should furnish the particulars giving specific required details of Distribution Boxes, KITKATs, Isolator, HRC fuse, HRC Fuse Link and Link Disconnector in Schedule `A' attached.

The offers without details in Schedule `A' stand rejected.

13. TESTING & MANUFACTURING FACILITIES :

The Tenderer must clearly indicate what testing facilities are available in the works of manufacturer and whether the facilities are adequate to carry out all Routine & Acceptance Tests. These facilities should be available to MSEDCL's Engineers, if deputed to carry out or witness the tests in the manufacturer's works. The tenderer must have all the in-house testing facilities to carry out the acceptance tests on the Box.

The tenderer shall furnish detailed process of manufacturing of SMC enclosure and submit list of plant of machinery available for that.

14. PROTOTYPE SAMPLE:

The successful bidders should manufacture 3 Nos. of prototype L.T. Distribution Boxes as per the specification and keep ready at their works for the purpose of sample inspection and testing. The MSEDCL at their option may sent a team of Engineers to the works. Prior intimation of this inspection may not be given to the Bidder.

15. INSPECTION:

All routine & acceptance tests and inspection of material shall be carried out at the place of manufacturer. The manufacturer shall offer the Inspector (representing the purchaser) all reasonable facilities, free of charge at the time of Inspection.

The representative of the CE (MMC) and the Executive Engineer (INSPECTION WING) shall jointly inspect the first lot of each rating of box.

16. REJECTION:

The purchaser may select one box at random from a lot of 100 Distribution Boxes of each type or part thereof as may be supplied to stores from time to time. The Box so selected must pass all the Type Tests mentioned above otherwise the whole lot of 100 boxes or part thereof, from which the box is selected, will be rejected. For this purpose, lots will be made, consisting of 100 boxes per lot of each rating, at stores after supply.

The testing under this clause will be done in any Laboratory of the MSEDCL's choice including MSEDCL's own Laboratory. Notice of such tests will be given by the MSEDCL to supplier. The supplier is at liberty to be present during the testing.

17. SCHEDULES:

The tenderer shall fill in the following schedules which form part of the tender specification and offer. If the schedules are not submitted duly filled-in with the offer, the offer shall be liable for rejection.

Schedule 'A' – Guaranteed Technical Particulars

Schedule `B' - Tenderer's Experience.

The tenderer shall submit the list of orders for similar type of equipments, executed or under execution during the last three years, with full details in the schedule of Tenderer's experience (Schedule `B') to enable the purchaser to evaluate the tender.

18. DRAWINGS ENCLOSED:

i)Dist/DB/01/A ii) Dist/DB/01/B iii) Dist./DB/06 iv) Dist./DB/07

v) Dist./DB/08 vi) Dist./DB/09 vii) Dist./DB/12 viii) Dist./DB/13

ix) MMC./DB/14 x) Annexure –I xi) CE/Dist/MM-II/MSEDCL/ Kitkat /100/02/rev02

xii) MMC/DB/16-A,16-B and 16-C xiii) MMC/DB/15

The successful bidder shall submit set of all above drawings of the distribution box and its components shall be submitted in triplicate to CE(MMC) office and get approved before commencement of supply.

SCHEDULE - `A'

E-tendering Guaranteed Technical Particulars

SCHEDULE - `B'

SCHEDULE OF TENDERER'S EXPERIENCE

Tenderer shall furnish here a list of similar orders executed/under execution by him to whom a reference may be made by Purchaser in case he considers such a reference necessary.

Sr. No.	Name of Client & Description	Value of order	Period of supply and commissioning	Name & Address to whom reference may be made.
1	2	3	4	5

NAME OF FIRM _____

NAME & SIGNATURE OF THE TENDERER_____

DESIGNATION _____

DATE _____

TECHNICAL SPECIFICATION OF BIMETALLIC LUGS

1) SCOPE:

Bimetallic terminal lugs are for use in Distribution Boxes/Distribution Transformer and other O&M application for Crimping Copper and Aluminum Cables and termination on surface namely Aluminum/Brass/Copper Plated terminals without the use of Bimetallic washers.

2) STANDARD:

Bimetallic lug crimped joint should conform to all tests laid down in IS-8337 e.g. clause 4.1.1 (6.2) for initial resistance and clause 4.1.3 (6.4) for Electrical Load Cycle test for 1000 Cycles and Tensile Test clause 4.2 (6.5). Type Test certificate to this effect giving numerical values obtained must be provided.

3) SERVICE CONDITION:

The Lugs to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

3.1	Maximum ambient temperature (Degree C)	50
3.2	Maximum temperature in shade (Degree C)	45
3.3	Minimum Temperature (Degree C)	3.5
3.4	Relative Humidity (percent)	10 to 95
3.5	Maximum Annual rain fall (mm)	1450
3.6	Maximum wind pressure (kg/sq.m)	150
3.7	Maximum altitude above mean sea level (Meter)	1000
3.8	Isoceranic level (days per year)	50
3.9	Siesmic level (Horizontal Acceleration)	0.3 g

3.10 Moderately hot and humid tropical climate conductive to rust and fungus growth.

4) MATERIAL SPECIFICATION:

Bimetallic lug should be made for electrolytic grade aluminum. Each lug should be copper coated by electrolytic process and rich layer of tin should be mounted through out the lug to protect from Galvanic Corrosion. The lugs shall be such that the rich layer of tin should not peel of during operation. Individual lot should be pre filled with conductive inhibition compound and lug should be duly capped to prevent oozing of compound. The ductility of material should be such that flow ability of material be adequate to flow in to the strand of the conductor and withstand on crimping pressure of 8500 PSI. The cut cross section of the joints shall be homogeneous.

5) GENERAL REQUIREMENTS:

The minimum dimensions of the bimetallic lug in respect of barrel thickness and holes diameter should conform to enclosed Drawing No.DIST/DB/13.

6) TESTS:

i) Initial resistance test of bimetallic crimped joint as per IS 8337.
ii) Heating cycle test for 1000 cycles of crimped joint of bimetallic lugs as per IS 8337.
iii) Tensile strength test of the crimped joint of bimetallic lug as per IS: 8337.
iv) Dimensional test as per drawing/offer.

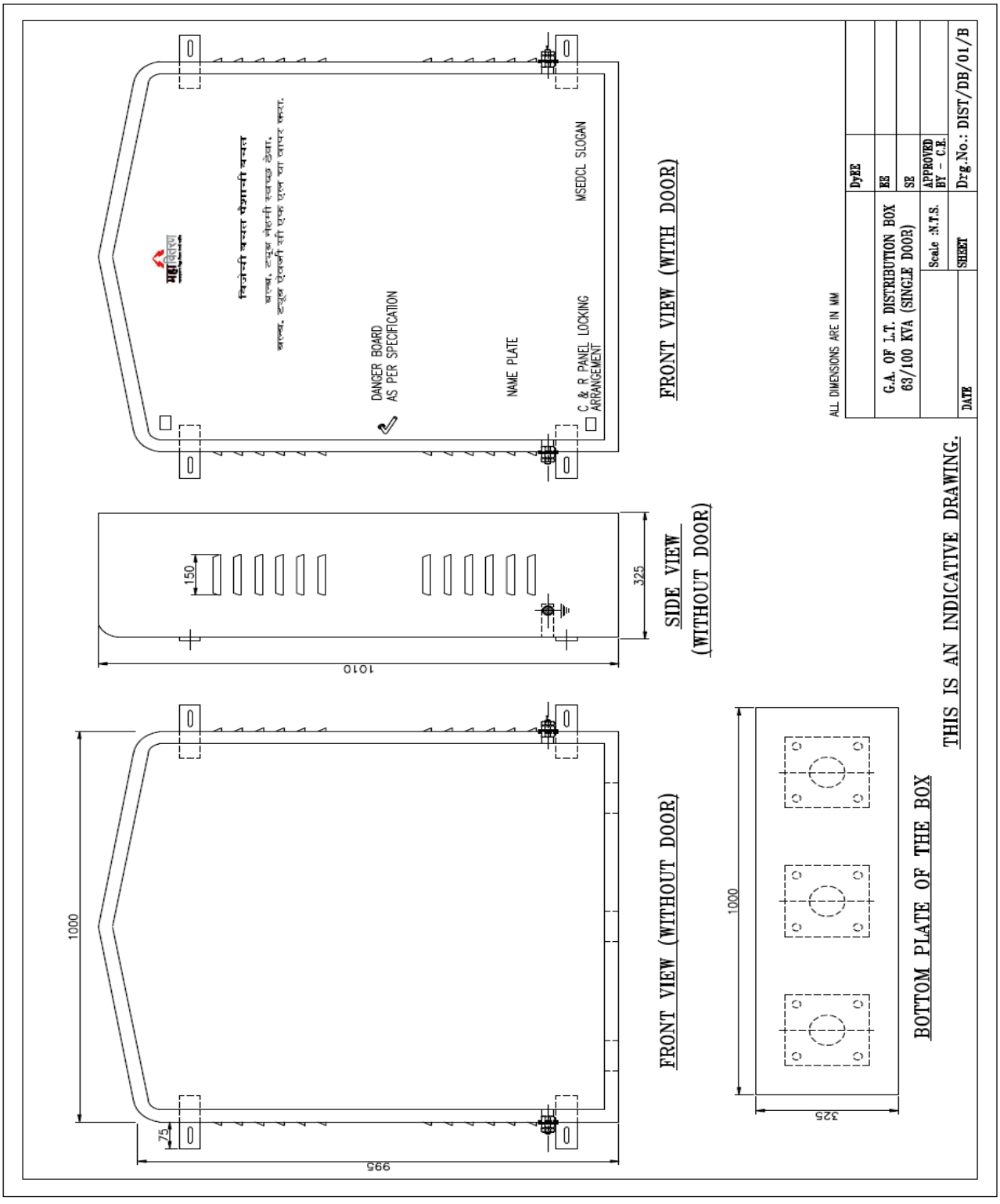
7 TEST CERTIFICATES:

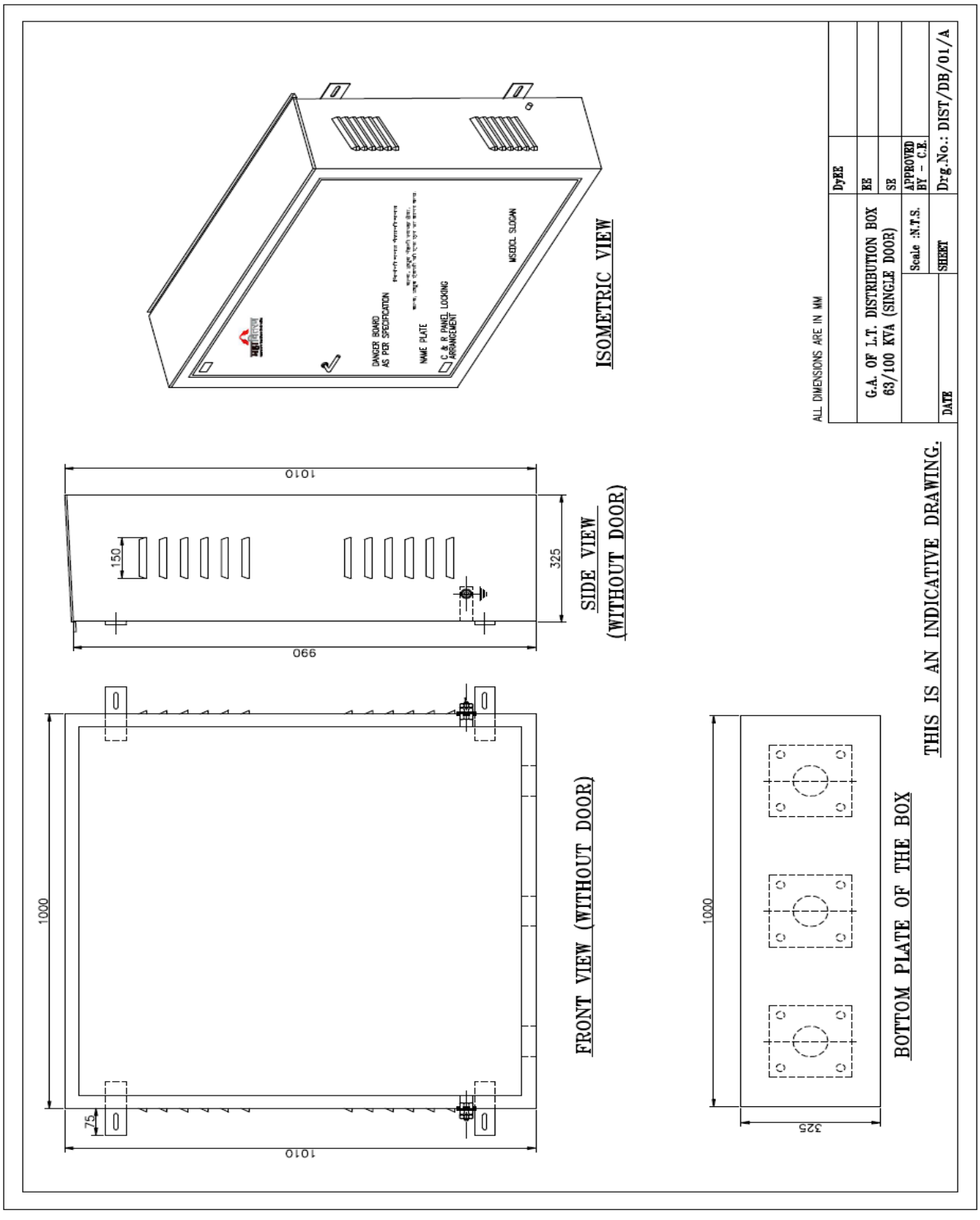
At present the following makes and types of bimetallic lugs are accepted by the MSEDCL.

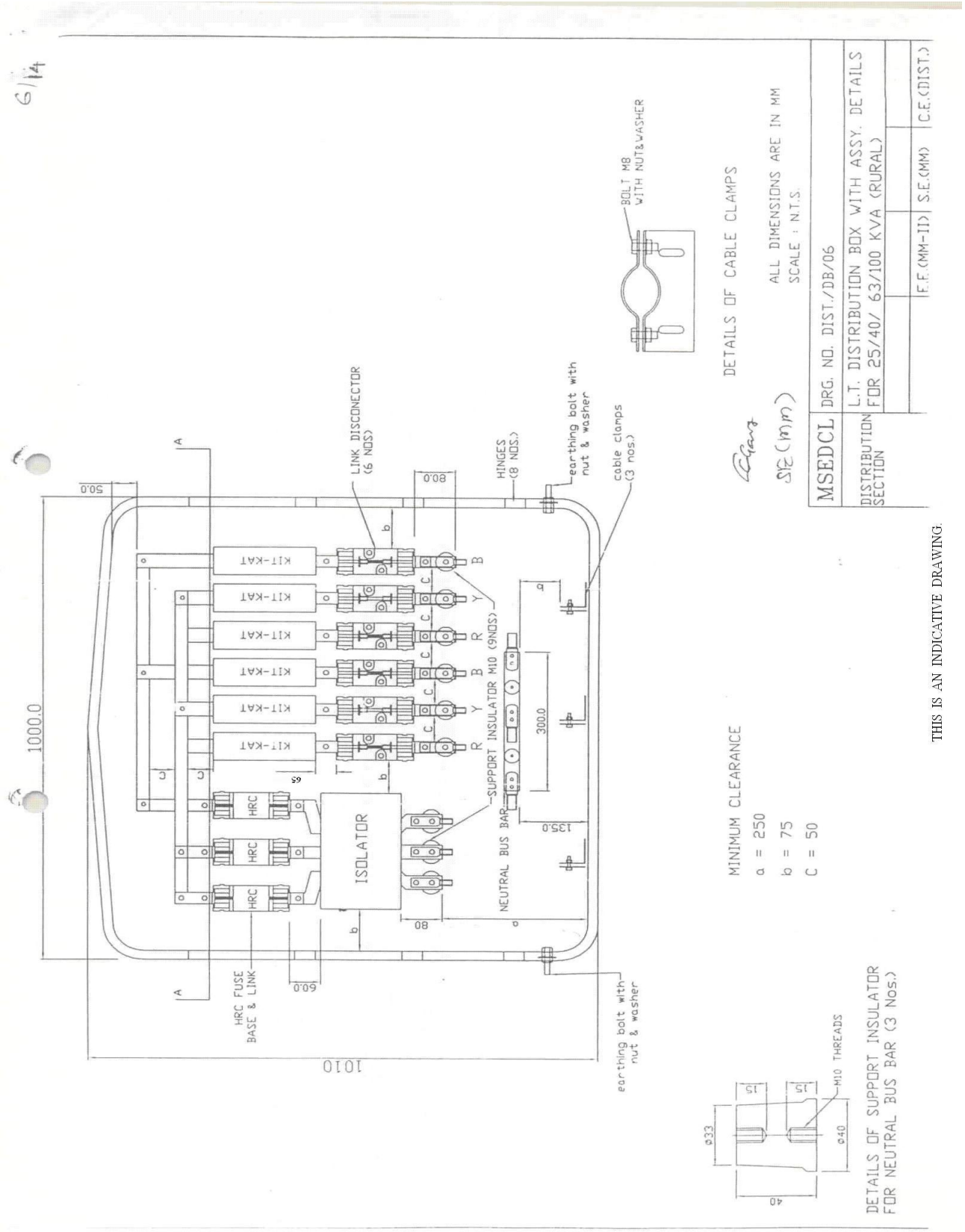
Usha Martin Industries, Ismail, Chetna , Klippon, SRI, Alcon, NES , Hames and HB

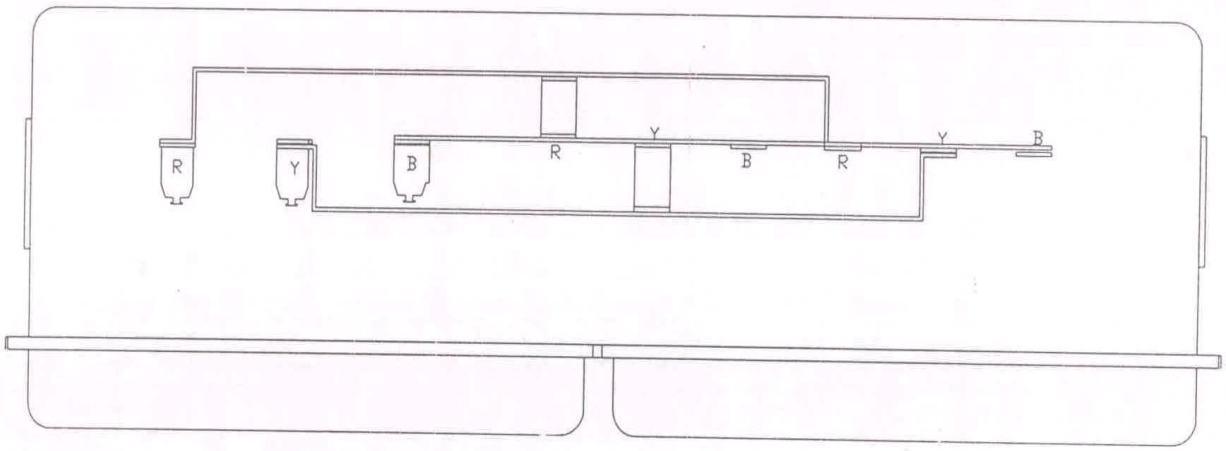
In case any other equivalent make of bimetallic lugs, if bidder offer, they should indicate makes and types of bimetallic lugs in E-tendering GTP. The bidders should submit complete test reports of the bimetallic lugs as per this specification, clause No. 6 to CE (MMC) for approval before commencement of supply. The Tests on lugs should be done in any reputed independent laboratory.

8) DRAWING ENCLOSED: No.DIST/DB/13


FRONT VIEW (WITH DOOR)
DANGER BOARD
AS PER SPECIFICATION
NAME PLATE
C & R PANEL LOCKING
ARRANGEMENT
MSEDCL SLOGAN
SIDE VIEW
(WITHOUT DOOR)
150
325
1010
FRONT VIEW (WITHOUT DOOR)
1000
75
995
BOTTOM PLATE OF THE BOX
1000
325
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
G.A. OF L.T. DISTRIBUTION BOX
63/100 KVA (SINGLE DOOR)
DyEE
EE
SE
APPROVED
BY - C.E.
Scale :N.T.S.
DATE
SHEET
Drg.No.: DIST/DB/01/B


ISOMETRIC VIEW
DANGER BOARD AS PER SPECIFICATION
NAME PLATE
C & R PANEL LOCKING ARRANGEMENT
MSEDCL SLOGAN
SIDE VIEW (WITHOUT DOOR)
1010
150
325
990
FRONT VIEW (WITHOUT DOOR)
1000
75
1010
BOTTOM PLATE OF THE BOX
1000
325
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
G.A. OF L.T. DISTRIBUTION BOX 63/100 KVA (SINGLE DOOR)
Scale :N.T.S.
DATE
SHEET
DyEE
EE
SE
APPROVED BY - C.E.
Drg.No.: DIST/DB/01/A


6/14
1000.0
1010
50.0
80.0
60.0
65
LINK DISCONECTOR (6 NOS)
HINGES (8 NOS.)
earthing bolt with nut & washer
cable clamps (3 nos.)
BOLT M8 WITH NUT&WASHER
DETAILS OF CABLE CLAMPS
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S
KIT-KAT
HRC
ISOLATOR
SUPPORT INSULATOR M10 (9NOS)
NEUTRAL BUS BAR
300.0
135.0
80
HRC FUSE BASE & LINK
MINIMUM CLEARANCE
a = 250
b = 75
C = 50
MSEDCL
DRG. NO. DIST./DB/06
DISTRIBUTION SECTION
L.T. DISTRIBUTION BOX WITH ASSY. DETAILS FOR 25/40/ 63/100 KVA (RURAL)
F.F.(MM-II)
S.E.(MM)
C.E.(DIST.)
M10 THREADS
ø33
ø40
40
15
DETAILS OF SUPPORT INSULATOR FOR NEUTRAL BUS BAR (3 Nos.)
THIS IS AN INDICATIVE DRAWING.



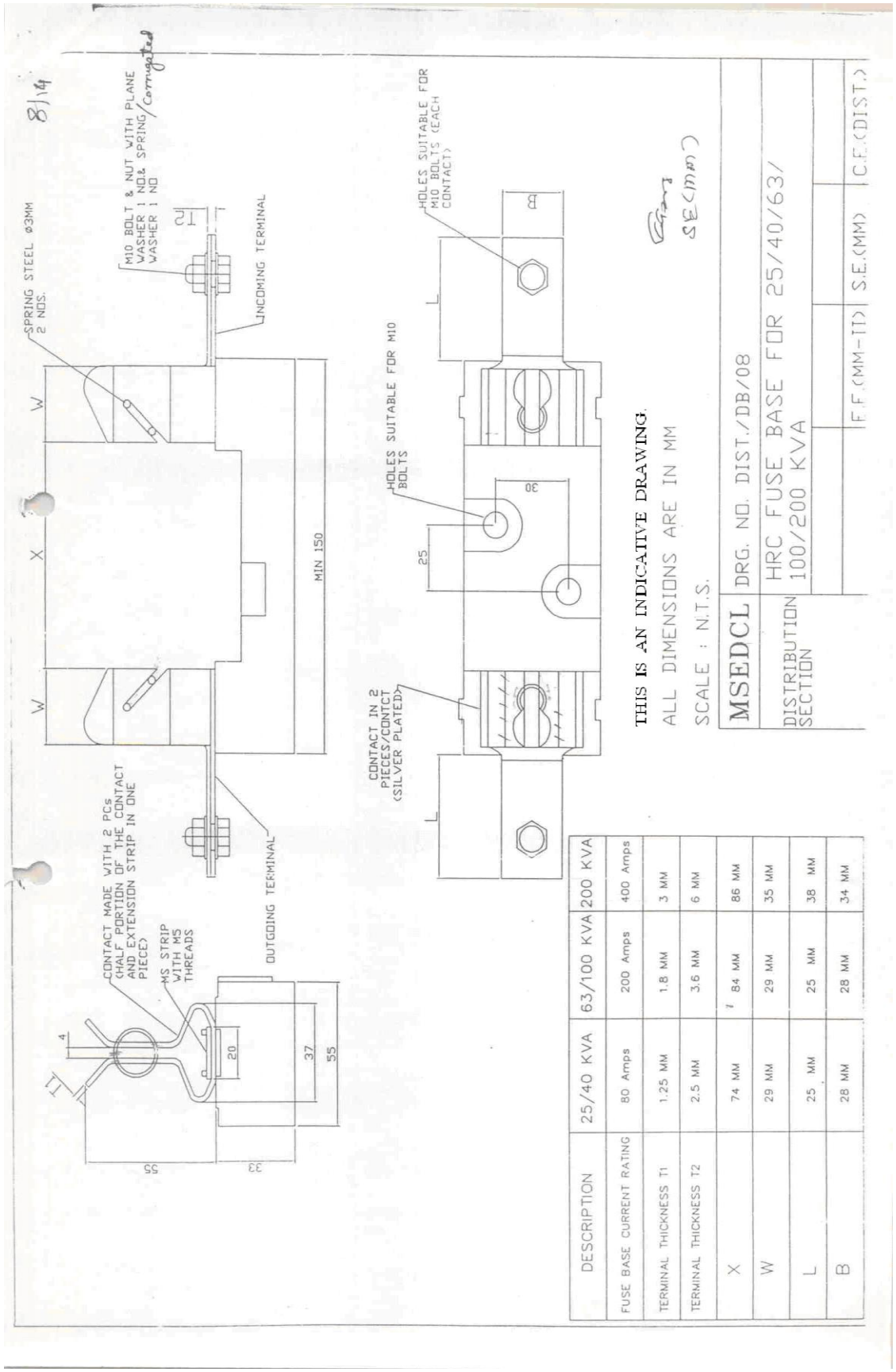
SECTION "A-A" WITH BUS BAR ASSEMBLY DETAILS.

Size (mm)

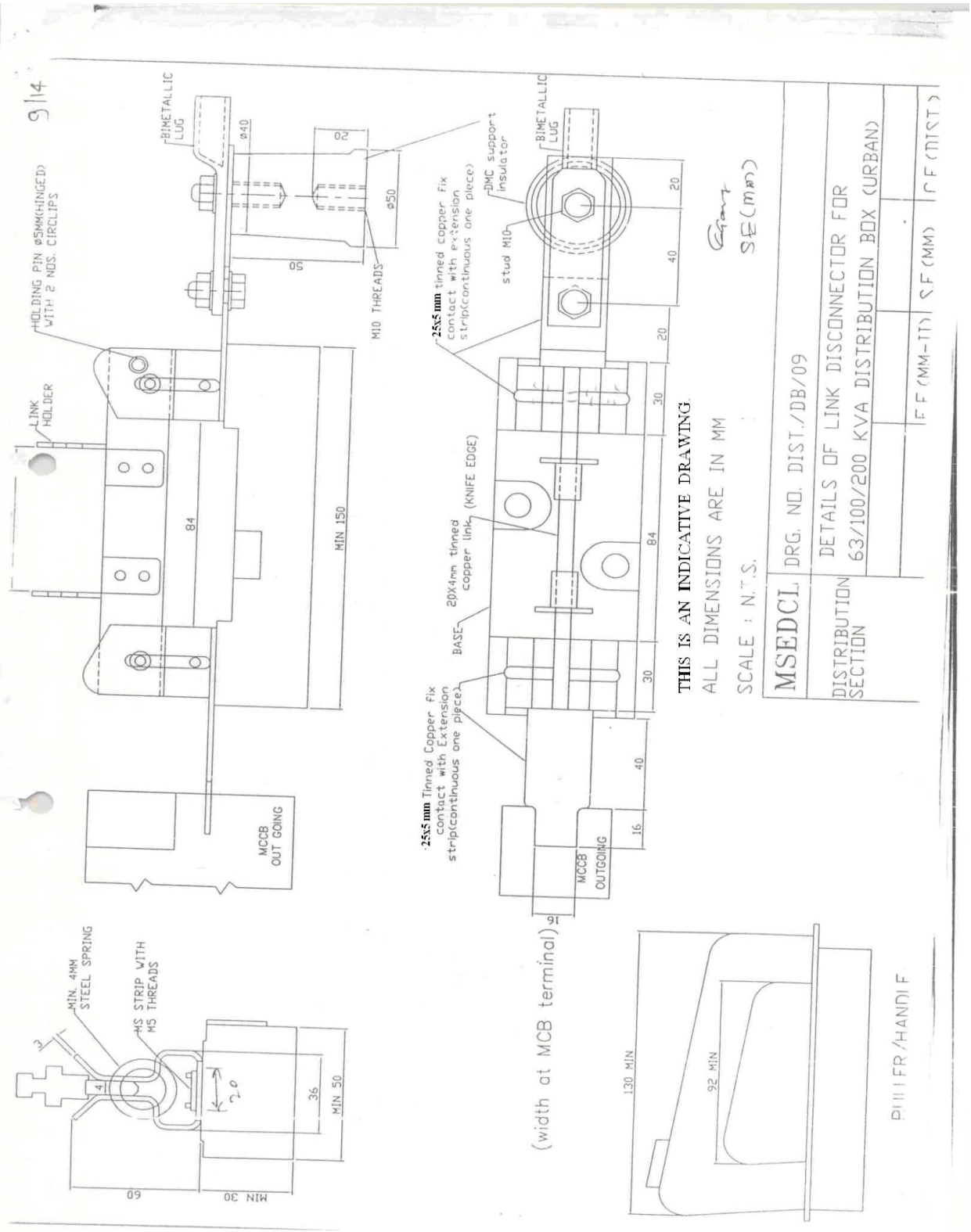
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.

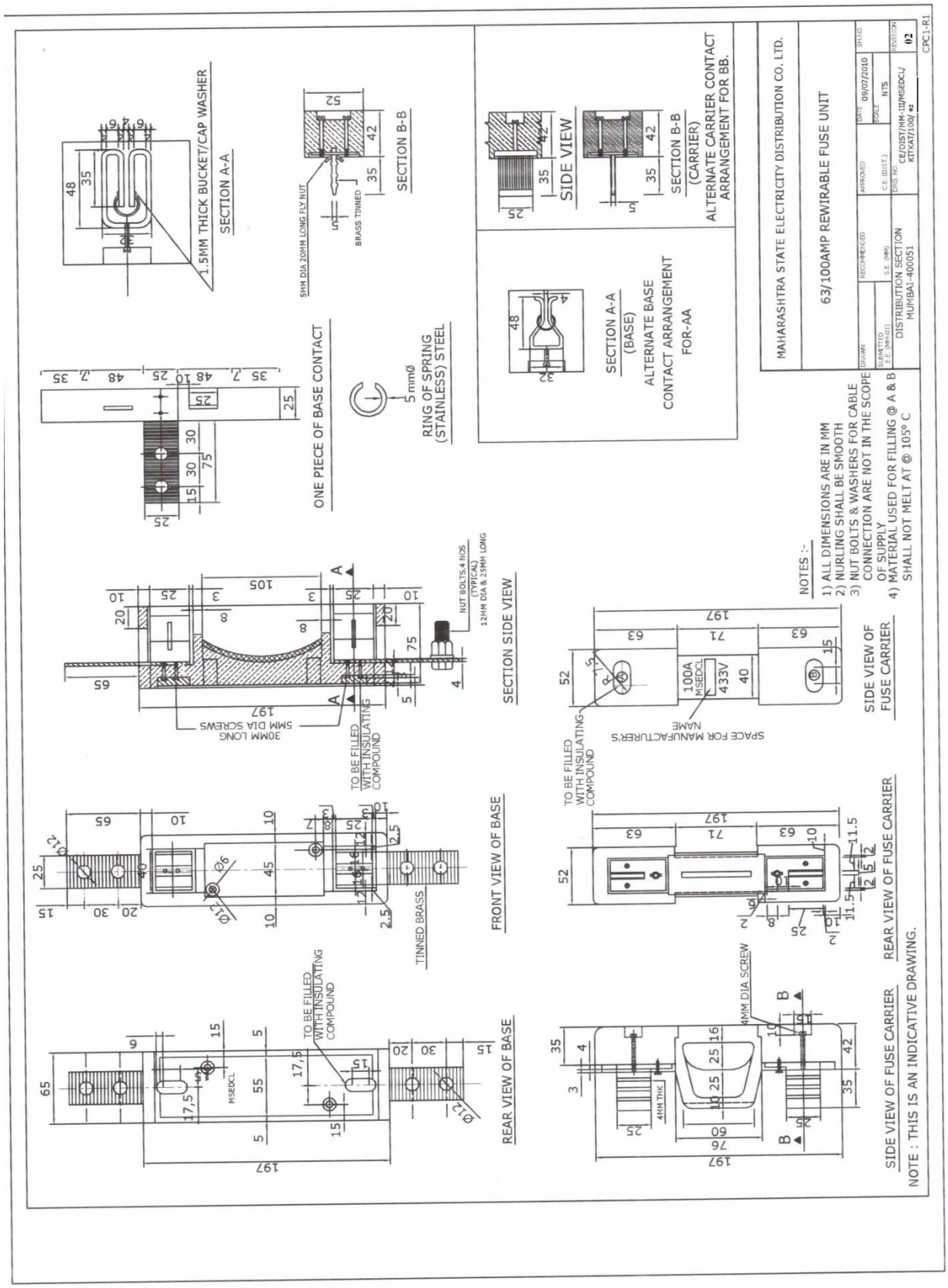
MSEDCL	DRG. NO. DIST./DB/07			
DISTRIBUTION SECTION	L.T. DISTRIBUTION BOX WITH BUS BAR DETAILS FOR 25/40/ 63/100 KVA (RURAL/URBAN)			
		E.E.(MM-II)	S.E.(MM)	C.E.(DIST.)

THIS IS AN INDICATIVE DRAWING.



DESCRIPTION	25/40 KVA	63/100 KVA	200 KVA
FUSE BASE CURRENT RATING	80 Amps	200 Amps	400 Amps
TERMINAL THICKNESS T1	1.25 MM	1.8 MM	3 MM
TERMINAL THICKNESS T2	2.5 MM	3.6 MM	6 MM
X	74 MM	84 MM	86 MM
W	29 MM	29 MM	35 MM
L	25 MM	25 MM	38 MM
B	28 MM	28 MM	34 MM


9/14
BIMETALLIC LUG
ø40
ø50
M10 THREADS
HOLDING PIN ø5MM(HINGED) WITH 2 NOS. CIRCLIPS
LINK HOLDER
84
MIN 150
MCCB OUT GOING
25x5 mm tinned copper fix contact with extension strip(continuous one piece)
DMC support insulator
stud M10
BIMETALLIC LUG
20x4mm tinned copper link (KNIFE EDGE)
BASE
25x5 mm Tinned Copper fix contact with Extension strip(continuous one piece)
MCCB OUTGOING
(width at MCB terminal)
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
MSEDCL
DRG. NO. DIST./DB/09
DETAILS OF LINK DISCONNECTOR FOR 63/100/200 KVA DISTRIBUTION BOX (URBAN)
DISTRIBUTION SECTION
MIN. 4MM STEEL SPRING
MS STRIP WITH M5 THREADS
MIN 50
MIN 30
130 MIN
92 MIN
PILLER/HANDLE


1.5MM THICK BUCKET/CAP WASHER
SECTION A-A
SECTION B-B
5MM DIA 20MM LONG FLY NUT
BRASS TINNED
ONE PIECE OF BASE CONTACT
5 mmØ
RING OF SPRING (STAINLESS) STEEL
SIDE VIEW
SECTION B-B (CARRIER)
ALTERNATE CARRIER CONTACT ARRANGEMENT FOR BB.
SECTION A-A (BASE)
ALTERNATE BASE CONTACT ARRANGEMENT FOR-AA
MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO. LTD.
63/100AMP REWIRABLE FUSE UNIT
DRAWN
SUBMITTED
E.E. (MM-III)
RECOMMENDED
S.E. (MM)
APPROVED
C.E. (DIST.)
DRG NO. CE/DIST/MM-III/MSEDCL/KTK/AT/100/ 02
DATE 09/07/2010
SCALE N.T.S
REVISION 02
DISTRIBUTION SECTION MUMBAI-400051
CPC1-R1
NOTES :-
1) ALL DIMENSIONS ARE IN MM
2) NURLING SHALL BE SMOOTH
3) NUT BOLTS & WASHERS FOR CABLE CONNECTION ARE NOT IN THE SCOPE OF SUPPLY
4) MATERIAL USED FOR FILLING @ A & B SHALL NOT MELT AT @ 105° C
NOTE : THIS IS AN INDICATIVE DRAWING.
ONE PIECE OF BASE CONTACT
SECTION SIDE VIEW
FRONT VIEW OF BASE
REAR VIEW OF BASE
SIDE VIEW OF FUSE CARRIER
REAR VIEW OF FUSE CARRIER
SIDE VIEW OF FUSE CARRIER
30MM LONG SMM DIA SCREWS
NUT BOLTS:4 NOS. (TYPICAL) 12MM DIA & 25MM LONG
TO BE FILLED WITH INSULATING COMPOUND
TINNED BRASS
SPACE FOR MANUFACTURER'S NAME
100A MSEDCL 433V
4MM DIA SCREW
4MM THK

12/14 4

महाराष्ट्र स्टेट इलेक्ट्रीसिटी डिस्ट्रीब्यूशन कंपनी लिमिटेड

एल. टी. डिस्ट्रीब्युशन बॉक्स् _____ के. व्ही. ए. ट्रान्सफॉर्मरसाठी

हया डिस्ट्रीब्युशन बॉक्स् मधील साधनांची माहीती.

१) इंन्कमींग स्वीचची क्षमता = _____ ॲम्पिअर्स

२) सिंगल फेज एम. सी.सी.बी. / किटकॅट ची एकूण संख्या = _____

३) एम. सी.सी.बी चे वरंट रेटिंग / किटकॅट चे रेटिंग (प्रत्येक फेज साठी) = _____ ॲम्पिअर्स.

४) लिंक डिस्कनेक्टर्सची एकूण संख्या = _____

अ) डिस्ट्रीब्युशन बॉक्स् जोडताना खाली दिल्याप्रमाणे काळजी घ्यावी.

१) वरीलप्रमाणे सर्व साधने बॉक्समध्ये आहेत याची खात्री करा.

२) सर्व नट बोल्ट कनेक्शन्स योग्य प्रमाणशीर हत्यारे वापरुन घट्ट करा. कारण कनेक्शन सैलपणामुळे ढिले होण्याची शक्यता असते.

३) नट–बोल्ट आवळताना बॉक्स् सोबत दिलेल्या ग्लेरिटकपिशवीत / तसाम सिलिकॉन ग्रीसचा वापर सढळ हाताने करावा. नट–बोल्ट आवळल्यानंतर राहिलेले / वर आलेले ग्रीस तसेच राहू द्या. ते काढू नका.

4) इन्कमिंग (येणाऱ्या) व आऊटगोईंग (जाणाऱ्या) साठी खाली दिलेल्या आकाराची केबल्स वापरा.

ट्रान्सफॉर्मरची क्षमता	डिस्ट्रिब्युशन बॉक्समधील केबल	
	इन्कमिंगचा आकार (ट्रान्सफॉर्मरकडून येणारी)	आऊटगोईंगचा आकार (लाईनकडे जाणारी)
२५ के. व्ही. ए.	३.५ वेअर ५० स्क्वेअर एम. एम.	३.५ वेअर ३५ स्क्वेअर एम. एम.
६३ के. व्ही. ए.	३.५ वेअर ७० स्क्वेअर एम. एम.	३.५ वेअर ३५/५० स्क्वेअर एम. एम.
१२५ के. व्ही. ए.	३.५ वेअर १२० स्क्वेअर एम. एम.	३.५ वेअर ५०/७० स्क्वेअर एम. एम.
१०० के. व्ही. ए.	३.५ वेअर १२० स्क्वेअर एम. एम.	३.५ वेअर ५०/७० स्क्वेअर एम. एम.
२०० के. व्ही. ए.	३.५ वेअर १८० स्क्वेअर एम. एम.	३.५ वेअर १२० स्क्वेअर एम. एम.

इन्कमिंग रिवचला/लिंक डिस्कनेक्टरला केबल जोडण्यासाठी लग्जचा वापर करा.

५) केबलच्या वायरचा आकार हा वधीवरी त्रिकोणासारखा असतो. तो लग्ज वापरण्यापूर्वी गोल करून घ्या.

वायर लग्जमध्ये घालताना व केबलराहित लग्ज जोडताना सिलिकॉन ग्रीसचा (पेट्रोलियम जेलीचा) वापर करा. इन्कमिंग (येणाऱ्या) व आऊटगोईंग (जाणाऱ्या) वायरी लग्जशिवाय टर्मिनलमध्ये सेट जोडू नका. ते त्रासदायक आहे.

बोल्टने आवळून घट्ट करा. त्यामध्ये प्लॅट (सपाट) वॉशर, स्प्रिंग वॉशर व ग्रीस वापरण्यास विसरू नका.

६) डिस्ट्रिब्युशन बॉक्सची वापरात न घेतलेली छिद्रे उघडी असल्यास ती बंद करा म्हणजे उंदीर, घूस, साप, पाल, चिमणी यगैरेसारखे प्राणी आतमध्ये जाणार नाहीत व शॉर्ट सर्किटचा धोका टाळला जाईल.

७) बॉक्सशोबत दिलेल्या पी.व्ही.सी. च्या किंवा ब्रासच्या रिंग (ग्लैड) डिस्ट्रिब्युशन बॉक्सच्या इन्कमिंग व आऊटगोईंग वायरींच्या छिद्रामधली पकलग्या बसवा म्हणजे वायरी तेथे वापरल्या जाणार नाहीत.

८) सर्व वायरी जोडल्यानंतर डिस्ट्रिब्युशन बॉक्सचा दरवाजा व्यवस्थित बंद करून कुलुप लावण्यास विसरू नका.

९) निगमित सर्व जॉईंट्स (साधे) तापासा व आवश्यकतेनुसार घट्ट करा.

ब) एम. सी. सी. बी. वापरण्याबाबत घेण्याची काळजी.

१) एम. सी. सी. बी हा सर्किट ब्रेकर असून दिलेल्या ठराविक करंट सेटिंगवर तो ट्रिप होत असतो म्हणून लाई नवरील वीजभार त्या मर्यादेतच ठेवा.

२) एम. सी. सी. बी ट्रिप झाल्यानंतर थोडया वेळानंतर "ऑन" ऑफपोझिशनवर आणा म्हणजे एम. सी. सी. बी. रीसेट होईल. एम. सी. सी. बी. ऑन/ऑफपोझिशनवर नसा.

३) लाईनवर लाग करावयाचे असल्यास प्रथम एम. सी. सी. बी. बंद करा टेस्टरने खात्री करा ऑफपोझिशनला आहे

४) एम. सी. सी. बी. बंद करून लिंकडिस्कनेक्टर ओपन करा. तसेच लाईनला स्पर्श करण्यापूर्वी अर्थिंग रॉडचा वापर करून लाईन "अर्थ" करा. एम. सी. सी. बी. वापरास करण्याचा किंवा करंट सेटिंग बदलण्याचा प्रयत्न करू नका. लाईनचे काम झाल्यानंतर प्रथम लिंकडिस्कनेक्टर क्लोज करा व नंतर एम. सी. सी. बी. ऑन करा.

५) एम. सी. सी. बी. बदलताना तो वर नमूद केलेल्या / योग्य करंट सेटिंगचाच वापर करा.

क) इन्कमिंग स्विच वापरण्याबाबत सूचना :

१) इन्कमिंग स्विच सामोरून "ऑन / ऑफ" करू शकाल अशा पध्दतीचा आहे. "ऑन / ऑफ" इन्डीकेशन ऑपरेटिंग हॅन्डलवर आहे.

२) इन्कमिंग स्विच "ऑन" करण्यासाठी हॅन्डल क्लॉकवाईज (घडयाळाच्या) दिशेने फिरवा.

३) इन्कमिंग स्विच "ऑफ" करण्यासाठी हॅन्डल अन्टिक्लॉकवाईज (घडयाळाच्या विरूद्ध) दिशेने फिरवा.

४) इन्कमिंग स्विच बदलताना तो वर नमूद केलेल्या / योग्य ऑप्शिअर क्षमतेचाच वापरा.

क्षात ठेवा हा डिस्ट्रिब्युशन बॉक्स व्यवस्थित हाताळल्यास ट्रान्सफॉर्मरचे व इतर मालमत्तेचे नुकसान टाळता येते. तसेच लाईन स्टाफला सुद्धा अधिकसुरक्षितता मिळते

INSTRUCTIONS LEAFLET IN MARATHI				MSEDCL
22.1.18		22.5.18	24/08/06	DISTRIBUTION SECTION
WRITTEN BY Dy. E.E (MM-II)	CHK. BY E.E. (MM-II)	SUB. BY S.E.(MM)	APPR. BY C.E.(Dist)	DRG NO. Dist./ DB/ 12

Annexure - I

1) विजेची बचत पैशाची बचत

बल्ब, ट्यूब नेहमी स्वच्छ ठेवा,
बल्ब, ट्यूब ऐवजी सी एफ एल चा वापर करा.

2) विजेची बचत पैशाची बचत

एक युनिट विजेची बचत म्हणजे
दीड युनिट विजेची निर्मिती

3) विजेची बचत पैशाची बचत

गरज नसेल तेव्हा दिवे, पंखे व
विजेची इतर उपकरणे बंद ठेवा.

4) विजेची बचत पैशाची बचत

सायंकाळी ६ ते रात्री १० या वेळेत
इस्त्री, मिक्सर, गिझर, ओव्हन
या उपकरणांचा वापर टाळा.

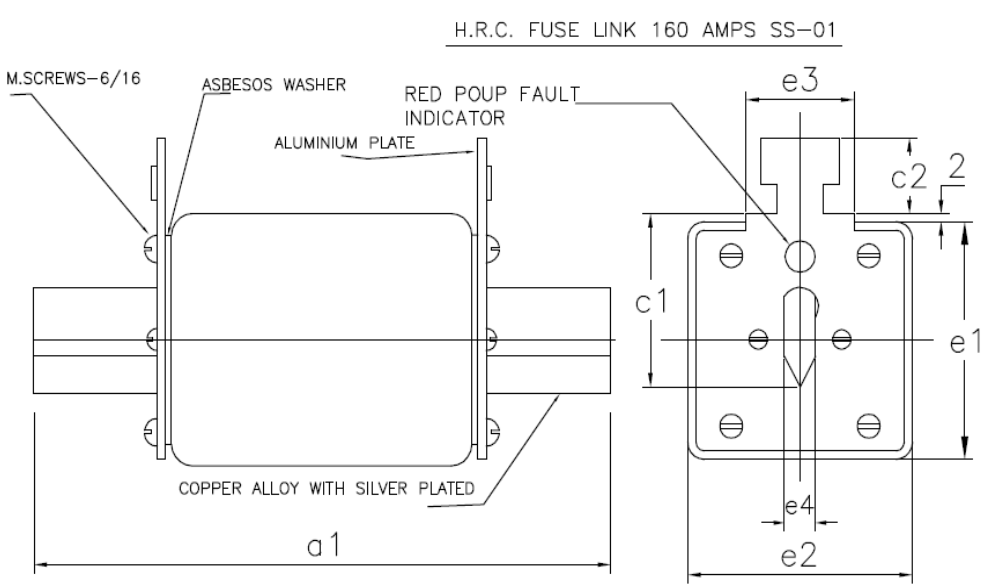
5) विजेची बचत पैशाची बचत

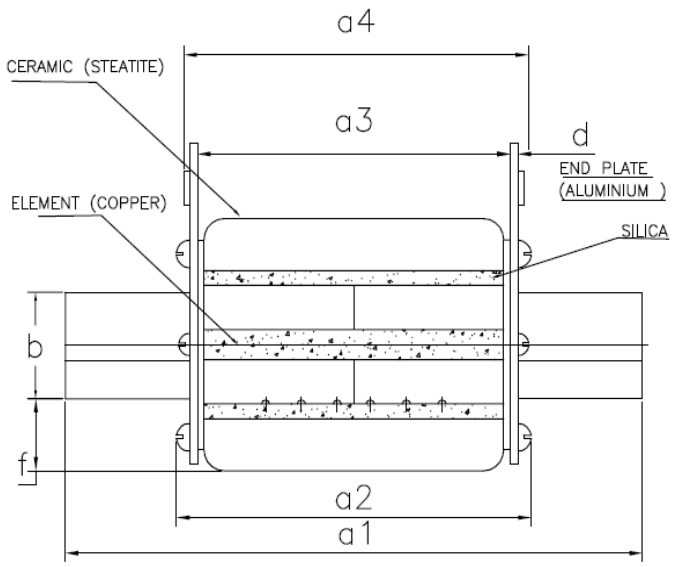
४० वॅटचा साधा बल्ब २५ तासात एक युनिट
वीज खातो तेवढाच प्रकाश देणाऱ्या १० वॅटच्या
सीएफएलसाठी १०० तास लागतात.

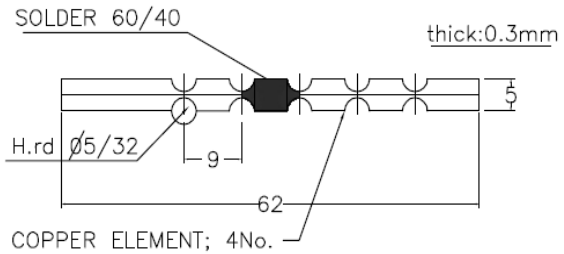
6) विजेची बचत पैशाची बचत

स्वच्छता गृह, शयनकक्ष, व्हरांडा अशा ठिकाणी मंद प्रकाश देणा-या कमी क्षमतेच्या दिव्यांचा वापर करा.

H.R.C. FUSE LINK 160 AMPS SS–01





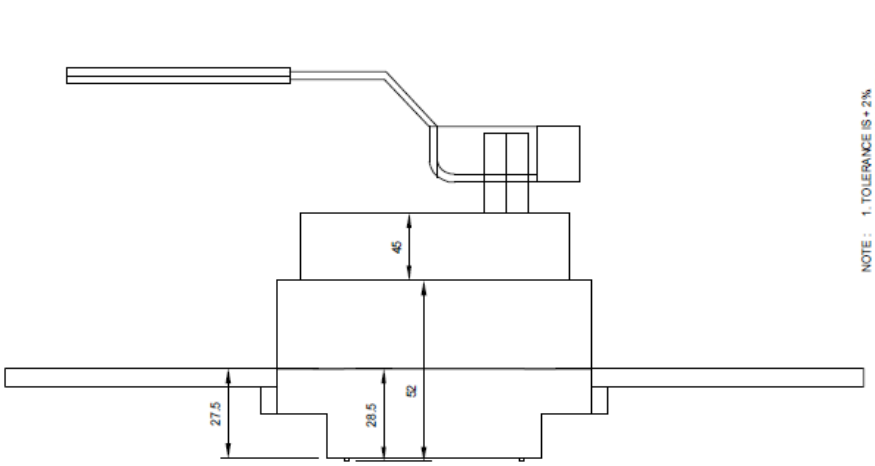


Amps.	SIZE	a1	a2	a3	a4	b	c1	c2	d	e1	e2	e3	e4	f
100	AS PER 13703	125	68	62	68	15	35	11	2.0	48	40	20	6	15
	TOL	±2.5	−8	+3 −1.5	+1.5 −3	MIN	±0.8	−2	+1.5 −0.5	MAX	MAX	±5	±0.2	MAX
160	AS PER 13703	135	75	62	68	20	40	11	2.5	53	52	20	6	15
	TOL	±2.5	−10	±2.5	±2.5	MIN	±0.8	−2	+1.5 −0.5	MAX	MAX	+5.0 −2.0	±0.2	MAX
315	AS PER 13703	150	75	62	68	25	48	11	2.5	61	60	20	6	15
	TOL	±2.5	−10	±2.5	±2.5	MIN	±0.8	−2	+1.5 −0.5	MAX	MAX	+5.0 −2.0	±0.2	MAX

NOTE : ALL DIMENSIONS ARE IN M.M OTHERWISE SPECIFIED

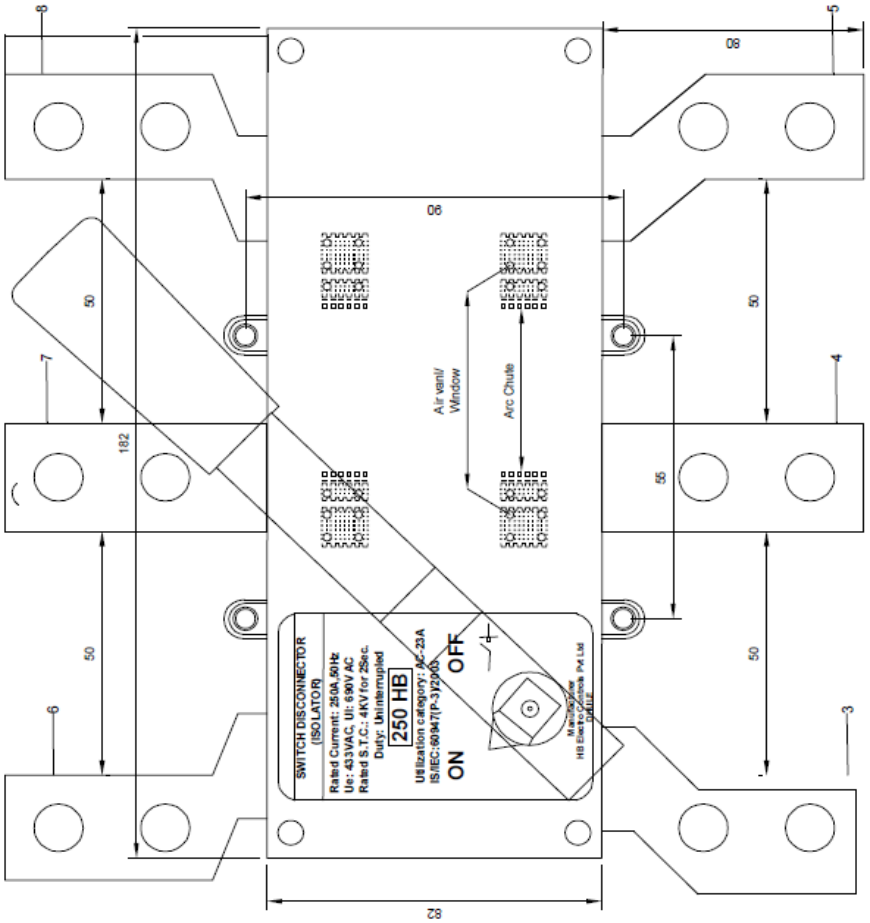
THIS IS AN INDICATIVE DRAWINGS

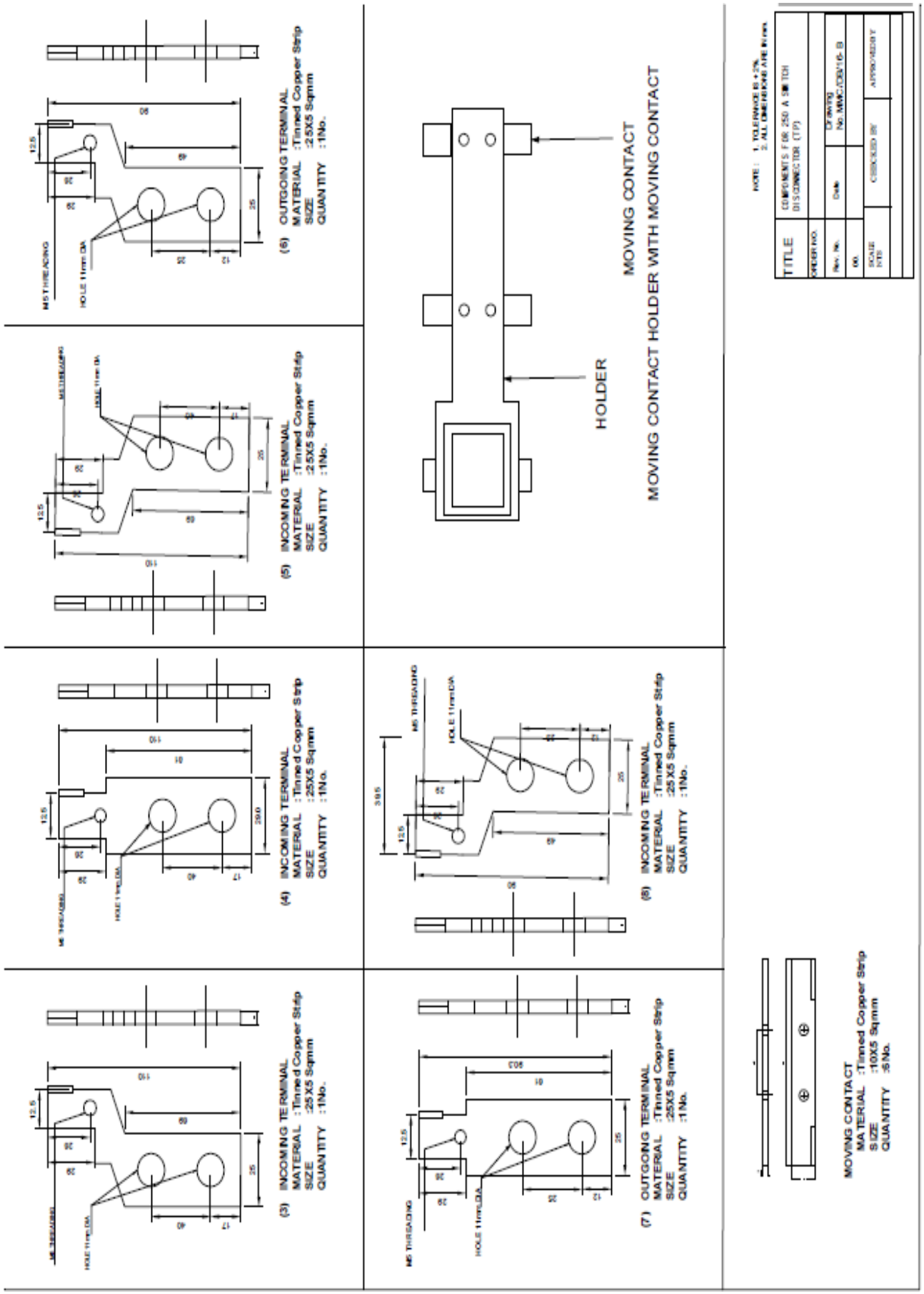
TITLE	H.R.C. FUSE LINK 100/160/315 AMPS	
ORDER NO.		
Rev. No.	Date	Drawing No, MMC/DB/15
00.		
SCALE NTS	CHECKED BY	APPROVED BY

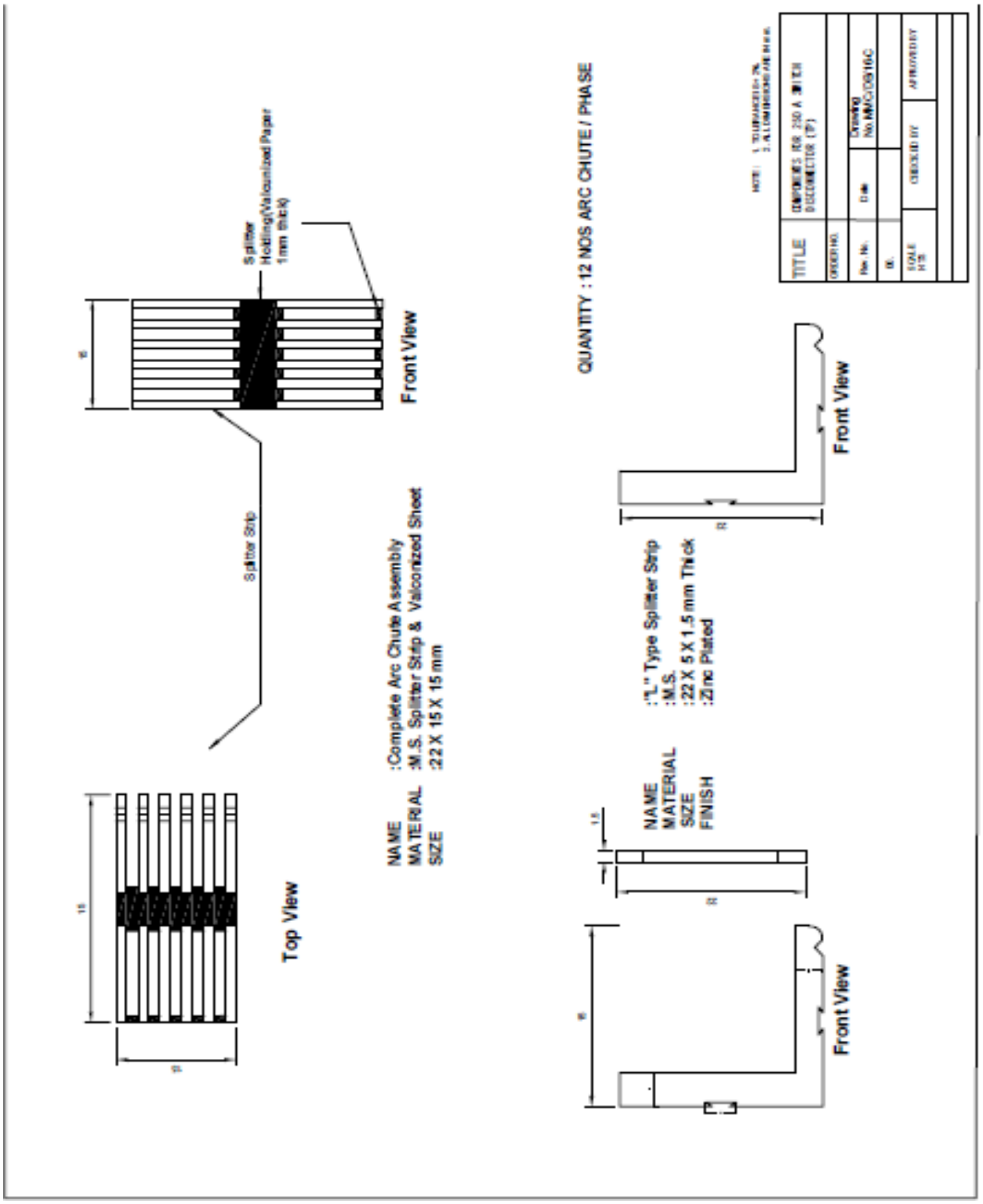


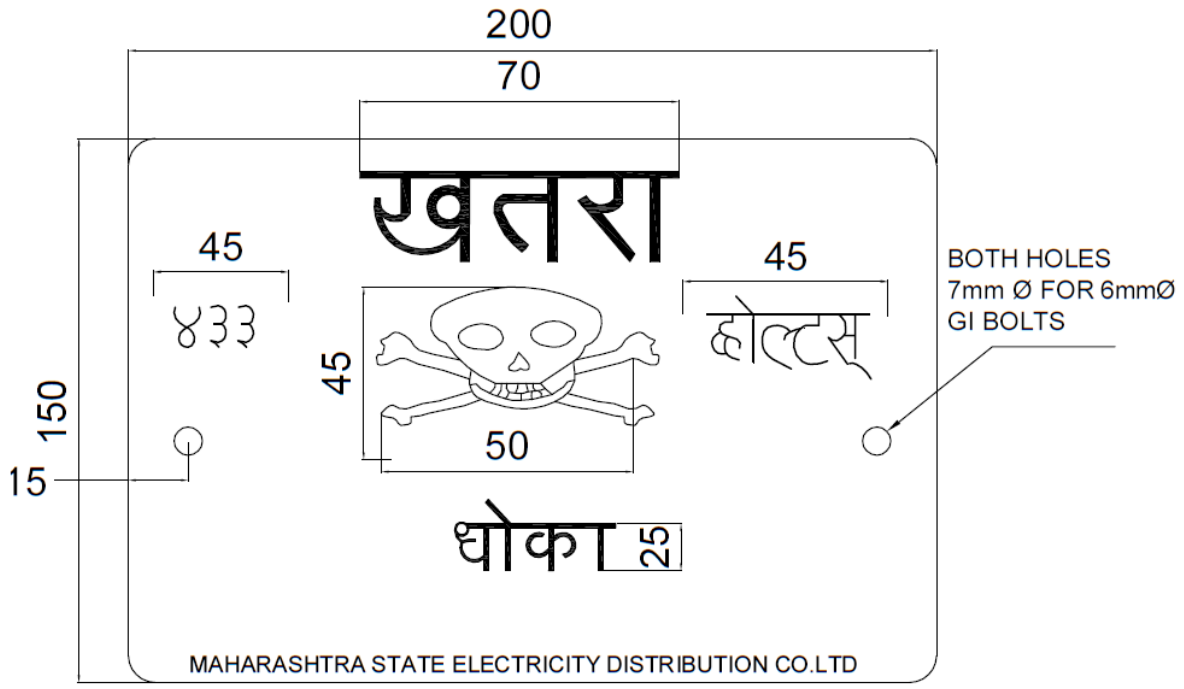
NOTE : 1. TOLERANCE IS + 2%
2. ALL DIMENSIONS ARE IN mm.

TITLE	COMPONENTS FOR 250 A SWITCH DISCONNECTOR (TP)		Drawing No.MMC/DB/16- A	
ORDER NO.		Date		
Rev. No.	00.		CHECKED BY	APPROVED BY
SCALE NTS				




(6) OUTGOING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1No.
(5) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1No.
HOLDER
MOVING CONTACT
MOVING CONTACT HOLDER WITH MOVING CONTACT
(4) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1No.
(8) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1No.
(3) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1No.
(7) OUTGOING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1No.
MOVING CONTACT
MATERIAL :Tinned Copper Strip
SIZE :10X5 Sqmm
QUANTITY :5No.
TITLE
COMPONENTS FOR 250 A SWITCH DISCONNECTOR (TP)
Drawing No. MMC/TDB/15-B
SCALE NTS
CHECKED BY
APPROVED BY


Splitter Hotding(Valcunized Paper 1mm thick)
Splitter Strip
Front View
Top View
NAME :Complete Arc Chute Assembly
MATERIAL :M.S. Splitter Strip & Valconized Sheet
SIZE :22 X 15 X 15 mm
QUANTITY : 12 NOS ARC CHUTE / PHASE
NAME :"L" Type Splitter Strip
MATERIAL :M.S.
SIZE :22 X 5 X 1.5 mm Thick
FINISH :Zinc Plated
Front View
Front View
TITLE



A. SPECIFICATION FOR THE BOARD

1. MATERIAL : 18 SWG M.S. SHEET.
2. SIZE : 200MM X 150MM
3. FRONT SIDE (BACK GROUND) ENAMELED WIRE.
   LETTERING FIGURE OF VOLTAGE.
   PAINTING OF SKULL AND BONES.
   SHALL BE IN SIGNAL RED COLOR.
4. BACKSIDE : ENAMELED AS PER IS : 2551.
5. BOLT HOLES : 2 NOS. 7MM Ø FOR 6Ø G.L. BOLTS

NOTES : CORNERS OF THE PLATE SHALL BE ROUNDED
ALL LETTERINGS SHALL BE CENTRALLY SPACED.

NOTE : 1. TOLERANCE IS + 2%.
2. ALL DIMENSIONS ARE IN mm.

TITLE	DANGER BOARD	
ORDER NO.		
Rev. No.	Date	Drawing No.MMC/DB/14
00.		
SCALE NTS	CHECKED BY	APPROVED BY

GURANTEED TECHNICAL PARTICULARS for 63,100,KVA SMC L.T. Distribution Boxes with KITKAT for Rural area		
Sr.NO	**GTP Parameters**	
1	Name of Manufacturer	TEXT
2	Applicable Reference standards	TEXT
3	Process of manufacturing	TEXT
4	Clear Dimensions of box	TEXT
5	Rating of distribution Box in KVA	NUMERICAL
6	Thickness of Enclosure (in mm)	TEXT
7	Material of Enclosure	TEXT
8	Rated Voltage in Volts	NUMERICAL
9	Colour shade of Distribution Box (Inside and Outside)	TEXT
10	Degree of protection IP-33 as per IS-8623/1993 (amended upto date) of enclosure	TEXT
11	Sets of Louvers provided to the box.	NUMERICAL
12	Size of perforated sheet 20 SWG CRCA MS with 2.5mm holes shall be fitted from inside of the louvers	TEXT
13	Type, Size & material Hinges provided to the doors	TEXT
14	Hinges pin diameter & material	TEXT
15	Danger Board shall be riveted on the box door as per IS 2551 (Yes/No)	BOOLEAN
16	No. Doors & handle provided to the box	TEXT
17	Locking arrangement provided to the box	TEXT
18	Simple C&R panel locking arrangement provided to the box (YES/NO)	BOOLEAN
19	Detailed Name plate provided (Yes/No)	BOOLEAN
20	Material & thickness of name plate	TEXT
21	Before powder coating pretreating / phosphating of boxes i.e. in seven tank process shall be carried out as per relevant IS (Yes/No)	TEXT
22	Whether manufacturer have seven tank process facility and powder coating in house (YES/NO)	BOOLEAN
23	In case facility of manufacturing & powder coating of boxes is not available with bidder, undertaking to provide it by sub vendor shall be submitted. (YES/NO)	BOOLEAN
24	Marathi slogans shall be painted on each box as per annexure attached with technical specification (Yes/ No)	BOOLEAN
25	Welding process shall be MIG (Metal Inert Gas) (Yes/NO)	BOOLEAN
26	Material & Size of Busbar	TEXT
27	Material & Size of neutral busbar	TEXT
28	Busbar support insulator provided as per drawings (Yes/No)	TEXT
29	Size & No. of Earthing nutbolts provided	TEXT
30	No. & Size of Bottom plates provided to the Box	TEXT
31	Fixing arrangement provided	TEXT
32	Size of component mounting strip	TEXT
33	Packing of box	TEXT
34	Name or Trade mark of Manufacturer of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
35	Type of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
36	Designation of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
37	Rating of Isolator in Amp	TEXT
38	Rated Current of Isolator in Amp	NUMERICAL
39	Rated Voltage of Isolator in Volts	NUMERICAL
40	Basic Uninterrupted Duty of Isolator	NUMERICAL
41	Utilization category of Isolator	TEXT
42	Rated short time withstand capacity of isolator for 2 seconds in kA	TEXT

43	Rated insulation voltage of Isolator in Volts	TEXT
44	The Material of isolator shall be DMC	TEXT
45	The DMC isolator withstand breaking capacity shall be 80 kA	TEXT
46	The arc chutes provided in the isolator as technical specifications	TEXT
47	Size of strips on outside of the Isolator provided in mm	TEXT
48	Name or Trade Mark of Manufacturer of HRC Fuse Base	TEXT
49	Rated Current of HRC Fuse Base in Amps	NUMERICAL
50	Rated Voltage of HRC Fuse Base in Volts	NUMERICAL
51	Breaking Capacity of HRC Fuse Base in kA	NUMERICAL
52	The base material of HRC Fuse Base shall be DMC	TEXT
53	Contact material of HRC Fuse base	TEXT
54	Name & Trade mark of Manufacturer of HRC Fuse link	TEXT
55	Rated Current of HRC Fuse Link in Amps	Numerical
56	Rated Voltage of HRC Fuse Link in Volts	NUMERICAL
57	Breaking Capacity of HRC Fuse Link in kA	NUMERICAL
58	Fault Indication provided HRC Fuse Link	TEXT
59	Name or Trade mark of Manufacturer of LINK DISCONNECTOR	TEXT
60	Reference standard applied	TEXT
61	Rated Current of LINK DISCONNECTOR in Amp	NUMERICAL
62	Rated Voltage of LINK DISCONNECTOR in Volts	NUMERICAL
63	The base material of Link Disconnector shall be DMC	TEXT
64	Size of the terminal connector strips of the Link Disconnector in mm	TEXT
65	Material & Size of Male contact terminal of LINK DISCONNECTOR	TEXT
66	Material & Size of Female contact terminal (Solid link hinged) of LINK DISCONNECTOR	TEXT
67	Handle/ puller provided with each Distribution Box (Yes/No)	BOOLEAN
68	Make of Bimetallic lugs	TEXT
69	Reference standard applied for Bimetallic lugs	TEXT
70	Name of manufacturer of KIT KAT	TEXT
71	Type Designation	TEXT
72	Reference Standard	TEXT
73	Material & Color of KIT KAT (Non current carting Part)	TEXT
74	Material of fuse base, fuse carrier & extension technical strip block	TEXT
75	Rated Current in Amps	TEXT
76	Rated Voltage & Frequency	TEXT
77	Withdraw force required for KIT KAT (Newton meter)	NUMERICAL
78	The design & dimension of KIT KAT (Porcelain part) shall be as per the drawing enclosed with specifications	TEXT
79	The metal Composition of current carrying parts shall be as per the specification & relevant IS	TE`XT
80	Each Fuse base shall be clearly and indelibly marked as per specifications	TEXT
81	Material of current & non current carrying screws & washers used for KIT KAT	TEXT
82	All Type tests carried out on Distribution Box with assembly, Isolator, HRC Fuse Base & Fuse Link, KITKAT & Link disconnector at NABL as per Technical specification and relevant IS shall be submitted before commencement of supply. (Yes/No).	BOOLEAN