Maharashtra State Electricity Distribution Company Limited

SPECIFICATION NO. STORES/DB/URBAN/SMC/2011/03

TECHNICAL SPECIFICATION

FOR

63, 100,200 KVA SMC LT DISTRIBUTION BOX with MCCBs for Urban Areas.

IN

MSEDCL

Technical Specifications

63 /100 /200 KVA SMC L.T. DISTRIBUTION BOX with MCCBs for Urban Area

NO. STORES /DB/URBAN/SMC/2011/03

INDEX

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY

Technical Specifications for

63/100/200 KVA SMC L.T. DISTRIBUTION BOX with M.C.C.Bs.

SPECIFICATION NO.DIST/DB/URBAN/SMC/2011/03.

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	200 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	270 A
6.	No. of Outgoing circuits	2 nos		3 nos

4. Applicable Standards:

a. IS :13947/1993 (Part 3) for Isolator (Switch Disconnector)

b. IS: 13947/1993 (Part2) (amended upto date) for L.T. MCCBs.

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 links on incoming circuit and single pole MCCBs & Link Disconnector on outgoing circuits with necessary interconnecting Bus Bars/ Links.

b. Standard General Arrangement of Isolators, HRC fuse base with 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/SMC/URBAN/2010/05** for 63/100 KVA and Drawing No**. Dist / DB/SMC/ URBAN/2010/02** for 200 KVA distribution boxes.

6. 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. 13(C) and 13.6** for approval of CE(STORES) before commencement of supply. The makes of Switch disconnector provided in the Distribution Box to be supplied shall be as the mentioned in the GTP of detailed purchased order from MSEDCL.

The Isolator should be front operated triple pole type. The casing of Isolator shall be 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 Base 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 should be front operated triple pole type. If the casing of Isolator is of non-tracking, heat resistant insulating material, no separate enclosure is required. 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	200 KVA
1.	Basic uninterrupted duty	250 A		600A
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		8 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 /100/200 KVA distribution box, the cross section of the strips on outside of the isolator shall be provided as below:

63/100 KVA - 25X5 mm.

200 KVA - 50X 6 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/SMC/URBAN /2010/07** 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 and fuse link should have withstand breaking capacity of 80 kA.

HRC Fuse base shall be suitable for fuse of 200A for 63/100 KVA distribution box and 400 A for 200 KVA distribution box.

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 /200 KVA distribution box shall be as follows:

63 KVA - 100 A

100 KVA - 160 A

200 KVA - 315 A.

The successful bidder shall submit Type Test Report of the HRC fuse base and HRC fuse link as specified in **Cl. No. 13(C) and 13.8** for approval of CE (STORES) before commencement of supply. The makes of HRC fuse base with link provided in the Distribution Box to be supplied shall be as the mentioned in the GTP of detailed purchased order from MSEDCL.

7. OUTGOING CIRCUITS:

7.1 MCCBs

Each distribution box shall have 6 nos. of single-pole MCCBs in 63 KVA /100 KVA Box and 9 nos of single-pole MCCBs in 200 KVA box to protect outgoing circuits. MCCB shall be conforming to this specification. The bidder shall indicate the makes and types of MCCBs offered in GTP. The successful bidder shall submit Type Test Report of the MCCB as specified in **Cl. No. 13(C) and 13.7** for approval of CE (STORES) before commencement of supply. The makes of MCCBs provided in the Distribution Box to be supplied shall be as the mentioned in the GTP of detailed purchased order from MSEDCL.

The colour of MCCBs for 63/100 /200 distribution box shall be as follows:

63 KVA - Brown

100 KVA - Dark admiral gray

200 KVA - Black

MCCB shall have quick make quick break mechanism. Making of MCCB shall only be manual but breaking of MCCBs shall be electrical as well as manual.

The detailed specification for MCCBs shall be as under.

S.N	Particulars	Details		
1.	KVA rating	63 KVA	100 KVA	200 KVA
2.	Rated current	150 A		200 A
3.	Fixed overload release setting (A)	60 A	90 A	120 A

4.	No. of poles	Single pole
5.	Rated service short circuit breaking capacity (kA) which is equal to ultimate breaking capacity as per IS 13947 /1993	10 KA at 0.4 p.f . (lag)
	The sequence of operation for this test shall be, O - t - CO - t - CO, and t = 3 min.). The test shall be done at 250V at 0.4 p.f. (lag). Voltage rating phase to phase 433 V and phase to earth 250V.	
6.	Power factor for short circuit (Max.)	0.4 lag
7.	Utilization category	A
8.	Rated Insulation Voltage	660 V

The Busbar dropper and Terminal connection strip of Link Disconnector shall be placed in contact terminal of MCCB as shown in the drawing.

The rated service short circuit breaking capacity as specified in clause No. 5 above shall be based on the rated service short circuit test carried out at specified power factors.

To extinguish the arc immediately in MCCBs, archutes with minimum 8 strips shall be provided.

While the above stipulation regarding the test power factor and the sequence of operation shall be binding, the other procedure for making the short circuit test and circuit etc. shall generally be in accordance with the Indian Standard applicable to the type of circuit breakers under test.

7.2 TIME CURRENT CHARACTERISTICS of MCCBs:

The L.T. MCCBs shall have time current characteristics as follows:

Multiple of normal Current setting	Tripping time
1.05	More than 2.5 hrs.
1.2	More than 10 minutes and less than 2 hrs.
1.3	Less than 30 minutes
1.4	Less than 10 minutes
2.5	Less than 1 minute
4.0	Not less than 2 seconds
6.0	Less than 5 seconds
12.0	Instantaneous (less than 40 milli seconds.)

For above time/current characteristic, the reference calibration temperature of the breaker shall be 50°C. Deration, if any, upto 60°C. ambient temperature shall not exceed 10% of the current setting indicated above.

7.3 LINK DISCONNECTOR :

Link Disconnector of 200 A capacity shall be provided between outgoing terminal of MCCB & cable connection as shown in the Drg.No.**Dist/DB/SMC/URBAN/2010/08** to facilitate mechanical breaking (manual isolation) of the circuit. 63 /100 KVA Distribution Box shall have 6 Nos. of link Disconnectors and 200 KVA distribution box shall have 9 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. 13(C) and 13.9** for approval of CE (STORES) before commencement of supply. The makes of Link disconnector provided in the Distribution Box to be supplied shall be as the mentioned in the GTP of detailed purchased order from MSEDCL.

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 alongwith each Distribution Box. The terminal connector strips of the Link Disconnector of 25x5 mm cross section, shall be projecting out of Link disconnector for minimum length of 80 mm on cable connection side and 40mm on MCCB outgoing side (as shown in the **Drg DIST/DB/SMC/ URABN/2010/02**). 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 /100/200 KVA distribution box shall be rated as follows :

63 and 100 KVA - 150 A .

200 KVA - 200 A.

8 BUSBARS AND CONNECTIONS:

As shown in **Drg. DIST/DB/SMC/URBAN/2010/03 & DIST/DB/SMC/URBAN/2010/06**, 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 tin-plated E.C. grade copper. The phase busbar strips shall be of size 25X5 mm for 63 KVA/100 KVA and 40X8 mm for 200 KVA box. Feeder droppers shall be 25X5 mm. Incomer dropper of 25 x 5 mm cross section for 63 /100 KVA box and 40 x 8 mm cross section for 200 KVA box be provided. All busbars and droppers shall be properly drilled and deburred. Each busbars shall be of one single strip without any joint.

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 specification. 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 Switch Disconnector, HRC fuse base with link, Kitkats and Link Disconnector shall be housed in an enclosure**.** The enclosure shall comply with the requirement of degree of protection IP-33 type as per IS – 8623/1993 (amended upto date). Access to the switch disconnector including operating handle shall be available only after the enclosure door is opened.

9.5 The general clear dimensions of 63 / 100 KVA Distribution Box shall be 1000 x 1010 x 325 (LXHXW)mm. without considering collor 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). The general clear dimensions of 200 kVA distribution box shall be 1305 x Avg.1050 x 325 (LXHXW) mm without considering collar of the box and door. The center height of the distribution box on front side shall be 1060 mm & right & left side of the box shall be 1045 mm without considering collar of the box (Drg No. Dist/DB/01/B).

9.6 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.

B. 200 kVA boxes shall have two doors as shown in drawing fixed on right side & left side of the box with four hinges on both sides shall be provided from inside of box. On closing of doors, right door shall rest on the left door.

The Base and doors shall have flange / collars as shown in drawing. 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. Rubber Gasket shall be fitted with suitable adhesive. Hinges shall be minimum 50 mm in length & made from 2mm thick sheet. Hinge pin (stainless steel) diameter shall be 4mm. The hinges shall not be visible from outside.

9.7 Four Louvers (two on each side) shall be provided with suitable nut bolts. The perforated sheet of 20 SWG CRCA MS with 2.5mm holes shall be fitted from inside of the louvers.

9.8 Mounting of components inside the enclosure shall allow free air circulation keeping the electrical clearances as per drawing Nos. **Dist /DB/SMC/URBAN/2010/05 & Dist /DB/SMC/URBAN/2010/02** attached with the specification.

9.9 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.

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

9.11 The Colour of inside & outside of the SMC distribution box shall be **Brown for 63 KVA box** and **Dark Admiralty Gray for 100 KVA & 200 kVA box**.

9.12 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.

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

9.14 Tin-plated EC grade copper Neutral Busbar of 300 x 30 x 5mm for 63/100 KVA box and 525 x 50 x 5mm for 200 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.

9.15 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, Creepage and convenience in making connections shall be ensured.

9.16 Tin-plated EC grade copper Neutral Busbar of 300 x 30 x 5mm for 63/100 KVA box and 525 x 50 x 5mm for 200 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.

9.17 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. Two Nuts with washers shall be provided on each bolt.

9.18 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.

9.19 Danger Board as shown in drawing no. Dist /DB/SMC/URBAN/2010/11 attached with specifications shall be riveted on the box as per IS:2551. Danger board marking by painting shall not be accepted.

9.20 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.

9.21 All joints of current carrying parts shall be bolted with 8.8 grades 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.

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

9.23 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.

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

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 on leaflet should be in Marathi language.

9.26 3 Nos. MCCBs and 3 Nos. HRC fuse links in spare should be invariably provided with each box.

10 CABLE TERMINATION:

Adequate size of 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
200 KVA	185 sq.mm	120 sq.mm

11. PROPERTIES OF MATERIALS USED FOR DISTRIBUTION BOXES:

11.1 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

11.2 The Metal parts such as Nuts, Bolts & Washers etc used in the Distribution Boxes shall be treated Electro galvanizing of Zinc except for bus bar & links.

12 SAFETY ARRANGEMENTS:

Two earthing studs of galvanized M.S. M 12 X 50 mm shall be provided for external earth and internal neutral connections. These should be complete with plain washer, spring washer, nuts etc. Earthing studs must be fitted to prevent removal of the same from the box.

13 TEST & TEST CERTIFICATES:

A. ACCEPTANCE TESTS (ON COMPLETE DISTRIBUTION BOX):

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.

13.1 Routine Test (Carried out on all boxes):

9.1.1 Overall Dimensions Checking.
9.1.2 Insulation Resistance Tests.
9.1.3 High Voltage Test at 2500 V, 50 Hz AC for one minute.
9.1.4 Operation Test on MCCB/Isolator/Link Disconnector/ HRC fuse base and fuse Links.

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:

13.2 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 MCCBs, Link Disconnectors, Isolator, HRC fuse base with link shall be kept in an enclosure such that the temperature outside the box/MCCB shall be maintained at 50 degree C. The full load current of MCCB setting such as 60/90 A as per requirement shall be passed and maintained till temperature is stabilized and maximum temperature rise should be recorded.
This test shall be carried out on box as well as MCCB & Link Disconnector separately.

13.3 Time-Current Characteristics

With the stabilized temperature rise as per Cl. 13.2 above, the MCCB should be tested for time current characteristics at 1.05 & 1.2 times of overload release setting current and should pass the requirement given in clause- 7.1.

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

B. TYPE TESTS:

13.5 ON COMPLETE BOX:

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

b. High voltage test as per IS:8623/1993 amended up to date.

c. Short Time Withstand Current Test on Distribution Box as per IS 8623 or latest version. The Distribution Box should be subjected to Short Time Withstand Current Test for value of 4KA for 2 seconds for all the circuits independently. The test should be carried out after by-passing MCCBs.

d. Degree of protection for **IP- 33** on complete unit as per IS 13947 or latest version thereof.

e. Time /current characteristic test as per clause 13.3 of this specification as stated above.

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.

13.6 ON ISOLATOR (SWITCH DISCONNECTOR):

All type tests on incoming isolator (Switch Disconnector) as per IS:13947 amended upto date.

13.7 ON MCCB: All type tests on MCCB as per IS-13947 amended upto date.

13.8 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.

13.9 On Link Disconnector:

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

1. Short Circuit withstand strength.
2. Temperature rise test.
3. Mechanical Operations

C) TEST CERTIFICATES:

The Distribution Box, Isolator (Switch Disconnector), HRC fuse, HRC Fuse Link and MCCB 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 such as CPRI Bangalore/ Bhopal, ERDA Baroda to prove that the complete Box, Isolator, HRC fuse, Link disconnector & MCCB 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 Tenderer should furnish the particulars giving specific required details of Distribution Boxes, MCCBs, Isolator and Link Disconnector in Schedule `A' attached.

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

14 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. 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.

15 PROTOTYPE SAMPLE:

The successful tenderer have to manufacture the prototype unit for each rating as per this specification before bulk manufacturing. The tenderer should intimate readiness of prototype to CE (STORES), Prakashgad, 5th floor, MSEDCL, Mumbai. The representative of CE (Distribution) will inspect the prototype on any day within 15 days from the date of readiness intimated. The inspection report of prototype jointly signed by manufacturer and MSEDCL representative. The approval of prototype shall be responsibility of tenderer .The commencement period of supply shall include the time period required for getting the prototype approved from CE(STORES) and no additional time period for the same will be given.

16 INSPECTION:

All tests and inspection shall be made at the place of manufacturer. The manufacturer shall afford the Inspector (representing the purchaser), all reasonable facilities, without charge to satisfy him that the material is being supplied in accordance with this specification.
The first lot of each rating of distribution box shall be jointly inspected by the representative of CE(STORES)and Executive Engineer (IW).

17 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 from time to time. The Box so selected must pass any or all the Type Tests mentioned above otherwise the whole lot of 100 boxes or part thereof, from which one box was selected, will be rejected.

The testing under this clause will be done in any Laboratory of the MSEDCL's choice including MSEDCL's Laboratory. Notice of such tests will be given by the MSEDCL by

ordinary post to supplier and the date of test may not be altered to the convenience or request of the supplier. The supplier is at liberty to be present during the testing.
The MSEDCL may, at its option, inspect the distribution boxes supplied to the different Stores at site or at departmental Stores. If any of the technical particulars are seen to be in variance than the guaranteed technical particulars, the whole lot of boxes will be rejected.

18 SCHEDULES:

a. The tenderer shall fill in the following schedule, 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.

b. 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 purchaser. to evaluate the tender

19 DRAWINGS ENCLOSED:

A list of indicative drawings of distribution box and its components is given below:

i. DIST/DB/02/B
ii. DIST/DB/SMC/URBAN/2010/02
iii. DIST/DB/SMC/URBAN/2010/03
iv. Dist/DB/01/B
v. DIST/DB/SMC/URBAN/2010/05
vii.DIST/DB/SMC/URBAN/2010/06
viii. DIST/DB/SMC/URBAN/2010/07
ix. DIST/DB/SMC/URBAN/2010/08
xi. DIST/DB/SMC/URBAN/2010/09
x. DIST/DB/SMC/URBAN/2010/10
xii. DIST/DB/SMC/URBAN/2010/11
xiii. Annexure –I.

The successful bidder shall submit set of all above drawings of the distribution box and its components in triplicate to CE (STORES) office and get approved before commencement of supply (i.e. Ist Lot of Distribution Boxes).

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/SMC/URBAN/2010/10**

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.

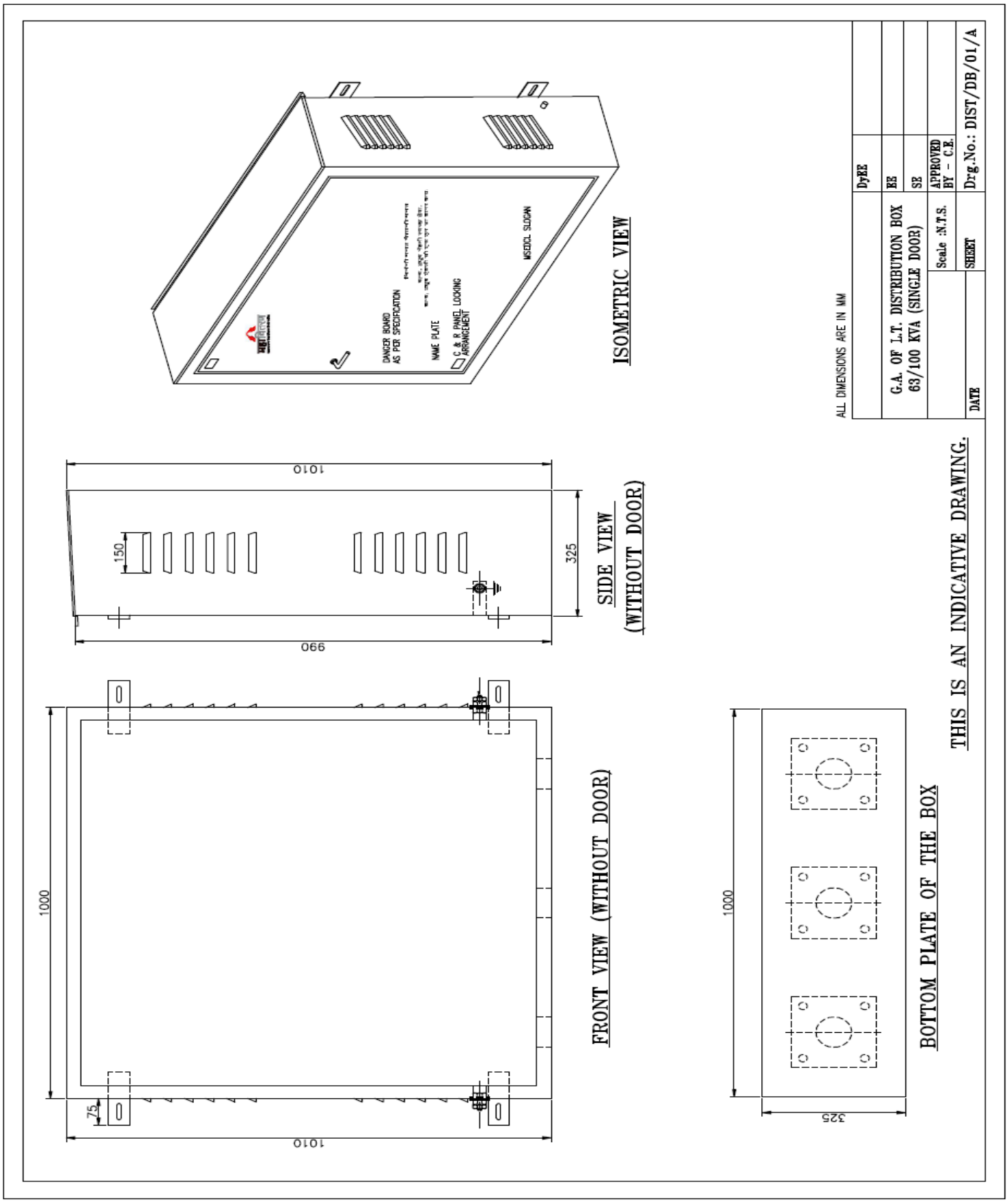
7 TEST CERTIFICATES:

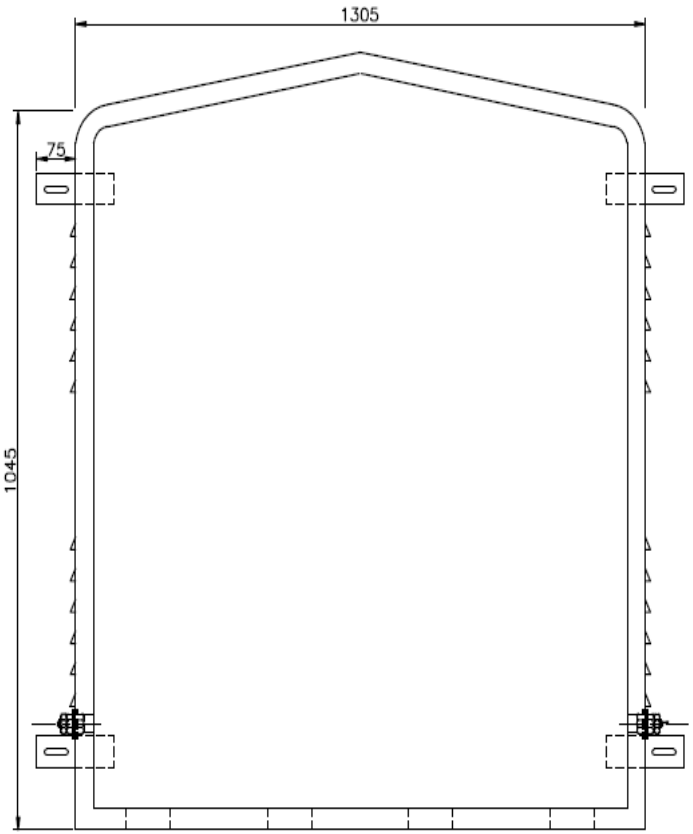
At present the following makes and types of bimetallic lugs are accepted by the MSEDCL.

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

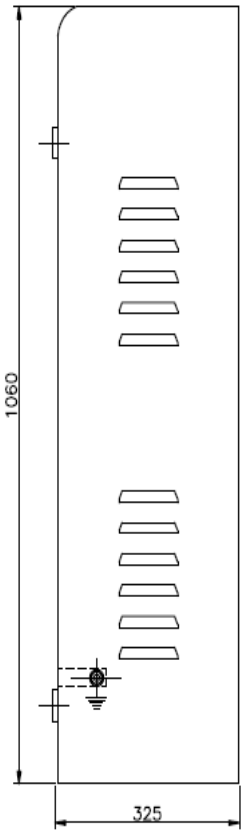
In case any other equivalent make of bimetallic lugs, if bidder offer, they should indicate makes and types of bimetallic lugs in E-tendering GTP. The bidders should submit complete test reports of the bimetallic lugs as per this specification, clause No. 6 to CE (STORES) for approval before commencement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

8. DRAWING ENCLOSED: No. DIST/DB/SMC/URBAN/2010/10

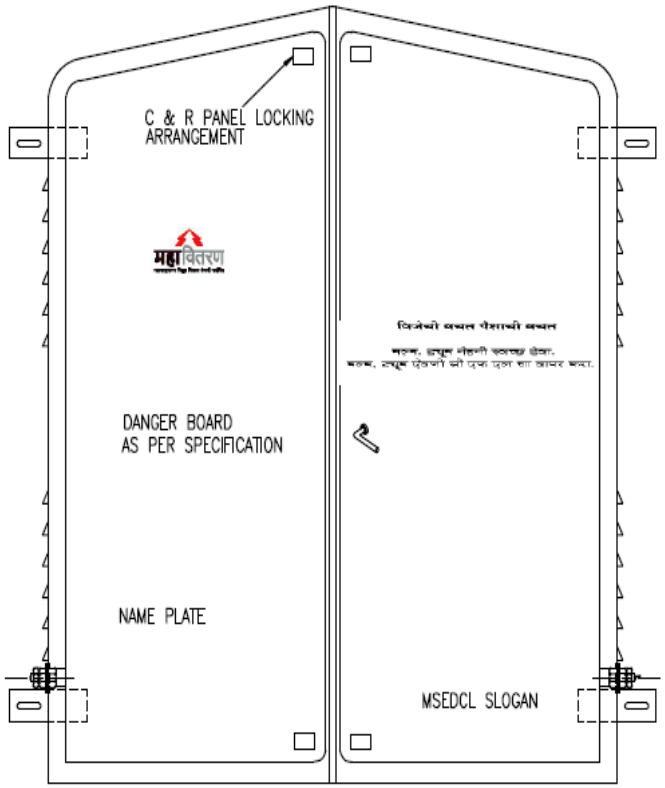

ISOMETRIC VIEW
DANGER BOARD AS PER SPECIFICATION
NAME PLATE
G & R PANEL LOCKING ARRANGEMENT
MSEDCL SLOGAN
SIDE VIEW (WITHOUT DOOR)
1010
150
325
990
FRONT VIEW (WITHOUT DOOR)
1000
75
1010
BOTTOM PLATE OF THE BOX
1000
325
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
G.A. OF L.T. DISTRIBUTION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



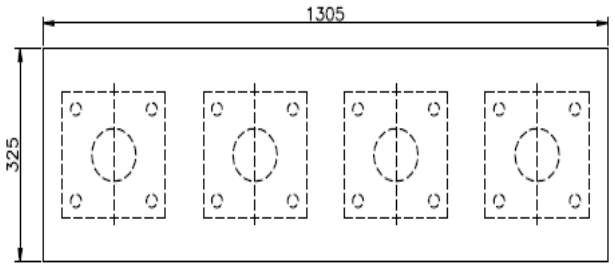
FRONT VIEW (WITHOUT DOOR)



SIDE VIEW
(WITHOUT DOOR)



FRONT VIEW (WITH DOOR)

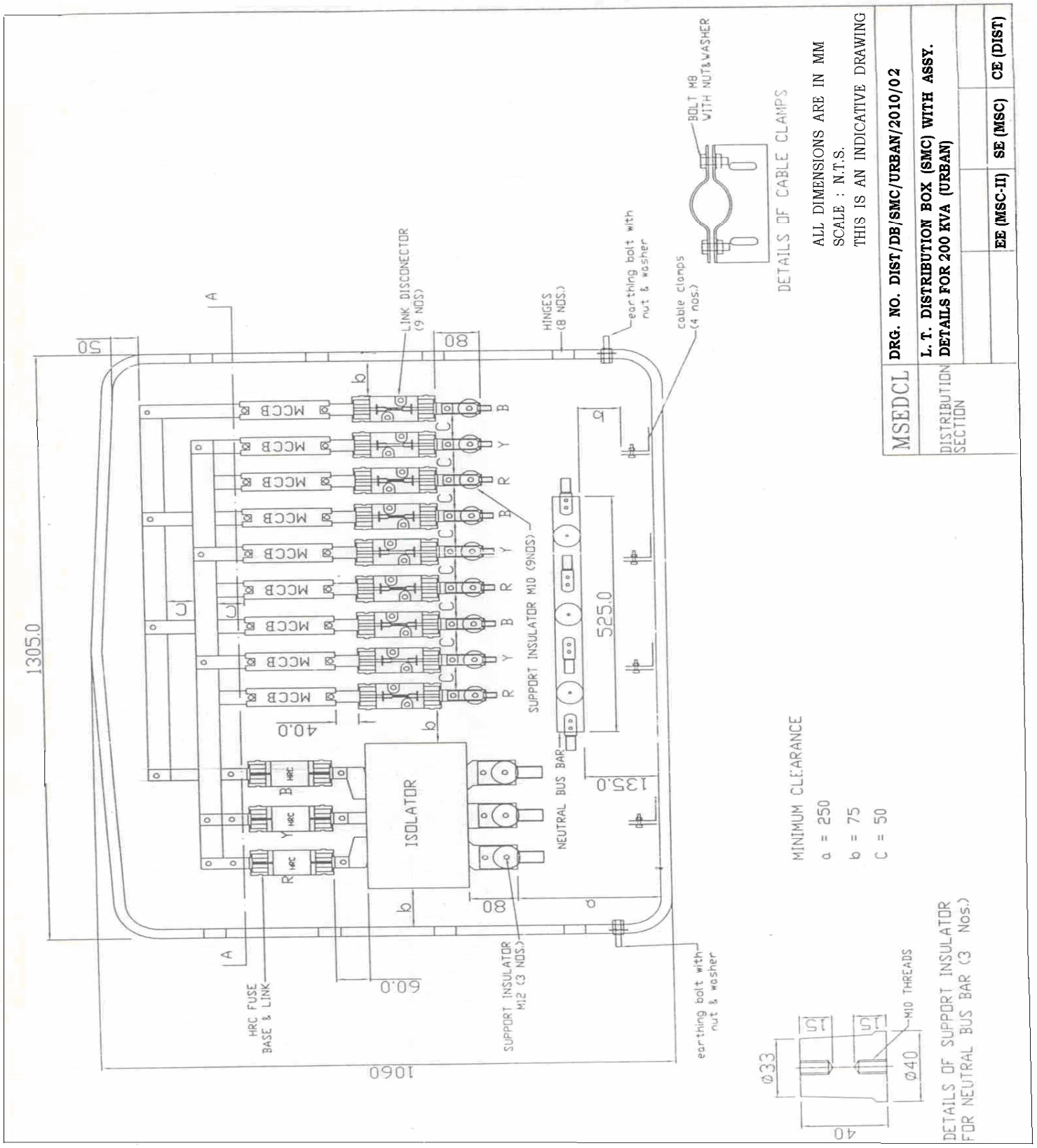


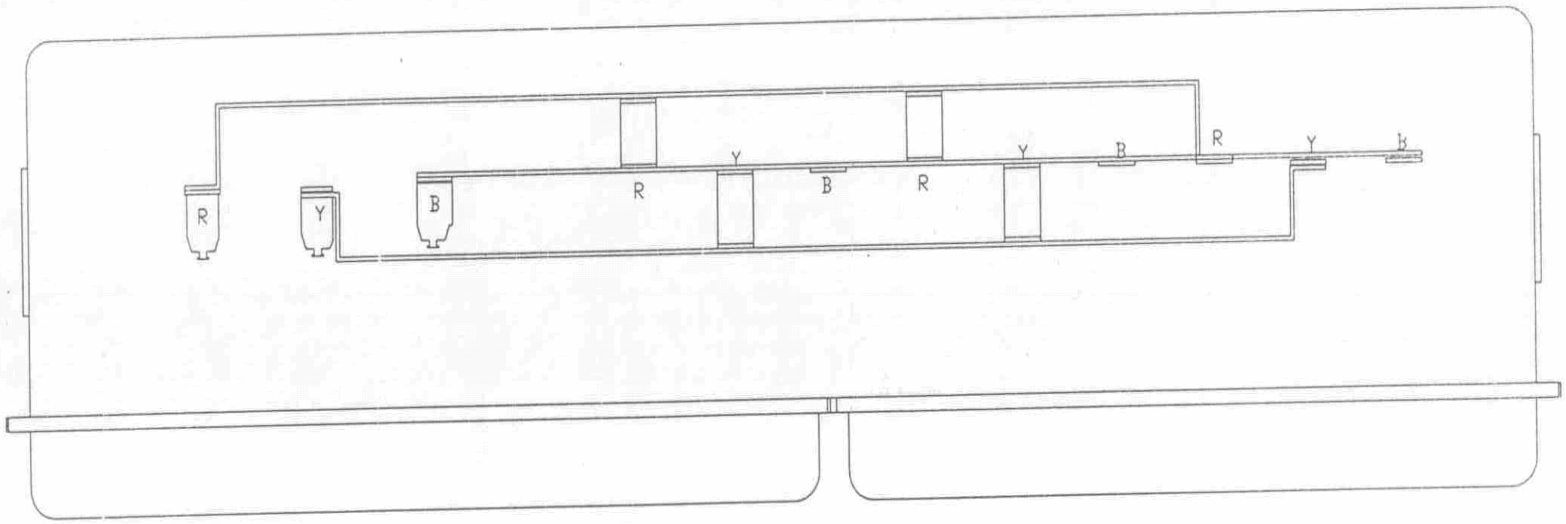
BOTTOM PLATE OF THE BOX

THIS IS AN INDICATIVE DRAWING.

ALL DIMENSIONS ARE IN MM

		DyEE	
G.A. OF L.T. DISTRIBUTION BOX 200 KVA (DOUBLE DOOR)		EE	
		SE	
	Scale :N.T.S.	APPROVED BY - C.E.	
DATE	SHEET	Drg.No.: DIST/DB/02/B	

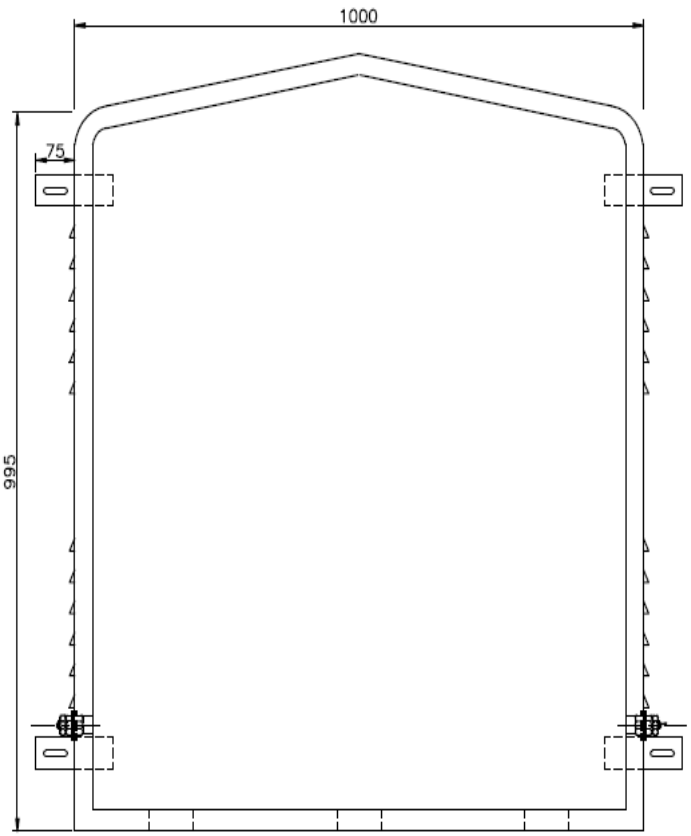

1305.0
1060
50
80
60.0
40.0
525.0
135.0
MCCB
ISOLATOR
LINK DISCONECTOR (9 NOS)
HINGES (8 NOS.)
earthing bolt with nut & washer
cable clamps (4 nos.)
BOLT M8 WITH NUT&WASHER
DETAILS OF CABLE CLAMPS
SUPPORT INSULATOR M10 (9NOS)
NEUTRAL BUS BAR
HRC FUSE BASE & LINK
SUPPORT INSULATOR M12 (3 NOS.)
earthing bolt with nut & washer
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING
MINIMUM CLEARANCE
a = 250
b = 75
C = 50
Ø33
Ø40
M10 THREADS
40
DETAILS OF SUPPORT INSULATOR FOR NEUTRAL BUS BAR (3 Nos.)
MSEDCL
DRG. NO. DIST/DB/SMC/URBAN/2010/02
L.T. DISTRIBUTION BOX (SMC) WITH ASSY.
DETAILS FOR 200 KVA (URBAN)
DISTRIBUTION SECTION
EE (MSC-II)
SE (MSC)
CE (DIST)



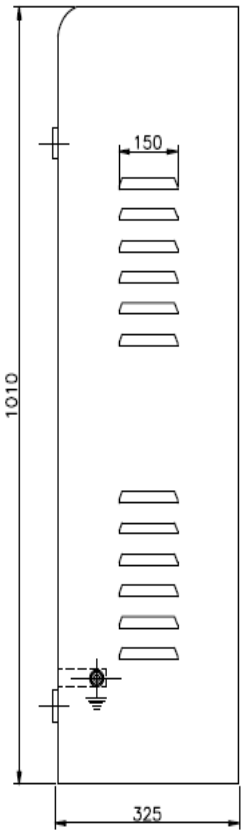
SECTION "A-A" WITH BUS BAR ASSEMBLY DETAILS.

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING

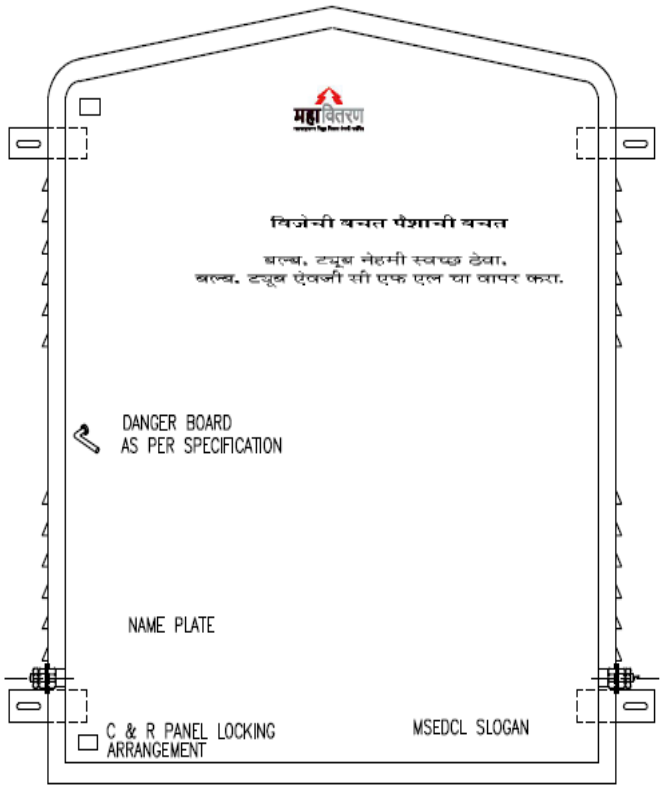
MSEDCL	**DRG. NO. DIST/DB/SMC/URBAN/2010/03**			
DISTRIBUTION SECTION	**L. T. DISTRIBUTION BOX (SMC) WITH BUS BAR DETAILS FOR 200 KVA (URBAN)**			
		EE (MSC-II)	**SE (MSC)**	**CE (DIST)**



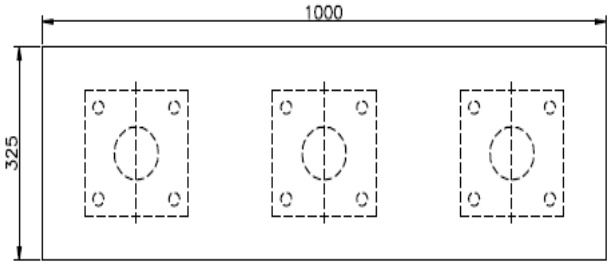
FRONT VIEW (WITHOUT DOOR)



SIDE VIEW
(WITHOUT DOOR)



FRONT VIEW (WITH DOOR)

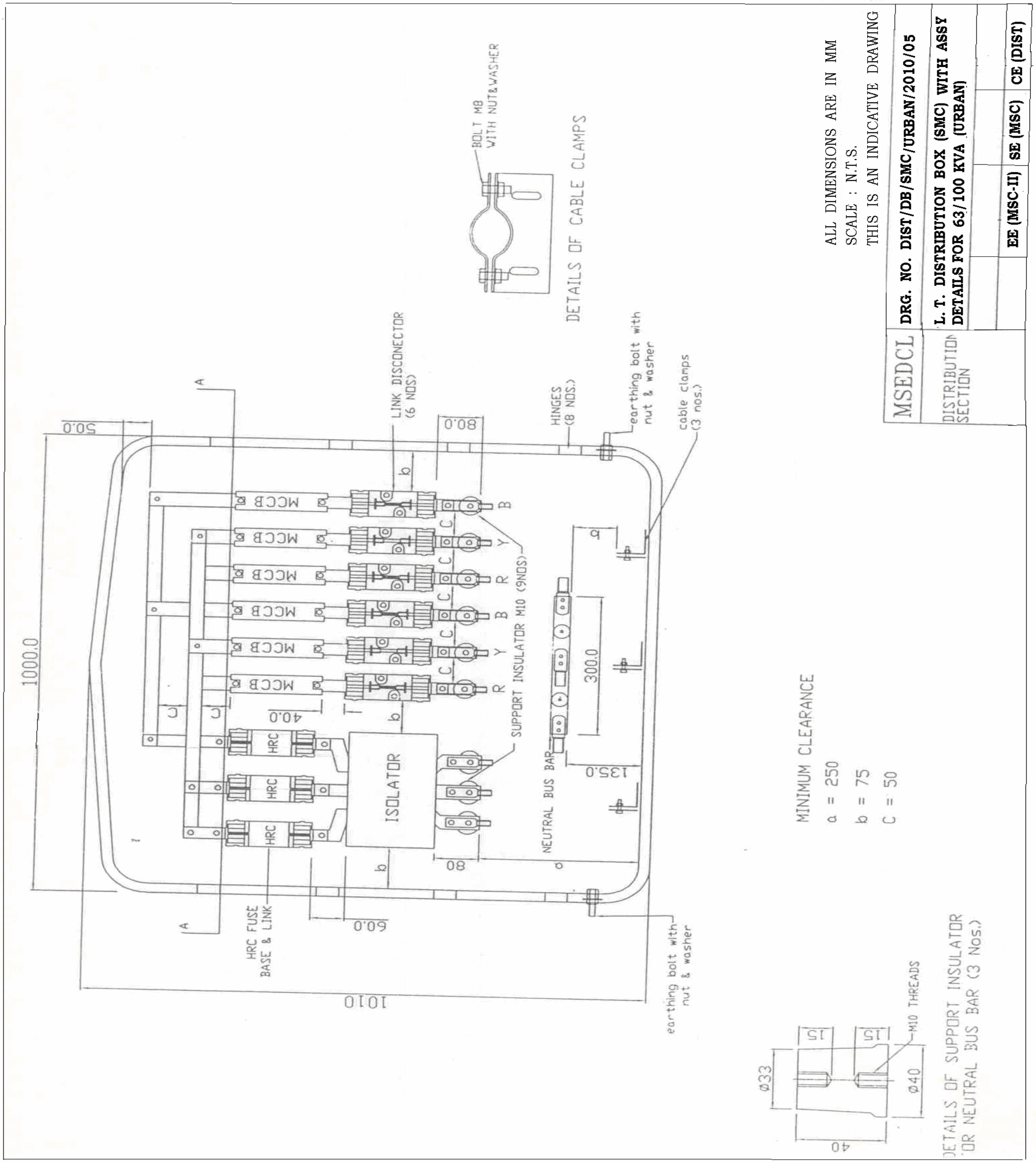


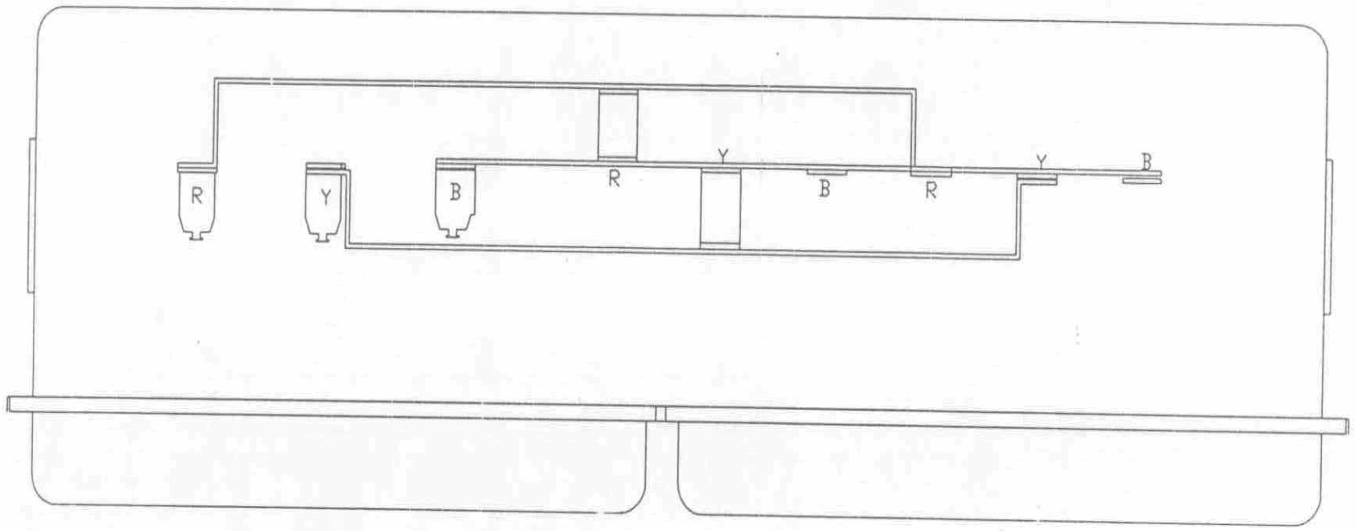
BOTTOM PLATE OF THE BOX

THIS IS AN INDICATIVE DRAWING.

ALL DIMENSIONS ARE IN MM

		DyEE	
G.A. OF L.T. DISTRIBUTION BOX 63/100 KVA (SINGLE DOOR)		EE	
		SE	
	Scale :N.T.S.	APPROVED BY - C.E.	
DATE	SHEET	Drg.No.: DIST/DB/01/B	

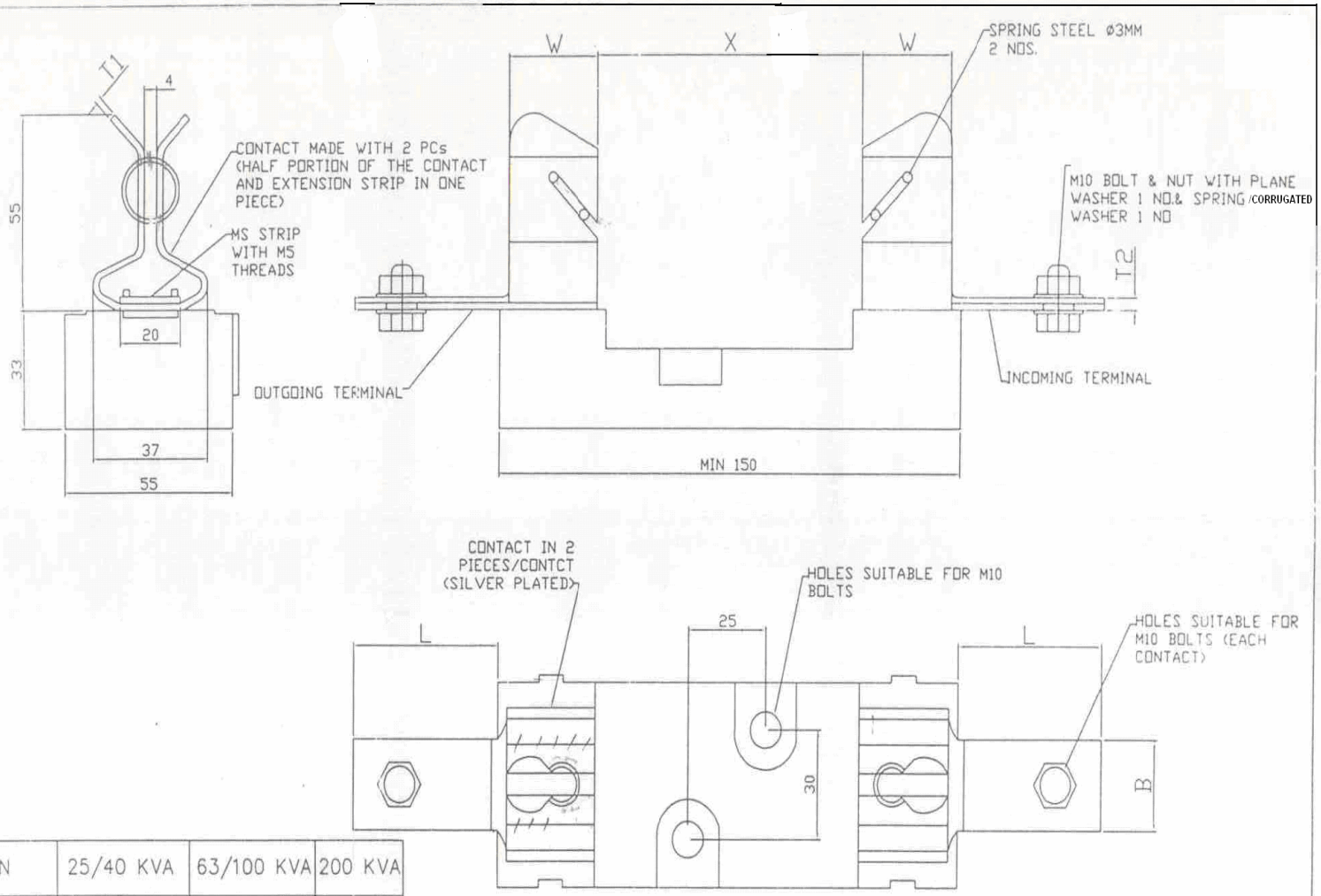

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING
MSEDCL
DRG. NO. DIST/DB/SMC/URBAN/2010/05
DISTRIBUTION SECTION
L. T. DISTRIBUTION BOX (SMC) WITH ASSY DETAILS FOR 63/100 KVA (URBAN)
EE (MSC-II)
SE (MSC)
CE (DIST)
BOLT M8 WITH NUT&WASHER
DETAILS OF CABLE CLAMPS
LINK DISCONECTOR (6 NOS)
HINGES (8 NOS.)
earthing bolt with nut & washer
cable clamps (3 nos.)
SUPPORT INSULATOR M10 (9NOS)
NEUTRAL BUS BAR
ISOLATOR
MCCB
HRC
HRC FUSE BASE & LINK
earthing bolt with nut & washer
MINIMUM CLEARANCE
a = 250
b = 75
C = 50
1000.0
1010
50.0
80.0
40.0
60.0
80
300.0
135.0
Ø33
Ø40
40
15
M10 THREADS
DETAILS OF SUPPORT INSULATOR FOR NEUTRAL BUS BAR (3 Nos.)



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

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING

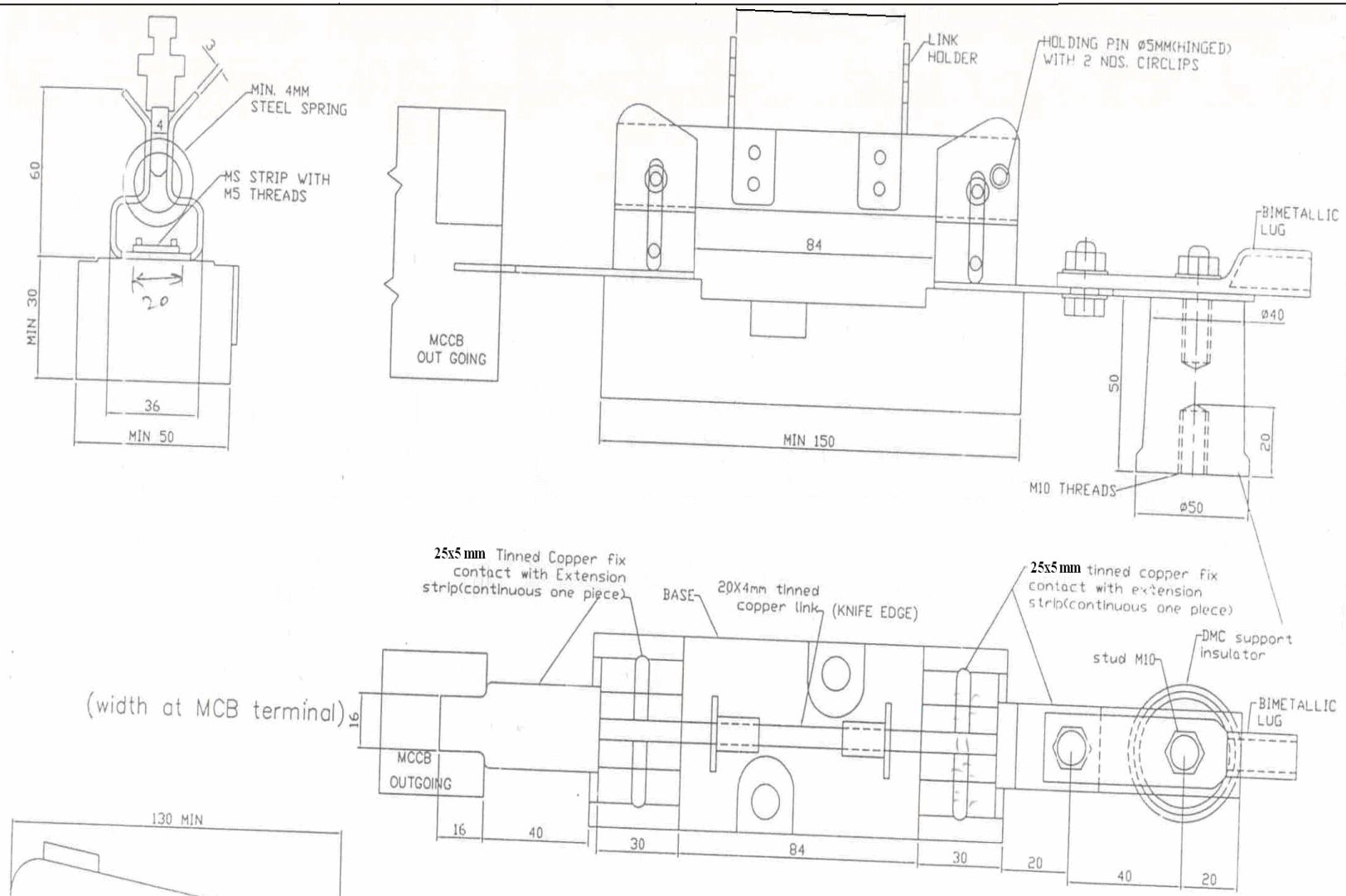
MSEDCL	DRG. NO. DIST/DB/SMC/URBAN/2010/06			
DISTRIBUTION SECTION	L. T. DISTRIBUTION BOX (SMC) WITH BUS BAR DETAILS FOR 63/100 KVA (URBAN)			
		EE (MSC-II)	SE (MSC)	CE (DIST)



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

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING

MSEDCL	DRG NO. DIST/DB/SMC/URBAN/2010/07			
DISTRIBUTION SECTION	HRC FUSE BASE FOR 63/100/200 KVA LT DISTRIBUTION BOX SMC (URBAN)			
		EE (MSC-II)	SE (MSC)	CE (DIST)



ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING

MSEDCL	DRG NO. DIST/DB/SMC/URBAN/2010/08			
DISTRIBUTION SECTION	DETAILS OF LINK DISCONNECTOR FOR 63/100/200 KVA LT DISTRIBUTION BOX SMC (URBAN)			
		EE (MSC-II)	SE (MSC)	CE (DIST)

महाराष्ट्र स्टेट इलेक्ट्रीसिटी डिस्ट्रीब्यूशन कंपनी लिमिटेड

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

[illegible]था डिस्ट्रीब्युशन बॉक्स् मधील साधनांची माहिती.

१) इंकमींग स्वीचची क्षमता = ____________ ॲम्पिअर्स

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

३) एम. सी.सी.बी चे करंट रेटिंग / किटकॅट चे रेटिंग (प्रत्येक [illegible] साठी) = ____________ ॲम्पिअर्स.

४) लिंक डिस्कनेक्टर्सची एकूण संख्या = ______

अ) डिस्ट्रीब्यु[illegible] बॉक्स् [illegible] खाली [illegible] काळजी घ्या[illegible].

१) वरीलप्रमाणे सर्व साधने बॉक्समध्ये आहेत याची खात्री करा.

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

३) नट–बोल्ट आवळताना बॉक्स् सोबत दिलेल्या प्लॅस्टिकपिशवीत / [illegible] विशिष्ट [illegible] वापर सढळ हाताने करावा. नट–बोल्ट आवळल्यानंतर राहिलेले / वर आलेले ग्रीस तसेच राहू द्या. ते काढू नका.

4) इनकमिंग (येणाऱ्या) व आऊटगोईंग (जाणाऱ्या) साठी खाली [illegible] आकाराची केबल वापरा.

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

इन्कमिंग स्विचला/लिंक डिस्कनेक्टरला केबल जोडण्यासाठी लग्जचा वापर करा.

५) केबलच्या वायरचा आकार हा बहुधा त्रिकोणासारखा असतो. तो लग्ज वापरण्यापूर्वी गोल करून घ्या. वायर लग्जमध्ये घालताना व केबलसहित लग्ज जोडताना विशिष्ट ग्रीसचा ([illegible] जेलीचा) वापर करा. इन्कमिंग (येणाऱ्या) व आऊटगोईंग (जाणाऱ्या) वायरी लग्जशिवाय टर्मिनलमध्ये थेट जोडू नका. ते त्रासदायक आहे.

बोल्टने आवळून घट्ट करा. त्यामध्ये फ्लॅट (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 वगैरेसारखे प्राणी आंतमध्ये जाणार नाहीत व शॉर्ट सर्किटचा धोका टाळला जाईल.

७) बॉक्सबरोबर दिलेल्या पी.व्ही.सी. च्या बिना बाराच्या रिंग (ग्लँड) डिस्ट्रिब्युशन बॉक्सच्या इन्कमिंग व आऊटगोईंग वायरींच्या छिद्राभोवती पक्क्या बसवा म्हणजे वायरी तेथे घासल्या जाणार नाहीत.

८) सर्व कामे संपल्यानंतर डिस्ट्रिब्युशन बॉक्सचा दरवाजा व्यवस्थित बंद करून कुलुप लावण्यास विसरू नका.

९) नियमित सर्व जॉईंट्स (सांधे) तपासा व आवश्यकतेनुसार घट्ट करा.

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

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

२) एम. सी. सी. बी ट्रिप झाल्यानंतर थोड्या वेळानंतर "नॉब" ऑफपोझिशनवर आणा म्हणजे एम. सी. सी. बी. रीसेट होईल. एम. सी. सी. बी. ऑन/ऑफपोझिशनवर न्या.

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

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

५) एम. सी. सी. बी. बदलताना तो वर नमुद केलेल्या / योग्य करंट सेटिंगचा वापर करा.

क) इन्कमिंग स्विच वापरण्याबाबत सूचना :

१) इन्कमिंग स्विच सहजपणे "ऑन / ऑफ" करू शकाल अशा पद्धतीचा आहे. "ऑन / ऑफ' इन्डीकेशन ऑपरेटिंग हॅन्डलवर आहे.

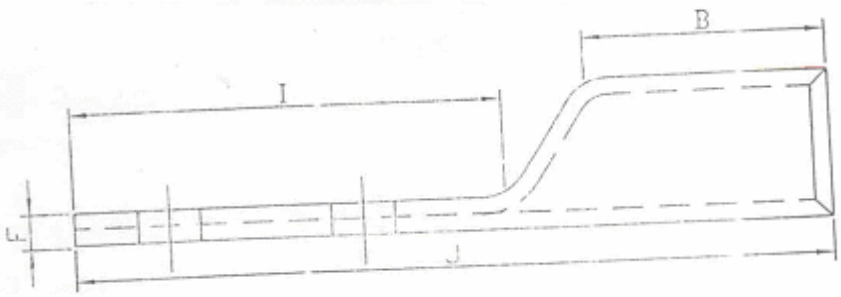
२) इन्कमिंग स्विच "ऑन" करण्यासाठी हॅन्डल क्लॉकवाईज (घड्याळाच्या) दिशेने फिरवा.

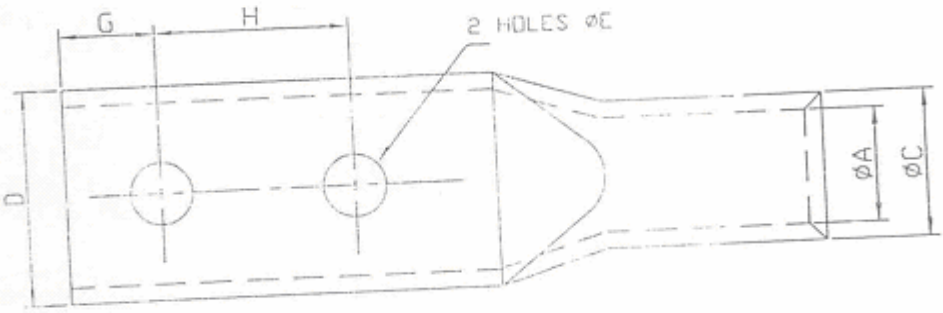
३) इन्कमिंग स्विच "ऑफ" करण्यासाठी हॅन्डल ॲन्टिक्लॉकवाईज (घड्याळाच्या विरूद्ध) दिशेने फिरवा.

४) इन्कमिंग स्विच बदलताना तो वर नमुद केलेल्या / योग्य क्षमतेचा वापरा.

ध्यानात ठेवा हा डिस्ट्रिब्युशन बॉक्स व्यवस्थित हाताळल्यास ट्रान्सफॉर्मरचे व इतर मालमत्तेचे नुकसान टाळता येते. तसेच लाईन स्टाफला सुद्धा अधिक सुरक्षितता मिळते

MSEDCL	DRG. NO. DIST./ DB / SMC / URBAN/2010/09			
DISTRIBUTION SECTION	INSTRUCTIONS LEAFLET IN MARATHI			
		EE(MSC-II)	SE(MSC)	CE(DIST.)

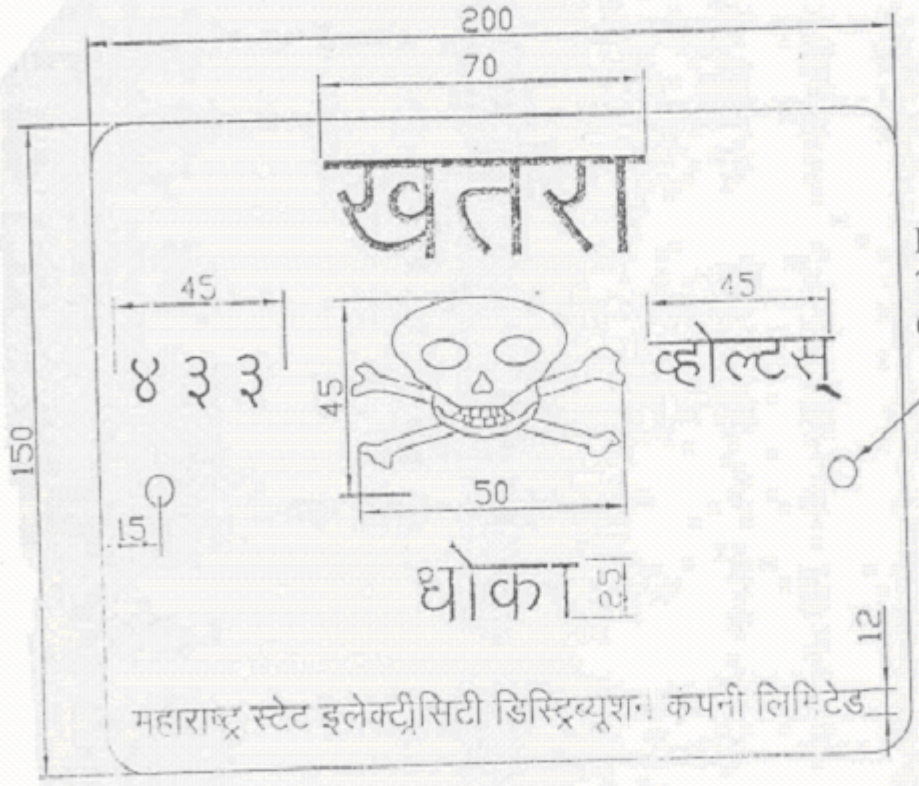




CABLE SIZE	øA	øC	D	F	øE	B	G	H	I	J
(25 SQ MM)	7.0	9.7	13.7	2.7	8.2	21	11	20.0	–	70
(35 SQ MM)	8.0	10.8	15.4	2.8	8.2	21	11	20.0	–	70
(50 SQ MM)	9.6	13.0	20.0	3.5	10.3	30	13	40	65.0	115
(70 SQ MM)	11.8	17.0	24.0	5.3	10.3	38	13	40	65.0	115
(95 SQ MM)	13.0	17.0	30.0	3.9	10.3	30	13	40	65.0	115
(120 SQ MM)	15.6	21.9	30.0	6.0	13.0	50	20	40	81.0	145
(150 SQ MM)	16.5	22.0	31.5	5.3	13.0	50	20	40	90.0	156
(185 SQ MM)	18.2	27.6	50.0	9.0	13.0	50	20	40	90.0	156
(225 SQ MM)	21.8	30.0	50.0	7.5	13.0	50	20	40	90.0	156
(240 SQ MM)	21.8	30.0	50.0	7.5	13.0	50	20	40	90.0	156
(300 SQ MM)	24.0	31.0	45.0	6.8	13.0	50	20	40	90.0	156

ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING.

MSEDCL	DRG. NO. DIST./ DB / SMC / URBAN/2010/ 10			
DISTRIBUTION SECTION	BIMETALLIC LUGS			
		EE(MSC-II)	SE(MSC)	CE(DIST.)



A. SPECIFICATION FOR THE BOARD.

1. MATERIAL : 18 SWG M.S. SHEET.
2. SIZE : 200mm X 150mm.
3. FRONT SIDE (BACKGROUND) ENAMMELED WIRE, LETTERING, FIGURES OF VOLTAGE, PAINTING OF SKULL AND BONES SHALL BE IN SIGNAL RED COLOUR
4. BACKSIDE : ENAMELLED AS PER IS :2551.
5. BOLT HOLES : 2 Nos. 7mm Ø FOR 6Ø G.I. BOLTS.

NOTE : CORNERS OF THE PLATE SHALL BE ROUNDED.
ALL LETTERINGS SHALL BE CENTRLLY SPACED.

ALL DIMENSIONS ARE IN MM.
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING.

MSEDCL	DRG. NO. DIST./ DB / SMC / URBAN/2010/11			
DISTRIBUTION SECTION	DANGER BOARD			
		EE(MSC-II)	SE(MSC)	CE(DIST.)

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.

7) **विजेची बचत पैशाची बचत**
आवश्यक तेवढा गारवा निर्माण झाल्यावर एअर कंडिशनर, कुलर बंद करा.

8) **विजेची बचत पैशाची बचत**
एक दिवा येई अनेक कामी
पैशांची करी बचत नामी

9) **विजेची बचत पैशाची बचत**
विजेची बचत हा विजेचा नवा स्त्रोत
उज्ज्वल भविष्यासाठी आज करा बचत

10) **विजेची बचत पैशाची बचत**
थेंबे थेंबे तळे साचे
तुमच्या बचतीने वीज वाचे

11) **विजेची बचत पैशाची बचत**
असेल शक्य जेथे जेथे वीज वाचवा तेथे तेथे

12) **विजेची बचत पैशाची बचत**
मोफत व विपुल सूर्य प्रकाशाचा पुरेपूर वापर करा.

13) **विजेची बचत पैशाची बचत**
विजेचे साहित्य दर्जेदारच वापरा.

14) **विजेची बचत पैशाची बचत**
नैसर्गिक ऊर्जा स्त्रोतांचा पुरेपूर वापर करा.

15) **विजेची बचत पैशाची बचत**
सुर्यप्रकाश आहे फुकट
वीज मिळते विकत
विजेची बचत हीच विजेची निर्मिती.

GURANTEED TECHNICAL PARTICULARS for 63,100,200 KVA SMC L.T. Distribution Boxes with MCCB for Urban 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)	TEXT
19	Detailed Name plate provided (Yes/No)	BOOLEAN
20	Material & thickness of name plate	TEXT
21	Marathi slogans shall be painted on each box as per annexure attached with technical specification (Yes/ No)	BOOLEAN
22	Material & Size of Busbar	TEXT
23	Material & Size of neutral busbar :	TEXT
24	Busbar support insulator provided as per drawings (Yes/No)	TEXT
25	Size & No. of Earthing nutbolts provided	TEXT
26	Fixing arrangement provided	TEXT
27	Size of component mounting strip	TEXT
28	Packing of box	TEXT
29	Name or Trade mark of Manufacturer of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
30	Type of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
31	Designation of ISOLATOR (SWITCH DISCONNECTOR)	TEXT
32	Rating of Isolator in Amp	NUMERICAL
33	Rated Current of Isolator in Amp	NUMERICAL
34	Rated Voltage of Isolator in Volts	NUMERICAL
35	Basic Uninterrupted Duty of Isolator	TEXT
36	Utilization category of Isolator	TEXT
37	Rated short time withstand capacity of isolator for 2 seconds in kA	TEXT
38	Rated insulation voltage of Isolator in Volts	TEXT
39	The Material of base of isolator shall be DMC	TEXT
40	The DMC base of isolator withstand breaking capacity shall be 80 kA	TEXT

41	The archutes provided in the isolator as technical specifications	TEXT
42	Size of strips on outside of the Isolator provided in mm	TEXT
43	Name or Trade Mark of Manufacturer of HRC Fuse Base	TEXT
44	Rated Current of HRC Fuse Base in Amps	NUMERICAL
45	Rated Voltage of HRC Fuse Base in Volts	NUMERICAL
46	Breaking Capacity of HRC Fuse Base in kA	NUMERICAL
47	Name & Trade mark of Manufacturer of HRC Fuse link	TEXT
48	Rated Current of HRC Fuse Link in Amps	Numerical
49	Rated Voltage of HRC Fuse Link in Volts	NUMERICAL
50	Breaking Capacity of HRC Fuse Link in kA	NUMERICAL
51	Fault Indication of HRC Fuse Link	TEXT
52	The base material of Link Disconnector	TEXT
53	Name or Trade mark of Manufacturer of LINK DISCONNECTOR	TEXT
54	Reference standard applied	TEXT
55	Rated Current of LINK DISCONNECTOR in Amp	NUMERICAL
56	Rated Voltage of LINK DISCONNECTOR in Volts	NUMERICAL
57	The base material of Link Disconnector	TEXT
58	Size of the terminal connector strips of the Link Disconnector in mm	TEXT
59	Material & Size of Male contact terminal of LINK DISCONNECTOR	TEXT
60	Material & Size of Female contact terminal (Solid link hinged) of LINK DISCONNECTOR	TEXT
61	Handle/ puller provided with each Distribution Box (Yes/No)	BOOLEAN
62	Make of Bimetallic lugs	TEXT
63	Reference standard applied for Bimetallic lugs	TEXT
64	Name of manufacturer of MCCB	TEXT
65	Reference of standard for MCCB	TEXT
66	Type designation (i.e.Fixed /Variable)	TEXT
67	Type of overload release	TEXT
68	No.of Poles	TEXT
69	Rated current (amps)	NUMRICAL
70	Rated Voltage & Frequency	TEXT
71	Rated short Circuit Breaking capacity in KA	TEXT
72	The archutes provided in MCCBs as technical specifications	TEXT
73	Ultimate Breaking capacity	TEXT
74	Utilization category	TEXT
75	Overload release setting provided in Amps	NUMERICAL
76	Colour of MCCB	TEXT
77	All Type tests carried out on Distribution box with complete assembly, Isolator, HRC Fuse & HRC Fuse link, MCCB & Link disconnector at laboratories accredited by NABL as per Technical specification and relevant IS shall be submitted before commencement of supply. (Yes/No).	BOOLEAN