Maharashtra State Electricity Distribution Company Limited

SPECIFICATION NO. Testing: MSC/DB/01 /2020

TECHNICAL SPECIFICATION

FOR

63, 100 kVA, 200 kVA LT DISTRIBUTION BOX (MS) with MCCBs for Urban Areas

FOR

DISTRIBUTION SYSTEM

IN

MSEDCL

I N D E X

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION COMPANY

Technical Specifications for

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

SPECIFICATION NO TESTING : MSC/DB/01 /2020

1. SCOPE:

Specification covers the design, manufacture, testing at works and supply of Distribution Boxes made out of **CRCA MS** for controlling the L.T. feeders from the L.T. side of Distribution Transformers. The system shall be A.C. 3 phase, 4 wire, 433 V, 50 HZ with effectively grounded neutral.

2. SERVICECONDITIONS:

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:5 /2007 - Colours of Ready Mixed paints and Enamels.

g. IS: 13871/1993 – Powder coatings – specifications

h. IS : 6005/1998 – Code of Practice for phosphating of iron and steel.

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/05 for 63/100 KVA and Drawing No. Dist / DB/ 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 Switch disconnector to be provided in the Distribution Box will be as per MSEDCL's approval as given in the detailed purchase order.

The Isolator should be front operated triple pole type. The casing of Isolator shall be of Non –tracking and heat resistant insulating material of Dough Moulding Compound (DMC) of D3 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. 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/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 D3 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.

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 Bidder shall furnish detailed type test reports before or on due date & time of submission of tender. The HRC fuse base with links to be provided in the Distribution Box will be as per MSEDCL's approval given in the detailed purchase order.

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 Bidder shall furnish detailed type test reports before or on due date & time of submission of tender. The MCCBs to be provided in the Distribution Box will be as per MSEDCL's approval as given in the detailed purchase order. The colour of MCCBs for 63/100 /200 kVA 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 Sr. No. 5 above table, shall be based on the rated service short circuit test carried out at specified power factors.

The MCCB should be front operated single pole type. The casing of MCCB shall be of Non –tracking and heat resistant insulating material of Dough Moulding Compound (DMC) of D3 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 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. Duration, 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/09 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 Bidder shall furnish detailed type test reports before or on due date & time of submission of tender. The link Disconnectors to be provided in the Distribution Box will be as per MSEDCL's approval as 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 D3 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 **30 x 3 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 63/100/200 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/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. The phase busbar strips shall be of size 25X8 mm for 63 KVA/100 KVA and 40X15 mm for 200 KVA box. Feeder droppers shall be 25X8 mm. Incomer dropper of 25 x 8 mm cross section for 63 /100 KVA box and 40 x 15 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. 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 specification. Other clearances shall be as per requirement of IS: 4237/1982 amended upto date.

9 ENCLOSURE:

9.1 The Box & Doors shall be made up of CRCA MS sheet of 2mm thickness.

9.2 The manufacturing process of Box shall be either Deep Drawn process or Fabrication.

9.3 In case of Deep drawn type 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 in Deep Drawn Process.

9.4 In case of fabricated box sharp corners & one side slope will be acceptable. The fabrication boxes, involving welding, shall not have more than two joints.

9.5 The welding process of both type of distribution boxes shall be done by MIG (Metal Inert Gas) welding and workmanship/finishing should be good enough.

9.6 A. **For Fabrication Box:** The general overall clear dimensions of 63 / 100 KVA Distribution Box shall be 1000 x 1010 x 325 (LXHXW)mm. The height of distribution boxes on front side shall be 1010 mm and backside shall be 990 mm. (Drg No. Dist/DB/01/A) The general clear dimensions of 200 kVA Distribution Box shall be 1305 x 1060 x 325 (LXHXW) mm. The height of distribution boxes on front side shall be 1060 mm and

backside shall be 1040 mm. (Drg No. Dist/DB/02/A)

B. **For Deep Drawn Box:** The general clear dimensions of 63 / 100 KVA Distribution Box shall be 1000 x 1010 x 325 (LXHXW)mm. without considering collar 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 1060 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/02/B)

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.

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.

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 MCCBs, Link Disconnector, Isolator and HRC fuse base with 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 The electric grade aluminum Neutral Busbar of 300 x 30 x 8 mm for 63/100 KVA box and 525 x 40 x 15mm 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.

9.14 Two galvanized earthing Bolts of M12 x 50 mm size shall be welded 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. MCCBs 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
200 KVA	185 sq.mm	120 sq.mm

11 FINISHING OF DISTRIBUTION BOX:

The outer side and inside surface of the box shall be properly Pre-treated / Phosphated in seven tank process as per IS: 6005 and shall be applied powder coating of minimum 40 micron thickness. The Colour shade of **smoke gray** for 63 kVA box and **light gray** for 100 and 200 KVA box as per IS: 5/2007 (Colours of Ready Mixed paints and Enamels) shall be applied inside & outside surface of the box. Powder coating shall be suitable for outdoor use, conforming IS: 13871/1993 – Powder coatings. The process facility shall be in-house to ensure proper quality for outdoor application.

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 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 MCCBs / Link Disconnectors / Isolator / HRC fuse base with 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) Time-Current Characteristics

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- 7.2.

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 and 8 KA for 2 second for 200 KVA box) all the circuits independently. The test should be carried out after by- passing MCCBs.

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. Time /current characteristic test on MCCBs shall be carried out as per clause **7.2** of this specification as stated above.

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 MCCB:

All type tests on MCCB as per IS-13947 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 base , HRC Fuse Link ,Link Disconector 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 or on due date & time of submission of tender. 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 & 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 type test certificate carried out during last ten 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, MCCBs, Isolator 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 & Powder coating. In case box manufacturing/Powder Coating is to be carried out from outside agencies, the tenderer shall furnish the facilities available with the sub-vendor. Undertaking from sub-vendor, regarding providing services of these facilities, shall be submitted.

14. PROTOTYPE SAMPLE:

The successful bidders should manufacture 3 Nos. of prototype LT Distribution box of each ordered item as per the specification before bulk manufacturing and keep ready at your works for the purpose of sample inspection and testing. The representative of MSEDCL will inspect the prototype on any day within 15 days from the date of readiness intimated. Prior intimation of this inspection may not be given to the Bidder. The inspection report of prototype should be jointly signed by manufacturer and MSEDCL's 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 this office and no additional time period for the same will be given.

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.

All the lots of each rating of Box shall be inspected by the representative of Chief Engineer (Testing).

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

18. DRAWINGS ENCLOSED:

i) Dist/DB/02/A ii) Dist/DB/02/B

iii) Dist/DB/02 iv) Dist/DB/03

v) Dist/DB/01/A vi) Dist/DB/01/B

vii) Dist./DB/05 viii) Dist./DB/07

ix) Dist./DB/08 x) Dist./DB/09

xi) Dist./DB/12 xii) Dist./DB/13

xiii) MMC/DB/14 xiv) Annexure –I

xvi) MMC/DB/17-A & 17B xvii)MMC/DB/15

xviii) MMC/DB/16-A,16-B and 16-C

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

TECHNICALSPECIFICATION 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.

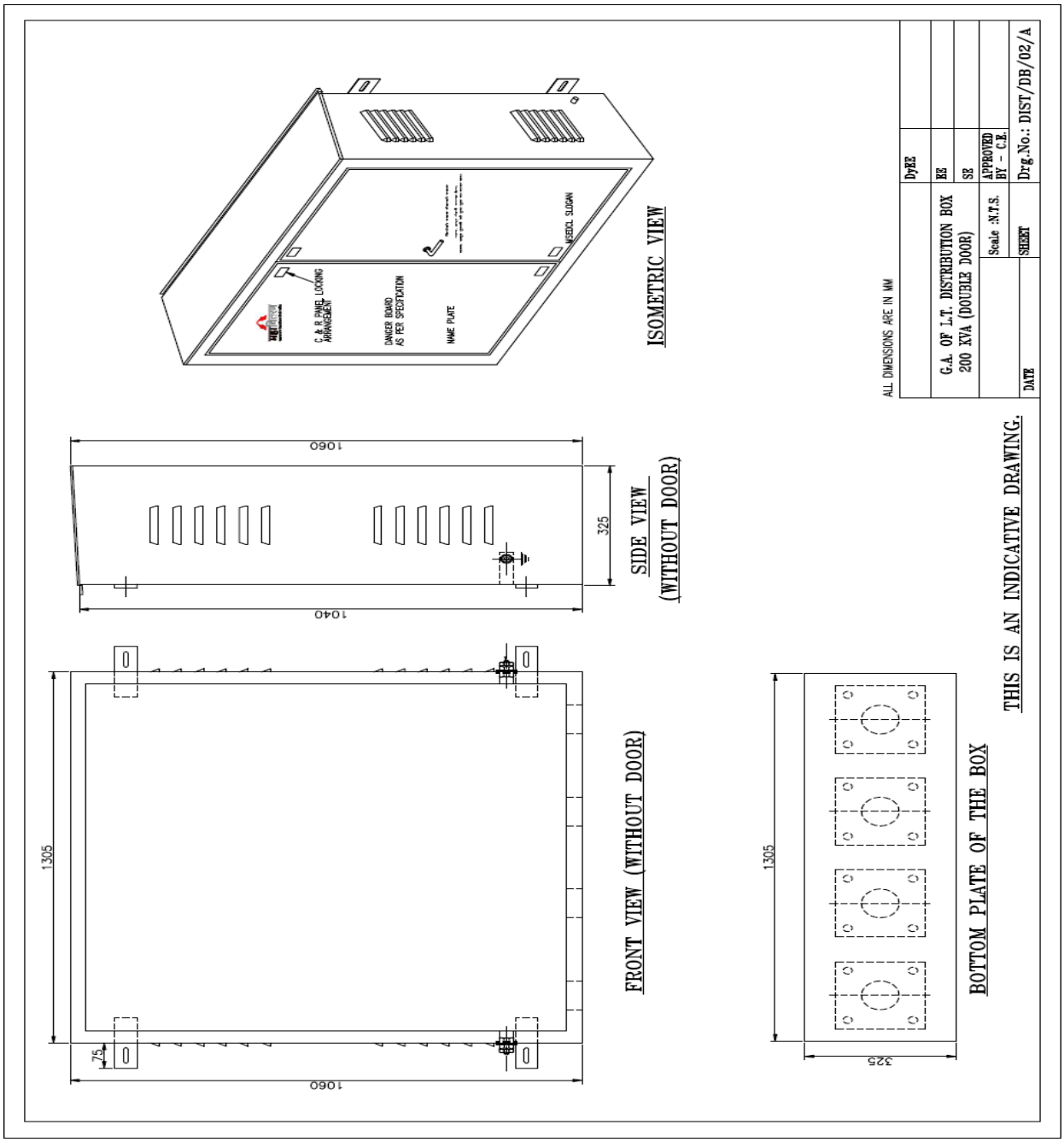
7 TEST CERTIFICATES:

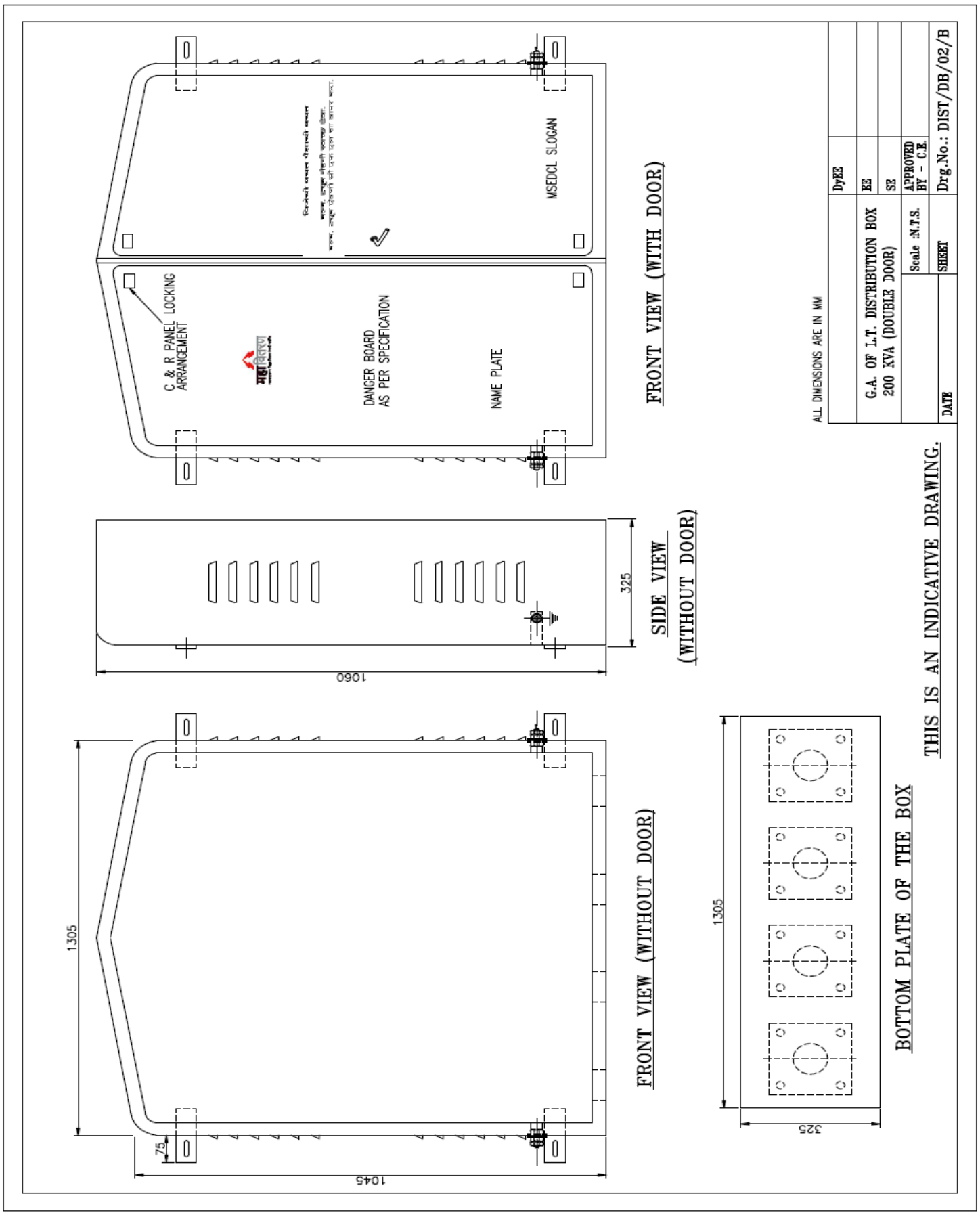
At present the following makes and types of bimetallic lugs are accepted by the MSEDCL.

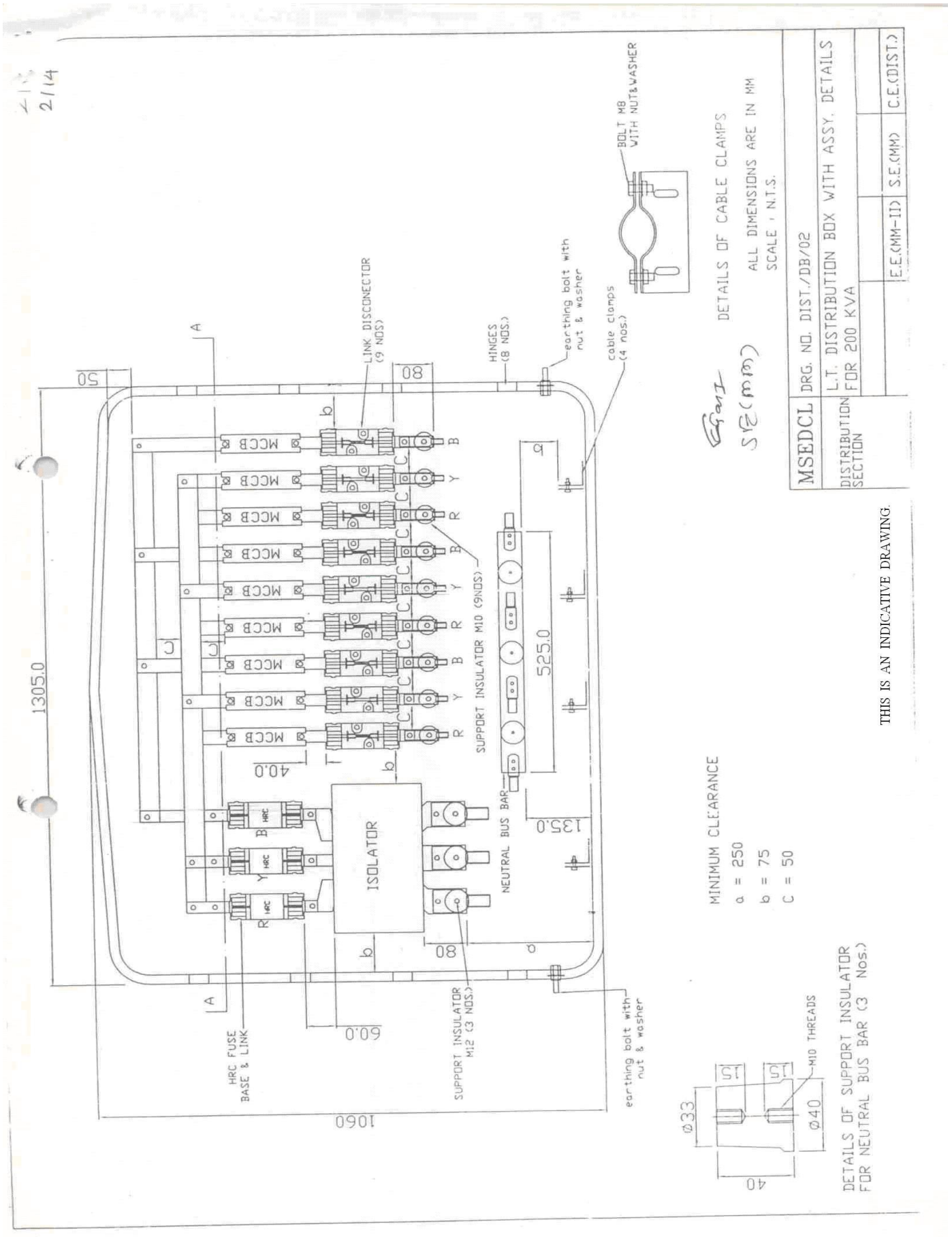
Usha Martin Industries, Ismail, Chetna , Klippon, SRI, Alcon, NES , Hames and HB

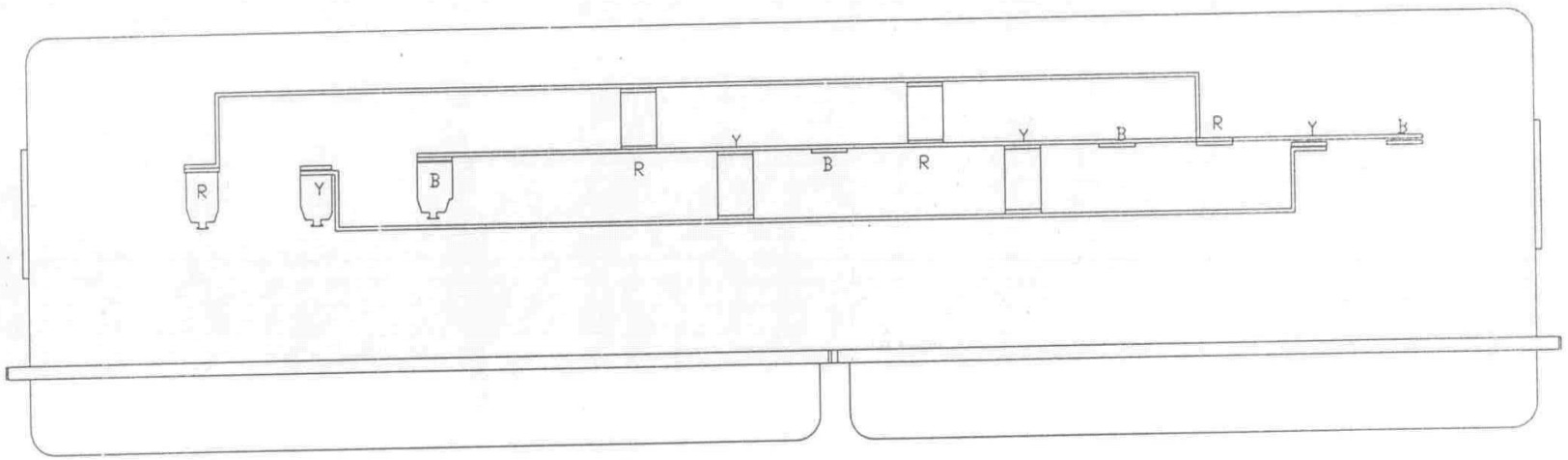
In case any other equivalent make of bimetallic lugs, if bidder offer, they should indicate makes and types of bimetallic lugs in E-tendering GTP. The bidders should submit complete test reports of the bimetallic lugs as per this specification, clause No. 6 to C.E. (Testing) for approval.. The Tests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

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


ISOMETRIC VIEW
C & R PANEL LOCKING ARRANGEMENT
DANGER BOARD AS PER SPECIFICATION
NAME PLATE
ASEFOL SLOGAN
SIDE VIEW (WITHOUT DOOR)
1060
325
1040
FRONT VIEW (WITHOUT DOOR)
1305
75
1060
BOTTOM PLATE OF THE BOX
1305
325
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
G.A. OF L.T. DISTRIBUTION BOX 200 KVA (DOUBLE DOOR)
Scale :N.T.S.
DATE
SHEET
Drg.No.: DIST/DB/02/A
DyEE
KS
SR
APPROVED BY - C.R.


C & R PANEL LOCKING ARRANGEMENT
DANGER BOARD AS PER SPECIFICATION
NAME PLATE
MSEDCL SLOGAN
FRONT VIEW (WITH DOOR)
1060
325
SIDE VIEW (WITHOUT DOOR)
1305
1045
75
FRONT VIEW (WITHOUT DOOR)
1305
325
BOTTOM PLATE OF THE BOX
THIS IS AN INDICATIVE DRAWING.
ALL DIMENSIONS ARE IN MM
G.A. OF L.T. DISTRIBUTION BOX 200 KVA (DOUBLE DOOR)
Scale :N.T.S.
DATE
SHEET
DyEE
EE
SE
APPROVED BY – C.E.
Drg.No.: DIST/DB/02/B


2/14
1305.0
1060
50
80
LINK DISCONNECTOR (9 NOS)
HINGES (8 NOS.)
earthing bolt with nut & washer
cable clamps (4 nos.)
BOLT M8 WITH NUT&WASHER
MCCB
ISOLATOR
SUPPORT INSULATOR M10 (9NOS)
NEUTRAL BUS BAR
525.0
135.0
40.0
60.0
HRC FUSE BASE & LINK
SUPPORT INSULATOR M12 (3 NOS.)
earthing bolt with nut & washer
DETAILS OF CABLE CLAMPS
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
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/02
DISTRIBUTION SECTION
L.T. DISTRIBUTION BOX WITH ASSY. DETAILS FOR 200 KVA
E.E.(MM-II)
S.E.(MM)
C.E.(DIST.)
THIS IS AN INDICATIVE DRAWING.



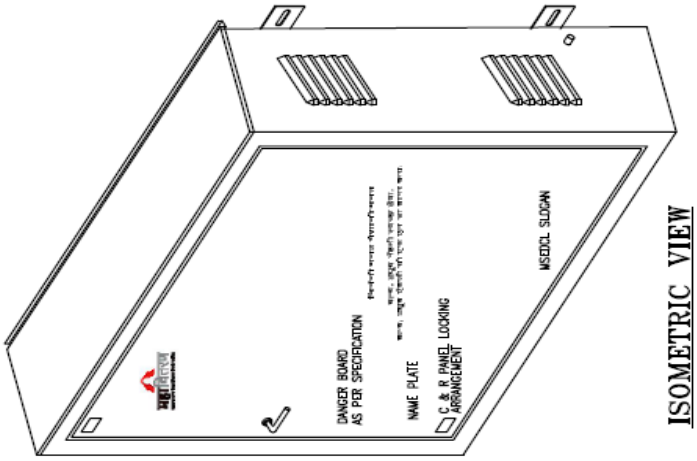
SECTION "A-A" WITH BUS BAR ASSEMBLY DETAILS.

Eqns ALL DIMENSIONS ARE IN MM

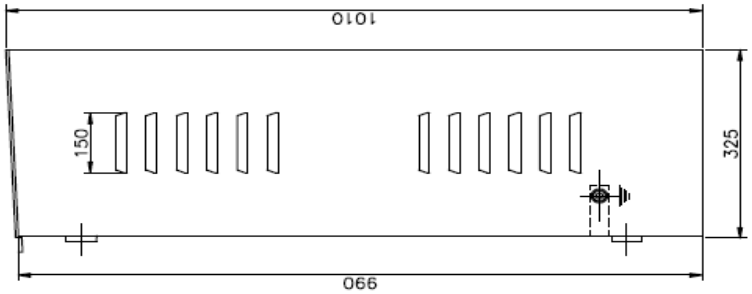
SIZE(mm) SCALE : N.T.S.

MSEDCL	DRG. NO. DIST./DB/03			
DISTRIBUTION SECTION	L.T. DISTRIBUTION BOX WITH BUS BAR DETAILS FOR 200 KVA			
		E.E.(MM-II)	S.E.(MM)	C.E.(DIST.)

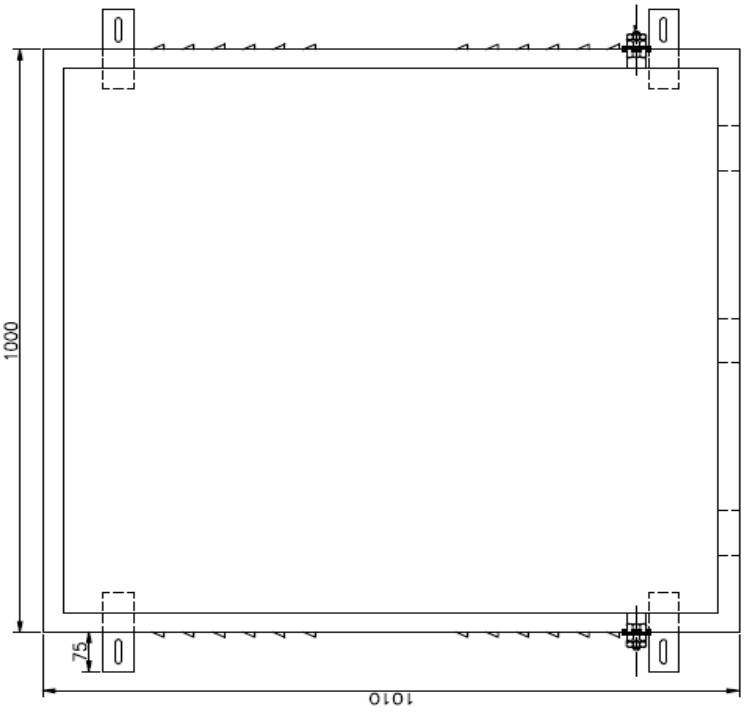
THIS IS AN INDICATIVE DRAWING.



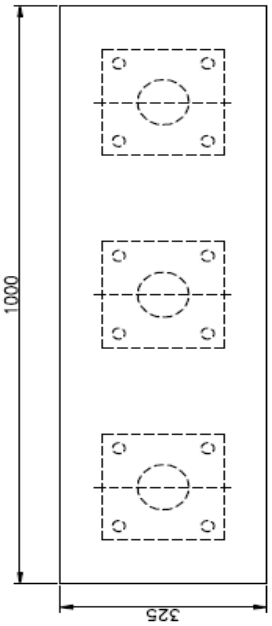
ISOMETRIC VIEW



SIDE VIEW
(WITHOUT DOOR)



FRONT VIEW (WITHOUT DOOR)

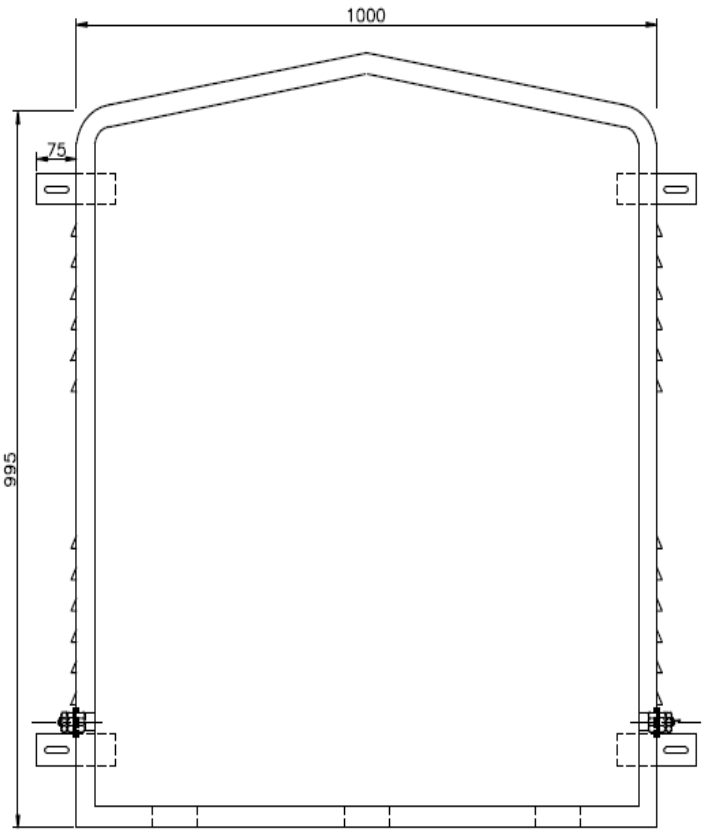


BOTTOM PLATE OF THE BOX

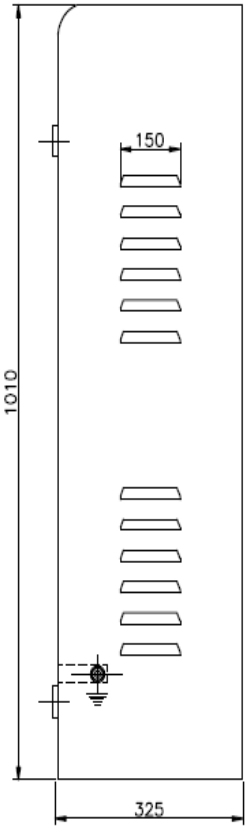
THIS IS AN INDICATIVE DRAWING.

ALL DIMENSIONS ARE IN MM

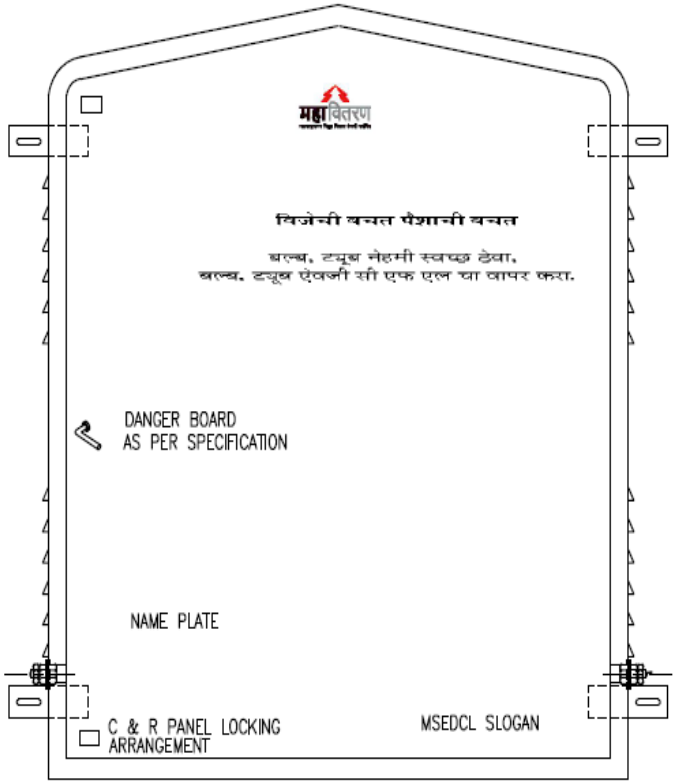
		DyEE
G.A. OF L.T. DISTRIBUTION BOX 63/100 KVA (SINGLE DOOR)		EE
		SE
	Scale :N.T.S.	APPROVED BY – C.E.
	SHEET	Drg.No.: DIST/DB/01/A
	DATE	



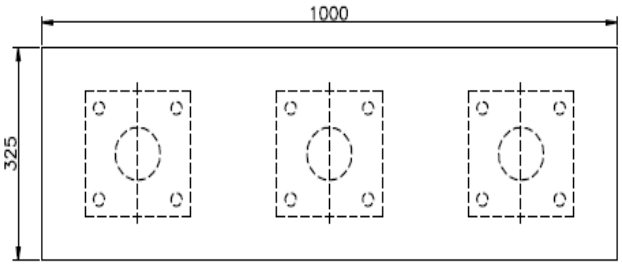
FRONT VIEW (WITHOUT DOOR)



SIDE VIEW
(WITHOUT DOOR)



FRONT VIEW (WITH DOOR)

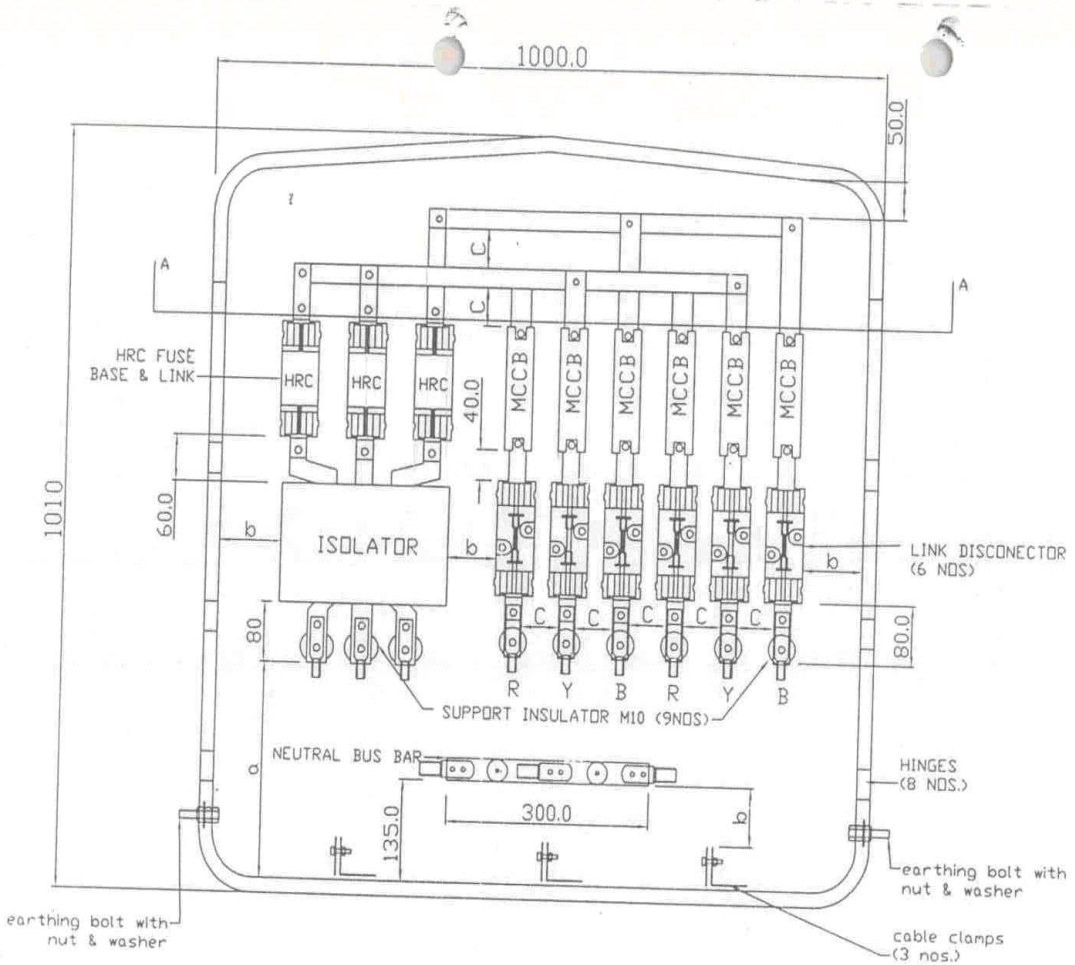


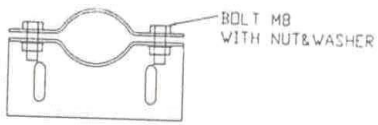
BOTTOM PLATE OF THE BOX

THIS IS AN INDICATIVE DRAWING.

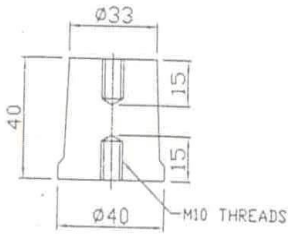
ALL DIMENSIONS ARE IN MM

		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	





DETAILS OF CABLE CLAMPS



DETAILS OF SUPPORT INSULATOR FOR NEUTRAL BUS BAR (3 Nos.)

MINIMUM CLEARANCE

a = 250

b = 75

C = 50

Grant

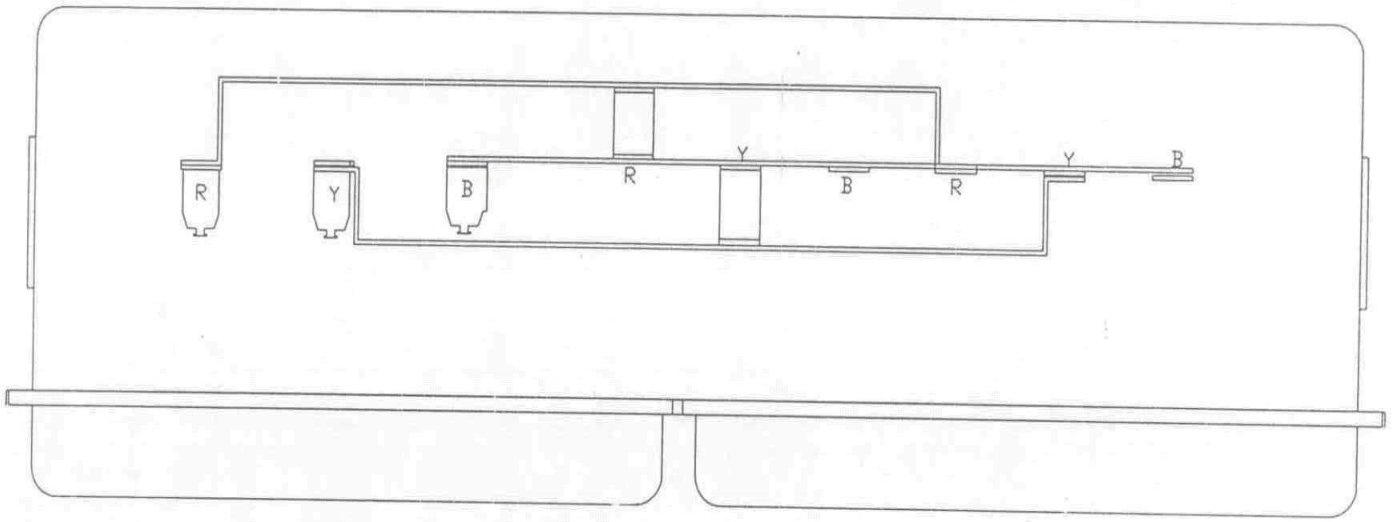
SE(MM)

ALL DIMENSIONS ARE IN MM

SCALE : N.T.S.

MSEDCL	DRG. NO. DIST./DB/05			
DISTRIBUTION SECTION	L.T. DISTRIBUTION BOX WITH ASSY. DETAILS FOR 63/100 KVA (URBAN)			
		SE (MM-II)	SE (MM)	CE (DIST.)

THIS IS AN INDICATIVE DRAWING.



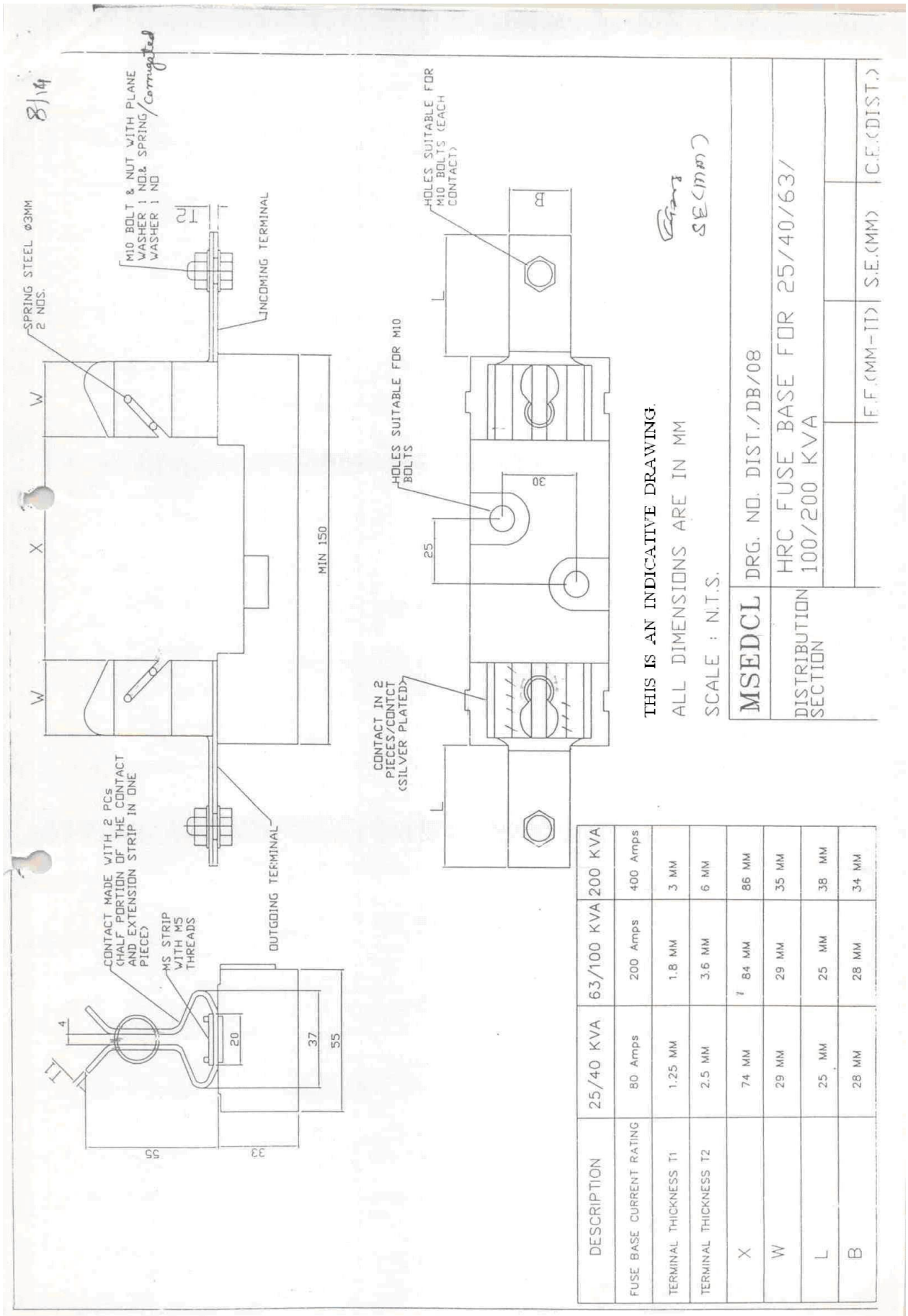
SECTION "A-A" WITH BUS BAR ASSEMBLY DETAILS.

Sfz(mm)

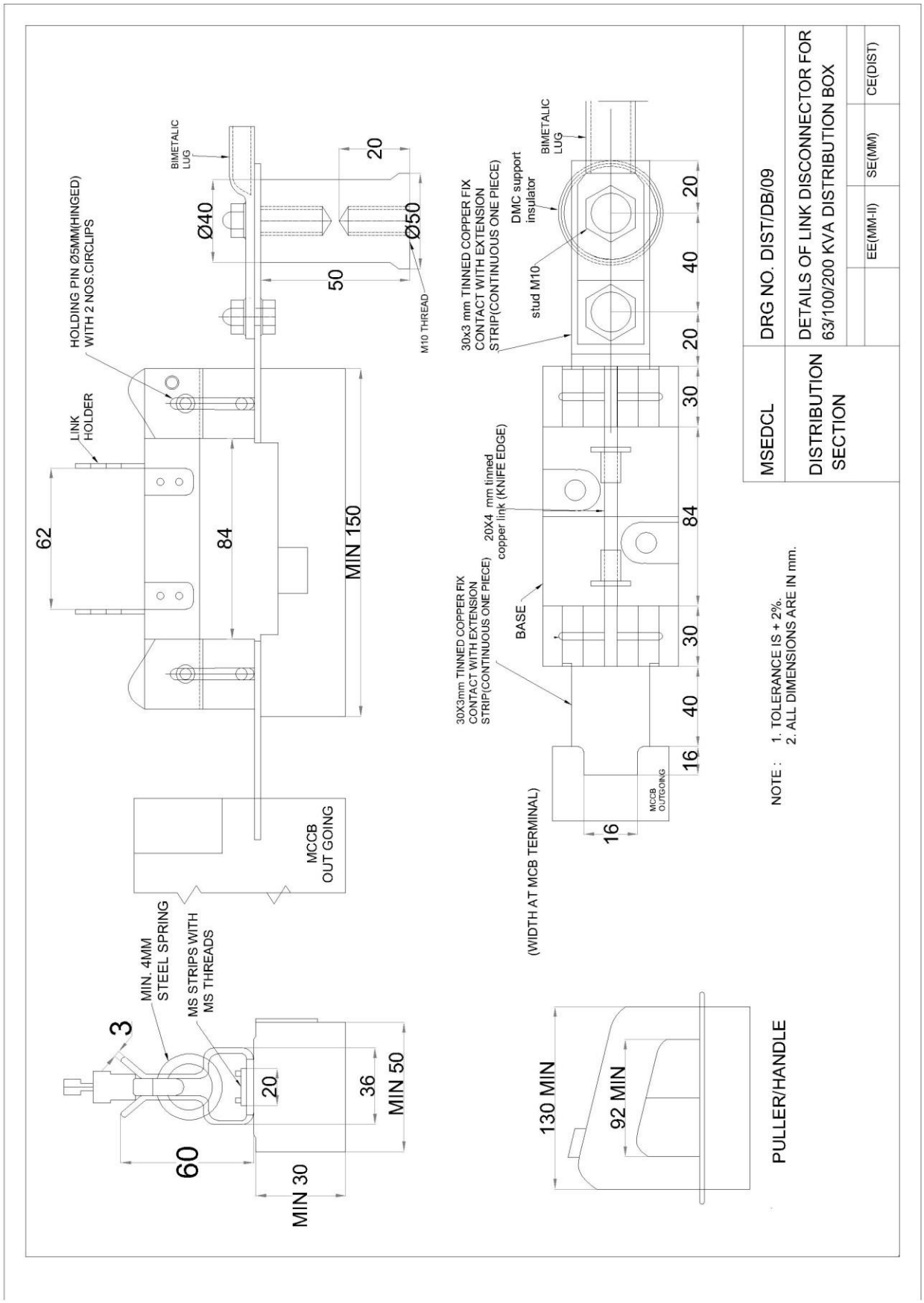
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.

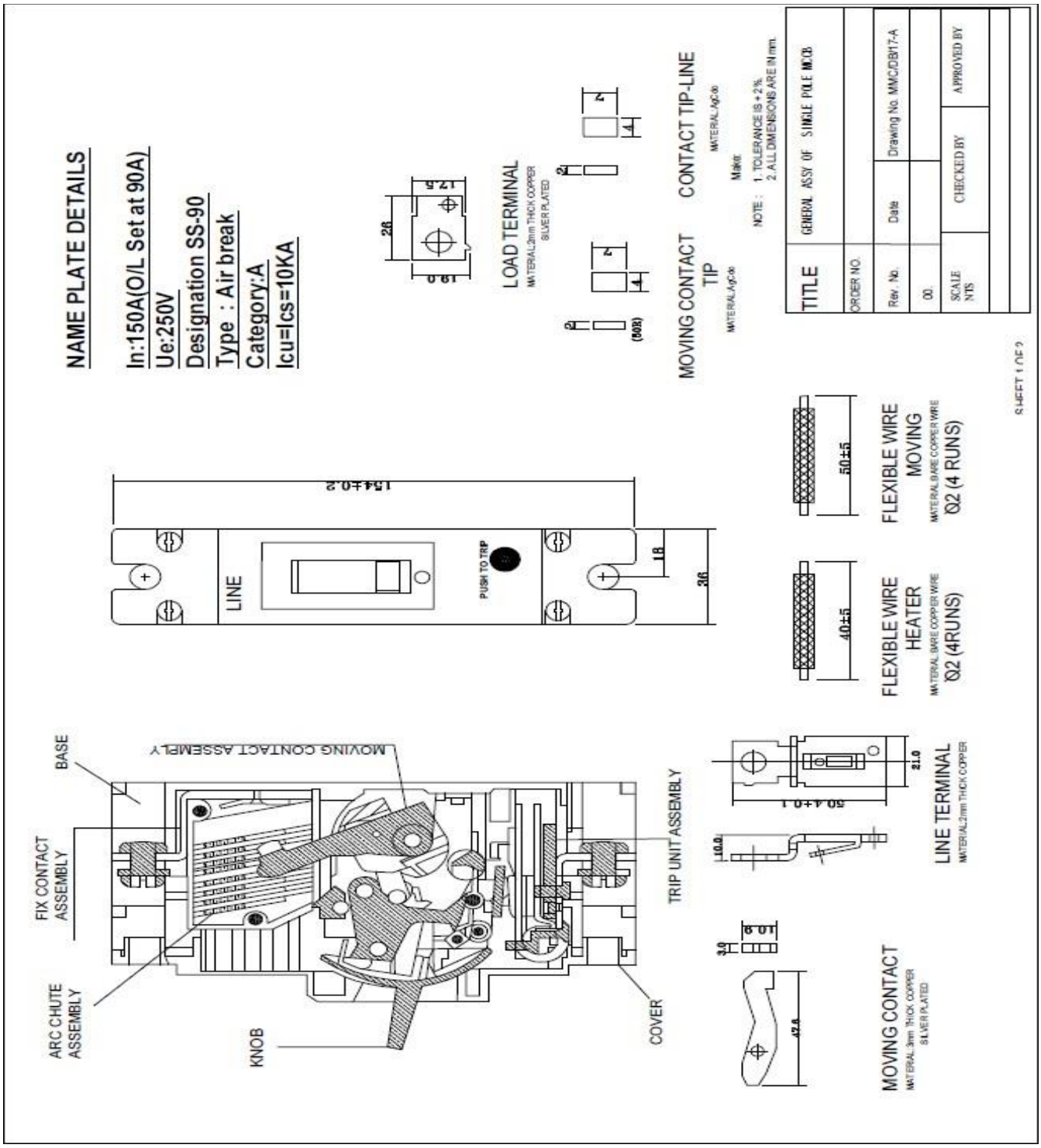
MSEDCL	DRG. NO. DIST./DB/07			
DISTRIBUTION SECTION	L.T. DISTRIBUTION BOX WITH BUS BAR DETAILS FOR 25/40/ 63/100 KVA (RURAL/URBAN)			
		E.E.(MM-II)	S.E.(MM)	C.E.(DIST.)

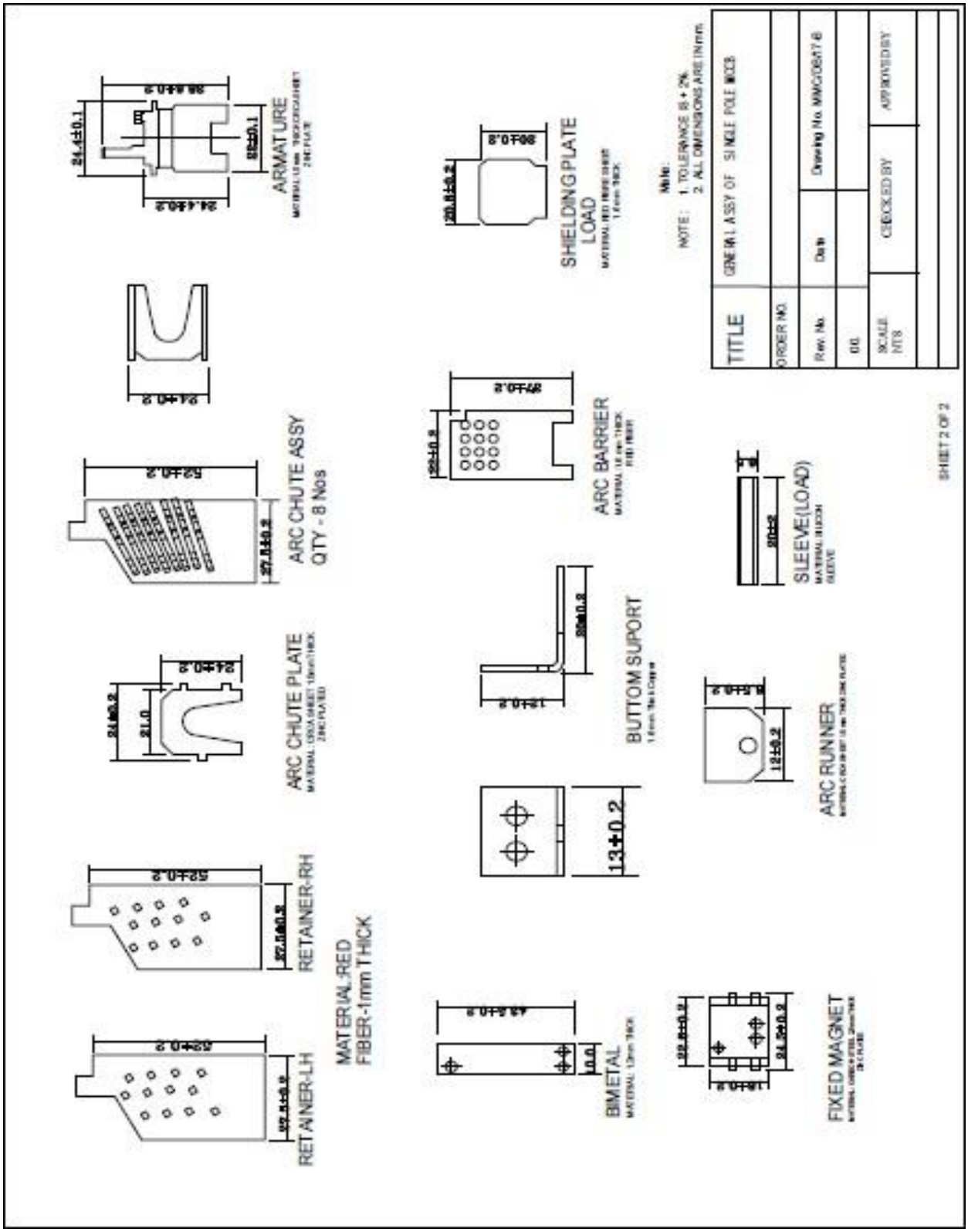
THIS IS AN INDICATIVE DRAWING.



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


BIMETALIC LUG
HOLDING PIN Ø5MM(HINGED) WITH 2 NOS.CIRCLIPS
LINK HOLDER
Ø40
Ø50
20
50
M10 THREAD
62
84
MIN 150
MCCB OUT GOING
MIN. 4MM STEEL SPRING
MS STRIPS WITH MS THREADS
3
60
20
36
MIN 50
MIN 30
30x3 mm TINNED COPPER FIX CONTACT WITH EXTENSION STRIP(CONTINUOUS ONE PIECE)
DMC support insulator
stud M10
BIMETALIC LUG
20X4 mm tinned copper link (KNIFE EDGE)
BASE
30X3mm TINNED COPPER FIX CONTACT WITH EXTENSION STRIP(CONTINUOUS ONE PIECE)
(WIDTH AT MCB TERMINAL)
MCCB OUTGOING
16
20
40
30
20
84
20
40
130 MIN
92 MIN
PULLER/HANDLE
NOTE : 1. TOLERANCE IS + 2%.
2. ALL DIMENSIONS ARE IN mm.
MSEDCL
DISTRIBUTION SECTION
DRG NO. DIST/DB/09
DETAILS OF LINK DISCONNECTOR FOR 63/100/200 KVA DISTRIBUTION BOX
EE(MM-II)
SE(MM)
CE(DIST)


NAME PLATE DETAILS
In:150A(O/L Set at 90A)
Ue:250V
Designation SS-90
Type : Air break
Category:A
Icu=Ics=10KA
LOAD TERMINAL
MATERIAL:2mm THICK COPPER
SILVER PLATED
MOVING CONTACT TIP
MATERIAL:AgCdo
CONTACT TIP-LINE
MATERIAL:AgCdo
Make
NOTE : 1. TOLERANCE IS ± 2%
2. ALL DIMENSIONS ARE IN mm.
TITLE
GENERAL ASSY OF SINGLE POLE MCCB
ORDER NO.
Rev. No.
Date
Drawing No. MMC/DB17-A
DD.
SCALE NTS
CHECKED BY
APPROVED BY
SHEET 1 OF 2
LINE
PUSH TO TRIP
154±0.2
18
36
FLEXIBLE WIRE HEATER
MATERIAL:BARE COPPER WIRE
Ø2 (4RUNS)
40±5
FLEXIBLE WIRE MOVING
MATERIAL:BARE COPPER WIRE
Ø2 (4 RUNS)
50±5
LINE TERMINAL
MATERIAL:2mm THICK COPPER
MOVING CONTACT
MATERIAL:3mm THICK COPPER
SILVER PLATED
BASE
FIX CONTACT ASSEMBLY
ARC CHUTE ASSEMBLY
KNOB
COVER
TRIP UNIT ASSEMBLY
MOVING CONTACT ASSEMBLY


ARMATURE
SHIELDING PLATE LOAD
ARC CHUTE ASSY QTY - 8 Nos
ARC BARRIER
ARC CHUTE PLATE
BUTTOM SUPORT
SLEEVE(LOAD)
RETAINER-LH
MATERIAL RED FIBER-1mm THICK
RETAINER-RH
ARC RUNNER
BIMETAL
FIXED MAGNET
13±0.2
TITLE
GENERAL ASSY OF SINGLE POLE MCCB
ORDER NO.
Rev. No.
Date
Drawing No. MMG/0647/B
QTY.
SCALE NTS
CHECKED BY
APPROVED BY
Note:
NOTE : 1. TOLERANCE IS ± 2%
2. ALL DIMENSIONS ARE IN mm
SHEET 2 OF 2

12/14

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 करंट सेटिंग / किटकॅट चे रेटिंग (प्रत्येक फेज साठी) = _____ ॲम्पिअर्स.

४) लिंक डिसकनेक्टर्सची एकूण संख्या = _____

अ) डिस्ट्रीब्युशन बॉक्स् जोडताना खाली दिल्याप्रमाणे सावली घ्यावी.

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 प्लॅस्टिक पिशवीत / सक्षम 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 आकारानी केबल्स 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.
६३ के. व्ही. ए.	३.५ कोअर ७० स्क्वेअर एम. एम.	३.५ कोअर ३५/५० स्क्वेअर एम. एम.
१०० 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 रिबचला/लिंक डिस्कनेक्टरला केबल जोडण्यासाठी लग्जचा वापर करा.

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

वायर लग्जमध्ये घालताना व केबलराहित लग्ज जोडताना विशिष्ट ग्रीसचा (पेट्रोलियम जेलीचा) वापर करा. इन्कमिंग (येणाऱ्या) व आऊटगोईंग (जाणाऱ्या) वायर्स लग्जशिवाय टर्मिनलमध्ये घेट 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) बॉक्ससोबत दिलेल्या पी.व्ही.सी. च्या बिना बाराच्या रिंग (ग्लँड) डिस्ट्रिब्युशन बॉक्सच्या इन्कमिंग व आऊटगोईंग वायर्सच्या छिद्रांभोवती पक्क्या बसवा म्हणजे वायर्स तेथे कापल्या जाणार नाहीत.

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

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

ब) <u>एम. सी. सी. बी. वापरण्याबाबत घेण्याची काळजी.</u>

१) एम. सी. सी. बी हा सर्किट ब्रेकर असून 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 लिंकडिस्कनेक्टर ओपन करा. तसेच लाईनला स्पर्श करण्यापूर्वी अर्थिंग रॉडचा वापर करून लाईन "अर्थ" करा. एम. सी. सी. बी. बायपास 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 सेटिंगचा वापर करा.

क) <u>इन्कमिंग स्विच वापरण्याबाबत सूचना :</u>

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

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

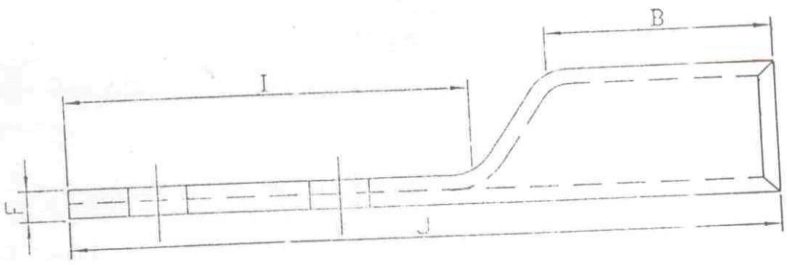
३) इन्कमिंग स्विच "ऑफ" करण्यासाठी हॅन्डल अॅन्टिक्लॉकवाईज (घड्याळाच्या विरूद्ध) दिशेने फिरवा.

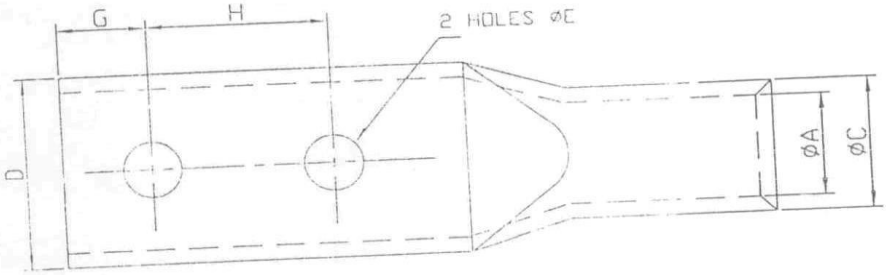
४) इन्कमिंग स्विच बदलताना तो वर नमूद केलेल्या / योग्य अॅम्पिअर क्षमतेचाच वापरा.

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

INSTRUCTIONS LEAFLET IN MARATHI				MSEDCL DISTRIBUTION SECTION
22/8	21/8/06	22-8-06	24/08/06	DRG NO. Dist./ DB/ 12
WRITTEN BY Dy. E.E (MM-II)	CHK. BY E.E. (MM-II)	SUB. BY S.E.(MM)	APPR. BY C.E.(Dist)	

13/14

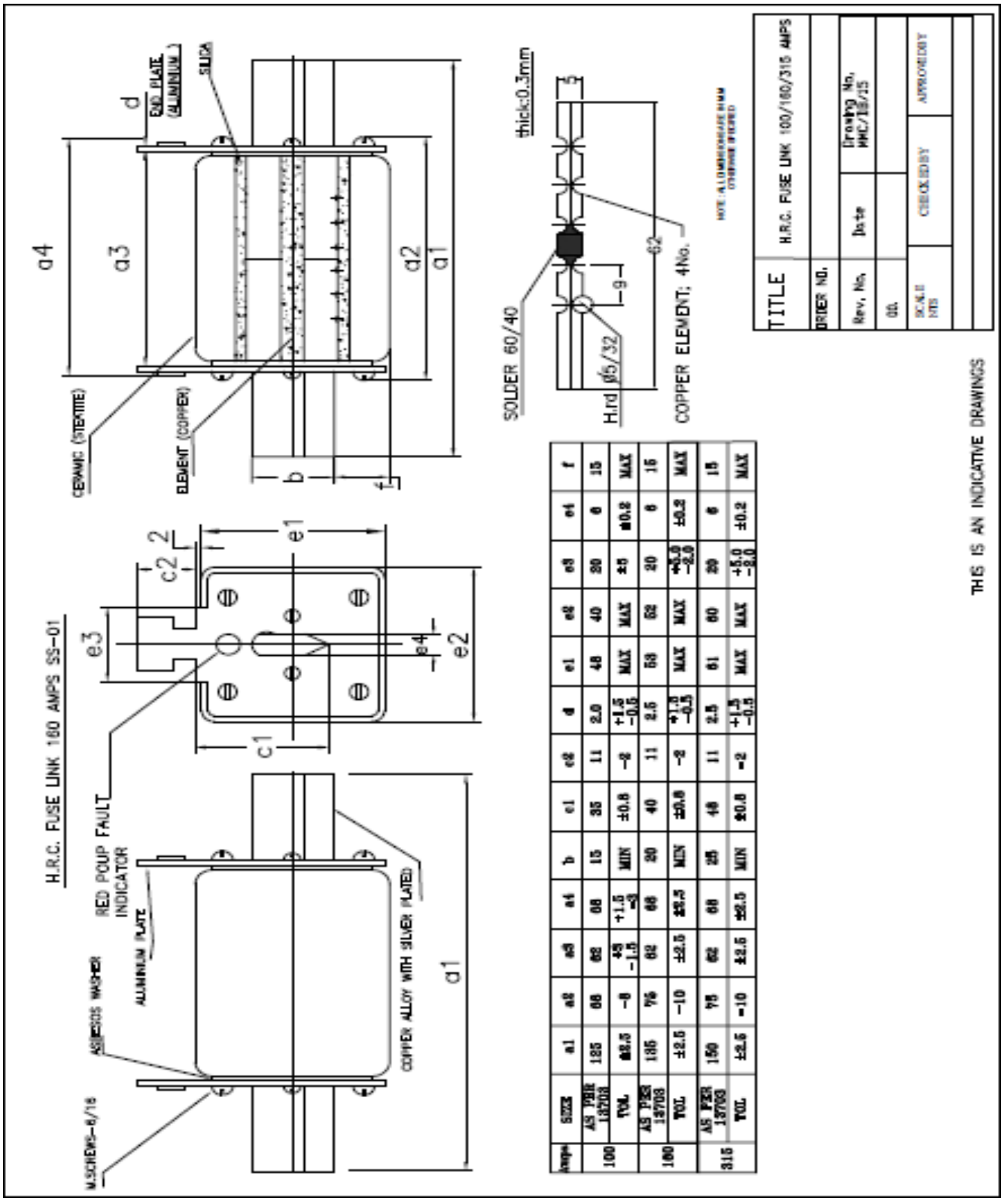




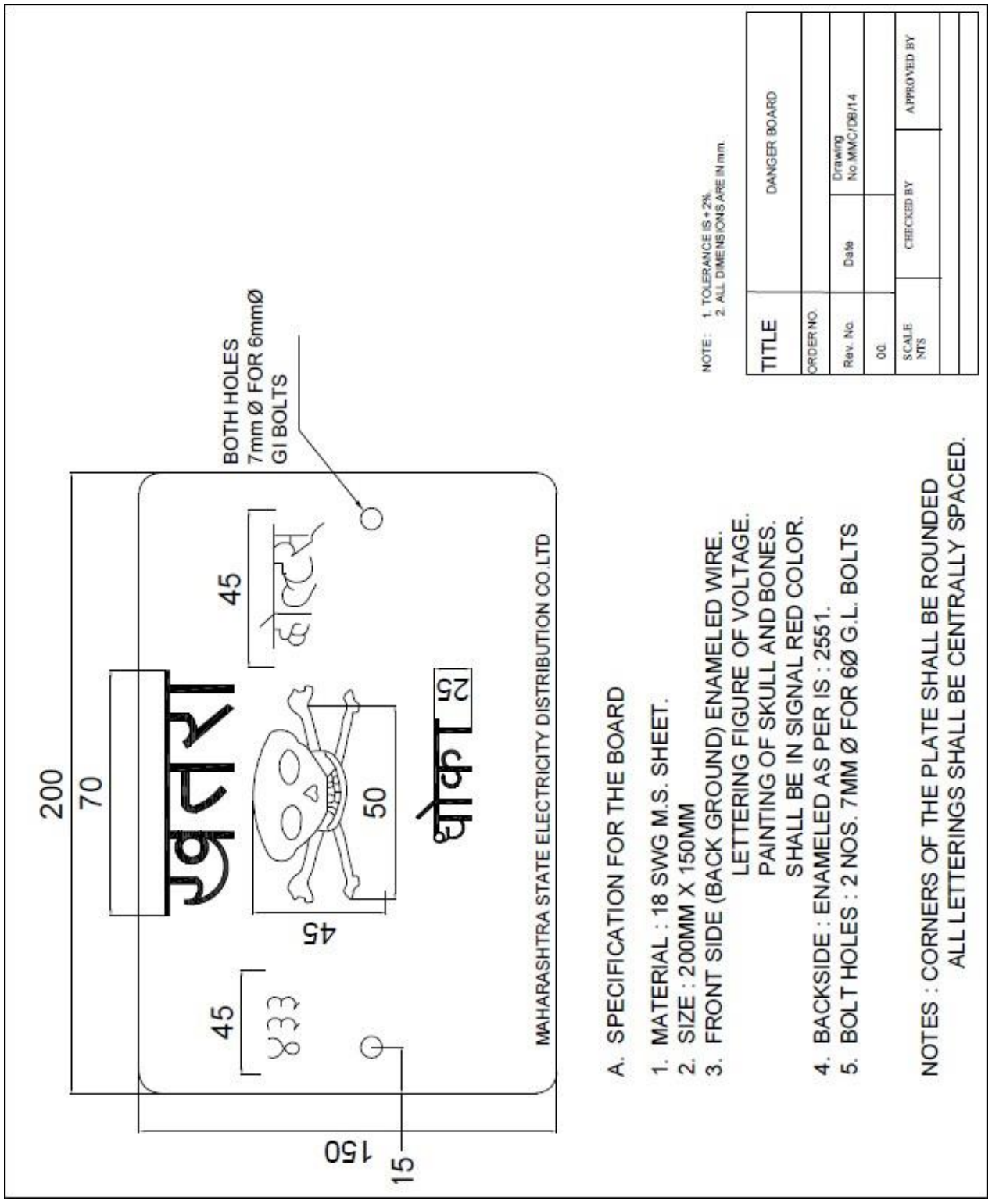
CABLE SIZE	ØA	ØC	D	F	ØE	B	G	H	I	J
(25 SQ MM)	7.0	9.7	13.7	2.7	8.2	21	11	20.0	–	70
(35 SQ MM)	8.0	10.8	15.4	2.8	8.2	21	11	20.0	–	70
(50 SQ MM)	9.6	13.6	20.0	3.5	10.3	30	13	40	65.0	115
(70 SQ MM)	11.8	17.0	24.0	5.3	10.3	38	13	40	65.0	115
(95 SQ MM)	13.0	17.0	30.0	3.9	10.3	30	13	40	65.0	115
(120 SQ MM)	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

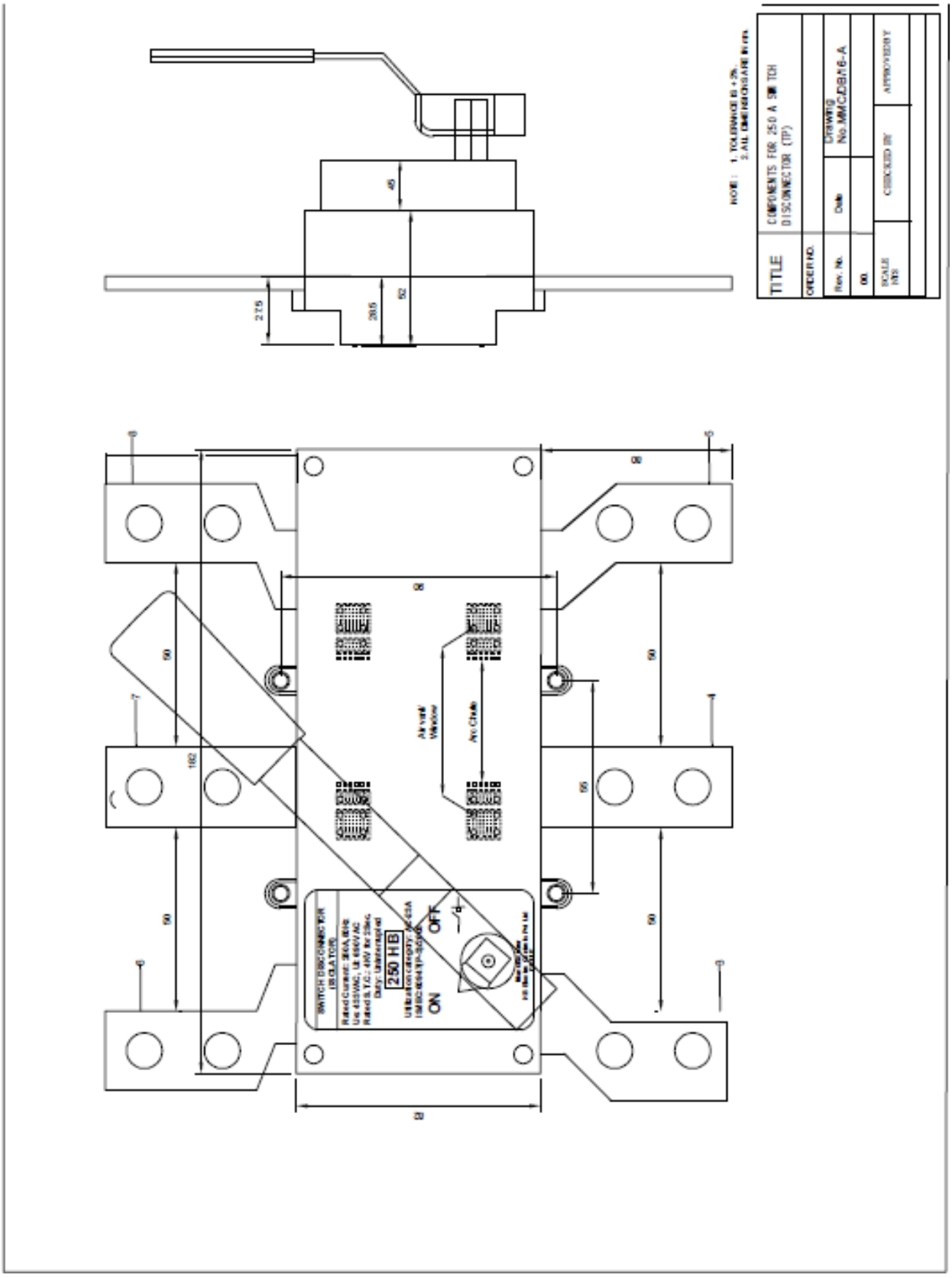
ALL DIMENSIONS ARE IN MM
SCALE : N.T.S.
THIS IS AN INDICATIVE DRAWING.

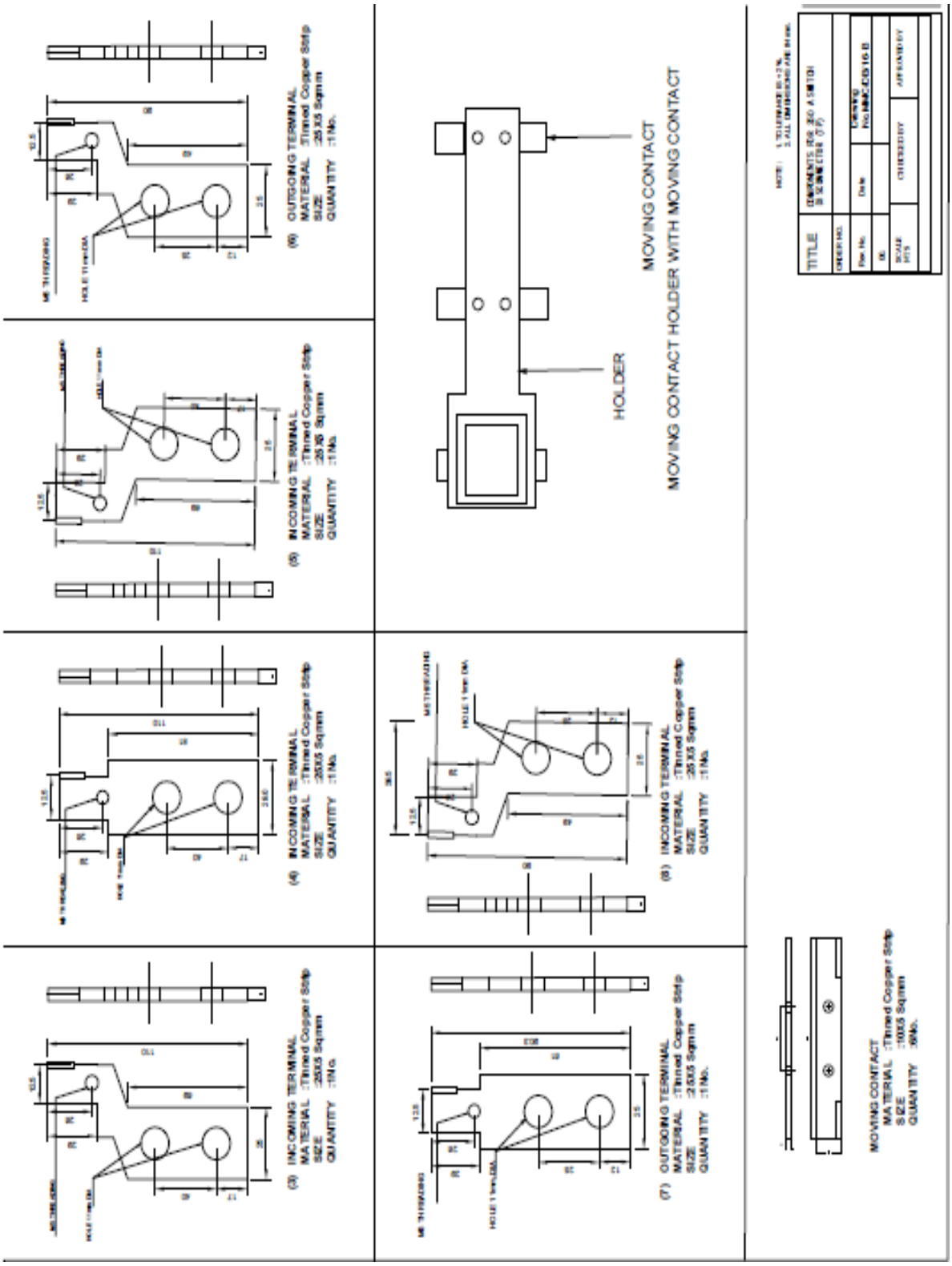
BIMETALLIC LUGS			SCALE: NTS	MSEDCL
				DISTRIBUTION SECTION
DRN. BY. Dy.E.E(MM-II)	CHK. BY. E.E.(MM-II)	SUB.. BY. S.E.(MM)	APPR. BY. C.E.(DIST.)	DRG. NO. Dist./DB/ 13

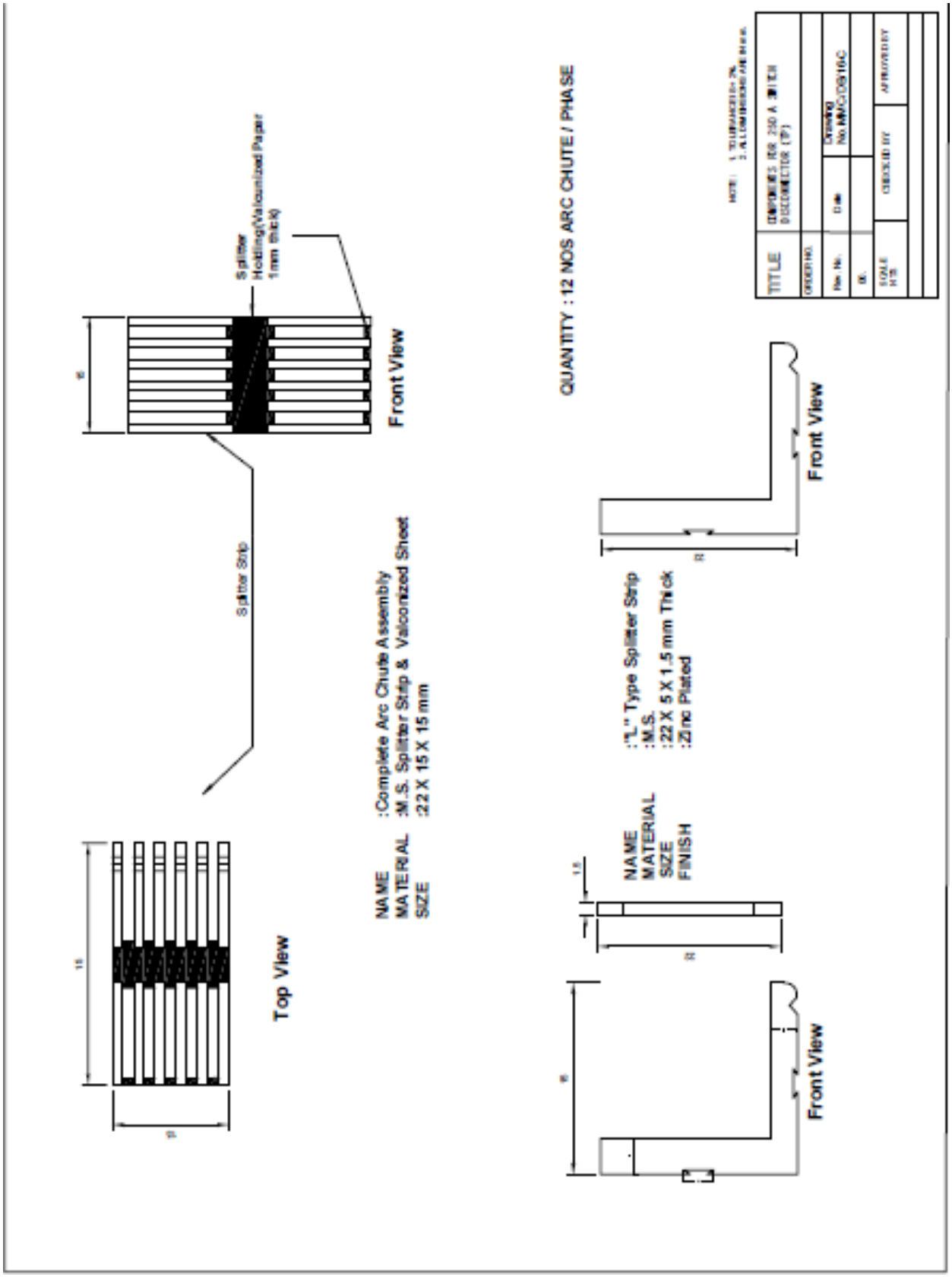


Amps	SIZE	a1	a2	a3	a4	b	c1	c2	d	e1	e2	e3	e4	f
100	AS PER 13703	125	88	62	88	15	35	11	2.0	48	40	20	6	15
	TOL.	±2.5	-8	+5 -1.5	+1.5 -3	MIN	±0.8	-2	+1.5 -0.5	MAX	MAX	±5	±0.2	MAX
160	AS PER 13703	135	76	62	88	20	40	11	2.5	53	62	20	6	15
	TOL.	±2.5	-10	±2.5	±2.5	MIN	±0.8	-2	+1.5 -0.5	MAX	MAX	+5.0 -2.0	±0.2	MAX
315	AS PER 13703	150	76	62	88	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


200
70
150
15
45
45
45
50
BOTH HOLES
7mm Ø FOR 6mmØ
GI BOLTS
MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO.LTD
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
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.


TITLE
COMPONENTS FOR 250 A 3P TCH DISCONNECTOR (TP)
ORDER NO.
Rev. No.
Date
Drawing No.MMC/DB/16-A
CHECKED BY
APPROVED BY
SCALE NTS
NOTE : 1. TOLERANCE IS +2%
2.ALL DIMENSIONS ARE IN mm
45
52
27.5
28.5
98
50
162
55
Air vent/ Window
Arc Chute
SWITCH DISCONNECTOR (ISOLATOR)
250 HB
ON
OFF


(6) OUTGOING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1 No.
(5) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1 No.
HOLDER
MOVING CONTACT
MOVING CONTACT HOLDER WITH MOVING CONTACT
(4) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1 No.
(8) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1 No.
TITLE
(3) INCOMING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1 No.
(7) OUTGOING TERMINAL
MATERIAL :Tinned Copper Strip
SIZE :25X5 Sqmm
QUANTITY :1 No.
MOVING CONTACT
MATERIAL :Tinned Copper Strip
SIZE :10X5 Sqmm
QUANTITY :2Nos.


Splitter
Holding(Valcumized 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

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.

SCHEDULE - `A'

E-tendering Guaranteed Technical Particulars

	(I) GURANTEED TECHNICAL PARTICULARS for 63 KVA L.T. Distribution Boxes with MCCB for urban area		
Sr.NO	**GTP Parameters**		
1	Name of Manufacturer	Mfg .To give details	TEXT
2	Applicable Reference standards	IS:8623/1993,IS:13947/1993 (part 2),IS:13947/1993(part 3),IS:4237/1982, IS:13703/1993 (Part I and II) amended upto date	TEXT
3	Process of manufacturing	Fabrication/Deep Drown	TEXT
4	Clear Dimensions of box	1000 x 1010 x 325 mm	TEXT
5	Rating of distribution Box in KVA	63	NUMERICAL
6	Thickness of Enclosure in mm	2	NUMERICAL
7	Material of Enclosure	CRCA MS Sheet	TEXT
8	Rated Voltage in Volts	433	NUMERICAL
9	Colour shade of Distribution Box (Inside and Outside)	Smoke Gray	TEXT
10	Degree of protection IP-33 as per IS-8623/1993 (amended up to date) of enclosure	IP33	TEXT
11	Sets of Louvers provided to the box.	4	NUMERICAL
12	Size of perforated sheet 20 SWG CRCA MS with 2.5mm holes shall be fitted from inside of the louvers	Mfg to give details	TEXT
13	Type, Size & material Hinges and nos provided to the doors	Invisible from out side, made of 2 mm thick CRCA MS Steel,4 nos	TEXT
14	Hinges pin diameter & material	4mm, Stainless Steel	TEXT
15	Danger Board as per IS 2551 shall be riveted on the box door (Yes/No)	Yes	BOOLEAN
16	No. Doors & handle provided to the box	Single door , front operated with common handle.	TEXT
17	Locking arrangement provided to the box	CR panel type lock with key	TEXT
18	Simple C&R panel locking arrangement provided to the box (YES/NO)	Yes	BOOLEAN
19	Detailed Name plate provided (Yes/No)	Yes	BOOLEAN
20	Material & thickness of name plate	1 mm stainless steel	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)	Yes	BOOLEAN
22	Whether manufacturer have seven tank process facility and powder coating in house (YES/NO)	Yes	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)	Yes	BOOLEAN
24	Marathi slogans shall be painted on each box as per annexure attached with technical	Yes	BOOLEAN

	specification (Yes/ No)		
25	Welding process shall be MIG (Metal Inert Gas) (Yes/NO)	Yes	BOOLEAN
26	Material & Size of Busbar	EC Grade Aluminum 25 x 8 mm	TEXT
27	Material & Size of neutral busbar	EC Grade Aluminum 300x30 x 8 mm	TEXT
28	Busbar support insulator provided as per drawings (Yes/No)	Yes	TEXT
29	Size & No. of Earthing nutbolts provided	2 sets galvanized (M12X50mm) with 2 nuts & washer on each bolt	TEXT
30	No. & Size of Bottom plates provided to the Box	125 mm x 125 mm x 3 nos	TEXT
31	Fixing arrangement provided	Mfg to give details	TEXT
32	Size of component mounting CRCA strip in mm	2	NUMERICAL
33	Packing of box should be Five Ply corrugated(Yes/No)	Yes	BOOLEAN
34	Name or Trade mark of Manufacturer of ISOLATOR (SWITCH DISCONNECTOR)	Mfg. To. Give details	TEXT
35	Type of ISOLATOR (SWITCH DISCONNECTOR)	Mfg To Give details	TEXT
36	Designation of ISOLATOR (SWITCH DISCONNECTOR)	Mfg.To. Give details	TEXT
37	Rating of Isolator in Amp	250	NUMERICAL
38	Rated Current of Isolator in Amp	250	NUMERICAL
39	Rated Voltage of Isolator in Volts	433	NUMERICAL
40	Basic Uninterrupted Duty of Isolator	250	NUMERICAL
41	Utilization category of Isolator 40	AC 23-A	TEXT
42	Rated short time withstand capacity of isolator for 2 seconds in kA	4	NUMERICAL
43	Rated insulation voltage of Isolator in Volts	433	NUMERICAL
44	The Material of isolator shall be DMC	DMC	TEXT
45	The DMC isolator withstand breaking capacity shall be 80 kA	80	NUMERICAL
46	The arc chutes provided in the isolator as technical specifications	12	NUMERICAL
47	Size of strips on outside of the Isolator provided in mm	80 mm in length on cable side and 60 mm in length o HRC fuse base side of cross section 25x5 mm	TEXT
48	Name or Trade Mark of Manufacturer of HRC Fuse Base	Mfg to give details	TEXT
49	Rated Current of HRC Fuse Base in Amps	200	NUMERICAL
50	Rated Voltage of HRC Fuse Base in Volts	500	NUMERICAL
51	Breaking Capacity of HRC Fuse Base in kA	80	NUMERICAL
52	The base material of HRC Fuse Base shall be DMC	DMC	TEXT
53	Contact material of HRC Fuse base	Silver plated EC grade copper	TEXT
54	Name & Trade mark of Manufacturer of HRC Fuse link	Mfg to give details	TEXT
55	Rated Current of HRC Fuse Link in Amps	100	Numerical
56	Rated Voltage of HRC Fuse Link in Volts	500	NUMERICAL
57	Breaking Capacity of HRC Fuse Link in kA	80	NUMERICAL

58	Fault Indication provided HRC Fuse Link	Red popup for indication	TEXT
59	Name or Trade mark of Manufacturer of LINK DISCONNECTOR	Mfg to give details	TEXT
60	Reference standard applied	IS:13411/1992	TEXT
61	Rated Current of LINK DISCONNECTOR in Amp	200	NUMERICAL
62	Rated Voltage of LINK DISCONNECTOR in Volts	500	NUMERICAL
63	The base material of Link Disconnector shall be DMC	Non tracking, Heat resistant DMC	TEXT
64	Size of the terminal connector strips of the Link Disconnector in mm	Cross section 30x3 mm and 80mm projecting on cable connection side and 40mm on MCCB outgoing side	TEXT
65	Material & Size of Male contact terminal of LINK DISCONNECTOR	Tin plated EC grade Copper of size 20x4 mm	TEXT
66	Material & Size of Female contact terminal (Solid link hinged) of LINK DISCONNECTOR	Tin plated EC grade Copper of size 30x3mm	TEXT
67	Handle/ puller provided with each Distribution Box (Yes/No)	Yes	BOOLEAN
68	Make of Bimetallic lugs	Mfg to give details	TEXT
69	Reference standard applied for Bimetallic lugs	IS:8337	TEXT
70	Name of manufacturer of MCCB	Mfg. To Give details	TEXT
71	Reference of standard for MCCB	IS 13947/1993 (part II)	TEXT
72	Type designation (i.e. Fixed /Variable)	Fixed	TEXT
73	Type of overload release	Fixed type over load release	TEXT
74	No. of Poles	Single	Text
75	Rated current in Amps	150	NUMRICAL
76	Rated phase to earth Voltage in Volts	250	NUMERICAL
77	Rated Frequency in Hz	50	NUMERICAL
78	Rated short Circuit Breaking capacity in KA	10	NUMERICAL
79	The Minimum no of archutes provided in MCCB as technical specifications	8	NUMERICAL
80	Ultimate Breaking capacity	150	NUMERICAL
81	Utilization category	A	TEXT
82	Overload release setting provided in Amps	60	NUMERICAL
83	Colour of MCCB	Brown	TEXT

	(II) GURANTEED TECHNICAL PARTICULARS for 100 KVA L.T. Distribution Boxes with MCCB for Urban area		
Sr.NO	**GTP Parameters**		
1	Name of Manufacturer	Mfg .To give details	TEXT
2	Applicable Reference standards	IS:8623/1993,IS:13947/1993 (part 2),IS:13947/1993(part 3),IS:4237/1982, IS:13703/1993 (Part I and II) amended upto date	TEXT
3	Process of manufacturing	Fabrication/Deep Drown	TEXT
4	Clear Dimensions of box	1000 x 1010 x 325 mm	TEXT
5	Rating of distribution Box in KVA	100	NUMERICAL
6	Thickness of Enclosure in mm	2	NUMERICAL
7	Material of Enclosure	CRCA MS Sheet	TEXT
8	Rated Voltage in Volts	433	NUMERICAL
9	Colour shade of Distribution Box (Inside and Outside)	Light Gray	TEXT
10	Degree of protection IP-33 as per IS-8623/1993 (amended up to date) of enclosure	IP33	TEXT
11	Sets of Louvers provided to the box.	4	NUMERICAL
12	Size of perforated sheet 20 SWG CRCA MS with 2.5mm holes shall be fitted from inside of the louvers	Mfg to give details	TEXT
13	Type, Size & material and nos of Hinges provided to the doors	Invisible from out side, made of 2 mm thick CRCA MS Steel. 4nos	TEXT
14	Hinges pin diameter & material	Mfg to give details	TEXT
15	Danger Board as per IS 2551shall be riveted on the box door (Yes/No)	Yes	BOOLEAN
16	No. Doors & handle provided to the box	Single door , front operated with common handle.	TEXT
17	Locking arrangement provided to the box	CR panel type lock with key	TEXT
18	Simple C&R panel locking arrangement provided to the box (YES/NO)	Yes	BOOLEAN
19	Detailed Name plate provided (Yes/No)	Yes	BOOLEAN
20	Material & thickness of name plate	1 mm stainless steel	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)	Yes	TEXT
22	Whether manufacturer have seven tank process facility and powder coating in house (YES/NO)	Yes	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)	Yes	BOOLEAN
24	Marathi slogans shall be painted on each box as per annexure attached with technical Specification (Yes/ No)	Yes	BOOLEAN
25	Welding process shall be MIG (Metal Inert Gas) (Yes/NO)	Yes	BOOLEAN
26	Material & Size of Busbar	EC Grade Aluminum 25 x 8 mm	TEXT
27	Material & Size of neutral busbar	EC Grade Aluminum 300x30 x 8 mm	TEXT
28	Busbar support insulator provided as per drawings (Yes/No)	Yes	TEXT
29	Size & No. of Earthing nutbolts provided	2 sets galvanized (M12x50mm) with 2 nuts & washer on each bolt	TEXT
30	No. & Size of Bottom plates provided to the Box	125 mm x 125 mm x 3 nos	TEXT
31	Fixing arrangement provided	Mfg to give details	TEXT
32	Size of component mounting CRCA strip in mm	2	NUMERICAL
33	Packing of box	Five Ply corrugated box	TEXT
34	Name or Trade mark of Manufacturer of ISOLATOR (SWITCH DISCONNECTOR)	Mfg.To. Give details	TEXT
35	Type of ISOLATOR (SWITCH DISCONNECTOR)	Mfg To Give details	TEXT
36	Designation of ISOLATOR (SWITCH DISCONNECTOR)	Mfg.To. Give details	TEXT
37	Rating of Isolator in Amp	250	NUMERICAL
38	Rated Current of Isolator in Amp	250	NUMERICAL
39	Rated Voltage of Isolator in Volts	433	NUMERICAL
40	Basic Uninterrupted Duty of Isolator	250	NUMERICAL
41	Utilization category of Isolator	AC 23-A	TEXT
42	Rated short time withstand capacity of isolator for 2 seconds in kA	4	NUMERICAL
43	Rated insulation voltage of Isolator in Volts	433	NUMERICAL
44	The Material of isolator shall be DMC	DMC	TEXT
45	The DMC isolator withstand breaking capacity shall be 80 kA	80	NUMERICAL
46	Minimum no of the arc chutes provided in the isolator as technical specifications	12	NUMERICAL
47	Size of strips on outside of the Isolator provided in mm	80 mm in length on cable side and 60 mm in length on HRC fuse base side of cross section 25 x 5 mm	TEXT
48	Name or Trade Mark of Manufacturer of HRC Fuse Base	Mfg to give details	TEXT
49	Rated Current of HRC Fuse Base in Amps	200	NUMERICAL
50	Rated Voltage of HRC Fuse Base in Volts	500	NUMERICAL
51	Breaking Capacity of HRC Fuse Base in kA	80	NUMERICAL
52	The base material of HRC Fuse Base shall be DMC	DMC	TEXT
53	Contact material of HRC Fuse base	Silver plated EC grade copper	TEXT
54	Name & Trade mark of Manufacturer of HRC Fuse	Mfg to give details	TEXT

	link		
55	Rated Current of HRC Fuse Link in Amps	160	NUMERICAL
56	Rated Voltage of HRC Fuse Link in Volts	500	NUMERICAL
57	Breaking Capacity of HRC Fuse Link in kA	80	NUMERICAL
58	Fault Indication provided HRC Fuse Link	Red popup for indication	TEXT
59	Name or Trade mark of Manufacturer of LINK DISCONNECTOR	Mfg to give Details	TEXT
60	Reference standard applied	IS:13411/1992	TEXT
61	Rated Current of LINK DISCONNECTOR in Amp	200	NUMERICAL
62	Rated Voltage of LINK DISCONNECTOR in Volts	500	NUMERICAL
63	The base material of Link Disconnector shall be DMC	Non tracking, Heat resistant DMC	TEXT
64	Size of the terminal connector strips of the Link Disconnector in mm	Cross section 30x3 mm and 80mm projecting on cable connection side and 40mm on MCCB outgoing side	TEXT
65	Material & Size of Male contact terminal of LINK DISCONNECTOR	Tin plated EC grade Copper of size 20x4 mm	TEXT
66	Material & Size of Female contact terminal (Solid link hinged) of LINK DISCONNECTOR	Tin plated EC grade Copper of size 30x3 mm	TEXT
67	Handle/ puller provided with each Distribution Box (Yes/No)	Yes	BOOLEAN
68	Make of Bimetallic lugs	Mfg to give details	TEXT
69	Reference standard applied for Bimetallic lugs	IS:8337	TEXT
70	Name of manufacturer of MCCB	Mfg. To Give details	TEXT
71	Reference of standard for MCCB	Is 13947/1993(part II)	TEXT
72	Type designation (i.e.Fixed /Variable)	Fixed	TEXT
73	Type of overload release	Fixed type over load release	TEXT
74	No. of Poles	Single	TEXT
75	Rated current (amps)	150	NUMERICAL
76	Rated phase to earth Voltage in Volts	250	NUMERICAL
77	Rated Frequency in Hz	50	NUMERICAL
78	Rated short Circuit Breaking capacity in KA	10	NUMERICAL
79	Minimum no of archutes provided in MCCB as technical specifications	8	NUMERICAL
80	Ultimate Breaking capacity	150	NUMERICAL
81	Utilization category	A	TEXT
82	Overload release setting provided in Amps	90	NUMERICAL
83	Colour of MCCB	Dark Admiral Gray	TEXT

	(III) GURANTEED TECHNICAL PARTICULARS for 200 KVA L.T. Distribution Boxes with MCCB for Urban area		
Sr.NO	**GTP Parameters**		
1	Name of Manufacturer	Mfg .To give details	TEXT
2	Applicable Reference standards	IS:8623/1993,IS:13947/1993 (part 2),IS:13947/1993(part 3),IS:4237/1982, IS:13703/1993 (Part I and II) amended upto date	TEXT
3	Process of manufacturing	Fabrication/Deep Drown	TEXT
4	Clear Dimensions of box(L x H x W)	1305 x 1060 x 325 mm	TEXT
5	Rating of distribution Box in KVA	200	NUMERICAL
6	Thickness of Enclosure in mm	2	NUMERICAL
7	Material of Enclosure	CRCA MS Sheet	TEXT
8	Rated Voltage in Volts	433	NUMERICAL
9	Colour shade of Distribution Box (Inside and Outside)	Light Gray	TEXT
10	Degree of protection IP-33 as per IS-8623/1993 (amended up to date) of enclosure	IP33	TEXT
11	Sets of Louvers provided to the box.	4	NUMERICAL
12	Size of perforated sheet 20 SWG CRCA MS with 2.5mm holes shall be fitted from inside of the louvers	Mfg. to give details	TEXT
13	Type, Size & material Hinges provided to the doors	Invisible from out side, made of 2 mm thick CRCA MS Steel, 4 nos on each side	TEXT
14	Hinges pin diameter & material	4mm,Stainless steel	TEXT
15	Danger Board as per IS 2551 shall be riveted on the box door (Yes/No)	Yes	BOOLEAN
16	No. Doors & handle provided to the box	Double Door , front operated	TEXT
17	Locking arrangement provided to the box	CR panel lock with key	TEXT
18	Simple C&R panel locking arrangement provided to the box (YES/NO)	Yes	BOOLEAN
19	Detailed Name plate provided (Yes/No)	Yes	BOOLEAN
20	Material & thickness of name plate	1 mm stainless steel	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)	Yes	TEXT
22	Whether manufacturer have seven tank process facility and powder coating in house (YES/NO)	Yes	BOOLEAN
23	In case facility of manufacturing & powder coating of boxes is not available with bidder, undertaking to provide it by sub vendor shall	Yes	BOOLEAN

	be submitted. (YES/NO)		
24	Marathi slogans shall be painted on each box as per annexure attached with technical specification (Yes/ No)	Yes	BOOLEAN
25	Welding process shall be MIG (Metal Inert Gas) (Yes/NO)	Yes	BOOLEAN
26	Material & Size of Busbar	EC Grade Aluminum 40 x 15 mm	TEXT
27	Material & Size of neutral busbar	EC Grade Aluminum 525 x 40 x 15 mm	TEXT
28	Busbar support insulator provided as per drawings (Yes/No)	Yes	TEXT
29	Size & No. of Earthing nutbolts provided	2 sets galvanized(M12x 50mm) with 2 nuts & washer on each bolt	TEXT
30	No. & Size of Bottom plates provided to the Box	125 mm x 125 mm x 3 nos	TEXT
31	Fixing arrangement provided	Mfg to give details	TEXT
32	Size of component mounting CRCA strip in mm	2	NUMERICAL
33	Packing of box should be Five Ply Corrugated(Ye/No)	YES	BOOLEAN
34	Name or Trade mark of Manufacturer of ISOLATOR (SWITCH DISCONNECTOR)	Mfg.To. Give details	TEXT
35	Type of ISOLATOR (SWITCH DISCONNECTOR)	Mfg To Give details	TEXT
36	Designation of ISOLATOR (SWITCH DISCONNECTOR)	Mfg.To. Give details	TEXT
37	Rating of Isolator in Amp	600	NUMERICAL
38	Rated Current of Isolator in Amp	600	NUMERICAL
39	Rated Voltage of Isolator in Volts	433	NUMERICAL
40	Basic Uninterrupted Duty of Isolator	600	NUMERICAL
41	Utilization category of Isolator	AC 23-A	TEXT
42	Rated short time withstand capacity of isolator for 2 seconds in kA	8	NUMERICAL
43	Rated insulation voltage of Isolator in Volts	433	NUMERICAL
44	The Material of isolator shall be DMC	DMC	TEXT
45	The DMC isolator withstand breaking capacity shall be 80 kA	80	NUMERICAL
46	Minimum no of arc chutes provided in the isolator as technical specifications	12	NUMERICAL
47	Size of strips on outside of the Isolator provided in mm	80 mm in length on cable side and 60 mm in length o HRc fusebase side of cross section 25x5 mm	TEXT
48	Name or Trade Mark of Manufacturer of HRC Fuse Base	Mfg to give details	TEXT
49	Rated Current of HRC Fuse Base in Amps	400	NUMERICAL
50	Rated Voltage of HRC Fuse Base in Volts	500	NUMERICAL
51	Breaking Capacity of HRC Fuse Base in kA	80	NUMERICAL
52	The base material of HRC Fuse Base shall be DMC	DMC	TEXT
53	Contact material of HRC Fuse base	Silver plated EC grade copper	TEXT
54	Name & Trade mark of Manufacturer of HRC Fuse link	Mfg to give details	TEXT

55	Rated Current of HRC Fuse Link in Amps	315	Numerical
56	Rated Voltage of HRC Fuse Link in Volts	500	NUMERICAL
57	Breaking Capacity of HRC Fuse Link in kA	80	NUMERICAL
58	Fault Indication provided HRC Fuse Link	Red popup for indication	TEXT
59	Name or Trade mark of Manufacturer of LINK DISCONNECTOR	Mfg to give details	TEXT
60	Reference standard applied	IS:13411/1992	TEXT
61	Rated Current of LINK DISCONNECTOR in Amp	200	NUMERICAL
62	Rated Voltage of LINK DISCONNECTOR in Volts	500	NUMERICAL
63	The base material of Link Disconnector shall be DMC	Non tracking, Heat resistant DMC	TEXT
64	Size of the terminal connector strips of the Link Disconnector in mm	Cross section 30x3 mm and 80mm projecting on cable connection side and 40mm on MCCB outgoing side	TEXT
65	Material & Size of Male contact terminal of LINK DISCONNECTOR	Tin plated EC grade Copper of size 20x4 mm	TEXT
66	Material & Size of Female contact terminal (Solid link hinged) of LINK DISCONNECTOR	Tin plated EC grade Copper of size 30x3 mm	TEXT
67	Handle/ puller provided with each Distribution Box (Yes/No)	Yes	BOOLEAN
68	Make of Bimetallic lugs	Mfg to give details	TEXT
69	Reference standard applied for Bimetallic lugs	IS:8337	TEXT
70	Name of manufacturer of MCCB	Mfg. To Give details	TEXT
71	Reference of standard for MCCB	Is 13947/1993(part II)	TEXT
72	Type designation (i.e .Fixed /Variable)	Fixed	TEXT
73	Type of overload release	Fixed type over load release	TEXT
74	No. of Poles	Single	TEXT
75	Rated current (amps)	150	NUMRICAL
76	Rated phase to earth Voltage in volts	250	NUMRICAL
77	Rated Frequency in Hz	50	NUMRICAL
78	Rated short Circuit Breaking capacity in KA	10	NUMERICAL
79	No of minimum archutes provided in MCCB as technical specifications	8	NUMERICAL
80	Ultimate Breaking capacity	150	NUMERICAL
81	Utilization category	A	TEXT
82	Overload release setting provided in Amps	125	Numerical
83	Colour of MCCB	Black	TEXT