Saudi Electricity Company	الشركة السعودية للكهرباء

SEC DISTRIBUTION MATERIALS SPECIFICATION	31-SDMS-02, Rev. 01
	DATE: 6-04-2004G

31-SDMS-02

REV. 01

SPECIFICATIONS

FOR

LOW VOLTAGE DISTRIBUTION PILLAR

C O N T E N T S

1. SCOPE:

This **SEC** Distribution Material Specification (SDMS) specifies the minimum technical requirements for design, materials, manufacturing, testing, inspection and performance for Low Voltage Distribution Pillar to be used in the Distribution Network of **Saudi Electricity Company (SEC)** in Saudi Arabia.

2. CROSS REFERENCES:

This Material Standard Specification shall be read in conjunction with the SEC Specification No: 01-SDMS-01 (latest revision), titled "General Requirements for All Equipment/ Materials", which shall be considered as an integral part of this SDMS, also be read in conjunction with SEC Purchase Order requirements or Contract Schedules.

3. APPLICABLE CODES & STANDARDS:

The latest revision of the following Codes and Standards shall be applicable for the Equipments/Materials covered in this Specification. In case of any deviation, the Vendor/ Manufacturer may propose Equipment/Material conforming to an alternate Code or Standard without jeopardizing the requirements of this SDMS. However, the provision of SEC Standard shall supersede the provision of these Standards in case of any differences.

3.1 SASO (Saudi Arabian Standard Organization)

a) SASO-SSA-775 Fiberglass reinforced polyester meter boxes.
b) SASO-SSA-774 Method of testing fiberglass reinforced polyester meter boxes.

3.2 VDE (Verband Deutscher Elektrotechnike)

a) VDE-0660 Regulations for Low Voltage Switchgear.
b) VDE-0220 Terminal of Energy Distribution Panels.

3.3 DIN (Deutsche International Normen)

a) DIN-43623 NH Strip Fuse-Ways.
b) DIN-40003 Standard ratings for NH Fuses.
c) DIN-43620 NH Fuse Links.
d) DIN-16911 Polyester Resin Molding Materials.
e) DIN-43629 Dimensions of Cabinet.

3.4 International Electro-Technical Commission:

a) IEC-529 Classification of Degree of Protection provided for enclosures.

b) IEC-60269-2 Low voltage Fuses - Part-2
Supplementary requirements for fuses for use by authorized persons (Fuses mainly for industrial application).

c) IEC-60335-1 Safety of household and similar electrical appliances.

3.5 ASTM (American Standard Testing Material).

a) ASTM B103 Phosphor bronze plate, sheets, strip and rolled bar.

4. SERVICE CONDITION:

4.1 The Pillar shall be suitable for operation under the service condition as per SEC latest revision of General Specification No. 01-SDMS-01.

4.2 Pillar complete with all its fittings and attachments shall be capable of withstanding the effects of direct solar radiation at their installed locations. The temperature of metal surfaces exposed to direct solar radiation shall be regarded as 75ºC, plus the effect of any internal heating.

5. DESIGN & CONSTRUCTION REQUIREMENTS:

5.1 **General**:

5.1.1 All Cable Terminations shall be easily accessible from the front.

5.1.2 All Insulating Materials shall be non-hygroscopic and resistant to tracking and cracking.

5.1.3 All parts of equal size and shape shall be inter-changeable.

5.2 **Enclosure:**

5.2.1 The Pillar shall be made of impact proof, heat resistant, self extinguishing, hot molded, non-inflammable, fiberglass reinforced polyester with a minimum thickness of 5mm and shall be covered by SASO approved epoxy coating to provide service degradation and for ultra violet protection. The Pillar shall be of free-standing type mounted on a Fiberglass Reinforced Polyester base with mounting dimensions in accordance with Drawing No. (SEC/DP-01), (SEC/DP-02), (SEC/DP-03), (SEC/DP-04). The Pillar shall be with a canopy type roof. The Pillar made of other plastic material can be offered as alternative.

5.2.2 The Pillar shall have adequate mechanical strength to withstand rough handling as may be expected in normal uses.

5.2.3 Access to the Pillar shall be from the front by means of hinged door fitted with locking mechanism to secure it at the top and bottom, it shall be openable up to 180 deg.

a) Hinges shall be made of metal and fitted by bolts made of stainless steel or brass.

b) Locking shall be as follows:

- Handle shall be made of durable metal.
- The handle shall be provided at the middle of the door.
- Integral lock cylinder type suitable for SEC standard key.
- Locking rotation shall be maintained within 90 degrees.

c) The inner side of the door shall have a storing pocket.

d) A suitable provision shall be made for fixing circuit numbering plate as shown in the drawing No. SEC/DP-01 and SEC/DP-04.

5.2.4 The pillar shall have a side opening in both sides for entering an emergency cable 300 Sq.mm.

5.2.5 The Pillar shall have an adequate ventilation system. It shall have a degree of protection in accordance with IEC-529 and the General Requirements for all Equipments/Materials Specification No: 01-SDMS-01(Latest Revision).

5.2.6 The finished color of the pillar shall be light grey (RAL-7035).

5.3 **Bus-Bars**:

5.3.1 The Bus bars shall be hard drawn high conductivity tinned copper of uniform cross section.

5.3.2 The Bus bars shall carry a rated normal continuous current of 400 Amps. It shall be supported by insulators of epoxy resin in a robust and secure manner. Three (3) Bus bars for phases and one (1) for neutral bar shall be provided.

5.3.3 The general design shall be made with minimum possible number of Joints.

5.3.4 Phase bus bars shall be color marked in sequence from top to bottom red, yellow, blue and neutral bus bar shall be marked black. The marking shall be by indelible paint at visible location.

5.4 **Fuse Ways and Fuses**:

5.4.1 The Distribution Pillar shall be equipped for seven (7), 3-Phase, 4-Wire, Aluminum Cable circuits. Two (2) circuits for the in-coming and five (5) circuits for the out-going.

5.4.2 The two (2) in-coming circuits shall be located on each side of the Pillar. For the five (5) out-going circuits NH Fuse Ways shall be of size DIN-1 with rated current of 200 Amps and they shall be in the middle.

5.4.3 The contacts of the Fuse Way shall be double spring made of stainless steel assisted for adequate contact pressure and shall be provided with insulated covers made of top quality self-extinguishing material. The contacts shall also be silver-plated to the extent of minimum 4 microns. The strip Fuse Ways shall be in accordance with DIN-16911.

5.4.4 The in-coming cables shall be directly terminated to the bus bars by using cable lugs (as per SEC specification for lugs & connectors). The (5) out-going circuits shall have 200 Amps NH Fuse Links of DIN size 2 and gl class. (as per SEC specification for fuses links).

5.4.5 The inner side of the door of the Pillar shall have the arrangement for storing NH Fuse handle.

5.5 **Terminals**:

The in-coming circuit terminals shall be suitable for fixing Aluminum Cable of size 185 mm2 or 300 mm2 with the use of cable lugs. The out-going circuit terminal shall be suitable for fixing Aluminum Cable of size 185 mm2 or 70 mm2 with the use of cable lugs. The strip Fuse Ways shall have a cable space barrier self-extinguishing and insulated material. The lugs will be provided by SEC but bolts and nuts to be provided by the Supplier.

5.6 **Cabinet base**:

5.6.1 The Cabinet Base shall comply with DIN-43629. It shall be made of self-extinguishing glass reinforced polyester.

5.6.2 The design of Cabinet Base shall conform to Drawing No: (SEC/DP-05). The front plate of the base shall be of two removable parts with the upper part to enable cable clamping, while the lower part to enable access for cable installation. Four fixing bolts with spring washers and lock washers shall be provided for fixing the cabinet on the base.

5.6.3 Cable clamps with cable support bar shall be suitable for holding securely the copper / aluminum conductor of sizes from 4x70 Sq.mm. up to 4x300 Sq.mm.

5.6.4 All metal parts shall be made of hot dip galvanized steel.

6. TEST AND INSPECTION:

6.1 Pillar shall be type tested in an independent testing laboratory for all the applicable tests as per SASO-774 and IEC-529.

6.2 The Fuse Ways shall be type tested in an independent laboratory for all the applicable tests.

6.3 Certified type test reports for both Distribution Pillar and Fuse Ways shall be submitted for approval before shipping.

6.4 SEC may wish to witness tests or to visit Factory during the manufacture of any or all items covered in this Specification. Accordingly the Supplier shall give advance notice to SEC of the manufacturing and test schedule.

7. MARKING:

7.1 The following information shall be clearly embossed on the front outer surface of the Distribution Pillar door:

a) SEC Monogram.
b) SEC Item Number.
c) Manufacturer's Name.

7.2 A name plate shall be fixed inside the pillar door with the following informations:

a) Nominal current.
b) Reference to this SEC specification.
c) The gross weight when fully equipped.
d) Serial number.
e) Year of manufacture.
f) SEC purchase order.

7.3 A single line diagram plate shall be fixed inside the pillar door indicating circuits numbers, it shall be drawn indelibly by black on white background.

7.4 Danger Plate shall be fixed on the front door in a clear place as per drawing No. (SEC-01-02).

8. PACKING:

Each Pillar shall be packed separately in a wooden frame for handling and storage convenience. The whole unit shall be shrouded with a polythene bag for protection in outdoor storage.

9. GUARANTEE:

9.1 Vendor shall guarantee the Pillar against all the defects arising out of faulty design workmanship or defective material for a period of one (1) year from the date of installation or two years from the date of delivery. SEC certificates for date of installation shall be accepted by the vendor.

9.2 If no exception/deviation are taken to this specification and no list of deviation is submitted, it shall be deemed that, in every respect, the offered Pillar and their accessories conform to this specification.

10. SUBMITTALS:

The following documents and drawings shall be supplied with the Tender:

a) Duly filled-in, signed and stamped "Technical Data Schedule" attached to this Specification.

b) Test Reports of an Independent Testing Laboratory for Fuse-Ways, Fuse handles and insulation materials.

c) Catalogues of the equipment offered.

d) Drawings showing full constructional details and dimensions thereof.

e) Any deviation from the dimension given in the attached drawings shall be highlighted through a separate memo addressed to the Purchaser.

TECHNICAL DATA SCHEDULE
(LOW VOLTAGE DISTRIBUTION PILLAR)
(Page 1 of 2)

SEC Enquiry No: _____ **Item No:** _____

S.No.	Description	Unit	SEC Requirement	Bidder's offer
1	Conformance to Drawing No.			
2	Polyester Reinforced Fiberglass Body/ Any Equivalent Material			
3	Thickness	mm		
4	Locking Arrangement		As per the Drawing	
5	Degree of Protection as per IEC-529.		IP-54	
6	Size of Bus bar		For 400 Amps	
7	NH Fuses		DIN size 2	
8	Cable Connection Terminals for Aluminum Conductors Cables: a) In-coming b) Out-going		 185-300 mm2 185-70 mm2	
9	Test Marks: Fuse Bases/Fuses		IEC, VDE, KEMA	
10	Impact strength as per DIN-53453		Yes	
11	Tensile strength as per DIN-53453		Yes	
12	Flexibility strength as per DIN-53452		Yes	
13	Fault Current Rating for the Bus-bar	A		
14	Color of the Enclosure		RAL-7035	
15	Rating of Fuses for out going feeders		200 Amps	
16	Weight in Kilograms			
17	Height, Width and Depth			
18	Voltage Class	V		

TECHNICAL DATA SCHEDULE
(LOW VOLTAGE DISTRIBUTION PILLAR)
(Page 2 of 2)

SEC Enquiry No: _____ Item No: _____

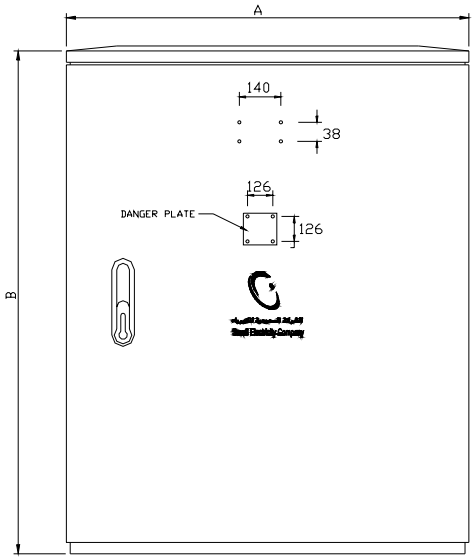
A) Additional technical information or features specified by SEC.

B) Additional supplementary data or features proposed by Vendor/Supplier.

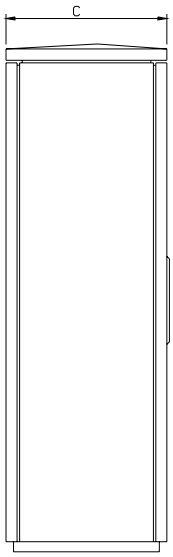
C) Other particulars to be filled up by Vendor/Supplier.
(Use separate sheet if needed).

Address	Manufacturer	Vendor/Supplier
Name of the Company		
Location & Office Address		
Authorized Name & Signature		
Date		
Official Seal / Stamp		

TOP VIEW



FRONT VIEW

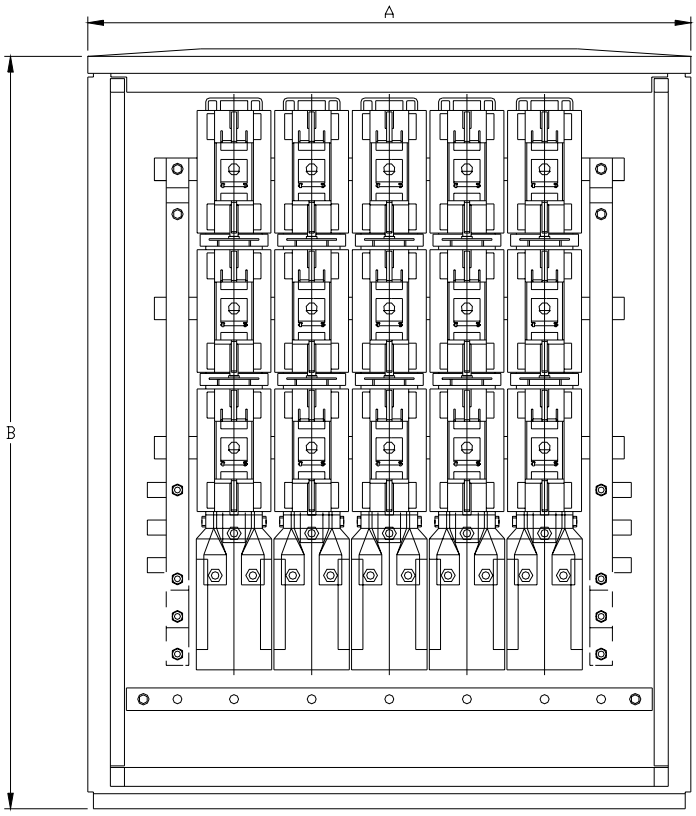


SIDE VIEW

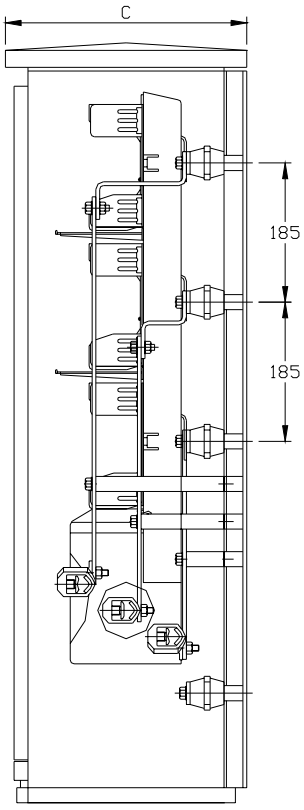
	A	B	C
Dimenision (mm)	800	830	310
Deviation (mm)	±30	±30	±30

LOW VOLTAGE DISTRIBUTION PILLAR

DRAWING NO. SEC/DP-01



FRONT VIEW (INTERNAL)

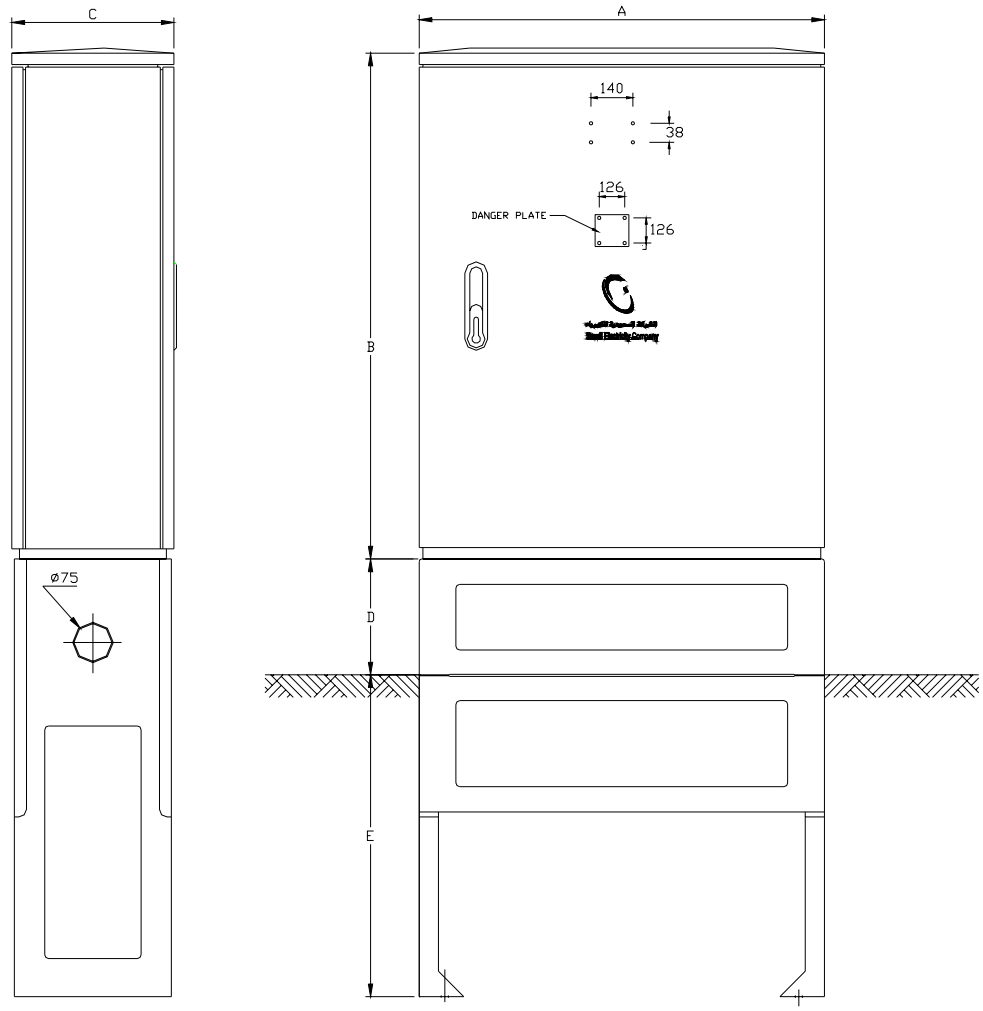


SIDE VIEW (INTERNAL)

	A	B	C
Dimenision (mm)	800	830	310
Deviation (mm)	±30	±30	±30

LOW VOLTAGE DISTRIBUTION PILLAR (INTERNAL DETAILS)

DRAWING NO. SEC/DP-02



SIDE VIEW

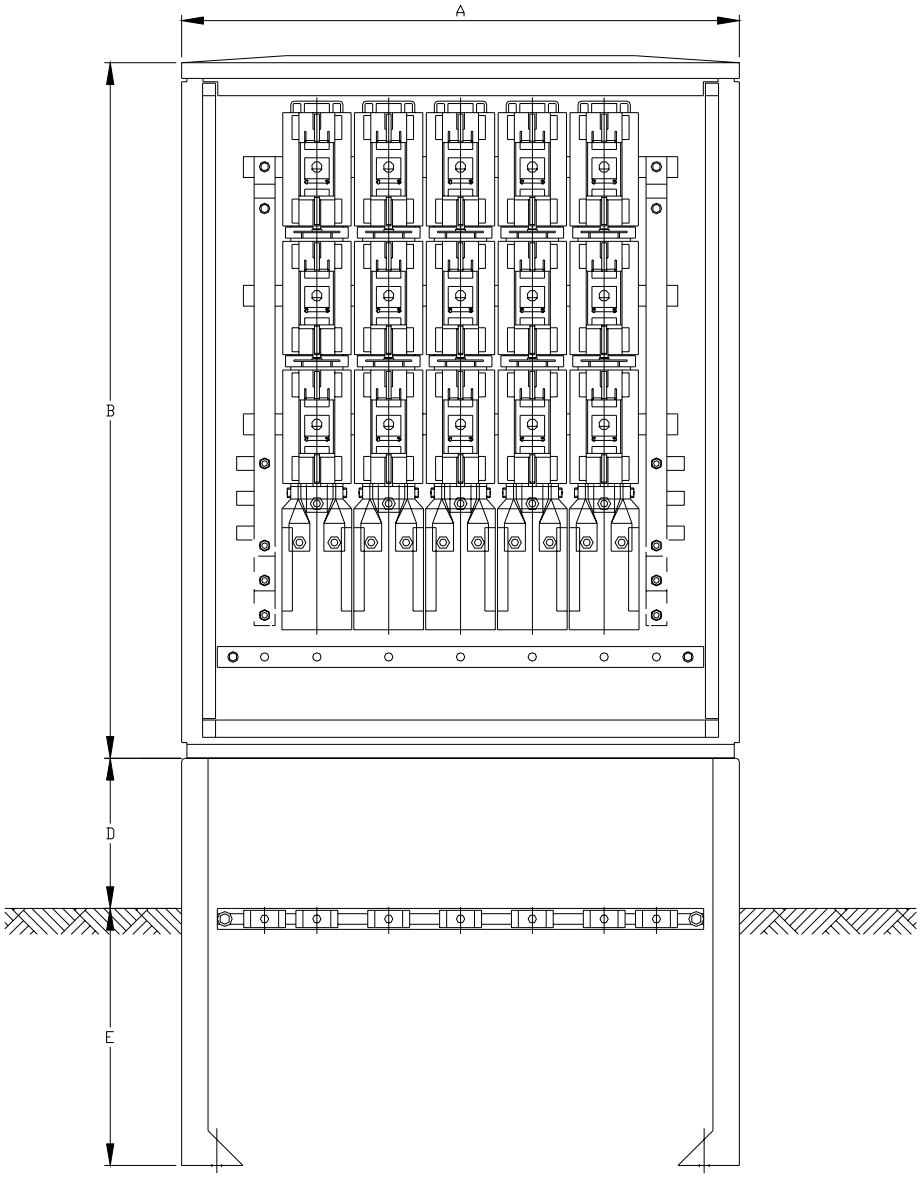
FRONT VIEW

	A	B	C	D	E
Dimenision (mm)	800	830	310	280	600
Deviation (mm)	±30	±30	±30	±30	±30

TOP VIEW

LOW VOLTAGE DISTRIBUTION PILLAR

DRAWING NO. SEC/DP-03

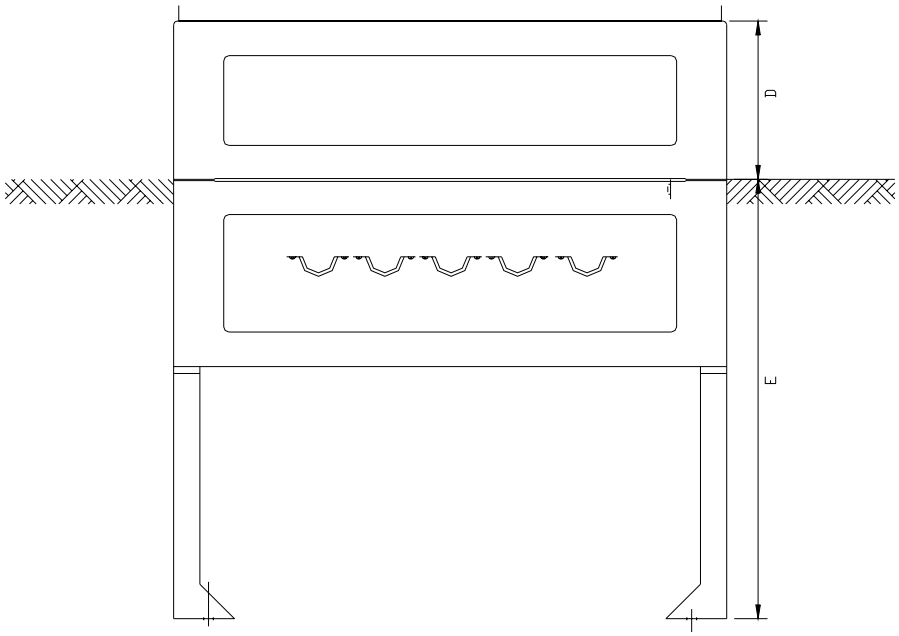


FRONT VIEW (INTERNAL)

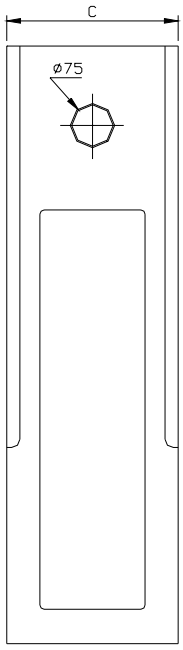
	A	B	D	E
Dimenision (mm)	800	830	280	600
Deviation (mm)	±30	±30	±30	±30

LOW VOLTAGE DISTRIBUTION PILLAR

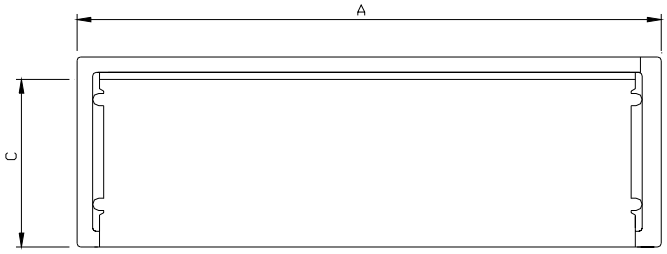
DRAWING NO. SEC/DP-04



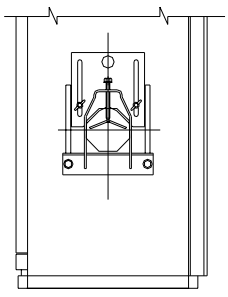
FRONT VIEW



SIDE VIEW



TOP VIEW



TEMPORARY CABLE CLAMPING DETAIL

	A	B	C	D	E
Dimenision (mm)	800	830	310	280	600
Deviation (mm)	±30	±30	±30	±30	±30

LOW VOLTAGE DISTRIBUTION PILLAR BASE

DRAWING NO. SEC/DP-05