007 : 1993

CEB
STANDARD

SERVICE CUT - OUTS

The revised version incorporating the amendment 01 of 14/07/93 and amendment 02 of 26/06/2000.

CEYLON ELECTRICITY BOARD
SRI LANKA

Specification

for

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CEB Standard 007 : 1993

The revised version incorporating the amendment 01 of 14/07/93 and amendment 02 of 26/06/2000.

CEYLON ELECTRICITY BOARD

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SPECIFICATION FOR SERVICE CUT - OUTS

1.0 SCOPE

This specification covers the design, manufacture and testing of cartridge type All Insulated Service Cut-outs.

2.0 SYSTEM PARAMETERS

(a)	Nominal System Voltage	..	400/230V 3ph & Neutral
(b)	System Highest Voltage	..	440/250V 3ph & Neutral
(c)	System Frequency	..	50 Hz.
(d)	Method of Earthing	..	Solidly earthed neutral at substations
(e)	System Fault Level	..	5 kA

3.0 SERVICE CONDITIONS

(a)	Annual average ambient temperature	..	30^0C
(b)	Maximum ambient temperature	..	40^0C
(c)	Maximum relative humidity	..	90%
(d)	Environmental Condition	..	Humid tropical climate with polluted atmosphere
(e)	Operational Altitude	..	From M.S.L. to 1900 metres above M.S.L.

4.0 APPLICABLE STANDARDS

The items and components supplied shall be in accordance with the standard specified below or later editions and/or amendments thereof.

(a)	B.S.88-Part 1 (1988)	-	Cartridge fuses for voltages up to and including 1000V a.c. and 1500V d.c. General requirements.
(b)	B.S. 1361 (1971)	-	Cartridge fuses for A.C. Circuits in domestic and similar premises
(c)	I.E.C. 269-1 (1968)	-	Low voltage fuses, Part 1 - General requirements.
(d)	I.E.C.269-3 (1987) I.E.C. 269-3A (1978)	-	Low voltage fuses. Part 3 - Supplementary requirements for fuses for domestic and similar applications.

The equipment and components conforming to any other international standards which are equal to or higher but not less rigid than the standards and specifications stipulated may be offered.

When such alternative Standards are used reference to such standards shall be quoted and English Language copies of such standards shall be furnished with the offer.

5.0 BASIC FEATURES

5.1 Design

The fuse bases, carriers and links shall be designed to withstand conditions of excessive humidity and industrial or salt pollution. The fuse links shall be designed and proportioned as to carry continuously its rated current without exceeding the maximum temperature as indicated in the relevant standards.

The design of the shall be such that the access to the neutral link shall not be possible without the removal of the fuse link carrier.

5.2 Manufacture

5.2.1 General

All Insulated Service Cut-outs shall be of non-hygroscopic phenolic or other suitable insulating material moulding possessing high thermal stability and good mechanical strength to withstand rough usage without any fracture or permanent distortion. It shall be treated to provide protection against Ultra-Violet radiation.

5.2.2 Fuse Links

(i) (a) For 15A, 30A, 60A Ratings

The dimensions shall conform to BS Type IIA or IEC Type B of values for 80 A.

(b) For 100A Rating

The dimension shall conform to BS Type IIB or IEC Type B".

(ii) The breaking capacity rating of the fuse link shall not be less than 5 kA at 0.8 power factor lagging (Nominal).

5.2.3 Fuse Base and Carrier

(i) Fuse Base and Carrier shall be designed to accommodate the type of fuse links specified in section 5.2.2.

(ii) All insulated s for a single phase supply shall comprise of

a) a fuse base with female contacts for a single fuse link carrier, and a linked neutral.

b) a removable fuse carrier to accommodate the cartridge type fuse link.

(iii) All insulated Cut-outs for three phase supply shall comprise of

a) Fuse base with female contacts for three fuse link carriers and a linked neutral.

b) Three Nos. of removable fuse carriers to accommodate the cartridge type fuse links.

(iv) All insulated cut-out shall have provision for adequately accommodating and securely clamping the incoming and outgoing aluminium or copper service wire of size up to 16mm^2 for current rating of 15A and 30A, 25mm^2 for current rating of 60A and 35mm^2 for current rating of 100A. Knockouts shall be provided to cover top and bottom entry ports. The terminals shall be made out of such materials to prevent bi-metallic corrosion in service with copper or aluminium conductors and shall be provided with two screws for effectively clamping the conductors.

(v) The bottom terminals shall have provisions for one additional out-going wire for providing loop services if requested in the Schedule of Prices.

(vi) All insulated cut-outs shall have provision for sealing by means of sealing wire and the holes provided for this shall not be less than 3mm.

(vii) The letters "CEB" of height not less than 5mm shall be embossed or stamped on the base and the carrier of the cut- out.

(viii) Fuse carriers shall be of such form and material as to protect persons from shock or burns.

5.2.4 Contacts

All contacts surfaces shall be coated with tin or other suitable material. The movable and the fixed contacts shall be so designed and be of such material to provide adequate contact after repeated operations and when left untouched for long period.

6.0 ADDITIONAL REQUIREMENTS

6.1 Name Plates or Labeling

Every fuse link, base and carrier shall be permanently marked with the following information by having provision in the mould. Stickers are not acceptable.

6.1.1 Fuse Links

Every fuse link shall be clearly and indelibly marked with the followings:

(a) Manufacturer's identification mark.

(b) Number and year of standard adopted.

(c) Rated voltage and frequency.

(d) Rated current.

(e) Breaking capacity.

6.1.2 Fuse Bases and Carriers

Fuse bases and carriers shall be clearly and indelibly marked with

(a) Manufacturer's identification mark.

(b) Number and year of standard adopted.

(c) Rated voltage and frequency.

(d) Rated current.

(e) Type reference of fuse links for which it is suitable.

6.1.3. Packing

The service cut-outs shall be packed in cardboard boxes to prevent damage during transport and handling. A maximum ten cut-outs shall be pack in a box.

7.0 INFORMATION TO BE SUPPLIED WITH THE OFFER

The following shall be furnished with the offer.

(a) Catalogues describing the equipment and indicating the Model No.

(b) Constructional feature, materials used for components and relevant technical literature.

(c) Complete dimensional drawings.

(d) Completed Schedule of Particulars, Annexure - B

(e) Type test certificates.

Certificates of -

(a) Type Test

Test Certificates and I^2t curves based on the type tests conforming to the relevant standard shall be supplied along with the offer for evaluation purposes. The test certificates should clearly identify the equipment concerned showing the Manufacturer's identity, type number and basic technical parameters.

Certificate of type tests on fuse bases, carriers and links carried out in accordance with the specified standard by an **internationally recognized Independent Testing Authority acceptable to the purchaser.**

(b) Performance -

Certificate of Performance with regard to Manufacture, supply and utilization of the fuse bases, carrier and links of similar type and design quoted shall accompany the offer.

A list of names and addresses of ten leading purchasers giving year of delivery and quantities supplied during the past ten years.

Failure to furnish the particulars asked for in clause 7.0 will result in the offer being rejected

8.0 TECHNICAL LITERATURE AND DRAWINGS

The selected tenderer shall supply along with the equipment relevant drawings and technical literature including installation instructions.

9.0 INSPECTION AND TESTING

9.1 Inspection

The selected tenderer shall make necessary arrangements for inspection by an Engineer as appointed by the Board and also to carry out in his presence necessary routine tests of the materials, equipment offered.

9.2 Routine Test

The following routine test shall be carried out. These test certificates will form a part of the shipping documents.

Verification of temperature rise limits and power losses

Verification of operation

Verification of the breaking capacity

Resistance to heat

Mechanical test

10.0 SAMPLE STUDY

One sample of All Insulated Cut-out of each rating offered shall accompany the Bid to facilitate analysis and evaluation.

11.0 ANNEXURE

A & B - Schedule of Particulars

ANNEXURE A

SCHEDULE OF PARTICULARS

A.1.1 Current Rating

15, 30, 60 & 100 Amps.

A.1.2 Fuse Sizes

(a) IEC 269 - 3A: 1978 - Type B

(b) BS 1361: 19671 - Type 11

A.1.3 Service Cable

(a) Conductor material: Aluminium or Copper

(b) Size:

Rated current of Fuse	**Service Cable Size**
15 A	16 sq. mm.
30 A	16 sq. mm.
60 A	25 sq. mm.
100 A	35 sq. mm.

ANNEXURE - B

SCHEDULE OF PARTICULARS

(To be furnished for each rating)

1. Fuse Links

(i)	Rated Voltage	 V
(ii)	Rated Current	..... A
(iii)	Rated Frequency	..... Hz
(iv)	Rated Power Loss	..... W
(v)	Time/Current Characteristics - Curves should be given	
(vi)	Rated Breaking Capacity	..... KA
(vii)	I^2t Characteristics	.....
(viii)	Fusing Factor	.....
(ix)	Dimensions and Drawings	.....
(x)	Material of fuse element	.....

2. Fuse Bases and Carriers

(i)	Rated Voltage	 V
(ii)	Rated Current	..... A
(iii)	Rated Frequency	..... Hz
(iv)	Temperature raise at rated current	
	(a) Fuse Contacts	..... ^{0}C
	(b) Fixed terminals or when cable socket is used	 C
(v)	Dimensions and Drawings	.....
(vi)	Name of manufacturer or Trade Mark by which he may be readily identified	.....
(vii)	Materials of contacts and terminals and body of the Cut-out	.....
(vii)	Whether the Labeling is permanent and conforming to clause 6.1	……..Yes/No
(ix)	Whether the Packing is conforming to Clause 6.1.3	……Yes/no