

SUPREME

www.supreme.in



MV FUSE ELEMENTS

- OUTDOOR DISTRIBUTION

SUPREME FUSE LINK (Expulsion Type)

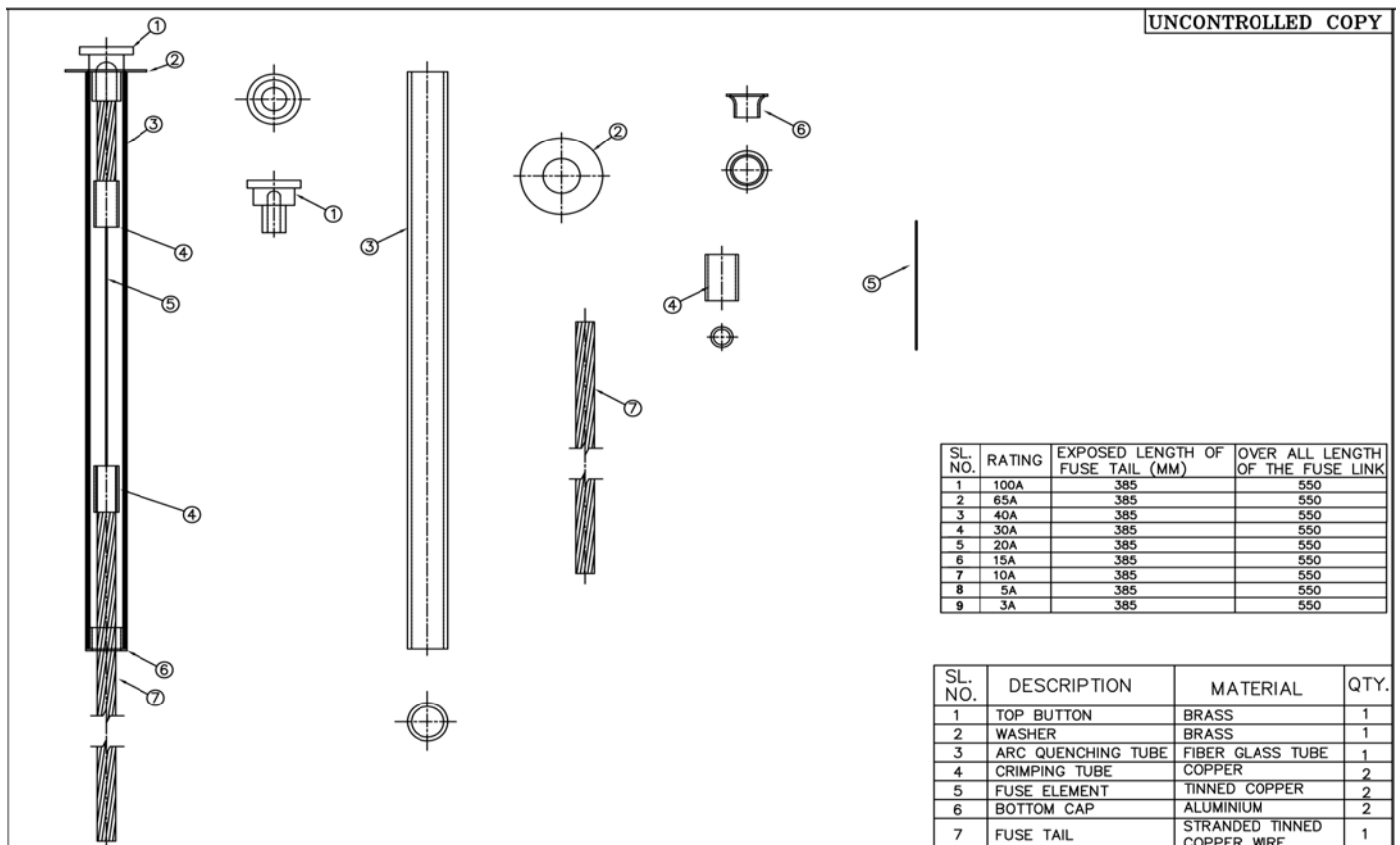
Fuse cut-outs play very important role in system and equipment protection on overhead distribution systems. The key determinant of a cut-out's ability to function properly is the fuse link it uses. Failure of the fuse link to perform as planned can result in mis-coordination with other protective devices, nuisance operations and needless outages. To a utility that's money and not just the cost of the replacement fuse link. The expense of finding and replacing fuse links that sneak out can cost many times the up-front savings achieved through the use of less-expensive fuse links. SUPREME's Fuse Links eliminate nuisance fuse operations and, at the same time, provide reliable protection in the event of a fault within the cut-out's zone of protection. They're manufactured in accordance with a quality system certified to ISO9001:2000.

Salient Features

SUPREME Fuse Links offer features that are unparalleled.

- **High Mechanical Strength.** SUPREME Fuse Links have permanently accurate time-current characteristics as per IEC-60282-2 (Tests on Heat Run & Time Current Characteristics have been successfully carried out from Jadavpur University, Kolkata). They're unaffected by mechanical shock, vibration, or transient current surges that heat the element nearly to the severing point — eliminating sneak-outs.
- **Close Melting-Current Tolerance.** SUPREME Fuse Links have a melting-current tolerance permitting closer fusing for improved protection, more precise series coordination for enhanced service reliability.
- **Superior Fault-Interrupting Performance.** SUPREME Fuse Links provide protection against all types of faults, including low-current transformer secondary-side faults.

Button Type Fuse Links provide fault performance for applications up to 33 kV.



Drawing of Fuse Link

Constructional Features

FUSE ELEMENTS

Elements consist of special alloy wire to protect from overheating during full load. The fuse elements are crimped jointed by ferrule/sleeve with stranded tinned copper flexible wire rope tails made of 37 SWG wires. The overall Dimensions of 11KV D.O. fuse elements tails are shown in the drawing.

FIBER GLASS TUBE

The central portions of the Fuse Elements are having a protecting device made of good quality FIBER GLASS TUBE which are manufactured from the best quality of Electrical grade insulating materials of high temperature range.

FLEXIBLE TAIL ROPE WIRES

The D.O. fuse elements are crimped jointed by ferrule/sleeve with two stranded tinned copper flexible wire rope tails made of 37 SWG. Stranded tinned copper flexible wire ropes are manufactured by our own stranding machine from Electrical Grade 100% tinned copper wires.

Technical Specification

APPLICABLE STANDARD :

Unless otherwise modified in this specification, the cutout shall conform to IS: 9385 & IEC 60282-2 (Part-I to III) as amended from time to time.

RATED VOLTAGE :

The rated voltage shall be 12 KV.

RATED CURRENT:

The rated current shall be 100 A, 65 A, 40A, 30 A, 20 A, 15 A, 10 A, 5 A, 3 A.

RATED LIGHTING IMPULSE WITHSTAND VOLTAGE VALUES FOR THE FUSE BASE:

The rated lightning impulse withstand voltage both for positive and negative polarities shall be as given below.

- a) To earth and between pole : 75KV (Peak)
- b) Across the isolating distance : 85KV (Peak) of fuse base.

RATED ONE MINUTE POWER FREQUENCY WITHSTAND VOLTAGE (DRY AND WET) VALUES FOR THE FUSE BASE:

- a) To earth and between poles : 28KV (rms)
- b) Across the isolating distance : 35KV (rms)

TEMPERATURE RISE LIMIT (IN AIR):

- a) Copper contacts silver faced : 65°C
- b) Terminals : 50°C
- c) Metal parts acting : The temperature shall not reach as springs such a value that elasticity of the metal is changed.

Best Suggested Rating for Indian rural area:

<u>Transformer KVA</u>	<u>Rating of D.O. Fuse Element</u>
25 KVA.....	05 Amp
63 KVA.....	10 Amp
100 KVA.....	15 Amp
200 KVA.....	20 Amp
500 KVA.....	40 Amp
Feeder Tap line (500 KVA load).....	40 Amp
Feeder Tap line (800 KVA load).....	60 Amp
Feeder Tap line (1000 KVA load).....	80 Amp
Feeder Main line	60 Amp to 100 Amp (According to connected load)

Test Report on Heat Run Test

JADAVPUR UNIVERSITY
KOLKATA-700032, INDIA

Ref. E-12/7/1/16
Dated: 11.01.2016
37

Sorted Post

M/S Supreme & Co. PVT. LTD.,
53, Justice Chandra Madhav Road,
Kolkata-700020,
West Bengal.

Sub: Temperature rise test and Time-current Characteristics Test as per IEC 60282-2
Ref: SUPREME/TYPE TEST/ALTD dated 06.09.2013

Dear Sir,

Please find the detailed test reports (Temperature rise test and Time-current Characteristics Test) on the subject job prepared by Prof. Susanta Ray of Electrical Engineering Department. The receipt of this may kindly be acknowledged.

Thanking You,

Yours sincerely,

Susanta Ray
Registrar

Encls: - As above

1) Machines & Drives Laboratory with one copy of the test report
2) Records - two copies.

MACHINES & DRIVES LABORATORY
ELECTRICAL ENGINEERING DEPARTMENT
JADAVPUR UNIVERSITY
18B, Raja S.C. Mukh Road, Kolkata - 700032 (India)

Test Report

Test Report Number: JUEMND_2013_2

Name and Address of the Customer: SUPREME & CO PVT LTD, 53, JUSTICE CHANDRA MADHAV ROAD, KOLKATA, WB,INDIA, PIN - 700020

Name & address of the Manufacturer: SUPREME & CO PVT LTD, 53, JUSTICE CHANDRA MADHAV ROAD, KOLKATA, WB,INDIA, PIN - 700020

Particulars of the sample tested: DROPOUT TYPE FUSE ELEMENTS of current rating 3A,5A,10A,15A,20A,30A,40A,65A,100A respectively (EXPANSION CLUT OUT (N-TYPE))

Type: NI
Serial No: NI
Number of samples tested: One of each rating
Condition of sample on receipt: None

Particular of the Test Conducted: Temperature rise test as per IEC 60282-2:2008

Name of the witnessing persons: MR. ANAN SINHA ROY, MANAGER, POWER SYSTEM, SUPREME & CO PVT LTD
Customer representatives: NI
Other than Customer representatives: NI

Documents consisting this report: Number of sheets (in words): Six
Number of Oscillograms: NI
Number of Graphs: NI
Number of Test Circuit Diagrams: NI

Susanta Ray
Registrar, Jadavpur University

Prof. Susanta Kumar Ghoshal
HOD, Electrical Engineering Department

Susanta Ray
Tested By

MACHINES & DRIVES LABORATORY
ELECTRICAL ENGINEERING DEPARTMENT
JADAVPUR UNIVERSITY
18B, Raja S.C. Mukh Road, Kolkata - 700032 (India)

Test Report

Average ambient temperature: 20°C
Temperature rise of various parts at steady state:
For 100A Fuse conductor used: 150 sq mm, copper bus bar of 1 m length

Parts of Assemblies	Temperature rise limits as given in table-LT IEC 60282-2:2008 (K)	Temperature rise (K)	Remarks
Terminals of external insulated conductors of incoming terminal Fuse contacts (Silver Plated)	65	42	Within limits
(i) Incoming	65	39	Within limits
(ii) Outgoing	65	58	Within limits

For 65A Fuse conductor used: 150 sq mm, copper bus bar of 1 m length

Parts of Assemblies	Temperature rise limits as given in table-LT IEC 60282-2:2008 (K)	Temperature rise (K)	Remarks
Terminals of external insulated conductors of incoming terminal Fuse contacts (Silver Plated)	65	20.4	Within limits
(i) Incoming	65	22.8	Within limits
(ii) Outgoing	65	22.8	Within limits

Susanta Ray
Registrar, Jadavpur University

Prof. Susanta Kumar Ghoshal
HOD, Electrical Engineering Department

Susanta Ray
Tested By

Test Report on Time Current Characteristics

MACHINES & DRIVES LABORATORY
ELECTRICAL ENGINEERING DEPARTMENT
JADAVPUR UNIVERSITY
18B, Raja S.C. Mukh Road, Kolkata - 700032 (India)

Test Report

Test Report Number: JUEMND_2013_2

Name and Address of the Customer: SUPREME & CO PVT LTD, 53, JUSTICE CHANDRA MADHAV ROAD, KOLKATA, WB,INDIA, PIN - 700020

Name & address of the Manufacturer: SUPREME & CO PVT LTD, 53, JUSTICE CHANDRA MADHAV ROAD, KOLKATA, WB,INDIA, PIN - 700020

Particulars of the sample tested: DROPOUT TYPE FUSE ELEMENTS of current rating 3A,5A,10A,15A,20A,30A,40A,65A,100A respectively (EXPANSION CLUT OUT (N-TYPE))

Type: NI
Serial No: NI
Number of samples tested: One of each rating
Condition of sample on receipt: None

Particular of the Test Conducted: Time-Current Characteristics Tests as per IEC 60282-2:2008

Name of the witnessing persons: MR. ANAN SINHA ROY, MANAGER, POWER SYSTEM, SUPREME & CO PVT LTD
Customer representatives: NI
Other than Customer representatives: NI

Documents consisting this report: Number of sheets (in words): Four
Number of Oscillograms: (One Graph for SCRP/FUSE ILM/TIME-CURRENT CHARACTERISTICS)
Number of Test Circuit Diagrams: NI

Susanta Ray
Registrar, Jadavpur University

Prof. Susanta Kumar Ghoshal
HOD, Electrical Engineering Department

Susanta Ray
Tested By

MACHINES & DRIVES LABORATORY
ELECTRICAL ENGINEERING DEPARTMENT
JADAVPUR UNIVERSITY
18B, Raja S.C. Mukh Road, Kolkata - 700032 (India)

Schedule of test conducted

Time-Current Characteristics

Tested as per: Client's instruction following the procedure given in sub-clause 6.7 of IEC60282-2:2008.

Client's requirement: Time-current characteristics test at any convenient voltage at current values specified.

Test procedure: Test sample was mounted as in normal use. Required test current was passed and the operating time was recorded at an ambient temperature of 20°C.

1) Fuse rating: 100A conductor used: 150 sq mm, copper bus bar of 1 m length

Sample Numbers	Test Current (A)		Fusing time	Observation
	Required	Actual		
JUMND01	300-340	300	285 s	Within the limits
JUMND02	268-308	265	16 s	Within the limits
JUMND03	1520-1520	1500	75 ms	Within the limits

2) Fuse rating: 65A conductor used: 150 sq mm, copper bus bar of 1 m length

Sample Numbers	Test Current (A)		Fusing time	Observation
	Required *	Actual		
JUMND04	130-154	131	129 s	Within the limits
JUMND05	152-242	155	6.29 s	Within the limits
JUMND06	520-1128	1035	71 ms	Within the limits

3) Fuse rating: 40A conductor used: 150 sq mm, copper bus bar of 1 m length

Sample Numbers	Test Current (A)		Fusing time	Observation
	Required	Actual		
JUMND07	80-90	81	18.48 s	Within the limits
JUMND08	36-148	131	4.23 s	Within the limits
JUMND09	565-680	654	60 ms	Within the limits

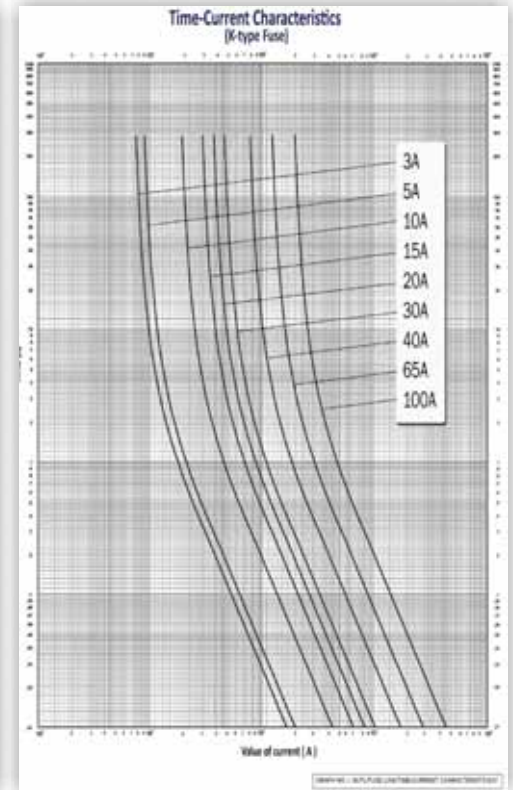
4) Fuse rating: 30A conductor used: 150 sq mm, copper bus bar of 1 m length

Sample Numbers	Test Current (A)		Fusing time	Observation
	Required *	Actual		
JUMND10	62-75	64	5.13	Within the limits
JUMND11	75-115	81	2.36	Within the limits
JUMND12	430-536	435	30 ms	Within the limits

Susanta Ray
Registrar, Jadavpur University

Prof. Susanta Kumar Ghoshal
HOD, Electrical Engineering Department

Susanta Ray
Tested By



City Office

53, Justice Chandra Madhav Road,
Kolkata - 700020, West Bengal, India.
Phone : +91-033-24745984/ 85
Fax : +91-033-24746537 / 24761955
Mail : info@supreme.in/ ho@supreme.in
Website : www.supreme.in



SUPREME & CO. PVT. LTD.
ISO 9001: 2008 & 14001: 2004 Certified

Work Office

P-200, Benaras Road,
Howrah - 711108, West Bengal, India.
Phone : +91-033-2651
+91-033-26516701 to 05
Fax : +91-033-26514792/ 6706
Mail : sales@supreme.in