Ferraz Shawmut

Feeder Pillar & House Service Fuse Links Catalogue - 2009

CARBONE LORRAINE

Ferraz Shawmut

- Powerful presence of the world's leader on the circuit protection market Ferraz Shawmut, Carbone Lorraine's Electrical Protection Division, offer innovative solutions to enhance the safety of low and medium voltage installations and equipment.

- Above and beyond the supply of products, the company also provides added value in the form of technical support for OEMs, electrical contractors, panel builders, plant maintenance department and utilities.

- As a global player, Ferraz Shawmut has established production facilities on every continent to optimize the offering (France, Tunisia, United States, Canada, Mexico, India, Japan and P.R. of China). All these locations are united around a global quality, safety and environment policy.

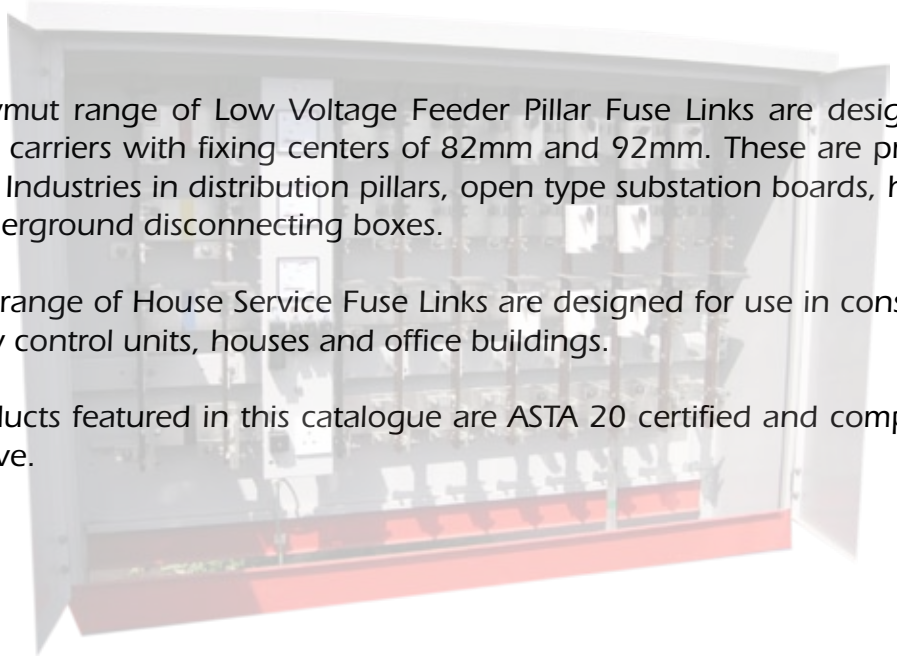
- The world-class organization of Ferraz Shawmut offers tried, proven and approved solutions ensuring the integrity of the equipment, their devices protected and the safety of people working around them. To guard customers' electrical equipment and installations over the long term, Ferraz Shawmut markets the widest range of safe, reliable electrical and thermal protection solutions.

- Ferraz Shawmut solutions are sold all over the world at 4500 points of sale through professional distributors of electrical components and equipment.

The Ferraz Shawmut range of Low Voltage Feeder Pillar Fuse Links are designed for use with wedge type fuse carriers with fixing centers of 82mm and 92mm. These are primarily for use by Electricity Supply Industries in distribution pillars, open type substation boards, heavy duty service cut-outs and underground disconnecting boxes.

Ferraz Shawmut range of House Service Fuse Links are designed for use in consumer distribution boards, electricity control units, houses and office buildings.

All the Fuse products featured in this catalogue are ASTA 20 certified and comply with the RoHS European Directive.



Contents

Feeder Pillar Fuse Links

Reference data

Rated Voltage: 415V ac
Breaking Capacity: 80kA

Voltage (V)	Rating (A)	Catalog Number	BS Standard Reference	IEC Standard Reference	Fixing Centre (mm)	Pack.
415	20	BJU42V020PA	BS88-5	IEC60269-2	82	6
	25	BJU42V025PA	BS88-5	IEC60269-2	82	6
	32	BJU42V032PA	BS88-5	IEC60269-2	82	6
	40	BJU42V040PA	BS88-5	IEC60269-2	82	6
	50	BJU42V050PA	BS88-5	IEC60269-2	82	6
	63	BJU42V063PA	BS88-5	IEC60269-2	82	6
	80	BJU42V080PA	BS88-5	IEC60269-2	82	6
	100	BJU42V100PA	BS88-5	IEC60269-2	82	6
	125	BJU42V125PA	BS88-5	IEC60269-2	82	6
	160	BJU42V160PA	BS88-5	IEC60269-2	82	6
	200	BJU42V200PA	BS88-5	IEC60269-2	82	6
415	20	BJU42V020SA	BS88-5	IEC60269-2	92	3
	25	BJU42V025SA	BS88-5	IEC60269-2	92	3
	32	BJU42V032SA	BS88-5	IEC60269-2	92	3
	40	BJU42V040SA	BS88-5	IEC60269-2	92	3
	50	BJU42V050SA	BS88-5	IEC60269-2	92	3
	63	BJU42V063SA	BS88-5	IEC60269-2	92	3
	80	BJU42V080SA	BS88-5	IEC60269-2	92	3
	100	BJU42V100SA	BS88-5	IEC60269-2	92	3
	125	BJU42V125SA	BS88-5	IEC60269-2	92	3
	160	BJU42V160SA	BS88-5	IEC60269-2	92	3
	200	BJU42V200SA	BS88-5	IEC60269-2	92	3
415	250	BJU42V250PB	BS88-5	IEC60269-2	82	3
	315	BJU42V315PB	BS88-5	IEC60269-2	82	3
	355	BJU42V355PB	BS88-5	IEC60269-2	82	3
	400	BJU42V400PB	BS88-5	IEC60269-2	82	3
415	250	BJU42V250SB	BS88-5	IEC60269-2	92	3
	315	BJU42V315SB	BS88-5	IEC60269-2	92	3
	355	BJU42V355SB	BS88-5	IEC60269-2	92	3
	400	BJU42V400SB	BS88-5	IEC60269-2	92	3
415	450	BJU42V450SC	BS88-5	IEC60269-2	92	1
	500	BJU42V500SC	BS88-5	IEC60269-2	92	1
415	560	BJU42V560SD	BS88-5	IEC60269-2	92	1
	630	BJU42V630SD	BS88-5	IEC60269-2	92	1

Feeder Pillar Fuse Links

Dimensions

Fig. 1

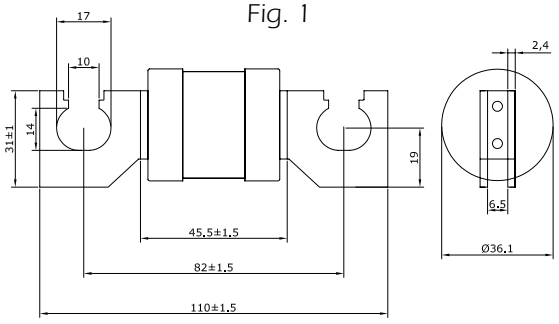


Fig. 2

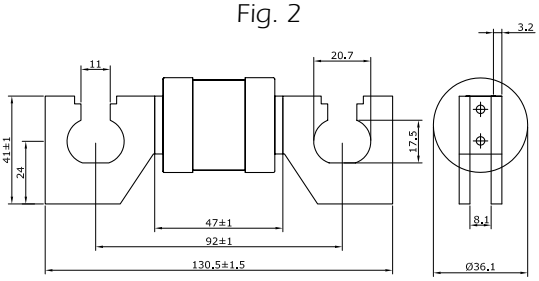


Fig. 3

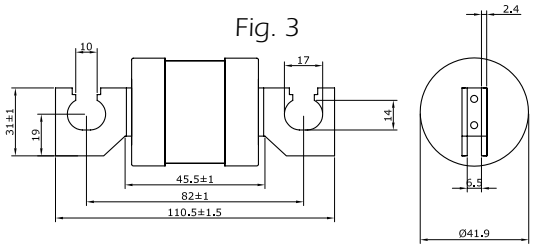


Fig. 4

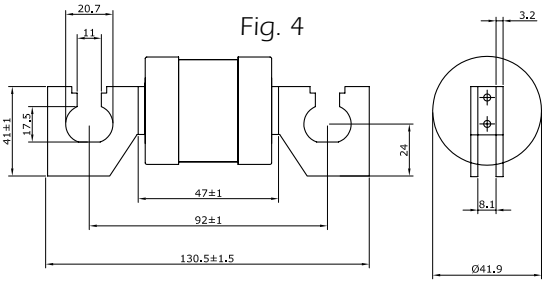


Fig. 5

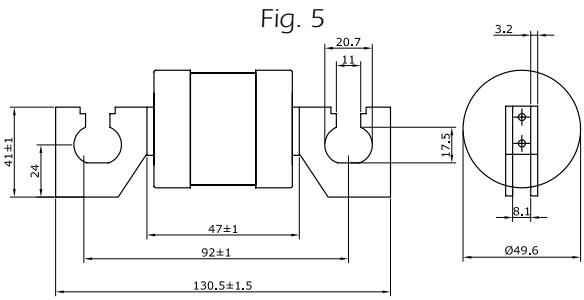


Fig. 6

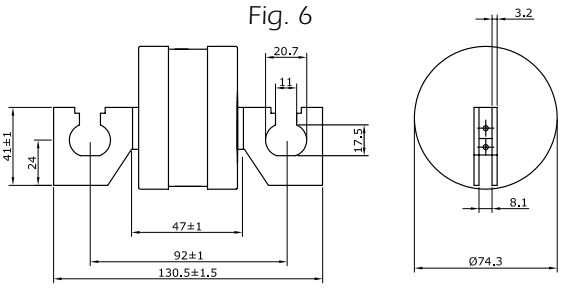


Fig. No.	Catalog Ref
1	BJU42V020PA - BJU42V200PA
2	BJU42V020SA - BJU42V200SA
3	BJU42V250PB - BJU42V400PB
4	BJU42V250SB - BJU42V400SB
5	BJU42V450SC - BJU42V500SC
6	BJU42V560SD - BJU42V630SD

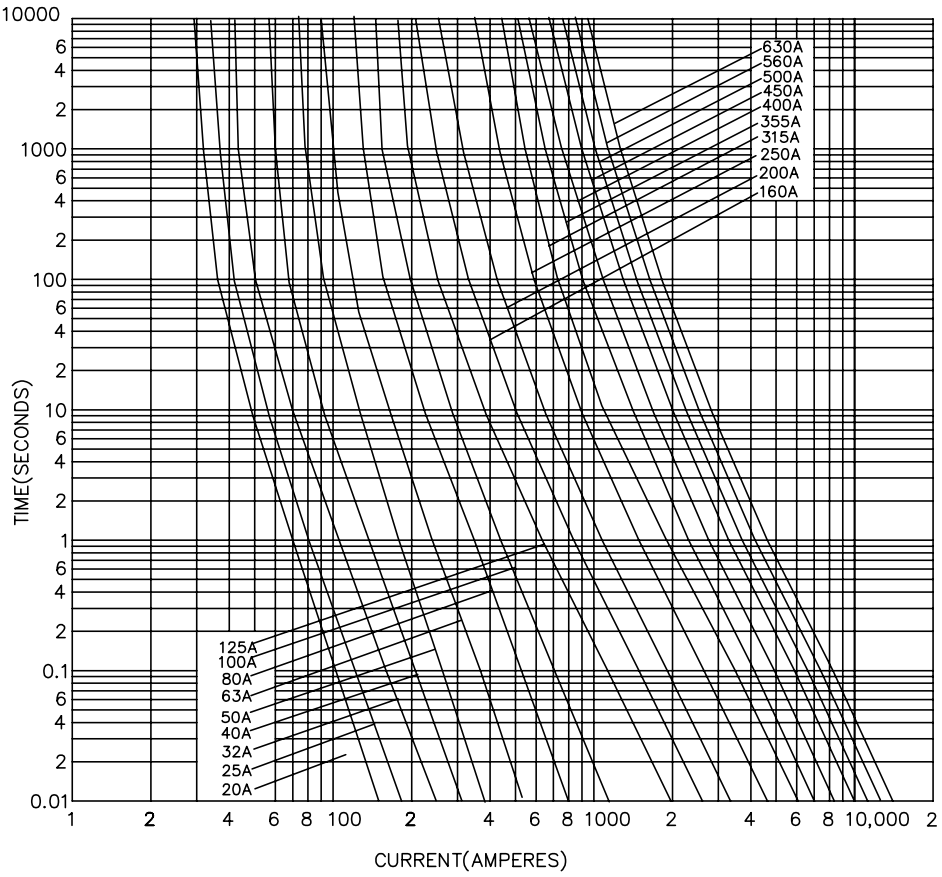
Electrical characteristics

Fuse Type	Rating (A)	Curve	I^2t (Ampere² seconds) Pre Arcing	I^2t (Ampere² seconds) Total	Watts Loss
BJU42V020PA/SA	20	gU	100	1125	2.4
BJU42V025PA/SA	25	gU	250	1890	2.7
BJU42V032PA/SA	32	gU	670	3000	3.2
BJU42V040PA/SA	40	gU	1300	5850	4.5
BJU42V050PA/SA	50	gU	2600	11700	4.8
BJU42V063PA/SA	63	gU	4000	18000	6.2
BJU42V080PA/SA	80	gU	4150	21000	8.4
BJU42V100PA/SA	100	gU	8240	37000	8.7
BJU42V125PA/SA	125	gU	16600	74700	9.3
BJU42V160PA/SA	160	gU	37500	168000	10.7
BJU42V200PA/SA	200	gU	57000	256500	16.2
BJU42V250PB/SB	250	gU	60000	270000	20
BJU42V315PB/SB	315	gU	105000	472500	27
BJU42V355PB/SB	355	gU	134000	603300	29
BJU42V400PB/SB	400	gU	160000	720000	32
BJU42V450SC	450	gU	210000	945000	36
BJU42V500SC	500	gU	302000	1359000	37
BJU42V560SD	560	gU	485000	2910000	35
BJU42V630SD	630	gU	634000	3800000	39

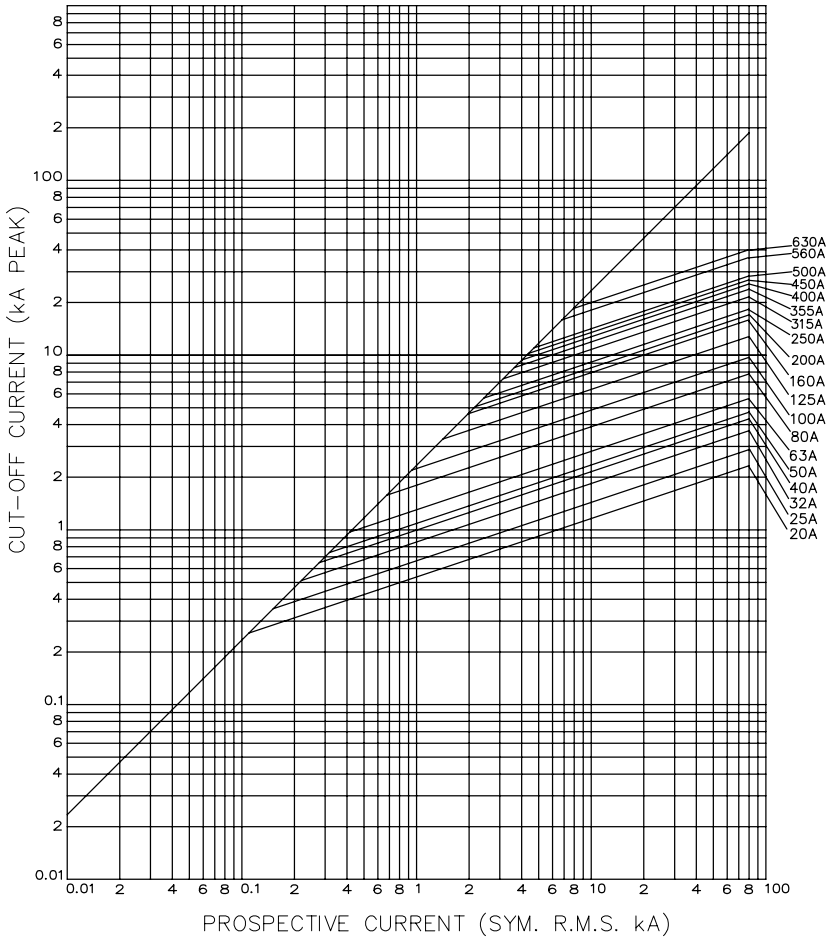
Curves Set for Feeder Pillar Fuse Links

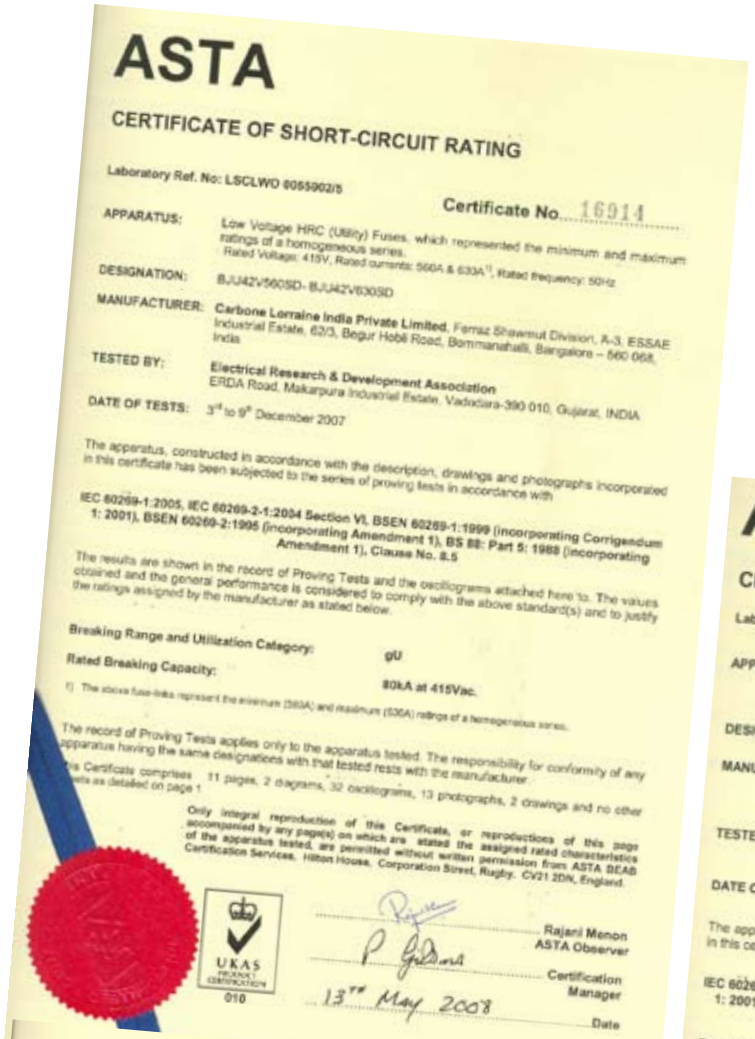
Time vs. Current characteristics

gU curves - 20 to 630A - 415VAC



Cut off - Current characteristics





ASTA

CERTIFICATE OF SHORT-CIRCUIT RATING

Laboratory Ref. No: LSCLWO 0055902/5 **Certificate No.** 16914

APPARATUS: Low Voltage HRC (Utility) Fuses, which represented the minimum and maximum ratings of a homogeneous series.
Rated Voltage: 415V, Rated currents: 560A & 630A[1], Rated frequency: 50Hz

DESIGNATION: BJU42V560SD- BJU42V630SD

MANUFACTURER: **Carbone Lorraine India Private Limited**, Ferraz Shawmut Division, A-3, ESSAE Industrial Estate, 62/3, Begur Hobli Road, Bommanahalli, Bangalore – 560 068, India

TESTED BY: **Electrical Research & Development Association**
ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, Gujarat, INDIA

DATE OF TESTS: 3rd to 9th December 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with

IEC 60269-1:2005, IEC 60269-2-1:2004 Section VI, BSEN 60269-1:1999 (incorporating Corrigendum 1: 2001), BSEN 60269-2:1995 (incorporating Amendment 1), BS 88: Part 5: 1988 (incorporating Amendment 1), Clause No. 8.5

The results are shown in the record of Proving Tests and the oscillograms attached here to. The values obtained and the general performance is considered to comply with the above standard(s) and to justify the ratings assigned by the manufacturer as stated below.

Breaking Range and Utilization Category: **gU**

Rated Breaking Capacity: **80kA at 415Vac.**

1) The above fuse-links represent the minimum (560A) and maximum (630A) ratings of a homogeneous series.

The record of Proving Tests applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the manufacturer.

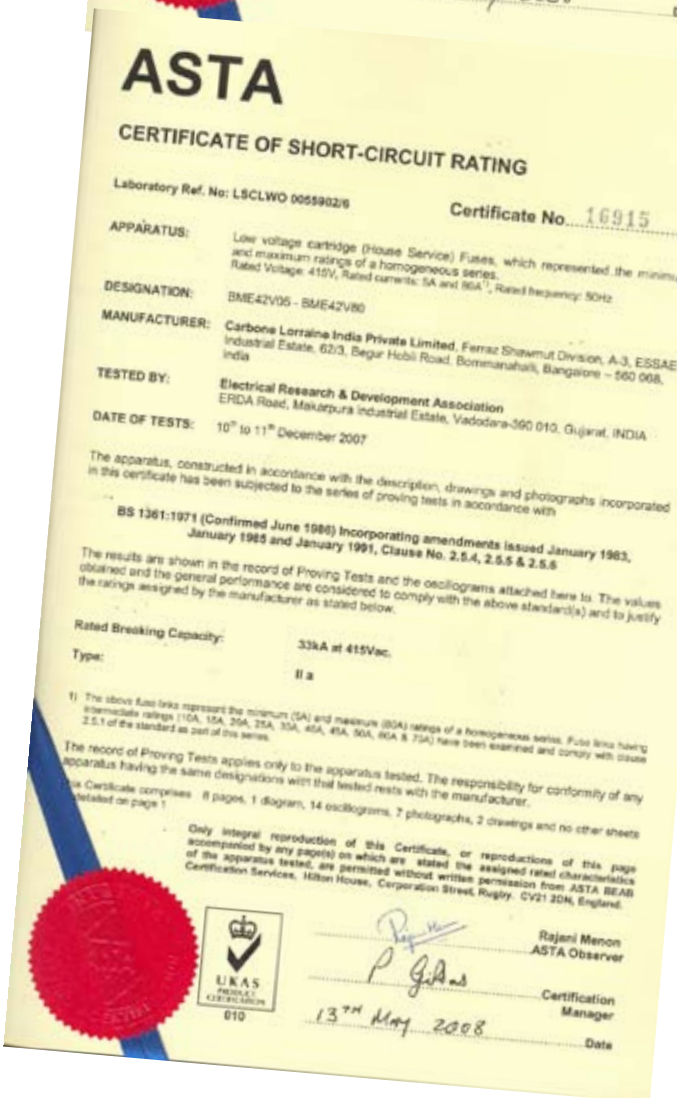
This Certificate comprises 11 pages, 2 diagrams, 32 oscillograms, 13 photographs, 2 drawings and no other sheets as detailed on page 1

UKAS PRODUCT CERTIFICATION 010

Rajani Menon
ASTA Observer

Certification Manager

13TH May 2008
Date



ASTA

CERTIFICATE OF SHORT-CIRCUIT RATING

Laboratory Ref. No: LSCLWO 0055902/6 **Certificate No.** 16915

APPARATUS: Low voltage cartridge (House Service) Fuses, which represented the minimum and maximum ratings of a homogeneous series.
Rated Voltage: 415V, Rated currents: 5A and 80A[1], Rated frequency: 50Hz

DESIGNATION: BME42V05 - BME42V80

MANUFACTURER: **Carbone Lorraine India Private Limited**, Ferraz Shawmut Division, A-3, ESSAE Industrial Estate, 62/3, Begur Hobli Road, Bommanahalli, Bangalore – 560 068, India

TESTED BY: **Electrical Research & Development Association**
ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, Gujarat, INDIA

DATE OF TESTS: 10th to 11th December 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with

BS 1361:1971 (Confirmed June 1986) Incorporating amendments issued January 1983, January 1985 and January 1991, Clause No. 2.5.4, 2.5.5 & 2.5.6

The results are shown in the record of Proving Tests and the oscillograms attached here to. The values obtained and the general performance are considered to comply with the above standard(s) and to justify the ratings assigned by the manufacturer as stated below.

Rated Breaking Capacity: **33kA at 415Vac.**

Type: **II a**

1) The above fuse-links represent the minimum (5A) and maximum (80A) ratings of a homogeneous series. Fuse links having intermediate ratings (10A, 15A, 20A, 25A, 35A, 45A, 50A, 60A & 71A) have been examined and comply with clause 2.5.1 of the standard as part of this series.

The record of Proving Tests applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the manufacturer.

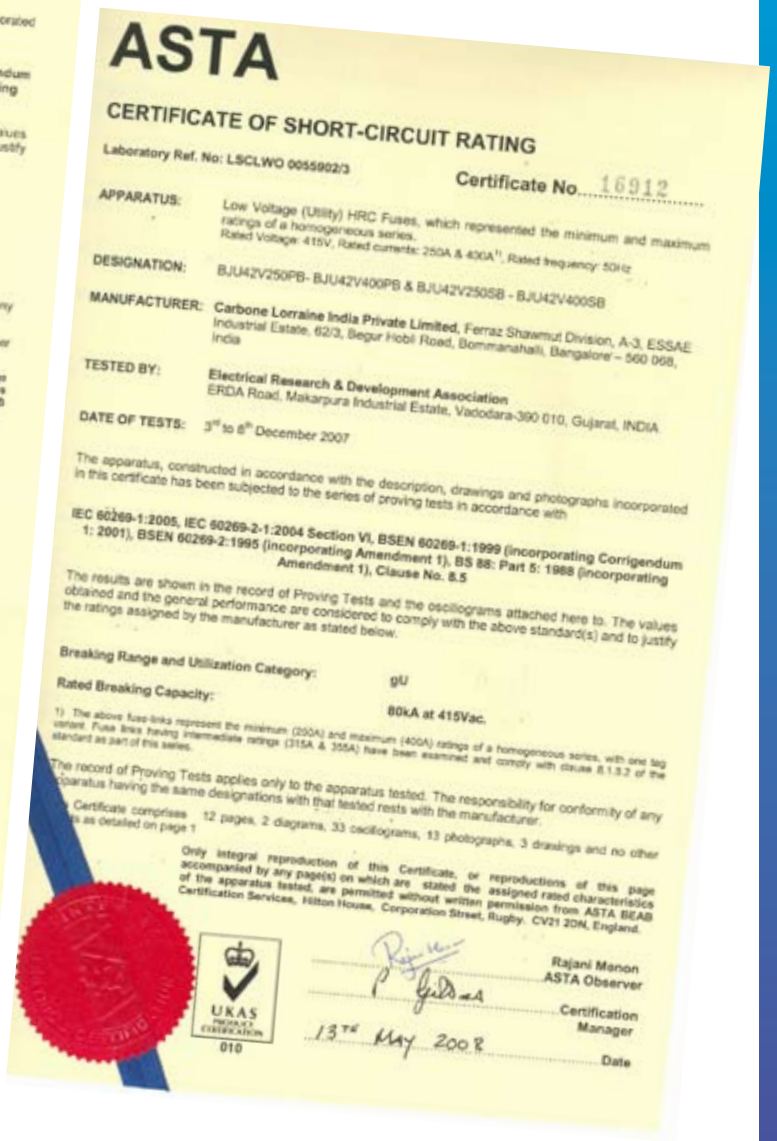
This Certificate comprises 8 pages, 1 diagram, 14 oscillograms, 7 photographs, 2 drawings and no other sheets as detailed on page 1

UKAS PRODUCT CERTIFICATION 010

Rajani Menon
ASTA Observer

Certification Manager

13TH May 2008
Date



ASTA

CERTIFICATE OF SHORT-CIRCUIT RATING

Laboratory Ref. No: LSCLWO 0055902/3 **Certificate No.** 16912

APPARATUS: Low Voltage (Utility) HRC Fuses, which represented the minimum and maximum ratings of a homogeneous series.
Rated Voltage: 415V, Rated currents: 250A & 400A[1], Rated frequency: 50Hz

DESIGNATION: BJU42V250PB- BJU42V400PB & BJU42V250SB - BJU42V400SB

MANUFACTURER: **Carbone Lorraine India Private Limited**, Ferraz Shawmut Division, A-3, ESSAE Industrial Estate, 62/3, Begur Hobli Road, Bommanahalli, Bangalore – 560 068, India

TESTED BY: **Electrical Research & Development Association**
ERDA Road, Makarpura Industrial Estate, Vadodara-390 010, Gujarat, INDIA

DATE OF TESTS: 3rd to 8th December 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with

IEC 60269-1:2005, IEC 60269-2-1:2004 Section VI, BSEN 60269-1:1999 (incorporating Corrigendum 1: 2001), BSEN 60269-2:1995 (incorporating Amendment 1), BS 88: Part 5: 1988 (incorporating Amendment 1), Clause No. 8.5

The results are shown in the record of Proving Tests and the oscillograms attached here to. The values obtained and the general performance are considered to comply with the above standard(s) and to justify the ratings assigned by the manufacturer as stated below.

Breaking Range and Utilization Category: **gU**

Rated Breaking Capacity: **80kA at 415Vac.**

1) The above fuse-links represent the minimum (250A) and maximum (400A) ratings of a homogeneous series, with one tag variant. Fuse links having intermediate ratings (315A & 355A) have been examined and comply with clause 8.1.3.2 of the standard as part of this series.

The record of Proving Tests applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the manufacturer.

This Certificate comprises 12 pages, 2 diagrams, 33 oscillograms, 13 photographs, 3 drawings and no other sheets as detailed on page 1

UKAS PRODUCT CERTIFICATION 010

Rajani Menon
ASTA Observer

Certification Manager

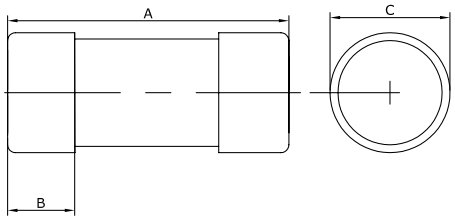
13TH May 2008
Date

Reference data

Rated Voltage: 415V ac
Breaking Capacity: 33 kA

Voltage (V)	Rating (A)	Catalog Number	BS Standard Reference	IEC Standard Reference	Size (mm)	Std. Pack.
415	5	BME42V05	BS1361	IEC60269-3	22x57	10
	10	BME42V10	BS1361	IEC60269-3	22x57	10
	15	BME42V15	BS1361	IEC60269-3	22x57	10
	20	BME42V20	BS1361	IEC60269-3	22x57	10
	25	BME42V25	BS1361	IEC60269-3	22x57	10
	30	BME42V30	BS1361	IEC60269-3	22x57	10
	40	BME42V40	BS1361	IEC60269-3	22x57	10
	45	BME42V45	BS1361	IEC60269-3	22x57	10
	50	BME42V50	BS1361	IEC60269-3	22x57	10
	60	BME42V60	BS1361	IEC60269-3	22x57	10
	70	BME42V70	BS1361	IEC60269-3	22x57	10
	80	BME42V80	BS1361	IEC60269-3	22x57	10
415	30	BMF42V30	BS1361	IEC60269-3	30x57	6
	40	BMF42V40	BS1361	IEC60269-3	30x57	6
	50	BMF42V50	BS1361	IEC60269-3	30x57	6
	60	BMF42V60	BS1361	IEC60269-3	30x57	6
	70	BMF42V70	BS1361	IEC60269-3	30x57	6
	80	BMF42V80	BS1361	IEC60269-3	30x57	6
	100	BMF42V100	BS1361	IEC60269-3	30x57	6

Dimensions



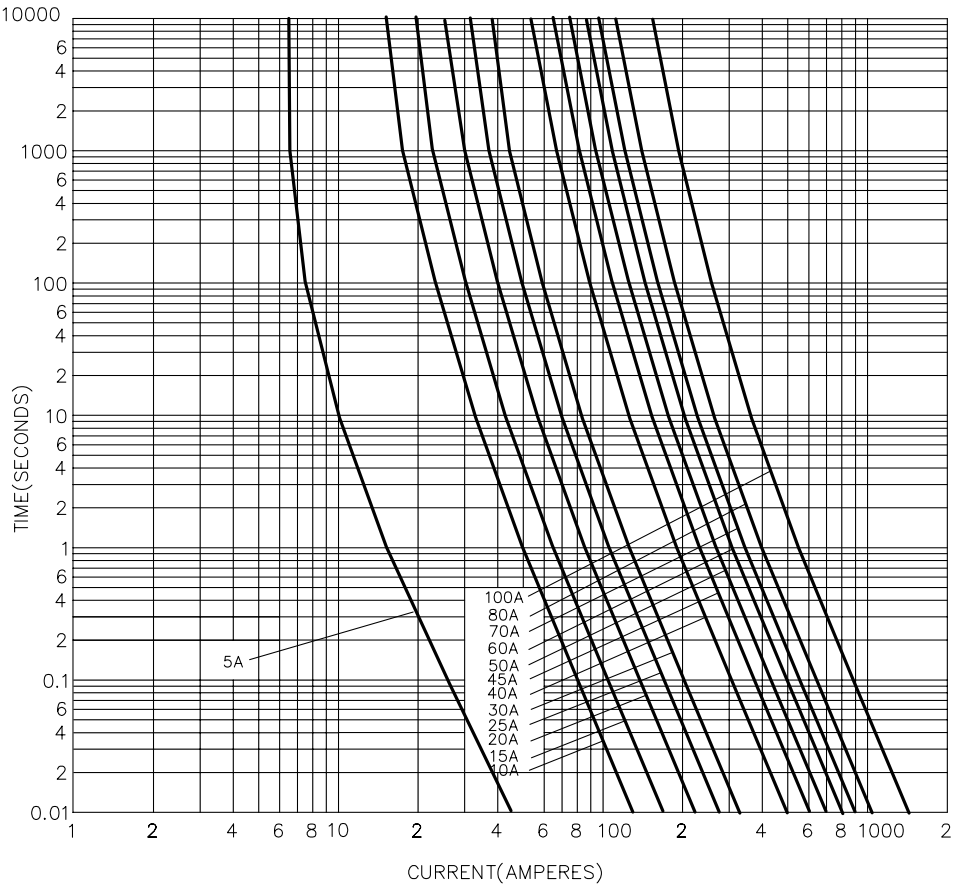
Size (mm)	Fuse Type	Current Rating (A)	Dimensions (mm) A	B	C
22x57	BME	5,10,15,20,25,30,40,45,50,60,70,80	57	16	22.23
30x57	BMF	30,40,50,60,70,80,100	57	16	30.16

Electrical characteristics

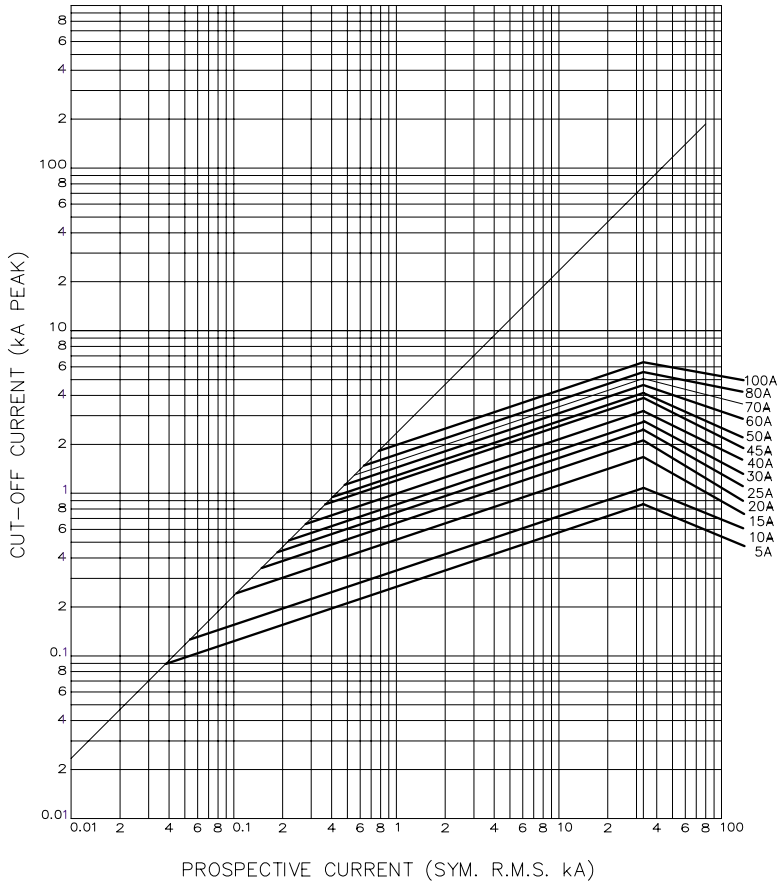
Fuse Type	Rating (A)	Size (mm)	I^2t (Ampere² seconds) Pre Arcing	Total	Watts Loss
BME42V05	5	22x57	12	100	1.5
BME42V10	10	22x57	25	185	1.7
BME42V15	15	22x57	120	540	1.9
BME42V20	20	22x57	250	1125	2.1
BME42V25	25	22x57	300	1890	2.3
BME42V30	30	22x57	400	4500	2.65
BME42V40	40	22x57	520	5850	4.4
BME42V45	45	22x57	1250	11700	4.6
BME42V50	50	22x57	1600	16000	4.75
BME42V60	60	22x57	2100	19200	4.8
BME42V70	70	22x57	2600	26250	5.3
BME42V80	80	22x57	4000	30000	5.6
BMF42V30	30	30x57	400	4500	2.6
BMF42V40	40	30x57	520	5850	4.3
BMF42V50	50	30x57	1600	16000	4.6
BMF42V60	60	30x57	2100	19200	4.7
BMF42V70	70	30x57	2600	26250	5.2
BMF42V80	80	30x57	4000	30000	5.5
BMF42V100	100	30x57	8500	68000	5.8

Ferraz Shawmut

Time vs. Current characteristics



Cut off - Current characteristics



Comparison chart for Feeder Pillar Fuse links

Competitors		FERRAZ SHAWMUT	Ratings
JPUxx	xxxMJ30-8	**BJU42VxxxPA**	20 - 200 amps
JPUxx	xxxMJ30-7	**BJU42VxxxPA**	20 - 200 amps
JSUxx	xxxMJ31-7	**BJU42VxxxSA**	20 - 200 amps
JPUxx	xxxPJ30-7	**BJU42VxxxPB**	250 - 400 amps
JSUxx	xxxPJ31-7	**BJU42VxxxSB**	250 - 400 amps
JPUxx	xxxRJ31-7	**BJU42VxxxSC**	450 - 500 amps
JSUxx	xxxSJ31-6	**BJU42VxxxSD**	560 - 630 amps

Ferraz Shawmut Numbering System

B	JU	42V	xxx	PA
BS88	J type utility fuse	Rated Voltage (415V AC)	Current Rating	P-82mm fixing centre, A-ϕ36.1mm

B	JU	42V	xxx	SA
BS88	J type utility fuse	Rated Voltage (415V AC)	Current Rating	S-92mm fixing centre A-ϕ36.1mm

Other Diamaters : B - ϕ41.9mm, C - ϕ49.6mm & D - ϕ74.3mm

Comparison chart for House Service Cut out Fuse links

Competitors		FERRAZ SHAWMUT	Ratings
MExx	xxKR85	**BME42Vxx**	5 - 80 amps
MFxx	xxxLR85	**BMF42Vxxx**	30 - 100 amps

Ferraz Shawmut Numbering System

B	ME	42V	xx
BS88	Part Number	Rated Voltage (415V AC)	Current Rating

B	MF	42V	xxx
BS88	Part Number	Rated Voltage (415V AC)	Current Rating

This list is intended for guidance only. Ferraz Shawmut do not guarantee identical performance for the comparative types. It is essential that the performance characteristics are checked to ensure compatibility

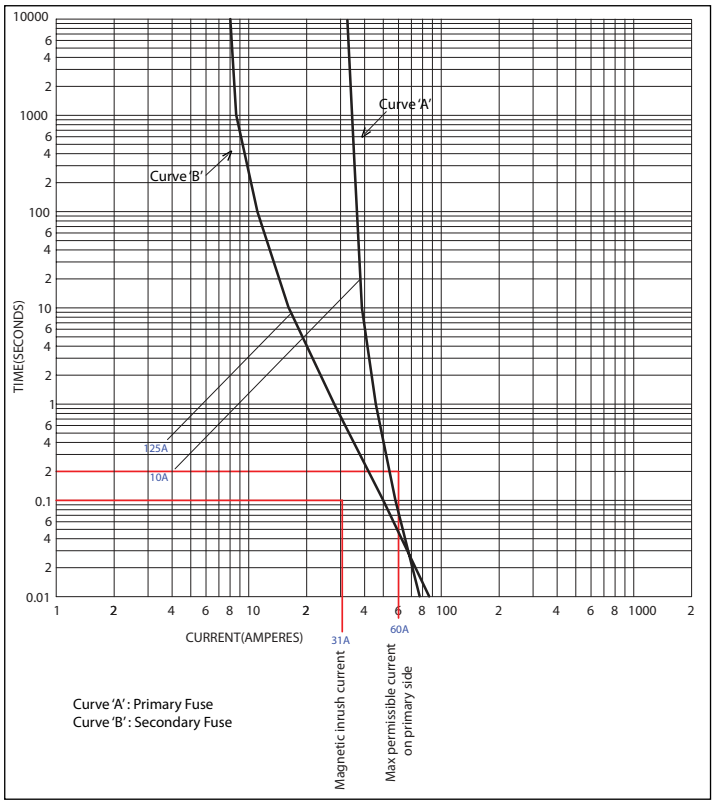
Selection Procedure for Feeder Pillar Fuse Links for protection of distribution transformer

Ferraz Shawmut range of feeder pillar fuse-links have wedge tightening contacts of standard dimensions (82mm & 92mm) and performance intended for use in a.c. electricity supply networks. These fuses comply as per IEC60269-2, BS: 88 Part 5 requirements.

Selection:

1. The primary fuse side is selected as per table below based on transformer ratings

Rated Voltage range of fuse-link (kV)		3/7.2		6/12		10/24		20/36	
Service Voltage of Transformer (kV)		6		10		20		30	
rel. short circuit voltage	Transformer output (kVA)	Transformer rated current (A)	Rated current of fuse-link (A)	Transformer rated current (A)	Rated current of fuse-link (A)	Transformer rated current (A)	Rated current of fuse-link (A)	Transformer rated current (A)	Rated current of fuse-link (A)
U_k = 4%	50	4.8	16-20	2.9	10	1.5	4	0.96	2-6.3
	100	9.6	20-31.5	5.8	16-20	2.9	10	1.9	6.3-10
	125	12	25-40	7.2	20-25	3.6	10-16	2.4	6.3-10
	160	15.4	31.5-50	9.2	20-31.5	4.6	16-20	3.1	10
	200	19.2	40-63	11.5	25-40	5.8	16-20	3.8	10-16
	250	24.1	40-80	14.4	31.5-50	7.2	20-25	4.8	16-20
	315	30.3	50-100	18.2	40-63	9.1	20-31.5	6.3	16-25
	400	38.5	63-125	23.1	40-80	11.5	25-40	7.7	20-25
	500	8.1	80-160	28.9	50-100	14.4	31.5-50	9.6	20-31.5
	630	60.6	100-200	36.4	63-100	18.2	40-63	12.1	25-40
U_k = 5%	800	77.1	125-200	46.2	80-125	23.1	40-63	15.4	31.5-40
	1000	96.3	125-160	57.7	100-160	28.9	50-80	19.2	40-50
	1250	120.3	160-200	72.2	125-200	36.1	63-100	24.1	40-50
U_k = 6%	1600	154	200	92.4	125-200	46.2	80-100	30.8	50-63



2. The following procedure for selecting secondary fuse should be observed (Feeder Pillar fuse):
   a) Transformer ratings
      - Service voltage (U)
      - Rated output (S)
      - Relative short-circuit voltage (U_k 4%)
      - Inrush current (factor 8…12 I_N)
   b) Time current characteristics of HV/LV fuse links

3. ## Procedure based on an example:

A 50 kVA transformer has a transformer rated primary full load current of 2.6A with a ratio 11kV/415V. The short circuit current on secondary terminal short-circuit is given from the relative short-circuit voltage. The fuse should be selected to operate within 2 seconds as the transformer is designed to withstand minimum short circuit current (25 I_N) for 2 seconds. The primary fuse link is selected to ensure withstand of primary inrush current of 12 I_N for 0.1 seconds.

Selection of secondary fuse is based on the full load current which includes 130% overload withstand for 3 hours(secondary maximum current is 90.5A) and with temperature correction factor, the fuse-link rating of 125A is selected (Please refer to Ferraz Shawmut Feeder Pillar fuse range-BJU42V125PA).

To check whether the selected fuse is ok, the following conditions needs to be satisfied.

- Referring to the curve above which consists of primary fuse time-current curve along with the secondary fuse time-current curve reflected on to primary, it is found that the selected secondary fuse will be operated within 2 seconds for minimum Short Circuit fault current on secondary side, thus protecting transformer from secondary faults.

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