

BS88-4 fuses 250V & 690V

October 2013 – Issue 1

The IXYS UK range BS88-4 protistor fuse links provides maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. These fuse links are available in industry standard body sizes with worldwide acceptable mounting styles.

These fuses are available with voltage ratings of either 250VAC or 690VAC in accordance with IEC 33 and also have the option of a separated trip indicator. Current ratings range from 5A to 1050A.

The square body BS88-4 fuses, 070BQCL, are both UL and CSA recognised and available in voltage ratings of 690V and current ratings from 5A to 400A



Features and Benefits

- Ultra-fast acting
- Current limiting
- Very low I^2t for improved semiconductor protection
- Superior cycling capability
- Multiple body sizes
- aR class and gR class according to VDE 636-23 and IEC 60269-4

Applications

Protection of inverters, UPS systems, motor drives and similar equipment rated at 690VAC or less

Approvals

- UL/CSA recognised component (070BQCL fuses only)
- AC: UL guide no. E76491
- IEC 60269-4 compliance
- RoHS compliant



Nomenclature

The IXYS UK range of BS88-4 fuses is broken down into two voltage categories, 250VAC and 690VAC. The following nomenclature explains the part numbering for these fuses

1	2	3	4	5	6	7	8
3	1	5	L	M	M	W	I
Current rating			Voltage rating and body style				Indicator

Current rating

1, 2 or 3 figures to denote fuse current rating

Voltage rating and body style

250V fuses – LCW = 8.4mm body diameter
 LEW = 17.5mm body diameter
 LMW = 35mm body diameter
 LMMW = 35mm body diameter, twin body

690V fuses – CW = 8.4mm body diameter
 EW = 17.5mm body diameter
 MW = 35mm body diameter
 MMW = 35mm body diameter, twin body

Indicator

I – Trip indicator mounted to fuse

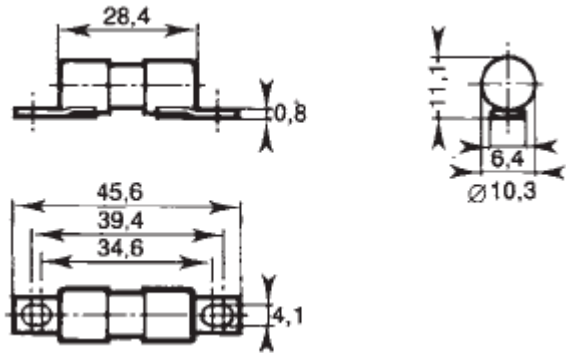
Example

315LMMWI is – 315A rated, 250VAC (RMS), 35mm body diameter, twin body with trip indicator

250V BS88-4 fuses

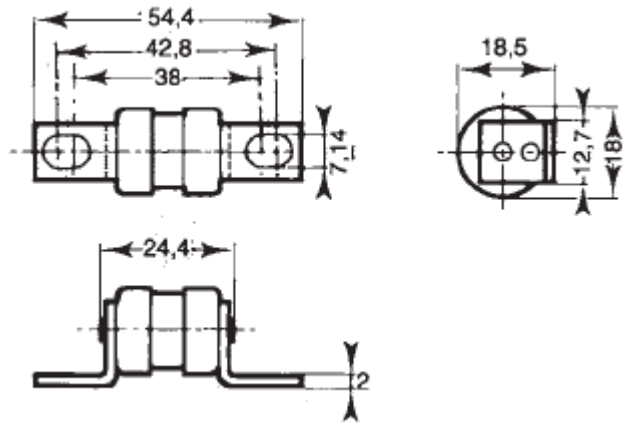
10x28 – without trip indicator

Part number	Nominal current A	Class
5LCW	5	gR (URE)
6LCW	6	
10LCW	10	
12LCW	12	
15LCW	15	
20LCW	20	
25LCW	25	
32LCW	32	



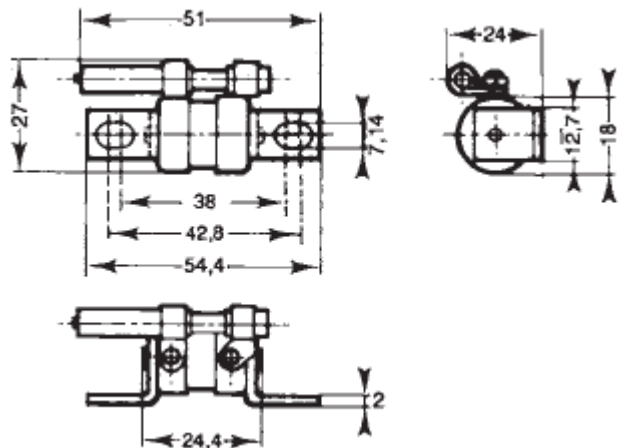
17x27 – without trip indicator

Part number	Nominal current A	Class
7LEW	7	aR (URGS)
10LEW	10	
12LEW	12	
16LEW	16	
20LEW	20	
25LEW	25	
30LEW	30	
35LEW	35	
50LEW	50	
60LEW	60	
75LEW	75	
80LEW	80	aR (URZ)
100LEW	100	
125LEW	125	
150LEW	150	
160LEW	160	
180LEW	180	



17x27 – with trip indicator

Part number	Nominal current A	Class
7LEWI	7	aR (URGS)
10LEWI	10	
12LEWI	12	
16LEWI	16	
20LEWI	20	
25LEWI	25	
30LEWI	30	
35LEWI	35	
50LEWI	50	
60LEWI	60	
75LEWI	75	
80LEWI	80	aR (URZ)
100LEWI	100	
125LEWI	125	
150LEWI	150	
160LEWI	160	
180LEWI	180	

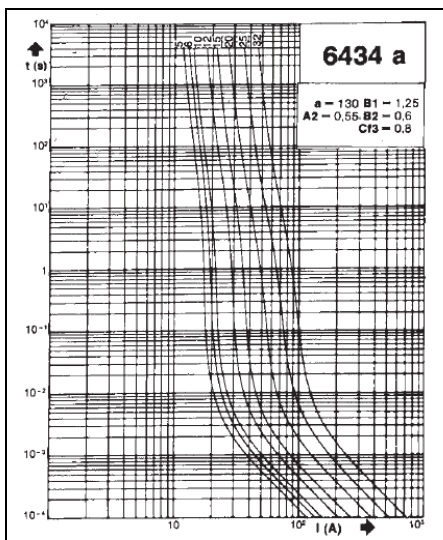


Rating and curves

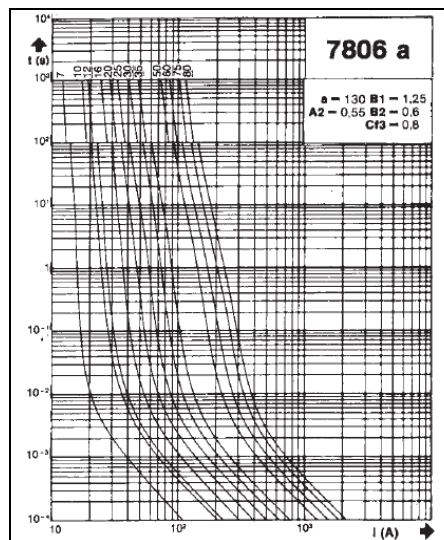
Part number	Current rating I_N A	Pre-arcing I^2t @1ms I^2tp kA^2s	Total clearing I^2t @ rated voltage, kA^2s		Watts loss @ 100% I_N W	Breaking capacity @ rated voltage kA
			$I_p \leq 30I_N$	$I_p > 30I_N$		
5LCW	5	1.3	10	11	1	160kA
6LCW	6	1.8	13	15	1.2	
10LCW	10	2.4	18	20	2.1	
12LCW	12	4.3	28	33	2.8	
15LCW	15	6.7	41	48	3.5	
20LCW	20	15	85	100	4.0	
25LCW	25	27	135	160	4.7	
32LCW	32	53	240	280	5.4	
7LEW(I)	7	1.3	8.5	9.8	1	
10LEW(I)	10	4.5	21	23.8	1.5	
12LEW(I)	12	5.9	27	31	2.0	
16LEW(I)	16	11.2	50	59	3.0	
20LEW(I)	20	15.6	80	100	3.9	
25LEW(I)	25	30	130	160	4.8	
30LEW(I)	30	45	195	235	5.6	
35LEW(I)	35	63	270	330	6.5	
50LEW(I)	50	180	790	940	8.8	
60LEW(I)	60	250	1100	1310	10.4	
75LEW(I)	75	380	1670	1990	13.6	
80LEW(I)	80	480	2100	2530	13.7	
100LEW(I)	100	730	3350	4060	11.5	
125LEW(I)	125	850	5720	6920	12.3	
150LEW(I)	150	1250	7930	9590	13.6	
160LEW(I)	160	1730	9600	11700	15.6	
180LEW(I)	180	2090	14500	17500	17	

Time/Current characteristics

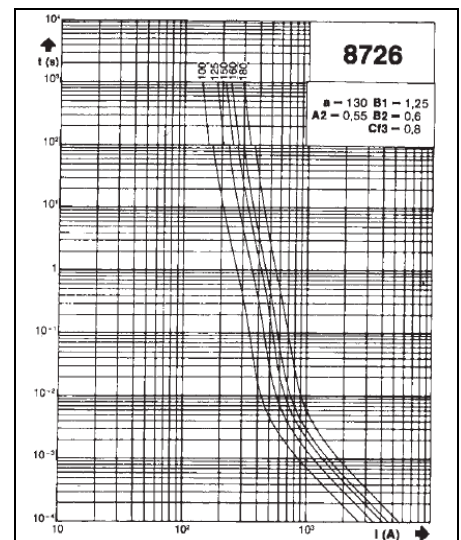
gR (URE)



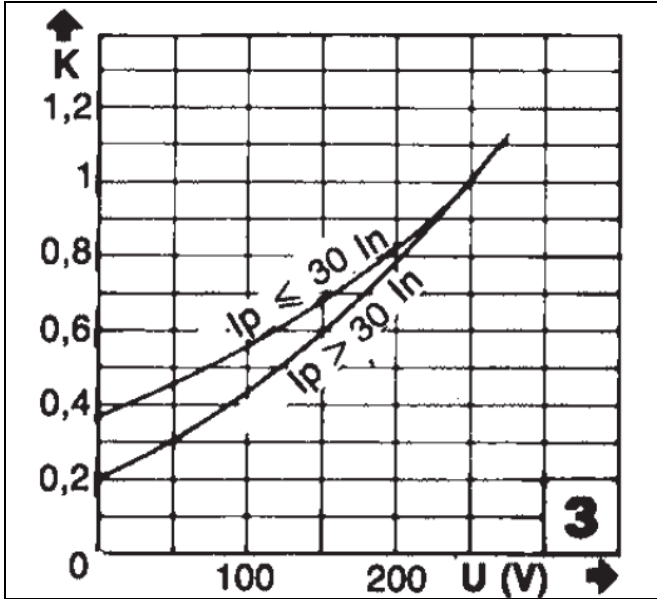
aR (URGS)



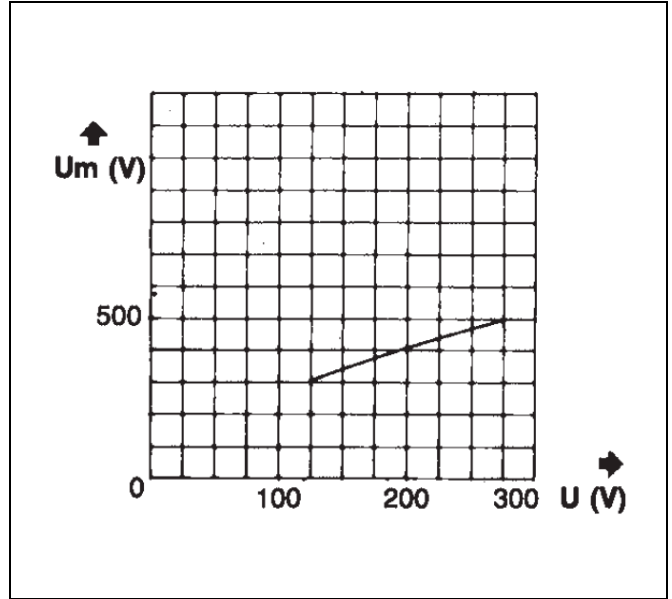
aR (URZ)



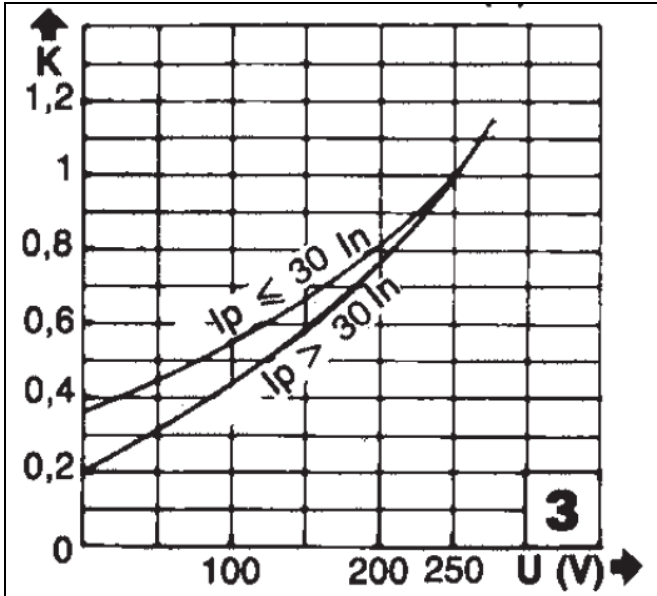
Corrective factor (gR – URE)



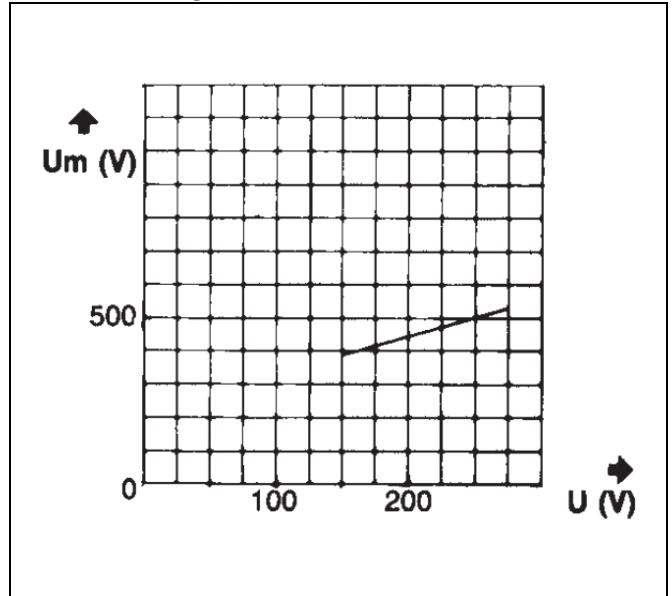
Peak arc voltage (gR – URE)



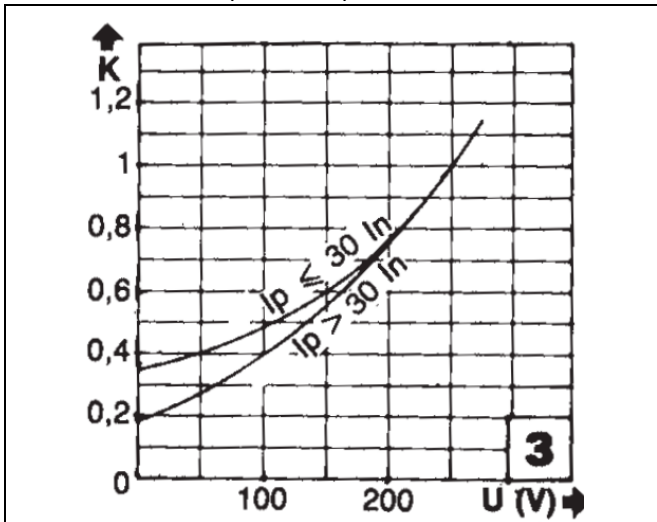
Corrective factor (aR – URGS)



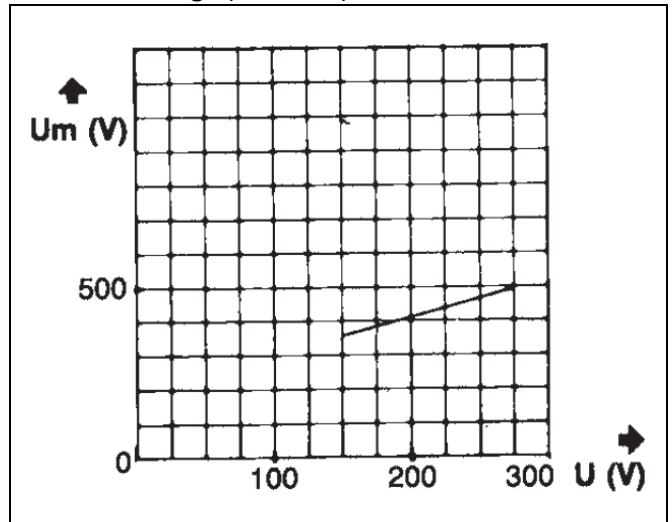
Peak arc voltage (aR – URGS)



Corrective factor (aR – URZ)



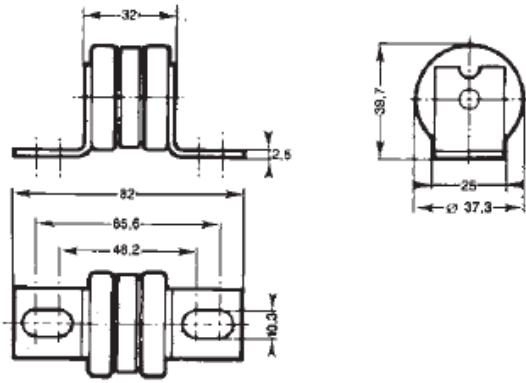
Peak arc voltage (aR – URZ)



250V BS88-4 fuses

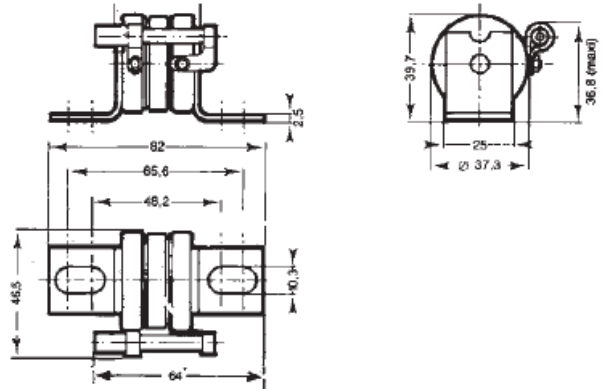
36×27 – without trip indicator

Part number	Nominal current A	Class
50LMW	50	gR (URGG)
75LMW	75	
100LMW	100	
125LMW	125	
150LMW	150	
200LMW	200	
250LMW	250	
300LMW	300	
350LMW	350	
400LMW	400	
450LMW	450	aR (URGG)
500LMW	500	
525LMW	525	



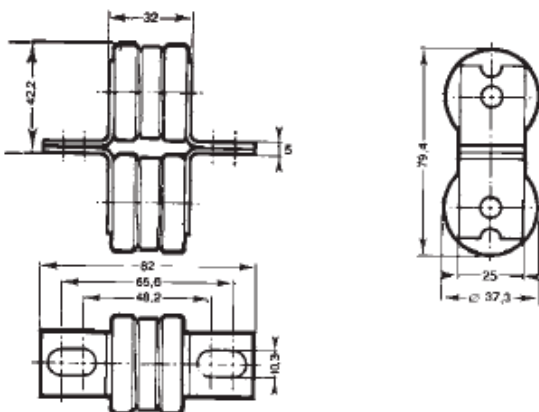
36×27 – with trip indicator

Part number	Nominal current A	Class
50LMWI	50	gR (URGG)
75LMWI	75	
100LMWI	100	
125LMWI	125	
150LMWI	150	
200LMWI	200	
250LMWI	250	
300LMWI	300	
350LMWI	350	
400LMWI	400	
450LMWI	450	
500LMWI	500	
525LMWI	525	



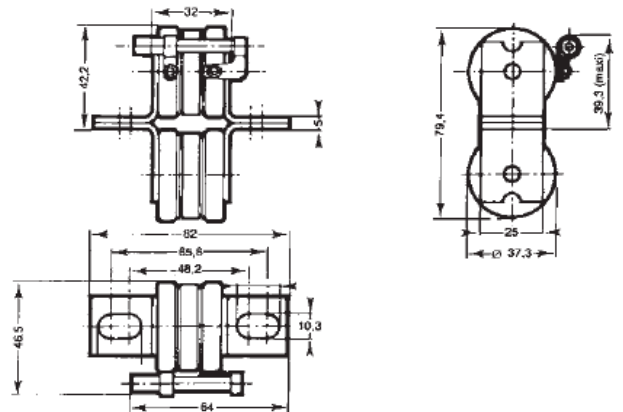
2×36×27 – twin without trip indicator

Part number	Nominal current A	Class
300LMMW	300	gR (URGH)
350LMMW	350	
400LMMW	400	
500LMMW	500	
600LMMW	600	
700LMMW	700	
800LMMW	800	aR (URGH)
900LMMW	900	
1000LMMW	1000	
1050LMMW	1050	



2×36×27 – twin with trip indicator

Part number	Nominal current A	Class
300LMMWI	300	gR (URGH)
350LMMWI	350	
400LMMWI	400	
500LMMWI	500	
600LMMWI	600	
700LMMWI	700	
800LMMWI	800	aR (URGH)
900LMMWI	900	
1000LMMWI	1000	
1050LMMWI	1050	

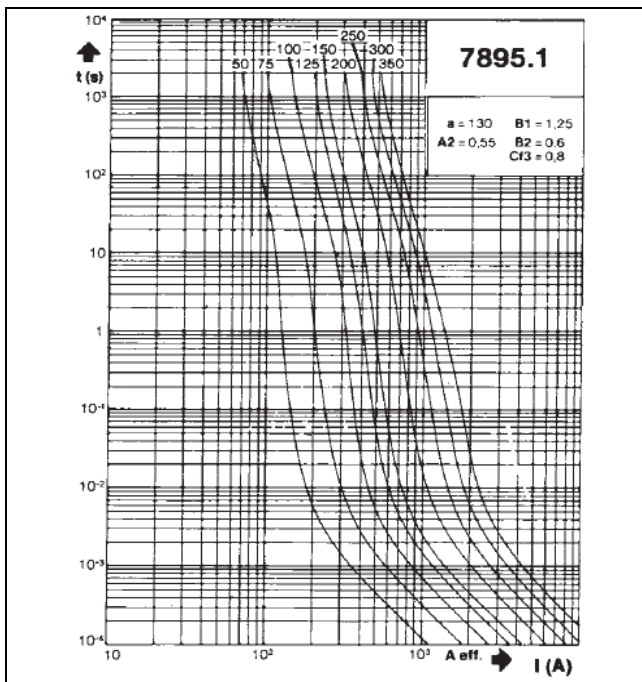


Rating and curves

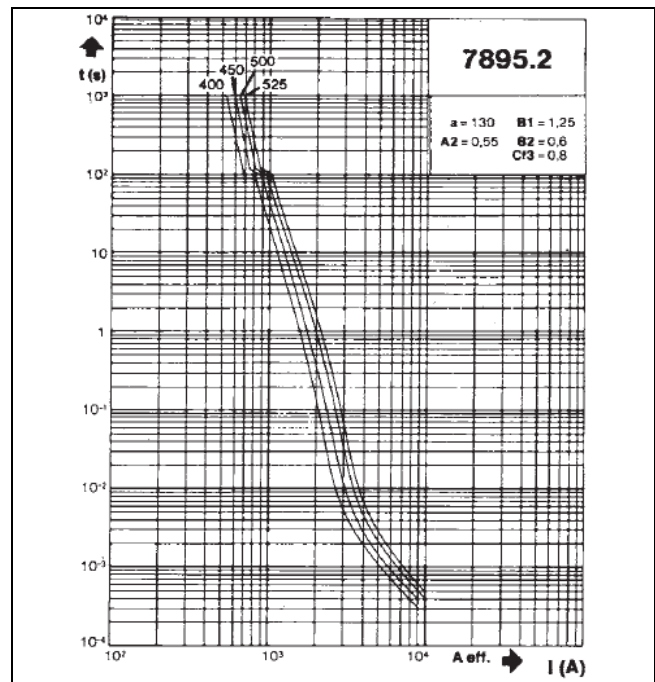
Part number	Current rating I_N A	Pre-arcing I^2t @1ms I^2t_p A^2s	Total clearing I^2t @ rated voltage A^2s	Watts loss @ 100% I_N W	Breaking capacity @ rated voltage kA
50LMW(I)	50	0.12×10^3	0.5×10^3	9.5	100
75LMW(I)	75	0.33×10^3	1.38×10^3	12.6	
100LMW(I)	100	0.745×10^3	3.06×10^3	15.7	
125LMW(I)	125	1.34×10^3	5.5×10^3	18.2	
150LMW(I)	150	1.93×10^3	7.95×10^3	21.6	
200LMW(I)	200	4.02×10^3	16.4×10^3	27.0	
250LMW(I)	250	5.35×10^3	30.0×10^3	32.6	
300LMW(I)	300	7.29×10^3	49.6×10^3	37.2	
350LMW(I)	350	18×10^3	74.0×10^3	42.0	
400LMW(I)	400	25.1×10^3	128×10^3	46.7	
450LMW(I)	450	33.5×10^3	170×10^3	54.1	
500LMW(I)	500	43×10^3	219×10^3	60.8	
525LMW(I)	525	48.2×10^3	245×10^3	66.4	
300LMMW(I)	300	7.7×10^3	31.8×10^3	43.2	
350LMMW(I)	350	11.5×10^3	48.7×10^3	48.6	
400LMMW(I)	400	16×10^3	65.6×10^3	54.0	
500LMMW(I)	500	29.1×10^3	120×10^3	65.2	
600LMMW(I)	600	48.2×10^3	198.5×10^3	74.4	
700LMMW(I)	700	72×10^3	276×10^3	84.0	
800LMMW(I)	800	100×10^3	512×10^3	93.4	
900LMMW(I)	900	134×10^3	680×10^3	108.2	
1000LMMW(I)	1000	172×10^3	876×10^3	121.6	
1050LMMW(I)	1050	193×10^3	980×10^3	132.8	

Time/Current characteristics

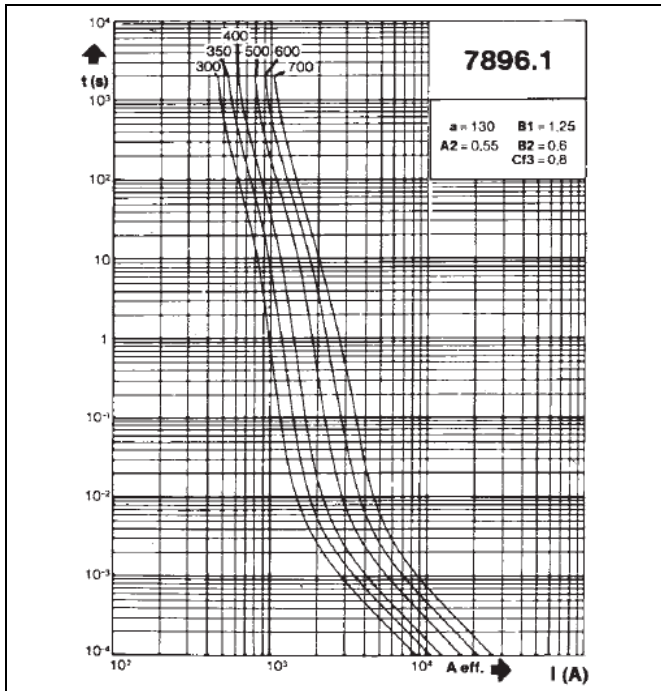
gR (URGG)



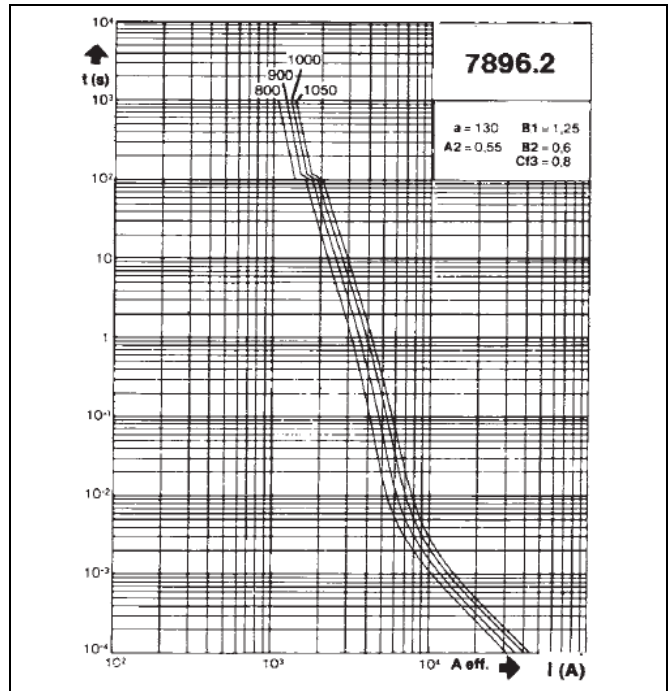
aR (URGG)



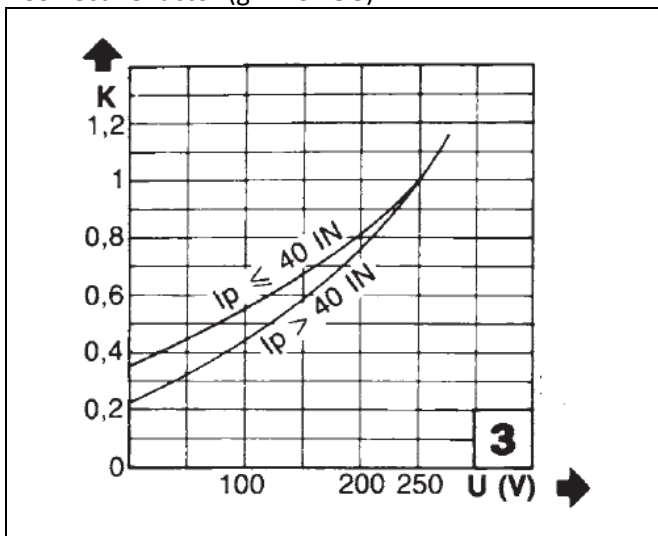
gR (URGH)



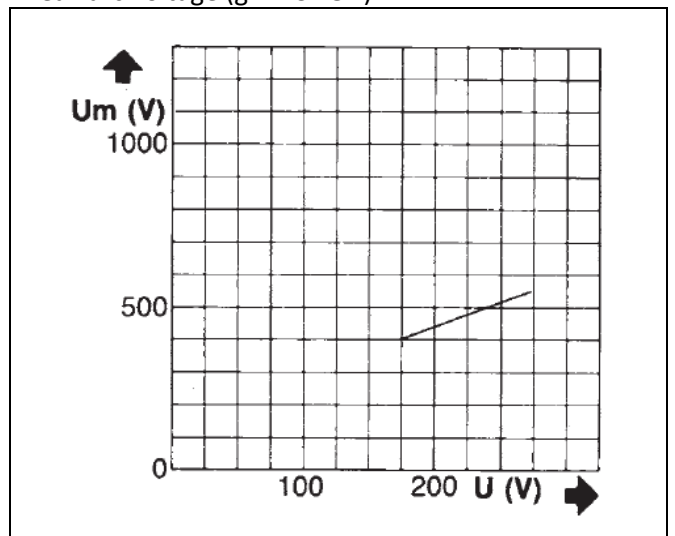
aR (URGH)



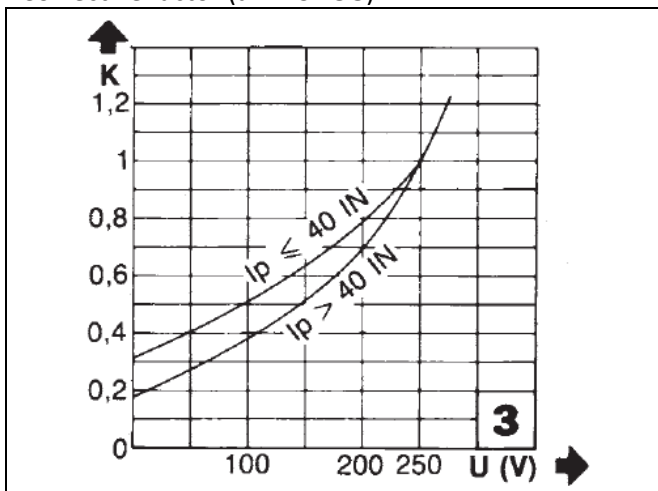
Corrective factor (gR – URGG)



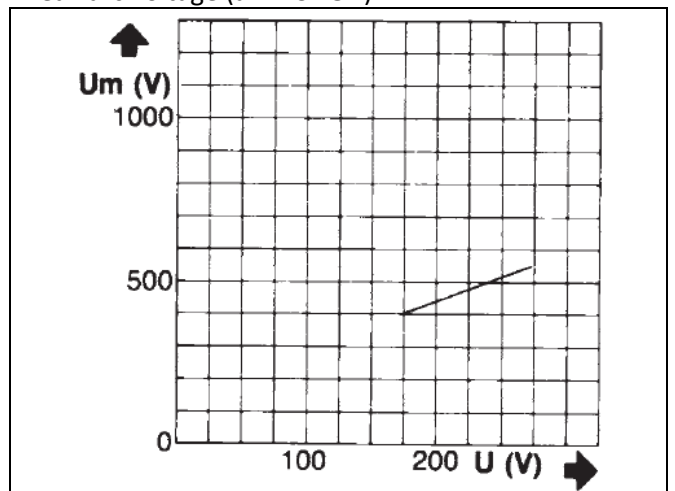
Peak arc voltage (gR – URGH)



Corrective factor (aR – URGG)



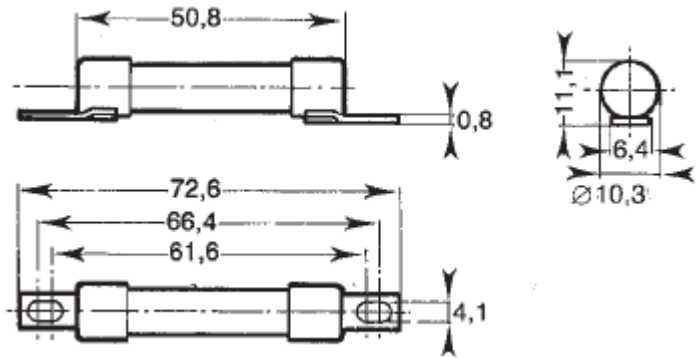
Peak arc voltage (aR – URGH)



690V BS88-4 fuses

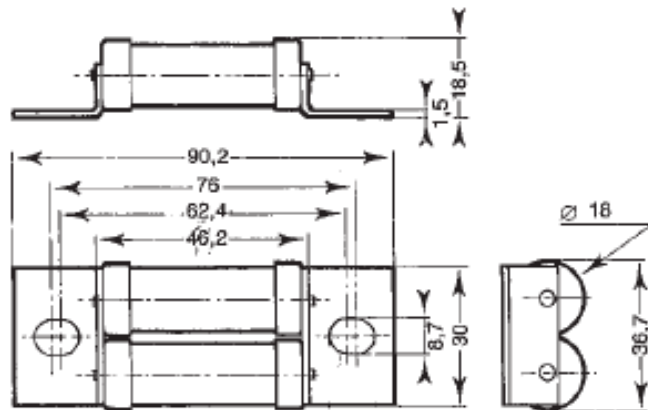
10x51 – without trip indicator

Part number	Nominal current A	Class
5CW	5	gR (URE)
6CW	6	
10CW	10	
12CW	12	
15CW	15	
20CW	20	



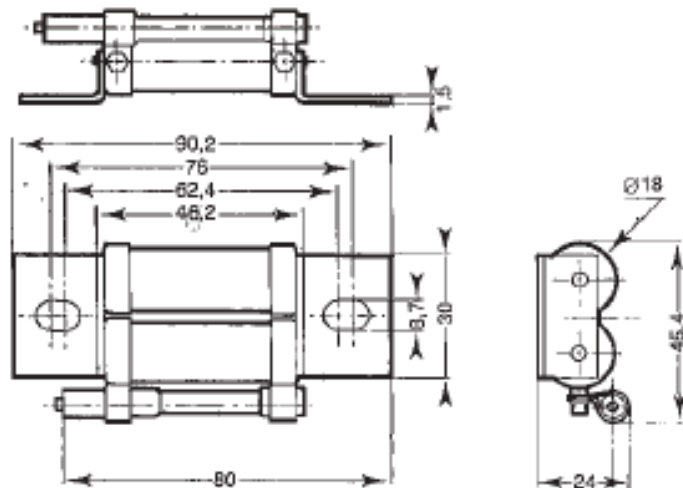
2x17x49 – without trip indicator

Part number	Nominal current A	Class
65EEW	65	gR (URT)
75EEW	75	
85EEW	85	
90EEW	90	
110EEW	110	
140EEW	140	
150EEW	150	
160EEW	160	



2x17x49 – with trip indicator

Part number	Nominal current A	Class
65EEWI	65	gR (URT)
75EEWI	75	
85EEWI	85	
90EEWI	90	
110EEWI	110	
140EEWI	140	
150EEWI	150	
160EEWI	160	

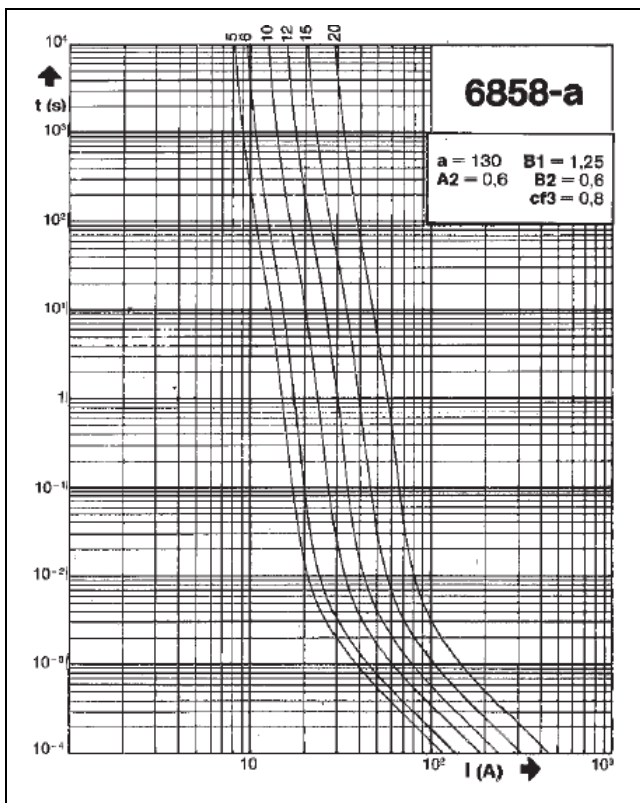


Rating and curves

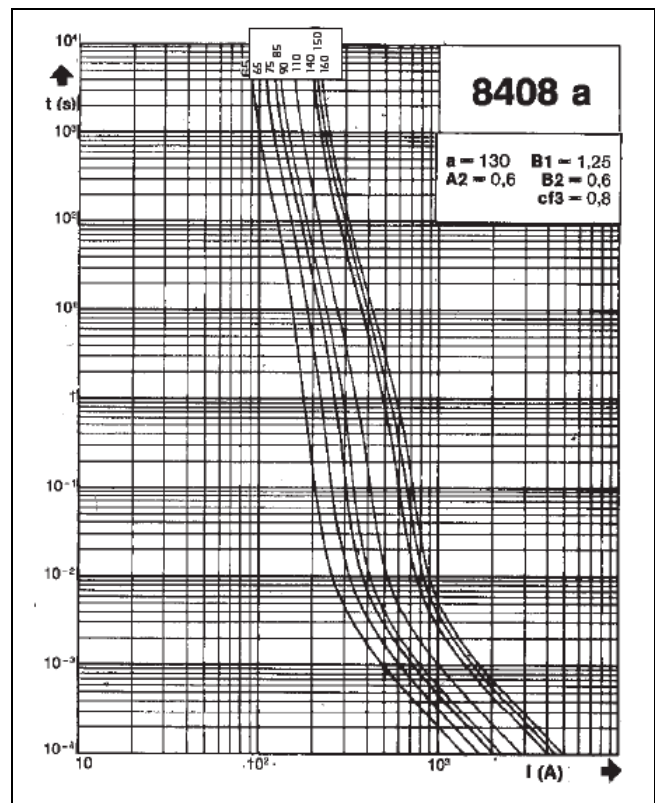
Part number	Current rating I_N A	Pre-arcing I^2t @1ms I^2t_p A^2s	Total clearing I^2t @ rated voltage, A^2s		Watts loss @ 100% I_N W	Breaking capacity @ rated voltage kA
			$I_p \leq 30I_N$	$I_p > 30I_N$		
5CW	5	1.3	10	15	2	200
6CW	6	1.3	13.5	20.5	2.5	
10CW	10	3.3	25	35	4.1	
12CW	12	5.5	40	58	4.3	
15CW	15	9.7	70	100	4.4	
20CW	20	19.4	120	200	5.8	
65EEW(I)	65	210	1590	2270	17.4	
75EEW(I)	75	310	2300	3280	20	
85EEW(I)	85	430	3050	4350	21.9	
90EEW(I)	90	252	3600	5130	22.8	
110EEW(I)	110	850	5500	7840	26.5	
140EEW(I)	140	1730	11000	15700	28.5	
150EEW(I)	150	2090	13400	18500	28.7	
160EEW(I)	160	2500	15600	22800	31.5	

Time/Current characteristics

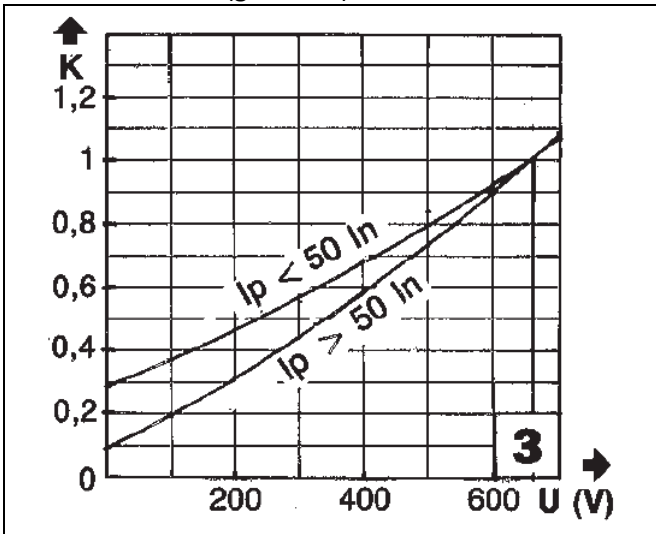
gR (URe)



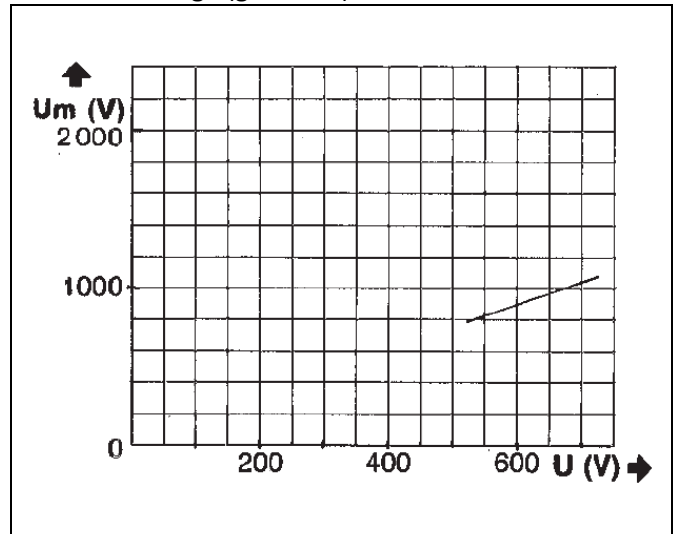
aR (URt)



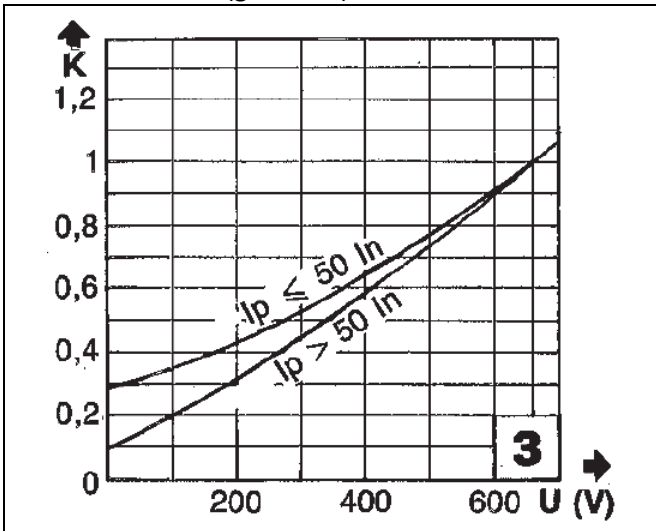
Corrective factor (gR – URE)



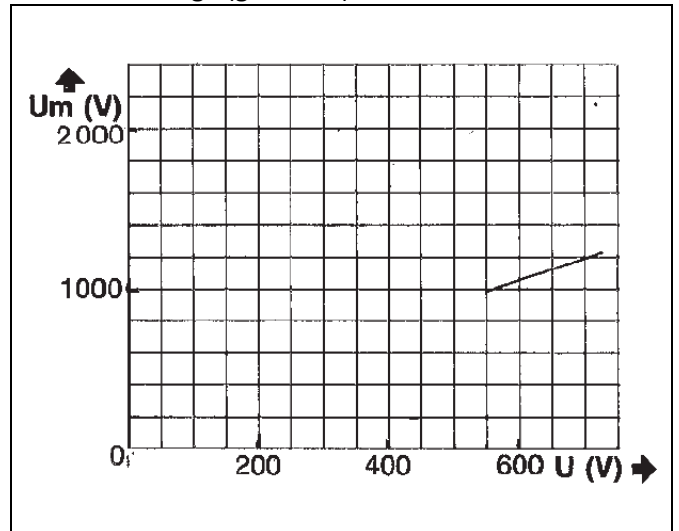
Peak arc voltage (gR – URE)



Corrective factor (gR – URT)



Peak arc voltage (gR – URT)



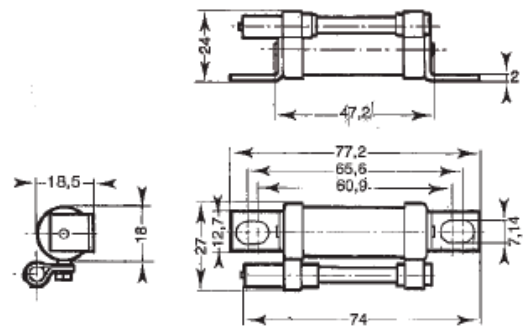
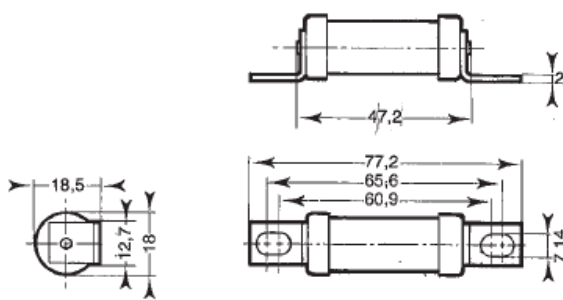
690V BS88-4 fuses

17×49 – without trip indicator

Part number	Nominal current A	Class
12EW	12	gR
16EW	16	
20EW	20	
25EW	25	
32EW	32	
35EW	35	
40EW	40	
45EW	45	
50EW	50	
55EW	55	
63EW	63	
75EW	75	
80EW	80	
90EW	90	
100EW	100	aR

17×49 – with trip indicator

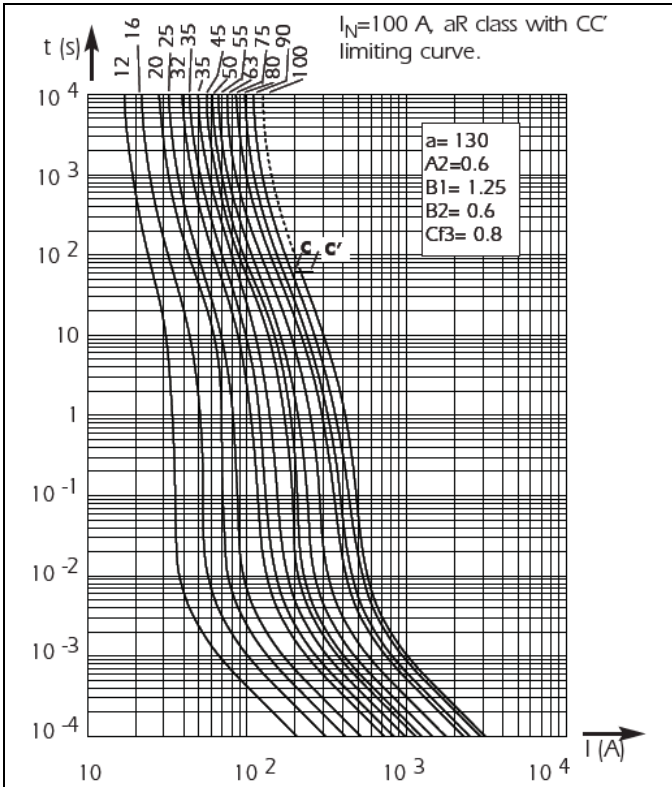
Part number	Nominal current A	Class
12EWI	12	gR
16EWI	16	
20EWI	20	
25EWI	25	
32EWI	32	
35EWI	35	
40EWI	40	
45EWI	45	
50EWI	50	
55EWI	55	
63EWI	63	
75EWI	75	
80EWI	80	
90EWI	90	
100EWI	100	aR



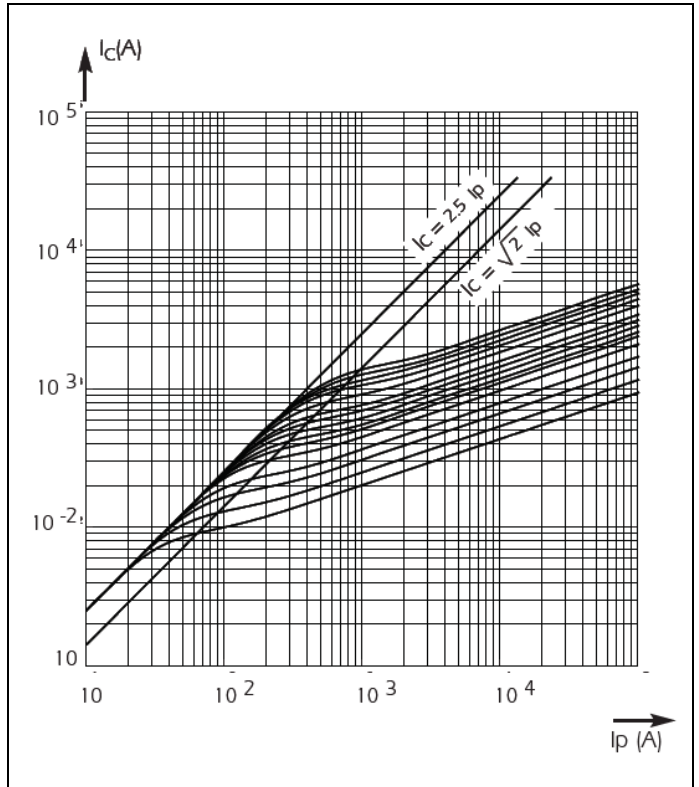
Rating and curves

Part number	Current rating I_N A	Pre-arcing I^2t @1ms I^2t_{tp} A^2s	Total clearing I^2t @ rated voltage A^2s	Watts loss @ 100% I_N W	Breaking capacity @ rated voltage kA
12EW(I)	12	4.2	30	3.5	300
16EW(I)	16	9.6	65	4	
20EW(I)	20	17.1	110	5.35	
25EW(I)	25	26.8	170	8	
32EW(I)	32	52.5	330	9	
35EW(I)	35	69	430	9.5	
40EW(I)	40	96	610	10.5	
45EW(I)	45	130	820	11.5	
50EW(I)	50	154	970	13	
55EW(I)	55	210	1320	13.5	
63EW(I)	63	310	1950	14.5	
75EW(I)	75	520	3250	16	
80EW(I)	80	620	3900	17	
90EW(I)	90	840	5300	20	
100EW(I)	100	965	6150	23.5	

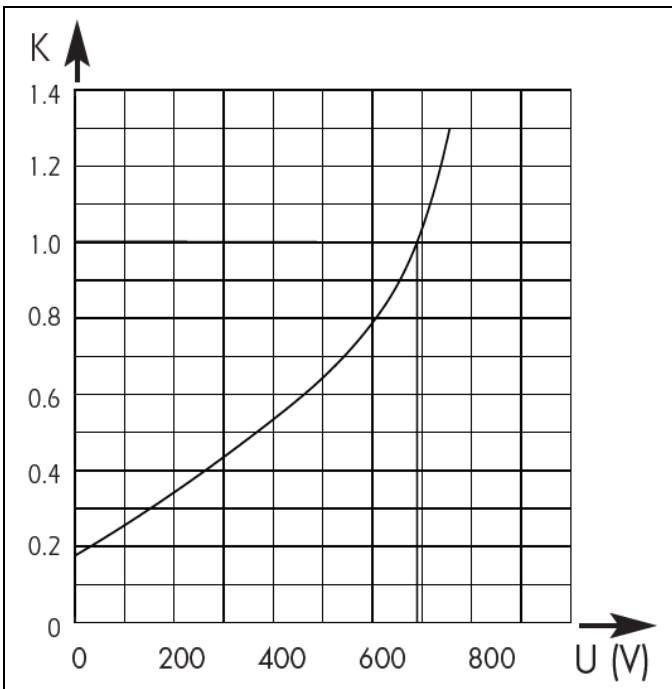
Time/Current characteristic



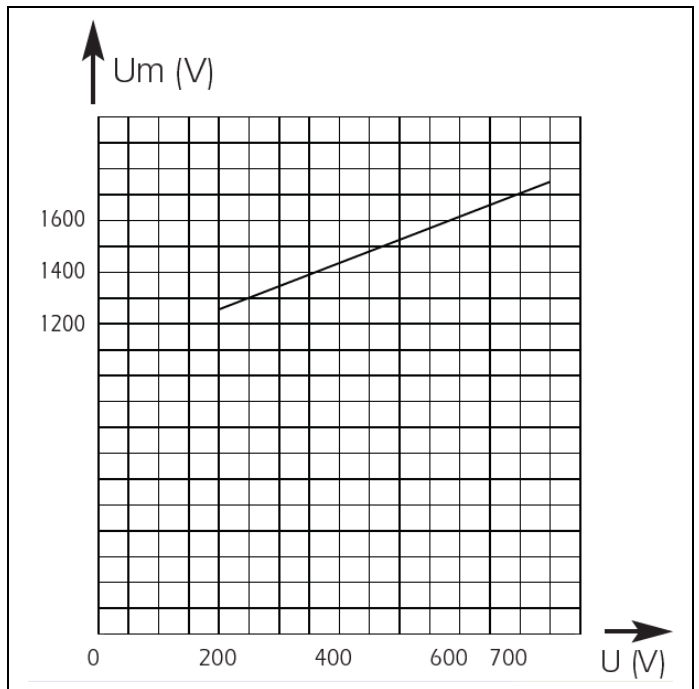
Current limitation



I²t corrective factor



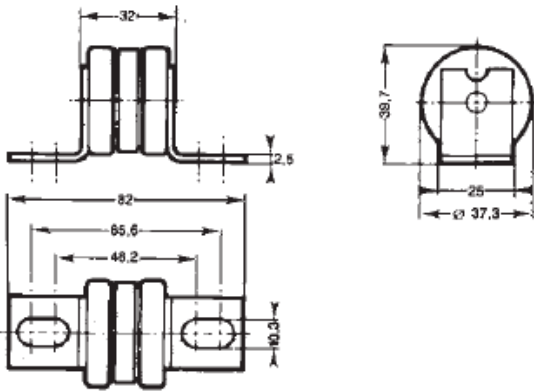
Peak arc voltage



690V BS88-4 fuses

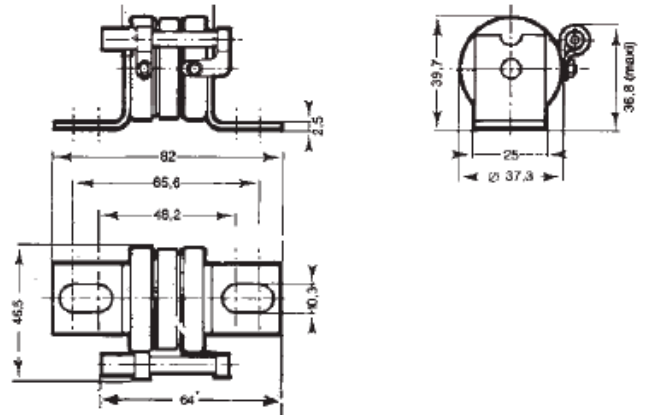
36×27 – without trip indicator

Part number	Nominal current A	Class
90MW	90	aR (URGL)
110MW	110	aR (URR)
150MW	150	aR (URGL)
180MW	180	
200MW	200	
250MW	250	
280MW	280	
315MW	315	
355MW	355	
400MW	400	



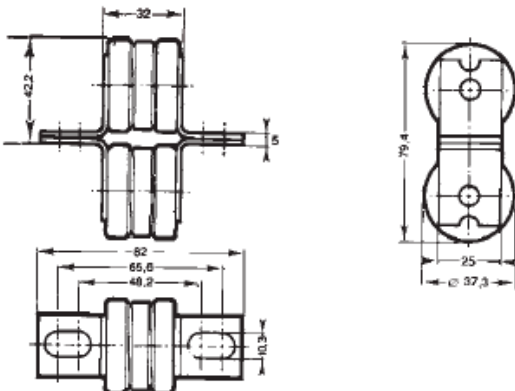
36×27 – with trip indicator

Part number	Nominal current A	Class
90MWI	90	aR (URGL)
110MWI	110	aR (URR)
150MWI	150	aR (URGL)
180MWI	180	
200MWI	200	
250MWI	250	
280MWI	280	
315MWI	315	
355MWI	355	
400MWI	400	



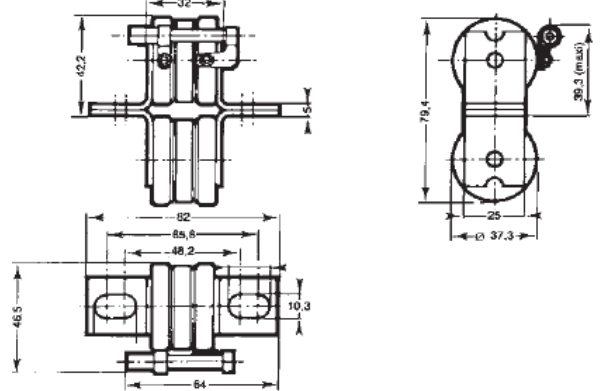
2×36×27 – twin without trip indicator

Part number	Nominal current A	Class
175MMW	175	aR (URGM)
200MMW	200	aR (URU)
235MMW	235	
300MMW	300	aR (URGM)
325MMW	325	
355MMW	355	
400MMW	400	aR (URU)
450MMW	450	aR (URGM)
500MMW	500	
630MMW	630	
710MMW	710	
800MMW	800	



2×36×27 – twin with trip indicator

Part number	Nominal current A	Class
175MMWI	175	aR (URGM)
200MMWI	200	aR (URU)
235MMWI	235	
300MMWI	300	aR (URGM)
325MMWI	325	
355MMWI	355	
400MMWI	400	aR (URU)
450MMWI	450	aR (URGM)
500MMWI	500	
630MMWI	630	
710MMWI	710	
800MMWI	800	



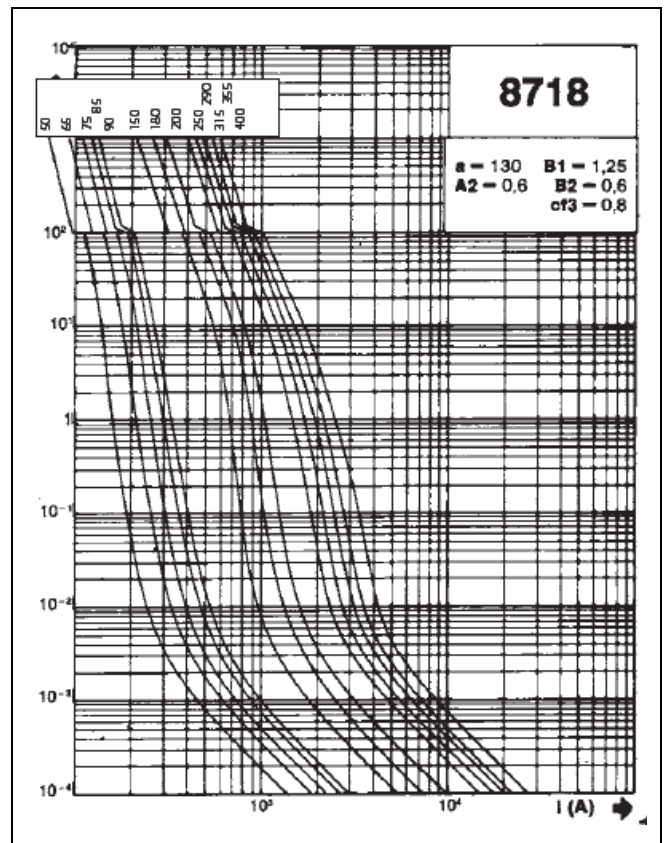
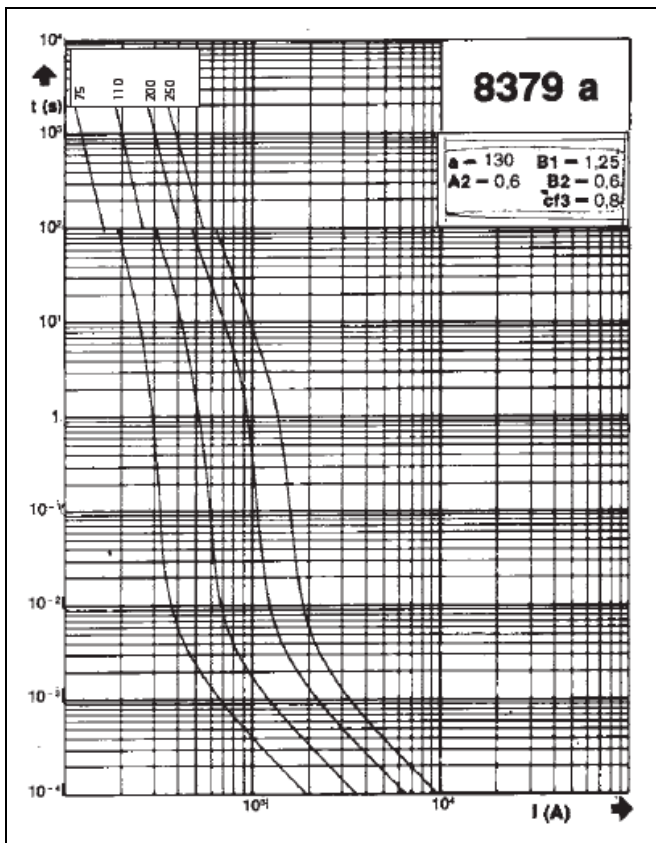
Rating and curves

Part number	Current rating I_N A	Pre-arcing I^2t @1ms I^2t_p A^2s	Total clearing I^2t @ rated voltage, A^2s		Watts loss @ 100% I_N W	Breaking capacity @ rated voltage kA
			$I_p \leq 50I_N$	$I_p > 50I_N$		
90MW(I)	90	720	4100	4700	25.5	200
110MW(I)	110	1180	6000	6700	22.8	
150MW(I)	150	2880	12600	14500	35.3	
180MW(I)	180	5350	22500	25500	35.7	
200MW(I)	200	9510	40000	46000	33.1	
250MW(I)	250	21400	97000	110000	34.5	
280MW(I)	280	29100	125000	145000	38	
315MW(I)	315	38100	157000	180000	42.6	
355MW(I)	355	48200	190000	215000	48.5	
400MW(I)	400	72000	265000	305000	50	
175MMW(I)	175	2880	13800	16000	47.6	
200MMW(I)	200	4700	24000	27000	33	
235MMW(I)	235	9620	34500	39000	37.6	
300MMW(I)	300	13700	66000	68000	59	
325MMW(I)	325	21400	90000	102000	54	
355MMW(I)	355	25200	106000	120000	62	
400MMW(I)	400	21200	100000	110000	62.3	
450MMW(I)	450	65600	300000	340000	63.8	
500MMW(I)	500	85600	390000	440000	69	
630MMW(I)	630	152000	630000	720000	85.2	
710MMW(I)	710	193000	760000	860000	97	
800MMW(I)	800	282000	1220000	1220000	100	

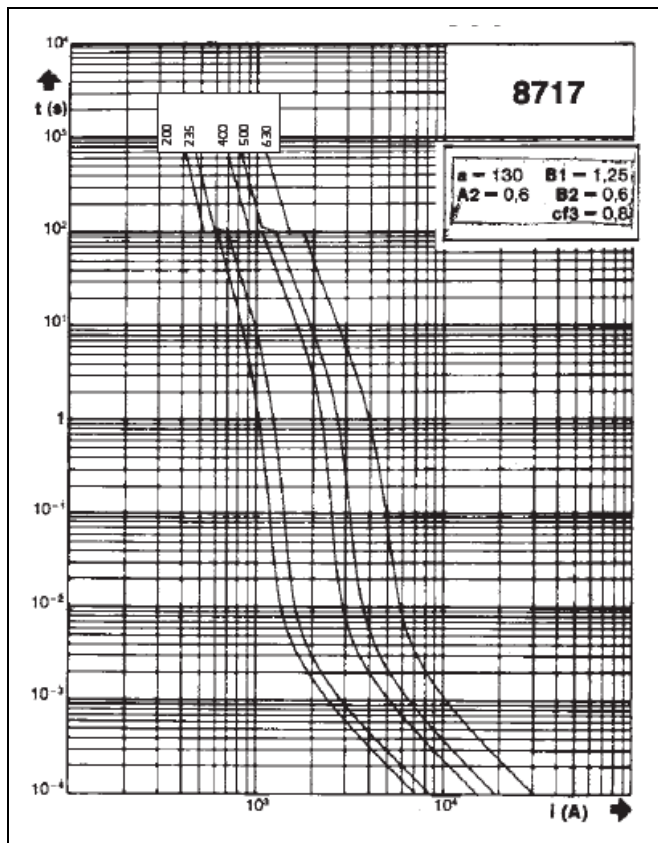
Time/Current characteristics

gR (URR)

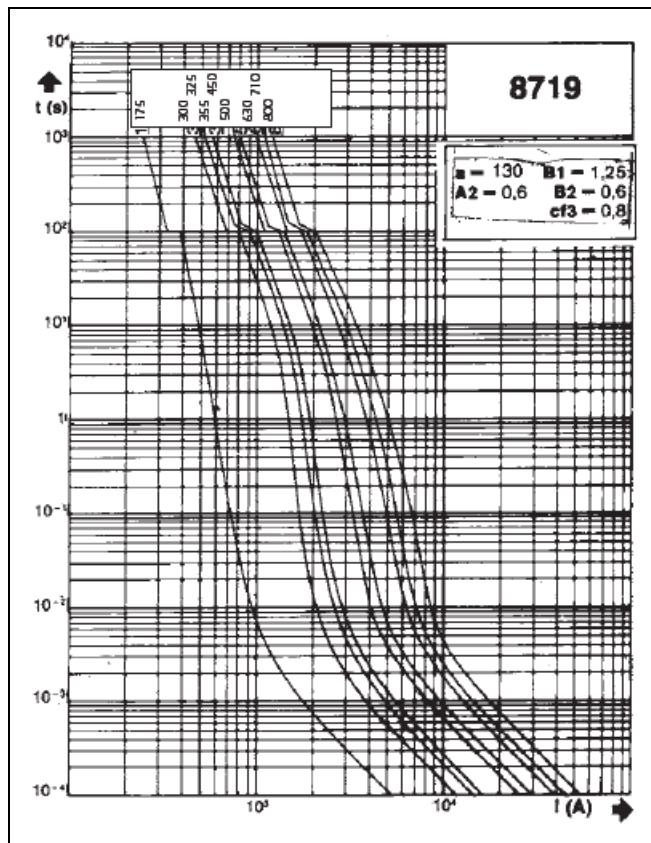
gR (URGL)



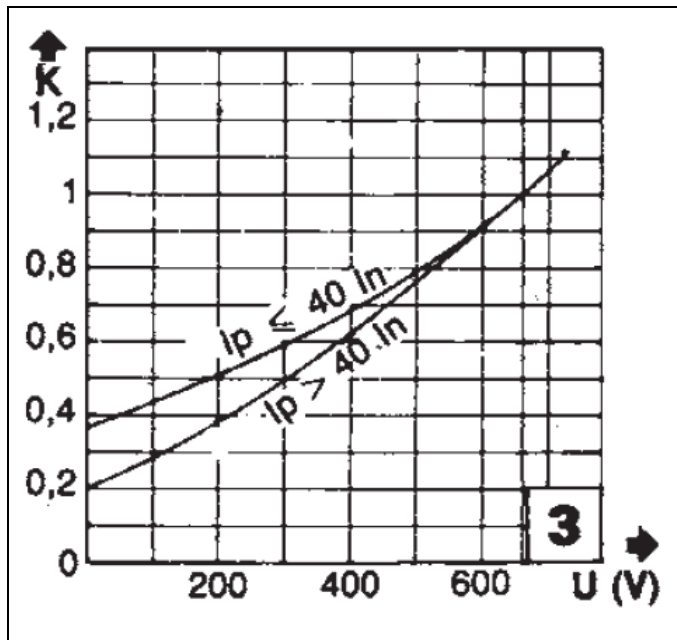
gR (URU)



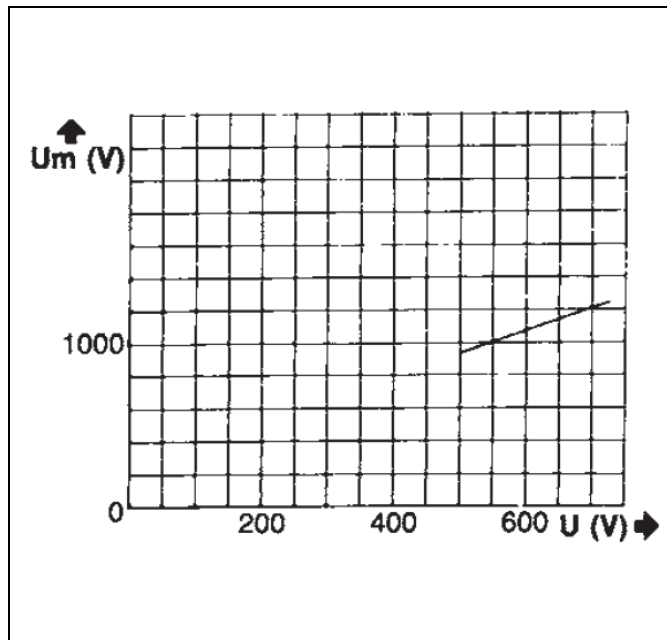
gR (URGM)



Corrective factor



Peak arc voltage



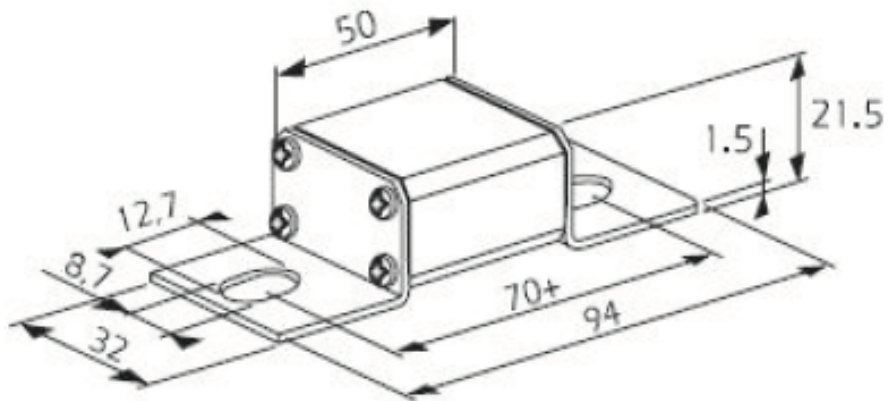
690V BS88-4 fuses – Square body size 000

Without trip indicator

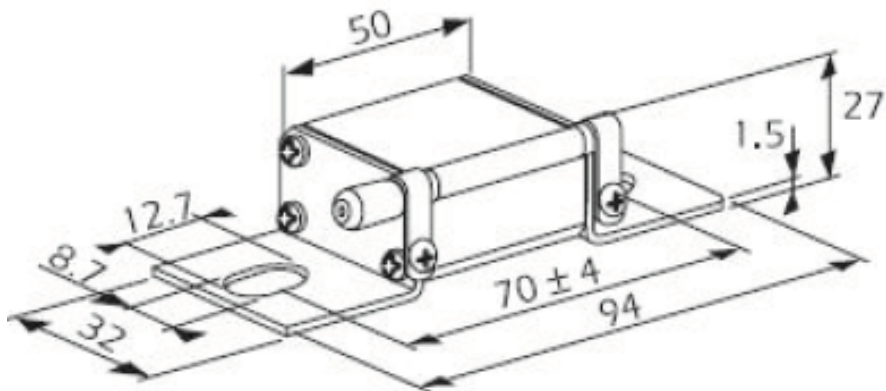
Part number	Nominal current A	Rated voltage V	Class
070BQCL0075N	75	690	aR
070BQCL0080N	80	690	
070BQCL0100N	100	690	
070BQCL0110N	110	690	
070BQCL0125N	125	690	
070BQCL0160N	160	690	
070BQCL0200N	200	690	
070BQCL0250N	250	690	
070BQCL0315N	315	690	
050BQCL0350N	350	500	
050BQCL0400N	400	500	

With trip indicator

Part number	Nominal current A	Rated voltage V	Class
070BQCL0075I	75	690	aR
070BQCL0080I	80	690	
070BQCL0100I	100	690	
070BQCL0110I	110	690	
070BQCL0125I	125	690	
070BQCL0160I	160	690	
070BQCL0200I	200	690	
070BQCL0250I	250	690	
070BQCL0315I	315	690	
050BQCL0350I	350	500	
050BQCL0400I	400	500	



070BQCL without trip indicator

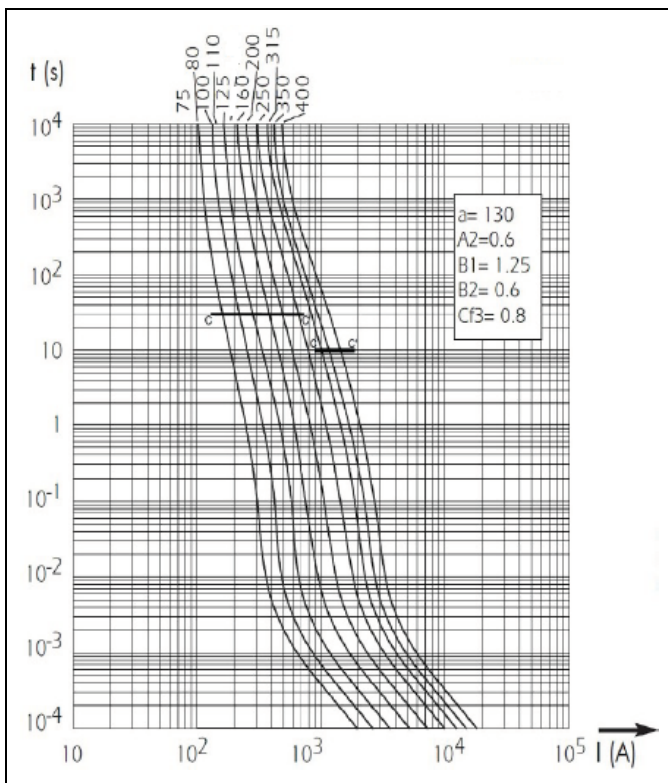


070BQCL with trip indicator

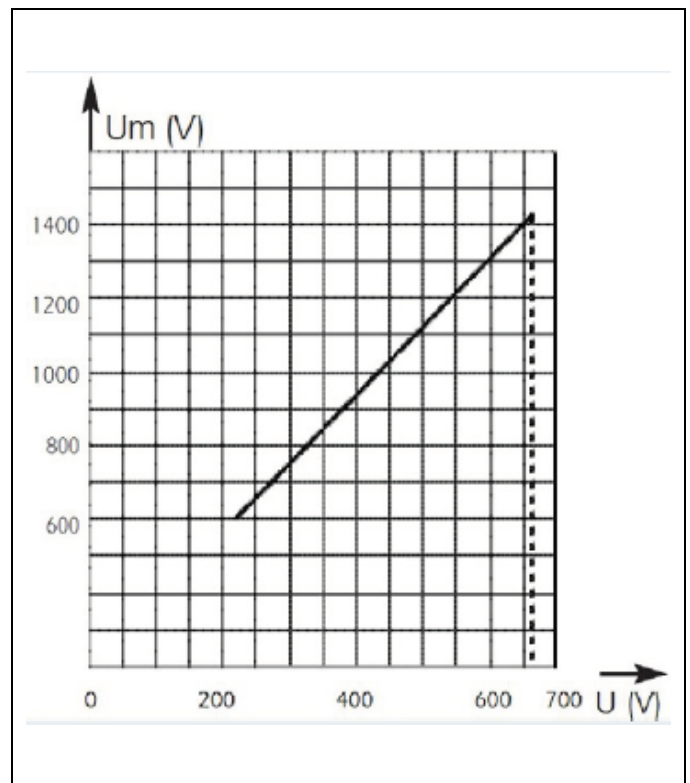
Rating and curves

Part number	Current rating I_N	Voltage rating	Pre-arcing I^2t @1ms I^2tp	Total clearing I^2t @ rated voltage	Watts loss @ 100% I_N	Breaking capacity @ rated voltage
	A	V	A ² s	A ² s	W	kA
070BQCL0075N	75	690	350	2250	20.5	200
070BQCL0080N	80	690	390	2500	21	
070BQCL0100N	100	690	690	4200	23	
070BQCL0110N	110	690	950	6800	24.5	
070BQCL0125N	125	690	1300	8900	26	
070BQCL0160N	160	690	2700	16000	31	
070BQCL0200N	200	690	5250	31500	36	
070BQCL0250N	250	690	9900	52000	45	
070BQCL0315N	315	690	15500	82000	58	
050BQCL0350N	350	500	22400	110000	58	120
050BQCL0400N	400	500	33200	160000	66	

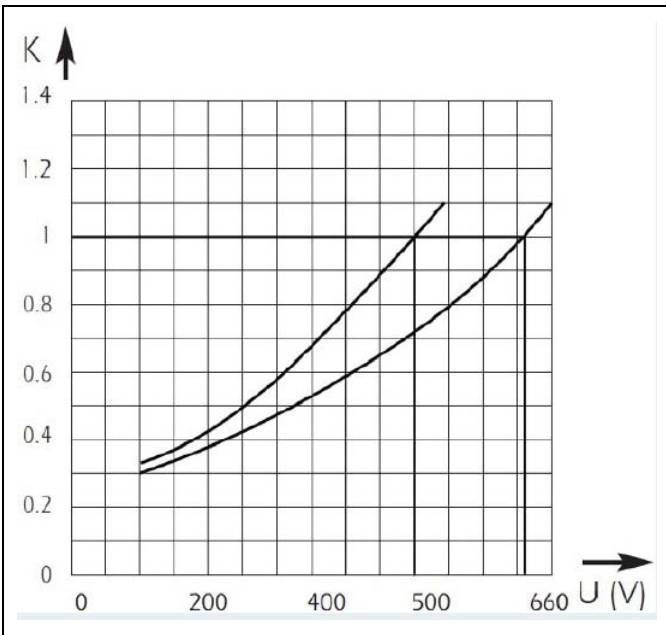
Time/Current characteristics



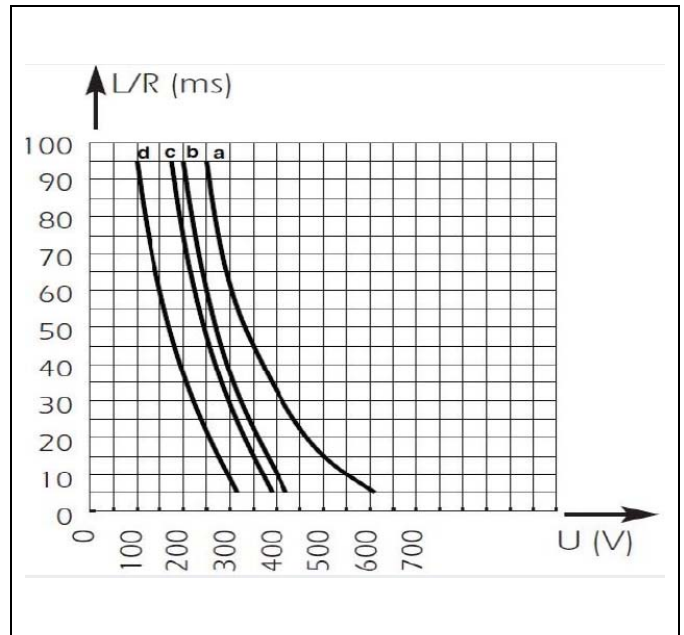
Peak arc voltage



I^2t multiplier coefficient

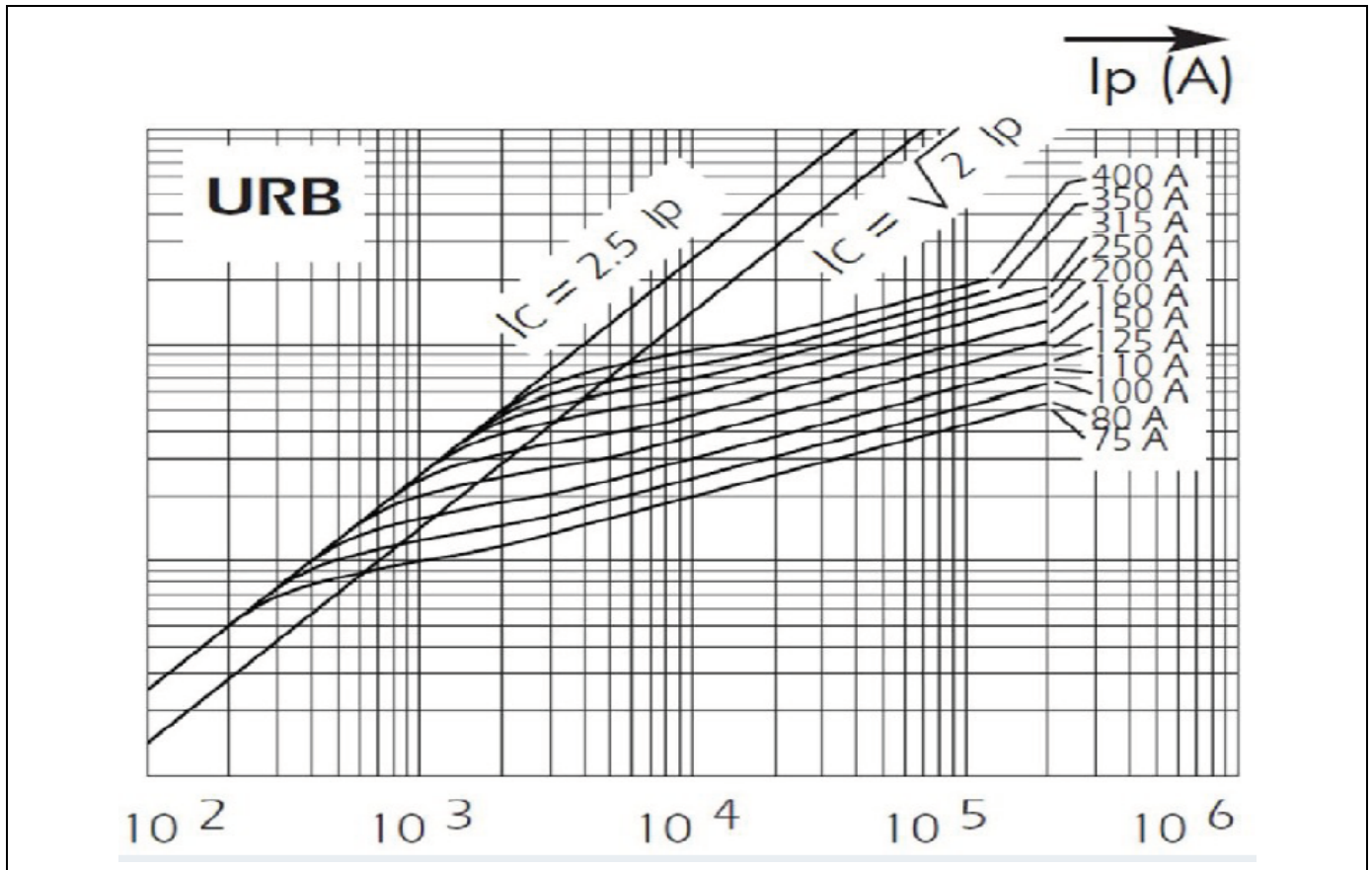


L/R time constant vs DC voltage capability



- Curve A – 20A-160A
- Curve B – 200A
- Curve C – 250A-315A
- Curve D – 350A-400A

Peak let thru characteristics



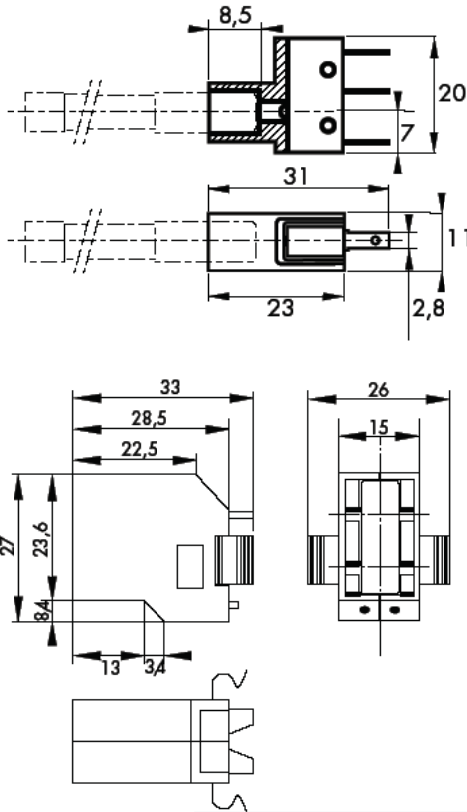
Microswitches

IXYS UK can offer a range of microswitches to suit our BS88-4 fuses* with separate blown fuse trip indicators

System: MC 6.3 GR 2.5N
 Fuse sizes: All except square bodied BS88-4 fuses

Part number	AC Insulation Voltage Rating *** (V)	Positive Operating Voltage/Current (V/mA)	Current Rating (A)	Interrupting Rating (A)						AC Voltage Withstand * (kV)	Fire Class according to UL 94	
				Current (A)	Non inductive circuit			Inductive Circuit: L/R = 25ms				
					30V	110V	250V	30V	110V			250V
MC 6.3 GR 2.5N	1000	20/100	5	AC 50/60Hz	-	5	3	-	3	2	3.5	H.B.
				DC	4	0.4	-	3	0.4	-		

- * - Between power circuit and microswitch terminals as per IEC 60 and 694 (50/60Hz, 1 min duration in dry air)
- ** - Between power circuit and microswitch terminals U_{imp} : impulse voltage as per IEC 947-1
- *** - Between power circuit and microswitch terminals



Certificate FM26085

IXYS UK Westcode Ltd's BS EN ISO9001 quality system is registered by BSI



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