

Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Main characteristics



Ferraz Shawmut 1500 V PSC fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. These square body fuse-links are available in three different body sizes, each size having four world-wide acceptable mounting styles. The different mounting styles and body sizes along with a broad range of ampere ratings allow greatest flexibility in equipment design.

The Ferraz Shawmut PSC fuses have been engineered to provide state-of-the-art protection for SCRs, diodes, thyristors, GTO's and IGBT devices. They have pure silver die-cut elements embedded in solidified sand which helps control arcing characteristics for low I^2t and high breaking capacity. All contact surfaces are silver plated and all hardware is non-magnetic.

All fuse links are equipped with a low voltage trip-indicator. This trip-indicator can operate a field mountable microswitch which is easily mounted directly on to the fuse even while in service.

Highlights

- Extremely Fast Acting
- Current Limiting
- Very Low I^2t
- Worldwide Acceptability
- Superior Cycling Ability

Ratings

AC: 100 - 1500A
1500 VAC
200 KA IR

DC: Consult us

Approvals

C: Tested to IEC 60269.4 at UN +10 %

Features/Benefits

Choice of mounting styles gives wide choice for equipment design

Broad range of ampere ratings in a given body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Applications

Protection of rectifiers, inverters, DC drives, UPS Systems, reduced voltage motor starters, and other equipment in globally accepted applications





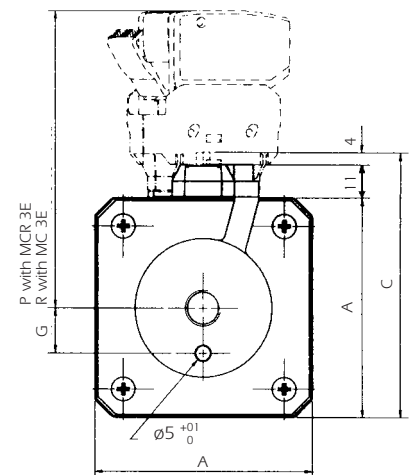
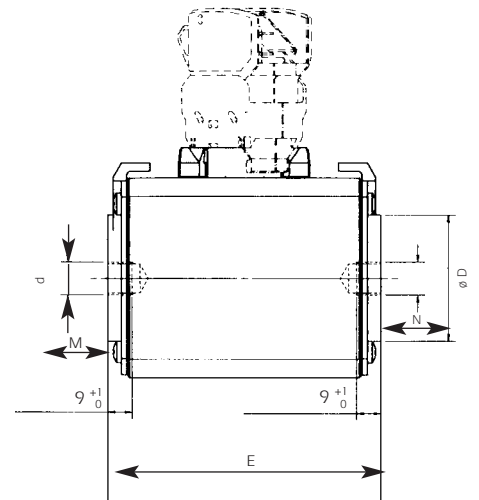
Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Main characteristics

| Voltage (V) | Size | Type | Rating (A) | Maximum I ² t under 1500V (kA ² S) | Power losses in watts | | | | Breaking capacities kA |
|----------------|------|-------|---------------|--|---------------------------|------|---------------------|------|------------------------------|
| | | | | | End contacts 0,8 In In | | Blades 0,8 In In | | |
| 1 500 V | 91 | URF | 100 | 10 | 18,5 | 35 | 18,5 | 35 | 1 500 V 200 kA |
| | | URF | 125 | 15 | 23 | 43 | 23 | 43 | |
| | | URF | 160 | 24,5 | 29 | 55 | 29 | 55 | |
| | | URF | 180 | 32,5 | 33 | 62 | 33 | 63 | |
| | | URG | 200 | 50 | 27,5 | 52 | 28 | 53,5 | |
| | | URK | 225 | 78 | 31 | 58,5 | 31 | 59 | |
| | | URH | 250 | 246 | 25 | 47 | 25 | 47 | |
| | | URH | 315 | 384 | 31 | 59 | 31 | 59 | |
| | URH | 350 | 466 | 35 | 66 | 35 | 66 | | |
| | 92 | URF | 200 | 40 | 36,5 | 69 | 37,5 | 71 | |
| | | URG | 250 | 84 | 37,5 | 73 | 39 | 76 | |
| | | URK | 315 | 144 | 46 | 91 | 46,5 | 95 | |
| | | URK | 350 | 200 | 51 | 101 | 52 | 106 | |
| | | URH | 400 | 669 | 41,5 | 83 | 44 | 90 | |
| | | URH | 500 | 983 | 50,5 | 101 | 53,5 | 109 | |
| | | URH | 550 | 1 190 | 57,5 | 115 | 61 | 124 | |
| | 93 | URF | 250 | 60 | 48 | 95 | 49,5 | 98 | |
| | | URF | 315 | 94 | 61 | 120 | 62 | 123 | |
| | | URF | 350 | 135 | 67 | 133 | 69 | 137 | |
| | | URG | 375 | 185 | 62 | 125 | 64,5 | 130 | |
| | | URK | 400 | 240 | 60 | 122 | 61,5 | 128 | |
| | | URK | 450 | 305 | 67 | 137 | 69 | 144 | |
| | | URK | 500 | 375 | 77 | 158 | 79 | 165 | |
| | | URH | 630 | 1 570 | 62,5 | 125 | 67 | 136 | |
| | | URJ | 700 | 2 500 | 67 | 131 | 73 | 143 | |
| | | URB | 750 | 3 000 | 73 | 143 | 80 | 156 | |
| | 2X92 | URG | 500 | 335 | 77,5 | 152 | | | |
| | | URK | 630 | 576 | 93 | 190 | | | |
| | | URK | 700 | 800 | 104 | 212 | | | |
| | | URH | 800 | 2 680 | 87 | 177 | | | |
| | | URH | 1 000 | 3 930 | 106 | 216 | | | |
| | 2X93 | URH | 1 100 | 4 760 | 120 | 246 | | | |
| | | URG | 750 | 740 | 129 | 260 | | | |
| | | URK | 800 | 960 | 122 | 256 | | | |
| | | URK | 900 | 1 220 | 138 | 288 | | | |
| | | URK | 1 000 | 1 500 | 160 | 332 | | | |
| | | URH | 1 250 | 6 280 | 131 | 268 | | | |
| | | URJ | 1 400 | 10 000 | 143 | 280 | | | |
| | URB | 1 500 | 12 000 | 148 | 310 | | | | |



Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC French End contacts

| Size | Designation | Reference Number | Weight (g) | Packaging | Catalog Number |
|------|--------------------|------------------|------------|-----------|----------------|
| 91 | 15 URF 91 TTF 0100 | W 076 149 | 650 | 1 | PC91UF15C100TF |
| | 15 URF 91 TTF 0125 | X 076 150 | | | PC91UF15C125TF |
| | 15 URF 91 TTF 0160 | Y 076 151 | | | PC91UF15C160TF |
| | 15 URG 91 TTF 0200 | A 076 153 | | | PC91UG15C200TF |
| | 15 URK 91 TTF 0225 | B 076 154 | | | PC91UK15C225TF |
| | 15 URH 91 TTF 0250 | C 076 155 | | | PC91UH15C250TF |
| | 15 URH 91 TTF 0315 | D 076 156 | | | PC91UH15C315TF |
| | 15 URH 91 TTF 0350 | E 076 157 | | | PC91UH15C350TF |
| 92 | 15 URF 92 TTF 0200 | F 076 158 | 900 | 1 | PC92UF15C200TF |
| | 15 URG 92 TTF 0250 | G 076 159 | | | PC92UG15C250TF |
| | 15 URK 92 TTF 0315 | H 076 160 | | | PC92UK15C315TF |
| | 15 URK 92 TTF 0350 | J 076 161 | | | PC92UK15C350TF |
| | 15 URH 92 TTF 0400 | K 076 162 | | | PC92UH15C400TF |
| | 15 URK 92 TTF 0400 | M 076 003 | | | PC92UK15C400TF |
| | 15 URH 92 TTF 0500 | V 076 194 | | | PC92UH15C500TF |
| | 15 URH 92 TTF 0550 | L 076 163 | | | PC92UH15C550TF |
| 93 | 15 URF 93 TTF 0230 | L 097 829 | 1250 | 1 | PC93UF15C230TF |
| | 15 URF 93 TTF 0250 | M 076 164 | | | PC93UF15C250TF |
| | 15 URF 93 TTF 0315 | N 076 165 | | | PC93UF15C315TF |
| | 15 URF 93 TTF 0350 | P 076 166 | | | PC93UF15C350TF |
| | 15 URG 93 TTF 0375 | Q 076 167 | | | PC93UG15C375TF |
| | 15 URK 93 TTF 0400 | R 076 168 | | | PC93UK15C400TF |
| | 15 URK 93 TTF 0450 | J 076 092 | | | PC93UK15C450TF |
| | 15 URK 93 TTF 0500 | T 076 170 | | | PC93UK15C500TF |
| | 15 URH 93 TTF 0630 | V 076 171 | | | PC93UH15C630TF |
| | 15 URJ 93 TTF 0700 | W 076 172 | | | PC93UJ15C700TF |
| | 15 URB 93 TTF 0750 | X 076 173 | | | PC93UB15C750TF |



Microswitches : MC3E1-5N - Ref. D310020

MC3E1-5NBS - Ref. E310021

MC3E1-9NBS - Ref. F310022

MC3E1-5NET - Ref. L310027

MCR3E1-5N - Ref. G310023

MCR3E1-5NBS - Ref. P310030

MCR3E1-9NBS - Ref. H310024

MCR3E1-5NET - Ref. Q310031

For operating voltage
1250 VAC - DC max.

Insulation voltage 2200 VAC - DC

Threaded studs and microswitches supplied separately

| Size | A | C | D | M [±] | N [±] | E ^{±1,7} | d | G ^{±0,1} | P | R |
|------|----------|-------|----------|----------------|----------------|-------------------|-----|-------------------|-------|-------|
| 91 | 51 | 66 | 30 | 19 | 24 | 101 | M8 | 9 | 87,5 | 72,5 |
| | 2" | 2,6" | 1-3/16" | | | 3,98" | | 23/64" | 3,45" | 2,85" |
| 92 | 60 | 74 | 38 | 19 | 39 | 101 | M10 | 15 | 91,5 | 76,5 |
| | 2-3/8" | 2,95" | 1-1/2" | | | 3,98" | | 19/32" | 3,6" | 3" |
| 93 | 74,5 | 88 | 46 | 24 | 39 | 101 | M12 | 15 | 98,5 | 83,5 |
| | 2-15/16" | 3,5" | 1-13/16" | | | 3,98" | | 19/32" | 3,9" | 3,29" |

Note : dimensions in mm and inches

M and N dimensions are with Metric studs Ref. Number S098801 for size 91 T098802 for size 92 and V098803 for size 93.

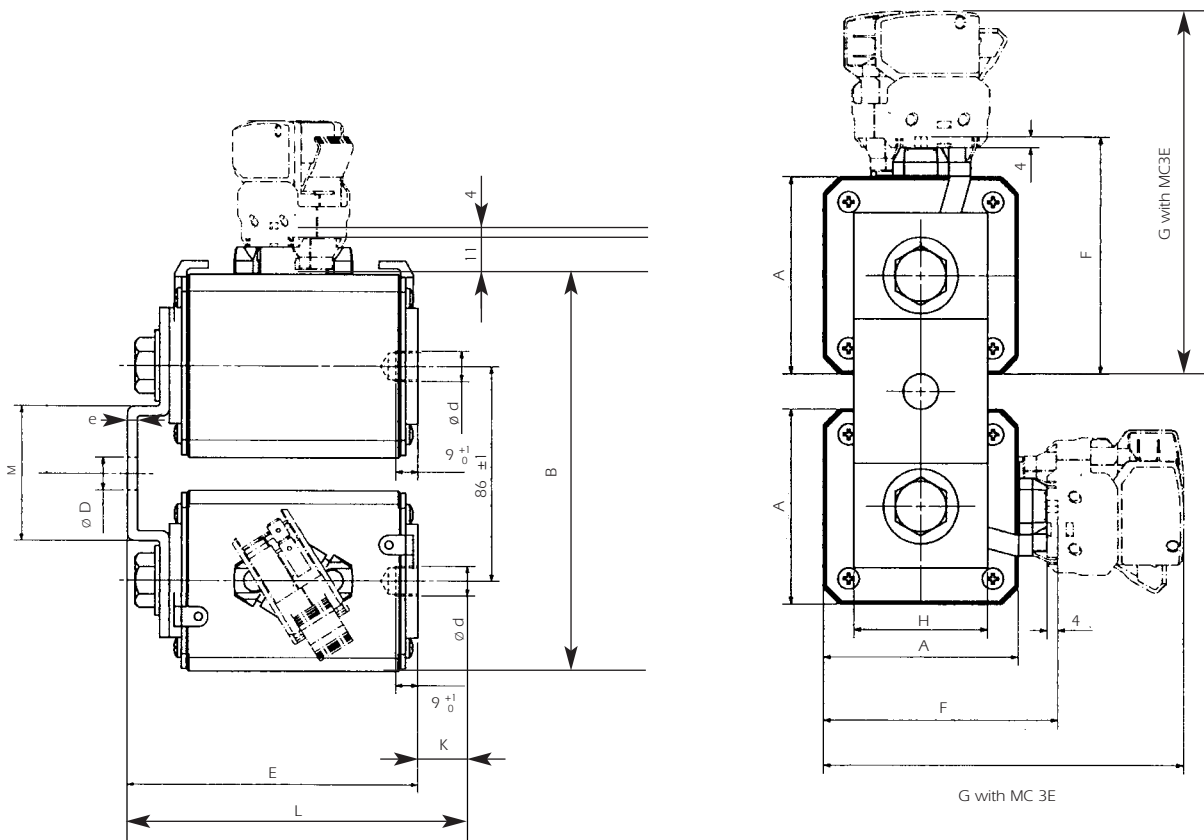
Maximum balanced nut tightening torque: 13,5 Nm (M8) - 26 Nm (M10)

46 Nm (M12)

Semiconductor (AC) fuses

Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC French End contacts

| Size | Designation | Reference Number | Weight (g) | Packaging | Catalog Number |
|------|---------------------|------------------|------------|-----------|-----------------|
| 2x92 | 15 URG 292 TTF 0500 | Y 076 174 | 2460 | 1 | PC292UG15C500TF |
| | 15 URK 292 TTF 0630 | Z 076 175 | | | PC292UK15C630TF |
| | 15 URK 292 TTF 0700 | A 076 176 | | | PC292UK15C700TF |
| | 15 URH 292 TTF 0800 | B 076 177 | | | PC292UH15C800TF |
| | 15 URH 292 TTF 1000 | C 076 178 | | | PC292UH15C10CTF |
| | 15 URH 292 TTF 1100 | D 076 179 | | | PC292UH15C11CTF |
| 2x93 | 15 URG 293 TTF 0750 | P 081 755 | 3450 | 1 | PC293UG15C750TF |
| | 15 URK 293 TTF 0800 | F 076 181 | | | PC293UK15C800TF |
| | 15 URK 293 TTF 0900 | G 076 182 | | | PC293UK15C900TF |
| | 15 URK 293 TTF 1000 | Q 081 756 | | | PC293UK15C10CTF |
| | 15 URH 293 TTF 1250 | R 081 757 | | | PC293UH15C13CTF |
| | 15 URJ 293 TTF 1400 | S 081 758 | | | PC293UJ15C14CTF |
| | 15 URB 293 TTF 1500 | X 081 854 | | | PC293UB15C15CTF |



Threaded studs and microswitches supplied separately

| Size | A | B | D | E ^{±1.7} | F | G | H | K | d | e | L | M | N |
|---------|------|-----|----|-------------------|----|-------|----|----|-----|---|-----|----|----|
| 2x92 TT | 60 | 147 | 11 | 118 | 74 | 106,5 | 35 | 40 | M10 | 4 | 158 | 48 | 72 |
| 2x93 TT | 74,5 | 164 | 13 | 118 | 88 | 121 | 50 | 40 | M12 | 4 | 158 | 54 | 86 |

Dimensions in mm

K dimensions are with studs Ref. Number W098804 in size 2x92 and X098805 in size 2x93.

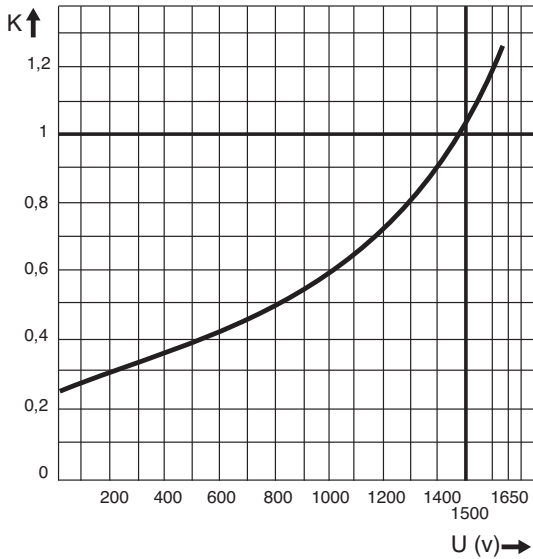
Maximum balanced nut tightening torque: 26 Nm (M10) and 46 Nm - (M12)

Semiconductor (AC) fuses

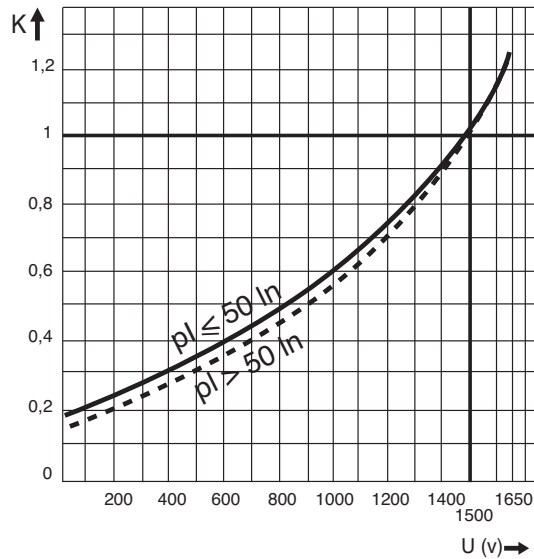
Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Curves set

I²t corrective K factor

URF/URG/URK



URB/URH/URJ

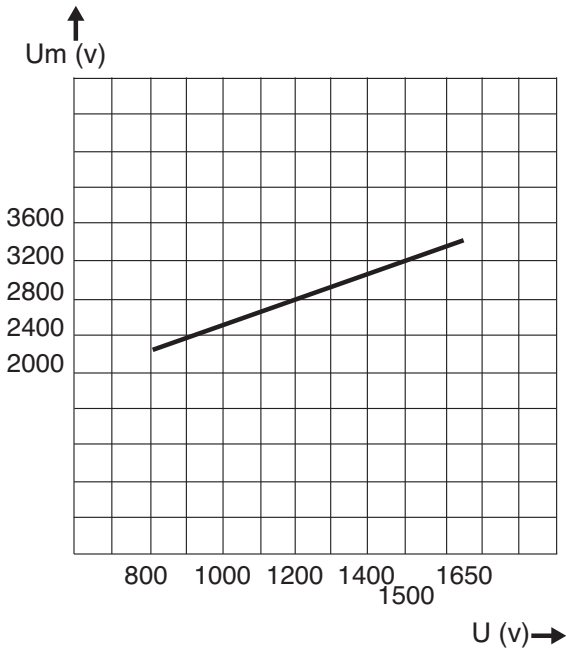


U: R.M.S. working voltage V
K: I²t corrective coefficient versus U

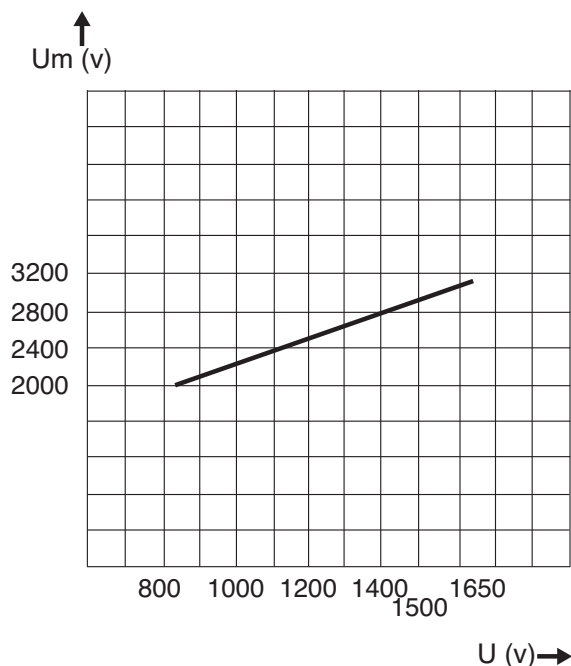
pl: Prospective Current in the fuse

Arc voltage

URF/URG/URK



URB/URH/URJ

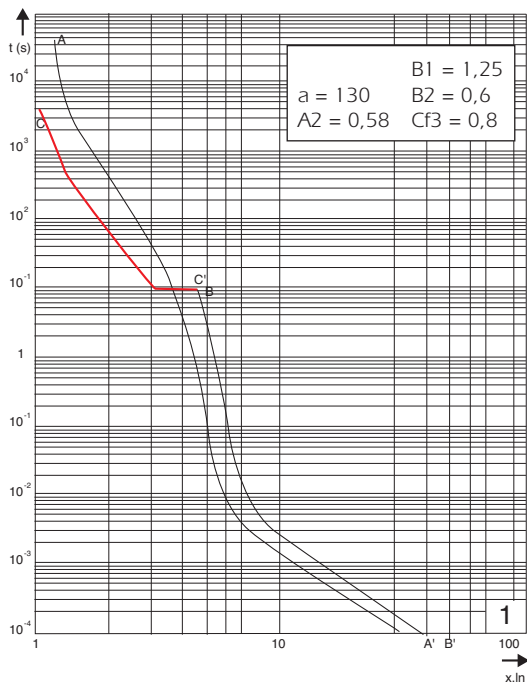


Um: arc voltage
U: R.M.S. working voltage V

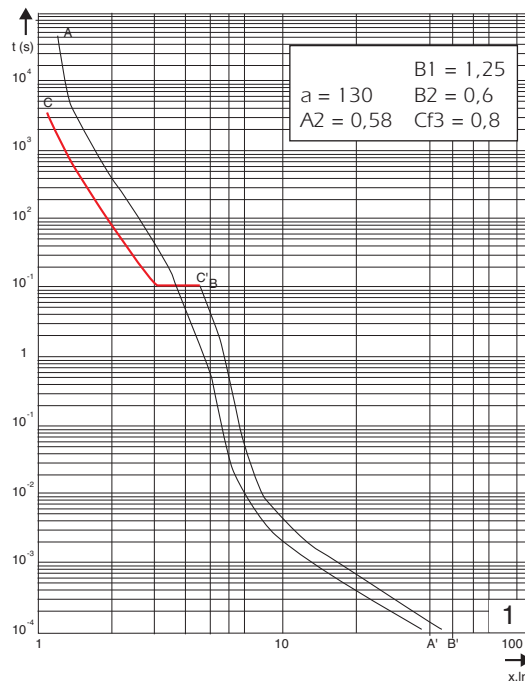
Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Curves set

Times/Current Characteristics

URF

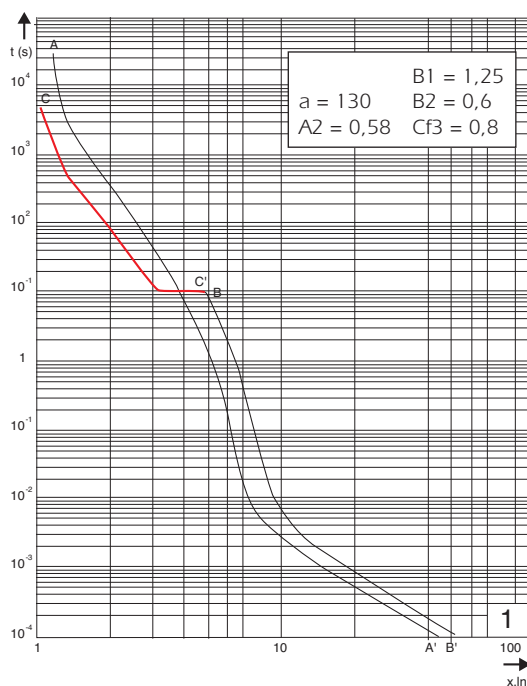


URG



t: actual prearcing time (s) (average value)
x.In: R.M.S. value of prearc current in multiples of rated current

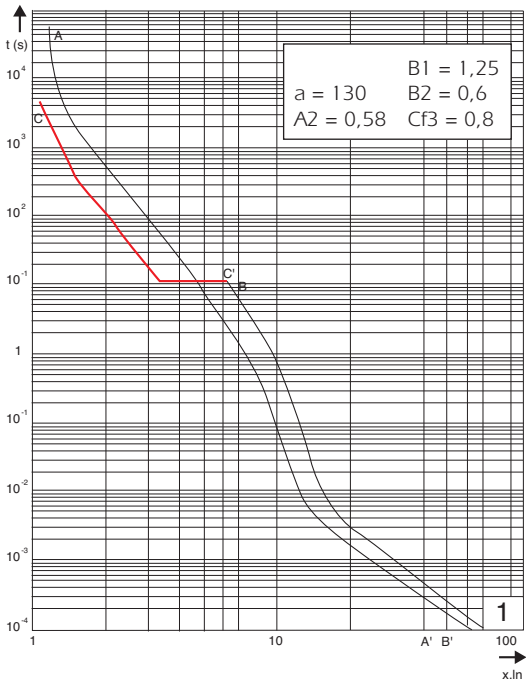
URK



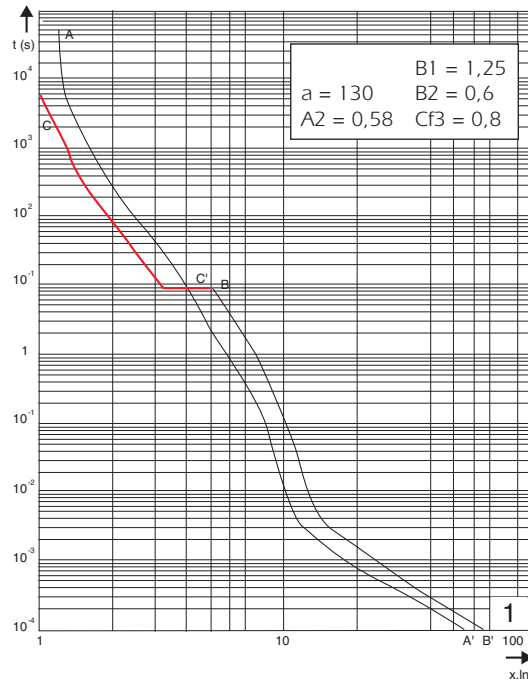
Semiconductor (AC) fuses

Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Curves set

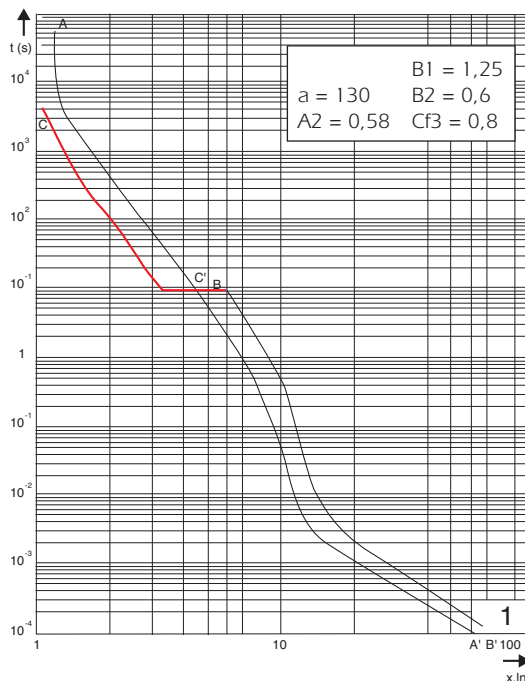
URB



URH



URJ



Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Microswitches for other square-body Protistor®



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X
- PERMANENT INDICATION OF FUSE STATE
 - CONDUCTIVE
 - BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

| Type | Designation | AC or DC Insulation voltage rating U_i (V) | AC voltage withstand test (*) | Impulse voltage test $U_{imp1,2/50}$ μ s (**) | Positive operating min. voltage /min. current | Current rating | Interrupting rating | | | | | | | |
|------------------|---------------|--|-------------------------------|---|---|----------------|---------------------|-----------------------|-----------|-------|-------------------------------|-------|-------|-------|
| | | | | | | | Current | Non-inductive circuit | | | Inductive circuit: L/R = 25ms | | | |
| | | | | | | | | 30V | 110V | 250V | 30V | 110V | 250V | |
| Standard | MC3E 1-5N | 1250V | 15 kV | 20 kV | 20 V 50 mA | 5 A | 50/60 Hz | 10 A | 10 A | 7 A | | | 6 A | |
| | MCR3E 1-5N | 2200 | 20 kV | 30 kV | | | DC | 5 A | 0.5 A | | | 1.6 A | 0.3 A | |
| Low level | MC3E 1-5NBS | 1250 V | 15 kV | 20 kV | 10 V 10 mA | 3 A | 50/60 Hz | 3 A | 3 A | 3 A | 2 A | 1 A | 1 A | |
| | MC3E 1-9NBS | | | | | | | 2200 V | 20 kV (1) | 30 kV | 3 A | 3 A | 3 A | 2 A |
| | MCR3E 1-5NBS | 6000 V | 23 kV (2) | 40 kV | | | DC | | 3 A | | 0.5 A | 0.25A | 3 A | 0.2 A |
| | MCR3E 1-9NBS | | 24 kV (1) | | | | | | | | | | | |
| Watertight IP 50 | MC2R3E 1-5NBS | 6000 V | 26 kV (2) | 40 kV | 10 V 10 mA | 3 A | 50 Hz | 3 A | 3 A | | 1 A | 1 A | | |
| | MC2R3E 1-9NBS | | 32 kV (3) | | | | | | | | | | | |
| | MC3E 1-5NET | | 11 kV | | | | | 16 kV | DC | 0.5 A | | 0.2 A | | |
| | MCR3E 1-5NET | 2200 V | 20 kV (1) | 30 kV | | | | | | | | | | |
| | MC2R3E 1-5NET | 6000 V | 24 kV (2) | 40 kV | | | | | | | | | | |

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals U_{imp} : impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

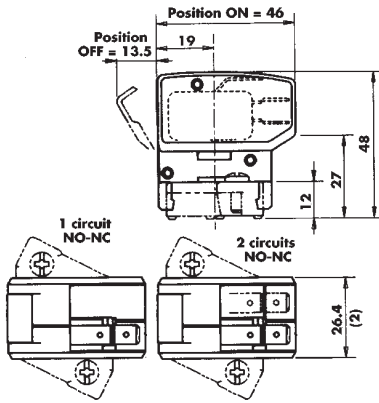
Semiconductor (AC) fuses

Protistor® Square-body Fuses

PSC aR sizes 9x - 1500 VAC

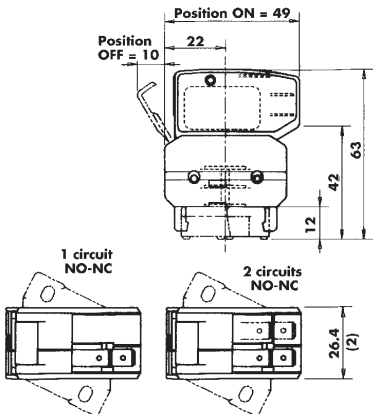
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



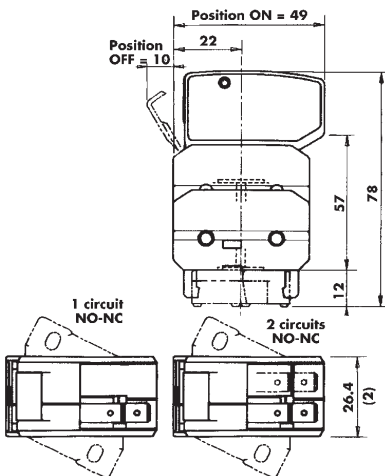
| Quantity of NO-NC separated circuits | Contact | Designation | Ref. Number | Weight (g) | Pack. (1) | Catalog Number |
|--------------------------------------|------------|-------------|-------------|------------|-----------|------------------|
| 1 | standard | MC3E 1-5N | D310020 | 39.5 | 3 | MC3E1-5N |
| 1 | low level | MC3E 1-5NBS | E310021 | 39.5 | 3 | MC3E1-5NBS |
| 2 | low level | MC3E 1-9NBS | F310022 | 45.7 | 3 | MC3E1-9NBS |
| 1 | watertight | MC3E 1-5NET | L310027 | 40.2 | 3 | MC3E1-5N ETANCHE |

Remote signaling with insulation voltage up to 2200 V AC/DC



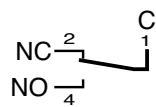
| Quantity of NO-NC separated circuits | Contact | Designation | Ref. Number | Weight (g) | Pack. (1) | Catalog Number |
|--------------------------------------|------------|--------------|-------------|------------|-----------|-------------------|
| 1 | standard | MCR3E 1-5N | G310023 | 51.7 | 1 | MCR3E1-5N |
| 1 | low level | MCR3E 1-5NBS | P310030 | 51.7 | 1 | MCR3E1-5NBS |
| 2 | low level | MCR3E 1-9NBS | H310024 | 58.0 | 1 | MCR3E1-9NBS |
| 1 | watertight | MCR3E 1-5NET | Q310031 | 52.5 | 1 | MCR3E1-5N ETANCHE |

Remote signaling with insulation voltage up to 6000 V AC/DC

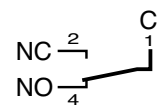


| Quantity of NO-NC separated circuits | Contact | Designation | Ref. Number | Weight (g) | Pack. (1) | Catalog Number |
|--------------------------------------|------------|---------------|-------------|------------|-----------|----------------|
| 1 | low level | MC2R3E 1-5NBS | J310025 | 64.0 | 1 | MC2R3E1-5NBS |
| 1 | watertight | MC2R3E 1-5NET | N310029 | 64.8 | 1 | MC2R3E1-5NET |
| 2 | low level | MC2R3E 1-9NBS | K310026 | 70.3 | 1 | MC2R3E1-9NBS |

Electrical diagram of each microswitch circuit



Non-blown fuse
Microswitch ON



Blown fuse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.

The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.

Spectrum: 1st segment (2 to 16 Hz) constant trip $x = 5$ mm peak.

2nd segment (16 to 250 Hz) constant acceleration $g = 5$ g peak.

Exponential scanning speed : 1 octave per minute.

Duration: 2 hours per axis.





Shah & Shah Enterprise

www.shahent.co.in

Protistor® Square-body Fuses PSC aR sizes 3x - 450V to 700 VAC Metric-studs

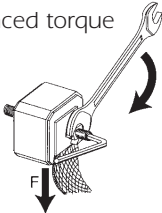
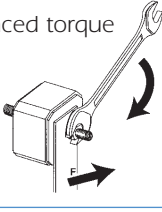
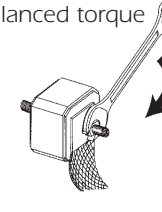
Metric studs for threaded terminal fuses



| Type and fuse size | Designation | Ref. Number | Unit weight (g) | Pack. | Catalog Number |
|--|---|-------------|-----------------|---------|-----------------|
|  Sizes 0 and 1 | HC stud pair M8x30 & M8x35 | S098801 | 23 | 6 pairs | STUM8x30M8x35 |
| | Size 2 HC stud pair M10x30 & M10x50 | T098802 | 40 | 6 pairs | STUM10x30M10x50 |
| | Size 3 HC stud pair M12x35 & M12x50 | V098803 | 60 | 6 pairs | STUM12x35M12x50 |
|  Size 2 | HC stud pair M10x50 | W098804 | 45 | 6 pairs | STUM10x50 |
| | Size 3 HC stud pair M12x50 | X098805 | 45 | 6 pairs | STUM12x50 |

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

| Torque type | Stud type | Maximum stud tightning torque (Nm) (1) | Maximum nut tightning torque (Nm) (1) |
|--|-----------------|--|---------------------------------------|
| Balanced torque  | M8x30 & M8x35 | 10 | 13.5 |
| | M10x30 & M10x50 | 15 | 26 |
| | M12x35 & M12x50 | 15 | 46 |
| Balanced torque  | M8x30 & M8x35 | 10 | 13.5 |
| | M10x30 & M10x50 | 15 | 26 |
| | M12x35 & M12x50 | 15 | 46 |
| Unbalanced torque  | M8x30 & M8x35 | 10 | 13.5 |
| | M10x30 & M10x50 | 15 | 26 |
| | M12x35 & M12x50 | 15 | 46 |

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All fuse links are equipped with a low voltage trip-indicator. This trip-indicator can operate a field mountable microswitch which is easily mounted directly on to the fuse even while in service.

Highlights

- Extremely Fast Acting
- Current Limiting
- Very Low I^2t
- Worldwide Acceptability
- Superior Cycling Ability

Ratings

AC: 100 - 1500A
1500 VAC
200 KA IR

DC: Consult us

Approvals

C: Tested to IEC 60269.4 at UN +10 %

Features/Benefits

Choice of mounting styles gives wide choice for equipment design

Broad range of ampere ratings in a given body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Applications

Protection of rectifiers, inverters, DC drives, UPS Systems, reduced voltage motor starters, and other equipment in globally accepted applications



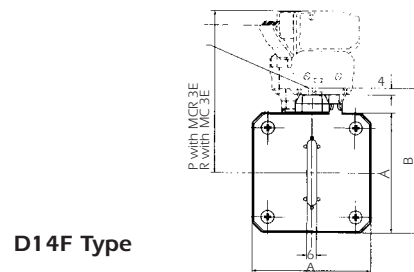
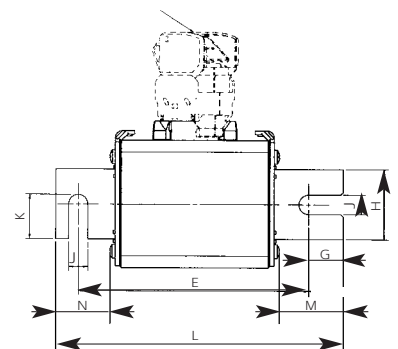
Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Main characteristics

| Voltage (V) | Size | Type | Rating (A) | Maximum I ² t under 1500V (kA ² S) | Power losses in watts | | | | Breaking capacities kA |
|----------------|------|-------|---------------|--|---------------------------|------|---------------------|------|------------------------------|
| | | | | | End contacts 0,8 In In | | Blades 0,8 In In | | |
| 1 500 V | 91 | URF | 100 | 10 | 18,5 | 35 | 18,5 | 35 | 1 500 V 200 kA |
| | | URF | 125 | 15 | 23 | 43 | 23 | 43 | |
| | | URF | 160 | 24,5 | 29 | 55 | 29 | 55 | |
| | | URF | 180 | 32,5 | 33 | 62 | 33 | 63 | |
| | | URG | 200 | 50 | 27,5 | 52 | 28 | 53,5 | |
| | | URK | 225 | 78 | 31 | 58,5 | 31 | 59 | |
| | | URH | 250 | 246 | 25 | 47 | 25 | 47 | |
| | | URH | 315 | 384 | 31 | 59 | 31 | 59 | |
| | URH | 350 | 466 | 35 | 66 | 35 | 66 | | |
| | 92 | URF | 200 | 40 | 36,5 | 69 | 37,5 | 71 | |
| | | URG | 250 | 84 | 37,5 | 73 | 39 | 76 | |
| | | URK | 315 | 144 | 46 | 91 | 46,5 | 95 | |
| | | URK | 350 | 200 | 51 | 101 | 52 | 106 | |
| | | URH | 400 | 669 | 41,5 | 83 | 44 | 90 | |
| | | URH | 500 | 983 | 50,5 | 101 | 53,5 | 109 | |
| | | URH | 550 | 1 190 | 57,5 | 115 | 61 | 124 | |
| | 93 | URF | 250 | 60 | 48 | 95 | 49,5 | 98 | |
| | | URF | 315 | 94 | 61 | 120 | 62 | 123 | |
| | | URF | 350 | 135 | 67 | 133 | 69 | 137 | |
| | | URG | 375 | 185 | 62 | 125 | 64,5 | 130 | |
| | | URK | 400 | 240 | 60 | 122 | 61,5 | 128 | |
| | | URK | 450 | 305 | 67 | 137 | 69 | 144 | |
| | | URK | 500 | 375 | 77 | 158 | 79 | 165 | |
| | | URH | 630 | 1 570 | 62,5 | 125 | 67 | 136 | |
| | | URJ | 700 | 2 500 | 67 | 131 | 73 | 143 | |
| | | URB | 750 | 3 000 | 73 | 143 | 80 | 156 | |
| | 2X92 | URG | 500 | 335 | 77,5 | 152 | | | |
| | | URK | 630 | 576 | 93 | 190 | | | |
| | | URK | 700 | 800 | 104 | 212 | | | |
| | | URH | 800 | 2 680 | 87 | 177 | | | |
| | | URH | 1 000 | 3 930 | 106 | 216 | | | |
| | 2X93 | URH | 1 100 | 4 760 | 120 | 246 | | | |
| | | URG | 750 | 740 | 129 | 260 | | | |
| | | URK | 800 | 960 | 122 | 256 | | | |
| | | URK | 900 | 1 220 | 138 | 288 | | | |
| | | URK | 1 000 | 1 500 | 160 | 332 | | | |
| | | URH | 1 250 | 6 280 | 131 | 268 | | | |
| | | URJ | 1 400 | 10 000 | 143 | 280 | | | |
| | URB | 1 500 | 12 000 | 148 | 310 | | | | |

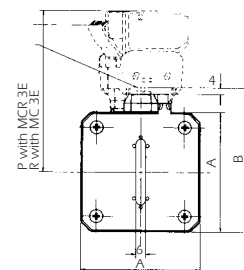
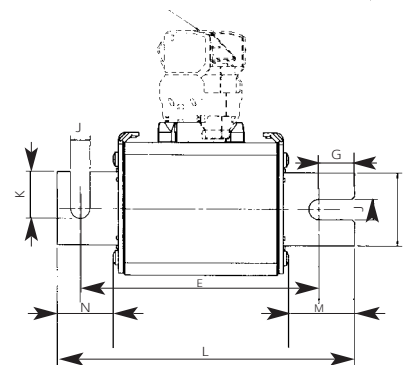
Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC German Blades (DIN 140)

| Size | Designation | Reference Number | Weight (g) | Packaging | Catalog Number |
|---------------------|---------------------|------------------|-----------------|-----------|-----------------|
| 91 | 15 URF 91 D14F 0100 | Z 076 060 | 800 | 1 | PC91UH15C100D4F |
| | 15 URF 91 D14F 0125 | A 076 061 | | | PC91UF15C125D4F |
| | 15 URF 91 D14F 0160 | B 076 062 | | | PC91UF15C160D4F |
| | 15 URF 91 D14F 0180 | C 076 063 | | | PC91UF15C180D4F |
| | 15 URG 91 D14F 0200 | D 076 064 | | | PC91UG15C200D4F |
| | 15 URH 91 D14F 0250 | T 076 101 | | | PC91UH15C250D4F |
| | 15 URH 91 D14F 0315 | V 076 102 | | | PC91UH15C315D4F |
| | 15 URH 91 D14F 0350 | W 076 103 | | | PC91UH15C350D4F |
| | 15 URF 91 D14A 0100 | V 221 232* | | | PC91UH15C100D4A |
| | 15 URF 91 D14A 0125 | M 210 737* | | | PC91UF15C125D4A |
| | 15 URF 91 D14A 0160 | L 077 037* | | | PC91UF15C160D4A |
| | 15 URF 91 D14A 0180 | - | | | |
| | 15 URG 91 D14A 0200 | A 221 214* | | | PC91UG15C200D4A |
| | 15 URH 91 D14A 0250 | D 221 309* | | | PC91UH15C250D4A |
| | 15 URH 91 D14A 0315 | - | | | |
| 15 URH 91 D14A 0350 | - | | | | |
| 92 | 15 URF 92 D14F 0200 | F 076 066 | 1100 | 1 | PC92UF15C200D4F |
| | 15 URG 92 D14F 0250 | G 076 067 | | | PC92UG15C250D4F |
| | 15 URK 92 D14F 0315 | H 076 068 | | | PC92UK15C315D4F |
| | 15 URK 92 D14F 0350 | J 076 069 | | | PC92UK15C350D4F |
| | 15 URH 92 D14F 0400 | X 076 104 | | | PC92UH15C400D4F |
| | 15 URH 92 D14F 0500 | Y 076 105 | | | PC92UH15C500D4F |
| | 15 URH 92 D14F 0550 | Z 076 106 | | | PC92UH15C550D4F |
| | 15 URF 92 D14A 0200 | - | | | |
| | 15 URG 92 D14A 0250 | - | | | |
| | 15 URK 92 D14A 0315 | C 097 959* | | | PC92UK15C315D4A |
| 15 URK 92 D14A 0350 | - | | | | |
| 15 URH 92 D14A 0400 | - | | | | |
| 15 URH 92 D14A 0500 | - | | | | |
| 15 URH 92 D14A 0550 | K 078 278* | | PC92UH15C550D4A | | |
| 93 | 15 URF 93 D14F 0250 | K 076 070 | 1800 | 1 | PC93UH15C250D4F |
| | 15 URF 93 D14F 0315 | L 076 071 | | | PC93UF15C315D4F |
| | 15 URF 93 D14F 0350 | M 076 072 | | | PC93UF15C350D4F |
| | 15 URG 93 D14F 0375 | N 076 073 | | | PC93UG15C375D4F |
| | 15 URK 93 D14F 0400 | P 076 074 | | | PC93UK15C400D4F |
| | 15 URK 93 D14F 0450 | Q 076 075 | | | PC93UK15C450D4F |
| | 15 URK 93 D14F 0500 | R 076 076 | | | PC93UK15C500D4F |
| | 15 URH 93 D14F 0630 | A 076 107 | | | PC93UH15C630D4F |
| | 15 URJ 93 D14F 0700 | B 076 108 | | | PC93UJ15C700D4F |
| | 15 URB 93 D14F 0750 | S 076 123 | | | PC93UB15C750D4F |
| | 15 URF 93 D14A 0250 | - | | | |
| | 15 URF 93 D14A 0315 | - | | | |
| | 15 URF 93 D14A 0350 | - | | | |
| | 15 URG 93 D14A 0375 | - | | | |
| | 15 URK 93 D14A 0400 | - | | | |
| 15 URK 93 D14A 0450 | J078277 | | PC93UK15C450D4A | | |
| 15 URK 93 D14A 0500 | - | | | | |

* D14A Type



D14F Type



| Fuse Size | A | B | E ^{±2} | H | J | K | L ^{±2} | M | N | P | R |
|------------|------|----|-----------------|----|------|------|-----------------|------|------|------|------|
| 91 DIN 140 | 51 | 66 | 133-145 | 25 | 11,1 | 17,7 | 166 | 37,2 | 31,6 | 87,5 | 72,5 |
| 92 DIN 140 | 60 | 74 | 133-145 | 32 | 11,1 | 21,5 | 166 | 37,2 | 31,6 | 91,5 | 76,5 |
| 93 DIN 140 | 74,5 | 88 | 133-145 | 40 | 11,1 | 25,5 | 166 | 36,7 | 31,1 | 98,3 | 83,5 |

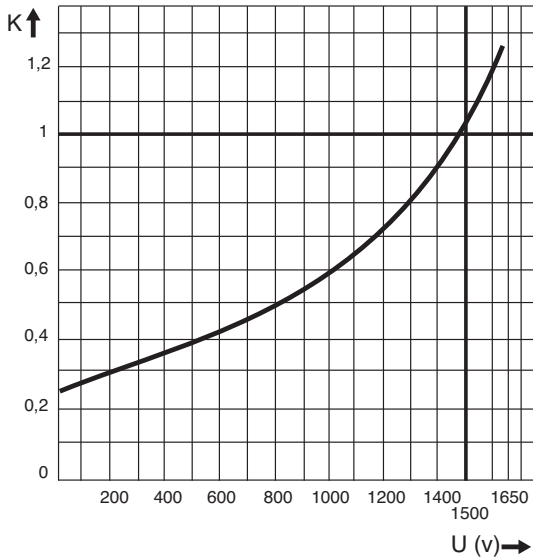
For other terminals: "US blades"; "D17A"; D17F; "D21A"; "D21F" consult us.
Microswitches supplied separately

Semiconductor (AC) fuses

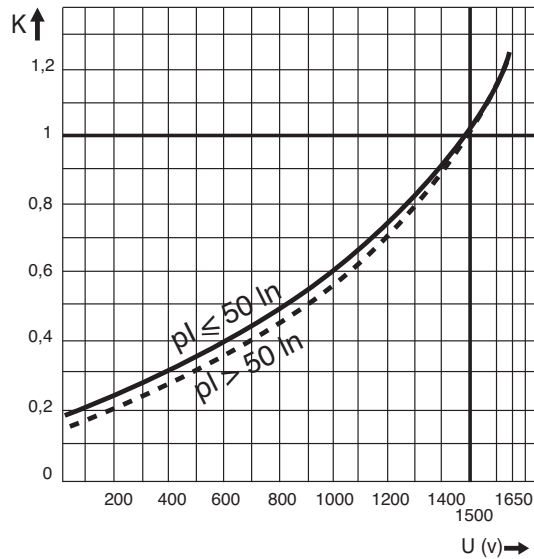
Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Curves set

I²t corrective K factor

URF/URG/URK



URB/URH/URJ



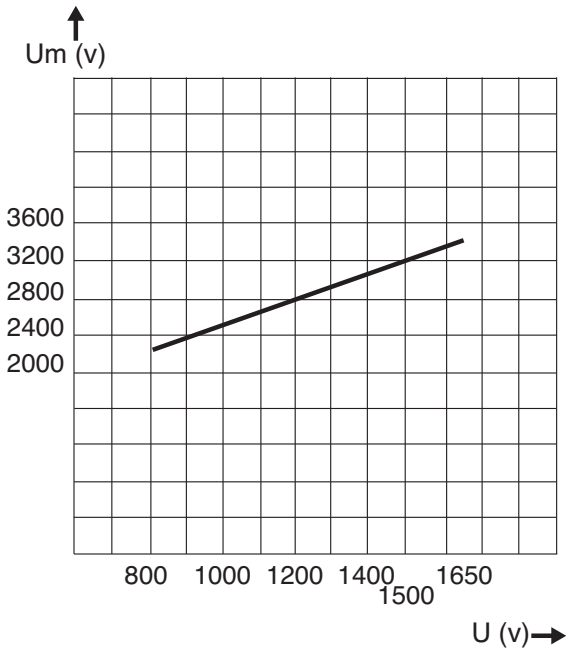
U: R.M.S. working voltage V

K: I²t corrective coefficient versus U

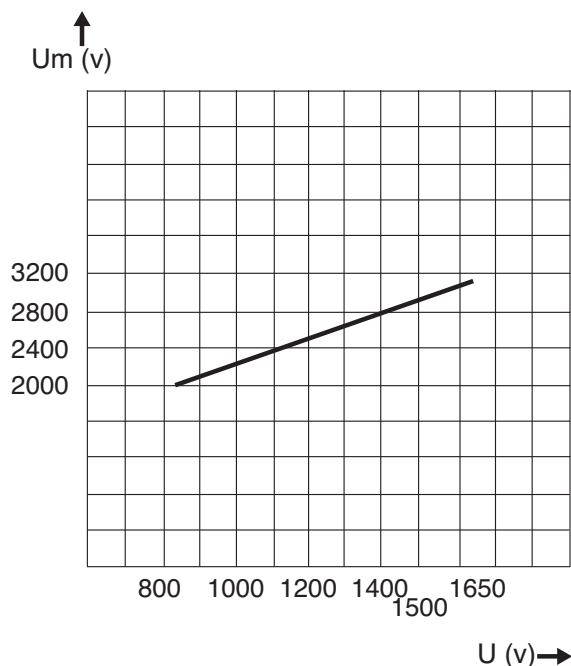
pl: Prospective Current in the fuse

Arc voltage

URF/URG/URK



URB/URH/URJ



Um: arc voltage

U: R.M.S. working voltage V



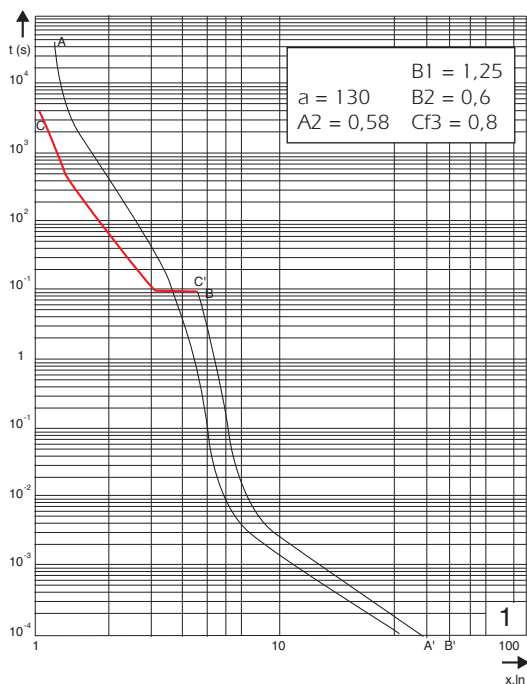
Shah & Shah Enterprise

www.shahent.co.in

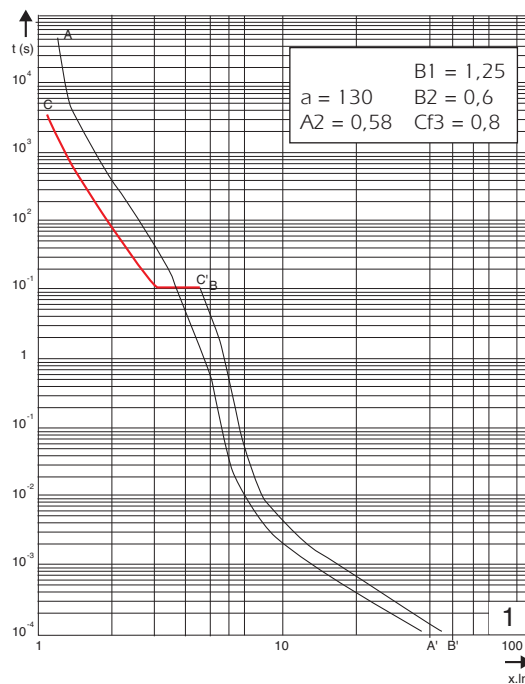
Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Curves set

Times/Current Characteristics

URF

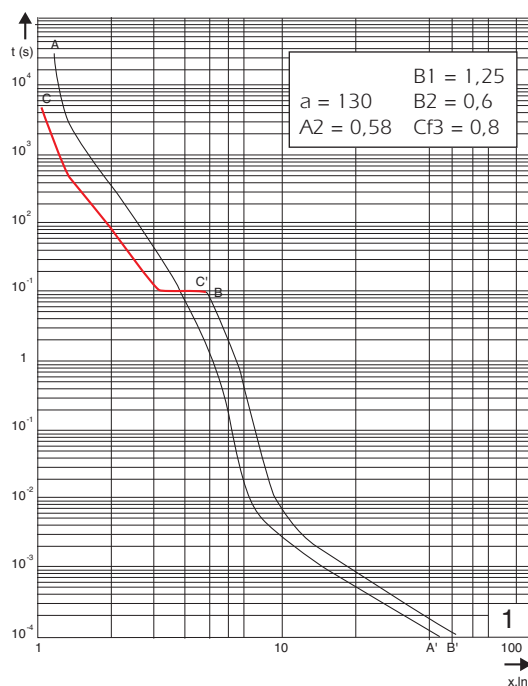


URG



t: actual prearcing time (s) (average value)
x.In: R.M.S. value of prearc current in multiples of rated current

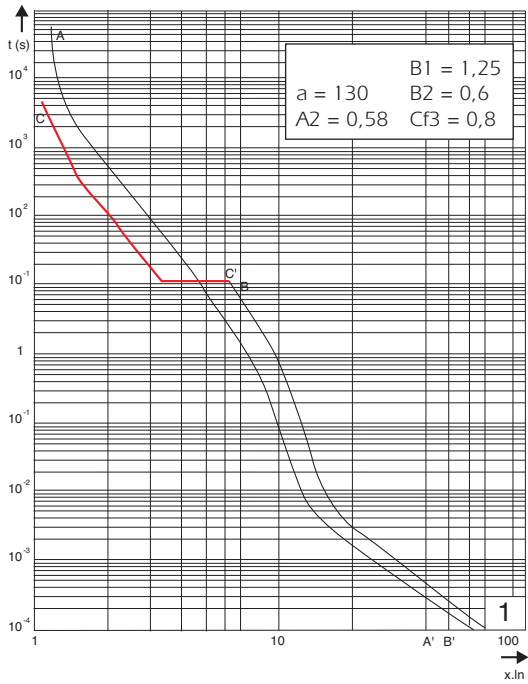
URK



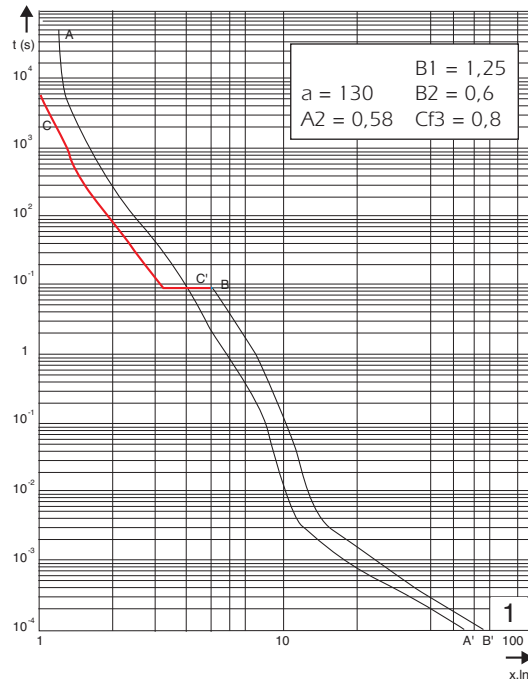
Semiconductor (AC) fuses

Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Curves set

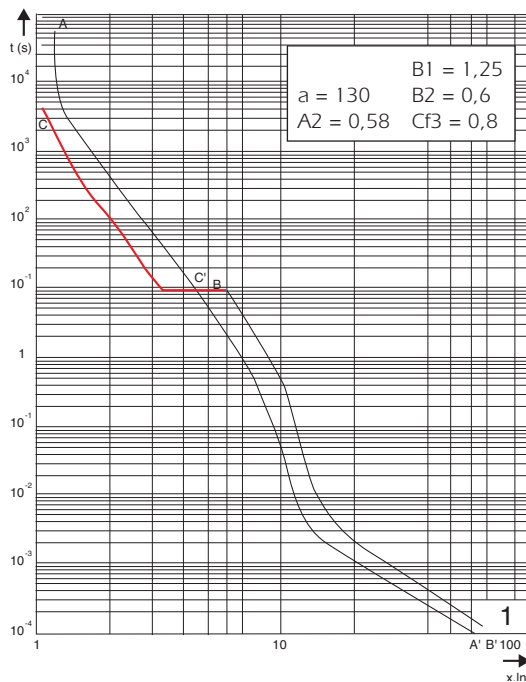
URB



URH



URJ



Protistor® Square-body Fuses PSC aR sizes 9x - 1500 VAC Microswitches for other square-body Protistor®



- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X
- PERMANENT INDICATION OF FUSE STATE
 - CONDUCTIVE
 - BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE

Main Characteristics

| Type | Designation | AC or DC Insulation voltage rating U _i (V) | AC voltage withstand test (*) | Impulse voltage test U _{imp} 1,2/50 μs (**) | Positive operating min. voltage /min. current | Current rating | Interrupting rating | | | | | | |
|------------------|---------------|---|-------------------------------|--|---|----------------|---------------------|-----------------------|-----------|-------|-------------------------------|-------|-------|
| | | | | | | | Current | Non-inductive circuit | | | Inductive circuit: L/R = 25ms | | |
| | | | | | | | | 30V | 110V | 250V | 30V | 110V | 250V |
| Standard | MC3E 1-5N | 1250V | 15 kV | 20 kV | 20 V 50 mA | 5 A | 50/60 Hz | 10 A | 10 A | 7 A | | | 6 A |
| | MCR3E 1-5N | 2200 | 20 kV | 30 kV | | | DC | 5 A | 0.5 A | | | 1.6 A | 0.3 A |
| Low level | MC3E 1-5NBS | 1250 V | 15 kV | 20 kV | 10 V 10 mA | 3 A | 50/60 Hz | 3 A | 3 A | 3 A | 2 A | 1 A | 1 A |
| | MC3E 1-9NBS | | | | | | | 2200 V | 20 kV (1) | 30 kV | 3 A | 3 A | 3 A |
| | MCR3E 1-5NBS | 6000 V | 23 kV (2) | 40 kV | | | DC | | 3 A | | 0.5 A | 0.25A | 3 A |
| | MCR3E 1-9NBS | | 24 kV (1) | | | | | | | | | | |
| Watertight IP 50 | MC2R3E 1-5NBS | 6000 V | 26 kV (2) | 40 kV | 10 V 10 mA | 3 A | 50 Hz | 3 A | 3 A | | 1 A | 1 A | |
| | MC2R3E 1-9NBS | | 32 kV (3) | | | | | | | | | | |
| | MC3E 1-5NET | | 11 kV | | | | | 16 kV | DC | 0.5 A | | 0.2 A | |
| | MCR3E 1-5NET | 2200 V | 20 kV (1) | 30 kV | | | | | | | | | |
| | MC2R3E 1-5NET | 6000 V | 24 kV (2) | 40 kV | | | | | | | | | |

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals U_{imp}: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

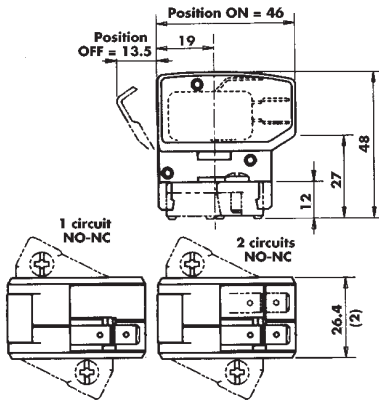
Semiconductor (AC) fuses

Protistor® Square-body Fuses

PSC aR sizes 9x - 1500 VAC

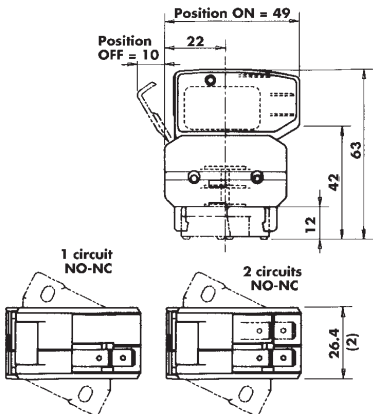
Microswitches for other square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



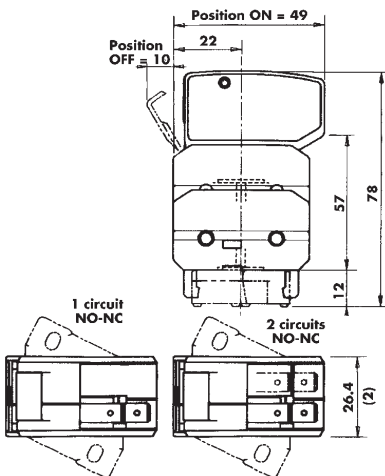
| Quantity of NO-NC separated circuits | Contact | Designation | Ref. Number | Weight (g) | Pack. (1) | Catalog Number |
|--------------------------------------|------------|-------------|-------------|------------|-----------|------------------|
| 1 | standard | MC3E 1-5N | D310020 | 39.5 | 3 | MC3E1-5N |
| 1 | low level | MC3E 1-5NBS | E310021 | 39.5 | 3 | MC3E1-5NBS |
| 2 | low level | MC3E 1-9NBS | F310022 | 45.7 | 3 | MC3E1-9NBS |
| 1 | watertight | MC3E 1-5NET | L310027 | 40.2 | 3 | MC3E1-5N ETANCHE |

Remote signaling with insulation voltage up to 2200 V AC/DC



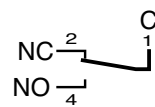
| Quantity of NO-NC separated circuits | Contact | Designation | Ref. Number | Weight (g) | Pack. (1) | Catalog Number |
|--------------------------------------|------------|--------------|-------------|------------|-----------|-------------------|
| 1 | standard | MCR3E 1-5N | G310023 | 51.7 | 1 | MCR3E1-5N |
| 1 | low level | MCR3E 1-5NBS | P310030 | 51.7 | 1 | MCR3E1-5NBS |
| 2 | low level | MCR3E 1-9NBS | H310024 | 58.0 | 1 | MCR3E1-9NBS |
| 1 | watertight | MCR3E 1-5NET | Q310031 | 52.5 | 1 | MCR3E1-5N ETANCHE |

Remote signaling with insulation voltage up to 6000 V AC/DC

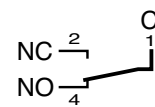


| Quantity of NO-NC separated circuits | Contact | Designation | Ref. Number | Weight (g) | Pack. (1) | Catalog Number |
|--------------------------------------|------------|---------------|-------------|------------|-----------|----------------|
| 1 | low level | MC2R3E 1-5NBS | J310025 | 64.0 | 1 | MC2R3E1-5NBS |
| 1 | watertight | MC2R3E 1-5NET | N310029 | 64.8 | 1 | MC2R3E1-5NET |
| 2 | low level | MC2R3E 1-9NBS | K310026 | 70.3 | 1 | MC2R3E1-9NBS |

Electrical diagram of each microswitch circuit



Non-blown fuse
Microswitch ON



Blown fuse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC. The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.

Spectrum: 1st segment (2 to 16 Hz) constant trip $x = 5$ mm peak.

2nd segment (16 to 250 Hz) constant acceleration $g = 5$ g peak.



Exponential scanning speed : 1 octave per minute.

Duration: 2 hours per axis.

Protistor® Square-body Fuses PSC aR sizes 3x - 450V to 700 VAC Metric-studs

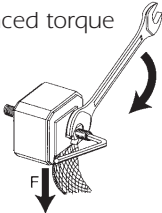
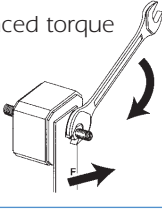
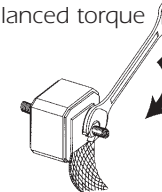
Metric studs for threaded terminal fuses



| Type and fuse size | Designation | Ref. Number | Unit weight (g) | Pack. | Catalog Number |
|--|---|-------------|-----------------|---------|-----------------|
|  Sizes 0 and 1 | HC stud pair M8x30 & M8x35 | S098801 | 23 | 6 pairs | STUM8x30M8x35 |
| | Size 2 HC stud pair M10x30 & M10x50 | T098802 | 40 | 6 pairs | STUM10x30M10x50 |
| | Size 3 HC stud pair M12x35 & M12x50 | V098803 | 60 | 6 pairs | STUM12x35M12x50 |
|  Size 2 | HC stud pair M10x50 | W098804 | 45 | 6 pairs | STUM10x50 |
| | Size 3 HC stud pair M12x50 | X098805 | 45 | 6 pairs | STUM12x50 |

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

| Torque type | Stud type | Maximum stud tightening torque (Nm) (1) | Maximum nut tightening torque (Nm) (1) |
|--|-----------------|---|--|
| Balanced torque  | M8x30 & M8x35 | 10 | 13.5 |
| | M10x30 & M10x50 | 15 | 26 |
| | M12x35 & M12x50 | 15 | 46 |
| Balanced torque  | M8x30 & M8x35 | 10 | 13.5 |
| | M10x30 & M10x50 | 15 | 26 |
| | M12x35 & M12x50 | 15 | 46 |
| Unbalanced torque  | M8x30 & M8x35 | 10 | 13.5 |
| | M10x30 & M10x50 | 15 | 26 |
| | M12x35 & M12x50 | 15 | 46 |