EATON | MEM

# MEM Circuit Protection & Control

## Industrial Switch and Fusegear

2003 Catalogue



The World's Most Comprehensive Range Of Equipment

MEM

EATON | MEM



THE SOURCE OF CIRCUIT PROTECTION SOLUTIONS

As a market-leading manufacturer of circuit protection and control equipment, Eaton MEM's world leading switch and fusegear, circuit breaker and wiring accessory products are distributed across the globe.

Incorporating the latest technological advances, our products are the result of a comprehensive ongoing development programme and comply with the industry's most rigorous quality standards. This all serves to make Eaton MEM an industry benchmark, with unsurpassed quality and performance guaranteed.

This extensive product range, together with our lengthy experience and specialist knowledge serves to make Eaton MEM the only source for your installation needs.

Eaton Corporation is a global $7.2 billion diversified industrial manufacturer that is a leader in fluid power systems; electrical power quality, distribution and control; automotive engine air management and fuel economy; and intelligent drivetrain systems for fuel economy and safety in trucks. Eaton has 51,000 employees and sells products in more than 50 countries. For more information, visit www.eaton.com.

www.memonline.com

MEM

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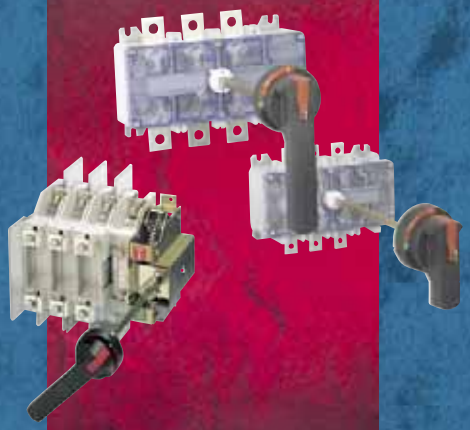
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# INDUSTRIAL SWITCH AND FUSEGEAR

## THE WORLD'S MOST COMPREHENSIVE RANGE OF EQUIPMENT



- Market leading products include...
- Glasgow – fuse-switch-disconnectors & switch-disconnectors, 63A to 800A
- Glasgow busbar chamber system, 100A to 800A
- Exel 2 - switch-disconnector-fuses & switch-disconnectors, 20A to 125A
- Exel HRC distribution fuseboards, 20A to 200A
- SPSN switchfuses up to 100A
- Memlok moulded changeover switches, 20A to 63A
- Memproof enclosed disconnectors, 20A to 63A
- Firemans emergency switches 20A & 32A

From the very start Eaton MEM has earned a worldwide reputation for reliable, high quality switch and fusegear – an area in which we are clear market leaders.

Constantly updated and refined to comply with the very latest international standards the range can accommodate the diverse requirements of the contractor, specifier, OEM and distributor alike.

Our market leading switchgear range combined with specialist heavy duty switchgear and special distribution and control equipment means Eaton MEM offers a vast choice, flexible approach and total solution to your installation needs.

### GLASGOW FUSE-SWITCH-DISCONNECTORS & SWITCH-DISCONNECTORS



- Comply with BSEN60947-3
- Conditional short circuit rating = 80kA, 415V
- Five frame sizes offer ratings of 63A to 800A
- Excellent AC22A & AC23A (Ue 415V)
- Range of auxiliary equipment
- Page 4

### GLASGOW BUSBAR CHAMBER SYSTEM



- Comply with BSEN60439-1
- Conditional short circuit rating = 63kA, 550V
- Five ratings of 100A to 800A
- Lengths of 550mm, 900mm, 1350mm, 1800mm
- Range of ancillary equipment including pedestal sets
- Page 10

### EXEL 2 SWITCH-DISCONNECTORS & SWITCH-DISCONNECTOR-FUSES



- Comply with BSEN60947-3
- Conditional short circuit rating = 80kA, 415V
- Five frame sizes offer ratings of 20A to 125A
- Excellent AC22A & AC23A ratings (Ue 415V)
- Suitable for use on AC or DC
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### EXEL HRC DISTRIBUTION FUSEBOARDS

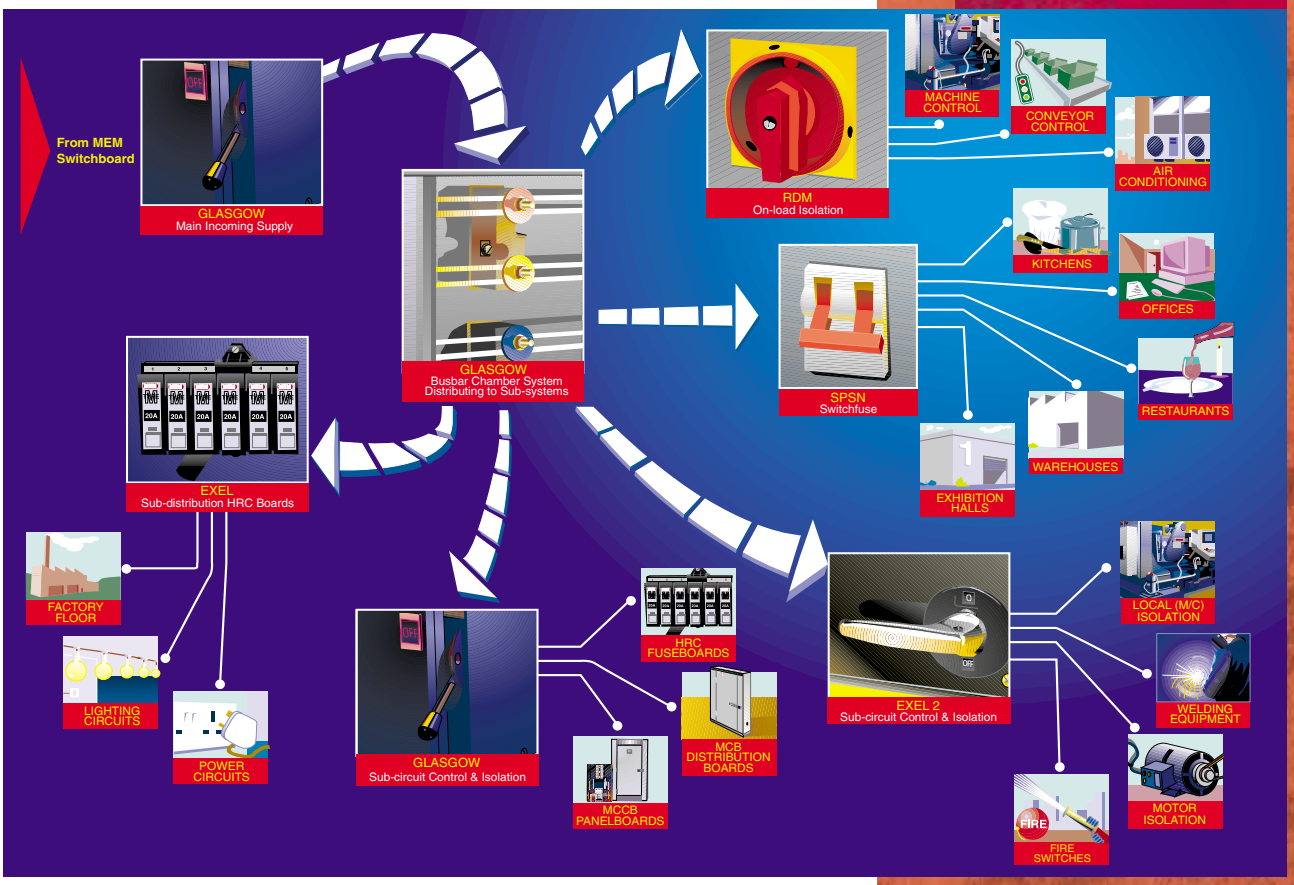


- Comply with BS5486: Part 11: 1989
- Enclosures available up to IP4X
- Five ratings of 20A to 200A
- Safety carriers available
- Page 20

### SPSN SURFACE MOUNTING SWITCHFUSE



- Double pole isolating switch tested to BSEN60947-3
- Conditional short circuit rating = 16kA, 240V
- 80A or 100A fuselink fitted as standard
- 2-63A fuselinks can be fitted
- Fully shrouded fuse carrier
- Safety carriers available
- Page 16




## MEMLOK CHANGEOVER SWITCHES

- Moulded enclosures to IP65
- 20A, 25A, 40A, 63A
- Metalclad enclosures to IP54
- 32 to 800A
- Page 17



## MEMPROOF ENCLOSED DISCONNECTORS

- For use as an isolating switch in all types of circuits
- Comply with IEC 60947-3
- Four ratings from 20A to 63A
- Available in Double Pole, Triple Pole and Switched Neutral
- Enclosures are IP57 rated
- Page 16



## FIREMANS EMERGENCY SWITCHES

- Double pole switches suitable for AC or DC to BSEN60947-3
- Heavy duty cast enclosures to IP55
- Pole operated ring handle automatically locks in the 'OFF' position
- Flush version
- Page 18





## RATING TO BSEN60947-3

General Performance Characteristics

| NOMINAL UNIT RATING Ie | UTILIZATION CATEGORY AT Ue 415V TO BSEN60947-3 | | |
|---|---|---|---|
| | SWITCH - DISCONNECTOR AC21A Ie | FUSE-SWITCH - DISCONNECTOR AC22A Ie | AC23A Ie |
| 63A | 125A | 63A | 41A |
| 100A | 125A | 100A | 41A |
| 160A | Use 200A | 160A | 160A |
| 200A | 315A | 200A | 160A |
| 315A | Use 400A | 315A | 200A |
| 400A | 400A | 400A | 200A |
| 500A | Use 630A | 500A | 385A |
| 630A | 630A | 630A | 385A |
| 800A | 800A | 800A | 500A |

## OPERATIONAL PERFORMANCE

In accordance with BSEN60947-3: 1992 "A" categories all ratings have been tested to values specified below:

| RATED OPERATIONAL CURRENT Ie | OPERATING CYCLES WITHOUT CURRENT | WITH CURRENT | TOTAL |
|---|---|---|---|
| 63 - 100A | 8,500 | 1,500 | 10,000 |
| 160 - 400A | 7,000 | 1,000 | 8,000 |
| 500 - 630A | 4,000 | 1,000 | 5,000 |
| 800A | 2,500 | 500 | 3,000 |

## LOCKING DEVICES

Facilities are provided for locking off operating handles and securing doors as under:

| CURRENT RATING A | LIST NO. LOCKING DEVICE | LIST NO. PADLOCK |
|---|---|---|
| Handle locking 63-800A | ★ | PD1 |
| Door locking 63-400A | 6LD | PD1 |
| 500-800A | 8LD | PD1 |

* Operating handles of all units can be locked 'ON' or 'OFF' using padlock only.

Non standard hasps on padlock available to order.

All units are supplied with fuselinks or switchlinks fitted. Glasgow fuse-switch-disconnectors and switch-disconnectors are type tested to BSEN60947-3 and meet the constructional requirements for isolation as specified in BSEN60947-3.

Conditional short circuit current rating tests at a value of 80kA rms Ue 415V have been carried out with Eaton MEM HRC fuses fitted. Five frame sizes are available to provide a range from 63A to 800A, with utilization category AC22A and AC23A Ue 415V ratings as specified in table below. Switch-disconnectors fitted with copper links give assigned AC20A Ui 660V and AC21A Ue 415V ratings as specified in table below.

All units have retractable operating handles which drive over-centre mechanisms incorporating powerful operating springs. Opening and closing of the switches is not solely dependent upon these springs. Moving contact assemblies can be removed to facilitate installation or for contact inspection or renewal. Flag "on-off" indication is provided and terminal cover shields prevent contact with live metal.

TPSN indicates triple-pole and switched neutral, the neutral pole making first and breaking last.

Rated Insulation Voltage Ui 660V.

## ENCLOSURES

Surface-mounting enclosures comprise heavy gauge steel body plates incorporating cast iron frame members and are rust-protected, with a light grey paint finish. Front access doors, which are detachable, are fitted with dust-excluding gaskets and are interlocked to prevent opening when the switch is 'on'.

The interlock can be defeated by a competent person for maintenance purposes. Operating handles may be locked in both the 'on' and 'off' positions. Castell type interlocks can be supplied to special order. Internal fixing holes allow units to be mounted closely side by side and all models have removable top and bottom end plates. These are pierced for connections, divided into front and rear (fixed) portions to simplify cabling using Eaton MEM split-type cable boxes, and provided with undrilled cover plates.

## FUSES

Glasgow units are designed for use with HRC cartridge fuse links to BS88: Part 2. 63A and 100A units employ off-set contact fuse links. Details of suitable types of HRC cartridge fuse links are listed on page 8.

All performance tests have been carried out using Eaton MEM BS88 fuselinks. The exclusive use of Eaton MEM fuselinks will extend the warranty period to 3 years.

## MOTOR RATINGS

The motor ratings assigned to TPN switch-disconnector units are utilization category AC23A (frequent operation) to BSEN60947-3, which calls for make and break testing at 10 and 8 times rated current respectively for units having a motor rating up to and including 100 Amps.

Ratings for switch-disconnector-fuses are dependent on suitable HRC fuses being fitted.

## AUXILIARY EQUIPMENT

A comprehensive range of extension boxes and spreader boxes is available. A chart to aid selection of suitable equipment together with termination details is provided on pages 8 and 9.

## FUSE-SWITCH-DISCONNECTOR

## SWITCH-DISCONNECTOR

| NOMINAL UNIT RATING IE | MEM 415V FUSE(S) FITTED | MEM SWITCH LINK(S) FITTED | POLES | STANDARD GLASGOW LIST NO. | NOMINAL RATING IE AC21A | MEM SWITCH LINK (S) REQUIRED | STANDARD GLASGOW LIST NO. | MOTOR RATING AC23A KW | MOTOR RATING UE415V HP |
|---|---|---|---|---|---|---|---|---|---|
| 63A | 63SB4 | 63MLK | SPSN<br>DP<br>TPN<br>TPSN | **61GNC**<br>★<br>**63GNC**<br>**64GC** | 125A | 63MLK | **63GNL** | 22 | 30 |
| 100A | 100SD5 | 100MLK | SPSN<br>DP<br>TPN<br>TPSN | **101GNC**<br>★<br>**103GNC**<br>**104GC** | 125A | 100MLK | **103GNL** | 22 | 30 |
| 160A | 160SF6 | 200MLK | SPSN<br>DP<br>TPN<br>TPSN | **151GNC**<br>★<br>**153GNC**<br>**154GC** | use 200A switch-disconnector | | | | |
| 200A | 200SF6 | 200MLK | SPSN<br>DP<br>TPN<br>TPSN | **201GNC**<br>★<br>**203GNC**<br>**204GC** | 315A | 200MLK | **203GNL** | 90 | 125 |
| 315A | 315SF7 | 400MLK | TPN<br>TPSN | **303GNC**<br>**304GC** | use 400A switch-disconnector | | | | |
| 400A | 400SF8 | 400MLK | TPN<br>TPSN | **403GNC**<br>**404GC** | 630A | 400MLK | **403GNL** | 110 | 150 |
| 500A | 500SH9 | 630MLK | TPN<br>TPSN | **503GNC**<br>**504GC** | use 630A switch-disconnector | | | | |
| 630A | 630SH9 | 630MLK | TPN<br>TPSN | **603GNC**<br>**604GC** | 1000A | 630MLK | **603GNL** | 225 | 300 |
| 800A | 800SH10 | 800MLK | TPN<br>TPSN | **803GNC**<br>**804GC** | 1000A | 800MLK | **803GNL** | 300 | 400 |

Units are fitted with HRC Fuselinks of maximum rating but will accept fuselinks of a lower rating, refer to the Paramount HRC Fuselinks section on page 24.

SPSN and TPSN indicate switched neutral. Neutral makes first and breaks last.

★ If DP fuse-switch-disconnectors are required, use SPSN and replace the supplied switch link with a compatible fuselink.

## DEFINITIONS OF UTILIZATION CATEGORY

AC20A Connecting and disconnecting under no load condition.

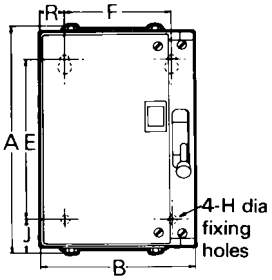
AC21A Switching of resistive loads including moderate overloads.

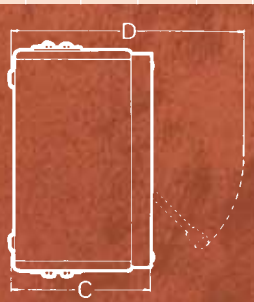
AC22A Switching of mixed resistive and inductive loads including moderate overloads.

AC23A Switching of motor, or other high inductive loads.

## DIMENSIONS

| NOMINAL UNIT RATING Ie | POLES | A mm | B mm | C mm | D mm | E mm | F mm | H mm | J mm | R mm |
|---|---|---|---|---|---|---|---|---|---|---|
| 63A | **SPSN, DP** | 289 | 199 | 180 | 283 | 203 | 127 | 7.9 | 43 | 36 |
| | **TPN, TPSN** | 289 | 275 | 180 | 283 | 203 | 203 | 7.9 | 43 | 36 |
| 100A | **SPSN, DP** | 327 | 199 | 180 | 283 | 241 | 127 | 7.9 | 43 | 35 |
| | **TPN, TPSN** | 327 | 275 | 180 | 283 | 241 | 203 | 7.9 | 43 | 35 |
| 160A, 200A | **SPSN, DP** | 431 | 280 | 229 | 383 | 340 | 140 | 7 | 45 | 70 |
| | **TPN, TPSN** | 431 | 340 | 229 | 383 | 340 | 200 | 7 | 45 | 70 |
| 315A, 400A | **TPN, TPSN** | 501 | 467 | 291 | 545 | 385 | 375 | 10 | 58 | 46 |
| 500A, 630A, 800A | **TPN, TPSN** | 596 | 680 | 381 | 715 | 440 | 550 | 14 | 78 | 65 |

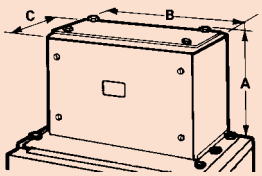



Units have retractable handles. 'D' dimension indicates fully extended operating position.



| LIST NO. | A mm | B mm | C mm |
|---|---|---|---|
| **1PCB** | 148 | 133 | 113 |
| **2PCB** | 148 | 209 | 113 |
| **3PCB** | 148 | 259 | 132 |
| **4PCB** | 302 | 347 | 184 |
| **5PCB** | 213 | 515 | 187 |
| **6PCB** | 213 | 515 | 327 |




## CABLE EXTENSION BOXES

Fabricated sheet steel boxes for fitting to Glasgow switch units to provide additional space for spreading multi-core PVC insulated cables with solid aluminium conductors and for some larger cables with stranded copper conductors.

For 1-3PCB, a plain flame retardant plywood plate is provided for fitting between the box and switch unit, the steel endplate supplied fitted to the switch unit being used on the box's cable entry side.

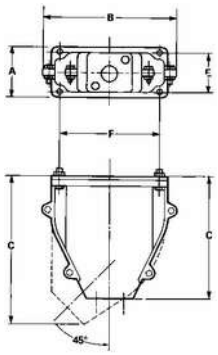
For 4PCB, a plain steel plate is provided for cable entry on box. The switch enclosure has 8mm thick insulated endplates fitted both ends.

For 5-6PCB, a 10mm thick insulated plate is provided for cable entry on box. The switch enclosure has 10mm thick insulated endplates fitted both ends, 5PCB includes a flame-retardant plywood packer for fitting between PCB and switch unit's endplate to provide lid flange clearance.

| LIST NO. | A mm | B mm | C mm | E mm | F mm | FIXING BOLTS NO. | FIXING BOLTS TYPE |
|---|---|---|---|---|---|---|---|
| Straight entry | | | | | | | |
| **50 CSB** | 83 | 232 | 170 | 67 | 171 | 4 | M6 |
| **60 CSB** | 108 | 283 | 260 | 89 | 216 | 4 | 5/16 Whit. |
| **70 CSB** | 133 | 384 | 322 | 114 | 318 | 4 | 5/16 Whit. |
| **90 CSB** | 133 | 530 | 450 | 114 | 457 | 4 | 3/8 Whit. |
| 45° Angled entry | | | | | | | |
| **50 CSBA** | 83 | 232 | 250 | 67 | 171 | 4 | M6 |
| **60 CSBA** | 108 | 283 | 310 | 89 | 216 | 4 | 5/16 Whit. |
| **70 CSBA** | 133 | 384 | 390 | 114 | 318 | 4 | 5/16 Whit. |
| **90 CSBA** | 133 | 530 | 510 | 114 | 457 | 4 | 3/8 Whit. |

## SPREADER BOXES

Cast metal split pattern, supplied with fixing bolts and plain bushes. Two types are available, suitable for straight or angled entry. They permit conductor spreading of larger PVC cables and fit directly on to Glasgow fuse-switch-disconnectors and switch-disconnectors.





| LIST NO. | | | | |
|---|---|---|---|---|
| **405 APL** | for fitting | BW40 | to | 50 CSB(A) |
| **406 APL** | | BW40 | | 60 CSB(A) |
| **407 APL** | | BW40 | | 70 CSB(A) |
| **505 APL** | | BW50 | | 50 CSB(A) |
| **506 APL** | | BW50 | | 60 CSB(A) |
| **507 APL** | | BW50 | | 70 CSB(A) |
| **509 APL** | | BW50 | | 90 CSB(A) |
| **637 APL** | | BW63 | | 70 CSB(A) |
| **639 APL** | | BW63 | | 90 CSB(A) |
| **757 APL** | | BW75 | | 70 CSB(A) |
| **759 APL** | | BW75 | | 90 CSB(A) |

## ADAPTOR PLATES

Available for fitting to spreader boxes, tapped to receive Type B compression glands to BS6121: Part 1. Supplied complete with fixing bolts.

Recommendations for suitable glands can be provided if required.

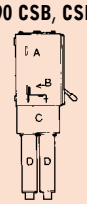
## GLASGOW SPARES

Standard spares packs available via the sales office. Other spares are available on request.

| DESCRIPTION NOMINAL UNIT RATING Ie | LIST NO. |
|---|---|
| **Moving contact fuse carrier; 1 per pole** | |
| 63A | **EBK110SP** |
| 100A | **0BK103SP** |
| 160...200A | **EBK105SP** |
| 315...400A | **EBK113SP** |

| DESCRIPTION NOMINAL UNIT RATING Ie | LIST NO. |
|---|---|
| **Fixed contact base complete; 1 per pole** | |
| 63...100A | **102GCEBSP** |
| 160...200A | **202GCEBSP** |
| 315...400A (2 per pole) | **402GCEBSP** |

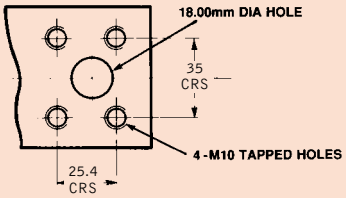
All units are supplied fitted with fuselinks or switch links.

| NOMINAL UNIT RATING, Ie | POLES | FUSE-SWITCH-DISCONNECTOR LIST NO. | SWITCH-DISCONNECTOR LIST NO. | EXTENSION BOXES FOR PVC COPPER OR ALUMINIUM CABLES | SPREADER BOXES (CSB - STRAIGHT) (CSBA - ANGLED) | SUITABLE MEM FUSELINKS |
|---|---|---|---|---|---|---|
| 63A | SPSN | **61 GNC** | - | **1PCB** Not required for copper cables or al. below 35mm² | - | **SB3** and **SB4** |
| | DP | ★ | - | | - | |
| | TPN | **63 GNC** | **63GNL (125A, AC21)** | **2PCB** Not required for copper cables or al. below 35mm² | or **50 CSB, CSBA** | |
| | TPSN | **64 GC** | - | | - | |
| 100A | SPSN | **101 GNC** | - | **1PCB** Not required for copper cables or al. below 50mm² | - | **SB3** **SB4** **SO** **SD5** |
| | DP | ★ | - | | - | |
| | TPN | **103 GNC** | **103 GNL (125A, AC21)** | **2PCB** Not required for copper cables or al. below 50mm² | or **50 CSB, CSBA** | |
| | TPSN | **104 GC** | - | | | |
| 160A | SPSN | **151 GNC** | 160A switch links are not available - use **203 GNL** | **2PCB** Not required for copper cables | or **50 CSB, CSBA** | **SF3** to **SF6** |
| | DP | ★ | | | | |
| | TPN | **153 GNC** | | **3PCB** Not required for copper cables | or **60 CSB, CSBA** | |
| | TPSN | **154 GC** | | | | |
| 200A | SPSN | **201 GNC** | - | **2 PCB** | or **50 CSB, CSBA** | **SF3** to **SF6** |
| | DP | ★ | - | **2 PCB** | or **50 CSB, CSBA** | |
| | TPN | **203 GNC** | **203 GNL (315A, AC21)** | **3 PCB** | or **60 CSB, CSBA** | |
| | TPSN | **204 GC** | - | **3 PCB** | or **60 CSB, CSBA** | |
| 315A | TPN | **303 GNC** | 315A switch links are not available - use **403 GNL** | **4 PCB** | or **70 CSB, CSBA** | **SF3** to **SF7** |
| | TPSN | **304 GC** | | **4 PCB** | or **70 CSB, CSBA** | |
| 400A | TPN | **403 GNC** | **403 GNL (630A, AC21)** | **4 PCB** | or **70 CSB, CSBA** | **SF3** to **SF8** |
| | TPSN | **404 GC** | - | **4 PCB** | or **70 CSB, CSBA** | |
| 500A | TPN | **503 GNC** | 500A switch links are not available - use **603 GNL** | **5 PCB** For parallel cables use: 6 PCB + 802 GCC + 2 x 90 CSB, CSBA PARALLEL CABLE CONNECTION A = 803GNC B = 802GCC C = 6PCB D = 90CSB/A  | or **90 CSB, CSBA** | **SH8** and **SH9** |
| | TPSN | **504 GC** | | | | |
| 630A | TPN | **603 GNC** | **603 GNL (1000A, AC21)** | | | |
| | TPSN | **604 GC** | - | | | |
| 800A | TPN | **803 GNC** | **803 GNL (1000A, AC21)** | | | **SH8 to SH10** |
| | TPSN | **804 GC** | - | | | |

★ If DP fuse-switch-disconnectors are required, use SPSN and replace the supplied switch link with a compatible fuselink.

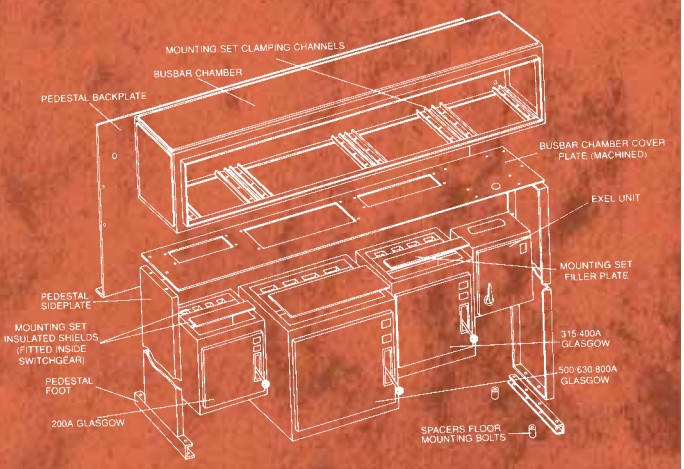
802 GCC is a four-phase set containing 8 copper connectors, fixings and M16 cable studs.

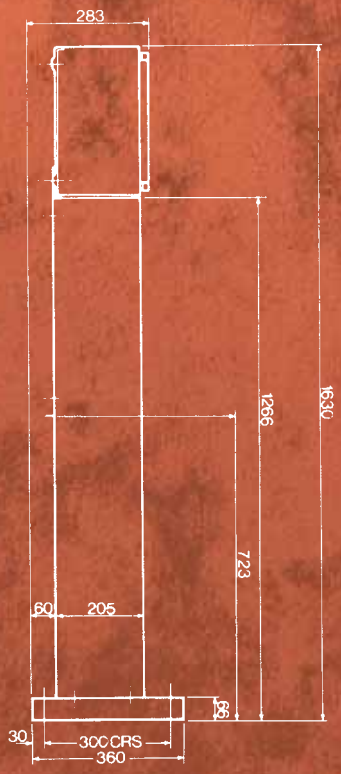
PCB extension boxes are empty.

| Recommendations for compression glands in compliance with BS6121:Part 1<br>COMPRESSION GLANDS FOR PVC SWA STRANDED:<br>CABLE mm² | 2-CORE | 4-CORE | ADAPTORS FOR GLANDS TO FIT SPREADER BOXES | COPPER SWITCH LINKS | COPPER SOCKETS TYPICAL CRIMPING | SOLID AL. SOCKETS TYPICAL CRIMPING | STUD SIZE |
|---|---|---|---|---|---|---|---|
| 16 | BW20 | BW25 | ★★ | 63 MLK | Not required Surface mounting unit has tunnel - type terminals (50mm²) | Swage and fit brass sleeve for cables up to 95mm² | Tunnel Terminal |
| 25 | BW25 | BW32 | ★★ | | | | |
| 35 | BW25 | BW32 | ★★ | | | | |
| 25 | BW25 | BW32 | ★★ | 100 MLK | Not required Surface mounting unit has tunnel- type terminals (50mm²) | Swage and fit brass sleeve for cables up to 95mm² | Tunnel Terminal |
| 35 | BW25 | BW32 | ★★ | | | | |
| 50 | BW32 | BW40 | 405 APL | | | | |
| 50 | BW32 | BW40 | ★★ 405 APL | 200 MLK | ERMA 41189 (95mm²) | AWCO 2 SLM 95 | M10 |
| 70 | BW32 | BW40 | ★★ 405 APL | | | | |
| 95 | BW40 | BW50 | 405 APL 505 APL | | | | |
| 50 | BW32 | BW40 | ★★ 406 APL | | | AWCO 4 SLM 95 | |
| 70 | BW32 | BW40 | ★★ 406 APL | | | | |
| 95 | BW40 | BW50 | 406 APL 506 APL | | | | |
| 70 | BW32 | BW40 | ★★ 405 APL | 200 MLK | ERMA 41209 (150mm²) | AWCO 2 SLM 95 | M10 |
| 95 | BW40 | BW50 | 405 APL 505 APL | | | | |
| 120 | BW40 | BW50 | 405 APL 505 APL | | | | |
| 70 | BW32 | BW40 | ★★ 406 APL | | | AWCO 4 SLM 150 | |
| 95 | BW40 | BW50 | 406 APL 506 APL | | | | |
| 120 | BW40 | BW50 | 406 APL 506 APL | | | | |
| 150 | BW50 | BW50 | 506 APL | | | | |
| 150 | - | BW50 | 507 APL | 400 MLK | ERMA 41735 (300mm²) | AWCO 4 SLM 300 | M14 |
| 185 | - | BW63 | 637 APL | | | | |
| 240 | - | BW63 | 637 APL | 400 MLK | ERMA 41735 (300mm²) | AWCO 4 SLM 300 | M14 |
| 300 | - | BW75 | 757 APL | | | | |
| 240 | - | BW63 | 639 APL | 630 MLK | Each copper terminal plate has 1-M16 x 50mm bolt, nut and washers for single hole sockets. 4-M10 tapped holes are also provided for 4 hole sockets or solid copper.   | | |
| 300 | - | BW75 | 759 APL | | | | |
| 400 | - | BW75 | 759 APL | | | | |
| 2/150 | - | BW50 | 2 x 509 APL | 630 MLK | | | |
| 2/185 | - | BW63 | 2 x 639 APL | | | | |
| 2/240 | - | BW63 | 2 x 639 APL | 800 MLK | | | |
| 2/300 | - | BW75 | 2 X 759 APL | | | | |

★★ Sufficient spreading space in switch-disconnector units to mount 'B' gland on to enclosure.

N.B. The details relating to sockets and glands refer to the maximum size of cable for each unit. For details of glands and sockets for smaller cables please refer to gland/socket manufacturer's data.




The Eaton MEM busbar chamber system is designed to provide either compact, wall-mounting installations or - by using optional pedestal sets - easily assembled switchboards.

Every facility is provided to enable Eaton MEM switchgear and distribution gear to be mounted easily and economically to busbar chambers which can be applied either to a suitable load-bearing vertical surface; or, by means of a pedestal set, affixed to a vertical surface which need not be load-bearing.

## BUSBAR CHAMBERS

These are produced in 100, 200, 400, 630 and 800 Amp. ratings and in four nominal lengths (see illustration on page 11). 100, 200 and 400 Amp units are available in all four sizes; 630 and 800 Amp ratings are offered in the three longest units only.

All units in the range share the same height and depth dimensions. Similarly the twin busbars are located in precisely the same positions throughout the range and vary in size only in their front-to-back dimensions according to rating.

Detachable end plates enable all units to be extended by coupling to a second busbar chamber using extension sets. Both top and bottom plates are also readily detachable so that marking out and machining can be carried out conveniently on a bench to accommodate Eaton MEM switchgear either above or below the chamber. Complete mounting kits, including templates, are available for mounting all Exel and Glasgow switchgear.

Eaton MEM busbar chambers are fabricated from rust-protected sheet steel with a light grey paint finish. They have been type tested to BSEN60439-1 with a rated conditional short circuit current rating of 63kA at Ue 550V and a rated short-time withstand current Icw 20 times nominal rated current for one second. They are designed for use in factory-built assemblies to BSEN60439-1.

All chambers are subjected to an on-line dielectric test unit which checks earth continuity and provides a high voltage test between poles; and from poles to earth.

Rated insulation voltage 660V.

## PEDESTAL AND BACK-PLATE SETS

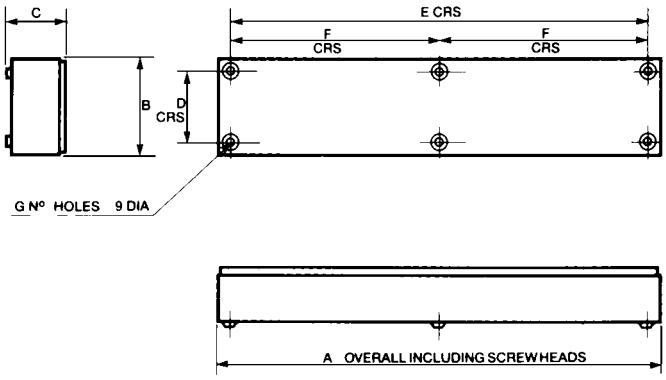
Pedestal and back-plate sets are available to accommodate 1800, 1350 and 900mm nominal length Eaton MEM busbar chambers in all ratings. These sets enable complete industrial switchboards to be built up easily and at competitive cost to produce a ready-painted unit of pleasing appearance.

It is recommended that such switchboards are secured against a wall although this need not be a load-bearing structure. Switchgear of 315A and above must be mounted on the underside of the BBC and fastened to the pedestal backplate. Each set comprises two pedestal sideplates and feet plus a pedestal backplate, all ready drilled; together with all necessary fastenings and spacers for floor-mounting bolts. Components are of rust-protected sheet steel with light grey paint finish.

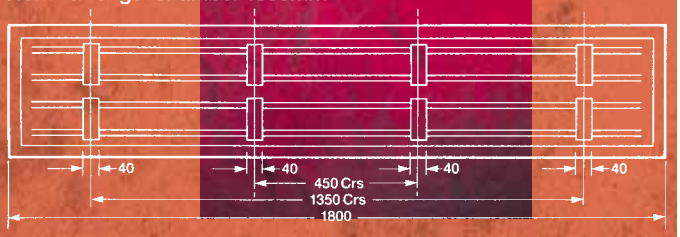
| NOMINAL LENGTH OF BUSBAR CHAMBER | PEDESTAL SET LIST NO. |
|---|---|
| 900mm | **31 BBPU** |
| 1350mm | **41 BBPU** |
| 1800mm | **61 BBPU** |

| NOMINAL UNIT RATING | LIST NO. ACCORDING TO NOMINAL LENGTH, mm | | | |
|---|---|---|---|---|
| Ie | 550 | 900 | 1350 | 1800 |
| 100A | **142 BBC** | **143 BBC** | **144 BBC** | **146 BBC** |
| 200A | **242 BBC** | **243 BBC** | **244 BBC** | **246 BBC** |
| 400A | **442 BBC** | **443 BBC** | **444 BBC** | **446 BBC** |
| 630A | | **643 BBC** | **644 BBC** | **646 BBC** |
| 800A | | **843 BBC** | **844 BBC** | **846 BBC** |

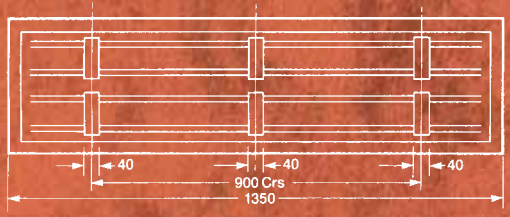
| NOMINAL LENGTH | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm |
| 1800 | 1812 | 364 | 222 | 280 | 1724 | 862 | 6 |
| 1350 | 1362 | 364 | 222 | 280 | 1274 | - | 4 |
| 900 | 912 | 364 | 222 | 280 | 824 | - | 4 |
| 550 | 562 | 364 | 222 | 280 | 474 | - | 4 |



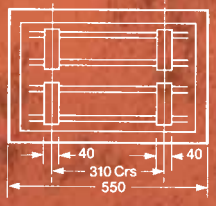

Nominal length chamber 1800mm



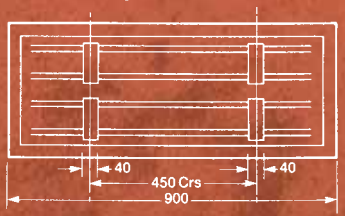

Nominal length chamber 1350mm




Nominal length chamber 550mm




Nominal length chamber 900mm

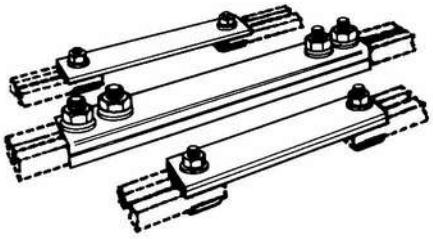




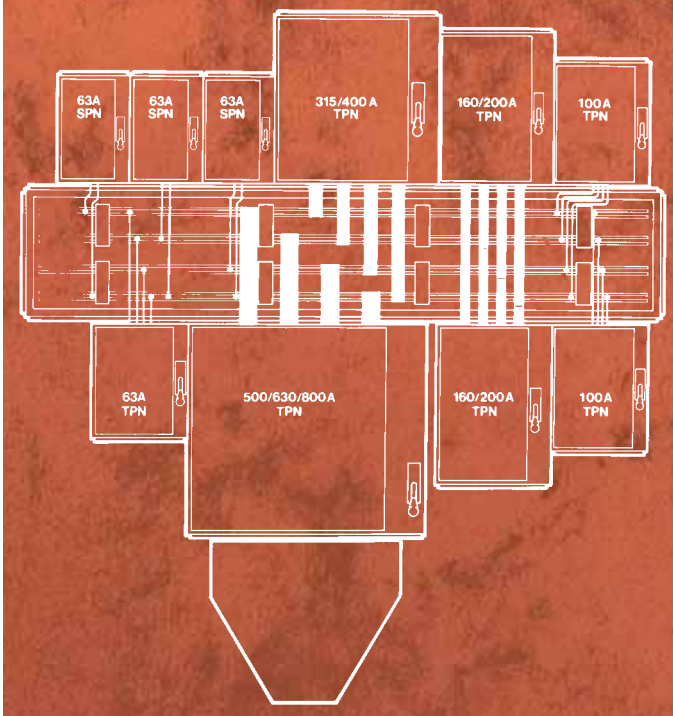
## BUSBAR CHAMBER EXTENSION SETS

Each unit can be coupled to any other Eaton MEM chamber in the range of the same rating by removing adjacent end plates and using the appropriate busbar chamber extension set.

These comprise a set of four copper links complete with all necessary clamps, washers and fasteners plus fitting instructions.



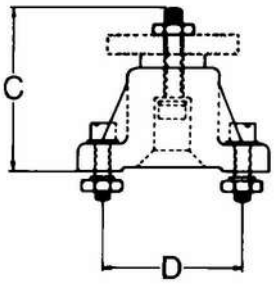
| NOMINAL RATING Ie | LIST NO. |
|---|---|
| 100A | **21 BBL** |
| 200A | **21 BBL** |
| 400A | **41 BBL** |
| 630A | **81 BBL** |
| 800A | **81 BBL** |

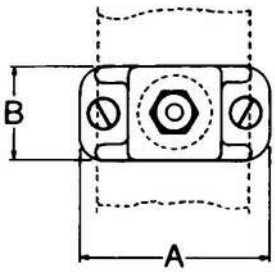



N.B. The Glasgow units shown above are drawn to scale. This illustration is intended for use as a guide when planning installations.

## BUSBAR SUPPORTS

These porcelain supports are suitable for use with flat busbars only and not with Eaton MEM multiple type bars.




| LIST NO. | DIMENSIONS A mm | B mm | C mm | D mm | BUSBAR FIXING BOLT | SUITABLE BUSBAR SECTION mm |
|---|---|---|---|---|---|---|
| **10 BM** | 73 | 35 | 60 | 54 | 1/4" Whit | 32 x 6.4 |
| **10 BMD** | 73 | 35 | 79 | 54 | 3/8" Whit | 51 x 6.4 |
| **10 BML** | 95 | 51 | 79 | 64 | 3/8" Whit | Larger busbars |

## CONNECTION SETS FOR GLASGOW FUSE-SWITCH-DISCONNECTORS & SWITCH-DISCONNECTORS

Cable clamps covering all ratings are available as detailed opposite for switchgear up to 200A. For connecting Glasgow units of 160A and above, solid copper connection sets are recommended as cost effective and convenient. These comprise pre-formed, insulated links in 4-pole sets supplied with all necessary clamps and fasteners.

The appropriate switchgear mounting set (41, 51 or 61 BBMS), as detailed below, must be used with connection sets for 160-800A Glasgow units.

| NOMINAL RATING Ie | CONNECTION SET LIST NO. |
|---|---|
| 160A, 200A | **200 FSCS** |
| 315A, 400A | **400 FSCS** |
| 500A, 630A, 800A | **800 FSCS** |



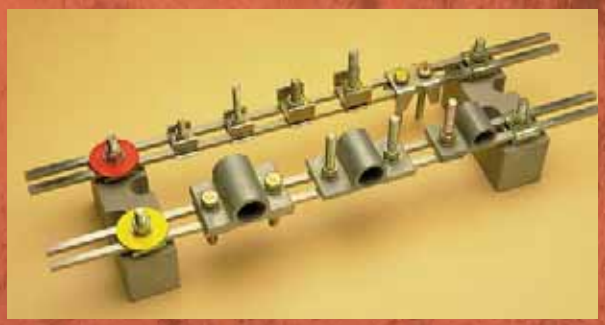
## BUSBAR CABLE CLAMPS AND SOCKETS

Incoming main cable clamps or sockets are not supplied due to the wide range which would be necessary to meet all requirements.

Busbar cable clamps comprise plated brass U-clamps and steel slides with all bolts and washers. They are suitable for the connection of small solid or stranded copper conductors and also aluminium conductors using a barrier grease. Busbar cable sockets are plated brass castings complete with clamps and fixings, suitable for the termination of either copper or aluminium conductors. Both clamps and sockets allow for clamping on the Eaton MEM busbars without drilling.

For cabling direct on to busbars of 630-800A rating a special cable extension is required which can be made to special order.

| NOMINAL RATING Ie | BORE DIA. mm | CAPACITY $mm^2$ | LIST NO. 100-200A BUSBARS | LIST NO. 400-800A BUSBARS |
|---|---|---|---|---|
| U-Clamps | | | | |
| 20A-63A | - | 25 | **2 BBCL** | **4 BBCL** |
| 63A-100A | - | 70 | **3 BBCL** | **5 BBCL** |
| 100A-200A | - | 120 | **6 BBCL** | **6 BBCL** |
| Sockets | | | | |
| 100A-200A | 16.7 | 150 | **62 BBSK** | **62 BBSK** |
| 200A-315A | 19.0 | 185 | **-** | **72 BBSK** |
| 315A-400A | 22.5 | 240 | **-** | **82 BBSK** |



## SWITCHGEAR MOUNTING SETS

Available for all ratings of Exel switch-disconnectors/switch-disconnector fuses and Glasgow fuse-switch disconnectors and switch-disconnectors enabling these units to be mounted simply and efficiently either above or below the busbar chamber.

Each mounting set comprises a template with instructions for machining the top/bottom plate of the busbar chamber; clamping channels, ready pierced for fasteners; all necessary fastenings; and -for Glasgow units - insulated shields and switch filler plates where appropriate.

| | NOMINAL RATING Ie | MOUNTING SET LIST NO. |
|---|---|---|
| Exel Switch-disconnector-fuses/ | 20A, 32A | **11 BBMS** |
| Switch-disconnectors | 63A, 100A, 125A | **21 BBMS** |
| Glasgow Fuse-switch-disconnectors/ | 63A, 100A | **31 BBMS** |
| Switch-disconnectors | 160A, 200A | **41 BBMS** |
| | 315A, 400A | **51 BBMS** |
| | 500A, 630A, 800A | **61 BBMS** |





Exel 2 switch-disconnectors and switch-disconnector-fuses are type tested to BSEN60947-3 and meet the constructional requirements for isolation as specified in BSEN60947-3.

Switches are of the quick make and break type, suitable for use on AC or DC. Units have removable moving contact assemblies to facilitate wiring.

Exel 2 surface-mounting enclosures are fabricated from rust-protected sheet steel with a light grey paint finish with removable top and bottom endplates incorporating knockouts (blank endplates available) and gasketed doors giving IP41 protection. Chromium-plated front operated handles, with "ON (I) OFF (O)" indication, and internal fixing enabling units to be mounted closely side by side. Interiors comprise porcelain bases fitted with non-ferrous conducting components.

## FUSES & FUSE CARRIERS

HRC fuse carriers are designed for offset contact fuse links to BS 88: Part 2. Eaton MEM HRC fuse links fitted to switch-disconnector-fuses are suitable on systems up to 415V AC. Eaton MEM fuses used in these products are also suitable for 250V DC systems. All performance tests have been carried out using Eaton MEM BS88 fuselinks. **The exclusive use of Eaton MEM fuselinks will extend the warranty period to 3 years.**

Units are fitted with HRC Fuselinks of maximum rating but will accept fuselinks of a lower rating, refer to the Paramount HRC Fuselinks section on page 24.

HRC pattern switchfuses are fitted with type SCH carriers (20A, 32A, 63A-moulded; 100A, 125A-porcelain). 100A units fitted with moulded carrier type 10SCH can be supplied to special order.

## MOTOR RATINGS

The motor ratings assigned to TPN switch-disconnector units are utilization category AC23A (frequent operation) to BSEN60947-3, which calls for make and break testing at 10 and 8 times rated current respectively for units having a motor rating up to and including 100 Amps.

Ratings for switch-disconnector-fuses are dependent on suitable HRC fuses being fitted.

## CABLE SIZE

Maximum cable sizes are: 20A-6mm2, 32A-10mm2, 63A-35mm2, 100/125A-70mm2.

## TYPE TEST COMPLIANCE WITH STANDARDS

This range has been satisfactorily type-tested in accordance with BSEN60947-3 WITH MEM HRC fuselinks fitted.

## OPERATIONAL PERFORMANCE

In accordance with BSEN60947-3 all ratings have been tested to values specified below:

| | |
|---|---|
| Operating cycles without current | 8500 |
| Operating cycles at rated current | 1500 |
| Total | 10000 |

## PERFORMANCE VALUES

| UNIT | SHORT TIME WITHSTAND CURRENT (R.M.S. AMPS FOR 1 SECOND) | SHORT CIRCUIT MAKING CAPACITY (PEAK AMPS AT 415V AC) | RATED FUSED SHORT-CIRCUIT (PROSPECTIVE R.M.S. AMPS AT 415V AC) |
|---|---|---|---|
| 20A | 640A | 2.96 kA | 80 kA |
| 32A | 960A | 5.12 kA | 80 kA |
| 63A | 2000A | 6.62 kA | 80 kA |
| 100/125A | 3750A | 8.42 kA | 80 kA |

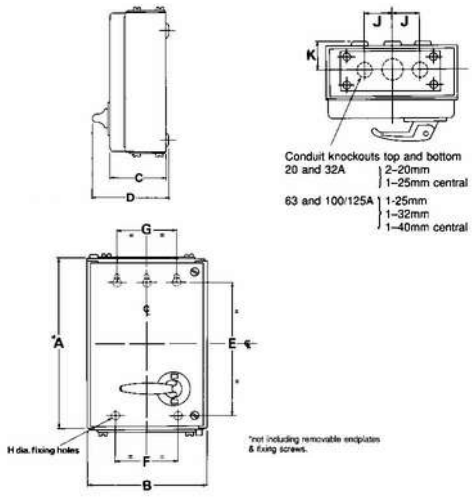
## LOCKING FACILITIES

All units are supplied with operating handles that provide lock-on, lock-off facilities, using padlock **PD4**. Door locking facilities, using padlock PD1, are available for fitment on site.

| NOMINAL UNIT RATING Ie | DOOR LOCKING DEVICE | PADLOCK |
|---|---|---|
| 20A/32A | **4 LD** | **PD1** |
| 63A/100A/125A | **5 LD** | |

| NOMINAL RATING Ie | UTILIZATION CATEGORY AT Ue 415V TO BSEN60947-3 | | 250V DC RATING TO BS5419 | POLES | SWITCH-DISCONNECTOR-FUSE-HRC | MEM HRC FUSES FITTED | SWITCH-DISCONNECTOR | BLANK ENDPLATE |
|---|---|---|---|---|---|---|---|---|
| | AC22A | AC23A | DC23 | | LIST NO. | | LIST NO. | |
| 20A | 20A | - | 20A# | SPSN | **15KXSC2F*** | 20SA2 | **-** | EP 842 |
| | 20A | - | 20A# | DP | **15KXDC2F** | 20SA2 | **15AXD2** | EP 842 |
| | 20A | 11A | - | TPN | **15KXTNC2F** | 20SA2 | **15AXTN2** | EP 842 |
| 32A | 32A | - | 32A | SPSN | **30KXSC2F** | 32SB3 | **-** | EP 842 |
| | 32A | - | 32A | DP | **30KXDC2F** | 32SB3 | **30AXD2** | EP 842 |
| | 32A | 22A | - | TPN | **30KXTNC2F** | 32SB3 | **30AXTN2** | EP 842 |
| 63A | 63A | - | 63A | SPSN | **60KXSC2F** | 63SB4 | **-** | EP 539 |
| | 63A | - | 63A | DP | **60KXDC2F** | 63SB4 | **60AXD2** | EP 539 |
| | 63A | 39A | - | TPN | **60KXTNC2F** | 63SB4 | **60AXTN2** | EP 539 |
| 100A | 100A | - | 100A | SPSN | **100KXSC2F** | 100SD5† | **-** | EP 539 |
| | 100A | - | 100A | DP | **100KXDC2F** | 100SD5† | **100AXD2** | EP 539 |
| | 100A | 52A | - | TPN | **100KXTNC2F** | 100SD5† | **100AXTN2** | EP 539 |
| 125A | 125A | 52A | - | TPN | **125KXTNC2F** | 125SD6† | **125AXTN2** | EP 539 |

SPSN indicates switched neutral. †These units have dual fixings to accept SB3, SB4 and SO fuselinks. 2x M5 screws required #20A units are DC22. *Also available in red paint finish - **List No. 15KXSC2FRED.**




## DIMENSIONS

| CURRENT RATING A | A* mm | B mm | C mm | D mm | E mm | F mm | G mm | H mm | J mm | K mm |
|---|---|---|---|---|---|---|---|---|---|---|
| Switch-disconnectors | | | | | | | | | | |
| 20 | 159 | 193 | 92 | 127 | 112 | 114 | on℄ | 5.6 | 38.5 | 34 |
| 32 | 173 | 245 | 101 | 137 | 116 | 114 | 114 | 6.4 | 38.5 | 34 |
| 63 | 230 | 310 | 129 | 173 | 152 | 168 | 168 | 6.7 | 58 | 54 |
| 100/125 | 329 | 367 | 167 | 210 | 241 | 221 | 221 | 6.7 | 58 | 54 |
| Switch-disconnector-fuses | | | | | | | | | | |
| 20 | 219 | 193 | 92 | 127 | 171 | 114 | on℄ | 5.6 | 38.5 | 34 |
| 32 | 267 | 245 | 101 | 137 | 209 | 114 | 114 | 6.4 | 38.5 | 34 |
| 63 | 351 | 310 | 129 | 173 | 273 | 168 | 168 | 6.7 | 58 | 54 |
| 100/125 | 503 | 367 | 167 | 210 | 416 | 221 | 221 | 6.7 | 58 | 54 |

## EXEL 2 SPARES

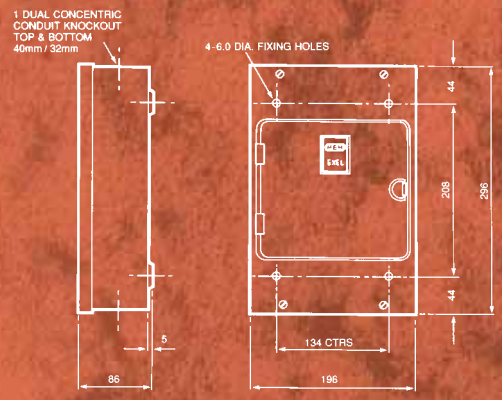
Standard spares packs available via the sales office. Other spares are available on request.

| DESCRIPTION | QUANTITY REQUIRED | LIST NO. |
|---|---|---|
| Moving contact assembly | | |
| 20A | 1 | **0LV727SP** |
| 32A | 1 | **0LV728SP** |
| 63A | 1 | **0LV725SP** |
| 100/125A | 1 | **0LV726SP** |
| Switch base with arc shroud | | |
| 32A | 1 per pole | **230AXEBSP†** |
| 63A | 1 per pole | **260AXEBSP†** |
| 100/125A | 1 per pole | **2100AXEBSP†** |
| 100/125A | 1 per pole | **2100AXDEBSP** |

†1 required for switched neutral pole on SPSN switchfuses.

| DESCRIPTION | QUANTITY REQUIRED | LIST NO. |
|---|---|---|
| Combined switch/fusebase with arc shroud | | |
| 32A | 1 per pole | **230KXEBSP** |
| 63A | 1 per pole | **260KXEBSP** |
| Fusebase only | | |
| 100/125A | 1 per pole | **100MBDEBSP** |
| Arc shroud only | | |
| 32A | 1 per pole | **SH265SP** |
| 63A | 1 per pole | **SH754SP** |
| 100/125A | 1 per pole | **CV1109SP** |





DIMENSIONS 100 ESSCF

## SPSN SWITCHFUSE

A surface mounting switch - disconnector - fuse in rust-protected sheet steel with a light grey paint finish. Endplates incorporate dual concentric knockouts for cable entry. A hinged secondary cover allows access to switch and fuse carrier.

Designed for offset contact fuselinks to BS88: Part 2. The moulded fuse unit is shrouded to prevent accidental contact with live parts.

Units are supplied as standard with a 80A or 100A fuselink fitted List No. 80SO or 100SO. (2-63A SB3/SB4 fuselinks may be site fitted if required.)

A double pole isolating switch is fitted, type tested to BSEN60947-3 with a utilization category AC22A having a rated operational current Ie 240V and a conditional short circuit rating of 16kA.

A dolly locking device is available **List No. AL1** for use with padlock **List No. PD2**.

Maximum cable sizes are:- incoming cables 50mm2, outoing cables 35mm2.

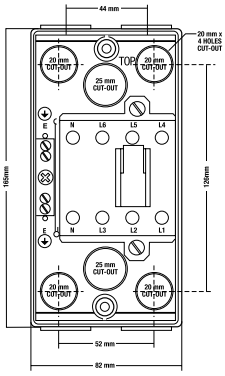
| NOMINAL RATING Ie | LIST NO. |
|---|---|
| 80A | **80ESSCF** |
| 100A | **100ESSCF** |




## MEMPROOF ENCLOSED DISCONNECTORS

Memproof enclosed switch - disconnectors are compliant with IEC 60947-3. The enclosures provide high impact resistance and have an IP57 rating. Each unit is supplied with fixed earth and isolating neutral and has facilities for locking.

| NOMINAL RATING Ie | LIST NO. | DIMENSIONS (mm) H | W | D |
|---|---|---|---|---|
| Double pole | | | | |
| 20A | **MP202** | 165 | 82 | 81 |
| 35A | **MP352** | 165 | 82 | 81 |
| 45A | **MP452** | 165 | 82 | 81 |
| 63A | **MP632** | 165 | 82 | 81 |
| **NOMINAL RATING Ie** | **LIST NO.** | **DIMENSIONS (mm) H** | **W** | **D** |
| Triple pole | | | | |
| 20A | **MP203N** | 165 | 82 | 81 |
| 35A | **MP353N** | 165 | 82 | 81 |
| 45A | **MP453N** | 165 | 82 | 81 |
| 63A | **MP633N** | 165 | 82 | 81 |



Suitable for on-load control of alternative supplies. Surface mounted, 4 pole on-load changeover switches have a rated voltage of 415V. Higher voltage ratings available, details on request.

Switches comply with BSEN60947-3, VDE0660. Double break blade & clip wiping action contact system ensures reduced contact bounce and the operator independent spring assisted mechanism ensures a positive and consistent switching action reducing arcing and contact wear.

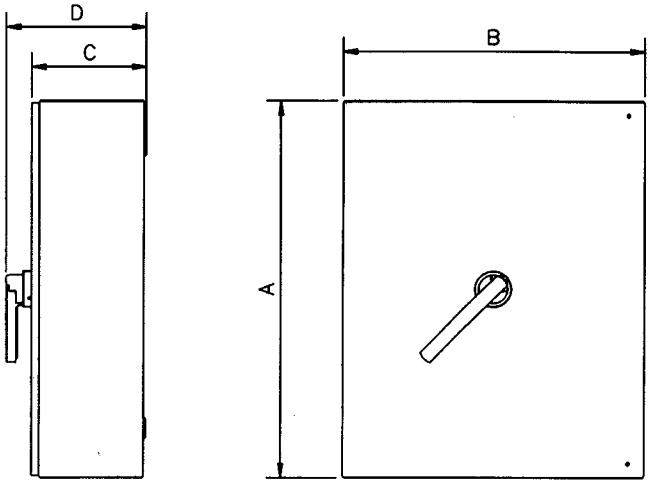
32 - 200A units are provided with cable links and 400 - 800A with solid links suitable for use on either side of the switch. In all cases ample cable space is provided for both incoming and outgoing cables.

Each unit is provided with an IP54 black handle and steel operating shaft. All handles are insulated and may be padlocked in the 'OFF' position. Clear 'IN' (I) and 'OFF' (O) indication is provided. Door interlocking is provided by the handle in the 'ON' position.

Enclosures are finished in light grey.



| NOMINAL RATING Ie | A mm | B mm | C mm | D mm | WEIGHT kg | LIST NUMBER |
|---|---|---|---|---|---|---|
| 32A | 320 | 372 | 170 | 225 | 9.6 | **432DA** |
| 63A | 320 | 372 | 170 | 225 | 10.0 | **463DA** |
| 100A | 370 | 372 | 170 | 225 | 10.6 | **4100DA** |
| 200A | 474 | 460 | 320 | 375 | 25 | **4200DA** |
| 400A | 800 | 550 | 245 | 300 | 46.4 | **4400DA** |
| 630A | 800 | 650 | 245 | 300 | 47.0 | **4630DA** |
| 800A | 800 | 650 | 245 | 300 | 51.0 | **4800DA** |




Note: Dimensions C & D measured form bottom of foot detail



## MEMLOK CHANGEOVER SWITCHES

Memlok changeover switches are available in non-padlockable moulded enclosures to IP65. Four pole two-way rotary cam switches comprise double break silver alloy contacts. Memlok units comply with BSEN60947-3.

| NOMINAL RATING Ie | LIST NO. | CONDUIT KNOCKOUTS | | DIMENSIONS (mm) | | |
|---|---|---|---|---|---|---|
| | | TOP | BOTTOM | H | W | D |
| Moulded four pole | | ISO thread | | | | |
| 20A | **200DAM** | 2 x 20 | 2 x 20 | 90 | 90 | 89★ |
| 25A | **250DAM** | 2 x 20 | 2 x 20 | 90 | 90 | 115★ |
| 40A | **400DAM** | 2 x 25<br>1 x 16 | 2 x 25<br>1 x 16 | 176 | 125 | 190★ |
| 63A | **630DAM** | 2 x 25<br>1 x 16 | 2 x 25<br>1 x 16 | 176 | 125 | 190★ |

★Including operating handle.




## FIREMAN'S EMERGENCY SWITCHES

DP switches have heavy duty cast iron enclosures finished in red, IP55. Surface and flush mounting versions available.

They comply with BS7671: 1992 (16th Edition of IEE Regulations) Clause 537 and 476-03-05 to 476-03-07. Switches are type-tested to BSEN60947-3 and have Utilization Category AC22, 250V.

They are of the quick make and break type, AC or DC. Pole operated ring handle automatically locks in the 'OFF' position.

White vitreous enamel nameplates with red lettering, for compliance with BS7671: 1992 Clause 537-04-06, of size 152mm x 102mm with 4-4.8mm fixing holes are available - **List No. 2FNP.**

For fire safety signs to BS5499-1 as required for Petrol Filling Stations under Health & Safety Executive Publication HS(G)41 reference should be made to specialist safety sign companies.

| NOMINAL RATING Ie | LIST NO | DIMENSIONS mm | | | CONDUIT ENTRY TOP & BOTTOM |
|---|---|---|---|---|---|
| | | H | W | D | |
| 20A | **215AF** | 143 | 159 | 102 | 1-20mm |
| 20A (Flush) | **220AFF*** | 178 | 165 | 132 | 1-20mm |
| 32A | **230AF** | 175 | 178 | 124 | 1-25mm |

*Recess required: 136H x 124W x 73D (mm)

## MAIN EARTHING TERMINAL BARS

Memform terminal bars are intended for the connection of circuit protective conductors, main bonding conductors and functional earthing conductors, etc., as referred to in IEE Wiring Regulation 542-04 (BS7671). A bolted link facilitates testing of earthing resistance. They are manufactured from solid hard drawn copper and mounted on painted steel supports complete with fixing holes and warning labels. For ease of installation all terminals are captive. Extra terminals are provided for supplementary bonding.



| MAXIMUM INCOMER Ie | SIZE AND NUMBER OF TERMINALS EARTHING | PROTECTIVE BONDING | OVERALL LENGTH (mm) | OVERALL WIDTH (mm) | COPPER THICKNESS (mm) | LIST NO. |
|---|---|---|---|---|---|---|
| 600A | 1 x M10 | 3 x M10<br>2 x M6 | 320 | 32 | 31.75 x 6.35 | **600MEB** |
| 1000A | 2 x M12<br>1 x M8 | 3 x M12<br>8 x M8 | 665 | 51 | 50.8 x 6.35 | **1000MEB** |

## EARTH LEAD ADAPTORS

Intended for use with moulded enclosures. They allow earth continuity to be maintained by providing a flexible earth lead which can be terminated inside the enclosure. They are manufactured from brass.



20/20mm thread. **List No. 2020AFEW**
25/25mm thread. **List No. 2525AFEW**

## GREY ENAMEL PAINT

Aerosol spray paint, air drying, dark grey to RAL 7015. **List No. 1AP**.
Light grey. **List No. 2AP**

Half-litre tin of dark grey enamel air drying paint to RAL 7015 for application by brush. **List No. 3EN**.

# EXEL DISTRIBUTION FUSEBOARDS






The Exel fuseboard range is available with standard enclosures to IP4X for the complete range of 20A to 200A distribution boards.

A variety of extra features have been incorporated in the range including increased cabling space, superior door latches and locking devices (there is a choice of barrel lock or padlocking device), improved lid hinges and a unique safety carrier which effectively blanks off a single fuse-way allowing the circuit to be worked on in safety. Safety carriers have no provision for accepting a fuselink.

The Exel distribution fuse boards are designed to comply with the requirements of BS5486: Part 11: 1989. All live parts are fully shrouded so that additional circuits may be wired and connected in safety whilst the existing circuits remain live and on load. The type of enclosure available gives protection to IP4X and is supplied with removable endplates.

The range covers a wide variety of ratings from 20-200A; 20A and 32A with up to 12 ways in SPN and TPN configurations; 63A up to 10 ways, 100A up to 8 ways and 200A up to 6 ways in TPN configurations.

All ratings available with moulded HRC carriers to BS88: Part 2. Testing has been carried out using Eaton MEM 'S' type HRC fuselinks.

The exclusive use of Eaton MEM fuselinks will extend the warranty period to 3 years.

Fuse base mouldings are of high quality thermosetting material. The fuse units have skirted fuse carriers to prevent accidental contact with live parts when inserting or withdrawing a carrier. Separate shields are provided for the base contacts to prevent accidental contact when the carrier has been withdrawn. All fuseboards are suitable for systems with a rated insulation voltage Ue 660V AC, 500V DC.

## SAFETY CARRIERS

A range of safety carriers is available for insertion in a fusebase when its normal fuse carrier has been removed for isolation. The safety carriers are marked yellow for identification and have no provision for fuselink fixing.

## ENCLOSURES

Rust protected sheet steel IP4X enclosures have a light grey paint finish and are fitted with internal fixing holes. Enclosures have a robust, reliable construction.

Enclosures for units from 20A to 100A are of all welded construction, 200A IP4X units have cast corner pieces. Removable top and bottom endplates incorporate knockouts on 20A and 32A units while 63-200A boards have blank endplates. Blank endplates are available on request for 20A and 32A boards.

The enclosure allows gasketed access doors to be reversed for left hand or right hand opening.

All sides are free from external projections and fuseboards can be mounted in inverted form if required.

## MAIN TERMINATIONS

32A, 2-way fuseboards have the main phase termination (tunnel type) attached to the fusebanks. All other fuseboards have the main terminations mounted on the back of the enclosure and are intended for use with cable sockets (sweating or crimp type) which are not provided. Busbar and main terminals are fully shrouded. A cable shroud to cover the cable socket is provided.

Earthing and Neutral Bars

Multi-way earthing bars are fitted with an integral earth bolt and have an outgoing terminal per fuse. They are rail mounted adjacent to the fully rated neutral bars. Neutral bars have main terminals of the same capacity as the phase terminals and have one outgoing terminal per fuse. Earth/neutral bar rails are fitted at the bottom of enclosures on 20A and 32A fuseboards and at the top on all others.

## ADDITIONAL OUTGOING CIRCUITS

All 20A and 32A units except 2-way versions have a main terminal suitable for looping out at full terminal capacity. This facility permits adjacent mounting of two fuseboards to extend outgoing circuits up to 24 way max. by the suggested method illustrated.

Additional shrouds (one per phase) required when using looping facility **List No. SH1539**.

## LID LOCKING FACILITIES

A choice of locking device is available as follows:-

| | |
|---|---|
| Barrel lock for 20A to 100A units | **List No. 1CLX** |
| Padlock bracket for 20A to 100A units | **List No. 9LD** |
| Padlock bracket for 200A units | **List No. 8LD** |
| Padlock for use with above | **List No. PD1** |

## DIVERSITY FACTORS

| MAXIMUM RATED OPERATIONAL CURRENT PER WAY Ie | | | | | |
|---|---|---|---|---|---|
| NO. OF WAYS | 200A | 100A | 63A | 32A | <20A |
| 2 | 1.0 | 1.0 | 1.0 | 1.0 | - |
| 3 | 0.9 | 1.0 | - | - | - |
| 4 | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 |
| 6 | 0.66 | 0.8 | 0.8 | 0.8 | 0.8 |
| 8 | - | 0.66 | 0.8 | 0.8 | 0.8 |
| 10 | - | - | 0.66 | 0.66 | - |
| 12 | - | - | - | 0.66 | 0.66 |
| Therefore, incomer rating = | | | | | |
| 2 | 400A | 200A | 126A | 64A | - |
| 3 | 540A | 300A | - | - | - |
| 4 | 640A | 360A | 227A | 115A | 72A |
| 6 | 800A | 480A | 302A | 154A | 96A |
| 8 | - | 528A | 403A | 205A | 128A |
| 10 | - | - | 416A | 211A | - |
| 12 | - | - | - | 253A | 160A |

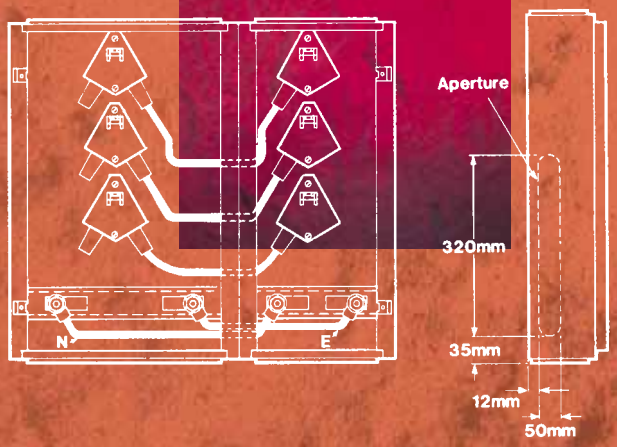
## EARTH BAR TERMINAL CAPACITIES

| | NOMINAL RATING OF FUSEBOARD Ie | | | | |
|---|---|---|---|---|---|
| | 20A | 32A | 63A | 100A | 200A |
| Main (stud) | M10 | M10 | M10 | M10 | M10 |
| Outgoing, $mm^2$ | 10 | 10 | 25 | 25 | 70 |

## MAIN TERMINAL STUD SIZES

| | WAYS | NOMINAL RATING OF FUSEBOARD Ie 20A | 32A | 63A | 100A | 200A |
|---|---|---|---|---|---|---|
| SPN | 4 | M10 | M10 | - | - | - |
| | 6 | | | - | - | - |
| | 8 | | | - | - | - |
| | 12 | | | - | - | - |
| TPN | 2 | - | ★★ | M12 | M12 | M16 |
| | 3 | - | - | | | |
| | 4 | M10 | M10 | | | |
| | 6 | | | | M16 | |
| | 8 | | | M16 | | - |
| | 10 | | | | - | - |
| | 12 | | | | - | - |

★★Tunnel terminal 35mm2 max.




## EXEL SPARES

Standard spares packs available via the sales office. Other spares are available on request.

| DESCRIPTION | LIST NO. |
|---|---|
| Earth bars | |
| 20/32A fuseboards | |
| SP outgoing ways: | |
| up to 12 | **ETM2209SP** |
| up to 18 | **ETM2210SP** |
| up to 24 | **ETM2211SP** |
| up to 36 | **ETM2212SP** |
| Neutral bars | |
| 20/32A fuseboards | |
| SP outgoing ways: | |
| up to 12 | **ETM2223SP** |
| up to 18 | **ETM2224SP** |
| up to 24 | **ETM2225SP** |
| up to 36 | **ETM2226SP** |
| Main incoming terminal block | |
| 20/32A fuseboards | **EBS843SP** |
| Blank endplates | |
| 20/32A fuseboards | |
| 4/6 way boards | **EP539** |
| 2/8 way boards | **EP879** |
| 10/12 way 20A; 10 way 32A boards | **EP880** |
| 12 way 32A boards | **EP881** |

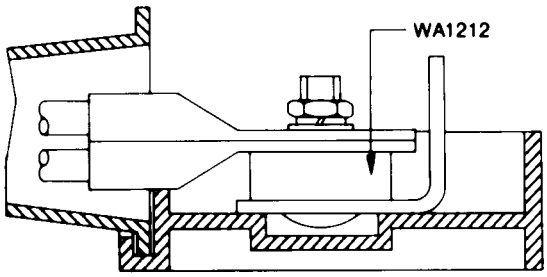
All units are supplied without fuselinks which must be ordered separately.

| NOMINAL RATING Ie | POLES | NO. OF WAYS | MAX. TERMINAL CAPACITY mm² (COPPER CABLES) MAIN | MAX. TERMINAL CAPACITY mm² (COPPER CABLES) OUTGOING | OUTGOING TERMINAL BORE DIA. mm | SUITABLE H.R.C. FUSELINKS | SPARE FUSE CARRIER | SAFETY CARRIER | LIST NO. WITHOUT FUSELINKS |
|---|---|---|---|---|---|---|---|---|---|
| IP4X Enclosures | | | | | | | | | |
| 20A | SPN | 4 | 95 | 6 | 4 | SA2 | 20 MFH | 20 MFS | **204XSNC** |
| | | 6 | | | | | | | **206XSNC** |
| | | 8 | 120 | | | | | | **208XSNC** |
| | | 12 | | | | | | | **212XSNC** |
| | TPN | 4 | 95 | 6 | 4 | | | | **204XTNC** |
| | | 6 | | | | | | | **206XTNC** |
| | | 8 | 120 | | | | | | **208XTNC** |
| | | 12 | | | | | | | **212XTNC** |
| 32A | SPN | 4 | 95 | 16 | 5.5 | SB3 | 32 MFH | 32 MFS | **304XSNC** |
| | | 6 | | | | | | | **306XSNC** |
| | | 8 | 150 | | | | | | **308XSNC** |
| | | 12 | | | | | | | **312XSNC** |
| | TPN | 2 | 35 (8mm dia.) | 16 | 5.5 | | | | **302XTNC** |
| | | 4 | 95 | | | | | | **304XTNC** |
| | | 6 | | | | | | | **306XTNC** |
| | | 8 | 150 | | | | | | **308XTNC** |
| | | 10 | | | | | | | **310XTNC** |
| | | 12 | | | | | | | **312XTNC** |
| 63A | TPN | 2 | 240 | 35 | 8 | SB3 and SB4 | 63 MFH | 63 MFS | **602XTNC** |
| | | 4 | | | | | | | **604XTNC** |
| | | 6 | | | | | | | **606XTNC** |
| | | 8 | 500 | | | | | | **608XTNC** |
| | | 10 | | | | | | | **610XTNC** |
| 100A | TPN | 2 | 240 | 70 | 12 | SD5★ | 100 MFH | 100 MFS | **1002XTNC** |
| | | 3 | | | | | | | **1003XTNC** |
| | | 4 | | | | | | | **1004XTNC** |
| | | 6 | 500† | | | | | | **1006XTNC** |
| | | 8 | | | | | | | **1008XTNC** |
| 200A | TPN | 2 | 630† | 150 | 18 | SF6 | 200 MFH | 200 MFS | **2002XTNC** |
| | | 3 | | | | | | | **2003XTNC** |
| | | 4 | | | | | | | **2004XTNC** |
| | | 6 | | | | | | | **2006XTNC** |

★SB3, SB4 and SO fuselinks may be fitted if used with adaptor - **List No. 100MFLK**

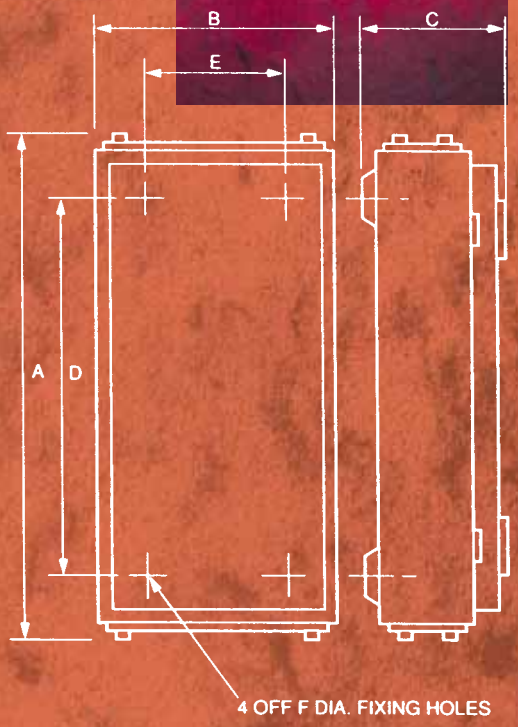
†Can be adapted to allow fitment of 2-240mm2 max. cable sockets with suitable copper spacing piece **List No. WA1212** (set of 4) - see diagram.

Adaptor clips (set of 2) enabling fitment of house service ferrule cap fuselinks to BS1361: 1971 Type 11a (60A) and type 11b (100A) : **63MFRCL** for 63A fuse carriers, **100MFRCL** for 100A fuse carriers.

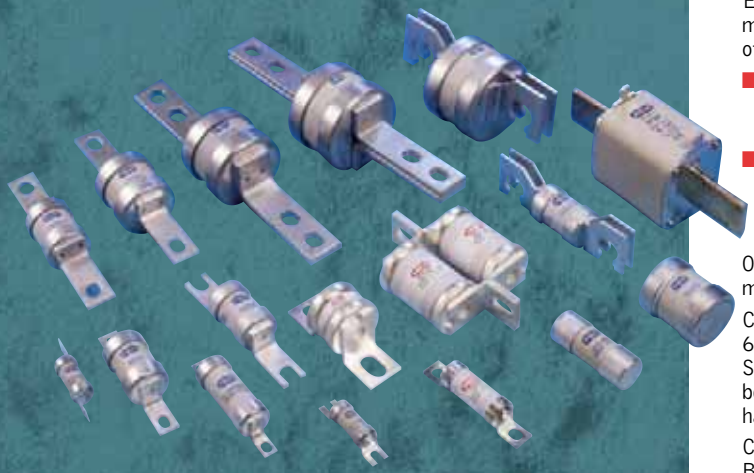


DIMENSIONS (MM) IP4X ENCLOSURES

| NOMINAL RATING Ie | POLES | NUMBER OF WAYS | A | B | C | D CRS | E CRS | F DIA. |
|---|---|---|---|---|---|---|---|---|
| 20A | SPN | 4 | 386 | 304 | 148 | 252 | 191 | 8 |
| | | 6 | | 304 | | | 191 | |
| | | 8 | | 368 | | | 255 | |
| | | 12 | | 448 | | | 335 | |
| | TPN | 4 | 631 | 304 | 148 | 442 | 191 | 8 |
| | | 6 | | 304 | | | 191 | |
| | | 8 | | 368 | | | 255 | |
| | | 12 | | 448 | | | 335 | |
| 32A | SPN | 4 | 386 | 304 | 148 | 252 | 191 | 8 |
| | | 6 | | 304 | | | 191 | |
| | | 8 | | 368 | | | 255 | |
| | | 12 | | 496 | | | 383 | |
| | TPN | 2 | 386 | 368 | 148 | 252 | 255 | 8 |
| | | 4 | 710 | 304 | | 576 | 191 | |
| | | 6 | | 304 | | | 191 | |
| | | 8 | | 368 | | | 255 | |
| | | 10 | | 448 | | | 335 | |
| | | 12 | | 496 | | | 383 | |
| 63A | TPN | 2 | 546 | 473 | 227 | 458 | 369 | 10 |
| | | 4 | 972 | 330 | | 884 | 226 | |
| | | 6 | | 330 | | | 226 | |
| | | 8 | | 473 | | | 369 | |
| | | 10 | | 473 | | | 369 | |
| 100A | TPN | 2 | 1066 | 549 | 227 | 978 | 445 | 10 |
| | | 3 | | 330 | | | 226 | |
| | | 4 | | 330 | | | 226 | |
| | | 6 | | 549 | | | 445 | |
| | | 8 | | 549 | | | 445 | |
| 200A | TPN | 2 | 1560 | 410 | 270 | 1334 | 206 | 10 |
| | | 3 | | 410 | | | 206 | |
| | | 4 | | 529 | | | 325 | |
| | | 6 | | 529 | | | 325 | |



# PARAMOUNT HRC CARTRIDGE FUSELINKS & FUSE UNITS



- The leading edge of HRC fuse technology
- Options to suit every application
- Compact 415V fuselinks
- NEW ferrule fuselinks
- New F type semi-conductor fuselinks
- Breaking capacity of 80kA at 415V
- Motor rated fuselinks
- New compact moulded HRC fuse units...
- Fully shrouded for safety
- For bolt-in & clip-in fuselinks

Eaton MEM's technical ability coupled with recent investment in manufacturing technology has lead to being able to offer an extensive range of up to date designs at the leading edge of fuse technology including...

- New general purpose 415V a.c 29 x 12.7mm ferrule fuselinks complying with BS EN 60269-1 (BS88: Part 1) and BS7654 with ratings from 2-32A. For use in industrial and commercial installations.
- New F type semiconductor protection fuselinks complying with IEC 60269-4 and BS88: Part 4. Ratings from 6-900A at 240V a.c. and 6-710A at 660/690V a.c. For the protection of semiconductor devices requiring high speed disconnection from faults.

Our comprehensive range offers a selection of fuses to cater for many applications:

Compact 415V a.c. S type industrial fuselinks complying with BS EN 60269-1 (BS88: part 1) or BS88: Part 2 with ratings from 2 to 1250A. Skilful design techniques have meant that power dissipation has frequently been reduced despite the significant reduction in barrel size. Many ratings have also been tested for use in circuits up to 250V d.c.

Compact 415V a.c. S type motor circuit protection fuselinks complying with BS EN 60269-1 (BS88: part 1) or BS88: Part 2 with ratings from 20M25A to 400M500A. This extended range of fuselinks is designed to withstand the inrush current associated with direct on line start motors whilst saving cost on the size of equipment to which they are fitted by virtue of their small dimensions.

Compact 240V and 415V a.c. SS, SN and SP type offset blade contact fuselinks complying with BS EN 60269-1 (BS88: part 1) or BS88: Part 6 with ratings from 2 to 63A for use in industrial and commercial installations.

550V a.c. S type industrial fuselinks complying with BS EN 60269-1 (BS88: part 1) or BS88: Part 2 with ratings from 2 to 800A are also available in the most commonly used fixing centres. Also rated at 250V d.c.

Compact 415V a.c. J type feeder pillar fuselinks complying with BS88: Part 5 for use by the Electricity Supply Industry in distribution systems. Ratings from 63-400A with 82mm fixing centres and 63-800A with 92mm fixing centres for wedge tightening contacts and 63-250A in ferrule form for single phase pole mounted cut outs.

NH type blade contact 500V a.c. fuselinks complying with IEC 60269-2-1 section 1 and with dimensions also to DIN43620/1. Ratings from 6-630A in size C00 to size 4. For use in industrial applications where European practice prevails.

Eaton MEM HRC fuselinks are manufactured to exacting standards using precision assembly methods and undergo rigorous quality checking before dispatch including resistance testing all production. This ensures that performance will be consistent and conform with published characteristics within close tolerances. Type tests on Eaton MEM equipment have been performed using Eaton MEM fuselinks and the exclusive use of Eaton MEM fuselinks in Eaton MEM equipment will extend the warranty period to 3 years.

Eaton MEM industrial and general purpose fuselinks have a breaking range and utilization category gG which replaces the old class Q1 fusing factor. "g" indicates a full range breaking capacity fuselink and "G" indicates a fuselink for general application.

Eaton MEM motor circuit protection fuselinks have a breaking range and utilization category gM indicating a full range breaking capacity fuselink for the protection of motor circuits. These fuselinks have a dual current rating separated by the letter "M".

The lower current rating is the maximum continuous rating which also determines the rating and size of equipment to which the fuse is fitted. The higher current rating is the time current characteristic of the fuselink which determines its ability to withstand the motor starting current. Their selection frequently permits the use of lower rated switch and/or fusegear than would be the case using gG fuselinks with a consequent cost saving. Type gG fuselinks however may still be used and are the preferred option for assisted start motors where starting currents are reduced.

Technical information for these products is available from Eaton MEM's Customer Services Department.

Eaton MEM fuselinks are designed and manufactured in accordance with a Quality Management System in accordance with ISO 9001 assessed by BSI. Most fuselinks are ASTA Certified for a breaking capacity of 80kA at 415V or 550V a.c. and are endorsed ASTA 20 CERT showing compliance with the rules of the ASTA 20 scheme which includes assessment of the Quality Management System to ISO 9002 and detailed auditing of fuselink manufacture.

Eaton MEM have for many years participated in developing and influencing fuse standards through EIEMA and BSI at national level and IEC at international level and therefore are able to produce designs incorporating forthcoming changes to standards.

## 415V INDUSTRIAL FUSELINKS

S-Type compact industrial bolted pattern fuselinks with offset contacts. ASTA 20 Certified or tested to BS EN 60269-1 (BS88: Part 1) or BS88: Part 2 for a breaking capacity of 80 kA at 415V a.c.

- These industrial bolted pattern fuselinks are of two types - with offset contacts of ratings 2-200A and with centre contacts of ratings 2-1250A.
- They are available to BS references A1 to A4, B1 to B4, C1 to C3, D1 and in certain other sizes.

| RATING Ie NORMAL | MOTOR | FIXING CENTRES (mm) | BS88 REF | LIST NO. | DIMENSIONAL EQUIVALENTS GEC/LAWSON | BRUSH/HAWKER | BUSSMANN/DORMAN |
|---|---|---|---|---|---|---|---|
| 2A | - | 44.5 | A1 | 2SA2 | NIT2 | 2F21 | NITD2 |
| 4A | - | | | 4SA2 | NIT4 | 4F21 | NITD4 |
| 6A | - | | | 6SA2 | NIT6 | 6F21 | NITD6 |
| 10A | - | | | 10SA2 | NIT10 | 10F21 | NITD10 |
| 16A | - | | | 16SA2 | NIT16 | 16F21 | NITD16 |
| 20A | - | | | 20SA2 | NIT20 | 20F21 | NITD20 |
| 20A | 25A | | | 20SA2M25 | NIT20M25 | 20M25F21 | NITD20M25 |
| 20A | 32A | | | 20SA2M32 | NIT20M32 | 20M32F21 | NITD20M32 |
| 25A | - | | - | 25SA2 | NIT25 | 25F21 | NITD25 |
| 32A | - | | - | 32SA2 | NIT32 | 32F21 | NITD32 |
| 32A | 40A | | - | 32SA2M40 | NIT32M40 | - | NITD32M40 |
| 32A | 50A | | - | 32SA2M50 | NIT32M50 | - | NITD32M50 |
| 32A | 63A | | - | 32SA2M63 | NIT32M63 | - | NITD32M63 |
| 2A | - | 73 | A2 | 2SB3 | TIA2 | 2H07 | AA02 |
| 4A | - | | | 4SB3 | TIA4 | 4H07 | AA04 |
| 6A | - | | | 6SB3 | TIA6 | 6H07 | AA06 |
| 10A | - | | | 10SB3 | TIA10 | 10H07 | AA010 |
| 16A | - | | | 16SB3 | TIA16 | 16H07 | AA016 |
| 20A | - | | | 20SB3 | TIA20 | 20H07 | AA020 |
| 25A | - | | | 25SB3 | TIA25 | 25H07 | AA025 |
| 32A | - | | | 32SB3 | TIA32 | 32H07 | AA032 |
| 32A | 40A | | | 32SB3M40 | TIA32M40 | 32M40H07 | AA032M40 |
| 32A | 50A | | | 32SB3M50 | TIA32M50 | 32M50H07 | AA032M50 |
| 32A | 63A | | | 32SB3M63 | TIA32M63 | 32M63H07 | AA032M63 |
| 35A | - | 73 | A3 | 35SB4 | TIS35 | - | - |
| 40A | - | | | 40SB4 | TIS40 | 40K07 | BA040 |
| 50A | - | | | 50SB4 | TIS50 | 50K07 | BA050 |
| 63A | - | | | 63SB4 | TIS63 | 63K07 | BA063 |
| 63A | 80A | | | 63SB4M80 | TIS63M80 | 63M80K07 | BA063M80 |
| 63A | 100A | | | 63SB4M100 | TIS63M100 | 63M100K07 | BA063M100 |
| 80A | - | 73 | - | 80S0 | 0S80/TIS80 | 80K07R | 0SD80 |
| 100A | - | | | 100S0 | 0S100/TIS100 | 100K07R | 0SD100 |
| 100A | 125A | | | 100S0M125 | 0S100M125/TIS100M125 | - | 0SD100M125 |
| 100A | 160A | | | 100S0M160 | - | - | 0SD100M160 |
| 125A | - | | | 125S0 | 00T125 | - | - |
| 160A | - | | | 160S0 | 00T160 | - | - |
| 200A | - | | | 200S0 | - | - | - |
| 32A | - | 94 | A4 | 32SD5 | TCP32 | 32L14 | CE035 |
| 40A | - | | | 40SD5 | TCP40 | 40L14 | CE040 |
| 50A | - | | | 50SD5 | TCP50 | 50L14 | CE050 |
| 63A | - | | | 63SD5 | TCP63 | 63L14 | CE063 |
| 80A | - | | | 80SD5 | TCP80 | 80L14 | CE080 |
| 100A | - | | | 100SD5 | TCP100 | 100L14 | CE0100 |
| 100A | 125A | | | 100SD5M125 | TCP100M125 | 100M125L14 | CE0100M125 |
| 100A | 160A | | | 100SD5M160 | TCP100M160 | 100M160L14 | CE0100M160 |
| 100A | 200A | | | 100SD5M200 | TCP100M200 | 100M200L14 | CE0100M200 |
| 125A | - | 94 | | 125SD6 | TFP125 | 125M14 | DE0125 |
| 160A | - | | | 160SD6 | TFP160 | 160M14 | DE0160 |
| 200A | - | | | 200SD6 | TFP200 | 200M14 | DE0200 |
| 200A | 250A | | | 200SD6M250 | TFP200M250 | 200M250M14 | DE0200M250 |
| 200A | 315A | | | 200SD6M315 | - | - | - |



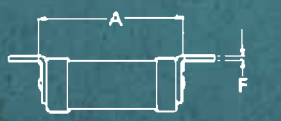


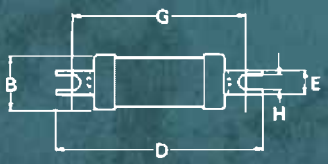




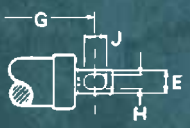
## DIMENSIONS

| LIST NO | A MAX. mm | B MAX. mm | D MAX. mm | E mm | F mm | G NOM. mm | H MM | J MM |
|---|---|---|---|---|---|---|---|---|
| SA2 | 33 | 14 | 54 | 11 | 0.8 | 44.5 | 4.8 | - |
| SA2M (25-40A) | 33 | 14 | 54 | 11 | 0.8 | 44.5 | 4.8 | - |
| SA2M (50-63A) | 36 | 17.5 | 55 | 11 | 1.2 | 44.5 | 4.8 | - |
| SB3 | 34 | 14 | 86 | 9 | 1.2 | 73 | 5.5 | 8 |
| SB3M | 38 | 17 | 86 | 9 | 1.2 | 73 | 5.5 | 8 |
| SB4 | 38 | 17 | 86 | 9 | 1.2 | 73 | 5.5 | 8 |
| SB4M | 45 | 27 | 91 | 13 | 1.6 | 73 | 5.8 | 10 |
| S0 (80-100A) | 45 | 27 | 91 | 13 | 1.6 | 73 | 5.8 | 10 |
| S0M | 45 | 27 | 91 | 13 | 1.6 | 73 | 5.8 | 10 |
| S0 (125-200A) | 48 | 30 | 90 | 19 | 3.2 | 73 | 5.8 | - |
| SD5 | 48 | 27 | 111 | 16 | 3.2 | 94 | 9 | - |
| SD5M | 48 | 30 | 111 | 19 | 3.2 | 94 | 9 | - |
| SD6 | 48 | 30 | 111 | 16 | 3.2 | 94 | 9 | - |
| SD6M | 48 | 40 | 111 | 19 | 3.2 | 94 | 9 | - |




SB3, SB3M, SB4, SB4M, SO (80-100A) & SOM types



## 550V INDUSTRIAL FUSELINKS

S-Type industrial bolted pattern fuselinks with offset contacts. ASTA 20 Certified or tested to BS EN 60269-1 (BS88: Part 1) or BS88: Part 2 for a breaking capacity of 80 kA at 550V a.c.





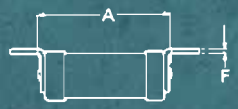


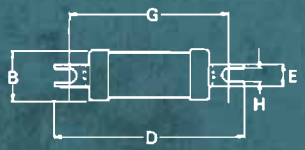


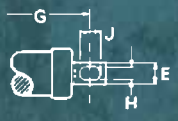
| RATING Ie NORMAL | MOTOR | FIXING CENTRES mm | BS88 REF | LIST NO. | DIMENSIONAL EQUIVALENTS GEC/LAWSON | BRUSH/HAWKER | BUSSMANN/DORMAN |
|---|---|---|---|---|---|---|---|
| 2A | - | 44.5 | A1 | **2SA2-550** | NIT2 | 2F21 | NITD2 |
| 4A | - | | | **4SA2-550** | NIT4 | 4F21 | NITD4 |
| 6A | - | | | **6SA2-550** | NIT6 | 6F21 | NITD6 |
| 10A | - | | | **10SA2-550** | NIT10 | 10F21 | NITD10 |
| 16A | - | | | **16SA2-550** | NIT16 | 16F21 | NITD16 |
| 20A | - | | | **20SA2-550** | NIT20 | 20F21 | NITD20 |
| 2A | - | 73 | A2 | **2SB3-550** | TIA2 | 2H07 | AA02 |
| 4A | - | | | **4SB3-550** | TIA4 | 4H07 | AA04 |
| 6A | - | | | **6SB3-550** | TIA6 | 6H07 | AA06 |
| 10A | - | | | **10SB3-550** | TIA10 | 10H07 | AA010 |
| 16A | - | | | **16SB3-550** | TIA16 | 16H07 | AA016 |
| 20A | - | | | **20SB3-550** | TIA20 | 20H07 | AA020 |
| 25A | - | | | **25SB3-550** | TIA25 | 25H07 | AA025 |
| 32A | - | | | **32SB3-550** | TIA32 | 32H07 | AA032 |
| 40A | - | 73 | A3 | **40SB4-550** | TIS40 | 40K07 | BA040 |
| 50A | - | | | **50SB4-550** | TIS50 | 50K07 | BA050 |
| 63A | - | | | **63SB4-550** | TIS63 | 63K07 | BA063 |
| 80A | - | 94 | A4 | **80SD5-550** | TCP80 | 80L14 | CE080 |
| 100A | - | | | **100SD5-550** | TCP100 | 100L14 | CE0100 |
| 125A | - | 94 | | **125SD6-550** | TFP125 | 125M14 | DE0125 |
| 160A | - | | | **160SD6-550** | TFP160 | 160M14 | DE0160 |
| 200A | - | | | **200SD6-550** | TFP200 | 200M14 | DE0200 |

## DIMENSIONS

| FUSE LINK TYPE | A MAX. mm | B MAX. mm | D MAX. mm | E mm | F mm | G NOM. mm | H mm | J mm |
|---|---|---|---|---|---|---|---|---|
| SA2-550 | 36 | 14 | 55 | 11 | 0.8 | 44.5 | 4.8 | - |
| SB3-550 / SB4-550 | 56 | 21 | 86 | 9 | 1.2 | 73 | 5.5 | 7.5 |
| SD5-550 | 62 | 36 | 110 | 19 | 2.4 | 94 | 8.7 | - |
| SD6-550 | 77 | 41 | 110 | 19 | 2.4 | 94 | 8.7 | 10.3 |



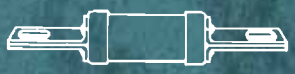




SB3, SB4, SD6, types only

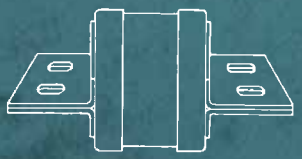
## 415V INDUSTRIAL FUSELINKS

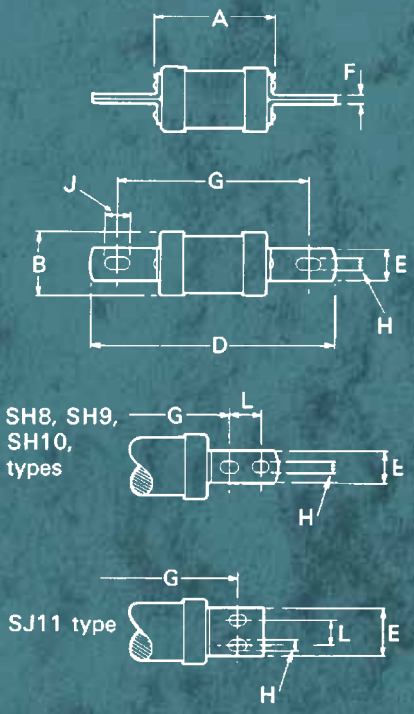
S-Type compact industrial bolted pattern fuselinks with centre contacts. ASTA 20 Certified or tested to BS EN 60269-1 (BS88: Part 1) or BS88: Part 2 for a breaking capacity of 80 kA at 415V a.c.

| RATING Ie NORMAL | MOTOR | FIXING CENTRES mm | BS88 REF | LIST NO. | DIMENSIONAL EQUIVALENTS GEC/LAWSON | BRUSH/HAWKER | BUSSMANN/DORMAN |
|---|---|---|---|---|---|---|---|
| 2A | - | 97 | - | **2SE3** | TB2 | 2K08 | AC2 |
| 4A | - | | | **4SE3** | TB4 | 4K08 | AC4 |
| 6A | - | | | **6SE3** | TB6 | 6K08 | AC6 |
| 10A | - | | | **10SE3** | TB10 | 10K08 | AC10 |
| 16A | - | | | **16SE3** | TB16 | 16K08 | AC16 |
| 20A | - | | | **20SE3** | TB20 | 20K08 | AC20 |
| 25A | - | | | **25SE3** | TB25 | 25K08 | AC25 |
| 32A | - | | | **32SE3** | TB32 | 32K08 | AC32 |
| 2A | - | 111 | - | **2SF3** | TBC2 | 2K09 | AD2 |
| 4A | - | | | **4SF3** | TBC4 | 4K09 | AD4 |
| 6A | - | | | **6SF3** | TBC6 | 6K09 | AD6 |
| 10A | - | | | **10SF3** | TBC10 | 10K09 | AD10 |
| 16A | - | | | **16SF3** | TBC16 | 16K09 | AD16 |
| 20A | - | | | **20SF3** | TBC20 | 20K09 | AD20 |
| 25A | - | | | **25SF3** | TBC25 | 25K09 | AD25 |
| 32A | - | | | **32SF3** | TBC32 | 32K09 | AD32 |
| 40A | - | 97 | - | **40SE4** | TB40 | 40K08 | BC40 |
| 50A | - | | | **50SE4** | TB50 | 50K08 | BC50 |
| 63A | - | | | **63SE4** | TB63 | 63K08 | BC63 |
| 63A | 80A | 97 | - | **63SE4M80** | - | - | - |
| 63A | 100A | | | **63SE4M100** | - | - | - |
| 40A | - | 111 | B1 | **40SF4** | TBC40 | 40K09 | BD40 |
| 50A | - | | | **50SF4** | TBC50 | 50K09 | BD50 |
| 63A | - | | | **63SF4** | TBC63 | 63K09 | BD63 |
| 63A | 80A | 111 | B1 | **63SF4M80** | - | - | - |
| 63A | 100A | | | **63SF4M100** | - | - | - |
| 80A | - | 111 | B1 | **80SF5** | TC80 | 80L09 | CD80 |
| 100A | - | | | **100SF5** | TC100 | 100L09 | CD100 |
| 100A | 125A | | | **100SF5M125** | TC100M125 | 100M125L09 | CD100M125 |
| 100A | 160A | | | **100SF5M160** | TC100M160 | 100M160L09 | CD100M160 |
| 100A | 200A | | | **100SF5M200** | TC100M200 | 100M200L09 | CD100M200 |
| 125A | - | 111 | B2 | **125SF6** | TF125 | 125M09 | DD125 |
| 160A | - | | | **160SF6** | TF160 | 160M09 | DD160 |
| 200A | - | | | **200SF6** | TF200 | 200M09 | DD200 |
| 200A | 250A | | | **200SF6M250** | TF200M250 | 200M250M09 | DD200M250 |
| 200A | 315A | | | **200SF6M315** | - | - | - |
| 250A | - | 111 | B3 | **250SF7** | TKF250 | 250N09 | ED250 |
| 315A | - | | | **315SF7** | TKF315 | 315N09 | ED315 |
| 315A | 400A | | | **315SF7M400** | - | - | - |
| 250A | - | 133 | - | **250SG7** | TKM250 | 250N11 | EFS250 |
| 315A | - | | | **315SG7** | TKM315 | 315N11 | EFS315 |
| 355A | - | 111 | B4 | **355SF8** | TMF355 | 355P09 | ED355 |
| 400A | - | | | **400SF8** | TMF400 | 400P09 | ED400 |
| 400A | 500A | | | **400SF8M500** | TMF400M500 | - | ED400M500 |
| 355A | - | 133/184 | C1 | **355SH8** | TM355 | 355P11 | EF355 |
| 400A | - | | | **400SH8** | TM400 | 400P11 | EF400 |
| 450A | - | | - | **450SF9** | 3T450 | - | - |
| 500A | - | | - | **500SF9** | 3T500 | - | - |
| 560A | - | | - | **560SF9** | 3T560 | - | - |
| 630A | - | | - | **630SF9** | 3T630 | - | - |
| 450A | - | 133/184 | C2 | **450SH9** | TTM450 | 450R11 | FF450 |
| 500A | - | | | **500SH9** | TTM500 | 500R11 | FF500 |
| 560A | - | | | **560SH9** | TTM560 | 560R11 | FF560 |
| 630A | - | | | **630SH9** | TTM630 | 630R11 | FF630 |
| 450A | - | 165/229 | - | **450SY9** | TT450 | 450R12 | FG450 |
| 500A | - | 165/229 | - | **500SY9** | TT500 | 500R12 | FG500 |
| 560A | - | 165/229 | - | **560SY9** | TT560 | 560R12 | GG560 |
| 630A | - | 165/229 | - | **630SY9** | TT630 | 630R12 | GG630 |
| 710A | - | 133/184 | C3 | **710SH10** | TLM710 | 700S11 | GF710 |
| 800A | - | | | **800SH10** | TLM800 | 800S11 | GF800 |
| 710A | - | 165/229 | - | **710SY10** | TLT710 | 700S12 | GG700 |
| 800A | - | 165/229 | - | **800SY10** | TLT800 | 800S12 | GG800 |
| 1000A | - | 149 | D1 | **1000SJ11** | TXU1000 | 1000U44 | GH1000 |
| 1250A | - | | | **1250SJ11** | TXU1250 | 1250U44 | GH1250 |










## 415V INDUSTRIAL FUSELINKS – DIMENSIONS

**DIMENSIONS**

| FUSE LINK TYPE | A MAX. mm | B MAX. mm | D MAX. mm | E mm | F mm | G NOM. mm | H mm | J mm | L mm |
|---|---|---|---|---|---|---|---|---|---|
| SE3 | 57 | 21 | 116 | 13 | 1.6 | 97 | 7.2 | 11 | - |
| SF3 | 57 | 21 | 136 | 16 | 2.0 | 111 | 8.7 | 16 | - |
| SE4 | 57 | 21 | 116 | 13 | 1.6 | 97 | 7.2 | 11 | - |
| SF4 | 57 | 21 | 136 | 16 | 2.0 | 111 | 8.7 | 16 | - |
| SE4M | 57 | 26 | 116 | 13 | 1.6 | 97 | 7.2 | 11 | - |
| SF4M | 58 | 26 | 136 | 16 | 3.2 | 111 | 8.7 | 16 | - |
| SF5 | 48 | 27 | 134 | 16 | 3.2 | 111 | 9 | 12.5 | - |
| SF5M | 48 | 30 | 137 | 19 | 3.2 | 111 | 9 | 12.5 | - |
| SF6 | 48 | 30 | 137 | 19 | 3.2 | 111 | 9 | 12.5 | - |
| SF6M | 48 | 40 | 137 | 19 | 3.2 | 111 | 9 | 12.5 | - |
| SF7 | 48 | 40 | 137 | 19 | 3.2 | 111 | 9 | 12.5 | - |
| SF7M | 51 | 40 | 138 | 25 | 5.0 | 111 | 9 | 12.5 | - |
| SG7 | 48 | 40 | 159 | 19 | 3.2 | 133 | 10.5 | 14 | - |
| SF8 | 51 | 40 | 138 | 25 | 5.0 | 111 | 9 | 12.5 | - |
| SF8M | 59 | 53 | 138 | 25 | 6.3 | 111 | 9 | 18 | - |
| SH8 | 51 | 40 | 211 | 25 | 5.0 | 133 | 10.5 | 14 | 25.4 |
| SF9 (450-500A) | 59 | 53 | 138 | 25 | 6.3 | 111 | 9 | 18 | - |
| SF9 (560-630A) | 59 | 63 | 138 | 25 | 6.3 | 111 | 9 | 18 | - |
| SH9 (450-500A) | 59 | 53 | 212 | 25 | 6.3 | 133 | 10.5 | 14 | 25.4 |
| SH9 (560-630A) | 59 | 63 | 212 | 25 | 6.3 | 133 | 10.5 | 14 | 25.4 |
| SY9 | 59 | 63 | 266 | 38 | 6.4 | 165 | 10 | 16 | 32 |
| SH10 | 57 | 63 | 212 | 25 | 10 | 133 | 10.5 | 14 | 25.4 |
| SY10 | 59 | 63 | 267 | 38 | 10 | 165 | 10 | 16 | 32 |
| SJ11 | 83 | 100 | 198 | 63.5 | 9.5 | 149 | 14.3 | 19 | 32 |

## 550V INDUSTRIAL FUSELINKS

S-Type industrial bolted pattern fuselinks with centre contacts. ASTA 20 Certified or tested to BS EN 60269-1 (BS88: Part 1) or BS88: Part 2 for a breaking capacity of 80 kA at 550V a.c.



| RATING Ie NORMAL | MOTOR | FIXING CENTRES | BS88 REF | LIST NO. | DIMENSIONAL EQUIVALENTS GEC/LAWSON | BRUSH/HAWKER | BUSSMANN/DORMAN |
|---|---|---|---|---|---|---|---|
| 80A | - | 111 | B1 | **80SF5-550** | TC80 | 80L09 | CD80 |
| 100A | - | | | **100SF5-550** | TC100 | 100L09 | CD100 |
| 125A | - | 111 | B2 | **125SF6-550** | TF125 | 125M09 | DD125 |
| 160A | - | | | **160SF6-550** | TF160 | 160M09 | DD160 |
| 200A | - | | | **200SF6-550** | TF200 | 200M09 | DD200 |
| 250A | - | 111 | B3 | **250SF7-550** | TKF250 | 250N09 | ED250 |
| 315A | - | | | **315SF7-550** | TKF315 | 315N09 | ED315 |
| 250A | - | 133 | - | **250SG7-550** | TKM250 | 250N11 | EFS250 |
| 315A | - | | | **315SG7-550** | TKM315 | 315N11 | EFS315 |
| 355A | - | 111 | B4 | **355SF8-550** | TMF355 | 355P09 | ED355 |
| 400A | - | | | **400SF8-550** | TMF400 | 400P09 | ED400 |
| 355A | - | 133/184 | C1 | **355SH8-550** | TM355 | 355P11 | EF355 |
| 400A | - | | | **400SH8-550** | TM400 | 400P11 | EF400 |
| 450A | - | 133/184 | C2 | **450SH9-550** | TTM450 | 450R11 | FF450 |
| 500A | - | | | **500SH9-550** | TTM500 | 500R11 | FF500 |
| 560A | - | | | **560SH9-550** | TTM560 | 560R11 | GF550 |
| 630A | - | | | **630SH9-550** | TTM630 | 630R11 | GF630 |
| 710A | - | 133/184 | C3 | **710SH10-550** | TLM710 | 700S11 | GF700 |
| 800A | - | | | **800SH10-550** | TLM800 | 800S11 | GF800 |

**DIMENSIONS**

| LIST NO. | A MAX. mm | B MAX. mm | D MAX. mm | E mm | F mm | G NOM. mm | H mm | J mm | L mm |
|---|---|---|---|---|---|---|---|---|---|
| SF5-550 | 66 | 36 | 134 | 19 | 3.6 | 111 | 8.7 | 16 | - |
| SF6-550 | 76 | 41 | 136 | 19 | 3.6 | 111 | 8.7 | 16 | - |
| SF7-550 | 75 | 51 | 137 | 26 | 4 | 111 | 8.7 | 16 | - |
| SG7-550 | 75 | 51 | 159 | 26 | 4 | 133 | 10 | 16 | - |
| SF8-550 | 81 | 59 | 136 | 26 | 5.2 | 111 | 8.7 | 16 | - |
| SH8-550 | 81 | 59 | 210 | 26 | 5.2 | 133 | 10 | 16 | 25 |
| SH9-550 | 82 | 74 | 210 | 26 | 6.4 | 133 | 10 | 16 | 25 |
| SY9-550 | 82 | 74 | 266 | 38 | 6.4 | 165 | 10 | 16 | 32 |
| SH10-550 | 84 | 83 | 210 | 26 | 10 | 133 | 10 | 16 | 25 |
| SY10-550 | 84 | 83 | 267 | 38 | 10 | 165 | 10 | 16 | 32 |

## SN TYPE OFFSET BLADE FUSELINKS

ASTA 20 Certified or tested to BS EN 60269-1 (BS88: Part 1) and BS88: Part 6 for a breaking capacity of 80 kA at 415V a.c. For use in industrial and commercial installations.

| RATING Ie | | OVERALL | OVERALL | LIST NO. | EQUIVALENTS | | |
|---|---|---|---|---|---|---|---|
| NORMAL | MTR | LENGTH mm | DIA. mm | | GEC/LAWSON | BRUSH/HAWKER | BUSSMANN/DORMAN |
| 2A | - | 60 | 14 | **2SN2** | NS2 | 2F06 | NSD2 |
| 4A | - | | | **4SN2** | NS4 | 4F06 | NSD4 |
| 6A | - | | | **6SN2** | NS6 | 6F06 | NSD6 |
| 10A | - | | | **10SN2** | NS10 | 10F06 | NSD10 |
| 16A | - | | | **16SN2** | NS16 | 16F06 | NSD16 |
| 20A | - | | | **20SN2** | NS20 | 20F06 | NSD20 |
| 20A | 25A | | | **20SN2M25** | NS20M25 | 20M25F06 | NSD20M25 |
| 20A | 32A | | | **20SN2M32** | NS20M32 | 20M32F06 | NSD20M32 |
| 25A | - | | | **25SN2** | NS25 | 25F06 | NSD25 |
| 32A | - | | | **32SN2** | NS32 | 32F06 | NSD32 |
| 32A | 40A | 58 | 17.5 | **32SN2M40** | NS32M40 | - | NSD32M40 |
| 32A | 50A | | | **32SN2M50** | NS32M50 | - | NSD32M50 |
| 32A | 63A | | | **32SN2M63** | NS32M63 | - | NSD32M63 |



## SP TYPE OFFSET BLADE FUSELINKS

ASTA 20 Certified to BS EN 60269-1 (BS88: Part 1) and BS88: Part 6 for a breaking capacity of 80 kA at 415V a.c. For use in industrial and commercial installations.

| RATING Ie | OVERALL LENGTH mm | OVERALL DIA. mm | LIST NO. | EQUIVALENTS | | |
|---|---|---|---|---|---|---|
| | | | | GEC/LAWSON | BRUSH/HAWKER | BUSSMANN/DORMAN |
| 16A | 68 | 17 | **16SP** | - | - | ESD16 |
| 20A | | | **20SP** | - | - | ESD20 |
| 25A | | | **25SP** | - | - | ESD25 |
| 32A | | | **32SP** | - | - | ESD32 |
| 40A | | | **40SP** | 40ES | 40G05 | ESD40 |
| 50A | | | **50SP** | 50ES | 50G05 | ESD50 |
| 63A | | | **63SP** | 63ES | 63G05 | ESD63 |



## R AND RL TYPE HOUSE SERVICE CUT-OUT FUSELINKS

Type IIa (R) and IIb (RL) house service cut-out fuselinks. ASTA 20 Certified or tested to BS1361 for a breaking capacity of 33 kA at 415V a.c.

For use in domestic and commercial installations mainly in supply authorities cut-outs.

| RATING Ie | OVERALL LENGTH mm | OVERALL DIA. mm | LIST NO. | EQUIVALENTS | | |
|---|---|---|---|---|---|---|
| | | | | GEC | HAWKER/ BUSSMANN | DORMAN |
| 15A | 57 | 22.23 | **154R** | RHF15 | 15KR85 | - |
| 20A | | | **204R** | RHF20 | 20KR85 | - |
| 30A | | | **304R** | RHF30 | 30KR85 | RHD30 |
| 40A | | | **404R** | RHF40 | 40KR85 | RHD40 |
| 45A | | | **454R** | - | 45KR85 | - |
| 50A | | | **504R** | RHF50 | 50KR85 | RHD50 |
| 60A | | | **604R** | RHF60 | 60KR85 | RHD60 |
| 80A | | | **804R** | RHF80 | 80KR85 | RHD80 |
| 100A | | | **1004R** | - | 100KR85 | - |
| 30A | 57 | 30 | **304RL** | RHL30 | 30LR85 | RHLD30 |
| 60A | | | **604RL** | RHL60 | 60LR85 | RHLD60 |
| 80A | | | **804RL** | RHL80 | 80LR85 | RHLD80 |
| 100A | | | **1004RL** | RHL100 | 100LR85 | RHLD100 |



## LC TYPE FUSELINKS

Type I domestic consumer unit fuselinks. Tested to BS1361 (or BS88: Part 1 for non-standard ratings) for a breaking capacity of 16.5 kA at 240V a.c.

For use in domestic and commercial installations mainly for lighting and heating circuits.

| RATING Ie | OVERALL LENGTH mm | OVERALL DIA. mm | COLOUR CODE | LIST NO. | CARTON QTY. | EQUIVALENTS | |
|---|---|---|---|---|---|---|---|
| | | | | | | GEC | DORMAN |
| 5A | 23 | 6.35 | White | **5LC** | 100 | D55 | DSD5 |
| 5A | 26 | 10.32 | Black | **1505LC** | 50 | - | - |
| 6A | 29 | 12.70 | Black | **3006LC** | 20 | - | - |
| 10A | 26 | 10.32 | Black | **1510LC** | 50 | - | - |
| 10A | 29 | 12.70 | Black | **3010LC** | 50 | - | - |
| 15A | 26 | 10.32 | Blue | **15LC** | 50 | D1515 | DSD15 |
| 16A | 29 | 12.70 | Black | **3016LC** | 20 | - | - |
| 20A | 26 | 10.32 | Yellow | **20LC** | 50 | D1520 | DSD20 |
| 20A | 29 | 12.70 | Black | **3020LC** | 50 | - | - |
| 25A | 29 | 12.70 | Black | **3025LC** | 20 | - | - |
| 30A | 29 | 12.70 | Red | **30LC** | 50 | D3030 | DSD30 |
| 35A | 35 | 16.67 | Black | **35LCS** | 10 | - | - |
| 40A | 35 | 16.67 | Black | **40LCS** | 10 | - | - |
| 45A | 35 | 16.67 | Green | **45LCS** | 10 | D4545 | DSD45 |



## LS TYPE STREET LIGHTING FUSELINKS

ASTA 20 Certified to BS EN 60269-1 (BS88: Part 1) for a breaking capacity of 50 kA at 240V a.c. Also complies with BS7654.

For use in street lighting cut-outs.



| RATING Ie | FIXING CENTRES mm | OVERALL LENGTH mm | OVERALL DIA. mm | LIST NO. | EQUIVALENTS* GEC | BRUSH | DORMAN/ BUSSMANN |
|---|---|---|---|---|---|---|---|
| LS-Type, offset contacts | | | | | | | |
| 2A | 38 | 49 | 14 | **2LS** | LST2 | 2D19L | STD2 |
| 4A | | | | **4LS** | LST4 | 4D19L | STD4 |
| 6A | | | | **6LS** | LST6 | 6D19L | STD6 |
| 10A | | | | **10LS** | LST10 | 10D19L | STD10 |
| 16A | | | | **16LS** | LST16 | 16D19L | STD16 |
| 20A | | | | **20LS** | LST20 | 20D19L | STD20 |
| 25A | | | | **25LS** | LST25 | 25D19L | STD25 |
| 32A | | | | **32LS** | LST32 | 32D19L | STD32 |

## SS TYPE OFFSET BLADE FUSELINKS

ASTA 20 Certified to BS EN 60269-1 (BS88: Part 1) and BS88: Part 6 for a breaking capacity of 50 kA at 240V a.c.

For use in industrial and commercial installations mainly for lighting and heating circuits.



| RATING Ie | FIXING CENTRES mm | OVERALL LENGTH mm | OVERALL DIA. mm | LIST NO. | EQUIVALENTS* GEC/ LAWSON | BRUSH | DORMAN/ BUSSMANN |
|---|---|---|---|---|---|---|---|
| 2A | - | 51 | 14 | **2SS** | SS2 | 2D04 | SSD2 |
| 4A | | | | **4SS** | SS4 | 4D04 | SSD4 |
| 6A | | | | **6SS** | SS6 | 6D04 | SSD6 |
| 10A | | | | **10SS** | SS10 | 10D04 | SSD10 |
| 16A | | | | **16SS** | SS16 | 16D04 | SSD15 |
| 20A | | | | **20SS** | SS20 | 20D04 | SSD20 |
| 25A | | | | **25SS** | SS25 | 25D04 | SSD25 |
| 32A | | | | **32SS** | SS32 | 32D04 | SSD32 |

## DR TYPE GENERAL PURPOSE FUSELINKS

ASTA 20 Certified to BS EN 60269-1 (BS88: Part 1) for a breaking capacity of 80 kA at 415V a.c. Also complies with BS7654.

For general purpose use in industrial and commercial installations.



| RATING Ie | FIXING CENTRES mm | OVERALL LENGTH mm | OVERALL DIA. mm | LIST NO. | EQUIVALENTS* GEC/ LAWSON | BRUSH | DORMAN/ BUSSMANN |
|---|---|---|---|---|---|---|---|
| 2A | - | 29 | 12.7 | **2DR** | MD2 | - | - |
| 4A | | | | **4DR** | MD4 | - | - |
| 6A | | | | **6DR** | MD6 | - | - |
| 8A | | | | **8DR** | MD8 | - | - |
| 10A | | | | **10DR** | MD10 | - | - |
| 12A | | | | **12DR** | - | - | - |
| 16A | | | | **16DR** | MD16 | - | - |
| 20A | | | | **20DR** | MD20 | - | - |
| 25A | | | | **25DR** | MD25 | - | - |
| 32A | | | | **32DR** | MD32 | - | - |

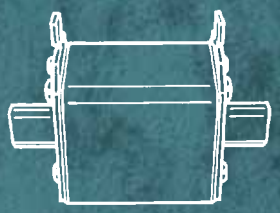
*Equivalent columns list fuselinks having similar ratings and fixing centres.

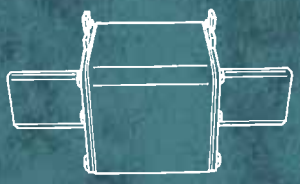
## NH-TYPE DIN KNIFE BLADE FUSELINKS

Tested to IEC 60269-2-1 section 1 for a breaking capacity of 120 kA at 500V a.c. with dimensions also to DIN43620/1.

For use in industrial applications where European practice prevails.

| | RATING Ie | LENGTH O/A mm | LIST NO. | COOPER BUSSMANN | EQUIVALENTS LEGRAND | GEC |
|---|---|---|---|---|---|---|
| SIZE 00C | 6A | 78.5 | **NHC006** | NHC00B | - | - |
| | 10A | 78.5 | **NHC0010** | NHC00B | - | NHG00C |
| | 16A | 78.5 | **NHC0016** | NHC00B | - | NHG00C |
| | 20A | 78.5 | **NHC0020** | NHC00B | - | NHG00C |
| | 25A | 78.5 | **NHC0025** | NHC00B | - | NHG00C |
| | 32A | 78.5 | **NHC0032** | NHC00B | - | NHG00C |
| | 35A | 78.5 | **NHC0035** | NHC00B | - | NHG00C |
| | 40A | 78.5 | **NHC0040** | NHC00B | - | NHG00C |
| | 50A | 78.5 | **NHC0050** | NHC00B | - | NHG00C |
| | 63A | 78.5 | **NHC0063** | NHC00B | - | NHG00C |
| | 80A | 78.5 | **NHC0080** | NHC00B | - | NHG00C |
| | 100A | 78.5 | **NHC00100** | NHC00B | - | NHG00C |
| SIZE 00 | 125A | 78.5 | **NH00125** | NH00B | 163 | NHG00 |
| | 160A | 78.5 | **NH00160** | NH00B | 163 | NHG00 |
| SIZE 1 | 25A | 133.0 | **NH0125** | NH1B | 173 | NHG1 |
| | 35A | 133.0 | **NH0135** | NH1B | 173 | NHG1 |
| | 50A | 133.0 | **NH0150** | NH1B | 173 | NHG1 |
| | 63A | 133.0 | **NH0163** | NH1B | 173 | NHG1 |
| | 80A | 133.0 | **NH0180** | NH1B | 173 | NHG1 |
| | 100A | 133.0 | **NH01100** | NH1B | 173 | NHG1 |
| | 125A | 133.0 | **NH01125** | NH1B | 173 | NHG1 |
| | 160A | 133.0 | **NH01160** | NH1B | 173 | NHG1 |
| | 200A | 133.0 | **NH01200** | NH1B | 173 | NHG1 |
| | 224A | 133.0 | **NH01224** | NH1B | 173 | NHG1 |
| | 250A | 133.0 | **NH01250** | NH1B | 173 | NHG1 |
| SIZE 2 | 25A | 148.0 | **NH0225** | NH2B | 178 | NHG2 |
| | 35A | 148.0 | **NH0235** | NH2B | 178 | NHG2 |
| | 50A | 148.0 | **NH0250** | NH2B | 178 | NHG2 |
| | 63A | 148.0 | **NH0263** | NH2B | 178 | NHG2 |
| | 80A | 148.0 | **NH0280** | NH2B | 178 | NHG2 |
| | 100A | 148.0 | **NH02100** | NH2B | 178 | NHG2 |
| | 125A | 148.0 | **NH02125** | NH2B | 178 | NHG2 |
| | 160A | 148.0 | **NH02160** | NH2B | 178 | NHG2 |
| | 200A | 148.0 | **NH02200** | NH2B | 178 | NHG2 |
| | 224A | 148.0 | **NH02224** | NH2B | 178 | NHG2 |
| | 250A | 148.0 | **NH02250** | NH2B | 178 | NHG2 |
| | 315A | 148.0 | **NH02315** | NH2B | 178 | NHG2 |
| | 355A | 148.0 | **NH02355** | NH2B | 178 | NHG2 |
| | 400A | 148.0 | **NH02400** | NH2B | 178 | NHG2 |
| SIZE 3 | 315A | 150.0 | **NH03315** | NH3B | 181 | NHG3 |
| | 355A | 150.0 | **NH03355** | NH3B | 181 | NHG3 |
| | 400A | 150.0 | **NH03400** | NH3B | 181 | NHG3 |
| | 500A | 150.0 | **NH03500** | NH3B | 181 | NHG3 |
| | 630A | 150.0 | **NH03630** | NH3B | 181 | NHG3 |





Neutral links, handles and other ratings and dimensions of fuselinks for use on the L.V. distribution network are available - details on request.

Neutral Links: KS 00, KS 01, KS 02, KS 03. Handle: NHH

## J-TYPE FEEDER PILLAR FUSELINKS

ASTA 20 Certified or tested to BS88: Part 5 for a breaking capacity of 80 kA at 415V a.c.

Available in standard 82mm and 92mm fixing centres up to 400A and 800A respectively for wedge tightening contacts. Also available in ferrule form up to 250A for pole mounted cut-outs.

For use by the Electricity Supply Industry in distribution systems.

Available with silver elements, details on request.

| RATING Ie | FIXING CENTRES mm | LIST NO. | EQUIVALENTS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | FLUVENT | LAWSON | SIBA | GEC | EMP | BUSSMANN/ BRUSH | DORMAN |
| 63A | | **63JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 80A | | **80JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 100A | | **100JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 125A | | **125JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 160A | | **160JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 200A | 82 | **200JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 250A | | **250JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 315A | | **315JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | MJ30 | JPD |
| 355A | | **355JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | PJ30 | JPD |
| 400A | | **400JCS82** | DL2-2 | JPU | 5002301 | JP | 2/EJA | PJ30 | JPD |
| 63A | | **63JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 80A | | **80JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 100A | | **100JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 125A | | **125JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 160A | | **160JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 200A | | **200JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 250A | | **250JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 315A | 92 | **315JSC92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | MJ31 | JSD |
| 355A | | **355JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | PJ31 | JSD |
| 400A | | **400JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | PJ31 | JSD |
| 450A | | **450JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | RJ31 | JSD |
| 500A | | **500JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | RJ31 | JSD |
| 560A | | **560JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | SJ31 | JSD |
| 630A | | **630JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | SJ31 | JSD |
| 710A | | **710JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | SJ31 | JSD |
| 800A | | **800JCS92** | DL3-2 | JSU | 5002601 | JS | 3/EJB | SJ31 | JSD |
| Ferrule cap type | | | | | | | | | |
| 63A | | **63JCF** | - | JF | 5005701 | FHLA | - | MJ25 | - |
| 80A | | **80JCF** | - | JF | 5005701 | FHLA | - | MJ25 | - |
| 100A | | **100JCF** | - | JF | 5005701 | FHLA | - | MJ25 | - |
| 125A | | **125JCF** | - | JF | 5005701 | FHLA | - | MJ25 | - |
| 160A | | **160JCF** | - | JF | 5005701 | FHLA | - | MJ25 | - |
| 200A | | **200JCF** | - | JF | 5005701 | FHLA | - | MJ25 | - |
| 250A | | **250JCF** | - | JF | 5005701 | FHLA | - | MJ25 | - |



## 240V F TYPE SEMI-CONDUCTOR PROTECTION FUSELINKS

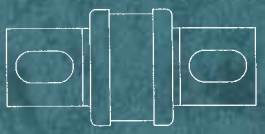
Tested to BS88: Part 4 and IEC 60269-4 for a breaking capacity of 100 kA at 240V a.c.

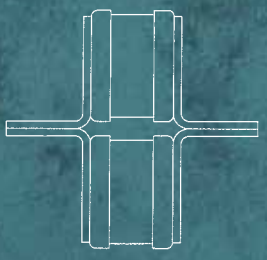
For the protection of semi-conductor devices requiring high speed protection from faults.

| RATING Ie | FIXING CENTRES mm | LIST NO. | BUSSMANN | GEC | INTERNATIONAL RECTIRIER | DORMAN | FERRAZ | SIBA |
|---|---|---|---|---|---|---|---|---|
| 6 | 37 | **6FMA** | 6LCT | GSA5 | A350-5 | DSA5 | 2.5URE 10/6 | 50-076-06/5 |
| 10 | 37 | **10FMA** | 10LCT | GSA10 | A350-10 | DSA10 | 2.5URE 10/10 | 50-076-06/10 |
| 12 | 37 | **12FMA** | 12LCT | - | A350-12 | DSA12 | 2.5URE 10/12 | - |
| 16 | 37 | **16FMA** | 16LCT | GSA15 | A350-16 | DSA16 | 2.5URE 10/15 | 50-076-06/16 |
| 20 | 37 | **20FMA** | 20LCT | GSA20 | A350-20 | DSA20 | 2.5URE 10/20 | 50-076-06/20 |
| | | | | | | | | |
| 7 | 40.4 | **7FNA** | 7LET | - | L350-7 | DSL7 | 2.5URGS 17/7 | 50-053-06/7 |
| 10 | 40.4 | **10FNA** | 10LET | - | L350-10 | DSL10 | 2.5URGS 17/10 | 50-053-06/10 |
| 12 | 40.4 | **12FNA** | 12LET | - | L350-12 | DSL12 | 2.5URGS 17/12 | - |
| 16 | 40.4 | **16FNA** | 16LET | - | L350-16 | DSL16 | 2.5URGS 17/16 | 50-053-06/16 |
| 20 | 40.4 | **20FNA** | 20LET | - | L350-20 | DSL20 | 2.5URGS 17/20 | 50-053-06/20 |
| 25 | 40.4 | **25FNA** | 25LET | GSA25 | L350-25 | DSL25 | 2.5URGS 17/25 | 50-053-06/25 |
| 32 | 40.4 | **32FNA** | 32LET | - | L350-32 | DSL32 | 2.5URGS 17/32 | 50-053-06/32 |
| 35 | 40.4 | **35FNA** | 35LET | GSA35 | L350-35 | DSL35 | 2.5URGS 17/35 | 50-053-06/35 |
| 50 | 40.4 | **50FNA** | 50LET | GSA50 | L350-50 | DSL50 | 2.5URGS 17/50 | 50-053-06/50 |
| 63 | 40.4 | **63FNA** | 63LET | - | L350-63 | DSL63 | 2.5URGS 17/63 | 50-053-06/63 |
| 80 | 40.4 | **80FNA** | 80LET | - | L350-80 | DSL80 | 2.5URGS 17/100 | 50-053-06/80 |
| 100 | 40.4 | **100FNA** | 100LET | GSA100 | L350-100 | DSL100 | 2.5URZ 17/125 | 50-053-06/100 |
| 125 | 40.4 | **125FNA** | 125LET | GSA125 | L350-125 | DSL125 | 2.5URZ 17/160 | 50-053-06/125 |
| 160 | 40.4 | **160FNA** | 160LET | GSA160 | L350-160 | DSL160 | 2.5URZ 17/180 | 50-053-06/160 |
| 180 | 40.4 | **180FNA** | 180LET | - | L350-175 | DSL180 | 2.5URZ 17/150 | 50-053-06/180 |
| | | | | | | | | |
| 160 | 56.9 | **160FPA** | 160LMT | GSA150 | T350-150 | DST160 | 2.5URGG 36/200 | 50-054-06/150 |
| 200 | 56.9 | **200FPA** | 200LMT | GSA200 | T350-200 | DST200 | 2.5URGG 36/250 | 50-054-06/200 |
| 250 | 56.9 | **250FPA** | 250LMT | GSA250 | T350-250 | DST250 | 2.5URGG 36/300 | 50-054-06/250 |
| 315 | 56.9 | **315FPA** | 315LMT | GSD315 | T350-315 | DST315 | 2.5URGG 36/315 | 50-054-06/315 |
| 355 | 56.9 | **355FPA** | 355LMT | GSD355 | T350-350 | DST355 | 2.5URGG 36/350 | 50-054-06/350 |
| 400 | 56.9 | **400FPA** | 400LMT | - | T350-2400 | DST400 | 2.5URGG 36/400 | 50-054-06/400 |
| 450 | 56.9 | **450FPA** | 450LMT | - | T350-450 | DST450 | 2.5URGG 36/450 | - |
| | | | | | | | | |
| 400 | 56.9 | **400FPA2** | 400LMMT | - | TT350-400 | DSTT400 | 2.5URGH 236/400 | 50-072-06/400 |
| 500 | 56.9 | **500FPA2** | 500LMMT | GSA500 | TT350-500 | DSTT500 | 2.5URGH 236/500 | 50-072-06/500 |
| 630 | 56.9 | **630FPA2** | 630LMMT | GSA630 | TT350-630 | DSTT630 | 2.5URGH 236/600 | 50-072-06/630 |
| 710 | 56.9 | **710FPA2** | 710LMMT | GSD710 | TT350-710 | DST710 | 2.5URGH 236/700 | 50-072-06/710 |
| 800 | 56.9 | **800FPA2** | 800LMMT | - | TT350-800 | DSTT800 | 2.5URGH 236/800 | 50-072-06/800 |
| 900 | 56.9 | **900FPA2** | 900LMMT | - | TT350-900 | DSTT900 | 2.5URGH 236/900 | 50-072-06/900 |









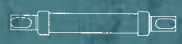
## DIMENSIONS (MM)

| FUSELINKS TYPE | OVERALL LENGTH | BODY LENGTH | BODY DIAMETER | TAG WIDTH | TAG THICKNESS | DETAIL IF MULTI BARREL |
|---|---|---|---|---|---|---|
| FMA | 45.6 | 28 | 10.3 | 6.40 | 0.80 | |
| FNA | 55.6 | 25.5 | 18 | 12.70 | 2 | |
| FPA | 82 | 32 | 37.3 | 25 | 2.5 | |
| FPA2 | 82 | 32 | 37.3 | 25 | 5 | TWO BODIES BACK TO BACK |

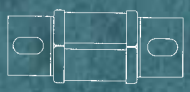
## 660V F TYPE SEMI-CONDUCTOR PROTECTION FUSELINKS

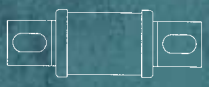
Tested to BS88: Part 4 and IEC 60269-4 for a breaking capacity of 200 kA at 660V a.c.

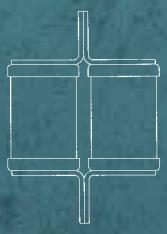
For the protection of semi-conductor devices requiring high speed protection from faults.











| CURRENT RATING | FIXING CENTRES mm | LIST NO. | GEC | GEC | BUSSMANN | INTERNATIONAL RECTIRIER | DORMAN | FERRAZ | SIBA |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 64 | **6FSB** | GSB5 | - | 6CT | B1000-5 | DSB5 | 6.6URE 10/6 | 50-077-06/5 |
| 10 | 64 | **10FSB** | GSB10 | - | 10CT | B1000-10 | DSB10 | 6.6URE 10/10 | 50-077-06/10 |
| 12 | 64 | **12FSB** | - | - | 12CT | B1000-12 | DSB12 | 6.6URE 10/12 | - |
| 16 | 64 | **16FSB** | GSB16 | - | 16CT | B1000-16 | DSB16 | 6.6URE 10/15 | 50-077-06/16 |
| 20 | 64 | **20FSB** | GSB20 | - | 20CT | B1000-20 | DSB20 | 6.6URE 10/20 | 50-077-06/20 |
| | | | | | | | | | |
| 8 | 63.2 | **8FRB** | - | - | 8ET | E1000-8 | DSG8 | - | - |
| 10 | 63.2 | **10FRB** | - | - | 10ET | E1000-10 | DSG10 | - | 50-073-06/10 |
| 16 | 63.2 | **16FRB** | - | GSGB16 | 15ET | E1000-15 | DSG15 | 6.6URS 17/16 | 50-073-06/16 |
| 20 | 63.2 | **120FRB** | - | - | 20ET | E1000-20 | DSG20 | 6.6URS 17/20 | 50-073-06/20 |
| 25 | 63.2 | **25FRB** | GSB25 | GSGB25 | 25ET | E1000-25 | DSG25 | 6.6URS 17/25 | 50-073-06/25 |
| 32 | 63.2 | **32FRB** | - | GSGB30 | 32ET | E1000-32 | DSG32 | 6.6URS 17/32 | 50-073-06/32 |
| 35 | 63.2 | **35FRB** | - | GSGB35 | 35ET | E1000-35 | DSG35 | 6.6URS 17/35 | 50-073-06/35 |
| 40 | 63.2 | **40FRB** | - | GSGB40 | 40ET | E1000-40 | DSG40 | 6.6URS 17/40 | 50-073-06/40 |
| 45 | 63.2 | **45FRB** | GSB45 | GSGB45 | 45ET | E1000-45 | DSG45 | 6.6URS 17/45 | 50-073-06/45 |
| 56 | 63.2 | **56FRB** | - | GSGB55 | 56ET | E1000-56 | DSG55 | 6.6URS 17/55 | 50-073-06/55 |
| 63 | 63.2 | **63FRB** | - | GSGB63 | 63ET | E1000-63 | DSG63 | 6.6URS 17/63 | 50-073-06/63 |
| 80 | 63.2 | **80FRB** | GSB80 | GSGB80 | 80ET | E1000-80 | DSG80 | 6.6URS 17/80 | 50-073-06/80 |
| | | | | | | | | | |
| 65 | 69.2 | **65FTB2** | - | - | 63EET | EE1000-65 | DSGG65 | 6.6URT 217/65 | - |
| 75 | 69.2 | **75FTB2** | - | GSGB75 | 75EET | EE1000-75 | DSGG75 | 6.6URT 217/75 | - |
| 90 | 69.2 | **90FTB2** | - | GSGB75 | 90EET | EE1000-90 | DSGG90 | 6.6URT 217/90 | - |
| 110 | 69.2 | **110FTB2** | - | GSGB110 | 110EET | EE1000-110 | DSGG110 | 6.6URT 217/110 | - |
| 140 | 69.2 | **140FTB2** | - | GSGB150 | 140EET | EE1000-140 | DSGG140 | 6.6URT 217/140 | - |
| 160 | 69.2 | **160FTB2** | - | GSGB160 | 160EET | EE1000-160 | DSGG160 | 6.6URT 217/160 | - |
| | | | | | | | | | |
| 160 | 84.9 | **160FUB** | GSB100 | - | 160MT | M1000-160 | DSM160 | 6.6URGL 36/50 | 50-074-06/150 |
| 180 | 84.9 | **180FUB** | - | GSGB170 | 180MT | M1000-180 | DSM180 | 6.6URGL 36/180 | 50-074-06/180 |
| 200 | 84.9 | **200FUB** | GSB200 | GSGB200 | 200MT | M1000-200 | DSM200 | 6.6URGL 36/200 | 50-074-06/200 |
| 250 | 84.9 | **250FUB** | GSB250 | GSGB250 | 250MT | M1000-250 | DSM250 | 6.6URGL 36/250 | 50-074-06/250 |
| 280 | 84.9 | **280FUB** | - | - | 280MT | - | DSM280 | 6.6URGL 36/280 | 50-074-06/280 |
| 315 | 84.9 | **315FUB** | - | - | 315MT | M1000-315 | DSM315 | 6.6URGL 36/315 | 50-074-06/315 |
| 355 | 84.9 | **355FUB** | - | - | 355MT | M1000-355 | DSM355 | 6.6URGL 36/355 | 50-074-06/355 |
| | | | | | | | | | |
| 180 | 84.9 | **180FUB2** | - | GSGB175 | 180MMT | MM1000-180 | DSMM180 | 6.6URGM 236/175 | 50-075-06/180 |
| 200 | 84.9 | **200FUB2** | - | GSGB200 | 200MMT | MM1000-235 | DSMM225 | 6.6URU 236/200 | 50-075-06/200 |
| 225 | 84.9 | **225FUB2** | - | GSGB235 | 225MMT | MM1000-225 | DSMM225 | 6.6URR 236/235 | 50-075-06/225 |
| 280 | 84.9 | **280FUB2** | - | - | 280MMT | - | DSMM280 | 6.6URGM 236/300 | 50-075-06/280 |
| 315 | 84.9 | **315FUB2** | GSB300 | GSGB300 | 315MMT | MM1000-315 | DSMM315 | 6.6URGM 236/325 | 50-075-06/300 |
| 355 | 84.9 | **355FUB2** | - | GSGB350 | 355MMT | MM1000-355 | DSMM355 | 6.6URGM 236/355 | 50-075-06/350 |
| 400 | 84.9 | **400FUB2** | GSB400 | GSGB400 | 400MMT | MM1000-400 | DSMM400 | 6.6URU 246/400 | 50-075-06/400 |
| 450 | 84.9 | **450FUB2** | - | GSGB450 | 450MMT | MM1000-450 | DSMM450 | 6.6URGM 236/450 | 50-075-06/450 |
| 500 | 84.9 | **500FUB2** | GSB500 | GSGB500 | 500MMT | MM1000-500 | DSMM500 | 6.6URGM 236/500 | 50-075-06/500 |
| 560 | 84.9 | **560FUB2** | - | - | 560MMT | MM1000-560 | DSMM560 | - | - |
| 630 | 84.9 | **630FUB2** | - | - | 630MMT | MM1000-630 | DSMM630 | 6.6URGM 236/630 | 50-075-06/630 |
| 710 | 84.9 | **710FUB2** | - | - | 710MMT | MM1000-710 | DSMM710 | 6.6URGM 236/710 | 50-075-06/710 |

| FUSELINKS TYPE | OVERALL LENGTH | BODY LENGTH | BODY DIAMETER | TAG WIDTH | TAG THICKNESS | DETAIL IF MULTI BARREL |
|---|---|---|---|---|---|---|
| FSB | 72.6 | 50.8 | 10.3 | 6.4 | 0.8 | |
| FRB | 77.2 | 47.2 | 18 | 12.7 | 2 | |
| FTB2 | 90.2 | 46.2 | 18 | 30 | 1.5 | TWO BODIES SIDE BY SIDE |
| FUB | 110 | 60 | 37.3 | 25 | 2.5 | |
| FUB2 | 110 | 60 | 37.3 | 25 | 5 | TWO BODIES BACK TO BACK |

# FUSE CARRIERS AND BASES, REWIRABLE AND HRC TYPES

Types MBA and MBB fuse bases, type MRH rewirable fuse carriers and 100A HRC fuse carriers (List No. 100 SCHF) are manufactured from high grade vitreous porcelain.

HRC fuse carriers up to and including 100A (List Nos. 2 SCHF, 3 SCHF, 6 SCHF, 10 SCHF) comprise black track-resistant mouldings.

HRC and rewirable pattern carriers of the same rating are interchangeable.

Fuse bases are available in two types:

Type A - providing for busbar connection at one end and cable termination at the other.

Type B - providing for cable connection at both ends.

Terminal capacities for Type A and Type B bases:- 20A 6mm2, 32A 10mm2, 63A 35mm2, 100A 70mm2.

Rewirable fuse carriers are of the semi-enclosed type, and when fitted in Eaton MEM enclosures comply with the following 415/250V Categories of duty of BS 3036: 1958.

20, 32 and 63A - Category S2A.

100A - Category S4A.

100A fuse units may be fitted with SB3, SB4 or S0 fuselinks having 73mm fixing centres if used with adaptor List No. 100 MFLK HRC fuse carriers are designed for standard offset contact fuse links to BS88: Part 2 and are suitable for systems up to 660V.

All performance tests have been carried out using Eaton MEM BS 88 Fuselinks.

The exclusive use of Eaton MEM Fuselinks will extend the warranty period to 3 years.

HRC fuse carriers and bases comply with the requirements of Lloyds Register of Shipping and are included in Schedules A and B of their List of Approved Fuses.



## FUSE CARRIERS

| NOMINAL RATING Ie | LIST NO. REWIRABLE | LIST NO. HRC | MEM HRC FUSES FITTED |
|---|---|---|---|
| 10A | **15 MRH2★** | **1 SCHF★★** | 10SA2 |
| 20A | **15 MRH2★** | **2 SCHF★★** | 20SA2 |
| 32A | **32 MRH2★** | **3 SCHF★★** | 32SB3 |
| 63A | **63 MRH2★** | **6 SCHF★★** | 63SB4 |
| 100A | **100 MRH2★** | **10 SCHF★★** | 100SD5 |
| | | **100 SCHF★** | |

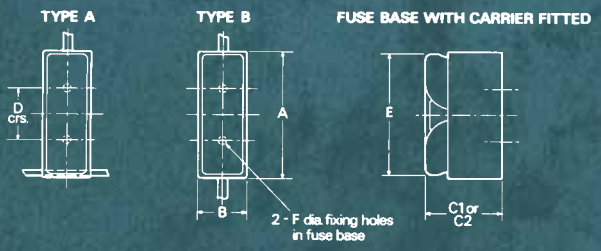
★Porcelain ★★Moulded

## FUSE BASES

| NOMINAL RATING Ie | LIST NO. TYPE A | LIST NO. TYPE B |
|---|---|---|
| 20A | **15 MBA2** | **15 MBB2** |
| 32A | **32 MBA2** | **32 MBB2** |
| 63A | **63 MBA2** | **63 MBB2** |
| 100A | **100 MBA2** | **100 MBB2** |

## DIMENSIONS

| NOMINAL RATING Ie | A mm | B mm | C1 mm | C2 mm | D mm | E mm | F mm |
|---|---|---|---|---|---|---|---|
| 20A | 75 | 29 | 56 | 52 | * | 68 | 4.8 |
| 32A | 106 | 35 | 60 | 68 | 41 | 105 | 5.2 |
| 63A | 132 | 46 | 86 | 90 | 41 | 129 | 5.6 |
| 100A | 165 | 60 | 116 | 121 | 57 | 162 | 6.8 |



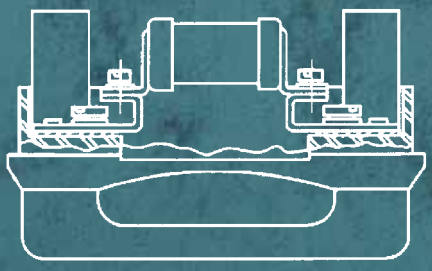

*20A fuses have a single fixing hole on the centre line.

C1 applies to base fitted with rewirable carrier, C2 to base fitted with HRC carrier.

# PARAMOUNT HRC CARTRIDGE FUSELINKS & FUSE UNITS

## MOULDED HRC FUSE UNITS, BOLT-IN AND CLIP-IN TYPES



### SPECIFICATION

A range of moulded HRC fuse units designed to accept bolt-in and clip-in HRC fuselinks.

Each unit is fully shrouded to prevent accidental contact with live parts when inserting or withdrawing a carrier and once the carrier has been removed completely.

The carrier and base mouldings are manufactured from high quality thermosetting material finished in black. Other colours are available.

Units accepting bolt-in HRC fuselinks are available in ratings of 20, 32, 63, 100 and 200A and can be supplied in front connected, front/busbar connected, front/back connected and back connected versions.

They are designed to comply with BS88: Part 2, 1988 and are suitable for systems up to 660V. Suitable HRC fuselinks are also to BS88: Part 2: 1988. A full range of neutral links is available.

**The exclusive use of Eaton MEM Fuselinks will extend the warranty period to 3 years.**

Those units which accept the clip-in fuselinks are rated at 32A and 63A, 415V. Each in a front connected and front/back connected version, with a 32A back/back type also available. Also suitable for DIN-rail mounting.

They comply with BS88: Part 1: 1988 and accept clip-in HRC fuselinks to the same standard.

Clip-in type units allow fuselinks to be replaced very simply - no tools are required. Fuselinks are removed from the carrier using side pressure on the fuselink end tags while replacement involves a simple push fit only. Neutral links are available.

Terminal capacities:

20A 6mm2, 32A 16mm2, 63A 35mm2, 100A 70mm2, 200A 150mm2.

Fuse units are available in four types:

Type A - providing for busbar connection at one end and cable termination at the other.

Type B - providing for cable connection at each end.

Type C - with back connecting studs.

Type D - providing for cable connection at one end with back connecting stud at the other.

Fuse units have been ASTA certified for type tests to BS88: Part 2 and are suitable for systems up to 660V.

Fuse units comply with the requirements of Lloyds Register of Shipping and are included in schedule A of their List of Approved Fuses.

100A fuse units may be fitted with SB3, SB4 or S0 fuselinks having 73mm fixing centres if used with adaptor 100MFLK.

## COMPLETE FUSE UNITS (CARRIERS AND BASES)

| NOMINAL RATING Ie | COLOUR | LIST NO. ACCORDING TO TYPE OF CONNECTION | | | | | | | NEUTRAL LINK LIST NO. | | SUITABLE MEM HRC FUSELINKS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | BOLT-IN TYPE TYPE A FRONT/BUSBAR | TYPE B FRONT/FRONT | TYPE C BACK/BACK | TYPE D FRONT/BACK | CLIP-IN TYPE FRONT/FRONT | FRONT/BACK | BACK/BACK | BOLT-IN | CLIP-IN | BOLT-IN | CLIP-IN |
| 20A | Black | 20MFA | 20MFB | 20MFC | 20MFD | - | - | - | 20MLK | - | 2-20SA2 | - |
| | White | - | 20MFBW | 20MFCW | - | - | - | - | | - | 2-20SA2 | - |
| 32A | Black | 32MFA | 32MFB | 32MFC | 32MFD | 32CFF | 32CFB | 32CBB | 32MLK | 32CLK | 2-32SB3 | 2-32SN2 |
| | White | - | 32MFBW | 32MFCW | - | 32CFFW | 32CFBW | 32CBBW | | 32CLK | 2-32SB3 | 2-32SN2 |
| 63A | Black | 63MFA | 63MFB | 63MFC | 63MFD | 63CFF | 63CFB | - | 63MLK | 63CLK | 2-32SB3<br>35-63SB4<br>154-604R* | 16-63SP |
| | White | - | 63MFBW | 63MFCW | - | 63CFFW | 63CFBW | - | | 63CLK | | |
| 100A | Black | 100MFA | 100MFB | 100MFC | 100MFD | - | - | - | 100MLK | - | 2-32SB3†<br>35-63SB4†<br>80-100S0† | - |
| | White | - | 100MFBW | 100MFCW | - | - | - | - | | - | 80-100SD5 | |
| 200A | Black | 200MFA | 200MFB | 200MFC | 200MFD | - | - | - | 200MLK | - | 2-32SF3<br>40-63SF4<br>80-100SF5<br>125-200SF6 | - |
| | White | - | 200MFBW | 200MFCW | - | - | - | - | | | | |
| **COMPACT RANGE** | | | | | | | | | | | | |
| 32A | Black | 32CMFA | 32CMFB | 32CMFC | 32CMFD | - | - | - | 20MLK | - | 2-32SA2 | - |
| | White | - | 32CMFBW | 32CMFCW | - | - | - | - | | - | 2-32SA2 | - |
| 63A | Black | 63CMFA | 63CMFB | 63CMFC | 63CMFD | - | - | - | 32MLK | - | 2-32SB3 | - |
| | White | - | 63CMFBW | 63CMFCW | - | - | - | - | | - | 35-63SB4 | - |
| 100A | Black | 100CMFA | 100CMFB | 100CMFC | 100CMFD | - | - | - | 63MLK | - | 35-63SB4 | - |
| | White | - | 100CMFBW | 100CMFCW | - | - | - | - | | - | 80-100S0 | - |
| 200A | Black | 200CMFA | 200CMFB | 200CMFC | 200CMFD | - | - | - | 100MLK | - | 80-100SD5 | - |
| | White | - | 200CMFBW | 200CMFCW | - | - | - | - | | - | 125-200SD6 | - |
| 315A | Black | 315CMFA | 315CMFB | 315CMFC | 315CMFD | - | - | - | 200MLK | - | 125-200SF6 | - |
| | White | - | 315CMFBW | 315CMFCW | - | - | - | - | | - | 250-315SF7 | - |

†SB3, SB4 or S0 fuselinks may be fitted if used with adaptor - **List No. 100MFLK**.

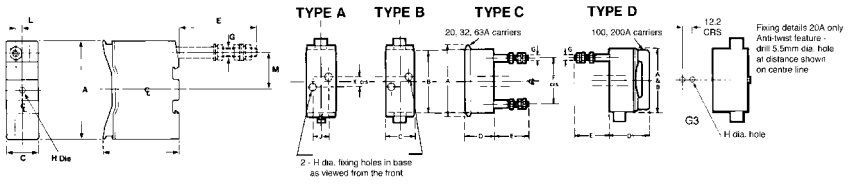
*R-Type (22.2mm dia.) ferrule cap fuselinks may be fitted if used with adaptor clips (set of 2) **List No. 63MFRCL**.

These adaptor clips are also suitable for 100A units if used together with **100MFLK**. Ferrule cap HRC Fuselinks (30.2mm dia.) to BS 1361: 1971, type IIb may be fitted to 100A units if used with adaptor clips (set of 2) **List No. 100MFRCL**.

Note: Carriers available for NH fuses - details on request. Memshield 2 fuse carrier range also available.

## DIMENSIONS

| NOMINAL RATING Ie | A mm | B mm | C mm | D mm | E mm | F mm | G mm | H mm | J mm | K mm | L mm | M mm | HOLE DIA. TO ACCEPT INSULATED STUD (TYPES C AND D) mm MIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20A | 87 | 79 | 27 | 50 | 63 | 56 | 6 | 5.5 | - | - | - | - | 12 |
| 32A | 109 | 101 | 31 | 62 | 60 | 78 | 6 | 5.5 | 12.7 | 6.4 | - | - | 12 |
| 32A clip-in | 75 | - | 25 | 57.7 | 40 | - | 6 | 5.5 | - | - | 4.4 | 28.5 | 12 |
| 63A | 118 | 110 | 35 | 72 | 71 | 79 | 8 | 5.5 | 12.7 | 6.4 | - | - | 14.5 |
| 63A clip-in | 88.7 | - | 31.5 | 66.34 | 71 | - | 8 | 5.5 | - | - | 4.8 | 31.6 | 14.5 |
| 100A | 154 | 154 | 54 | 108 | 80 | 117 | 10 | 6.5 | 19 | 22 | - | - | 18.5 |
| 200A | 193 | 193 | 70 | 149 | 89 | 138 | 12 | 7.0 | 38 | 57 | - | - | 24.5 |
| **COMPACT RANGE** | | | | | | | | | | | | | |
| 32A | 87 | 79 | 27 | 50 | 63 | 56 | 6 | 5.5 | - | - | - | - | 12 |
| 63A | 109 | 101 | 31 | 62 | 60 | 78 | 6 | 5.5 | 12.7 | 6.4 | - | - | 12 |
| 100A | 118 | 110 | 35 | 72 | 71 | 79 | 8 | 5.5 | 12.7 | 6.4 | - | - | 14.5 |
| 200A | 154 | 154 | 54 | 108 | 80 | 117 | 10 | 6.5 | 19 | 22 | - | - | 18.5 |
| 315A | 193 | 193 | 70 | 149 | 89 | 138 | 12 | 7.0 | 38 | 57 | - | - | 24.5 |



# PANEL MOUNTING SWITCHGEAR
## FUSED COMBINATION SWITCHES, 32-800A



Fused combination switches from 32-800A and switch-disconnectors in six frame sizes from 45-1000A. Units will accommodate BS88 and DIN fuselinks. Unique side operating versions are available for draw out motor control applications or for use where space is restricted.

The range complies with BSEN60947-3, VDE0660 and is both ASTA and KEMA approved.

### SPECIFICATION

Each fused combination switch and switch-disconnector has been designed to provide a high performance switch rating in both distribution (AC22) and motor control (AC23) applications.

Six compact frame sizes cover nominal ratings from 32 to 800A in double, triple and four pole configurations.

**The exclusive use of Eaton MEM Fuselinks will extend the warranty period to 3 years.**

Steel components have a zinc plate and full chromate passivation finish to BS1706-ZN3. Copper termination bars are silver plated.

The range of switches complies with BSEN60947-3, VDE0660 and has been ASTA certified to category of duty AC23.

## FEATURES

### MECHANISM

The operator independent spring assisted mechanism ensures a positive and consistent switching action reducing arcing and contact wear.

### CONTACTS

The double break, blade and clip wiping action contact system ensures reduced contact bounce and provides load breaking isolating contacts either side of the fuselink.

Fuselinks remain stationary providing a high level of mechanical reliability for the fuse and contact system. Long contact life is combined with high performance for both a.c. and d.c. supplies.

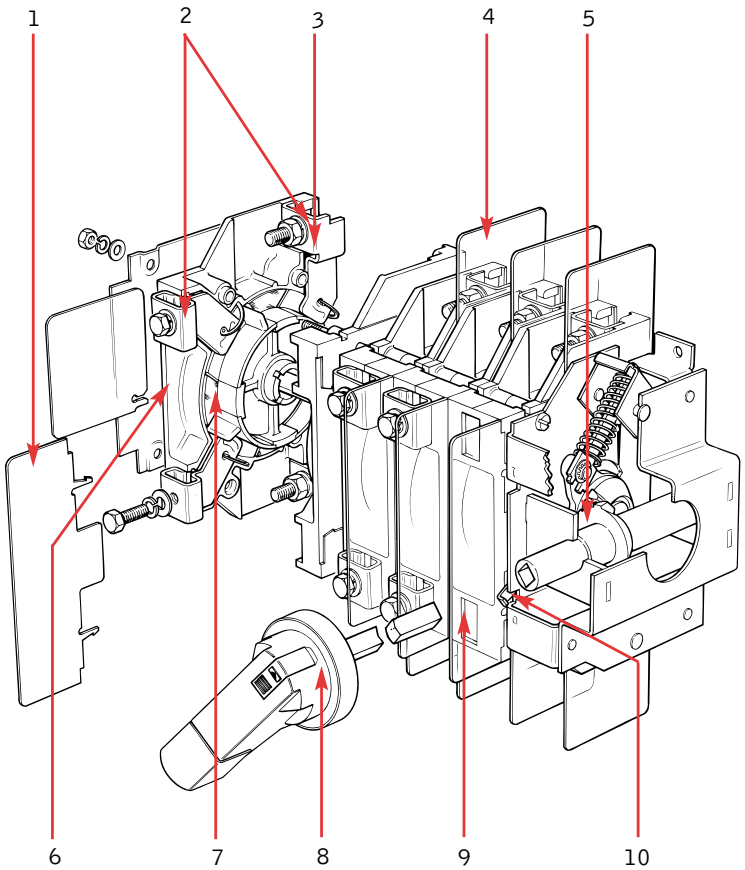
### CONTACT POSITION INDICATION

Each operating handle positively indicates the position of the contacts. Complete fuse isolation is achieved in the 'OFF' position. Handles cannot be returned to 'OFF' if any contacts in any pole become welded.

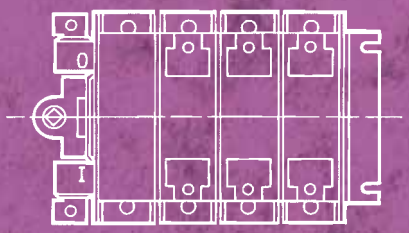
A contact position indicator is fitted to each switch giving positive indication of contact position, this is clearly visible when the door is open.

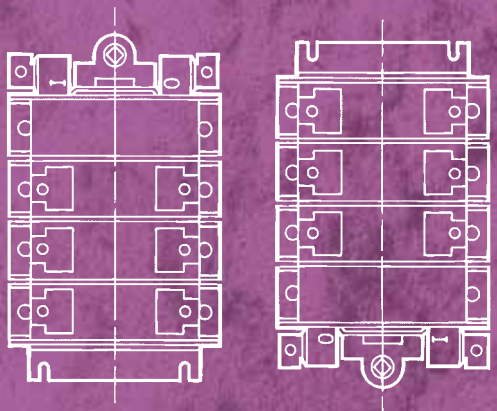
### COMPACT SIZE

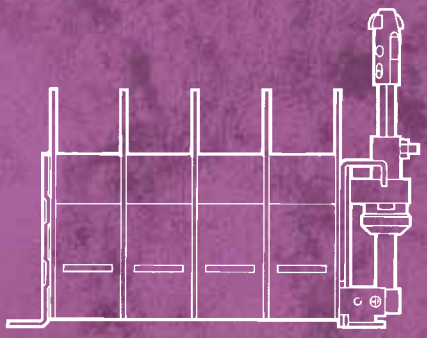
The high performance contact system achieves maximum ratings for both distribution and motor control applications within a very compact size thus saving valuable panel space.




1. Polycarbonate inter-phase shields.
2. Fixed contacts.
3. 63-800A terminations are provided for easy attachment of cable lugs or solid copper connections.
4. Polycarbonate snap-fastening connection barriers.
5. Manually independent over centre spring switching mechanism.
6. Contact system provides four breaks in series per phase.
7. Moving contacts.
8. Fully interlocked rotary action operating handle. Interlock may be overridden by a competent operator for inspection and maintenance.
9. Choice of switched (neutral makes first, breaks last) or solid neutrals.
10. Positive contact indicator shows contact position with door open.

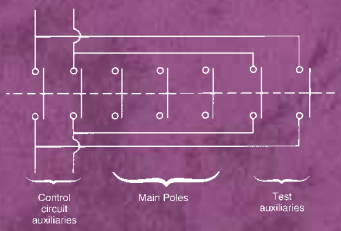






**Mounting Positions**

**OPERATING SEQUENCE:**




## HANDLES AND SHAFTS

Each switch is provided as standard with an IP54 black handle and steel operating shaft. For switches up to 400A handles are moulded, 800A and above are cast metal. Clear 'ON' (I) and 'OFF' (O) indication is provided and padlocks may be fitted in the 'OFF' position.

Door interlocking provided by the handle in the 'ON' position is defeatable by a competent person to enable access in emergencies and for maintenance purposes.

Operating shafts have flexible arrow-heads to aid handle alignment and panel depth adjustment.

## TERMINALS

32-63A rated fuse-switches are fitted with box clamp terminals for copper cables (solid, stranded or flexible, prepared or unprepared) up to 25mm$^2$. 100A fuse-switches and above have silverplated copper terminals to accept cable or solid conductor connections.

32A fuse-switches have inherent terminal shrouds designed to prevent accidental finger contact. Additional polycarbonate terminal shrouds are available for all ratings and configurations.

## SIDE OPERATING VERSIONS

Triple pole ratings up to 160A are available as side operating versions. These are particularly suitable for draw out motor control applications or where narrow form enclosures may be required.

## MOUNTING POSITIONS

Switches may be mounted in the positions illustrated without need for de-rating. All switches are designed for base mounting.

## RATING LABELS

For convenience, a second rating label is supplied with each switch for separate mounting where visual access to technical data is impaired.

## NEUTRALS

Neutrals (switched or solid) are situated next to the switch mechanism. Units can be supplied with neutrals positioned at the furthest pole position from the mechanism. Suffix order references /D1.

## TEST SWITCHES

Triple pole switches up to 400A can be supplied with three positions; 'ON' - 'OFF' - 'TEST' where test auxiliaries only are operated at the third ('TEST') position. The additional auxiliaries are mounted on the mechanism side and are parallel wired to standard auxiliaries or used as required.

Black handles are supplied having three positions and switches are door interlocked in 'TEST' and 'ON' positions - defeatable by competent personnel.

Auxiliaries are supplied separately for mounting on 'TEST' and 'STANDARD' positions up to the maximum indicated. Mounting packs are required for auxiliaries.

| | OFF | ON | TEST |
|---|---|---|---|
| MAIN POLES | OPEN | CLOSED | OPEN |
| AUX. | OPEN | CLOSED | OPEN |
| TEST AUX. | OPEN | OPEN | CLOSED |

## ORDER REFERENCES

### BS Fuse Version - Standard Operation

| FRAME SIZE | ENCLOSED RATING I the | OPEN RATING I th | AC22 | AC23 | MEM FUSE | SINGLE POLE AND BOLTED NEUTRAL, SPN LIST NO. | SINGLE POLE AND SWITCHED NEUTRAL, SPSN LIST NO. | TRIPLE POLE, TP LIST NO. | TRIPLE POLE AND BOLTED NEUTRAL, TPN LIST NO. | TRIPLE POLE AND SWITCHED NEUTRAL, TPSN LIST NO. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32A | 32A | 32A | 32A | BS A1 | **32S1N32** | **32S1SN32** | **32S332** | **32S3N32** | **32S3SN32** |
| 1 | 63A | 63A | 63A | 63A | BS A2 | **63S1N63** | **63S1SN63** | **63S363** | **63S3N63** | **63S3SN63** |
| 2 | 63A | 63A | 63A | 45A | BS A3 | **63S1N45** | **63S1SN45** | **63S345** | **63S3N45** | **63S3SN45** |
| 2 | 100A | 100A | 100A | 63A | BS A3 | **100S1N63** | **100S1SN63** | **100S363** | **100S3N63** | **100S3SN63** |
| 2 | 100A | 100A | 100A | 100A | BS A3 | **100S1N100** | **100S1SN100** | **100S3100** | **100S3N100** | **100S3SN100** |
| 3 | 125A | 125A | 125A | 125A | BS A4 | **125S1N125** | **125S1SN125** | **125S3125** | **125S3N125** | **125S3SN125** |
| 3 | 160A | 200A | 200A | 160A | BS A4 | **200S1N160** | **200S1SN160** | **200S3160** | **200S3N160** | **200S3SN160** |
| 4 | 200A | 200A | 200A | 200A | BS B2 | **200S1N200** | **200S1SN200** | **200S3200** | **200S3N200** | **200S3SN200** |
| 4a | 220A | 250A | 250A | 250A | BS B3 | | | **250S3250** | **250S3N250** | **250S3SN250** |
| 4b | 315A | 315A | 315A | 315A | BS B4 | | | **315S3315** | **315S3N315** | **315S3SN315** |
| 5 | 400A | 400A | 400A | 400A | BS B4 | | | **400S3400** | **400S3N400** | **400S3SN400** |
| 6 | 630A | 630A | 630A | 630A | BS C3 | | | **630S3630** | **630S3N630** | **630S3SN630** |
| 6 | 800A | 800A | 800A | 710A | BS C3 | | | **800S3710** | **800S3N710** | **800S3SN710** |



### BS Fuse Version - Side Operation

| FRAME SIZE | ENCLOSED RATING I the | OPEN RATING I th | AC22 | AC23 | MEM FUSE | TRIPLE POLE TP LIST NO. | TRIPLE POLE AND BOLTED NEUTRAL, TPN LIST NO. | TRIPLE POLE AND SWITCHED NEUTRAL, TPSN LIST NO. |
|---|---|---|---|---|---|---|---|---|
| 1 | 32A | 32A | 32A | 32A | BS A1 | **32SM332** | **32SM3N32** | **32SM3SN32** |
| 1 | 63A | 63A | 63A | 63A | BS A2 | **63SM363** | **63SM3N63** | **63SM3SN63** |
| 2 | 63A | 63A | 63A | 45A | BS A3 | **63SM345** | **63SM3N45** | **63SM3SN45** |
| 2 | 100A | 100A | 100A | 63A | BS A3 | **100SM363** | **100SM3N63** | **100SM3SN63** |
| 2 | 100A | 100A | 100A | 100A | BS A3 | **100SM3100** | **100SM3N100** | **100SM3SN100** |
| 3 | 125A | 125A | 125A | 125A | BS A4 | **125SM3125** | **125SM3N125** | **125SM3SN125** |
| 3 | 160A | 200A | 200A | 160A | BS A4 | **200SM3160** | **200SM3N160** | **200SM3SN160** |



### Switch-Disconnector - Standard Operation

| FRAME SIZE | ENCLOSED RATING I the | OPEN RATING I th | AC22 | AC23 | DOUBLE POLE, DP LIST NO. | TRIPLE POLE TP LIST NO. | FOUR POLE FP LIST NO. |
|---|---|---|---|---|---|---|---|
| 1 | 45A | 45A | 45A | 32A | **IS452** | **IS453** | **IS454** |
| 2 | 100A | 100A | 100A | 63A | **IS1002** | **IS1003** | **IS1004** |
| 3 | 160A | 160A | 160A | 125A | **IS1602** | **IS1603** | **IS1604** |
| 4 | 315A | 315A | 315A | 250A | | **IS3153** | **IS3154** |
| 5 | 630A | 630A | 630A | 400A | | **IS6003** | **IS6004** |
| 6 | 1000A | 1000A | 1000A | 710A | | **IS10003** | **IS10004** |



550V ratings

## ORDER REFERENCES



### BS Fuse Version - Changeover Switches

| FRAME SIZE | ENCLOSED RATING I the | OPEN RATING I th | AC22 | AC23 | MEM FUSE | TRIPLE POLE, TP LIST NO. | TRIPLE POLE AND BOLTED NEUTRAL, TPN LIST NO. | TRIPLE POLE AND SWITCHED NEUTRAL, TPSN LIST NO. |
|---|---|---|---|---|---|---|---|---|
| 1 | 32A | 32A | 32A | 32A | BS A1 | **32SC332** | **32SC3N32** | **32SC3SN32** |
| 1 | 63A | 63A | 63A | 63A | BS A2 | **63SC363** | **63SC3N63** | **63SC3SN63** |
| 2 | 63A | 63A | 63A | 45A | BS A3 | **63SC345** | **63SC3N45** | **63SC3SN45** |
| 2 | 100A | 100A | 100A | 63A | BS A3 | **100SC363** | **100SC3N63** | **100SC3SN63** |
| 2 | 100A | 100A | 100A | 100A | BS A3 | **100SC3100** | **100SC3N100** | **100SC3SN100** |
| 3 | 125A | 125A | 125A | 125A | BS A4 | **125SC3125** | **125SC3N125** | **125SC3SN125** |
| 3 | 160A | 200A | 200A | 160A | BS A4 | **200SC3160** | **200SC3N160** | **200SC3SN160** |
| 4 | 200A | 200A | 200A | 200A | BS B2 | **200SC3200** | **200SC3N200** | **200SC3SN200** |
| 4a | 220A | 250A | 250A | 250A | BS B3 | **250SC3250** | **250SC3N250** | **250SC3SN250** |
| 4b | 315A | 315A | 315A | 315A | BS B4 | **315SC3315** | **315SC3N315** | **315SC3SN315** |
| 4b | 345A | 400A | 400A | 400A | BS B4 | **400SC3400** | **400SC3N400** | **400SC3SN400** |



### BS Fuse Version - Standard Operation Test Switches

| FRAME SIZE | ENCLOSED RATING I the | OPEN RATING I th | AC22 | AC23 | MEM FUSE | TRIPLE POLE, TP LIST NO. | TRIPLE POLE AND BOLTED NEUTRAL, TPN LIST NO. | TRIPLE POLE AND SWITCHED NEUTRAL, TPSN LIST NO. |
|---|---|---|---|---|---|---|---|---|
| 1 | 32A | 32A | 32A | 32A | BS A1 | **32ST332** | **32ST3N32** | **32ST3SN32** |
| 1 | 63A | 63A | 63A | 63A | BS A2 | **63ST363** | **63ST3N63** | **63ST3SN63** |
| 2 | 63A | 63A | 63A | 45A | BS A3 | **63ST345** | **63ST3N45** | **63ST3SN45** |
| 2 | 100A | 100A | 100A | 63A | BS A3 | **100ST363** | **100ST3N63** | **100ST3SN63** |
| 2 | 100A | 100A | 100A | 100A | BS A3 | **100ST3100** | **100ST3N100** | **100ST3SN100** |
| 3 | 125A | 125A | 125A | 125A | BS A4 | **125ST3125** | **125ST3N125** | **125ST3SN125** |
| 3 | 160A | 200A | 200A | 160A | BS B2 | **200ST3160** | **200ST3N160** | **200ST3SN160** |
| 4 | 200A | 200A | 200A | 200A | BS B2 | **200ST3200** | **200ST3N200** | **200ST3SN200** |
| 4a | 220A | 250A | 250A | 250A | BS B3 | **250ST3200** | **250ST3N200** | **250ST3SN200** |
| 4b | 315A | 315A | 315A | 315A | BS B4 | **315ST3315** | **315ST3N315** | **315ST3SN315** |
| 4b | 345A | 400A | 400A | 400A | BS B4 | **400ST3400** | **400ST3N400** | **400ST3SN400** |



### DIN Fuse Version - Standard Operation

| FRAME SIZE | ENCLOSED RATING I the | OPEN RATING I th | AC22 | AC23 | FUSE | TRIPLE POLE, TP LIST NO. | TRIPLE POLE AND SWITCHED NEUTRAL, TPN LIST NO. | FOUR POLE FP LIST NO. |
|---|---|---|---|---|---|---|---|---|
| 1a | 63A | 63A | 63A | 63A | 000 / C00 | **DS63-000** | **DS63SN-000** | **DS63FP-000** |
| 2a | 100A | 100A | 100A | 100A | '00 | **DS100-00** | **DS100SN-00** | **DS100FP-00** |
| 2a | 115A | 125A | 125A | 125A | '00 | **DS125-00** | **DS125SN-00** | **DS125FP-00** |
| 3 | 135A | 160A | 160A | 160A | '00 | **DS160-00** | **DS160SN-00** | **DS160FP-00** |
| 4a | 220A | 250A | 250A | 250A | '1 | **DS250-1** | **DS250SN-1** | **DS250FP-1** |
| 4b | 315A | 315A | 315A | 315A | '2 | **DS315-2** | **DS315SN-2** | **DS315FP-2** |
| 4b | 345A | 400A | 400A | 400A | '2 | **DS400-2** | **DS400SN-2** | **DS400FP-2** |
| 5a | 540A | 630A | 630A | 630A | '3 | **DS630-3** | **DS630SN-3** | **DS630FP-3** |

## ORDER REFERENCES

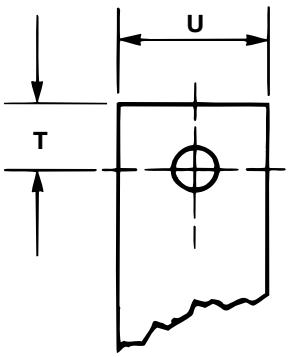
DIN Fuse Version - Side Operation

| FRAME SIZE | ENCLOSED RATING I the | OPEN RATING I th | AC22 | AC23 | FUSE | TRIPLE POLE, TP LIST NO. | TRIPLE POLE AND SWITCHED NEUTRAL, TPSN LIST NO. | FOUR POLE, FP LIST NO. |
|---|---|---|---|---|---|---|---|---|
| 1a | 63A | 63A | 63A | 63A | 000 / C00 | **SMDS63-000** | **SMDS63SN-000** | **SMDS63FP-000** |
| 2a<br>2a | 100A<br>115A | 100A<br>125A | 100A<br>125A | 100A<br>125A | '00<br>'00 | **SMDS100-00**<br>**SMDS125-00** | **SMDS100SN-00**<br>**SMDS125SN-00** | **SMDS100FP-00**<br>**SMDS125FP-00** |
| 3 | 135A | 160A | 160A | 160A | '00 | **SMDS160-00** | **SMDS160SN-00** | **SMDS160FP-00** |



## TERMINATION INFORMATION

| FRAME SIZE | SWITCH RANGE 'BS' | DIN | NFC | ISOLATOR | TERMINAL SIZE 'BS' FUSE | TERMINAL SIZE SUPPLY/LOAD | TERMINATION TORQUE NM 'BS' FUSE | TERMINATION TORQUE NM SUPPLY/LOAD | MAX CABLE SQmm | MAXCONNECTOR SIZE DIM T mm | MAXCONNECTOR SIZE DIM U mm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32A/32A, 63A/63A | - | 25A | 45A | M4 | M5 | 1.2 | 3 | 25 | - | - |
| 1a | - | 63A | 50A | - | M4 | M5 | 1.2 | 3 | 25 | - | - |
| 2 | 100A/63A, 100A/100A | - | - | 100A | M5 | M6 | 2 | 5 | 35 | 10 | 19 |
| 2a | - | 100A, 125A | 100A | - | - | M6 | - | 5 | 35 | 10 | 19 |
| 3 | 125A/125A, 200A/160A | 160A | - | 160A | M5/M6 | M8 | 2.0/4.0 | 12 | 70 | 12 | 23 |
| 4 | 200A/200A | - | - | 315A | M8 | M10 | 10 | 25 | 150 | 22 | 32 |
| 4a | 250A/250A | 250A | - | - | M8 | M10 | 10 | 25 | 150 | 22 | 32 |
| 4b | 315A/315A, 400A/400A | 315A, 400A | - | - | M8 | M10 | 10 | 25 | 240 | 22 | 40 |
| 5 | 400A/400A | - | - | 630A | M8 | M14 | 10 | 50 | 500 | 22 | 58 |
| 5a | - | 630A | - | - | - | M14 | - | 50 | 500 | 22 | 58 |
| 6 | 630A/500A, 630A/630A | - | - | 1000A | M10 | M16 | 21 | 60 | 630 | 26 | 70 |
| 6 | 800A/710A | - | - | - | M10 | M20 | 21 | 100 | 630 | 40 | 70 |
| Auxiliary Switches - ASP to 8ASP | | | | | - | M3 | - | 5 | 2.5 | - | - |



## TECHNICAL INFORMATION – BS & DIN

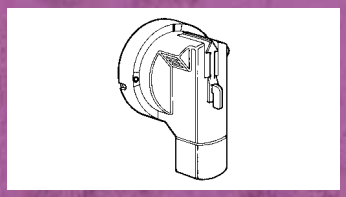
The technical information given in this table applies to 3 and 4 pole fused combination switches

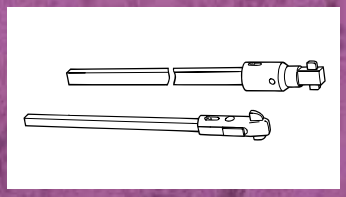
| | | | | 32A/32A BS | 63A/63A BS | 100A/63A BS | 100A/100A BS | 125A/125A BS | 200A/160A BS |
|---|---|---|---|---|---|---|---|---|---|
| Frame size | | | | 1 | 1 | 2 | 2 | 3 | 3 |
| Fused combination switch, nominal rating | | | A | 32 | 63 | 100 | 100 | 125 | 200 |
| Rated thermal current (ambient -5°C to +40°C) | unenclosed | Ith | A | 32 | 63 | 100 | 100 | 125 | 200 |
| | enclosed | Ithe | A | 32 | 63 | 63 | 100 | 125 | 160 |
| | enclosed with solid links | Ithe | A | 45 | 63 | 100 | 100 | 160 | 200 |
| Category of duty AC22A | | Ue | | Ie | Ie | Ie | Ie | Ie | Ie |
| Rated operational current | | 415V | A | 32 | 63 | 100 | 100 | 125 | 200 |
| | | 500V | A | 32 | 63 | 100 | 100 | 125 | 160 |
| | | 550V | A | 32 | 63 | 100 | 100 | 125 | 135 |
| Category of duty AC23A | | Ue | | Ie | Ie | Ie | Ie | Ie | Ie |
| Rated operational current | | 220V | A | 32 | 63 | 63 | 100 | 125 | 160 |
| | | 380V | A | 32 | 63 | 63 | 100 | 125 | 160 |
| | | 415V | A | 32 | 63 | 63 | 100 | 125 | 160 |
| | | 500V | A | 32 | 63 | 63 | 100 | 125 | 160 |
| | | 550V | A | 32 | 63 | 63 | 100 | 125 | 135 |
| | | 690V | A | - | - | - | - | - | - |
| Rated operational current DC23 | Single pole | 110V | A | 32 | 63 | 63 | 100 | 125 | 125 |
| Rated operational current | two poles in series | 250V | A | 32 | 63 | 63 | 100 | 125 | 125 |
| | two poles in series | 500V | A | 32 | 63 | 63 | 100 | 80 | 80 |
| Rated operational power for category AC23A | | Ue | | | | | | | |
| | | 220V | kW | 7.5 | 15 | 15 | 30 | 37 | 45 |
| | | 380V | kW | 15 | 30 | 30 | 45 | 55 | 75 |
| | | 415V | kW | 15 | 30 | 30 | 55 | 60 | 90 |
| | | 500V | kW | 20 | 37 | 37 | 60 | 75 | 90 |
| | | 550V | kW | 22 | 45 | 45 | 75 | 90 | 90 |
| | | 690V | kW | - | - | - | - | - | - |
| Rated operational performance | Number of cycles | | | 10,000 | 10,000 | 10,000 | 10,000 | 8,000 | 8,000 |
| | | Ue | | | | | | | |
| Short-time withstand current for 1 secomd | RMS value | - | kA | 1.39 | 1.5 | 3.2 | 3.2 | 5 | 5 |
| Short-circuit making capacity | Peak-value | 550V | kA | 3.06 | 3.7 | 4.25 | 4.25 | 5.44 | 5.44 |
| Fuse protected performance | | Ue | | | | | | | |
| | RMS value | 415V | kA | 80 | 100 | 80 | 80 | 80 | 80 |
| | | 500V | kA | 63 | 100 | 63 | 63 | 63 | 63 |
| | | 550V | kA | 63 | 100 | 63 | 63 | 63 | 63 |
| | | 690V | kA | - | - | - | - | - | - |
| | Peak-value | 415V | kA | 176 | 220 | 176 | 176 | 176 | 176 |
| | | 500V | kA | 139 | 220 | 139 | 139 | 139 | 139 |
| | | 550V | kA | 139 | 220 | 139 | 139 | 139 | 139 |
| | | 690V | kA | - | - | - | - | - | - |
| Rated operational voltage | Ue | | V | 550 | 550 | 550 | 550 | 550 | 550 |
| Rated insulation voltage (2) | Ui | | V | 690 | 690 | 690 | 690 | 690 | 690 |
| Rated impulse voltage | Uimp | | kV | 8 | 8 | 8 | 8 | 8 | 8 |
| Rated capacitor power (1) | | | kVAr | 24 | 45 | 45 | 55 | 90 | 120 |
| Fuse types, BS-pattern | BS88 | | | A1 | SB3/4 | A2-A3 | A2-A3 | A2-A3 | A2-A4 |
| | Fuse fixing centres | | mm | 44.5 | 73 | 73 | 73 | 73,94 | 73,94 |
| NFC-pattern | | | | - | - | - | - | - | - |
| DIN- pattern | DIN43620 | | | - | - | - | - | - | - |
| Solid copper links | | | | 20MLK | 63MLK | 63MLK | 63MLK | 100MLK | 100MLK |
| Weight (cartoned) not including fuselinks | SPN,SPSN | | kg | 0.9 | 0.92 | 1.36 | 1.36 | 1.6 | 1.7 |
| | DP | | kg | 0.9 | 0.92 | 1.36 | 1.36 | 1.9 | 2 |
| | TP | | kg | 1.04 | 1.12 | 1.57 | 1.57 | 2.51 | 2.58 |
| | TPSN | | kg | 1.2 | 1.25 | 1.81 | 1.81 | 2.78 | 2.96 |
| | FP | | kg | - | - | - | - | - | - |

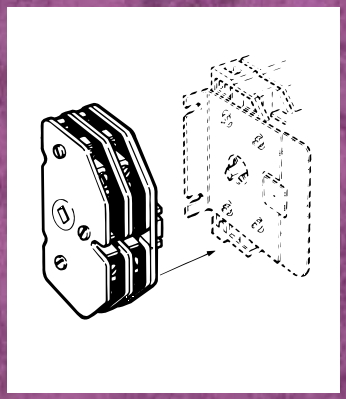
**(1) The Capacitor rating of the switch is limited by the fuselink**

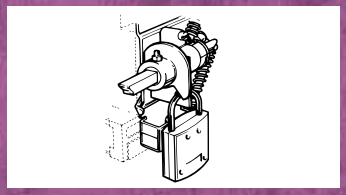
**(2) Units with a rated insulation voltage at 1000V are available to special order**

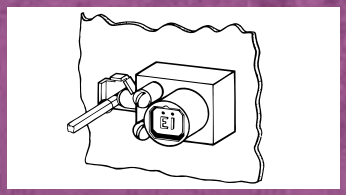
| 200A/200A BS | 250A/250A BS | 315A/315A BS | 400A/400A BS | 400A/400A BS | 630A/630A BS | 800A/710A BS | 63A DIN | 100A DIN | 125A DIN | 160A DIN | 250A DIN | 315A DIN | 400A DIN | 630A DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 4a | 4b | 4b | 5 | 6 | 6 | 1a | 2a | 2a | 3 | 4a | 4b | 4b | 5a |
| 200 | 250 | 315 | 400 | 400 | 630 | 800 | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 400 | 400 | 630 | 800 | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 345 | 400 | 630 | 710 | 63 | 100 | 115 | 135 | 250 | 315 | 345 | 540 |
| 315 | 315 | 315 | 400 | 400 | 630 | 800 | - | - | - | - | - | - | - | - |
| Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie |
| 200 | 250 | 315 | 400 | 400 | 630 | 800 | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 400 | 400 | - | - | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 400 | 400 | - | - | 63 | 100 | 115 | 135 | 250 | 315 | 315 | 540 |
| Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie | Ie |
| 200 | 250 | 315 | 400 | 400 | 630 | 710 | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 400 | 400 | 630 | 710 | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 400 | 400 | 630 | 710 | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 400 | 400 | - | 630 | 63 | 100 | 125 | 160 | 250 | 315 | 400 | 630 |
| 200 | 250 | 315 | 315 | 400 | - | 630 | 63 | 100 | 115 | 135 | 250 | 315 | 315 | 540 |
| - | - | - | - | - | - | - | 63 | 100 | 115 | 135 | 250 | 315 | 315 | 540 |
| 200 | 250 | 315 | 315 | 400 | 630 | 800 | 32 | 100 | 1 | 125 | 200 | 315 | 315 | 400 |
| 200 | 250 | 315 | 315 | 400 | 630 | 800 | 32 | 100 | 63 | 125 | 200 | 315 | 315 | 400 |
| 200 | - | - | - | - | - | - | 32 | 100 | 63 | 80 | 200 | - | - | - |
| | | | | | | | | | | | | | | |
| 55 | 75 | 110 | 132 | 132 | 200 | 220 | 15 | 30 | 37 | 45 | 75 | 110 | 132 | 200 |
| 110 | 130 | 150 | 185 | 185 | 315 | 355 | 30 | 45 | 55 | 75 | 130 | 150 | 185 | 315 |
| 110 | 130 | 150 | 225 | 225 | 375 | 410 | 30 | 55 | 60 | 90 | 130 | 150 | 225 | 375 |
| 130 | 150 | 185 | 225 | 280 | - | 475 | 37 | 60 | 75 | 90 | 150 | 185 | 225 | 375 |
| 150 | 185 | 225 | 225 | 300 | - | 515 | 45 | 75 | 75 | 90 | 185 | 225 | 225 | 400 |
| - | - | - | - | - | - | - | 45 | 90 | 90 | 110 | 225 | 290 | 290 | 500 |
| 8,000 | 8,000 | 8,000 | 5,000 | 5,000 | 5,000 | 3,000 | 10,000 | 10,000 | 8,000 | 8,000 | 8,000 | 8,000 | 5,000 | 5,000 |
| | | | | | | | | | | | | | | |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 1.5 | 3.2 | 3.2 | 5 | 10.96 | 10.96 | 10.96 | 12.96 |
| 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 3.7 | 4.25 | 4.25 | 5.44 | 10.81 | 10.81 | 10.81 | 25.2 |
| | | | | | | | | | | | | | | |
| 100 | 100 | 72.5 | 72.5 | 80 | 50 | 50 | 100 | 100 | 100 | 100 | 100 | 72.5 | 72.5 | 50 |
| 100 | 100 | 72.5 | 72.5 | 63 | - | 50 | 100 | 100 | 100 | 100 | 100 | 72.5 | 72.5 | 50 |
| 100 | 100 | 50 | 50 | 63 | - | 50 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 50 |
| - | - | - | - | - | - | - | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 50 |
| 220 | 220 | 160 | 160 | 176 | 110 | 110 | 220 | 220 | 220 | 220 | 220 | 160 | 160 | 110 |
| 139 | 220 | 160 | 160 | 176 | - | 110 | 220 | 220 | 220 | 220 | 220 | 160 | 160 | 110 |
| 139 | 220 | 105 | 105 | 139 | - | 110 | 220 | 220 | 220 | 220 | 220 | 110 | 110 | 110 |
| - | - | - | - | - | - | - | 220 | 220 | 220 | 220 | 220 | 110 | 110 | 110 |
| 550 | 550 | 550 | 550 | 550 | 415 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 | 550 |
| 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 |
| 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 140 | 140 | 160 | 200 | 200 | 270 | 370 | 45 | 45 | 45 | 90 | 140 | 140 | 140 | 200 |
| B1-B2 | B1-B2 | B1-B4 | B1-B4 | B1-B4 | C1-C3 | C1-C3 | - | - | - | - | - | - | - | - |
| 111 | 111 | 111 | 111 | 111 | 133,184 | 133,184 | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | 000/C00 | 0 | 0 | 0 | 1 | 2 | 2 | 3 |
| 200MLK | 200MLK | 400MLK | 400MLK | 400MLK | 800MLK | 800MLK | - | - | - | - | - | - | - | - |
| 5.63 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 5.63 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6.7 | 6.77 | 8 | 8 | 18.5 | - | 38 | 1.12 | 1.57 | 1.57 | 2.5 | 6.77 | 8 | 8 | 18.5 |
| 7.5 | 7.75 | 9 | 9 | 19.5 | - | 41 | 1.25 | 1.81 | 1.81 | 2.6 | 7.75 | 9 | 9 | 19.5 |
| - | - | - | - | - | - | - | 1.3 | 1.85 | 1.85 | 2.9 | 7.9 | 9.2 | 9.2 | 20.5 |

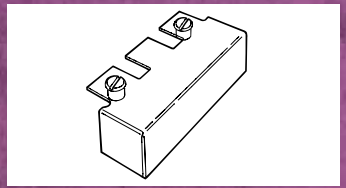


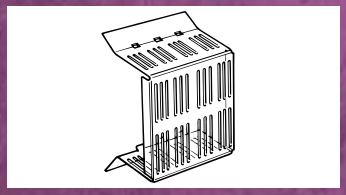












## HANDLES
Red/yellow safety handles (IP54) suitable for up to three padlocks in the 'OFF' position.

## IP65 HANDLES
Alternative handles are available for standard and test switches. (Non defeatable for ON/OFF action, non interlocked in test position for 'ON-OFF-TEST' action). Details on request.

These handles require special IP65 shafts/adaptors.

## EXTENDED HANDLE SHAFTS
Operating shafts of extra 200mm length.

## AUXILIARY SWITCHES
List no. ASP contains 2 N/O contacts. List no. 1ASP to 8ASP each contain two sets of changeover contacts. These moulded units have been designed to offer protection against accidental finger contact.

Auxiliary packs can be added to the drive shaft of any switch rating via the appropriate mounting pack adaptor.

Technical Data, Ith=10A:

| Ue | ACII | DCII |
|---|---|---|
| 48V | 10A | - |
| 110V | 10A | - |
| 220/240V | 6A | - |
| 380/440V | 4A | - |

## CHANGEOVER SWITCHES - AUXILIARIES
Three position (1-0-2) changeover switches are available in TP, TPSN and TPN versions.

Auxiliaries can be added to each operating position.

Please note that an auxiliary switch mounting pack is required for both sides on changeover and test position switches.

## LOCKING DEVICES
Standard handles are capable of accepting three padlocks to lock the handle in the 'OFF' position.

## MECHANISM PADLOCKING DEVICE
To lock switch in 'OFF' position when enclosure is 'OPEN'.

## FIGURE LOCKING DEVICE
To provide locking 'ON', 'OFF' and interlocking facility.

The device is a shaft mounting interlock cam attachment for adaptation to Castell or Fortress figure locks. (Not supplied).

## CABLE TERMINAL SHROUDS
Packs of clear polycarbonate shrouds to protect cable terminations from unintentional contact (1 per pack).

A pack of eight push-in plugs **List No. 1TS4** are available for frame size 1 and 1a which have finger protected main terminals.

## FUSE COVERS
Clear polycarbonate clip-on covers to protect all fuses from unintentional contact.

| Frame size | Poles | Accessory | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Safety Handles | Extended Shafts | Auxiliary Switch Pack 2 N/O | Auxiliary Switch Pack 1 C/O | Auxiliary Switch Pack 2 C/O | Auxiliary Switch Pack 3 C/O | Auxiliary Switch Pack 4 C/O | Auxiliary Switch Pack 6 C/O | Auxiliary Switch Pack 8 C/O | Auxiliary Switch Mounting Pack | Push in Terminal Plugs | Terminal Shrouds BS Type | Terminal Shrouds DIN Type | Fuse Covers BS Type | Fuse Covers DIN Type | Figure Locking Device | Mechanism Padlocking Device** |
| | | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. | List No. |
| 1 | SPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 32TS2 | - | 1FC2 | - | 3FLD | 3PLD |
| | SPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 32TS2 | - | 1FC2 | - | 3FLD | 3PLD |
| | TP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 32TS3 | - | 1FC3 | - | 3FLD | 3PLD |
| | TPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 32TS4 | - | 1FC4 | - | 3FLD | 3PLD |
| | TPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 32TS4 | - | 1FC3 | - | 3FLD | 3PLD |
| | FP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | - | - | - | - | - | - |
| 1a | SPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 1ATS2 | - | N1FC2 | - | 3FLD | 3PLD |
| | SPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 1ATS2 | - | N1FC2 | - | 3FLD | 3PLD |
| | TP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 1ATS3 | 1TS4 | N1FC3 | D1FC3 | 3FLD | 3PLD |
| | TPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 1ATS4 | - | N1FC4 | - | 3FLD | 3PLD |
| | TPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | 1TS4 | 1ATS4 | 1TS4 | N1FC3 | D1FC3 | 3FLD | 3PLD |
| | FP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | - | 1TS4 | - | D1FC4 | 3FLD | 3PLD |
| 2 | SPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 2TS2 | - | 2FC2 | - | 3FLD | 3PLD |
| | SPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 2TS2 | - | 2FC2 | - | 3FLD | 3PLD |
| | TP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 2TS3 | - | 2FC3 | - | 3FLD | 3PLD |
| | TPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 2TS4 | - | 2FC4 | - | 3FLD | 3PLD |
| | TPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 2TS4 | - | 2FC3 | - | 3FLD | 3PLD |
| 2a | TP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | - | D2TS3 | - | D2FC3 | 3FLD | 3PLD |
| | TPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | - | D2TS4 | - | D2FC3 | 3FLD | 3PLD |
| | FP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | - | D2TS4 | - | D2FC4 | 3FLD | 3PLD |
| 3 | SPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 3TS2 | - | 3FC2/D3FC2* | - | 3FLD | 3PLD |
| | SPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 3TS2 | - | 3FC2/D3FC2* | - | 3FLD | 3PLD |
| | TP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 3TS3 | 3TS3 | 3FC3/D3FC3* | D3FC3 | 3FLD | 3PLD |
| | TPN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 3TS4 | - | 3FC4/D3FC4* | - | 3FLD | 3PLD |
| | TPSN | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | 3TS4 | 3TS4 | 3FC3/D3FC3* | D3FC4 | 3FLD | 3PLD |
| | FP | 3SHN | 3XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | - | - | 3MP | - | - | 3TS4 | - | D3FC3 | 3FLD | 3PLD |
| 4 | SPN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | 4TS2 | - | 4FC2 | - | 4FLD | 4PLD |
| | SPSN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | 4TS2 | - | 4FC2 | - | 4FLD | 4PLD |
| | TP | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | 4TS3 | - | 4FC3 | - | 4FLD | 4PLD |
| | TPN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | 4TS4 | - | 4FC4 | - | 4FLD | 4PLD |
| | TPSN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | 4TS4 | - | 4FC3 | - | 4FLD | 4PLD |
| 4a | TP | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | D4TS3 | D4TS3 | 4FC3E | D3FC3 | 4FLD | 4PLD |
| | TPN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | D4TS4 | - | 4FC4E | - | 4FLD | 4PLD |
| | TPSN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | D4TS4 | D4TS4 | 4FC3E | D4FC3 | 4FLD | 4PLD |
| | FP | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | - | D4TS4 | - | D4FC4 | 4FLD | 4PLD |
| 4b | TP | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | D4TS3E | D4TS3E | D4FC3E | D4FC3E | 4FLD | 4PLD |
| | TPN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | D4TS4E | - | D4FC4E | - | 4FLD | 4PLD |
| | TPSN | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | D4TS4E | D4TS4E | D4FC3E | D4FC3E | 4FLD | 4PLD |
| | FP | 4SHN | 4XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 4MP | - | - | D4TS4E | - | D4FC4E | 4FLD | 4PLD |
| 5 | TP | 5SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | 5TS3 | - | 5FC3 | - | 6FLD | 6PLD |
| | TPN | 5SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | 5TS4 | - | 5FC4 | - | 6FLD | 6PLD |
| | TPSN | 5SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | 5TS4 | - | 5FC3 | - | 6FLD | 6PLD |
| 5a | TP | 5SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | - | D5TS3 | - | D5FC3 | 6FLD | 6PLD |
| | TPSN | 5SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | - | D6TS4 | - | D5FC3 | 6FLD | 6PLD |
| | FP | 5SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | - | D5TS4 | - | D5FC4 | 6FLD | 6PLD |
| 6 | TP | 6SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | 6TS4 | - | 6FC3 | - | 6FLD | 6PLD |
| | TPN | 6SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | 6TS4 | - | 6FC4 | - | 6FLD | 6PLD |
| | TPSN | 6SHN | 6XS | ASP | 1ASP | 2ASP | 3ASP | 4ASP | 6ASP | 8ASP | 6MP | - | 6TS4 | - | 6FC3 | - | 6FLD | 6PLD |

* Fuse covers for BS Type units 160/200A.
** Suitable padlock: **List No. PD4**

# PANEL MOUNTING SWITCHGEAR

## FUSED COMBINATION SWITCHES DIMENSIONS

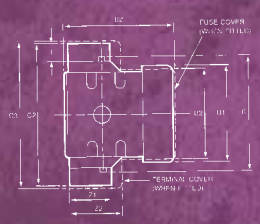
### BS CHANGEOVER FUSED COMBINATION SWITCHES

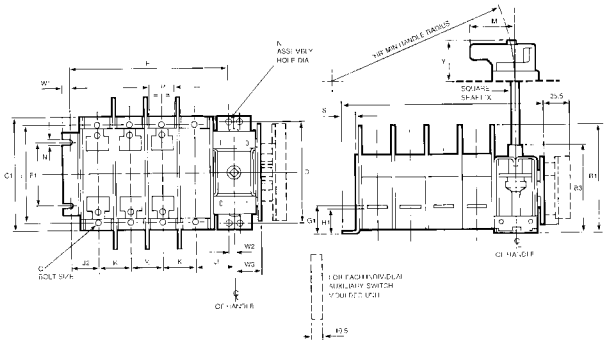
| Frame Size | List Number | A (mm) | B1 (mm) | B2 (mm) | B3 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | D (mm) | E (mm) | F1 (mm) | F2 (mm) | G1 (mm) | G2* (mm) | H1 (mm) | H2* (mm) | HR (mm) | J1 (mm) | J2 (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | Q (mm) | R (mm) | S (mm) | T (mm) | U1 (mm) | U2 (mm) | W1 (mm) | W2 (mm) | X (mm) | Y (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32S1N32, 32S1SN32<br>32S332<br>32S3N32, 32S3SN32 | 88.5<br>109.5<br>130.5 | 91 | 93 | 81 | 98 | 126 | - | 83.5 | 67.5<br>88.5<br>109.5 | 56 | - | - | - | 16.7 | - | 175 | 32.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 6 | 6.3<br>SQ | 55 | 38 | - |
| 1 | 63S1N63, 63S1SN63<br>63S363<br>63S3N63, 63S3SN63 | 88.5<br>109.5<br>130.5 | 91 | 93 | 81 | 98 | 126 | - | 83.5 | 67.5<br>88.5<br>109.5 | 56 | - | - | - | 16.7 | - | 175 | 32.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 6 | 6.3<br>SQ | 55 | 38 | - |
| 2 | 63S1N45, 63SISN45<br>63S345<br>63S3N45, 63S3SN45 | 110<br>141<br>172 | 107 | 109 | 86 | 107 | 145 | 166 | 95 | 88.5<br>119.5<br>150.5 | 72 | - | 27 | - | 25.5 | - | 175 | 36.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 5.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 2 | 100S1N63, 100S1SN63<br>100S363<br>100S3N63, 100S3SN63 | 110<br>141<br>172 | 107 | 109 | 86 | 107 | 145 | 166 | 95 | 88.5<br>119.5<br>150.5 | 72 | - | 27 | - | 25.5 | - | 175 | 36.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 5.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 2 | 100S1N100, 100S1SN100<br>100S3100<br>100S3N100, 100S3SN100 | 110<br>141<br>172 | 107 | 109 | 86 | 107 | 145 | 166 | 95 | 88.5<br>119.5<br>150.5 | 72 | - | 27 | - | 25.5 | - | 175 | 36.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 5.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 3 | 125S1N125, 125S1SN125<br>125S3125<br>125S3N125, 125S3SN125 | 129<br>169<br>209 | 124 | 135.5 | 86 | 142 | 181 | 209.5 | 120 | 104.5<br>144.5<br>184.5 | 80 | - | 23 | - | 21 | - | 175 | 41 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 125.5 | 7.5 | 7 | 6.3<br>SQ | 55 | 45 | 47 |
| 3 | 200S1N160, 200S1SN160<br>200S3160<br>200S3N160, 200S3SN160 | 129<br>169<br>209 | 137.5 | 139.5 | 86 | 142 | 181 | 209.5 | 120.5 | 104.5<br>144.5<br>184.5 | 80 | - | 23 | - | 21 | - | 175 | 41 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 114 | 7.5 | 7 | 6.3<br>SQ | 55 | 39 | 47 |
| 4 | 200S1N200, 200S1SN200<br>200S3200<br>200S3N200, 200S3SN200 | 182<br>227<br>272 | 168 | 190 | 141 | 196 | 286 | 307 | 182.5 | 131<br>176<br>221 | 120 | - | 34 | - | 31.5 | - | 250 | 63.5 | 37.5 | 45 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 45 | 154 | 159 | 10 | 15 | 9.5<br>SQ | 55 | 57 | 69 |
| 4a | 250S3250<br>250S3N250, 250S3SN250 | 278<br>328.5 | 168.5 | 170.5 | 141 | 196 | 319 | 324 | 182.5 | 225.5<br>276 | 120 | - | 34 | - | 31.5 | - | 250 | 74.3<br>66.8 | 50.5 | 58 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 9.5<br>SQ | 55 | 68 | 70 |
| 4b | 315S3315<br>315S3N315, 315S3SN315 | 311<br>374.5 | 202.5 | 204.5 | 141 | 196 | 319 | 367 | 182.5 | 258.5<br>322 | 120 | - | 34 | - | 31.5 | - | 250 | 79.8<br>74.3 | 56 | 69 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 9.5<br>SQ | 55 | 68 | 70 |
| 5 | 400S3400<br>400S3N400<br>400S3SN400 | 335<br>407<br>407 | 196 | 206 | 165 | 225 | 359 | 365 | 164 | 259<br>331<br>331 | 95 | 139 | 43 | 43<br>- | 18 | 40<br>- | 350 | 64 | 53.2 | 72 | 188 | 210 | 8.5 | 45 | 14 | - | 26.5 | 67 | 174 | 179 | 9.5 | 2.5 | 14.5<br>SQ | 52 | 65 | 83 |
| 6 | 630S3630<br>630S3N630<br>630S3SN630 | 395<br>485<br>485 | 257.5 | 268 | 183 | 320 | 464.5 | 472.5 | 164 | 319.5<br>411.5<br>411.5 | 140 | 180 | 60.3 | 60.3 | 32.3 | 54<br>- | 350 | 74.5 | 63 | 92 | 266.5 | 210 | 8.5 | 64 | 20 | - | 26.5 | 72 | 240 | 245.5 | 9.5 | 2 | 14.5<br>SQ | 60 | 85 | 133 |
| 6 | 800S3710<br>800S3N710<br>800S3SN710 | 395<br>485<br>485 | 257.5 | 268 | 183 | 320 | 464.5 | 472.5 | 164 | 319.5<br>411.5<br>411.5 | 140 | 180 | 60.3 | 60.3 | 32.3 | 54<br>- | 350 | 74.5 | 63 | 92 | 266.5 | 214<br>to<br>320 | 8.5 | 64 | 20 | - | 26.5 | 72 | 240 | 245.5 | 9.5 | 2 | 14.5<br>SQ | 60 | 85 | 133 |

### DIN FUSED COMBINATION SWITCHES - STANDARD OPERATION

| Frame Size | List Number | A (mm) | B1 (mm) | B2 (mm) | B3 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | D (mm) | E (mm) | F1 (mm) | F2 (mm) | G1 (mm) | H1 (mm) | HR (mm) | J1 (mm) | J2 (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | Q (mm) | R (mm) | S (mm) | T (mm) | U1 (mm) | U2 (mm) | W1 (mm) | W2 (mm) | X (mm) | Y (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | DS63-000<br>DS63SN-000<br>DS63FP-000 | 132<br>159<br>159 | 124.5 | 126.5 | 81 | 98 | - | - | 83.5 | 112<br>139<br>139 | 56 | - | - | 16.7 | 175 | 37 | 28 | 26.5 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | - | 88 | 85 | 6 | 6 | 6.3<br>SQ | 55 | - | - |
| 2a | DS100-00<br>DS100SN-00<br>DS100FP-00 | 164<br>201<br>201 | 143.5 | 145.5 | 86 | 107 | 145 | 176 | 95 | 143.5<br>180.5<br>180.5 | 72 | - | 27 | 25.5 | 175 | 42 | 34 | 36.5 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 95 | 90 | 6.7 | 5.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 2a | DS125-00<br>DS123SN-00<br>DS125FP-00 | 164<br>201<br>201 | 143.5 | 145.5 | 86 | 107 | 145 | 176 | 95 | 143.5<br>180.5<br>180.5 | 72 | - | 27 | 25.5 | 175 | 42 | 34 | 36.5 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 95 | 90 | 6.7 | 5.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 3 | DS160-00<br>DS160SN-00<br>DS160FP-00 | 169<br>209<br>209 | 137.5 | 139.5 | 86 | 142 | 181 | 209.5 | 120.5 | 144.5<br>184.5<br>184.5 | 80 | - | 23 | 21 | 175 | 41 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 114 | 7.5 | 7 | 6.3<br>SQ | 55 | 39 | 47 |
| 4a | DS250-1<br>DS250SN-1<br>DS250FP-1 | 278<br>328.5<br>336 | 202.5 | 204.5 | 141 | 196 | 319 | 324 | 182.5 | 225.5<br>276<br>283.5 | 120 | - | 34 | 31.5 | 250 | 74.3<br>66.8<br>74.3 | 50.5 | 58 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 9.5<br>SQ | 55 | 68 | 70 |
| 4b | DS315-2<br>DS315SN-2<br>DS315FP-2 | 311<br>374.5<br>380 | 202.5 | 204.5 | 141 | 196 | 319 | 324 | 182.5 | 258.5<br>322<br>327.5 | 120 | - | 34 | 31.5 | 250 | 79.8<br>74.3<br>79.8 | 56 | 69 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 9.5<br>SQ | 55 | 68 | 70 |
| 4b | DS400-2<br>DS400SN-2<br>DS400FP-2 | 311<br>374.5<br>380 | 202.5 | 204.5 | 141 | 196 | 319 | 324 | 182.5 | 104.5<br>322<br>327.5 | 120 | - | 34 | 31.5 | 250 | 79.8<br>74.3<br>79.8 | 56 | 69 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 9.5<br>SQ | 55 | 68 | 70 |
| 5a | DS630-3<br>DS630SN-3<br>DS630FP-3 | 394<br>467.5<br>479 | 219 | 221 | 165 | 225 | 358 | 370 | 164 | 308<br>381.5<br>393.5 | 95 | 139 | 43 | 18 | 350 | 75.5<br>64<br>75.5 | 66.2 | 85 | 188 | 210 | 8.5 | 45 | 14 | - | 26.5 | 66.5 | 175 | 163 | 9.5 | 2.5 | 14.5<br>SQ | 52 | 79 | 83 |

Note: 1) 'R' = Dimension represents the maximum width across mechanism spring guides.
2) 'T' = Additional height of connecting barrier.
3) First auxiliary pack adds 24.5mm to side of the switch when attached. Each additional auxiliary pack adds a further 10.5mm.



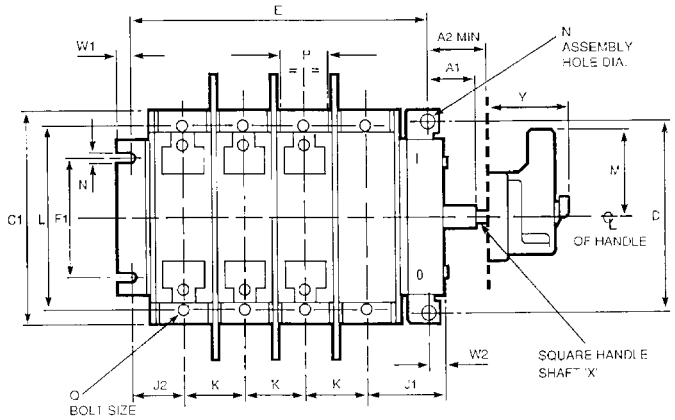


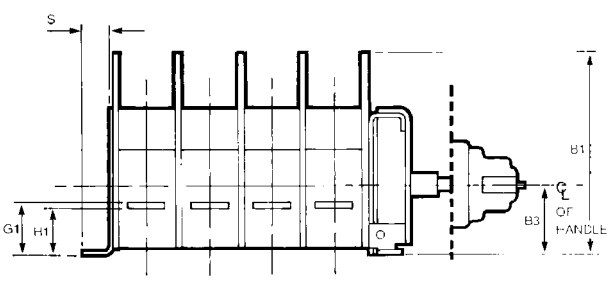
## BS SIDE MECHANISM FUSED COMBINATION SWITCHES

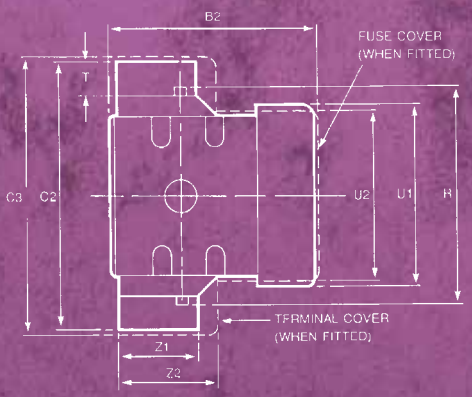
| Frame Size | List Number | A (mm) | A2 (mm) | B1 (mm) | B2 (mm) | B3 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | D (mm) | E (mm) | F1 (mm) | G1 (mm) | H1 (mm) | J1 (mm) | J2 (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | Q (mm) | R (mm) | S (mm) | T (mm) | U1 (mm) | U2 (mm) | W1 (mm) | W2 (mm) | X (mm) | Y (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32SM332<br>32SM3N32, 32SM3SN32 | 21.5 | 45 | 91 | 93 | 31 | 98 | 126 | - | 83.5 | 88.5<br>109.5 | 56 | - | 16.7 | 34.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 8 | 6.3<br>SQ | 55 | 38 | - |
| 1 | 63SM363<br>63SM3N63, 63SM3SN63 | 21.5 | 45 | 91 | 93 | 31 | 98 | 126 | - | 83.5 | 88.5<br>109.5 | 56 | - | 16.7 | 34.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 8 | 6.3<br>SQ | 55 | 38 | - |
| 2 | 63SM345<br>63SM3N45, 63SM3SN45 | 21 | 45 | 107 | 109 | 36.5 | 107 | 145 | 166 | 95 | 119.5<br>150.5 | 72 | 27 | 25.5 | 38.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 7.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 2 | 100SM363<br>100SM3N63, 100SM3SN63 | 21 | 45 | 107 | 109 | 36.5 | 107 | 145 | 166 | 95 | 119.5<br>150.5 | 72 | 27 | 25.5 | 38.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 7.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 2 | 100SM3100<br>100SM3N100, 100SM3SN100 | 21 | 45 | 107 | 109 | 36.5 | 107 | 145 | 166 | 95 | 119.5<br>150.5 | 72 | 27 | 25.5 | 38.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 7.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 3 | 125SM3125<br>125SM3N125, 125SM3SN125 | 21 | 45 | 124 | 135.5 | 36.5 | 142 | 181 | 209.5 | 120.5 | 144.5<br>184.5 | 80 | 23 | 21 | 43 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 125.5 | 7.5 | 9 | 6.3<br>SQ | 55 | 45 | 47 |
| 3 | 200SM3160<br>200SM3N160, 200SM3SN160 | 21 | 45 | 137.5 | 139.5 | 36.5 | 142 | 181 | 209.5 | 120.5 | 144.5<br>184.5 | 80 | 23 | 21 | 43 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 114 | 7.5 | 9 | 6.3<br>SQ | 55 | 39 | 47 |

## DIN SIDE MECHANISM FUSED COMBINATION SWITCHES

| Frame Size | List Number | A (mm) | A2 (mm) | B1 (mm) | B2 (mm) | B3 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | D (mm) | E (mm) | F1 (mm) | G1 (mm) | H1 (mm) | J1 (mm) | J2 (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | Q (mm) | R (mm) | S (mm) | T (mm) | U1 (mm) | U2 (mm) | W1 (mm) | W2 (mm) | X (mm) | Y (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SMDS63-000<br>SMDS6363SN-000<br>SMDS6363FP-000 | 21.5 | 45 | 124.5 | 126.5 | 31 | 98 | - | - | 83.5 | 112<br>139<br>139 | 56 | - | 16.7 | 34.5 | 28 | 26.5 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | - | 88 | 85 | 6 | 8 | 6.3<br>SQ | 55 | - | - |
| 2 | SMDS100-00<br>SMDS100SN-00<br>SMDS100FP-00 | 21 | 45 | 143.5 | 145.5 | 36.5 | 107 | 145 | 176 | 95 | 143.5<br>180.5<br>180.5 | 72 | 27 | 25.5 | 38.5 | 34 | 36.5 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 95 | 90 | 6.7 | 7.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 2a | SMDS125-00<br>SMDS125SN-00<br>SMDS125FP-00 | 21 | 45 | 143.5 | 145.5 | 36.5 | 107 | 145 | 176 | 95 | 143.5<br>180.5<br>180.5 | 72 | 27 | 25.5 | 38.5 | 34 | 36.5 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 95 | 90 | 6.7 | 7.5 | 6.3<br>SQ | 55 | 45 | 47 |
| 3 | SMDS160-00<br>SMDS160SN-00<br>SMDS160FP-00 | 21 | 45 | 137.5 | 139.5 | 36.5 | 142 | 181 | 209.5 | 120.5 | 144.5<br>184.5<br>184.5 | 80 | 23 | 21 | 43 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 114 | 7.5 | 9 | 6.3<br>SQ | 55 | 39 | 47 |



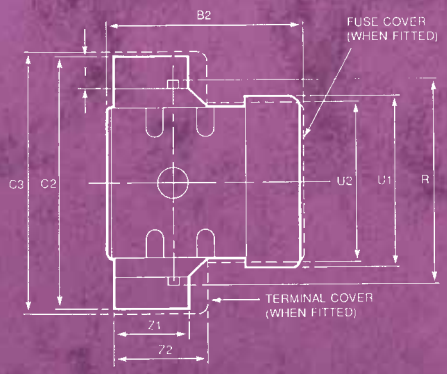

Note: 1) 'R' = Dimension represents the maximum width across mechanism spring guides.
2) 'T' = Additional height of connecting barrier.
3) First auxiliary pack adds 24.5mm to side of the switch when attached. Each additional auxiliary pack adds a further 10.5mm.

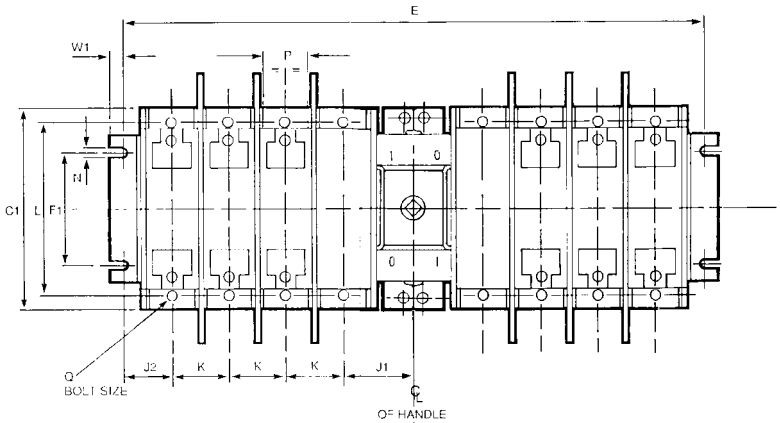
# PANEL MOUNTING SWITCHGEAR

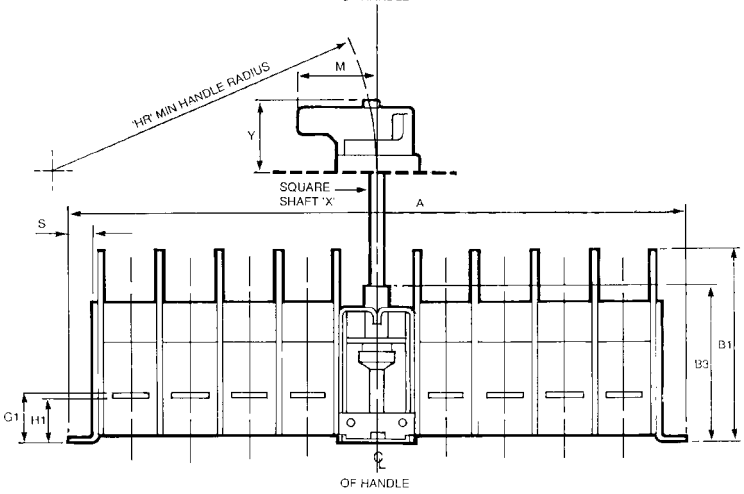
## FUSED COMBINATION SWITCHES DIMENSIONS

### BS CHANGEOVER FUSED COMBINATION SWITCHES

| Frame Size | List Number | A (mm) | B1 (mm) | B2 (mm) | B3 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | E (mm) | F1 (mm) | G1 (mm) | H1 (mm) | HR (mm) | J1 (mm) | J2 (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | Q (mm) | R (mm) | S (mm) | T (mm) | U1 (mm) | U2 (mm) | W1 (mm) | X (mm) | Y (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32SC332<br>32SC3N32<br>32SC3SN32 | 203<br>245<br>245 | 91 | 93 | 81 | 98 | 126 | - | 191<br>233<br>233 | 56 | - | 16.7 | 175 | 33.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 6.3 SQ | 55 | 38 | - |
| 1 | 63SC363<br>63SC3N63<br>63SC3SN63 | 203<br>245<br>245 | 91 | 93 | 81 | 98 | 126 | - | 191<br>233<br>233 | 56 | - | 16.7 | 175 | 33.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 6.3 SQ | 55 | 38 | - |
| 2 | 63SC345<br>663SC3N45<br>63SC3SN45 | 265.5<br>327.5<br>327.5 | 107 | 109 | 86 | 107 | 145 | 166 | 252<br>314<br>314 | 72 | 27 | 25.5 | 175 | 37.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 6.3 SQ | 55 | 45 | 47 |
| 2 | 100SC363<br>100SC3N63<br>100SC3SN63 | 265.5<br>327.5<br>327.5 | 107 | 109 | 86 | 107 | 145 | 166 | 252<br>314<br>314 | 72 | 27 | 25.5 | 175 | 37.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 6.3 SQ | 55 | 45 | 47 |
| 2 | 100SC3100<br>100SC3N100<br>100SC3SN100 | 265.5<br>327.5<br>327.5 | 107 | 109 | 86 | 107 | 145 | 166 | 252<br>314<br>314 | 72 | 27 | 25.5 | 175 | 37.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 6.3 SQ | 55 | 45 | 47 |
| 3 | 125SC3125<br>125SC3N125<br>125SC3SN125 | 320<br>400<br>400 | 124 | 135.5 | 86 | 142 | 181 | 209.5 | 305<br>385<br>385 | 80 | 23 | 21 | 175 | 42 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 125.5 | 7.5 | 6.3 SQ | 55 | 45 | 47 |
| 3 | 200SC3160<br>200SC3N160<br>200SC3SN160 | 320<br>400<br>400 | 137.5 | 139.5 | 86 | 142 | 181 | 209.5 | 305<br>385<br>385 | 80 | 23 | 21 | 175 | 42 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 114 | 7.5 | 6.3 SQ | 55 | 39 | 47 |
| 4 | 200SC3200<br>200SC3N200<br>200SC3SN200 | 402<br>492<br>492 | 168 | 190 | 141 | 196 | 286 | 297 | 382<br>472<br>472 | 120 | 34 | 31.5 | 250 | 63.5 | 37.5 | 45 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 45 | 154 | 159 | 10 | 9.5 SQ | 55 | 57 | 69 |
| 4a | 250SC3250<br>250SC3N250<br>250SC3SN250 | 501<br>602<br>602 | 168.5 | 170.5 | 141 | 196 | 319 | 324 | 481<br>582<br>582 | 120 | 34 | 31.5 | 250 | 74.3<br>66.8<br>66.8 | 50.5 | 58 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 9.5 SQ | 55 | 68 | 70 |
| 4b | 315SC3315<br>315SC3N315<br>315SC3SN315 | 567<br>694<br>694 | 202.5 | 204.5 | 141 | 196 | 319 | 324 | 547<br>674<br>674 | 120 | 34 | 31.5 | 250 | 79.8<br>74.3<br>74.3 | 56 | 69 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 9.5 SQ | 55 | 68 | 70 |
| 4b | 400SC3400<br>400SC3N400<br>400SC3SN400 | 567<br>694<br>694 | 202.5 | 204.5 | 141 | 196 | 319 | 324 | 547<br>674<br>674 | 120 | 34 | 31.5 | 250 | 79.8<br>74.3<br>74.3 | 56 | 69 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 9.5 SQ | 55 | 68 | 70 |



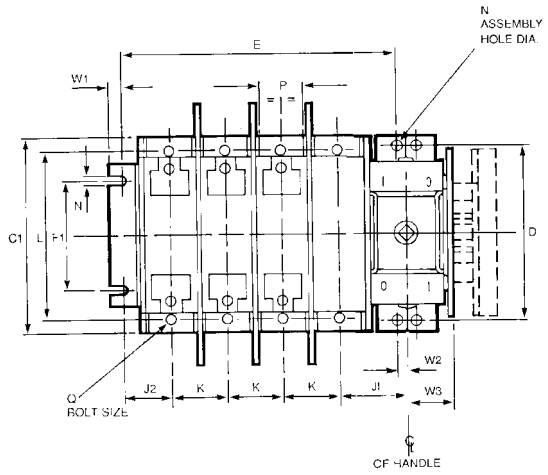



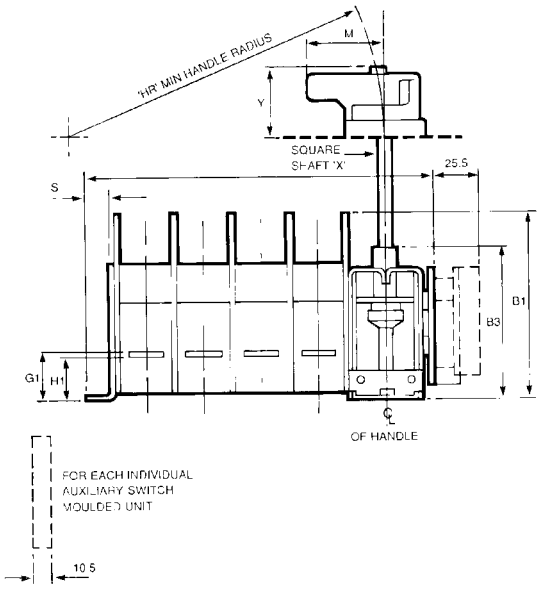



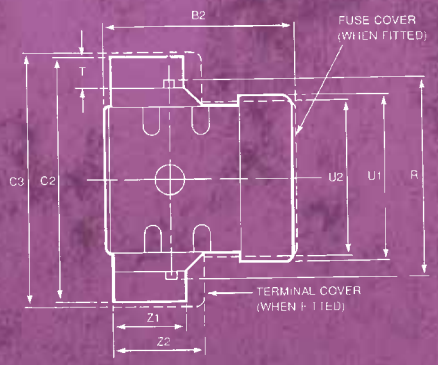

Note: 1) 'R' = Dimension represents the maximum width across mechanism spring guides.
2) 'T' = Additional height of connecting barrier.
3) First auxiliary pack adds 24.5mm to side of the switch when attached. Each additional auxiliary pack adds a further 10.5mm.

## BS TEST POSITION FUSED COMBINATION SWITCHES

| Frame Size | List Number | A (mm) | B1 (mm) | B2 (mm) | B3 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | E (mm) | F1 (mm) | G1 (mm) | H1 (mm) | HR (mm) | J1 (mm) | J2 (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | Q (mm) | R (mm) | S (mm) | T (mm) | U1 (mm) | U2 (mm) | W1 (mm) | W2 (mm) | W3 (mm) | X (mm) | Y (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32ST332<br>32ST3N32<br>32ST3SN32 | 126<br>146.5<br>146.5 | 91 | 93 | 81 | 98 | 126 | - | 88.5<br>109.5<br>109.5 | 56 | - | 16.7 | 175 | 33.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 7 | 25.5 | 6.3 SQ | 55 | 38 | - |
| 1 | 63ST363<br>63ST3N63<br>63ST3SN63 | 126<br>146.5<br>146.5 | 91 | 93 | 81 | 98 | 126 | - | 88.5<br>109.5<br>109.5 | 56 | - | 16.7 | 175 | 33.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 78 | 83 | 6 | 7 | 25.5 | 6.3 SQ | 55 | 38 | - |
| 2 | 63ST345<br>63ST3N45<br>63ST3SN45 | 157.5<br>188.5<br>188.5 | 107 | 109 | 86 | 107 | 145 | 166 | 119.5<br>150.5<br>150.5 | 72 | 27 | 25.5 | 175 | 37.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 6.5 | 25.5 | 6.3 SQ | 55 | 45 | 47 |
| 2 | 100ST363<br>100ST3N63<br>100ST3SN63 | 157.5<br>188.5<br>188.5 | 107 | 109 | 86 | 107 | 145 | 166 | 119.5<br>150.5<br>150.5 | 72 | 27 | 25.5 | 175 | 37.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 6.5 | 25.5 | 6.3 SQ | 55 | 45 | 47 |
| 2 | 100ST3100<br>100ST3N100<br>100ST3SN100 | 157.5<br>188.5<br>188.5 | 107 | 109 | 86 | 107 | 145 | 166 | 119.5<br>150.5<br>150.5 | 72 | 27 | 25.5 | 175 | 37.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 94 | 99 | 6.7 | 6.5 | 25.5 | 6.3 SQ | 55 | 45 | 47 |
| 3 | 125ST3125<br>125ST3N125<br>125ST3SN125 | 185.5<br>225.5<br>225.5 | 124 | 135.5 | 86 | 142 | 181 | 209.5 | 144.5<br>184.5<br>184.5 | 80 | 23 | 21 | 175 | 42 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 125.5 | 7.5 | 8 | 25.5 | 6.3 SQ | 55 | 45 | 47 |
| 3 | 200ST3160<br>200ST3N160<br>200ST3SN160 | 188.5<br>225.5<br>225.5 | 137.5 | 139.5 | 86 | 142 | 181 | 209.5 | 144.5<br>184.5<br>184.5 | 80 | 23 | 21 | 175 | 42 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 120 | 114 | 7.5 | 8 | 25.5 | 6.3 SQ | 55 | 39 | 47 |
| 4 | 200ST3200<br>200ST3N200<br>200ST3SN200 | 251.5<br>296.5<br>296.5 | 168 | 190 | 141 | 196 | 286 | 297 | 176<br>221<br>221 | 120 | 34 | 31.5 | 250 | 63.5 | 37.5 | 45 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 45 | 154 | 159 | 10 | 15 | 52 | 9.5 SQ | 55 | 57 | 69 |
| 4a | 250ST3250<br>250ST3N250<br>250ST3SN250 | 302.5<br>353<br>353 | 168.5 | 170.5 | 141 | 196 | 319 | 324 | 225.5<br>276<br>276 | 120 | 34 | 31.5 | 250 | 74.3<br>66.8<br>66.8 | 50.5 | 58 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 52 | 9.5 SQ | 55 | 68 | 70 |
| 4b | 315ST3315<br>315ST3N315<br>315ST3SN315 | 335.5<br>399<br>399 | 202.5 | 204.5 | 141 | 196 | 319 | 324 | 258.5<br>322<br>322 | 120 | 34 | 31.5 | 250 | 79.8<br>74.3<br>74.3 | 56 | 69 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 52 | 9.5 SQ | 55 | 68 | 70 |
| 4b | 400ST3400<br>400ST3N400<br>400ST3SN400 | 335.5<br>399<br>399 | 202.5 | 204.5 | 141 | 196 | 319 | 324 | 258.5<br>322<br>322 | 120 | 34 | 31.5 | 250 | 79.8<br>74.3<br>74.3 | 56 | 69 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 61.5 | 160 | 157 | 10 | 15 | 52 | 9.5 SQ | 55 | 68 | 70 |



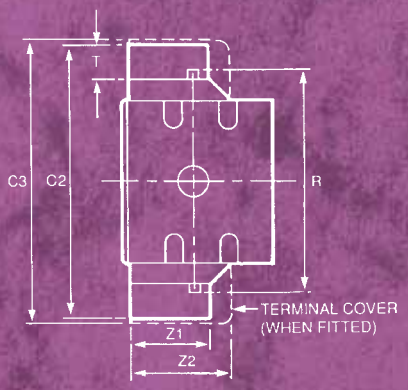

Note: 1) 'R' = Dimension represents the maximum width across mechanism spring guides.
2) 'T' = Additional height of connecting barrier.
3) First auxiliary pack adds 24.5mm to side of the switch when attached. Each additional auxiliary pack adds a further 10.5mm.

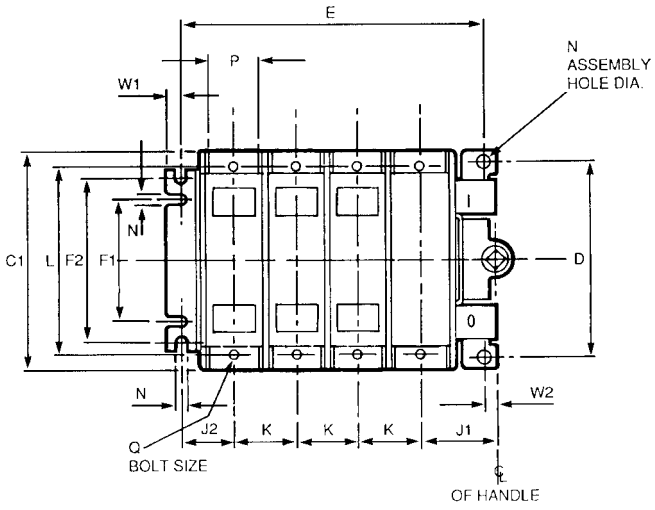
# PANEL MOUNTING SWITCHGEAR

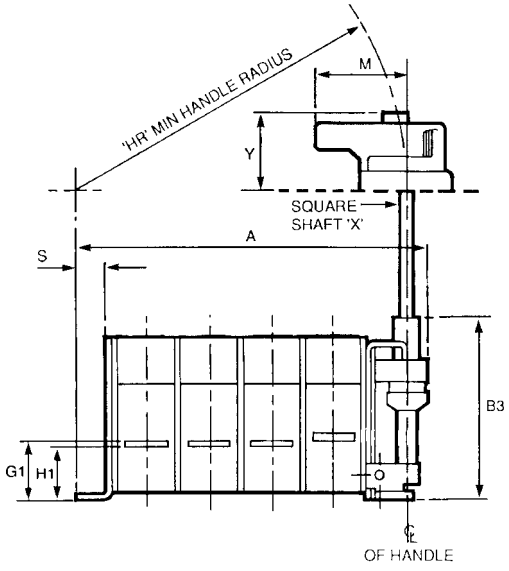
## FUSED COMBINATION SWITCHES DIMENSIONS

### SWITCH – DISCONNECTORS

| Frame Size | List Number | A (mm) | B3 (mm) | C1 (mm) | C2 (mm) | C3 (mm) | D (mm) | E (mm) | F1 (mm) | F2 (mm) | G1 (mm) | H1 (mm) | HR (mm) | J1 (mm) | J2 (mm) | K (mm) | L (mm) | M (mm) | N (mm) | P (mm) | Q (mm) | R (mm) | S (mm) | T (mm) | W1 (mm) | W2 (mm) | X (mm) | Y (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | IS452<br>IS453<br>IS454 | 88.5<br>109.5<br>130.5 | 82 | 98 | 126 | - | 83.5 | 67.5<br>88.5<br>109.5 | 56 | - | - | 16.7 | 175 | 32.5 | 20 | 21 | 81.5 | 65 | 5.5 | - | - | 121 | 13 | 14 | 6 | 6 | 6.3 SQ | 55 | 38 | - |
| 2 | IS1002<br>IS1003<br>IS1004 | 110<br>141<br>172 | 86 | 107 | 145 | 166 | 95 | 88.5<br>119.5<br>150.5 | 72 | - | 27 | 25.5 | 175 | 36.5 | 26.5 | 31 | 95.5 | 65 | 5.5 | 18 | 6 | 125 | 15 | 19 | 6.7 | 5.5 | 6.3 SQ | 55 | 45 | 47 |
| 3 | IS1602<br>IS1603<br>IS1604 | 129<br>169<br>209 | 86 | 142 | 181 | 209.5 | 120.5 | 104.5<br>144.5<br>184.5 | 80 | - | 23 | 21 | 175 | 41 | 30.5 | 40 | 123.5 | 65 | 5.5 | 22 | 8 | 125 | 15 | 19.5 | 7.5 | 7 | 6.3 SQ | 55 | 45 | 47 |
| 4 | IS3153<br>IS3154 | 227<br>272 | 141 | 196 | 286 | 297 | 182.5 | 176<br>221 | 120 | - | 34 | 31.5 | 250 | 63.5 | 37.5 | 45 | 167 | 130 | 6.5 | 32 | 10 | 266 | 22 | 45 | 10 | 15 | 9.5 SQ | 55 | 57 | 69 |
| 5 | IS6003<br>IS6004 | 335<br>407 | 165 | 225 | 359 | 365 | 164 | 259<br>331 | 95 | 139 | 43 | 18 | 350 | 64 | 53.2 | 72 | 188 | 210 | 8.5 | 45 | 14 | - | 26.5 | 67 | 9.5 | 2.5 | 14.5 SQ | 52 | 65 | 83 |
| 6 | IS10003<br>IS10004 | 395<br>485 | 183 | 320 | 464.5 | 472.5 | 164 | 319.5<br>411.5 | 140 | 180 | 48.3 | 32.3 | 350 | 74.5 | 63 | 92 | 266.5 | 214 to 320 | 8.5 | 64 | 20 | - | 26.5 | 72 | 9.5 | 2 | 14.5 SQ | 60 | 85 | 133 |



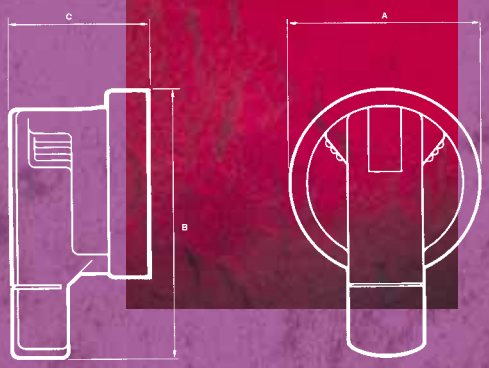




Note: 1) 'R' = Dimension represents the maximum width across mechanism spring guides.
2) 'T' = Additional height of connecting barrier.
3) First auxiliary pack adds 24.5mm to side of the switch when attached. Each additional auxiliary pack adds a further 10.5mm.

## HANDLE DIMENSIONS (MM)

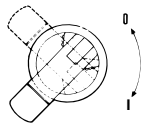
| FRAME SIZE | FUSED COMBINATION SWITCH RATING, A | SWITCH - DISCONNECTOR RATING, A | A | B | C |
|---|---|---|---|---|---|
| 1 - 3 | 32 - 200A | 45 - 160A | 67 | 96.5 | 54 |
| 4 - 4b | 200 - 400A | 200 - 315A | 67 | 159.5 | 54 |
| 5 - 6 | 400 - 630A | 600A | 76 | 245 | 52.4 |
| 6 | 800A | 1000A | 90 | 260/365* | 58.9 |

*Extended length

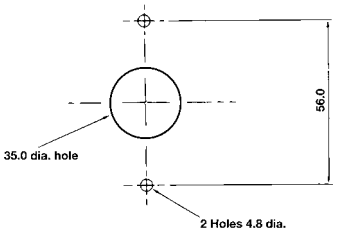



## OPERATING HANDLE FIXING APERTURES (DIMENSIONS IN MM)

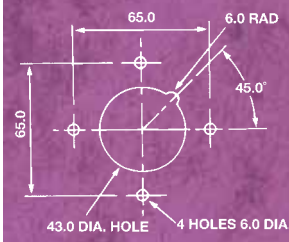
Handle aligned thus:



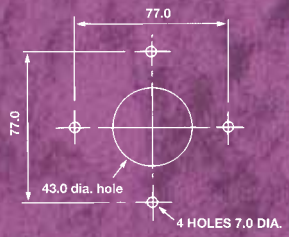

Up to 400A




400A - 630A




800A

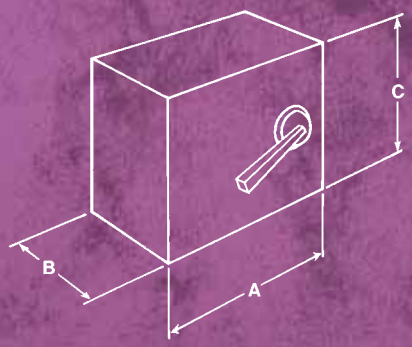



## INTERNAL ENCLOSURE DIMENSIONS

These enclosure dimensions are for guidance only as recommended minimum inside enclosure dimensions for temperature rise considerations.

**NOTE:** Larger dimensions may be necessary for the bending and termination of cables, copper, etc.

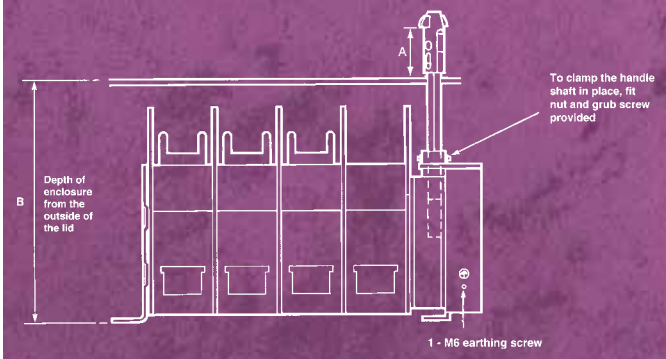
| FRAME SIZE | SWITCH RATING | A (mm) | B (mm) | C (mm) |
|---|---|---|---|---|
| 1 | 32A | 245 | 155 | 215 |
| 1 | 45 - 63A | 270 | 170 | 275 |
| 2 | 63A | 245 | 155 | 215 |
| 2 | 100A | 270 | 170 | 275 |
| 3 | 125A | 245 | 155 | 215 |
| 3 | 160A | 330 | 220 | 410 |
| 4 | 200 - 315A | 460 | 290 | 470 |
| 5 | 400A | 460 | 290 | 470 |
| 6 | 630 - 710A | 670 | 380 | 560 |




## HANDLE OPERATING SHAFT

The cut length of the handle operating shaft must allow a distance of 'A' when the door is firmly closed and any gasket is fully compressed. Dimension 'A'; distance from outside of door to underside of interlock lug, is shown below:-

| FRAME SIZE* | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| A | 14.0 | 14.0 | 14.0 | 14.0 | 17.0 | 18.0 |
| Shaft length mm | 200 | 200 | 200 | 300 | 200 | 200 |
| B Max. depth of enclosure with standard shaft (mm) | 235 | 240 | 240 | 375 | 320 | 337 |




Note: 1) 'R' = Dimension represents the maximum width across mechanism spring guides.
2) 'T' = Additional height of connecting barrier.
3) First auxiliary pack adds 24.5mm to side of the switch when attached. Each additional auxiliary pack adds a further 10.5mm.



## SPECIFICATION

Each compact frame size, up to 1600A, is enclosed in a moulded, insulated housing which provides protection against the ingress of dust and foreign bodies. This housing also supports the fixed contact assembly ensuring that each contact is isolated from the operating mechanism when in the 'OFF' position. Visual indication of contact separation is provided.

Efficient operation and extended contact life results from the switch operating mechanism and the clip and blade wiping action, fixed and moving contact design.

The fixed contacts form part of the incoming and outgoing terminals which are of the box clamp type up to 63A and tinned copper lugs from 125 to 1600A ratings.

The moving contact assembly rigidly supports each pair of moving contacts and ensures simultaneous action of each contact pair during switching operations. Each moving contact pair consists of two silver plated copper contacts, spring assisted to ensure efficient contact.This spring assistance also compensates for repulsion stresses developed under normal operating conditions or when the switch is subject to high electro-dynamic forces. Each pole houses separate arc shutes to ensure arc extinguishment during operation.

Manually independent operating mechanisms are of the "stored energy" type. Operation of the handle loads the mechanism up to a point that the stored energy in the spring system is sufficient to change the position of the moving contact train ensuring quick make and break operation.

## HANDLES AND 'ON-OFF' POSITION INDICATION

Black moulded handles (IP54) and operating shafts are supplied with each switch for door mounting. Handles may be padlocked in the 'OFF' position and incorporate a door interlocking facility which may be defeated by a competent, authorised operator.

'ON-OFF' position indication is threefold being shown on the operating handle base, the switch housing and, via a window in the switch housing, on the moving contact assembly.

## APPLICATIONS

The LBV range of switches is suitable for AC operation up to 690V single phase or three phase.

DC operation up to 250V ( $\frac{L}{R}$ = 15ms max) may be achieved by series connection of three pole devices as shown in table 6.

## SWITCH RATINGS

The load break switch range has been tested to the following specifactions: BSEN60947–3 & IEC60947–3.

## TECHNICAL INFORMATION

Table 1

| RATED THERMAL CURRENT Ith (AC21) | A | 40 | 63 | 125 | 160 | 250 | 400 | 630 | 1000 | 1600 |
|---|---|---|---|---|---|---|---|---|---|---|
| Insulation Voltage | V | 690 | 690 | 800 | 800 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Operating Voltage | Vac | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 |
| | Vdc | - | - | 440 | 440 | 440 | 440 | 440 | 440 | 440 |
| Breaking Capacity AC23 415V cos Ø=0.35 | A | 320 | 504 | 1000 | 1232 | 2000 | 2440 | 4944 | 5520 | 10000 |
| Breaking Capacity AC3 415V cos Ø=0.35 | A | - | - | - | - | - | - | - | - | - |
| Making Capacity AC23 415V cos Ø=0.35 | A | 400 | 630 | 1250 | 1540 | 2500 | 3050 | 6180 | 6900 | 12500 |
| Making Capacity AC3 415V cos Ø=0.35 | A | - | - | - | - | - | - | - | - | - |
| Short time rating | kA | 756 | 756 | 8 | 8 | 10 | 12 | 36 | 36 | 50 |
| | sec | 0.75 | 0.75 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 1 |
| Short circuit making capacity 415V (peak) | kA | 13 | 13 | 15.5 | 15.5 | 33 | 33 | 65 | 65 | |
| Rated fused short circuit current 415V RMS | kA | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 110 |

Table 2

Rated operational current AC21: Resistive loads including moderate overloads.

| NOMINAL RATING | A | 40 | 63 | 125 | 160 | 250 | 400 | 630 | 1000 | 1600 |
|---|---|---|---|---|---|---|---|---|---|---|
| at 380/415V | A | 40 | 63 | 125 | 160 | 250 | 400 | 630* | 1000* | 1600 |
| at 500V | A | 40 | 63 | 125 | 160 | 250 | 400 | 630* | 1000* | 1600 |
| at 690V | A | 40 | 63 | 125 | 125 | 250 | 400 | 630* | 1000* | 1600 |

*switching category B according to IEC947

Table 3

Rated operational current AC22

| NOMINAL RATING | A | 40 | 63 | 125 | 160 | 250 | 400 | 630 | 1000 | 1600 |
|---|---|---|---|---|---|---|---|---|---|---|
| at 380/415V | A | 40 | 63 | 125 | 160 | 250 | 400 | 630* | 1000* | 1600 |
| at 500V | A | 40 | 63 | 125 | 160 | 250 | 400 | 630* | 1000* | 1600 |
| at 690V | A | 40 | 63 | 125 | 125 | 250 | 315 | 630* | 1000* | 1600 |

*switching category B according to IEC947

Table 4

Rated operational current AC23 Loads generated by 3-phase motors or other highly inductive loads.

| NOMINAL RATING | A | 40 | 63 | 125 | 160 | 250 | 400 | 630 | 1000 | 1600 |
|---|---|---|---|---|---|---|---|---|---|---|
| at 415V | A | 40 | 63 | 105 | 154 | 250 | 305 | 618* | 690* | 1250 |
| | kW | 22 | 30 | 59 | 90 | 147 | 180 | 375* | 425* | 750 |
| at 500V | A | 40 | 63 | 106 | 106 | 250 | 254 | 575* | 575* | 850 |
| | kW | 25 | 40 | 75 | 75 | 160 | 180 | 425* | 425* | 630 |
| at 690V | A | 40 | 63 | - | - | 138 | 138 | 437* | 437* | 630 |
| | kW | 37 | 59 | - | - | 132 | 132 | 425* | 425* | 630 |

*switching category B according to IEC947

Table 5

| NOMINAL RATING | A | 40 | 63 | 125 | 160 | 250 | 400 | 630 | 1000 | 1600 |
|---|---|---|---|---|---|---|---|---|---|---|
| at 220/240V | A | 40 | 63 | 105 | 160 | 250 | 305 | 618* | 690* | 1250 |
| | kW | 15 | 18 | 30 | 48 | 54 | 106 | 152* | 245* | 305 |
| at 415V | A | 40 | 55 | 80 | 125 | 150 | 300 | 460* | 650* | 800 |
| | kW | 22 | 30 | 45 | 75 | 85 | 165 | 225* | 370* | 455 |
| at 550V | A | 30 | 40 | 60 | 100 | 125 | 250 | 370* | 540* | 670 |
| | kW | 20 | 26 | 40 | 65 | 75 | 170 | 253* | 320* | 455 |

*switching category B according to IEC947

Table 6

Direct Current: Resistive or moderate loads. Four pole switches.

| NOMINAL RATING | A | 40 | 63 | 125 | 160 | 250 | 400 | 630 | 1000 | 1600 |
|---|---|---|---|---|---|---|---|---|---|---|
| at 250V | A | - | - | 125 | 125 | 200 | 315 | 500 | 800 | - |

## SWITCH DISCONNECTORS

| NOMINAL RATING, Ie | LIST NUMBERS INCORPORATING DOOR MOUNTING, INTERLOCKING OPERATING HANDLE AND SHAFT. | |
|---|---|---|
| | TP LIST NUMBER | TPSN LIST NUMBER |
| 40A | **34LBV** | **44LBV** |
| 63A | **36LBV** | **46LBV** |
| 125A | **312LBV** | **412LBV** |
| 160A | **316LBV** | **416LBV** |
| 250A | **325LBV** | **425LBV** |
| 400A | **340LBV** | **440LBV** |
| 630A | **363LBV** | **463LBV** |
| 1000A | **3100LBV** | **4100LBV** |
| 1600A | **3160LBV** | **4160LBV** |

## AUXILIARY CONTACTS

Auxiliary (micro-switch) contacts may be attached to the switch housing for use as:

- Signal contacts
- An early break device for tripping of remote contactor for off load switching.

| DESCRIPTION | LIST NUMBER |
|---|---|
| 1 c/o | **1LBAXD** |
| 2 c/o | **2LBAXD** |

## TERMINAL SHIELDS

Transparent terminal shields are available for TP and TPN switches in sets of two suitable for screw fixing to the switch housing.
Each shield protects two terminals.
Switches rated up to 63A have finger protected terminals.

| SWITCH RATING, A | LIST NUMBER |
|---|---|
| 125 - 160 | **412TSD** |
| 250 / 400 | **440TSD** |
| 630 | **463TSD** |
| 630 / 1000 | **4100TSD** |
| 1600 | **4160TSD** |

## SAFETY HANDLES

Red/yellow safety handles (IP54) suitable for up to three padlocks in the off position.

| SWITCH RATING, A | LIST NUMBER |
|---|---|
| 40 - 63 | **2SHNE** |
| 125 | **3SHNE** |
| 160 - 250 | **4SHNE** |
| 400 - 630 | **5SHNE** |
| 1000 - 1600 | **6SHNE** |

## HANDLE SHAFTS

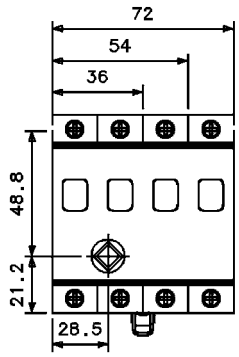
Standard length shafts are supplied with each switch, shafts of extra length can be supplied to order.

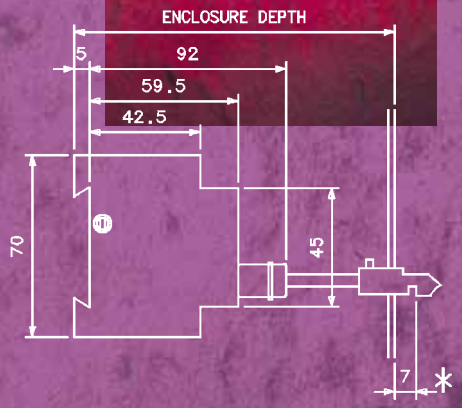
| SWITCH RATING, Ie | SHAFT LENGTH (mm) | | |
|---|---|---|---|
| | STANDARD SHAFT | NON STANDARD SHAFT | NON STANDARD SHAFT LIST NUMBER |
| 20 - 63A | 130 | 250 | **63LXSD** |
| 125 - 160A | 130 | 250 | **160LXSD** |
| 250 - 400A | 130 | 250 | **400LXSD** |
| 630 - 1000A | 130 | 250 | **1000LXSD** |
| 1600A | 130 | 200 | **1600LXSD** |

## DIMENSIONS

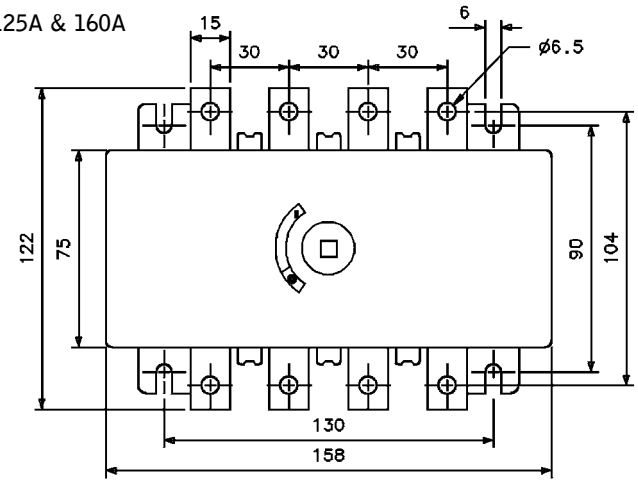
(NOTE: Operating shafts shown in 'on' position to show dimension for handle engagement)

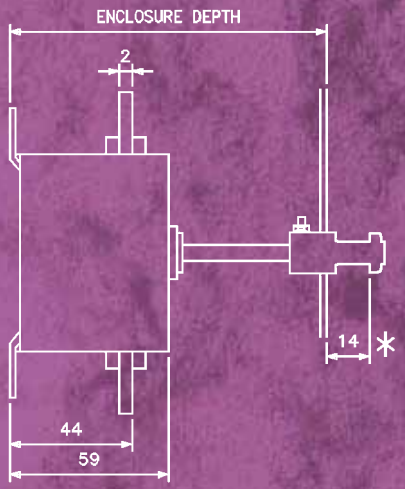
40 & 63A



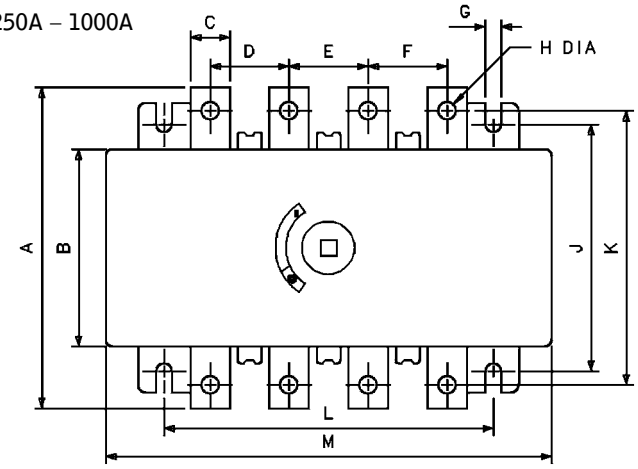



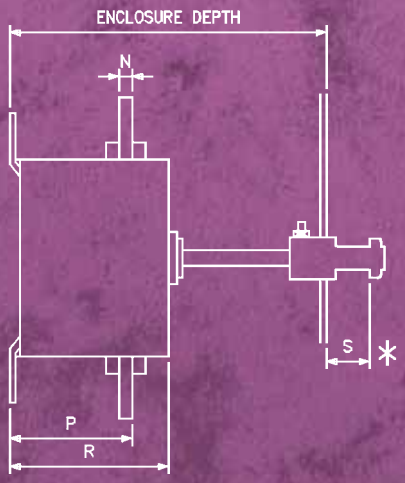

125A & 160A



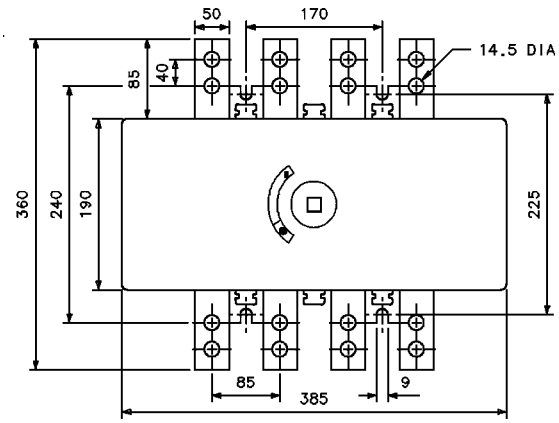

250A – 1000A

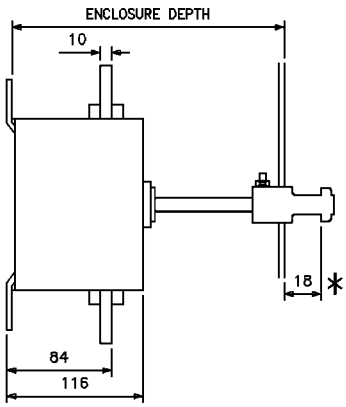



| RATING | A | B | C | D | E | F | G | H DIA | J | K | L | M | N | P | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 250A | 135 | 90 | 20 | 45 | 45 | 45 | 7 | 9 | 110 | 115 | 170 | 205 | 3 | 47 | 63 | 14 |
| 400A | 146 | 90 | 25 | 45 | 45 | 45 | 7 | 11 | 110 | 122 | 170 | 205 | 3 | 47 | 63 | 14 |
| 630A | 192 | 130 | 30 | 65 | 65 | 65 | 7 | 11 | 145 | 162 | 240 | 292 | 6 | 71 | 96 | 17 |
| 1000A | 205 | 130 | 35 | 65 | 65 | 65 | 7 | 14 | 145 | 170 | 240 | 292 | 6 | 71 | 96 | 17 |

1600A




* NB: Operating shafts shown in 'ON' position to show dimension for handle engagement.

## TERMINATIONS

Terminals for ratings up to 63A are of the cable clamping type and maximum size cable is 25mm². All other ratings are designed to accept solid copper or cable lugs. Stud sizes as table.

| RATING A | 40-63 | 125-160 | 250 | 400-630 | 1000 | 1600 |
|---|---|---|---|---|---|---|
| Stud Size | – | M6 | M8 | M10 | M12 | 2 x M12 |
| Torque setting NM | 2Nm | 7Nm | 14Nm | 28Nm | 40Nm | 40Nm |

## HANDLE FITTING

40 – 63A

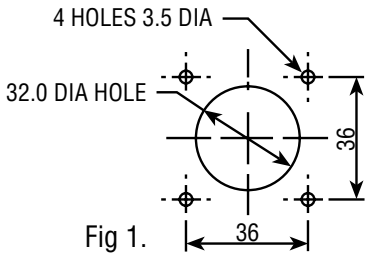



Fig 1.

125 – 400A

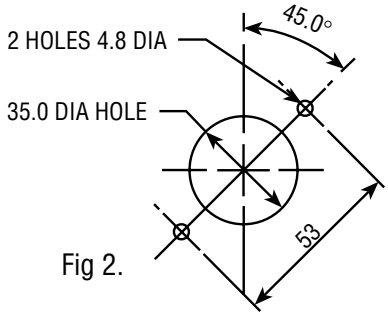



Fig 2.

630 – 1000A

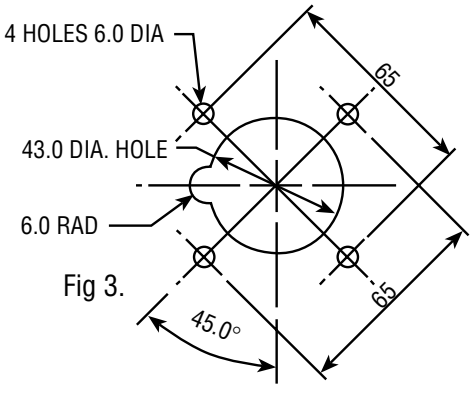



Fig 3.

1600A

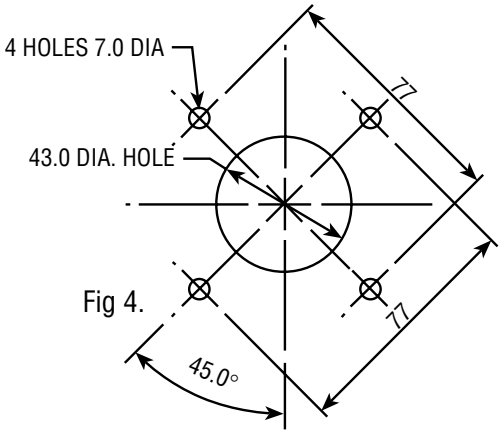
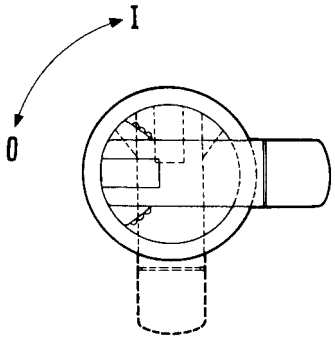


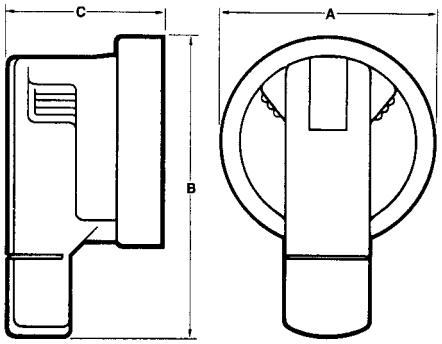

Fig 4.

## DIMENSIONS

Handle Aligned Thus:




Handle Dimensions (mm)




| RATING | A | B | C |
|---|---|---|---|
| 40 - 63 | 50 | 48 | 49 |
| 125 | 67 | 96.5 | 48 |
| 160 - 250 | 67 | 159.5 | 48 |
| 400 - 630 | 76 | 245 | 52.4 |
| 1000 - 1600 | 90 | 260/365* | 58.9 |

*Extended Length

# SPECIALIST HEAVY DUTY SWITCHGEAR

## LOCAL SWITCH-DISCONNECTORS STANDARD DUTY, TYPE RDMP, 20-63A, IP65, 2-8 POLES



Complying with BSEN60947 and IEC 408 the RDMP range of rotary cam switches are suitable for on load switching of general distribution a.c. power circuits and infrequent duty motor isolation.

Grey, moulded thermoplastic enclosures provide protection to IP65 making them suitable for most indoor and outdoor environmental conditions.

These compact isolators are fitted with red/yellow operating handles padlockable in the 'OFF' position with up to three padlocks.

Units supplied with an early break auxiliary contact are indicated by a figure 1 in the list number e.g. 2021RDMP.

The enclosure design allows easy access for cabling. Solid neutral and earth termination points are a standard feature.

### TECHNICAL DATA

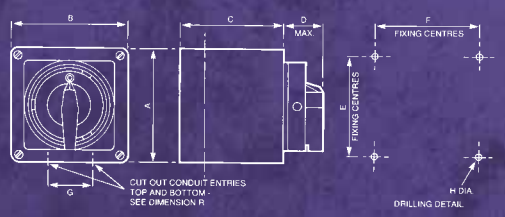
| NOMINAL UNIT RATING Ie | OPERATIONAL CURRENT, Ie AND POWER, 415V CATEGORY: | | OPERATIONAL CURRENT, Ie AND POWER, 660V CATEGORY: | | RATED SHORT TIME WITHSTAND CURRENT RMS FOR 1 SEC Icw | RATED CONDITIONAL SHORT CIRCUIT CURRENT (PROSPECTIVE R.M.S. AMPS AT 415V AC, FUSED) | | MAX TERMINAL CAPACITY $mm^2$ | DEGREE OF PROTECTION |
|---|---|---|---|---|---|---|---|---|---|
| | AC21 | AC23 | AC21 | AC23 | | kA | FUSE RATING | | |
| 20A | 20A | 5.5kW | 20A | 5.5kW | 0.25kA | 25<br>50 | 20A<br>16A | 1 x 4$mm^2$<br>2 x 2.5$mm^2$ | IP65 |
| 25A | 25A | 7.5kW | 25A | 7.5kW | 0.40kA | 25<br>50 | 25A<br>20A | 1 x 6$mm^2$<br>2 x 4$mm^2$ | IP65 |
| 40A | 40A | 15kW | 40A | 15kW | 0.80kA | 62 | 40A | 1 x 10$mm^2$<br>2 x 6$mm^2$ | IP65 |
| 63A | 63A | 22kW | 63A | 18.5kW | 1.70kA | 50 | 63A | 1 x 16$mm^2$<br>2 x 10$mm^2$ | IP65 |

Auxiliary contact rating as main poles.

### ORDER REFERENCES

| NOMINAL UNIT RATING, Ie | DOUBLE POLE AND NEUTRAL LIST NO. | TRIPLE POLE AND NEUTRAL LIST NO. | FOUR POLE LIST NO. | FOUR POLE AND NEUTRAL LIST NO. | SIX POLE AND NEUTRAL LIST NO. | EIGHT POLE LIST NO. |
|---|---|---|---|---|---|---|
| 20A | **2021RDMP** | **2031RDMP** | **204RDMP** | **2041RDMP** | **2061RDMP** | - |
| 25A | **2521RDMP** | **2531RDMP** | **254RDMP** | **2541RDMP** | **2561RDMP** | **258RDMP** |
| 40A | **4021RDMP** | **4031RDMP** | **404RDMP** | **4041RDMP** | **4061RDMP** | - |
| 63A | **6321RDMP** | **6331RDMP** | **634RDMP** | **6341RDMP** | **6361RDMP** | **638RDMP** |

NB:- Switches with additional poles are available on request.




### DIMENSIONS (MM)

| NOMINAL UNIT RATING, Ie | A | B | C 2-4 POLE 20 & 40A 2-3 POLE 25 & 63A | C 6 POLE 20 & 40A 4-6 POLE 25 & 63A | D | E | F | G | H | R ISO THREAD |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 and 25A | 90 | 90 | 71 | 98 | 30 | 79 | 63 | 30 | 4.5 | 2 x 20 |
| 40 and 63A | 176 | 125 | 85 | 119 | 36 | 146 | 112 | 68 | 5.5 | 2 x 25<br>1 x 16 |

# LOCAL SWITCH-DISCONNECTORS STANDARD DUTY, TYPE PC2, IP55, 2-6 POLES

Complying with BSEN60947 and IEC 408 the PC2 range of rotary cam isolating switches are suitable for on load switching of general distribution A.C. power circuits and infrequent duty motor isolation.

Grey, pressed steel enclosures provide protection to IP55.

These compact disconnectors are fitted with black operating handles, padlockable in the 'OFF' position.

The enclosure design allows easy access for cabling by removal of the switch interior.

Switches with additional poles are available on request.

2 pole and 4 pole units have removable neutral links included for SPN (from 2P) or TPN (from 4P) conversions.

Earth terminals provided as standard.




## TECHNICAL DATA

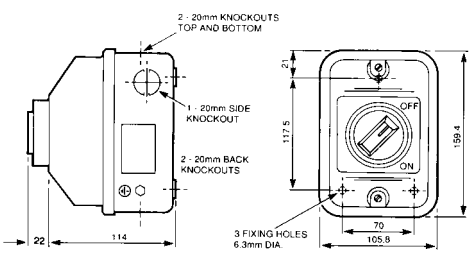
| NOMINAL UNIT RATING Ie | OPERATIONAL CURRENT, Ie AND POWER, 415V 3ph CATEGORY: | | OPERATIONAL CURRENT, Ie AND POWER, 660V 3ph CATEGORY: | | RATED SHORT TIME WITHSTAND CURRENT RMS FOR 1 SEC | RATED CONDITIONAL SHORT CIRCUIT CURRENT (PROSPECTIVE R.M.S. AMPS AT 415V AC, FUSED) | | MAX TERMINAL CAPACITY | DEGREE OF PROTECTION |
|---|---|---|---|---|---|---|---|---|---|
| | AC21 | AC23 | AC21 | AC23 | | kA | FUSE RATING | | |
| 20A | 20A | 5.5kW | 20A | 5.5kW | 0.25kA | 25<br>50 | 20A<br>16A | 1 x 4mm²<br>2 x 2.5mm² | IP55 |
| 25A | 25A | 7.5kW | 25A | 7.5kW | 0.40kA | 25<br>50 | 25A<br>20A | 1 x 6mm²<br>2 x 4mm² | IP55 |
| 40A | 40A | 15kW | 40A | 15kW | 0.80kA | 62 | 40A | 1 x 10mm²<br>2 x 6mm² | IP55 |
| 63A | 63A | 22kW | 63A | 18.5kW | 1.70kA | 50 | 63A | 1 x 16mm²<br>2 x 10mm² | IP55 |

## ORDER REFERENCES

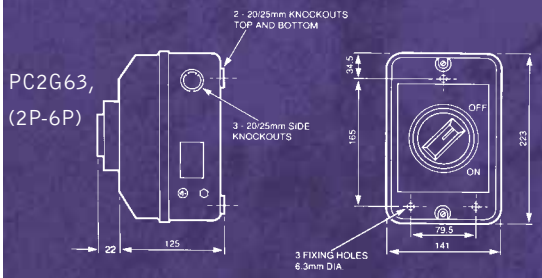
| NOMINAL UNIT RATING, Ie | DOUBLE POLE LIST NO. | TRIPLE POLE LIST NO. | FOUR POLE LIST NO. | SIX POLE LIST NO. |
|---|---|---|---|---|
| 20A | **PC2G20 2** | **PC2G20 3** | **PC2G20 4** | **PC2G20 6** |
| 25A | **PC2G25 2** | **PC2G25 3** | **PC2G25 4** | **PC2G25 6** |
| 40A | **PC2G40 2** | **PC2G40 3** | **PC2G40 4** | **PC2G40 6** |
| 63A | **PC2G63 2** | **PC2G63 3** | **PC2G63 4** | **PC2G63 6** |

## DIMENSIONS

PC2G20,
PC2G25,
PC2G40
(2P-6P)




PC2G63,
(2P-6P)



# SPECIALIST HEAVY DUTY SWITCHGEAR

## EXEL IP LOCAL SWITCH – DISCONNECTORS HEAVY DUTY, IP55, 20-1250A, 3-6 POLES



The IP55 range complies with BSEN60947. It consists of switches mounted in sheet steel enclosures, rust protected and having a powder coat finish.

All enclosures have bolt-on removable front covers with gland plates top and bottom. Cable entries must be site drilled. Switches are base mounted on the enclosure back plate.

Each enclosure has ample wiring space making additional cable boxes unnecessary when using standard copper cable.

Two tone grey operating handles are suitable for padlocking.

The range of disconnectors may be installed indoors or outdoors under sheltered conditions. They are ideally suited to installations where vibration or mechanical shock conditions prevail.

A variety of contact configurations and additional features are available – contact the factory for details.

## EXEL IP LOCAL SWITCH – DISCONNECTORS HEAVY DUTY, IP65, 20-1250A, 3-6 POLES



The IP65 range complies with BSEN60947. This range has been designed specifically for outside locations where extremely adverse conditions exist.

Each switch is mounted in a weatherproof enclosure with a sealed switch spindle and lid mounted handle providing interlocking facility allowing the lid to be removed only when the switch is in the 'OFF' position.

The enclosure is toughly constructed of sheet steel with a durable, corrosion resistant coating of 70 microns (minimum) polyester powder coat providing a degree of protection of IP65.

Switches are supplied with - gland plates fitted to all units. Suitable weatherproof glands should be used during installation and cabling.

Operating handles have facility for padlocking in both 'ON' and 'OFF' positions.

The standard range is available in configurations of up to six main poles up to 160A and 3 or 4 pole for higher ratings.

## TECHNICAL DATA IP55 & IP65 UNITS

| NOMINAL UNIT RATING Ie | OPERATIONAL CURRENT, Ie AND POWER, 415V CATEGORY: | | | OPERATIONAL CURRENT, Ie AND POWER, 690V CATEGORY: | | |
|---|---|---|---|---|---|---|
| | AC22 | AC23 | AC23 | AC22 | AC23 | AC23 |
| 20A | 20A | 11kW | 21A | 20A | 18.5kW | 21A |
| 40A | 40A | 22kW | 40A | 40A | 30kW | 40A |
| 63A | 63A | 37kW | 63A | 63A | 59kW | 63A |
| 125A | 125A | 59kW | 125A | 125A | - | - |
| 160A | 160A | 90kW | 154A | 125A | - | - |
| 250A | 250A | 147kW | 249A | 250A | 129kW | 134A |
| 400A | 400A | 180kW | 305A | 315A | 129kW | 134A |
| 630A | 630A | 375kW | 630A | 630A (B) | 425kW | 437A |
| 1000A | 1000A | 425kW | 690A | 1000A (B) | 425kW | 437A |
| 1250A | 1250A | 750kW | 1250A | 1250A | 630kW | 630A |

| NOMINAL UNIT RATING Ie | RATED SHORT TIME WITHSTAND CURRENT RMS FOR 1 SEC | SHORT CIRCUIT MAKING It op | RATED CONDITIONAL SHORT CIRCUIT CURRENT PROSPECTIVE RMS AMPS AT 415V AC, FUSED<br>kA/FUSE RATING |
|---|---|---|---|
| 20A | 0.66kA | 2.2kA | 100kA/80A |
| 40A | 0.66kA | 2.2kA | 100kA/80A |
| 63A | 0.66kA | 2.2kA | 100kA/80A |
| 125A | 3.6kA | 17.6kA | 100kA/100A |
| 160A | 3.6kA | 17.6kA | 100kA/100A |
| 250A | 6.6kA | 26.5kA | 100kA/250A |
| 400A | 6.6kA | 26.5kA | 100kA/250A |
| 630A | 20.4kA | 76kA | 100kA/630A |
| 1000A | 20.4kA | 76kA | 100kA/630A |
| 1250A | 50kA | 105kA | - |

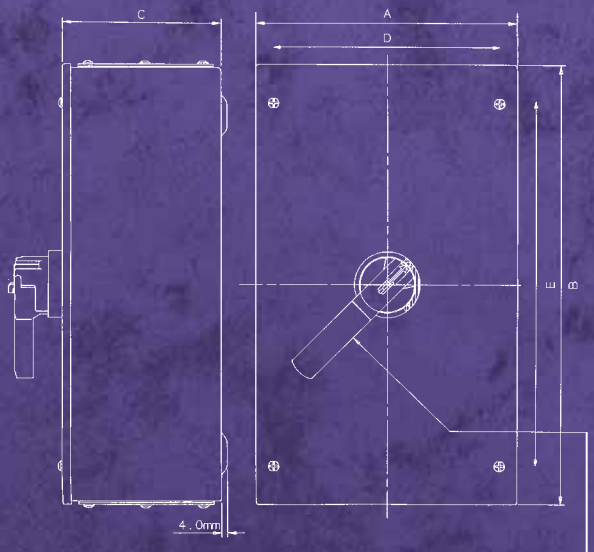
| NOMINAL UNIT RATING Ie | RATED CONDITIONAL SHORT CIRCUIT CURRENT PROSPECTIVE RMS AMPS AT 690V AC, FUSED<br>kA/FUSE RATING | MAX TERMINAL / CABLE SIZE<br>$MM^2$ | HOLE<br>$MM^2$ |
|---|---|---|---|
| 20A | 100kA/80A | 25 | - |
| 40A | 100kA/80A | 25 | - |
| 63A | 100kA/80A | 25 | - |
| 125A | 50kA/160A | 15 wide x 2 thick | 6.5 |
| 160A | 50kA/160A | 15 wide x 2 thick | 6.5 |
| 250A | 50kA/500A | 20 wide x 3 thick | 9.0 |
| 400A | 50kA/500A | 25 wide x 3 thick | 11.0 |
| 630A | 50kA/1000A | 30 wide x 6 thick | 11.0 |
| 1000A | 50kA/1000A | 35 wide x 6 thick | 14.0 |
| 1250A | - | 50 wide x 10 thick | 18.5 |

## ORDER REFERENCES IP55

| NOMINAL UNIT RATING, Ie | TRIPLE POLE LIST NO. | TRIPLE POLE AND SOLID NEUTRAL LIST NO. | FOUR POLE LIST NO. | SIX POLE LIST NO. |
|---|---|---|---|---|
| 20A | DE552031 | DE55203N | DE552041 | DE552061 |
| 40A | DE554031 | DE55403N | DE554041 | DE554061 |
| 63A | DE556331 | DE55633N | DE556341 | DE556361 |
| 125A | DE5512531 | DE551253N | DE5512541 | DE5512561 |
| 160A | DE5516031 | DE551603N | DE5516041 | DE5516061 |
| 250A | DE5525031 | DE552503N | DE5525041 | - |
| 400A | DE5540031 | DE554003N | DE5540041 | - |
| 630A | DE5563031 | DE556303N | DE5563041 | - |
| 1000A | DE55100031 | DE5510003N | DE55100041 | - |
| 1250A | DE55125031 | DE5512503N | DE55125041 | - |

## ORDER REFERENCES IP65

| NOMINAL UNIT RATING, Ie | TRIPLE POLE LIST NO. | TRIPLE POLE AND SOLID NEUTRAL LIST NO. | FOUR POLE LIST NO. | SIX POLE LIST NO. |
|---|---|---|---|---|
| 20A | DE652031 | DE65203N | DE652041 | DE652061 |
| 40A | DE654031 | DE65403N | DE654041 | DE654061 |
| 63A | DE656331 | DE65633N | DE656341 | DE656361 |
| 125A | DE6512531 | DE651253N | DE6512541 | DE6512561 |
| 160A | DE6516031 | DE651603N | DE6516041 | DE6516061 |
| 250A | DE6525031 | DE652503N | DE6525041 | - |
| 400A | DE6540031 | DE654003N | DE6540041 | - |
| 630A | DE6563031 | DE656303N | DE6563041 | - |
| 1000A | DE65100031 | DE6510003N | DE65100041 | - |
| 1250A | DE65125031 | DE6512503N | DE65125041 | - |




OPERATING HANDLE SUBJECT TO VARIATIONS

## DIMENSIONS (MM)

| NOMINAL UNIT RATING, Ie | A (MM) | B (MM) | C (MM) | D (MM) | E (MM) |
|---|---|---|---|---|---|
| 20A / 40A / 63A | 225 | 245 | 131 | 150 | 170 |
| 20A / 40A / 63A 6 POLE | 225 | 245 | 131 | 150 | 170 |
| 125A / 160A | 325 | 325 | 131 | 250 | 250 |
| 125A / 160A 6 POLE | 405 | 325 | 147 | 330 | 250 |
| 250A | 385 | 705 | 136 | 310 | 630 |
| 400A | 385 | 705 | 136 | 310 | 630 |
| 630A | 505 | 1105 | 183 | 430 | 1030 |
| 1000A | 505 | 1105 | 183 | 430 | 1030 |
| 1250A | 505 | 1105 | 183 | 430 | 1030 |

# SPECIAL DISTRIBUTION & CONTROL EQUIPMENT

## SPECIALS WITH A DIFFERENCE

Our comprehensive range of circuit protection and control equipment, utilising the very latest technology, enables us to provide the solution to almost any installation problem.

Eaton MEM factory built assemblies are designed and manufactured specifically for customer's precise needs.

Special distribution and control equipment can be designed to incorporate, either individually or in a combination, a variety of fused equipment, MCBs, MCCBs, motor control gear and associated equipment. Comprehensive earth leakage protection and metering facilities can easily be incorporated. Special distribution systems can be built in to either a standard enclosure or, if required, within a larger enclosure with high specification environmental protection.














MEM

# MEMFORM FORM 4 CUBICLE SWITCHBOARDS



- Form 4 individual metal compartments as standard
- Complies fully with BSEN60 439-1 and IEC60439-1
- Busbar ratings from 1000A to 10000A
- Naturally ventilated
- Totally enclosed busbars, risers and inter-connections in sheet steel compartments
- IP31 as standard
- Compact modular design to conserve space
- Front or rear access, with protective devices removable from the front
- Vertical/horizontal busbars are ASTA/KEMA Certified for short circuit performance:
  - 1000A - 50kA for 1 second
  - 1250A - 4000A - 50kA for 3 seconds
  - 1600A - 4000A - 80kA for 1 second
  - 2000A - 10000A - 100kA for 1 second
- Switchboards can incorporate: ACBs, MCCBs, fuse-switches, contactors, fuseboards, MCB boards and other ancillary equipment to customer specifications
- A full range of integral power factor correction equipment, TVSS and controls
- Wide range of control options includes PLC's and BMS interfacing
- A comprehensive range of metering
- Locking options include Castell/Fortress door, shaft and handle locking
- Versatile enclosure system allows for future extension of switchboard

Cubicle switchboards are of standardised modular construction giving a great degree of flexibility and good technical performance with cost effectiveness.

Eaton MEM specialises in producing equipment to the customer's precise needs. Thus metering, locking devices, power factor correction equipment, alternative paint finishes or other non-standard requirements may be specified.

Designed on a modular concept the Memform switchboard can be modified or extended in an infinite variety of ways with standard components - a factor which greatly reduces delivery times.

Both the front and rear access designs are fully cable segregated and suitable for top and bottom cable entry - with busduct and removable cable entry plates being provided where appropriate.

Cabling operations are simplified by the provision, as standard, of removable crossrails etc., thus enabling the 'laying-in' of cable tails. Cable gland location within the fully segregated wiring chamber is readily adjustable on site, both vertically and fore-and-aft, to suit specific requirements.

Combinations of the following earthing facilities are available:

A FULL WIDTH EARTH BAR
B GLAND RAIL/GLAND PLATE BONDING
C SUPPLEMENTARY INTERNAL BONDING
D STAR POINT EARTH/NEUTRAL LINK

## REAR ACCESS SWITCHBOARDS

A unit generally more suited to heavy current applications which provides unobstructed access at the rear for cabling and both front and rear access for maintenance.

## FRONT ACCESS SWITCHBOARDS

Designed for those applications where depth rather than length is a critical factor in the switchroom. This unit can be installed directly against a wall and is wholly accessible from the front for cabling and maintenance.







## CUBICLE CONSTRUCTION

The Memform Form 4 system is designed so that combinations of fuse-switches, MCCBs, ACBs, MCBs, contactors, fuseboard assemblies, power factor correction, CTs, anti-condensation heaters and other ancillary equipment can be arranged in vertical stacks, complete with busbars, risers and interconnections - all enclosed with separation of the busbar system from functional units, and separation of all functional units from one another. Incoming and outgoing terminals are also separated from the busbars and from each other.

A complete switchboard layout can be quickly and easily determined for combinations of fuse-switches and/or moulded case circuit breakers.

Standard switchboard dimensions are shown below, however arrangements of switchboards can be accommodated to meet the customers own specifications.

The basic design includes corner sections for both Rear and Front Access types, providing facilities for 'L' or 'U' shaped assemblies.

## COMPLIANCE WITH STANDARDS

The Memform Form 4 cubicle switchboard in its standard form complies fully with BSEN60439-1 and IEC60439-1.

## STANDARD STACK DIMENSIONS (NOMINAL) FOR UP TO 80kA

| Front Access | | Rear Access | |
|---|---|---|---|
| Depth | 600mm | Depth | 1000mm |
| Height* | 2000mm | Height* | 2000mm |
| or | 2300mm | or | 2300mm |

## FOR 100kA

### Rear Access Only

| | |
|---|---|
| Depth | 1200 to 1800mm to meet system requirements |
| Height* | 2300mm |

*Not including ventilation cowls

- We can provide a complete system design and application service from our specialist technical team, based in Birmingham, who are always available to help and advise on any project.



Choice of Protective Device



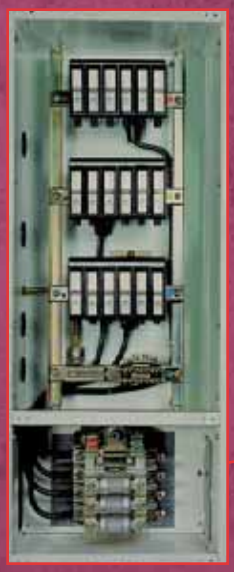
MCCB Rotary Handle Mechanism

Individual Circuit Monitoring

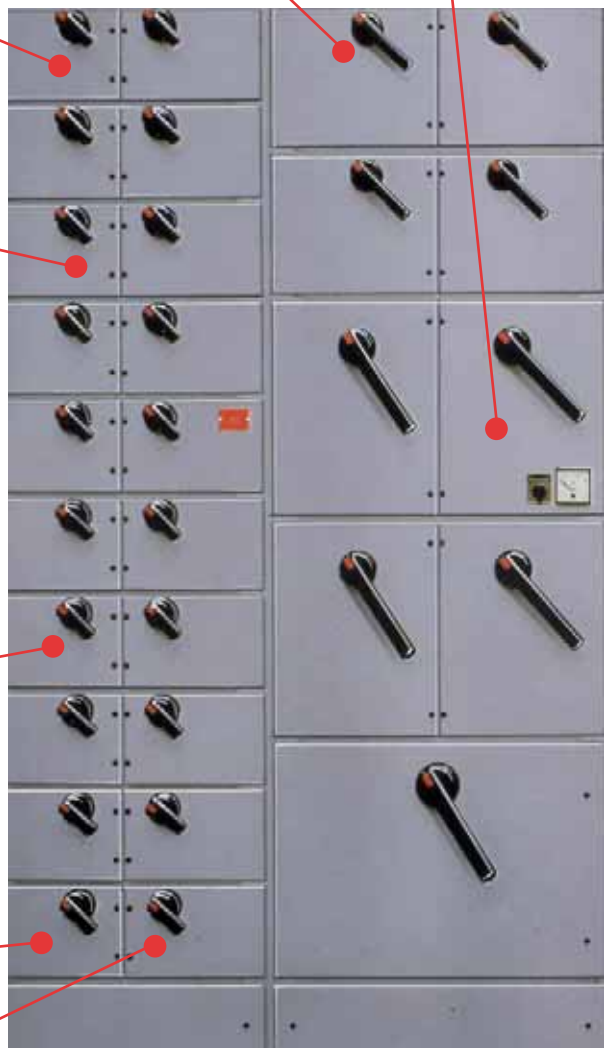




MCB Distribution Boards



HRC Fuse Distribution Boards



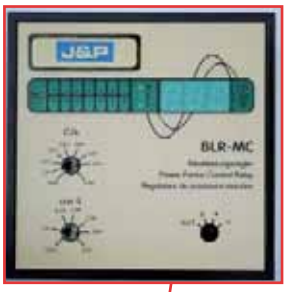



CT Arrangements



Castell, Handle and Shaft Locking

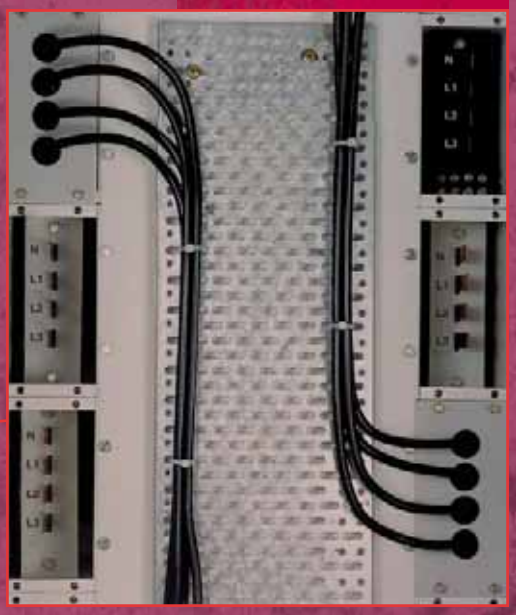




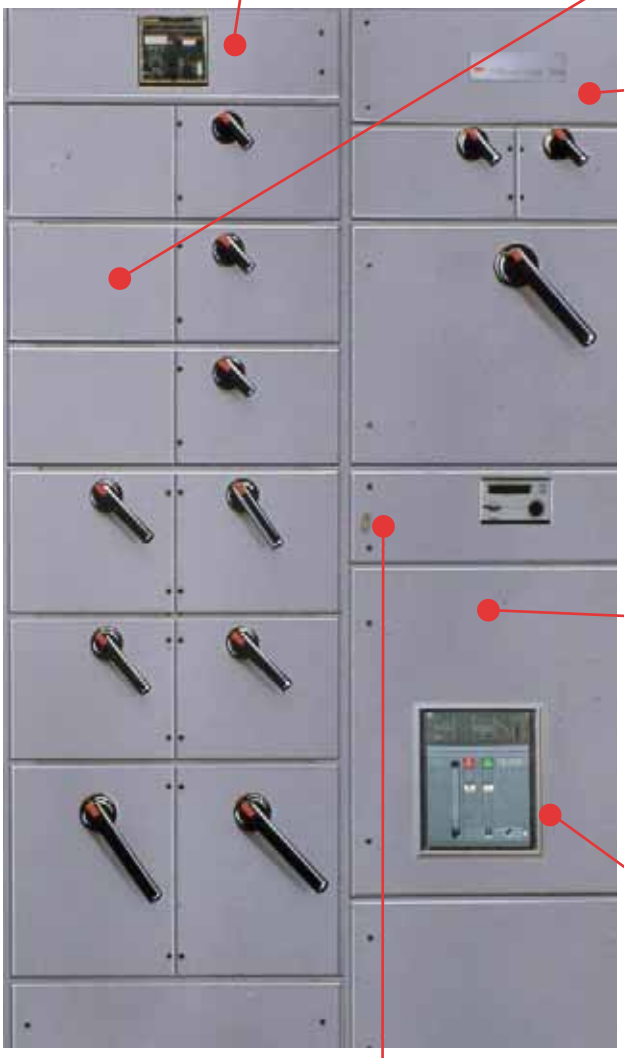

Power
Factor
Control



Contactors



Contractor 'Friendly' Connections
Cable tray fitted as standard





MCCB Distribution Boards



Typical Metering



Choice of Incoming Device

MEM

# MEMFORM FORM 4 CUBICLE SWITCHBOARDS
## MEMFORM PACKAGED SUBSTATIONS



A typical indoor packaged substation comprises a power transformer to BS171 (IEC176) rated up to 4 MVA and a low voltage switchboard, assembled together to form a complete unit.

The transformer, generally of Class C air insulated design or resin encapsulated, is air cooled (AN) and housed in a ventilated sheet steel enclosure designed to match the front appearance of a MEMFORM Switchboard. Transformer ratings can be enhanced by the additions of fans and ratings up to 4MVA (AN) force cooled are available.

A fully supported copper busbar system connects between the transformer LV secondary terminals and the LV switchboard main incomer, which is usually an air circuit breaker.

Provision is generally made for MV cable termination into an appropriate cable box mounted at the rear or side of the transformer housing. It is possible however, to engineer the incoming MV circuit breaker, isolator or ring main unit (RMU) as part of a packaged substation installation.

A full inter-tripping facility between MV and LV circuit breakers as well as interlocking between transformer housing and MV breaker is available to meet specific requirements.

Standard forms of instrumentation, measuring and protective circuitry can be provided, the latter including alarm indication and trip relay protection for the transformer windings.

Impulse voltage requirements for the supply system can readily be met by the provision of surge diverters at the MV terminals of the transformer.

Due to the number of variations possible when putting together a composite package each substation is the subject of an individual design exercise, aimed at producing the optimum arrangement for the particular installation under consideration.

# DEGREES OF PROTECTION, IP RATINGS

The degrees of protection against ingress of foreign bodies and liquids are indicated by the first two characteristic numerals as detailed in tables 1 and 2. For switch and control gear the classification is recognised internationally and is described in detail in BSEN60529.

| **FIRST NUMBER**<br>**Protection against solid foreign objects**<br>**IP** | **Requirements** | **Meaning protection of persons against access to hazardous parts with:** |
|---|---|---|
| 0 | No protection. | non-protected |
| 1 | Full penetration of 50mm diameter sphere not allowed.<br>Contact with hazardous parts not permitted. | back of hand |
| 2 | Full penetration of 12.5mm diameter sphere not allowed.<br>The jointed test finger shall have adequate clearance<br>from hazardous parts. | finger |
| 3 | The access probe of 2.5mm diameter shall not penetrate. | tool |
| 4 | The access probe of 1.0mm diameter shall not penetrate. | wire |
| 5 | Limited ingress of dust permitted (no harmful deposit). | wire |
| 6 | Totally protected against ingress of dust. | wire |
| **SECOND NUMBER**<br>**Protection against harmfull ingress of water**<br>**IP** | **Requirements** | **Meaning protection from water** |
| 0 | No protection. | non-protected |
| 1 | Protected against vertically falling drops of water - limited ingress permitted. | vertically dripping |
| 2 | Protected against vertically falling drops of water<br>with enclosure tilted 15° from the vertical - limited ingress permitted. | dripping up to 15° from<br>the vertical |
| 3 | Protected against sprays to 60° from the vertical –<br>limited ingress permitted. | limited spraying |
| 4 | Protected against water splashed from all directions –<br>limited ingress permitted. | splashing from all directions |
| 5 | Protected against low pressure jets of water from all<br>directions – limited ingress permitted. | hosing jets from all<br>directions |
| 6 | Protected against strong jets of water –<br>limited ingress permitted | strong hosing jets<br>from all directions. |
| 7 | Protected against the effects of immersion between<br>15cm and 1m. | temporary immersion |
| 8 | Protected against long periods of immersion under pressure. | continuous immersion |
| **ADDITIONAL LETTER**<br>**(Optional)**<br>**IP** | **Requirements** | **Meaning protection of persons against access to hazardous parts with:** |
| A<br>For use with 0 | Penetration of 50mm diameter sphere up to guard<br>face must not contact hazardous parts. | back of hand |
| B<br>For use with 0 & 1 | Test finger penetration to a maximum of 80mm<br>must not contact hazardous parts. | finger |
| C<br>For use with 1 & 2 | Wire of 2.5mm diameter x 100mm long must not contact<br>hazardous parts when spherical stop face is partially entered. | tool |
| D<br>For use with 1, 2 & 3 | Wire of 1.0mm diameter x 100mm long must not contact<br>hazardous parts when spherical stop face is partially entered. | wire |
| | | Limited penetration allowed<br>with all four additional letters |

# INDUSTRIAL SWITCH AND FUSEGEAR

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## UK MANUFACTURING

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