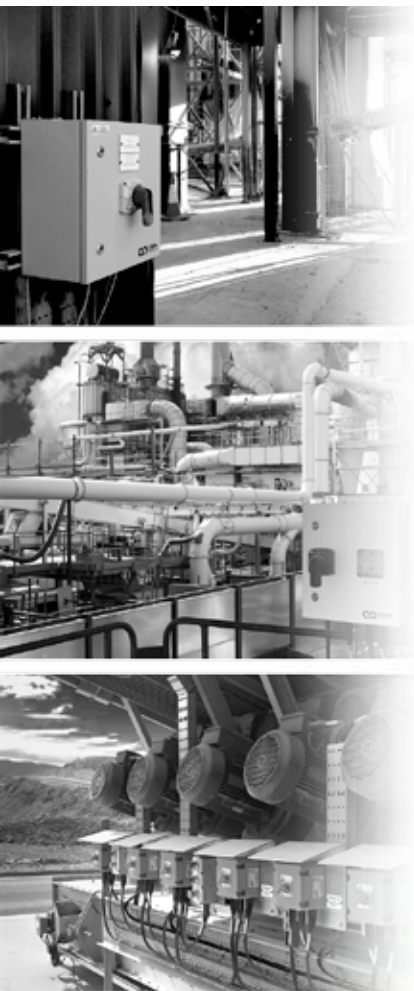


# Industrial Products Catalogue



enclosed switchgear  
fire rated isolators  
photovoltaic equipment  
explosive atmosphere isolators  
control stations  
grabwire systems  
selector switches  
panel isolators  
pushbuttons & indicators  
footswitches  
bespoke equipment

## Years of experience ...

We design, manufacture and market electrical control equipment and switchgear, this has formed the basis of the company's continuing success and expansion into markets around the world.

Craig & Derricott was incorporated in 1944 and commenced manufacture in the Royal Borough of Sutton Coldfield. The company soon outgrew the original premises and in the 1970's the business moved to its current site at Walsall Wood in the industrial Midlands.

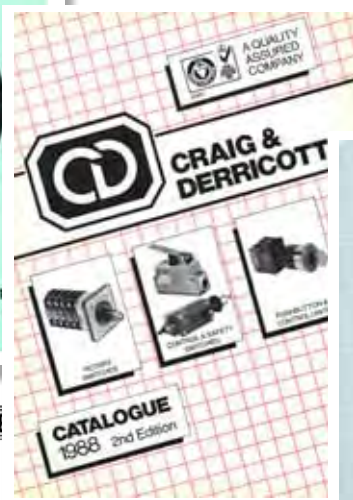
Initially rotary selector switches formed the bulk of the company's production which was soon augmented by a range of heavy duty pushbutton components and a wide selection of various limit switch formats. Today the majority of output is in enclosed products and bespoke arrangements.

The company's product range is constantly evolving with new products and continuous improvements to the existing ranges being launched.

The company's operations are monitored to ISO 9001 : 2008.



1963



1988



2001



2012

## ***Products for the real world ...***

Our products are designed and built to withstand the rigours of continuous use in difficult environments.

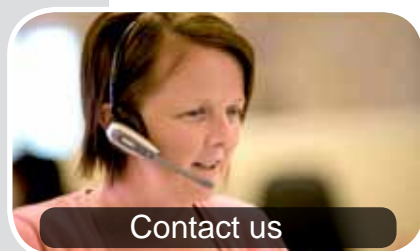


## ***Passionate about customer service ...***

- Experienced territory and factory based sales staff.
- Expert technical advice and support.
- Fast response to enquiries, quotes and communications.
- Ex-stock delivery for most catalogued items.
- Network of stocking distributors for easy product availability.
- Bespoke design, prototyping and customization services for special applications.
- Web chat technical support.
- Give us a call and talk to people who are pleased to help.







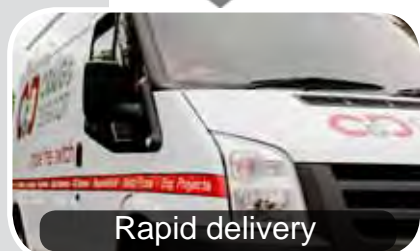
Contact us



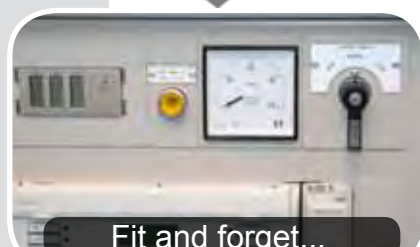
Develop the design



Manufacture the product



Rapid delivery







Fit and forget...

## Enclosed Products

Enclosed products specifically designed to appeal to today's installers by ensuring a simple and swift installation process.






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## Components

Enclosed products specifically designed to appeal to today's installers by ensuring a simple and swift installation process.

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Craig & Derricott has been at the forefront of electrical switchgear design for more than 60 years. During that time the company's products have earned a well deserved reputation for quality and reliability. Building on this, the latest 'i-switch' range combines modern styling within a cost effective design to ensure a quick and easy installation and maximise safety in use.

Additionally the 'i-switch' range has been broadened to include:




- Sloping roof stainless steel switch-disconnectors designed specifically for use where severe cleansing routines are expected. (Page 12)
- Large die-cast enclosure increases ratings to 80A (Pages 7-8)
- Smaller 'Compact' enclosures introduced into the IP41 & IP65 hinged lid ranges. (Pages 14-18)
- Hinged lid Switch-Disconnectors & Fuse Combination Units with 'Flag' indicators (Pages 21-22)
- 'Fire Rated' range designed to maintain power to essential services allowing safe evacuation during a fire. (Pages 23-24)
- London Underground 'Section 12' isolation equipment designed to meet strict regulations for use on the underground network. (Pages 25-26)
- Automatic Transfer Switches in two ranges, the 'Standard' and the more flexible 'Advanced' range. (Pages 27-29)

This catalogue covers our industrial products. However, this is only a small part of our capability. As a U.K. based Design & Manufacturing business we pride ourselves on being able to offer bespoke and special versions of our products in one off or larger quantities delivered in short lead times. Simply contact our sales team to discuss your requirements and take advantage of our bespoke 'mi-switch' service for make to order products.



## Product Guide

Comparing today's 'Trade' descriptions to European standards:-

BS EN 60947-3 Definition	'Trade' Description	Technical Description
<b>Switch-Disconnecter</b> Sym. 	<b>Isolator</b>	<p>A '<b>Disconnecter</b>' is a mechanical switch which in the 'Open' position, complies with requirements specified for the isolating function. A '<b>Disconnecter</b>' or '<b>Isolator</b>' is an off-load device and marked 'Isolate elsewhere before opening' they have an AC20/DC20 utilisation category.</p> <p>A '<b>Switch</b>' is a mechanical switching device capable of making, carrying and breaking current under normal circuit conditions, which may include specified operating overload conditions. They also carry, for a specified time, currents under specified abnormal circuit conditions, such as those of short circuit (i.e. Utilisation category AC23A duty).</p> <p>A '<b>Switch-Disconnecter</b>' meets both of these criteria and with a Red/Yellow padlockable handle may also be called a '<b>Safety Isolator</b>'.</p>
<b>Changeover Switch-Disconnecter</b> Sym. 	<b>Changeover Switch</b>	<p>A '<b>Changeover</b>' device is used to connect to one of two sources and in this isolation application will require a central 'Off' position. In all other respects it conforms to the 'Switch-Disconnecter' requirements.</p>
<b>Fuse Combination Unit</b> Sym. 	<b>Fuse Switch</b>	<p>A '<b>Fuse Combination Unit</b>' is a combination of a mechanical switching device with fuses in a composite assembly.</p>

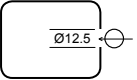

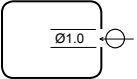

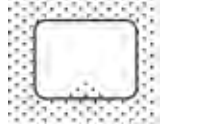

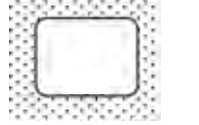

## Ingress Protection

When choosing an isolating device, apart from the electrical performance, consideration must be given to the environmental conditions in which the device will be placed. The item may be subjected to dust or dirt or it may come in contact with degrees of moisture. Indoor conditions will vary considerably but items may well be placed outdoors where the full influence of rain, ice & snow will be present. Protecting items to varying degrees is detailed in BS EN 60529:1992.

Employing a two digit code the standard defines protection against solid objects and separately protection against moisture i.e.

**IP66** (protection against solid objects)  
(protection against water)

The following extract defines the IP categories used within this document.

1st Digit	Protection against solid objects		2nd Digit	Protection against water	
0	Not Protected		0	Not Protected	
2		Protected against solid objects greater than Ø12.5	1		Protected against dripping water.
4		Protected against solid objects greater than Ø1.0	4		Protected against splashed water from any direction.
5		Protected against dust - allowing a degree of ingress that isn't harmful to the assembly.	5		Protected against water jets from any direction.
6		No ingress of dust.	6		Protected against strong water jets from any direction.

Please refer to BS EN 60529:1992 for full details.

## General Description

Switchgear housed in moulded plastic enclosures provide the basis for most industrial applications and the added benefits offered by the 'i-switch' range provide the user with a wealth of opportunities when selecting the correct item for a specific application. Sealing up to IP66 is a standard feature as is the ability to add a selection of auxiliary blocks providing additional contacts and a choice of Neutral assemblies.

With the 'i-switch' range comes an important safety feature which prevents the enclosure cover being removed when the device has been padlocked in the 'Off' position. When combined with the excellent on-load breaking capacity of the 'i-switch' family this feature ensures that the term 'Safety Switch' is fully satisfied.



## Safety Features

### Padlocking

All items allow for the insertion of up to three padlocks in the 'Off' position thus preventing the isolator being switched to the 'On' position.

Standard shackle diameter Ø6.4

(An option to allow padlocking in the 'On' position is available on request.)



### Safety Interlock

Screwed lid enclosures have always been open to abuse by having the lid removable when the isolator is 'Off' and padlocked. This would allow the switch shaft to be turned manually to the 'On' position, thus defeating the safety padlocking feature.

The 'i-switch' range now incorporates a mechanical interlock which when a padlock is inserted prevents the enclosure lid from being removed.



Watch a 3 minute video explaining the various safety features built-in to the design of the i-switch 'screwed lid' product family.

## Switch-Disconnectors (O-I)

### Catalogue Numbers

Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
20A	6P	GX20	SDP206	A (IP66)
	6P+2EB Aux	GX20	SDP206EB	
25A	2P	CS25	SDP252	A (IP66)
	3P	CS25	SDP253	
	3P+NL	CS25	SDP253NL	
	3P+N	CS25	SDP253N	
	3P+2EB Aux	CS25	SDP253EB	
32A	2P	CS32	SDP322	A (IP66)
	3P	CS32	SDP323	
	3P+NL	CS32	SDP323NL	
	3P+N	CS32	SDP323N	
	3P+2EB Aux	CS32	SDP323EB	
40A	2P	CS40R	SDP402	B (IP66)
	3P	CS40R	SDP403	
	3P+NL	CS40R	SDP403NL	
	3P+N	CS40R	SDP403N	
	3P+2EB Aux	CS40R	SDP403EB	
	6P	GX40	SDP406	
	6P+2EB Aux	GX40	SDP406EB	
63A	2P	CS63	SDP632	B (IP66)
	3P	CS63	SDP633	
	3P+NL	CS63	SDP633NL	
	3P+N	CS63	SDP633N	
	3P+2EB Aux	CS63	SDP633EB	
80A	2P	CS80	SDP802	C (IP65)
	3P	CS80	SDP803	
	3P+NL	CS80	SDP803NL	
	3P+N	CS80	SDP803N	
	3P+2EB Aux	CS80	SDP803EB	
100A	2P	CS100	SDP1002	D (IP65)
	3P	CS100	SDP1003	
	3P+NL	CS100	SDP1003NL	
	3P+N	CS100	SDP1003N	
	3P+2EB Aux	CS100	SDP1003EB	

'N' = switched neutral (Early make, late break)

'NL' = Unswitched neutral

## Changeover Switch-Disconnectors (I-O-II)

Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
20A	2P	GX20	SCODP202	A (IP66)
	3P	GX20	SCODP203	
	4P	GX20	SCODP204	
40A	2P	GX40	SCODP402	B (IP66)
	3P	GX40	SCODP403	
	4P	GX40	SCODP404	



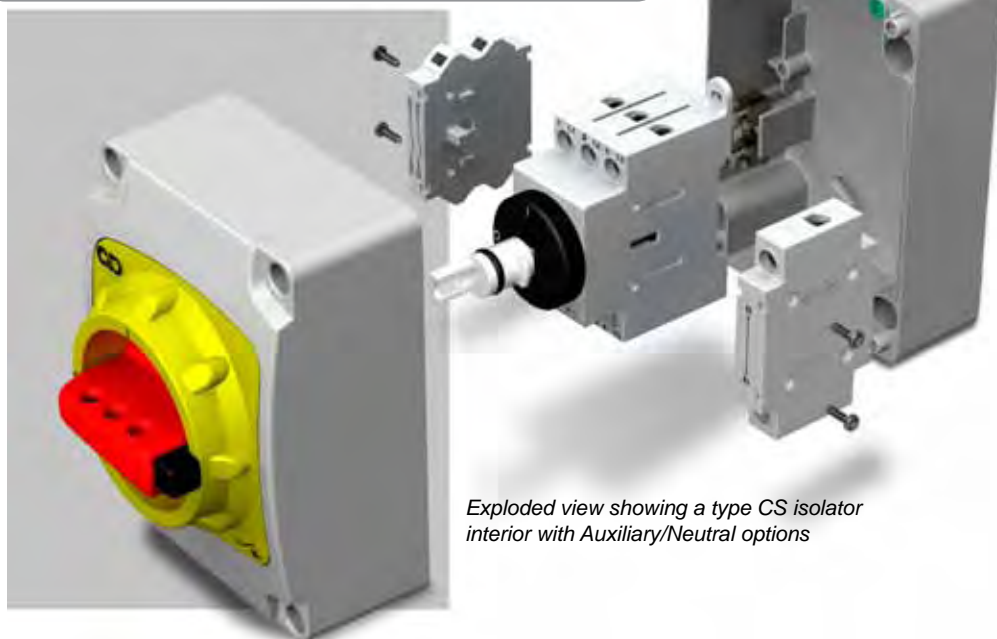


Neutral Link (Unswitched)    2 Early Break Auxiliary    Neutral Link (Switched)

## Accessories (applicable to type 'CS' interiors only)


Description	Cat. No.
Auxiliary Contact - 2 Early Break	SAUX2EB
Auxiliary Contact - 1 N/O + 1 N/C	SAUXCO
25A Neutral (Unswitched)	SNL25
32A & 40A Neutral (Unswitched)	SNL40
63A Neutral (Unswitched)	SNL63
80A Neutral (Unswitched)	SNL80
100A Neutral (Unswitched)	SNL100
25A Neutral (Switched)	SSP25
32A & 40A Neutral (Switched)	SSP40
63A Neutral (Switched)	SSP63
80A Neutral (Switched)	SSP80
100A Neutral (Switched)	SSP100

## Design Features



Exploded view showing a type CS isolator interior with Auxiliary/Neutral options

### Enclosure

Material	20A-63A PC/ABS 80A-100A PC	
Colour	Enclosure - Grey RAL 7035	
Entries	<b>Size A Enclosure</b> - 2 x M20 knock-outs on top & bottom faces. <b>Size B Enclosure</b> - 2 x M20/25 knock-outs on top & bottom faces. Back face - 2 x M20 knock-outs. <b>Size C &amp; D Enclosures</b> - Blank sides.	
Cover Screws	Stainless Steel (Captive)	
Fixings	Outside sealed cavity.	

### Switch-Disconnectors

2 & 3 Pole	Type <b>CS</b> - base mounted. (Accepts add-on Aux. blocks & Neutrals)
6 Pole	Type <b>GX</b> - base mounted. (also available with 2 E/B Aux.)

### Changeover Switch-Disconnectors

2, 3 & 4 Pole	Type <b>GX</b> - base mounted.
---------------	--------------------------------

### Earthing

Earth terminals are provided in the base of the enclosures.

## General Description

The 'i-switch' die cast range provides the user with a product that will withstand a good deal of rough treatment. With sealing up to IP66 these assemblies can be placed in environments where resistance to impacts, moisture and dust/dirt are a concern. The option to add a selection of auxiliary blocks providing additional contacts and a choice of Neutral assemblies increases the flexibility of the product range.



Size A & Size B enclosures as Switch-Disconnectors in both Red & Grey



20A Changeover Switch-Disconnecter in a size A enclosure

## Catalogue Numbers

### Switch-Disconnectors (O-I)

Rating	Format	Interior Switch product range	Catalogue Nos.		Enclosure Size
			Grey	Red	
20A	6P	GX20	SDDG206	SDDR206	A (IP66)
	6P+2EB Aux	GX20	SDDG206EB	SDDR206EB	
25A	2P	CS25	SDDG252	SDDR252	A (IP66)
	3P	CS25	SDDG253	SDDR253	
	3P+NL	CS25	SDDG253NL	SDDR253NL	
	3P+N	CS25	SDDG253N	SDDR253N	
	3P+2EB Aux	CS25	SDDG253EB	SDDR253EB	
32A	2P	CS32	SDDG322	SDDR322	A (IP66)
	3P	CS32	SDDG323	SDDR323	
	3P+NL	CS32	SDDG323NL	SDDR323NL	
	3P+N	CS32	SDDG323N	SDDR323N	
	3P+2EB Aux	CS32	SDDG323EB	SDDR323EB	
40A	2P	CS40R	SDDG402	SDDR402	B (IP66)
	3P	CS40R	SDDG403	SDDR403	
	3P+NL	CS40R	SDDG403NL	SDDR403NL	
	3P+N	CS40R	SDDG403N	SDDR403N	
	3P+2EB Aux	CS40R	SDDG403EB	SDDR403EB	
	6P	GX40	SDDG406	SDDR406	
	6P+2EB Aux	GX40	SDDG406EB	SDDR406EB	
63A	2P	CS63	SDDG632	SDDR632	B (IP66)
	3P	CS63	SDDG633	SDDR633	
	3P+NL	CS63	SDDG633NL	SDDR633NL	
	3P+N	CS63	SDDG633N	SDDR633N	
	3P+2EB Aux	CS63	SDDG633EB	SDDR633EB	
	6P	CS63	SDDG636	SDDR636	
	6P+2EB Aux	CS63	SDDG636EB	SDDR636EB	
80A	3P	CS80	SDDG803	SDDR803	B (IP66)
	3P+NL	CS80	SDDG803NL	SDDR803NL	
	3P+N	CS80	SDDG803N	SDDR803N	

'N' = switched neutral (Early make, late break)  
'NL' = Unswitched neutral

### C/O Switch-Disconnectors (I-O-II)

Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
20A	2P	GX20	SCODDG202	A (IP66)
	3P	GX20	SCODDG203	
	4P	GX20	SCODDG204	
40A	2P	GX40	SCODDG402	B (IP66)
	3P	GX40	SCODDG403	
	4P	GX40	SCODDG404	

### Accessories (applicable to type 'CS' interiors only)

Description	Cat. No.
Auxiliary Contact - 2 Early Break	SAUX2EB
Auxiliary Contact - 1 N/O + 1 N/C	SAUXCO
25A Neutral (Unswitched)	SNL25
32A & 40A Neutral (Unswitched)	SNL40
63A Neutral (Unswitched)	SNL63
80A Neutral (Unswitched)	SNL80
25A Neutral (Switched)	SSP25
32A & 40A Neutral (Switched)	SSP40
63A Neutral (Switched)	SSP63
80A Neutral (Switched)	SSP80

### Safety Features

Screwed lid enclosures have always been open to abuse by having the lid removable when the isolator is 'Off' and padlocked. This would allow the switch shaft to be turned manually to the 'On' position, thus defeating the safety padlocking feature.

The 'i-switch' range now incorporates a mechanical interlock which when a padlock is inserted prevents the enclosure lid from being removed.

## Design Features

### Enclosure

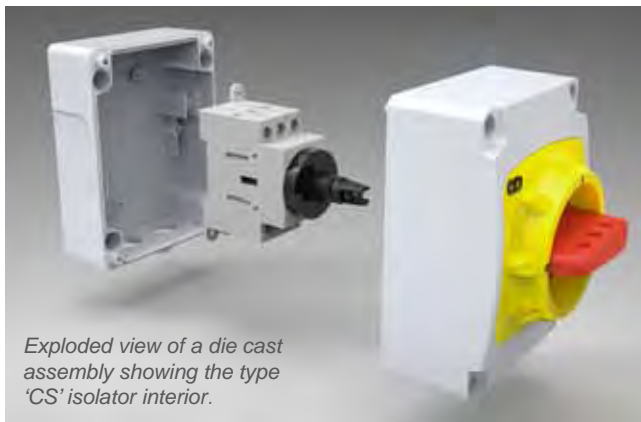
Material	Die cast aluminium alloy LM24 (BS1490)
Paint finish	<b>Grey</b> - RAL 7035 <b>Red</b> - RAL 3020.
Entries	Included with std. catalogue No:- <b>Size A</b> - 2xM20 on bottom face. <b>Size B</b> - 40A & 63A:- 2xM25 + 1xM20 on bottom face. 80A:- 2xM32 + 1xM20 on bottom face.  Maximum number of possible entries:- <b>Size A</b> - 4 (2 Top+2 Bottom). <b>Size B</b> - 6 (3 Top+3 Bottom).
Cover Screws	Stainless Steel (Captive)
Earthing	Terminals are provided on both lid and base to allow full earth continuity to be maintained.
Mounting	All fixings are internal but outside of the IP66 sealed area. Guide channels are provided to assist with the fixing screw location.

### Switch-Disconnectors

2, 3 & 6 Pole	Type <b>CS</b> - base mounted. (Accepts add-on Aux. blocks & Neutrals, see page 13 for ratings)
6 Pole	Type <b>GX</b> - base mounted. (also available with 2 E/B Aux.)

### Changeover Switch-Disconnectors

2, 3 & 4 Pole	Type <b>GX</b> - base mounted.
---------------	--------------------------------



Exploded view of a die cast assembly showing the type 'CS' isolator interior.

The size 'B' enclosure is available with 'Start/Stop' or 'Start/Emergency Stop' pushbuttons. Please contact our sales team for details.



Craig & Derricott are the market leaders in die cast enclosed isolation equipment

...products for the real world





### General Description

Craig & Derricott have been manufacturing flush mounting isolators for more than 60 years and in that time the design has been carefully modified to give features that installers and end users really need.

The assembly consists of a zinc plated back box (complete with knock-outs) and a stainless steel fascia plate which carries the isolating switch and lockable handle. The fascia plate now comes in an attractive brushed finish which resists the fingerprint effect associated with highly polished surfaces.

Equally at home in kitchens, laboratories, food processing areas, hospitals and many other areas where an elegant, low projection isolation device is required.



### Design Features

#### Enclosure

Fascia plate      Stainless steel 304, thickness 1.2mm  
*Finish*      Brushed.

Back box      Sheet steel, thickness 1.4mm  
*Finish*      Galvanised

#### Entries

Knockouts in back box.

### Installation

Whilst the joint between the isolating switch and the stainless steel fascia plate is factory sealed to IP66 min, when installed, the fascia to mounting surface seal is the responsibility of the installer.

To maintain the sealing overall, an efficient bond must be made using some form of gasketing material. This is particularly vital on tiled surfaces where grout lines can channel moisture down the wall.

A continuous bead of moisture resistant mastic is a simple way of providing a seal, and can improve the appearance of the final assembly on an uneven surface.

### Switch-Disconnectors (O-I)

#### Catalogue Numbers

Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
20A	2P	GX	SDFL202	A
	3P		SDFL203	
	4P		SDFL204	
32A	2P	GX	SDFL322	B
	3P		SDFL323	
	4P		SDFL324	
40A	2P	GX	SDFL402	B
	3P		SDFL403	
	4P		SDFL404	
63A	2P	GN	SDFL632	C
	3P		SDFL633	
	4P		SDFL634	

#### Sealing

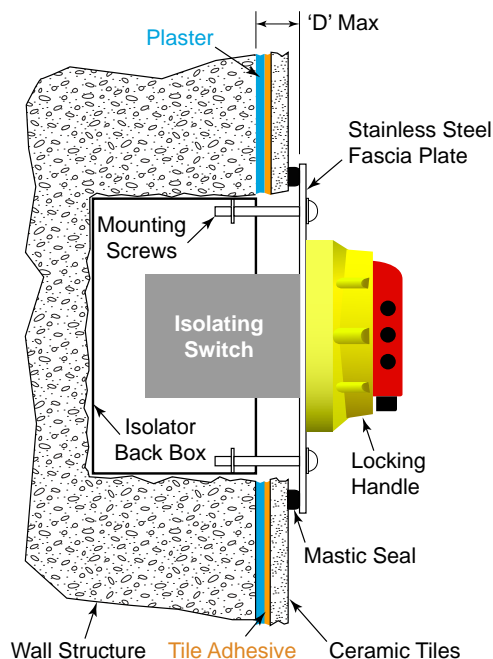
Isolating switch to stainless steel fascia plate - IP66.

#### Fascia plate securing screws

Stainless steel (M5 x 25 with 'Allen Key' head).

#### Earthing

Separate earthing points on fascia plate and back box.



**Typical Installation**  
('D' max = 20mm with standard length mounting screws)

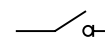
## General Description

Switchgear housed in mild steel enclosures provides the user with a robust and cost effective assembly along with the added features offered by the 'i-switch' range. Sealing to IP66 is a standard feature as is the ability to add a selection of auxiliary blocks providing additional contacts and a choice of Neutral assemblies. External mounting feet in stainless steel are offered as an accessory sized to match each enclosure.

With the 'i-switch' range comes an important safety feature which prevents the enclosure cover being removed when the device has been padlocked in the 'Off' position. When combined with the excellent on-load breaking capacity of the 'i-switch' family this feature ensures that the term '**Safety Switch**' is fully satisfied.



## Switch-Disconnectors (O-I)



### Catalogue Numbers

Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
20A	6P	GX20	SDMG206	A (IP66)
	6P+2EB Aux	GX20	SDMG206EB	
25A	2P	CS25	SDMG252	A (IP66)
	3P	CS25	SDMG253	
	3P+NL	CS25	SDMG253NL	
	3P+N	CS25	SDMG253N	
	3P+2EB Aux	CS25	SDMG253EB	
32A	2P	CS32	SDMG322	A (IP66)
	3P	CS32	SDMG323	
	3P+NL	CS32	SDMG323NL	
	3P+N	CS32	SDMG323N	
	3P+2EB Aux	CS32	SDMG323EB	
40A	2P	CS40R	SDMG402	B (IP66)
	3P	CS40R	SDMG403	
	3P+NL	CS40R	SDMG403NL	
	3P+N	CS40R	SDMG403N	
	3P+2EB Aux	CS40R	SDMG403EB	
	6P	GX40	SDMG406	
63A	6P+2EB Aux	GX40	SDMG406EB	B (IP66)
	2P	CS63	SDMG632	
	3P	CS63	SDMG633	
	3P+NL	CS63	SDMG633NL	
	3P+N	CS63	SDMG633N	
	3P+2EB Aux	CS63	SDMG633EB	

'N' = switched neutral (Early make, late break)  
'NL' = Unswitched neutral

## Safety Features

All safety features are identical to the plastic moulded range - see page 5 for details.

## Design Features

### Enclosure

Material	Sheet steel, thickness 1.2mm
Paint finish	Epoxy Powder Coated.
Colour	Enclosure - Grey RAL 7035
Entries	<b>Size A Enclosure</b> - 2 x M20 <b>Size B Enclosure</b> - 2 x M20 + 2 x M25
Cover Screws	Stainless Steel (Captive)
External Feet	Size A enclosure - Cat. No. <b>EFA</b> Size B enclosure - Cat. No. <b>EFB</b>

### Switch-Disconnectors

2 & 3 Pole	Type <b>CS</b> - base mounted. (Accepts add-on Aux. blocks & Neutrals)
6 Pole	Type <b>GX</b> - base mounted. (also available with 2 E/B Aux.)

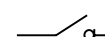
### Changeover Switch-Disconnectors

2, 3 & 4 Pole	Type <b>GX</b> - base mounted.
---------------	--------------------------------

### Earthing

Earth continuity terminals are provided in the base and lid of each enclosure.

## Changeover Switch-Disconnectors (I-O-II)



Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
20A	2P	GX20	SCODMG202	A
	3P	GX20	SCODMG203	
	4P	GX20	SCODMG204	
40A	2P	GX40	SCODMG402	B
	3P	GX40	SCODMG403	
	4P	GX40	SCODMG404	

## Accessories (applicable to type 'CS' interiors only)

Description	Cat. No.
Auxiliary Contact - 2 Early Break	SAUX2EB
Auxiliary Contact - 1 N/O + 1 N/C	SAUXCO
25A Neutral (Unswitched)	SNL25
32A & 40A Neutral (Unswitched)	SNL40
63A Neutral (Unswitched)	SNL63
25A Neutral (Switched)	SSP25
32A & 40A Neutral (Switched)	SSP40
63A Neutral (Switched)	SSP63

## General Description

Switchgear housed in stainless steel enclosures provides the user with an assembly that can be installed in the harshest of environments. Outdoor in unprotected positions or indoor and subject to severe environmental conditions, the standard stainless steel i-switch range with a flush back surface offers the ideal solution. Sealing to IP66 is a standard feature as is the ability to add a selection of auxiliary blocks providing additional contacts and a choice of Neutral assemblies. External mounting feet in stainless steel are offered as an accessory sized to match each enclosure.

With the 'i-switch' range comes an important safety feature which prevents the enclosure cover being removed when the device has been padlocked in the 'Off' position. When combined with the excellent on-load breaking capacity of the 'i-switch' family this feature ensures that the term '**Safety Switch**' is fully satisfied.



### Safety Features

All safety features are identical to the plastic moulded range - see page 5 for details.

### Design Features

#### Enclosure (Flush rear surface)

Material	Stainless steel, Grade 304, thickness 1.2mm (Grade 316 to special order)
Finish	Brushed -  Satin (150 grit)
Entries	<b>Size A Enclosure</b> - 2 x M20 <b>Size B Enclosure</b> - 2 x M20 + 2 x M25
Cover Screws	Stainless Steel (Captive)
External Feet	Size A enclosure - Cat. No. <b>EFA</b> Size B enclosure - Cat. No. <b>EFB</b>

#### Switch-Disconnectors

2 & 3 Pole	Type <b>CS</b> - base mounted. (Accepts add-on Aux. blocks & Neutrals)
6 Pole	Type <b>GX</b> - base mounted. (also available with 2 E/B Aux.)

#### Changeover Switch-Disconnectors

2, 3 & 4 Pole	Type <b>GX</b> - base mounted.
---------------	--------------------------------

#### Earthing

Earth continuity terminals are provided in the base and lid of each enclosure.

### Standard Switch-Disconnectors (O-I)

#### Catalogue Numbers

Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
<b>20A</b>	6P	GX20	<b>SDS206</b>	A (IP66)
	6P+2EB Aux	GX20	<b>SDS206EB</b>	
<b>25A</b>	2P	CS25	<b>SDS252</b>	A (IP66)
	3P	CS25	<b>SDS253</b>	
	3P+NL	CS25	<b>SDS253NL</b>	
	3P+N	CS25	<b>SDS253N</b>	
<b>32A</b>	3P+2EB Aux	CS25	<b>SDS253EB</b>	A (IP66)
	2P	CS32	<b>SDS322</b>	
	3P	CS32	<b>SDS323</b>	
	3P+NL	CS32	<b>SDS323NL</b>	
	3P+N	CS32	<b>SDS323N</b>	
<b>40A</b>	3P+2EB Aux	CS32	<b>SDS323EB</b>	B (IP66)
	2P	CS40R	<b>SDS402</b>	
	3P	CS40R	<b>SDS403</b>	
	3P+NL	CS40R	<b>SDS403NL</b>	
	3P+N	CS40R	<b>SDS403N</b>	
	3P+2EB Aux	CS40R	<b>SDS403EB</b>	
<b>63A</b>	6P	GX40	<b>SDS406</b>	B (IP66)
	6P+2EB Aux	GX40	<b>SDS406EB</b>	
	2P	CS63	<b>SDS632</b>	
	3P	CS63	<b>SDS633</b>	
	3P+NL	CS63	<b>SDS633NL</b>	
	3P+N	CS63	<b>SDS633N</b>	
	3P+2EB Aux	CS63	<b>SDS633EB</b>	

'N' = switched neutral (Early make, late break)

'NL' = Unswitched neutral

### Changeover Switch-Disconnectors (I-O-II)

Rating	Format	Interior Switch product range	Cat. No.	Enclosure Size
<b>20A</b>	2P	GX20	<b>SCODS202</b>	A (IP66)
	3P	GX20	<b>SCODS203</b>	
	4P	GX20	<b>SCODS204</b>	
<b>40A</b>	2P	GX40	<b>SCODS402</b>	B (IP66)
	3P	GX40	<b>SCODS403</b>	
	4P	GX40	<b>SCODS404</b>	

### Accessories (applicable to type 'CS' interiors only)

Please refer to the table on page 6.



Based upon Craig & Derricott's 'i-switch' range of isolation equipment, the specially designed stainless steel 'sloping roof' enclosure is ideally suited for hygienic environments with their associated severe cleaning routines

The design has been created to minimise areas where dirt can accumulate and incorporates a flush rear surface and universal fixing that include IP66 sealings.

With the 'i-switch' range comes an important safety feature which prevents the enclosure cover being removed when the device has been padlocked in the 'Off' position. When combined with the excellent on-load breaking capacity of the 'i-switch' family this feature ensures that the term 'Safety Switch' is fully satisfied.



## Sloping Roof Switch-Disconnectors (O-I)

### Catalogue Numbers

Rating	Format	Interior Switch product range	Cat. No.	Encl. Size
20/ 25A	2P	CS25	SDSSR252	A (IP66)
	3P	CS25	SDSSR253	
	3P+2EB AUX	CS25	SDSSR253EB	
	3P+N	CS25	SDSSR253N	
	6P	GX20	SDSSR206	
	6P+2EB AUX	GX20	SDSSR206EB	
32A	2P	CS32	SDSSR322	A (IP66)
	3P	CS32	SDSSR323	
	3P+2EB AUX	CS32	SDSSR323EB	
	3P+N	CS32	SDSSR323N	
40A	2P	CS40R	SDSSR402	B (IP66)
	3P	CS40R	SDSSR403	
	3P+2EB AUX	CS40R	SDSSR403EB	
	3P+N	CS40R	SDSSR403N	
	6P	GX40	SDSSR406	
	6P+2EB AUX	GX40	SDSSR406EB	
63A	2P	CS63	SDSSR632	B (IP66)
	3P	CS63	SDSSR633	
	3P+2EB AUX	CS63	SDSSR633EB	
	3P+N	CS63	SDSSR633N	

'N' - switched neutral (Early make, late break)

### Fixings

Universal fixings across the range.

### Switch-Disconnectors

2 & 3 Pole	Type <b>CS</b> - base mounted. (Accepts add-on Aux. blocks & Neutrals)
6 Pole	Type <b>GX</b> - base mounted. (also available with 2 E/B Aux.)

### Earthing

Earth continuity terminals are provided in the base and lid of each enclosure.

### Accessories (applicable to type 'CS' interiors only)

Please refer to the table on page 6.

Section view showing the enclosures flush rear face with 'sealed' fixings that ensure the IP66 seal is maintained.








### Enclosure (Flush rear surface)

Material	Stainless steel, Grade 316, thickness 1.2mm body, 1.5mm lid. (15° Slope)
Finish	Brushed - Satin 150 grit
Entries	The enclosures are supplied as standard without entries. Optional pre-drilled bottom entries can be supplied as follows:- Size A - 2xM20 (add M20 to cat No.) Size B - 2xM25 (add M25 to cat No.) e.g. SDSSR322/M20, SDSSR403N/M25
Cover Screws	Stainless Steel (Captive)



## Technical Data (For pages 5-12)

Data supplied against tests to IEC/BS EN 60947-3

Data supplied against tests to IEC/BS EN 60947-3				Rating							
Application	Sym.	Unit	Category	20A	25A	32A	40A	63A	80A	100A	
Switch product range	-	-		GX20	CS25	CS32	GX40	CS40R	CS63	CS80	CS100
Rated thermal current	I <sub>the</sub>	A		20	25	32	40	40	63	80	100
Rated insulation voltage	U <sub>i</sub>	V		690	690	690	690	690	690	690	1000
Rated impulse voltage	U <sub>imp</sub>	kV		6	6	6	6	6	6	6	8.0
Rated operational power(3 phase AC)		kW	380/440 - AC23	7.5	11	15	18.5	15	25	30	59
			500V - AC23	7.5	15	15	15	15	30	37	63
			690V - AC23	7.5	15	15	15	15	30	30	51
Rated short time withstand current (1 sec)	I <sub>cw</sub>	A		250	500	600	800	600	1300	1400	2600
Max. fuse size for short circuit protection (gG Characteristic)		kA	10kA	20	35	35	40	40	80	80	160
			25kA	16	32	32	35	32	63	63	160
			50kA	-	32	32	-	32	63	63	160
Recommended connecting capacity		-	Terminal type								
		mm <sup>2</sup>	Flexible cable	2.5 x 2	6	6	6 x 2	6	16	16	50
		mm <sup>2</sup>	Rigid cable	2.5 x 2	10	10	10 x 2	10	25	25	70
		Nm	Tightening torque	1.0	1.2	1.2	1.0	1.2	1.2	1.2	2

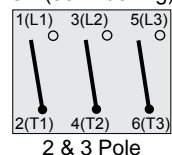
### Auxiliary Contacts

Data supplied against tests to IEC/BS EN 60947-5-1

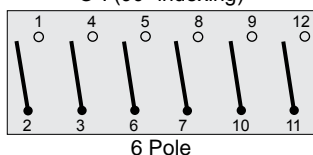
Application	Category	Sym.	Unit	Rating
Rated insulation voltage	-	$U_i$	V	690
Rated thermal current	-	$I_{th}$	A	10
Rated operational current (AC15)	110V	$I_e$	A	8
	220-240V			8
	380-400V			3
	660-690V			1
Max. conductor size	-	-	mm <sup>2</sup>	1.5
Tightening torque	-	-	Nm	0.6

### Terminal Markings

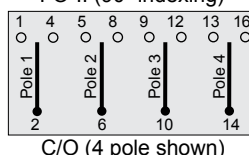
O-I (90° indexing)



O-I (90° indexing)



I-O-II (90° indexing)

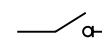


## General Description

Supplied in 'hinged lid' grey powder coated sheet steel enclosures, these IP41 sealed assemblies are eminently suitable for most indoor industrial applications. Supplied as 'Switch-Disconnectors' or 'Fuse Combination Units' all items are supplied in generously sized enclosures which helps to avoid the need for extension boxes.

The design offers a choice of accessories and options to match a variety of **real world** applications.

## Switch-Disconnectors (O-I)



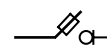
### Catalogue Numbers

Rating	Format	Cat. No.	Encl. Size
32A	3P+N	SD41G00323N	1
	3P+NL	SD41G00323NL	1
63A	3P+N	SD41G00633N	1
	3P+NL	SD41G00633NL	1
	6P+2E/B	SD41G00636EB	2
80A	3P+N	SD41GC00803N	3A
	3P+NL	SD41GC00803NL	3A
100A	3P+N	SD41GC01003N	3A
	3P+NL	SD41GC01003NL	3A
125A	3P+N	SD41GC01253N	4A
	3P+NL	SD41G01253NL	4A
160A	3P+N	SD41GC01603N	4A
	3P+NL	SD41GC01603NL	4A
200A	3P+N	SD41GC02003N	5A
	3P+NL	SD41GC02003NL	5A
250A	3P+N	SD41G02503N	5
	3P+NL	SD41G02503NL	5
400A	3P+N	SD41G04003N	6
	3P+NL	SD41G04003NL	6
630A	3P+N	SD41G06303N	8
	3P+NL	SD41G06303NL	8

'N' = switched neutral (Early make, late break)

'NL' = Unswitched neutral (50% rated, 100% on request)

## Fuse Combination Units (O-I)



### Catalogue Numbers

Rating	Format	Cat. No.	Enclosure Size
32A	3P+NL	SDF41G00323N	2
63A	3P+NL	SDF41G00633N	2
100A	3P+NL	SDF41G01003N	3
125A	3P+NL	SDF41G01253N	4
160A	3P+NL	SDF41G01603N	4
200A	3P+NL	SDF41G02003N	5
250A	3P+NL	SDF41G02503N	5
315A	3P+NL	SDF41G03153N	6
400A	3P+NL	SDF41G04003N	6
630A	3P+NL	SDF41G06303N	8



The internal arrangement of a typical switch-disconnector (Isolator)

## Design Features

- Safety handle - when padlocked in the 'Off' position, the enclosure door cannot be opened. Capable of accepting up to three padlocks in the 'Off' position. (Locking in 'On' position on request)
- Door interlock handle can be defeated to enable emergency opening or for testing purposes. (Must be carried out by a competent person)
- Removable gland plates on top & bottom of all enclosures.
- Enclosure size 2 and above isolating switches are mounted on a removable galvanised chassis plate.
- All Fuse Combination Units are supplied complete with a set of fully rated fuse links.
- Terminal covers are supplied for incoming terminals.
- Earth terminals fitted to door and gland plates.





## Spares/Accessories



For electrical ratings please refer to the following pages:-

**Type A - page 13**

**Types B & C - Page 20**

## Auxiliary Contacts

Add-on auxiliary blocks are available for all IP41 products. Please select the blocks/kit from the tables below.

All auxiliaries are supplied as 1 N/O+1 N/C pair.

All N/O auxiliary contacts are early break with respect to the main poles when switching from 'On' to 'Off'.

## Catalogue Numbers

### For Switch-Disconnectors

Rating (A)	32-200	250	400-630
Cat No	SAUXCO	SAUXKITB	SAUXKITC
Type	A	B	B

### For Fuse Combination Units

Rating (A)	32-160	200-400	630
Cat No	SAUXKITA	SAUXKITC	SAUXKITD
Type	C	B	C

## Fuse Links



IEC/BS EN 60269  
(BS88) fuse links

All of the Fuse Combination Units are supplied fitted with a set of fully rated IEC/BS EN 60269 (BS88) fuse links. Replacements can be supplied as individual fuse links to the table below.

Fuse links can be fitted to a lower rating to suit a particular load: please refer to the rating table below to maintain the correct size/tag format (A2, A4, B1 etc.).

Rating (A)	32	63	100	125	160	200	250	315	400	630
C&D Cat. No.	SFL32	SFL63	SFL100	SFL125	SFL160	SFL200	SFL250	SFL315	SFL400	SFL630
Cooper Bussmann Cat. No.	AA032	BA063	CE0100	DE0125	DD160	DD200	ED250	ED315	ED400	FF630
Lawson Cat. No.	TIA32	TIS63	TCP100	TFP125	TF160	TF200	TKF250	TKF315	TMF400	3T630
BS fuse format	A2, A3	A2, A3	A4	A4	B1, B2	B1-B2	B1-B2	B1-B4	B1-B4	C1-C3

## Terminal Covers



Terminal protection is provided on all items for live incoming terminals; spare terminal covers are available for replacement or extending the protection to the outgoing terminals.

## Catalogue Numbers - individual covers

### For Switch-Disconnectors

Isol Rating (A)	32-160	200	250-400	630
Cat No	Not reqd	STS1	STS2	STS4

### For Fuse Combination Units

Isol Rating (A)	32-63	100-160	200-400	630
Cat No	Not reqd	STS1	STS2	STS3





The internal arrangement of a typical Fuse Combination Unit

## Design Features

- Safety handle - when padlocked in the 'Off' position, the enclosure door cannot be opened. Capable of accepting up to three padlocks in the 'Off' position. ('On' position on request)
- Door interlock handle can be defeated to enable emergency opening or for testing purposes. (Must be carried out by a competent person)
- Removable gland plates on top & bottom of all enclosures.
- Enclosure size 2 and above isolating switches are mounted on a removable galvanised chassis plate.
- All Fuse Combination Units are supplied complete with a set of fully rated fuse links.
- Stainless steel enclosures for severe environments.
- Changeover Switch-Disconnectors in four pole format.
- Enclosures finished Red (RAL 3020) are available to order, please contact our Sales team for details.

## General Description

In addition to the basic features of the IP41 enclosed range, the IP65 sealed family of products introduces:-

- IP65 Handle assemblies.
- Sealed gland plates
- Up to 1000A Switch-Disconnectors
- Changeover Switch-Disconnectors
- Grey or Stainless steel enclosures (Red also available)

*Need something special?*

*Why compromise?*

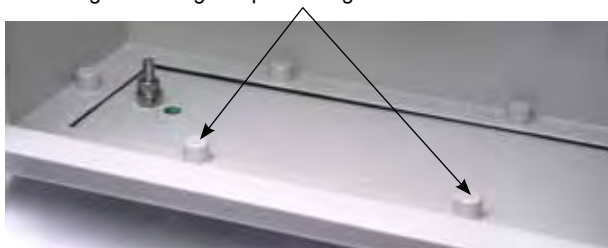
*Give our technical sales a call to discuss your requirements.*

*We can design, build & supply what you really need.*

## *...products for the real world*



Removable gland plates are fitted to the top & bottom faces and employ 'blind' fixings (Compact enclosures) that will maintain the IP sealing even if a gland plate fixing screw should be missed.



Technical  
Data  
Page 19

Dimensions  
Page 32

## Switch-Disconnectors\* (O-I)



### Catalogue Numbers

Rating	Format	Sheet steel (Grey)	Stainless Steel	Encl. Size
63A	3P+N	SDG00633N	SDS00633N	1
	3P+NL	SDG00633NL	SDS00633NL	1
	6P+2E/B	SDG00636EB	SDS00636EB	2
80A	3P+N	SDGC00803N	SDSC00803N	3A
	3P+NL	SDGC00803NL	SDSC00803NL	3A
100A	3P+N	SDGC01003N	SDSC01003N	3A
	3P+NL	SDGC01003NL	SDSC01003NL	3A
125A	3P+N	SDGC01253N	SDSC01253N	4A
	3P+NL	SDGC01253NL	SDSC01253NL	4A
160A	3P+N	SDGC01603N	SDSC01603N	4A
	3P+NL	SDGC01603NL	SDSC01603NL	4A
200A	3P+N	SDGC02003N	SDSC02003N	5A
	3P+NL	SDGC02003NL	SDSC02003NL	5A
250A	3P+N	SDG02503N	SDS02503N	5
	3P+NL	SDG02503NL	SDS02503NL	5
400A	3P+N	SDG04003N	SDS04003N	6
	3P+NL	SDG04003NL	SDS04003NL	6
630A	3P+N	SDG06303N	SDS06303N	8
	3P+NL	SDG06303NL	SDS06303NL	8
800A	3P+N	SDG08003N	SDS08003N	8
	3P+NL	SDG08003NL	SDS08003NL	8
1000A	3P+N	SDG10003N	SDS10003N	10
	3P+NL	SDG10003NL	SDS10003NL	10

\* 'N' = switched neutral (Early make, late break)

\* 'NL' = Unswitched neutral (50% rated, 100% on request)

## Fuse Combination Units\* (O-I)



### Catalogue Numbers

Rating	Format	Sheet steel (Grey)	Stainless Steel	Encl. Size
32A	3P+NL	SDFG00323N	SDFS00323N	2
63A	3P+NL	SDFG00633N	SDFS00633N	2
100A	3P+NL	SDFG01003N	SDFS01003N	3
125A	3P+NL	SDFG01253N	SDFS01253N	4
160A	3P+NL	SDFG01603N	SDFS01603N	4
200A	3P+NL	SDFG02003N	SDFS02003N	5
250A	3P+NL	SDFG02503N	SDFS02503N	5
315A	3P+NL	SDFG03153N	SDFS03153N	6
400A	3P+NL	SDFG04003N	SDFS04003N	6
630A	3P+NL	SDFG06303N	SDFS06303N	8

## Changeover Switch Disconnectors (I-O-II)



### Catalogue Numbers

Rating	Format	Sheet steel	Stainless Steel	Encl. Size
63A	4P C/O	SCODGC00634	SCODSC00634	3
100A	4P C/O	SCODGC01004	SCODSC01004	3
125A	4P C/O	SCODGC01254	SCODSC01254	5
160A	4P C/O	SCODGC01604	SCODSC01604	5
200A	4P C/O	SCODGC02004	SCODSC02004	5
250A	4P C/O	SCODG02504	SCODS02504	7
400A	4P C/O	SCODG04004	SCODS04004	9
630A	4P C/O	SCODG06304	SCODS06304	9

\* Items painted Red (RAL3020) are readily available. Please contact our Sales team for further details or a brochure.



...products for  
the real world

Most of the products in this catalogue are readily available through our stockist network.

Give us a call to find your nearest distributor.

Alternatively visit our website to find the contact details for your local Area Sales Manager who will be pleased to offer advice.

www.craigandderricott.co.uk/content/how-to-buy



## Spares/Accessories



For electrical ratings please refer to the following pages:-

**Type A - page 13**

**Types B & C - Page 20**

## Auxiliary Contacts

Add-on auxiliary blocks are available for all IP65 products. Please select the blocks/kit from the tables below.

All auxiliaries are supplied as 1 N/O+1 N/C pair.

All N/O auxiliary contacts are early break with respect to the main poles when switching from 'On' to 'Off'.

For additional contacts or details regarding auxiliaries for Change-over Switch-Disconnectors please contact our sales team.

## Catalogue Numbers

### For Switch-Disconnectors

Rating (A)	63-200	250	400-800	1000
Cat No	SAUXCO	SAUXKITB	SAUXKITC	SAUXKITD
Type	A	B	B	C

### For Fuse Combination Units

Rating (A)	32-160	200-400	630
Cat No	SAUXKITA	SAUXKITC	SAUXKITD
Type	C	B	C

## Fuse Links



IEC/BS EN 60269  
(BS88) fuse links

All of the Fuse Combination Units are supplied fitted with a set of fully rated IEC/BS EN 60269 (BS88) fuse links.

Replacement can be supplied as individual fuse links to the table below.

Fuse links can be fitted to a lower rating to suit a particular load: please refer to the rating table below to maintain the correct size/tag format (A2, A4, B1 etc.).

Rating (A)	32	63	100	125	160	200	250	315	400	630
C&D Cat. No.	SFL32	SFL63	SFL100	SFL125	SFL160	SFL200	SFL250	SFL315	SFL400	SFL630
Cooper Bussmann Cat. No.	AA032	BA063	CE0100	DE0125	DD160	DD200	ED250	ED315	ED400	FF630
Lawson Cat. No.	TIA32	TIS63	TCP100	TFP125	TF160	TF200	TKF250	TKF315	TMF400	3T630
BS fuse format	A2, A3	A2, A3	A4	A4	B1, B2	B1-B2	B1-B2	B1-B4	B1-B4	C1-C3

## Terminal Covers



Terminal protection is provided on all items for live incoming terminals; spare terminal covers are available for replacement or extending the protection to the outgoing terminals.  
(Not available for 800A & 1000A switch-disconnectors.)

## Catalogue Numbers - individual covers

### For Switch-Disconnectors

Isol Rating (A)	63-160	200	250-400	630
Cat No	Not reqd	STS1	STS2	STS4















### For Fuse Combination Units

Isol Rating (A)	32-63	100-160	200-400	630
Cat No	Not reqd	STS1	STS2	STS3

## Technical Specification

## Switch-Disconnectors

Data supplied against tests to BS EN 60947-3

				Rating (A)													
Application	Sym	Unit	Category	3P	3P	6P	3P	3P	3P	3P	3P	3P	3P	3P	3P	3P	3P
				32	63	63	80	100	125	160	200	250	400	630	800	1000	
Rated thermal current	$I_{the}$	A		32	63	63	80	100	125	160	200	270	500	630	720	1000	
Rated insulation voltage	$U_i$	V		690	690	690	690	1000	1000	1000	1000	1000	1000	1000	1000	1000	
Rated impulse voltage	$U_{imp}$	kV		6	6	6	6	8	8	8	8	12	12	12	12	8	
Rated operational current (AC)	$I_e$	A	Up to 415V - AC21A	32	63	63	80	100	125	160	200	250	400	630	800	1000	
			440-690V - AC21A	32	63	-	80	100	125	160	200	250	400	630	800	1000	
			Up to 415V - AC22A	32	63	-	80	100	125	160	200	250	400	630	800	1000	
			690V - AC22A	32	63	-	80	100	125	160	160	250	400	630	800	-	
			Up to 415V - AC23A	29	48	-	56	99	112	128	128	250	400	630	720	-	
			690V - AC23A	17	33	-	33	53	57	57	57	250	350	350	350	-	
Rated operational current (DC) (/poles in series)	$I_e$	A	Up to 48V - DC21A	32/1	63/1	-	80/1	-	-	-	-	250/2	400/2	630/1	800/1	1000/1	
			220V - DC21A	32/3	63/4	-	80/4	-	-	-	-	250/2	400/2	630/2	800/2	1000/3	
			Up to 48V - DC22A	-	-	-	-	-	-	-	-	250/2	400/1	630/1	800/1	-	
			220V - DC22A	-	-	-	-	-	-	-	-	250/2	400/2	630/2	800/2	-	
			Up to 48V - DC23A	-	-	-	-	-	-	-	-	250/2	400/1	630/1	800/1	-	
			220V - DC23A	-	-	-	-	-	-	-	-	250/2	400/2	630/2	630/2	-	
Rated operational power	$P_e$	kW	400/415V - AC23A	15	25	25	30	59	63	75	75	132	200	315	355	400	
			690V - AC23A	15	30	30	30	51	55	55	55	200	315	355	355	-	
Short circuit making capacity	$I_{cm}$	kA	Peak value	1.4	2.9	-	3.0	3.7	4.0	5.0	5.0	35	65	80	80	105	
Short circuit withstand (1sec)	$I_{cw}$	kA	rms value	0.6	1.3	1.3	1.4	2.6	2.8	3.0	3.0	8	17	17	17	50	
Min. mechanical endurance	-	-	Operations ( $10^3$ )	250	250	-	250	50	50	50	50	16	10	10	10	6	
Min. electrical endurance	-	-	415V - at 0.65 pf	-	-	-	-	-	-	-	-	1,000	1,000	500	500	500	
Connecting capacity			- Terminal type														
			mm <sup>2</sup> Min/Max	2.5/10	2.5/25	2.5/25	-/25	-/70	-/70	-/70	-/70	-/95					
			mm Stud/Cu palm width	-	-	-	-	-	-	-	-	8x25	10x30	10x30	12x40	12x40	12x60
			Nm Tightening torque	1.2	1.3	1.3	2	2	2	2	2	12	25	25	40	40	40



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the real world













## Technical Specification

## Fuse Combination Units



Data supplied against tests to BS EN 60947-3

				Rating (A)									
Application	Sym	Unit	Category	32	63	100	125	160	200	250	315	400	630
Rated thermal current	$I_{the}$	A		32	63	100	125	160	200	250	315	400	630
Rated insulation voltage	$U_i$	V		750	750	750	750	750	750	750	750	750	750
Rated impulse voltage	$U_{imp}$	kV		8	8	12	12	12	12	12	12	12	12
Rated operational current (AC)	$I_e$	A	415V - AC23A	32	63	100	125	160	200	250	315	400	630
Rated operational current (DC)*			220V - DC23A	-	-	100	125	160	200	250	315	400	630
Rated making capacity (AC23A)		A	415V, 0.35 pf	320	630	1,000	1,250	1,600	2,000	2,500	3,150	4,000	6,300
Rated breaking capacity (AC23A)		A	415V, 0.35 pf	256	504	800	1,000	1,280	1,600	2,000	2,520	3,200	5,040
Rated Conditional (Fused) short circuit		kA	S/C current rms	80	80	80	80	80	80	80	80	80	80
		A	back-up fuse	32	63	100	125	160	200	250	315	400	630
Min. mechanical endurance		-	Operations	25,000	25,000	15,000	15,000	15,000	10,000	10,000	10,000	10,000	6,000
Min. electrical endurance		-	415V - at 0.65 pf	1,500	1,500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
BS fuse format				F2	F2	A4	A4	B1, B2	B1, B2	B1, B2	B1, B4	B1, B4	C1, C3
Connecting capacity		-	Terminal type										
		mm <sup>2</sup>	Min/Max	16	25	95	95	120	240	240	300	300	400
		mm	Stud/Cu palm width	-	-	8x20	8x20	8x20	10x25	10x25	10x25	10x25	12x50
		Nm	Tightening torque	3.5	5.5	9	12	16	25	30	35	45	50









\* Two poles in series

## Technical Specification

## Changeover Switch-Disconnectors



Data supplied against tests to BS EN 60947-3

				Rating (A)							
Application	Sym	Unit	Category	63	100	125	160	200	250	400	630
Rated thermal current	$I_{the}$	A		63	100	125	160	200	250	400	630
Rated insulation voltage	$U_i$	V		750	750	1000	1000	1000	1000	1000	1000
Rated impulse voltage	$U_{imp}$	kV		6	6	6	6	6	12	12	12
Rated operational current	$I_e$	A	415V - AC22A	63	100	125	160	200	250	400	630
			415V - AC23A	63	100	125	160	200	250	400	630
Rated making capacity (AC23A)		A	415V, 0.35 pf	630	630	1,250	1,600	2,000	2,500	4,000	6,300
Rated breaking capacity (AC23A)		A	415V, 0.35 pf	504	504	1,000	1,280	1,600	2,000	3,200	5,040
Short circuit current		kA	rms (with fuses)	80	80	80	80	80	100	100	80
Rated S/C making capacity		kA	Peak	15	15	20	20	20	30	40	50
Min. mechanical endurance		-	Operations	20,000	20,000	10,000	10,000	10,000	10,000	10,000	10,000
Min. electrical endurance		-	415V - at 0.65 pf	2,500	1,500	1,000	1,000	1,000	1,000	1,000	500
Connecting capacity		-	Terminal type								
		mm <sup>2</sup>	Max	35	35	95	95	95	240	300	400
		mm	Stud/Cu palm width	6x12	6x12	8x22	8x22	8x22	10x25	10x25	12x50
		Nm	Tightening torque	3	3	10	10	10	30	45	50

**Auxiliary Blocks** Data supplied against tests to BS EN 60947-1

	Sym.	Category	Auxiliary blocks type 'B'	Auxiliary blocks type 'C'
Thermal current	$I_{th}$		10A	10A
Rated insulation voltage	$U_i$		660V a.c. or d.c.	500V
Utilisation Category	-	AC15	6.0A at 120V, 4.0A at 250V, 2.0A at 660V	240V - Make 30A, Break 3A 480V - Make 15A, Break 1.5A
		DC13	1.0A at 120V, 0.5A at 240V, 0.1A at 660V	240V - Make 30A, Break 3A 480V - Make 15A, Break 1.5A
		Pure Resistive	10A	-



## General Description

The provision of a Flag Indicator driven off the main operating shaft viewed through a window in the enclosure lid provides the user with confirmation of the isolating switch contact state.

Offered in both Switch-Disconnecter & Fuse Combination Unit assemblies with a choice of sheet steel or stainless steel enclosures. All assemblies are sealed to IP65 for protection against harsh environments and are supplied with 2 C/O auxiliary blocks wired down to terminals (N/O contacts are Early Break when switching 'Off').



(Items shown with optional external mounting feet fitted).



Interior view showing flag indicator and the auxiliary blocks wired down to terminals.



## Design Features

- Flag indication is operated off the end of the main operating shaft ensuring 'positive contact indication'.
- Flag window - 8mm thick polycarbonate.
- Safety handle - when padlocked in the 'Off' position, the enclosure door cannot be opened. Capable of accepting up to three padlocks in the 'Off' position. (Max. hasp/shackle dia. 6.4mm).
- Door interlock handle can be defeated to enable emergency opening or for testing purposes. (Must be carried out by a competent person).
- External stainless steel mounting feet option.
- Sheet steel - finish, painted RAL7035  
Stainless steel - Brushed finish grade 304.
- All assemblies are supplied with the switching element mounted on a removable internal chassis plate. Material - 2mm galvanised steel.
- All gland plate fixings are 'non invasive' i.e. leaving out a gland plate fixing does not compromise the enclosures IP65 sealing.
- All items are supplied with 2 C/O aux. blocks wired down to terminals (N/O contacts are Early Break when switching 'Off').

## Flagged Switch-Disconnectors (O-I)



### Catalogue Numbers

Rating	Format	Sheet steel	Stainless Steel	Encl. Size
32A	3P+N	SDG00323N/F	SDS00323N/F	1F
63A	3P+N	SDG00633N/F	SDS00633N/F	1F
100A	3P+N	SDG01003N/F	SDS01003N/F	2F
160A	3P+N	SDG01603N/F	SDS01603N/F	3F
200A	3P+N	SDG02003N/F	SDS02003N/F	4F

'N' = switched neutral (Early make, late break)

## Flagged Fuse Combination Units (O-I)



### Catalogue Numbers

Rating	Format	Sheet steel	Stainless Steel	Encl. Size
32A	3P+N	SDFG00323N/F	SDFS00323N/F	3F
63A	3P+N	SDFG00633N/F	SDFS00633N/F	3F
100A	3P+N	SDFG01003N/F	SDFS01003N/F	4F

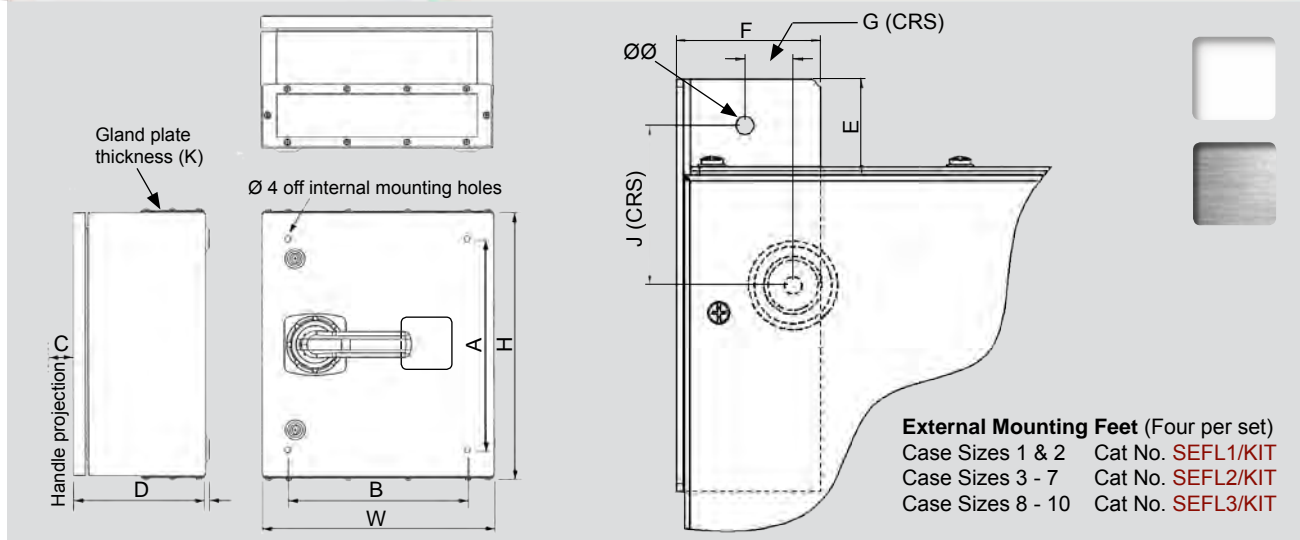
'N' = switched neutral (Early make, late break)

"ATEX - Zone 22 versions of these products are available. Please contact our technical sales staff for details."

Typical handle assembly showing the facility to accept up to three Ø6.4 shackle padlocks.



## Dimensions



**Case Sizes**

Dim	1F	2F	3F	4F
H	250	400	500	600
W	350	350	350	450
D	163	163	163	270
A	170	302	402	470
B	270	270	270	370
C	67	67	67	67
K	1.5	1.5	1.5	2.0
Ø	6.5	6.5	6.5	6.5

**External Feet**

Dim	1F	2F	3F	4F
E	35	35	35	35
F	53	58	58	58
G	18	18	13	13
J	58	58	58	58
ØØ	6.5	6.5	8.5	8.5

## Enclosure Data

<b>Materials</b>	Sheet steel or stainless steel
<b>Finish</b>	Sheet steel, iron phosphate pre treatment with a powder coat RAL 7035 (Light grey) textured finish.
<b>IP65</b>	Stainless steel, grade 304 with a <i>brushed</i> finish.
<b>Hinges</b>	Metal with quick release pins.
<b>Door Locks</b>	All metal locks supplied with one key per enclosure.
<b>Gland plates</b>	All enclosures are supplied with a removable gland plate on top & bottom faces finished to match the enclosure.
<b>Chassis plate</b>	All assemblies have the switching element mounted on a removable chassis plate. Material - 2mm zinc plated steel.



The above image shows an example of a bespoke assembly based upon a standard catalogue item. Call if you need your own version.

## General Description

Craig & Derricott have been designing electrical switchgear for more than 60 years and it's from this expertise that a development for the ventilation industry has led to the extensive 'Fire Rated' range. Contact stability at extended temperatures, typically 400°C for 2 hours (F400), is the basis of the design.

The critical role these switches perform is to maintain the power to vital equipment such as smoke extraction fans, allowing the safe evacuation of business, car-parks or public areas. Often these devices are mounted local to the extraction fans and, as an assembly, it is essential that they comply with the stringent thermal requirements of BS EN 12101-3: 2003.

The complete range are housed in metal enclosures; the user can therefore be assured that there will be no distortion affecting the connecting cables and their supports under high temperature conditions.

## Catalogue References.

Rating	Format	Assembly Form	Catalogue No. (Finished Red)	Temp. Class.	Encl. size
20A	2P	Lid mounted in sheet steel enclosure	FSDMR0202	F400	A
	3P		FSDMR0203		
	3P+2EB Aux		FSDMR0203EB		
	3P+N		FSDMR0203N		
	4P		FSDMR0204		
	6P		FSDMR0206		
32A	2P	Lid mounted in die-cast aluminium enclosure	FSDDR0322	F400	B
	3P		FSDDR0323		
	3P+2EB Aux		FSDDR0323EB		
	3P+N		FSDDR0323N		
	4P		FSDDR0324		
	6P		FSDDR0326		
63A	2P	Base mounted in hinged lid sheet steel enclosure	FSDMR0632	F400	C
	3P		FSDMR0633		
	3P+2EB Aux		FSDMR0633EB		
	3P+N		FSDMR0633N		
	4P		FSDMR0634		
	6P		FSDMR0636		
125A	2P	Base mounted in hinged lid sheet steel enclosure	FSDMR0636EB	F400	D
	3P		RS1BD11/HPHT		
	3P+2EB Aux		RS1BT21/HPHT		
	3P+N		RS1BT31/2EB/HPHT		
	4P		RS1BT21/HPHT/NL		
	6P		RS1BQ21HPHT		
160A	2P	Base mounted in hinged lid sheet steel enclosure	RS1BY31/HPHT	F400	D
	3P		RS1BY41/2EB/HPHT		
	4P		FSDMR1603		
	6P		FSDMR1604		
200A	3P	Base mounted in hinged lid sheet steel enclosure	FSDMR1606	F300	4*
	6P		FSDMR1606EB		
200A	3P	Base mounted in hinged lid sheet steel enclosure	FSDMR2003	F300	5*
	4P		FSDMR2004		
	6P		FSDMR2006		
	6P+2EB Aux		FSDMR2006EB		

\* Enclosure sizes from the Standard 'Hinged Lid' range - see page 32

## Specification

Within BS EN 12101-3: 2003 (Smoke and heat controls) there are several classes of duty which define a specific temperature gradient, upper temperature limit and time period.

**F200** 200°C for 120 min. **F300** 300°C for 60 min. **F400** 400°C for 120 min.

The specification calls for dynamic tests designed to check the performance of the complete ventilation system. The critical function of the associated isolator is required to maintain the essential supply for the duration of the test.

**“Smoke kills more people than fire”**







A well known fact, and it's the job of the ventilation designer to ensure this doesn't happen - to do this effectively he will need continuous power.





## Technical Specification

Data supplied against tests to IEC/BS EN 60947-3

Application	Sym.	Unit	Category	20A	32A	63A	125A	160A	200A
Rated thermal current	$I_{the}$	A		20	32	63	125	160	200
Rated insulation voltage	$U_i$	V		690	690	690	690	750	1000
Rated impulse voltage	$U_{imp}$	kV		6.0	6.0	6.0	6.0	12.0	12.0
Rated operational power (3 phase AC)		A/kW	415V - AC23A	20/9.5	32/15	40/18.5	100/55	45	110
			690V - AC23B	20/9.5	20/9.5	20/9.5	-	45	170
			660V - AC23B	-	-	-	30/22	-	-
Short circuit withstand (1 sec)	$I_{cw}$	kA	rms value	-	-	-	-	5.0	8.0
Conditional Short Circuit Current	Fuse gG	kA/ Fuse(A)	415V	50/32	50/32	50/63	50/200	50/160	50/200
			690V	40/32	40/32	40/63	50/63	50/63	50/200
Recommended connecting capacity		-	Terminal type						
		mm <sup>2</sup>	Flexible cable	2.5	6	16	50	95	95
		mm <sup>2</sup>	Rigid cable	2.5	10	25	50	95	95
		Nm	Tightening tor.	1.2	1.2	3.0	10.0	8.0	12.0



*If you need something special, then give our sales team a call.*

*They will be pleased to offer advice and suggest the next step to move your enquiry forward.*



High velocity extraction fans installed in an underground car park



Fire Rated

Technical Data  
Page 24

Dimensions  
Pages 32 & 33

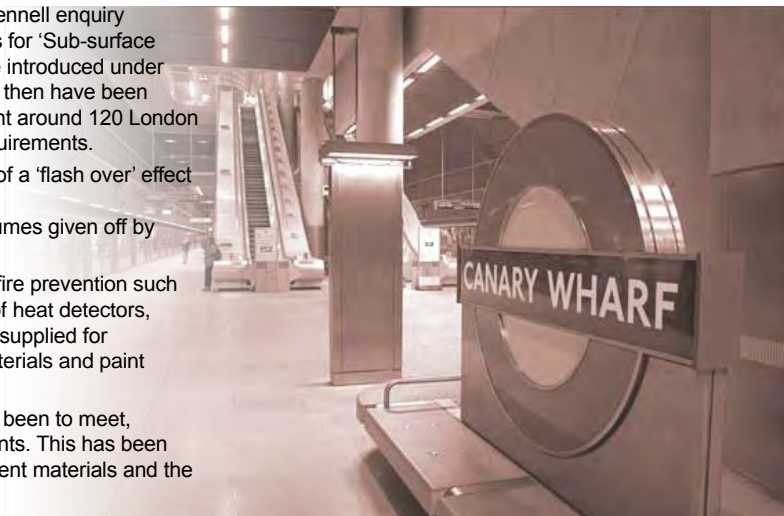
## Background

Following the Kings Cross fire of 1987, the resulting Fennell enquiry prompted the introduction of additional fire precautions for 'Sub-surface Railway Stations'. These additional requirements were introduced under section 12 of the Fire Precautions Act 1971, and since then have been known simply as 'Section 12' regs. There are at present around 120 London Underground stations that come under Section 12 requirements.

The forensic report on the fire cited several instances of a 'flash over' effect caused by materials and paint finishes being ignitable. Exacerbating the conditions underground were toxic fumes given off by certain materials being excessively heated.

Although the new regulations dealt with all aspects of fire prevention such as the removal of wooden escalators, the installation of heat detectors, improved staff training etc, as far as actual equipment supplied for underground use, the overriding emphasis was on materials and paint finishes.

With this isolation range, the overall consideration has been to meet, and where possible exceed, the Section 12 requirements. This has been achieved by the careful selection of individual component materials and the use of only recognised and approved paint finishes.



Products covered by London Underground Product Registration Certificates 638 & 639

## Die cast enclosures



## Switch-Disconnectors (O-I)

Rating	Format	Interior Switch product range	Catalogue Nos.		Enclosure Size
			Grey	Red	
25A	2P	GN25	DCG252LUL10	DCR252LUL10	A (IP65)
	3P	GN25	DCG253LUL10	DCR253LUL10	
	3P+2EB Aux	GN25	DCG253EBLUL10	DCR253EBLUL10	
	4P	GN25	DCG254LUL10	DCR254LUL10	
	6P	GN25	DCG256LUL10	DCR256LUL10	
	6P+2EB Aux	GN25	DCG256EBLUL10	DCR256EBLUL10	
40A	2P	R32	DCG402LUL10	DCR402LUL10	B (IP65)
	3P	R32	DCG403LUL10	DCR403LUL10	
	3P+2EB Aux	R32	DCG403EBLUL10	DCR403EBLUL10	
	4P	R32	DCG404LUL10	DCR404LUL10	
	6P	R32	DCG406LUL10	DCR406LUL10	
	6P+2EB Aux	R32	DCG406EBLUL10	DCR406EBLUL10	

To order a neutral link please include in the catalogue ref. as follows:-  
Example - 3 Pole + Neutral Link - DCG403**N**LUL10

## Design Features

- Paint Finishes:-  
Cupon EA9WB system  
Colour - Light Grey (RAL7035)  
Red (RAL3020)
- Captive lid fixing screws with a security head.
- Enclosure material - Aluminium (LM6)
- Sealing to IP65.
- Supplied with pre-finished steel mounting brackets.
- Padlocking cast lever handle.
- Positive break contacts.
- Earthing points on both lid and base plus external earth stud.
- Padlocking in both 'Off' & 'On'.
- Second product label supplied loose for fitting by the contractor where the original label may be obscured.
- Labels - Engraved traffolyte labels in various colours can be supplied attached to the side of the enclosure or supplied loose for fitting adjacent to the isolator.

## Technical Specification

Electrical ratings to BS EN 60947-3

Application	Sym	Unit	Category	Rating	
Rated thermal current	$I_{the}$	A	-	25A	40A
Rated operational power(3 phase AC)	-	kW	380/440V AC23A	11.0	15.0

## Stainless steel enclosures



## Switch-Disconnectors (O-I)

Rating	Format	Interior Switch product range	Catalogue Nos.	Enclosure Size
			Stainless steel	
25A	2P	GN25	DS252LUL10	C (IP65)
	3P	GN25	DS253LUL10	
	3P+2EB Aux	GN25	DS253EBLUL10	
	4P	GN25	DS254LUL10	
	6P	GN25	DS256LUL10	
40A	6P+2EB Aux	GN25	DS256EBLUL10	
	2P	GN40	DS402LUL10	D (IP65)
	3P	GN40	DS403LUL10	
	3P+2EB Aux	GN40	DS403EBLUL10	
	4P	GN40	DS404LUL10	
	6P	GN40	DS406LUL10	
	6P+2EB Aux	GN40	DS406EBLUL10	

To order a neutral link please include in the catalogue ref. as follows:- Example - 3 Pole + Neutral Link - DS256EB**N**LLUL10

## Design Features

- Lid mounted switch interiors.
- Captive lid fixing screws with a security head.
- Enclosure material - 18 gauge stainless steel grade 304.
- Finish - Natural - Brushed (Non glare)
- Sealing to IP65.
- Supplied with stainless steel mounting brackets.
- Padlocking cast lever handle.
- Positive break contacts.
- Earthing points on both lid and base plus external earth stud.
- Padlocking in both 'Off' & 'On'.
- Second product label supplied loose for fitting by the contractor where the original label may be obscured.
- Labels - Engraved traffolyte labels in various colours can be supplied attached to the side of the enclosure or supplied loose for fitting adjacent to the isolator.

## Technical Specification

Electrical ratings to BS EN 60947-3

Application	Sym	Unit	Category	Rating	
Rated thermal current	$I_{the}$	A	-	25A	40A
Rated operational power(3 phase AC)	-	kW	380/440V AC23A	11.0	18.5

Craig & Derricott produce many other products to meet 'Section 12' requirements; for example:-

### Hinged lid enclosed Switch-Disconnectors.

- Ratings 40A - 400A (3P + switched N).
- Grey or Red 'Copon EA9WB' finish.
- All metal padlocking handle.
- Can be supplied lockable in both 'Off' & 'On'.
- Removable top & bottom gland plates.
- Sealing to IP65.

### Hinged lid enclosed Fuse Combination Units.

- Ratings 32A - 630A (3P + switched N).
- Grey or Red 'Copon EA9WB' finish.
- All metal padlocking handle.
- Can be supplied lockable in both 'Off' & 'On'.
- Removable top & bottom gland plates.
- Takes BS88 fuse links.
- Sealing to IP65.

If you require further information on these products please contact our technical sales team or download the relevant data sheets from our website:-

[www.craigandderricott.co.uk/casestudies/transport11/rail-infrastructure/section-12-equipment](http://www.craigandderricott.co.uk/casestudies/transport11/rail-infrastructure/section-12-equipment)



Typical 'Fuse Combination Unit' and all metal handle assembly.





## General Description

Automatic Transfer Switches (ATS) are essential wherever substantial power has to be maintained. Whether it's to ensure people's safety in a work or public space, or to maintain essential supplies to a vital process, the fast and efficient transfer of power is automatically managed by the ATS system. The second source of power can either be from a generator or from an alternative/stand-by source. Either of which can be accommodated in Craig & Derricott's range of ATS systems.

At the core of each system is a three/four pole changeover device. The 'Standard' range utilises electromechanical contactors whilst the 'Advanced' range uses two load break isolators.

Two distinct ranges are available to cover differing requirements:-

The '**Standard Range**' provides all of the essential requirements for automatically providing a replacement power source. Facilities are provided to control the 'start-up' of standby generators manually and to set the undervoltage values and the required time delay. Neon lights show the status of the supplies.

The '**Advanced Range**' provides a more comprehensive control system where the user has an extensive set of variables under their control.

## Standard Range

Rated from 45A to 800A, the Single and Three-phase **Auto Transfer Switches (ATS)** units allow automatic connection of a secondary electrical supply to a load upon failure of the primary.

### Technical Features

- Mechanically and electronically interlocked 3/4 pole AC1 rated contactors. (AC1 - BS EN 60947-4-1)
  - 'No volt' connection for remote generator start (N/O & N/C)
  - Auxiliary power supply for Generator battery charging or jacket water heater.
  - Two position key switch for 'Auto' & 'Generator Run'.
  - Supply availability neon's for visual status indication.
  - Incoming supply adjustable undervoltage and time delay relays for the setting of individual supply parameters.
  - All equipment housed in a sheet steel hinged lid enclosure.
  - Duty/Standby (Mains/Mains) versions available on request.
- Suffix standard catalogue number with 'M' i.e ATS1254BM

#### Enclosures

- Grey (RAL7035) textured powder coated Zintec steel construction with phosphate protected welds.
- Termination compartment with internal polycarbonate terminal protection shrouds and external panel key lock door.
- Top and bottom steel gland plates.
- Sealing to IP65.

Connections	Termination	Protection
<b>Input 1 (Mains)</b>	1/3P+N+E Hardwire	45 to 800A 3/4 P Contactor
<b>Input 2 (Generator)</b>	1/3P+N+E Hardwire	45 to 800A 3/4 P Contactor
<b>Outgoing (Load)</b>	1/3P+N+E Hardwire	N/A
<b>Aux.</b>	1/1P+N+E Hardwire	20A 2 Pole MCB

Typical 45A/63A  
interior layout



Typical 400A interior layout



### Catalogue Numbers

Ratings	AC1 Rating	Cat No.	Encl. size
45A	45A x 4P	<b>ATS0454B</b>	<b>A</b>
63A	63A x 4P	<b>ATS0634B</b>	<b>B</b>
90A	90A x 4P	<b>ATS0904B</b>	
100A	100A x 4P	<b>ATS1004B</b>	
110A	110A x 4P	<b>ATS1104B</b>	
125A	125A x 4P	<b>ATS1254B</b>	
160A	160A x 4P	<b>ATS1604B</b>	<b>C</b>
200A	200A x 4P	<b>ATS2004B</b>	<b>D</b>
250A	250A x 4P	<b>ATS2504B</b>	
275A	275A x 4P	<b>ATS2754B</b>	
300A	300A x 4P	<b>ATS3004B</b>	
350A	350A x 4P	<b>ATS3504B</b>	
400A	400A x 4P	<b>ATS4004B</b>	
450A	450A x 4P	<b>ATS4504B</b>	
500A	500A x 4P	<b>ATS5004B</b>	
550A	550A x 4P	<b>ATS5504B</b>	<b>E</b>
600A	600A x 4P	<b>ATS6004B</b>	
650A	650A x 4P	<b>ATS6504B</b>	
700A	700A x 4P	<b>ATS7004B</b>	
750A	750A x 4P	<b>ATS7504B</b>	
800A	800A x 4P	<b>ATS8004B</b>	

Add suffix 'M' for Duty/Standby (Mains/Mains) versions.

## Advanced & Advanced+ Ranges

With ratings from 40A to 400A Craig & Derricott's 'Advanced Range' incorporates a modular style assembly with electronic control over a wide range of parameters.

### Typical interior assembly

All Craig & Derricott ATS products are supplied fully assembled in enclosures and ready to install.

Featuring:-

- Two mechanically interlocked four pole power switches.
- A configurable automatic control associated with an emergency manual operation.
- Built-in configuration and control interface.
- On load switch-disconnectors providing safety isolation combined with high making and breaking capacity.
- Fast electromagnetic operation.
- 'Advanced+' units which are designed to accept many optional accessories.

### Technical Features

#### Single or three phase voltage and frequency control on networks I or II.

- Independent over/under voltage and over/under frequency thresholds +/- 20% of nominal values.
- Considerable associated hysteresis values.
- Phase rotation and unbalance control.

#### Metering

- 3 phases voltage measurements on networks I & II.
- Frequency measurement on networks I & II.
- Timers display & count down.

#### Display & Keypad

- Parameters configuration (thresholds, timers etc).
- 3 phases voltage and frequency for source I & II, timers, number of cycles and last event display.
- Tests and positions control facilities.

#### LED's

- Power On; Source availability; Changeover position; 'MAN/AUT' mode; Test/Control operation; Fault.

#### 3 Configurable Inputs

- Automatic mode inhibition; Test on load and off load; Manual re-transfer; Changeover position control; Network priority change.

#### Bi-stable output relay

- For Generator Start/Stop command - 30V DC/2A

#### Ingress Protection

- IP65 (Without remote LCD display)

#### Two programmable output relays.

- Source I or II availability, Load shedding output; Fault relay.
- 250V AC/3A

#### Remote Display connection (Optional for Advanced+ range)

- RJ45 output connection.

#### Front of panel LCD display (Optional for Advanced+ range)

- Provides visualisation and control.
- Inhibits controls on the front of the Switching assembly.

#### Standard fitted accessories

- Bridging bars.
- Voltage sensing and power supply tap.
- Terminal shrouds.



Typical assembly showing the optional front panel 'D10' display

### Catalogue Numbers

Ratings	Format	Advanced	Advanced+	Encl. size
		Cat No.	Cat No.	
40A	40A x 4P	<b>ATS0404</b>	<b>ATS0404E</b>	A
63A	63A x 4P	<b>ATS0634</b>	<b>ATS0634E</b>	
100A	100A x 4P	<b>ATS1004</b>	<b>ATS1004E</b>	
125A	125A x 4P	<b>ATS1254</b>	<b>ATS1254E</b>	
160A	160A x 4P	<b>ATS1604</b>	<b>ATS1604E</b>	
250A	250A x 4P	<b>ATS2504</b>	<b>ATS2504E</b>	B
400A	400A x 4P	<b>ATS4004</b>	<b>ATS4004E</b>	

### Fitted Accessories

Accessories can be suitable for the Advanced or Advanced+ ranges. Those items suitable for the Advanced+ range only are indicated with a (+) symbol. All items offered below will be factory fitted to the enclosed assembly

#### Auxiliary Contact (40A - 160A)

- Single module containing 3 N/O contacts. One contact will close in each of the three switch positions (I-O-II). A maximum of two modules can be fitted to any unit.

Cat No. extension **/1AUX** (One module)  
**/2AUX** (Two modules)

#### RJ45 Connecting Cable (+)

- Connection cable for remote interfaces (D10 & D20). 3 metre long.

Cat No. extension **/RJ**

#### Remote Interfaces (+)

- Displays the basic system status on the enclosure front panel.

Cat No. extension **/D10**

- In addition to displaying the system status, the D20 allows control over operation and configuration via the front panel.

Cat No. extension **/D20**

All of the above items can be added to the basic catalogue number as follows:-

e.g. **ATS0634E/1AUX/RJ/D10** or **ATS1604/2AUX**

If you require any assistance in determining your exact requirements please contact our technical Sales team.

### Loose Accessories








#### Auxiliary Contact (40A - 160A)

- Three contact module as described above.

Catalogue No. **ATSAUX**

## 'Advanced' & 'Advanced+' Electrical Characteristics (4 pole Changeover)

### Rating (A)

Application	Sym.	Unit	Category	40A	63A	100A	125A	160A	250A	400A
Sheet steel enclosure size (See page 30)			-	(A)	(A)	(A)	(A)	(A)	(B)	(B)
Rated thermal current	$I_{th}$	A	-	40	63	100	125	160	250	400
Rated impulse withstand	$U_{imp}$	kV	Power circuit	6	6	6	6	6	8	8
Rated insulation voltage	$U_i$	V	Power circuit	800	800	800	800	800	800	800
Rated operational current (AC) (BS EN 60947-3)	$I_e$	A	400/415V - AC21A	40	63	100	125	160	250	400
			400/415V - AC22A	40	63	100	125	160	250	400
			400/415V - AC23A	40	63	100	125	125	250	250
Rated operational current (AC) (BS EN 60947-6-1)	$I_e$	A	415V - AC 31B	40	63	100	125	160	250	400
Rated short time withstand (1 sec)	$I_{cw}$	kA	rms	4	4	4	4	4	9	9
Short circuit making capacity *		kA	peak	17	17	17	17	17	30	30
Prospective short circuit current *		kA	rms	50	50	50	50	50	50	18
Associated fuse - rated *		A		40	63	100	125	160	250	400
Minimum mechanical endurance			Cycles	$10 \times 10^3$	$10 \times 10^3$	$10 \times 10^3$	$10 \times 10^3$	$10 \times 10^3$	$8 \times 10^3$	$8 \times 10^3$
Connecting capacity		-	Terminal type							
		mm	Cu busbar width	-	-	-	-	-	32	32
		mm <sup>2</sup>	Stranded cable	6 - 70	6 - 70	6 - 70	6 - 70	6 - 70	95 - 150	185 - 240
Tightening torque		Nm	-	4-6	4-6	4-6	4-6	4-6	20-26	20-26

\* For a rated operating voltage  $U_e = 400V$  AC

### Enclosure Data

#### Materials

	Thickness
Mild steel	Size A 1.2mm
	Size B 1.5mm

#### Finish

Mild steel (Grey)	Iron Phosphate pre treatment + Powder coat RAL 7035 (Light grey) textured finish.
-------------------	---

#### Hinges

Metal with quick release pins.

#### Cabinet Locks

All metal locks supplied with one key per enclosure.	
Enclosure Size A.	2 Locks
Enclosure Size B.	3 point locking

#### Gland Plates

All enclosures supplied with a 1.4mm thick removable gland plate on the bottom face finished to match the enclosure.

#### Chassis Plate

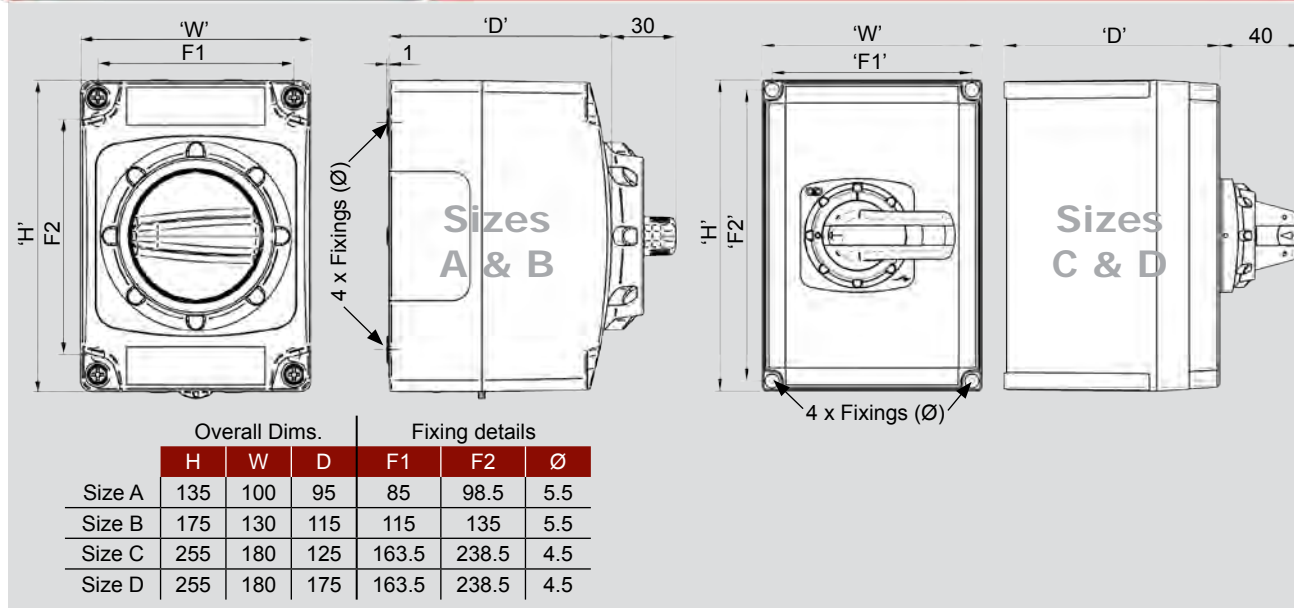
All assemblies are supplied with the switching element mounted on a removable internal chassis plate.  
Material - 2mm galvanised steel pre-drilled to accept optional components.



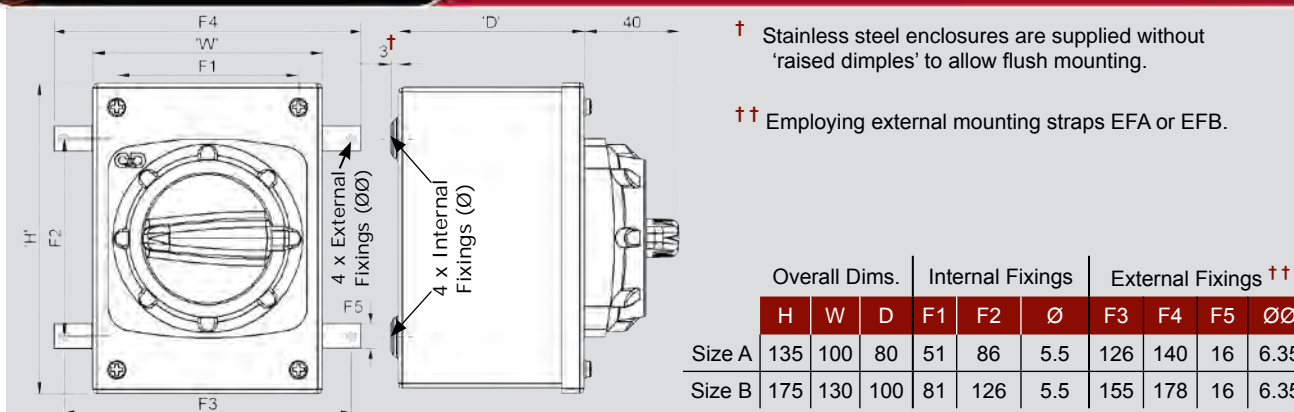
Optional 'D20' Remote Control Interface for mounting on enclosure door.



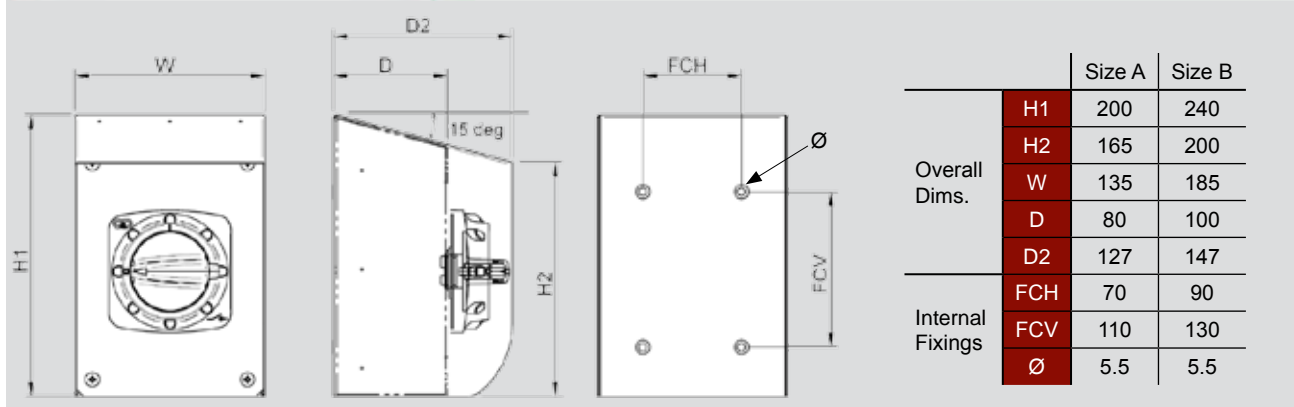
## Moulded Plastic Enclosures



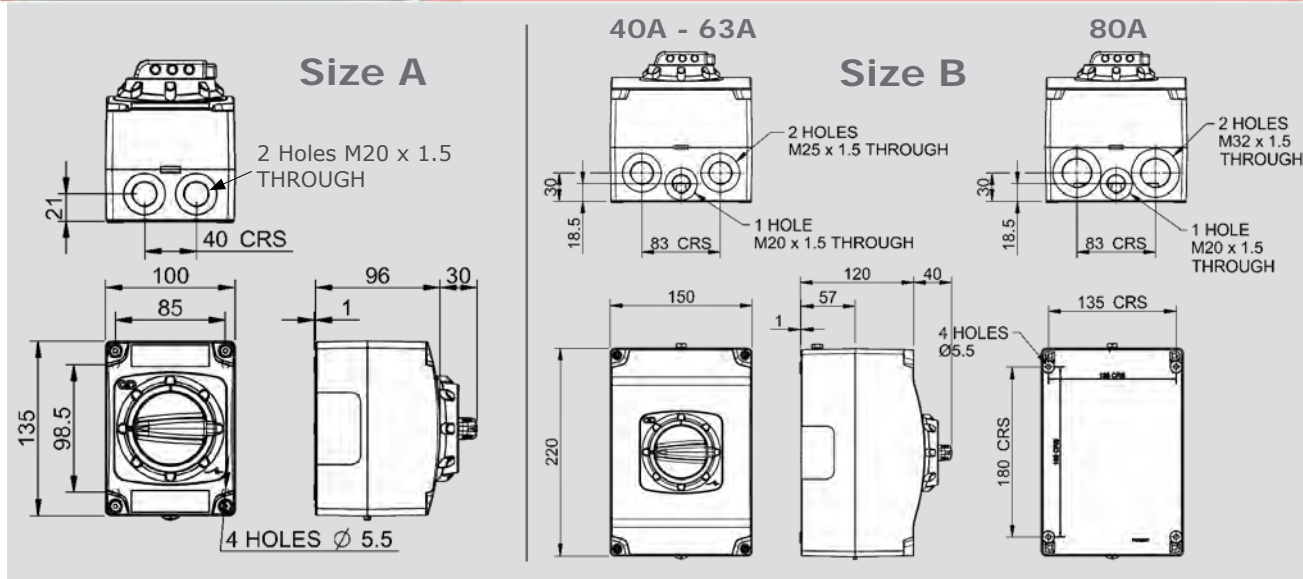
## Mild Steel & Stainless Steel Enclosures



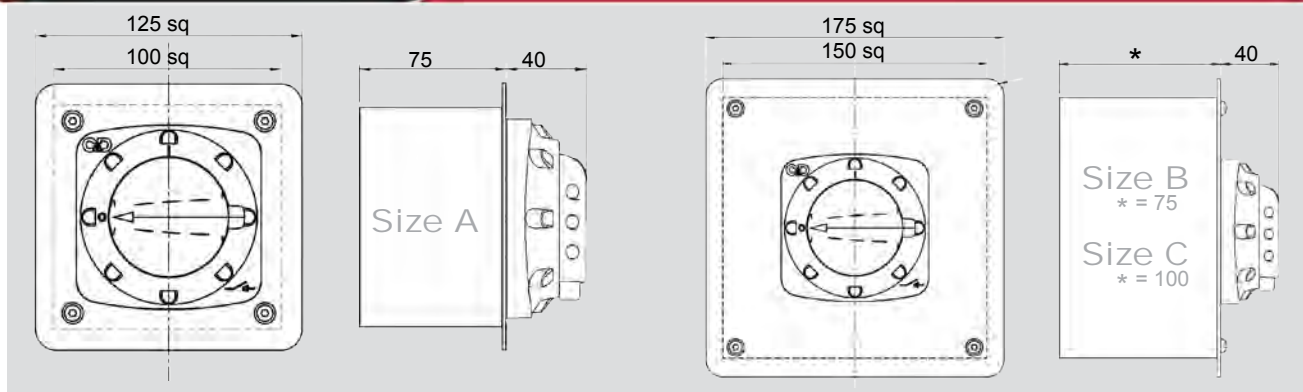
## Stainless Steel Sloping Roof Enclosures



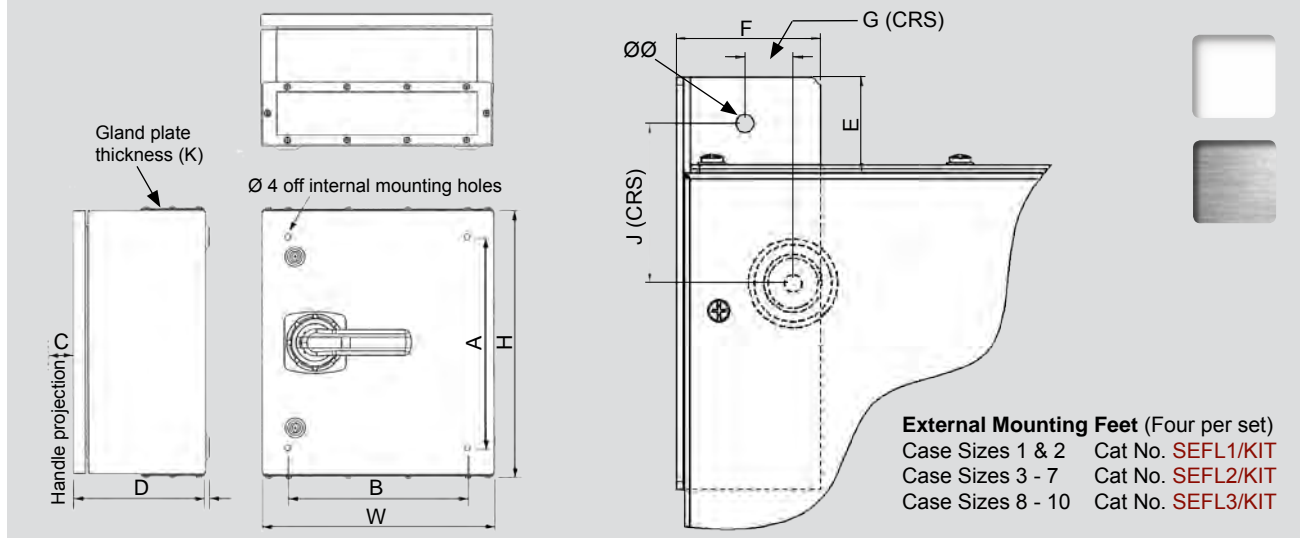
## Die Cast Enclosures



## Flush Enclosures



### Hinged Lid Enclosures



Enclosure Sizes

Dim	1	2	3	3A	4	4A	5	5A	6	7	8	9	10
H	250	250	400	350	500	400	550	550	750	750	900	900	1000
W	250	300	350	300	350	300	450	400	450	600	600	600	750
D	100	200	200	175	200	175	250	175	275	300	300	400	300
A	170	170	320	270	420	320	470	470	670	670	820	820	920
B	170	220	270	220	270	220	370	320	370	520	520	520	670
C	40	67	67	67	67	67	67	67	67	67	67	67	67
K	1.5	1.5	1.5	2.0	1.5	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5
Ø	6.5	6.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	10.5	10.5	10.5

External Feet

E	35	35	35	35	35	35	35	35	35	35	35	35	35
F	53	58	58	58	58	58	58	58	58	58	58	58	58
G	18	18	13	13	13	13	13	13	13	13	13	13	13
J	58	58	58	58	58	58	58	58	58	58	58	58	58
ØØ	6.5	6.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	10.5	10.5	10.5



### Enclosure Data

#### Materials

- IP41 items Sheet steel
- IP65 items Sheet steel or stainless steel

#### Finish

- IP41 & IP65 Sheet steel, iron phosphate pre treatment with a powder coat RAL 7035 (Light grey) textured finish.

- IP65 Stainless steel, grade 304 with a brushed finish.

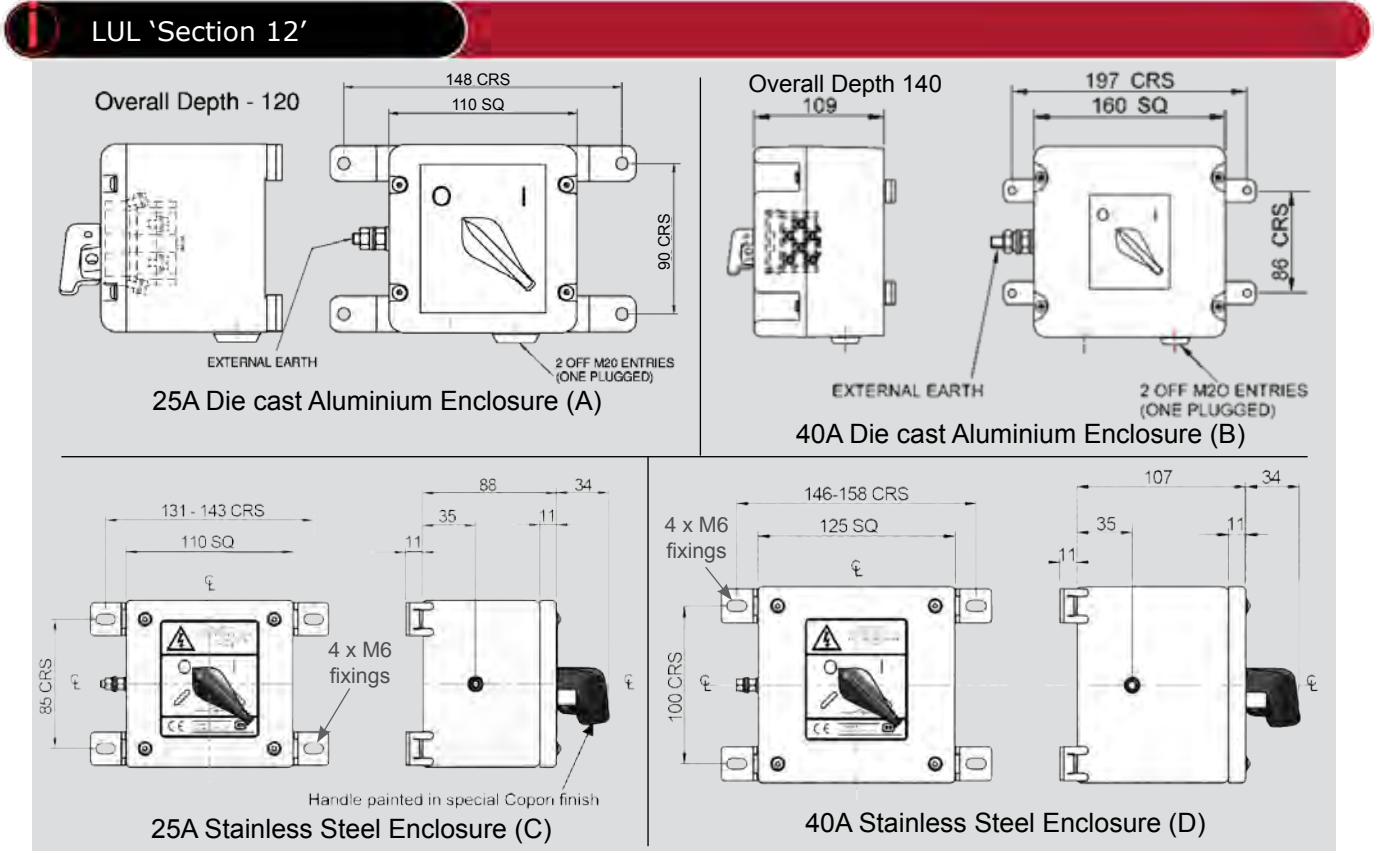
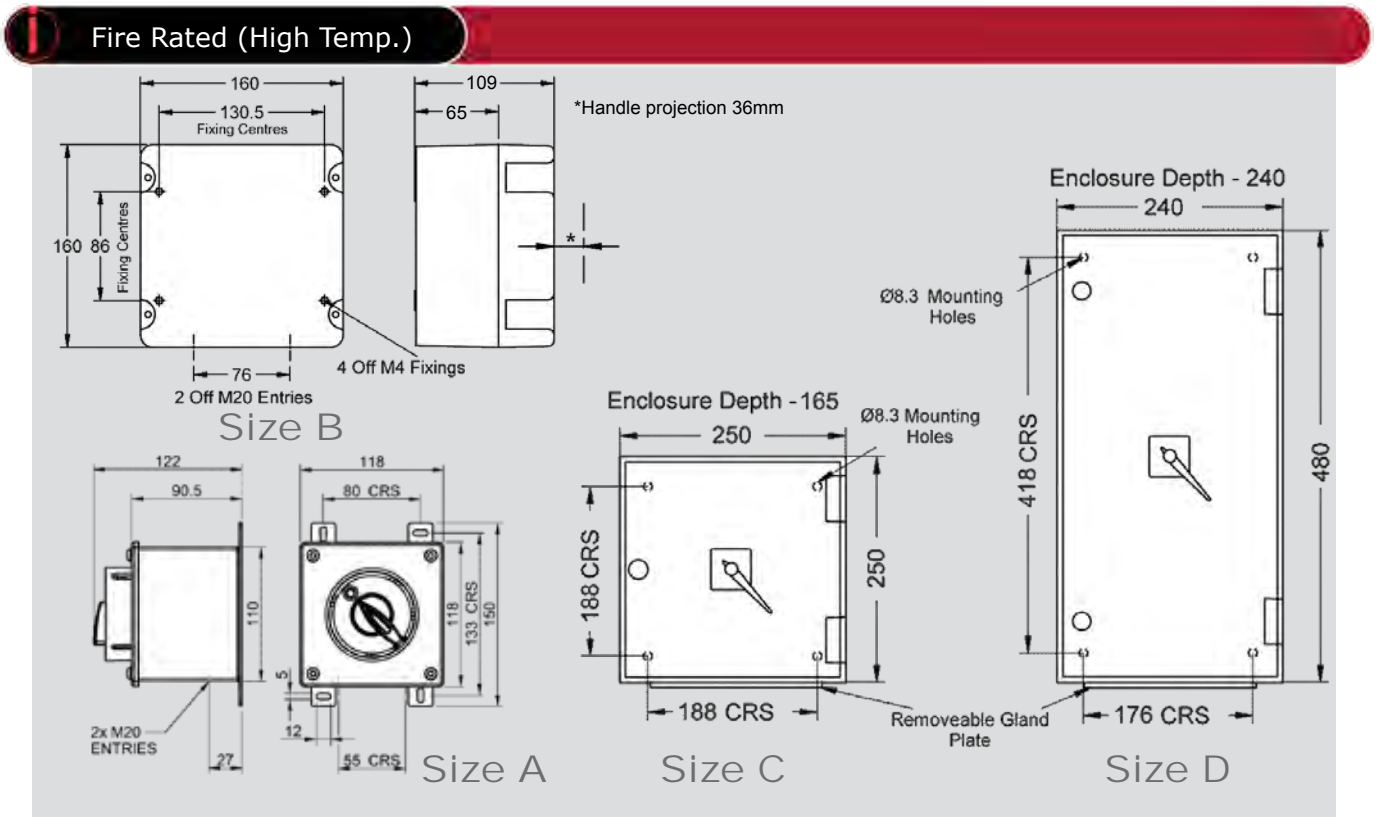
- Hinges Metal with quick release pins.

- Door Locks All metal locks supplied with one key per enclosure.  
 Enclosures 1 & 2 IP41 - 2 screw fixings  
 IP65 - 1 lock  
 Enclosures 3 - 9 IP41 & IP65 - 2 locks  
 Enclosure size 10 IP41 & IP65 - 3 locks

- Gland plates All enclosures are supplied with a removable gland plate on top & bottom faces finished to match the enclosure.

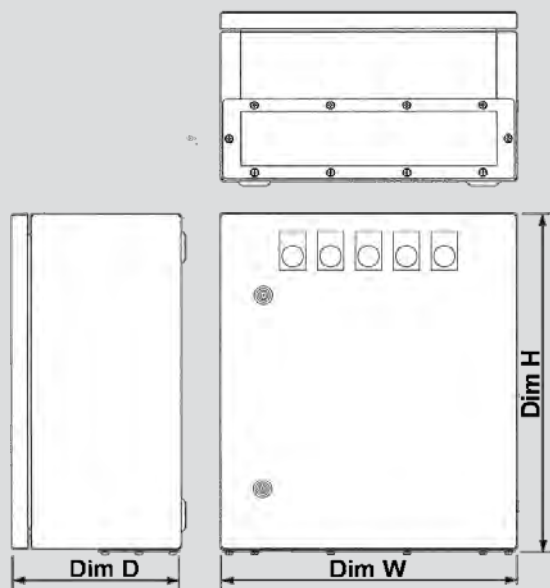
- Chassis plate Above enclosure size 1, all assemblies have the switching element mounted on a removable chassis plate. Matl.- 2mm zinc plated steel.





## ATS assemblies

### Standard Range



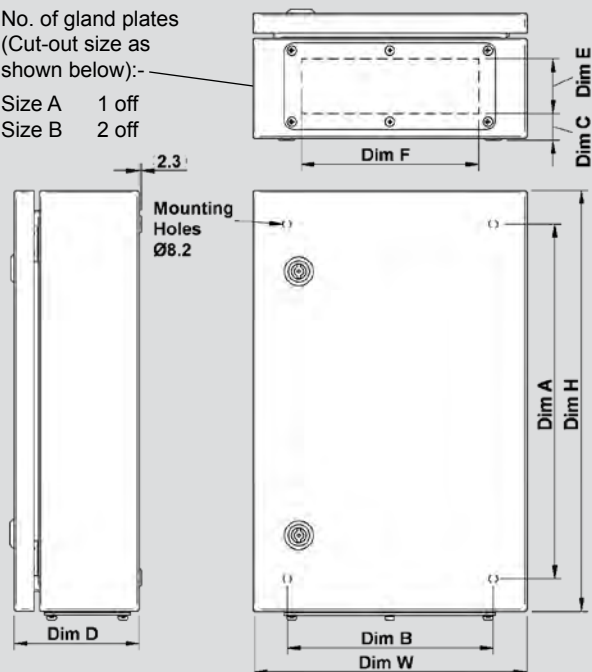
Overall Dims.

	H	W	D
Size A	400	300	150
Size B	600	400	250
Size C	700	500	250
Size D	800	600	300
Size E	1000	800	300

### Advanced & Advanced+ Ranges

No. of gland plates  
(Cut-out size as  
shown below):-

Size A 1 off  
Size B 2 off



	H	W	D	A	B	C	E	F
Size A	700	500	210	660	460	35	96	410
Size B	1000	800	400	960	760	35	96	310



Most of the products in this catalogue are readily available through our stockist network.

Give us a call to find your nearest distributor.

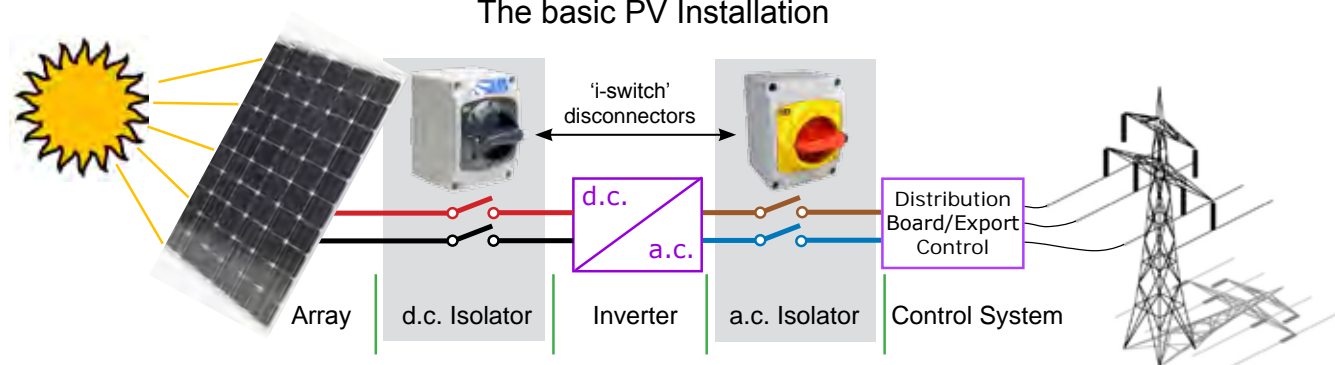
Alternatively visit our website to find the contact details for your local Area Sales Manager who will be pleased to offer advice.

Solar power is an environmentally friendly method of producing electricity and is achieved using PhotoVoltaic (PV) cells that capture sunlight and convert it to electricity. By combining cells into an array different voltages and current combinations can be achieved.

Once installed an array will continue to generate voltage and current and it is therefore essential to isolate the array in the event of a fault or for maintenance purposes. To enable this Craig and Derricott have developed a range of DC switch-disconnectors to manage this specific application.

See page 5 for AC isolating devices

The basic PV Installation



Select from the table below the suitable d.c. switch-disconnector to meet the required installation that is applicable to Rated Operational Voltage and Rated Operational Current rating.

## D.C. Isolators (array side of inverter)

### Catalogue Nos. and Enclosure Arrangements

Enclosed Assembly Catalogue No	Interior Isolating Sw. Catalogue No	Number of poles	Rated Operational Voltage (d.c.)	$I_{th}$ (A)	Rated Operational Current ( $I_{the}$ ) - DC21B	Connection Diag. (See Over)	Enclosure Size.
PVP162	SPV162	2	600	25	16	W	A
PVP252	SPV252			32	25		
PVP322	SPV322			40	32		
PVP163	SPV163	3	1000	25	16	X	A
PVP253	SPV253			32	25		
PVP323	SPV323			40	32		
*PVP1622	*SPV1622	4	600	25	16	Y	B
*PVP2522	*SPV2522			32	25		
*PVP3222	*SPV3222			40	32		
PVP164	SPV164	4	1200	25	16	Z	B
PVP254	SPV254			32	25		
PVP324	SPV324			40	32		

\* Designed to isolate twin array applications.





## D.C. Isolators (contd.)

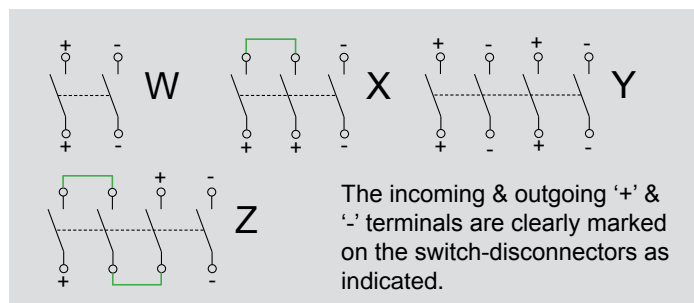
### Technical Data

- Type tested to BS EN 60947-3
- Thermal rating ( $I_{th}$ ) Up to 40A
- Utilization Category DC21B
- Ambient temp. limits 55°C (Peak) max
- Ingress protection all assemblies IP66
- Operating handles will accept up to three padlocks in the 'Off' position.  
Recommended hasp diameter is 1/4" (Ø6.4mm)
- Terminal capacity:-

Cable type	Capacity (40A)
Rigid	2 x 10mm <sup>2</sup>
Flex.	2 x 6mm <sup>2</sup>
Tightening torque	1.0Nm

### Internal Switch Linking

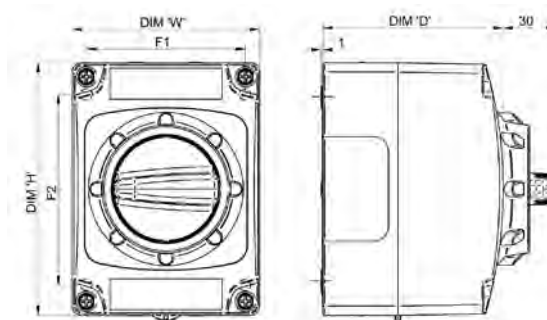
(Links supplied factory fitted)



### Dimensions

All enclosures supplied with plain sides.  
ABS/Polycarbonate

Colour - RAL7035



	Overall Dims			Fixing Details		
	H	W	D	F1	F2	Ø
Size A	135	100	95	85	98.5	5.5
Size B	175	130	115	115	135	5.5

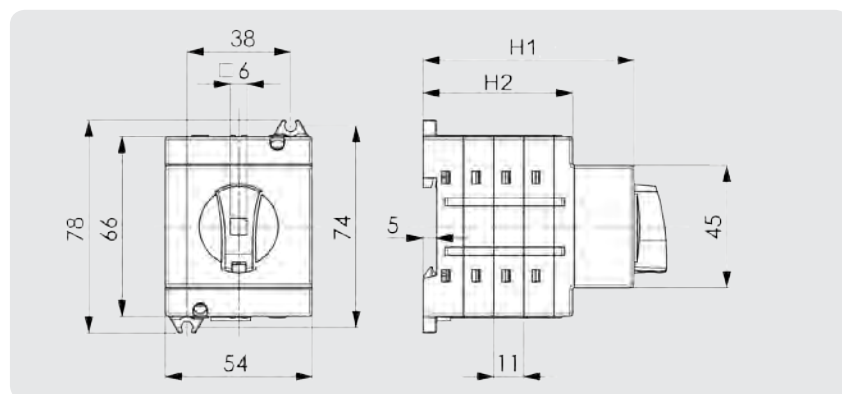


For those installing PV isolators in their own assemblies, the following components are available:-

- On-load d.c. isolating switches
- Operating shaft kits
- IP65 Door interlocking handle assemblies

## Isolating Switch modules

Cat No	Rated operational voltage (d.c.)	Rated operational current (A) - DC21B	Total No. of poles	Max. enclosure depth with SSH1 shaft	Max. enclosure depth with SSH2 shaft	H1	H2
<b>SPV162</b>	600	16	2	148	248	50.5	28
<b>SPV252</b>		25					
<b>SPV322</b>		32					
<b>SPV163</b>	1000	16	3	159	259	61.5	39
<b>SPV253</b>		25					
<b>SPV323</b>		32					
<b>SPV1622</b>	600	16	4	170	270	72.5	50
<b>SPV2522</b>		25					
<b>SPV3222</b>		32					
<b>SPV164</b>	1200	16	4	170	270	72.5	50
<b>SPV254</b>		25					
<b>SPV324</b>		32					



## Operating Shafts

Supplied in two lengths to suit varying enclosure depths, the shafts can easily be shortened and re-assembled.

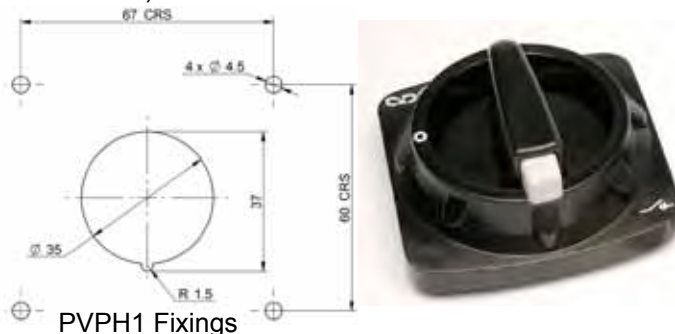
Style SSH1 & SSH2



Switch Rating	Shaft Length 'L'	Catalogue No.
16A, 25A & 32A	100mm	<b>SSH8</b>
	200mm	<b>SSH18</b>

## Door Interlocking Handles

The door interlocked handle is of a stylish design and compact in size. Up to 3 padlocks can be fitted to lock the handle in the 'Off' position. (Ø6.4 max. hasp diameter)



Switch Rating	Sealing	Catalogue No.
25A, 32A & 45A	IP65	<b>PVPH1</b>

Great Customer Service is our mantra and a fast turnaround of each and every enquiry is what we achieve.

*However you contact us...*

Website



Web chat



Sales team  
Local Rep.

C&D Enquiry Promise

*... you know you can rely on us to get back to you in the shortest possible time.*

***Make contact today!***



Craig & Derricott has been associated with the design and manufacture of Ex products for more than 30 years.

The current product range has been developed to meet the technical requirements of today's market and a great deal of the design consideration has been given to bringing a quality product to the market at a competitive price.

### General Description

The 'EXZ1' range of enclosed switch-disconnectors are supplied in 'EX e' enclosures manufactured from glass reinforced polyester sealing to IP65 ensuring the product will withstand being installed in the harshest of industrial environments.

The operating handles are available in Red/Yellow or Black and can be padlocked in the 'Off' position. All lids are mechanically interlocked with the isolating switch and are removable in the 'On' position only.

Available in ratings from 20A - 150A the isolating switch interiors are supplied in either 3 or 4 pole formats complete with 1 N/O (Early break) & 1 N/C (Late make) auxiliary contacts.

### Catalogue Numbers

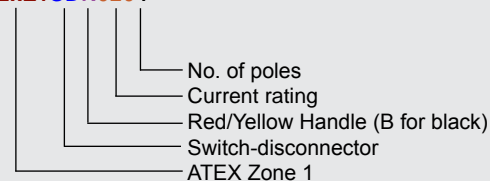
Rating	Format	Handle Colour	Cat. No.	Enclosure Size
20A	3P+Aux	Red/Yellow	EXZ1SDR0203	A
		Black	EXZ1SDB0203	
	4P+Aux	Red/Yellow	EXZ1SDR0204	
		Black	EXZ1SDB0204	
32A	3P+Aux	Red/Yellow	EXZ1SDR0323	B
		Black	EXZ1SDB0323	
	4P+Aux	Red/Yellow	EXZ1SDR0324	
		Black	EXZ1SDB0324	
63A	3P+Aux	Red/Yellow	EXZ1SDR0633	C
		Black	EXZ1SDB0633	
	4P+Aux	Red/Yellow	EXZ1SDR0634	
		Black	EXZ1SDB0634	
150A	3P+Aux	Red/Yellow	EXZ1SDR1503	D
		Black	EXZ1SDB1503	

Aux - 1 N/O (Early break) & 1 N/C (Late make)



### Catalogue No. Key

ExZ1SDR0204



### Certification

All items have been approved with 'ATEX' (Sira 13ATEX3205X) and 'IECEx' (IECEx SIR 13.0076X) certificates for use in Zones 1 & 2.

The equipment is designed and tested to comply with the following:-

- EN 60079-0 Electrical Atmospheres, Part 0 : Equipment - General requirements.
- EN 60079-1 Electrical Atmospheres, Part 1 : Equipment protection by flameproof enclosures 'd'.
- EN 60079-7 Electrical Atmospheres, Part 7 : Equipment protection by increased safety 'e'.
- EN 60947-1 Low-Voltage switch gear and controlgear - Part 1:general rules.
- EN 60947-3 Low-Voltage switch gear and controlgear - Part 3:switches, disconnectors, switch-disconnectors and fuse combination units.
- EN 60529 Degrees of protection provided by enclosures. (IP Code)



Interior view of a typical 20A assembly  
(Glands not supplied)

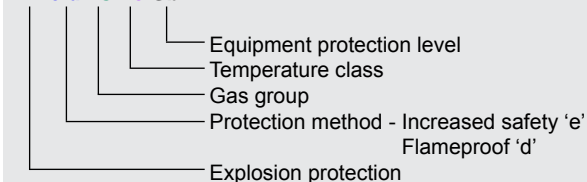
### Equipment Marking

20A	Ⓔ II 2 G Ex e d IIC T4 Gb - (-40°C ≤ Ta ≤ +40°C)
32A	Ⓔ II 2 G Ex e d IIC T6 Gb - (-40°C ≤ Ta ≤ +40°C)
63A	Ⓔ II 2 G Ex e d IIC T6 Gb - (-40°C ≤ Ta ≤ +40°C)
150A	Ⓔ II 2 G Ex e d IIC T5 Gb - (-40°C ≤ Ta ≤ +30°C)





### Key to Marking

Ⓔ	Specific marking for Explosion protection	II	Equipment group
2		2	Equipment category
G		G	Environment e.g. Gas


Ex e d IIC T6 Gb



## Technical Specification - Switch-Disconnecter Main Contacts

Application	Sym.	Unit	Category	20A	32A	63A	150A
Rated thermal current	$I_{the}$	A		20	32	63	150
Rated insulation voltage	$U_i$	V		690	690	690	690
Rated current	-	A	AC3 (230V)	20	32	63	150
			AC3 (400V)	20	32	63	150
			AC3 (500V)	20	32	63	150
			AC3 (690V)	16	32	63	125
Terminal Capacity			-	2x6mm <sup>2</sup>	2x16mm <sup>2</sup>	2x35mm <sup>2</sup>	2x95mm <sup>2</sup>
Tightening Torque (Nm)			-	1.2	2.5	3	6
Terminal Type	-						

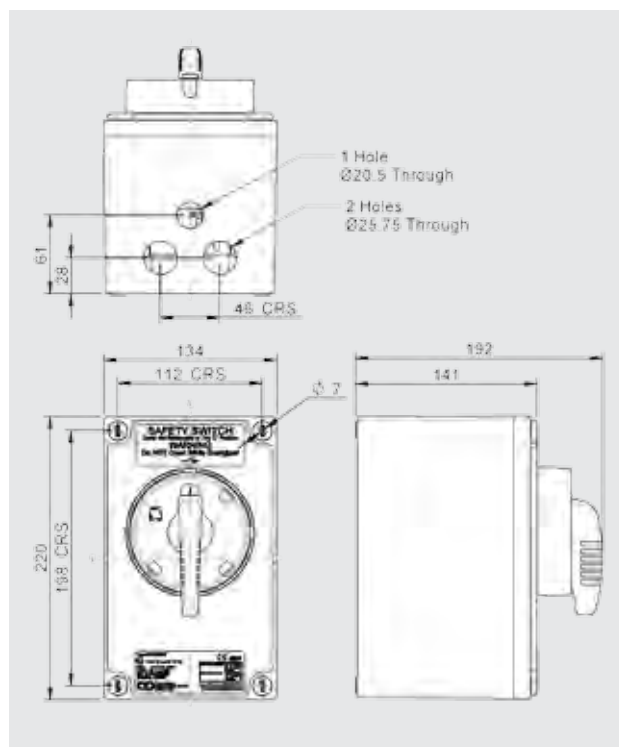
## Technical Specification - Auxiliary Contacts

Application	Sym.	Unit	Category	AUX
Rated thermal current	$I_{the}$	A		10
Rated insulation voltage	$U_i$	V		690
Rated current	-	A	AC15 (250V)	10
			AC15 (400V)	8
			DC13 (24V)	8
			DC13 (250V)	1
Terminal Capacity			-	2x6mm <sup>2</sup>
Tightening Torque (Nm)			-	1.2
Terminal Type	-			

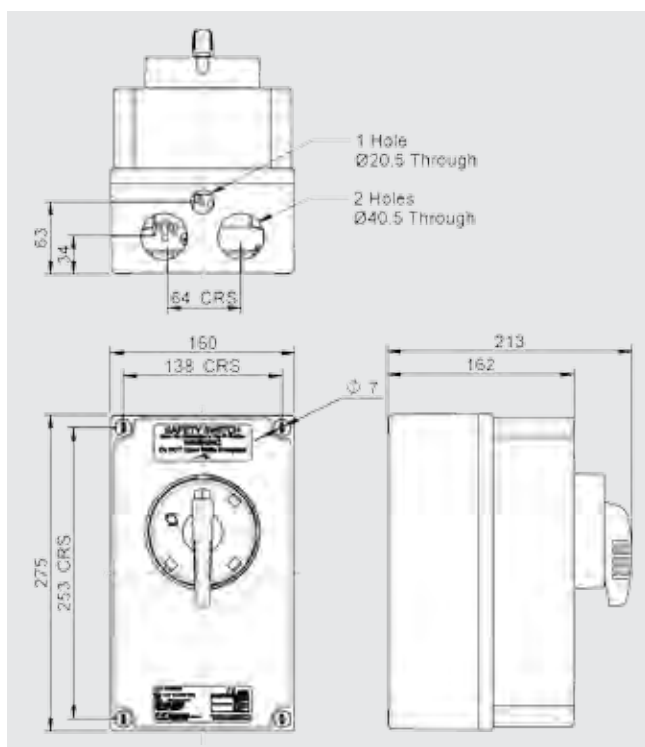


Exterior view of a typical 20A assembly  
(Glands not supplied)

## Dimensions



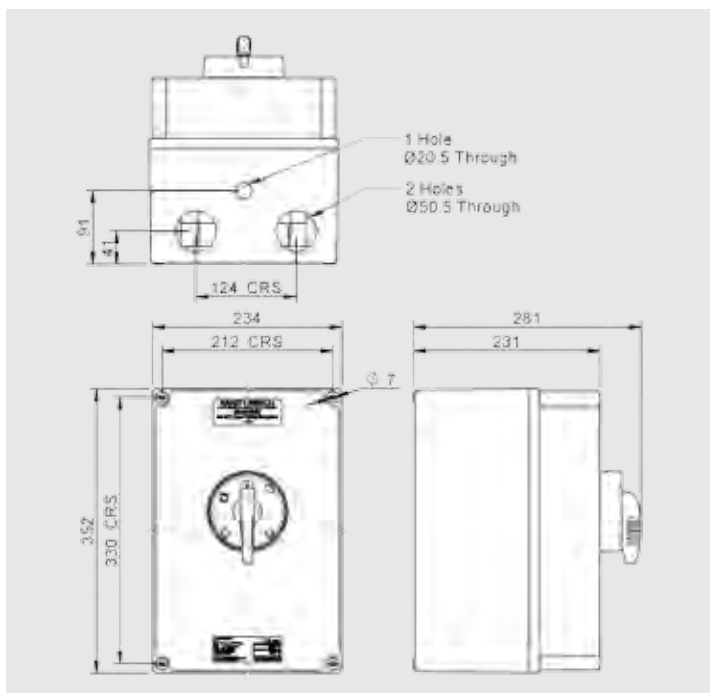
Enclosure A



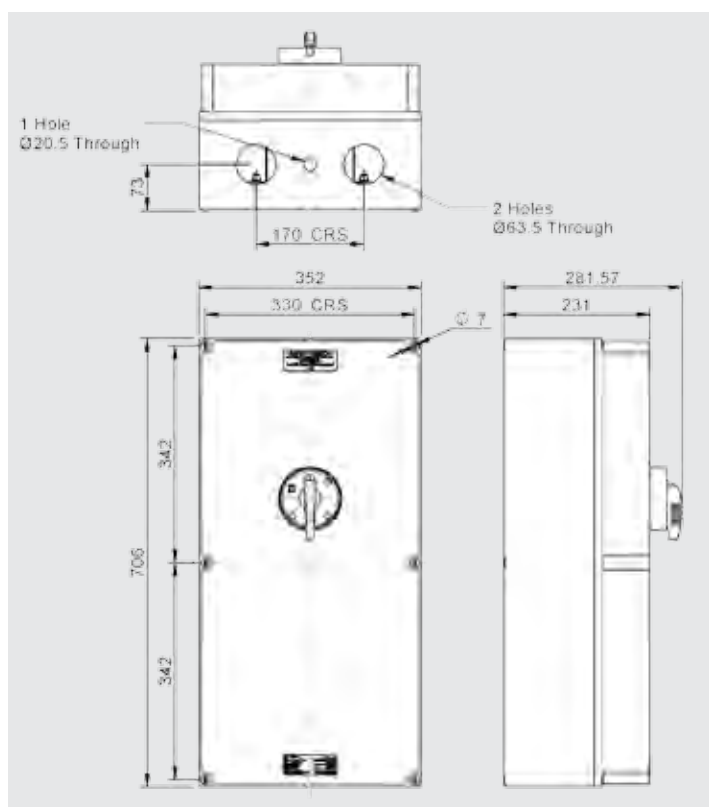
Enclosure B

## Dimensions Contd.

### ATEX Zone 1 & 2 Isolators



Enclosure C



Enclosure D





A range of Switch-Disconnectors housed in heavy duty cast enclosures - ATEX certified for use in Cat II, Zones 1, 2, 21 & 22 environments.

## Certifications and Approvals

- |                          |  |
|--------------------------|--|
| • Certification Code     | <b>Ex d II 2 GD IIB T6</b>                                 |
| • Certification No.      | <b>ITS 09 ATEX 16433X, ITS 09 ATEX 16436U</b>              |
| • Certification standard | <b>EN 60079-0, EN 60079-1, EN 61241-0 &amp; EN 61241-1</b> |
| • Operating temperature  | <b>-20°C to +40°C</b>                                      |
| • Ingress Protection     | <b>IP65</b>  |

## Construction

High quality heavy duty cast enclosures are used throughout the range. (Cast Iron 16A - 63A, Cast Aluminium 80A - 250A)

The enclosures are supplied with large cable entries which can be fitted with approved reducers to suit individual cable requirements. (See page 43) Specific entry requirements can be accommodated - please specify when ordering.

All load switching interiors are supplied as either 3P+N (switched neutral) or 6P and have AC23A ratings to BS EN 60947-3.

Auxiliary contacts are available for applications such as SCADA packages.











Operating handles are capable of accepting up to three padlocks in the 'Off' position.

Finish - RAL 7035 Two pack grey epoxy coating over etching primer.



Example of a 100A assembly

## Electrical Ratings

Application	Sym.	Unit	Category	Rating (A)									
				16A	20A	25A	40A	40A	63A	80A	100A	125A	250A
Format	-	-	-	3P	6P	3P	6P	3P	3P	3P	3P	3P	3P
Enclosure	-	-	-	G21	G21	G21	G22	G22	G22	G24	G25	G25	G28
Rated thermal current	$I_{the}$	A		16	20	25	40	40	63	80	100	125	250
Rated Insulation voltage	$U_i$	V		690	690	690	690	690	690	690	750	750	1000
Rated impulse voltage	$U_{imp}$	kV		6.0	6.0	6.0	6.0	6.0	6.0	6.0	8.0	8.0	12.0
Rated operational power (3 phase AC)		kW	380/440V - AC23	7.5	7.5	11.0	18.5	18.5	25.0	30.0	37.0	45.0	132.0
			500V - AC23	9.0	7.5	15.0	15.0	22.0	30.0	37.0	-	-	-
			690V - AC23	9.0	7.5	15.0	15.0	22.0	30.0	30.0	37.0	45.0	200.0
Rated short time withstand current (1 sec)	$I_{cw}$	A		400	250	500	800	1100	1300	1400	2500	2500	8000
Max. fuse size for short circuit protection (gG characteristic)	$I_n$	A	10kA	35	20	35	40	80	80	80	-	-	-
			25kA	32	16	32	35	63	63	63	-	-	-
			50kA	32	-	32	-	63	63	63	-	-	-
Connecting capacity			Terminal type										
			mm <sup>2</sup> Flexible cable	6.0	2x2.5	6.0	2x6.0	16.0	16.0	16.0	-	-	-
			mm <sup>2</sup> Rigid cable	10.0	2x2.5	10.0	2x10	25.0	25.0	25.0	-	-	-
			mm Stud Cu palm width	-	-	-	-	-	-	-	8x20	8x20	10x30
			Nm Tightening torque	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	8.0	30-44

## Catalogue Nos.

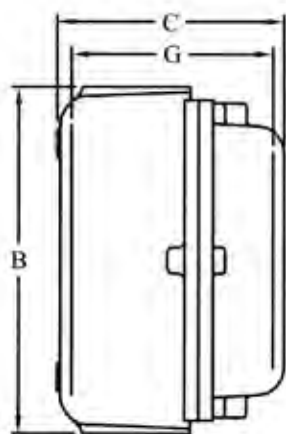
Current Rating (A)	Format	Catalogue No.	Enclosure Ref.	Supplied Entries*	External Earth
16	3P+N+2E/B	DGC0164EBZ1	G21	3 x M20	M6
25	3P+N+2E/B	DGC0254EBZ1	G21	4 x M20	M6
20	6P + 2E/B	DGC0206EBZ1	G21	2 x M25 + 1 x M20	M6
40	3P+N+2E/B	DGC0404EBZ1	G22	2 x M25 + 1 x M20	M8
40	6P + 2E/B	DGC0406EBZ1	G22	2 x M25 + 1 x M20	M8
63	3P+N+2E/B	DGC0634EBZ1	G22	2 x M25 + 1 x M20	M8
80	3P+N+2E/B	DGC0804EBZ1	G24	3 x M32 + 1 x M20	M8
100	3P+N+2E/B	DGC1004EBZ1	G25	3 x M32 + 1 x M20	M8
125	3P+N+2E/B	DGC1254EBZ1	G25	3 x M40 + 1 x M20	M8
160	3P+N+2E/B	DGC1604EBZ1	G25	2 x M32 + 1 x M20	M8
200	3P+N+2E/B	DGC2004EBZ1	G28	3 x M50 + 1 x M20	M10
250	3P+N+2E/B	DGC2504EBZ1	G28	3 x M50 + 1 x M20	M10

\* Other entry configurations available on request.

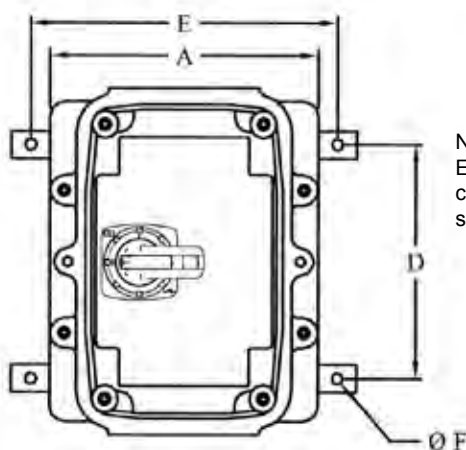


Example of a 25A assembly

## Dimensions



- A Enclosure Width
- B Enclosure Height
- C Enclosure Depth



- D Fixing Centre Height
- E Fixing Centre Width
- F Fixing Hole Diameter
- G Internal Depth from Base Plate

N.B.  
Enclosures can be close coupled at either end (To special order)

Enclosure	Material	Dimensions							Weight (Kg)
		A	B	C	D	E	F	G	
G21	Fe	180	155	145	130	195	7.0	100	9
G22	Fe	205	220	156	160	230	9.0	117	19
G24	Al	321	361	228	291	320	11.0	179	21
G25	Al	366	406	218	250	370	11.0	177	25
G28	Al	586	690	294	480	580	14.0	216	96

The items listed in this document are standard products. If you require a bespoke arrangement, then please contact our technical sales staff who will be pleased to discuss your individual requirements.



## How safe is your workspace?

From July 2006 the onus was placed upon companies to ensure that all equipment within their organisations is suitable for the environment in which it is being used. This was aimed particularly at areas where there may be a possibility of a combustible atmosphere being present, even for short periods i.e. less than 10 hours/year.

People normally think of such atmospheres as being gases, mists or vapours, however there are various industries where a conductive or non-conductive dust mixed with air in the right proportion can become explosive. It is these areas where the Craig & Derricott ATEX Group II (Zone 22) equipment can be used to help you comply with Health & Safety regulations.

Typical industries where such atmospheres may be generated:-

- Grain Mills
- Textiles
- Cargo Handling
- Pharmaceuticals
- Powder Coating Plant
- Chemicals
- Woodworking
- Waste Processing

There are different degrees of protection against explosive dusts, and Zone 22 is defined as:-

"A place in which an explosive atmosphere, in the form of a cloud of combustible dust in air, is not likely to occur in normal operation but, if it does occur, will persist for a short period only."

## Applicable Regulations/Specifications

- **Directive 94/9/EC** ("Manufacturers Directive") Sets out the route equipment manufacturers must take to get their products certified for use in hazardous environments.
- **Directive 1999/92/EC** ("Users Directive") Defines the classifications for protection zones, and the approach users must take to ensure that the correct equipment is matched to specific hazardous environments.

Both of the above are classed as 'ATEX' directives and are concerned solely with ensuring safety in the workplace.

- **DSEAR** Dangerous Substances and Explosive Atmospheres Regulations 2002.
- **BS EN 60079-0** Explosive atmospheres - Part 0: Equipment - General requirements.
- **BS EN 60079-31** Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t".
- **BS EN 61241-0** Electrical apparatus for use in the presence of combustible dust - General requirements.
- **BS EN 61241-1** Electrical apparatus for use in the presence of combustible dust - Protection by enclosures 'tD'.
- **BS EN 60529** Specification for degrees of protection provided by enclosures. (IP code)
- **BS EN 60947-3** Specification for low-voltage switchgear and control gear.
- **BS EN 60204-1** Safety of machinery. Electrical equipment of machines - General requirements.

## ATEX Switch-Disconnectors 25A - 63A

Craig & Derricott has been manufacturing enclosed switchgear for more than 60 years. We have incorporated all of that experience in producing an outstanding product that has now been approved for use in explosive dust atmospheres.

Using high quality die cast aluminium and hinged lid sheet steel enclosures the range covers 20A - 63A ratings



Size A

Moulded Padlocking  
Handle & Base mounted interiors

Size B

Sizes C&D

Hinged lid  
sheet steel enclosure:-  
Base mounted interior (63A)

### Catalogue Numbers

Rating	Format	Cat. No.	Enclosure Size
20A	6P+2 EB Aux	<b>SDDG206EBZ22</b>	A
25A	3P+2 EB Aux	<b>SDDG253EBZ22</b>	A
32A	3P+2 EB Aux	<b>SDDG323EBZ22</b>	A
	6P+2 EB Aux	<b>SDDG326EBZ22</b>	B
40A	3P+2 EB Aux	<b>SDDG403EBZ22</b>	B
	6P+2 EB Aux	<b>SDDG406EBZ22</b>	B
63A	3P+2 EB Aux	<b>SDDG633EBZ22</b>	B
63A	3P+2 EB Aux	<b>SDMG633EBZ22</b>	C
	6P+2 EB Aux	<b>SDMG636EBZ22</b>	D

Technical  
Data  
Page 45

Dimensions  
Page 46



## Safety Features

### Padlocking

All items allow for the fitting of up to three padlocks in the 'Off' position.

## Design Features







### Auxiliary Contacts

The 'EB' addition to the catalogue numbers denotes the inclusion of 2 off **early break** contacts.

In all cases these are factory fitted to the isolator interior.

## Technical Specification

Data supplied against tests to BS EN 60947-3

Application	Sym.	Unit	Category	Rating					
				6P	3P	3P+6P	3P	6P	3P+6P
				20A	25A	32A	40A	40A	63A
Rated thermal current	$I_{the}$	A		20	25	32	40	40	63
Rated insulation voltage	$U_i$	V		690	690	690	690	690	690
Rated impulse voltage	$U_{imp}$	kV		6.0	6.0	6.0	6.0	6.0	6.0
Rated operational power (3 phase AC)		kW	380/440V - AC23	7.5	11	15	15	15	25
			500V - AC23	7.5	15	15	15	15	30
			690V - AC23	7.5	15	15	15	15	30
Rated short time withstand current (1 sec)	$I_{cw}$	A		250	500	600	600	600	1300
Max. fuse size for short circuit protection (gG Characteristic)		kA	10kA	20	35	35	40	40	80
			25kA	16	32	32	32	32	63
			50kA	-	32	32	32	32	63
Connecting capacity		-	Terminal type						
		mm <sup>2</sup>	Flexible cable	2.5 x 2	6	6	6	6	16
		mm <sup>2</sup>	Rigid cable	2.5 x 2	10	10	10	10	25
		Nm	Tightening torque	1.0	1.2	1.2	1.2	1.2	1.2

## Certification Details 20A - 63A

### Die cast Aluminium

#### Coding



Ex tc IIIB T85°C dc

Complies in part or in full with standards:-

BS EN 60079-0, BS EN 60079-31  
BS EN 60529, BS EN 60947-3, BS EN 60204-1

### Sheet steel

#### Coding



Ex tD A22 IP65 T85°C

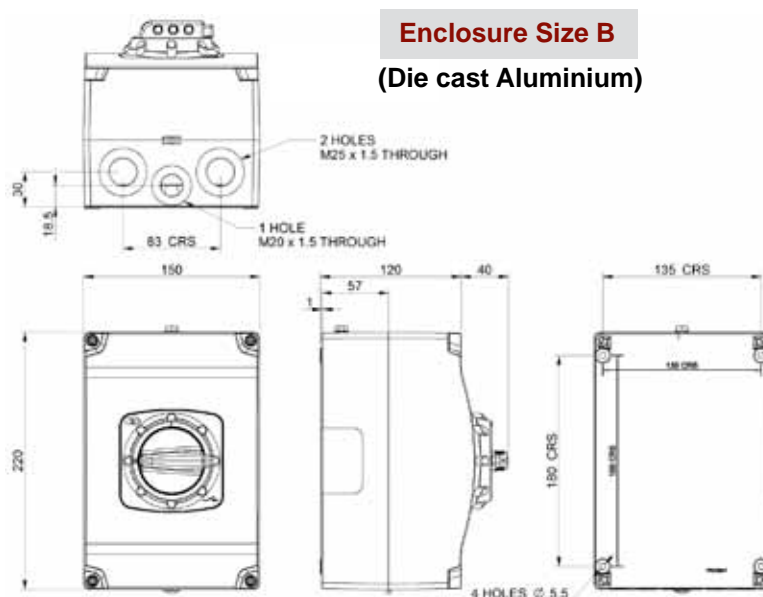
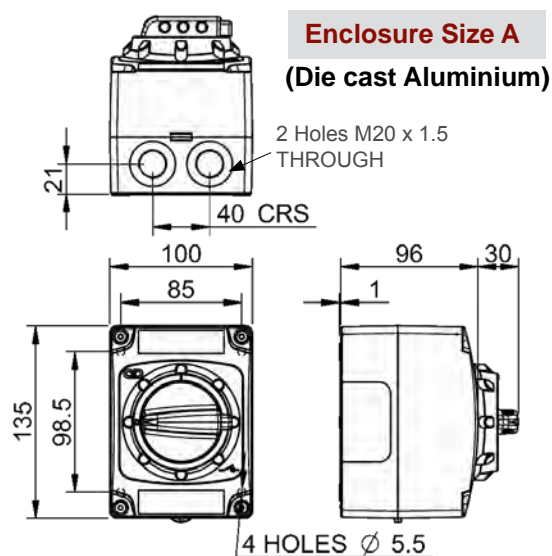
Complies in part or in full with standards:-

BS EN 60079-0, BS EN 61241-0, BS EN 61241-1  
BS EN 60529, BS EN 60947-3, BS EN 60204-1

**(Must not be used in areas which exhibit conductive dust)**

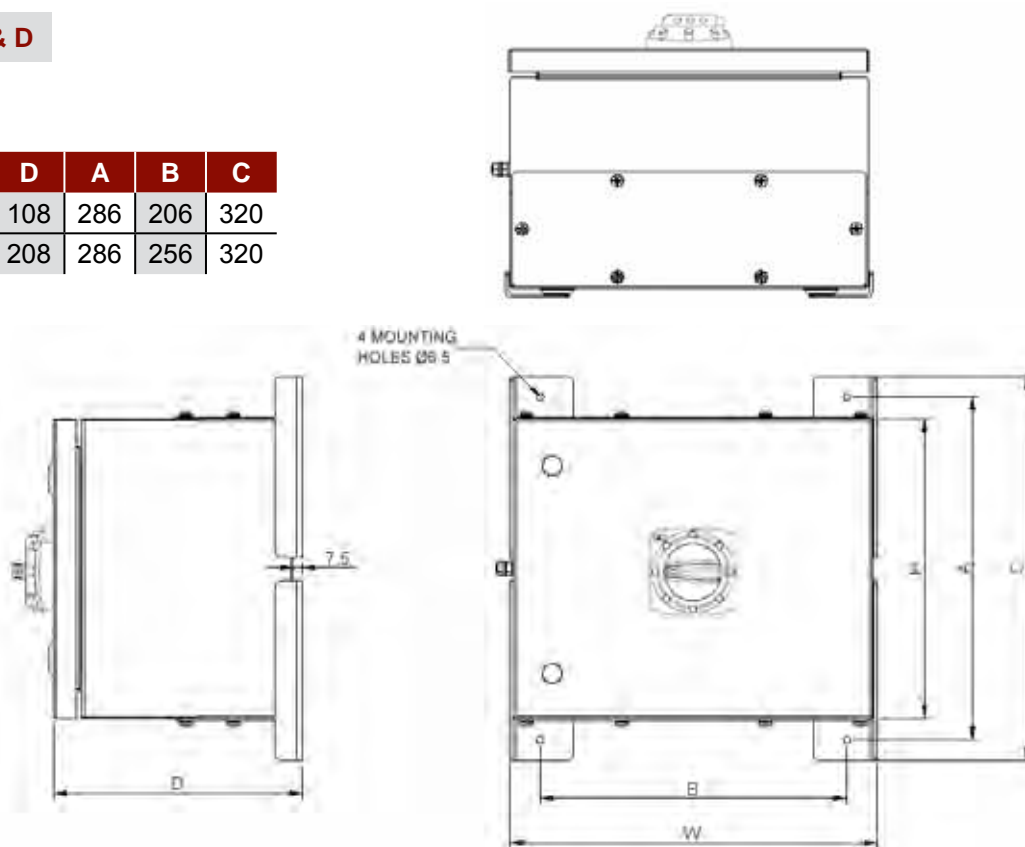


## Dimensions



**Enclosure Sizes C & D**  
(Sheet Steel)

Dim	H	W	D	A	B	C
Size C	250	256	108	286	206	320
Size D	250	306	208	286	256	320

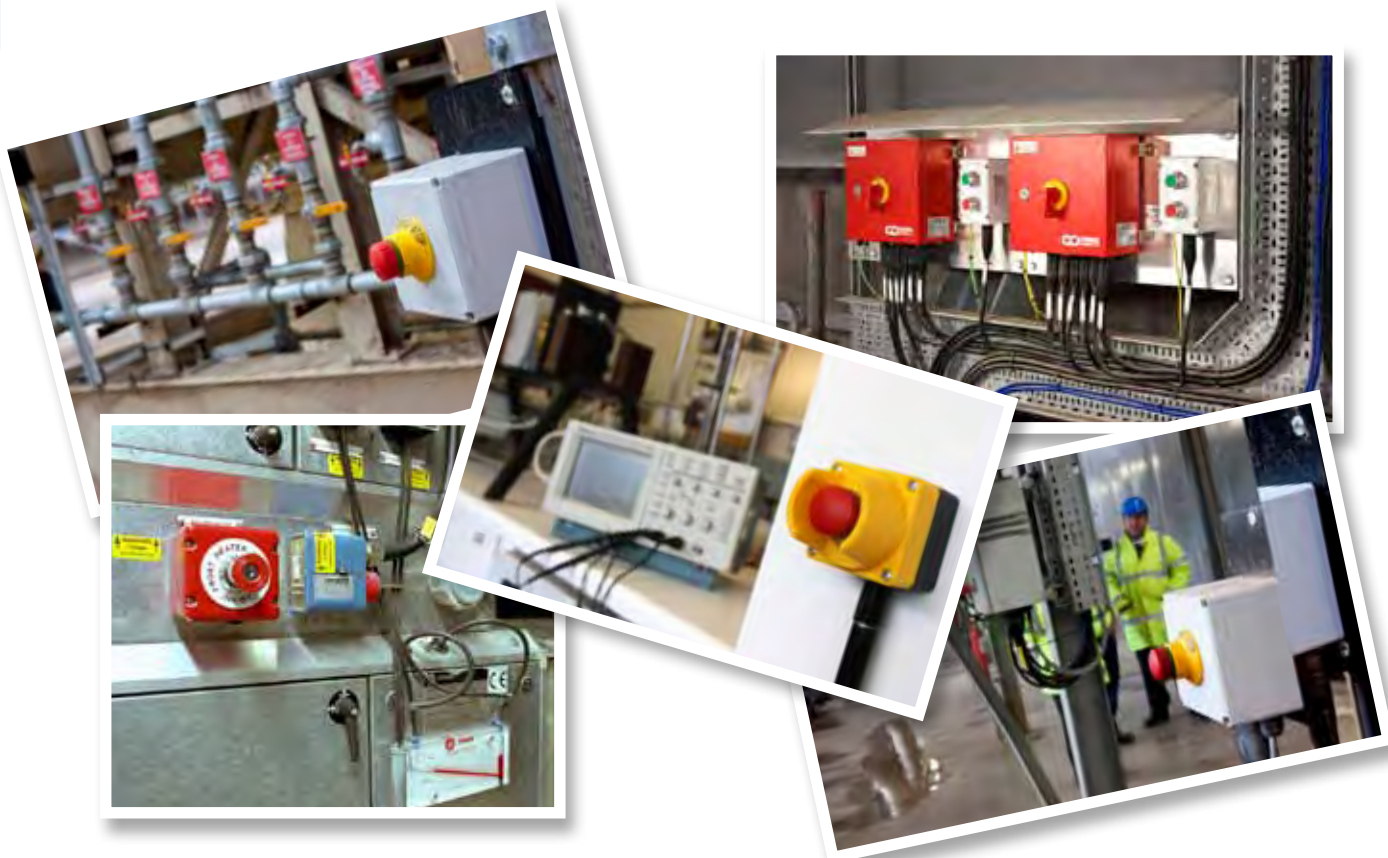


Craig & Derricott have been at the forefront of electrical control gear design and manufacture for more than 60 years. The i-push range has been designed and developed to incorporate safety, functionality and ease of installation incorporating suggestions from re-sellers and end-users.



- Emergency Stop
- Emergency Power Off (EPO)
- Emergency Stop/Start
- Stop
- Start
- Stop/Start
- ATEX (Zone 22)

... products for the real world.





The 'i-push' range contains many unique features: -

## Heavy & Normal Duty Actuators

The 'i-push' range incorporates two distinctly different component series - Heavy Duty & Normal duty.



Heavy Duty

Normal Duty

The *Heavy Duty* (HD) actuators are manufactured using metal based components and are therefore suitable for use in arduous environments.

The *Normal Duty* (ND) actuators are manufactured from high strength moulding materials and are suitable for most applications.

(All control stations incorporating Heavy Duty actuators include an 'H' in the first part of the catalogue number i.e. EMSH/T/MG/CO) You will also see an 'HD' in the title bar above each relevant item.

## Pushbutton Position Indicator

An innovative design feature is included on all 'normal duty' Emergency Stop actuators.

A green segment forms part of the pushbutton moving body and when visible clearly indicates that the actuator has not been operated. When the button has been depressed and the mechanism latched, then the green segment is no longer visible.



Standby mode



Operated & latched

## Protective Guard



The 'i-push' Normal Duty range includes actuators with an integral guard. This will give the control station protection against accidental operation.

## Security lid fixings



The stainless steel and flush mounting enclosures are supplied as standard with security 'tamper proof' style lid fixings.

## Ingress Protection

All i-push control stations are sealed to a minimum of IP65 and suitable for indoor and outdoor applications.



A flexible shroud between the actuator and the enclosure lid assists in meeting the IP69K requirements



Contoured lid gasket seals on a variety of enclosures

To withstand the high pressure water cleaning in certain environments Craig and Derricott has developed a stainless steel control station that complies with IP69K water test.

(See cat No 'EMS/T/SS/NC69' - Page 53)

## The 'i-push' features continued:-

### Flap Covers



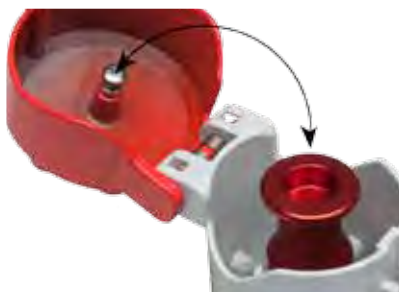
Padlocking flap cover fitted to an 'E. Stop' control station

The Heavy Duty 'i-push' assemblies include actuators with optional flap cover protection, these are manufactured using die-cast aluminium components and can be supplied in locking or non-locking types.

- The *non-locking* flap cover - to provide additional degree of protection against accidental operation of the actuator.
- The *locking* flap cover - includes a padlocking feature for up to three padlocks that prevents access to the actuator.

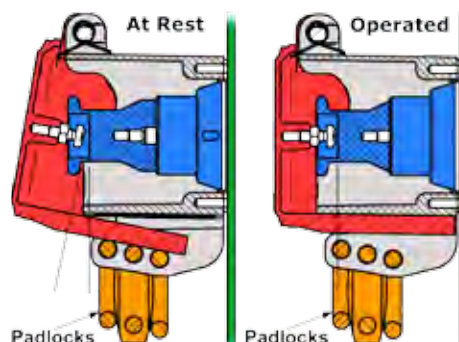
*We recommend using padlocks with a standard hasp diameter of 6.4mm*

**Emergency Stop** stations fitted with Flap Covers are used solely to prevent unauthorised resetting. In an emergency situation, having to lift a flap cover to gain access to the pushbutton is not permissible. Should an emergency occur the flap cover itself is used as the primary 'Stop' actuator. When the flap cover is struck this operates the pushbutton actuator. Once operated the pushbutton will latch and will need resetting by hand before the process can resume.



It's here where the flap cover adds an extra level of safety. In the normal running condition the flap cover can be fitted with a padlock(s) whilst still allowing the normal emergency operation. After an emergency operation of the flap cover the padlock will prevent

any unauthorised access to reset the actuator.



### Safety Contact



Blue 'Safety' Plunger

Safety contacts are available for Emergency Stop control stations incorporating 'Clip-in' type contact blocks. Here a pair of contact blocks are sandwiched together and the contacts connected in series. When inserted the Red plunger will be operated by the pushbutton actuator, the blue plunger will retain a N/C contact when the block is pushed fully home and clicked in-place. Should for any reason the block become loose, the contact under the blue plunger will open and initiate a stop function.



Series Connection

### Bespoke Assemblies



Although this catalogue contains a wealth of options, there will always be the case where a bespoke assembly is the only answer to fulfill a precise requirement. Craig & Derricott has over 60 years experience in designing products to meet a specific need, so why not call our Sales team who will be pleased to discuss your requirements.



Sales @ [craigandderricott.com](http://craigandderricott.com)

## General Description

Emergency Stop stations are designed and installed primarily to provide machine operators with a means of shutting down in the event of a dangerous occurrence taking place.



All electrical machines must now be installed with Emergency Stops fitted and specific International Regulations apply to the design, testing and installation of such devices. (IEC/EN60204-1)

The following pages contain the following options:-

- Enclosure formats - Moulded, Polyester, Die-cast Aluminium, Stainless Steel, Flush Mounting & Sheet steel.
- 'Reset' Methods - Twist-to-Reset, Pull-to-Reset & Key Reset
- Protection Devices - Raised Shroud & Flap Cover

## Moulded IP65

Catalogue No.	EMS/TNS/PS/CO	ND
---------------	---------------	----

- Actuator Emergency Stop, twist-to-reset.
- Legend None
- Contacts 1N/C+1N/O (ET-10A)
- Dims. 'D1'



Catalogue No.	EMS/T/PS/CO	ND
---------------	-------------	----

- Actuator Emergency Stop twist-to-reset.
- Legend 'Emergency Stop' yellow anti-lock collar.
- Contacts 1N/C+1N/O (ET-10A)
- Dims. 'D1'



Catalogue No.	EMS/TS/PS/CO	ND
---------------	--------------	----

- Actuator Emergency Stop twist-to-reset.
- Guard Raised shroud
- Legend None
- Contacts 1N/C+1N/O (ET-10A)
- Dims. 'D1'



Catalogue No.	EMS/K/PS/CO	ND
---------------	-------------	----

- Actuator Emergency Stop key reset (supplied with 2 keys)
- Legend 'Emergency Stop' yellow anti-lock collar.
- Contacts 1N/C+1N/O (ET-10A)
- Dims. 'D1'



Catalogue No.	EMS/T/P/NC	ND
---------------	------------	----

- Actuator Emergency Stop, twist-to-reset.
- Legend Circular yellow
- Contacts 1N/C (MT-16A)
- Dims. 'D2'



Catalogue No.	EMS/TS/P/NC	ND
---------------	-------------	----

- Actuator Emergency Stop twist-to-reset.
- Legend Circular yellow
- Guard Raised shroud
- Contacts 1N/C (MT-16A)
- Dims. 'D2'





### Moulded Contd. IP65

Catalogue No.	EMS/K/P/NC	ND
---------------	------------	----

- Actuator Emergency Stop key reset. (Supplied with 2 keys)
- Legend 'Emergency Stop' yellow anti-lock collar.
- Contacts 1N/C (MT-16A)
- Dims. 'D2'



Catalogue No.	EMS/KS/P/NC	ND
---------------	-------------	----

- Actuator Emergency Stop key reset. (Supplied with 2 keys)
- Guard Raised shroud
- Legend Circular yellow
- Contacts 1N/C (MT-16A)
- Dims. 'D2'



### Glass Filled Polyester IP65

Catalogue No.	EMSH/T/GP/CO	HD
---------------	--------------	----

- Actuator Mushroom, twist-to-reset.
- Legend Circular yellow
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D4'



Catalogue No.	EMSH/P/GP/CO	HD
---------------	--------------	----

- Actuator Mushroom, pull-to-reset.
- Legend Circular yellow
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D4'



Catalogue No.	EMSH/K/GP/CO	HD
---------------	--------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Legend Circular yellow
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D4'



Catalogue No.	EMSH/P/F1/GP/CO	HD
---------------	-----------------	----

- Actuator Mushroom, pull-to-reset.
- Guard Padlocking flap cover
- Legend Printed flap cover
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D4'



### Die-cast Aluminium IP65

Catalogue No.	EMS/T/MG/NC	ND
---------------	-------------	----

- Actuator Emergency Stop twist-to-reset.
- Legend Printed collar
- Contacts 1N/C (MT-16A)
- Dims. 'D5'



Catalogue No.	EMS/TS/MG/NC	ND
---------------	--------------	----

- Actuator Emergency Stop, twist-to-reset.
- Guard Raised shroud
- Legend Circular yellow
- Contacts 1N/C (MT-16A)
- Dims. 'D5'



Catalogue No.	EMS/K/MG/NC	ND
---------------	-------------	----

- Actuator Emergency Stop, key reset. (Supplied with 2 keys)
- Legend Printed collar
- Contacts 1N/C (MT-16A)
- Dims. 'D5'



Catalogue No.	EMS/KS/MG/NC	ND
---------------	--------------	----

- Actuator Emergency Stop, key reset. (Supplied with 2 keys)
- Guard Raised shroud
- Legend Circular yellow
- Contacts 1N/C (MT-16A)
- Dims. 'D5'



### Die-cast Aluminium Contd. IP65

#### Catalogue No. EMSH/T/MG/CO HD

- Actuator Mushroom, twist-to-reset.
- Legend Circular yellow
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



#### Catalogue No. EMSH/P/MG/CO HD

- Actuator Mushroom, pull-to-reset.
- Legend Circular yellow.
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



#### Catalogue No. EMSH/P/MR/CO HD

- Actuator Mushroom, pull-to-reset.
- Legend Circular yellow.
- Finish Red
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



#### Catalogue No. EMSH/K/MG/CO HD

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Legend Circular yellow.
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



#### Catalogue No. EMSH/K/MR/CO HD

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 key, differs available)
- Finish Red
- Legend Circular yellow.
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



#### Catalogue No. EMSH/P/F1/MG/CO HD

- Actuator Mushroom, pull-to-reset.
- Guard Padlocking flap cover
- Legend Printed flap cover
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D5'



#### Catalogue No. EMSH/P/F1/MR/CO HD

- Actuator Mushroom, pull-to-reset.
- Guard Padlocking flap cover
- Finish Red
- Legend Printed flap cover
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D5'



### Stainless Steel IP65

#### Catalogue No. EMS/T/SS/NC ND

- Actuator Emergency Stop twist-to-reset.
- Legend Printed collar
- Finish Brushed
- Lid fixings Security style screws.
- Contacts 1N/C (MT-16A)
- Dims. 'D9'



#### Catalogue No. EMS/K/SS/NC ND

- Actuator Emergency Stop, key reset. (Supplied with 2 keys)
- Lid fixings Security style screws.
- Finish Brushed
- Legend Printed collar
- Contacts 1N/C (MT-16A)
- Dims. 'D9'





### Stainless Steel Contd. IP69K



Catalogue No.	EMS/T/SS/NC69	ND
<ul style="list-style-type: none"> <li>• Actuator Emergency Stop twist-to-reset.</li> <li>• Legend Yellow circular.</li> <li>• Sealing IP69K.</li> <li>• Finish Brushed</li> <li>• Lid fixings Security style.</li> <li>• Contacts 1N/C+safety contact (Type MTOSF see page 16)</li> <li>• Dims. 'D10'</li> </ul>		<p>Sealed to withstand the forces associated with pressure washers. Tested to withstand a hose delivering water at a pressure between 80-100 bar at a temperature of 80°C.</p> <p>The combination of a stainless steel enclosure and sealing to IP69K make these items ideally suited to environments where strict hygiene cleaning routines are enforced.</p> <p>Supplied with external fixing feet for vertical or horizontal mounting.</p>

### Flush Mounting IP65

As supplied there is an IP65 seal between the Pushbutton and the face plate. To maintain this seal when installing the complete assembly the onus is upon the installer to use a continuous bead of flexible sealant to provide an effective seal between the rear of the face plate and what may be an uneven mounting surface.

Catalogue No.		EMS/T/F/CO	ND	Catalogue No.		EMS/K/F/CO	ND
<ul style="list-style-type: none"><li>• Actuator</li><li>• Legend</li><li>• Lid fixings</li><li>• Contacts</li><li>• Dims.</li></ul>	<p>Emergency Stop twist-to-reset. Printed Collar Security style 1N/C+1N/O (ET-10A) 'D11'</p>			<ul style="list-style-type: none"><li>• Actuator</li><li>• Legend</li><li>• Lid fixings</li><li>• Contacts</li><li>• Dims.</li></ul>	<p>Emergency Stop, key reset.(Supplied with 2 keys) Printed collar Security style 1N/C+1N/O (ET-10A) 'D11'</p>		

Catalogue No.	EMSH/T/F/CO	HD	Catalogue No.	EMSH/P/F/CO	HD
<ul style="list-style-type: none"><li>• Actuator</li><li>• Legend</li><li>• Lid fixings</li><li>• Contacts</li><li>• Dims.</li></ul>	<p>Mushroom, twist-to-reset.</p> <p>Yellow circular.</p> <p>Security style</p> <p>1N/C+1N/O (MT-16A)</p> <p>'D11'</p>		<ul style="list-style-type: none"><li>• Actuator</li><li>• Legend</li><li>• Lid fixings</li><li>• Contacts</li><li>• Dims.</li></ul>	<p>Mushroom, pull-to-reset.</p> <p>Yellow circular.</p> <p>Security style</p> <p>1N/C+1N/O (MT-16A)</p> <p>'D11'</p>	

Catalogue No.	EMSH/K/F/CO	HD	Catalogue No.	EMSH/P/F1/F/CO	HD
<ul style="list-style-type: none"><li>• Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)</li><li>• Legend Circular yellow.</li><li>• Contacts 1N/C+1N/O (MT-16A)</li><li>• Dims. 'D11'</li></ul>		<ul style="list-style-type: none"><li>• Actuator Mushroom, pull-to-reset.</li><li>• Guard Padlocking flap cover</li><li>• Legend Pad printed flap cover</li><li>• Contacts 1N/O+1N/C (MT-16A)</li><li>• Dims. 'D11'</li></ul>			

### Sheet Steel

Catalogue No.	EMS/T/FS/NC	ND
<ul style="list-style-type: none"> <li>• Actuator Emergency Stop, twist-to-reset.</li> <li>• Fitting Pattress box or trucking as shown:-</li> <li>• Contacts 2xN/C with 'faston' terminals (Monobloc-5A)</li> <li>• Dims. 'D8'</li> </ul>		<ul style="list-style-type: none"> <li>• Can be installed in dado trunking as shown.</li> </ul>





## General Description



'Emergency Power Off' or 'EPO' control stations can be used where the safety requirements associated with Emergency Stops are not required.

Typical uses would include:-

- Computer suites
- School workshops
- Water treatment plants
- Service and maintenance

All items are housed in robust die-cast aluminium enclosures fitted with flap covers to prevent accidental operation.

## i Die-cast Aluminium IP65

### Catalogue No. EPOH/M/F5/MG/CO HD

- Actuator Mushroom, momentary action.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



### Catalogue No. EPOH/M/F5/MG/2CO HD

- Actuator Mushroom, momentary action.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 2N/C+2N/O (MT-16A)
- Dims. 'D5'



### Catalogue No. EPOH/M/F5/MGL/3CO HD

- Actuator Mushroom, momentary action.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 3C/O (S1-10A)
- Dims. 'D6'



### Catalogue No. EPOH/M/F5/MGL/4CO HD

- Actuator Mushroom, momentary action.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 4C/O (S1-10A)
- Dims. 'D6'



### Catalogue No. EPOH/P/F5/MG/CO HD

- Actuator Mushroom, pull-to-reset.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



### Catalogue No. EPOH/P/F5/MG/2CO HD

- Actuator Mushroom, pull-to-reset.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 2N/C+2N/O (MT-16A)
- Dims. 'D5'



### Catalogue No. EPOH/P/F5/MGL/3CO HD

- Actuator Mushroom, pull-to-reset.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 3C/O (S1-10A)
- Dims. 'D6'



### Catalogue No. EPOH/P/F5/MGL/4CO HD

- Actuator Mushroom, pull-to-reset.
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 4C/O (S1-10A)
- Dims. 'D6'



## Die-cast Aluminium Contd. IP65

Catalogue No.	EPOH/K/F5/MG/CO	HD
---------------	-----------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



Catalogue No.	EPOH/K/F5/MG/2CO	HD
---------------	------------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 2N/C+2N/O (MT-16A)
- Dims. 'D5'



Catalogue No.	EPOH/K/F5/MGL/3CO	HD
---------------	-------------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 3C/O (S1-10A)
- Dims. 'D6'



Catalogue No.	EPOH/K/F5/MGL/4CO	HD
---------------	-------------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 4C/O (S1-10A)
- Dims. 'D6'



### General Description

#### Emergency Stop/Start



'Emergency Stops' are often situated adjacent to the associated 'Start' button. In these assemblies the two functions are combined in a single enclosure.

All of the stayput 'Emergency Stop' buttons meet the latest safety requirements.

The flap cover option operates the stayput actuator when the cover is pressed. Padlocks can be inserted to prevent an unauthorised reset. Enclosures in polycarbonate and die-cast aluminium provide a choice dependent upon the environment.

## Die-cast Aluminium IP65

Catalogue No.	ESS/GS/T/MG/NO	ND
---------------	----------------	----

- Actuator a/ Start, momentary  
b/ Emergency Stop, twist-to-reset.
- Legend a/ 'I' Start  
b/ Printed collar
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D7'



Catalogue No.	ESSH/GS/P/MG/CO	HD
---------------	-----------------	----

- Actuator a/ Start, momentary  
b/ Emergency Stop, pull-to-reset.
- Legend a/ 'Start'  
b/ Circular yellow
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D7'



## Moulded IP65

Catalogue No.	SSTH/GS/P/F1/MG/CO	HD
---------------	--------------------	----

- Actuator a/ Start, momentary  
b/ Emergency Stop, pull-to-reset.
- Guard Padlocking flap cover
- Legend a/ 'Start'  
b/ Printed flap cover
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D7'



Catalogue No.	ESS/GS/T/P/NO	ND
---------------	---------------	----

- Actuator a/ Start, momentary  
b/ Emergency Stop, twist-to-reset.
- Legend a/ 'I' Start  
b/ Printed collar
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D3'



## General Description



Individual 'Stop' stations have been designed for use in many applications.

The range includes alternatives for both surface and flush mounting with options of flap covers which add an extra degree of security against inadvertent operation.

### **i** Moulded IP65

Catalogue No.	STO/RS/P/NC	ND
---------------	-------------	----

- Actuator Full guard, momentary.
- Legend 'Stop'
- Contacts 1N/C (MT-16A)
- Dims. 'D2'



### **i** Die-cast Aluminium IP65

Catalogue No.	STO/RS/MG/NC	ND
---------------	--------------	----

- Actuator Full guard, momentary.
- Legend 'Stop'
- Contacts 1N/C (MT-16A)
- Dims. 'D5'



### **i** Glass Filled Polyester IP65

Catalogue No.	STOH/M/F3/GP/CO	HD
---------------	-----------------	----

- Actuator Mushroom, momentary
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D4'



Catalogue No.	STOH/RS/MG/CO	HD
---------------	---------------	----

- Actuator Full guard, momentary.
- Legend 'Stop'
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



Catalogue No.	STOH/P/F3/GP/CO	HD
---------------	-----------------	----

- Actuator Mushroom, pull-to-reset
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D4'



Catalogue No.	STOH/M/MG/CO	HD
---------------	--------------	----

- Actuator Mushroom, momentary.
- Legend 'Stop'
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



Catalogue No.	STOH/K/F3/GP/CO	HD
---------------	-----------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Guard Flap cover non-locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D4'



Catalogue No.	STOH/M/F3/MG/CO	HD
---------------	-----------------	----

- Actuator Mushroom, momentary
- Guard Flap cover non locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'





## Die-cast Aluminium Contd. IP65

Catalogue No.	STOH/P/F3/MG/CO	HD
---------------	-----------------	----

- Actuator Mushroom, pull-to-reset
- Guard Flap cover non locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



Catalogue No.	STOH/K/F3/MG/CO	HD
---------------	-----------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Guard Flap cover non locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



Catalogue No.	STOH/P/F3/MR/CO	HD
---------------	-----------------	----

- Actuator Mushroom, pull-to-reset
- Guard Flap cover non locking
- Legend Printed flap cover
- Finish Red
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



## Flush Mounting

As supplied there is an IP65 seal between the Pushbutton and the face plate. To maintain this seal when installing the complete assembly the onus is upon the installer to use a continuous bead of flexible sealant to provide an effective seal between the rear of the face plate and what may be an uneven mounting surface.

Catalogue No.	STO/RS/F/CO	ND
---------------	-------------	----

- Actuator Full guard, momentary.
- Legend 'Stop'
- Contacts 1N/C+1N/O (ET-1A)
- Dims. 'D11'



Catalogue No.	STOH/P/F3/F/CO	HD
---------------	----------------	----

- Actuator Mushroom, pull-to-reset
- Guard Flap cover non locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D11'



Catalogue No.	STOH/M/F3/F/CO	HD
---------------	----------------	----

- Actuator Mushroom, momentary
- Guard Flap cover non locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D11'



Catalogue No.	STOH/K/F3/F/CO	HD
---------------	----------------	----

- Actuator Mushroom, key reset. (Supplied with 2 x DC800 keys, differs available)
- Guard Flap cover non locking
- Legend Printed flap cover
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D11'



## Stainless Steel IP65

Catalogue No.	STO/RS/SS/NC	ND
---------------	--------------	----

- Actuator Full guard, momentary.
- Legend 'Stop'
- Contacts 1N/C (MT-16A)
- Dims. 'D9'



## General Description



Individual 'Start' stations have been designed for use in many applications.

Enclosure options include:-

- Die-cast aluminium
- Moulded
- Stainless steel
- Surface and flush mounting options.

### Moulded IP65

Catalogue No.	STA/GS/P/NO	ND
---------------	-------------	----

- Actuator Full guard, momentary.
- Legend 'Start'
- Contacts 1N/O (MT-16A)
- Dims. 'D2'



### Stainless Steel IP65

Catalogue No.	STA/GS/SS/NO	ND
---------------	--------------	----

- Actuator Full guard, momentary.
- Legend 'Start'
- Contacts 1N/O (MT-16A)
- Dims. 'D9'



### Die-cast Aluminium IP65

Catalogue No.	STA/GS/MG/NO	ND
---------------	--------------	----

- Actuator Full guard, momentary.
- Legend 'Start'
- Contacts 1N/O (MT-16A)
- Dims. 'D5'



Catalogue No.	STA/GS/MG/CO	HD
---------------	--------------	----

- Actuator Full guard, momentary.
- Legend 'Start'
- Contacts 1N/O (MT-16A)
- Dims. 'D5'

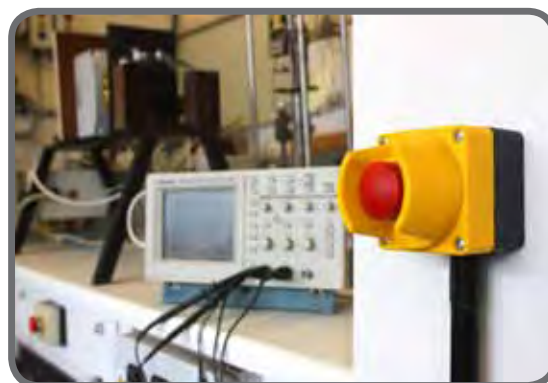


### Flush Mounting

As supplied there is an IP65 seal between the Pushbutton and the face plate. To maintain this seal when installing the complete assembly the onus is upon the installer to use a continuous bead of flexible sealant to provide an effective seal between the rear of the face plate and what may be an uneven mounting surface.

Catalogue No.	STA/GS/MG/NO	ND
---------------	--------------	----

- Actuator Full guard, momentary.
- Legend 'Start'
- Contacts 1N/O (ET-10A)
- Dims. 'D11'



## General Description



**Stop/Start**

'Start/Stop' control stations are the most convenient way of providing simple local control for a variety of applications. When inserted into a control scheme they provide the local interface with which machinery can be easily be controlled.

The assembled stations are offered in various enclosure materials which are designed to match applications in terms of mechanical protection.

### Die-cast Aluminium IP65

Catalogue No.	SST/GS/RS/MG/NOC	ND
---------------	------------------	----

- Actuator Full guard, momentary.
- Legend 'O' & 'I'
- Contacts 'I' - 1N/O (MT-16A)  
'O' - 1N/C (MT-16A)
- Dims. 'D5'



Catalogue No.	SSTH/GS/P/F3/MG/CO	HD
---------------	--------------------	----

- Actuator a/ Full guard, momentary.  
b/ Mushroom, pull-to-reset
- Guard Flap cover non-locking
- Legend a/ 'Start'  
b/ Printed flap cover
- Contacts 'Start' - 1N/O (MT-16A)  
'Stop' - 1N/C (MT-16A)
- Dims. 'D7'



Catalogue No.	SSTH/GS/RS/MG/CO	HD
---------------	------------------	----

- Actuator Full guard, momentary.
- Legend 'Start' & 'Stop'
- Contacts 'Start' - 1N/O (MT-16A)  
'Stop' - 1N/C (MT-16A)
- Dims. 'D7'



Catalogue No.	SSTH/GS/K/F3/MG/CO	HD
---------------	--------------------	----

- Actuator a/ Full guard, momentary  
b/ Mushroom, key reset.  
(Supplied with 2 x DC801 keys, differs available)
- Guard Flap cover non-locking
- Legend a/ 'Start'  
b/ Printed flap cover
- Contacts 'Start' - 1N/O (MT-16A)  
'Stop' - 1N/C (MT-16A)
- Dims. 'D7'



### Moulded IP65

Catalogue No.	SST/GS/RS/P/NOC	ND
---------------	-----------------	----

- Actuator Full guard, momentary.
- Legend 'O' & 'I'
- Contacts 'I' - 1N/O (MT-16A)  
'O' - 1N/C (MT-16A)
- Dims. 'D2'



### Stainless Steel IP65

Catalogue No.	SST/GS/RS/SS/NOC	ND
---------------	------------------	----

- Actuator Full guard, momentary.
- Legend 'O' & 'I'
- Contacts 'I' - 1N/O (MT-16A)  
'O' - 1N/C (MT-16A)
- Dims. 'D9'





## General Description



**ATEX Zone 22**

### 'ATEX ' Zone 22 (category 3D) non-conductive dust

In the UK from July 2006 the onus was placed upon companies to ensure that all equipment within their organisations is suitable for the environment in which it is being used. This was aimed primarily at areas where there may be a possibility of a combustible atmosphere being present, even for short periods i.e. less than 10 hours/year.

People normally associate such atmospheres as being gases, mists or vapours. However there are many industries where a non-conductive dust mixed with air in the right proportion can become potentially explosive. It is these areas where the Craig & Derricott ATEX Group II (Zone 22 equipment can be used to help you comply with Health & Safety regulations.)

All listed items show here have been certified to the appropriate international standards for explosive atmospheres.

Certification data: Ex II 3D, EX tD A22 IP65 T85°C  
Complies in part or full with: BS EN 50014, BS EN 50281-1-1, BS EN 60529, BS EN 60947-3, BS EN 60204-1

### Die-cast Aluminium IP65

#### Catalogue No. **STOH/RS/MG/COZ** HD

- Actuator Full guard, momentary.
- Legend 'Stop'
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D2'



#### Catalogue No. **STAH/GS/MG/COZ** HD

- Actuator Full guard, momentary.
- Legend 'Start'
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D5'



#### Catalogue No. **SSTH/GS/RS/MG/COZ** HD

- Actuator Full guard, momentary.
- Legend 'Start' & 'Stop'
- Contacts 'Start' - 1N/O (MT-16A)  
'Stop' - 1N/C (MT-16A)
- Dims. 'D7'



#### Catalogue No. **EMSH/T/MG/COZ** HD

- Actuator Mushroom, twist-to-reset
- Legend Circular yellow
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D5'



#### Catalogue No. **STOH/M/MG/COZ** HD

- Actuator Mushroom, momentary.
- Legend 'Stop'
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D5'



#### Catalogue No. **ESSH/GS/P/MG/COZ** HD

- Actuator a/ Start, momentary  
b/ Emergency stop, pull-to-reset.
- Legend a/ 'Start'  
b/ Circular yellow
- Contacts 'Start' - 1N/O (MT-16A)  
'Em. Stop' - 1N/C (MT-16A)
- Dims. 'D7'





## Die-cast Aluminium Cond.

IP65

Catalogue No. **SSTH/GS/P/F1/MG/COZ** HD

- Actuator a/ Start, momentary  
b/ Emergency stop, pull-to-reset.
- Guard Padlocking flap cover
- Legend a/ 'Start'  
b/ Printed flap cover
- Contacts 'Start' - 1N/O (MT-16A)  
'Stop' - 1N/C (MT-16A)
- Dims. 'D7'



Catalogue No. **EMSH/P/F1/MG/COZ** HD

- Actuator Emergency stop, pull-to-reset.  
Start, momentary
- Guard Padlocking flap cover
- Legend Printed flap cover
- Contacts 1N/O+1N/C (MT-16A)
- Dims. 'D5'



Catalogue No. **EMSH/P/MG/COZ** HD

- Actuator Mushroom, pull-to-reset.
- Legend Circular yellow
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



Catalogue No. **EMSH/K/MG/COZ** HD

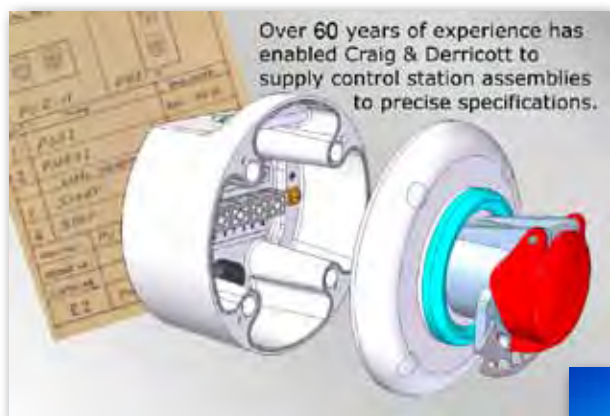
- Actuator Mushroom, key reset.  
(Supplied with 2 x DC800 keys, differs available)
- Legend Circular yellow
- Contacts 1N/C+1N/O (MT-16A)
- Dims. 'D5'



## Bespoke Assemblies

All of the items shown in this catalogue are of a specified design, and although the variations are extensive, there is always going to be the case where only a specially constructed assembly will satisfy an exact requirement. Craig & Derricott have been offering a bespoke control station design and build service for over 60 years and in that time have supplied over a thousand specially constructed assemblies to industries across the world.

*If you are interested in discussing a specific arrangement then please give our technical sales staff a call.*



*"Give us a call and get your next project built exactly how you require"*

Illuminated evacuation control station.

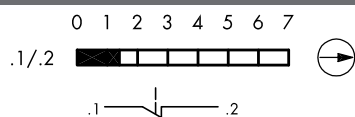
### Accessories

Contact blocks are available to replace or extend the arrangements supplied as standard.

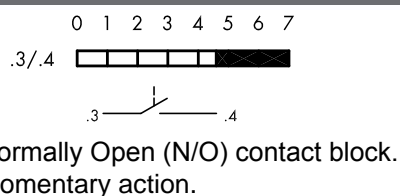
#### 'MT' Series

The 'MT' series are designed as 'clip-in' modules which can be supplied in N/O, N/C & safety formats. The clip-in housing allows for a total of three blocks per actuator.

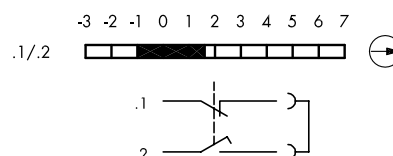
#### Catalogue No. MTO



#### Catalogue No. MTI



#### Catalogue No. MTOSF



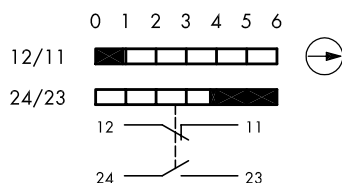
#### Electrical Ratings - BS EN 60947-5-1

	a.c.	d.c.
Utilisation Category	AC15 A600	DC13 Q600
Rated Insulation Voltage (Ui)	600V	600V
Rated Operational Voltage (Ue)	250V / 440V	440V / 250V / 125V / 60V / 24V
[Rated Operational Current (Ie)]	3A / 1.6A	0.12A / 0.2A / 0.4A / 1A / 2A
Breaking Capacity	10I <sub>e</sub>	1.1I <sub>e</sub>
Continuous thermal current (Ith)	16A	16A

#### 'ET' Series

The 'ETR' block provides N/O + N/C contacts in one assembly.

#### Catalogue No. ETR



#### Electrical Ratings - BS EN 60947-5-1

	a.c.	d.c.
Utilisation Category	AC15	DC13
Rated Insulation Voltage (Ui)	400V	400V
Rated Operational Voltage (Ue)	400V / 250V	400V / 250V / 125V / 60V / 24V
Rated Operational Current (Ie)	3A / 5A	0.12A / 0.2A / 0.4A / 1A / 2A
Breaking Capacity	10I <sub>e</sub>	1.1I <sub>e</sub>
Continuous thermal current (Ith)	10A	10A

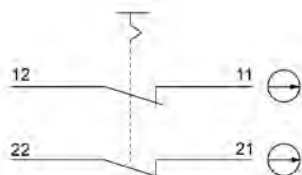


### Accessories Contd.

#### 'Monobloc'

The Monobloc assembly is designed for use in very restricted space. The contacts are assembled in the base of the actuator and cannot be supplied separately. To replace the contacts will require a new complete actuator.

Catalogue No. **FVRKOO**



Contact Block, Momentary Action 2 N/C

#### Electrical Ratings - BS EN 60947-5-1

	a.c.
Utilisation Category	AC15 B300
Rated Insulation Voltage (Ui)	250V
Rated Operational Voltage (Ue)	240V / 120V
Rated Operational Current (Ie)	1.5A / 3A
Breaking Capacity	10Ie
Continuous thermal current (Ith)	5A

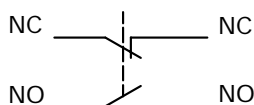
#### 'S1' Series

The S1 contact block is designed to be stacked in pairs side-by-side and then back-to-back making a total on four changeover blocks on one Heavy Duty actuator. Three or four blocks will require extended fixing screws (U42)

Catalogue No. **S1**



Image shows  
2 off S1 blocks



Contact Block, Momentary Action C/O

#### Electrical Ratings - BS EN 60947-5-1

	a.c.
Utilisation Category	AC15
Rated Insulation Voltage (Ui)	660V
Rated Operational Voltage (Ue)	400V
Rated Operational Current (Ie)	5A
Continuous thermal current (Ith)	10A

Catalogue No. **U42**

Assembly screw kit to enable 3 or 4 'S1' contacts to be mounted on a single Heavy Duty actuator.

#### Mechanical Endurance:-

All HD assemblies with the exception of Emergency Stops

HD Emergency Stop (Twist-to-reset & pull-to-reset)

All ND assemblies

1x10<sup>6</sup> operations

0.25x10<sup>6</sup> operations

1x10<sup>6</sup> operations

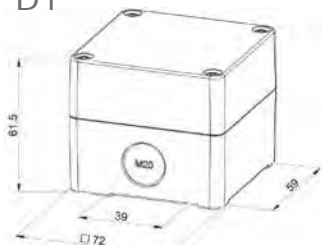
*"Over 60 years experience in design and manufacture"*



## Dimensions

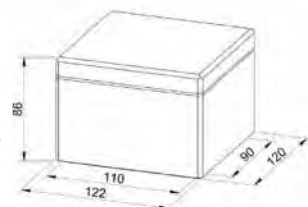
Dimensions as shown are for the enclosures only used in the various assemblies.  
Projections will vary depending upon the actuators incorporated in the design - see foot of page.

D1



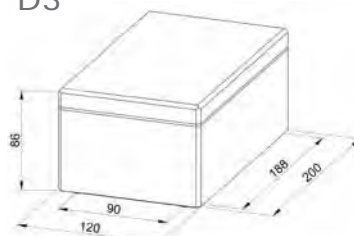
Material: Polycarbonate  
Colour: Yellow/Black  
Entries: 2xM20  
Fixings: 2xM4

D2



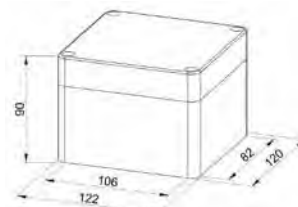
Material: Polycarbonate  
Colour: Grey (RAL 7035)  
Entries: Plain sides  
Fixings: 4xM4

D3



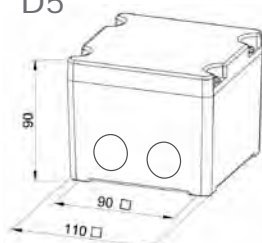
Material: Polycarbonate  
Colour: Grey (RAL 7035)  
Entries: Plain sides  
Fixings: 4xM4

D4



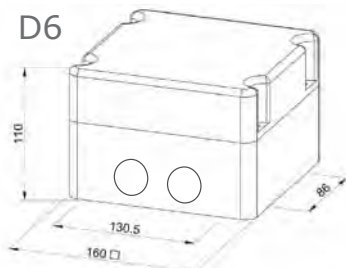
Material: Glass reinforced Polyester  
Colour: Grey (RAL 7000)  
Entries: Plain sides  
Fixings: 4xM5

D5



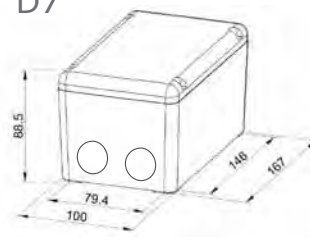
Material: Die-cast Aluminium  
Colour: Grey (RAL 7035)  
Red (RAL 3020)  
Entries: 2xM20  
Fixings: 4xM5

D6



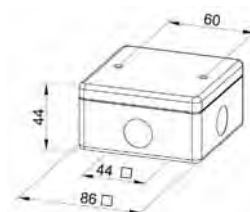
Material: Die-cast Aluminium  
Colour: Grey (RAL 7035)  
Entries: 2xM20  
Fixings: 4xM5

D7



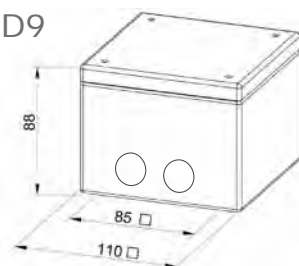
Material: Die-cast Aluminium  
Colour: Grey (RAL 7035)  
Entries: 2xM20  
Fixings: 4xM5

D8



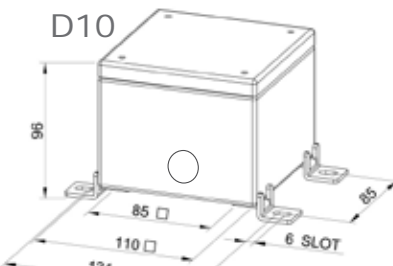
Material: Steel  
Colour: Silver  
Entries: 5xM20 knockouts  
Fixings: 4 off 5x10 slots

D9



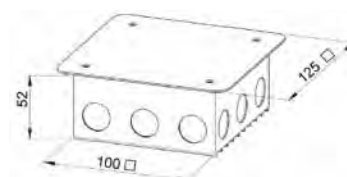
Material: Stainless steel (Grade 304)  
Finish: Brushed  
Entries: 2xM20  
Fixings: 4xM6

D10



Material: Stainless steel (Grade 304)  
Finish: Brushed  
Entries: 1xM20  
Fixings: 4xM6

D11



Material: Fascia plate - Stainless Steel  
Back box - Galvanised steel  
Fascia plate - Brushed  
Entries: 9xM20 knockouts  
Fixings: 4xM5

### Actuator Projections

Normal Duty Actuators (ND)	Emergency Stop (incl. guards)	42mm
	Start/Stop	11mm
Heavy Duty Actuators (HD)	Mushroom (Twist or pull to reset)	43mm
	Mushroom (Key reset)	51mm
	Full guard (Start/Stop)	30mm
	Flap Cover	66mm

## General Description

Grabwire switches are the equipment of choice to provide safety protection over long distances. Prior to the development of Grabwire switches, machinery such as conveyors had to be fitted with a number of separate Emergency Stops.

Positioning the ‘Stops’ such that at least one could be reached from any point, was often difficult to fulfil.

A Grabwire switch assembly gives a continuous and uninterrupted safety provision over long distances. With our Live-Wire system, this can stretch to 2km.

Conveyors are the obvious application for such devices, but with the ability to take the protection wire around bends, and provide safety cover over both horizontal and vertical runs, the system lends itself to many different applications.

Craig and Derricott offer two different systems:-

- The ‘GW’ range, is a tensioned wire system which is designed to cover small to medium sized runs. (Up to 100m max. between pairs)
- The ‘LW’ range, specially developed for long installations (Up to 2km)



## Tensioned Wire System (GW Range)

Reference standards:-

BS EN ISO 12100-1:2003 Pts. 1 & 2  
BS EN 418  
BS EN 60947-5-1  
BS EN 60529  
BS EN 60947-5-5  
BS EN 60204-1  
PD 5304



Catalogue Ref.	GWN1	GWN2	GWN2/SS	GWDE
Description	Universal single ended	Universal single ended	Universal single ended	Universal double ended
Max. span between pairs (L) *	50m	100m	100m	2 x 100m
Enclosure material	Die-cast Aluminium (LM24)	Die-cast Aluminium (LM24)	Stainless Steel 1.6 mm Grade 316	Sheet Steel 1.6 mm
Finish	Textured Powder Coat RAL 3020	Textured Powder Coat RAL 3020	Polished	Textured Powder Coat RAL 3020
Ingress Protection	IP65	IP65	IP65	IP65
Rope Tensioner	Included	Included	Included	Included
Earthing	M4 Internal & External	M5 Internal & External	M5 Internal & External	M5 Internal & External
Electrical Contacts	2 N/C (Safety) + 1 N/O	2 N/C(Safety) + 2 N/O	2 N/C (Safety) + 2 N/O	2 x {2 N/C (Safety) + 2 N/O}
Electrical Rating:- Ith / Ui	10A/415V	10A/415V	16A/600V	16A/600V
AC21/22/23A to BS EN 60947-3	-	-	16A at 415V	16A at 415V
AC15 to BS EN 60947-5-1	5A at 415V	5A at 415V	5A at 415V	5A at 415V
Optional Indicator Lamp	✓	✓	-	-
Setting-up indicator	✓	✓	✓	✓
Hand reset knob	✓	✓	✓	✓
Universal (LH or RH) mounting	✓	✓	✓	✓

\* Or between switch & anchor box

## Ordering Requirements

**Universal Grabwire Switch**

(See table above)

+

**Connection Kit**

(See Page 66)

+

**Universal Grabwire Switch**

(See table above)





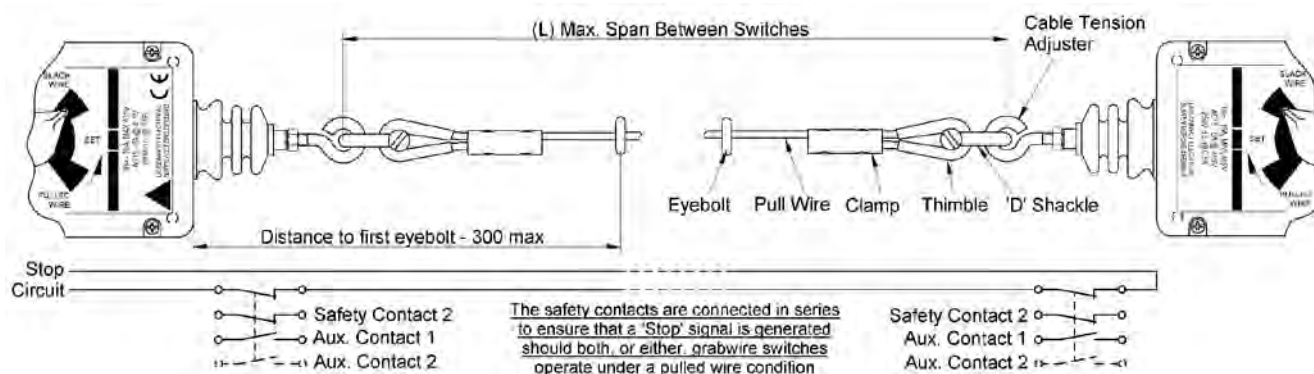
## Connection Kits

Apart from the Grabwire switch, the only other item required in a simple set-up, is the connection kit. In the kit you will find all the parts necessary to install the system. Each kit includes:-

- Multi strand steel catenary cable with red PVC covering \*
- Stainless steel eyebolt supports. Sufficient to support the cable at 2M intervals. Supplied complete with two fixing nuts.\*
- 2 x Stainless steel thimbles.
- 2 x Stainless steel 'D' shackles.
- 2 x Stainless steel clamps.

Description	Catalogue Ref.	Description	Catalogue Ref.
<b>Basic connection kit</b> *Catenary wire and eyebolts not included	<b>GK00</b>	<b>10m Connection kit</b> All items for installations up to 10m	<b>GK10</b>
<b>20m Connection kit</b> All items for installations up to 20m	<b>GK20</b>	<b>50m Connection kit</b> All items for installations up to 50m	<b>GK50</b>
<b>75m Connection kit</b> All items for installations up to 75m	<b>GK75</b>	<b>100m Connection kit</b> All items for installations up to 100m	<b>GK100</b>

## Installation Data



It is necessary to place the first eyebolt close to the switching body to ensure that if the wire is pulled at a very oblique angle, then the pull on the switch remains linear

## Recommendations for installation

When planning a grabwire installation, it is vital that the operators safety is always the primary objective.

- Plan the route of the 'pull wire' carefully to ensure the maximum accessibility by the possible users. Ensure that supports can be placed at a maximum of 2m spacing.
- The placement of the grabwire switches need to be in reachable positions for setting-up, monitoring and resetting after an incident.
- Although corners/bends can be incorporated in the run, try to avoid too many. It may be necessary to install additional systems to ensure an effective installation.
- The ultimate objective must be to provide a free running 'pull wire' with the minimum of resistance to movement.
- Measure each run and select a Grabwire switch whose max. span (L) is greater than the measured distance.
- If the total length is over 100m, then multiple installations will be necessary. If the length is excessive, then consider using the 'LW' system.
- Choose the Stainless Steel grabwire switch option if the working environment will be continuously wet or subject to systematic cleansing routines.

## Anchor boxes

Without doubt the most effective installation involves the fitting of Grabwire switches at both ends of the 'pull wire'. However, this does involve electrical cabling up to, and between, the switching units. The use of a non electrical 'Anchor Box' at one end does remove the need to cable between the end assemblies.

The 'Anchor Box' effectively houses a long spring, which is compressed when the 'pull wire' is activated. At a fixed point during the compression, a latch is operated which locks the spring in the compressed or shortened state. When the 'pull wire' is released, it will be in a 'slack' condition, and the switching unit at the other end of the 'pull wire' senses the 'slack' condition and activates the 'Stop' signal. Although the 'Anchor Box' contains no electrical contacts, the latch needs manual resetting to restore the system.

Description	Catalogue Ref.
Non Switching Anchor Box with manual reset	<b>GW/AB</b>



## Minimum Installation Requirements

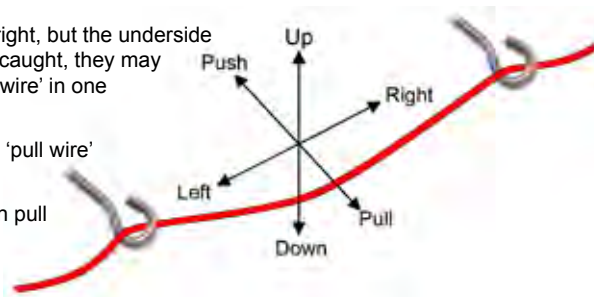
The operator must be able to reach and move the 'pull wire' in **any** direction. When someone gets into trouble they may only be able to move the 'pull wire' in one direction.

Taking the simple conveyor as an example, the top surface may run left to right, but the underside will be running right to left. Depending upon how and where someone gets caught, they may well be pulled in either direction and only have a hand free to pull the 'grab wire' in one direction only.

Having this requirement means that the use of one grabwire switch and the 'pull wire' terminated at the other end to a fixed point is almost always dangerous.








If an operator gets trapped in the equipment, and the only direction they can pull the 'grab wire' is against the fixed end, nothing will happen.

The minimum requirements in this situation would be a Grabwire Switch at one end and an Anchor Box at the other.



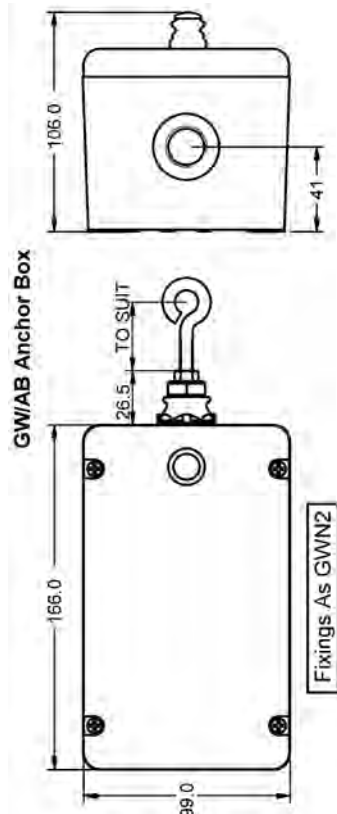
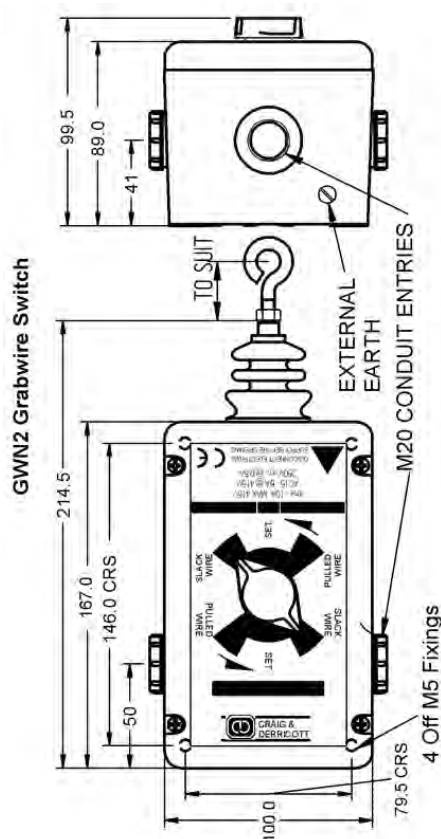
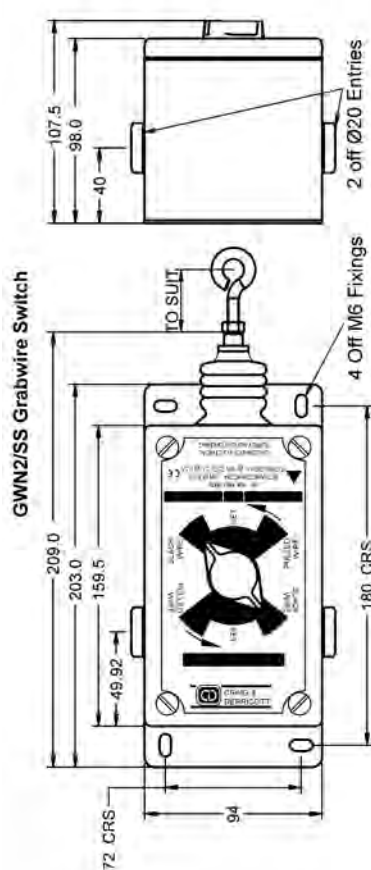
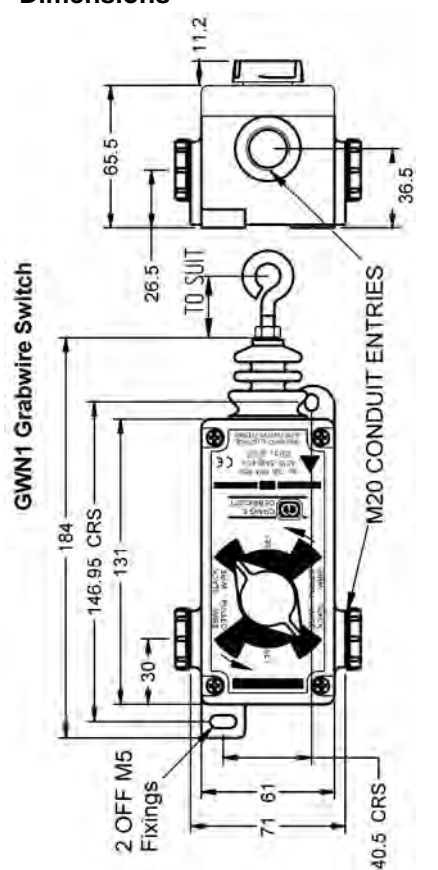
## Accessories

To assist with the possible variations necessary when designing an installation, the following accessories are available.

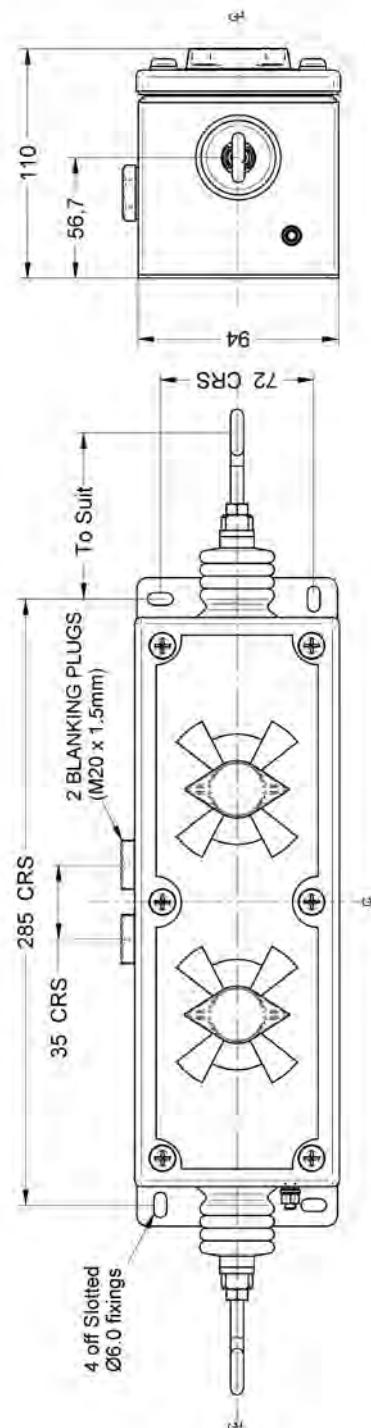
Image/Diagram	Description	Catalogue Ref.
	Indicator lamp, which when powered through one of the spare N/O contacts, will indicate which grabwire switch has been actuated. (Indicates on 'Pulled' or 'Slack Wire' conditions) Supplied complete with bulb. Other colours and supply voltages available to order.  24V (Amber) Annunicator Lamp 110V (Amber) Annunicator Lamp	GW024A GW110A
-	Stranded steel 'pull wire' with red PVC covering. ( Ø5 approx O/D) Sold per Metre.  Pull Wire (As supplied in the connecting kits)	MR 0221
	Standard length 'eyebolt' for 'pull wire' support. Supplied complete with 2 x locking nuts. Material - Stainless steel    Size - M6    Overall length - 80    Thread length - 58  Standard M6 Eyebolt (As supplied in the connection kits)	GWA 0070
	Extended length 'eyebolt' for 'pull wire' support. Supplied complete with 2 x locking nuts. Material - Stainless steel    Size - M6    Overall length - 230    Thread length - 200  Extended M6 Eyebolt	GWC 0270
	Enclosed corner pulley. Chosen to prevent the 'pull wire' getting trapped or detached from the pulley wheel. Material - Stainless steel    Fixings - 2 x Ø5 on 26 centres  Enclosed Corner Pulley	GWC 0271
	Wrap around 'thimble' to terminate the 'pull wire'. Material - Stainless steel  Termination 'thimble' (As supplied in the connection kits)	GWC 0163
	'D Shackle' to connect the 'pull wire' to the grabwire switches. Material - Stainless steel  Connection 'D Shackle' (As supplied in the connection kits)	GWC 0166
	Cable clamp for securing the 'pull wire' back upon itself once passed around the 'thimble'. Tightening via 2 x Allen screws. Material - Stainless steel  Cable clamp (As supplied in the connection kits)	GWC 0167
-	Allen key for tightening 'Cable Clamp' above Size - 2.5 A/F  Allen Key (As supplied in the connection kits)	GWC 0189



## Dimensions



## GWDE Double Ended Grabwire Switch



# 'GW' Grabwire Dimensions



## Live Wire Grabwire System

Designed specifically for long distance protection, where a tensioned wire installation (GW series) becomes expensive or impractical.

The Live Wire system incorporates the following safety features:-

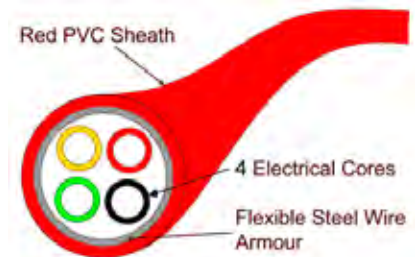
- The trip switch interior to each grabwire assembly contains positive push-off contacts
- The system will trip in the event of -
  - (a) a Grab-Line being pulled in any direction.
  - (b) a Grab-Line being broken or the Grab-Line circuit interrupted.
  - (c) a short circuit condition occurring in the Grab-Line circuit.
  - (d) a loss of power to the Control Station.
- Once tripped, the system requires manual resetting.
- Only a safe low voltage is applied to the Grab-Line circuit and Grab-Line switch assemblies.

The system is ideal for heavy duty and exposed situations. The Control Station and Grab-Line switch assemblies are housed in substantial enclosures which are sealed to IP65. Stainless steel components are used where necessary to ensure reliability is maintained.

### Principle of the Design

The design of the overall system has been kept as flexible as possible to allow for additional features that may be required to fulfil specific applications. However, the basic operating system will be at the heart of every system and can be described simply as follows:-

A single Control Station is required for each installation, and from there a low voltage rectified output is fed to the Grab-Line circuit. Unlike the tensioned wire systems (GW), which use a form of catenary wire with a stranded steel core, the Grab-Line used here is very different. The cable is constructed with a flexible steel armour, however down the centre of the Grab-Line run four electrical cores.



The low voltage supply is taken from the control station to the first Grab-Line switch in normal cable. The safety circuit is then fed through the rotary switch within the Grab-Line switch and leaves using the special Grab-Line cable. This is fed through the cable tensioner and on to the next Grab-Line switch. This continues along the protection run until at the last Grab-Line switch, where a wire link completes the return path of the safety circuit.

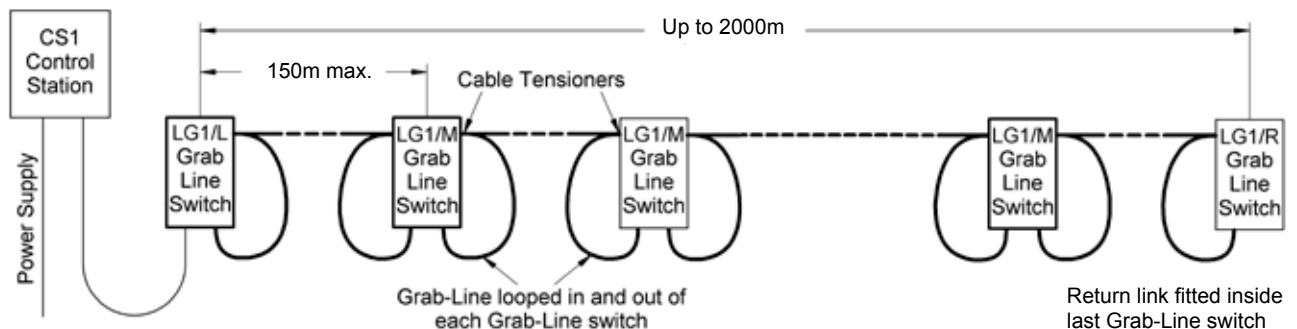
When the system is setup, and the control station is indicating ‘Set To Run’, a relay in the control station is held energised. For any of the fault conditions as listed above, the relay de-energises. The correct connection of the relay contacts ensures a ‘Fail Safe’ condition.

The relay has 3 sets of contacts:-

- The protected machinery Start/Stop control circuit. (Safety circuit - N/C)
- An alarm or indication circuit. (N/O)
- An interlock whereby the emergency stopping of a single conveyor, in a multi-conveyor installation, will also stop ‘upstream’ conveyors as required. (N/C)
- and many other possibilities .....

Two of the three inner cores of the Grab-Line cable comprise the ‘go & return’ safety circuit, the third core is used for signalling.

With very long conveyors, typically found in quarries or gravel pits, the protection may go ‘out of sight’ of the control centre. Here, someone might be despatched to rectify a fault which could be up to 2km from the source. After correcting the fault he can then signal to the control by pressing the ‘Signal to Reset’ pushbutton which is fitted on every Grab-Line switch. The ‘Reset System’ indicator will illuminate on the CS1 control station, and the conveyor ‘Start-Up’ sequence can begin.



### Installation Components

- CS1 - Control Station Assembly (1 required for each safety circuit run)  
 LG1/L - Grab-Line switch - Left Hand (1 required for each safety circuit run)  
 LG1/R - Grab-Line switch - Right Hand (1 required for each safety circuit run)  
 LG1/M - Grab-Line switch - Mid Unit ( 1 required every 150m along the safety circuit run)



## Installation Parameters

The installed system must fall within the following parameters:-

- 1 The total length of Grab-Line safety circuit will consist of -
  - The feed from the CS1 Control Station to the first Grab-Line switch
  - The Grab-Line run
  - If connected, the two wire connection for conveyor interlock control

The total of the above must not exceed 2km or a total circuit resistance of 50 ohms.
- 2 The distance between Grab-Line switches must not exceed 150m.
- 3 The interconnections between Grab-Line switches is by the Grab-Line cable which must be secured to each of the Grab-Line switches by the attachments provided.
- 4 The Grab-Line should be supported at 2m intervals, and 'pigtailed' are available for this purpose. The first support should be as close to the Grab-Line switches as practical. This ensures that the pull on the switches is always linear.
- 5 The CS1 Control Station must be fed by either a 110V or 240V clean a.c. supply.
- 6 A minimum of 1.0 sq mm cable must be used for the following connections.
  - The 3 wire connection between the CS1 Control Station and the first Grab-Line switch
  - The loop 'return' connection in the most distant Grab-Line switch
  - If required, the 2 wire connection to a 'down stream' control station.

## Components

### CS1 Control Station

Required for each installation, the sheet steel housed control station contains the following equipment:-

#### Internal

- Half wave rectified low voltage source from either a 110V or 240V a.c. supply.
- Control circuit relay
- Fuse protection
- Terminal blocks for external connections

#### Lid Mounted

- On/Off switch
- 'Supply On' Indicator Lamp (Blue)
- 'Reset' Pushbutton
- 'Reset System' Indicator Lamp (White)
- 'System Tripped' indicator Lamp (Red)

### LG1 Grab-Line Switches

Supplied in three versions **LH**, **RH** & **Mid**, the assemblies are housed in heavy duty die-cast aluminium enclosures and contain the following components:-

#### Internal

- Chassis plate mounted safety rotary switch
- Terminal blocks for external connections
- A diode (LH & RH units only) which is only connected into the safety circuit if the Grab-Line switch is at the end of the run
- Bellows protected stainless steel 'pull shafts' to which the Grab line is attached
- M20 glands to terminate the Grab-Line cable
- Thimbles, shackles & clamps are supplied loose. Required to attach the Grab-Line to each switch assembly

#### Lid Mounted

- Manual 'Reset/Condition Indicator' knob
- 'Signal to Reset' pushbutton

### Grab-Line Cable

Specialist cable with the following characteristics:-

#### Internal

- Supplied in four different cut lengths. (75m, 100m, 125m & 150m). A 2m allowance for 'making off' the cable is added to the nominal lengths.
- Thick outer sheath of red PVC
- Flexible steel wire armour
- Four 1 sq mm flexible cores with Red, Yellow, Green & Black sheaths
- Approx. Ø10 O/D



CS1 Control Station



CS1 Control Station Interior



LG1/M Grab-Line switch



LG1/M Grab-Line switch  
with cover removed

## System Technical Data

<b>Input Voltage</b>	110V (15W max.), 240V (15W max)
<b>System Voltage</b>	24V a.c. - 1/2 wave rectified.
<b>Control circuit relay</b>	
Contact operation	Positively operated
Rated load	3A at 240V a.c. 3A (Resistive) at 24V d.c.
Max. switching current	6A
Max. switching Voltage	250V a.c. & 24V d.c.
Minimum permissible load	5V d.c. - 10mA
Mechanical/Electrical life	10 x 10 <sup>6</sup> /10 x 10 <sup>3</sup>
Contact resistance	100 mΩ
<b>Power Protection Fuse</b>	2A
<b>Safety circuit fuse</b>	200mA
<b>Max. Grab-Line circuit resistance</b>	50 Ohms
<b>Pull force to operate</b>	Approx 5kg.

*Full documentation and installation instructions are supplied with each control station*

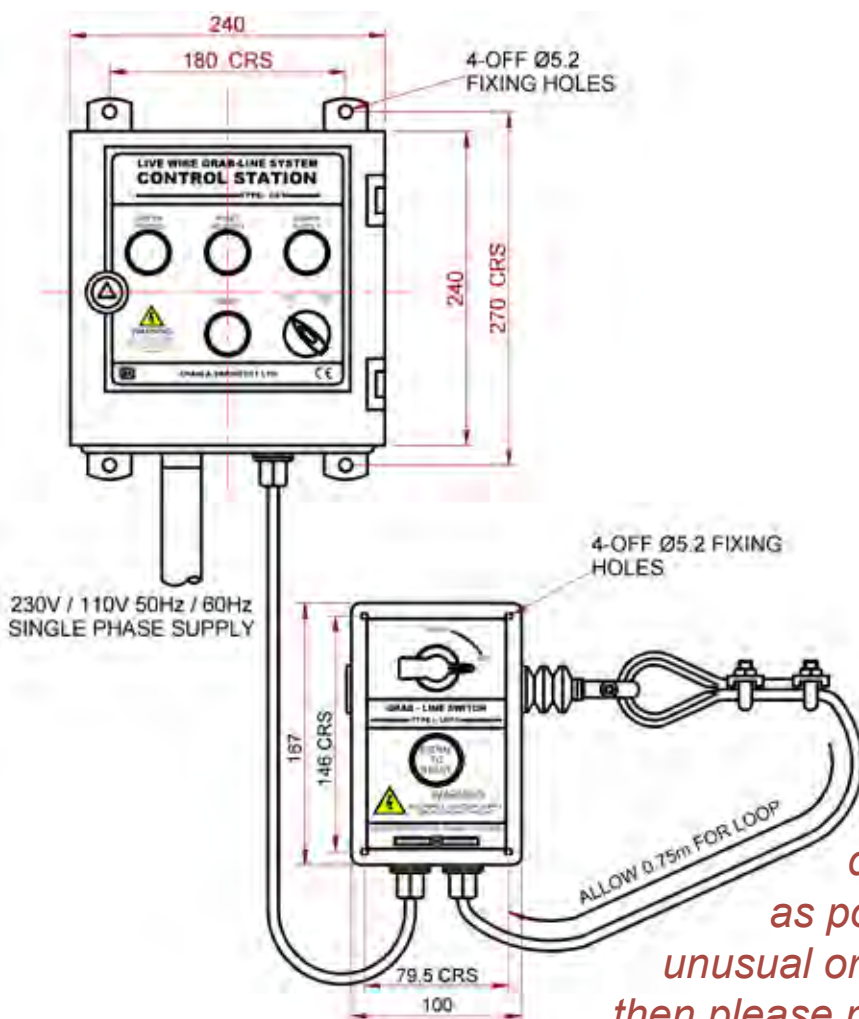
## Ordering Codes

Control Station Assembly	<b>CS1</b>
LH Grab-Line switch	<b>LG1/L</b>
RH Grab-Line switch	<b>LG1/R</b>
Mid Grab-Line switch	<b>LG1/M</b>
Grab-Line cable (75M)	<b>GWC 0038A</b>
Grab-Line cable (100M)	<b>GWC 0038B</b>
Grab-Line cable (125M)	<b>GWC 0038C</b>
Grab-Line cable (150M)	<b>GWC 0038D</b>
St St Eyebolt with fixing nuts	<b>GWA 0070</b>

## Accessories

Grab-Line Thimble	<b>GWC 0031</b>
Grab-Line Clamp	<b>GWC 0032</b>
Grab-Line 'D' shackle	<b>GWC 0033</b>
Cable gland	<b>GWC 0039</b>

## Dimensions



*Application in Rolling Stock Repair pits*

*"The Live-Wire system is designed to be as flexible as possible, so if you have an unusual or complicated application, then please phone our technical sales team who will be at hand to give advice"*





Call our customer services with ***your*** requirements.

The next section of the catalogue represent components specially designed for the Panel Builder and OEM.

Selector Switches, Panel Isolators and pushbutton components are geared toward the Panel Builder market while the additional ranges of Footswitches and Limit Switches will benefit the discerning OEM.

- Selector Switches Pages 75-104
- Panel Isolators Pages 105-116
- Pushbutton Components Pages 117-129
- Footswitches Page 130





*The component ranges contain many innovative features:-*

## Terminal Security

Ring crimp retention feature for 'tunnel' type terminals brings greater security to 'C' range selector switches



## Pushbutton Position Indicator

An innovative design feature is included on 'normal duty' Emergency Stop actuators. A green segment forms part of the pushbutton moving body and when visible clearly indicates that the actuator has not been operated. When the button has been depressed and the mechanism latched, then the green segment is no longer visible.



Standby mode



Operated & latched

## Safety Handles

The door interlock handles come in three sizes and take up to three padlocks in the 'Off' position (6.4 max. hasp diameter).

For emergency or testing situations there is an override facility available for use by a competent person.

All handles are sealed to a minimum of IP65.



Defeat mechanism access point

## Robust Locking Handles

Two types of padlocking plus a key locking option.

Type Nos. LHC, LHD & K



Two die cast aluminium handle shapes are available for each version.

## 'Quick-fit' Actuators

To make installation and wiring as simple as possible a 'plug-in' series of actuators are available with alternative handle styles.



## Safety Padlocking

When door interlocked isolators are switched 'Off' and the door is open, there is always the possibility that with the aid of a tool the shaft can be turned and the isolator switched back on.

The internal padlocking feature prevents this from taking place. (Only available on selected items within the range).



## Padlockable Flap Cover

Up to three padlocks can be inserted to prevent access to the actuator beneath.





A special version to suit 'Emergency Stops' is also available.



*Many other useful features can be found within the following pages.....*

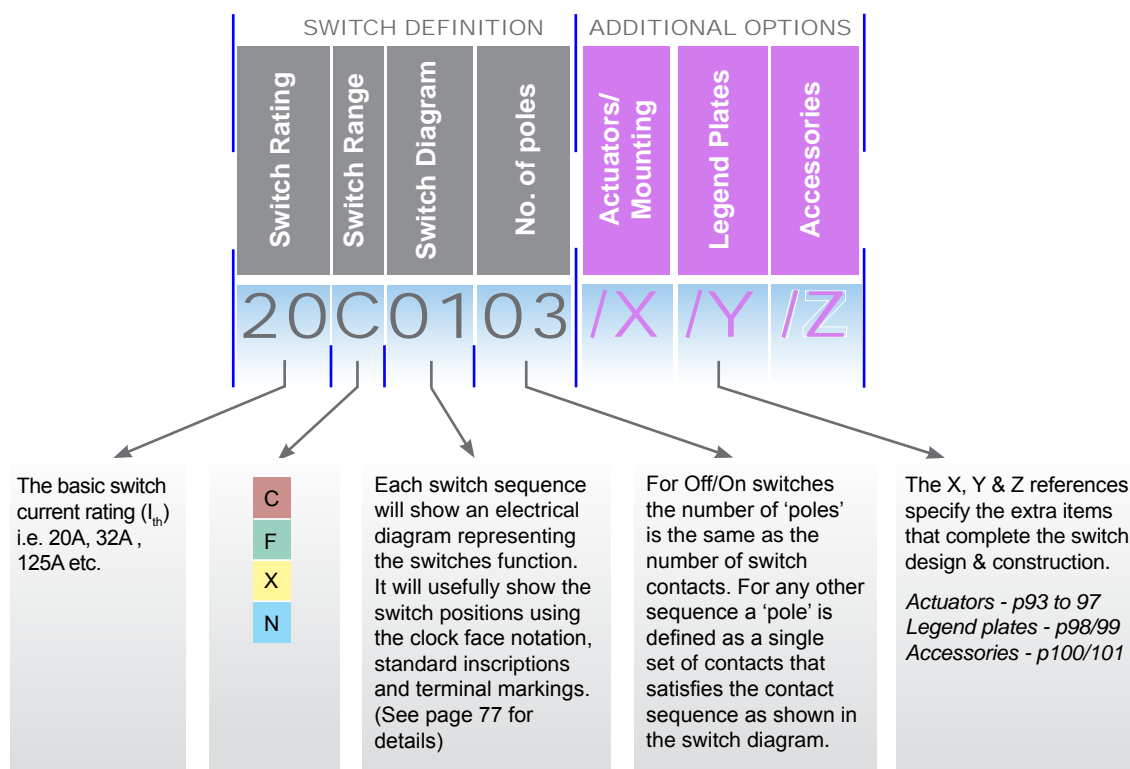


Craig & Derricott's selector switches are available in four different ranges, each of which has distinct design differences and ranges of accessories. This presents the user with a vast choice of options and the aim of the following pages is to help the user decide the best option for their precise application.

Range	C	F	X	N
Image (Typical)				
Ratings	20A	10A & 20A	16A, 20A, 32A & 40A	20A, 25A, 32A, 40A, 63A & 125A
Indexing options	45°, 60° & 90°	30°, 45°, 60° & 90°	30°, 45°, 60° & 90°	30°, 45°, 60° & 90°
Terminal Type	Tunnel	Clamp	Clamp	Clamp
Terminal Access	Side	Rear	Rear	Side
Temperature Range	-25°C to +40°C	-25°C to +55°C	-25°C to +55°C	-25°C to +55°C
Finger protection	IP2X	IP2X	IP2X	IP2X*

(\* With terminal covers)

## Catalogue Number 'Build-up'



The above example represents a 20Amp rated 'C' switch, three pole, Off/On sequence requiring two switching sections, one holding two contact sets the other holding the remaining third pole.

The image shows a 20F triple pole changeover switch plus 'Off' (20A) with a **black padlocking handle** and a **48x48 legend plate printed '1-0-2'**.

Catalogue number - **20F0403/X7/Y34**



## Guide to defining a selector switch

### Switch Sequence (Pages 78-88)



Off/On  
(page 78)



Multi Position  
(pages 80-81)



Cumulative  
(page 85)



Ammeter/  
Voltmeter  
(pages 86/87)



Changeover  
(page 79)



Spring Return  
(page 84)



Motor Control  
(page 88)



### Rating (Amps)

From



to...



For full details of electrical ratings  
please see pages 102-104.



F X N

### Actuators/Mounting (X - pages 93-97)



DIN Rail or Base  
Plate Mounting  
(page 93)

### BASE MOUNTING



Five hole  
Mounting  
(page 93)



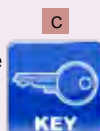
'Quick-fit'  
actuators  
(pages 95-97)



LHC pull-to-lock  
padlocking handle  
(pages 96/97)



LHD push-to-release  
padlocking handle  
(pages 96/97)



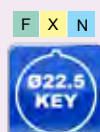
K key locking handle  
(pages 96/97)



Ø16 mounting  
knob actuator  
(page 96)



Ø22.5 mounting  
knob actuator  
(page 96)



Ø22.5 mounting  
key actuator  
(page 96)

### PANEL MOUNTING



### Legend Plates (Y - pages 98/99)

Sizes (page 98)  
Inscriptions (page 99)



### Accessories (Z - pages 100/101)



4.8 and 6.3  
Fast-on terminals  
(page 100)



Extension  
shafts  
(page 101)

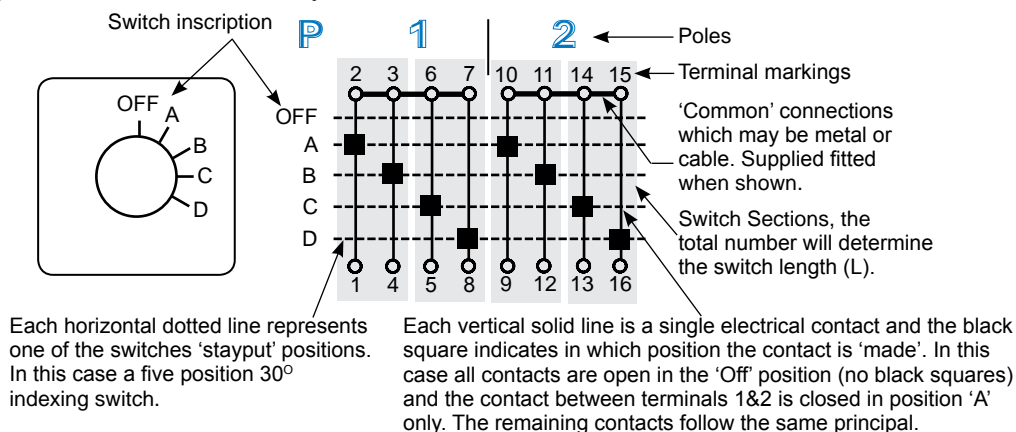


Unidirectional  
Rotation  
(page 100)

*and many more....*

## Understanding Switch Diagrams

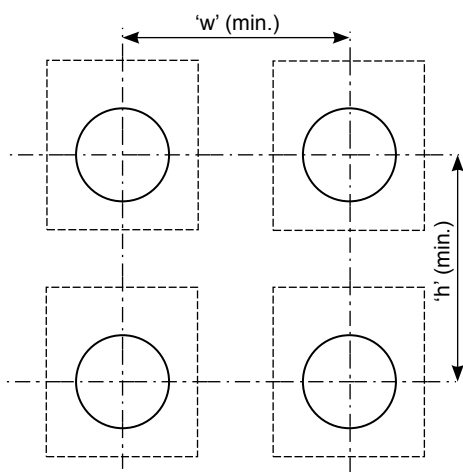
Each switch sequence shown on the following pages includes a Switch Diagram. This contains a lot of useful information for the user and installer and the following description is intended for those who may not be familiar with the layout.



Using this system you can indicate the full requirements for a special or 'bespoke' switch construction. Full details and a template which can be scanned and submitted to us can be found on pages 91-92.

## Fitting Matrix

In certain applications groups of rotary switches need to be fitted in the smallest space envelope possible. The tables shown take into account the legend plates that would normally be supplied with each switch.



The dimensions shown are for guidance only. The spacing for each application will depend upon the product mix and the individual switch length/complexity.

'C' Range	'w' (min.)	'h' (min.)
20C	80	70
'F' Range	'w' (min.)	'h' (min.)
10F	32	45
20F	50	65
'X' Range	'w' (min.)	'h' (min.)
16X	50	65
20X	50	65
32X	67	85
40X	67	85
'N' Range	'w' (min.)	'h' (min.)
20N	65	65
25N	65	65
32N	85	85
40N	85	85
63N	85	85
125N	115	115





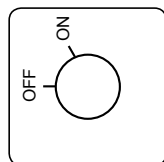
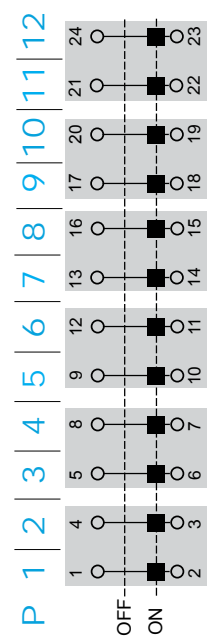


Diagram 01



Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N	125N
1	20C0101	10F0101	20F0101	16X0101	20X0101	32X0101	40X0101	20N0101	25N0101	32N0101	40N0101	63N0101	125N0101
2	20C0102	10F0102	20F0102	16X0102	20X0102	32X0102	40X0102	20N0102	25N0102	32N0102	40N0102	63N0102	125N0102
3	20C0103	10F0103	20F0103	16X0103	20X0103	32X0103	40X0103	20N0103	25N0103	32N0103	40N0103	63N0103	125N0103
4	20C0104	10F0104	20F0104	16X0104	20X0104	32X0104	40X0104	20N0104	25N0104	32N0104	40N0104	63N0104	125N0104
6	20C0106	10F0106	20F0106	16X0106	20X0106	32X0106	40X0106	20N0106	25N0106	32N0106	40N0106	63N0106	125N0106
8	20C0108	10F0108	20F0108	16X0108	20X0108	32X0108	40X0108	20N0108	25N0108	32N0108	40N0108	63N0108	125N0108
10	20C0110	10F0110	20F0110	16X0110	20X0110	32X0110	40X0110	20N0110	25N0110	32N0110	40N0110	63N0110	125N0110
12	20C0112	10F0112	20F0112	16X0112	20X0112	32X0112	40X0112	20N0112	25N0112	32N0112	40N0112	63N0112	125N0112

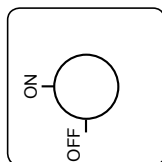
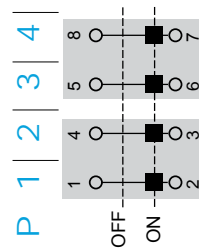


Diagram 02



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N	125N
1	20C0201	10F0201	20F0201	16X0201	20X0201	32X0201	40X0201	20N0201	25N0201	32N0201	40N0201	63N0201	125N0201
2	20C0202	10F0202	20F0202	16X0202	20X0202	32X0202	40X0202	20N0202	25N0202	32N0202	40N0202	63N0202	125N0202
3	20C0203	10F0203	20F0203	16X0203	20X0203	32X0203	40X0203	20N0203	25N0203	32N0203	40N0203	63N0203	125N0203
4	20C0204	10F0204	20F0204	16X0204	20X0204	32X0204	40X0204	20N0204	25N0204	32N0204	40N0204	63N0204	125N0204

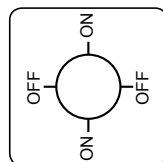
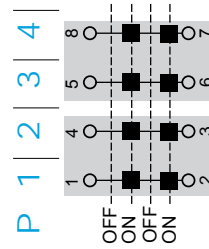
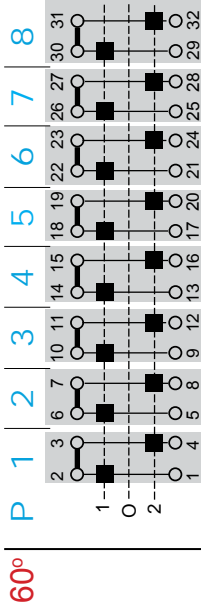
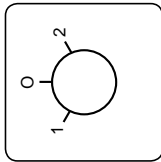


Diagram 03



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N	125N
1	20C0301	10F0301	20F0301	16X0301	20X0301	32X0301	40X0301	20N0301	25N0301	32N0301	40N0301	63N0301	125N0301
2	20C0302	10F0302	20F0302	16X0302	20X0302	32X0302	40X0302	20N0302	25N0302	32N0302	40N0302	63N0302	125N0302
3	20C0303	10F0303	20F0303	16X0303	20X0303	32X0303	40X0303	20N0303	25N0303	32N0303	40N0303	63N0303	125N0303
4	20C0304	10F0304	20F0304	16X0304	20X0304	32X0304	40X0304	20N0304	25N0304	32N0304	40N0304	63N0304	125N0304

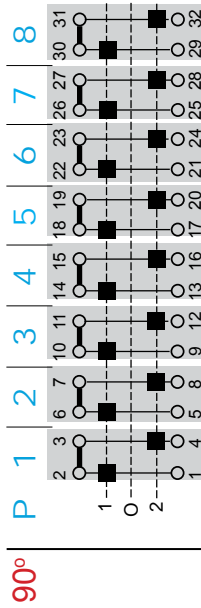
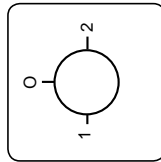
## Changeover Sequences



**Diagram 04**

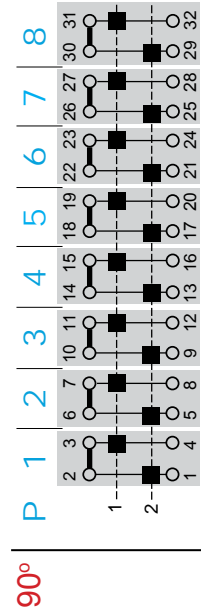
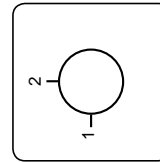
Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N	125N
1	20C0401	10F0401	20F0401	16X0401	20X0401	32X0401	40X0401	20N0401	25N0401	32N0401	40N0401	63N0401	125N0401
2	20C0402	10F0402	20F0402	16X0402	20X0402	32X0402	40X0402	20N0402	25N0402	32N0402	40N0402	63N0402	125N0402
3	20C0403	10F0403	20F0403	16X0403	20X0403	32X0403	40X0403	20N0403	25N0403	32N0403	40N0403	63N0403	125N0403
4	20C0404	10F0404	20F0404	16X0404	20X0404	32X0404	40X0404	20N0404	25N0404	32N0404	40N0404	63N0404	125N0404
6	20C0406	10F0406	20F0406	16X0406	20X0406	32X0406	40X0406	20N0406	25N0406	32N0406	40N0406	63N0406	125N0406
8	20C0408	10F0408	20F0408	16X0408	20X0408	32X0408	40X0408	20N0408	25N0408	32N0408	40N0408	63N0408	125N0408

Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')



**Diagram 05**

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N	125N
1	20C0501	10F0501	20F0501	16X0501	20X0501	32X0501	40X0501	20N0501	25N0501	32N0501	40N0501	63N0501	125N0501
2	20C0502	10F0502	20F0502	16X0502	20X0502	32X0502	40X0502	20N0502	25N0502	32N0502	40N0502	63N0502	125N0502
3	20C0503	10F0503	20F0503	16X0503	20X0503	32X0503	40X0503	20N0503	25N0503	32N0503	40N0503	63N0503	125N0503
4	20C0504	10F0504	20F0504	16X0504	20X0504	32X0504	40X0504	20N0504	25N0504	32N0504	40N0504	63N0504	125N0504
6	20C0506	10F0506	20F0506	16X0506	20X0506	32X0506	40X0506	20N0506	25N0506	32N0506	40N0506	63N0506	125N0506
8	20C0508	10F0508	20F0508	16X0508	20X0508	32X0508	40X0508	20N0508	25N0508	32N0508	40N0508	63N0508	125N0508



**Diagram 06**

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N	125N
1	20C0601	10F0601	20F0601	16X0601	20X0601	32X0601	40X0601	20N0601	25N0601	32N0601	40N0601	63N0601	125N0601
2	20C0602	10F0602	20F0602	16X0602	20X0602	32X0602	40X0602	20N0602	25N0602	32N0602	40N0602	63N0602	125N0602
3	20C0603	10F0603	20F0603	16X0603	20X0603	32X0603	40X0603	20N0603	25N0603	32N0603	40N0603	63N0603	125N0603
4	20C0604	10F0604	20F0604	16X0604	20X0604	32X0604	40X0604	20N0604	25N0604	32N0604	40N0604	63N0604	125N0604
6	20C0606	10F0606	20F0606	16X0606	20X0606	32X0606	40X0606	20N0606	25N0606	32N0606	40N0606	63N0606	125N0606
8	20C0608	10F0608	20F0608	16X0608	20X0608	32X0608	40X0608	20N0608	25N0608	32N0608	40N0608	63N0608	125N0608



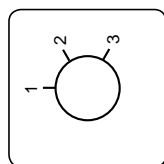
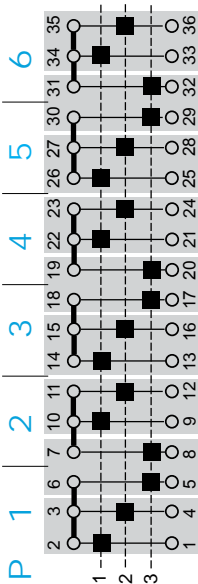


Diagram 07



Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	20C0701	10F0701	20F0701	16X0701	20X0701	32X0701	40X0701	20N0701	25N0701	32N0701	40N0701	63N0701
2	20C0702	10F0702	20F0702	16X0702	20X0702	32X0702	40X0702	20N0702	25N0702	32N0702	40N0702	63N0702
3	20C0703	10F0703	20F0703	16X0703	20X0703	32X0703	40X0703	20N0703	25N0703	32N0703	40N0703	63N0703
4	20C0704	10F0704	20F0704	16X0704	20X0704	32X0704	40X0704	20N0704	25N0704	32N0704	40N0704	63N0704
6	20C0706	-	20F0706	16X0706	20X0706	32X0706	40X0706	20N0706	25N0706	32N0706	40N0706	63N0706

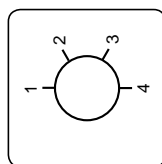
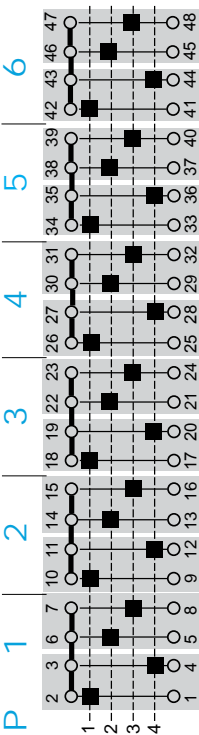


Diagram 08



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	20C0801	10F0801	20F0801	16X0801	20X0801	32X0801	40X0801	20N0801	25N0801	32N0801	40N0801	63N0801
2	20C0802	10F0802	20F0802	16X0802	20X0802	32X0802	40X0802	20N0802	25N0802	32N0802	40N0802	63N0802
3	20C0803	10F0803	20F0803	16X0803	20X0803	32X0803	40X0803	20N0803	25N0803	32N0803	40N0803	63N0803
4	20C0804	10F0804	20F0804	16X0804	20X0804	32X0804	40X0804	20N0804	25N0804	32N0804	40N0804	63N0804
6	20C0806	-	20F0806	16X0806	20X0806	32X0806	40X0806	20N0806	25N0806	32N0806	40N0806	63N0806

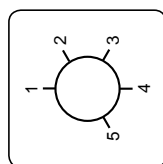
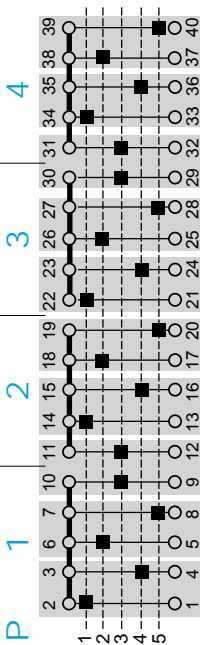


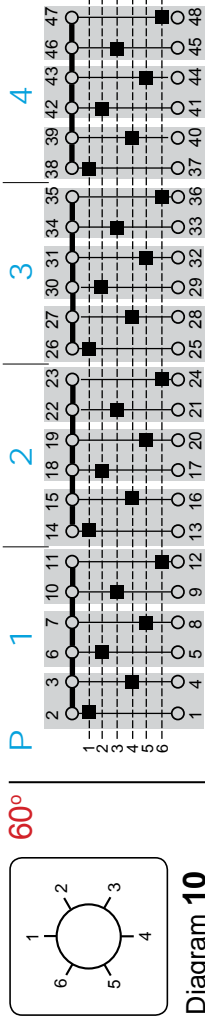
Diagram 09



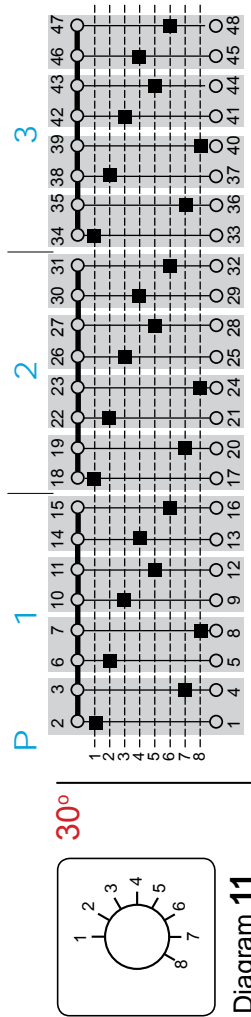
Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	20C0901	10F0901	20F0901	16X0901	20X0901	32X0901	40X0901	20N0901	25N0901	32N0901	40N0901	63N0901
2	20C0902	10F0902	20F0902	16X0902	20X0902	32X0902	40X0902	20N0902	25N0902	32N0902	40N0902	63N0902
3	20C0903	10F0903	20F0903	16X0903	20X0903	32X0903	40X0903	20N0903	25N0903	32N0903	40N0903	63N0903
4	20C0904	-	20F0904	16X0904	20X0904	32X0904	40X0904	20N0904	25N0904	32N0904	40N0904	63N0904



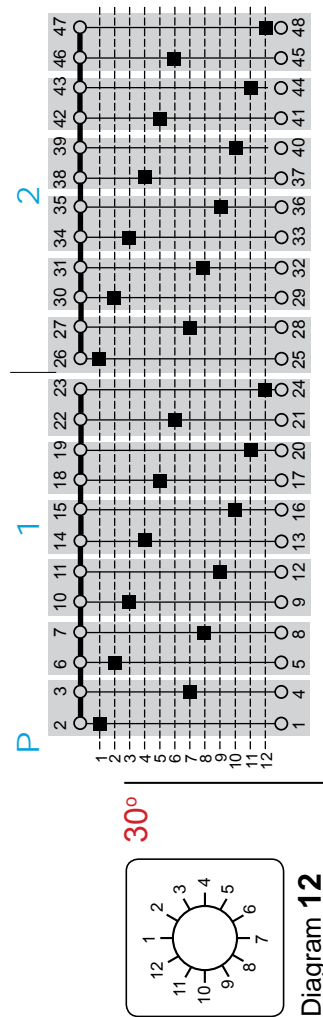
## Multi-step Sequences



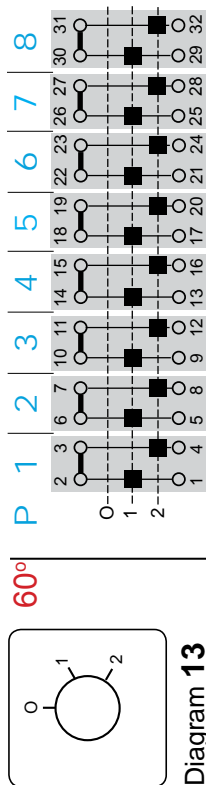
Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	20C1001	10F1001	20F1001	16X1001	20X1001	32X1001	40X1001	20N1001	25N1001	32N1001	40N1001	63N1001
2	20C1002	10F1002	20F1002	16X1002	20X1002	32X1002	40X1002	20N1002	25N1002	32N1002	40N1002	63N1002
3	20C1003	-	20F1003	16X1003	20X1003	32X1003	40X1003	20N1003	25N1003	32N1003	40N1003	63N1003
4	20C1004	-	20F1004	16X1004	20X1004	32X1004	40X1004	20N1004	25N1004	32N1004	40N1004	63N1004



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	10F1101	20F1101	16X1101	20X1101	32X1101	40X1101	20N1101	25N1101	32N1101	40N1101	63N1101
2	-	10F1102	20F1102	16X1102	20X1102	32X1102	40X1102	20N1102	25N1102	32N1102	40N1102	63N1102
3	-	-	20F1103	16X1103	20X1103	32X1103	40X1103	20N1103	25N1103	32N1103	40N1103	63N1103

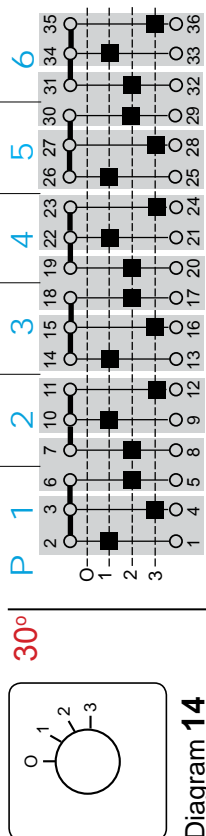


Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	12F1201	20F1201	16X1201	20X1201	32X1201	40X1201	20N1201	25N1201	32N1201	40N1201	63N1201
2	-	-	20F1202	16X1202	20X1202	32X1202	40X1202	20N1202	25N1202	32N1202	40N1202	63N1202

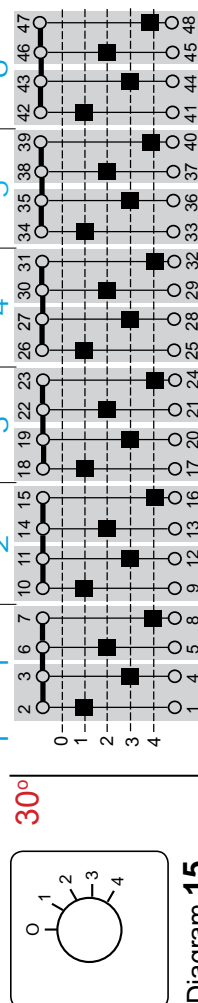


Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	20C1301	10F1301	20F1301	16X1301	20X1301	32X1301	40X1301	20N1301	25N1301	32N1301	40N1301	63N1301
2	20C1302	10F1302	20F1302	16X1302	20X1302	32X1302	40X1302	20N1302	25N1302	32N1302	40N1302	63N1302
3	20C1303	10F1303	20F1303	16X1303	20X1303	32X1303	40X1303	20N1303	25N1303	32N1303	40N1303	63N1303
4	20C1304	10F1304	20F1304	16X1304	20X1304	32X1304	40X1304	20N1304	25N1304	32N1304	40N1304	63N1304
6	20C1306	10F1306	20F1306	16X1306	20X1306	32X1306	40X1306	20N1306	25N1306	32N1306	40N1306	63N1306
8	20C1308	10F1308	20F1308	16X1308	20X1308	32X1308	40X1308	20N1308	25N1308	32N1308	40N1308	63N1308

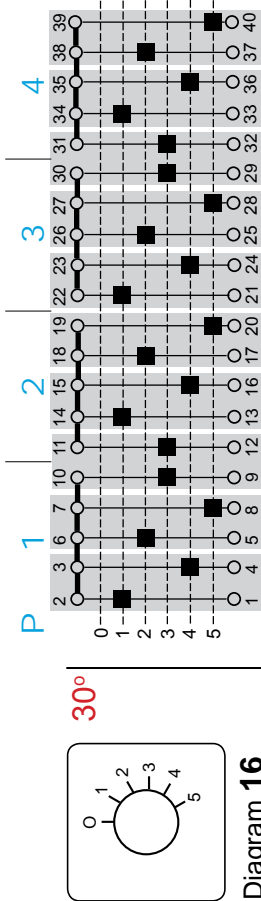


Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	10F1401	20F1401	16X1401	20X1401	32X1401	40X1401	20N1401	25N1401	32N1401	40N1401	63N1401
2	-	10F1402	20F1402	16X1402	20X1402	32X1402	40X1402	20N1402	25N1402	32N1402	40N1402	63N1402
3	-	10F1403	20F1403	16X1403	20X1403	32X1403	40X1403	20N1403	25N1403	32N1403	40N1403	63N1403
4	-	10F1404	20F1404	16X1404	20X1404	32X1404	40X1404	20N1404	25N1404	32N1404	40N1404	63N1404
6	-	-	20F1406	16X1406	20X1406	32X1406	40X1406	20N1406	25N1406	32N1406	40N1406	63N1406



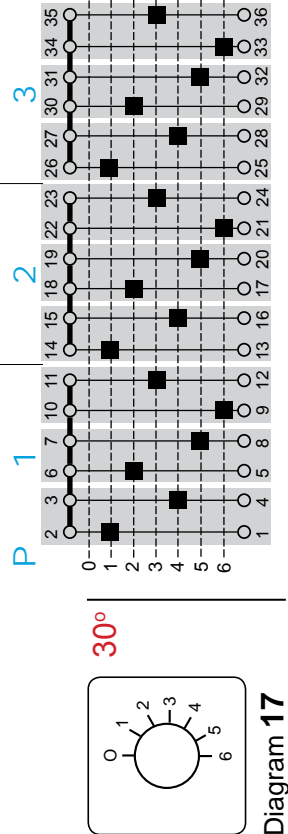
Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	10F1501	20F1501	16X1501	20X1501	32X1501	40X1501	20N1501	25N1501	32N1501	40N1501	63N1501
2	-	10F1502	20F1502	16X1502	20X1502	32X1502	40X1502	20N1502	25N1502	32N1502	40N1502	63N1502
3	-	10F1503	20F1503	16X1503	20X1503	32X1503	40X1503	20N1503	25N1503	32N1503	40N1503	63N1503
4	-	-	20F1504	16X1504	20X1504	32X1504	40X1504	20N1504	25N1504	32N1504	40N1504	63N1504
6	-	-	20F1506	16X1506	20X1506	32X1506	40X1506	20N1506	25N1506	32N1506	40N1506	63N1506

## Multi-step + Off Sequences



Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')

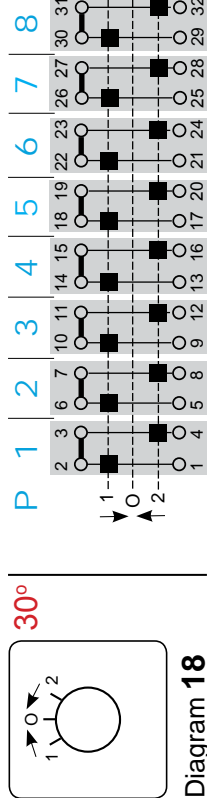
Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	10F1601	20F1601	16X1601	20X1601	32X1601	40X1601	20N1601	25N1601	32N1601	40N1601	63N1601
2	-	10F1602	20F1602	16X1602	20X1602	32X1602	40X1602	20N1602	25N1602	32N1602	40N1602	63N1602
3	-	10F1603	20F1603	16X1603	20X1603	32X1603	40X1603	20N1603	25N1603	32N1603	40N1603	63N1603
4	-	-	20F1604	16X1604	20X1604	32X1604	40X1604	20N1604	25N1604	32N1604	40N1604	63N1604



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	10F1701	20F1701	16X1701	20X1701	32X1701	40X1701	20N1701	25N1701	32N1701	40N1701	63N1701
2	-	10F1702	20F1702	16X1702	20X1702	32X1702	40X1702	20N1702	25N1702	32N1702	40N1702	63N1702
3	-	-	20F1703	16X1703	20X1703	32X1703	40X1703	20N1703	25N1703	32N1703	40N1703	63N1703

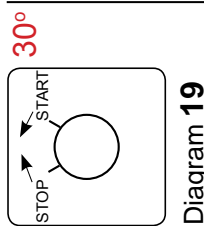




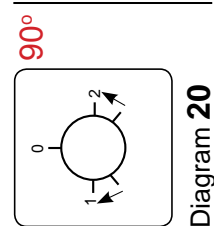


Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')

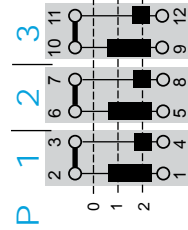
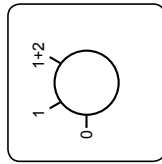
Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	20C1801	10F1801	20F1801	16X1801	20X1801	32X1801	40X1801	20N1801	25N1801	32N1801	40N1801	63N1801
2	20C1802	10F1802	20F1802	16X1802	20X1802	32X1802	40X1802	20N1802	25N1802	32N1802	40N1802	63N1802
3	20C1803	10F1803	20F1803	16X1803	20X1803	32X1803	40X1803	20N1803	25N1803	32N1803	40N1803	63N1803
4	20C1804	10F1804	20F1804	16X1804	20X1804	32X1804	40X1804	20N1804	25N1804	32N1804	40N1804	63N1804
6	20C1806	10F1806	20F1806	16X1806	20X1806	32X1806	40X1806	20N1806	25N1806	32N1806	40N1806	63N1806
8	20C1808	10F1808	20F1808	16X1808	20X1808	32X1808	40X1808	20N1808	25N1808	32N1808	40N1808	63N1808



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C1901	10F1901	20F1901	16X1901	20X1901	32X1901	40X1901	20N1901	25N1901	32N1901	40N1901	63N1901



Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C2001	10F2001	20F2001	16X2001	20X2001	32X2001	40X2001	20N2001	25N2001	32N2001	40N2001	63N2001



Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')



Diagram 21

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	20C2101	10F2101	20F2101	16X2101	20X2101	32X2101	40X2101	20N2101	25N2101	32N2101	40N2101	63N2101
2	20C2102	10F2102	20F2102	16X2102	20X2102	32X2102	40X2102	20N2102	25N2102	32N2102	40N2102	63N2102
3	20C2103	10F2103	20F2103	16X2103	20X2103	32X2103	40X2103	20N2103	25N2103	32N2103	40N2103	63N2103

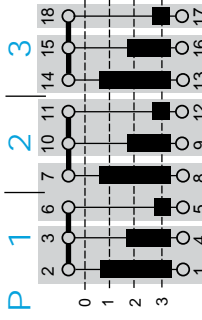
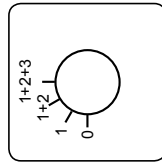


Diagram 22

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	10F2201	20F2201	16X2201	20X2201	32X2201	40X2201	20N2201	25N2201	32N2201	40N2201	63N2201
2	-	10F2202	20F2202	16X2202	20X2202	32X2202	40X2202	20N2202	25N2202	32N2202	40N2202	63N2202
3	-	10F2203	20F2203	16X2203	20X2203	32X2203	40X2203	20N2203	25N2203	32N2203	40N2203	63N2203

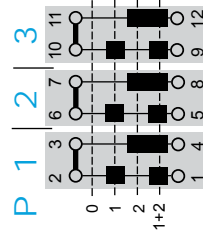
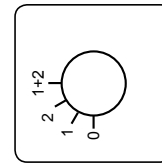


Diagram 23

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
1	-	10F2301	20F2301	16X2301	20X2301	32X2301	40X2301	20N2301	25N2301	32N2301	40N2301	63N2301
2	-	10F2302	20F2302	16X2302	20X2302	32X2302	40X2302	20N2302	25N2302	32N2302	40N2302	63N2302
3	-	10F2303	20F2303	16X2303	20X2303	32X2303	40X2303	20N2303	25N2303	32N2303	40N2303	63N2303



**Diagram 24**

**45°**

**Voltmeter**  
Line to Line  
+ Line to Neutral  
+ Off

**10F Only**

Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C2403	10F2403	20F2403	16X2403	20X	32X	40X	20N2403	-	-	-	-

**Diagram 25**

**45°**

**Voltmeter**  
Line to Line + Off

**10F Only**

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C2503	10F2503	20F2503	16X2503	20X	32X	40X	20N2503	-	-	-	-

**Diagram 26**

**90°**

**Ammeter**  
Line currents with  
3 off CT's

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C2603	10F2603	20F2603	16X2603	20X	32X	40X	20N2603	-	-	-	-





## Diagram 27

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	-	-	20F2703	16X2703	20X2703	32X2703	40X2703	20N2703	25N2703	32N2703	40N2703	63N2703



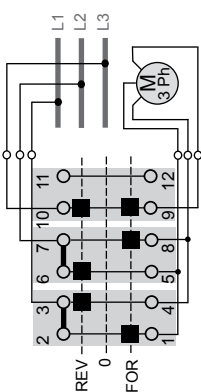
## Diagram 28

[illegible]

## Direction Switch

Reverse-Off-Forward

Required number of switch sections to construct switch. See page 89 for switch length. (Dim 'L')



60°

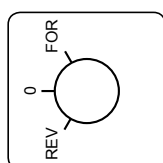


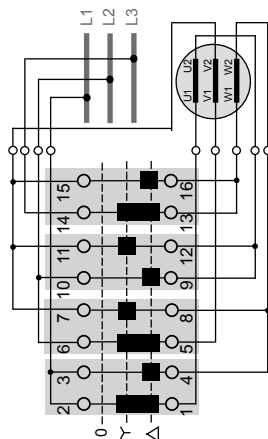
Diagram 29

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C2903	10F2903	20F293	16X2903	20X2903	32X2903	40X2903	20N2903	25N2903	32N2903	40N2903	63N2903



## Starter switch

Off-Star-Delta



60°

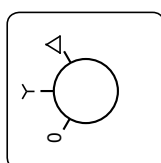


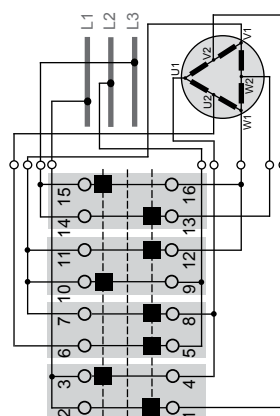
Diagram 30

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C3003	-	20F3003	16X3003	20X3003	32X3003	40X3003	20N3003	25N3003	32N3003	40N3003	63N3003



## Speed Control

'Dahlander' winding giving two speeds (Δ - 0 - Y-Y)



60°

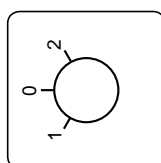
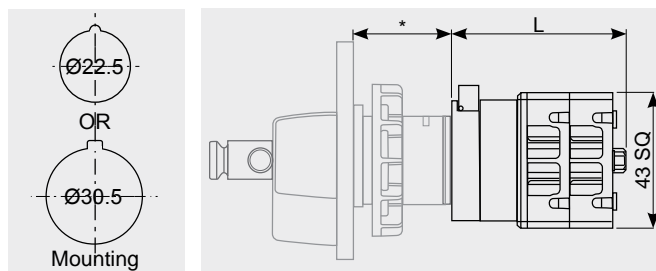


Diagram 31

Poles	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
-	20C3103	-	20F3103	16X3103	20X3103	32X3103	40X3103	20N3103	25N3103	32N3103	40N3103	63N3103



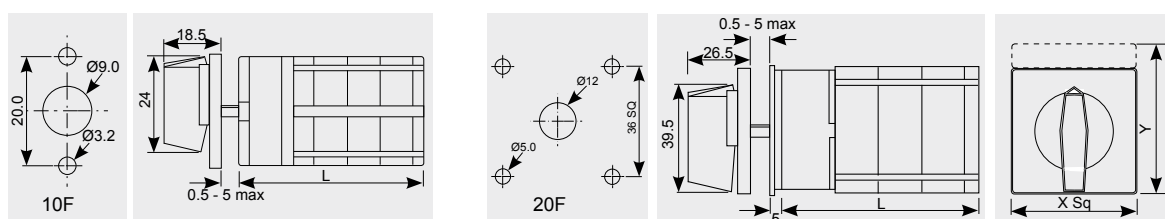
The following dimensions show the basic front of panel mounting switches, the accessories and attachments will show the deviations from the standard items individually. (The F, X & N diagrams are shown with the standard 'X1' or 'X2' knob in place.)



Switch Sections	1	2	3	4	5	6	7	8	9	10	11	12
L 20C	41	55	68	82	95	105	122	135	149	163	176	190

## 'C' Range

\* The C range does not accommodate standard five hole panel fixing or base mounting options. The diagram above is intended to provide the switch length (L) only. The remaining behind the panel dimension can be found for the various 'Quick-fit' actuators shown on pages 95-97.

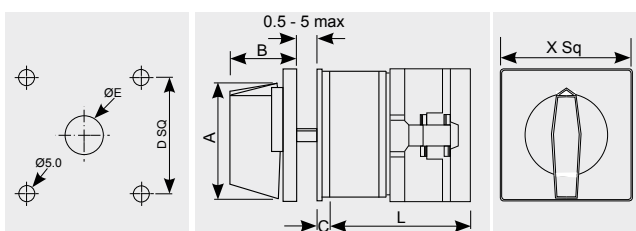


Switch Sections	1	2	3	4	5	6	7	8	9	10	11	12
L 10F	40	52	64	76	88	100	112	124	-	-	-	-
20F	36	50	63	77	90	104	117	131	144	158	171	185

	10F	20F
X	30	48
Y	40	60

## 'F' Range

Diagram shown with standard knob (X1 - X2)



Dim	A	B	C	D	E	X
16X/20X	39.5	26.5	5	36	12	48
32X/40X	53	34.5	5.5	48	14	65

Switch Sections	1	2	3	4	5	6	7	8	9	10	11	12
L 16X/20X	35	44	52	61	69	78	86	95	103	112	120	129
32X/40X	43	55	67	79	91	103	115	127	139	161	173	185

Diagram shown with standard knob (X1 - X2)

## 'X' Range

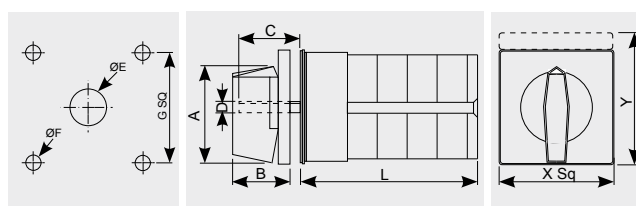


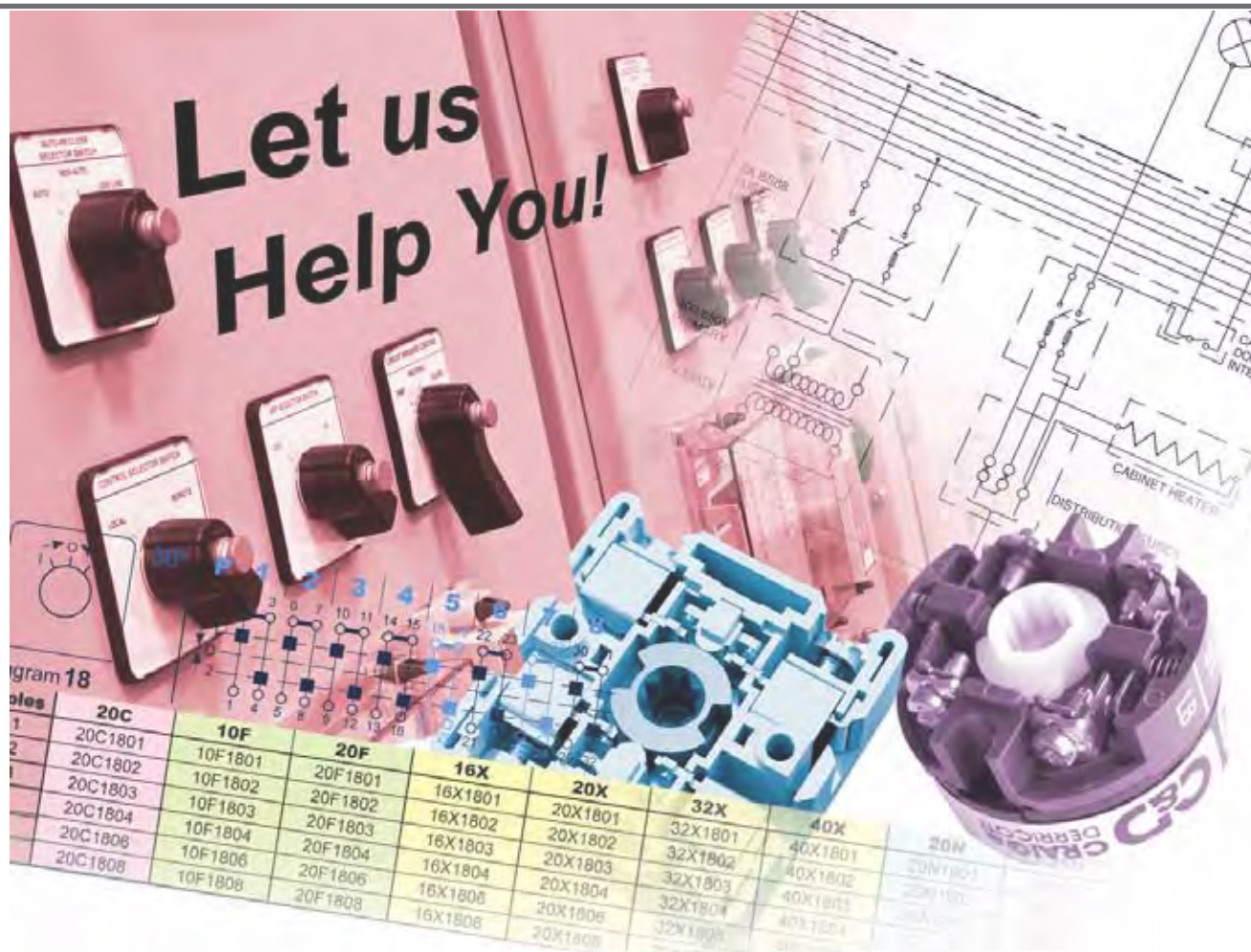
Diagram shown with standard knob (X1 - X2)

Dim	A	B	C	D	E	F	G	X	Y
20N/25N	39.5	26.5	23.5	6	12	5	36	48	60
32N/40N/63N	53	34.5	26	7	14	5	48	65	80
125N	70.5	41.5	28	9	16	6	68	90	110

Switch Sections	1	2	3	4	5	6	7	8	9	10	11	12
L 20N	33	43	53	62	72	82	91	101	111	120	130	140
25N	38	51	65	78	92	106	119	133	146	160	174	187
32N/40N	44	59	74	89	104	119	134	149	164	179	195	210
63N	47	65	84	102	120	138	156	174	192	210	228	246
125N	67	96	126	155	184	220	249	279	308	337	366	395

## 'N' Range





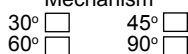
Send us your scheme/wiring diagram and let our experienced engineers interpret the contact requirements into the most effective switch design. We will then discuss your physical & technical requirements to ensure that the complete switch package meets your exact specification.



# Bespoke Switch Template

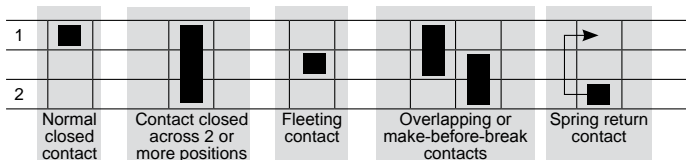
email: .....

*Duty*    *Frequent* ☐    *Infrequent* ☐

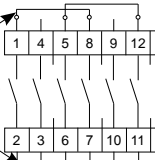


1	4	5	8	9	12	13	16	17	20	21	24	25	28	29	32	33	36	37	40	41	44	45	48
2	3	6	7	10	11	14	15	18	19	22	23	26	27	30	31	34	35	38	39	42	43	46	47

Please indicate the terminal markings required for each contact or the standard C&D marking scheme will be applied.

[illegible]

Indicate any external links you would like included.



For locking handles & key actuators show the positions to be lockable by circling the position as shown

12		
11		
10		

## Design Template For Bespoke Selector Switches contd.

### Mechanical Parameters

Rotation	Restricted	<input type="checkbox"/>	Unrestricted	<input type="checkbox"/>	Uni-direction	<input type="checkbox"/>
Mounting	Panel mounting	<input type="checkbox"/>	Base Mounting (DIN rail)	<input type="checkbox"/>	Base Mounting (Base plate)	<input type="checkbox"/>
Terminals	Side Access	<input type="checkbox"/>	Rear Access	<input type="checkbox"/>		
Actuator	Std. Knob (5 hole fixing)	<input type="checkbox"/>	Knob (single hole fixing)	<input type="checkbox"/>	Key (single hole fixing)	<input type="checkbox"/>
	Single hole fixing Ø16	<input type="checkbox"/>	Ø22.5	<input type="checkbox"/>	Ø30.5	<input type="checkbox"/>
Locking Handles	Moulded (Red/Yellow)	<input type="checkbox"/>	Moulded (Black)	<input type="checkbox"/>	Die cast aluminium	<input type="checkbox"/>
	LHC (Pull to lock)	<input type="checkbox"/>	LHD (Press to release)	<input type="checkbox"/>	K (Key locking)	<input type="checkbox"/>
	Die cast handle options		SM	<input type="checkbox"/>	SA	<input type="checkbox"/>

Please describe any other options you require .....

**NB - 'We will come back to you and advise the best options to suit the choices you have made'.**

### Indicator Plates

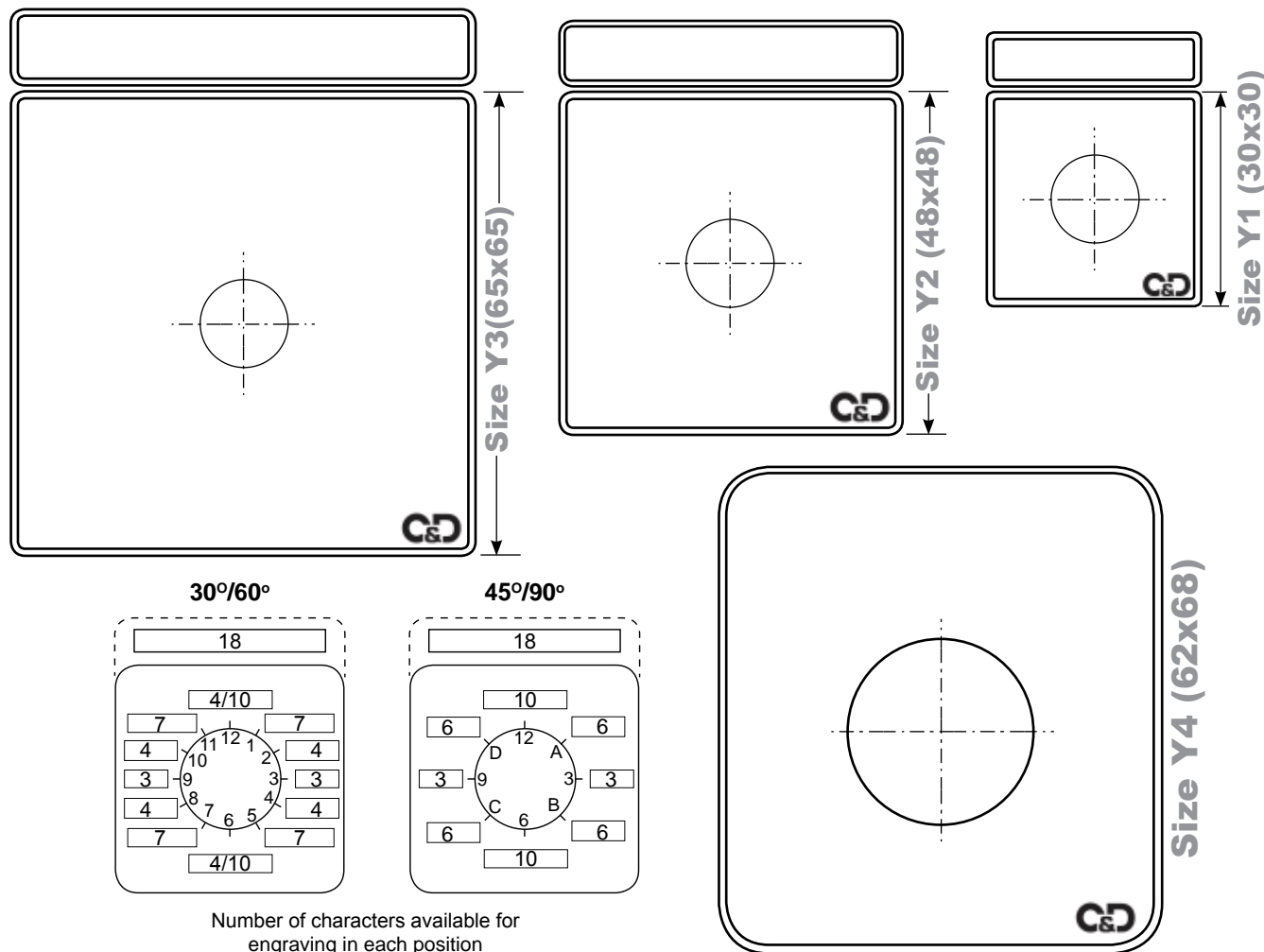
The plates shown below can be used with the following switch combinations:-

**Y1** - 10F **Y2** - 20C, 20F, 16X, 20X, 20N & 25N **Y3** - 32X, 40X, 32N, 40N & 63N **Y4** - 20C, 32X, 40X, 32N, 40N & 63N

(90 x 90 indicator plate available for 125N to special order. Please call for details)

All indicator plates will be produced with black lettering on a white background as standard. Other colour options are available please talk to our technical staff.

Please show your engraving requirements on the **actual** size diagrams below:-





This section covers the options available for actuators, indicator plates and accessories to complete the switch configuration. To follow Craig & Derricott's 'building block' principal of catalogue number creation the following sequence will be adhered to:-

## Basic switch ref / Actuator(X) / Indicator Plate(Y) / Accessory(Z)

**Basic switch ref** - Choose from the previous sequence options

**Actuator** - Basic handles, single hole knob & key actuators, metal locking handles etc.

**Indicator plate** - Either standard or specially printed

**Accessory** - Items such as tab terminals, terminal shrouds etc.

**Example:- 20N0103/X1/Y53/Z3**

### Standard Panel Mounting (Non locking)

Provides the basic switch configuration with a moulded knob for front of panel mounting.

Feature	Ranges Applicable	Code	Example
IP40 protection	F X N	X1	20X0104/X1
IP65 protection	F X N	X2	32N1702/X2

**Dimensions** See Page 89



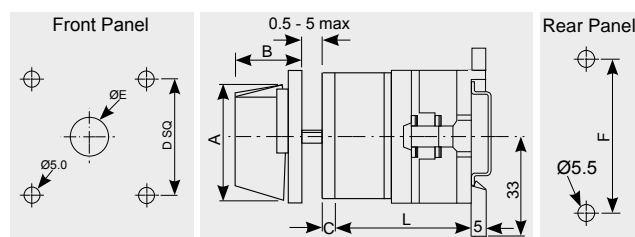
### Base Mounting (Non locking)

Provides the basic switch configuration with a moulded knob for back of panel mounting.

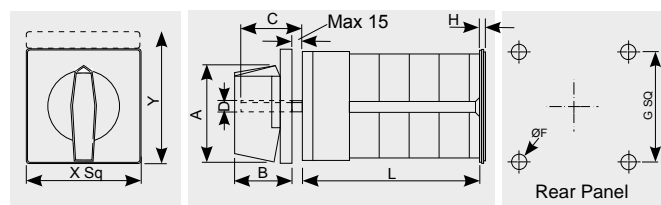
Feature	Ranges Applicable	Code	Example
IP40 protection (Base plate)	N	X3	20N0102/X3
IP40 protection (Base plate/DIN rail)	X N	X4	20X0103/X4



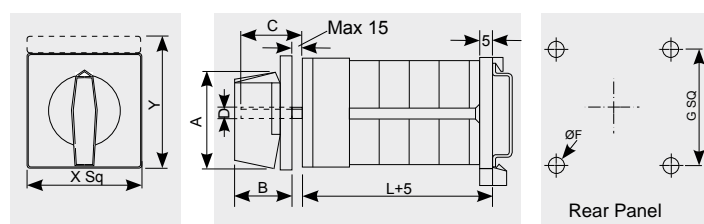
#### Dimensions



Dimensions for items available	A	B	C	D	E	F
16X/20X	39.5	26.5	5	36	12	52
32X/40X	53	34.5	5.5	48	14	68



Dimensions for items available	A	B	C	D	F	G	X	Y
20N/25N	39.5	26.5	23.5	6	5	36	48	60
32N/40N	53	34.5	26	7	5	48	65	80
63N	53	34.5	26	7	5	48	65	80
125N	70.5	41.5	38	9	6	68	90	110



Dimensions for items available	A	B	C	D	E	F	G	H	X	Y
20N/25N	39.5	26.5	23.5	6	12	5	36	5	48	60
32N/40N	53	34.5	26	7	14	5	48	5	65	80
63N	53	34.5	26	7	14	5	48	7	65	80



## Padlocking Handle

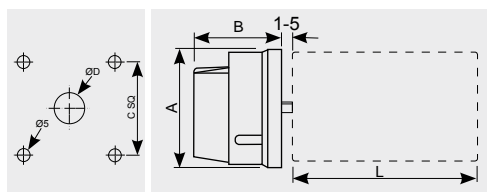
Panel mounting lockable handle in Black or Red/Yellow. Lockable in 'OFF' only.  
Options for 60° and 90° switch movement.



Feature	Ranges Applicable	Code	Example
60° (Black)	F X N	X5	20F0103/X5
60° (Red/Yellow)	F X N	X6	32X0102/X6
90° (Black)	F X N	X7	25N0204/X7
90° (Red/Yellow)	F X N	X8	63N0202/X8



**Dimensions** See Page 89 for 'L'



Dimensions for items available	A	B	C	D	Max. Hasp Ø	No. of padlocks
20F, 16X, 20X, 20N, 25N	48	34.2	36	12	4.8	2
32X, 40X, 32N, 40N, 63N	65	38	48	14	4.8	3
125N	90	49	68	16	6.4	3

Not available for the 10F range.

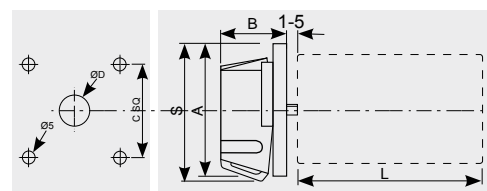
## Padlocking Handle

Alternative panel mounting lockable handle in Black or Red/Yellow.  
(Lockable in 'Off' only)

Feature	Ranges Applicable	Code	Example
Handle - Black	F X N	X9	20F0102/X9
Handle - Red/Yellow	F X N	X10	20X0102/X10



**Dimensions** See Page 89 for dimension 'L'



Dimensions for items available	A	B	C	D	S	Max. Hasp Ø	No. of padlocks
20F, 16X, 20X, 20N, 25N	48	34.5	36	12	57	4.8	1 - 3

Should you need a special contact sequence or operating features please give our technical sales team a ring or use the special switch template on pages 91 & 92 to give us your requirements.

We have over 60 years experience in designing special products.

## Padlocking Handle (Quick Fit)

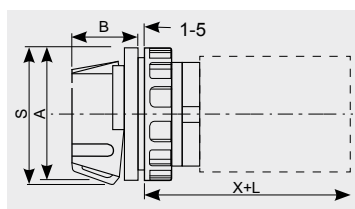
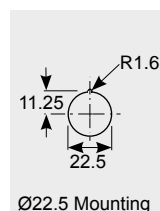
Panel mounting lockable handle in Black or Red/Yellow. Plug-in, press button to release switch mounting in Ø22.5 mounting format. (Lockable in 'Off' only)

Mtg.	Feature	Ranges Applicable	Code	Example
Ø 22.5	Handle - Black	C F X N	X11	20F0106/ <b>X11</b>
	Handle - Red/Yellow	C F X N	X12	16X0102/ <b>X12</b>



### Dimensions

See Page 89 for dimension 'L'



Dimensions for items available	A	B	S	X	Max. Hasp Ø	No. of padlocks
<b>20C</b>	48	36	57	21	4.8	1 - 3
<b>20F</b>	48	36	57	21		
<b>16X, 20X</b>	48	36	57	21		
<b>20N, 25N</b>	48	36	57	21		

## Key Actuator (Quick Fit)

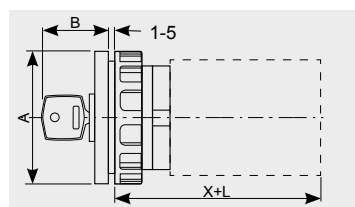
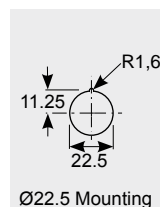
Panel mounting key actuator. Key removable (lockable) in 90° increments. Plug-in, press button to release switch mounting in Ø22.5 mounting format.

Mtg.	Feature	Ranges Applicable	Code	Example
Ø 22.5	Locking 9 o'clock	C F X N	X13	20N0204/ <b>X13</b>
	Locking 9 & 12 o'clock	C F X N	X14	25N0201/ <b>X14</b>
	Locking 12 o'clock	C F X N	X15	16X0203/ <b>X15</b>
	Locking 9 & 3 o'clock	C F X N	X16	20F0304/ <b>X16</b>
	Locking 9, 12, 6 & 3 o'clock	C F X N	X17	20X0301/ <b>X17</b>
	Locking 6 & 12 o'clock	C F X N	X18	20N0302/ <b>X18</b>

\* locking positions

### Dimensions

See Page 89 for dimension 'L'



Dimensions for items available	A	B	X
<b>20C</b>	48	38	21
<b>20F</b>	48	38	21
<b>16X, 20X</b>	48	38	21
<b>20N, 25N</b>	48	38	21



Random key differs supplied as standard. Contact our sales team if you require any other arrangements



### Choosing a locking actuator

The options shown here are for the locking handle only. When matching the handle to your selected switch make sure that the locking position(s) you require are available in the switch configuration.

When selecting a handle for a restricted movement switch remember that if the switch can't be turned to a lockable position shown for the handle - it can't be locked. This increases the choices for the various locking positions shown.



## Knob Actuator (Quick Fit)

Panel mounting non-locking knob actuator in Black.

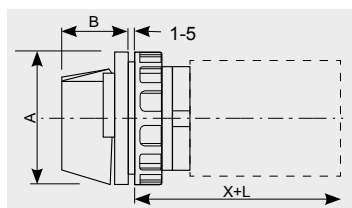
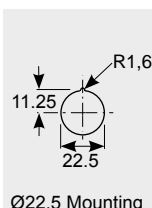
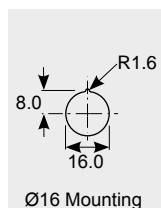
Plug-in, press button to release switch mounting in Ø16 & Ø22.5 mounting formats.

Mtg.	Feature	Ranges Applicable	Code	Example
Ø16	Non-locking knob actuator	F	X19	10F2203/ <b>X19</b>
Ø 22.5	Non-locking knob actuator	C F X N	X20	16X2401/ <b>X20</b>



### Dimensions

See Page 89 for dimension 'L'



Dimensions for items available	A	B	X
20C	48	26.5	21
10F	30	18.5	15
20F	48	26.5	21
16X,20X	48	26.5	21
20N, 25N	48	26.5	21

## Robust Locking Handles (Quick Fit)

Panel mounting locking handles in padlocking & key locking formats.

Plug-in, press button to release switch mounting in Ø30.5 fitting.



### 'LHC' Pull-to-lock handle.

A robust die cast aluminium handle assembly available as a 'Quick Fit' in Ø30.5 mounting.

When the switch is turned to a position to be locked, the central spindle can be pulled out and a padlock inserted in the hole that becomes available.

Available with either an 'SM' or 'SA' style handle.

(Ø6.4 padlock hasp recommended)



### 'LHD' Push-to-release handle.

A robust die cast aluminium handle assembly available as a 'Quick Fit' in Ø30.5 mounting.

The central locking spindle must be depressed to turn the switch to another position. Inserting a padlock in the spindle will lock the switch in that position.

Available with either an 'SM' or 'SA' style handle.

(Ø6.4 padlock hasp recommended)



### 'K' Key locking handle.

A robust die cast aluminium handle assembly available as a 'Quick Fit' in Ø30.5 mounting.

When in a locking position the key can be turned and removed. The key will be trapped in all other positions. Two keys supplied as standard (Key No 801\*)

Available with either an 'SM' or 'SA' style handle.

\* Over 100 key differs are available to special order, please talk to our technical sales for further details.

### Choosing a locking actuator








The options shown here are for the locking handle only. When matching the handle to your selected switch make sure that the locking position(s) you require are available in the switch configuration.

When selecting a handle for a restricted movement switch remember that if the switch can't be turned to a lockable position shown for the handle - it can't be locked. This increases the choices for the various locking positions shown.

See page 97 for locking positions and handle shape options.

## Robust Locking Handles (Quick Fit) Contd.



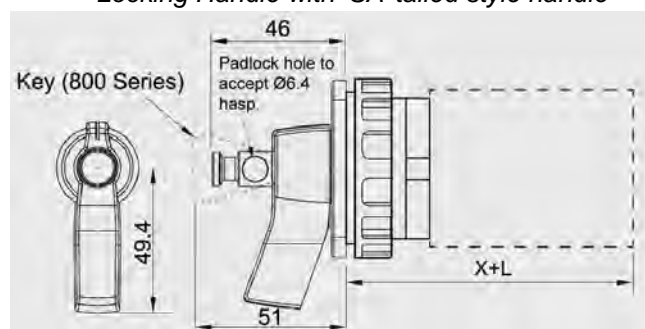
Locking Positions	Index	Ranges Applicable	Code	Example
	90°	C F X N	X21	16X2401/ <b>X21A</b>
		C F X N	X22	20N0202/ <b>X22C</b>
		C F X N	X23	25N0503/ <b>X23D</b>
	60°	C F X N	X24	20C1004/ <b>X24E</b>
		C F X N	X25	20X0806/ <b>X25C</b>
		C F X N	X26	20F0104/ <b>X26A</b>
		C F X N	X27	25N3103/ <b>X27F</b>

\* locking positions

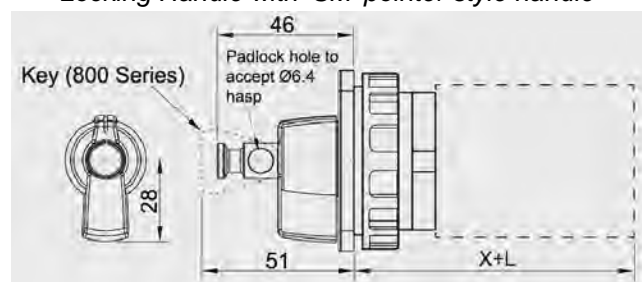
### Dimensions

See Page 89 for dimension 'L'

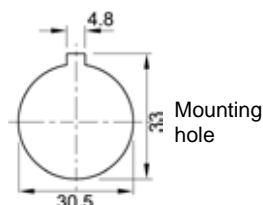
#### Locking Handle with 'SA' tailed style handle



#### Locking Handle with 'SM' pointer style handle



Dimensions for items available	X
20C	30
20F	30
16X, 20X	30
20N, 25N	30



Mounting hole



LHC & LHD handles can take padlocks with hasps up to Ø6.4



## Legend Plates

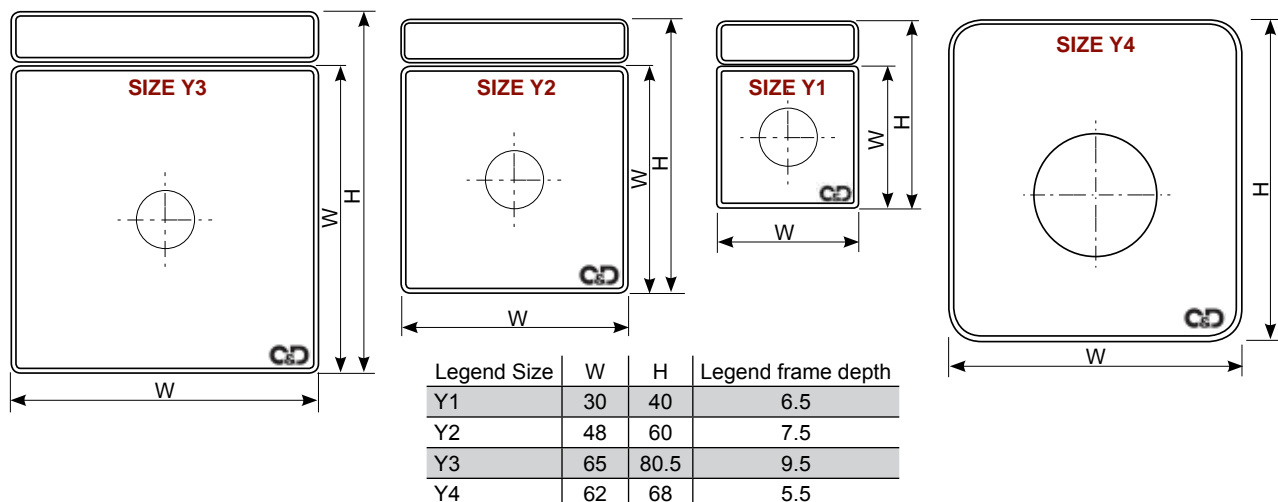
### Basic switch ref / Actuator(X) / Indicator Plate(Y) / Accessory(Z)



All of the options shown below are supplied as a three part assembly which 'snap' together, the printed legend being the centre component. The back plate or holder forms part of the actuator assembly and is used to locate the switch assembly on the mounting panel. The transparent front cover completes the assembly.

The 'Y1' & 'Y3' sizes allow the addition of a 'Title Plate' while the additional height of the size 'Y4' allows for a title to form part of the printed legend.


The various sizes are applicable to the range of switches as indicated in the table below:-



Legend Size	Allocated legend plate to switch range/size											
	20C	10F	20F	16X	20X	32X	40X	20N	25N	32N	40N	63N
Y1		✓										
Y2	✓		✓	✓	✓			✓	✓			
Y3						✓	✓			✓	✓	✓
Y4*	✓											

\* Y4 plate size will be allocated if locking handles style X21 - X27 are specified

## 20N2303/X1/Y12S


  
 Plate inscription      Title plate inscription

See page 99 for pre-printed legend options.

Should you need a special contact sequence or operating features please give our technical sales team a ring or use the special switch template on pages 91 & 92 to give us your requirements.

We have over 60 years experience in designing special products.



## Printed Legends (30° Switching)

-01	-02	-03	-04	-05	-06	-07	-08	-09
-10	-11	-12	-13	-14				
								(Special Printing) See p92

## Printed Legends (45° Switching)

								(Special Printing) See p92
-21	-22							

## Printed Legends (60° Switching)

-31	-32	-33	-34	-35	-36	-37	-38	-39
								(Special Printing) See p92
-41	-42	-43	-44	-45	-46			

## Printed Legends (90° Switching)

								(Special Printing) See p92
-51	-52	-53	-54	-55	-56	-57	-58	

## Printed Title Plates

AMMETER	VOLTMETER	MOTOR	SELECTOR					(Sp. Engr.)
---A	---V	---M	---S					See p92

Example :- 10F2403/X1/Y21S Line to line & line to neutral ammeter switch with Y21 legend and Y--S title plate (If a title plate is not required please omit the green portion of the catalogue number).

Specially printed legends and title plates can be supplied, please use the template shown on pages 91-92 to send us your detailed requirements. Add an 'S' following the legend size e.g. 'Y2S' to call for a specially printed item.



## Optional Accessories

### Basic switch ref / Actuator(X) / Indicator Plate(Y) / Accessory(Z)

The following items are available either supplied fitted to the specified selector switch or available separately (when indicated).

#### N Auxiliary Contacts.

Available for panel mounting N selector switches in the range 32A, 40A, 63A & 125A

Customer to define the contact arrangement and current rating available from 20N & 25N options.

(Please use the Selector Switch design template on pages 91-92 to show your requirements.)

*Must be factory fitted.*

#### N Fast-on Terminals.

Available in both 4.8mm and 6.3mm sizes for the N switch range.



Feature	Ranges Applicable	Code	Example
4.8 (3/16") size	20N <span>N</span>	Z1	20N3103/X26/Y34/ <b>Z1</b>
6.3 (1/4") size	25N & 32N/40N <span>N</span>	Z2	32N0303/X1/Y53/ <b>Z2</b>

*Must be factory fitted.*

#### F X N Unidirectional Rotation.

Available for panel mounting F, X & N selector switches in the range 20A to 63A. Where a sequence of events must be followed in a specific order, the unidirectional feature only allows switch movement in a clockwise direction.



*Cannot be supplied with a restricted movement switch.*

Feature	Ranges Applicable	Code	Example
Unidirectional rotation	20F 16X-40X 20N-63N	Z3	25N0301/X1/Y34/ <b>Z3</b>

*Must be factory fitted.*

#### F X N Alternative Knobs.

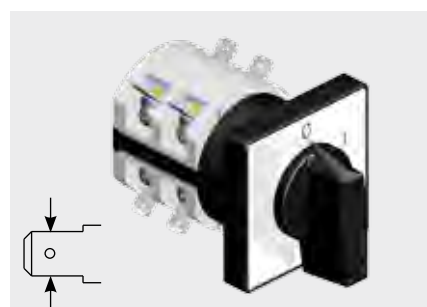
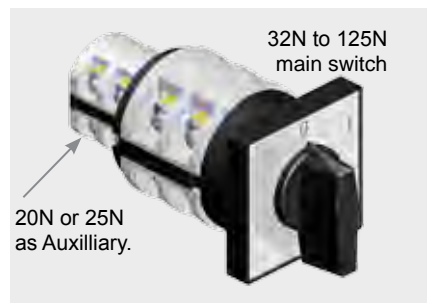
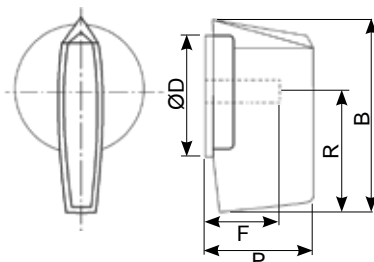
General pointer style knob moulded in four colours and three sizes as shown below. Alternative knobs for standard panel or base mounted switches (X1-X4).

Feature	Ranges Applicable			Example
	20F, 16X, 20X, 20N & 25N	32X, 40X, 32N/40N & 63N	125N	
Grey	Z4	Z8	Z12	40N0701/X1/Y38/ <b>Z8</b>
Red	Z5	Z9	Z13	25N0504/X2/Y51/ <b>Z5</b>
Black	Z6	Z10	Z14	63N1201/X1/Y09/ <b>Z10</b>
Yellow	Z7	Z11	Z15	20N2001/X1/Y51/ <b>Z7</b>

*Can be supplied as loose items. Order using 'ACC' - followed by 'Z-' code.*

*Example:- ACC-Z7*

Size	ØD	B	F	P	R
Z4-Z7	27.5	39.5	16	19	23.5
Z8-Z11	35	53	20	25	32
Z12-Z15	48	70.5	26.5	32	43.5



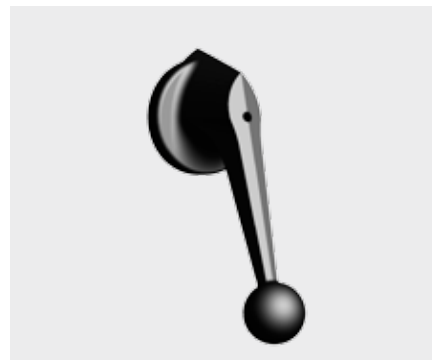
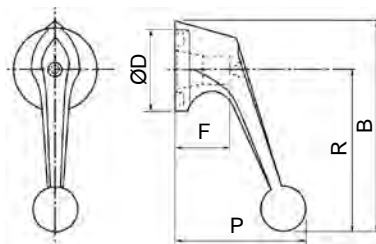
## X N Alternative Knobs contd.

Lever & ball style knob in four colours. Not suitable for smaller switch sizes.  
Alternative knobs for standard panel or base mounted switches (X1-X4).

Feature	Ranges Applicable		Example
	32X, 40X, 32N/40N & 63N	125N	
Grey	Z16	Z20	32N0402/X1/Y32/ <b>Z16</b>
Red	Z17	Z21	63N0303/X1/Y36/ <b>Z17</b>
Black	Z18	Z22	63N0301/X1/Y37/ <b>Z18</b>
Yellow	Z19	Z23	40N0304/X2/Y35/ <b>Z19</b>

Can be supplied as loose items. Order using 'ACC- followed by 'Z-' code.  
Example:- ACC-Z15

Size	ØD	B	F	P	R
Z16-Z19	35	81.5	23	52	61.5
Z20-Z23	48	105.5	26.5	65	79.5



## N Flexible Insulation Tube.

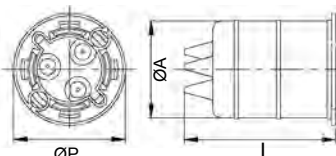
Provides IP42 protection for connection terminals. Supplied with fixing bracket.

**Not suitable for base mounting switches.**

Feature	Ranges Applicable	Code	Example
Flexible Insulation Tube	20N & 25N	Z24-Z26	25N0701/X10/Y38/ <b>Z16</b>
	32N, 40N & 63N	Z27	40N1301/X1/ <b>Z19</b>

Can be supplied as loose items. Order using 'ACC- followed by 'Z-' code. Example:- ACC-Z25

Range	No. of elements	ØP	ØA	L	Code
20N	1-2	66	57	90	Z24
25N	3-4			115	Z25
	5-6			140	Z26
32N	1-4	89	87	112.5	Z27
40N					
63N	1-3				



## N 'Live' Terminal Protection.

Provides protection against accidental contact with 'Live' terminals for panel or base mounting switches. (Supplied in packs of 6 only.)

Feature	Ranges Applicable	Code	Example
'Live' Terminal Protection	20N, 25N	Z28	25N0104/X4/ <b>Z28</b>
	32N/40N	Z29	40N1401/ <b>Z29</b>
	63N	Z30	63N0803/ <b>Z30</b>
	125N	Z31	125N0301/ <b>Z31</b>

Supplied as loose items. Order using 'ACC- followed by 'Z-' code. Example:- ACC-Z30

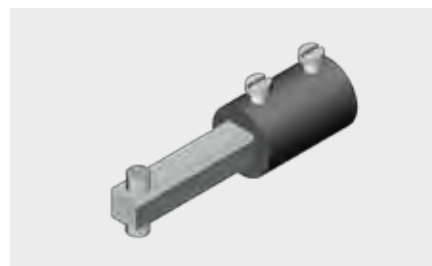
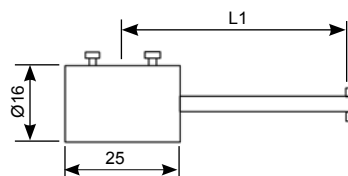


## N Extension Shaft (Door Interlock).

Adjustable door coupling extension shaft available in three lengths.  
To be cut to suit specific installations.

Suitable for switches 20N, 25N, 32N, 40N & 63N.

	L1
Z32	70mm
Z33	150mm
Z34	200mm





## Technical Data

The following information is extracted from tests in accordance with IEC 60947-3 & IEC 60947-5-1.

### F Range

		Sym.	Unit	Switch Model	
				10F	20F
Rated insulation voltage		$U_i$	V	480	480
Rated impulse voltage		$U_{imp}$	kV	4	4
Rated thermal current		$I_{th}$	A	10	20
Rated operational voltage			V	250	480
Rated short-time withstand (1 sec)		$I_{cw}$	A	250	250
Rated operational current	AC1/AC21A		A	10	20
	AC15	220/240V	A	3	8
		380/440V	A	2	6
Rated operational power	AC3	220/240V	kW	1.5	3
		380/440V	kW	2.2	5
	AC23	220/240V	kW	1.8	5
		380/440V	kW	3	7.5
Max. fuse size for short circuit protection	3kA	$I_n(gG/gL)$	A	16	20
	5kA		A	16	20
	10kA		A	10	20
	25kA		A	-	20
Terminal capacity <i>r</i> = rigid conductor <i>f</i> = flexible conductor		(max.r/f)	2 x mm <sup>2</sup>	1.5/1.5	2.5/2.5
			2 x AWG	14/14	12/12
		(min.r/f)	2 x mm <sup>2</sup>	0.5/0.5	0.5/0.5
			2 x AWG	20/20	20/20



20F fitted with a Quick-fit key actuator

The 'F' range gives good flexibility with a small frame size and an affordable price.

### X Range

		Sym.	Unit	Switch Model			
				16X	20X	32X	40X
Rated insulation voltage		$U_i$	V	690	690	690	690
Rated impulse voltage		$U_{imp}$	kV	6	6	6	6
Rated thermal current		$I_{th}$	A	16	20	32	40
Rated operational voltage			V	440	440	440	440
Rated short-time withstand (1 sec)		$I_{cw}$	A	250	250	800	800
Rated operational current	AC1/AC21A		A	16	20	32	40
Rated operational power	AC3	220/240V	kW	3.5	3.7	7.5	7.5
		380/440V	kW	4.5	5.5	11	15
		500/690V	kW	5.5	5.5	11	15
	AC23	220/240V	kW	3.7	4	8	9
		380/440V	kW	6.5	7.5	15	18.5
		500/690V	kW	7.5	7.5	15	15
Max. fuse size for short circuit protection	5kA	$I_n(gG/gL)$	A	16	20	35	40
	10kA		A	16	20	35	40
	25kA		A	16	16	35	35
Terminal capacity <i>r</i> = rigid conductor <i>f</i> = flexible conductor		(max.r/f)	2 x mm <sup>2</sup>	2.5/2.5	2.5/2.5	10/6	10/6
			2 x AWG	14/14	14/14	8/10	8/10
		(min.r/f)	2 x mm <sup>2</sup>	0.5/0.5	0.5/0.5	1.5/1.5	1.5/1.5
			2 x AWG	20/20	20/20	16/16	16/16



20X fitted with a Quick-fit padlocking handle

The 'X' range provides rear access to terminals allowing switches to be fitted close together.

## Technical Data contd.

### N Range

		Sym.	Unit
Rated insulation voltage		$U_i$	V
Rated impulse voltage		$U_{imp}$	kV
Rated thermal current		$I_{th}$	A
Rated operational voltage			V
Rated short-time withstand (1 sec)	1 sec	$I_{cw}$	A
	3 sec		A
	10 sec		A
	30 sec		A
	60 sec		A
Rated operational current	AC1/AC21A		A
	AC15	110V	A
		220/230V	A
		380/400V	A
		660/690V	A
Rated operational power	AC3 (3 Pole)	220/230V	kW
		380/440V	kW
		500/690V	kW
	AC3 (2 Pole)	110V	kW
		220/230V	kW
		380/440V	kW
	AC23A (3 Pole)	220/230V	kW
		380/440V	kW
		500/690V	kW
	AC23A (2 Pole)	110V	kW
		220/230V	kW
		380/440V	kW
DC Switching Capacity ( $I_e$ )	DC21A $t_c=1ms$	48V	A
		60V	A
		110V	A
		220V	A
		440V	A
	DC23 $t_c=15ms$	24V	A
		48V	A
		60V	A
		110V	A
		220V	A
	No. of contacts in series (l)	110V	A
		220V	A
	DC13 $t_c=50ms$	48V	A
		60V	A
		110V	A
		220V	A
		440V	A
Max. fuse size for short circuit protection	10kA	$I_n(gG/gL)$	A
	25kA		A
	50kA		A
	63kA		A
Mechanical life		Switching cycles	
Terminal screw size			
Terminal capacity <i>r</i> = rigid conductor <i>f</i> = flexible conductor		(max.r/f)	2 x mm <sup>2</sup>
			2 x AWG
		(min.r/f)	2 x mm <sup>2</sup>
			2 x AWG

### Switch Model

20N	25N	32N	40N	63N	125N
690	690	690	690	690	690
6	6	6	6	6	8
20	25	32	40	63	125
480	480	480	480	480	690
250	400	800	1000	1600	2100
150	250	400	600	800	1300
80	150	250	300	400	700
50	100	160	200	250	400
40	80	125	130	160	300
20	25	32	40	63	125
10	16	25	25	32	40
8	12	20	22	25	28
6	8	10	12	15	15
1.5	2	2	2	4	5
3	5.5	7.5	8	11	18.5
5.5	7.5	11	15	18.5	37
5.5	7.5	11	15	18.5	33
0.8	1.5	2.2	3	3.7	5
2.2	3	4	6.5	6.5	11
3	5.5	6.5	8	11.5	15
5	6.5	8	8	12.5	30
7.5	11	15	18.5	30	45
7.5	11	18.5	22	30	37
0.8	1.5	2.2	3	3.7	5
2.5	3.7	5	6	7.5	11
3.7	5.5	8	11	12.5	15
20	25	32	40	63	125
20	25	32	40	50	80
4	4	6	6	8	10
0.6	0.7	0.8	-	-	-
0.25	-	-	-	-	-
20(1)	25(1)	32(1)	40(1)	50(1)	125(1)
20(2)	25(2)	32(2)	40(2)	50(2)	125(2)
20(3)	25(3)	32(3)	40(3)	50(3)	125(3)
10(3)	12(3)	15(3)	20(3)	25(3)	50(3)
8(4)	10(4)	12(4)	12(4)	15(4)	20(4)
16	20	25	32	40	100
12	16	16	16	28	50
1	1.5	3	3	3.3	4
0.4	0.4	0.5	-	-	-
0.15	-	-	-	-	-
20	25	32	40	63	125
16	25	32	40	63	100
-	-	32	40	63	100
-	-	-	40	63	100
5x10 <sup>6</sup>	5x10 <sup>6</sup>	5x10 <sup>6</sup>	5x10 <sup>6</sup>	5x10 <sup>6</sup>	1x10 <sup>6</sup>
M3	M3.5	M4	M4	M5	2xM5
2.5/2.5	4/4	6/4	10/6	16/10	70/50
14/14	10/12	10/12	8/10	6/8	2/0 / 1/0
0.5/0.5	0.5/0.5	1.5/1.5	1.5/1.5	2.5/2.5	2.5/2.5
20/20	20/20	16/16	16/16	14/14	14/14

The 'N' range provides the maximum in constructional flexibility with the most comprehensive ratings in both a.c. and d.c.

25N 4 pole selector switch fitted with Yellow/Red padlocking handle



## Technical Data contd.

### C Range

		Sym.	Unit
Rated insulation voltage		$U_i$	V
Rated impulse voltage		$U_{imp}$	kV
Rated thermal current		$I_{th}$	A
Rated operational voltage			V
Rated operational current	AC1/AC21A	415V	A
	AC15	415V	A
	AC23	415V	A
	DC13	110V	A
Max. fuse size for short circuit protection	50kA	$I_n(gG/gL)$	A
Operational performance	AC21, AC22 & AC23		Operating cycles
	AC15 & DC13		
Terminal capacity <i>r</i> = rigid conductor <i>f</i> = flexible conductor		(max.r/f)	2 x mm <sup>2</sup>
			2 x AWG
		(min.r/f)	2 x mm <sup>2</sup>
			2 x AWG

### Switch Model

20C
690
4
20
415
20
5
16
1
20
10,000
6,050
4/2.5
12/14
0.5/0.5
20/20



The 'C' range provides the widest choice of locking handles for the panel builder.



*Hand operated Rotary Switches remain the most cost effective way of performing complex switching functions.*

- They don't require any form of separate expensive power supply.
- Total freedom in the way contacts are made to open and close.
- The number of indexing positions can vary between 2 and 12.
- Contacts can be provided capable of switching low energy or high power; from a few milliamps up to 125A.
- A vast array of alternative operating handles can provide interlocking and other safety features.
- Rotary switches provide a positive indication of their switching position.
- *Early break, late break, make-before-break* and *fleeting* contact conditions are available for use.

*....what are your requirements?*

*Give us a call if you need something special.*



## Control Panel Isolation Equipment

Craig & Derricott has ranges of Switch-Disconnectors, Fuse Combination Units and Changeover Isolators for panel mounting ranging from 25A to 1250A.

All come supplied with operating handle and a standard length shaft.

### Switch-Disconnectors - ISDC Range (25A - 200A)

A compact range of switch-disconnectors with the capacity to add auxiliary and neutral block options to the basic load break switch block.

#### Features

- IP2X terminal protection.
- Door interlock handles with override facility.
- DIN rail or base mounting.
- Add-on auxiliary/neutral blocks.

The catalogue numbers below include:-

- On-load AC23A switch-disconnector.
- 100mm standard length shaft assembly.
- IP65 minimum door interlock handle.(Black)
- Terminal covers (A3 only).



63A 3P assembly complete with standard shaft and handle assembly

#### Catalogue Numbers

Current Rating	25A	25A	32A	40A	40A	63A	63A	80A
Frame size	A0	A0-A0	A0	A0	A0-A0	A1	A1-A1	A1
3 pole	SD00253B	-	SD00323B	SD00403B	-	SD00633B	-	SD00803B
6 pole	-	SD00256B	-	-	SD00406B	-	SD00636B	-
Current Rating	100A	100A	125A	125A	160A	160A	200A	
Frame size	A2	A2-A2	A2	A2-A2	A2	A2-A2	A3	
3 pole	SDC01003B	-	SDC01253B	-	SDC01603B	-	SDC02003B	
6 pole	-	SDC01006B	-	SDC01256B	-	SDC01606B	-	

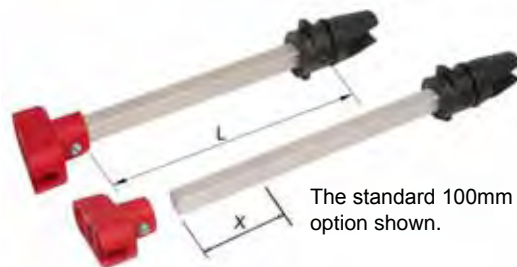
For door interlock handles in 'R/Y', replace the 'B' in the catalogue number with 'R' e.g. SDC01603R

#### Extended shafts

Both the standard 100mm shaft and the longer version as shown below can easily be adjusted to suit specific panel depths. The correct dimension to be removed (X) can easily be determined using the dimensions shown on page 110-111.

#### Catalogue Numbers

Shaft length 'L'	Frame size	Shaft (mm <sup>2</sup> )	Catalogue No.
200mm	A0 & A1	6	SSH2
200mm	A2 & A3	8	SSH17



The standard 100mm option shown.



Handle assembly supplied with the 'A0' & 'A1' frame sizes (SDH1/BLK).



Handle assembly supplied with the 'A2' & 'A3' frame sizes (SDH3/BLK).

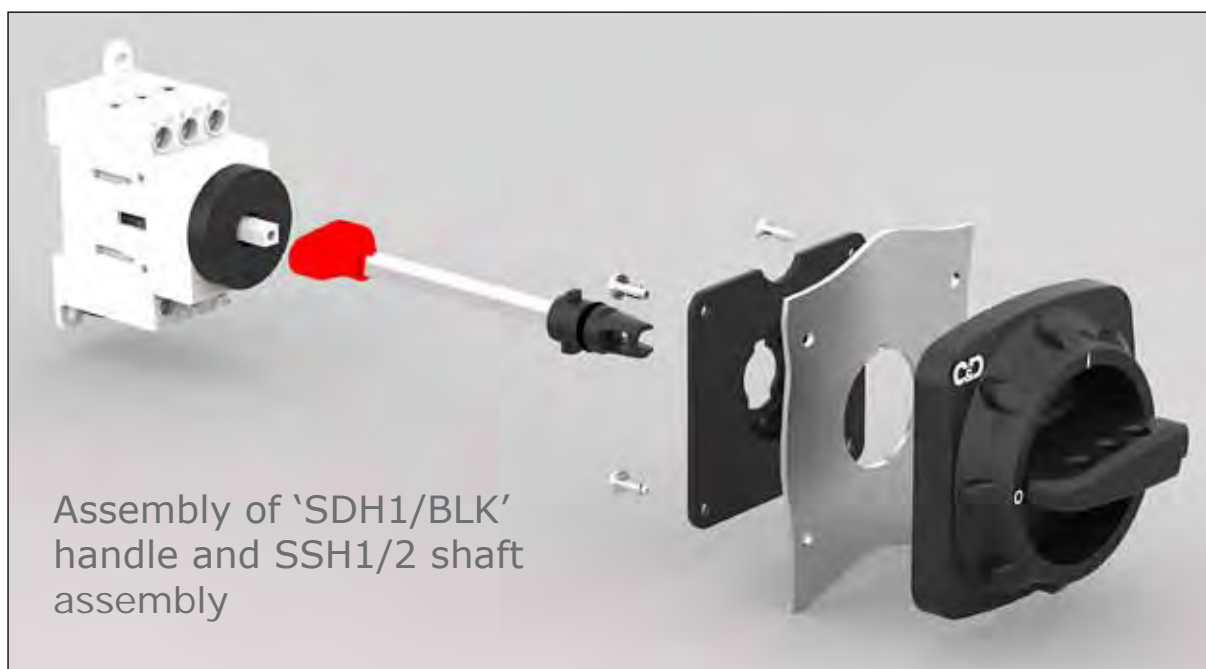
Includes emergency override facility.

## Auxiliary Blocks

All of the accessories listed below can be retro-fitted.  
One block can be fitted either side of the main assembly on all of the 3 pole switch-disconnector interiors.  
(Technical data see page 13)

### Catalogue Numbers

Description	Cat. No.
Auxiliary Contact - 2 Early Break	SAUX2EB
Auxiliary Contact - 1 N/O + 1 N/C	SAUXCO
25A Neutral (Unswitched)	SNL25
40A Neutral (Unswitched)	SNL40
63A Neutral (Unswitched)	SNL63
80A Neutral (Unswitched)	SNL80
100A Neutral (Unswitched)	SNL100
125A Neutral (Unswitched)	SNL125
160A Neutral (Unswitched)	SNL160
200A Neutral (Unswitched)	SNL200
25A Neutral (Switched)	SSP25
40A Neutral (Switched)	SSP40
63A Neutral (Switched)	SSP63
80A Neutral (Switched)	SSP80
100A Neutral (Switched)	SSP100
125A Neutral (Switched)	SSP125
160A Neutral (Switched)	SSP160
200A Neutral (Switched)	SSP200



## Switch-Disconnectors - ISD Range (100A - 1250A)

A robust range of load break switches to ensure simple installation in applications such as power distribution boards. The compact design also suits OEM's and stand alone enclosure installations. A range of accessories extends the versatility.

### Features:-



- On-load AC23A ratings.
- Four frame sizes covering 100A - 1250A.
- Direct lug connections onto plated Copper palms.
- Windows for contact inspection
- Supplied as either 3 or 4 pole versions.
- IP65 sealing door interlocking handles.
- Internal locking feature.

### The catalogue numbers below include:-

- On-load AC23A switch-disconnector.
- 200mm standard length shaft assembly.
- IP65 door interlock handle.(Black)
- Terminal covers.



Typical assembly containing switch block, standard length shaft (200mm), handle assembly and incoming terminal covers.

### Catalogue Numbers

Current rating	100A	125A	160A	200A	250A	400A	630A	800A	1000A	1250A
Frame size	B1	B1	B1	B2	B2	B3	B3	B3	B4	B4
3 Pole	SD01003B	SD01253B	SD01603B	SD02003B	SD02503B	SD04003B	SD06303B	SD08003B	SD10003B	SD12503B
4 Pole	SD01004B	SD01254B	SD01604B	SD02004B	SD02504B	SD04004B	SD06304B	SD08004B	SD10004B	SD12504B

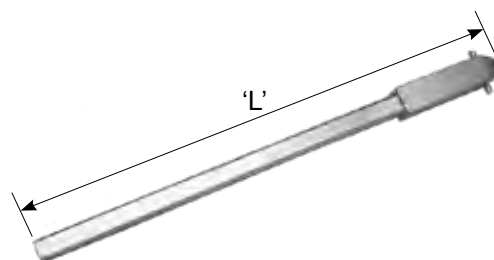
For door interlock handles in 'R/Y', replace the 'B' in the catalogue number with 'R' e.g. SDC01603R

### Alternative shafts

As an alternative to the standard 200mm shaft a 400mm option is available as indicated below. The shafts are manufactured from square section steel and zinc plated. The height setting is adjusted by passing the shaft through a bush in the switch mechanism and locking it in position using two 'cup point' grub screw.

### Catalogue Numbers

		Load break switch current Rating		
Shaft length 'L'		100A - 160A	200A - 250A	400 - 1250A
400mm		SSH13	SSH14	SSH15
Drive Shaft Section		6mm <sup>2</sup>	8mm <sup>2</sup>	12mm <sup>2</sup>
Max. possible enclosure depth	200mm	250	270	285
	400mm	450	470	485



Handle assembly supplied with the 'B2' frame size(SDH3BLK).



Handle assembly supplied with the 'B3' (SDH4/BLK) & 'B4' (SDH7/BLK) frame sizes



## Accessories

### Auxiliary Contacts

Add-on auxiliary contacts are available for the 100A - 1250A range and can be selected from the table below.

All auxiliary kits contain the necessary fixings and attachments to install the contact blocks which are supplied in 1 N/O + 1 N/C format.

All N/O contacts are early break with respect to the main poles when switching from 'On' to 'Off'.

### Catalogue Numbers

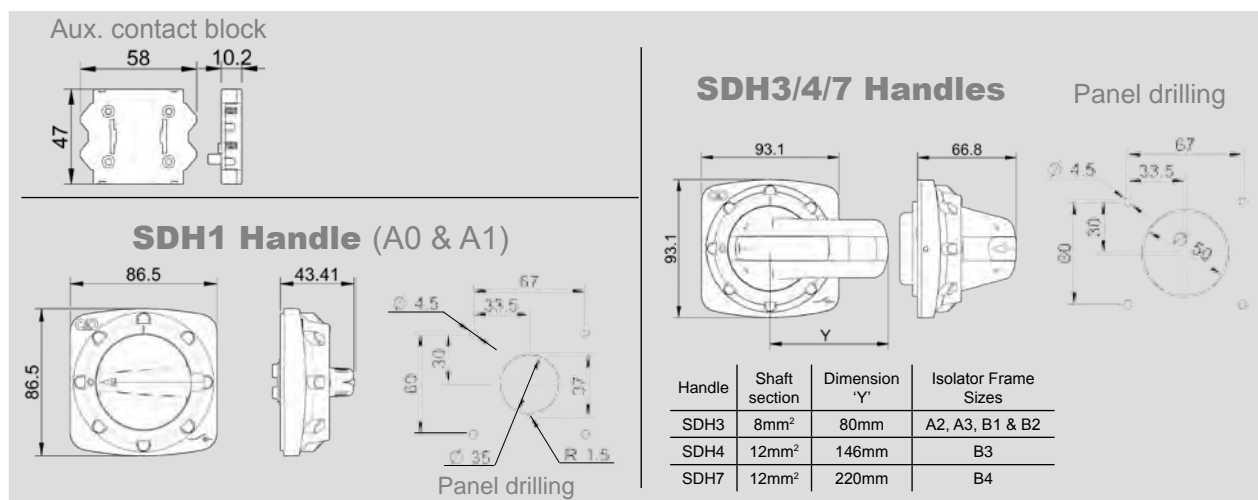
	Load break switch rating			
Rating (A)	100 - 160A	250A	400 - 800A	1000 - 1250A
Catalogue No.	SAUXKITA	SAUXKITB	SAUXKITC	SAUXKITD
Block type	C	B	B	C



### Auxiliary Contacts Type A - Data supplied against tests to BS EN 60947-1

	Sym.	Category	Auxiliary blocks type 'B'	Auxiliary blocks type 'C'
Thermal current	$I_{th}$		10A	10A
Rated insulation voltage	$U_i$		660V a.c. or d.c.	500V
Utilisation Category	-	AC15	6.0A at 120V, 4.0A at 250V, 2.0A at 660V	240V - Make 30A, Break 3A 480V - Make 15A, Break 1.5A
		DC13	1.0A at 120V, 0.5A at 240V, 0.1A at 660V	240V - Make 30A, Break 3A 480V - Make 15A, Break 1.5A
		Pure Resistive	10A	-

## Dimensions



## Technical Specification

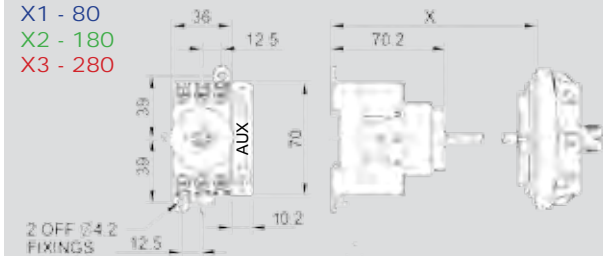
## Switch-Disconnectors

Data supplied against tests to BS EN 60947-3																							
				ISDC Compact Range										ISD Standard Range									
Application	Sym	Unit	Category	25	32	40	63	80	100	125	160	200	100	125	160	200	250	400	630	800	1000	1250	
Rated thermal current	I <sub>th</sub>	A		25	32	40	63	80	100	125	160	200	115	135	160	250	270	500	630	720	1000	1250	
Rated insulation voltage	U <sub>i</sub>	V		690	690	690	690	690	1000	1000	1000	1000	750	750	750	1000	1000	1000	1000	1000	1000	1000	
Rated impulse voltage	U <sub>imp</sub>	kV		6	6	6	6	6	8	8	8	8	8	8	12	12	12	12	12	12	8	8	
Rated operational current (AC)	I <sub>e</sub>	A	Up to 415V - AC21A	25	32	40	63	80	100	125	160	200	100	125	160	200	250	400	630	800	1000	1250	
			440-690V - AC21A	25	32	40	63	80	100	125	160	200	100	125	160	200	250	400	630	800	1000	1250	
			Up to 415V - AC22A	25	32	40	63	80	100	125	160	200	100	125	160	200	250	400	630	800	1000	1250	
			690V - AC22A	25	32	40	63	80	100	125	160	200	100	125	160	200	250	400	630	800	-	-	
			Up to 415V - AC23A	21	29	29	48	56	99	112	128	128	100	125	160	200	250	400	630	720	-	-	
Rated operational current (DC) (poles in series)	I <sub>e</sub>	A	690V - AC23A	17	17	17	33	33	53	57	57	57	40	50	63	200	250	350	350	350	-	-	
			Up to 48V - DC21A	25/1	32/1	40/1	63/1	80/1	-	-	-	100/2	125/2	160/2	200/2	250/2	400/2	630/1	800/1	1000/1	1250/1		
			220V - DC21A	25/3	32/3	40/3	63/4	80/4	-	-	-	100/3	125/3	160/3	200/2	250/2	400/2	630/2	800/2	1000/3	1250/3		
			Up to 48V - DC22A	-	-	-	-	-	-	-	-	100/2	125/2	160/2	200/2	250/2	400/1	630/1	800/1	-	-		
			220V - DC22A	-	-	-	-	-	-	-	-	100/3	125/3	160/3	200/2	250/2	400/2	630/2	800/2	-	-		
Rated operational power	P <sub>e</sub>	kW	Up to 48V - DC23A	-	-	-	-	-	-	-	-	-	100/2	125/2	160/2	200/2	250/2	400/1	630/1	800/1	-	-	
			220V - DC23A	-	-	-	-	-	-	-	-	100/3	125/3	160/3	200/2	250/2	400/2	630/2	800/2	-	-		
Short circuit making capacity	I <sub>cm</sub>	kA	400/415V - AC23A	11	15	15	25	30	59	63	75	75	37	45	45	110	132	200	315	355	400	400	
			690V - AC23A	15	15	15	30	30	51	55	55	55	37	45	45	170	200	315	355	355	-	-	
Short circuit withstand (1sec)	I <sub>cw</sub>	kA	Peak value	1.2	1.4	1.4	2.9	3.0	3.7	4.0	5.0	5.0	3.6	3.6	7	35	35	65	80	80	105	105	
			rms value	0.5	0.6	0.6	1.3	1.4	2.6	2.8	3.0	3.0	2.5	2.5	5	8	8	17	17	17	50	50	
Min. mechanical endurance	-	-	Operations	250 x 10 <sup>3</sup>	250 x 10 <sup>3</sup>	250 x 10 <sup>3</sup>	250 x 10 <sup>3</sup>	250 x 10 <sup>3</sup>	50 x 10 <sup>3</sup>	50 x 10 <sup>3</sup>	50 x 10 <sup>3</sup>	50 x 10 <sup>3</sup>	20 x 10 <sup>3</sup>	20 x 10 <sup>3</sup>	20 x 10 <sup>3</sup>	16 x 10 <sup>3</sup>	16 x 10 <sup>3</sup>	10 x 10 <sup>3</sup>	10 x 10 <sup>3</sup>	6 x 10 <sup>3</sup>	6 x 10 <sup>3</sup>	6 x 10 <sup>3</sup>	
Min. electrical endurance	-	-	415V - at 0.65 pf	-	-	-	-	-	-	-	-	-	5,000	5,000	1,000	1,000	1,000	1,000	500	500	500	500	
Connecting capacity		-	Terminal type																				
		mm <sup>2</sup>	Min/Max	2.5/6	2.5/10	2.5/10	2.5/25	2.5/25	10/70	10/70	10/70	-	-	-	-	-	-	-	-	-	-	-	
		mm	Stud/Cu palm width	-	-	-	-	-	-	-	-	-	8/20	8x20	8x20	8x20	8x25	10/25	10/25	12/40	12/40	12/60	12/60
		Nm	Tightening torque	1.2	1.2	1.2	1.2	1.2	2	2	2	2	12	6	8	8	20	25	25	40	40	40	40

## Dimensions (Continued)

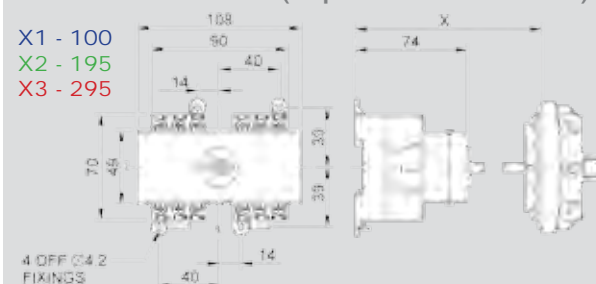
### A0 Size (25A - 40A)

X1 - 80  
X2 - 180  
X3 - 280



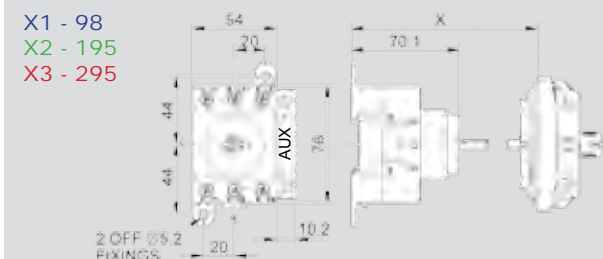
### A0-A0 Size (6 pole 25A & 40A)

X1 - 100  
X2 - 195  
X3 - 295



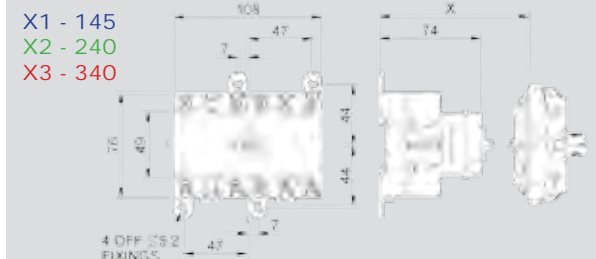
### A1 Size (63A - 80A)

X1 - 98  
X2 - 195  
X3 - 295



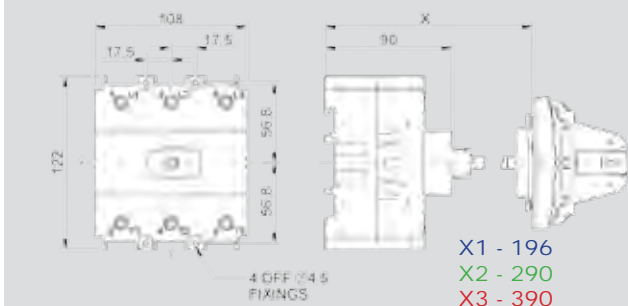
### A1-A1 Size (6 pole 63A)

X1 - 145  
X2 - 240  
X3 - 340



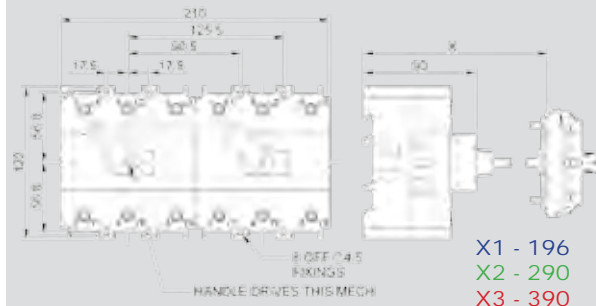
### A2 Size (100A - 160A)

X1 - 196  
X2 - 290  
X3 - 390



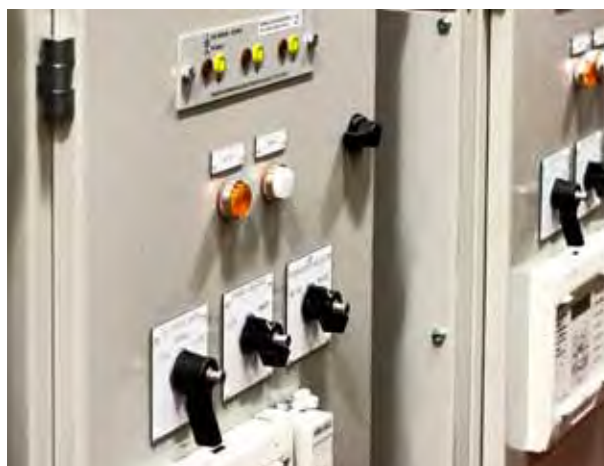
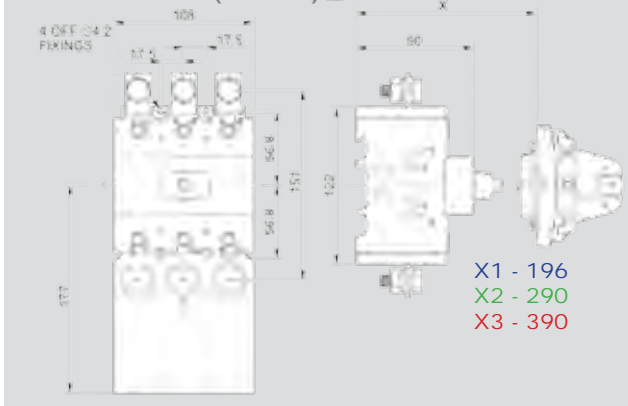
### A2-A2 Size (6 pole 100A-160A)

X1 - 196  
X2 - 290  
X3 - 390



### A3 Size (200A)

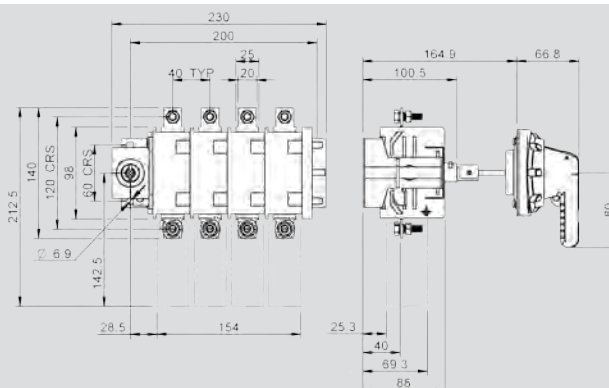
X1 - 196  
X2 - 290  
X3 - 390



X1 Minimum depth.  
X2 Maximum depth with 100mm shaft extension.  
X3 Maximum depth with 200mm shaft extension.

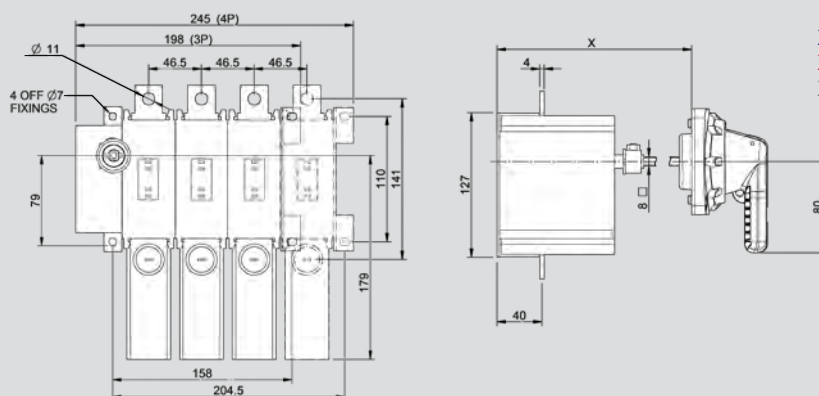


B1 Size  
(100A - 160A)



X1 - 130  
X3 - 255  
X4 - 455

B2 Size  
(200A - 250A)

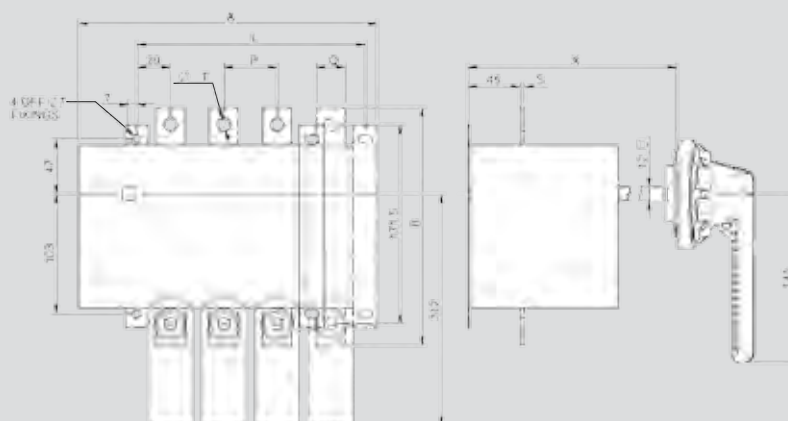


X1 - 190  
X3 - 270  
X4 - 470

B3 Size  
(400A - 800A)

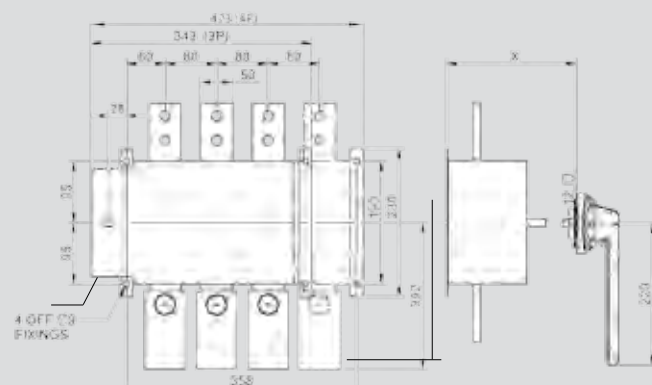
Rating	A		B	L	
	3P	4P		3P	4P
400A	211	257	205	151	197
600A	244	306	223	183	245
800A	260	330	223	199	269

Rating	P	Q	S	T
400A	46	25	4	11
600A	62	40	5	13.5
800A	70	40	5	13.5



X1 - 220  
X3 - 285  
X4 - 485

B4 Size  
(1000A - 1250A)



X1 - 240  
X3 - 285  
X4 - 485

X1 Minimum depth.  
X3 Maximum depth  
with 200mm shaft extension.  
X4 Maximum depth  
with 400mm shaft extension.

## Fuse Combination Units - ISF Range (32A - 630A)

A compact range of fuse combination units designed specifically for the panel builder market.

### Features

- IP2X terminal protection.
- Suitable for std. IEC/BS EN 60269 (BS88) fuse links.
- Supplied as 3P&N or 3P&NL (Neutral Switched or Unswitched respectively).
- Add-on auxiliary/neutral blocks.

The catalogue numbers below include:-

- On-load AC23A fuse combination unit.
- 200mm standard length shaft and IP65 door interlocking handle.
- Incoming/outgoing terminal protection & fuse covers.



Typical 63A assembly

### Catalogue Numbers

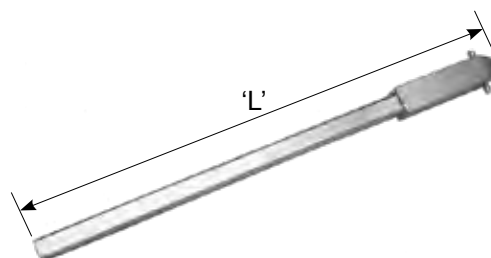
Current Rating	32A	63A	100A	125A	160A
Frame size	D1	D1	D2	D2	D3
3P&N	SDF00323NB	SDF00633NB	SDF01003NB	SDF01253NB	SDF01603NB
3P&NL	SDF00323NLB	SDF00633NLB	SDF01003NLB	SDF01253NLB	SDF01603NLB
Current Rating	200A	250A	315A	400A	630A
Frame size	D4	D4	D5	D5	D6
3P&N	SDF02003NB	SDF02503NB	SDF03153NB	SDF04003NB	SDF06303NB
3P&NL	SDF02003NLB	SDF02503NLB	SDF03153NLB	SDF04003NLB	SDF06303NLB

For door interlock handles in 'R/Y', replace the 'B' in the catalogue number with 'R' e.g. SDF04003NLR

### Alternative shafts

As an alternative to the standard 200mm shaft a 400mm option is available as indicated below. The shafts are manufactured from square section steel and zinc plated. The height setting is adjusted by passing the shaft through a bush in the switch mechanism and locking it in position using two 'cup point' grub screw. See page 114 for dimensions.

Catalogue Numbers		Load break switch current Rating		
Shaft length 'L'		32A - 160A	200A - 400A	630A
400mm		SSH13	SSH15	SSH15
Drive Shaft Section		6mm <sup>2</sup>	12mm <sup>2</sup>	12mm <sup>2</sup>
Max. possible enclosure depth	200mm	270	285	330
	400mm	470	485	530



### Supplied Handles

Designed to compliment the handles used on our enclosed equipment, the door interlocked versions are capable of being locked with up to three individual padlocks (Ø6.4 max shackle dia).

All handles are sealed to IP65 which will enable installations in a wide variety of environmental conditions.

If the contacts should weld due to a fault or an excessive current situation, an override facility is provided for the use of a competent person which will allow the enclosure lid to be opened

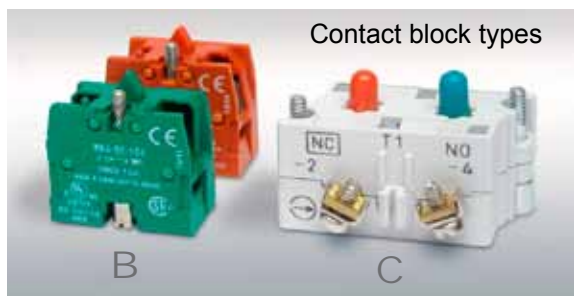


Handle assembly supplied with the 'D1' to 'D3' frame size (SDH2/BLK).



Handle assembly supplied with the 'D4' to 'D6' frame size (SDH4/BLK).

## Spares/Accessories



Contact block types

## Auxiliary Contacts

Add-on auxiliary blocks are available for all Fuse Combination Units. Please select the blocks/kit from the tables below. All auxiliaries are supplied as 1 N/O+1 N/C pair.

All N/O auxiliary contacts are early break with respect to the main poles when switching from 'On' to 'Off'.

For additional contacts or details regarding auxiliaries for Changeover Switch-Disconnectors please contact our sales team.

## Catalogue Numbers

Rating (A)	32-160	200-400	630
Cat No	SAUXKITA	SAUXKITC	SAUXKITD
Type	C	B	C

Electrical ratings - See page 108



IEC/BS EN 60269  
(BS88) fuse links

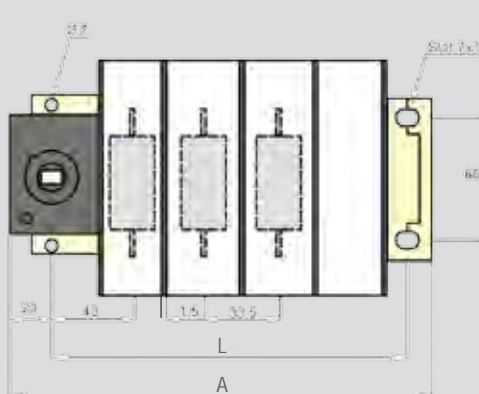
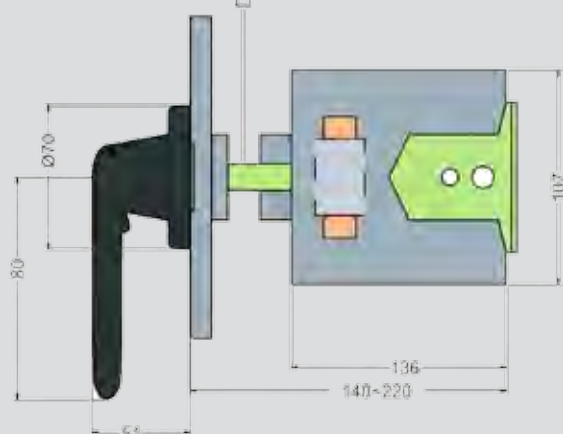
## Fuse Links

Fuse links can be fitted to a lower rating to suit a particular load: please refer to the rating table below to maintain the correct size/tag format (A2, A4, B1 etc.).

Rating (A)	32	63	100	125	160	200	250	315	400	630
C&D Cat. No.	SFL32	SFL63	SFL100	SFL125	SFL160	SFL200	SFL250	SFL315	SFL400	SFL630
Cooper Bussmann Cat. No.	AA032	BA063	CE0100	DE0125	DD160	DD200	ED250	ED315	ED400	FF630
Lawson Cat. No.	TIA32	TIS63	TCP100	TFP125	TF160	TF200	TKF250	TKF315	TMF400	3T630
BS fuse format	A2, A3	A2, A3	A4	A4	B1, B2	B1-B2	B1-B2	B1-B4	B1-B4	C1-C3



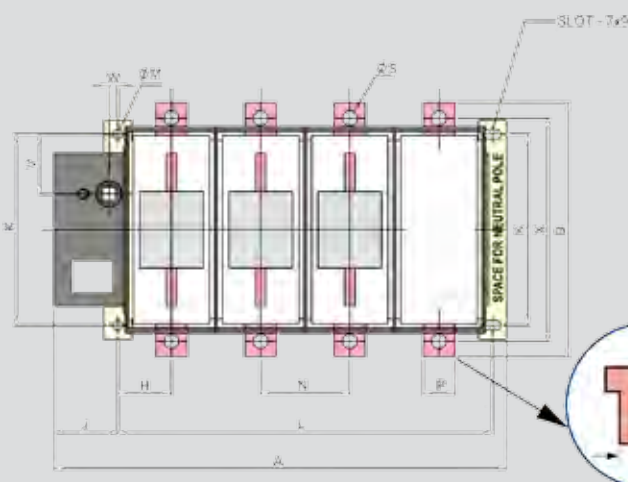
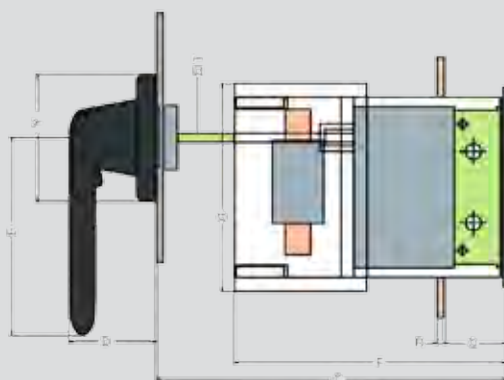
## 32A - 63A



Format	A	L
3P+NL	168	138
3P+N	201	171

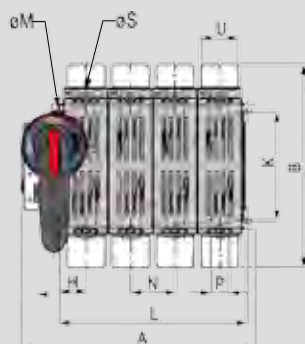
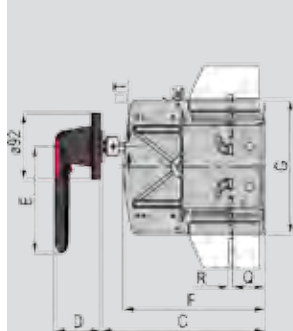
Frame Size D1

## 100A - 160A



	A		B	C	D	E	F	G	H	J	K	L		M	N	P	Q	R	S	T	V	W	X	Y	Frame Size
Rating (A)	3P&NL	3P&N										3P&NL	3P&N												
100 - 125	190	230	142	135-225	67	80	134	98	44.5	20	60	160	200	7	40	20	40	2	9	6	30	0	122	93	
160	212	260	142	135-225	67	80	134	98	44.5	20	60	182	230	7	48	20	40	3	9	6	30	0	122	93	

## 200A - 630A



	A		B	C	D	E	F	G	H	K	Frame Size
Rating (A)	3P&NL	3P&N									
200-250	261	323	280	230-310	67	145	196	186	37	150	D4
315-400	285	355	280	230-310	67	145	196	186	37	150	D5
630	360	440	444	245-305	67	145	231	250	60	190	D6

	L		M	N	P	Q	R	S	T	U	Frame Size
Rating (A)	3P&NL	3P&N									
200-250	198	260	7	62	25	45	5	11	12	52	D4
315-400	222	292	7	70	25	45	5	11	12	52	D5
630	278	358	9	80	40	40	6	13	12	61	D6



## Changeover Disconnectors - ISC Range (32A - 630A)

A compact range of load break Changeover Switches suitable for a wide range of applications.

### Features

- Compact 'piggy-back' design.
- On-load AC23A ratings.
- Supplied as four pole format.
- Windows for visual contact inspection.

The catalogue numbers below include:-

- On-load AC23A changeover four pole switch.
- 200mm standard length shaft assembly.
- IP65 door interlocking handle.



Typical 'C2/C3' Arrangement

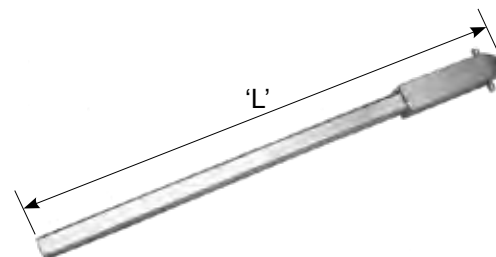
### Catalogue Numbers

Current Rating	63A	100A	125A	160A	200A	250A	400A	630A
Frame size	C1C	C1C	C2C	C2C	C2C	C2	C3	C3
TP&N	SCOD00634B	SCOD01004B	SCOD01254B	SCOD01604B	SCOD02004B	SCOD02504B	SCOD04004B	SCOD06304B

### Alternative shafts

As an alternative to the standard 200mm shaft a 400mm option is available as indicated below. The shafts are manufactured from square section steel and zinc plated. The height setting is adjusted by passing the shaft through a bush in the switch mechanism and locking it in position using two 'cup point' grub screw. See pages 116 for dimensions.

Shaft length 'L'	Load break switch current Rating		
	63A - 100A	125A - 200A	250A - 630A
400mm	SSH14	SSH18	SSH15
Drive Shaft Section	8mm <sup>2</sup>	8mm <sup>2</sup>	12mm <sup>2</sup>
Max. possible enclosure depth	200mm	270	330
	400mm	470	530



### Supplied Handles

Designed to compliment the handles used on our enclosed equipment, the door interlocked versions are capable of being locked with up to three individual padlocks (Ø6.4 max shackle dia).

All handles are sealed to IP65 which will enable installations in a wide variety of environmental conditions.

If the contacts should weld due to a fault or an excessive current situation, an override facility is provided for the use of a competent person which will allow the enclosure lid to be opened



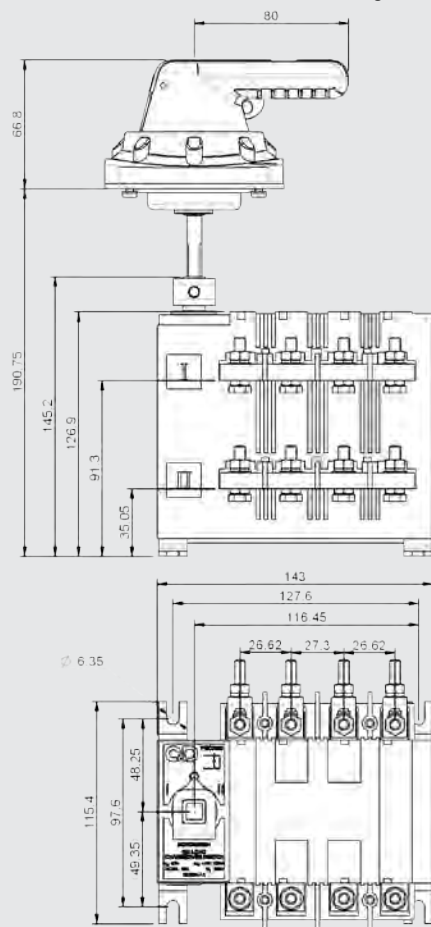
Handle assembly supplied with the 'C1' frame size (SDH5/BLK). Handle length 145.



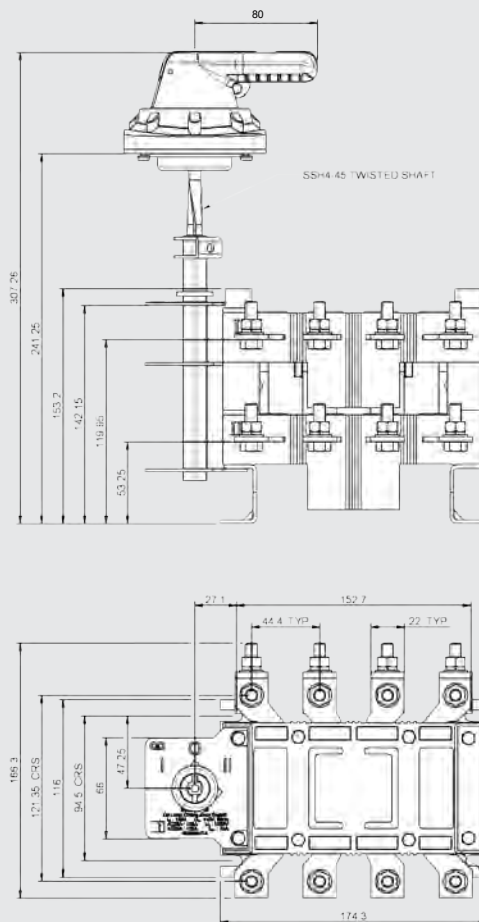
Handle assembly supplied with the 'C2' & 'C3' frame size (SDH6/BLK). Handle length 220.



Frame Size **C1C** - 63A & 100A Ratings



Frame Size **C2C** - 125A, 160A & 200A Ratings

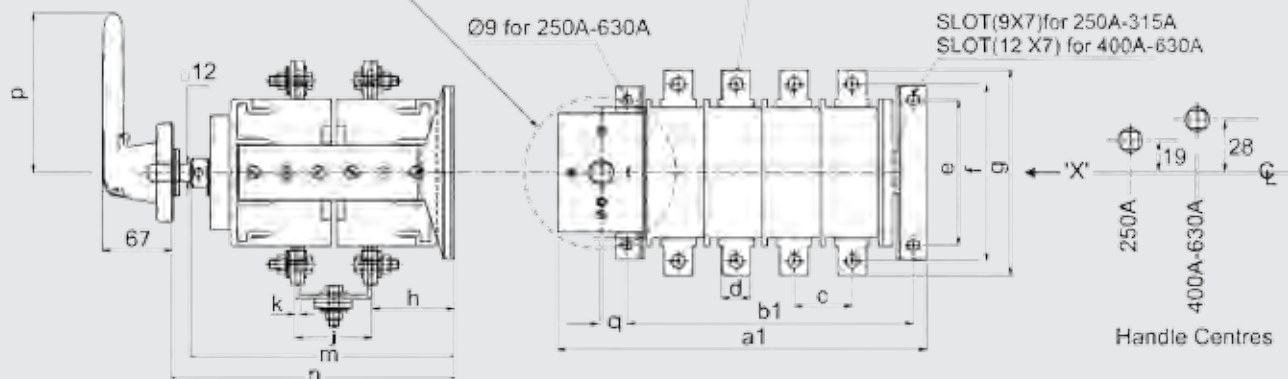


Refer to handle centres

M10 for 250A-630A

Ø9 for 250A-630A

SLOT(9X7)for 250A-315A  
SLOT(12 X7) for 400A-630A






Rating	a1	b1	c	d	e	f	g	h	j	k	m	n	p	q	Frame Size
250A	309.5	252	61	25	124	138	163	65.5	81	4.0	242	255-355	145	18	C2
400A	352	276	70	25	150	180	205	85	96	4.0	262	300-400	220	26	C3
630A	352	276	70	40	150	185	223	84	98	5.0	262	300-400	220	26	C3














## Control Panel Pushbutton Components

Craig & Derricott have a wealth of pushbutton and indicator components to suit a wide range of applications. For many years the '32 Series' has been the byword for heavy duty applications and many manufacturers standardise on this range. Although well established Craig & Derricott are still developing products to compliment the range.

When more conventional products are required Craig & Derricott can offer several different ranges with a comprehensive list of features and variations behind each one.

Range	'16 Series'	'22 Series'	'32 Series'
Image (Typical only)			
Mounting Hole (mm)	Ø16	Ø22	Ø32
Front Dimensions (mm)	25 x 25	Ø30	Ø42
Front Bezel Height (mm)	12	12	30
Travel (mm)	6	6	6
Body Material	Moulded	Moulded	Metal
Contact blocks	Type A	Type MT & ET	Type MT
Ingress protection	IP65	IP65	IP65

All of the above ranges are covered by one or more of the following international approvals:-

Germany  Canada  Netherlands  ENEC  Norway  Finland  UL   
 Denmark  Sweden  Det Norske Veritas  USA  China  Europe 



**...Craig & Derricott at work**



## '16 Series' Components

### General Description


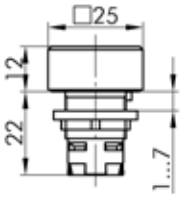
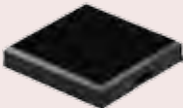
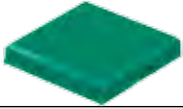

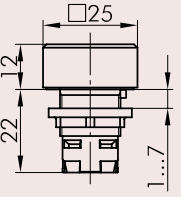
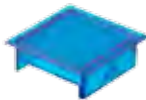
The '16 Series' offers the user components with an attractive appearance and a small panel *footprint*.

The square format allows simple alignment and the facility to butt components together to form very a compact multi-unit assembly.

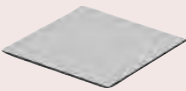

Although small in size, they are designed to withstand the rigours of normal industrial applications.



### Actuator Details

Image	Dimensions	Description	Catalogue No
		<b>Pushbutton Actuator 25mm x 25mm</b> Momentary action.  <b>Body Colour</b> Black Charcoal <i>(Contact block options AF, AT, AT2, ATL &amp; ATL2)</i>  Requires flat colour cap & inscription plate	<b>QXT</b> <b>QXTDG</b>
		<b>Flat Colour Caps</b> Non transparent - no inscriptions WS - White, RT - Red, GN - Green, GB - Yellow, SW - Black, BL - Blue. (Add code letters to cat no e.g. T25FGRT)	<b>T25FG...</b>
		<b>Flat Colour Caps</b> Transparent - no inscriptions WS - White, RT - Red, GN - Green, GB - Yellow, SW - Black, BL - Blue, KL - Clear (Add code letters to cat no e.g. T25FRT)	<b>T25F...</b>
		<b>Pilot Lamp 25mm x 25mm</b>  <b>Body Colour</b> Black Charcoal <i>(Contact block options AL5)</i>  Requires flat lens & inscription plate	<b>QXN</b> <b>QXNDG</b>
		<b>Pilot Lamp Lenses - Flat</b> WS - Opal White, RT - Red, GN - Green, GB - Yellow, BL - Blue, KL - Clear (Add colour code to cat no e.g. KF25GB) For use with QXN..	<b>KF25...</b>

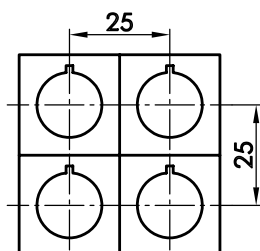
### Inscription plates

		<b>Blank Inscription Plate</b>	<b>BSQXU</b>
		<b>Printed Inscription Plate</b> Hundreds of standard printed images and text available, Speak to our sales department for details.	<b>BSQX...</b>
		<b>Printed Inscription Plate</b> Printed to customers own requirements. Suitable for QXT....	<b>BSQXB</b>

### Dimensions

The '16 Series' allows for the close grouping of full guard pushbuttons and indicator lamps.

The mounting grid shown is applicable to the items shown above.


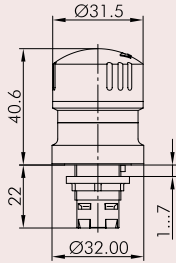

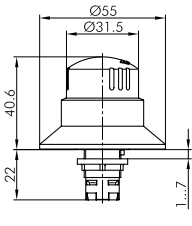

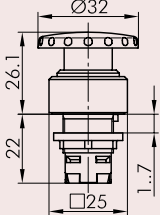

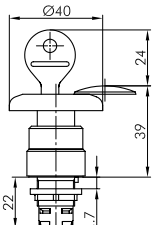


### IMPORTANT

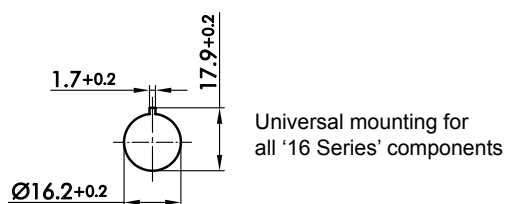
A universal lens remover must be purchased with the above Actuators to aid installation. Refer to page 129 for details.



## ‘16 Series’ Components contd.

Image	Dimensions	Description	Catalogue No
		<b>Emergency Stop Actuator with Position Indicator</b> Stayput twist-to-rest. Red button, yellow surround and green position indicator. <i>(Contact block options AT &amp; AT2)</i> In accordance with EN 60068, EN ISO 13850, EN 60947-5-1 and EN 60947-5-5	<b>RXUV</b>
		As the previous item but with anti-lock collar. Red actuator & yellow body, twist-to-reset action. <i>(Contact block options AT &amp; AT2)</i>	<b>RXBUV</b>
		<b>Stop actuator 25mm x 25mm</b> Red actuator, momentary action. <b>Body Colour</b> Black Charcoal <i>(Contact block options AT &amp; AT2)</i>	<b>QXS QXSDG</b>
		<b>Emergency Stop actuator 25mm x 25mm</b> Red actuator, stayput key reset action. <b>Body Colour</b> Black Charcoal <i>(Contact block options AT &amp; AT2)</i> Replacement key - <b>ES3A</b>	<b>QXVSCH QXVSCHDG</b>

### Dimensions



Also available in the ‘16 Series’ :-

- Silicone protective covers for actuators.
- Short stroke actuators.
- Adjustable plunger extension.
- Choice of lens shapes.
- Key & knob actuators.
- Toggle actuator
- Buzzers & sounders.
- Wide range of accessories.

*Please contact our Sales team for further details.*

### Contact Blocks

The ‘16 Series’ utilises ‘Type A’ contact blocks. See pages 128-129 for details. (Also includes illuminated lamp options)



## '22 Series' Components

### General Description

Wherever the design of a control panel requires robustness, long life and reliability, then the '22 Series' components meet the need.

As well as looking elegant in their own right, they are often used as replacement items where other, less able components, have failed.


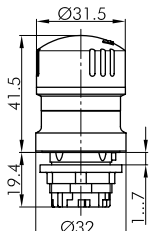

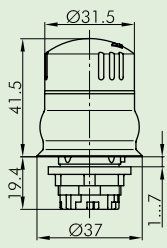

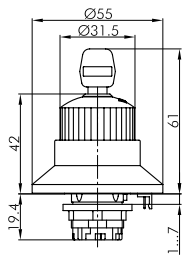
With a standard 22mm fixing, the range of actuators and contact block options lend themselves to a wide variety of applications - processing and manufacturing machines, shipbuilding, rail rolling stock, cranes & hoists, elevators and many other electromechanical applications.

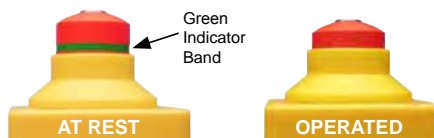
Manufactured using high quality materials the actuators are available in black, charcoal or chromed metallic front bezel.

With all of the above features the '22 Series' still remains competitively priced.




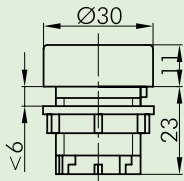

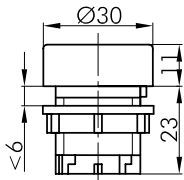

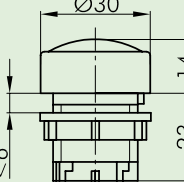


### Actuator Details

Image	Dimensions	Description	Catalogue No
		<b>Emergency Stop Actuator - IP65</b> with position indicator*. Stayput - twist-to-reset (In accordance with EN 60068, EN ISO 13850, EN 60947-5-1 and EN 60947-5-5)	<b>QRUV</b>
		<b>Emergency Stop Actuator for Hygiene and Pressure Washer Applications - IP69K</b> No position indicator. Stayput - twist-to-reset (In accordance with EN 60068, EN ISO 13850, EN 60947-5-1 and EN 60947-5-5)	<b>QRUVK</b>
		<b>Emergency Stop Actuator - IP65</b> with position indicator* and yellow anti-lock collar. Stayput - Key reset (In accordance with EN 60068, EN ISO 13850, EN 60947-5-1 and EN 60947-5-5)	<b>QRBUVSE</b>



\*Emergency Stop Position Indicator

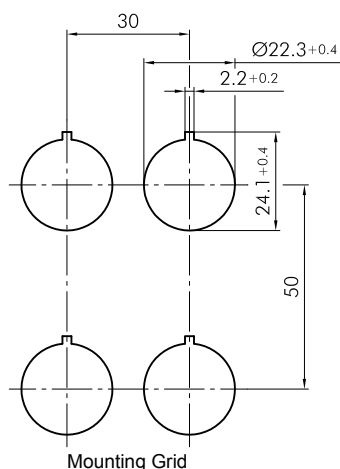
## '22 Series' Components contd.

Image	Dimensions	Description	Catalogue No
		<b>Pushbutton head with flat colour cap (Non illuminated) - IP65</b> Spring return action. Colour cap - no inscription. WS - White, RT - Red, GN - Green, GB - Yellow, SW - Black, BL - Blue. (Add colour code to cat no e.g. DXRTCGB) <b>Bezel Colour</b> Satin chrome effect Grey Bright chrome effect Black	<b>DXRTC...</b> <b>DXRTG...</b> <b>DXRTM...</b> <b>DXRTS...</b>
		<b>Pushbutton head with illuminated flat colour cap. - IP65</b> Momentary action. Transparent colour caps. RT - Red, GN - Green, GB - Yellow, KL - Clear, BL - Blue. (Add colour code to cat no e.g. DXRTCGB) <b>Bezel Colour</b> Satin chrome effect Grey Bright chrome effect Black	<b>DXRTL...</b> <b>DXRTLG...</b> <b>DXRTLM...</b> <b>DXRTLS...</b>
		<b>Pilot Lamp - IP65</b> Supplied with a transparent domed lens. RT - Red, GN - Green, GB - Yellow, KL - Clear, BL - Blue. (Add colour code to cat no e.g. DXRNBL) <b>Bezel Colour</b> Satin chrome effect Grey Bright chrome effect Black	<b>DXRNKC...</b> <b>DXRNKG...</b> <b>DXRNKM...</b> <b>DXRNKS...</b>
		<b>Blank Inscription Plate</b> Suitable for DXRTL.... range above.	<b>BSKU</b>
		<b>Printed Inscription Plate</b> Hundreds of standard printed images and text available, Contact our sales for details. Suitable for DXRTL.... range above.	<b>BSK....</b>
		<b>Printed Inscription Plate</b> Printed to customers own requirements. Suitable for DXRTL.... range above.	<b>BSKB</b>

### Dimensions

The mounting grid shown is only applicable to full guard actuators and indicator lamps as shown above.

The mounting hole detail shown is applicable to all '22 Series' components.



Also available in the '22 Series' :-

- Emergency Stops with position indicator.
- Actuators with 'ring' illumination.
- Flat and concave actuator head.
- Key & knob actuators.
- Toggle actuator
- Wide range of accessories.

*Please contact our Sales team for further details.*

### Contact Blocks

The '22 Series' utilises 'Type MT' & 'Type ET' contact blocks. See pages 125-127 for details. (Also includes illuminated lamp options)



## '32 Series' Components

### General Description

The '32 Series' has long been recognised as being the pinnacle of strength and reliability in control gear components. All actuator bodies and locking rings are produced in Aluminium, with a bright anodised finish.

The range incorporates all of the options required in today's safety conscious world, and all of the various items bring with them the ultimate in reliability.

There are several options suitable for Emergency Stop use, and to match the quality of the tactile components, the '32 Series' includes contact blocks with a generous rating which meet the latest safety requirements.


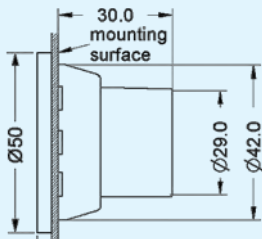

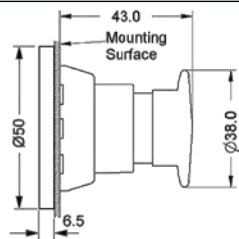

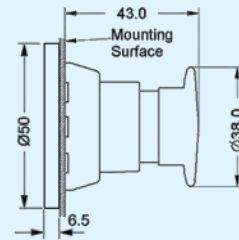

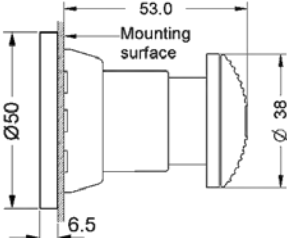
The user can fit up to five 16A rated contact blocks on the back of an actuator, giving flexibility without rating constraints.

The range incorporates many unique features and accessories, an example of which are the very popular die-cast flap covers. These are supplied in several variations to suit different levels of security and function.

The '32 Series' offers the user flexibility with strength.




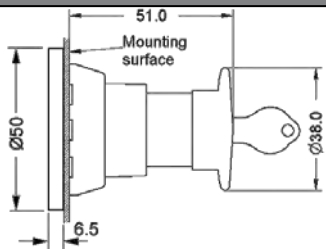

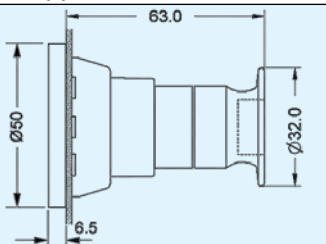
### Actuator Components

Image	Dimensions	Description	Catalogue No
		<b>Full guard actuator - momentary</b> Moulded colour cap  <i>Colour Cap</i> Red Green Yellow Blue Black White	<b>PR/SCH</b> <b>PG/SCH</b> <b>PY/SCH</b> <b>PZ/SCH</b> <b>PB/SCH</b> <b>PW/SCH</b>
		<b>Mushroom actuator Ø38 - momentary</b> Moulded button  <i>Actuator</i> Red Black Green Yellow Blue	<b>PMR/SCH</b> <b>PMB/SCH</b> <b>PMG/SCH</b> <b>PMY/SCH</b> <b>PMZ/SCH</b>
		<b>Mushroom actuator Ø38 - stayput, pull-to-reset</b> Moulded button  <i>Actuator</i> <b>Red*</b> Black Green Yellow Blue	<b>PMRH/SCH</b> <b>PMBH/SCH</b> <b>PMGH/SCH</b> <b>PMYH/SCH</b> <b>PMZH/SCH</b>
		<b>Mushroom actuator Ø38 - stayput, twist-to-reset</b> Moulded free to turn button with rear reset ring  <i>Actuator</i> <b>Red*</b>	<b>PMR-U59/SCH</b>

\*Suitable for 'Emergency Stop' use.




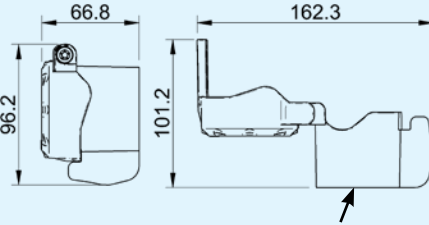

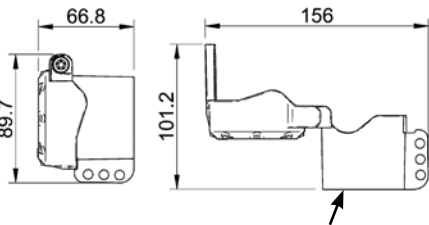

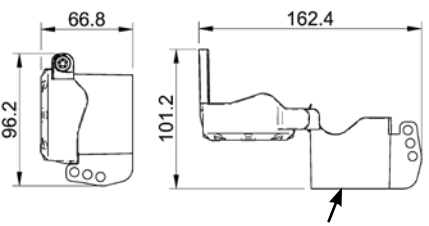
## Actuator Components contd.

Image	Dimensions	Description	Catalogue No
		<b>Mushroom actuator Ø38 - stayput, Key reset**</b> Die-cast button  Actuator Red* Black	<b>PMRA-U19/SCH</b> <b>PMBA-U19/SCH</b>
		<b>Mushroom actuator Ø32 - stayput, pull-to-reset</b> Die-cast button  Actuator Red*	<b>PMARH-U51/SCH</b>

\*Suitable for 'Emergency Stop' use.


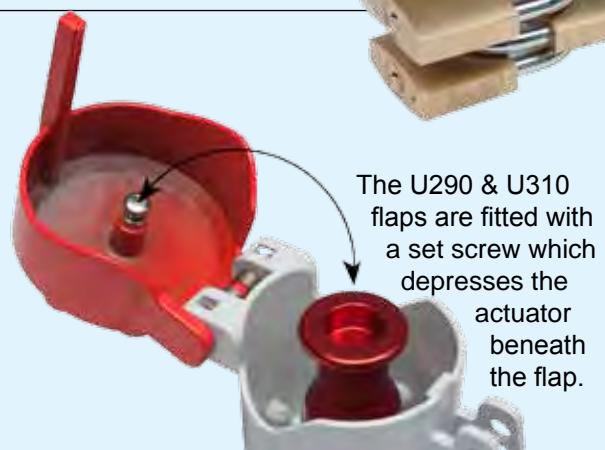
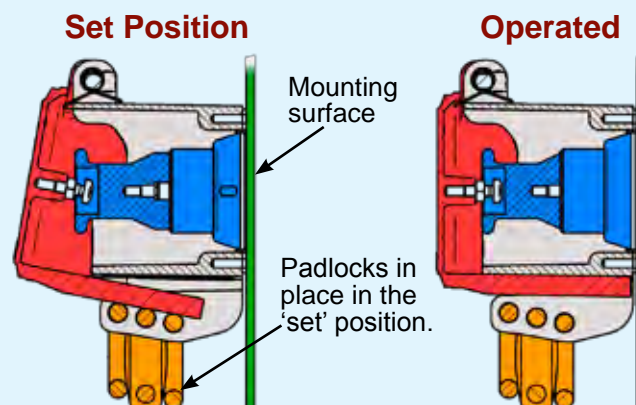
\*\* 2 x DC800 series keys are supplied with each actuator as standard. Differs are available to special order.

## Accessories

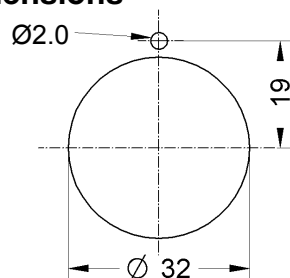
Image	Dimensions	Description	Catalogue No
 U260-R/U270-R	 4 off M3.5 fixings on Ø49 PCD	<b>Flap Covers</b> - Die cast Aluminium. Grey body with Red flap)  Non-lockable  Non-lockable  <i>U260-R - Used to prevent accidental operation of a pushbutton or similar devices. Spring loaded so the flap is kept closed.</i>  <i>U270-R - As above but the cover is not spring loaded</i>	<b>U260-R</b> <b>U270-R</b>
 U280-R/U310-R	 4 off M3.5 fixings on Ø49 PCD	<b>Flap Covers Contd.</b> - Die-Cast Aluminium. Grey body with Red flap (Other colours available to special order)  Padlockable  Padlockable  Padlockable	<b>U280-R</b> <b>U290-R</b> <b>U310-R</b>
 U290-R	 4 off M3.5 fixings on Ø49 PCD	<i>U280-R - Used to prevent unauthorised access to the actuator. Holes in the flap cover body are available to place up to three padlocks which will lock the cover closed. The cover cannot be opened until the last padlock has been removed.</i>  <i>U290-R - Used to prevent unauthorised resetting of stayput actuators. The flap is depressed to actuate the unit with the padlock(s) in position. The actuator remains in the operated position until access is allowed by removal of the padlock(s)</i>  <i>U310-R - Used as a hold button. The cover is depressed to operate the pushbutton, and it is manually held down whilst the padlock(s) are inserted. The pushbutton remains depressed until the padlock(s) are removed</i>	



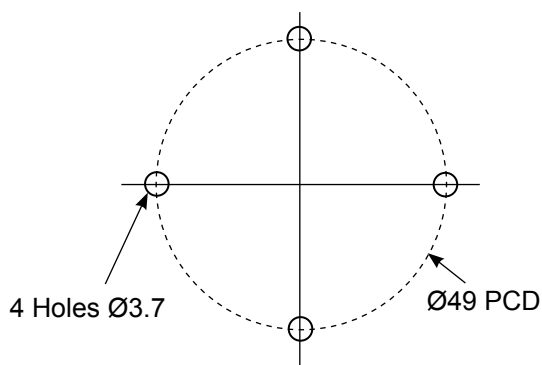
## Accessories contd.

Image	Description	Catalogue No
 <p>Lockable covers can take up to three large padlocks (shackle Ø6.4 max)</p>	<b>Flap Cover Engraving</b> 'STOP' 'EMERGENCY STOP' 'EMERGENCY TRIP' 'EMERGENCY POWER OFF' 'PRESS FIRMLY FOR EMERGENCY STOP'	-0001 -0002 -0010 -0016 -0129
	Example:- U290-R0001 <i>Other engravings can be accommodated, please contact our sales to discuss your requirements.</i>	
 <p>The U290 &amp; U310 flaps are fitted with a set screw which depresses the actuator beneath the flap.</p>		
 <p><b>Set Position</b>      <b>Operated</b></p> <p>Mounting surface</p> <p>Padlocks in place in the 'set' position.</p>		

## Dimensions



Component Mounting Hole



Flap Cover Drilling

## Contact Blocks

The '32 Series' utilises 'Type MT' contact blocks and holders. See pages 125-126 for details.

## 'MT... Series' ( For use with the '22 and 32 Series' actuators)

### General Description

The '22 and 32 Series' components share common modules.

All items are tested and approved to the latest international standards and offer excellent performance with extended life.

**General Data** Catalogue Ref MT..

Approvals



Storage Temperature	-50°C up to +85°C
Operating Temperature	-30°C up to +85°C For non-illuminated items -30°C up to +55°C Using incandescent lamps -30°C up to +65°C Using LED's
Operating Travel	6mm
Connections	screw connections for 2 x 2.5mm <sup>2</sup> , IP2X.
Lamp Type/Socket	incandescent lamps, LED's / BA9s
Contact Material	silver-nickel alloy (Ag/Ni). <b>Gold Plated Version available upon request.</b>
Mechanical Life	1 million operations
Electrical Life	1 million cycles at rated load
Min. Current / Voltage	1 mA / 5V (Under laboratory conditions)
Contact Resistance (New State)	< 20mΩ
Bounce Time	< 10 ms
Positive Opening N/C Contact	→ to EN 60947-5-1 appendix K


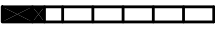
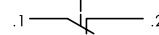

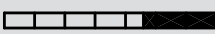
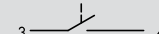


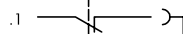
### Electrical Ratings - BS EN 60947-5-1

	a.c.	d.c.
Utilisation Category	AC15 A600	DC13 Q600
Rated Insulation Voltage (Ui)	600V	600V
Rated Operational Voltage (Ue)	250V/440V	440V / 250V / 125V / 60V / 24V
Rated Operational Current (Ie)	3A/1.6A	0.12A / 0.2A / 0.4A / 1A / 2A
Breaking Capacity	10Ie	1.1Ie
Continuous thermal current (Ith)	16A	16A

### Electrical Data - Pilot Lamp Bodies





Lamp Socket	BA9s
Lamp Voltage	max. 250V (CSA max. 125V)
Lamp Output	max. 2W
Definition	X1.. anode, X2.. cathode.

### Contact Blocks



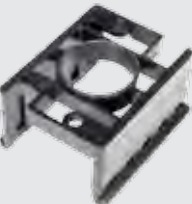
Image	Contact Details	Description	Catalogue No
	0 1 2 3 4 5 6 7 .1/.2  → .1  .2	<b>Modular Contact Block, Momentary</b> 1 N/C	<b>MTO</b>
	0 1 2 3 4 5 6 7 .3/.4  → .3  .4	<b>Modular Contact Block, Momentary</b> 1 N/O	<b>MTI</b>
	-3 -2 -1 0 1 2 3 4 5 6 7 .1/.2  → .1  .2	<b>Modular Contact Block, Momentary, for Emergency Stop Actuators.</b> 1 N/C safety contact switching off in an emergency and 1 N/C series contact that opens should the contact block become detached from the actuator.	<b>MTOSF</b>



## 'MT... Series' Product data continued.

Image	Contact Details	Description	Catalogue No
	X1 —  — X2	<b>Lamp Module BA9s</b> max. 250V 2W	<b>ML</b>
	X1 —  — X2	<b>Latching Module - BA9s</b> when used as the centre element in the module holder, it provides a maintained unit with the adjacent momentary type modules. max. 250V 2W	<b>MFL</b>

## Mounting

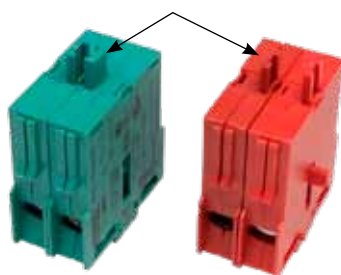
		<b>Holder for 3 Modules</b> Bayonet fitting on actuator.  <b>For '22 Series' only</b>	<b>MHR_3</b>
		<b>Holder for 5 Modules</b> Bayonet fitting on actuator. N.B. Not suitable for Emergency Stop use  <b>For '22 Series' only</b>	<b>MHR_5</b>
		<b>Holder for 5 Modules</b> Screw fitting on actuator.  <b>For '32 Series' only</b>	<b>MHR-5C</b>

Other contact blocks and accessories are available within this range, please contact our Sales staff for further details.

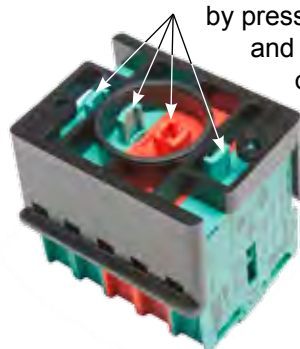
1. Up to 5 blocks in any combination can be accommodated.



2. Blocks can be reversed to suit the positions in the holder



3. When fitting blocks in the holder it is important that the actuators are free to move - reverse blocks as necessary. Ensure that all the blocks are fitted correctly by pressing any actuator and checking that all the other actuators move in unison.





## ‘ET... ’ ( For use with ‘22 Series’ actuators)

**General Data** Catalogue Ref ET...

Approvals



Storage Temperature  
Operating Temperature

-50°C up to +70°C  
-30°C up to +70°C For non-illuminated items  
-30°C up to +55°C Using incandescent lamps  
-30°C up to +65°C Using LED's

Operating Travel  
Connections  
Lamp Type/Socket

6mm  
screw connections for 2 x 2.5mm<sup>2</sup>, finger protected.  
incandescent lamps, LED's / BA9s

Contact Material  
Mechanical Life

silver-nickel alloy (Ag/Ni) **Gold Plated Version available upon request.**  
1 million operations

Electrical Life  
Min. Current / Voltage

1 million cycles at rated load  
1 mA / 5V (Under laboratory conditions)

Contact Resistance (New State)

< 20mΩ

Bounce Time

NC: < 10 mS / NO: < 10 mS

Positive Opening N/C Contact

→ to EN 60947-5-1 appendix K


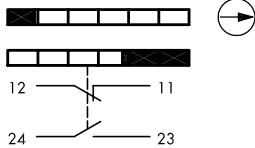

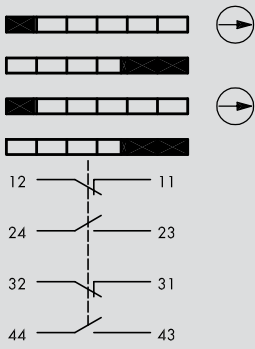
### Electrical Ratings - BS EN 60947-5-1

	a.c.	d.c.
Utilisation Category	AC15	DC13
Rated Insulation Voltage (Ui)	400V	400V
Rated Operational Voltage (Ue)	400V / 250V	440V / 250V / 125V / 60V / 24V
Rated Operational Current (Ie)	3A / 5A	0.12A / 0.2A / 0.4A / 1A / 2A
Breaking Capacity	10Ie	1.1Ie
Continuous thermal current (Ith)	10A	10A

### Electrical Data - Pilot Lamp Bodies

Lamp Socket	BA9s
Lamp Voltage	max. 250V (CSA max. 150V)
Lamp Output	max. 2W
Definition	X1.. anode, X2.. cathode.

### Product Data

Image	Contact Details	Description	Catalogue No
	<p>0 1 2 3 4 5 6</p> <p>12/11</p> <p>24/23</p> 	<b>Contact Block, Momentary</b> 1 N/C + 1 N/O	<b>ETR</b>
	<p>0 1 2 3 4 5 6</p> <p>12/11</p> <p>24/23</p> <p>32/31</p> <p>44/43</p> 	<b>Contact Block, Momentary</b> 2 N/C + 2 N/O	<b>ETR2</b>

Other contact blocks are available within this range, please contact our Sales staff for further details.



## 'A... Series' ( For use with '16 Series' actuators)

**General Data** Catalogue Ref AT... & AF...

### Approvals



Storage Temperature  
Operating Temperature

-50°C up to +85°C  
-30°C up to +70°C For non-illuminated items  
-30°C up to +55°C Using incandescent lamps  
-30°C up to +65°C Using LED lamps

Protection Class

II

Connections

Faston terminals 2.8 x 0.8mm

Lamp Type/Socket

T5, 5K

Contact Material

silver-nickel alloy (Ag/Ni) - **gold plated versions available**

Bounce Time

NC: < 10 mS / NO: < 10 mS

Positive Opening N/C Contact 

to EN 60947-5-1 appendix K


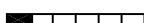
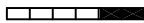
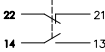
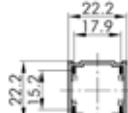
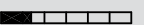

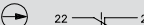
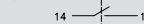
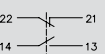
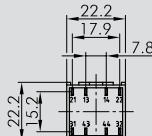

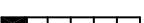
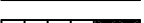
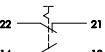
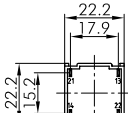

### Electrical Ratings - BS EN 60947-5-1

	a.c.	d.c.
Utilisation Category	AC15 A300	DC13 Q300
Rated Insulation Voltage (Ui)	250V	300V
Rated Operational Voltage (Ue)	250V	250V / 125V / 60V / 24V
Rated Operational Current (Ie)	3A	0.2A / 0.4A / 1A / 2A
Breaking Capacity	10Ie	1.1Ie
Continuous thermal current (Ith)	6A	6A
Contact Resistance (New State)	< 20mΩ	


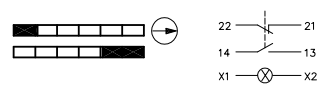
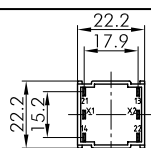

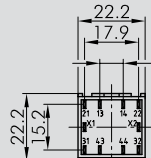
### Electrical Data - Pilot Lamp Bodies

Lamp Socket	T5, 5K
Lamp Voltage	max. 60V
Lamp Output	max. 1.2W
Definition	X1.. anode, X2.. cathode.

### Product Data




Image	Contact Details	Description	Catalogue No
	<b>AT</b> 0 1 2 3 4 5 6 22/21  14/13  	<b>Momentary action</b> 1 N/O + 1 N/C 	<b>AT</b>
	0 1 2 3 4 5 6 22/21  14/13  32/31  44/43  	<b>Momentary action</b> 2 N/O + 2 N/C 	<b>AT2</b>
	<b>AF</b> 0 1 2 3 4 5 6 22/21  14/13  	<b>Maintained action</b> 1 N/O + 1 N/C 	<b>AF</b>
		<b>Lampholder</b> Faston terminals 2.8 x 0.8mm Lampholder T5,5K	<b>AL5</b>

## ‘A.. Series’ Product Data Continued

Image	Contact Details	Description	Catalogue No
	<p>0 1 2 3 4 5 6</p> <p>22/21 14/13</p> 	<p><b>Illuminated - Momentary</b></p> <p>1 N/C + 1 N/O</p> 	<b>ATL</b>
	<p>0 1 2 3 4 5 6</p> <p>22/21 14/13 32/31 44/43</p> 	<p><b>Illuminated - Momentary</b></p> <p>2 N/C + 2 N/O</p> 	<b>ATL2</b>

Other contact blocks are available within this range, please contact our Sales staff for further details.

## Accessories

Image	Description	Catalogue No
	<p><b>‘16 Series’</b></p> <p><b>Incandescent Lamps - T5.5K fitting</b></p> <p>6V / 1.2W (200mA) 12V / 1.2W (100mA) 24V / 1.2W (50mA) 30V / 1.2W (40mA) 36V / 1.2W (35mA) 48V / 1.2W (25mA) 60V / 1.2W (20mA)</p>	<p><b>T5,5K-6V</b> <b>T5,5K-12V</b> <b>T5,5K-24V</b> <b>T5,5K-30V</b> <b>T5,5K-36V</b> <b>T5,5K-48V</b> <b>T5,5K-60V</b></p>
	<p><b>‘16 Series’</b></p> <p><b>Ultra-Bright LED's - T5.5K fitting</b> with integrated series resistor and single-wave rectifier. 24V AC/DC (7/14mA)</p> <p>Blue Green Red White Yellow</p>	<p><b>L5,5K24UB</b> <b>L5,5K24UG</b> <b>L5,5K24UR</b> <b>L5,5K24UW</b> <b>L5,5K24UY</b></p>
	<p><b>‘22 &amp; 32 Series’</b></p> <p><b>Incandescent Lamps - BA9s fitting</b></p> <p>6V / 1.8W (300mA) 12V / 2.0W (166mA) 24V / 2.0W (80mA) 48V / 2.0W (40mA) 60V / 1.2W (20mA) 110V-130V / 2.0W (18mA)</p>	<p><b>FZR9-6</b> <b>FZR9-12</b> <b>FZR9-24</b> <b>FZR9-48</b> <b>FZR9-60-1</b> <b>FZR9-130</b></p>
	<p><b>‘22 &amp; 32 Series’</b></p> <p><b>Ultra-Bright LED's - BA9s fitting</b> with integrated single-wave rectifier for 230V a.c., 3mA</p> <p>Blue Green Red White Yellow</p>	<p><b>LD9-230UB</b> <b>LD9-230UG</b> <b>LD9-230UR</b> <b>LD9-230UW</b> <b>LD9-230UY</b></p>
	<p><b>Tightening Tool</b></p> <p>‘16 Series’ ‘22 Series’</p>	<p><b>S16</b> <b>S22</b></p>
	<b>Universal Lens Remover</b>	<b>USK</b>



Linemaster has been at the forefront of footswitch design and manufacture since the 1950's and the range and quality of their products is second to none.

Linemaster delivers unmatched capabilities to design and manufacture foot controls with limitless applications. From heavy to light duty, traditional to wireless, Linemaster foot controls are widely recognised as being some of the best in the world.

Since its founding in 1952, Linemaster has come to be the standard by which all other footswitches are judged. Linemaster was the first to market with an IR wireless footswitch that met the exacting demands of their customers, particularly in the medical field.

- Electromechanical
- Pneumatic
- Linear Hall Effect
- Digital and Linear Switches
- Wireless IR and RF

Linemaster can claim more than 550 catalogued products but it has the capacity to design and develop bespoke applications that makes the company so unique.

By providing a 'third' hand, footswitches are indispensable across so many applications it's no wonder that Linemaster provide foot controls to some of the worlds largest OEM's.

A cross section of typical industrial applications would be:-

- Adhesive Dispensers
- Abrasive Blasters
- Packaging Equipment
- Conveyors
- Material Handling
- Scissor lifts
- Communications Equipment
- Lighting
- Engine Brake
- Alarms/Security
- Emergency Vehicles (Siren)
- Degreasers
- Metal Working Machinery
- Electric Vehicles
- Farm Equipment
- Engraving Machinery
- Riveting Machines
- Soldering Machinery
- Welding Machines ...



For the Heavy duty 'Hercules' and 'Atlas' ranges a choice of cover height is available to suit the type of footwear worn by the operative.



Linemaster has developed a special relationship with manufacturers in the medical field and some of the more recent applications would include:-

- Electrosurgical Generators
- CT Scanners
- Medical Lasers
- Mammography
- Lighting controls
- X-ray Equipment
- Medical Tables
- Endoscopy
- Ophthalmic Surgery
- MRI Systems
- Dental Chairs ...



Two examples of IR wireless footswitch assemblies

*Should you require any further information regarding Linemaster products please visit our website or give our sales staff a call.*





Call our customer services with ***your*** requirements.



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email address .....

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Your Internal Sales Contact .....  
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email address .....



