Technical Data Sheet

London Underground - 'Section 12' approved Switch Disconnectors

Introduction

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 sited 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.

Applicable Regulations/Specifications

- Section 12 of the Fire Precautions Act 1971
- The Fire Precautions (Sub-surface Railway Stations) Regulations 1989

- BS EN 60947-3 Low voltage switchgear and controlgear. Switches, disconnectors, switch-disconnectors and fuse-combination units.
- BS 88-2.2:1988 Cartridge fuses for voltages up to and including 1000 V a.c. and 1500 V d.c.

- BS EN 60439-1 Low -voltage switchgear and controlgear assemblies.
- BS EN 60529 Degrees of protection provided by enclosures (IP code)

- 2-01001-002 A1 Fire safety performance of materials.
* M-1042-A2 Fire safety of materials used in the Underground.
- 2-1105-006 Low voltage electrical installations.
* E 4013 General requirements for fixed installation power supplies.

Equipment Description

Switch disconnector assemblies in the range 40A - 400A are all supplied housed in one of five sizes of sheet steel enclosures. The interior assemblies are all supplied in three pole + switched neutral form.
The all metal operating handles are supplied in two sizes across the range, and are lockable in the 'Off' position as standard, with an option to enable locking in the 'On' position.
The IP65 sealed enclosures are generously proportioned to allow simple cable connection, with removable gland plates on both top and bottom faces.
All external surfaces are finished with a 'Copon EA9' approved paint system. Enclosures are finished red or grey and handle assemblies red.

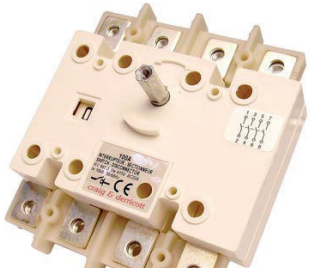
Catalogue Numbers

Rating	Catalogue Number		Enclosure Size*
	Finished Grey	Finished Red	
40A	DCG0403LUL	DCR0403LUL	1
63A	DCG0633LUL	DCR0633LUL	1
80A	DCG0803LUL	DCR0803LUL	2
100A	DCG1003LUL	DCR1003LUL	2
125A	DCG1253LUL	DCR1253LUL	2A
160A	DCG1603LUL	DCR1603LUL	2A
200A	DCG2003LUL	DCR2003LUL	3
250A	DCG2503LUL	DCR2503LUL	3
315A	DCG3153LUL	DCR3153LUL	4
400A	DCG4003LUL	DCR4003LUL	4

*See page 2

Typical Assembly with a grey Copon finished enclosure

To call for padlocking in both 'Off' & 'On' positions, add suffix '10' to the catalogue numbers as shown above. - e.g. DCG2003LUL10



Locking system allows several individual padlocks to be inserted

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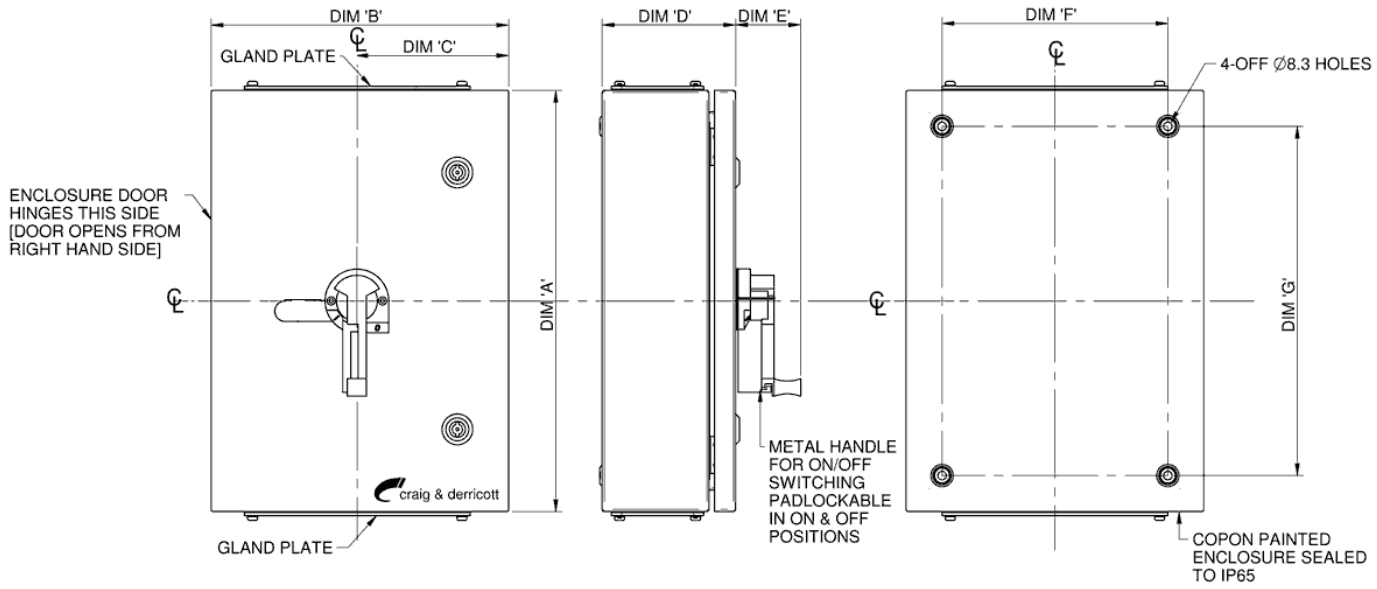
Technical Specification (To BS EN 60974 - 3)

Application	Sym.	Unit	Category	Rating (A)									
				40	63	80	100	125	160	200	250	315	400
Rated thermal current	I_{th}	A		40	63	80	100	125	160	200	250	315	400
Rated Insulation voltage	U_i	V		690	690	690	690	800	800	800	800	1000	1000
Rated impulse voltage	U_{imp}	kV		6.0	6.0	6.0	6.0	8.0	8.0	8.0	8.0	12.0	12.0
Rated operational current (AC)	I_e	A	400V - AC22A/AC22B	40/40	63/63	80/80	100/100	125/125	160/160	200/200	250/250	315/315	400/400
			400V - AC23A/AC23B	40/40	50/63	80/80	80/100	125/125	160/160	200/200	250/250	315/315	400/400
			690V - AC22A/AC22B	32/32	32/32	50/50	50/50	125/125	125/125	125/160	125/160	250/315	250/315
			690V - AC23A/AC23B	25/25	25/25	40/40	40/40	63/80	63/80	80/100	100/125	160/200	160/200
Rated operational power (Frequent operation)	P_e	kW	3x400V - AC23A	18.5	25	40	40	63	80	100	132	160	220
			3x690V - AC23A	22	22	33	33	55	55	75	90	150	150
Fuse protected short-circuit characteristics		kA (rms)	Prospective short-circuit current	100	100	100	70	100	100	80	50	100	100
		A	Associated fuse rating	40	63	80	100	125	160	200	250	315	400
Overload capacity		kA (Peak)	Rated peak withstand current	12	12	12	12	20	20	30	30	45	45
	I_{cw}	kA (rms)	Rated short time withstand current (1S)	2.5	2.5	2.5	2.5	7	7	9	9	13	13
Mechanical endurance			Cycles	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	5,000	5,000
Connecting capacity		-	Terminal type										
		mm^2	Cable section (Min/Max)	4/16	10/16	16/35	25/35	35/50	50/95	70/95	95/150	150/240	185/240
		mm	Maximum busbar width	-	-	15	15	25	25	32	32	40	40
		Nm	Min. Tightening torque	4	4	5	5	9	9	20	20	20	20

Dimensions



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Dimensions Continued

RATING	BOX SIZE	DIM 'A'	DIM 'B'	DIM 'C'	DIM 'D'	DIM 'E'	DIM 'F'	DIM 'G'
40A	1	270	285	142.5	130	64	215	200
63A	1	270	285	142.5	130	64	215	200
80A	2	410	290	145	190	64	220	340
100A	2	410	290	145	190	64	220	340
125A	2A	550	300	150	190	80	230	480
160A	2A	550	300	150	190	80	230	480
200A	3	630	460	230	330	80	390	560
250A	3	630	460	230	330	80	390	560
315A	4	760	550	275	380	80	480	690
400A	4	760	550	275	380	80	480	690

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