

Glasgow fuse-switch-disconnectors

Exceptional quality and reliability in protecting industrial, rail and university applications

Glasgow range: fuse-switch-disconnectors and switch-disconnectors

With over 100 years on the market, Eaton's Glasgow range continues to evolve leading the way as a robust, trusted product solution



Glasgow Range

- Type tested to BS EN 60947-3.
- Frame sizes from 63A to 800A.
- Retractable operating handles which drive over centre mechanisms incorporating powerful operating springs
- Short circuit rating 80kA.
- TPSN indicates triple-pole and switched neutral, the neutral pole making first and breaking last - which prevents voltage rise from happening
- Moving contact assemblies can be removed to facilitate installation or for contact inspection or renewal.
- Ratings of up to 1000A available when used with solid copper links
- Flag "on-off" indication is provided and terminal cover shields prevent contact with live metal.

Glasgow Busbar Chamber

Eaton's busbar chamber is designed to provide compact, wall-mounting installations

- Type tested to BS EN 61439
- Ratings from 100A to 800A
- Four lengths from 550mm to 1800mm
- Ancillary equipment including connection set
- All units share the same height and depth dimensions

EATON

Powering Business Worldwide



Glasgow Fuse Switch-Disconnectors | Eaton



Glasgow fuse-switch-disconnectors & switch-disconnectors

For many years, the Glasgow product name has been synonymous with quality, trust and reliability and as part of our long standing commitment to its tried and tested design we've reinvested for the future by re-tooling the whole range. Glasgow fuse switch disconnectors and switch disconnectors meet the constructional requirements for isolation of and are type tested to BS EN 60947-3. Conditional short circuit current rating tests at a value of 80kA rms Ue 415V have been carried out with Eaton HRC fuses fitted. Five frame sizes are available to provide a range from 63A to 800A, with utilisation category AC22A and AC23A Ue 415V ratings. Switch-disconnectors fitted with copper links give assigned AC20A Ui 660V and AC21A Ue 415V ratings. All units have retractable operating handles which drive overcentre mechanisms incorporating powerful operating springs. Opening and closing of the switches is thus independent of the action of the operator. Moving contact assemblies can be removed to facilitate installation or for contact inspection or renewal. Flag "on-off" indication is provided and terminal cover shields prevent contact with live metal. TPSN indicates triple-pole and switched neutral, the neutral pole making first and breaking last. Rated Insulation Voltage Ui 660V.

Enclosures

Surface-mounting enclosures comprise heavy gauge steel body plates incorporating cast iron frame members and are rustprotected, with a light grey paint finish (RAL7004). Front access doors, which are detachable, are fitted with dust-excluding gaskets and are interlocked to prevent opening when the switch is 'on'. The interlock can be defeated by a competent person for maintenance purposes. Operating handles may be locked in both the 'on' and 'off' positions. Castell type interlocks can be supplied to special order. Internal fixing holes allow units to be mounted closely side by side and all models have removable top and bottom end plates. These are pierced for connections, divided into front and rear (fixed) portions to simplify cabling using Eaton's MEM series split-type cable boxes, and provided with undrilled cover plates.

Fuses

Glasgow units are designed for use with HRC cartridge fuse links to BS88: Part 2. 63A and 100A units employ off-set contact fuse links. Details of suitable types of HRC cartridge fuse links are listed on page 101. All performance tests have been carried out using Eaton BS88 fuselinks.

Motor ratings

The motor ratings assigned to TPN switch-disconnector units are utilisation category AC23A (frequent operation) to BS EN 60947-3, which calls for make and break testing at 10 and 8 times rated current respectively for units having a motor rating up to and including 100 Amps. Ratings for switch-disconnector-fuses are dependent on suitable HRC fuses being fitted.

Auxiliary equipment

A comprehensive range of extension boxes and spreader boxes is available. Units are fitted with HRC Fuselinks of maximum rating but will accept fuselinks of a lower rating, refer to the Paramount HRC Fuselinks section on page 101. SPSN and TPSN indicate switched neutral. Neutral makes first and breaks last. If DP fuse-switch-disconnectors are required, use SPSN and replace the supplied switch link with a compatible fuselink.

Definitions of utilisation category

AC20a – Connecting and disconnecting under no load condition.

AC21a – Switching of resistive loads including moderate overloads.

AC22a – Switching of mixed resistive and inductive loads including moderate overloads.

AC23a – Switching of motor, or other high inductive loads.

Cable extension boxes

Fabricated sheet steel boxes can be fitted top/bottom of Glasgow switch units to provide additional space for spreading multi-core PVC insulated cables with solid aluminium conductors and for some larger cables with stranded copper conductors. For 1–3PCB, a plain flame retardant plywood plate is provided for fitting between the box and switch unit, the steel endplate supplied fitted to the switch unit being used on the box's cable entry side. For 4PCB, a plain steel plate is provided for cable entry on box. The switch enclosure has 8mm thick insulated endplates fitted both ends. For 5–6PCB, a 10mm thick insulated plate is provided for cable entry on box. The switch enclosure has 10mm thick insulated endplates fitted both ends, 5PCB includes a flame-retardant plywood packer for fitting between PCB and switch unit's endplate to provide lid flange clearance.

Spreader boxes

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

203GN



Glasgow switch-disconnector & fuse-switch-disconnector

- The Glasgow range is ordered as a modular solution, whereby the enclosure and fuselinks or switchlinks are ordered separately. This allows for installation flexibility by pairing the required fuselink or switchlink with the necessary enclosure.
- A Glasgow enclosure can be fitted with copper solid links for Switch Disconnector or with both fuses (and solid links) for Fuse-switch-disconnector
- Units can be fitted with HRC Fuselinks of maximum rating but will accept fuselinks of a lower rating, refer to the HRC Fuselinks section on page 109
- SPSN and TPSN indicate switched neutral.
- Neutral makes first and breaks last.

Nominal unit rating Ie (A)	Motor Ratings AC23A Ue 415V		Pole Config.	Eaton Glasgow Part Number	For Switch Disconnector Add Solid links	Fuses (types)	For Fuse Switch Disconnector Add both	
	kW	HP					Solid Links	
63	22	30	SPSN	61GN	63MLK (x2)	AAO or BAO (x1)	63MLK (x1)	
			TPN	63GN	63MLK (x3)	AAO or BAO (x3)	–	
			TPSN	64G	63MLK (x4)	AAO or BAO (x3)	63MLK (x1)	
100	22	30	SPSN	101GN	100MLK (x2)	CEO (x1)	100MLK (x1)	
			TPN	103GN	100MLK (x3)	CEO (x3)	–	
			TPSN	104G	100MLK (x4)	CEO (x3)	100MLK (x1)	
200	90	125	TPN	203GN	200MLK (x3)	DD or CD or BD or AD (x3)	–	
			TPSN	204G	200MLK (x4)	DD or CD or BD or AD (x3)	200MLK (x1)	
400	100	150	TPN	403GN	400MLK (x3)	DD or CD or BD or AD or ED (x3)	–	
			TPSN	404G	400MLK (x4)	DD or CD or BD or AD or ED (x3)	400MLK (x1)	
630	225	300	TPN	603GN	630MLK (x3)	FF or EF (x3)	–	
800	225	300	TPN	803GN	800MLK (x3)	GF or FF or EF (x3)	–	

If DP fuse switch disconnector is required, use SPSN and replace the solid link with an additional fuse

Stud size: 63/100A = tunnel terminal, 200A = M10, 400 = M14, 600/800A = see page 152, "copper terminal plate"

Note: Failure to fit the designed Eaton Switchlinks or Fuselinks will invalidate the warranty on the product



Spreader boxes

- Provide additional space for spreading multi-core PVC insulated cables
- Supplied with fixing bolts and plain bushes
- Adapter plates required for each unit, see page 99

Nominal unit rating, I _e (A)	Eaton list number	
	Straight	45° angled
63	50CSB	50CSBA
100	50CSB	50CSBA
200	60CSB	60CSBA
400	70CSB	70CSBA
630	90CSB	
800	90CSB	

Extension boxes

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

Nominal unit rating (A)	Fuse switch-disconnector/switch-disconnector	Eaton list number
63	61GN	1PCB¹⁾
	63GN	2PCB¹⁾
	64G	
100	101GN	1PCB²⁾
	103GN	2PCB²⁾
	104G	
200	203GN (315A AC21)	3PCB
	204G	
400	403GN (630A AC21)	4PCB
	404G	
630	603GN (1000A, AC21)	5PCB⁴⁾
800	803GN (1000A, AC21)	

¹⁾ Not required for copper cables or al. below 35mm²

²⁾ Not required for copper cables or al. below 50mm²

⁴⁾ For parallel cables use 6 PCB + 80Z GCC + 2 x 90 CSB or CSBA (see diagram on page 152)

Glasgow maximum cable capacity

Glasgow Nominal Rating (A)	Maximum Cable capacity mm ²
63	35
100	50
200	150
400	300
630	400 or 2/240
800	2/300

Adapter plate to fit spreader boxes



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

Nominal unit rating, Ie (A)	Straight spreader box	45° angled spreader box	Cable mm ²	PVC SWA stranded cables:		Eaton list number			
				2-core	4-core				
63	50CSB	50CSBA	16	2-core	4-core	¹⁾			
			25	2-core	4-core	¹⁾			
			35	2-core	4-core	¹⁾			
100	50CSB	50CSBA	25	2-core	4-core	¹⁾			
			35	2-core	4-core	¹⁾			
			50	2-core		¹⁾			
					4-core	405 APL			
200	50CSB	50CSBA	70	2-core		¹⁾			
					4-core	405 APL			
			95	2-core		405 APL			
					4-core	505 APL			
			120	2-core		405 APL			
					4-core	505 APL			
				60CSB	60CSBA	70	2-core		¹⁾
							4-core	406 APL	
			95	2-core		406 APL			
					4-core	506 APL			
			120	2-core		406 APL			
					4-core	506 APL			
			150	2-core		506 APL			
400	70CSB	70CSBA	150	–	4-core	507 APL			
			185	–	4-core	637 APL			
			240	–	4-core	637 APL			
			300	–	4-core	757 APL			
630	90CSB		240	–	4-core	639 APL			
			300	–	4-core	759 APL			
			400	–	4-core	759 APL			
		Parallel cables ²⁾	2/150	–	4-core	2 x 509 APL ²⁾			
			2/185	–	4-core	2 x 639 APL ²⁾			
			2/240	–	4-core	2 x 639 APL ²⁾			
800	90CSB		2/300	–	4-core	2 x 759 APL ²⁾			

¹⁾ Sufficient spreading space in switch-disconnector units to mount 'B' gland on to enclosure.

²⁾ For 500 / 630 & 800A unit applications where parallel cables are used you need to order; **6PCB + 802GCC** (copper connection piece) + 2x **90CSB** see configuration on page 162.

EBK110SP



Glasgow spares

Nominal unit
rating, Ie (A)

Eaton list
number

Moving contact fuse carrier; 1 per pole*

63	EBK110SP
100	OBK103SP
200	EBK105SP
400	EBK113SP

Fixed contact base complete; 1 per pole

63...100	102GCEBSP
200	202GCEBSP
400 (2 per pole)	402GCEBSP

*Not suitable for neutral pole

PD1



Handle locking devices

- Facilities are provided for locking off operating handles

Current rating
(A)

Eaton list
number

Handle locking 63–800

PD1¹⁾

¹⁾Operating handles of all units can be locked 'ON' or 'OFF' using padlock only.

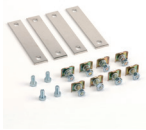
142BBC



Busbar chambers

Nominal unit rating, I _e (A)	Nominal length, mm	Eaton list number
100	550	142 BBC
	900	143 BBC
	1350	144 BBC
	1800	146 BBC
200	550	242 BBC
	900	243 BBC
	1350	244 BBC
	1800	246 BBC
400	550	442 BBC
	900	443 BBC
	1350	444 BBC
	1800	446 BBC
630	900	643 BBC
	1350	644 BBC
	1800	646 BBC
800	900	843 BBC
	1350	844 BBC
	1800	846 BBC

81BBL



Busbar chamber extension sets

Nominal rating, I _e (A)	Eaton list number
630	81 BBL
800	81 BBL

400FSCS



Connection sets for Glasgow fuse-switch-disconnectors & switch-disconnectors

Nominal rating, I _e (A)	Eaton list number
160, 200	200 FSCS
400	400 FSCS
630, 800	800 FSCS

62BBSK



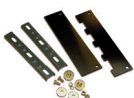
Busbar clamps and sockets – 100–200A Busbars

Type	Nominal rating, I _e (A)	Bore diameter mm	Capacity mm ²	Eaton list number	mm	Bolt Size
U-Clamps	20–63	–	25	2 BBCL	19	M6
	63–100	–	70	3 BBCL	22	M8
	100–200	–	120	6 BBCL	38	–

Busbar clamps and lugs connection – 400–800A Busbars

Type	Nominal rating, I _e (A)	Bore diameter mm	Capacity mm ²	Eaton list number	mm	Bolt Size
U-Clamps	20–63	–	25	4 BBCL	19	M6
	63–100	–	70	5 BBCL	22	M8
	100–200	–	120	6 BBCL	38	–
Lugs connection	315–400	22.5	240	82 BBSK	133	M14

21BBMS



Switchgear mounting sets

Description	Nominal rating, I _e (A)	Eaton list number
Exel Switch-disconnector-fuses/ Switch-disconnectors	20, 32	11 BBMS
	63, 100, 125	21 BBMS
Glasgow Fuse-switch-disconnectors/ Switch-disconnectors	63, 100	31 BBMS
	200	41 BBMS
	400	51 BBMS
	630, 800	61 BBMS

- The difference between 2BBCL/4BBCL is the bolt length(30mm and 50mm respectively).
- The difference between 3BBCL/5BBCL is the bolt length(40mm and 55mm respectively).



Glasgow busbar chamber system

Eaton's busbar chamber system is designed to provide either compact, wall-mounting installations or – by using optional pedestal sets – easily assembled switchboards. Every facility is provided to enable Eaton's switchgear and distribution gear to be mounted easily and economically to busbar chambers which can be applied either to a suitable load-bearing vertical surface; or, by means of a pedestal set, affixed to a vertical surface which need not be load-bearing.

Busbar chambers

These are produced in 100, 200, 400, 630 and 800 Amp. ratings and in four nominal lengths. 100, 200 and 400 Amp units are available in all four sizes; 630 and 800 Amp ratings are offered in the three longest units only. All units in the range share the same height and depth dimensions. Similarly the twin busbars are located in precisely the same positions throughout the range and vary in size only in their front-to-back dimensions according to rating. Detachable end plates enable all units to be extended by coupling to a second busbar chamber using extension sets. Both top and bottom plates are also readily detachable so that marking out and machining can be carried out conveniently on a bench to accommodate Eaton's switchgear either above or below the chamber. Complete mounting kits, including templates, are available for mounting all Exel and Glasgow switchgear. Eaton chambers are fabricated from rust-protected sheet steel with a light grey paint finish. They have been type tested to BS EN 61439 with a rated conditional short circuit current rating of 63kA at Ue 550V and a rated short-time withstand current I_{cw} 20 times nominal rated current for one second. They are designed for use in factory-built assemblies to BS EN 61439. All chambers are subjected to an on-line dielectric test unit which provides a high voltage test between poles; and from poles to earth. Earth continuity is also tested. Rated insulation voltage 660V.

Connection sets for Glasgow fuse-switch-disconnectors & switch-disconnectors

Cable clamps covering all ratings are available for switchgear up to 200A. For connecting Glasgow units of 160A and above, solid copper connection sets are recommended as cost effective and convenient. These comprise pre-formed, insulated links in 4-pole sets supplied with all necessary clamps and fasteners. The appropriate switchgear mounting set (41, 51 or 61 BBMS) must be used with connection sets for 160–800A Glasgow units.

Busbar cable clamps and sockets

Incoming main cable clamps or sockets are not supplied due to the wide range which would be necessary to meet all requirements. Busbar cable clamps comprise plated brass U-clamps and steel slides with all bolts and washers. They are suitable for the connection of small solid or stranded copper conductors and also aluminium conductors using a barrier grease. Busbar cable sockets are plated brass castings complete with clamps and fixings, suitable for the termination of either copper or aluminium conductors. Both clamps and sockets allow for clamping on the busbars without drilling. For cabling direct on to busbars of 630–800A rating a special cable extension is required which can be made to special order.

Switchgear mounting sets

Available for all ratings of Exel switch-disconnectors/switchdisconnector fuses and Glasgow fuse-switch disconnectors and switchdisconnectors enabling these units to be mounted simply and efficiently either above or below the busbar chamber. Each mounting set comprises a template with instructions for machining the top/bottom plate of the busbar chamber; clamping channels, ready pierced for fasteners; all necessary fastenings; and, for Glasgow units, insulated shields and switch filler plates where appropriate.



Glasgow Fuse Switch-Disconnectors | Eaton

Eaton Electric Limited
252 Bath Road
Slough
Berkshire SL1 4DX
United Kingdom
Customer Support Centre
Tel: +44 (0)8700 545 333
Fax: +44 (0)8700 540 333
email: ukcommorders@eaton.com

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