

Installation and Maintenance Instructions for Switch Fuse, Fuse Switch and associated busbar chambers.

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Safety

The equipment must be installed and maintained by competent personnel in accordance with the appropriate statutory regulations and codes of practice e.g. Electricity at Work Regulations, IEE. Wiring regulations (BS7671) Etc.

Ensure the source is isolated elsewhere, locked off and labelled prior to work being carried out on the board. It is the responsibility of the installer to ensure that all electrical connections are tight and satisfactory earth continuity has been achieved.

Following completion of installation these instructions should be left with the equipment/end user.



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1 Switch Fuse and Switch Fuse Disconnectors

1.1 Installation Instructions

All wiring should be carefully routed to avoid interference with the switch mechanism.

Procedure

- Move operating handle to the OFF position, release the door screw(s) and open the door (which can be lifted vertically off its hinges for easier access)
- Remove transparent line terminal protection cover.
- Mark out and drill fixings on vertical mounting surface to suit internal mounting holes and secure to surface.
- Remove top and bottom gland plates.
- Prepare cable accommodation as required and refit.
- Prepare and connect incoming and outgoing phase and neutral conductors. See table below of tightening torques.
- Ensure unit is free of swarf and wall debris.

	Rating		Phase Connection			Earth Bolt		Neutral Connection			Neutral Link	Fuse Links	
	Switch Disconnecter	Switch Disconnecter Fuse	Maximum Conductor Size mm		Tightening Torque Nm	Bolt Size	Tightening Torque Nm	Maximum Conductor Size mm		Tightening Torque Nm	Tightening Torque Nm	Tightening Torque Nm	BS88 Fuse Ref
			Rigid	Flexible				Rigid	Flexible				
SP&N	20A	20A	10	10	2	M6	8	10	10	2	2	2	A1, A2
	32A	32A	10	10	2	M6	8	10	10	2	2	2	A1, A2
	63A	63A	25	25	3.5	M6	8	25	25	3.5	3.5	2	A2, A3
	100A	100A	50	35	3.5	M6	8	50	35	3.5	3.5	2	A2, A3, A4
TP&N	20A	20A	10	10	2	M6	8	10	10	2	2.5	2	A1, A2
	32A	32A	10	10	2	M6	8	10	10	2	2.5	2	A1, A2
	63A	63A	25	25	3.5	M6	8	25	25	3.5	3.5	2	A2, A3
	100A	100A	50	35	3.5	M6	8	50	35	3.5	3.5	2	A2, A3, A4
	125A	-	70	50	10	M6	8	70	50	4.5	4.5	-	-
	160A	-	70	50	10	M6	8	70	50	4.5	4.5	-	-

Connecting the supply

Ensure that connection from supply is connected to LINE terminals which are positioned under the incoming terminal screen.

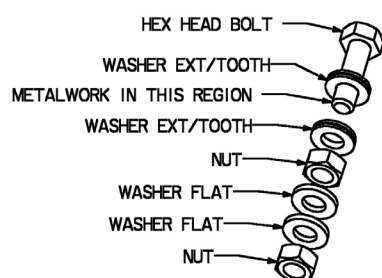
Connect the main earth and earth bonding conductors via one of the alternative hole positions in the enclosure using the separately packaged main earth bolt assembly, ensuring the serrated washer is interposed between the earth bolt and enclosure. See 'Earth Bolt Assembly' drawing for fitting details and table for tightening torque. Fit plug to remaining unused bolt hole.

Check fuse link ratings and connections. See table for tightening torques.

Refit line terminal protective cover and replace door if previously removed.

When commissioning tests are satisfactorily completed, ensure door is closed and secure.

EARTH BOLT ASSEMBLY



1.2 Operation and Maintenance

The switch handle can be padlocked in the 'On' or 'Off' position using up to 4 padlocks via the built-in-handle locking lever.

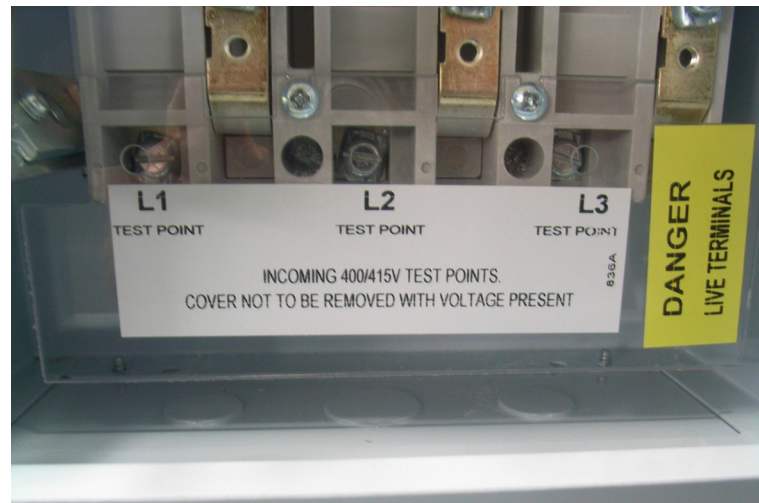
When not padlocked the door interlock can be defeated for test purposes by pressing inwards the lever situated directly below the handle locking lever.

If this is carried out it should be noted that the device is electrically live.

Note: Dimensions for the shackle of the padlock –
Shackle diameter = 5 to 10mm

Check terminals for tightness every 6 months.

1.3 Voltage Test Points



Typical Voltage Test Point Label

2.0 Busbar Chambers for Switch Fuse



Typical Switch Fuse Busbar Chamber

All busbar chambers come with a kit. Each kit contains M8 coachbolts for making the interconnections. Recommended tightening torque 11Nm.

3 Fuse Switch and Fuse Switch Disconnectors

3.1 Installation Instructions

- a. Ensure operating handle is in the 'Off' position, release door-fastening screw and open the door. The door may be lifted off its hinges for ease of access.
- b. To access terminals; remove the clear protective barriers.
- c. To install cables, remove the gland plate and fit cable extension box (if required) using the screws removed from the gland plate. For ease of cable access, the cross rails of the enclosure may be removed.
- d. Install cables and tighten bolts in accordance with the following torque settings.

100 and 160A frame – 25Nm

250, 400, 500 and 630A frame – 40Nm

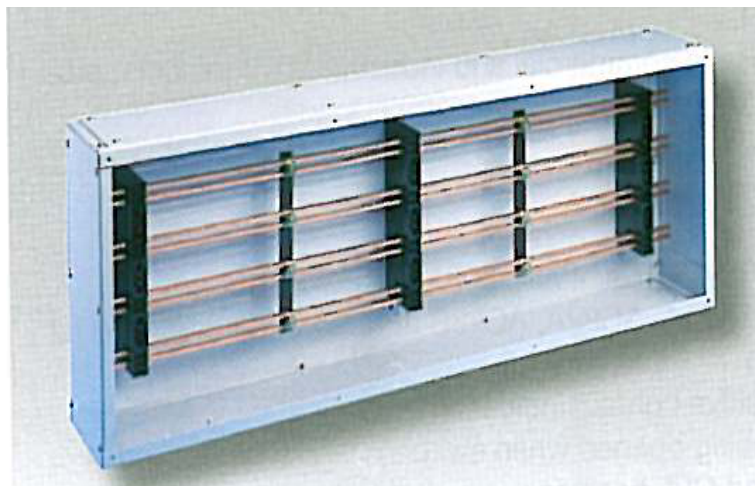
- e. Replace cross rails and protective barriers.

The mouldings should not be dismantled for any reason.

3.2 Replacement Fuse Links

Rating	BS88 Reference
100A	B1 111mm
160A	B2 111mm
200A	B2 111mm
250A	B3/B4 111mm
315A	C1 133mm
400A	C1 133mm
500A	C2 133mm
630A	C2 133mm

4 Busbar Chambers for Fuse Switch



Typical Fuse Switch Busbar Chamber

The busbar chambers allow traditional wall mounted electrical distribution equipment to be built up to suit each application. Connections are available to join most combinations of components to give a rigid, fault rated assembly.

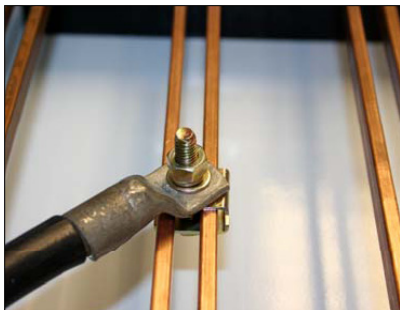


Fig 1

4.1 Busbar Cable Connections

To enable crimped cable ends to be connected to the busbar chamber bars. (Fig 1).

Kit contents:

8 x busbar clamps, 4 x M10 bolts, nuts, plain and spring washers.

Tightening torque: 40Nm for all ratings.

- Pass fixing bolt with one busbar clamp through the busbars from behind.
- Place second busbar clamp over bolt and locate on top of the busbars.
- Position cable lug onto bolt and secure using nuts and washers to the torque detailed.

4.2 Busbar Extension Kits

To electrically and mechanically join busbar chambers.

Kit contents:

200-400A: 4 x busbar links, 8 x busbar clamps, 8 x M10 bolts, nuts, plain and spring washers, 6 x M8 bolts, nuts and washers.

400-630A: 8 x busbar links, 8 x busbar clamps, 8 x M10 bolts, nuts, plain and spring washers, 6 x M8 bolts, nuts and washers.

Tightening torque: 40Nm for all ratings.

- Remove end covers from busbar chambers to be joined.
- Position busbar chambers together and secure together using M8 fixing bolts (Fig 2).
- Place flat washer and insulated copper, if 600-800A rating onto bolt and pass the bolt between the busbars.
- Place copper link on top of the bars. Fit flat spring washers and nuts onto fixing bolts and tighten to the specified torque.
- Refit covers when all other connections made.

4.3 Switch Disconnecter Busbar Connections

To electrically connect switch-disconnector to the busbars.

Kit contents:

4 copper connections, front and rear insulated barriers, M5 screws, plain and spring washers, busbar clamps, M10 nuts, bolts and washers (Fig 3).

Note: the busbar chambers should always be mounted securely before switch units and other accessories are fitted.

- Remove door, gland plate and terminal shields from switch unit and covers from the busbar chamber.
- Using the two insulated barriers as a template mark the fixing holes for the switch unit on the top cover of the busbar chamber keeping the units flush at the rear.
- Use the switch unit to mark the positions of the wall fixings.
- Drill holes previously marked and then loosely secure the switch unit to the wall.
- Place the notched insulation shield between the switch unit and the busbar chamber, towards the rear and loosely fit the rear fixing bolts.

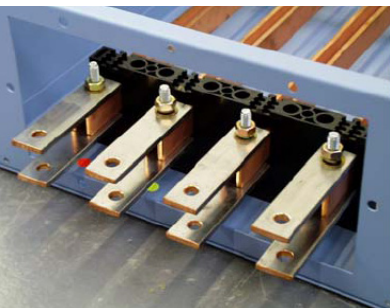


Fig 2

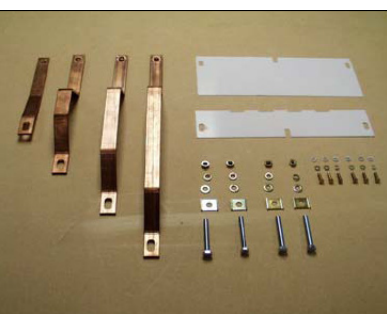


Fig 3

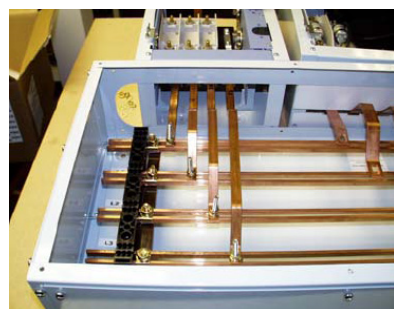


Fig 4



Fig 5

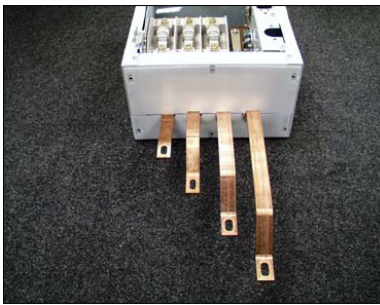


Fig 6

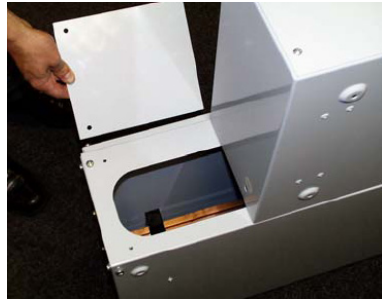


Fig 7

- f. Remove terminal bolts from the switch unit and fit the copper connections between these terminals and the busbars ensuring correct phase alignment, using the M10 bolts, nuts and washers. Leave connections loose (Fig 4 & 5).
- g. Slide the front insulation shield between the busbar chamber and the switch unit. Fit remaining bolts to secure the switch unit to the busbar chamber and the wall. The insulation sheets should now provide a complete shield between the two units (Fig 6).
- h. For 315-800A units the gland plate removed earlier must be cut to fill the space between the front of the busbar chamber and the switch unit using the existing fixing holes.
- i. Cut the busbar chamber cover to length to cover all apertures in the busbar chamber (Fig 7).
- j. Tighten all mechanical fixings between units and to the wall.
- k. Tighten all electrical connections to the required torque of 40Nm for all ratings.
- l. Refit terminal shields and doors to the units and covers to the busbar chamber.

4.4 Voltage Test Points

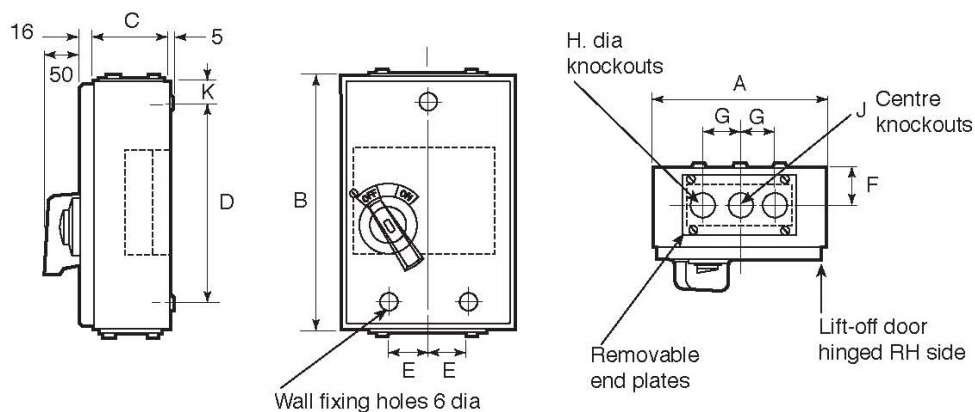


Typical Voltage Test Point Label

5. Dimensions

5.1 Switch Disconnect Fuse

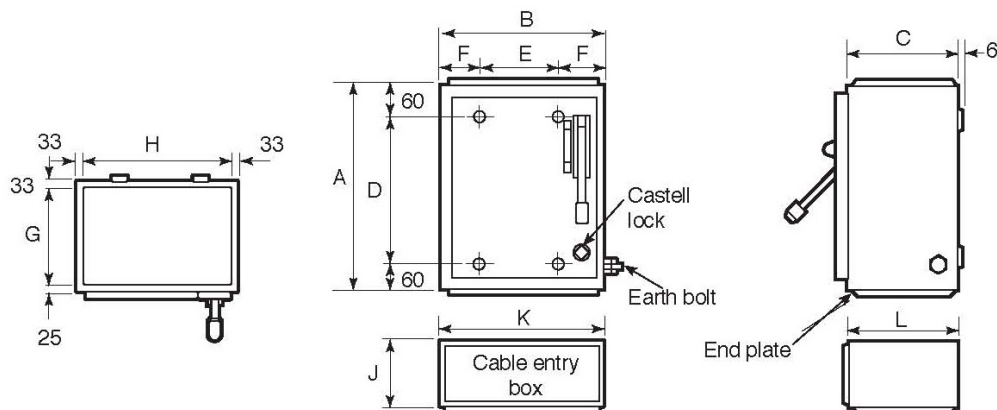
All dimensions in mm



Rating	A	B	C	D	E	F	G	H	J
20A	210	240	105	160	50	51	44	20	25
32A	210	240	105	160	50	51	44	20	25
63A	235	350	105	270	55	51	50	32	32
100A	260	400	120	320	65	51	60	40	40
125A	292	521	121	421	94.5	51	60	40	40
160A	292	521	121	421	94.5	51	60	40	40

5.2 Fuse Switch Disconnect

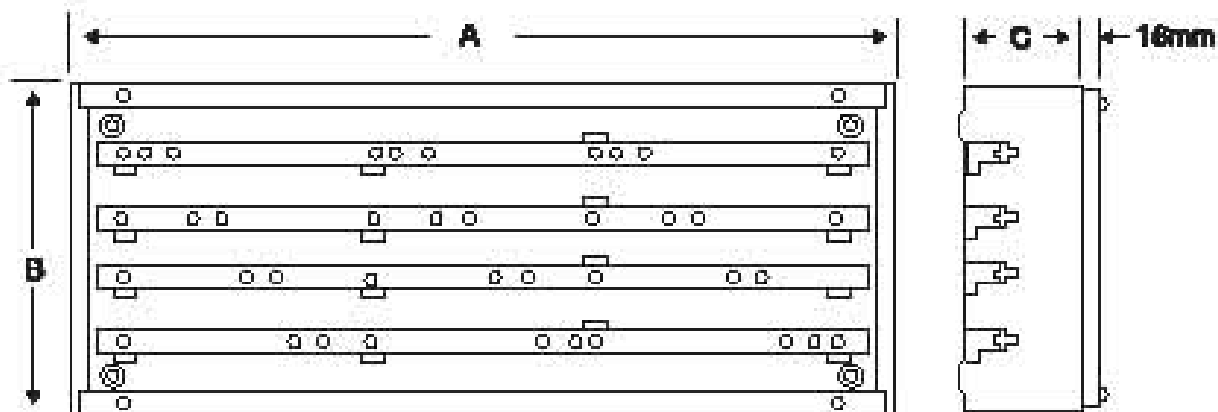
All dimensions in mm



Rating	A	B	C	D	E	F	G	H	J	K	L
63A	380	292	200	260	130	81	142	226	100	292	200
100A	380	292	200	260	130	81	142	226	100	292	200
160A	380	292	200	260	130	81	142	226	150	292	200
200/250A	380	340	200	260	180	81	142	274	180	340	200
315/400A	455	489	270	335	289	100	212	423	300	489	270
500A	455	489	270	335	289	100	212	423	300	489	270
630A	455	489	270	335	289	100	212	423	400	489	270
800A	455	489	270	335	289	100	212	423	400	489	270

5.3 Switch Fuse and Switch Fuse Disconnecter Busbar Chambers

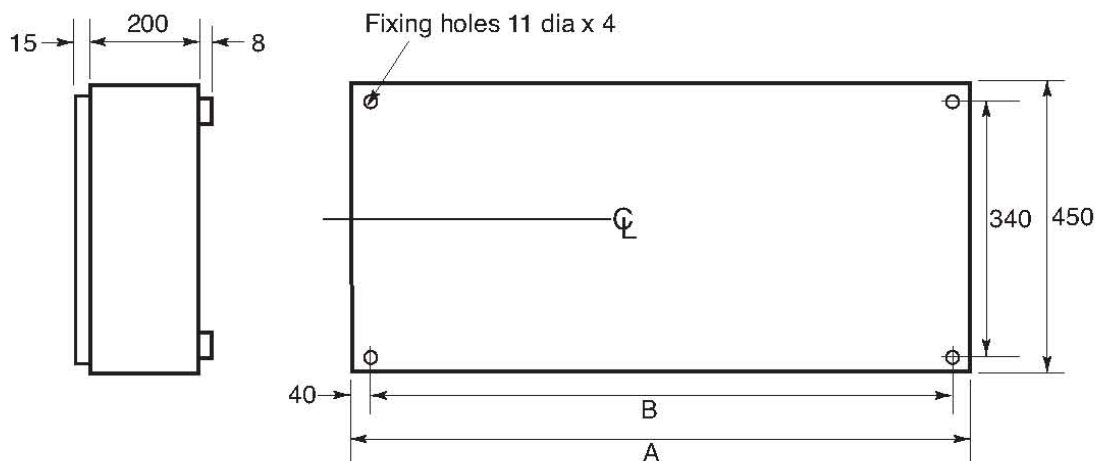
All dimensions in mm



Reference	Rating	A	B	C
SBC106	160A	600	350	120
SBC109	160A	900	350	120

5.4 Fuse Switch and Fuse Switch Disconnecter Busbar Chambers

All dimensions in mm



Rating	A	B	A	B	A	B
	For 750 long		For 1200 long		For 1800 long	
200A	750	670	1200	1120	1800	1720
400A	750	670	1200	1120	1800	1720
630A	750	670	1200	1120	1800	1720
800A	750	670	1200	1120	1800	1720