

GUIDE TO FORMS OF SEPARATION



**Low Voltage Switchgear and
Controlgear Assemblies:**

BS EN 60439-1:2000
(IEC 60439-1)

BEAMA*Installation* Ltd



ABOUT BEAMAInstallation

BEAMAInstallation is an independent, incorporated association of manufacturers of electrical installation equipment and cable management products, representing 95% of the industry.

Its roots go back to the early days of the electrotechnical industry.

During 1972 EIEMA was formed from the Electrical Installation Equipment Department of BEAMA – The British Electrotechnical and Allied Manufacturers' Association. April 2003 saw the creation of BEAMAInstallation Limited through the merger between EIEMA (the Electrical Installation Equipment Manufacturers' Association) and BESA (the British Electrical Systems Association).

BEAMAInstallation has many members - from UK divisions of large multi-nationals to small owner-managed niche market companies. The association is organised into these product groups:

- **Single Phase Product Group (SPPG)**
Wiring accessories, MCBs, RCDs, consumer units.
- **Industrial Products Group (IPG)**
Fuses, distribution boards (standard), switch & fusegear, MCCBs (as well as MCBs and RCDs), ACBs, industrial plugs and sockets.
- **Engineered Systems Product Group (ESPG)**
Low voltage switchboards, busbar trunking systems (busduct) products.
- **Cable Management Product Group (CMPG)**
Cable trunking, cable tray and Powertrack systems.
- **Cutout & Feeder Pillar Group (COFP)**
Cut-outs, feeder pillars.

Benefits of membership fall into two broad categories - representation and access to association services. The main areas in which the association represents its members are in legislative and standardisation matters. The former is by established relationships with appropriate government/EU departments in London and Brussels, through BEAMA and various European manufacturers' groups including ORGALIME, the European Federation for Engineering.

Acknowledgements

BEAMAInstallation would like to thank IEC and BSI for allowing references to their standards; Health and Executive (HSE) for their assistance with Section 10.

Active participation in the work of numerous national, international and European standards committees has ensured the safety and performance of the design, development and manufacture of BEAMAInstallation members' products.

The result is quality equipment of the highest standard throughout each association group.

Other services include legal, statistics and export support. The association is also a channel for liaison with customer associations such as the Electrical Distributors' Association (EDA) and the Electrical Contractors' Association (ECA).

This publication is available at £15 plus postage and packing

CONTENTS



Section	Page
<i>About BEAMAInstallation</i>	
Preface	2
1 Introduction	3
2 Useful definitions	3
3 Fundamentals of separation	4
4 Achieving separation	5
5 Selecting a form of separation	6
6 Form 1 requirements	7
7 Form 2 requirements	8
8 Form 3 requirements	10
9 Form 4 requirements	12
10 Safe working	16
11 Access for cabling	17
12 Marking of terminals	17
13 Decision tree	18
14 Typical quotation questions	20
<i>BEAMAInstallation switchboard manufacturers</i>	



PREFACE

In May 1992 our first Guide to the Forms of Separation to BS 5486 Part 1:1990 was published. That guide was accepted by Specifiers and Industry alike and used almost universally as an industry standard, providing a more clear understanding of the constructional requirements for the various means of meeting internal separation for Low Voltage Switchboard Assemblies.

In 1994, the Standard was amended and re-numbered to align with the European Norm EN 60439-1. Also at this time an initiative by our members contributed to the expansion of the various forms which subsequently led to the publication of a National Annex to the Standard, (see amendment 1: March 1995).

This fifth edition of the guide reflects further changes and therefore remains essential reading for both Specifiers and Users. It is intended as an explanatory document to be used in conjunction with the Standard. Study of this guide will enable Specifiers and Users to match their specific requirements to the even wider range of options available from member companies of the BEAMA *Installation* Low Voltage Switchboard Technical Committee. *(See inside back cover)*

The Standard specifically states that the Forms of Separation shall be the subject of agreement between Manufacturer and User. BEAMA *Installation* believes this guide to be an appropriate basis for such an agreement and it will assist in identifying the most suitable solution for each application. Other forms of construction, however, are not precluded by the Standard.

1 INTRODUCTION

BS EN 60439 Part I, describes a system for classifying the various forms of separation to be provided principally for:

- protection against contact with live parts belonging to the adjacent functional units.
- limitation of the probability of initiating arc faults.
- protection against the passage of solid foreign bodies from one unit of an Assembly to an adjacent unit.

Even though the Standard has now been revised with a UK National Annex to provide a wider scope of forms, it still does not give detailed advice on how to achieve these aims.

Manufacturers of switchboard assemblies employ many variations of design to meet this protection and any other additional market requirements.

The means utilised to achieve these conditions may be partitions or barriers of metallic or non-metallic material. The partitions or barriers may provide individual separate compartments or alternatively, barriered sub-sections.

Greater clarification has been included within this guide by providing some basic definitions of the terms used and explaining some of the various methods employed by manufacturers to meet the required degree of separation.

In general, the cost of an Assembly increases with enhanced levels of separation, but choosing the most expensive arrangement will not necessarily lead to the most appropriate solution.

2 USEFUL DEFINITIONS

The Standard includes definitions relating to Assemblies. Those particularly relevant to the separation of Assemblies include the following. The same clause numbering has been used to aid cross reference to the Standard.

2.1.1 Assembly: *“A combination of one or more low-voltage switching devices together with associated control, measuring, signalling, protective, regulating equipment, etc., completely assembled under the responsibility of the manufacturer with all the internal electrical and mechanical interconnections and structural parts.”* This includes floor standing or wall mounting distribution switchboards, panelboards, and motor control centres using electromechanical and/or electronic components. It does however specifically exclude individual devices and self-contained components which control a single circuit i.e., wall mounted starters and fuse switches.

2.1.5 Functional Unit: *“A part of an assembly comprising all the electrical and mechanical elements that contribute to the fulfilment of the same function.”* Essentially this is all parts necessary to form a complete incoming or outgoing circuit. It includes all the main current carrying equipment, including cable terminals, and control devices within the assembly, that are necessary to form the complete circuit. It excludes the connections from the unit to the busbars (busbar connections) and any insulation or shrouding with which they may be provided. (Generally such connections have a short-circuit rating to match the rated current and short-circuit characteristics of the functional unit and historically were referred to as ‘fault free zones’).

2.2.1 Section: “**A constructional unit of an assembly between two successive vertical delineations**”. Usually considered to be a single full height column containing one or more functional units. Generally several columns are required to complete an Assembly.

2.2.2 Sub-Section: “**A constructional unit of an assembly between two successive horizontal delineations within a section**”. Abstract in nature. The area or space within a column identified and bounded by two adjacent and horizontal constructional members e.g., cross members or shelves.

2.2.3 Compartment: “**A section or sub-section enclosed except for openings necessary for interconnection, control or ventilation.**” An enclosed area or space within an Assembly. Also includes a product complete with its own integral housing (MCB, MCCB, Moulded Switch, ACB) if protection to IP2X is assured. See also 2.4.5.

2.4.5 Enclosure: “**A part providing protection of equipment against certain external influences and in any direction, protection against direct contact to a degree of protection of at least IP2X**”.

2.4.10 Partition: “**A part of the enclosure of a compartment separating it from other compartments**”. A component used to form the top, bottom, sides, front or back of a compartment or enclosure and which can be manufactured from metal or an appropriate plastic material.

2.4.11 Barrier: “**A part providing protection against direct contact from any usual direction of access (minimum IP2X) and against arcs from switching devices and the like, if any**”. Prevents finger contact with live parts and/or protects operators from emissions from switching devices. It can take the form of insulating material in direct contact with the live part, e.g., heat shrink sleeving on a busbar. Alternatively it can take the form of rigid insulation or an earthed metal screen appropriately positioned relative to the live part(s).

3 FUNDAMENTALS OF SEPARATION

In accordance with the Standard, separation of the various elements of an Assembly: busbars, functional units, terminals, can be claimed providing one or more of the following criteria are met:

1. “Protection against contact with live parts belonging to adjacent functional units. The degree of protection shall be at least IP2X or IPXXB”

As a minimum, finger contact with live parts in adjacent functional units is prevented. With Assemblies supplied by BEAMA Installation Member Companies this is extended to include protection against finger contact between: functional units, adjacent busbars and busbar connections, and terminals as required for the particular form of separation being considered.

The requirement is proven with the standard test finger.

2. “Protection against the passage of solid foreign bodies from one unit of an Assembly to an adjacent unit. The degree of protection shall be at least IP2X”

The minimum requirement is proven by the standard test finger not being able to touch live parts in adjacent units and a 12mm ball not being able to pass between units.

In practice a higher degree of protection may be required for horizontal partitions to prevent small objects from falling between compartments and should be identified in the contract specification.

These three fundamental criteria are interrelated. BEAMA *Installation* Member Companies will therefore ensure all three are fully met in respect of the particular form of separation offered.

4 ACHIEVING SEPARATION

The fundamental requirements in the Standard are performance criteria and not constructional details on how separation should be achieved. There is a requirement that Assemblies are divided by means of partitions or barriers (metallic or non-metallic) into separate compartments or barriered sub-sections, but *not* for example:

- each functional unit to be in its own compartment;
- partitions and barriers to be manufactured from earthed metal, etc.

Separation can be achieved in several ways. Depending on a particular application and the requirements for maintenance, this may include:

- a) Insulating sleeving, wrapping or plastic coating of conductors.
- b) Insulated terminal shields or insulating 'boots'.
- c) Rigid insulated barriers or partitions.
- d) Compartments formed from earthed metal.
- e) A device's integral housing.

Where a Specifier or User has a particular preference, this should be clearly stated at the enquiry stage.

5 SELECTING A FORM OF SEPARATION

In general, the price of an Assembly will increase with increased levels of separation and/or types of construction. Choosing the arrangement with the most internal barriers will not always lead to the most appropriate solution.

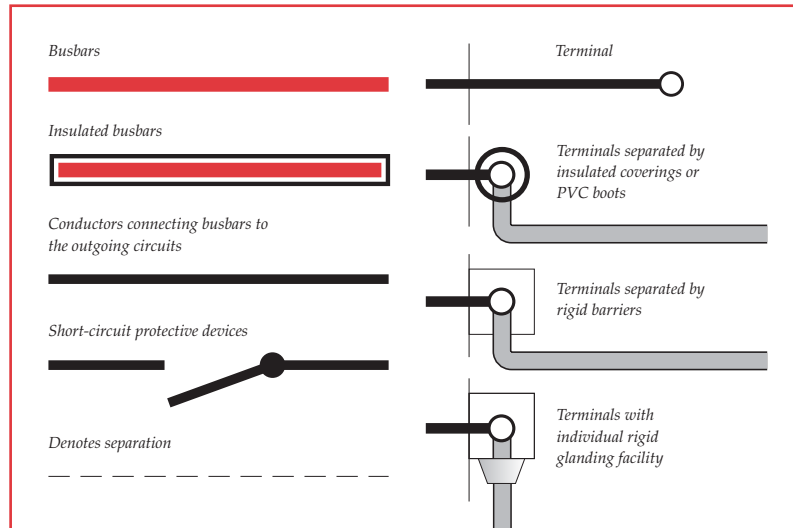
Where specific requirements are not stated or identified, the manufacturer is likely to assume the most cost effective solution will satisfy the customer's needs and offer it accordingly.

To select the most suitable arrangement for each application, BEAMA *Installation* members recommend the following points are considered:

- Site and position of the Switchboard.
- Maintenance requirements of the switchgear.
- Skill level of personnel having access to the Assembly
- Probability of requiring access to the terminals of a particular circuit with those adjacent live and still in service.
- Difficulty and/or inconvenience in isolating the complete Assembly.
- Price and benefits of the different forms.

Further guidance on selection is provided in the form of a decision tree, see Section 13 page 18.

Key throughout



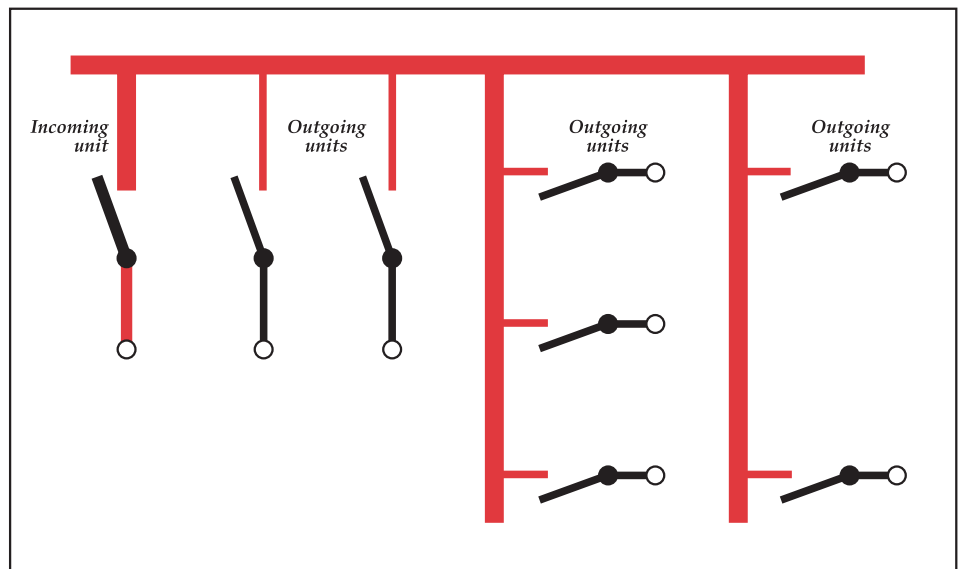
6 FORM I REQUIREMENTS

Form I covers overall Assemblies which are enclosed so as to provide protection against contact with any internal live parts or components, but where no internal separation is provided for functional units or terminations.

For Form I:

- i Busbars **are not** separated from the functional units,
- ii Functional units **are not** separated from other functional units.
- iii Functional units **are not** separated from any incoming or outgoing termination.
- iv Busbars **are not** separated from any incoming or outgoing terminations.

FORM I



7 FORM 2 REQUIREMENTS

Form 2 defines overall Assemblies which are enclosed to provide protection against contact with any internal live parts or components, and where there is internal separation of the busbars from functional units.

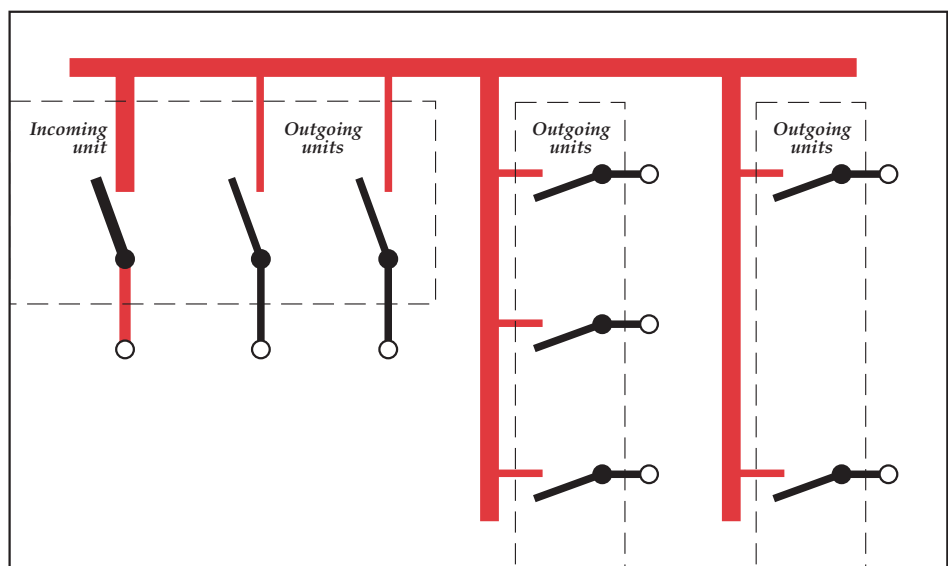
The following general conditions apply:

- i Busbars **are** separated from functional units
- ii Functional units **are not** separated from other functional units.

Compliance with the requirements of Form 2 may be offered by BEAMA Installation manufacturers by any of the three methods. Specifiers and Users should clearly state their preference.

FORM 2 (Form 2a)

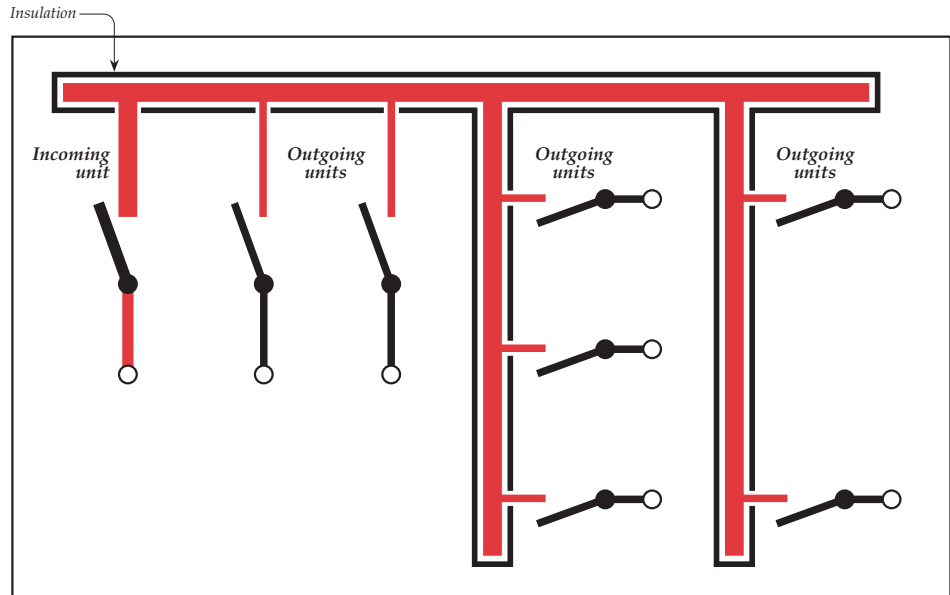
Basic form as above. However, with this method terminals **are not** separated from the busbars, or each other. The actual means of separation is not defined in the Standard.



FORM 2 Type 1 (Form 2b Type 1)

Main criteria as FORM 2. Busbar separation is achieved by insulated coverings, e.g. insulating sleeving, wrapping or coating.

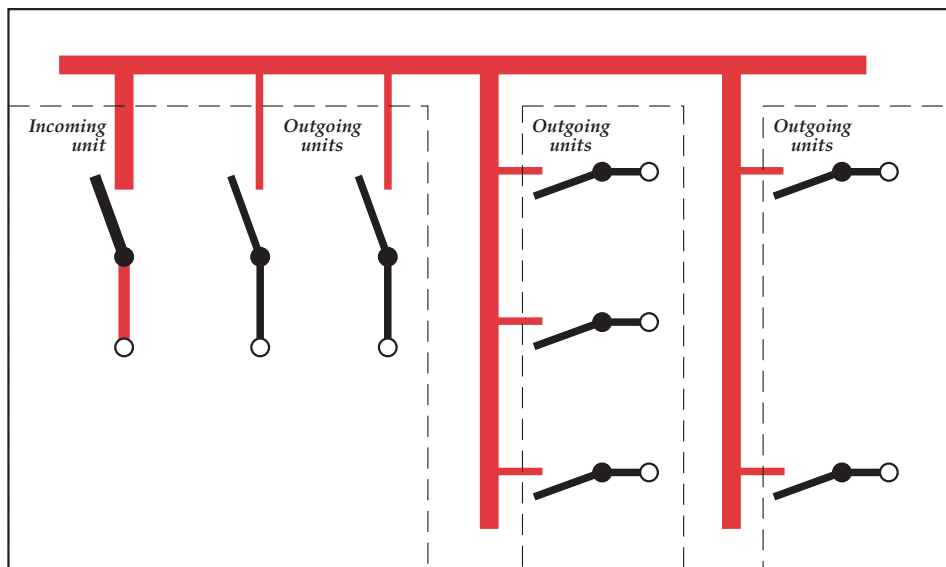
Terminals **are** therefore separated from the busbars, but **not** from functional units or each other.



FORM 2 Type 2 (Form 2b Type 2)

Main criteria as FORM 2. Busbar separation is achieved by metallic or non-metallic rigid barriers or partitions.

Terminals **are** therefore separated from the busbars, but **not** from functional units or each other.



8 FORM 3 REQUIREMENTS

Form 3 defines overall Assemblies which are enclosed to provide protection against contact with internal live parts and components, and in which there is internal separation of the busbars from functional units and separation of all functional units from each other.

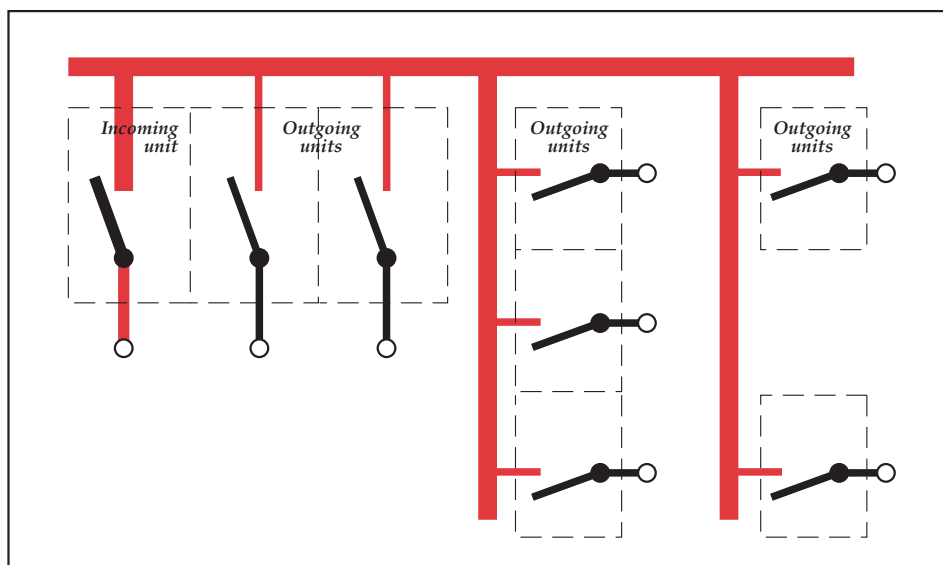
The following general conditions apply:

- i Busbars **are** separated from functional units.
- ii Functional units **are** separated from each other.
- iii Functional units **are** separated from incoming and outgoing terminals.
- iv Incoming and outgoing terminals **are not** separated from each other.

Compliance with the requirements of Form 3 may be offered by BEAMA Installation manufacturers by any of the three methods. Specifiers and Users should clearly state their preference.

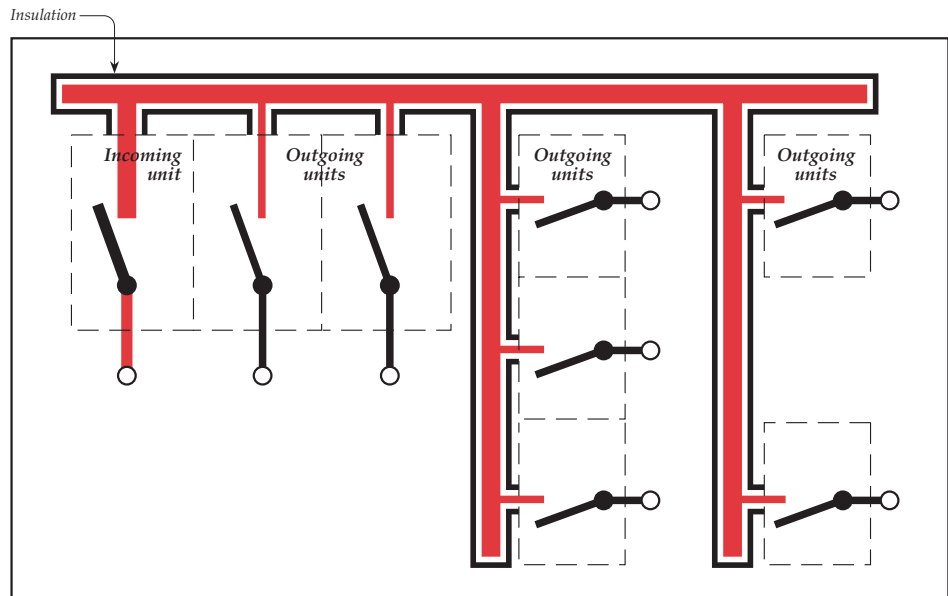
FORM 3a

Basic form as above. Terminals **are not** separated from the busbars or each other. The actual means of separation is not defined in the Standard.



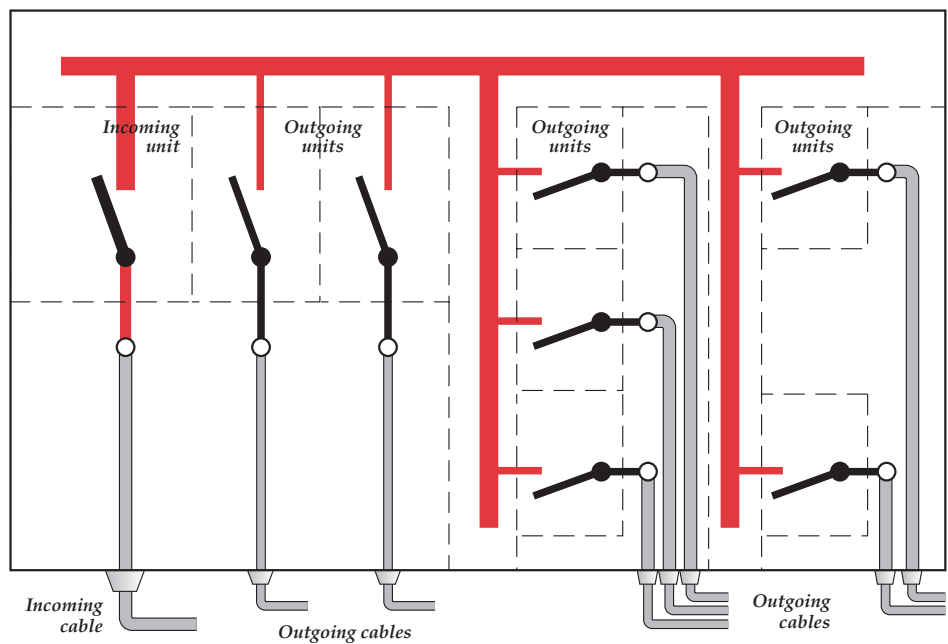
FORM 3b Type I

As basic Form 3. Busbar separation is achieved by insulated coverings, e.g. insulating sleeving, wrapping or coating. Terminals **are** therefore separated from the busbars, but **not** from each other.



FORM 3b Type 2

As basic Form 3. Busbar separation is achieved by metallic or non-metallic rigid barriers or partitions. Terminals **are** therefore separated from the busbars, but **not** from each other.



9 FORM 4 REQUIREMENTS

Form 4 covers overall Assemblies which are so enclosed as to provide protection against contact with internal live parts and components, and in which there is internal separation of the busbar system from functional units, and separation of all functional units from each other. Incoming and outgoing terminals are also required to be separated from the busbars and from each other.

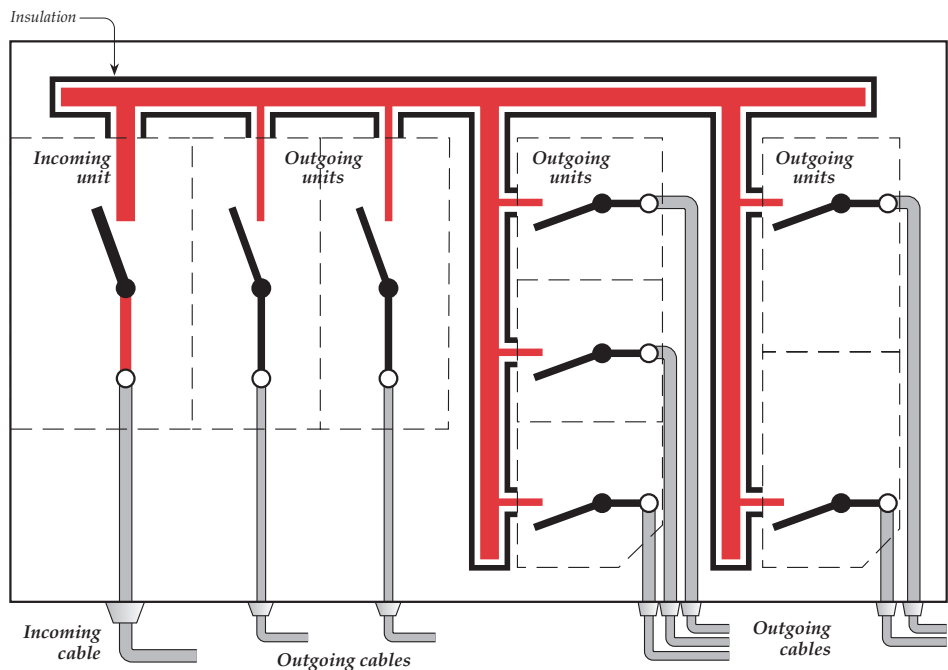
The following general conditions apply:

- i Busbars **are** separated from functional units.
- ii Functional units **are** separated from each other.
- iii Terminations to functional units **are** separated from each other.

Compliance with any of the requirements of Form 4 may be offered by BEAMAInstallation manufacturers by any of the following seven methods. Specifiers and Users should clearly indicate their preference.

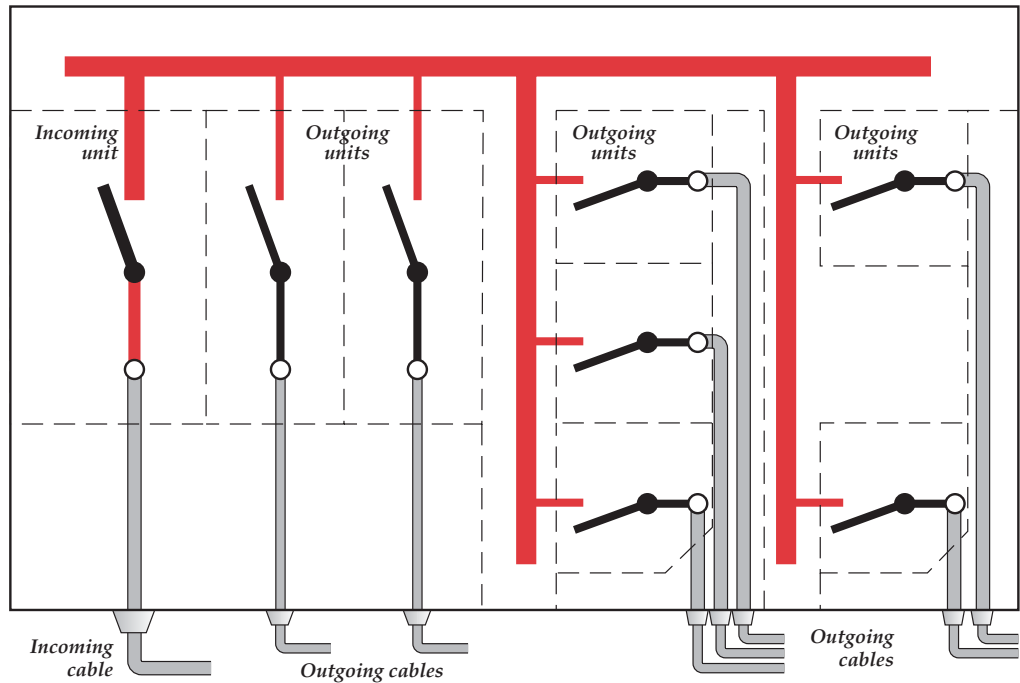
FORM 4 Type I (Form 4a Type I)

As basic Form 4. Busbar separation is achieved by insulated coverings, e.g. insulating sleeving, wrapping or coating. Cables are terminated within the same compartment as the associated functional unit. Cables may be glanded elsewhere, e.g. in a common cabling chamber.



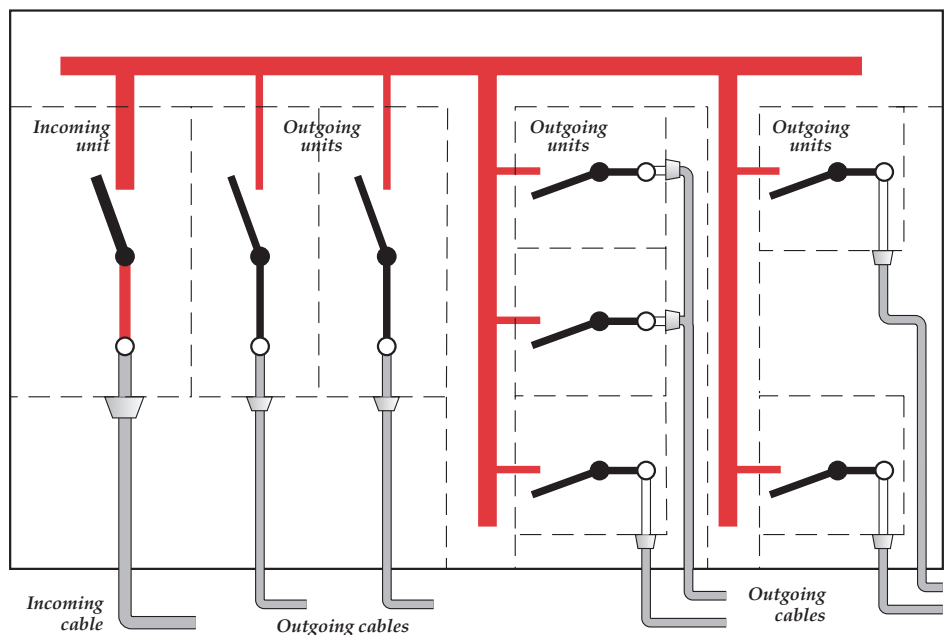
FORM 4 Type 2 (Form 4a Type 2)

As basic Form 4. Busbar separation is achieved by metallic or non-metallic rigid barriers or partitions. Cables are terminated within the same compartment as the functional unit. Cables may be glanded elsewhere, e.g. in a common cabling chamber.



FORM 4 Type 3 (Form 4a Type 3)

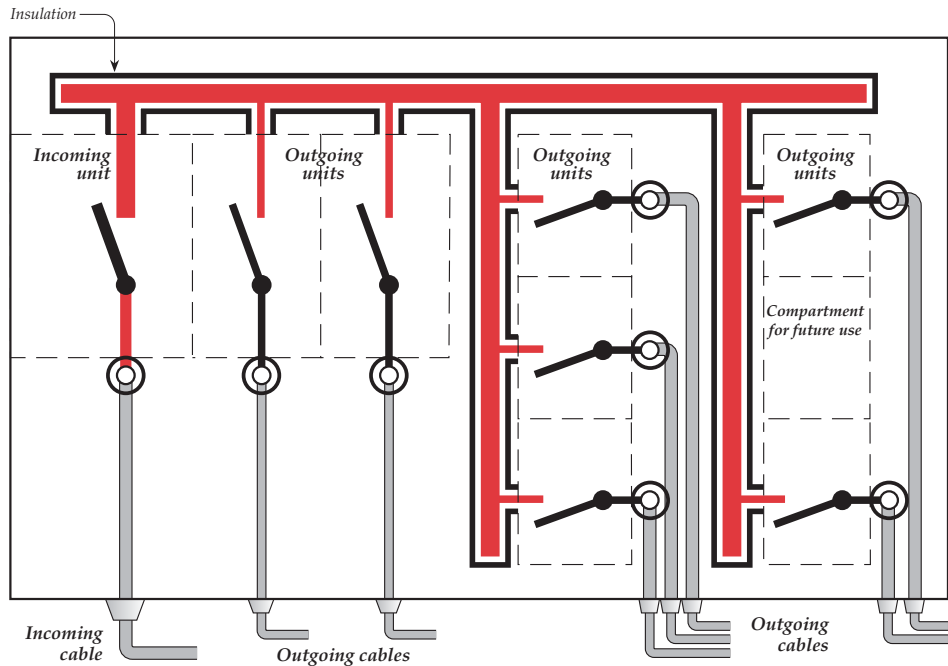
As basic Form 4. Busbar separation is achieved by metallic or non-metallic rigid barriers or partitions. Cables are terminated within the same compartment as the functional unit. The termination for each functional unit has its own integral glanding facility.



FORM 4 Type 4 (Form 4b Type 4)

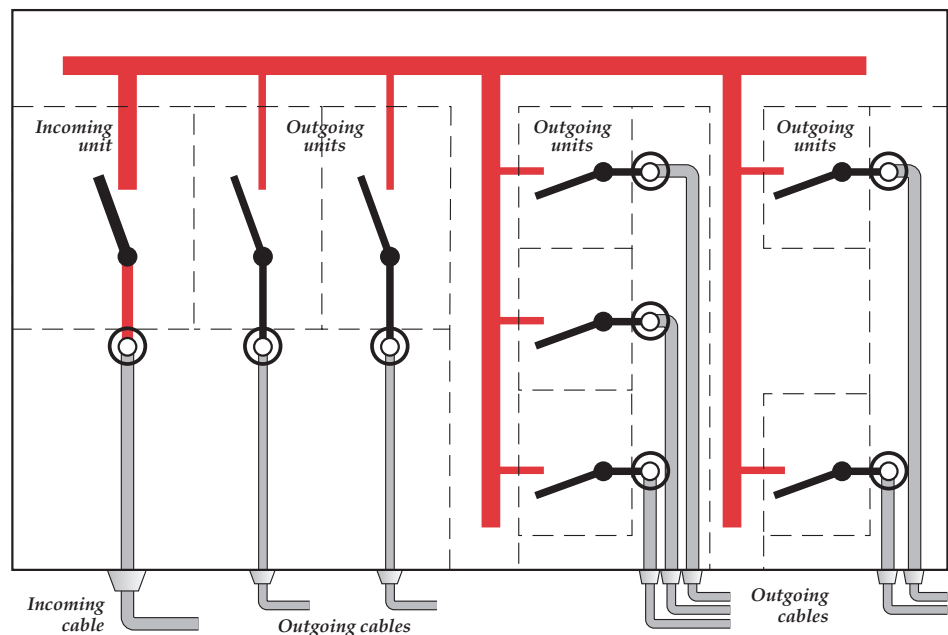
As basic Form 4. Busbar separation is achieved by insulated coverings, e.g. insulating sleeving, wrapping or coating. Terminals are external to the functional unit and separated by insulated coverings, e.g. insulating boots. Cables may be glanded elsewhere, e.g. in a common cabling chamber.

Note: Where connections between the cable terminals and the functional unit pass through the same general compartment as the busbars, busbar separation may be achieved by insulated covering of these connections only.



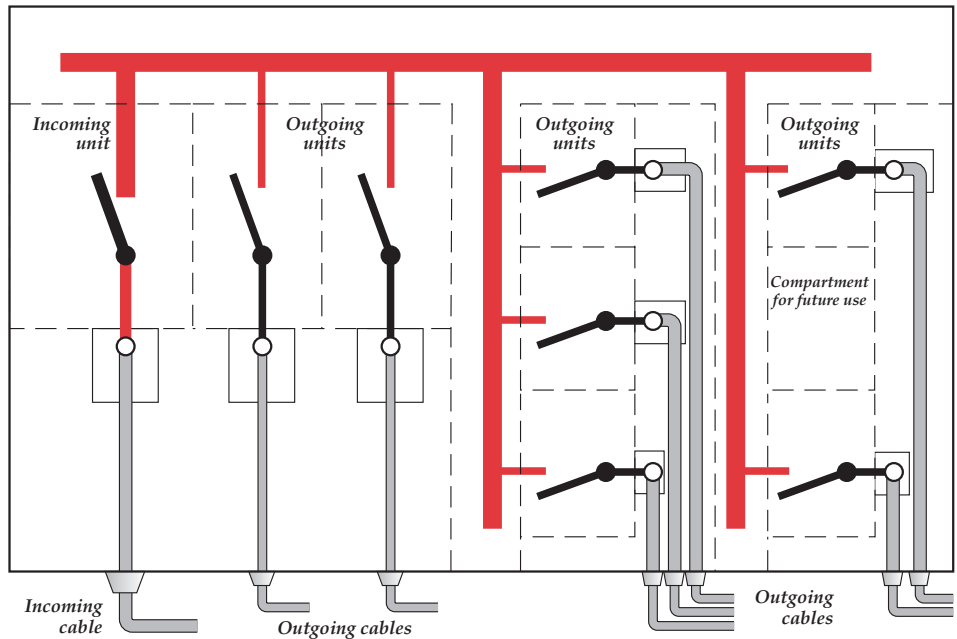
FORM 4 Type 5 (Form 4b Type 5)

As basic Form 4. Busbar separation is achieved by metallic or non-metallic rigid barriers or partitions. Terminals are external to the functional unit compartment and separated by insulated coverings, e.g. insulating boots. Cables may be glanded elsewhere, e.g. in a common cabling chamber.



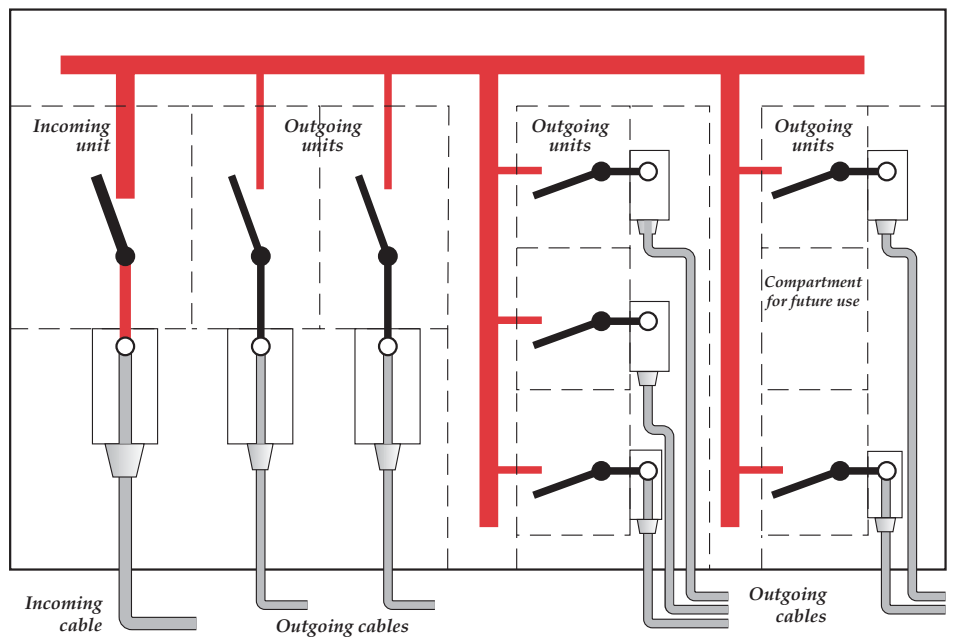
FORM 4 Type 6 (Form 4b Type 6)

As main criteria for Form 4. **All** separation is achieved by metallic or non-metallic rigid barriers or partitions. Terminals are external to the functional unit compartment and enclosed in their own compartment by means of rigid barriers or partitions. Cables may be glanded elsewhere, e.g. in a common cabling chamber.



FORM 4 Type 7 (Form 4b Type 7)

As main criteria for Form 4. **All** separation requirements are achieved by metallic or non-metallic rigid barriers or partitions. Terminals are external to the functional unit compartment and enclosed in their own compartment by means of rigid barriers or partitions complete with integral glanding facility.



10 SAFE WORKING WITH ADJACENT EQUIPMENT ENERGISED

Working safely in part of an Assembly with adjacent sections live is a sensitive issue but cannot be ignored when considering forms of separation.

First and foremost within the UK, the requirements of The Electricity At Work Regulations, **must** be complied with. Regulation 14 is particularly pertinent and requires that:

“No person shall be engaged in any work activity on or so near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise unless:

- a) it is unreasonable in all the circumstances for it to be dead; and**
- b) it is reasonable in all the circumstances for him to be at work on or near it while it is live; and**
- c) suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury.”**

Regulation 4(4) in particular also applies to the provision and use of protective equipment.

Effectively this means that where live working is being contemplated a risk assessment and judgement must be made for every situation by the **Duty Holder***. This must take account of all relevant factors some of which include:

- the effectiveness of isolating the Assembly,
- the task to be performed,
- the skill level of the personnel carrying out the work,
- the level of separation within the Assembly,
- the suitability of the separating barriers within the Assembly for the task being considered,
- the effectiveness of using temporary protective measures,
- use of correct tools, instruments and other work equipment,
- use of warning signs, etc.

Switchboard manufacturers therefore cannot give all embracing assurances for safe working, according to the form of separation with parts of the Assembly energised. Specifying a particular form of separation will not guarantee this for any given Form number. It can only be provided on a case by case basis depending on the work to be done. This is fully recognised in the Standard and requires a separate agreement between Manufacturer and User, as detailed in clause 7.4 and Annex E.

Note: For further reference see HSE publication Electricity at Work - Safe working practices HS(G)85.

*** Duty Holder**
The term used within the Electricity At Work Regulations to refer to the person appointed to be responsible for the electrical equipment, systems and conductors and any work or activities being carried out on or near the electrical equipment. The Duty Holder must be competent and may be the employer, an employee, or a self-employed person.

11 ACCESS FOR CABLING

Generally for front access Assemblies cable compartments are provided alongside the associated functional units. For rear access Assemblies cabling facilities are provided at the rear of the Assembly where working space is required..

In both cases, operation and access to the functional units are normally from the front.

If the Assembly is to be installed against a wall, the Assembly must be designed to ensure that all necessary access can be gained from the front.

If the Assembly is to be installed in a position where there is adequate working space all round, then cabling access may be from either front or rear. Where the Specifier or User has a preference this should be clearly stated in the enquiry.

Generally, for the same number of functional units, front access Assemblies are much longer than the rear access alternative. Conversely where cabling compartments are required at the rear, this necessitates a deeper design of Assembly.

The size of cabling compartments and the general arrangement can be influenced by the number and size of circuit cables and also the direction in which the cables need to approach the Assembly, (e.g. from overhead or via a trench).

12 MARKING OF TERMINALS FOR EXTERNAL CIRCUIT CONDUCTORS

It is the manufacturer's responsibility to provide clear indication of conductor arrangements at the point of connection of external circuits. These markings must be consistent with those shown on the wiring diagrams and drawings.

It is recommended that phase and neutral connections be marked L1, L2 L3 & N. Clear indication should be provided to identify the source phase of a single-phase supply. Earth symbols shall be marked according to IEC 60445. As an example, see graphical symbol No 5019 of IEC 60417. This symbol is not required where the external protective conductor is clearly identified with the colours Green/Yellow.

Fundamental requirements

The Assembly can be totally isolated elsewhere for all activities involving access of any kind

Additional integrity is required by separation of Functional units from the Busbars

Access is required to Functional units for limited maintenance with adjacent circuits live

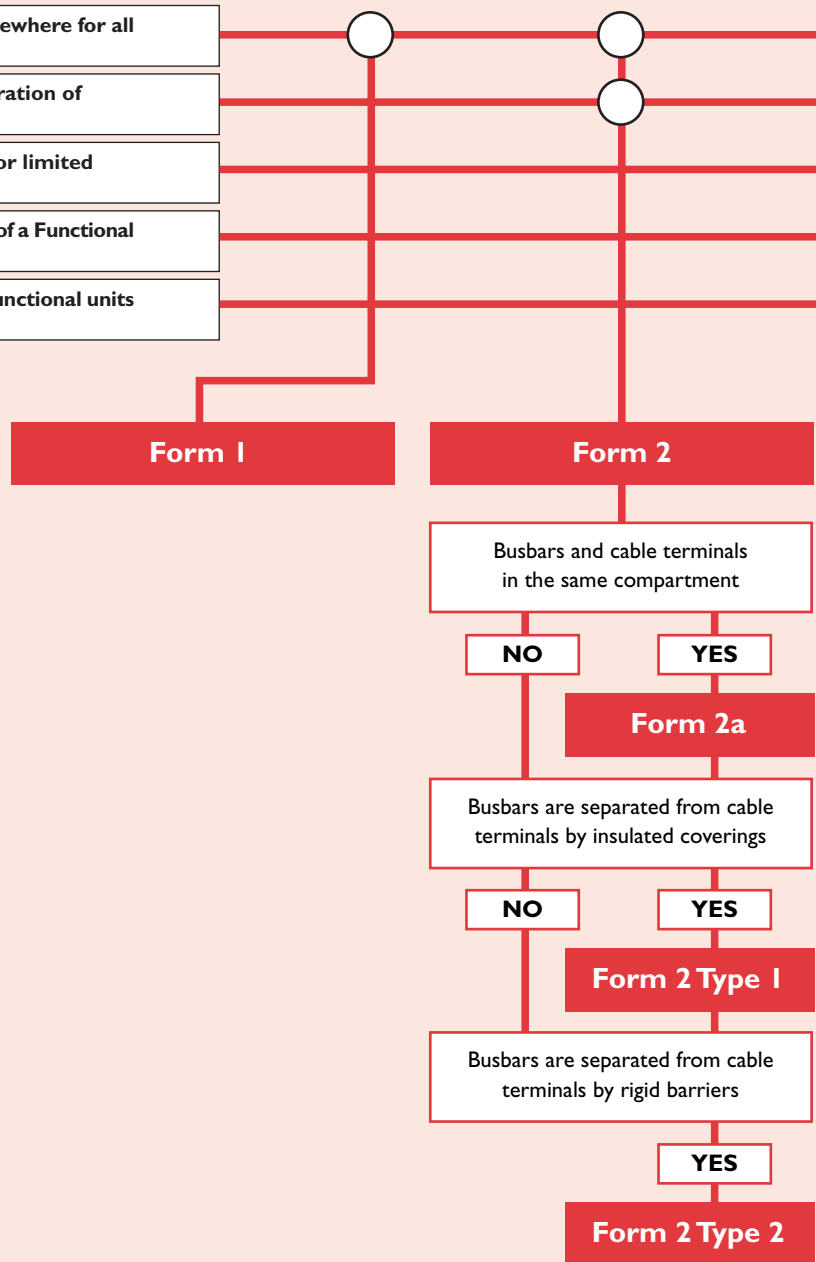
Access is required to the cable terminals of a Functional unit with adjacent Functional units live

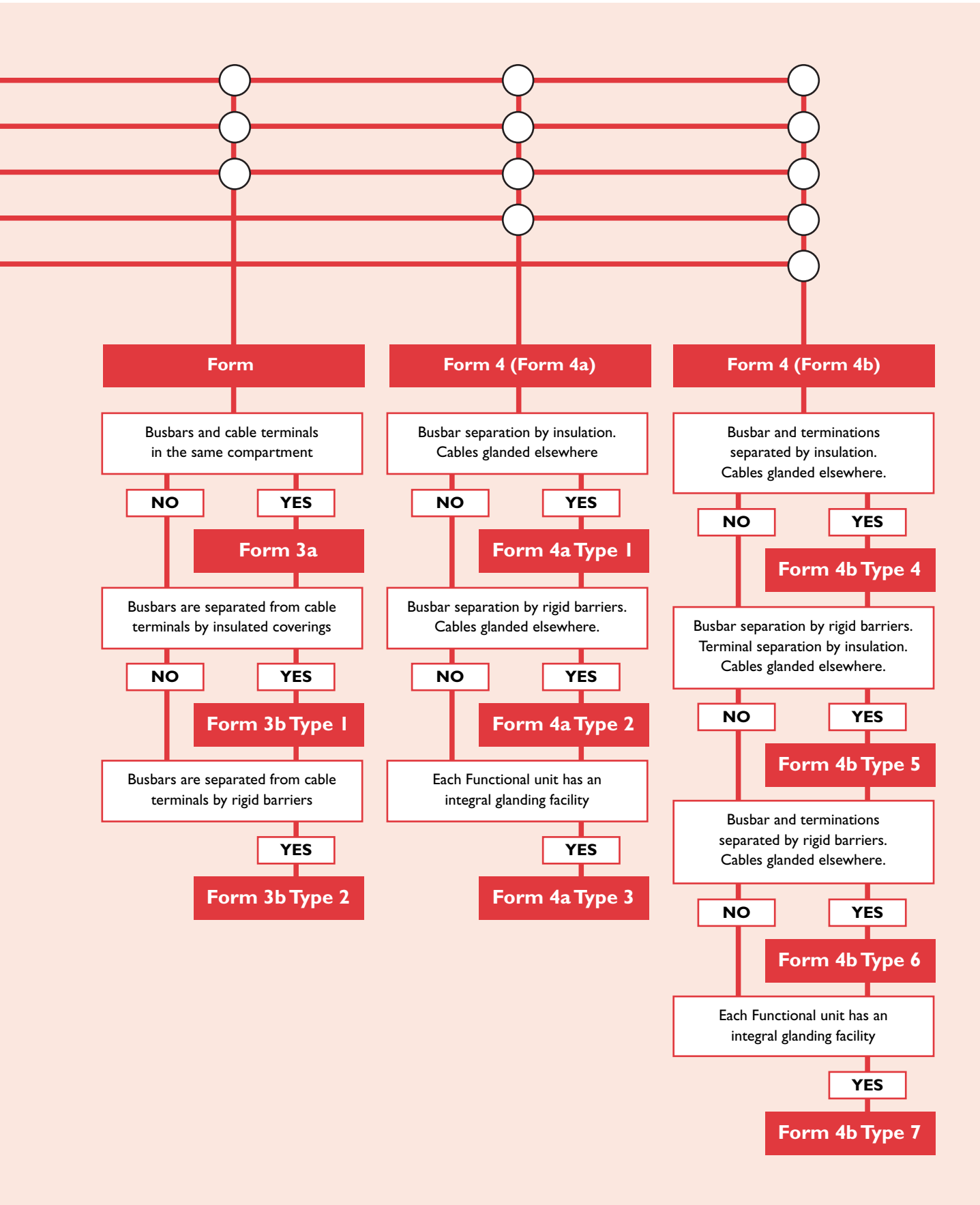
A clear boundary is required between Functional units and Cabling Contractor

13 DECISION TREE

The most appropriate solution for each requirement should be established considering all aspects of the particular application as indicated earlier.

This 'decision tree' is intended to assist in a logical approach to identifying the preferred Form of separation for the assembly being considered.





14 TYPICAL QUOTATION QUESTIONS

Full name & address

Name of Contact
 Phone no:
 Fax no:

Supply details: V. Ph. Hz

Internal separation:
 (BS EN 60439-1)

FORM 1 2 3 4

Indicate type required:

Prospective fault current: (Ip) (I) _____ kA

Busbar/Panel Fault level: _____ kA _____ Secs

or limiting Device (specify): _____

Neutral Busbar: Half Full

Type of incoming device

Isolator Upstream device _____

Fuseswitch

MCCB

ACB

Outgoing Circuit Protective Device

Fuseswitch

MCCB

ACB

Type of access: Rear Front

Manufacturers Standard Height

min height mm max height mm

Degree of protection (BS EN 60529):

IP2X IP3X IP4X Other (specify):
 IP

Physical layout: (2), 3

Incoming cables Btm Top

Incoming position LHS RHS

Trench/Duct available Yes No

Outgoing cables Btm Top

Your ref:

Project title & location:

Dates: Quote by: Delivery by:
 CPA Fixed price until: _____

External Finish:

Manufacturers Standard Colour:

Special (BS Colour Ref): _____

Fuses Fitted: Yes No

Spare fuses (indicate quantity): _____ %

Earthing: Full length Earth Bar:

Earth bar extended adjacent to gland points

Other (specify): _____

Supply Authority Requirements

C/T Links: **Location to incomer:**
 Yes No Before After

Meter Space:
 Yes No N/A

_____ h. _____ w. _____ d.

Space Access Restrictions

If yes, give details: Yes No

General:

Specification attached Yes No

Drawing(s) attached Yes No

Please attach all relevant information including a schematic.

Additional requirements: (3)
 e.g: Metering, Functional or System Interlocking,
 Control or protective relays etc.

Notes: // Important especially where breakers are specified 2/ Please state all cable sizes and directions where known 3/ If insufficient space give details on a separate sheet.



MEMBERSHIP

ABB Low Voltage Systems

Hanover Place, Sunderland
Tyne & Wear SR4 6BY
United Kingdom

T +44 (0) 191 514 4555

F +44 (0) 191 514 5505

E clare.moon@gb.abb.com

W www.abb.co.uk

AF Switchgear & Control Panels Ltd

Nunn Brook Road, Sutton-in-Ashfield
Nottinghamshire NG17 2HU
United Kingdom

T +44 (0) 1623 555600

F +44 (0) 1623 555800

E email@afswitchgear.co.uk

W www.afswitchgear.co.uk

Eaton Bill

Reddings Lane, Tyseley
Birmingham B11 3EZ
United Kingdom

T +44 (0) 121 685 2004

F +44 (0) 121 706 2012

E billinfo@eaton.com

W www.bill-switchgear.com

Eaton Cutler Hammer

Reddings Lane, Tyseley
Birmingham B11 3EZ
United Kingdom

T +44 (0) 121 685 2100

F +44 (0) 121 706 2012

E ch-help-uk@eaton.com

W www.cutler-hammer.eaton.com/global/UK

Eaton MEM

Reddings Lane, Tyseley
Birmingham, West Midlands
B11 3EZ United Kingdom

T +44 (0) 121 685 2100

F +44 (0) 121 706 2012

E meminfo@eaton.com

W www.memonline.com

GR Electrical Services Ltd

Merlin House, Aviation Road
Sherburn Enterprise Park
Sherburn-in-Elmet, Leeds
LS25 6NB United Kingdom

T +44 (0) 1977 681 681

F +44 (0) 1977 685 605

E sales@gr-electrical.co.uk

W www.gr-electrical.co.uk

ICW Power

6-7 Crescent, Tower Bridge
London EC3N 2LY
United Kingdom

T +44 (0) 20 7553 8553

F +44 (0) 20 7702 2002

E info@icwpower.com

W www.icwpower.com

Merlin Gerin LV Equipment

Stafford Park 5, Telford
Shropshire TF3 3BL
United Kingdom

T +44 (0) 1952 290 029

F +44 (0) 1952 290 534

W www.schneider.co.uk

Moeller Electric Ltd

PO Box 35, Gatehouse Close
Aylesbury, Buckinghamshire
HP19 8DH United Kingdom

T +44 (0) 1296 393 322

F +44 (0) 1296 421 854

E marketing@moeller.co.uk

W www.moeller.co.uk

Siemens Automation & Drives

Sir William Siemens House
Princess Road, Manchester
M20 2UR United Kingdom

T +44 (0) 161 446 6400

F +44 (0) 161 446 5352

E cdtech@plcman.siemens.co.uk

W www.siemens.co.uk

Square D

Stafford Park 5, Telford
Shropshire TF3 3BL United Kingdom

T +44 (0) 1952 290 029

F +44 (0) 1952 290 534

W www.squared.co.uk

Ter-Mate Ltd

Leone Works, John Street
New Basford, Nottingham
NG7 7HL United Kingdom

T +44 (0) 115 978 4652

F +44 (0) 115 970 2106

E info@termate.com

W www.termate.com

GUIDE TO FORMS OF SEPARATION



A BEAMA*Installation* Publication
Issue No5

BEAMA*Installation* Ltd

**Westminster Tower
3 Albert Embankment
London SE1 7SL**

Telephone: **020 7793 3013**

Fax: **020 7793 3003**

Email: **cac@beama.org.uk**

Website: **www.beamainstallation.org.uk**

*Other publications from BEAMA*Installation*:*

Guide to the 'IP' Codes for Enclosures

Guide to Switch & Fusegear Devices

Guide to Fuse Link Applications

Guide to Circuit Breaker Standards

Guide to Low Voltage Busbar Trunking Systems

Guide to Type Tested Assemblies and Partially Type Tested Assemblies

RCD Handbook