

# PREVENTION OF PREMATURE COLLAPSE TEST SPECIFICATION BEAMA CABLE MANAGEMENT TECHNICAL COMMITTEE (CMTC)



Version 1

# FOREWORD

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# BEAMA members of the Cable Management Product Group at the time of publication



## ABB Ltd

Tower Court, Courtaulds Way  
Foleshill Enterprise Park  
Coventry, West Midlands CV6 5NX  
Tel: +44 (0) 2476 368 500  
<https://new.abb.com/uk>



## Atkore International

Delta Point, West Bromwich B70 9PL  
Tel: 0121 580 6300  
[www.atkore.com](http://www.atkore.com)



## Cableflow International Ltd

Windsor House, Abbey Barn Road,  
High Wycombe, Bucks HP11 1NN  
Tel: 01494 52 88 11  
[www.cableflow.com](http://www.cableflow.com)



## CMD Ltd

Sycamore Road, Eastwood Trading Estate,  
Rotherham S65 1EN  
Tel: 01709 829511  
[www.cmd-ltd.com](http://www.cmd-ltd.com)



## CMP Products Ltd

Nelson Way, Cramlington NE23 1WH  
Tel: 0191 265 7411  
[www.cmp-products.com](http://www.cmp-products.com)



## Cutterwell & Co

1 Manor Industrial Estate, Flint, CH6 5UY  
Tel: 03316 303280  
[www.cutterwell.co.uk](http://www.cutterwell.co.uk)



## Univolt Uk Ltd

A1 Connect Unit 2, Cole Green Lane,  
Welwyn Garden City, AL7 4FW  
Tel: 01707 379 820  
[www.univolt.co.uk](http://www.univolt.co.uk)



Holding Power

## Ellis Patents Ltd

High St, Rillington, Malton YO17 8LA  
Tel: 01944 758395  
[www.ellispatents.co.uk](http://www.ellispatents.co.uk)



## Gripple Ltd

Savile St E, Sheffield S4 7UQ  
Tel: 0114 275 2255  
[www.gripple.com](http://www.gripple.com)



## Honeywell Building Technologies

The Arnold Centre, Paycocke Road,  
Basildon SS14 3EA  
Tel: 01268 563 000  
[www.mkelectric.com](http://www.mkelectric.com)



## Legrand Electric

Great King Street North, Birmingham B19 2LF  
Tel: +44 (0) 370 608 9020  
Email: [powersales.uk@legrand.co.uk](mailto:powersales.uk@legrand.co.uk)  
[www.legrand.co.uk](http://www.legrand.co.uk)



## Marshall-Tufflex

55-65 Castleham Rd, St Leonards on Sea,  
East Sussex TN38 9NU  
Tel: 01424 856600  
[www.marshall-tufflex.com](http://www.marshall-tufflex.com)



## Philip Grahame International Ltd

Montrose Rd, Dukes Park Industrial Estate,  
Chelmsford CM2 6TE  
Tel: 01245 451717  
[www.philipgrahame.co.uk](http://www.philipgrahame.co.uk)



## Prysmian Group

Chicken Hall Lane, Eastleigh SO50 6YU  
Tel: 0870 513 3143  
[www.prysmiangroup.com/en](http://www.prysmiangroup.com/en)



## Unitrunk Ltd

Blaris Industrial Estate, Altona Road,  
Lisburn, BT27 5QB  
Tel: 02892 625100  
[www.unitrunk.co.uk](http://www.unitrunk.co.uk)



## ZIP-Clip Ltd

Offas Dyke Business Park, Welshpool, Powys  
SY21 8SS  
Tel: 01686 623366  
[www.zip-clip.com](http://www.zip-clip.com)

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## 1. General Scope

The purpose of this technical specification is to aid manufacturers, system designers, specifiers and installers to select and erect Wiring Systems to prevent cables from premature collapse due to the effects of heat caused by fire from an external source.

Cable Management Systems (CMS) manufactured from thermoplastic materials such as PVC-U will soften at around 80°C – 100°C and be molten from 180°C – 200°C. Therefore, the retention of cables in the event of a fire is unlikely. Systems manufactured from metallic materials with low melting points and composite materials may also be susceptible to premature collapse in the event of a fire. To overcome this issue supplementary metallic supports may be used, internally and / or externally to the system as advised by the manufacturer. The purpose of this technical specification is to enable verification of conformity of CMS with current 18th Edition IET Wiring Regulations (BS 7671:2018+A4:2026) regulation 521.10.202. This guidance is to be used for all Wiring Systems (as per BS 7671 110.1.2), which includes fixed wiring for information and communication technology, signalling, cables above false ceilings, control cables and similar systems.

The testing detailed in this technical specification applies to all types of CMS products intended to avoid premature collapse in the event of fire. These tests determine the ability of the CMS to withstand combustion / exhaust gases and heat without collapse but not exposure to the full effect of fire conditions. This covers the phase where egress to safety or ingress to effect rescue by emergency services is possible.

The following table, not exhaustive, includes a list of example CMS products:

Table 1: Examples of CMS products

| Product Type | Cable Management Type                                     |
|--------------|-----------------------------------------------------------|
| <b>A</b>     | Conduit Systems                                           |
| <b>B</b>     | Trunking / Ducting Systems / Channel                      |
| <b>C</b>     | Cable Cleats                                              |
| <b>D</b>     | Cable Tray / Cable Ladder / Mesh Cable Tray (Wire Basket) |
| <b>E</b>     | Suspension Systems (wire rope or threaded rod)            |
| <b>F</b>     | Cantilever arms                                           |
| <b>G</b>     | Trapeze System                                            |

The tests described in this document do not apply to products used for underfloor cable management installations.

The performance of wiring systems is not within the scope of this technical specification. BS 5839 and BS 8519 cover these topics.



## 2. Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes the requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- BS EN 61537:** Cable management. Cable tray systems and cable ladder systems.
- BS EN 61386:** Conduit systems for Cable management.
- BS EN 50085:** Cable trunking systems and cable ducting systems for electrical installations.
- BS EN 61914:** Cable cleats for electrical installations.
- BS 5839-1:** Fire detection and fire alarm systems for buildings – Code of practice for design, installation, commissioning, and maintenance of systems in non-domestic premises.
- BS 6946:** Specification for metal channel cable support systems for electrical installations.
- BS 7671:2026:** Amd 4 – IET Wiring Regulations.
- BS 8519:** Selection and installation of fire-resistant power and control cable systems for life safety and fire-fighting applications. Code of practice.

## 3. Terms and Definitions

For the purposes of this technical specification, the following terms and definitions apply.

### 3.1. Cable Management System (CMS)

Assembly including different system components intended for the accommodation of insulated conductors, cables and possibly other electrical equipment in electrical and/or communication systems.

*Note to entry: Examples of cable management systems are cable tray systems, mesh cable tray systems, cable ladder systems, cable trunking systems, conduit systems, cable ducting systems, cable cleats, cable ties.*

### 3.2. Collapse

- (of a structure) suddenly fall down or give way
- cause (something) to fall down or give way
- fail suddenly and completely
- an instance of a structure falling down or giving way

### 3.3. Composite

Combination of materials comprising of both metallic and non-metallic materials.

### 3.4. Discrete component device

Device consisting of distinct or unconnected elements.

### 3.5. Fitting

System component used to join, change direction, change dimension, or terminate CMS lengths.

### 3.6. Fire

Process in which substances combine chemically with oxygen from the air and typically give out bright light, heat, and smoke; combustion or burning.

### 3.7. Furnace

Furnace, test chamber or controlled fire compartment.

### 3.8. Substrate Fixing

System component to secure other system components to the wall, ceiling, floor, or other structural elements.

### 3.9. Heat

Heat is the flow of energy from a warm object to a cooler object.

### 3.10. Manufacturers declared load

Load declared by the manufacturer.

### 3.11. Measurement Device

Appropriate device or equipment to be able to measure the deflection of the product being tested.

### 3.12. Metallic

Consisting of metallic material only.

### 3.13. Non-metallic

Consisting of non-metallic material only.

### 3.14. Premature

Occurring or done before the usual or proper time; too early.

### 3.15. Safe Working Load (SWL)

Maximum load that can be applied safely in normal use.

### 3.16. Uniformly Distributed Load (UDL)

Load applied evenly over a given area.

## 4. Wiring System Zones

### 4.1.

In the following table the Zones are numbered to enable designers and/or test engineers to understand where the requirements are to be applied, see table 2 and Appendix A – Figure A1:

Table 2: Zones

| Zone Ref    | A          | B     | C    |
|-------------|------------|-------|------|
| Height (mm) | ≥800 ≤2100 | >2100 | <800 |

## 5. General Test Conditions

Tests according to this document are type tests.

### 5.1 Temperature / Heat & Furnace Pressure

5.1.1 These test criteria concern HEAT and not FIRE.

5.1.2 Due to furnace limitations radiated heat to maintain a uniform temperature level may not be possible.

5.1.3 The use of burners is acceptable for the prescribed tests.

5.1.4 Consideration shall be given to the location of the assembly in the chamber in relation to the burner position so as they are not in direct line of the flame.

5.1.5 Electric laboratory ovens can be used for discrete items.

5.1.6 The pressure within the furnace is not required to be measured.

### 5.2 Load Materials

5.2.1 These tests are designed for products that have been designed and manufactured to prevent premature collapse of Wiring Systems in the event of fire and not related to the maintenance of continuity of service of electrical safety services, for this reason and consistency cabling of any type shall not be used as a material for the following tests. *BS 7671 Chapter 52, regulation 521.10.202: Regulation 521.10.202 requires cables to be adequately supported against their premature collapse in the event of a fire and applies throughout the installation, not just in escape routes.*

5.2.2 Loads shall be simulated using non-combustible materials such as chains, catenary wire or weights.

5.2.3 The load materials selected shall not add to the rigidity of the materials being tested.

5.2.4 Furnace: The furnace used shall be selected according to the size of the product and load material being tested.

### 5.3 Zone 'A' and 'B': Temperature and Test Duration (See Appendix A)

5.3.1 The temperature of the material immediately before the start of the test shall be  $25^{\circ}\text{C} \pm 15^{\circ}\text{C}$ .

5.3.2 Linear Systems: The temperature at the location of the Wiring System within the furnace shall be increased to a value of  $650^{\circ}\text{C} - 0^{\circ}\text{C} + 40^{\circ}\text{C}$  as per the Cellulosic curve (ISO-834, BS 476 & DIN 4102). (See Appendix E – Cellulosic curve) once the temperature has been attained, the temperature should be held for the duration of the test. The

temperature shall be measured at the mid-point of the assembly.

5.3.3 Discrete Items: The temperature at the location of the Wiring System within the furnace shall be increased to a value of  $650^{\circ}\text{C} - 0^{\circ}\text{C} + 40^{\circ}\text{C}$  as per the Cellulosic curve (ISO-834, BS 476 & DIN 4102). (See Appendix E – Cellulosic curve) once the temperature has been attained, the temperature should be held for the duration of the test.

5.3.4 The temperature of  $650^{\circ}\text{C} - 0^{\circ}\text{C} + 40^{\circ}\text{C}$  shall then be maintained for the remaining duration of the 60-minute test.

### 5.4 Zone 'C': Temperature and Test Duration (See Appendix A)

5.4.1 The temperature of the material immediately before the start of the test shall be  $25^{\circ}\text{C} \pm 15^{\circ}\text{C}$ .

5.4.2 Linear Systems: The temperature at the location of the Wiring System within the furnace shall be increased to a value of  $200^{\circ}\text{C} - 0^{\circ}\text{C} + 40^{\circ}\text{C}$  as per the Cellulosic curve (ISO-834, BS 476 & DIN 4102). (See Appendix E – Cellulosic curve) once the temperature has been attained, the temperature should be held for the duration of the test. The temperature shall be measured at the mid-point of the assembly.

5.4.3 Discrete Items: The temperature at the location of the Wiring System within the furnace shall be increased to a value of  $200^{\circ}\text{C} - 0^{\circ}\text{C} + 40^{\circ}\text{C}$  as per the Cellulosic curve (ISO-834, BS 476 & DIN 4102). (See Appendix E – Cellulosic curve) once the temperature has been attained, the temperature should be held for the duration of the test. The temperature shall be measured at the mid-point of the assembly.

5.4.4 The temperature of  $200^{\circ}\text{C} - 0^{\circ}\text{C} + 40^{\circ}\text{C}$  shall then be maintained for the remaining duration of the 60-minute test.

### 5.5 Cable Management Product Movement Limitations

5.5.1 Horizontal runs: For horizontal runs in zones 'A' and 'C' the vertical movement as a result of fire, of the wiring system or its contents shall not be greater than 300mm (See appendix A figure 1 and 2).

5.5.2 Vertical runs: For vertical runs in zones 'A' and 'C' the horizontal movement, as a result of fire, of the wiring system or its contents shall not be greater than 150mm.

5.5.3 Materials within zone B: refer to BEAMA prevention of premature collapse – a guide to the design, installation, and inspection of cable management systems for further information regarding zone <https://www.beama.org.uk/resourceLibrary/premature-collapse-guide-2026.html>

## 6. Test criteria for CMS products and accessories tested individually

### 6.1 Scope

This section specifies test requirements for cable cleats, clips, saddles, conduit saddle clamps, cable ties and other discrete components used for securing cables to the CMS or building structure that may be used to prevent premature collapse of a wiring installation in heat affected areas as a result of a fire.

The test is applicable to component devices that secure cables being supported so there is no risk of cable spilling out of position when affected by the heat of a fire in a building.

This test does not apply to linear cable management products such as conduit, trunking, cable tray, mesh cable tray or ladder but may be applied to discrete components used to support these products or cable contained on or within them.

Where tests are carried out on cable retaining clips for trunking and conduit, the tests shall be carried out in conjunction with a length of trunking or conduit two times the clip fixing distance as declared by the manufacturer plus 300mm.

### 6.2. General

- 6.2.1.** The individual products being tested shall provide adequate mechanical strength.
- 6.2.2.** The main criterion of the test shall be to confirm the ability of the product to maintain its form under the applied test load at the test temperature for the duration of 60 minutes to provide support of cables and prevent premature collapse.
- 6.2.3.** Where there are a number of products in a range, and the same safe working load applies to all products in the range, then the test only needs to be performed on the smallest and the largest size of product. In other cases, each size must be tested.
- 6.2.4.** All tests shall be carried out on three new samples of each size selected.
- 6.2.5.** The samples shall be assembled and installed as for normal use according to the manufacturer's or responsible vendor's instructions.
- 6.2.6.** Where a discrete component device is designed to accommodate more than one cable the number, size and shape of the mandrels used in the test shall represent the number, size and shape of the cables for which the component device is intended.
- 6.2.7.** Where there is no minimum limit on the diameter of cable installed in a bundle then 6 mm diameter mandrels shall be used to build the appropriate size bundle.
- 6.2.8.** Test requirements for cable retaining clips for metallic trunking: Tests are to be carried out in conjunction with the metallic trunking.
- 6.2.9.** Tests on non-metallic and composite trunking devices shall not commence earlier than 168 hours after manufacture. Ref: BS EN 50085:2005+A1:2013 clause 5.3
- 6.2.10.** Tests on non-metallic and composite conduit devices shall not commence earlier than 240 hours after manufacture. Reference: BS EN 61386:2008+A1:2019 clause 5.4

- 6.2.11.** When toxic or hazardous processes are used, due regard shall be taken of the safety of persons within the test area.
- 6.2.12.** Compliance is satisfied if all the applicable test requirements are achieved and recorded as per clause 11 document of this document.

### 6.3. Mechanical properties

Discrete component devices shall be:

- 6.3.1.** Compliant with all requirements of their respective product standard(s).
- 6.3.2.** Capable of accommodating the size or range of cable or cable bundle diameter declared by the manufacturer or responsible vendor.
- 6.3.3.** Capable of withstanding the manufacturers declared load at the maximum declared temperature. Compliance is checked by the test according to clause 6.

### 6.4. Load test at temperature

- 6.4.1.** The component device is mounted on a test rig as shown in *Appendix B* or a similar arrangement.
- 6.4.2.** The mounting surface can be made of any suitable material.
- 6.4.3.** For the purpose of applying the load:
  - 6.4.3.1.** Cable Cleats (*Appendix B: Figures 3-8*): a rigid mandrel of circular, or another appropriate cross-section, is positioned within the component device aperture. For component devices taking more than one cable, the appropriate number of mandrels is used. Where it is not possible to apply the desired load by the weight of the mandrel(s) alone, additional weight shall be attached to a mandrel. Where more than one mandrel is used the weight shall be attached to a mandrel furthest from the mounting surface. Care is taken to ensure that the load acts through the centre line of the mandrel. The mandrel size is the minimum for which the component device is designed.
  - 6.4.3.2.** Cable clips: Clips used to support cable(s) direct to the substrate shall be tested as per clause 6.4.3.1 of this document.
- 6.4.4.** The sample assembly is placed in a full draft air circulating furnace. The temperature of the furnace and the duration of the test shall be as defined in clause 5 of this document.
- 6.4.5.** A component device intended for a single mounting orientation shall be tested in that orientation and that orientation shall be declared in the documentation.
- 6.4.6.** A component device intended for multiple mounting orientations shall be tested in each mounting orientation using separate samples. The test load on all samples shall be applied vertically. See *Appendix B*.
- 6.4.7.** When it can be determined that a particular mounting orientation represents the most onerous condition, the results of the tests in that orientation may represent all mounting orientations. All mandrels shall remain within the component device until the conclusion of the test.

## 7. Test criteria for linear CMS products tested as an assembly.

### 7.1 Scope

This section specifies test requirements for linear CMS systems, e.g., cable tray, mesh cable tray, ladder, conduit or trunking used for securing cable or cable management products that may be used to prevent premature collapse of a wiring installation in heat affected areas as a result of a fire.

The test is applicable to linear cable management products tested as part of an assembly.

The test is to determine whether cables remain supported when the linear CMS is affected by the heat of a fire in a building. Cables shall be fully supported to ensure movement is limited when the product distorts and moves due to heat of the test.

For horizontally linear CMS with the opening at the top of the component, the test may be carried out without lids or cable retention clips.

Where the linear CMS is to be used in any other orientation it shall be tested in that orientation with a lid and/or cable retention clips, the test results are only applicable to installations where lids and / or cable retention clips are used.

Support devices, such as trapeze arms, cantilever brackets, threaded rods etc., may also be tested individually in accordance with clause 8 of this document.

### 7.2. General

**7.2.1.** Linear CMS systems shall provide adequate mechanical strength.

**7.2.2.** The main criteria for the linear CMS system is to provide support and restrict the movement of the cables when loaded to the declared manufacturer or responsible vendor specification, throughout the duration of the test.

**7.2.3.** Where there are a number of products in a range, and the same declared load applies to all products in the range, then the test only needs to be performed on the smallest and the largest size of product. In other cases, each size must be tested.

**7.2.4.** All tests shall be carried out on the number of samples as defined in the relevant product standards:

7.2.4.1. BS EN 61537 – Cable management. Cable tray systems and cable ladder systems

7.2.4.2. BS EN 50085 – Cable trunking systems and cable ducting systems for electrical installations

7.2.4.3. BS EN 61386 – Conduit systems for cable management

**7.2.5.** The samples shall be assembled and installed as for normal use according to the manufacturer's or responsible vendor's instructions.

**7.2.6.** Tests on non-metallic and composite trunking systems shall not commence earlier than 168 hours after manufacture. Ref: BS EN 50085:2005+A1:2013 clause 5.3

**7.2.7.** Tests on non-metallic and composite conduit systems shall not commence earlier than 240 hours after manufacture. Ref: BS EN 61386:2008+A1:2019 clause 5.4

**7.2.8.** Compliance is satisfied if all the applicable test requirements are achieved and recorded as per clause 10 of this document.

### 7.3. Mechanical properties

**7.3.1.** Compliant with all requirements of the relevant product standard.

**7.3.2.** Capable of accommodating the size or range of cable or cable bundle diameter declared by the manufacturer or responsible vendor.

**7.3.3.** Capable of withstanding the load at the maximum declared temperature. Compliance is checked by the test according to clause 5.3 of this document.

**7.3.4.** For the intermediate widths, the declared load shall then be determined by interpolation of the test results. In other cases, each size must be tested.

**7.3.5.** If a sample does not satisfy a test due to an assembly or a manufacturing fault, that test and any preceding one which may have influenced the results of the test shall be repeated, all of which shall comply with the requirements.

**7.3.6.** For cable tray, mesh cable tray, ladder mounted horizontally running in the horizontal plane the test arrangements shall be the same as in BS EN 61537 (clause 10.4) for single span where a joint shall be included in the span and located at the centre. If the manufacturer's or responsible vendor's instructions do not declare that fittings shall be supported, then fittings shall be included in the test. Compliance is checked by the test according to clause 5. (*Appendix C: Figure 6a*)

**7.3.7.** For conduit and trunking systems mounted horizontally running in the horizontal plane the test arrangements shall be for a single span where a joint shall be included in the span and located at the centre and supported as per the IET On-site guide for BS 7671 or as per the manufacturers or responsible vendor's instructions.

**7.3.8.** For cable management installations that are run in the horizontal plane where cable access is from the front or from the underside (lid down) if inverted, the method of fixing the cable to a cable tray, mesh cable tray or ladder will be the likely mode of failure in a fire or heat affected zone. These devices shall be tested in accordance with clause 6 of this document.

**7.3.9.** For cable management systems installed with front access or inverted cable access in the horizontal plane and front cable access in the vertical plane the support of cables in a fire or heat affected zone will rely on the cable retainers and the trunking lid. Ferrous trunking systems that utilize steel screws and nuts to retain the trunking lid do not need to be tested if the lid fixing positions fall within the spacing's set out in clause 7.4 of this document, such systems can be classified suitable for the prevention of premature collapse if the manufacturer or responsible vendor supplies appropriate installation documentation.

**7.3.10.** For cable management systems installed with front access or inverted cable access in the horizontal plane and front cable access in the vertical plane that rely on zinc or alloy turnbuckle devices to retain the trunking lid, compliance will be checked by the test according to clause 7.

- 7.3.11.** Conduits Saddles (*Appendix B: Figure 9 & 10*): The manufacturer specified conduit shall be used to support the load. A suitable length of conduit shall be used to support the discrete clip / support.
- 7.3.12.** Mini / Maxi Trunking (*Appendix B: Figure 11, 12, 14 & 15*): The manufacturer specified mini or maxi trunking shall be used to support the load. A suitable length of mini or maxi trunking shall be used to support the discrete clip / support.
- 7.3.13.** Dado & Skirting Trunking (*Appendix B: Figure 13*): The manufacturer specified mini or maxi trunking shall be used to support the load. A suitable length of mini or maxi trunking shall be used to support the discrete clip / support.

## 7.4. Load test at maximum temperature

- 7.4.1.** The cable tray, mesh cable tray, ladder and trunking systems shall be mounted in accordance with declared load to the manufacturer's or responsible vendor's instructions into a furnace, test chamber or controlled fire compartment.
- 7.4.2.** The support spans shall be selected from table 3 'Classification of spacing' below. This information shall be recorded for published results. See clause 11 of this document.

**Table 3: Spacing classification**

| Classification | Span (mm) |
|----------------|-----------|
| <b>A</b>       | 1200      |
| <b>B</b>       | 2500      |

- 7.4.3.** The load declared by the manufacturer shall be applied to the sample for the duration of the test.
- 7.4.4.** The test specimen shall be mounted on suitable supports in a furnace as shown in figure 18. The arrangement can be ceiling hanging supports or floor mounted. Measurement devices shall be used on both the supports and test samples so that any movement of the support device can be taken into account when calculating the deflection of the test sample.
- 7.4.5.** Ceiling mounted supports shall be secured outside of the furnace to ensure the substrate fixing cannot be affected by the heat e.g., the threaded rod may penetrate the furnace ceiling and be secured externally. Movement and distortion of the support device needs to be measurable so that the deflection of the tray, mesh cable tray, ladder, and trunking can be isolated and recorded for the test result.
- 7.4.6.** The application of the load shall be by means of fixing steel chains in accordance with figure 9. The load shall remain within the cabling area of the specimen throughout the duration of the test.

- 7.4.7.** For cable tray, the loads shall be attached to the existing bottom holes but only at the end of the specimen. If there are no holes, holes can be drilled within 100mm of each end. Only applicable if using lengths of chain.
- 7.4.8.** For mesh cable tray, the loads shall be attached to the wires only at the end of the specimen. – Only applicable if using lengths of chain.
- 7.4.9.** For cable ladder the loads shall be attached to the rungs only at the end of the specimen. – Only applicable if using lengths of chain.
- 7.4.10.** For cable trunking the loads shall be inside the trunking and shall not obstruct the lid from closing. If there are no holes, holes can be drilled.
- 7.4.11.** The method of attaching the loads shall not make the system more rigid. The chains shall be attached as shown in figure 9 with 100mm of slack either end of the assembly. This will allow the chain to move during the deflection of the sample but also prevent the chain from complete displacement and therefore maintaining a UDL for the duration of the test. This information shall be recorded for published results, see clause 11 of this document.
- 7.4.12.** Suitable measurement devices shall be used to measure the mid-span deflection and transverse deflection, including deflection of any supports (tested as a complete system). The deflection of the Cable Management and support shall also be recorded separately.
- 7.4.13.** The furnace shall be heated for a designated time and carried out in accordance with clause 5 of this document.
- 7.4.14.** The practical mid-span deflection of the sample should be monitored, where practicable, for the duration of the test. The test is deemed a failure should the mid span deflection exceed 300mm. If the chains spill out of the cable compartment due to distortion or collapse, then the test shall be deemed a failure.
- 7.4.15.** When the specified time has elapsed the heat source shall be stopped and the furnace or test chamber or controlled fire compartment allowed to cool naturally. During this time the deflection should still be monitored, where practicable, as there may be some distortion in the cooling phase. When the sample is at ambient temperature it shall be inspected to confirm that it would still ensure reliable support to any cables that would normally be contained therein in normal use.

## 8. Test criteria for Suspension systems, cantilever arms and trapezes

### 8.1 Scope

This section specifies test requirements for suspension systems, cantilever arms and trapeze systems used for securing cable management products, examples of which are listed in table 4 below, that may be used to prevent premature collapse of a wiring installation in heat affected areas as a result of a fire.

**Table 4: Cable Management Type**

| Cable Management Type        |
|------------------------------|
| Cable Tray / Cable Ladder    |
| Wire mesh tray (Wire Basket) |
| Trunking / Ducting Systems   |
| Conduit Systems              |

### 8.2. General

- 8.2.1.** The individual products being tested shall provide adequate mechanical strength.
- 8.2.2.** The main criteria for the suspension system, cantilever arms or trapeze system is to provide support for the CMS and /or cables for the duration of the test. In accordance with clause 6 of this document.
- 8.2.3.** The Suspension system, cantilever arms or trapeze system are to be loaded as declared by the manufacturer or responsible vendor.
- 8.2.4.** Where there are a number of products in a range, and the cross-section properties and area are the same along the length then the test only needs to be performed on the smallest and the largest size of product. Where the cross-section properties or area are not the same along the length, each size must be tested.
- 8.2.5.** All tests shall be carried out on three new sets of samples of each size selected.
- 8.2.6.** Tests on non-metallic and composite trunking systems shall not commence earlier than 168 hours after manufacture.  
Ref: *BS EN 50085:2005+A1:2013 clause 5.3*
- 8.2.7.** Tests on non-metallic and composite conduit systems shall not commence earlier than 240 hours after manufacture.  
Ref: *BS EN 61386:2008+A1:2019 clause 5.4*
- 8.2.8.** Compliance is satisfied if all the applicable test requirements are achieved and recorded as per clause 11 document of this document.

### 8.3. Test Criteria

- 8.3.1.** The suspension system, cantilever arms or trapeze system shall be mounted according to the manufacturer's or responsible vendor's instructions into a furnace, test chamber or controlled fire compartment.
- 8.3.2.** The suspension system, cantilever arms or trapeze systems can be installed individually or over multiple spans.
- 8.3.3.** When the suspension system, cantilever arms or trapeze system is to be tested individually the declared load of the bracket is applied. The type of load shall be declared as either a UDL or point load.
- 8.3.4.** When the Suspension system, cantilever arms or trapeze system is installed as a series of spans, the load is applied to the installation according to the type of load declared, either as a UDL or as a point load. The total load applied to the installation is the manufacturers declared load of the support multiplied by the number of supports. i.e., for 2 spans the total number of supports would be 3, total load applied to 2 spans would be 3 times the manufacturers declared load of the bracket.
- 8.3.5.** The test specimens shall be mounted in a furnace as shown in *Appendix D*. The arrangement can be ceiling hanging supports or Wall mounted. Measurement devices shall be used to indicate any movement of the support brackets.
- 8.3.6.** Ceiling mounted supports shall be secured outside of the furnace to ensure the substrate fixing cannot be affected by the heat e.g., the threaded rod may penetrate the furnace ceiling and be secured externally. Movement and distortion of the support device needs to be measurable.
- 8.3.7.** The load shall be applied to the sample for the duration of the test. The application of the load shall be by means of an applied mass. The load shall be applied in such a way that the load does not limit the deflection of the sample. The load shall remain in place during the test.
- 8.3.8.** The method of attaching the loads shall not make the system more rigid.
- 8.3.9.** Suitable measurement devices shall be used to measure the deflection at the end of the cantilever arms, the centre of the trapeze system brackets or at the fixing positions of a suspension system.
- 8.3.10.** The furnace or test chamber or controlled fire compartment shall be heated for a designated time and carried out in accordance with clauses 5.3 and 5.4 of this document.
- 8.3.11.** The deflection of the sample should be monitored, where practicable, for the duration of the test. The test is deemed a failure should the deflection exceed the criteria as per clause 5.5 of this document, in which case the test shall be stopped, and the time recorded.

## 9. Pass / fail criteria

### 9.1.

Each individual test must succeed for that specific product variant in that orientation to be qualified as passing the test.

### 9.2.

Products tested according to clause 8 of this technical specification shall take into consideration the combined total deflection of the support(s) and Cable management.

### 9.3.

Products tested according to clause 7 shall record the following separately:

9.3.1. System deflection

9.3.2. Cable Management deflection

9.3.3. Support deflection.

### 9.4.

For deflection criteria see *Appendix A*

### 9.5.

All data to be collated in a table as per the example in table 5.

Table 5: Table of results

| Ref No. | Product Name | Description | Test Criteria (clause 6, 7 or 8) | Manufacturers Declared Load (Kg) | Span (mm) (if applicable) | Deflection (mm) | Pass / Fail |
|---------|--------------|-------------|----------------------------------|----------------------------------|---------------------------|-----------------|-------------|
|         |              |             |                                  |                                  |                           |                 |             |
|         |              |             |                                  |                                  |                           |                 |             |

## 10. Publication of results

To ensure designers, specifiers, and installers can make an informed decision when selecting the appropriate CMS, it is advised the results of this technical specification are produced as follows:

### 10.1.

List of items to be added to a table / template: Manufacturer details

10.1.1. Manufacturer Name

10.1.2. Manufacturer Address

10.1.3. Manufacturer website (QR code or link)

10.1.4. Declaration of conformity (QR code or link)

10.1.5. Manufacturer authorised person and job title.

10.1.6. Date tested.

10.1.7. Date reviewed.

### 10.2.

Product Classification:

10.2.1. Product Type:

Table 6: CMS Classification

| Product Type | Cable Management Type                                     |
|--------------|-----------------------------------------------------------|
| <b>A</b>     | Conduit Systems                                           |
| <b>B</b>     | Trunking / Ducting Systems / Channel                      |
| <b>C</b>     | Cable Cleats                                              |
| <b>D</b>     | Cable Tray / Cable Ladder / Mesh Cable Tray (Wire Basket) |
| <b>E</b>     | Suspension Systems (wire rope or threaded rod)            |
| <b>F</b>     | Cantilever arms                                           |
| <b>G</b>     | Trapeze System                                            |
| <b>H</b>     | Other not specified above                                 |

10.2.2. Applicable Wiring Zone(s):

Table 7: Wiring Zones Classification

| Zone Ref    | A                    | B        | C       |
|-------------|----------------------|----------|---------|
| Height (mm) | $\geq 800 \leq 2100$ | $> 2100$ | $< 800$ |

10.2.3. Classification of span (for linear CMS assemblies):

Table 8: Spacing classification

| Classification | Span (mm) |
|----------------|-----------|
| A              | 1200      |
| B              | 2500      |

10.3.

Declared loads: Manufactured declared loads to be listed in a table against a product code / name.

10.4.

Utilise table of results from section 9 of this Technical Specification.



# 11. Appendices

## Appendix A – Wiring Zones

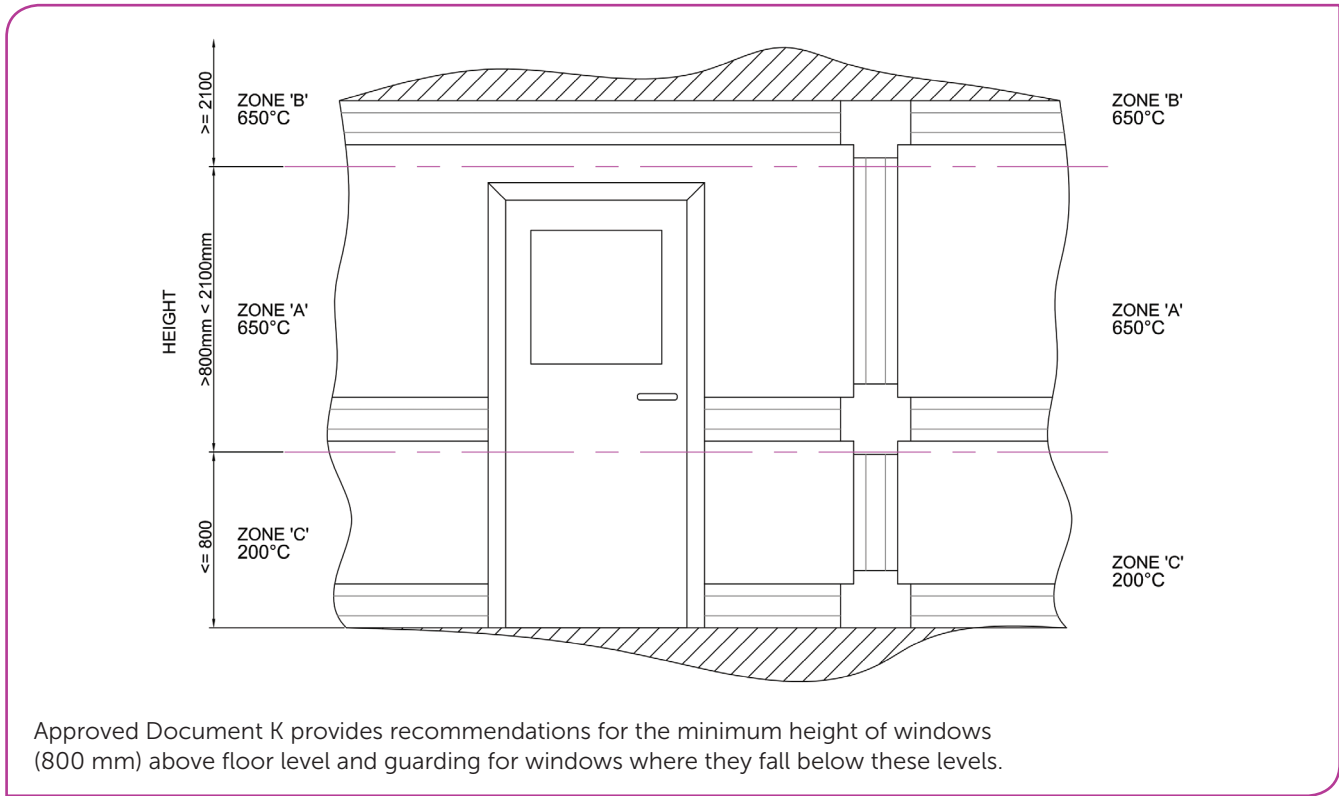


Figure 1 – Installation Zones A, B & C

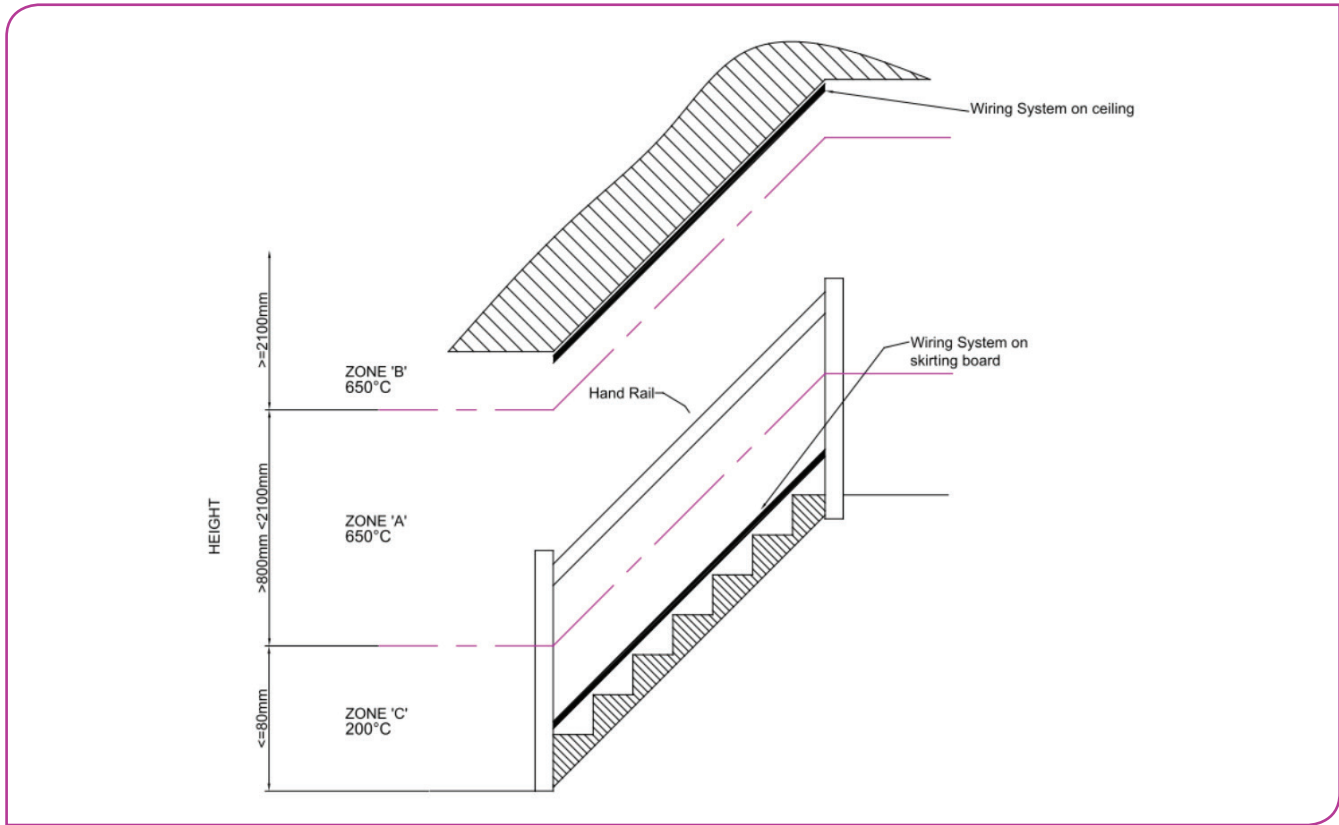


Figure 2 – Wiring Zones for stairs

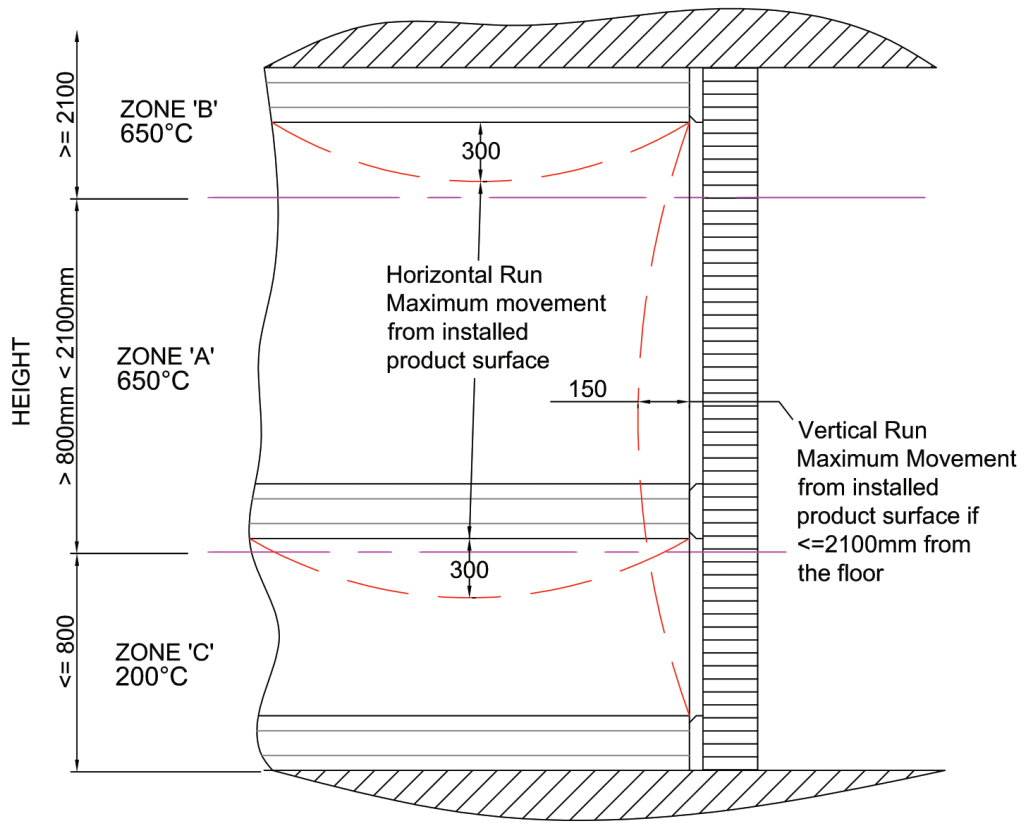


Figure 3 – Riser

Appendix B – CMS products and accessories tested individually

Typical test arrangement for cable cleats, conduit clamps and saddles

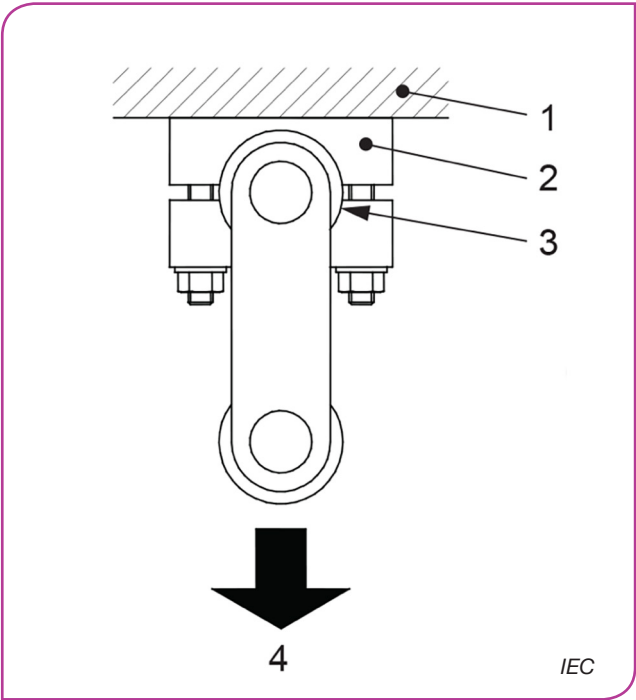


Figure 4:  
Arrangement for ceiling mounted 2-bolt cable cleats and conduit saddle clamps. Ref: BS EN IEC 61914

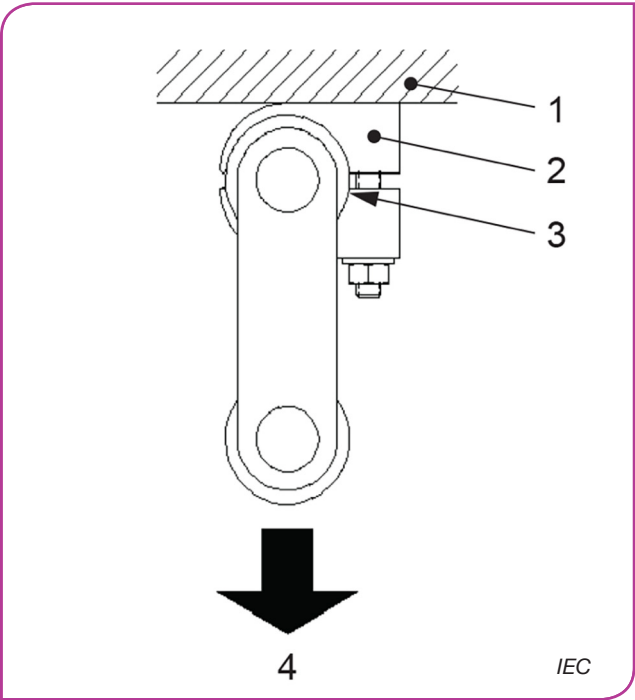


Figure 5:  
Arrangement for ceiling mounted single bolt cable cleats and conduit clamps. Ref: BS EN IEC 61914

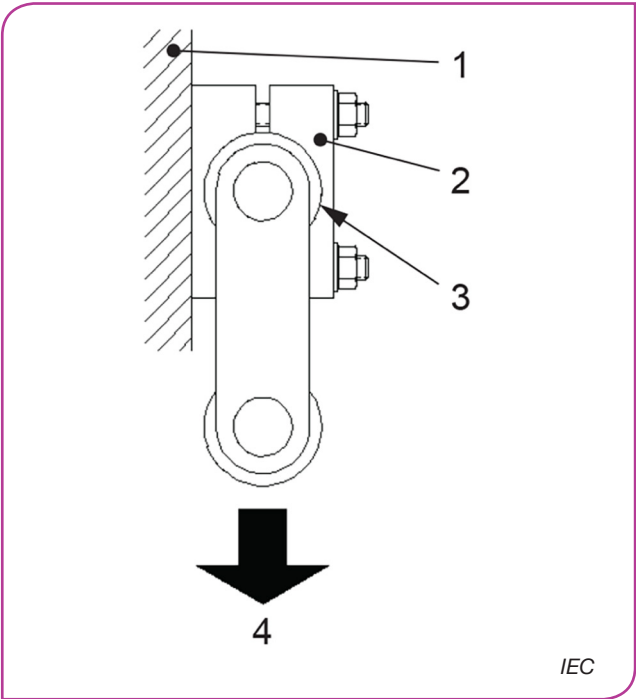


Figure 6:  
Arrangement for wall mounted 2-bolt cable cleats and conduit saddle clamps. Ref: BS EN IEC 61914

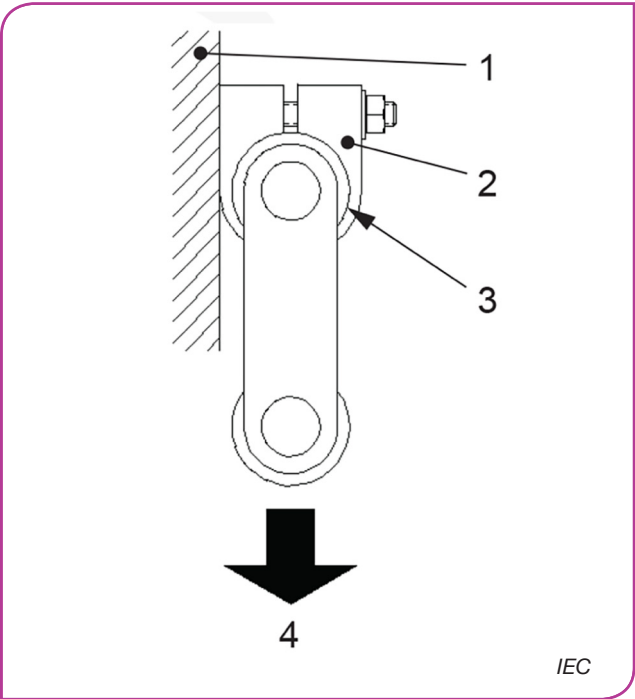


Figure 7:  
Arrangement for wall mounted single bolt cable cleats and conduit clamps. Ref: BS EN IEC 61914

|     |                     |                     |                     |                      |
|-----|---------------------|---------------------|---------------------|----------------------|
| KEY | 1. Mounting surface | 2. Component device | 3. Mandrel / saddle | 4. direction of load |
|-----|---------------------|---------------------|---------------------|----------------------|

Appendix B – CMS products and accessories tested individually

Typical test arrangement for Conduit Saddles

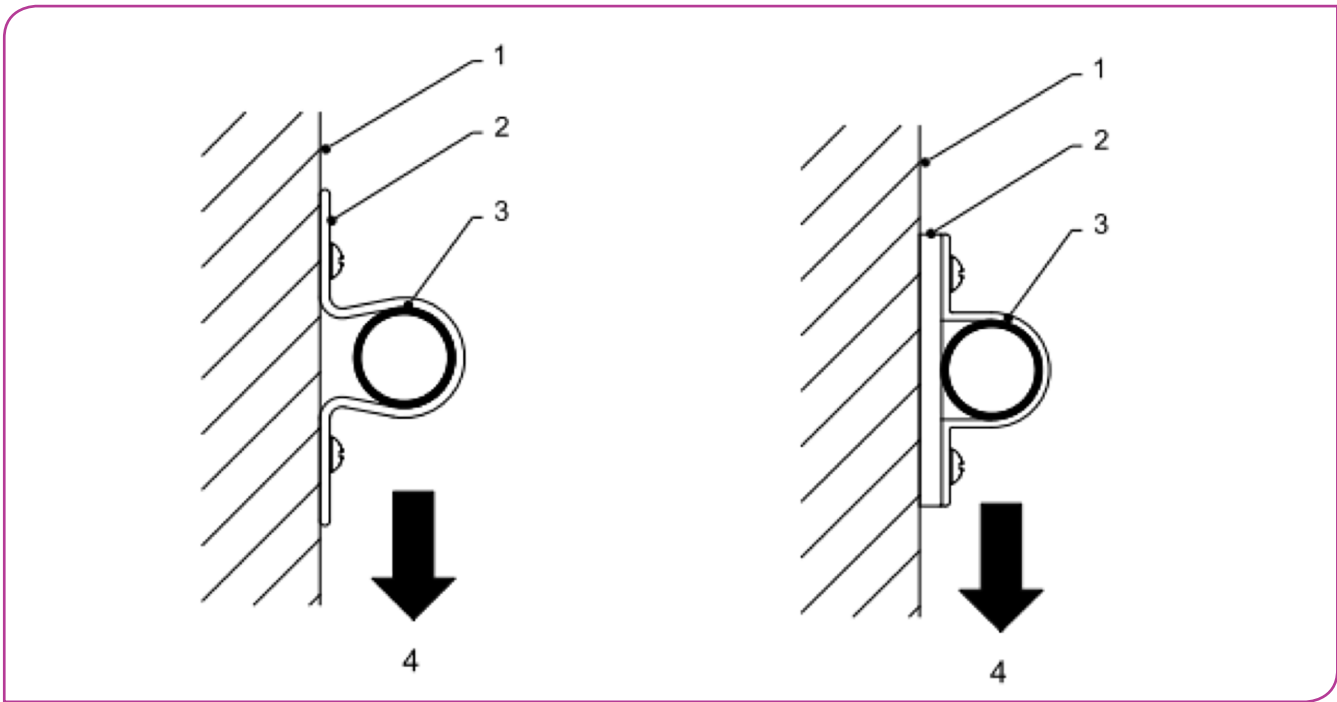


Figure 8:  
Arrangement(s) for wall mounted (vertical) 2 screw conduit saddle clamps

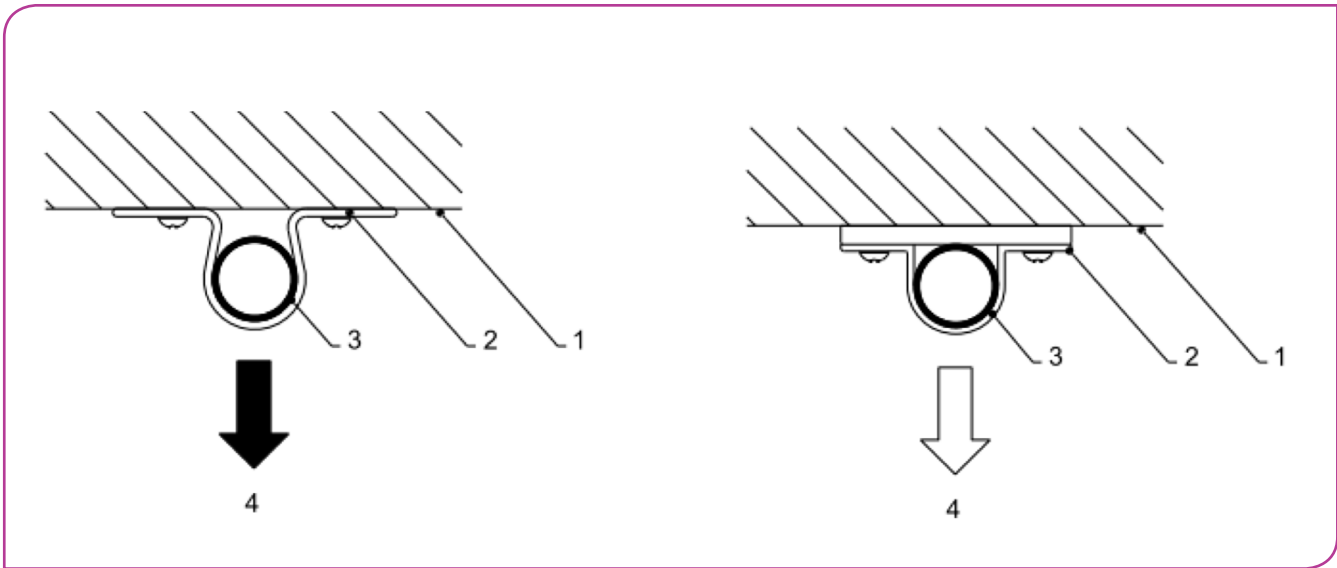


Figure 9:  
Arrangement(s) for ceiling mounted (horizontal) 2 screw conduit saddle clamps

|     |                     |                     |                     |                      |
|-----|---------------------|---------------------|---------------------|----------------------|
| KEY | 1. Mounting surface | 2. Component device | 3. Mandrel / saddle | 4. direction of load |
|-----|---------------------|---------------------|---------------------|----------------------|

Appendix B – CMS products and accessories tested individually

Typical test arrangement for Mini trunking clips

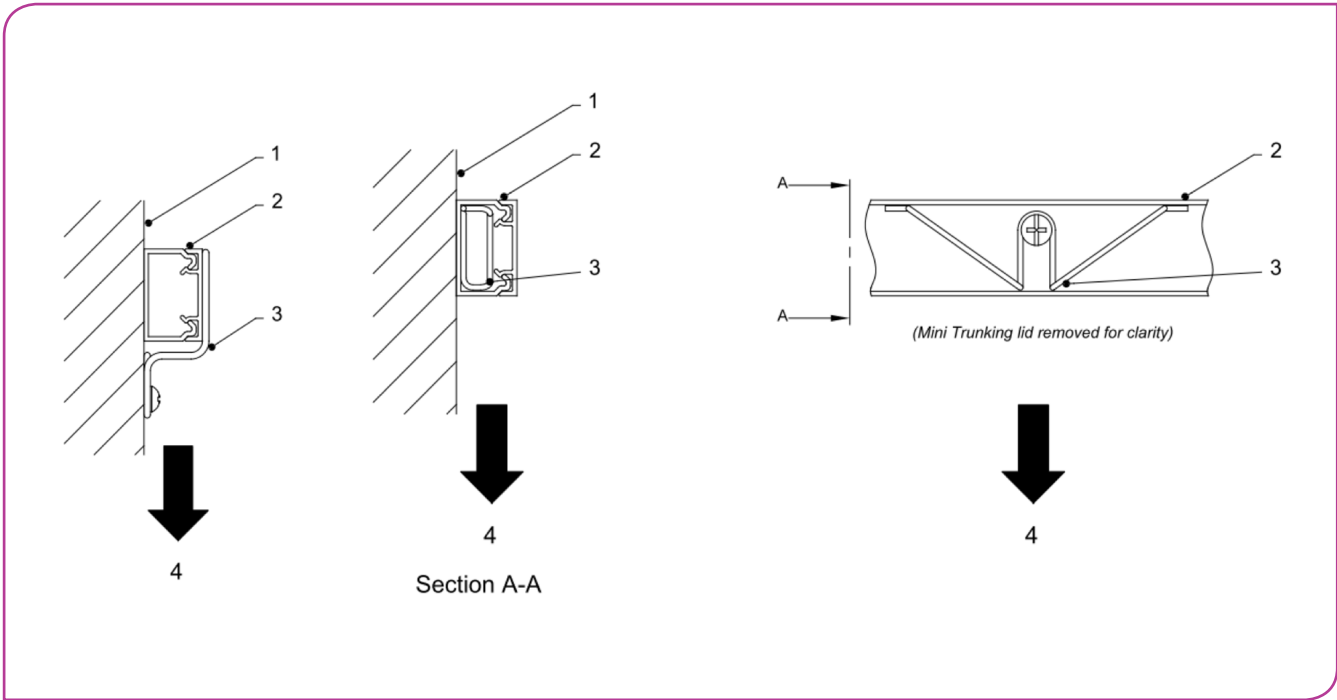


Figure 10:  
Arrangement(s) for wall mounted (horizontal) Mini trunking clips

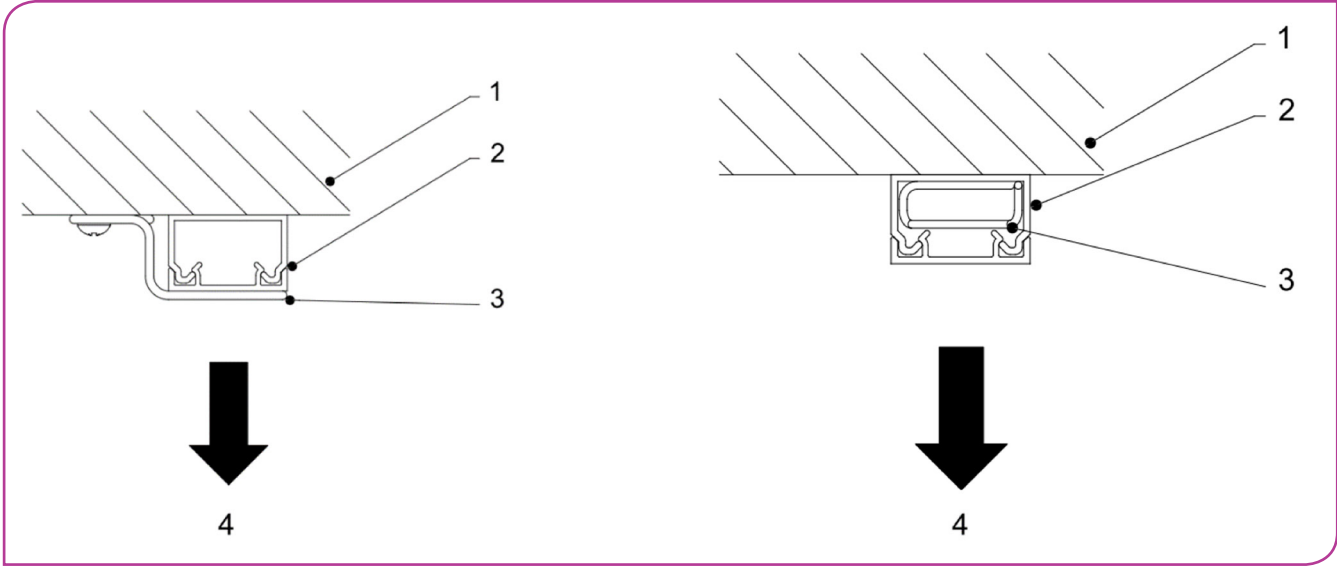


Figure 11:  
Arrangement(s) for wall mounted (horizontal) Mini trunking clips

|     |                     |                     |                     |                      |
|-----|---------------------|---------------------|---------------------|----------------------|
| KEY | 1. Mounting surface | 2. Component device | 3. Mandrel / saddle | 4. direction of load |
|-----|---------------------|---------------------|---------------------|----------------------|

Appendix B – CMS products and accessories tested individually

Typical test arrangement for Trunking clips

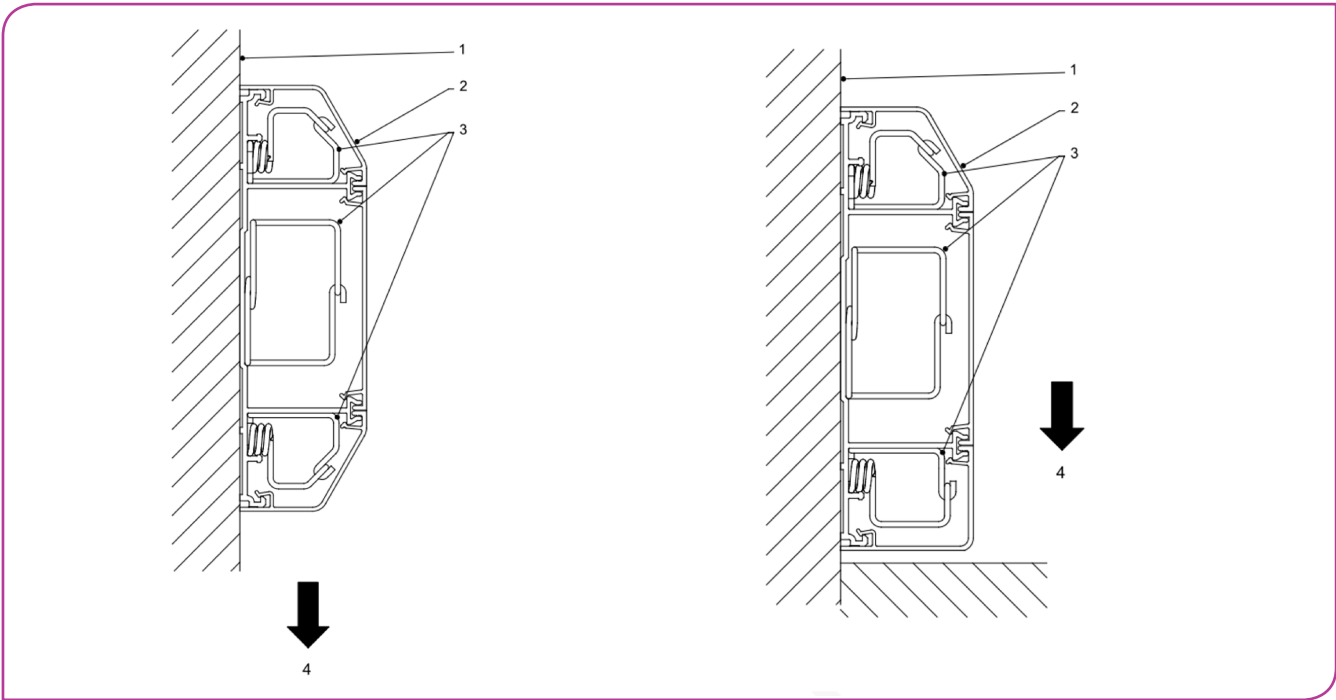


Figure 12:  
Arrangement(s) for wall mounted (vertical or horizontal) Dado and Skirting Trunking clips

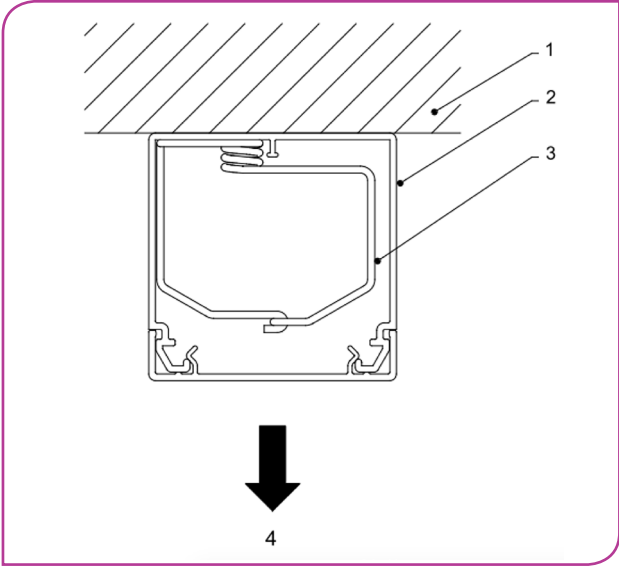


Figure 13:  
Arrangement(s) for ceiling mounted (horizontal) Trunking clips

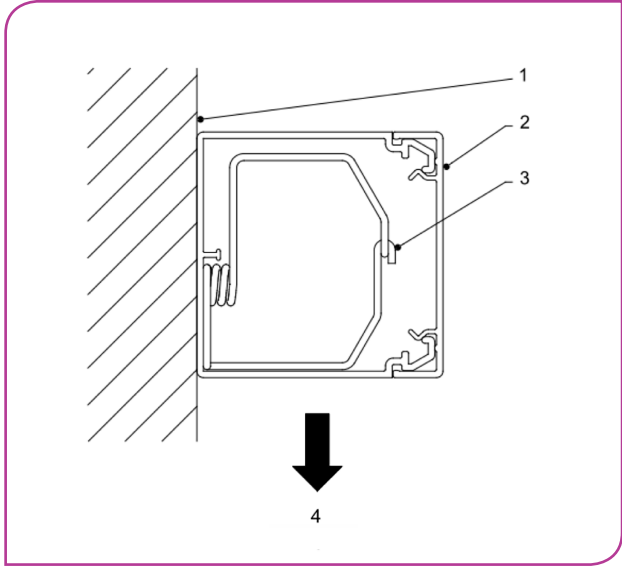


Figure 14:  
Arrangement(s) for wall mounted (horizontal) Maxi Trunking clips

|     |                     |                     |                     |                      |
|-----|---------------------|---------------------|---------------------|----------------------|
| KEY | 1. Mounting surface | 2. Component device | 3. Mandrel / saddle | 4. direction of load |
|-----|---------------------|---------------------|---------------------|----------------------|

Appendix C – Linear CMS products tested individually or as an assembly

Typical test arrangement for Basket / Tray / Ladder

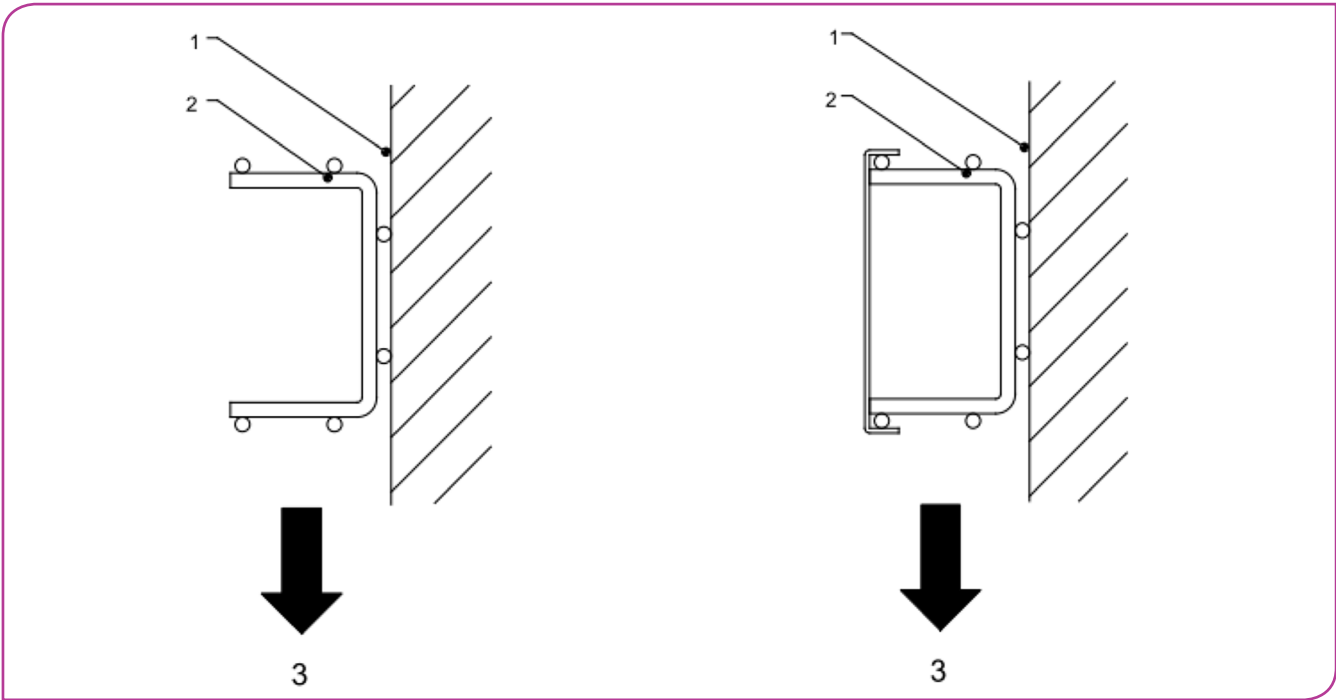


Figure 15:  
Arrangement(s) for wall mounted (vertical or vertical) Basket / Tray / Ladder

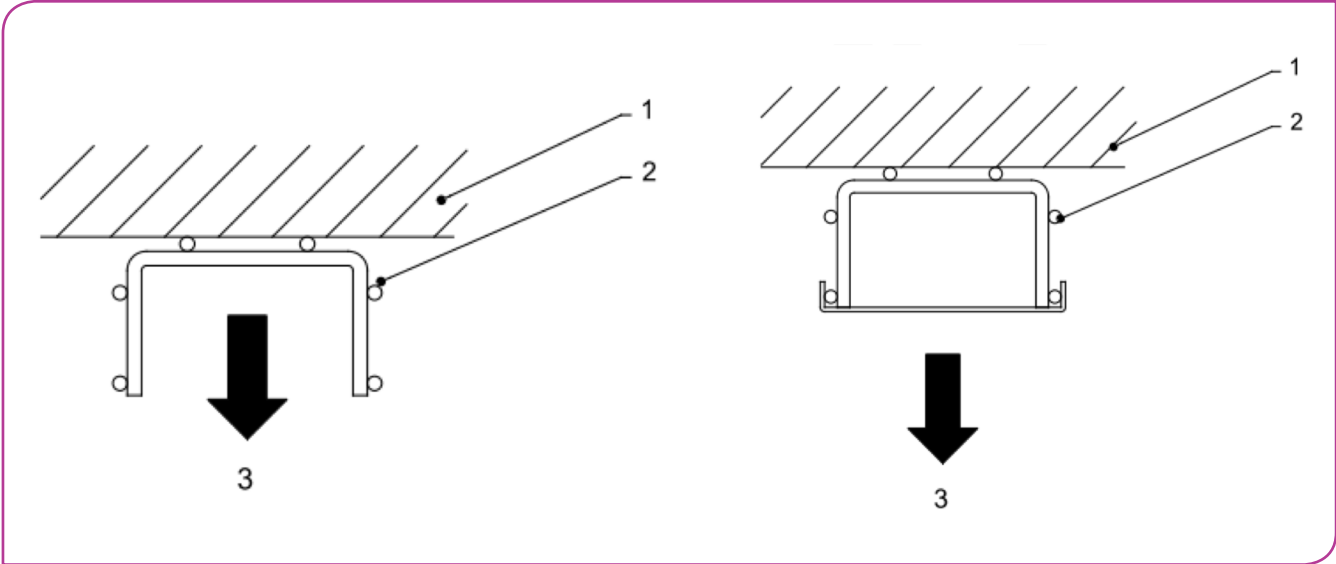
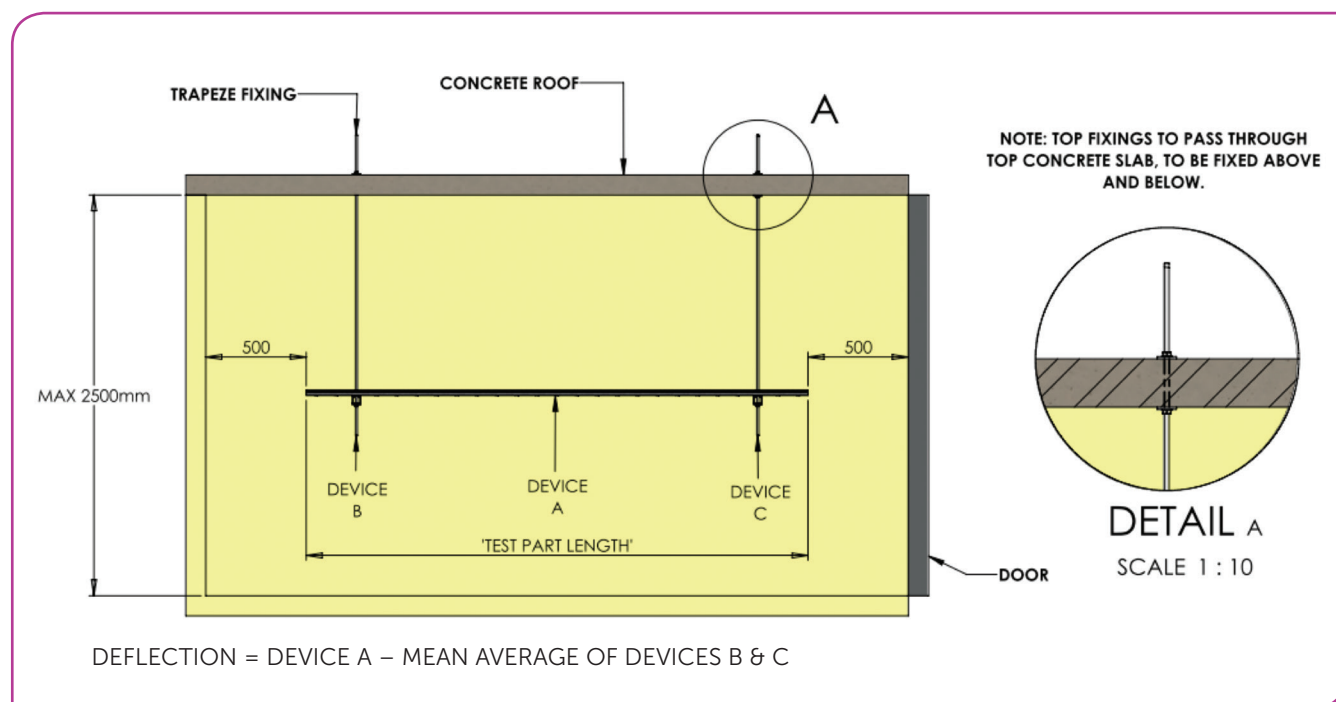


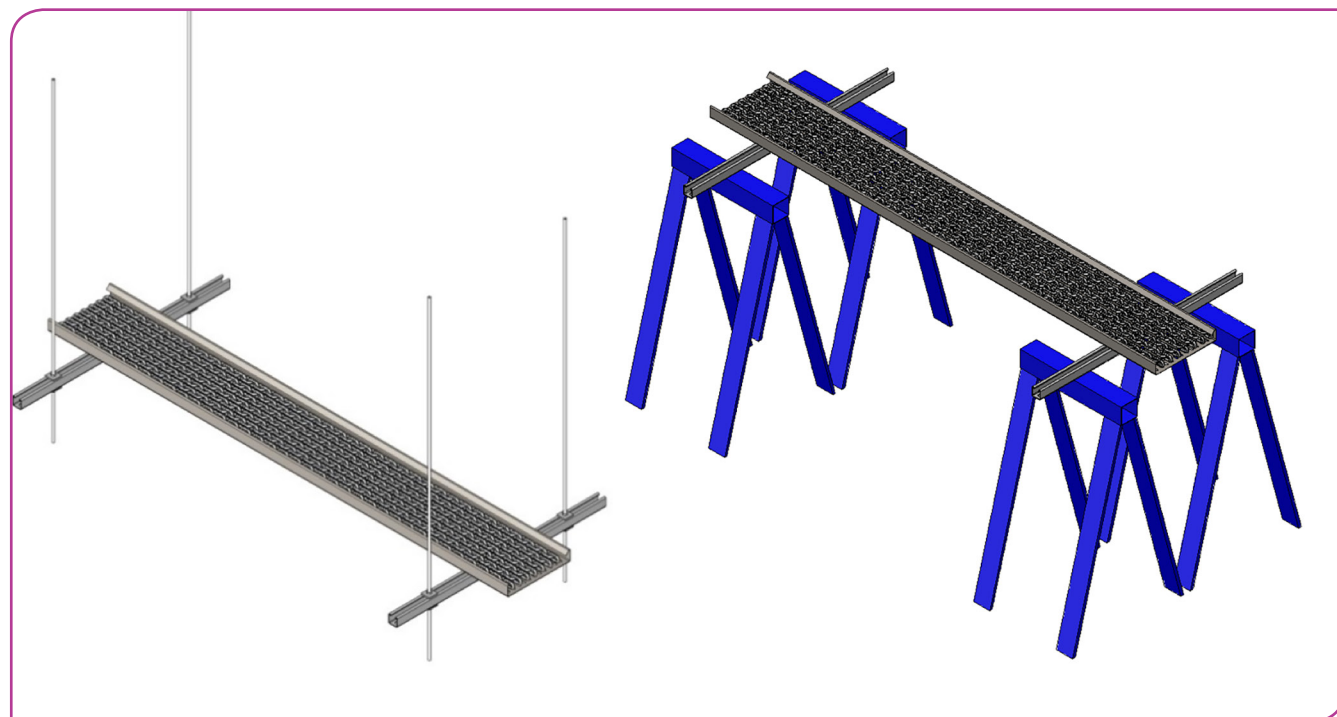
Figure 16:  
Arrangement(s) for ceiling mounted (inverted horizontal) Basket / Cable Tray / Ladder

|     |                     |                     |                     |
|-----|---------------------|---------------------|---------------------|
| KEY | 1. Mounting surface | 2. Component device | 3. Mandrel / saddle |
|-----|---------------------|---------------------|---------------------|

## Appendix C – Linear CMS products tested individually or as an assembly



**Figure 17:**  
Linear assembly



**Figure 18:**  
Linear assembly (Isometric)

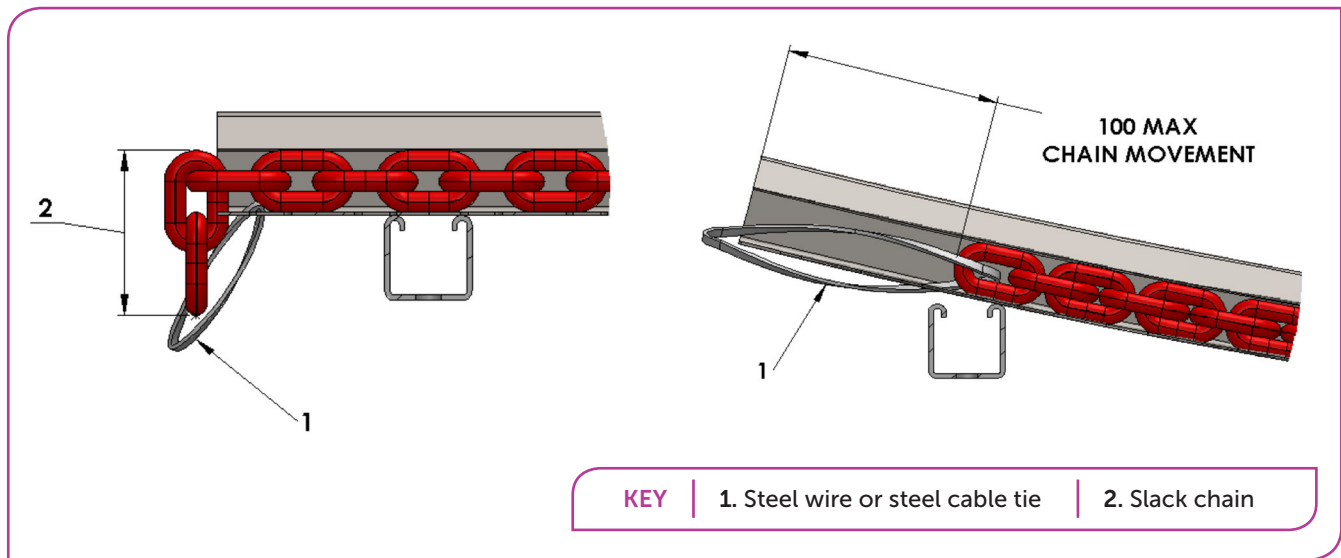


Figure 19:  
Application of steel tie

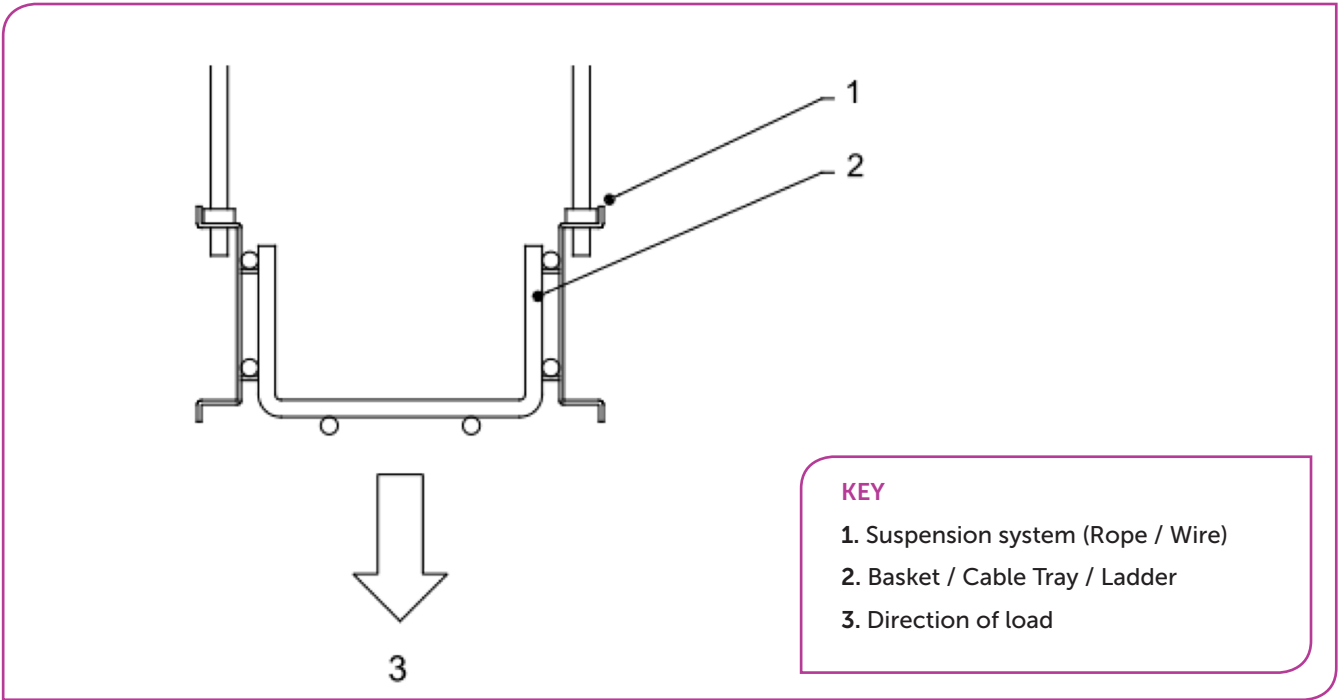


Figure 20:  
Arrangement(s) for suspended Basket / Cable Tray / Ladder

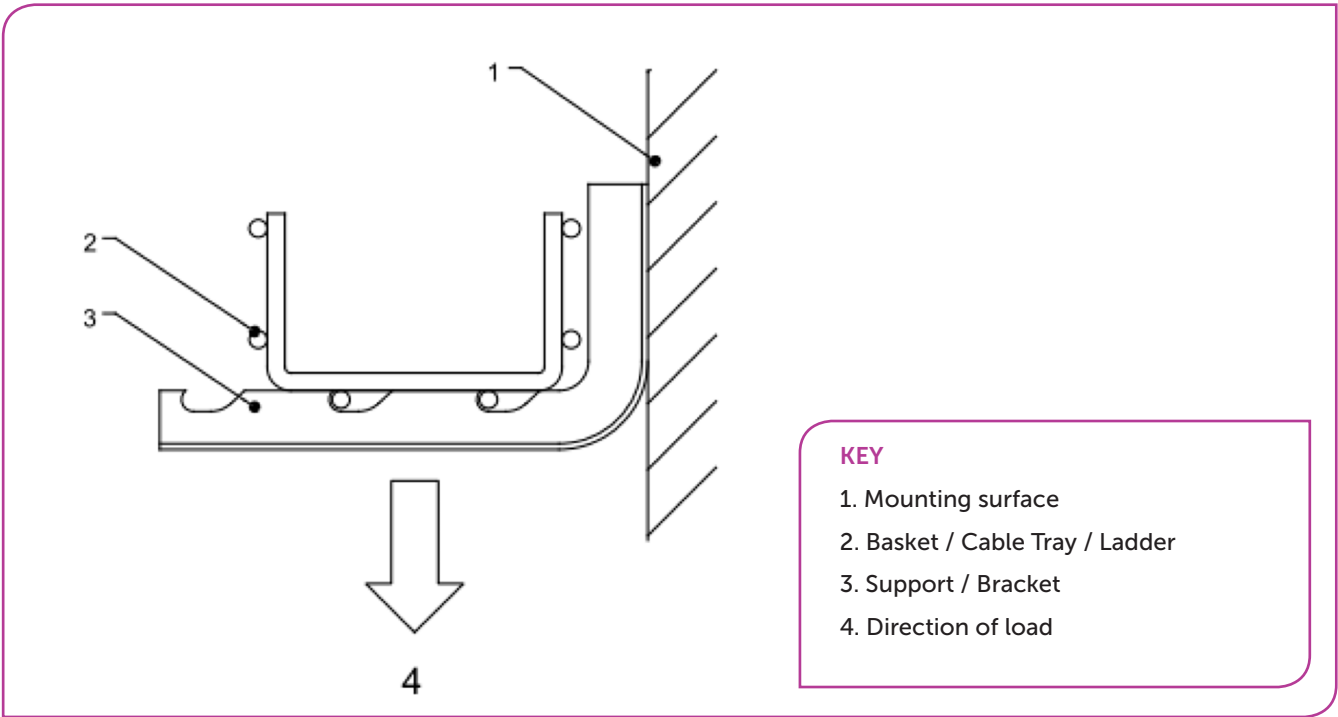


Figure 21:  
Arrangement(s) for wall mounted Basket (horizontal) / Cable Tray / Ladder using Supports / Bracketry

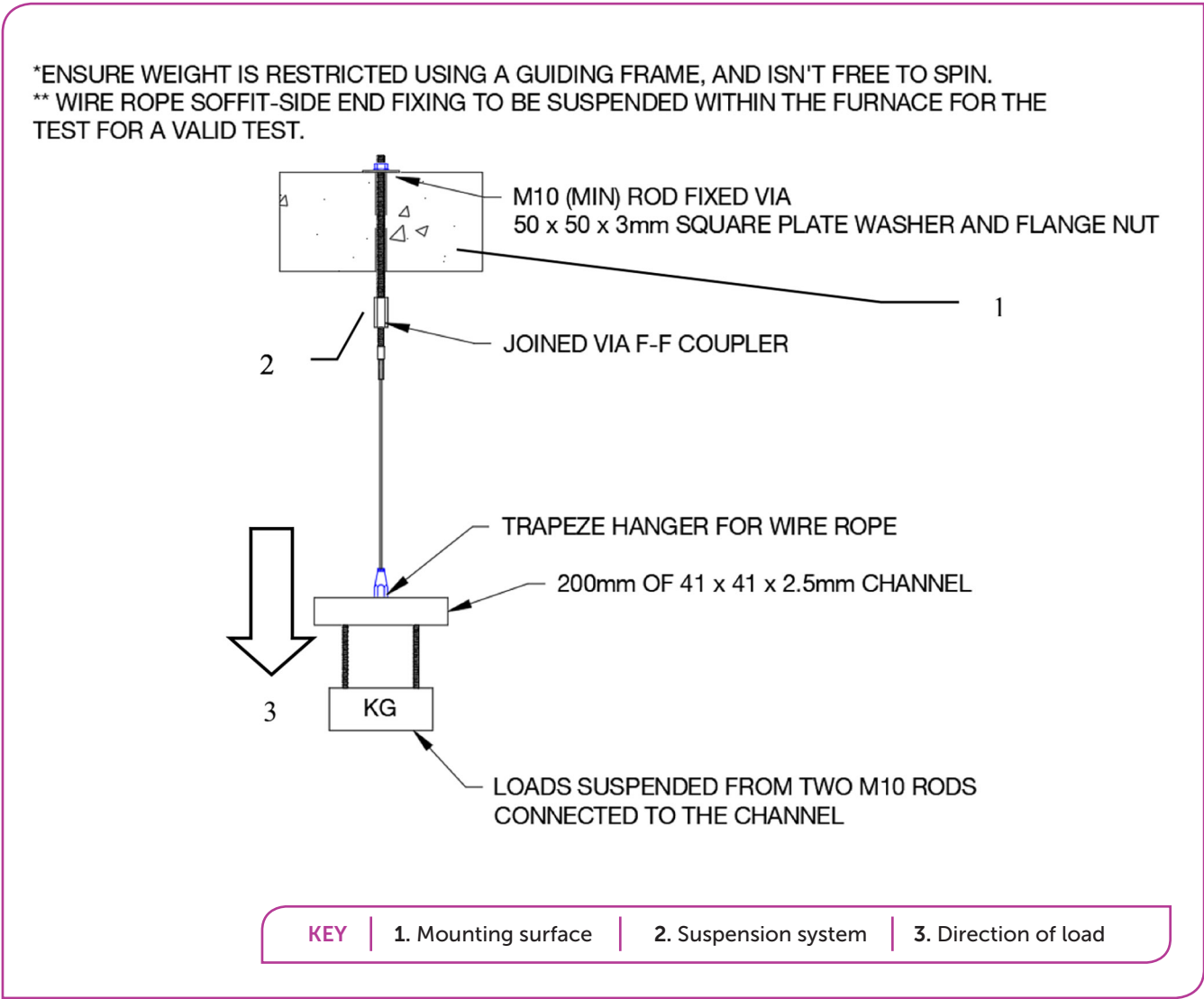
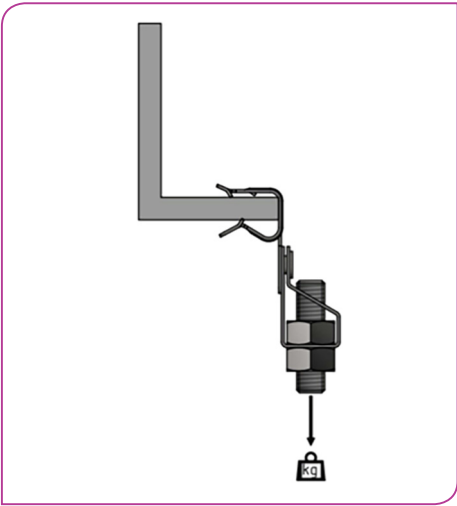
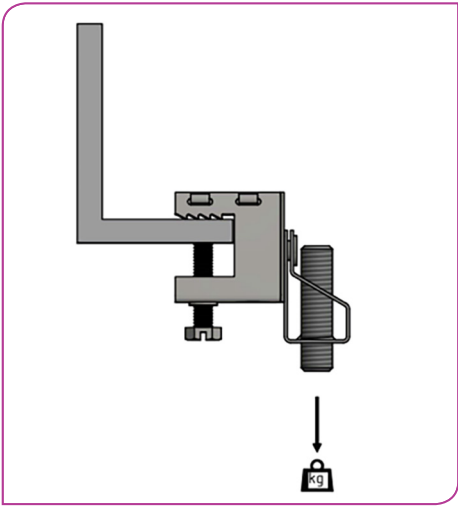


Figure 22:  
Arrangement(s) for ceiling mounted suspension systems

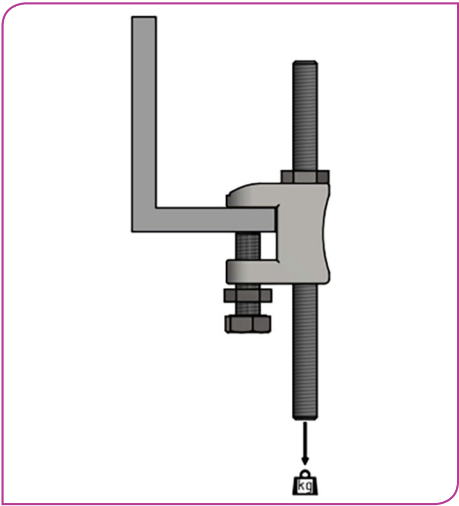
Appendix D – Suspension systems, cantilever arms and trapeze system



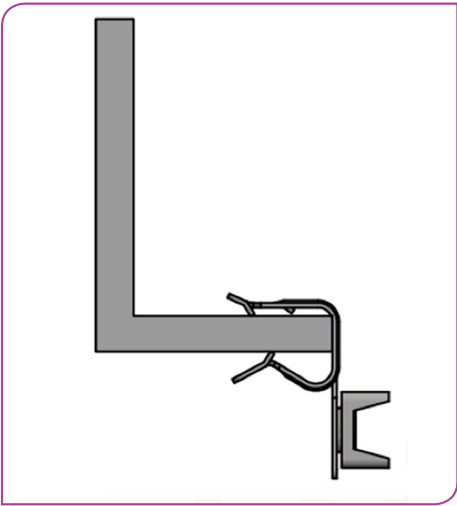
**Figure 23:**  
Arrangement(s) girder clip for threaded rod



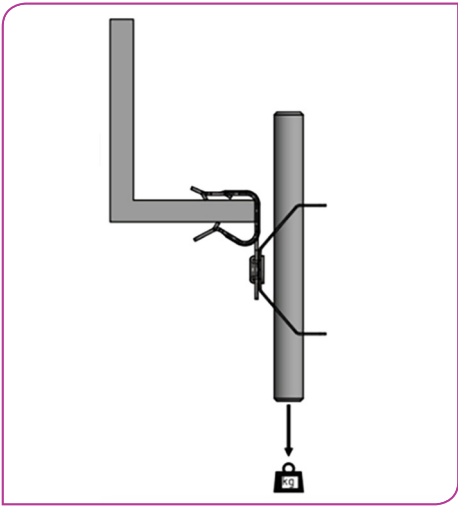
**Figure 24:**  
Arrangement(s) girder clamp for threaded rod



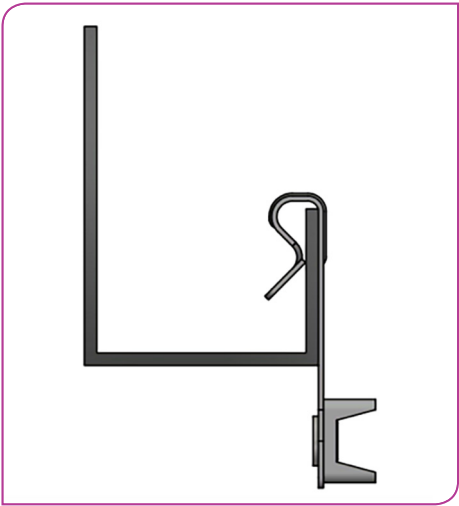
**Figure 25:**  
Arrangement(s) girder clamp for threaded rod



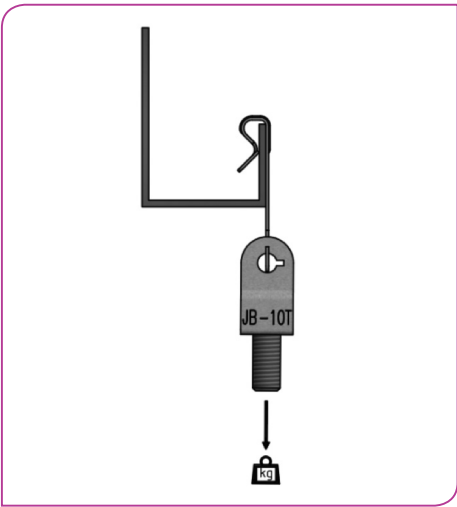
**Figure 26:**  
Arrangement(s) girder clip & mounting base for cable bundles



**Figure 27:**  
Arrangement(s) girder clip for Rod



**Figure 28:**  
Arrangement(s) girder clip for Rod



**Figure 29:**  
Arrangement(s) for Purlin clip

Appendix E – Cellulosic Curve

Standard fire tests to which specimens of constructions are subject to are based on the use of the Cellulosic time/temperature curve, as defined in various national standards, e.g. ISO 834, BS 476: part 20, DIN 4102, AS 1530, etc.

This curve is based on the burning rate of the materials found in general building materials and contents.

The temperature development of the Cellulosic fire curve (ISO-834) is described by the following equation:

$$T = 20 + 345 \cdot \text{LOG} (8 \cdot t + 1)$$

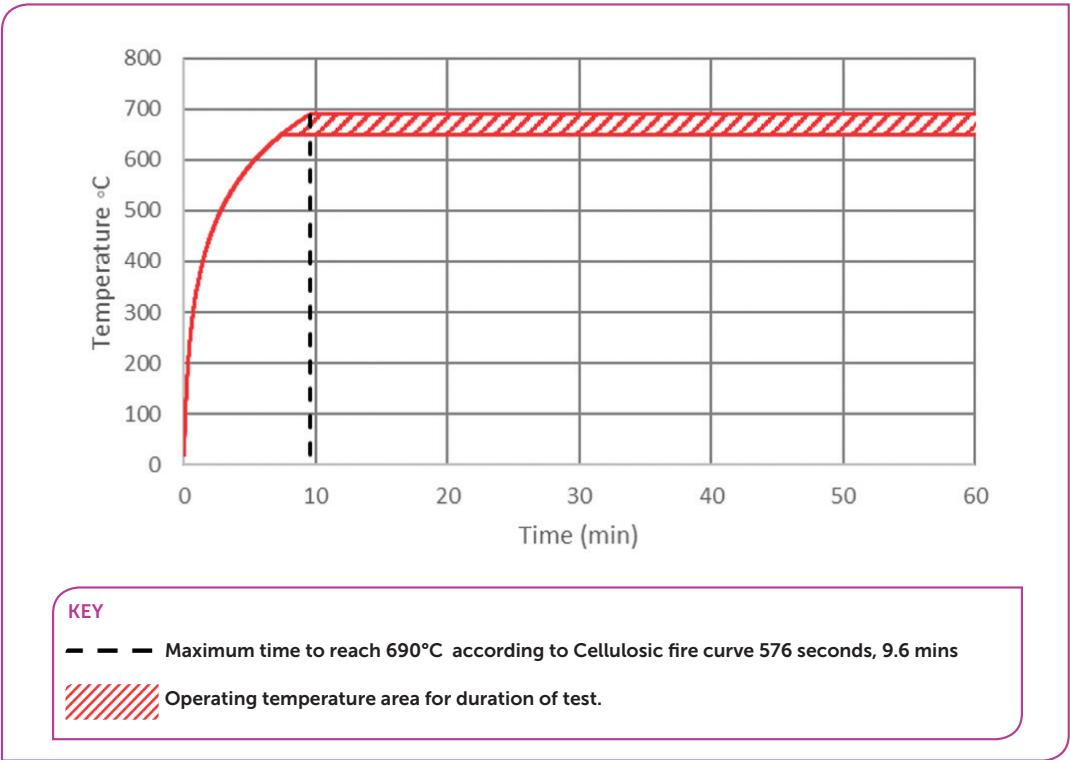


Figure 30:  
Cellulosic Curve

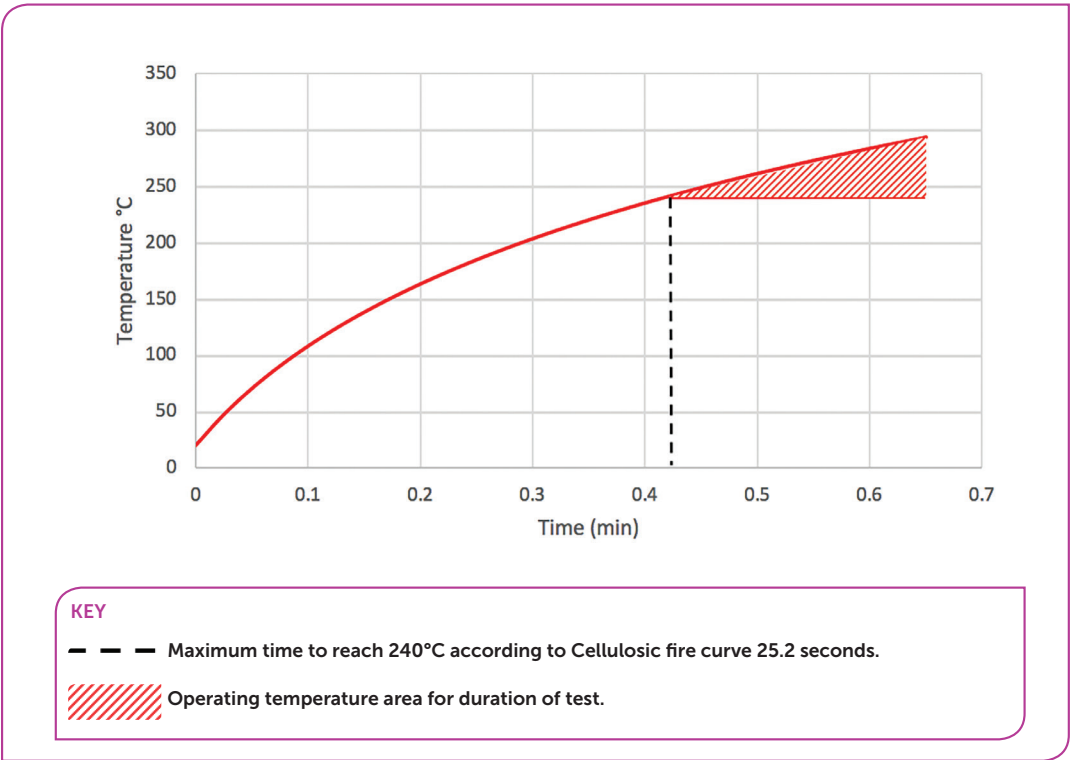


Figure 31:  
Zone C Curve v2

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| 5          | Arrangement for ceiling mounted single bolt cable cleats and conduit clamps. <i>Ref: BS EN IEC 61914</i>   | 16   |
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Rotherwick House  
3 Thomas More Street  
London E1W 1YZ

[www.beama.org.uk](http://www.beama.org.uk)