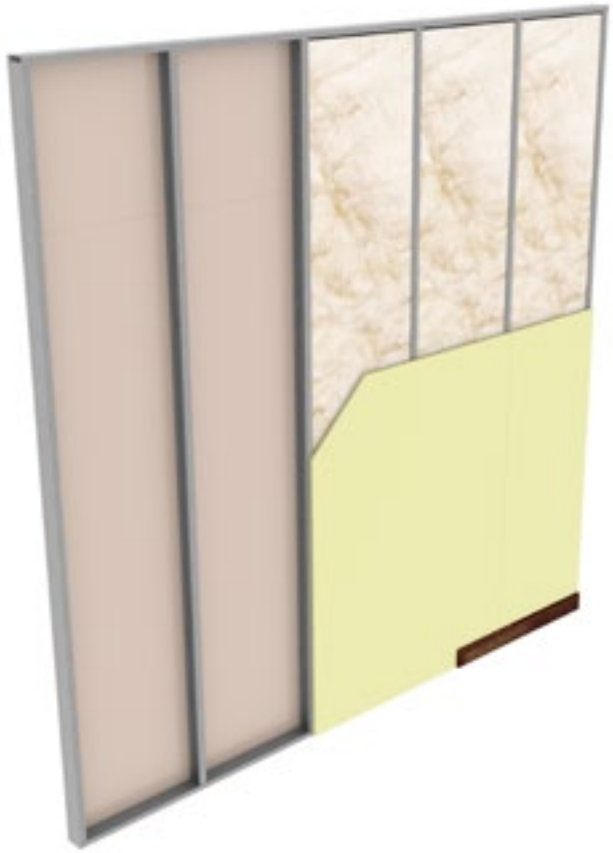
GypWall™
ROBUST

High impact resistant
partition system

The King Hussein
Cancer Center Extension
Kingdom of Jordan

GypWall ROBUST

GypWall ROBUST is a highly impact-resistant partition system for use where a more durable structure is required.



60 mins

41 - 50 R_w dB

41 - 51 STC dB

Key Benefits

- Achieves Severe Duty Rating in accordance with BS 5234 with only a single layer of Gyproc DuraLine plasterboard to each side of the partition
- Reduced maintenance cycles due to impact resistant nature of Gyproc DuraLine plasterboard
- Single layer system provides 60 minutes fire resistance
- Accommodates services within the stud cavity

Eligible for the SpecSure warranty from Gyproc

System components

Gypframe metal components

Gypframe 'C' Studs
(70 S 60, 92 S 60)
Vertical stud providing acoustic and structural performances designed to receive fixing of board to both sides

Gypframe Deep Flange Floor & Ceiling Channels
(72 DC 60, 94 DC 60)
Standard floor and ceiling channels for retaining the Gypframe studs at floor and ceiling junctions and around openings to heights not exceeding 4200mm

Gypframe Standard Floor & Ceiling Channels
(72 C 50, 94 C 50)
Standard floor and ceiling channels for retaining Gypframe studs at floor and ceiling junctions and around openings to heights not exceeding 4200mm

Gypframe Extra Deep Flange Floor & Ceiling Channels
(72 EDC 80, 94 EDC 80)
Floor and ceiling channels with extra deep flanges for retaining the Gypframe studs at floor and ceiling junctions for partitions over 8000mm high. Also used around openings and in deflection heads (maximum 50mm deflection)

Gypframe 103 FC 50 Fixing Channel
A versatile metal fixing channel used to support medium weight fixtures on walls

Gypframe 103 FC 90 Fixing Channel
A versatile metal fixing channel used to support heavy weight fixtures on walls

Gypframe GFS1 Fixing Strap
Used to support horizontal board joints and within deflection head

Gypframe GA1 Steel Angle
Used as a fixing mechanism to hold ISOVER Eco APR insulation in place

Gypframe GA6 Splayed Angle
Steel angle providing framing stability and board support

Board products

Gyproc DuraLine[1, 2, 3]
(15mm)
Gypsum plasterboard with high density core with glass fibre for enhanced impact resistance performance

[1] Moisture resistant (MR) versions of the above board is specified in intermittent wet use areas, e.g. shower cubicles

[2] Available with Activ'Air technology

[3] Available with M2TECH technology

System components (continued)

Fixing products

Gyproc Drywall Screws
Corrosion resistant self-tapping steel screws for fixing board to metal framing less than 0.8mm thick

Gyproc Waferhead Screws
Corrosion resistant self-tapping steel screws for fixing metal to metal framing less than 0.8mm thick

Gyproc Jack-Point Screws
Corrosion resistant self-drilling steel screws for fixing boards to Gypframe metal framing 0.8mm thick or greater and all 'I' studs

Gyproc Waferhead Jack-Point Screws
Corrosion resistant self-drilling steel screws for fixing metal to metal framing 0.8mm thick or greater and all 'I' studs

Gyproc Wedge Anchor
Corrosion resistant anchor used for fixing fire rated partition and ceiling systems into masonry

Gyproc Hammer Fix
Corrosion resistant nail, screw engaged in a nylon plug, suitable for fixing non fire rated partition systems and ceiling perimeters into masonry

Plasterboard accessories

Gyproc Jointing Compound
Air-drying, asbestos free, ready mixed compound for filling and finishing plasterboard joints and corner beads

Gyproc Paper Tape
Designed for reinforcing flat joints when finishing plasterboard joints and provides improved resistance against cracking

Gyproc FireStrip
Soft extruded linear gap seal introduced for use within Gyproc system deflection head details

Gyproc Fibre Tape
Suitable for flat joint reinforcements

Gyproc Sealant
Used for sealing air paths to reduce air-leakage and optimise sound insulation performance

Corners

Habito Flex 83
Adjustable and superior corner reinforcement that uses structural laminate technology for ultimate impact protection

Levelline Flex
Adjustable corner reinforcement that flexes to any angle and gives high levels of impact protection

Gyproc Drywall Corner Bead
Provides corner reinforcement and protection to plasterboards and plasters

Gyproc Drywall Metal Edge Bead
A galvanised steel channel used to protect plasterboard edges and to form a defined edge commonly used around window reveals

System components (continued)

Insulation products

ISOVER Eco
Acoustic Partition Roll (APR)
(25, 50, 75 and 100mm)*
Non-combustible glass mineral wool roll for sound insulation in partitions, linings and ceiling systems.

Minimum density: 16 kg/m³

KIMMCO ISOVER
Stone mineral wool
(50 and 70mm)*
For fire stopping, where required.

Minimum density: 33 kg/m³

* Available in other thickness and density

Installation overview

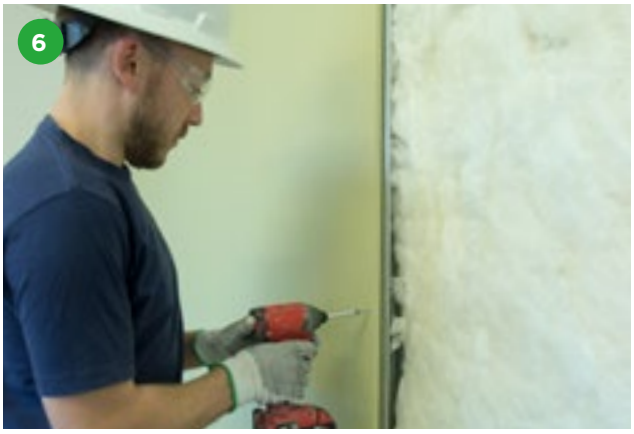
Gypframe Deep Channels or Gypframe Extra Deep Channels are suitably fixed to the floor and soffit.

Gypframe Studs are suitably fixed to abutments. Gypframe Studs are fitted vertically to a friction fit within the channel sections to form the framework. Studs are fitted to all face the same way.

The perimeter of the metal framework is then sealed with Gyproc Sealant for optimum sound insulation performance

Gypframe 103 FC 50 Fixing Channel fixed to stud to receive light/medium weight fixtures

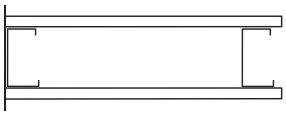
ISOVER Eco APR insulation is added to the partition cavity for increased acoustic performance.



Gyproc DuraLine boards are fixed to framing members with Gyproc Drywall Screws to form the lining.

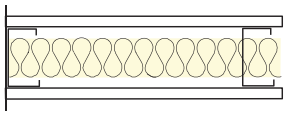
Table 1 – GypWall ROBUST 70mm Gypframe 'C' Studs (70 S 60) - single layer board linings. Solutions to satisfy the requirements of BS 476: Part 22: 1987, ASTM E119 & ANSI / UL 263

1



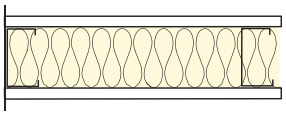
One layer of board each side of 70mm Gypframe 'C' Studs at 600mm centres. Linings as in table.

2



One layer of board each side of 70mm Gypframe 'C' Studs at 600mm centres. 50mm ISOVER Eco APR in the cavity. Linings as in table.

3



One layer of board each side of 70mm Gypframe 'C' Studs at 600mm centres. 75mm ISOVER Eco APR in the cavity. Linings as in table

Detail	Partition thickness mm	Board type	Lining thickness mm	Maximum partition heights[1] mm	Sound insulation R_w dB	Sound insulation STC dB	Duty rating	Approx. weight kg/m²
60 minutes fire resistance								
1	102	DuraLine	1 x 15	4000	41	42	Severe	29
2	102	DuraLine	1 x 15	4000	49	48	Severe	29
3	102	DuraLine	1 x 15	4000	50	51	Severe	29

[1] Based on a limiting deflection of L/240 at 200 Pa. Greater heights can be achieved through the use of Gypframe 'I' Studs or reduced stud centres. Refer to **Technical performance and principles of system design - Robustness** section for increased heights.

NB For increased fixing capability replace above listed boards with equivalent thickness of Gyproc Habito.

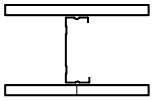
NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, according to Gyproc recommendations. The quoted performances are achieved only if Gyproc components are used throughout, and the company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with the Gyproc Technical Team.

NB Gypframe Deep Flange Floor & Ceiling Channel or Gypframe Extra Deep Flange Floor & Ceiling Channel should be used at the base and at the head (subject to deflection head criteria)

NB Where tiling, refer to 'Tiling section' on page 304

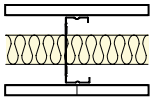
Table 2 – GypWall ROBUST 92mm Gypframe 'C' Studs (92 S 60) - single layer board linings. Solutions to satisfy the requirements of BS 476: Part 22: 1987, ASTM E119 & ANSI / UL 263

1



One layer of board each side of 92mm Gypframe 'C' Studs at 600mm centres. Linings as in table.

2



One layer of board each side of 92mm Gypframe 'C' Studs at 600mm centres. 50mm ISOVER Eco APR in the cavity. Linings as in table.

Detail	Partition thickness mm	Board type	Lining thickness mm	Maximum partition heights[1] mm	Sound insulation R_w dB	Sound insulation STC dB	Duty rating	Approx. weight kg/m²
60 minutes fire resistance								
1	124	DuraLine	1 x 15	4900	41	41	Severe	29
2	124	DuraLine	1 x 15	4900	49	50	Severe	30

[1] Based on a limiting deflection of L/240 at 200 Pa. Greater heights can be achieved through the use of Gypframe 'I' Studs or reduced stud centres. Refer to **Technical performance and principles of system design - Robustness** for increased heights.

NB For increased fixing capability replace above listed boards with equivalent thickness of Gyproc Habito.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with all joints taped and filled, according to Gyproc recommendations. The quoted performances are achieved only if Gyproc components are used throughout, and the company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with the Gyproc Technical Team.

NB Gypframe Deep Flange Floor & Ceiling Channel or Gypframe Extra Deep Flange & Ceiling Channel should be used at the base and at the head (subject to deflection head criteria)

NB Where tiling, refer to 'Tiling section' on page 304

Design

Planning – key factors
GypWall ROBUST comprises Gypframe 'C' Studs installed at 600mm centres within Gypframe Deep Flange Floor & Ceiling Channels. The position of services and heavy fixtures should be pre-determined and their installation planned into the frame erection stage.

Fixing floor and ceiling channels
Gypframe Deep Flange Floor & Ceiling Channels must be securely fixed with a row of fixings at 600mm maximum centres. For 94mm and above, two rows of staggered fixings are required, each row at 600mm centres and each fixing 25mm in from the flange. If the floor is uneven, a 38mm thick timber sole plate equal to the width of the channel should be used.

If the concrete or screeded floor is new and still damp, consideration should be given to the installation of a damp-proof membrane between the floor surface and the channel or sole plate.

Splicing
To extend studs, overlap by 600mm (minimum) and fix together using Gyproc Waferhead Screws. Refer to GypWall CLASSIC - construction details 17, 18 and 19 on page 85.

Partition to structural steelwork junctions
When designing the layout of rooms requiring separation by sound insulating walls abutting structural steelwork, consideration should be given to the potential loss of sound insulation performance through the steelwork. Refer to Building acoustics for further information.

Door openings
The designer should consider thickness tolerances of the partition types in relation to the proposed door frame detail. To satisfy BS 5234: Part 2: Part 2 requirements for Heavy and Severe Duty Rating is shown in construction detail 115. The door manufacturer should also be consulted in relation to door details.

Specialist advice should be sought from door manufacturers and Acoustic Consultants to ensure the required acoustic performance is achieved. This becomes more important as acoustic requirements increase.

Framing surround for openings
Where services such as horizontal ducts, fire dampers and access panels are required to penetrate the wall, their position should be pre-determined in order that a framed opening can be provided. The openings should be constructed using established metal stud procedures. Refer to GypWall CLASSIC - construction details 33 to 35 on page 91-92.

Cavity barriers
Minimum 12.5mm Gyproc plasterboard, screw-fixed into the web of perimeter channels or vertical studs, will provide a satisfactory closure to flame or smoke.

Control joints
Control joints may be required in the partition to relieve stresses induced by expansion and contraction of the structure. Refer to GypWall CLASSIC - construction detail 15 on page 84. They should coincide with movement joints within the surrounding structure.

Deflection heads
Partition head deflection designs may be necessary to accommodate deflections in the supporting floor. Deflection heads may also be required to the underside of roof structures subjected to positive and negative pressures. Refer to GypWall CLASSIC - construction details 22 to 26 on page 86. When ceilings are not present to one or both sides of the partition, consideration should be given to the potential loss of acoustic performance. Refer to Building acoustics for further information.

Services

Penetrations
Penetrations of fire-resistant or sound-insulating constructions for services need careful consideration to ensure that the performance of the element is not downgraded. Consideration also needs to be given to the services themselves so they do not act as the mechanism of fire spread or sound transmission. Refer to Service installations for further information.

Electrical
The installation of electrical services should be carried out in accordance with BS 7671 or other equivalent international standard. The service cut-outs in the studs can be used for routing electrical and other small services. Refer to GypWall CLASSIC - construction detail 1 on page 82. Cables should be protected by conduit, or other suitable precautions taken to prevent abrasion when they pass through the metal frame. Service cut-outs should be aligned to allow easy installation of service. If studs require cutting, cut from the same end of each stud to ensure cut-out alignment. Switch boxes and socket outlets can be supported from Gypframe 103 FC 50 Fixing Channel fixed horizontally between studs, or a high performance socket box detail can be used where higher acoustic performance is required.

Independent support
When designing for the installation of services such as fire dampers and associated ductwork through a GypWall partition, consideration should be given to the size and weight of the damper - this will determine whether it can be supported directly from the partition or needs to be independently supported from the structure. Refer to GypWall CLASSIC - construction details 33 and 34 on page 91.

Design (continued)

Fixtures
Lightweight fixtures can be made directly to the partition board linings. Medium weight fixtures can be made to Gypframe 103 FC 50 Fixing Channel. Heavyweight fixtures (to BS 5234: Part 2) such as wash basins and wall cupboards, can be fixed using plywood secured by Gypframe Service Support Plates. Refer to Service installations for further information. Where it is not possible to predetermine the exact location of fixtures, or where additional fixtures may be added or moved around the room in the future, Gyproc Habito board should be considered as the lining board where medium and/or heavy weight fixtures are to be included. Refer to GypWall HABITO on page 118 for further information.

Access for maintenance
Suitable access panels (by others) must be used to provide access for maintenance. Access panels must be fully compatible with drywall construction and match the fire rating of the partition.

Board finishing
Refer to Finishing systems on page 298.

Tiling
Tiles up to 32 kg/m^2 can be applied to the surface of Gyproc plasterboard systems. Tiles up to 60 kg/m^2 can be applied when using Glasroc X or Aquaroc FC fibre cement board. Refer to Tiling on page 304 for further information.

Mold & moisture protection
Where additional protection against moisture is required, for example in a bathroom, kitchen or other area subject to intermittent humidity, then the moisture resistant grade of the required board type should be specified – for example Gyproc SoundBloc MR. Similarly, if protection against mold spores forming is required then M2TECH (mold & moisture technology) versions of the boards should be specified – for example Gyproc SoundBloc M2TECH.

Using MR or M2TECH versions of any of the plasterboard linings listed in the performance tables, will not affect the fire, acoustic, height or robustness performances listed.

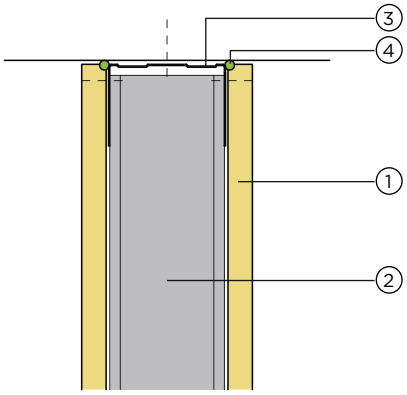
Air quality
Consideration should be given to specifying plasterboard linings that, in addition to the performances listed in the preceding tables from page 110-111 (covering fire, acoustic, duty rating etc), actively absorb harmful volatile organic compounds (VOC's) such as formaldehyde, from the atmosphere. Where additional protection against VOC's is required, then Activ'Air versions of the boards listed in these pages should be specified – for example SoundBloc Activ'Air.

Using Activ'Air versions of any of the plasterboard linings listed in the performance tables, will not affect the fire, acoustic, height or robustness performances listed.

Construction details
For GypWall construction details, refer to the construction details shown on pages 114 to 116. For more typical or example details, please contact the Gyproc Technical Team.

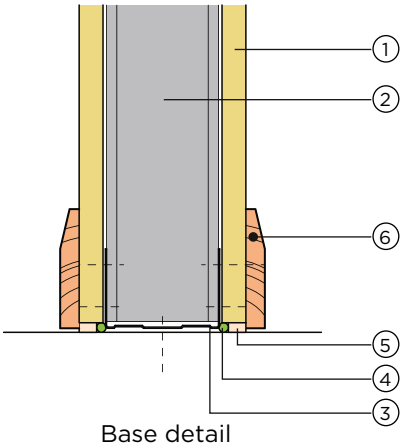
Construction details

1



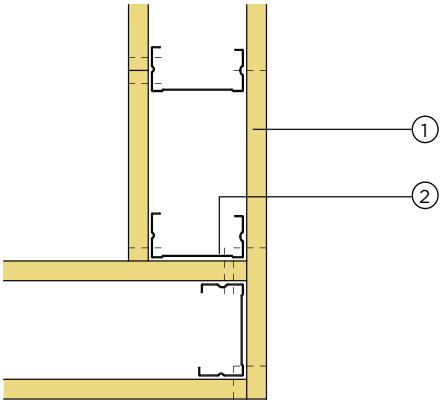
Head detail

2



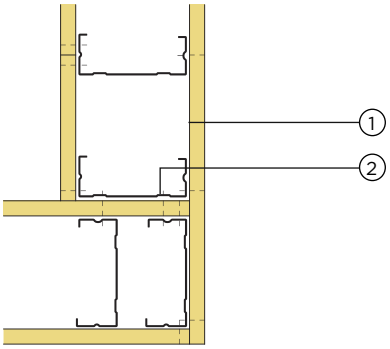
Base detail

3



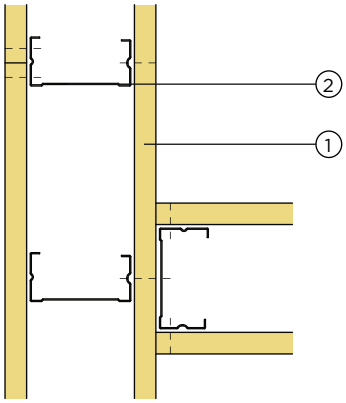
Corner detail for 70mm stud

4



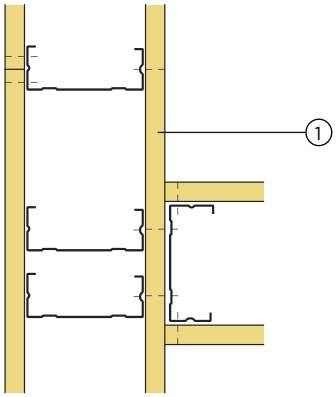
Corner detail for 92mm stud

5



'T' junction detail for 70mm stud

6

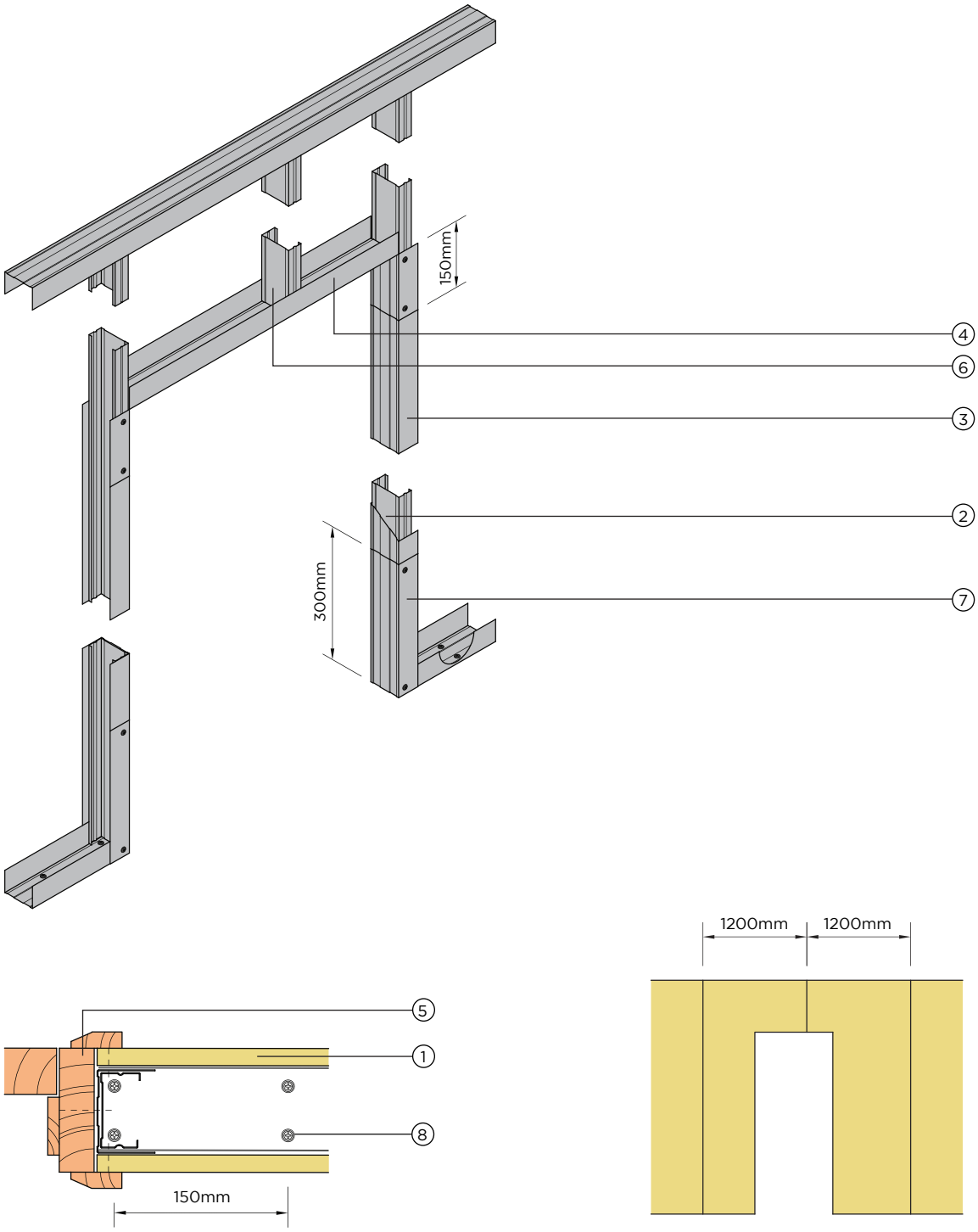


'T' junction detail for 92mm stud

1. Gyproc DuraLine
2. Gypframe 'C' Stud
3. Gypframe Deep Flange Floor & Ceiling Channels
4. Gyproc Sealant
5. Bulk fill with Gyproc Jointing Compound (where gap exceeds 5mm)
6. Skirting

Construction details

7



Door frame to satisfy BS 5234: Parts 1 & 2: 1992 - Heavy and Severe Duty. Suitable for door weights up to 60kg. For door weights in excess of 60kg, please contact Gyproc Technical Team.

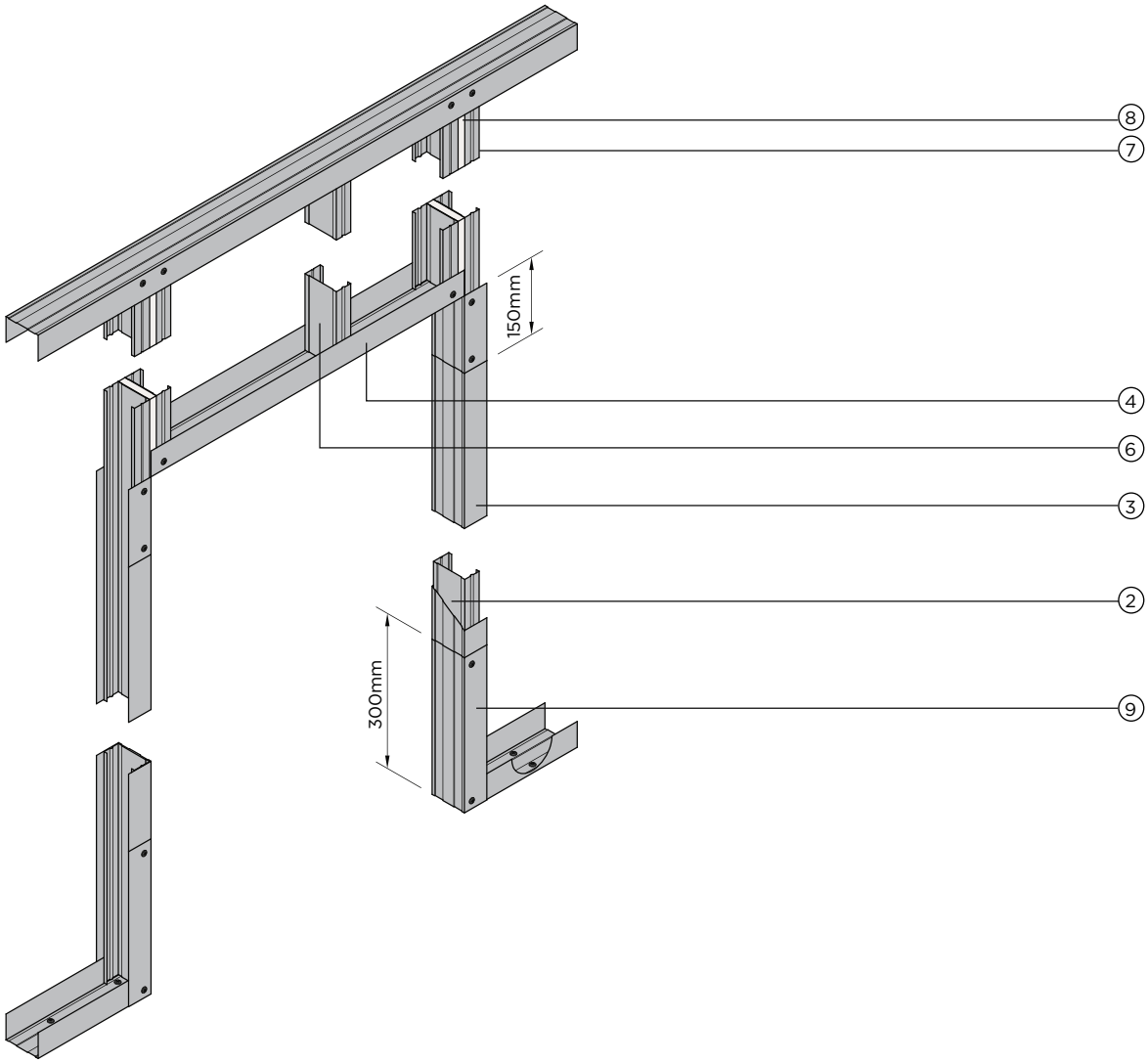
1. Gyproc DuraLine
2. Gypframe 'C' Stud
3. Gypframe Deep Flange Floor & Ceiling Channels to sleeve studs
4. Gypframe Deep Flange Floor & Ceiling Channels cut and bent to form door head
5. Timber door frame and architrave
6. Gypframe 'C' Stud to maintain stud module
7. Gypframe Deep Flange Floor & Ceiling Channels cut and bent to extend up studs
8. Gyproc Wedge Anchor for fire rated partitions or Gyproc Hammer Fix for non-fire rated partitions

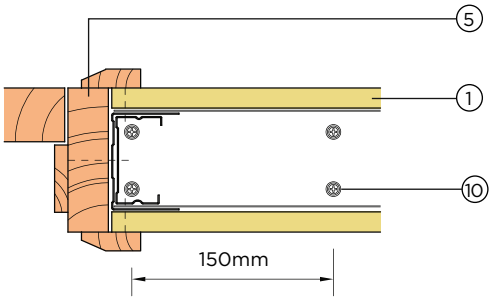
NB Advice should be sought from the door manufacturer prior to the construction of these details.

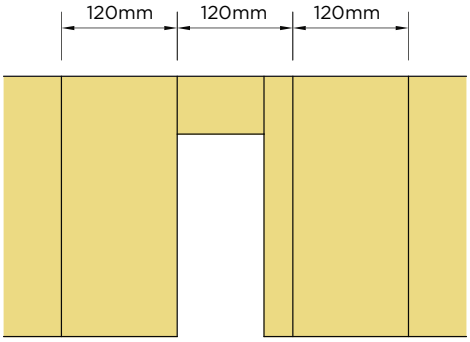
NB At the base, the channel is cut and bent to extend 300mm up the studs and fixed each side with two Gyproc Waferhead Screws.

Construction details

8







Alternative 'reduced plasterboard waste' door frame detail to satisfy BS 5324: Parts 1 & 2: 1992 - Heavy and Severe Duty. Suitable for door weights upto 60kg. For door weights above 60kg, please contact Gyproc Technical Team.

1. Gyproc DuraLine
2. Gypframe 'C' Stud
3. Gypframe Deep Flange Floor & Ceiling Channels to sleeve studs
4. Gypframe Deep Flange Floor & Ceiling Channels cut and bent to form door head
5. Timber door frame and architrave
6. Gypframe 'C' Stud to maintain stud module
7. Gypframe 'C' Studs fixed back to back with Gyproc Drywall Screws at 300mm centres staggered
8. Plasterboard infill (same type as lining) cut to fit between studs
9. Gypframe Deep Flange Floor & Ceiling Channels cut and bent to extend up studs
10. Gyproc Wedge Anchor for fire rated partitions or Gyproc Hammer Fix for non-fire rated partitions

NB Advice should be sought from the door manufacturer prior to the construction of these details.

NB The principle of this reduced plasterboard waste door detail is only suitable for GypWall CLASSIC and GypWall ROBUST for fixed head situations only.

NB At the base, the channel is cut and bent to extend 300mm up the studs and fixed each side with two Gyproc Waferhead Drywall Screws..

Notes