

Guldmann planning guide

Our intention with this planning guide is to offer architects, consulting engineers and others a tool that can simplify the planning of effective ceiling hoist systems.

Our goal is to ensure reliable, effective solutions for the benefit of all parties.

Although we have made every effort to provide answers to the most frequently asked questions, which experience has shown may arise when planning ceiling hoist systems, other questions and problems will unavoidably arise.

We therefore offer professional assistance in the form of such services as:

- initial demand analyses carried out by Guldmann's ergonomic specialists
- help with planning and calculations, call us or send us a sketch or AutoCAD / Revit drawing
- participation in planning meetings
- a visit to our demo-rooms where you can see and try out the functions of the products and test planning arrangements in practice

As a principal rule we provide service free of charge.

Guldmann's installation and service departments have undoubtedly the most experienced corps of quality conscious installers and service consultants. This allows us to offer installation and, if required, subsequent operation of both simple and highly complex systems at competitive prices.

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Guldmann™

PLANNING GUIDE

Vers. 10.00

Guldmann develops, manufactures,
distributes and maintains products and
services that make the daily lives
of disabled people and their
helpers a little easier.

Time to care

INTRODUCTION

SOLUTION TYPES

CONSIDERATIONS

PLANNING

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INTRODUCTION

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Guldmann's FACT of life

Flexibility

We know and we act according to the fact that what is right today may be wrong tomorrow – we do not have a monopoly of the truth.

Ambitions

We set common ambitious goals and strive for improvements.

Competence

We know what we talk about. The capability and knowledge of the individual is our common strength.

Trustworthiness

We inspire to instill confidence in us through confidence in each other.

Guldmann in brief

Since the beginning in 1980 Guldmann has devoted the company's entire resources to making life easier for the disabled and their helpers.

Today Guldmann works within three focus areas:

1. Guldmann

Guldmann offers a comprehensive system comprising different solutions that create better working conditions for carers and care institutions. A Guldmann system releases resources to allow more and better care for the disabled. The products in the Guldmann system comprise lifting and moving systems as well as nursing beds.

2. Stepless

Stepless is a series of products that makes it easier for walking-impaired people to gain access to their surroundings.

The products from Stepless comprise portable and stationary ramps and lifting platforms.

3. Consulting

In Guldmann Consulting, the main focus is occupational health and safety issues among staff handling and caring for patients. Consulting provide knowledge sharing within this area because it is an essential part of preventing work-related injuries.

An international company

Guldmann is a well-established, international company with its own representatives in Denmark, Sweden, Germany, England, Italy, France, Ukraine, Brazil, Canada and the USA. In addition we have partners and distributors in many other countries.

Facts about Guldmann

| | |
|---------------------|---|
| Started | 1980 |
| Number of employees | 340 |
| Headquarters | Denmark |
| CVR No. | 27 70 67 46 |
| Owner | Guldmann Holding A/S |
| Bank | Sydbank |
| Accountants | Deloitte |
| Member of | The Confederation of Danish Industries The Danish Export Group Association |



Security, safety and comfort. These are the key words when lifting a disabled person. Both for the disabled person and for the carer, who must also safeguard his or her health.

Guldmann's activities have since 1980 been based on these three key words. Today Guldmann specialises in technical aids for securely, safely and comfortably lifting and moving disabled people. Constant product development has resulted in the Guldmann's ceiling hoist system - a comprehensive, unique and cohesive system that is characterised by great flexibility.

Guldmann's ceiling hoist system comprises a wide range of lifting and rail modules that can be combined with different types of hoist and lifting sling. A lifting sling is a textile belt that the disabled person is placed in when being lifted. The individual components can be combined to create both simple and highly complex systems.

A ceiling hoist system is extremely flexible and is designed to meet the individual needs of the disabled. At the same time the system makes it possible to adapt to the various architectural conditions and limitations that must be taken into account when installing a hoist.

Guldmann's ceiling hoist system has a simple, distinguished design and can be discreetly incorporated into the user's surroundings.

In order to gain the maximum benefit of a ceiling hoist system it is important to take the system into consideration from the beginning when planning accommodation for the disabled - whether this is a new building or a conversion of existing premises.

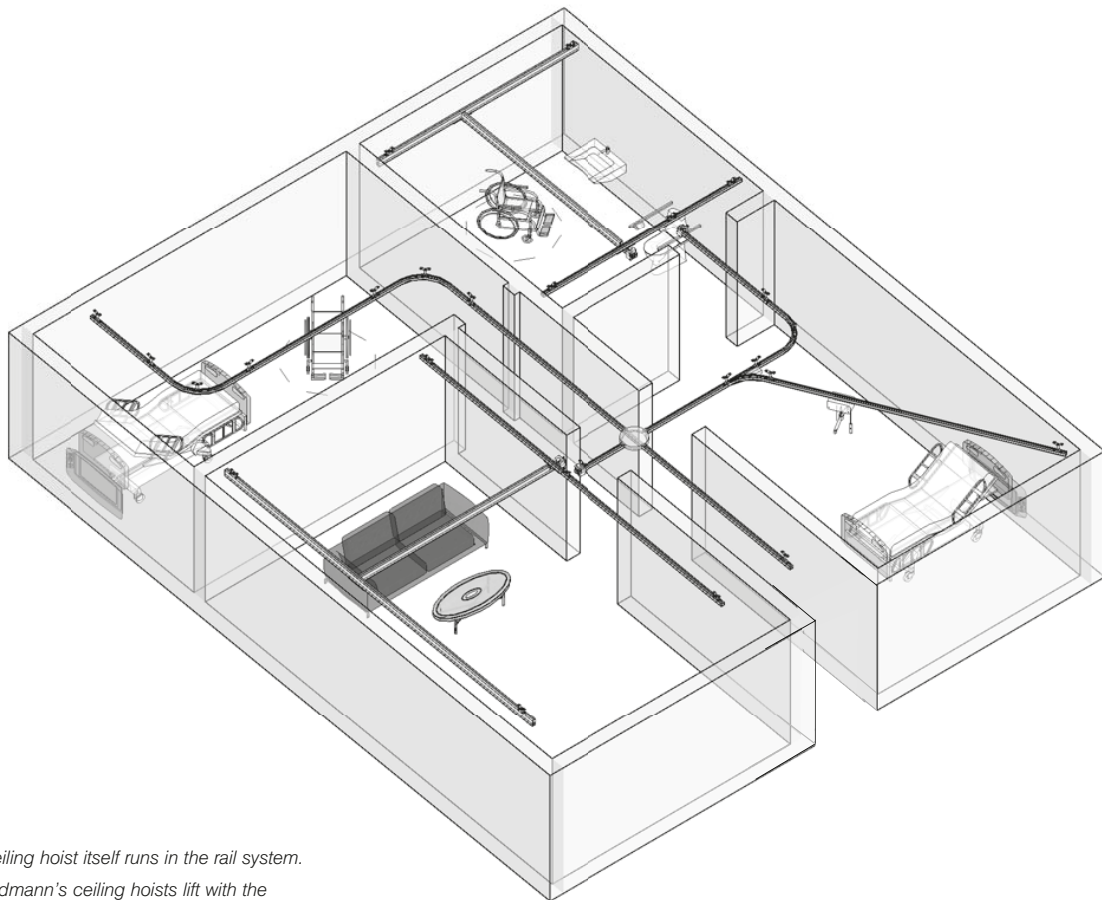


A rail system comprises one or more rails, which are installed on the ceiling, the wall or on freestanding upright support brackets.

The rail system is constructed in modules. This makes it easy to create individual solutions and to adapt the system to existing buildings. The modules are easy to handle during installation and transport. The flexible modules also make the system suitable for recirculation.

Rail systems can be installed anywhere. Private homes, hospitals, nursing homes, therapy clinics, riding centres and swimming pools are just some of the places where a rail system can help to improve the working environment for carers and heighten the quality of life for the disabled.

A ceiling hoist system takes up no floor space, makes little noise and is always ready for use.



*The ceiling hoist itself runs in the rail system.
All Guldmann's ceiling hoists lift with the help of a battery operated motor. The hoist is equipped with a hanger to which the sling is secured. The rail system that the hoist runs in can be:*

- A room-covering system
- Single track
- A combination of the two systems

The hoist is manually controlled, or controlled with the help of a drive-motor.





SOLUTION TYPES

– Presentation of different ceiling hoist systems

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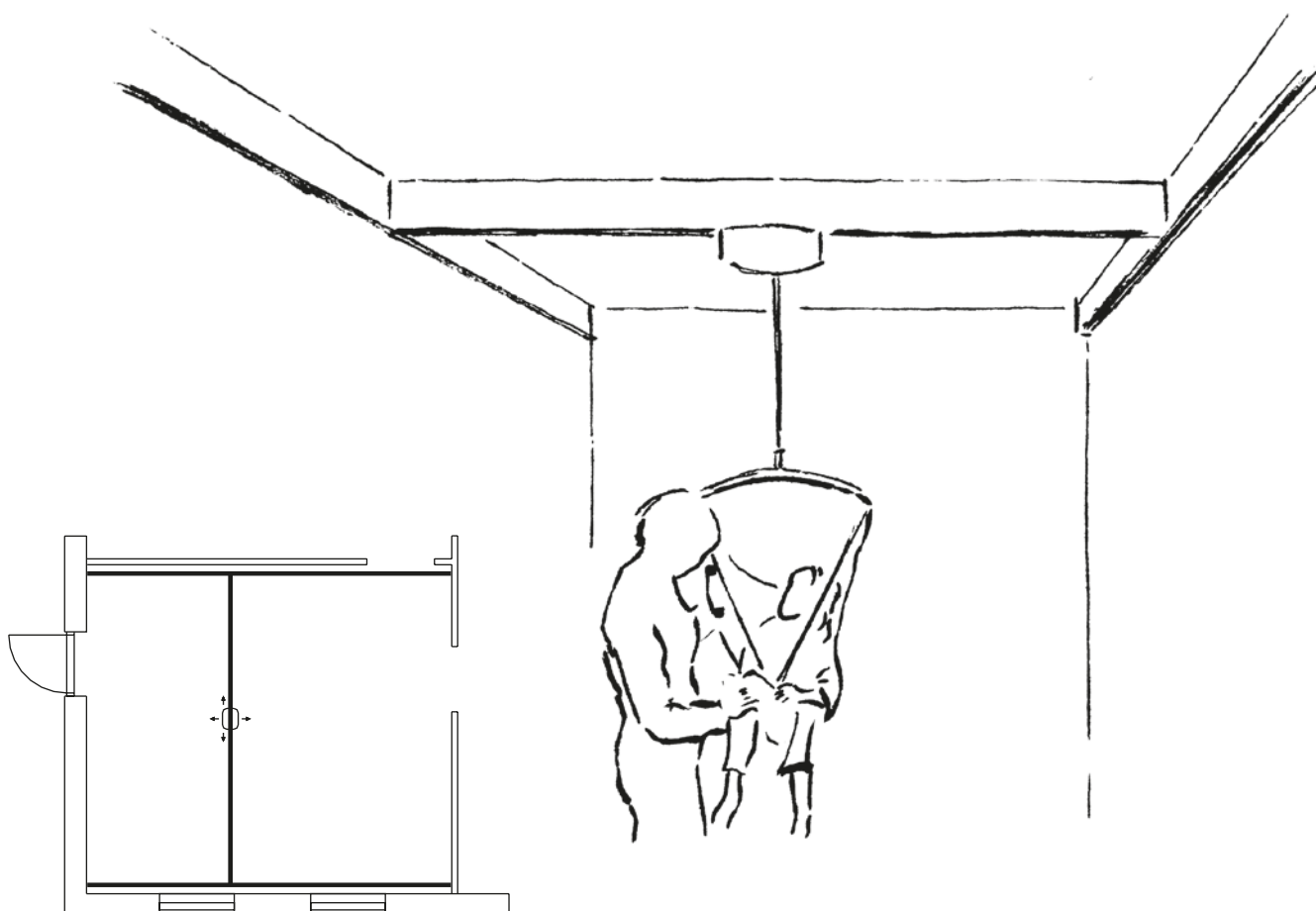


The room-covering rail system comprises two parallel rails installed on the ceiling, the wall or on freestanding upright support brackets. A traverse rail runs between the parallel rails. The hoist itself glides backwards and forwards on the underside of the traverse rail in a travelling trolley, which is equipped with wheels that run inside the rail. Horizontal movement is smooth and comfortable for the user. The room-covering system makes it possible to lift the disabled person to and from any place in the room and is the optimum solution in rooms where many lifts are carried out.

Installing a room-covering system saves space and provides an extremely high degree of freedom. The bed, a wheelchair and the other furniture in the room can be placed as desired and lifting can be carried out rapidly, easily and comfortably both with regard to the carer and the disabled person.

In addition the planner has considerable freedom to design the rooms in the building – both because the system saves space and because it offers flexibility when lifting a person.

In some cases the parallel rails can be built into the ceiling so that only the lower part of them is visible.



Rail profiles

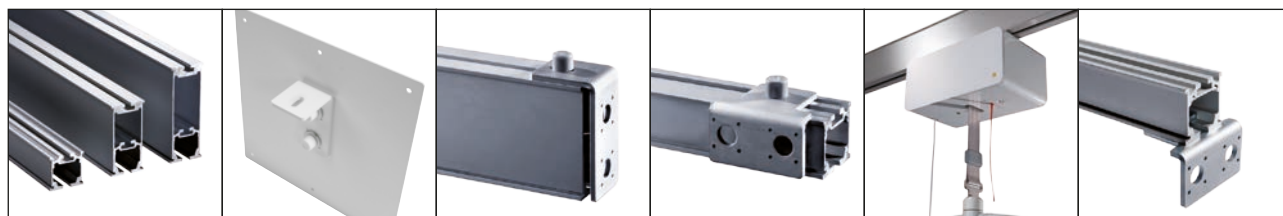
Bracket

Bracket

Bracket

GH3

Bracket





The single track rail system

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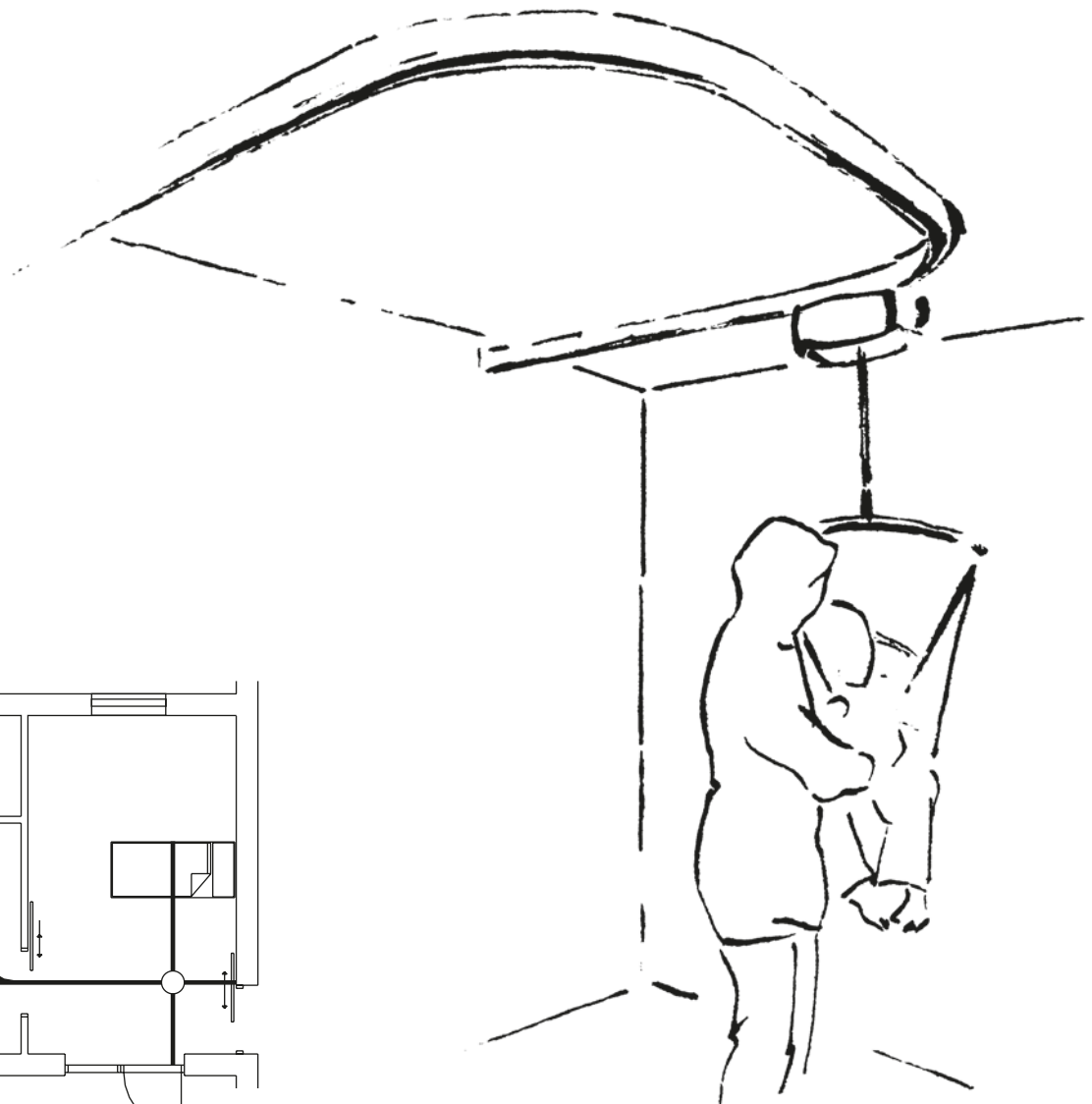
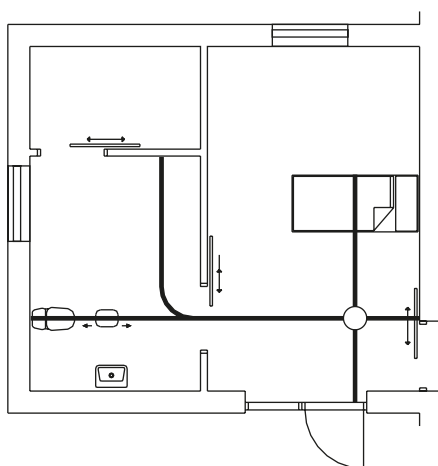
SOLUTION TYPES

In its basic form the single track rail system comprises a single rail in which the ceiling hoist runs. The system can be extended with curves of various angles, GH Switch tracks and GH Turn tables.

The single track system is very suitable for moving people over longer distances. Examples of this could be corridors, riding schools or swimming pools.

Over and above this the single track system can be used in the same situations and rooms as the room-covering system. But attention should be paid to the fact that wheel-chairs, beds and other aid facilities must be located directly beneath the rail. This places limitations on the layout of the room due to the location of the rail.

In some cases the rail can be built into the ceiling so that only the lower part is visible.



GH1 F

Travelling trolley

Bracket

Curves

Free standing system

Traverse trolleys



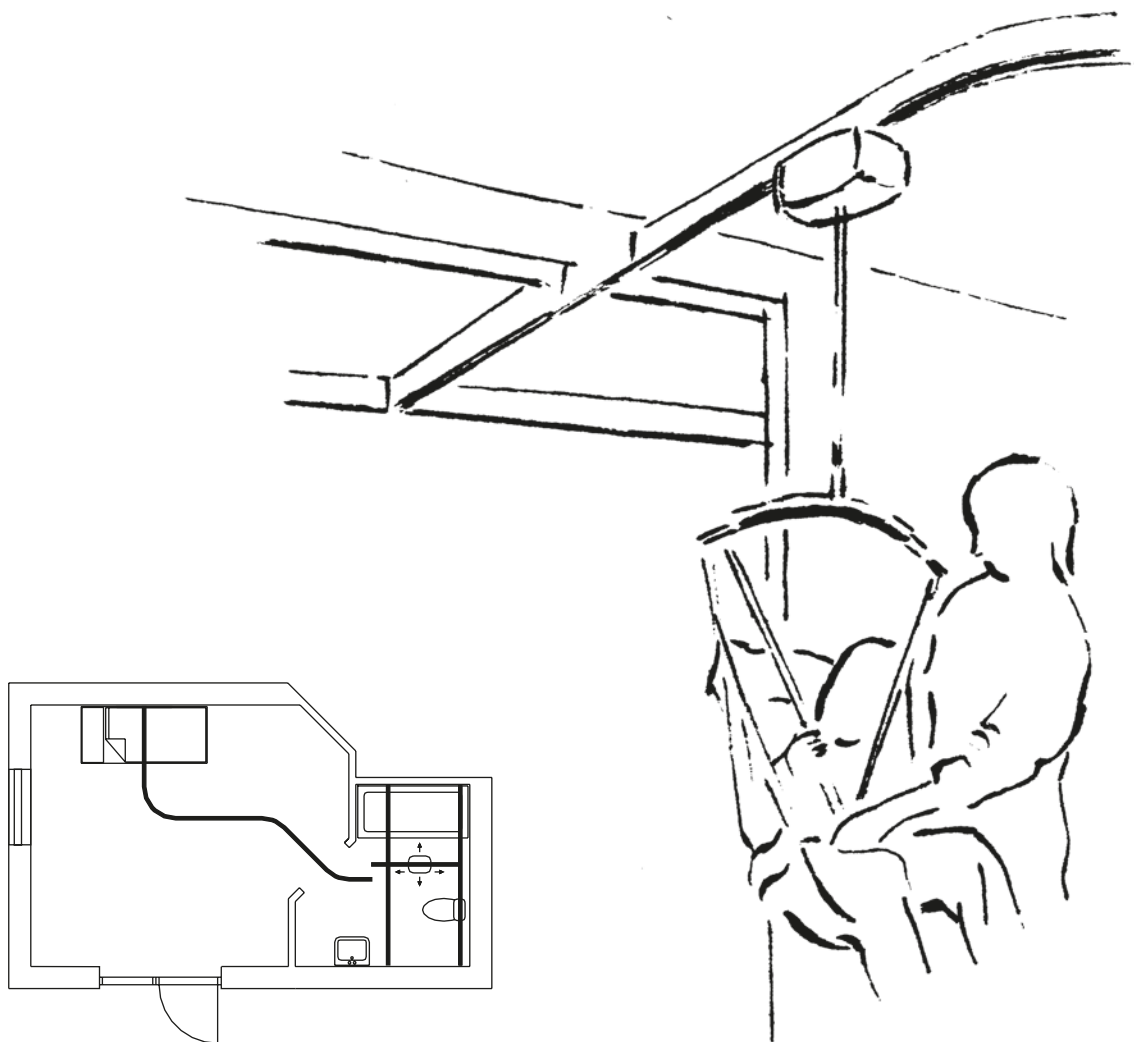


It is possible to combine the room-covering system with a single track rail system in adjacent rooms with the help of a GH Combi-lock.

A Safety lock is installed on the traverse rail in the room covering system to prevent the hoist from running out of the rail. Another Safety lock is installed on the single track rail system. Together will the two Safety locks form a Combi lock. When the traverse rail and the single track are aligned, both Safety gates will open, and the hoist can be moved from one system to the other without problems.

The rail in the single track rail system must be installed at a right angle to the parallel rails on the room-covering rail system.

The parallel rail in the room-covering system which is closest to the room with the single track system must be installed some distance into the room to provide space for the safety lock and the Combi-lock between the wall and the rail.



GH1

Bracket

Lifting hanger

Combi-lock





All Guldmann's hoist types lift with the help of a battery-driven motor and run in the rail system with the help of a travelling trolley, which is manually controlled or controlled with the help of a motor.

GH3

GH3 ceiling hoist lifts with the help of a lifting hanger to which the sling is attached. The hanger is raised or lowered from the hoist, which is installed in the rail and can only be moved horizontally. Lifting capacity up to 250 kg (550 lbs).



GH3+

Ceiling hoist similar to GH3, but with options like integrated scale, care lift management, service monitoring system and WiFi module. The lifting speed is also faster. Lifting capacity up to 375 kg (825 lbs).



GH3 Twin

GH3 Twin is a heavy duty ceiling hoist with double lifting straps, which lifts using a cross hanger or a horizontal lifter on which the sling is attached. Lifting capacity up to 500 kg (1100 lbs).



GH1

GH1 has a lifting capacity up to 255 kg (560 Lbs). GH1 is recharged when the hand control is placed in the docking station.



GH1 F

GH1 F is a flexible hoist which can rapidly and easily – with the least manual handling – be transferred from one rail system to another in a specially designed transport trolley. GH1 F has a lifting capacity up to 255 kg (560 lbs.)



GH1 Q

GH1 Q is a flexible hoist with a quick release system. GH1 Q has a lifting capacity up to 255 kg (560 Lbs). GH1Q is recharged through the hand control when it is placed in the docking station.





CONSIDERATIONS

– Considerations in connection with
integrating a ceiling hoist into a building

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When designing buildings for the disabled it is important for all parties involved to clarify the following questions when choosing technical aids facilities for lifting and moving people:

Who are the users?

It is an often overlooked fact that both disabled people and carers are users of systems for moving people.

Where is the lifting requirement?

The bedroom?

The bathroom and toilet?

Guldmann recommends that daily working routines should be reviewed by a working group comprising a carer, a therapist, technical staff, an architect and a ceiling hoist consultant. This will make it possible to discover where the lifting requirements in the building are and, on the basis of this, to arrive at the best solution for all users.

Which lifting method is best in the specific situation?

A manual lifting?

A mobile hoist?

A ceiling hoist?

Although a ceiling hoist system will be the most functional solution in most situations, other lifting methods can be more suitable in certain cases.

Which rail system should be chosen?

A room-covering system?

A single track system?

A combination?

Which type of ceiling hoist should be chosen?

GH3?

GH3+?

GH3Twin?

GH1?

GH1 F?

GH1 Q?

Which type of building is in question?

An existing building?

A renovated building?

A new building?

A ceiling hoist system can be adapted for use anywhere, but the possibilities vary depending on whether a new or an existing building is in question.

REMEMBER

– the choice of a technical aid is decisive for:

What the working environment will be like for carers

What the user's quality of life will be

How the entire area of the room can be utilised

How the carer's time can be utilised

How money can be utilised

Guldmann can help to arrive at the optimum solution in each case.



The influence of lifting modules and rail types on lifting height

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CONSIDERATIONS

This table shows which consequences the choice of lifting modules and rail types has for the lifting height in two different situations:

1. Moving a patient to and from a bed
2. Moving a patient to and from a wheelchair

Conditions are described in detail below.

The fields in the table are either white or grey

- White fields indicate that there is insufficient lifting height. This means that it will be necessary to lift the patient's feet and legs manually. The figure in the field shows how great a distance is lacking.
- Grey fields indicate that the lifting height is sufficient and how great an extra distance there is.

Conditions

- Person Height, 180 cm (6')
- Sling Basic Basic size, Medium
- Bed GB4, distance from floor to top of mattress is 48 cm (19")
- Wheelchair Distance from floor to top of seat is 55 cm (21½")

| | Rails | Room height 225 cm (88") | | Room height 240 cm (94") | | Room height 250 cm (98") | | Room height > 300 cm (117") | |
|---------|--------|--------------------------|----------------|--------------------------|----------------|--------------------------|----------------|-----------------------------|----------------|
| | | Bed (x) | Wheelchair (y) | Bed (x) | Wheelchair (y) | Bed (x) | Wheelchair (y) | Bed (x) | Wheelchair (y) |
| GH3/GH1 | A-Rail | - 10 (4") | + 25 (10") | + 5 (2") | + 40 (15¾") | + 15 (6") | + 50 (19½") | + 65 (25½") | + 100 (39¼") |
| | B-Rail | - 16 (6¼") | + 18 (7") | - 1 (½") | + 33 (13") | + 9 (3½") | + 43 (17") | + 59 (23") | + 93 (36½") |
| | C-Rail | - 21 (8¼") | + 13 (5") | - 6 (2¼") | + 28 (11") | + 4 (1½") | + 38 (15") | + 54 (21") | + 88 (34½") |

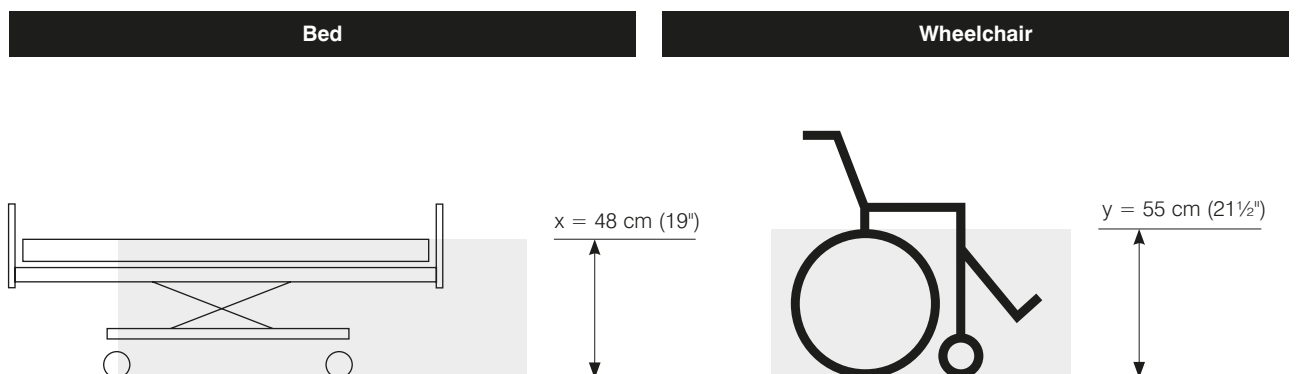
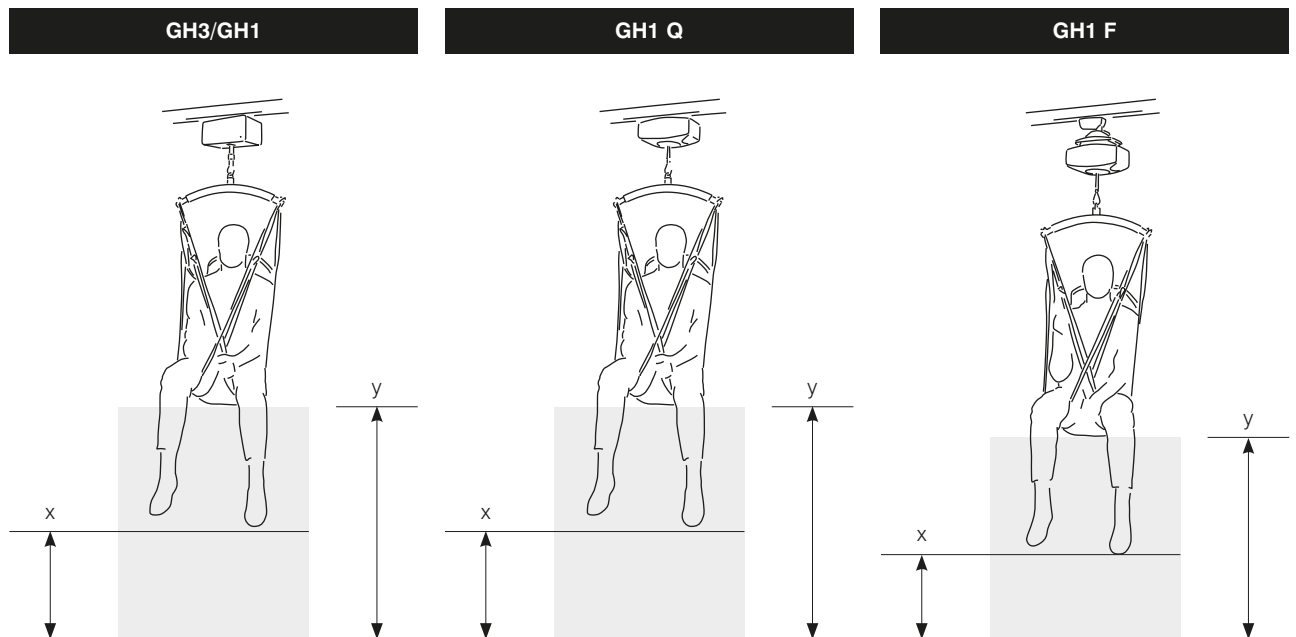
| | | | | | | | | | |
|-------|--------|------------|------------|-----------|-------------|-------------|-------------|-------------|------------|
| GH1 Q | A-Rail | - 11 (4¼") | + 24 (9½") | + 4 (1½") | + 39 (15¼") | + 14 (5½") | + 49 (19¼") | + 64 (25") | + 99 (39") |
| | B-Rail | - 18 (7") | + 17 (6½") | - 3 (1¼") | + 32 (12½") | + 27 (10½") | + 42 (16½") | + 77 (30") | + 92 (36") |
| | C-Rail | - 22 (8½") | + 12 (4¾") | - 7 (2¾") | + 27 (10½") | + 22 (8½") | + 37 (14½") | + 72 (28¼") | + 87 (34") |

| | | | | | | | | | |
|-------|--------|-------------|-----------|------------|------------|-----------|-------------|-------------|-------------|
| GH1 F | A-Rail | - 26 (10¼") | + 9 (3½") | - 11 (4¼") | + 24 (9½") | - 1 (½") | + 34 (13½") | + 49 (19¼") | + 84 (33") |
| | B-Rail | - 33 (13") | + 2 (¾") | - 18 (7") | + 17 (6½") | - 8 (3¼") | + 27 (10½") | + 42 (16½") | + 77 (30¼") |
| | C-Rail | - 38 (15") | - 3 (1¼") | - 23 (9") | + 12 (4") | - 13 (5") | + 22 (8½") | + 37 (14½") | + 72 (28¼") |

All measurements are in cm / inch



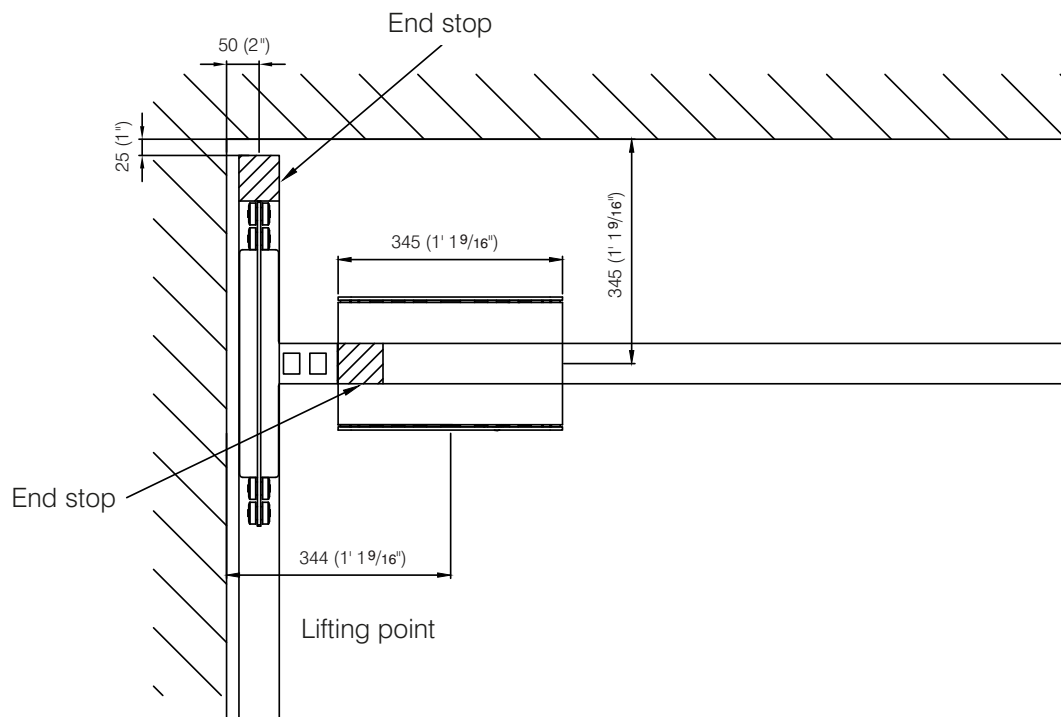
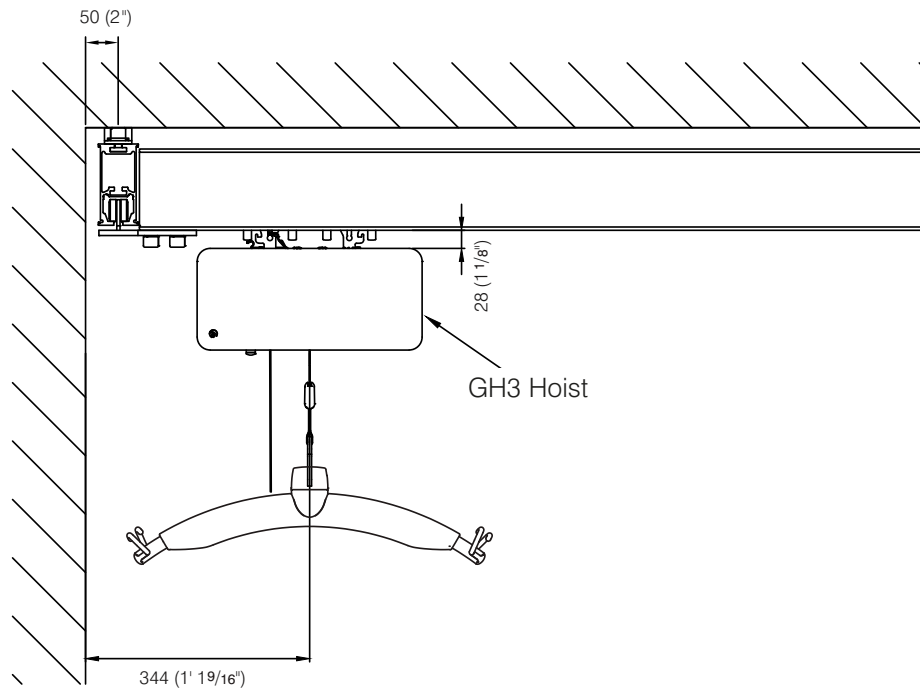
CONSIDERATIONS





CONSIDERATIONS

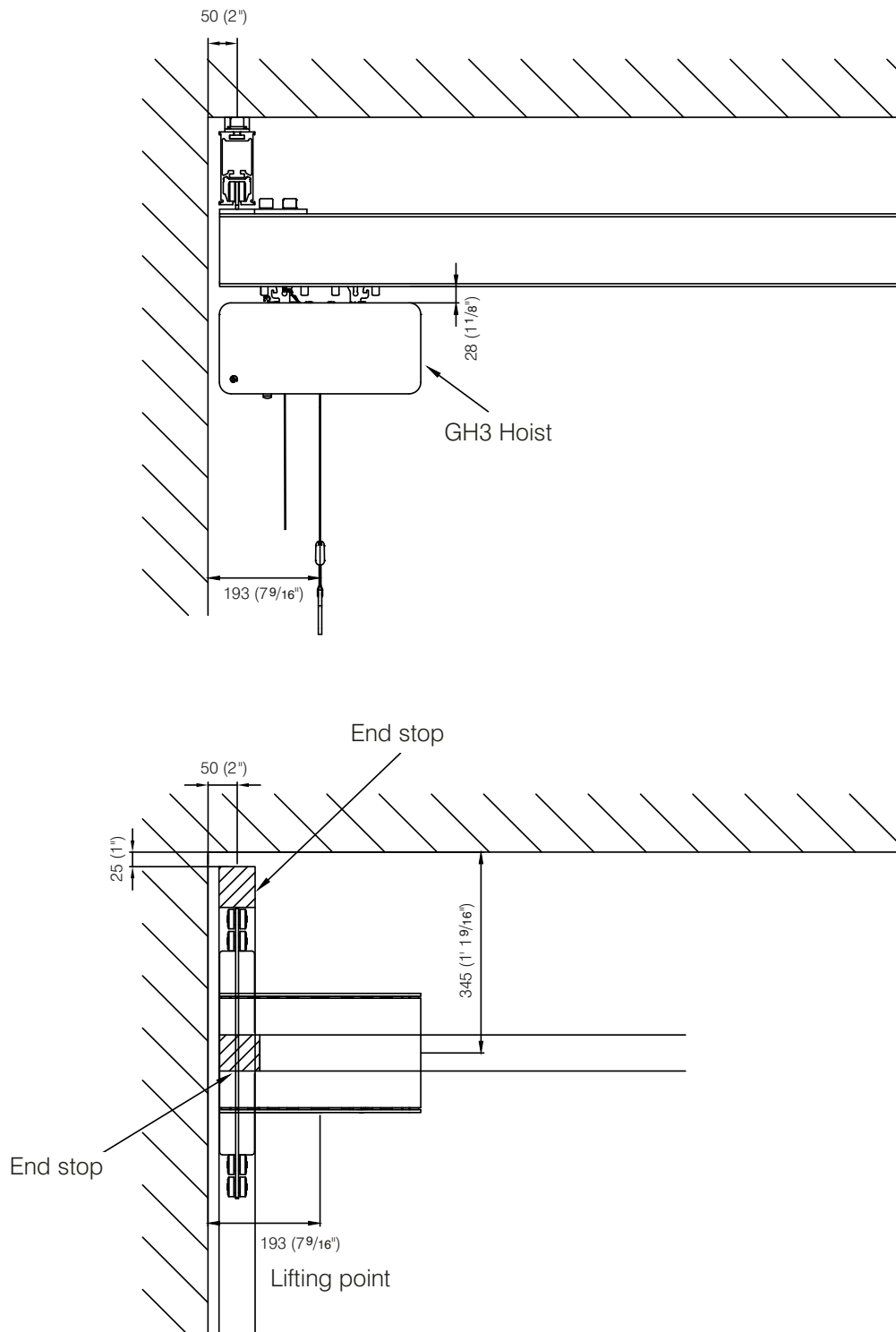
Outer liftingpoint for GH3 hoist in systems with traverse mounted in between the parallel rails.





CONSIDERATIONS

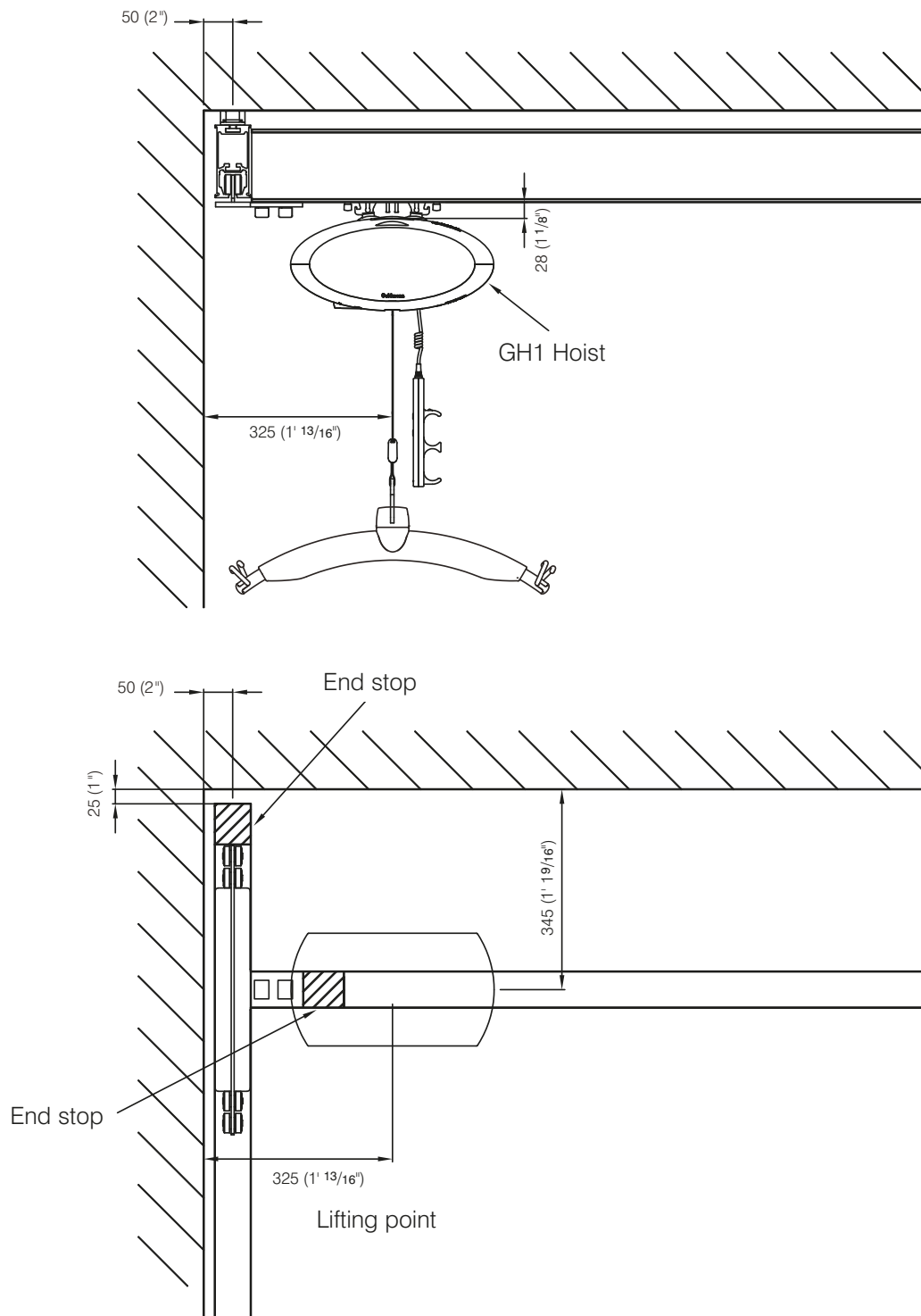
Outer liftingpoint for GH3 hoist in systems with underhanging traverse rail.





CONSIDERATIONS

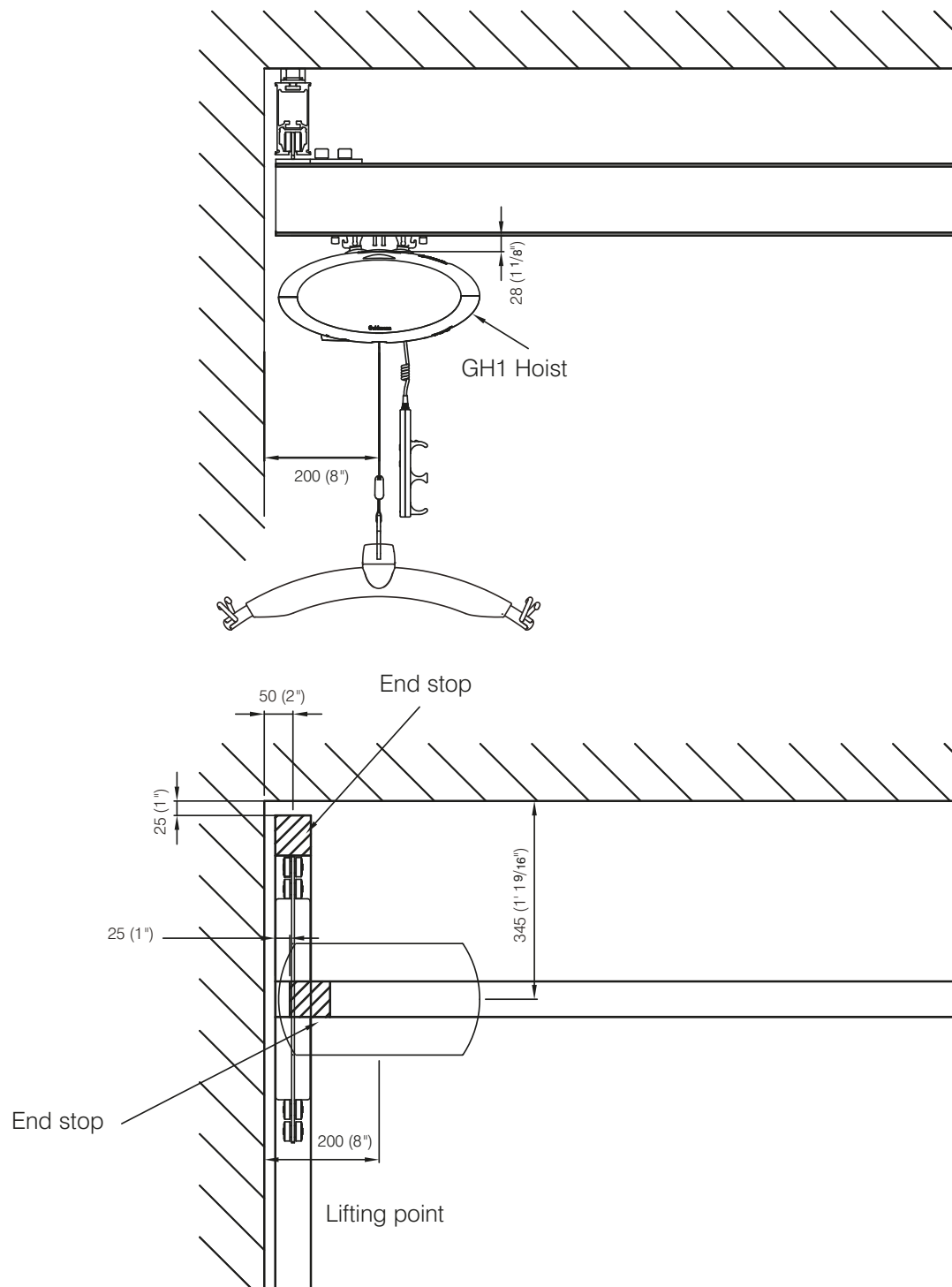
Outer liftingpoint for GH1 hoist in systems with traverse mounted in between the parallel rails.





CONSIDERATIONS

Outer liftingpoint for GH1 hoist in systems with underhanging traverse rail.

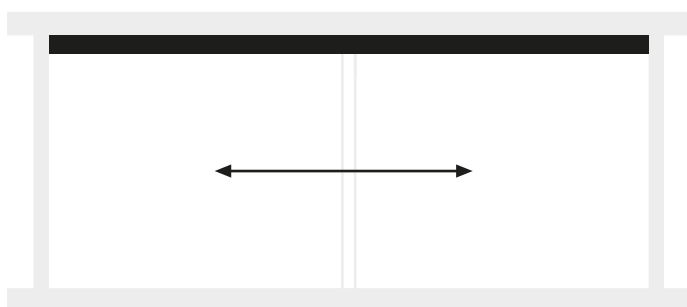




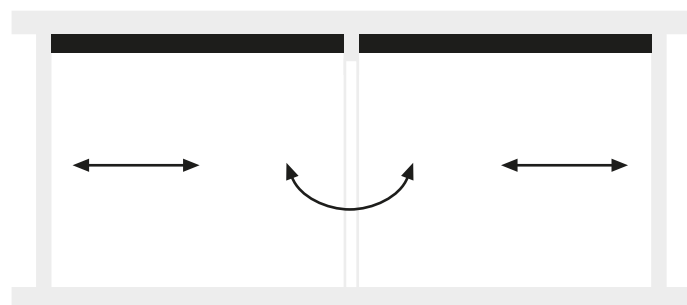
CONSIDERATIONS

Once it has been established that there is a need to carry out lifts in several rooms, a decision must be made as to how the disabled person will be moved from room to room and from rail system to rail system. The door opening can either be heightened so that the rail can be led directly through and the hoist can be run from room to room without stopping. Or a Swing solution can be chosen, where the original height of the door opening can be retained and the disabled person be “swung” through the door opening. This can be carried out with two hoists where the hanger is “swung” through the door opening.

Rail transition is the most functional solution both for the disabled person and the carer. However, attention should be drawn to the fact that there are certain limitations and problems in connection with a Swing solution.



Rail transition



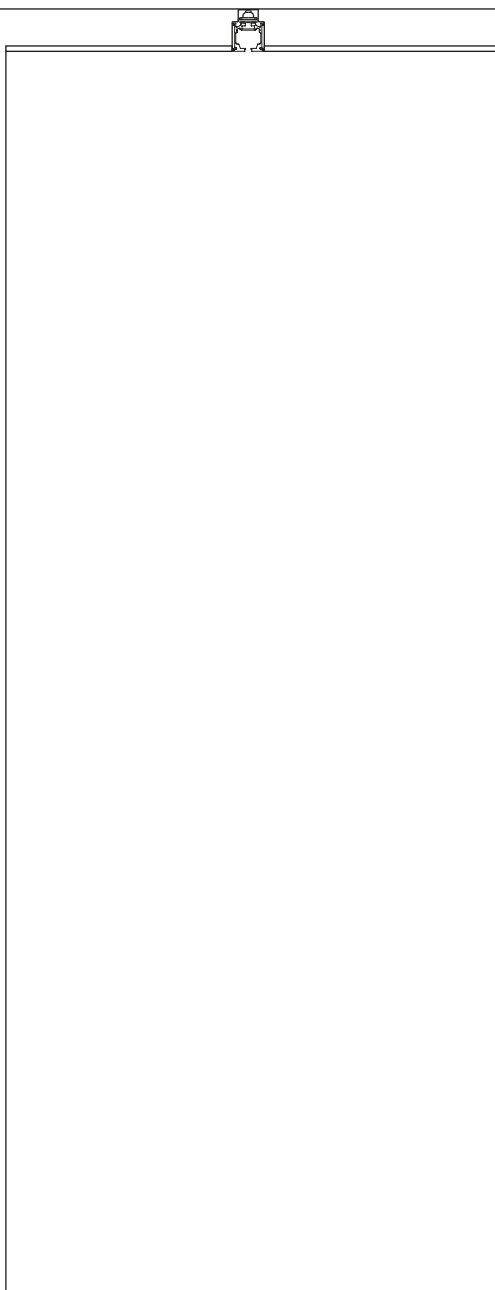
The Swing solution



Transition through a door opening
Oversize door

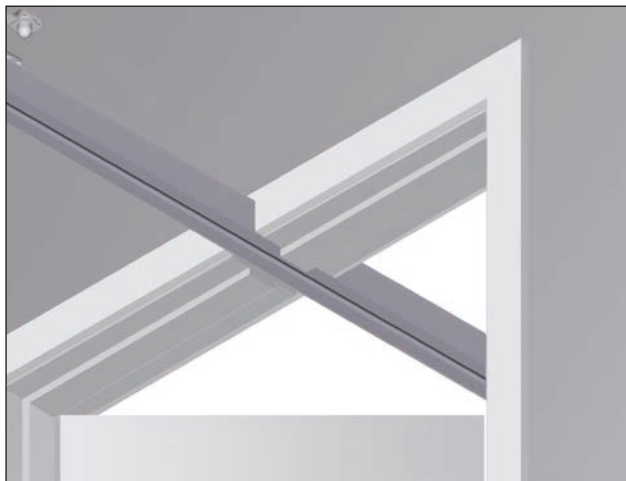
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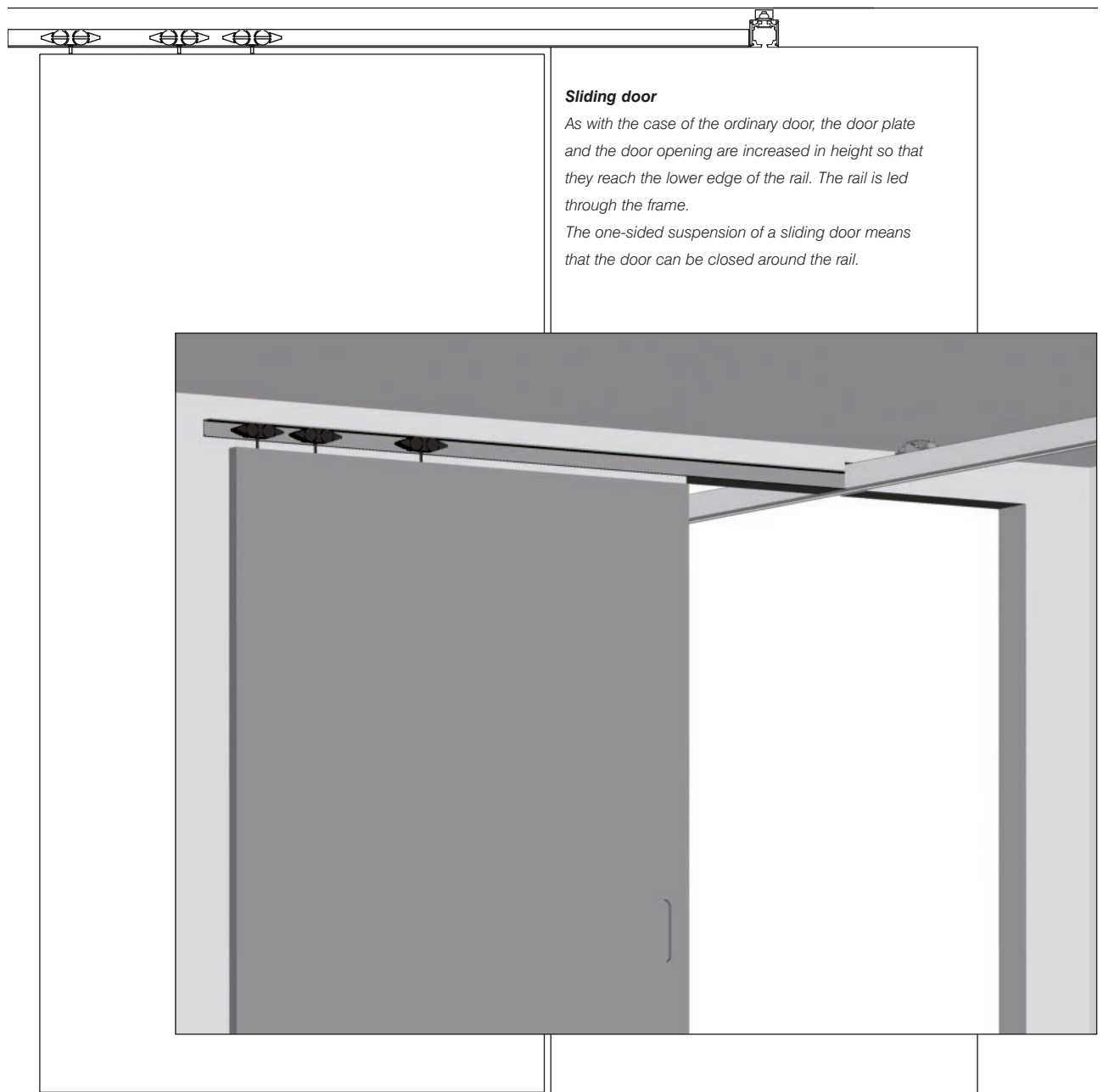
CONSIDERATIONS



Oversize door

The door plate and the door opening are increased in height so that they reach the lower edge of the rail.





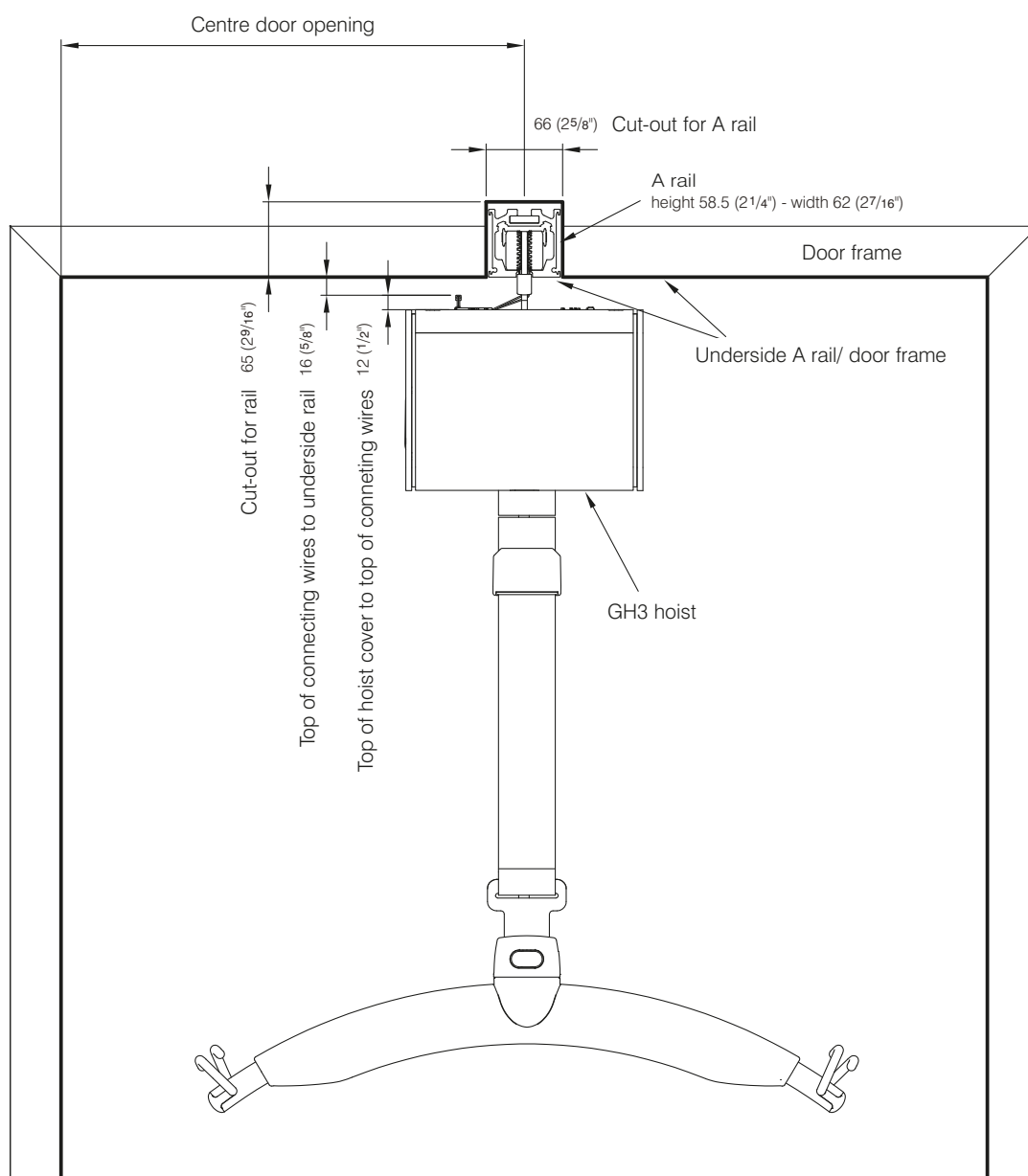


Transition through a door opening Cut-out, oversized doors

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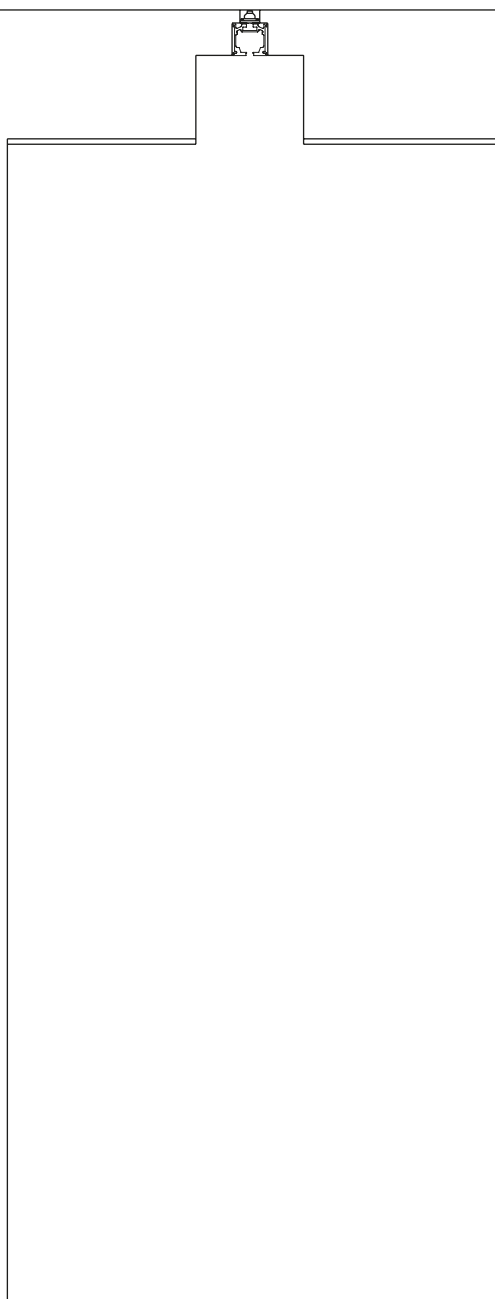
CONSIDERATIONS

Cut-out through door frame for A rail when using standard trolley.





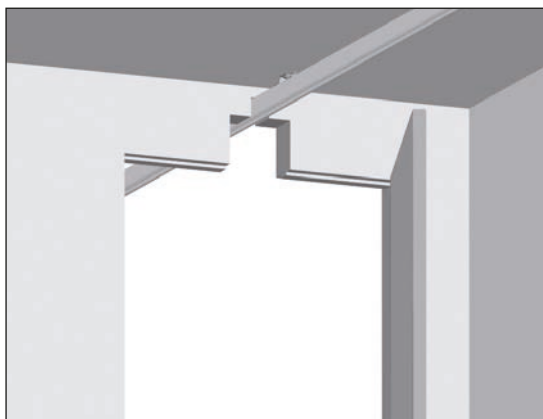
CONSIDERATIONS



Standard door

– cutting a hole in the wall for the hoist
The hoist is run through an opening in the wall –
allowing a standard door height to be maintained.

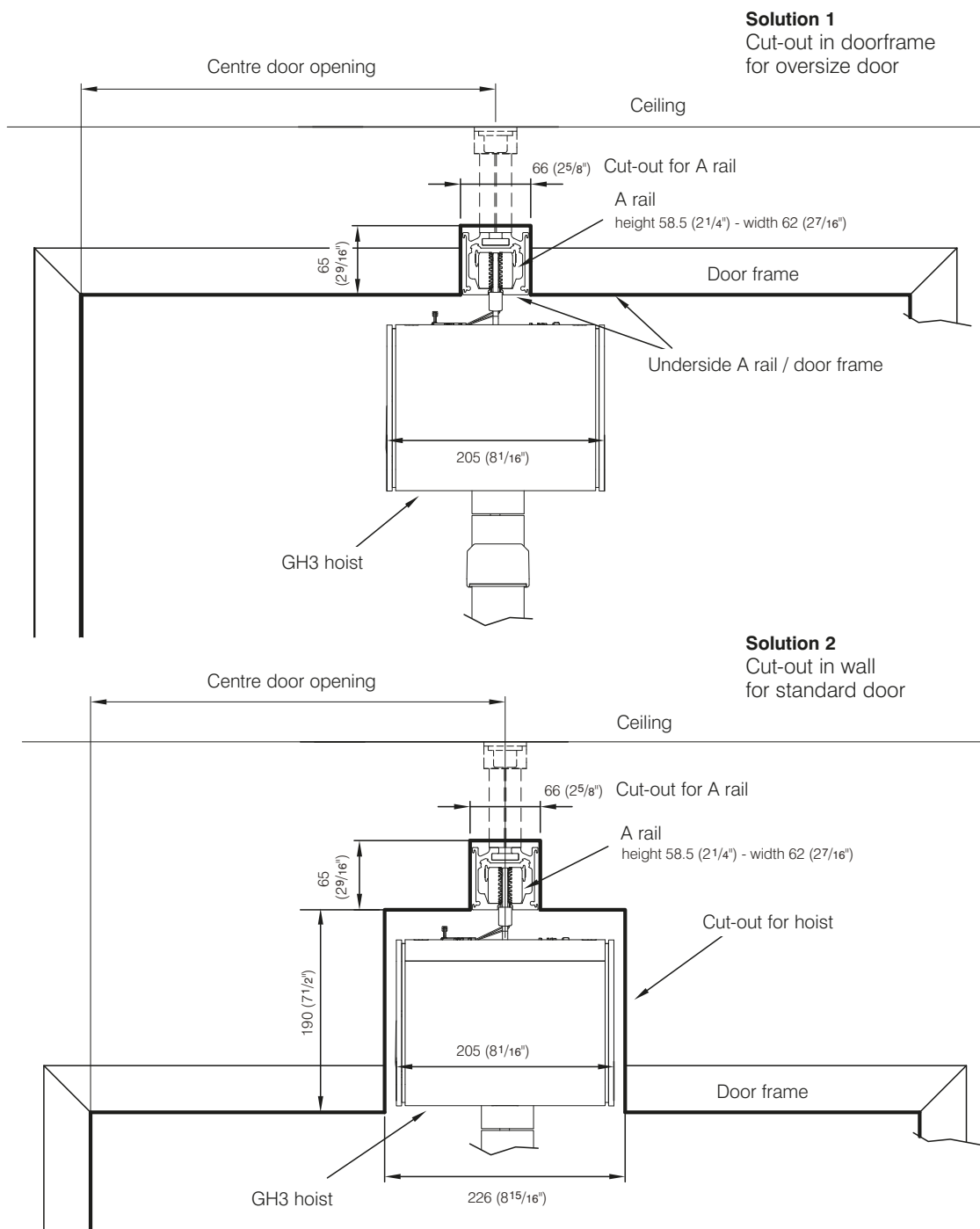
Remember to find out how wide the hole for the
hoist should be. This is shown on page 30.





CONSIDERATIONS

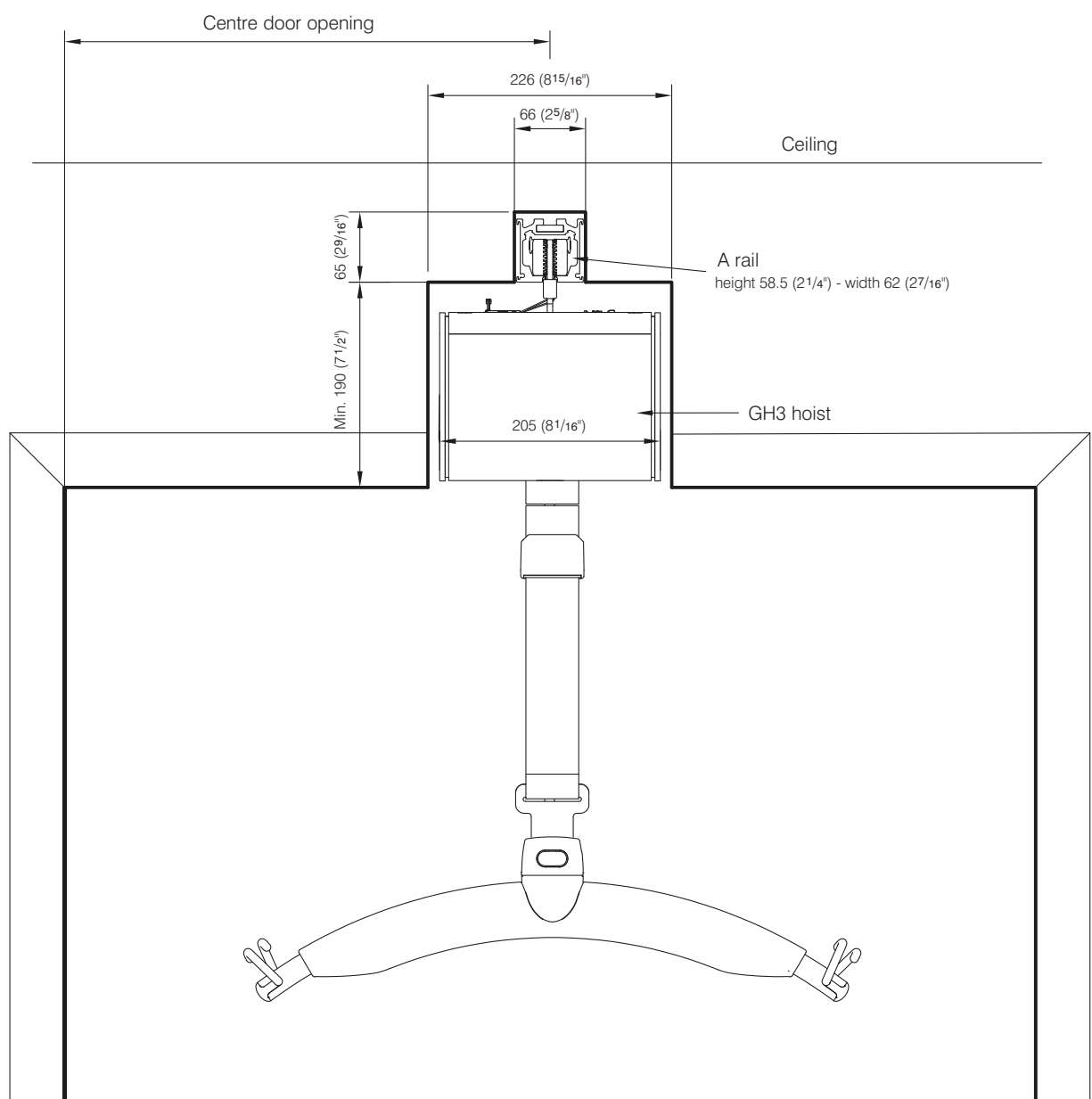
Cut-out through doorframe/wall for A rail in standard M system.





CONSIDERATIONS

Cut-out through wall for GH3 hoist.





Transition through a door opening Swing solution

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CONSIDERATIONS

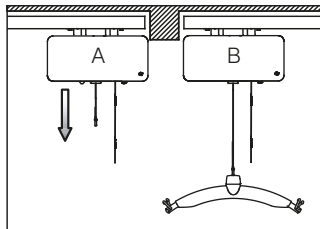
In order to be able to use a Swing solution with transition through a door opening, ceiling height must be at least 2400 mm/94" and the maximum thickness of the wall must be 110 mm/4½".

Advantages of the Swing solution

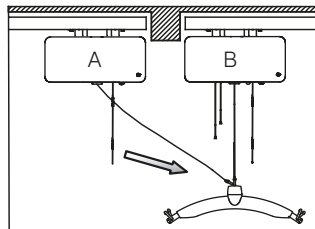
- Saves the expense of heightening the door opening and door plate.

Disadvantages of the Swing solution

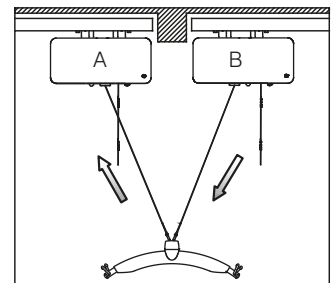
- Moving the disabled person from room to room is time consuming.
- The carer must be given special instructions in order to be able to carry out the move correctly.
- It is necessary to use two hoists – one in each room.



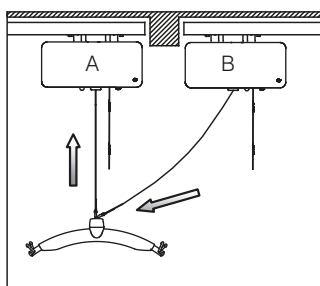
1. Bring the two hoist as close to each other as possible. Adjust the height of the lifting hanger on B so that the transfer can be performed without the user touching the floor during the transfer from one hoist to another.



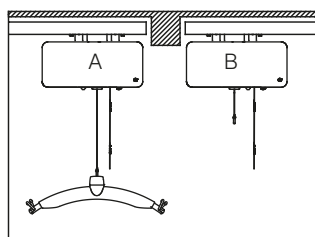
2. Take the free lifting strap from hoist A and secure it to the swing adapter on the lifting hanger. In order to lower the free lifting strap on A a slight pull must be applied to the strap.



3. Lower the lifting hanger using hoist B while lifting the strap on A to perform the swing transfer. The transfer has been completed when there is no load on the lifting strap on B.



4. Disconnect the lifting strap on hoist B from the lifting hanger and raise the strap on B out of the way.



5. Move the lifting hanger from hoist A to operating height, and the doorway transfer is complete.



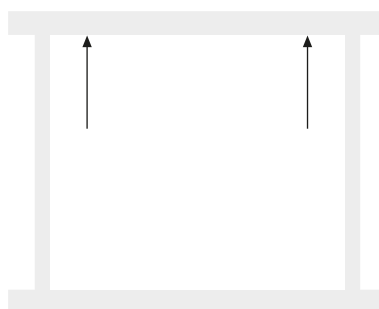
CONSIDERATIONS

A ceiling hoist system can be installed on the ceiling, on the wall, or with the help of upright support brackets. The method of installation should be chosen on the basis of the specific conditions in each situation.

Ceiling

Ceiling installation can be carried out on:

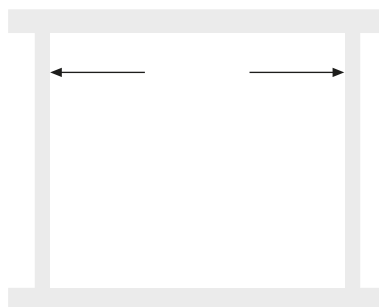
- Concrete ceilings
- Wooden constructions (requires reinforcement between rafters)
- Roof cassettes



Wall

Wall installation can be carried out on:

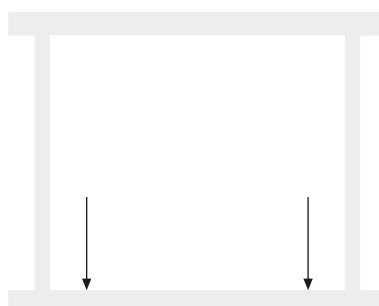
- Brick walls
- Concrete walls
- Light walls such as wooden and plasterboard walls



Upright support bracket

Upright support brackets are used when:

- Ceiling or wall installation is inappropriate or difficult due to lack of strength or other installations in ceiling or on walls.

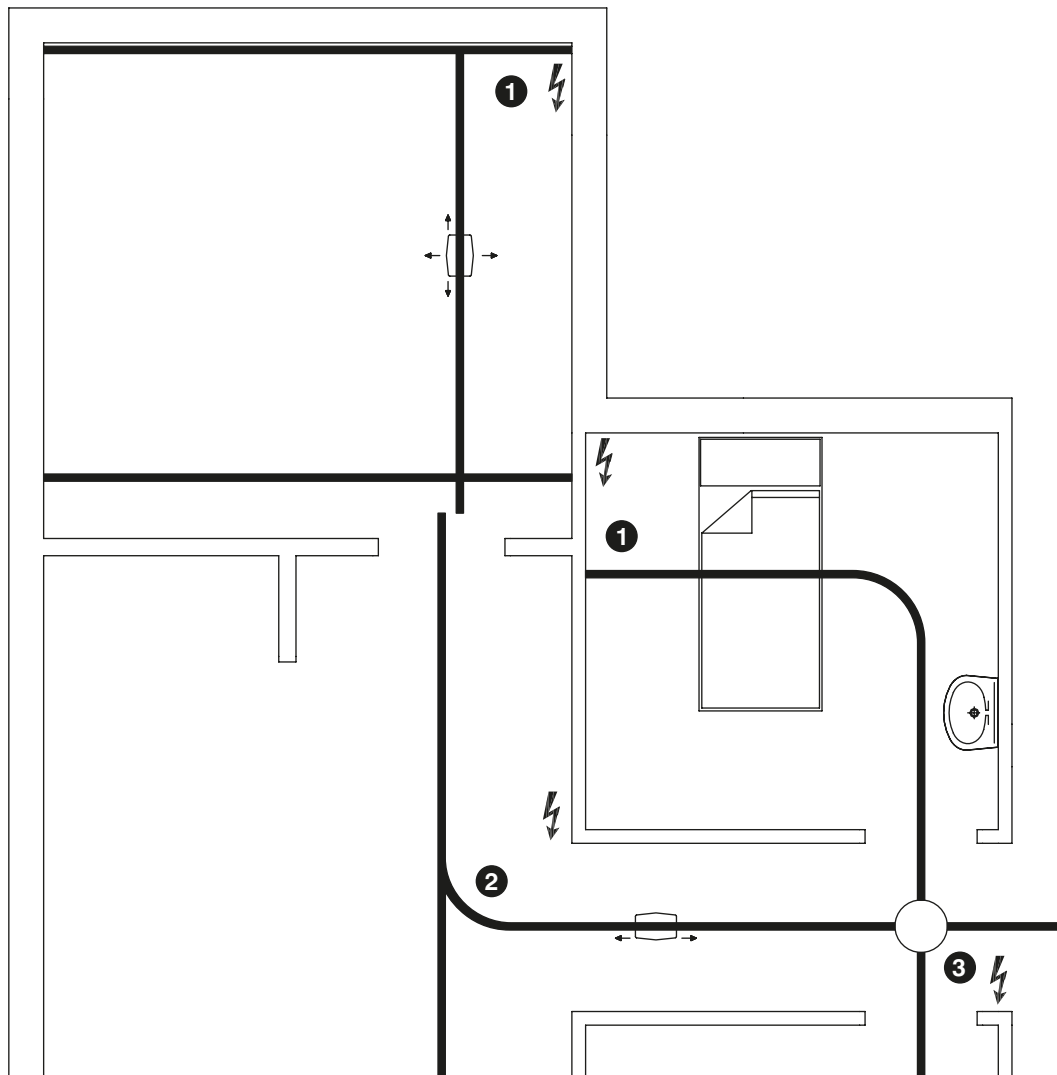




CONSIDERATIONS

The following components must be connected to the power supply when a ceiling hoist system is installed:

- ❶ Transformer for charging of hoist
- ❷ Transformer for activating the GH Switch track.
- ❸ Transformer for activating the GH Turntable





PLANNING

– Scale drawings and assistance with planning

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There are three different types of GH rails:

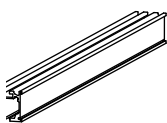
Rail A, B and C.

GH rail A is normally used in single-track systems, straight and with curves.

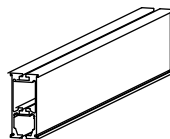
The overall height of the rails in a room-covering system can vary from 99 mm (4") for two GH rail A (traverse rail mounted between GH rail A parallel rails) to 381 mm (15") for two GH rail C (GH rail C parallel rails with underhanging GH rail C traverse rail).

The traverse rail can be mounted between the parallel rails, be underhanging or be a combination of the two solutions.

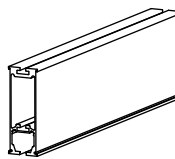
| | Max projection | | | Max distance between supporting points | | | | | | | | | | | | | | | | Available lengths | | | | | | | | |
|-------|-----------------------|-----|-----|--|------|-----|------|-----|-----|-----|-----|-----|------|------|-----|------|------|------|-----|-------------------|----|-----|-----|-----|-----|-----|-----|--|
| Meter | 0,23 | 0,7 | 1,2 | 1,0 | 1,25 | 1,5 | 1,75 | 2,0 | 3,0 | 3,5 | 4,0 | 4,5 | 4,75 | 5,25 | 6,0 | 6,25 | 6,75 | 7,25 | 8,0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| Inch | 9 | 27 | 47 | 40 | 50 | 60 | 70 | 80 | 120 | 140 | 160 | 180 | 190 | 210 | 234 | 250 | 270 | 290 | 320 | 40 | 80 | 120 | 160 | 200 | 240 | 280 | 320 | |
| Rail | Max 205 kg (450 lbs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | x | | | | | | | x | | | | | | | | | | | | x | x | x | x | x | x | | | |
| B | | x | | | | | | | | | | | | x | | | | | | | | x | x | x | x | x | x | |
| C | | | x | | | | | | | | | | | | | | | | x | | | | | x | x | x | x | |
| Rail | Max 255 kg (560 lbs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | x | | | | | | x | | | | | | | | | | | | | x | x | x | x | x | x | | | |
| B | | x | | | | | | | | | | | x | | | | | | | | | x | x | x | x | x | x | |
| C | | | x | | | | | | | | | | | | | | | x | | | | | | x | x | x | x | |
| Rail | Max 300 kg (660 lbs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | x | | | | | x | | | | | | | | | | | | | | x | x | x | x | x | x | | | |
| B | | x | | | | | | | | | | x | | | | | | | | | | x | x | x | x | x | x | |
| C | | | x | | | | | | | | | | | | | | x | | | | | | | x | x | x | x | |
| Rail | Max 350 kg (770 lbs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | x | | | | | x | | | | | | | | | | | | | | x | x | x | x | x | x | | | |
| B | | x | | | | | | | | | x | | | | | | | | | | | x | x | x | x | x | x | |
| C | | | x | | | | | | | | | | | | | x | | | | | | | | x | x | x | x | |
| Rail | Max 375 kg (825 lbs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | x | | | | x | | | | | | | | | | | | | | | x | x | x | x | x | x | | | |
| B | | x | | | | | | | | | x | | | | | | | | | | | x | x | x | x | x | x | |
| C | | | x | | | | | | | | | | | | x | | | | | | | | | x | x | x | x | |
| Rail | Max 500 kg (1100 lbs) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | x | | | | x | | | | | | | | | | | | | | | x | x | x | x | x | x | | | |
| B | | x | | | | | | | | x | | | | | | | | | | | | x | x | x | x | x | x | |
| C | | | x | | | | | | | | | | | x | | | | | | | | | | x | x | x | x | |



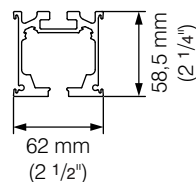
Rail A
Weight: 2.6 kg/m
(5.72 lbs/m)



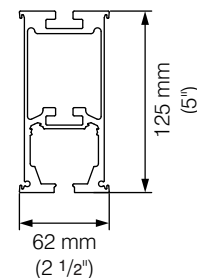
Rail B
Weight: 5.0 kg/m
(11 lbs/m)



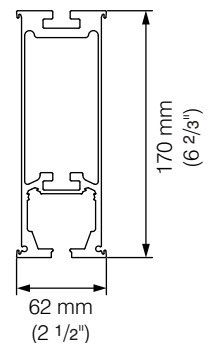
Rail C
Weight: 6.0 kg/m
(13.2 lbs/m)



Rail A



Rail B

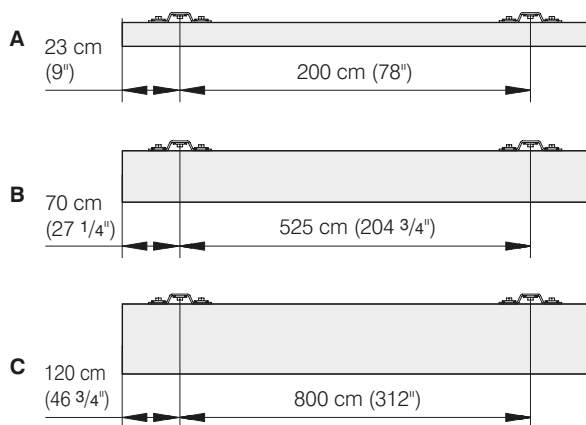


Rail C

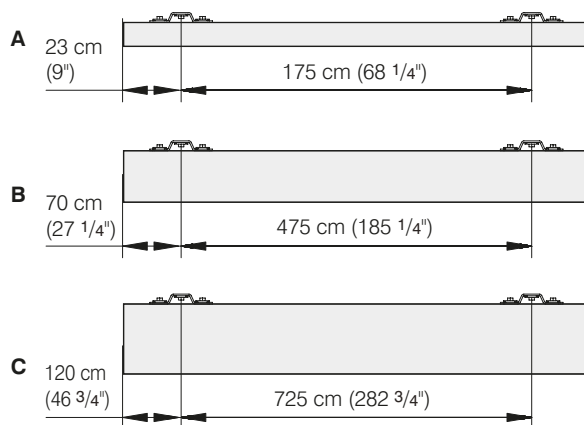


Max distance between brackets

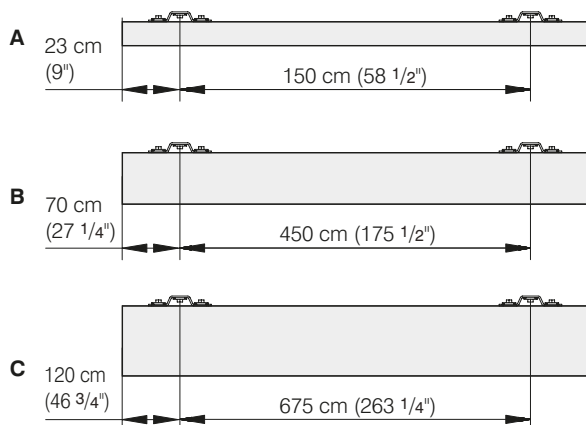
Max 205 kg (450 lbs)



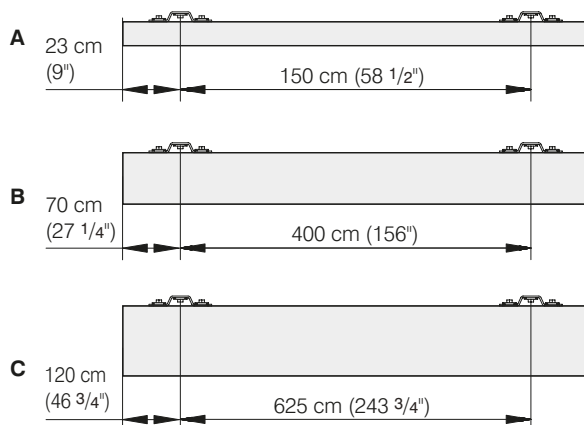
Max 255 kg (560 lbs)



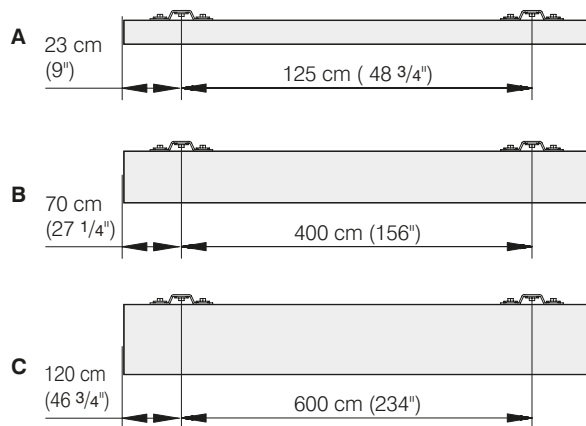
Max 300 kg (660 lbs)



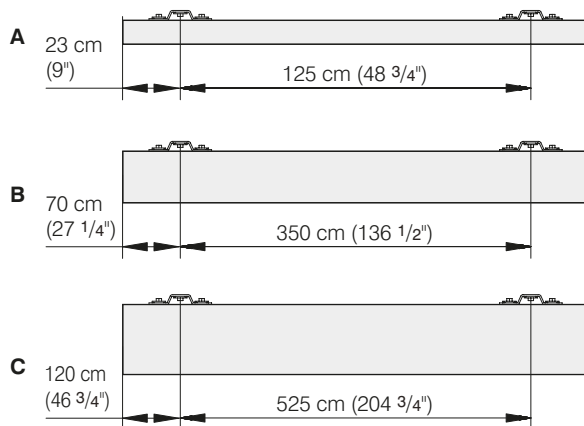
Max 350 kg (770 lbs)



Max 375 kg (825 lbs)



Max 500 kg (1100 lbs)



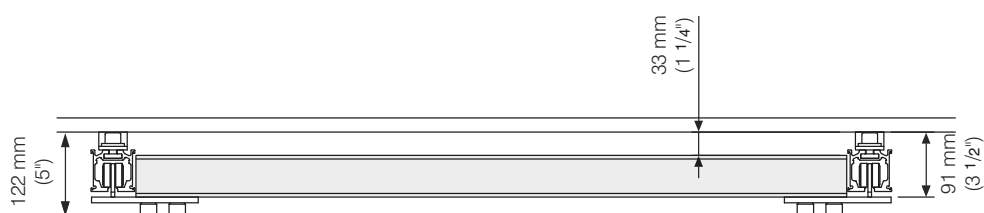


PLANNING

A traverse rail mounted between the parallel rails is an aesthetically good solution, as the rail is installed close to the ceiling and takes up a minimum of space in the room.

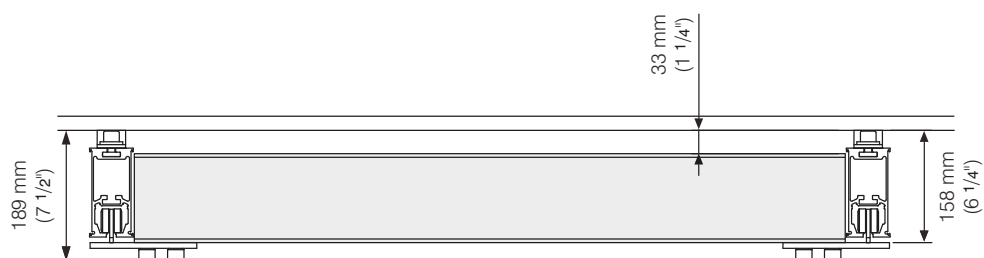
A system

Rail A traverse rail mounted between rail A parallel rails.



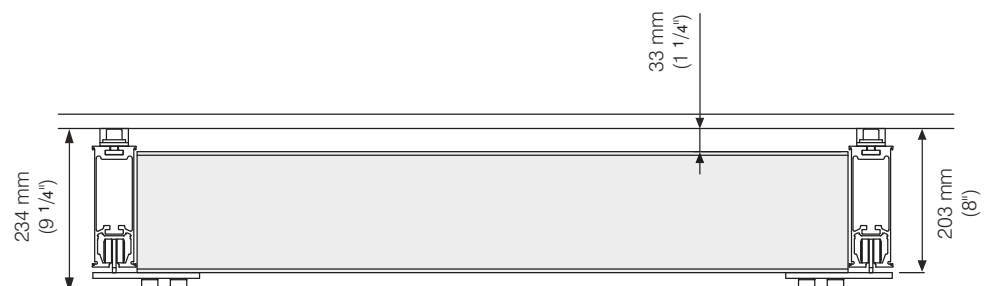
B system

Rail B traverse rail mounted between rail B parallel rails.



C system

Rail C traverse rail mounted between rail C parallel rails.



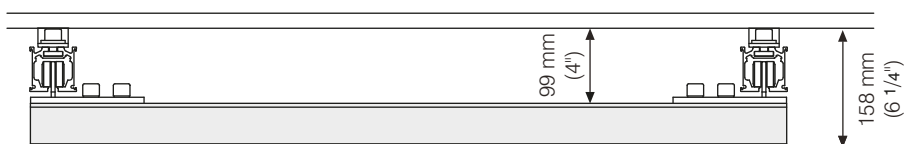


An underhanging traverse rail is used

- When it is impossible to mount the traverse rail between the parallel rails, because lamps, smoke alarms or similar equipment have been installed on the ceiling.
- When the traverse and parallel rails cannot be of equal height.

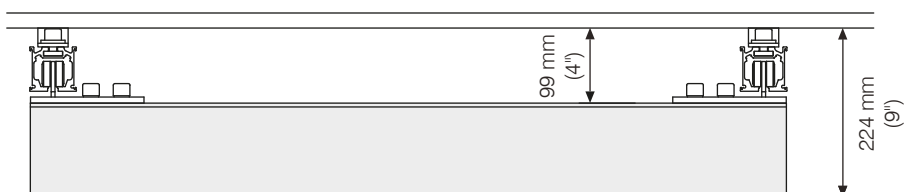
D system

Rail A parallel rails with underhanging rail A traverse rail.



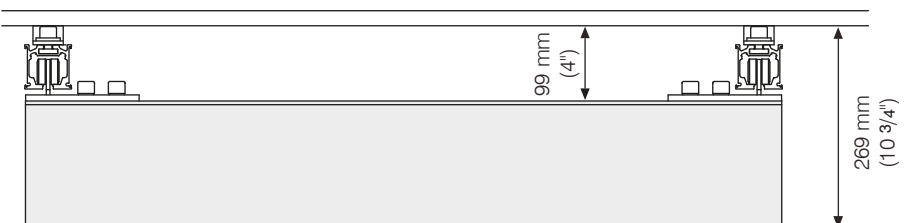
E system

Rail A parallel rails with underhanging rail B traverse rail.



F system

Rail A parallel rails with underhanging rail C traverse rail.





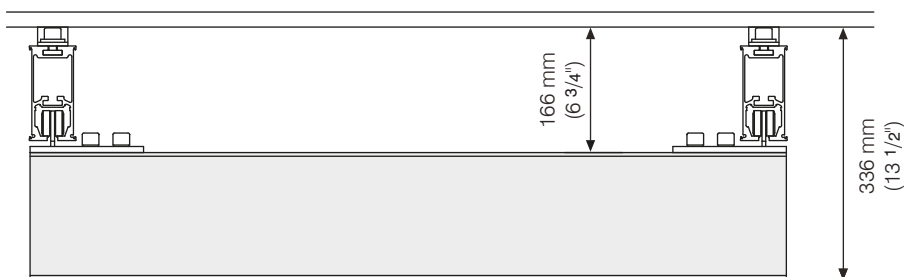
G system

Rail B parallel rails with
underhanging rail B traverse rail.



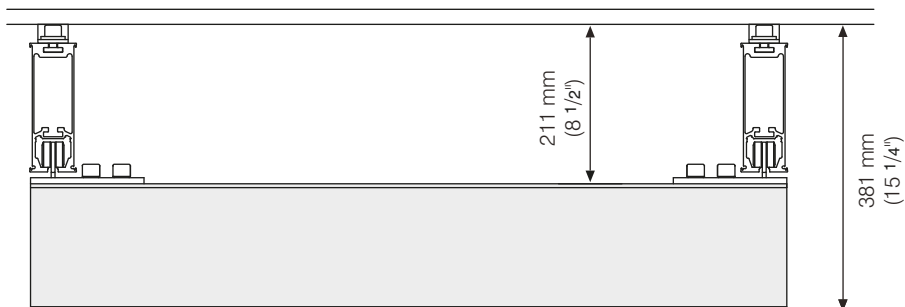
H system

Rail B parallel rails with
underhanging rail C traverse rail.



I system

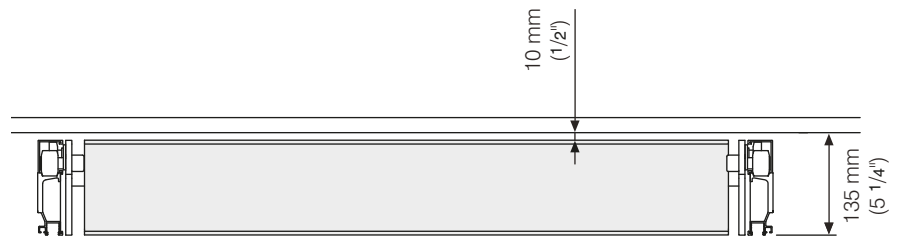
Rail C parallel rails with
underhanging rail C traverse rail.





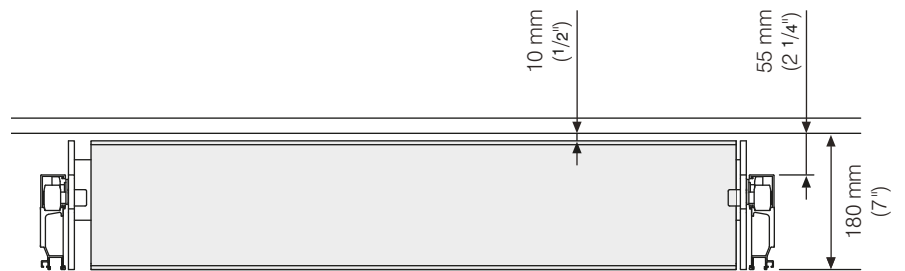
J system

Wall rails with B traverse rail.
SWL: 255 kg (560 lbs).



K system

Wall rails with C traverse rail.
SWL: 255 kg (560 lbs).



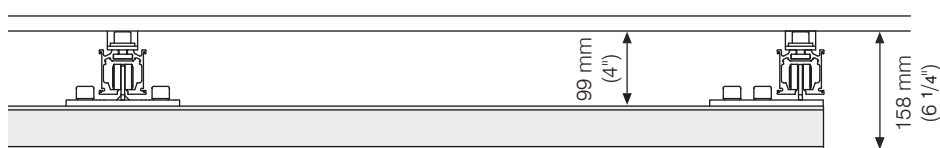


The rails can be cut to size so that room-covering and single track systems can be combined, even though different rail types are used in the two systems.

L system

Rail A parallel rails with underhanging Rail A traverse rail, to a combination system.

SWL: 255 kg (560 lbs).

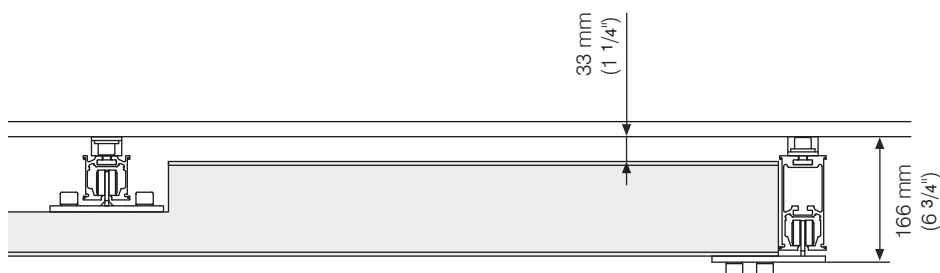


M system

Rail A/Rail B parallel rails with underhanging Rail B traverse rail/intermediate suspension, cut-out for a combination system.

This solution is the most frequently used of the combination solutions and, thanks to the solution with intermediate suspension, it has a harmonious appearance. In addition the height of the combined system can be minimised with the help of a Rail A facing the combination side.

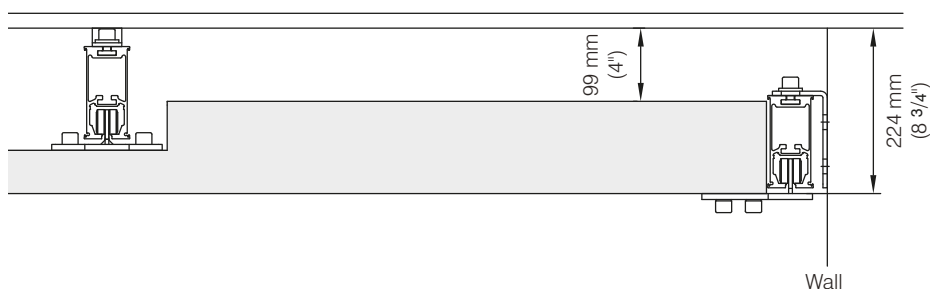
SWL: 255 kg (560 lbs).



MB system

Rail B parallel rails with underhanging Rail B traverse rail/intermediate suspension, cut-out for a combination system.

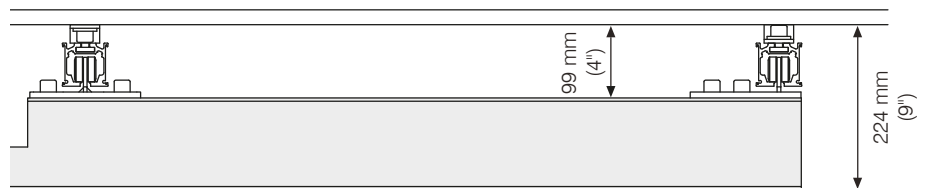
SWL: 255 kg (560 lbs).





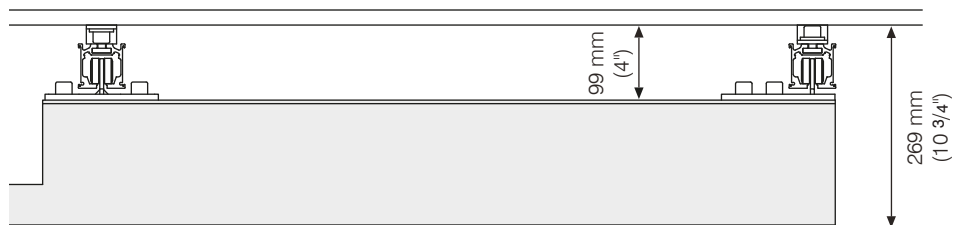
N system

Rail A parallel rails with underhanging Rail B traverse rail cut-out for a combination system.



O system

Rail A parallel rails with underhanging Rail C traverse rail cut-out for a combination system.



P system

Rail B parallel rails with underhanging Rail B traverse rail cut-out for a combination system.





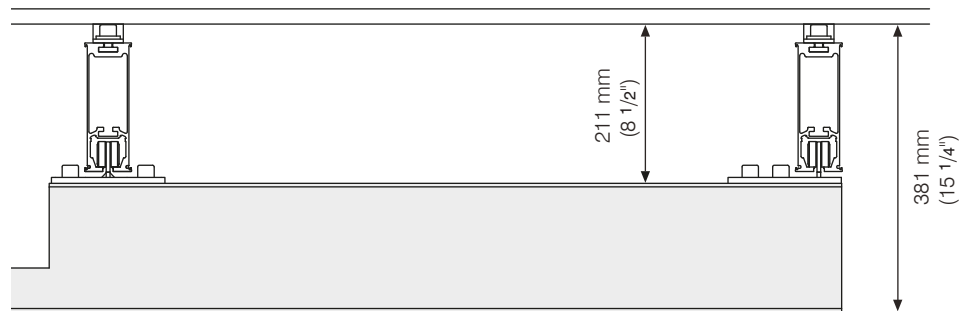
Q system

Rail B parallel rails with underhanging Rail C traverse rail cut-out for a combination system.



R system

Rail C parallel rails with underhanging Rail C traverse rail cut-out for a combination system.





Wall mounted rails in combined systems Intermediate suspension/underhanging traverse rail

Guldmann™

PLANNING

The wall mounted rail can be used as an alternative to the traditional parallel rails for room covering rail systems. The wall mounted rails are powder coated white. The installation screws and rail ends are protected with white covers. The need for installation brackets is eliminated and the result is a visually discreet and simple solution for the majority of the rooms.

Hoist for this system must charge through the docking station.

Must not be used in systems with maximum load over 255 kg (560 lbs)

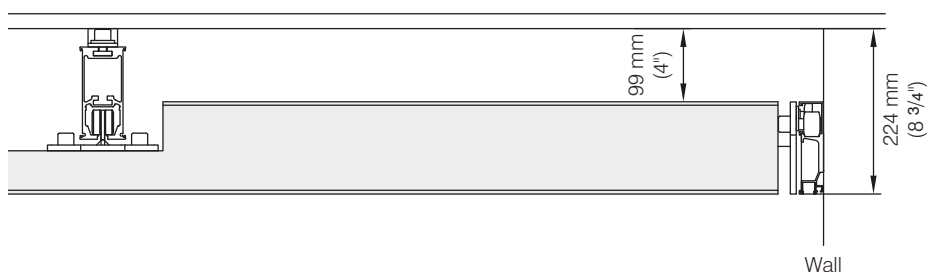
MW system

Rail A/Wall rail parallel rails with underhanging Rail B traverse rail/intermediate suspension, for a combination system.
SWL: 255 kg (560 lbs).



MBW system

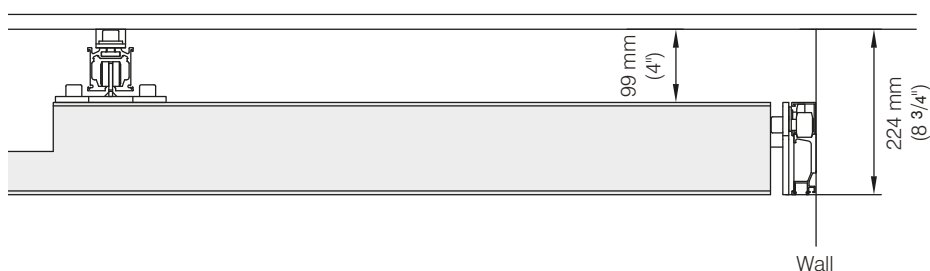
Rail B/Wall rail parallel rails with underhanging Rail B traverse rail/intermediate suspension, cut-out for a combination system.
SWL: 255 kg (560 lbs).





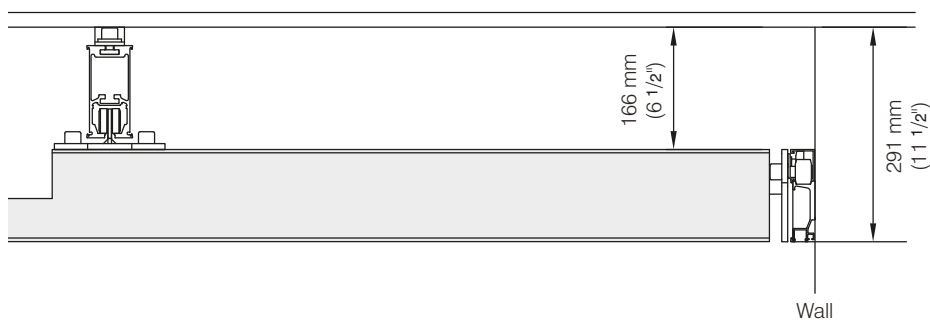
NW system

Wall rail/Rail A parallel rails with
intermediate/underhanging Rail
B traverse rail, with cut-out for a
combination system.
SWL: 255 kg (560 lbs).



PW system

Wall rail/Rail B parallel rails with
intermediate/underhanging Rail
B traverse rail, with cut-out for a
combination system.
SWL: 255 kg (560 lbs).





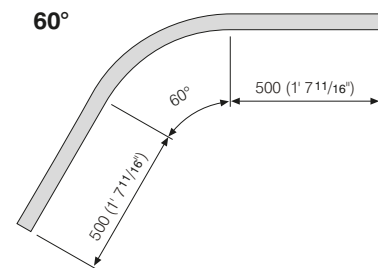
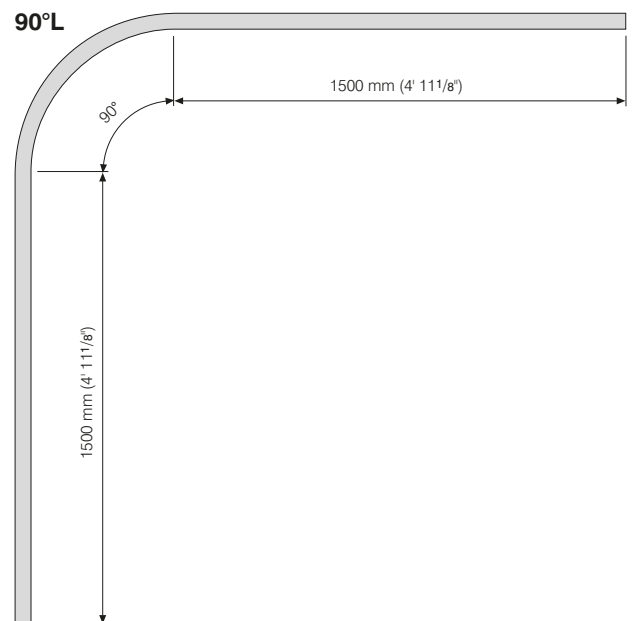
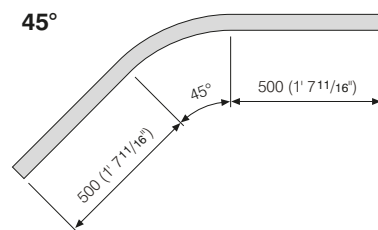
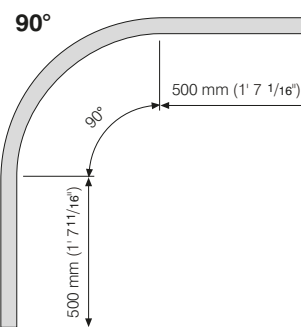
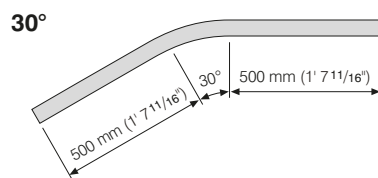
Rail curves are used where it is necessary to change the direction of the rail in a single rail system.

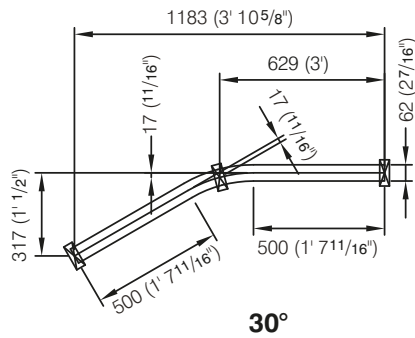
Rail curves are available in angles of 30°, 45°, 60° and 90°. All the curves have a centre radius of 500 mm.

As a minimum three brackets must be used to mount all rail curves with SWL at 255 kg (560 Lbs) - one bracket must be placed in the middle of the curve.

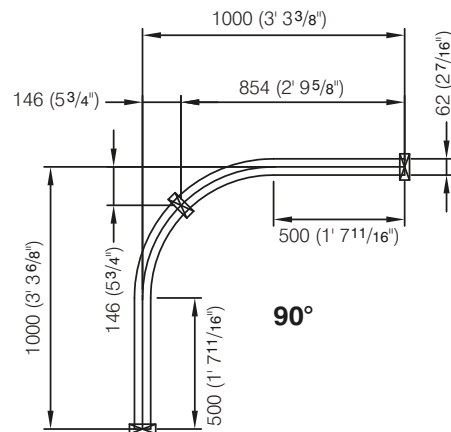
For curves installed with a SWL more than 255 kg (560 Lbs), four brackets must be used as minimum.

Rail curves can be built into the ceiling so only the lower part is visible.

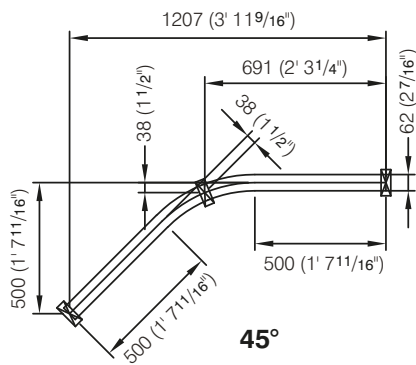




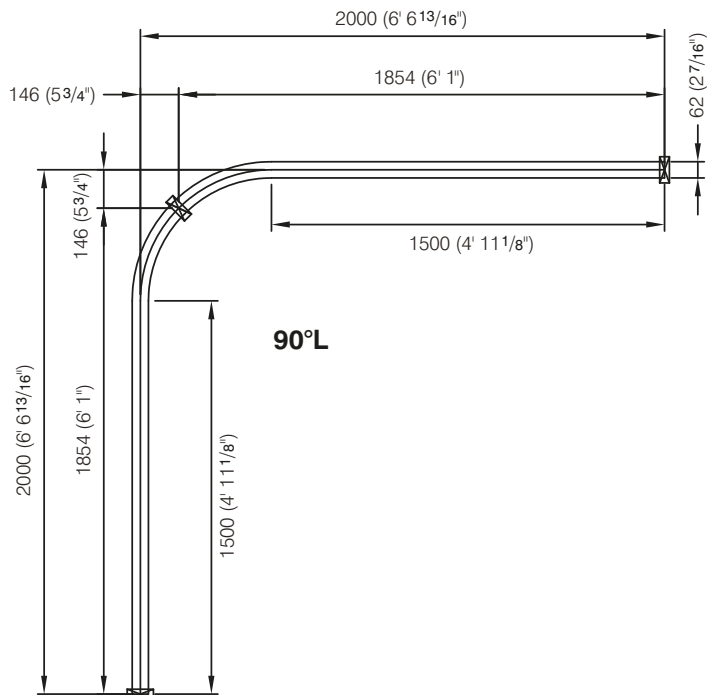
30°



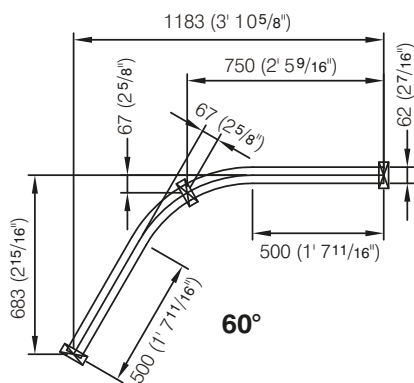
90°



45°



90°L



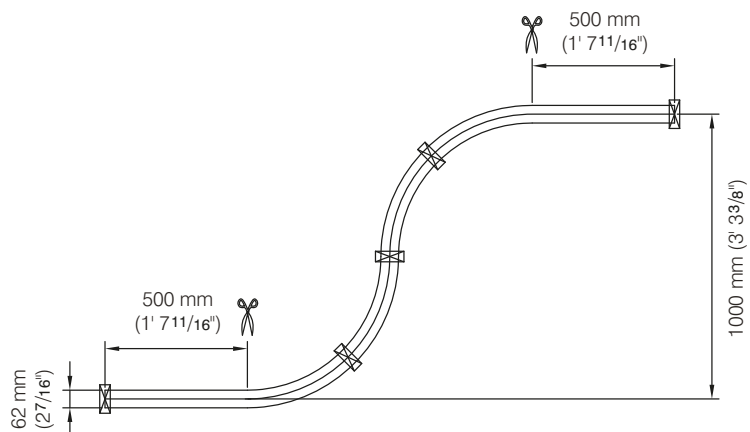
60°



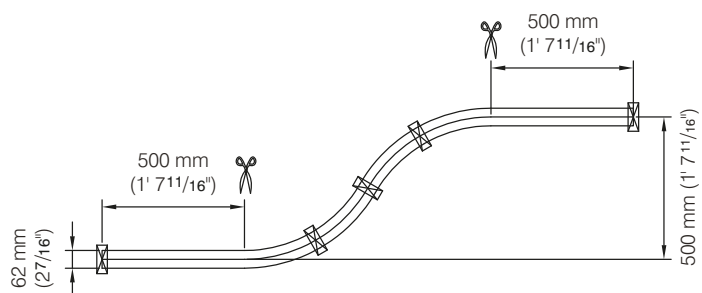
There are many possible combinations of rail curves.
All standard curves end in a 500 mm straight rail.
The dimensions given are absolutely minimum dimensions.

Note: The scissor symbol indicates the max. length which can be shortened of rail curves.

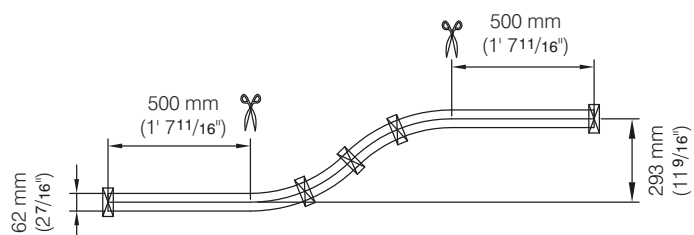
90°



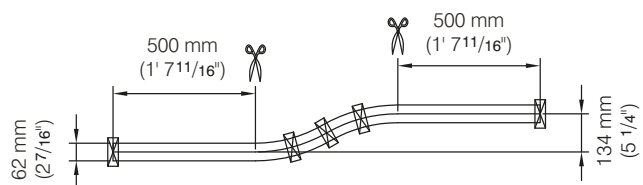
60°



45°



30°

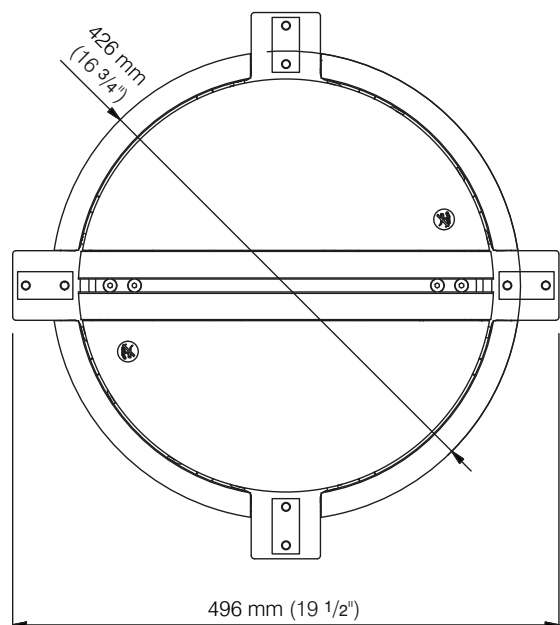
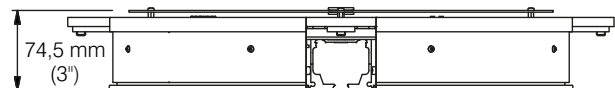
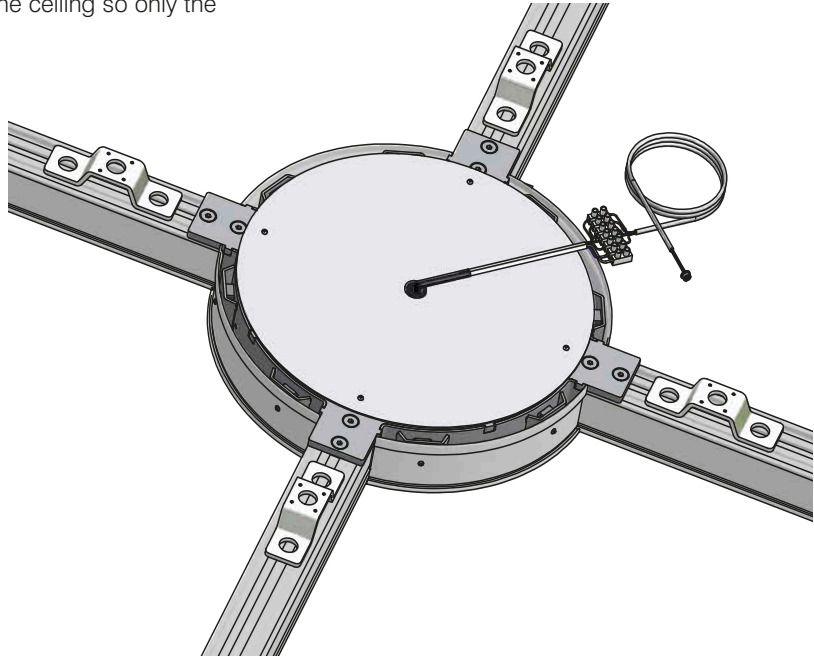




PLANNING

A GH Turntable must be installed in places where two rails cross each other. The GH Turntable is electrically operated. The ceiling brackets must be installed as close as possible to the turntable. Maximum distance from center of GH Turntable to center of GH Ceiling bracket is max. 500 mm / 20".

The GH Turntable can be built into the ceiling so only the lower part is visible.





PLANNING

GH Switch tracks are used where there is a need to lead the rail in several directions. The GH Switch track is operated electrically.

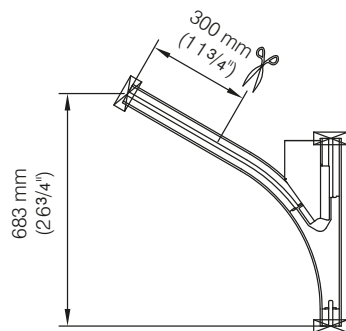
As a minimum a bracket must be mounted at each rail end of the GH Switch track.

The GH Switch track can be built into the ceiling so only the lower part is visible.

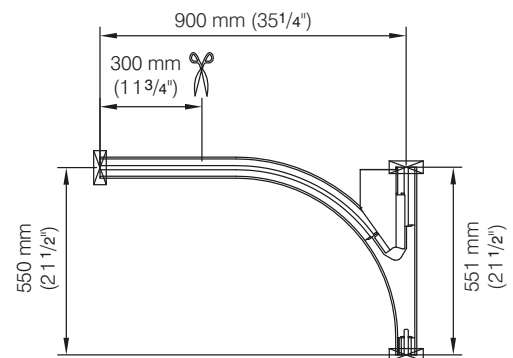
Note: The GH Switch track can only be used for systems with max 255 kg (560 lbs) lifting capacity.

Note: The scissor symbol indicates the max. length which can be shortened of GH Switch track.

60°



90°





A GH Combi-lock is used to lock the rails together when two rail systems are linked. The GH Combi-lock is always used together with two safety locks to prevent the hoist running out of the rail.

The GH Combi-lock cannot be installed in the door opening due to insufficient space. In the room where the room-covering system is installed, the parallel rail closest to the adjacent room with the single track system, must be installed at a sufficient distance from the wall to leave space for the two safety locks.

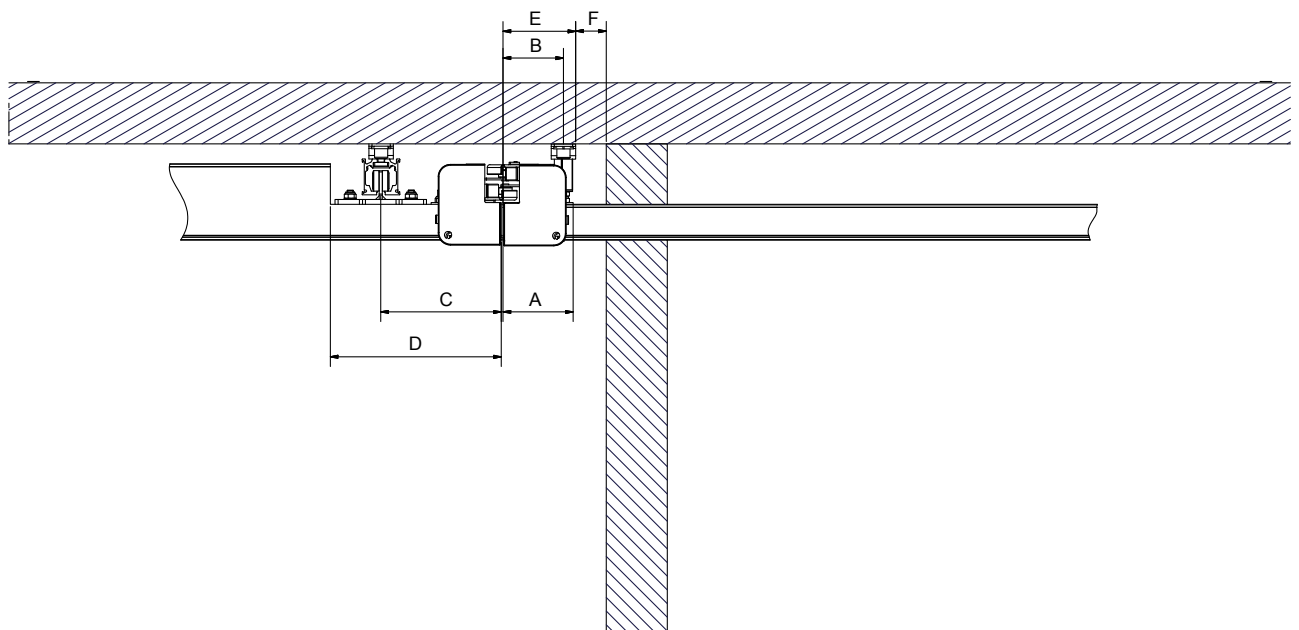
The GH Combi-lock is manually operated. When the rails are aligned, the safety locks will automatically open and allow free passage for the hoist.

When a room-covering system is linked to a single track system, the single track system must be suspended in order for the two systems to be at the same height.

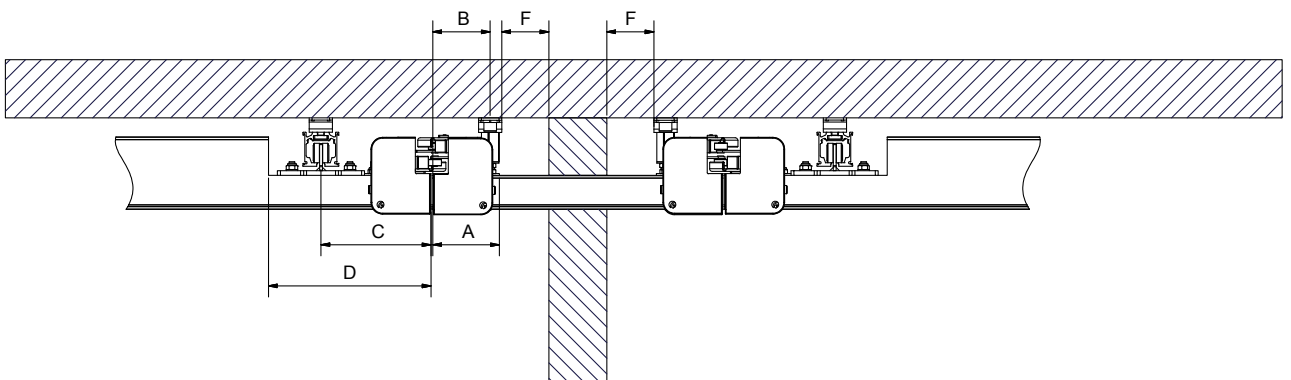
GH Combi-Lock systems with traverse rail with long cut-out (e.g. System M) have a max. SWL at 255 kg (560 lbs).

| | | | |
|---------|---|--------|-----------|
| A. | : | 114 mm | (4 1/2") |
| B. | : | 99 mm | (4") |
| C. | : | 195 mm | (7 3/4") |
| D. | : | 280 mm | (11 1/4") |
| E. | : | 119 mm | (4 3/4") |
| F. min. | : | 50 mm | (2") |

Max 255 kg (560 lbs)



Max 255 kg (560 lbs)





GH Combi-lock - max 255 kg/560 lbs

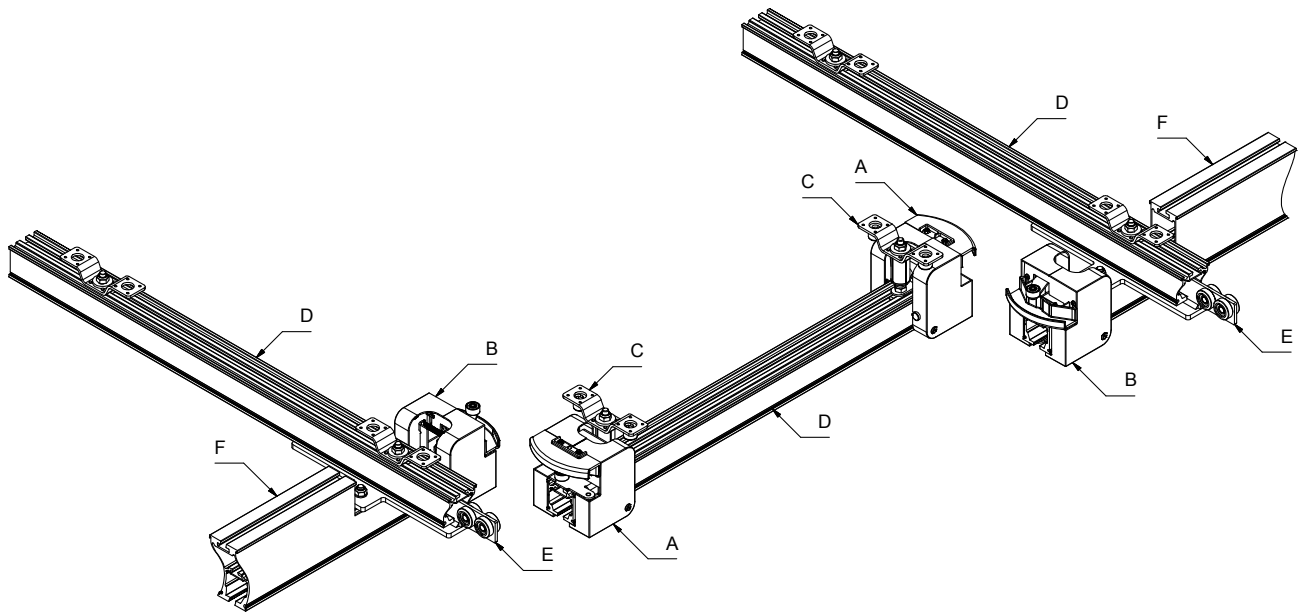
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The double GH Combi-lock is used at the transition between two room-covering rail systems to provide optimum safety when the two rail systems are used together.

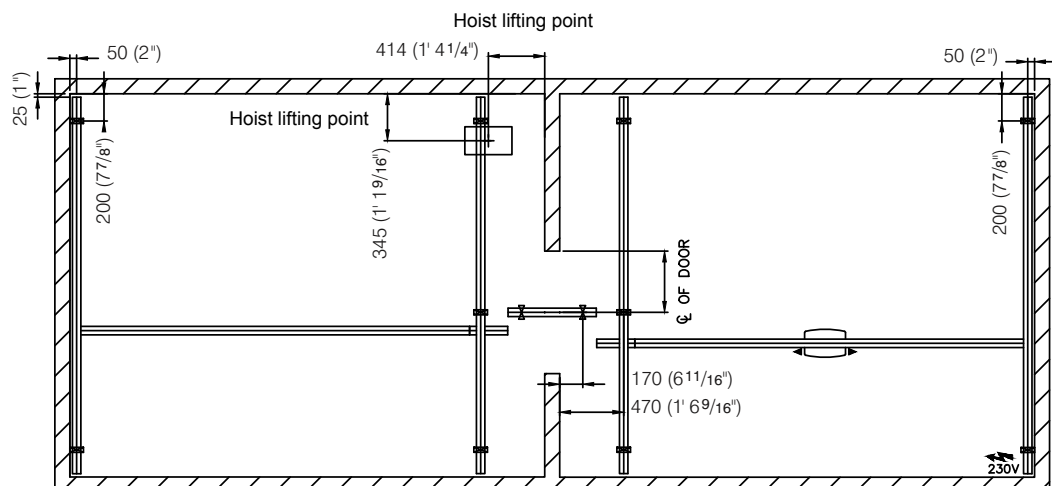
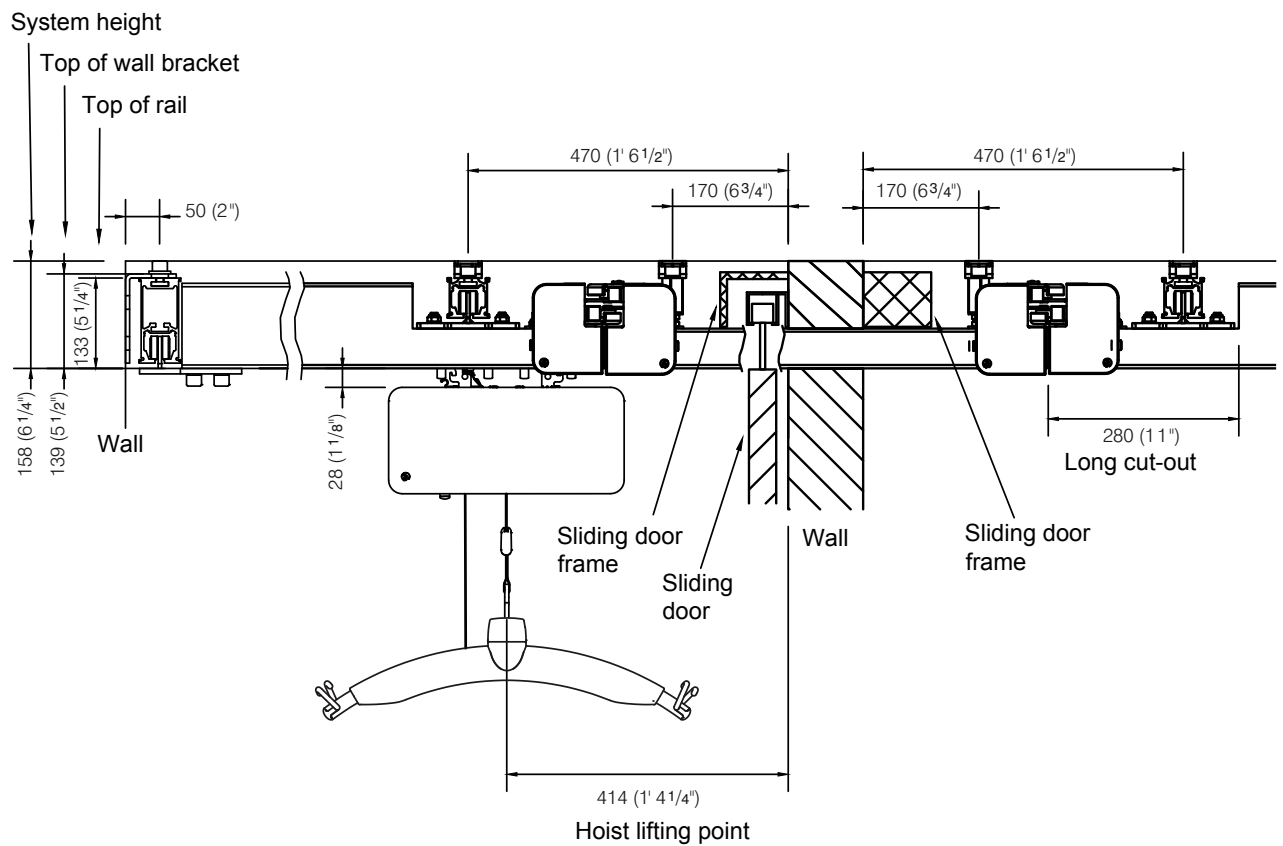
Comprises:

- A. Two safety locks for fixed rail.
- B. Two safety locks for traverse rail.
- C. GH Ceiling bracket adjustable or ceiling bracket lowered for GH Combi-lock.
- D. Rail A, B or C.
- E. Traverse trolley.
- F. Traverse rail is a B or C rail which is cut down to the height of an A rail, in the place where the safety lock for the traverse rail is installed.



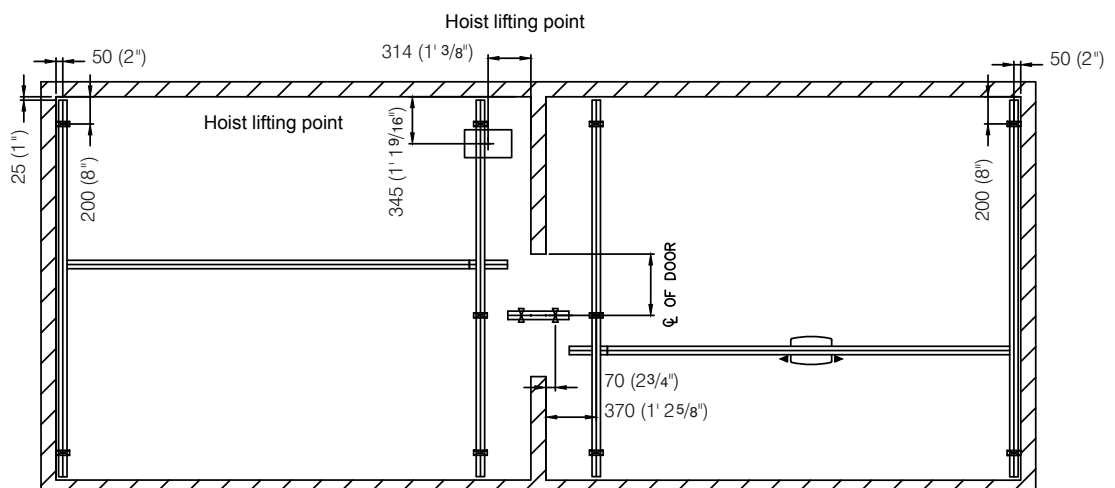
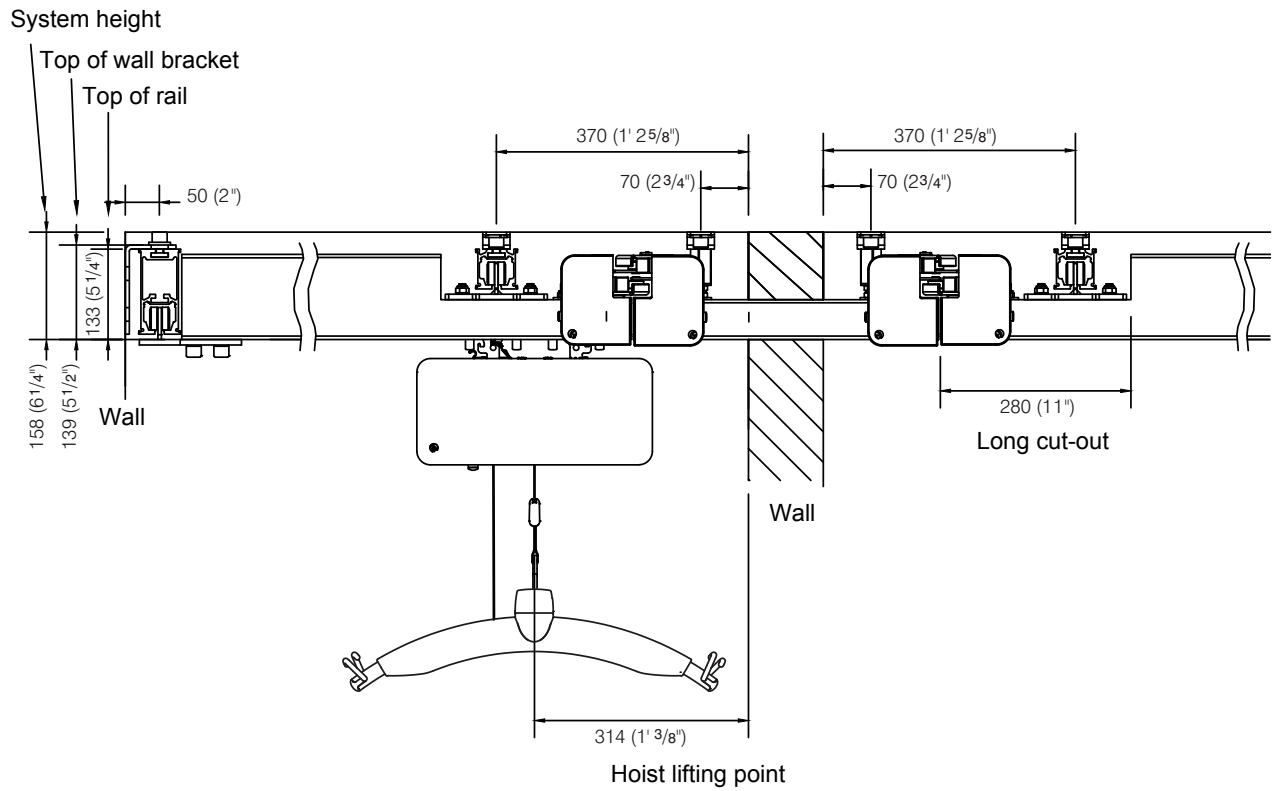


Standard dimensions for M system with sliding door frame.





Standard dimensions for M system without sliding door frame.





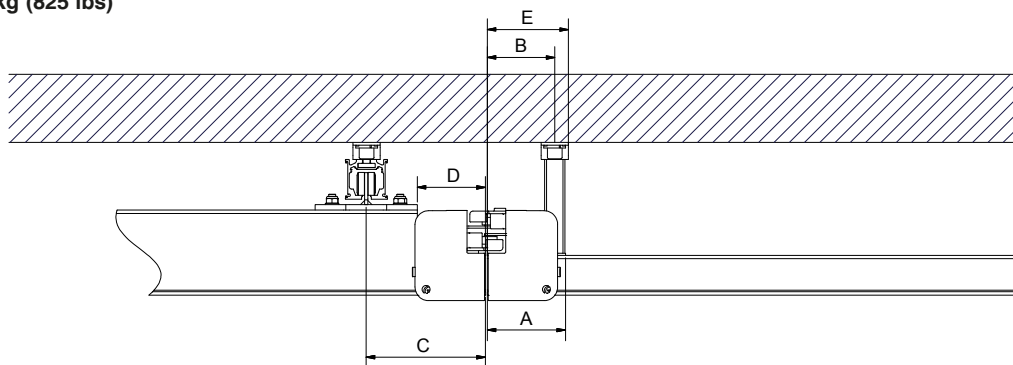
GH Combi-lock systems with traverse rails with short cut-out (e.g. System N) can be used for systems up to 375 kg (825 lbs).

Systems with SWL over 255 kg (560 lbs) may only be installed in concrete ceiling.

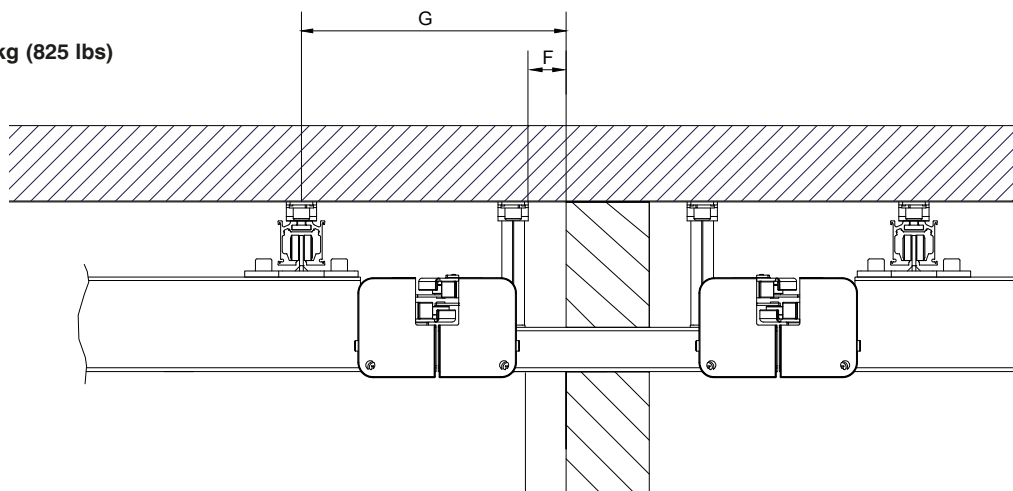
Mål

| | | | |
|--------|---|--------|-------------|
| A | : | 114 mm | (4 1/2") |
| B | : | 99 mm | (4") |
| C | : | 175 mm | (6 3/4") |
| D | : | 100 mm | (4") |
| E | : | 119 mm | (4 3/4") |
| F min. | : | 50 mm | (2") |
| G | : | 350 mm | (1' 1 3/4") |

Max 375 kg (825 lbs)

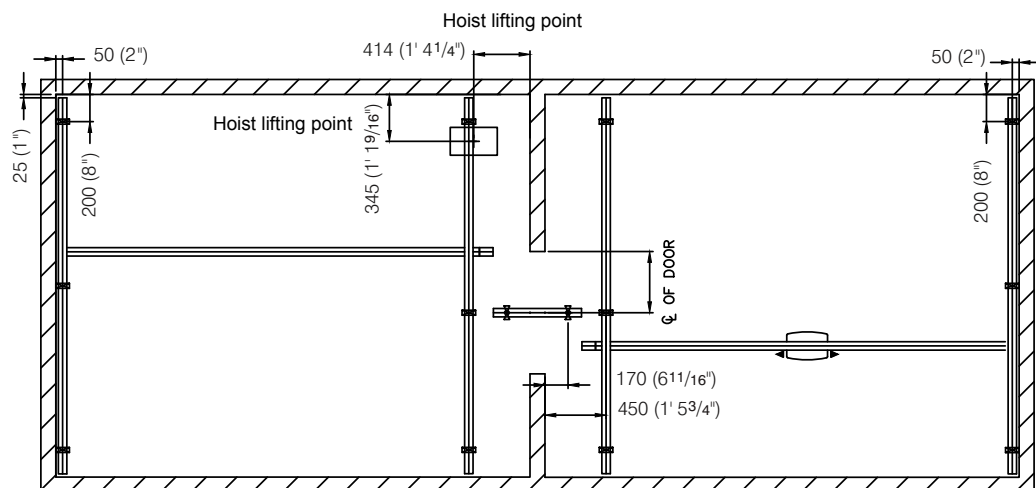
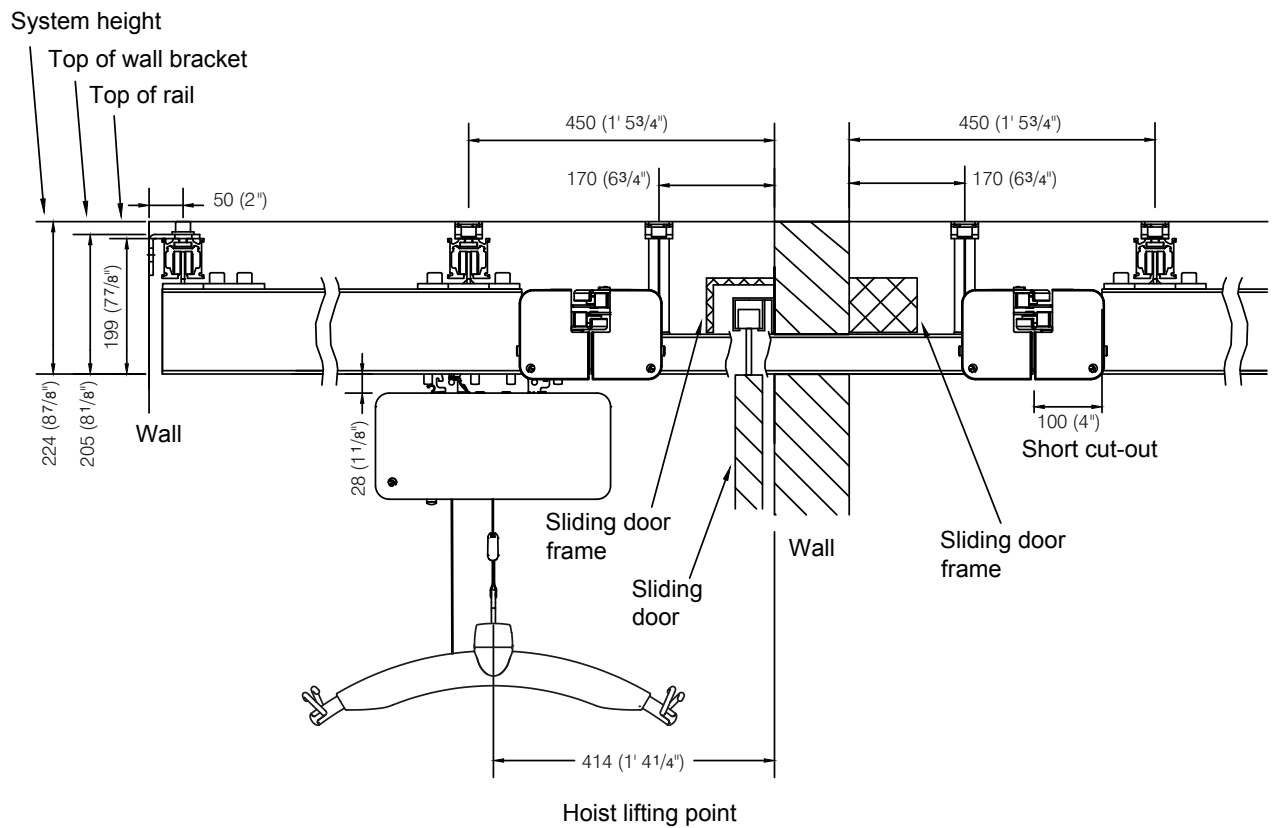


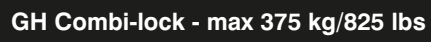
Max 375 kg (825 lbs)





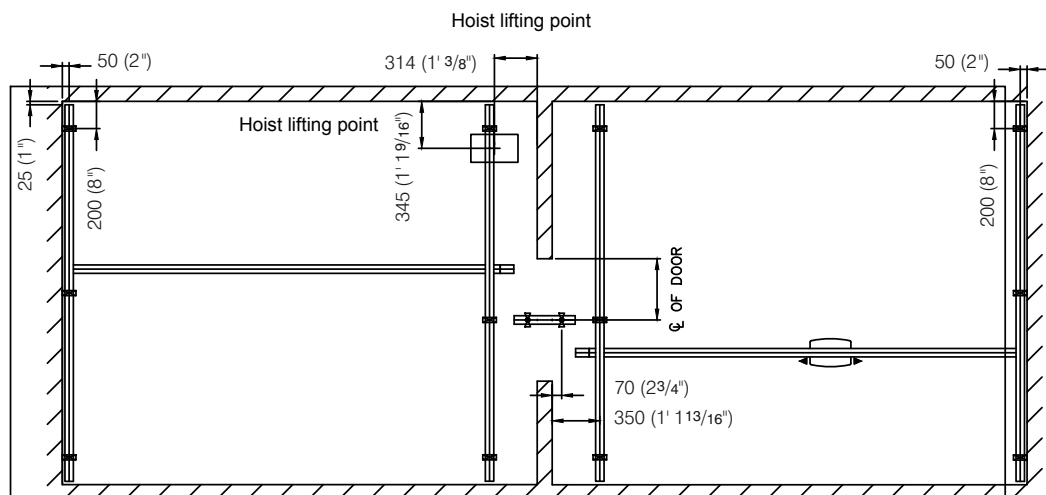
Standard dimensions for N system with sliding door frame.





PLANNING

System height





In connection with a single rail system (A-rail) the height of the doorhead is calculated as following:

Sliding doors:

Height from floor to the lower edge of A-rail minus 20 mm / $\frac{3}{4}$ ".

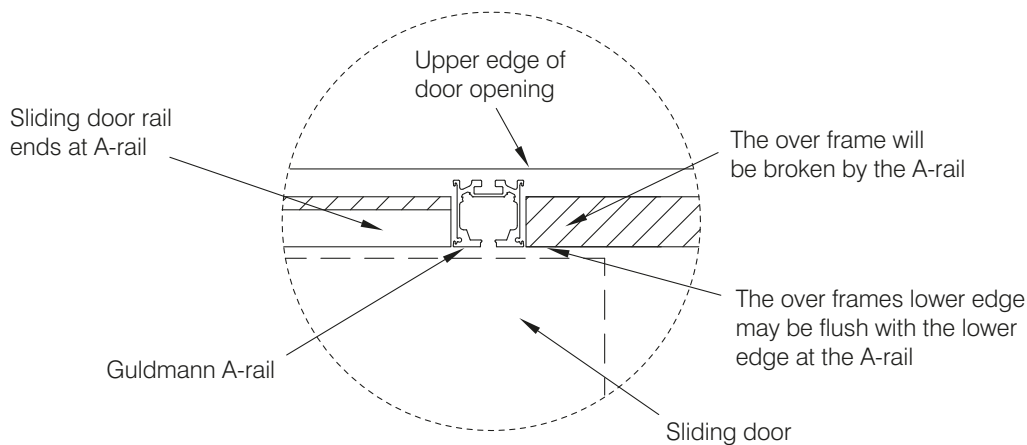
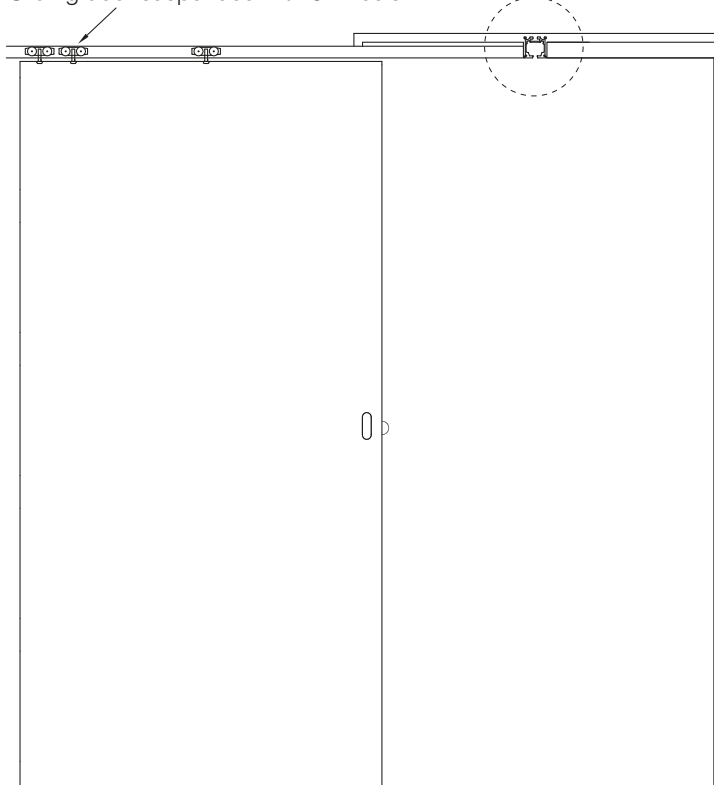
Side-hung doors:

Height from floor to the lower edge of A-rail minus 30 mm / $1 \frac{1}{4}$ ".

This example illustrates the most frequently used methods when linking rails in two rooms. If other requirements arise in connection with a project, Guldmann will be pleased to help find the best solution.

If a coping board is to be used to conceal a sliding door rail, this board must hang at a maximum of 8 mm / $\frac{3}{8}$ " below the lowest edge of the hoist rail, as a wider board could hinder the free passage of the hoist through the door opening.

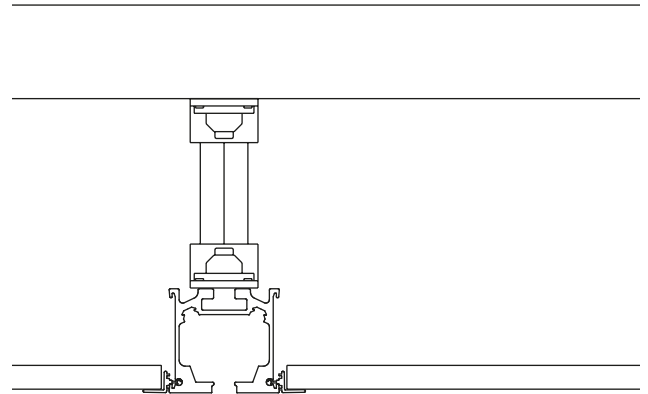
Sliding door suspended with 3 wheels





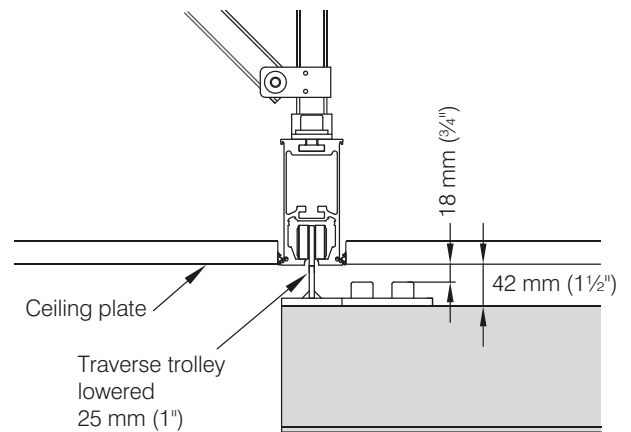
Single rail systems

Single rail systems can be built into the ceiling, so that only the lower edge of the rail is visible by using the profile for suspended ceiling.

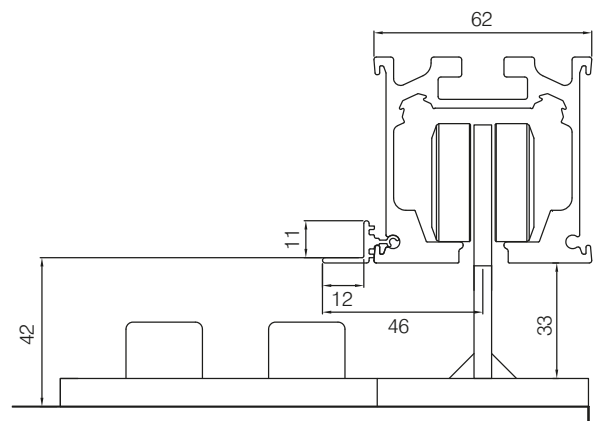


Room-covering systems

In a room-covering system it is possible to build in the parallel rails flush with the ceiling, so that only the lower edge of the rails is visible by using the profile for suspended ceiling together with a lowered traverse trolley.



Dimension for rails, ceiling profiles and a lowered traverse trolley for rails build into the ceiling.



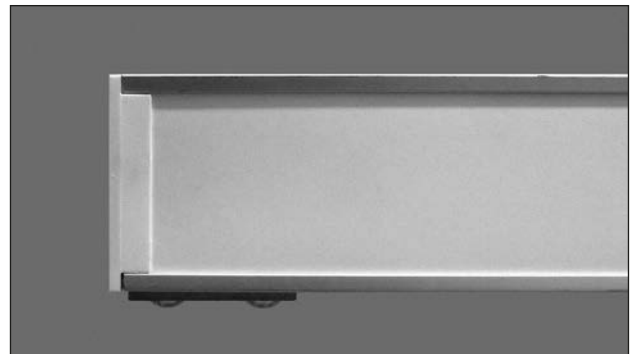
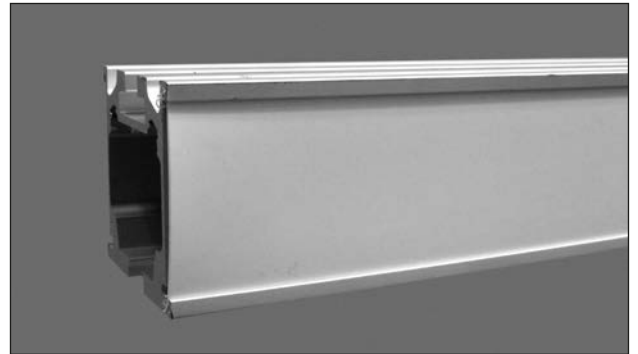


Inserting side cover on rails

The cover is placed in the top and bottom groove on the side of the rail.

The covers can have different colors, the standard colors are white and grey. But other colors or patterns can be provided.

Fit End covers at the end of the rails, to hold the Side cover in place.





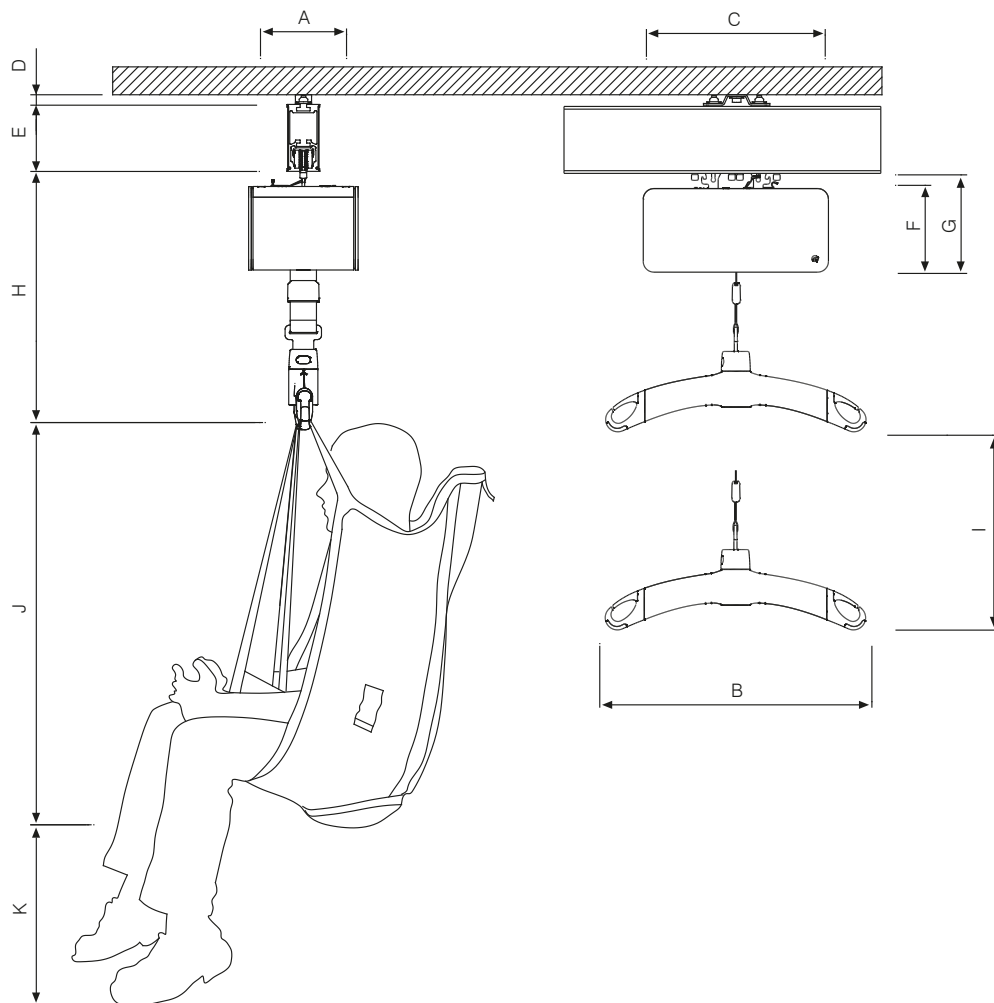
Dimension sketch GH3 hoist

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Dimensions

| | | |
|-----------------------------|---------|-----------|
| A | 205 mm | (8") |
| B | 580 mm | (22 3/4") |
| C | 345 mm | (13 1/2") |
| D, Ceiling bracket standard | 24 mm | (1") |
| E, A | 58,5 mm | (2 1/4") |
| B | 125 mm | (5") |
| C | 170 mm | (6 2/3") |
| F | 156 mm | (6 1/8") |
| G | 184 mm | (7 1/4") |
| H | 425 mm | (16 2/3") |
| I | 2500 mm | (98") |
| J, Basic High M | 970 mm | (38") |
| K, Basic High M | 340 mm | (13 1/3") |





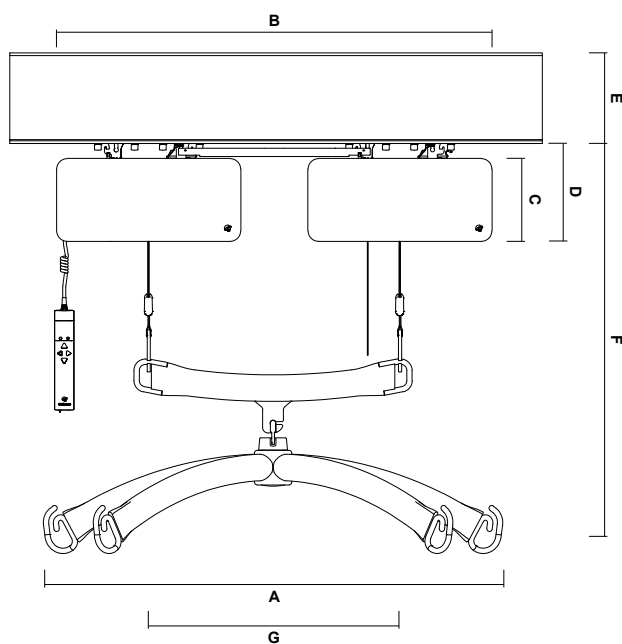
Dimension sketch GH3 Twin hoist

Guldmann™

PLANNING

Dimensions

| | | |
|----------------|---------|------------|
| A | 860 mm | (33 3/4") |
| B | 817 mm | (32") |
| C | 156 mm | (6 1/8") |
| D | 184 mm | (7 1/4") |
| E, A | 58,5 mm | (2 1/4") |
| B | 125 mm | (5") |
| C | 170 mm | (6 2/3") |
| F, min | 655 mm | (25 3/4") |
| F, max | 3155 mm | (123 3/4") |
| G | 473 mm | (18 1/2") |
| Depth of hoist | 205 mm | (8") |





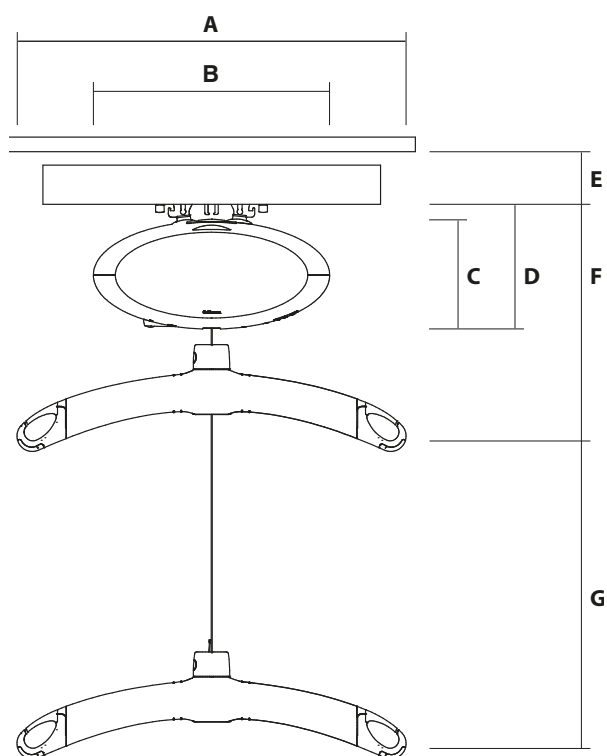
Dimension sketch GH1 hoist

Guldmann™

PLANNING

Dimensions

| | | |
|----------------|---------|-----------|
| A | 580 mm | (22 3/4") |
| B | 350 mm | (13 3/4") |
| C | 156 mm | (6 1/8") |
| D | 184 mm | (7 1/4") |
| E, min. | 83 mm | (3 1/4") |
| F, min. | 415 mm | (16 1/4") |
| G | 2500 mm | (98") |
| Depth of hoist | 194 mm | (7 1/2") |





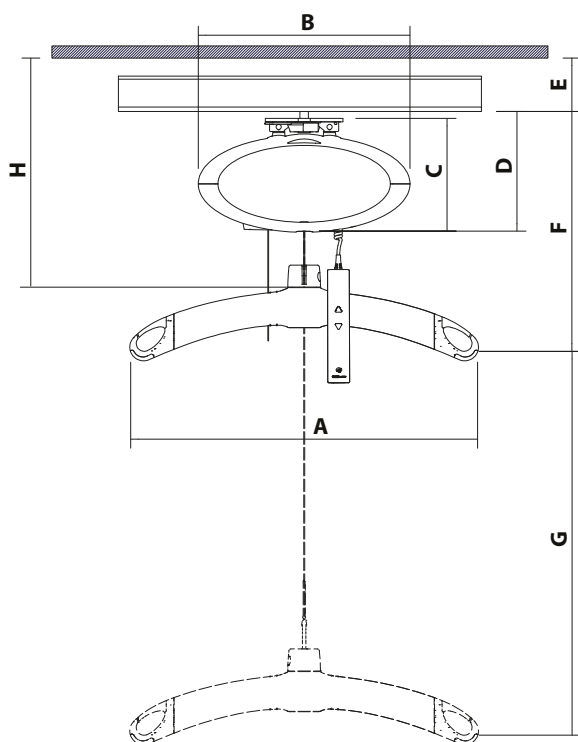
Dimension sketch GH1 Q hoist

Guldmann™

PLANNING

Dimensions

| | | |
|----------------|---------|-----------|
| A | 580 mm | (22 3/4") |
| B | 350 mm | (13 3/4") |
| C | 187 mm | (7 1/3") |
| D | 196 mm | (7 3/4") |
| E, min | 59 mm | (2 1/3") |
| F, min | 427 mm | (16 3/4") |
| G | 2500 mm | (98") |
| Depth of hoist | 194 mm | (7 1/2") |





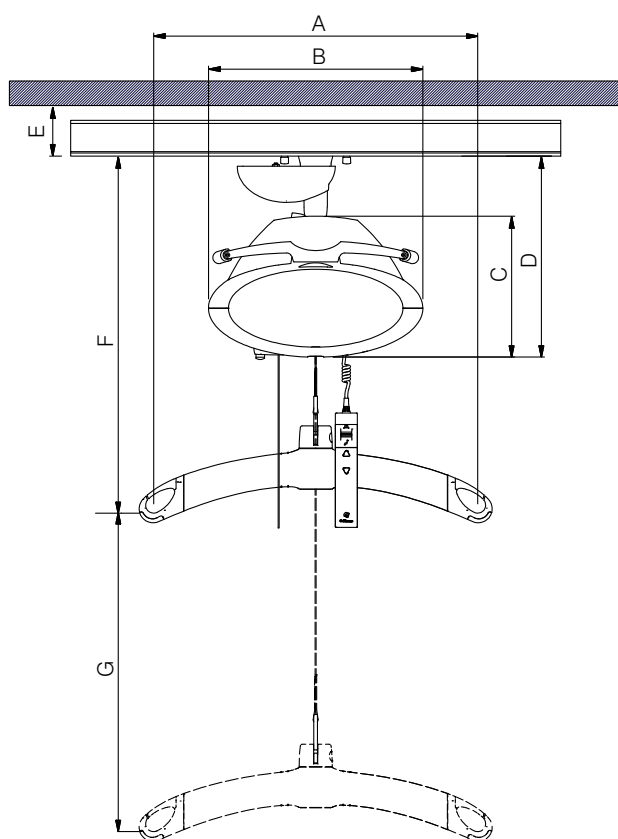
**Dimension sketch
GH1 F hoist**

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Dimensions

| | | |
|----------------|---------|-----------|
| A | 530 mm | (20 3/4") |
| B | 350 mm | (13 3/4") |
| C | 230 mm | (9") |
| D | 330 mm | (13") |
| E, min. | 83 mm | (3 1/4") |
| F, min. | 580 mm | (22 3/4") |
| G | 2500 mm | (98") |
| Depth of hoist | 194 mm | (7 1/2") |

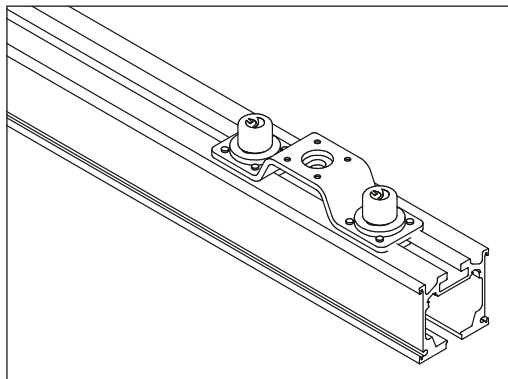




GH Ceiling bracket standard

Use: The GH Ceiling bracket standard is used for single rail and room-covering systems. The distance between the upper edge of the rail and the ceiling must be 25 mm/1".

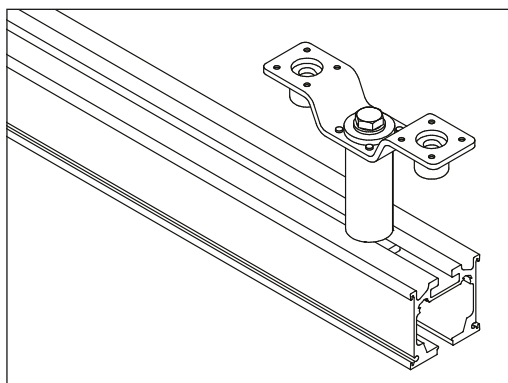
Installation: Depending on the underlying surface or/and the lifting capacity, the GH Ceiling bracket standard should be secured to the ceiling with one or two fixings. The bracket can be used on concrete and wooden ceilings.



GH Ceiling bracket lowered standard for straight rails and rail curves

Use: The GH Ceiling bracket lowered standard is used for single rail systems or room-covering systems.

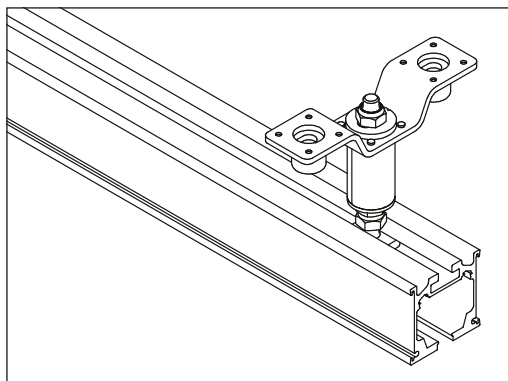
Installation: The GH Ceiling bracket lowered standard should be secured to the ceiling with two fixings.



GH Ceiling bracket adjustable 5 mm/13/64" for Combi lock

Use: The GH Ceiling bracket adjustable is used together with the Safety lock when a Combi lock is used in combination systems.

Installation: The GH Ceiling bracket adjustable is mounted with 2 fixings in the ceiling.



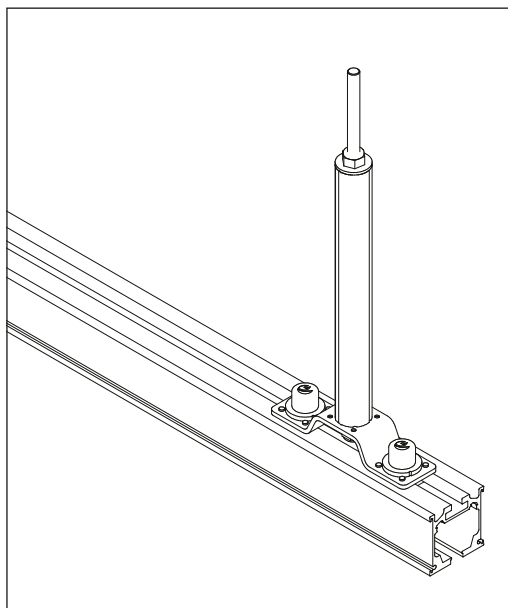


GH Ceiling bracket lowered rod

Use: The GH Ceiling bracket lowered rod (with aluminium profile) is used in connection with suspended ceiling constructions. The bracket is primarily used in rooms with high ceilings in order to be able to install the rail system beneath the suspended ceiling at an ordinary installation and users' height.

Installation: The GH Ceiling bracket lowered rod is joined by cutting the aluminium tube to the required length.

Note: There is no limitation with regard to the length of the GH Ceiling bracket lowered rod. But in connection with longer lengths the bracket should be anchored to the wall or ceiling with a GH Stabilizing bracket to stabilize the rail system and ensure that the construction is solid even with a long suspension.

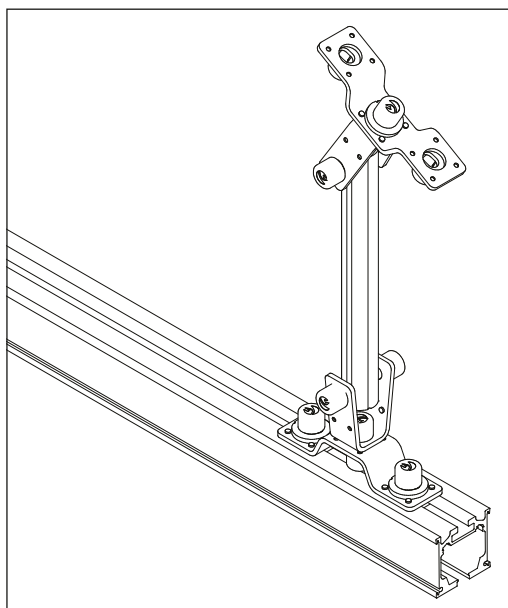


GH Ceiling bracket slope lowered

Use: An adjustable GH Ceiling bracket slope lowered (with aluminium profile) is used in rooms with high, sloping ceilings. The bracket makes it possible to install the rail system at an ordinary installation and users' height.

Installation: An adjustable GH Ceiling bracket slope lowered, is connected by cutting the aluminium tube to the required length. The aluminium tube is first mounted on the U profile of the bracket. The bracket is then installed on the ceiling in the same way as with the other suspended ceiling brackets - but the angle can be adjusted on this type.

Exception: Must not be used in systems with a maximum load over 205 kg (450 lbs).



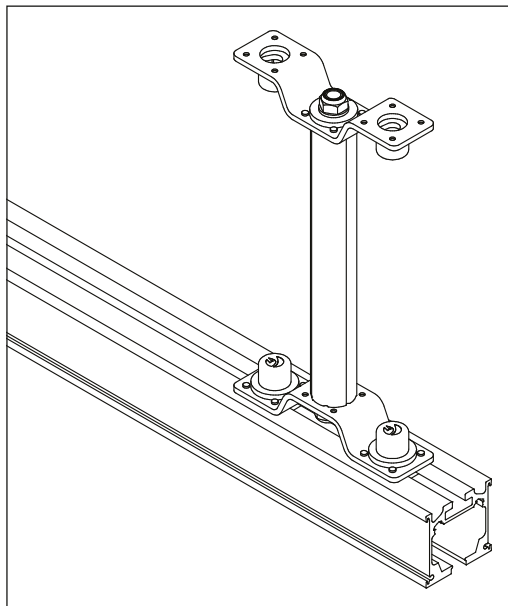


GH Ceiling bracket straight lowered

Use: The GH Ceiling bracket straight lowered (with aluminium profile) is used in connection with suspended ceiling constructions. The bracket is primarily used in rooms with high ceilings in order to be able to install the rail system beneath the suspended ceiling at an ordinary installation and users' height.

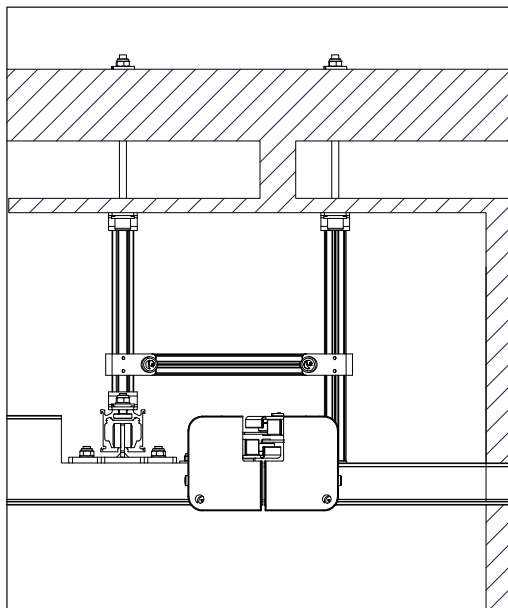
Installation: The GH Ceiling bracket straight lowered is joined by cutting the aluminium tube to the required length. Remember to allow for the space required by the upper and the lower ceiling brackets.

Note: There is no limitation with regard to the length of the GH Ceiling bracket straight lowered. In connection with the bracket it could be necessary to use a GH Stabilizing bracket to stabilize the rail system and ensure that the construction is stable.



GH stabilizer bracket for Combi-lock

Is installed between room-covering rail system and single track rail system to stabilise connection of rails.

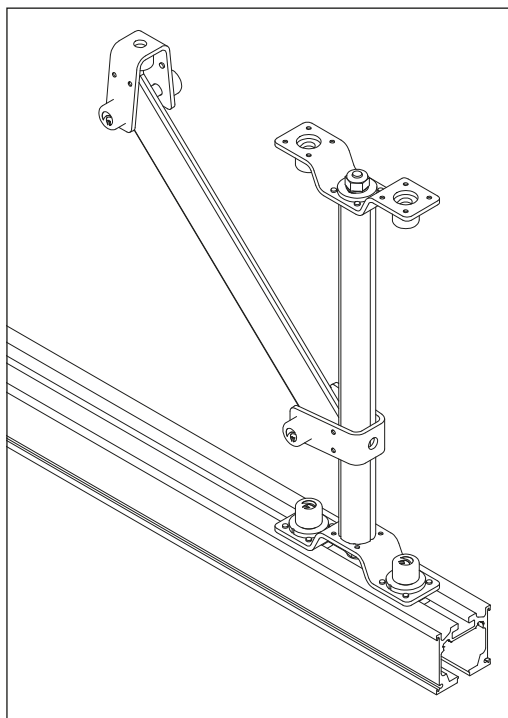




GH stabilizing bracket

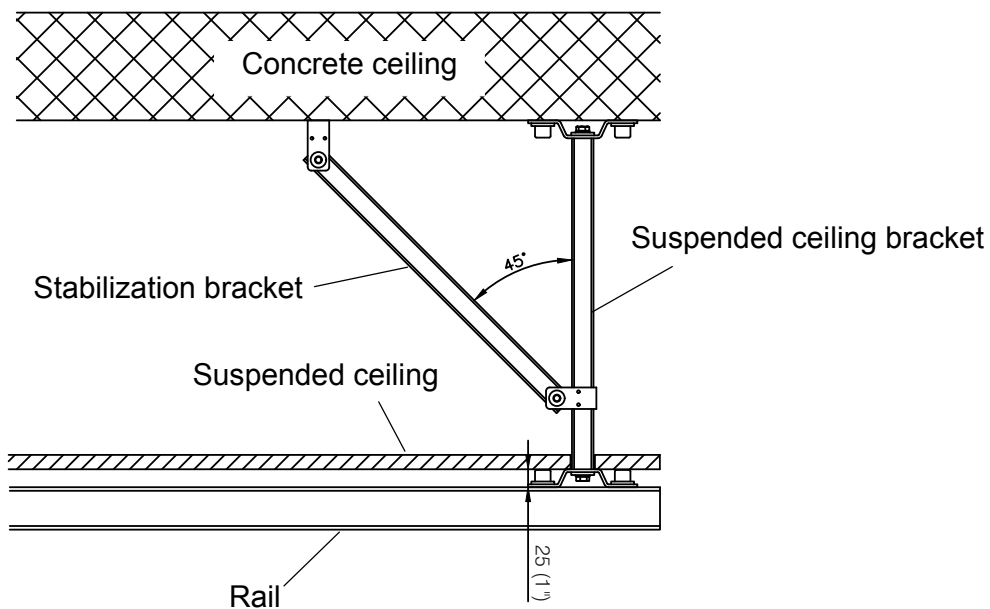
Use: The GH stabilizing bracket is installed as a side support for a suspended GH Ceiling bracket in cases where the rail system has been lowered considerably relative to the ceiling. Even in connection with long suspension lengths this makes the construction very stable.

Installation: A holder is mounted around the aluminium tube on the GH Ceiling bracket. The aluminium tube on the stabilizing bracket is cut to length relative to the distance to the wall or ceiling and secured to the holder on the ceiling bracket.

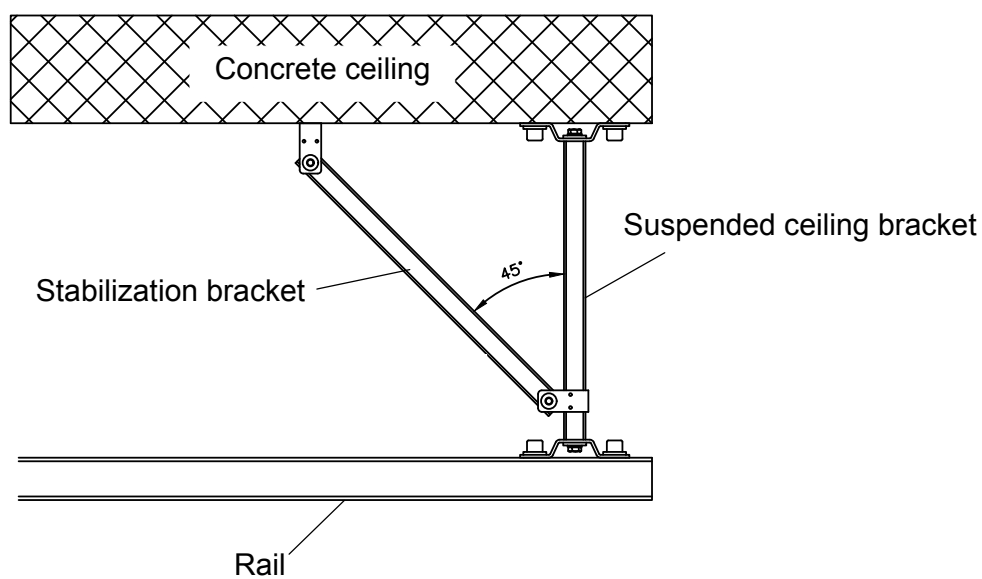




Example with Suspended ceiling



Example with mounting direct in ceiling





Reinforcement

In cases where the ceiling construction consists of timber joists, it is necessary to install a reinforcement in between the joists in order to be able to install the ceiling bracket.

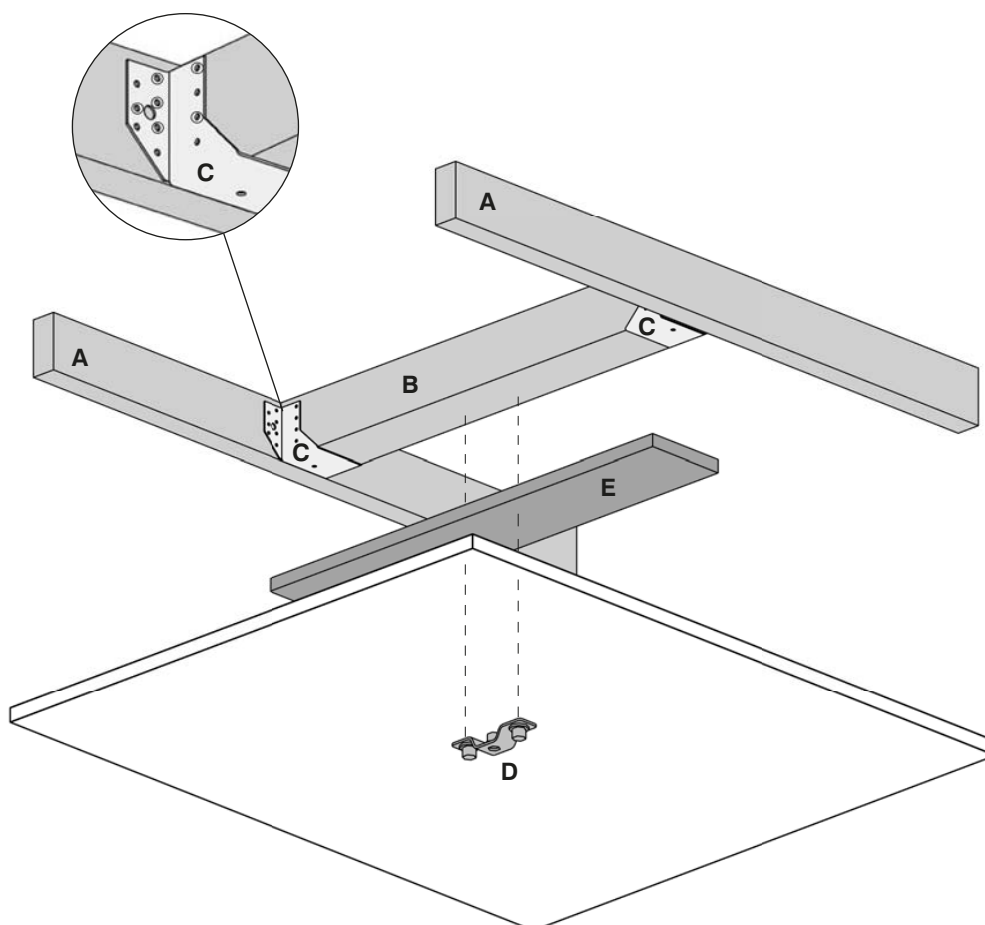
For reinforcement use timber minimum 4"x 4" – 100 x 100 mm, with appropriate fittings of the type BMF 3224 – 100 x 90 mm.

It is important to fasten the fittings with nails in the marked holes only, as illustrated, or else the timber may split. Lower edge of reinforcement shall be level with lower edge of joists.

Shutter boards must be mounted direct under the reinforcement.

Nail the fittings to the marked holes only.

- A. Joists
- B. Timber 4"x 4" – 100 x 100 mm
- C. Fittings BMF 3224 – 100 x 90 mm
- D. Guldmann ceiling bracket
- E. Timber shuttering





Reinforcement, Combi-lock

In cases where the ceiling construction consists of timber joists, it is necessary to install a reinforcement in between the joists in order to be able to install the ceiling bracket.

For combination systems it is important that the reinforcement is executed in such a way that any buckling of the system is aligned - i.e. fittings for parallel rail and fittings for combi-lock must be fixed to the same beam/reinforcement.

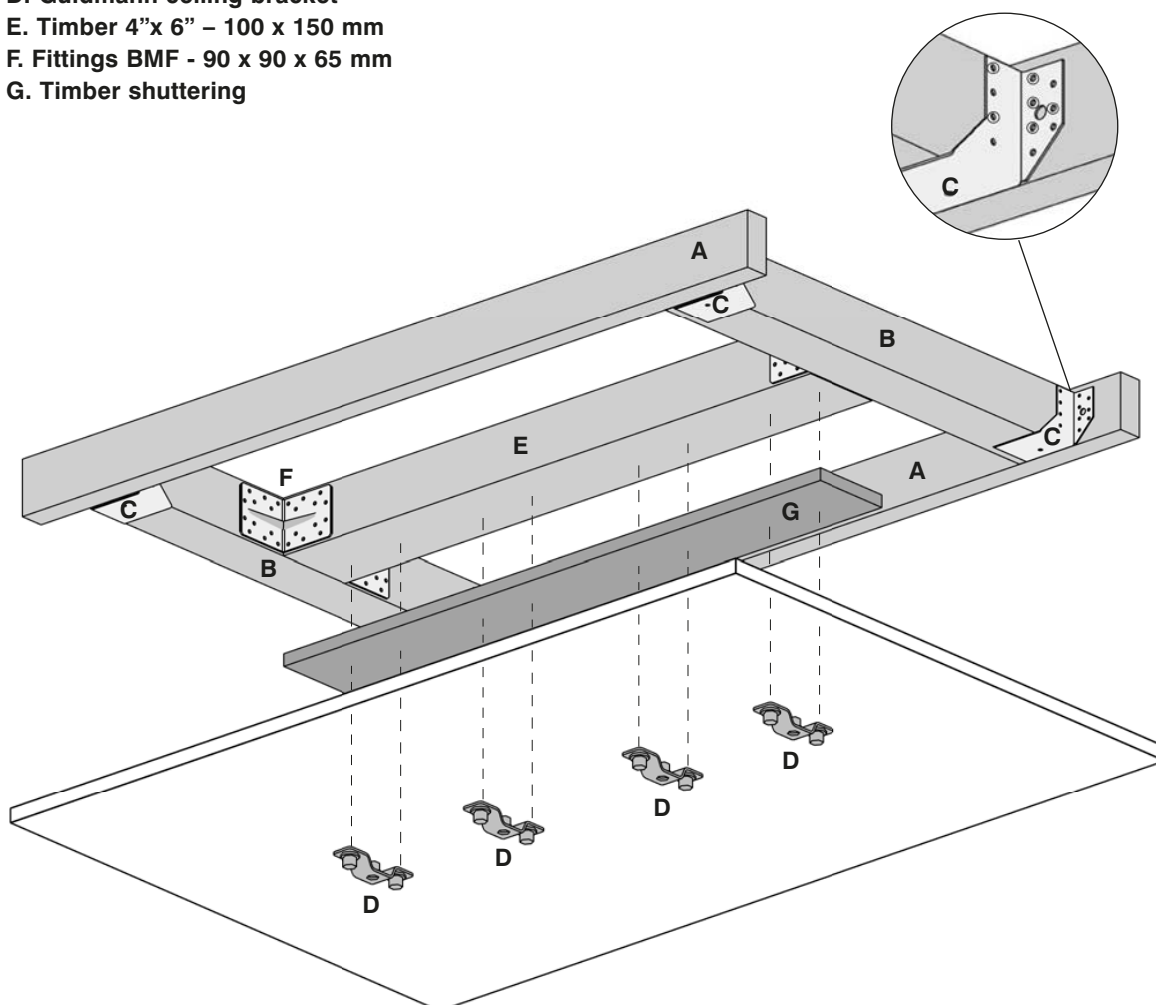
In the centre of the door opening fix timber 100 x 150 mm (4"x 6") on the side of timber 100 x 100 mm (4"x 4") with 4 angle brackets with ribs of type BMF 99.

It is important to fasten the fittings with nails in the marked holes only, as illustrated, or else the timber may split. Lower edge of reinforcement shall be level with lower edge of joists.

Shutter boards must be mounted direct under the reinforcement.

Nail the fittings to the marked holes only.

- A. Joists
- B. Timber 4"x 4" – 100 x 100 mm
- C. Fittings BMF 3224 – 100 x 90 mm
- D. Guldmann ceiling bracket
- E. Timber 4"x 6" – 100 x 150 mm
- F. Fittings BMF - 90 x 90 x 65 mm
- G. Timber shuttering



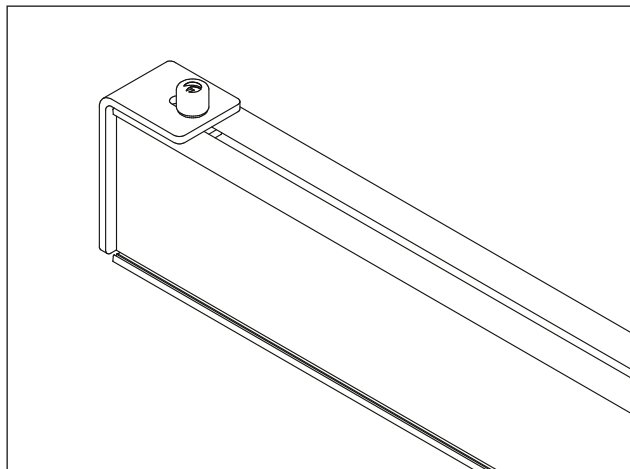


GH Wall bracket end

Use: The GH Wall bracket end is used to install all types of rail between vertical surfaces. The bracket can be used, e.g. in connection with installing room-covering rail systems in rooms where the ceiling is inaccessible or sloping.

The GH Wall bracket can be installed on all types of wall – both brick and concrete, lightweight concrete, wood and plasterboard. But the GH Wall bracket end must be combined with a GH Plasterboard bracket on plasterboard walls without wall reinforcement.

Installation: The GH Wall bracket must be secured to the wall with two fixings.



GH Plasterboard bracket

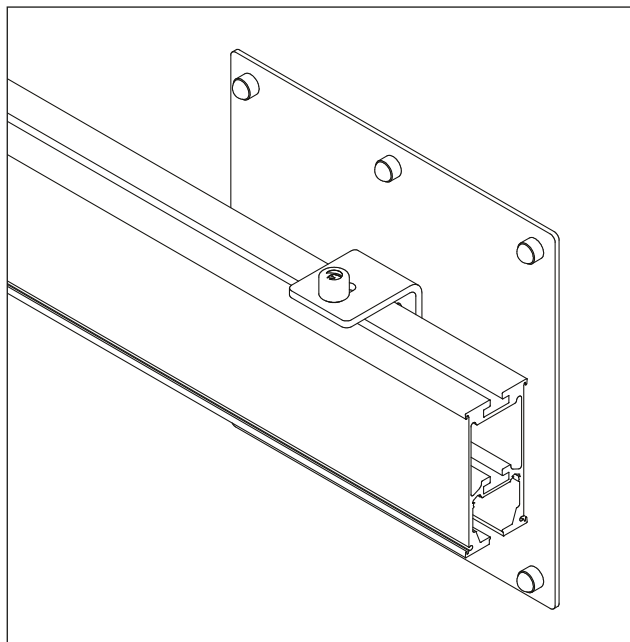
Use: The GH Plasterboard bracket is used as an adapter for the GH Wall bracket in connection with installations on plasterboard walls or other types of light wall.

A GH Plasterboard bracket provides the necessary high stability and strength to install rail systems on plasterboard walls. But it is a requirement that these are double plasterboard walls at least 24 mm/1" thick.

Installation surface (WxH) 303x303 mm/12x12".

Installation: The GH Plasterboard bracket can be secured direct to the plasterboard wall with six Hilti HBS-S M6 x 60 mm. The GH Wall bracket end must then be secured to the two threaded rods on the GH Plasterboard bracket with 10 mm lock nuts.

Exception: Must not be used in systems with a maximum load over 255 kg (560 lbs).



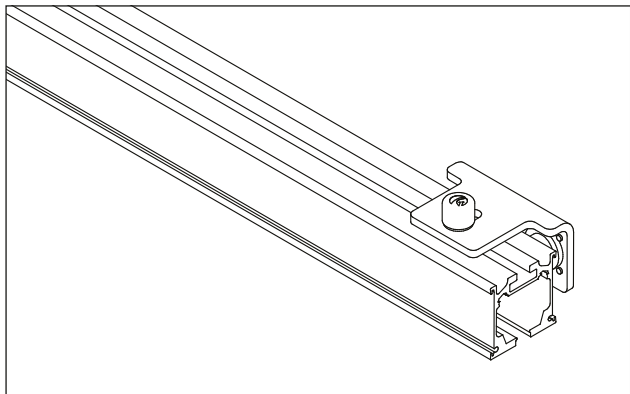
GH Wall bracket side

Use: The GH Wall bracket side, is used as side-hung brackets at the parallel rails in a room-covering system.

The GH Wall bracket can be installed on all types of wall – both brick and concrete, lightweight concrete, wood and plasterboard. But the GH Wall bracket end must be combined with a GH Plasterboard bracket on plasterboard walls without wall reinforcement.

Installation: The GH Wall bracket for side-hung rails must be secured to the wall with two fixings.

Note: The GH Wall bracket for side-hung rails can also be used as an end bracket.





Mounting of GH Wall brackets in plasterboard walls requires wall reinforcements.

Each reinforcement must consist of :

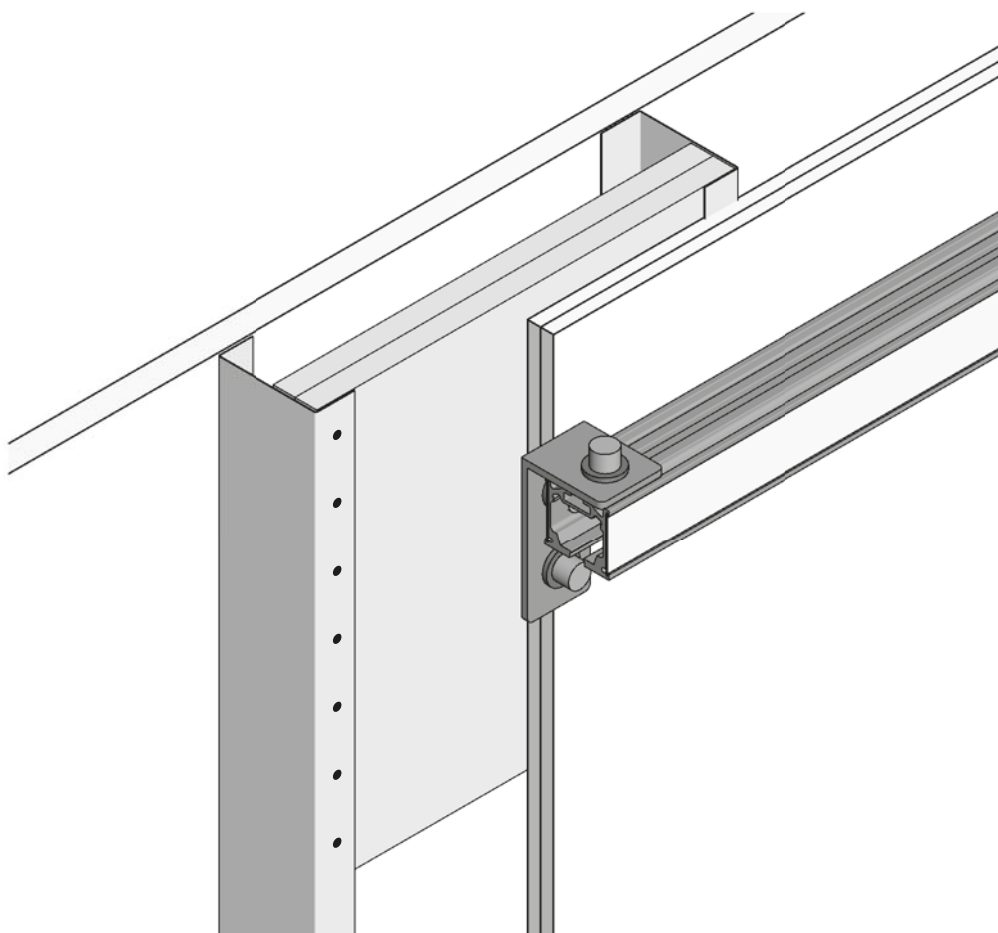
2 pcs of 21 mm/ 7/8" plywood sheets of Finnish beech.

Height: 400 mm/16".

Width: distance between vertical steel latches according to Guldmann layout for placing of rails.

The plywood sheets are mounted with 7 pcs of flat-headed screws 4x32 mm/ 5/32x1 1/4" on each of the vertical steel latches.

As standard the plywood sheets shall be placed as close to the ceiling as possible.





GH Upright support bracket

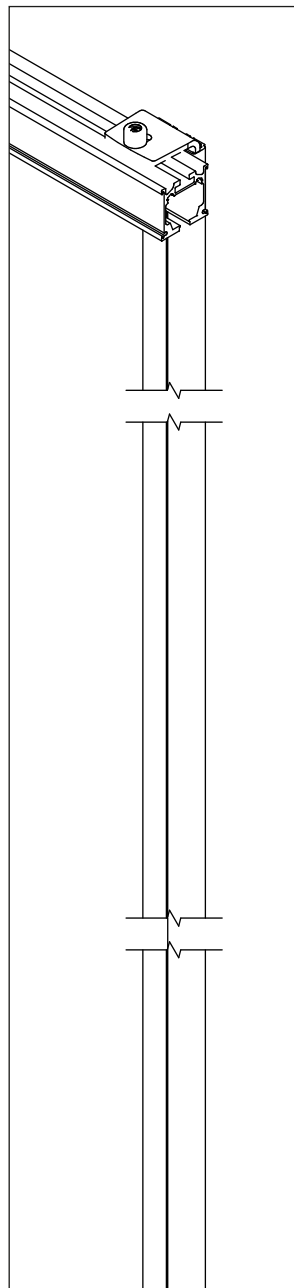
Use: The GH Upright support bracket is used in rooms where it is impossible to secure brackets to the ceiling or the wall. These could be rooms with extensive window areas, for example.

The GH Upright support bracket can be supplied with various types of adapter that make it possible to lead studs around such obstacles as cable and installation panels or skirting boards.

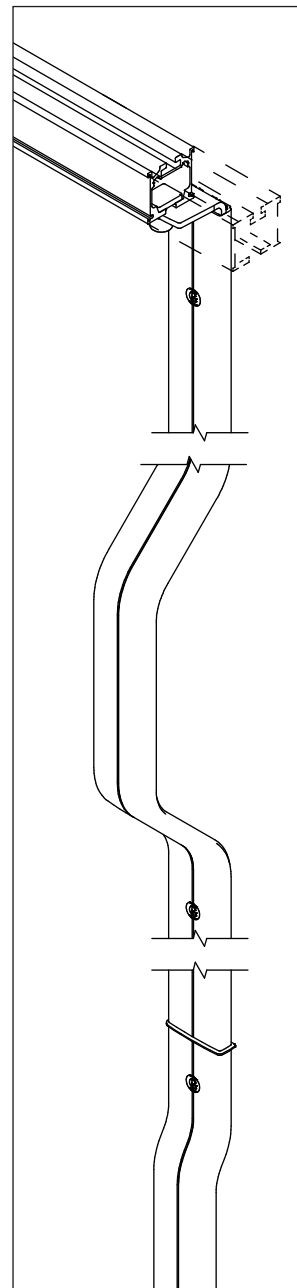
The GH Upright support bracket and adapter can be used e.g. at institutions or hospitals, where it is difficult to fasten brackets to the ceiling due to various pipe systems.

Installation: The GH Upright support bracket is installed on the floor, but the brackets must also be fastened to the wall in order to guide them.

Can be mounted on single plasterboard.



Max. SWL 500 kg/1100 lbs



Max. SWL 255 kg/560 lbs

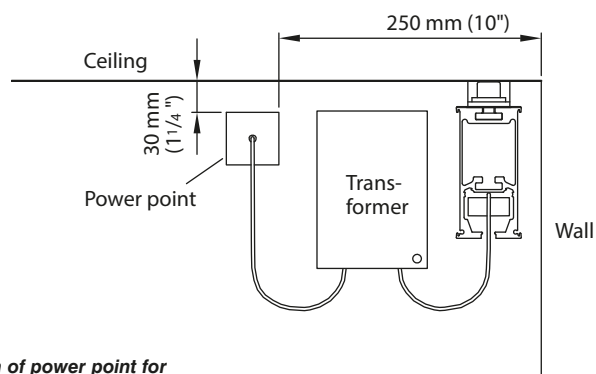


A transformer must be connected to the power supply when a GH3 ceiling hoist, GH Switch track or/and GH Turntable is installed.

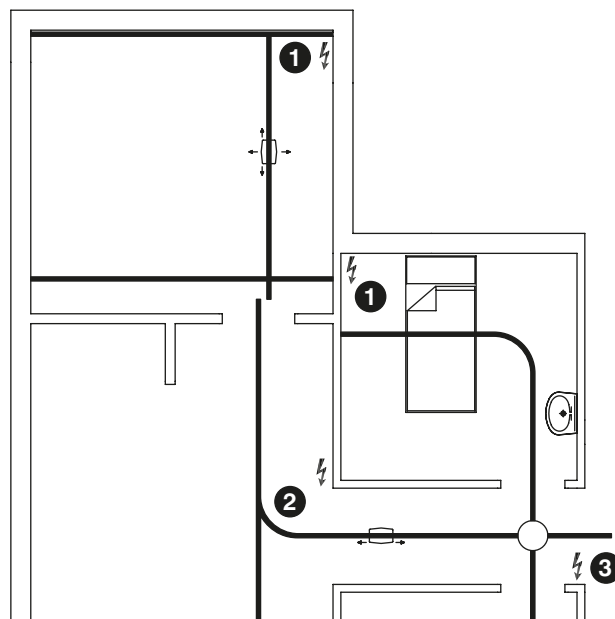
In connection with single rail systems the power point should be located in the closest corner.

In connection with room-covering systems the transformer should be located in the corner with regard to accessibility and furnishings.

- ❶ Transformer for charging of hoist
- ❷ The GH Switch track
- ❸ The GH Turntable



Location of power point for
transformer





GH Switch tracks and GH Turntable

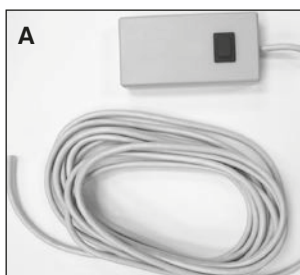
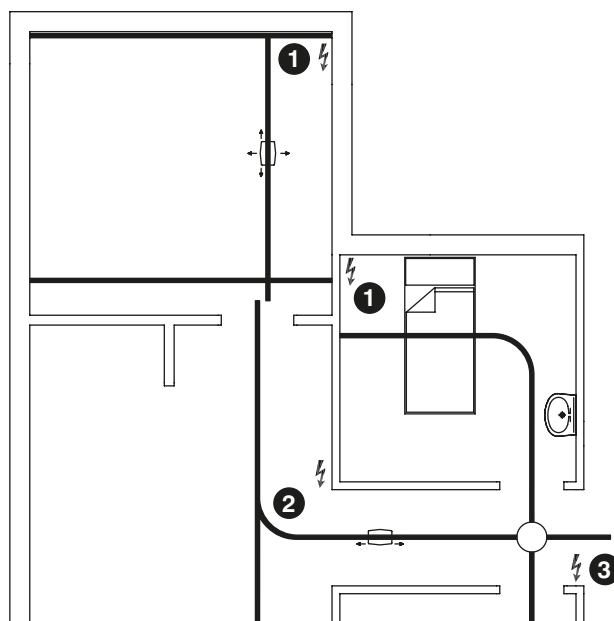
A 110/230 V electric point (a plug without a switch) must be used for the Switch tracks and Turntable. The transformer should be plugged into the power point.

Where possible the power point should be installed above the ceiling - on a truss for example above a suspended ceiling, where applicable. If this is not possible the power point should be installed on the wall near the ceiling right next to the rail.

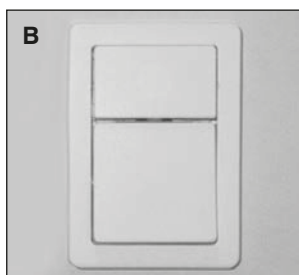
- ❶ Transformer for charging of hoist
- ❷ The GH Switch track
- ❸ The GH Turntable

Hand control for the GH Switch tracks and GH Turntable

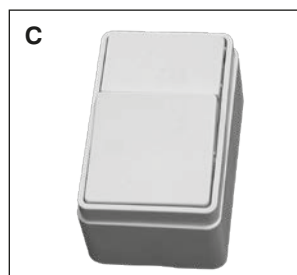
The GH Switch track and GH Turntable is activated with the help of a handcontrol. The handcontrol (A) should be placed at an ordinary height close to the GH Switch track or GH Turntable. The handcontrol can also be integrated into a wall switch (B) or the GH Switch track or GH Turntable can be operated by an IR sender (D).



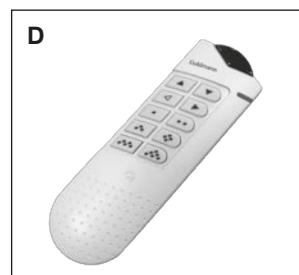
Hand control for GH Switch track and GH Turntable.



It is possible to integrate the hand control for GH Switch track and GH Turntable into a wall switch. (1,5 module FUGA).



C. Direct fixed hand control at wall.



D. IR



*These precautions apply to installations made in Denmark.
Local requirements may differ.*

Guldmann ceiling hoist and rail systems are manufactured and installed in accordance with the rules on Electro-Medical Equipment IEC 60601-1.

Guldmann has a UL/DEMKO approval of its products which confirms that they meet the requirements contained in IEC 60601-1.

This regulation defines how medical equipment must be classified and also how it must be protected so that danger of electric shock does not arise when handling the products.

Guldmann ceiling hoist and related rail system are classified as equipment in Class I – High Voltage Regulation, Electro-Medical Equipment, Chapter 14.

Reference is made to Fig. 701A – Area Division 0 to 3.

Installation of the rail system is carried out with safety voltage – designated SELV. The safety transformer with a nominal voltage of 33 V AC voltage.

In accordance with the High Voltage Regulation, Chapter 701 – AREAS WITH BATHTUBS OR SHOWERS

Chapter 701.4 Protection for safety reasons

When SELV is used (safety voltage), protection against direct contact must be in place regardless of the size of the voltage, i.e. to min IP2X.

The geometry of the live rails meet the requirements for protection against contact.

Regarding installation of Guldmann rail systems in bathroom environments

Guldmann power supply (transformer) and rail with charging liner must be installed in accordance with the illustrations in Fig. 701A & 701B and guidelines interpreted here below.

Guideline for transformer:

- Transformer class 1 must be installed above 3 m (9 3/4') if installed directly over areas 2 and 3.
Or above 2,25 m (7 1/4') if not installed directly above areas 2 and 3 (outside area 3)
- Transformer class 2 must be installed above 2,25 m (7 1/4') (area 3) if the mains power is protected by a residual-current circuit breaker max. 30 mA (RCCB) (HPFI-breaker "DK").

Guidelines for single rail and room covering rail system:

- Single rail system without charging liner must be installed above 2,25 m (7 1/4'), ground connection of rail (area 3 and outside area 3)

Guidelines for rail system with open end:

- The rail with charging liner must be installed with end cover and with a minimum clearance of 100 mm (4") to the charging liner from the open rail end. (to apply to IP20).

If e.g. cleaning by hosing, the power supply and charging area must be located completely separate from the area in which splashing with water may occur.

For single rails the grounding may be located as required either in the bathroom or in the adjacent room.

Note

These rules have been issued by the Electricity Council and form part of the High Voltage Regulation.

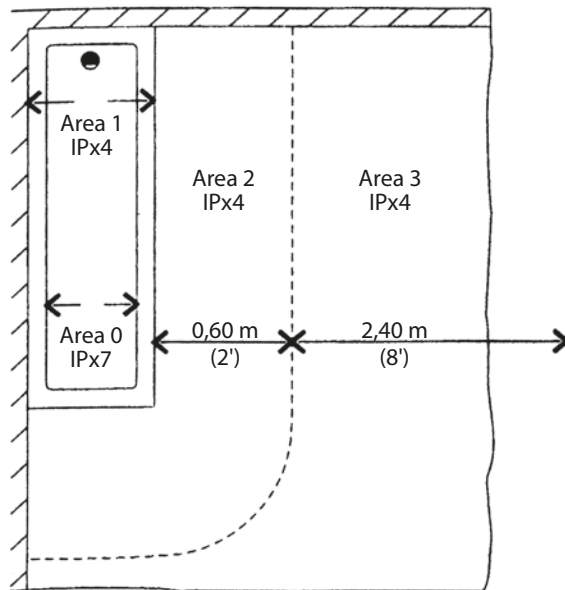
There **may** be special local requirements for the installation of rail systems in medical treatment areas.

Any special requirements carried out without the participation of Guldmann are at the purchaser's own risk.

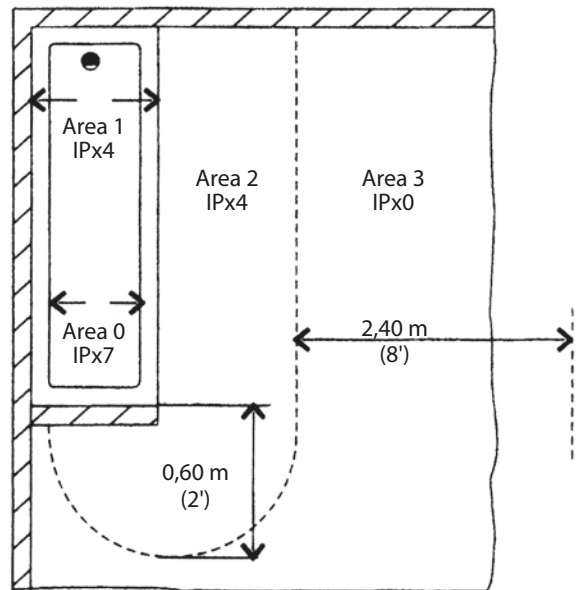
See illustrations on page 80 + 81.



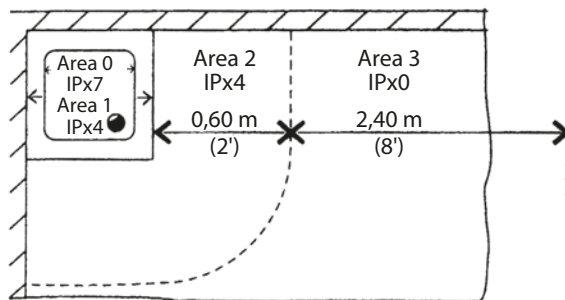
a) Bathtub



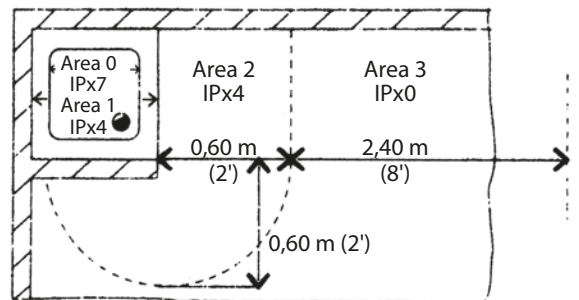
b) Bathtub with fixed partition wall



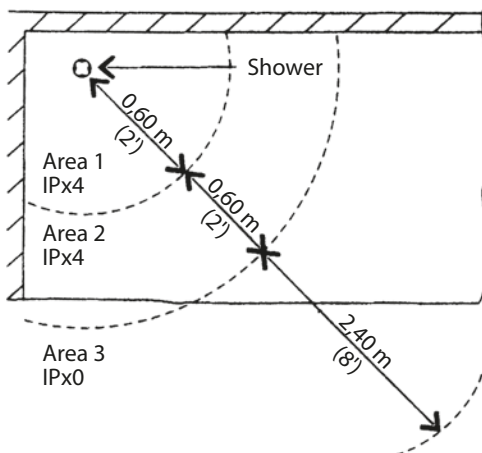
c) Showerbasin



d) Showerbasin with partition wall



e) Shower without basin



f) Shower without tray, but with fixed partition wall

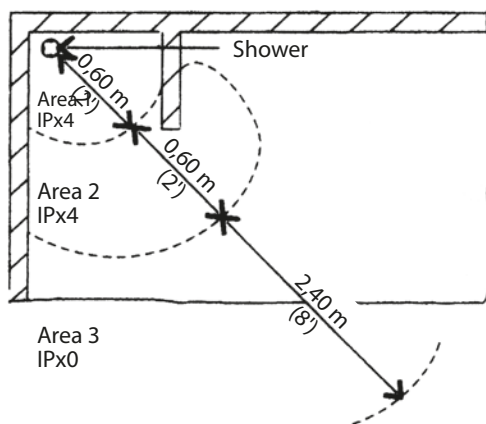
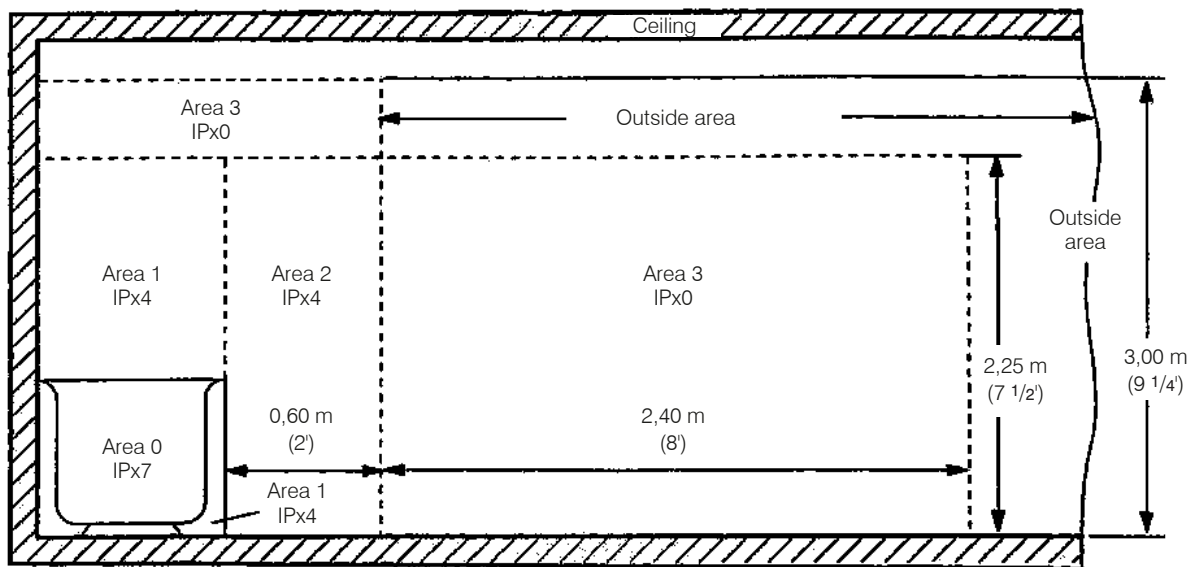


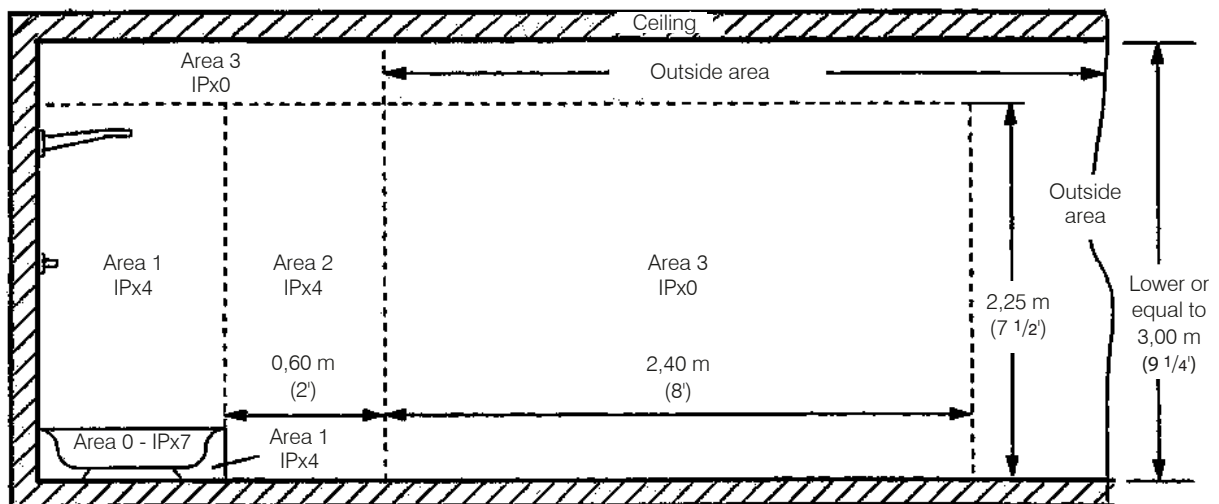
Figure 701 A – Area distribution (plan)



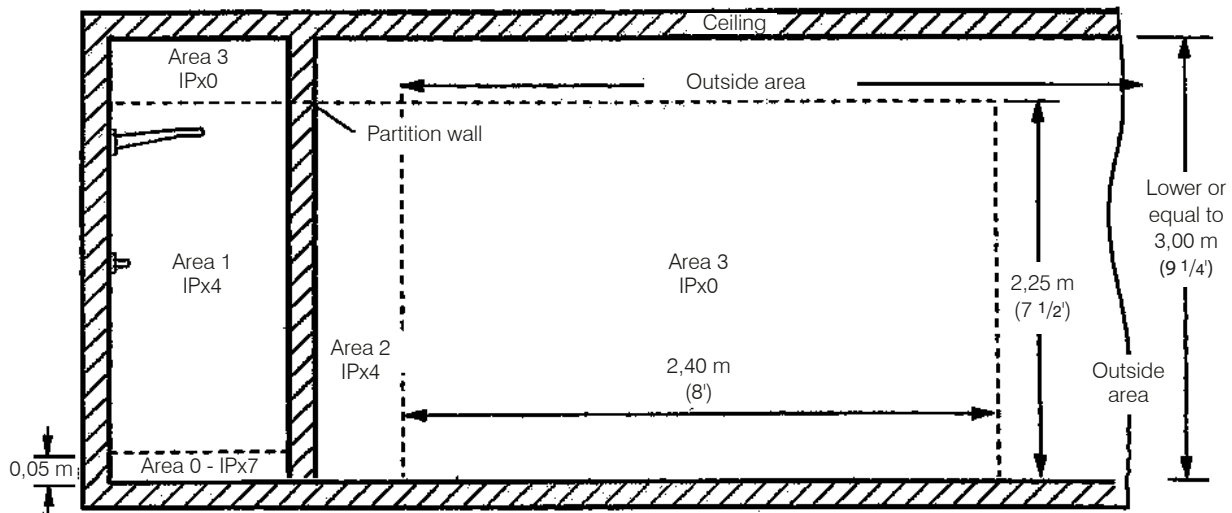
g) Bathtub



h) Showerbasin

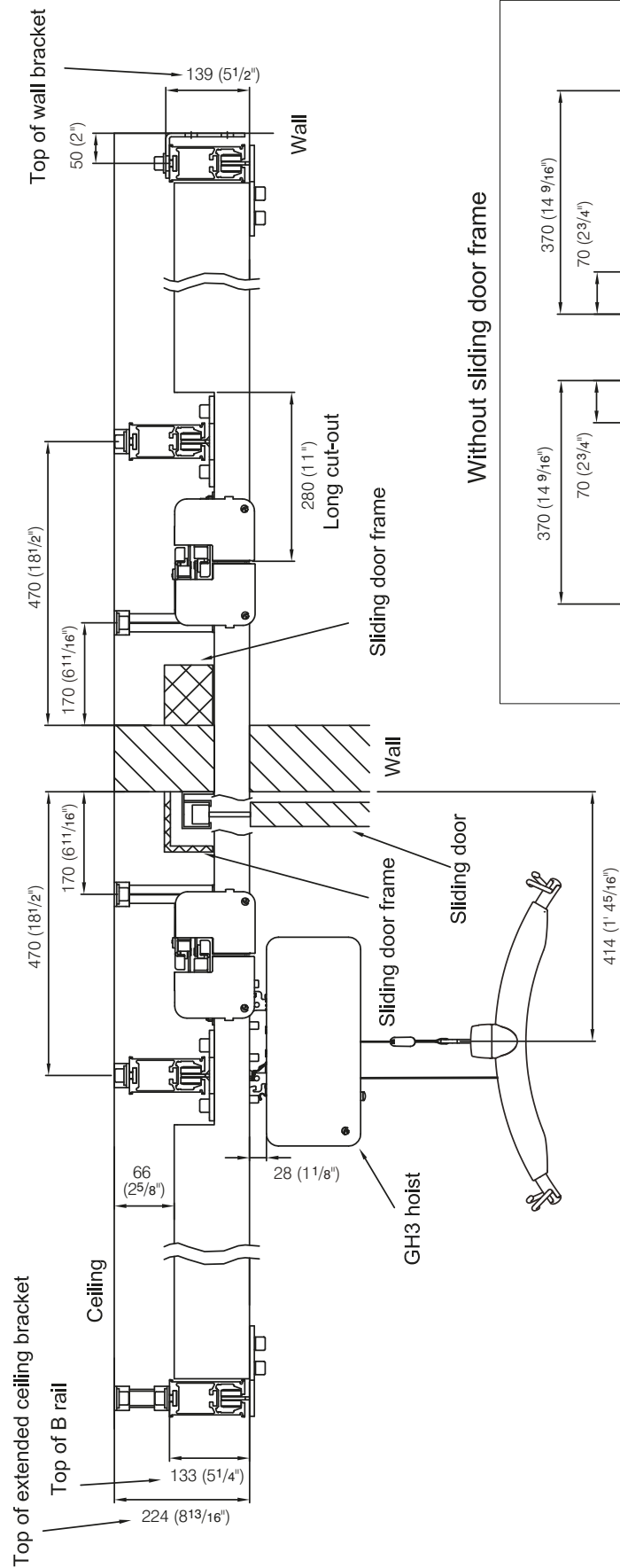


i) Shower without basin, with partition wall

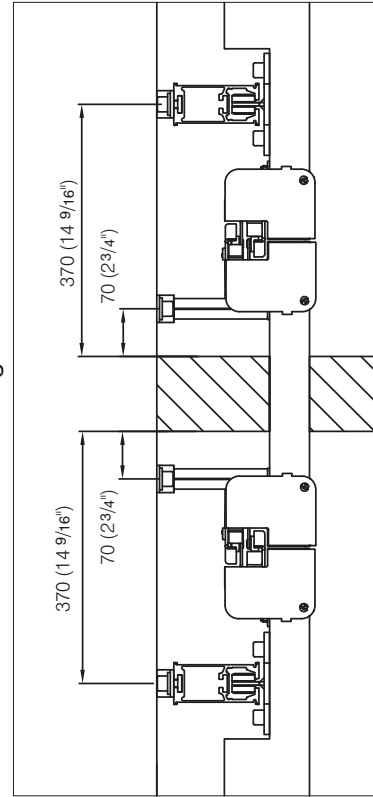


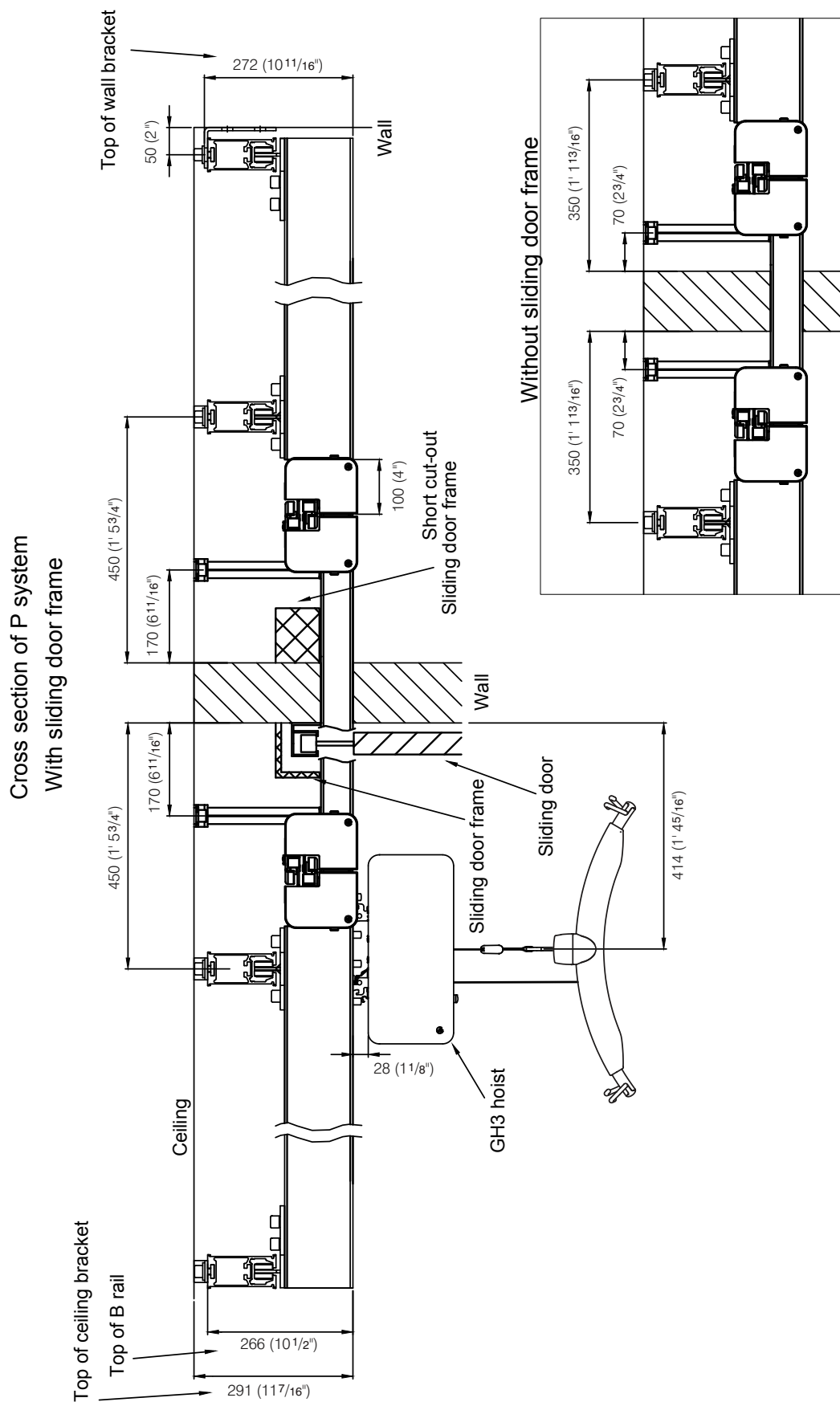


Cross section of MB system
With sliding door frame



Without sliding door frame





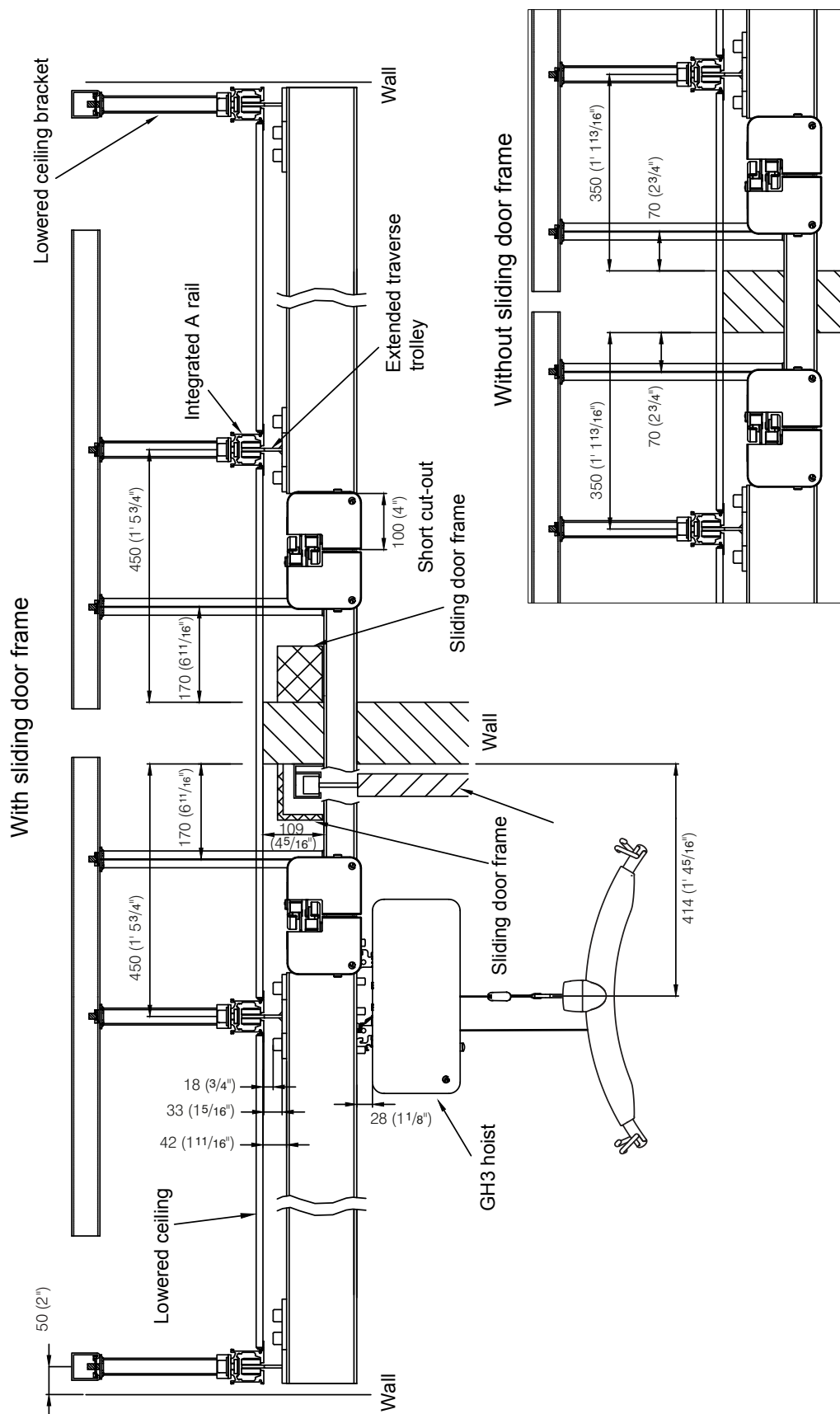


Cross section example
N system integrated in the ceiling

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Cross section of N system integrated in ceiling with lowered traverse trolleys



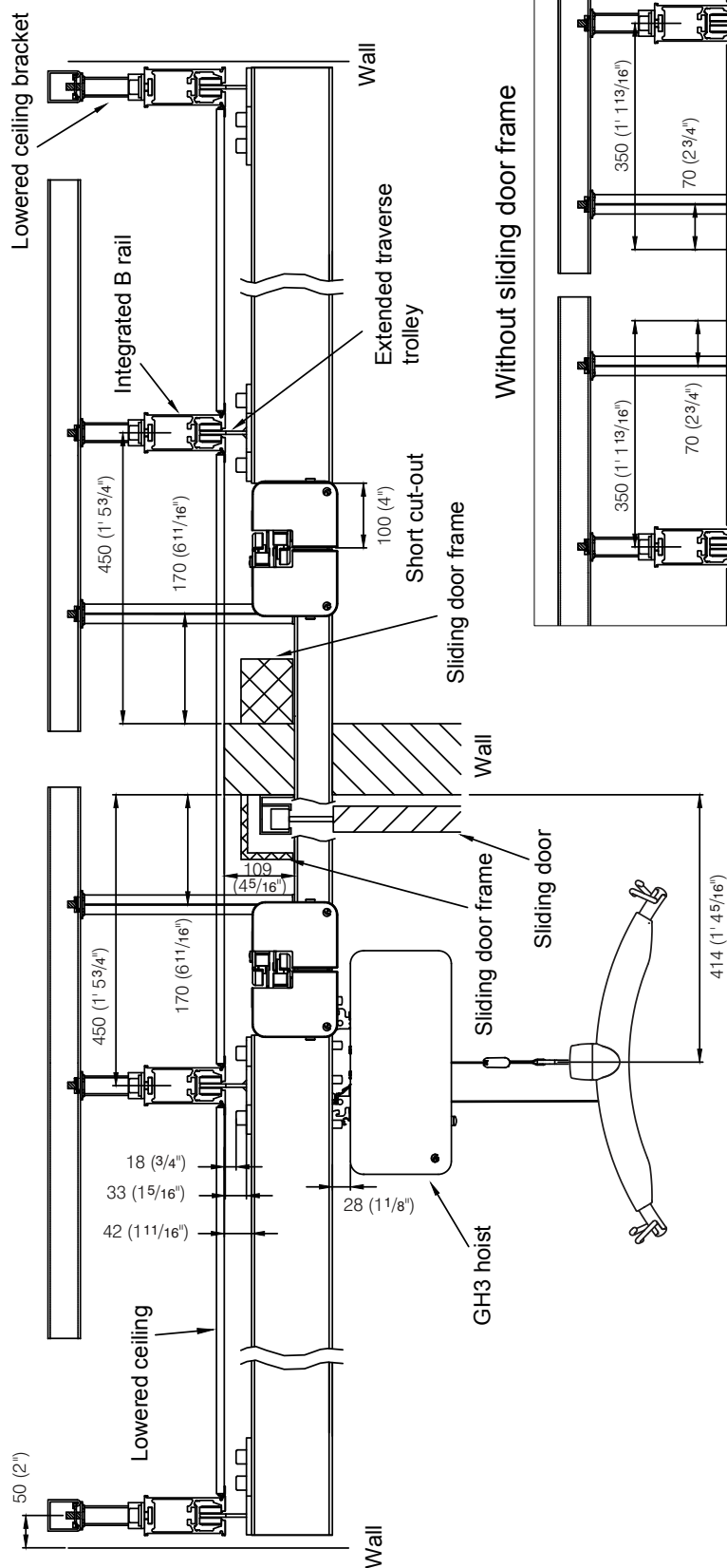


Cross section example
P system integrated in the ceiling

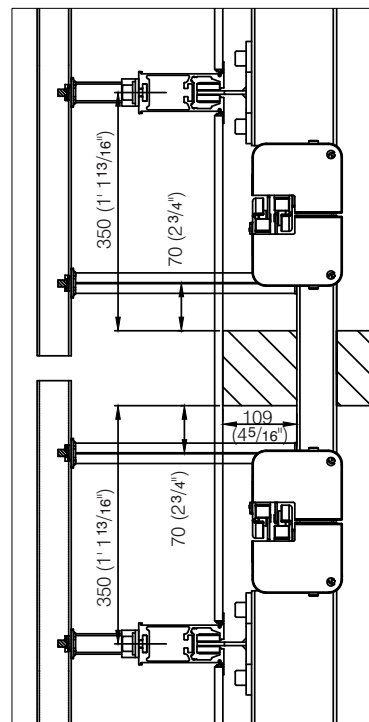
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Cross section of P system integrated in ceiling with lowered traverse trolleys

With sliding door frame



Without sliding door frame

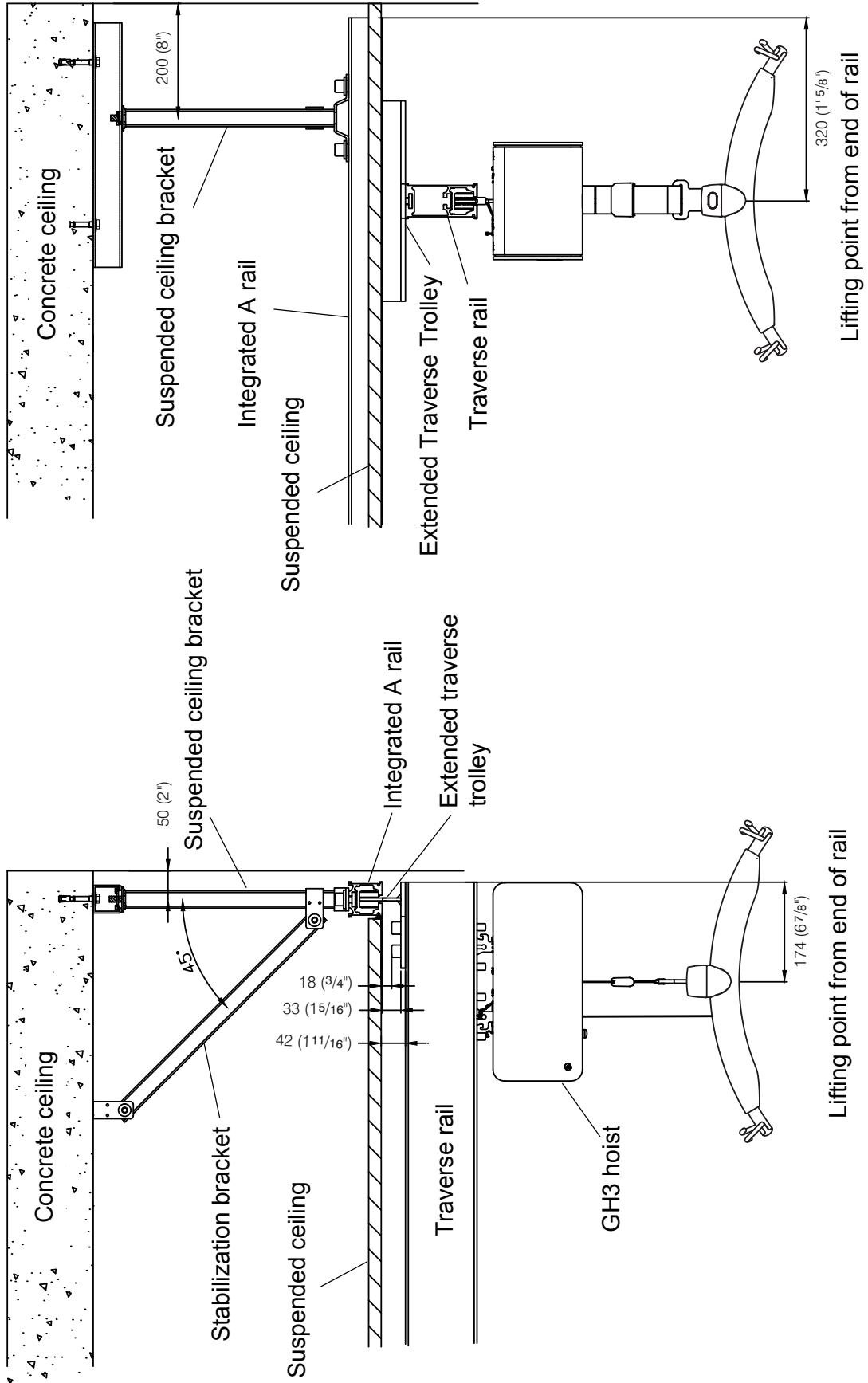




Cross section example
Lowered ceiling

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PLANNING





| Symbols | Description |
|---------|------------------------------|
| | A Rail |
| | B Rail |
| | C Rail |
| | Wall Rail |
| | Wall bracket |
| | Ceiling bracket, Standard |
| | Ceiling bracket, Extended |
| | Adjustable Combi bracket |
| | Extended Combi bracket |
| | Bracket for slooping ceiling |
| | Upright support bracket |
| | Plaster wall bracket |
| | Power outlet |
| | Hoist |



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