Modular Coldroom

Installation Manual

May 2005

Thank you for choosing Bromic for your refrigeration needs. Your new Bromic Coldroom is guaranteed to provide years of excellent insulation to better protect what matters most to you.

Please read the following instructions on how to properly set up your modular room.

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1. What is a modular room?

Not everyone is familiar with the concept of modular Coldrooms.
Basically put, a modular coldroom is refrigeration room whose walls, ceiling and floor is composed of various sections or modules. These modules all fit together and lock into place providing a thermally insulated and structurally sound room.

Bromic Coldrooms are composed of modules 85mm thick.
As customers may not always use standard refrigeration equipment, all Bromic Coldrooms are shipped with uncut panels.
The cutting and/or drilling for the placement of refrigeration units as well as pressure balance valves should be conducted by the installer.

2. Concept and benefits:

The fundamental concept of Coldkit Coldrooms resides in the size of the modules and placement of their interlocking cam mechanisms.

Our standard modular Coldrooms can be composed of ceiling and wall panels of the following widths: 40cm, 80cm, 120cm. Floor panels are only available in widths of 80cm and 120cm.

The heights of standard wall panels are either 200cm or 220cm.
All panels interlock with special cam-locks, which align and lock onto each other.

Bromic rooms may be used as freezers as well as chillers. For temperatures at or below freezing the door must have a heating cord and is referred to as a 'negative door'. We also recommend that you place a pressure balance valve through one of the walls in order to equalise internal and external pressure.

Bromic Coldrooms all have 85mm thick floors.

3. Setup Requirements

Before starting make sure there is sufficient space is available for room assembly, a relevant power outlet is installed and the installation surface is flat and level.

3.1 Power Requirements

Power requirements vary for the different room sizes and between cool and freezer as shown in the Table below.

MODULAR COOL ROOMS			
Part No.	Volume (m^3)	*Size L x W	Power Required
3735510	4	1.8 x 1.4	10A
3735511	5.4	1.8 x 1.8	10A
3735512	8	1.8 x 2.6	10A
3735513	8.4	2.2 x 2.2	10A
3735514	11.6	2.6 x 2.6	15A

MODULAR FREEZER ROOMS			
Part No.	Volume (m^3)	*Size L x W	Power Required
3735520	4	1.8 x 1.4	10A
3735521	5.4	1.8 x 1.8	15A
3735522	8	1.8 x 2.6	25A
3735523	8.4	2.2 x 2.2	25A
3735524	11.6	2.6 x 2.6	25A

*Size = Length x Width in Metres

Note: Power requirements are based on usage of standard slide-in refrigeration system selected by Bromic for a general usage coldroom. Altering or changing this unit can potentially alter the power requirements.

3.2 Room Sizing

Keep in mind that all of the stated room dimensions are external **NOT** internal.

In order to calculate this you must add the width and length dimensions as well as the height and floor spacers to determine the height.

Example: A Coldroom 2.6m long x 2.6m wide x 2.2m high will occupy…

External Room Width:	2.6 m
External Room Length:	2.6 m
External Room Height:	2.2 m

…A total of 2.6 meters in width by 2.6 meters in length by 2.2 meters in height (260cm width x 260cm length x 220cm height)

The above specifies the <u>minimum</u> required space for installing the Coldroom size used in the example but having more space is always a good idea.

Since it is thermally more efficient to NOT have the actual coldroom in contact with other walls or structures we would, in this case recommend having the following space: 2.75 m x 2.75m x 2.45 m. (25cm must be allowed in ALL cases above the room, to allow for air flow.)

4. Parts & Accessories
All basic Bromic Coldrooms will have a minimum of:

Part	Quantity	Description
Floor Panels	1 or more	Reinforced, finished in Phenolic food-safe resin coating on 1 side (walking surface)
Floor Beams	3 or more	Connect around the outer surfaces of the floor - used to connect the floor to the walls. NOTE: These are 85mm x 115mm & should not be confused with Ceiling connectors which are 85mm x 85mm
Corner Posts	4	Stand in the 4 corners of the room, 2200mm or 2400mm long.
Wall Panels	3 or more	2000mm tall standard white panels in either 400mm, 800mm or 1200mm widths
Ceiling Beams	4	Connect around the top of the walls & join the ceiling panels to the walls. These are 85mm x 85mm & are provided in lengths to suit the room size
Ceiling Panels	1 or more	Standard white panels in 800mm, and 1200mm widths and lengths to suit the room size chosen
Door	1 1x1.2m panel	Size is 1900mm x 800mm clear opening - fitted with door frame heater, used on Freezer rooms. Heater must be connected by a licensed electrical contractor.

With your room you will also receive one box of accessories containing the following:

Kit Item	Usage
End caps	for spacers
Allen Wrench	special tool for Cam lock operation
Grommet caps	Come in white & grey – used to cover cam-lock holes. White caps are for wall & ceiling panels, grey caps are for floor,
Infill plugs	Used for plugging hole in cam lock point - optional
Silicon	For sealing between the panel joints. Silicon must be used to seal all joints on freezer rooms. On cool room applications, used at the discretion of the installer.
Sponge seal tape	'joint tape'
Pressure Relief Port (Freezer room use only)	This port must be installed in the position provided on one of the wall panels. Electrical connection of this port must be performed by a licensed electrical contractor

Note: Although the Cam lock "Allen" wrench is provided, other tools are required. Please have a toolbox with standard tools such as pliers & screwdrivers at your disposal. Where a Zanotti refrigeration unit is to be installed you will need tools for cutting either a wall or a roof panel, depending on if the unit is a Drop or Slide in. Please refer to Page 15 "Zanotti Installation" for specific details.

Installation

> **ATTENTION:** Always wear eye protection when handling beams, posts and other PVC components. PVC flakes _will_ fall from within the coldroom components and can cause injury and/or discomfort.

5.0 Floor
After you've made sure that you have the necessary space for installation and that all the components on the packing list have arrived and are in good shape, you are ready to start the actual set up process.

5.1 Floor Panels
Floor panels will always have an off-white side and a coated side. For standard floors we apply a black phenolic resin coating over plywood.

- Floor panels come in lengths of: 80cm, 120cm, 160cm, 200cm & 240cm.
- Their width will always be 80cm or 120cm.
- Floor panels are 85mm thick.

5.2 Installing the floor panels
Material needed:
- Floor panels
- Allen wrench - found inside the Accessory (KITCMA) Box

Select floor panel(s) and position on floor where room is to be constructed, and in the correct direction.

If your Coldroom contains various floor panels, start at a corner and move outward according to the layout provided. When placing the second panel next to the first, align them as indicated on the diagram below and lock them to each other.
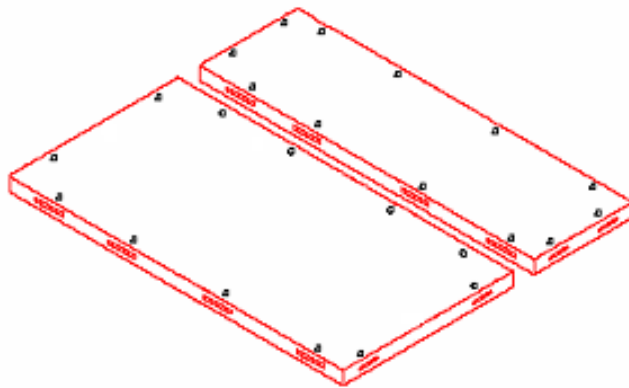
To interlock the floor panels, take the Allen wrench and insert it into the cam-lock hole on the coated side of the floor and twist about 45º clockwise. Stop tightening as soon as you feel some resistance.

You should not have to twist the wrench more then 45º to 90º (max). When you feel resistance simply stop and try to pull the two panels apart from each other to test whether or not the cam-lock actually hooked to the panel next to it.
NOTE: Do not try to tighten the adjacent cam-lock on the second panel.

For every cam-lock pair that becomes aligned, only one needs to be twisted into the locked position.

Please view the below image to better understand the concept behind the cam-locks.
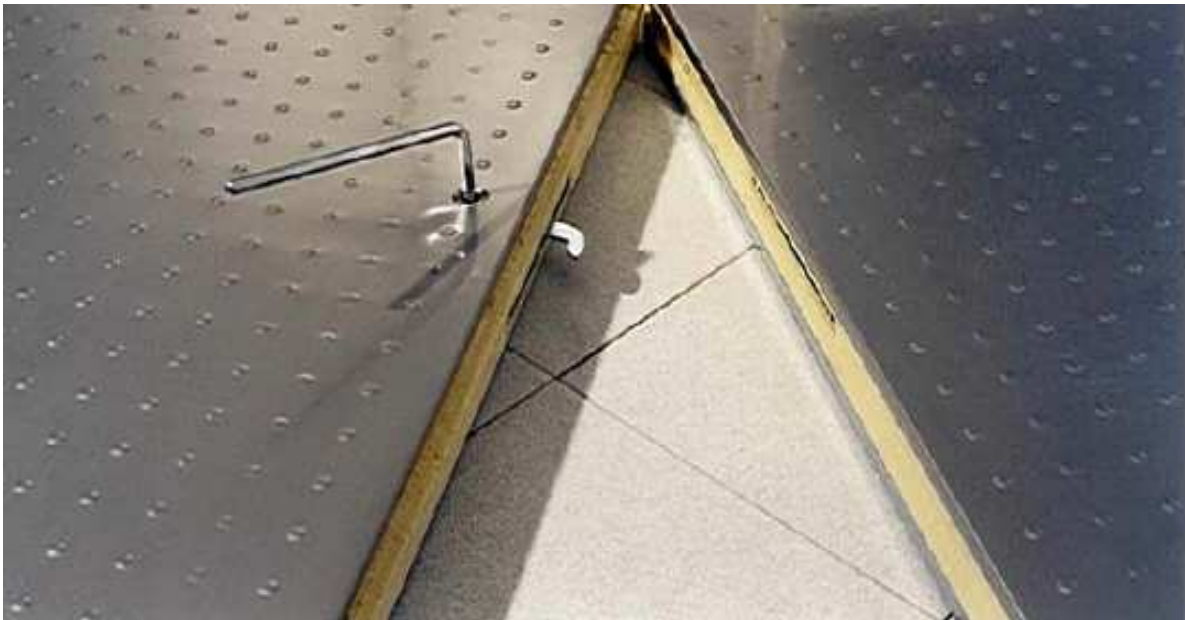
Once you have the all floor panels in place and locked them onto one another, you will be ready to put the floor beams in place.

5.3 Floor Beams
Once all the floor panels are laid out in place you may start placing the floor beams around them according to the layout provided.

Floor beams serve as the attachment point for the walls and come in the following lengths: 40cm, 80cm, 120cm, 160cm, 200cm and 240cm.
The floor beams have a height of 11.5cm and the same width as the panel being used.

**5.4 Installing the floor beams**
Material needed:
- Floor beams
- Allen wrench - found inside the Accessory (KITCMA) Box.

When setting the first floor beam you should be aware that it will stand 3cm taller than the floor panel.

Start by aligning the first floor beam with the cam locks on one side of the floor panels.

Once you have aligned the cam-locks simply lock the beam into place just as you tightened the floor panels to each other.

Attach all the floor beams to the floor panels as indicated in the diagram below.
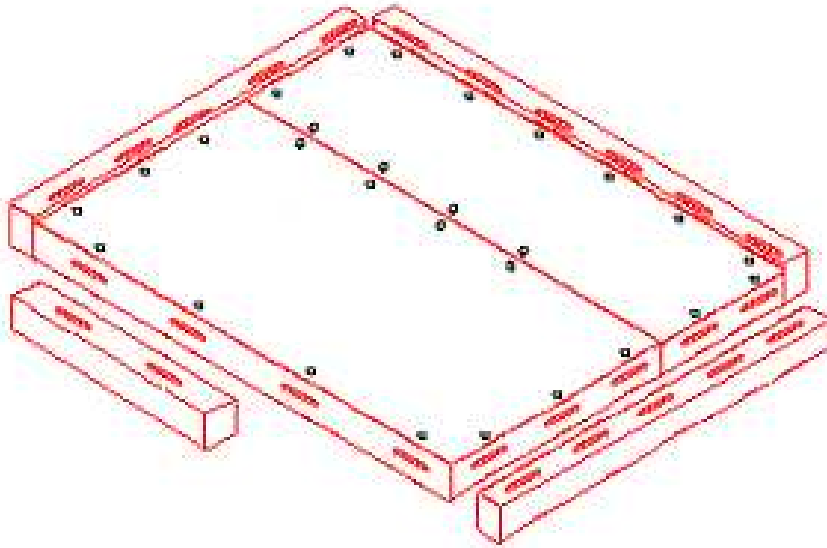
6.0 Walls
After you've made sure that the floor panels and floor beams are all interlocked and sturdy, you will be ready to raise the walls into position. The wall panels and corner posts will be raised at the same time but first you must distinguish them from ceiling panels and ceiling beams.

In the following section you will find information on how to properly raise the corner posts, wall panels and door(s) into position.

6.1 Corner Posts
Corner posts are meant to provide an attachment point for two perpendicular wall panels to grab onto at each corner.
They can often be confused with ceiling beams but are easily identified if you note the following:

Unlike ceiling beams, the distance from each edge of the Corner post (beam) to the middle of the first cam-lock is NOT 20cm. However the actual distance will vary greatly and cannot be identified within this text. Also worthy of noting is the fact that the actual distance will be different at each end of the corner post.

- Corner posts have a square cross section that is 85mm x 85mm

- Their length will span the entire external height of the coldroom (minus the spacers).

6.2 Wall Panels

Wall panels and ceiling panels are exactly the same in every way. You must take note of the distribution and placement of the panels on the provided layout. Any panel that is longer than the internal height of the coldroom can automatically be considered a ceiling panel.

Also worth noting is that unlike the floor panels which contain cam-locks every 40cm (and 20cm from each edge), the wall and ceiling panels have cam-locks which start 20cm from each edge but are then placed 80cm apart.

For the rooms with wall panels of 220cm in length, the uppermost cam-lock will rest 40cm from the top edge. This panel can NOT be applied upside down!

The bottom of the panel MUST contain a cam-lock 20cm from the bottom edge in order to align properly with the other panels.

6.3 Installing the Wall Panels & Corner Posts

Material needed:
- Corner posts
- Wall panels
- Door
- Allen wrench - found inside the Accessory (KITCMA) Box.

Setting up the walls and corner posts requires 2 people minimum, as does setting up the ceiling, so please have someone ready to assist you from this point onward!


ATTENTION: Always wear eye protection when handling beams, posts and other PVC components. PVC flakes _will_ fall from within the coldroom components and can cause injury and/or discomfort.

The first step is to have someone hold up a corner post while you verify that the midpoint of the first cam-lock slot is 20cm above the floor beam since the first cam-lock on the wall panel starts 20cm up from the lower edge.

While the corner post is being held up and you have verified that its first cam-lock will align correctly with the wall panel; raise the wall panel up and rest it on the floor beam or plate with the cam-lock holes facing the inside of the coldroom.
Use the Allen wrench to tighten the panel to the floor beam or plate first and then to the corner post.

When done try to pull the corner post off the wall panel to test whether the cam-lock actually grabbed onto the post properly. Afterward try to raise the wall panel to verify that the panel also grabbed onto the floor beam or plate.
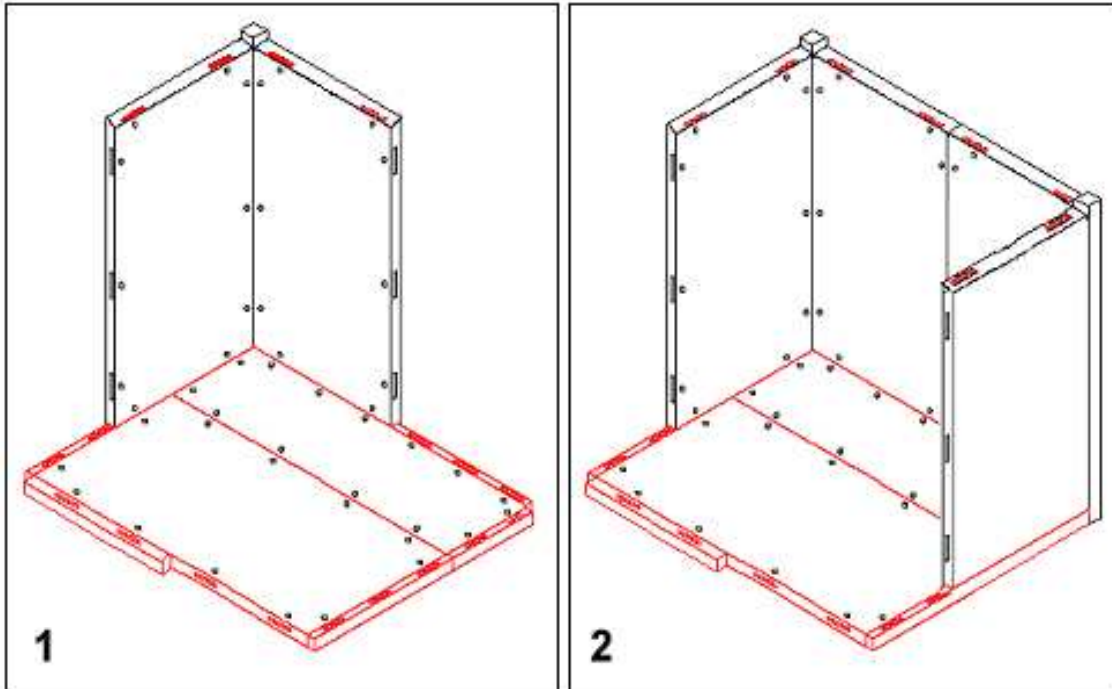
The next wall panel raised should be the perpendicular panel that will lock onto the same corner post. Work outwards from these panels until the walls are complete.
Move around the room, connecting wall panels and upright connectors as necessary.

IMPORTANT: When installing a Slide-in Refrigeration system with the room, be sure to locate the panel on which the Slide-in system will mount. This is determined by which best suits the installation.

Un-box the Slide-in refrigeration system and install it as per the instructions with the unit along with the guidelines in Section….. "Zanotti Slide-in Installation".

7.0 Fitting the Door
The door(s) should be treated as if it were a wall panel and set up in its place accordingly.

NOTE: Doors are shipped in the locked position with the keys taped onto the inside of the door leaf. Please remove the keys from the door before completing the walls!
If you have decided to complete all the walls and ceiling and save the door for last, you might end up with a room with no way of getting in! In this case an extra key will have to be ordered so *please* remove the keys from the door before raising it into place.

Support the single panel in the upright position.
While doing this position the door in correct position and connect to the other side of the upright connector, thus creating a 90° corner section.
When connecting the door, make note that the door panel includes the floor connector which needs to be connected to the floor panel.

7.1 Doors and Freezer rooms

All doors (intended to be used on freezers at < 0 ºC) contain a heating cord that heats the portion of the frame that comes into contact with the rubber from the door leaf so that it will not freeze into place and damage the rubber.

> **NOTE:** **For Freezer rooms the door heater chord will need to be hooked up to your standard line current by a qualified electrician.**
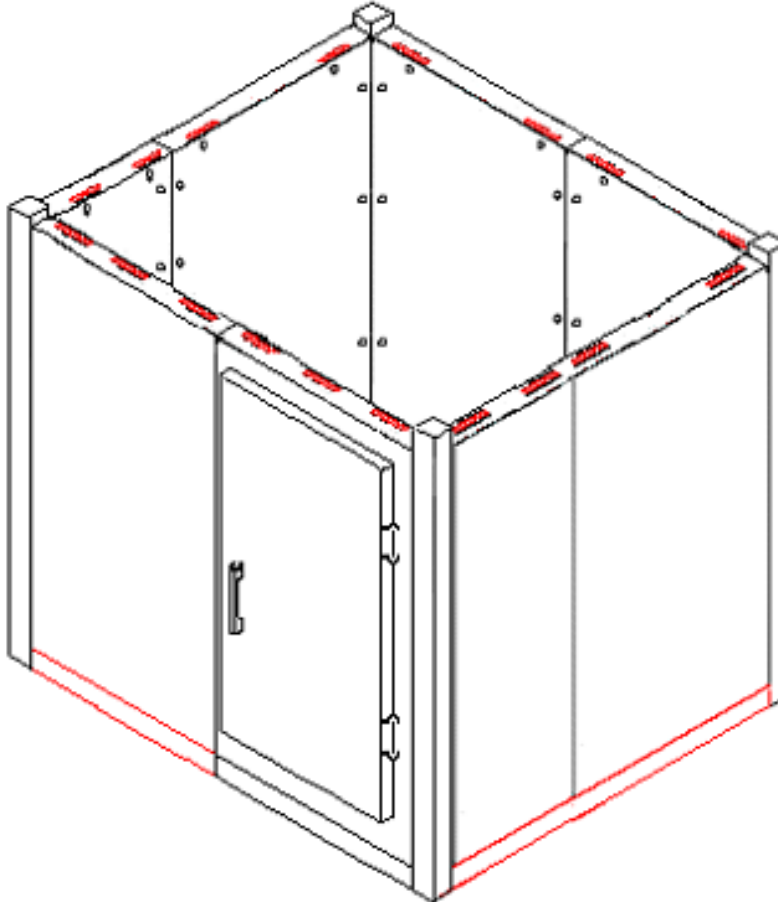
8.0 Ceiling

IMPORTANT NOTE: If you are installing a Slide in Refrigeration unit to the room, it must be installed prior to the roof being attached. Refer to Page 15.

Ceiling beams and panels are the next things to install before the finishing touches can be applied. Once again, please ensure you wear adequate eye protection when raising the ceiling beams into place so that PVC flakes do not fall into your eyes.

8.1 Ceiling Beams.

Ceiling beams are meant to provide an attachment point shared by the wall and ceiling panels. They can often be confused with corner beams since they too have a square cross section whose width is the same as the panel thickness.

Ceiling beams come in the following lengths: 120cm, 160cm, 200cm, and 240cm.

8.2 Installing the ceiling beams.

Material needed:
- Ceiling beams
- Allen wrench - found inside the Accessory (KITCMA) Box.

Setting up the ceiling beam is as simple as laying them on top of the wall and tightening the cam-locks from the wall panel so that it grabs onto the beam.

Position the ceiling connectors on top of the wall panels with the connecting slots facing into the room. Connect all ceiling connectors in place, noting that they will fit tightly into position and may require a small amount of force to push into place

After you have aligned and secured the ceiling beam try to raise it from the wall to ensure that all the cam-locks have properly latched onto it. Work your way around the room until all the ceiling beams have been placed according to the layout provided with your coldroom.

The diagram below shows the recommended order in which the room should be constructed once the floor is down. It may be preferred to install the roof beams before both corner posts are positioned as shown in the diagram.
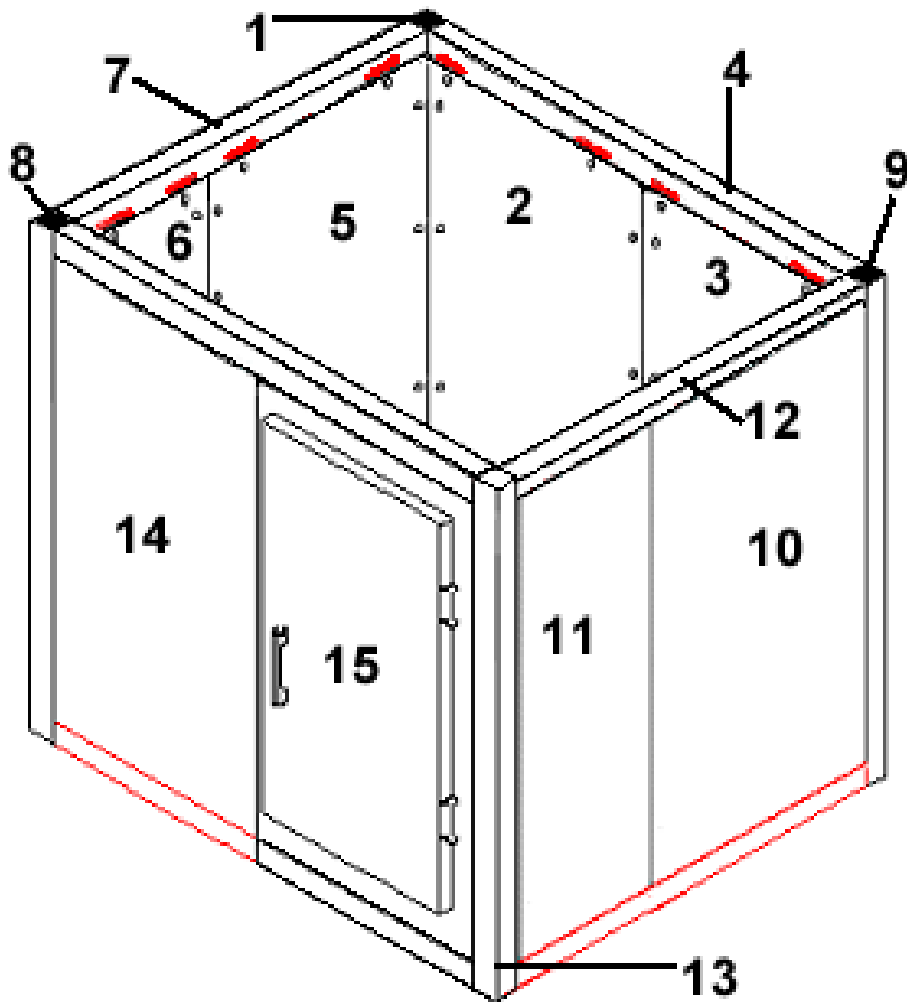
8.3 Ceiling Panels:
Ceiling panels, due to the nature of their purpose, are often longer than wall panels. They should always be installed exactly as depicted by the provided diagram.
Their structural strength is designed to support one man and a toolbox. Of course the weight of men and tool boxes can vary greatly. However, the actual maximum weight allowed also depends on the thickness of the panel as well as the length.

Please contact your direct supplier for specific information.
Ceiling panels come in the following widths: 40cm, 80cm and 120cm.

8.4 Installing the ceiling panels:
Material needed:
- Ceiling panels
- Allen wrench - found inside the Accessory (KITCMA) Box.

1 person holds the first ceiling panel in its appropriate location at the end of the coldroom making sure that the cam-lock holes face the inside of the coldroom while the other person tightens the cam-locks so that they grab onto the ceiling beam.

After positioning the 1st ceiling panel into place, take remaining ceiling panels and position and lock into place ensuring all cam-locks are locked into position.

All ceiling beams must be supported on at least two sides before weight can be applied onto it. (Support offered by other panels is not considered sufficient.)
Because of this, the ceiling panels often transverse the entire width of a coldroom.

For example: if you order a coldroom that's 160cm x 240cm you will most likely receive two 120cm x 160cm panels to stretch across the Coldrooms width.
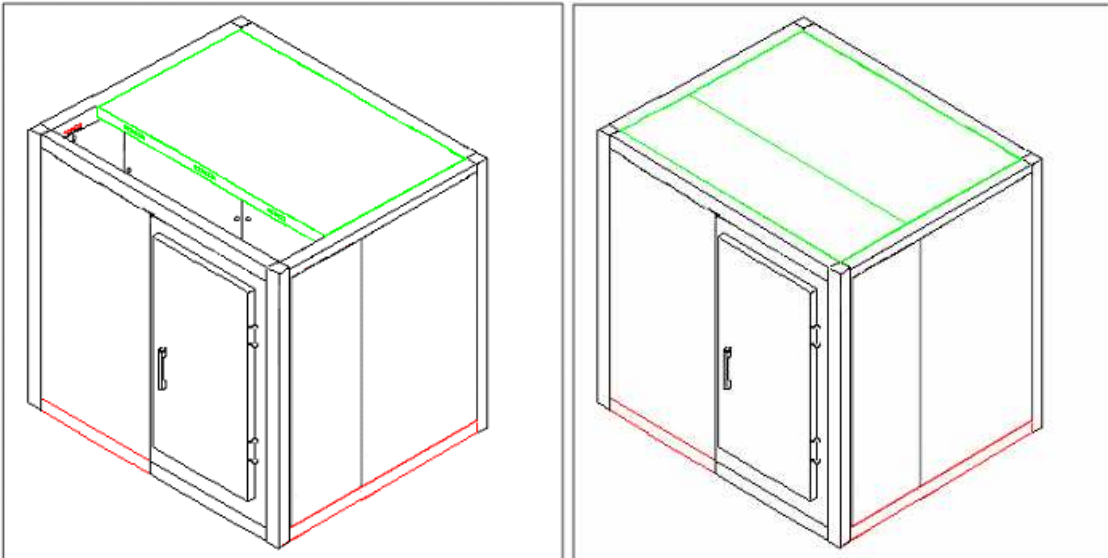
8.5 Silicon Sealing the room

Upon completion of the modular room installation you should now seal any areas that may require it, specifically the sealing between the panel joints.

- Freezer Rooms - Silicon must be used to seal **ALL** joints.
- Cool Rooms – Silicon sealing is at the discretion of the installer apart from the floor which must be sealed along with any gaps.

NOTE: All construction surfaces are different therefore each room will assemble differently. Small gaps may be present and must be sealed accordingly. A good test once the room is built is to close the door and look for any places where light is visible.

Additional Room Components

9.0 Door Bells

Where a customer requests it, Bromic supply a Door Bell with the Modular room kit. These are generally a standard designed manually operated Door Bell which fit to the outside of the cold room door, with a key through to the inside where the bell can be operated.

Installing Door Bells

Material needed:

- Door
- Bell with key
- Drill or hole saw

1. Firstly determine position on the door where the Bell is to be mounted and mark where hole is to be made for "key".
2. Drill the hole and mount the Bell assembly according to mounting requirements.

9.1 Cold Room Coving (Internal only)

Local area Health codes may require Internal Coving to be installed.
Where requested by the Customer Bromic supply aluminium coving in lengths of 6.5m. The number of lengths provided with the room is dependant on the room size.

If upon arrival at a room installation and you are advised internal coving is required please contact Bromic.

Installing Coving

Material needed:

- Coving
- Corner Clips
- Hack-saw
- Silicon

How to install the coving.

1. Install the 4 Coving corner clips in position
2. Measure the internal edges of the room and cut coving into required lengths
3. Lock coving into position using the corner clips
4. Silicon seal the coving along all edges so that no foreign matter can enter

9.2 Shelving

Shelving is an optional Modular Cold room accessory provided by Bromic and is available in a range of sizes to suit the specific room size. The shelving will be

delivered with the Modular room and is in kit form ready for assembly as per the instruction provided.

If upon arrival at a room installation and you are advised shelving is required – please contact Bromic.

Installation of Zanotti Refrigeration Units

10.0 Installing the Zanotti

> **IMPORTANT NOTE: ALWAYS FOLLOW THE MANUFACTURERS INSTALLATION INSTRUCTIONS & WARNINGS THAT ARE PROVIDED WITH THE ZANOTTI UNIT.**

Materials Needed:
- angle grinder or a jigsaw and a drill with 22mm hole saw
- lifting equipment

> **WARNING: Zanotti Units are heavy. Use appropriate equipment & observe relevant Occupational Health & Safety requirements when installing.**

- 10mm x 10mm conduit for Zanotti wiring

Special Notes:
- Cut the wall/roof panel for the Zanotti prior to assembly.
  This is best done using an angle grinder (a jigsaw may also be used)
- Slide in systems must be installed before the attaching the roof, Drop in systems can be installed after roof is in place.
- The explosion port must not be installed near the evaporator as it will draw in outside air and cause frosting problems (on the evaporator)
- Before starting the Zanotti unit the room panels must be cleaned down to ensure there are no marks on the panels and all plastic is removed
- When installing allow enough free room for door opening, correct use and easy maintenance in safe conditions.

Installation Overview:
- Prepare the cuts and holes in the cold room panel wall where the Zanotti unit is to sit using a marker and a ruler to mark out the position of the cuts. *(Refer to the information provided with the Zanotti unit.)*
- Using an Angle Grinder (or a Jigsaw) cut the marked holes out of the panel, and using a Drill, Drill the hole for the drainage tube.
- Using at least **Two** people (or lifting equipment) lift the unit into position and fix it into place.
- Drop in units are to be silicon sealed inside & above the room around the unit, Slide in units are to be siliconed around the cuts in the panel
- All wiring for components including control panel are connected. *(Refer to the information provided with the Zanotti unit.)*
- Turn on Test run unit and run room to temperature to customer specified temperature set point
- Ensure door heater is operational on freezer rooms
- Test light & defrost operation. <END>