

**Multisystem** is a modular and extensive range of cold rooms. The modular and comprehensive nature of the accessories permits both simple and complex configurations with camlocks, the possibility of future development and the use of few types of panels to create cold rooms in a great variety of sizes. The system stands out, among other things, for its rounded internal corners.

**Wall panels:**

Sandwich panels consisting of rigid polyurethane foam between 2 metal sheets. Available in 4 thicknesses of 60 – 80 – 100 – 140 mm and in 6 widths of 200 – 400 - 600 – 800 – 1000 – 1200 mm. The lengths are in multiples of 200 mm, from 400 mm and up to a max of 4000 mm. The standard internal height of the multisystem rooms can be 2030 – 2230 – 2430 – 2830 – 3230 mm.

**Metal supports:** Standard: Sendzmir galvanized sheet metal 0.6 mm thick, pre-varnished with a 30 micron layer of white RAL 9010 ( $\Delta E < 1$ ) polyester paint, suited to contact with food (refer to Infotec G-00.04 annexed to this technical dossier). There are various panel finishes available on request, such as sheet metal with a 110 micron layer of rigid PVC film (refer to Infotec G-00.03 annexed to this technical dossier), X5CrNi18-10 (AISI 304) stainless steel, and stainless steel with a 110 micron layer of rigid PVC film.

**Insulation core:** Standard in polyurethane foam (PUR) without CFCs, Density 41  $\text{Kg/m}^3 \pm 2 \text{ Kg/m}^3$ , Initial thermal conductivity coefficient  $\lambda = 0.023 \text{ W/m K}$ , Closed cells 95%, Adhesion > 100 KPa, Compression  $\geq 150 \text{ Kpa}$ , Blow agent HFC245fa, Range of application – 40 °C to 60 °C.

Thermal transmission coefficient $U_{\text{init}}$ . According to standards EN 13165 - EN 14509				
Thickness mm	60	80	100	140
$\text{W/m}^2 \text{ K}$	0,39	0,29	0,23	0,16

**Environmental Compatibility:** Index of the global warming potential GWP = 950, Index of ozone depletion potential ODP = 0

**Reaction to fire (Euroclass) according to EN 13501-1:** Standard class **B s3 d0**.

**Fastening devices:** Double-acting camlocks along the perimeter of the panel, embedded in the polyurethane foam at suitable points for creating multiple modules of 200 mm, tensile strength > 350 dN.

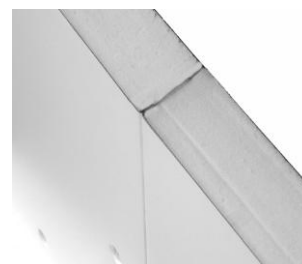
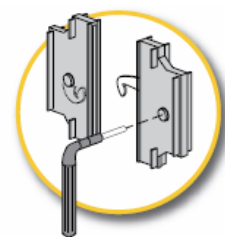
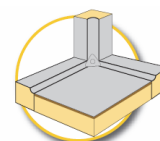
**Alignment devices:** There are tongue and groove (Corner Line) alignment devices in the 4 corners of the panels that facilitate assembly. There are also other alignment (In-Line) devices on the longer sides of the panels, between the camlocks, to help support ceiling applications.

**Joints between the panels:** The perimeter of the panels is smooth and consists of expanded polyethylene gasket which guarantees the heat resistance of the joint after mechanical fastening with the camlocks.

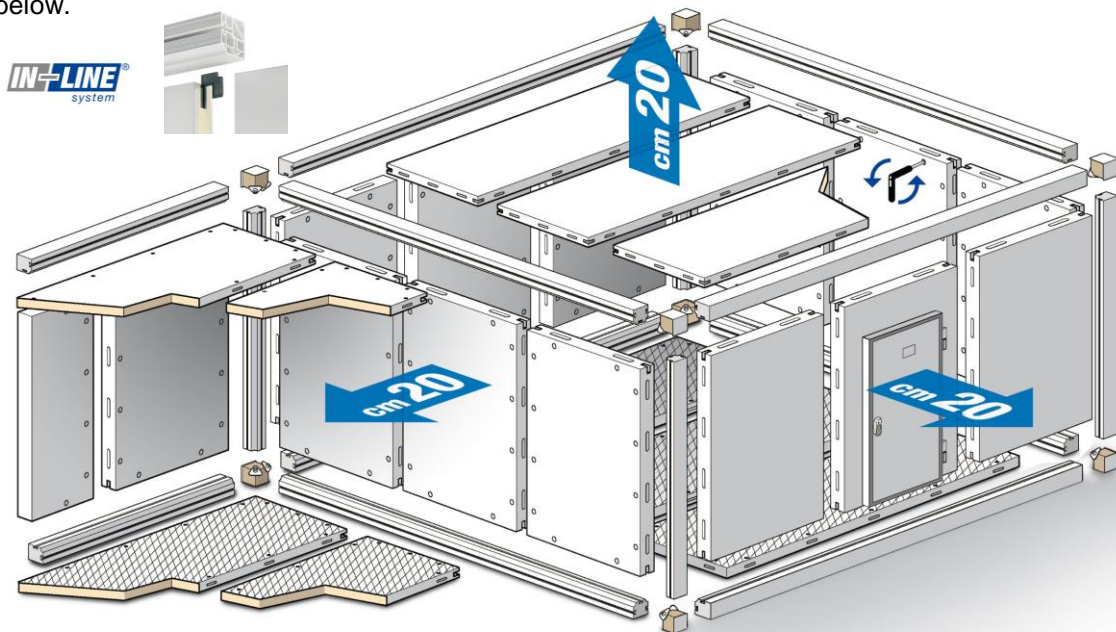
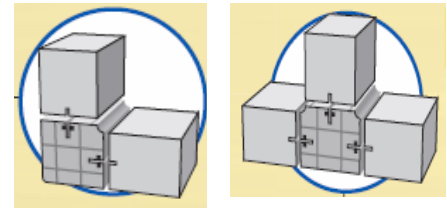


**ANGOLI  
ARROTONDATI  
INTERNI**

Rounded internal corners  
Angles intérieurs arrondis  
Abgerundete Innenecken



- **Corner joints between the Walls, the Ceiling and the Floor:** The Multi system consists of a range of profiles for connecting all the parts that make up the cold room with camlocks, as shown in the exploded drawing below. These profiles have a rounded internal corner with a radius of 15 mm which, when connected to the panels, forms a hygienic seal on the inside that is easy to clean, in conformity with European regulations. These can be made of shock-resistant, non-toxic and self-extinguishing honeycomb PVC, or of PUR foam in between 2 metal sheets with the same characteristics as the panels (multi “L” version); in both cases, there are metal hinges along the length of the panels on which are connected the eccentric hooks on the edges of the panels – all this and the expanded polyethylene gasket guarantee the thermal resistance of the joint. The profiles can be 2-way for use along the sides or 3-way for creating partition walls.
- **The modular multisystem:** the components of the system are shown in the exploded drawing below.



#### Floor panels:

- ✓ **Standard** with 0.7 thick galvanized sheet metal floor with a 200 micron layer of rigid PVC film, grey in colour, R9 anti-slip, a 10 mm chipboard reinforcement glued onto the metal sheet, and polyurethane insulation injected at high pressure with a density of  $43 \text{ Kg/m}^3 \pm 2 \text{ Kg/m}^3$  and a 0.6 mm thick outer panel of Sendzmir galvanized sheet metal pre-varnished with a 30 micron layer of white RAL 9010 polyester paint.  
 Capacity: Evenly distributed static load  $3000 \text{ Kg/m}^2$ ,  
 Concentrated load:  $300 \text{ Kg/50 cm}^2$ , Maximum dynamic load on 1 rubber wheel with a minimum contact surface of  $3 \text{ cm}^2$  90 Kg. Conditions for application: Constant pressure on a perfectly level and even floor (without subsidence), or on 60 x 40 mm honeycomb PVC profiles spaced 400 mm apart, in which case the capacity decreases by 30%.



- ✓ **Standard IR (stainless steel R11):** a floor consisting of a 0.7 mm sheet of reinforced stainless steel with chequered and satin polished surface finish, R11 anti-slip, a 10 mm chipboard reinforcement glued onto the metal sheet, and polyurethane insulation injected at high pressure with a density of  $43 \text{ Kg/m}^3 \pm 2 \text{ Kg/m}^3$  and a 0.6 mm thick outer panel of Sendzmir galvanized sheet metal pre-varnished with a 30 micron layer of white RAL 9010 polyester paint.  
 Capacities: Evenly distributed static load  $3000 \text{ Kg/m}^2$ , Concentrated load:  $300 \text{ Kg}/50\text{cm}^2$ , Maximum dynamic load on 1 rubber wheel with a minimum contact surface of  $3 \text{ cm}^2$  90 Kg. Conditions for application: Constant pressure on a perfectly level and even floor (without subsidence), or on 60 x 40 mm honeycomb PVC profiles spaced 400 mm apart, in which case the capacity decreases by 30%.

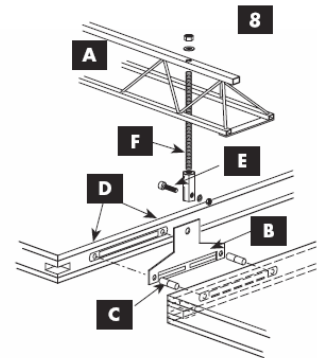
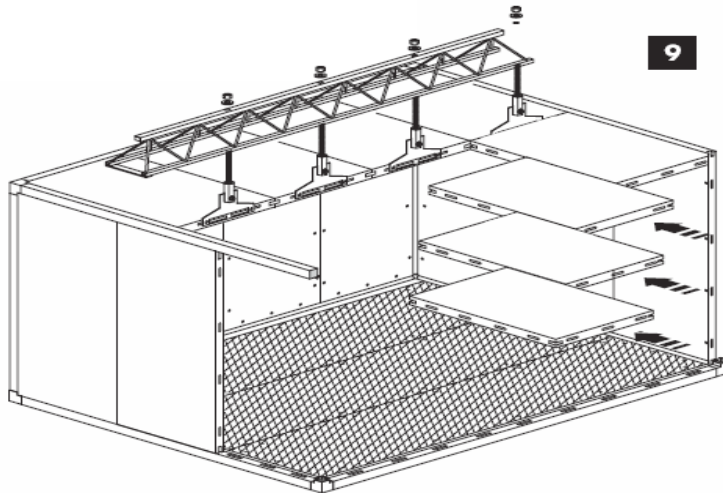


- ✓ **Reinforced with ST Phenolic Stratified laminate:** a floor consisting of a 10 mm layer of Phenolic stratified laminate integrated with the polyurethane foam, with orange peel surface finish, R10 anti-slip, and polyurethane insulation injected at high pressure with a density of  $43 \text{ Kg/m}^3 \pm 2 \text{ Kg/m}^3$  and a 0.6 mm thick outer panel of Sendzmir galvanized sheet metal pre-varnished with a 30 micron layer of white RAL 9010 polyester paint.  
 Capacities: Evenly distributed static load  $4500 \text{ Kg/m}^2$ , Concentrated load:  $800 \text{ Kg}/50\text{cm}^2$ , Maximum dynamic load on 1 rubber wheel with a minimum contact surface of  $3 \text{ cm}^2$  240 Kg. Conditions for application: Constant pressure on a perfectly level and even floor (without subsidence), or on 60 x 40 mm honeycomb PVC profiles spaced 400 mm apart, in which case the capacity decreases by 30%.



- ✓ **Super-reinforced with ST Phenolic Stratified laminate:** a floor consisting of a 10 mm layer of Phenolic stratified laminate with internal supporting structure integrated in the polyurethane foam, with orange peel surface finish, R10 anti-slip, and polyurethane insulation injected at high pressure with a density of  $43 \text{ Kg/m}^3 \pm 2 \text{ Kg/m}^3$  and a 0.6 mm thick outer panel of Sendzmir galvanized sheet metal pre-varnished with a 30 micron layer of white RAL 9010 polyester paint.  
 Capacities: Evenly distributed static load  $5500 \text{ Kg/m}^2$ , Concentrated load:  $1000 \text{ Kg}/50\text{cm}^2$ , Maximum dynamic load on 1 rubber wheel with a minimum contact surface of  $3 \text{ cm}^2$  300 Kg. Conditions for application: Constant pressure on a perfectly level and even floor (without subsidence), or constant pressure on metal profiles, code 02940004.

- Ceiling panels:** The panels are the same as the ones used for walls and are self-supporting for ceilings up to 4000 mm, but cannot be used to walk on or for storing materials, even temporarily. In the case of larger ceilings, i.e. when both sides of the room exceed 4000 mm, a layer of two or more panels is required; the ceiling is hung from trusses at a height of between 350 and 550 mm according to length. The suspended system is shown in pictures 8 and 9.

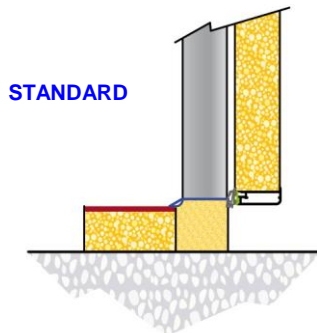


- A = Truss
- B = Suspension plate
- C = Steel pins
- D = Holes for the pins on eccentric hooks
- E = Hexagonal joint with TE M8 screw
- F = M8 threaded bar with hex nuts

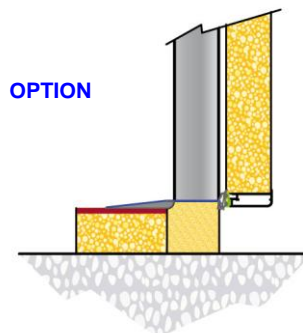
- Doors:** cold room can have one or more hinged or sliding doors. The door provided as standard is a hinged one measuring 950 x 1900 H, mounted directly on a suitably reinforced panel with the same properties as the wall panels. For more detailed information and details on doors of other sizes, refer to **Infotec M-05.01** (Multi hinged doors) and **Infotec M-05.02** (Multi sliding doors), annexed to this technical dossier.



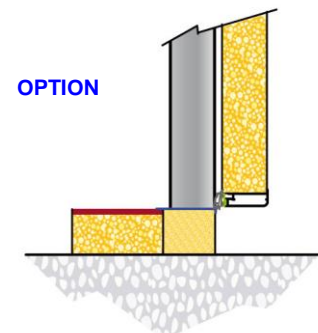
- Types of thresholds:** The thresholds for cold room doors can differ according to needs. The floor is usually below the level of the door for health reasons, unless specified otherwise, so the standard threshold is in the form of a step. If the user needs to be able to roll trolleys into the cold room, this step can be removed on request and the door fitted flush with the floor; in which case the customer has to specify the position of the door. The types of threshold are shown below.



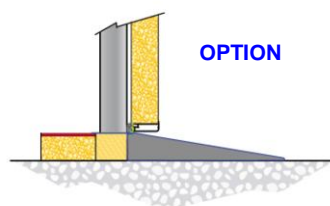
STEP THRESHOLD



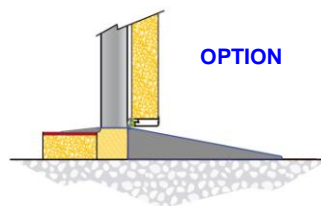
STEP THRESHOLD WITH  
 INTERNAL DOWNWARD RAMP



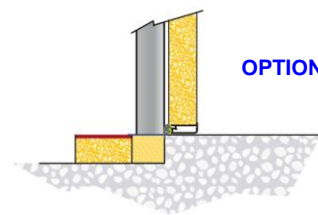
THRESHOLD FLUSH WITH FLOOR



STEP THRESHOLD WITH  
 EXTERNAL DOWNWARD RAMP

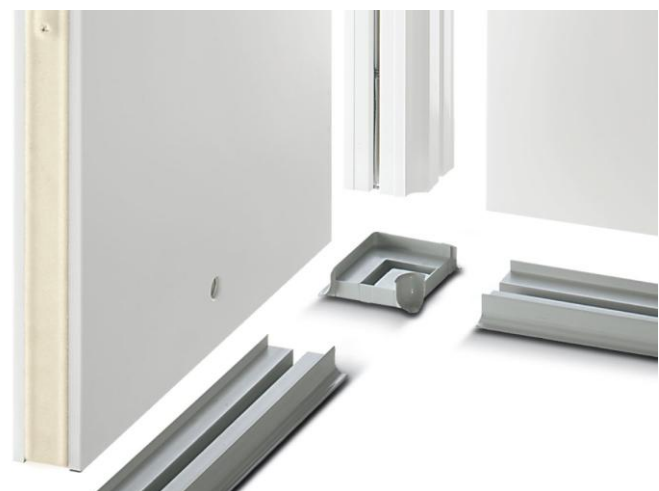


STEP THRESHOLD WITH  
 INTERNAL AND EXTERNAL  
 DOWNWARD RAMP



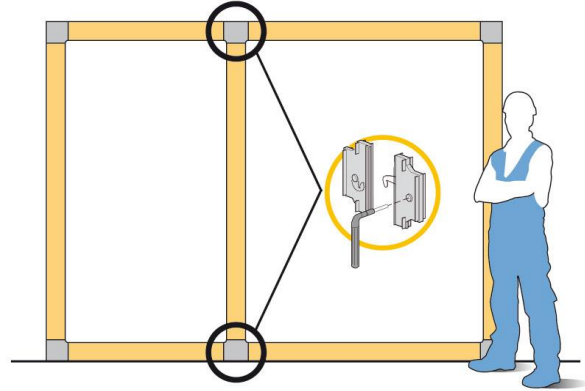
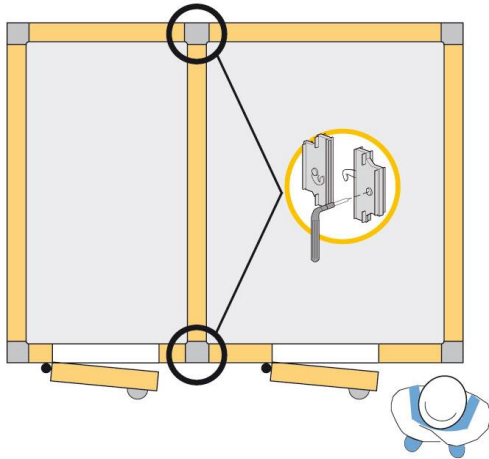
THRESHOLD FLUSH WITH  
 EMBEDDED FLOOR

**Configurations without floor:** In the case of cold rooms at above-zero temperatures, the walls can be fitted directly on the original floor. There are U-shaped profiles and corner pieces for this very purpose, that also keep all the internal edges perfectly smooth, in keeping with the entire system. In the case of low temperature applications with traditional insulated floor, it is advisable to install ventilation systems to prevent the ground underneath from freezing and causing serious structural problems. Please do not hesitate to contact our technical office for further information and/or advice.

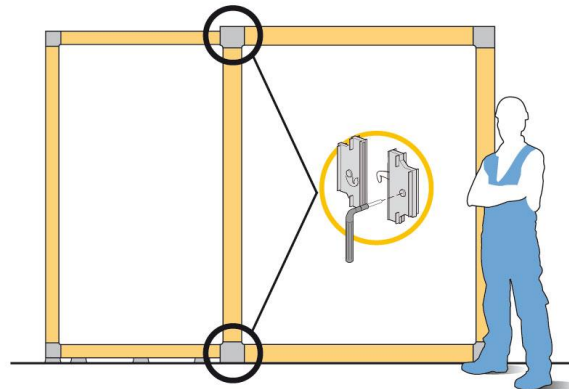
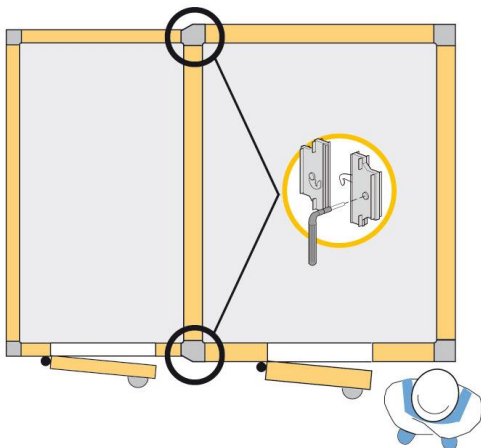


## POSSIBLE CONFIGURATIONS AND COMBINATIONS:

### Rooms with modular partitions



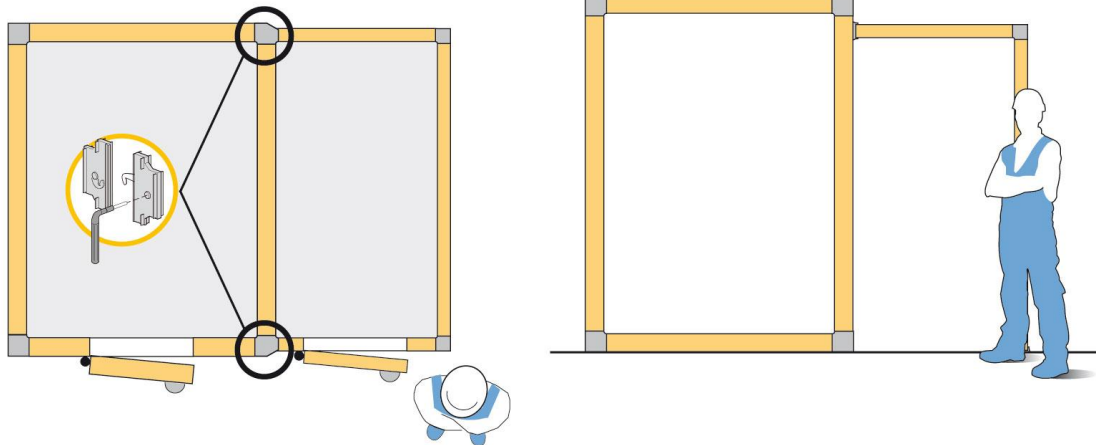
### Cam-locked rooms, with floor, of different width



### Cam-locked rooms, with floor, of different height



### Cam-locked rooms, with/without floor, of different width and height



### Accessories: Compensation valves

You are advised to install suitable pressure compensation valves to avoid the build-up of pressure in the cold rooms due to the contraction of the volume of air as it cools down, as this can subject the panels to stress and cause structural damage to the same panels and/or the supporting structures. These valves control the pressure in the cold room in relation to external pressure. Compensation valves for cold rooms at low temperature have an internal electric element that prevents ice from forming and blocking the floating fender. To determine the number and size of the compensation valves required, you need to know the working conditions of the cold room unit, for example: the speed at which the temperature is lowered over time, the temperature at which the goods are put in, and the average quantity of goods stored in the cold room. As INCOLD S.p.A. cannot normally know this data, it is the responsibility of the person who installs the cold room to determine the necessary parameters and establish the number and type of compensation valves required. General information on installation and sizing is given in Indotec F-00.16 annexed to this Technical Dossier.

**Installation, use and maintenance:** Make sure you have read and understood the **Assembly Instructions** annexed to this technical dossier. Cleaning instructions, instead, are given in **Infotec M-00.07** annexed to this Technical Dossier.

### References:

**Infotec G-00.03** Plastic coated sheet

**Infotec G-00.04** Pre-varnished sheet

**Infotec M-05.01** Multi hinged doors

**Infotec M-05.02** Multi sliding doors

**Infotec F-00.16** Compensation valves

**Assembly instructions:** IT code 04030435 – GB code 04030436 – D code 04030437 – F code 04030437