

Moduline Style MCS MFS and MWS Radiant Panels

Installation Guide



**INSTALLER : IT IS IMPORTANT TO LIASE WITH OTHER TRADES WHEN
INSTALLING MODULINE RADIANT PANELS**

Introduction

This booklet provides instructions to identify, handle, install and commission MHS Moduline Style MCS, MFS and MWS radiant panels. The instructions apply to panels from the standard range only. Please study the instructions carefully before commencing any installation work.

Identification

Refer to Diagram 1. On larger or more complex installations, MHS may provide a base board layout (BL) drawing which will show details of each panel run, dimensions and panel part numbers. If specified on the order, each panel will be marked with a unique individual stencil reference, which may also be shown on the BL drawing.

Description

Moduline Style MCS MFS and MWS comprises aluminium alloy sheet panel bonded to an extruded aluminium channel profile; copper tube (carrying the hot water) is mechanically located inside the extruded channel with spring clips. Insulation is fitted to the upper side of the panel to prevent heat loss upwards from the panel.

Standard range of panels & sizes

Each panel type is in four tube (4T) variants and are available in three different panel types:

EB - end panel

EC - connection panel

ED - single (stand-alone) panel

Panels are available in the following nominal lengths:

600mm, 1200mm, 1800mm, 2400mm and 3000mm

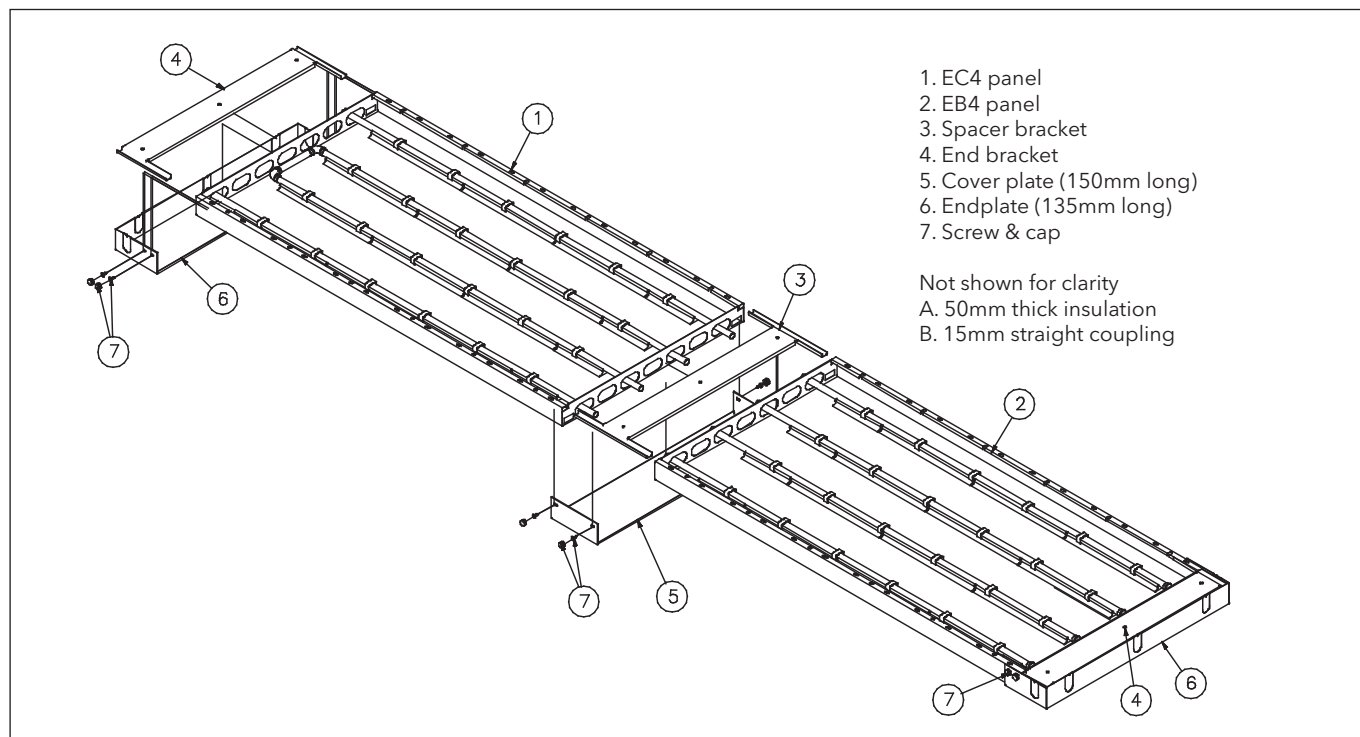


Diagram 1: Moduline Style MCS4T - typical panel run

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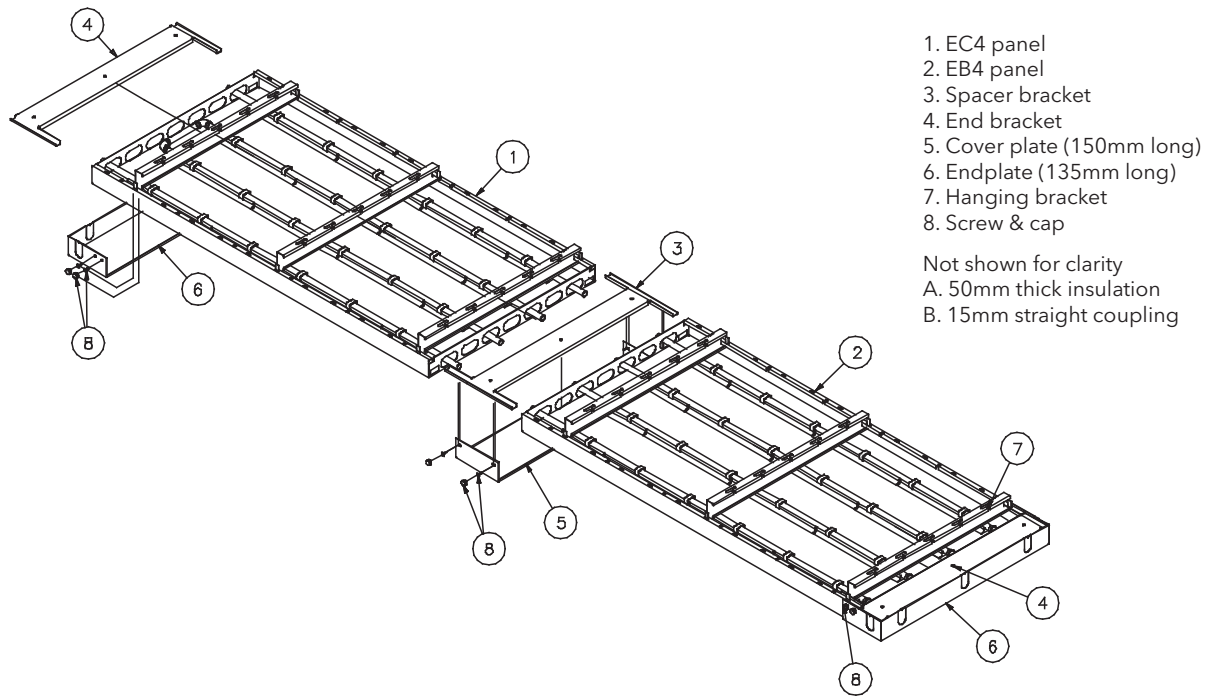


Diagram 1: Moduline Style MFS4T - typical panel run

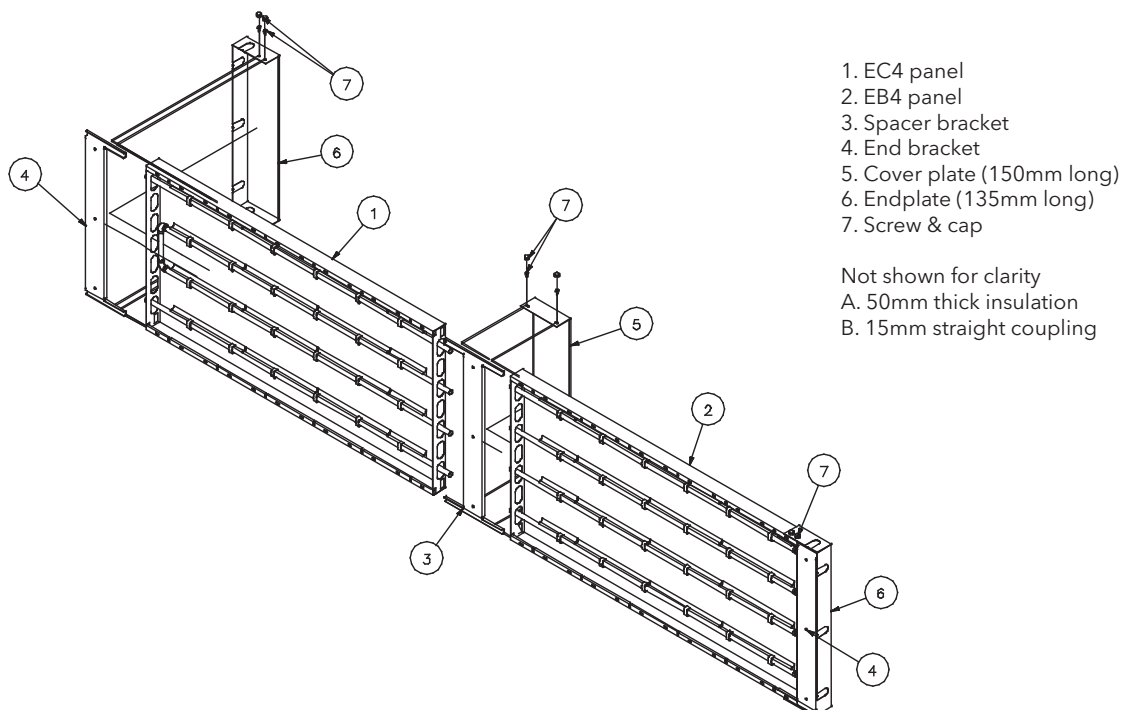


Diagram 1: Moduline Style MWS4T - typical panel run

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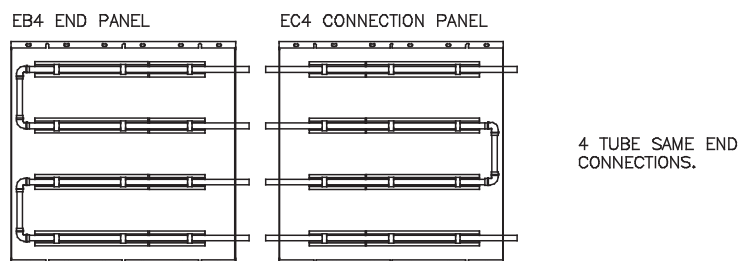


Diagram 2: Typical panel arrangements over 3000mm length

Construction

Delivery

The purchaser is responsible for off-loading, and must examine the radiant panels promptly upon receipt. Any claims for damage will only be accepted if, at the time of delivery, the consignment note is endorsed with the details and counter signed by the transport driver.

Handling

Radiant panels are usually palletised so a fork-lift or similar will be required for lifting. Individual panels can usually be handled by one or two persons. Panels must not be dropped or suffer impact in any circumstances.

Storage

Radiant panels should be stored in clean, dry indoor conditions. Packaging should not be removed until the panel is required for installation (the radiant surface of each panel is covered in a protective film which should be removed when installation and commissioning is complete). Any packaging should only be removed if damage is suspected at the time of delivery.

Preparation

Moduline Style MCS radiant panels are intended for horizontal installation onto a ceiling surface; Style MWS onto a vertical wall surface and Style MFS to be suspended from drop-rods or similar. It is important to liaise with other trades to co-ordinate installation. Provision must be made for proper fixings; the ceiling, soffit or structure must be suitable to accept proposed fixings such as expanding anchors, drop rods, lindaptors etc. Refer to Table 1 for panel masses.

Access is recommended for maintenance i.e. pipe connections. Ceiling tiles, builders work etc should be removable with sufficient clearance. Moduline should be free to expand during normal operation.

Warning

Some components may have sharp edges. Care must be taken when handling the product and protective gloves should be worn.

Nominal panel length (mm)	600	1200	1800	2400	3000
Mass of panel 4T (kg)	4.3	8.5	12.8	17.1	21.3

Table 1 : Masses of Moduline Style MCS, MFS and MWS radiant panels

N.B. Style MCG panels have a nominal installed mass of approximately 10kg/m²

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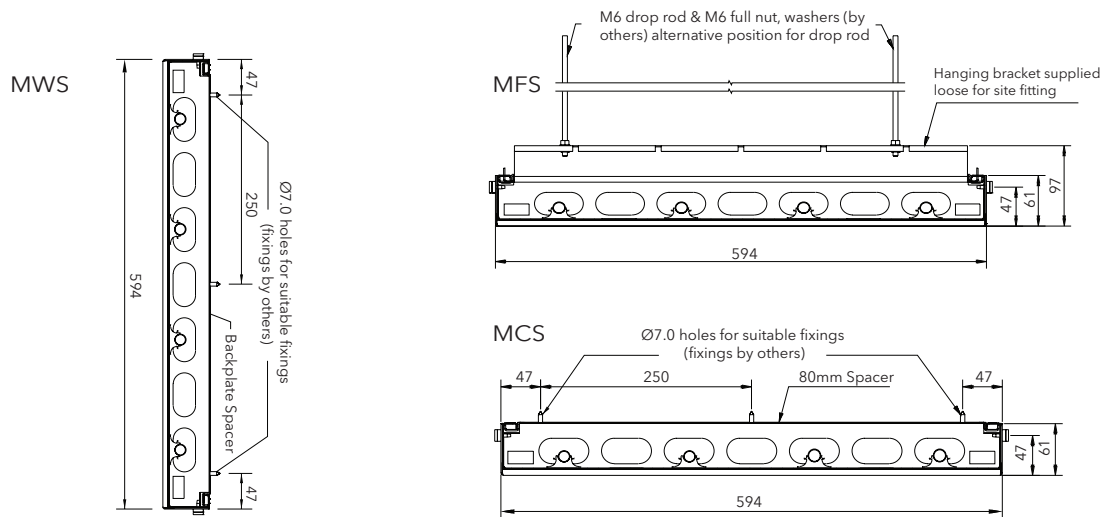
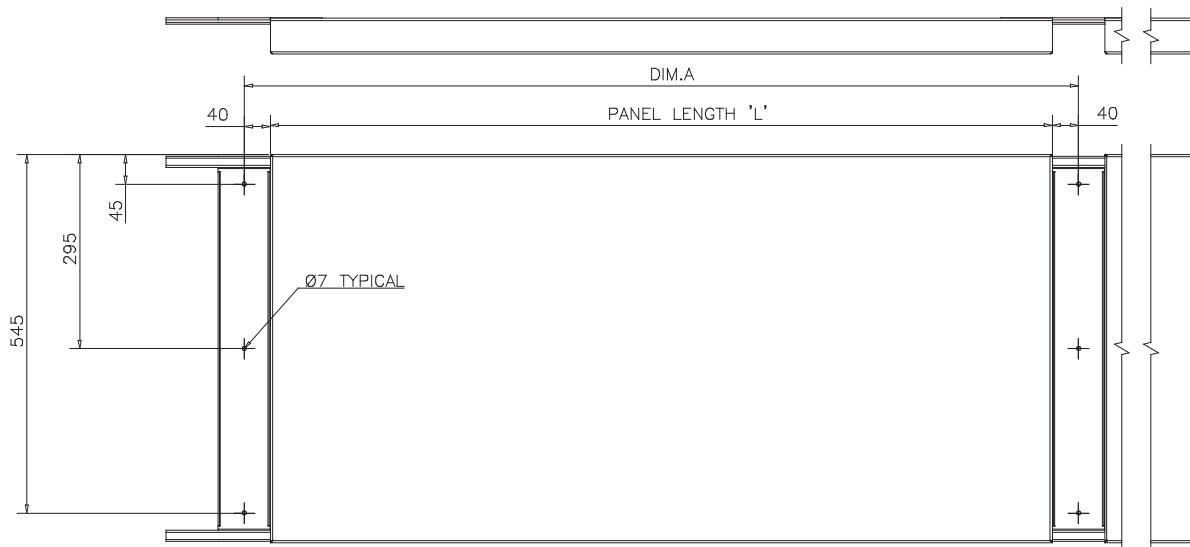


Diagram 5: Typical section detail for installation; Styles MCS4T, MFS4T and MWS4T



NOTES:

1. Positions of holes in spacer detailed above (fixings by others)
2. Additional holes can be sited drilled to provide additional or alternative fixing points as required.

Diagram 6: Fixing bracket details for Moduline Styles MCS and MCS

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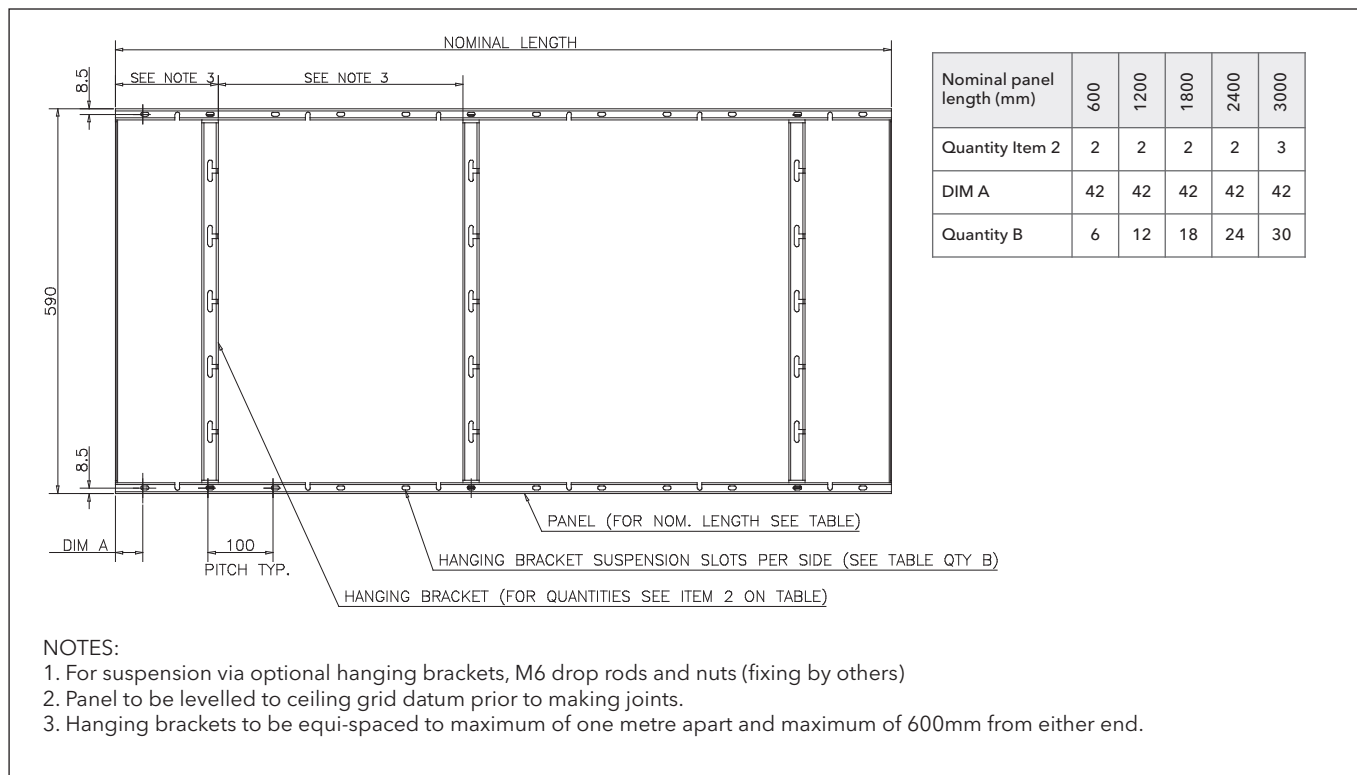


Diagram 7: Suspension point locations for Moduline Style MFS

Installation

General

Refer to the layout drawing for panel arrangement. Panels can be installed before or after a ceiling is installed. When two panels are to be installed in a run, then pipework is interconnected using 15mm straight couplings.

Fitting

1. Prepare suitable fixings to accept the radiant panels. Refer to Diagrams 5 and 7 for fixing positions.
2. Style MFS - Suspend the panels to appropriate level. Note that panels can be suspended by one of the following options (see Diagram 7.)
 - Drops rods fixed directly to the panel
 - Drop rods fixed to the Hanging Brackets
 - Suspension wires directly to the panel
 - Suspension wires to the Hanging Brackets
3. Styles MCS and MWS - Starting at one end, fit an end bracket, offer up the first panel and slide fully onto the end bracket. With the panel held in place, slide a connection bracket or end bracket fully into the other end of the panel and fix to the mounting surface. (see Diagram 6).
4. If two panels are to be installed in a run then fit the pipe couplings to the first panel. Fix the second panel level to the first panel and engage the pipes of both panels into the couplings, using compression nuts and olives. Check that all panels are located correctly and in a straight line before tightening joints. Tighten all joints by hand then tighten further 1 ¼ turns (see Diagram 8).

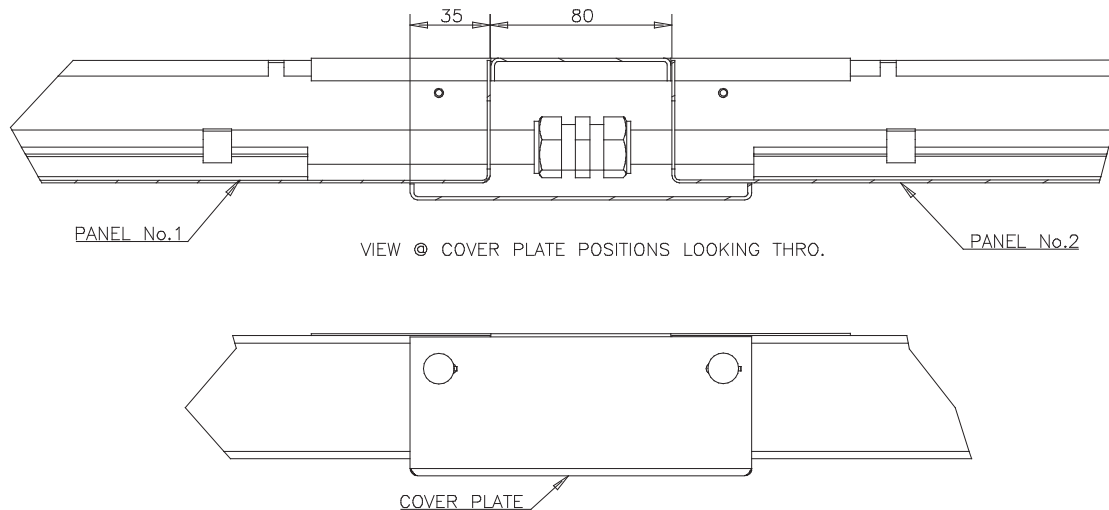
5. Ensure that panels are interconnected correctly. EC panels are positioned at the connection end (flow and return) of panel run, whereas EB panels are positioned at the opposite end. ED panels are single (stand-alone) panels. (see Diagram 4).
6. Refer to Pipework Connections for connecting the panels to the mains.
7. Fit the end cover plates and connection cover plates with self-drilling/self tapping screws and screw caps provided
8. Refit the insulation and leave the protective film on the radiating surface until installation and commissioning is complete.

Pipework connections

1. Connection to the mains is made via EC and ED panels. Panels have Ø15mm copper tube tails formed upwards for connection from above. Flow and return connections are interchangeable.
2. The installer must provide suitable fittings to connect the panels. Flexible hoses are recommended to allow for rapid installation and flexibility.
3. Local isolating and regulating valves are recommended, as well as drains, vents and strainers.

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NOTES:

1. Suspend panel No.1 and level to required invert.
2. Fit compression fittings and olives on to tube ends of panel No.1 and tighten nuts by hand as far as possible, hold the body of the coupling and then tighten the compression nut approx. 1¼ turns.
3. Fit compression fittings and olives on to tube ends of panel No.2
4. Suspend panel N.2 and level to first panel and required invert.
5. Offer free end of each coupling to tube end of panel No.2
6. Move panels together so that the tube fully engages with panel No.2 tubing, distance between them is approx. 80mm
7. Tighten nuts by hand as far as possible. Hold the body end of coupling and then tighten the compression nut approx. 1¼ turns.
8. Apply hydraulic test to all joints. Maximum test pressure 12barg. Maximum working temperature of 90° and maximum working pressure of 6 barg.
9. Position cover plate and secure with self tapping & cap 2 No. per side

Diagram 8: Installation detail of Moduline Styles MCS, MFS and MWS - standard joint

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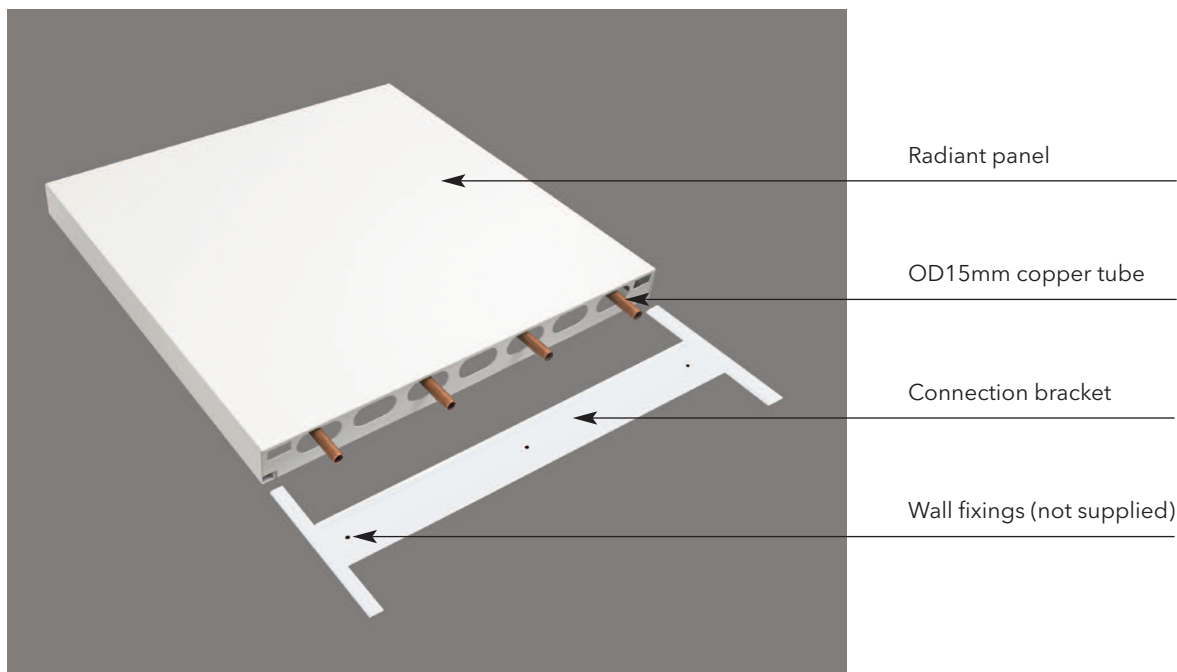


Diagram 10: Moduline MWS

Commissioning

1. Check the fastness of all fixings. Ensure that the insulation is fitted correctly and that the radiating surface is not damaged.
2. Purge the air from the system using air vents in the mains.
3. Check pipe connections for leaks.
Refer to Table 2 for test and working pressures.
4. Balance the water flow rate through the panel to accepted practice to achieve the specified flow rate.
5. Refit the connection cover plates and end cover plates, checking they are securely fixed.
6. Leave this document and any layout drawings with the end-user.

Maximum cold test pressure	12 bar gauge
Maximum working pressure at 120°C	6 bar gauge

Table 2 : Recommended test and working pressures

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General Guidance

1. Preparation

Planning and preparation of ceiling openings is important; openings should be uniform, straight and free from all obstructions prior to panel installation. It is essential to co-ordinate all installation works with other trades.

2. Layout

Panel runs should be set out on a layout plan. Radiant panels should be concentrated in areas of highest heat loss i.e. around the outside perimeter of the room, particularly, near windows. This will counteract disproportionately high heat losses. Single or dual circuit runs should be considered- see Water flow rates and Hydraulic Resistances below.

3. Maximum mounting height

There is no maximum mounting height for Moduline. However, when mounting heights exceed 4m, the heat load should be adjusted to allow additional losses of radiant heat incident on walls, and stratification of air which absorbs some heat by convection.

4. Minimum mounting height

There is no minimum mounting height for Moduline. For comfort and safety the following rule of thumb can be applied:-

All Styles

LTHW - minimum mounting height 2.4m

MTHW - minimum mounting height 3.0m Contact MHS for further information on mounting heights and comfort conditions.

5. Panel runs

Refer to Diagram 2 for typical arrangements in a panel run.

6. Water flow rates

To ensure rated heat outputs are achieved, water velocity in the tube should be such the water flow is turbulent. This maximises heat-transfer from the water, through the tube and to the radiating surface. Water flow rates should also be limited to inhibit noise and erosion and high pressure drops. Water velocities should ideally be between 0.3 - 1.0m/s.

7. Hydraulic resistances

Moduline utilises 15mm OD copper tube to transport hot water. To calculate the total pressure drop, determine the water flow rate :-

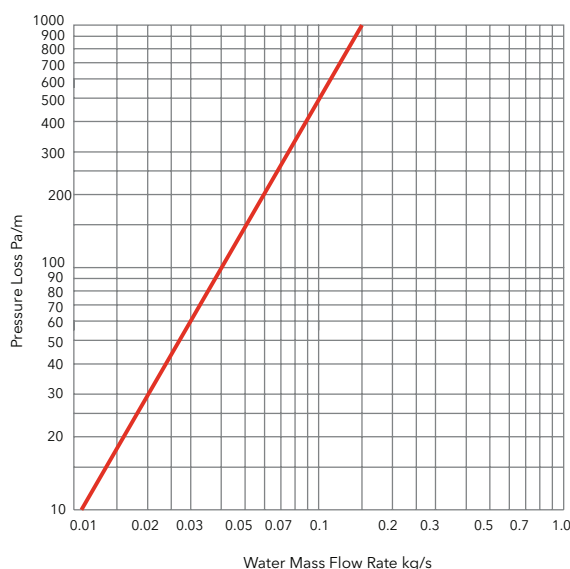
$$\text{Water flow rate (kg/s)} = \frac{Q}{C_p \times \Delta T}$$

Q = total heat output (kW)

C_p = specific heat capacity of water (kJ/kgK); approx. 4.187

ΔT = water temperature drop

Obtain the hydraulic resistance from the graph below.



Maintenance

MHS Moduline radiant panels are essentially maintenance free, with no moving parts. Panel surfaces can be washed with mild cleaner or detergent followed by rinsing. Strong, abrasive or mechanical cleaning should not be used. If panels or accessories become damaged, they can be replaced after isolating, draining and disconnecting from pipework or adjacent panels.

MHS Radiators Limited,
3 Juniper West, Fenton Way, Southfields Business Park,
Basildon, Essex SS15 6SJ
Tel: 01268 546700 Fax: 01268 888260

orders@mhsradiators.co.uk
enquiries@mhsradiators.co.uk
www.mhsradiators.co.uk

SALES OFFICE - 01268 546700

AFTER SALES SUPPORT - 01268 546775