



OPERATOR MANUAL
SCREWS FOR FIXING SANDWICH PANELS TO WOOD AND CONCRETE
MC2S-P TYPE
No. OM_MC2S-P_A19

Installation carried out in an appropriate way, using professional tools is extremely important for proper and safe use of building fasteners. Always follow all instructions listed in this operator manual.

General rules:

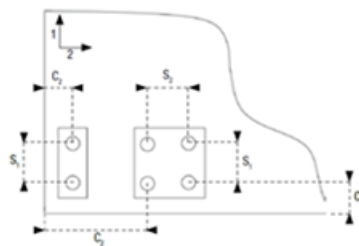
- The operator manual, apply only to original products of Baltic Fasteners Sp. z o.o. bearing the Manufacturer's logo, which allows for their identification;
- The use of screws shall be confirmed by a fixing plan made on the basis of complete building data;
- When carrying out the fixing plan, observe the mounting parameters and take into account the loads of the connections given in valid approval or technical evaluation issued for the product;
- When carrying out the fixing plan, comply with applicable laws and standards;
- The sandwich panel Manufacturer's recommendations must be taken into account;
- The number and type of screws must be in line with the information given in the fixing plan;
- Only tools that are equipped with clutch adjustment should be use;
- Modification of **MC2S-P** screws is not permitted;
- Products may only be used for their intended purpose.

Product selection rules:

- **MC2S-P** screws are subject to **PZH** certificate and may be used in accordance with its provisions;
- **MC2S-P** screws are covered by class **A1** reaction to fire and can be used in this class;
- The corrosion protection of the screws should be suitably selected for the corrosive environment in which they will be used. **MC2S-P** screws are protected against corrosion by coating **PREMIUM** with **540h** resistance in a salt spray test, which allows them to be used in corrosive environments **C3**. Washers **A19** delivered with screws are made of aluminum, which allows them to be used in corrosive environments **C3**;
- The length of the screws should be appropriately selected depending on the thickness of all fixed elements:
 - thickness of the sandwich panel at the fixing point;
 - thickness of **MSW** saddle washers if used;
 - thickness of **MSD** stress diffusers, if used;
 - thickness of **PES** sealing tapes, if used (tape thickness should not be greater than 3mm);
 - thickness of other components, if used.

In addition, the length of the screws should be appropriately selected to embedment depth in the substrate. In case of installation in concrete substrate the following anchoring depths are allowed $h_{ef} = 30, 40$ or 50mm . In case of installation in wooden substrate the following anchoring depth is allowed $h_{ef} = 40\text{mm}$;

- Screws can be used in concrete structures of minimum grade **C20/25** or wooden structures of minimum class **C24**;
- Maximum steel drilling capacity for screws **2 x 1.00mm**. Maximum tool speed **2200rpm**;
- When choosing the length of the screws, the thickness of saddle washers **MSW = 4mm** or stress diffuser **MSD = 1.2mm** must be taken into account;
- No face positioning in one plane, on the inner lining of sandwich panel, cause panel offset from the support. The distance between the inner lining and the support should be taken into consideration when selecting the length of the screws. In addition, during installation, the distance must be filled with a special spacing washer so that the sandwich panels are always mounted perpendicular to the support;
- In order to select the appropriate length of the screws, the thickness of all fixed elements must be summed. Then check in the Baltic Fasteners product catalog exact length of the **MC2S-P** screws that is suitable for fixing the obtained thickness, taking into account chosen embedment depth in the substrate. The sum of the thicknesses of all the elements must be within the range $h_{min} - h_{max}$ given in the catalog; Product catalog is available on the website www.balticfasteners.com;
- Screws can be fixed to a wooden substrate with a minimum thickness of **45mm** or concrete with a minimum thickness of $h_{ef} + 30\text{mm}$ (h_{ef} - embedment depth);
- When fixing the screws to the concrete substrate, the minimum distance from the edge of the concrete support $C_{cr} = 1,5 \times h_{ef}$ and the minimum spacing between the screws $S_{cr} = 3,0 \times h_{ef}$ as shown on the picture below should be maintained (h_{ef} - embedment depth). The amount of space on the support must be sufficient to meet above conditions.



Distance from the edge of the concrete support C_{cr} and the minimum spacing between the screws S_{cr} .

Installation process:

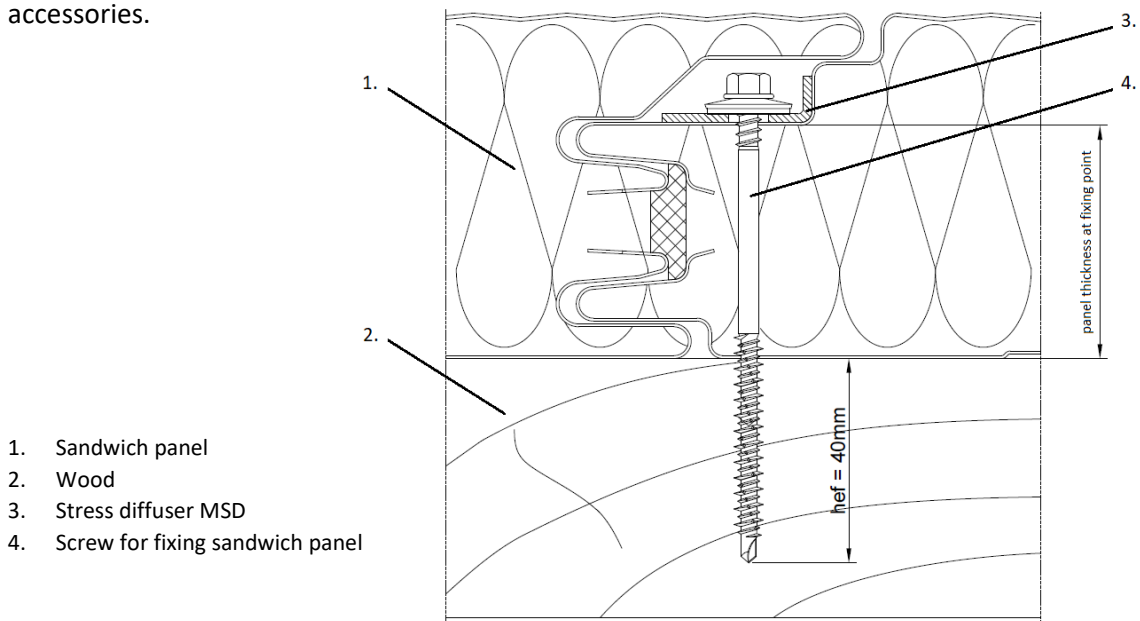
- Place the sandwich panel, following instruction provided by the panel Manufacturer. Use of the startup profiles is recommended. Use of **PES** insulating tapes at the contact surface between panel / support is recommended;
- When fixing the panels to the concrete substrate, perform initial holes (through the sandwich panel) for the screws. Use a drill with a diameter of **5mm** to make a pre-drilling in concrete. In high-grade concrete **C50/60**, drill bits in diameter **5.5mm** can be used, after prior confirmation of the load capacity of the screws by tensile test done by Baltic Fasteners representative. The depth of the initial hole should be greater than the embedment depth by $1.5 \times D$ (D = diameter of the screw) - approximately **10mm**. In case of a wooden substrate, the screws can be screwed directly into the substrate through the sandwich panel without pre-drilling;

- When using **MSD** stress diffusers or **MSW** saddle washers, place them in the appropriate place on the sandwich panel before screwing in the screws. It is imperative to observe all the rules set out in the operator manual for those products.
 - a) When using **MC2S-P** screws with stress diffusers **MSD**, for fixing sandwich panel to concrete substrate, use a 150x22x1.20 diffuser with 15mm distance. The internal set of diffuser holes has a spacing of **90mm** and allows installation with embedment depth of **30mm**. The outer set of diffuser holes has a **120mm** spacing and allows installation with embedment depth of **40mm**;
- The sandwich panel (with **MSD** diffuser, **MSW** washer or without them) should be screwed to the substrate with the selected screws in accordance with the fixing plan.
 - a) Screws must always be mounted perpendicular to the substrate.
 - b) The EPDM should be properly tightened as shown on the picture below.

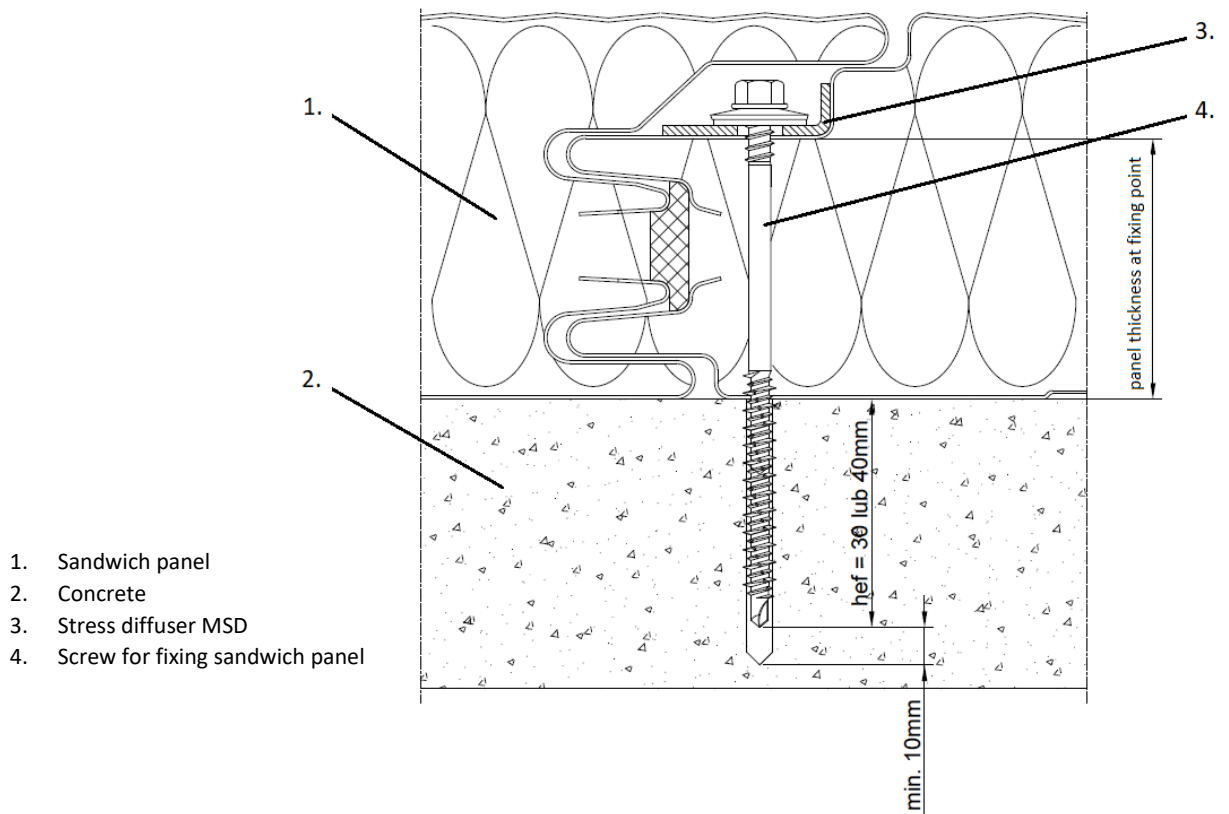


- c) Fixing parameters specified for the screw **MC2S-P** need to be retained.
 - d) Use dedicated nut-setters **MNS-S8** for a given screw line. For fixing screws coated with paint use spring nut-setters **MNS-S8**.
 - e) The sandwich panel should be fixed to each support at least with **2** screws to balance the system;
- In case of damage to the corrosion or paint coating on the screws, the defects must be further secured;
 - When installing roofing sandwich panels, waves of the upper lining (overlap) should be connected longitudinally by using overlapping screws with washer, for example **MO 4,8x20**. The distance between screws should be **max. 250mm**;
 - Once you have fixed the panel, proceed to assemble the next one by following the procedure given above.

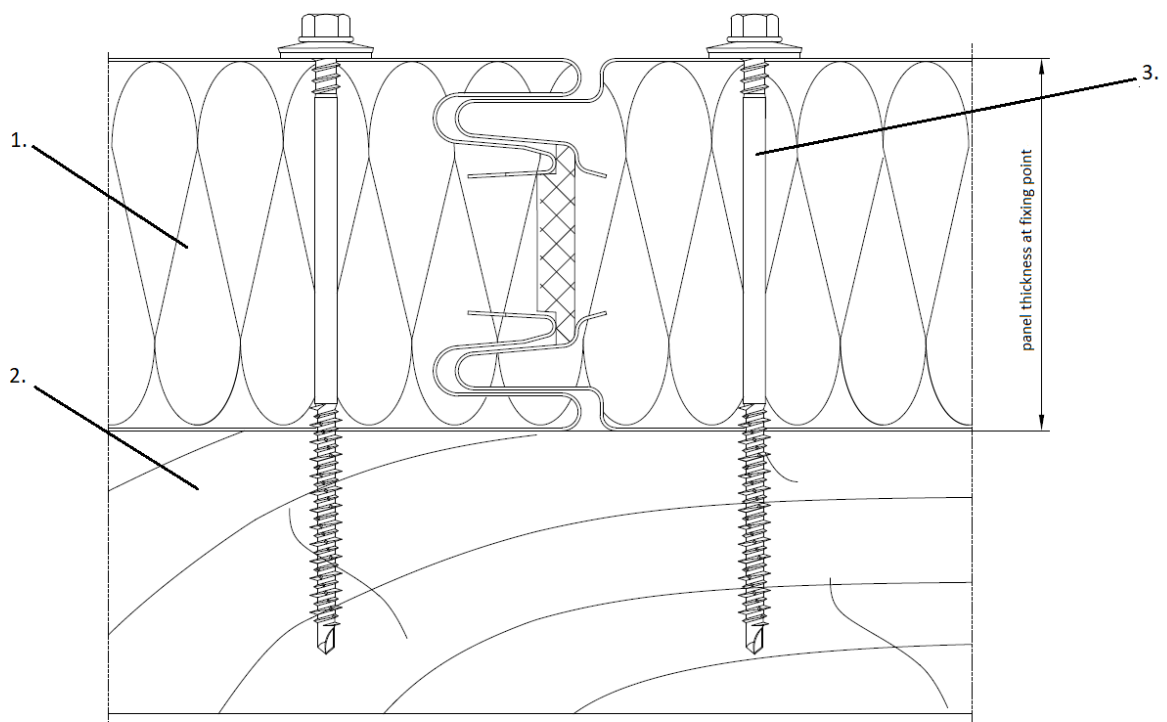
Pictures 1-6 illustrate the fixing of **MC2S-P** screws to concrete or wood with or without accessories.



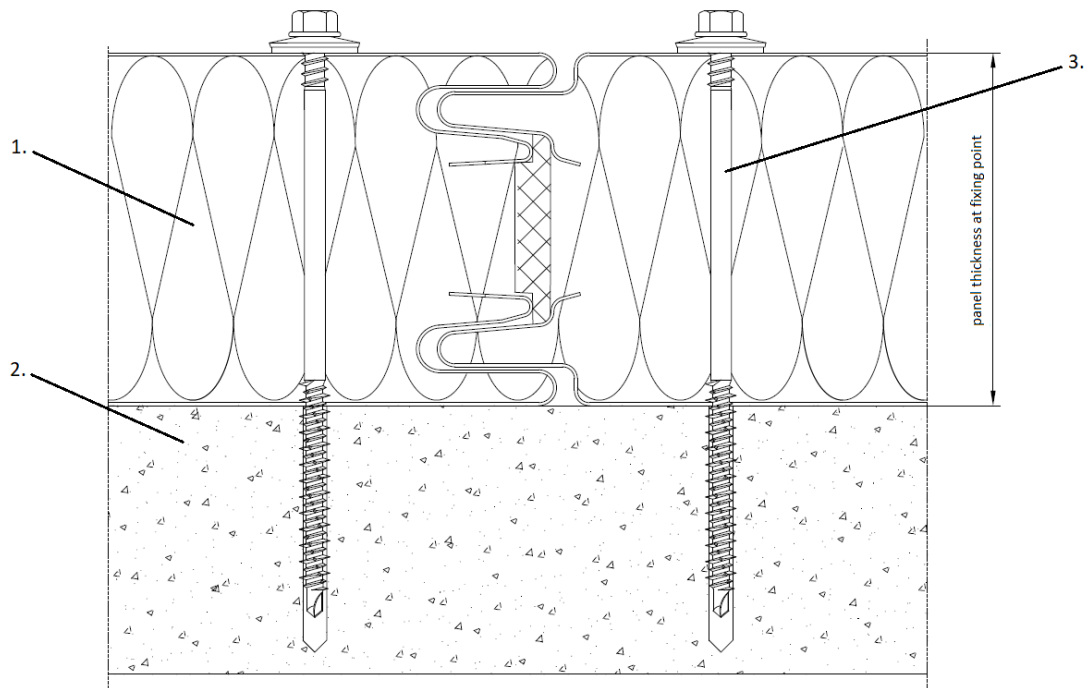
Picture 1. Assembling of the **MC2S-P** with wall sandwich panel on wooden substrate with use of **MSD** stress diffuser - cross section across the sandwich panel.



Picture 2. Assembling of the MC2S-P with wall sandwich panel on concrete substrate with use of MSD stress diffuser - cross section across the sandwich panel.

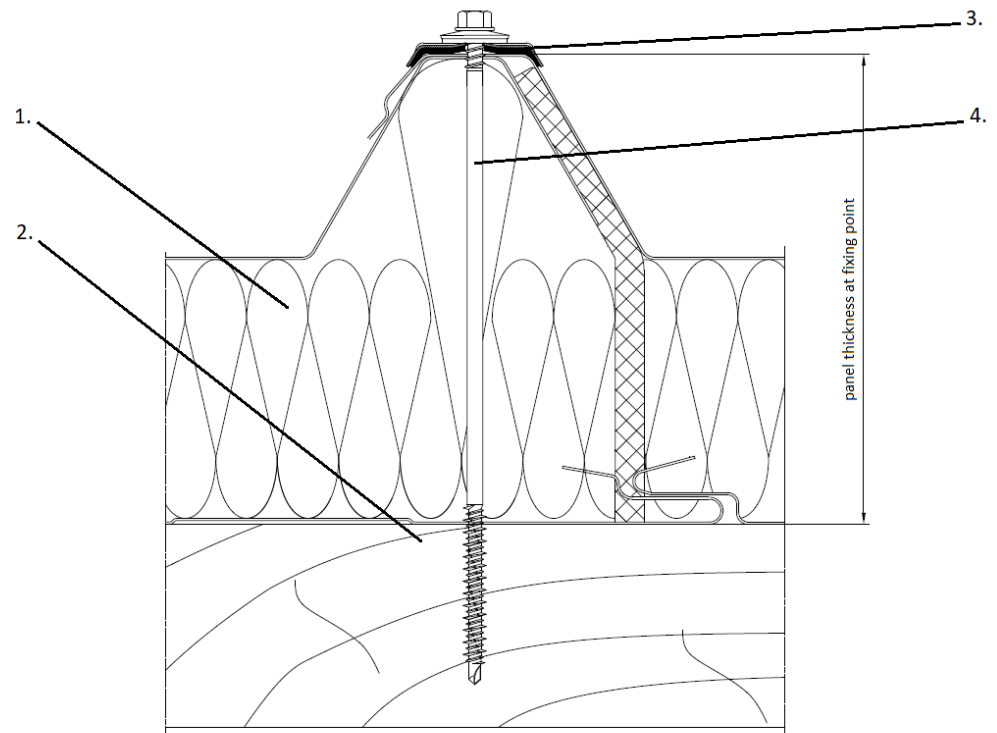


Picture 3. Assembling of the MC2S-P with wall sandwich panel (attachment visible) on wooden substrate - cross section across the sandwich panel.



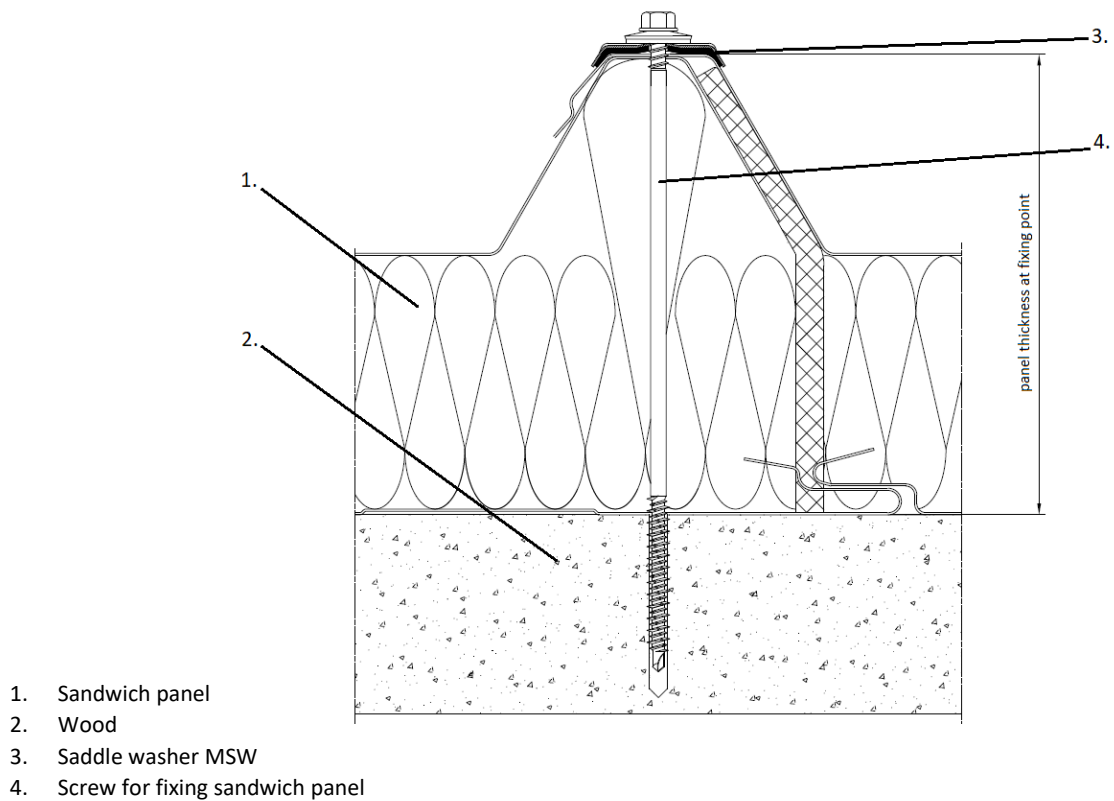
1. Sandwich panel
2. Concrete
3. Screw for fixing sandwich panel

Picture 4. Assembling of the MC2S-P with wall sandwich panel (attachment visible) on concrete substrate - cross section across the sandwich panel.



1. Sandwich panel
2. Wood
3. Saddle washer MSW
4. Screw for fixing sandwich panel

Picture 5. Assembling of the MC2S-P with roofing sandwich panel on wooden substrate with use of MSW saddle washer - cross section across the sandwich panel.



Picture 6. Assembling of the MC2S-P with roofing sandwich panel on concrete substrate with use of MSW saddle washer - cross section across the sandwich panel.

Basic dimensions of screws MC2S-P type:

