



OPERATOR MANUAL
SCREWS FOR FIXING STEEL SHEETS TO STEEL SUBSTRATE
MC2-P TYPE WITH WASHER
No. OM_MC2-P_A16

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:

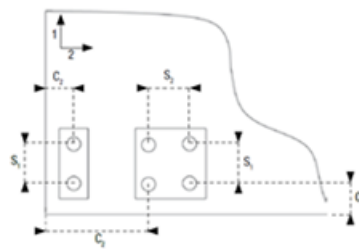
- The operator manual, apply only to original products of Baltic Fasteners Sp. z o.o. bearing the Manufacturer's logo, which allows for their identification;
- The use of screws shall be confirmed by a fixing plan made on the basis of complete building data;
- When carrying out the fixing plan, observe 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 steel sheet 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 **MC2-P** screws with washer **A16** is not permitted;
- Products may only be used for their intended purpose.

Product selection rules:

- **MC2-P** screws are subject to **PZH** certificate and may be used in accordance with its provisions;
- **MC2-P** screws with **A16** washer are designed for fixing steel sheets to wooden or concrete substrates where the tightness of joints is required;
- **MC2-P** screws with **A16** washers are designed for fixing structural steel sheets;
- **MC2-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. **MC2-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 **A16** 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 steel sheet;
 - 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 $h_{ef} = 30$ or 40mm . 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**;
In addition, the thickness of the steel substrate should be taken into consideration when choosing the length of the screws;
- 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 **MC2-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} .

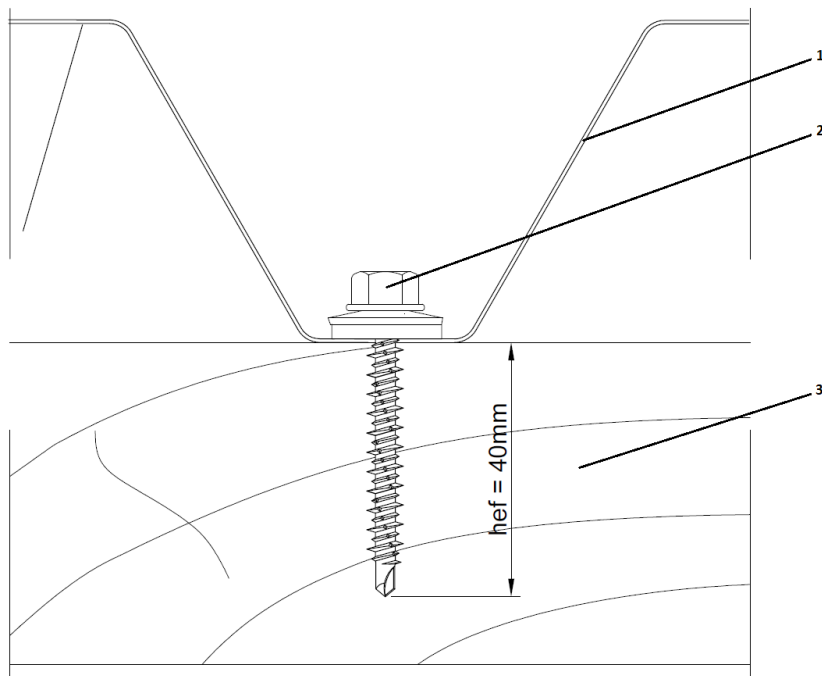
Installation process:

- Place the steel sheet, following instruction provided by the Manufacturer. Use of **PES** insulating tapes at the contact surface between panel / support is recommended;
- For structural sheets, it is recommended to install screws in the lower sheet wave;
- When fixing the steel sheets to the concrete substrate, perform initial holes (through the steel sheet) 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 steel sheet without pre-drilling;
- The steel sheet 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.



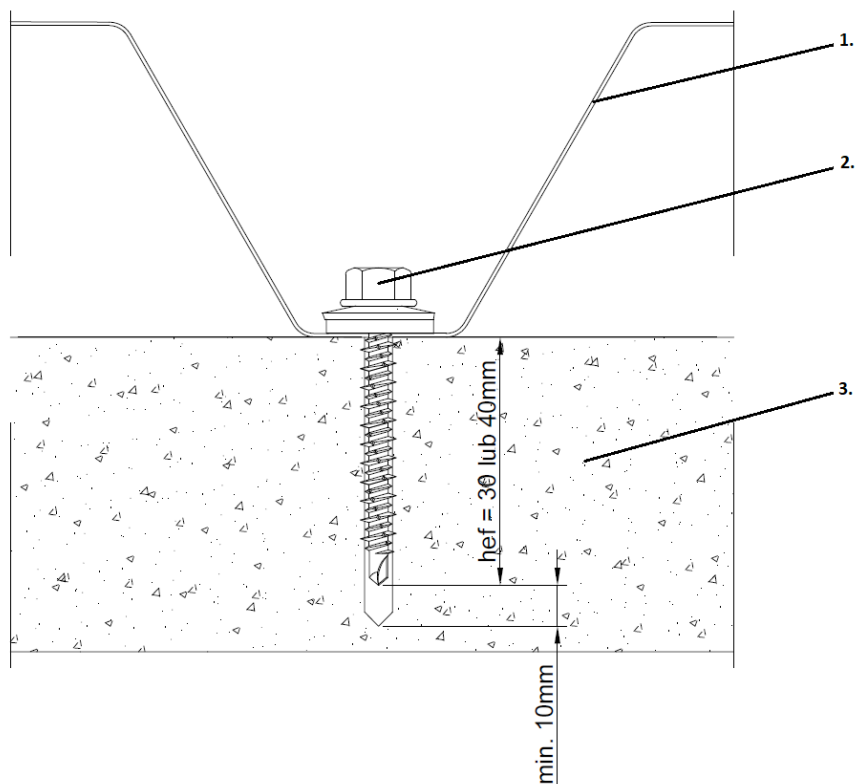
- c) Fixing parameters specified for the screw **MC2-P** need to be retained.
- d) Use dedicated nut-setters for a given screw line **MNS-S8**. For fixing screws coated with paint use spring nut-setters **MNS-S8**.
- e) The steel sheet should be fixed to each support with the same number of screws to balance the system;
- In case of damage to the corrosion or paint coating on the screws, the defects must be further secured;
- Overlapped waves of the steel sheet should be connected longitudinally by using overlapping screws with washer, for example **MO-SP 4,8x20**. The distance between screws should be **max. 250mm**;
- Once you have fixed the steel sheet, proceed to assemble the next one by following the procedure given above.

Pictures 1-2 illustrate the fixing of **MC2-P** screws to wooden or concrete substrate.



- 1. Structural steel sheet
- 2. Screw for wood and concrete MC2-P
- 3. Wood

Picture 1. Assembling of the MC2-P with structural steel sheet on wood.



1. Structural steel sheet
2. Screw for wood and concrete MC2-P
3. Concrete

Picture 2. Assembling of the MC2-P with structural steel sheet on concrete.

Basic dimensions of screws MC2-P with washer A16 type:

