

# W-H5G2N CONSTRUCTION ASSEMBLY INSTRUCTIONS



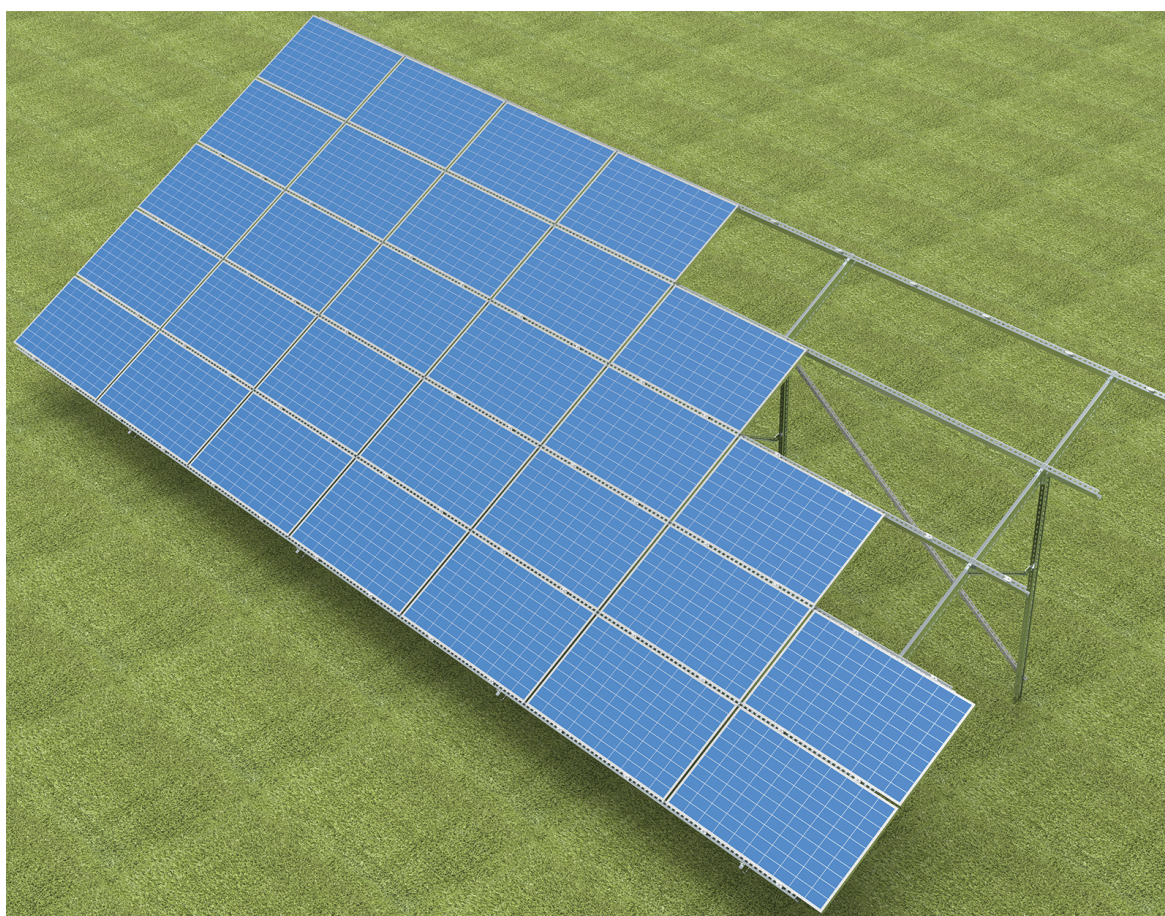
Manufacturer:

**BAKS**

Jagodne 5 Street

05-480 Karczew

Poland



W – free-standing steel structure

H – horizontal arrangement of panels

5 – number of rows of panels

G – structure fixed to the ground by piles driven directly into the ground

2 – structure based on two support columns

N – structure based on the new version of profiles



## 1. Essential tools for assembling the structure

- Allen spanner (ampoule spanner) size 6
- Cordless screwdriver with speed and torque control
- Hexagon socket wrench, size 6 for screwdriver head
- Open-end spanner, size 15 mm
- Ratchet spanner with socket size 15 mm
- Extension piece 100-120mm for socket spanners
- Rubber mallet
- Torque spanner, range 10-45 Nm

## 2. General information

- Possibility of using the structure in wind and snow zones in accordance with standards: **PN-EN 1991-1-3** and **PN-EN 1991-1-4**.
- Before assembling the structure, read the installation instructions for the photovoltaic panels
- It is recommended that connection of BDFCH... profiles to CWC100H50 profiles, CWCR100H50 profiles to CWC100H50 profiles and BUF... to CWC100H50 profiles should not be placed on the last (outermost) holes.
- Each CWC100H50 and CWCR100H50 channel must have at least 2 support points
- The depth of penetration of the profiles into the ground, the dimensions of the concrete pour hole and the dimensions of the foundation for anchoring the structure should be determined by an authorised constructor for the particular installation.
- If the panel mounting area does not coincide with the profile perforation, an adjustment must be made at the channel joint or an intermediate bracket type UPP...MC must be used.
- The grounding washer for the panel (PUP) is placed under the intermediate brackets of the panels. A single washer has the ability to ground two adjacent panels.
- Cutting of workpieces is only permitted with slow-running sabre saws and hand saws with high-grade steel tools, in order to avoid excessive heating of the material.
- The cut edges must be unconditionally protected - sanded with sandpaper, cleaned and degreased again, protected with a minimum of three coats of zinc paste after drying.
- Bracing connecting successive frames should be placed at a maximum of every 4th field of the structure.
- Screw **SAM8x...E** and **NRM8PV** nut to a torque of 12-14 Nm.
- When tightening the **SGKFM10x20** screw, hold the head of the screw with your hand in such a position that the underlay locks onto the walls of the hole in which you are installing the screw, and then, using a screwdriver, tighten the screw slowly until it locks into place. At the final stage, tighten the screw with the screwdriver to a torque of 42 Nm.



### 3. Summary of the components of the W-H5G2N construction

(Construction kit does not include tools)

| No. | Name              | Name of product  | Designation in construction          |
|-----|-------------------|------------------|--------------------------------------|
| 1   | Support Channel   | CWT70H50/...NMC  | Front and rear support pillars       |
| 2   | Channel Connector | LCT70H50NMC      | Łącznik słupów podporowych           |
| 3   | Profile           | BDFTH120/...NMC  | Rafter                               |
| 4   | Support Channel   | CMP41H41/...MC   | Bracing                              |
| 5   | Channel Connector | LCJ70MC          | Bracing connector                    |
| 6   | Support Channel   | CWC100H50/...NMC | Purlin                               |
| 7   | Channel Connector | LCTW100H50MC     | Purlin connector                     |
| 8   | Side Holder       | BUF...           | Lateral clamp for fixing panels      |
| 9   | Middle Holder     | PUF              | Intermediate clamp for fixing panels |
| 10  | Grounding Washer  | PUP              | Panel earthing                       |
| 11  | Screw             | SAM8x...E        | Panel fixing screw                   |
| 12  | Spring Washer     | PS8E             | Head washer SAM8x...E                |
| 13  | Screw set         | SGKFM10x20PV     | Screw + flange nut                   |
| 14  | Washer            | PW10F            | Washer                               |
| 15  | Channel Nut       | NRM8PV           | Clamp mounting nut                   |

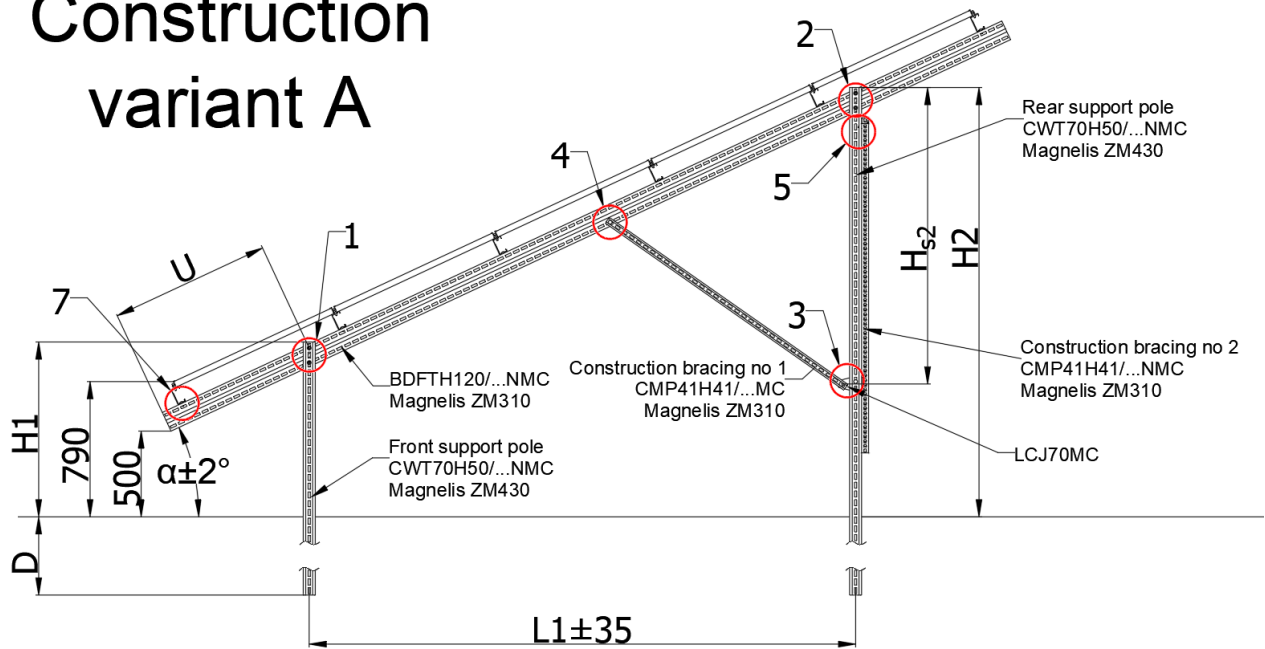
Table 1 Summary of components

### 4. Installation sequence:

- 1) Mounting of the **CWT70H50/...NMC** front and rear support pillars according to the information in Tables 3 and 4, in accordance with the "L1" and "L2" values indicated therein, taking into account their orientation with respect to the directions of the world as shown in Drawing No. 6.
- 2) Installing the **BDFCH120/...NMC** profile to the anchored support columns (detail 1; 2)
- 3) Assembly of bracing No. 1 (detail 3; 4)
- 4) Assembly and joining of the longitudinal profiles under the panels (detail 6; 7)
- 5) Assembly of bracing No. 2 (detail 5)
- 6) Installing the fastening clamps for the panels (detail 8.1; 8.2 ; 9)



# Construction variant A



# Construction variant B

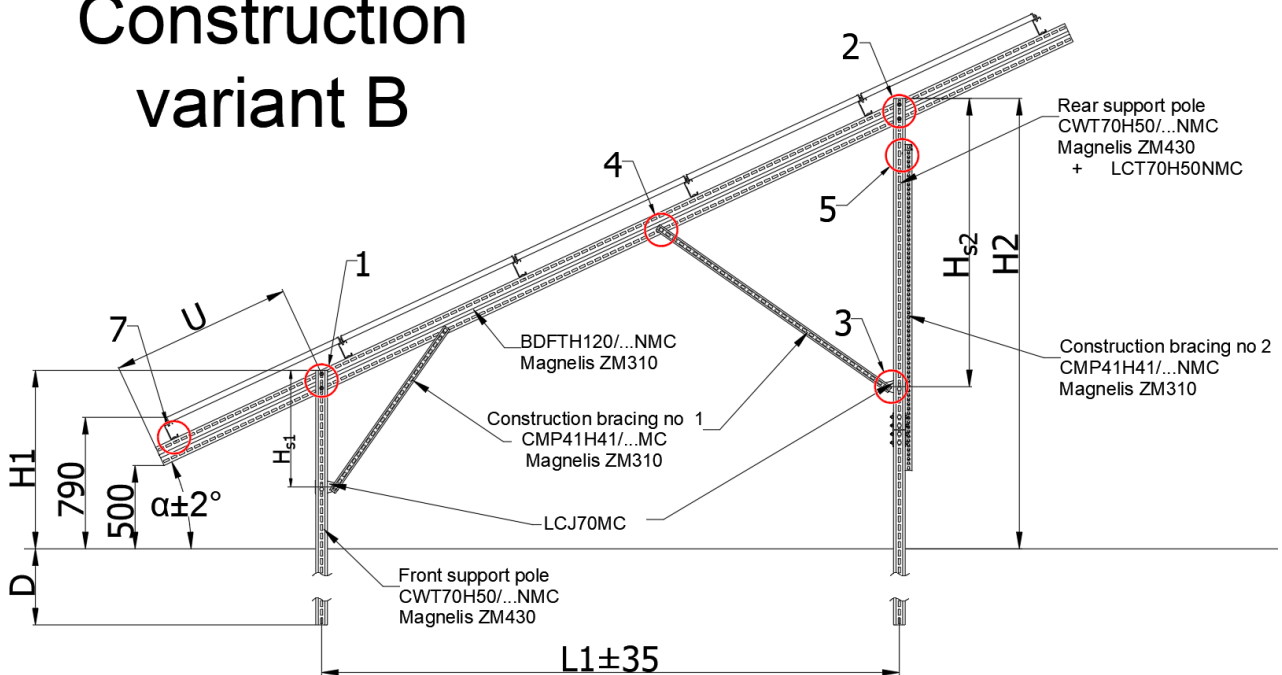


Fig. 1 Side view of the structure



| Angle of structure „ $\alpha$ ”                               | Front support pillar | Front support pillar               | Rafter          | Brace No. 1                     |
|---|----------------------|------------------------------------|-----------------|---------------------------------|
| <b>Panel width from 950 to 1000mm Construction variant A</b>  |                      |                                    |                 |                                 |
| 25°   | CWT70H50/3NMC        | CWT70H50/4,4NMC                    | BDFCH120/5,4NMC | CMP41H41/1,7MC                  |
| <b>Panel width from 1000 to 1100mm Construction variant B</b> |                      |                                    |                 |                                 |
| 25°   | CWT70H50/3NMC        | CWT70H50/2NMC<br>+ CWT70H50/3NMC   | BDFTH120/6NMC   | CMP41H41/1,2MC + CMP41H41/1,7MC |
| <b>Panel width from 1100 to 1150mm Construction variant B</b> |                      |                                    |                 |                                 |
| 25°   | CWT70H50/3NMC        | CWT70H50/2,4NMC<br>+ CWT70H50/3NMC | BDFTH120/6,4NMC | CMP41H41/1,2MC + CMP41H41/2,2MC |

Table 2 Lengths of construction elements depending on panel size

If it is necessary to connect the support columns, use the LCT70H5NMC connector and 12 SGKFM10x20 bolts for the connection (extension). The longer of the channel bars assigned to the rear support column should be anchored to the required depth, the shorter being its extension above the ground.

| Angle of structure „ $\alpha$ ”                               | Distance „L1” | Height |      |                    |                    | Distance „U” |
|---|---------------|--------|------|--------------------|--------------------|--------------|
|   |               | „H1”   | „H2” | „H <sub>S1</sub> ” | „H <sub>S2</sub> ” |              |
| <b>Panel width from 950 to 1000mm Construction variant A</b>  |               |        |      |                    |                    |              |
| 25°   | 3190          | 1020   | 2500 |                    | 1730               | 940          |
| <b>Panel width from 1000 to 1100mm Construction variant B</b> |               |        |      |                    |                    |              |
| 25°   | 3470          | 1070   | 2700 | 700                | 1730               | 1090         |
| <b>Panel width from 1100 to 1150mm Construction variant B</b> |               |        |      |                    |                    |              |
| 25°   | 3790          | 1070   | 3840 | 700                | 2220               | 1090         |

Table 3 Structure dimensions on the angle of inclination of the structure and the size of the panels

The „D” dimension is determined by a competent person depending on the quality of the soil.



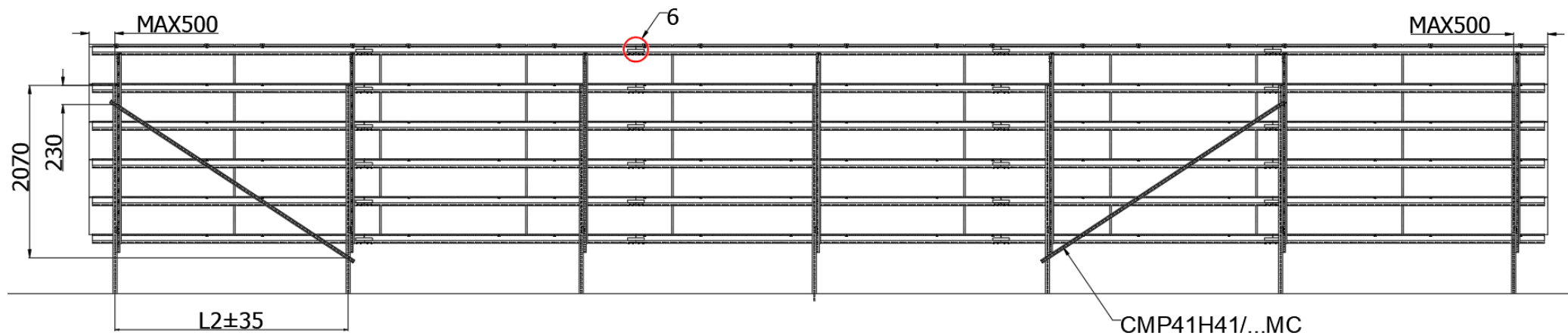


Fig. 2 View of the structure with bracing spacing No. 2

| Combination of "W" wind and "S" snow zones* | Maximum distance of consecutive "L2" frames |
|---|---|
| 1W-1S or 3W-1S                              | 2,9 m                                       |
| 1W-2S                                       |   |
| 1W-3S or 3W-3S                              | 2,4 m                                       |
| 1W-4S                                       |   |
| 2W-2S or 2W-3S                              | 2,0 m                                       |
| Other combinations of zones                 | Selected individually after consultation    |

Table 4 Installation of successive frames of the photovoltaic structure depending on the combination of wind and snow zones

\*1 wind zone below 300 meters above sea level; 3 wind zone below 500 meters above sea level;  
 1 and 3 snow zone below 300 meters above sea level; 5 snow zone below 500 meters above sea level.



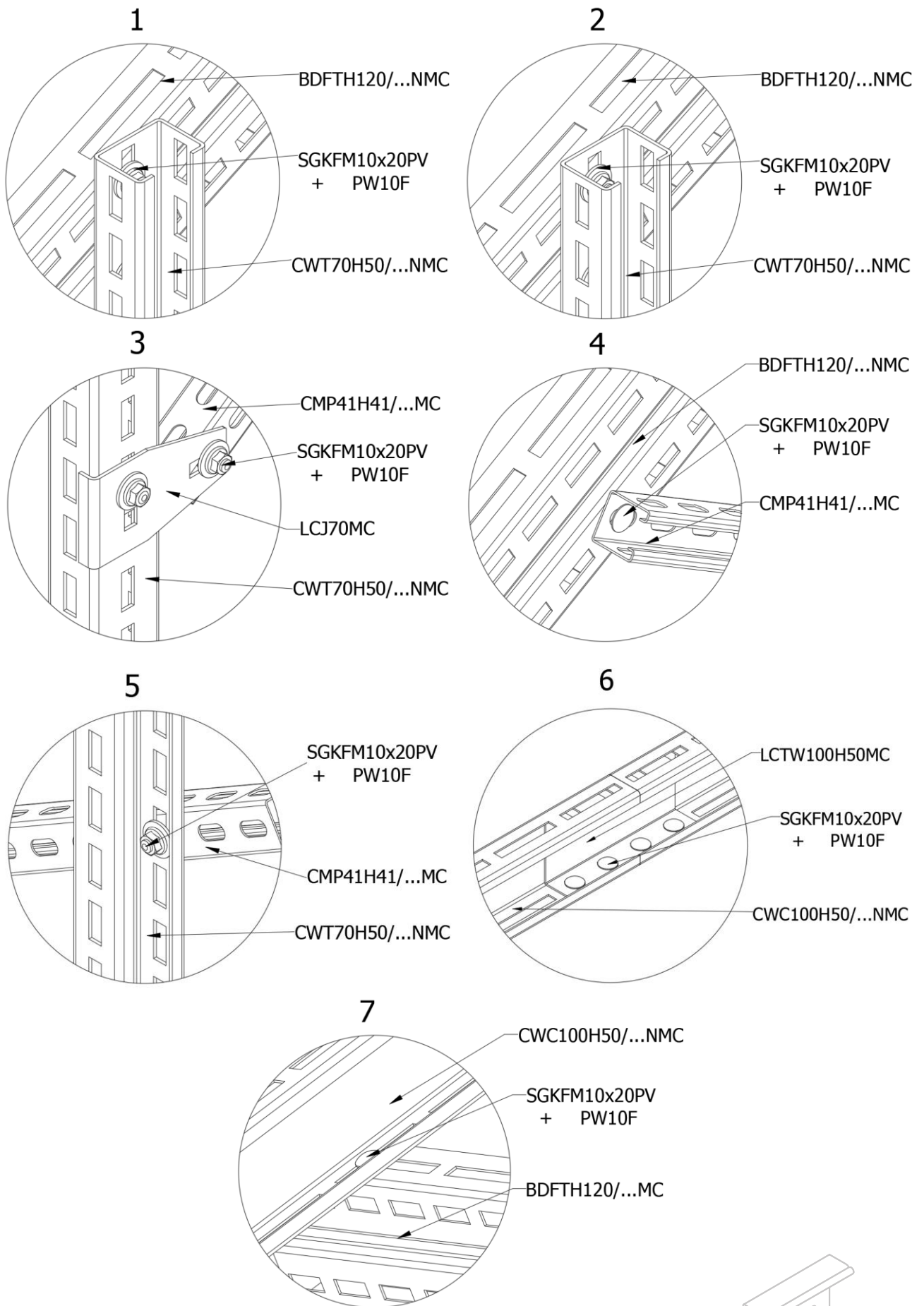


Fig. 3 Details of connecting individual components



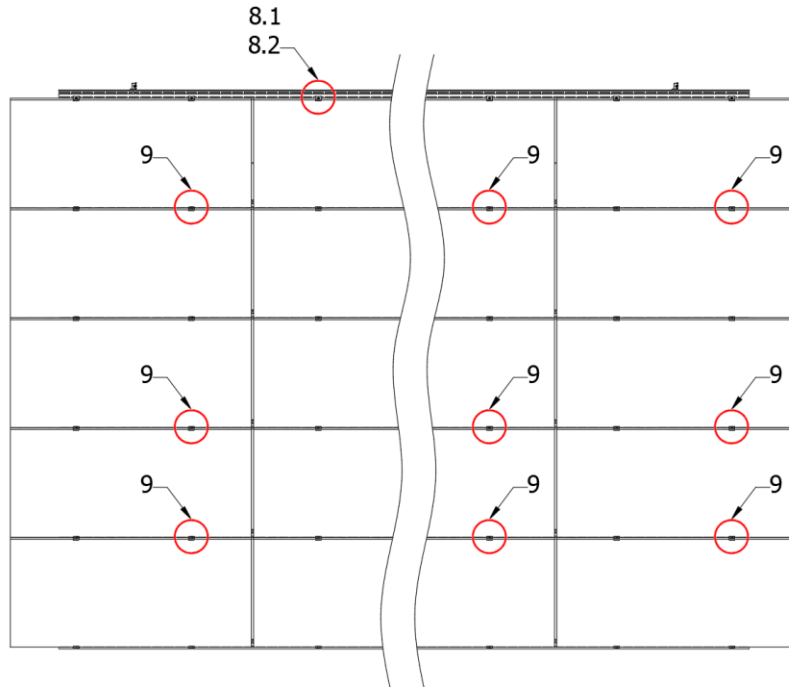


Fig. 4 Top view of the structure

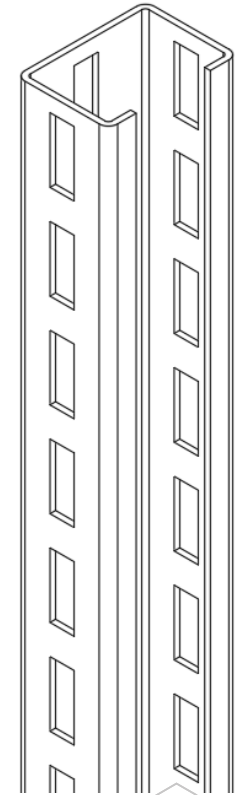
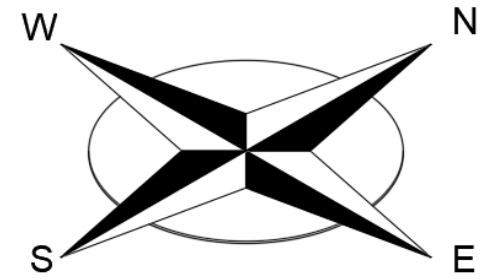


Fig. 6 Orientation of support column

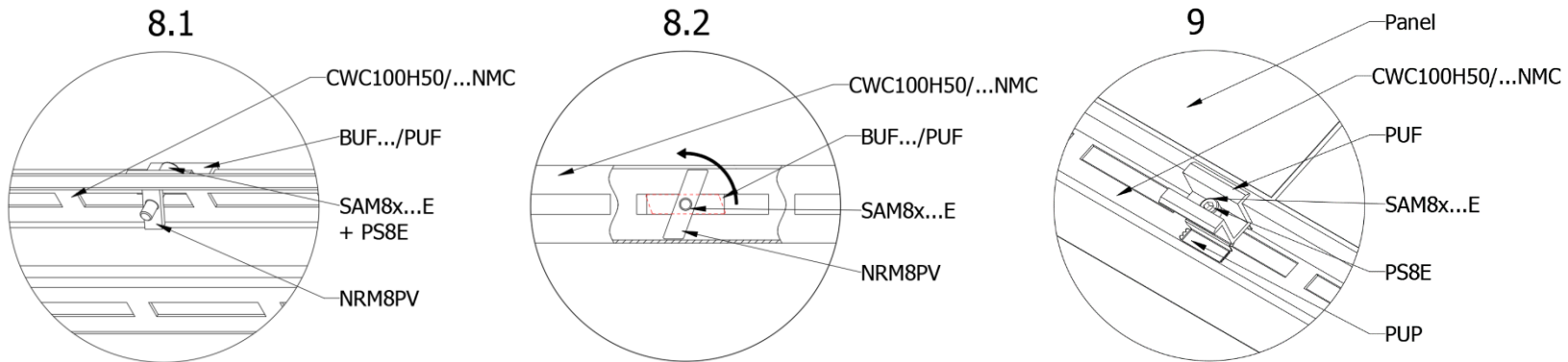


Fig. 5 Details of assembly of the clamps together with the earthing washer and locking of the channel nut