

W-H4B2N CONSTRUCTION ASSEMBLY INSTRUCTIONS



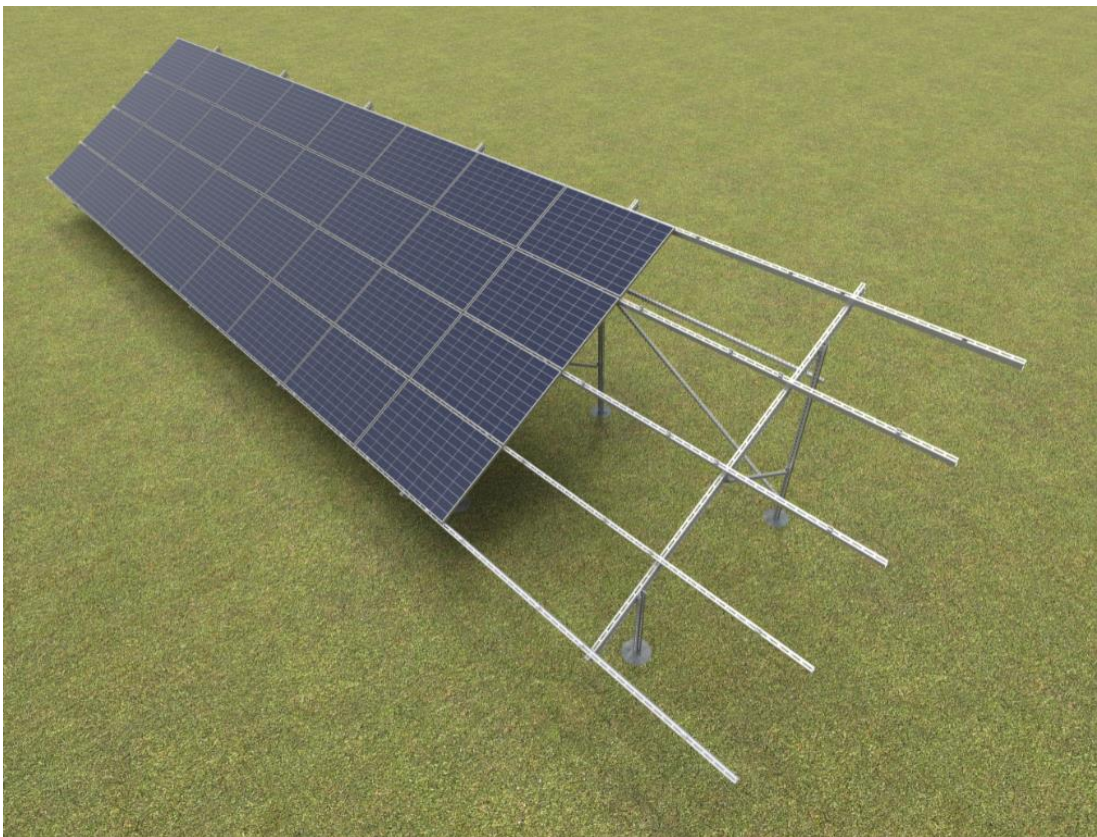
Manufacturer:

BAKS

Jagodne 5 street

05-480 Karczew

Poland



W – free-standing steel structure

H – horizontal arrangement of panels

4 – number of rows of panels

B – structure fixed to the ground with legs cast in concrete foundations

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 profile 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.
- 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 components of the W-H4B2N construction

(Construction kit does not include tools)

No.	Product	Name of product	Designation in construction
1	Support Channel	CWT70H50/...NMC	Front and rear support pillars
2	Profile	BDFCH120/...NMC*	Rafter
3	Support Channel	CMP41H41/...MC	Bracing
4	Channel Connector	LCJ70MC	Bracing connector
5	Support Channel	CWC100H50/...NMC	Purlin
6	Channel Connector	LCTW100H50MC	Purlin connector
7	Side Holder	BUF...	Lateral clamp for fixing panels
8	Middle Holder	PUF	Intermediate clamp for fixing panels
9	Grounding Washer	PUP	Panel earthing
10	Screw	SAM8x...E	Panel fixing screw
11	Spring Washer	PS8E	Head washer SAM8x...E
12	Screw set	SGKFM10x20PV	Screw + flange nut
13	Washer	PW10F	Washer
14	Channel Nut	NRM8PV	Clamp mounting nut

Table 1 Summary of components

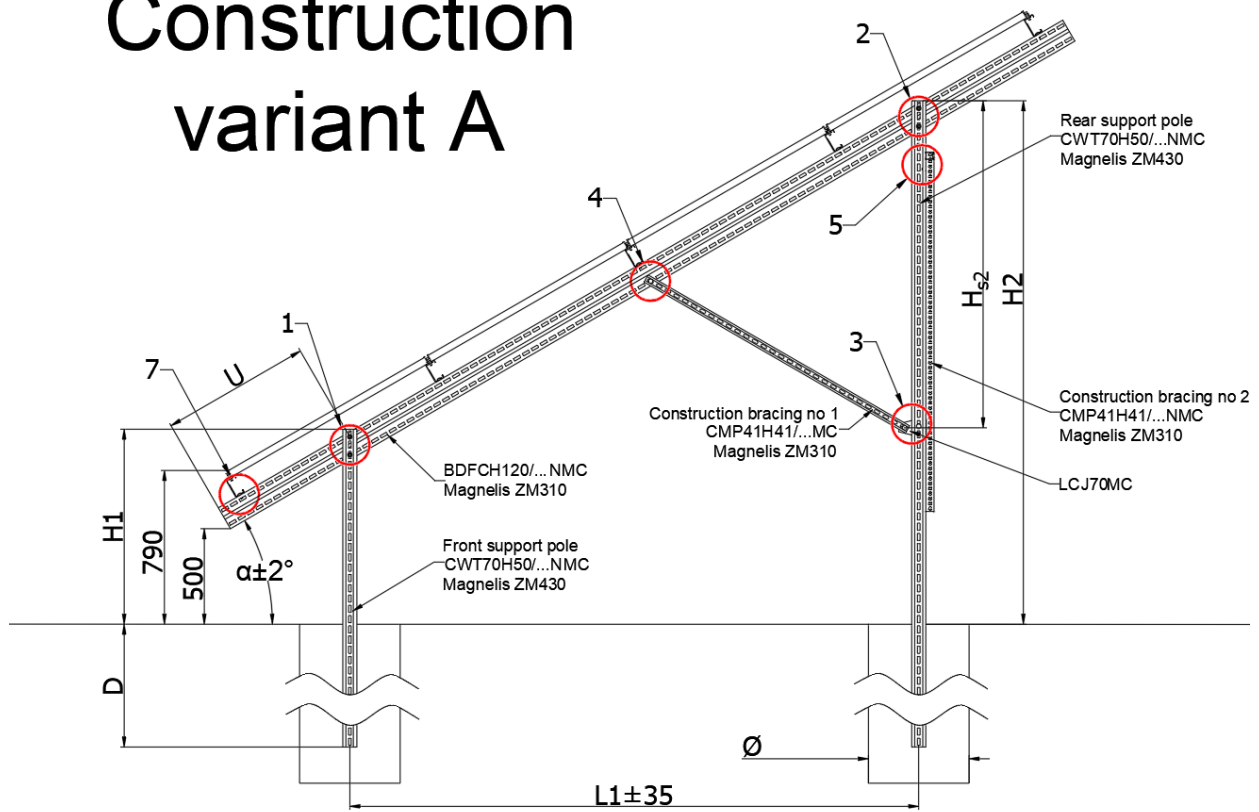
* For panels wider than 1250 mm, the BDFTH120/...NMC profile can be used.

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

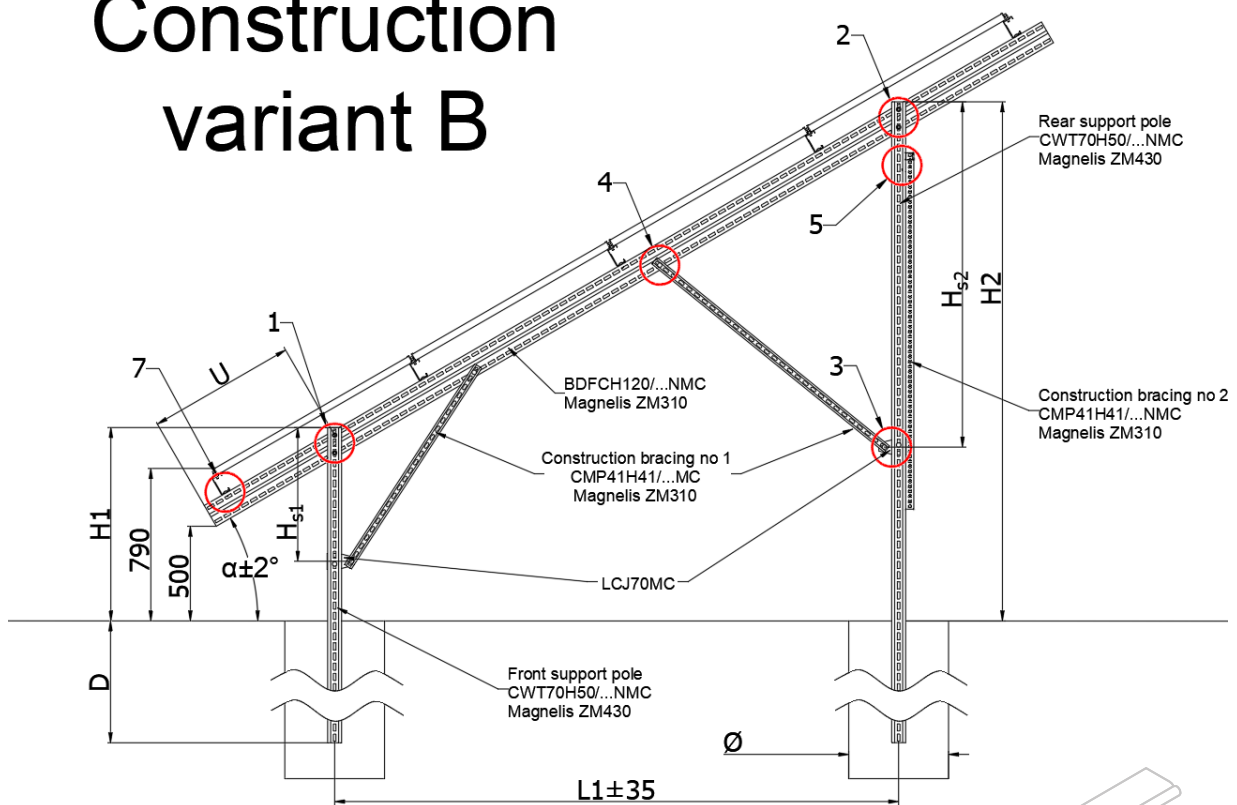


Fig. 1 Side view of the structure



Angle of structure „ α ”	Front support pillar	Front support pillar	Rafter	Brace No. 1
Panel width from 950 to 1000mm Construction variant A				
25°	CWT70H50/2NMC	CWT70H50/3,4NMC	BDFCH120/4,4NMC	CMP41H41/1,5MC
30°	CWT70H50/2NMC	CWT70H50/3,4NMC	BDFCH120/4,4NMC	CMP41H41/1,5MC
Panel width from 1000 to 1100mm Construction variant A				
25°	CWT70H50/2MC	CWT70H50/3,4NMC	BDFCH120/4,8NMC	CMP41H41/1,5MC
30°	CWT70H50/2MC	CWT70H50/3,4NMC	BDFCH120/4,8NMC	CMP41H41/1,5MC
Panel width from 1100 to 1250mm Construction variant B				
25°	CWT70H50/2NMC	CWT70H50/4,4NMC	BDFCH120/5,4NMC	CMP41H41/1,2MC + CMP41H41/2,2MC
30°	CWT70H50/2NMC	CWT70H50/4,4NMC	BDFCH120/5,4NMC	CMP41H41/1,2MC + CMP41H41/2,2MC
Panel width from 1250 to 1300mm Construction variant B				
25°	CWT70H50/2NMC	CWT70H50/4,4NMC	BDFTH120/6NMC	CMP41H41/1,2MC + CMP41H41/2,2MC
30°	CWT70H50/2NMC	CWT70H50/4,4NMC	BDFTH120/6NMC	CMP41H41/1,2MC + CMP41H41/2,2MC

Table 2 Lengths of construction elements depending on panel size



Angle of structure „ α ”	Distance „L1”	Height				Distance „U”
		„H1”	„H2”	„Hs1”	„Hs2”	
Panel width from 950 to 1000mm Construction variant A						
25°	2820	870	2180		1520	580
30°	2520	970	2410		1620	690
Panel width from 1000 to 1100mm Construction variant A						
25°	2960	950	2330		1520	780
30°	2830	970	2600		1620	690
Panel width from 1100 to 1250mm Construction variant B						
25°	3370	950	2530	650	2340	780
30°	3440	970	2960	670	2440	690
Panel width from 1250 to 1300mm Construction variant B						
25°	3370	950	2530	650	2340	780
30°	3440	970	2960	670	2440	690

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

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



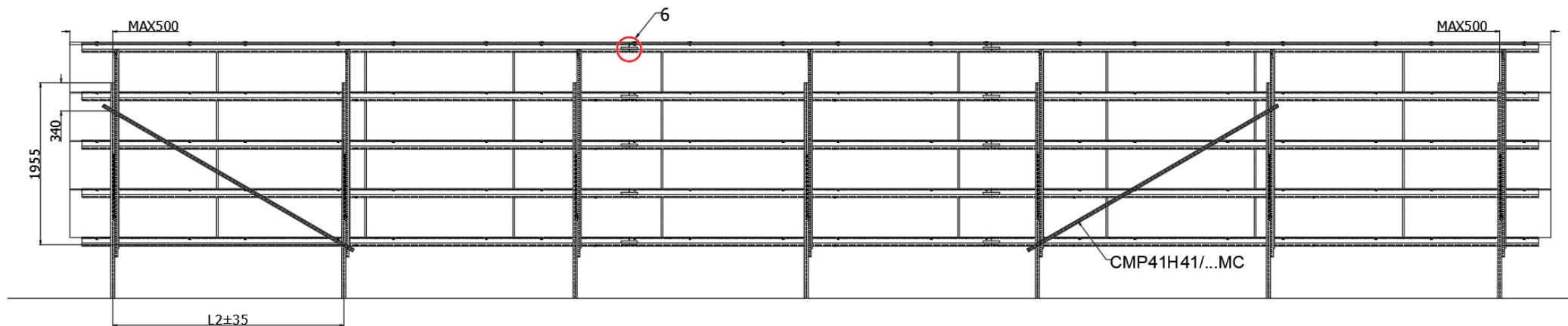


Fig. 2 View of the structure with bracing spacing No. 2

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	2,7 m
1W-4S	
2W-2S or 2W-3S	2,0 m
Other combinations of zones	Selected individually after consultation

Table 4 Installation distance 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 m above sea level; 5 snow zone below 500 meters above sea level.



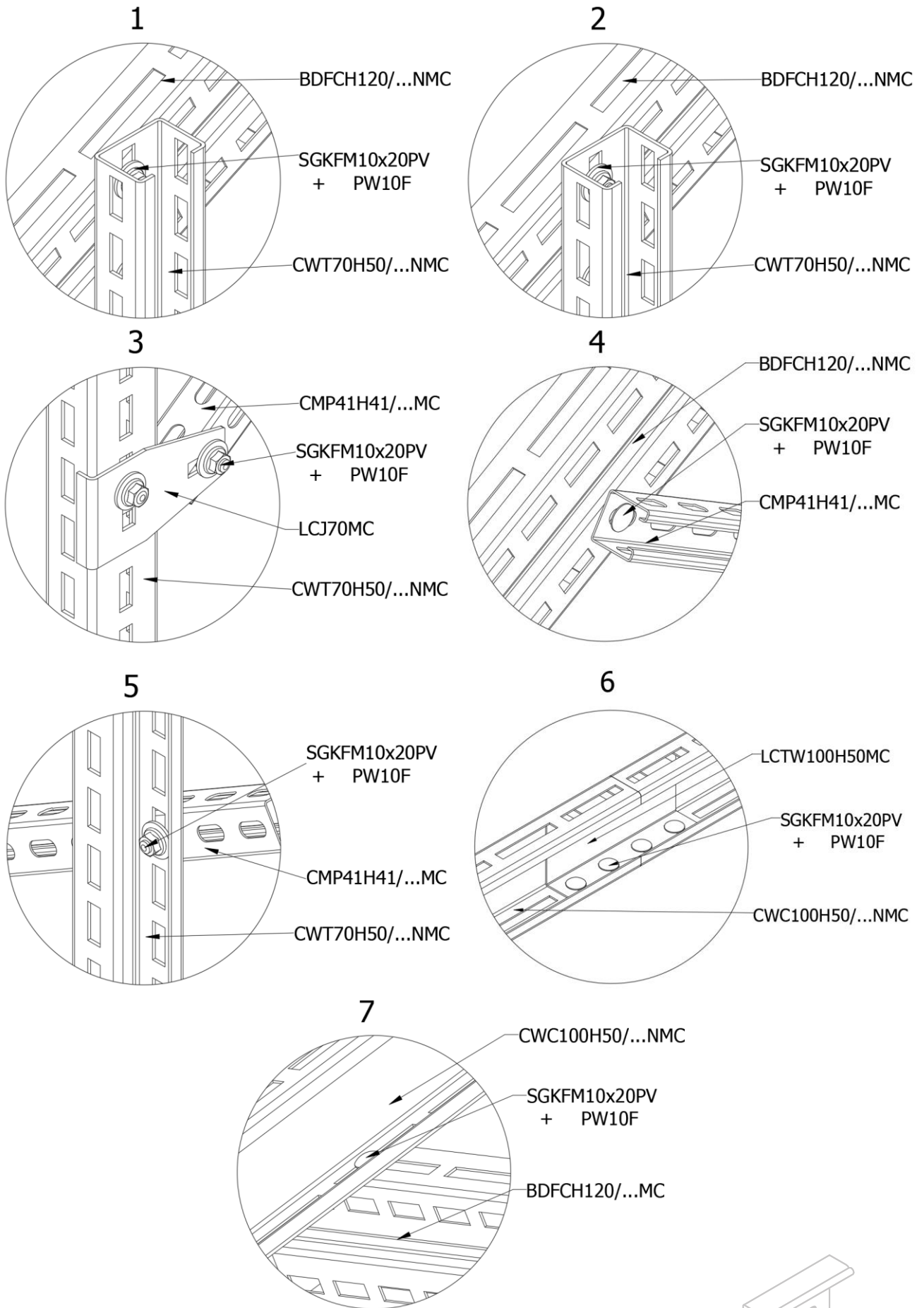


Fig. 3 Details of connecting individual components



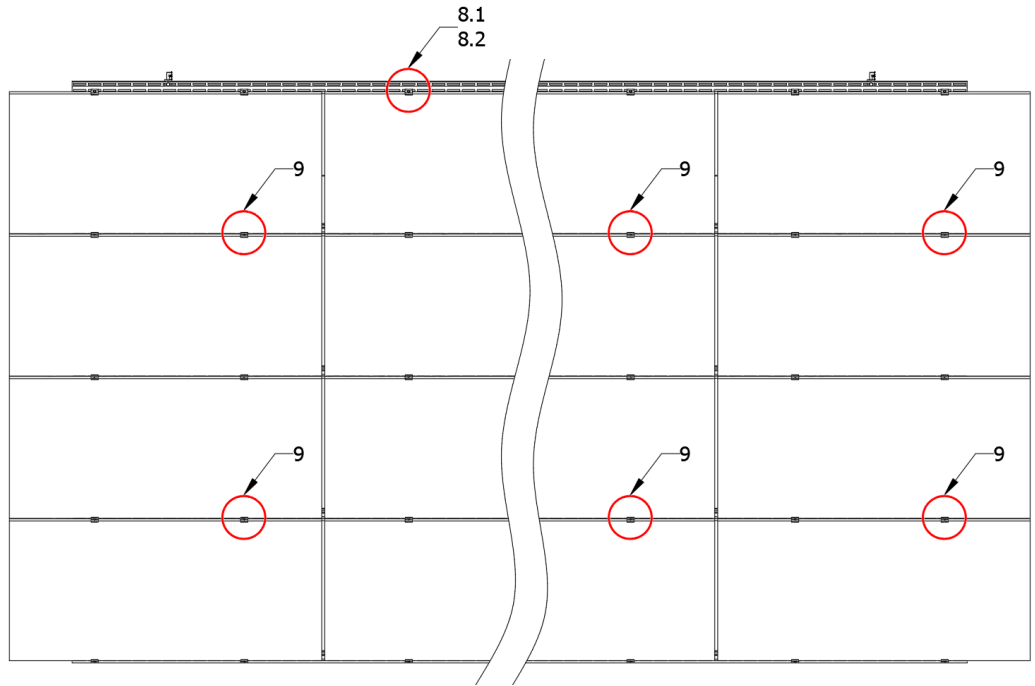


Fig. 4 Top view of the structure

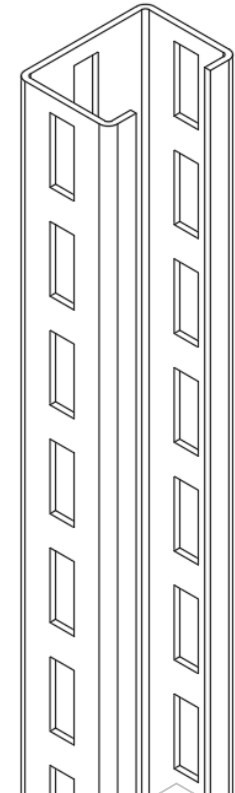
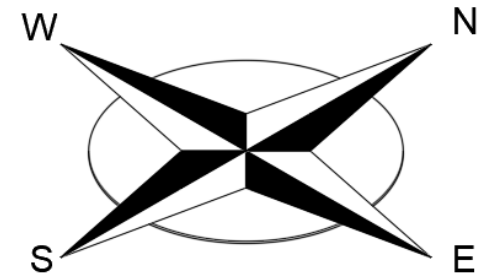


Fig. 6 Orientation of support column

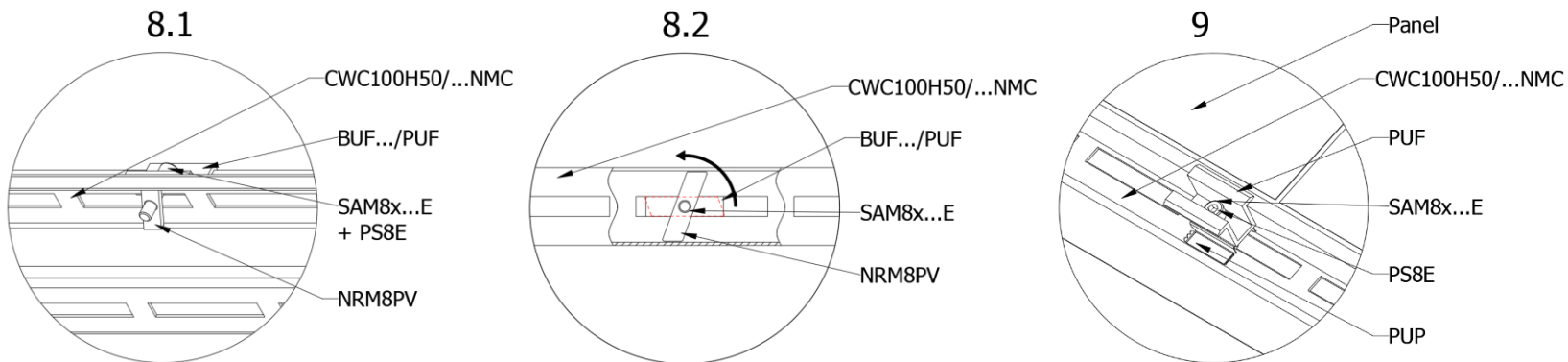


Fig. 5 Detail of assembly of the clamps together with the earthing washer and locking of the channel nut