W-H5K2N CONSTRUCTION ASSEMBLY INSTRUCTIONS

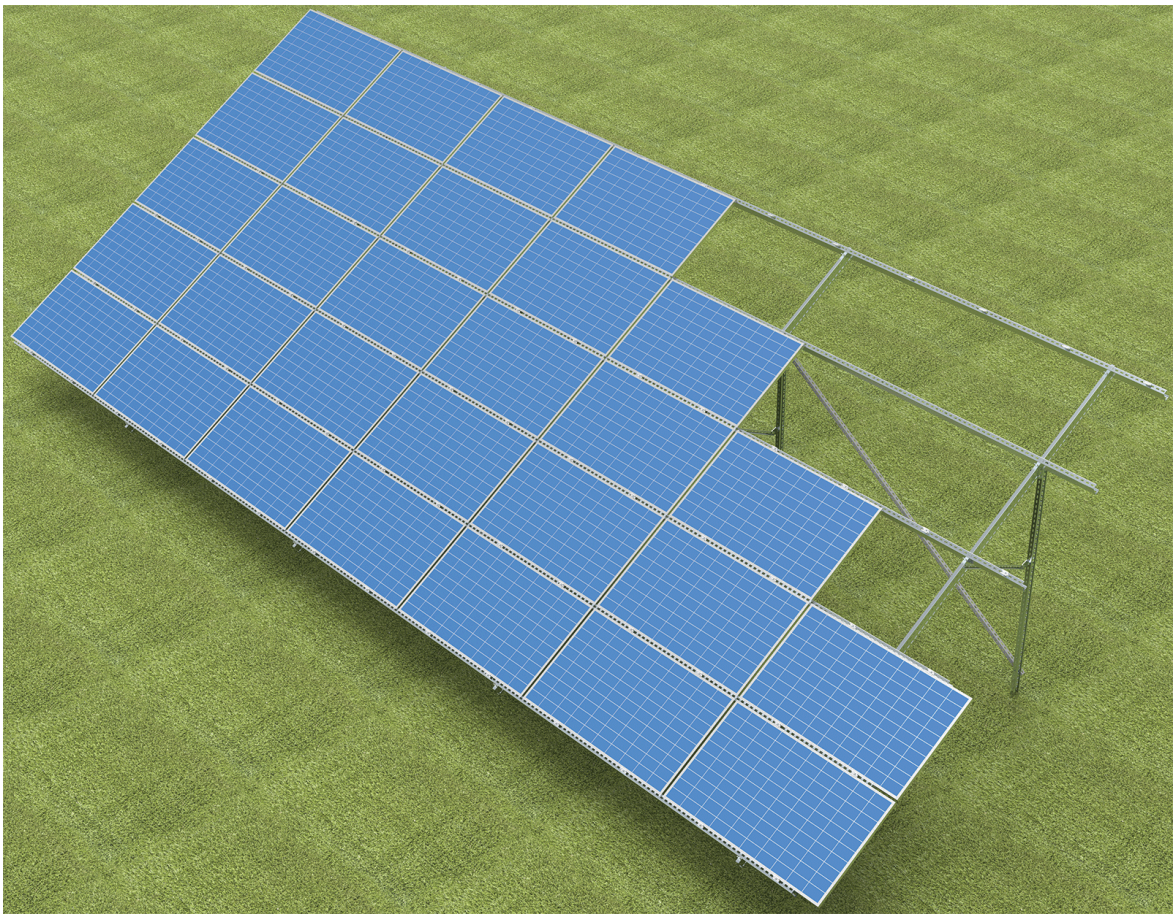
Manufacturer:

BAKS

Jagodne 5 Street

05-480 Karczew

Poland



W – free-standing steel structure

H – horizontal arrangement of panels

5 – number of rows of panels

K – structure fixed to the ground with anchors attached to concrete bases

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 to avoid excessive heat build-up in the material.
- 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-H5K2N construction

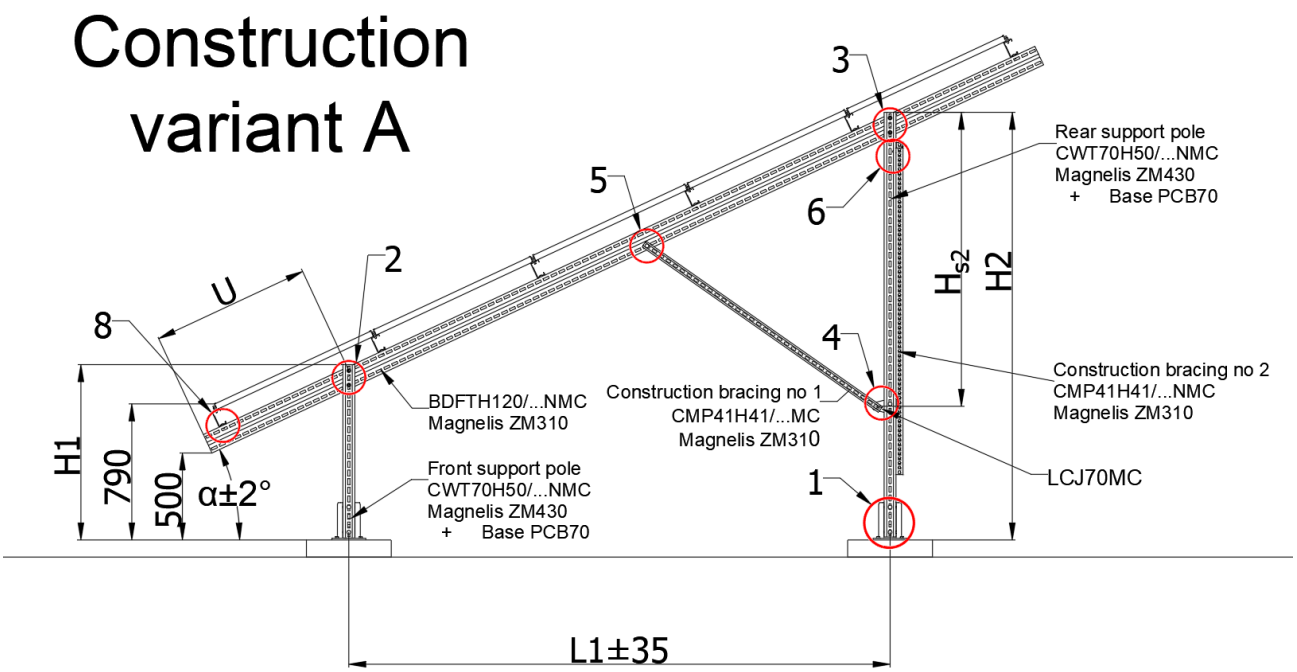
(Construction kit does not include tools)

No.	Product	Name of product	Designation in construction
1	Support Channel	CWT70H50/…NMC	Front and rear support pillars
2	Base Plate	PCB70	Support column mounting base
3	Anchor Bolt	PSRM10x90F	Anchor fixing the base to the foundation
4	Profile	BDFTH120/…NMC	Rafter
5	Support Channel	CMP41H41/…MC	Bracing
6	Channel Connector	LCJ70MC	Bracing connector
7	Support Channel	CWC100H50/…NMC	Purlin
8	Channel Connector	LCTW100H50MC	Purlin connector
9	Side Holder	BUF…	Lateral clamp for fixing panels
10	Middle Holder	PUF	Intermediate clamp for fixing panels
11	Grounding Washer	PUP	Panel earthing
12	Screw	SAM8x…E	Panel fixing screw
13	Spring Washer	PS8E	Head washer SAM8x...E
14	Screw set	SGKFM10x20PV	Screw + flange nut
15	Washer	PW10F	Washer
16	Channel Nut	NRM8PV	Clamp mounting nut

Table 1 Summary of components

4. Installation sequence:

1) Mounting of the **PCB70** bases to the concrete foundation in accordance with the information provided in Tables 3 and 4, taking into account their orientation with respect to directions of the world as shown in drawing No. 6
2) Installing the **CWT70H50/...NMC** front and rear support pillars to the **PCB70** bases (detail 1), taking into account their orientation with respect to the directions of the world as indicated in the drawing No. 6
3) Installing the **BDFCH120/...NMC** profile to the anchored support pillars (detail 2; 3)
4) Assembly of bracing No. 1 (detail 4; 5)
5) Assembly and joining of the longitudinal profiles under the panels (detail 7; 8)
6) Assembly of bracing No. 2 (detail 6)
7) Installing the attachment clamps for the panels (detail 9.1; 9.2; 10)



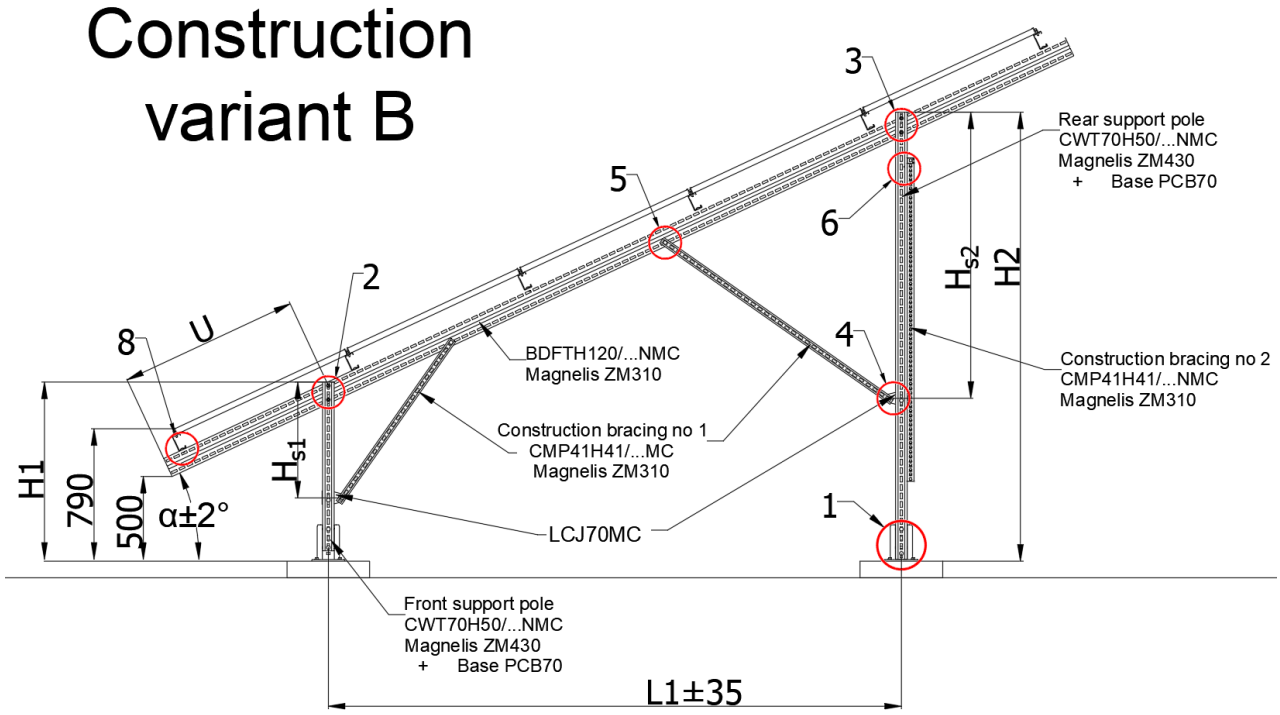


Fig. 1 Side view of the structure

Angle of structure „α”	Front support pillar	Rear support pillar	Rafter	Brace No. 1
Panel width from 950 to 1000mm Construction variant A				
25°	CWT70H50/1NMC	CWT70H50/3NMC	BDFCH120/5,4NMC	CMP41H41/1,7MC
Panel width from 1000 to 1100mm Construction variant B				
25°	CWT70H50/1NMC	CWT70H50/3NMC	BDFTH120/6NMC	CMP41H41/1,2MC + CMP41H41/1,7MC
Panel width from 1100 to 1150mm Construction variant B				
25°	CWT70H50/1NMC	CWT70H50/3NMC	BDFTH120/6,4NMC	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”	„H_{S1}”	„H_{S2}”	
Panel width from 950 to 1000mm Construction variant A						
25°	3190	1030	2520		1730	940
Panel width from 1000 to 1100mm Construction variant B						
25°	3460	1080	2720	700	1730	1090
Panel width from 1100 to 1150mm Construction variant B						
25°	3790	1080	2850	700	2220	1090

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

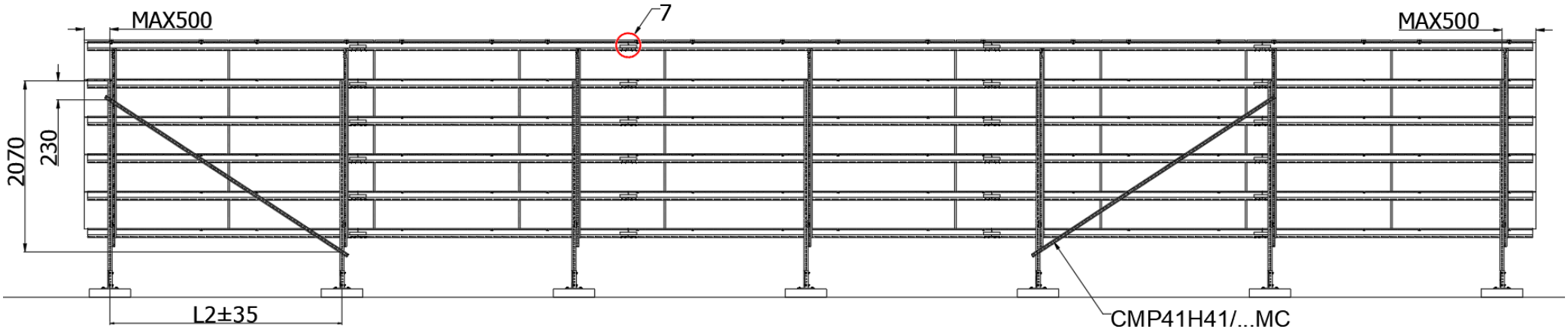


Fig. 2 View of the structure from the north with bracing spacing No. 2

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 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 meters above sea level.; 5 snow zone below 500 meters above sea level.

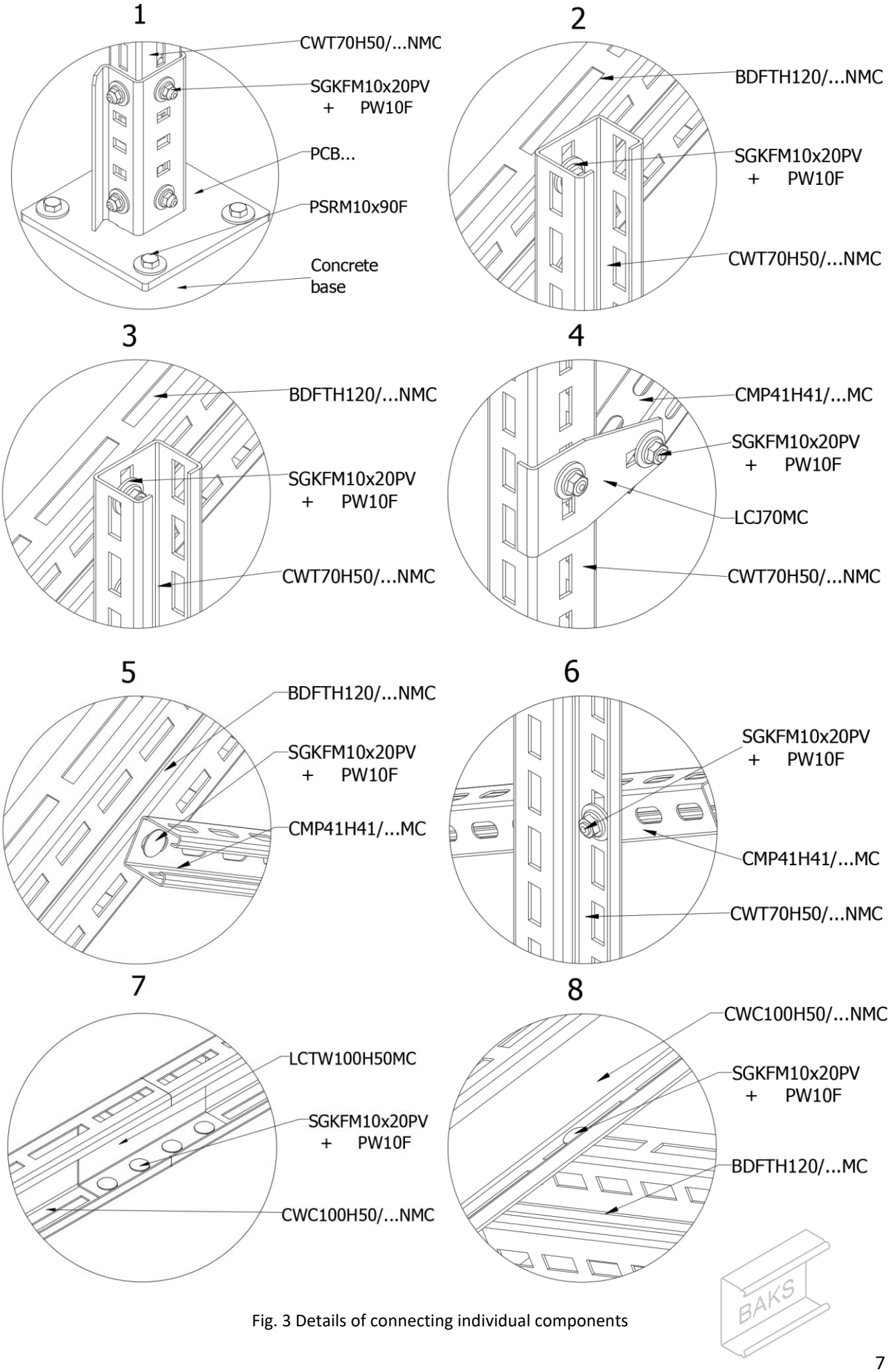


Fig. 3 Details of connecting individual components

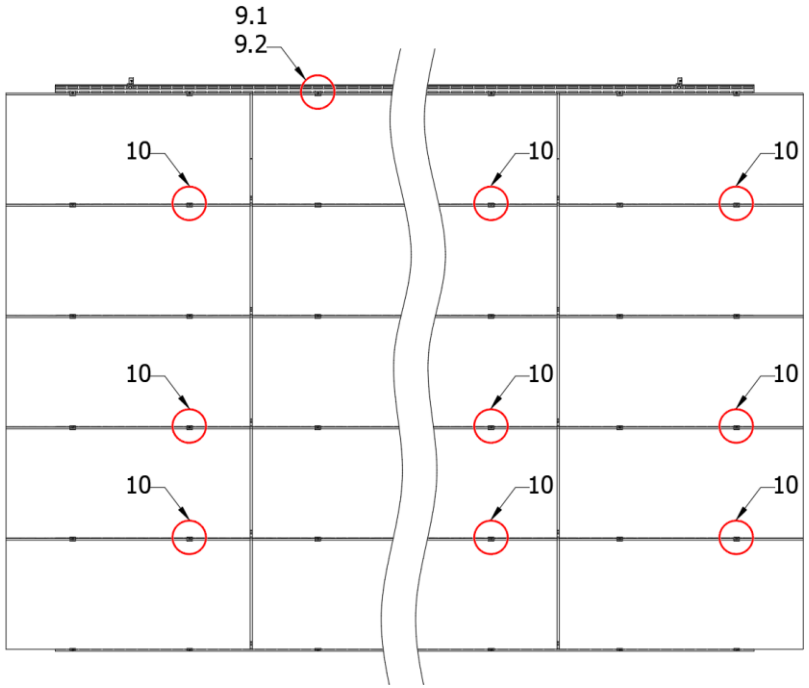


Fig. 4 Top view of the structure

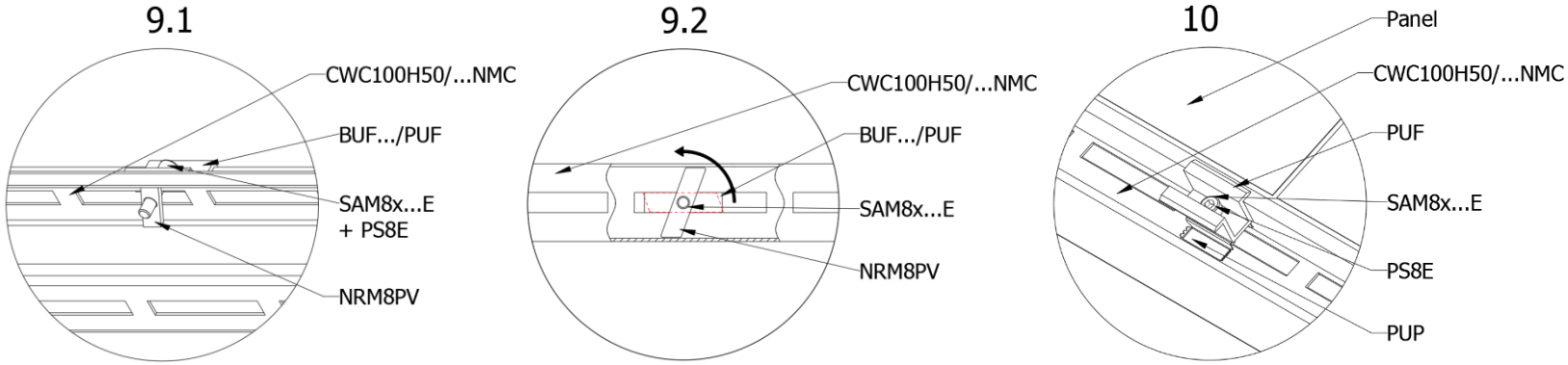
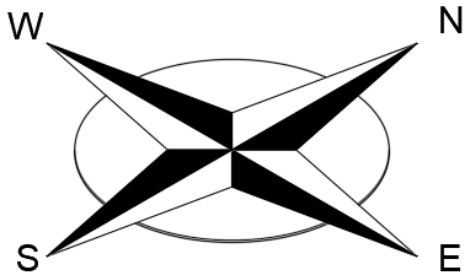


Fig. 5 Detail of assembly of the clamps together with the earthing washer and locking of the channel nut



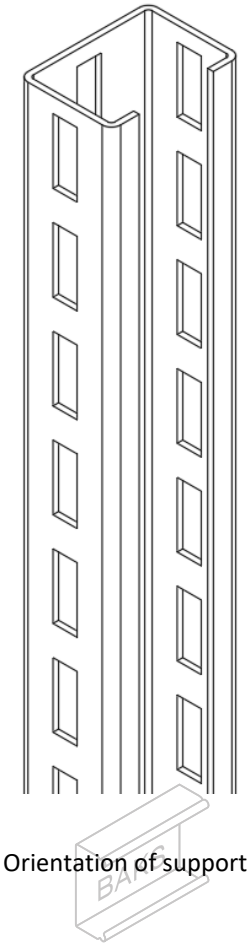


Fig. 6 Orientation of support column