

Foundation

The foundation of the KUKATE34 carries the load of the plant. The foundation is sunk into the ground. As connecting pieces to the mast, the mast feet are screwed to the foundation. The screwed mast feet are located about 100-150mm above the ground surface.

In this chapter, a sleeper foundation is presented. The density of the soil depends on its composition and the degree of moisture. To increase the weight of the soil, stones can be buried in the soil above the wooden slab.

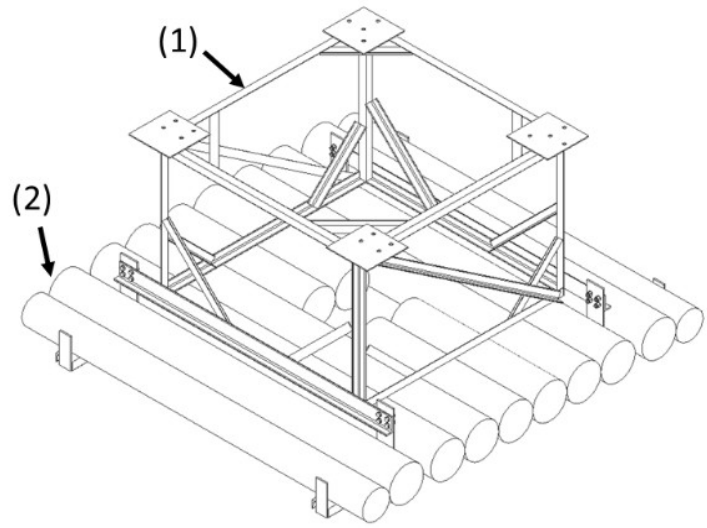
The foundation consists of a foundation basket (1), a wooden sleeper foundation (2) and the backfilled soil. The foundation basket and the wooden slab are embedded in the earth and backfilled with soil.

The diagonal braces (4) in Figure 2, which are parallel and opposite each other, prevent the basket from warping during raising and lowering. They end at the top where the hinges of the mast are.

The beauty of the KUKATE34 is the possible variations:

Of course, a foundation of concrete is also possible. The foundation basket is then provided with a mesh of reinforcing steel at the bottom. After it is precisely aligned, it is poured with a concrete slab at least 0.3 m thick.

After curing, soil or sand is poured onto the slab. The well pipe protrudes from the soil at least up to the frame of the mast. After compacting, a second clay slab can be poured on top. This guarantees clean conditions in the well and mast base area.

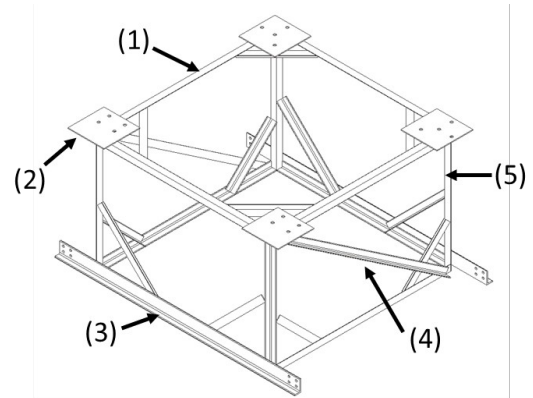


(1) Fundamentkorb
(2) Schwellenfundament aus Holz

Figure 1 – Complete Foundation

Foundation frame

The figure on the right shows the foundation cage. This consists of a rectangular framework. The base plates (2) for the mast feet are welded onto the upper edges of the framework. Diagonal reinforcements are attached to increase the stability of the foundation cage. In addition, the lower corners of the scaffold are provided with stiffeners. The framework, the reinforcements and the stiffeners are made of 50 mm L-sections. The foundation cage is mounted on the wooden plate with 100 mm L-sections. These angle profiles (3) are welded to the framework. The wooden slat is screwed to the profiles.



- (1) Querstreben
- (2) Grundplatte
- (3) Schwellenfundamentverbindung
- (4) Versteifung
- (5) Längsstreben

Figure 2 – Complete Foundation frame

The upper frame of the finished foundation must be absolutely horizontal before erecting the KUKATE34.

Tools

	17,5; 22	Metal	WS 24; 30	90°	

Material

Pos	Raw material	Name	Standard	Dimensions	Qty	Material
5.1 -1		Plate	EN 10051	300x300x6mm	2	S235
-2		Plate	EN 10051	300x300x6mm	2	S235
-3		L-Profile	DIN EN 10056-1	50x50x5x1400mm	4	S235
-4		L-Profile	DIN EN 10056-1	50x50x5x1450mm	4	S235
-5		L-Profile	DIN EN 10056-1	50x50x5x540mm	4	S235
-6		L-Profile	DIN EN 10056-1	50x50x5x1000mm	4	S235
-7		L-Profile	DIN EN 10056-1	50x50x5x700mm	4	S235
-8		L-Profile	DIN EN 10056-1	50x50x5x500mm	4	S235
-9		L-Profile	DIN EN 10056-1	50x50x5x1690mm	2	S235
-10		L-Profile	DIN EN 10056-1	100x50x8x2000m m	2	S235
-11		Hexagon head screw	DIN EN ISO 4017	M20x50-8.8	16	
-12		Hexagon nut with torque part	DIN EN ISO 7040	M20-8.8	16	
-13		Washer	DIN EN ISO 7092	20	32	

-14	Hexagon head screw	DIN EN ISO 4017	M16x50-8.8	16
-15	Hexagon nut with torque part	DIN EN ISO 7040	M16-8.8	16
-16	Washer	DIN EN ISO 7092	16	32

Table 1 – Bill of material 5.1 foundation frame

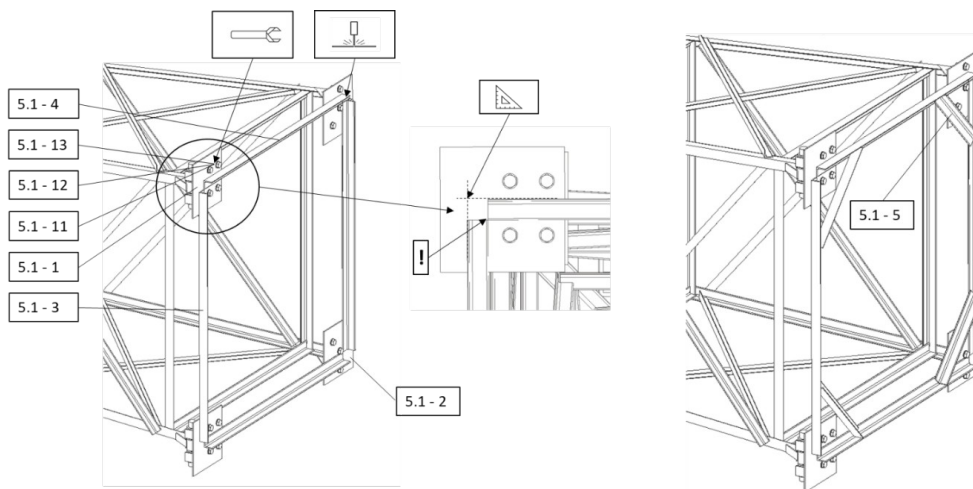
Construction

1. Mast base serves as template

The lower part of the mast is laid sideways. The lower mast frame is the template for the upper fundament frame. The base plates [5.1-1 and 5.1-2] are screwed to the mast feet. Screw the base plate [5.1-1] to the mast feet with hinges and the base plate [5.1-2] to the feet without hinges. The plates must be aligned exactly.

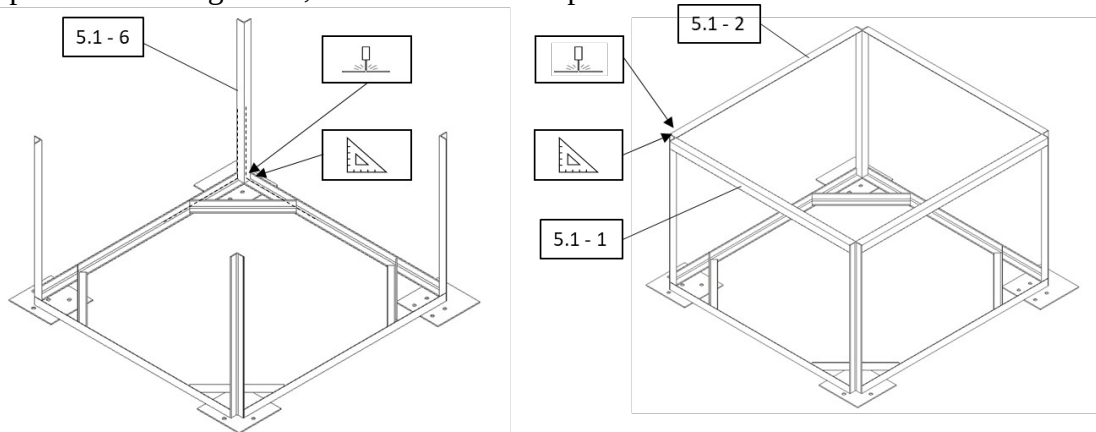
Build upper foundation frame

The L-sections must then be clamped to the base plates and spot-welded. It is important to keep sufficient distance between the holes of the base plates and the L-sections for the screw connection and the tools. The corners of the L-sections must be at right angles to each other. Diagonal braces [5.1-5] are installed at the corners for stabilization. These are first aligned and spot-welded. Then check again whether the base plates are flush with the mast feet. All welded joints are to be welded with short (40-50mm) seams. To prevent warping, the superstructure is welded crosswise. If not already done, the holes from the mast base plates can now serve as a template for the corresponding holes in the foundation base plates!

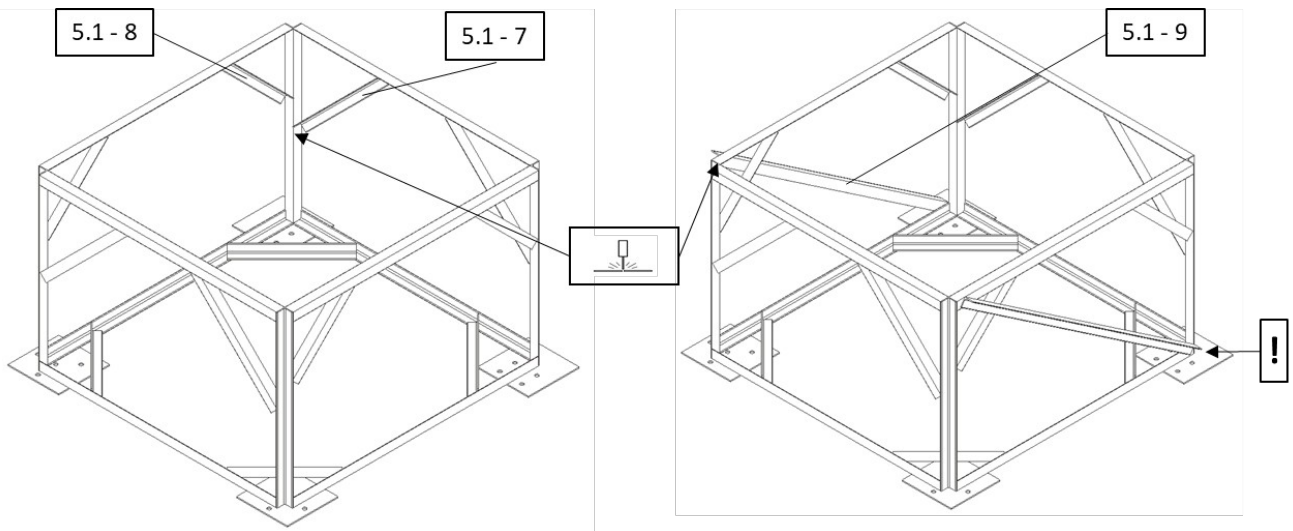


2. Build foundation stems and lower frame

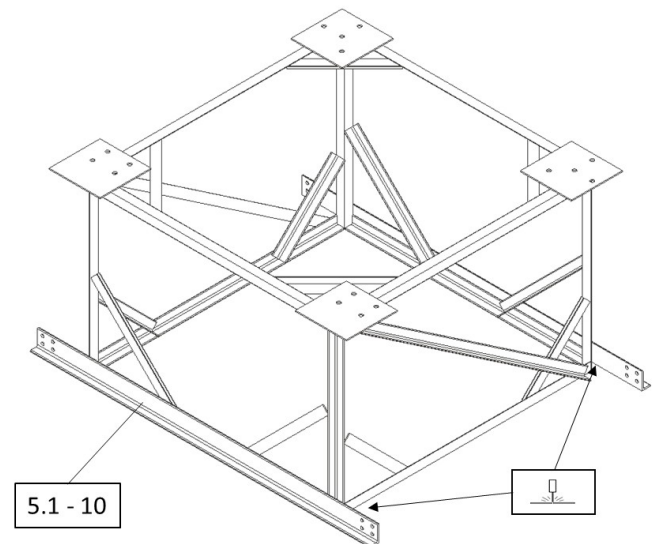
In the next step, longitudinal struts are placed at right angles and spot-welded. The lower cross brace rectangle is then fitted (the perspective has been rotated for a better overview). Again, make sure that the L-profile [5.1-1] is placed between the base plates of the same mast foot type (with or without hinge). The profiles [5.1-2] are to be welded accordingly between the base plates of the respective different base plates. After alignment, the L-sections are spot-welded.



3. Next, insert the diagonal braces and spot weld them. Use one short [5.1-8] and one long L-section [5.1-7] per corner. When aligning the outer diagonal braces, the positioning must be observed urgently. Their purpose is to distribute the forces over the entire foundation cage when setting up the system. Accordingly, they must be aligned to the base plate with hinges [5.1-2].



4. In the last step, the L-sections [5.1-10] must be attached to the cage. For this purpose, they are first aligned and spot-welded. Subsequently, all welded joints are to be welded with short welds (40 - 60mm). Here, too, it is important that the entire construction is welded crosswise..



Sleeper foundation

In figure is shown the sleeper foundation. The wooden structure consists of 10 logs.

However, this is not mandatory and can be varied in design. Thus, the dimensions or the number of logs can be designed differently.

The only important thing here is that the supporting surface of the piled up earth is stable and large enough. Due to the U-profiles underneath, which are screwed to the foundation cage, the weight of the logs and the piled-up soil acts as a counterweight for the entire plant.

In the center of the foundation there is a recess for the well.

Before installation, the foundation must be well protected against corrosion. Damage to the corrosion protection must be carefully repaired.

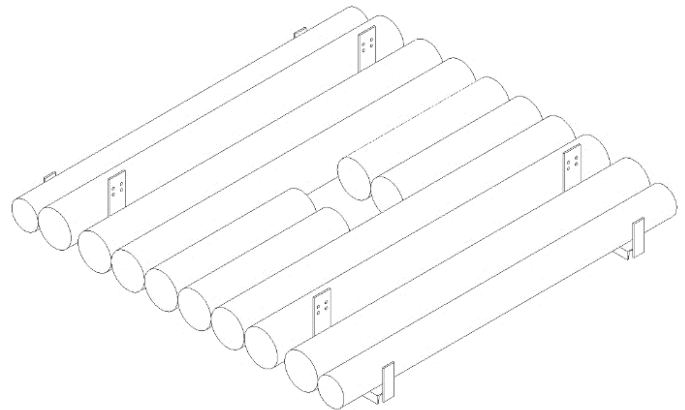





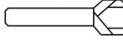


Figure 3 – Complete sleeper foundation

Assembly test in the workshop.

Check that all components fit together.

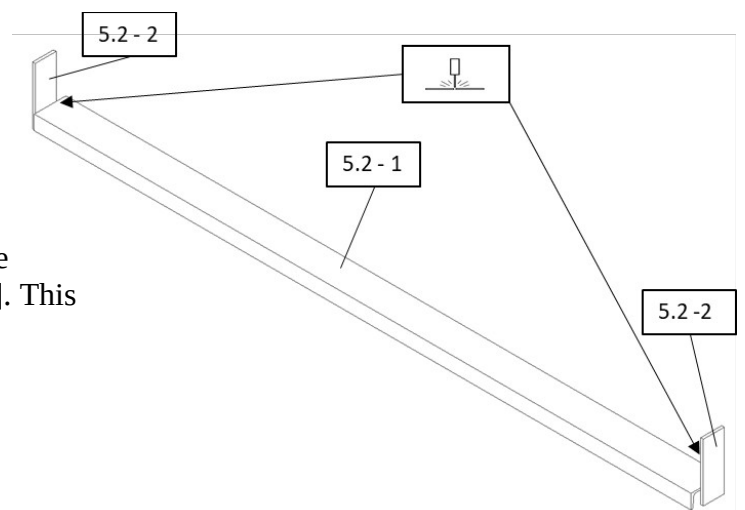
- The logs, wooden boards or beams must be adjusted without gaps. Their position in the frame must be marked and registered for the subsequent final assembly.
- The finished welded foundation must now be connected once again to the base plates of the lying lower mast section.
All screw connections must now be tested. The screwing tools must have sufficient space between the angles.
- It is necessary to check whether the mast bases and the foundation plates lie on each other without gaps.
Gaps must not be larger than 10mm.

Tools

					
	5; 17	Metal wood		90°	

Material						
Pos	Rar material	Name	Standard	Dimensions	Qty	Material
5.2 -1		U-Profile	EN1026	U120x2500mm	2	S235
-2	R - 25	Flat steel	DIN EN 10058	220x80x10mm	4	S235
-3		Plate	EN 10051	400x120x10mm	4	S235
-4		L-Profile	DIN EN 10056-1	50x50x5x100mm	8	
-5		Wooden weights		250x2500mm	10	Hardwood
-6		Wooden weights short		250x1050mm	4	Hardwood
-7		Wood screw	DIN 571	10x80mm	8	

Table 2 – Bill of material 5.2 sleeper foundation **Construction**



1. Weld plate girder

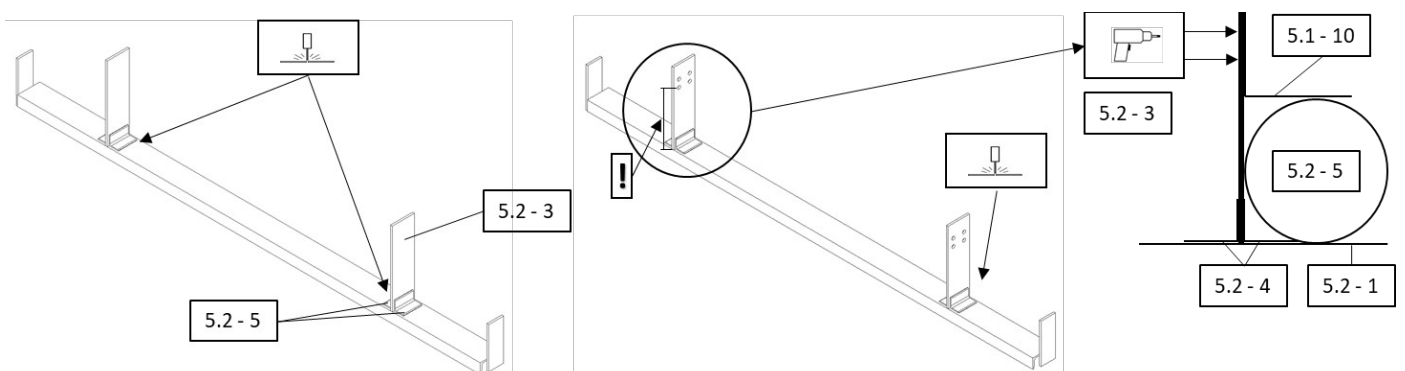
After all the components are cut to size, weld the plates [5.2-2] to the ends of the U-profile [5.2-1]. This construction is required twice.

2. Connectors sawing, drilling, welding

Next, the connectors from the plate girders to the foundation cage are built. Using screw clamps, the plates [5.2-3] are fixed to the lower mast brackets [5.1-10] to match the holes.

Alternatively: You can also drill the four holes at the top of [5.2-3] already and immediately bolt the plates to the lower mast brackets.

Then align the short connecting brackets [5.2-5] between the clamped connecting plates [5.2-3] and the girder [5.2-1] and spot-weld them. For the time being, the plate [5.2-3] is only placed between them so that the distance between L-sections is correct. The connecting plates must now be removed in the meantime before welding the L-sections because the angle sections [5.2-5] must be welded around the entire circumference. Then the plates [5.2-3] are drilled. Now the connecting



plates are screwed to the lower L-sections of the mast [5.1-10], positioned and welded to the short angles.

3. The last step is assembled at the installation site. However, it is advisable to assemble this step in the workshop beforehand to check whether all components fit together.

