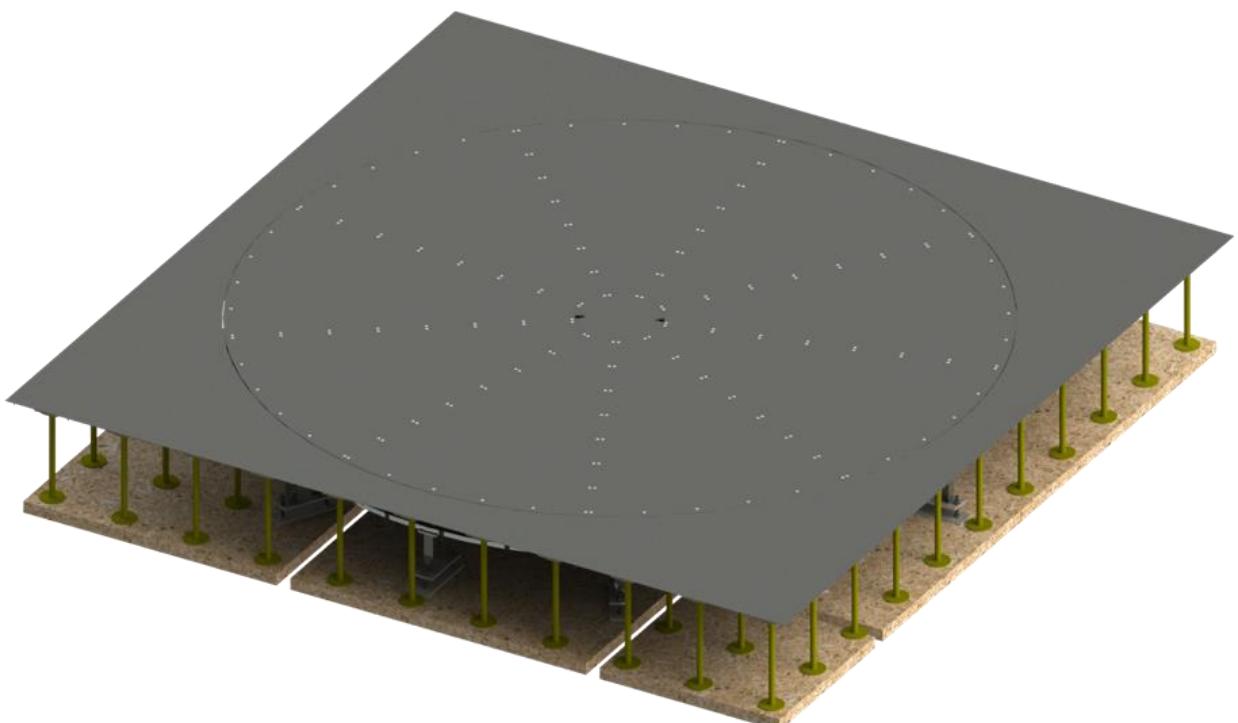


# Manual

## for

### Turntable TT 5.0 – 4t



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## **2 Safety instructions, general instructions, decommissioning**

### **2.1 Operator responsibility**

- Make sure that the system is operated only by personnel who have been authorized and instructed by the operator.
- Define an area of risk, which must not be entered while operating the system.
- Affix the instructed person's signature, that the operating instructions have been read and understood.
- Ensure that a copy of the entire operating manual is permanently ready to hand at the system.
- Determine the responsibility in accordance with the different fields of duty exactly. (Maintenance, upkeep, etc.)

### **2.2 Danger caused by energy**

#### **2.2.1 Danger from electrical energy**



The device may only be connected to a power supply, where the protective conductor has a proper grounding.



Any damage or interruption of the protective conductor inside or outside of the device, or interruptions of the protective earth terminal can result in injury.



The electrical commissioning of this device may only be performed by authorized personnel. The legal local rules and safety regulations must be adhered to.



Even when the device is turned off, there remains residual electrical energy in conduits!



Working at electrical components may only be performed by qualified electricians, before that the system must be disconnected from the mains.

## 2.2.2 Danger from mechanical energy



Caused by the movements of parts of the system, there is a risk of crushing as well as drawing-in hazard during operation. The defined area of risk must not be entered. While the system is stationary, there is a risk of impact as well as tripping hazard.

## 2.3 Residual hazards



Despite all precautions taken, there may occur unobvious residual hazards. These can be reduced by considering the safety advises, the intended use and the operating instructions.



### 2.3.1 Risk of injury by malfunctions



Malfunctions or operating conditions which may affect the safety, force the shutdown of the system by separating the power supply.



Before re-commissioning of the system, proper restoring of the intended condition is required.



### 2.3.2 Risk of impact, tripping falling



After removal of panels or plates, as required e.g., for maintenance, there is a danger to stumble against or to trip over parts of the system, or to fall in maintenance hatches.



### 2.3.3 Danger of slipping



During the operation or caused by malfunctions of the system there may form contamination or leak on ground near the system.

### 2.3.4 Explosion hazard through flammable detergents



During the maintenance there is a risk of explosion if highly flammable detergents are used for cleaning the system.

### 2.3.5 Risk of injury from irritant, health damaging or caustic substances



There are dangers when handling consumable supplies like oils, detergents, etc.



While working with these, the currently valid operating and work instructions or safety data sheets for handling of the respective substances must be observed.



### 2.3.6 No entry for unauthorized persons



There is risk of injury if unauthorized persons enter the pre-defined area of risk of the system. The operator must ensure that unauthorized persons, as visitors, customers, etc. have no access to the risk of area of the system.



### 2.3.7 Risk of death by falling loads



In the defined danger zone there is risk of death caused by human error or insufficient secured loads.



During installation, repair or maintenance of the system, appropriate lifting devices must be used, and the personal protective equipment must be used.

### 2.3.8 Risk of injury from hot surfaces



Especially motors are heating up during operation and cause risk of burning. Before maintenance and repair it is necessary to ensure that all components are cooled down.

### 2.3.9 Risk of injury from use by unauthorized persons or third parties



There are risks if unauthorized persons or third parties operate the system via the control unit while personnel are staying unauthorized in the area of risk.

### 2.3.10 Danger from laser beams



During setup operation of the device laser systems are used. Never look into the laser beam! Wear safety glasses!

## 2.4 General instructions



Before carrying out any repairs, always contact maturo GmbH previously.

Independent repairs or modifications to the equipment may cause warranty to expire.



Before any repairs the electrical power supply must be interrupted. At many points of the individual component's voltages appear that can cause injuries when touching.



Only trained staff may carry out settings and / or repairs to the devices. At the capacitors inside the device can still be voltage even if the device is powered off.



Regularly inspect and maintenance all devices in accordance with the provided instructions

Only use spare parts that are ordered or recommended by the manufacturer.



The devices must be clean and free of dust. A dirty or dusty environment may cause electrostatic interference.



To prevent electromagnetic interference, we use filters with a high leakage.



These filters are installed in each phase and the neutral conductor. The filters are principally used in products which are grounded to the floor, for example AM, CAM, TAM, EAS, TD, WPTC, MVCF. The filters are also installed into turn tables with higher loads, starting at TT2.0-1t. In most EMC chambers no Residual Current protective device (RCD) is installed. This is legit when sockets are built for a specific item of electrical equipment. In this case, the high leakage current has no effect.

If you are planning to install an RCD in the EMC chamber, then a 30mA RCD is too small!

You must use a 300mA RCD!

Technical changes and errors expected as product enhancements are made regularly. Pictures included are for illustration only and do not represent all possible configurations.

## 2.5 Decommissioning

### 2.5.1 Switching off the system



Stop all remote controls by external software!

Move the devices to their parking positions (see instructions for the control unit)!



Turn off the respective control unit and devices with their power switches and disconnect the equipment from the power supply!

### 2.5.2 Storage of the system

Turn off the system, disconnect all data connections between control units and devices!

The storage area must be cool and dry to avoid corrosion on the individual devices of the system. The room temperature of the storage area must be constantly between 5°C and 25°C, the humidity must not be more than 50%.

- Prepare the individual parts of the system to avoid any external damaging influences during storage!
- If necessary, use cardboard, wooden boxes, and other packaging material!
- Secure all components against accidental tilting and instability!

### 2.5.3 Dispose of the system



This device must be disposed according to the applicable regulations and legislation from domestic waste. By collecting and recycling of recyclable materials the natural resources are conserved, and it is ensured, that all the applicable regulations for the protection of health and the environment are considered.

### **3 General Instructions and Precautions**

**Before this device is applied with power:**

Ground it properly through the protective conductor of the power cable to a power source provided with protective earth contact. Any interruption of the protective (grounding) conductor, inside or outside the device, or disconnection of the protective earth terminal could result in personal injury.

**The electrical installation** of this product must be accomplished by an individual who is authorized to so do by the appropriate local authority. The installation must be compliant with local electrical safety codes.

**Only qualified personnel** are allowed to operate or service this equipment.

**Before making service, contact maturo GmbH**

Service or modifications of the device by yourself may void your warranty.

If you attempt to service the unit by yourself, disconnect all electrical power before starting. There are voltages at many points in the components which could, if contacted, cause personal injury. Only trained service personnel are allowed to perform adjustments and/or service procedures upon this device. Capacitors inside this instrument may still be charged even when instrument is disconnected from its power source.

**Stay clear** of moving components during the operation of the device.

Do not operate the device while somebody is close to moving parts.

The protection of the **area of risk** at site is part of the operator.

**Read this manual** completely before starting installation. This equipment must be installed and operated only by qualified personnel.

**Regularly inspect** all equipment and conduct scheduled maintenance in accordance with the factory recommendations provided. Only use replacement parts and fasteners ordered directly from the factory.

Information presented enclosed is subject to change as product enhancements are made regularly. Every effort has been made to ensure that the information in this manual is accurate. However, no liability or guarantee is assumed for the up-to-dateness, correctness and completeness of the information provided herein.

Pictures included are for illustration purposes only and do not represent all possible configurations.

## 4 Technical Data of the Turntable TT 5.0 – 4t

Diameter	5.0 m
Load capability	4.000 kg
Point load	650 kg (at area of 10cm x 10cm)
Height	600 mm
Material cover plate	stainless steel
Rotating speed adjustable	0.1 rpm – 1.5 rpm
Rotating angle	+400° to -200°
Position accuracy	+/- 0.5°
Motor	servo motor, frequency inverter
Interference suppression	20 dB under limits DIN EN 55011:2022-05 class B
Turntable drive	bevel gear
Control cable	Fibre optic lines
Remote control via	LAN (TCP/IP)
Voltage	380 VAC – 400 VAC, 50 Hz / 60 Hz, three phases
Required Fuse	max. 16 A
Discharge current	30 mA per drive unit (higher in the moment when powering on)
Recommended RCD	300 mA
Concentricity tolerance	+/- 3mm
Elevation tolerance	< 5 mm
Ground plane connecting	every 50 mm
Square border interface	5.5 m x 5.5 m, stainless steel
Operating temperature	10° C – 35° C
Accessories	Interface to FCU <sup>3.0</sup> Controller 1.5 m power supply cable Service manual

### Brief description

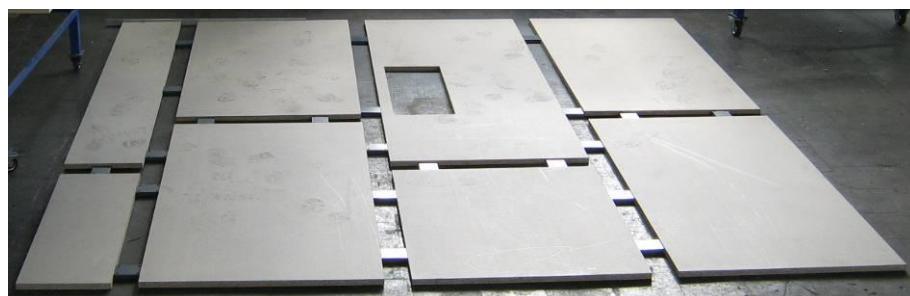
The turntable **TT 5.0 – 4t** is especially designed for flush mounted installation in semi anechoic electromagnetic absorption chambers. The carrier plate is made of stainless steel. A 450 mm diameter opening in the centre of the turntable provides the capability to insert power supply for testing.

The **LAN (TCP/IP) - interface** provides an additional control option for all functions, when operated with the **FCU<sup>3.0</sup> Controller**.

## 5 Assembly and Installation

Notes:

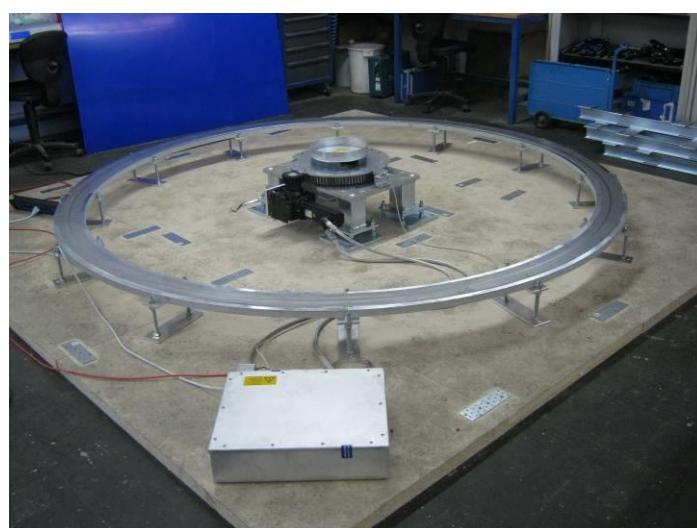
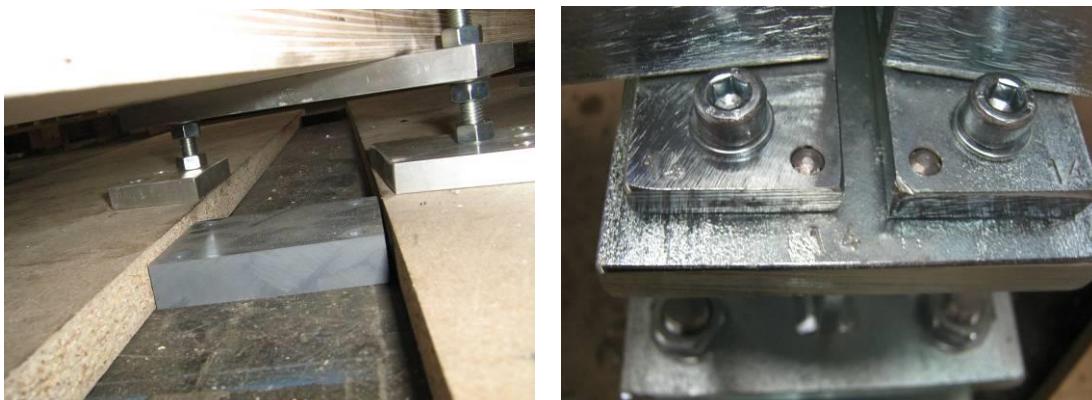
- All important assembly groups are marked with numbers.  
See also drawings in appendix for installation.  
**Take care of the markings while assembling the turntable.**
  - The required mounting screws are packed and labelled in different cardboard boxes  
**Take care of the labelling while assembling the turntable.**
- 1) Place wooden floor plates on the floor and fix them with include glue according to drawing in appendix.



- 2) Set drive unit frame in the centre and level the unit on height and position according to the chamber design



- 3) Place the metal supports for the runway on the wooden floor.  
Put on the metal segments of the runway on the supports.  
**Note: Do not screw on the supports at this stage!**



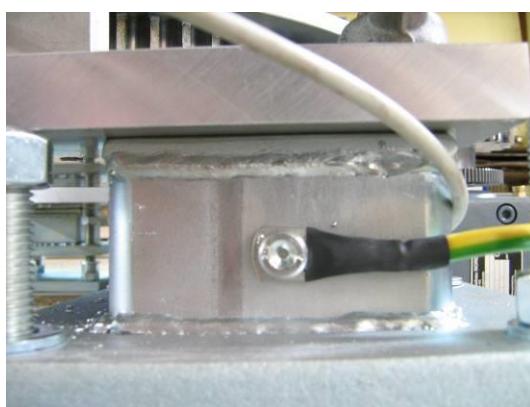
- 4) Screw on one main beam to the centre bearing. **Pay attention to the markings!**



- 5) Connect the turntable with the short fibre optic cable to the controller and reference the turntable according to the manual of the controller
- 6) Align the runway in height and radial run-out by turning the main beam
- 7) After the runway structure is aligned it can be screwed to the wooden floor
- 8) Align the metal runway sheets and screw on to the runway structure



- 9) Connect ground cables from the drive unit frame, the control box, and the runway structure to the shielding (bottom panels)



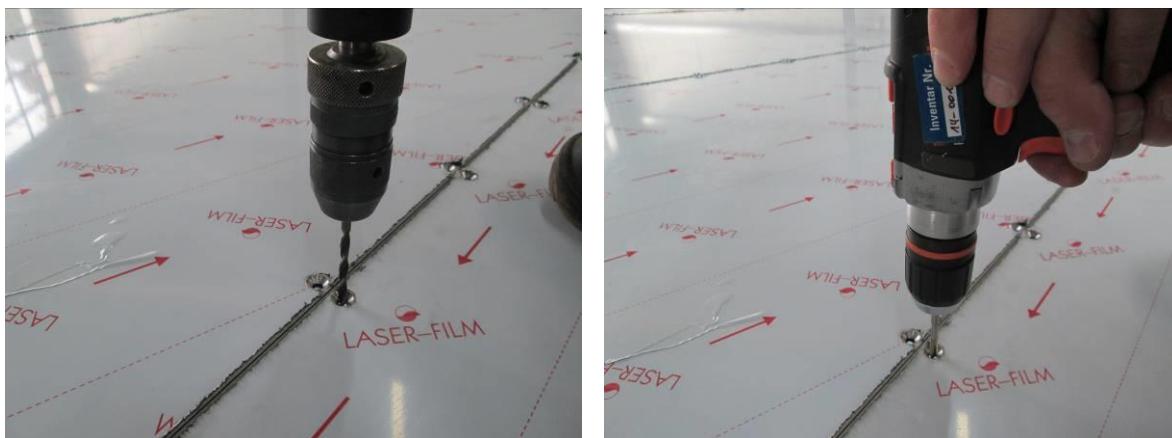
- 10) Install the beam structure of the turntable to the drive unit frame, align the beams and fasten the screws by hand.



- 11) Check height level of the beams structure with bubble level and adjust accordingly.  
After the steel structure is aligned and levelled, tighten all screws of the beam structure.
- 12) Tighten all screws of the wheels at the main beams
- 13) If a connection plate (CP) for power supply exists in the centre, connect the sockets with the corresponding cables – use only shielded cables for the power supply!
- 14) Clean all parts from dirt – especially the runway.
- 15) Place the cover plates on the structure and align the plate accordingly  
The radial run-out should be within a tolerance of +/- 0.5 mm.



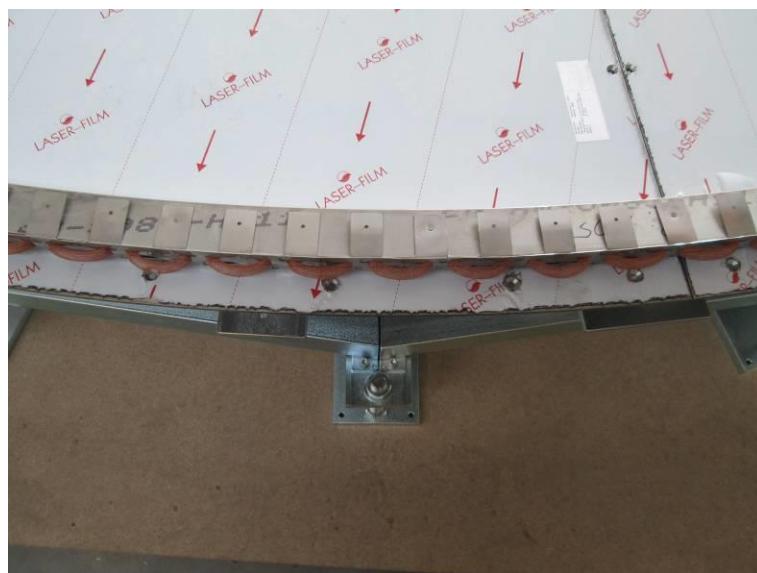
16) Drill and tape M6 threaded holes through the beams while the cover plates are on the beams.



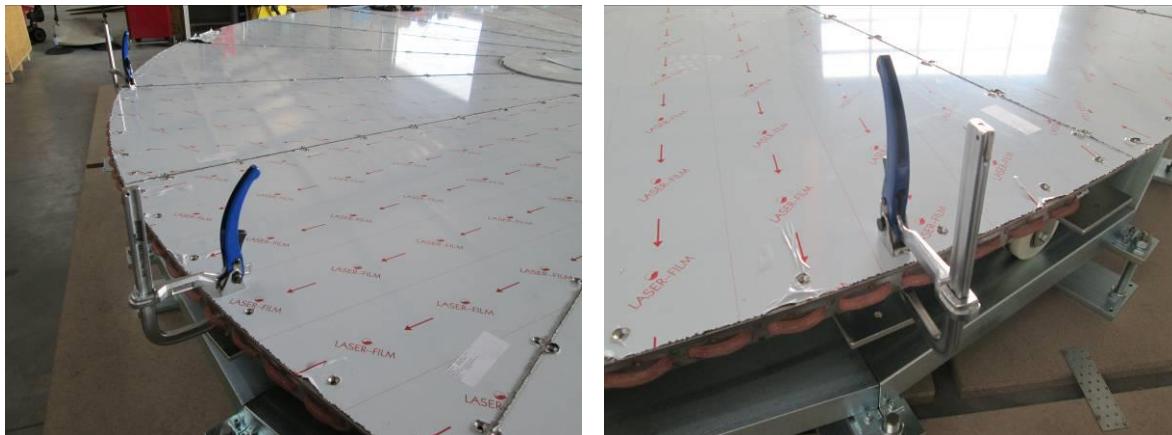
17) Remove cover plates and clean the surface carefully.

18) Fix all cover plates with the M6x16 screws

19) Install the aluminium segments with the contact ring at the outer rim of the turntable structure.



20) The contact ring will be placed under the cover plates. If necessary, cut out the straps where the cover plates are fixed to the aluminium segments with the screws.



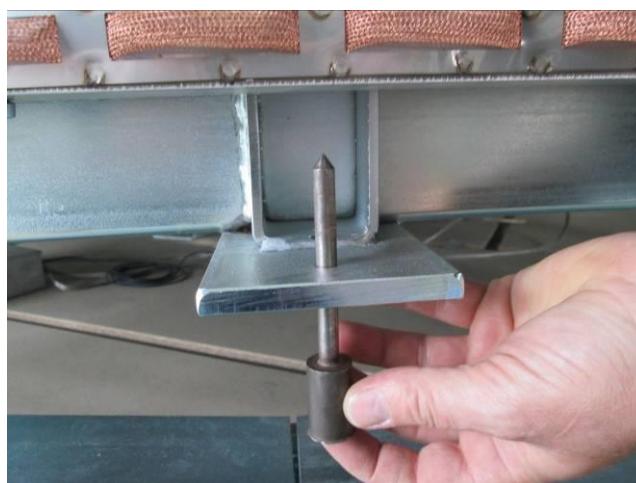
21) Adjust distance from cover plates to the contact ring.

The distance must be 5 mm.

After the contact ring is adjusted drill, tape M6 threaded holes, and fix with M6x16 screws.



22) Punch the aluminium segments through the main beams with centre punch



23) Remove the segments and drill and tape M8 threaded holes for the thread spindles



24) Fix the aluminium segments again to the turntable structure and fix the M8 thread spindles at the aluminium segments.



25) Check the concentricity tolerance (+/- 3mm) and the elevation tolerance (5mm) of the contact ring and the turntable.

It is possible to rotate the turntable in this case slowly with the controller.



26) The elevation tolerance can be adjusted with the thread spindles.



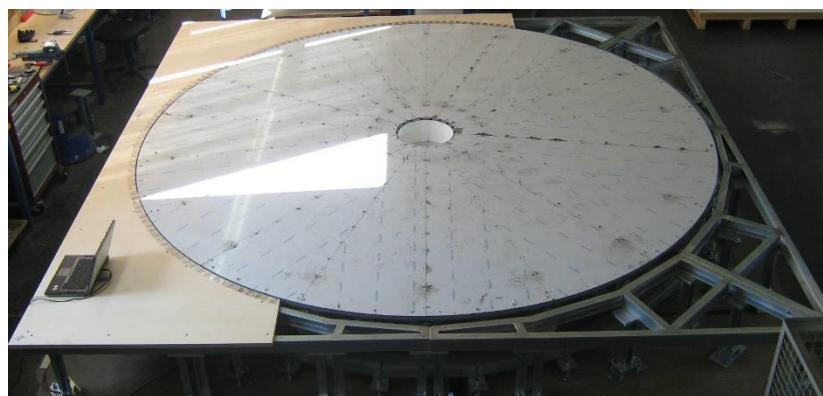
27) After the tolerances are checked, all screws of the turntable structure can be tightened.

28) Mount the outer pedestals to the wooden floor and level on height



29) Align the outer frame plates (wooden or steel) and bolt on to the pedestals.

**Pay attention to the hollow core gasket that they will be not damaged during installation.**



30) Install the contact stripe and drill it with the frame plates

- a) At turntables with **steel frame plates**: drill it with the frame plates
- b) At turntables with **wooden frame plates**: use the included nails to fix the contact stripe

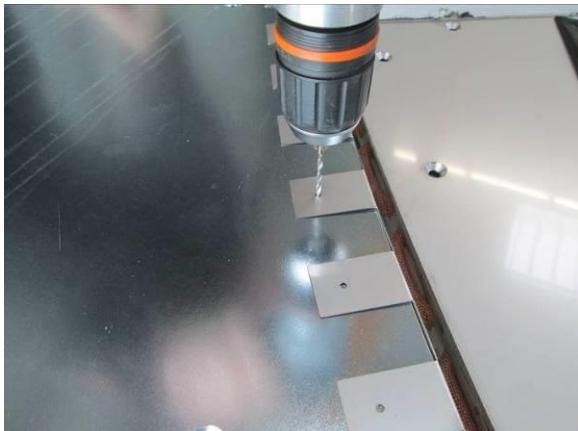


Fig. a: Drilling at steel frame plates

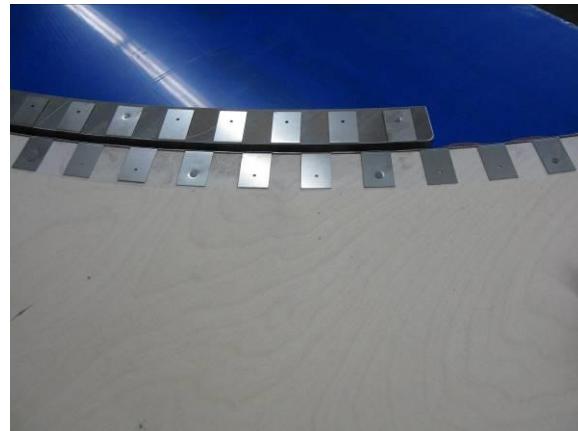


Fig. b: Nailing at wooden frame plates

31) Fix the contact stripe with the notched nails for steel frame plates or standard nails for wooden frame plates

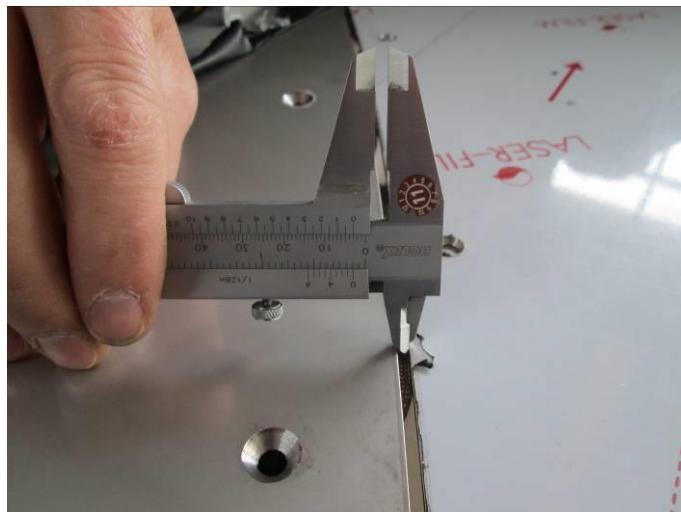


32) Place and align the outer cover plates on the frame plates.

If wooden frame plates are used, place electrically conductive metal foil underneath the joints of the outer cover plates.



The gap between the inner and outer cover plates shall be 3 mm.



33) Seal the gap between the turntable and the outer cover plates with tape



34) Drill and tape M4 threaded holes through the **steel frame plates** while the cover plates are on the frame. (At **wooden frame plates** no drilling is required)

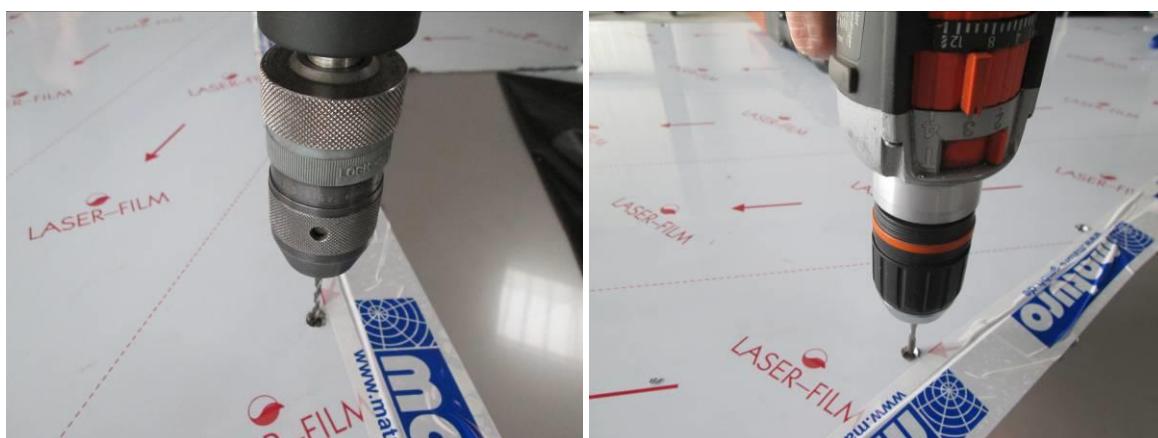
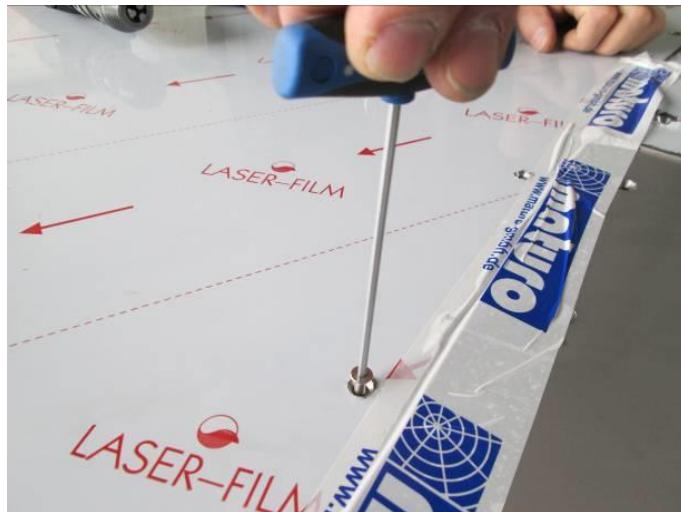


Fig.: Drilling and taping at steel frame plates

- 35) Remove cover plates, clean the surface carefully, and afterwards fix all cover plates with the M4 screws at **steel frame plates** or with chipboard screws 4x25 at **wooden frame plates**.



- 36) Remove protective foil from all cover plates and clean the surface of the cover plates
- 37) Connect the power cable and switch on the power  
Attention: Power Consumption: 380 VAC – 400 VAC, 50 Hz / 60 Hz, three phases  
**Only use the provided power supply cable!**  
**Note: The power supply cable must be shielded and have good earthing!**
- 38) Connect the fibre optic control cables from the turntable to the controller
- 39) Reference the turntable and make a test run according to the manual of the controller

## **6 Care and Maintenance**

Caution:

Before performing any maintenance, disconnect the system and turn off power

Routine check:

- Prior to beginning normal operation of the turntable, look for foreign objects in the gap between the turntable top plate and the surrounding plates – the contact system or the castors could be damaged
- Listen for unusual noise during operation

Six-month check:

- Check flatness between the cover plates and tighten fixing screws if loose
- Check the contact system on displacement and adjust if necessary
- Clean the running way and castors and remove scaling if exists
  - Note: Do not use cleaner, which includes corrosive and harmful ingredients
- Check the positioning switch and clean if necessary
- Note: The lifetime of the cables are limited, they must be replaced from time to time depending on the used cables and environmental conditions

General:

- When not using cables or devices, always put on the provided dust covers!



Cleaning of cables see manual of NCD controller!

### Routine Maintenance

To ensure a high level of reliability of operation, a long working life of the products, and substantially to avoid major repair costs, we offer the option of a maintenance contract with our service department.

This maintenance contract is carried out by our service engineers who accurately check and examine all the important components and functions at regular intervals of time, to be agreed from case to case.

The contract covers the mechanical and electrical or electronic parts of our products as well as the cooling units, safety devices, alternative and optional equipment, where these have been fitted to the products.

The details of the services to be provided by our maintenance service are agreed from case to case. We shall be happy to provide a suitable quotation on request.

## **7 Trouble shooting for the Turntable**

If there are problems with the device, please always carry out the following first:

- Check power supply and fuses!
- Check fibre optic cables and connections (if possible, change cables from a different device and check)!
- Check user limits and remove the limits, if not in use (see manual of controller)!
- Use a short cable for connection directly to the turntable in the chamber!
- Disconnect the power supply of the device and the controller for minimum one minute! Reconnect the power supply and carry out positioning!

Please contact our service department by phone or by e-mail, please always provide the serial number of the products:

Phone: +49 9606 9239130

E-mail: [service@maturo-gmbh.de](mailto:service@maturo-gmbh.de)

## Warranty Statement

Maturo GmbH, hereinafter referred as maturo, warrants that our standard products are free from defect in materials and workmanship for a period of two years from date of shipment if maintenances are done regularly. Standard maturo products include the following:

- Antenna Masts and Stands
- Turntables and Turn Devices
- Cable Guide Rails
- Controllers
- Dynamometers for the automotive industry

If the Buyer notifies the Seller of a defect within the warranty period, the Seller will at the Seller's option, either repair and/or replace those products that prove to be defective.

There will be no charge for warranty services performed at the location maturo designates. The customer must, however, prepay inbound shipping costs and any duties or taxes. Maturo will pay outbound shipping cost for a carrier of maturo's choice, exclusive of any duties and taxes. If maturo determines that warranty service can only be performed at the customer's location, the customer will not be charged for maturo's travel related costs.

This warranty does not apply for:

- Improper storage of our products outside our area of influence
- Errors during installation, commissioning, or operation
- Wear and tear during normal operations
- Unqualified maintenance works
- The application of unsuitable equipment and materials
- The results of repair work or other activities undertaken on our products, which have not been expressly approved by us.
- Consumable items such as fuses, batteries, etc
- Products which have been operated outside the specifications

Note: Please always contact maturo before shipping equipment to us.

## Einbauerklärung

im Sinne der EG-Richtlinie Maschinen 2006/42/EG, Anhang II, Nr. 1 B

### ***Declaration of Incorporation***

*in accordance with EC -Machinery Directive 2006/42/EC, appendix II, No. 1 B*

Hiermit wird erklärt, dass das Positioniersystem, bestehend aus:

*We hereby declare that the positioning system, consisting of:*

Produktbezeichnung: <i>Product:</i>	Turtable TT 5.0-4t
Seriennummer: <i>Serial number:</i>	TT5.0-4t/1200/3792.01
Baujahr: <i>Year:</i>	2023
Hersteller: <i>Manufacturer:</i>	maturo GmbH, Am Kalvarienberg 24, 92536 Pfreimd

Produktbezeichnung: <i>Product:</i>	Controller FCU <sup>3.0</sup>
Seriennummer: <i>Serial number:</i>	FCU <sup>3.0</sup> /525/3792.01
Baujahr: <i>Year:</i>	2023
Hersteller: <i>Manufacturer:</i>	maturo GmbH, Am Kalvarienberg 24, 92536 Pfreimd

in der gelieferten Ausführung zum Einbau in eine Anlage bestimmt ist.

Die grundlegenden Sicherheits- und Gesundheitsschutzanforderungen gemäß Anhang I der Maschinenrichtlinie kommen zur Anwendung und wurden eingehalten.

*as delivered is designed for installation into a system.*

*The general safety- and health requirements according to appendix I of the Machinery Directive are applied and have been observed.*

Zusätzlich entspricht dieses Positioniersystem folgenden Richtlinien:

*Additionally, the positioning system in according to the following directives:*

- |              |  |
|--------------|--|
| - 2014/30/EU | Elektromagnetische Verträglichkeit – EMV-Richtlinie  |
| - 2014/30/EU | <i>Electromagnetic compatibility – EMC directive</i> |
| - 2014/35/EU | Elektrische Betriebsmittelrichtlinie                 |
| - 2014/35/EU | <i>Electrical equipment directive</i>                |

Grundlagen dafür sind folgende harmonisierte Normen:

*Basis for that are the following harmonized standards:*

- DIN EN 55011:2022-05	Class B
- DIN EN 61000-4-2:2009-12	Level 2/3
- DIN EN 61000-4-3:2021-11	Level 2
- DIN EN 61000-4-4:2013-04	Level 2
- DIN EN 61010-1:2020-03	

Die speziellen technischen Unterlagen nach Anhang VII B wurden erstellt.

*The relevant technical documentation according to appendix VII B have been issued.*

Dieses Positioniersystem darf erst dauerhaft in Betrieb genommen werden, wenn festgestellt wurde, dass die Anlage, in die dieses Positioniersystem eingebaut werden soll, den Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht.

*The commissioning of the positioning system is prohibited until it has been installed into a system which then meets the requirements of the EC Machinery Directive 2006/42/EC.*

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Telefon: +49 (0)9606 923913-0  
Telefax: +49 (0)9606 923913-29



Pfreimd, den 30.08.2023

Gerhard Strehl, Managing Director

Firmenstempel <i>Company stamp</i>	Ort und Datum der Ausstellung <i>Place and date of issue</i>	rechtsverbindliche Unterschrift <i>Name and signature of authorised person</i>
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## EU-Konformitätserklärung

im Sinne der EU-Richtlinie RoHS 2011/65/EU

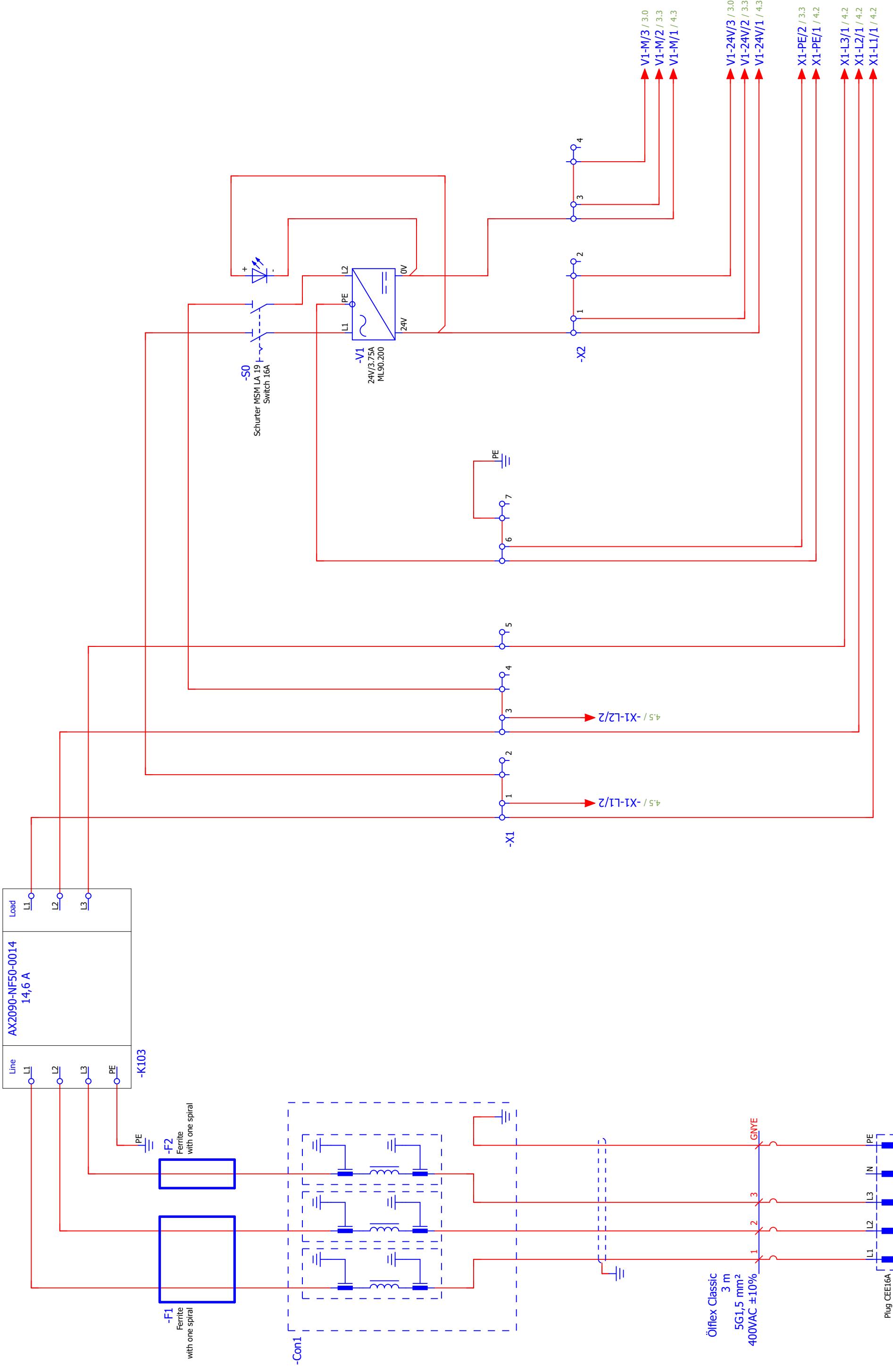
### ***EC declaration of conformity***

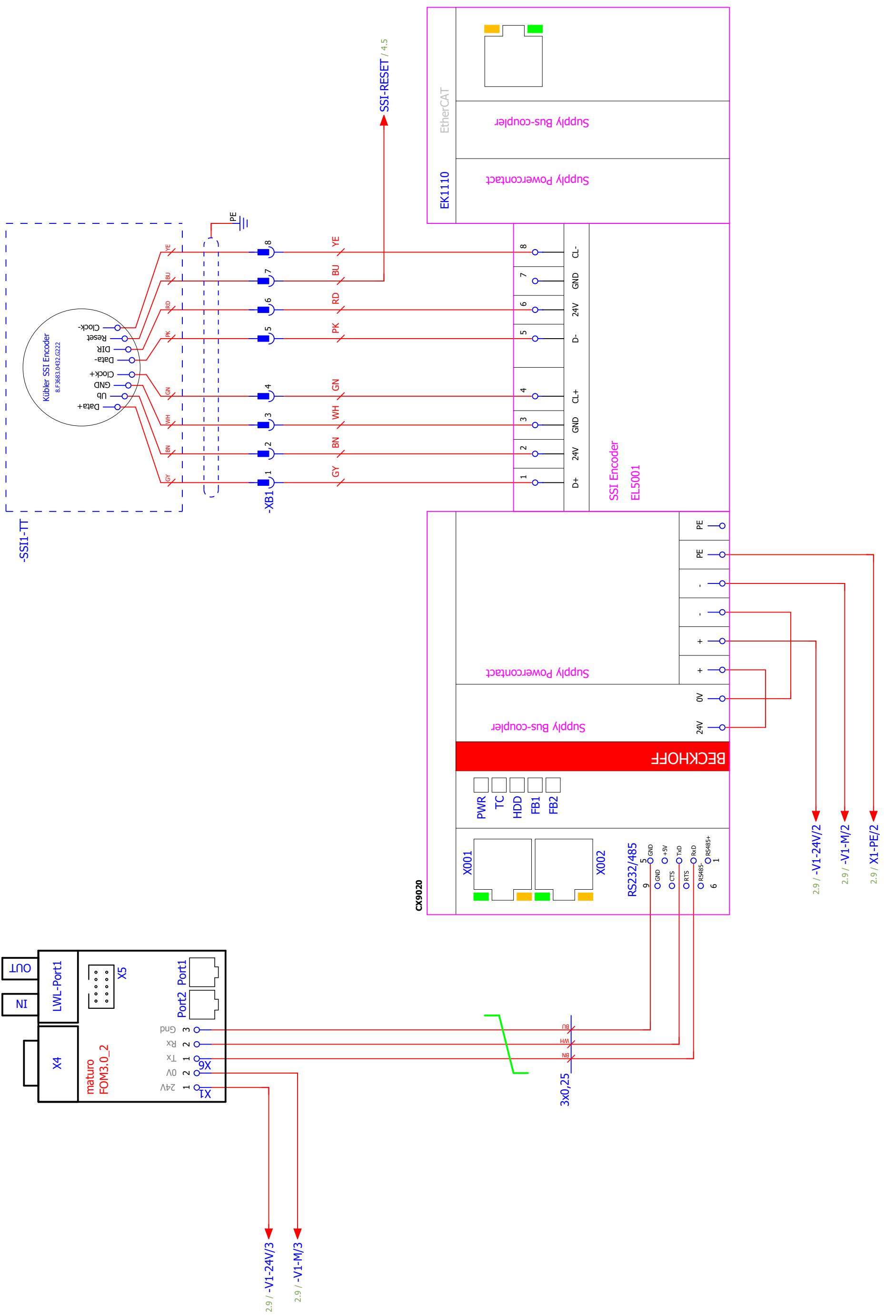
*in accordance with EC Directive RoHS 2011/65/EU*

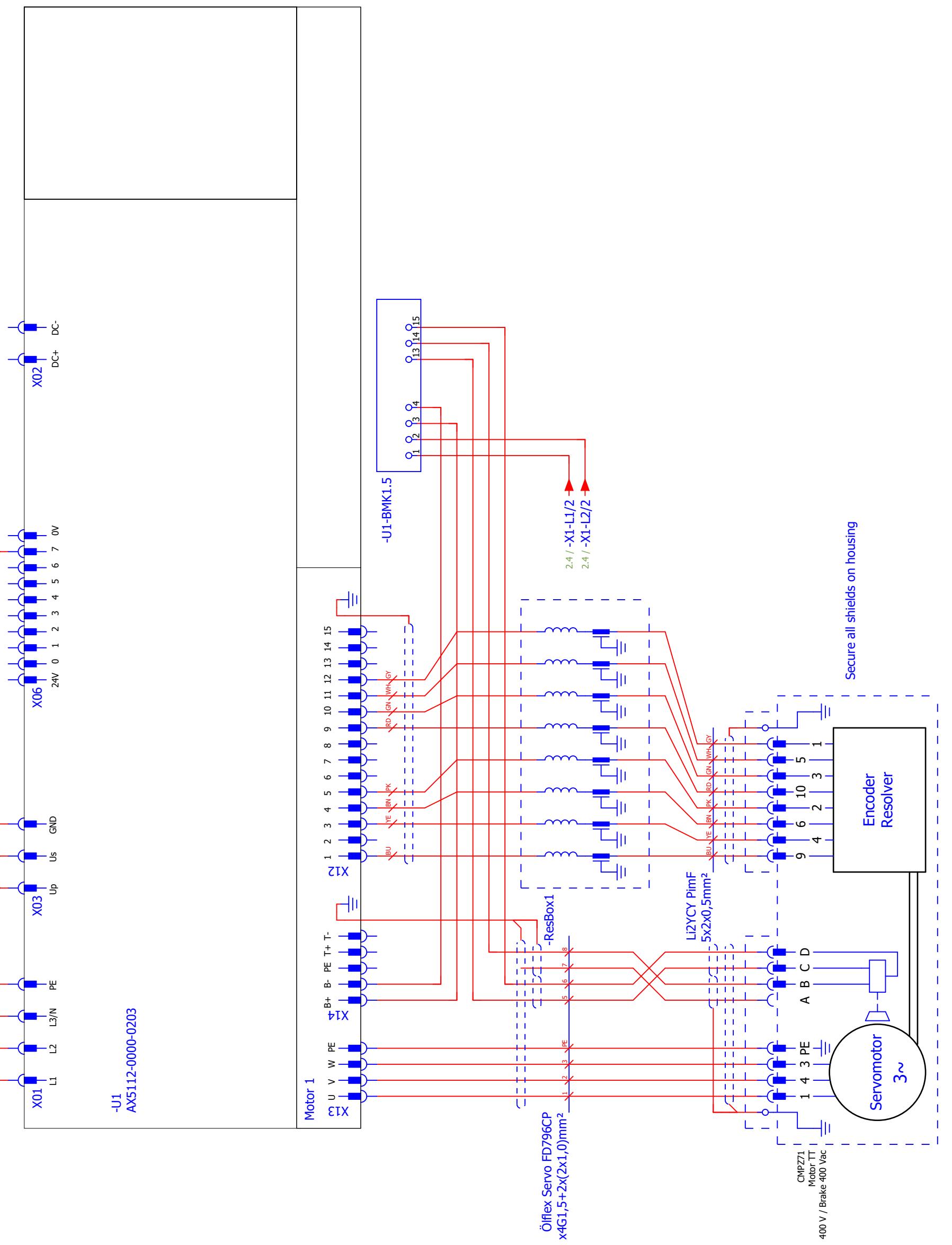
Unsere Produkte erfüllen die Vorschriften der Richtlinie 2011/65/EU des Europäischen Parlaments und des Rates vom 08.06.2011 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten, sowie der Einhaltung der Höchstkonzentration in homogenen Werkstoffen in Gewichtsprozent von Cadmium < 0,01%, sowie Blei, Quecksilber, sechswertiges Chrom (Cr<sup>6+</sup>), Polybromierte Biphenyle (PBB), Polybromierte Diphenylether (PBDE), Bis(2-ethylhexyl)phthalat ((DEHP), Benzylbutylphthalat (BBP), Dibutylphthalat (DBP) und Diisobutylphthalat (DIBP) < 0,1% gemäß Anhang II der Richtlinie. Wir erklären hiermit, dass alle unsere Produkte RoHS-konform produziert werden.

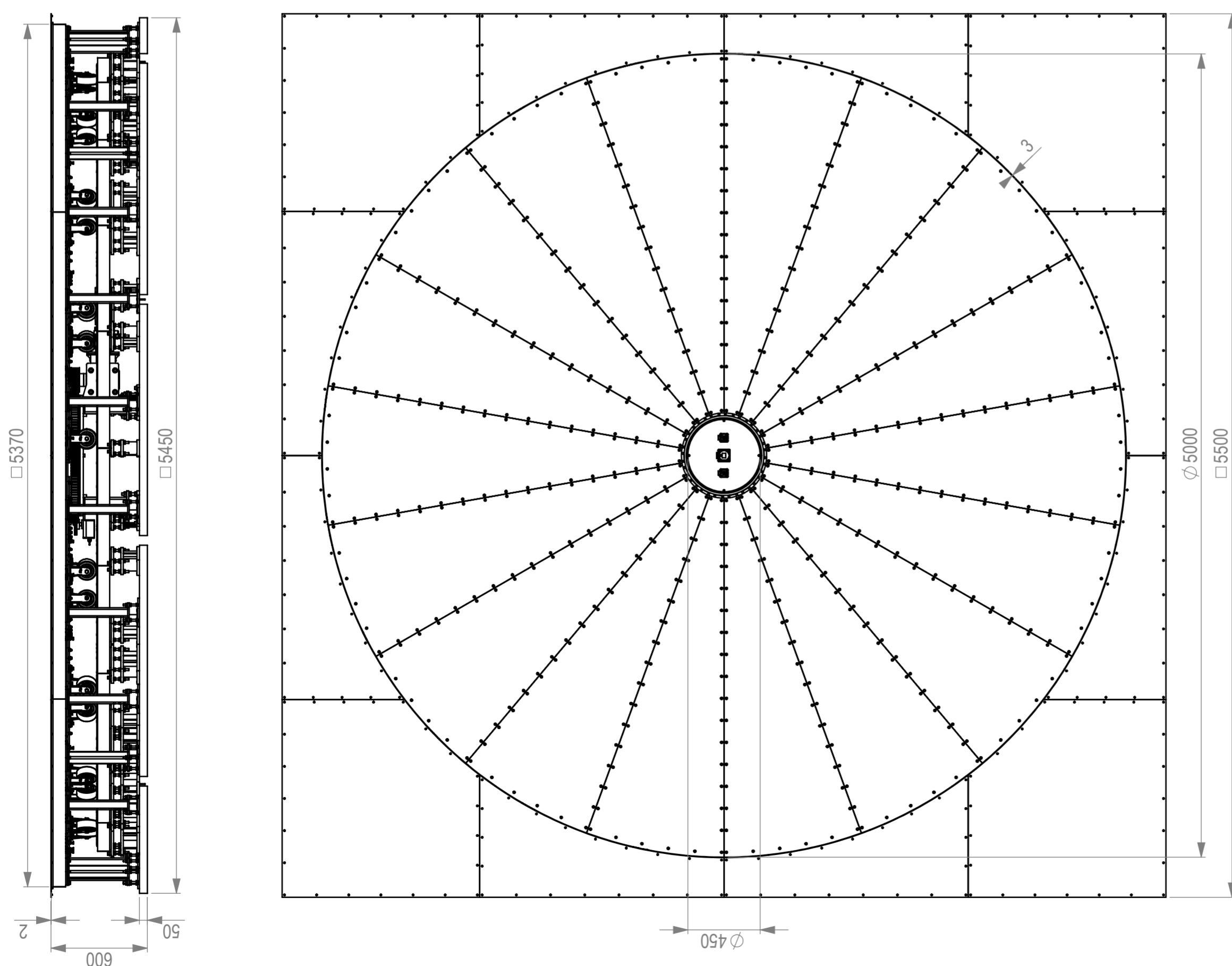
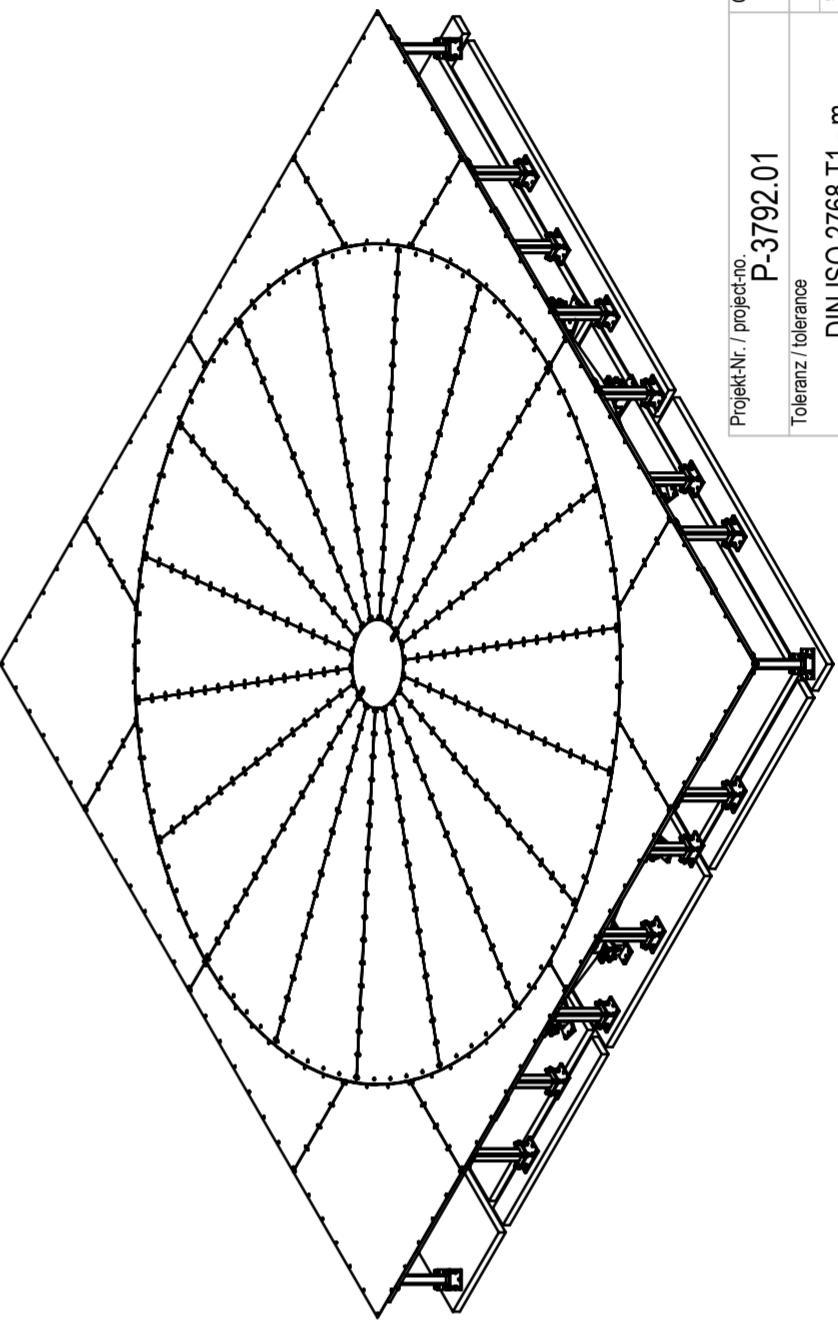
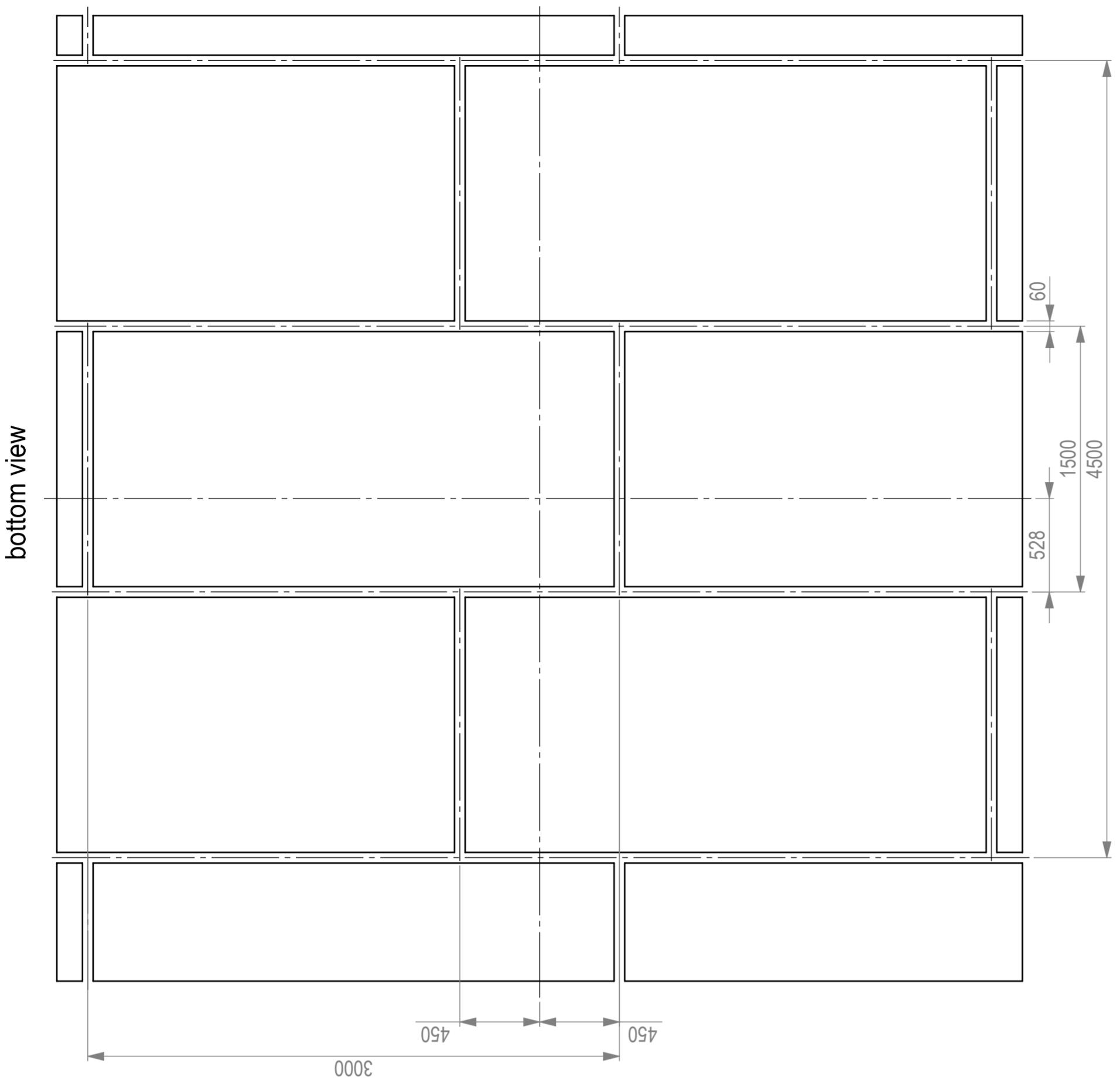
*Our products comply with the regulation of Directive 2011/65/EU of the European Parliament and the Council dated 08.06.2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment and the observance of the maximum concentration in homogeneous materials by weight Cadmium < 0,01%, and lead, mercury, hexavalent chromium (Cr<sup>6+</sup>), polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP) < 0,1% according to Annex II of the Directive. We hereby declare that all our products are produced RoHS compliant.*











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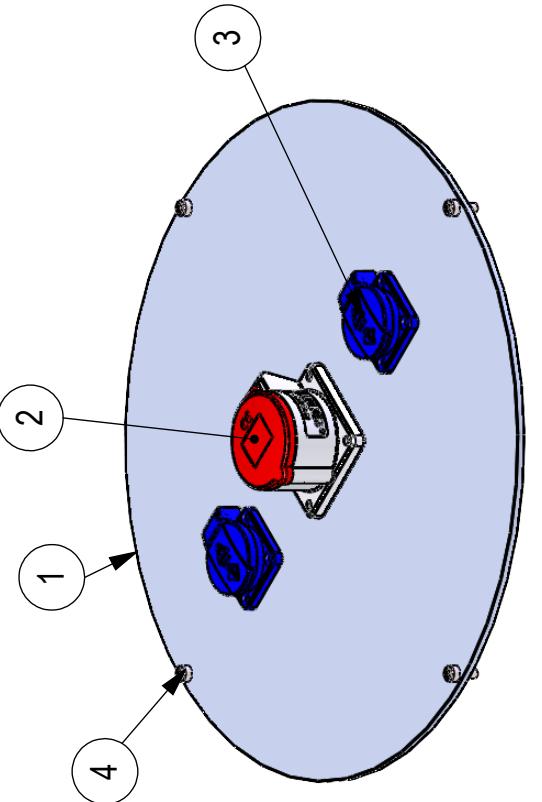
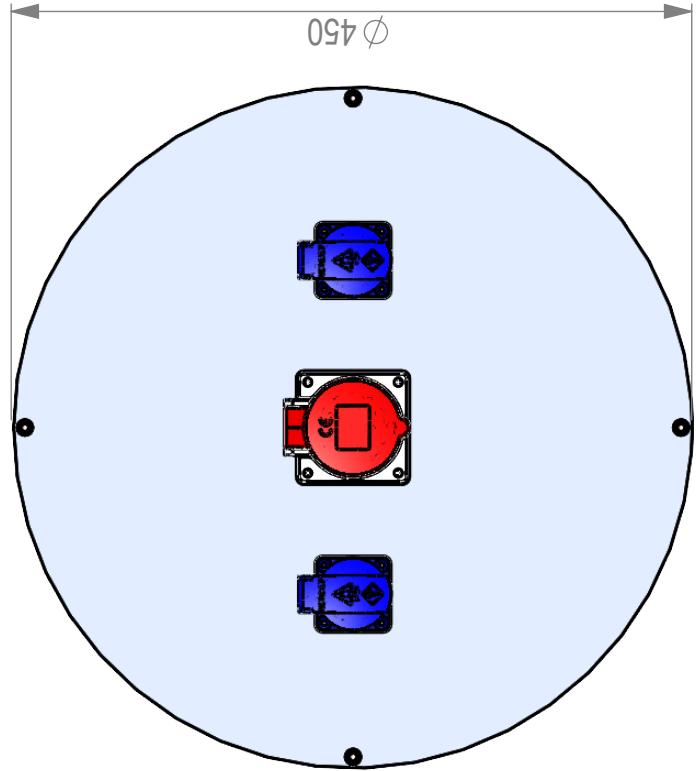
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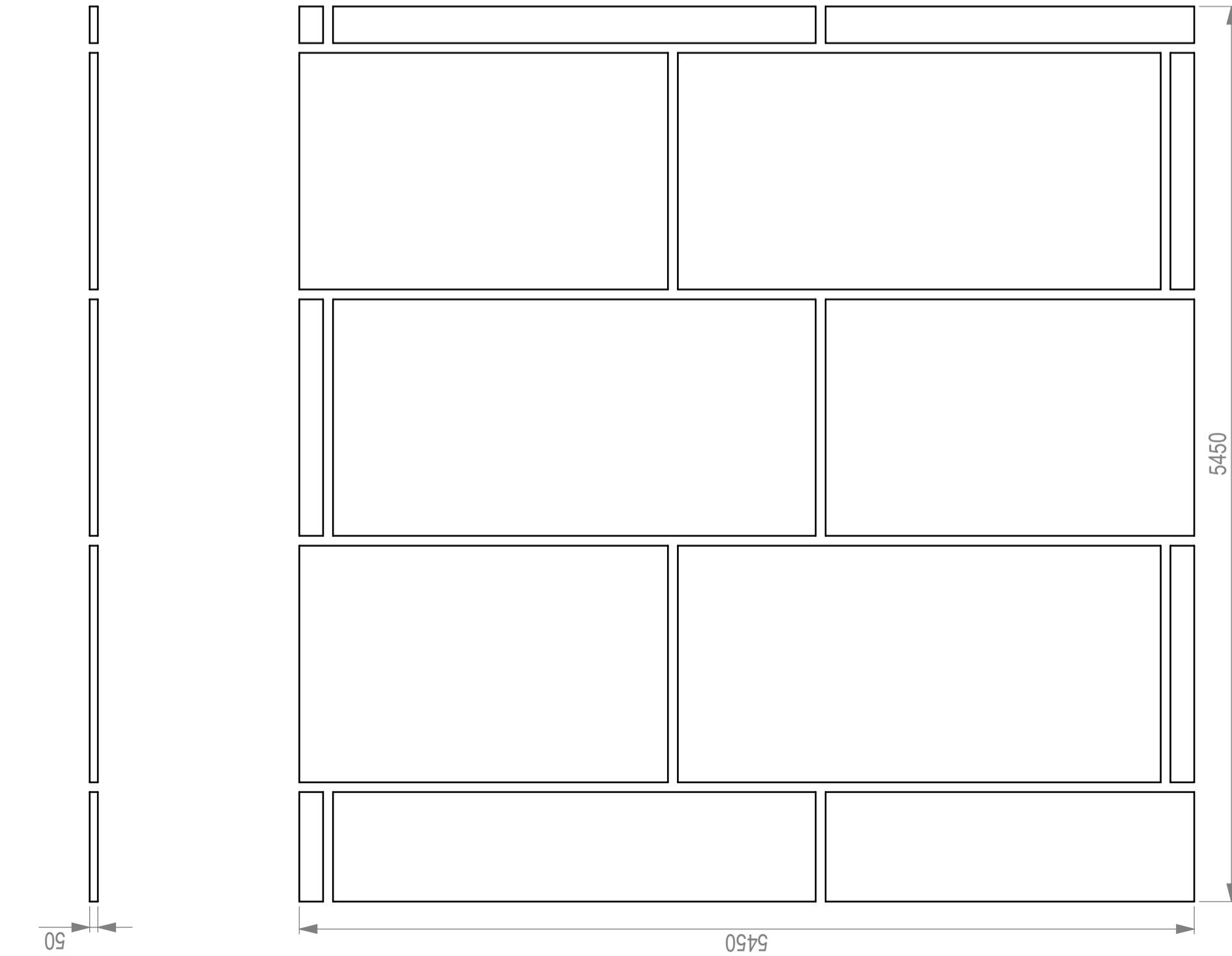
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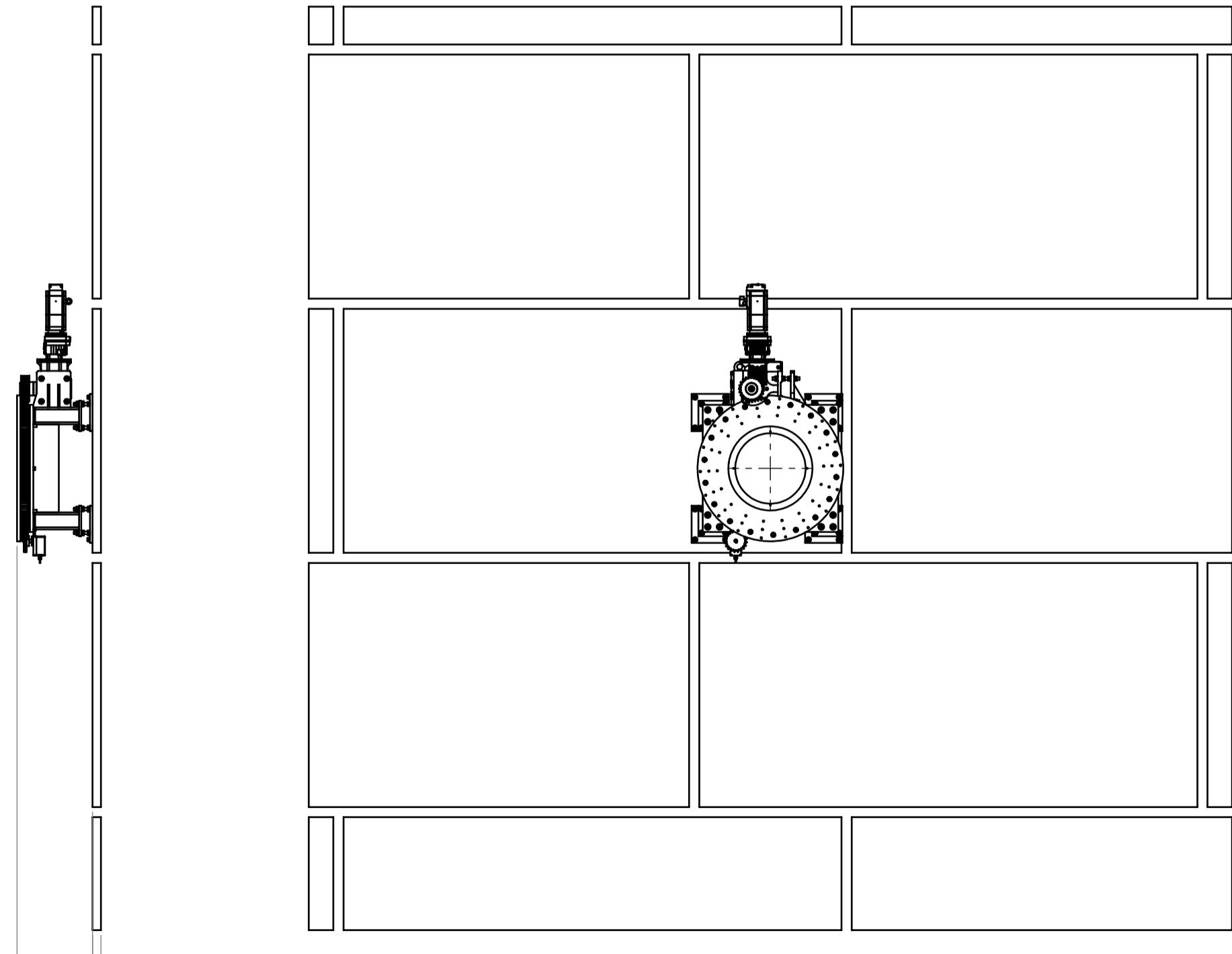


POS.-NR. Projekt-Nr. / project.no.	BENENNUNG CP-Platte	Gewicht / weight 2.29 kg	Material / material	Bearbeitung / treatment	Stückzahl 1	TT5.0-4t			Maßstab / scale
						Datum / date 19.06.2023	Name / name Alwang	Titel / title Zeichnungs-Nr. / drawing-no.	
P-3792.01	Zylinderschraube Innensechskant DIN 912 A2 M6 x 16	4							1:5
	K000102°Schuko socket 230V-16A-blue	3							
	K000122°CEE socket 400V-16A-50_60Hz-5pin	2							
	CP-Platte	1							

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Projekt-Nr. / project-no. <b>P-3792.01</b>	Gewicht / weight <b>5703.00 Kg</b>	Material / material	Bearbeitung / treatment
Toleranz / tolerance DIN ISO 2768 T1 - m DIN ISO 2768 T2 - K	Datum / date gezeichnet/ Signiert/ Zeichner/ freigegeben/ approved	Name / name Titel / title Zeichnungs-Nr. / drawing-no.	
	20.06.2023	Alwang	
			SolidWorks
			<b>maturo</b> Am Kalvarienberg 24 · 92336 Freimond Germany
			K:\SolidWORKS_Projekte\Projekte P-3700 bis P-3799\3792\TT5.0-4t\TT5.0-4t Gesamtbaugruppe

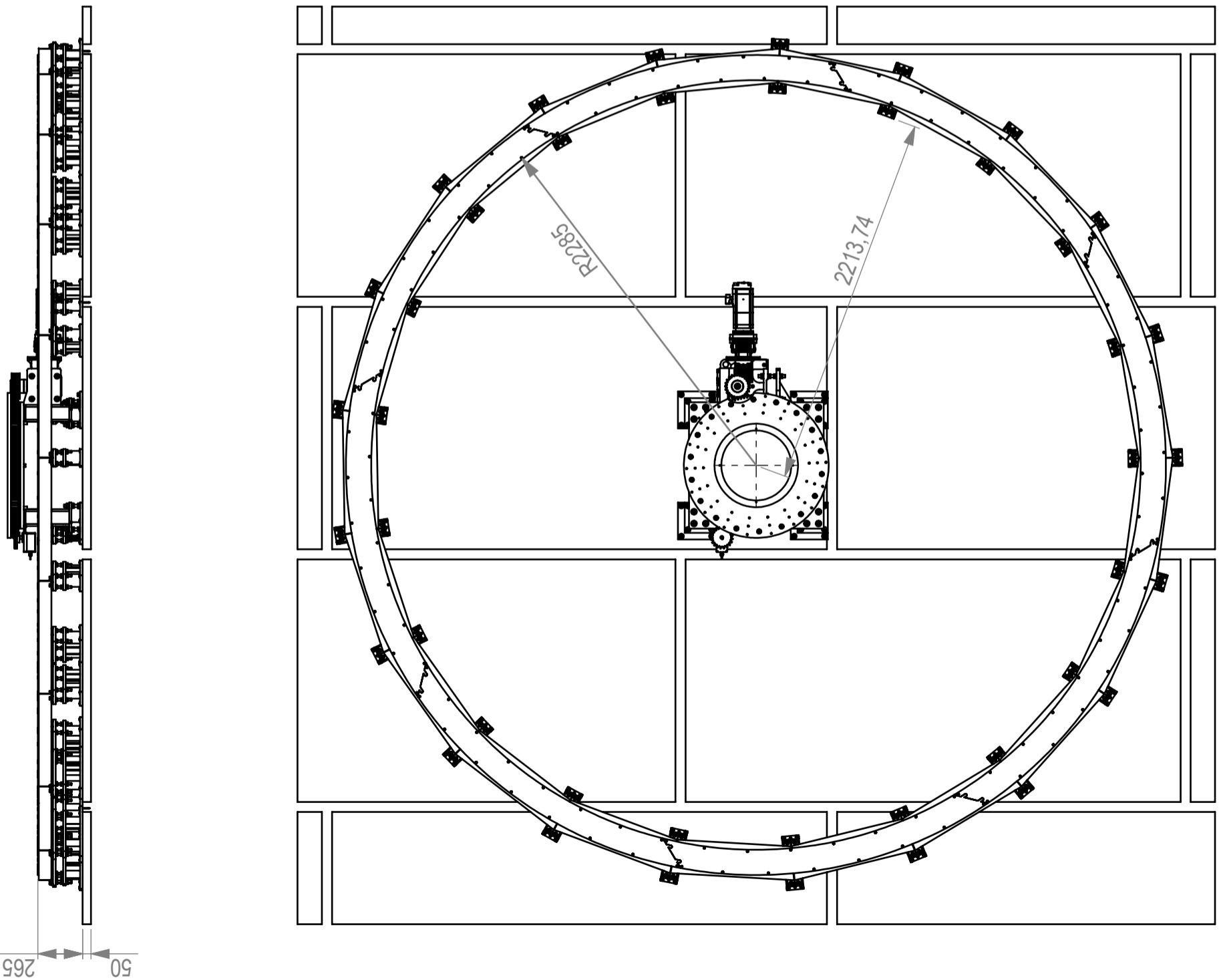
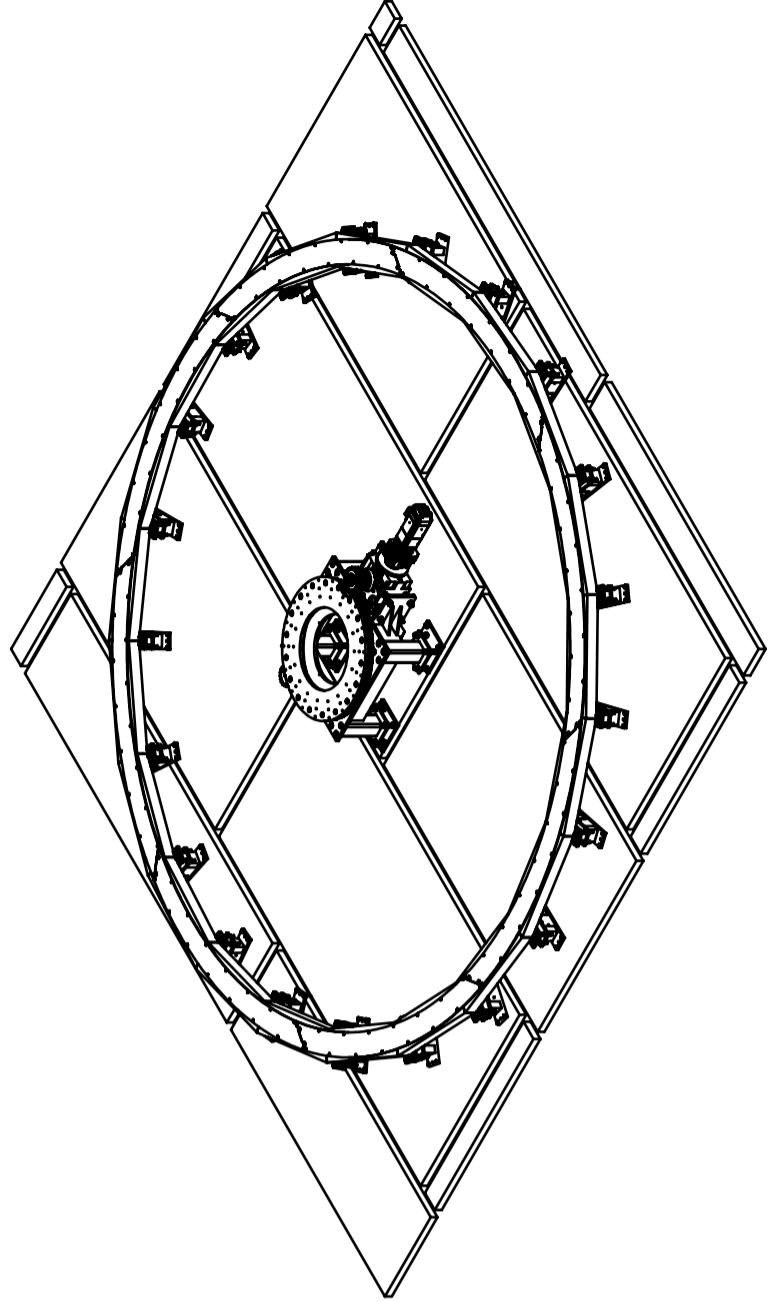


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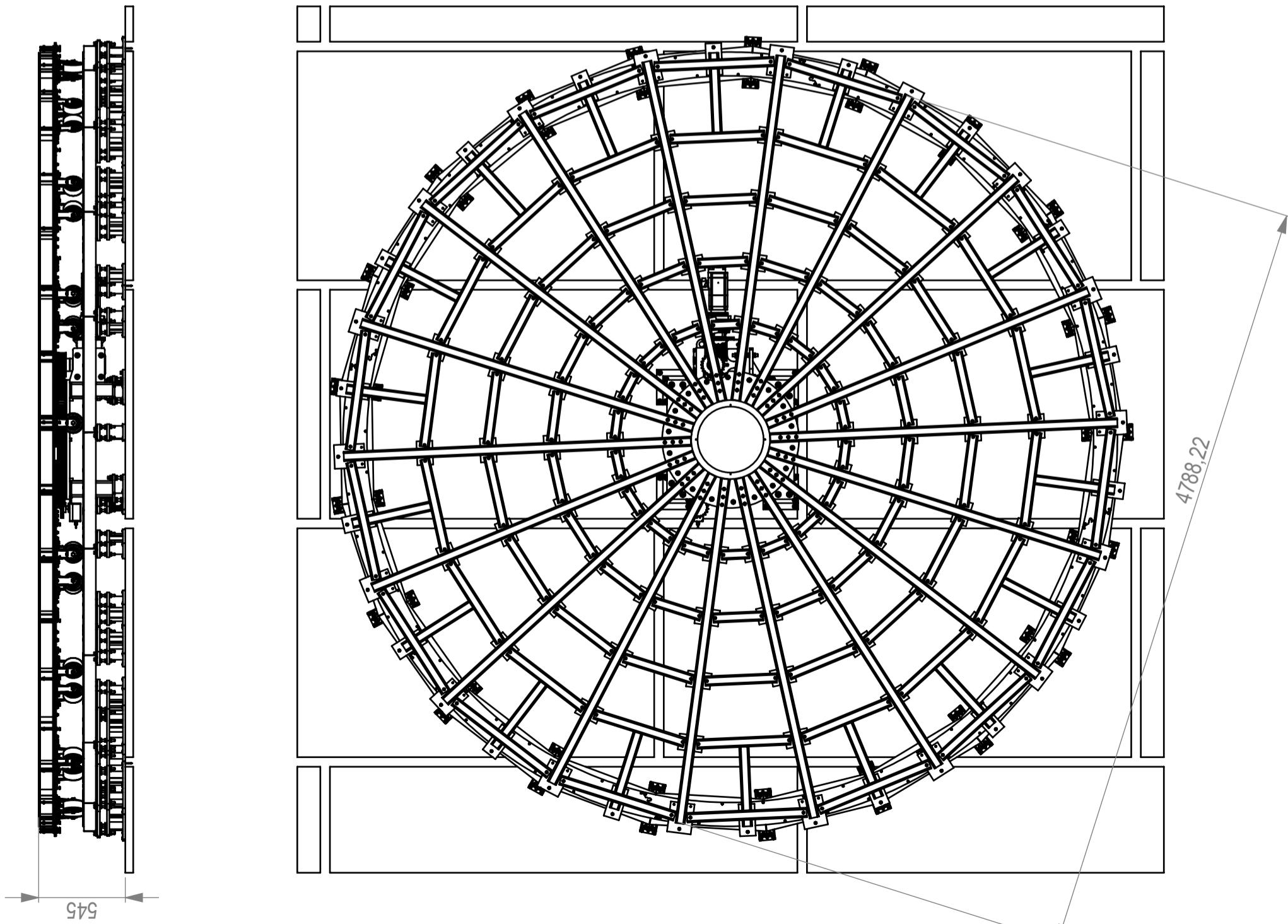
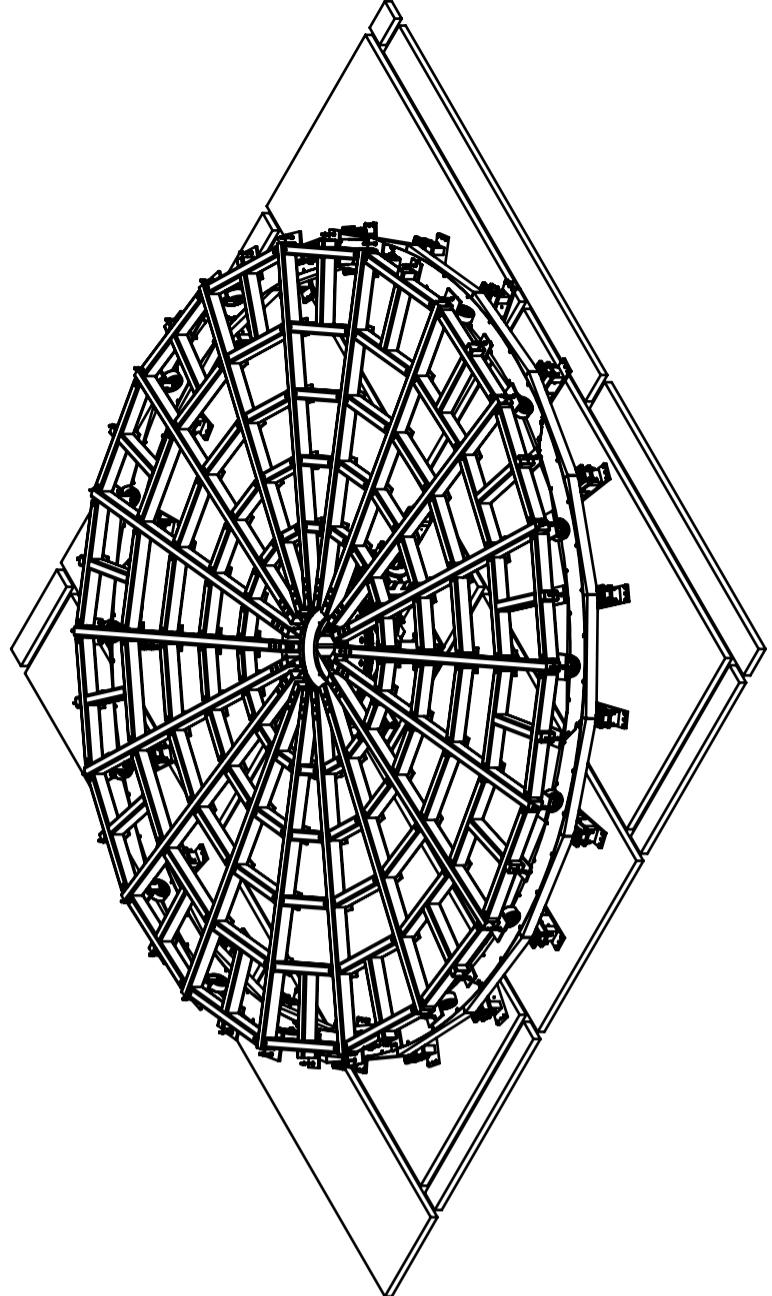
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Projekt-Nr. / project-no. <b>P-3792.01</b>	Gewicht / weight <b>5703.00 Kg</b>	Material / material	Bearbeitung / treatment
Toleranz / tolerance <b>DIN ISO 2768 T1 - m DIN ISO 2768 T2 - K</b>	Datum / date 20.06.2023	Name / name Alwang	Titel / title Zeichnungs-Nr. / drawing-no.
	gezeichnet/ Skizziert Grafik / Checklist freigegeben/ approved		
	SolidWorks		Artikel-Nr. / order-no. <b>TT5.0-4t</b>
			Maßstab / scale <b>1:30</b>
			Bla- schet <b>4 / 9</b>
			Am Kalvarienberg 24 92336 Freimond Germany
			K:\SolidWORKS_Projekte\Projekte P-3700 bis P-3799\3792P-3792\01\TT5.0-4t\01 Gesamtaufgruppe



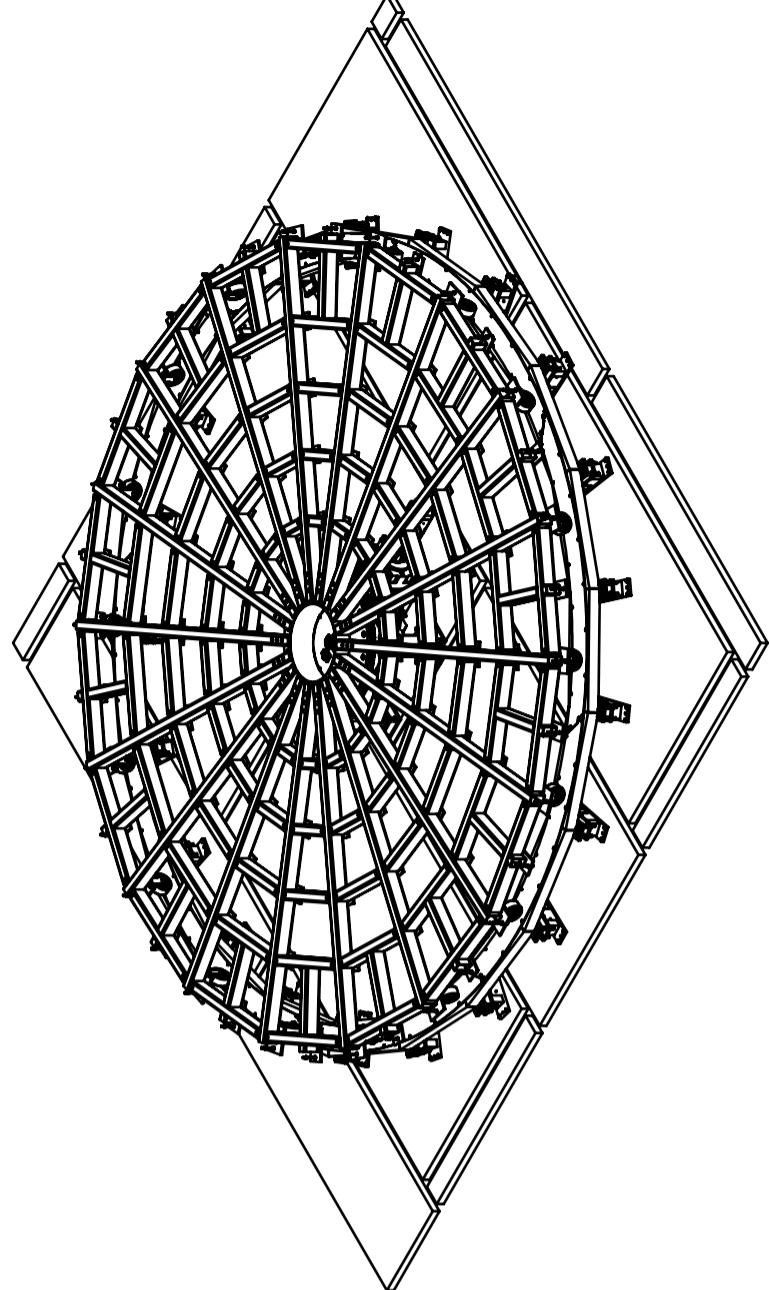
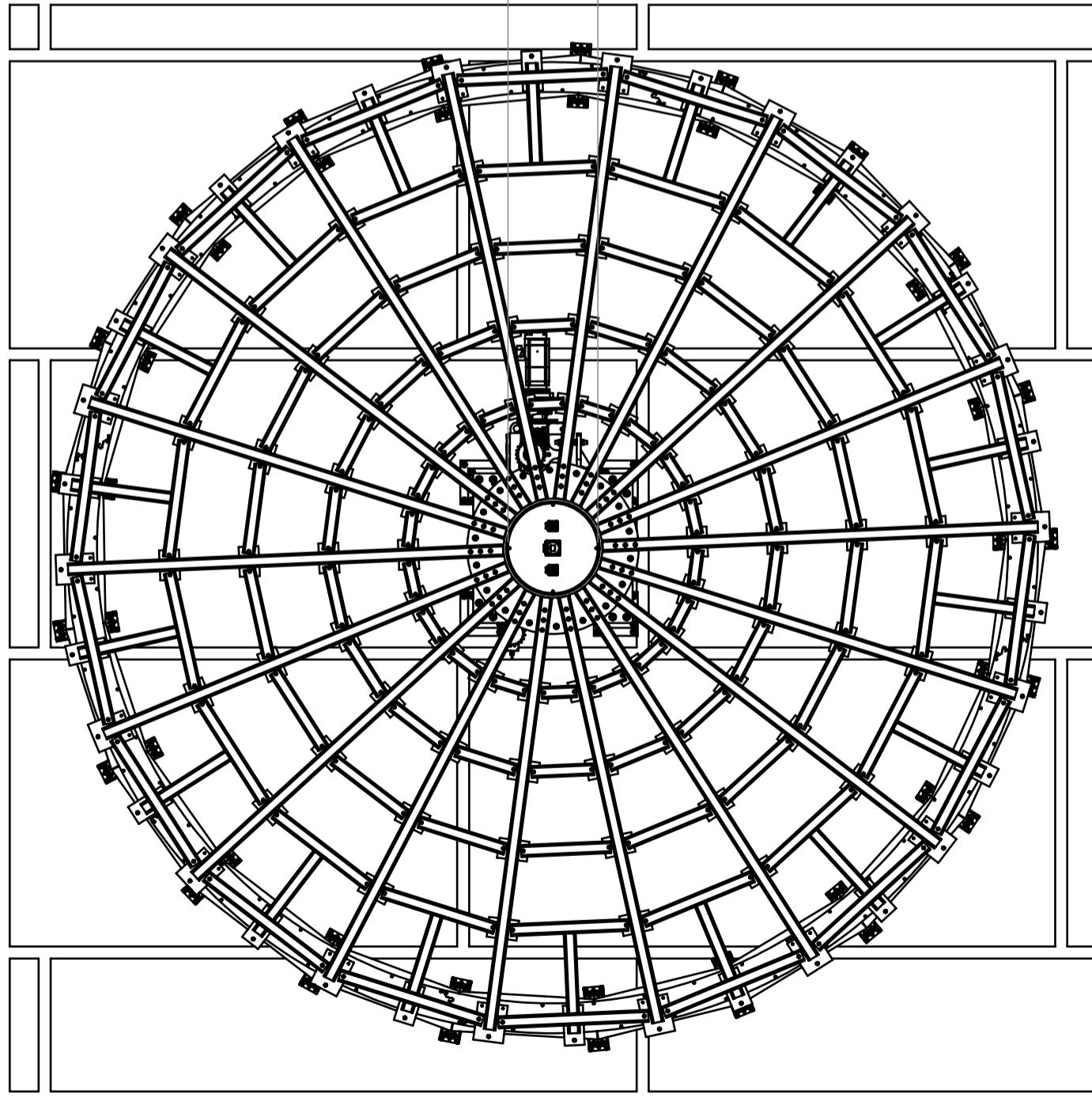
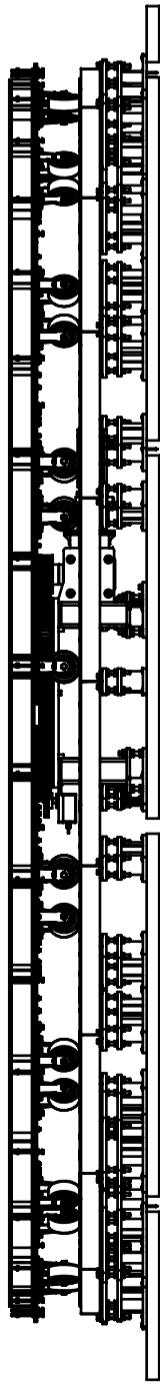
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Die Drama maak gebruik van die term *metaphor* om die geskiedenis van die land te vertel. Die geskiedenis word so geskryf dat daar 'n groot aantal verwysings na die geskiedenis van Suid-Afrika is. Hierdie verwysings sluit in die geskiedenis van die land, die geskiedenis van die Afrikaners en die geskiedenis van die land. Die geskiedenis word so geskryf dat daar 'n groot aantal verwysings na die geskiedenis van die land is. Hierdie verwysings sluit in die geskiedenis van die land, die geskiedenis van die Afrikaners en die geskiedenis van die land.



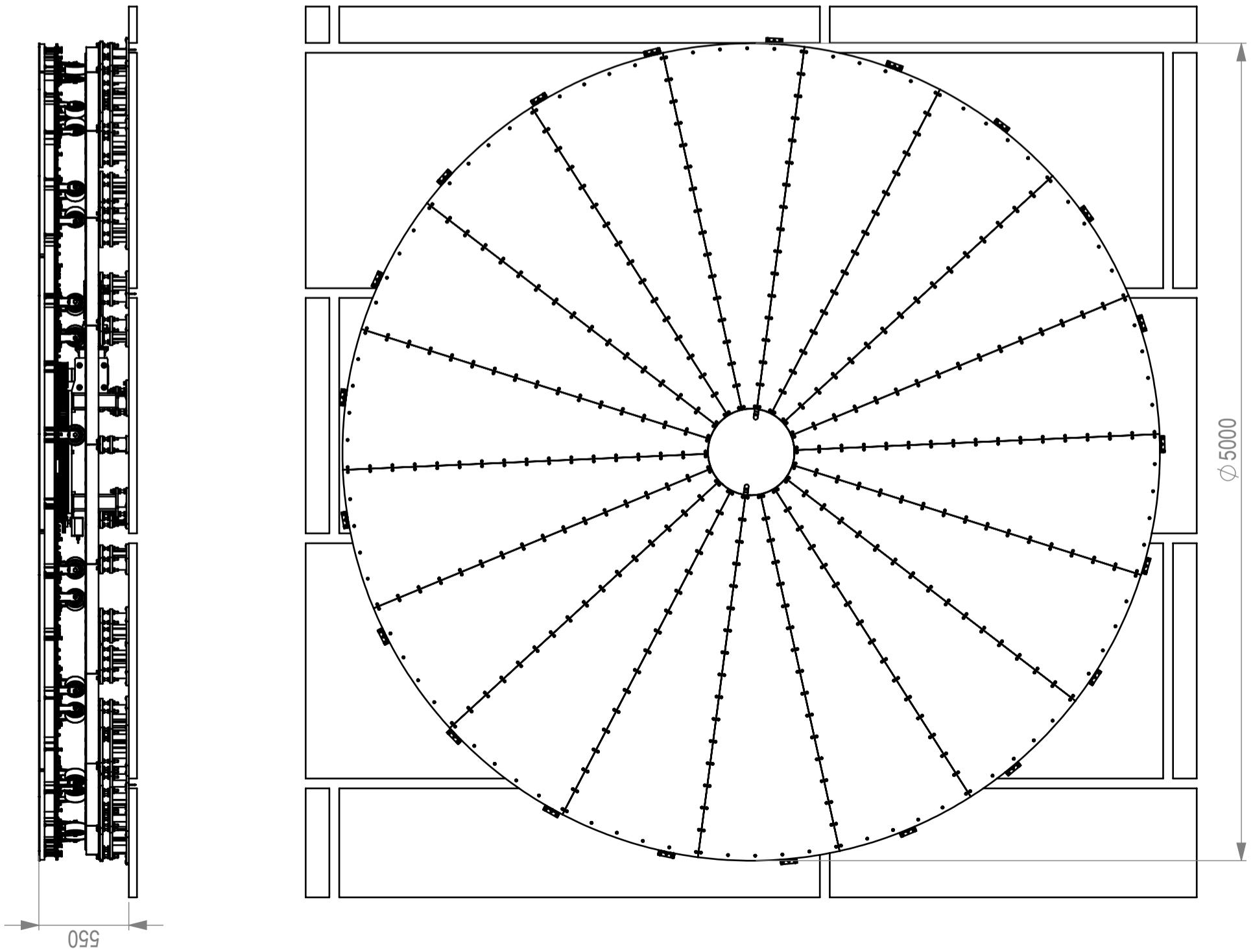
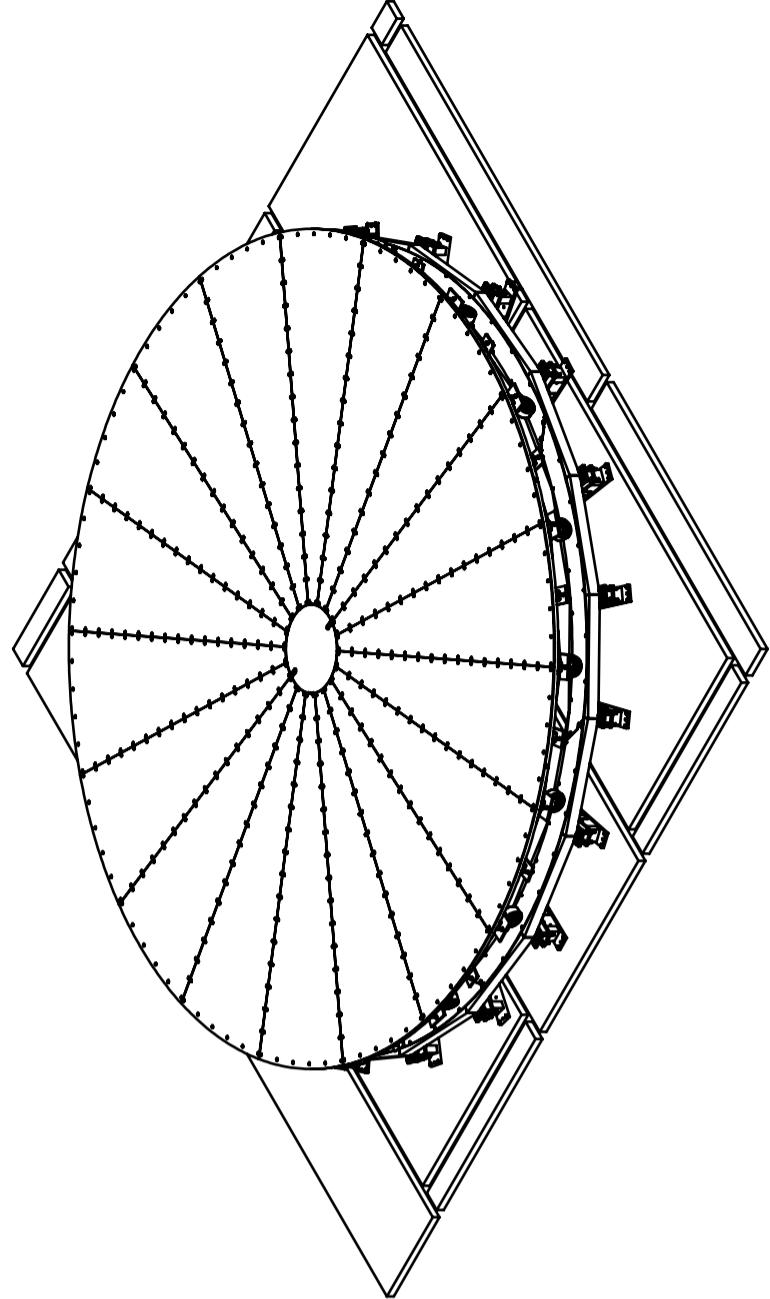
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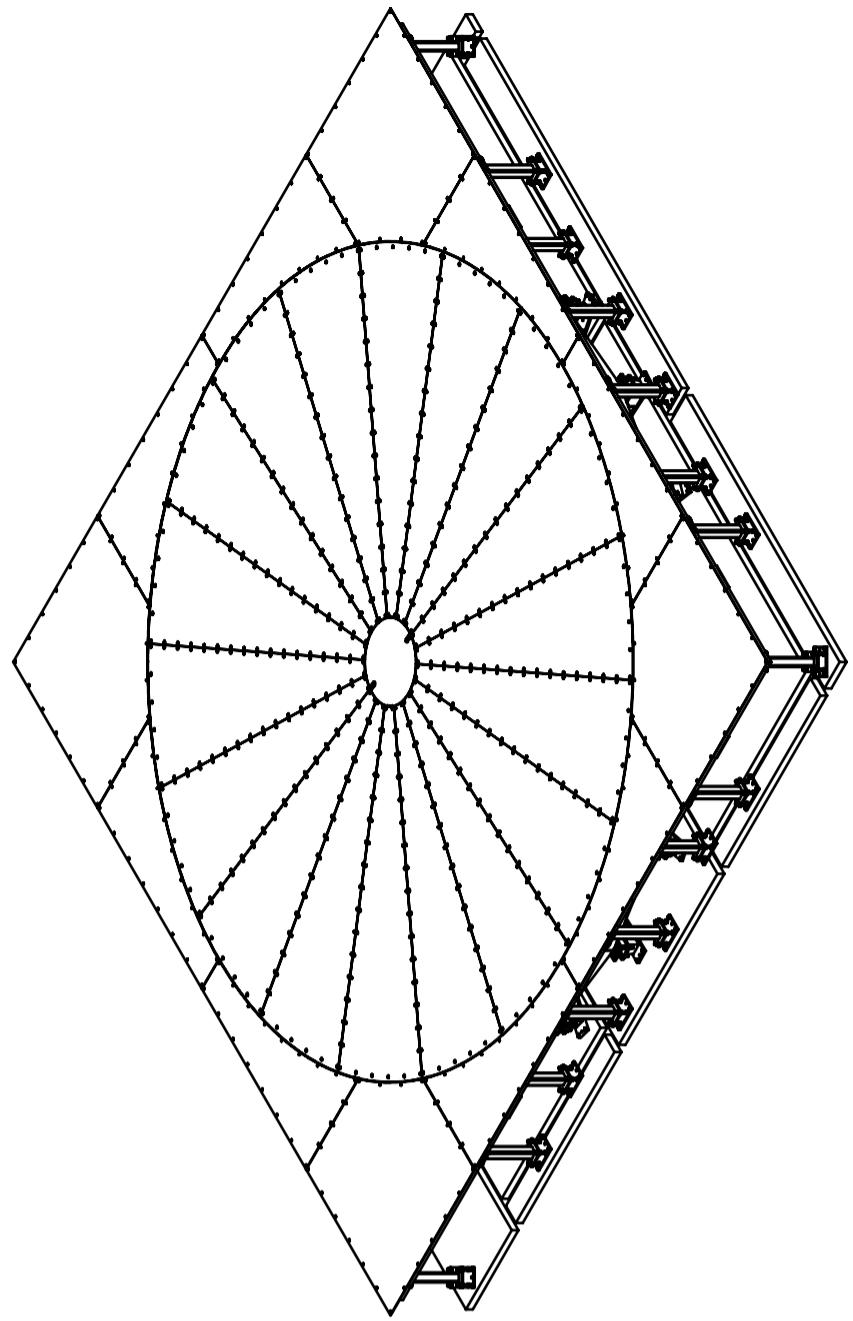
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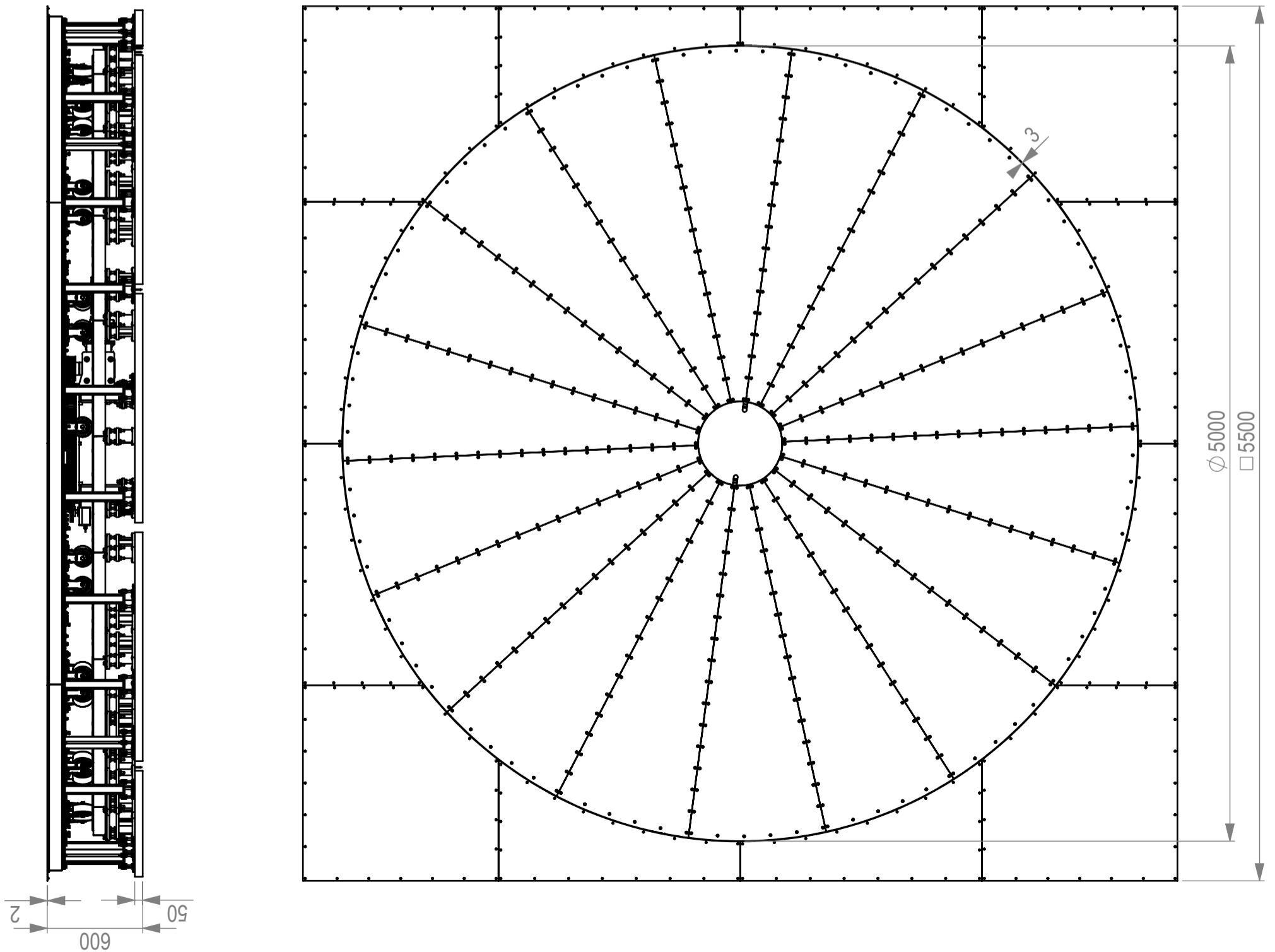
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Bezug auf die geschilderten Probleme und deren Lösungen ist es erforderlich, dass die entsprechenden Maßnahmen in den kommenden Jahren ergriffen werden.





Projekt-Nr. / project-no.	P-3792.01	Gewicht/ weight	5703.00 kg	
Toleranz / tolerance	DIN ISO 2768 T1 - m DIN ISO 2768 T2 - K	Datum / date	Name / name	Title / title
	gezeichnet/ Signed	20.06.2023	Alwang	Zeichnungs-Nr. / drawing-no.
	geprüft/ checked			
	freigegeben/ approved			
			SolidWorks	Artikel-Nr. / order-no.
			 <b>nature</b> Am Kalvarienberg 24, 92336 Pfreimd Germany	K:\SolidWORKS_Projekte\Projekte P-3700 bis P-3799\3792\1\TT5.0-4\01_Gesamtbaugruppe\
				Maßstab/ scale
				Blaup/ sheet
				9 / 9



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### Notes