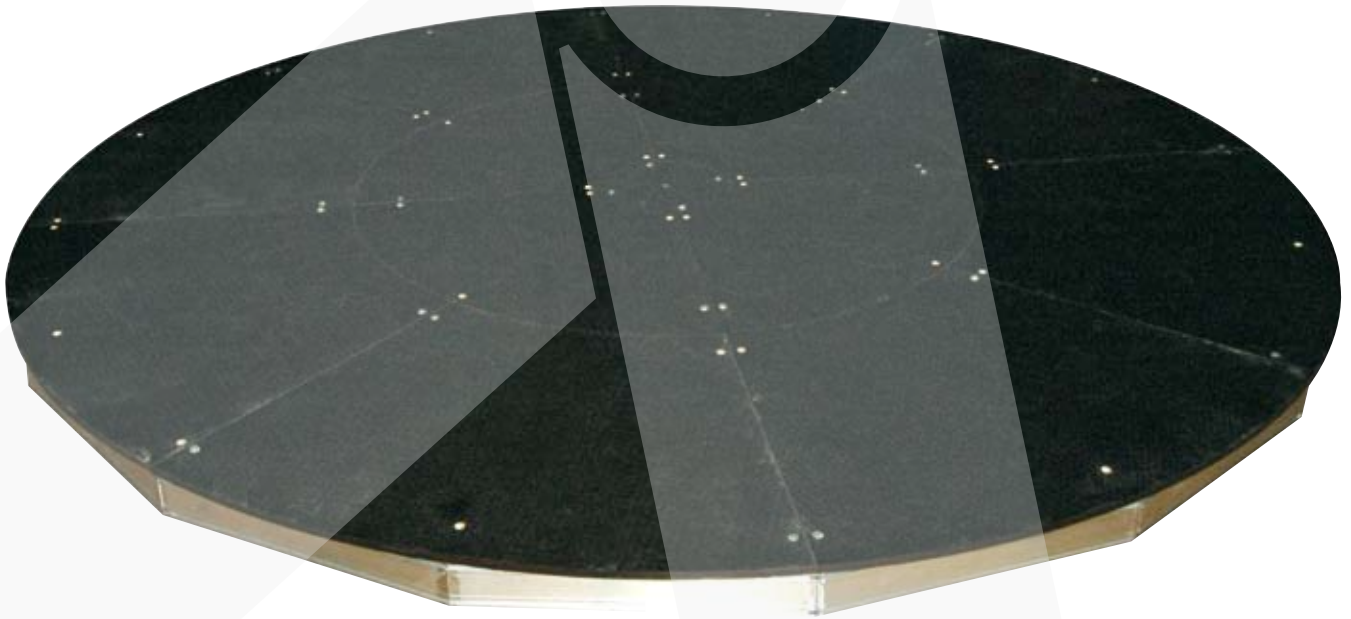




PROLYTE PRODUCTS

Read this manual carefully and understand all of it's contents before you assemble the rotating stage



MANUAL PROLYTE ROTATING STAGE

Manuals are also available at www.prolyte.com

Version 1, October 2008

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1. PREFACE

This preface explains how to interpret the symbols and text styles in this manual.

Warnings and cautions contain important information that can protect you, the machinery and the construction. Always read warnings and attentions.

Notes contain additional information. Some notes contain basic information for inexperienced users. Others provide extra information or tips for experienced users.

WARNING!

The information in a warning protects against bodily harm or loss of life

CAUTION!

The information in an caution protects against damage to the truss or optional external parts

NOTE

The information in a note provides supplementary information for inexperienced or advanced users

This manual has been written for all the users of the Prolyte Rotating Stage. Make sure that you read and understand this manual completely before using this system. This manual shall be available for everyone assembling, disassembling or loading the rotating stage. Save this manual for later use or download it from the Prolyte website www.prolyte.com/downloads/manuals.

For health and safety reasons people assembling, disassembling, transporting and maintaining the rotating stage should wear adequate Personal Protection Equipment like, but not limited to, gloves, hard heads and safety shoes. The operating noise level is below 55dB. Elements weighting 20 kg or more shall be carried by at least 2 persons. Artists, performers who have to be on the stage or in the vicinity of 50 cm shall be instructed and informed about correct use and possible dangers before use.

CAUTION!

Possible dangers but not limited to are, trapping, skidding, jamming

2. SCOPE

The Prolyte rotating stage is an electrical, frequency controlled power driven revolving stage of 200 mm high meant to move loads generally within applications of the entertainment industry and limits of use as stated in this manual.

3. LIMITATIONS OF USE

It is allowed to move people on the stage if the rotating speed is reduced to 0.3 m/s max. This is mandatory by EU Machine directive.

The power transfer of the motor to the substructure is based on friction. Therefore the surface of the drive wheel and substructure should always be clear of water, oil, grease or anything else which can make the wheels slip.

The allowable environmental operating temperatures are +5dgr Celsius to + 40dgr. Celsius.

For ease of use the duty factor of the stage is calculated to be 100%. However, unbalanced loads, environmental temperatures, wear and tear and wrongly assembled stages will negatively influence the duty factor. Please take care to avoid such conditions or take propere measures to avoid. Do not use the stage outdoors if not protected sufficiently against environmental influences like rain and snow.

4. IDENTIFICATION

Make sure only Prolyte original components are used. In case of doubt please contact you distributor or Prolyte.

5. TECHNICAL SPECIFICATIONS

Loading and Speed

Table 1

Diameter	min. RPM 20hz 0,12m/s	RPM at 50hz 0,3m/s	Max UDL(b) at 50Hz Static Load	Max UDL(b) at 50Hz Dynamic load	RPM at 100hz 0,6m/s	Max UDL(b) at 100Hz Static Load	Max UDL(b) at 100Hz Dynamic load
2 meter	1,28	3,18	4000(a) kg	2000(a) kg	6,36	2000(a) kg	1000(a) kg
4 meter	0,64	1,59	6000 kg	3000 kg	3,18	3000 kg	1500 kg
6 meter	0,43	1,06	6000 kg	3000 kg	2,12	3000 kg	1500 kg
CPL®	Max. allowable pointload on a 200x80mm surface is 750kg						
(a)	With one electrical drive motor						
(b)	UDL = Uniformly Distributed Load						
(c)	CPL = Center Point Load						

5.1 ELECTRICAL CONTROLS

Power

Input : 230 Volt, 16Amp, 1P+N+E, 50hz. Fused with 16 amps
 On stage outlet : 8 amp. 230 Volt.

Protection Class overall system : IP 20

Electrical Motor

Nominal power consumption : 0.25 KW
 Max Rpm : 1300
 Outgoing Rpm : 21
 Duty factor : 100% at 50Hz
 Nominal voltage : 400V 3 phase
 Nominal amperage : 0.68 amp
 Cos phi : 0.81
 Isolation class : F
 Brake voltage : 230V
 Protection Class : IP 54

6. FREQUENCY CONTROL SETTINGS

Table 2

Parameter	Discription	Recommended config.	Motivation
1	minimum set speed	20 Hz.	used to set minimum speed for both directions
2	maximum set speed	100 Hz.	used to set maximum speed for both directions
3	acceleration rate	30 sec	time in seconds to reach maximum speed
4	deceleration rate	30 sec	time in seconds to reach minimum speed
5	drive configuration	Ai.AV	voltage and current input
6	Motor rated current	1.27 A	enter the motor current rating
7	Motor rated speed	1300 rpm	enter the rated full load speed of the motor
8	Motor rated voltage	230 V	enter the motor rated voltage
9	Motor power factor	0,81	enter the motor rated power factor cos. Fi.
22	load display units	A / Hz	used to display the current (A) or frequency (Hz.)
37	maximum switching frequency	set at 18 = 18 kHz	used to let the motor run more silent

38* autotune **only performe if parameters # 1 till and with # 9 are configured !!!**

- *
step 1: select parameter 38 > parameter 38 is flashing.
step 2: press M to select the options of Pararmeter 38. Then the options wil start flashing.
step 3: select option 1
step 4: start the motors so "tune" starts flashing > wait 2 minutes > step 5
step 5: cut the power from the system
step 6: power the the system
step 7: the autotune is now initiated

CAUTION!

Do not set the frequency converter below 20Hz as this might damage the electrical motor due to lack of cooling.

NOTE

If fuses blow when starting the rotating stage, it is possible that the power supply has quick respond fuses.
Change power supply or lift EMC filters witches at frequency converters.



EMC filter switch

7. TOOLING LIST

- ALLEN KEY SIZE 6
- ALLEN KEY SIZE 10
- TORX KEY SIZE TX 30
- WRENCH SIZE 19
- RUBBER HAMMER
- ROTATING LASER LEVELER
- GAFFA TAPE

8. ARTICLE LIST

Table 3

No:	Art Code	Description	weight		R3	R2	R1
		Base units			amount		
1	SM-RS-SS-R100	Base frame, R100, 180dgr	45	kg	2	2	2
4	BM-M12x025-IB-CS	Bolt, M12x25, Inbus, countersunk			8	8	8
1α	SM-RS-RA-R100	Steel strip to centre R100 rotating stage	2,1	kg			4
2	SM-RS-SS-R200	Base frame, R200, 90 dgr	45	kg	4	4	
4	BM-M12x025-IB-CS	Bolt, M12x25, Inbus, countersunk			16	16	
2α	SM-RS-RA-R200	Steel strip to centre R200 rotating stage	4,2	kg		4	
3	SM-RS-SS-R300	Base frame, R300, 45 dgr	34	kg	8		
4	BM-M12x025-IB-CS	Bolt, M12x25, Inbus, countersunk			32		
3α	SM-RS-RA-R300	Steel strip to centre R300 rotating Stage	6,3	kg	4		
5	SM-RS-CS	Connection strip for base frame	0,2	kg	4		
5	BM-M12X040-IB/TX	TORX M12X40			208	96	32
		Top frames					
7	SM-RS-FR-R100-M	Top frame, R100, 90 dgr incl. motor att.	20	kg	4	4	4
8	SM-RS-FR-R200	Top frame, R200, 45 dgr	25	kg	6	6	
9	SM-RS-FR-R200-M	Top frame, R200, 450 dgr incl. motor att.	27	kg	2	2	
10	SM-RS-FR-R300	Top frame, R300, 45 dgr	35	kg	6		
11	SM-RS-FR-R300-M	Top frame, R300, 45 dgr incl. motor att.	36	kg	2		
12	SM-ACC-CLP-03	DECK TO DECK CLAMP	0,4	kg	60	36	12
		Decking					
13	SM-RS-WT-R100	Top plate, R100, 21 mm top line	11	kg	4	4	4
14	SM-RS-WT-R200	Top plate, R200, 21 mm top line	18	kg	8	8	
15	SM-RS-WT-R300	Top plate, R300, 21 mm top line	31	kg	8		
16	BM-M10X040-IB-CS	BOLT, M10x40, INBUS, COUNTERSUNK			112	64	24
		Electric Components					
17	SM-RS-EP-04	Remote pendant incl. 15 meter of cable	1,5	kg	1	1	1
18	SM-RS-EP-03	Slip ring, 12ch, 10amp, incl. centre deck	8	kg	1	1	1
19	SM-RS-EP-02	Frequency controllers in metal box	16	kg	1	1	1
20	SM-RS-EP-01	Motor unit incl. gear box + support frame	22	kg	2	2	1
21	BM-M10X025	BOLT 8.8 M10 X 25 MM DIN-933			8	8	8
		Misc					
22	SM-RS-DK	Centre bearing unit	6,5	kg	1	1	1
23	BM-M10X025	BOLT 8.8 M10 X 25 MM DIN-933			8	8	8
24	BM-M10-W-X30	WASHER, 2,5X30, M10, ELV, DIN125A			8	8	8
25	BM-M10-N	NUT, M10, DIN934			8	8	8

9. ASSEMBLY INSTRUCTION

For health and safety reasons people assembling, disassembling, transporting and maintaining the rotating stage should wear adequate Personal Protection Equipment like, but not limited to, gloves, hard heads and safety shoes. Elements weighting 20 kg or more shall be carried by at least 2 persons.

9.1 BASE FRAME (picture 1 to 4, page10)

1. Determine the highest point on the building floor. Use this point as reference for levelling the base structure.
2. Position the centre bearing unit (picture 1, no.22). NB! The bearing has one sided a groove. This groove shall be pointed downwards to avoid all kinds of dust entering the bearing.
3. Put the control and power cable for the slip ring in. Preferably near one of the spokes. Fix the cable to the floor by using gaffa tape. This to avoid hooking behind the top frame when rotating.
4. Mount the steel strips (picture 1, no.1A/2A/3A) to position the base rings using M10 nuts don't tighten bolts to fast yet. There are spokes available for 2m, 4m and 6m. diameter stages. NB! One of the spokes has a vertical wire rod at the end. This rod is used to block the slip ring unit. Between ring 2 and 3, four additional spoke trips need to ne placed to make sure the frames are 100% round.
5. Position the sub frame rings inside out. All bolts should be tighten loose (picture 2, no.1/2/3).
6. If the rings are in position all bolts should be tightened inside out.
7. Level cross wise to make sure the whole base is level, starting from the highest point.
8. Make sure all screw jacks (picture 2, no. 5) are touching the ground. (Under fill with 5 mm aluminium plate 100 x 100)
9. In case the height adjustment of 20 mm is not enough under fill with wood pads.

9.2 TOP FRAME (picture 5 to 7, page 10)

1. The frame sections holding the motor drives should be in opposite position on the outer ring (picture 6, no. 8 or picture 7, no.11).
2. Position the 4 sections of the 2 meter diameter frames. Connect them with one deck-to-deck clamp (picture 12). Make sure there is a little headroom. This allows better alignment of the next rings (picture 5).
3. Position the 8 sections of the 4 and 6 meter rings (picture 6 and 7). Always use deck-to deck clamps to hold them together. Don't tighten the clamps to much this can be done after alignment when assembly is completed.
4. If all elements are in place, start inside-out to tighten all clamps and aligning frames (picture 15 and 16).
5. Make sure the deck to deck clamps are not interfering with the base structure. All wing nuts shall be in a horizontal plane. Deck-to-deck clamps to be positioned at marked places.
6. Eventually use 3 clamps at marked places per frame to connect them.

WARNING !

Switch of power during installation and servicing

7. Put the electrical control box in position, connect the slip ring and motor cables.
8. Make sure all cabling is not hanging slack. Use gaffa tape and/or T-raps.

9.3 DECKING (picture 9 to 11, page11)

1. Position the slip ring unit at first (picture 7, no. 7 and 13).
2. Make sure the locator strip at the bottom of the slip ring unit is blocked by one of the wire rods on the spokes.
3. Connected the system to the main power supply and test if all functions are working properly. Functions to be checked are:
 - are both motors running in the same direction
 - are the friction wheels running properly. (by turning bolts #) the friction can be increased)
 - is the E-stop working
 - are all cables free of slack
 - are the deck-to-deck clamps not interfering with other parts
 - are all screw jacks touching the floor
4. Put all decks in place (picture 9,10 and 11, no. 13,14 and 15).
5. Tighten all bolts by hand (no. 16).
6. Start tighten and aligning all decks inside out.

9.4 OPERATING THE ASSMEBLED ROTATING STAGE

1. Position all loads evenly distributed.
2. Artists, performers who have to be on the stage or in the vicinity of 50 cm shall be instructed and informed about correct use and possible dangers before use.
3. The control unit has 3 buttons. E-STOP, POWERSWITCH with options to chose LEFT-OUT-RIGHT turning directions, and a STEP-FREE SPEED button.
4. Switch the power on.
5. Make sure the red E-STOP button is released by turning clockwise.
6. Set the speed button at 50%. It will take +/- 60sec before the stage is at set speed.
7. Adjust the speed to the desired speed. See table for indicative speeds per meter.
8. In case of emergency press the red E-STOP button. The stage will stop immediately.

10. MAINTENANCE AND REJECTION

WARNING !

Switch of power during installation and servicing.

If the electrical system does not work, switch off the main power supply by pulling the power connector out of its supply. Consult the applicable manual to determine the cause of the problem.

If the wheels deteriorated more than 3 mm the are subject to rejection. Exchanging wheels can be done by the system operator.

Grinding sounds from the motor or transmission point out that they are not correctly aligned or worn out.

Keep the system free from all kinds of dirt and paint. Use warm water and soap to clean parts, except electrical components. Avoid the use of abrasive cleaning materials and fluids.

Repairs only should be done by the manufacturer or any 3rd party when explicitly agreed in writing by the manufacturer.

11. TRANSPORT AND STORAGE

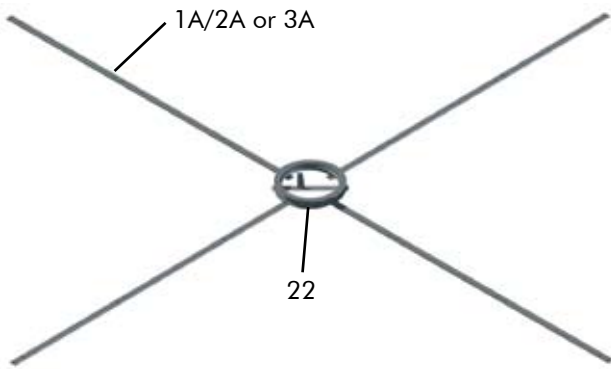
Transport all components on pallets, dollies or flight cases when moving from one location to another. Damaging can occur easily by transporting parts. Damaged parts will negatively influence the working of the system.

Store all components in such a way that they are free from dust and environmental influences.

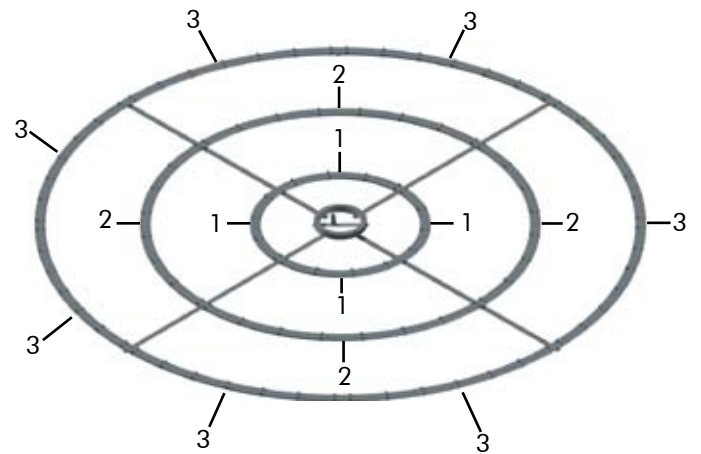
12. TROUBLE SHOOTING

Problem	Probable cause	Possible solution
Motor is not working.	No power. Motor broke. Cable failure.	Check if all connectors are in place correctly. Check if power is present. Corresponding frequency converter is switched off. Check connectetions against wiring diagram.
Fuses main supply blow when starting.	Quick responding fuses in mains supply. Wrong fusing level.	Probably quick-responding-fuses are used. Change to other powersupply. Release EMC filter as per manual.
Speed can not be adjusted.	Mall function of pot-meter. Bad connection.	Check if all connectors are in place correctly.
Motor makes high freq. Sound.	Setting of freq. Controller not correct.	Adjust setting of parameter 37, see table 2.
Transmission/ motor make grinding sound.	Motor/transmission worn out incorrect alignment.	Align both parts better.
Stage is not turning.	Running surface is greasy. No power.	Check if all connectors are in place correctly. Check if power is present. Adjust friction between motor wheel and bottom frame. If bottom frame is greasy or wet > clean or dry.
Stage makes cracking sound when turning.	Clamps are not tigthend. Stage is not built level.	Tighten all clamps firmly. Level bottom frame.

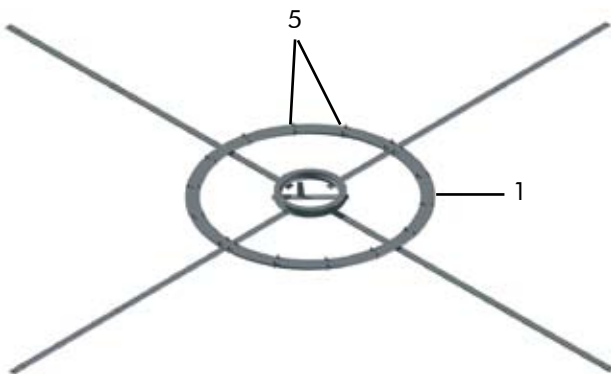
13. ASSEMBLY ROTATING STAGE



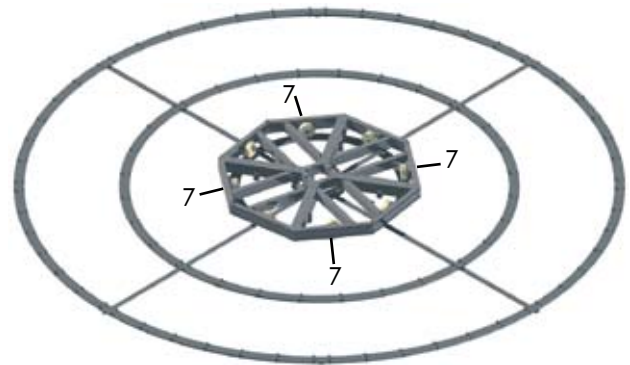
Picture 1.



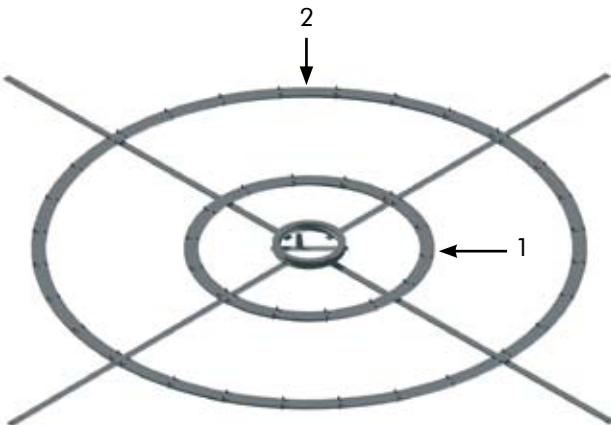
Picture 4.



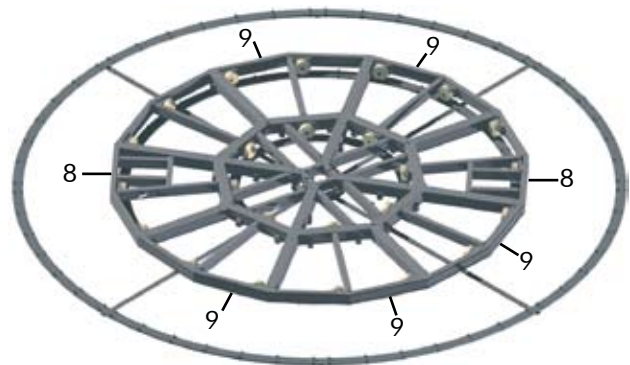
Picture 2.



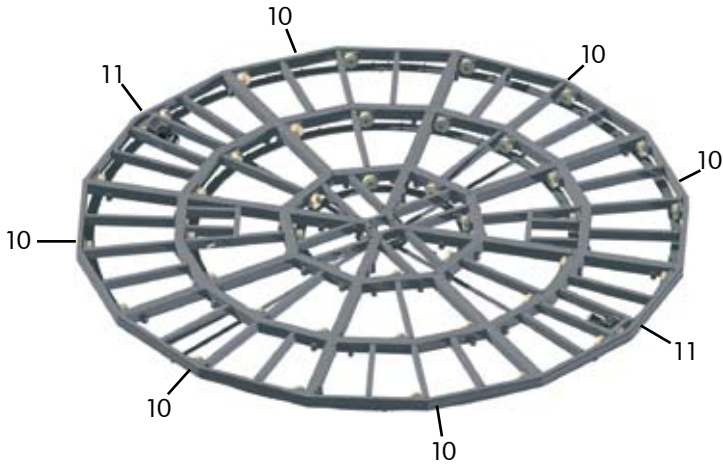
Picture 5.



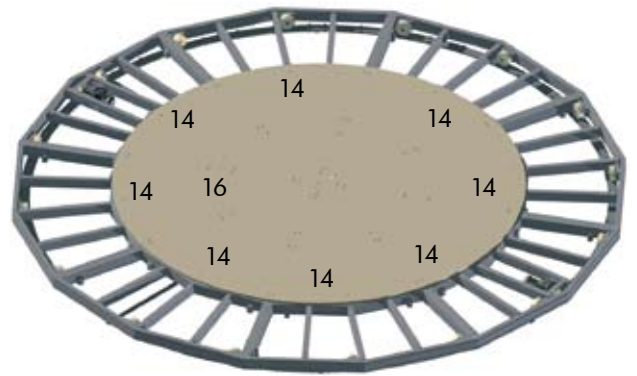
Picture 3.



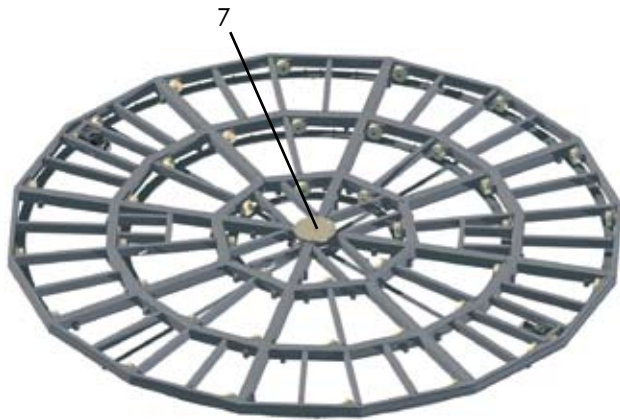
Picture 6.



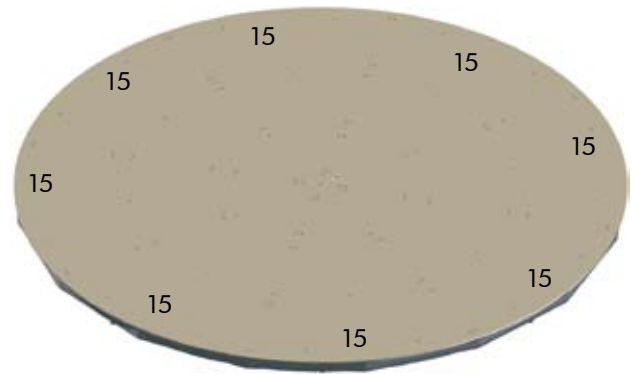
Picture 7.



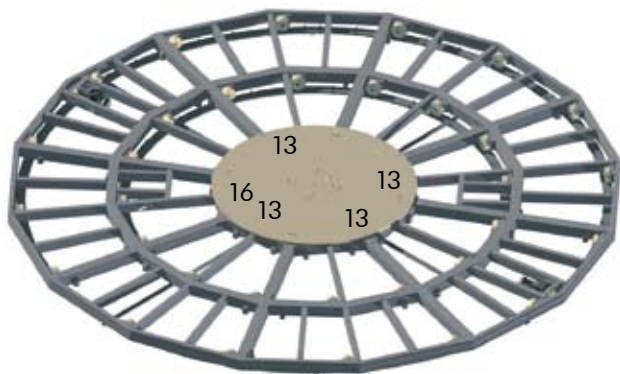
Picture 10.



Picture 8.



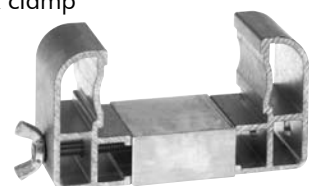
Picture 11.

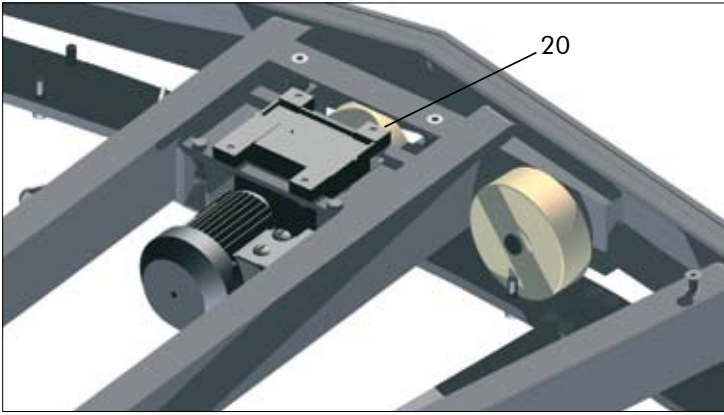


Picture 9.

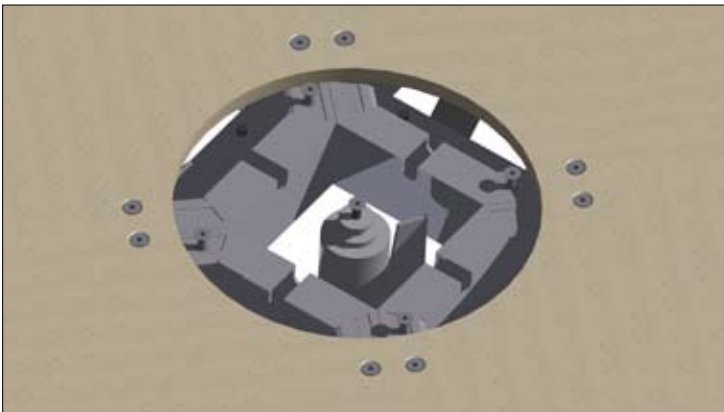


Picture 12. Deck-to-deck clamp





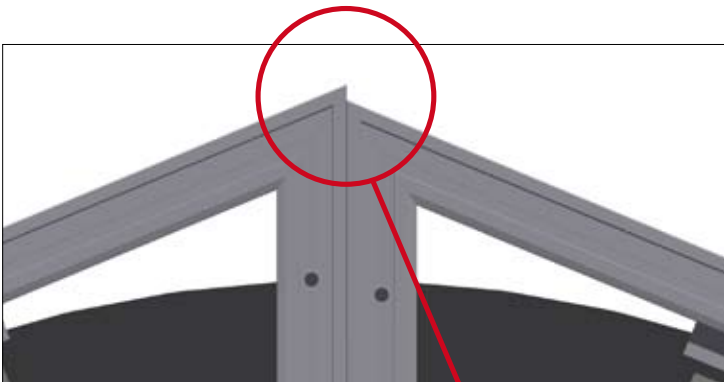
Picture 12. Detail of the motor



Picture 13.



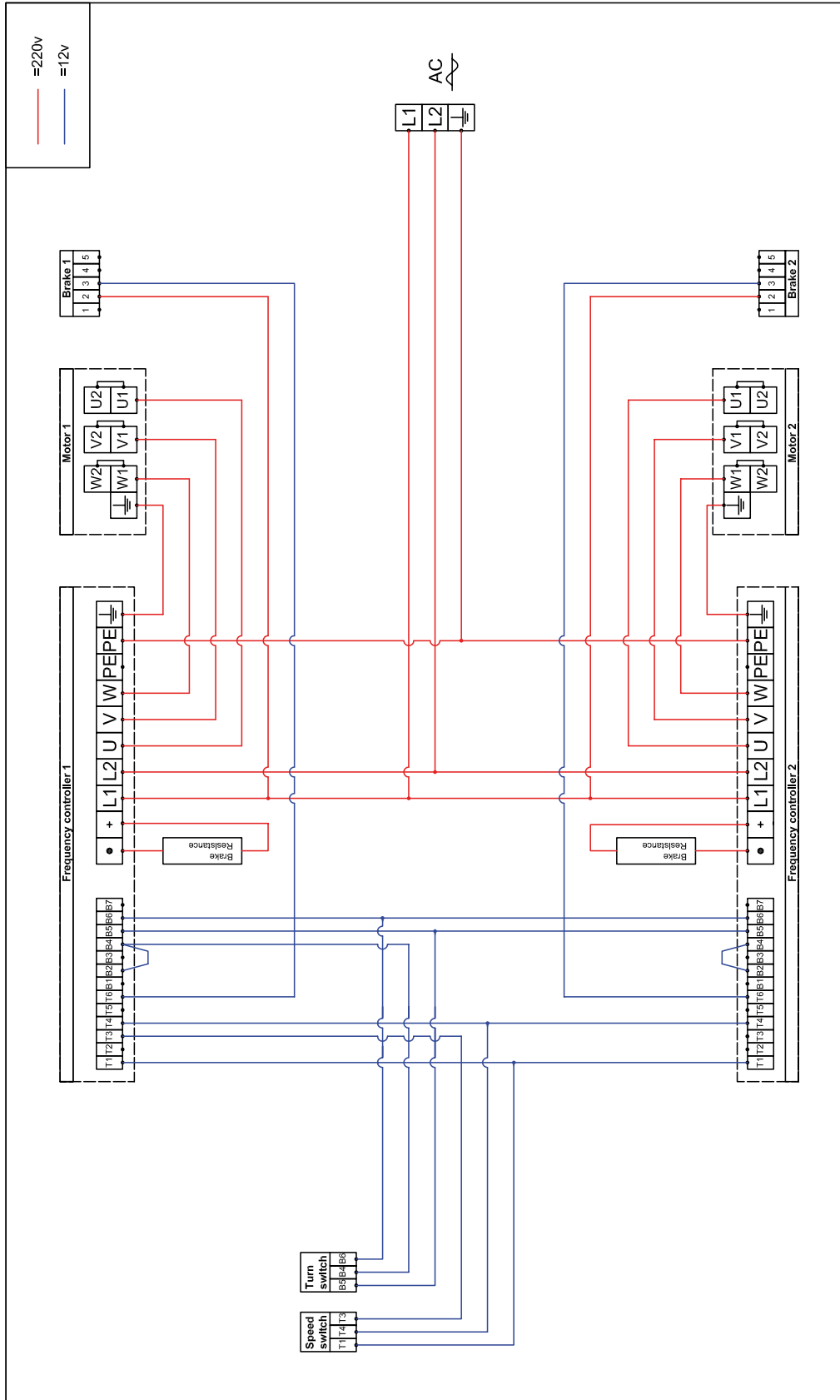
Picture 14.



Picture 15.

DO NOT !

14. FLOW CHART ROTATING STAGE



		TEKENAAR: R.BEUKEMA	SCHAAL:	
		DATUM: 07-08-2008	MAATEENHEID: MM	
		GEWIJZIGD:	KLANT:	
		ART.NR.:	PROJ.:	
		TEK.NR.:	GECONT. DOOR:	
		BENAMING: FLOW CHART ROTATING STAGE		
stuk nr.	materiaal	werkende lengte	zaaglengte	opmerking
A4				

15. EC-DECLARATION OF CONFORMITY FOR MACHINERY



PROLYTE PRODUCTS

EC-DECLARATION OF CONFORMITY FOR MACHINERY (Directive 2006/42/EC, Annex II, sub A)

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BIC INGBNL2A
IBAN NL72INGB0662185714

Herewith, we declare that the design, construction and commercialized execution of the Prolyte ROTATING STAGE type SM-RS complies with the following essential health and safety provisions applying to it:

- EC Machinery Directive 2006/42/EC
- EC Low Voltage Directive 2006/95/EG
- EC EMC Directives 2004/108/EC

Applied harmonized standards, in particular:

- EN 292 Part 1 (Safety of machinery)
- EN 292 Part 2 (Safety of machinery)
- EN 50081-1 (Electromagnetic compatibility)
- EN 50082-2 (Electromagnetic compatibility)
- EN 60034-1 (Rating and performance)
- EN 60034-5 (Types of enclosures - IP code)
- EN 60947-1 (Low voltage switchgear)

Applied standards and technical specifications, in particular:

- DIN 4113 all parts (Aluminium constructions under predominantly static loading)
- DIN 18000-1 (steel structures)
- EN 755 all parts (Aluminium and Aluminium alloys)
- ISO 9606-2 (Approval testing of welders)
- ISO 3834 (Quality requirements for welding)
- BGV C1 (Accident-Prevention Regulation. for Staging and Production areas)

As stipulated by Annex V of the EC machinery directive:

- CE symbol affixed to the product
- Technical documentation filed in manufacturer's works

Leek, The Netherlands, 2008

All transactions and deliveries are subject to conditions registered at the Chamber of Commerce in Groningen under number 2422