ser. No.		manufactured	
230V~, 50 Hz.	W	type	

Sign #:

ROTA PANEL

The moving sign

MANUAL
RP-2000 ADVERTISING

Version : 4.1
Product : ROTAPANEL 2000
Date : March 25th 2008
Issued by : Rotapanel International b.v., Plutoweg 2,
tel +31 58 2880000, Leeuwarden, The Netherlands

Rotapanel International bv.
Plutoweg 2, 8938 AB LEEUWARDEN
THE NETHERLANDS

Phone +31(0)58 288 00 00/Fax +31(0)58 288 28 30

Website: www.rotapanel.com / E-mail: info@rotapanel.com
Manual also available at: www.manualrotapanel.com

Publication information:

Title	RP-2000 Advertising Manual
Version	Version 4, March 25th © 2008
File	C:\Users\hendry\Desktop\1-Advertising\Handleiding RP-2000 Advertising Engels\Versie 4.1\Doc\172409_HANDLEIDING_RP2000_4.1.doc
Author	H.G.Born
Remarks: --	

In spite of the attention given to drawing up this Rotapanel manual, Rotapanel International bv cannot be liable for any inaccuracy it may contain. Subject to alteration.

TABLE OF CONTENTS

page

TABLE OF CONTENTS

page

1 INTRODUCTION

1.1 GENERAL

A Rotapanel consists of a frame with inside a number of triangular louvers positioned next to each other. The louvers can be turned through an electronically driven motor around their longitudinal axis; the three sides are manipulated as three units by the control. This creates three independent projection surface that can be driven with regard to side blocking and stopping time; the number of sides can also be selected. Multiple message signs can be linked in a master-slave configuration which can achieve special series effects. The electronics can be remotely controlled with acknowledgement from the current side.

☝ IMPORTANT

Please carefully read the following points before installing and assembling the Rotapanel!

1. A poor installation will always cause problems and premature wear!
2. It is very important that the upper beam and mechanism beam are always horizontally parallel installed and do not point forwards or backwards. Also see section 3 pages 6 -11.
3. Always install a solid back plate behind the Rotapanel to counteract wind turbulence and transmitted light through the louvers. The openings on the sides must also be sealed. Also see 3.1 page 6.
4. Ensure that bolts and nuts cannot touch any parts of the mechanism after the Rotapanel has been mounted.
5. Check the distance between the louvers once the images have been implemented; it must be uniform. Check all three sides. Remove the surplus vinyl or paper residual material if required.

1.2 SAFETY

Every Rotapanel must be erected outside the reach of persons. If erected within the reach of people, the Rotapanel must be covered in such a way that the rotating parts cannot be touched in anyway. A mechanical slip coupling has been included in the system; it will start to slip when the Rotapanel is overloaded or should the louvers be blocked. The electronic drive will temporarily switch off the system when slipping occurs after a time interval set at the factory. Turning will resume after a specific period of time. Should it emerge that the blocking has not yet been cancelled, the procedure will be repeated. If a certain number of repetitions are exceeded, the drive will stop for a longer period of time.

Π **Remark:**
1 inch = 25.4 mm

2 TECHNICAL SPECIFICATIONS

2.1 GENERAL

The following is specified on the nameplate at the bottom on the left on the Rotapanel:
construction year, serial number, type number, voltage and frequency.

Standard electrical details:

230/110 V AC ±25%, 50/60 Hz. Maximum performance input depending on the motor type; see the type label.

Prism width:
Standard 100 mm, optionally 125 mm

Circumferential profile:
Standard 124 mm wide, 113 mm deep, optionally 124 mm wide and 148 mm deep

Image time:
Adjustable; depends on the delay and standard between 4.8 and 26 seconds by using DIP switches and maximum 3600 seconds by using an RP Commander (optional). Longer times are optional.

Rotation method:
Standard wave, rotation in one go optional.

Support:
The Rotapanel frame is **not** self-supporting above 200 x 200 cm and requires a supporting steel structure. See Section 3.

2.2 RP 2000 CONTROL UNIT

Types: : RP 2000 for controlling 1 motor (4 outputs)
: RP 2000B for controlling 2 motors (5 outputs).
Supply voltage: 230 V AC ±25%, 50 Hz
Supply voltage: 110 V AC ±25%, 60 Hz
Internal spanning: +5 V DC + 12 V DC
Frequency: 50 - 60 Hz.
Switching current: < 8 A peak at 230 V AC
: < 16 A peak at 115 V AC
Input current: 1.5A max (RMS) at 115 V AC
Hold-up time: 10 ms at 115/230 V AC
Probes/position recorder: (digital, 12 V DC supply)
Remote control through: RS-485 (optionally via 12-230 V AC/V DC, GSM)
Ambient temperature: -20 ºC to +50 ºC.
When temperatures are lower than: -20 ºC you should also order a cabinet heater.)
When temperatures are higher than: +50 ºC you should also order a cabinet cooler.)

Interruption of the power supply through plug connection or mains switch with a control light
Motor switched by an optically separated Triak control

EMC directives:
The unit complies with the following EMC directives: 89/336 EEC EN 61000-6-3, EN 61000-6-4, EN 61000-6-2 and (PVMS EN 12966-1 tables 11 and 12)

The Rotapanel can rotate both to the left or to the right and, therefore, the shortest route is chosen with regard to each new request.

3 LOAD-BEARING FRAME AND INSTALLATION

3.1 LOAD-BEARING FRAME/INSTALLATION

- The static load such as the weight of the Rotapanel (this can be found to the right at the bottom on the drawing supplied by Rotapanel) and especially the dynamic loads such as winds must be assumed to calculate the support with regard to strength and rigidity. Possible settlement and subsidence as a result of changes in temperature must be carefully monitored.

- The aluminium lower and upper beams of a Rotapanel must be parallel with regard to each other, they must be level both in the horizontal and vertical direction and must remain sufficiently straight and must not distort at all or only slightly after being installed. See drawings 1 to 5 on pages 7 to 11. Only 10% of the tolerances may be ascribed to dynamic phenomena such as wind and temperature changes.

- Above 200 cm width and 200 cm height the aluminium frame of the Rotapanels is **not** self-supporting. The Rotapanel must be supported above these dimensions and a rear steel structure must be applied; the support profiles can be installed on the wall when wall mounted. Irregularities in the support can be corrected using packing plates. The support must also be so strong and rigid that all form accuracy criteria of the Rotapanel can be complied with under all conditions, for example, wind and temperature.
- Ensure that the aluminium Rotapanel frame can freely expand and contract with regard to the steel load-bearing frame to process any expansion differences that may be exerted between the steel and aluminium. See the schematic drawing in section 3.3.

- Ensure that wind cannot flow through the Rotapanel to ensure that operation by wind can be avoided. If the Rotapanel is not being installed against a closed wall, a closed back wall **must** be provided. The back wall must be erected 5 to 10 cm from the louvers/prisms so that they can rotate freely under all conditions such as, for example, in case of wind. Vertical openings are created to the left and right after the back wall has been erected; these vertical sides of the back wall must also be sealed.

- Electrical insulation must be installed between the aluminium Rotapanel frame and the steel of the load-bearing frame when using a steel load-bearing frame to prevent electrochemical corrosion. Thermal galvanised bearing structures are sufficiently insulated due to the zinc coating. The material of the mounting resources must be stainless steel unless they do not come in contact with the aluminium Rotapanel frame.

☝ **Warning:**
Never install lights or light supports on the aluminium Rotapanel frame beams or directly on the steel load-bearing frame on which the Rotapanel has been mounted. Should this working method be applied that has been prohibited, inadmissible deformations will be the result when there are strong winds. Always, therefore, use the rear structure or the wall to attach lights.

☝ **Warning:**
Never move/mount a Rotapanel with the louvers/prisms in the frame. First mount the aluminium frame on or in the structure and only then install the louvers.

HORIZONTAL ANGLE BETWEEN UPPER AND LOWER ALUMINIUM BEAM MUST BE LOWER THAN 0.2° (DEGREES)*

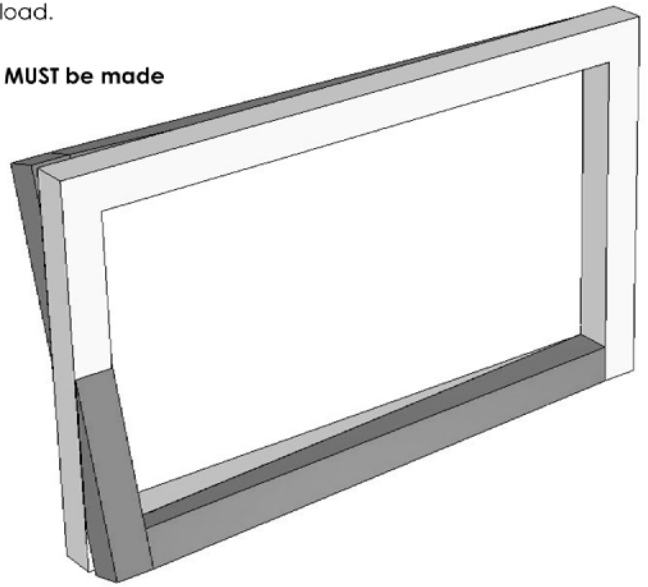
This is 3,5mm (0.14")deflection every 1000mm (39.3") beamlength

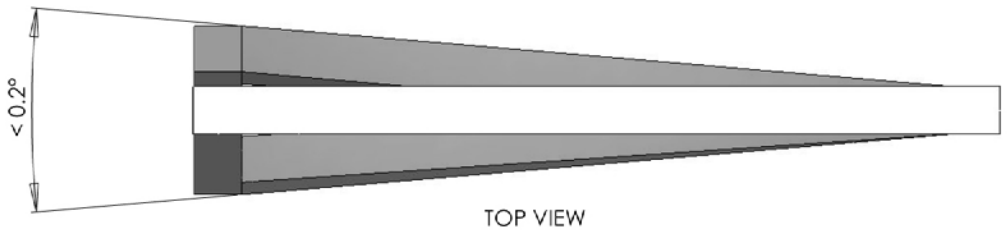
* For Rotapanels with a lenght of 10000mm (394") or longer, is the maximum allowable deflection 35mm (1.4") INCLUDING dynamic loads like windload.

* Be aware that the maximum allowable limit of 0.2° (degrees) is INCLUDING 30% dynamic loads, like windload.
  The maximum allowable limit for dynamic loads is 30% from the total load.

Combined static and dynamic stress analyses and deflection-calculations of the suspension-construction MUST be made by an official design-engineering consultant before installing the Rotapanel !.

Not doing so can result in damage of the Rotapanel.





TOP VIEW

DRAWING 1 OF 5 MOUNTING INSTRUCTIONS ROTAPANEL

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH:				DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
	NAME	SIGNATURE	DATE				TITLE: 1	
DRAWN			20 April 2007					
CHK'D								
APPV'D								
MFG								
Q.A				MATERIAL:			DWG NO. Parallelism	A3
				WEIGHT:			SCALE:1:1	SHEET 1 OF 1

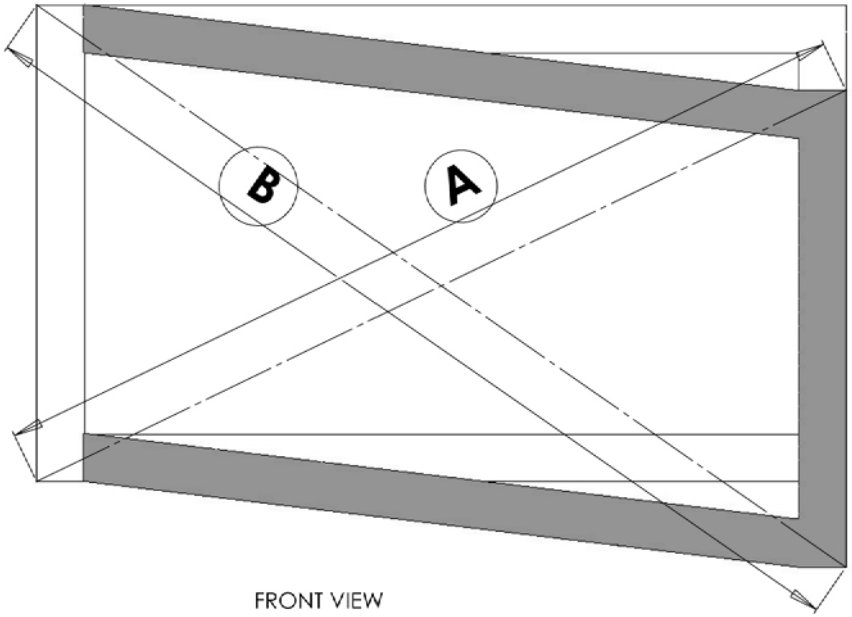
DIFFERENCE BETWEEN LENGTH "A" AND "B" SHALL NOT BE GREATER THAN 0,3% WITH RESPECT TO THE LONGEST LENGTH *.

BY EXAMPLE :
If "B" IS 1000mm than is the minimum for "A"
0.997 x 1000 = 997mm

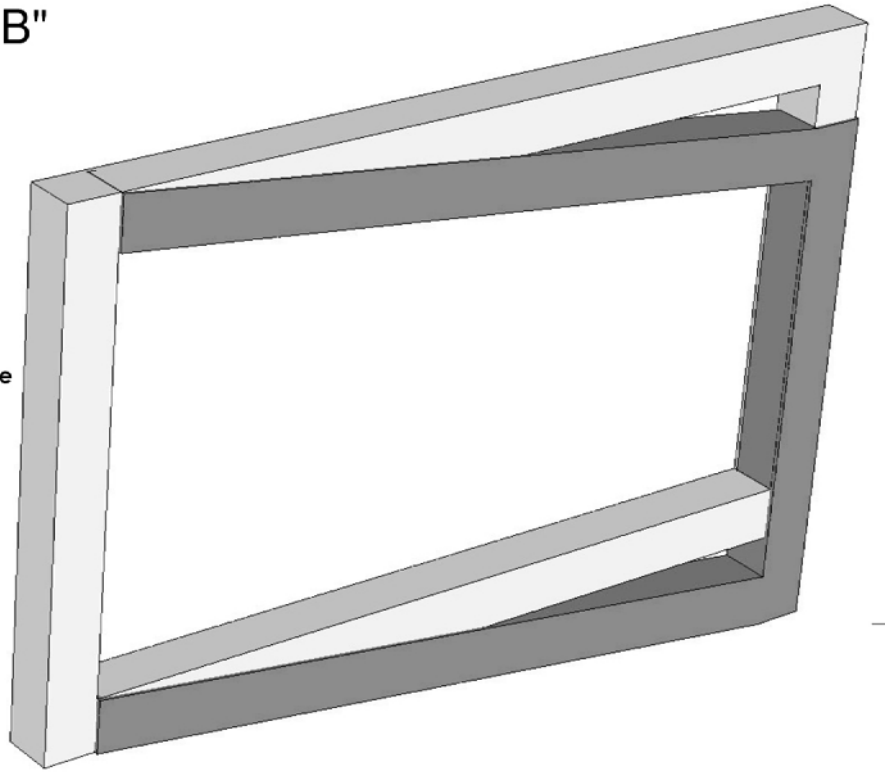
* Be aware that the maximum allowable limit of 0.2° (degrees) is INCLUDING 30% dynamic loads, like windload.
The maximum allowable limit for dynamic loads is 30% from the total load.

Combined static and dynamic stress analyses and deflection-calculations of the suspension-construction MUST be made by an official design-engineering consultant before installing the Rotapanel !.

Not doing so can result in damage of the Rotapanel.



FRONT VIEW



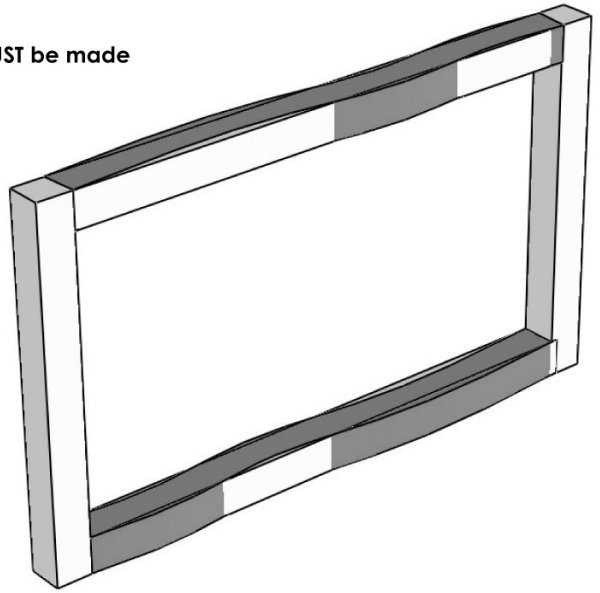
DRAWING 2 OF 5 MOUNTING INSTRUCTIONS ROTAPANEL

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:			DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION
	NAME	SIGNATURE	DATE		TITLE: 2
DRAWN			20 April 2007		
CHK'D					
APPV'D					
MFG					
Q.A				MATERIAL:	DWG NO. Perpendicularity / A3
				WEIGHT:	SCALE:1:1 / SHEET 1 OF 1

* Be aware that the maximum allowable limits 5mm (0,2") and 10mm (0,4") are INCLUDING 30% dynamic loads, like windload.
The maximum allowable limit for dynamic loads is 30% from the total load.

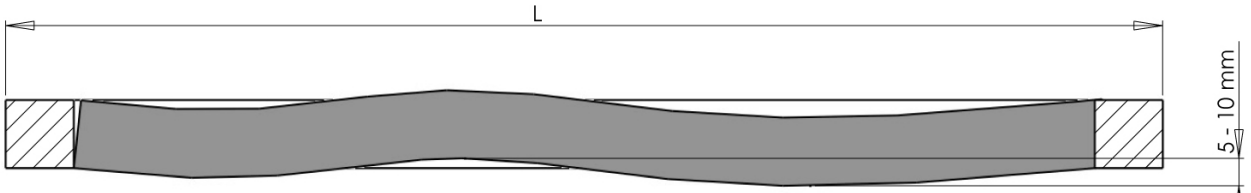
Combined static and dynamic stress analyses and deflection-calculations of the suspension-construction MUST be made by an official design-engineering consultant before installing the Rotapanel !.

Not doing so can result in damage of the Rotapanel.



MAXIMUM HORIZONTAL DEFLECTION HORIZONTAL BEAMS : 5mm IF L < 5000mm (200")*

MAXIMUM HORIZONTAL DEFLECTION HORIZONTAL BEAMS : 10mm IF L > 5000mm (200")*



TOP VIEW

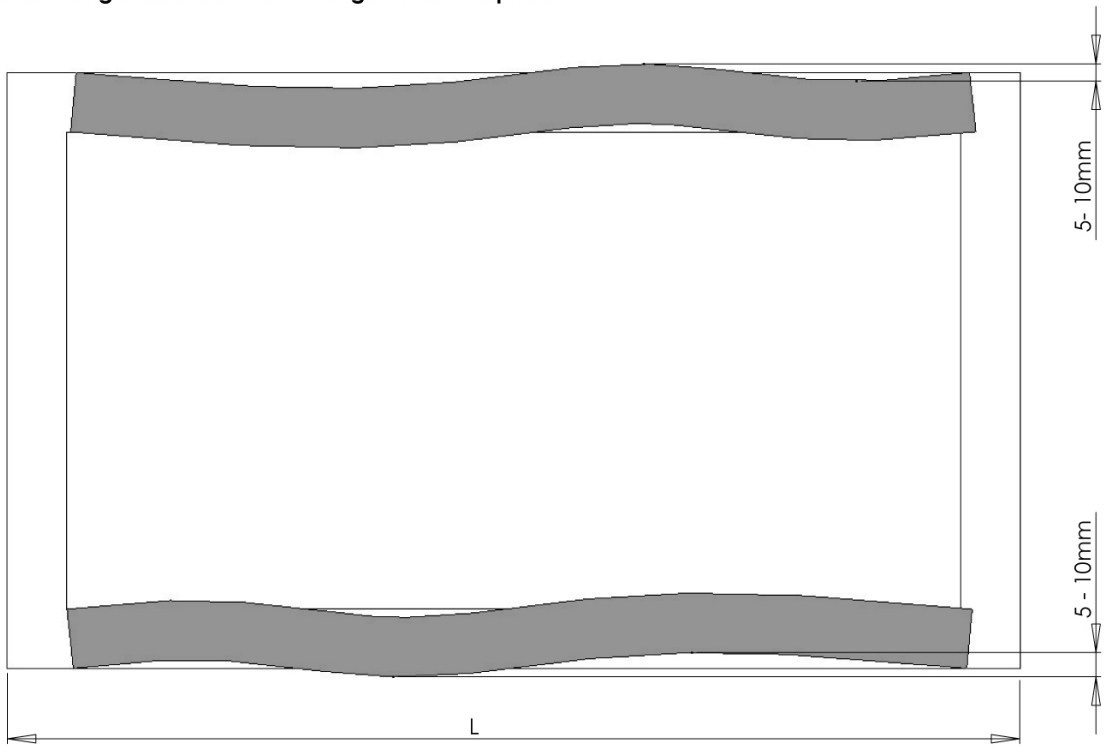
DRAWING 3 OF 5 MOUNTING INSTRUCTIONS ROTAPANEL

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH:				DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION
	NAME	SIGNATURE	DATE				TITLE: 3
DRAWN			20 April 2007				
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:			DWG NO. Straigthness hor / A3
				WEIGHT:			SCALE:1:1 / SHEET 1 OF 1

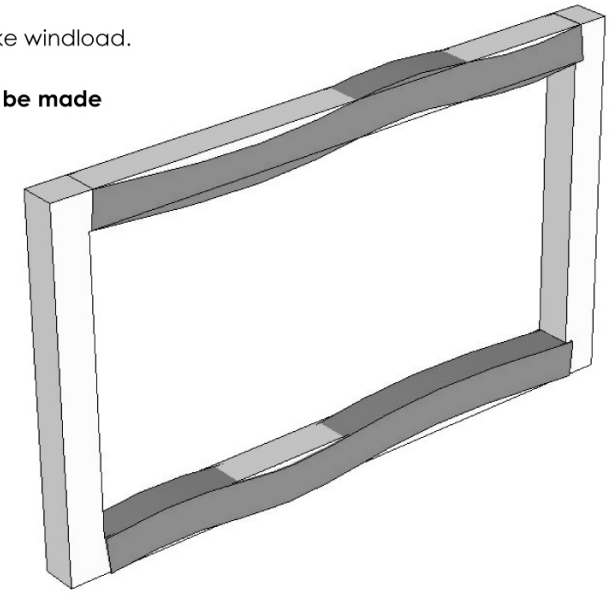
* Be aware that the maximum allowable limits 5mm (0,2") and 10mm (0,4") are INCLUDING 30% dynamic loads, like windload.
The maximum allowable limit for dynamic loads is 30% from the total load.

Combined static and dynamic stress analyses and deflection-calculations of the suspension-construction MUST be made by an official design-engineering consultant before installing the Rotapanel !.

Not doing so can result in damage of theRotapanel.



FRONT VIEW



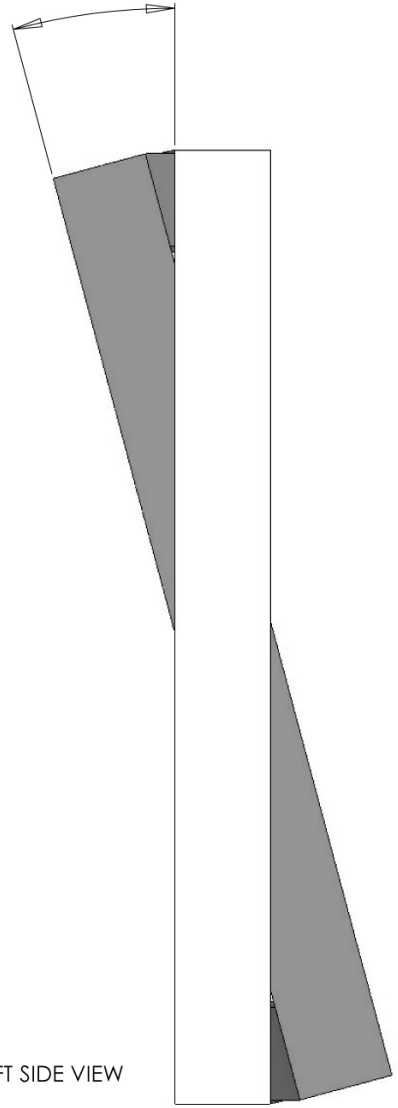
MAXIMUM VERTICAL DEFLECTION
HORIZONTAL BEAMS : 5mm IF L < 5000mm (200") *

MAXIMUM VERTICAL DEFLECTION
HORIZONTAL BEAMS : 10mm IF L > 5000mm (200") *

DRAWING 4 OF 5 MOUNTING INSTRUCTIONS ROTAPANEL

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH:				DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION
	NAME	SIGNATURE	DATE				TITLE: 4
DRAWN			20 April 2007				
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:			DWG NO. Straigthness vert / A3
				WEIGHT:			SCALE:1:1 / SHEET 1 OF 1

MAXIMUM TORSION 0.2° *



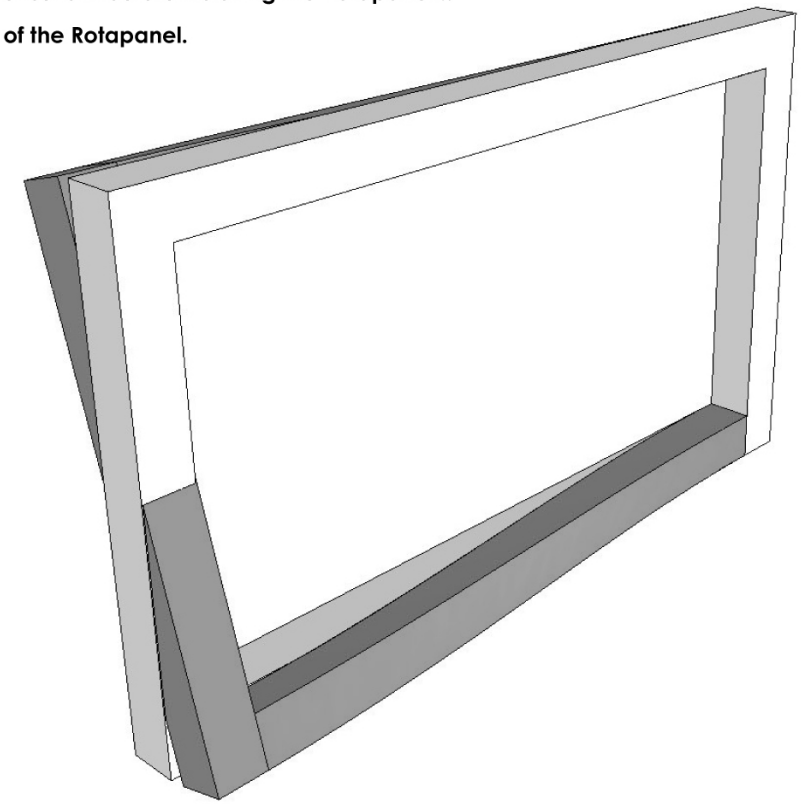
LEFT SIDE VIEW

* This is 3.5mm (0.14")deflection every 1000mm (39.3") beamlength

* Be aware that the maximum allowable limit of 0.2° (degrees) is INCLUDING dynamic loads, like windload.

Combined static and dynamic stress analyses and deflection-calculations of the suspension-construction MUST be made by an official design-engineering consultant before installing the Rotapanel !.

Not doing so can result in damage of the Rotapanel.



DRAWING 5 OF 5 MOUNTING INSTRUCTIONS ROTAPANEL

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH:				DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION
	NAME	SIGNATURE	DATE				TITLE: 5
DRAWN			20 April 2007				
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:			DWG NO. Torsion / A3
				WEIGHT:			SCALE:1:1 / SHEET 1 OF 1

3.2 SCHEMATIC DRAWINGS

- Schematic drawings have been included on pages 13 - 20 for securing your Rotapanel against a wall or steel structure.

Warning:
The diagrams are only schematic. The number of attachment points, span lengths and material thicknesses must always be calculated. If calculations are not made, the guarantee will be null and void.

3.3 SCHEMATIC DRAWINGS 1 TO 7

(These are provided to assist you in installing your Rotapanel.)

Drawings 1 and 2 together:

These drawing provide the methods that are used the most for the installation of your Rotapanel; the mounting sets are free and are supplied with your Rotapanel.

Drawing 3:

This drawing should only be used for the installation when using special mounting plates; this is an extra strong installation method. We can only supply these mounting plates if ordered before production and for an additional charge.

Drawing 4:

Is a special drawing for the hole dimensions of a Rotapanel with a pitch of 105.9 mm.

Drawing 5:

Is a special drawing for the hole dimensions of a Rotapanel with 125 mm louvers and a pitch of 132.15 mm.

Drawing 6:

Is a special drawing for the hole dimensions of a Rotapanel with a pitch of 108.0 mm.

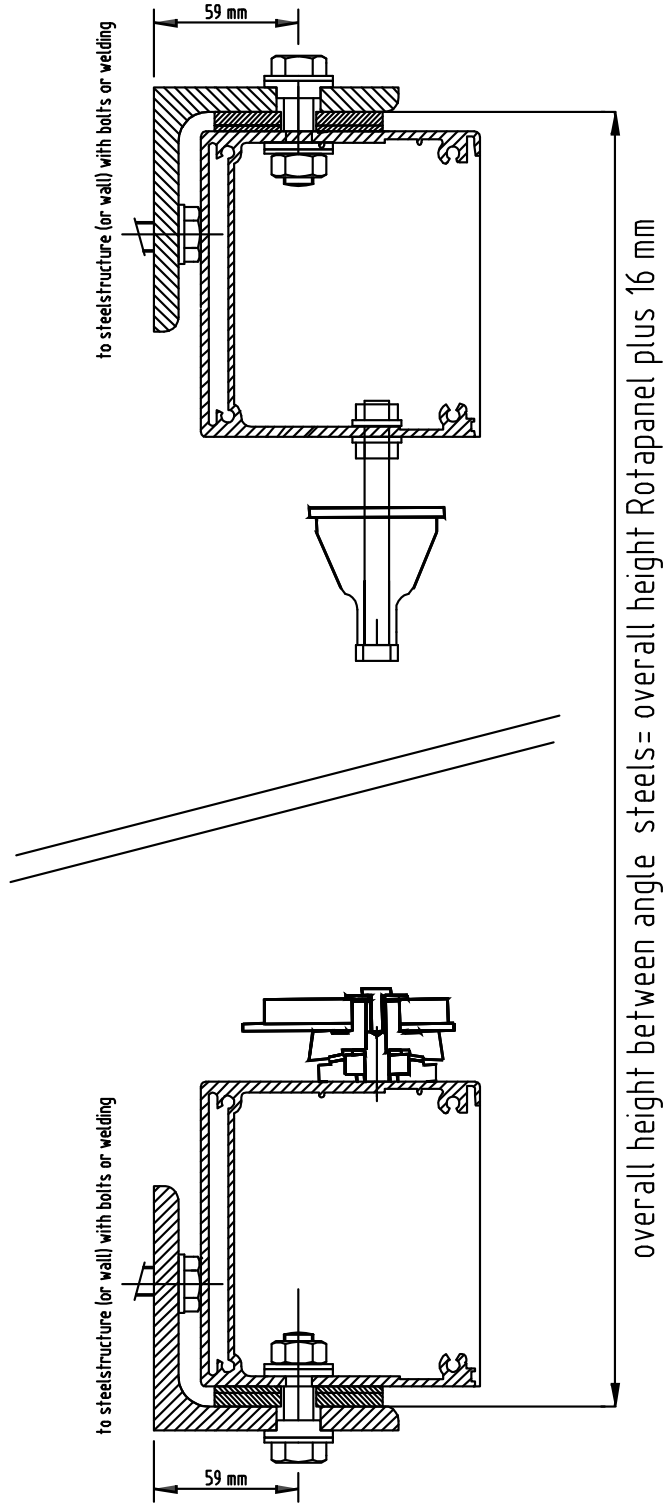
Drawings 7 and 8 together:

Are only for the Rotapanel XL with horizontal dividers; you always require a special schematic drawing that is supplied by Rotapanel for this type of Rotapanel. It is extremely important to strictly follow the recommendations in the manual for the Rotapanel XL type.

PRINCIPAL DRAWING NO. 1

This drawing helps you calculate the measure between the bottom and top angle steel.

This construction drawing is only a principle drawing. Thus, the number of mounting brackets, fastening points, span length and material thicknesses must always be calculated by a constructor!!



PROFILE 1

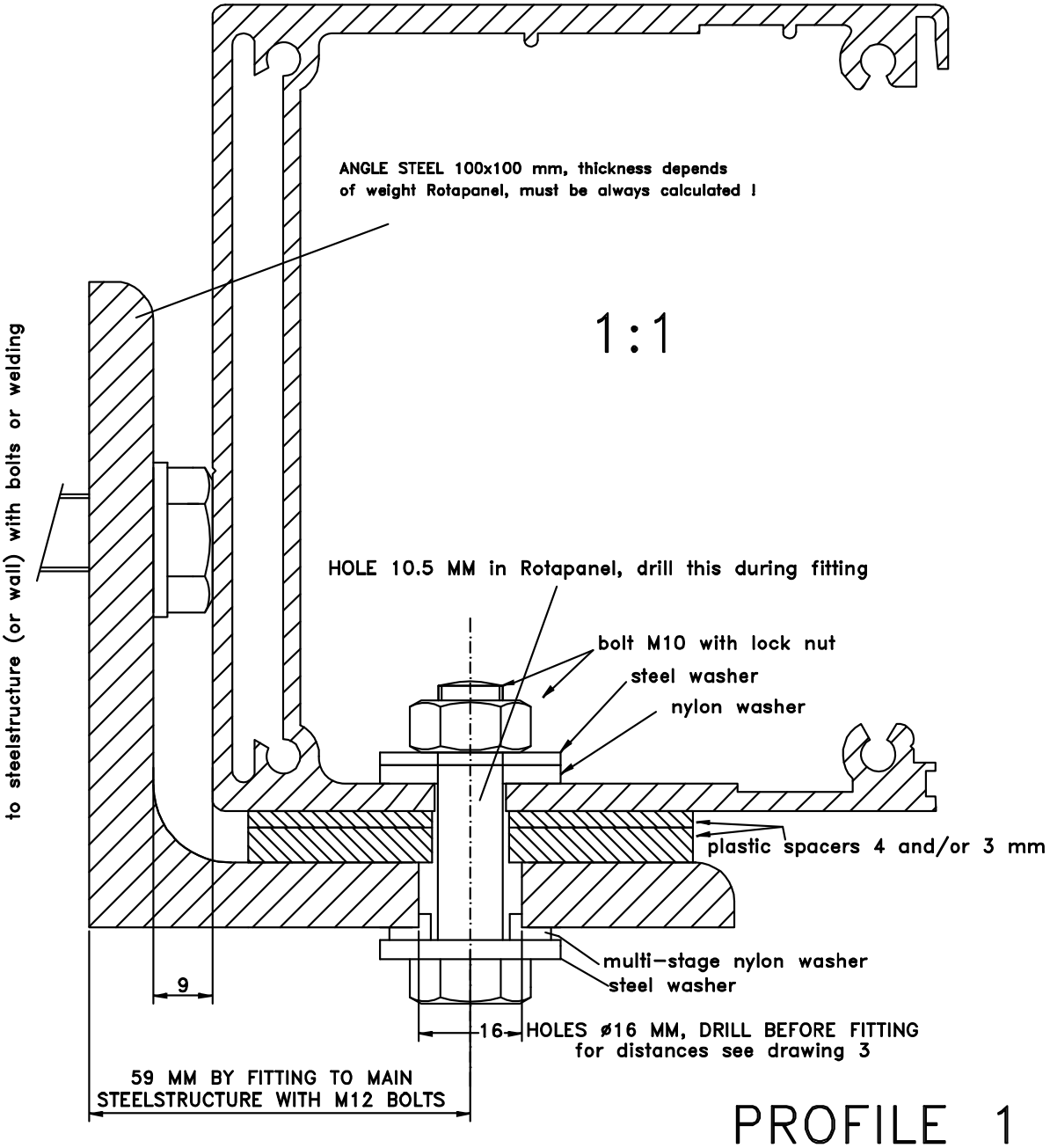
Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:	Form and plate tolerances according to NEN3311
American projection	Scale 1:3	Drawn by: 04-03-05	ROTA® The moving sign PANEL
	Dimmensions:		
	Date:	Checked:	
Remarks:	Name PRINCIPAL DRAWING 1		

PRINCIPAL DRAWING NO. 2

THIS PRINCIPAL DRAWING IS THE MOST USABLE,
FOR BOTTOM AND TOP FITTING.

The special assembling set eliminates the expansiondifferences between steelstructure/aluminium RotaPanel, the spacers handle the electrical isolation.

This construction drawing is only a principle drawing. Thus, the number of mounting brackets, fastening points, span length and material thicknesses must always be calculated by a constructor!!



PROFILE 1

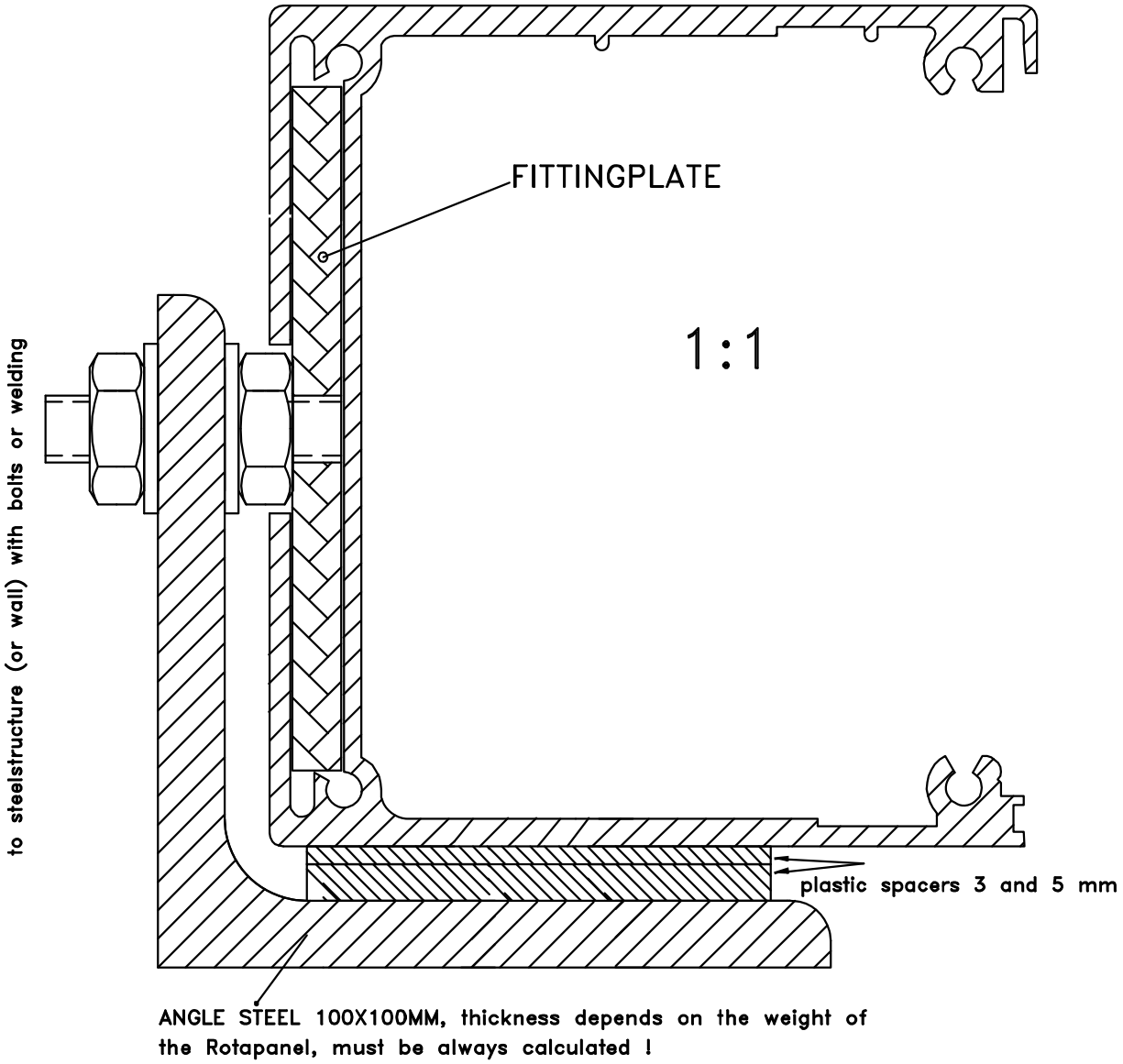
With each RotaPanel delivered, it is also delivered a free fitting set. Wich includes: bolts, nylon washers and spacers.

Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:	Form and plate tolerances according to NEN3311
American projection	Scale 1:3	Drawn by: 04-03-05	ROTA® The moving sign PANEL
	Dimmensions:		
	Date:	Checked:	
Remarks:	Name PRINCIPAL DRAWING 2		

PRINCIPAL DRAWING NO. 3

THIS PRINCIPAL DRAWING IS ONLY SUITABLE,
BY USING STEEL FITTINGPLATES, YOU MUST ORDER THIS PLATES B E F O R E PRODUCTION.

For calculating distances between angle steels and total fitting plan, look Drawing 2



This construction drawing is only a principle drawing. Thus, the number of mounting brackets, fastening points, span length and material thicknesses must always be calculated by a constructor!!

SPACERS HANDLE ALSO ELECTRICAL ISOLATION.

PROFILE 1

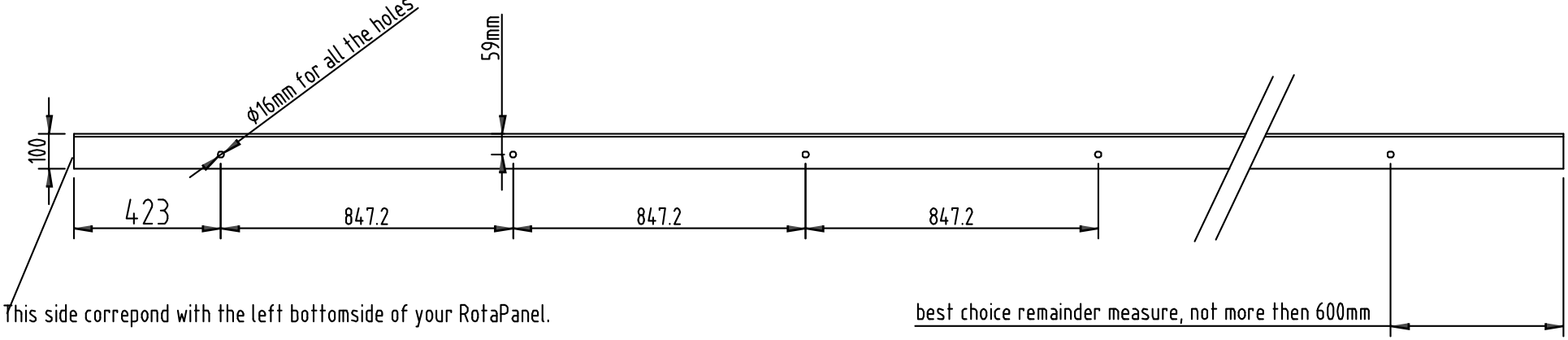
Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:	Form and plate tolerances according to NEN3311
American projection	Scale 1:3	Drawn by: 04-03-05	ROTA The moving sign PANEL
	Dimmensions:		
	Date:	Checked:	
Remarks:	Name PRINCIPAL DRAWING 3		

PRINCIPAL DRAWING NO.4 (100 mm prisms distance105.9)

This is the principal drawing giving the dimensions of the holes situated on the top and bottom angle steel for prism distance of 105.9 mm. Combine this drawing with drawing 1,2 or 6, the number depends of the and type of your panel.

Angle steel 100x100x? mm ,for top and bottom fitting of your RotaPanel.

For the fixing to the wall or steelstructure you must use the same places and distances between holes thus duplicate the holes in the vertical flange of the angle steel



Attention: If you do not use this hole shedule, you can DAMAGE the mechanism !!!!

Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:
American projection	Scale 1:3	Drawn by: U.J. 3-1-003
	Dimmensions:	Name PRINCIPAL DRAWING 4
	Date:	

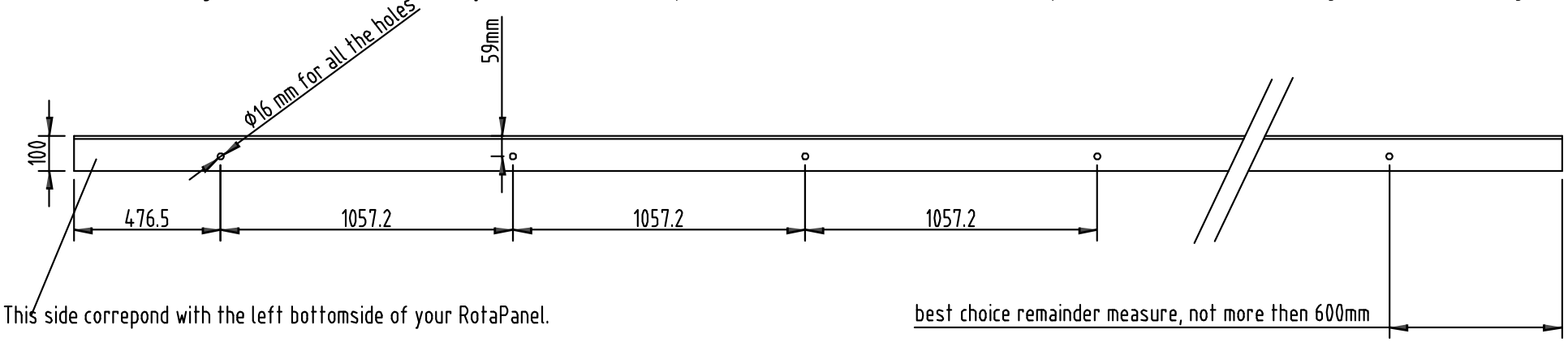
ROTA The moving sign PANEL

PRINCIPAL DRAWING NO.5 (125 mm prisms DISTANCE 132.15)

This is the principal drawing giving the dimensions of the holes situated on the top and bottom angle steel for prism distance of 105.4 mm. Combine this drawing with drawing 1,2 or 6, the number depends of the and type of your panel.

Angle steel 100x100x? mm ,for top and bottom fitting of your RotaPanel.

For the fixing to the wall or steelstructure you must use the same places and distances between holes thus duplicate the holes in the other angle steel vertical flange.



Attention: If you do not use this hole shedule, you can DAMAGE mechanism !!!!

Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:
American projection	Scale 1:3	Drawn by: U.J. 3-1-003
	Dimmensions:	Name PRINCIPAL DRAWING 5
	Date:	

ROTA The moving sign PANEL

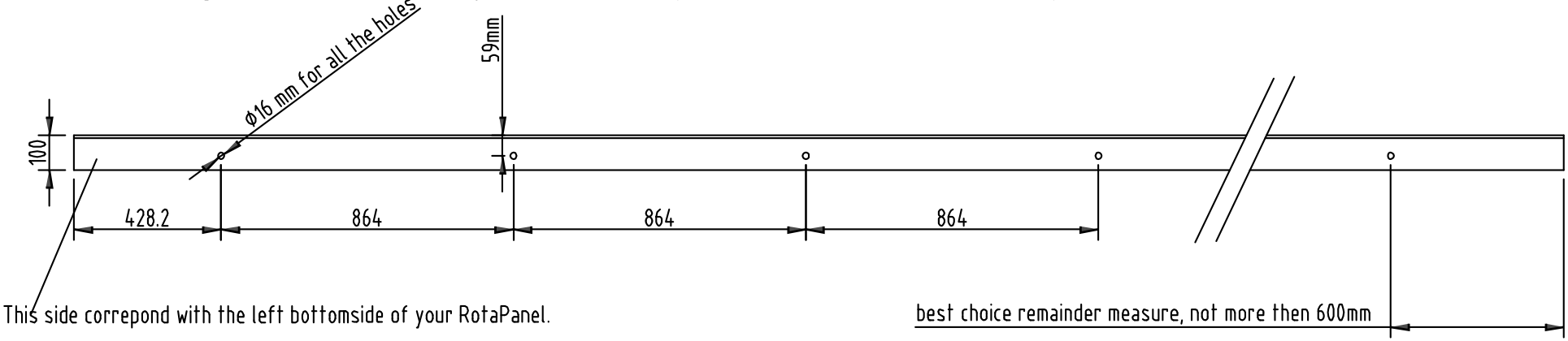
PRINCIPAL DRAWING NO.6 (100 mm prisms steek 108)

This is the principal drawing with hole dimensions of the bottom and top angle steel for prism distance of 108.0mm., check this distance in your drawing !

Combine this drawing with drawing 1, 2 or 6, the number depends of the size and type of your RotaPanel

Angle steel 100x100x? mm ,for top and bottom fitting of your RotaPanel.

For the fixing to the wall or steelstructure you must use the same places and distances between holes thus duplicate the holes in the other angle steel vertical flange.

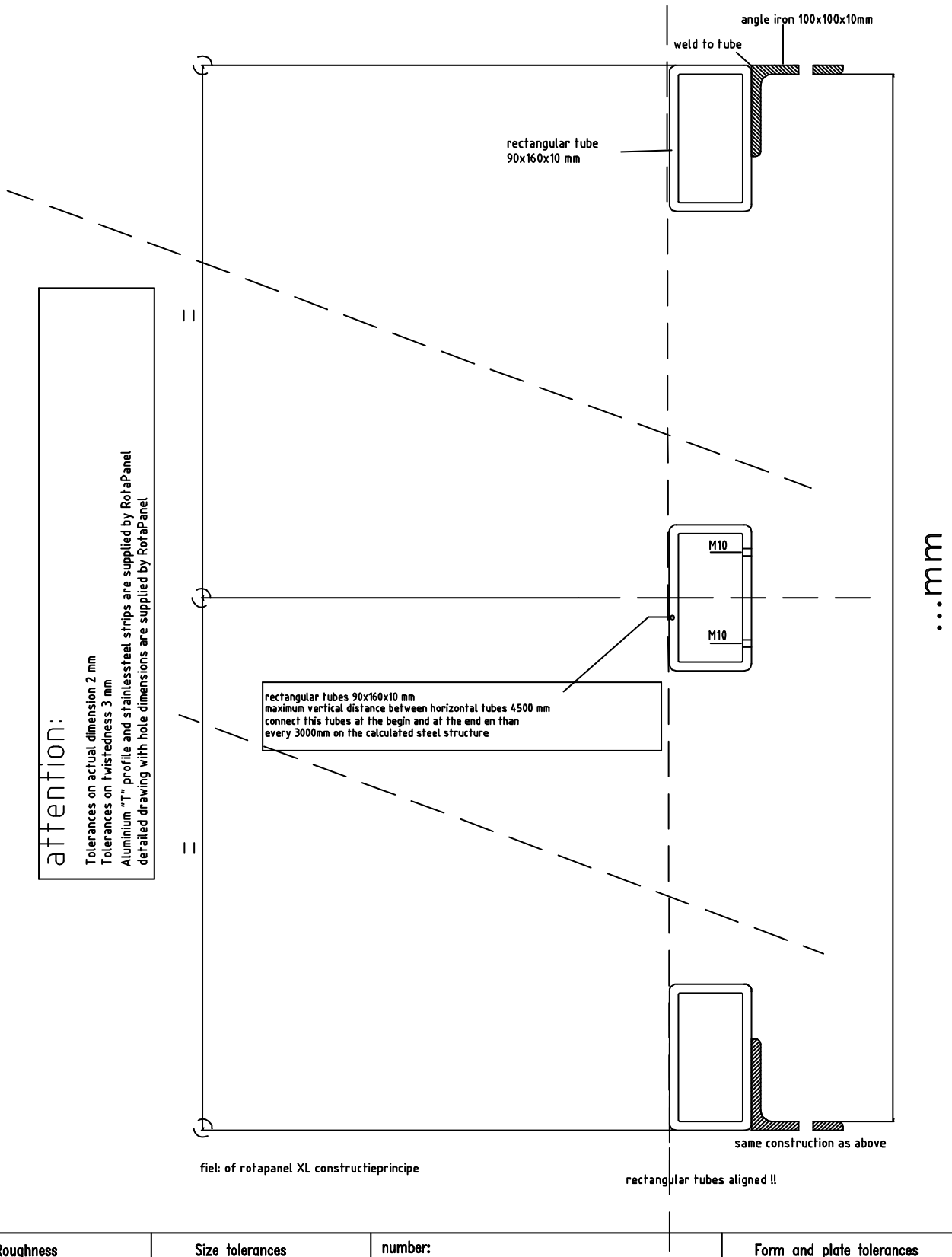


Attention: If you do not use this hole shedule, you can drill in the mechanism !!!!

Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:
American projection	Scale 1:3	Drawn by: U.J. 3-1-003
	Dimmensions:	Name PRINCIPAL DRAWING 6
	Date:	

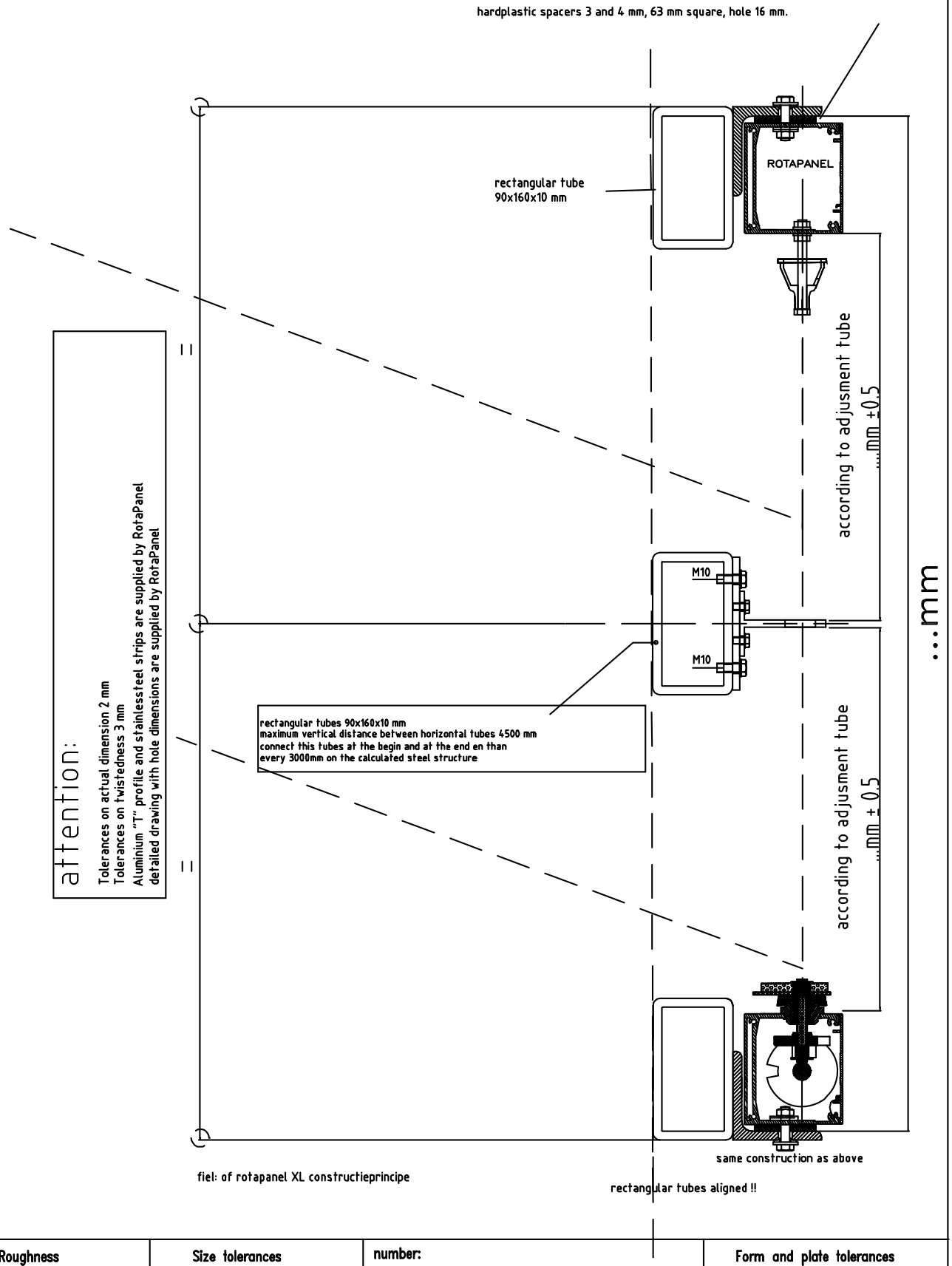
ROTA The moving sign PANEL

principal drawing no. 7 RotaPanel with cardanic split



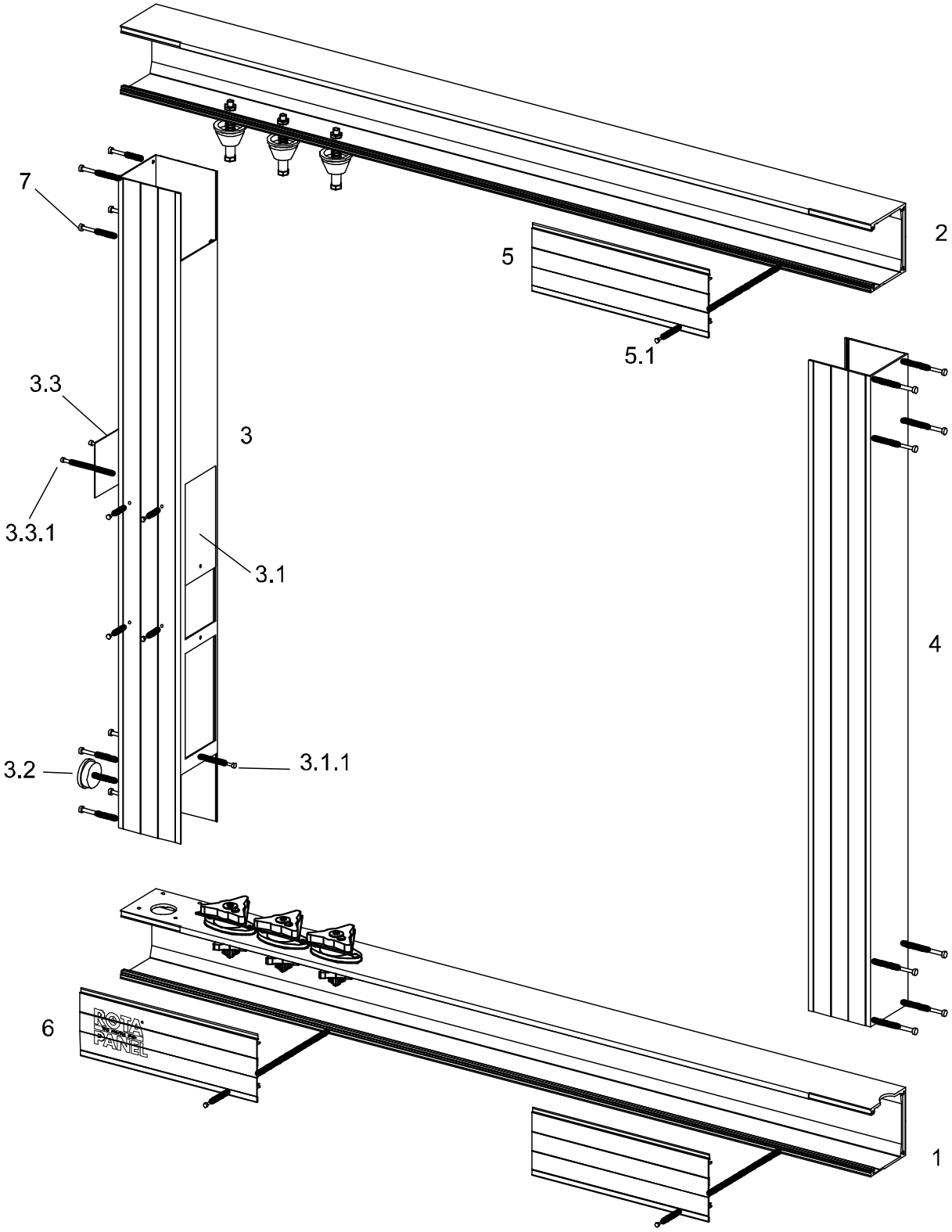
Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:	Form and plate tolerances according to NEN3311
		Drawn by: Gijs Lanting	ROTA The moving sign PANEL
	Dimmensions		
	Date: 31-03-03	Checked:	
Remarks:	File: rotapanel XL constructieprincipe inches		

principal drawing no. 8 RotaPanel with cardanic split

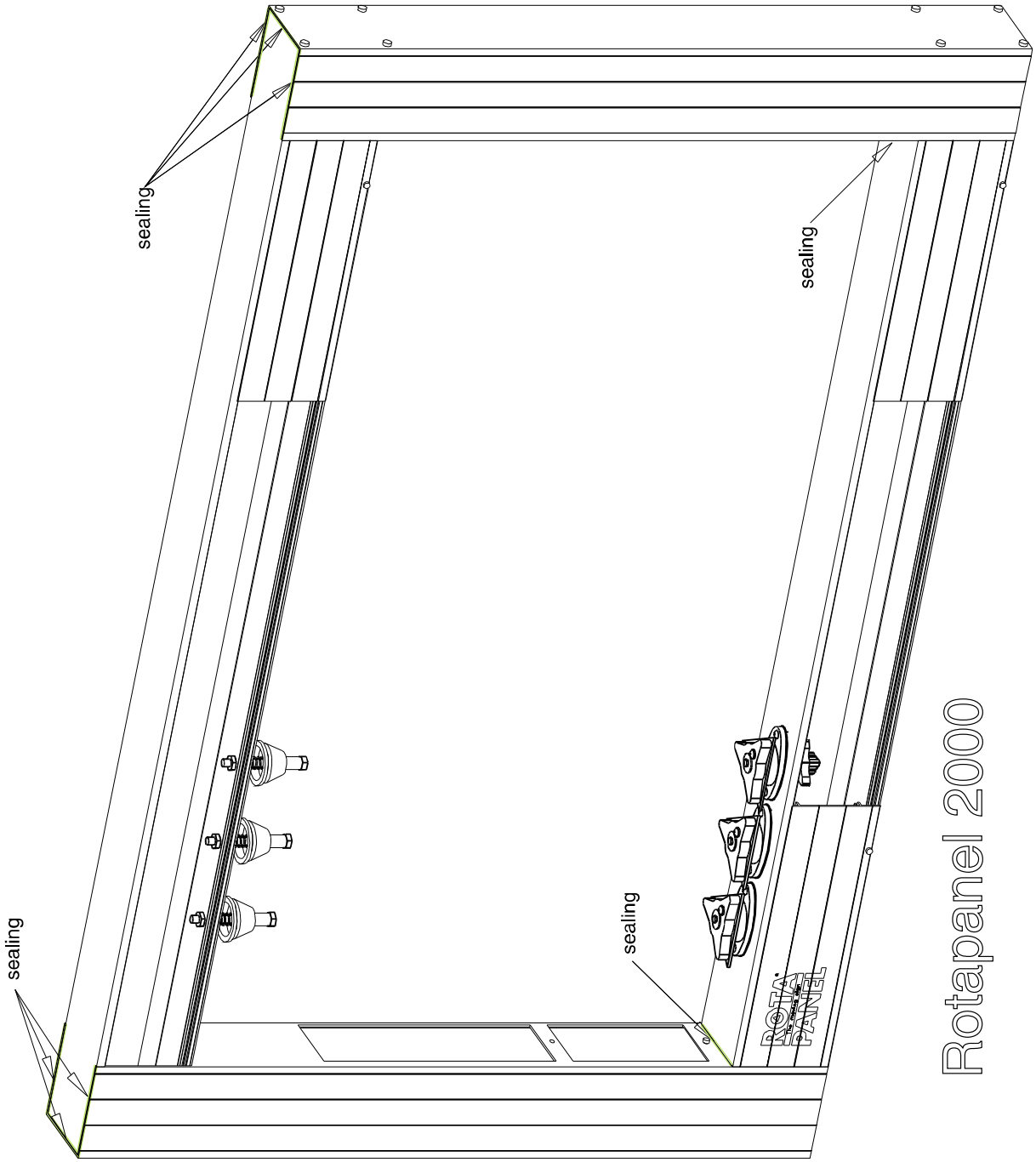


Roughness according to NEN 3634	Size tolerances according to NEN 2365	number:	Form and plate tolerances according to NEN3311
		Drawn by: Gijs Lanting	ROTA The moving sign PANEL
	Dimmensions:		
	Date: 31-03-03	Checked:	
Remarks:	File: rotapanel XL constructieprincipe inches		

4.0 ASSEMBLY OVERVIEW 1



4.0 ASSEMBLY OVERVIEW 2



5. INSTALLATION OF LOUVERS – REPLACING DISPLAYS

☝ **Warning:**
The unit must first be switched off. If you do not switch off the unit this may lead to injury and/or damage to the unit.

5.1 SOLID VERSION (standard):

Removing louvers:
Lift the louver 20 mm, move the lower part to the front so that it is free from the sign and, next, allow the louver to drop so that it is also free from the upper bearing housing.

Positioning louvers:
Follow the procedure for removing but in the reverse order.

5.2 SOLID VERSION (for vertical louvers with a subdivision):

Positioning louvers:
All louvers are equipped with a bolted down base plate with a hexagonal hole on one side; position the louver with the open side on the base plate of the mechanism, keep the louver in place and put the hexagonal cardanic coupling through the T profile in the bolted down base plate of the louver. Next, secure the coupling using the supplied socket screw. Once all the lower louvers have been positioned, you can position the louvers in the upper part of the sign. Position the louver with the open side around the top and lift the louver 20 mm. Next position the louver including the base plate on the hexagonal cardanic coupling

Removing louvers:
Lift the upper louver 20 mm, move the lower part to the front so that it is free from the sign, next, allow the louver to drop so that it is also free from the upper bearing housing and remove the louver. Loosen the socket screw of the cardanic coupling to remove the louvers from the lower part of the sign. Remove the hexagonal coupling by pulling it upwards. In the meantime, hold the louver because if not it may fall out of the sign. Lift the louver 20 mm and remove it.

5.3 SPLIT VERSION (optional fast slide-in system):

Removing blades:
Use the supplied blade removal tool for this and position the pins at the base plate behind the replacement blade and carefully pull it forwards.

Positioning aluminium replacement blades:
Position the lower part of the blade between the studs on the base plate and, next, press the blade from the bottom to the top.

☝ Warning:
Treat the louvers and slide-in strips (optional) carefully when positioning, removing and transporting so that they cannot become permanently deformed. Check whether the tension of the blades is correct before switching on. Deformation and/or incorrectly installed louvers/blades will lead to obstruction.

5.4 INSTALLING DISPLAYS

The displays are usually manufactured using self-adhering PVC film or paper. This film/paper is applied immediately to the louvers or slide-in strips. The louvers are first placed in a specially supplied adhesive template. The display is attached to the louvers and next the recesses between the louvers are cut away.

WARNING

Do not crawl over the louvers or slide-in strips when you are installing displays because this may cause deformation. Deformation will lead to obstruction.

5.5 SLIDE INVERSION with PVC guide angles (optional)

Material specifications for display strips:

- PVC 0.4 mm thick for 100 mm louvers and PVC 0.6 mm for 125 mm louvers.
- Strip width 95 mm for 100 mm louver including the clearance between the louvers and, therefore, this means that you must cut away 10.4 mm!
- Strip width 120 mm for 125 mm including the clearance between the louvers and, therefore, this means that you must cut away 12.1!
- Strip length is the same as the louver length (see type number).

Positioning PVC slide-in strips:

Position the PVC strip at the lower part of the louver between the PVC corner pieces and slide this up until the strip protrudes approximately 15 mm on top of the aluminium louver. Next, allow the PVC strip to drop and ensure that the PVC strip is behind the clip on the base plate.

Removing PVC slide-in strips:

Slide the PVC strip approximately 15 mm up. Next, allow it to drop while you slightly pull the PVC strip forward so that this slides in front of the clip on the base plate.

Replacing PVC guide angles:

Remove the louver from the panel as described in 5.2 and lay it down horizontally. The lower part of the louver has been provided with metal pins and the PVC corner pieces are approximately 12 mm shorter here. Slide the old PVC angle section from the louver in the direction of the top of the louver (without pins). Remember: not in the direction of the lower part! Sometimes you need to gently tap it.

Now position the new PVC angle sections by sliding these one-by-one from the top in the aluminium profile. There is a narrower section at the lower part of the louver on every angle of the louver on top of the pin that will clamp the PVC angle section in its place. You should exert a slight pressure on the PVC corner piece to slide it over the narrower section. The end position is attained when the PVC angle section is against the metal pin.

6. COMMISSIONING

Check whether the installation followed the standards set down on page 6. Pay particular attention to the lower beam being level and straight.

Check whether all louvers are level and, if required, adjust them using the adjustment bolt in the base plate of the louver (see page 38).

Position the plugs in the female sockets of the electronics housing. The 4-pole male plug should be connected to the 4-pole female socket. The 4-pole female plug should be connected to the male socket and the 7-pole male plug of the sensors should be connected to the female socket. Check whether all plugs have been connected.

Check whether the power supply is watertight and whether the earthing has been connected.

Check whether the Rotapanel frame has been earthed (see page 30).

Now switch on the main voltage and check whether the LED on the control unit lights up; if this is not the case; switch off the control unit. Next, the sign will start to rotate.

6.1 MANUAL ROTATION

If you want to manually rotate the louvers without voltage being supplied, you can only do this with Rotapanels with 1 driving motor on the main shaft. **Never** manually rotate the louvers via the main shaft when more than 1 motor has been mounted on the main shaft. This is the case with signs that are wider than 7.5 metres.

Follow the following procedure:

- Check whether the Rotapanel can rotate freely without obstructions.
- Remove the black cap 3.2 (see Assembly overview on page 21) on the motor side of the Rotapanel.
- Put a 30 mm box spanner in the hole so that this slides over the nut on the main shaft. Carefully turn the box spanner clockwise!

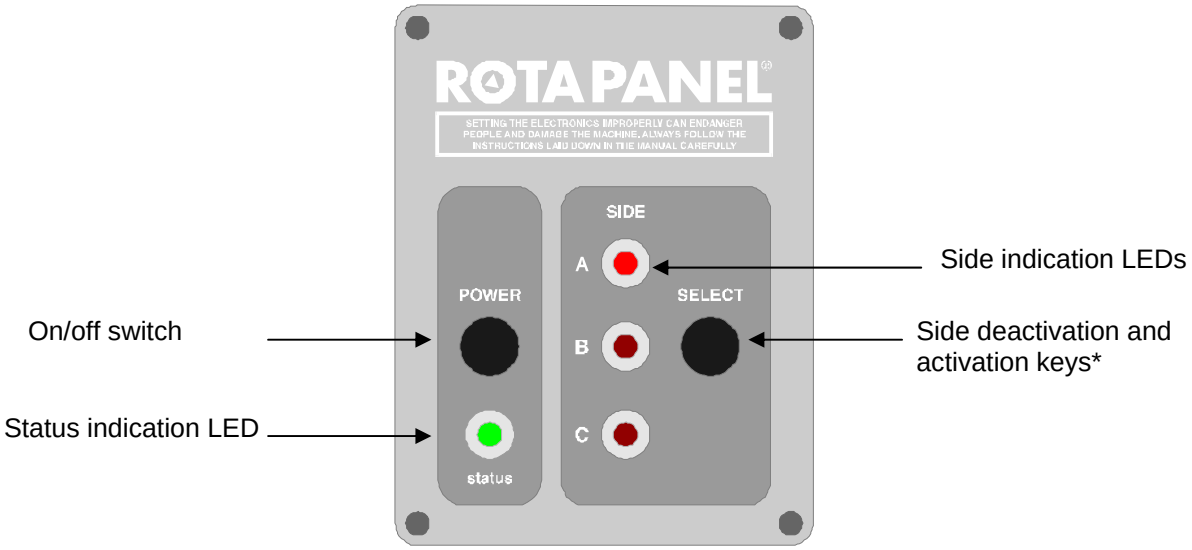
☝ **Warning:**

Never turn the box spanner anticlockwise. This will change settings. This will lead to faults and failures. Never manually rotate the louvers with regard to Rotapanels that are wider than 750 cm. (24.6 feet)

7. OPERATION/CHANGE SETTINGS

7.1 ADVERTISING APPLICATION CONTROL PANEL:

You can access the control panel by removing the hatch 3.3 (see page 21). There are two switches and four LEDs on the control panel that have been positioned according to the figure below.



On/off switch:

- You can switch the unit on and off with this. When the unit has been switched on, the status LED will either be red or green.

Status indication LED:

- The status LED will be green during normal operation.
- In case of an error, the status LED will be red; in this case, see section 15, Troubleshooting.

Side indication LEDs*:*

This three LEDs may indicate the following:

- If the side LED is lit permanently, the side is switched off.
- If the side LED flashes quickly, the system is underway to the relevant side.
- If the side LED flashes slowly, the sign is on this side.

Deactivation and activation switch for the sides:

- You can switch off one side by using this switch so that the Rotapanel displays two instead of three sides.
- You can again switch on the relevant side with the same switch.

If you want to switch off side A, follow the following steps:

- Press the deactivation and activation switch once.
- LED A will light up and, therefore, side A will be skipped.

If you want to switch off side B or C, follow the following steps:

- Press the deactivation and activation switch two or three times, respectively.
- LEDs B or C, respectively, will light up and, therefore, side B or C is skipped.

If you again want to switch on all sides, follow the following steps:

- Press the deactivation and activation switch until all three LEDs are no longer lit.

When you switch the unit on or off, the unit will again display three sides as standard.

8. CHANGE SETTINGS TO THE GENERAL ADVERTISING APPLICATIONS

If you want to change the time interval of the delay time for starting the slave unit, use the DIP switches on the electronic drive or use the optional Commander (Section 10).

You can access the electronic control by following the steps described below:

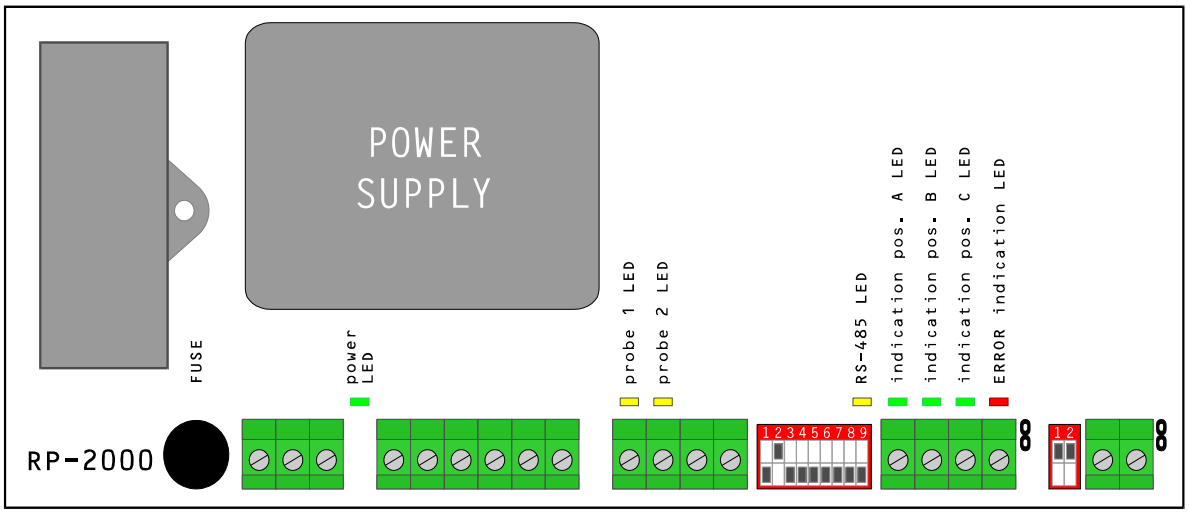
- Disconnect the whole unit through the main switch.
- Remove the first 2 louvers.
- Slide the hatch 3.1 (see page 21) up.
- Disconnect all plug connections at the bottom of the electronics housing.
- Loosen the electronics housing by using the screw at the front of the Rotapanel circumferential profile.
- Remove the electronics housing from the Rotapanel circumferential profile.
- Loosen the lower part of the housing (with the plugs).
- Carefully slide the electronics out of the housing.

Put the electronics back in the reverse order after changing the settings.

Warning:
Always open and close the housing in a dust and moisture free environment. Ensure that moisture cannot penetrate loose plug components of the motor and sensor. If water penetrates into the electronics housing, this will damage components.

Warning:
If you put the electronics back in the housing, ensure that the housing and plugs are correctly sealed by using gaskets. If the electronics housing is not correctly sealed, this will lead to faults/failures.

8.1 EXPLANATION OF LEDS



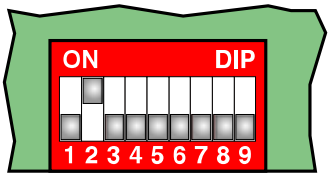
There are a number of LEDs on the electronic drive printed circuit board as well as the LEDs on the control panel of the aluminium housing; see 8.1 on page 27 for the position of the LEDs (therefore in the housing).

1. Power LED, green colour, : Will be lit if the unit is being supplied with voltage
2. Probe 1 LED, yellow colour, : Will be lit if the right sensor makes contact
3. Probe 2 LED, yellow colour, : Will be lit if the left sensor makes contact
4. RS-485 LED, yellow colour, : Will be lit if the RS-485 mode has been selected
5. Indication pos. A LED, green colour, this may be lit or flash in different ways:
   - Lit continuously : A side has been selected through manual or remote control
   - Flashing quickly : The unit is underway to the relevant side
   - Flashing slowly : The unit is stationary at the relevant side
6. Indication pos. B LED, green colour, may be lit or flash in different ways:
   - Lit continuously : A side has been selected through manual or remote control
   - Flashing quickly : The unit is underway to the relevant side
   - Flashing slowly : The unit is stationary at the relevant side
7. Indication pos. C LED, green colour, this may be lit or flash in different ways:
   - Lit continuously : A side has been selected through manual or remote control
   - Flashing quickly : The unit is underway to the relevant side
   - Flashing slowly : The unit is stationary at the relevant side
8. Error indication LED, red colour, this will be lit in case of error, see section 15 page 41.

8.2 STOPPING TIME FOR THE SIDES:

Setting delay times (MASTER):

Number	Time
1	1 second
2	2 seconds
3	3 seconds
4	4 seconds
5	5 seconds
6	6 seconds
7	Low
8	Low
9	Low



Switch 2 will be up as standard; this means that the control will switch off the unit for 2 seconds before it rotates to the next side. You can change the time intervals by using switches 1 to 6 and you can add together the times if you position multiple switches up.

Example: *switches 2 and 5 are both up, the stopping time will then be 2 + 5= 7 seconds.*

8.3 MASTER-SLAVE SWITCHING OF MULTIPLE UNITS:

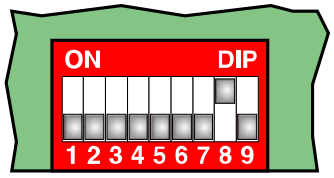
If a Rotapanel is driven by multiple motors, the controls are electronically linked in a master-slave configuration in accordance with the circuit diagram on page 30. One electronics box must also be configured as the master and the other boxes as slaves. This should be carried out as follows:

See page 27 where a description is given on how to access the electronic control unit.

- Master configuration (switches 7, 8 and 9 Low); see the figure at 8.2
- Slave configuration (switches 7 and 9 Low, 8 High; see the figure below)

Configuration (Slave):

Number	Time
1	200 milliseconds
2	400 milliseconds
3	800 milliseconds
4	1600 milliseconds
5	3200 milliseconds
6	6400 milliseconds
7	Low
8	**HIGH**
9	Low



Note: If none of the switches 1-6 is set, the slave delay time is 0 milliseconds.
The slave will rotate at the same time as the master.

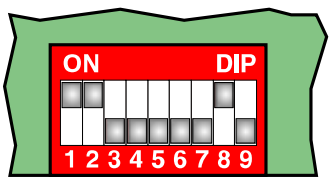
Wave delay time:

The master and slave will rotate at the same time as standard. It may also be the case that multiple loose Rotapanels are suspended next to each other and must rotate at the same time or consecutively. You can enter the time difference between the master and slave by using the delay time for starting the slave unit. You can only change this value on the slave(s). See the above figure.

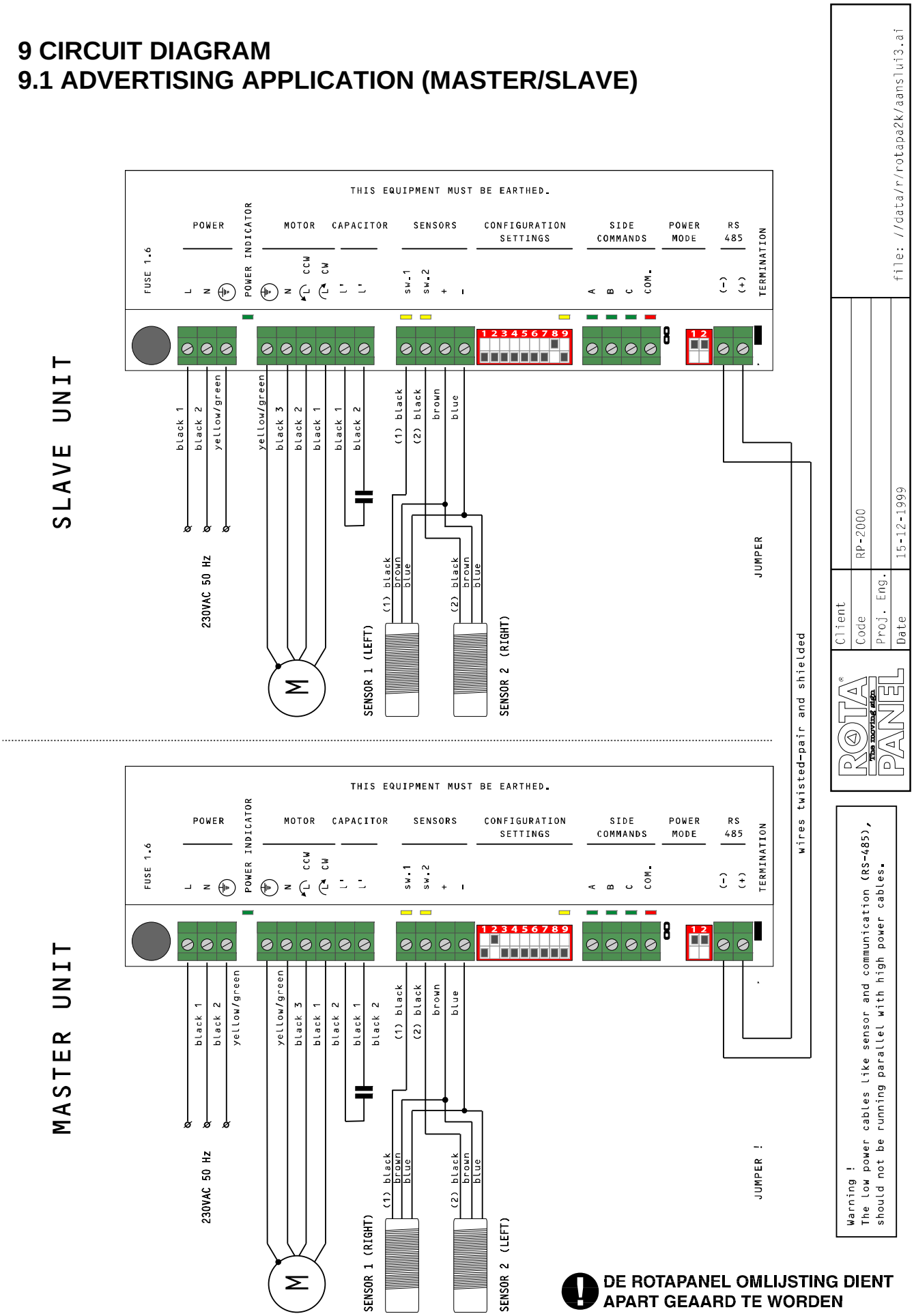
All the time switches of the slave unit are down as standard; this means that the controls will operate simultaneously. You can enter the delay by using switches 1 to 6. If you position multiple switches up, you can add the times together.

Example: *switches 1 and 2 are both up: the slave delay time will then be 600 milliseconds.*

Number	Time
1	**200 milliseconds**
2	**400 milliseconds**
3	800 milliseconds
4	1600 milliseconds
5	3200 milliseconds
6	6400 milliseconds
7	Low
8	**HIGH**
9	Low



9 CIRCUIT DIAGRAM
9.1 ADVERTISING APPLICATION (MASTER/SLAVE)



9.2 CONNECTOR CONNECTIONS

Motor:

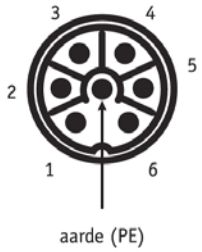
- Hirschmann

pin.	connection	
1	L-ccw	(black 1)
2	L-cw	(black 2)
3	N	(black 3)
ground	ground	(yellow/green)

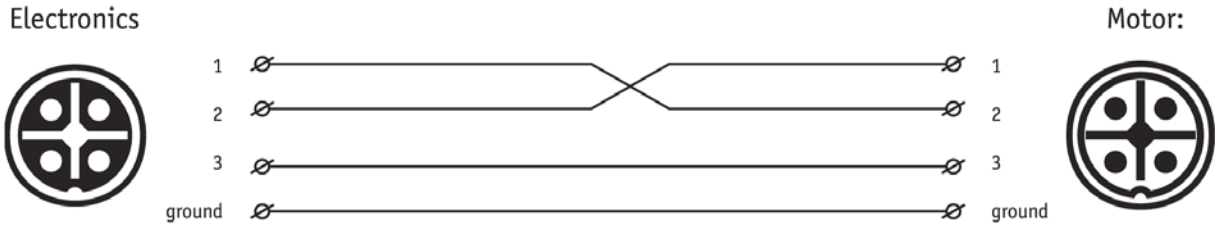
Sensors:

- Hirschmann CA 6LD (FM)

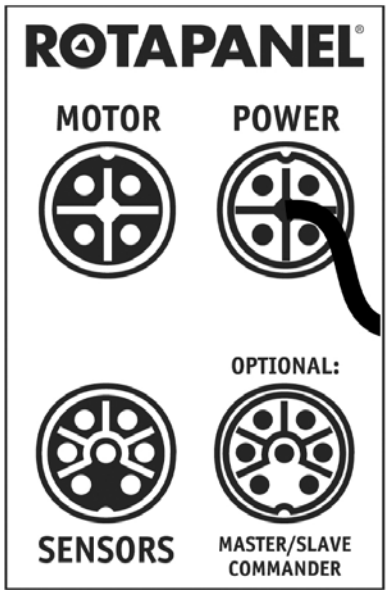
pin.	connection	
1	sensor +	(bruin 2x)
2	sensor SW_1	(black)
3	sensor SW_2	(black)
4	N/A	
5	N/A	
6	N/A	
ground	sensor -	(blue 2x)



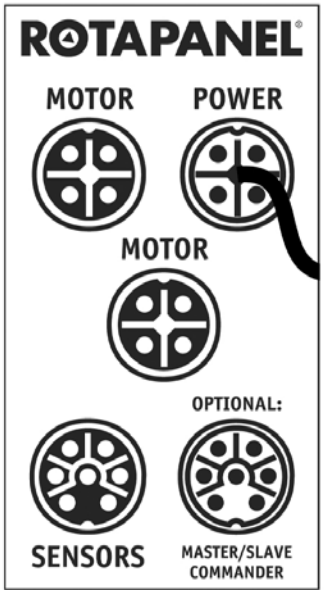
Cable to the second motor (only at RP-2000B)



RP-2000



RP-2000B



10 COMMANDER (optional)

General:

You can change the following settings by using the Commander as well as other issues:

- Delay time per side
- Direction of rotation
- Use of default or stored values
- All other options are described in section 10.2, Menu settings, on page 34.

Explanation of the housing (see the photograph):

⏻	On switch	: Switching on the Commander
P	“P” key	: Program, change value
E	“E” key	: Enter, confirm value
▲	Arrow key up	: Increase/change value; browse through the menu
▼	Arrow key down	: Decrease/change value; browse through the menu

10.1 COMMANDER DESCRIPTION:

- Make a connection between the Commander and the RP2000 electronics by putting the 7-pole connector of the commander in the lower part of the electronics box. The connector only fits in 1 connector on the RP2000. If a Rotapanel has 2 electronics boxes or it is linked to other Rotapanels, the Commander will make a connection with the MASTER electronics box (the master-slave cable must be temporarily disconnected).
- Ensure that the RP-2000 is switched on.
- Switch on the Commander by using the switch on the housing,
  The Rotapanel will now stop rotating.
- The Commander will first make a connection with the RP-2000.
- (The display will show the message “CONNECTING TO RP-2000”.)
- The display will, next, show “DELAY TIME SIDE A” after no more than 12 seconds. You can change the delay time by pressing the “P” key once. Change the value by using the arrow keys. Confirm the new value by using the “E” key. If the delay time is set to “0”, the relevant side will be skipped (it is easier to press the electronics box; see section 7.1).
- If you want to browse through the menu and, for example, change the delay time of another side, press the arrow keys. You can change all values as described when changing the “DELAY TIME SIDE A”.
- **The first time that you use the Commander you must change the “USE DEFAULT VALUES” menu option into “USE STORED VALUES”.** You can change this by accessing this menu option by pressing the arrow keys and the “P” key followed by an arrow key until the “USE STORED VALUES” message is shown. Next, confirm this by pressing the “E” key. (If the display already shows “USE STORED VALUES”, nothing needs to be changed.)
- When you have finished programming, switch off the Commander by pressing the “P”+ “E” keys simultaneously.
- Interrupt the connection by disconnecting the connector.
- Restore the connection with the slave by using the slave through the master-slave cable if required.
- The Rotapanel should now work with the new settings.

Π Remarks about the Slave:

If the Commander is connected to a slave unit.
Switch on the Commander by simultaneously pressing the keys below.

An “S” will be displayed on the right-side of the display.

☝ **Warning:**
If you change factory settings, this may lead to irreparable damage to the motor and/or mechanism.

10.2 DESCRIPTION OF THE USE OF THE COMMANDER:

The following menu settings can be gone through by consecutively browsing using the arrow keys:

DELAY TIME SIDE A: xxxx.x s *	Changing the delay time of side A (0.0 - 3600.0)
DELAY TIME SIDE B: xxxx.x s *	Changing the delay time of side B (0.0 - 3600.0)
DELAY TIME SIDE C: xxxx.x s *	Changing the delay time of side C (0.0 - 3600.0)
DELAY TIME SLAVE: xx.x s *	**Factory configuration, do not change this!**
DELAY TIME CW: xx.x s *	**Factory configuration, do not change this! Finishing time**
DELAY TIME CCW: xx.x s *	**Factory configuration, do not change this! Finishing time**
BRAKE ACTIVE: xx.x s* time	**Factory configuration, do not change this! Motor braking**
TURN SEQUENCE X-X-X *	For changing the rotational mode (ABC, CBA and ABAC)
RP-2000 UNIT MASTER	**Factory configuration: do not change this!** Depending on your configuration, the following may also be displayed **RP-2000 UNIT SLAVE**
MASTER A, SLAVE A	**Factory configuration, do not change this!** Depending on your configuration, the following may also be displayed **MASTER A, SLAVE C**
USE DEFAULT VALUES	This is displayed on the display when the Commander is used for the first time (**USE DEFAULT VALUES** by using DIP switches); this must be changed into (**USE STORED VALUES**)

***** The displayed value may be different depending on previously selected or factory set values

Π **Remark:**

The Commander operates on batteries. You can, if required, replace these at the bottom of the Commander. You should carefully remove the commander from the rubber housing. The battery holder can be found at the rear of the commander. Replace, if required, all 4 batteries (type AA-1.5V). The Commander will switch off when a key has not been pressed for approximately 30 seconds to ensure the battery is not discharged.

Warning:
If you change factory settings, this may lead to irreparable damage
to the motor and/or mechanism.

11. REMOTE CONTROL

11.1 Serial drive remote control via RS-485 (Standard):

The serial interface of the RP-2000 is a standard 2-wire multi-drop positive/negative RS-485. The terminating resistance of 120Ω 0.25 Watts is available as standard on the basic printed circuit board. The jumper (termination, only first and last terminators*) that can be found furthest away to the right must be positioned to terminate the bus segment. (* = Terminating resistance.)

For the specifications see section 2.2.

The serial interface of the RP-2000 has been designed in such a way that the drive can be easily realised from the central control system.

The serial communication is possible by using a protocol defined by the user (optional) or by using the protocol that is already available. All actions and information can, in principle, be obtained serially.

11.2 GSM-SMS remote control (option):

All changes can be implemented remotely and error messages can be sent by SMS by using the optional GSM-SMS module. You can control a maximum of 4 master RP-2000 units with one SMS module.

The commands with regard to the RP-2000 settings are master commands. Every SMS message with regard to the RP-2000 commands must, therefore, start with the master command M: followed by a 6-digit authorisation code (the default value is 000000), therefore, “M:000000”. Multiple master commands can be sent through an SMS message.

Select Signs 1, 2, 3, 4:
SIGN: 1/2/3/4 (default sign: 1)

Change delay time for sides A, B, C:
DTA:x/DTB:x/DTC:x (0 <= x <= 3600 seconds), if x=0 side is switched off.

Turning sequence ABC/CBA/ABAC:
ABC: CBA: ABAC:

If master to A slave to A/C:
ASIDEA: ASIDEC:

Retrieve delay times from EEPROM/DIP SWITCH:
STORED: DEFAULT:

Status request:
STRP: (possibly telephone number)
If a telephone number is not entered, the status message will be sent to the telephone number from which the SMS message originates.

Example:
M:000000 MODE:CONT DTA:0 DTB:10 DTC:5 ASIDEA: STORED: ABAC:
M:000000 DTA:1000 (the remainder stays unchanged)

A status message will be sent to the telephone number from which the SMS message originates after every change. If the message should be sent to another telephone number, the following command must be added to the message: STRP:0651234567.

GSM-SMS remote control (option):

Example:

M:000000 DTB:0 CBA: STRP:0651234567
The status message will be the following:

SIGN ID, SMS#:0023, PIN correct, M, use stored values, sequence:ABAC, masterA:slaveC, delayA:0sec, delayB:10sec, delayC:6sec

Error messages:

If there is no communication with the RP-2000, the status message will be as follows:
SIGN ID, SMS#0024, PIN correct, M, **no communication**
When an error occurs with regard to the sign, an SMS message will be sent to the telephone number that is related to channel D1. If a telephone number has not been entered here, the message will be sent to the master telephone number.

SIGN ID, SMS#:0025, sign:ERROR

If the error has been solved
SIGN ID, SMS#:0026, sign:OK

Text stings “BORD ID” (Sign ID) and “sign” can be changed.

Changing “BORD ID”:
M:000000 ID:(Max. 30 characters)

Changing message service number:
M:000000 BS:+31653131313 (telephone number using international notation)

Changing master telephone number:
M:000000 TM:+31651234567

Changing “system” and D1 telephone number (these are specific channel settings):
M:000000 D1: T:(max. 30 characters) T1:+31651234567
Or
D1:0000 T:(max. 30 characters) T1:+31651234567

A combination of the above commands is allowed.

Important:
Rotapanel international cannot be held responsible or liable for services and mobile networks of third parties and their accessibility.

12. MAINTENANCE INSTRUCTIONS

☝ **Warning:**
The main power supply must be disconnected before starting any maintenance work and before opening the mechanism beam!

PROTECTIONS

☝ **Warning:**
The mechanical protection; the slip coupling has been adjusted by the manufacturer using a torque wrench and it must not be further adjusted. Adjusting the slip coupling may lead to injury and/or damage to the mechanism!

HARDENED STEEL GEARS

The hardened steel gears between the motor and the mechanism must be lubricated once a year with grease of the following type (or equivalent) when in continuous operation:

MOLYKOTE 165 LT, manufacturer Dow Corning Corporation Midland, Michigan, USA.

The lubrication period may be longer when sings do not rotate continuously.

Apply the grease as follows:

- Remove the black cap 3.2 (see page 21) on the grinding face of the Rotapanel.
- Remove short cover 6 (see page 21) of the mechanism beam on the motor side (with regard to light).
- Apply Molykote grease sparingly and **only** to the small gear of the motor using a brush.

LOUVER DRIVE MECHANISM

For continuous operation, also lubricate the driving disc with pure silicone grease without additives of the following type. Manufacturer: Wacker-Chemie GmbH Munich or equivalent. Relubricate once per year. After removing the old grease apply the fresh grease as a thin film on the running surfaces.

In a sandy, dusty environment and when the system is not used continuously, the self-lubricating PVC material (15% Teflon®) runs without grease. Do NOT lubricate.

Lubricating is not necessary but it will extend the service life when operation is continuous. If you do lubricate, only the prescribed grease must be applied.

☝ **Warning:**
Never use a different grease than the one prescribed. Using another grease will hugely shorten the service life of moving parts. They will not be covered by the guarantee anymore!

POST-ADJUSTING PRISMS

If required, you can post-adjust the louver as follows (see the photograph on page 40):

- Switch off the Rotapanel by using the isolation switch or unplug.
- Remove the louver (for a description see section 5, Removing louvers).
- Loosen screw 1 (photograph on page 70) 2 turns.
- Turn the base plate of the louvers in line with the other louvers.
- Tighten screw 1.

REPLACING THE COMPLETE LOUVER MECHANISM

You can replace the complete louver mechanism (see the photograph on page 40):

- Switch off the Rotapanel by using the isolation switch or unplug.
- Remove the louver (for a description see section 5, Removing louvers).
- Fully loosen the hexagon socket bolts 2 and 3.
- Lift the mechanism vertically and remove it with a twisting movement.
- Next position a new mechanism.
- Check whether the gasket seals correctly.
- Tighten the socket bolts 2 and 3.

DRAINAGE HOLES

These must be regularly cleaned.

CLEANING OF IMAGES AND FRAME

Spray clean using low-pressure equipment and wipe. Not when there is frost.

FREEZING

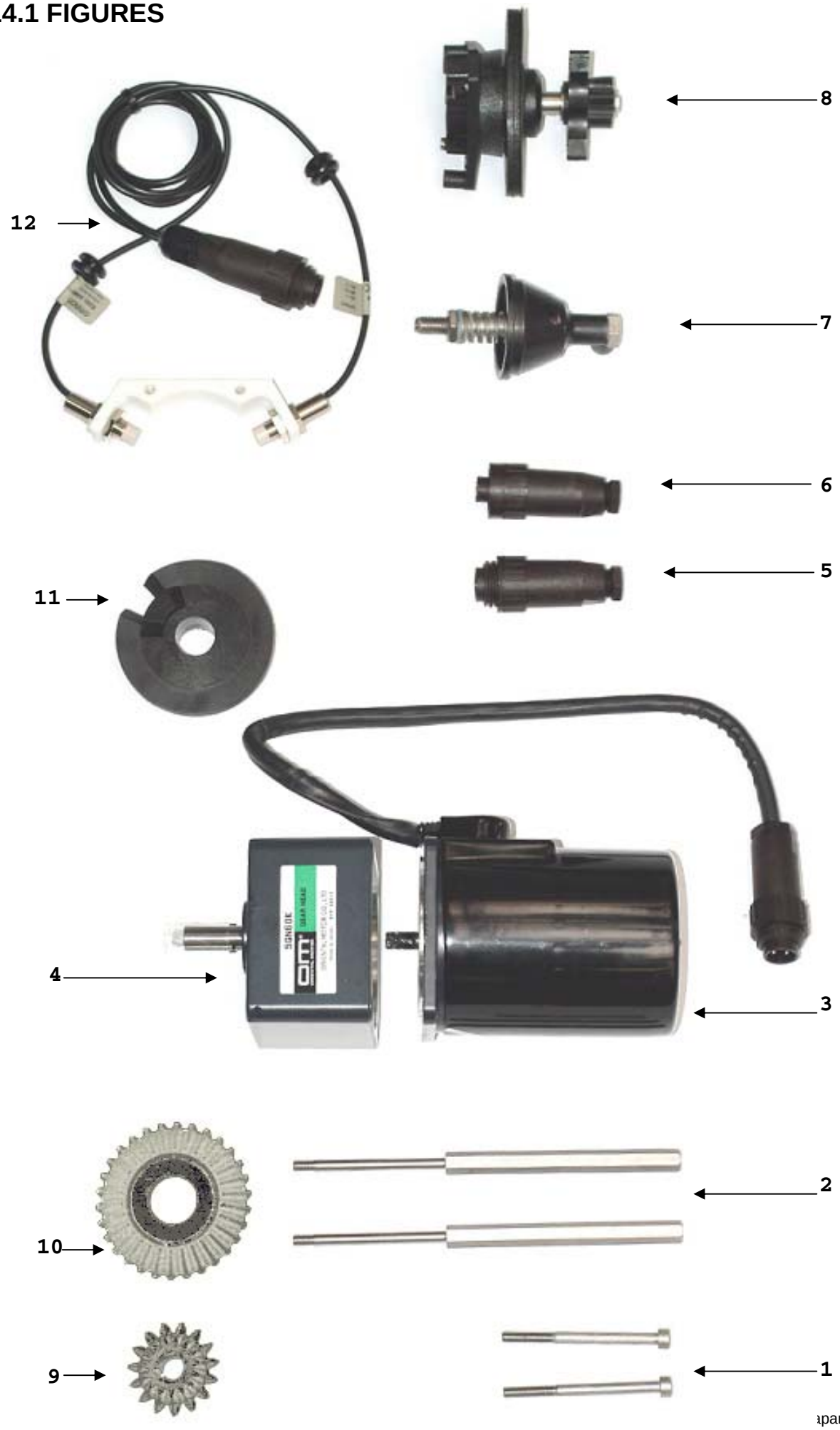
Special Teflon spray can be applied to the lower beam to prevent the unit from freezing. This spray must be re-applied after cleaning or before the winter season. No spray is required when the unit is provided with a heating element.

13. STORM/WIND PROTECTION

You can optionally order a wind protection for additional security, which will switch off the system from wind force 8 Beaufort and will restart the system when the storm has passed with regard to continuously rotating signs that have been installed at great height or that have been erected in windy locations. In the event of a heavy wind, the wind protection system places one side in front, for example side A. When the next storm hits, side B will have front position. Switching off the unit in stormy weather prolongs the life of the system and reduces risks.

14. MECHANICAL MAINTENANCE

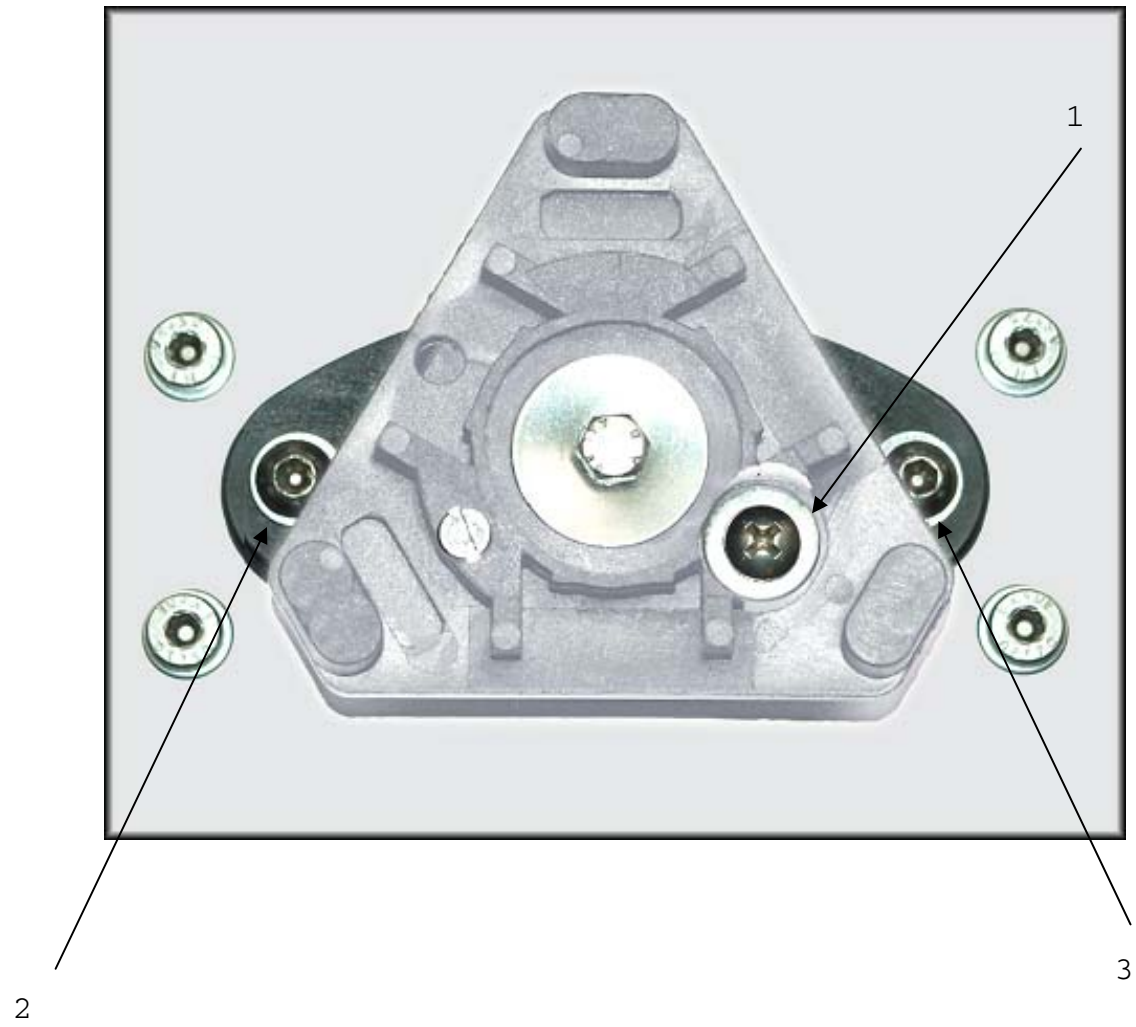
14.1 FIGURES



14.2 FIGURE PARTS DESCRIPTION:

1) Short motor bolts
2) Long motor bolts
3) Motor
4) Gearbox 1:60 or 1:75
5) Female plug, 4- or 7-poles
6) Male plug 4- or 7-poles
7) Complete upper prism assembly
8) Complete mechanism
9) Conical gearbox gear
10) Conical gear + slip coupling component for main shaft
11) Drive disc
12) Sensors with support, sensor type: digital, inductive.

14.3 POST-ADJUSTMENT OF PRISMS FIGURE



15. FAULTS AND FAILURES

Warning:
Immediately switch off the Rotapanel in case of a fault or failure by using the on/off switch, if not damage may occur.

First check whether there is not a persistent obstruction between the louvers (for example, a stick or a loose slide-in strip with regard to the optional split version fast slide-in system).

15.1 EXPLANATION OF ERRORS

If the red error LED is lit, this means that the maximum rotation time has been exceeded; the electronics will not detect the following sensor within the rotation time entered as part of the factory settings. The drive will automatically restart after 4 minutes. If the fault or failure has not been solved, the procedure is repeated; if a number of repetitions is exceeded, the drive will stop for a longer period of time.

Warning:
Never adjust the slip coupling to a higher setting. The dealer/manufacturer must first trace and solve the cause. Making a higher adjustment or protection may lead to personal injury and/or damage to the mechanism.

. **Warning:**
If parts are being replaced, exactly the same must be used (make and number type). When the numbers or types are not the same, always consult the dealer or the manufacturer.

15.2 TROUBLESHOOTING DIAGRAM

Symptom	Possible cause	Solution
No movement. The status light does not light up.	- Main switch is off. - Loose plug connection. - No supply voltage. - Internal fuse broken.	- Press the on/off switch. - Plug the plug correctly and turn it so that it is secure. - Contact an electrician. - Next, have the fuse replaced by a qualified technical person.
The sign rotates approximately 15 seconds ***at a normal speed*** (status indication light/LED set is green and red when the sign stops).	- Sensor plug is loose - 1 or 2 sensor(s) faulty - Cable(s) to the sensors is/are damaged (this may have happened during the assembly of the side profile).	- Plug the plug correctly and turn it so that it is secure. - Replace the complete sensor set (2). Ensure that the marked sensor is positioned on the right-hand side. The correct distance between the sensor and the metal parts of the sensor mechanism is approximately 4 mm.
The sign rotates approximately 15 seconds ***slowly to very slowly*** (the status indication light/LED set is green and red when the sign stops).	- The mechanical slip coupling continues to slip because the sign is running to heavily. (The motor(s) are running at the normal speed but the main shaft continues to be stationary or turns slowly).	- Check whether objects are not blocking the louvers. - Check whether the sign has not been installed on the structure while bent, crooked or under tension. Check whether mounting parts such as bolts are blocking the mechanical parts. - Ensure that the blades of split versions are mounted correctly including in the corners.

The information below only applies to signs with 2 or more motors (RP2000-B model):

No visible movement. Indication light is green for approximately 2 seconds and then red.	- Loose plug connection - Motor cable(s) are damaged. - 1 or 2 motors faulty. - Sign is completely blocked.	- Plug the plug correctly and turn it so that it is secure. - Replace the motor cable. See the drawing on page 11! - Replace the faulty motor(s). - Remove the hatches on the front of the mechanism and check the mechanism. For more information see page 11.
The different parts of the sign do not rotate at the same time.	- The coupling(s) between the shafts in the sign have not been mounted correctly. There are red dots on the shaft at the coupling. They are not aligned.	- Loosen the blue parts of the coupling and mount them in the correct way. (Also check that the openings in the round discs have a spiral formation.)

CE

Declaration of Conformity

CE DECLARATION OF CONFORMITY;

Product name: Rotapanel RP-2000 Controller
Manufacturer part number: RP-2000

Manufacturer address:
Plutoweg 2
8938 AB LEEUWARDEN
THE NETHERLANDS

The product (system) identified above is in conformity with the listed European Directive(s).
The following table identifies the applied standards, the conformity assessment procedure and the technical file.

EMC DIRECTIVE
2004/108/EC
OJ Dec. 2004 L 390/24

Applied Standards:
EN 61000-6-2/EN 61000-6-3/EN 61000-6-4
(PVMS EN 12966-1 table 11 EN 12)

Technical file
Reference: EMC- Test Report No. 9505025551xxEQR001 Revision 2.2
by Thales ECC Hengelo,
Notified Body
and ISO 17025 accredited reg. No. L240

Authorised representative
Name: Mr H.G. Born
Responsibility: Product Engineer

Date: 12-7-2007
Signature:

Notes:

- END -