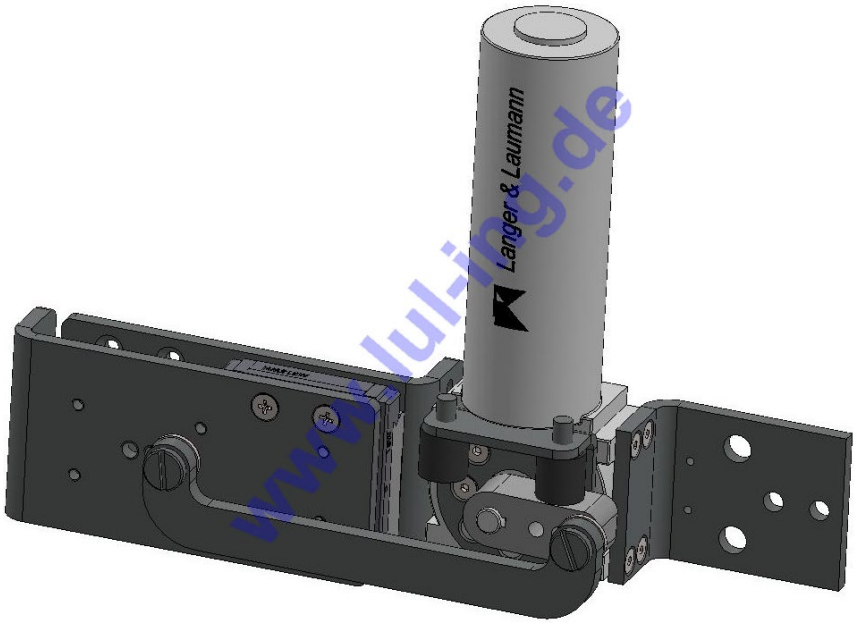
Installation Instruction

TSG Sinus Drive

on TSG V4



Dokumentationshistorie

Nr.	Ver.	Stand	Bearbeiter
3	2.2	31.07.15	RAU
4	2.3	21.12.15	RAU
5	2.4	27.12.19	CSA
7	2.6	16.09.23	CSA

Fordern Sie die Umbauanleitung **auf Deutsch** an, indem Sie den QR Code einscannen.

Demandez les instructions d´instruction de montage **en français**, en scannant le code QR.

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file: 1.20.94090_Anleitung_TSG-Sinusantrieb_V2.6_en.docx
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Table of Contents

1 About this manual

1.1 General information

Before mounting the TSG Sinus Drive and put it into operation, please read these instructions carefully. Across the Cape. 2 General safety rules / page 5 must be observed. For further use of the instructions and keep them handy.

These instructions are intended to make it easier for you to mount the TSG sine drive and its components and to put into operation. This manual contains important information for safely and correctly mount the TSG sine drive and put into operation.

By following these instructions will help danger, to prevent repair costs and downtime and increase reliability and service life of the TSG sine drive.

In addition to this manual, applicable in the country and on the site regulations for accident prevention and environmental protection must be respected. This manual only describes the modules of the Türsteue-tion are described, which are supplied by Langer & Laumann Engineering Office GmbH. Information about non-Langer & Laumann Engineering Office GmbH manufactured and supplied components of the door control It corresponds please the respective instructions of the manufacturer or supplier.

These operating instructions do not purport to cover all details on all types of the product and can not cover every conceivable case of installation, operation or maintenance also.
Should you require further information or should particular problems arise which are not covered sufficiently in the operating instructions, you can request the necessary information via telephone:
+49 (2573) 955 990 received.

1.2 Explanation of symbols

WARNING:

This symbol directs your attention to a possible hazard that could lead to severe bodily injuries or death.

CAUTION:

This symbol directs your attention to a possible hazard that could lead to minor bodily injuries. The same symbol is also used to warn of potential damage to property.

NOTE:

Your attention is drawn to applications and other useful information.

2 General safety requirements

The TSG Sinus Drive is designed exclusively for the automatic operation of locks on sliding doors. For applications that fall outside the defined application, the manufacturer accepts no liability. The TSG Sinus Drive contains dangerous voltages and controls moving mechanical parts. Failure to follow the instructions in this manual can result in death, severe personal injury or substantial property damage.

The TSG Sinus Drive is built according to the state of the art and recognised safety engineering rules and is intended exclusively for normal industrial usage. If it is used for any other purpose, the manufacturer must in every case be consulted. Otherwise no liability is assumed for personal injury or property damage. Any other or more extensive use is considered contrary to designated use and may result in personal injury for the user or third parties as well as damage to property.

WARNING:

When electrical devices are in operation, certain parts of the devices conduct dangerous voltage. Failure to observe the operating instructions may therefore result in serious bodily injuries or property damage! Observance of the warning notices in these operating instructions is absolutely mandatory. While the TSG is starting up, door movements cannot always be controlled externally. During commissioning, an authorised person located at the door must ensure that no other persons can reach the area close to the door. Permissible forces and energy levels must be checked by a qualified person after the door has been commissioned.

2.1 Delivery

Using the delivery note and the operating instructions, check the delivered components to ensure completeness. At the same time perform a visual inspection for damage of delivered materials. While unpacking, check:
Whether there is any visible mechanical damage to components.
Whether the lengths of the cables included with delivery are correct.

CAUTION:

Electrostatic discharge, mechanical load, moisture and dirt will damage or destroy electronic components.

Leave electronic components in their original packages until they are installed.

If damage occurred during shipping, a claim must be filed immediately with the shipping company.
If components are missing, inform the supplier immediately.

2.2 Safety and accident prevention requirements

In addition to the instructions in these operating instructions, you must also observe safety and accident prevention requirements as specified by law. Persons responsible for the safety of the system must ensure the following:

- Only appropriately qualified personnel are permitted to work on and with the TSG door operator.
- All personnel who work with the TSG door operator must be familiar with all warning signs and measures listed in the description here for installation, control and operation of the TSG door operator.
- Unqualified personnel are prohibited from working on the TSG door operator.
- Personnel must have knowledge of first aid measures and on-site rescue equipment.

2.3 Qualified personnel as defined by VDE 0105

Qualified personnel means persons who has received by virtue of their training, experience, instructions and knowledge of applicable standards, specifications, accident prevention requirements and operating conditions have been authorized by the person responsible for the safety of the system to perform necessary activities.

2.4 Exclusion of any guarantee when changes or conversions are made

Before any work is performed on the electrical or mechanical parts of the system, the TSG door operator must be disconnected from the mains voltage. Unauthorized changes or conversions to or in the TSG door operator, its components or accessories will automatically exclude all claims under the warranty. These safety instructions do not claim to be complete. The manufacturer assumes no liability for damages or operating malfunctions which may occur due to failure to observe these operating instructions.

WARNING:

Unauthorized changes to the drive or installation of non-original replacement parts shall exclude any liability on the part of the manufacturer for resulting damages.

2.5 Safety contacts

The relay outputs of the TSG door operator must not be used as safety contacts to the safety circuit of the higher-level control unit.

Caution:
In case of installation and commissioning of the TSG Sinus Drive in / on a car, make sure that the total weight of the elevator car is not exceeded at the maximum rated load!

WARNING:

If the higher-level control unit undergoes an Emergency Stop or Off, it must be ensured that the TSG Sinus Drive will not cause any unintentional, dangerous or uncontrolled door movements.

2.6 Other important safety instructions

The buyer, engineer and/or fitter of the TSG Sinus Drive and its components are responsible for ensuring it is used correctly and safely. It must be ensured that all national and local laws and regulations regarding safety and power-operated doors and applicable national work safety requirements are observed.
Langer & Laumann Ing.-Büro GmbH is not responsible for accidents and/or consequential damage that could result from application or use of the TSG door operator and its components. Our maximum obligation and warranty is limited to the replacement cost of the purchased product.
Langer & Laumann Ing.-Büro GmbH does not make any claims or recommendations of suitability for specific protective door concepts. The buyer, engineer and/or fitter of the TSG Sinus drive must decide themselves whether the drive is suitable for a specific application. Langer & Laumann Ing.-Büro GmbH furthermore declines any responsibility for damages and injuries resulting from modification of the drive, including modification of software parameters. Employees of Langer & Laumann Ing.-Büro GmbH are not authorised to modify these terms and conditions without written consent and a legally binding signature of the responsible offices.

Caution:
After mounting and commissioning of TSG Sinus drive to / on an elevator car, make sure that the latches close the shaft doors as planned and, for example, could grind no catch on the locking plate and wear out.

3 Range of service applications for the TSG Sinus Drive

The TSG Sinus Drive is an additional drive for cabin and shaft door locks on elevators. For applications that fall outside the defined application, the manufacturer accepts no liability.

The TSG sine drive is available in two different versions:

- TSG Sinus Drive left version,
- TSG Sinus Drive right version.

NOTE:
The distinction between left and right is independent of the direction of opening of an elevator door or lock.

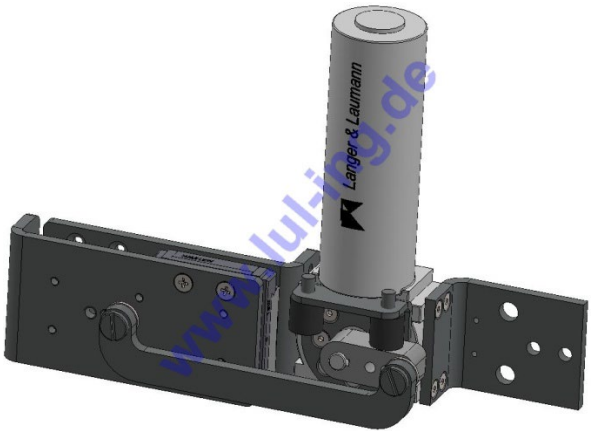


Abb. 1: version left

Abb. 2: version right

4 Mechanical Installation

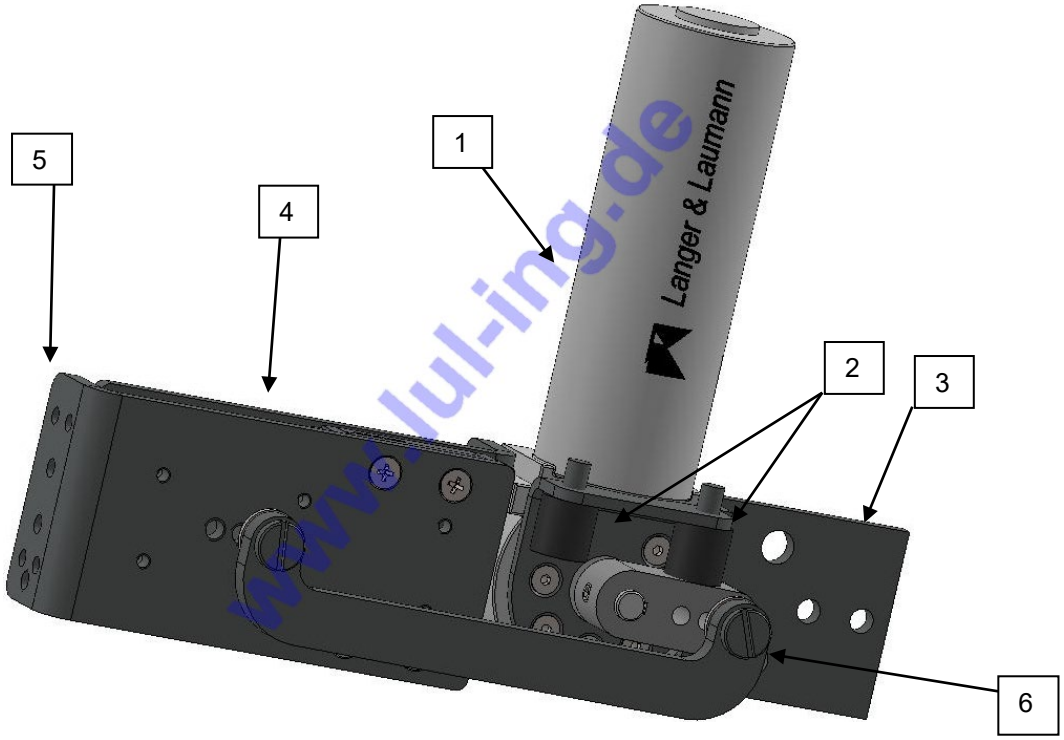


Abb. 3: TSG Sinus Drive - Item description

1: Motor with gear
2: stops (buffer)
3: bracket for mounting the TSG Sinus Drive
4: linear guide
5: support for various components (eg role)
6: Screw for lifting high

5 Description

The TSG Sinus Drive performs a linear movement, which can be used to actuate a lock or cam lock on an elevator car. It is controlled via the TSG electronics. The stroke is adjustable between 20, 30, 45 or 60 [mm].

The TSG expansion board can control and process up to two additional drives and is connected to the control part of the TSG motherboard. In the TSG motherboard parameters of the drive and the time delay between the opening of the drive and open the door (hC) can be set to activate the feature (hA), the Open time (h7), the closing time (hb).

5.1 Activating the function

The function to use the TSG expansion board can drive, the parameter hA must be set accordingly. This is only possible with optional add-on board stocked.

Tabelle 1: adjustment parameter hA

value **hA**	TSG Sinus Drive	Emergency power (NSG)	Swing door	CAN (CANopenLift oder Thyssen-CAN)	FKTV	DCSS5
01	X					
03	X	X				
06	X		X			
16	X			X		
17	X	X		X		
18	X		X	X		
20	X				X	
21	X		X		X	
23	X			X	X	
24	X		X	X	X	
29	X				X	X

CAUTION:
The setting hA = 02, 04 or 05 is not suitable for this application.
.

NOTE:
Is ha = 00, the TSG Sinus Drive is not actuated.

NOTE:
For more information on parameter setting see also the manual door control unit TSG.

5.2 Stroke adjustment

Setting the lifting height should be selected as small as possible but as large as necessary.
Should the lifting height to be changed is the screw (Loctite or similar) with thread lock be provided.

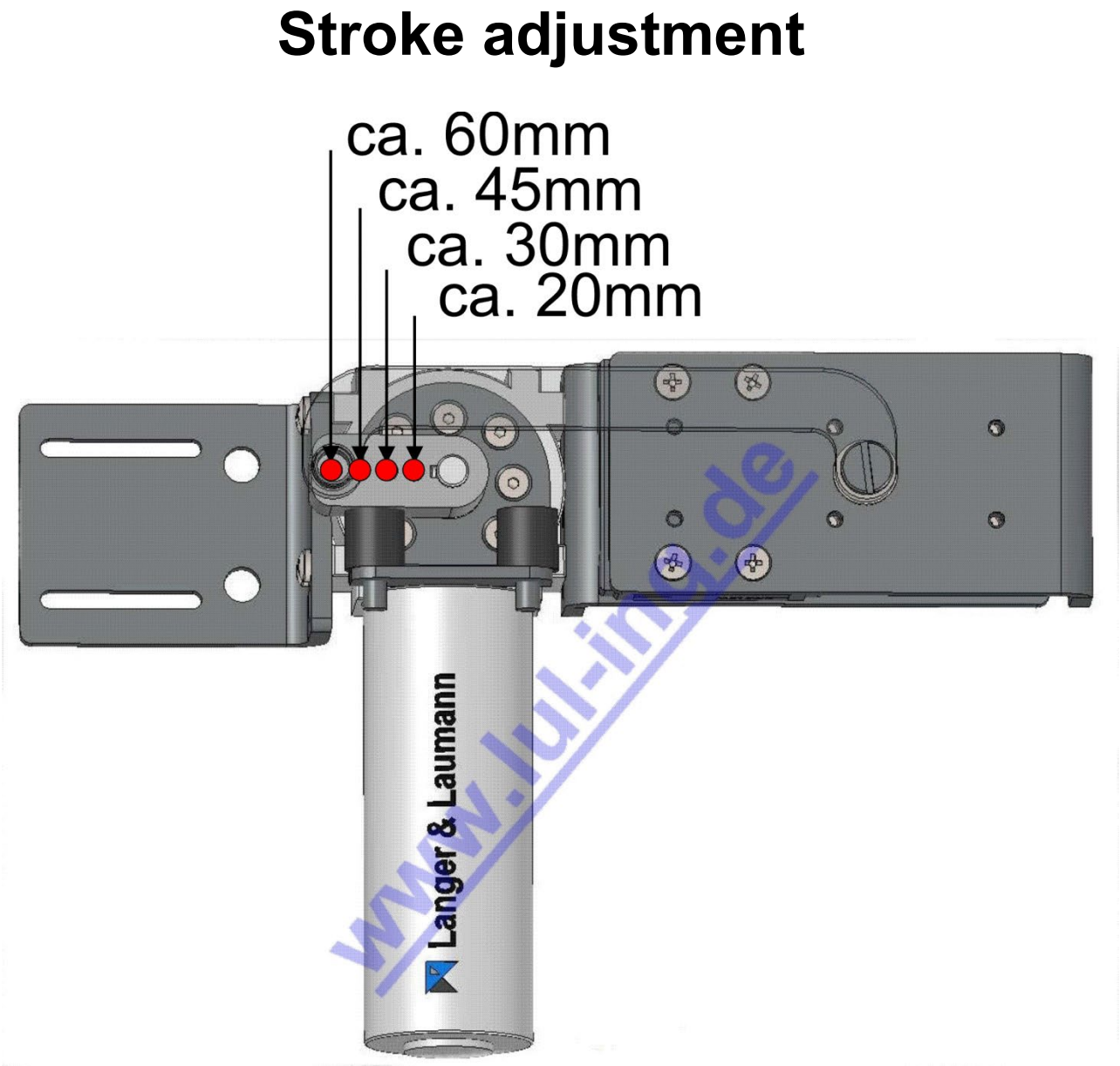


Abb. 4: lifting height

5.3 Open and closing time

The open and the closing time of the TSG Sinus Drive can be set via the parameter h7 and hb. The values can be changed in 0.01 second increments. The default value can be assumed for both the input and for the exit of the drive for a time of 0.50 seconds. However, this value must be controlled and must be adapted according to local circumstances.

Tabelle 2: open and closing times

adjusted stroke of	Max load	parameter h7 (Opening time of the TSG Sinus Drive)	parameter hb (Closing time of the TSG Sinus Drive)
ca. 60mm	2,3kg	53	46
ca. 45mm	3,1kg	54	45
ca. 30mm	4,6kg	55	45
ca. 20mm	7,0kg	54	46

CAUTION:
The values must not be set greater than the time that is really needed to drive on and extend. Otherwise it can cause failure of the drive!

NOTE:
If a value is changed and confirmed, the value is stored permanently, ie even after a power failure, the changed value is available again.

NOTE:
For more information on parameter setting see also the manual door control unit TSG.

5.4 Time delay between door drive and TSG Sinus Drive

It is possible to set that in an open command from the elevator control system to the door control device TSG first drive the TSG Sinus Drive apart and then ascends the door. For this purpose, the parameter hC can be adjusted. The value can be varied in 0.01 second increments.

NOTE:
For more information on parameter setting see also the manual door control unit TSG.

6 Optional mounting parts

The TSG sine drive can with different attachments such as a roller or a locking cam be equipped.

Abb. 5: 8.20.82113 TSG mounting parts for TSG Sinus Drive

7 Illustration

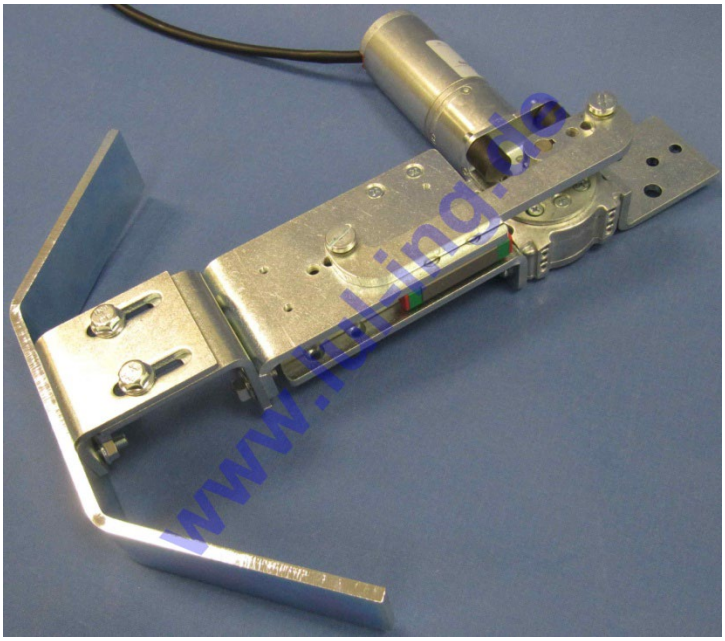


Abb. 6: TSG Sinus Drive with bracket

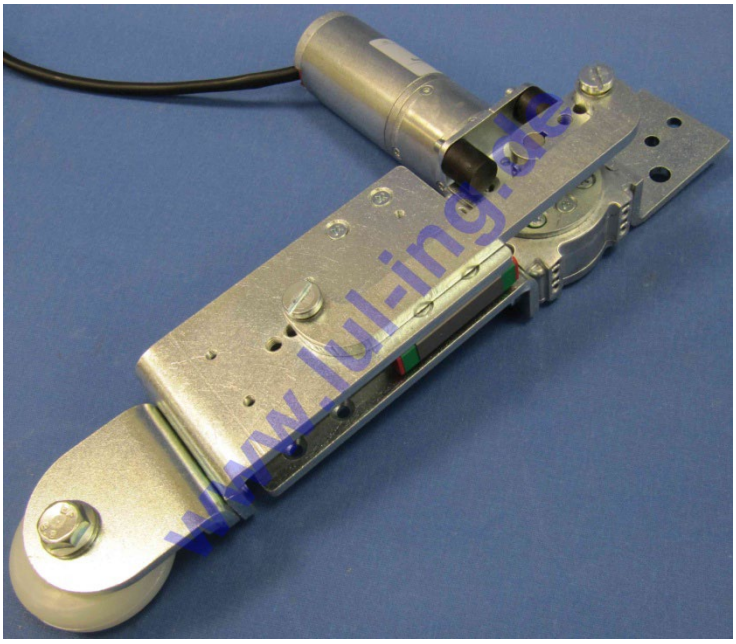


Abb. 7: TSG Sinus Drive with roller

8 Electrical connection and startup

1. The electrical connection is via the supplied cable.

2. If the rotation direction of the TSG Sinus Drive to be wrong direction, only the polarity of the motor must be replaced.

WARNING:

When operating electrical equipment, certain parts of the devices conduct dangerous voltage. Ignoring the safety instructions can result in serious personal injury or property damage! The warnings in this instruction must be followed. During commissioning of the TSG door movements cannot always be influenced from the outside. During start-up is by an authorized person, which is located on the door to ensure that no other person may enter the vicinity of the door. The allowable forces and energies are to be checked after commissioning at the door by the executive personnel.

9 User setting h-parameter

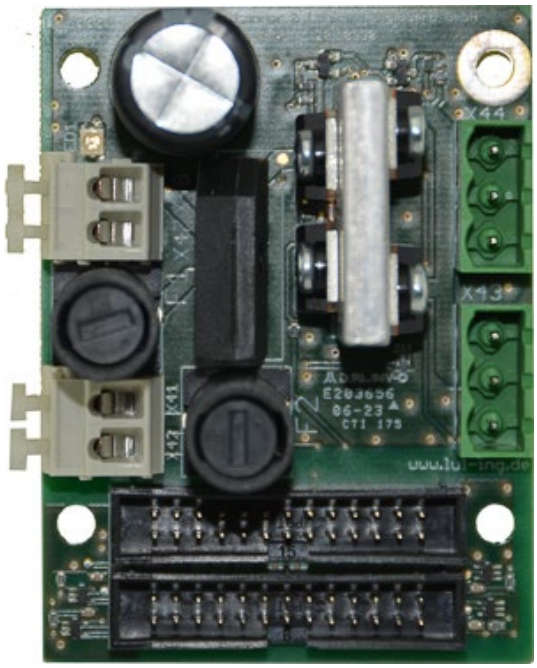
Tabelle 3: h-Parameter

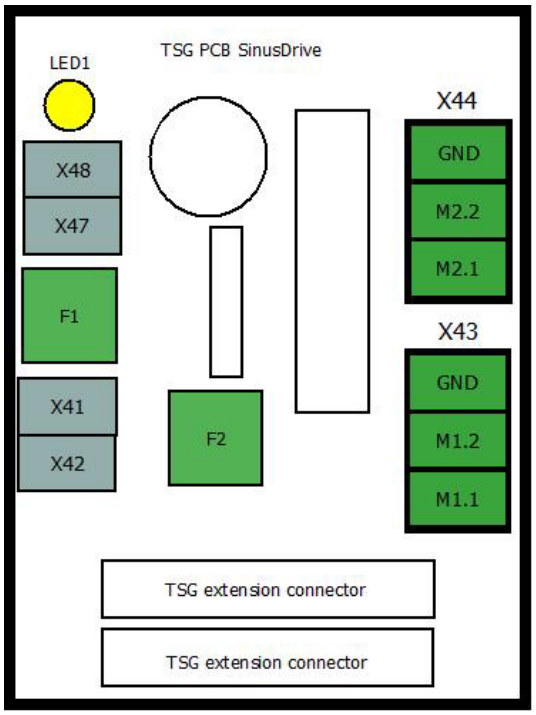
Parameter	Funktion	Min.-Wert	Default-Wert	Max.-Wert	Faktor	Einheit
hA	Only for use with optional add on boards (valid from version TSG V4). 01: control TSG Sinus Drive (us-able with add on board TSG Si-nus Drive) 03: control TSG Sinus Drive with emergency power supply (usable with add on board TSG Sinus Drive) 06: control TSG Sinus Drive for shaft hinged doors (usable with add on board TSG Sinus Drive) 16: CANopenLift- or ThyssenFx - Bus-communication and TSG Sinus Drive (usable with add on board CAN and TSG Sinus Drive) 17: CANopenLift- or ThyssenFx - Bus-communication and TSG Sinus Drive with emergency pow-er supply (usable with add on board CAN and TSG Sinus Drive) 18: CANopenLift- or ThyssenFx - Bus-communication and TSG Sinus Drive for shaft hinged doors (usable with add on board CAN and TSG Sinus Drive)	00	00	29		
h7	Opening time of the skate	00	00	80		[1/100 Se-kunde]
hb	Closing time of the skate	01	50	80		[1/100 Se-kunde]
hC	Pause between opening of the skate and opening of the door	01	50	99		[1/100 Se-kunde]

Note:
For more information on parameter setting see also the manual TSG door operator.

10 Technical data for TSG electronic

10.1 Overview of TSG Expansion board drive





X41: connection TSG emergency power internal (optional)
GND
X42: connection TSG emergency power internal (optional)
24VDC

X47: connection AC voltage
X48: connection AC voltage

X43: connection TSG Sinus Drive 1
X44: connection TSG Sinus Drive 2

F1: Fuse (AC voltage from transformer)
F2: Fuse (DC voltage emergency power, optional)

LED 1: 24[VDC] ok

TSG extension connector 1: connection to TSG mainboard
TSG extension connector 2: possible connection to additional electronics

10.2 Internal fuse

Tabelle 4: fuses TSG expansion board drive

Name	Function	value
F1	Fuse (AC voltage from transformer) size: 5 x 20mm material housing: glass tube nominal voltage: 250VAC characteristic: Super-Time-Lag TT	4[A]
F2	Fuse (DC voltage emergency power, optional) size: 5 x 20mm material housing: glass tube nominal voltage: 250VAC characteristic: Super-Time-Lag TT	4[A]

10.3 Terminal assignment TSG expansion board drive

Tabelle 5: supply voltages

voltage connection:		
X41	connection TSG emergency power internal (optional) GND	16…28 [VDC] / min. 1[A]
X42	connection TSG emergency power internal (optional) 24VDC	16…28 [VDC] / min. 1[A]
X47	connection AC voltage	14…20 [VAC] / min. 2[A]
X48	connection AC voltage	14…20 [VAC] / min. 2[A]

Tabelle 6: control voltage connection

X41,X42,X47,X48 voltage connection:	
Conductor cross section solid/flexible (min./max.) (stripping length: 5[mm])	0,5 /1,5 [mm²]
Conductor cross section flexible, with ferrule with/without plastic sleeve (min./max.)	0,5 / 1,5 [mm²]
Conductor cross section AWG (min./max.)	20…15
Only use copper cables for the connection. The line insulations must be designed for a max. temperature of 60[°C] for UL-compliant operation.	

Tabelle 7: TSG expansion board X43 – drive 1

X43 TSG Sinus Drive 1 (3-pin screw connector)**:**		
M1.1	connection 1	
M1.2	connection 2	
GND	GND	

Tabelle 8: X43 – connection data

X43 TSG Sinus Drive 1 (3-pin screw connector)**:**	
Conductor cross section solid/flexible (min./max.) (stripping length: 10[mm])	0,2 / 2,5 [mm²]
Conductor cross section flexible, with ferrule with/without plastic sleeve (min./max.)	0,25 / 2,5 [mm²]
Conductor cross section AWG (min./max.)	24 / 12
2 conductors with same cross section, stranded, TWIN-AEH with plastic sleeve (min./max.)	0,5 / 1,5 [mm²]
AWG according to UL/CUL (min./max.)	26 / 12
Only use copper cables for the connection. The line insulations must be designed for a max. temperature of 60[°C] for UL-compliant operation.	

Tabelle 9: TSG expansion board X44 – drive 2

X44 TSG Sinus Drive 2 (3-pin screw connector)**:**		
M2.1	connection 1	
M2.2	connection 2	
GND	GND	

Tabelle 10: X44 – connection data

X44 TSG Sinus Drive 2 (3-pin screw connector)**:**	
Conductor cross section solid/flexible (min./max.) (stripping length: 10[mm])	0,2 / 2,5 [mm²]
Conductor cross section flexible, with ferrule with/without plastic sleeve (min./max.)	0,25 / 2,5 [mm²]
Conductor cross section AWG (min./max.)	24 / 12
2 conductors with same cross section, stranded, TWIN-AEH with plastic sleeve (min./max.)	0,5 / 1,5 [mm²]
AWG according to UL/CUL (min./max.)	26 / 12
Only use copper cables for the connection. The line insulations must be designed for a max. temperature of 60[°C] for UL-compliant operation.	

11 Maintenance and servicing

The maintenance of L & L door drives is limited by their constructive approach to a minimum. Components, which are subject to normal wear and tear shall be included in regular maintenance and repair measures.

WARNING:
During maintenance is essential to ensure that the drive can not be powered on and that no exposed parts can come under electrical voltage unintentionally. Once these measures have existing protective and safety devices on the drive have to be installed again.

12 Sample Images

Abb. 8: TSG Sinus Drive in Thyssen M2Z D6

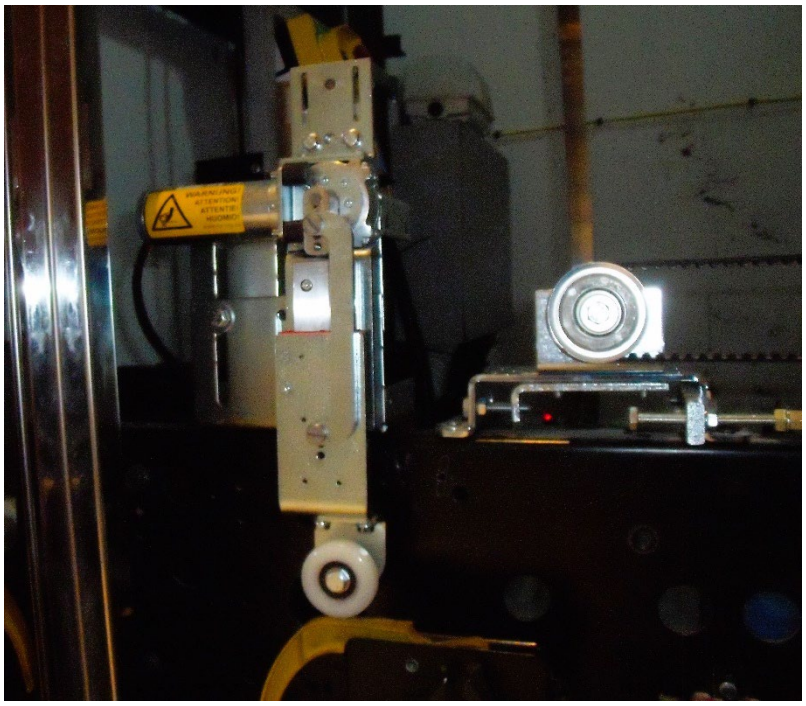


Abb. 9: TSG Sinus Drive in Selcom / Wittur 3201

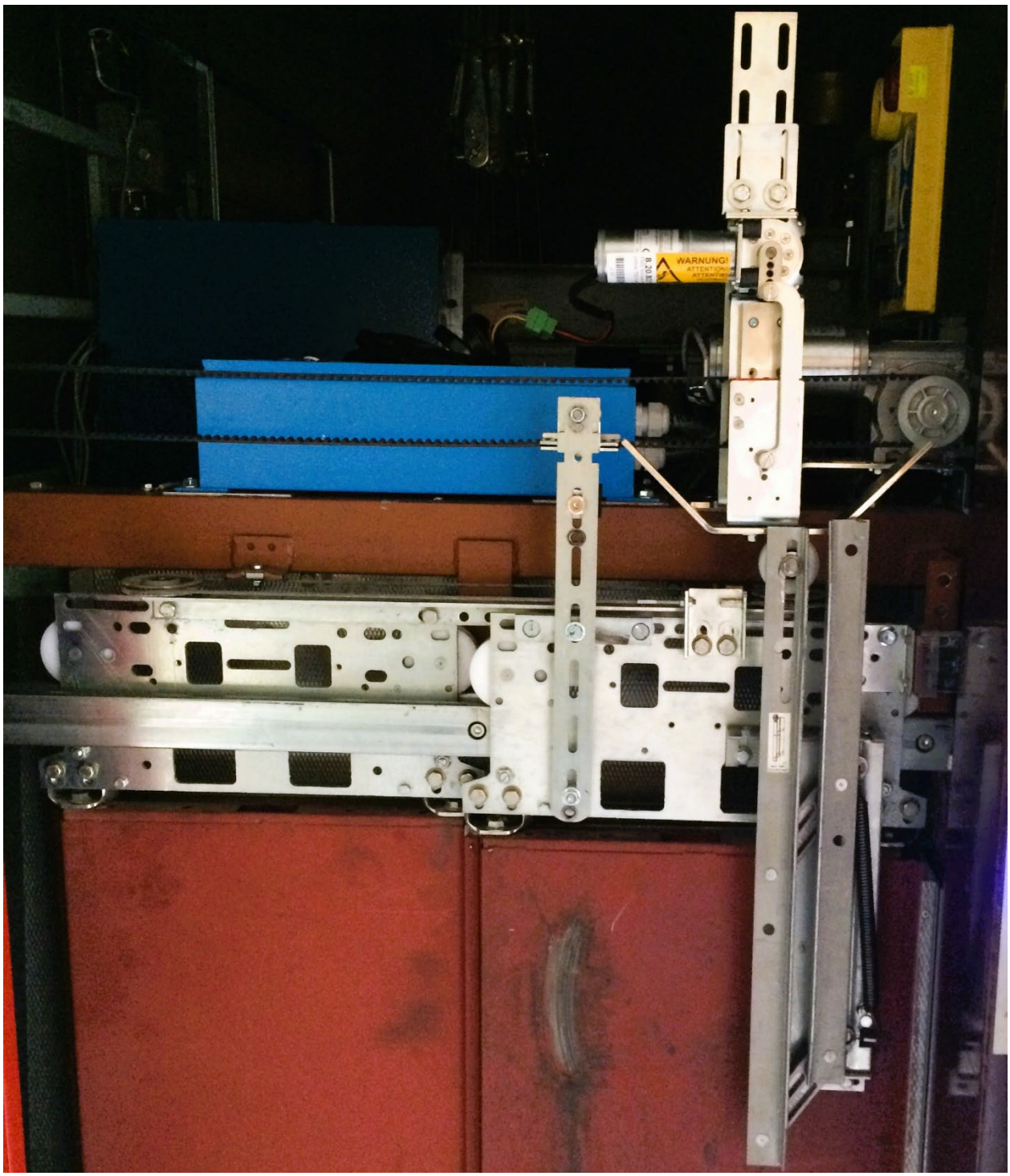


Abb. 10: TSG Sinus Drive in Haushahn TSS72

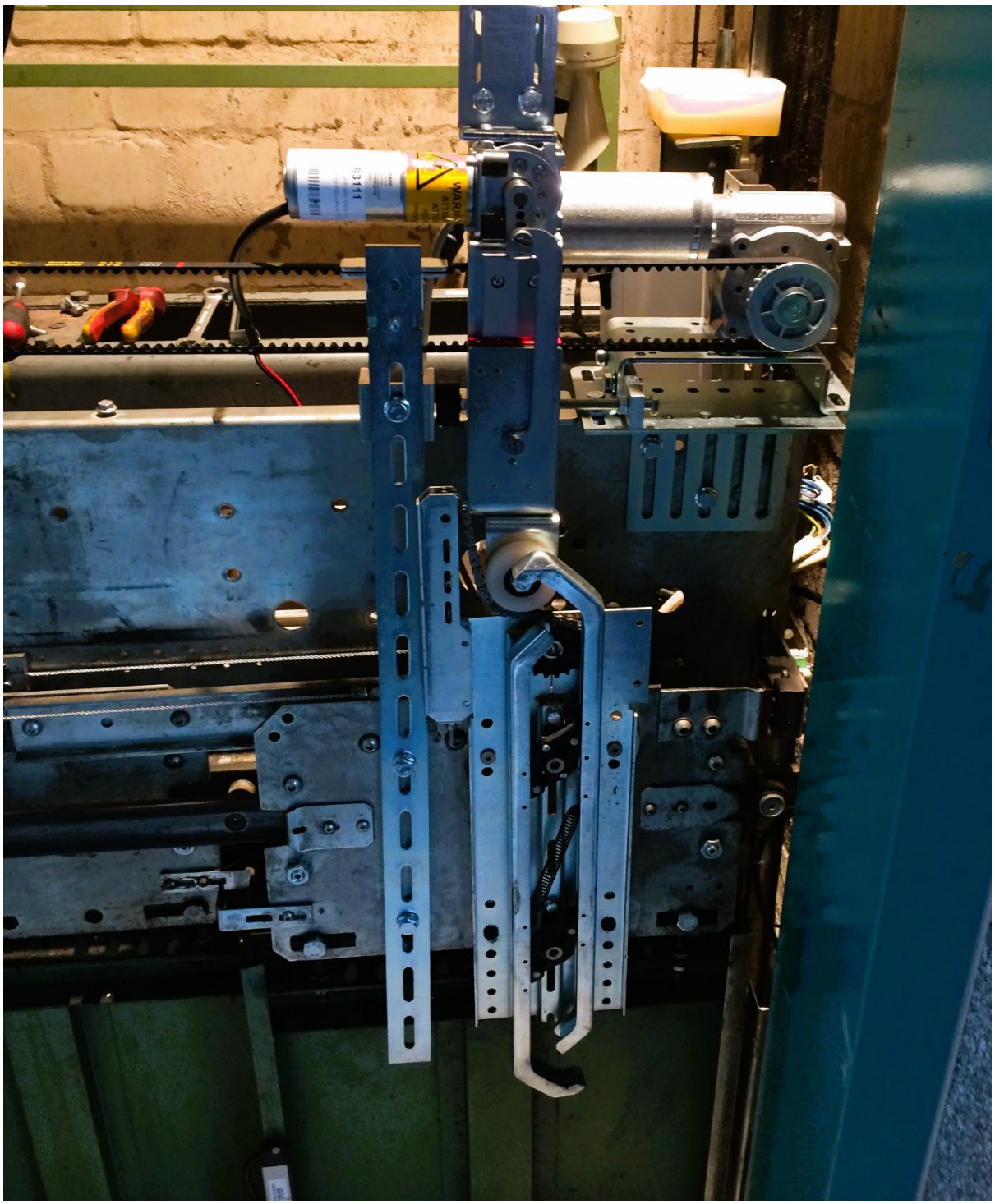


Abb. 11: TSG Sinus Drive in Prisma Concord

Abb. 12:TSG Sinus Drive from behind

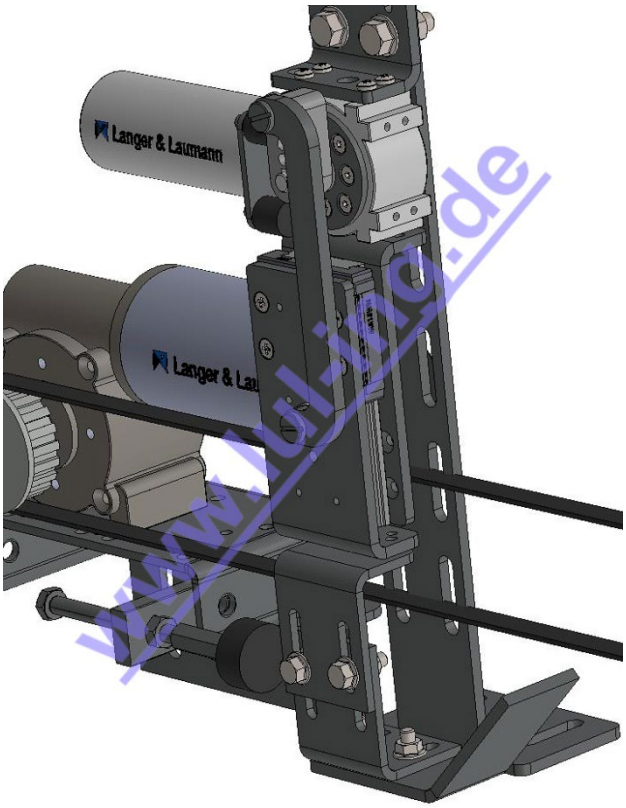


Abb. 13: TSG Sinus Drive from the front

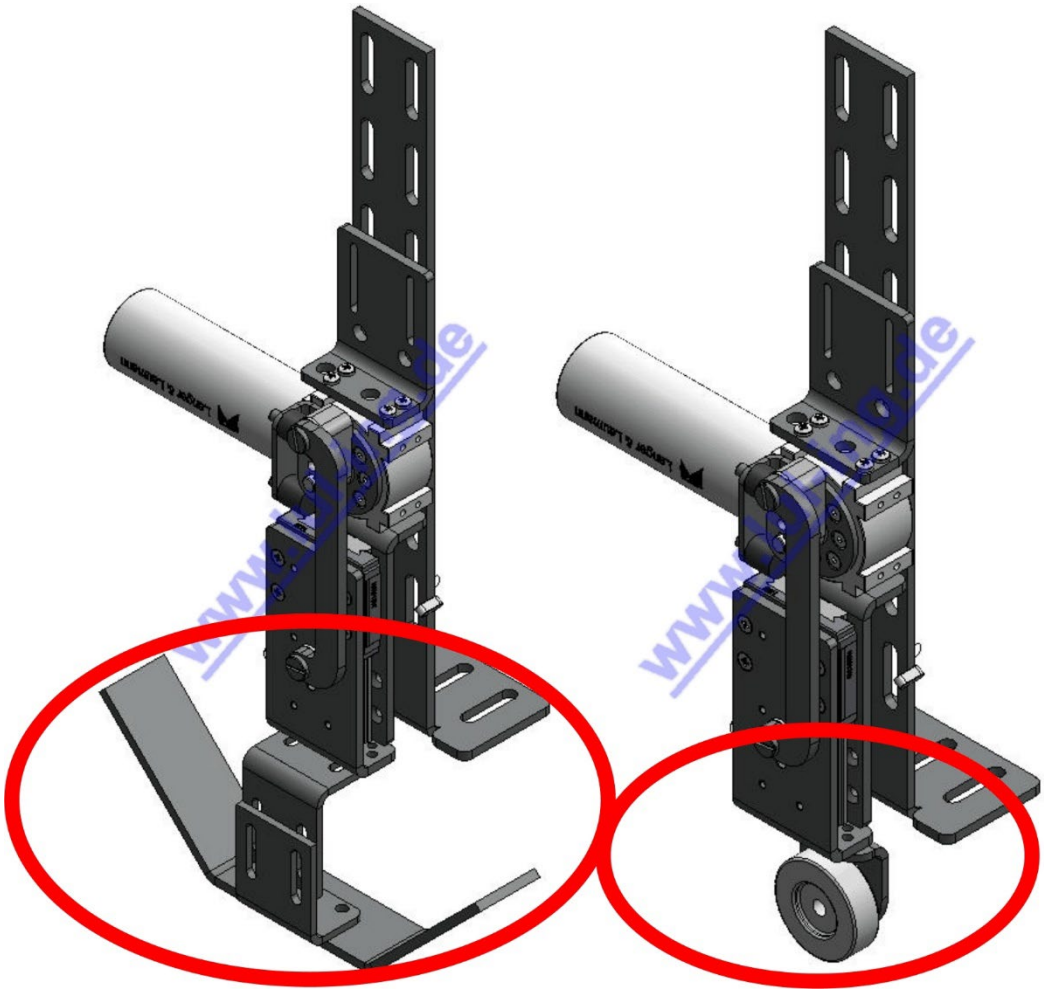


Abb. 14: TSG Sinus Drive with curve or roller

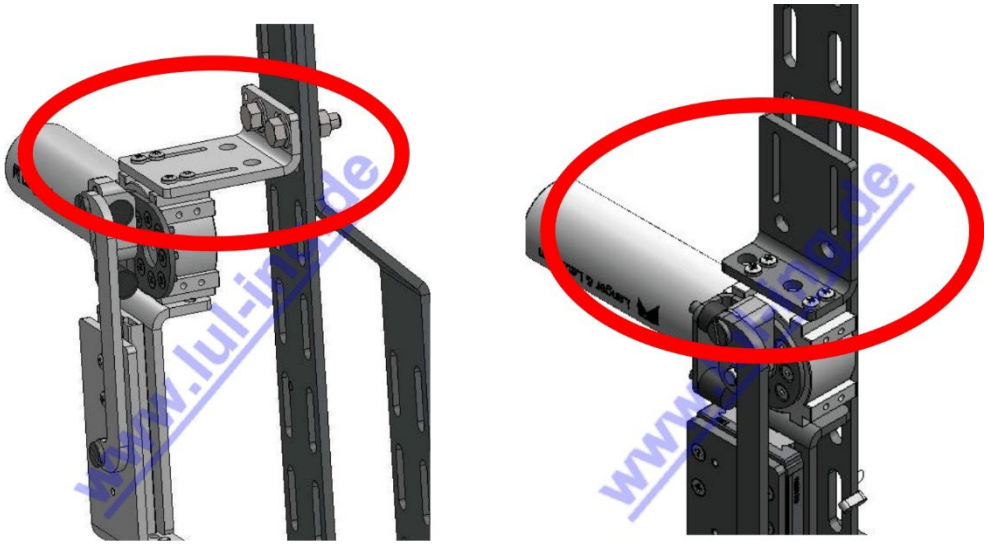


Abb. 15: Possibility to change the distance

Abb. 16: Reinforcement for stabilization

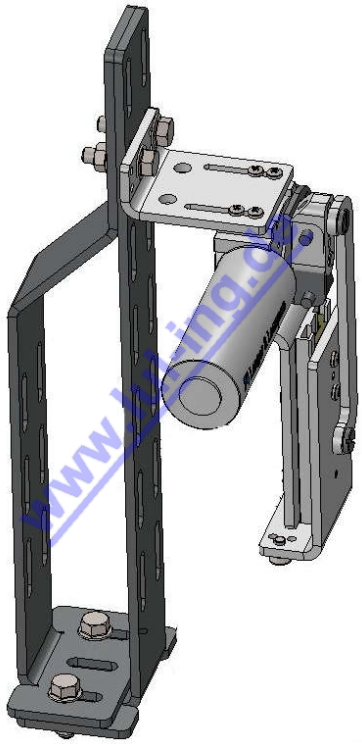


Abb. 17: Reinforcement for stabilization

13 Contact

For questions and / or doubts, you can reach us at the following address:

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