

TSG Application Note

Mechanical transmission ratio

Dokumentationshistorie

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content

1	About these instructions	4
1.1	General information	4
1.2	Explanation of symbols	4
1.3	General safety requirements	5
1.4	Delivery	6
1.5	Safety and accident prevention requirements	6
1.6	Qualified personnel as defined by VDE 0105	6
1.7	Exclusion of any guarantee when changes or conversions are made or installation of foreign material	7
1.8	Other important safety instructions	8
2	Description	9
3	Parameter	9
4	Example	10
5	Adjusting with standard timing belt pulley	11
6	Contact	12

1 About these instructions

1.1 General information

Please read this operating instruction attentively before you install the TSG door operator and put into operation. Note the cap. 1.3 General safety requirements / page 5. For further using please keep the operating instructions on hand.

The operating instructions are to assist you to mount the TSG door operator and its components and to put into operation. The operating instructions contain important information for safely and correctly to mount the TSG door operator and put into operation.

The operating instructions are applicable for the TSG door operator from hardware version V4.03 and software version V4.60.12.

By following this operation instruction, you will avoid danger, costs of repair, downtime, increase reliability and service life of the TSG door operator.

In addition to our recommendations, it is imperative to comply with any local safety regulations that may be in force in the country where the operator is installed.

The manual only applies to components supplied by Langer & Laumann Ing. -Büro GmbH for any other component used, please refer to the supplier's instructions.

The manual describes the standard TSG door operator application only. Due to the wide range of its application, these may not apply to all the application possible. Please consult Langer & Laumann Ing. -Büro GmbH (+49 (2552) 92791 0) for any special application.

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.

1.3 General safety requirements

The TSG door operator is designed exclusively for operation of horizontal and vertical sliding doors or removable protection device. The manufacturer assumes no liability for applications that fall outside the defined area of usage. The TSG door operator carries electrical and mechanical hazards. Failure to observe the instructions in these operating instructions may result in death, severe bodily injuries or significant property damage.

The TSG door operator is built according to the state of the art and recognized 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 authorized 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.



WARNING:

The TSG door operator has to be installed so that hazards are excluded to moving points (e.g. installation of protection devices to motor shaft, counter roller, tooth belt).



WARNING:

When operating on a vertically guided door care must be taken to ensure that it cannot lead to uncontrolled movements in the failure of the TSG door operator. This can be prevented by, for example, use of counterweights. It is necessary to provide a customer-supplied mounting protection against means breakage. The exporting specialist must check the structure corresponding to the commissioning at the door.

1.4 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.

1.5 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.

1.6 Qualified personnel as defined by VDE 0105

Qualified personnel mean 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.

1.7 Exclusion of any guarantee when changes or conversions are made or installation of foreign material

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 or installation of foreign material 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.



WARNING:

By using the unreleased cable forfeit the examination certificate 44780 1309930301 and the certificate of conformity for equipment manufacturer.

1.8 Other important safety instructions

The purchaser, designer and/or fitter of the TSG door control unit and its components is responsible for its correct and safe use. He must ensure that all state and local laws and regulations regarding the safety of power-operated doors as well as the relevant state health and safety regulations are observed.

Langer & Laumann Ing. -Büro GmbH is not responsible for accidents and/or consequential damage that could result from the application or use of the door control unit TSG and its components. Our maximum obligation and warranty is limited to the reimbursement of the costs of the sold product.

Langer & Laumann Ing. -Büro GmbH makes no specifications or recommendations for suitability for specific safety gate concepts. The purchaser, designer and/or installer of the TSG door control unit must decide for himself whether the drive is suitable for a given application. Langer & Laumann Ing. -Büro GmbH also declines all responsibility for damage or injury resulting from changes to the drive, including changes to software parameters. Employees of Langer & Laumann Ing. -Büro GmbH are not authorized to modify these conditions without the written consent and legally valid signature of the responsible authorities.

2 Description

The instructions are valid for the TSG door control unit from software version V4.60.12.

A fixed gear ratio is stored in the TSG door control unit as standard. In some applications, however, gear ratios are desired.

As a result of a modified mechanical transmission ratio, the forces, speeds and accelerations are different from those expected. In order to compensate for the difference, the existing mechanical transmission ratio in the TSG door control unit can be adapted.

3 Parameter

In order to set a changed mechanical ratio, parameters A8 and A9 must be adapted to the conditions.

Parameter	Function	Notes	Min	Standard	Max	Factor	Unit
A8	Mechanical, additional transmission ratio		0.5	1.0	8.0		
A9	Release Parameter A8 (Mechanical, additional transmission)		00	00	01		
CC	Leaving the Au-Parameters						



NOTE:

When parameter A8 is changed and enabled by parameter A9, all velocity parameters, acceleration and deceleration parameters are automatically changed as a function of one another.



NOTE:

When loading the default settings, parameters A8 and A9 are not reset to default.



NOTE:

When loading the default settings, all speed parameters, acceleration and deceleration parameters are changed depending on the set mechanical transmission ratio.

4 Example

If the mechanical structure differs from the standard structure, there is a different mechanical transmission ratio.

Sequence:

1. Commissioning of the system during the calibration process.
2. Determine the transmission ratio to be adjusted.
 - a. Reading the measured door width in the TSG web interface or in the parameters r6 to r8.
Example: 5,0[m]
 - b. Manual measurement of the existing door width (from end stop to end stop, without the width of the door wing carrier).
Example: 2,0[m]
 - c. Calculating the transmission ratio:

$$\text{transmission ratio} = \frac{\text{door width at TSG}}{\text{real door width}} = \frac{5.0[m]}{2.0[m]} = 2.5$$

3. Entering the calculated transmission ratio in parameter A8.
Example: A8 = 2.5
4. Activation of the changed transmission ratio with A9 = 01.
5. The TSG updates the internal calculations on the basis of the new transmission ratio.

5 Adjusting with standard timing belt pulley

date 06.12.2021

Article number	Description	Diameter	Parameter	
			A8	A9
1.20.60114	timing belt pulley, HTD8M, d=20H7, D=60[mm], B=20[mm]	60	0,9	1
1.20.60116	timing belt pulley, STD8M, d=14H7, D=66[mm], B=20[mm]	66	0,8	1
1.20.60117	timing belt pulley, STD8M, d=14H7, D=76[mm], B=12[mm]	76	0,7	1
1.20.60118	timing belt pulley, STD8M, d=14H7, D=97[mm], B=12[mm]	97	0,6	1
1.20.60190	timing belt pulley, STD8M, d=10H7, D=110[mm], B=20[mm]	110	0,5	1
1.20.60198	timing belt pulley, HTD5M, d=15H7, D=29[mm], B=25[mm]	29	1,9	1
1.20.99140	timing belt pulley, STD8M, d=28H7, D=112[mm], B=20[mm]	112	0,5	1
1.20.99145	timing belt pulley, STD8M, d=14H7, D=104[mm], B=15[mm]	104	0,5	1
1.20.96110	timing belt pulley, STD8M, d=18H7, D=112[mm], B=15[mm]	112	0,5	1
1.20.92195	timing belt pulley, STD8M, d=17H7, D=112[mm], B=15[mm]	112	0,5	1
1.20.99147	timing belt pulley, STD8M, d=25H7, D=118[mm], B=21[mm]	118	0,5	1
1.20.31020	timing belt pulley, STD8M, d=12H7, D=44[mm], B=15[mm]	44	1,3	1
1.20.60514	timing belt pulley, HTD5M, d=10H7, D=43[mm], B=25[mm]	43	1,3	1
1.20.96115	timing belt pulley, STD8M, d=20H7, D=112[mm], B=17[mm]	112	0,5	1
1.20.60127	timing belt pulley, HTD8M, d1=16H7, d2=25, d3=51, D=97[mm]	97	0,6	1
1.20.60199	timing belt pulley, HTD5M, d=14H7, D=47[mm], B=38[mm]	47,75	1,2	1
1.20.60140	timing belt pulley, HTD5M, d=10H7, D=37[mm], B=15[mm]	37	1,5	1
1.20.60197	timing belt pulley, HTD5M, d=14H7, D=29[mm], B=25[mm]	29	1,9	1
1.20.99146	timing belt pulley, STD8M, d=14H7, D=118[mm], B=21[mm]	118	0,5	1
1.20.60119	timing belt pulley, HTD8M, d=14H7, D=76[mm], B=20[mm]	76	0,7	1
1.20.60195	timing belt pulley, HTD5M, d=14H7, D=43[mm], B=25[mm]	43	1,3	1
1.20.60165	timing belt pulley, V2A, STD8M, d1=14H7, d2=15,3, D=39[mm]	39	1,4	1
1.20.60122	timing belt pulley, HTD8M, d1=16,6, d2=45, D=143[mm]	143	0,4	1

6 Contact

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