TORMAX AUTOMATIC

T-1132 e 3.03



Installation On Site

for Automatic Swing Doors SWINGDOOR

Smart Drive 1101

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The enterprises Landert Motoren AG and Landert GmbH are certified according to ISO 9001.

1 Introduction

Addressee/Status

These instructions are addressed at qualified installation personnel and contain all required information for the installation on site.

Area of Application

This document is applicable to automatic TORMAX doors of type SWINGDOOR Smart Drive 1101.

Explanation of Symbols



Non-compliance endangers the safety of the installation personnel, the system operator or the user.



Warning of electrical voltage.

Passages with text on grey background must be absolutely observed for reliable performance of the system! Neglect can cause material damages.

◆ This symbol marks optional components, which are not installed in all units.

Languages

These instructions are available in different languages. Please ask your TORMAX dealer.

SWINGDOOR Smart Drive 1101

For installation and commissioning of this system, the following instructions and data sheets are useful; get hold of these documents before beginning the assembly work!

- Operating instructions T-1134 e
- Wiring diagram lintel mounting T-1135 e
- Wiring diagram door leaf mounting T-1154 e
- Drilling template T-1138
- Dimensional drawings standard linkage lintel mounting T3-386-40
- Dimensional drawings standard linkage door leaf mounting T3-386-41
- Dimensional drawings sliding lever lintel mounting T3-386-42
- System test book International: T-895 e

2 Safety

2.1 General Safety and Accident Prevention Regulations

General safety Instructions



Prior to installation or commissioning, read and follow this information that is being described on this page—especially the following notes relating to safety—and adhere to them at all times! Damage to the unit and personal injury may result if these instructions were not carefully followed.

Pay particular attention to the specially marked notes in this manual (for an explanation of the symbols please refer to chapter 1)!

These products are Underwriters Laboratories, Inc. (UL) listed and cUL certified for the Canadian marketplace, and therefore comply with the requirements of the National Electrical Code (NEC) and the Canadian Electrical Code (CEC). Installations intended to meet UL and cUL requirements must be followed as described in the instruction provided herein. These are minimum standard requirements. Where local codes exceed these requirements, they must be followed as well.

Preventing General Hazards and Possible Damage to This Equipment

- Keep fingers away from all moving parts.
- Verify that the power selection switch is set to the correct voltage before start-up.
- The power supply cable (flexible cord) should be entered at the end side that is close to the input power supply plug. It should not be routed through doorways, window openings, walls, ceilings, floors, etc. The power supply cable (flexible cord) should not be attached or otherwise secured to the building structure. It should not also be concealed behind walls, etc.
- Never allow the power supply cable (flexible cord) to become entrapped in moving parts of the operator, door, or system.
- The power receptacle must be of the grounding-type. It is very important that the unit will be properly grounded.
- To reduce the risk of electrical shock, this equipment has a grounding-type plug that has a third grounding pin. This plug will only fit into a grounding-type outlet. If the plug does not fit into the outlet, contact a qualified electrician to install the proper outlet. Do not change the plug in any way.

Warnings of Dangerous Electrical Voltages or Current

- Be sure the electrical power is disconnected and locked-out when working on the operator unit.
- Install the electrical cables and power only after the mechanical installation to the unit is done.
- Turn on the power to the operator unit only after all internal cables are connected. Do not connect cables while the unit is powered.
- Always use appropriate tools for installation and repair.

Prior to commissioning or performing any work on the door system, the operating instructions for the TORMAX operator and the following safety directions should be studied with great care and must be observed!

In any case, please pay attention to the specially marked notes within this document (see chapter 1 for an explanation of symbols).

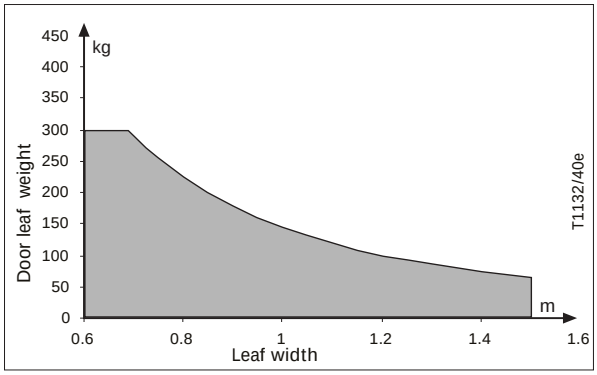
Use for Intended Purpose

The TORMAX operator is designed according to the current state of technology as well as the recognized safety-relevant regulations and is intended exclusively for the deployment in conjunction with automatic interior and exterior doors (without wind loads) used by people e.g. in hospitals, homes for the elderly, shopping centres, office buildings and large-scale enterprises. The operator corresponds to protective class IP 22. Without additional safety precautions, it may only be installed within, i.e. at the inside, of buildings.

Any other use or any use exceeding this aim is determined to be not for its intended purpose and may lead to personal injury to the user or a third party. Furthermore, the system or other material assets can be damaged. The manufacturer will not be responsible for any damage resulting from this; the risk is carried entirely by the operator of the door system.

The operating, service and maintenance conditions specified by the manufacturer are to be maintained. The persons entrusted with the service and maintenance must be acquainted with the matter and informed about any possible danger.

Maximum Door Leaf Weights



To ensure a reliable function of the door the moment of friction may not exceed 10 Nm.

In addition to the operating instructions, the legal and other obligatory regulations for accident prevention and environmental protection, in the respective country where the door system is operated, shall be applicable. The special directives for automatic doors (e.g. of the European committee for standardization CEN) must be adhered to. Furthermore, the operational/national regulations apply.

Arbitrary changes to the system will exempt the manufacturer from any liability for damages resulting from this.

2.2 Safeguarding Danger Points

General

prEN 12650-2:2002

Automatic door systems are to constructed in such a manner that on opening and closing motions endangerments through jamming, shearing and drawing-in are avoided or safeguarded against, for example through:

– Safety separations

– Limitation of the door-leaf forces

– Monitored safety facilities

– Separating protective facilities

Sufficiently dimensioned minimum safety distances to prevent crushing are:

– for fingers or hand 25 mm

– for the head 200 mm

– for the body 500 mm

Fingers are unlikely to penetrategaps ≤ 8 mm in powered pedestrian door installations.

The safety measures may be used in combination.

Automatic Swing Doors

Door leaves may not open directly into areas in which other transit traffic takes place. If door leaves open into an area in which there might be people, safety precaution are to be taken if this is judged as necessary by the risk evaluation.

Danger points in the range of the opening motion are considered as safeguarded if:

– There is an adequate safety separation regarding the endangered parts of the human body between the secondary closing edge and adjacent parts of the environment,
or

– The forces of the door leaves are limited to safe values,
or

– Monitored protective facilities will be installed between the secondary closing edge and adjacent parts of the environment,
or

– The area of the secondary closing edge is protected with separating protective facilities.

Danger positions during the closing motion are secured – depending on application – if

– The motion travel of a door leaf is continuously supervised through (error-proof and monitored) presence sensors,
or

– Monitored protective facilities are installed at the main and/or secondary closing edge,
or

– The motion travel of a door leaf is secured with switching mats.

The leaves must be manufactured from materials that will not lead to a potential danger of injury when breaking (e.g. toughened safety glass, compound safety glass etc. when using glass).

2.3 Organizational Measures

Requirements for Installation Personnel

The installation on site may be carried out only by qualified personnel who have sufficient knowledge in the area of the power-operated doors due to vocational training and experience and are acquainted with the relevant national workers protection rules, accident prevention regulations, directives and generally recognized rules of the technology to such an extent that they can judge the safe-for-working status of power-operated doors.

Experience/vocational training in metal construction and in fastening techniques is a requirement.

If necessary, qualified employees of the contract partner can make use of the training offered by TORMAX (training courses).

Depending upon leaf weight, an assistant must be available for the installation.

Fundamental Safety Measures – Appropriate Behaviour





- Use the system only in a technically sound state. Eliminate faults immediately that may impair safety.
- Keep fingers away from any mobile parts. Special caution is required in the area of the drive lever, the linkage and the secondary closing edges of the hinges.
- Use exclusively tools that are suitable for the respective work procedure. Pay attention to good condition of the tools.
- Electric voltage/current: The operator is to be disconnected from electrical mains before any work is performed on electrical parts.
  Install cabling only after the installation is complete.
  Plug in the power plug only after all internal cables are connected.

3 Basic Functions

Motion Control – General

The door opens motor-driven in accordance with the adjusted speed against the installed spring. Ahead of the open position, the motor torque is reduced and the door is braked down by the spring. The door is held in the open position by a reduced motor torque. The closing action is performed through spring force only. Thereby, the motor adjusts the speed. At the completion of the closing motion, deceleration occurs with adjustable homing in speed over an adjustable angle (see section 7.4.2). The motor is switched off when the door is closed.

Activator

Functionality of the unit

Opens the door in operating mode **AUTO and in operating mode OFF** in accordance with **"Teach-In General"**.

Key Switch

Opens the door in operating mode **AUTO** in accordance with "**Teach-In General**", or with "**Teach-In Key Switch**" if this was performed after "**Teach-In General**".

Safety device in opening direction

This prevents the door from opening. It stops the door during opening.
If both, the **safety device in opening direction** and the **safety device in closing** direction, respond at the same time during a motion, the door stops in place. Through **"Teach-In General",** the safety sensor is disabled automatically over a predetermined door swing range. If this function is not used, a jumper is inserted between 14–15.

Safety device in closing direction/safety device for the swing area/ Safety Device Bodyguard

Standard function:

Safety device in closing direction (safety sensor riding along in closing direction).
The door remains open. A commenced closing motion is reversed.
If both, the **safety device in opening direction** and the **safety device in closing direction,** respond at the same time during a motion, the door stops in place.

Optional functions:

Safety device for the swing area
The door remains open or closed. A commenced motion is completed.
The **safety device in opening direction** has a higher priority than the **safety device for the swing area**.

Safety Device Bodyguard

This function is only in use with the safety device "Bodyguard" of BEA.

The door remains open or closed. A commenced motion is completed. The **safety device in opening direction** has a higher priority than the **safety device "Bodyguard"**. Using this function automatically changes the settings of **Feedback Door State** to **"door opening or door open"**. This feature is compulsory for the function **"Bodyguard"** (See **Feedback Door State**)

If these safety functions are not used, a jumper is inserted between 18–19.

Test of safety devices

Output for active testing of the **safety device in opening direction** and **safety device in closing direction** (e.g. for Eye-Tech of BEA).

Operating Mode OFF

An opening can only be initiated through the **key switch**.

Operating Mode AUTO

An opening can be initiated by an **activator**, a **key switch** and also by **"Push and Go"** depending upon configuration.

Operating Mode OPEN

The door opens and stops in open position. It opens according to the settings of **"Teach-In General".**

Door Lock

Unlocks on each opening command. On completion of the **opening time delay**, the door starts opening. When the door has moved somewhat in opening direction, the door lock drops off again. The door lock is activated only in proximity of the "door closed" position.

Feedback Door State

The feedback "door closed" (or "door open" if reconfigured) between 11–12 is only valid as long as mains supply is available. This message is established as soon as the processor considers the driving function as complete. Connection for 24 VDC relay or signal light. Transistor output short circuit proof in relation to internal supply voltage 24 VDC / 0.75 A.

If a second opening width has been configured (Teach-In SS) the feedback "door open" is as follows:

Triggering of opening	Feedback defined by
Activator	Teach-In General
Key-switch	Teach-In key-switch
Push-and-Go	Teach-In General
Manual operation	the smaller of both opening widths

Using this function automatically changes the settings of **Feedback Door State** to **"door opening or door open"**. The other feed back types can be chosen, but have no effect whatsoever. (See: Safety device **Bodyguard**).

Power Supply 24 VDC

The control system Smart Drive 1101 provides a power supply of 24 VDC for sensors, **door lock** and signalling. The power supply may be continuously loaded with maximally 0.75 A. With loads >0.75 A, the point LED on the display goes out. On overload, the unit switches itself off automatically. In this condition, manual operation of the door is possible with controlled spring closing action.

Reversing Motion

If the door hits a firm obstacle during opening, the motor driven opening procedure is terminated immediately. If the door hits a firm obstacle during closing, the weak spring closing force remains in existence. The next opening command opens the door again as usual.

Time Control

The door opens when an impulse is received, remains in the valid **open position** during the valid **hold-open time**, and closes thereafter again.

Step Control

The door opens when an impulse is received (from the **key switch** or an **activator**) and remains in the open position. The door closes immediately after the next impulse. The motional sequence depends on the settings of the respective "**Teach-In**".

Internal Protective Device

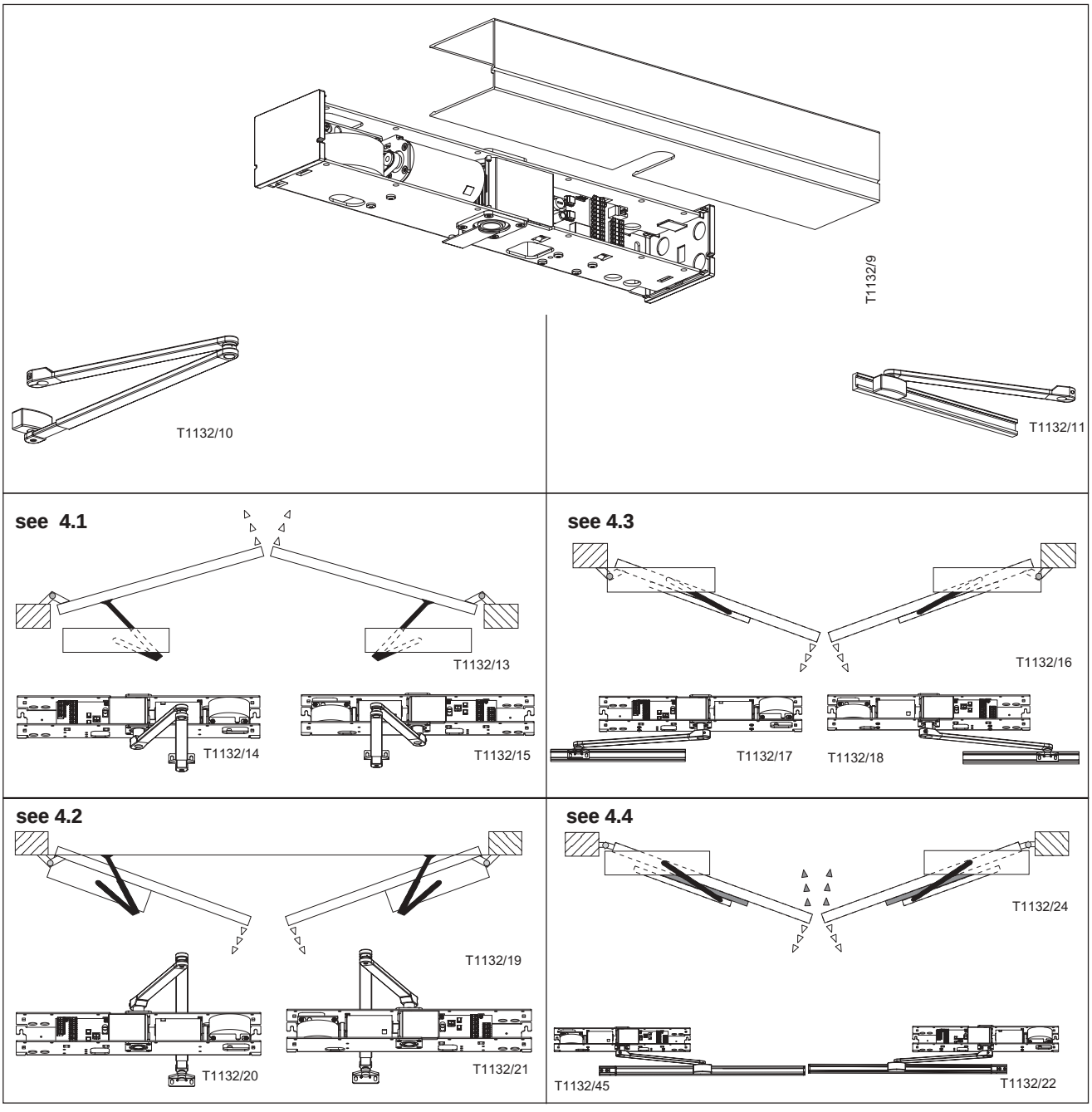
The motor is switched off immediately when the door is blocked.
Motor and transformer contain thermal relays that interrupt the current supply to the control system at 110 °C. The system operates as during a **power failure** until the temperature drops to 85 °C.

Power Failure

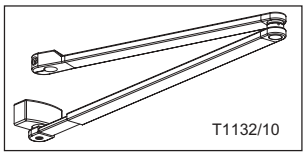
The door can be manually opened if the **door lock** can be unlocked with the door handle. The door closes through spring force. The motor, which is controlled short-circuited, controls the closing action with constant braking power. After return of power, the system is immediately ready for use again.

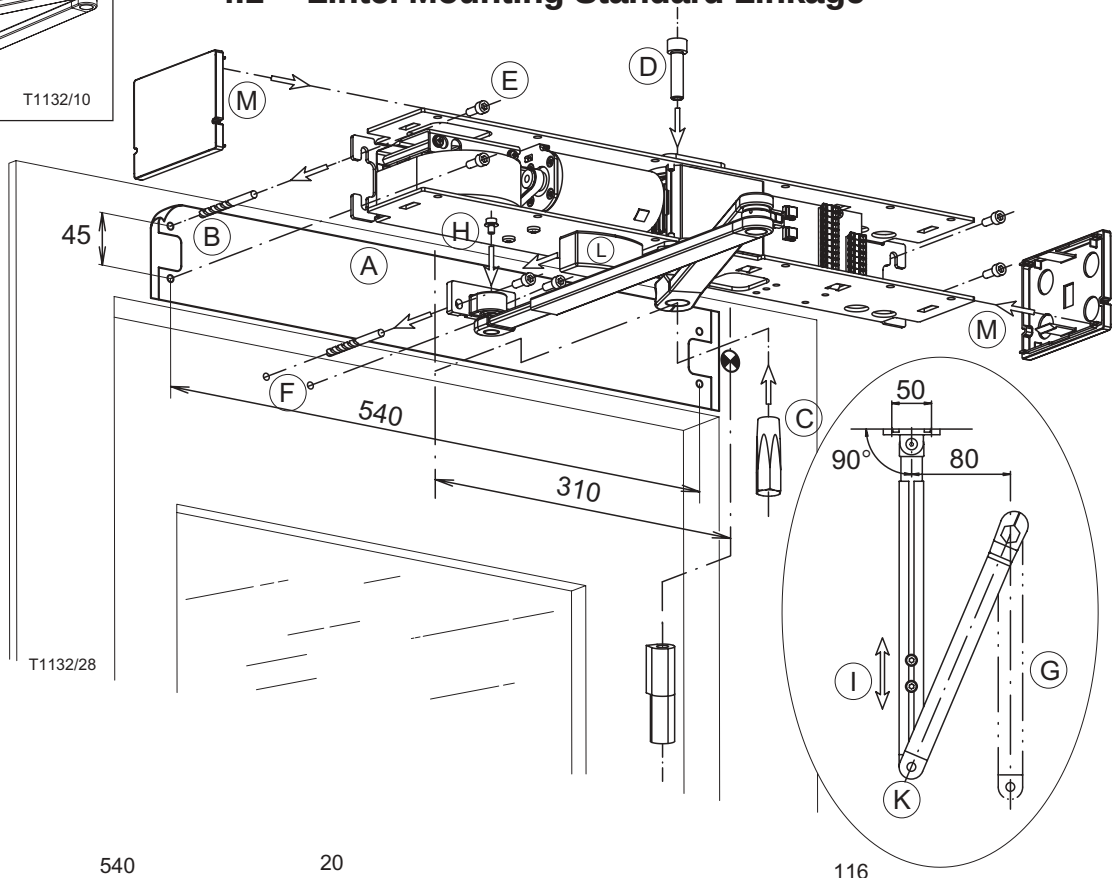
4 Installation

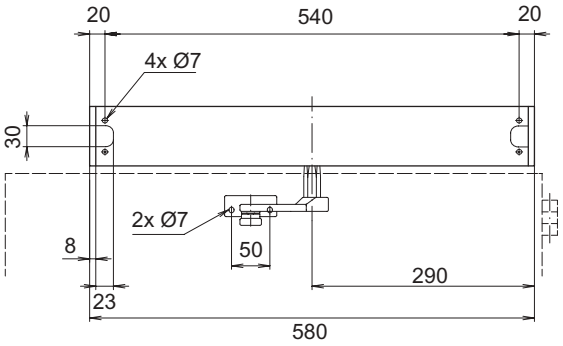
Overview of mounting methods

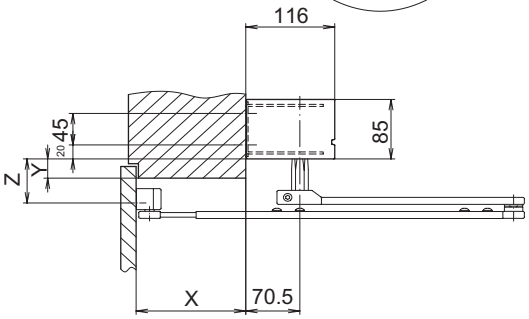


4.1 Lintel Mounting Standard Linkage

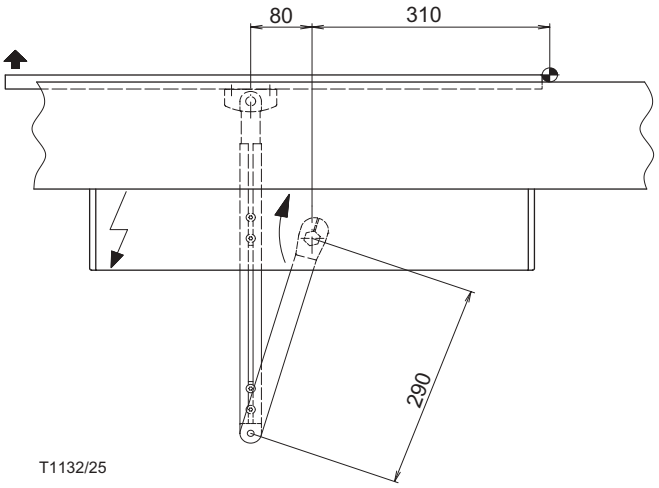






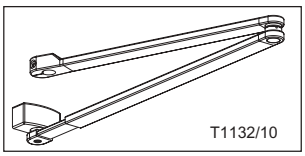


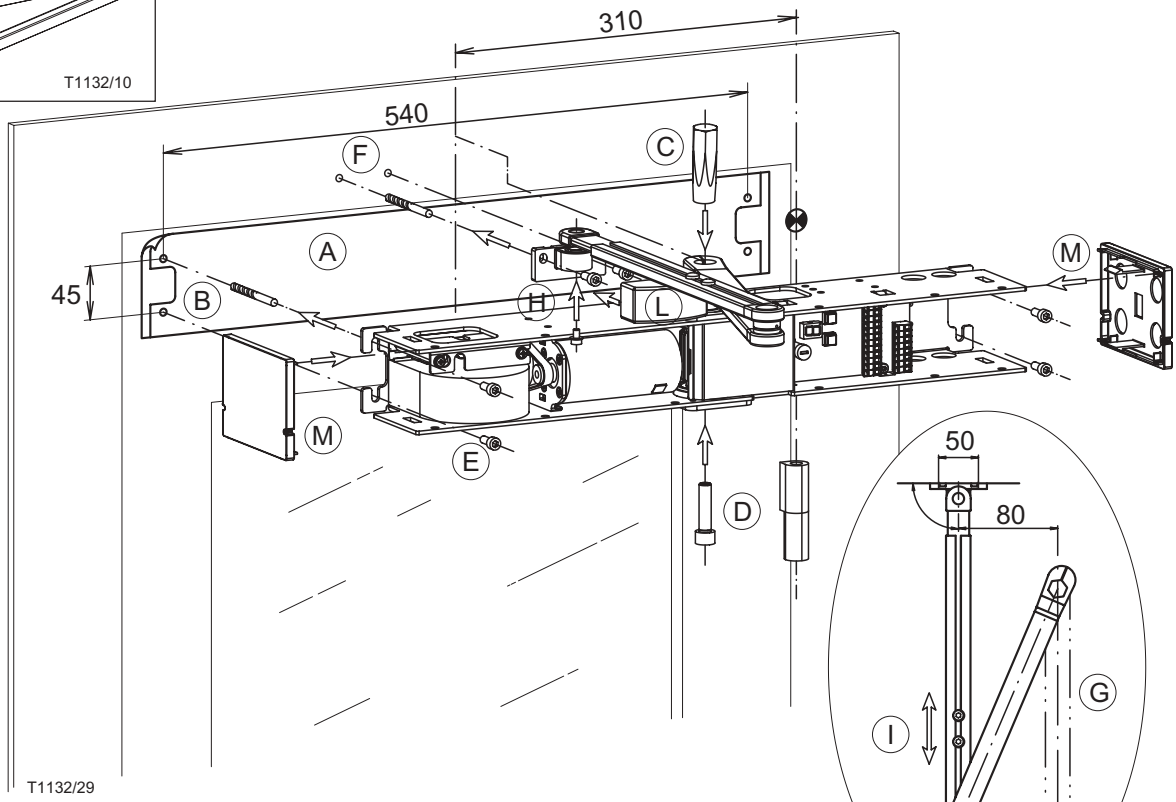
Y	Z	X	
0 – 10	33	–40…+107	+105…+252
0 – 70	93	–40…+107	+105…+252

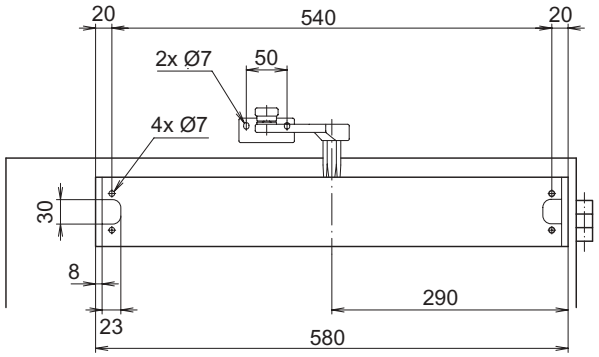


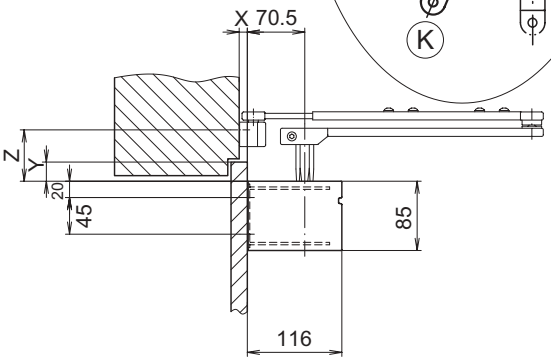
A) Glue on template
B) Drill holes
C) Attach cone, length according Y, surfaces parallel to side plates
D) Tighten hexagon-socket screw
E) Fasten operator
F) Fasten bearing trestle according to dimensional specifications on door leaf
G) Attach connecting part at right-angle to the operator to cone (length in accordance with Y)
H) Interconnect bearing trestle and adjustment member
I) Adjust adjustment member at right-angle to the lintel and tighten screws
K) Interconnect connecting part and adjustment member
L) Fasten covers
M) Snap in side plates

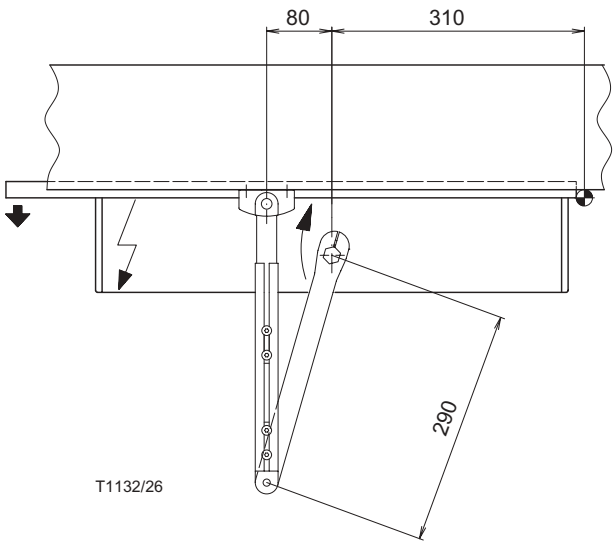
4.2 Door Leaf Mounting Standard Linkage







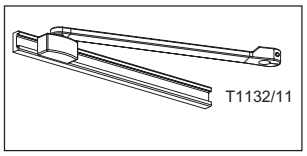


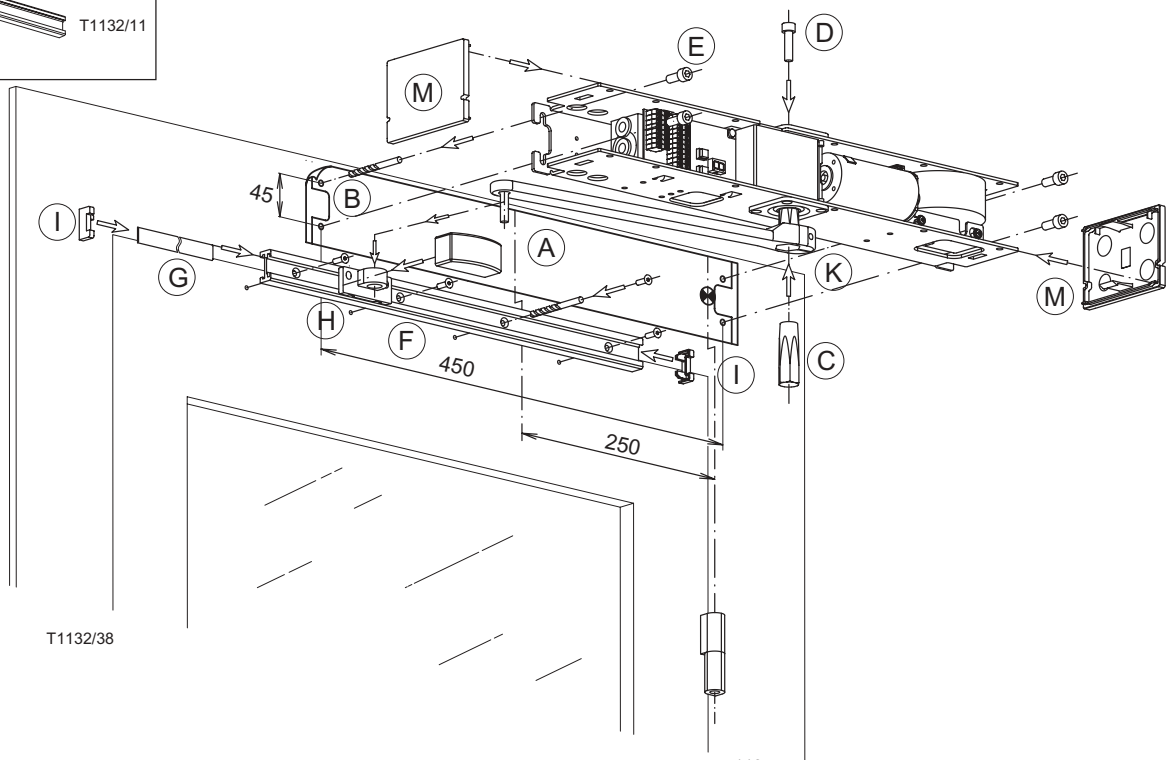


Y	Z	X	
0 – 10	33	–40…+107	+105…+252
0 – 70	93	–40…+107	+105…+252

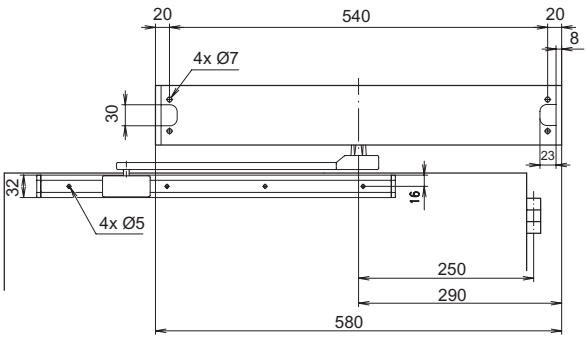
A) Glue on template
B) Drill holes
C) Attach cone, length according Y, surfaces parallel to side plates
D) Tighten hexagon-socket screw
E) Fasten operator
F) Fasten bearing trestle according to dimensional specifications on lintel
G) Attach connecting part at right-angle to the operator to cone (length in accordance with Y)
H) Interconnect bearing trestle and adjustment member
I) Adjust adjustment member at right-angle to the lintel and tighten screws
K) Interconnect connecting part and adjustment member
L) Fasten covers
M) Snap in side plates

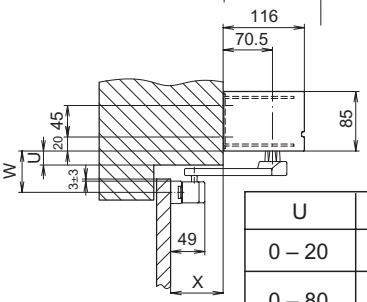
4.3 Sliding Lever ◆



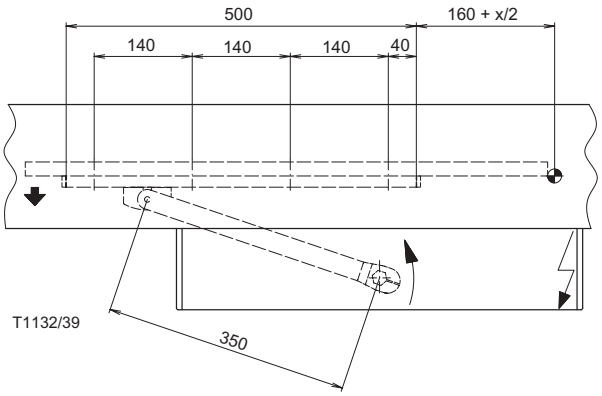


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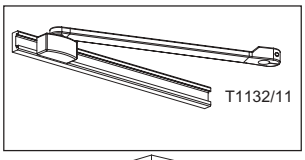
U	W	X
0 – 20	59 ± 3	0…+150
0 – 80	119 ± 3	0…+150

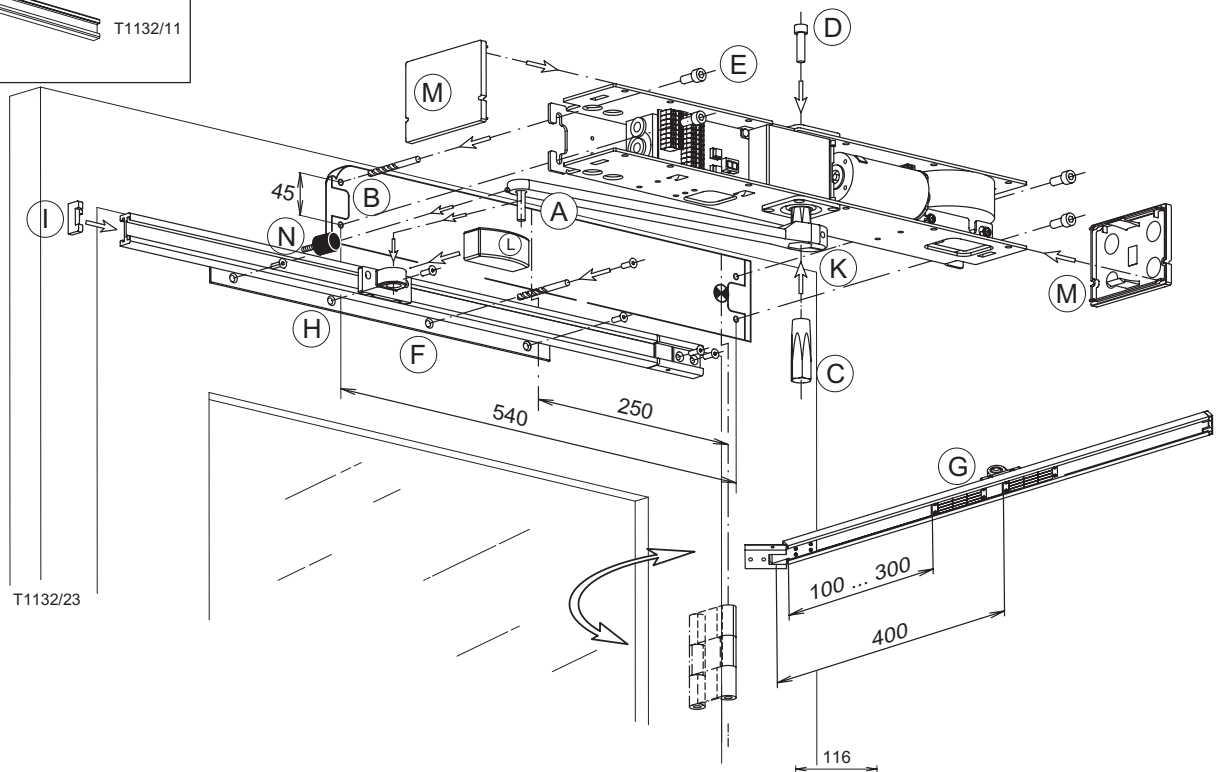


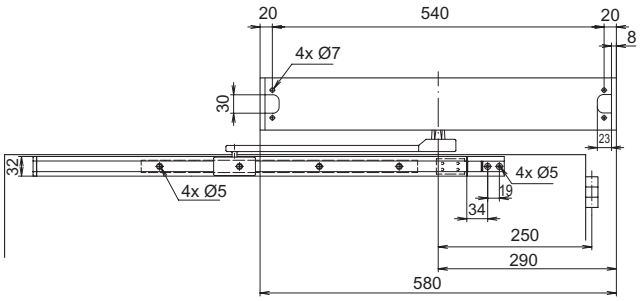
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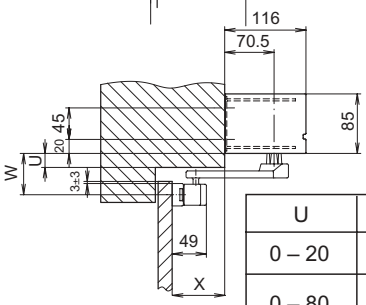
A) Glue on template
B) Drill holes
C) Attach cone (length according Y)
D) Tighten hexagon-socket screw in a way that the cone can be turned by hand
E) Fasten operator
F) Fasten sliding rail according to dimensional specifications on door leaf
G) Insert cover profile
H) insert bearing trestle into sliding rail
I) Mount side covers of sliding rail
Connect to mains,
Trigger factory reset, (see paragraph 7.3 programmimg table)
Choose operating mode OPEN (with operating mode switch ◆ or by connecting terminals no 2 and 3)
axis will turn 20°
K) Slide connecting part over cone and push up to the operator
insert other end completely into bearing threstle, tighten cone Konus (hexagon-socket screw) and connecting part
L) Fasten covers
M) Snap in side plates

4.4 Panic Fitting ◆

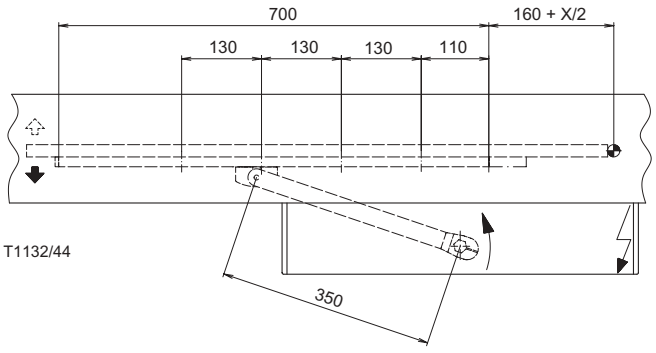








U	W	X
0 – 20	59 ± 3	0...+150
0 – 80	119 ± 3	0...+150

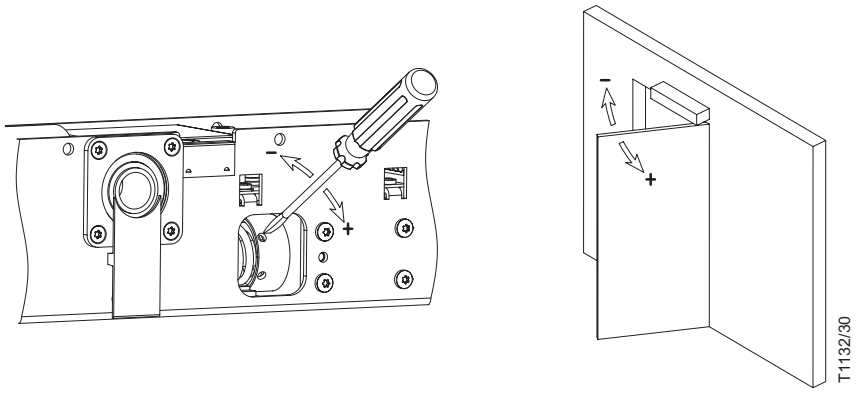


A) Glue on template
B) Drill holes
C) Attach cone (length according Y)
D) Tighten hexagon-socket screw in a way that the cone can be turned by hand
E) Fasten operator
F) Fasten hinge of panic fitting and holding plate according to dimensional specifications on door leaf
G) Adjust the desired holding force of the magnet by sliding it in the rail.

H) insert bearing trestle into sliding rail
I) Mount side covers of sliding rail
Connect to mains,
Trigger factory reset, (see paragraph 7.3 programmimg table)
Choose operating mode OPEN (only with operating mode switch ◆ or by connecting terminals no 2 and 3)
axis will turn 20°
K) Slide connecting part over cone and push up to the operator
insert other end completely into bearing threstle, tighten cone (hexagon-socket screw) and connecting part
L) Fasten cover
M) Snap in side plates
N) Fasten rubber stop on the lintel, so that the connecting part will rest on it, when triggering the panic fitting.

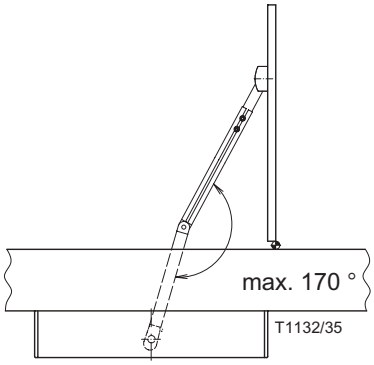
5 Mechanical Adjustments

The internal OPEN end-stop is only to be used as a safety device (e.g. wind load, manual operation). In automatic operation it must not be hit!



- Open the door to the greatest possible opening width and secure it.
- Adjust the OPEN end-stop.

The door should only be opened so far that the standard linkage cannot tip over and the sliding lever does not leave the rail.

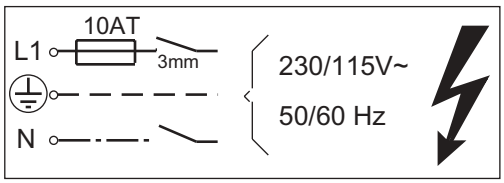


Door in open position at the end stop (internal OPEN end-stop or door stopper).

6 Electrical Connections

Observe wiring diagram T-1135 e for lintel mounting and T-1154 e for door-leaf mounting!

A system switch must be mounted on site.



T1132/1

Mains Connection

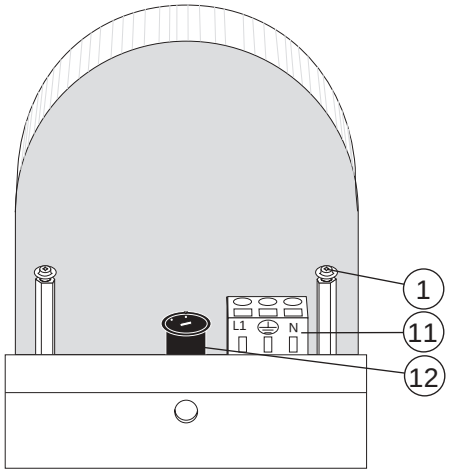
Before beginning the work described here check that the mains supply is switched off.

If possible, route the mains connection along the side of the power supply to the operator.

The connecting cables must be of the type “PVC cable H05VV-F” or “rubber hose cable H05RR-F”.

Round the edges and remove burrs from all conduits used for the mains connection.

- Remove mains supply cover (1).
- Connect the mains cable to terminal (11) in accordance with figure.
- Route the mains cable either through the prepared holes of the side cover or through the slots in the mounting plate.
- Use only cable bushings made from synthetic materials. Metallic bushings are to be earthed.
- Check correct adjustment of the voltage selector (12) and reinstall the mains supply cover (1).
- Secure mains cable with a cable strap at the plastic nub (17) and at the supporting metal sheet.



T1132/34

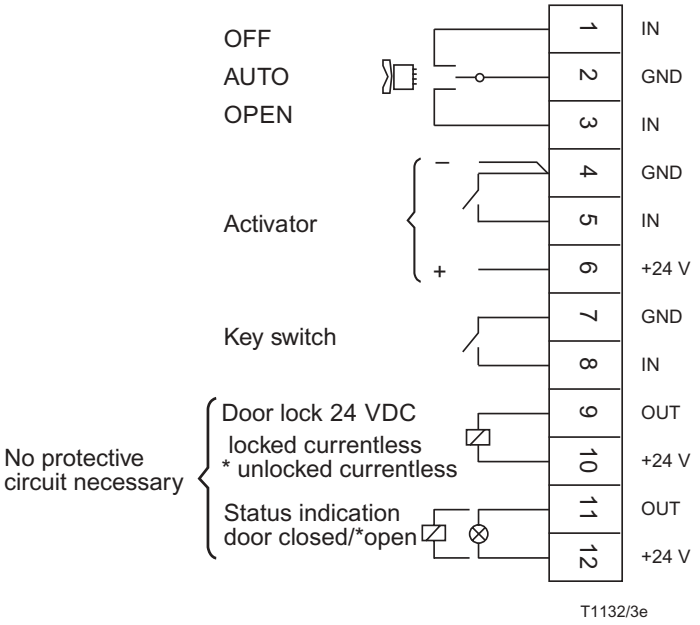
Emergency-off Switch ◆

- Mount the emergency-off switch in accordance with the contract order and route the mains connection via emergency-off switch.

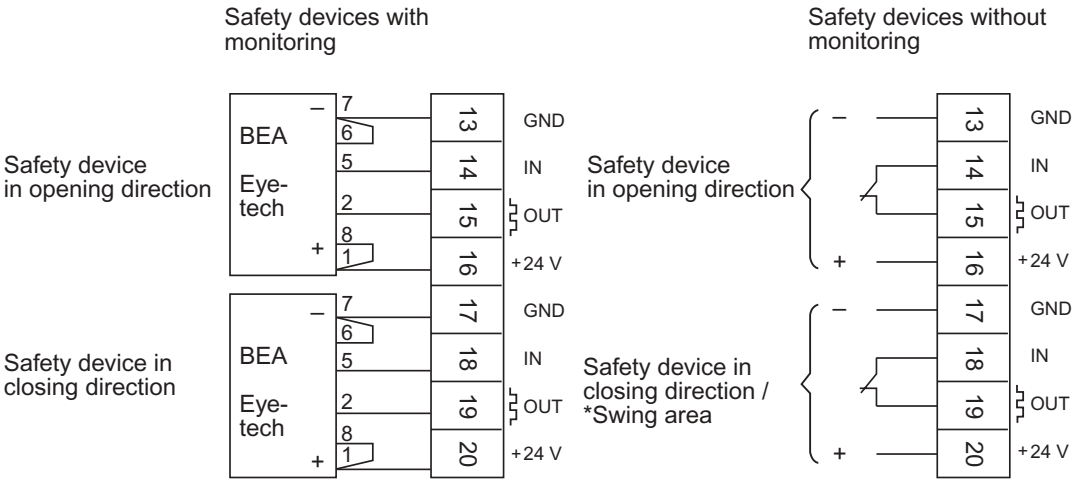
Activator and Safety Facilities ◆

- Mount in accordance with contract order
- Connect in accordance with connection diagram and the manufacturer’s specification
- Adjust the detection field/sensitivity and action radius according to the requirements and the surroundings of the system.

Terminal Connections



T1132/3e

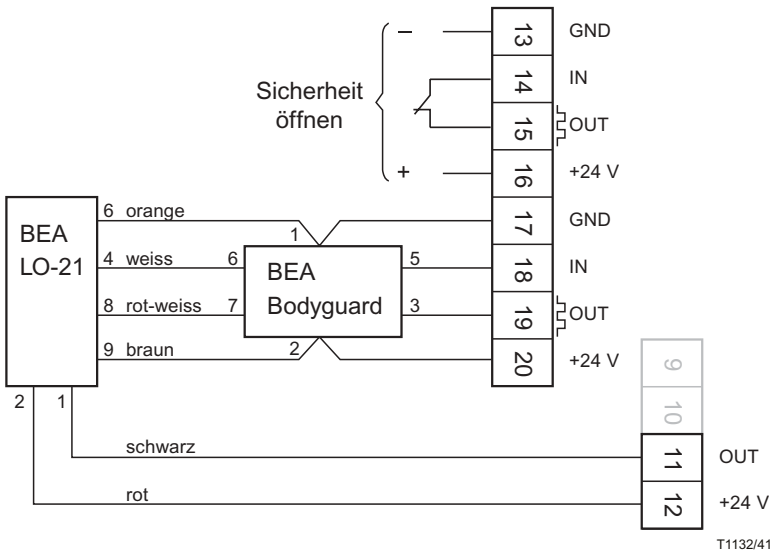


T1132/6e

Legend:

*	programmable
+24 V	24 VDC (21 … 24 VDC)
IN	Input 24 VDC / 3 mA
OUT	Output NPN integrated protective diode

Safety Device
BEA Bodyguard





Do not connect safety devices with monitoring and without monitoring in combination.



Overall, the 24 V power supply may be loaded with max. 0.75 A, on overload the point LED goes out.

7 Commissioning of the Automatic System

Prerequisite

- The sensors, safety facilities and operating devices are professionally installed, connected and preset.
- The operator is mounted professionally and the linkage is attached.
- The linkage and the internal end stop are adjusted and coordinated.
- The mains cable is expertly laid and connected.
- The system is switched on and is in operating mode AUTO.
- The point LED at the digital display is illuminated.



7.1 Commissioning with “Teach-In General”

During commissioning and in particular during “Teach-In” no people or items may be present in the swing area of the door!

1. Push simultuaneosly the yellow and the blue key → programming mode is active. (No number is visible on the digital display yet).
2. Press yellow key once → display 0 is illuminated for max. 5 s.
   (function “Teach-In” is now selected)
3. Press blue key once → display 0 flashes
   (**“**Teach-In General**”** is now ready for execution)
4. Open the door by hand with the desired speed, keep it open as long as desired and close it with the desired speed (the speeds are limited upward by the motor and the spring force).
5. Open the door by way of the activator → the operator now opens the door and reproduces the manually performed operational sequence for opening and displays the sequence with the numbers 1 to 3 on the digital display.
   During this sample opening sequence, the safety device in opening direction is disabled automatically starting from the door position from where it responds. The detection of the wall is thereby ignored for all following door openings.
   “Teach In” is finished on completion of this test run. The learned values are now stored. The function is departed automatically.
6. Check the safety facilities in opening and closing direction to find out whether they react to a test object in the given swing area (see operating instructions T-1134 section 4.2).
   Attention: Changing the position of the linkage requires a new Teach-In.

7.2 Programming Procedure

(See table in section 7.4)

Smart Drive 1101 possesses many useful features and parameters. These can be programmed through 2 keys and a digital display as follows:

- Push simultuaneosly the yellow and the blue key → programming mode is active. (No number is visible on the digital display yet).
- Select the desired function (1st number) with the yellow key.
- Press the blue key for confirmation of your choice.
  → 2nd number (parameter) flashes.
- Modify the parameter with the yellow key as desired.
- For storage of the adjusted parameter, press the blue key again.

The procedure is thus complete and the 1st number (function) is displayed again.

If no action takes place for 5 s during programming, the procedure is aborted without effect. (Return to functions or leaving programming mode). Exceptions are the Teach-In functions (0), which can be cancelled by prssing the blue key, as long as the door has not been moved.
The input and outputs are inactive as long as the control system is in the programming mode.

7.3 Programming Examples

Program the desired functions now in sequence in accordance with the programming table. The individual functions are described in section 7.4.

Check the programming options immediately after they are set!

Example 1

Changing the opening time delay to 1.2 s.

- Read values from the programming table.
- Push simultuaneosly the yellow and the blue key → programming mode is active. (No number is visible on the digital display yet).
- Press the yellow key several times until the number 3 appears on the display → Number 3 is lit (function)
- Press the blue key once for confirmation of the choice
  → Number 0, or the value programmed last, flashes (parameter)
- Press the yellow key several times until the number 3 appears
  → Number 3 flashes (parameter)
- Press the blue key once for storage of the adjusted value
  → Number 3 is lit (function)

Example 2

Examination of the last programmed value of the release angle for the function “Push and Go”.

- Push simultuaneosly the yellow and the blue key → programming mode is active. (No number is visible on the digital display yet).
- Press the yellow key several times until the number 1 appears on the display → Number 1 is lit (function)
- Press the blue key once for confirmation of the choice
  → The last programmed value is now displayed and is flashing

The value associated with the displayed number can be inferred from the programming table.

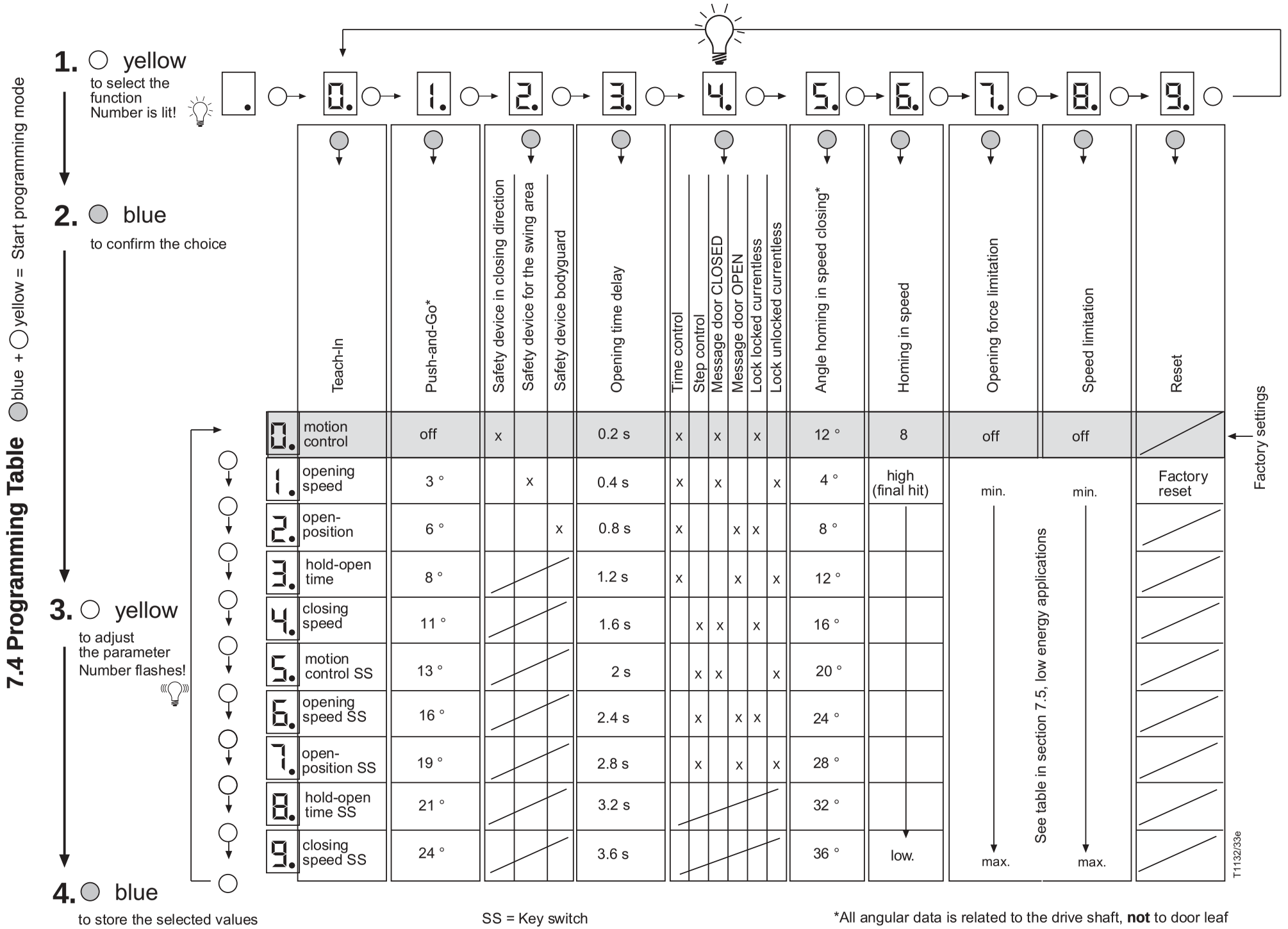
- Wait 5 s
  → The LED shows no 1 lit
- Wait 5 s
  → The point LED is lit
  (programming was aborted automatically without any changes)

Example 3

Factory reset

- Push simultuaneosly the yellow and the blue key → programming mode is active. (No number is visible on the digital display yet).
- Press the yellow key several times until the number 9 appears on the display → Number 9 is lit (function)
- Press the blue key once for confirmation of the choice
  → Number 0 flashes (parameter)
- Press the yellow key once
  → Number 1 flashes (parameter)
- Press the blue key once to execute the factory reset
  → The point LED is lit

7.4 Programming Table



	Teach-In	Push-and-Go*	Safety device in closing direction	Safety device for the swing area	Safety device bodyguard	Opening time delay	Time control	Step control	Message door CLOSED	Message door OPEN	Lock locked currentless	Lock unlocked currentless	Angle homing in speed closing*	Homing in speed	Opening force limitation	Speed limitation	Reset
0.	motion control	off	x			0.2 s	x		x		x		12 °	8	off	off	
1.	opening speed	3 °		x		0.4 s	x		x			x	4 °	high (final hit)	min.	min.	Factory reset
2.	open-position	6 °			x	0.8 s	x			x	x		8 °				
3.	hold-open time	8 °				1.2 s	x			x		x	12 °				
4.	closing speed	11 °				1.6 s		x	x		x		16 °				
5.	motion control SS	13 °				2 s		x	x			x	20 °				
6.	opening speed SS	16 °				2.4 s		x		x	x		24 °				
7.	open-position SS	19 °				2.8 s		x		x		x	28 °				
8.	hold-open time SS	21 °				3.2 s							32 °				
9.	closing speed SS	24 °				3.6 s							36 °	low.	max.	max.	

SS = Key switch

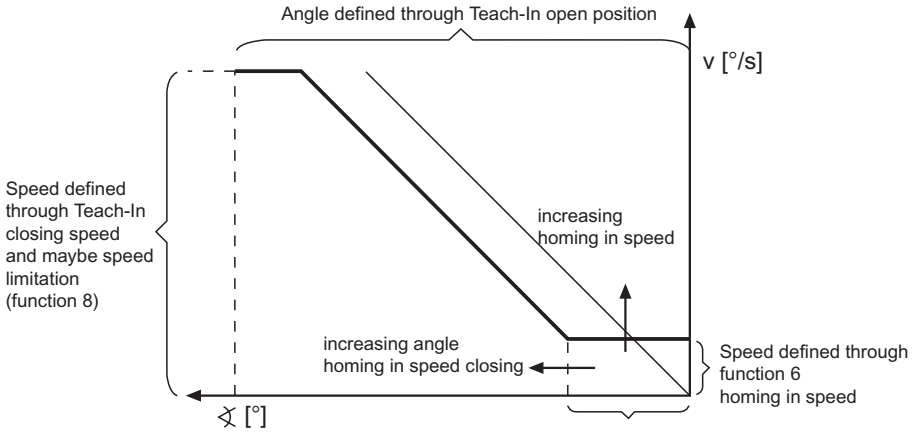
*All angular data is related to the drive shaft, **not** to door leaf

7.4.1 Programmable Functions

Function		Parameter	Description of Function
0	**Teach-In General**	0	Automatic teaching procedure for adjustment of the operational behaviour: **Opening and closing speed, open position, hold-open time, disabling angle for safety device in opening direction** The behaviour applies to opening through **activators, key switches** and **Push-and-Go**. The fitter must carry out **Teach-In General** for each system!
		1	Only the **opening speed** of **Teach-In General** is changed.
		2	Only the **open position** of **Teach-In General** is changed. **Caution:** The disabling angle for the safety facility in opening direction is thereby possiblyregistered anew. The disabling angle applies to all opening motions.
		3	Only the **hold-open time** of **Teach-In General** is changed (max. 100 minutes).
		4	Only the **closing speed** of **Teach-In General** is changed.
0	**Teach-In key switch**	5	Optional automatic teaching procedure for establishing another operational behaviour during opening with the key switch (terminal 7–8): **Opening and closing speed, open position, hold-open time.** **Caution:** The disabling angle for the safety facility in opening direction is thereby possiblyregistered anew. The disabling angle applies to all opening motions.
		6	Only the **opening speed** of the **Teach-In key switch** is changed
		7	Only the **open position** of the **Teach-In key switch** is changed **Caution:** The disabling angle for the safety facility in opening direction is thereby possiblyregistered anew. The disabling angle applies to all opening motions.
		8	Only the **hold-open time** of the **Teach-In key switch** is changed (max. 100 minutes)
		9	Only the **closing speed** of the **Teach-In key switch** is changed
1	**Push-and-Go**	0	**Push-and-Go** is switched off (standard). No motor-driven opening takes place on an attempt to open the door manually. The door closes in a controlled manner as soon as it is released.
		1...9	**Push-and-Go** is switched on. The door opens automatically in accordance with "**Teach-In General**" on an attempt to open the door manually. The release angle for **Push and Go** is adjustable from 3 ° to 24 °, measured at the shaft of the drive unit.
2	**Safety devices**	0	**Safety device in closing direction** (e.g. for the safety sensor riding along on the door) is activated (standard)
		1	The **safety device for the swing area** (e.g. for safety mat) is activated.
		2	The **safety device Bodyguard** is activated.
3	**Opening time delay**	1 ... 9	After an opening command, the **door lock** is unlocked immediately. The motor is only started on completion of the **opening time delay** so that the door has sufficient time to unlock. The **opening time delay** is adjustable from 0.2 to 3.6 s.
4	**Special functions**	0...7	In this adjustment menu, 3 different functions can be selected in combination according to the specifications in the programming table: 1. Sequencing according to **time** or **step control** **2. Door lock** current-free unlocked or current-free locked **3. Feedback of door state**: "door closed" or "door open"
5	**Angle homing in speed closing**	1...9	The **angle homing in speed closing** of the door on closing can be adjusted between 4 ° and 36 °. From this position onward, the adjustable damping becomes effective. (0 = standard value 12 °)
6	**Homing in Speed**	1...9	The **homing in speed closing** is effective from **angle homing in speed closing** and is thus dependent on this setting. The **homing in speed** can be adjusted between a minimum, e.g. end stop for **door lock**, and maximum homing in speed for softly driving to the final position. (0 = standard value with medium homing in speed)
7	**Opening force limitation**	0...9	For the deployment as low energy operator, the maximally possible opening force must not be used. The opening force, given by the motor current, can be limited with this setting in accordance with the table in section 7.4. (0 = standard value without force limitation)
8	**Speed limitation**	0...9	For the deployment as a low energy operator, the **opening and closing speeds** must be limited so that the actual opening and closing times will not be shorter than the requested values specified in the standards. With this setting, the speed obtained through **Teach-In General**"and **Teach-In key switch** can be limited upward in accordance with the table in section 7.4 (0 = standard value without speed limitation)
9	**Reset**	1	With the factory reset, all programming changes made are reset to the default values specified at the factory. The system must be re-commissioned in accordance with section 7.1, Commissioning With **Teach-In General**.

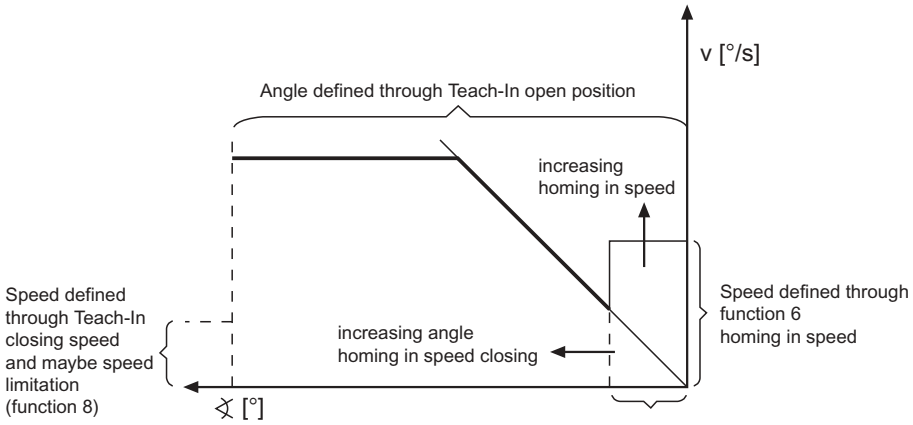
7.4.2 Effect of Homing in Speed and Angle for Homing in Speed Closing

a) Closing Speed higher than Homing in Speed



T1132/42e

b) Closing Speed lower than Homing in Speed



T1132/43e

7.5 Low Energy Applications

With the operator Smart Drive 1101, door systems can be built that comply with the standards prEN12650 in Europe or ANSI A156.19 in the USA regarding low energy requirements. In order to comply with these standards, among other things, certain adjustments on the control system are necessary.

This concerns the settings:

– Angle homing in speed closing

– homing in speed

– Opening force limitation

– Speed limitation,

i.e. the function 5–8 in the programming table.

With correct adjustments it is achieved that:

– The maximally attained energy of the door will not exceed 1.6 J,

– The required static force to prevent a door from motion will never be higher than 67 N (measured 25 mm from the closing edge)

– The door will move through the final 10 degrees of the closing motion in not less than 1.5 s.

Adjustments for Angle homing in speed closing (function 5) and homing in speed (function 6)

Standard Linkage	Sliding Lever
5 / 9	5 / 5
6 / 7	6 / 8

Opening force limitation (function 7) and speed limitation (function 8) for standard linkage (SL) and sliding lever (GH)

Door Leaf Width [mm]	Door Leaf Weight [kg]									
	50		60		70		80		90	
	SL	GH	SL	GH	SL	GH	SL	GH	SL	GH
750	7* / 9	7 / 0	7* / 9	7 / 0	7* / 9	7 / 0	7* / 9	7 / 0	7* / 9	7 / 0
	8 / 2	8 / 5	8 / 3	8 / 6	8 / 3	8 / 7	8 / 4	8 / 7	8 / 4	8 / 7
850	7* / 8	7 / 0	7* / 8	7 / 0	7* / 8	7 / 0	7* / 8	7 / 0	7* / 8	7 / 0
	8 / 3	8 / 6	8 / 3	8 / 7	8 / 4	8 / 7	8 / 5	8 / 8	8 / 5	8 / 8
1000	7* / 7	7 / 0	7* / 7	7 / 0	7* / 7	7 / 0	7* / 7	7 / 0	7* / 7	7 / 0
	8 / 4	8 / 7	8 / 5	8 / 8	8 / 6	8 / 8	8 / 6	8 / 8	8 / 7	8 / 9
1250	7* / 5	7 / 0	7* / 5	7 / 0	7* / 5	7 / 0	7* / 5	7 / 0	7* / 5	7 / 0
	8 / 6	8 / 8	8 / 7	8 / 9	8 / 7	8 / 9	8 / 8	8 / 9	8 / 8	8 / 9

* Since conditions of friction of different systems are very much scattered, the fitter must check the actually achieved force at the door edge. Usually, the opening force limitation can be set to a lower value than the value indicated in the table.

8 Trouble Shooting

Fault pattern	Cause
Door doesn't open	– Emergency off is pressed (→ point LED on the display is not lit anymore) – Safety device in opening direction is active or the cable is interrupted or jumper 14-15 is missing – The safety device for the swing area is active or the cable is interrupted or jumper 18–19 is missing – Operating mode OFF is active or the cable on 1 is short circuited against GND. – Mains supply is interrupted (→point LED on the display is not lit anymore) – Power supply 24 V is overloaded (→point LED on the display is not lit anymore) – Thermal motor protection was triggered (→point LED on the display is not lit anymore) – Thermal protection transformer was triggered (→point LED on the display is not lit anymore) – Door lock is blocked – Door lock or the cable is defective – Door lock is incorrectly programmed (function 4 current-free locked / current-free unlocked) – Lock delay is set too briefly (function 3) – Opening force is limited too much (function 7) or is inadequate for a door that is difficult to operate – Teach-In has not been carried out (factory reset!)
Door opens not completely	– Opening force is too strongly limited (function 7) or is inadequate for a door that is difficult to operate – The safety device in opening direction is triggered during the opening motion (disabling of "Teach-In General" or "Teach-In Key Switch"). – "Teach-In General" was not performed – Open position was set according to "Teach-In" – Internal open end-stop does not permit a larger opening – Irregularity in the opening-versus-force dependency or wind load
Door opens varyingly	– Varying preconditions through "Teach-In General" and "Teach-In Key Switch" – Irregularity in the opening-versus-force dependency or wind load
Door remains open	– Activator has maintained contact or the cable on 5 is short circuited against GND – Operating mode OPEN is active or cable on 3 is short circuited against GND – The safety device in closing direction is active or the cable is interrupted or jumper 18–19 is missing – The safety device for the swing area is active or the cable is interrupted or jumper 18–19 is missing
Door does not remain open in operating mode OPEN	– End stop incorrectly adjusted – Wind load or door is not in the plumb bob – Motor thermal protection triggered (temporarily only manual operation possible)
The safety device in opening direction does not react	– The safety device in opening direction was active during "Teach-In General" or "Teach-In Key Switch" – Short circuit in the cable to the safety sensor
Point LED goes out temporarily	– Temporary overload >0.75 A at the 24 VDC power supply. Power demand rises over 18 W, in particular when operating the door lock or the signal lamp (cold start)
Door slams shut	– Start of damping too late or damping inadequate. – Differential pressure in the building – Operator defective (position sensor, motor)
Irregular motion	– Operator defective (position sensor, control system, motor)

9 Check List

After completion of installation and commissioning of the system, the following points are to be checked before handing the system over to the system operator:

Drive Unit

- ❑ All screws tightened and secured
- ❑ Cable expertly routed, no brushing against moving parts
- ❑ Strain relief mounted for the mains cable
- ❑ OPEN end-stop correctly adjusted.

Safety Regulations

The door system must correspond to the valid, state-specific regulations.

- ❑ Dangerous jamming, wedging and shearing positions safeguarded or eliminated
- ❑ Safety facilities ◆ checked
- ❑ Adjusted door speed permissible
- ❑ Emergency-off switch ◆ checked

Activators ◆

- ❑ Size of the detection field reasonably adjusted
- ❑ Action radius adequate
- ❑ The activators ◆ cannot be evaded by under-creeping
- ❑ Lateral sneaking up to the door not possible without detection
- ❑ Auxiliary activators (key switch ◆ etc..) are functioning

Functions

- ❑ The desired operating modes can be selected with the operating mode selector ◆
- ❑ Speeds and homing in speed are tuned
- ❑ Customer requests in accordance with contract order sheet checked
- ❑ Operation on power failure/power recovery checked

General Appearance

- ❑ Colour damages repaired, system cleaned
- ❑ Electrical cabling carried out professionally
- ❑ No abnormal noises
- ❑ Good motion control
- ❑ System labelled
  (Company name label with TORMAX support address)

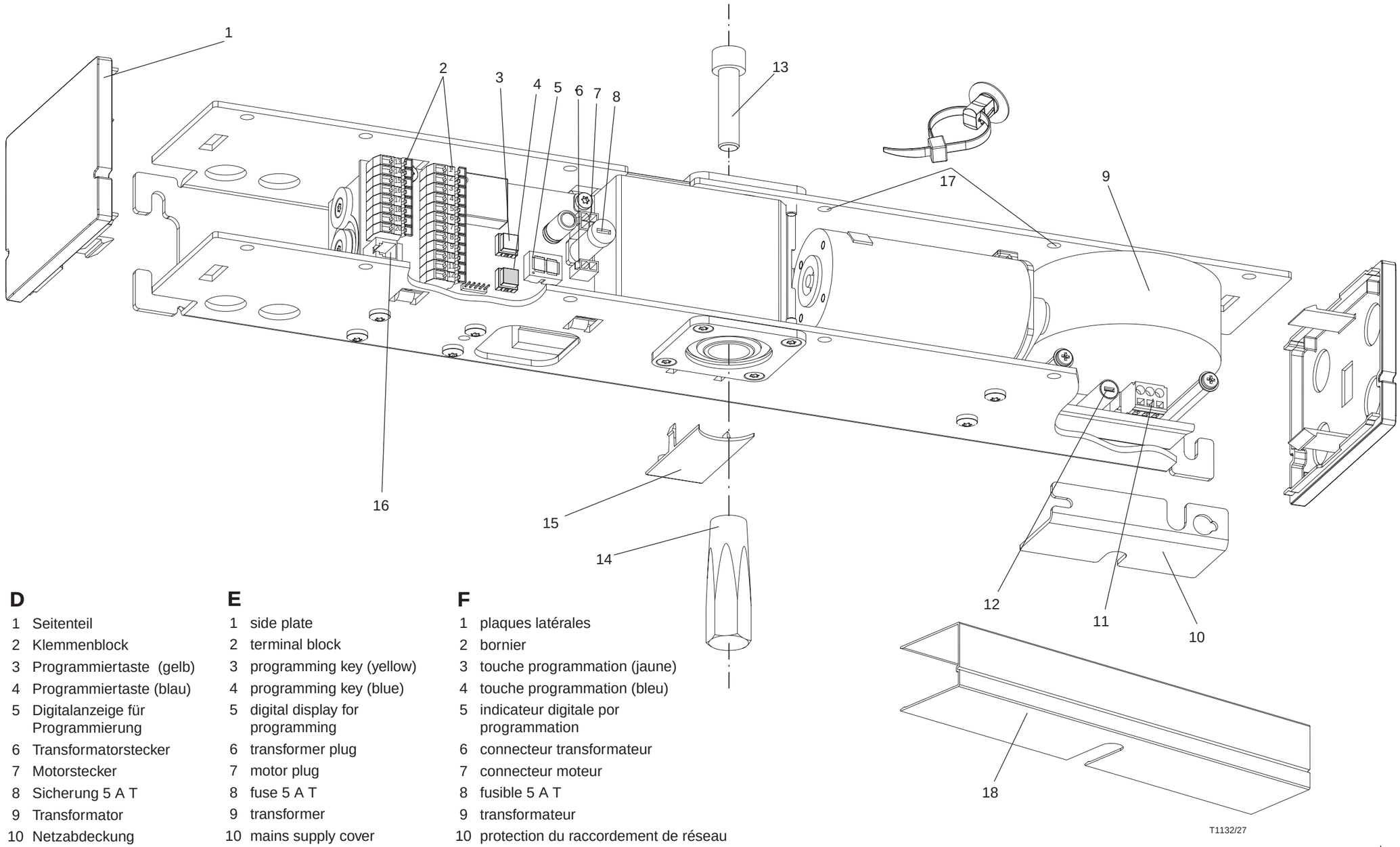
Acceptance Test

- ❑ System accepted in accordance with on site acceptance test

Handing-Over to the System Operator

- ❑ Operating instructions supplied
- ❑ Duty and operation of the system explained
- ❑ Conduct in case of trouble explained (including possible interventions)
- ❑ Informed the system operator of his obligations
  - Regular checks in accordance with the operating instructions
  - Annual service obligation through TORMAX dealer (in accordance with national regulations)
- ❑ Service contract offered

Subject to technical changes



D

1	Seitenteil
2	Klemmenblock
3	Programmiertaste (gelb)
4	Programmiertaste (blau)
5	Digitalanzeige für Programmierung
6	Transformatorstecker
7	Motorstecker
8	Sicherung 5 A T
9	Transformator
10	Netzabdeckung
11	Netzanschluss
12	Spannungswahlschalter
13	Innensechskantschraube
14	Konus
15	Netzabdeckung
16	RS232 Schnittstelle
17	Kunststofflaschen für Kabelbinder
18	Verschalung

E

1	side plate
2	terminal block
3	programming key (yellow)
4	programming key (blue)
5	digital display for programming
6	transformer plug
7	motor plug
8	fuse 5 A T
9	transformer
10	mains supply cover
11	mains supply
12	voltage selector
13	hexagon socket bolt
14	cone
15	cover
16	RS232 interface
17	plastic nobs for cable ties
18	casing

F

1	plaques latérales
2	bornier
3	touche programmation (jaune)
4	touche programmation (bleu)
5	indicateur digitale por programmation
6	connecteur transformateur
7	connecteur moteur
8	fusible 5 A T
9	transformateur
10	protection du raccordement de réseau
11	raccordement de réseau
12	sélecteur de tension
13	vis à tête cylindrique avec six pans creux
14	cône
15	recouvrement
16	RS232 interface
17	picots en plastique pour fixation câble
18	habillage

TORMAX AUTOMATIC

3.03

SWINGDOOR Smart Drive 1101

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AUTOMATIC

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