

Operating Instructions

for Automatic TORMAX Doors with Control System
TCP 51, TCP 51LC or TCP 101

Table of contents

1	Introduction	3
2	Safety	6
2.1	General Safety and Accident Prevention Regulations	6
2.2	Organizational Measures	7
2.3	Safety Devices	7
3	Operation	8
3.1	Commissioning	8
3.2	Normal Duty – Operation	8
3.3	Operation in Case of Mains Failure	10
3.4	Manual Operation and Software Reset	10
4	Control Panel Operation	11
4.1	Selecting Operating Modes	12
4.2	Optimizing the Course of Motion	13
4.3	Specifics of Operation	15
5	Maintenance	16
5.1	Periodic Maintenance	16
5.2	Inspections by the System Operator	17
6	Trouble Shooting	20
6.1	Fault Diagnosis Diagram 1	20
6.2	Fault Diagnosis Diagram 2	21
7	Additional Notes	23
7.1	Technical Data	23
7.2	Warranty	23
7.3	Options	23
7.4	Disposal	23

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1 Introduction

Addressee/Status

The following instructions are directed at the system operator and user of an automatic TORMAX door system. It is assumed that the system was installed and tested by professional persons, i.e. it is ready for operation.

Applicability

This document has validity for automatic TORMAX door systems with TCP control systems of types TCP 51, TCP 51LC or TCP 101. This concerns to the following door systems:

with control system TCP 51: Drive TEP, Drive TEP.IP65
Drive TKP, Drive TSP, Drive TOP

with control system TCP 51LC: Drive TLP

with control system TCP 101: Drive TXP



Explanation of Symbols

In these instructions, we have designated all passages concerning your safety with this symbol.



This symbol warns of electrical voltage.

Text passages in grey background must be absolutely observed for sound operation of the system! Disregard may cause material damage.



Operating functions that are marked by the accompanying symbol correspond to the basic settings; however, the fitter can reprogram them.



This symbol marks optional components, which are not **installed in all systems**.

Languages

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

Applicable Documents

Please refer also to the system test book which contains a list of checks that need to be performed during the periodic maintenance (see also section 5.1). The system test book is located at the corresponding door system.

System test: T-879 e

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.

Correct Application

The TORMAX operator has been designed and manufactured according to the state-of-the-art engineering and the recognized safety related regulations and is intended exclusively for the operation of automatic TORMAX doors. Operators corresponding to IP 22 in the protective system may only be installed at the inside of buildings if no additional protective measures are provided.

Any other use is considered non-permissible and may result in injuries to the user or third parties. The manufacturer will not be liable for damages resulting from incorrect application. The risk of such non-permissible applications must be borne solely and entirely by the operator of the door system.

Basic Precautionary Measures-Careful Behaviour

Do not use the system in other than technically perfect condition. Make sure that faults which could impair safety are eliminated immediately by professionals.

The following are consequences of incorrect application of the door operator or the door system:

- Danger of the user's or a third party's injury or loss of life.
- Risk of damage to the system or associated equipment.

Relevant Instructions

The operating service and maintenance conditions specified by the manufacturer are to be observed. TORMAX drive units must only be maintained and repaired by trained specialists who are aware of any possible danger that may occur.

In addition to the operating instructions, the generally accepted legal and otherwise relevant rules relating to accident prevention and to occupational medicine-in the country where the door system is installed-are also applicable.

The manufacturer is exempted from any liability for damages caused by unauthorized alterations of the system.

Electronic Reversing

During the opening and closing actions, the door movements are monitored by a sensitive electronic circuit.

Function



If the door hits an obstacle during closing then it reopens, remains open somewhat longer, and closes again with reduced speed.

If the door hits an obstacle during opening, it reverses and runs in closing direction for a few cm, stops for a while and closes with reduced speed. The door will open if an activator is in operation.

Emergency-Off Function ♦

(installation according to local regulations)

Function



The activation of the emergency-off button causes an immediate stop of the door. The door leaf can then be moved manually; at the control panel fault code 10 is indicated (see section 6.2) until the emergency-off push-button is reset and the operating mode OFF is selected.

Emergency Opening/Emergency Closing ♦

Function

By means of the rubber spring-installed into the operator-opening (emergency opening) or closing of the door leaves (emergency closing) on mains failure are ensured.

2 Safety

2.1 General Safety and Accident Prevention Regulations



Please read the operating instructions carefully prior to installation or commissioning—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)!

TEP, TLP and TSP Sliding Door Operators with UL/cUL Certificate

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.

2.2 Organizational Measures

Doors are to be operated and maintained in such a way that the safety of the user, maintenance personnel or third party is guaranteed at all times.



Should any fault occur on the safety-devices (i.e. safety beams), they may not be bypassed to maintain the automatic door functions.

Working on TORMAX Door Systems

The person operating, checking or maintaining door systems must have the relevant operating instructions present.

Personnel charged with duties on the door system must have read and understood the operating instructions prior to performing any work.

Mechanical and electrical work on the door system and the control system may only be performed by our trained specialists or by fitters after consulting our trained specialists.

All other persons are prohibited from performing any repairs or alterations on the system.

Labels

Notices on doors and control devices must be easily legible, clearly understandable and of durable quality.

If instructions are necessary for assuring the safety of people (marking of escape routes) and for servicing, these instructions must be provided on the system.

2.3 Safety Devices

Self-Checking Safety Beams ♦, Light Scanners ♦



In accordance with an accomplished risk analysis, TORMAX allows for corresponding safety facilities in conjunction with the control system for this operator type for the protection of people and damage prevention to property. These facilities must correspond to the current state of technology and comply with the Machinery Directive 98/37/EC, the CEN and CENELEC standards as well as the corresponding state-specific regulations.

TORMAX allows for the installation of max. 2 self-monitoring light beams in the doorframe or 2 presence sensors for optimal safety.

Function



Every interruption of the light beam of a photocell or scanner causes the immediate termination of a closing action. If after 1 minute the light beam is still interrupted (for example on a fault) then the door continues to operate in a safety mode-that is with a slow closing speed.

3 Operation

3.1 Commissioning

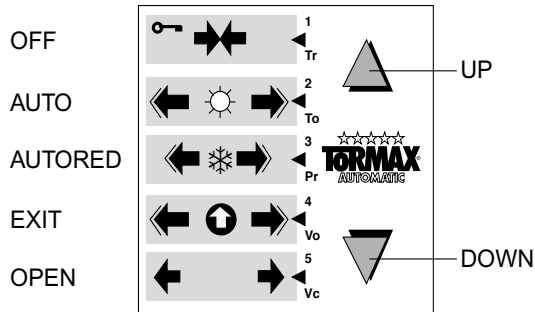
Switching On

- Switch on mains supply (mains plug or main system switch).
- At the control panel PANECO press key UP or DOWN to select the desired operating mode → the corresponding LED lights up.



If the door is locked or in the operating mode OFF, the door presses briefly against the close position.

In any other operating mode, the door performs a calibration run to find the end stops. The LED AUTO flashes during this process.



T-787/30e

Re-Commissioning

If the door has not been operated for a longer period, it must be checked prior to re-commissioning according to section 5.2 and repaired if necessary so that the safety of people is ensured at all times.

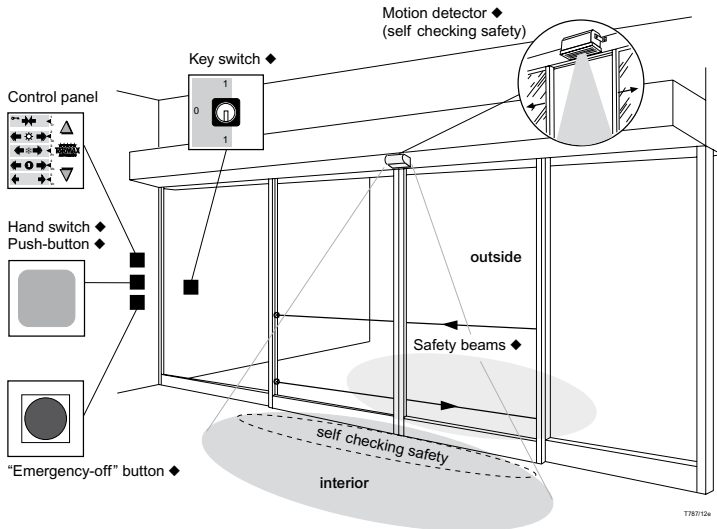
3.2 Normal Duty – Operation

The TORMAX door operator ensures the automatic opening and closing of the door. By selecting an operating mode at the control panel, the behaviour of the door can be affected by the system operator.

Activation

The activation of the door takes place through opening activators; automatically or manually:

- Automatically by means of sensors ◆, motion detectors ◆, contact mats ◆, etc.
- Manually by means of push-buttons ◆, key switches ◆, hand switches ◆, etc.



Normal Operating Mode AUTO

Function

If an opening activator is activated, the door opens, stops for the duration of the hold-open time and closes again.

If the motion detector, or a safety beam/scanner, recognizes a person while the door is open, it remains open. If a person moves within the range of the motion detector, in direction of the closing door, the door reopens immediately.



The door system may only be operated if all safety relevant devices (see section 2.3) are installed and functional!

Monitoring

The TORMAX TCP control systems supervise numerous functions of the door and display malfunctions on the control panel (see Fault Diagnosis Diagram in section 6.2).

Shutdown in Case of Fault

The door must be placed out of operation whenever malfunctions occur, that may influence the safety of people. Make sure that faults and deficiencies are eliminated at once.



Doors may be returned to service only after the malfunctions have been corrected (repaired) or the hazard eliminated (e.g. set operating mode to OPEN or separate operator from mains supply). The escape function of doors serving as emergency exits must not be impaired.

Damage

Components that no longer ensure the required safety standard due to wear or tear must be replaced or repaired by a qualified TORMAX dealer.

3.3 Operation in Case of Mains Failure

On mains failure, the door is brought to a halt by braking; afterwards the leaves can be moved manually.

Emergency Opening/Emergency Closing ◆

Opening (emergency opening) or closing (emergency closing) of the door leaves on mains failure are ensured by storing mechanical energy (rubber spring, installed into the drive unit).

Battery Module ◆

The emergency power supply permits continual operation of our automatic doors during a limited time. On power recovery, the system switches immediately back to mains operation and the batteries are recharged again. For more detailed information see Operating Instructions of your battery module.

3.4 Manual Operation and Software Reset

Manual Operation (Free Wheeling)

There are several feasibilities, if – by way of exception – the door should be moved manually:

- Press one of the keys UP or DOWN of the control panel for 10 seconds → the automatic operation is then switched off and the door can be moved freely; at the control panel fault code 43 is indicated (see section 6.2).

To put the door into operation again: press one of the keys UP or DOWN for 5 seconds.

or

- Activate «emergency off» ◆, → the door leaf can now be moved manually; at the control panel fault code 10 is indicated (see section 6.2).

To put the door into operation again: reset emergency-off button and select operation mode OFF.

or

- Disconnect mains plug → the door is brought to a halt by braking; afterwards the leaves can be moved manually.

Software Reset (Calibration Run)

Triggering a reset of the door control system:

- Press one of the keys UP or DOWN of the control panel for 5 seconds → the door executes a calibration run: the control system moves the door leaves slowly to open position to find the end stops; after the hold-open time has elapsed, the door closes again. During this procedure, the fault code 2 is indicated at the control panel (see section 6.2).

4 Control Panel Operation

The most important element for the system operator is the TORMAX control panel with the following options:

- Selection of operating mode (determines the behaviour of the door) → section 4.1
- Setting of parameters (optimizing the motion process) → section 4.2
- Code lock (control panel interlock) → section 4.3
- Manual operation (free wheeling) → section 3.4
- Reset (calibration run) → section 3.4
- Fault indication (flashing LED) → chapter 6

Some functions may be inhibited or limited due to door specific adjustments performed by the authorized technician.

Control Panel

Operating Mode

Door closed and locked

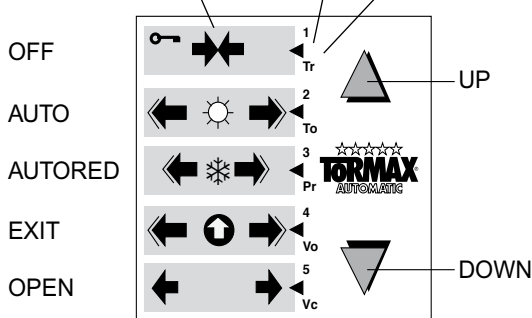
Automatic operation

Automatic operation with reduced opening width

Shop closing mode

Door remains open

Symbol for operating mode LED Door parameter



T-787/30e

Door Parameter

Tr Hold-open time with reduced opening width

To Hold-open time with full opening width

Pr Reduced opening width

Vo Opening speed

Vc Closing speed

4.1 Selecting Operating Modes

Setting Operating Mode

The continuously illuminated LED indicates the currently active operating mode.

- Press UP or DOWN key till desired operating mode is indicated on the panel.

An operating mode is only valid if the LED has been lit up for at least 1 second.

Operating Mode OFF Door closed and locked ♦

In the operating mode OFF the door is closed and cannot be opened by the opening activators-except by a key switch ♦. The door leaves are blocked and also locked if a lock is fitted.



The opening activators will immediately be deactivated if the operating mode OFF is selected while the door is still open. However, safety beams and light scanners remain functional which ensures that the door will not close if a person is within their range.

Operating Mode AUTO Automatic operation

AUTO is the main operating mode. Upon a door opening command the door opens automatically to full opening width, stays open until the hold-open time T_o has elapsed, and closes again.

Operating Mode AUTORED Automatic operation with reduced opening width

This mode is useful in winter to reduce loss of energy.

In operating mode AUTORED, upon a door opening command, the door opens automatically to a reduced opening width, stays open for the hold-open time T_r , and then closes again.



If a sensor detects a person approaching from the opposite direction during opening, the door opens a little wider to provide passing space for people cross traffic.

Operating Mode EXIT Shop closing mode



In this mode, the door opens only through the motion detectors fitted inside the building. However, as long as the door is not fully closed, the external motion detector causes also a reversal of the door movement. The opening width depends on the previously selected operating mode (AUTO or AUTORED).

Operating Mode OPEN Door remains open

The door opens immediately and stays open. The opening width depends on the previously selected operating mode (AUTO or AUTORED).

4.2 Optimizing the Course of Motion

Adjusting Parameters

The door parameters (and therefore the course of motion) is automatically set to default values when the system is commissioned. It can, however, at any time be adapted to individual requirements.

The parameters are shown on the control panel by letter pairs (Tr, To, Pr, Vo, Vc). With each parameter – detailed description see later on – a specific door behaviour can be optimized.

- Select parameter Tr, To, Pr, Vo or Vc to be adjusted by means of UP or DOWN key → corresponding LED lights up.
- Press both keys UP/DOWN simultaneously for one second → the LED flashes to indicate that the optimization can be performed.
- Adjust respective parameter by pressing the UP or the DOWN key once or several times.

If, for example, the movement is to be faster, the UP key is pressed. The flashing frequency, as well, changes accordingly.

- If no key is pressed within 60 seconds, the adjustment process is terminated automatically and the settings remain unchanged.
- To store the new parameter setting: press both keys UP/DOWN again simultaneously → now the LED is again continuously illuminated. The new setting is now in effect.



All other settings, e.g. acceleration and braking distances, are optimized by the microprocessor and may only be changed by authorized technicians.

Hold-Open Times To and Tr



The hold-open time is the time during which the door stays in the open position from the time the sensors no longer receive any signals.

To (Time open) Hold-open time with full opening width, active in operating mode AUTO

Tr (Time reduced) Hold-open time with reduced opening width, active in operating mode AUTORED

The hold-open time is to be set so that even slower users have enough time to pass through the door. On the other hand, the hold-open time is to be kept short in order to minimize energy loss in winter.

Significance of Indications:

UP key:

faster flashing → shorter hold-open time

DOWN key:

slower flashing → longer hold-open time



Limit Values:

minimum: 0 sec.

maximum: 10 sec.

Reduced Opening Width Pr

Pr (Position reduced) Position of the open door with reduced opening width, operating mode AUTORED.



If energy loss is to be minimized in winter or if for other reasons a reduced opening width is desired, it is infinitely variable between a minimum of 20 cm per leaf and the full opening width.

Significance of Indications:

UP key: faster flashing → smaller opening width

DOWN key: slower flashing → wider opening width

If the operating mode AUTORED is set before the optimization of the reduced opening width, the door leaves move to the desired opening width simultaneously with the variation in the rhythm of flashing.

Speeds Vo and Vc

Vo (Velocity open) Opening speed

Vc (Velocity close) Closing speed



Normally, a high opening speed is desired to avoid slowing down the flow of people. Depending on the weight of the door, a reduced speed is necessary in the closing direction (the regulations in the relevant country must be observed) in order to minimise hazards to persons. If necessary, the speed is limited or the parameter is blocked by the installation engineer.

Significance of Indications:

UP key: faster flashing → higher speed

DOWN key: slower flashing → lower speed



Limit Values:		Speed per leaf (cm/sec.)			
		TEP, TLP TSP, TKP	TXP	TRI/A	TOP
Opening	Minimum	30 30	30	30	
	Maximum	80 80	80	70	
Closing	Minimum	20 20	20	20	
	Maximum	50 50	50	50	

4.3 Specifics of Operation

Code Lock

The control panel can be protected against unauthorized manipulation by means of a code lock.

Changing Operating Mode or a Parameter Setting When Code Lock is Active



- Enter code preprogrammed by the authorized technician.

This may be the standard code; 3 x UP, 3 x DOWN, 3 x UP or a user-specific code.

- Immediately adjust desired settings.

This is only possible during a limited period of time; after this time has elapsed, the LEDs are automatically switched off and the control panel is interlocked again.

Skipping Operating Modes

The desired mode is selected by pressing the UP or DOWN key once or multiple times. The respective LED lights up immediately—the operating mode, however, becomes active only after one second. Thus, by pressing the key rapidly in succession, the undesired activation of an operating mode can be avoided.

Example 1

The AUTO mode has been selected. Now the door is to remain fully open:

- Press the DOWN key in brief succession 3 times → the door opens completely after approximately one second.

If, after pressing the DOWN key once, you wait longer than one second before pressing the key repeatedly until the OPEN mode is reached, then the AUTORED mode is activated during the interval and the door will stay open at reduced opening width.

Example 2

The OFF mode is active, and the door is closed. The closing speed is to be changed without opening the door.

- Press the DOWN key four times in rapid succession, and then immediately press both keys simultaneously for one second.
- Adjust closing speed as described in section 4.2.
- After the input, press both keys again for one second → now the LED OFF lights up again, indicating that the operating mode has not been changed during the adjustment process.

5 Maintenance



- The responsibilities of maintenance personnel must be clearly defined.
- Keep hands and other body parts away from moving devices.

Spare parts must comply with the technical requirements of the manufacturer. Use genuine spare parts exclusively.

5.1 Periodic Maintenance

Maintenance Interval

The maintenance interval is determined under consideration of the frequency of use of the system. However, checking and maintenance must be performed at least once a year by an authorized technician.

Requirements Concerning Maintenance Personnel

Authorized technicians are persons who have adequate knowledge in the discipline of power operated doors based on their vocational training and experience and who are acquainted with the relevant accident prevention regulations, guidelines and generally recognized rules of that technology to such an extent that they can appraise the safe working condition of power operated doors. These persons include for example authorized technicians of the manufacturing or supplying company and experienced technicians of the system operator.

Authorized technicians have to submit their expertise objectively from the point of view of accident prevention and not influenced by other, e.g. financial, perspectives.

Maintenance work on electrical parts and cables must be performed by an electrical fitter who must work in accordance with the relevant regulations.



For all work, a clear separation must be created between mains supply and drive system; either by unplugging the mains plug or through securing the main system switch in position off.

Extent of Maintenance Work

The extent of maintenance work is shown in the System Test Book.

The inspection results are to be entered in the System Test Book by the authorized technician together with date and signature.

5.2 Inspections by the System Operator

Extent of Inspections

The inspection must be performed periodically, but not less than once every 3 months. The system operator of an automatic door has to periodically check the functioning of the automatic door and the safety devices. Thus, an early recognition of functional faults, or of mutations to the system that diminish safety, is ensured.



If deficiencies are found during the periodic checks, ensure that these are repaired immediately by an authorized TORMAX dealer (address see at back of these instructions).



When performing these inspections, consider always the possibility of a malfunction of the system. No parts of the body may be used for functional checks if there is not enough free space available; instead use as a substitute a suitable object from wood, rubber or similar material.

The maintenance work to be performed by the system operator requires only a minimum of time but is essential for the safe and faultless functioning of the system. This work include:

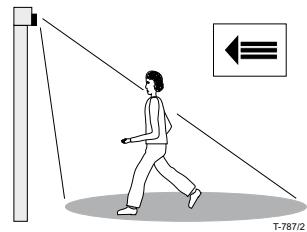
Checking the Opening Activators

- Select operating mode AUTO.

Automatically Operated Opening Activators (Radar or Infrared Motion Detector ♦, Contact Mats ♦ etc.)

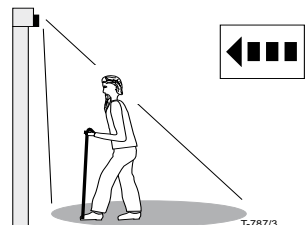
Check:

- Passing through the door in a normal manner:
→ The door opens and recloses when the set hold-open time has elapsed.



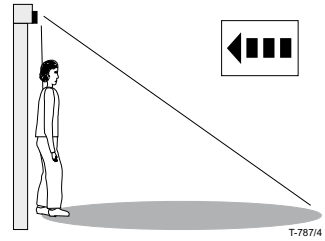
Check:

- Slow approach (appropriate to an elderly person), pause for around 5 sec. before reaching the door:
→ Normal opening of the door. The door must not close too early.



Check:

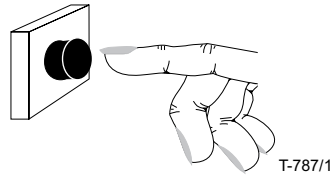
- Approach the door slowly side-ways along the door leaves:
→ The door must open.



Manually Operated Opening Activators (Push-Button, Key Switch ♦)

Check:

- Initiate corresponding activator briefly:
→ The door opens and recloses after the set hold-open time has elapsed.
- Initiate opening activator for around 20 sec:
→ The door opens and stays open. When the impulse is released, the door closes only after the hold-open time has elapsed.

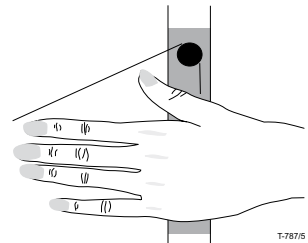


Checking the Safety Devices

Safety Beams ♦, Light Scanner ♦

Check:

- Interrupt the light beam by hand:
→ When the door is open, it should not close during at least 1 min. If the door is closing, it must immediately reopen.

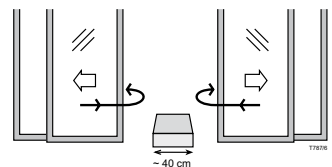


Electronic Reversing

Check:

- Place an obstacle (sponge rubber block or similar) between the door wings -without interrupting the safety beams or light scanners:

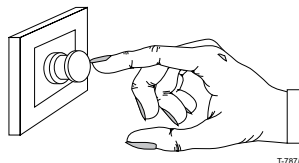
- When the door encounters an obstacle, it reopens (the overrun distance in the area subject to jamming is max. 25 mm). When the prolonged hold-open time has elapsed, the door closes, but at reduced speed.



Emergency-Off Function ♦

Check:

- Activate the “emergency-off” push-button:
→ The door is switched to manual operation and the door leaves can be moved manually. If the system is equipped with an emergency opening facility (rubber spring), the door leaves will open.
- Reset “emergency-off” push-button and choose operating mode OFF:
→ The door reacts the same way as on power-on.



Emergency Opening/Emergency Opening Monitoring System ♦ (Rubber Spring)

Check:

- Simulate a mains failure: disconnect mains plug or switch-off main system switch
→ the door leaves should be opening independent of the selected operating mode.

The rubber spring must be replaced during the annually maintenance (see section 5.1) – thus after a serviceable time of one year. Do not increase the tension of the rubber spring after this time-this could lead to excess elongation.

Checking the System for Traces of Excessive Wear

Check:

- Check the system for traces of wear.

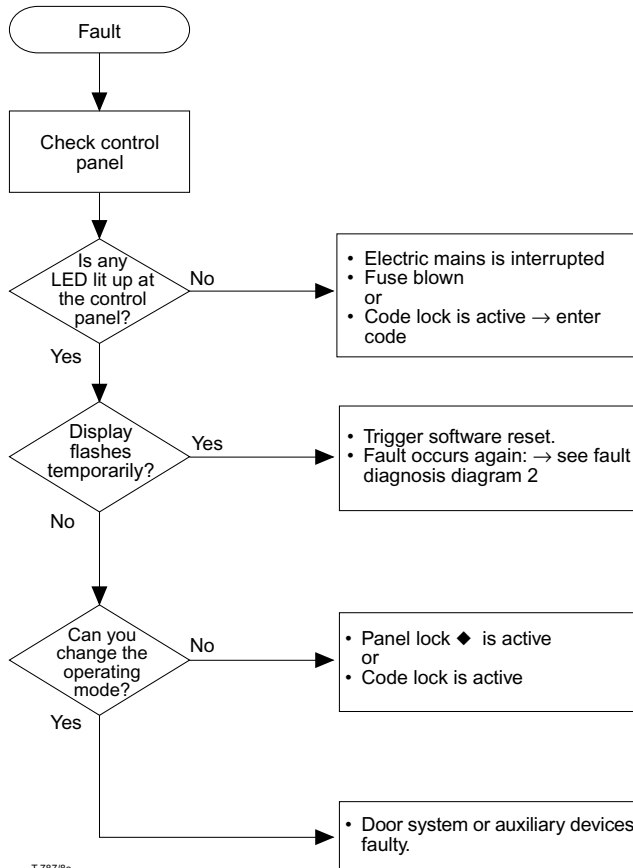


If there are excessive deposits of rubber (toothed belt), steel or aluminium (door wing, drive support) on the ground around the system, contact a qualified TORMAX dealer, so that the system may be given a thorough check.

6 Trouble Shooting

The microprocessor control system TCP 101 performs a self-diagnosis continually and displays faults by means of periodically flashing combinations of LEDs on the control panel. For fault analysis and fault removal proceed according to the following fault diagnosis diagrams.

6.1 Fault Diagnosis Diagram 1



6.2 Fault Diagnosis Diagram 2

With the occurrence of a fault, the corresponding fault code is displayed on the control panel-in flashing LED combinations form-alternately with the display of the active operating mode:

Fault Code 1 to 30:

- Fault code flashes during 6 sec.,
- ... operating mode is displayed during 10 sec.

The table shows the LED combinations (code) of the individual faults.

● flashing LED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
●	●	●			●		●		●		●		●		●		●		●		●		●		●		●		●	
●		●	●				●	●			●	●			●	●			●	●			●	●			●	●		
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●																	●	●	●	●	●									

T-787/9e

From Fault Code 33:

- Beginning with operating mode OFF (LED1), all 5 LED light up shortly one after another (named as run light) 1 x,
- ... fault code flashes during 6 sec.,
- ... operating mode is displayed during 10 sec.

The table shows the run light followed by the LED combination (code) of the individual faults.

Fault Display

● flashing LED

	1x	43	45	49
●	●	●	●	●
●	●			
●	●			
●	●	●		
●	●			
●	●			●

T-787/11e

Explanation of Fault Code and Trouble Shooting

- 1 Door lock faulty → possibly intervene by manual lock disengagement
- 2 Calibration run → wait until door is closed
- 3 Battery operation; mains failed
- 4 Light beam 1 faulty:
- 5 Light beam 2 faulty:
- 6 Light beam 3 faulty:
- 7 Light beam 4 faulty:
possible reasons:
 - transmitter, receiver, cable or power module faulty
 - safety beam not properly aligned
 - cable not properly shielded
- 8 In operating mode OFF: safety beam interrupted longer than 10 sec.
- 9 Operator type not defined or processor failure
- 10 "Emergency-off" is activated → reset push-button and select operating mode OFF
- 11 Motor overheated → call for assistance
- 12 Power module faulty or shut down
- 13 No movement: encoder, cable, motor or belt faulty; possibly door blocked
- 14 Battery failure or signalling device faulty
- 15 Failure of night duty lock → possibly intervene by manual lock disengagement
- 16 Door in reversing mode: door encountered an obstacle → wait until door is closed
- 17 Panel key UP gives contact longer than 1 min: panel or cable faulty
- 18 Panel key DOWN gives contact longer than 1 min: panel or cable faulty
- 19 Burglary alarm → reset by means of key switch or system reset
- 20 Activator 1 gives contact longer than 1 min.
- 21 Activator 2 gives contact longer than 1 min.
- 22 Activator 3 gives contact longer than 1 min.
- 23 Activator 4 gives contact longer than 1 min.
possible reason:
 - activator or cable faulty
- 24 Safety beam 1 interrupted for more than 1 min.
- 25 Safety beam 2 interrupted for more than 1 min.
- 26 Safety beam 3 interrupted for more than 1 min.
- 27 Safety beam 4 interrupted for more than 1 min.
possible reasons:
 - safety beam or cable faulty
 - optical components possibly dirty
- 28 Key switch gives contact longer than 1 min: possibly key turned
- 29 External closing reversing
- 30 External opening reversing
- 43 Free wheeling mode
- 45 Support request: system needs maintenance → call for assistance
- 49 System is ready for automatic system configuration

7 Additional Notes

7.1 Technical Data

Mains voltage:	115 V AC (108-125 V)	
	230 V AC (198-264 V)	
Frequency:	50/60 Hz	
Power consumption:	min:	max:
TPC 51/51LC	4 W	160 W
TCP 101	14 W	240 W
Protective class:	TEP/IP65:	IP 65
	all other operator types:	IP 22
Ambient temperature range:	-20 °C to +40 °C	
Designation of drive:	CE/TÜV UL/cUL (only TEP, TLP and TSP with respective certificate)	
Equivalent continuous sound level:	< 70 dB(A)	

7.2 Warranty

Deliberate or malicious damaging of system components and staining of system parts, as well as alterations to the drive or control system by a third party, will result in the loss of all warranty!

7.3 Options

The following options are available-within others:

- Electromagnetic lock, four-point lock, manual disengagement, night duty lock,
- Emergency power supply, emergency opening/closing facility, emergency opening monitoring system,
- Panel lock, various activators, people counter, interface to a building facility management system.

Additional functions are programmable (e.g. bell contact, hold-up locking, code lock etc.); please contact your TORMAX dealer.

7.4 Disposal

At the end of its useful lifetime, this system is to be disposed of according to the relevant national regulations. We recommend that you contact a company specializing in waste disposal.

The contents of this manual are subject to technical changes!

★★★★★
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