



# Brief instructions

Door control

TS 971

51171624\_d\_03.2014



0000000 0000 51171624 XXXXX

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## Symbols



**Warning** - Risk of injury or danger to life!



**Warning** - Danger to life from electric shock !



**Note** - Important information!



**Prompt** - Required action!

Illustrations show example products. Differences from the delivered product are possible.

## **1 General safety information**

### **Specified normal use**

The door control is intended for a power-operated door with a drive unit (NES/DES GfA limit switch system).

The safe operation is only guaranteed with specified normal use. The drive unit is to be protected from rain, moisture and aggressive ambient conditions. No liability for damage caused by other applications or non-observance of the information in the manual.

Modifications are only permitted with the agreement of the manufacturer. Otherwise the Manufacturer's Declaration shall be rendered null and void.

### **Safety information**

Installation and initial operation tasks are to be performed by skilled personnel only.

Only trained electrical craftsmen are permitted to work on electrical equipment. They must assess the tasks assigned to them, recognise potential danger zones and be able to take appropriate safety measures.

Installation work is only to be carried out with the supply off.

Observe the applicable regulations and standards.

### **Coverings and protective devices**

Do not operate unless corresponding coverings and protective devices are installed.

Ensure that gaskets are fitted correctly and that cable glands are correctly tightened.

### **Spare parts**

Only use original spare parts.

## 2 Technical data

Series	TS 971	
Dimensions W x H x D	155 x 386 x 90	mm
Installation	Vertical	
Vibration	Free of vibration Installation	
Operating frequency	50/60	Hz
Supply voltage (+/- 10%)	1 N~220 V, PE 3 N~220-400 V, PE 3~220-400 V, PE	
Output power for drive unit, maximum	3	kW
Protection per phase, on-site	10-16	A
External supply voltage: (internal electronic protection)	24	V DC
	0.35	A
External supply voltage: X1/L, X1/N (protection via F1 micro-fuse)	1 N~230 V	
	1.6	A time-lag
Control inputs	24	V DC
	Type 10	mA
Type of relay contacts (2 pcs) Max. current of 1A at 230VAC, and 0.4A at 24VDC (The use of LED lamps is recommended.)	Potential-free changeover contacts	
Loading of relay contacts, ohmic/inductive	230	V AC
	1	A
Control power consumption	10	VA
Temperature range	Operation: -10..+50 Storage: +0..+50	°C
Air humidity	to 93 % non-condensing	
Protection class of housing	IP54	
Compatible GfA limit switch	NES; DES	
Integrated radio receiver WSD / radio transmitter	2.4GHz / 433MHz	

### 3 Electrical installation



#### Warning - Danger to life from electric shock!

- Disconnect the cables (mains OFF) and check that the supply is off
- Observe the applicable regulations and standards
- Ensure proper electrical connection
- Use suitable tools




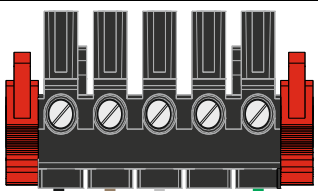


#### On-site backup fuse and disconnecter unit!

- Only use current sensitive earth leakage circuit breakers type B for FI-drive units
- Connection to the indoor installation via an all-pole disconnecter unit, with current  $\geq 10$  A as per EN 12453 (e.g. CEE plug connector, main switch)

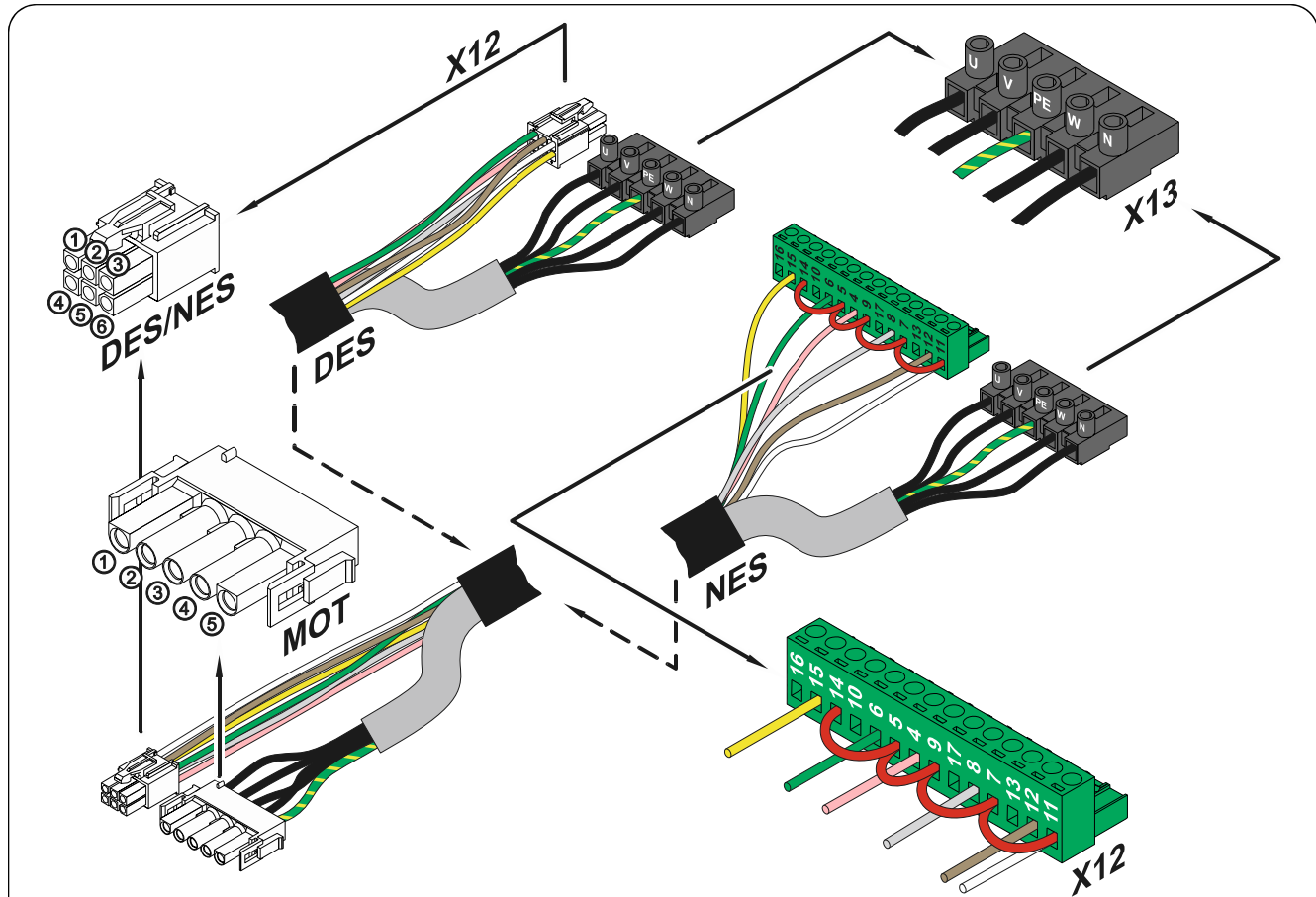


Read the drive unit installation instructions!

#### Mains connection

3~, N, PE 190 – 440 V 50 -60 Hz	3~, PE 190 – 440 V 50 -60 Hz	1~, N, PE, sym. 190 – 230 V 50 -60 Hz	1~, N, PE, asym. 190 – 230 V 50 -60 Hz
			
L1 L2 L3 N PE	L1 L2 L3 PE	L N PE	N L PE
		$\neq$ SI 25.15WS, SI 45.7WS	$=$ SI 25.15WS, SI 45.7WS

## Connection cable connection overview



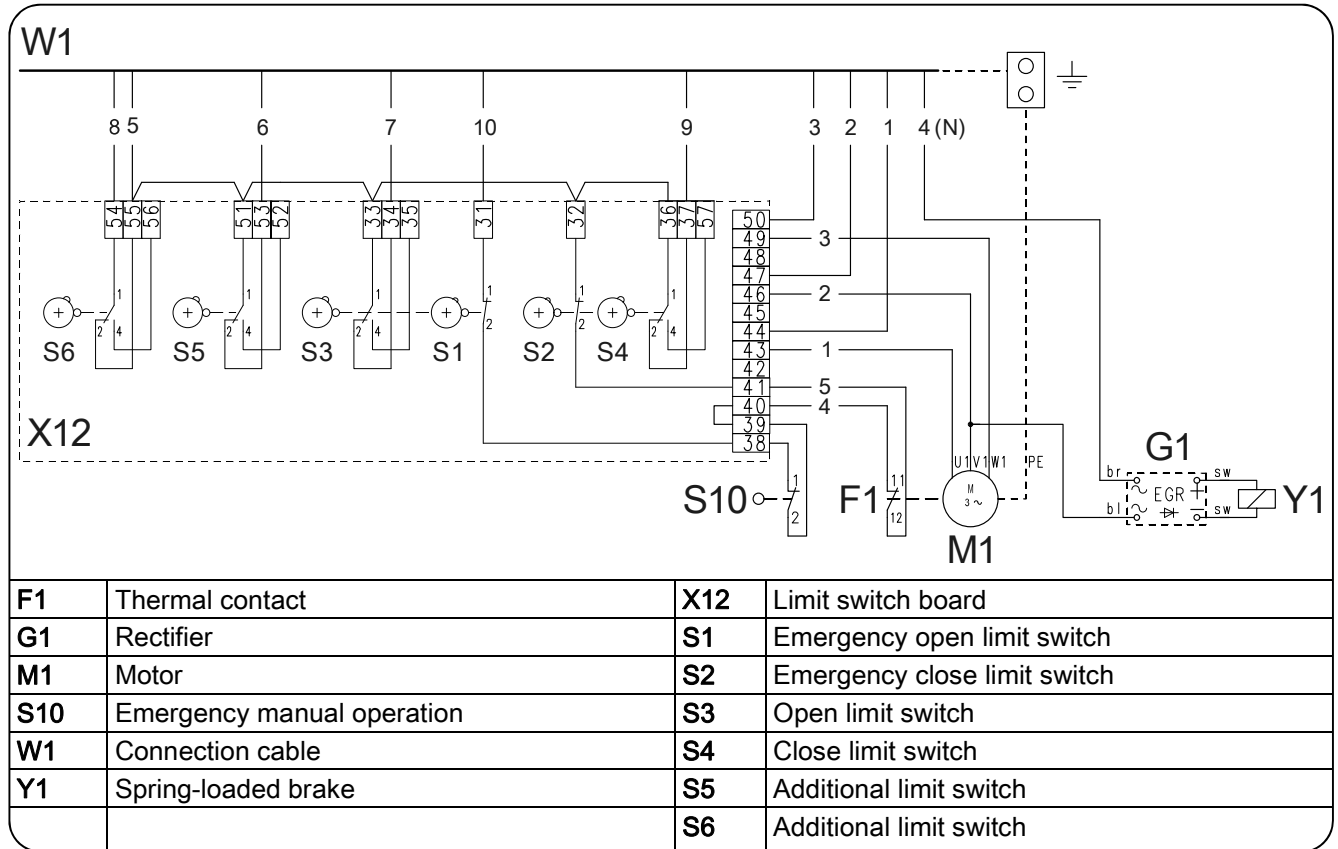
DES and NES motor connection cable				DES connection cable limit switch			
MOT		X13	Motor plug	DES		X12	Limit switch plug
Pin	Core	Term.		Pin	Core	Term.	
1	3	W	Phase W	1	5/wh	1	+24 V safety circuit
2	2	V	Phase V	2	6/bn	2	Channel B (RS485)
3	1	U	Phase U	3	7/gn	3	Ground
4	4	N	Neutral conductor (N)	4	8/ye	4	Channel A (RS485)
5	PE	PE		5	9/gy	5	Safety circuit
				6	10/pk	6	8 V DC supply voltage

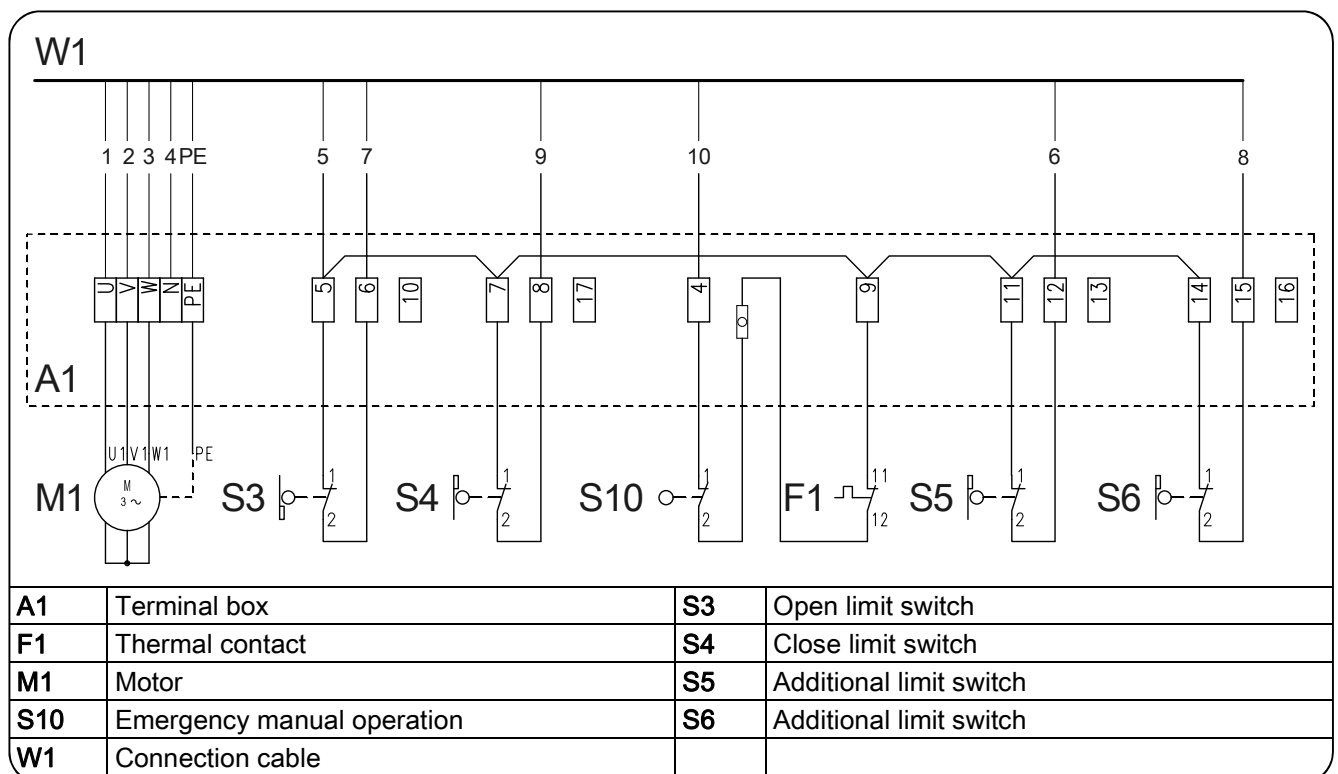
NES connection cable			
NES		X12	Limit switch plug
Pin	Core	Term.	
1	5/wh	11	Limit switch common +24 V, wire link on X12 5, 7, 9, 11, 14
2	6/bn	12	S5 Additional limit switch, testing or safety edge function
3	7/gn	6	S3 Open limit switch
4	8/ye	15	S6 Additional limit switch, relay function or intermediate stop
5	9/gy	8	S4 Close limit switch
6	10/pk	4	Safety circuit



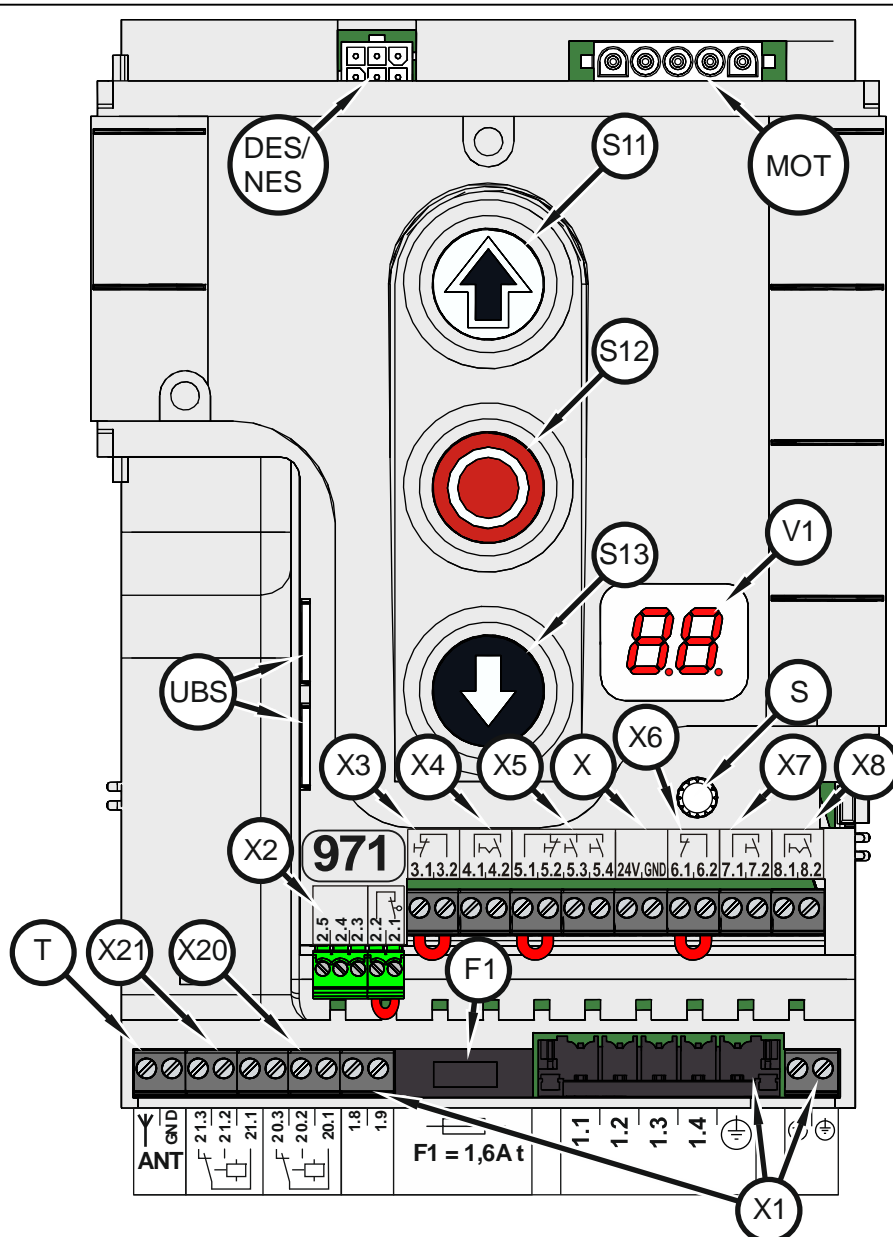
## Limit switch assignment for screwable version until year of manufacture of 1997



## Assignment of individual limit switches



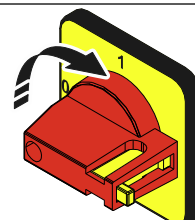
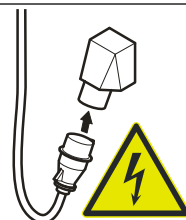
## Overview of control



<b>DES/ NES</b>	DES or NES limit switch socket	<b>X</b>	24 V mains supply, external devices
		<b>X1</b>	Mains supply
<b>F1</b>	Micro-fuse 1.6 A time-lag	<b>X2</b>	Safety edge system and door safety switch
<b>MOT</b>	Motor socket		
<b>S</b>	Selector switch	<b>X3</b>	Emergency stop button
<b>S11</b>	OPEN push-button	<b>X4</b>	Automatic closing On/Off
<b>S12</b>	STOP push-button	<b>X5</b>	Control device, external three push-button
<b>S13</b>	CLOSE push-button	<b>X6</b>	Through / reflective photo cell
<b>T</b>	Internal aerial, 433 MHz	<b>X7</b>	External radio receiver, pull switch
<b>UBS</b>	Universal command sensor socket	<b>X8</b>	Intermediate stop On/Off
<b>V1</b>	Display	<b>X20</b>	Potential-free relay contact 1
		<b>X21</b>	Potential-free relay contact 2

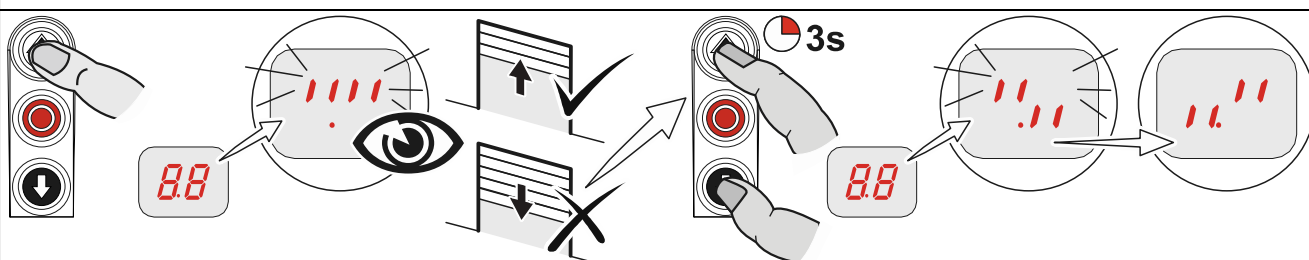
## 4 Starting up the control

- Plug in or switch on the mains supply line

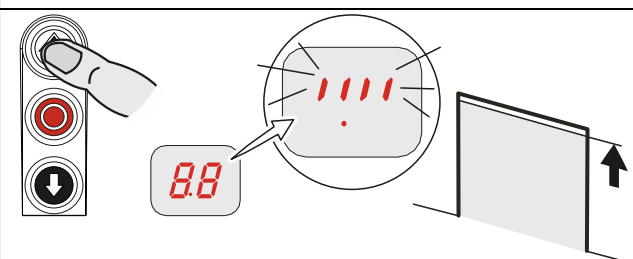


### DES: Rapid adjustment of final limit positions

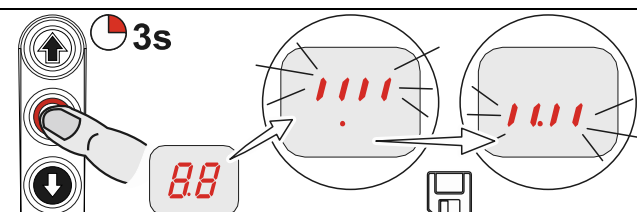
#### 1. Check rotating direction



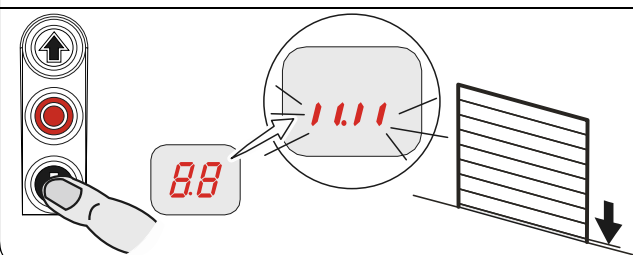
#### 2. Move to Open final limit position



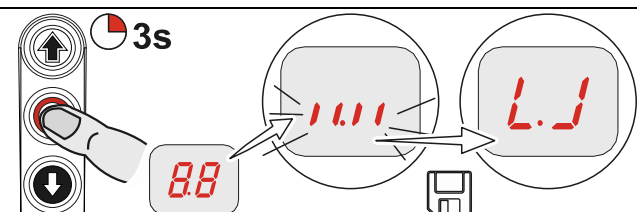
#### 3. Save Open final limit position



#### 4. Move to Close final limit position



#### 5. Save Close final limit position



#### Note!

- Rapid adjustment is complete, "Hold-to-run" door operating mode is active
- Change of OPEN/CLOSE final limit positions via menus "1.1" to "1.4"
- Pre-limit safety edge adjusts automatically
- Changing the pre-limit position is possible via menu "1.5"

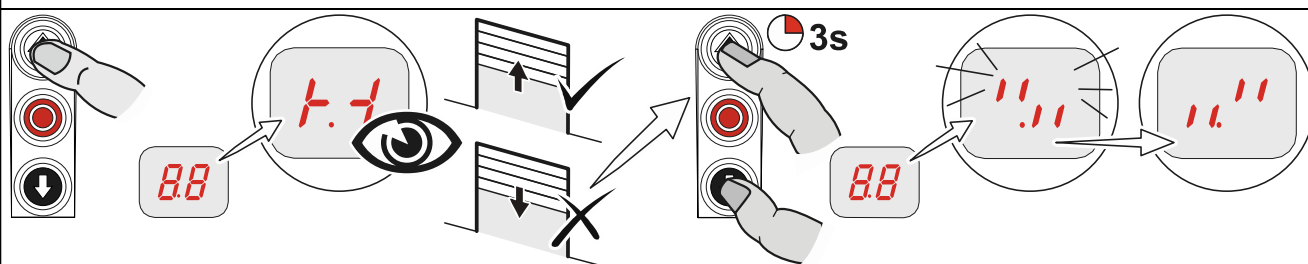


**Read the drive unit installation instructions!**

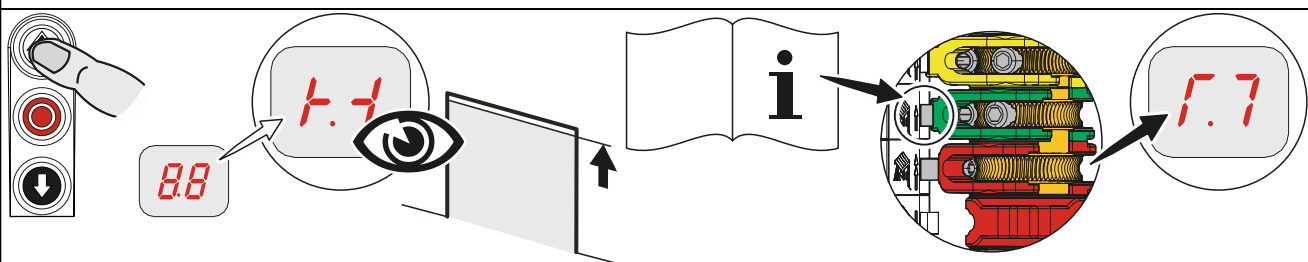
- For adjusting the mechanical limit switch, see the drive unit installation instructions

## NES: Rapid adjustment of final limit positions

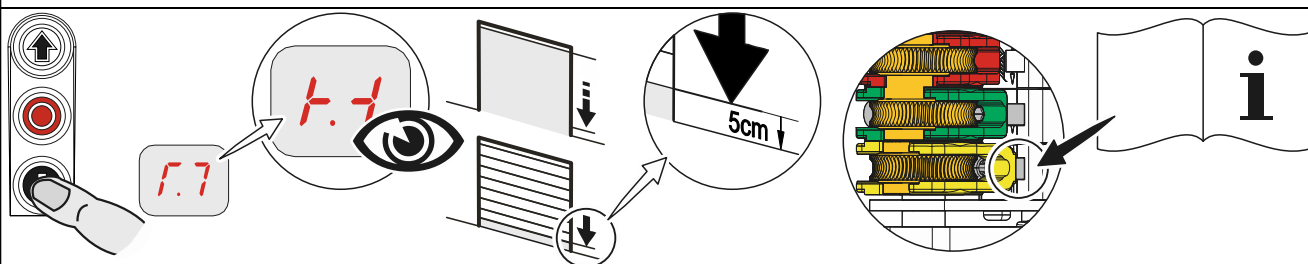
### 1. Check rotating direction



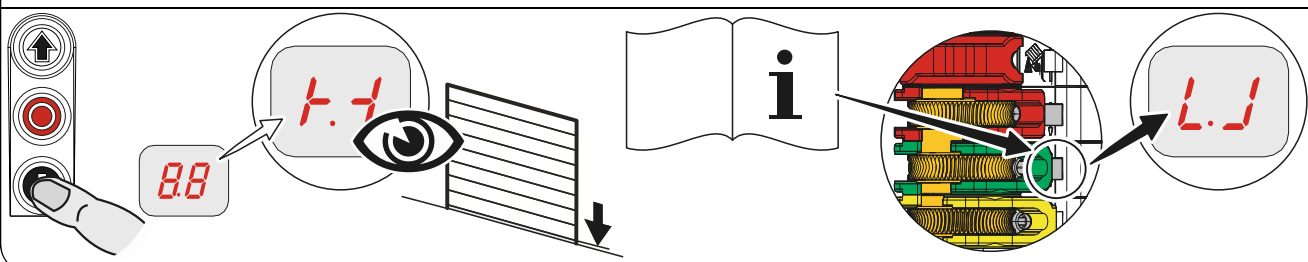
### 2. Move to Open final limit position and adjust S3 OPEN limit switch



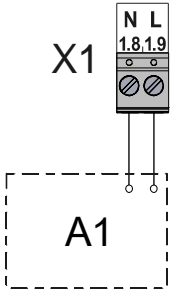
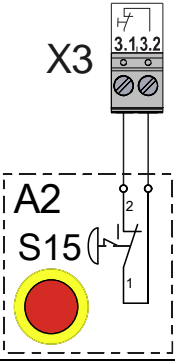
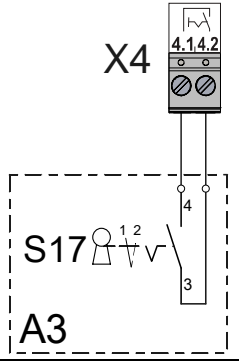
### 3. Move to Close final limit position 5cm above the ground and adjust S5 pre-limit switch



### 4. Move to Close final limit position and adjust S4 CLOSE limit switch



## 5 Electrical installation – control accessories

External supply X1		Emergency stop X3		Automatic closing, On/Off X4	
					
A1	External device	A2	Control device Emergency stop	A3	Control device Key switch

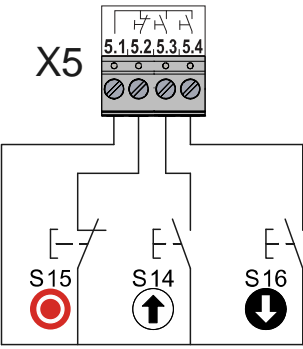
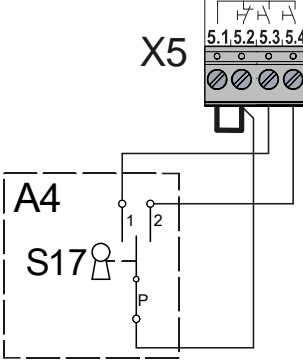
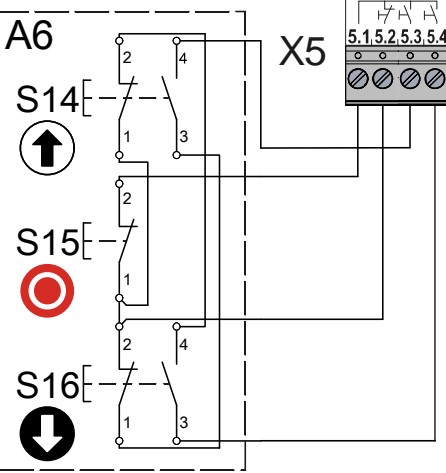
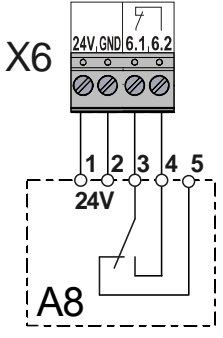
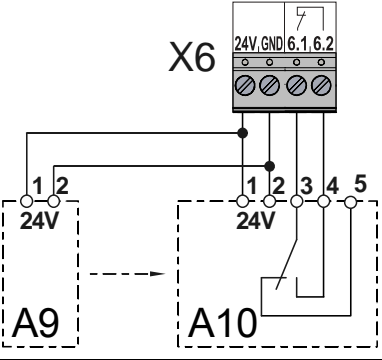
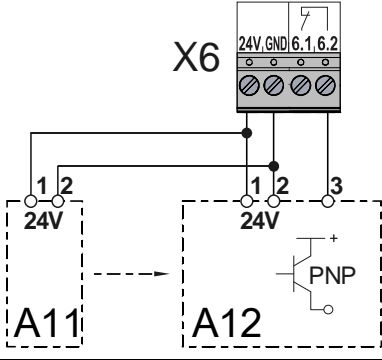
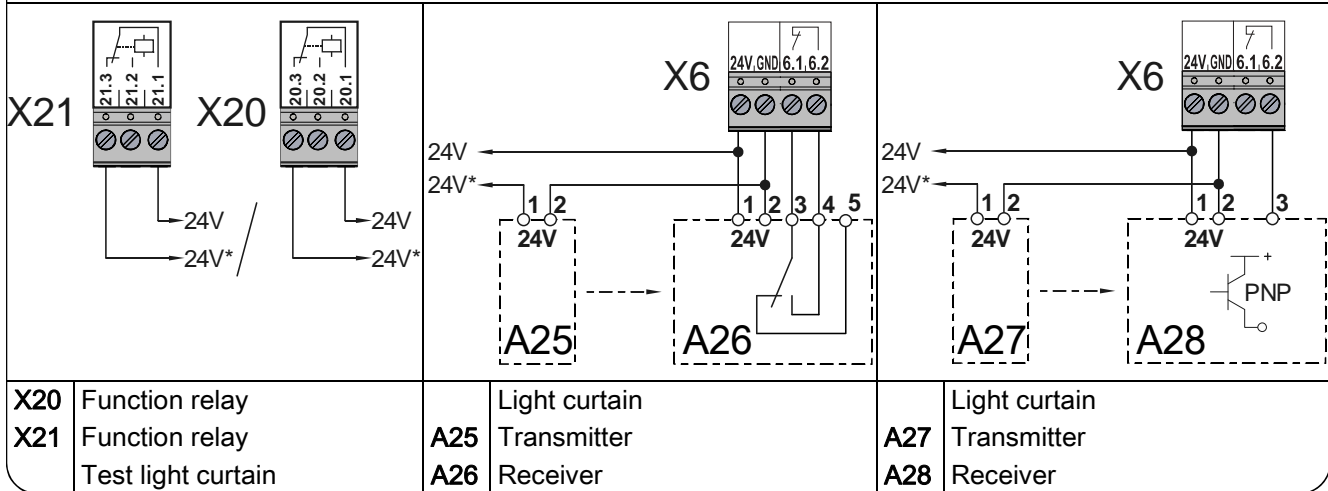
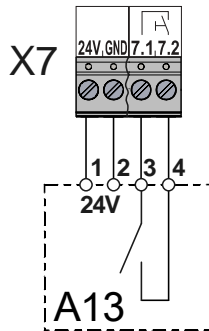
Control device X5					
					
		A4	Key push-button	A6	Three push-button

Photo cell X6					
					
A8	Reflective photo cell	A9	Through-beam photo cell Transmitter	A11	Through-beam photo cell Transmitter
		A10	Receiver	A12	Receiver

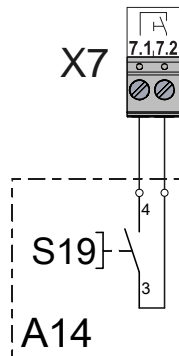
### Light curtain X6



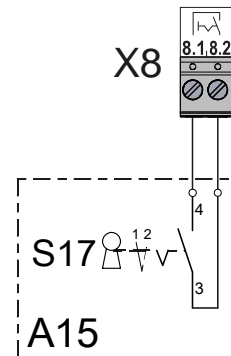
### Radio receiver X7



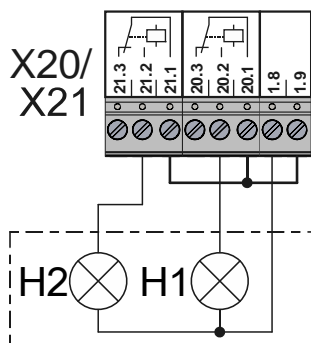
### Pull switch X7



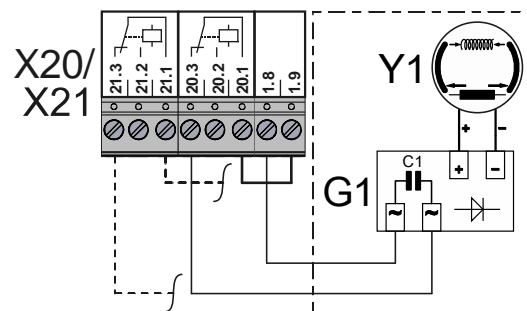
### Intermediate stop X8



### Red/green traffic lights X20 / X21



### Magnetic brake X20 / X21

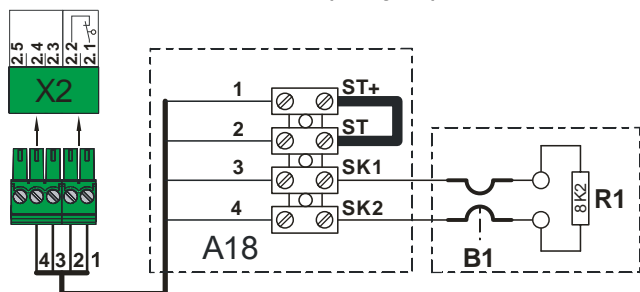


**H1** Traffic light, green  
**H2** Traffic light, red

**G1** Rectifier  
**Y1** Magnetic brake

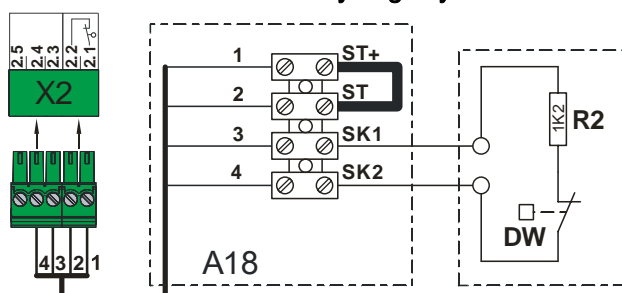
## Connection of spiral cable

### Electrical safety edge system



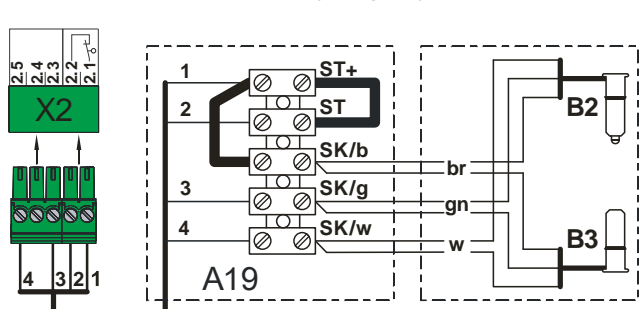
- A18** Junction box  
**ST+** Mains supply  
**ST** Input for door safety switch  
**SK1** Input for electrical safety edge system  
**SK2** Input for electrical safety edge system  
**B1** Electrical safety edge system  
**R1** End of line resistor (8k2)  
**X2** Door control socket

### Pneumatic safety edge system



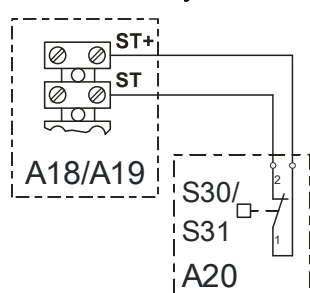
- A18** Junction box  
**ST+** Mains supply  
**ST** Input for door safety switch  
**SK1** Input for pneumatic safety edge system  
**SK2** Input for pneumatic safety edge system  
**DW** Pneumatic switch  
**R2** Series resistor (1k2), testing  
**X2** Door control socket

### Optical safety edge system



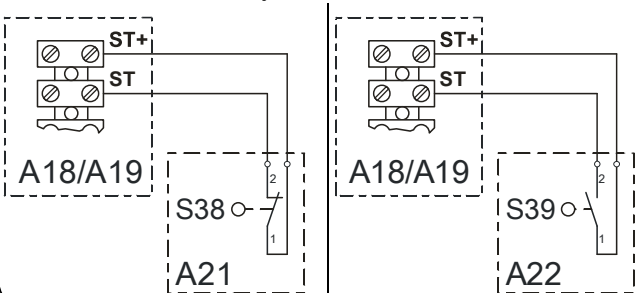
- A19** Junction box  
**ST+** Mains supply  
**ST** Input for door safety switch  
**SK/b** Mains supply (brown)  
**SK/g** Output (green)  
**SK/w** Earth (white)  
**B2** Optical transmitter  
**B3** Optical receiver  
**X2** Door control socket

### Door safety switch



- A18** Junction box  
**A19** Junction box  
**A20** Junction box switch  
**S30** Pass-door switch (NC contact)  
**S31** Slack-rope switch (NC contact)

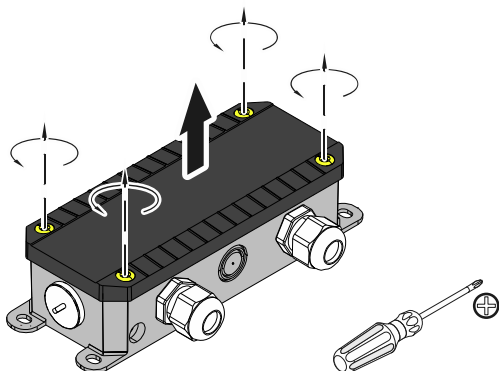
### Door safety switch, crash switch



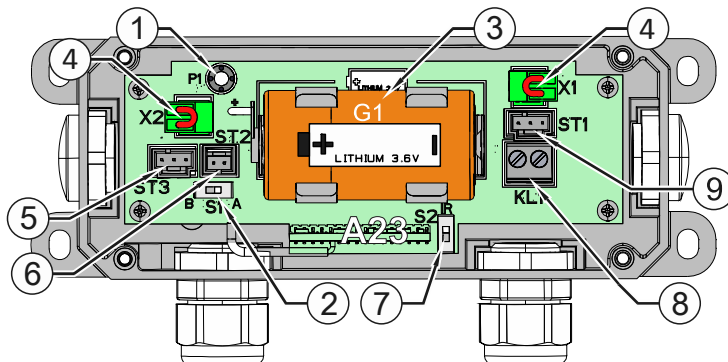
- A18** Junction box  
**A19** Junction box  
**A21** Junction box switch  
**S38** Crash switch (NC contact)  
**A22** Junction box switch  
**S39** Crash switch (NO contact)

## Wireless safety device WSD

Direction for opening



"WSD" door module



### A23 "WSD" door module

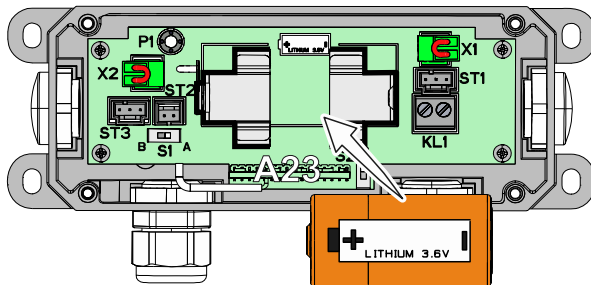
- ① **P1** Door module push-button
- ② **S1** Switch "A" system 1, switch "B" system 2
- ③ **G1** Lithium battery, 9000 mAh
- ④ **X1/2** Connection point for door safety switch
- ⑤ **ST3** Socket for optical sensor or system-2 connection cable

- ⑥ **ST2** Socket for system-2 connection cable
- ⑦ **S2** Safety edge evaluation switch:  
Optical (upper changeover position, "IR")  
Electrical (lower changeover position)
- ⑧ **KL1** Terminal  
Electrical safety edge system
- ⑨ **ST1** Socket for optical sensor

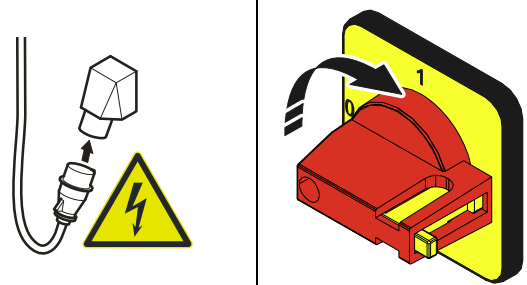


## Teaching-in of "WSD" door module

### Insert battery

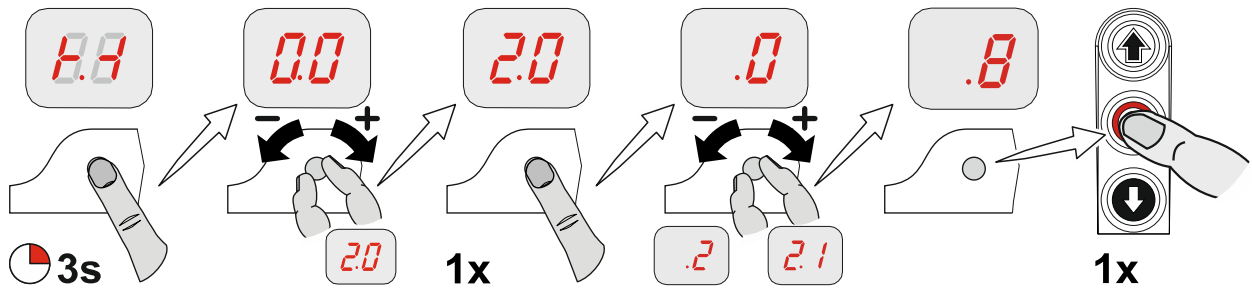


### Insert or switch on mains supply



### Activate

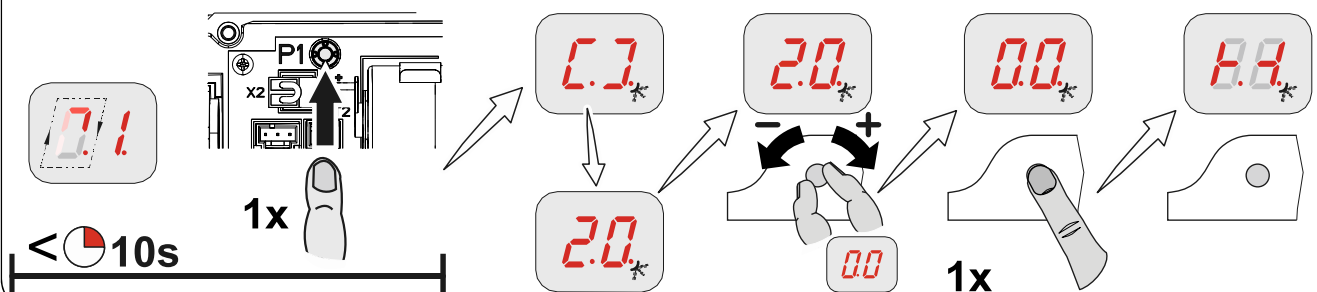
### Channel 8, for example



Available channels

### Teach in

"WSD" door module connected, dot on right is lit



### Note!

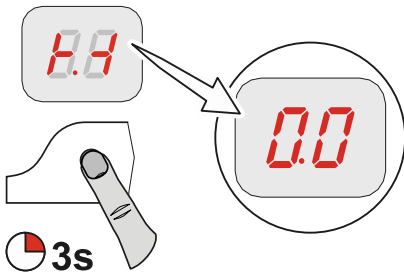
- Use of a safety edge system only possible via menu 0.1, door operating mode "3", "4" or "6"

## Completing the electrical installation

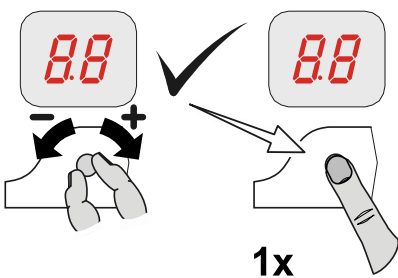
Connect other electrical equipment and/or safety devices and install cable bushings and/or cable glands, as required.

## 6 Control programming

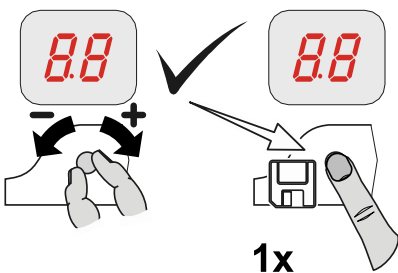
1. Programming can only be accessed after rapid adjustment of final limit positions!



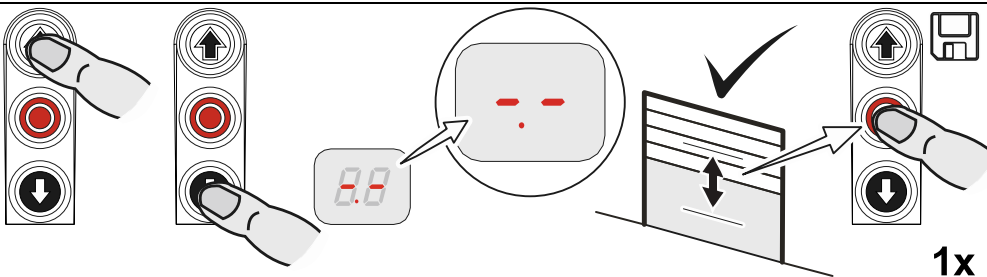
2. Select menu and confirm



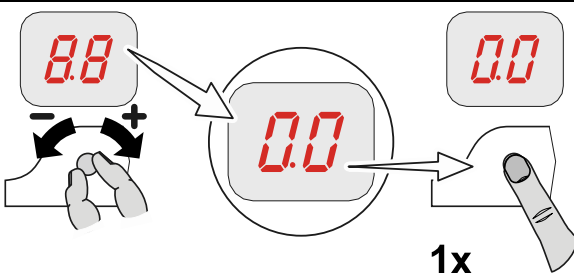
3.a) Set and save functions





















3.b) Set and save positions
























































4. Exit programming















## 7 Table of menus











Operating mode					
					
1x <b>Door operating mode</b>					
		OPEN	Hold-to-run		
		CLOSE	Hold-to-run		
		OPEN	Self-hold		
		CLOSE	Hold-to-run		
		OPEN	Self-hold		
	CLOSE	Self-hold			
	OPEN	Self-hold			
	CLOSE	Self-hold, enabling of CLOSE in hold-to-run mode via external control device (X5)			
	OPEN	Hold-to-run			
	CLOSE	Hold-to-run with active safety edge system			
					
1x <b>Output direction of rotation</b>					
		Maintain the output direction of rotation			
		Change output direction of rotation			
					3s









## Door positions

<b>1.1</b>		<b>OPEN final limit position, coarse correction (DES)</b>				
 		OPEN/CLOSE door movement				 1x
<b>1.2</b>		<b>CLOSE final limit position, coarse correction (DES)</b>				
 		OPEN/CLOSE door movement				 1x
<b>1.3</b>		<b>OPEN final limit position, fine correction (DES)</b>				
				Without door movement, [ + ] OPEN correction [ - ] CLOSE correction		 1x
<b>1.4</b>		<b>CLOSE final limit position, fine correction (DES)</b>				
				Without door movement, [ + ] OPEN correction [ - ] CLOSE correction		 1x
<b>1.5</b>		<b>Pre-limit safety edge, fine correction (DES)</b>				
				Without door movement, [ + ] OPEN correction [ - ] CLOSE correction		 1x
<b>1.6</b>		<b>Intermediate stop</b>				
 		OPEN/CLOSE door movement For NES: Set S6 auxiliary limit switch				 1x
<b>1.7</b>		<b>Setting for position of relay 1 switching point</b>				
		Select relay function via menu 2.7				
 		OPEN/CLOSE door movement For NES: Set S6 auxiliary limit switch				 1x
<b>1.8</b>		<b>Setting for position of relay 2 switching point</b>				
		Select relay function via menu 2.8				
 		OPEN/CLOSE door movement For NES: Set S6 auxiliary limit switch				 1x




































## Door functions, part 1

				1x		Safety device				
				Spiral cable				1x		
						Teach-in of “WSD” door module 2 to 21: Manual selection of channel				
						<ul style="list-style-type: none"><li>• Up to 20 doors: Do not assign any radio channel twice.</li><li>• More than 20 doors: Ensure a maximum separation between channels assigned twice.</li><li>• Note down the designations of taught-in channels, e.g. write “CH5” inside the housing of the control. (Important for maintenance and troubleshooting.)</li></ul>				1x
								Check WSD manual		





















				1x		Safety edge function in the pre-limit area				
				Safety edge system active				1x		
				Safety edge system inactive						
				Ground adjustment (DES) (safety edge system activated at moment of contact with ground)						
				Reversal movement in upwards direction in overrun area (DES)						

				1x		Overrun correction (DES)				
				Off				1x		
				On (do not use in conjunction with “ground adjustment” function)						


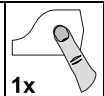


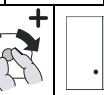


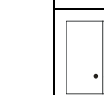
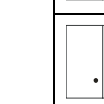
## Door functions, part 2

2.3		1x	Automatic closing					
					0 to 240 seconds		1x	
2.4		1x	Extended photo cell function					
		Off					1x	
		Cancellation of automatic closing and CLOSE command						
		Vehicle recognition Cancellation of automatic closing and CLOSE command if photo cell activation duration > 1.5 seconds						
2.5		1x	Reversing					
				0 = Off 1 to 10 safety-device activations			1x	
2.6		1x	Pull-switch or radio-receiver function (X7)					
		Pulse type 1 Door is not at OPEN final limit position    OPEN command Door is at OPEN final limit position        CLOSE command					1x	
		Pulse type 2 Command sequence OPEN – STOP – CLOSE – STOP – OPEN						
		Pulse type 3 OPEN command only						

### Door functions, part 3






















































<b>2.7</b>		<b>Relay function at X20</b> Teach in door position via menu 1.7 (DES only)		
<b>2.8</b>	1x 	<b>Relay function at X21</b> Teach in door position via menu 1.8 (DES only)	<b>X20</b>	<b>X21</b>
		Off	1x 	
		Pulse signal for 1 second		
		Permanent signal		
		Red lamp, permanently lit during door movement OPEN final limit position      Flashing for 3 seconds CLOSE final limit position      Flashing for 3 seconds		
		Red lamp, permanently lit during door movement OPEN final limit position      Flashing for 3 seconds CLOSE final limit position      Off		
		Red lamp, permanently lit during door movement OPEN final limit position      Permanently lit for 3 seconds CLOSE final limit position      Permanently lit for 3 seconds		
		Red lamp, permanently lit during door movement OPEN final limit position      Permanently lit for 3 seconds CLOSE final limit position      Off		
		Dock leveller release or permanent green light Active only in OPEN final limit position		
		Permanent contact in CLOSE final limit position		
		Light sensing device 1-second pulse at each OPEN command		
		Permanent contact at door position		
		Brake control Active during operation Inactive at stop		
		Light curtain test, etc. Test prior to each closing operation		

## Door functions, part 4






































































		Intermediate stop function		
		All command inputs		
		Input X7.2 and internal radio receiver		
		Input X5.3 and OPEN push-button of control		

























## Safety functions

Safety functions									
3.1		 1x	Force monitoring (DES)						
							0 = Off Adjustable for 2 % to 10 % overload		
3.2		 1x	Interruption to photo cell operation						
				Off				 1x	
				On (single reference position taught-in twice)					
3.3		 1x	Travel time monitoring (NES)						
						0 = Off 0 to 90 seconds			 1x
3.4		 1x	Door safety switch function (input X2.2 or WSD)						
				Slack-rope or pass-door switch				 1x	
				Crash detector (NC contact) Hold-to-run after activation					
				Crash detector (NO contact) Hold-to-run after activation					
				Crash detector (NC contact) Reversal, resetting in OPEN final limit position following contact reset; hold-to-run function, otherwise					
				Crash detector (NO contact) Reversal, resetting in OPEN final limit position following contact reset; hold-to-run function, otherwise					
3.5		 1x	Automatic opening (automatic closing settings made via menu 2.3)						
						0 = Off 0 to 99 minutes			 1x
3.8		 1x	Reversing duration adjustment						
						[ + ] slower [ - ] faster			 1x

## DU/FI settings

4.1		<b>OPEN output speed</b>				
					Output speed in rpm	
4.2		<b>CLOSE output speed</b>				
					Output speed in rpm	
4.3		<b>Increased CLOSE output speed</b> Up to an opening height of 2.5 m				
					Output speed in rpm 0 = Off	
4.4		<b>Changeover position to CLOSE output speed</b> (with adherence to minimum opening height requirement of 2.5 m!)				
		OPEN/CLOSE door movement				
4.5		<b>OPEN acceleration</b>				
					DU Steps of 1.0 seconds FI Steps of 0.1 seconds	
4.6		<b>CLOSE acceleration</b>				
					DU Steps of 1.0 seconds FI Steps of 0.1 seconds	
4.7		<b>OPEN deceleration</b>				
					DU Steps of 1.0 seconds FI Steps of 0.1 seconds	
4.8		<b>CLOSE deceleration</b>				
					DU Steps of 1.0 seconds FI Steps of 0.1 seconds	
4.9		<b>OPEN/CLOSE crawling speed</b>				
					Output speed in rpm	

## Extended door functions

76	 1x	<b>Selection of manufacturers of radio transmitters</b> (434 MHz)	
		Internal radio receiver deactivated	 1x
		(Fixed code) GfA, Tedsen	
		Teleco "COD1"	
		-	
		(Rolling code of various providers) Guthrie Douglas, JCM, Dickert	
		(Fixed code) RDA	
		(Fixed code) TRL	
		-	
		-	
		-	
		-	
77	 1x	<b>Radio function</b>	
		Teach-in of a handheld transmitter	 1x
		Cancellation of a taught-in radio transmitter	
		Cancellation of all taught-in radio transmitters	

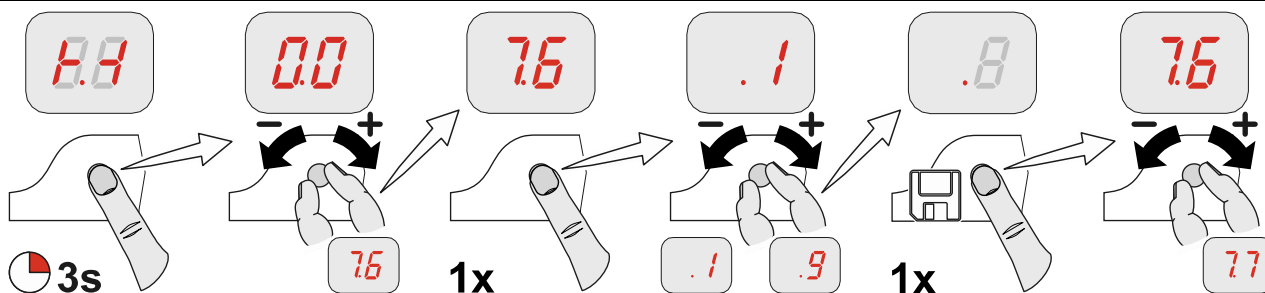


### Note!

- A combination of different radio transmitter manufacturers is possible
- Only use 434-MHz handheld transmitters
- Up to 64 radio channels can be taught.

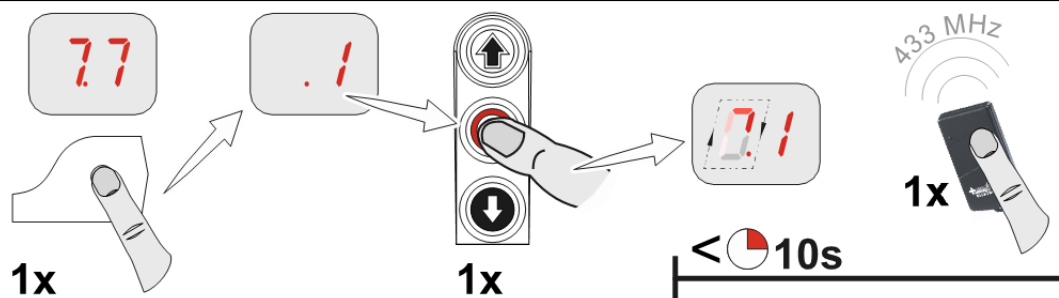
## Teach-in of radio transmitter

### 1. Select radio transmitter manufacturer's system

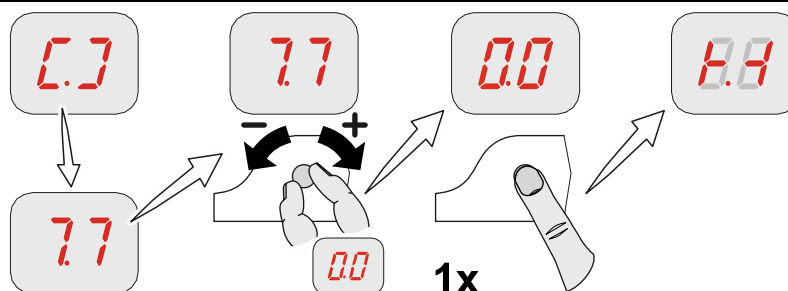


### 2. Activate radio transmitter






















### 3. Carry out teaching-in



### 4. Switch to door operation









## Maintenance cycle counter

		<b>Maintenance cycle preselection</b>						
					01-99 corresponds to 1,000 to 99,000 cycles Cycles are counted down			
		<b>Response upon reaching zero</b>						
		"CS" display with set value of maintenance cycle						
		Changeover to hold-to-run and "CS" display with set value of maintenance cycle						
		Changeover to hold-to-run and "CS" display with set value of maintenance cycle. By pressing the Stop button for 3 seconds, 500 automatic cycles are re-enabled						
		"CS" display with set value of maintenance cycle and switching of relay contact X21						




## Reading-out of memory

	1x	<b>Cycle counter reading</b> 7-digit number		
	<div> M</div> <div> HT</div> <div> ZT</div> <div> T</div> <div> H</div> <div> Z</div> <div> E</div> <p>Cycle counter reading in divisions of ten consecutively</p> <div><div>M = 1,000,000</div><div>HT = 100,000</div><div>ZT = 10,000</div><div>T = 1,000</div><div>H = 100</div><div>Z = 10</div><div>E = 1</div></div>			
	1x	<b>Last faults</b>		
	The six most recent faults are indicated alternately			
	1x	<b>Data counter</b> 7-digit number		
	<div> M</div> <div> HT</div> <div> ZT</div> <div> T</div> <div> H</div> <div> Z</div> <div> E</div> <p>Cycle counter reading in divisions of ten consecutively</p> <div><div>M = 1,000,000</div><div>HT = 100,000</div><div>ZT = 10,000</div><div>T = 1,000</div><div>H = 100</div><div>Z = 10</div><div>E = 1</div></div>			
	<div></div> <div></div>	<div>Cycle counter reading for the most recent programming change</div> <div>Number of activations for slack-rope, pass-door or crash switch</div>	1x	
	1x	<b>Firmware version</b>		
	The firmware version of the control is displayed. In conjunction with DU or FI, additional firmware version (of DU or FI) is displayed.			

## Deleting

<b>9.5</b>	 1x	<b>Deleting of all settings</b>
	 0  1	All (factory setting), except for cycle counter setting  1x  3s

## Reading-out of WSD data

		<b>WSD data</b> (only for taught-in WSD and active menu; lack of data is indicated by “-.-.”)
	Data indicated alternately  1. Version of master radio module 2. Type of safety edge system 0.0. = none 0.1. = 1k2 0.2. = 8k2 0.3. = optical 3. Door safety switch 0.0. = inactive 0.1. = active 4. Battery voltage 5. Assigned / Selected communication channel 6. Signal quality, 0% - 99%	

## 8 Safety devices

### X2: Input, safety edge system

The door control automatically detects three different safety edge systems.

1K2 resistor-evaluation system;

8K2 resistor-evaluation system;

optical safety edge system.



### Important!

- ▶ Connect safety edge systems in accordance with EN 12978
- ▶ Check the pre-limit safety edge position
- At a door opening height > 5 cm, reversing must occur after activation of the safety edge system
- The hold-to-run mode can always be used should the safety edge system be defective

## EMERGENCY operation

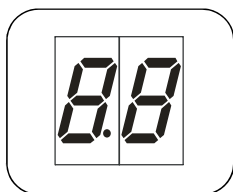


### Warning!

- ▶ For EMERGENCY operation, the door has to be checked (it has to be in a fault-free state)
  - “Hold-to-run” door operating mode:  
The door must be fully visible from the operating point.

EMERGENCY operation allows for moving the door to a required position by bypassing faults with the signal transmission of the safety device.

EMERGENCY operation is activated after pressing the STOP push-button and holding for 7 seconds, and is indicated by the flashing display.









### Note!

- The door cannot be moved in case of “F1.3” and “F1.4” fault indications for reasons of operating safety.
  - ▶ Activation of EMERGENCY operation: Press and hold the STOP push-button on the keypad of the control,  
while simultaneously pressing the OPEN or CLOSE push-button to move the door













## 9 Status display

Faults		
	"F" plus a code are displayed in each case	
Status code	Fault description	Fault causes and fault correction
	Terminals X2.1 – X2.2 are open. Slack-rope switch/Pass-door contact is open.	Check door safety switch. Check whether the connection cable is connected.
	DES safety circuit is open. Emergency manual operation has been activated. Thermal protection of the motor has tripped.	Check emergency manual operation. Check for overload or stalling of the drive unit.
	Terminals X3.1 – X3.2 are open. Emergency stop has been activated.	Check emergency stop. Check whether the connection cable is connected.
	Faulty "WSD" radio transmission.	<ul style="list-style-type: none"> <li>• Radio channel assigned twice: Use menu 9.6 to read off the radio channel. Use menu 2.0 to manually assign the radio channels.</li> <li>• Moisture in the WSD socket: Replace WSD and use splash guard (optional equipment).</li> <li>• Obstacle between WSD and door control: Adapt fitting configuration or use a spiral cable.</li> <li>• Battery voltage too low: Read off voltage value using menu 9.6 and replace battery if this is less than 3.2 V.</li> </ul> <p>Red LED in WSD: Press P1 push-button.</p> <ul style="list-style-type: none"> <li>• Flashing: Faulty radio connection</li> <li>• Lit: Radio connection OK</li> </ul> <div>  Check WSD manual         </div>

## Faults

F.	“F” plus a code are displayed in each case	
Status code	Fault description	Fault causes and fault correction
17	Faulty “entry sense” switch. Contact resistances are too high. Faulty “entry sense” installation.	Open and close pass door. Check resistance. Check pass door installation.
18	“Entry sense” control input (X2.1 – X2.2) faulty.	Switch control off and on. Replace control if necessary.
19	“WSD” door module batteries are too low.	Replace “WSD” door module batteries. If the battery service life was considerably less than one year, check fault code 1.6 (radio channels assigned twice, obstacles).
20	No safety edge detected.	Check the wiring of the safety edge system. Check whether the “WSD” is correctly functioning.
21	Terminals X6.1 – X6.2 are open. Photo cell has been activated.	Check alignment of the photo cell. Check connection cable. Replace photo cell if necessary.
22	Maximum number of reversing movements for door through safety edge system activation has been reached. (Only with automatic closing)	Obstacles along door travel path. Check whether the safety edge system is correctly functioning.
24	8k2 safety edge system has been activated.	Check whether the safety edge system is correctly functioning. Check whether the connection cable has short-circuited.
25	8k2 safety edge system is defective.	Check whether the safety edge system is correctly functioning. Check whether the connection cable is connected.
26	1k2 safety edge system has been activated.	Check whether the safety edge system is correctly functioning. Check whether the connection cable is connected.
27	1k2 safety edge system is defective.	Check whether the safety edge system is correctly functioning. Check whether the connection cable has short-circuited.
28	1k2 testing is negative.	Testing is activated in the lower final limit position. Check pre-limit switch (“S5” for NES).

## Faults

	<b>"F" plus a code are displayed in each case</b>	
Status code	Fault description	Fault causes and fault correction
	WSD or optical safety edge system has been activated or is defective.	Check whether the safety edge system is correctly functioning. Check the "WSD" door module.
	(DES) OPEN emergency stop switch reached.	In the voltage-free state, move the door back via emergency manual operation.
	(NES) OPEN or CLOSE emergency stop switch reached. Emergency manual operation has been activated. Thermal protection of the motor has tripped	Check OPEN/CLOSE emergency stop switch. Check emergency manual operation. Check drive unit for overload or stalling.
	(DES) CLOSE emergency stop switch reached.	In the voltage-free state, move the door back via emergency manual operation.
	(NES) Faulty activation of the "S5" pre-limit switch.	Check the "S5" pre-limit switch for correct functioning and setting.
	No limit switch detected (active at initial start-up).	Connect the limit switch to the control. Check the limit-switch connection cable.
	Limit switch system has been changed without the control being reset.	Reset the control via menu "9.5".
	Internal plausibility error.	Clearance of fault with next movement command.
	Triggering of force monitoring.	Check the door mechanism for stiffness.
	Crash detectors (X2.1 – X2.2) have been activated.	Check crash detector or connection cable. Reset fault, press STOP button and hold for 3 seconds.

## Faults

F.	“F” plus a code are displayed in each case	
Status code	Fault description	Fault causes and fault correction
4.6	Terminals X6.1 – X6.2 are open. Light curtain has been activated.	Check light curtain. Check whether the connection cable is connected.
4.7	Light curtain defective.	Comply with the light curtain manufacturer's specifications. Check connection cable.
5.0	Controller fault.	Switch control off and on. Replace control if necessary.
5.1	ROM error.	Switch control off and on. Replace control if necessary.
5.2	CPU error.	Switch control off and on. Replace control if necessary.
5.3	RAM error.	Switch control off and on. Replace control if necessary.
5.4	Internal control error.	Switch control off and on. Replace control if necessary.
5.5	Fault with digital limit switch (DES).	Check DES connector and connection cable. Switch control off and on.
5.6	Fault with door movement.	Check the door mechanism for stiffness. Check the limit switches for correct rotational movement. Switch control off and on.
5.7	Fault with rotating direction.	Change rotating direction via menu “0.2”.
5.8	Unacceptable door movement in stopped state.	Fault clearance through movement command. Check brake and drive unit.
5.9	No compliance with specified travel direction at drive unit.	Fault clearance through movement command. Check for overload of the drive.

## Faults

**F.**

"F" plus a code are displayed in each case

**Status  
code**

**Fault description**

**Fault causes and fault correction**

**6.1**

DU / FI closing speed is too high.

Switch control off and on.  
Replace drive unit if necessary.

**6.2**

Internal FI communication fault.

Switch control off and on.  
Replace FI drive unit if necessary.

**6.3**

Low voltage in the DC voltage sink.

Fault clearance through movement command.  
Check mains input voltage.  
Change slope durations/speeds.

**6.4**

Excess voltage in the DC voltage link.

Check mains input voltage.  
Fault clearance through movement command.  
Change slope durations/speeds.

**6.5**

Temperature limit exceeded.

Check for overload of the drive unit.  
Cool down the drive unit and reduce the number of cycles.

**6.6**

Permanent current overload.

Check for overload of the drive unit.  
Check the door mechanism for stiffness or weight.

**6.7**

Brake / FI fault.

Check brake; replace if necessary.  
If problem recurs, replace drive unit.

**6.9**

Collective indication for FI.

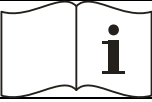











Fault clearance through movement command.  
Replace drive unit if message is continually displayed.










**8.1**

Minimum travel distance not completed during initial operation.

Move the door for at least 1 second.

## 10 Explanation of symbols

Symbol	Explanation
	Prompt: Read installation instructions
	Prompt: Check
	Prompt: Note
	Prompt: Note the setting of the program below
	Default adjustment of the program
	Default adjustment of the program, value on the right
	Default adjustment of the minimum limit, dependent on drive unit
	Default adjustment of the maximum limit, dependent on drive unit
	Setting range
	Prompt: Select program or value, turn selection switch left or right
	Prompt: View program, press selection switch once
	Prompt: Save, press selection switch once

Symbol	Explanation
	Prompt: Setting via OPEN/CLOSE built in push button, open push button: Value upwards; CLOSE button: Value downwards
 1x	Prompt: Press stop button once via built in push button
 1x	Prompt: Save, press stop button once via built in push button
 3s	Prompt: Save, press stop button for three seconds via built in push button
 3s	Prompt: Reset the control, press stop button for three seconds via built in push button
	Prompt: Move to door positions
	Prompt: Move to door positions for OPEN limit switch
	Prompt: Move to pre-limit
	Prompt: Move to door positions for CLOSE limit switch

# Declaration of Incorporation

pursuant to Machinery Directive 2006/42/EG  
for a partly completed machine Appendix II Part B



GfA - Gesellschaft für Antriebstechnik  
Dr.-Ing Hammann GmbH & Co KG  
Wiesenstraße 81  
40549 Düsseldorf

# Declaration of Conformity

pursuant to EMC Directive 2004/108/EC

We,  
**GfA – Gesellschaft für Antriebstechnik,**  
hereby declare that the product specified in the following complies with the  
above-mentioned EU Directive and is only intended for installation in a door system.

## TS 971

### Applied standards

<b>DIN EN 12453</b>	Industrial, commercial and garage doors and gates
<b>DIN EN 12978</b>	Safety devices for power operated doors and gates
<b>DIN EN 60335-1</b>	Household and similar electrical appliances - Safety – Part 1: General requirements
<b>DIN EN 61000-6-2</b>	Electromagnetic compatibility (EMC) - Part 6-2 Generic standards - Immunity for industrial environments
<b>DIN EN 61000-6-3</b>	Electromagnetic compatibility (EMC) - Part 6-3 Generic standards - Emission standard for residential, commercial and light-industrial environments

We undertake to transmit, in response to a reasoned request by the authorities, the special  
documents for this partly completed machine.

### Authorised representative for the compilation of the technical documentation

(EU address in the company)  
Dipl.-Ing. Bernd Synowsky  
Documentation representative

Partly completed machinery according to EC Directive 2006/42/EC is only intended to be installed  
in, or combined with, other machinery (or other partly completed machinery/systems) in order to  
form a completed machine pursuant to the Directive. This product must therefore only be put into  
operation when it has been determined that the complete machine/system in which it has been  
installed complies with the provisions of the above-mentioned directives.

Düsseldorf, 05.12.2011

**Stephan Kleine**  
Managing Director

  
Signature