



DOOR COMPANY

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PLEASE KEEP THESE INSTRUCTIONS
IN A SAFE PLACE AFTER
INSTALLATION & ADJUSTMENTS
ARE COMPLETED.

TS727
Microprocessor Control System

THIS UNIT IS PRE-WIRED FOR:

- 208/1/60
- 230/1/60
- 400/1/60
- 460/1/60
- 480/1/60

The TS727 controller, with *self-positioning* control system, is designed for three-phase motors to open and close sliding doors. It is to be used for industrial applications only. The acceleration and deceleration of the motor is adjustable as well as the travel speed of the door. The positions of the door are controlled by an integrated position control system (encoder). As the drive unit is equipped with a position control system, the TS727 control system recognizes this automatically. All programming and adjustments are carried out with membrane keys located on the outside of the closed case - after all connections have been done.



TECHNICAL DATA

Mains voltage	208 / 230 / 400 / 460 / 480 VAC / 1 / 60
Power consumption	4.0 amps
Output voltage (secondary)	24VDC
Power supply (secondary)	max. 1020 mA
Output voltage to motor	230 VAC (3-phase)
Motor rating	max. 370 watts
Dimensions	HxWxD = 8" x 12" x 4 1/2"

I/1 Connection of external devices

Connect all wires from the external devices (operating switches, reversing edges, etc.) to the external leads of the controller per instructions below in Section I/2 & I/3 (leads are located in service box behind controller labeled “24 Volts”). When using the control system together with drive units with an electronic position control system (encoder), no additional limit switches are required. The encoder is recognized automatically by the control system. Make sure there is a lockable switch in the supply line to control system that will cut off the power supply completely. **Furthermore, a separate fuse must be provided on the site to protect the supply line and the connection terminals of the control system.**

I/2 Wiring connections for pull switch stations, 2-button switch

Note: Pull switch stations & 2-button switches (if supplied) must be wired normally open & in parallel.

Connect pull switch stations to terminals labeled “OPEN”

Connect “Open/Close” feature of 2-button switch (if supplied) to terminals labeled “OPEN”

Connect “Partial Open” feature of 2-button switch (if supplied) to terminals labeled “PARTIAL OPEN”



I/3 Wiring connections for reversing edge, locks (if applicable)

Plug in lead(s) from reversing edge to connector on trailing edge side of header. On **biparting** doors, there is a connector on each side of header. Leads on door are labeled “24 Volts”.

I/4 Wiring connections for radio receiver (if supplied)

Radio receiver is pre-wired in the factory. If a radio receiver is added after initial installation:

Connect RED wire from radio receiver to terminal labeled "+24 VDC" on left buss

Connect BLACK wire from radio receiver to terminal labeled "+24 VDC" on right buss

Connect GRAY wires from radio receiver to terminals labeled "OPEN"

I/5 Wiring connections for motion detector (if supplied)

Please follow manufacturer's instructions for motion detector

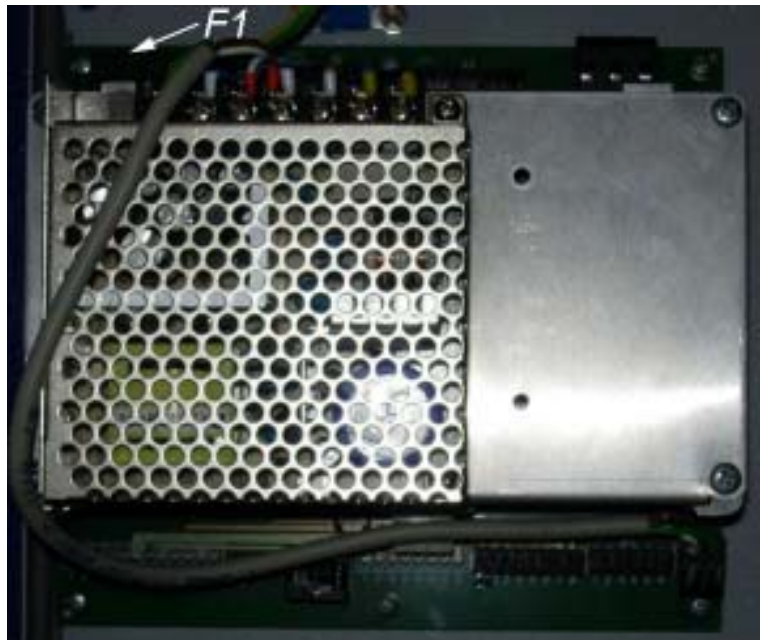
Note: Both "Open" & "Close" Controls must be set at "Full Travel"
"Automatic Closing" must be set to "On"

Please follow manufacturer's instructions for motion detectors

I/6 Location of fuses

FUSE Fuse F1: T 4.0 A
Main fuse (time-lag fuse)

(Complete 230V AC supply)



1) Wiring on Terminal Block X8:

Terminal #	Description	Type of Contact	Remarks
1	OPEN-Button	normally open	switch to +24VDC to activate an OPEN- command
2	STOP-Button	normally closed	switch to +24VDC to disable STOP; switch to open circuit to activate a STOP-command
3	CLOSE-Button	normally open	switch to +24VDC to activate a CLOSE-command
4	PARTIAL OPEN	normally open	switch to +24VDC to activate a PART-command
5	SAFETY DEVICE #1	normally closed	switch to +24VDC to indicate „no obstacles“
6	SAFETY DEVICE #2	normally closed	switch to +24VDC to indicate „no obstacles“
7	SIGNAL GROUND	-	
8	+24 VDC	-	max. load current 1000mA

2) Wiring of Encoder (Terminal Block X7):

Terminal #	Description	Color
2	Encoder Signal B	white
3	Encoder Signal A	green
4	Signal Ground	black
5	+24VDC	brown

3) Wiring of Lagegeber (Terminal Block X7):

Terminal #	Description	#
1	Analog Input	88
4	Signal Ground	87
5	+24VDC	89

4) Power Supply (Terminal Block X2):

Terminal #	Description
1	230 VAC Input
2	230 VAC Input
3	Protective Earth

5) Motor Wiring (Terminal Block X3):

Terminal #	Description
1	Motor Phase 1
2	Motor Phase 2
3	Motor Phase 3
PE	Protective Earth

6) Relay Contact (Terminal Block X4):

Terminal #	Description
1	normally closed
2	common
3	normally

All adjustments and programming are carried out with the membrane keys and the LCD display on the lid of the control system. On page 10, you will find the adjustment menu with all adjustable functions and values. Please mark in the right hand column, the values you adjusted in your control system. Detailed information on how to adjust the speeds and the positions of the door can be found on pages 8 and 9.

WARNING: Never make any adjustments when the door is moving!

***RECOMMENDED TO BE USED IN
TEMPERATURES ABOVE 0°C (32°F)
(Please see Adjustment Instructions for
Motor/Controller Heat on page 8)***

II/1 Operation

1) Switch on the mains power supply. The LCD display on the lid will show for a short time, the number of the software update used in this control system. Afterwards, it switches to "Find Encoder Limits Automatically - ENT". **(Do not press "ENTER" at this time! See Section II/3 Adjustment/Programming on the following page.)**

2) You can choose between English, German, French, Italian, and Spanish (the default is set to English).

3) The password is preset in the factory at "0000". When the display asks for a password, press the "ENT" key. This will allow you easy access to all functions of the controller. Once you have finished making adjustments, go to "Select New Password" in the menu and enter a new password to protect your adjustments. Please note your password and keep in a secure place. Detailed information on how to select a new password can be found on page 9.

4) If none of the keys are pressed for more than 10 minutes, the display returns back to the highest level of the menu ("POWER ON / SYSTEM OK"). This is a safety function that prevents anyone from making any adjustments without the proper password.

II/2 Functions of the keys

With the “ENT” key (ENTER)

...you select the just displayed point of the menu

...you go to the next lower level of the menu

...you open the input area within the angle brackets (input area is flashing)

...you confirm and enter the values adjusted in the flashing input area

...you confirm (=yes)

With the “ESC” key (ESCAPE)

...you go back to the previous, higher, menu level

...you leave the opened flashing input area without selecting and entering the adjusted values

With the arrow keys (UP & DOWN)

...you select a function within one menu level

...you adjust the value in the opened flashing input area

II/3 Adjustment/Programming

a) Programming of the Position Control System

Before powering up the controller, ensure that the door operates properly as a manual slider. Once you are satisfied with its manual operation, **close** the door, power up the controller (“Find Encoder Limits Automatically? - ENT” appears on screen) and follow these steps:

1. With door in **CLOSED** position, press “ENT” and the door will begin to find its open and closed limits.
2. Once this procedure is complete (“Power On/System OK” appears on screen), press “ENT” (“Basic Settings?” appears on screen).
3. Press “ENT” again (“Enter Password Please” appears on screen).
4. Press “ENT” (“Set Control Functions?” appears on screen).
5. Press “ENT” (“Open Control: Dead Man Function” appears on screen).
6. Press “ENT” (“Dead Man Function” will start flashing).
7. Press arrow down key until “Altern. Open/Close” appears on screen. (Set to “Full Travel” if using a motion detector)
8. Press “ENT” to select function (function selected will stop flashing).
9. Continue to press “ESC” until “Power On/System OK” appears on screen.
10. Operate the door a few times to ensure both fully opened & closed positions before modifying the encoder values.

II/3 Adjustment/Programming

Modification of the encoder values: The point of the menu “Adjust Door Limit Encoder Values?” also offers you the possibility to modify or correct at a later time the adjusted values. The registered values should be modified only in small steps.

b) Programming the Control Functions

Apart from selecting between “Dead Man Function”, “Full Travel” (impulse) or alternating “OPEN-CLOSE” function, you can adjust the automatic closing. If the “Automatic Closing” is activated, you can adjust the “Hold Open Time” between 0 and 999 seconds.

The “Position for Partial Opening” is adjusted as well in this point of the menu. This position is determined by a time of between 0 and 250 seconds (the door opens for the adjusted time and then stops).

c) Initial (first time) motor adjustments

Before adjusting the parameters for the “Opening Speed”, “Soft Start” and “Quick Stop”, you should try the parameters of the default configuration (see the values in the angle brackets on the menu page 10). *Make sure you change the values only in small steps. The parameter for the nominal motor power has to be adjusted for the connected drive unit.*

-Function Soft Start:

This value determines inclination of the starting ramp, i.e. the acceleration when the motor starts. The same ramp applies for the deceleration of the motor when the motor is switched off by a limit switch, the internal position control system or a “STOP” push-button. The ramps can be set at different values if necessary, although this value is automatically set when the door is started.

-Function Quick Stop:

With this value, you select how fast the door stops when the safety device has been activated. Note that the factory setting is “5”.

II/3 Adjustment/Programming

d) Adjust the safety device

“Safety Device causes”: different functions of the safety devices are possible:

- “Temporary Stop @ Close”: the door automatically continues to close, 2 seconds after the safety device is free again.
- “Permanent Stop @ Close”: the door stops until it gets a new command.
- “Door Opening 2 s.”: the door reopens for 2 seconds when the safety device responds and then remains in this position until it gets a new command. If the automatic closing is activated, the door will close automatically after the adjusted time.
- “Complete Opening”: the door opens completely when the safety device responds. This function is recommended and pre-set at the factory.
- “Stop @ Open + Close”: the door stops when the safety device responds, both in opening and closing direction.

e) Set Relay contact K1

“Contact K1 active on”: the relay contact can be used to activate for example, a flashing light, as long as the door is moving. Or it can connect with a security central to pass on information on the position of the door (e.g. door closed).

“K1-Time Before Door Motion”: this is necessary, for example, for flashing lights that normally should already start flashing before the door starts to move.

“Operation of K1”: Impulse 1 or 5 seconds is necessary for the operation of locking magnets. If you adjust the operation to “Flashing Contact”, a normal lamp can be used as a flashing light.

f) Bypass of a defective safety device:

This function should be set to “Yes” if the connected safety device is out of order. The signal of the defective safety device is ignored. The bypass-function permits to operate the door in the deadman function until the safety device has been repaired.

INSTRUCTIONS FOR MAKING ADJUSTMENTS TO THE DOOR VIA CONTROLLER

We test all of the parameters in the factory prior to shipping your door. However, there are times when some adjustments must be made once the door has been installed, such as opening & closing speeds and the door's open and closed positions. All adjustments are easily made by pressing the keys on the keypad located on the front of the controller.

The parameter sheet on page 10 of this manual contains all of the information and values for your door. At the top of the page you will find the date that the system was set up, our customer's name, the door size & type, and the serial numbers for the door, controller and motor. These serial numbers are recorded to help keep track of your system and its values. If you experience any problems with your door or if you are having trouble making adjustments, these numbers can be used for reference when you call our customer support (1.888.833.3667). The parameters, located below this information, contains the menus which are set up in the same order as in the system itself.

*To adjust speeds: **WARNING: Never make any adjustments when the door is moving!***

01. Press "ENT" ("Basic Settings?" appears on screen)
02. Press "ENT" ("Enter Password Please" appears on screen)
03. Enter your password by using the arrow up key until you reach your password number
04. Press "ENT" ("Set Control Functions?" appears on screen)
05. Press arrow down key once ("Motor Adjustment?" appears on screen)
06. Press "ENT" ("Adjust Nom. Motor Power:" appears on screen)
07. Press arrow down key once ("Opening Speed" appears on screen)
08. Press "ENT" (the set value will start flashing)
09. Press arrow up key to increase door opening speed or arrow down key to decrease door speed (MAKE SURE THAT YOU INCREASE DOOR SPEED IN SMALL INCREMENTS!)
10. Press "ENT" (the value that you selected will stop flashing)
11. Press arrow down key once ("Closing Speed" appears on screen)
12. Repeat steps 8-10
13. Press arrow down key once ("Soft Start " appears on screen)
14. Repeat steps 8-10
15. Press arrow down key once ("Quick Stop" appears on screen)
16. Repeat steps 8-10
17. Continue to press "ESC" until "Power On/System OK" appears on screen

*To adjust motor & controller heat: **WARNING: Never make any adjustments when the door is moving!***

01. Press "ENT" ("Main Menu: Basic Settings?" appears on screen)
02. Press arrow down key once ("Main Menu: Special Functions" appears on screen)
03. Press "ENT" ("Enter Password" appears on screen) "0000" is factory default
04. Press "ENT" ("Set Relay-Contact K1" appears on screen)
05. Press arrow down key once ("Adjust Motor Heating" appears on screen)
06. Press "ENT" ("Heating Power: (00) (00=OFF 07=MAX)" appears on screen)
07. Press "ENT" ("00" will start flashing)
08. Press arrow up key to select desired heating level ("00"=No Heating / "07"=Max. Heating)
09. Press "ENT" (the set value will stop flashing)
10. Continue to press "ESC" until "Power On/System OK" appears on screen

INSTRUCTIONS FOR MAKING ADJUSTMENTS TO THE DOOR VIA CONTROLLER

*To adjust the OPEN position of the door: **WARNING: Never make any adjustments when the door is moving!***

01. Press "ENT" ("Basic Settings?" appears on screen)
02. Press "ENT" ("Enter Password Please" appears on screen)
03. Enter your password (if applicable) by using the arrow up key until you reach your password number
04. Press "ENT" ("Set Control Functions?" appears on screen)
05. Press arrow down key 2 times ("Adjust Door Limit Encoder Values?" appears on screen)
06. Press "ENT" ("Pos. Encoder Open" appears on screen)
07. Press "ENT" (the set value will start flashing)
08. Press arrow up or down key to increase or decrease door open position
(MAKE SURE THAT YOU INCREASE OR DECREASE USING SMALL INCREMENTS!)
09. Press "ENT" (the value that you selected will stop flashing)
10. Continue to press "ESC" until "Power On/System OK" appears on screen
11. Repeat steps as necessary

*To adjust the CLOSED position of the door: **WARNING: Never make any adjustments when the door is moving!***

01. Press "ENT" ("Basic Settings?" appears on screen)
02. Press "ENT" ("Enter Password Please" appears on screen)
03. Enter your password (if applicable) by using the arrow up key until you reach your password number
04. Press "ENT" ("Set Control Functions?" appears on screen)
05. Press arrow down key 2 times ("Adjust Door Limit Encoder Values?" appears on screen)
06. Press "ENT" ("Modify Limit Value Pos. Open:" appears on screen)
07. Press arrow down key 1 time ("Pos. Encoder Close" appears on screen)
08. Press "ENT" (the set value will start flashing)
09. Press arrow up or down key to increase or decrease door closed position
(MAKE SURE THAT YOU INCREASE OR DECREASE USING SMALL INCREMENTS!)
10. Press "ENT" (the value that you selected will stop flashing)
11. Continue to press "ESC" until "Power On/System OK" appears on screen
12. Repeat steps as necessary

To select a new password:

01. Press "ENT" ("Basic Settings?" appears on screen)
02. Press arrow down key once ("Special Functions?" appears on screen)
03. Press "ENT" ("Enter Password Please:" appears on screen)
04. Press "ENT" ("Set Relay-Contact K1" appears on screen)
05. Continue to press arrow down key until "Select New Password?" appears on screen
06. Press "ENT" ("Enter Password, Please:" appears on screen & "0000" will start flashing)
07. Press arrow up key to select a new password
08. Press "ENT" ("Select New Password?" appears on screen)
09. Continue to press "ESC" until "Power On/System OK" appears on screen

Please note your password and keep in a secure place.

DATE _____
 CUSTOMER _____
 DOOR SIZE _____

DOOR S/N _____
 CONTROLLER S/N _____
 MOTOR S/N _____

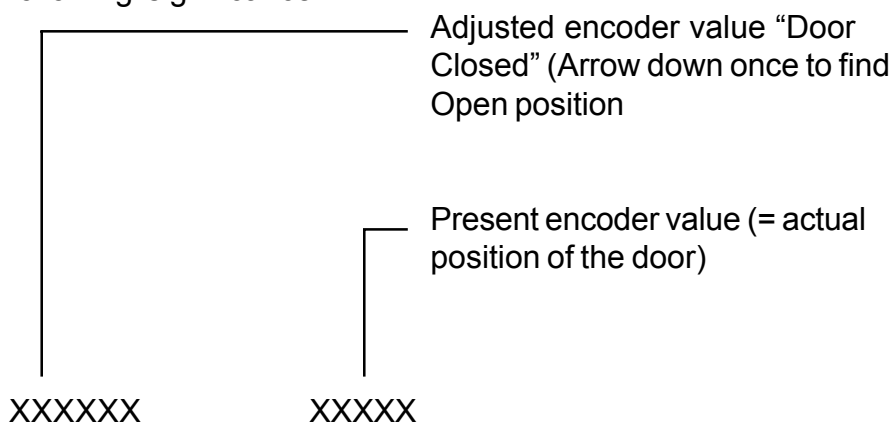
MENU LEVEL 1	MENU LEVEL 2	MENU LEVEL 3 <DEFAULT SETTINGS>	SELECTION TABLE FOR LEVEL 3	YOUR VALUE
MAIN MENU: BASIC SETTINGS?	SET CONTROL FUNCTIONS?	OPEN CONTROL: <DEAD MAN FUNCTION>	-DEAD MAN FUNCTION -FULL TRAVEL ALTERN. OPEN/CLOSE	
		CLOSE CONTROL:<DEAD MAN FUNCTION>	-DEAD MAN FUNCTION FULL TRAVEL	
		AUTOMATIC CLOSING: <OFF>	OFF -ON	
		HOLD-OPEN-TIME FOR AUTO CLOSE:<010s>	0...999 s	10
		MOTOR TIME PARTIAL OPENING: <06s>	2...99 s	1
	MOTOR ADJUSTMENT?	ADJUST NOMINAL MOTOR POWER: <250W>	50...370 W	370
		OPENING SPEED: <075>	5...250% (100% = 50 Hz)	
		CLOSING SPEED: <075>	5...250% (100% = 50 Hz)	
		SOFT START: 1(HARD)...100(SOFT) <25>	1...100	15
		QUICK STOP: 1(HARD)...100(SOFT) <05>	1...100	5
	ADJUST DOOR LIMIT ENCODER VALUES?	MODIFY LIMIT VALUE POS. OPEN:<XXX>	000...999	
		MODIFY LIMIT VALUE POS. CLOSE:<XXX>	000...999	
ADJUST SAFETY DEVICE?	SAFETY DEVICE CAUSES: <TEMPORARY STOP @ CLOSE>	-TEMPORARY STOP @ CLOSE -PERMANENT STOP @ CLOSE -DOOR OPENING 2 SEC. COMPLETE OPENING -STOP @ OPEN + CLOSE		
MAIN MENU: SPECIAL FUNCTIONS	SET RELAY-CONTACT K1?	CONTACT K1 ACTIVE ON: <EACH DOOR MOTION>	EACH DOOR MOTION -OPENING MOTION -CLOSING MOTION -DOOR COMPLETE OPEN -DOOR COMPLETE CLOSED	
		K1-TIME BEFORE DOOR MOTION:<0>	0...99s	0
		OPERATION OF K1: <MAINTAINED CONTACT>	MAINTAINED CONTACT -IMPULSE 1 SEC. -IMPULSE 5 SEC. -FLASHING CONTACT	
	ADJUST MOTOR HEATING	HEATING POWER <XX> 00=OFF 07=MAX		
	DELETE COMPLETE SET OF PARAMETERS?	ARE YOU SURE? THEN PRESS ENT		
	BYPASS DEFECTIVE SAFETY DEVICE: <NO>		NO -YES	
	SELECT SYSTEM LANGUAGE?	OPERATING LANGUAGE: <DEUTSCH>	-DEUTSCH -ITALIANO ENGLISH -FRANCAIS -ESPAÑOL	
SELECT NEW PASSWORD?	PLEASE ENTER NEW PASSWORD: <XXXX>			
MAIN MENU: DIAGNOSTICS	OVERVIEW OF CONTROL UNIT STATUS?	A S Z P G C O U V W F L K XXX.XXX XXX.XXX XXX	0000...9999	
	PERFORM SELF-TEST?	PLEASE WAIT: SELF-TEST RUNNING!!		
MAIN MENU: STATISTICS?	OPENING CYCLES TOTAL			
	CLOSING CYCLES TOTAL			
	DOOR STOPS WHILE OPENING			
	DOOR STOPS WHILE CLOSING			
	SAFETY DEVICE TRIPS TOTAL			
	OPERATING HOURS TOTAL			
	MOTOR OPERATING TIME			
	MOTOR OVERLOADS TOTAL			
	SYSTEM START-UPS TOTAL			
	WATCHDOG-RELEASES			
MAIN MENU: SYSTEM INFO?	HARD COPY			
	SOFTWARE-RELEASE			
MAIN MENU: SERVICE HOTLINE?	SERIAL NO.			
	TELEPHONE #S / FAX #S OF REPRESENTATIVES			

The “Diagnostics” part of the menu helps to locate errors fast and without problems, and to check the correct connections of switches, etc. This also allows an effective support from our service hotline as it permits to look systematically for errors.

III/1 Integrated diagnostic function “Overview of Control Unit Status”

In the upper row of the display, letters are shown whose significance is explained on the following page. The column “Indication of possible mistakes” gives examples of errors that could be indicated by this letter. Of course the status letters will be shown also, when corresponding switch/device is just actuated normally (e.g. “A” when the switch “OPEN” is pressed.)

The 3 figures shown in the lower row of the display have the following significance:



If the encoder values set for the positions “Door Closed” and “Door Open” are faulty (e.g. value of “Door Closed” is higher than in “Door Open”), the door might not move. ATTENTION: If the encoder has not yet been adjusted, wrong values may be shown.

III/2 Further error messages

The message “SYSTEM ERROR” in the display indicates that the microprocessor has located a grave error in the control system. Please check whether this problem is solved by pressing the “ESC” key. If the problem is not solved, then briefly switch off the power supply of the control system and then re-boot it. If this does not work, please call 1-888-833-3667.

III/3 Service

In the operating menu “Service Hotline”, you will find the telephone numbers and addresses of our facilities. Please do not hesitate to call if you have any questions.

Status letter	Indicated when...		Type of contact	Indication of possible mistakes
A S Z P	...the switch "OPEN" is pressed ...the switch "STOP" is pressed ...the switch "CLOSE" is pressed ...the switch "Part. Open" is pressed		make (NO) break (NC) make (NO) make (NO)	If the letter is shown all of the time, check whether the type of contact is correct or whether instead of a "make" contact, there is a "break" contact.
			break (NC) break (NC) break (NC)	If the letter is shown all of the time, check whether the type of contact is correct or whether the limit switch is not fixed correctly and is actuated all of the time.
U V W	...the encoder signals "Door Closed" ...the encoder signals "Crawling Speed Open" or "Crawling Speed Close" ...the encoder signals "Door Open"	- - -	- - -	If the position of the door indicated in the display (U, V, W) does not correspond with the actual position of the door, the connection of the encoder might be faulty.
L	...the safety device (SHE) responds		break (NC)	If the letter is shown all of the time, check whether the safety device is installed correctly or whether it is out of order.
K	...the signal contact K1 is actuated		-	Set the relay contact K1 (Menu: Special Functions); check which function has been set.

ERROR 02: • Internal device for measuring the motor current may be defective
(call customer service at the factory)

ERROR 04: • The door fails to complete the open or close cycle
(re-adjust the door limits)
• No door movement
(check wiring connections of all control stations)
• A wire between controller & Positioning Control System is broken or not connected
(check for broken or disconnected wire)
• Motor is wired opposite of the Positioning Control System
(re-wire properly)
• Controller is not connected to the motor
(connect controller to motor)

ERROR 10: • External device output does not maintain 24 volts
(check wiring)
• Possible component failure within power supply
(call customer service at the factory)

MOTOR

OVERLOAD: • Improper voltage
(check voltage)
• Door has hit an object
(remove the obstruction & press “ESC” on the keypad)
• Door not moving freely
(adjust the door to minimize friction & press “ESC” on the keypad)
• Very large doors or doors located in freezers
(increase the “Soft Start” settings)
• Door traveling too far in open or closed position
(check encoder values in the Diagnostics Menu)

Warranty - The Frank Door Company warrants to the original owner of this product that the door panel will be free of defective material and workmanship, for a period of five (5) years and a two (2) year warranty on all other Frank Door Company manufactured components (excluding normal wear parts), commencing with the date of shipment from the factory. Frank Door Company warrants products or component parts used on the doors, but not manufactured by Frank Door, to the purchaser, to the same extent that they are warranted by the original manufacturer to Frank Door.

The warranty becomes valid upon the receipt of "Payment in Full" by Frank Door Company. Only defects called to Frank Door Company's attention during this period of time will be covered under this warranty. This warranty is null and void if:

The door(s) are altered in any way without advanced written consent of the Frank Door Company.

The door(s) are not installed within 120 days of original shipment.

Frank Door Company will not be responsible for any installation (labor) costs incurred during replacement, or for replacement or repair of any materials subjected to excessive abuse, misuse, or improper installation.

Frank Door will repair or replace at its discretion and at no charge, with freight prepaid (carrier of Frank Door Company's choice), any door or its component parts which are found defective upon inspection by an authorized Frank Door Company representative. This provision of repair or replacement shall be the limit of Frank Door's responsibility under this warranty. Frank Door Company shall not be responsible for other losses or damages claimed to be caused by any door or door parts covered under this warranty.

No other oral or written representation made by Frank Door Company or its agents are part of this warranty unless specifically set forth in writing by an authorized Frank Door Company representative.

The above set forth warranty is seller's sole warranty. Seller, makes no other warranty of any kind whatever, expressed or implied; and all implied warranties or merchantability and fitness for a particular purpose which exceed the aforesaid obligation and hereby disclaimed by the seller and excluded from this agreement.

Back Charge Claim Policy - The Frank Door Company strictly enforces this Warranty Back Charge Policy. Prior to ANY warranty work being performed, the following procedures must be followed. Frank Door reserves the right to deny ANY back charges or invoices if these procedures are not followed. A detailed explanation of the issue(s) must be presented to the Manager of Customer Service for review. If the claim is determined to be justifiable by the Manager of Customer Service, the following information shall be required prior to any expenditures or work being performed:

The Manager of Customer Service will issue a purchase order for the scope of work with a "Not to Exceed" monetary amount for the scope of work specifically set forth in writing. Any changes or modifications to the scope of work or the monetary value must have prior written approval from the Manager of Customer Service.

The total liability to Frank Door Company shall be the total monetary value of the scope work approved in writing by the purchase order and any modifications thereof by the Manager of Customer Service. No other oral or written representations made by Frank Door Company or its agents are part of this policy unless specifically set forth in writing by the Manager of Customer Service.