



# **Installation Instructions**

**SE 14.21-25,40 ER CP970**

**115VAC 1PH**

## SAFETY DIRECTIONS

### Basic Directions

This control has been built in accordance with **EN 12453 Industrial, commercial and garage doors and gates - Safety in use of power operated doors - Requirements** and **EN 12978 Industrial, commercial and garage doors and gates - Safety devices for power operated doors - Requirements and Test methods**; and left the factory in perfect condition from the point of view of safety. To maintain this condition and to ensure safe operation, the user must observe all the directions and warnings contained in these operating instructions.

In principle, only trained electrical technician should work on electrical equipment. They must assess the work which has been assigned to them, identify potential danger sources and take suitable safety precautions.

Reconstruction of or changes to CP 970 or the SE 14.21 operator are only permissible with the approval of the manufacturer. Original replacement parts and accessories authorized by the manufacturer guarantee safety. Liability ceases to apply if other parts are used. The operational safety of the unit is only guaranteed if it is used in accordance with the regulations. The limiting values stated in the technical data should not be exceeded under any circumstances (see corresponding sections of the operating instructions).

### Specified normal use

The drive unit is intended for counter-balancing sectional doors. The safe operation is only guaranteed with normal specified 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.

### Spare parts

Use only original spare parts.

#### Symbols



**Warning** - This warns that the SE14.21 or other materials may be damaged if the appropriate precautions are not taken.



**Danger** - This indicates danger to the life and health of the user if the appropriate precautions are not taken.



**Note** - Important information!

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## TECHNICAL DATA

### SE14.21 CP 970

Output torque	140	Nm
Output speed	21	rpm
Output shaft / hollow shaft	25,40 / 1	mm/inch
Maximum holding torque	600	Nm
Maximum door weight	6000	N
Supply voltage	115V 1PH	VAC
Secondary Supply	24VDC, max load 150mA	
Operating current	2.6	AMPS
Operating frequency	60	Hz
Maximum movement per hour	16	
Class of protection	IP 65	
Fuses	1 x 2AMP Secondary 1 x 1AMP Accessories	
Temperature range	-5 / +40	°C
Operator Dimensions Control Panel enclosure dimensions	190 x 300 x 115 7.5" x 11.8" x 4.5"	Mm/Inch WxHxD
Cable length	10	Meter



#### Warning


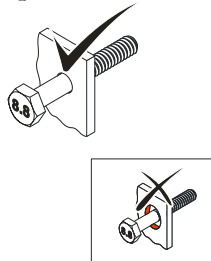
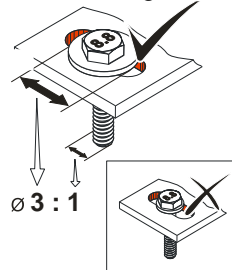
- Verify primary voltage before installing or wiring. Verify that the primary voltage matches main supply listed on the operator and control panel enclosure.

## 1. MECHANICAL INSTALLATION OF SE14.21 OPERATOR & PANEL

### A. Prerequisites

The permissible loads on walls, fastenings, mountings and transmission elements must not be exceeded. For maximum holding torques or locking torques refer to technical data.

#### Fasteners:

<p>Self-locking fasteners with a minimum strength of 800 N/mm<sup>2</sup> (8.8) must be used.</p>  <p>≥ 800 N/mm<sup>2</sup></p>	<p>Utilize the hole diameter to the fullest.</p> 	<p>Use adequately dimensioned washers for elongated holes.</p>  <p>Ø 3 : 1</p>
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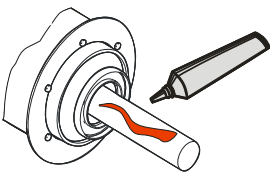
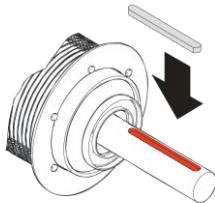
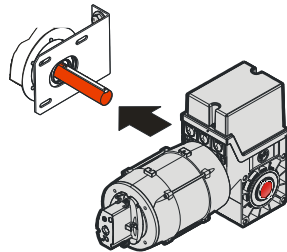
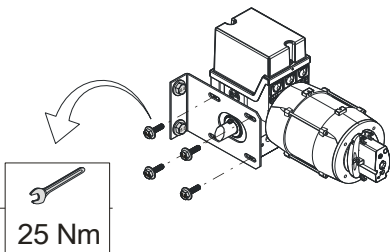
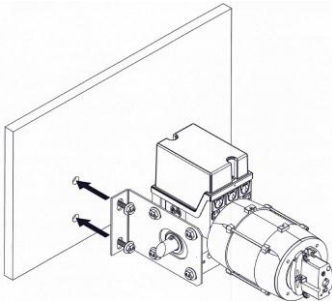
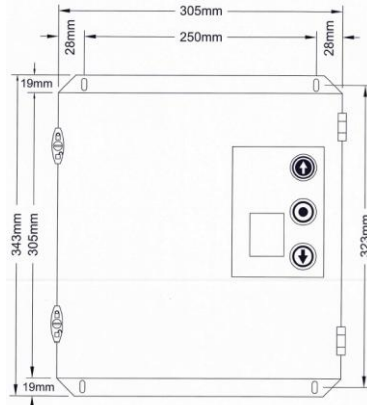
### B. Mounting the Operator

The descriptions below apply to general door specifications. The specifications of the door manufacturer must also be observed during installation.

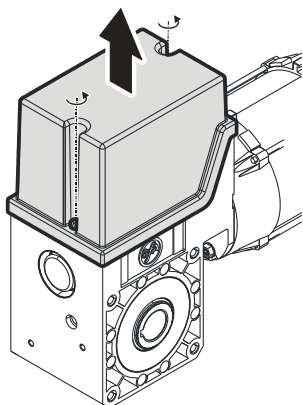
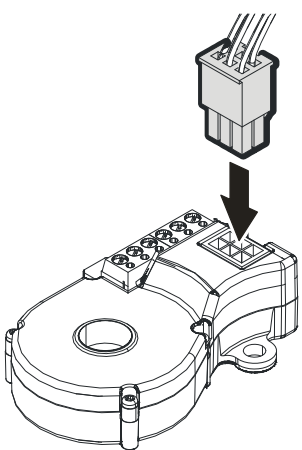
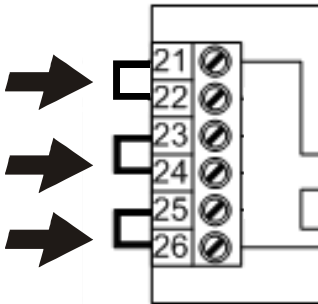
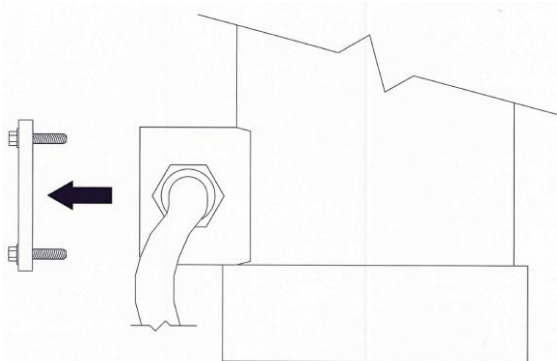
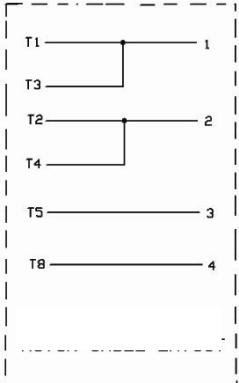


#### Warning

- During installation, be sure to use a lifting device that has a sufficient load-carrying capacity

<p><b>1.</b> Thoroughly grease the door shaft</p> 	<p><b>2.</b> Mount the Key (not supplied)</p> 	<p><b>3.</b> Slide drive unit onto 1" shaft</p> 
<p><b>4.</b> Install bolts (M8) with lock washer And tighten to 25Nm.</p>  <p>25 Nm</p>	<p><b>5.</b> Secure bracket to wall or support. Bracket fasteners are NOT provided.</p> 	<p><b>6.</b> Mount control panel. Mounting fasteners are NOT provided.</p> 

## 2. VERIFY ELECTRICAL CONNECTION OF LIMIT SWITCH AND MOTOR

<p>1. Remove limit cover</p> 	<p>2. Verify limit switch plug is in</p> 	<p>3. Verify limit jumpers are in place.</p> 											
<p>4. Remove motor cover</p> 	<p>5. Verify wiring of motor cables.</p>  <table border="1"> <tbody> <tr> <td>T1</td> <td>1</td> </tr> <tr> <td>T3</td> <td></td> </tr> <tr> <td>T2</td> <td>2</td> </tr> <tr> <td>T4</td> <td></td> </tr> <tr> <td>T5</td> <td>3</td> </tr> <tr> <td>T8</td> <td>4</td> </tr> </tbody> </table>	T1	1	T3		T2	2	T4		T5	3	T8	4
T1	1												
T3													
T2	2												
T4													
T5	3												
T8	4												



### Note

- After verifying proper connections re-install limit and motor cover.

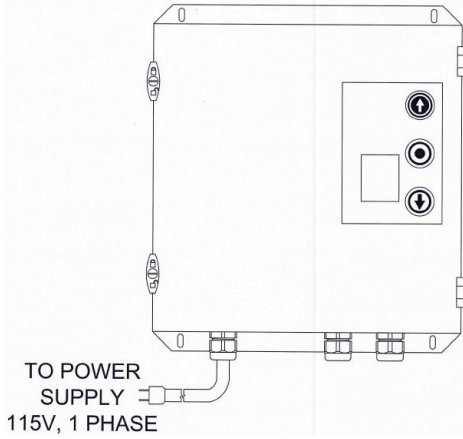
### Danger



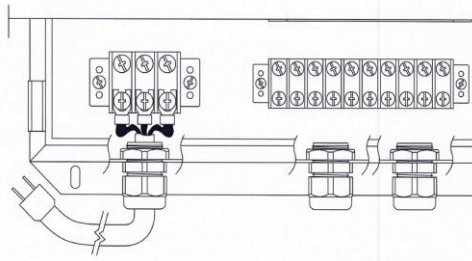
- Switch the power OFF and check that the cables are de-energized
- Observe the applicable regulations and standards
- Make a proper electrical connection
- Use suitable tools

### 3. ELECTRICAL CONNECTIONS

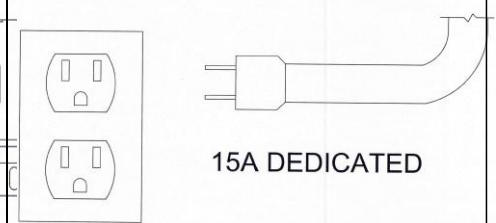
#### Confirm Primary Voltage



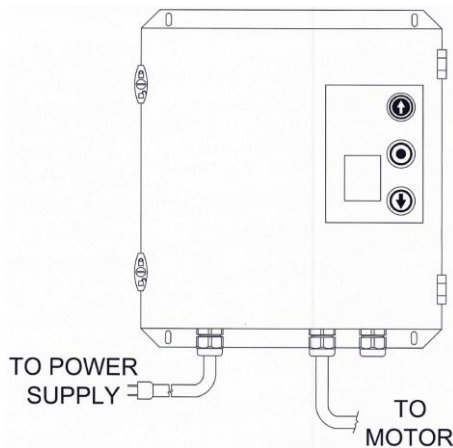
#### Confirm power cord is wired properly



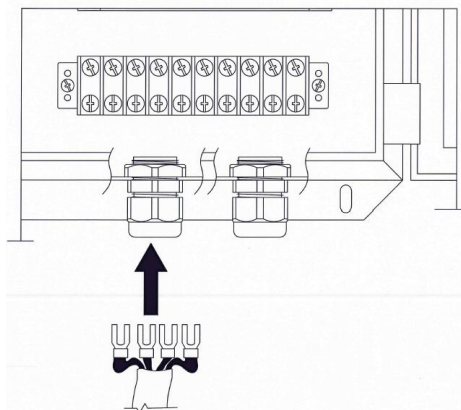
#### Plug into dedicated 15AMP outlet within 3' of control panel



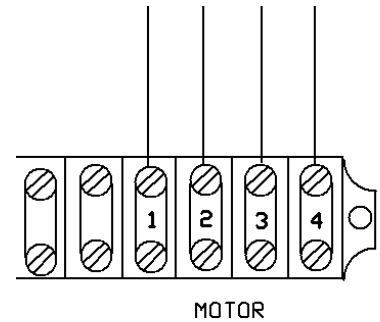
#### Motor cable connection to operator & control panel overview



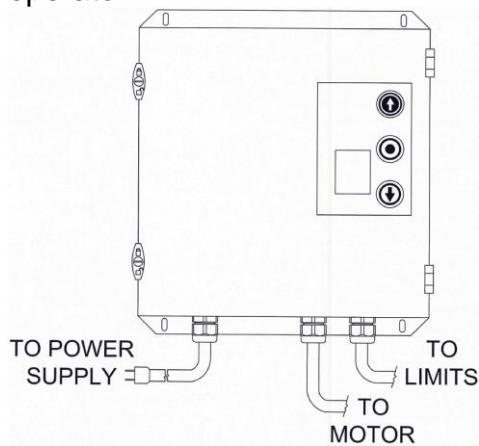
#### Fit cable through the provided strain relief



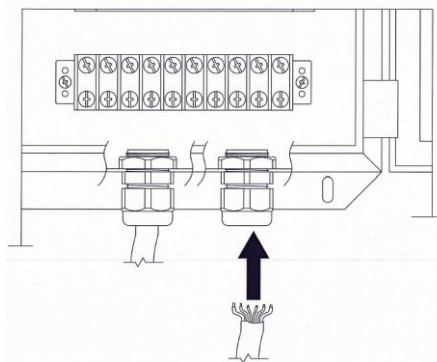
#### Wire motor cables into CP 970 panel



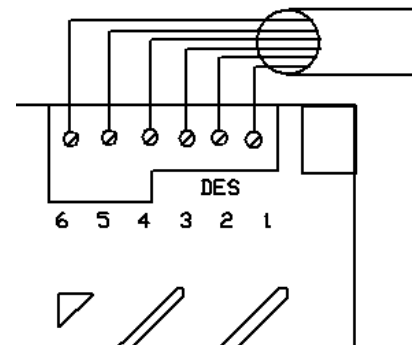
#### Limit cable connection to operator



#### Fit cable through provided strain relief



#### Wire limit cables into CP 970 panel



## 4. SETTING THE LIMITS



### Warning

- First check motor rotation

### Turn power ON.

The door must open when the OPEN push button is operated. If the door closes, 3 and 1 of control panel must be exchanged with the power off. See hardware overview on page 15.

### Note

- During setup the system will only run in Deadman

Confirm board is ready for programming the Limits. Display is Blinking.

### A. Program the OPEN limit

Push & Hold the OPEN button to open the door to the desired OPEN final limit position.

### B. Memorise the OPEN limit

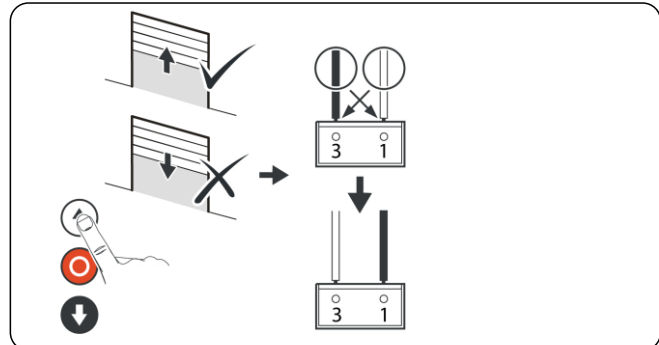
Push & Hold the STOP-button for 3 seconds, until the display changes.

### C. Program the CLOSE limit

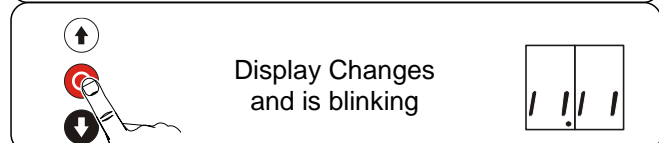
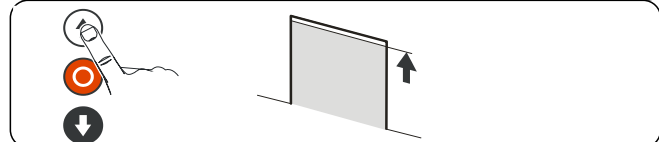
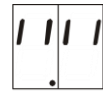
Push & Hold the CLOSE button to close the door to the desired close final limit position.

### Memorise the CLOSE limit

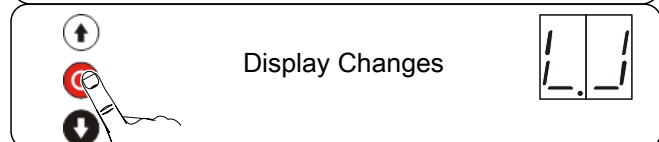
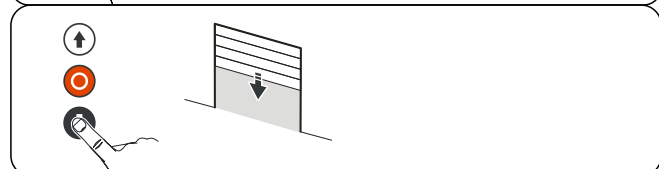
Push & Hold the STOP-button for 3 seconds, until the display changes.



Display is blinking



Display Changes  
and is blinking



Display Changes



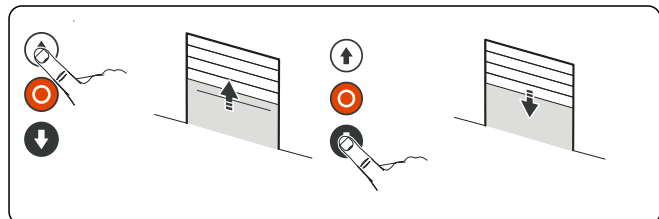
### Warning

- Door limits are now programmed. System will run in Deadman Only.

### E. Test open and close cycle before adding any accessories

Push & Hold the OPEN button to check the full open position.

Push & Hold the CLOSE button to check the full close position.



### Note

- For further adjustments, such as momentary activation or timer to close see programming mode on page 10.

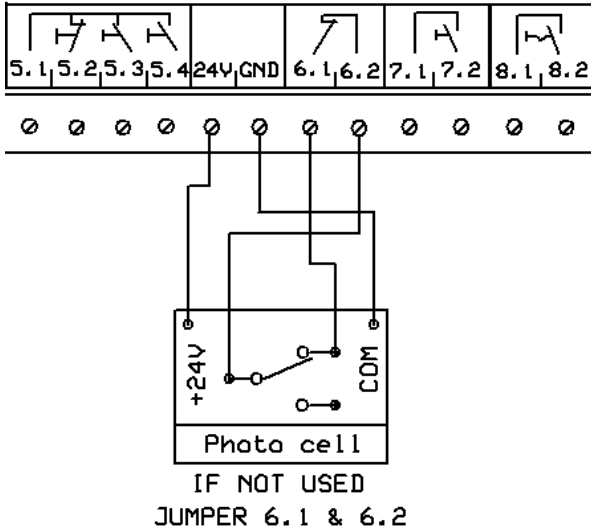


## 5. WIRING THE ACCESSORIES

The following wiring diagrams are for recommended and optional accessories.

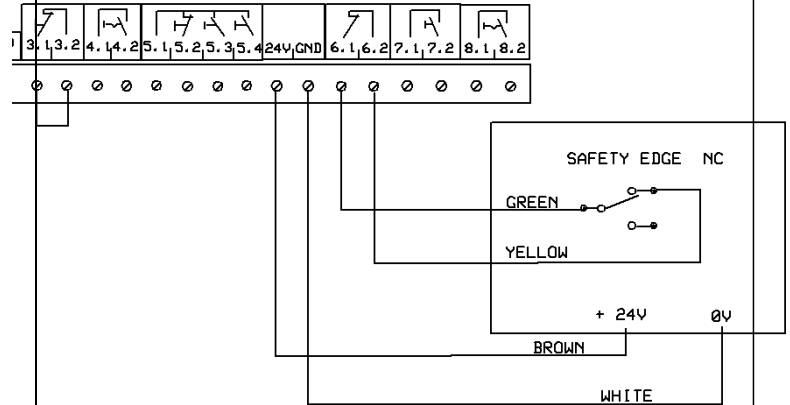
### A. Safety Photocell

It is **recommended** to install a normally closed contact photocell to the CP 970. If not used Jumper 6.1 & 6.2.



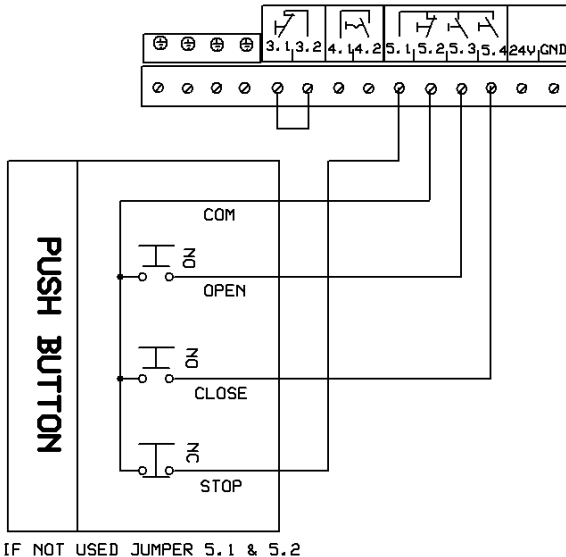
### B. Safety Edge

It is **recommended** to install a normally closed contact Safety Edge to the CP 970. If used with photocell (A) wire in series 6.1 & 6.2



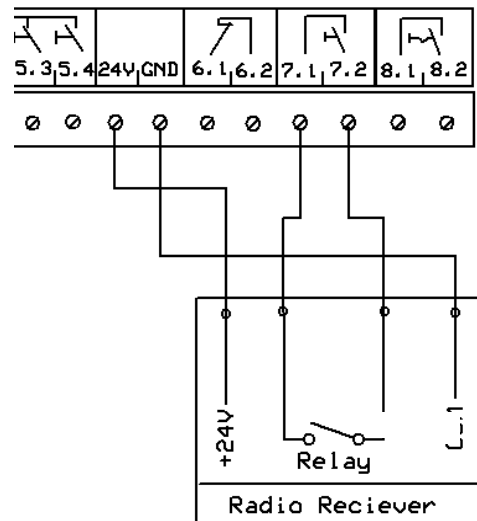
### C. Push Button

To wire an external push button for open/close/stop activation. If not used Jumper 5.1 & 5.2.



### D. Radio Control








To wire an external radio receiver for open or open & close activation based on programming. See page 10 for programming options.






































### Note


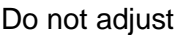

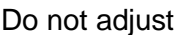





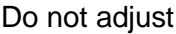










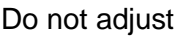

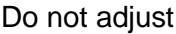

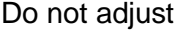

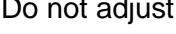




- If Safety Photocell (5.A) and Safety Edge (5.B) are used together they must be wired in series. See complete wiring diagram on page 16.

## 6. PROGRAMMING THE UNIT

<b>1. Entering programming mode</b> Open enclosure lid Press & Hold selector switch for 3 seconds until display =   3s	<b>2. Choose program and confirm</b> Turn selector AND Press & Hold selector switch for 3 seconds  3s
<b>3. Adjustment</b> Turn selector switch 	<b>4. Memorize</b> Press & Hold selector switch for 3 seconds  3s
<b>5. Exit Programming</b> Turn selector until display=  AND Press & Hold selector switch for 3 seconds  3s	

## 7. PROGRAMMING PARAMETERS

2. Choose program and confirm		3. Adjustment	4. Set
<b>Operating mode</b>			
 Door function   <b>Warning -Do not enable momentary close without installing a Safety Photocells and/or Safety Edge</b>		 Dead man OPEN  Momentary OPEN  Momentary OPEN  Do Not Use	 1x Press Selector
<b>Door Position</b>			
 Final limit open coarse adjustment	 	 Move door upwards or downwards	 1x Press stop button
 Final limit close coarse adjustment	 	 Move door upwards or downwards	 1x Press stop button
 Final limit open Fine adjustment		 Final limit open can change Without door movement using +/-	Press selector  1x
 Final limit close Fine adjustment		 Final limit close can change Without door movement using +/-	Press selector  1x
 Do not use		Do not adjust	
 Intermediate stop	 	Move to intermediate stop	 1x press stop button
 Relay switch stop	 	Move to relay switch stop	 1x press stop button










2. Choose program and confirm	3. Adjustment	4. Set
<b>Control Functions</b>		
 Do not use	 Do not adjust	
 Do not use	 Do not adjust	
 Automatic closing feature	  Time can be set between 1-240 sec. Ex. 1-6.2 = 162 sec.	 1x Press stop button
 Do not use	 Do not adjust	
 Relay Output "9.1, 9.2, 9.3"  *See program 1.6 and 1.7 to move switch contact position*	  Off/Not used  Switch contact impulse signal  Switch contact continuous  Pre-Flash Open & Close 3 seconds with flash on movement  Pre-Flash Close three seconds with flash on movement  Constant pressure open & close three seconds constant movement	 1x Press selector
 Do not use	 Do not adjust	
 Do not use	 Do not adjust	
 Do not use	 Do not adjust	
 Do not use	 Do not adjust	
<b>Maintenance cycle counter</b>		
 Counter adjustment	  01-99 correspond from 1,000 up to 99,000 count down cycles	 1x Press selector

<div><div>8.6</div></div> <div>Reaction when reaching 0</div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div>1</div>	<div>Display appears "CS" and adjusted number of cycles</div> <div>Changing to DEADMAN display appears "CS" and adjusted number of cycles</div> <div>Changing to DEADMAN same as 0.2 reset to about 500 cycles possible,press stop button for 3 seconds</div>	
2. Choose program and confirm	3. Adjustment		4. Set
Memory Check			
<div><div>9.1</div></div> <div>Info cycle counter 7-digit</div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div>1x selector</div>	<div><div><div><div>1.</div></div><div><div>HT</div></div></div><div><div>7.</div></div><div><div>ZT</div></div></div> <div><div>0.</div></div> <div><div>T</div></div> <div><div>P.</div></div> <div><div>H</div></div> <div><div>E.</div></div> <div><div>Z</div></div> <div><div>8.</div></div> <div><div>E</div></div> <div>The cycles would be displayed as follow: M= 1.000.000      H= 100 HT= 100.000      Z= 10 ZT= 10.000      E= 1</div>	
<div><div>9.2</div></div> <div>Info last 2 faults</div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div>1x selector</div>	<div>Last 2 faults would be alternately displayed.</div>	
<div><div>9.3</div></div> <div>Info Program changes 7-digit</div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div>1x selector</div>	<div><div><div><div>1.</div></div><div><div>HT</div></div></div><div><div>7.</div></div><div><div>ZT</div></div></div> <div><div>0.</div></div> <div><div>T</div></div> <div><div>P.</div></div> <div><div>H</div></div> <div><div>E.</div></div> <div><div>Z</div></div> <div><div>8.</div></div> <div><div>E</div></div> <div>The cycles would be displayed as follow: M= 1.000.000      H= 100 HT= 100.000      Z= 10 ZT= 10.000      E= 1</div>	
<div><div>9.4</div></div> <div>Info program version</div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div>1x</div>	<div>Program version will be displayed</div>	
Reset			
<div><div>9.5</div></div> <div>RESET except cycle and program change counter</div>	<div><div><div><div>0.0</div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div>RESET</div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div></div><div></div></div></div> <div>3s Press stop button for 3 seconds</div>	

## 8. OPERATING STATUS DISPLAY

Report	Description	Measure to solve the problem
F. 12	Missing jumper	Insure jumper is in 2.1 & 2.2 on CP970
13	Missing jumper	Insure jumper is in 21 through 26 on DES Limit
14	Emergency stop activated	Check the emergency stop is activated, or whether the supply cable is broken
17	Missing jumper	Insure jumper is in 2.1 & 2.2 on CP970
18	Missing jumper	Insure jumper is in 2.1 & 2.2 on CP970
20	Safety edge not recognized	Check the safety edge is connected correctly or the wrong type has been selected in the program
21	Photocell activated	Check the photocell has been fitted properly, or whether the connecting cable is broken
22	Safety edge operated in two consecutive cycles	Check for an obstacle or the connecting cable is broken or there is a short circuit in the cable
24	Safety edge 8K2 activated	Check the safety edge is activated or there is a short circuit in the connecting cable
25	Safety edge 8k2 defect	Check safety edge and connecting cable are not broken
26 27 28 29	Consult factory	
30	Limits not adjusted	Adjust limits
31	Safety open limit operated	Turn mains supply OFF and move the door downwards - with the manual operator- until the limit is free or the open limit should be re-adjusted.
32	Safety close limit operated	Turn mains supply OFF and move the door upwards - with the manual operator- until the limit is free or the close limit should be re-adjusted.
41	Door load monitor has activated	Check to see if the door moves freely.
45	Missing jumper	Insure jumper is in 2.1 & 2.2 on CP970
51	ROM - Fault	Fault acknowledgement: switch OFF and ON the main power.
52	Internal fault report	Fault acknowledgement: switch OFF and ON the main power.
53	RAM - Fault	Fault acknowledgement: switch OFF and ON the main power.
54	Internal control fault	Fault acknowledgement: switch OFF and ON the main power.
55	DES – no response	Check electronic limit DES connection. Fault acknowledgement: switch OFF and ON the main power.
56	Drive unit does not work	Check the door movement. Check the limit shaft for turning. Check phase rotation.
57	Phase rotation failure	Check main supply phase rotation turns right Solution: Reverse 1 & 3 on DC970

## OPERATING STATUS DISPLAY

Report	Command Acknowledgements
	Open command being given
	Stop command being given
	Close command being given
	Cycles for maintenance reached
Report	Status
Flashing 	Opening
Flashing 	Closing
	Door stopped between set limits
	Door stopped at upper limit
	Door stopped at lower limit

### Note

- If any other fault codes appear please consult factor.

## 9. MANUAL OPERATION - ER (release)

The manual operation is provided as a means of opening or closing the door when power is unavailable or an error has occurred.

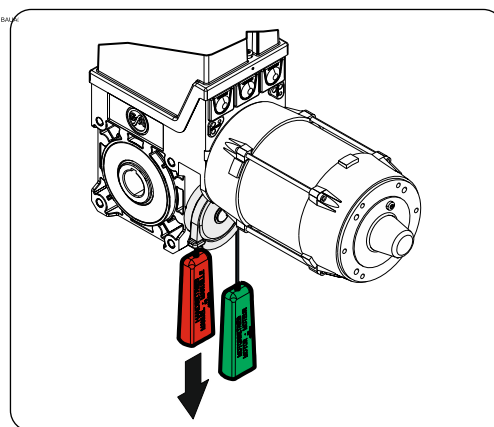


### Warning - Injury through improper operation!

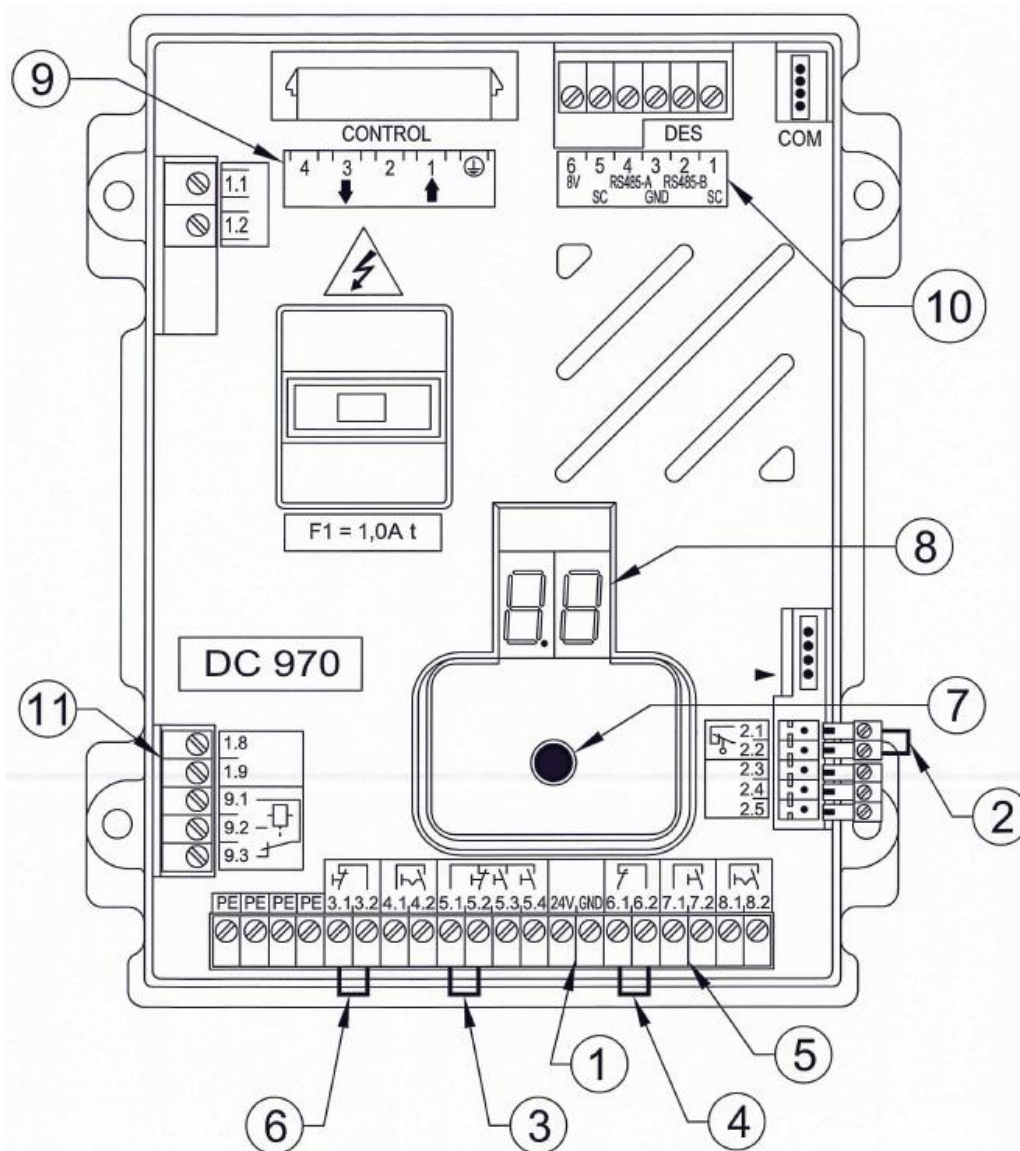
- Disconnect the power
- Door movement is only possible after release

Pull the red grip to disengage the drive. Open or close the door manually.

Pull the green grip to engage the drive.

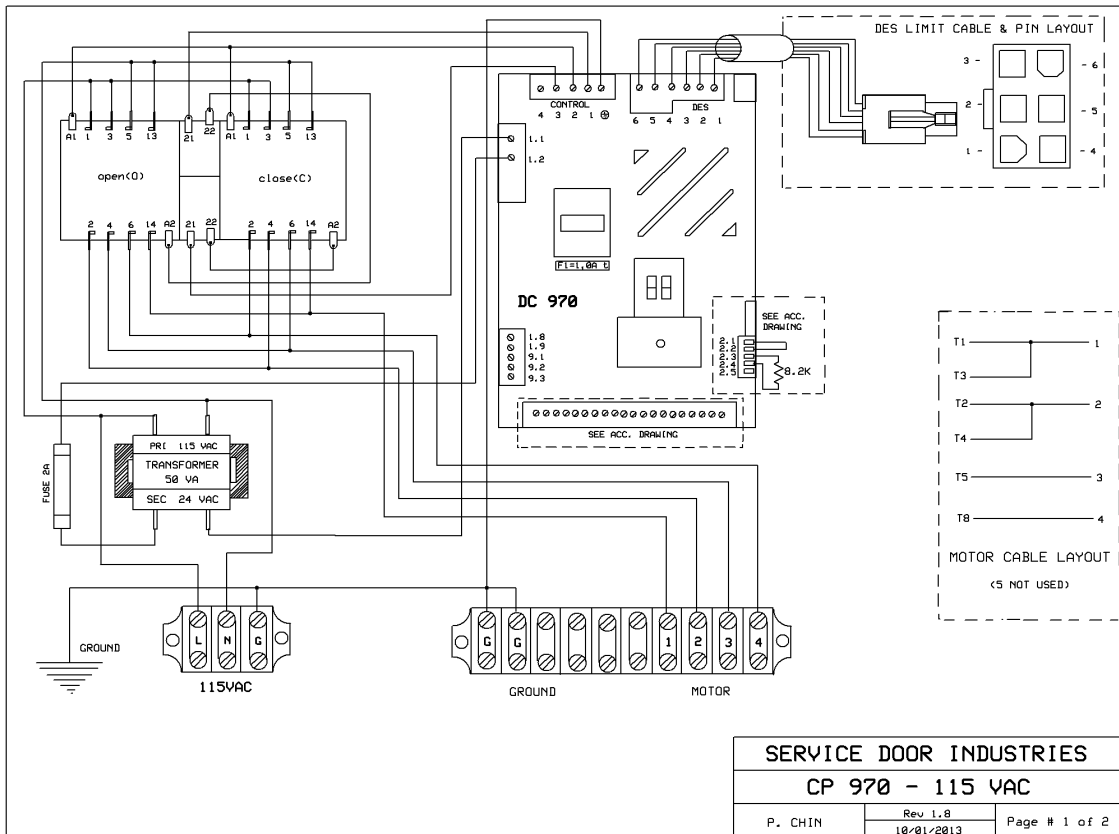


## 10. HARDWARE OVERVIEW CP970

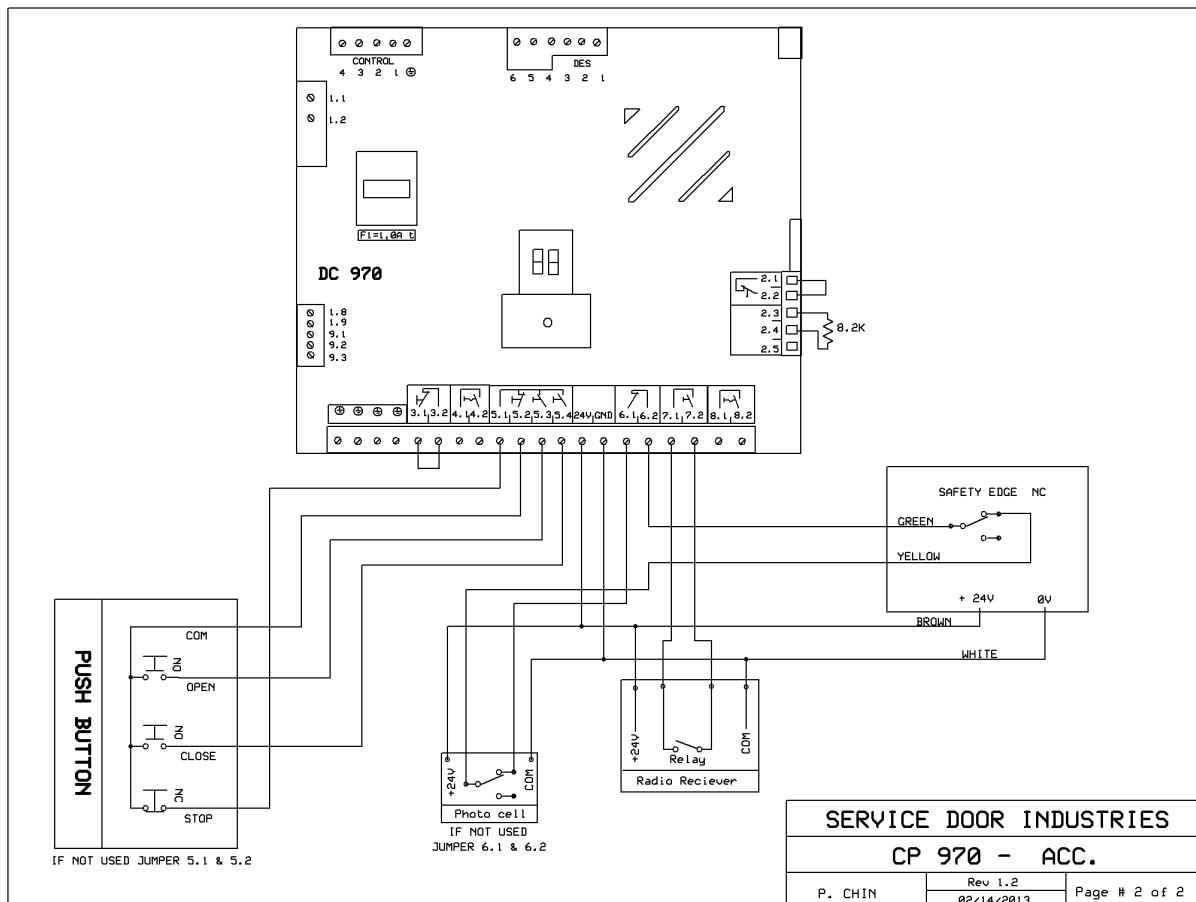


1	Supply 24VDC Max 500mA
2	Resistor – Do not remove 2.1 & 2.2
3	Push button - If not used Jumper 5.1 & 5.2
4	Photocell or Safety edge N.C. – If not used Jumper 6.1 & 6.2
5	Radio control N.O. 7.1 & 7.2
6	Jumper – Do not remove 3.1 & 3.2
7	Selector switch
8	7-Segment display
9	Relay output for warning light or annunciator
10	Limit connection
11	24VAC 1.8 & 1.9

## 11. CP 970 POWER, MOTOR AND LIMIT WIRING DIAGRAM



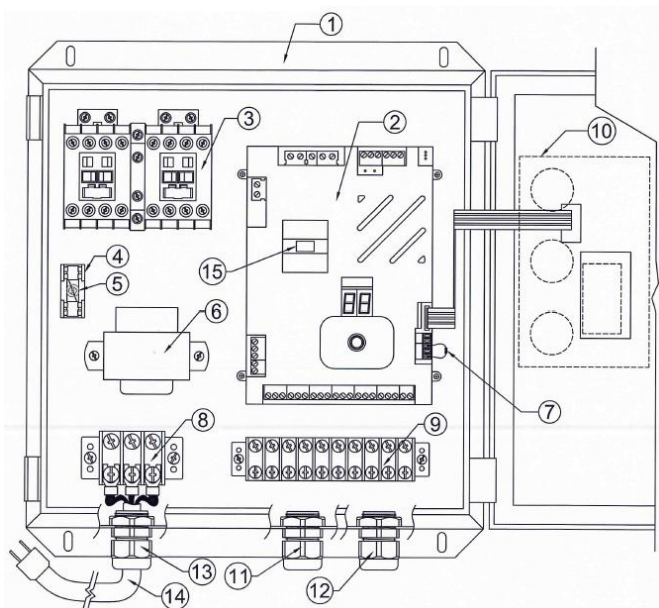
## 12. ACCESSORIES WIRING DIAGRAM





## 13. OPERATOR AND PANEL PARTS BREAKDOWN

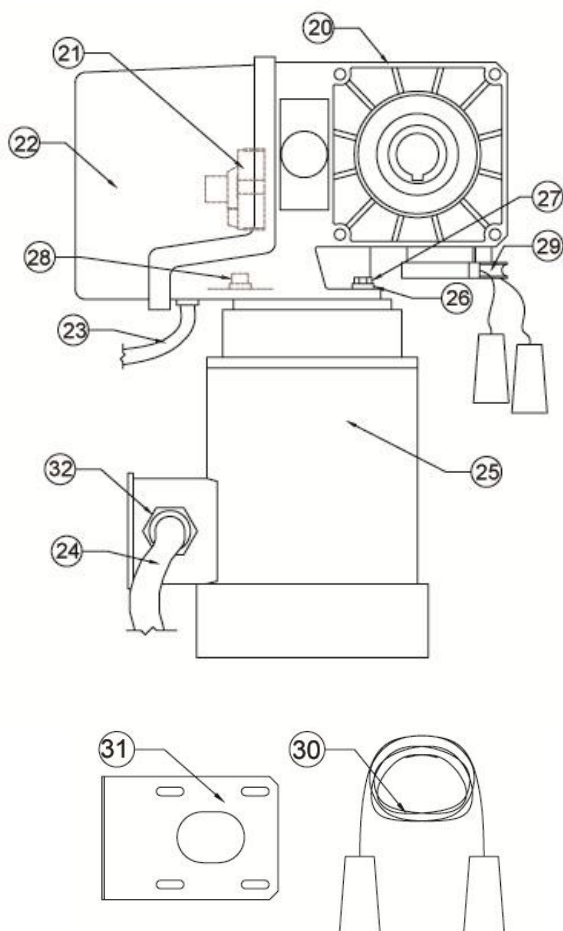
### CONTROL PANEL



#### PART DESCRIPTION

1. ENCLOSURE
2. CP970 CONTROLLER
3. CONTACTOR 24VAC
4. FUSE HOLDER
5. FUSE – 2 AMP
6. TRANSFORMER 115V-24VAC
7. RESISTOR- 8K2
8. TERMINAL STRIP 3C
9. TERMINAL STRIP 10C
10. FOIL PUSH BUTTON W/ CABLE
11. STRAIN RELIEF- MOTOR CABLE
12. STRAIN RELIEF- LIMIT CABLE
13. STRAIN RELIEF- POWER CABLE
14. PRE-WIRED POWER CABLE
15. FUSE – 1 AMP
16. WASHER
17. 3/4 SCREW
18. 1/2 SCREW
19. NUT

### OPERATOR



#### PART DESCRIPTION

20. GEAR REDUCER
21. DIGITAL LIMIT
22. LIMIT COVER
23. LIMIT CABLE
24. MOTOR CABLE
25. MOTOR
26. M6 LOCK WASHER (X4)
27. M6 x 1.0 x 25mm HEX HEAD SCREW (X2)
28. M6 x 1.0 x 25mm SOCKET HEAD CAP SCREW (X2)
29. EMERGENCY RELEASE
30. ROPE EXTENSION
31. MOUNTING BRACKET
32. STRAIN RELIEF

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