Installation Instructions

SDS SPRINGLESS DOOR SYSTEM

230VAC 1PH

Date: 23.03.2016

Version: II-SDS-001-01

1. SAFETY *DIRECTIONS*

Basic Directions

This system 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 a 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 the following equipment 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 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 operator 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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TABLE OF CONTENTS

2. TECHNICAL SPECIFICATION

SDS – SPRINGLESS DOOR SYSTEM

Mounting	Bracket	
Drum type	5250-18	
Maximum Door Height	18' (5.5m)	
Drive Types	SD-19.85	SD-25.55
Maximum door weight	400 Lbs (181 kg)	575 Lbs (260 kg)
Maximum door speed	24"/s (61 cm/s)	15"/s (28 cm/s)
Shaft Size	1 1/4" (3.175 cm)	
Supply voltage	230VAC 1PH 60Hz	
Secondary Supply	24VDC, max load 500mA	
Operating current	7.7 Amps	
Class of protection	IP 65	
Temperature range	23 / 104 °F (-5 / +40 °C)	
Operator Dimensions	7.48" x 11.81" x 4.52" (19 x 30 x 11.4cm)	
Control Panel enclosure dimensions	7.5" x 11.8" x 4.5" (19 x 30 x 11.4cm)	
Pre-wired Cable length	16' - 6" or 33' (5m or 10m)	

Warning

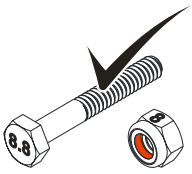
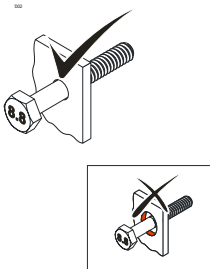
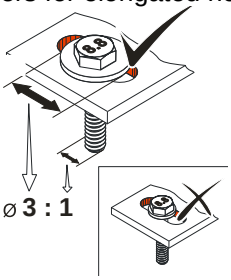
- Verify primary voltage before installation. Verify that the primary voltage matches main supply listed on the operator and control panel enclosure.

3. MECHANICAL INSTALLATION OF SDS

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 of fasteners.

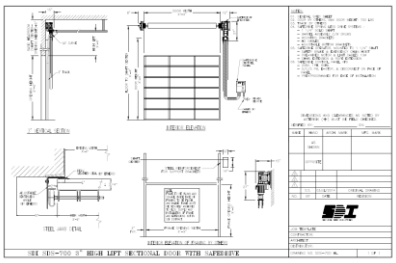
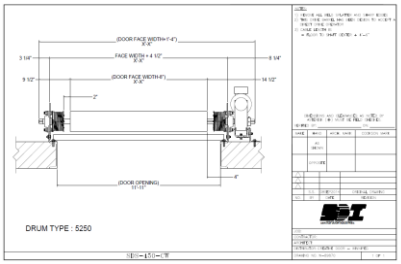
Fasteners:

Self-locking fasteners with a minimum strength of 800 N/mm^2 (8.8) must be used  **≥ 800 N/mm^2**	Utilize the hole diameter to the fullest  	Use adequately dimensioned washers for elongated holes 

B. Verify Documentation Before Proceeding

Note

- Review all drawings, packing lists and the manual before starting installation.

1. Verify field dimensions with provided drawing 	**2.** Verify mounting location with provided drawing  	**3.** Check all parts against packing list. Determine if any parts are missing before proceeding 

C. Mounting the Barrel Assembly

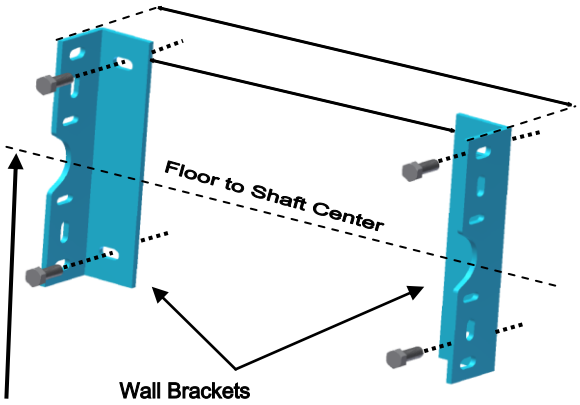
The descriptions below apply to general specifications. The specifications of the door manufacturer must also be observed during installation.

Warning

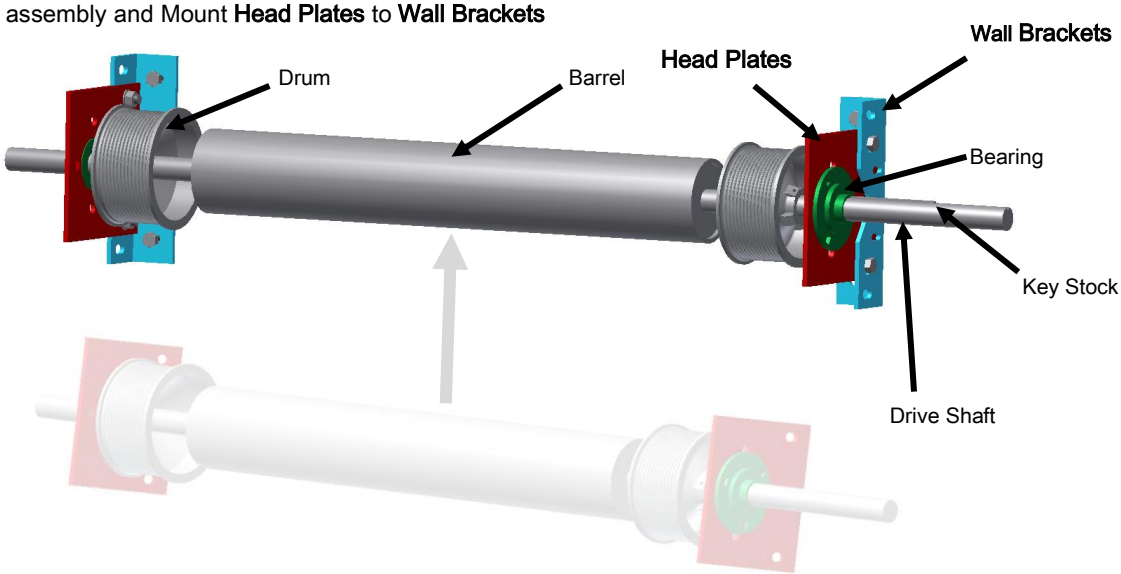
- During installation be sure to use a lifting device that has a sufficient load carrying capacity

1. Mount the **Wall Brackets** as specified in the drawing provided

Note: Confirm dimensions with drawing



2. Lift barrel assembly and Mount **Head Plates** to **Wall Brackets**



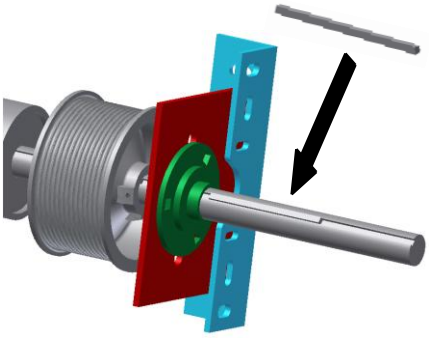
D. Mounting the Operator

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

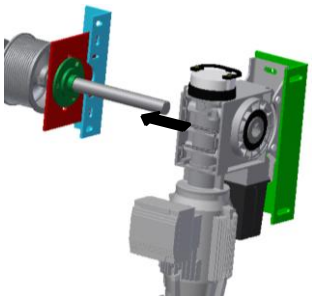
Warning

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

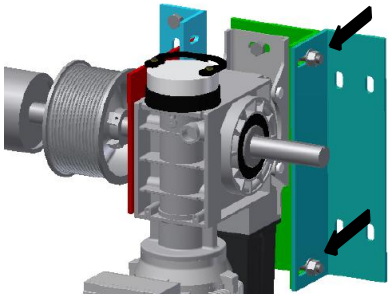
1. Install the keystock on the shaft



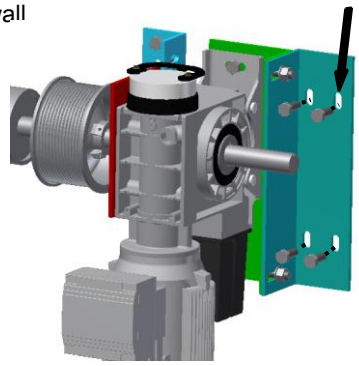
2. Thoroughly grease the shaft and slide the operator on while aligning it with the keystock



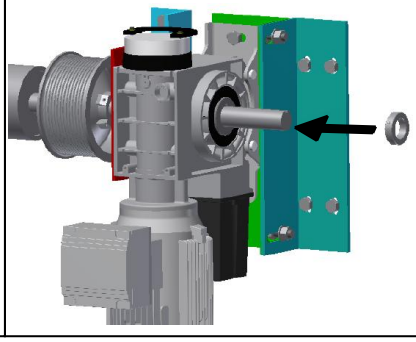
3. Install the operator brackets on operator flange



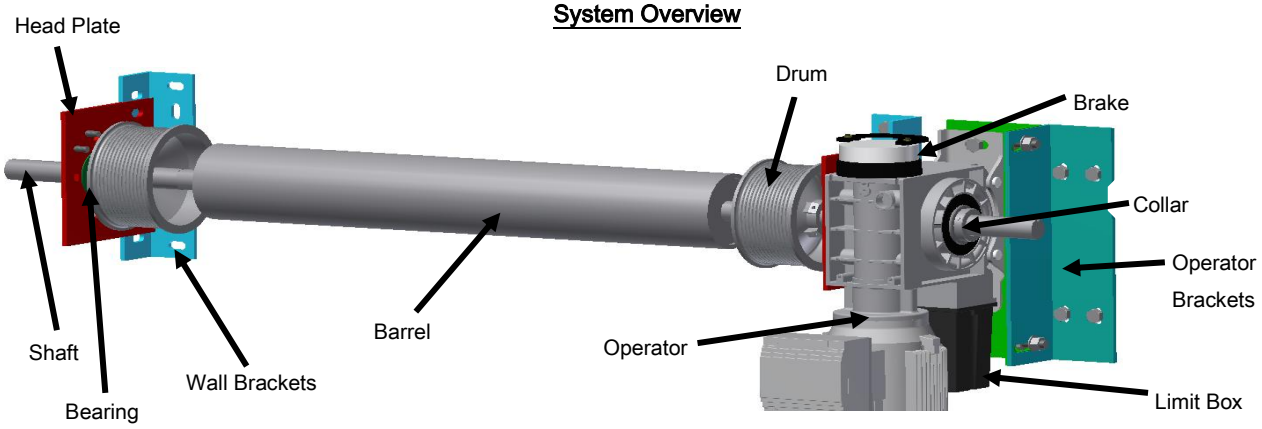
4. Mount the operator brackets to the wall



5. Fix the collar onto the shaft to secure the operator

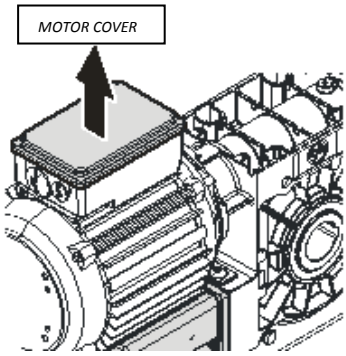
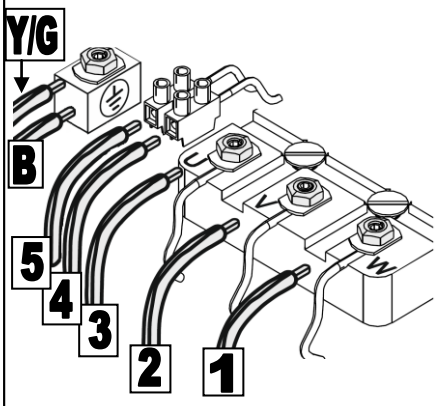
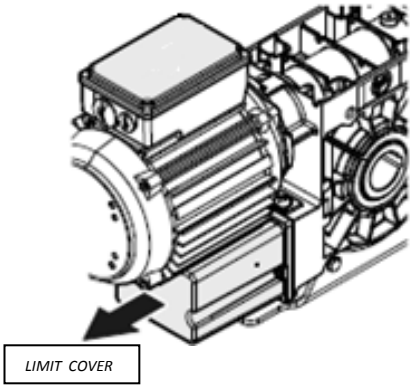
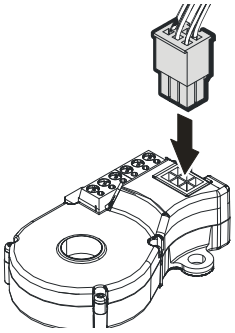
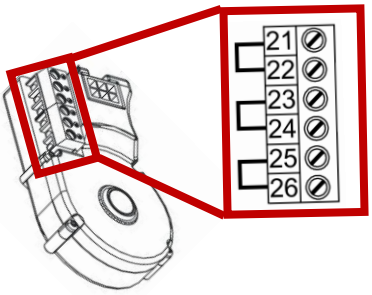
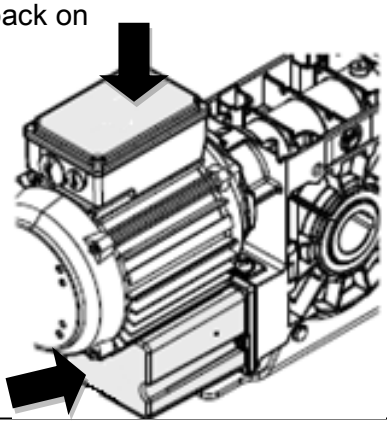


System Overview



4. VERIFICATION OF OPERATOR ELECTRICAL CONNECTIONS

E. Verification of Pre-Wired Connections

4. Remove Motor Cover 	5. Verify motor connections 	6. Remove Limit cover 
7. Verify limit switch plug is in  **Note:** *Wire Number 7 and 8 are not used*	8. Verify all 3 jumpers are in place 	9. Put Limit and Motor Covers back on 

5. MANUAL OPERATION - ER (release)

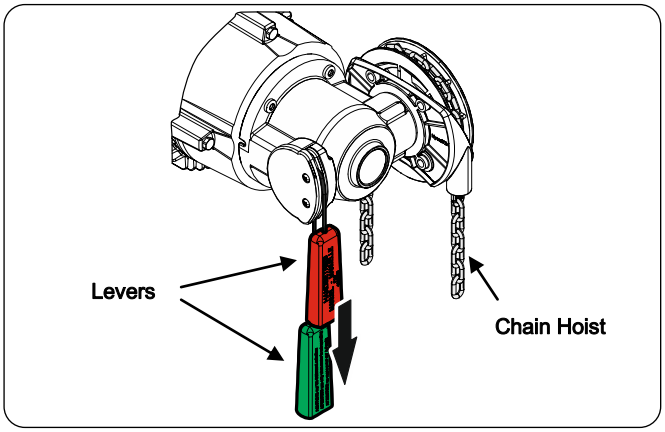
Warning - Injury through improper operation!

- Disconnect the power
- Manual Door movement is only possible when RED lever has been pulled

Chain Hoist is for Emergency Use Only

When RED lever is pulled
The operator is disengaged and allows movement of the door manually with the use of the chain hoist.
If the power is on, the display shall read F.212 (fault code) when engaged.

When GREEN lever is pulled
The operator is engaged allowing automatic movement of the door by the operator.
No fault code present.



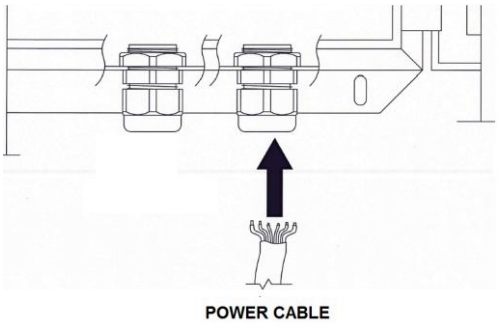
6. VERIFICATION OF CONTROL PANEL CONNECTIONS

Danger

- Switch the power OFF and check that the cables are de-energized, observe the applicable regulations and standards. Make a proper electrical connection using suitable tools.

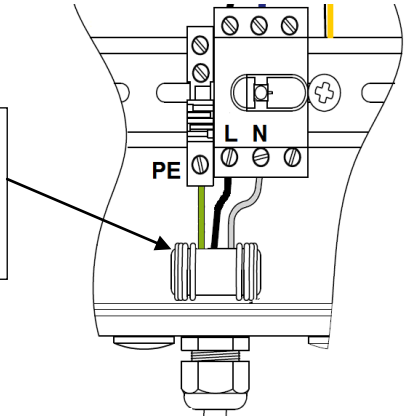
F. Electrical Connections

10. Fit Power cable through strain relief furthest to the right

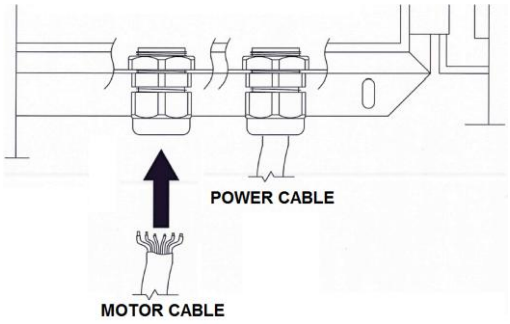


11. Wire main power into L, N , PE (Ground)

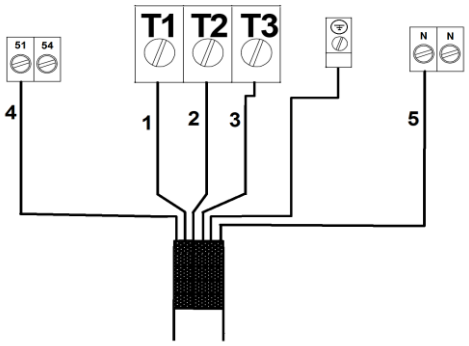
! Note: Place 5 windings of the **L** and **N** wires around the ferrite core to reduce potential electrical



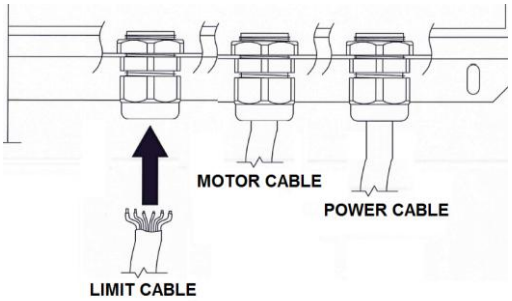
12. Fit motor cable through strain relief In the centre



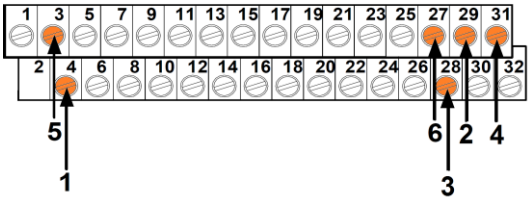
13. Wire motor cable into terminal T1, T2, T3, 51, N & PE (Ground)



14. Fit limit cable through strain relief furthest to the left



15. Wire limit cables into terminal 3, 4 & 27, 28, 29 and 31



Wire 1: Emergency stop → Terminal 4
Wire 2: Channel B → Terminal 29
Wire 3: GND → Terminal 28
Wire 4: Channel A → Terminal 31
Wire 5: Emergency stop → Terminal 3
Wire 6: 12 VDC → Terminal 27

! *Note: Wire #7 and #8 are not used*

WARNING!

DO NOT WIRE ANY ACCESSORIES UNTIL THE FOLLOWING HAS BEEN COMPLETED:

- Motor rotation is checked
- Limits are programmed
- Door will open thru momentary activation of open push button on panel
- Door will close thru momentary activation of close push button on panel

Failure to adhere to the above guidelines can lead to improper setup

7. SETTING DOOR LIMITS

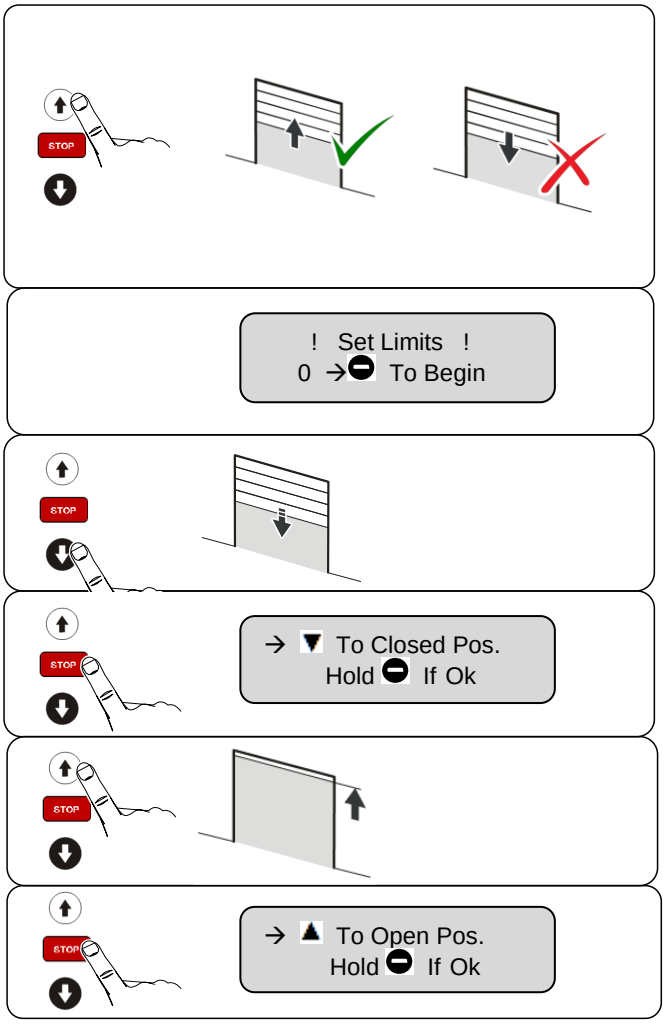
Warning

- Manually place the door in the mid-way position to check the motor rotation
- **Turn Power ON & Ensure Green Handle is pulled (See Page 8 – Section 5)**

Note: The door must OPEN when the UP button is pressed. If the door CLOSES, switch the motor wires T3 and T1 while power is off.

See motor wiring on page 9 step 13

Note: *During setup the system will only run in deadman until limits are programmed*



When the system is ready to set the limits the display will prompt to hold the STOP button until the display changes to begin

1. Program the CLOSE limit

Push & Hold the DOWN button until door lowers to the desired final CLOSED position.

2. Memorise the CLOSE limit

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

3. Program the OPEN limit

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

4. Memorise the OPEN limit

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

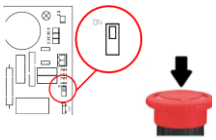
Warning

- Door limits are now programmed
- System will now run in Momentary activation

8. PROGRAMMING

G. Navigation of Parameters

1. Entering Programming Mode



- Programming switch is ON
- Push in the Emergency Stop Button

LCD display will show:

```
P : Door  Cycles   I
000#          0 Cyc
```

2. Selecting a Parameter

- Use the UP ⬆ or DOWN ⬇ arrows to select the desired Parameter
- Press the STOP button momentarily to enter the selected parameter

3. Adjusting selected Parameter

- Use the UP ⬆ or DOWN ⬇ arrows to change the value

```
P : Boost Auff.      I
140=           10?%
```

?

4. Saving Parameter

- Hold the STOP Button until a checkmark appears beside the value (holding for 2 - 3 seconds)

```
P : Boost Auff.      I
140=           10√%
```

√

5. Exiting the Selected Parameter

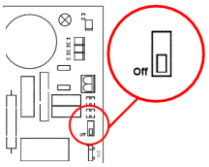
- Press the STOP button momentarily to return to the selected parameter

```
P : Boost Auff.      I
140=           10?%
```

6. Exiting Programming mode

- Pull the Emergency Stop Button out

! *Note: Turn the programming switch off when all programming is complete*



H. Basic Parameters

Name	Parameter	Description	Display
Reset of Limits	**P.210**	0: Cancel, no limit set 1: Reset **Lower** limit, upper limit and if appropriate, intermediate limit switch 2: Reset **Upper** limit and if appropriate, intermediate limit switch 3: Reset **Lower** and **Upper** limits 4: Reset **Intermediate** stop limit 5: Reset **All** limit switches are taught **(DEFAULT: N/A)**	P : New Limits I 210= 5 #
Correction of End CLOSE Limits (*Lower*)	**P.221**	Correct the end position when door CLOSE (+) End position to shift up (–) End position to shift down **(DEFAULT: N/A)**	P : Adj Cls Pos. I 221= 0 inc
Correction of END OPEN Limits (*Upper*)	**P.231**	Correct the end position when Door OPEN (+) End position to shift up (–) End position to shift down **(DEFAULT: N/A)**	P : Adj Opn Pos. I 231= 0 inc
Auto Close Time 1	**P.010**	The door is held in the open position for the set time. The door is then automatically closed. **(DEFAULT: 0)**	P : Auto Close 1 C 010= 0 sec
Boost Open **Boost Close**	**P.140** **P.145**	The boost parameter increases the voltage to the operator to increase power. **(DEFAULT OPEN: 10%) (DEFAULT CLOSE: 0%)** ***NEVER EXCEED 15%***	P : Boost Open I 140= 10 %
Operating Modes	**P.980**	0: Open & Close (Automatic) 1: Open (Auto) & Close (Manual) 2: Open (Manual) & Close (Manual) 3: Manual all safety devices ignored 4: Endurance test with safety devices 5: Endurance test without safety devices **(DEFAULT: 2)**	P : Operat. Mode I 980= 2 #
Speed OPEN	**P.310**	Travel frequency for Rapid OPEN *Min: 30Hz* *Max: 80Hz* **(DEFAULT: 60 Hz)**	P : Open Speed m 310= 60 Hz
Speed CLOSE	**P.350**	Travel frequency for Rapid CLOSE *Min: 30Hz* *Max: 80Hz* **(DEFAULT: 40 Hz)**	P : Closing Speed m 350= 40 Hz

9. WIRING ACCESSORIES

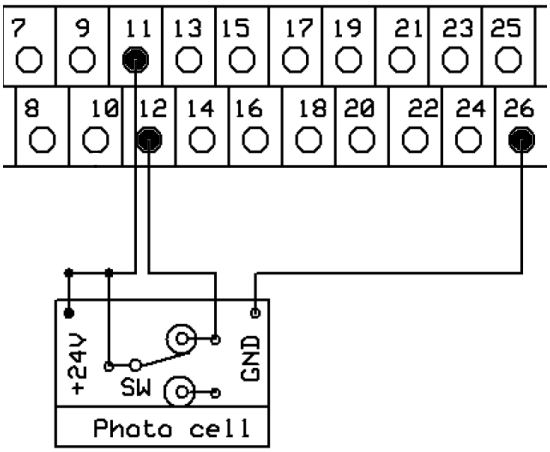
SAFETY REQUIREMENTS

- Motorized doors can cause serious injuries or death. It is strongly recommended to use an entrapment protection system such as reversing edge, photocells or similar devices. This is especially important in the case of momentary contact to close.
- A Minimum of two monitored entrapment protection devices should be used. Usually one non-contact sensor and one contact sensor. The monitored devices must provide continuous status to the operator and failure to do so will result in the operator being limited to constant contact to close operation or a fault code being displayed.
- **Consult Local Authority having jurally or regulatory bodies to confirm local regulations or applicable standards**

Reference the Installation Accessory manual from the manufacturer for additional information

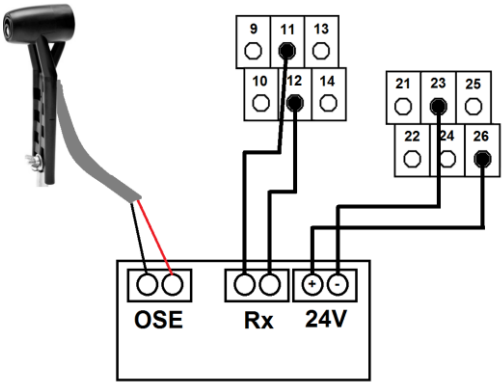
I. Safety Photocell

It is **recommended** to install a normally closed contact photocells for safety

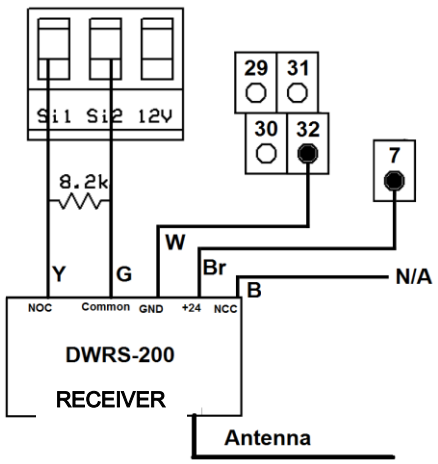


J. Photocell (OSE by FRABA)

Note: *Input #12 must be change to a normally open contact (NOC).*



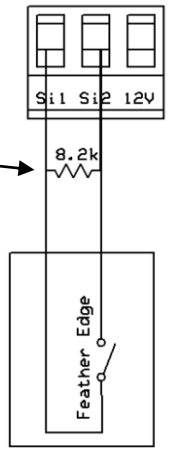
K. Wireless Featheredge (DWRS-200 by FRABA)



L. Safety Edge (Featheredge)

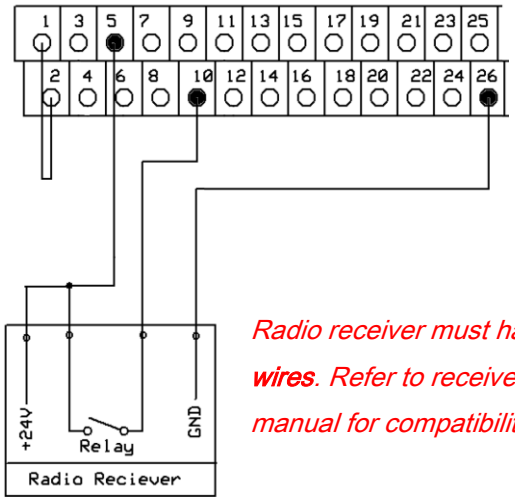
It is **recommended** to install a Normally Open Contact (NOC) Safety Edge.

8k2Ω Terminal resistor should always be present between Si1 & Si2



M. Radio Control

Radio receiver for open or open & close activation based on programming.

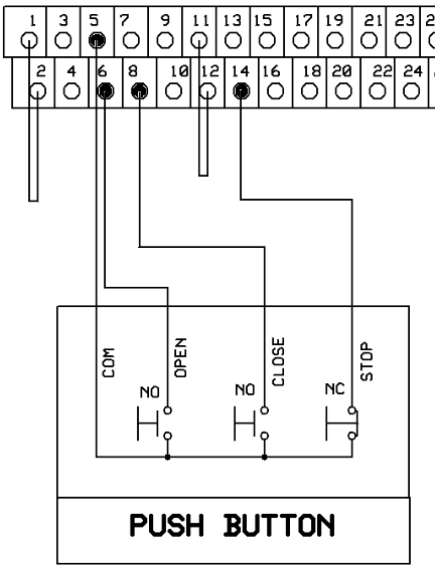


*Radio receiver must have **4** **wires**. Refer to receiver manual for compatibility.*

N. Push Button

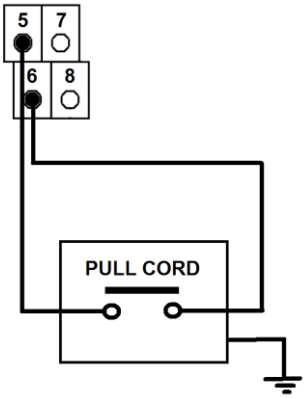
Push button for open/close/stop activation.

Change
P.552 = 1
(Input-5 to NCC)



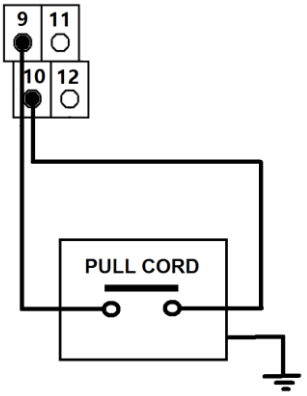
O. Pull cord - Open Function (Only)

Pull Cord for Open activation only

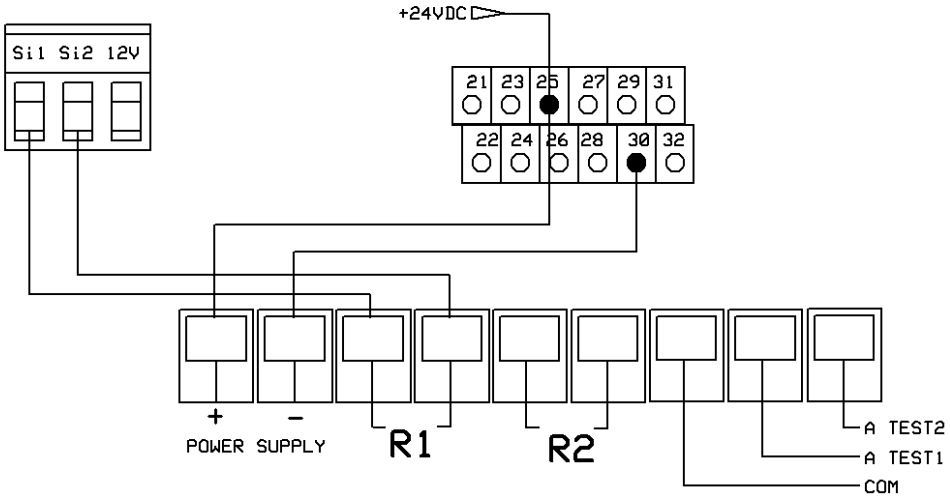


P. Pull cord – Open / Close Function

Pull Cord for Open / Close Activation



Q. Cable Monitoring System (FRABA RCD-R)



10. COMMON FAULT CODES

Report	Description	Measure to solve the problem
F.030	**Lag Error**	• Check Limit cable connections and Encoder Jumpers • Wrong positioning system selected (*P.205 = 3*) • Door or motor is blocked • Too little power for lift (Adjust P.140 Boost) • Verify incoming voltage • Verify brake is functioning properly
F.201	**Internal E-Stop**	• Verify green pull cord is pulled • E-Stop button is triggered • Check limit cable, limit connections in panel and on operator (Three Jumpers should be present on the encoder)
F.211	**External E-Stop 1 tripped**	• E-Stop chain was interrupted starting at Input 1
F.212	**External E-Stop 2 tripped**	• E-Stop chain was interrupted starting at Input 2 • Enabled when NOC
F.410	**Over-current (Motor Current or Intermediate circuit Limit 1)**	• Wrong Motor data set (P.100 to P.103) ▲ • Non-adjusted voltage increase / boost set (P.140 or P.145) • Motor not properly dimensioned for door • Door sticks or has excess resistance during door movement
F.420	**Over Voltage Line Supply**	• The supply voltage for the controller is to high
F.440	**Under Voltage Line Supply**	• The supply voltage for the controller is to low
F.510	**Motor / Intermediate circuit over current Limit 2**	• Wrong Motor data set (P.100 to P.103) ▲ • Non-adjusted voltage increase / boost set (P.140 or P.145) • Motor not properly dimensioned for door • Door sticks or has excess resistance during door movement
F.515	**Motor protection function detected over current**	• Incorrect motor curve (Motor rated current) set (P.101) ▲ • Too much boost (P.140 or P.145) • Motor incorrectly dimensioned for door

▲ : Contact SDI to ensure correct Motor Data (P.100 to P.103)

F.519	**IGBT driver chip detected overcurrent**	• Wrong Motor data set (P.100 to P.103) ▲ • Non-adjusted voltage increase / boost set (P.140 or P.145) • Motor not properly dimensioned for door • Door Sticks or has excess resistance during door movement
F.700	**Position Sensing defective**	***For Mechanical limit switch*** • At least one limit switch does not correspond to the configured active status • An implausible combination of at least 2 active limit switch ***For Digital limit switch*** • After invoking activation of the factory parameters (P.990) the corresponding positioned system was not parameterized (P.210→ 5) • Calibration not completed or is incorrect and must be repeated (P.210 → 3) • When activating the intermediate stop the intermediate stop is implausible (P.210→ 4)
F.752	**Timeout with protocol transmission**	• No communication between board and encoder • Limit cable incorrectly wired or poor electrical connection • Check 12V Supply (Terminal#27) • Absolute encoder defective

▲ : Contact SDI to ensure correct Motor Data (P.100 to P.103)

Note

- If any other fault codes appear please consult SDI

11. MAINTENANCE

R. Gearbox

Check the drive unit for loss of oil (a few drops can be neglected). Protect the output-shaft permanently against corrosion.

S. External Brake

Lifecycle brake - change complete brake unit at 250,000 cycles

Regular visual examination of the brakes physical condition should be performed on a regular basis (3 months)

In an environment that can affect the coefficient of friction of the brake pad (atmosphere with oil, solvents, detergents, etc.), class of protection IP65i must be adopted.

Brake Testing:

Carry out a brake test by running the door and inspecting the condition of the brake

T. Electrical wiring

Check the connection cables for any sign of damage. Ensure the control box is clean, proper grounding wires are present and that the power terminations do not show sign of corrosion.

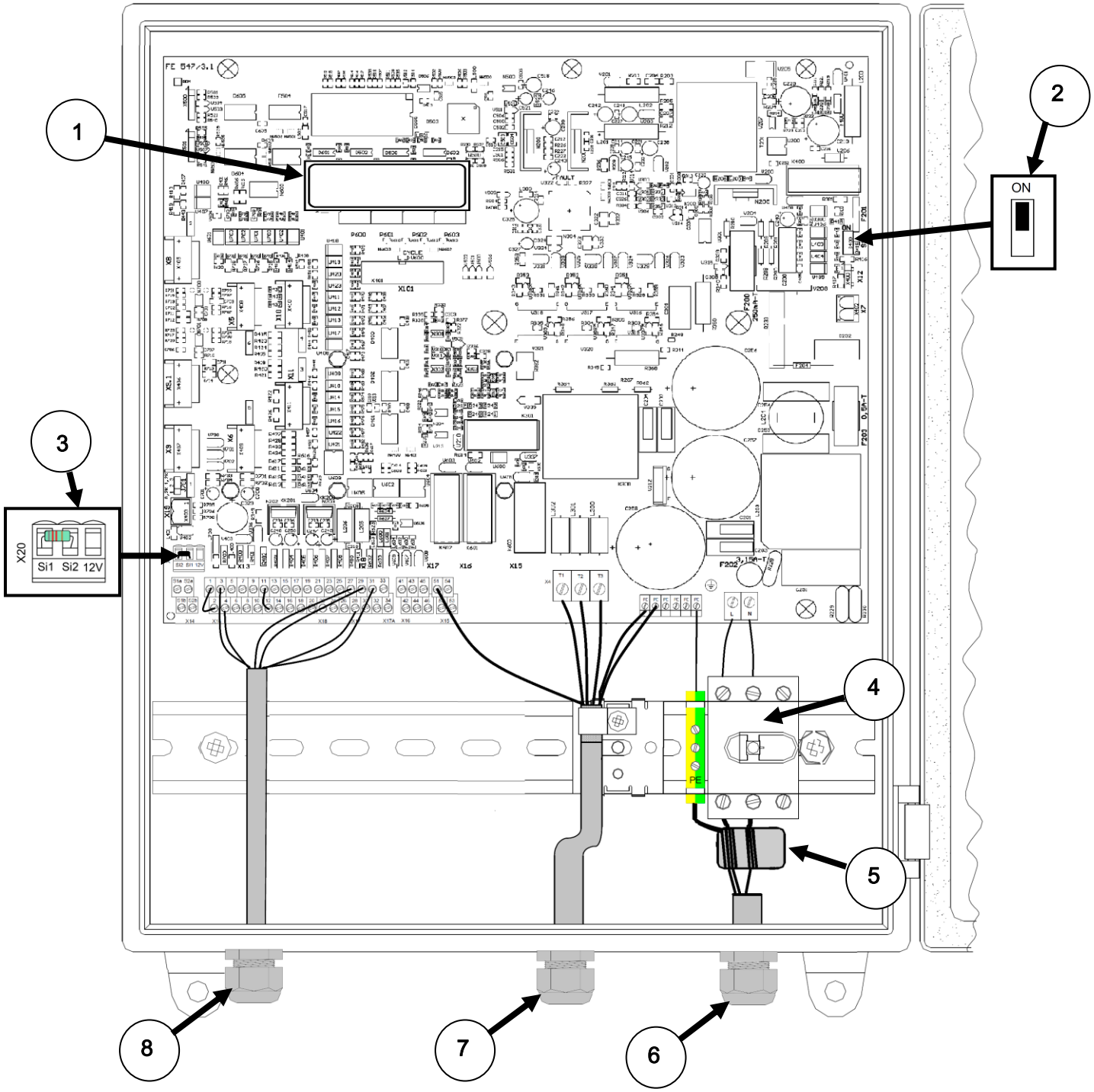
U. Mounting

Check that all connection elements (consoles, torque mounts, screws, locking rings, cables, etc.) are secure and in proper condition.

V. Drive Unit

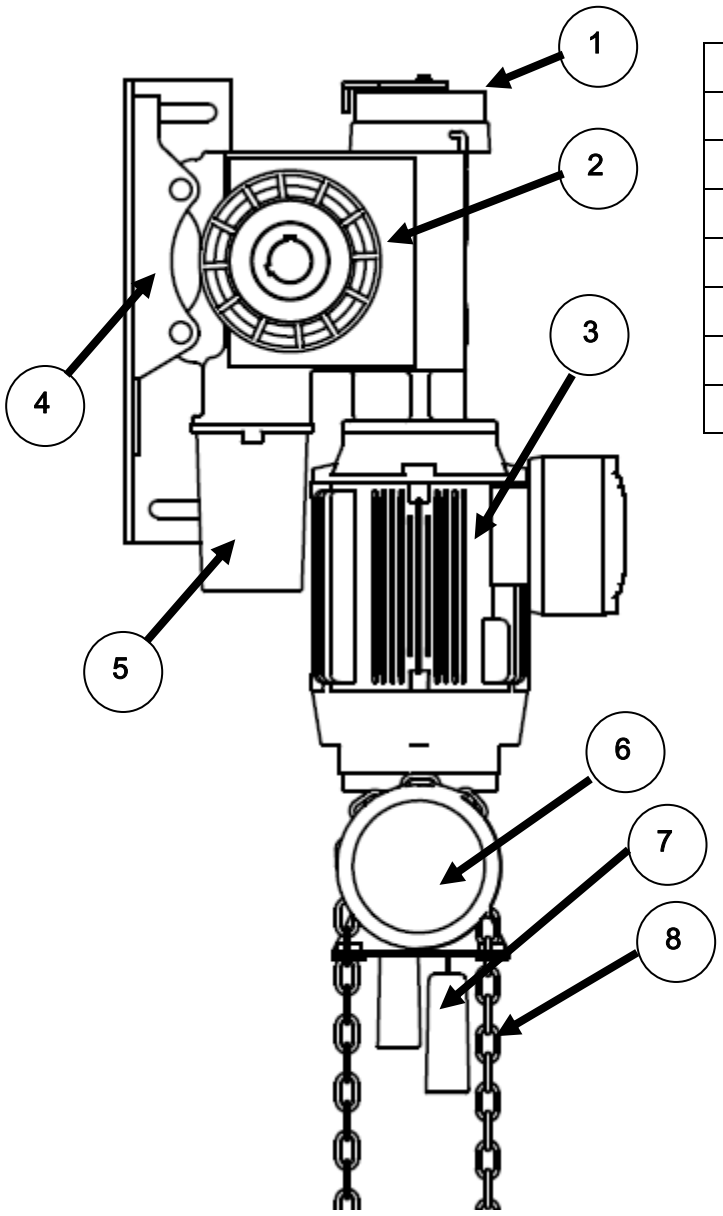
Engage a qualified technician to check the drive unit annually
Apply shorter inspection intervals for doors that are operated frequently

12. HARDWARE OVERVIEW



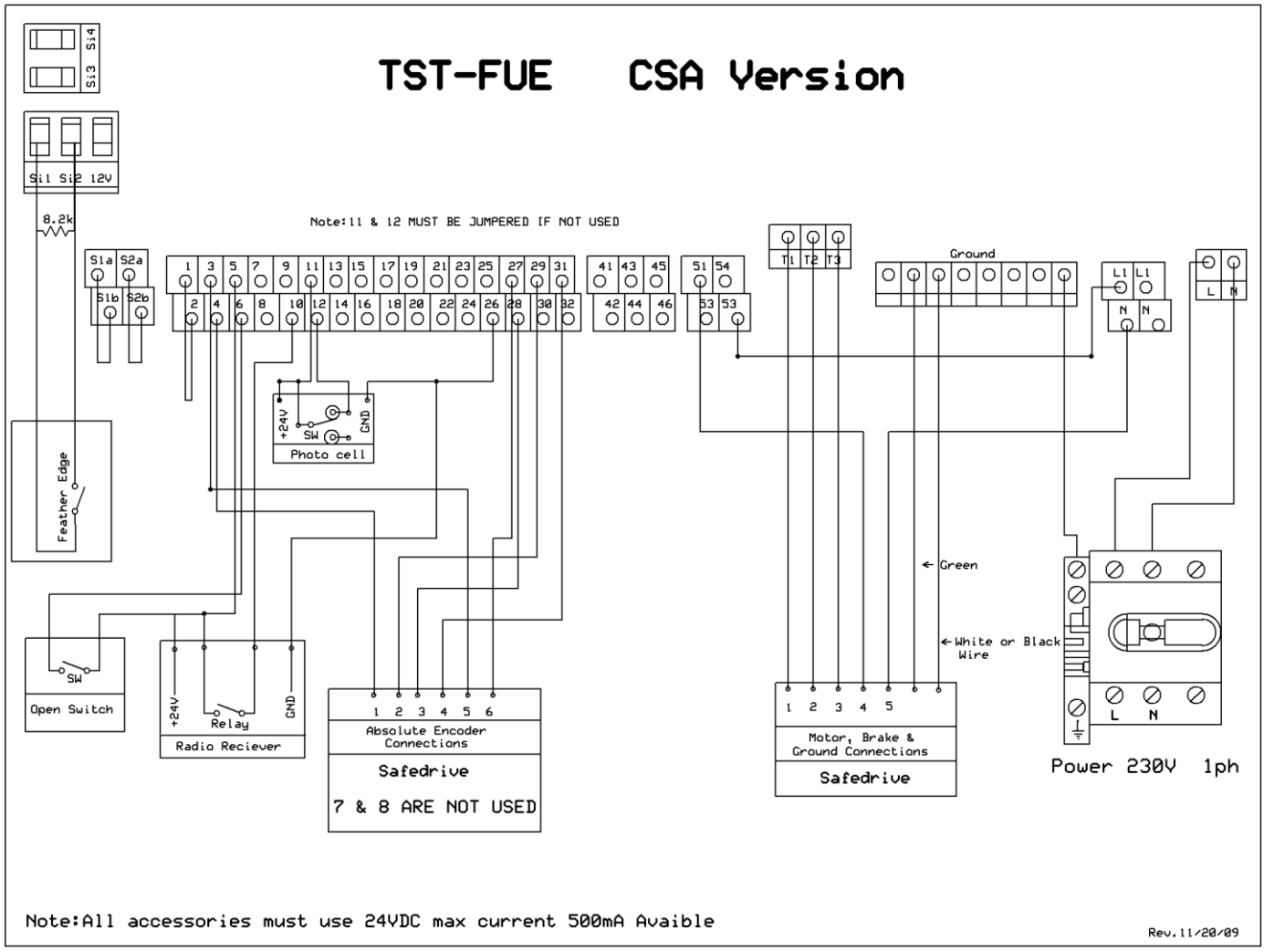
1	LCD Display
2	Programming Switch
3	8k2 Resistor – Feather Edge / Safety Edge
4	Panel Disconnect
5	Motor Ferrite
6	Power Cable
7	Motor Cable
8	Limit Cable

13. OPERATOR AND PANEL PARTS BREAKDOWN

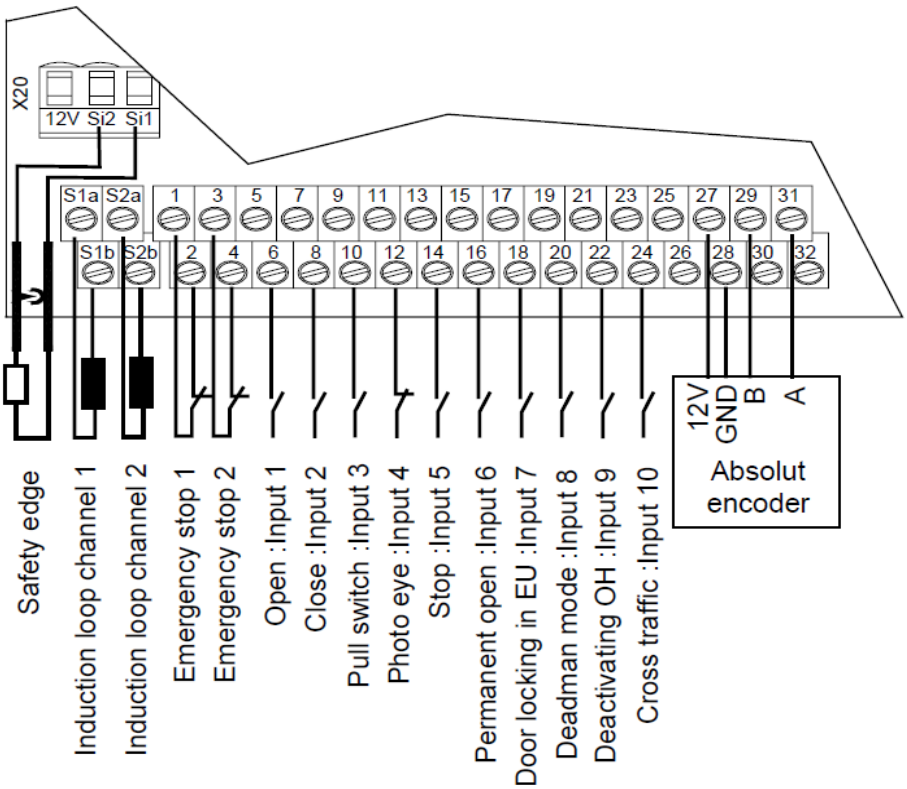


1	Brake
2	Gear Reducer
3	Motor
4	Mounting Bracket
5	Limit Box
6	Chain Hoist
7	Emergency Release
8	Chain

14. FEIG PANEL WIRING DIAGRAM



15. OVERVIEW OF PANEL INPUTS



16. TECH INFORMATION LOG

We recommend logging as much information possible for your own benefit. This accelerates the technical support calls since information will be easily available.

DATE INSTALLED: _____

DOOR WEIGHT: _____

DOOR SIZE: _____

SAFEDRIVE MODEL: SI _____

VOLTAGE SUPPLY TO PANEL: _____ 1PH OR 3PH

NOTES:

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