Relcross
Door, Security and Washroom Hardware

Relcross Ltd
9130/9140

Low Energy Swing Door
Automatic Operator

Installation Instructions

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1 GENERAL

The Relcross 9130/9140 is an automatic electromechanical swing door operator for use on hinged, centre pivoted, and offset pivoted doors. The controller is a microprocessor based system, tracking the door position at any time during the cycle. When activated the Relcross 9130/9140 drives the door to the full open position creating the potential energy in the spring. When closing the electrical power is reduced and the door closes by controlling the potential energy release in the spring force. The activating circuit opens the door from any position on the closing swing. During power failure the Relcross 9130/9140 acts as a manual door closer (size 3). Door opening and closing cycles, including opening speed, back check speed, hold open time delay, closing speed, and latch position are adjustable.

CAUTION
Always disconnect main power to the operator prior to servicing or cleaning

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2 PRE-INSTALLATION & PRODUCT CHECK

2.1 Check that the product model is correct for the required application.

2.2 Check that all parts listed for the installation are received.

2.3 Check architectural drawings and final approved shop drawings for position of frame and structural openings.

2.4 Check header and frame dimensions and required clearances (see below).

2.5 Ensure door weights is less than 90Kgs for heavier doors, consult supplier.

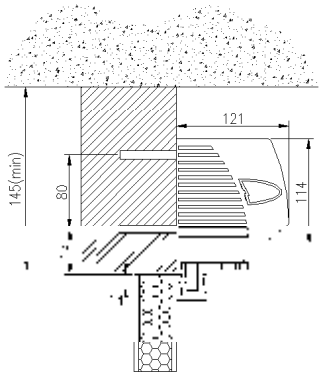
2.6 **Check that a 240 Volt, single phase, 50 Hz, fused supply (5 amp fuse maximum) is available at the side of the jamb within approximately 1 Meter of the header. Approved type conduit is recommended for 240V systems.**

2.7 If an electric lock is to be connected to the system the maximum current draw is 2 Amps. The switching relay contact is a maximum resistive current of 2 Amps.

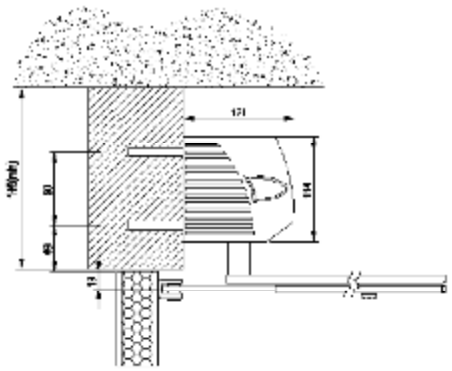
2.8 The supply must be a dedicated circuit from the main circuit breaker panel and must not be connected into building lighting circuit with fluorescent lights.

2.9 When Pre-Install & Product Check is complete go to **3 OPERATOR INSTALLATION**.

Clearances for Pull System



Clearances for Push System



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3 OPERATOR INSTALLATION

3.1 Remove control box then motor from their mounting brackets.

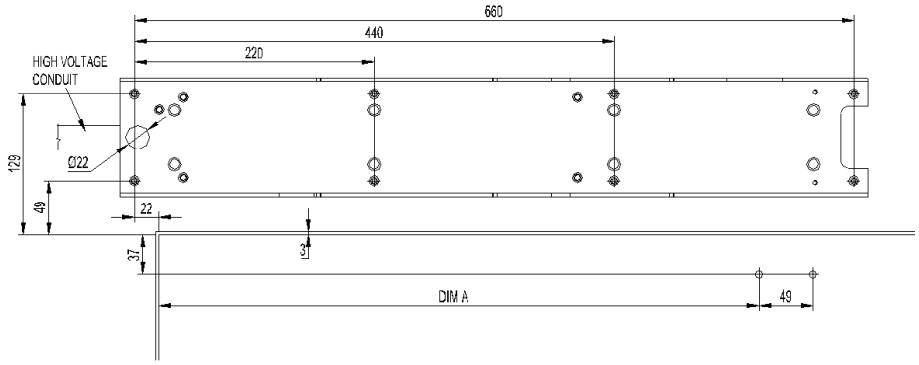
3.2 Prepare header frame for push or pull system (see below).

3.3 Install operator-mounting bracket onto the header/frame.

3.4 Re-install motor then control box onto their mounting brackets.

3.5 When operator installation is complete go to **4 WIRING**.

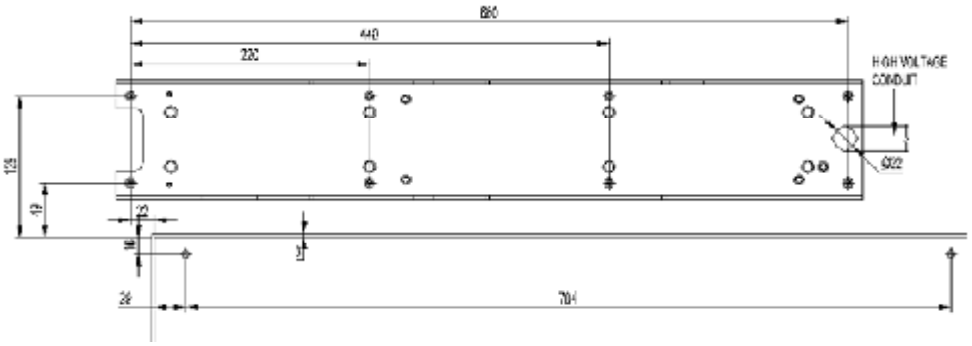
Header Frame & Door Preparation: Push System



REVEAL	DIM A: *For Butt-Hung or Offset Pivot*	DIM A: *For Centre Pivot*
25mm	559mm	686mm
51mm	533mm	660mm
76mm	508mm	635mm
102mm	483mm	610mm
127mm	457mm	584mm
152mm	457mm	584mm

NOTE: For push units with a reveal greater than 152mm you will need to purchase an extended arm and refer to installation sheet included

Header Frame & Door Preparation: Pull System



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4 WIRING

CAUTION
Make sure all wires are properly dressed and secured to prevent interference
Route all wiring away from moving parts, sharp edges, and heat sources
Use copper conductors only
Do not modify the factory wiring or connect into existing electrical circuits or devices

4.1 Refer to the appropriate wiring diagram for the standard control box (Page 22) or the diagram supplied for custom applications. And connect the following cables:

- Ground cable (ground the operator properly with the earth from main supply)
- Hall effect cable (do not wrap the hall effect cable around the motor cable)
- Motor power cable (do not wrap the motor cable around the hall-effect cable).
- Control box power cable

4.2 Connect activation and safety devices + operational keyswitch and lock accessories if applicable. Refer to the accessory instruction s for any accessories used. Do not connect any remote activating device to the door unless it is located within line of sight of the door.

4.3 When wiring is complete go to **5 ARM & COVER INSTALLATION**.

5 ARM & COVER INSTALLATION

CAUTION
Keep hands, clothing, wires, tools, etc. away from the operator motor when the operator is turned on

5.1 Make sure the operator power switch is turned OFF.

5.2 Install a jumper across the control box MAIN ACT T28 and COMMON T27.

5.3 Turn the operator power switch on. The operator motor will activate and drive to the full open position.

5.4 Attach the arm to the operator spindle loosely with the 8-mm socket head screw (for push systems ensure adjusting boss is inserted correctly).

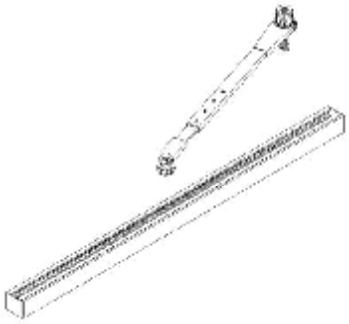
5.5 Attach the arm to the door:

5.5.1 For push systems attach the push arm shoe to the door.

5.5.2 For pull systems, slide the pull arm roller into the track, insert a track cap on each end of the track, and attach the track to the door.

Push Arm

Pull Arm



5.6 Adjust the arm:

5.6.1 For pull systems, remove the locking screw from the arm.

5.6.2 For the push system remove the locking screw from the arm.

5.6.3 Keep the door in the full open position and adjust the arm length as necessary to align the door at 90 degrees from closed. When the arm is adjusted to the correct length, tighten up the 8 mm socket head screw that secures the arm to the operator spindle (ensure this is secure) and then tighten the arm locking screw.

5.7 Turn off the power operator switch - the door closes.

5.8 Remove the jumper from the control box T27, T28.

5.9 When arm installation is complete go to **6 OPERATOR ADJUSTMENT**

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6 OPERATOR ADJUSTMENT

CAUTION

If the encoder is connected in the opposite direction, disconnected or faulty the door will operate erratically (continuously opening halfway, closing, latching and reopening etc.). This will continue until power is switched off and problem rectified.

6.1 SETTING FUNCTION

6.1.1 From the FUNCTION SELECTOR switch to one of the 6 standard program settings depending on the desired fire alarm position **AND** monitored safety requirement (see FUNCTION table on page 11). If no safety devices are to be used then only the fire alarm position is critical.

6.1.2 For function 0, 3 & 6 (i.e. fail safe to open position) Fire Alarm input operates the door and it remains in the open position for as long as the contact is made.

6.1.3 For function 1, 4 & 7 (i.e. fail safe to closed position) Fire Alarm input disables all activation allowing the door to close where it remains for as long as the contact is made.

6.2 LEARNING CYCLE & SET UP (no safety sensors)

6.2.1 From start-up, the door will activate from either T9 & T10 (Fire Alarm) or T27 & T28 (One Way). Activate the operator using the activation device - the operator will perform one *learning cycle*. During the *learning cycle*, the door opens and closes one time.

6.2.2 The speed of the learning cycle is adjusted automatically to compensate for the door weight and is not set from a potentiometer.

6.2.3 The door drives to the fully open position where the control box sets the parameters to the fully open setting (*NB - remember to install drive arm when door is in the open position*).

6.2.4 When the door reaches the fully open position the control box automatically sets the power required to keep the door open until activation and/or timer is cleared

6.2.5 The door closes at the designated close speed (P6) up to latch position (P5) where the speed is decreased automatically by the control box allowing the door to close smoothly until fully closed.

6.2.6 If the door does not open at all during learning cycle:

- Check the door for binding.

- If an electromechanical lock is being used, check that the lock disengages before the operator opens the door.
- Check fuses, circuit breakers and connections.
- Adjust the operator and check door operation.

Opening speed	75%
Back check speed	75%
Hold open time delay	Minimum
Latch position	Maximum
Closing speed	50%
SW 1,2,3,4	OFF

6.2.7 If the door does not open fully during learning cycle:

- Check the door for binding.
- Increase the back-check speed slightly and check door operation. Continue increasing back-check speed until door opens fully.

6.2.8 If the door slams open decrease the back check speed slightly (P2) and check door operation. Continue decreasing back check speed until the door opens without slamming.

6.2.9 After the learning cycle is complete and the door is closed, apply a maintained activation signal and check that the door remains open while the signal is applied.

6.3 AUTO REVERSE

6.3.1 The door will auto reverse back to the open if an obstruction is present

6.3.2 P4 sets the level of torque required to trip the door as it is opening so that it automatically reverts to the closed position

6.4 SAFETY SENSORS

6.4.1 Door Safety Opening:

Firstly, when the door is in the closed position, activate the safety device (T1 & T2) then try to activate the door. The door should remain closed

Secondly, activate the door and as it is opening activate the safety device. The door should stop and then slowly drive to the fully opening position

The point at which the safety device becomes inactive can be adjusted via P8 from closed position up to back check position

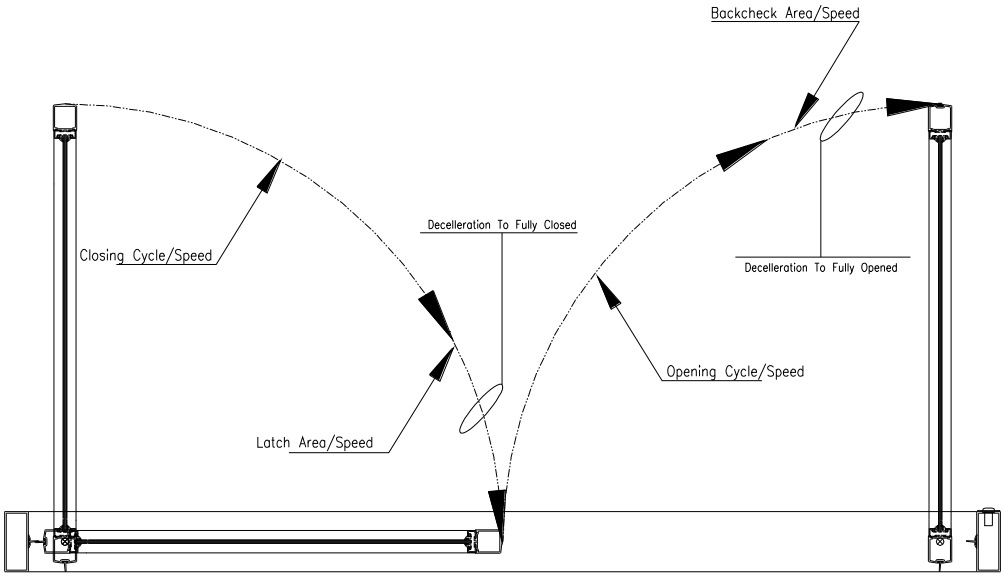
6.4.2 Door Safety Closing:

Firstly, activate the door to the full open position then activate the safety device (T5 & T6). The door should remain open.

Secondly, activate the door and as it is closes activate the safety device. The door should stop and then re-open slowly to the fully open position, time out and close.

The point at which the safety device becomes inactive can be adjusted via P7 from open position up to a few degrees of closed position

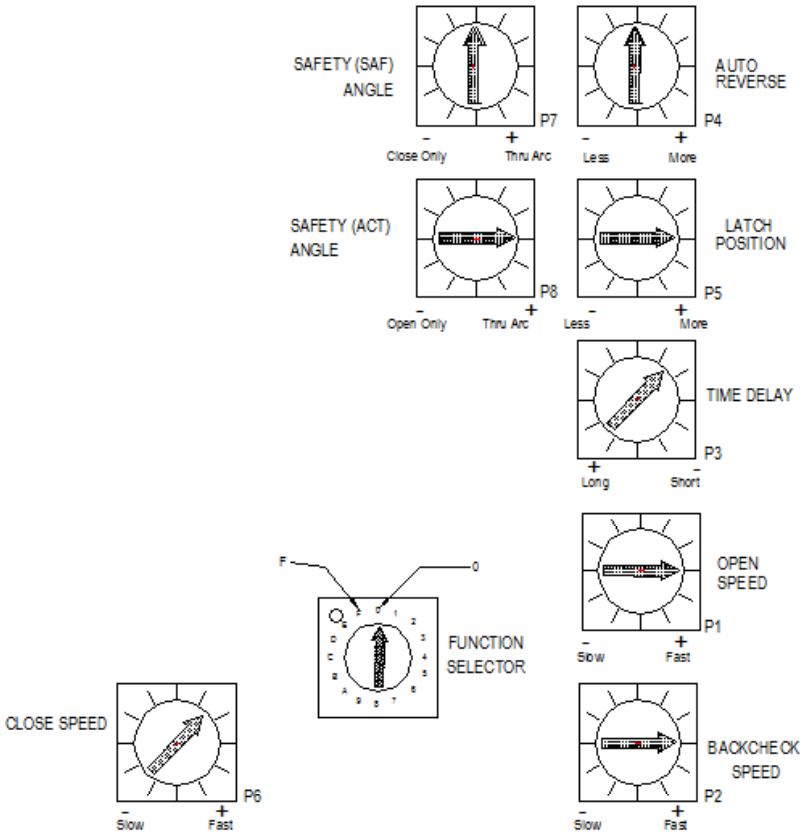
NOTE
Adjust operator in accordance with EN16005 be it for power assisted low energy power operated doors



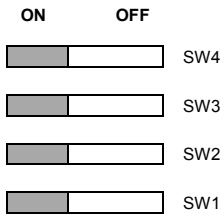
7 FUNCTION TABLES & WIRING DIAGRAMS

See table and diagrams that follow for operator feature selection and adjustments. After adjustment, cycle the door several times and check for proper operation. Then go to **8 RELEASE FOR SERVIVE**.

7.1 CONTROL BOX: POTENTIOMETERS & SWITCHES



POWER BOOST ADJ	
CONT	5 SECS
POWER BOOST ACT	
ON	OFF
PUSH & GO	
ON	OFF
MONITORED SAFETY	
ON	OFF



7.2 CONTROL BOX: FUNCTIONS

FUNCT.	PROGRAM	DESCRIPTION	MONITORING	TERMINAL	OPERATION
0	Standard	Standard functionality and adjustment - door to failsafe open on fire alarm	Safety: Opening & Closing	T1, T2	Door Safety Opening
				T5, T6	Door Safety Closing
				T9, T10	Fire Alarm
1	Fire Alarm	Standard functionality and adjustment - door to failsafe closed on fire alarm and remain electrically unlocked (if locking present)		T27, T28	One Way
				T14	Door Open
				T12	Key Switch Off
2	WC	BESPOKE SOLUTION - RELCROSS		T22, T23	Two Way
3	Standard	Standard functionality and adjustment - door to failsafe open on fire alarm	Safety: Opening Only	T1, T2	Door Safety Opening
				T5, T6	Door Safety Closing
				T9, T10	Fire Alarm
4	Fire Alarm	Standard functionality and adjustment - door to failsafe closed on fire alarm and remain electrically unlocked (if locking present)		T27, T28	One Way
				T14	Door Open
				T12	Key Switch Off
5	WC	BESPOKE SOLUTION - RELCROSS		T22, T23	Two Way
6	Standard	Standard functionality and adjustment - door to failsafe open on fire alarm	Safety: Closing Only	T1, T2	Door Safety Opening
				T5, T6	Door Safety Closing
				T9, T10	Fire Alarm
7	Fire Alarm	Standard functionality and adjustment - door to failsafe closed on fire alarm and remain electrically unlocked (if locking present)		T27, T28	One Way
				T14	Door Open
				T12	Key Switch Off
8	WC	BESPOKE SOLUTION - RELCROSS		T22, T23	Two Way
9, A-F	NOT IN USE				
A					
B					
C					
D					
E					
F					

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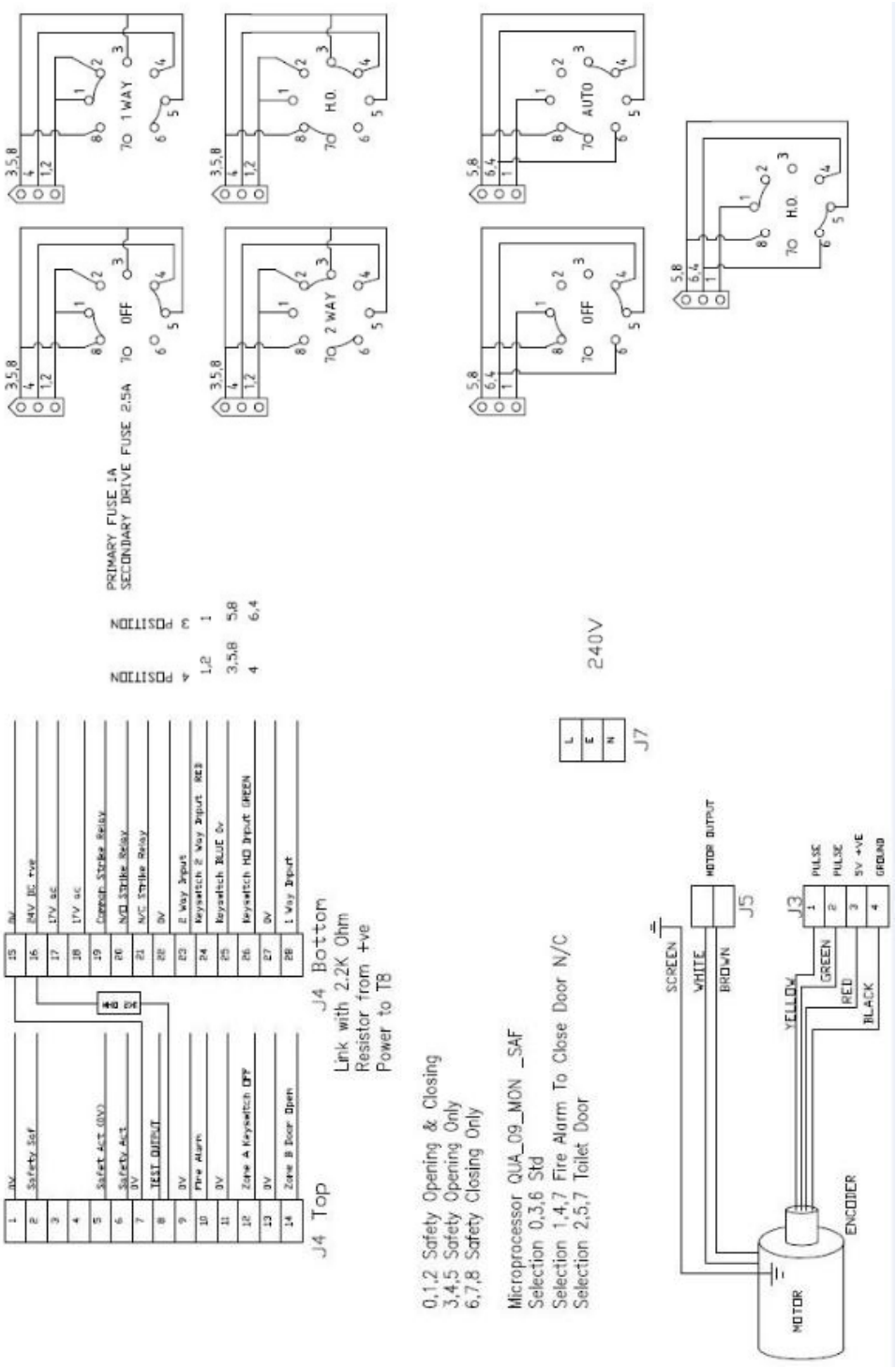
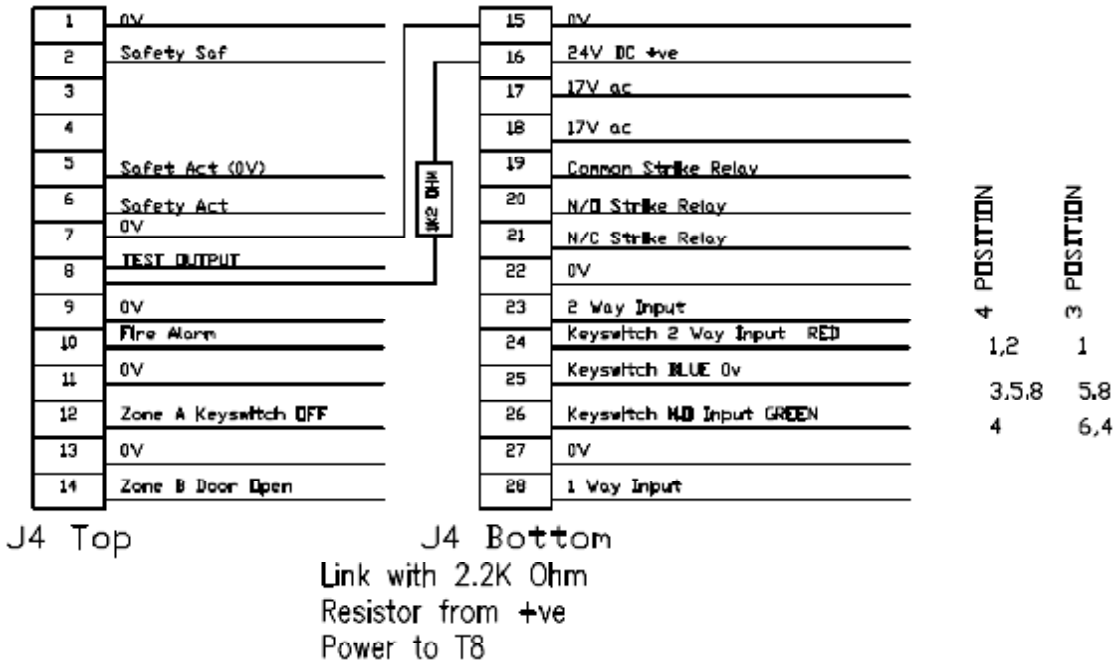
7.3 CONTROL BOX: SETTINGS

Features	Control	Description	Anti-Clockwise	Clockwise
Opening Speed	P1	Controls opening speed of door	Slower	Faster
Back Check Speed	P2	Controls speed of door near full open position prevent door slamming	Slower	Faster
Hold Open Time Delay	P3	Controls length of time door remains in the full open position	Less time (min 1 sec)	More time (max 30 sec)
Auto Reverse Setting	P4	Sets pressure required on door opening before door stops	Less pressure required	More pressure Required
Latch Position	P5	Distance at which the door begins to decelerate to fully closed position to prevent door slamming	Less latch	More latch
Closing Speed	P6	Controls closing speed of door	Slower	Faster
Safety Opening Angle	P7	Controls the angle during the open cycle that safety operates	Closer to closed position	Further from closed position
Safety Closing Angle	P8	Controls the angle during the close cycle that safety operates	Closer to open position	Further from open position
Monitored Safety	SW1	To allow monitoring of safety sensors	Monitoring 'ON'	Monitoring 'OFF'
Push & Go	SW2	Pushing the door open by 5° causes the operator to open for the remainder of the open cycle	Push & Go 'ON'	Push & Go 'OFF'
Power Boost Activation	SW3	Power boost gives a force in the closed direction when the door is closed - used for high wind situations	Power Boost 'ON'	Power Boost 'OFF'
Power Boost Adjustment	SW4	Enables power boost to operate continuously or for 5 seconds only after the door closes	Continuous	5 Seconds

7.4 WIRING DIAGRAM INCLUDING TERMINALS



7.5 TERMINALS (CLOSE UP)



8 RELEASE FOR SERVICE

8.1 Snap the optional end cap insert into the end cap opposite the on/off switch.

8.2 Install the cover assembly onto the operator.

8.3 Remove all installation equipment and debris from the vicinity of the door.

8.4 Install all safety, traffic control and instruction labels on the door as required under EN16005. Failure to do this leaves the installer LIABLE for any accident that might occur - this must be done.

8.5 Instruct the owner or person in charge of the proper operation of the door.

8.6 Instruct the owner or person in charge to routinely inspect the door for the following:

- Occasional damage
- Developing problems
- Minor preventative maintenance

8.7 Instruct the owner or people in charge who and where to call for service and maintenance when required.

IMPORTANT
Make sure to install all safety, traffic control and instruction decals on the door as required