Relcross
Door, Security and Washroom Hardware

9100 Series

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9100 Series

Installation Instructions

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1 GENERAL

The 9100 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 9100 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 9100 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.

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

.

2 REPLACEMENT PARTS AND SYSTEM COMPONENTS

Description	Part No	
Control Box	710026 – XXX	
Gear Box	9100-000	
Cover	2550.CP.SA	(95171-975R)
Pull Arm Assembly	2550.T.AP.SE	(95005-975)
Push Arm Assembly	2550.AP.SE	(95085-975)

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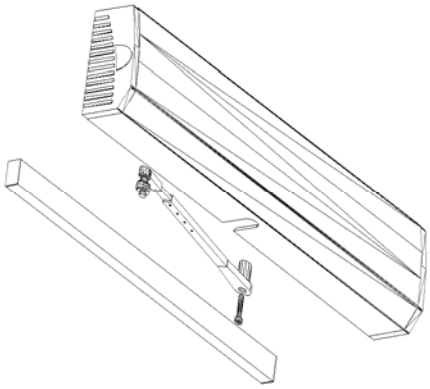
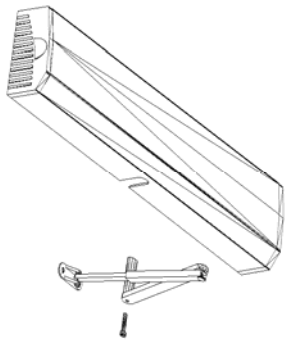
REPLACEMENT PARTS AND SYSTEM COMPONENTS (Cont)



Swing Door Operator
Pull arm and track assembly
9130



Swing door operator
Push arm assembly
9140

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3 PRE-INSTALLATION SITE AND PRODUCT CHECK

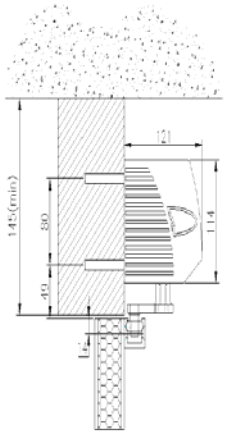
3.1 **Check that the product model is correct for the required application**

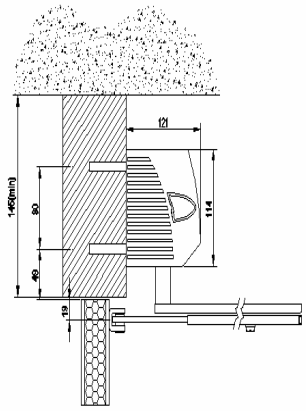
3.2 **Check that all parts listed for the installation are received**

3.3 **Check architectural drawings and final approved shop drawings for position of frame and structural openings**

3.4 **Check header and frame dimensions and required clearances**

Clearances for pull system **Clearances for push system**





3.5 **Ensure door weights is less than 90Kgs for heavier doors, consult supplier**

3.6 **Check that a 240 Volt, single phase, 60 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**

3.7 **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**

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4 OPERATOR INSTALLATION

4.1 Remove control box from mounting bracket, then remove Motor/Gearbox from bracket

4.2 Prepare header frame Pull system ……See Page 5

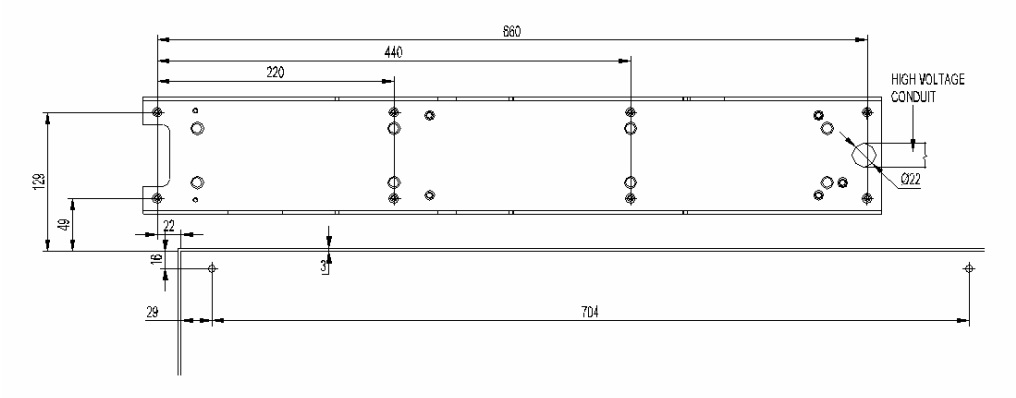
Push system……See Page 6

NOTE
For push units with a reveal greater than 150 mm refer to installation sheet included in the extended arm Packaging.

4.3 Install operator-mounting bracket on the header/frame.

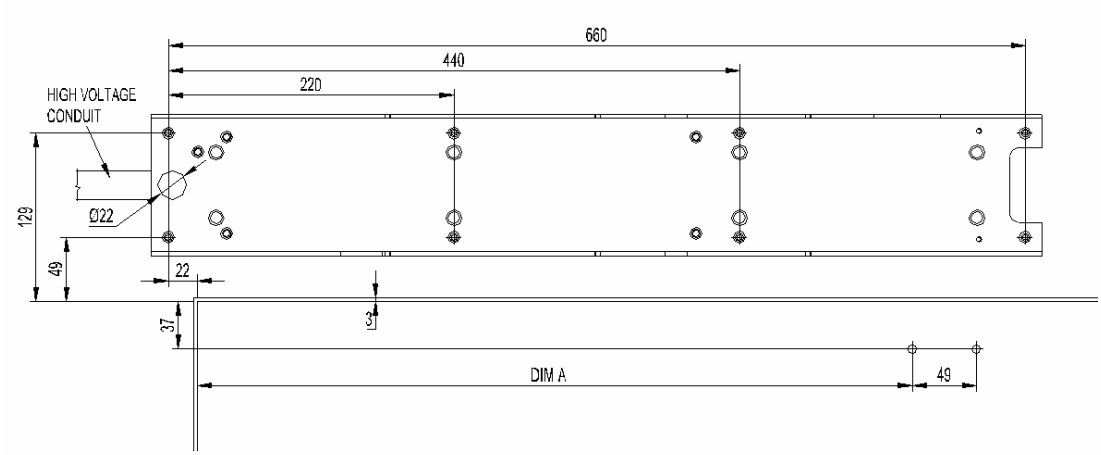
4.4 Install motor/gearbox on operator mounting bracket, then install control box on bracket Go to wiring page 7

Pull System
Framed Header and Door Preparation



OPERATOR INSTALLATION (Cont)

Push System
Framed Header and Door Preparation



REVEAL	Butt Hung/Offset Pivot DIM A	Centre Pivot DIM A
25.	559	686
51	533	660
76	508	635
102	483	610
127	457	584
152	457	584

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5 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**

5.1 **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**

5.2 **Connect Activate, Safety, Key switch, and lock accessories as needed. 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**

5.3 **When wiring is complete go to “Arm and cover installation” on page 8**

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6 ARM AND COVER INSTALLATION

WARNING

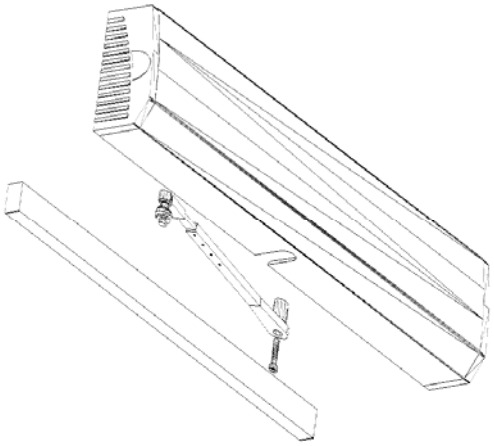
• Keep hands, clothing, wires, tools, ETC away from the operator motor when the operator is turned on

6.1 Make sure the operator power switch is turned OFF

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

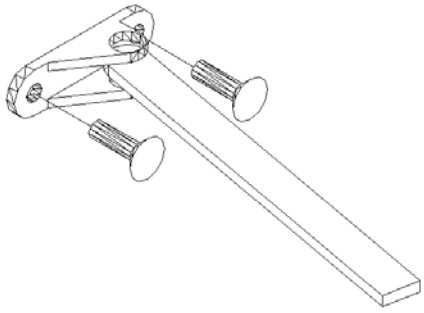
6.3 Turn the operator power switch on. The operator motor will activate and drive to the full open position.

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



6.5 Attach the arm to the door

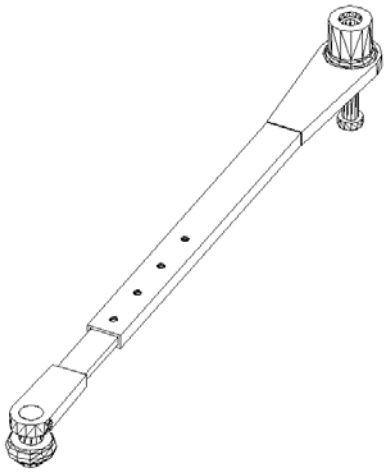
6.5.1 For push systems attach the push arm shoe to the door



ARM AND COVER INSTALLATION (Cont)

6.5.2 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.

Pull Arm

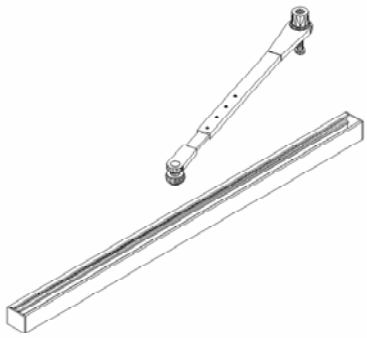


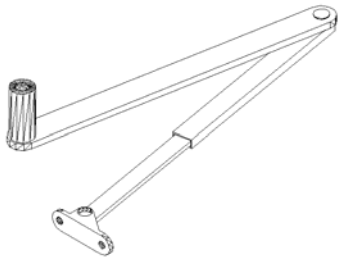
6.6 Adjust the arm

6.6.1 For pull systems, remove the locking screw from the arm

6.6.2 For the push system remove the locking screw from the arm

Pull Arm **Push Arm**





6.6.3 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 the8 mm socket head screw that secures the arm to the operator spindle and ensure this is secure, then tighten the arm locking screw

6.7 Turn off the power operator switch. The door closes

6.8 Remove the jumper from the control box T27, T28

6.9 Test the operator (See operational check" on page 11) and continue with step 6. 10

6.10 Adjust the operator as required(see "Operator Adjustment" on page 12) and continue with step 6.11

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ARM AND COVER INSTALLATION (Cont)

6.11 Snap optional end cap insert (from screw bag) into the end cap opposite the on/off switch.

6.12 Install the cover assembly on the operator

6.13 Release the operator for service (see “Release for Service” on page 14)

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7 OPERATIONAL CHECK

7.1 Set the Key switch to Auto (1 Way) and turn on the operator power switch

7.2 Activate the operator using the activation device, the operator will perform one sizing cycle

Sizing cycle:

Occurs after a legitimate activation signal is received, after power has been turned on. During the size cycle, the door opens and closes one time

7.3 If the door does not open at all during sizing cycle

- Check 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 (See "Operator Adjustment on page xx)

Opening speed	75%
Back check speed	75%
Hold open time delay	Minimum
Latch position	Maximum
Closing speed	50%
SW1 1,2,3,4	OFF

7.4 If the door does not open fully during size cycle

- Check the door for binds
- Increase the back check speed slightly and check door operation continue increasing back check speed until door opens fully

7.5 If the door slams open decrease the back check speed slightly and check door operation. Continue decreasing back check speed until the door opens without slamming

7.6 After the sizing cycle is complete and the doors are closed, apply a maintained activation signal and check that the door remains open while the signal is applied.

7.7 If a door safety device is being used:

7.8 Door open safety

When the door is in the closed position activate the safety device, then try to activate the door the door should remain closed.
Activate the door, as the door is opening activate the safety device the door should stop, and then slowly drive to the full open position.

7.9 Door close safety

Activate the door then maintain activation of the safety device, the door should open and remain open.
As the door is closing activate the safety device, the should re-open to the open position time out and close

7.10 When the door is operating properly, continue with step 6.10 on page 9

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8 OPERATOR ADJUSTMENT

See table below and diagrams on page 16 for operator feature adjustment. After adjustment, cycle the door several times and check for proper operation, then continue with step 6.11 on page 10.

NOTE
Adjust operator for the slowest operation practical in accordance with the latest BS 7036 standards for power assisted low energy power operated doors. Opening speed 5 sec's or more Closing speed 3 sec's or more

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 1 to 30Sec	Less time 1 Sec	`More Time 30 Sec's
Auto Reverse setting	P4	Sets pressure required on door opening before door stops	Less Pressure required	More Pressure Required
Latch Position	P5	Determines distance at which the door begins to decelerate to full 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
Delayed Activation	SW1			
Push And Go	SW2	When switched on pushing the door open by 5 degrees causes the operator to open for the remainder of the open cycle		
Power boost On or OFF	SW3	Enables or disables Power Boost which gives a force in the closed direction when the door is closed. Used for high wind situations		
Power boost continuous or 5 Sec's	SW4	Enables power boost to operate continuously or for 5 Sec's only after door closes.		

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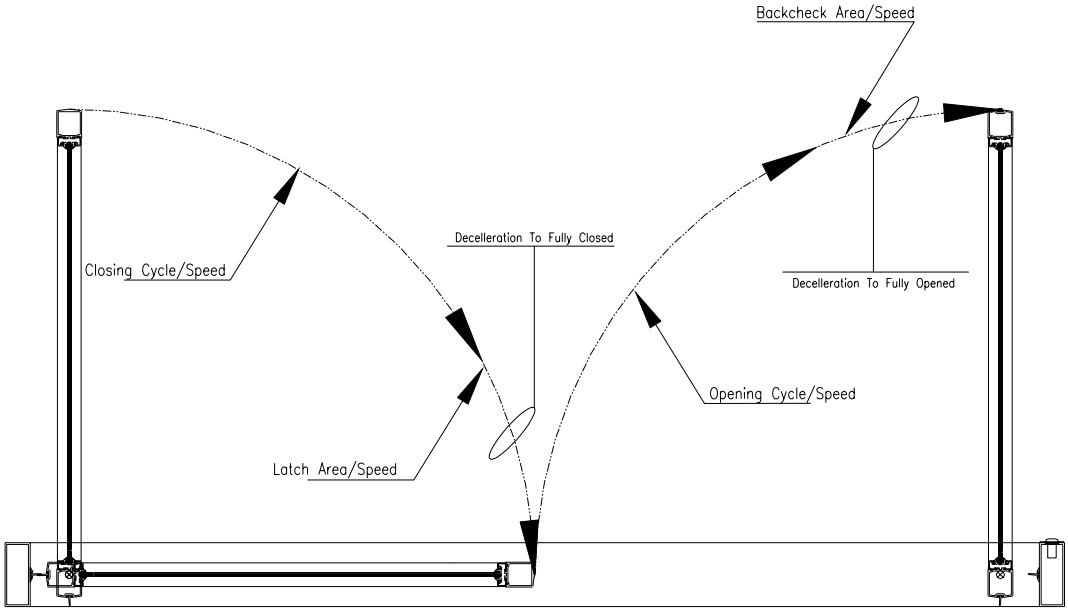
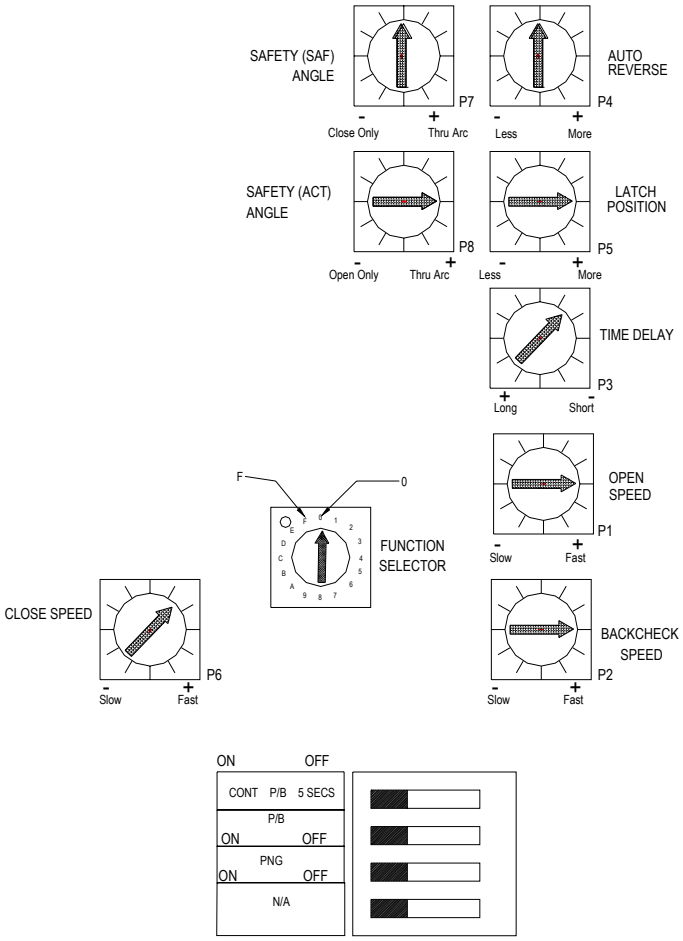
OPERATOR ADJUSTMENT (Cont)




SAFETY (SAF) ANGLE
P7
- Close Only
+ Thru Arc
AUTO REVERSE
P4
- Less
+ More
SAFETY (ACT) ANGLE
P8
- Open Only
+ Thru Arc
LATCH POSITION
P5
- Less
+ More
TIME DELAY
P3
+ Long
- Short
F
0
FUNCTION SELECTOR
OPEN SPEED
P1
- Slow
+ Fast
CLOSE SPEED
P6
- Slow
+ Fast
BACKCHECK SPEED
P2
- Slow
+ Fast

ON
OFF
CONT P/B 5 SECS
P/B
ON
OFF
PNG
ON
OFF
N/A

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9 RELEASE FOR SERVICE

9.1 **Remove all tools, installation equipment, and debris from the vicinity of the door.**

9.2 **Install all safety, traffic control, and instruction labels on the door as required by the latest BS 7036. Failure to do this leaves the installer LIABLE for any accident that might occur. This must be done.**

9.3 **Verbally instruct the owner or person in charge of the proper operation of the door.**

9.4 **Instruct the owner or person in charge to routinely inspect the door for the following**

- **Occasional damage**
- **Developing problems**
- **Minor preventative maintenance**

9.5 **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

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10 9100 SERIES VER 4.0 SOFTWARE

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10.1 OPERATION

10.1.1 Sizing

From start up (size) the door will activate from morning entry (24Hrs,T9, T10) regardless of key switch position, 1 Way input (T27,T28) with key switch in one way. 2 Way input (22, T23) with key switch in two way, or key switch Hold Open. The first movement will be in the open direction - The speed of the sizing cycle is automatic and cannot be set from a potentiometer the door drives opened to the full open position where the system sets the counter to full open. The door closes at close speed then latch up to closed position where the system sets the counter for closed position. From these two parameters opened and closed position the system calculates all the other parameters it requires for normal operation i.e. latch position back check position etc.

- ***Notes***

If the encoder is connected for opposite direction or faulty or disconnected the door will operate erratically continuously opening ½ way closing latching and re-opening. This will continue to occur until power is switched off

10.1.2 Auto Reverse on open

The auto reverse open is set from the Back check position pot. This sets the level of current required to trip the door as it is opening.

Normal operation

Key switch, activation, morning entry/fire alarm, locking, and safety.

10.1.3 Standard operation

Upon a legitimate activation signal the door accelerates up to open speed, monitoring the current load on the drive output. (If the current reaches a level above the set datum the door will stop and close). The door travels at the set speed (Potentiometer setting) until it reaches the set back check position, where the speed (Potentiometer setting) is decreased to back check speed. When the door stops at hold open position the system sets the hold open speed and holds the door open until activation and or timer is cleared. The door will then close at close speed, (Potentiometer setting) up to latch position (Potentiometer setting). Where the speed is decreased by driving the motor in the open direction (fixed setting), the power is set such that the spring will overcome this power and continue to allow the door to close up to the closed position. During the open cycle the safe opening (T1, T1) is active and the Safety side Adj Pot sets the angle at which the sensor is redundant, this can be set from Closed up to back check position. During the closing cycle the safe closing (T5, T6) is active and the Activate side Adj pot sets the angle the sensor is redundant, this can be set from Opened up to a few degrees of closed position.

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General

24Hr operates the door regardless of key switch position the door will drive open and remain in the open position as long as the contact is made (Program 4 is the exception) Key switch position OFF no activation or safety operates. Electric lock operates when door closed dependant upon function selection Electric lock operation is set from the function selector the time delay is fixed

Key switch Position 1 Way the activation from internal Activate (T27, T28) safety operates. Electric lock operates when door closed dependant upon function selection

Key switch Position 2 way the activation from internal Activate (T27, T28) and external Activation (T22, T23) safety operates. Electric lock does not operate when door closed

Key Switch H.O The door operates to the open position and remains in the open position safety is by passed (If safety activated the door will open slowly)

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10.2 FUNCTION SELECTION

10.2.1 Standard (0)

Operates as a standard door with electric lock operating in OFF and 1 WAY

Eyetech Act T5, T6

Eyetech Saf T1, T2

F/A T9, T10

1 Way T27, T28

2 Way T22, T23

Door open T14

Key switch off T12

T8 Not Used

10.2.2 Lock in OFF Only (1)

Operates as a standard door with electric lock operating in OFF only.

This selection will give a fast activation in Auto or 1 Way from closed as there is no delay for lock operation.

10.2.3 Lock in 1 Way Only (2)

Operates as a standard door with electric lock operating in 1 Way only

10.2.4 PNG in OFF (3)

Operates as a standard with Push & Go operating in key switch OFF

10.2.5 Door closes and Unlocks in Fire Alarm (4)

Operates as a standard Fire Alarm Normally closed if open circuit door closes and will remain Unlocked

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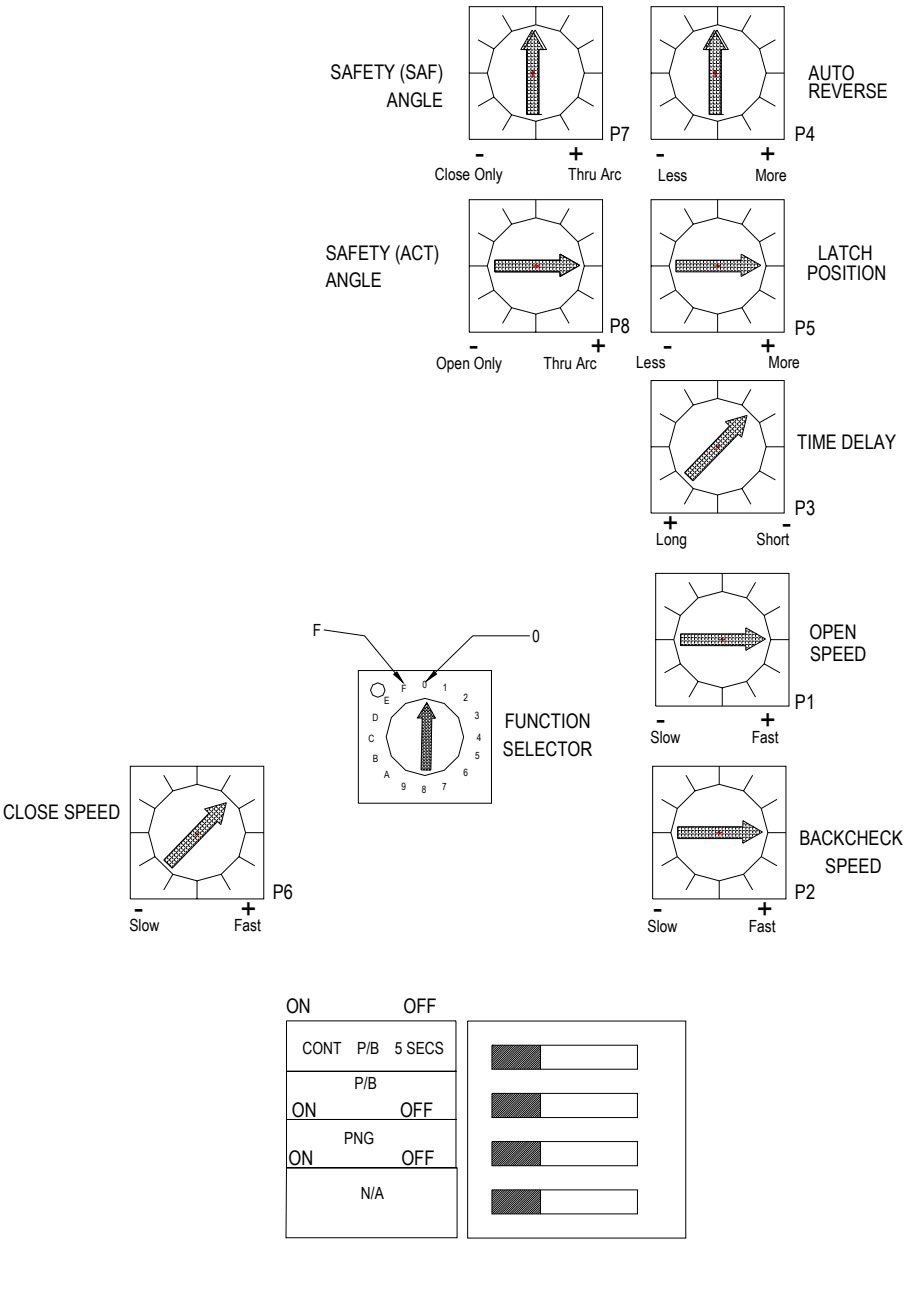
10.3 FUNCTION CHART

Program	BCD	Operation
Standard	0	Eyetech Act T1,T2 Eyetech Saf T5,T6 F/A T9,T10 1 Way T27,T28 Door open T14 Key switch off T12 2 Way T22,T23 T8 Not Used
Locking in OFF only	1	As Std Door locks in OFF Only
Locking Auto only	2	As Std Door Locks in AUTO Only
Standard PNG in OFF	3	As Std PNG operates in key switch OFF
Fire Alarm to close door Normally closed (Breakout)	4	As Std F/A T9,T10 Normally closed Door closes and remains unlocked
	5	
	6	
	7	
	8	
	9	
	A	
	B	
	C	
	D	
	E	
	F	

10.4 CONTROL BOX SETUP



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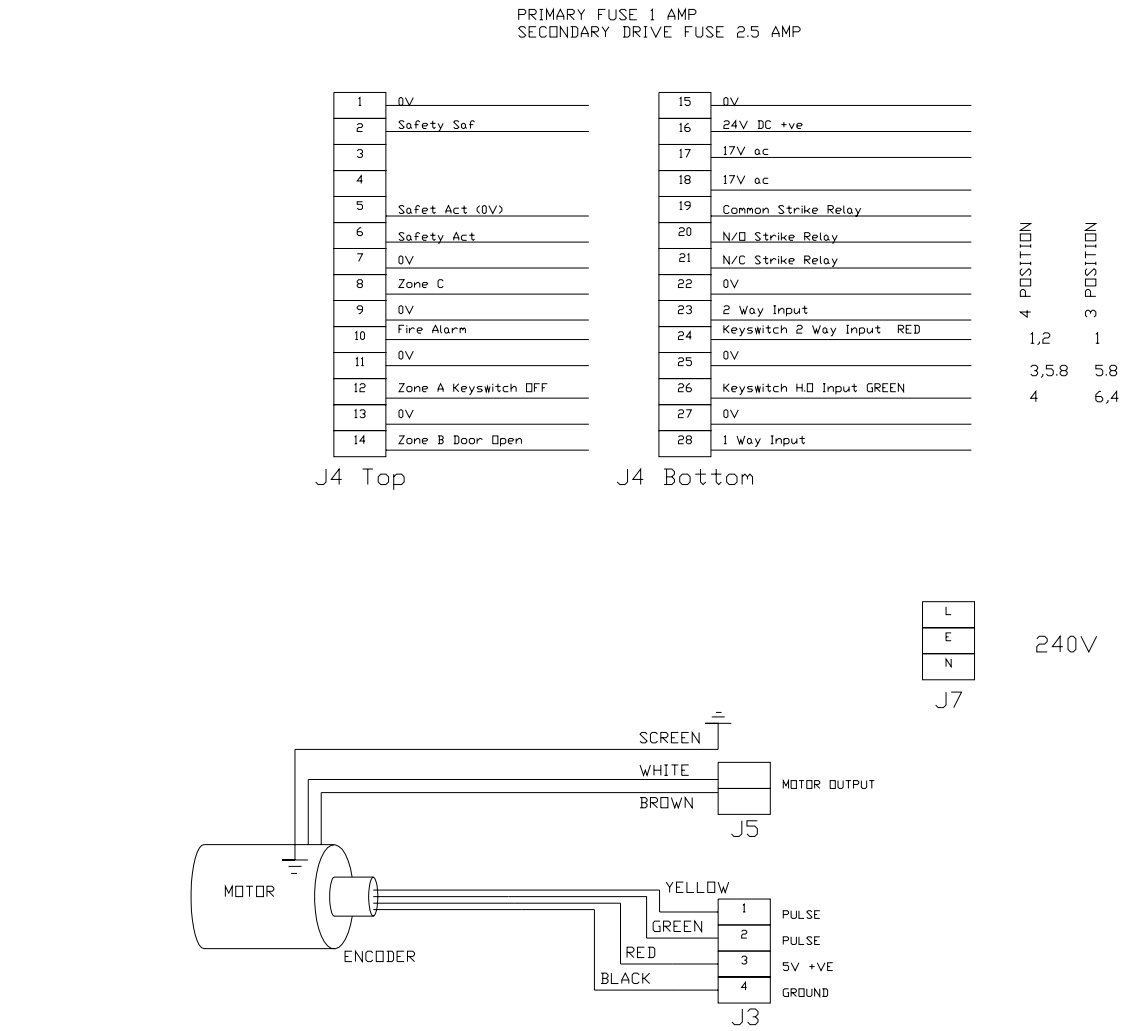
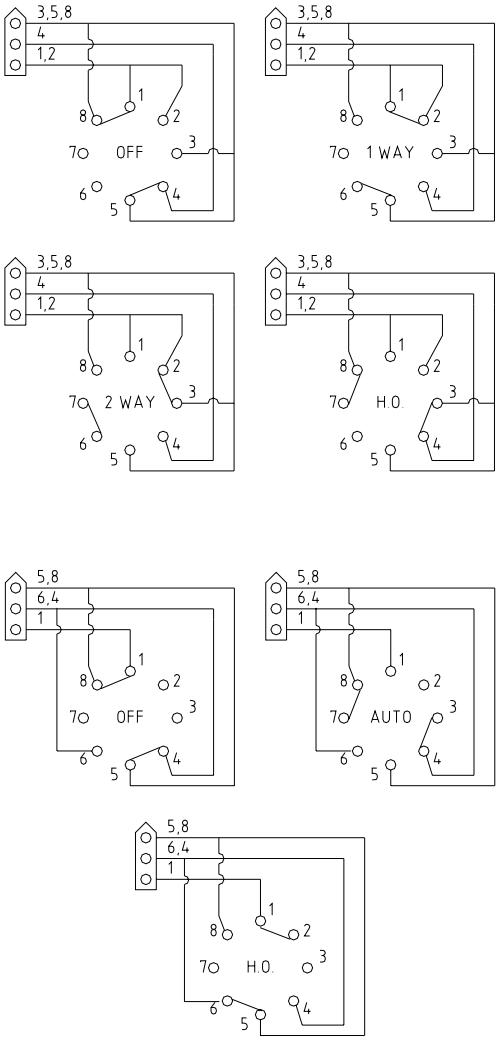
10.5 9100 Series WIRING





10.6 9100 Series Terminal Block

PRIMARY FUSE 1 AMP
SECONDARY DRIVE FUSE 2.5 AMP

1	0V
2	Safety Saf
3	
4	
5	Safet Act (0V)
6	Safety Act
7	0V
8	Zone C
9	0V
10	Fire Alarm
11	0V
12	Zone A Keyswitch OFF
13	0V
14	Zone B Door Open

J4 Top

15	0V
16	24V DC +ve
17	17V ac
18	17V ac
19	Common Strike Relay
20	N/O Strike Relay
21	N/C Strike Relay
22	0V
23	2 Way Input
24	Keyswitch 2 Way Input RED
25	0V
26	Keyswitch H.O Input GREEN
27	0V
28	1 Way Input

J4 Bottom

4 POSITION	3 POSITION
1,2	1
3,5.8	5.8
4	6,4