

WARNING
120VOLT POTENTIAL. MAKE SURE POWER IS TURNED OFF
DURING INSTALLATION AND WIRING PROCEDURE.

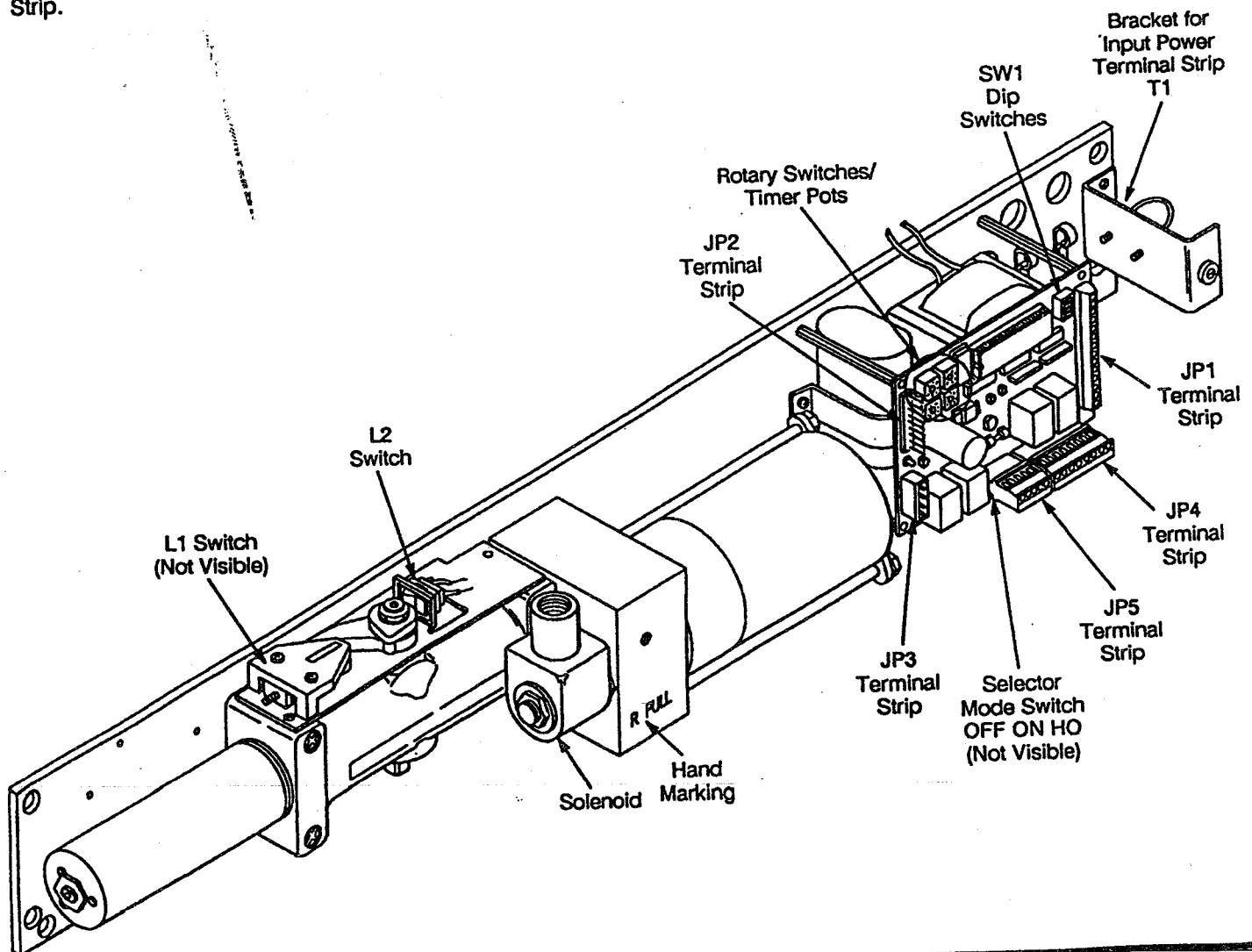
REQUIREMENTS

- U.L. labeled fire or smoke barrier door assemblies require that the 120VAC, 60Hz power input to the PowerMatic door control be supplied through normally closed alarm contacts of the alarm system/ alarm panel.
- All wiring and connections use standard wiring practice conforming with local wiring codes.
- Maximum wire size is:
12 AWG at Power Input Terminal Strip
14 AWG at Terminal Strips JP1 and JP4
Note: No power/voltage inputs are to be made to the PowerMatic unit except 120VAC, 60Hz (+10% -15%) at terminals HOT and COM of the Power Input Terminal Strip.

- Power input terminal strip at terminals HOT and COM must be 120VAC at 60Hz. (Plus 10% minus 15%).
- Current draw at auxiliary contact JP4-2 must not exceed 0.500 amps, for auxiliary devices.

GENERAL DATA

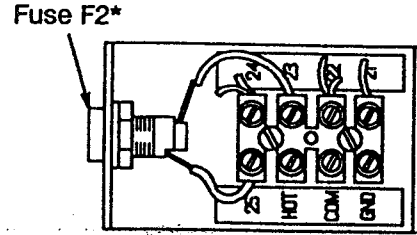
- Maximum current draw of PowerMatic units without peripheral sensors or scanners is 1.5 amps when motor is operating, .050 amps in standby.
Maximum current draw from auxiliary devices is 0.500 amps (terminals JP4-1 and JP4-2).
- Fuse "F2" protects the Electronic Control Module and Transformer circuit and is a 3 amp slo-blo fuse.
- Fuse "F1" protects the Voltage Regulator circuit and is a 1-1/2 amp slo-blo fuse.



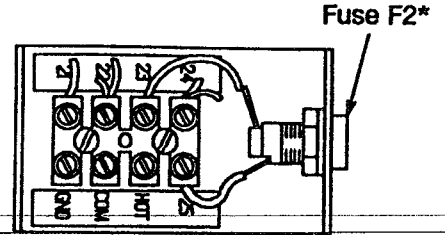
INSTALLER/USER INFORMATION

Input Power Terminal Strip – Maximum wire size 12AWG at terminals HOT, COM and GND. Terminals 21 through 25 are factory wired using 18AWG wire.

Terminal	Description and Use
GND	Earth ground.
COM	Common power lead:
HOT	Hot power lead.
25	Fuse connection.
24	Hot connection to PC board JP5-2 and to hot primary side of 120V/24V transformer.
23	Fuse connection.
22	Common connection to PC board JP5-1 and to common primary side of 120V/24V transformer.
21	Ground connection to PC board JP5-3.

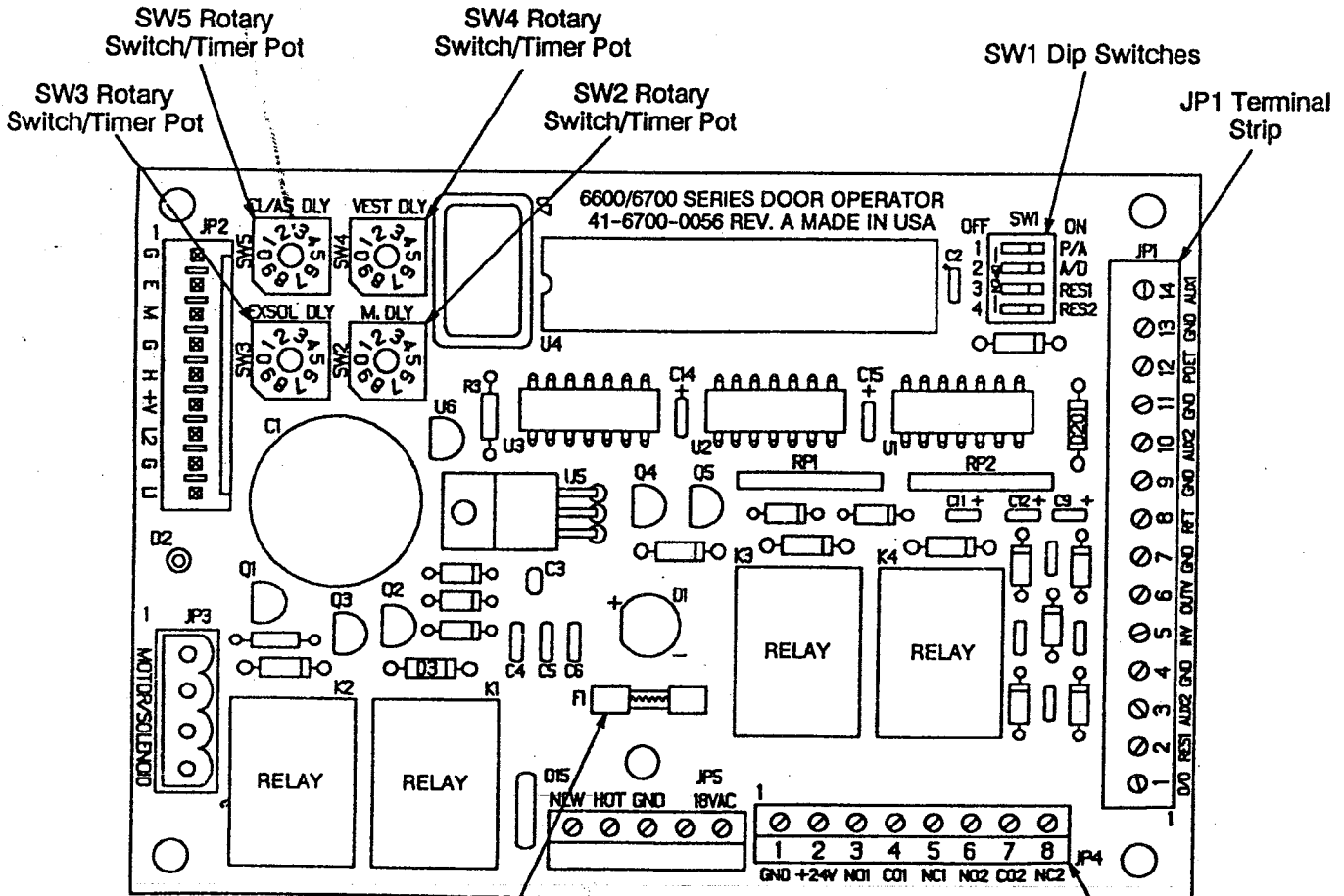


**Left Hand Double Lever
Right Hand Slide Track**



**Right Hand Double Lever
Left Hand Slide Track**

*3 amp, 2AG slo-blo fuse.



Fuse F1
1.5 amp, 2AG
Slo-Blo

JP4 Terminal Strip

Electronic Control Module

JP1 Terminal Strip - Maximum wire size 14AWG.

<u>Terminal</u>	<u>Description</u>
1 O/O	<u>Override Open</u> - This terminal has two possible functions that can be used together or separately. <ol style="list-style-type: none">1. <u>Smoke Ventilation Door or Blow Open Door</u> - Upon initiation of a closed signal from a fire/smoke alarm panel, door will open and remain open until signal is terminated. Use with any JP1 ground.2. <u>Alarm Delay (30 second or 60 second time period)</u> - Time is set with dip switch SW1-2 A/D. (OFF = 30 second delay, ON = 60 second delay.) Use with any JP1 ground.
2 RES1	This is not an active contact.
3 AUX2	<u>Auxiliary 2</u> - This is one of two secondary initiating switch contacts (JP1-10 is the other.) For most applications it is equivalent to AUX1 JP1-14. For Vestibule Function use, it is the contact for a switch located within the vestibule. Use with any JP1 ground.
4 GND	Ground
5 INV	<u>In Vestibule</u> - Used for Vestibule Function. This contact must be connected to the JP1-6 terminal from another unit to receive an initiating signal. The signal is then programmed to initiate the unit by setting the VEST DLY rotary switch/timer pot of the receiving unit. Use this contact with any JP1 ground.
6 OUTV	<u>Out Vestibule</u> - Used for Vestibule Function. This contact must be connected to terminal JP1-5 of another unit to send an initiating signal. Use with any JP1 ground.
7 GND	Ground
8 RFT	<u>Radio Frequency Toggle (Maintained Hold Open)</u> - With unit's slide switch in the ON position, a radio frequency signal will open the door and maintain an indefinite hold open until a second radio frequency signal releases the door from hold open. Use with any JP1 ground.
9 GND	Ground
10 AUX2	<u>Auxiliary 2</u> - Same as JP1-3/AUX2 above.
11 GND	Ground
12 PDET	<u>Presence Detector</u> - Permits wiring of a presence detector to prevent a closed door from opening or a door that is fully open from closing. Use with any JP1 ground.
13 GND	Ground
14 AUX1	<u>Auxiliary 1</u> - Primary initiating switch contact. Initiates door power cycle. For Vestibule Function, the switch at outside of vestibule is connected to this terminal. (Outside switch to outside unit's JP1-14. Inside switch to inside unit's JP1-14.) Use with any JP1 ground.

JP4 Terminal Strip - Maximum wire size 14AWG.

<u>Terminal</u>	<u>Description</u>
1 GND	Ground
2 +24	24VDC output to a maximum current draw of 0.500 amps. Use with ground terminal JP4-1.
3 NO1	<u>Solenoid Control (Relay Contact only)</u> - Normally open contact that is switched by Relay K3 (on board) to close. Relay K3 will remain switched for a period set by SW-3 EXSOL DLY rotary switch/timer pot. Use with terminal JP4-4 CO1. Coordinate use of this terminal with delayed start of motor using timer pot SW-2 M DLY.
4 CO1	<u>Solenoid Control (Relay Contact only)</u> - Common contact for use with terminals JP4-3 NO1 and JP4-5 NC1.
5 NC1	<u>Solenoid Control (Relay Contact only)</u> - Normally closed contact that is switched by Relay K3 (on board) to open. Relay K3 will remain switched for a period set by SW-3 EXSOL DLY rotary switch/timer pot. Use with terminal JP4-4 CO1. Coordinate use of this terminal with delayed start of motor using rotary switch/timer pot SW-2 M DLY.

JP4 Terminal Strip (con't.)

6	NO2	<u>Alarm Delay</u> (Switching Contact only) – Normally open contact that is switched by Relay K4 (on board) to close. Relay K4 will remain switched for a period set by Dip Switch SW1-2 A/D. (OFF = 30 second delay, ON = 60 second delay.) Use with terminal JP4-7 CO2.
7	CO2	<u>Alarm Delay</u> – Common contact for use with terminals JP4-6 NO2 and JP4-8 NC2.
8	NC2	<u>Alarm Delay</u> (Switching Contact only) – Normally closed contact that is switched by Relay K4 (on board) to open. Relay K4 will remain switched for a period set by Dip Switch SW1-2 A/D. (OFF = 30 second delay, ON = 60 second delay.) Use with terminal JP4-7 CO2.

JP5 Terminal Strip – Factory wired connections using 18 AWG wire.

<u>Terminal</u>	<u>Description</u>	
1	NEU	Common 120V connection to Input Power Terminal 22.
2	HOT	Hot 120V connection to Input Power Terminal 24.
3	GND	Ground connection to Input Power Terminal 21.
4	18VAC	From secondary of 120V/24V transformer.
5	18VAC	From secondary of 120V/24V transformer.

JP3 Terminal Strip – Factory wired connections.

<u>Terminal</u>	<u>Description</u>
MOTOR	Motor connection.
SOLENOID	Solenoid coil connection.

JP2 Terminal Strip – Factory wired connections.

<u>Terminal</u>	<u>Description</u>
L1	<u>White Wire</u> – High side of L1 switch. L1 switch is only supplied with 6700 Series units. Detects door motion to open door when door is pushed in the open direction. Contacts are always open when door is closed or moving in closed direction. Contacts are closed whenever door is traveling toward open position.
G	<u>Black Wire</u> – Ground. Common connection for L1 and L2.
L2	<u>Blue Wire</u> – High side of L2 switch. L2 switch is supplied on all 6600 and 6700 Series units. Detects the maximum degree of door swing. Contacts are only closed when door is at the fully open position.
+V	<u>Yellow Wire</u> +24VDC. This terminal is not used. For factory use only.
H	<u>Violet Wire</u> – Hold open contact of "OFF ON H/O" switch assembly.
G	<u>White Wire</u> – Ground. Common contact of "OFF ON H/O" switch assembly.
M	<u>Orange Wire</u> – ON contact of "OFF ON H/O" switch assembly.
E	<u>Red Wire</u> – Emergency Hold Open Release. This contact may be hard wired to a remote normally open momentary contact switch to close the door immediately at any point of door opening or from the hold open position. Use with terminal JP2-G for Emergency Hold Open Release.
G	<u>Black Wire</u> – Ground. Use with terminal JP2-E for Emergency Hold Open Release. Hard wired connection to release switch.

Switches

<u>Terminal</u>	<u>Description</u>
SW1 Dip Switches	
1 P/A	<i>Push-to-go - opens all the way</i> Door Operator Function Switch - OFF position selects the Operator mode. ON position sets the Assist Mode. - Open for a couple seconds
2 A/D	Alarm System Delay Timer - This switch is used in conjunction with terminal JP1-1, O/O for optional function 2. (OFF = 30 second delay, ON = 60 second delay.)
3 RES1	DIAGNOSTIC USE OF FACTORY AUTHORIZED PERSONNEL.
4 RES2	DIAGNOSTIC USE OF FACTORY AUTHORIZED PERSONNEL.
SW2 M DLY	This rotary switch or timer pot sets the length of delay for motor start up to allow for "unlocking" of exit devices, electric strikes, magnetic locks, etc. See Chart 1 for delay times.
SW3 EXSOL DLY	This rotary switch or timer pot sets the length of time that a solenoid remains either energized or deenergized to allow "unlocking". Used in conjunction with terminals JP4-3, JP4-4, JP4-5. See Chart 2 for setting length of time.
SW4 VEST DLY	This switch or timer pot sets the length of time between receipt of the "In Vestibule" signal (terminal JP1-5) and motor start up. See Chart 3 for delay times.
SW5 CL/AS DLY	This switch or timer pot controls either one of two function times (see chart 4 below): <ol style="list-style-type: none"> Operator Function - Suffix "POR" Sets length of time door holds open at the fully open position. Assist Function - Suffix "PAS" Sets length of time motor and pump will operate to reduce opening force of door. When set length of time expires the door opening force will revert to the full opening force required for unassisted passage.

Chart 1 - SW2, M DLY

Length of Time (Seconds)	Setting
0.0	0
0.2	1
0.5	2
1.0	3
1.5	4
2.5	5
3.5	6
4.5	7

Chart 2 - SW3, EXSOL DLY

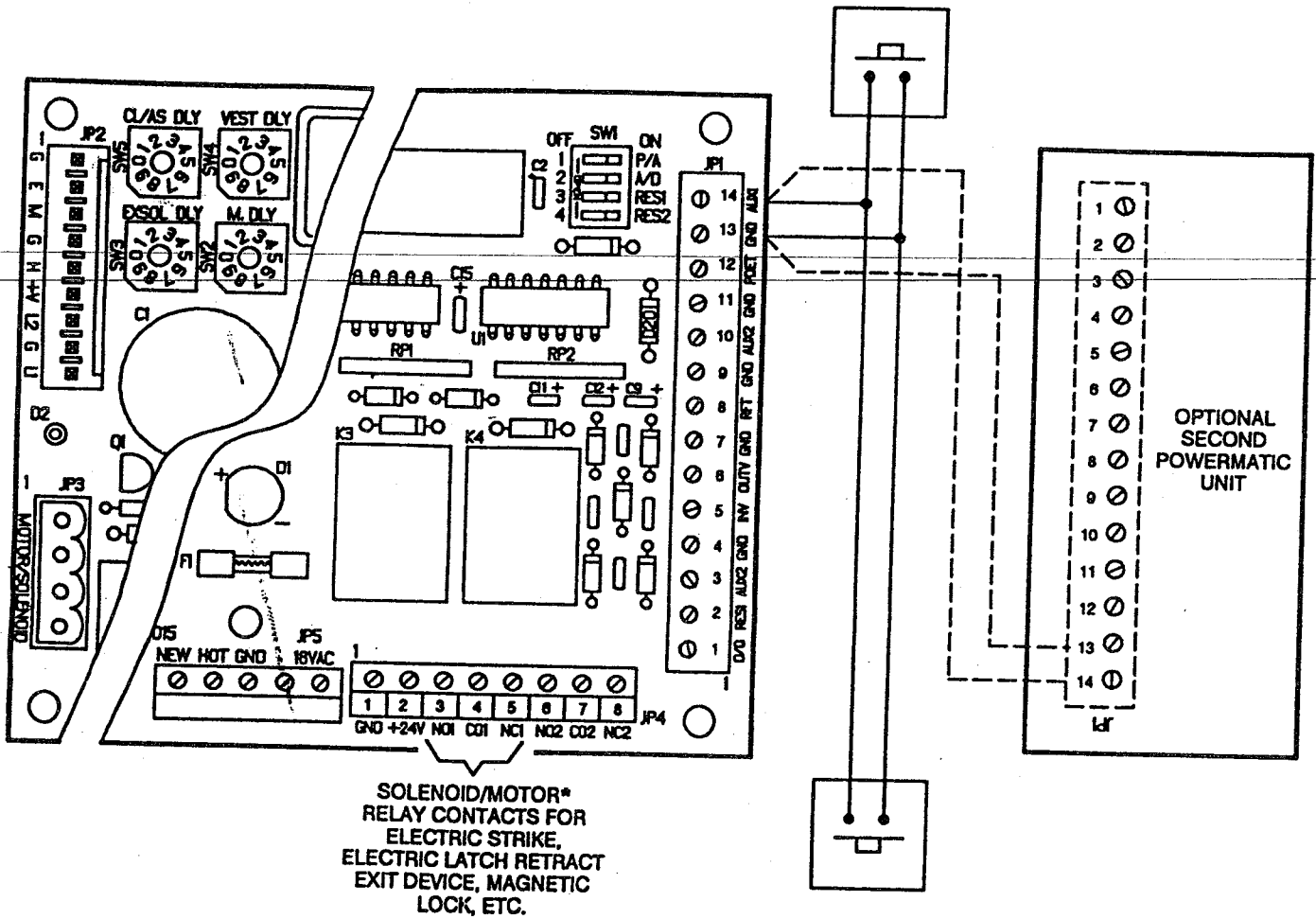
Length of Time (Seconds)	Setting
0	0
1	1
2	2
4	3
6	4
8	5
10	6
12	7

Chart 3 - SW4, VEST DLY

Length of Time (Seconds)	Setting
0	0
1	1
3	2
6	3
9	4
14	5
21	6
30	7

Chart 4 - SW5, CL/AS DLY

Length of Time (Seconds)	Setting
0	0
2	1
5	2
10	3
15	4
20	5
25	6
30	7

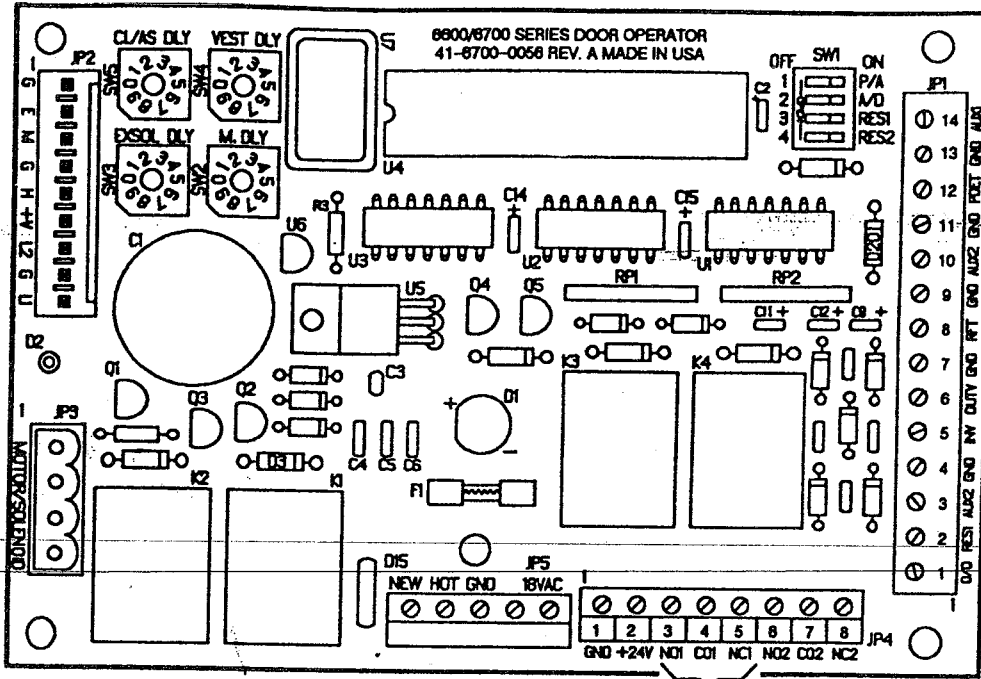


* A diode must be installed across solenoid/motor coil to prevent damage to relay. Suggested diode is 1N4001 or equivalent.

Notes:

1. Power input to PowerMatic unit is at Power Input Terminal Strip (not shown) 120Volts, 60Hz.
2. Current draw must not exceed 0.500 amps at terminal JP4-2.

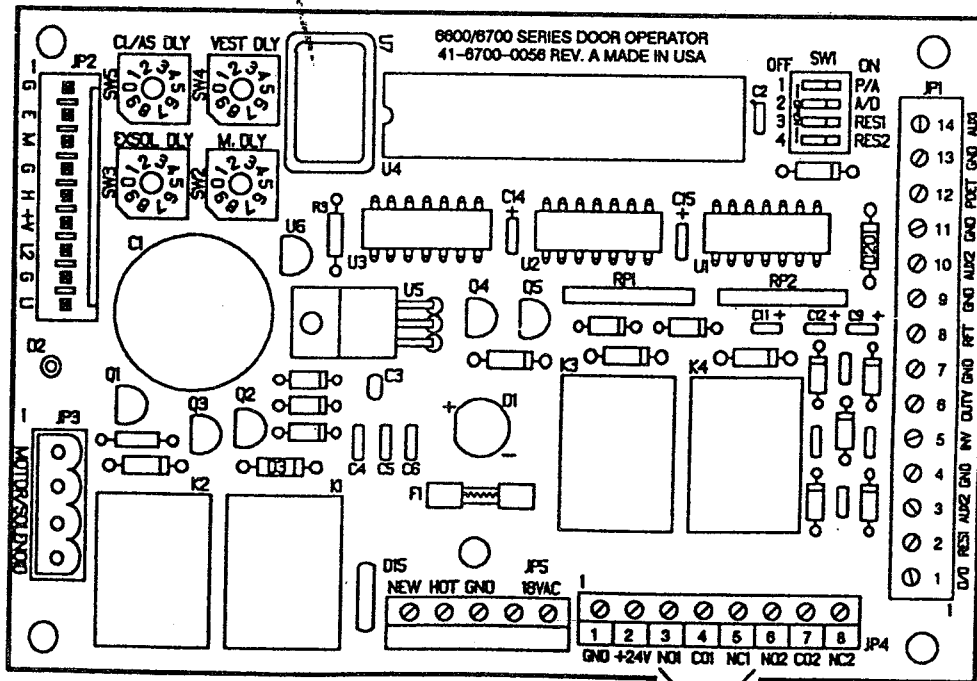
INSIDE



SOLENOID/MOTOR* RELAY CONTACTS FOR ELECTRIC STRIKE, ELECTRIFIED EXIT DEVICE, MAGNETIC LOCK, ETC.

VESTIBULE

OUTSIDE



SOLENOID/MOTOR* RELAY CONTACTS FOR ELECTRIC STRIKE, ELECTRIFIED EXIT DEVICE, MAGNETIC LOCK, ETC.

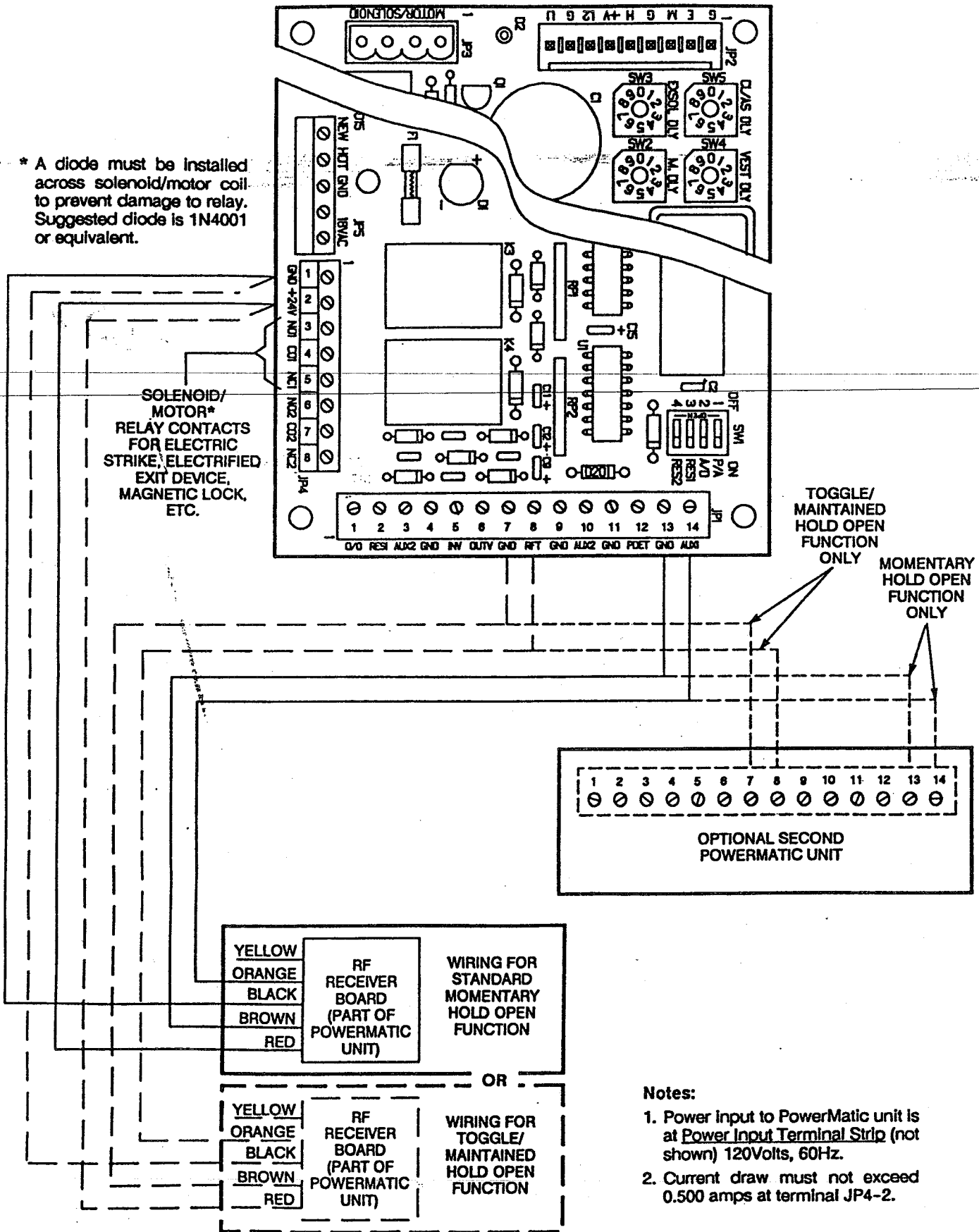
Notes:

1. Power Input to Power-Matic unit is at Power Input Terminal Strip (not shown) 120Volts, 60Hz.
2. Current draw must not exceed 0.500 amps at terminal JP4-2.

* A diode must be installed across solenoid/motor coil to prevent damage to relay. Suggested diode is 1N4001 or equivalent.

Vestibule Function

* A diode must be installed across solenoid/motor coil to prevent damage to relay. Suggested diode is 1N4001 or equivalent.



Notes:

1. Power input to PowerMatic unit is at Power Input Terminal Strip (not shown) 120Volts, 60Hz.
2. Current draw must not exceed 0.500 amps at terminal JP4-2.

Radio Frequency Function Options

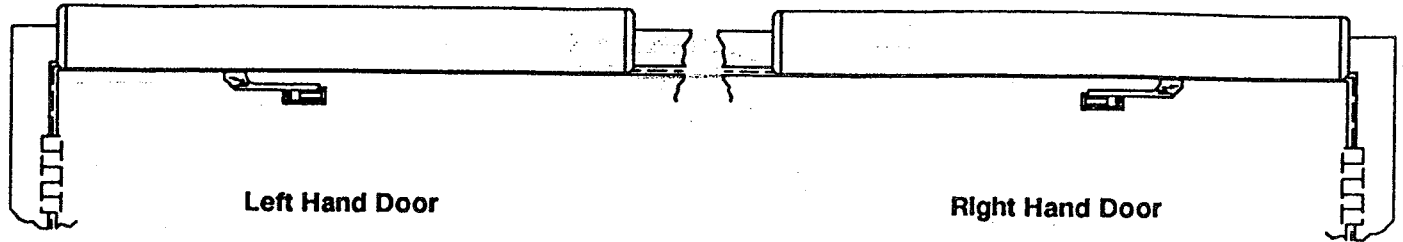
80-9366-0901-020 (6-93)

Standard Duty Double Lever Arm Application for Frame Reveals to 6-7/8" (175mm)

Stop (Push) Side of Door Installation

Door Openings 85° to 110° Use Series 6620/6621 and 6720/6721 or

Door Openings 111° to 180° Use Series 6630/6631 and 6730/6731



Selectively Activated Models Switch or Scanner is needed to activate door control function.	Door Control Function NOTE: Series 6630POR/6631POR and 6730POR/6731POR will be power opened to between 85° and 110°. Door must be manually opened beyond 110° to 180°.	Automatically Activated Models Door Control function activated by pushing on door. May also be activated by Switch or Scanner.
6620PAS/6630PAS 6621PAS/6631PAS	Power Assist Controls	6720PAS/6730PAS 6721PAS/6731PAS
6620POR*/6630POR* 6621POR*/6631POR*	Low Energy Power Operator	6720POR*/6730POR* 6721POR*/6731POR*
* with or without suffix "RF1" or "RF2"		

- **Selectively Activated Models** Series 6600 door controls depend upon external switches or scanners for activation of "Power Assist"/"Power Operator" function.
- **Automatically Activated Models** Series 6700 door controls have an integral switch mechanism that automatically activates the "Power Assist"/"Power Operator" function with a slight movement of the door toward the open position. This movement is adjustable between 3/8" to 1-1/8" (9.5mm to 29mm) in the direction of opening. Switches or scanners may also be used to activate the unit.


The Series 6600 and Series 6700 door controls are available in the following functions:

- **"PAS" suffix - Power Assist function** - The door control operates as a standard door closer unless activated. Upon activation the door opening resistance is reduced, for a selected period of time, well below A.D.A. guidelines. When the time period expires, the door closes under normal door closer spring power.
- **"POR" suffix - Power Operator function** - The door control performs as a low energy power door operator. The Series 6600POR operates only when activated by a switch or scanner. The Series 6700POR is activated by a push or pull on the door. It can also be activated by a switch or scanner if specified.


Americans With Disabilities Act (A.D.A.)

These door controls can be installed and adjusted to conform with A.D.A. regulations.

ANSI Standards

-  **ANSI A117.1** - These door controls permit door assemblies to conform to the requirements of this specification "for buildings and facilities - providing accessibility and usability for physically handicapped people".
- **ANSI A156.19** - These products are designed to conform to this specification "for power assist and low energy power operated doors".
 - "PAS" Models are designed to meet or exceed all of the requirements for the "Power Assist Door".
 - "POR" Models are designed to meet or exceed all of the requirements for the "Low Energy Power Operated Door".

U.L. Listing

 Underwriters Laboratories, Inc. listed for use on fire and smoke barrier door assemblies when the 120VAC (60 Hz) power input is supplied through the normally closed alarm contacts of a compatible U.L. listed alarm system or alarm panel.

WARNING

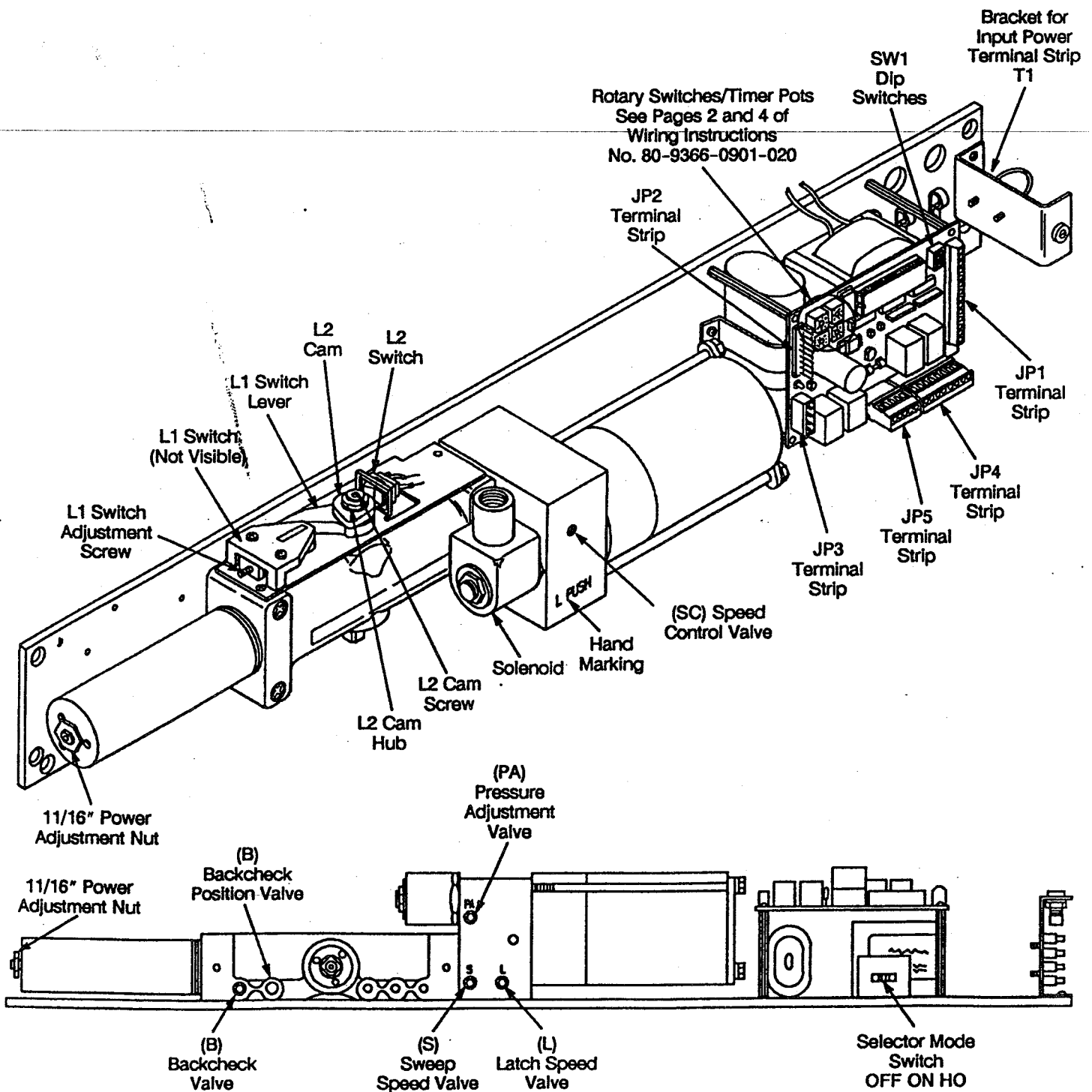
120 VOLT POTENTIAL. MAKE SURE POWER IS TURNED OFF DURING INSTALLATION PROCEDURE.

CAUTION
AN INCORRECTLY INSTALLED OR IMPROPERLY ADJUSTED DOOR CONTROL CAN CAUSE PROPERTY DAMAGE OR PERSONAL INJURY. THESE INSTALLATION INSTRUCTIONS SHOULD BE FOLLOWED TO AVOID THE POSSIBILITY OF MISAPPLICATION OR MISADJUSTMENT.
CAUTION

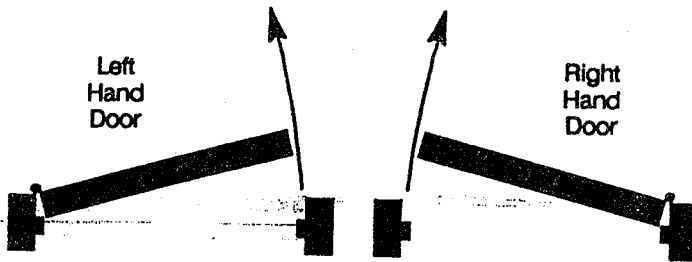
Basic Requirements	2	General Product Information	6
Parts Identification	2	Troubleshooting	6
Installation Template	3	Function and Operation Sequence	6
Installation Sequence	4	Signs	7
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Requirements

- U.L. labeled fire or smoke barrier door assemblies require that the 120VAC (60Hz) power input to the PowerMatic™ door control be supplied through normally closed alarm contacts of the alarm system/alarm panel.
- Power Input to PowerMatic door control must be 120 VAC (60Hz) to terminals HOT and COM at terminal strip T1. Terminal GND is earth ground.
- All wiring must conform to standard wiring practice in accordance with national and local wiring codes.
- Note: Unless otherwise noted, all dimensions are given in inches (millimeters).
- Minimum frame face 2" (51mm).
- Minimum ceiling clearance 4" (102mm).
- Minimum suggested and required material thickness for hollow metal frames (skin plus reinforcement) is charted on page 3.
- For wiring refer to Wiring Instruction 80-9366-0901-020.
- Hand of unit and hand of door must be the same. Hand of unit is not reversible.
- Door must be hung on butt hinges [5" (127mm) max. width] or 3/4" (19mm) offset pivots. A separate door and frame preparation template will be supplied for other conditions.
- Door thickness must be 1-3/4" (44mm) minimum, 2-1/4" (57mm) maximum.
- Door must swing freely through the entire opening and closing cycle before beginning the installation.
- Use of a supplemental door stop is required.



DETERMINE HAND OF DOOR



Hollow Metal Door Frame Reinforcing		
Frame Material	Reinforcing	
	Recommended	Min. Required
12 Ga. .1046 (2.66)	12 Ga. .1046 (2.66)	18 Ga. .0478 (1.21)
14 Ga. .0747 (1.90)	10 Ga. .1343 (3.41)	12 Ga. .1046 (2.66)
16 Ga. .0598 (1.52)	10 Ga. .1343 (3.41)	12 Ga. .1046 (2.66)
18 Ga. .0478 (1.21)	8 Ga. .1644 (4.18)	10 Ga. .1343 (3.41)

General

- Before beginning the installation, verify that the door frame is properly reinforced and is well anchored in the wall. Unreinforced hollow metal frames and aluminum frames should be prepared and fitted with 1/4-20 blind rivet nuts, furnished by the installer.
- Concealed electrical conduit and concealed switch or sensor wires should be pulled to the frame before proceeding.

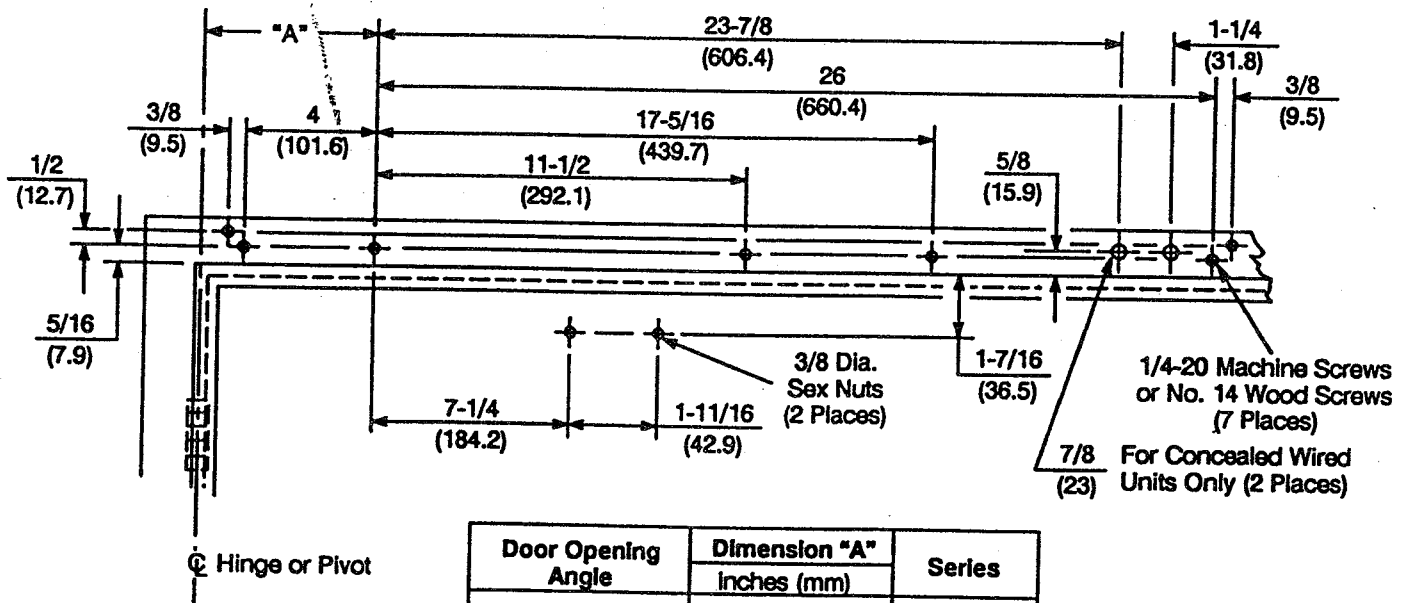
Fasteners for Frame

- 1/4-20 Machine screws for hollow metal and aluminum.
- No. 14 x 2-3/4" (70mm) long wood screws.

Fasteners for Door

- 1/4-20 machine screws.
- 3/8" diameter x 1-3/4" (45mm) long sex nut.

WARNING: Make sure that (120V, 60Hz) input power is turned off before proceeding with installation.



Door Opening Angle	Dimension "A"	Series
	Inches (mm)	
To 110°	5-7/8 (150)	6620/6720
111° to 180°	3-1/8 (80)	6630/6730

Notes:

- Do not scale drawing.
- Left hand door shown.
- All dimensions are shown in inches (mm).
- Thickness recommended for reinforcements in hollow metal doors and frames is charted at the top of this page.
- This template information based upon use of 5" (127mm) maximum width butt hinges or 3/4" (19mm) offset pivots. A separate template will be supplied for other conditions.
- Maximum frame reveal is 6-7/8" (175mm) for this application.
- Conduit hole farthest from hinge is suggested for 120 VAC power input.

Installation Sequence

- Determine hand of door from illustration on page 3.
- Using template, locate and prepare holes in the frame and door:

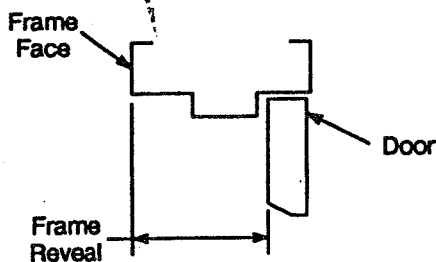
Frame

- **Concealed Wired Units Only:** Two (2) 7/8" (19mm) diameter holes for conduit, for power input and for switch/sensor wires. NOTE: On new construction these holes will generally be drilled by the frame supplier at their shop or at the time the frame is installed in the wall.
- Prepare seven (7) holes for 1/4-20 machine screws or No. 14 x 2-3/4" (70mm) wood screws. Blind rivet nuts (by others) are suggested for unreinforced hollow metal frames or for aluminum frames.

Door

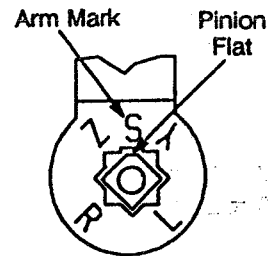
- Prepare two (2) holes for 3/8" diameter sex nuts. Standard units are supplied with sex nuts and screws for 1-3/4" (44mm) thick door. Sex nuts and screws for other door thicknesses are available to order.
- Remove cover from door control assembly and set cover and cover screws aside.
- Fasten backplate/control assembly to frame face.
 - **Concealed wired units only:** Connect conduit to backplate before fastening backplate to frame.
 - **Surface wired units only:** Connect conduit to conduit bracket on backplate after fastening backplate to frame.
- Remove forearm screw from the arm adjusting rod and disassemble the adjusting slide and arm shoe assembly from the arm assembly.

NOTE: Series 6620/6621 and 6720/6721 Models Only
If the frame reveal is less than 3-1/4" (83mm) use a saw and cut 1-7/8" (48mm) off the end of the adjusting rod.

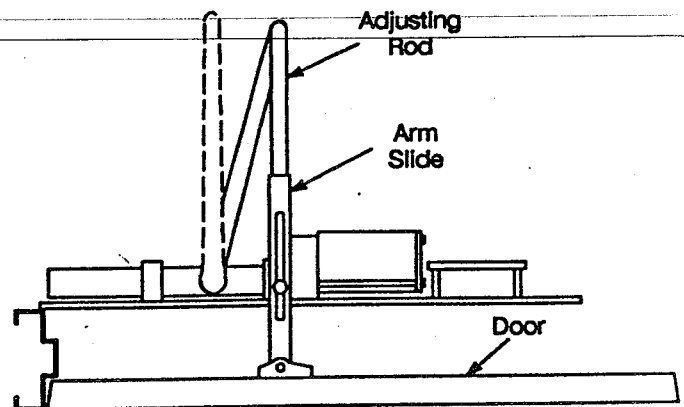


- Fasten arm slide and shoe assembly to the door with the long end of the arm shoe away from the hinge.
- Slide the main arm onto the pinion shaft of the door control unit at a 90° angle to the door control unit and the frame. Align arm mark "S" with the flat corner of the pinion shaft square (see illustration above right).

- Install and tighten 1/4-20 washerhead cap screw with 7/16" wrench or socket.



- Open Door. Align and insert adjusting rod into the arm slide. Close door.
- Rotate the main arm away from the hinge until the adjusting rod and arm slide are perpendicular (at a 90° angle) to the door. Secure at 90° angle with forearm screw.



- Adjust valves "S" and "L". Using 1/8" hex wrench provided, turn valves counterclockwise. Adjust valve "S" first and then valve "L" until desired speeds are achieved. A.D.A. requires that from an open position of 70° the door will take at least 3 seconds to move to a point .3" (75mm) from the latched position, measured at the leading edge of the door.
- Make wire connections using Wiring Instructions No. 80-9366-0901-020.

IMPORTANT

- **6600POR and 6700POR Power Operator Units Only:** The opening speed of the door from closed position to 80 degrees must be 3 seconds or longer and 4 seconds or longer to the fully open position.
- **6600POR and 6700POR Power Operator Units Only:** The force required to prevent a door from opening or closing must not exceed a 15lb. (67N) applied 1" (25mm) from the latch edge of the door at any point in the opening or closing cycle.

Adjustments for the PowerMatic Product

The following adjustments mechanical, hydraulic and electrical are listed in a suggested sequence.

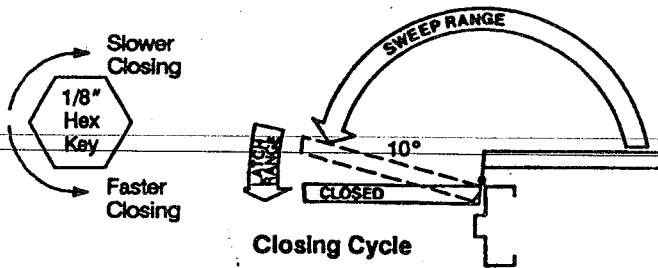
NOTE: Make sure that power to unit is OFF.

MECHANICAL ADJUSTMENT

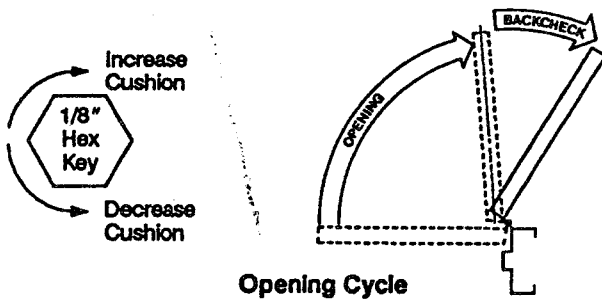
- Set Closing Power. Use 11/16" wrench or socket. Turn Power Adjustment Nut clockwise to increase door closing power. Door control is shipped set at the lowest power setting. Maximum closing power can be achieved with 10 (360°) turns of the power adjustment nut.

HYDRAULIC ADJUSTMENT - Use 1/8" hex wrench

- Closing Cycle - Make adjustments, as necessary, to the Sweep Speed "S" valve and Latch Speed "L" valve. See illustration on page 2. Turn valves clockwise to reduce speed, counterclockwise to increase speed.



- Opening Cycle - Adjust Backcheck, "B" valve, as necessary, for hydraulic resistance to door opening in the backcheck range. See illustration on page 2.



NOTE: Too much Backcheck, "B" valve, can affect the operation of the units pump, preventing 6600POR and 6700POR Series units from fully opening the door. This valve may require fine tuning after all other adjustments have been made.

- Backcheck Position "P" valve is closed. Open by turning counterclockwise, only if backcheck cushioning is required to begin at a greater degree of door opening than the approximately 75° it is set for.

ELECTRICAL ADJUSTMENT

- Verify that all wire connections are secure.
- Turn electrical power to unit "ON".
- Selector Mode Switch - located on the underside of the unit, must be in the "ON" position. Not the "H/O" or "OFF" positions.

6700PAS and 6700POR Units Only

- Adjust "L1" Limit Switch as necessary using a standard screwdriver with a 1/8" wide blade. This adjustment sets the door travel distance required for the power assist/power operator function to self actuate. The range of adjustment is between 1/8" and 1-1/8" (9.5mm and 29mm) of door travel.
- Adjust "L2" Limit Switch as necessary with 5/32" hex wrench supplied and an adjustable wrench. This adjustment sets the maximum degree of door swing (between 85° and 110°) at which the motor shuts off:

6600PAS and 6700PAS Units Only

This will be the point at which the motor will no longer assist with reduced opening force. Anywhere beyond this point the unit will function as a standard hydraulic door closer.

6600POR and 6700POR Units Only

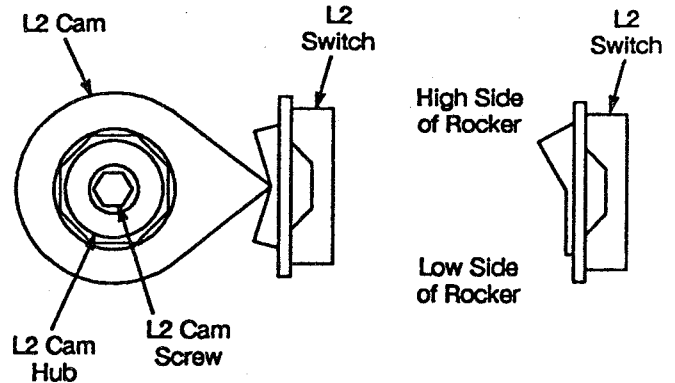
This will be the point at which the motor will stop and the power operator function ceases. Anywhere beyond this point the unit will function as a standard hydraulic door closer.

L2 Switch Adjustment

Product is shipped for motor to shut off at 85°, adjust as follows:

- Loosen screw in top of pinion shaft with 5/32" hex wrench provided. Do not remove it.
- Open door to desired angle of door opening between 85° to 110°.
 - Rotate "L2" cam hub with an adjustable wrench so point of cam is in center of "L2" switch and a "click" is heard.
- Hold "L2" cam hub in position with the adjustable wrench and tighten the pinion shaft screw with the 5/32" hex wrench.

Caution: If not oriented properly, "L2" cam may rotate in the wrong direction and damage or break the "L2" switch. When rotated, "L2" cam must pass across the "low" side of the switch rocker before making contact with the "high" side of the switch rocker.



- Adjust "CL/AS DLY" Rotary Switch/Timer Pot on the printed circuit board as necessary using a standard screwdriver with a 1/8" wide blade. Adjustable for 0 to 30 seconds (see chart below).
- 6600PAS and 6700PAS Units Only: Adjusts the length of time the motor will assist with opening from the time the motor is activated.
- 6600POR and 6700POR Units Only: Adjusts the length of time the door remains at the fully open position after the operator function shuts off.

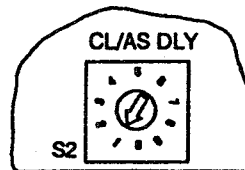


Illustration for CL/AS DLY Rotary Switch/Timer Pot From Printed Circuit Board

Length of Time (Seconds)	Setting
0	0
2	1
5	2
10	3
15	4
20	5
25	6
30	7

- If desired, install No. 668 Security Plate over notch in cover to conceal the Selector Mode Switch when cover is installed.
- Install Cover with mounting screws removed at beginning of installation.

General Product Information (See illustrations on page 2 for location of switch and valves.)

- **Selector Mode Switch** - This is a three (3) position switch that has positions marked "OFF ON H/O".
 - "ON" position - Unit is in standby, capable of function activation either by a remote switch or scanner; or by the units integral switch depending upon the model.
 - "H/O" position - Indefinite hold open. Door will hold open until power is interrupted.
6600PAS and 6700PAS Units Only.
These units must be manually pushed to the full open position for this Indefinite Hold Open function to operate.
 - "OFF" position - All power is shut off to unit, rendering all power functions inoperative and the unit then functions as a standard hydraulic door closer.
 - **"SC" Speed Control Valve**
 - 6600PAS and 6700PAS Power Assist Units Only.
Adjusts the force required to open the door.
 - 6600POR and 6700POR Power Operator Units Only.
Adjusts the opening speed of the door.
- Important: From closed position to 80 degrees must be 3 seconds or longer and 4 seconds or longer to the fully open position.
- **"PA" Pressure Adjustment Valve**
Factory set adjustment for opening force. Will not generally require adjustment:
- Important: 6600POR and 6700POR Power Operator Units Only: The force required to prevent a door from opening or closing must not exceed a 15 lbf. (67N) applied 1" (25mm) from the latch edge of the door at any point in the opening or closing cycle.

Troubleshooting

Because of the sophisticated nature of the PowerMatic product, there are a number of steps during the installation procedure that if overlooked or misapplied, can create incorrect functioning or a complete failure of operation.

- Door Closing Force is Insufficient
 - Increase spring power with Power Adjustment Nut.
 - Check Sweep Speed and Latch Speed regulating valves.
- Door Opening Force is Too Strong
 - Adjust "PA" valve - turn counter clockwise.
- Door Opens Too Fast - 6600POR & 6700POR Units Only
 - Adjust "SC" valve - turn counter clockwise.
- Door Does Not Open Far Enough - 6600POR & 6700POR Units Only
 - Adjust "L2" limit switch cam setting using a 5/32" hex wrench and an adjustable wrench. (Shipped for 85° door swing). See instructions on page 2.
 - Adjust "PA" valve - turn clockwise.
 - Check "B" backcheck valve - turn counterclockwise.
- Check template position of unit on the frame and the door.
- Door Does Not Appear to be Receiving Power
 - Selector Mode Switch is in either the "ON" or "H/O" position.
 - Check to see if red LED is illuminated on printed circuit board.
 - If yes:
Check solenoid and motor connectors and connections, that they are secure.
 - If no:
 - Check incoming power at the input power terminal strip (terminals HOT and COM) to insure that power leads are oriented correctly and are fastened securely.
 - Check fuse "F2".
 - If blown, unplug solenoid and motor lead connectors. Replace fuse and check LED.
 - If illuminated, either the solenoid coil or the motor connections, wire or motor windings are defective.

Function and Operation Sequence

VESTIBULE OPERATION

In either Door Operator or Door Assist mode, initiation of a power cycle may be performed on a delayed basis. This feature, referred to as Vestibule Operation, allows placement of the initiating switch at a remote location from the Door Operator. The adjustable VEST DLY rotary switch/timer pot is provided for selecting a length of delay, appropriate for the particular installation. The basic sequence is shown below:

- Initiate vestibule delay cycle JP1-INV from JP1-OUTV of another unit or from a switch.
- Set VEST DLY rotary switch/timer pot to delay initiation of pump motor.
- Upon initiation of pump motor, Power Operator or Power Assist cycle will start.

POWER OPERATOR FUNCTION - SUFFIX "POR"

In the Power Operator mode, initiation of the unit causes the operator to fully open the door under its own power, sustain the opened position for a set duration, and then release and close. The basic sequence is:

1. Initiate power cycle through any of the following JP1 terminal functions: AUX1, AUX2, RFT, JP1-INV, the L1 limit switch, the H/O of slide switch or the JP1-O/O terminal.

2. If JP1-INV is the power cycle initiating signal, read the VEST DLY rotary switch/timer pot to determine how long to wait before the power cycle starts.
3. Read the EXSOL DLY rotary switch/timer pot to determine how long solenoid should be energized or de-energized, depending upon function required.
4. Read the SW1-2 (A/D) dip switch to determine how long solenoid should be energized.
5. Read the M DLY rotary switch/timer pot to determine how long before the pump motor and solenoid valve turn on.
6. When limit switch L2 closes, door is fully open.
7. Pump motor turns off.
8. Read the CL/AS DLY rotary switch/timer pot to determine the length of temporary hold open.
9. Solenoid valve turns off, releasing door from temporary hold open.
10. Door closes and operator waits for next power cycle initiation.

Additional power cycle commands received during step 8 of the Power Operator function will cause the closing delay timer to be reset to the beginning.

Function and Operation Sequence (Con't)

Exceptions to the Power Operator Function

Following is an explanation of the inputs that can modify the basic flow of the Power Operator mode described above.

1. If terminal JP1-PDET is signaled the door will not open if it is closed or the door will not close if it is open. This signal is normally used to connect to a presence detector which will prevent the door from opening or closing when someone is in the area of detection. Note that JP1-O/O will override the PDET signal.
2. If JP1-O/O is signaled the door will open independently of the state of JP1-PDET or JP2-E signals.
3. If the H/O slide switch is set, the door will open and remain open. JP1-PDET, JP1-O/O or JP2-E will override the H/O signal.
4. If JP2-E is signaled, the power cycle will terminate and the door will close. JP1-O/O will override the JP2-E signal.
5. The door must reach its fully open position (limit switch L2 closed) within 7 seconds after it has started opening or the

pump motor and solenoid valve will be turned off allowing the door to close.

6. If the door is in the closed position, and not in the Manual or Emergency mode, signaling RFT will initiate a door power cycle. The door will remain open until JP1-RFT is again signaled or until JP2-E is signaled. If the door is in the open position, the RFT signal will close the door. therefore, the door can be "toggled" between an open and closed position.

POWER ASSIST FUNCTION - SUFFIX "PAS"

In the Power Assist mode, initiation of a power cycle causes the pump motor and solenoid valve to engage, requiring minimal force to open or close the door. The ease of operation is sustained for an adjustable duration, after which the motor and solenoid are turned off, causing the door to close. If the door is fully opened during the power cycle, the motor will disengage for the remainder of the cycle. The solenoid will remain engaged for the duration of the cycle. The basic flow for the Power Assist mode is the same as the Power Operator mode except that the 7 second time-out function is not in effect.

Signs

Signs are required to alert and instruct pedestrian traffic in the operation and use of the power assist door, the power operated door, wall switches and frame switches.

Material Composition of signs:

UL Recognized label system PGDQ2,

Base Material - Mylar

Material Color - PMS 341 Green

Laminated Material Polyester Clear with Pressure Sensitive

Permanent Adhesive.

Surface Preparation:

Before applying any of the labels shown on this page the surface to which they are to be applied should be:

- Hard, flat and nonporous
- Free of grease, dirt or loose paint

Application:

Remove backing to expose adhesive and apply for high visibility to the door surface or in close proximity to the switch or scanner/sensor to which it's instruction applies.



No. 248 - Supplied with 6700PQR Series Units.



No. 249 - Supplied with 6700PQR Series Units.



No. 250 - Supplied with switches 660, 661 and 662 used in conjunction with 6600PQR or 6700PQR Series Units.



No. 251 - Two supplied with 6600PAS Series Units when used with 663 and 664 scanners or two supplied with 6700PAS Series Units.



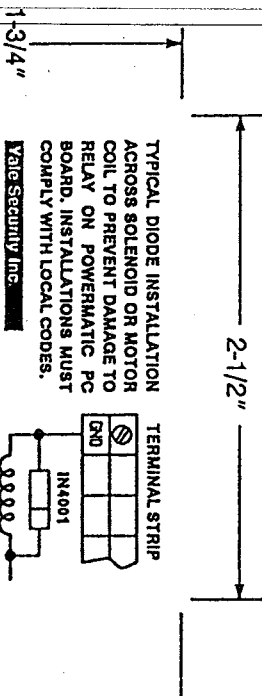
No. 252 - Supplied with switches 660, 661 and 662 used in conjunction with 6600PAS Series Units.



No. 253 - Two supplied with 663 and 664 scanners for use in conjunction with 6600PQR or 6700PQR Series Units.



No. 254 - Supplied with radio frequency controlled units (suffix RF1 or RF2). For 6600PQR or 6700PQR Series units.



TYPICAL DIODE INSTALLATION
ACROSS SOLENOID OR MOTOR
COIL TO PREVENT DAMAGE TO
RELAY ON POWERMATIC PC
BOARD. INSTALLATIONS MUST
COMPLY WITH LOCAL CODES.

Yale Security Inc.

- Notes:
1. YELLOW CARD STOCK WITH BLACK INK.
 2. STOCK THICKNES .024 TO .028
 3. LOWER BLANK SURFACE, 3/4 x 2 1/2,
TO ACCEPT ADHESION TO SCOTCH TAPE

PowerMatic® - Typical Diode Installation

Norton

Yale Security Inc.

P.O. BOX 25288, CHARLOTTE, NC 28229-8010

TEMPLATE NUMBER

80-9310-0339-020

DATE

4-94

Norton®

PowerPlus™ Door Controls Installation and Wiring Instructions

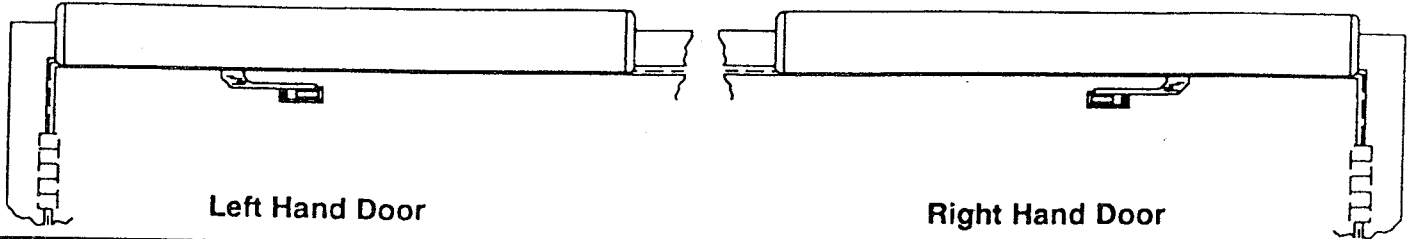
80-9366-0020-020 (9-90)

Door Controls with Standard Duty Double Lever Arm. Frame Reveals to 6-7/8" (175)

Stop (Push) Side of Door Installation for

Door Openings 85° to 110°, use Series 6620 and 6720 or

Door Openings 111° to 180°, use Series 6630 and 6730



Selectively Activated Models Switch or Scanner is needed to activate door control function.	Door Control Function NOTE: Series 6630POR and 6730POR will be power opened to between 85° and 110°. Door must be manually opened beyond 110° to 180°)	Automatically Activated Models Door Control function activated by pushing on door. May also be activated by Switch or Scanner.
6620PAS/6630PAS	Power Assist Controls	6720PAS/6730PAS
6620POR*/6630POR*	Low Energy Power Operator	6720POR*/6730POR*
* with or without suffixes "RF1" or "RF2"		

• **Series 6600** door controls depend upon external switches or scanners for activation of "Power Assist"/"Power Operator" function.

• **Series 6700** door controls have an integral switch mechanism that automatically activates the "Power Assist"/"Power Operator" function with a slight movement of the door toward the open position. This movement is adjustable between 3/8" to 1-1/8" (9.5 to 29mm) in the direction of opening. Switches or scanners may also be used to activate the unit.

The Series 6600 and Series 6700 door controls are available in the following functions:

• **"PAS" suffix - Power Assist function** - The door control operates as a standard door closer unless activated. Upon activation the door opening resistance is reduced, for a selected period of time, well below handicapped code requirements. When the time period expires, the door closes under normal door closer spring power.

• **"POR" suffix - Power Operator function** - The door control performs as a low energy power door operator. The Series 6600POR operates only when activated by a switch or scanner. The Series 6700POR is activated by a push or pull on the door. It can also be activated by a switch or scanner if specified.

WARNING

120 VOLT POTENTIAL. MAKE SURE
POWER IS TURNED OFF DURING
INSTALLATION PROCEDURE.

U.L. Listing



Underwriters Laboratories, Inc. listed for use on fire and smoke barrier door assemblies when the 120VAC (60 Hz.) power input is supplied through the normally closed alarm contacts of a compatible U.L. listed alarm system or alarm panel.

ANSI Standards



ANSI A117.1 - These door controls permit door assemblies to conform to the requirements of this specification "for buildings and facilities - providing accessibility and usability for physically handicapped people".

• ANSI A156.19 - These products are designed to conform to this specification "for power assist and low energy power operated doors".

- "PAS" Models are designed to meet or exceed all of the requirements for the "Power Assist Door".

- "POR" Models are designed to meet or exceed all of the requirements for the "Low Energy Power Operated Door".

CAUTION
AN INCORRECTLY INSTALLED OR IMPROPERLY ADJUSTED DOOR CONTROL CAN CAUSE PROPERTY DAMAGE OR PERSONAL INJURY. THESE INSTALLATION INSTRUCTIONS SHOULD BE FOLLOWED TO AVOID THE POSSIBILITY OF MISAPPLICATION OR MISADJUSTMENT.

Basic Requirements 2 & 3

Parts Identification 2

Installation Template 4

Installation Sequence 4 & 5

Wiring 5, 6 & 7

Regulation & Adjustment 8 & 9

Switches/Scanners 10

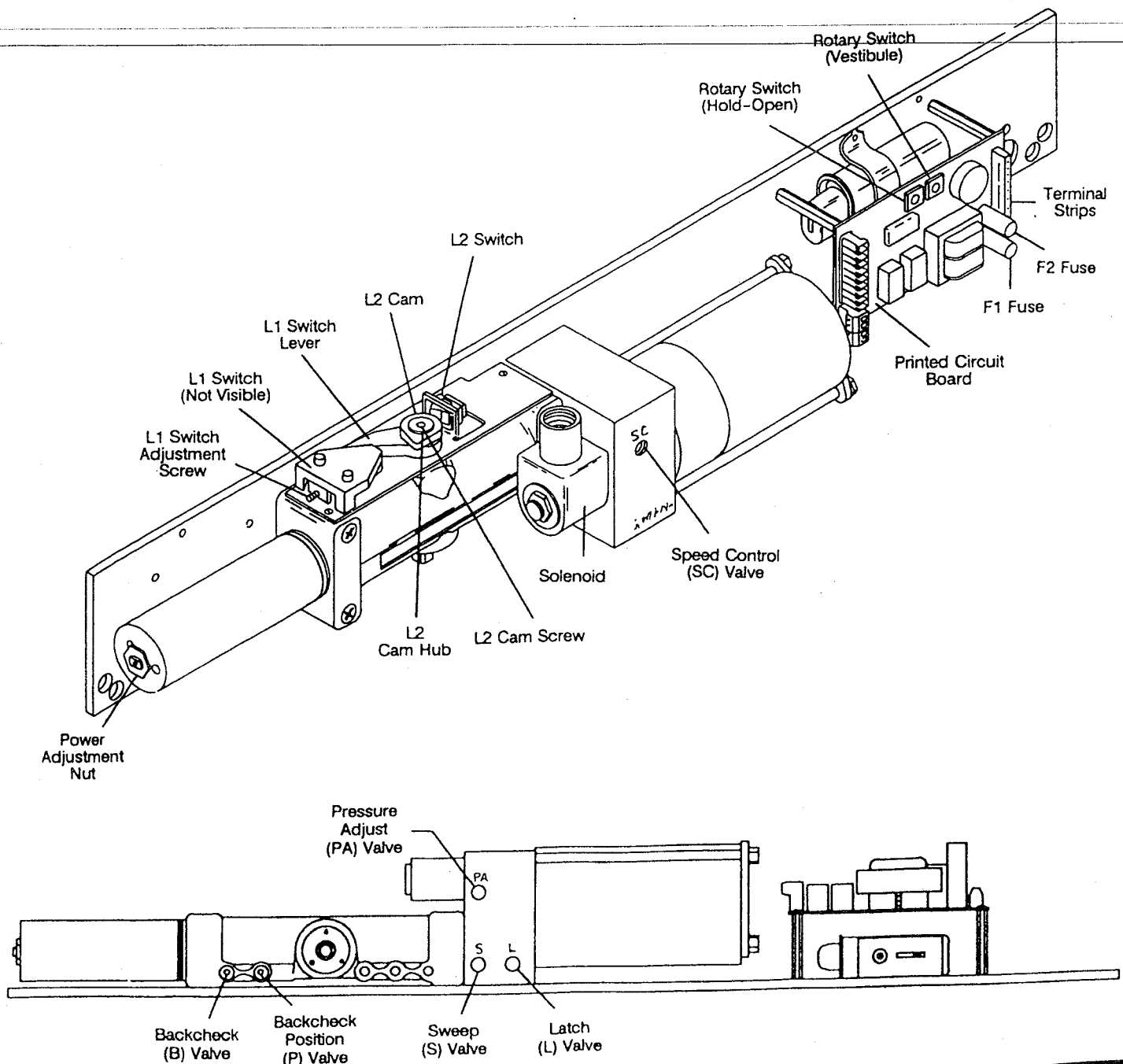
Miscellaneous 10

Signs 11

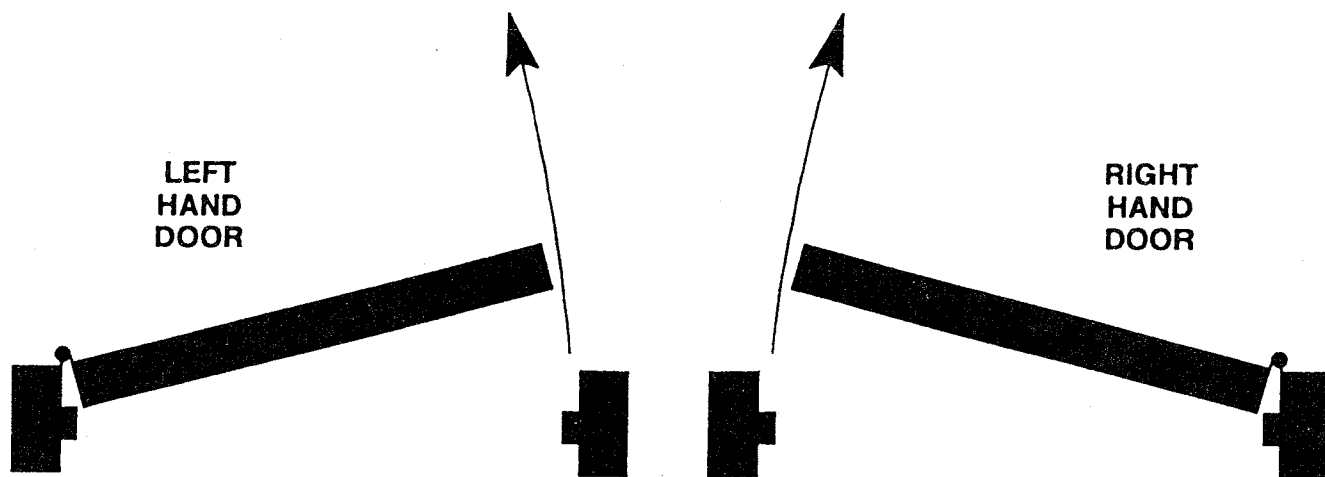
Troubleshooting 12

Requirements

- U.L. labeled fire or smoke barrier door assemblies require that the 120Volt A.C. (60Hz.) power input to the PowerPlus™ door control be supplied through normally closed alarm contacts of the alarm system/alarm panel.
- Power Input to PowerPlus™ door control must be 120 Volts A.C. (60Hz.) to terminals No. 1 (hot) and No. 3 (neutral). Terminal No. 2 is earth ground.
- Maximum wire size is 14 AWG.
- All wiring must conform to standard wiring practice in accordance with national and local wiring codes.
- Note: Unless otherwise noted, all dimensions are given in inches (millimeters) or inches/millimeters.
- Minimum frame face 2" (51).
- Door must swing freely through the entire opening and closing cycle before beginning the installation.
- Minimum ceiling clearance 11" (279).
- Minimum suggested and required material thickness for hollow metal frames (skin plus reinforcement) is charted on page 3.
- For wiring refer to Wiring Instruction 80-9366-0901-020 in this instruction, pages 5, 6 & 7.
- Hand of unit and hand of door must be the same. Hand of unit is not reversible.
- Door must be hung on butt hinges [5" (127) max. width] or 3/4" (19) offset pivots.
- Door thickness must be 1-3/4" (44) minimum, 2-1/4" (57) maximum.
- Use of a supplemental door stop is always recommended.



DETERMINE HAND OF DOOR



Hollow Metal Door Frame Reinforcing		
Frame Material	Reinforcing	
	Recommended	Minimum Required
12 Ga. .1046 (2.66)	12 Ga. .1046 (2.66)	18 Ga. .0478 (1.21)
14 Ga. .0747 (1.90)	10 Ga. .1343 (3.41)	12 Ga. .1046 (2.66)
16 Ga. .0598 (1.52)	10 Ga. .1343 (3.41)	12 Ga. .1046 (2.66)
18 Ga. .0478 (1.21)	8 Ga. .1644 (4.18)	10 Ga. .1343 (3.41)

General

- Before beginning the installation, verify that the door frame is properly reinforced and is well anchored in the wall. Unreinforced hollow metal frames and aluminum frames should be prepared and fitted with 1/4-20 blind rivet nuts, furnished by the installer.
- Concealed electrical conduit and concealed switch or sensor wires should be pulled to the frame before proceeding.

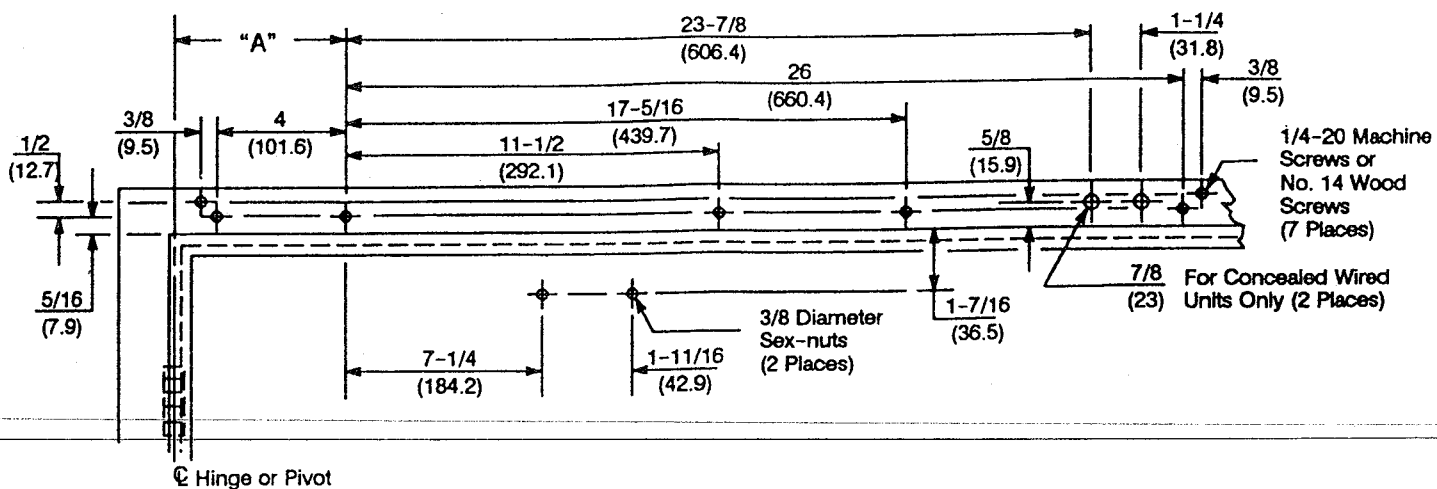
Fasteners for Frame

- 1/4-20 Machine screws for hollow metal and aluminum.
- No. 14 x 2-3/4" (70) long wood screws.

Fasteners for Door

- 1/4-20 Machine screws
- 3/8" diameter x 1-3/4" (45) long sex-nut

WARNING: Make sure that (120V, 60Hz.) input power is turned off before proceeding with installation.



DOOR OPENING ANGLE	Dimension "A"		SERIES
	inches	(mm.)	
TO 110°	5-7/8	150	6620/6720
111° TO 180°	3-1/8	80	6630/6730

Notes:

- Do not scale drawing.
- Left hand door shown.
- All dimensions are shown in inches and millimeters (mm).
- Thickness recommended for reinforcements in hollow-metal doors and frames should provide a combined material thickness of .1644 (4.2) minimum.

- Template information based upon use of 5" (127) maximum width butt hinges or 3/4" (19) offset pivots.
- Maximum frame reveal is 1/8" (3) for this application.
- Conduit hole farthest from hinge is suggested for 120 Volt AC power input.

Installation Sequence

- Determine hand of door from illustration on page 3.
- Using template, locate and prepare holes in the frame and door:

Frame

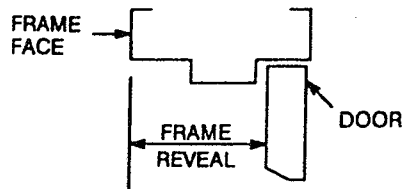
- Concealed Wired Units Only; 2 - 7/8" (19) diameter holes for conduit and for switch and/or sensor wires. NOTE: On new construction these holes will generally be drilled by the frame supplier at their shop or at the time the frame is installed in the wall.
- Prepare 7 holes for 1/4-20 machine screws or No. 14 x 2-3/4" (70) wood screws. Blind rivet nuts (by others) are suggested for unreinforced hollow metal frames or for aluminum frames.

Door

- Prepare 2 holes for 3/8" diameter sex-nuts. Standard units are supplied with sex-nuts and screws for 1-3/4" (44) thick door. Sex-nuts and screws for other door thicknesses are available to order.
- Remove cover from door control assembly and set cover and cover screws aside.
- Fasten backplate/control assembly to frame face
 - Concealed wired units only . . . connect conduit to backplate **before** fastening backplate to frame.
 - Surface wired units only . . . connect conduit to conduit bracket on backplate **after** fastening backplate to frame.

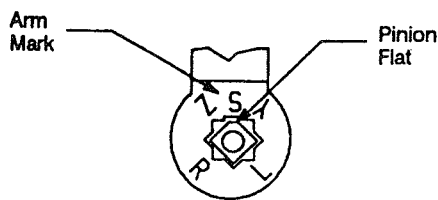
- Remove forearm screw from the arm adjusting rod and disassemble the adjusting rod and arm shoe assembly from the arm assembly.

– (Note: Series 6620PAS and 6620POR Models Only: If the frame reveal is less than 3-1/4" (83), use a saw and cut 1-7/8" (48) off the end of the adjusting rod.)

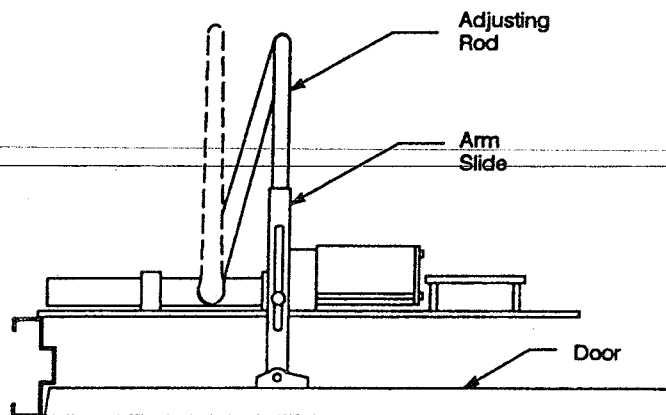


- Fasten adjusting rod and arm (snubber) shoe assembly to the door with the long end of the arm (snubber) shoe nearest to the hinge (and the adjusting rod on top of the arm snubber shoe).
- Slide the main arm onto the pinion shaft of the door control unit at a 90° angle to the door control unit and the frame. (Aligning Arm Mark "S" with the Pinion Flat)

Install and tighten 1/4-20 "Washerhead" cap screw with a 7/16" wrench or socket.



- Open door . . . align and insert adjusting rod into the arm slide . . . close door.
- Rotate the main arm away from the hinge until the adjusting rod and arm slide are perpendicular (at a 90° angle) to the door. Secure at 90° angle with forearm screw(s).



IMPORTANT

- 6600POR and 6700POR Power Operator Units Only: The opening speed of the door from closed position to 80 degrees must be 3 seconds or longer and 4 seconds or longer to the fully open position.
- 6600POR and 6700POR Power Operator Units Only: The force required to prevent a door from opening or closing must not exceed a 15lbf. (67N) applied 1" (25) from the latch edge of the door at any point in the opening or closing cycle.

WIRING INSTRUCTION No. 80-9366-0901-020

Requirements

- All wiring and connections use standard wiring practice conforming with local wiring codes.
- Maximum wire size is 14 AWG.
- Power input at terminals 1 (neutral) and 3 (hot) must be 120VAC at 60Hz. (Plus 10% minus 15%).
- Current draw at auxiliary contacts 6 and 10 combined must not exceed .350 Amps., for scanner/sensor operation.
- If auxiliary switches No. 660, No. 661 or No. 662 are specified for use with one of these units the electrical box must be supplied by others.

General Data

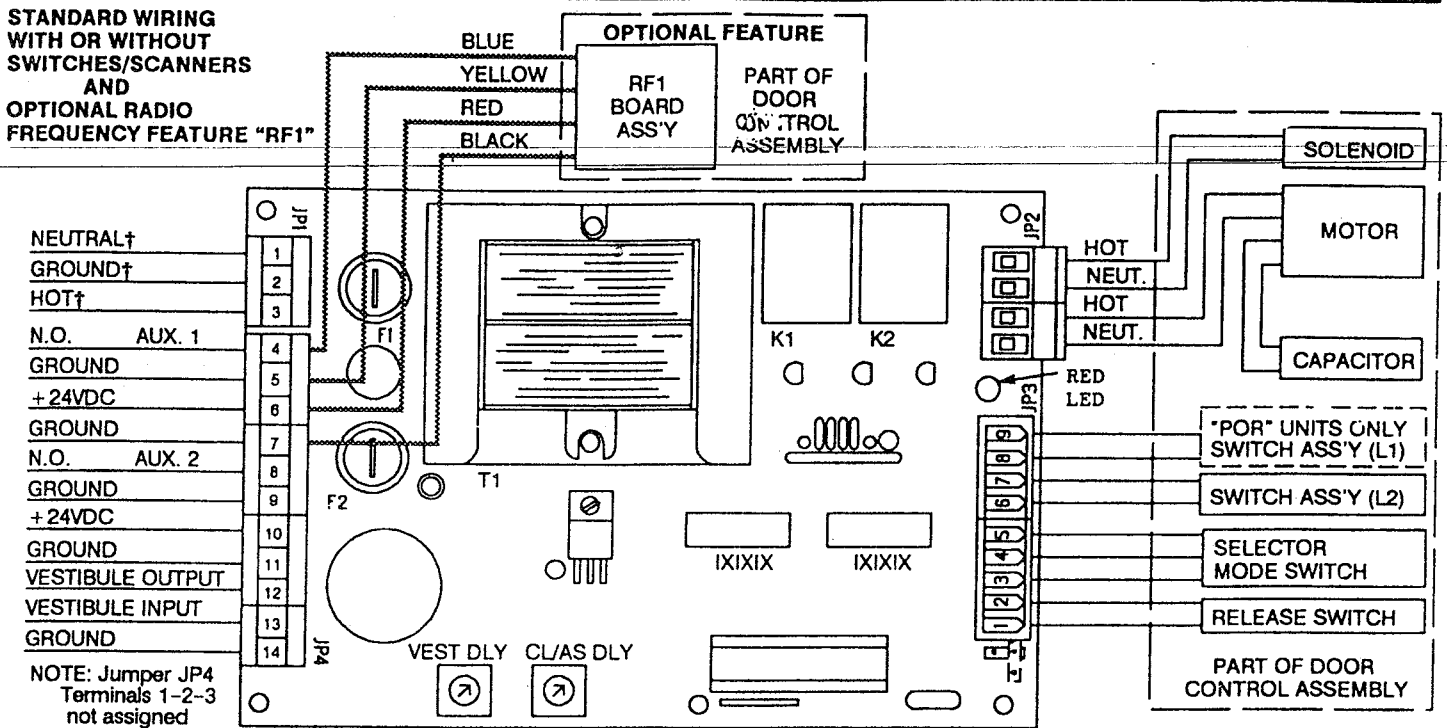
- Maximum current draw of PowerPlus™ units without peripheral sensors or scanners is 1.2 Amps. when motor is operating; .030 Amps. in standby. Maximum additional current draw from sensors or scanners is .350 Amps.
- Fuse "F1" protects the Electronic Control Module and Transformer circuit and is a 120VAC - 2-1/2 Amp. slo-blo fuse.
- Fuse "F2" protects the Voltage Regulator circuit and is a 24VDC - 1/2 Amp. slo-blo fuse.

Standard Wiring With or Without Switches or Scanners and (With or Without Optional Radio Frequency Feature "RF1")

- † U.L. labeled fire or smoke barrier door assemblies require that the 120Volt A.C. (60Hz.) power input to the PowerPlus™ door control be supplied through normally closed alarm contacts of the alarm system/alarm panel.
- Terminals 4 thru 7 are for the first switch or scanner connection; if and optional Radio Frequency "RF1" feature is provided, it will use these same terminals. "RF1" feature is factory wired.
- Terminals 8 thru 11 are for connection of a second switch or scanner.
- Terminals 12 thru 14 are for special "Vestibule Function" wiring.

Wiring Instruction No. 80-9366-0901-020 (cont'd)

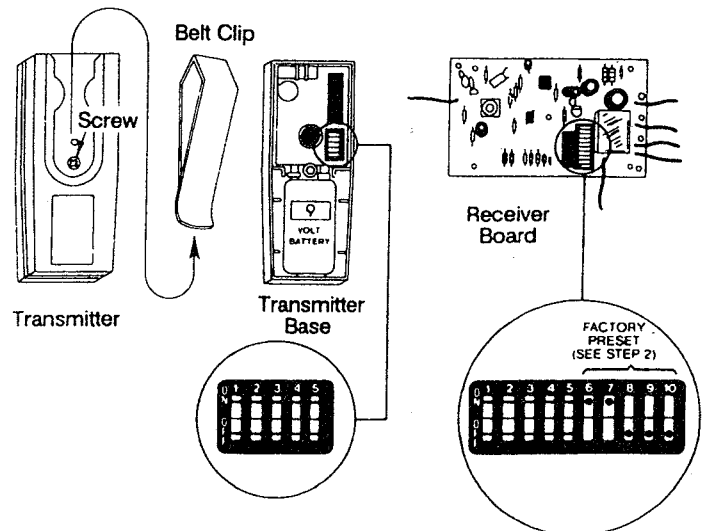
- Special "Vestibule Function" wiring capability is standard. May be used to synchronize the powered-up function of two consecutive doors in a pedestrian traffic path, with the actuation of a single switch outside either of the two doors.
- Wire "Vestibule Function" in the following manner:
 - Terminals 4 and 5 are connected to the "outside" wall switch for both units A and B and terminals 8 and 9 are connected to the "inside" wall switch for both units A and B
 - Terminal 12 in Unit A connects to terminal 13 in Unit B.
 - Terminal 13 in Unit A connects to terminal 12 in Unit B.
 - Terminal 14 in Unit A connects to terminal 14 in Unit B.



For Radio Frequency Option "RF1" (Power Open Only) "POR" Models

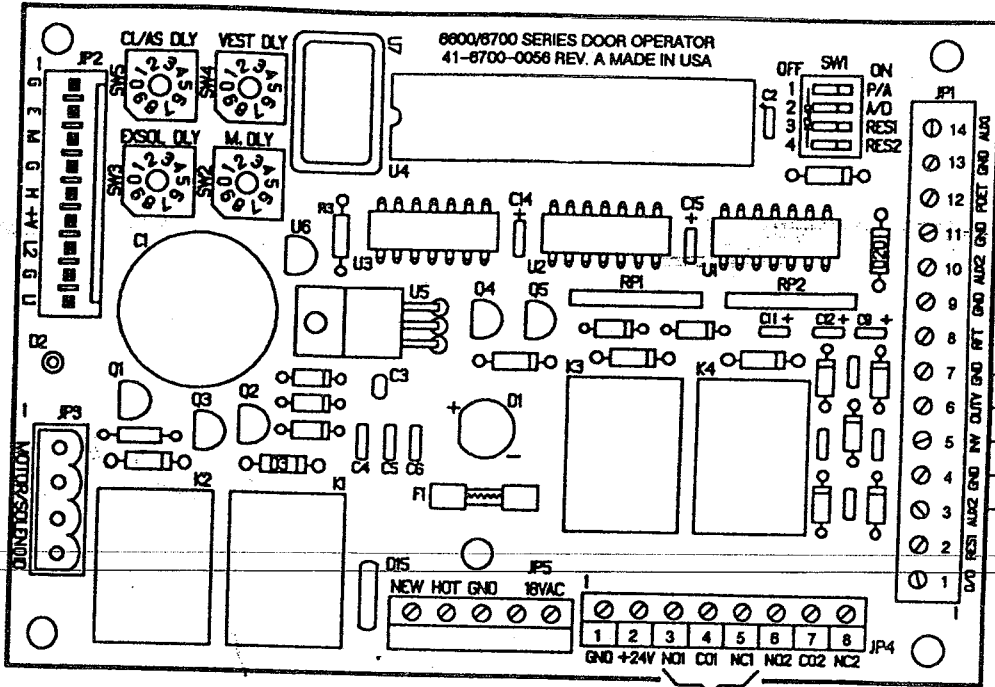
Programming Frequency Codes

1. Dis-assemble transmitter
 - A. Slide belt clip off of transmitter to expose screw.
 - B. Remove screw.
 - C. Separate the two parts.
2. Compare 5 position code switch-panel in transmitter with 10 position code switch-panel on the door closer receiver board. Verify that switches 6 and 7 on receiver board are in the "ON" position and switches 8, 9 and 10 are in the "OFF" position.
3. Unit as shipped is set to a random code. It may be used with this code or you may choose any one of the variations shown in chart. Simply match the switch positions of transmitter with the positions numbered 1 thru 5 of the receiver switches.



Note: To avoid interference with other radio frequency devices the chart at right on the facing page is provided for selection of a code from 32 available codes.

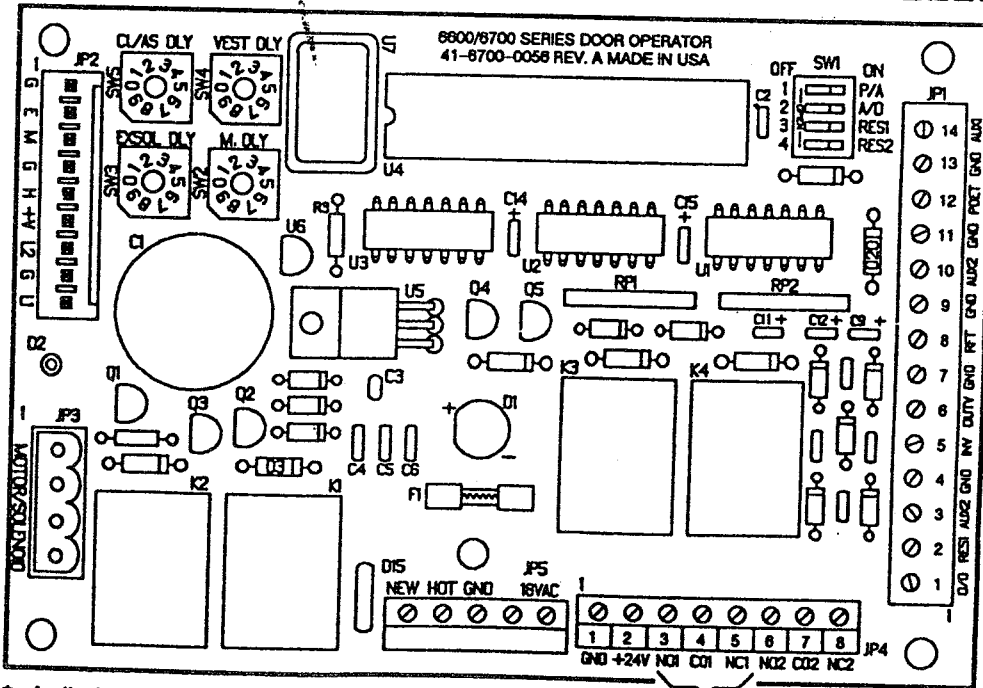
INSIDE



SOLENOID/MOTOR*
RELAY CONTACTS
FOR ELECTRIC STRIKE,
ELECTRIFIED EXIT
DEVICE, MAGNETIC
LOCK, ETC.

VESTIBULE

OUTSIDE



SOLENOID/MOTOR*
RELAY CONTACTS
FOR ELECTRIC STRIKE,
ELECTRIFIED EXIT
DEVICE, MAGNETIC
LOCK, ETC.

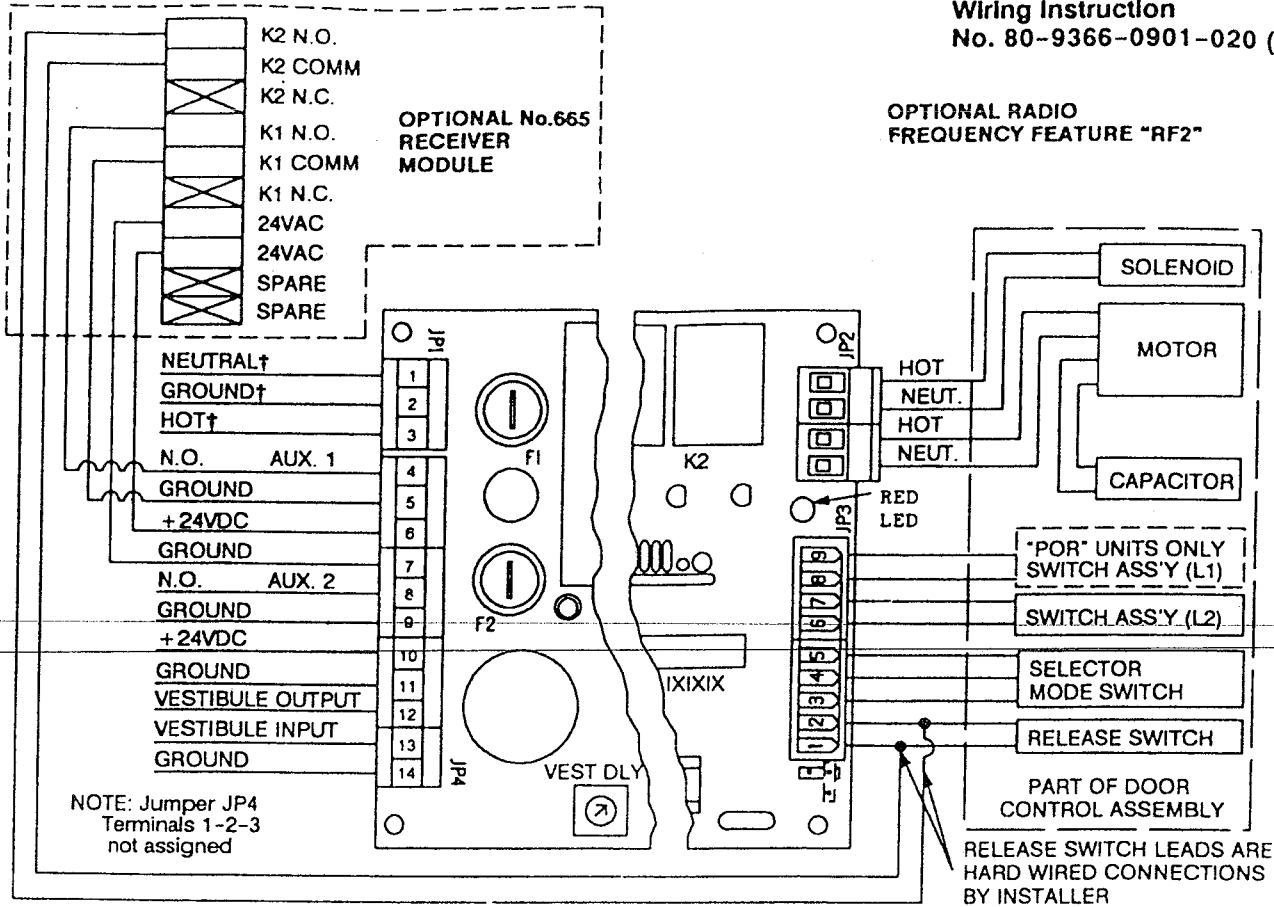
* A diode must be installed across solenoid/motor coil to prevent damage to relay. Suggested diode is 1N4001 or equivalent.

Notes:

1. Power input to Power-Matic unit is at Power Input Terminal Strip (not shown) 120Volts, 60Hz.
2. Current draw must not exceed 0.500 amps at terminal JP4-2.

Vestibule Function

Wiring Instruction
No. 80-9366-0901-020 (cont'd)



- No. 665 - "RF2" receiver module is a separate unit that is in proximity to the PowerPlus™ "POR" door control assembly it controls; i.e., above the ceiling line, on the wall overhead, etc.
- No. 665 receiver module is 6" H x 8" W x 2" D.
- No. 665 RF2 transmitter is 4-13/16" H x 2-5/8" W x 1" D uses 9-Volt battery.
- Capable of 512 codes per channel

† U.L. labeled fire or smoke barrier door assemblies require that the 120Volt A.C. (60Hz.) power input to the PowerPlus™ door control be supplied through normally closed alarm contacts of the alarm system/ alarm panel.

For Radio Frequency Option "RF1"
(Power Open Only)
"POR" Models (cont'd)

The following chart shows the on or off position of switches numbered 1 thru 5 for both the 5 switch transmitter and the 10 switch receiver.

• Indicates depressed position of switch.

	C O D E					C O D E					C O D E					C O D E					C O D E									
ON	1	•	•	•	•	7	•	•	•	•	13	•	•	•	•	19	•	•	•	•	25	•	•	•	•	31	•	•	•	•
OFF	2	•	•	•	•	8	•	•	•	•	14	•	•	•	•	20	•	•	•	•	26	•	•	•	•	32	•	•	•	•
ON	3	•	•	•	•	9	•	•	•	•	15	•	•	•	•	21	•	•	•	•	27	•	•	•	•					
OFF	4	•	•	•	•	10	•	•	•	•	16	•	•	•	•	22	•	•	•	•	28	•	•	•	•					
ON	5	•	•	•	•	11	•	•	•	•	17	•	•	•	•	23	•	•	•	•	29	•	•	•	•					
OFF	6	•	•	•	•	12	•	•	•	•	18	•	•	•	•	24	•	•	•	•	30	•	•	•	•					

Additional code combinations can be obtained with modification to the transmitter board, consult factory for details.

Adjustments for the PowerPlus™ Product

The following adjustments mechanical, hydraulic and electrical are listed in a suggested sequence.

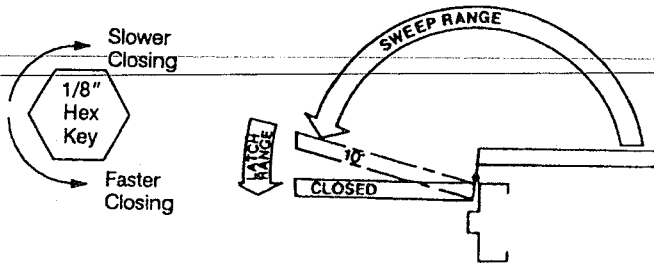
NOTE: Make sure that power to unit is OFF.

● Mechanical Adjustment

- Set Closing Power. Use 11/16" wrench or socket. Turn Power Adjustment Nut clockwise to increase door closing power. Door control is shipped set at the lowest power setting. Maximum closing power can be achieved with 10 (360°) turns of the power adjustment nut.

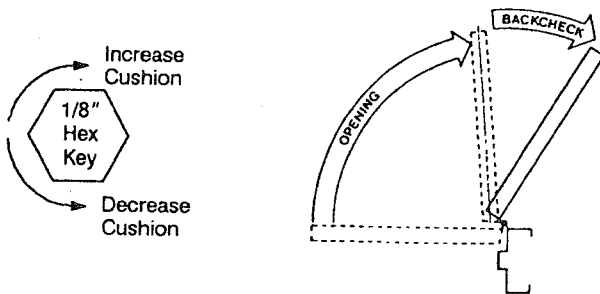
● Hydraulic Adjustment - Use 1/8" hex wrench

- Closing Cycle - Make adjustments, as necessary, to the Sweep Speed "S" valve and Latch Speed "L" valve. See illustration on page 9. Turn valves clockwise to reduce speed, counterclockwise to increase speed.



Closing Cycle

- Opening Cycle - Adjust Backcheck, "B" valve, as necessary, for hydraulic resistance to door opening in the backcheck range. See illustration on page 9.



Opening Cycle

NOTE: Too much Backcheck, "B" valve, can affect the operation of the units pump, preventing 6600POR and 6700POR Series units from fully opening the door. This valve may require fine tuning after all other adjustments have been made.

- Backcheck Position "P" valve is closed. Open by turning counterclockwise, only if backcheck cushioning is required to begin at a greater degree of door opening than the approximately 75° it is set for.

● Electrical Adjustment

- Verify that all wire connections are secure.
- Turn electrical power to unit "ON".
- Selector Mode Switch - located on the underside of the unit, must be in the "ON" position. Not the "H/O" or "OFF" positions.

- 6700PAS and 6700POR Units Only

- Adjust "L1" Limit Switch as necessary using a standard screwdriver with a 1/8" wide blade. This adjustment sets the door travel distance required for the power assist/power operator function to self actuate. The range of adjustment is between 1/8" and 1-1/8" (9.5 and 29) of door travel.

- Adjust "L2" Limit Switch as necessary with 5/32" hex wrench supplied and an adjustable wrench. This adjustment sets the maximum degree of door swing (between 85° and 110°) at which the motor shuts off:

- 6600PAS and 6700PAS Units Only - This will be the point at which the motor will no longer assist with reduced opening force. Anywhere beyond this point the unit will function as a standard hydraulic door closer.

- 6600POR and 6700POR Units Only - This will be the point at which the motor will stop and the power operator function ceases. Anywhere beyond this point the unit will function as a standard hydraulic door closer.

- Product is shipped for motor to shut off at 85°, adjust as follows:

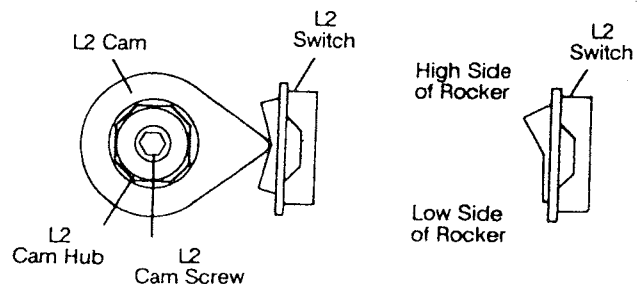
- Loosen screw in top of pinion shaft with 5/32" hex wrench provided . . . do not remove it.

- Open door to desired angle of door opening between 85° to 110°.

- Rotate "L2" cam hub with an adjustable wrench so point of cam is in center of "L2" switch . . . and a "click" is heard.

- Hold "L2" cam hub in position with the adjustable wrench and tighten the pinion shaft screw with the 5/32" hex wrench.

Caution: If not oriented properly, "L2" cam may rotate in the wrong direction and damage or break the "L2" switch. When rotated, "L2" cam must pass across the "low" side of the switch rocker before making contact with the "high" side of the switch rocker.



- Adjust "CL/AS DLY" Rotary Time Switch on the printed circuit board as necessary using a standard screwdriver with a 1/8" wide blade. Adjustable for 0 to 30 seconds in 5 second increments.

- 6600PAS and 6700PAS Units Only:

Adjusts the length of time the motor will assist with opening from the time the motor is activated.

- 6600POR and 6700POR Units Only:

Adjusts the length of time the door remains at the fully open position after the operator function shuts off.

• Install Cover with mounting screws removed at beginning of installation.

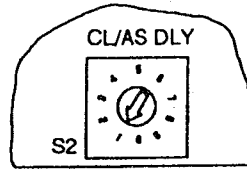


ILLUSTRATION OF ROTARY TIME DELAY SWITCH FROM PRINTED CIRCUIT BOARD

Length of Time (Seconds)	Setting
0	0
5	1
10	2
15	3
20	4
25	5
30	6
30	7
30	8
30	9

General Product Information

- **Selector Mode Switch** - This is a three (3) position switch that has positions marked "ON" - "H/O" - "OFF".

- "ON" position - Unit is in standby, capable of function activation either by a remote switch or scanner; or by the units Integral switch depending upon the model.

- "H/O" position - Indefinite hold open. Door will hold open until power is interrupted.

- 6600PAS and 6700PAS Units Only.

These units must be manually pushed to the full open position for this Indefinite Hold Open function to operate.

- "OFF" position - All power is shut off to unit, rendering all power functions inoperative and the unit then functions as a standard hydraulic door closer.

- **Release Switch** - This is a normally closed momentary contact push button switch that shuts off power to the motor and solenoid upon activation. No matter what point of opening or hold open that the door is at it will release and close immediately.

- **"SC" Speed Control valve**

- 6600PAS and 6700PAS Power Assist Units Only.
Adjusts the force required to open the door.

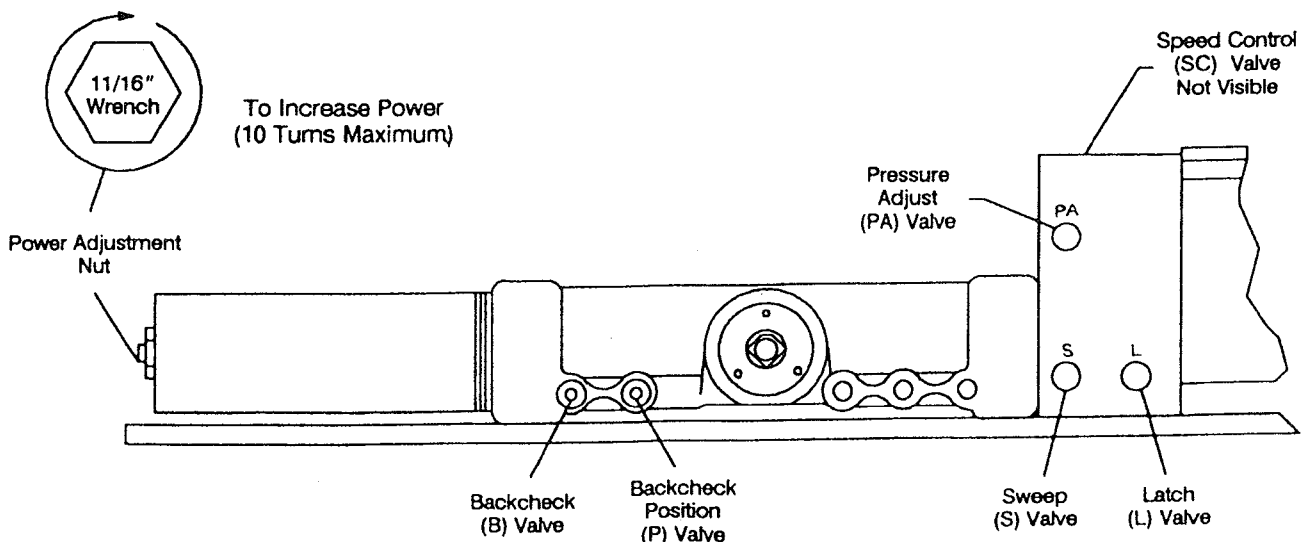
- 6600POR and 6700POR Power Operator Units Only.
Adjusts the opening speed of the door.

Important: From closed position to 80 degrees must be 3 seconds or longer and 4 seconds or longer to the fully open position.

- **"PA" Pressure Adjustment valve**

Factory set adjustment for opening force. Will not generally require adjustment:

Important: 6600POR and 6700POR Power Operator Units Only: The force required to prevent a door from opening or closing must not exceed a 15 lbf. (67N) applied 1" (25) from the latch edge of the door at any point in the opening or closing cycle.

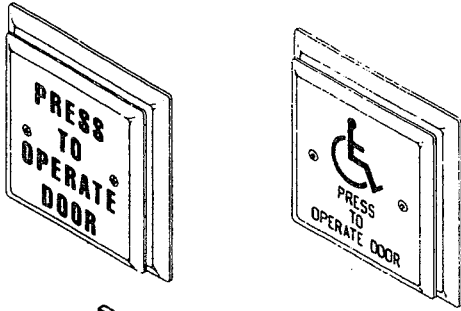


Switches/Scanners

The switches and scanners shown here, interface with the Series 6600 and Series 6700 PowerPlus™ products. The specifics of each application will determine the type of switch(es) or scanner(s) that are appropriate:

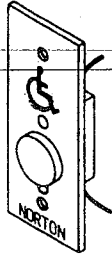
Note: Careful consideration should be given to the location of switches and/or scanners relative to their proximity to the door and the door's direction of swing.

These switches and sensors will be packed separately from the door control unit and will be packed with their own individual instructions.



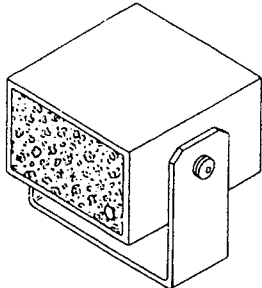
Nos. 660 & 661 Wall Switches

These switches are Normally Open Momentary Contact SPST press type wall switches with a wide 4-1/2" (114mm) square pressure pad. They are rated for 15 Amps. 250 VAC. The No. 660 and No. 661 wall switches install flush with the wall in a single gang electrical box, supplied by others. Both switches are suitable for exterior use or for surface mounted applications when mounted in a compatible 2 gang electrical box, supplied by others.



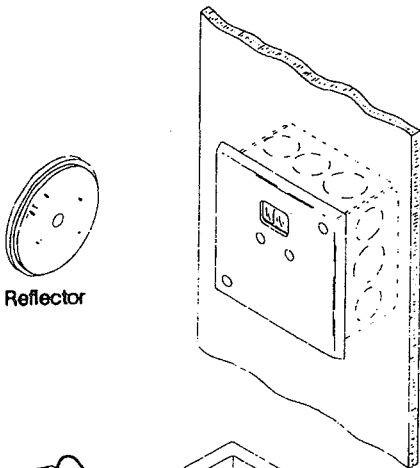
No. 662 Frame Switch

This switch is a Normally Open or Normally Closed Momentary Contact SPDT push button type switch with a 4-1/2" (114mm) high, 1-3/4" (44mm) wide, 1-1/2" (38mm) deep switch. For use where wall conditions will not permit use of a wall switch or where a frame mounted switch is preferred. This switch is rated for 20 Amps. 125 VAC.



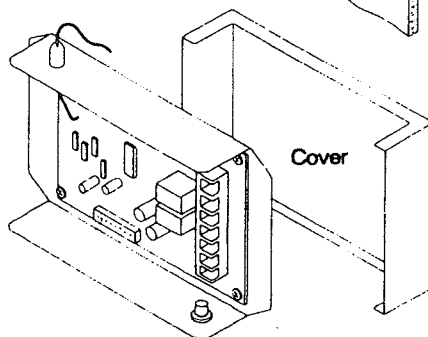
No. 663 Microwave Motion sensor

Functions as a normally open momentary contact switch. Rated for .175 Amps. at 24VDC. It is generally installed at a vertical angle of approximately 45° below horizontal. Typically, it can be adjusted to scan an area between 3 feet and 18 feet out from the door. Environmentally it has an operational temperature range of minus (-)20° up to plus (+)150° Farenheit. This unit is powered from the PowerPlus™ door control and communicates its signal back to the PowerPlus™ unit.



No. 664 Retro-Reflective beam type sensor

Functions as a normally open momentary contact switch. Rated for .100 Amps. at 24VDC. It consists of a sensor unit mounted in a two gang electrical box, and a simple reflector to reflect the red photoelectric beam back to the sensor and a cover plate. Sensor unit mounts flush with the wall and has a range of 30 feet. Environmentally it has an operational temperature range of minus (-)4° to plus (+)158° Farenheit. This unit must be powered from the PowerPlus™ unit.



No. 665 "RF2" Radio Frequency Receiver Module

This module mounts on the wall or above the ceiling in proximity to the door control unit it controls. This receiver has two channels, power open control and hold open release using normally closed and normally open contacts. It is rated at 1 Amp. at 115VAC. Power input is 24VDC supplied from PowerPlus™ control. Environmentally it has an operational temperature range of (-)40° to (+)140° Farenheit.

-RF Frequency 300-310MHz

-Size 6" H x 8" W x 2" D (152 H x 203 W x 51 D mm)

-Codes available 512

Signs are required to alert and instruct pedestrian traffic in the operation and use of the power assist door – the power operated door – wall switches – and frame switches.

Material Composition of signs:

UL Recognized label system PGDQ2,

Base Material – Mylar

Material Color – PMS 341 Green

Laminated Material Polyester Clear with Pressure Sensitive Permanent Adhesive.

Surface Preparation:

Before applying any of the labels shown on this page the surface to which they are to be applied should be:

-Hard, flat and non-porous

-Free of grease, dirt or loose paint

Application:

Remove backing to expose adhesive and apply for high visibility to the door surface or in close proximity to the switch or scanner/sensor to which it's instruction applies.



No. 248 – Supplied with 6700POR Series Units.



No. 249 – Supplied with 6700POR Series Units.



No. 250 – Supplied with switches 660, 661 and 662 used in conjunction with 6600POR or 6700POR Series Units.



No. 251 – Two supplied with 6600PAS Series Units when used with 663 and 664 scanners or two supplied with 6700PAS Series Units.



No. 252 – Supplied with switches 660, 661 and 662 used in conjunction with 6600PAS Series Units.



No. 253 – Two supplied with 663 and 664 scanners for use in conjunction with 6600POR or 6700POR Series Units.



No. 254 – Supplied with radio frequency controlled units (suffix RF1 or RF2). For 6600POR or 6700POR Series units.

Troubleshooting

Because of the sophisticated nature of the PowerPlus™ product, there are a number of steps during the installation procedure that if overlooked or misapplied, can create incorrect functioning or a complete failure of operation.

- Door Closing Force is Insufficient
 - Increase spring power with Power Adjustment Nut
 - Check Sweep Speed and Latch Speed regulating valves
- Door Opening Force is Too Strong
 - Adjust "PA" valve - turn counter clockwise
- Door Opens Too Fast - 6600POR & 6700POR Units Only
 - Adjust "SC" valve - turn counter clockwise
- Door Does Not Open Far Enough - 6600POR & 6700POR Units Only
 - Adjust "L2" limit switch cam setting using a 5/32" hex wrench and an adjustable wrench. (Shipped for 85° door swing).
 - Adjust "PA" valve - turn clockwise
 - Check "B" backcheck valve - turn counterclockwise
 - Check template position of unit on the frame and the door.

- Door Does Not Appear to be Receiving Power
 - Selector Mode Switch is in either the "ON" or "H/O" position.
 - Check to see if red LED is illuminated on printed circuit board.
 - If yes -
 - Check solenoid and motor connectors and connections, that they are secure.
 - If no -
 - Check incoming power at terminals 1 (neutral) and 3 (hot) to insure that power leads are oriented correctly and are fastened securely.
 - Check fuse "F1"
 - If blown - Unplug solenoid and motor lead connectors . . . replace fuse and check LED
 - If illuminated, either the solenoid coil or the motor connections, wire or motor windings are defective.
 - Check fuse "F2"
 - If fuse is good printed circuit board requires factory service.
 - If fuse is blown check terminal strip at connections at terminals 6 and 10 for a short across the terminals. Disconnect and insulate leads on terminals 6 and 10 . . . replace fuse . . . Red LED should be illuminated with the power on. If not the printed circuit board requires factory service.