besam®

Manual
US23-0202-01

Visionpulse-S (VP-S)®

(IFD-X)

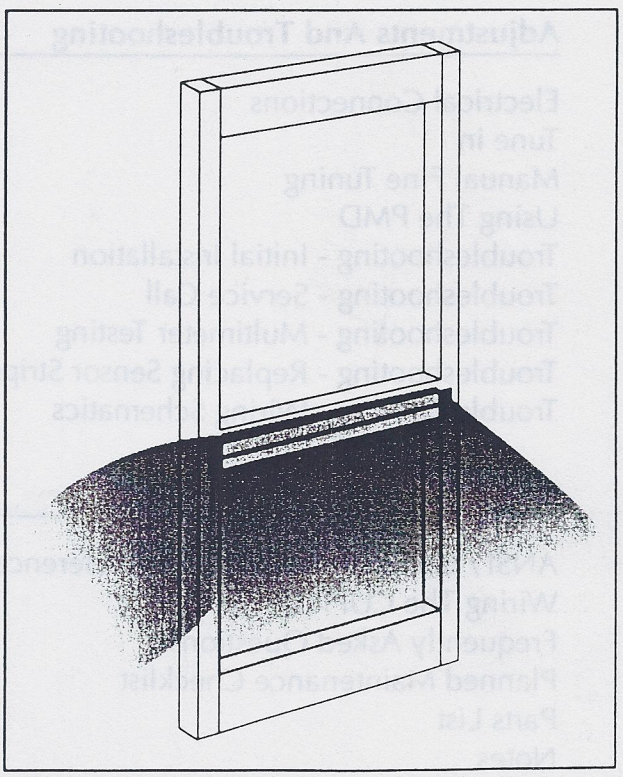
Swing Door Sensor

Installation, Adjustment and Troubleshooting Manual

For use with Swingmaster MP® only

Applications:

- Colleges/Schools
- Medical Centers
- Office Buildings
- Residential
- Shopping Malls
- Fire Doors
- Concealed or Surface Mounted



Complies with ANSI/BHMA A156.10-1999 standards for power operated pedestrian doors.

Table of Contents

Important Information

Important notice!
To avoid bodily injury, material damage and malfunction of the product, the instructions contained in this manual must be strictly observed during installation, adjustment, repairs and service etc. Only Besam trained experts should be allowed to carry out these operations.

Radio and television reception
This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been designed to comply with the emission limits in accordance with EN 50081-1 (US market FCC Part 15) which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Relocate the receiver with respect to the equipment.
- Move the receiver away from the equipment.
- Plug the receiver into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

Note!
Instructions, design, specifications and illustrations which are contained in this manual are not binding. Rights reserved for changes without previous notice.

Environment
This operator may be equipped with batteries containing materials which are hazardous to the environment. Remove the batteries from the operator before it is scrapped. The batteries must be disposed of safely.

Technical Specifications

NOTE: The VP-S is only designed to be used with Besam's Swingmaster MP operator.

Power supply	24 V DC ± 5%
Power consumption	< 65 mA
Mounting height:	28.5" to centerline of sensor housing.
Ambient temperature	-4° F to 122° F
Dimensions:	
Length:	Varies by door width
Height:	2-3/4"
Depth:	15/16"

To be installed internally or externally with suitable weather protection.

Introduction

This manual contains the necessary details and instructions for the installation, adjustment and troubleshooting of the Besam VisionPulse-S Swing Door Sensor System. The VisionPulse-S is designed specifically for use with Besam's Swingmaster MP Swing Door Operator / Control System. The Besam PMD module is required for adjustment.

How The VisionPulse-S Works

The VP-S is the next generation of Visionpulse. It contains microprocessor control, sophisticated communications with the Swingmaster MP control, enhanced side-looking capability with an optical prism system, auto tuning, and greatly enhanced water resistance. The VP-S eliminates the need for masking. Potentiometer, switch and jumper settings, the A+B switches, and Boost wiring are no longer used; all programming and troubleshooting is now done with the Besam PMD programming module. Integration of the VP-S with the Swingmaster control allows enhanced self-checking safety.

The Visionpulse presence sensor system, whether surface applied or concealed, consists of two main sensor assemblies called 'sticks,' which are mounted horizontally on both sides of the door. Additionally, a microwave motion detector* is mounted on the approach side of the door to provide the primary door opening signal. (For two way traffic, a second microwave detector is placed on the back, or 'swing,' side of the door, typically mounted to the ceiling just beyond the swing path of the door.)

The only other components of the Visionpulse system are the cables that link both sticks to the Swingmaster MP control unit (CUP). The Swingmaster motor has an integral position coder which informs the CUP continuously of the door's angular position, speed and direction (opening or closing). The CUP shares this information with the VP-S microprocessor for optimal control of the sensor sticks.

The VP-S is an infrared sensor. (Infrared is light beyond the color range seen by humans.) It sends out pulsed signals (much like a TV remote) and checks for a reflected signal from any objects in its field of view, signalling the CUP when necessary. If the approach side stick detects a person, the door opens if closed, stays open if fully open, or reopens if it was closing. If the swing side stick detects a person, the door will stay closed if closed, and will stop if it is opening. Additionally, the VP monitor function (PMD setting 17) lets the CUP determine if the VP-S is functioning properly. If the CUP detects a predetermined number of motion signals (adjustable from 0 to 20) without receiving a VP-S signal, the CUP will enter fail safe mode (door opens and system shuts down).

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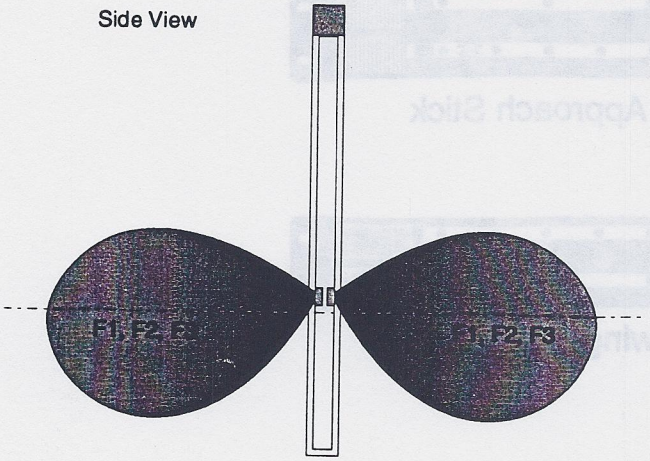
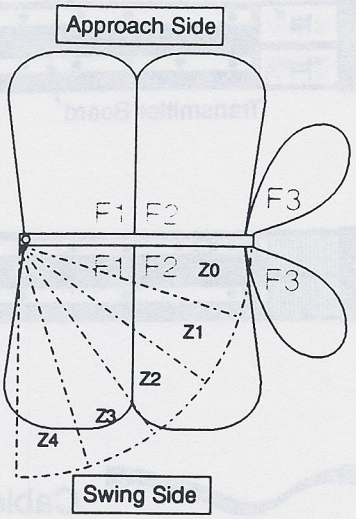
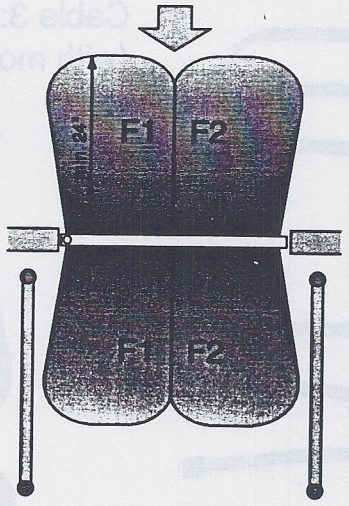
* Microwave motion detectors make use of the Doppler effect, which may be illustrated by a passing train that is blowing its horn. As the train approaches, the sound of the horn has a higher pitch (frequency); as it passes and recedes, the sound has a lower frequency. A microwave motion detector emits a constant high radio frequency 'sound' beyond the range of human hearing, and as a pedestrian approaches and passes, the sensor detects the frequency shift in the reflected sound. If an object is present but not in motion, there is no frequency shift and the door is not signaled. Besam uses advanced microwave sensors that not only detect the frequency shift of any motion, but also whether it is an approaching or receding motion. They can be set to open the door for approaching motion only, which causes fewer false openings and permits the doors to close safely without the added delay associated with less advanced sensors.

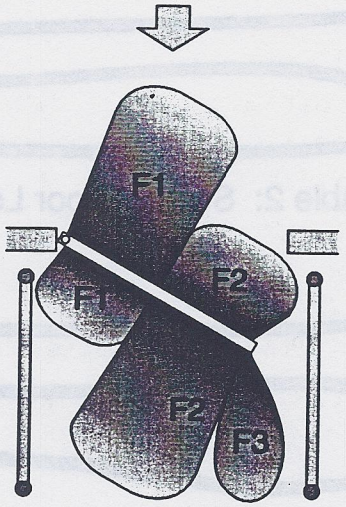
The following diagrams will aid in understanding the operation of the VP-S. Each stick has three separate fields of detection, labeled F1, F2 and F3. F3 is the side-looking field. The first diagram shows a side view of the approximate shape of all three fields. The next diagram shows how the fields pass through five distinct zones as the door traverses 90 degrees: Z0, Z1, Z2, Z3, and Z4.

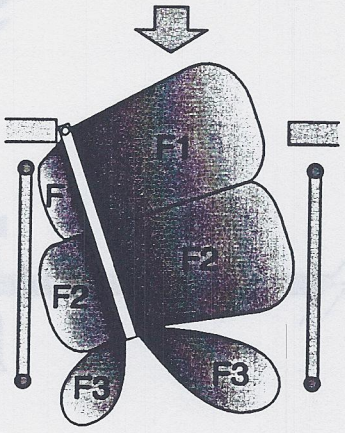


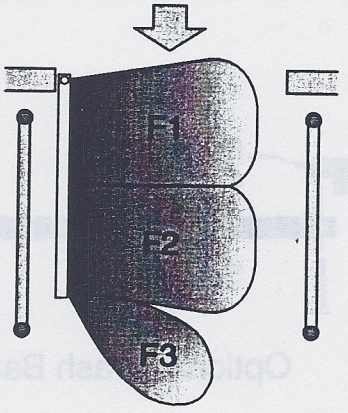


These four top-down views show the fields based on door position. Field lengths are automatically tailored to the particular installation by the tune-in process (described on pages 15-17). The views shown are approximate and represent a typical installation.

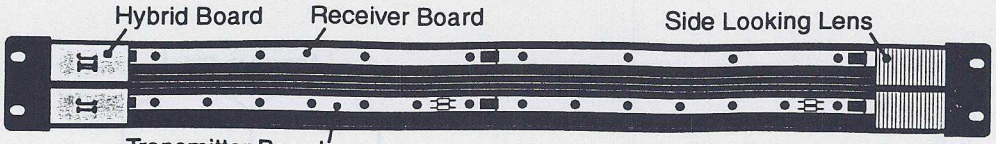




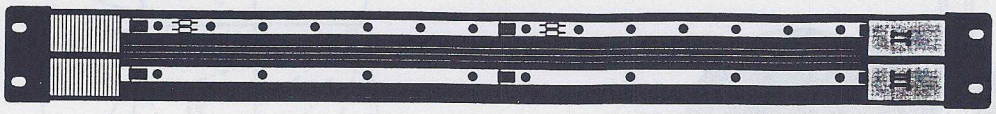




Part Identification & Options

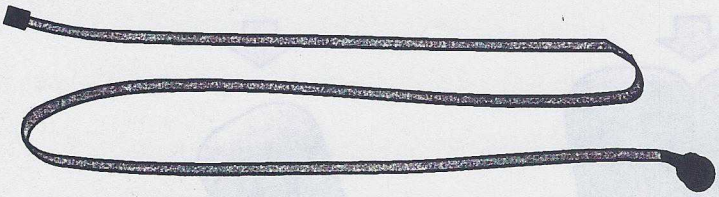


Approach Stick



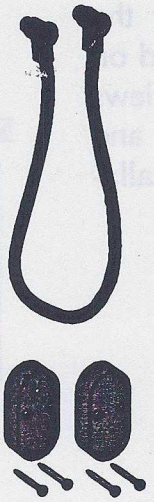
Swing Side Stick

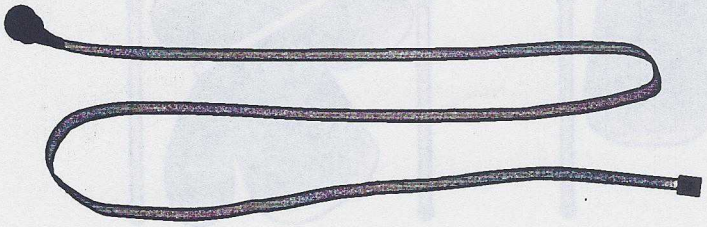
Cable 1: Approach Stick to Swing Stick



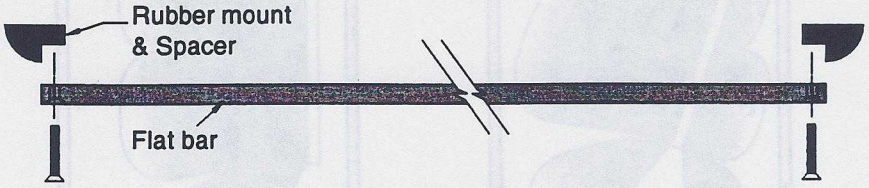
Cable 2: Stick to Door Loop

Cable 3: Door Loop
(with mounting kit)





Cable 4: Door Loop to CUP
(same part as Cable 2)



Optional Crash Bar Kit

Pre-Installation Questions

This section will help you to determine the appropriate Swingmaster configuration for your doors.

Q. Is this a concealed (recessed in door) or surface application?
(Recessed units are usually factory supplied - surface applications require field wiring.)

Q. Are the operator and control a Swingmaster MP with CUP control?
(The VP-S only works with a Swingmaster MP.)

Q. Is this installation a pair of inswing or outswing doors?
(The Swingmaster MP is no longer available with a dual control; two CUP units wired as 'master' and 'slave' are used to control dual doors. Thus, the sensor sticks on each respective door connect to the CUP controller for that door. See page 39 in the Swingmaster MP manual, P/N US23-0186-01.)

General Tips / Safety Concerns

Caution! In order to properly adjust the VP-S you must first have correctly adjusted the Swingmaster MP Operator / Control in accordance with ANSI/BHMA A156.10-1999 specifications. Safe adjustment of the Swingmaster MP Operator / Control must be done initially with the VP-S safety system disconnected! Ensure that pedestrian traffic cannot use this doorway until the Operator and Control are both adjusted properly, and the VP-S system has subsequently been connected and properly tuned!

Make sure that the power is off before installing.
Make sure that the door leaf is properly reinforced at the installation points.
Inspect the door before installation to ensure that it is in good repair.

Installation Overview

Surface applied: steps 1-9 apply.
Concealed: steps 3-9 apply.

CAUTION! This overview assumes that the Swingmaster MP has been properly installed and adjusted prior to beginning installation of the VP-S.

1: Drill wire access holes in door, jamb and operator header if needed; run wires.

2: Mount approach and swing side sticks.

3: Make all electrical connections. Connect the PMD

4: Make sure that there are no other infrared sources operating in the area, including other Visionpulse sensors.

5: Auto tune.

6: Check zone

7: Fine tune if necessary.

8: Recheck zone.

9: Train facility owner / manager in operation and daily safety check procedures. Leave copy of the Swingmaster MP owner's / user's daily safety check manual with the facility owner / manager.

Fastening Requirements

Part	Minimum anchor / bolt requirement *
Sticks	M6x16 LHCS screws with M6 rivnuts.
Door Loop	4 #6-19x" PPH black oxide finish thread cutting screws (70-09-207).
Crash Bars (Besam)	Reinforce stiles with rivnuts (2) 1/4-20. Attachment screws (2) 1/4-20 FHMS x1-1/2" long.

* Besam minimum recommended requirements. Building Codes may give different specifications.

Test Equipment

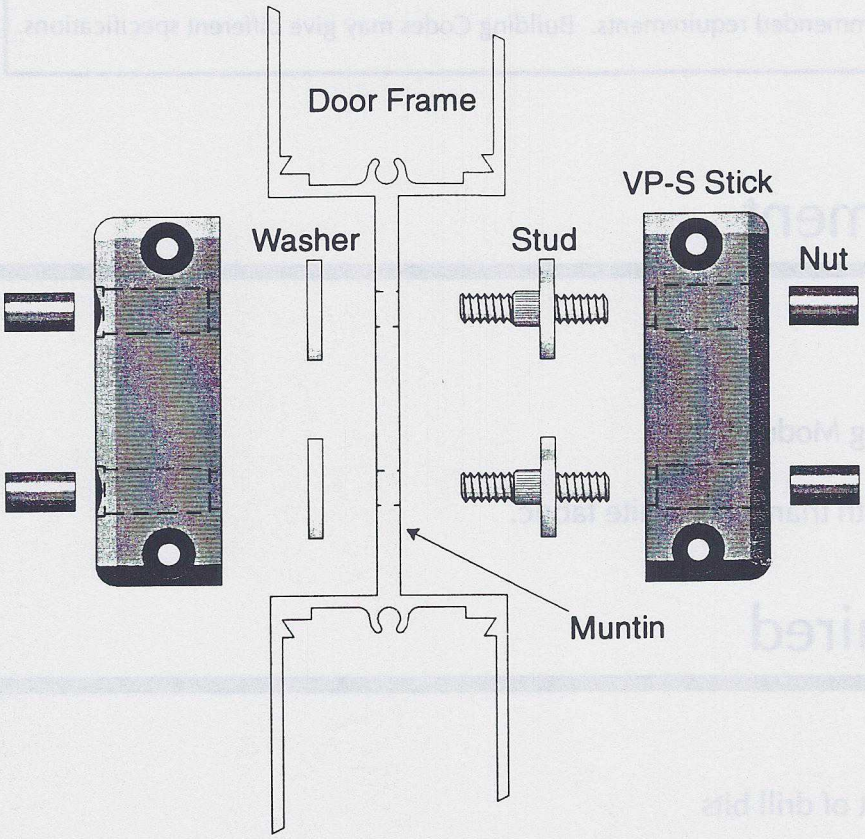
Stopwatch
PMD Programming Module
Multimeter
Test Flag - stick with triangle of white fabric.

Tools Required

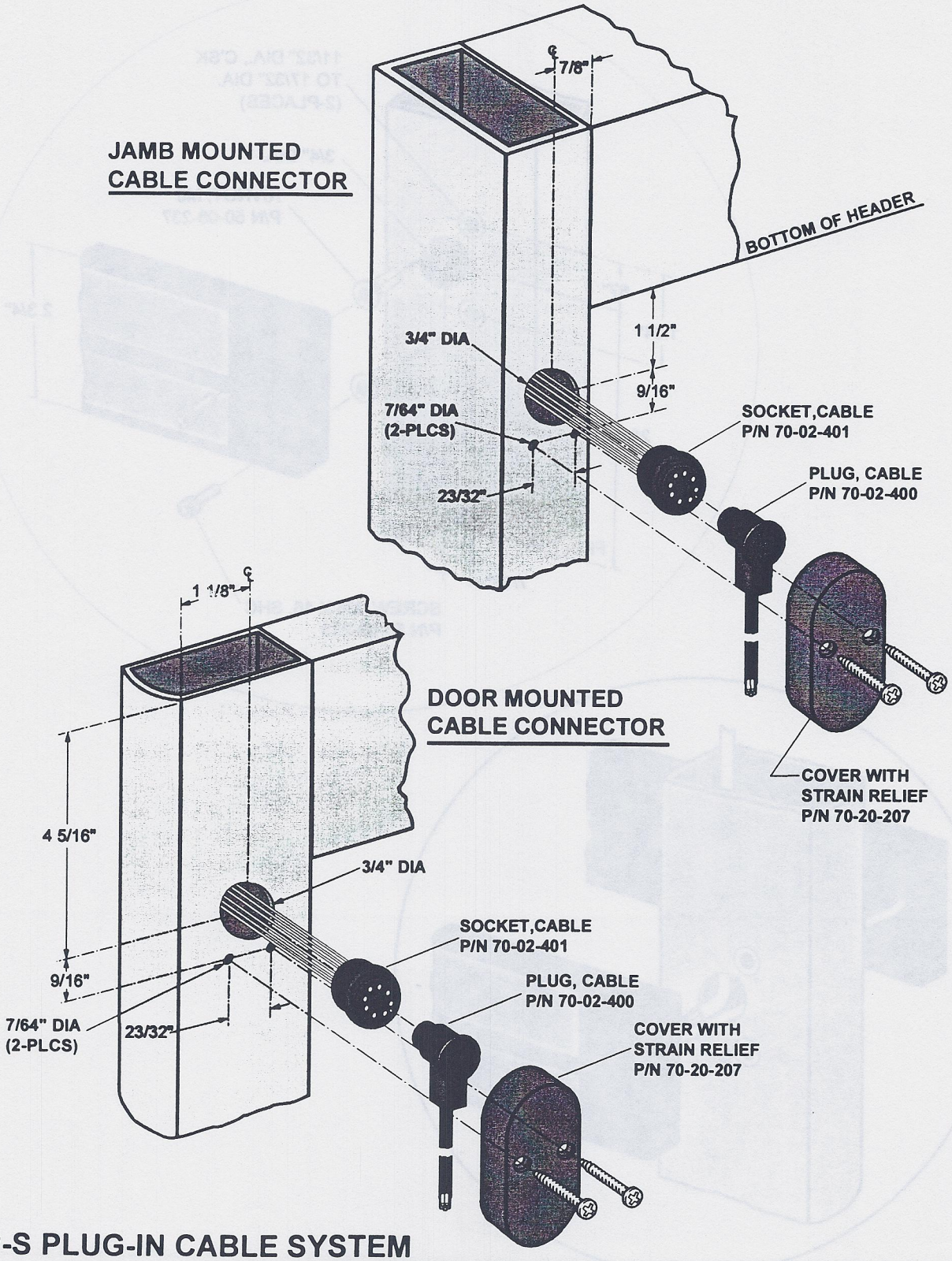
Power drill and set of drill bits
Small hole saw
Nut driver set
Flatblade and Phillips screwdriver set
Center punch
Hammer
Fish tape
Three foot level
Tape rule
1/4" allen wrench

Standard installation - Recessed mounting

The VP-S, when preinstalled, is shipped in this configuration.

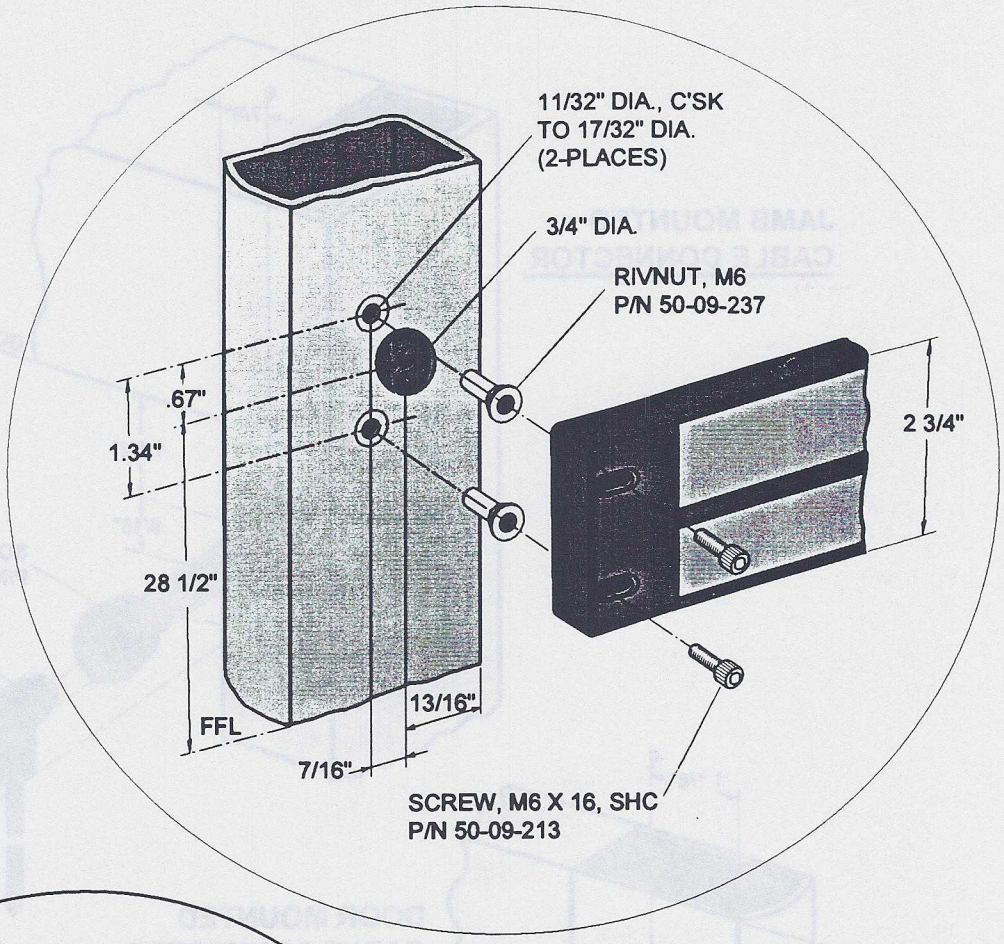


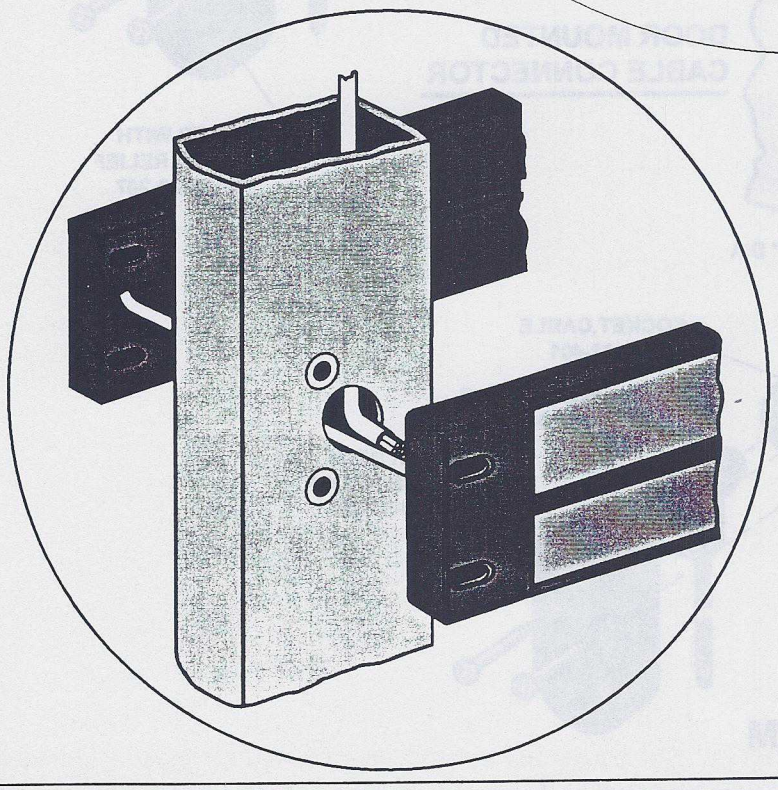
Retrofit installation - single or dual doors



VP-S PLUG-IN CABLE SYSTEM

Retrofit installation - single or dual doors



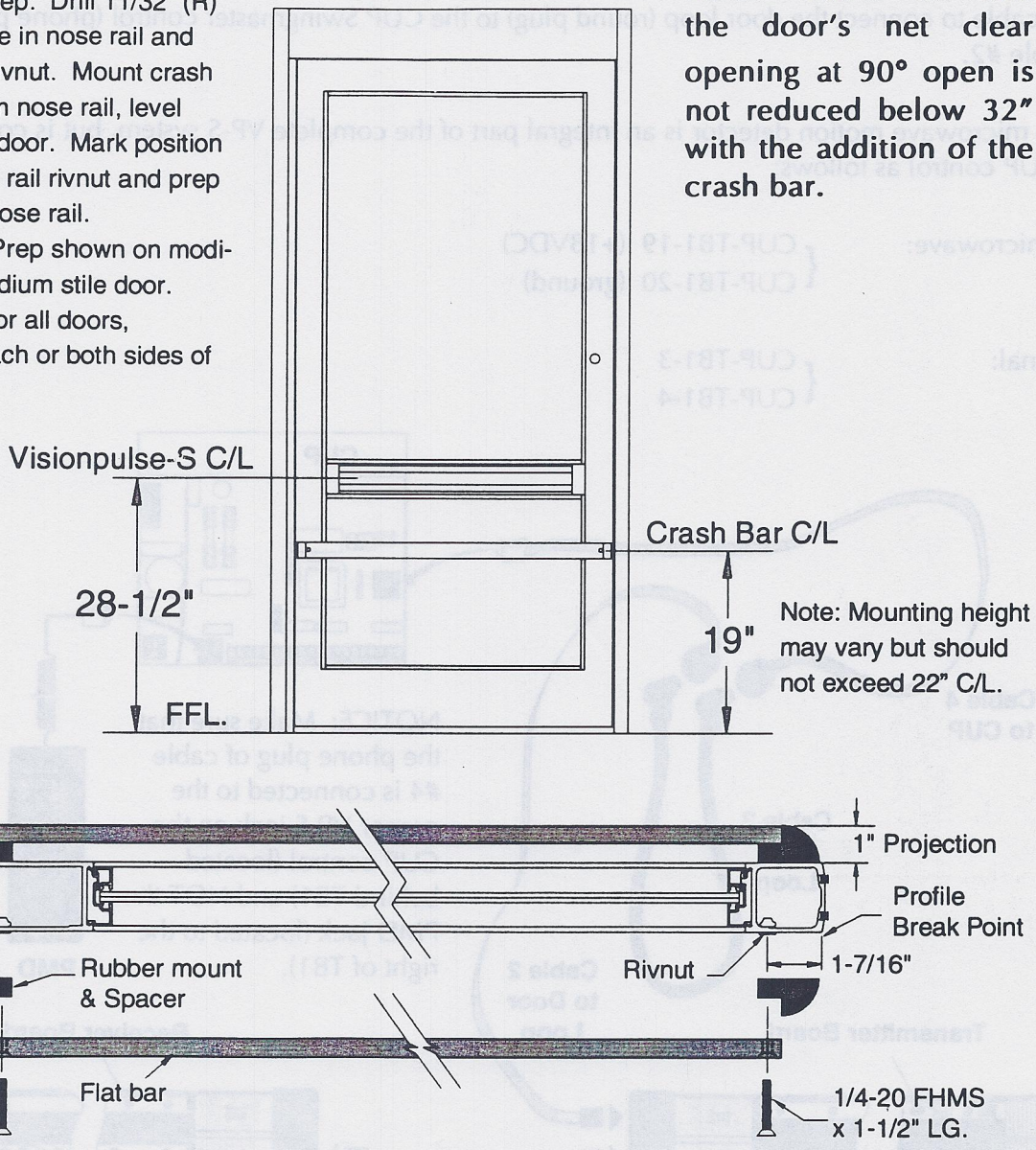


Optional crash bars

Note: Multiple crash bars or crash bars of different styles than shown may be applied. Important criteria are that the bars be sturdy and securely fastened, and that they do not enter the VP-S field of view or interfere with the full opening of the door.
Below is the suggested installation for a Besam style crash bar.

Door prep: Drill 11/32" (R) dia. hole in nose rail and install rivnut. Mount crash bar from nose rail, level across door. Mark position for heel rail rivnut and prep as for nose rail.
Note: Prep shown on modified medium stile door. Same for all doors, (approach or both sides of door.)

Note: Make sure that the door's net clear opening at 90° open is not reduced below 32" with the addition of the crash bar.



Electrical Connections

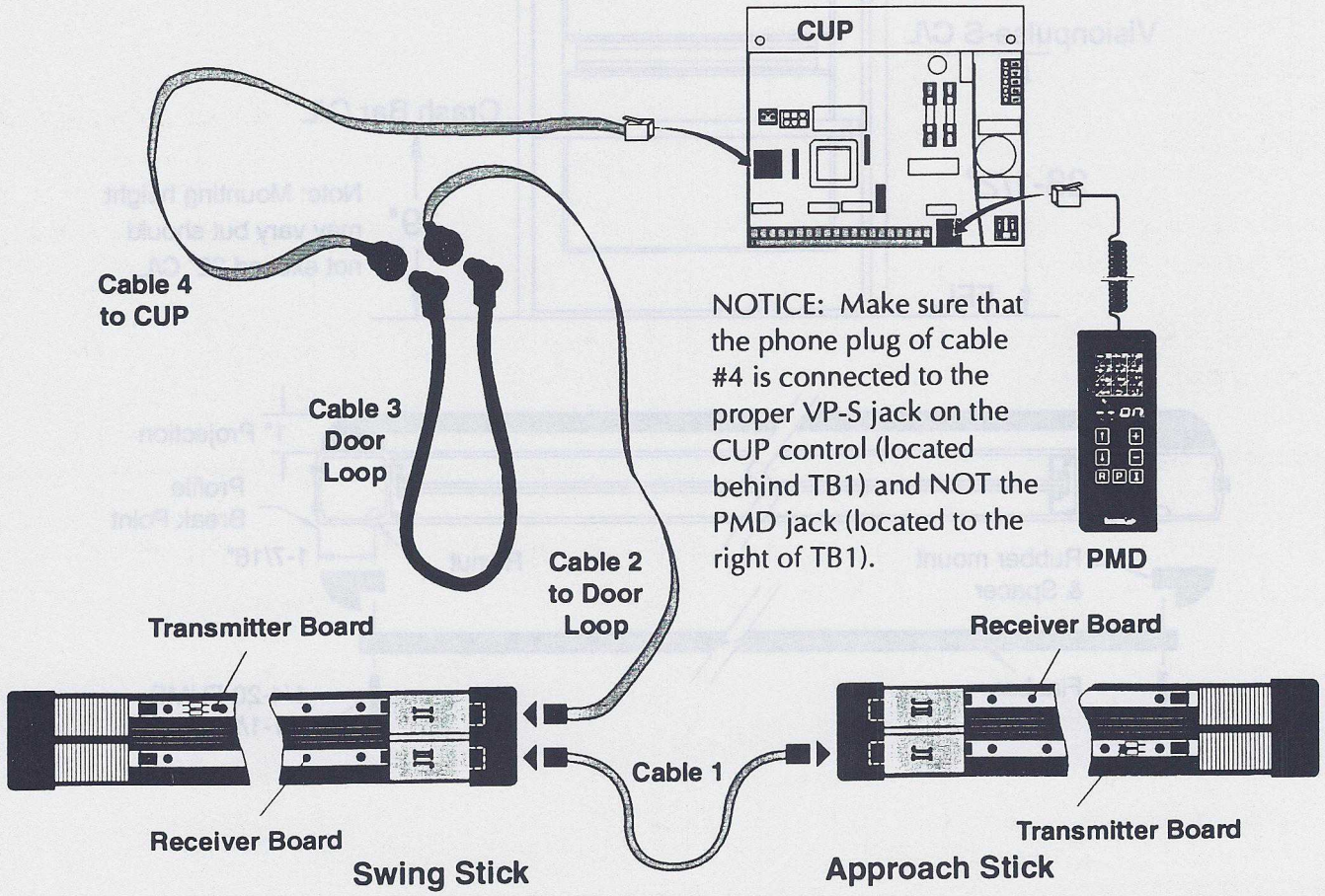
There are a total of four interconnect cables in a VP-S system. All four cables are prewired into quick disconnect plugs, so no cutting or stripping are required. See Diagram below:

1) Short cable to connect the approach stick terminal J1 to the swing stick terminal J2. This cable uses phone style plugs on both ends and is reversible.
2) A long cable to connect the swing stick terminal J1 to the door loop. This cable has a phone style plug on the stick end and a round female plug on the other end, and is not reversible. It may be interchanged with cable 4.
3) A short door loop cable with keyed round male plugs on both ends. Reversible.
4) A long cable to connect the door loop (round plug) to the CUP Swingmaster control (phone plug). It is identical to cable #2.

Note: The microwave motion detector is an integral part of the complete VP-S system, but is connected directly to the CUP control as follows:

Power to microwave: { CUP-TB1-19 (+18VDC) / CUP-TB1-20 (ground)

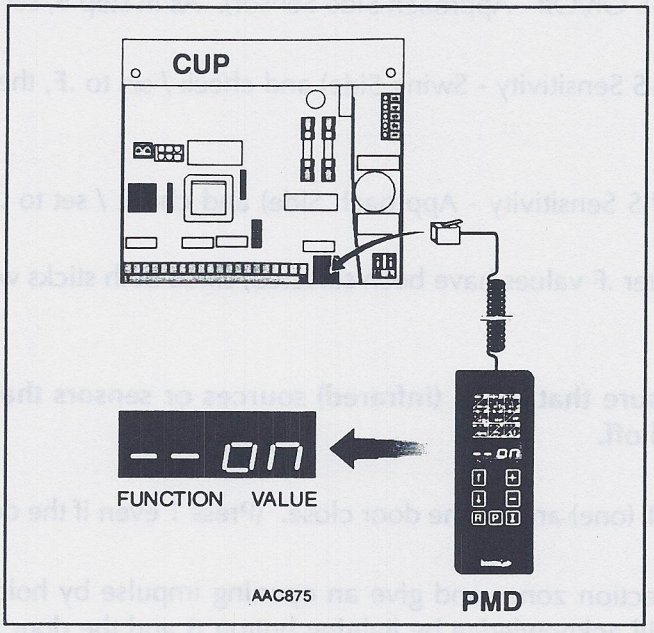
Motion signal: To CUP { CUP-TB1-3 / CUP-TB1-4



Tune In

BEFORE PROCEEDING: Power must have been connected and the Swingmaster MP adjusted for speed, time delay, and other parameters to conform to ANSI/BHMA A156.10-1999. (See excerpt in reference section on page 35.)

1: Plug in the PMD programming module.



See the section "Introduction to PMD" for more information if needed.
The PMD display will show either a status code or an error code after your PIN (Personal Identification Number) is entered.

2: Select function **15** (Type of Operator) and check that the value is **00** for a concealed Swingmaster MP or **02** for a surface applied Swingmaster MP.

3: Select function **27** (Door Opening Direction) and ensure that the proper value **A** for clockwise or **B** for counter-clockwise has been set.

4: Check again that the proper values were set for the run program, speeds, and hold open time.

5: Press the **I** (Impulse) button and readjust the door operation further if necessary, so that the opening and closing is satisfactory and meets ANSI/BHMA A156.10-1999 requirements.

6: Disconnect the power to the CUP controller.

7: Connect the VP-S to the CUP controller and reconnect power.

8: Push button **1** (one) on the PMD ("Off" closed door).

(Continued on page 16)

Tune In

(Continued from page 15)

9: Select function **13** (VP-S On/Off - Swing Side Sensor). Value **A** indicates that sensor is off, not used or not connected. Value **B** indicates that the sensor is on and used. Set the value to **B** and press **P** to program.

10: Select function **14** (VP-S On/Off - Approach Side Sensor). As in step 9, set to **B** and press **P** to program.

11: Select function **96** (VP-S Sensitivity - Swing Side) and check / set to **.F**, then press **P** to program if value has changed.

12: Select function **97** (VP-S Sensitivity - Approach Side) and check / set to **.F**, then press **P** to program if value has changed.
-Note: Doors will not open after .F values have been selected, since both sticks will be at their highest sensitivity (saturated).

13: IMPORTANT - **Make sure that all IR (infrared) sources or sensors that may be close to the VP-S are disconnected or masked off.**

14: Push the PMD button **1** (one) and let the door close. (Press 1 even if the door is already closed.)

15: Stand clear of the detection zones and give an opening impulse by holding down PMD button **8** for three seconds. The system will acknowledge by lighting button **8** and the door will open and close with low speed; the PMD will display the value **21** (Learn Cycle). The VP-S has now scanned the surroundings and adjusted (decreased) the sensitivity if obstacles were detected. The PMD value display will show **.0** if function **96** or **97** is selected.
NOTE: The VP-S is using the present sensitivity setting during the learning cycle, but it is always possible to return to the factory setting **.F** and perform a new learning cycle.

16: Push the PMD button **4** (Auto).

17: Push the PMD button **I** (Impulse) and check the door functioning.

18: If the opening and/or closing are jerky or if the door does not open at all, a new adjustment is needed. Repeat steps 13 through 17.

19: Check both the approach side and swing side for proper protection. See the ANSI/BHMA excerpt in the reference section of this manual, page 35.

20: Reconnect or unmask sensors disconnected or masked in step 13. Test again to ensure proper operator of the door.

(Continued on page 17)

Manual Fine Tuning

To perform manual fine tuning:

On the PMD, function **96** (Swing Side VP-S Sensor Sensitivity) and function **97** (Approach Side VP-S Sensor Sensitivity) are used to manually set the sensitivity.
Field status values (explained below) should be present when the PMD has these functions selected and there is an active sensor connected to the control unit; otherwise the value will be **00**. Check functions **13** and **14** for the **B** setting and be sure the sensors are plugged in.
A change to the values for functions **96** or **97** will affect all three fields in all five zones for that stick (by either increasing or decreasing its sensitivity). Be careful when setting values, as it is possible to turn off the side looking field (F3) by omitting the period (.) before the value.

PMD value explanations.

There are 41 possible values to choose for each stick. .F is the factory setting. Negative numbers indicate decreased sensitivity and positive numbers indicate heightened sensitivity. The values are as follows:

.F	=	Default factory setting with side looking on.
F	=	Factory setting with side looking off.
.0	=	Sensors are operating with learned values (side looking on)
0	=	Sensors are operating with learned values (side looking off)

Numeric values, side looking on: **-.9, -.8, -.7, -.6, -.5, -.4, -.3, -.2, -.1, .0, .1, .2, .3, .4, .5, .6, .7, .8, .9**
Numeric values, side looking off: **-9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9**

A value of **00** tells the CUP to ignore the VP-S if installed.

Note that a period (.) before the value turns side looking on. If the period is omitted, side looking will be turned off for that stick **(not recommended)**.

If the factory default of **.F** does not result in appropriate protection and you have gone through one or more trials of steps 16 through 23, the PMD should display a value of **.0** (**0** if you have turned off side looking). Press the Program button **P** and perform steps 16-23 before proceeding.

From the value of **.0**, you can decrease or increase the sensitivity in increments of one. Negative values decrease sensitivity and positive values increase sensitivity. Press the program button **P** to set each new value. Repeat the process for the other stick, then check again for good protection zones and proper operation.

Note: It is possible to increase or decrease the fields manually in 9 steps.
It is always possible to return the factory default setting of **.F**.
The values for stick sensitivity are relative to previously set values (except for **.F**, which is default). Changing the values from **.0** to **.9** and back to **.0** will not result in exactly the same setting as before, since the computer adjustments are based on percentage. For example, if **.0** is 100%, and you select **.3** (+/- 30%), the sensitivity will now be 130%. If you now reduce by **-.3** (+/- 30%), 30% of 130 = 39, and 130 - 39 = 91%. Therefore, the new **.0** setting may be less sensitive than the previous **.0** setting. All values are relative to the previous values except for **.F**, which is fixed. Always ensure that the last value set provides the proper protection zone by walking / flag testing.

Tune In

(Continued from page 16)

21: If detection zones and operator are now correct, the tune-in is complete; otherwise, return to steps 14-17 as needed.
If satisfactory operation is not achieved after 2-3 passes through steps 14-17, proceed to the next section to manually tune each stick's sensitivity.

WARNING: Under no circumstances leave the system adjusted with less than an adequate protection field - see ANSI/BHMA excerpt on page 35.

Tune In / Installation Notes:

Introduction To PMD

The programming module PMD is used to program the operating values into the control units.
The PMD has a limited service life. A countdown is made at every connection and the remaining "value" is shown on the display. When the figures "- - 71" are shown, the PMD is unusable and must be updated.

PMD models:

PMDA Service life: 6000 connections.
PMDB Service life: 2000 connections.
PMDC Service life: 400 connections.
PMDE Customer version with restricted use. Service life: 400 connections.

PIN-code

All new or updated PMDs are factory pre-programmed with the PIN-code "1234".

1. Connect the PMD to the control unit.
2. **"Pin_"** with a flashing dash will be shown on the display.
3. Enter the code **"1234"**. Every entered digit will be indicated with a dash "_" on the display.

Note! After five unsuccessful attempts to enter the correct PIN-code the error code **"71"** will be displayed. This means that the PMD is unusable and must be returned to be updated.

4. Push the button **"P"**.
5. The display will consecutively show:
   a) Type of control unit e.g. CUD or CUP.
   b) Remaining "value" of the service life.
   c) **"00"**.
   d) Actual status or error code e.g. **"on"**.

Note: If status code 10 is displayed for swing doors, check that the correct operator type has been selected under function 15.

Change of PIN-code

The factory pre-programmed PIN-code can be changed to a personal code as follows:

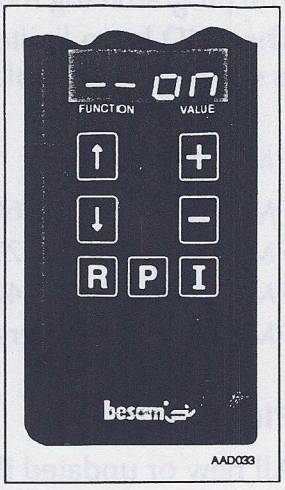
1. Carry out the instructions 1-5 under "PIN-code" above.
2. Select function **"30"**, value **"b"**.
3. Push the button **"P"**.
4. The display will show four flashing dashes **"_ _ _ _"**.
5. Enter your personal code (four digits). Every entered digit will be shown on the display.

Note! If a wrong digit is entered, disconnect and reconnect the PMD contact and start from the beginning with the factory pre-programmed PIN-code.

6. Push the button **"P"**.
7. **"Pin_"** with a flashing dash will be shown on the display.
8. Enter your **"personal code"** and push **"P"** once more to confirm that the correct code was entered.

Note! It is not possible to revert to old codes if you have forgotten the new one. If a mistake was made during the programming the PMD will revert to step 4 (**"_ _ _ _"**).

PMD – Push Button Set



Function buttons

These buttons are used to set or check* the functions (01-99) for speed, hold open time, monitoring, and so on. The up and down arrow buttons increase and decrease the number by one digit. If the button is held down for more than 1 second, the function number will be increased/decreased every 0.1 second. When the final function (99) has been reached, the digits will roll over to function 01 and start again.

* ***Note!*** *When selecting any of these functions, the last value programmed into the Swingmaster control unit will be displayed, except for function 99, where value 01 will always be displayed.*

Value buttons

These buttons are used to set the value for the selected function. The plus and minus buttons increase and decrease the value by one digit. If the button is held down for more than 1 second, the value will be increased/decreased every 0.1 second. When the end value has been reached the digits will roll over and start again.

Program button

This button is used to program the control unit with the function and value selected on the PMD. To indicate that data have been transferred into the control unit, the display will be blank (fractions of a second) and then show the selected digits.

Impulse button

This button is used to give an opening impulse to the operator. If the button is held down, an impulse is given every 0.2 seconds.

Reset button

This button is used to reset the control unit. Hold the button down for about 2 seconds to reset.

Function display

When a FUNCTION button is depressed, the latest function used will be presented on the function display. If no function has been selected previously, the function "01" will be shown. If the FUNCTION and VALUE buttons are not activated for 5 s, the display will show "– –".

Value display

The VALUE display shows the value for the selected function. If the FUNCTION and VALUE buttons are not activated for 5 s, the VALUE display will show the present status or error code for the operator.

Back

The function description on the back of the PMD is reversible. The green side is to be used when adjusting sliding doors and the blue side when adjusting swing doors.

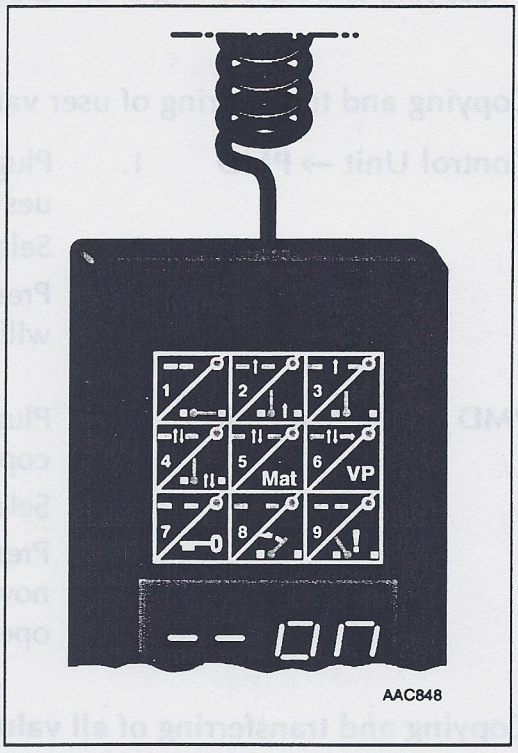
PMD – Program Selection

Program selector (blue push-button set to be used)

Buttons 1-4 control necessary functions of the operator. With the PMD connected to the control unit, these settings override the settings of the program selector, (if installed). The functions of the program selector will resume approximately 30 seconds after the PMD is removed.

Settings

1.		"Off"	The door is closed.
2.		"Exit"	Exit only.
3.		"Open"	The door is permanently open.
4.		"Auto"	The door opens with inner and outer activation units.
5.	**Mat**		Mat safety impulse.
6.	**VP (IFD)**		Presence detection.
7.		"Key impulse"	Key opening impulse.
8.		"Low speed opening" or "Learn" if VP-S is connected	Push the button for 3 s. The door opens with pre-set low speed. Used to automatically adjust the sensitivity of the VP-S.
9.		"Door opening angle >99°"	Push the button for 3 s, then open the door to the required angle and close it by hand. The new angle is now programmed into the control unit.



Pre-programmed run programs (Function 98)

Pre-programmed basic values for six different run programs (operating performance) can be selected with the function 98 and any of the values from 01 to 06. The value 98/03 is factory pre-programmed and selected to give a satisfactory function for most doors.

When selecting the values in the order from 01 to 06, the performance of the operator is gradually increased and can be adapted to the valid operating conditions. If the performance has to be increased depending on door size and/or door weight, never use a higher value than necessary. To comply with authority requirements, the value selected must give the operator a smooth and safe closing.

Programming the run programs into the control unit

1. Plug the PMD into the control unit on the operator.
2. Select function 98 and any of the values from 01 to 06.
3. Press the program button P within 5 seconds. The selected run program will now be transferred from the PMD to the control unit.

Note! The only values transferred will be values that affect the operator performance.

PMD – Push Button Set

Copying and transferring of programmed values (Function 98)

This function is used to facilitate the adjustment by copying and transferring the values from one smoothly running operator to another one with similar operating conditions. The values can be copied and transferred in two levels.

- Copying and transferring of user values only – Functions 01–27.
- Copying and transferring of all values.

Copying and transferring of user values only:

Control Unit → PMD

1. Plug the PMD into the control unit on the operator having the values to be copied.
2. Select function **98** and value **99.**
3. Press the program button **P** within 5 seconds. The user values only will now be transferred from the control unit to the PMD.

PMD → Control Unit

1. Plug the PMD into the control unit on the operator receiving the copied values.
2. Select function 98 and value 98
3. Press the program button P within 5 seconds. The user values will now be transferred from the PMD to the control unit on the new operator.

Copying and transferring of all values:

Control Unit → PMD

1. Plug the PMD into the control unit on the operator having the values to be copied.
2. Select function **98** and value **97.**
3. Press the program button **P** within 5 seconds. All programmed values will now be transferred from the control unit to the PMD.

PMD → Control Unit

1. Plug the PMD into the control unit on the operator receiving the copied values.
2. Select function **98** and value **96.**
3. Press the program button **P** within 5 seconds. All values will now be transferred from the PMD to the control unit on the new operator.

PMD – Functions And Values

Function	Description	Value	*)
01	High speed opening	15-90 °/s	65
02	Low speed opening	05-15 °/s	10
03	Low speed distance opening	05-40 °	20
04	High speed closing	15-60 °/s	30
05	Low speed closing	05-15 °/s	10
06	Low speed distance closing	05-30 °	20
07	Lock kick, additional	00-40 °/s	00
08	Hold open time	00-60 s	05
09	Key open time	00-60 s	05
10	Door opening angle [1]	30-99 °	70
11	Switch 1, angle [2]	00-99°	10
12	Switch 2, angle [2]	00-99°	60
13	VP-S swing side [3]	A/b no/yes	b
14	VP-S approach side [3]	A/b no/yes	b
15	Type of operator (concealed=00, surface=02)[4]	00/02	00
16	Push and go, PAG [5]	00-60 s	02
17	Presence impulse monitoring [6]	00-20	20
18	Mat safety monitoring [6]	00-20	00
19	Presence detection type, break/make impulse [7]	A/b break/make	b
20	Overhead presence detection	A/b no/yes	A
21	OBP-A (SA/OHC)	00-01	00
22	Balance force, open door	00-40	24
23	Hold force, closed door [8]	00-40	00
24	Locking without/with power [9]	A/b w/o / w.	A
25	Opening delay for unlocking [10]	00-50 x 0,1 s	00
26	Spring closing only	A/b no/yes	A
27	Door opening direction	A/b	A
28	Number of operator cycles performed x 10000	00-99	00
29	Number of operator cycles performed x 100	00-99	00
30	Change of PIN-code [11]	A/b no/yes	A
96	VP-S swing side, status [3]	-9→.9	.F
97	VP-S approach side, status [3]	-9→.9	.F
98	Run program [12]	01-06	03
	Copying and transferring of values between operators [13]	96-99	–
99	System tests [14]	01-05	–

*) Factory pre-programmed values in the control unit.

1) To set angle >99°, see item 9, page 21.
2) Used for switching of the VP (IFD) detection fields.
3) Used if VP-S is installed on swing/approach side.
4) IK-A= 00; IKA-S=02
5) Value 00 = No PAG. 01-60 s = Hold open time.
6) Value 00 = No monitoring, 01-20 = Monitoring. The control unit will monitor the VP (IFD) and/or the mat. After set value of actuations (01-20) without VP (IFD)-/mat impulse from pedestrians, the door will stay open.
7) Used for switching between break or make impulse for terminal No. 5 on the CUP.
8) Selects an additional hold force for a closed door.
9) After changing always press the **reset** button **R**.
10) An impulsed operator signals a lock-release to unlock the striking plate.
11) See page 19.
12) Pre-programmed basic values for 6 different run programs can be selected (see page 21).
13) See page 22.
14) 5 functional tests can be performed (see PMD manual).

Troubleshooting – Initial Installation

FAULT	CHECK	FIX / REMEDIES
1. System not working. PMD does not light up.	• Is there 120 VAC power at the control box?	• Check/replace/reset main panel fuse or breaker. Note: if it repeatedly trips, there is a short. Check wiring from panel to control for an open circuit. Note: Check for an in-line on/off wall switch.
	• Is there 18 VDC power at the CUP terminals #19-20?	• Check CUP fuse F1. • Try another PMD.
2. Control has power. PMD lights up, system not working.	• Is on/off/hold open switch set to off?	• Change switch position to on.
	• Is PMD button 1 (Door Off) pressed? Does LED indicate button one?	• Press button 4 to select Auto mode.
	• Is Push and Go properly selected?	• Select Push and Go.
	• Is push plate working (if used)?	• Check push plate connections to control. Check for proper operation of push plate with multimeter to check for 0 ohms at the control inputs when switch is pressed.
	• Is motor power absent?	• Check the motor cable plug on the control unit.
	• Is either control fuse blown?	• Check each fuse with multimeter for 0 ohms. Replace with a fuse of the same rating. Continued blowing of fuses suggests a short, miswiring or a bad control unit.

FAULT	CHECK	FIX / REMEDIES
5. System working; door recycling on closing.	• Microwave motion detector.	• Remove microwave detector cover and view indicator light to see if motion sensor is 'seeing' and triggering the door to recycle. Retune detector - usually by angling horn away from the door and/or reducing sensitivity.
	• VP-S approach side.	• With PMD connected, check CUP status. Status code 11 suggests that the microwave device is still triggering the door. If status code 52 is flashing, replace the VP-S. • Approach stick needs tuning if function 96 and/or 97 show a value of .F, indicating that factory defaults are installed. Follow the Tune In section of this manual and Fine Tune if necessary.
	• Push and Go.	• Excessive wind or stack pressure may cause the door to reopen with Push and Go on. Error 50 or 19 may be displayed.
6. System working, door opening and/or closing in a jerky manner. (This symptom is usually the result of either or both sticks tuned marginally too sensitive, or a background environment that has changed, i.e., a trash can that was moved closer to the doorway.)	• VP-S approach and swing side status.	• Determine value of functions 96 and 97. If value is .F, then factory defaults are installed. Follow the Tune In section of this manual and Fine Tune if necessary. Note: objects moving into field of view after tuning, such as a trash can, can be a recurring problem. The site manager/owner must be informed of this.
7. System working, door opening partially and stalling.	• VP-S swing side sensor.	• Same as #6 above.

FAULT	CHECK	FIX / REMEDIES
3. System still not working. PMD lights up and will communicate with Swingmaster MP control.	• Break the problem down by removing subsystems and retesting.	• Disconnect the microwave motion detector. • Deselect VP-S via the PMD by setting functions 13 and 14 to A. • Disconnect VP-S at the CUP control. Refer to the detailed troubleshooting guide in the Swingmaster MP manual; diagnose and fix the operator/control problem. • Reconnect the microwave motion detector and test. • Reconnect the VP-S and reset functions 13 and 14 to b. Proceed with Tune In.
4. Swingmaster MP working; VP -S will not tune.	• Will the PMD communicate with the VP-S?	• Try to read and change the status of function 96 or 97. Note: If 00 is displayed, functions 13 and 14 are set to A. Set value to b and proceed with tuning. • Check wiring from CUP control to VP-S approach and swing sticks. Presence of 24 volts at the approach stick gives a high confidence level that the wiring is good; see page 28 for test points. If 24 volts is not present, check all wire segments for continuity point to point, using wiring charts in this manual as a guide. (See pages 30-34.) • Try another PMD. • Try another CUP control. • Try another VP-S stick. Proceed with Tune In.

Troubleshooting – Service Call

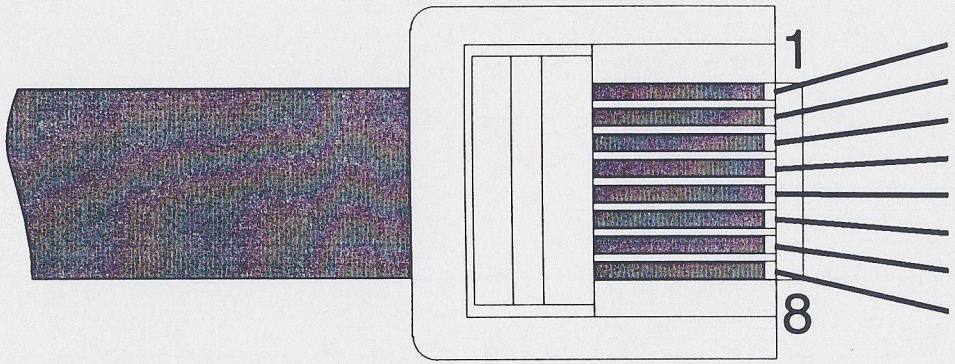
FAULT	CHECK	FIX / REMEDIES
1. Not working	• Door loop. • Loose connectors. • Visible stick damage. • Steps 1-7 of Troubleshooting - Initial Installation. • PMD function 17 - Presence monitoring. • PMD error code 52 flashing.	• Replace / repair. • Reinsert. • Replace broken subcomponents. • See previous troubleshooting section (page 24). • Ensure that value is 20 and reset door via button R on the PMD. • Presence impulse error. Replace the VP-S only if attempting reset (button R on the PMD) does not correct the problem. Note that if there are 20 microwave open signals without an approach stick signal, the system shuts down. this is unlikely but can occur if a child is playing near the doorway. Always try reset first.

Troubleshooting – Multimeter Testing

At either stick, check for the following voltages with a multimeter set to DC 50 volt range or less, measuring at the teleplug:

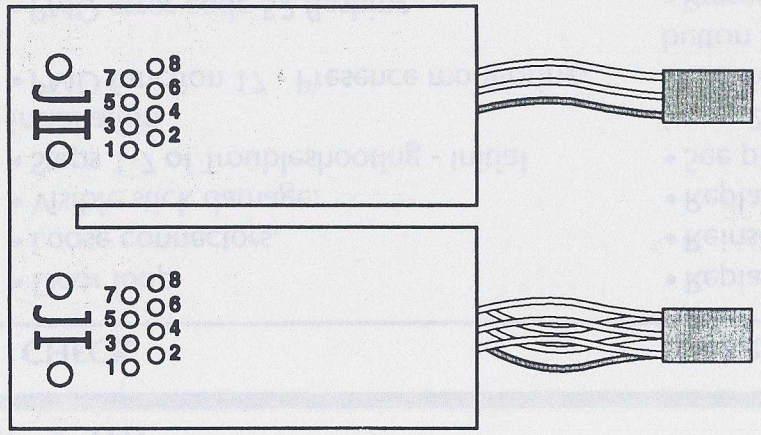
Pin 8+ Pin 1 Ground	+24 volts DC
Pin 2+ Pin 1 Ground	+5 volts DC (with no approach presence detected)
	+0 volts DC (with approach presence detected)
Pin 7+ Pin 1 Ground	+5 volts DC (with no swing presence detected)
	+0 volts DC (with swing presence detected)

Pins 3, 4, 5, and 6 require special test equipment; multimeter readings will generally be meaningless.



1. Ground.
2. Approach stick presence output (5v no presence).
3. Approach/Swing stick select signal (output from CUP).
4. Serial data from stick to CUP.
5. Serial data shift clock from CUP.
6. Serial data from CUP to stick.
7. Swing stick presence output (5V no presence).
8. +24 volts DC.

You can access these test points on the bottom of the hybrid board either at JI or JII. See diagram at right.



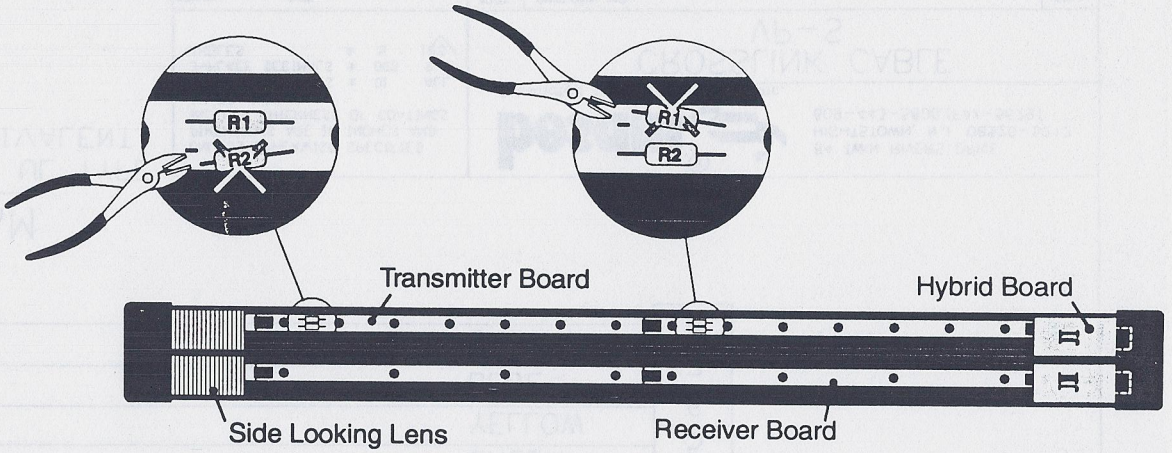
Troubleshooting – Replacing Sensor Strips

A. When replacing a transmitter board:

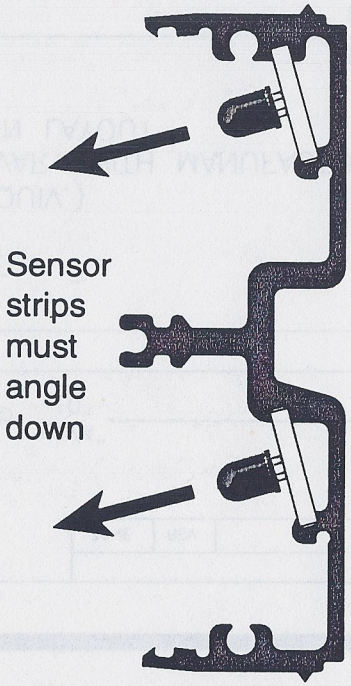
Clip resistor R1 on the section nearest the hybrid board.

Clip resistor R2 on the section nearest the side-looking lens.

Note: always replace transmitter or receiver boards with replacements matching the original length.

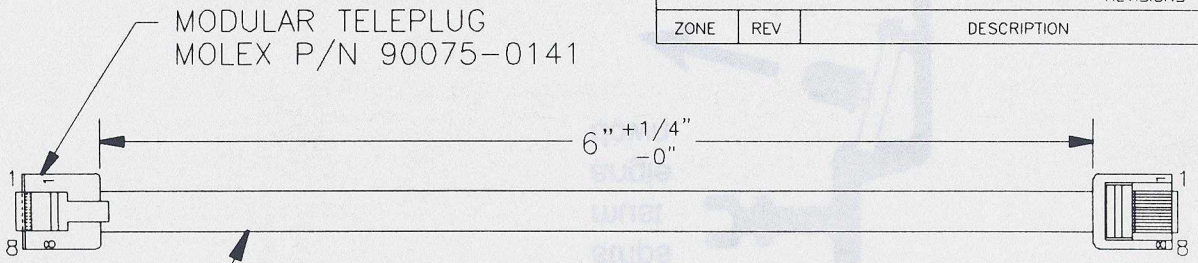


B. On both the approach stick and the swing stick, the transmitter and receiver strips MUST be angled downward to the floor when placed in the plastic housing. (See illustration at right.) If angled upwards, slide out components, reverse plastic housing and reinstall components at a downward angle.



Troubleshooting

REVISIONS				
ZONE	REV	DESCRIPTION	Date	APPROVED



FLAT, MODULAR CABLE
8 CONDUCTOR
L-CON #TDB8 (OR EQUIV.)
* COLOR CODE MAY VARY WITH MANUFACTURER
* MAINTAIN PIN TO PIN LAYOUT

TELEPLUG CONN.			TELEPLUG CONN.
1	GRAY	GRAY	1
2	ORANGE	ORANGE	2
3	BLACK	BLACK	3
4	RED	RED	4
5	GREEN	GREEN	5
6	YELLOW	YELLOW	6
7	BLUE	BLUE	7
8	BROWN	BROWN	8

WIRING DIAGRAM

ALL CABLE AND WIRES SHALL BE UL TYPE CL2, CL2P, CL2R, CL2X OR EQUIVALENT.

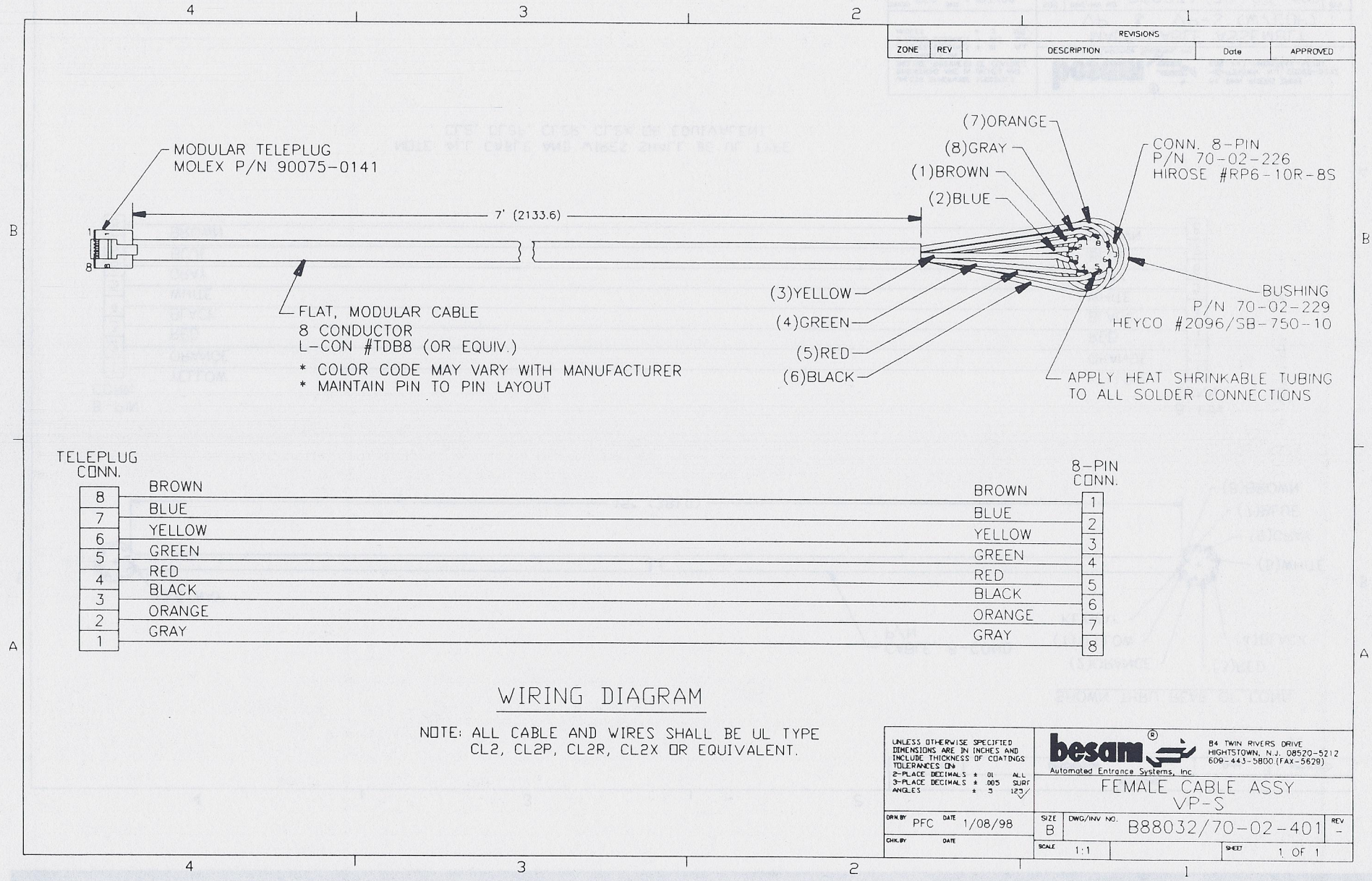
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE THICKNESS OF COATINGS
TOLERANCES ON:
2-PLACE DECIMALS ± .01 ALL
3-PLACE DECIMALS ± .005 SURF
ANGLES ± .5 125√

besam® Automated Entrance Systems, Inc.

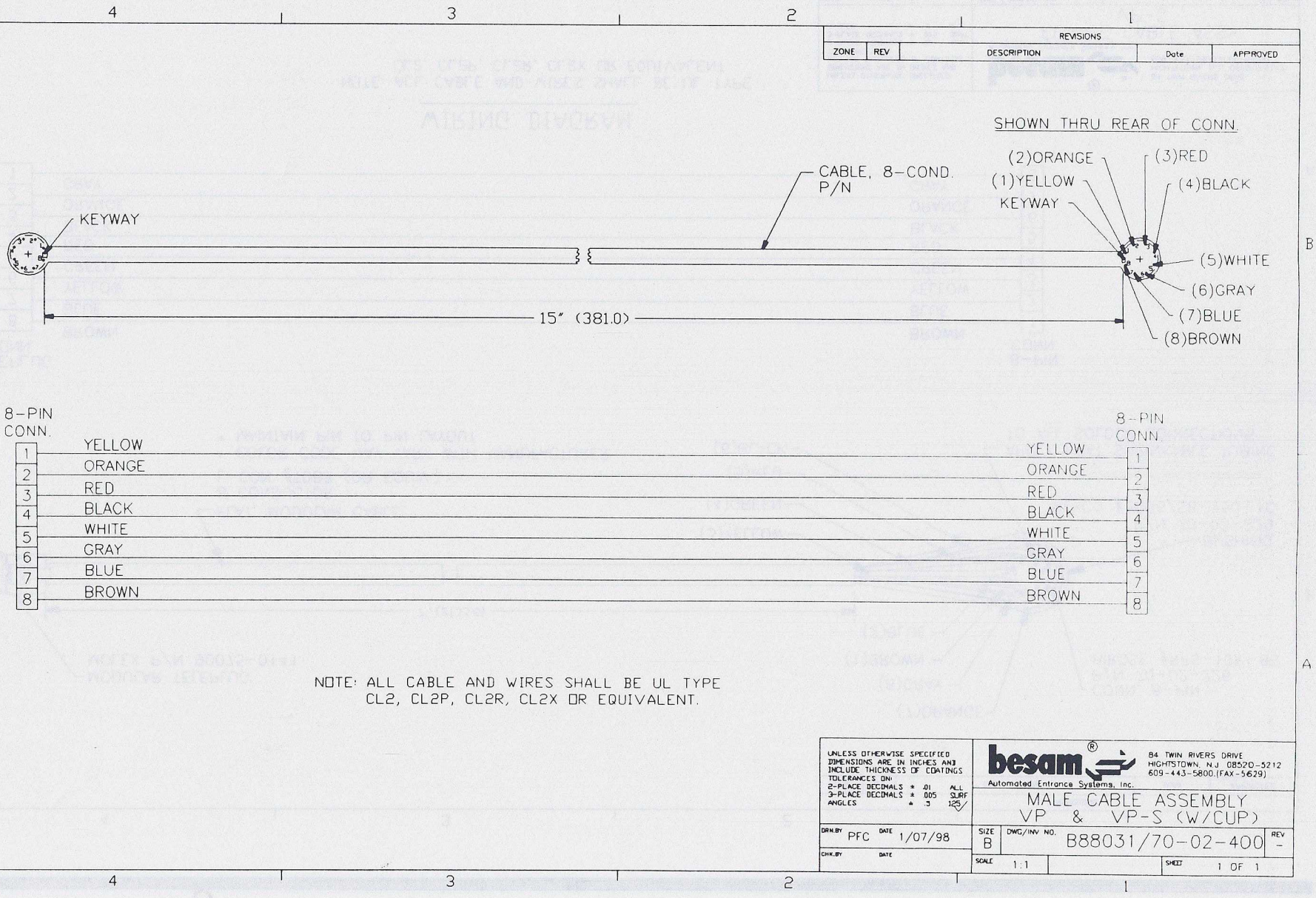
84 TWIN RIVERS DRIVE
HIGHTSTOWN, N.J. 08520-5212
609-443-5800.(FAX-5629)

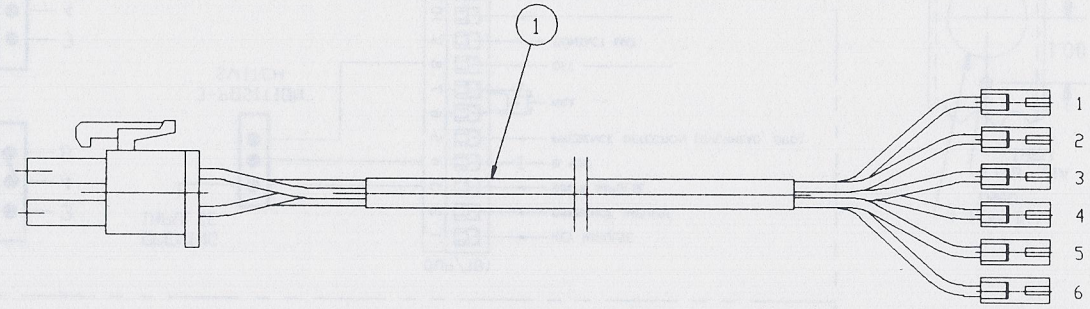
CROSSLINK CABLE
VP-S

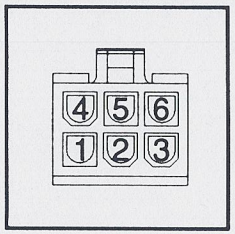
DRN.BY	DATE	SIZE	DWG/INV NO.	REV
PFC	2/5/98	A	A88033/70-02-402	-
CHK.BY	DATE	SCALE 1:1		SHEET 1 OF 1



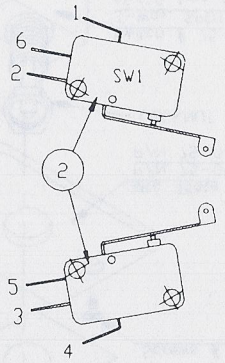
Troubleshooting







1 ORANGE
2 RED
3 BROWN
4 BLACK
5 YELLOW
6 GREEN



REVISIONS				
ZONE	REV	DESCRIPTION	Date	APPROVED

Item	Qty.	UnR	Description	Material	Draw./ArtNo.	Remark
2	2	ST	MICRO SWITCH 10A/250V		709091	TO BE MOUNTED TOGETHER/
1	1	ST	WIRING HARNESS		655455	/

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE THICKNESS OF COATINGS
TOLERANCES: DIA
2-PLACE DECIMALS ± .01 ALL
3-PLACE DECIMALS ± .005 SURF
ANGLES ± 5 125

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84 TWIN RIVERS DRIVE
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609-443-5800 (FAX-5629)

WIRING HARNESS
S/M CAM & SWITCH

DRN BY DATE
CHK BY DATE

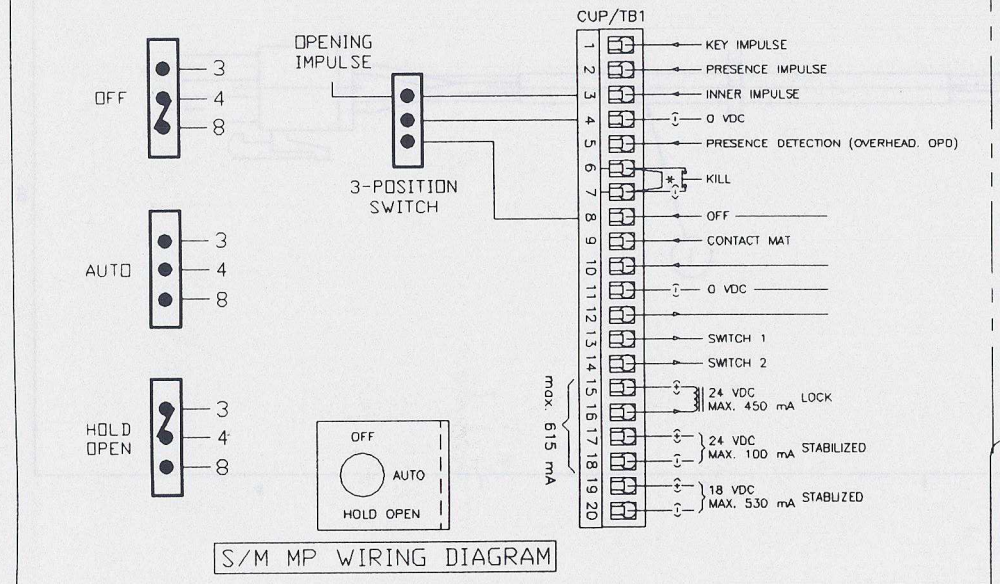
SIZE B | DWG/INV NO 30-02-655638 | REV -

SCALE NONE | SHEET 1 OF 1

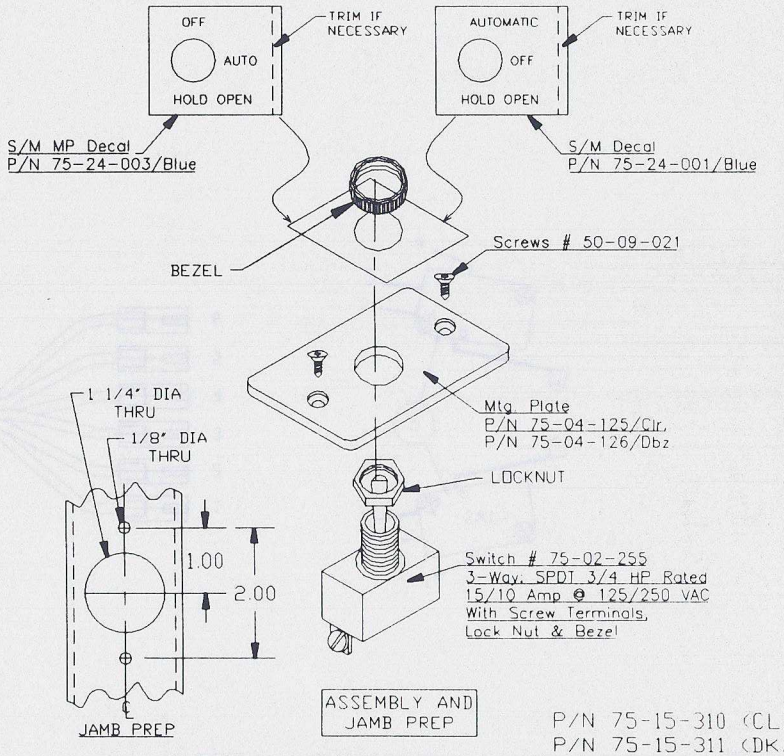
Troubleshooting

REV.	DESCRIPTION.	BY.	DATE.	CHK'D.
A	ADD P/N'S 75-24-002 & 75-04-126	PFC	7/29/97	
B	DELETE P/N 75-24-002 & ADDED MOUNTING HOLES	PFC	2/17/98	
C	ADDED S/M MP WIRING, DECAL & P/N	PFC	9/28/98	

NOTE: MOUNTING INSTRUCTIONS
1. LEGEND PLATE INSTRUCTIONS TO BE PLACED WHERE THEY CAN BE EASILY READ.
2. SWITCH SHOULD BE MOUNTED WITHIN VIEW OF DOOR IT IS CONTROLLING
3. SWITCH SHOULD BE MOUNTED WHERE DOOR OPENING/CLOSING WILL NOT CONTACT PERSON ACTIVATING IT



S/M MP WIRING DIAGRAM



P/N 75-15-310 (CLEAR)
P/N 75-15-311 (DK.BRZ.)

besam®
AUTOMATIC DOOR SYSTEMS
81 TWIN RIVERS DRIVE
HIGHTSTOWN, NJ 08520-5212
609-443-5800.(FAX-3440)

TITLE 3-POSITION SWITCH KIT ASSEMBLY / PREP / WIRING

DATE.	DRAWN BY.	DRAWING/INVENTORY No.
8/27/96	PFC	B28732/75-23-085

ANSI / BHMA A156.19 - 1997

From American National Standard for power operated pedestrian doors. Please refer to full standard if necessary, obtainable through BHMA at (212) 661-4261. Excerpts reprinted with BHMA permission.

Motion sensors shall detect a 28 inch (710 mm) minimum high person or equivalent and moving at a rate of 6 inches (150 mm) per second toward the center of the door within the detection areas described.

Presence sensors shall detect a stationary 28 inch (710 mm) minimum high person or equivalent within the detection areas described.

8.1.1 Non swing side activating detection areas shall have a minimum width equal to the width of the door opening less five inches (125 mm) maximum from both sides for a total of ten inches (255 mm) maximum measured at 15 inches (380 mm) and 30 inches (760 mm) perpendicular from the face of the closed door. The length from the face of the door shall be 43 inches (1090 mm) minimum measured at the center of the door opening. Detection shall be effective to within 5 inches (125 mm) from the face of the door measured at the center of the door opening.

8.1.2 A safety zone shall be provided on the swing side of all power operated swinging doors.

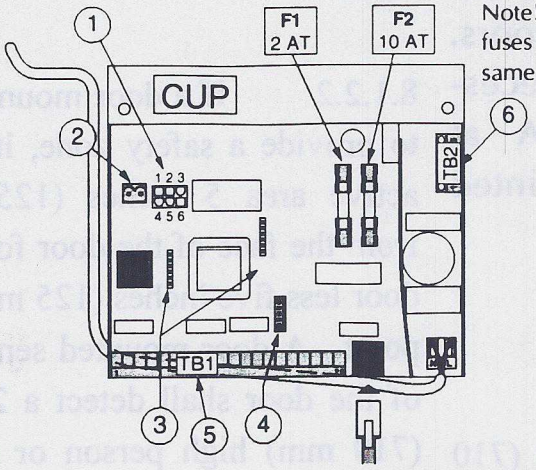
8.1.2.2 If a door mounted sensor is used to provide a safety zone, it shall provide an active area 5 inches (125 mm) maximum from the face of the door for the width of the door less five inches (125 mm) from the pivot point. A door mounted sensor on either side of the door shall detect a 28 inch minimum (710 mm) high person or equivalent in the swing path during the opening or closing cycle and shall cause the door to reverse direction, stop or slow down to a maximum latch edge speed of 4 inches per second (100 mm per second) measured within one inch (25 mm) of the latch edge before any contact is made.

8.1.3 Swinging doors serving both egress and ingress shall have on the swing side a safety zone as defined in 8.1.2 and an activating zone extending an additional 55 inches (1400 mm) from the leading edge of the door in the open position.

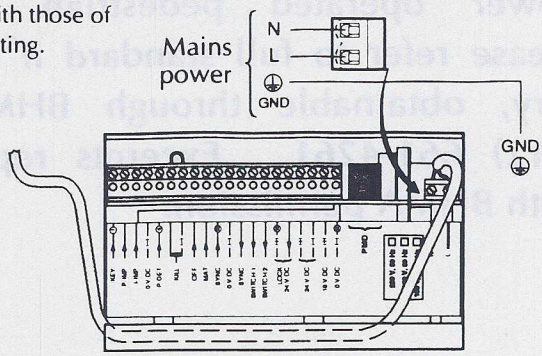
Please note that the full standard has an appendix with graphics to improve clarity. In addition, the excerpts here are only those which cover a Visionpulse system. For any other combination of products, or for door speed, guide rails, etc., please obtain a copy of the full standard as described above.

Wiring The CUP Control Unit

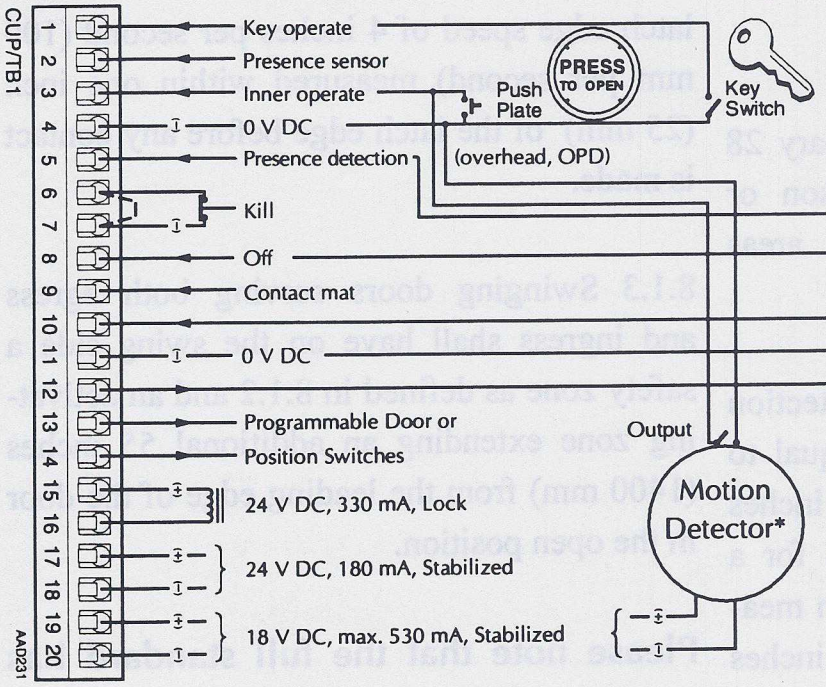
① Cam/Switch cable connector
② Connector for motor cable
③ Connecters for EXS extension unit
④ Connector for revolution counter cable
⑤ TB1 – Terminal block for external wiring
⑥ TB2 – Terminal block for backup battery, EUS

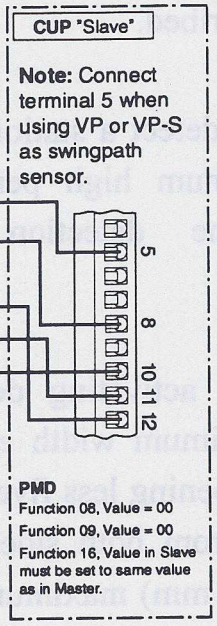


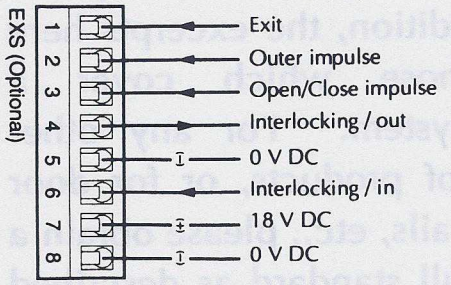
Note! Only replace fuses with those of same rating.

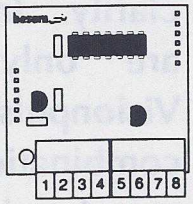


Note! Always enter PIN code first after connecting PMD.

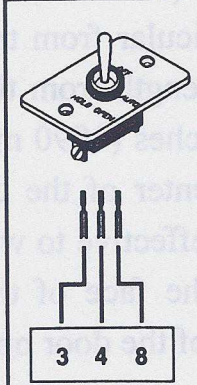








EXS Extension Unit



3 Position Switch

1) Legend plate instructions to be placed where they may be easily read.

2) Switch should be mounted within view of the door it is controlling.

3) Switch should be mounted where door opening/closing will not contact the person activating it.

Short 3 & 4 to hold open
Short 4 & 8 to hold closed

Caution!
If switched to off position and Push Reactivation has been chosen, the door will still operate when pushed.

* For Visionpulse and Visionpulse S, see respective manuals.

Frequently Asked Questions

Q. Can the VP-S be used with the older Swingmaster operator or compatible operators?
A. No. The VP-S is an entirely new design that requires door position feedback via an encoder of the kind present on the Swingmaster MP. Also, communications form the Swingmaster MP control (CUP) provide the tuning link, via the PMD, to the VP-S stick.

Q. Why is the VP-S at a different mounting height than the VP?
A. The original VP was designed many years before there was any ANSI/BHMA standard to define sensor operation for swing doors. Until very recently, the standards available led us to apply the requirement of protection as if the sensor was a mat. The new version of the standard addresses door-mounted sensors and sets a minimum detection height that we now follow.

Q. Why are there no manual adjustment pots, door position switches, configuration jumpers or masking requirements for the VP-S?
A. The VP-S is fully computerized and auto tuning, and is configured and diagnosed entirely through the PMD programming module.

Planned Maintenance Checklist – VP-S System

- ❑ Clean lenses with a non-abrasive cleaner, such as an ammonia-based glass cleaner.
- ❑ Ensure that VP-S fastening points are tight.
- ❑ Replace any broken lenses.
- ❑ Check door loop for secure fastening. Make sure loop is not frayed, cut or insulation weathered – replace if necessary.
- ❑ Plug in PMD to CUP control and check for any errors or status issues – resolve.
- ❑ Check both approach side and microwave zone for proper operation.
- ❑ Check VP-S swing side for proper operation.
- ❑ Check any loose crash bars and guide rails; tighten or replace.
- ❑ Alert facilities manager/owner to any bad practices at doorway.

Parts List

Cables and Cable Hardware:

P/N: 70-15-290	VP-S Cable Kit (1,2 & 4)
P/N: 70-02-402	Crosslink Cable (Cable 1)
P/N: 70-02-403	Door loop to CUP. (Cable 2) Also used as VP-S Swing Side to Door Loop (Cable 4)
P/N: 70-02-400	Door Loop Only (Cable 3)
P/N: 70-15-790	Door Loop and Cover Kit (Cable 3)
P/N: 70-02-207	Door Loop Cover Only
P/N: 70-09-207	Door Loop Cover Screw Only

Housing:

P/N: US15-0219-01	VP-S End Cap Kit
P/N: 70-21-655328	Housing Base (Specify Required Length)
P/N: 70-21-655329	Housing Lens Cover(Specify - Length equal to Housing Base + 3/16")
P/N: 70-21-655334	Side Looking Prism
P/N: 70-15-792	Surface Applied Fastener Kit

Electronics:

P/N: US13-0204-01	Hybrid Board (Calibrated)
P/N: 70-02-655397	Transmitter, Side Looking, 2.5", 7 diode
P/N: 70-02-655403	Transmitter, 9.5", 6 diode
P/N: 70-02-655408	Transmitter, 11", 7 diode
P/N: 70-02-655415	Transmitter, 12.5", 8 diode
P/N: 70-02-655421	Transmitter, 14-1/8", 9 diode
P/N: 70-02-655427	Transmitter, 15-5/8", 10 diode
P/N: 70-02-655433	Transmitter, 17-1/4", 11 diode
P/N: 70-02-655400	Receiver, Side Looking, 2.5", 7 diode
P/N: 70-02-655406	Receiver, 9.5", 3 diode
P/N: 70-02-655412	Receiver, 11", 4 diode
P/N: 70-02-655418	Receiver, 12.5", 4 diode
P/N: 70-02-655424	Receiver, 14-1/8", 5 diode
P/N: 70-02-655430	Receiver, 15-5/8", 5 diode
P/N: 70-02-655436	Receiver, 17-1/4", 6 diode

Notes

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Bulletins and Revisions

No bulletins or revisions are presently available for this manual.