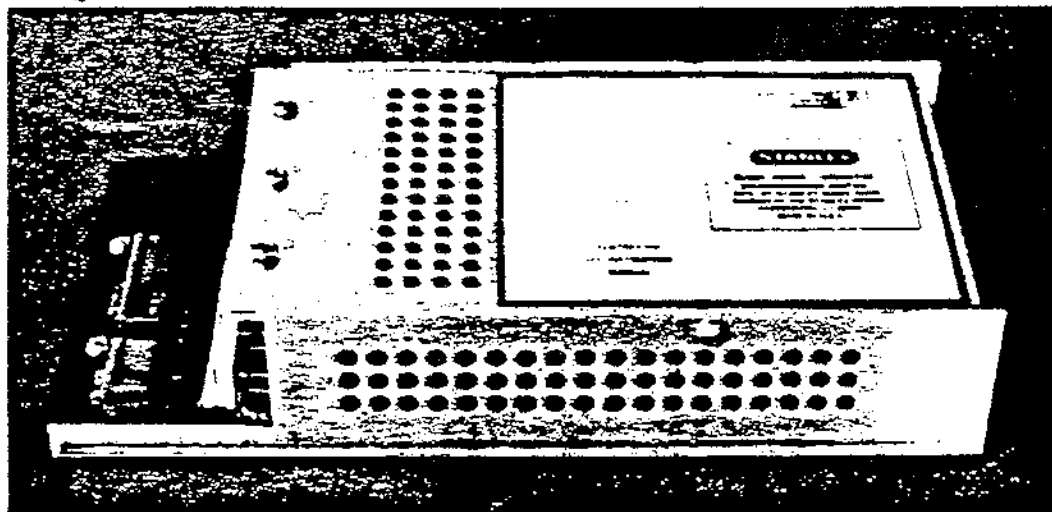


# **STANLEY<sup>®</sup>**

## **MAGIC-DOOR**

# **MAGIC-SWING MICROPROCESSOR CONTROL BOX**



## **INSTRUCTION MANUAL**

**STANLEY MAGIC-DOOR**  
Route 6, Corner Hyde Road  
Farmington, CT 06032  
Phone: (203) 677-2861  
(800) 232-3663

# TABLE OF CONTENTS

	Page
I. Overview .....	1
II. Operation	
A. Timer Mode .....	1
B. Carpet Mode .....	2
III. Electrical Connections	
A. TB1 .....	2
B. TB2 .....	2
C. J1 .....	3
D. Main Power .....	3
IV. Indicators and Adjustments	
A. LED Indicators .....	3
B. Potentiometers .....	3
C. Dipswitch S2 .....	4
D. Dipswitch S3 .....	4
E. Dual Operator Mode Jumper Plug .....	4
V. Troubleshooting Tips .....	5-6
VI. Figure 1 — Control Box Diagram .....	7
VII. Wiring Diagrams	
System Wiring — Main Power, Motor(s), Encoders .....	8-9
Signal Wiring — Microprocessor Box with Sentrex <sup>3</sup> .....	10-11
Signal Wiring — Microprocessor Box with Carpets .....	12-13
Signal Wiring — Microprocessor with Sentrex, Sentrex2 or Sentrex A.T. ....	14-17

## **CAUTION:**

**THIS OPERATOR CONTROL MUST BE ADJUSTED  
BY STANLEY TRAINED PERSONNEL AND IN  
ACCORDANCE WITH ANSI STANDARDS A156.10.**

### **I. Overview**

The Magic-Swing control box has been redesigned to incorporate a microprocessor that allows the control box to do more while taking up less space. In addition, the Sentrex<sup>3</sup> interface board can now be mounted inside the control box.

The new generation microprocessor control box has the following:

- New Features:
  - 1) Magic-Touch
  - 2) Reverse-on-Obstruction
  - 3) 2s Logic
  - 4) Lock Delay
- Internal Transformer / Power Supply for Stan-Ray and Sentrex
- Automatic Open-Check Calculation eliminates cam adjustment
- Internal Sentrex<sup>3</sup> control (with the addition of a mini-Board).
- ~~No big P.C. board in the bottom rail.~~
- Elimination of magnet and magnetic switch.

### **II. Operation**

The microprocessor control box uses the encoder on the Magic-Swing motor to determine door position in both Sentrex and carpet applications. Door position data is required for the open check calculation and the built-in Magic-Touch feature.

When power is first applied and an open signal is received, the control box opens the door in "Learn Speed". "Learn Speed" is slightly faster than check speed and allows the door to learn the door size safely yet expediently.

The microprocessor control also provides a 1-second reverse-on-obstruction feature that reverses door motion if an obstruction is met

The Magic-Touch feature allows door activation by manual action without the need for an approach sensor. Magic-Touch can be used with press plates or the radio control system, giving the system two time delays, one adjustable .2-30 seconds (operate input) and the other fixed at .5 seconds (Magic-Touch).

The "Lock Delay" feature momentarily delays the door opening cycle after an operate signal is received. This allows for operation with an automatic door lock.

#### **A. Timer Mode Operation**

- Stall Logic is intended for use with the Sentrex Sensor System. The door is stalled when an Operate and Stall Signal are received simultaneously.

- ... if the Stall Signal is removed with an Operate Signal present, the door will continue to open in check speed to full open.
- ... if the Operate Signal is removed and does not reactivate while a Stall Signal is present, the door will close.
- 2S Logic, Push switch to open door, push switch to close operation is optional in this mode.

## B. Carpet Mode Operation

- Safety Plus (1.5 second) delay is activated when a safety carpet signal is received. This disables an operate cycle for 1.5 seconds. The hold open time in carpet mode has a minimum 1.5 second delay.
- If a safety carpet signal does not follow an operate signal, the door will remain open for a minimum delay of 12 seconds.

## III. Electrical Connections

There are three connectors used for electrical input/output to the control box. (See figure 1)

See wiring diagrams for individual applications.

### A. TB1

TB1 is used to connect the signal inputs as listed:

TB1 Position	Connection
1	Signal Common
2	Operate Input
3	Terminal location for connecting On/Off/Hold Open Switch — Violet and Switched Operate Signal
4	12 VAC for Stan-Ray (12 VAC Output Rated at 1 AMP Max.)
5	12 VAC for Stan-Ray
6	Auxiliary Input
7	Stall / Safety Carpet Signal
8	Stall / Safety Carpet Common

### B. TB2

TB2 is used to connect the serial Sentrex3 sensor heads only. Older versions of Sentrex are connected through TB1. See wiring diagrams for older Sentrex system wiring.

TB2 Position	Connection
1	VSX (+) — Power for sensor heads
2	serial communication
3	serial communication
4	GND (-) — Ground for sensor heads

### C. J1

J1 accepts the harness which connects the main power, the encoder(s), and the motor(s). The motor / encoder / power harness plugs directly into J1. When connecting the encoder and motor connectors for dual operators, match motor connector 1 and encoder connector 1 to one operator and motor connector 2 and encoder connector 2 to the second operator. In the case of a single door, there are connectors for 1 motor and 1 encoder.

### D. Main Power

**CAUTION:** TURN SERVICE PANEL POWER OFF BEFORE CONNECTING HARNESS J1 TO ELECTRICAL SERVICE.

(Refer to pages 8 and 9 for System Schematic)

1. Connect the Ground Wire Assembly (P/N711527) to the Electrical Service Ground Wire using a wire nut provided.
2. Drill a hole for a #8 screw on the inside of the Header, preferably in a concealed location.
3. Place the ring terminal from the ground wire on to the #8 screw provided and screw into Header.
4. ~~Drill a second~~ hole for a #8 screw on the inside of the Header (concealed location).
5. Place the ring terminal from the Main Harness — J1 on to a #8 screw (provided) and screw into Header.
6. Connect the Power Pigtail Assembly (712846) to the Electrical Service, connecting line (black) to black and neutral (white) to white using wire nuts provided.
7. Plug the Power Pigtail into the Main Harness J1 power connection.

## IV. Explanation of Adjustments (See Figure 1)

**CAUTION:** TURN POWER SWITCH OFF BEFORE MAKING ANY ADJUSTMENTS

### A. LED Indicators

WD — Watchdog: Illuminated when power is applied and the control box is functioning properly. A flashing LED indicates a defective board.

E1 — Encoder 1, E2 — Encoder 2: Flashing LEDS with door motion indicate properly functioning encoders.

- A single door will cause only E1 to flash, E2 flashes with a pair of doors.

### B. Potentiometers

1. Time Delay — adjust 2-30 seconds, increase clockwise
2. Stall Speed — adjusts door holding power of control box
3. Open Speed — adjusts opening door speed
4. Open Check Speed — adjusts opening door check speed

The operator speeds and check sizes must be adjusted as defined below to comply with ANSI A156.10.

### OPERATING AREA:

Time Opening (from closed) to Back Check (0°-75°) not less than 1.5 seconds.

Back Check (75°-90°) not less than 1.0 seconds.

Closing (from full open) to Latch Check (90°-10°) 2.0-4.0 seconds. (see Table 1)

Latch Check to Full Closed (10°-0°) not less than 1.5 seconds.

**TABLE 1 Swing Door Minimum Closing Times**

Inches (D)	(mm)	lbs. (W)	(kg)	Time (secs) (T)
36 & under	(914) to	100	(45)	2.0
36	(914) to	140	(64)	2.3
42	(1 067) to	110	(50)	2.3
42	(1 067) to	150	(68)	2.7
48	(211 9) to	120	(55)	2.8
48	(211 9) to	160	(73)	3.2

For doors of other weights and widths:

$$T = \frac{D \sqrt{W}}{188}$$

where:

W = Weight of door in pounds.

D = Width of door in inches.

T = Closing time to latch check in seconds.

The following dipswitch adjustments must be made prior to powering on the control box.  
To change any setting, turn power off, then on again.

#### C. Dipswitch S2

Position 1: "on" = carpet logic, "off" = timer logic

Position 2: "on" = dual doors, "off" = single door

Position 3: "on" = 2S logic, "off" = normal operate

\* In Carpet Logic applications which require 2-WAY traffic, SET DIPSWITCH S2 Position 3 to "ON". This will cancel the Safety Carpet Fail time delay which has a minimum of 12 seconds

Position 4: "on" = lock delay, "off" = no delay

#### D. Dipswitch S3

Position 1: "on" = normal open check size, "off" = large open check size

Position 2: "on" = Magic-Touch, "off" = Magic-Touch

#### E. Dual Operator Mode Jumper Plug

There is a dual operator jumper plug located in the control box for the purpose of synchronizing the closing speeds on a pair of operators with a single control box.

Selecting this feature will increase the amount of manual opening force required to open either door in a pair. If the excessive force is undesirable, or if the doors need to be non-synchronized, remove jumper plug J3 (See Figure 1).

## V. Troubleshooting Tips

1. **PROBLEM:** Control Box does not respond to a change in DIP Switch settings...

**CHECK:** Turn the Power switch on the Control box off. Set the DIP switches as required. Turn power to the Control Box on. The DIP switch settings are "read" during power-up.

2. **PROBLEM:** The door stays in Learn Speed during consecutive cycles ...

**CHECK:**

- A. After the door completes the initialization cycle and gets to full-closed, count 2 seconds then re-cycle the door. The initial full-closed position is realized by the Control Box after the Encoder stops changing for 1.2 seconds - here the door positions are calculated.
- B. The Single/Dual DIP switch. If the switch is set for Dual and only one Encoder is connected, the Control Box thinks one Encoder is defective and remains in Learn Speed.
- C. If the application is dual operators, check that both Encoders are properly connected and that 4 LED's on the Control Box are flashing as the door is moving.

3. **PROBLEM:** The Control Box operates erratically — the door does not open when given an operate signal; the door closes on people regardless of a safety carpet signal; door position is lost and the Control Box goes through a reinitialization.

**CHECK:** The ground wire must be connected to the Header. Additionally, the ground wire from the service panel must be connected to the Header, and must be a valid ground. Verify by measuring for 1 20VAC from the black power wire to the Control Box and ground. Use caution to prevent electrical shock.

4. **PROBLEM:** The Control Box jerks the door while opening and closes before reaching full-open...

**CHECK:** Verify that the line voltage is between 90-132VAC. This is the designed operating range of the Control Box.

5. **PROBLEM:** The Control Box recycles the door without an operate signal...

**CHECK:**

- (A) Ground connection as described in #4.
- (B) Unplug Terminal block TBI from the Control Box. This will disable any signals from sensors.
- (C) Separate Motor and Encoder wire harnesses if wrapped together.
- (D) Ensure that the Encoder is snug on the motor shaft. Remove the Encoder, check the magnetic rotor wheel for slipping action against the Motor shaft.
- (E) The connectors between the Encoder and the Control Box wire harnesses for mating pins pushing out of the connectors.

6. **PROBLEM:** 2-Way Traffic application with Carpet Logic, the Control Box holds the doors open for 15 seconds...what can be done?

**SOLUTION:** The safety carpet fail timer is being activated on every cycle because the last signal the Control Box receives is an operate signal with 2-way traffic.

With power to the Control Box off, set DIPSWITCH S2 position '3' to 'ON'. This will cancel the Safety Carpet Fail Delay in Carpet Logic for 2-Way traffic applications.

7. **PROBLEM:** The Magic-Swing Door is locked at night. In the morning, the On/Off/Hold Open switch is turned on, then the door is unlocked. The door stays closed.

**SOLUTION:** The new Magic-Swing Microprocessor Control Box functions with a 1.2 second obstruction feature. If the Control Box is given an operate signal and held in a fixed position, it will go into "stall" mode. Set the on/off/hold open switch to off, unlock the door, and then switch to 'on'.

8. **PROBLEM:** The "WD" LED on the Control Box blinks...

**CHECK:** Turn power off, wait a few seconds and then turn power back on. If "WD" continues to blink, replace the Control Box.

9. **PROBLEM:** The door opens with a Magic-Touch operation even though the On/Off Hold Open switch is off.

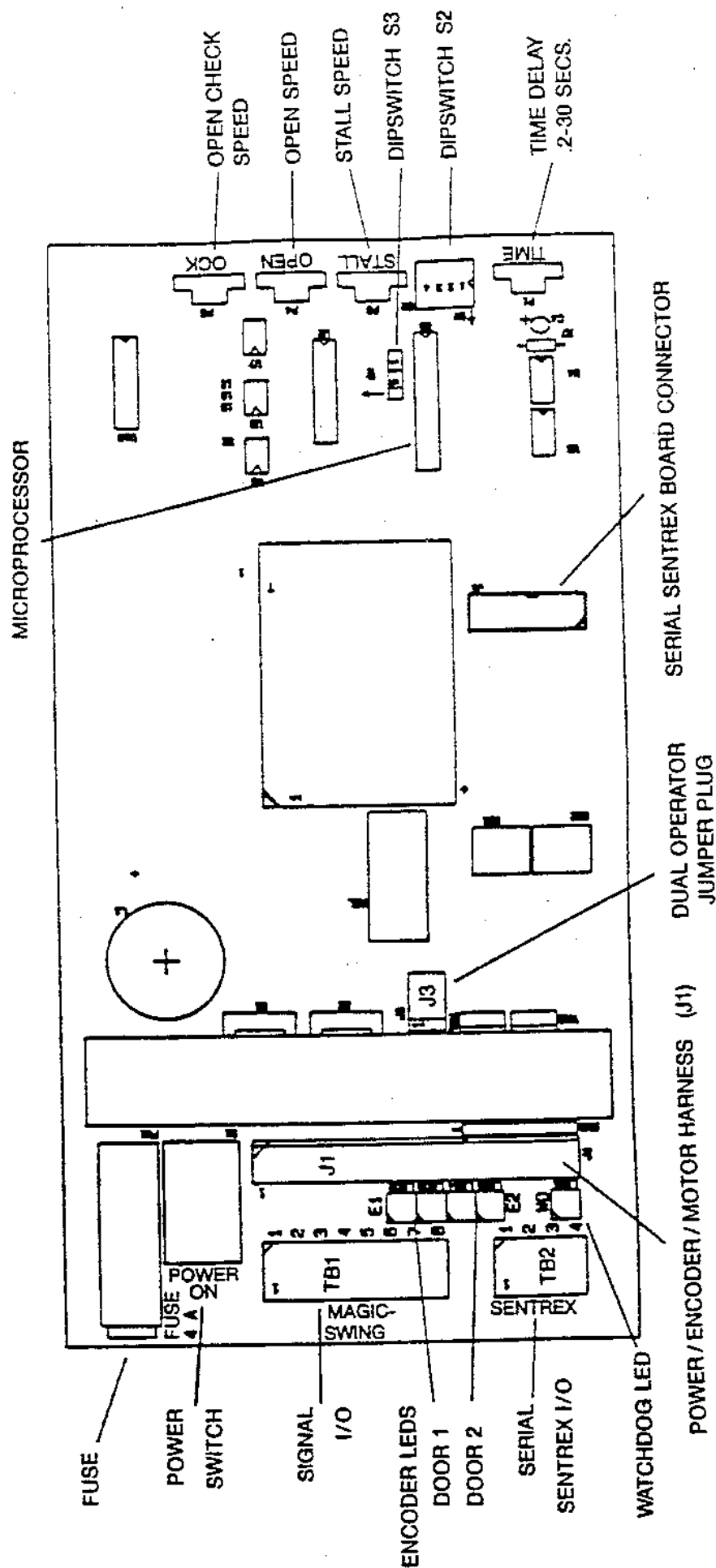
**SOLUTION:** Yes. The Control Box does not monitor the On/Off/Hold Open switch status, and the door will operate.

## VI. Applications for Magic-Swing Microprocessor Control Box with Previous Generations of Sentrex Auto-Tune and Sentrex<sup>2</sup>

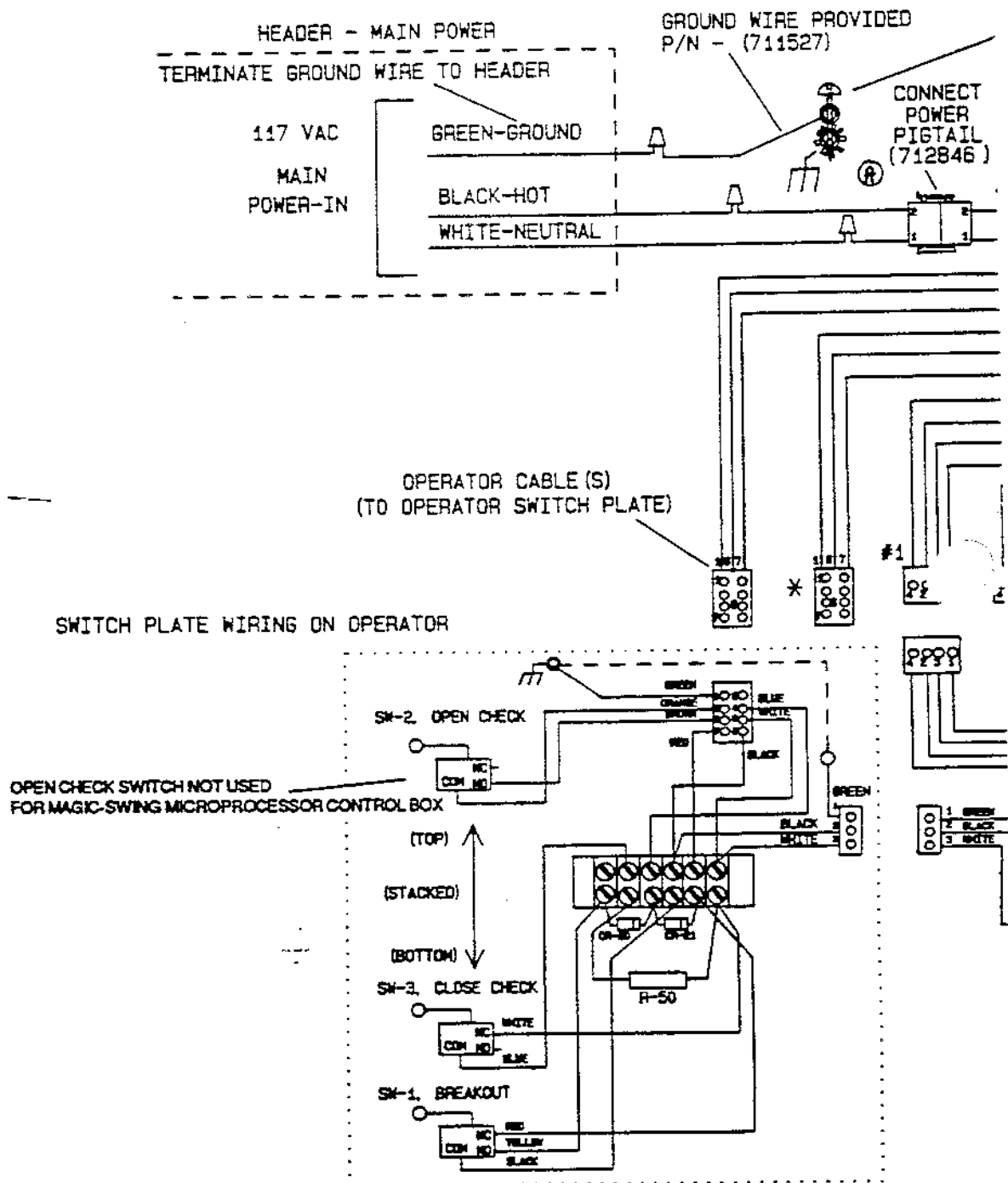
- A. Mount the 4-channel encoder(s) to the motor(s).
- B. Remove the 6 pin control box connector from the existing Sentrex power harness:
  - Connect the yellow wire to TB1 Terminal #1.
  - Connect the orange wire to TB1 Terminal #2.
  - Connect the red wire to TB1 Terminal #7.
- C. Remove the larger size (1/4") quick-connects from the Sentrex power harness (brown & gray wires terminate at these ends).
  - Strip wire ends and install both gray wires into TBI Terminal #4.
  - Strip wire ends and install both brown wires into TBI Terminal #5.
- D. Connect the on/off hold open switch to the existing Sentrex power harness.
- E. Connect either Stan-Ray or push-plates to the 4-wire pigtail on the power harness.
- F. Tune the Sentrex system using the appropriate Sentrex manual. For tuning the Magic-Swing microprocessor control box speeds, see Section IV.



## 7



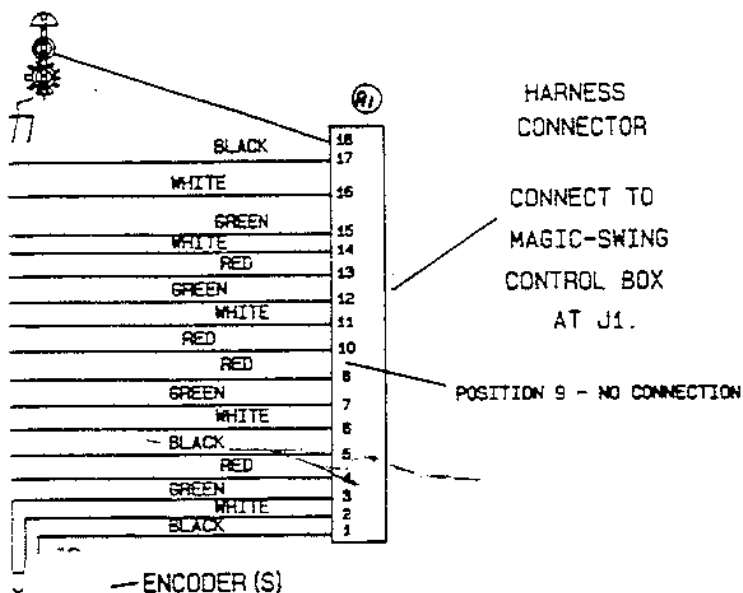
## SYSTEM WIRING - MAIN POWER.



ASSEMBLIES	312167
312168	312252
312253	312722
312723	312879
312880	312881
312882	

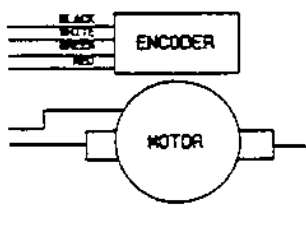
# (S), & ENCODER (S)

FASTEN TO HEADER WITH #8 SCREW P/N - (322731960)  
AND #8 STARWASHER PROVIDED.



\* - ON SINGLE HARNESS, MOTOR & ENCODER #2 WIRES NOT INSTALLED.

515743



92-20	3-12-92	A1) CORRECT NUMBERING SEQUENCE IN CONNECTOR	VR
		A) ADDED 712846	
		REVISED AND RELEASED	
		PILOT LOT RELEASE	
ECN	DATE	REVISION	APP'D

"This Document is the Property of the Stanley Works and is Furnished on the condition that it is not to be disclosed, reproduced in whole or in part, or used for manufacture for anyone other than the Stanley Works without its written consent."

SPEC. NO.:	1. MATL:
1. GRADE:	2. SIZE:
3. TEMPER:	4. FINISH:
5.	

WIRING DIAGRAM - SYSTEM

DATE 12-10-90

CHECKED VR

APP'D PM

MAGIC-SWING MICROPROCESSOR CONTROL

SCALE

ECN 90-47-2  
12-20-90

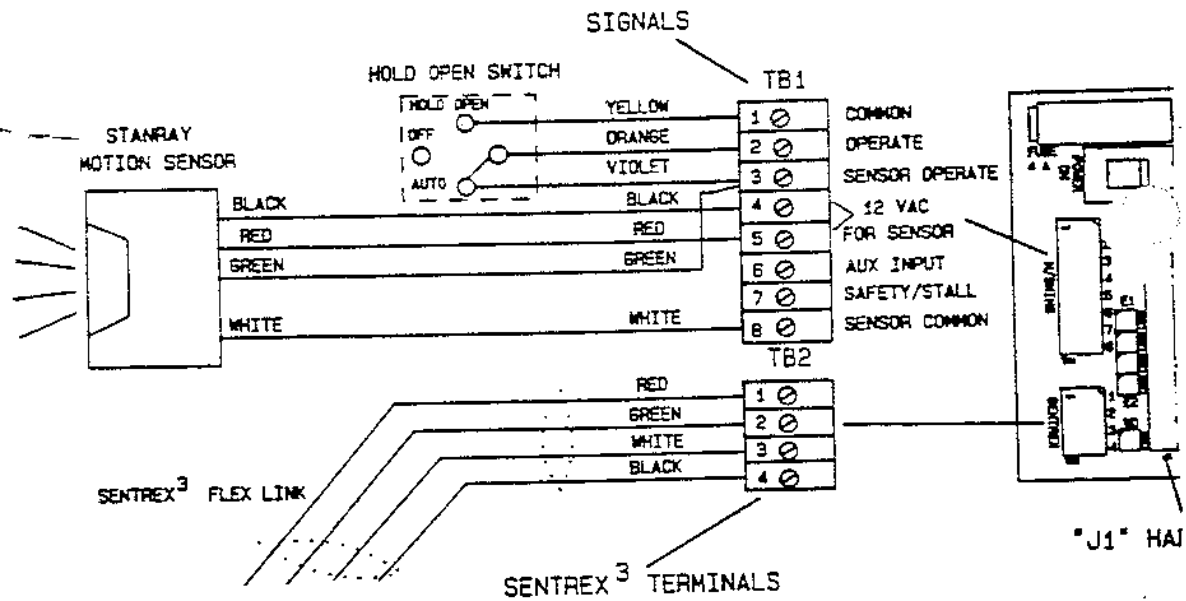
STANLEY MAGIC-DOOR

DIVISION OF THE STANLEY WORKS, FARMINGTON, CONN.

515743

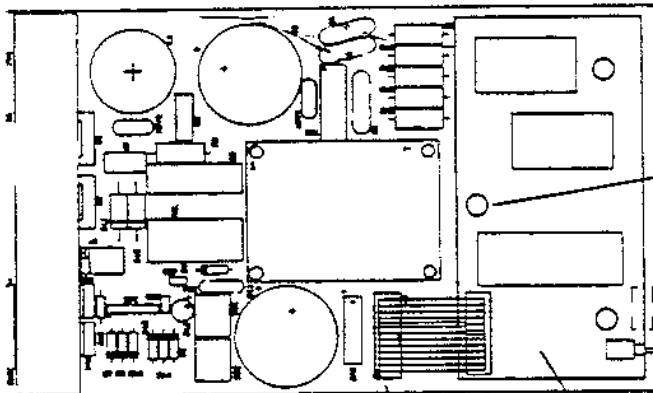
MUST BE FREE FROM BURRS & ROUGH EDGES  
DO NOT SCALE THIS DRAWING - TOLERANCES UNLESS OTHERWISE SPECIFIED - FRACTIONS  $\pm .015$ , DECIMALS  $\pm .005$ , ANGULAR  $\pm 1^\circ$

# SIGNAL WIRING - MAGIC-SWING M



# MICROPROCESSOR BOX WITH SENTREX<sup>3</sup>

-MAGIC-SWING MICROPROCESSOR CONTROL PC BOARD-



MOUNT WITH #6-32 SCREWS

SET DIP SWITCH POSITION #1 TO "OFF"  
(TIMER MODE)

CONNECT MICRO-BOARD RIBBON CONNECTOR

INSTALL SENTREX MICRO-BOARD

CONNECT MICRO-BOARD RIBBON CONNECTOR

515744

REVISED AND RELEASED		
PILOT LOT RELEASE		
DATE	REVISION	APP'D
SPEC. NO.:	1. MATL:	
1. GRADE:	2. SIZE:	
3. TEMPER:	4. FINISH:	
5.		

"This Document is the Property of the Stanley Works and is furnished on the condition that it is not to be disclosed, reproduced in whole or in part, or used for manufacture for anyone other than the Stanley Works without its written consent."

WIRING DIAGRAM-M/S-SENTREX<sup>3</sup>

DRAWN R-AD PM DATE 12/7/90

CHECKED

APP'D

PTM

MAGIC-SWING MICROPROCESSOR CONTROL

SCALE NONE

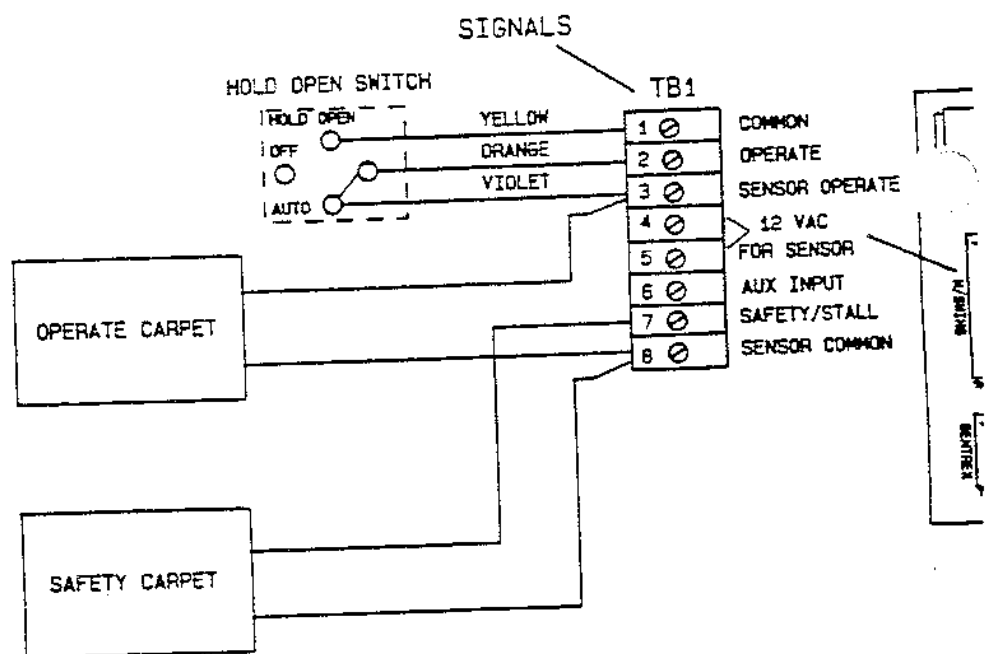
ECN 90-97-2  
12/24/90

STANLEY MAGIC-DOOR

DIVISION OF THE STANLEY WORKS, FARMINGTON, CONN.

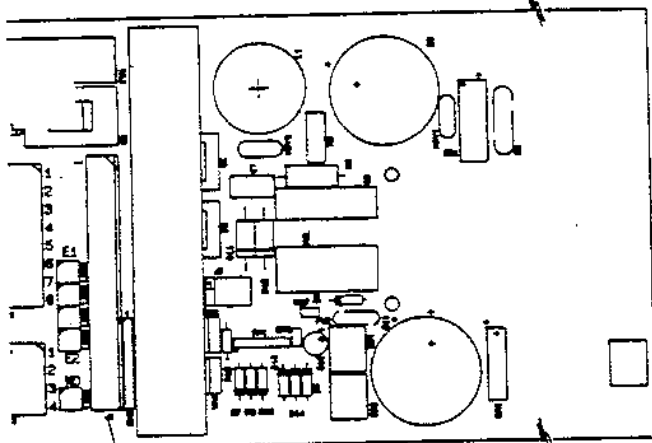
515744

# SIGNAL WIRING - MAGIC-SWING MI



# CROPROCESSOR BOX WITH CARPETS

MAGIC-SWING MICROPROCESSOR CONTROL PC BOARD



"J1" HARNESS CONNECTOR

SET DIP SWITCH POSITION #1  
TO "ON" (CARPET MODE)

515745

"This Document is the Property of the Stanley Works and is furnished on the condition that it is not to be disclosed, reproduced in whole or in part, or used for manufacture for anyone other than the Stanley Works without its written consent."

REVISED AND RELEASED		
PILOT LOT RELEASE		
DATE	REVISION	APP'D
SPEC. NO.	1. MATL.	
1. GRADE	12. SIZE	
3. TEMPER.	14. FINISH	
5.		

WIRING DIAGRAM-M/S BOX w/ Carpets  
DRAWN PCAD PM DATE 12/13/90

CHECKED

APP'D

PMT

MAGIC-SWING MICROPROCESSOR CONTROL  
SCALE ADJUE

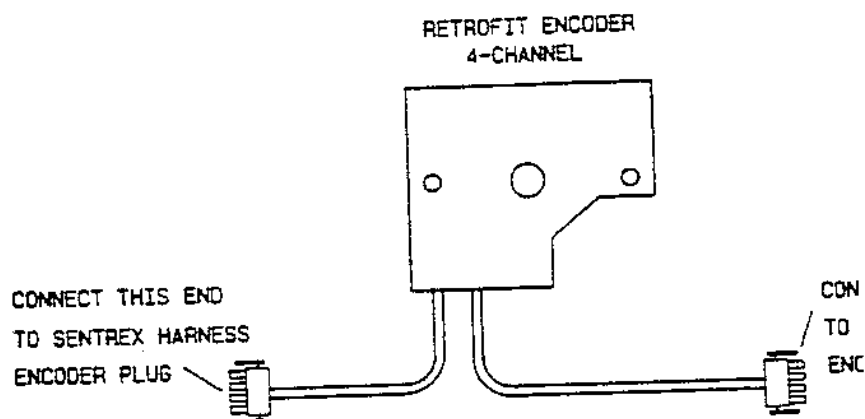
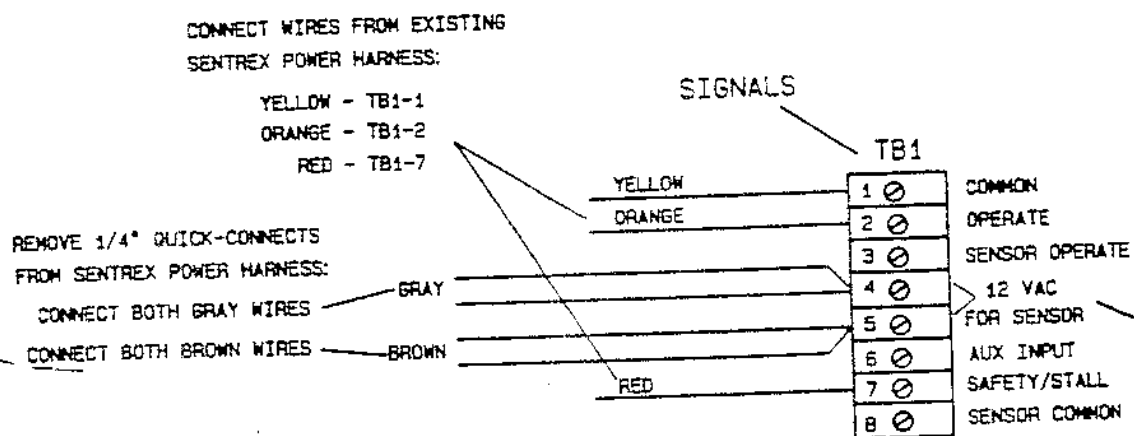
ECN 90-77-2  
12/20/90

STANLEY MAGIC-DOOR

DIVISION OF THE STANLEY WORKS, FARMINGTON, CONN.

515745

## SIGNAL WIRING - MAGIC-SWING M

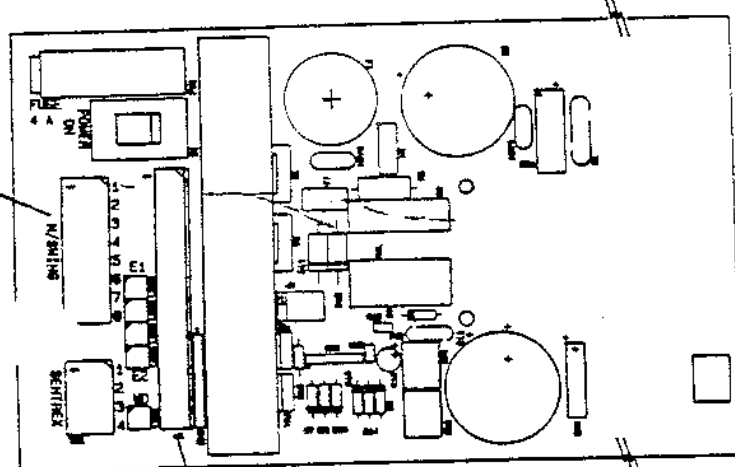


\*NOTE: SINGLE RETROFIT APPLICATION SHOWN FOR A DUAL RETROFIT APPLICATION, 2



MICROPROCESSOR CONTROL BOX WITH SENTREX A.T. OR SENTREX<sup>2</sup>

MAGIC-SWING MICROPROCESSOR CONTROL PC BOARD



SET DIP SWITCH #1 TO "OFF"  
(TIMER MODE)

515746

"J1" HARNESS CONNECTOR

CONNECT THIS END  
MAGIC-SWING HARNESS  
TO POWER PLUG

RETROFIT ENCODERS ARE REQUIRED.

"This Document is the Property of the Stanley Works and is Furnished on the condition that it is not to be disclosed, reproduced in whole or in part, or used for manufacture for anyone other than the Stanley Works without its written consent."

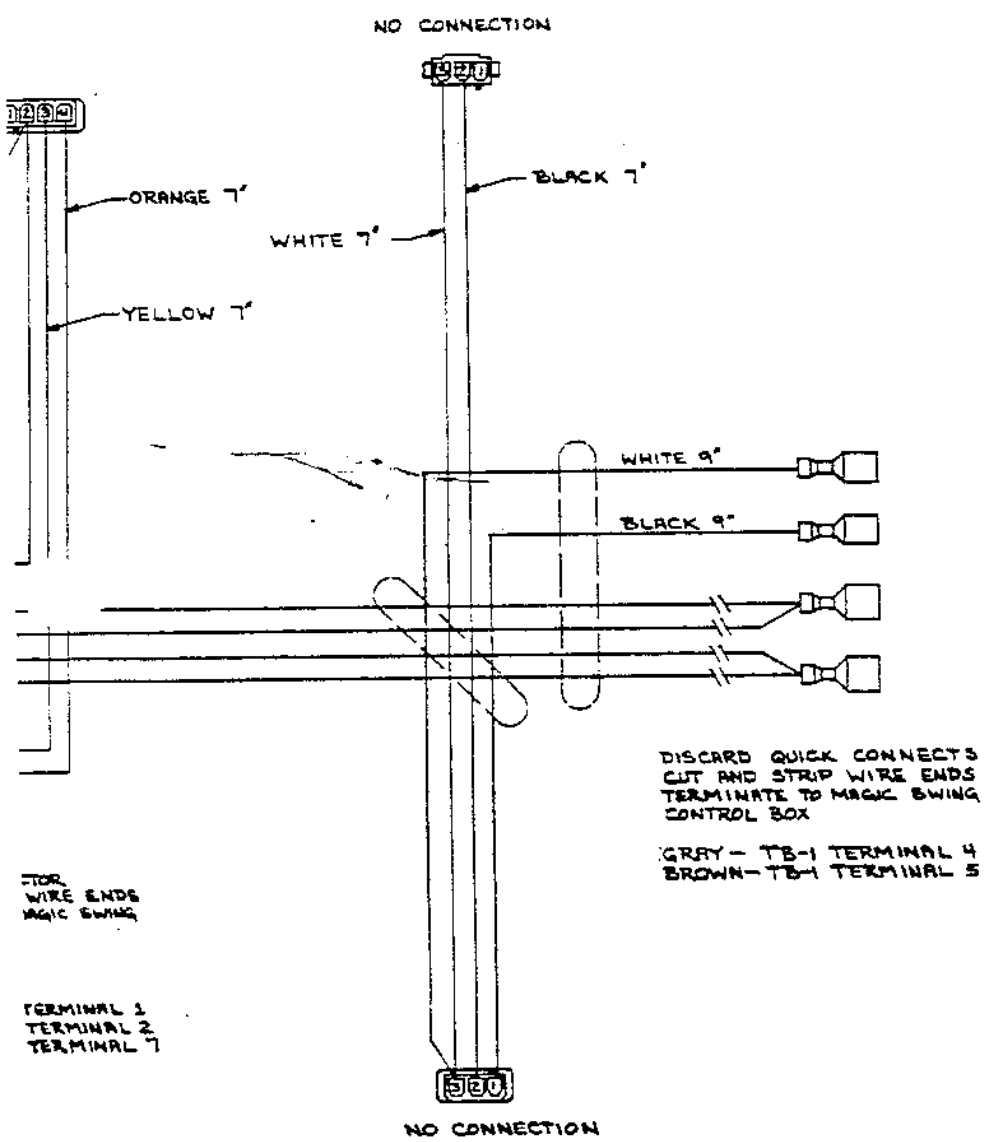
REVISED AND RELEASED		
PILOT LOT RELEASE		
DATE	REVISION	APP'D
SPEC. NO.:	1. MATL:	
1. GRADE:	2. SIZE:	
3. TEMPER:	4. FINISH:	
5.		

WIRING DIAGRAM		M/S MP CONTROL - SENTREX <sup>2</sup> - A.T.		MAGIC-SWING MICROPROCESSOR CONTROL	
DATE	4/2/91	CHECKED	APP'D	SCALE	

**STANLEY MAGIC-DOOR**  
DIVISION OF THE STANLEY WORKS, FARMINGTON, CONN.

515746

SWITCH  
- HOLD OPEN)



WIRE ENDS  
MAGIC SWING

TERMINAL 1  
TERMINAL 2  
TERMINAL 7

"This Document is the Property of the Stanley Works and is loaned to the customer. It is not to be destroyed, reproduced in whole or in part, or used for manufacturing for anyone other than the Stanley Works without its written consent."

REVIEWED AND RELEASED		
PILOT LOT RELEASE		
DATE	REVISION	APP
SPEC. NO.	1. MATL.	
1. QUANT.	2. SIZE	
3. TEMPER.	4. FINISH	
5.		

WIRING DIAGRAM		SENTREX <sup>2</sup> - SENTREX <sup>2</sup> R.T.	
REVIEWER	DATE	CHECKED	DATE
STANLEY MAGIC-DOOR			
DIVISION OF THE STANLEY WORKS, FARMINGTON, CONN.			

DO NOT BE FIRST FROM BEING A WORKER CHECK  
WORKS UNDER STANLEY SPECIFICATIONS - FARMINGTON, CONN. 060303-001, APPROVED

110303