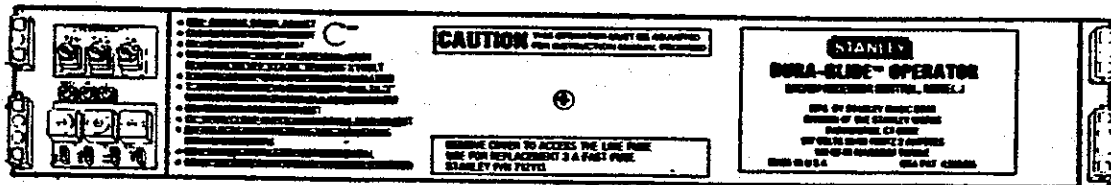




DURA-GLIDE 2000/3000 CONTROL BOX



Electrical Instructions and Troubleshooting Guide

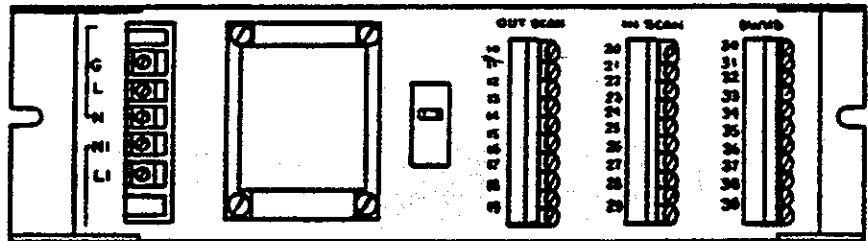
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Section I

**** Dura-Glide Installation Wiring Instructions ****

The Dura-Glide header assembly is delivered complete with the operator, motor, encoder, single board microprocessor control box, header mounted (rocker type) function switches, Stan-Guard™ Threshold Sensor and an electrical connector board all assembled and tested. The operate sensor(s) (Stan-Ray™, carpets, etc.) must be installed and connected to the electrical connector board (refer to Figures 1 and 5).

Figure 1
Electrical Connector Board



Line Power Connections

1. Requirements: 117VAC 50/60 Hz to be supplied from either end of the header assembly and spliced to the internal wiring harness.

NOTE: All electrical wiring must conform to the National Electrical Code Requirements.

2. It is recommended that a separate electrical circuit from the main power panel be supplied to the Dura-Glide operator. Do not connect more than four operators to one circuit.

3. Power wires should be routed on top of the header track tube which serves as a wire channel.

4. Connect the incoming power-ground, line, and neutral wires to the internal wiring harness (respectively green, black and white wires provided) using wire nuts.

Stan-Guard Fine-Tuning

NOTE: On 10/5/87, the Stan-Guard Threshold Sensor replaced the Doorway Holding Beam. Refer to Stan-Guard installation manual for fine-tuning information.

Doorway Holding Beam Connection

For units with holding beams, terminate wires from both sensor heads to holding beam control/power box (refer to Figure 5).

Breakout Switch Connection

Connect the breakout switch leads to terminal numbers 16 & 19 on electrical connector board (refer to Figure 4).

Stan-Ray Mounting on Header

Caution must be used locating Stan-Ray on header (refer to Figure 2).

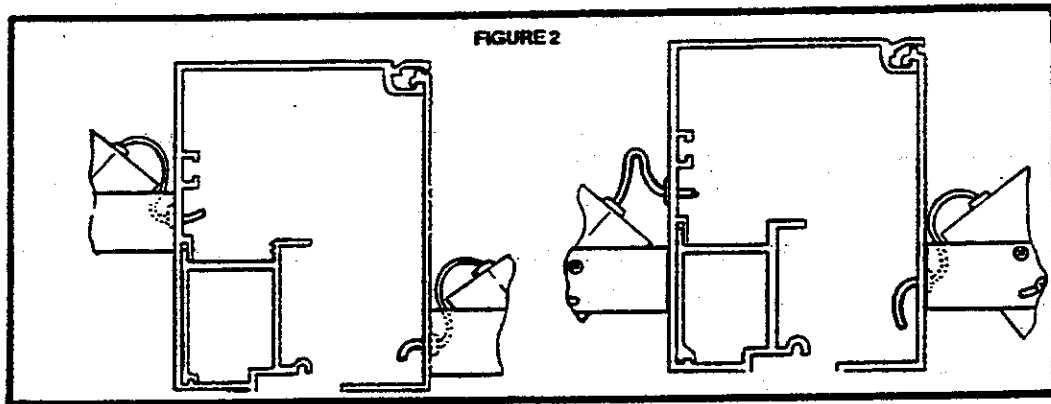
1. Header Cover Mounting

- a. Mount the Stan-Ray as low as possible, keeping the power cord and mounting hardware away from the operator belt.
- b. Stan-Ray power cord through header should not be any higher than 3" from the bottom edge of header.
- c. Route the Stan-Ray power cord along side the function switch harness assembly to the electrical connector board.

2. Header Frame Mounting

- a. Always mount the Stan-Ray high enough, so that the (SO) panel(s) can breakout and swing clear.
- b. Stan-Ray power cord through header should not be any lower than 4" from bottom edge of header.
- c. Route the Stan-Ray power cord along side the header wiring harness to the electrical connector board.

Figure 2



Installation and Tune-In Instructions for the Dura-Glide Single Board Microprocessor Control Box

With the operate sensors installed, the Stan-Guard zone fine-tuned and the line power and breakout switch connections completed, proceed with the control box tune-in.

Control Box Replacement Instructions

1. Set the header mounted power switch to "OFF" position.
2. Mount control box into header.
3. Terminate line, signal, motor and encoder connectors to control box.

NOTE: When retro-fitting a Dura-Glide microprocessor control box into a slider, make sure that the encoder signal harness and motor harness are separated from each other.

Control Box tune-In Instructions (refer to Figure 3)

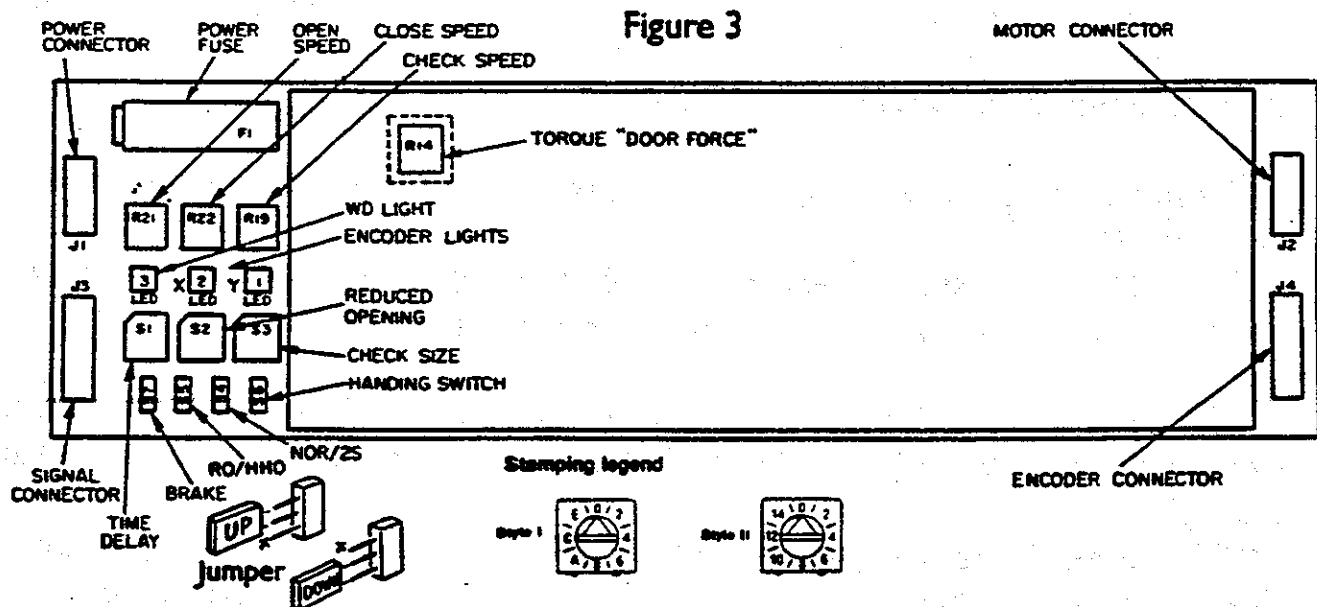
The control box adjustment switches are preset at the factory prior to shipment. Before proceeding with the tune-in procedure, verify that the position of adjustment switches are as follows:

Adjustment

Check Speed
Open Speed
Close Speed
Time Delay
Reduced Opening
Check Size
RO/HHO
NOR/2S
Brake
Handing

Switch Position

Minimum (fully counter-clockwise)
Minimum (fully counter-clockwise)
Minimum (fully counter-clockwise)
"0"
"1"
"6"
UP
UP
DOWN - Minimum Braking
DOWN - R.H. and Bi-Part Slider or
UP - L.H. Slider



DURA-GLIDE™ SINGLE BOARD MICROPROCESSOR CONTROL BOX ADJUSTMENT LOCATIONS

NOTE: The two position up/down slide switches for "BK", "HHO", "2S" and "HND" were replaced with 3 pin and jumper configurations as of 11/4/91. The jumper must be installed on a pair of pins for the control box to function properly.

1. Set the header mounted power switch to "OFF" position.
2. Manually push doors closed. Turn all control box speed potentiometers to minimum (fully counter-clockwise). Set the header mounted AUT/CLS/OPN switch to CLS position. For remainder of tune-in procedure, use OPN and CLS positions of switch. This will avoid interference from motion sensor(s).
3. Set power switch to "ON" position. Verify that the control box watchdog "WD" light is "ON".
4. Manually push door(s) partially open. Notice the control box encoder lights blinking "ON" and "OFF".
CAUTION: If encoder lights are permanently "ON" or "OFF", do not continue. Refer to troubleshooting section of manual.
5. Turn the check speed potentiometer 1/3 clockwise. Fine-tune check speed by operating door(s) via AUT/CLS/OPN switch.
NOTE: Door(s) will open and close slowly.
6. If required, adjust check size via control box check size selector switch (refer to chart "A").
NOTE: The size of the opening check zone will be approximately twice the size of the closing check zone. This may vary in length due to door inertia.
7. Turn the open and close speed potentiometers 1/3 clockwise. Fine-tune speeds by operating door(s) via AUT/CLS/OPN switch. (Refer to Section 3, Part 2 Kinetic Energy)
NOTE: If the doors are opening when they should be closing and closing when they should be opening, set the control box handing switch or jumper to the opposite position.
8. Set the time delay via control box time delay selector switch to obtain the desired hold open time (refer to Chart "A").
9. Set the header mounted reduced opening switch (if so equipped) to "ON" position. Check operation of door(s) via AUT/CLS/OPN switch.

NOTE: To enable reduced opening function, set the control box mini slide-switch or jumper labelled RO/HHO in the top or up position. Set the control box reduced opening size selector switch for the desired opening size (refer to Chart "A"). The sizes listed on the chart are for bi-part sliders, a single slider will be 1/2 the bi-part opening size.

10. Brake Mode "BK" - Brake mode allows for a smooth transition between full speed and check speed. Set the control box mini slide-switch or jumper labelled "BK" in the top or up position for maximum braking and in the bottom or down position for minimum braking.

11. Set AUT/CLS/OPN switch to AUT position.

A) Check the operation of operate sensors and Stan-Guard.

B) Check the operation of enter switch (if equipped).

Miscellaneous Control Box Tune-In Adjustments (Refer to Figure 3)

1. Door Force Adjustments - Remove control box cover, use isolated screwdriver and fine-tune torque (door force) potentiometer.

NOTE: Prior to making any adjustments, observe compliance with safety codes (U.L 325 refer to Section 3, Part 1 - Closing Force, ANSI-A156.10, etc.).

2. RO/HHO Switch or Jumper (Reduced Opening or Handicapped Hold Open) - Handicapped Hold Open feature provides a 9 second hold open delay when an operate signal is received from a designated wall switch. The HHO time delay will not interfere with the normal time delay.

CAUTION: If an electric solenoid lock is being used, do not use the HHO function.

NOTE: To enable the HHO function, set the mini slide-switch or jumper, labelled RO/HHO in the bottom or down position. When the handicapped hold open feature is enabled, the reduced opening feature can not be used and vice-versa.

3. Normal/2S Switch (Normal Operation or 2S Control) - 2S Control feature will open the door(s) when an operate signal is received and will then close the door(s) when a second operate signal is received.

NOTE: To enable the 2S function, set the mini slide-switch or jumper labelled Normal/2S in the bottom or down position. When the 2S feature is enabled, the normal feature can not be used and vice-versa.

4. The "WD" light performs two functions:

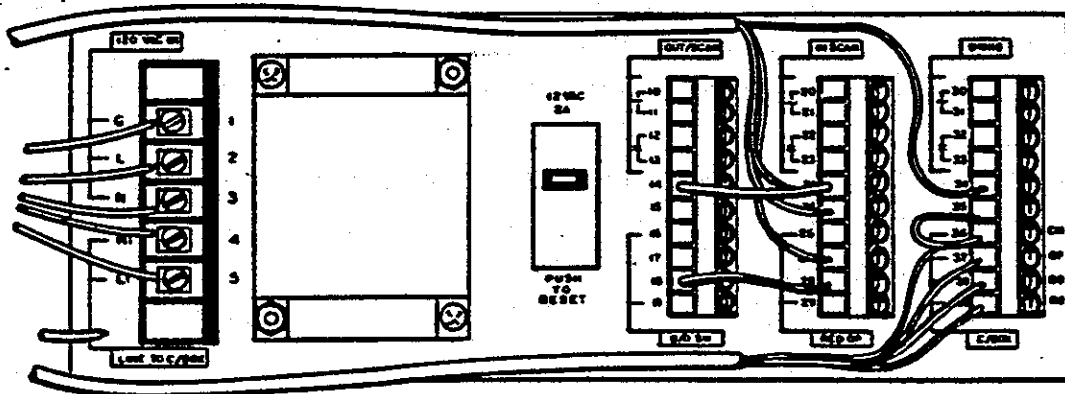
A. "WD" is a power indicator for the control box. The light should remain "ON" for as long as power is applied to the control box.

B. "WD" also monitors the microprocessor unit. Under normal operation, the light should remain "ON" at all times. If the "WD" light is found blinking "ON" and "OFF", set the power switch to "OFF" position. Leave power "OFF" for 15 seconds and then turn power switch to "ON" position. If "WD" light still blinks, a replacement control box should be installed.

CHART "A"

Selector Switch Position	Check Size	Hold Open Time	Reduced Opening Size (Bi-Part)
0	3"	0.2 sec. or 2 sec.* (see note)	10"
1	4"	0.4 sec.	30"
2	5"	1 sec.	36"
3	6"	2 sec.	42"
4	7"	3 sec.	48"
5	8"	4 sec.	54"
6	9"	5 sec.	60"
7	10"	6 sec.	64"
8	11"	9 sec.	68"
9	12"	12 sec.	72"
10 or A	13"	15 sec.	76"
11 or B	14"	18 sec.	80"
12 or C	15"	21 sec.	84"
13 or D	16"	24 sec.	88"
14 or E	17"	27 sec.	92"
15 or F	18"	30 sec.	96"

***NOTE:** If a second operate signal is received by the control box while the doors are closing, the hold open delay will be 2 seconds and will remain 2 seconds until the door(s) have a chance to close and the control box times out. This feature is known as traffic density, and is operable in the "0" selector switch position.

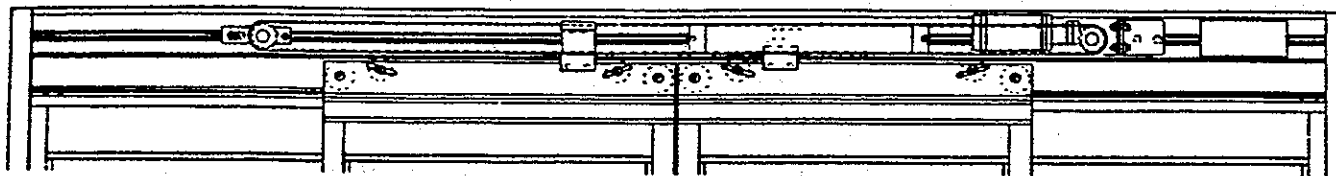


**DURA-GLIDE™
ELECTRICAL CONNECTOR BOARD**

Figure 4

SECTION 2

TROUBLESHOOTING HINTS:



1. Symptom: With power "ON", the "WD" light is "OFF".
Action: Verify that the fuse is not open. If symptom persists, check the voltage at the power supply connector.
2. Symptom: Door will not move at first run ("WD" light is "ON").
Action: Check breakout switch circuit. Check door for excessive drag.
3. Symptom: Encoder lights do not blink when door moved by hand. "WD" light is "ON".
Action: Check encoder cable and connector. Check motor to gearbox coupling.
4. Symptom: Door opens when it should be closing and closing when it should be opening.
Action: Set the control box handing switch or jumper to the opposite position.
5. Symptom: Door tends to stall, particularly at slow speed.
Action: Test force at edge of door; if under 5 lbs. increase torque (door force) potentiometer.
6. Symptom: Reduced opening size too wide or too narrow.
Action: Adjust reduced opening size via reduced opening selector switch.
7. Symptom: Close check size too short for a heavy door; prevents adjustment of door speed as desired.
Action: Increase close check size via the check size selector switch.
8. Symptom: No operation. Encoder lights blink when door is moved by hand.
Action:
 - 1) Check motor and motor cable.
 - 2) Check breakout wiring loop.
 - 3) Manually move door to a different position. If operation resumes, check motor brushes and brush holders (replace if needed).

9. Symptom: Door slams. Open and close speed adjustments are operating.
Action: 1) Check if encoder cable or connector is defective or disconnected.
2) Defective encoder; test as follows:
- Set AUT/CLS/OPN switch to CLS position. Turn power to "OFF" and then "ON" again. The "WD" light must be "ON".
- Move door by hand slowly and check to operation of encoder lights.
- Position door to have both encoder lights "OFF". For right hand operation, move the door slightly by hand, verify that the first light to come "ON" is the left when door is closing and the right when door is opening.
(EXCEPTION: Reverse sequence for boxes with the handing switch set for left hand operators.)
10. Symptom: Door slams. No speed adjustments.
Action: Replace defective control box.
11. Symptom: No operation in AUT position. Manual operation (OPN and CLS position) is okay.
Action: 1) Check sensor power supply at the electrical connector board terminals.
2) Check wiring of sensor(s) and AUT/CLS/OPN switch at the electrical connector board terminals.
12. Symptom: No reduced opening.
Action: 1) Check reduced opening switch connection.
2) Check setting of the reduced opening size selector switch.
13. Symptom: Jerky door operation or doors slamming open during initial tune-in.
Action: Check the encoder signal harness and motor harness. Make sure they are separated from each other.

SECTION 3

COMPLIANCE WITH U.L. 325

NOTICE: The following guidelines must be observed to assure that equipment meets U.L. Standard 325. Failure to adjust equipment as outlined in this section could void the U.L. label.

Part 1

The force required to prevent a door from closing at any point during the closing cycle shall not exceed 30 pounds.

Measurement of Sliding Door Closing Force:

- A) Operate slider, allow door to open fully.
- B) Allow the door to begin to close. With a spring scale, measure the force (pounds) necessary to stall the closing door at approximately the midway position.
- C) The closing force should not exceed 30 pounds.

NOTE: If the force is greater than 30 pounds, fine-tune the control box torque (door force) potentiometer. (Refer to Figure 3 and item 1 on page 5.)

Part 2

Kinetic energy (KE) of sliding door must be limited to 2-1/2 foot pounds unless a safety edge is employed. (7 foot pounds is permitted with safety edge.)

Measurement of Kinetic Energy:

Sliding Door

- a) Determine the weight of the door complete with glazing and accessories.
- b) With a stop watch, calculate the time (seconds) required for the door to close from a point 2" from the full open position to a point 2" from the full closed position.
- c) Measure the distance between the two points (feet).

- d) Divide the distance (feet) by the time (seconds). The result is the average speed of the door in feet per second.

- e) Use the door weight from Soap A - compare the average speed (your calculation from Soap D) to the average speed for the same door weight in Table 1. If the calculated speed is greater than the speed in Table 1, the doors closing speed (refer to Figure 3 and item 7 on Page 4) must be fine-tuned until you match the speed in Table 1. **NOTE:** The speed can be less than or equal to the required speed in Table 1.

Bi-Parting Sliding Door

- a) Determine the weight of one door complete with glazing and accessories.
- b) With a stop watch, calculate the time(seconds) required for the door to close from a point 1" from the full open position to a point 1" from the center of the opening.
- c) Measure the distance between the two points (feet).
- d) Divide the distance (feet) by the time (seconds). The result is the average speed of the door in feet per second.
- e) Use the door weight from Soap A - Compare the average speed (your calculation from Soap D) to the average speed for the same door weight in Table 1. If the calculated speed is greater than the speed in Table 1, the doors closing speed (refer to Figure 3 and item 7 on Page 4) must be fine-tuned until you match the speed in Table 1. **NOTE:** The speed can be less than or equal to the required speed in Table 1.

TABLE 1

**DOOR WEIGHT
POUNDS**

**MAX. ALLOWABLE
CLOSING SPEED
FT./SECOND**

0 - 160
161 - 170
171 - 180
181 - 190
191 - 200
201 - 210
211 - 220

1.00
0.97
0.94
0.92
0.89
0.87
0.85



FIGURE 5