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Other Languages:	NONE	**Author**:	Brandon Akridge
Viewed:	6319		

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Title: Bus Door Adjustment procedure for Electric and Air

Applies To: BE, CE, and RE Bus Models Built 9/15/11 or later

Change Log

Dealers: Please refer to the change log text box below for recent changes to this article:

03/12/2019 - update info on bent limit switches
02/26/2019 - updated note about door adjustment warranty, and added information about service part for latest limit switch
01/15/2019 - added info relative to door going past 90 degrees open
12/11/2017 - Updated to include non adjustable micro switch electric door
11/18/2015 - Updated author for feedback purposes.

Description

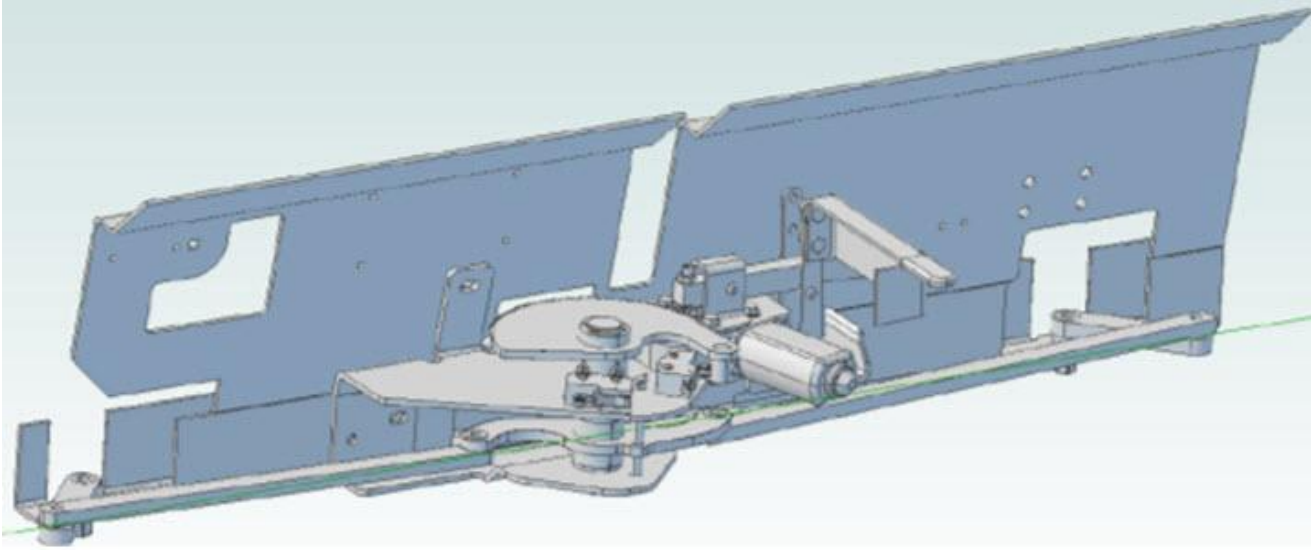
- Adjustment procedure for:
  - Electric Operated Doors built 9/15/2011 and later (adjustable micro switches)
  - Electric Operated Doors built after 1/16/2016 (nonadjustable micro switches)
  - Air Operated Bus Doors built 9/15/2011 and later
- NOTE: Door adjustment is part of the normal Dealer PDI and a maintenance item in the Operators manual. It is not a warrantable item.

Symptoms

- **Electric Door** - motor failures, water leaks, header box fit, bent adjustment rods, poor link arm clearance, motor gets hot, bent limit switches
- **Air Door** - doors blow open at highway speeds/high cross winds, poor closing force, water leaks, header box fit, poor link arm clearance, poor vandal lock operation, bent adjustment rods

Resolution

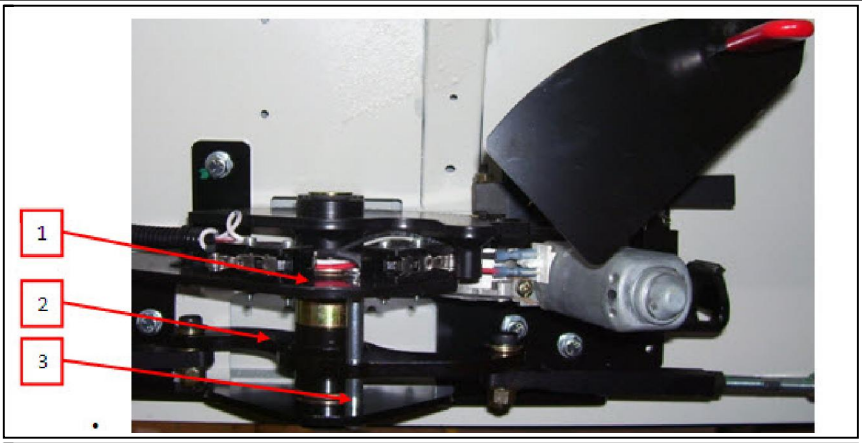
Electric Door



- **Power OFF**
- **Door Closed**
  - Visually inspect actuator assembly
  - All fasteners should be properly tightened
  - Adjustable tie-bars should be straight
  - No interferences should be found in the moving components to the frame assembly
  - Gear plate to base assembly should be positioned near the mechanical stop
  - Base assembly closed alignment holes should be closely aligned allowing a 3/8” pin to be installed through the base assembly components

NOTE:

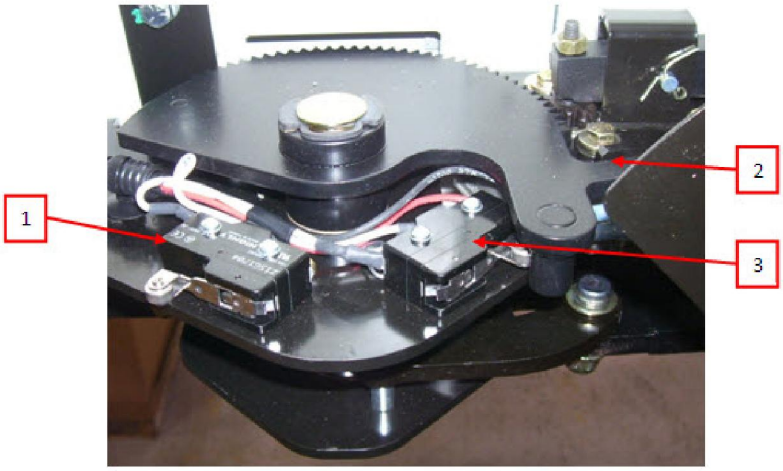
Installation of the 3/8” pin is typically not required unless the door actuator assembly is being replaced requiring initial tie-bar adjustment. After final adjustment, the alignment holes will not be perfectly aligned.



1. Base Assembly
2. “S” Cam
3. 3/8” pin

  - **For Adjustable switches**--Adjust closed micro switch outward to allow addition travel if required to gain travel toward the mechanical stop.

- **For Non-Adjustable switches**--Adjust tie-rods to gain more travel toward the mechanical stop.



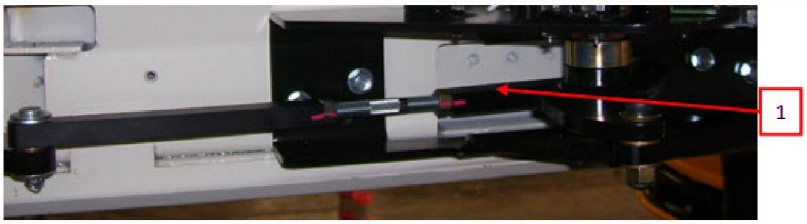
1. Open Micro Switch
2. Closed Mechanical Stop
3. Closed Micro Switch

- **Power OFF**
- **Door Open**
  - Visually inspect actuator assembly
  - No interferences should be found in the moving components to the frame assembly
  - Gear plate to base assembly should be positioned near the mechanical stop (Located on the underside of the gear plate)
  - (For Adjustable switches) Adjust open micro switch outward to allow addition travel if required to gain travel toward the mechanical stop
  - (For Non-Adjustable switches) Adjust tie-rod to gain additional travel toward mechanical stop

NOTE:

If the open or closed position referenced above is not achieved, loosening of the tie-bars or adjustment of the cylinder may be required

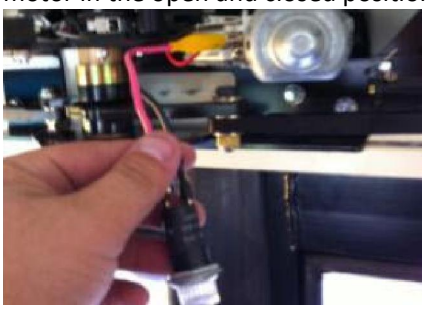
- **Power ON**
- **Door Closed**
  - Adjust aft door tie-bar to position aft door parallel to the upper door casing. Upper door casing seal should be compressed evenly across the aft door surface
  - Adjust forward door tie-bar to position forward door parallel to the upper casing. Upper door casing seal should be compressed evenly across the forward door surface

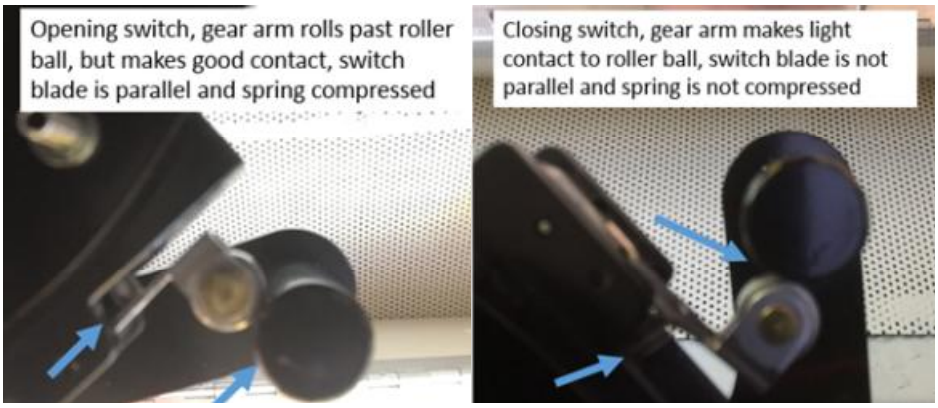


1. Tie-Bar Assembly (Forward Shown)

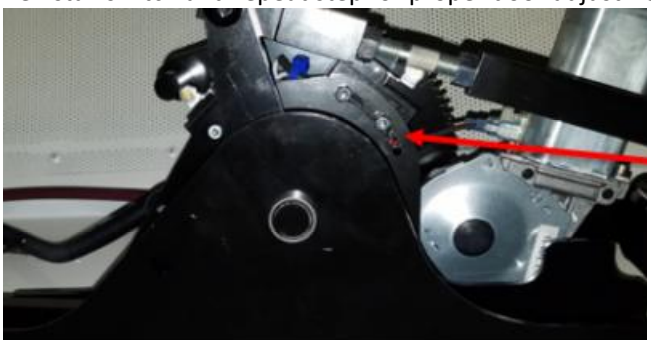
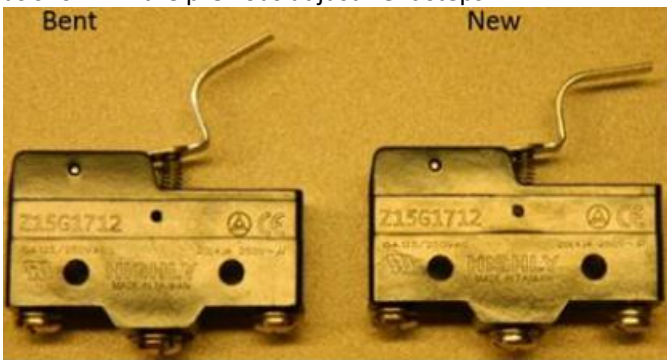
Upper Door Casing Seal Evenly Compressed

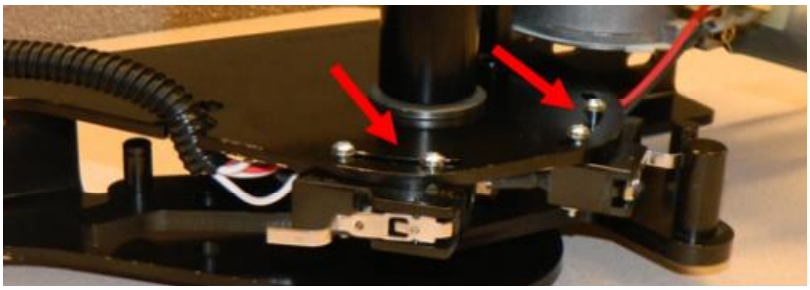
- (For Adjustable switches) Adjust closed micro switch. Micro switch position should disengage power to the motor as the door achieves the full closed position
- (For Non-Adjustable switches) Adjust tie-rods to ensure power to the motor is off.

- **Power ON**
- **Door Open**
  - Adjust open micro switch. Micro switch position should disengage power to the motor as the door achieves the full open position
  - Verify door achieves 85 to 90 degree opening (door can go past 90 as long as it maintains a good seal and turns off micro switches)
  - Cycle door to confirm open and closed position is repeated and that no air gaps are seen
  - It is important that the motor is not running when door is in stopped positions. Install a test light on the motor or use a digital multi meter to confirm the open and close micro switch is disengaging power to the motor in the open and closed position. Test light should only be ON as the door is in transition
  - 
  - (**For Adjustable switches**) If light comes on, move switch location until light is not coming on when door is the open and closed positions. See illustrations below for good and bad engagement of switches.
  - (**For Non-Adjustable switches**) If light comes on, adjust tie-rods slightly to gain good contact with switch. See illustrations below for good and bad engagement of switches.

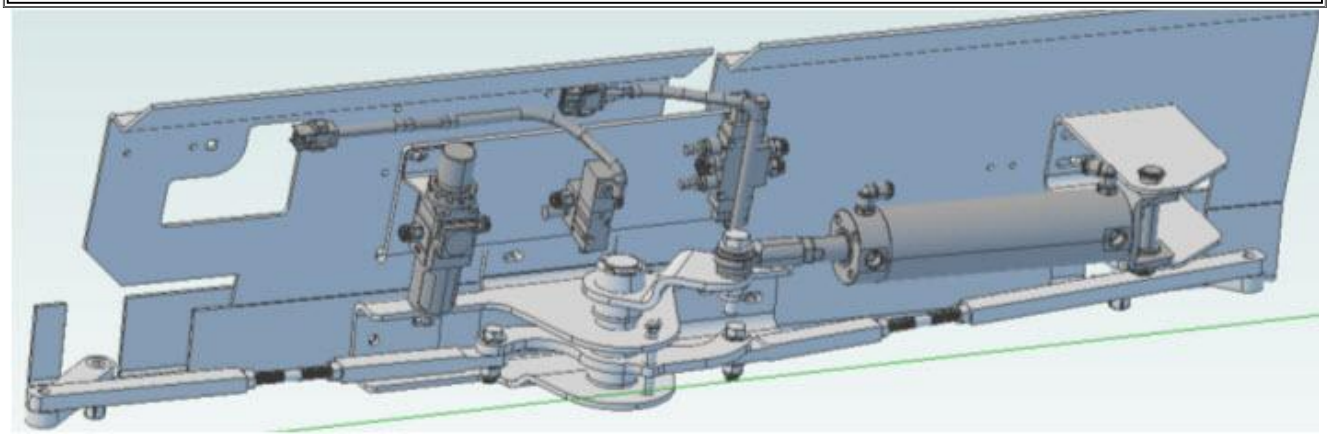
- 

- If having a hard time obtaining sufficient contact, a nominal starting position of 2.10" between both tie-rod arms can be used to begin adjustments
- 

- If unable to achieve proper engagement of micro switches, then measure needed distance to center (or slightly past as shown above) gear arm on roller, this will be the distance needed to move switch.
- Remove micro switch and drill new holes .177" or slot the distance measured in last step from existing holes
- Reinstall switch and repeat step for proper door adjustment.
- 
- **CAUTION**: Please not that a bent limit switch, even bending the switch blade as slightly as shown below, can cause other problems. The limit switches <u>should not</u> be modified, please use the slots to move them as shown in the previous adjustment steps.
- 

- If you have a damaged limit switch, please replace with the latest switch shown below. It is part 2520685c1.
- 
- If new limit switch is not available, you can order the wire harness that contains 2 switches. Harness parts listed below
2519879C1	K133413	WIRE HARNESS WITH SWITCH CE
2519880C1	K133414	WIRE HARNESS WITH SWITCH RE
- 

Air Door



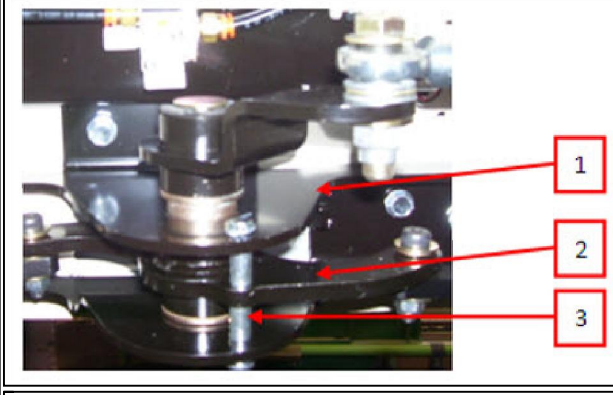
- **Power OFF**
- **Door Closed**
  - Visually inspect actuator assembly
  - All fasteners should be properly tightened
  - Adjustable tie-bars should be straight
  - Air lines should not be kinked
  - No interferences should be found in the moving components to the frame assembly

- **Power OFF**
- **Door Open**
  - Visually inspect actuator assembly
  - No interferences should be found in the moving components to the frame assembly

- **Power ON**
- **Door Closed**
  - Base assembly closed alignment holes should be closely aligned allowing a 3/8” pin to be installed through the base assembly components
  - No interferences should be found in the moving components to the frame assembly

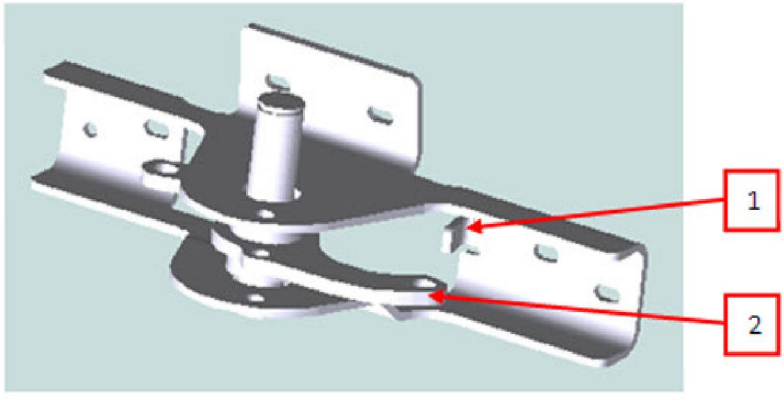
NOTE:

Installation of the 3/8” pin is typically not required unless the door actuator assembly is being replaced requiring initial tie-bar adjustment. After final adjustment, the alignment holes will not be perfectly aligned.



1. Base Assembly
2. “S” Cam
3. 3/8” pin

- **Power ON**
- **Door Open**
  - No interferences should be found in the moving components or the frame assembly
  - “S” cam should be positioned near the base assembly mechanical stop

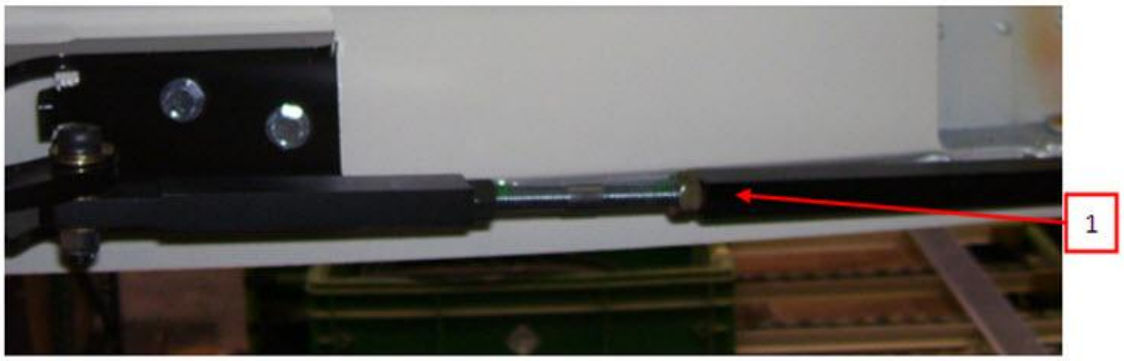


1. Base assembly mechanical stop
2. “S” Cam

NOTE:

If the open or closed position referenced above is not achieved, loosening of the tie-bars or adjustment of the cylinder may be required

- **Power ON**
- **Door Closed**
  - Adjust aft door tie-bar to position aft door parallel to the upper door casing. Upper door casing seal should be compressed evenly across the aft door surface
  - Adjust forward door tie-bar to position forward door parallel to the upper casing. Upper door casing seal should be compressed evenly across the forward door surface



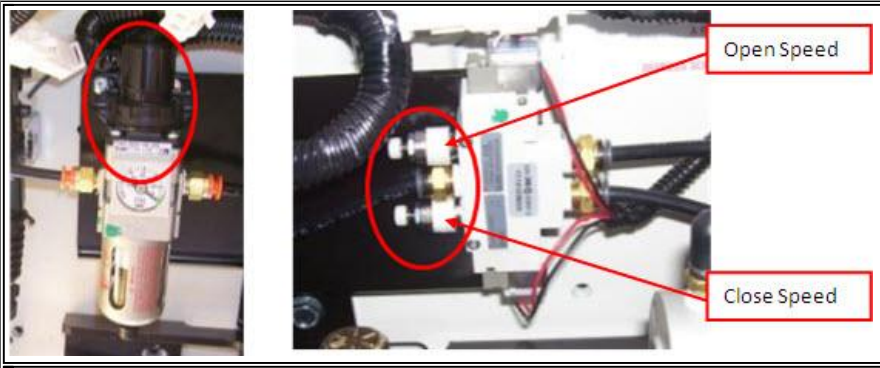
1. Tie-Bar Assembly (Aft Shown)

Upper Door Casing Seal Evenly Compressed

- **Power ON**
- **Door Open**
  - Verify door achieves 85 to 90 degree opening (door can go past 90 as long as it maintains a good seal)
  - Verify “S” cam is not making hard contact with base assembly mechanical stop
  - Cycle door to confirm open and closed position is repeated and that no air gaps are seen
  - Operation of the door should not result in the air cylinder reaching the end of the cylinder stroke in either the open or closed cycle
  - If the air cylinder is bottomed out in the closed position, the actual force applied to the doors will be reduced. In the open position, the amount of travel can be reduced if the air cylinder has reached full stroke

- **Air Regulator/Filter Assembly**

- Regulator is factory set at 60 psi. Regulator pressure can be increased between 60 psi to 100% system pressure by adjusting the regulator. In areas with high cross winds, adjusting the regulator to full system pressure will assist in eliminating door flutter and gaps during transport
- When increasing the air pressure, the open and close speed controls also need to be adjusted to maintain door operating speeds



All air door components are rated to operate within the air system operating pressure

NOTE:

Customer should be informed the regulator gauge is not inoperative when the regulator pressure is increased past the 60 psi setting

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