Maintenance
Rapid Sliding Door

Vehicle Type:	
Vehicle Number:	
Customer:	

INSTRUCTIONS

This guide is meant for the maintenance of the door system. It is important to follow all instructions. All instructions must be conducted without pressure. Adjustments which pressure is needed, will be mentioned. The instructions should be executed for the left and the right door.
How often you need to do maintenance on the door system can be seen in the table below.

Use	Times per day open/close	Frequent Maintenance
Normal	0-230	1x per year
Mid-Heavy	230-350	2x per year
Heavy	350-….	3x per year

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1. MAINTENANCE DOOR

1.1 ADJUST THE DOOR TO BE PARALLEL TO THE PORTAL

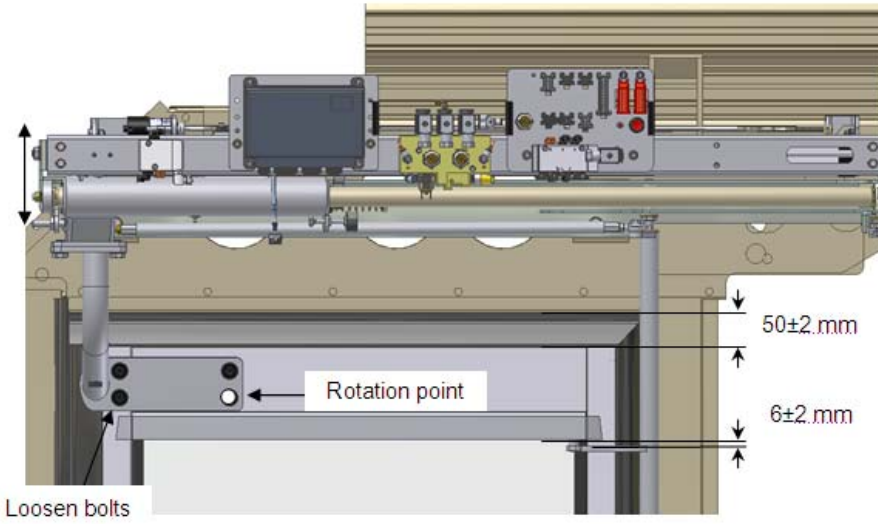


Figure: Adjust height / make movement door parallel

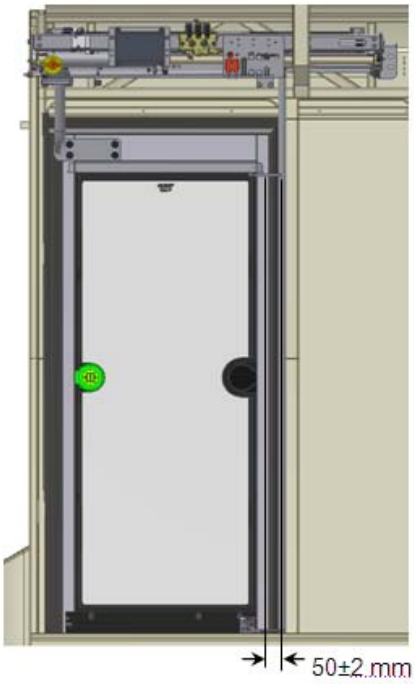


Figure: Door parallel to the portal

Nr.	Check	Checked by:
1.	Check if door moves parallel, the space between the upper rail and the upper lever has to be constantly ± 6mm when the door opens.	
2.	Check the height of the door leaf, the space between the portal and the top profile of the door is 50mm.	
3.	Check if the door leaf is parallel with the step edge.	

1.2 DOOR SHAFTS

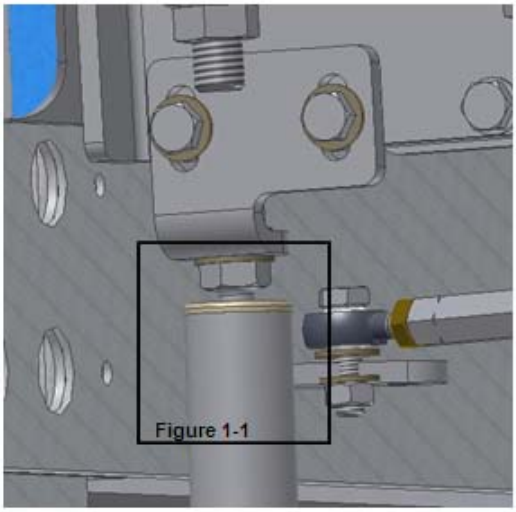


Figure 1: Door shaft

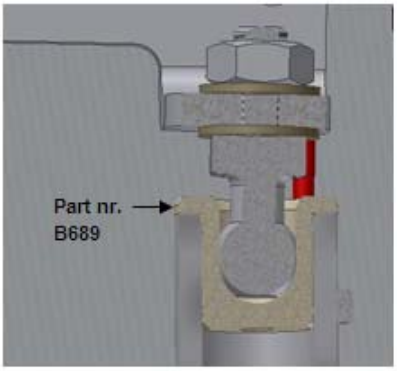


Figure 1-1: Detail Door shaft. Bearing bush

Nr.	Check	Checked by:
1.	Check that the bearing bush is not broken. If broken replace part.	

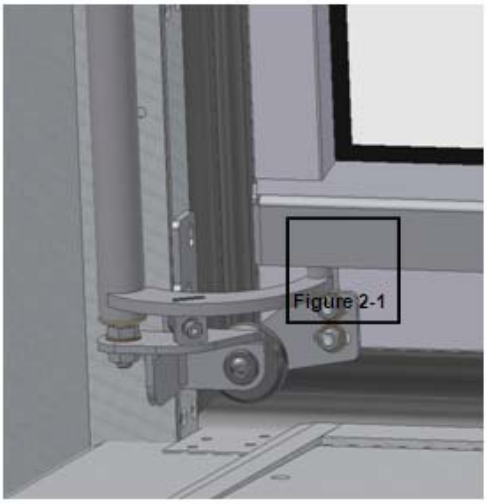


Figure 2: Door shaft

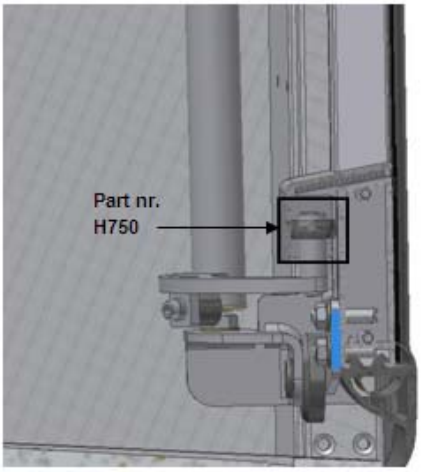
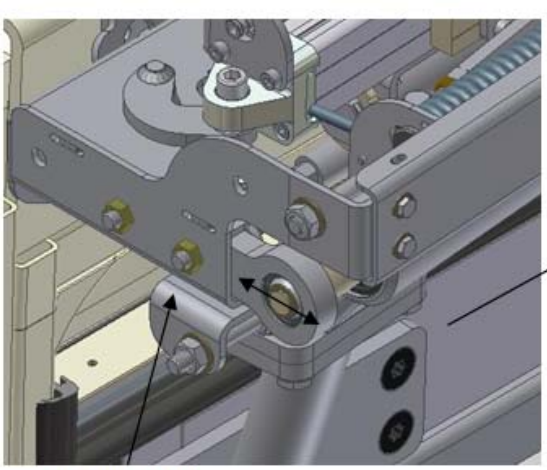


Figure 2-1: Detail Door shaft, Guide roller

Nr.	Check	Checked by:
2.	Check that the guide roller is not broken. If broken replace part.	

1.3 DOOR SEAL



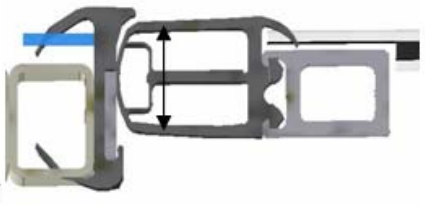


Figure **2**: moving leading edge

Figure **1**: Adjust bearing plate

Nr.	Check	Checked by:
1.	Check if the door seal fits in the portal seal (the door glass and side of the bus are in one line)	
2.	If necessary adjust the bearing plate to move the leading edge of the door inside or outside.	

1.4 END STOP CLOSED POSITION

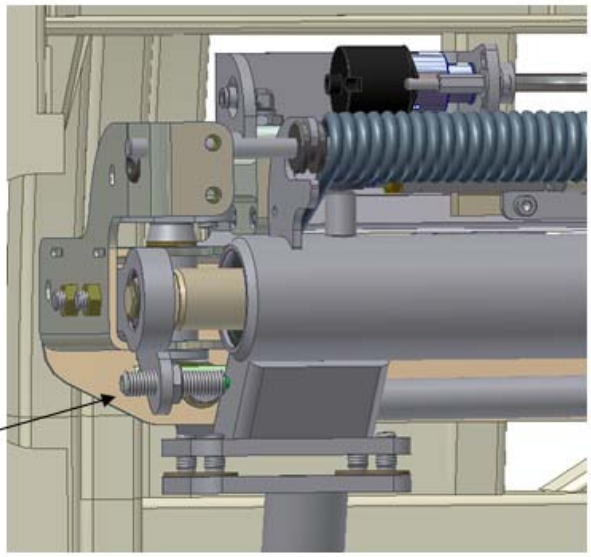
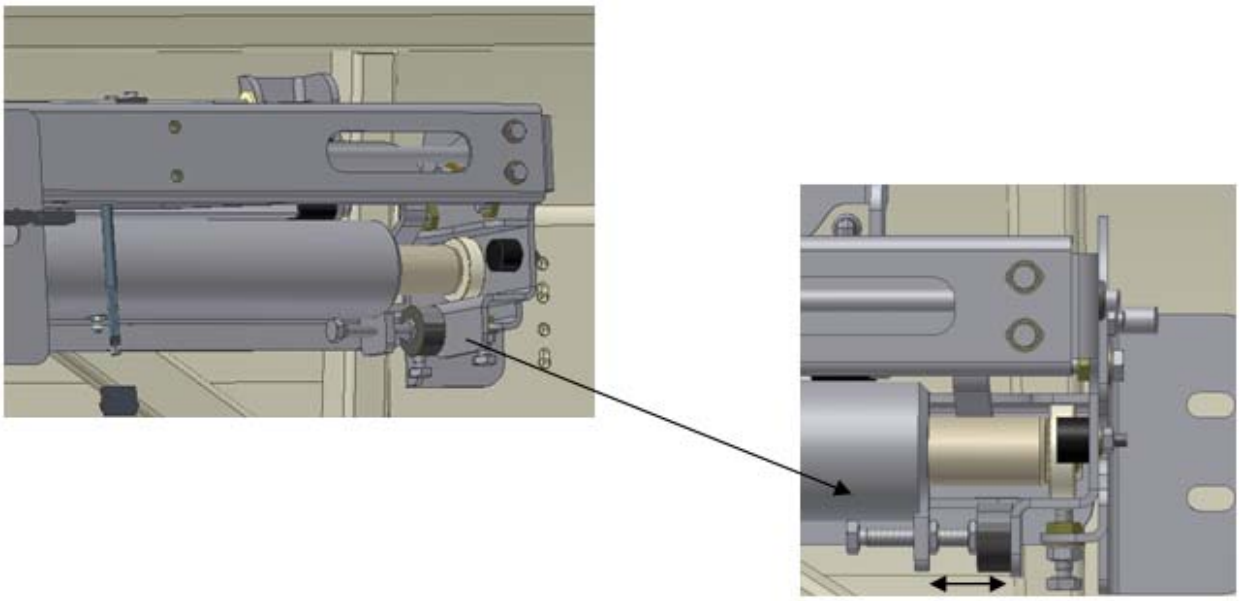


Figure: Adjust end stop in closed position

Nr.	Check	Checked by:
1.	Put the door in closed position on air pressure. Adjust bolt until the door is in the right position.	

1.5 END STOP OPEN POSITION



Nr.	Check	Checked by:
1.	Put the door in open position. Adjust both end stops against the roller and the end plate until they deliver a little force.	

1.6 PLAY DOOR SHAFT

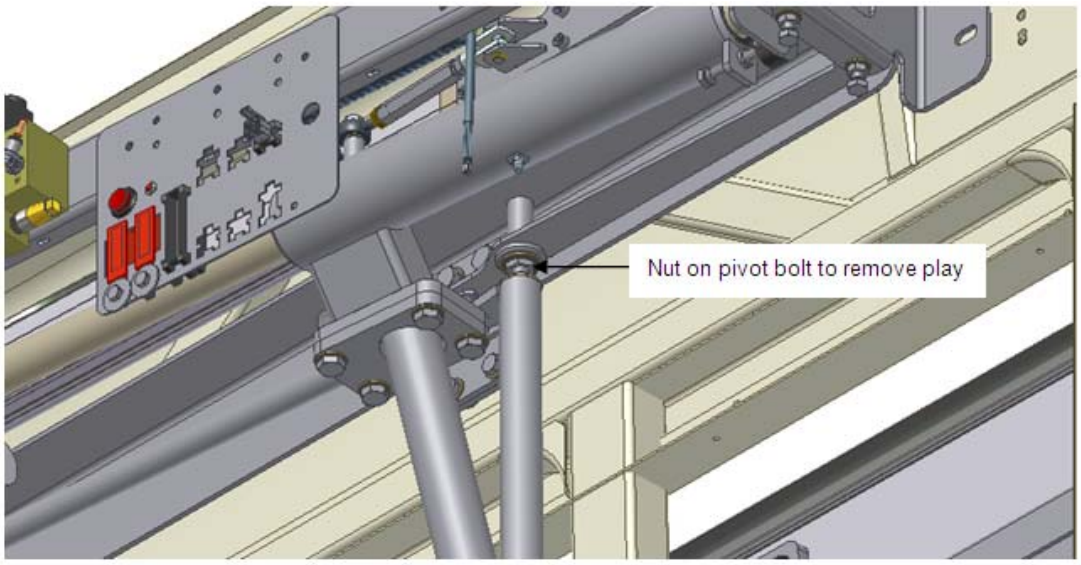


Figure: Adjust pivot bolt to remove play on door shaft

Nr.	Check	Checked by:
1.	Adjust the nut of the pivot bolt to remove play of the door shaft	

1.7 DOOR LEAF

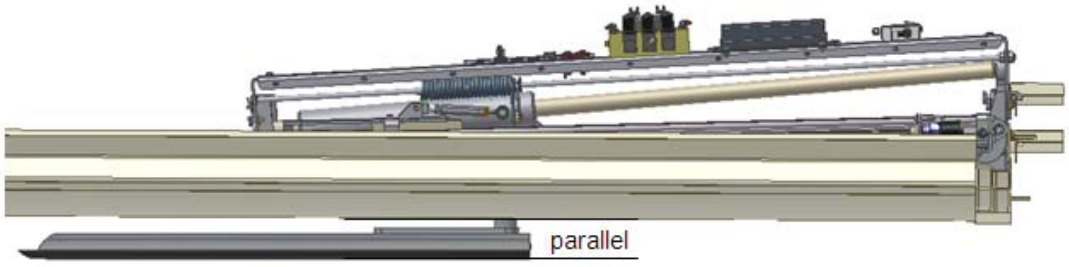


Figure 1: Door parallel to the bus

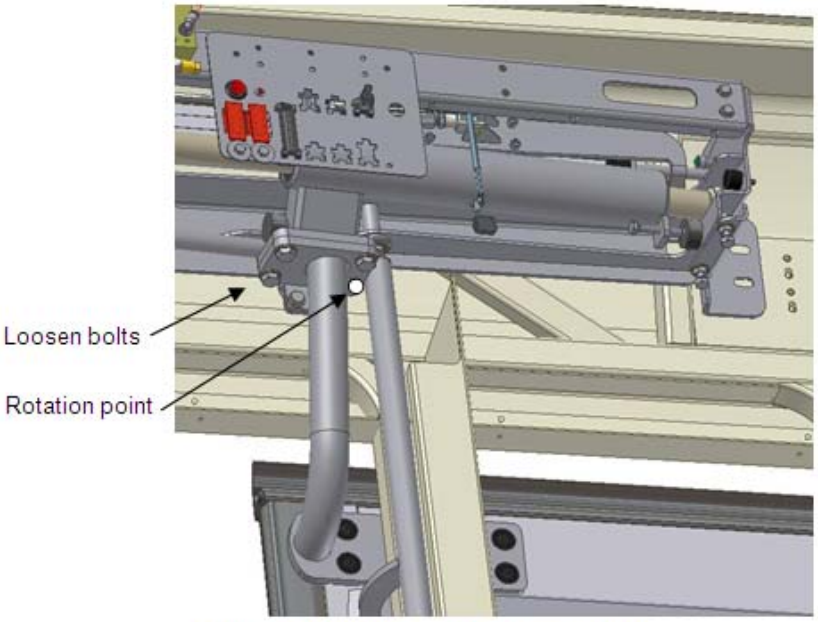


Figure: adjustment door parallel to the bus

Nr.	Check	Checked by:
1.	Check if the door and the side of the bus are parallel.	
2.	If necessary make the door parallel to the bus by rotating the door. Loosen bolts of the door arm on the bearing carriage.	

1.8 GREASING BEARING HOUSING

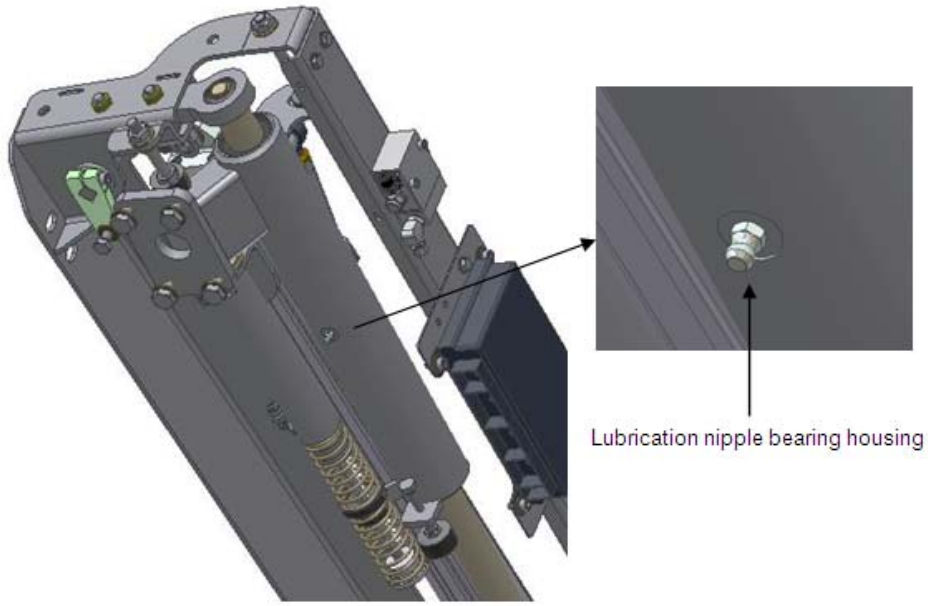


Figure: Apply multi purpose grease (Q8 Rembrandt EP2) to bearing housings

Nr.	Check	Checked by:
1.	- Greasing of the bearing housing. The housing is greased before delivering. (Advice: *multipurpose grease, Q8 Rembrandt EP-2*[1]). - Both bearing housings have to be refilled every year (Normal use, 20 gr. Grease.) - First 10 gr. grease after moving the door wing a few times, again 10 gr. grease).	

[1] NLGI 2
Multi-purpose lithium soap based greases with the **addition of an extreme pressure (EP) additive** to give excellent anti-wear properties for plain and anti-friction bearings operating under heavy or shock loaded conditions. Q8 Rembrandt EP greases provide for long service life and offers rust protection even in the presence of water. (http://www.q8oils.com/)

2. OPERATIONAL

2.1 OPERATION AND CONTROLS

Nr.	Check	Checked by:
1.	Open cycle, speed and cushioning (nominal 3,5 sec.)	
2.	Closing cycle, speed and cushioning (nominal 3,5 sec.)	
3.	Check the pneumatic system, open/close	
4.	Check the electric system, pushbuttons	
5.	Check that all bolts and nuts are properly tightened (See Torque settings chapter 3).	
6.	Check that the pressure between 7-9 bars is.	

2.2 SAFETY

Nr.	Check	Checked by:
1.	Check emergency controls.	
2.	Check pneumatic obstruction detection.	
3.	Check sensitive edges (if applicable).	
4.	Check potential finger traps.	

Signed on behalf of: Date:

3. TORQUE SETTINGS

Guidelines for mounting and securing joints with steel bolts. In the tables below are the Torque M_a values given for bolts with nominal dimensions over full thread (no special bolts) with metric thread of hexagon bolts type DIN931, DIN933, DIN912 and TORX. The Torque of bolts depends of friction coefficients of materials, surface treatments, surface conditions, fabrications methods etc. The values in tables below are values which correspond most with the practice, Torque dry.

Table 6: Torque chart for Hex. Bolts Zinc plated **in Nm**[2] [3]

	Class 8.8
Size	**Torque dry (Nm)**
M5 pitch 0.8	6
M6 pitch 1.00	10
M8 pitch range (1.25 - 1.00)	25 - 27
M10 pitch range (1.50 - 1.00)	51 - 57
M12 pitch range (1.76 - 1.25)	87 - 96
M14 pitch range (2.00 - 1.50)	140 - 150
M16 pitch 2.00	215

NOTE: Torque of the bolts depends of pitch size, the lowest value in the table refers with the biggest pitch of the bolt.

4. REMARKS

[2] Torque values according http://www.imperialinc.com/pdf/A_FastenerTorqueCharts.pdf
[3] Torque values according Fabory, values correspond with friction coefficient μ_k=0.14, most common, Faborycentres issue 04, 15092002, page 15-37-1, 15-37-2.