

## Test Report

Report No. : 2016-TBC-70  
Customer : 3G Technologies Co., Ltd.  
Representative : Lee, Sang Do  
Address : #410-1 Ssangjung-ri, Eumseong-Gun,  
Chung Buk, Korea.  
Sample Name : Lift Sliding System Hardware 400V

Hereinafter we present the test report as a result onto the tested sample was provided from the customer.

Dec. 29. 2016

Korea Testing & Research Institute

President *Byun, Jong-Rip*

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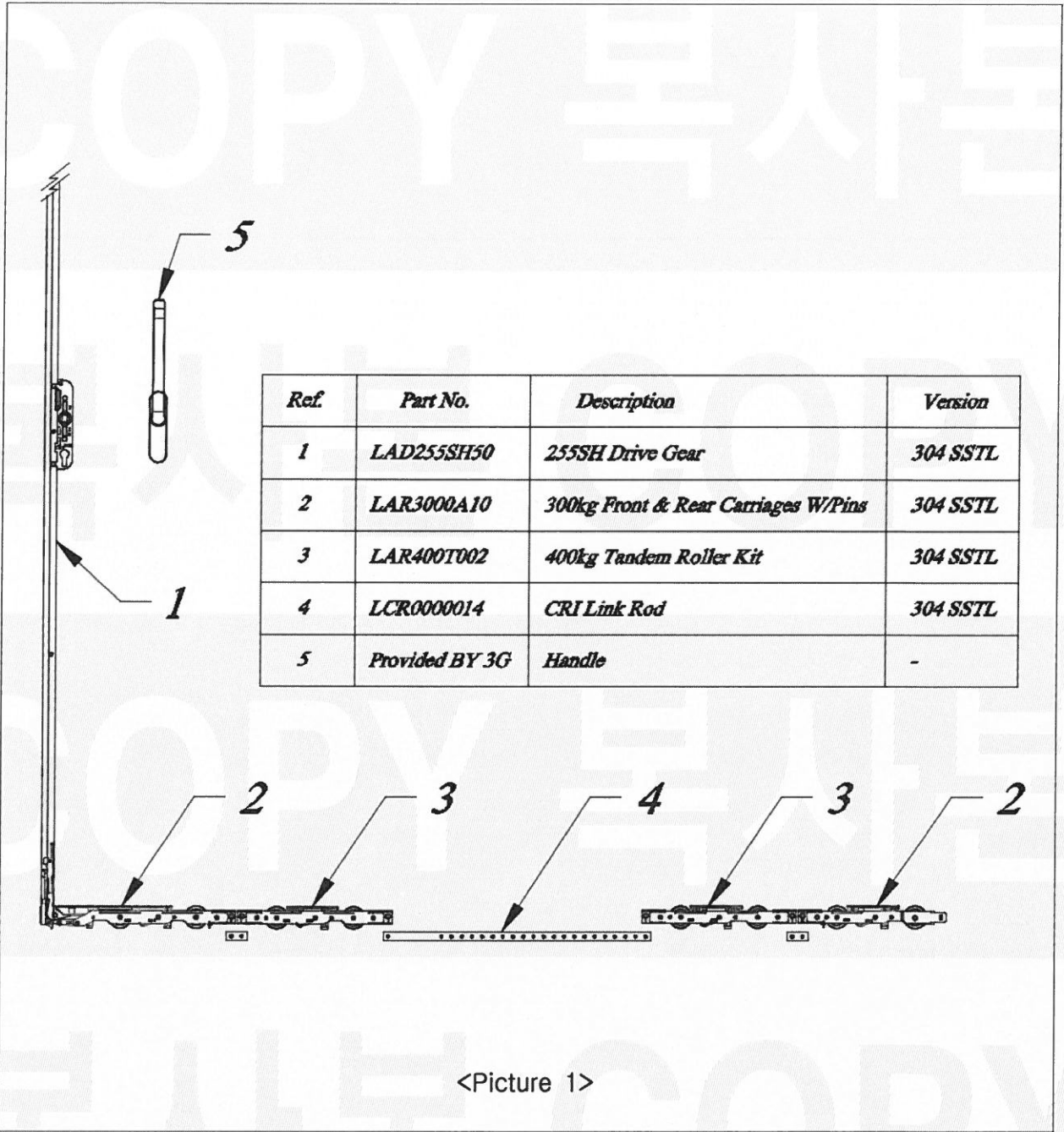
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1. Sample Name : Lift Sliding System Hardware 400V

2. Testing Date : Oct. 19. 2016 ~ Dec. 29. 2016

3. Test Purpose : To confirm the durability for 400 kg(3,920 N) weight product  
(System Hardware)

4. Structure of Goods : The specific structure of the used sample for this test was  
same as picture #1.



<Picture 1>

- Max. Application size
  1. Height : 3,100 mm
  2. Width : 6,000 mm
- Min. Application size
  1. Height : 1,000 mm
  2. Width : 1,320 mm
- Max. Application weight : 400 kg(3,920 N)

## 5. Test Method

### 5.1 Driving test equipment (Durability tester)

Name of test equipment	L/S drive tester	
Size(mm)	L3,000 X W750 X H2,570	
Drive way	Type: cylinder air supply	

<Picture 2>





### 5.2 Test condition

Driving number(times)	100,000 times
The load weight of window system(kg)	3,920 N (400 kg)
Window size(mm)	L1,500 x H3,000
Time of 1 cycle	50 sec.

### 5.3 Test method

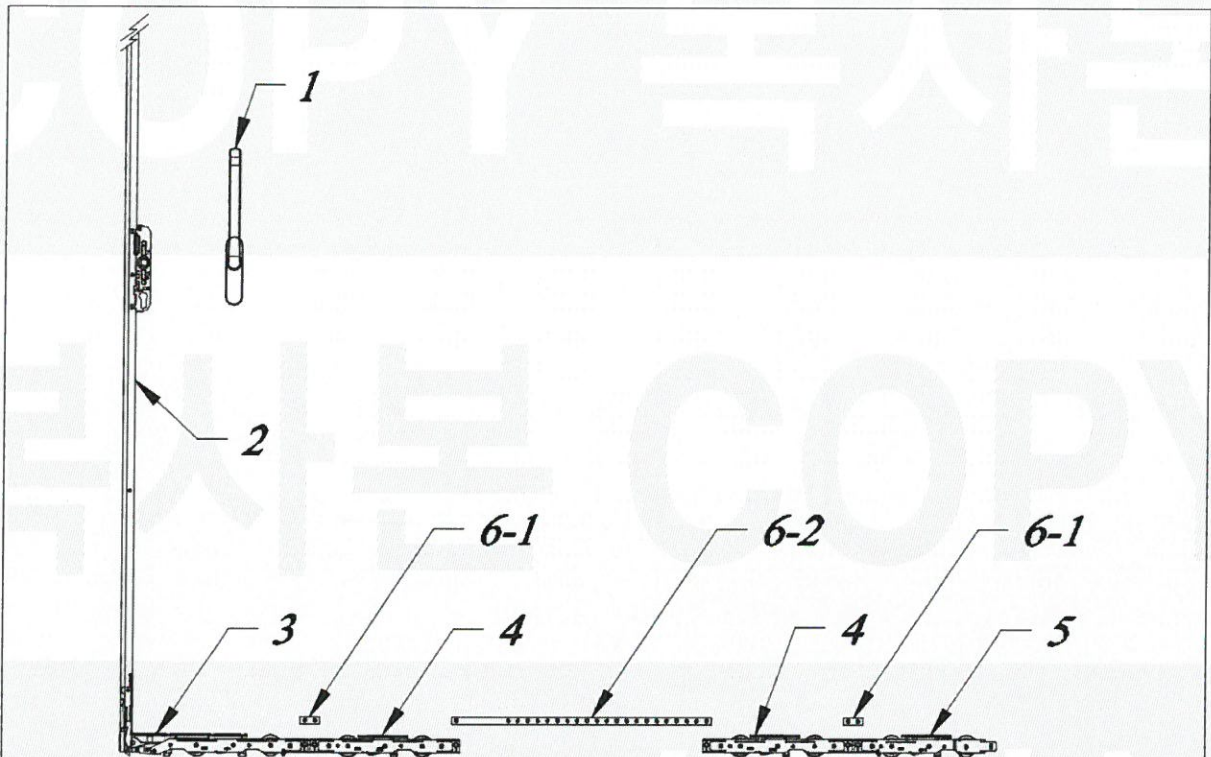
5.3.1 Driving test is performed with using the durability tester of clause 5.1 in accordance with the test condition of clause 5.2. to do the drive back & force for 100,000 times. (ref. Picture #3)

5.3.2 After completion of driving test for 100,000 times, according to the particular parts criterion of clause 5.4, the operation and exterior condition will be confirmed by physical eye inspection. (ref. Picture #4)

1. Window driving	
2. Window lock	
3. Window open	
4. On driving window	

<Picture 3>












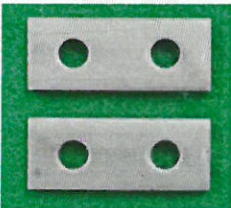
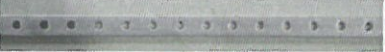

## 5.4 Particular partial criterion



<Picture 4>

No	Parts	Test clause	Criterion
1	Handle	Operation	Estimate no defect
		Appearance	Estimate no damage
2	Drive gear	Operation	Estimate no defect
		Appearance	Estimate no damage
3	Front Corner Drive	Operation	Estimate no defect
		Appearance	Estimate no damage
4	Tandem bogie	Operation	Estimate no defect
		Appearance	Estimate no damage
5	Rear bogie	Operation	Estimate no defect
		Appearance	Estimate no damage
6-1	Link plate	Appearance	Estimate no transform
6-2	Connecting rod	Appearance	Estimate no transform

## 6. Test result

Name of part	Before testing	After testing	Result
Handle			Operation : <b>No defect</b> Appearance : <b>No defect</b>
Drive gear			Operation : <b>No defect</b> Appearance : <b>No defect</b>
Front Corner Drive			Operation : <b>No defect</b> Appearance : <b>No defect</b>
Tandem bogie			Operation : <b>No defect</b> Appearance : <b>No defect</b>
Rear Bogie			Operation : <b>No defect</b> Appearance : <b>No defect</b>
Link plate			Appearance : <b>No defect</b>
Connecting rod			Appearance : <b>No defect</b>



## 7. Synthesis

No	Name of part	Testing clause	Criterion	Tested result
1	Handle	Operation	Estimate no defect	No defect
		Appearance	Estimate no damage	No defect
2	Drive gear	Operation	Estimate no defect	No defect
		Appearance	Estimate no damage	No defect
3	Front corner drive	Operation	Estimate no defect	No defect
		Appearance	Estimate no damage	No defect
4	Tandem bogie	Operation	Estimate no defect	No defect
		Appearance	Estimate no damage	No defect
5	Rear bogie	Operation	Estimate no defect	No defect
		Appearance	Estimate no damage	No defect
6-1	Link plate	Appearance	Estimate no transform	No defect
6-2	Connecting rod	Appearance	Estimate no transform	No defect

## 8. Consideration

THE HANDLE OF LIFT SLIDING HARDWARE SYSTEM is available to open & close the window by rotating  $0^{\circ}\sim 180^{\circ}$  and it has also a double locking system by the installed locking device of windowsill.

Thus, to verify the durability of 400 kg(3,920 N) window hardware, it had been tested by driving it back & force for 100,000 times and then the operation & exterior performance of each particular parts(handle, drive gear, front corner drive, tandem bogie, rear bogie, link plate and connecting rod etc.) was confirmed to proper to the requested criterion which was provided by the client as a test result.

## 9. Reference

- ◆ 3GQS-9123(Lift sliding system durability test standard, 3G Technologies Co., Ltd.)
- ◆ KS F 4534 : 2011(Fittings for sash windows)