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Retention force between header assembly & PCB of  
Grace Inertia Connector 2.5 Mark II

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## 1. INTRODUCTION

Test was performed on 4Pos. GI2.5 Mark II product to determine the retention & locking force of the connector. Test was performed at the TE Shanghai Electrical Components Test Laboratory. The test file number for this testing is SECT13-1161-TG1-S2 / SECT13-1161-TG2-S2 / SECT13-1161-TG3-S2. This document is on file and available from the DM.tec.

## 2. TEST SPECIMENS

Test#	Quantity	Part Number	Description
#1	2sets	4-1971798-1	NEW GI CONN2.5 HDR ASMBLY 4P NC D1.0
#2	6sets	4-1971798-1	NEW GI CONN2.5 HDR ASMBLY 4P NC D1.0
		4-1971793-1	NEW GI CONN2.5 PLUG HSG 4P NC
#3	6sets	4-1971798-1	NEW GI CONN2.5 HDR ASMBLY 4P NC D1.0
		4-1971793-1	NEW GI CONN2.5 PLUG HSG 4P NC

## 3. SPECIMEN PREPARATION

For the locking strength test, the connectors was assembled with all components & wire and then soldered on PCB. The wire used is AWG26# after crimping with Rec. contact. All connectors was numbered.

## 4. ENVIRONMENTAL CONDITIONS

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15°C to 35°C

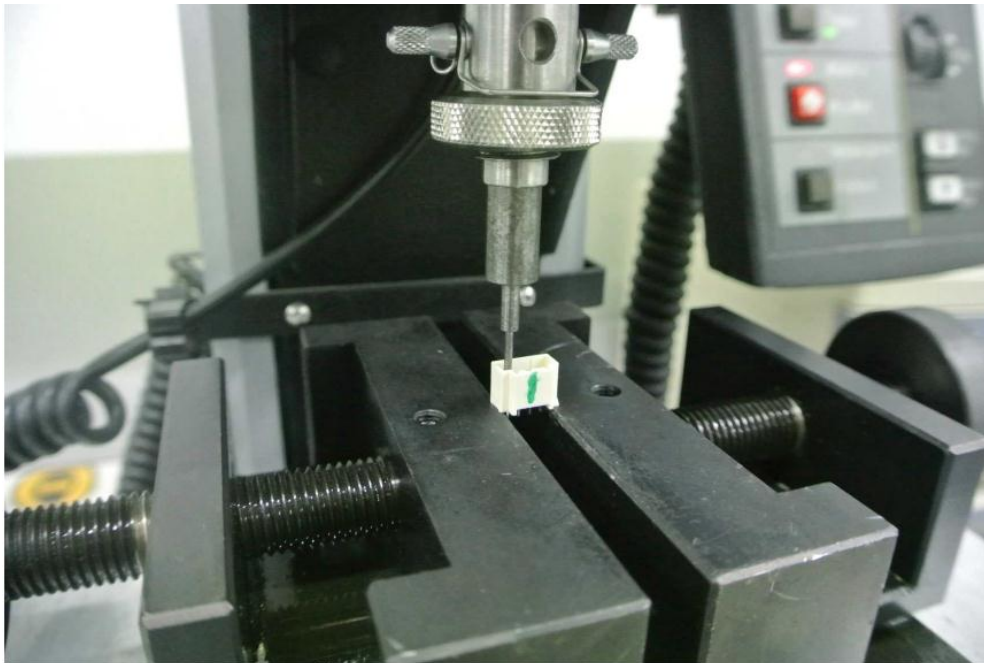
Relative Humidity: 25% to 75%

## 5. TEST PROCEDURE

### 5.1. Post contact retention force

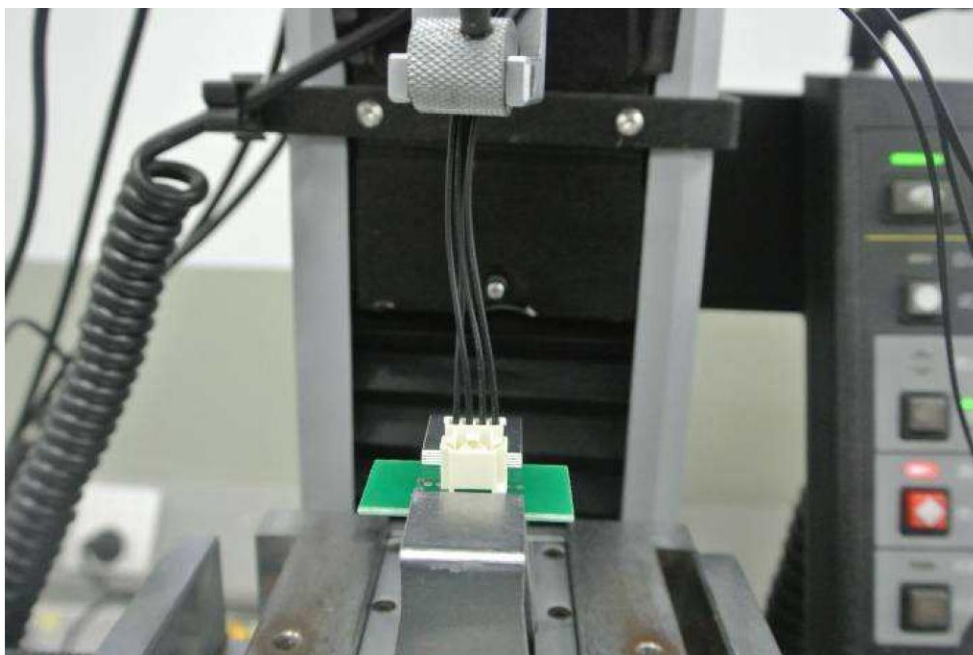
Reference per 3.5.15 in 108-106077. The tested header assembly sample was put on a test bench that with a slot, which bench was fixed on the basement of Instron testing equipment. Then adjust the protrusion test pin to make it align with the post pin inside of the header assembly to push the post pin, when the post pin was pushed out of header housing or the post pin was deformed or bended that can't continue to get align with the test pin, the test

got complete to check the measured peak force value. The test speed was noted at 100mm/min in the compression mode.



## 5.2. HOUSING LOCKING STRENGTH @90° VERTICAL.

Reference per 3.5.14 in 108-106077. The tested connector assembly sample that soldered on PCB was attached on a test bench that with a slot, which bench was fixed on the basement of Instron testing equipment. Then fasten the wire with jig that attached on Instron testing equipment on top side. When wires were pulled out or plug housing pulled out or header assembly pulled out from PCB, the test got complete to check the measured peak force value. The test speed was noted at 100mm/min in the tensile mode. The pulled direction is 90° vertical.



### 5.3. HOUSING LOCKING STRENGTH @45° SLANT.

Reference per 3.5.14 in 108-106077 . The tested connector assembly sample that soldered on PCB was attached on a test bench that with a slot, which bench was 45° fixed on the basement of Instron testing equipment. Then fasten the wire with jig that attached on Instron testing equipment on top side. When wires were pulled out or plug housing pulled out or header assembly pulled out from PCB, the test got complete to check the measured peak force value. The test speed was noted at 100mm/min in the tensile mode. The pulled direction is 45° slant.



*\*Instron is a trademark.*

## 6. TEST RESULT

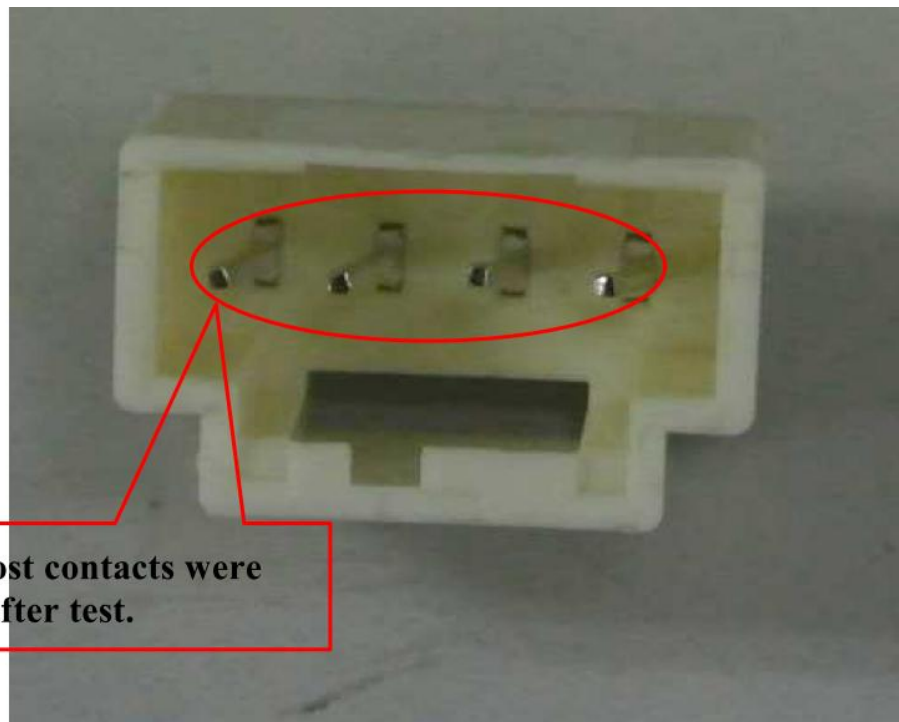
### 6.1. Visual Examination

Specimens were visually examined using the naked eye under cool white fluorescent lighting. No defects that could affect the mechanical form, fit, or function were observed before the test.

6.2. Post contact retention force

Test date: Jan.04, 2014

Post retention force Unit: N		
Pin	Sample 1#	Sample 2#
1	>98.4	>98.7
2	>102.6	>95.9
3	>103.0	>105.3
4	>107.5	>100.5
Max.	>107.5	>105.3
Min.	>98.4	>95.9
Average	>102.9	>100.1
Spec.	19.6N Min.	
Judgment	Meet Spec.	
Remark:">"	All the post pin were warped after test. See Fig. below	

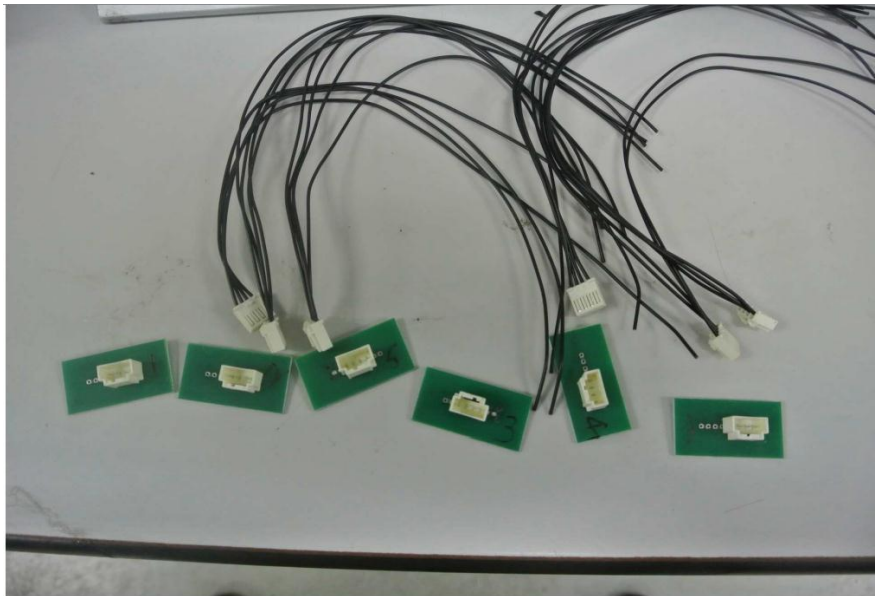


**All the post contacts were warped after test.**

6.3. HOUSING LOCKING STRENGTH @90° VERTICAL.

Test date: Jan.04, 2014

Housing locking strength @90° vertical Unit: N						
Sample #	1	2	3	4	5	6
Force	106.0	105.6	108.6	102.9	102.6	103.3
Max.	108.6					
Min.	102.6					
Ave.	104.8					



**6.4. HOUSING LOCKING STRENGTH @45° SLANT.**

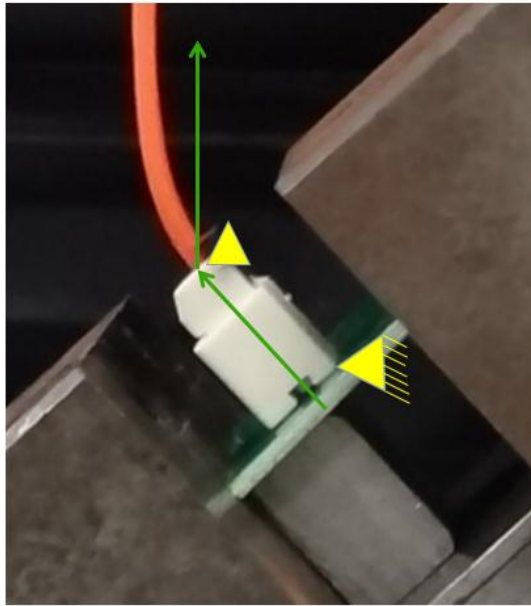
Test date: Jan.04, 2014

Housing locking strength @45° slant Unit: N						
Sample #	1	2	3	4	5	6
Force	116.9	117.3	115.2	117.6	116.0	116.9
Max.	117.6					
Min.	115.2					
Ave.	116.6					



**7. MECHANICAL FORCE LOAD CONDITIONS**

1. Shown as picture below, in fact the force load inside of the connectors should not has big difference with vertical direction even pull the header that mounted on PCB;



2. The force of post contact will directly be impacted by the pull force direction because of the force-lever of header housing & PCB, so, on this point we tested the force by two directions: 90° vertical & 45° slant as the data shown above.