NICOMATIC

NICOMATIC Test report summary

CMM Family

SHOCK Test

CREATIVE
INTERCONNECT
SOLUTIONS

I. Introduction

A. Purpose

The CMM connectors' family are manufactured to meet or exceed the requirements of **MIL-DTL-55302G standard**.

B. Scope

The object of this test is to assess the ability of electrical components to withstand severities of mechanical shocks.

The following data has been taken from NICOMATIC Qualification test report **QTR0936** and **QTR0937**.

C. Conclusion

The CMM connectors' family are **qualified** regarding **SHOCK** according to **MIL-DTL-55302G**.

Shock test according to MIL-DTL-55302F Test Condition G: 100g / Duration: 6 ms / Sawtooth

	Before Life test	After 500 Cycles	After Vibration and Shock
LF Contacts			
Visual Inspection	No evidence of cracking or breaking after the test		
Mating Force	2.7 N Max		
Unmating Force	0.2 N Min		
Contact Resistance	10 mOhm Max		15 mOhm Max
Low Level Contact Resistance			
HP Contacts			
Visual Inspection	No evidence of cracking or breaking after the test		
Mating Force	6 N Max		
Unmating Force	1 N Min		
Contact Resistance	3 mOhm Max		
Low Level Contact Resistance	3 mOhm Max	6 mOhm Max	3 mOhm Max

II. Test Method and Requirements

A. List of Test Samples

a. CMM 200 Series

- 201Y50L – LF male contacts Straight PCB _ 13507
- 202Y50 – LF female contacts Straight PCB _ C14764

b. CMM 220 Series

- 221V50FXX – LF male contacts 90° PCB _ 13507
- 222S50MXX – LF female crimp contacts _ C12468
- 222YL26MXX – LF male contacts Straight PCB _ C14810
- 221S26FXX – LF male crimp contacts _ 12969
- 221D00FXX-0008-3400CMM – HP30 male contacts 90° PCB _ 30-3400-CMM
- 222E00MXX-0008-4320 – HP30 female straight contacts on cable _ 30-4320
- 222Y08SXX-0004-4300CMM – HP30 + LF female contacts Straight PCB _ 30-4300-CMM + C14764
- 221S08FXX-0004-3308 – HP30 + LF male contacts Straight on cable _ 30-3308 + 12969
- 221S06FXX-0003-3320 – HP30 + LF male contacts Straight on cable _ 30-3320 + 12969
- 222S06MXX-0003-4308 – HP30 + LF female contacts Straight on cable _ 30-4308 + C12468

c. CMM 320 Series

- 321C057FXX – LF male crimp contacts _ 12960
- 322C057MXX – LF female crimp contact _ C13064-P
- 321V096FXX – LF male contacts 90° PCB _ 13507
- 322Y096MXX – LF female contacts Straight PCB _ C14812
- 341D000FXX-0018-340014 – HP22 male contacts 90° PCB _ 22-3400-XX
- 342E000MXX-0018-4310 – HP22 female straight contacts on cable _ 22-4310
- 342D000MXX-0048-430014 – HP22 female contacts Straight PCB _ 22-4300-14
- 341E000FXX-0048-3310 – HP22 male straight contacts on cable _ 22-3310

B. Requirements

According to **MIL-DTL-55302G** standard and **EIA-364-28E** test condition G:

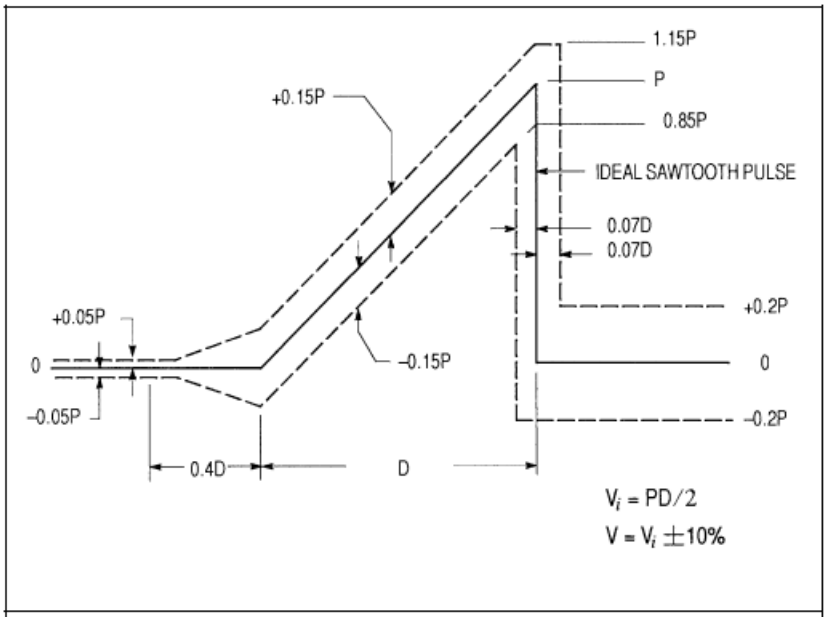
- When tested in accordance with follow conditions, there shall be no physical damage to the connector. During the test there shall be no interruption in continuity greater than one microsecond of the test circuit which incorporates mated contacts.
- Shock conditions shall be in accordance with the following conditions (condition G):

Test condition	Peak level		Normale Duration	Velocity change
	g_n	m/s^2	(ms)	Sawtooth
G	980	100	6	2.96 : 9.7

C. Test Method and Results

Test procedure:

Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The specified test pulse (half-sine or sawtooth pulse) shall be in accordance with figure 3, respectively, and shall have a duration and peak value in accordance with test conditions G.



NOTE - The oscillogram should include a time about 3D long with the pulse approximately in the center. The integration to determine the velocity change should extend from 0.4D before the pulse to 0.1D beyond the pulse. The peak acceleration magnitude of the sawtooth pulse is P and its duration is D. Any measured acceleration pulse that can be contained between the broken line boundaries is a nominal terminal-peak sawtooth pulse of nominal peak value, P, and nominal duration, D. The velocity-change associated with the measured acceleration pulse is V.

Figure 3 - Tolerances for terminal peak sawtooth shock pulse

Measurements:

Measurements are to be made on mated connectors before and after the required number of shocks unless otherwise specified, and during the test, if specified.

Unless otherwise specified in the Detail Specification, the electrical load conditions shall be 100 milliamperes maximum for all contacts.

Unless otherwise specified in the Detail Specification, **no discontinuities of one microsecond or greater duration are allowed**. A detector capable of detecting the specified discontinuity shall be used.

CMM equipped with	SHOCK		
	Axis		
	X	Y	Z
LF contacts	OK	OK	OK
HP 22 contacts	OK	OK	OK
HP 30 contacts	OK	OK	OK

	Before Life test	After 500 Cycles	After Vibration and Shock
LF Contacts			
Visual Inspection	No evidence of cracking or breaking after the test		
Mating Force	2.38 N Max	1.23 N Max	0.88 N Max
Unmating Force	0.53 N Min	0.42 N Min	0.22 N Min
Contact Resistance	5.88 mOhm Max	8.72 mOhm Max	10.6 mOhm Max
Low Level Contact Resistance	8.8 mOhm Max	9 mOhm Max	10.5 mOhm Max
HP Contacts			
Visual Inspection	No evidence of cracking or breaking after the test		
Mating Force	4.41 N Max	4.06 N Max	3.5 N Max
Unmating Force	2.25 N Min	1.71 N Min	3.73 N Max
Contact Resistance	1.42 mOhm Max	1.62 mOhm Max	1.63 mOhm Max
Low Level Contact Resistance	1.57 mOhm Max	3.5 mOhm Max	2.5 mOhm Max