

Σέρρες, 04-04-12

Αρ.Πρωτ.: 1344

## Test requirements according to FS045:2009 FIRA STANDARD 045

Testing object (name, type)  
Monitor support arm(Code:988-001-X00)

Inspector  
M. Fanariotis -TÜV AUSTRIA HELLAS

Receiving date of testing object  
28-03-2012

End or period of testing  
30-03-2012

Location of testing  
Dromeas S.A.  
Industrial Area of Serres  
621 21 Serres  
Greece

Testing fundamentals (optional)

FIRA STANDARD 045:2003

Statement to the testing result  
Conformity

Testing result

✓ = requirements are met  
✗ = requirements are not met  
— = requirements are not applicable

Serres



M. Fanariotis

Inspector

# Testing scheme for

Job-No.

Figure	Requirements	Notes	Testing result
FIRA STANDARD 045:2003 VDU Platform and Support Arm Performance Specification			
<b>1</b>	<b>General Test Conditions</b>		
<b>1.1</b>	<b>Tolerances</b>		
	Unless otherwise stated the following tolerances are applicable: forces: $\pm 5\%$ velocities: $\pm 5\%$ masses: $\pm 0.5\%$ dimensions: $\pm 1.0$ mm angles: $\pm 2^\circ$ The accuracy for the positioning of loading pads shall be $\pm 5$ mm. NOTE: Test forces can be replaced by loads.	<b>Force gauge</b> (Load cell 100kg) (Certificate N.: 02SK120209NA Date of Issue:09-02-12 ALGOSYSTEMS S.A.) <b>Electronic Balance</b> (Certificate N.: 01SK120216MC Date of Issue:20-02-12 ALGOSYSTEMS S.A.) <b>Compression Testing Machine</b> (Certificate N.: 04SK120216NC Date of Issue:20-02-12 ALGOSYSTEMS S.A.) <b>Digital Caliper</b> (Certificate N.: 03SK120209DA Date of Issue:09-02-12 ALGOSYSTEMS S.A.)	✓
<b>1.2</b>	<b>Conditioning</b>		
	The tests carried out in indoor conditions but, if during a test the atmosphere is outside the range of $15^\circ\text{C}$ to $25^\circ\text{C}$ , the maximum and/or minimum temperature shall be recorded in the test report.	Temperature range between $18^\circ\text{C}$ to $21^\circ\text{C}$	✓
<b>1.3</b>	<b>Preliminary Preparation</b>		
	Before any tests are commenced, the item was old enough to ensure that it has developed its full strength. Install the item as instructed by the supplier.		✓
<b>1.4</b>	<b>Rate of carrying out tests</b>		
	The forces applied at a sufficiently slow rate to ensure that negligible dynamic load is applied and to ensure that kinetic heating does not occur. NOTE: It is recommended that the cycles be carried out at a maximum rate of 6 cycles per minute.	Rate: 6 cycles per minute.	✓
<b>1.5</b>	<b>Test Programme</b>		
	The tests has been carried out in the sequence laid down in standard FIRA 045:2003		✓
<b>2</b>	<b>Inspection before and after testing</b>		
	Immediately before testing, each article has been thoroughly inspected. Any defects in the members, joints or attachment of components be noted so that they are not attributed to the effect of the tests when the tests have been completed. Immediately after completion of the tests, the article thoroughly inspected again. Any apparent defects be noted and a determination made of any changes that have taken place since the initial inspection. Fittings in self-assembly equipment tightened before testing. If any fittings are adjusted or retightened during testing this be recorded in the test report.	No defects appeared.	✓
	Each article subjected to each of the tests at the same test level and on completion of the test programme the occurrence of any of the following shall be recorded as defects: a) any fracture of any member, joint or component; b) any loosening, shown to be permanent by hand pressure applied to suitable members, of joints intended to be rigid. c) any deformation or wear of any component that will essentially affect its function; d) any loosening of any means of fixing	No defects appeared	✓

Testing result: ✓ = Requirements are met    ✗ = Requirements are not met    — = Requirements are not applicable



# Testing scheme for

Job-No.

Figure	Requirements	Notes	Testing result
	components to the article; e) any movable parts or catches that do not operate smoothly.		
<b>3</b>	<b>Apparatus</b>		
	2.1 Means of mounting/supporting the test item. 2.2 Bag or metal weights to the required mass. 2.3 Apparatus that is capable of performing a total of 50,000 cycles with inward and outward strokes.		✓
<b>4</b>	<b>General Safety Requirements</b>		
	The article is designed as to minimize the risk of injury to the user. All parts of the article with which the user comes into contact during intended use be designed that the physical injury and damage to property are minimized. These requirements are met when: - all edges and corners are free from burrs and rounded or chamfered; - moveable and adjustable parts are designed so that they cannot trap fingers during intended use; - the ends of feet and hollow components are closed or capped.		✓
<b>5</b>	<b>Procedures</b>		
<b>5.1</b>	<b>Strength of Pivot Arm Test</b>		
	Load the surfaces intended for storage with a mass specified by the supplier or, 20 kgs for a VDU and 2 kgs for a keyboard, when no load is specified. Adjust the item to the configuration most likely to cause failure. Apply 10 applications of a mass of 10 kg at the point furthest from an arm mounting bracket	Mass specified by Dromeas to 20,7 kgs.	✓
<b>5.2</b>	<b>Vertical Fatigue Test</b>		
	Load the surfaces intended for storage with a mass specified by the supplier or, 20 kgs for a VDU and 2 kgs for a keyboard, when no load is specified. Restrict all modes of operation, except for the mode undergoing test. Operate the vertical position adjustment mechanism for the appropriate number of cycles specified in Table 1, operating to the full extent (without stressing the stops), except that operational modes capable of rotating more than 180° shall be operated to a maximum of 180° motion. Where more than one method of adjustment for the vertical position is provided each method shall be tested separately.	Monitor arm admit regulation to the desirable height driven by a screw.	—
<b>5.3</b>	<b>Horizontal Fatigue Test</b>		
	Load the surfaces intended for storage with a mass specified by the supplier or, 20 kgs for a VDU and 2 kgs for a keyboard, when no load is specified. Restrict all modes of operation, except for the mode undergoing test. Operate the horizontal position adjustment mechanism for the appropriate number of cycles specified in Table 1, operating to the full extent (without stressing the stops), except that operational modes capable of rotating more than 180° shall be operated to a maximum of 180° motion. Where more than one method of adjustment for the horizontal position is provided each method shall be tested separately.	Mass specified by Dromeas to 20,4 kgs. Test Level: Severe 50.000 cycles	✓
<b>5.4</b>	<b>Overload Test</b>		

Testing result: ✓ = Requirements are met    ✗ = Requirements are not met    — = Requirements are not applicable

# Testing scheme for

Job-No.

Figure	Requirements	Notes	Testing result								
	Load the surfaces intended for storage with twice the mass specified by the supplier, or 40kgs for a VDU and 4 kgs for a keyboard where no load is specified. The load shall be maintained for a period of 24 hours.	Mass specified by Dromeas to 40,8 kgs.	✓								
	<b>TABLE 1 : Fatigues for VDU monitor arm relating to test levels.</b> <table border="1"> <thead> <tr> <th>TEST LEVEL</th><th>GENERAL</th><th>HEAVY</th><th>SEVERE</th></tr> </thead> <tbody> <tr> <td>Number of cycles</td><td>10,000</td><td>20,000</td><td>50,000</td></tr> </tbody> </table> See Appendix I for test level definition			TEST LEVEL	GENERAL	HEAVY	SEVERE	Number of cycles	10,000	20,000	50,000
TEST LEVEL	GENERAL	HEAVY	SEVERE								
Number of cycles	10,000	20,000	50,000								
<b>5.4</b>	<b>Overload Test</b>										
	The item is considered to have satisfied the requirements of the test at the appropriate test level if no defects have been observed (see clause 4) and if: (a) the force required to start movement of the arm is less than 75N and to maintain movement is less than 45N; (c) the arm or components do not dislodge from the test apparatus (see clause 7.4)	A) Force required to start movement of the arm is 69N and b) to maintain movement is 29N.	✓								
	<b>Appendix I</b> Test Levels General 8 hour single user, dedicated keyboard work environment Heavy 8 hour day multi-task, shared user environment Severe 24 hour multi-task environment										

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