Tony International (HK) Co., Ltd.
东 尼 国 际（香 港） 有 限 公 司
Addr: No. 1 Tech 9 Road, High-New Tech Development Zone, Songshan Lake, Dongguan City 523808,China.（中国广东省东莞市松山湖高新技术产业开发区科技 9 路 1 号）.
Tel: 86-769-23010657/ 89770663 Fax: 86-769-23010667 Email:sale@tonyhk.hk

Solution for Laboratory Testing

Bifma 5.1-2017(R2022)

TABLE 1 - Test Guide by Chair Type

Section Number	Description	Type I	Type II	Type III	Test machine
5.	Backrest Strength Test - Static- Type I and II	X	X		TNJ-006 （item2）
6.	Backrest Strength Test - Static- Type III			X	TNJ-006 （item2）
7.	Drop Test - Dynamic	X	X	X	TNJ-019（item3）
8.	Swivel Test - Cyclic	X	X	X	TNJ-020（item6）
9.	Tilt Mechanism Test - Cyclic	X	X		TNJ-006 （item2）
10.	Seating Durability Test -Cyclic	X	X	X	TNJ-019（item3）
11.	Stability Tests	X	X	X	TNJ-023（item09）
12.	Arm Strength Test - Vertical - Static	X	X	X	TNJ-006 （item2）
13.	Arm Strength Test -Horizontal -Static	X	X	X	TNJ-006 （item2）
14.	Backrest Durability Test -Cyclic- Type I	X			TNJ-006 （item2）
15.	Backrest Durability Test - Cyclic- Type II and Type III		X	X	TNJ-006 （item2）
16.	Caster/Chair Base Durability Test - Cyclic	X	X	X	TNJ-004 （item07）
17.	Leg Strength Test -Front and Side Application	X	X	X	TNJ-005 (item12)
18.	Footrest Static Load Test - Vertical	X	X	X	TNJ-024 （item4）
19.	Footrest Durability Test - Vertical - Cyclic	X	X	X	TNJ-024 （item4）
20.	Arm Durability Test - Cyclic	X	X	X	TNJ-017B （item5）
21.	Out Stop Test for Chairs with Manually Adjustable Seat Depth	X	X	X	座面具有滑动功能的撞击测试,不需要仪器
22.	Tablet Arm Chair Static Load Test	X	X	X	TNJ-024 （item4）
23.	Tablet Arm Chair Load Ease Test - Cyclic	X	X	X	TNJ-024 （item4）
24.	Structural Durability Test- Cyclic	X	X	X	TNJ-005 (item12)
	Appendix C - Informative Base Test—Static				TNJ-003（item08）
	Appendix G Template for Rear Stability				BIFMA Seating Rear Stability Loading Point Template （item10）
	Appendix D - Informative Front Stability Load Locator Fixture Construction Details				Front Stability Load Locator Fixture （item11）

Figure 4a - Type I - Tilting Chair

Figure 4b - Type II - Fixed seat angle, tilting backrest

Figure 4c - Type III - Fixed seat angle, fixed backrest

Types of Chairs

Item 01:

BIFMA CMD

Product Introduction:

To simulate the repeated dynamic movements that office chair mechanisms endure during daily use, including seat height adjustment, backrest tilting, locking and unlocking of the tilt function, and swiveling of the chair base. These tests replicate the cyclic stress that users impose on the mechanism through frequent posture changes.

Specification :

Overall dimensions are 560*335*680 mm, Net weight: 45.2 kg (100 lbs).

Materials and other parameters: Manufactured according to the material requirements specified in CMD-2002 Drawing2-2002.pdf.

Test standard :

BIFMA X5.1-2017. 2.4 CMD

BIFMA X5.4-2020 2 Definitions

Accessories List	Carpenter's 90-degree square	1 PCS
	Center of gravity adjustment weight	*1 PCS
	Rear seat counterweight	*2 PCS

Item 02:
TNJ-006 Chair Backrest Tester -Back pull

Product Introduction:

Assessing the ability of chairs to withstand fatigue and wear caused by rearward force on the backrest and assessing the ability of the tilt mechanism to withstand fatigue and wear caused by repeated tilting.

Features:

1. overload protection and power-off/memory functions.
2. Output force or displacement can be selected via the touchscreen.
3. Simple clamping structure design, operable by a single person without any special auxiliary tools.
4. Touchscreen interface: PLC control + Pre-input Test Standard

Specification :

	Name	Function	Brand	Note
Important components	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control procedures	Hust Tony	

	Force sensors	Real-time detection of force values	Dayang	
	Screen	Monitoring and parameterization	Velon 威纶通	
	Load the cylinder	Load force	Airtac 亚德客	
	Cylinder magnetic switch	Provides limit level protection	Airtac 亚德客	
	Proportional valves	Control the cylinder output pressure		
	muffler	Eliminate cylinder exhaust noise		
	counter			0~999999 times be set
Parameter	Adjustable output test force:	0–130 kgf		
	Adjustable lateral position:	±100 mm (5 inches).		
	Real-time display of operating speed:	0-25 cycles/minute, digitally set.		
	Stroke:	0-800 mm		
	Maximum allowable **sample size:**	projected area less than 850*850 mm.		
	Overall dimensions:	980*1860*2000 mm		
	Net weight:	270 kg.		
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

,

Test standard :

Test standard ：	Test items
BIFMA X5.1-2017	5 Backrest Strength Test - Static - Type l and II 5.3.4 Attach a loading device (front push or back pull) to the horizontal center of the backrest as determined above. With the backrest at its back stop position, apply a force that is initially 70 degrees ± 10 degrees to the plane of the backrest. (See Figures 5f and 5g). The force is not intended to be maintained at 70 degrees ± 10 degrees throughout the loading of the backrest. If applying the load with a cable and pulley system, the cable must initially be a minimum of 762 mm (30 in.) in length from the attachment point to the pulley. Note: Where the design of the chair does not allow the transfer of force(s) from the form fitting device to the load-bearing structure/surface, then a bridging device 38 mm to

102 mm (1.5 in. to 4 in.) in height may be used to span the width of the load-bearing structure/surface. For backrests with complex or varying contours, the plane of the backrest may be defined by the front of the CMD upright.

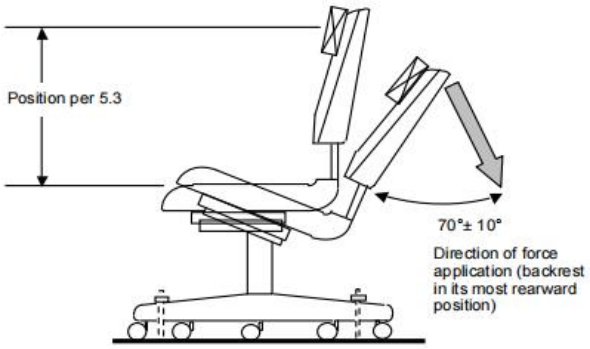


Figure 5f - Force Application for All Other Backrests
Backrest Strength Test - Static - Type I

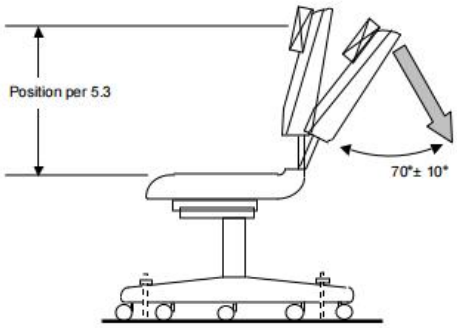


Figure 5g - Force Application for All Other Backrests
Backrest Strength Test - Static - Type II

6 Backrest Strength Test - Static - Type lll

6.3.4 Attach a loading device (front push or back pull) to the horizontal center of the backrest as determined above. With the backrest at its back stop position, apply a force that is initially 90 degrees ± 10 degrees to the plane of the backrest (see Figure 6d). The force is not intended to be maintained at 90 ± 10 degrees throughout the loading of the backrest. If applying the load with a cable and pulley system, the cable must initially be a minimum of 762 mm (30 in.) in length from the attachment point to the pulley. The angle of the backrest plane may be determined by the angle of the plane of the front of the CMD upright.

Note: Where the design of the chair does not allow the transfer of force(s) from the form fitting device to the load-bearing structure/surface, then a bridging device 38 mm to 102 mm (1.5 in. to 4 in.) in height may be used to span the width of the load-bearing structure/surface. For backrests with complex or varying contours, the plane of the backrest may be defined by the front of the CMD upright.

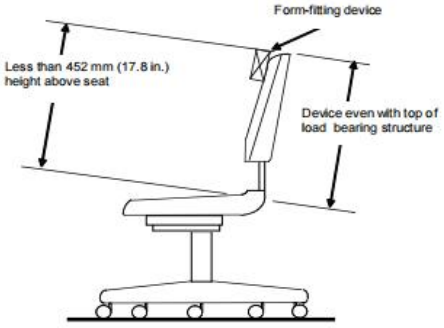


Figure 6c - Positioning of Form-Fitting Device for Backrests Lower than 452 mm (17.8 in.) Backrest Strength Test – Static - Type III

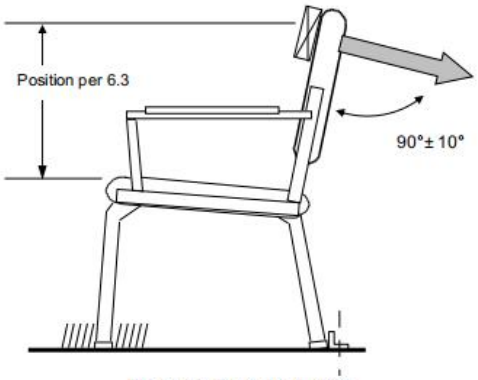


Figure 6d - Force Application
Backrest Strength Test - Static - Type III

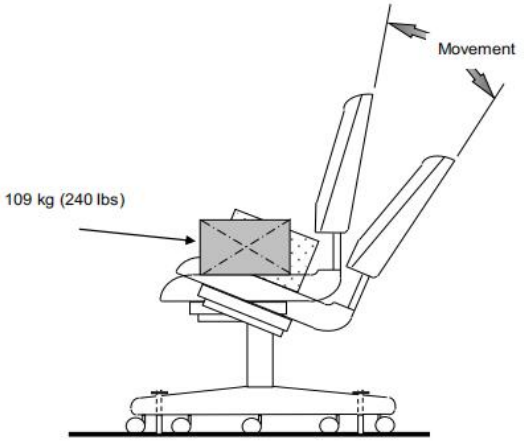
9 Tilt Mechanism Test – Cyclic

d) A test load of 109 kg (240 lbs.) shall remain on the center of the seat (or equivalent location on the fixture) and secured if necessary.

e) Adjust the cycling device to move the mechanism between the front and back stops,without overriding or impacting either stop.

9.4 Test Procedure

The unit shall be cycled for 300,000 cycles at a rate between 10 and 30 cycles per minute. The tilt mechanism and/or cycling device should be checked and readjusted as needed to maintain the original conditions specified.



12 Arm Strength Test - Vertical - Static

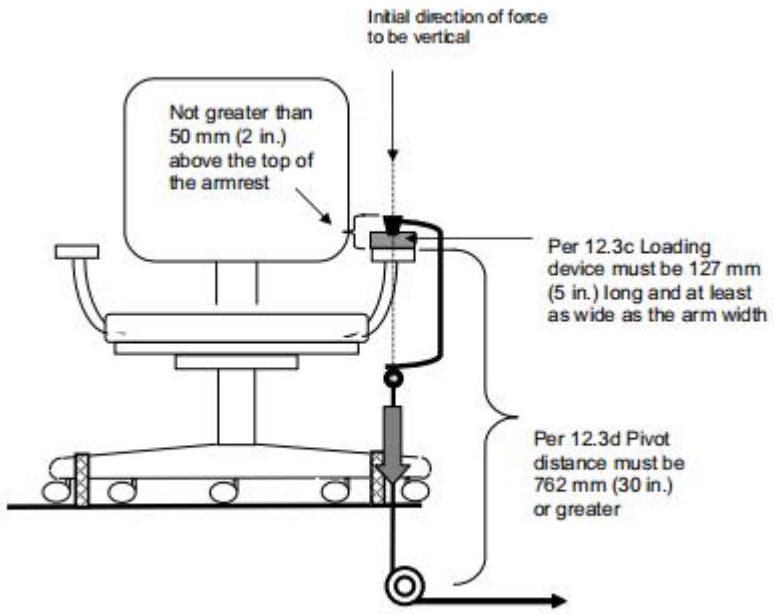
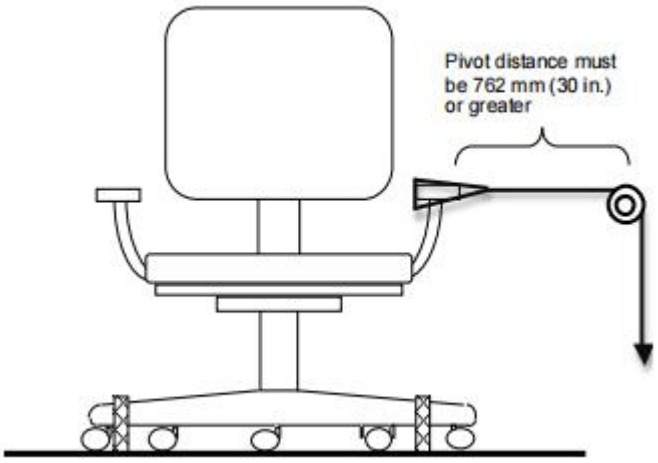


Figure 12c - Arm Strength Test - Vertical – Static ("C" Fixture Method)

13 Arm Strength Test - Horizontal - Static



14 Backrest Durability Test - Cyclic - Type 1

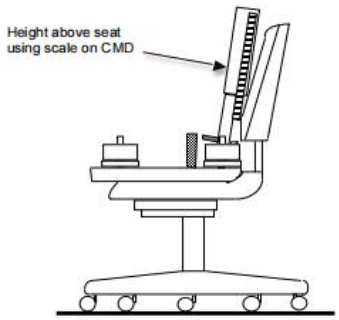


Figure 14a - Test Height Determination
Backrest Durability Test Cyclic - Type I

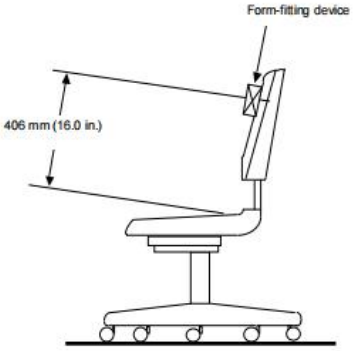


Figure 14b - Positioning of Form-Fitting Device for Backrests Higher than 452 mm (17.8 in.) Backrest Durability Test Cyclic - Type I

15 Backrest Durability Test - Cyclic - Type Il and lll

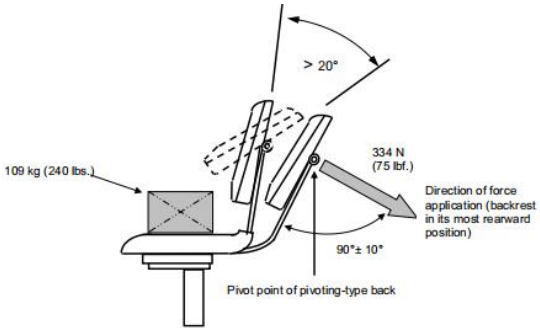


Figure 15d - Force Application for Backrests that Pivot Greater than 20 Degrees
Backrest Durability Test - Cyclic - Type II and III

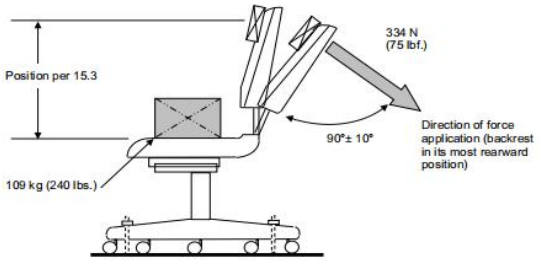


Figure 15e - Force Application for All Other Backrests
Backrest Durability Test - Cyclic - Type II and III

Accessories List	Seat Back Loading Pad - Back Pull	1 set (Seat back clamping fixture)
	Seat Surface Loading Weights	1 set (240 lbs) (Simulates seat surface load)
	Chair Rear Leg High-position Stop Block	1 set (Securing office chair feet)
	Chair Foot L-shaped Press Plate/Clamp	1 set (Securing office chair feet)
	1.5-inch x 3-meter Tensile Webbing Strap	1 set (Transmits pulling force)
	Four-legged Stool Fixing Fixture/Jig	1 set (Fixture for Type II Seating (Stools)
	Power line(2m) , AIR pipe(3m）	1 set

Item 03:

TNJ-019 Seat drop Tester

Product Introduction:

The BIFMA 5.1 sandbag impact tester is a specialized piece of testing equipment designed to evaluate the structural integrity, durability, and safety performance of office seating products in accordance with the BIFMA 5.1 standard (a globally recognized industry specification for office furniture).

Features:

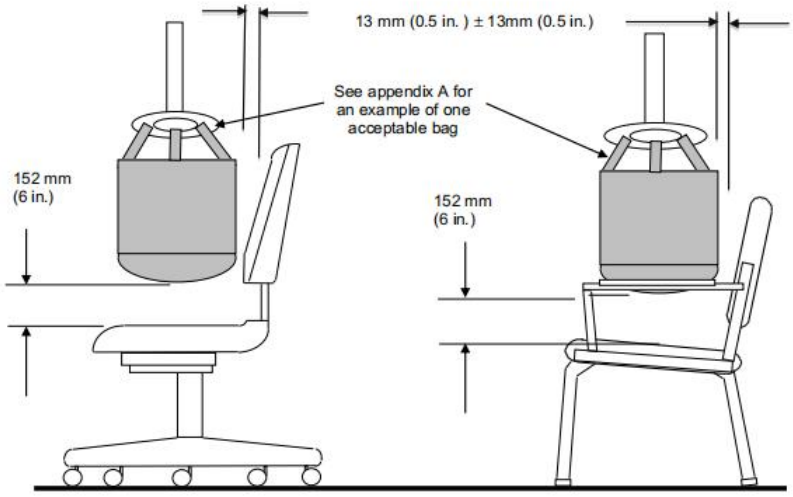
1.Uses an electromagnetic low-position power-on attraction and high-position power-off release function to perform free-fall impact motion.
2.Optional single manual or multiple continuous automatic impact functions; optional impact or slow loading functions.
3.Motorized adjustment of the height of the impact component beam, allowing self-locking at any position within the stroke range.
4.Simple sample clamping structure, enabling single-person operation without any special tools.
5.The motor is equipped with a protective cover to prevent accidental pinching by the electromagnet;
6.Aluminum profile frame structure, stainless steel test platform, aesthetically pleasing structure;
7.The impact assembly is equipped with a cushioning mechanism, greatly reducing impact noise;
8.Touchscreen interface： PLC control and Pre-input Test Standard

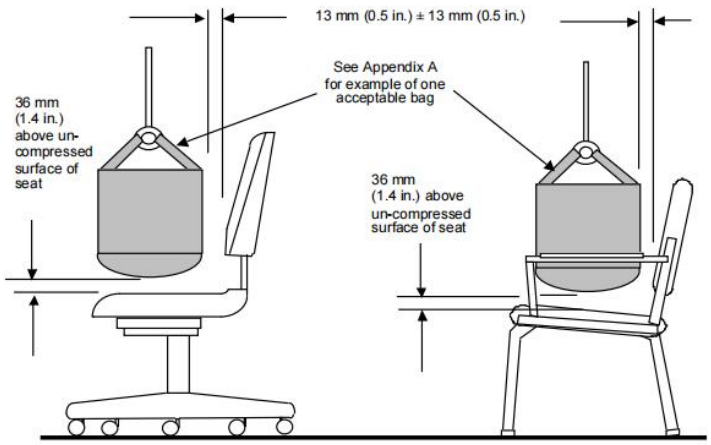
Specification :

	Name	Function	Brand	Note
Important components	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control procedures	Hust Tony	
	Force sensors	Real-time detection of force values	Dayang	
	Screen	Monitoring and parameterization	Velon 威纶通	
	Load the cylinder	Load force	Airtac 亚德客	
	Cylinder magnetic switch	Provides limit level protection	Airtac 亚德客	
	Proportional valves	Control the cylinder output pressure		
	muffler	Eliminate cylinder exhaust noise		
	counter			0~999999 times be set
Parameter	Drop weight:	Combination sandbag Max up to 150KG(test require 57kg/102kg/136kg)		
	Sandbag size:	diameter 16 inches, bag depth 14.5 inches		
	Test speed:	Rate of 10 -30 cycles per minute, digitally set.		
	Air cylinder Stroke:	0-300 mm		
	Drop high	test drop high : Dynamic test high 152mm , Seating Durability Tests - Cyclic high 36mm .		
	Overall dimensions:	1500*1500*2000mm		
	Net weight:	570 kg.		
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

Standard:

Test standard :	Test items

BIFMA X5.1-2017	7.Drop Test - Dynamic a) The test bag shall be raised 152 mm (6 in.) above the uncompressed seat and released one time. The free fall distance shall be measured at the center of the drop bag. (See Figure 7).  **Figure 7 - Drop Test - Dynamic**
	10 Seating Durability Tests - Cyclic d) A 406 mm ± 13mm (16 in. ± 0.5 in.) diameter test bag containing metal media weighing 57 kg (125 lb.) shall be attached to a cycling device, permitting a free fall to the seat as shown in Figure 10a. The drop height and/or seat height shall be adjusted during the test if the drop height changes by more than 13 mm (0.5 in.). The cycling device shall be set at a rate between 10 and 30 cycles per minute.

	 Figure 10a - Seating Durability Test - Cyclic
BIFMA X5.4-2020	14 Seating Durability Tests - Cyclic
	15 Drop Test - Dynamic
BIFMA X5.9-2019	7.2 Drop Test - Dynamic - for Units with Seat Surfaces
	7.3 Durability Test for Units with Seating Surfaces - Cyclic Impact

Accessories List	16-inch diameter impact test sandbag	1 pcs
	Small steel ball wight	10kg*12pcs , 5kg*5pcs, 1kg*5 pcs
	Sample Foot Mounting Block	5 pcs
	Seat damage sensor (automatically stops the machine if the sensed sample sinks or damaged)	1 set
	Sample Height block (152mm,36mm,13mm)	3 pcs (each 1pcs)
	Power line(2m) , AIR pipe(3m）	1 set

Item 04:
TNJ-024 Office Chair Front Edge Static Load Tester

Product Introduction:

This pneumatically-operated, Durability testing of the front edge and sides of all types of seating. electronically controlled test machine can be utilized to carry out seat front edge durability tests on standard upright seating.
The machine applies alternate seat loads via pneumatic cylinders.
The machine features full adjustability to cope with differing heights and widths of chairs
The machine is supplied with over load and over travel switches to automatically cut out loads in the event of failure.

Features:

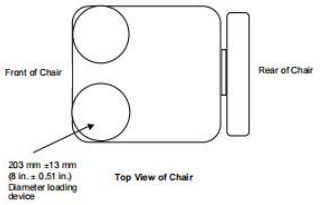
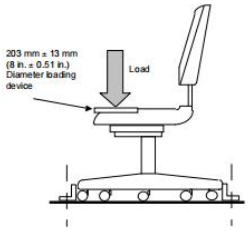
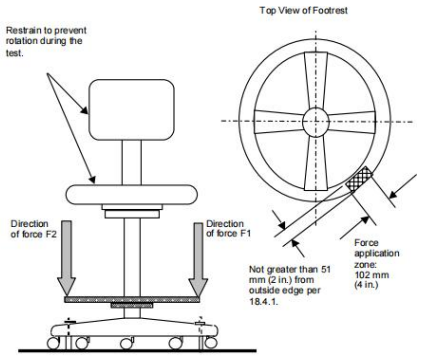
1. This product is specifically designed for durability testing of the backrest of European standard lounge chairs and the front corners of office chair seats.
2. The loading cylinder can adjust positions up and down (electric), left and right, and forward and backward to accommodate samples of different sizes.
3. The device is supported by universal foot pads, keeping a minimum distance of more than 80 mm from the ground, which facilitates leveling the equipment and forklift handling.
4. The simple clamping structure allows all operations to be completed quickly by one person without any tools.

5. Touchscreen interface：PLC control ＋ Pre-input Test Standard

Specification :

	Name	Function	Brand	Note
Important components	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control procedures	Hust Tony	
	Force sensors	Real-time detection of force values	Dayang	
	Screen	Monitoring and parameterization	Velon 威纶通	
	Load the cylinder	Load force	Airtac 亚德客	
	Cylinder magnetic switch	Provides limit level protection	Airtac 亚德客	
	Proportional valves	Control the cylinder output pressure		
	muffler	Eliminate cylinder exhaust noise		
	counter			0~999999 times be set
Parameter	2 cylinder loading	0-1500N		
	loading device	diameter 203 mm ± 13 mm (8 in. ± 0.51 in.) * 2 PCS		
	Test speed:	Rate of 10 -30 cycles per minute, digitally set.		
	Set the height range of the loading pad test platform:	0-910 mm		
	Overall dimensions:	1100*1420*1800 mm		
	Net weight:	370 kg.		
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

Standard：

Test standard ：	Test items
BIFMA X5.1-2017	10.4 Front Corner Load-Ease Test – Cyclic – Off-center aapply a force of 890 N (200 lbf.) through a 203 mm ± 13 mm (8 in. ± 0.51 in.) diameter loading device at one front corner flush to each structural edge. Raise the loading device from the seat and lower completely, without impact to the seat so that it takes the entire load without any support from the cycling device, at a rate of 10 to 30 cycles per minute. Test for 20,000 cycles. Reposition the load to the other front corner, and perform the test for an additional 20,000 cycles.   Figure 10d - Front Corner Load-Ease Test - Cyclic - Off-center
	18 Footrest Static Load Test - Vertical a) Apply a force F1 of 445 N (100 lbf.) uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure for one (1) minute in the vertical downward direction. (See Figure 18: Top View of Footrest).  Figure 18 - Footrest Static Load Test - Vertical
	19 Footrest Durability Test - Vertical - Cyclic (See Figure 19) a) A 890 N (200-lbf.) force shall be applied uniformly along a 102 mm (4 in.) distance along the footrest but not greater than 51 mm (2 in.) from the outside edge at the apparent weakest point of the structure. (See Figure 18: Top View of Footrest). When the weakest position is not obvious, several load application positions may be necessary to properly test the product. If the footrest moves more than 25 mm (1 in.) within the first 500 cycles, discontinue testing (See 19.5 Acceptance level). If the footrest moves

throughout the remainder of the test, reset it to its original position when it is within 12 mm (0.5 in.) from its lowest position.
b) The force shall be applied and removed 50,000 cycles at a rate between 10 and 30 cycles / minute.

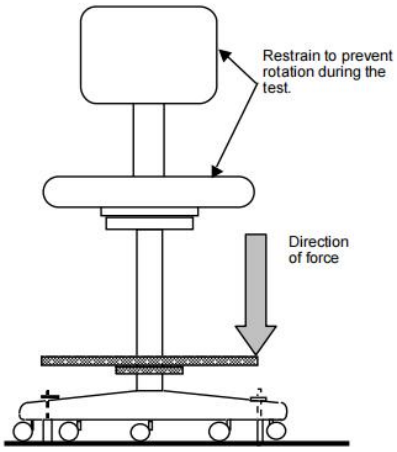


Figure 19 - Footrest Durability Test - Vertical - Cyclic

22 Tablet Arm Chair Static Load Test
Apply a load of 68 kg. (150 lb.) at the location described in 22.2 b) for one (1) minute and remove the load.

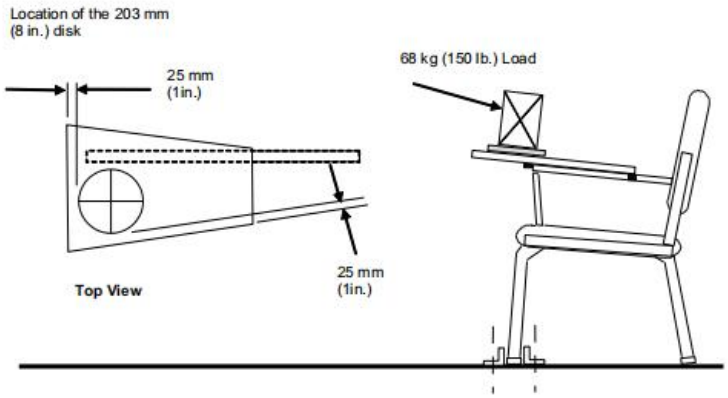


Figure 22 - Tablet Arm Chair Static Load Test

23 Tablet Arm Chair Load Ease Test - Cyclic
Apply a load of 25 kg (55 lb.) The cycling device shall be set to operate at a rate of 14 ± 6 cycles/ minute. total of 100,000 cycles.

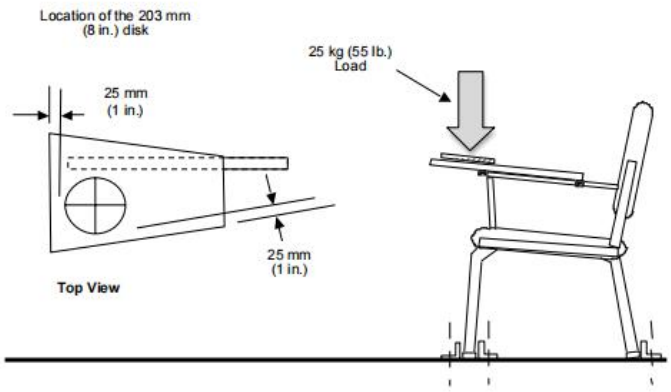


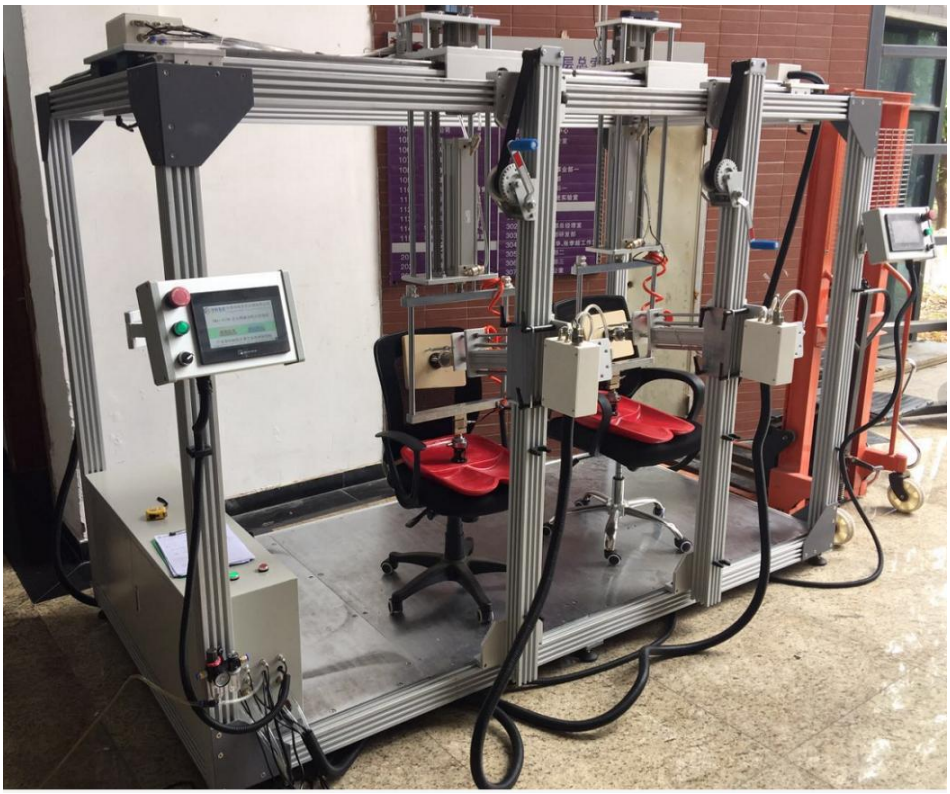
Figure 23 - Tablet Arm Chair Load Ease Test - Cyclic

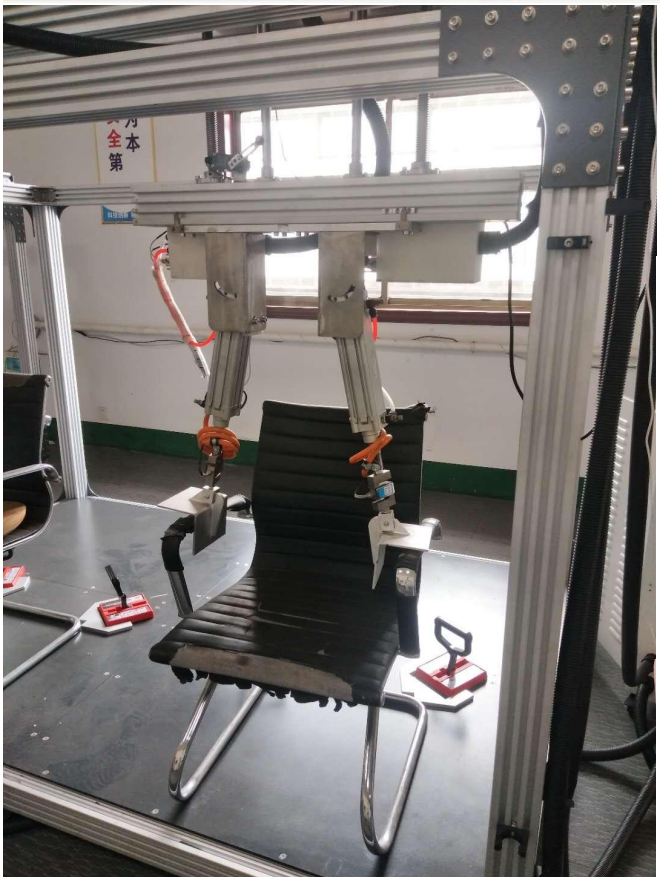
Accessories List	loading device diameter 203 mm ± 13 mm (8 in. ± 0.51 in.)	2 pcs
	Chair Foot L-shaped Press Plate/Clamp	1 set (Securing office chair feet)
	Sample Foot Mounting Block	5 pcs
	Seat damage sensor (automatically stops the machine if the sensed sample sinks or damaged)	1 set
	Power line(2m) , AIR pipe(3m）	1 set
	Weight 62kg	1 pcs

Item 05:

TNJ-017B 3 Station durability testing machine 椅子 2 工位椅座椅背（沙发）耐久测试+ 1 工位扶手耐久测试

2 station Chair seat and back （sofa）durability testing machine+ 1 Station Arm Durability Test





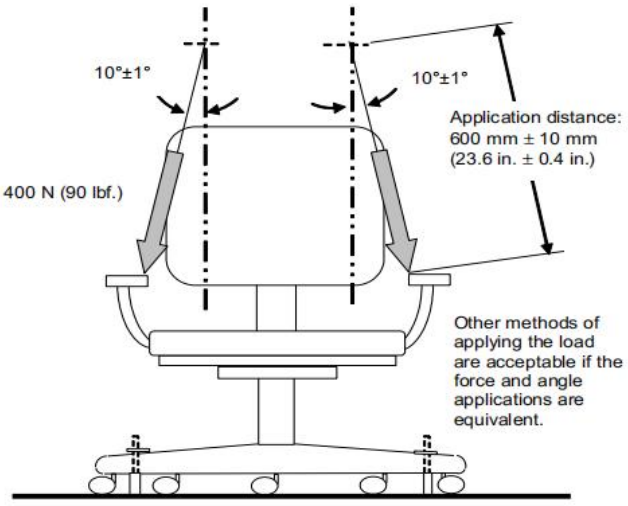
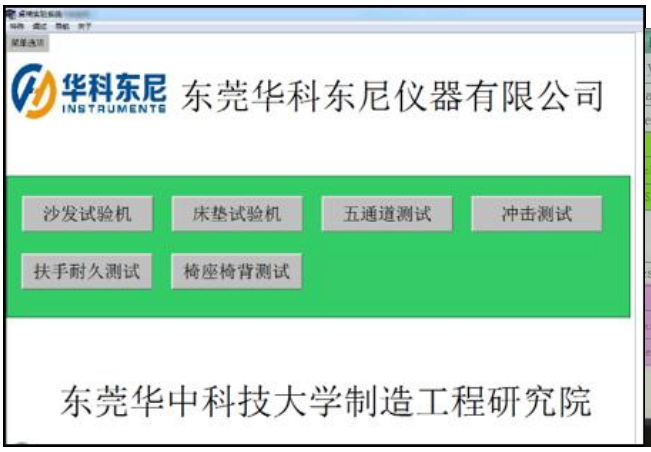


Figure 20b - Arm Durability Test – Cyclic

+ Biafma 5.1 -2017 ,20 Arm Durability Test - Cyclic (Figure 20b)

Touchscreen interface：PLC control and Pre-input Test Standard



Product Introduction：

According to the European and American standard X5.4 requirements, the combined backrest endurance test for multi-seat sofas applies to only two seats.
This equipment can also perform combined backrest tests on several single-seat chairs simultaneously. Therefore, some customers (especially third-party laboratories) purchase multiple sets of combined backrest testing machines to save space and improve efficiency.
This equipment is designed as a comprehensive testing machine, primarily manufactured for strength and durability tests of sofas according to BIFMA and BS EN standards.

Technical parameters:

	Name	Function	Brand	Note
Important components	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control procedures	Hust Tony	
	Force sensors	Real-time detection of force values	Dayang	
	Screen	Monitoring and parameterization	Velon 威纶通	
	Load the cylinder	Load force	Airtac 亚德客	
	Cylinder magnetic switch	Provides limit level protection	Airtac 亚德客	
	Proportional valves	Control the cylinder output pressure		
	muffler	Eliminate cylinder		

		exhaust noise		
	counter			0~999999 times be set
Parameter	cylinder loading	Total 3 sets Horizontal load (back test): 100-1000N; Vertical loading (seat test): 100-2500N ; Arm loading test :100-1000N		
	loading device	Total 3 sets Seat and back loading pad*2set , Arm loading pad*1 set  		
	Test speed:	Rate of 10 -30 cycles per minute, digitally set.		
	Set the height range of the loading pad test platform:	Vertical test : 500-1300 mm; Horizontal test : 400-1500 mm , angle adjust :0-90° ; Arm test :400-800mm（test standard require 600mm）.		
	Overall dimensions:	1540*3030*2100 mm		
	Net weight:	550 kg.		
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

Standard:

Test standard ：	Test items
ANSI BIFMA X5.1-2017	20 Arm Durability Test - Cyclic Simultaneously apply a force of 400 N (90 lbf.) to each arm initially at a 10 degrees ± 1 degree angle as shown in Figure 20b. The arm loading device must follow the arm (allow fore and aft, side-to-side and rotational movement) as it deflects or pivots. If using a test device similar to that shown in Figure 20b, the load application distance must initially be the length specified in the figure. Other methods of applying the load are acceptable if the force and angle applications are equivalent. The force shall be applied and removed for 60,000 cycles at a rate between 10 and 30 cycles per minute.

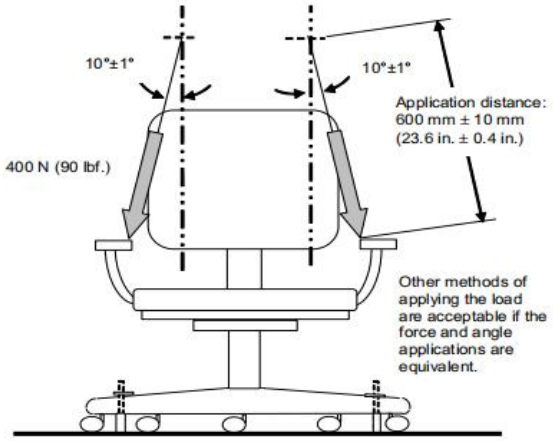


Figure 20b - Arm Durability Test – Cyclic

ANSI/BIFMA X5.4-2020

5 Backrest Strength Test - Horizontal - Static

6 Backrest Strength Test - Vertical - Static

The loading device shall be attached to the unit so that the force is applied vertically through an area defined by the thickness of the backrest by 406 mm ± 13 mm (16 in. ±0.5 in.) along the width of the backrest, centered on the apparent weakest point at the top of the backrest. Backrest cushions may be removed for this test. For units with two backrest positions, the backrest of each backrest position shall be tested. For units with three or more backrest positions, only two adjacent backrest positions (end and adjacent) shall be tested. When testing multiple-seating units with parallel backrest positions, the forces shall be applied simultaneously; otherwise, test two worst-case
positions individually.

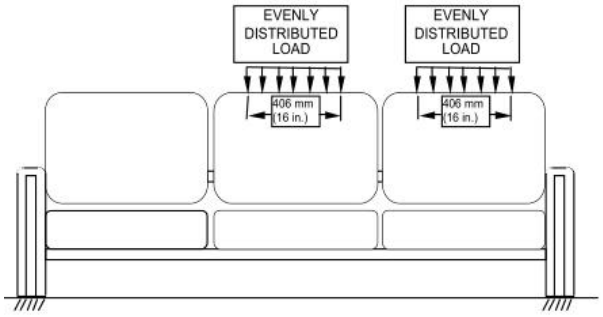


Figure 6 - Backrest Strength Test - Vertical - Static

7 Backrest Durability Test - Horizontal - Cyclic

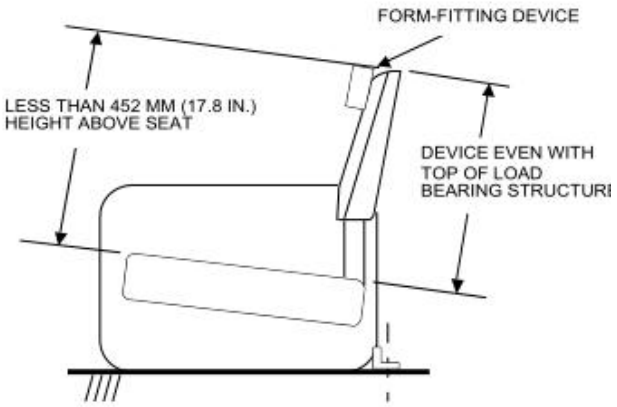


Figure 7c - Position of Form-fitting Block

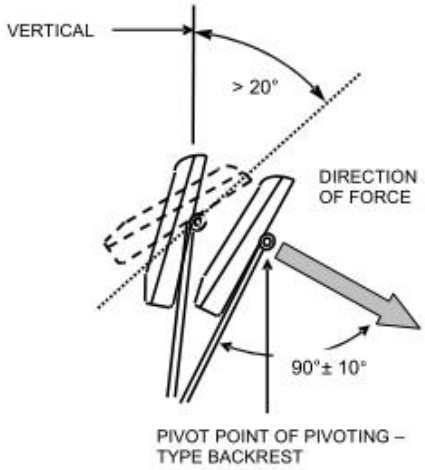


Figure 7d - Pivoting-type Backrest

27

8 Backrest Durability Test - Vertical - Cyclic

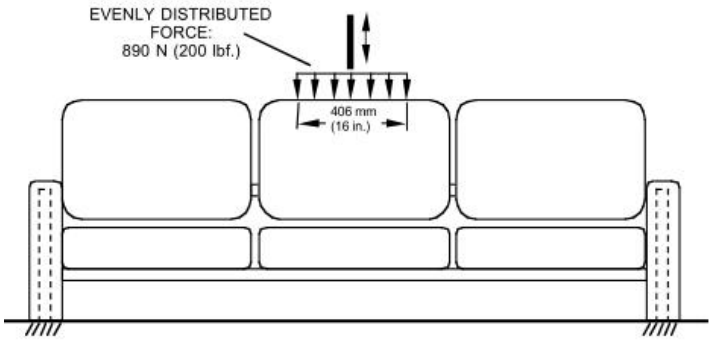
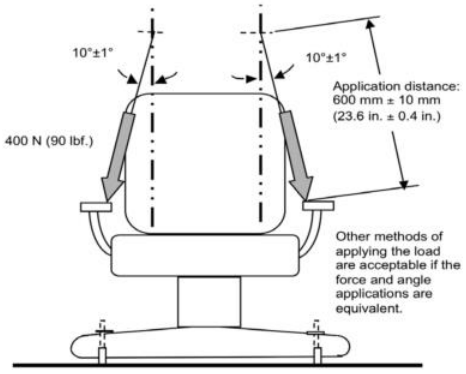


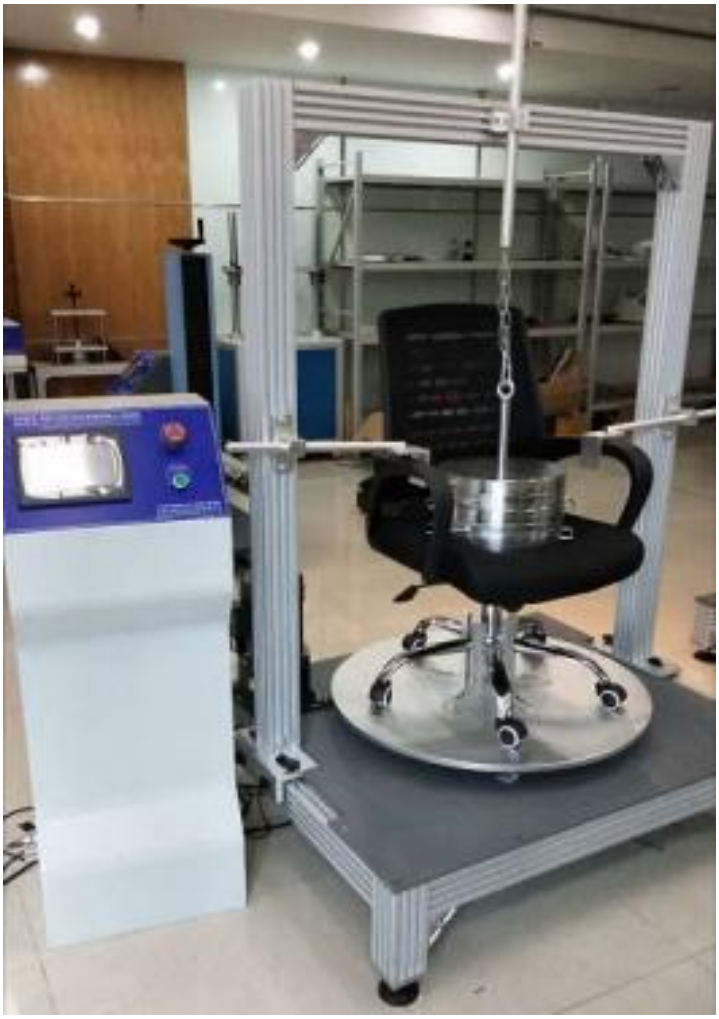
Figure 8 - Backrest Durability Test - Vertical - Cyclic

	13 Arm Durability Test for Single Seat Units - Angular - Cyclic  Figure 13b - Arm Durability Test - Angular - Cyclic **13 Arm Durability Test for Single Seat Units - Angular - Cyclic** (See Figures 13a and 13b)

Accessories List	Seat and back loading pads	2 set
	Arm loading pads	1 set
	Sample Foot Mounting Block	12 pcs
	Power line(2m) , AIR pipe(3m）	1 set

Item 06

TNJ-020 Chairs Swivel Test Machine---Rotation testing 办公椅旋转耐久试验机



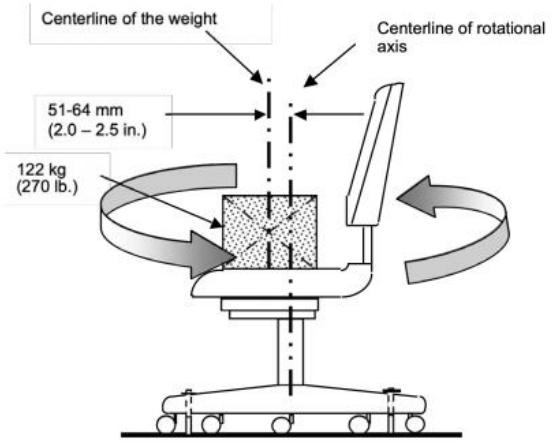


Figure 8 - Swivel Test – Cyclic

Product Introduction:

The seat is loaded using weights, which are released or lifted via a hand-cranked winch. The simple clamping structure and chuck-type mechanism automatically align the rotation center, ensuring that the center line of the chair's gas lift aligns with the rotation axis of the table. Additionally, the chuck structure allows the chair to move freely in the vertical direction, simulating actual usage conditions.

Features:

1. Meets multi-standard testing requirements; through front and rear adjustments of the gantry, it can switch between European and American standard testing modes.
2. The rotary platform can be set to rotate in a single direction or alternate between forward and reverse directions. In the alternating mode, any angle of reversal and dwell time at reversal can be set.
3. PLC control allows input of test parameters and output of test results via a touch screen.
4. Features power-off memory function to prevent loss of test data.
5. Touchscreen interface：PLC control + Pre-input Test Standard

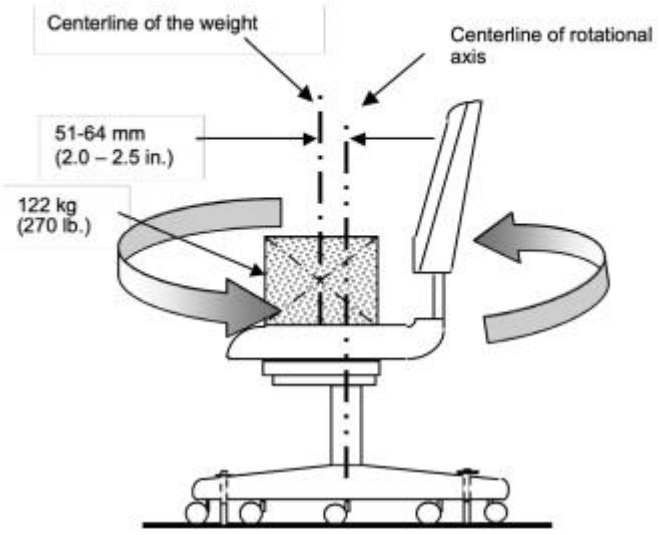
Specification :

Important	Name	Function	Brand	Note

components	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control procedures	Hust Tony	
	Screen	Monitoring and parameterization	Velon 威纶通	
	counter			0~999999 times be set
Parameter	Rotation angle max.	360°		
	Maximum sample diameter:	750 mm		
	loading device	A 122 kg (270 lb.) loading		
	Test speed:	5 and 15 rotations /minute		
	Reversing gap dwell time can be set:	0 - 10 seconds.		
	Overall dimensions:	1420*1100*1720 mm		
	Net weight:	330 kg.		
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

Standard：

Test standard ：	Test items
ANSI BIFMA X5.1-2017	**8 Swivel Test - Cyclic**) A 122 kg (270 lb.) load shall be placed on the seat such that the center of gravity of the load is 51 to 64 mm (2 to 2.5 in.) forward of the center line of the rotational axis as shown in Figure 8. a) The seat or platform shall rotate for 60,000 cycles at a rate between 5 and 15 rotations per minute. b) If the seat height is adjustable set the height to its lowest position. c) For all chairs, continue the test for an additional 60,000 cycles to a total of 120,000 cycles.

	 Figure 8 - Swivel Test – Cyclic
BIFMA X5.4-2020	19 Swivel Test - Cyclic A 122 kg (270 lb.) load shall be placed on the seat such that the center of gravity of the load is 51 mm, +13 mm, -0 mm (2 in., +0.5 in., -0 in.) forward or rearward of the center line of the spindle as shown in Figures 19(a) and 19(b). d) The cycling device shall be adjusted to rotate the lesser of the following: the available range of rotation or 360° ± 10°. If the available range of rotation is less than 360 degrees, the stroke shall be adjusted to touch but not override the stops. The rotation may be either bi-directional (alternating) or unidirectiona The seat or platform shall rotate for 120,000 cycles at an appropriate rate between 5 and 15 rotations per minute.

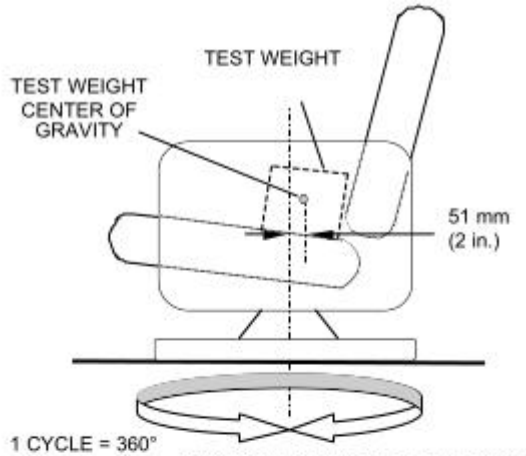


Figure 19a Weight Placed Rearward

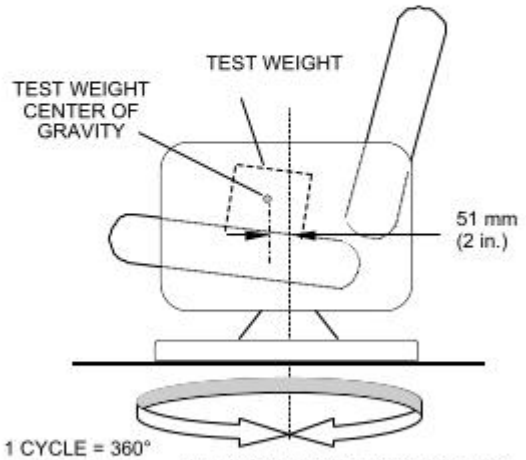


Figure 19b Weight Placed Forward

Figure 19 - Swivel Test - Cyclic

62

Accessories List	loading device	(270 lb.) loading
	Centering Chuck Assembly	1 set
	Power line(2m) , AIR pipe(3m）	1 set

Item 07

TNJ-004 Chair Base Durability Test-Cyclic

Product Introduction:

Slip Type Life Tester is suitable for testing the base seat chair with caster,to determine the ability of caster or base resistance to fatigue and abrasion caused by moving forward or backward.Place the caster specimens on the tester platform,and loading 122kg to make the specimen in repeat travel at a certain speed,the travel distance should be at least 762mm..After certain times,check the caster function is normal.This machine is required to place on a horizontal and stable platform when install.Slip type life tester needs to connect with 6kgf/cm^2 or above clean gas supply.
Touchscreen interface：PLC control ＋ Pre-input Test Standard

Technical parameters:

	Name	Function	Brand	Note
Important components	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control	Hust Tony	

		procedures		
	Force sensors	Real-time detection of force values	Dayang	
	Screen	Monitoring and parameterization	Velon 威纶通	
	Load the cylinder	Load force	Airtac 亚德客	
	Cylinder magnetic switch	Provides limit level protection	Airtac 亚德客	
	Proportional valves	Control the cylinder output pressure		
	muffler	Eliminate cylinder exhaust noise		
	counter			0~999999 times be set
Parameter	Test stroke:	≥762mm.°		
	loading device	A 122 kg (270 lb.) loading		
	Test speed:	10±2cycles/min		
	Obstacles :	thickness 3.2mm,width 51mm, edge blend		
	The transverse coverage width of the obstacle bar for each test position:	860 mm.		
	Overall dimensions:	2870*1140*930 mm		
	Net weight:	330 kg.		
	Air supply	⩾6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

Standard：

：**ANSI/BIFMA X5.1-2017 16 Caster/Chair Base Durability Test-Cyclic**

If a complete chair is to be tested, place a 122 kg (270 lb.) load on the seat of the chair.
If a fixture is used, the weight of the test assembly (base assembly, fixture and weights) shall be equivalent to 122 kg (270 lb.) plus the weight of the chair in its fully assembled configuration. (See Figure 16c). The base and casters shall be free to rotate and swivel. d) The stroke of the cycling device shall be adjusted to 762 +/- 50 mm (30 +/- 2 in.) of travel. The stroke shall be oriented so the casters roll across the test platform and obstacles as shown in Figure 16b.
e) The cycling device shall be operated at a rate of 10 ± 2 cycles per minute. One cycle shall consist of a forward and backward stroke of the cycling device.

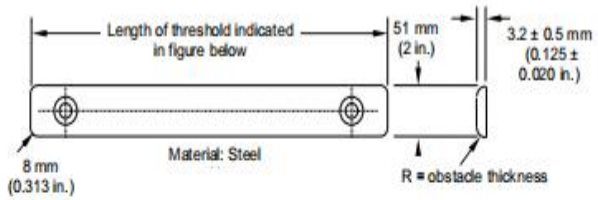


Figure 16a - Obstacle Detail Typical All Sides

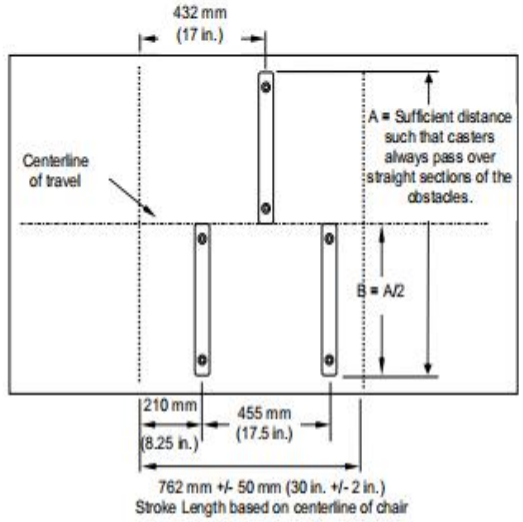


Figure 16b - Obstacle Layout for Pedestal Base Chairs

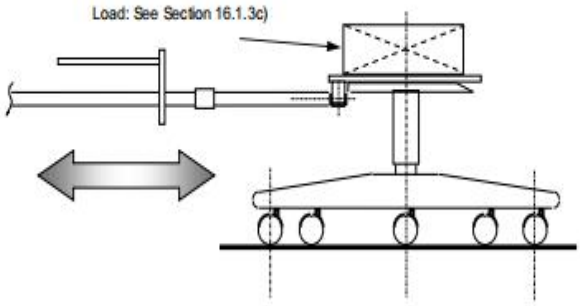


Figure 16c - Machine Schematic for Pedestal Base Chairs

Figures 16a through 16c - Caster/Chair Base Durability Test — Cyclic

Accessories List	American Standard Bifma Caster Obstacle	1 SET
	loading device	(270 lb.) loading
	Power line(2m) , AIR pipe(3m）	1 set

Item 08

TNJ-003 Chair Legs Pressure-resistant Tester--Base Test-Static

Product Introduction:

To simulate the static and dynamic compressive forces that the five-star base is subjected to during daily use scenarios, such as supporting the user’s weight, bearing sudden downward pressure when sitting down, or enduring repeated load cycles over long-term use.

Touchscreen interface：PLC control ＋ Pre-input Test Standard

Specification :

	Name	Function	Brand	Note
Important components	PC control	Lenovo computer	Lenovo 联想	
	Control system	Execution of automatic control procedures	Hust Tony	
	Force sensors	Real-time detection	Dayang	

		of force values		
	Screen	Monitoring and parameterization	Velon 威纶通	
	counter			0~999999 times be set
Parameter	Capacity:	25000N		
	Pressure stroke range (height of the pressure head from the support surface):	30-400 mm.		
	Inner test chamber size	820*900mm(Allows a five-star base with a diameter of 750 mm)		
	Accuracy of force to display：	0.1 units		
	Accuracy of force:indicating value	±0.05%.		
	Accuracy of shift:	0.01mm		
	Accuracy of force to display：	indicating value ±0.01%		
	Overall dimensions:	950*980*1920 mm		
	Net weight:	460 kg.		
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

Standard： ANSI BIFMA X5.1-2017 -Appendix C - Informative Base Test – Static

Test Procedures

a) A force of 11,120 N (2500 lbf.) shall be applied for one (1) minute.

b) Remove the force.

c) Apply a second force of 11,120 N (2500 lbf.) for one (1) minute.

d) Remove the load.

Assessment of results:controlled by a servo motor which can maintain constant pressure when chair legs are in plastic deformation status.

The tester which is controlled by computer stops automatically when breakpoint occurs.Customers can write test program by themselves;The computer generates force - time and force - shift curve automatically.

Accessories List	Support pad with support post	1 SET
	computer	1 set
	Power line(2m) , AIR pipe(3m）	1 set

Item 09
TNJ-023 Chair Seats Front Stability Test Machine

Introduction of product:

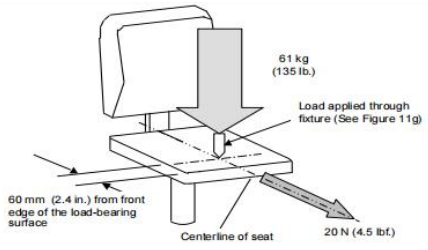
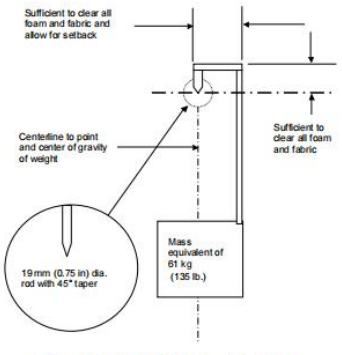
To simulate real-world scenarios where office chairs may be subjected to unbalanced forces, such as users leaning excessively to one side, reaching for objects beyond the normal seating range, or shifting their weight abruptly during daily use.

Specification :

	Name	Function	Brand	Note
Important components	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control procedures	Hust Tony	
	Screen	Monitoring and parameterization	Velon 威纶通	
	counter			0~999999 times be set

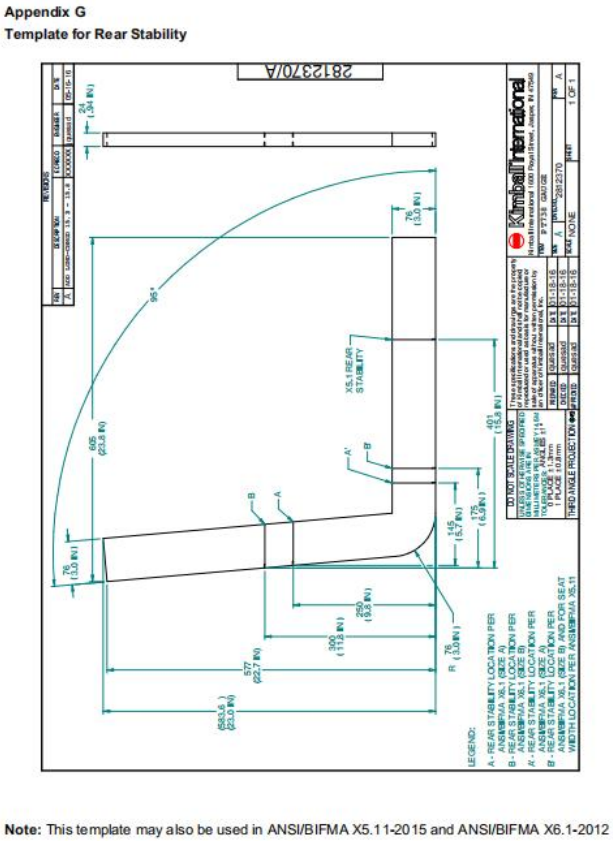
Parameter	Seat surface loading:	61KG(135LB)
	Adjustable release stroke:	50-250 mm;
	Seat surface loading pad:	diameter: 200mm, camber surface: R300mm,9 pins
	Loading rob:	19mm, both ends A type: sphere SR19mm B type: sharp surface 45 °
	Adjustable load weight:	10-150 kgf.
	Overall dimensions:	1200*1000*850 mm
	Net weight:	170 kg.
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）
	Power supply:	220VAC, 5A.

Standard：

Test standard ：	Test items
BIFMA X5.1-2017	**11 Stability Tests.** b) Apply a vertical load of 61 kg (135 lb.), by means of the front stability loading fixture shown in Figure 11g at a point 60 mm (2.4 in.) from the front center edge of the load-bearing surface of the chair. **Note:** It is recommended that the fixture/method shown in Appendix D be used to assist in locating the 60 mm (2.4 in.) loading dimension. c) Apply a horizontal force of 20 N (4.5 lbf.) at the same height that the vertical force is applied (at the point of contact of the loading fixture). The force shall be coincident (in-line) with the side-to-side centerline of the seat.  Figure 11f - Front Stability Test  Figure 11g - Front Stability Loading Fixture

Accessories List	American Standard Bifma Auxiliary Loading Fixture	1 SET
	Seat Stability Load Weight Component	1 set（Includes hooks, lifting fixtures, and load of 61 kg.）
	Power line(2m) , AIR pipe(3m）	1 set

Item 10
BIFMA Seating Rear Stability Loading Point Template 坐具后稳定性加载点模板



Note: This template may also be used in ANSI/BIFMA X5.11-2015 and ANSI/BIFMA X6.1-2012

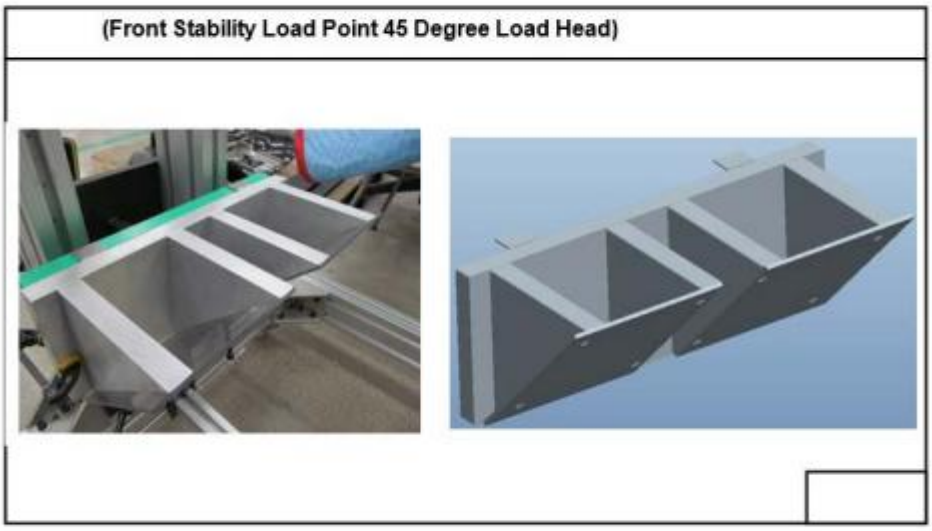
Standard ANSI/BIFMA X5.1-2017 Appendix G
Weight: 1.38 kg
Material: Made of birch plywood, surface coated with protective paint

Item 11

Front Stability Load Locator Fixture

Appendix D - Informative

Front Stability Load Locator Fixture Construction Details



Applicability: This optional fixture may be used for locating the load point for Front Stability (Section 11.4) when it is difficult to determine the 60 mm (2.4 in.) load point from the front center edge of the load-bearing surface of the seat. Often this is difficult to accomplish with upholstered seating and this fixture offers a consistent method.

Standard ANSI/BIFMA X5.1-2017 Appendix D

The 40N weight pushes the fixture to load through a fixed pulley.

Item12

TNJ-005 Furniture push-pull testing machine (for testing drawers, stools, cabinet doors, etc.)
家具推拉测试机（例如可测试：抽屉，柜门，凳子等）

Product Introduction:

This machine is suitable for testing the durability of drawer slides installed on furniture, and can also be used for durability tests of chair legs.
The drawer slide durability testing machine is suitable for testing the durability of the drawer slide rail installed on the furniture, placing a certain load on the inside of the drawer guide rail, repeatedly pulling out and closing the drawer, and checking whether the slide rail can still meet the use requirements after a certain number of cycles to test the durability of the guide rail.

Features:

1. Adopt microcomputer PLC program control, touch screen display is fully intelligent,
2. Electric lifting, easy to operate, automatic shutdown when the number of times it reaches the set,
3. It can work unattended for a long time. Automatic shutdown after the test is completed,
4. After a sudden power failure or artificial shutdown, call or restart again, and continue to run according to the parameters set before the power failure, so as to ensure the continuity and stability of the test and avoid the loss of test data.

Technical Parameters:

Important components	Name	Function	Brand	Note
	PLC	Programmable Controller		
	4AD module/4DA module	Digital-to-analog conversion input/output		
	Control system	Execution of automatic control procedures	Hust Tony	
	Force sensors	Real-time detection of force values	Dayang	
	Screen	Monitoring and parameterization	Velon 威纶通	
	Load the cylinder	Load force	Airtac 亚德客	
	Cylinder magnetic switch	Provides limit level protection	Airtac 亚德客	
	Proportional valves	Control the cylinder output pressure		
	muffler	Eliminate cylinder exhaust noise		
	counter			0~999999 times be set
Parameter	Cylinder Test stroke:	0~500mm°		
	Test force:	0-150LB (BIFMA5.1 .17 chair leg horizontal loading test requirement 75lbf and 113lbf)		
	Reciprocating push-pull speed	frequency adjustable speed: 1-15 times/min		
	The absolute error of the measured stroke:	≤±2.5mm		
	Overall dimensions:	1100*1200*1500 mm		
	Net weight:	150 kg.		
	Air supply	≥6kgf/cm^2 ,(Customer should bring along their own）		
	Power supply:	220VAC, 5A.		

Test standard :

BIFMA 5.1-2017 ,17 Leg Strength Test - Front and Side Application

17.4 Side Load Tests

Note: A separate chair may be used for the side load portion of the test.

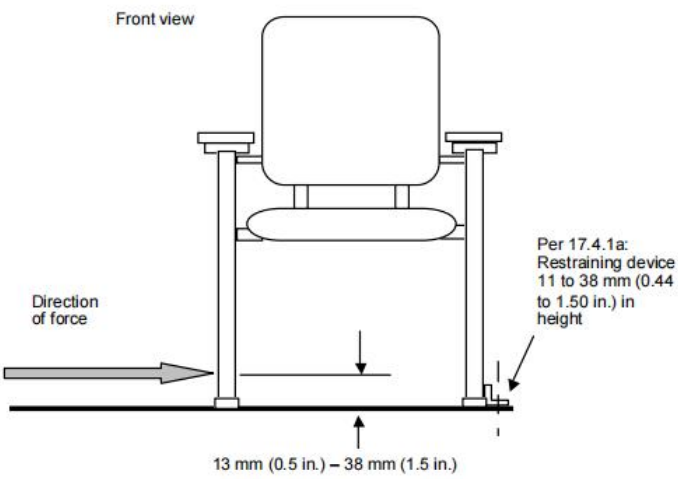


Figure 17b - Leg Strength Test - Side Application

BIFMA 5.1-2017 ,24 Structural Durability Test - Cyclic

c) Place a weight of 109 kg (240 lb.) in the center of the seat.

e) The cycling device shall be adjusted to apply a “push-pull” action, or alternately may be applied by alternating pull (or push) force application on alternating sides of the unit. One cycle shall consist of one outward force application and removal and one inward force application and removal.

f) Apply a force of 334 N (75 lbf.) at an appropriate rate between 10 and 30 cycles/ minute.

24.4 Test Procedures

The device shall be cycled for 25,000 cycles.

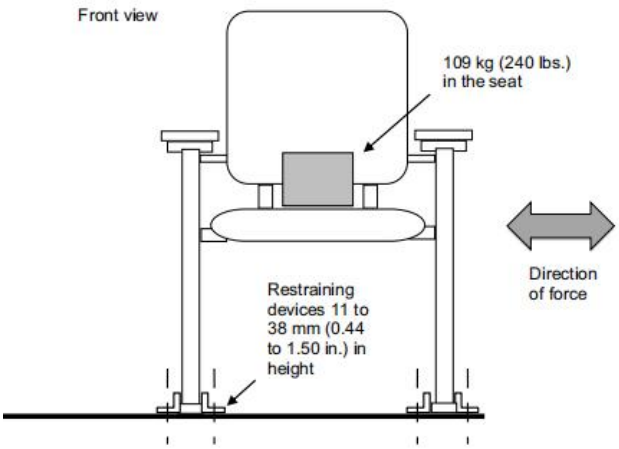


Figure 24 – Structural Durability Test - Cyclic

Other test standard :

ANSI/BIFMA X5.4-2020 chair leg horizontal loading test requirement

BIFMA X5.5-2014

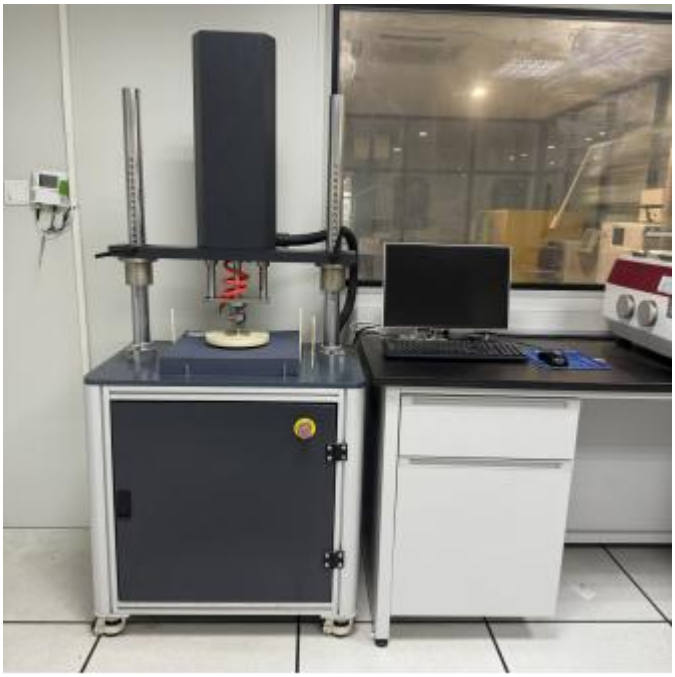
10.2+10.3+10.4+17.7+17.8+17.11;

BIFMA X5.9-2004 15.2+15.3+17.6+17.7+17.8;

ISO 7173 -2023 6.17 Leg sideways static load test

Item 13

TNJ-012A Sponge Indentation Hardness Tester 海棉压陷硬度测试仪（二合一）



Product Introduction:

This machine is a new type of foam comprehensive testing machine, and the appearance is treated with aluminum extruded sealing plate and high-grade baking paint, which is more beautiful and generous. This machine is used for foam indentation test and foam repeated durability test.

Principle:

This machine is the computer servo type foam comprehensive testing machine, using motor drive screw to move up and down, so compress the specimen. Automatic display of strength value and the displacement curve connected to the computer using the LOAD CELL force sensor.

Technical parameters:

Automatic stop, stroke top and bottom limitation
Sensing method: Force sensor automatic display
Load Cell Capacity: 300Kg (0~3000N)
Motor: servo motor control system
Unit switch: Kg、N、Lb
Resolution: 1/1000
Accuracy: 0.5 级(±0.5%)
Testing stroke: 800mm
Test speed: 0.05~500mm/min adjustable
Size of upper compressing plate: diameter 203mm,
Air hole diameter: 6.5mm,
Volume (WxDxH) 800×650×1800mm
Weight: approx 160kg
Power: 1∮ AC220V 2.6A

Standards: GB/T 10802， GB/T10807-89,ISO 2439-2008, ASTM D3574, ISO 3386 ,JISK6400, AS 2282.8 Method

A-IFD Test
- Indentation Force Deflection (IFD or previously ILD). ASTM D3574 TEST B1/ISO 2439
- Compression Force Deflection (CFD/CLD). ASTM D3574 TEST C / ISO 3386
- Hysteresis. ASTM D3574-Test X6

Standard accessories: 1 computer, 1 sponge indentation hardness tester, 1 operating manual, 1 power cord, 1 certificate

Item 14
TNJ-029A Sponge Resilience Tester

Product Introduction:
Suitable for determining the resilience performance of soft polyurethane foam using a falling ball method. This instrument calculates the rebound rate of a steel ball, which is the percentage ratio of the maximum rebound height of the steel ball to the drop height, by allowing a steel ball of specified diameter and mass to freely fall from a set height onto the foam specimen. The rebound rate represents the resilience performance of the foam. The machine is controlled by a microprocessor, features an LCD display in Chinese, and can print test data. It is characterized by safe and reliable use, and high measurement accuracy.Automatic calculation of average rebound adjustment Automatic calculation of average rebound rate Sponge Resilience Tester

Product Features:
Can be used for both national standard 460 samples and American standard 500 samples. (Similar products can only be used for national standard 460 samples)LCD screen with English display, making it easy to understand while increasing service life, allowing technicians to quickly master the operation. (Similar products use digital tube display, only showing numbers)Equipped with a printing function and comes with a printer. (Similar products have no printing function)

Technical Parameters:

Steel Ball Drop Distance: 460 ± 0.5% mm (Chinese Standard),
500 ± 0.5% mm (American Standard)
Steel Ball Diameter: ¢16 ± 0.05 mm
Ball Rebound Accuracy: 1.5
Test Sample Size: 100 mm (Length) * 100 mm (Width) * 50 mm (Height)

Test Item: 6.2.5.2 Rebound Performance, conducted according to GB/T6670-2008, using Method A for the test. The sampling location is the seating surface of the specimen, or sampling can be done on material identical to the test sample.
Applicable Standards: QB/T 1952.1-2012 Soft Furniture Sofa, GB/T6670-2008, ASTM D3574 (US Standard), and ISO 8307