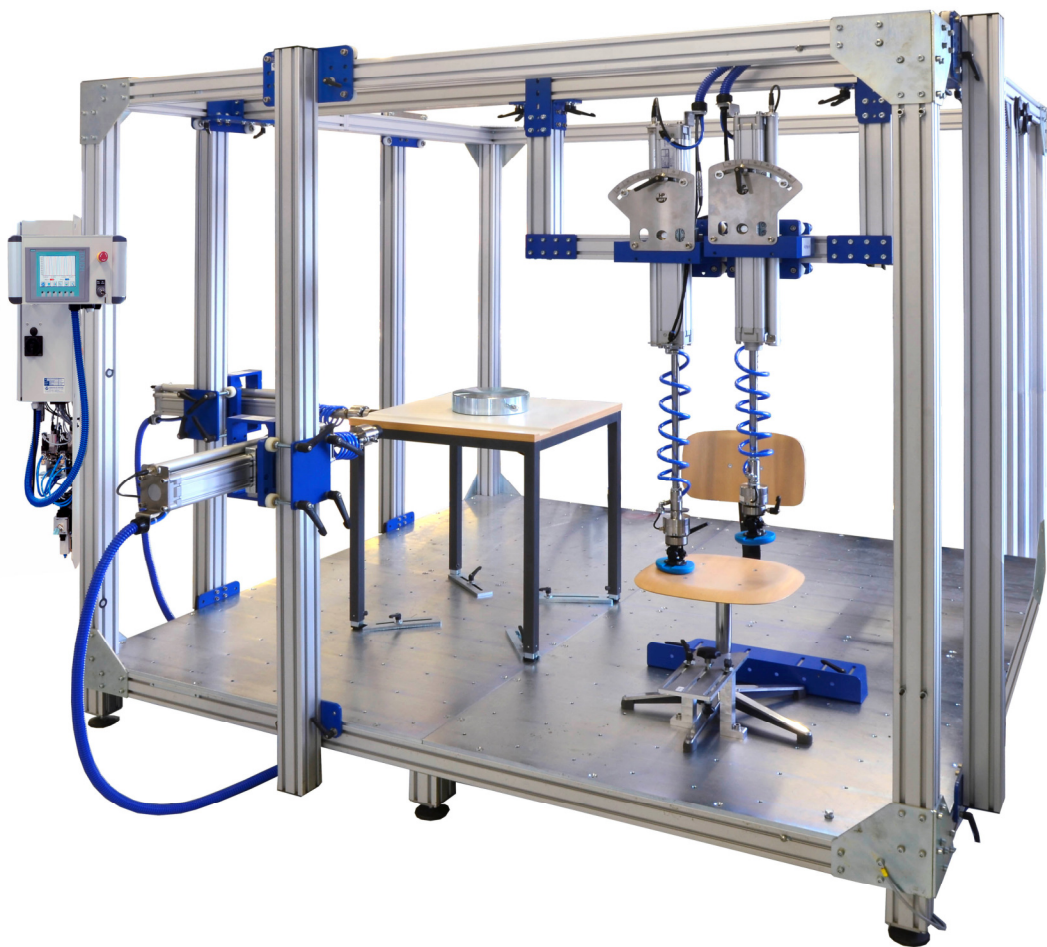




## Product information

# Universal test rigs for furniture and component testing with Calmar one

The PLC-based system with easy handling for simple test tasks





### General product description

The universal test rig concept of the Calmar one series by Hegewald & Peschke is designed for standard-compliant furniture and component testing according to DIN EN ISO, BIFMA, BS, NEN, GB, GOST, etc. In addition to durability tests, dynamic and static load tests, both functional tests and simulations of the product life cycle can be carried out. Depending on the specimen and test task, an individual test rig can be configured for your specific test task on the basis of this tool box.

The PLC-based control concept enables test configurations with up to six axes. It is perfect for simple application and easy operation and focuses on the equipping of the test rigs with pneumatic axes.

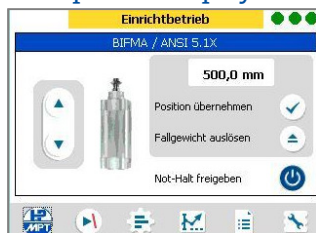
### Technical data:

- Internal sampling rate: 10-20ms real time
- Fixed control frequency of 100ms
- Control accuracy up to  $\pm 2$  digits
- Analog digital transformer with 13bit resolution (smallest digit of 0.6N at 2kN load cell)
- 20 test templates recordable
- From 1 up to 6 test axis systems available
- 2 or rather 3 simultaneous tests at one test rig with multiaxial testing systems (with up to 4 or rather up to 6 axes)



Intuitive coloured 6" touch panel

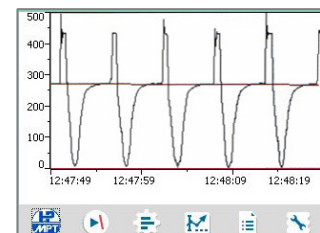
### Examples for display views in the application-optimized control concept Calmar one



Test parameterization in setup mode



Test overview in automatic mode



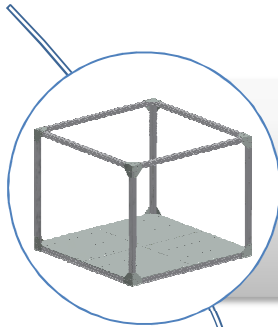
Progress view during the test

### Calmar one testing systems – essential features and particularities

- Extremely simple handling via touch display directly on the test rig with application-oriented user interface
- Fast loading of pre-configured standards-based and customer-specific test methods
- Freely configurable test sequences and test axes
- Online visualization (real-time graphics/values) on the touch screen display
- Data export interface - Data recording configurable - export option (\*.csv) to PC
- Optional automated test protocol
- High-precision control electronics with high resolution in a wide load/position measuring range
- Selection of preconfigured control parameters for high precision and control quality
- Accelerated cycle times possible without loss of control quality thanks to new adaptive controller
- Very quiet operation due to encased control cabinet
- Various test modules possible: alternating bending, rotation test, drop test, linear motion
- Control cabinet with central compressed air and power supply and separate operating interface with touch display
- Modular & flexible test systems - single test rigs and universal test rigs
- Universal tool box system - customer-specific equipment (also special systems)
- Durable and robust in harsh industrial environments or test laboratories
- High ease of use due to roller-guided, freely positionable profiles, thread grid in 12mm thick galvanised magnetic base plate, quick-clamping systems, etc.
- Very high variety of accessories

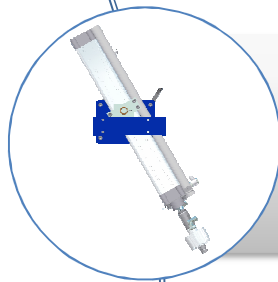


You can configure your test rig in 4 simple steps:



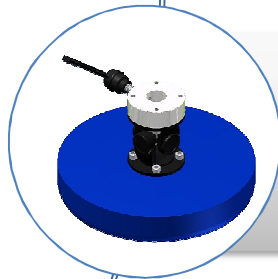
#### Test frame

- Base frame
- Pedestal (for uneven ground)
- Additional profiles (horizontal und vertical) as well as cross girders



#### Test axes

- Pneumatic test axes with different measurement sensors and control (load/position) as well as different load ranges and strokes possible
- Adaption on test frame with mounting brackets



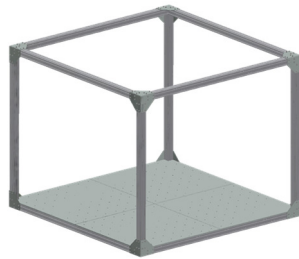
#### Accessories

- Various load pads and fixing elements depending on the test standard and test application



#### Control Calmar one

- Selection of control mode (load/position) and test axes



Example for a test frame  
(2400mm x 2400mm x 2000mm)



pedestal

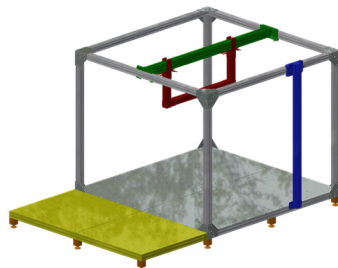
## Test frame

The size of the test frame depends on the customer requirements and on the specifications of the standard(s) according to which the respective testing task must be fulfilled.

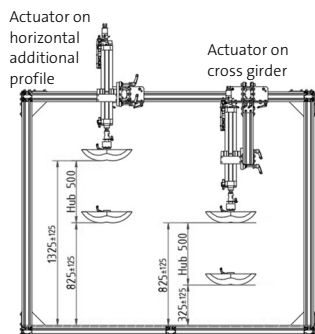
We offer various sizes for this purpose. If the test rig exceeds the specified sizes, special designs with horizontal or vertical additional modules are also possible. Additional roller-guided profiles can be used to fix the test axes and mount accessories and specimens.

The upper profiles of the test frame are available in 2 heights. The profile selection is designed in such a way that on the one hand a high stiffness and on the other hand a certain elasticity is guaranteed. The design of the profiles ensures that, taking into account the area moment of inertia and the modulus of resistance, the profiles can bend only slightly and above all reversibly under the loads to be applied.

Item no.	Upper profiles (in mm)	Length (in mm)	Width (in mm)	Height (in mm)
40-005-000-BG04	80x80	1200	1200	2000
40-005-000-BG03	80x80	2400	1200	2000
40-005-000-BG68	80x120	2400	1200	2000
40-005-000-BG01	80x80	2400	2400	2000
40-005-000-BG09	80x80	2400	2400	2300
40-005-000-BG73	80x80	2400	2400	2500
40-005-000-BG76	80x120	3600	2400	2000
40-005-000-BG66	80x120	4800	2400	2000
40-005-000-BG30	Pedestal on uneven ground, recommended for smaller and obligatory for test rigs larger than 3000mm			



Drawing of a test rig with additional:  
 ● roller-guided vertical profiles (blue)  
 ● roller-guided horizontal profiles (green)  
 ● roller-guided cross girders (red)  
 ● base plate extensions (yellow)



Possible min. specimen heights using the test axis with 500mm stroke and horizontal profiles as well as bearings

## Additional roller-guided profiles & cross girders

Vertical profile Item no.	Suitable for...
40-005-000-BG10	2000mm test rig height & mounting on 80mm x 80mm profile
40-005-000-BG11	2000mm test rig height & mounting on 80mm x 120mm profile
40-005-000-BG15	2300mm test rig height & mounting on 80mm x 80mm profile
40-005-000-BG17	2500mm test rig height & mounting on 80mm x 80mm profile
Horizontal profile Item no.	Suitable for...
40-005-000-BG20	2400mm test rig width & 80mm x 80mm profile
40-005-000-BG23	2400mm test rig width & 80mm x 120mm profile
40-005-000-BG57 <sup>1</sup>	manually height-adjustable profile set for 2400mm test rig depth & mounting on 80mm x 80mm profile
40-005-000-BG48 <sup>1</sup>	manually height-adjustable profile set for drop test for 2400mm test rig depth & mounting on 80mm x 80mm profile
40-005-000-BG49 <sup>1</sup>	manually height-adjustable profile set for drop test for 1200mm test rig depth & mounting on 80mm x 80mm profile
Cross girder Item no.	Suitable for...
40-005-000-BG25	specimen height up to 500mm lower, for test rig width 2400mm, on 80mm profile
40-005-000-BG26	specimen height up to 500mm lower, for test rig width 1200mm, on 80mm profile
40-005-000-BG37	specimen height up to 500mm lower, for test rig width 2400mm, on 120mm profile
40-005-000-BG27	specimen height up to 850mm lower, for test rig width 2400mm, width 1400mm, horizontal 80mm profile required ●
Base plate extension Item no.	Dimensions
40-005-000-BG95	1200mm x 2400mm (if applicable 3 pedestals necessary)

<sup>1</sup> two vertical profiles required for installation



Pillar of 80x80 profile

## Special profiles

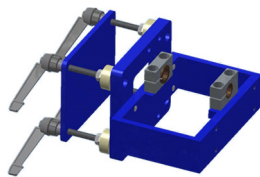
Item no.	
40-005-080-BG86	Pillar of 80x80 profile for mounting accessories such as test axes, fixation to test rig structure or floor anchoring  <i>Application example: Adaptation of horizontal test axes for testing smaller tables or children's furniture</i>



Pneumatic test axis

### Pneumatic test axes

Test axis Item no.	Control mode	F <sub>max</sub> (in N)	Axis (ø)	Stroke (in mm)
41-049-214	load controlled	1000	20	320
41-049-220	load controlled	1500	63	500
41-049-228	load controlled	1500	63	800
41-049-230	load controlled	2500	80	500
41-049-221	load /position controlled	1500	63	500
41-049-229	load /position controlled	1500	63	800
41-049-231	load /position controlled	2500	80	500



Mounting bracket for the adaption of the test axis on the test frame

### Mounting accessories

Mounting bracket Item no.	Axis (ø)
40-001-419	50
40-001-429	63
40-001-439	80

The easy adjustment of the angle as well as the flexible or rigid bearing are an advantage of the mounting brackets. In addition, the fixing elements allow free positioning of the test axes over the profile length in height or width. The actuator or swivel axis can be arranged parallel or perpendicular to the profile.

#### Further accessories

Item no.	
40-001-401	Height adjustment support for test axis with self-locking hand winch



Hand winch for easy height positioning  
of horizontal actuators



### Control and software Calmar one

The control cabinet is mounted on the test rig.

In addition to the control/regulation electronics, the "control" includes the separate touch display, the control cabinet, the pneumatic maintenance unit, the central pneumatic connection and the central power supply. Depending on the type, up to 6 axes can be connected to the central control cabinet.

The pneumatics are separated from the electronics and enclosed soundproofed.

Load controlled and load/position controlled test axes can be combined. As soon as a position measuring system is available, the corresponding control type 40-931-xxx must be used.

Item no.	Number axes
40-930-112	Calmar one control for 2 axes, load controlled
40-931-112	Calmar one control for 2 axes, load & position controlled
40-930-113	Calmar one control for 3 axes, load controlled
40-931-113	Calmar one control for 3 axes, load & position controlled
40-930-114	Calmar one control for 4 axes, load controlled
40-931-114	Calmar one control for 4 axes, load & position controlled
40-930-116	Calmar one control for 6 axes, load controlled
40-931-116	Calmar one control for 6 axes, load & position controlled

### Software option

18-350-001	Report generator CalReport for PLC testing systems of series Calmar one
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## Accessories

We will be pleased to provide you with our separate accessory brochures on drop weights, load pad (round and special shapes) and fixing elements on request. Below you will find some examples.



Seat impactor  
(41-006-730)



Seat shape  
(41-006-220)



Load pad for back rest  
incl. rotation lock  
(41-006-305)



Load pad  
for arm rests  
(41-006-521)



Upgrade kit for seat cylinder (40-001-123-BG18)

## Accessories for chair testing (selection)

Item no.	Description	Relevant test standard(s)
41-006-730	Seat impactor for drop tester 25kg, incl. calibration protocol	BIFMA X5.1 EN 1728, EN 1730
40-001-123-BG18	Upgrade kit for spring balanced positioning of seat cylinder	DIN EN ISO 1335, BIFMA X5.1, DIN EN ISO1728
41-006-220	Seat shape, clamping connection, moulded part of GF-UP <i>Special edition:</i> colour nature: Item no. 41-006-220v1 <i>Further accessories:</i> for crossing axes, check use of load introduction frame 41-006-060 to 063 and rotation lock 41-012-011 to 023!	EN 581, EN 1335, EN 1728
41-006-305	Load pad, rectangular for testing the backrest 250x200-R450/R12; clamping connection $\varnothing 20$ cardanic; with rotation lock for backrest <i>Special edition:</i> colour nature: Item no. 41-006-305v1	DIN 1728, DIN EN 1335
41-012-013	Rotation lock for pneumatic cylinder for tests with load introduction frame e.g. for seat/backrest testing	
41-006-060	Load introduction frame for alternating bending test seat/backrest with clamping connection	
41-006-101	Load pad $\varnothing 200\text{mm}$ -R300/R12; clamping connection $\varnothing 20$ cardanic	DIN EN 1022, DIN EN 1335 prEN 1728, ISO 7173
41-006-521	Load pad 100mm wide for permanent loading of the arm rests; variable load application and angle, clamping connection $\varnothing 20$	DIN EN 1335-3:2009, EN 1728:2012 EN 581-2



Load pads, round, clamping connection

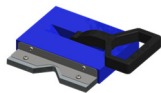


## Load pads for table testing (selection)

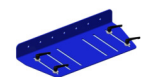
Item no.	Description	Relevante Prüfnorm(en)
41-006-110	$\varnothing 100\text{mm}$ for table testing, clamping connection <i>Special edition:</i> colour nature: Item no. 41-006-110v1	EN 527, EN 581, EN 1730
41-006-120	$\varnothing 50\text{mm}$ for table testing, clamping connection <i>Special edition:</i> elastic spacer: 41-006-121	EN 527, EN 581, EN 1730



Fixation element set  
for table test rigs



Fixation element set  
for furniture test rigs



Stop element for  
office swivel chairs



Clamping bridge for  
office swivel chairs

## Fixation elements (selection)

Item no.	Description
40-001-060	Fixation element set for furniture test rigs, 4 magnets with 12 mm high stop edge
40-001-117	Fixation element set for table test rigs
40-001-056	Stop element for office swivel chairs
40-001-050	Clamping bridge for office swivel chairs

## Application-oriented complete test rigs to choose from and as an example

The following test rigs have been designed according to the tool box principle. However, they offer the convenience of a finished product, which is designed for concrete testing tasks and already contains all necessary components, such as frames, additional profiles, test axes, mounting accessories, control and further accessories.

Item no.	Description
40-930-070	Universal test rig for tables and couches, consisting of: 3 pneumatic test axes load-controlled Dimensions: LxWxH: 2400x2400x2000 [mm]
40-930-071	Universal test rig for tables and couches, consisting of: 4 pneumatic test axes load-controlled Dimensions: LxWxH: 2400x2400x2000 [mm]
40-930-170	Universal test rig for bed testing, tables and couches, consisting of: 4 pneumatic test axes load-controlled Dimensions: LxWxH: 2400x2400x2300 [mm]
40-930-177	Universal test rig for tables and chairs, consisting of: 4 pneumatic test axes load-controlled Dimensions: LxWxH: 2400x2400x2300 [mm]
40-930-178	Universal test rig for tables and chairs, consisting of: 4 pneumatic test axes load-controlled Dimensions: LxWxH: 3600x2400x2000 [mm]
40-931-176	Universal test rig for bed testing, tables and couches, consisting of: 4 pneumatic test axes load-/position-controlled Dimensions: LxWxH: 2400x3600x2000 [mm]
40-931-177	Universal test rig for bed testing, tables and couches, consisting of: 4 pneumatic test axes load-/position-controlled Dimensions: LxWxH: 2400x2400x2300 [mm]
40-932-070	Universal test rig for tables and couches, consisting of: 3 pneumatic test axes indirect load-controlled (without load cell) Dimensions: LxWxH: 2400x2400x2000 [mm]
40-932-071	Universal test rig for tables and couches, consisting of: 4 pneumatic test axes indirect load-controlled (without load cell) Dimensions: LxWxH: 2400x2400x2000 [mm]

### Application possibilities:

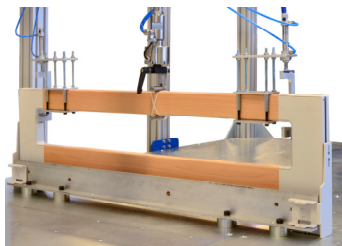


Fig. 1: Testing of the side protection of nursing bed



Fig. 2: Armchair testing



Fig. 3: Side-to-side-testing

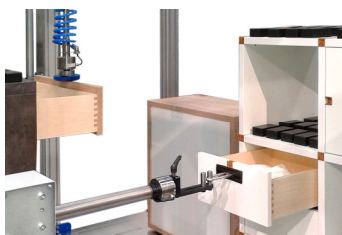


Fig. 4: Drawer testing



Fig. 7: Seat/backrest testing for living and object furniture in the test rig



Fig. 5: Swivel test



Fig. 6: Table testing with static load

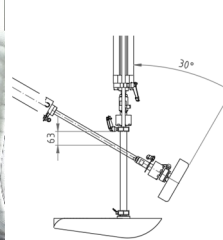


Fig. 8: Armrest testing

## Service

Hegewald & Peschke offers comprehensive services to its customers. One of the key services is commissioning of the machine on site with calibration and instruction of the operating personnel. Regular calibration of the test equipment guarantees the reliability of measuring results and serves as basis of measuring and test equipment monitoring in quality assurance measures. Different test tools, such as the seat impactor or the biting tester, are supplied as standard with calibration certificate. The calibration laboratory from Hegewald & Peschke is accredited according to DIN EN ISO/IEC 17025 and supplies traceable calibration certificates. DAkkS or factory calibration certificates can be issued depending on the respective measured variables.

## Hegewald & Peschke on YouTube

Experience our furniture and component test rigs in action:  
[www.youtube.com/hegewaldpeschke](http://www.youtube.com/hegewaldpeschke)

## Other offerings:

- » Static electromechanical universal testing machines
- » Hydraulic universal testing machines
- » Portable and stationary hardness testers
- » Longitudinal measuring fixtures
- » Maintenance and DAkkS calibration services
- » Special testing systems

## Contact:

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