CLOSING FORCE MEASUREMENT
SAFE TEST EQUIPMENT FOR GLOBAL USE

TEST EQUIPMENT

Test systems to check externally powered components and systems like doors, windows and gates

DriveTest

A COMPANY OF PCE INSTRUMENTS

TESTING
MEASUREMENT DEVICES

CLOSING FORCE MEASURING DEVICE FROM GERMANY

Maintenance and Service

In 1999 DriveTest begun to produce by licence the Original-BIA Class 2 – a mechanical device to measure the closing force of bus doors. Soon after DriveTest developed its first own measurement device – the electronic BIA Class 1. Since then the product spectrum extended: Measurement devices for doors and gates, car-windows and roofs as well as elevator doors were engineered and produced. In 2022, Drive Test GmbH became a subsidiary of PCE Instruments.

Today DriveTest is working for the worldwide standardization of Test systems to ensure uniform high-level quality standards.

MEASURING DEVICES FOR BUS DOORS

To measure the closing force of bus doors

MEASURING DEVICES FOR TRAM OR TRAIN DOORS

Closing force of tram or train doors

MEASURING DEVICES FOR SUNROOFS OR WINDOWS

To measure and evaluate the closing force of car system like sunroofs or windows.





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MEASURING DEVICES FOR DOORS AND GATES

To measure and evaluate the closing force of doors and gates.

MEASURING DEVICES FOR ELEVATOR DOORS

To measure and evaluate the closing force of elevator doors and machinery protection equipment.

TESTSYSTEMS

Test systems to check power controlled components and systems like electronic drives, sun roofs, windows, doors, and gates.

CLOSING FORCE MEASURING
CLOSING FORCE MEASURING DEVICE

ORIGINAL BIA1-SY-10-310

Closing force measurement system for bus and train doors and sliding steps

The original BIA class 1 closing force measuring device is an electronic closing force measuring device for rail vehicle and bus doors. The elaborate design combines precision with practical robustness and ensures accurate measured values even after years of use in harsh environments.For cyclic measurements on vehicles with multiple doors, a quick and easy implementation is of great importance. For this purpose, software was developed that drastically reduces the measurement process and the effort required for documentation. With just a few operating steps, the measurements for a complete vehicle can be taken over, printed out in tabular form and saved in a database.

ISO calibrated

- applicable standards – EN 14752:2005, VDV 111, 2001/85/EG
- operation with a single button or remotely via Microsoft® DLL interface or National instruments® LabView library
- complete scope of delivery -including high-quality transport case and software
- professional, comprehensive PC software – PinchPilot
- comprehensive user support -calibration service, standard change service
- support for the management of large fleets

APPLICATION

TECHNICAL SPECIFICATIONS

BIA1-SY-10-310	
Measuring range	25 ... 310 N
Accuracy	+/- 3 N or 3% of reading
Resolution	1 N
Stiffness	10 N/mm
Gap width	115 mm / 4.5"
Diameter	100 mm / 3.9"
Measuring principle	DMS transducer
Acquisition frequency / rate	250 Hz / 4 ms
Power supply	battery 9 V block, e.g. 6LR61
Battery voltage monitoring	yes
Operating temperature range	-10 to +40 °C / 14 to 104 °F
Storage temperature range	-40 to +50 °C / -40 to 122 °F
Humidity	max. 90% rel. h, non-condensing.
Dimensions	260 x 130 x 115 mm / 10.2 x 5.1 x 4.5"
Weight	2.1 kg / 4.6 lb

Optional accessories:

Test specimen	Prüfkörpersatz 1-3
	Prüfkörper 1
	Prüfkörper 2
	Prüfkörper 3
	Prüfkörper 4
	Prüfkörper 5
Test block for manual pre-test	Prüfkörper 143407

PC evaluation software PinchPilot
- Multilingual (DE, EN, IT, FR, ES)
- Graphic representation of the force curve
- Calculation of the standard-relevant characteristic values
- Evaluation according to different guidelines possible
- Custom policy adjustable
- Log printout
- Data export (Excel, CSV, PDF)
- Optional measuring point identification

Other model:

BIA1BT-SY-10-310	**Bluetooth**

Force Meter App downloadable from Google Play Store
- Force Meter – easy-to-use app with automatic guidelines and standards updates
- Time saving - immediate feedback on the measurement result including simpler report generation
- Paperless office - reduces paper and the associated costs and protects the environment
- Can be used individually - integration of the customer's signature possible

System requirements software PinchPilot (see tab Software/App)
Display device SEB2.2-AC
- Data logger unit with LCD display and LED status indicators, control button, serial interface
- Optional PC-controlled measurement
- 9 V battery supply
- Real time clock
- Memory for 100 measurements
- Sensor and PC interface
- Peak value display and effective power display
- Rating display i. O./n. i. O.

Subject to change without notice

CLOSING FORCE MEASURING
CLOSING FORCE MEASURING DEVICE

ORIGINAL BIA2-SE-10-300

Closing force measurement system for bus and train doors

The original BIA class 2 is a mechanical closing force measuring device for bus doors. The elaborate design combines precision with practical robustness and ensures accurate measured values even after years of use in harsh environments.

Precise measurements are guaranteed by a six-fold ball bearing guide. The housing of the original BIA2 is made of high-strength POM for a long service life in tough conditions. The BIA2 clamping force measuring system is equipped with a mechanical drag indicator which displays the peak value of the force after measurement

ISO calibrated

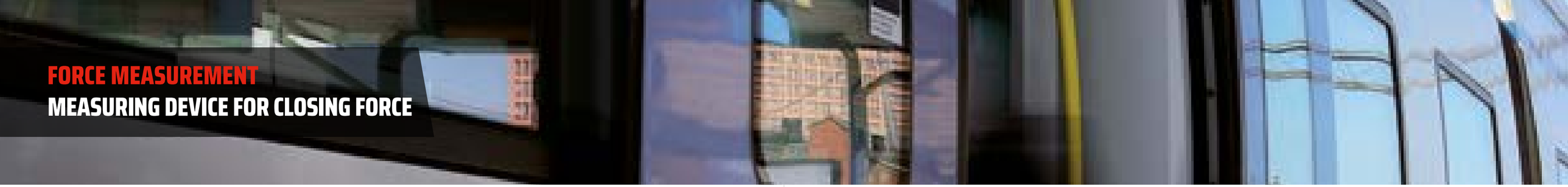
- precise measurements
- robust design
- easy to use
- complete scope of delivery - including high-quality transport case
- extensive user support
- calibration service

APPLICATION

TECHNICAL SPECIFICATIONS

BIA2-SE-10-300	
Measuring range	50 ... 300 N
Accuracy	+/- 10 N or 5% of reading
Stiffness	10 N/mm or 25 N/mm selectable!
Gap width	115 mm / 4.52"
Diameter	100 mm / 3.93"
Measuring principle	slave pointer
Dimensions	260 x 130 x 115 mm / 10.2 x 5.1 x 4.5"
Weight	2.1 kg / 4.6 lb
Other model:	
BIA2-SE-25-750	Stiffness: 25 N/mm, Measuring range: 25... 750 N

Subject to change without notice



FORCE MEASUREMENT
MEASURING DEVICE FOR CLOSING FORCE

BIA600-SY-10-700

For railway doors and sliding steps

Drive Test's BIA 600 is an electronic pinch force measuring system for power driven train and tramway doors. Combining rugged construction with precision, the advanced mechanical design delivers exact measurements, even after years of usage in an industrial environment. Fast and easy performance of repetitive measurements is an important aspect of standard test scenarios. Drive Test has responded to this requirement by developing software which streamlines the measurement process and drastically reduces documentation effort. Measurements made on a complete vehicle can be entered, printed as a table, and stored in a database with a minimum of user entries.

ISO calibrated

- applicable standards
  DIN EN 14752:2015, DIN EN 14752:2005 (optional)
- professional software
  PinchPilot offers complete functionality
- spacers for all apertures
  required by EN 14752:2015
- automatic limit setting
  according to detected spacers
- complete delivery all components
  packed in high-quality transportation case
- management support for large
  vehicle pools integration in existing
  software infrastructure available

APPLICATION

TECHNICAL SPECIFICATIONS

BIA600-SY-10-700	
Force entry	both-sided
Measuring range	0–700 N
Accuracy	+/– 3 N (0–100 N)/ +/– 3 % (>100 N)
Stiffness	10 N/mm
Gap width	90 mm
Area	100 x 100 mm
Force sensor	Strain Gauge Bridge
Dimensions	320 x 250 x 110 mm
Weight	3,0 kg

Optional accessories:

Test specimen	Prüfkörpersatz 1-3
	Prüfkörper 1
	Prüfkörper 2
	Prüfkörper 3
	Prüfkörper 4
	Prüfkörper 5
Test block for manual pre-test	Prüfkörper 143407

Spacer set
- Complete set for all opening widths according to EN 14752:2015
- Automatic recognition of the spacers used
- Automatic limit value adjustment according to opening width
- Easy to use, quick assembly without tools
- Robust design, low weight, POM
- Together with BIA 600 sensor, SEB2 in a transport case

PC evaluation software PinchPilot
- Multilingual (DE, EN, IT, FR, ES)
- Graphic representation of the force curve
- Calculation of the standard-relevant characteristic values
- Evaluation according to different guidelines possible
- Custom policy adjustable
- Log printout
- Data export (Excel, CSV, PDF)
- Optional measuring point identification

Other model:
BIA600BT-SY-10-700 **Bluetooth**

Force Meter App downloadable from Google Play Store
- Force Meter – easy-to-use app with automatic guidelines and standards updates
- Time saving - immediate feedback on the measurement result including simpler report generation
- Paperless office - reduces paper and the associated costs and protects the environment
- Can be used individually - integration of the customer's signature possible

System requirements software PinchPilot

Display device SEB2.2-AC
- Data logger unit with LCD display and LED status indicators, control button, serial interface
- Optional PC-controlled measurement
- 9 V battery supply
- Real time clock
- Memory for 100 measurements
- Sensor and PC interface
- Peak value display and effective power display
- Rating display i. O./n. i. O.

Subject to change without notice

FORCE MEASUREMENT
CLOSING FORCE MEASURING DEVICE

FM100-SY-500-2000

Closing force measuring system for doors and gates

The closing force measuring device is an electronic measuring device for power-operated doors and gates. Typical use is both the final inspection of new installations and regular rechecks. The closing force measuring system combines the well-known robust design for years of use in harsh environments and sustained precision. For cyclical measurements on plants with multiple doors and gates, quick and easy execution is of great importance. Drive Test has developed software for this purpose that drastically reduces the measurement procedure and the effort required for documentation. TÜV Nord has tested and certified the FM 100 closing force measuring device.

ISO calibrated

- instantaneous evaluation - according to selected guidelines and standards
- separate measured value acquisition module
- process reliability
- wide temperature operating range
- language selection - available in DE/ EN/ ES/ FR/IT/ CN
- user guidance and evaluation according to EN 12453:2017, EN 60335-2, DIN V 18650, ASR A1.7, DHF TS 011:2016 etc.
- housing made of high-strength material for long service life in heavy-duty use
- sensor with 2.5 m connection cable
- PC connection cable (USB)
- USB data stick with PC evaluation software PinchPilot and documentation

APPLICATION

TECHNICAL SPECIFICATIONS

FM100-SY-500-2000	
Measurement Range:	0 ... 2.000 N
Accuracy	+/- 3 N or 3 %
Resolution	1 N
Stiffness:	500 N/mm
Gap width:	50 mm
Diameter:	80 mm
Measuring principle	DMS transducer
Memory	80 measurements
Acquisition frequency/rate	500 Hz / 2 ms
Power supply SEB2	9 V block battery, e.g. 6LR61
Battery voltage monitoring	Yes
Environmental conditions	
Operating temperature range	-10 to +40 °C
Storage temperature range	-40 to +50 °C
Humidity	max. 90 % rel. F, non-condensing
Dimensions	210 x 80 x 50 mm
Weight:	2.1 kg

Optional accessories:

Extension set	FM100-SP-30-50
Extended carrying case	FM 100-AC
Load bar	FM100-SP-600
	FM100-SP-1000
	FM100-SP-1700
	FM100-SP-2900
Barrier Fixture Set for Barriers	FM100-FX Barrier

PC-Analysis-Software PinchPilot
- Multilingual (DE, EN, IT, FR, ES)
- Graphical display of force vs. time
- Calculation of relevant parameters
- Assessment with respect to different standards
- Support for user defined standards
- Printed reports
- Data export (Excel, CSV, PDF)

Other model:

FM100BT-SY-500-2000	**Bluetooth**

System requirements Software PinchPilot a. App
Display unit SEB2.2-AC
- Data logger unit with LCD display and
- LED status displays, operating button, serial interface
- optional PC-controlled measurement
- 9 V battery supply
- Real-time clock
- Memory for 100 measurements
- Sensor and PC interface
- Peak value display and effective force display
- Evaluation display i. O./n. i. O.

Download App from Google Play Store
- Force Meter – User-friendly app with automatic updates of guidelines and standards updates
- Time-saving – immediate feedback on the measurement result incl. simple report generation
- Paperless office – reduces paper and the associated costs and protects the environment
- Individually usable – integration of the customer's signature possible

Subject to change without notice

FORCE MEASUREMENT
CLOSING FORCE MEASURING DEVICE

FM200 SERIES

Closing force measuring system for sliding roofs, window lifters, tailgates

The closing force transducer is an electronic closing force measuring device for power-operated windows, sliding roofs and tailgates in the automotive sector. Typical areas of application are testing and production in the automotive industry. It is also increasingly used by technical inspection institutions. Its uncompromising design combines precision with practical robustness and ensures accurate measured values even after years of use in harsh environments. For measurement set-ups in testing and manufacturing, quick and easy execution is of great importance. For this purpose, Drive Test has developed software that drastically reduces the measurement procedure and the effort required for documentation.

ISO calibrated

- support of relevant standards - 2000/4 EC, US Standard FMVSS 118
- precise measurements - through frictionless guidance and platform load cell
- easy to use - single button operation or remote operation via Microsoft® DLL
- interface or National Instruments ® LabVIEW library
- complete scope of delivery - including high-quality carrying case and software
- professional, comprehensive PC software - PinchPilot
- extensive user support - calibration service, standards revision service ensures the
- application of the latest standard version
- flexible customisation - made possible by a variety of available force inputs:
- customised adaptations also available from DriveTest

APPLICATION

TECHNICAL SPECIFICATIONS

FM200

Accuracy	+/- 3 N oder 3 % of measured value
Gap width	Minimum 4 mm
Area	50 x 50 mm
Measuring principle	DMS-transducer
Dimensions	240 x 85 x 60 mm
Weight	1,3 kg

Models:

FM200-SU-SY-10-200	stiffness	10 N/mm	measuring range	0 ... 200 N
FM200-SU-SE-20-300	stiffness	20 N/mm	measuring range	0 ... 300 N
FM200-SU-SE-65-300	stiffness	65 N/mm	measuring range	0 ... 300 N

PC-Analysis-Software PinchPilot
- Multilingual (DE, EN, IT, FR, ES)
- Graphical display of force vs. time
- Calculation of relevant parameters
- Assessment with respect to different standards
- Support for user defined standards
- Printed reports
- Data export (Excel, CSV, PDF)

Download App from Google Play Store
- Force Meter – User-friendly app with automatic updates of guidelines and standards updates
- Time-saving – immediate feedback on the measurement result incl. simple report generation
- Paperless office – reduces paper and the associated costs and protects the environment
- Individually usable – integration of the customer's signature possible

System requirements Software PinchPilot a. App
Display unit SEB2.2-AC
- Data logger unit with LCD display and
- LED status displays, operating button, serial interface
- optional PC-controlled measurement
- 9 V battery supply
- Real-time clock
- Memory for 100 measurements
- Sensor and PC interface
- Peak value display and effective force display
- Evaluation display i. O./n. i. O.

Subject to change without notice

CLOSING FORCE MEASURING
CLOSING FORCE MEASURING DEVICE

FM205-WI-SY-10-150

Closing force measuring system for window lifters

The FM 205 is an electronic force measuring system for powered window lifters. Typical use includes R+D and production testing in the automotive industry. The FM 205 is characterized by its ease of use for repetitive measurements. According to the requirements of different standards a large variety of spring stiffnesses is available. It is also increasingly used by technical safety agencies. Combining rugged construction with precision, the advanced mechanical design delivers exact measurements, even after years of service in an industrial environment. Fast and easy performance of repetitive measurements is an important aspect of standard test scenarios.
Drive Test has responded to this requirement by developing software which streamlines the measurement process.

ISO calibrated

- support of relevant standards - 2000/4 EC, US Standard FMVSS 118
- precise measurements - uses frictionless guides and a single point (platform) load cell
- robust construction – manufactured from durable aluminium for long service life in industrial environment
- easy to use - single button operation or remote operation via Microsoft® DLL interface or National Instruments ® LabVIEW library
- professional software - PinchPilot offers complete functionality
- different spring stiffnesses available – 2, 5, 10, 20, 65 N/mm
- Complete delivery – all components packed in high-quality transportation case

APPLICATION

TECHNICAL SPECIFICATIONS

FM205/20

Application of force	on one side
Measuring range	0 ... 200 N
Accuracy	+/- 3 N (0-100 N) or +/- 3 % (>100 N)
Spring stiffness	20 N/mm
Gap width	Fmax. 5 mm / 0.19"
Area	5 x 80 mm / 0.19 x 3.1"
Force sensor	
Cable length	strain gauge bridge
1.5 m / 4.9 ft	
Dimensions	175 x 75 x 57 mm / 6.8 x 2.9 x 2.2"
Weight	ca. 400 g / 14 oz

Display device SEB2.2
- Display device SEB2.2 data logger unit with LCD display and LED status indicators, Control button, USB interface
- Optional PC-controlled measurement
- Lithium polymer battery
- Real time clock
- Memory for 100 measurements
- Sensor and PC interface
- Peak value display and effective power display
- Rating display i. O./n. i. O.

Spacers
- Complete set for all opening widths according to EN 14752:2015
- Automatic detection of the spacers used
- Automatic limit value adjustment according to opening width
- Easy to use, quick assembly without tools
- Robust design, low weight, POM
- Together with BIA 600 sensor, SEB2 in a carrying case

PC evaluation software PinchPilot
- Multilingual (DE, EN, IT, FR, ES)
- Graphic representation of the force curve
- Calculation of the standard-relevant characteristic values
- Evaluation according to different guidelines possible
- Custom policy adjustable
- Log printout
- Data export (Excel, CSV, PDF)
- Optional measuring point identification

Other model:
FM205-WI-SE-02-050
FM205-WI-SE-05-100
FM205-WI-SE-20-200
FM205-WI-SE-65-260

Subject to change without notice

CLOSING FORCE MEASURING
CLOSING FORCE MEASURING DEVICE

FM300-SY-25-750

Closing force measurement system for elevator doors

The closing force measuring device is an electronic measuring device for elevator doors and protective devices on machines. Typical use is both the final acceptance of new systems and regular inspection. Its uncompromising design combines precision with practical robustness and ensures accurate measured values even after years of use in harsh environments.
In the case of cyclical measurements on objects with several elevators, a quick and easy implementation is of great importance. For this purpose, software was developed that drastically reduces the measurement process and the effort required for documentation.

ISO calibrated

- precise measurements
- robust design
- easy handling - operation with a single control button or remotely controlled via Microsoft® DLL - interface or National Instruments® LabView library
- complete scope of delivery - including high-quality transport case and software
- professional, comprehensive PC software – PinchPilot
- comprehensive user support - calibration service, standard change service ensures the
- support of relevant standards - EN 81-1, EN 81-2, EN 81-20:2014, EN 81-50:2015, EN 14120
- application of the latest version of the standard
- software support - integration into existing software structures possible
- extensive systems can be measured in one run
  measured value acquisition module saves up to
- 100 measurements

APPLICATION

TECHNICAL SPECIFICATIONS

FM300-SY-25-750	
Measuring range	**0 ... 750 N**
Accuracy	+/- 3 N or 3 % of reading
Stiffness	25 N/mm
Gap width	145–510 mm / 5.7-20"
Diameter	58 mm / 2.2"
Measuring principle	DMS transducer
Dimensions	290 x 140 x 60 mm / 11.4 x 5.5 x 2.3"
Weight	1.7 kg / 3.7 lb
Stiffness	**25 N/mm**

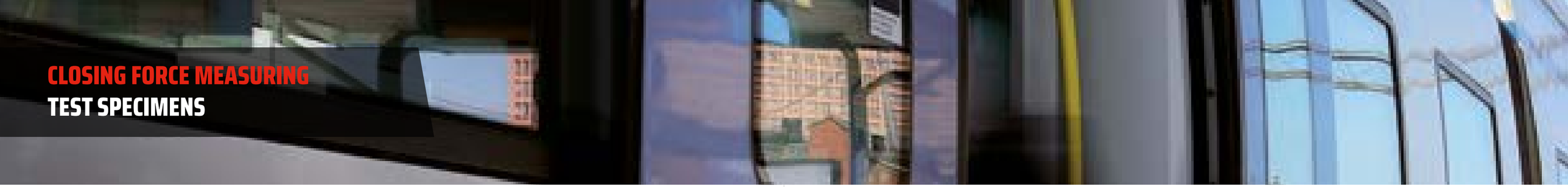
Display device SEB2
- Display device SEB2 data logger unit with LCD display and LED status indicators, control button, serial interface
- Optional PC-controlled measurement
- 9 V battery supply
- Real time clock
- Memory for 100 measurements
- Sensor and PC interface
- Peak display
- Rating display i. O./n. i. O.

PC evaluation software PinchPilot
- Multilingual (DE, EN, IT, FR, ES)
- Graphic representation of the force curve
- Calculation of the standard-relevant characteristic values
- Evaluation according to different guidelines possible
- Custom policy adjustable
- Log printout
- Data export (Excel, CSV, PDF)
- Optional measuring point identification

- System requirements software PinchPilot (see tab Software/App)

Other model:
FM300BT-SY-25-750 **Bluetooth**

Subject to change without notice



CLOSING FORCE MEASURING
TEST SPECIMENS

TEST SPECIMEN SERIES

Anti Pinch Test and Testing Powered Door Steps

Test specimens 1, 2 and 3 serve to verify that trapped objects between the vehicle doors are recognized and to test if anti pinch actions are effective. The maximum extraction force needed for clamped test specimen can be measured with the help of the spring scale. For this the rotatable and swivelling hook of the spring scale is inserted into the aperture of the test device. When closing the doors, the test specimen is clamped. By pulling the handle of the spring scale, the maximum extraction force can be determined.
Test specimen 4 tests the safety of stepping on powered door steps.
Test specimen 5 tests the safety of vehicle doors.

ISO calibrated

- **Test specimens 1, 2 and 3** serve to verify that trapped objects between the vehicle doors are recognized and to test if anti pinch actions are effective**.**
- **Precision spring scale** Range: 200N ± 1% of measured value (included in the scope of delivery of test specimen set 1,2 and 3)
- **Test specimen 4** ttests the safety of stepping on powered door steps..
- **Test specimen 5** tests the safety of vehicle doors.

APPLICATION

TECHNICAL SPECIFICATIONS

Test specimen 1
Anti pinch test for vehicle doors
Size: 10 x 50 x 300 mm
Material: Aluminium
Weight: 0.4 kg

Test specimen 2
Anti pinch test for vehicle doors
Size: 30 x 60 x 300 mm
Material: Aluminium
Weight: 1.4 kg

Test specimen 3
Anti pinch test for vehicle doors
Size: 5 x 30 x 300 mm
Material: Rubber band/ stainless steel
Weight: 0.1 kg

Test specimen 4
Testing powered door steps
Size: Ø 160 mm
Foot: Ø 40 mm
Material: Stainless steel
Weight: 15.3 kg

Test specimen 5
Anti pinch test for vehicle doors
Size: Ø 16 mm, Length: 300 mm
Degree of Remission: 150 mm 2-5 %, 150 mm > 90 %
Material: Aluminium
Weight: 100 g

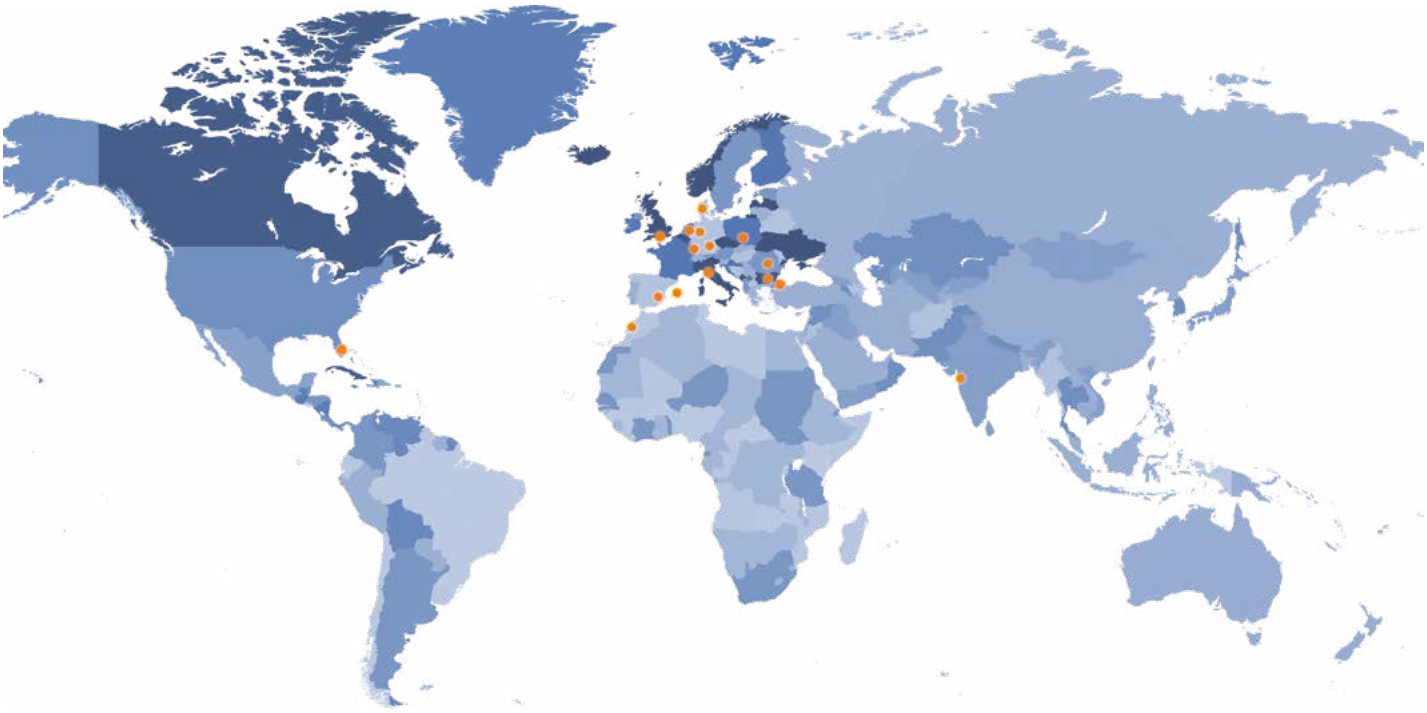
Precision spring scale 80196/7
(Range: 200 N ± 1% of measured value)

Set of test specimens 1–3:
- Test specimens 1, 2 and 3
- Precision spring scale (Range: 200 N ± 1% of measured value)
- Transportation case with foam inserts for complete delivery
- Calibration certificate of spring scale

Subject to change without notice

COMPANY LOCATIONS WORLDWIDE

PCE Instruments SE



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