



Magdeburger Prüfgerätebau GmbH

HMP PDG | The Static Plate Load Tester

The Static Plate Load Tester HMP PDG applies in earthworks and foundation engineering as well as road construction. It enables comfortably to determine the load capacity and the deformability of soils by evaluating load settlement lines and dynamic modulus of deformation of soil Ev1 and Ev2 according to DIN 18 134 issue 2012.

**Latest technology.
Intuitive handling.**

**Easily retrofittable for all
plate load tester.**

First choice for professionals!



MADE
IN
GERMANY

Calibration
INSTITUTE
authorised by the
Federal Highway
Research Institute



THE COMPANY

HMP Magdeburger Prüfgerätebau GmbH

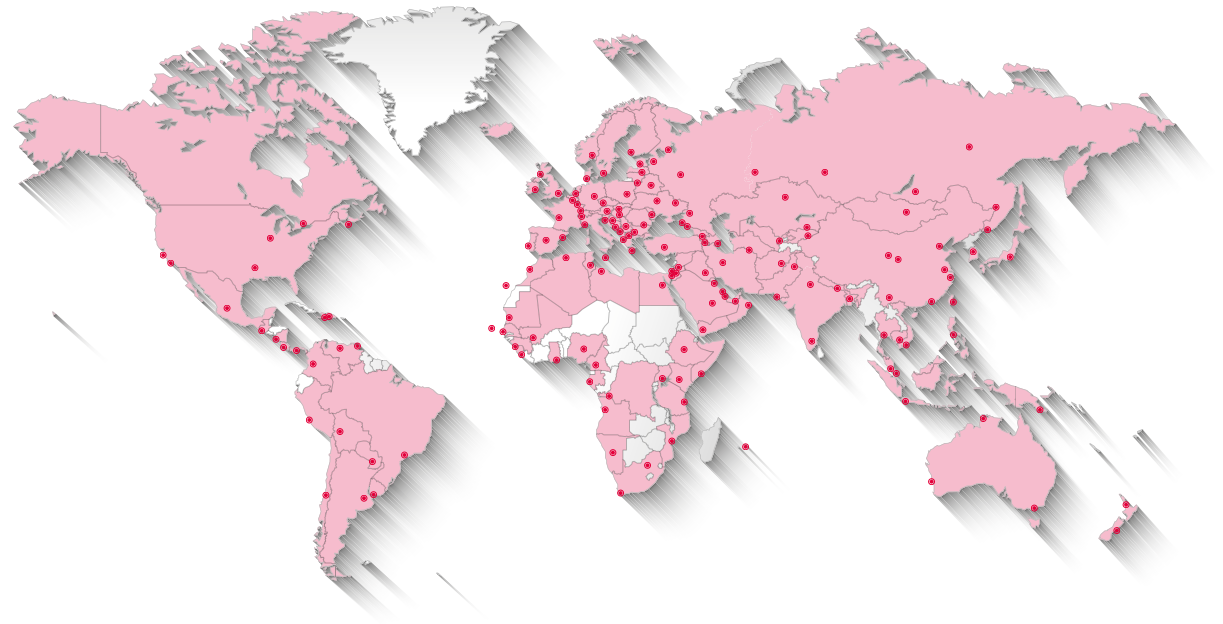
As a medium-sized family business in second generation we rely on continuity, reliability, confidence and innovation.

More than 30 years of experience in development, production and service, certified quality standards and latest production conditions make us a competent partner for the construction industry. The from us developed test equipment, as the Light Weight Deflectometer HMP LFG and the Static Plate Load Tester HMP PDG are used all over the world for compaction control and bearing capacity tests at the soil examination.

Trained service- and sales partners form a reliable global network.

We only manufacture in Germany and trust in regional suppliers on the basis of strict certification guidelines.

The HMP GmbH is a from the Federal Highway Research Institute (BAST) approved calibration institute for Light Weight Deflectometer.



**MADE
IN
GERMANY**

Calibration
INSTITUTE
authorised by the
Federal Highway
Research Institute



1990-2019
29
YEARS

Excellence for experts.



THE STATIC PLATE LOAD TEST

The test method

The Static Plate Load Test applies in earthworks and foundation engineering as well as road construction in order to determine load settlement lines and by this to evaluate the deformability and the load capacity of the soil.

The examining soil layer is repeatedly in steps loaded and unloaded by a circular load plate by means of a load device. The settlement measuring instrument consists of the measuring frame with probing arm and

dial gauge. As a counterbalance of the load device a heavy-weight construction vehicle is used.

For test evaluation, the settlements of each loading stage and the corresponding average normal stress under the load plate are shown in a diagram as load settlement curves.

The modulus of deformation E_v is determined from the load settlement line of the first load (E_{v1}) and the se-

cond load (E_{v2}). Through the first loading a certain remaining deformation always obtains and therefore the proportion of the accordingly higher E_{v2} value to the E_{v1} value provides an indication to the attained compaction.

The procedure of the Static Plate Load Test is standardized in DIN 18134.

Comprehensive correlations to direct test methods are available.



Bolivia



Malawi



New Zealand

German test regulations

- **DIN 18134 issue 2012-04**
Soil; testing procedures and testing equipment
– Plate load test
- **RStO 01**
Directives for standardisation of the superstructure of traffic areas

The HMP PDG complies with the Standards for application according to German and international test regulations. Comprehensive correlations with other test methods ensure compatibility.



India

International test regulations

- USA
ASTM D1195/1196 – Standard Test Method for Repetitive/Nonrepetitive Static Plate Load Tests of Soils and Flexible Pavement Components, for Use in Evaluation and Design of Airport and Highway Pavements
- Great Britain
BS1377-9 – Methods for test for soils for civil engineering purposes – In-situ tests
- Switzerland
SN 670317 Soils - Plate load test EV/ME
SN 670312 – VSS-Equipment for plate load test EV/ME
- Austria
ÖNORM B4417 – Geotechnical engineering; Exploration of soils; Plate load test
- Italy
CNR BU 146/92 – Prove di carico con piastra, Il modulo di compressibilità M_d , M'_d
- France
NF P94-117-1 – reconnaissance et essais - Portance des plates-formes - Partie 1 : module sous chargement statique à la plaque (EV2)

- Sweden
TDOK 2014:0141 Version 1.0 Bestämning av bärighetsegenskaper med statisk plattbelastning
- Norway
R211 Feltundersøkelser Metode 2.2.4 Platebelastning



Germany



Norway

THE STATIC PLATE LOAD TESTER

By means of the Static Plate Load Tester HMP PDGpro immediately after test procedure the deformability and the load capacity of the soil as well as the quality of the construction work can be assessed and documented on the construction site.

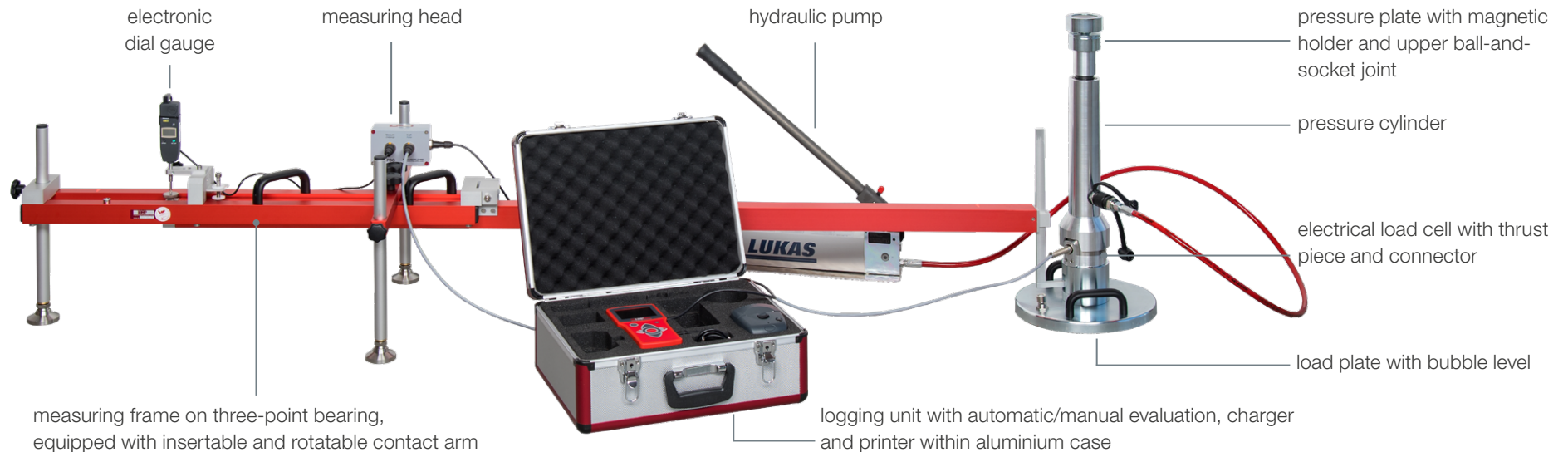
The indirect test method works **quickly, reliably, comfortably and precisely.**

To carry out the test a counterweight of at least 5 t is required. Set up and test procedure can be done by one person. The handling of the measuring instrument is comfortable and very user-friendly. Faulty measurements are almost impossible when handled properly. This is ensured by the internal plausibility check.

The pure test procedure according to DIN 18134 with 15 loading stages takes about 30 minutes and allows

immediate conclusions on the load capacity and deformability of soils down to the depth of twice of the load plate diameter. By specifying the GPS coordinates, the measuring point is recorded.

For subsequent post-processing and protocol creation on the PC, the measured values can be exported via USB stick or cable.



Advantages of the HMP PDGpro Measuring procedure

Bright red measuring frame

- › fast set up and safe position
- › user friendly in design and functionality

Automatic evaluation unit

- › latest, high-precision measuring technology, safely packed, splash-proof and ready for use even in adverse weather conditions
- › intuitive menu navigation
- › stored table of nominal values
- › automatic logging and evaluation of force and path
- › comprehensive language selection and individual adjustment options
- › USB for comfortable data transfer
- › GPS for localisation of measuring point
- › interface for printer and PC

Reliable and precise

- › manufactured according to the latest technical standards
- › precise, robust, long-lasting
- › calibrated on certified calibration point
- › worldwide in use for 20 years thousandfold

**Easily retrofittable
for all Plate Load Tester!**

Measuring procedure

Preparation

- › mount and set up the measuring frame
- › fasten dial gauge and measuring head
- › place the pressure plate onto the test point, position the counterweight
- › mount the force transducer, thrust piece, cylinder and magnetic holder on it
- › connect hydraulic and automatic evaluation unit

1



Measure

- › switch on the evaluation unit, confirm measuring mode
- › follow the menu navigation in the display and so gradually load and unload
- › approach the nominal values one after the other by means of the hydraulic pump, hold and store
- › displaying the measuring values for the pressing and settlement after each measuring point

2



Evaluate

- › automatic calculation and displaying of E_{v1} , E_{v2} and the ratio E_{v2} / E_{v1} immediately after completion of the measurement
- › displaying the load settlement curve and GPS position
- › showing the individual loading stages and corresponding settlements
- › print out short protocol directly at the construction site and/or transfer measured values to PC in order to comfortably edit, complete, archive these by means of the software HMPproplat

3



HMP PDG^{pro}



Reliably

The Static Plate Load Tester HMP PDGpro is a high-precision measuring instrument for professionals and yet designed robust and user-friendly ... used worldwide for 20 years.

The measuring frame and all accessories can be safely stored within the massive carrying cases.

Due to latest technology, the evaluation unit is small, handy, unbeatably easy and comfortable to use.

The measuring device is of course splash-water proof to work even under bad weather conditions. All parts of the tester are also surface sealed.

USB stick 4 GB incl. movie regarding application

New user? No problem, the movie on the supplied USB stick explains the test procedure within a few minutes - always available and quickly retrievable.



Latest device generation

- > large colourful graphic display 3,5"
- > **backlight**> guarantees optimum readability at all weathers!
- > intuitive menu navigation
- > integrated **GPS**
- > integrated **Bluetooth**
- > nterface for **printer, USB**
- > efficient, fast **32-bit processor**
- > internal memory for 200 tests
- > high-performance rechargeable lithium-polymer battery > guarantees constant readiness for use
- > PCsoftware to create professional test protocols

Best communication

- > **PC software HMPproplat** with comprehensive search and editing options to create professional test protocols
- > comprehensive **language selection** and individual setting options in the menu and the software for smooth communication at international assignments



To the movie:
www.hmp-online.com

RELIABLE RESULTS,
IMMEDIATELY AVAILABLE



Comfortable menu navigation

The menu navigation of the HMP PDGpro is particularly user-friendly. In order to perform the test, just follow the instructions on the display.

Nominal values according to DIN 18134 are stored. Individual nominal value tables can be added.

Start display

Welcome. The start display shows the charging status of logging unit + printer and also the GPS + Bluetooth activity. Warnings will additionally inform you about critical values, so that your testing device is always optimally ready for operation.

That's how easy the measurement works

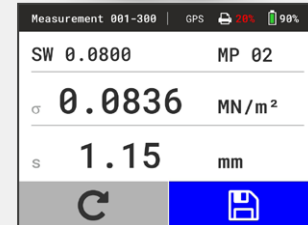
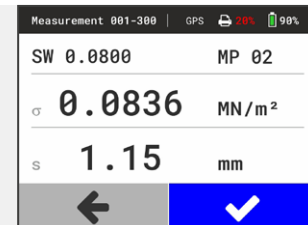
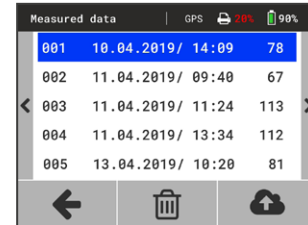
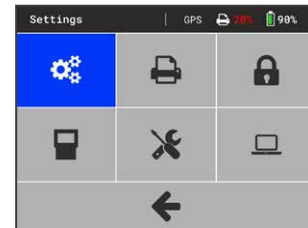
- After activating the menu item with ENTER you will be guided through the measuring process.
- Repeat this process until the last nominal value is reached.
- Reset dial gauge and force measurement. The first measuring point (MP) is stored
- After the stepwise load, follows the unload and then again a load.
- By operating the hydraulic, the stress (σ) below load plate will be increased to the next nominal value. Hold it for 60s and store the corresponding settlement (s).
- The internal plausibility check prevents avoids measurement errors.

Settings

Adjust the display and device configurations to your requirements. Regarding menu navigation just choose one of the various languages and use nationally usual measuring units.

Measured data

Here you can find all stored measurements clearly arranged for further processing and documentation.

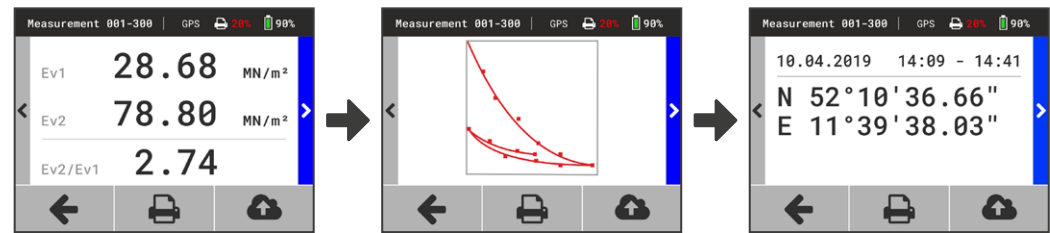


THE EVALUATION

Result

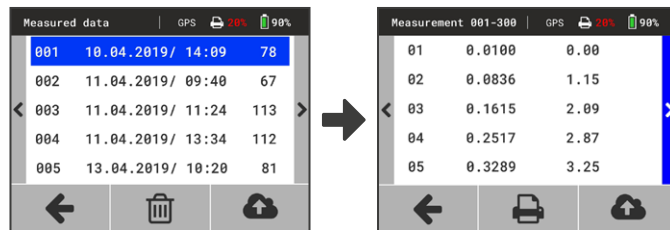
After reaching the last loading stage, the Ev1, Ev2 and the ratio Ev2 / Ev1 are calculated and displayed immediately. Scrolling will take you to the corresponding load settlement lines and to the GPS coordinates of the measuring point.

The measurement and its curve- and GPS data can be printed out directly or transferred onto a USB stick or via cable directly to the PC for later processing.



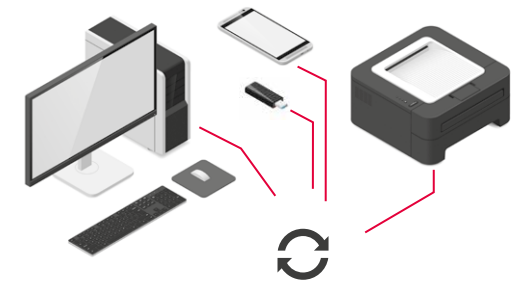
Measured data

The individual plate load tests are clearly stored in the memory. Select the single measurements and scroll through their details, such as curve and GPS data.



Export

Transfer your measured data onto a USB stick or via cable directly to your PC for archiving and further processing.



Contact details
contractor

Your professional appearance!

EXAMINER

WEATHER/TEMPERATURE

PROJECT

TEST SURFACE/LAYER

No.: 1

Measuring start::
10.04.2019/ 14:09

date/time

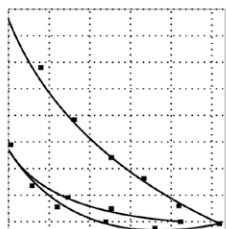
Measuring end:
10.04.2019/ 14:41

GPS position of measuring point

GPS position
N 52°10'36.70
E 11°39'39.33

No.	Tension MN/m ²	Settlement mm
1	0,0100	0,00
*** First load ***		
2	0,0836	1,15
3	0,1615	2,09
4	0,2517	2,87
5	0,3289	3,25
6	0,4224	3,80
7	0,5011	4,21
*** Unloading ***		
8	0,2532	3,96
9	0,1243	3,71
10	0,0050	2,59
*** Second load ***		
11	0,0813	3,23
12	0,1586	3,53
13	0,2509	3,79
14	0,3321	3,99
15	0,4194	4,13

loading stages,
tension and settlement



load settlement lines

Evaluation:
sigma max.=0,5011MN/m²
a0=0,227mm
a1=12,569mm/(MN/m²)
a2=-9,428mm/(MN/m²)²
Ev1= 28,683MN/m²
=====

Ev1 from first load

a0=2,619mm
a1=6,931mm/(MN/m²)
a2=-8,134mm/(MN/m²)²
Ev2= 78,800MN/m²
=====

Ev2 from second load

ratio Ev2/Ev1

Ev2/Ev1=2,747

EVALUATION > ARCHIVING > PROTOCOL CREATION

Documentation

- > **Print out**
Document the measuring result directly on site by means of the thermal printer.
- > **Create protocols**
Use the evaluation software **HMPproplat** in order to create professional protocols for the measurements on PC. Add your logo, your contact details and comments.
- > **Archive measurements**
The software also enables you to store the data in a database with comfortable search and editing capabilities.



Forster Building 25-45 Newcastle St Manchester M15 6JX Ford Engineering Solutions Ltd 29 Colson St, Ford M6 8WF Salford PV7+V6		Measurement serie: 0136 Inspector: Mr. James Ryan Date/time: 2019-04-10 / 14:09 - 14:41 Temperature/weather: 24°C / dry Weather yesterday: rainy																																																									
Static Plate Load Test acc. to DIN 18134																																																											
Project: 1822B Soil type: gravel layer Measuring point: Oxford Rd/Grosvenor St. Plate base: fine sand Excavation: no	Load plate diameter: 300 mm Kind of settlement measuring instr.: indirect Contact arm factor: 2:1 Device-No.: 2468																																																										
<table border="1"> <thead> <tr> <th>Value No.</th> <th>Normal stress MN/m²</th> <th>Settlement [mm]</th> </tr> </thead> <tbody> <tr> <td colspan="3">First load</td> </tr> <tr> <td>1.</td> <td>0,0100</td> <td>0,00</td> </tr> <tr> <td>2.</td> <td>0,0836</td> <td>1,15</td> </tr> <tr> <td>3.</td> <td>0,1615</td> <td>2,09</td> </tr> <tr> <td>4.</td> <td>0,2517</td> <td>2,87</td> </tr> <tr> <td>5.</td> <td>0,3289</td> <td>3,25</td> </tr> <tr> <td>6.</td> <td>0,4224</td> <td>3,80</td> </tr> <tr> <td>7.</td> <td>0,5011</td> <td>4,21</td> </tr> <tr> <td colspan="3">Unloading</td> </tr> <tr> <td>8.</td> <td>0,2532</td> <td>3,96</td> </tr> <tr> <td>9.</td> <td>0,1243</td> <td>3,71</td> </tr> <tr> <td>10.</td> <td>0,0050</td> <td>2,59</td> </tr> <tr> <td colspan="3">Second load</td> </tr> <tr> <td>11.</td> <td>0,0813</td> <td>3,23</td> </tr> <tr> <td>12.</td> <td>0,1586</td> <td>3,53</td> </tr> <tr> <td>13.</td> <td>0,2509</td> <td>3,79</td> </tr> <tr> <td>14.</td> <td>0,3321</td> <td>3,99</td> </tr> <tr> <td>15.</td> <td>0,4194</td> <td>4,13</td> </tr> </tbody> </table>	Value No.	Normal stress MN/m ²	Settlement [mm]	First load			1.	0,0100	0,00	2.	0,0836	1,15	3.	0,1615	2,09	4.	0,2517	2,87	5.	0,3289	3,25	6.	0,4224	3,80	7.	0,5011	4,21	Unloading			8.	0,2532	3,96	9.	0,1243	3,71	10.	0,0050	2,59	Second load			11.	0,0813	3,23	12.	0,1586	3,53	13.	0,2509	3,79	14.	0,3321	3,99	15.	0,4194	4,13		
Value No.	Normal stress MN/m ²	Settlement [mm]																																																									
First load																																																											
1.	0,0100	0,00																																																									
2.	0,0836	1,15																																																									
3.	0,1615	2,09																																																									
4.	0,2517	2,87																																																									
5.	0,3289	3,25																																																									
6.	0,4224	3,80																																																									
7.	0,5011	4,21																																																									
Unloading																																																											
8.	0,2532	3,96																																																									
9.	0,1243	3,71																																																									
10.	0,0050	2,59																																																									
Second load																																																											
11.	0,0813	3,23																																																									
12.	0,1586	3,53																																																									
13.	0,2509	3,79																																																									
14.	0,3321	3,99																																																									
15.	0,4194	4,13																																																									
<table border="1"> <thead> <tr> <th>Loading No.:</th> <th>1</th> <th>2</th> <th>3</th> <th></th> </tr> </thead> <tbody> <tr> <td>sig0 max [MN/m²]</td> <td>0,5011</td> <td>0,5011</td> <td></td> <td>Ev1 = 28.7 MN/m²</td> </tr> <tr> <td>a0 [mm] [MN/m²]</td> <td>0,227</td> <td>2,619</td> <td></td> <td>Ev2 = 78.8 MN/m²</td> </tr> <tr> <td>a1 [mm] [MN/m²]</td> <td>12,569</td> <td>6,931</td> <td></td> <td></td> </tr> <tr> <td>a2 [mm] [MN/m²]</td> <td>-9,428</td> <td>-8,134</td> <td></td> <td>Ev2/Ev1 = 2.75</td> </tr> <tr> <td>Ev [MN/m²]</td> <td>28.7</td> <td>78.8</td> <td></td> <td></td> </tr> </tbody> </table>		Loading No.:	1	2	3		sig0 max [MN/m ²]	0,5011	0,5011		Ev1 = 28.7 MN/m ²	a0 [mm] [MN/m ²]	0,227	2,619		Ev2 = 78.8 MN/m ²	a1 [mm] [MN/m ²]	12,569	6,931			a2 [mm] [MN/m ²]	-9,428	-8,134		Ev2/Ev1 = 2.75	Ev [MN/m ²]	28.7	78.8			Ev2 >= 70MN/m ² Requirement is fulfilled! Ev2/Ev1 <= 2.9 Requirement is fulfilled!																											
Loading No.:	1	2	3																																																								
sig0 max [MN/m ²]	0,5011	0,5011		Ev1 = 28.7 MN/m ²																																																							
a0 [mm] [MN/m ²]	0,227	2,619		Ev2 = 78.8 MN/m ²																																																							
a1 [mm] [MN/m ²]	12,569	6,931																																																									
a2 [mm] [MN/m ²]	-9,428	-8,134		Ev2/Ev1 = 2.75																																																							
Ev [MN/m ²]	28.7	78.8																																																									
Comments none																																																											
Manchester 10.04.2019 Software: HMPproplat - HMP Magdeburger Profingebäude GmbH 2019																																																											

THE HMP PDG^{pro}



Mexico



China



Norway



Denmark



India



Norway



Algeria



Germany



Germany

Technical data/Scope of supply

	PDG ^{pro}	PDG-M
Display unit	✓	✓
with automatic evaluation	✓	○
with manual evaluation	○	✓
› logging and displaying of stress, resolution 0,0001 MN/m ² and settlement, resolution 0,01mm	✓	✓
› robust, splash-proof, connection cable with high-quality binder plugs	✓	✓
› graphic display , coloured, illuminated 56 x 73 mm	✓	✓
› plausibility check	✓	○
› fast, efficient 32-bit processor	✓	✓
› interface for USB, integrated GPS, Bluetooth	✓	✓
› dimensions: 210 x 100 x 31 mm	✓	✓
› internal storage capacity in measurement series	200	200
› external storage capacity on 4GB USB stick	200.000	200.000
› high-performance rechargeable LI polymer battery 3,7 V, 6300 mAh	✓	✓
› menu navigation selectable in many languages	✓	✓
Measuring frame	✓	✓
› three-point bearing with attachable contact arm and adjustable plate-shaped feet	✓	✓
› dimensions: 2.320 x 570 x 420 mm (LxWxH) Weight: 12,5 kg, material: aluminium, anodised	✓	✓

Optional upgrade

Because of the modular construction you only buy, what is actually needed – basic equipment with manual evaluation or professional device for exact documentation. An upgrade or modification is possible at any time fast and cost-effective.

Technical data/Scope of supply

	PDG ^{pro}	PDG-M
Loading mechanism	✓	✓
› Hydraulic pump with tension cylinder for 100 kN tension force and 150 mm lift, 2 m high-pressure hose	✓	✓
› 1 set of hydraulic cylinder extensions pieces (attachable)	✓	✓
› pressure plate with holding magnet and upper ball-and-socket-joint	✓	✓
› load plate with handles and adjustable bubble level diameter / plate thickness:300/25 mm	✓	✓
Force measurement	✓	✓
› electrical force transducer 50kN (optional 100kN) complete with thrust piece and adapter	✓	✓
Path measurement	✓	✓
› electronic dial gauge, measuring range 25 mm, resolution 0.01 mm, digital display, degree of protection IP42	✓	✓
Measuring head	✓	○
› logging of force and path values and digital, interference-free transfer to measuring unit	✓	○
USB stick incl. movie	✓	✓
› regarding its application and instruction manual, 4 GB	✓	✓

Guaranteed

- › 2 years of HMP guarantee included
- › 10 years of spare parts availability guaranteed
- › competent all-round service - even after sale has been made!
- › certified production according to DIN EN ISO 9001:2015
- › development and production within Germany
- › trained service and distribution partners in your vicinity

**2 YEARS
GUARANTEE**

10 YEARS
spare parts availability

ACCESSORIES

Additional options

Thermal printer

- small, quick printer with light resistant thermal paper. Document your measuring results directly at the site.



HMPproplat Software

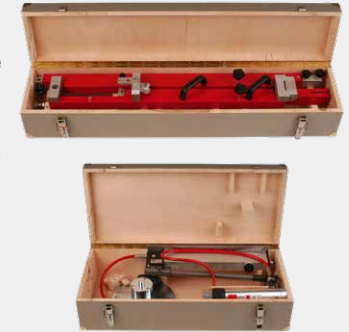
- PC Software for comfortable evaluation and processing of measured results. Add details regarding measuring point and take advantage of the clearly arranged user interface to create and archive representative A4 test protocols.



Robust carrying cases

- extra robust wooden boxes for safe storage and transport of the HMP PDG on construction vehicle, in the warehouse or during shipping - ecologically valuable produced from renewable resources.

Set consists of:
120 x 25 x 21cm, weight complete 23,0 kg
92 x 40,5 x 23,5cm, weight complete 49,5 kg



Load plate for HMP PDG

- Ø 600 mm, 70 kg, with holding bolt
- Ø 762 mm, 96 kg, with holding bolt



Calibration

The Static Plate Load Tester HMP PDG are delivered in calibrated condition. According to DIN 18134, these devices must be calibrated annually. Therefore HMP has returned test equipment to provide the calibration proof for force and path.

The HMP calibration includes firmware updates! This keeps your testing equipment up to latest technical standards.

Service

We do not only calibrate your tester, we also adjust and clean it and perform a comprehensive function check. In case we recognize any defects at your tester, we are able to repair it directly - fast and precise, so that your tester will definitely work correctly afterwards.

On request we remind you free of charge in good time before the end of the calibration cycle.

History



HMP PDG-SD
2000



HMP PDG-K



HMP PDGpro

The original one
from Magdeburg



HMP PDGpro
2019

The in-house research- and development department and the cooperation with renowned institutes, f. e. the Fraunhofer Institute Magdeburg guarantee the constant further development of our devices.

More than 30 years of experience and a certified service department with calibration institute ensure you an All-round service and an operational readiness of your HMP PDG for man years.

If basic equipment with manual evaluation or professional device with automatic evaluation for exact documentation - you only need to buy, what you really need. Because of the modular construction of the HMP testing equipment an upgrade or modification is possible at any time fast and cost-effective.

That you can rely on:

- > German production, certified according to DIN EN ISO 9001:2015
- > Calibration institute
 - authorized by the Federal Highway Research Institute
- > 2 years of guarantee, 10 years of spare part availability
- > more than 30 years of experience in development, production and service
- > trained service and distribution partners in your vicinity



Magdeburger Prüfgerätebau GmbH

HMP Magdeburger Prüfgerätebau GmbH
Bülstringer Straße 6
39126 Magdeburg

Tel.: + 49 391 2514666
Fax: + 49 391 2514668
info@hmp-online.de
www.hmp-online.com

Your competent specialised dealer:

- › Development, Production and Service - soil-mechanical test equipment

HMP PDG

Static Plate Load Tester

DIN 18134 issue 2012
ASTM D1195/1196
BS 1377 Part 9



HMP LFG

The Light Weight Deflectometer

TP BF-StB B 8.3 issue 2012
ASTM E2835-11 (2015)



HMP SON

Automatic acquisition-
and evaluation unit for
penetration

EN ISO 22476-2



HMP DEN

Determination of soil density

DIN 18125 part 2



- › Distribution of tester for road construction, concrete construction, refurbishment of buildings, laboratory equipment

www.hmp-online.com

Revision 04/2019, Technical changes reserved