



User Manual **for the** **Light Weight Deflectometer** **ZFG 3000 GPS** **ZFG 3000 ECO**

**in accordance with the
German technical test requirements
for soil and rocks in road construction
TP BF – StB Part B 8.3**



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Technical changes reserved
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ZFG 3000 GPS



ZFG 3000 ECO

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* depending on the equipment and device type (ZFG 3000 ECO without GPS, Software optional)

1. Intended purpose

The dynamic plate load test with the help of the ZFG 3000 Light Weight Deflectometer is a rapid method of determining the dynamic deflection modulus E_{vd} [[MN/m²]]. This allows conclusions to be made about the load-bearing capacity and compaction of soils.

In accordance with German regulations **TP BF-Stb Part B8.3**, the procedure can be used on mixed-grained and coarse-grained soils up to a grain size of maximum 63 mm, loose base courses, backfill material and for soil improvement. It is used in civil and road construction. It is ideal for documentation, self-monitoring and preparing reports.

The Light Weight Deflectometer can be used alternatively to a static plate load device according to DIN 18 134, and has the following benefits:

- no necessity for a loaded truck as a required counter balance in the static plate bearing test or the tripod required for settlement measurement
- testing facilities in restricted space, for example during rail track construction, trench backfilling, for general backfill, in boreholes or other locations with difficult access
- low space requirements and low test equipment weight
- low time requirements for testing - around 3 minutes for each measuring point

2. Preparation for measurement

Prepare a measurement by applying the load plate all-over the test area by rotating and pushing. Ensure that there are no hollows underneath the load plate. In this case, fill the hollows with dry medium sand.

The settlement gauge and the loading plate are each fitted with a socket, into which the measuring cable is plugged to connect the devices. Now place the loading device on the loading plate. Remove the transport safety device from the drop weight.



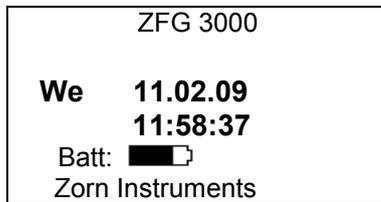
To prevent any damage, it is necessary to ensure proper locking of the transport lock

The test area must be pre-loaded with 3 drops. To do this, raise the drop weight and engage the release mechanism. Once you have aligned the guide rod vertically the drop weight should be released, then raise again using the catch handle after the rebound, and engage in the release mechanism once again.

3. Carrying out a measurement

3.1 Switching the device on

Once pre-loading has been carried out, the settlement gauge should be switched on using the **<On/Off>** switch. To prevent unintentional switching on of the device, the **<On/Off>** button must be pressed for at least two seconds when switching on.



The current date/time and battery status are displayed. Please insert the SD card now. to enable data to be saved on the SD card.

3.2 GPS receiver function*

GPS = Global Position System; used for position-fixing

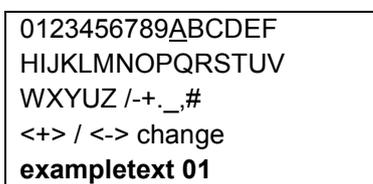
The GPS module installed as standard receives satellite signals in the open air. Reception is only available to a limited extent under coverings and in enclosed rooms. The satellite signals are received by the GPS module to fix the current position. Depending on the satellite signal strength, the device requires between 30 and 120 seconds to display the location coordinates on its display. The location coordinates are now displayed in place of the name Zorn Instruments.

If no satellite signals can be received (e.g. due to enclosed rooms) measurement and saving can also be carried out without position-fixing.

3.3 Text input function

Via the text input function, it is possible to add text to a measure. The user can insert text at the beginning of a measurement. By default, the text input function is disabled (to enable the function, see chapter 4.4 Settings).

When the device and text input function is activated, press **<OK>** to start a measurement. First, the following text input appears on the display:



From the upper three lines, a sign can be chosen.

Function of the buttons:

- **<+/->** Move the cursor (underline) to navigate to a character
- **<Print>** Choose a character and adds it to the end of the text-string (max. 16 characters possible)
- **<Mode>** Deletes the last character of the text string
- **<OK>** Finishes text inserting and starts measuring

- **<ON/OFF>** Cancels text inserting and starts measuring (no text will be used)

When a text was used, it will be saved and is shown as a suggestion at the next measuring.

When text ends with a number, the number will be increased at the next measure.

When the text input function was cancelled, next text input starts with an empty string.

When the file will be read for further processing on PC, the text appears in text field "Remarks".

3.4 Preloading

When preloading is switched on at measurement device, the user is asked to perform the three preloading pulses before measurement. When preloading pulses were finished, measurement starts automatic. The preloading pulses do not influence the result and will not be saved.

By default, this function is disabled (off). To enable, select „on“.

3.5 Starting measurement:

To start the measurement, press the **<OK>** button and the following image appears on the display:

Measure: 300mm/10kg Execute 1st pulse -1-
--

A single acoustic beep acknowledges the start of measurement.

The measuring mode currently set is now displayed (e.g. loading plate size and mass of drop weight). It may be necessary to switch to the required measuring mode (see also 4.4 Settings).

The second line displays a prompt to carry out the first pulse.

Once the first pulse has taken place, the settlement value s_1 is displayed.

Measure: 300mm/10kg Execute 2nd pulse s₁: 0.286 mm -2-
--

The beep which follows prompts you to carry out the second pulse.

This procedure is repeated up to the 3rd pulse.

Measure: 300mm/10kg Press <OK> s₁: 0.285 mm s₂: 0.303 mm s₃: 0.312 mm

After this, all three settlement values are displayed and this is confirmed with a double beep.

The following information is displayed if the GPS signal is missing: <waiting for GPS>

All available data is saved after 10 seconds at latest even if no GPS signal is available. In this case, the location coordinates will not be saved to the SD card. Then "Press <OK>" prompt is displayed in the second line and this then initiates the calculation of the results.

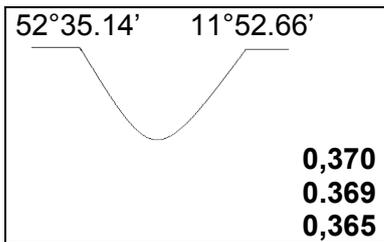
3.6 Evaluating and printing the results

The following results are displayed:

52°35.14'	11°52.66'
No: 33	11.03.09 13:22
s_m: 0.266 mm	
s/v: 2.414	
E_{vd}: 84.59 MN/m²	

- geographical coordinates
- consecutive number (only if SD card is inserted), date and time
- s_m = mean settlement in mm
- s/v = degree of compatibility, which gives information about whether the existing soil can be compacted further or not (in general: s/v > 3,5 soil further compactable; s/v < 3,5 soil NOT compactable any further).
- E_{vd} = dynamic deflection modulus in MN/m² (MPa).

You must press the <Mode> button to see the location coordinates, settlement curves and individual settlement values.



After this, you can print out the report by pressing the <Print> button.

The measurement is completed with <OK>, and a new measurement using the same sequence can be started with <OK> again.



After the measurement is completed, please check whether the data has been saved to the SD card. ("Read card" menu command). The SD card must be deleted before being used for the first time ("Delete card" menu command).

If the display shows the prompt "Repeat pulse" after carrying out a measurement pulse there is a measuring error which may have been caused, for example, if the fall weight has been engaged too firmly. If the same error message appears after the pulse is repeated, then the soil is too soft ($v > 4.000$ mm/s or $s > 65$ mm), the acceleration sensor is defect, there is a contact problem in one of the plugs or there is a broken cable. In these cases, measurement using the drop weight tester cannot be continued.

4. Menu

If you press the <*Mode*> button, you can call up additional device functions. Use the <*Ok*> button to confirm the menu command selected.

Quit the menu by pressing the <*On/Off*> button.

4.1 Measuring

See chapter 2. and 3.

4.2 Read card (display data saved to SD card)

- Select the **View card** menu command in the menu (see 4.).
- Select the saved individual measurements with consecutive number using the <+> or <-> buttons
- The display first shows the consecutive number for the measurement you have selected, the total number of saved measurements, date and time for saved individual measurements in addition to the mean settlement, s/v and Evd values.
- If you press the <*Mode*> button, the second display shows the associated coordinates if these were available for this individual measurement. In addition, you can see the settlement curves and the three individual settlements.
- You can use the <*Print*> button to print out the report afterwards.

4.3 Delete card

- Select the **Delete card** menu command in the menu.
- The number of saved individual measurements is displayed in the second line **Contain data**. This menu command enables you to delete all individual measurements in one step.

4.4 Settings

- Select the **Options** menu command in the menu (see 4.). The following settings are then visible on the display:
 - **Language** (German, English, French, Polish)
 - **LCD contrast** bright - dark
 - **Type** (300mm/10kg, 300mm/15kg, CBR can be switched over depending on order)
 - **Unit** MN/m² or Mpa
 - **Text input function:** on/off
 - **Preloading:** on/off
 - **GPS:** on/off (display, saving and printout with or without GPS data)* and the prompt <*OFF*> **Save**
- If you wish to make changes to the settings, you can do this by selecting one of the points (e.g. Language) using the <*Mode*> button.
- If you want to change the set language (German) to English, you can do this by pressing the <+> and <-> buttons.
- Once all settings have been checked or the necessary changes have been made, press the <*On/Off*> button to save and quit the **Options** menu.

4.5 Setting the clock

- Select the **Set clock** menu command in the menu (see 4.).
- You can use the **<Mode>** button to select the date or time, or to move the cursor to the position you require.
- You can change the underlying value by pressing the **<+>** or **<->** buttons.
- Press the **<On/Off>** button to save and quit the **Set clock** menu command.

4.6 Information

- Select the **Info** menu command in the menu (see 4.).
- Display of device data (Version; Device No, Calibration Factor, Calibration date and Language)
- Device data can be printed out (**<Print>** button)
- Quit the **Info** menu command using the **<On/Off>** button

4.7 Calibration / self-test

- Select the **Calibration** menu command in the menu (see 4.)
- **a** shows a value of 0.0. If the measuring cable connection between loading plate and settlement gauge is correct, **a** will change by two whole numerical values if the loading plate is placed upside down (ball facing downwards). **Self-test.**
- If **a** shows a differing value which does not change even if the weight is turned over, there is an error in the cable, the socket or in the sensor. In this case, please contact the manufacturer to find out more about the fault.
- The calibration factor **F** is set during calibration of the device and cannot be changed.

Calibration
a = 0.0
F = 1.000
Type: 300mm/10kg

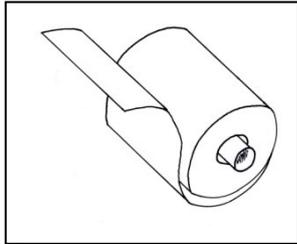
4.8 Firmware update

Firmware can only be updated on the manufacturer's suggestion.

5. Printer

The integrated printer is a thermal printer. This requires thermal paper only for printing. To change the thermal paper roll, open the printer compartment by pulling the access depression upwards.

Take the empty thermal paper roll out and replace it with a full one. When replacing the thermal paper roll, please ensure that the full thermal paper roll is inserted with the side to be unwound facing to the left and downwards! (*Figure 5.1*). When inserting, place the start of the roll top left above the printer tear-off edge.



After this, close the printer compartment by pressing it down.

If the thermal printer does not print after the thermal paper roll has been replaced, the roll has either been inserted incorrectly or it is not a thermal paper roll.

Fig. 5.1

6. Care and maintenance

6.1 Care of mechanical loading device

The mechanical loading device must be cleaned of any dirt adhering after the measurement using a dry cloth. The chrome-plated guide rod **must not** be greased. Heavy soiling must be removed using spirit or kerosene. The drop weight tester must be stored carefully during transport, and the fall height must be checked at regularly. The correct fall height is stated on the calibration report and on the calibration nameplate on the drop weight.

6.2 Battery

Careful care of the battery ensures permanent readiness for use of the drop weight tester. The NiMH battery fitted should be recharged from time to time **only** using the power supply provided. The charging status can be seen on the charging bar in the display. The charging process is normally complete after around four hours depending on the battery state. If the battery has not been used for a long time it is important that it is recharged, so that measurements on site do not need to be discontinued due to an empty battery.

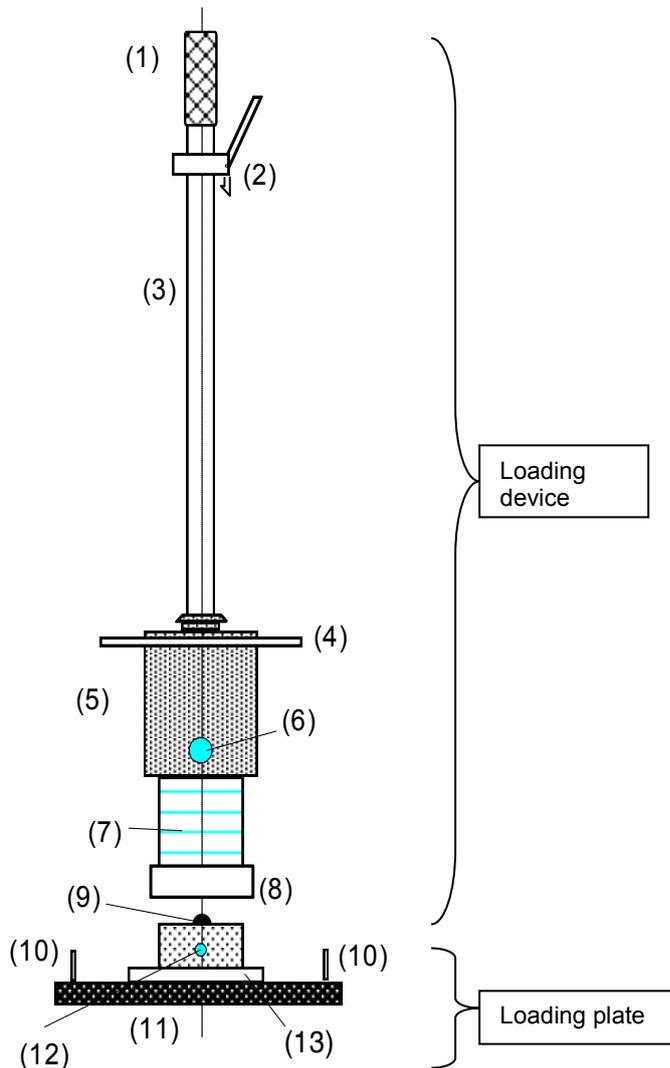
6.3 Protection against total discharge

The measuring device is fitted with total discharge protection for the battery. The battery is switched off shortly before total discharge. After this, the settlement gauge can no longer be switched on. If the battery charger is connected, the battery will be charged and the device can be used after around four hours.

6.4 Automatic switch-off when not in use

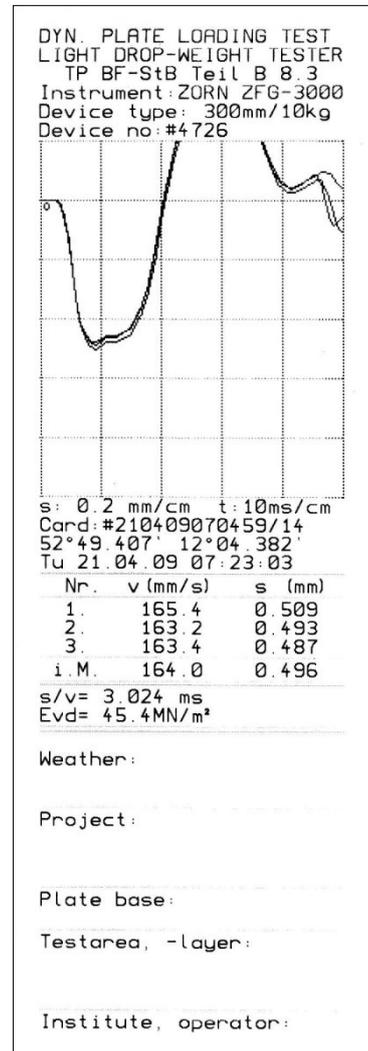
The settlement gauge switches itself off 4 minutes after the last button was pressed.

7. Device view



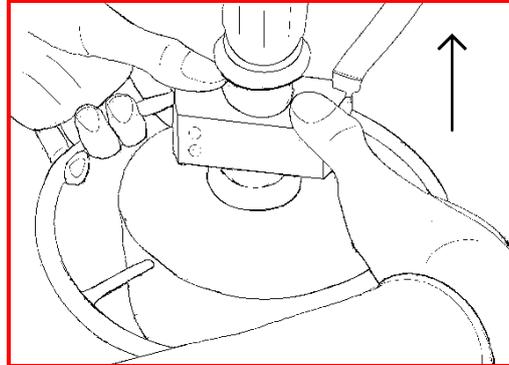
- (1) Handle
- (2) Top limit stop with release device
- (3) Guide tube
- (4) Round handle
- (5) 10 kg fall weight
- (6) Transport lock
- (7) Spring element
- (8) Anti-tip device
- (9) Centring cone
- (10) Carrying handle
- (11) Loading plate
- (12) Socket for connecting measuring cable to settlement gauge
- (13) Adapter plate

Mini-printer printout



8. Instructions for engaging fall weight

When engaging the fall weight in the release mechanism, please use both thumbs as shown in the sketch.



The fall weight is lifted up as far as possible with both hands until shortly underneath the limit stop so that it can be pressed into the stop using both thumbs as shown in the sketch. Use your thumbs to lift the fall weight up slowly until it engages in the release mechanism. This avoids engaging the weight too harshly, which can lead to faulty measurements.

9. Technical data for mechanical loading device

Weight of fall weight	10 kg (15 kg)
Total weight of loading device	15 kg (20 kg)
Maximum pulse force (calibrated)	7.07 kN (10.6 kN)
Pulse duration	17 ms

(Data in brackets relates to options which can be supplied)

10. Technical data for loading plate and CBR stamp

Diameter of replaceable loading plate depending on option ordered	300 mm (150 mm)
Diameter of CBR stamp	(50 mm)
Weight of loading plate or CBR stamp including release mechanism housing, sensors and 2 carrying handles	15 kg

(Data in brackets relates to options which can be supplied)

11. Technical data for settlement gauge

Measuring device dimensions 300x270x170 mm

Measuring device weight approx. 4 kg

Settlement measuring range 0.3 to 5 mm
± 0.02 mm

Sensor

acceleration range ±100 g

Frequency range 0 to 500 Hz

Temperature range 0 to 50 ° C

Power supply

Battery pack 4.8V, 4500mAh
(4x NiMH)

Power supply ES18E12-P1J

Input 100-240V 50/60 Hz

Output 12V / 1.5A

Automatic switch-off

when not in use 4 min

when battery is empty < 4.5V

12. Scope of delivery

The package includes:

- ZFG3000 GPS electronic measuring device including GPS module *
- 10 kg loading device with triangular catch handle*
- Loading plate (300 mm) with integrated acceleration sensor
- Measuring cable (1.5 m)
- SD card (min 1 GB)
- USB SD card reader *
- ZFG 3000 software (CD-ROM) *
- Charging device ES18E12-P1J
- 12V car – connecting cable
- Operating instructions / brief instructions

* depending on the configuration and device type (ZFG 3000 ECO without the GPS, with round catch handle , Software optional)

13. Calibration institutes for drop weight tester

ZORN INSTRUMENTS
HOCHPRÄZISIONS PRÜFTECHNIK

Kalibrierstelle
Benzstr. 1
D-39576 Stendal

Tel.: +49(0) 3931 / 25273-0
Fax: +49(0) 3931 / 25273-10
eMail: info@zorn-instruments.de

Please visit the BAST homepage for more calibration institutes:
<http://www.bast.de/>
<http://www.bast.de/htdocs/qualitaet/p-stelle/tp-bf.htm>

14. Correlations

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Quote from German ZTVE- STB 09, Research Institute for Road and Traffic (Edition 2009)

4.5.2 Requirements for deflection modulus

The information provided below is based on the 10% minimum quantile.

When constructing roads of Construction Classes SV and I to IV (see A & B tables) on frost-protected substrate or substructure, then the following deflection modulus of at least

$$E_{v2} = 120 \text{ MN/m}^2 \text{ or alternatively } E_{vd} = 65 \text{ MN/m}^2$$

and for Construction Classes V and VI a deflection modulus of at least

$$E_{v2} = 100 \text{ MN/m}^2 \text{ or alternatively } E_{vd} = 50 \text{ MN/m}^2$$

is necessary.

The deflection modulus E_{v2} is to be verified in accordance with a static plate load test in accordance with DIN 18134 and the deflection module E_{vd} with a dynamic plate load test in accordance with TP BF Part B 8.3.

When the requirements were meet, through compaction of the sub bases on the planum, it is sufficient to achieve a deflection modulus on the planum of at least

$$E_{v2} = 100 \text{ MN/m}^2 \text{ or alternatively } E_{vd} = 50 \text{ MN/m}^2$$

and for Construction Classes V and VI a deflection modulus of at least

$$E_{v2} = 80 \text{ MN/m}^2 \text{ or alternatively } E_{vd} = 40 \text{ MN/m}^2.$$

In the case of frost-sensitive substrate or substructure, a deflection modulus of at least

$$E_{v2} = 45 \text{ MN/m}^2 \text{ [or alternatively } E_{vd} = 25 \text{ MN/m}^2]$$

is required on the planum.

After improving the soil and in the case of frost-sensitive substrate or substructure, a deflection modulus of at least

$$E_{v2} = 70 \text{ MN/m}^2 \text{ [or alternatively } E_{vd} = 40 \text{ MN/m}^2]$$

is required on the planum. ¹

If the specifications do not specify whether the deflection modulus is static or dynamic, it must be verified for cases stated in this section; verification should always take place using the static deflection modulus.

If the required deflection modulus cannot be achieved on the planum through compaction, either

- (1) the substrate or substructure must be improved or consolidated, or*
- (2) the thickness of the loose sub bases must be increased.*

These activities or locale experiences must be stated in the specifications.

¹ [...] Editor's note

Table A

Number of authoritative traffic load	construction class
more than 3200	SV
1800 to 3200	I
900 to 1800	II
300 to 900	III
60 to 300	IV
10 to 60	V
up to 10	VI

Table B

Road type	construction class
Highway	SV, I, II
main street, walking path with a heavy traffic load	II, III
walking path with traffic load	IV
service road, walking path	V
service road, Wheelchair-accessible residential street	VI

Section 14.3.5:

Table 9: *Guide value for correlation of static deflection modulus E_{v2} or dynamic deflection modulus E_{vd} to compaction ratio D_{pr} for course-grained soils groups*

Soils group	Static deflection modulus E_{v2} in MN/m ²	Dynamic deflection modulus E_{vd} in MN/m ²	Compaction ratio D_{pr} in %
GW, GI	≥ 120	≥ 65	≥ 103
	≥ 100	≥ 50	≥ 100
	≥ 80	≥ 40	≥ 98
	≥ 70	≥ 30	≥ 97
GE, SE, SW, SI	≥ 80	≥ 50	≥ 100
	≥ 70	≥ 40	≥ 98
	≥ 60	≥ 35	≥ 97

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Quote from Ril 836, Deutsche Bahn AG (German Rail), (20.12.1999 a)

836.0501
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Ril 836 - Designing, constructing and maintaining earthworks
Soils body
Principles

Fig. 2 Normal requirements for the construction of rail tracks on soil bodies

1	Route type		Formation		Capping layer					Soil formation		Standard cross-section	
			E _{v2} [MN/m ²]	E _{vd} ²⁾	Grain mixture	D _{pr} (-)	Standard thickness [cm]			E _{v2} [MN/m ²]	E _{vd} ²⁾	in accordance with Appendix 1, Fig.	
	Frost effect area	I					II	III	Embankment			Cutting	
2	3	4	5	6	7	8	9	10	11	12	13	14	
New construction	P 300	Ballast top layer	120	50	kg1/2	1,00	70	70	70	80	40/35	a 1.1	a 1.3
		Solid track	120	50	kg2	1,00	³⁾ 40	³⁾ 40	³⁾ 40	60	35/30	a 1.2	a 1.4
	P 230 M 230	Ballast top layer	120	50	kg1/2	1,00	50	60	70	60	40/35	a 1.9	a 1.7
		Solid track	120	50	kg2	1,00	³⁾ 40	³⁾ 40	³⁾ 40	60	35/30	a 1.6	a 1.8
	P 160, M 160 G 120, R 120	Ballast top layer	100	45	kg1/2	1,00	40	50	60	45	35/30	a 1.9	a 1.10
R 80, G 50 other tracks	Ballast top layer	80	40	(KG 1/2) ⁴⁾	1,00	30	40	50	45	30/25	A 1.11	A 1.12	
Strengthening ⁵⁾ Maintenance	P 230 M 230	Ballast top layer	80	40	kg1/2	1,00	30	40	50	45	30/25	A 1.13	A 1.13
		Solid track	100	45	kg2	1,00	³⁾ 40	³⁾ 40	³⁾ 40	45	30/25	A 1.14	A 1.14
	P 160, M 160 G 120, R 120	Ballast top layer	50	35	kg1/2	1,00	20	25	30	30	25/20	A 1.15	A 1.15
	R 80, G 50 other tracks	Ballast top layer	40	30	(KG 1/2) ⁴⁾	0,97	20	20	20	20	25/20	A 1.16	A 1.16

1) Route categories in accordance with module 413.0202

P 300	High-speed transport routes	300 km/h
P 230	Passenger transport routes (ABS)	230 km/h
M 230	Mixed transport routes (ABS)	230 km/h
P 160	Passenger transport routes (I+II)	160 km/h
M 160	Mixed transport routes	160 km/h
G 120	Goods transport routes	120 km/h
R 120	Regional transport routes	120 km/h
R 80	Regional transport routes	80 km/h
G 50	Goods transport routes	50 km/h

2) Dynamic deflection modulus: Application conditions see Section 6; Para. 5
on soil formation: 1. Value for coarse-grained soils
2. Value for mixed and fine-grained soils

3) This thickness assumes a hydraulically-bonded based course underneath the solid track of at least 30 cm thickness

4) Also coarse-grained soils GW, GI, SW and SI; see Module 836.0503, Section 3

5) If the route is being overhauled for high-speed transport, new construction criteria apply

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Construction material and
soil engineering institute, Wetzlar

Backfilling of trenches

Verification of compaction with
light drop weight tester
in accordance with TP BF-StB Part 8.3

Indicators for the allocation of

Compaction ratio D_{pr}
Dynamic deflection modulus E_{vd}

	Required compaction at various depths (ZTVT-StB 95*) (ZTVE-StB 94)	Based on guide values for allocation to D_{pr} (ZTVE-StB 94 Tab. 8)	1) Proposal for allocation of E_{vd} to E_{v2} (in acc. w. FGSV AA Prüftechnik, Oct. 96 edition)
Soils group	Compaction ratio D_{pr}	Deflection modulus E_{v2}	Deflection modulus E_{v2}
DIN 18 196	%	MN/m ²	MN/m ²
GW, GI (e.g. stony soil or mineral aggregate 0/32)	≥ 103	≥ 120	≥ 60
	≥ 100	≥ 100	≥ 50
	≥ 98	≥ 80	≥ 40
	≥ 97	≥ 70	≥ 35
GE, SE, SW, SI	≥ 100	≥ 80	≥ 40
	≥ 98	≥ 70	≥ 35
	≥ 97	≥ 60	≥ 32
mixed and fine-grained soils	≥ 100	≥ 45	≥ 25
	≥ 97	≥ 30	≥ 15
	≥ 95	≥ 20	≥ 10

1) These indicator values can be used as guide values for the verification of the compaction achieved in acc. w ZTVE-StB 94, para. 14.2.5 as agreed between client and contractor.

15. Warranty

We provide 12 months warranty from date of delivery for all deficiencies that occur on our equipment in the manner that we choose to either repair any deficiency free of charge or replace damaged (faulty) parts with new ones.

No warranty claims can be made especially for damage caused by improper use; normal wear; handling, which does not comply with the operating instructions; improper handling; insufficient care and maintenance; non-use of original parts; higher force (natural catastrophes, fire, etc.) or transport accidents.

16. EC conformity declaration



EC-Declaration of Conformity

in accordance with the EEC low-voltage directive 2006/95/EC
in accordance with appendix III B; of 12th December 2006



Hereby we explain that those corresponds to below designated products in its conception and design as well as in circulation the execution the fundamental safety and health requirements of the Community directive low-voltage brought by us. In the case of a change of the product not coordinated with us this explanation loses its validity.

Manufacturer's name or of his representative: Zorn Instruments e. K.
Benzstraße 1
D-39590 Stendal

Description of the electrical equipment:

- **Function:** Measurement device for the determination of load-bearing capacity and compaction of soils
- **Type / model:** ZFG 3000 GPS, ZFG 3000 ECO
- **Serial number:** starting from 6630
- **Year of construction:** 2012

The agreement with further valid guidelines / regulations following for the product is explained:

EC-Directives:	Harmonised standards used:
Electromagnetic compatibility (2004/108/EC), of 15th December 2004	Measurement device₁: EN 61326-1:2006 EN 55011:2009 + A1:2010 EN 61000-4-2:2006 + A2:2009 EN 61000-4-3:2008 Printer₂: EN 55022:1998 EN 55024:2003 GPS module₃: EN 55022:2006, Class B EN 61000-3-2:2006 EN 61000-3-3:1995 + A1:2001 + A2:2005 EN 55024:1998 + A1:2001 + A2:2003 IEC 61000-4-2:1995 + A1:1998 + A2:2000 IEC 61000-4-3:2006 IEC 61000-4-4:2004 IEC 61000-4-5:2005 IEC 61000-4-6:2007 IEC 61000-4-8:1993 + A1:2000 IEC 61000-4-11:2004
Electrical equipment designed for use within certain voltage limits (2006/95/EC), of 12th December 2006	EN 60950-1:2006/AC:2011

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²GeBe Elektronik und Feinwerktechnik GmbH, Beethovenstraße 15, 82110 Germering, Deutschland
³Compliance Certification Services Inc., Sindian BU., No. 163-1, Jhongsheng Rd., Sindian City, Taipei County 23151, Taiwan

Year of the CE characteristic assignment: 10

Place / date: Stendal, 30th November 2012

Personal data of the signer: Dipl.-Ing. Bernd Zorn, company owner

Signature: 

17. Software (short manual)

A detailed manual for using the software is located on installation CD or is available on software by pushing „F1“ resp. in menu in Help/Show Manual.

Installation

Supported operating systems: Windows 2000, XP, Vista, 7

1. Put the installation CD in the CD drive
2. When the CD does not starts by itself, run the file „ZFG-3000_Setup.exe“, which is located on CD.
3. Follow the instructions

Read in data

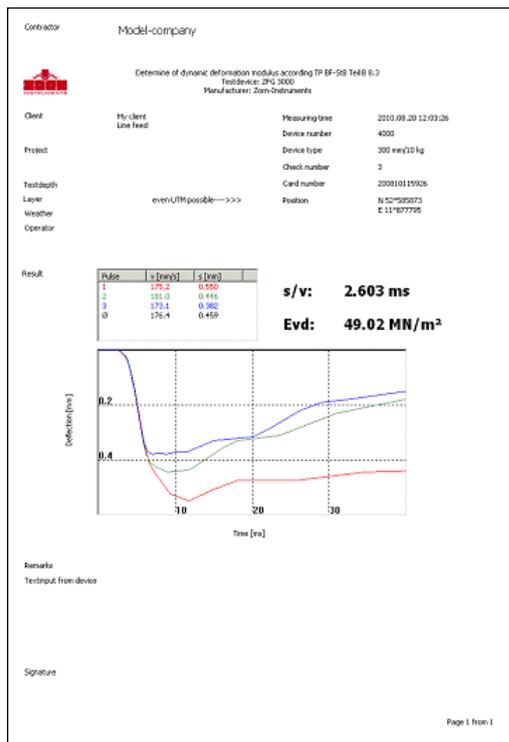
4. Start the program „ZFG 3000“
5. Click in menu „File“ on „Read in...“
6. Select i.e. the Folder „ZFG“ on the SD-card and click on „ZXZ.nrzc“
7. All files in folder will be read in and shown in an overview.
8. Select desired datasets to apply into the document and click OK.

Save and open files

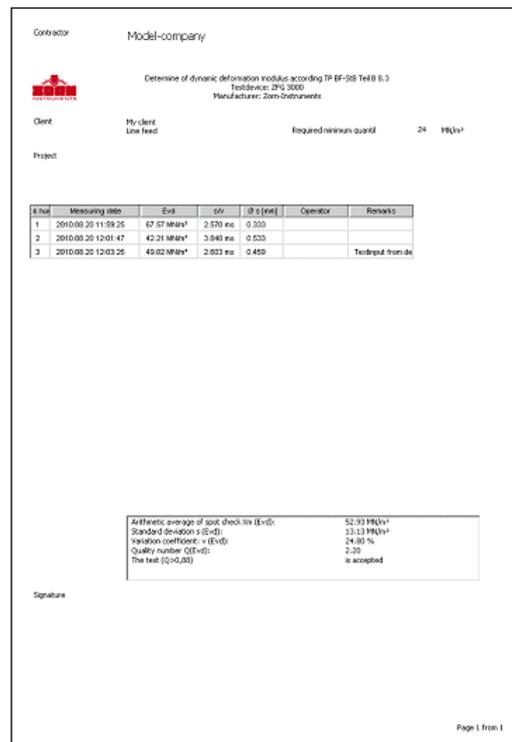
To save and open document is equally to the windows-default. Saved files use the file extension zfg3.

Print

It is possible to print single protocolls, the statistic (in menu File/Print) or all at once (menu File/Projectprint)



Single protocol



Statistic evaluation



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