

USER MANUAL

HYDRAULIC FORCE GAUGE

PCE-HFG Series



User manuals in various languages (français, italiano, español, português, niederlands, türk, polski) can be found via our product search on:
www.pce-instruments.com

SAFETY NOTES

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel.

Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- » The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- » The instrument may only be used if the environmental conditions (temperature, relative humidity) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- » Do not expose the device to shocks or strong vibrations.
- » The case should only be opened by qualified PCE Instruments personnel.
- » Never use the instrument when your hands are wet.
- » You must not make any technical changes to the device.
- » The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- » The device must only be used with accessories from PCE Instruments or equivalent.
- » Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- » Do not use the instrument in explosive atmospheres.
- » The measurement range as stated in the specifications must not be exceeded under any circumstances.
- » Non-observance of the safety notes can cause damage to the device and injuries to the user.
- » Do not transport the force gauge when it is attached to the manometer as the manometer could detach and damage the force gauge.
- » Avoid penetration of escaping oil into the soil and ground water.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

SPECIFICATIONS

General technical specifications

Specification	Description
Measurement range	See models
Measuring accuracy	See models
Resolution	See models
Units	N, kN
Type of force	Static compressive force
Force application	Axial or vertical application
Material	Stainless steel
Memory	Integrated drag indicator for maximum value recording
Operating time	Permanent, operation without auxiliary power
Display	Analogue force manometer
Mounting aid	2 x M6 screw mounting for axial fixing
Inner ring diameter	Φ27 mm
Main dimensions	180 mm x 105 mm x 35 mm (L x B x H)
Operating conditions	0 °C... +50 °C 20 %... 90 % RH non-condensing
Storage conditions	-10 °C... +60 °C 20 %... 90 % RH non-condensing
Weight	approx. 1,6 kg

Models

Specification	PCE-HFG 1K	PCE-HFG 2.5K	PCE-HFG 10K	PCE-HFG 25K
Measurement range	0... 1.000 N	0... 2.500 N	0... 10.000 N	0... 25.000 N
Measuring accuracy	±2,5 % v. E.	±1,95 % v. E.	±1,95 % v. E.	±1,95 % v. E.
Resolution	20 N	100 N	200 N	1000 N
Unit	N	N	kN	kN
Length Hydraulic hose*	1 m			

*Valid for Models: PCE-HFG 1K-E100, PCE-HFG 2.5K-E100, PCE-HFG 10K-E100 & PCE-HFG 25K-E100

GENERAL INFORMATION

Applications

The hydraulic ring force gauges of the PCE-HFG series can be used variably for measuring axial forces or bearing forces as well as vertical forces during maintenance and adjustment work. The special feature of the force gauge is the 27 mm ring aperture with an axial screw mounting. With the ring aperture in the force gauge, measurements can be made on guide rails, shafts and also bolts of hydraulic presses, for example. With the insertable compression die adaptor, the force gauge can be converted from a ring force gauge to a compression die force gauge within seconds and used for measuring industrial machines, for example. The force gauge can be used wherever applied forces are to be measured. With its integrated drag indicator, the force gauge can save the respective maximum measured value.

Operating principle

The force gauge works on the basis of the principle of force transmission. The forces applied to the compression die can be measured and displayed via the closed hydraulic system. The external forces generate a hydraulic pressure inside the force gauge. The oil acts as a transmission medium and transmits the forces to the manometer. On the manometer scale, these forces are displayed in Newton. The test instrument is adjusted to the display by the design of the housing and the compression die. Opening the closed hydraulic system falsifies the measuring results and a new adjustment must be made.

Note: Make sure that the closed hydraulic system is not opened.

Force application

The hydraulic ring force gauges of the PCE-HFG series are only designed for pressure forces perpendicular to the compression die. Any loading with transverse forces, bending moments and torques can tilt or displace the compression die and thus cause a permeability between the die and the housing. In general, the higher friction results in a greater measurement error.

Note: Avoid any loading with transverse forces, bending moments and torques.

The force gauge is used to measure static pressure forces. Dynamic forces can only be displayed at very low frequencies. The transducer should always be loaded and unloaded slowly. Ensure that the measurement range is generally not exceeded. Sudden pressure surges and over-range may destroy the manometer.

Note: Avoid sudden loading and unloading of the die.

OPERATION

Due to the design-related frictional forces prevailing in the manometer and the inertia of the indicator needle, measurements may be inaccurate. Especially after a longer period of non-use of the hydraulic ring force gauge, this inertia can occur at the indicator.

To ensure the accuracy of the measurement, load and unload the compression die several times before measuring. You can eliminate any remaining inaccuracies by **knocking** on the black housing of the manometer.

Note: For models with a remote pressure gauge, ensure that the pressure gauge and pressure plunger are always in the same position and at the same height. Otherwise, the measured values may deviate.

MAINTENANCE

If the operating and safety instructions are observed, the force gauge is very low-wear and does not require any maintenance over a longer period of time. To achieve this, the force gauge must be protected from coarse contamination and the closed hydraulic system must not be opened.

To check the measuring accuracy, however, the hydraulic force gauge must be sent to the manufacturer at regular intervals (annually) for inspection and recalibration.

DELIVERY CONTENTS

- 1 x Force gauge PCE-HFG Series
- 1 x Carrying case
- 1 x Compression die adaptor
- 1 x Quick start guide

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose. In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.

CONTACT INFORMATION

Germany

PCE Deutschland GmbH
Im Langel 26
D-59872 Meschede
Deutschland
Tel.: +49 (0) 2903 976 99 0
Fax: +49 (0) 2903 976 99 29
info@pce-instruments.com
www.pce-instruments.com/deutsch

United Kingdom

PCE Instruments UK Ltd
Trafford House
Chester Rd, Old Trafford
Manchester M32 0RS
United Kingdom
Tel: +44 (0) 161 464902 0
Fax: +44 (0) 161 464902 9
info@pce-instruments.co.uk
www.pce-instruments.com/english

The Netherlands

PCE Brookhuis B.V.
Twentepoort West 17
7609 RD Almelo
Nederland
Telefoon: +31 (0)53 737 01 92
info@pcebenelux.nl
www.pce-instruments.com/dutch

France

PCE Instruments France EURL
2, rue Georges Kuhnmmunch
67250 Soultz-sous-Forêts
France
Tel.: +33 (0) 972 35 37 17
Fax: +33 (0) 972 35 37 18
info@pce-france.fr
www.pce-instruments.com/french

Italy

PCE Italia s.r.l.
Via Pesciatina 878 / B-Interno 6
55010 Loc. Gragnano
Capannori (Lucca)
Italia
Telefono: +39 0583 975 114
Fax: +39 0583 974 824
info@pce-italia.it
www.pce-instruments.com/italiano

United States of America

PCE Americas Inc.
1201 Jupiter Park Drive, Suite 8
Jupiter / Palm Beach
33458 FL
USA
Tel: +1 (561) 320-9162
Fax: +1 (561) 320-9176
info@pce-americas.com
www.pce-instruments.com/us

Spain

PCE Ibérica S.L.
Calle Mula, 8
02500 Tobarra (Albacete)
España
Tel.: +34 967 543 548
info@pce-iberica.es
www.pce-instruments.com/espanol

Turkey

PCE Teknik Cihazları Ltd.Şti.
Halkalı Merkez Mah.
Pehlivan Sok. No.6/C
34303 Küçükçekmece - İstanbul
Türkiye
Tel: 0212 471 11 47
Faks: 0212 705 53 93
info@pce-cihazlari.com.tr
www.pce-instruments.com/turkish

Denmark

PCE Instruments Denmark ApS
Birk Centerpark 40
7400 Herning
Denmark
Tel.: +45 70 30 53 08
kontakt@pce-instruments.com
www.pce-instruments.com/dansk

