

prē'ssure (-sher), n. Pressing, calculated weight of this exercised on a given area by the atmosphere or steam or other force, urgency, (*high, low, ~*, atmospheric condition sending barometer up, down; *work at high, low, ~*, as hard as possible,

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DH-Budenberg is the World's Leading Manufacturer of primary pressure standards and pressure calibration equipment.

DH-Budenberg was established in 1996 from the merger of Desgranges & Huot from France ("DH") with the calibration division of the Budenberg Gauge company of the UK. Both companies have combined their know-how and resources in order to offer the widest and most advanced range of pressure standards and calibration systems.

DH-Budenberg has head offices in Altrincham (near Manchester, England), Aubervilliers (North of Paris, France) and Rodgau (Frankfurt suburbs, Germany). Customers are supported worldwide through a network of 45 expert representatives and distributors.

The DH-Budenberg laboratories are COFRAC, DKD and UKAS accredited. The company has a turnover of 13 Million Euros and employs 100 people. It is a member of the Electrocal Group Ltd. which also incorporates Budenberg Gauge Co. Ltd., manufacturers of premium quality dial gauges.

Activities and Products

The DH-Budenberg product range meets the needs of any industry where pressure is a critical parameter to monitor and master: Power Generation, Aerospace, Pressure Instruments Manufacturing, Gas, Defence, Chemicals, Petroleum, Automotive, Calibration Services Providers...

The portfolio includes solutions for laboratory, workshop, field and production line applications and allows for manual, semi- and fully automatic operation. It includes primary, transfer and working pressure standards, pressure balances, dead-weight testers, automatic controller/calibrators, portable calibrators and test gauges which are complemented by software packages, accessories, fittings and a full range of services.

Pressures covered range from vacuum to 1GPa (10000 bar, 150,000 psi), in absolute, gauge and differential modes, and for hydraulic or pneumatic operation. Achievable uncertainties range from 0.05% to world's best of 3 ppm of reading.

References

Over 50 National Measurement Laboratories operate DH-Budenberg pressure standards as their country's primary pressure standards, which means that pressure measurements made in more than 50 countries are linked at the highest stage to the quality and accuracy of DH-Budenberg instruments.

Industrial users include ABB, AGA, Agip, Airbus Industries, Air Liquide, Aventis, BASF, Bayer, Boeing, Bosh, British Aerospace, British Gas transco, British Petroleum, Bundeswher, CEA, Cegelec, Daimler-Chrysler, Dassault Aviation, DCN, Druck Ltd, EADS, EDF, Ford, GDF, Giat, Hoechst, Honeywell, ICI, IFP, Mannesmann, Mercedes, Michelin, NASA, Nuclear Electric PLC, OMV, Peugeot-Citroën, Renault, Rosemount, Ruhrgas, Schlumberger, Shell, Siemens, SNECMA, Sollac, Solvay, Swissgas, Thomson, Total-Antar-Elf, Thyssen, Voest...

Reference Calibration

Calibration of the highest Level Instruments and Dead-Weight Tester

A range of laboratory equipment dedicated to metrologists seeking outstanding levels of performance. Primarily designed for the calibration of high accuracy pressure instrumentation and calibrators (Dead-weight testers, high specification controllers and monitors...).

Pressure Balances

The 5000 series represent the world's ultimate level of primary standard. Implemented by more than 50 countries as primary reference and selected by thousands of users to transfer primary references.

They can now be combined with the new Terminal 5000 Interface, which gives the user a simple access to the 5000 series state of the art metrological excellence.



- Pressure ranges to 500 MPa oil (5000 bar, 72,500 psi) and to 100 MPa gas/gauge (1000 bar, 15,000 psi).
- Less than 1 μ m piston/cylinder geometry with full tungsten carbide construction.
- Sensitivity better than 1ppm.
- Stability better than 1ppm/year.
- Austenitic, non-magnetic masses.
- Local calculation of the corrected pressure with real time monitoring of ambient conditions.
- RS232 and IEEE488 computer interfaces.

Precision Calibration

Primary Calibration of Digital Calibrators and Latest Generation Process Instrument

Developed through careful analysis of modern high tech calibration requirements, these powerful mechanical, electronic and software solutions are designed to ensure reliable calibration of your high level pressure instrumentation such as controllers, calibrators and smart transmitters.

DPG

Digital Primary Pressure standards are built around an original concept first introduced by DESGRANGES & HUOT in the early 80's. The DPG technology combines a piston-cylinder assembly with an electronic dynamometer. They are the only pressure standards to associate the metrological performances of pressure balances with the convenience of digital transfer standards.

- Accuracy: 15ppm over 3 years
- Self calibrating with ACF™
- Integrated Environment Monitoring Module™
- Computer interface for full automation capability
- Traceable accredited calibration certificate as standard
- Resolution to 0.1 Pa



Model DPG8

- Dedicated to low gauge and absolute pressures.
- Ranges from 0 to 400 kPa (4 bar, 58 psi).
- Ideally suited for the calibration of Air Data Test Systems and the avionics instruments.
- 160 kPa range especially designed for meteorological applications.



Model DPG5

- Dedicated to gauge and high absolute pressures.
- 9 pressure ranges from 0 to 25 MPa (250 bar, 3,700 psi).
- Ideally suited as working standard in calibration laboratory, including accredited laboratories.

Instruments and Systems

For Control and Special Calibration Applications

Many industries handle processes which are aside from the traditional applications. Through a close and long lasting co-operation with experts, we have developed a range of state-of-the-art solutions that provide powerful responses to a variety of specific calibration requirements.

Automatic Testing and Calibration to Primary Standards

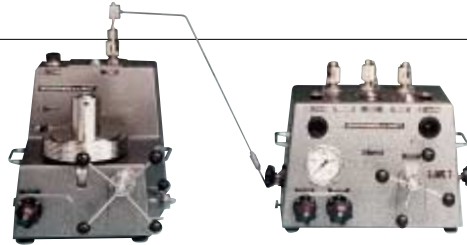
Combining automation with primary standard accuracy the 50000 series provides a powerful solution to the testing and calibration of high specification transmitters either in R&D departments or high volume production.



- Pressure ranges to 500 MPa oil (5000 bar, 72,520 psi), 100 MPa gas (1000 bar, 14,500 psi).
- Accuracy to 0.005% of reading.
- Resolution to 1 ppm.
- IEEE488 communication.
- Fully programmable.
- Software packages available.
- Automatic mass loading.

Differential Pressure Calibration at High Static Pressure

DP transmitters provide critical profit or safety-related information in processes like fiscal flow metering. Model 5500 and 1500 pressure balances enable their calibration under real working conditions and therefore bring improved process control.



- 0 to 1 MPa (10 bar, 145 psi) DP range.
- Static pressure range to 40 MPa (400 bar, 5,800 psi).
- Accuracy to 0.005% of reading on DP.
- Measurements with no effects from static pressure.

APX50 Automatic Absolute Pressure Balance

Our latest development combined with the BNM-LNE's metrological expertise, results in the leading APX50 absolute pressure balance. The APX50 is very well suited for the calibration of absolute dead-weight testers, mano-barometers and quartz transducers.

This standard is now the new national absolute pressure reference of the French calibration chain.



- Highest level achievable uncertainty of 5 ppm with $k=2$.
- Primary standard.
- Absolute/gauge pressure measurement.
- Automatic mass loading.
- Alternative to high accuracy mercury columns.
- Ranges from 10 kPa to 1 MPa (0.1 bar to 10 bar, 1.45 psi to 145 psi).

Automatic Controllers

Automatic Controllers & Software Packages for Turn-Key Solutions.

A comprehensive range of automatic pressure controllers and calibrators that focus on throughput. The GPS and the GPC serie controllers incorporate a high accuracy quartz pressure sensor, automatic pressure control and software for easy programming.

Automatic Pressure Generators

The GPS combines hydraulic pressure generation and calibration capabilities to 100 MPa with a high accuracy quartz cristal sensor as the reference for pressure measurement.



- Accuracy to 0.005%.
- Pressure ranges up to 100 MPa (1000 bar, 15,000 psi) with multi-ranging.
- Fully automatic operation.
- Oil or water operation.

Automatic Pressure Controllers

The Model GPC1 is a truly advanced gas-operated pressure calibration standard offering high performance measurement, speed, versatility and reliability for industrial applications.

- Accuracy to 0.025%.
- Pressure ranges up to 10 MPa (100 bar, 1,500 psi).
- Control precision to 0.004%.
- Local and remote operation.



The Model GPC3 is a truly advanced gas-operated pressure calibration standard offering high performance measurement, speed, versatility and reliability for industrial applications.

- Accuracy to 0.005%.
- 3 measuring ranges in one instrument up to 10 MPa (100 bar, 1,500 psi).
- Control precision to 0.004%.
- Local or remote operation.

Industrial Calibration

Calibration of General Process Instrumentation

Quality calibration of the instruments that provide control over industrial processes is the key to efficiency and profitability. Ranging from dead-weight testers to electronic calibrators including test gauges, our solutions suit all requirements. All instruments are rugged and reliable, carefully designed to resist the harshest environments.

Dead-Weight Testers

The 550/580 series of dead-weight testers are genuine primary standards. Ergonomic and easy to use they should be selected for day-to-day calibration where reliability and accuracy are a necessity.



- Pressure ranges to 800 MPa oil (8000 bar, 120,000 psi), 12 MPa air (120 bar, 1,800 psi).
- Accuracy to 0.008% of reading.
- Vacuum facility.
- Austenitic stainless steel non-magnetic weights.
- Dual range piston/cylinder units (on some models).

Comparators and Test Gauges

The inherent simplicity, adaptability and reliability of dial gauges have made them the pre-eminent classical means of measuring pressure. Test gauges provide an efficient response to many calibration requirements and are an unsurpassed solution to the calibration of other gauges and pressure indicators. The range we offer is backed with 150 years of expertise and can meet any requirements.



- Pressure ranges to 400 MPa oil (4000 bar, 60,000 psi).
- Accuracy to 0.2%.
- 150, 200 & 250 mm dial sizes.
- Comparator stands available with precision pressure generation.

Electronic Comparator P540/H540

A family of accurate comparator instruments for use in gas or oil suited to the workshop environment. Provides a complete measurement solution, including generation, control and measurement of pressure as well as reading signals from instruments under test.



- Range from -100 kPa to 10 MPa pneumatic (-1 to 100 bar, -14.5 to 1,450 psi) and 0 to 120 MPa hydraulic (0 to 1200 bar, 0 to 17,400 psi).
- Accuracy to 0.025%.
- Design allows for checking of electronics using existing PCU.
- Supplied with complete software package.
- Operates from rechargeable batteries.

Portable Calibration

On-site Calibration of General Process Instrumentation

A range of accurate, reliable, user friendly instruments designed to meet the exacting demands of on-site calibration.

PPS40

The PPS40 family of portable calibrators are a powerful range of instruments providing optimum feature combination for industrial users, whilst being user friendly and rugged enough for the harshest and explosive industrial environments with the forthcoming IS version. Housed in a robust enclosure offering IP65 protection and excellent ergonomics, the calibrator combines the measurement of pressures at an accuracy of 0.025%, including temperature correction for operating between 0 and 40°C, with supply and measurement of transmitter or transducer output, temperature measurement and data storage.



- Built-in pumps with fine control for pressure/vacuum.
- Robust IP65 ABS enclosure.
- Easy to use menu system.
- Simultaneous display of all measurement data.
- Ranges vac to 40 MPa (400 bar, 5,800 psi).
- 0.025% accuracy across range 0 to 40°C.
- Power, read and store data from test instrument.
- Supplied with PC software.
- Re-chargeable batteries, supplied with charger.

300 Series

The 300 series has modular construction allowing the instrument to be ideally suited to an application. They are designed to bring laboratory class performance to the field.



- 11 interchangeable ranges from -95 kPa to 60 MPa (-950 mbar to 600 bar, -13.8 to 8,700 psi).
- Gauge, negative, absolute and differential pressures.
- 0.05% of reading accuracy.
- Rugged ergonomic IP65 case.
- Software for automatic print-out calibration certificates.

Software Packages

Software Packages for Turn-Key Solutions.

Fully integrated software package for the control and measurement of pressure. Combined with our range of instruments it creates a complete calibration and measurement solution.

Software Packages

To complete our pressure standards and turn them into Turn-Key Solutions tailored to your calibration needs, we offer:



- PASCAL is a fully comprehensive MS-Windows software package that drives your equipment, performs state-of-the-art calibrations, computes test results, stores and prints out calibration certificates.

We believe that our responsibility to customers begins well before any equipment is purchased and continues throughout its service life. To back our claim we offer various services to ensure

- The equipment precisely fulfils your requirements.
- Your personnel can competently operate it.
- The equipment is correctly maintained.
- The equipment retains its inherent accuracies.

Calibration

It is important in a modern technical business to know the exact limitations of your equipment. Our calibration laboratories are accredited by UKAS in the United Kingdom, COFRAC in France and DKD in Germany, therefore ensuring the validity of your results.

- The DH-Budenberg Ltd. UKAS accredited laboratory near Manchester has measurement capabilities from 0.005% previously only available in the UK from the National Physical Laboratory.
- The DH-Budenberg SA COFRAC accredited laboratory in Paris has measuring capabilities from 0.0018% with k=2.
- The DH-Budenberg GmbH DKD accredited laboratory in Frankfurt has measuring capabilities from 0.005%.

Technical Services

Hire of Electronic Calibrators, Dead-weight Testers, Gauges etc.

Repair of Calibrators, Dead-weight testers, gauges etc. ranging from a basic repair to a full overhaul and recertification.

Training

“The Metrology of Pressure” is a three-day seminar on quality pressure calibration providing an in-depth understanding of how to solve industrial calibration problems and understand test results.

The training sessions can be performed in English, French and Spanish. On site training can also be considered.

One day courses are available on the understanding and calibration of diaphragm and Bourdon tube instruments of their choice for further training. All courses combine theory with hands-on experience. Bespoke courses based on a customer's individual specification can be organised.

Advice

Our experienced application/product engineers are always on-line, ready to give advice gained through years of permanent work on pressure instrumentation/calibration applications. We can make our know-how yours.



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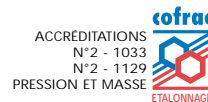
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