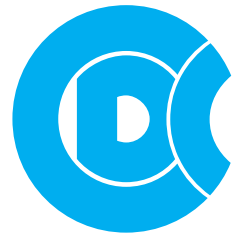


FLOW TEST LABORATORY



Continental Disc Corporation

Performance Under Pressure



Continental Disc Corporation has representatives located throughout the world. Contact the C.D.C. office nearest you for the authorized representative in your area.

CORPORATE HEADQUARTERS

Continental Disc Corporation
3160 W. Heartland Drive
Liberty, Missouri 64068-3385 USA

Phone: (816) 792-1500
FAX: (816) 792-2277 / 5447
E-mail: pressure@contdisc.com
Website: www.contdisc.com

THE NETHERLANDS

Continental Disc Corporation
Energieweg 20
2382 NJ Zoeterwoude-Rijndijk
The Netherlands
Phone: + (31) 71-5412221
Fax: + (31) 71-5414361
E-mail: cdcnl@contdisc.com

GERMANY

Continental Disc
Deutschland GmbH
Virmondstrasse 151
47877 Willich Germany
Phone: + (49) 2156-490802
Fax: + (49) 2156-492547
E-mail: cdd@contdisc.com

UNITED KINGDOM

Continental Disc UK Ltd.
Unit C, The Business Centre
Faringdon Avenue,
Harold Hill, Romford
Essex RM3 8EN
United Kingdom
Phone: + (44) 1708-386444
Fax: + (44) 1708-386486
E-mail: cduk@contdisc.com

CHINA

Continental Disc Corporation
2026 The Executive Center
20/F The Center
989 Changle Rd.
Shanghai, 200031
P.R. China
Phone: + (86) 21-5117-5848
Fax: + (86) 21-5117-5849
Mobile: + (86) 137-8897-2291
E-mail: jiyang@contdisc.com

DUBAI

Continental Disc Corporation
P.O. Box 2234
Dubai, U.A.E.
Phone: + (971) 43214490
Fax: + (971) 43438840
Mobile: + (971) 508129525
E-mail: kannan@contdisc.com

With a response time of milliseconds, Continental Disc Corporation's ASME accepted Flow Test Laboratory is adaptable to run a wide range of flow tests. And with the addition of the new Liquid Flow Loop, the Flow Test Laboratory can now run the full range of flow tests in both air and liquid.

The Flow Test Laboratory includes a 16-channel, state-of-the-art high speed data acquisition system capable of reading up to 500,000 samples per second. This hardware, coupled with pressure/temperature instrumentation and custom written software, creates a measurement system that conforms to the stringent testing requirements of ASME Performance Test Codes (PTC-25).

C.D.C.'s Flow Test Laboratory is managed and operated by a team of experienced research and development personnel who are ASME accepted authorized observers. They are experienced in flow testing relief valves, rupture discs, rupture disc resistance values (K_R), relief valve/rupture disc combinations, vent valves, and other pressure relief devices.

Test Lab Capacities

Test Media	Maximum Pressure	Maximum Capacity	Available Nozzle Sizes*
Air	180 psig	7200 scfm	1/2" - 4" 150/300 ANSI
Air	650 psig	6000 scfm	1/2" - 4" 150/300 ANSI
Water	650 psig	900 gpm	1/2" - 4" 150/300 ANSI

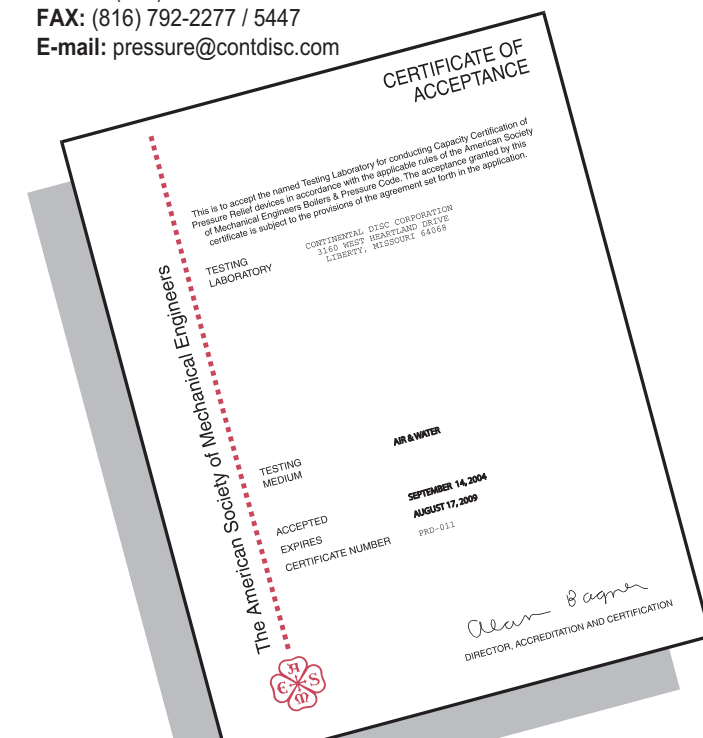
* Other test sizes are available.

The presence of an ASME designee may be required for certain types of device testing requiring certification. Contact Continental Disc Corporation for details.

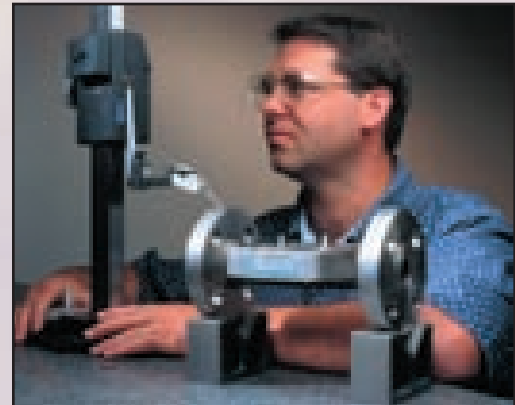
Centrally located in the Midwest, the state-of-the-art acquisition equipment and instrumentation found in C.D.C.'s Flow Test Laboratory are available to manufacturers, researchers, and educational institutions.

For more information about test scheduling and rates, contact:

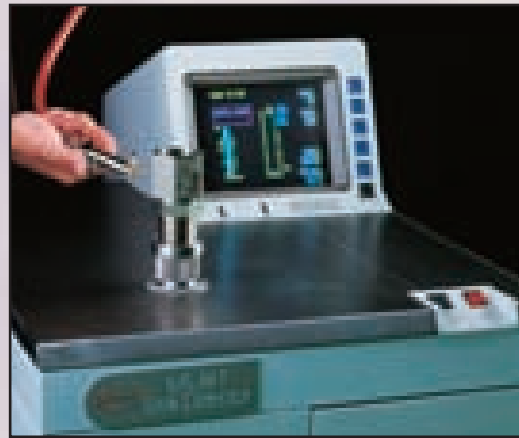
Continental Disc Corporation
3160 West Heartland Drive
Liberty, MO 64068-3385 USA
Phone: (816) 792-1500
FAX: (816) 792-2277 / 5447
E-mail: pressure@contdisc.com



Precision Measuring and Test Equipment to Support and Maintain the Flow Test Laboratory



A full range of precision measuring devices and accessories are maintained in support of Continental Disc Corporation's ISO 9001 registered quality assurance program. From a 4' X 6' granite surface plate (shown here), to custom designed gaging for your most intricate parts, Continental Disc Corporation's inspectors have all the measuring and test devices necessary to assure that your standards are being met.



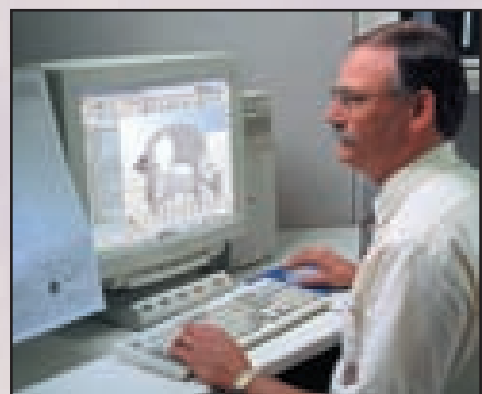
A Mass Spectrometer Leak Detector is used for non-destructive leak testing, quantitatively measuring leak rates in the range of $10 \text{ to } 6 \times 10^{-11}$ atm. cc/sec. of air.



The Optical Comparator is used for small parts which are difficult to accurately measure by manual methods. Enlarged detail, vertical and horizontal measuring capabilities and profile projection allow the precise measurement of features such as radii, thread profile and angles.



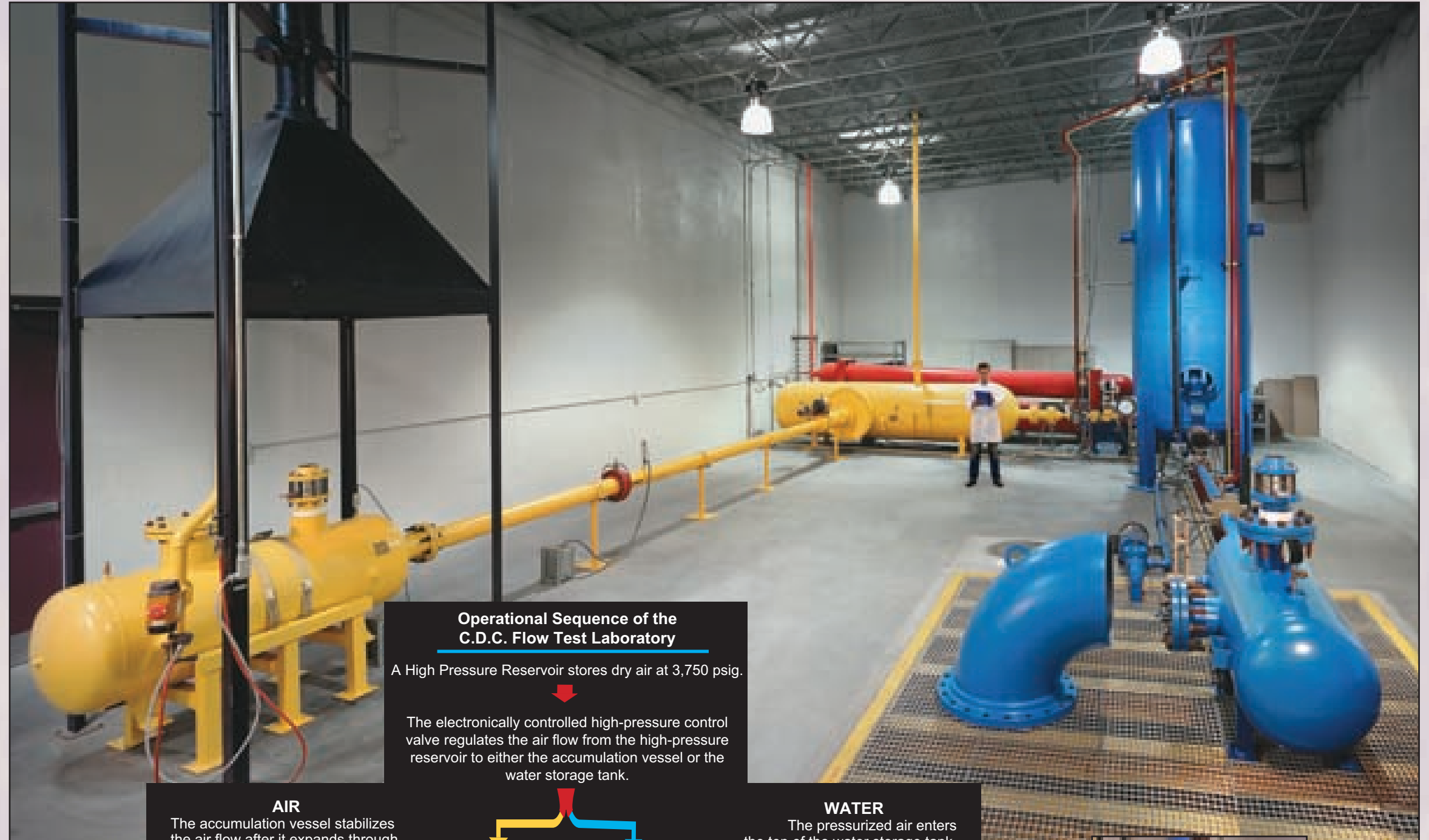
The Coordinate Measuring Machine is used for critical measurement of complex parts. This equipment provides statistical process control (SPC) capabilities, is programmable and automated, resulting in the highest level of measurement confidence.



The C.D.C. engineering staff utilizes solid modeling for design and machining of flow test apparatus and test objects.



Accurate pressure measurement is accomplished by a custom designed, software and data acquisition gaging system. This gaging system is calibrated, as shown here, by a precision portable calibrator including auto-calibration and data analysis software features. Continental Disc Corporation's calibration program is in compliance with MIL-STD 45662A and ISO 9001 requirements. Pressure test results are traceable through an unbroken chain of calibration to the United States National Institute of Standards Technology (N.I.S.T.).



Operational Sequence of the C.D.C. Flow Test Laboratory

A High Pressure Reservoir stores dry air at 3,750 psig.

The electronically controlled high-pressure control valve regulates the air flow from the high-pressure reservoir to either the accumulation vessel or the water storage tank.

AIR

The accumulation vessel stabilizes the air flow after it expands through the high pressure control valve. The air is passed through the metering section to the test vessel.

An orifice meter is used to precisely measure the air flow rate by means of the pressure differential across the orifice plate.

The computer data acquisition system records and captures the air flow rate data and generates the flow test report.

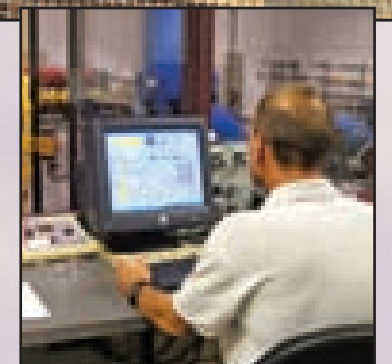
The testing air is vented to the atmosphere.

WATER

The pressurized air enters the top of the water storage tank, and forces the testing water through the liquid flow loop.

An orifice meter is used to precisely measure the liquid flow rate by means of the pressure differential across the orifice plate. The computer data acquisition system records and captures the liquid flow rate and generates the flow test report.

The testing water is directed to a receptacle vessel, to be returned to the water storage tank.



The Flow Laboratory is managed and operated by a team of experienced research and development personnel who are ASME accepted authorized observers.