

IPC Global™ **FACT**

Fully-Automated Cyclic Triax

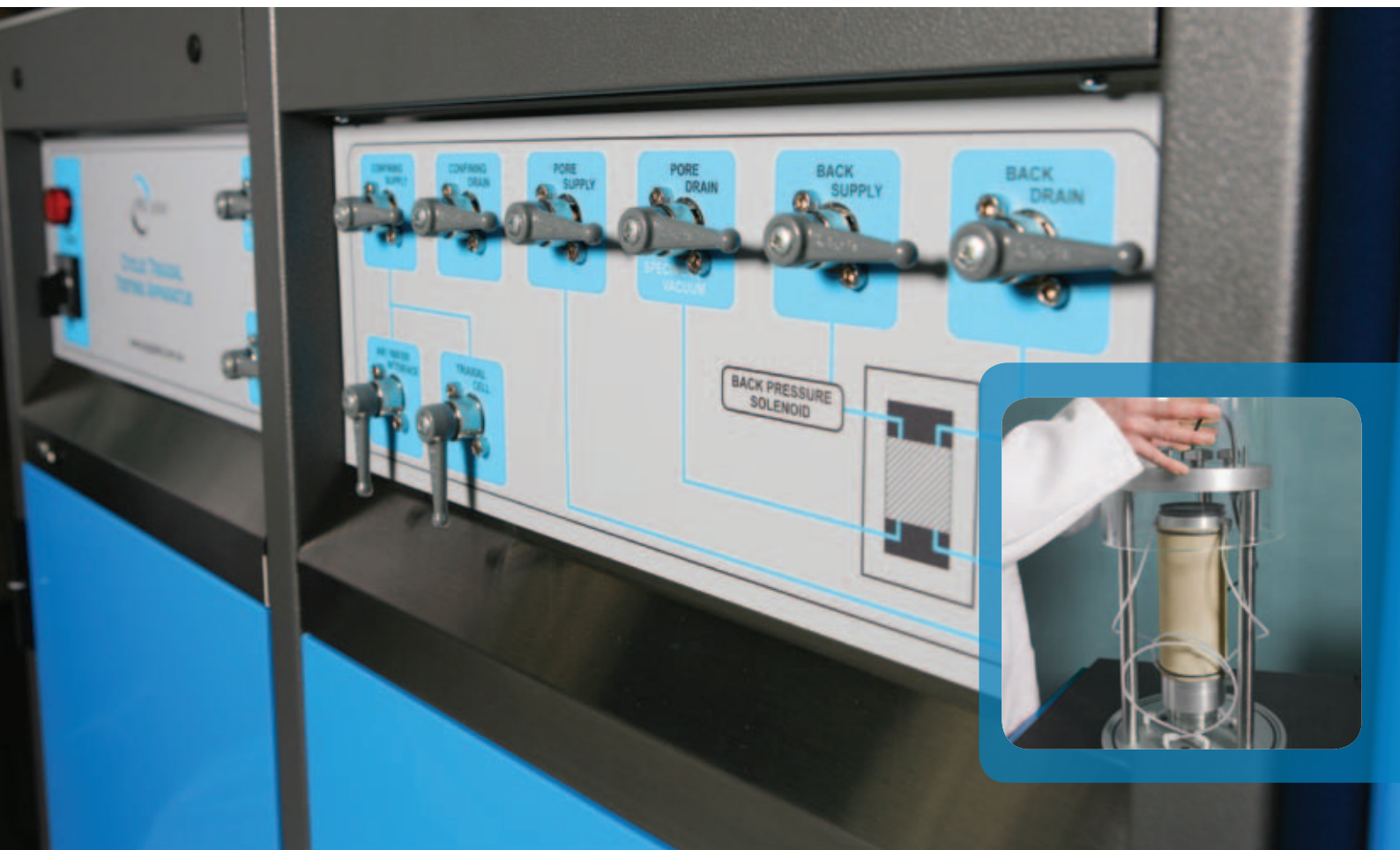
The first, completely integrated cyclic triaxial system.

Now that's a **FACT!**



The science
of testing

made easy™



A SIMPLE FACT

IPC Global have simplified cyclic triaxial testing with their Fully-Automated Cyclic Triax (FACT).

- *Completely integrated*–FACT has everything you need for advanced soil testing in one compact unit
- *Fully assembled*–Simply connect electricity, water and air and FACT is ready to go
- *Streamlined testing*–Innovative design unifies cell and reaction frame for efficient testing
- *No more heavy lifting*–Effortless specimen set-up and loading system
- *Easy specimen placement*–Integrity of specimen retained with minimal disturbance

For performing advanced tests with complex loading conditions, the simple FACT really does make *your soil testing easy*.

AN IMPORTANT FACT

IPC Global's controllers and software have been the driving force behind advanced soil testing systems from ELE, Wykeham Farrance and Controls.

WITH FACT YOU CAN

- Replicate and investigate earthquake tremors
- Quantify liquefaction potential of soils & silts
- Assess the impact of vibration on local soil types
- Accurately determine cyclic or dynamic loading on foundations
- Conduct conventional testing - saturation, isotropic & anisotropic consolidation & shear parameters included
- Test all possible vibration patterns with the wide frequency range
- Reproduce any vibration signature
- Design your own unique vibration test routines
- Improve the foundation design of new and existing structures
- Evaluate vibration effects on existing structures and historic buildings

Vibration and cyclic loading can have devastating effects on the stability of structures. These damaging loading patterns are caused by earthquakes, blasting, ocean waves, wind, construction, road and rail traffic.

Now you can accurately simulate these extreme real life conditions with IPC Global's Fully-Automated Cyclic Triax (FACT). FACT performs complex cyclic loading combinations with ease.

EASY INSTALLATION Assembled and ready to go

FACT is an all-in-one, streamlined instrument that's easy to install:

- Totally integrated system, ready to install straight out of the box
- Delivered fully plumbed and therefore easy to set-up, clean and service
- Internal vacuum generator for ease and simplicity
- Computer is conveniently pre-loaded with software applications
- Compact design, on wheels, for easy positioning in your laboratory

You'll find ongoing use and routine maintenance of FACT a breeze. Better still, training of new staff in cyclic triaxial testing is now simpler and faster.

FACT includes a submersible load-cell, light-weight acrylic triaxial cell, through-base ports, an integrated reaction frame, servo pneumatic actuator, air-water bladder, combined pressure/volume-change apparatus, water/vacuum distribution panel, vacuum generator, compressed air cleaning hose with trigger, computer and software.

EASY TESTING Fast and reliable results

FACT comes fully configured and ready for soil testing.

FACT gives you reliable results:

- Specimens, including non-cohesive soils, are easily positioned, clamped and loaded with *ingenious vacuum attachment*¹ of pedestal and top cap
- Triaxial cell assembly is simple and straightforward
- No more heavy lifting of a loaded cell into a separate reaction frame
- Specimen disturbance is minimised
- Specimen integrity is preserved
- *Unique floating ram*² gently lifts and carefully aligns your specimen, ready for testing
- Easy-to-follow *diagrammatic distribution panel*³ for water and vacuum lines
- Combined pressure/volume-change apparatus with auto-refill allows tests to run uninterrupted for infinite volume change
- Safer, quieter, easier



1 . Ingenious vacuum attachment



2 . Unique floating ram

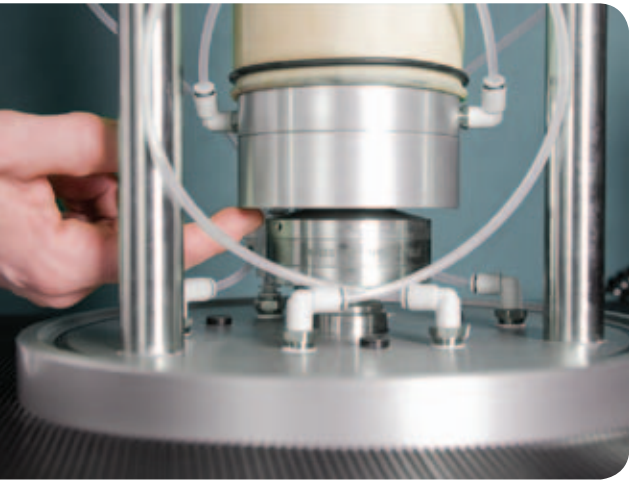


3 . Diagrammatic distribution panel

REVOLUTIONARY, ALL-IN-ONE CELL AND REACTION FRAME DESIGN

FACT frame and measurement systems offer:

- Precision engineered, integrated load frame for excellent sample alignment
- Virtual infinite stiffness with auto compliance correction
- IPC Global 'Special Application' high performance servo valve for precise force and displacement control

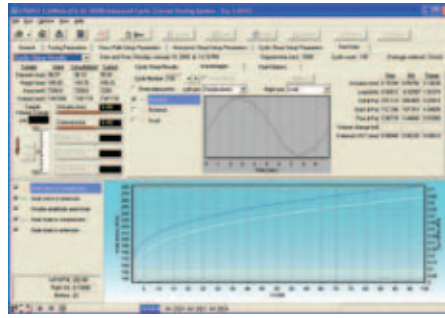


- Overload shut-off and protection switches that safeguard your equipment
- Through-base ports for tidy set-up of specimen transducers and other devices
- Integrated pneumatic actuator for quiet operation and easy maintenance

FACT cell has:

- Internal columns and an integrated crosshead for efficient operation
- Lightweight acrylic cell wall for improved specimen loading and less specimen disturbance
- Eliminated heavy lifting of triaxial cell apparatus
- Crystal clear heavy duty cell wall provides unobstructed specimen viewing and safe management of cell pressure
- Submersible internal load cell for precise stress measurement, confidence and repeatability
- Zero friction and no need for shaft bushes because the shaft is integrated into the cell

RENOWNED SOFTWARE AND CONTROL



Well-known UTS test application software:

- Purpose-built and runs automated test routines to speed up implementation time
- Specifically developed with expert knowledge, for comprehensive testing and reporting
- Numerous applications for testing soil and unbound granular materials
- Powerful, professional Delphi software with real-time graphs for monitoring the specimen under test
- Portable data files for remote reviewing, analysis and troubleshooting
- Displays 'live' transducer levels
- Playback vibration signatures with up to 40,000 data points

Controlling FACT is IPC Global's Integrated Multi-Axis Control System (IMACS). IMACS delivers leading edge performance, unparalleled control and the ultimate in flexible data acquisition:

- Real-time digital computer control
- Excellent waveform fidelity from the integrated channel acquisition and control functions at speeds up to 5kHz, simultaneous on all channels
- Low data noise performance with 4x over-sampled data and selectable filtration
- Exceptional data resolution and control with up to 20bit auto-ranging data acquisition
- Flash based firmware allows field updates of all modules
- USB communication port at 10Mb/s
- Total confidence in measurements from analogue inputs that auto-calibrate on power-up
- Measure and Control – axial displacement, axial load, confining pressure, back pressure, pore pressure⁺, volume change⁺.
- Optional – on-specimen axial displacement x2, on-specimen circumferential, mid-height pore pressure.

⁺ measurement only.



HOW DOES FACT MAKE SPECIMEN HANDLING EASY?

We've put the best ideas into one easy-to-use loading procedure. Just four simple steps to load your soil specimen:

- 1 Place the pedestal on the set-up platform and prepare the specimen with the membrane and top cap. To hold non-cohesive specimens firm, apply the integrated vacuum.
- 2 Transfer your specimen onto the floating ram and lift, with gentle finger pressure, until the top cap reaches the crosshead and locks by vacuum.
- 3 Slide on the lightweight acrylic cell wall to enclose the triaxial cell and fit the locking ring.
- 4 Charge with water and start your test.

FACT HAS SUPERIOR PERFORMANCE IN:

- Cyclic Axial Strength Test
- Cyclic Axial Strain Test
- Cyclic Back Pressure Test
- Cyclic Confining Pressure Test
- Cyclic and Monotonic Shear Strength Test
- Damping Ratio
- Liquefaction Potential
- Unconfined Compression Test
- Quick Undrained Test
- Stress Path and Strain Path Tests
- CU Consolidated Undrained Triaxial Tests
- CD Consolidated Drained Triaxial Tests
- UU Unconsolidated Undrained (stress strain test)
- Resilient Modulus
- Shear Modulus
- Sine, haversine, triangle and square waveforms
- User-defined waveforms of 40,000 point description.

SPECIFICATIONS



Maximum axial loading	+/- 11kN*
Load Cell	submersible
Ram Displacement	50mm
Ram Displacement Transducer	AC LVDT
Cell Dimensions	240mm I.D., 415mm High
Specimen sizes	100mm dia. 70mm dia. Other sizes available
Maximum axial frequency response	70Hz
Maximum test application frequency	typically 5Hz
Maximum dynamic cell pressure frequency	1Hz
Cell Pressure	Up to 1000kPa*
Back Pressure	Up to 1000kPa*
Control Modes	Force, Stress, Displacement, Strain
Dimensions	630mm deep x 1140mm wide x 1370mm high
Weight	165kg
Operating Environment	5 to 30°C
Electrical power requirements	115/230V 60/50Hz, 600W

* Load and pressure achievable with 10 bar compressed air supply.

FACT performs tests to the following standards:

ASTM D 5311 Standard Test Method for Load Controlled Cyclic Triaxial Strength of Soil

ASTM D3999-91 Standard Test Methods for the Determination of the Modulus and Damping Properties of Soils Using the Cyclic Triaxial Apparatus

BS 1377-8 Soils for civil engineering purposes - Shear strength tests (effective stress)

AASHTO T 307 Standard Method of Test for Determining the Resilient Modulus of Soils and Aggregate Materials (*with additional hardware*).

FACT test stages include:

Saturation with B value, Consolidation, Isotropic and Anisotropic Consolidation, Ko consolidation, Cyclic and Monotonic shear stages; and, Pore Pressure & Volume Change.



Above: Combined pressure /
volume-change apparatus

IPC Global Customer Care

At IPC Global we are proud of our products.

We're dedicated to supplying high quality, accurate, affordable, easy-to-use systems for advanced testing of asphalt, soil, unbound granular and other construction materials.

As a valued customer of IPC Global you will receive continuous, expert support and advice for your instrument. Furthermore, we ensure new users are trained in the correct operation of your IPC Global equipment.

For support from our expert customer care team, contact your local IPC Global distributor or IPC Global directly on +61 3 9800 2200 or email techsupport@ipcglobal.com.au.

Visit our website for more information:
www.ipcglobal.com.au

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