IPC Global®

Universal Testing Machines
UTM-250; UTM-130; UTM-30; UTM-15P

NEW & IMPROVED
IPC Global’s range of Servo-Hydraulic and Servo-Pneumatic Universal Testing Machines (UTM) are flexible, accurate, reliable and affordable. IPC Global has the largest customer user-base of servo-controlled UTM systems in the asphalt and pavement materials testing industry, with over 300 servo-hydraulic testing systems and over 200 servo-pneumatic testing systems sold globally.

New and Improved Technology
IPC Global’s range of new and improved UTM systems has received a powerful upgrade on our previous range of UTM systems.

World Leading Control
Paired with IPC Global’s world leading IMACS Digital Controller you are guaranteed unparalleled real-time computer control.

Tried and Tested
IPC Global’s UTM technology has been tried and tested by leading research institutes and government organisations around the world for over 25 years.

Precision Engineered
IPC Global is renowned for its easy to use, reliable and high quality materials testing technology.

Superior Data Acquisition
Benefit from leading-edge performance on the IMACS with flexible data acquisition expandable up to 32 channels.

Complete Turnkey Solution
IPC Global offers a wide range of high quality test fixtures, transducers and environmental chambers to complement its range of UTM systems.
Over the last 25 years we have been working closely with Government Highway Authorities, Universities, Asphalt Producers, Road Construction Industry and Research Organisations to pioneer the world’s best and most innovative range of advanced asphalt testing systems.

Full Set of Accessories Available

An extremely wide range of testing accessories is available for our UTM systems including platens, triaxial cells, fixtures, jigs, transducers and other customer specified items.

IPC Global has the largest range of asphalt testing jigs and accessories on the market. We work closely with the asphalt research community to develop new test standards and accessories.

IPC Global’s UTM Servo-Hydraulic and Servo-Pneumatic Universal Testing Machines are precision engineered to accomplish your toughest research challenges. Designed and built to IPC Global’s highest standard for civil engineering laboratories, IPC Global UTM Systems deliver superior reliability and accuracy with proficient performance of tension, compression and dynamic loading analysis on asphalt, unbound granular and other pavement materials. Harnessing the precision of IPC Global’s renowned IMACS digital controller and the powerful user-friendly, UTS software, you’ll have absolute confidence in your materials analysis.

IPC Global supplies a wide range of test fixtures, transducers and environmental chambers to complement its range of Universal Testing Systems, therefore creating a complete turnkey solution that streamlines your materials testing.
IPC Global’s new and improved UTM-130 Servo-Hydraulic Universal Testing Machine has been precision engineered to accomplish your toughest research challenges.

Designed and built to IPC Global’s highest standard for civil engineering laboratories, IPC Global’s UTM-130 delivers superior reliability and accuracy with proficient performance of tension, compression and dynamic loading analysis on a wide range of materials.

IPC Global’s UTM-130 is a flexible 130kN capacity dynamic servo-hydraulic universal testing machine, available with a wide range of transducers, jigs, fixtures, triaxial cells and accessories. The UTM-130 can conduct tests that comply with international standards for asphalt, unbound granular and other pavement materials.

Features:
- Rigid two column load frame
- Precision engineered for high stiffness and alignment
- Double acting high precision actuator
- High performance servo-valve allows for sinusoidal, loading frequencies up to 70Hz
- Hydraulic crosshead positioning and clamping for easier test set-up without the requirement for extension rods
- Fully customisable to suit a range of testing applications
- Independent environmental chamber eliminating the transfer of mechanical vibration to testing machine

**Ordering Information**

- 1002-2165 - UTM-130 Servo-Hydraulic UTM
- 1150-5031 - Environmental Chamber (-25°C ~ +60°C)
- 1150-5040 - Environmental Chamber (-50°C ~ +100°C)

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**UTM-130 Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Capacity</td>
<td>+/- 130kN Static</td>
</tr>
<tr>
<td></td>
<td>+/- 100kN Dynamic</td>
</tr>
<tr>
<td>Frequency</td>
<td>Up to 70Hz</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Low profile/pancake type,</td>
</tr>
<tr>
<td></td>
<td>+/-130kN capacity</td>
</tr>
<tr>
<td>Actuator Type</td>
<td>Double acting high precision</td>
</tr>
<tr>
<td></td>
<td>tie rod actuator, (optional</td>
</tr>
<tr>
<td></td>
<td>labyrinth bearing actuator)</td>
</tr>
<tr>
<td>Stroke</td>
<td>+/-50mm</td>
</tr>
<tr>
<td>In-built Displacement</td>
<td>100mm</td>
</tr>
<tr>
<td>Transducer</td>
<td>100mm</td>
</tr>
<tr>
<td>Adjustable Cross-Head</td>
<td>Hydraulic</td>
</tr>
<tr>
<td>Crosshead Clamping</td>
<td>Hydraulic</td>
</tr>
<tr>
<td>Vertical Space</td>
<td>1,000mm</td>
</tr>
<tr>
<td>Space Between</td>
<td>600mm</td>
</tr>
<tr>
<td>Columns</td>
<td>3,000x1,000x1,000mm</td>
</tr>
<tr>
<td>Weight</td>
<td>775kg (approx.)</td>
</tr>
</tbody>
</table>

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130kN UNIVERSAL TESTING MACHINE
**ENVIRONMENTAL CHAMBER**

IPC Global’s environmental chambers use a high quality mechanical refrigeration system and superior insulation technologies to enable users to analyse materials’ properties at real-life working temperatures (between -50°C to +100°C) for extended periods without the need for LN₂.

High accuracy and total control over temperature ramps and dwells are achieved using the Programmable Digital Controller enabling users to easily perform complex tests e.g. TSRST.

![UTM-130 Environmental Chamber](image1)
![Hydraulic Power Supply](image2)

**HYDRAULIC POWER SUPPLY (HPS)**

IPC Global’s Hydraulic Power Supply (HPS) has been designed based on variable displacement piston pump technology assuring improved performance, longer life, lower power consumption and noise reduction.

IPC Global’s HPS features remote starting and control via virtual pendant, water/air cooling options and indication for low oil, over temperature and dirty filter. The system provides electronically adjustable oil pressure allowing for greater control and safety. Oil accumulators further improve control accuracy while the high performance filters ensure long-life system protection and reduced maintenance costs.

**Environmental Chamber Features**

- Programmable Digital Controller—PID tuning, temperature ramps and dwells, auto-tuning, selectable sample time
- Extended range maximum cooling rate > -50°C/hour*
- Extended range programmable temperature gradient of -20°C/hour with ramp control
- Four access ports
- Stainless steel AISI 304, 18/10 heavy duty construction
- Triple Glazed, Argon filled, Lo E glass door
- Defrost system & interior lighting
- Fan forced ventilation
- Ergonomic design provides easy access to chamber
- Fully adjustable temperature probe for greater accuracy
- Independent chamber eliminates mechanical vibration to testing machine

*Dependant on thermal mass within chamber

**HPS Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate</td>
<td>18 litres/min</td>
</tr>
<tr>
<td>High Pressure</td>
<td>210 Bar</td>
</tr>
<tr>
<td>Low Pressure</td>
<td>100 to 210 Bar</td>
</tr>
<tr>
<td>Remote Starting</td>
<td>Available</td>
</tr>
<tr>
<td>Cooling System</td>
<td>Water/oil heat exchanger, optional water chiller, optional air-cooling</td>
</tr>
<tr>
<td>Oil Tank Capacity</td>
<td>220 litres</td>
</tr>
<tr>
<td>Mains Power</td>
<td>7.5kW 3 phase, 400V 50Hz, or 220V 60Hz</td>
</tr>
<tr>
<td>Size (HxWxD)</td>
<td>1,200x1,200x650mm</td>
</tr>
<tr>
<td>Weight</td>
<td>250kg (without oil)</td>
</tr>
</tbody>
</table>

**EXTRA-LARGE 130kN UNIVERSAL TESTING MACHINE**

IPC Global’s UTM-130XL has been designed and engineered specifically to accommodate the Extra Large Four Point Bend Jig and Extra Large UTM-130 Environmental Chamber.

Based on our world renowned UTM-130, the UTM-130XL allows you to perform four point bend tests on asphalt specimens, up to 160x200mm (HxW) and a minimum length of 790mm, at non-ambient temperatures.

UTM-130XL delivers superior reliability and accuracy with proficient performance of tension, compression and dynamic loading analyses on all types of material.

This unique testing system can be used with our full range of test accessories.
30kN UNIVERSAL TESTING MACHINE

IPC Global’s new and improved UTM-30 Servo-Hydraulic Universal Testing Machine has been precision engineered to accomplish your toughest research challenges.

Designed and built to IPC Global’s highest standard for Civil Engineering laboratories, IPC Global’s UTM-30 delivers superior reliability and accuracy with proficient performance of tension, compression and dynamic loading analysis on a wide range of materials.

IPC Global’s UTM-30 is a flexible and adaptable 30kN capacity dynamic servo-hydraulic universal testing machine available with many interchangeable transducers, jigs, fixtures, triaxial cells and accessories. It meets the requirements of the most important test standards and draft test standards for asphalt, unbound materials and soils.

Features:
- Rigid two column load frame
- Precision engineered for high stiffness and alignment
- Double acting high precision actuator
- High performance servo-valve allows for sinusoidal loading frequencies up to 70Hz
- Motorised crosshead positioning for easier test set-up without the requirement for extension rods
- Hydraulic crosshead clamping
- Fully customisable to suit a large range of testing applications

UTM-30 Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Capacity</td>
<td>+/- 30kN Static</td>
</tr>
<tr>
<td></td>
<td>+/- 30kN Dynamic*</td>
</tr>
<tr>
<td>Frequency</td>
<td>Up to 70Hz</td>
</tr>
<tr>
<td>Load Cell</td>
<td>Low profile/Pancake type, +/- 30kN capacity</td>
</tr>
<tr>
<td>Actuator Type</td>
<td>Double acting high precision labyrinth bearing or tie-rod actuator</td>
</tr>
<tr>
<td>Stroke</td>
<td>+/-25mm</td>
</tr>
<tr>
<td>In-built Displacement</td>
<td>50mm</td>
</tr>
<tr>
<td>Transducer</td>
<td>50mm</td>
</tr>
<tr>
<td>Adjustable cross-head</td>
<td>Motorised</td>
</tr>
<tr>
<td>Crosshead Clamping</td>
<td>Hydraulic</td>
</tr>
<tr>
<td>Vertical Space</td>
<td>800mm</td>
</tr>
<tr>
<td>Space Between Columns</td>
<td>450mm</td>
</tr>
<tr>
<td>Size (HxWxD)</td>
<td>1,800x660x560mm</td>
</tr>
<tr>
<td>Weight</td>
<td>285kg (approx.)</td>
</tr>
</tbody>
</table>

*Frequency performance dependent on load and displacement requirements

Ordering Information

1002-1942 - UTM-30 Servo-Hydraulic UTM
1150-5000 - Environmental Chamber (-25°C ~ +60°C)
1150-5020 - Environmental Chamber (-50°C ~ +80°C)
ENVIRONMENTAL CHAMBER

IPC Global’s environmental chambers use a high quality mechanical refrigeration system and superior insulation technologies to enable users to analyse materials’ properties at real-life working temperatures (between -50°C to +80°C) for extended periods without the need for LN₂. High accuracy and total control over temperature ramps and dwells are achieved using the Programmable Digital Controller thus enabling users to easily perform complex tests e.g. Thermal Stress Restrained Specimen test (TSRST).

HYDRAULIC POWER SUPPLY (HPS)

IPC Global’s Hydraulic Power Supply (HPS) has been designed with integrated inverter technology, assuring energy saving and noise reduction.

IPC Global’s HPS features return line filtration, remote starting and control via virtual pendant, water/air cooling options and indication for low oil, over temperature and dirty filter. The system provides electronically adjustable oil pressure allowing for greater control and safety. Oil accumulators further improve control accuracy while the high performance filters ensure long-life system protection and reduced maintenance costs.

HPS Specifications

- Flow Rate: 5 litres/min
- High Pressure: 210 Bar
- Low Pressure: 50 to 210 Bar
- Remote Starting: Available
- Cooling System: Air-cooling
- Oil Tank Capacity: 28 litres
- Mains Power: 2.5kW single phase, 230V 50Hz, or 208V 60Hz
- Size (HxWxD): 800x600x500mm
- Weight: 105kg (without oil)
**15kN UNIVERSAL TESTING MACHINE**

A 15kN Servo-Pneumatic controlled testing machine. The UTM-15P utilises digital control of a pneumatic servo-valve to provide accurate loading waveshapes of up to 70Hz*.

UTM-15P can be operated in tension, compression and dynamic loading and is suited to testing a diverse range of materials such as asphalt, soil, unbound granular materials, fibres and plastics.

Available with an optional motorised crosshead for quick and easy test set up. Crosshead positioning is accurately adjusted using PC control from UTS software and ensures that the crosshead is locked safely, without backlashes for waveshape fidelity and high accuracy in tension-compression tests.

Designed and built to IPC Global’s highest standard for Civil Engineering laboratories, UTM-15P delivers superior reliability and accuracy with proficient performance of tension, compression and dynamic loading analysis on all types of materials.

**Features:**
- Robust, high-strength and compact 2-Column load frame.
- Precision engineered for high stiffness and alignment.
- Digital Servo-Pneumatic control.
- Fully adjustable crosshead positioning. Optional motorised crosshead available.
- The optional motorised crosshead is controlled via the PC and ensures the crosshead is locked safely without backlashes for waveshape fidelity and high accuracy in tension-compression tests.
- Fully customisable to suit a large range of testing applications.

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**UTM-15P Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load Capacity</td>
<td>Static: 15kN / Dynamic: 15kN</td>
</tr>
<tr>
<td>Frequency</td>
<td>Up to 70Hz*</td>
</tr>
<tr>
<td>Load Cell</td>
<td>+/-20kN capacity</td>
</tr>
<tr>
<td>In-built Displacement</td>
<td></td>
</tr>
<tr>
<td>Transducer</td>
<td>30mm</td>
</tr>
<tr>
<td>Stroke</td>
<td>+/-15mm</td>
</tr>
<tr>
<td>Adjustable Cross-head</td>
<td>Manual / Motorised</td>
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<td>Vertical Space</td>
<td>600mm</td>
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<tr>
<td>Space Between Columns</td>
<td>345mm</td>
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<tr>
<td>Size (HxWxD)</td>
<td>1,000x450x300mm</td>
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<td>Weight</td>
<td>80kg (approx.)</td>
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</table>

**Services**

<table>
<thead>
<tr>
<th>Service</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Supply</td>
<td>Clean dry air</td>
</tr>
<tr>
<td>Pressure</td>
<td>800-900kPa</td>
</tr>
<tr>
<td>Minimum Flow Rate</td>
<td>5 litre/sec</td>
</tr>
<tr>
<td>Mains Power</td>
<td>Powered from IMACS</td>
</tr>
<tr>
<td>Motorised Crosshead</td>
<td>220-230V 50/60Hz, 1 phase</td>
</tr>
</tbody>
</table>

*Frequency performance dependent on load and displacement requirements

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**Ordering Information**

1002-1936 - UTM-15P Servo-Pneumatic UTM  
1002-1939 - UTM-15P Servo-Pneumatic UTM with motorised crosshead  
0150-0020 - Side Mount Env. Chamber (-15°C ~ +60°C)  
1150-5010 - Upright Env. Chamber (-25°C ~ +60°C)
Available on request is IPC Global’s UTM-250 Servo-Hydraulic Universal Testing Machine. Precision engineered for extremely high force loading with the ultimate precision to accomplish your toughest research challenges.

Designed and built to IPC Global’s highest standard for Civil Engineering laboratories, IPC Global’s UTM-250 delivers superior reliability and accuracy with proficient performance of tension, compression and dynamic loading analysis on high strength materials.

For more information contact IPC Global or your local distributor.
IPC Global’s Integrated Multi-Axis Control System (IMACS) delivers leading-edge performance, unparalleled real-time computer control and flexible data acquisition†.

For servo-controlled testing machines, the IMACS provides excellent waveform fidelity from integrated channel acquisition and control functions at 5kHz simultaneously on all channels.

The IMACS has low data noise performance with 4x over-sampled data and selectable filtration. It provides exceptional data resolution and control with up to 20-bit effective auto-ranging data acquisition. The flash-based firmware allows field updates of all modules.

Expandable, up to 8 control axes and 32 channel of acquisition, the IMACS allows for easy upgrades. With IPC Global’s IMACS you will have total confidence in your testing results.

IMACS Features

- Low data noise performance with over-sampled data.
- Excellent waveform fidelity from the integrated acquisition and control functions.
- Flash based firmware allows field updates of all modules.
- Total confidence in measurements from analogue inputs that auto-calibrate on power-up.
- Acquisition and Control—up to 8 axis of control and up to 32 channels of data-acquisition.
- Real-time digital computer control with 32-bit processing.
- Exceptional data resolution & control with up to 20-bit effective auto-ranging data acquisition.

† See White paper ‘Ensure Reliable Results: The Case For Robust Control & Data Acquisition’. Contact sales@ipcglobal.com.au for your copy.

IMACS Specifications

- Configuration: Fully integrated
- Real Time Digital Computer Control: 32-bit Processing
- Acquisition Speeds: 5kHz (simultaneous on all channels)
- Data Over-Sampling: 4x
- Data Resolution: 20-bit effective auto-ranging data acquisition
- Communication: USB 2.0: 12Mb/s Ethernet: 10/100Mb/s
- Firmware Update: Flash based
- Analogue Inputs: Auto-calibrate on power up
- Control: Up to 8 axis control
- Acquisition: Up to 32 channels of data acquisition
- Size (HxWxD): 270x350x460mm
- Weight: 11kg
- Mains Power: 220-240V 50Hz, or 110-120V 60Hz
IPC Global’s powerful and professional UTS Software draws upon over 25 years of advanced materials testing experience. IPC Global’s test and control software is known for its simplicity in use, clarity of results and analytical power. IPC Global works closely with the asphalt testing research community, collaboratively developing new and draft test standards. Customers can be assured that IPC Global will always have software available for the latest international test standards for asphalt testing.

**Powerful professional Delphi software**

Save time analysing your materials using UTS software’s clear, precise, rich, user friendly tab-based interface with multiple real time graphical displays.

**All test data saved in portable binary files**

A powerful feature unique to UTS software. When the test is finished UTS saves in a binary file the data points, the all test setup parameters and the calibration parameters. This means that at any time in the future the test can be reviewed as if it has just been performed complete with all test control, PID, specimen settings and results.

**Test templates**

Test settings can be entered and saved by the Chief Engineer or Laboratory Manager for easy recall and testing by Technicians. No need to configure the machine each time you want to perform a specific test.

**The ultimate in clean accurate data**

IMACS integrated control and data acquisition with 4x oversampling technology, auto-ranging and effective 20-bit data resolution gives unparalleled control and waveform fidelity.

**Purpose-written test applications**

Benefit from more than 25 years of IPC Global’s expert software application development. With UTS test applications written around international standards you can concentrate on analysing your materials; not on programing your testing machine.

**User programmable tests**

When you are developing a new test method or want to run a novel test UTS User-programmable test allows you to take full control and determine all the test, control and analysis parameters.

**Powerful professional software**

Save time analysing your materials using UTS software’s clear, precise, rich, user friendly tab-based interface with multiple real time graphical displays.

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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