IPC Global®

# Servo-pneumatic

## Four Point Bending Apparatus

The science of testing made easy®

The Servo-pneumatic Four Point Bending Apparatus comprises of a pneumatically powered loading system, a beam cradle, an optional environmental chamber, IMACS Integrated Multi-Axis Control System and Windows application software.

The beam cradle has been designed to subject an asphalt beam specimen to 4 point bending with backlash free rotation and horizontal translation of all load and reaction points.

## SPECIFICATIONS

### Features

- Digital servo-controlled hydraulic actuator provides accurate control of loading waveshape
- Innovative “floating straight-edge” on-specimen transducer eliminates errors due to frame compliance
- Backlash free rotation and translation on all load and reaction points
- Sinusoidal or haversine controlled strain or controlled stress loading
- Controlled force, motorised specimen clamping
- Non-linear regression data fitting ensures reliable determination of phase and modulus
- Cost effective solution for high volume testing

### Dimensions and weight

Apparatus: *460(l) x 230(w) x 600(h)mm / 35kg*

IMACS: *450(l) x 360(w) x 270(h)mm / 11kg*

Air Accumulator:
*450(l) x 470(w) x 330(h)mm / 9.5kg*

| | |
|---|---|
| Loading Frequency | *up to 60Hz** |
| Load Capacity | *up to 5kN dynamic* |
| Actuator Stroke | *10mm* |

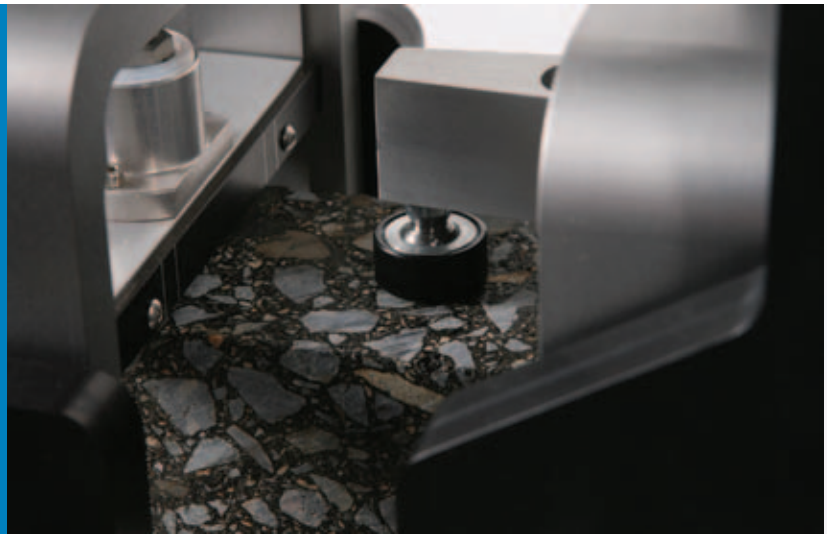
Specimen Size
*70 max(h) x 85 max(w) x 380 min(l)mm*

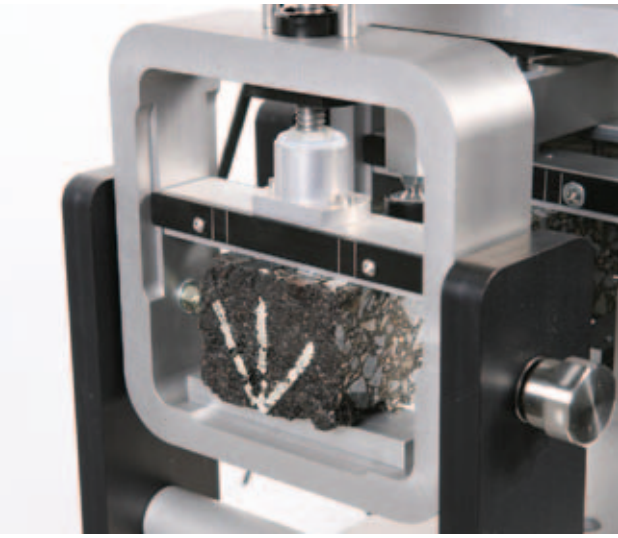
| | |
|---|---|
| Air Supply | *Clean, dry air at 800-900kPa, 5l/s min* |

Control & Data Acquisition, see *IMACS specifications*

*Load limitations apply at higher frequencies

# Servo-Pneumatic 4 point Bending Apparatus





**The specimen is laterally positioned by hand using etched lines as a visual guide for 2 specimen sizes, nominally 50 and 63.5 mm in width.**

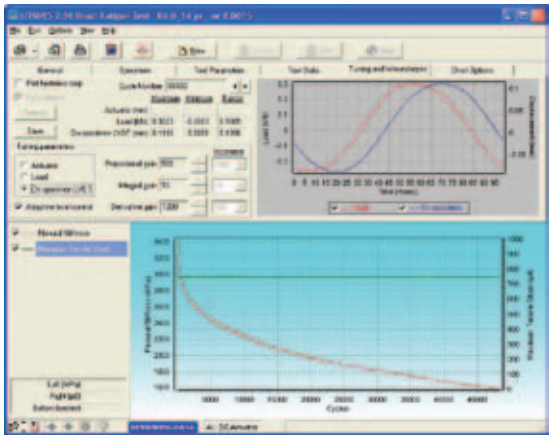
Vertical clamping of the specimen is achieved by servo-motor driven ball screws which are operated continuously during the test to take up the compliance of the specimen at the clamping surfaces and the clamping force is controlled via the IMACS by regulating the motor current.

The pneumatic system uses a bottom loading actuator system with a high performance servovalve, with PID closed-loop control and a run time adaptive control algorithm that adjusts the command signal during the running of a test.

The test control system is computer based, using sensors on the machine for feedback (load and strain) signals.

The user friendly PC software is menu-driven. The system gathers the dynamic data from the specimen under test, then displays plots appropriate to each test type and function mode, in real time on the PC. Optional non-linear regression data fitting ensures reliable determination of phase and modulus.

The software automatically saves test information in binary file format, llowing data files to be generated for importing into a spreadsheet package, or review of previously-run tests through the graphics screens of the system. Binary files may also be emailed for diagnostic purposes.



**Complies with the following standards:**
EN12697-24 Annex D*
EN12697-26 Annex B*
prEN13108-20 Annex D*
AASHTO T321 (formerly TP8)
AST 03 (AUSTROADS)

## 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.**

## Contact Us


**IPC Global**
4 Wadhurst Drive, Boronia, VIC 3155, Australia

**T** +61 3 9800 2200
**F** +61 3 9800 2813
**E** sales@ipcglobal.com.au
**W** www@ipcglobal.com.au


IPC global®

The science of testing **made easy**® www.ipcglobal.com.au