Servo-Pneumatic Four Point Bend Apparatus MkIV
Accessories

The Servo-Pneumatic Four Point Bend Apparatus comprises of a pneumatically powered loading system, a beam cradle, an optional environmental chamber, IMACS2 Third Generation Integrated Multi-Axis Control System and UTS Neutron test application software.

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

Features

- Digital servo-controlled pneumatic actuator provides accurate control of loading waveshape
- Suitable for use with both on-specimen and outer fixed reference point measurement systems.
- Deflection can be measured at the neutral axis or at the top surface of the specimen.
- Backlash-free rotation and translation on all load and reaction points.
- Sinusoidal or haversine controlled strain or controlled stress loading.
- Constant force motorized clamping with multiple preset force levels.
- Non-linear regression data fitting ensures reliable determination of phase and modulus.

Specifications

Loading frequency	up to 60 Hz*
Load capacity	up to 5kN dynamic
Optional on-specimen displacement transducers	LVDT +/- 0.5mm, +/- 1mm or +/- 2.5mm

Test Standards

AASHTO T321	—	Fatigue (Formerly TP8)
AG:PT/T274-15	—	Fatigue (Formerly AG:PT/T233, AST 03:2000)
ASTM D7460	—	Flexural Fatigue
EN1269724D	—	Resistance to Fatigue
EN 12697-24D	—	Stiffness
ASTM D8237	—	Fatigue Failure

Specimen dimensions

Specimen sizes	Maximum height 70 mm Maximum width 80 mm Length from 380 mm to 500+ mm
Accomodates typical specimens	50 x 50 x 400 mm 60 x 60 x 400 mm 50 x 63 x 400 mm 70 x 70 x 500 mm
Loading spans	Inner span ≤118.5 mm to >140 mm Outer span ≤355.5 mm to >420 mm
Yoke Alignment Tool (H x W x Outer span centers)	50 x 50 x 355.5 mm 70 x 70 x 420 mm (optional)

Dimensions and weight

Apparatus 600 x 230 x 490 – 560mm (H x D x W) / 35kg

IMACS2 445 x 280 x 245 mm (H x D x W) / 1kg**

Air Accumulator 330 x 470 x 450mm (H x D x W) / 9.5kg

Services

Air supply	Clean, dry air at 800 – 900kPa
Minimum flow rate	5 liter/sec

* Load limitations apply at higher frequencies

** Control & Data Acquisition, see IMACS2 specifications

Testing made easy

The specimen is laterally positioned by eye using etched lines as a visual guides.

Vertical clamping of the specimen is achieved by servo-motor driven ball screws which are operated continuously during the test to adjust for the compliance of the specimen at the clamping surfaces.

The pneumatic four point bend apparatus uses a bottom loading actuator with high performance servo-valve, PID closed-loop control and run time adaptive control algorithm that adjusts the command signal during the test. The control system uses load and strain feedback signals.

IPC Global's UTS test and control software is known for its simplicity in use, clarity of results and analytical power.

Developed from expert knowledge of applications, it features real-time graphs for monitoring the specimen under test; portable binary data files for sharing, reviewing & analysis; and 'live' transducer levels display.

Selectable non-linear regression data fitting ensures reliable determination of phase and modulus.

Complies with the following standards: EN12697-24 Annex D*, EN12697-26 Annex B*, AASHTO T321 (formerly TP8), ASTM D7460, AG:PT/T233 (formerly AST 03:2000)

Ordering information

PV74A12/I2	Four Point Bend Apparatus — Pneumatic
PV70206	On-specimen LVDT +/-0.5mm span, with In-Line Conditioner
PV70407	On-specimen LVDT +/-1mm span, with In-Line Conditioner
PV70408	On-specimen LVDT +/-2.5mm span, with In-Line Conditioner
PV70406	Optional Yoke Alignment Tool for 420mm (Outer span centers) x 70mm x 70mm
PV70403	4PB PVC beam (dummy specimen)
PV70116	Temperature measurement kit
PV70404	4PB Apparatus reference beam assembly
PV70405	4PB Aluminium channelled reference beam
PV70E02	Environmental Chamber (-25°C / +60°C)

Additional accessories may be required to create a working testing system. Please contact us for advice.

Contact Us

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