APPLIED TEST SYSTEMS, INC.

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Product Bulletin

Bending Beam Rheometer

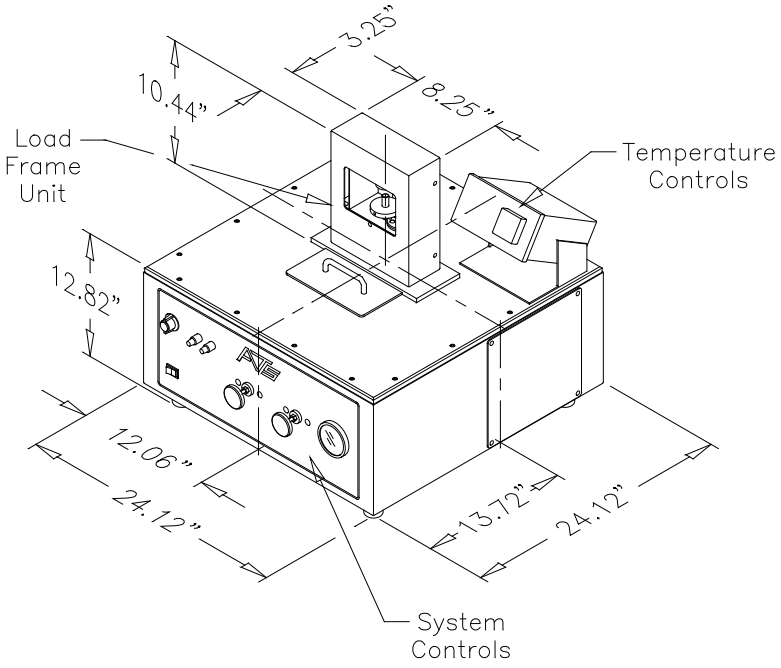
Durable, High-Quality System for Determination of Flexural Creep Stiffness of Asphalt Binder

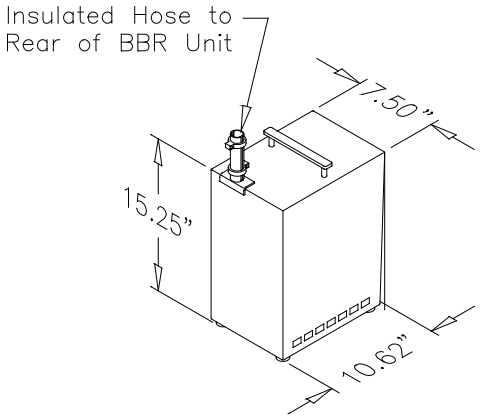
Features

The ATS Bending Beam Rheometer (BBR) has been engineered to perform flexural tests on asphalt binder and similar specimens per ASTM D6648-01 and AASHTO T313-02. These tests, initially developed by the Strategic Highway Research Program (SHRP), consist of a constant force being applied to a specimen in a chilled fluid bath in order to derive specific rates of deformation at various temperatures.

A complete BBR system consists of a fluid bath base unit, a three-point bend test apparatus which is easily removed from the base unit for specimen loading and unloading, an external cooling unit with temperature controller, and a calibration hardware kit with carrying case. Additionally, the BBR has recently been redesigned according to the latest revisions of the relevant ASTM and AASHTO specifications. This new design includes updated and improved software as well as features that make the BBR safer, easier, and more accurate.

Bending Beam Rheometer





Cooling Unit
(Included with BBR system)
Uses environmentally–friendly coolant and non–flammable ethylene glycol mixture

System Features:

- Durable, corrosion-resistant construction
- Computerized control, data acquisition, and analysis
- PID temperature controller with digital display
- Two independent platinum RTDs for precise temperature control
- Mechanically-refrigerated cooling bath with environmentally-safe non-CFC cool-
- ant
- Integral LVDT and temperature-compensated load cell for accurate test results
- Patented air bearing ensures reliable loading with accurate, repeatable results
- Includes complete calibration kit with carrying case
  Includes ASTM/AASHTO-compliant specimen molds

Specifications

Load Frame	Integral stainless steel frictionless construction
Loading Shaft	In-line stainless steel with blunt point
Test Load	Variable test range from 0 to 200g standard System maintains required test load within ±0.5g throughout the test cycle
Test Cycle Times	Cycle times for pre-load, recovery, and test load are completely operator-adjustable
Load Cell	500g (temperature-compensated)
Mechanical Overload Protection	Standard
Test Weights	Calibrated and traceable to NIST
Sample Supports	25mm (0.98 in.) diameter stainless steel spaced 4.00 in. (101.6mm) apart
LVDT Displacement Transducer	0.25 in. (6.35mm) calibrated range to provide ¡2um resolution throughout testing and verification range
Data Display	Large on-screen display of load, displacement, and bath temperature provides ease of setup and operation. Real-time displacement, loading, and temperature graphs are displayed during the test cycle and can be re-plotted and re-scaled as needed for easy viewing
Cooling Unit	Included (non-CFC refrigerant)
Recommended Cooling Bath Fluid	Non-flammable ethylene glycol mixture
Operating Temperature	Ambient to -40°F (-40°C)
Temperature Measurement	Platinum RTD
Power Requirements	115VAC 50/60Hz Standard 230VAC 50Hz Optional
Compressed Air Requirements	50 psi (0.34 MPa) clean, dry air supply required
Approximate Shipping Weight	250 lbs. (115kg)

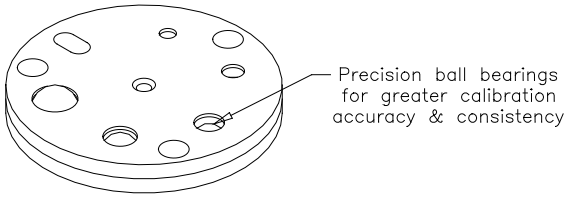
Specifications subject to change without notice

Introducing the New Step Disk and Calibration Gaging Kit

The latest and probably the most useful innovation in the ATS Bending Beam Rheometer is the totally redesigned calibration step disk. The new disk design makes calibration of the BBR load frame easier and more reliable than ever before.

The original notched step disk had a tendency to slide and distort the consistency of readings. The new design features a detent locking mechanism to prevent movement of the disk during calibration and incorporates a series of precision ball bearings as calibration steps.

Now, there is no longer the chance of recording a myriad of readings and the subsequent need to recalibrate. The new disk stays in place during the process, and the use of ball bearings means that there can be only one point of contact with the indicator pin, offering an unmatched level of precision and quality assurance.



Improved Step Disk
(Included as part of
new calibration kit)

The new calibration gaging kit includes the redesigned step disk, four 50g weights, two 2g weights, one certified confidence beam, one non-compliance beam, improved calibration software, and an attractive wooden carrying case.

Features

The new BBR includes a number of improved software and reporting features:

- Recording of data points is now twice as accurate (two readings per second as opposed to one).
- For verification that seating loads were within specifications, a graph shows the pre-load results before the initial tests and can be viewed digitally at a later time.
- The pre-test mode includes continuous contact between the loading shaft, anvils, and specimen, and the applying and reapplying of 35mN and 980mN of force.
- The intuitive software package walks the user through device configuration, daily verifications, test setup, test initiation, and reporting.
- All test parameters can be changed, so any future revisions to the ASTM/AASHTO standards can be accommodated.
- The data acquisition system records all raw data points, test specimen/setup data, and the test report in standard ASCII files that can be recalled, printed, or imported into other software packages for further analysis or custom reporting.
- Constant system error checking ensures that the correct parameters have been set prior to test initiation, so specimens are not accidentally destroyed before running the test.
- The new software improves the ease and repeatability of performing routine calibration and verification to comply with the latest ASTM/AASHTO specifications.
- Features increased analysis and reporting, including data on temperature and the quality of the constant force.
- Reports contain a “test conditions” section, which includes machine serial number, software version, and the latest calibration dates and results, allowing improved traceability.
- Indication of return to original load at the end of the test is now a standard part of the report.
- Daily verification and periodic calibration of the load cell, LVDT, and RTD transducers takes only a few minutes to complete.
- The BBR software now incorporates a program to verify and eliminate device compliance from the specimen displacement measurements.

A **BBR Upgrade Kit** is also available for older ATS Bending Beam Rheometers, which includes all updated software as well as the new calibration gaging kit and step disk.

ACCREDITED
Calibration Laboratory
Certificate No. 2132.01
Inclusion of this logo does not imply certification/approval of the products calibrated.

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