



**Quality Systems  
for Materials Testing  
and Process Heating**

***PRODUCT LINE OVERVIEW***

**Universal Testing Machines**

**Creep Testing Systems**

**Testing Accessories**

**Furnaces**

**Ovens**

**Industrial Furnaces**

**Heating Elements**

**Ultrasonic Standards**

**Pressure Testing Systems**

**Asphalt Testing Equipment**

**Sealant Testers**

# Introduction

## ***Affordable, Reliable, High-Performance Equipment for Testing, Laboratory, and Industrial Applications***




*The entrance to ATS's main engineering and manufacturing facility in Butler, Pennsylvania*

**Applied Test Systems, Inc.** was established in 1965 with the goal of providing a line of affordable, yet uncompromising, materials testing equipment. Every one of our products still reflects this principle. ATS systems are always among the industry's best and very often are the most affordable.

Since the beginning, we have succeeded in developing new products for emerging applications and have excelled in producing innovative solutions to age-old materials testing problems.

ATS has continued to succeed because *we are large enough to offer an extensive line of standard products; however, we are still, and will always be, flexible enough to custom-tailor any system for a specific application.* This is an uncommon and intentional combination of services, one that is guaranteed to result in a final product that precisely meets your organization's needs and expectations.

**This catalog** provides an introduction to Applied Test Systems and gives an overview of our product lines. Specifications and detailed descriptions for each of the products are presented in separate catalogs and bulletins, indicated by  throughout this publication. All are free and readily available from ATS. Please refer to the back cover for a convenient order form.

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#### *Cover Photographs:*

- Top Left: Series 3210 Split Tube Furnace*  
*Top Right: Series 1600 Universal Testing Machine*  
*Bottom Left: Bending Beam Rheometer*  
*Bottom Right: Industrial Heat Treating Batch Furnace*

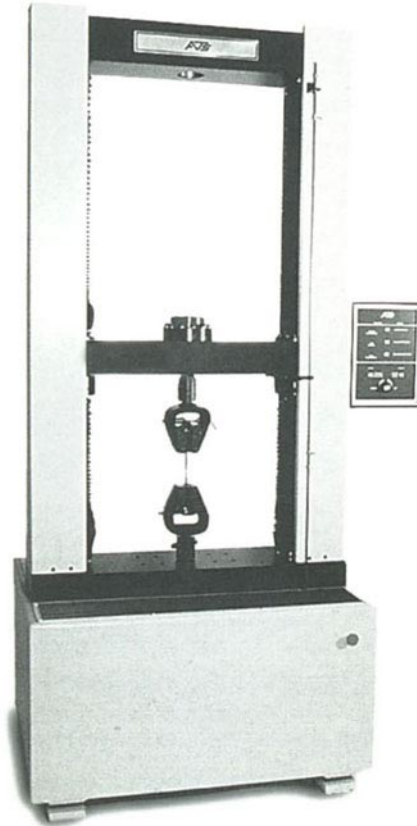


## **Full-Featured Materials Testing Systems Consistently Among the Industry's Best and Most Affordable**

**Universal Testing Machines** from ATS are ideal for accurately determining the mechanical properties of virtually any material in tension, compression, shear, or flexure. These machines are appropriately named as they are *designed to perform an enormous range of tests*, especially when coupled with our extensive line of modular accessories. Plastics, ceramics, composites, metals, elastomers, textiles, wire, adhesive bonds, packaging, and fasteners are just a few of the materials and products that can be tested with our machines.

With an enviable list of quality features and advanced capabilities, ATS Universal Testing Machines are *the perfect choice for the most demanding research and quality control applications*.

ATS makes three distinct lines of high-performance universal testing systems: The advanced Series 1600 computer-controlled machines; the durable, precise Series 1100; and the low-cost, intermediate-range Series 900. Twelve standard models are currently available, providing capacities from 1,000 lbf. (4.4kN) up to 67,440 lbf. (300kN).



### ◀ **Series 1600** Our Most Capable, Advanced, and Easy-to-Use Universal Testing Machines

- Computer-controlled by the versatile ATS TestVue® software
- Perfect for repetitive, data-intensive testing
- Capacities from 1,000 lbf. (4.4kN) to 67,440 lbf. (300kN)

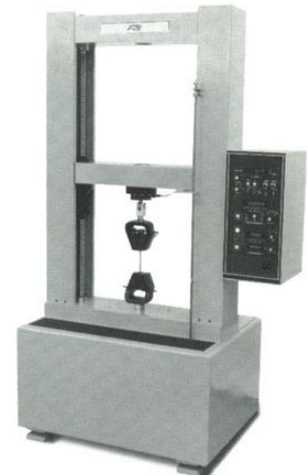
📖 See B1600 for more information



### ▲ **Series 900** Low-Cost, Medium Capacity Universal Testing Machines

- Long list of standard features
- Capacities of 5,000 lbf. (22.2kN) and 10,000 lbf. (44.4kN)

📖 See B900 for more information



### ▲ **Series 1100** Precise, Rugged, Versatile Universal Testing Machines

- Excellent specifications
- Four models with capacities from 1,000 lbf. (4.4kN) to 20,000 lbf. (88.9kN)

📖 See B11xx for more information

# Creep Testing



## ▲ Series 2140 Direct Load Creep Testing System

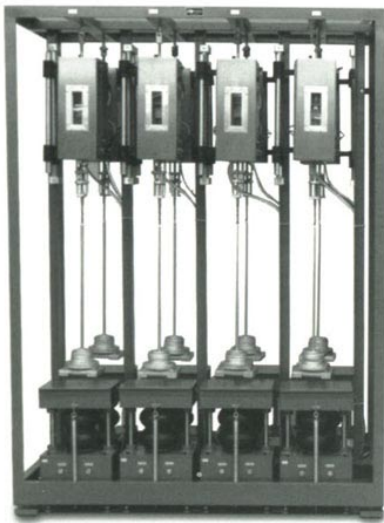
- Low-cost creep / stress rupture testing to ASTM requirements
- Capacities to 1,200 lbf. (5.3kN)

📖 See B2140 for more information

For this important category of materials testing, ATS provides *the most thoroughly well-designed and extensive line of **Creep Testing Systems** and accessories in the world.* We have been building these systems for more than 30 years, so we have the right equipment, accessories, and expertise to help you perform any test on any material, at temperatures up to 3272°F (1800°C).

ATS offers simple and precise direct load frame systems for relatively low-force testing, accurate lever arm frames for testing up to 50,000 lbf. (222kN), multiple-station configurations of either frame, and pneumatic-actuated testing machines. *All of these basic systems are capable of performing creep and stress-rupture tests. Modular options allow stress-relaxation, constant stress, and dynamic fatigue testing.*

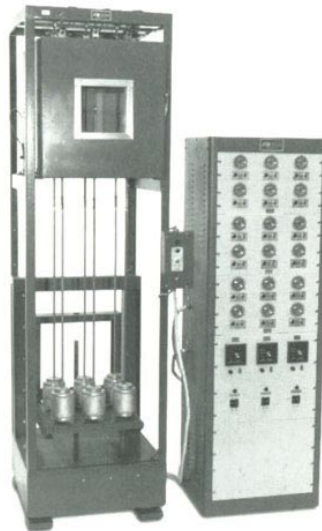
To provide you with a fully-integrated, complete system, ATS makes an extremely wide range of testing accessories, including furnaces, ovens, high-temperature load train components, electromechanical and laser extensometers, alignment-checking extensometers, and much more. Please see page 6 for more details.



## ▲ Series 2115 Multi-Station Direct Load Creep Testing System

- Separate environmental chambers
- Capacity: 400 lbf. (1.7kN) per station

📖 See B2110 for more information



## ▲ Series 2120 Multi-Station Direct Load Creep Testing System

- Single environmental chamber
- Capacity: 200 lbf. (0.88kN) per station

📖 See B2120 for more information



## ▲ Series 2390 Compression Creep Testing System

- High temperature bend testing
- Capacity: 6,000 lbf. (26.6kN)

📖 See B2390 for more information

# Creep Testing



## ▲ Series 2300 Lever Arm Creep Testing Systems

- Large testing area, open frame, long list of quality features
- Capacities to 12,000 lbf. (53.3kN)

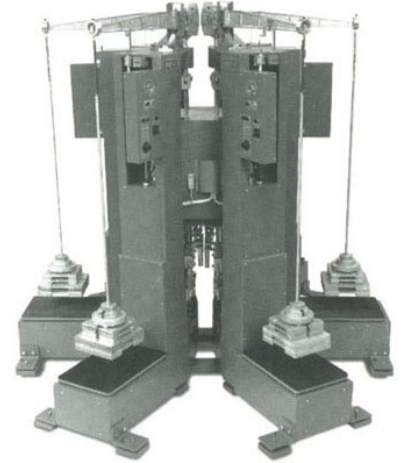
📖 See B23xx, B2001 for more information



## ▲ Series 2400/2500 Lever Arm Creep Testing Systems

- Large testing area, open frame, long list of quality features
- Capacities to 50,000 lbf. (222kN)

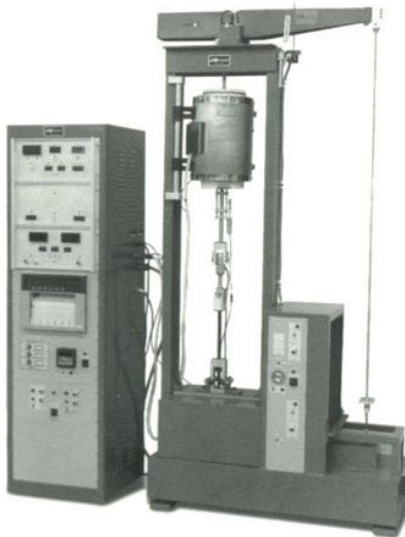
📖 See B24xx, B25xx, B2001 for more information



## ▲ Series 2240 Single or Multi-Station Lever Arm Creep Testing System

- Single environmental chamber
- Capacity: 8,000 lbf. (35.5kN)

📖 See B2240 for more information



## ▲ Series 2700 Stress-Relaxation / Creep Testing System

- Constant stress module available
- Capacities to 50,000 lbf. (222kN)

📖 See B900 for more information

## WinCCS Computer Creep System

- Powerful, advanced software
- Controls single or multiple creep testers, including temperature and weight application

📖 See B2020 for more information

## Series 2210 Multi-Station Lever Arm Creep Testing System *(Not pictured)*

- Environmental creep / stress-rupture testing to ASTM D2552
- Capacity: 100 lbf. (0.44kN) per station

📖 See B2210 for more information



## ▲ Series 2605/2610 Pneumatic-Actuated Creep Testing Systems

- Tension or compression
- Capacities to 5,000 lbf. (22.2kN)

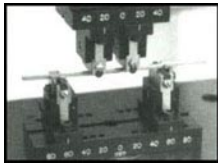
📖 See B2605, B2610 for more information

# Testing Accessories

ATS Universal Testing Machines and Creep Testing Systems are designed for maximum versatility. When combined with our *famous line of Testing Accessories*, an incredible range of testing options is possible. For example, a system can be set up with one-touch wedge grips for simple tension testing or equipped with an extensometer, a four-point bend fixture, and a furnace for high-temperature flexural testing. *ATS has the right equipment for any application.*

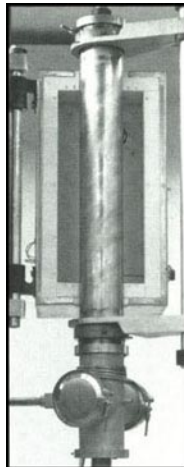
## Fixtures

- Compression Platens
- Compression Adapters
- Ceramic Flexure ▶
- Climbing Drum Peel
- Adhesive Peel
- Custom
- Flexural ▼



## Retorts

- Atmosphere
- Vacuum
- Inconel
- Ceramic
- Custom



## Load Train Components

- Pull Rods, Couplings, Adapters, Specimen Grips, and More
- High-Temperature

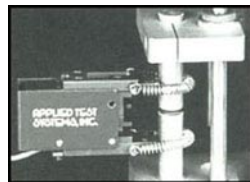
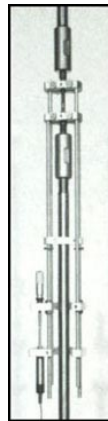
## Grips

- One-Touch Wedge ▼
- Pneumatic ▶
- Screw Action
- Eccentric Roller
- Elastomer
- Textile
- Yarn, Cord, Rope
- Wire
- Custom

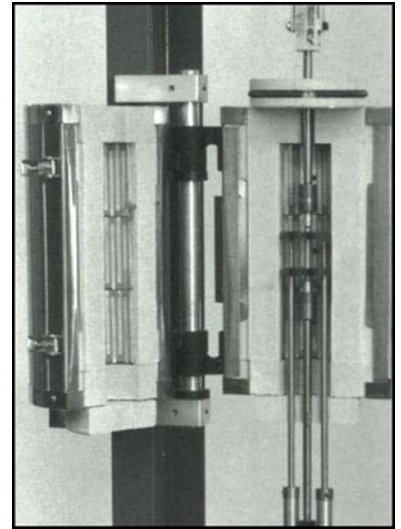


## Extensometers

- High-Temperature
- Electromechanical ▶
- Elastomeric
- Averaging
- Alignment Checking
- Precision Transducers
- Signal Conditioners
- Non-Contacting Laser ▼
- Clip-On ▼



**The Result of More Than 30 Years of Accessory Development: An Incredible Range of Testing Options**




## Furnaces ▲ Ovens Cooling Chambers

- *Fully integrated high-temperature testing - an ATS specialty.*
- Temperatures to 3272°F (1800°C)
- Cryogenic cooling to -300°F (-184°C)

*See pages 7-8 for more information.*

## Software / Data Acquisition

- TestVue® UTM Software
- WinCCS Computer Creep System
- RS-232, RS-485, IEEE 488 Interfaces
- Data Acquisition Systems
- Chart Recorders

 For more information, please specify the particular accessories in which you are interested. (Refer to back cover.)

# Furnaces

ATS has earned its position as an industry leader by offering a line of **Furnaces** that are unmatched in intelligent design, durability, standard selection, and adaptability to custom uses. *We are confident that ATS furnaces are the best value in the industry, so much so that we encourage you to compare features and specifications, and talk with one of our knowledgeable sales engineers if you have any questions. You will find out why ATS furnaces are very often the first choice at major research institutions, respected laboratories, government agencies, and successful corporations worldwide.*



## Tube Furnaces

### **Series 3110 ▲**

- Temperatures to 2200°F (1204°C)

### **Series 3410 Silicon Carbide**

- Temperatures to 2800°F (1538°C)

### **Series 3310 High Temperature**

- Temperatures to 3272°F (1800°C)



## Split Tube Furnaces

### **Series 3210 ▲**

- Temperatures to 2200°F (1204°C)

### **Series 3420 Silicon Carbide**

- Temperatures to 2800°F (1538°C)

### **Series 3320 High Temperature**

- Temperatures to 3272°F (1800°C)



## Box Furnaces

### **Series 3150 ▲**

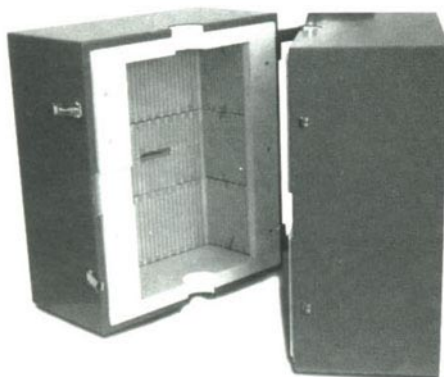
- Temperatures to 2200°F (1204°C)

### **Series 3450 Silicon Carbide**

- Temperatures to 2800°F (1538°C)

### **Series 3350 High Temperature**

- Temperatures to 3272°F (1800°C)



## Split Box Furnaces

### **Series 3160 ▲**

- Temperatures to 2200°F (1204°C)

## **ATS Furnaces Have These High- Quality Features:**

- Standard stainless steel shell
- Welded seams
- Vacuum-cast low-density ceramic fiber insulation
- Quick heat-up
- Superior energy retention
- Separate packaging of temperature control systems for safety, versatility, and longevity
- Wide selection of sizes, zone arrangements, and mounting options

See B3110 for more information on all lines of ATS furnaces

## **Custom Furnaces**

- Size, zone arrangement, multiple chambers, elevator loading, cutouts, access and viewing ports, atmosphere, retorts, muffles, liners, adiabatic furnaces, isothermal and gradient furnaces, and more
- Custom experience and capability

## **Atmosphere Furnaces**

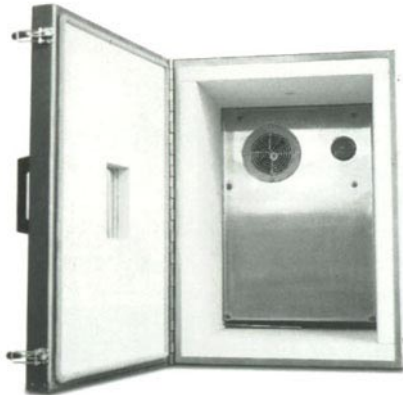
- Temperatures to 3092°F (1700°C)

## **Complete Furnace Systems**

- Coke CRI/CSR Testing System (per ASTM D5341)
- Rotary Calciner (Rotating Tube Furnace)
- Carbon Reactivity Testing System

ATS designs and manufactures a line of high-quality **Ovens** for a variety of testing, laboratory, and industrial applications. Features include *standard stainless steel construction, superior energy retention, and excellent temperature uniformity*. We offer a wide selection of standard oven sizes and we welcome custom inquiries. Ovens are available with maximum temperatures up to 1150°F (620°C). Cryogenic cooling is an option for temperatures to -300°F (-184°C).

📖 See B3610 for more information on all lines of ATS ovens



## Box Ovens

### Series 3610 ▲

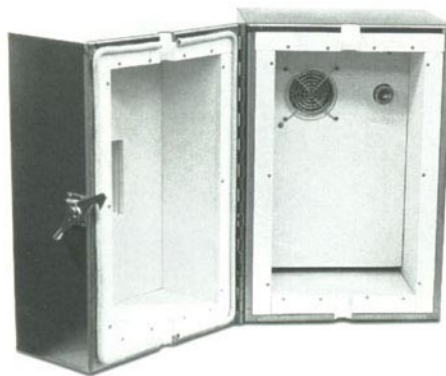
- Temperatures to 800°F (426°C)

### Series 3710

- Temperatures to 800°F (426°C)
- Stainless steel interior

### Series 3710HT

- Temperatures to 1150°F (620°C)
- Stainless steel interior



## Split Box Ovens

### Series 3620 ▲

- Temperatures to 800°F (426°C)

### Series 3720

- Temperatures to 800°F (426°C)
- Stainless steel interior

### Series 3720HT

- Temperatures to 1150°F (620°C)
- Stainless steel interior

## Custom Ovens

As always, we welcome your custom inquiries and offer our experience and capability to solve any process heating problem.

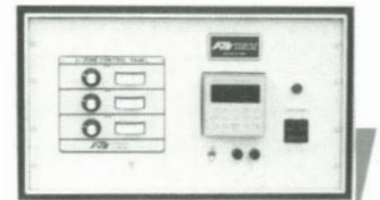
The ATS oven catalog contains four pages of special oven designs. Possible custom modifications include door location and hinging, latching, viewports, load train ports, size, mounting, and more.



## All ATS Ovens Have These High-Quality Features:

- Standard stainless steel shell
- Welded seams
- Quick heat-up
- Uniform temperature
- Separate packaging of temperature control systems for safety, versatility, and longevity
- Wide selection of sizes and mounting options

## Temperature Control Systems for Furnaces and Ovens



Temperature Control is provided by state-of-the-art micro-processor-based controllers. A full range of controllers is available, including programmable units capable of multiple ramp and dwell segments. Temperature controllers and power supplies are packaged separately from the furnace or oven, which maximizes system flexibility, reliability, and safety. Over-temperature controllers are also available for system and load protection.

📖 See our Temperature Controller bulletins for more information

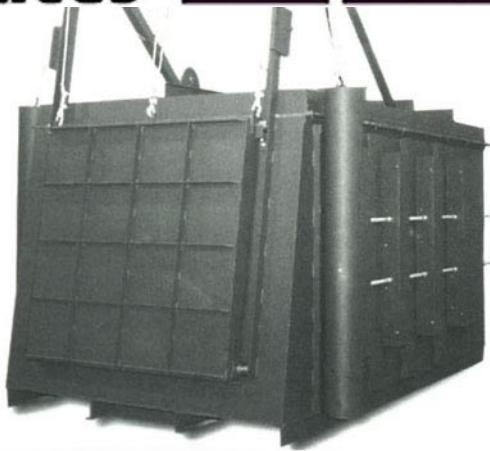


# Industrial Furnaces

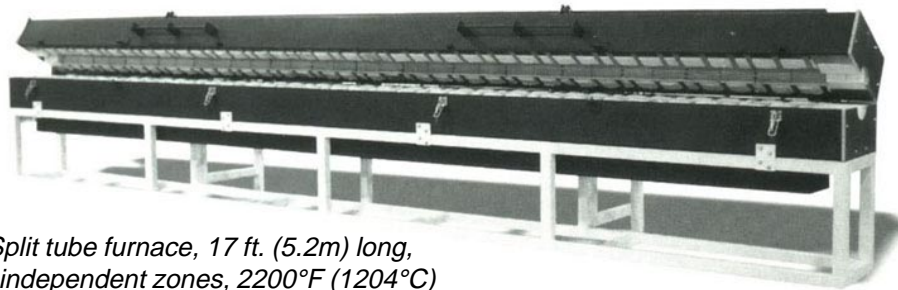
Electro Heat Systems (EHS), a division of ATS, designs and manufactures efficient *electric Furnaces* for a wide range of *Industrial heating applications*, including pre-heating, stress relieving, tempering, hardening, annealing, forging, and other heat treating operations, materials melting, mineral purification, ashing, ceramics firing, burnoff, curing, and drying.

Box, split box, tube, split tube, pit, split pit, and crucible furnaces are offered as well as accessories and options, including atmosphere systems, muffles, retorts, temperature control systems, and power supplies. Furnaces are available with temperature capabilities up to 3272°F (1800°C).

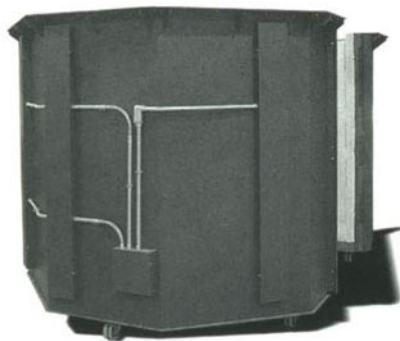
Some recent EHS furnace projects are displayed to the right. *Many more designs are available, and custom configurations are our specialty.* Be sure to call our EHS product manager to discuss your specific application.



Front-loading box furnace, 2200°F (1204°C), for batch heat treating



Split tube furnace, 17 ft. (5.2m) long, 16 independent zones, 2200°F (1204°C)

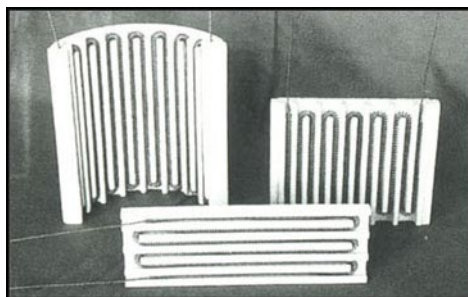


Large split pit furnace, 1800°F (982°C), 74" (1.8m) diameter, 82" (2.1m) deep, built for a specialty metals manufacturer

See our *Industrial Furnaces* bulletin for more information

EHS also manufactures high-quality electric **Heating Elements** for tube, split tube, box, split box, and other furnaces. These elements, supplied as original equipment with ATS and EHS furnaces, can also be used as replacement elements in furnaces from other manufacturers for improved performance and superior longevity. More than 135 standard sizes are offered. Two-day rush delivery is available.

## Heating Elements



See B3001 for more information

- Element materials:
  - Nichrome*: 1850°F (1010°C)
  - Kanthal A1*: 2200°F (1204°C)
  - Kanthal APM*: 2300°F (1260°C)
- Wide range of power outputs and voltages
- Tubular half and quarter sections; rectangular flat plates
- Open or embedded windings
- Kiln-fired ceramic shells
- Custom power densities and sizes

# Other Products

ATS designs and manufactures a quality line of **Pressure Testing Systems**. These systems are used for testing a wide range of products: plastic pipe, metal tubing, fittings, nuclear reactor components, automobile cooling system hoses, aerospace components, and more. Many standard models are available and custom inquiries are always welcome.

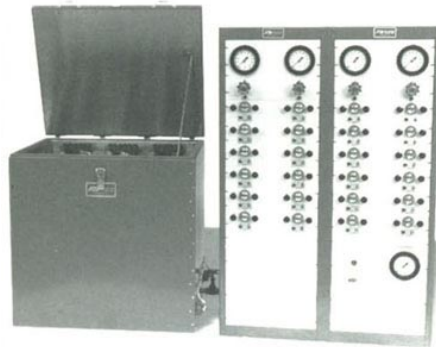
📖 See B1800 for more information

## **Series 1830/1840 Cyclic Hydraulic Burst Testing Systems**

*(Not pictured)*

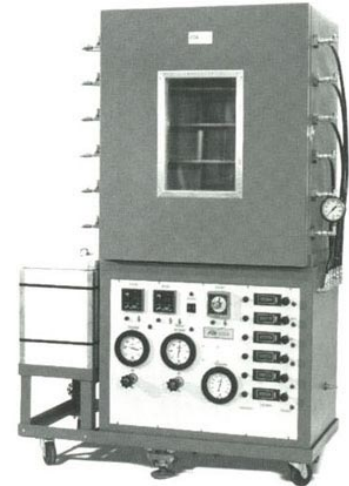
- High pressure burst testing to ASTM D1599 and similar requirements; capable of testing large-diameter specimens

## **Pressure Testing Systems**



## **▲ Series 1815 Hydrostatic Pressure Testing System**

- Designed to pressure test up to 24 specimens simultaneously; long-term tests to ASTM D1598 and similar requirements



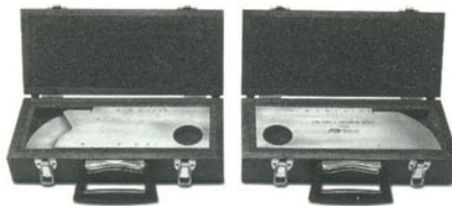
## **▲ Series 1860 Hydraulic Burst Testing System**

- Hydraulic tester for burst testing of plastic pipe, metal pipe, and fittings to ASTM D2143 and similar requirements

ATS supplies an extremely wide range of **Ultrasonic Reference Standards** for nondestructive testing applications such as calibrating ultrasonic testing equipment, evaluating discontinuities, and setting sensitivity levels. These blocks are available in a number of standard materials including steel, aluminum, and stainless steel. Custom materials can also be specified. Certification is supplied and is directly traceable to the NIST. Many reference blocks are available for same-day shipping. Custom shapes are available.

📖 See B134 for more information

## **Ultrasonic Reference Standards**



## **EDM Notching Service**

ATS uses its advanced electrostatic discharge machinery to provide precise **EDM Notching** as small as 0.0015 in. (0.038mm) for ultrasonic and eddy current applications. Parts can be notched internally or externally in numerous configurations, including V-shaped, flat-bottomed, and rounded.

📖 See B135 for more information

# Other Products

ATS Asphalt Testing Equipment has been designed to meet requirements developed by the Strategic Highway Research Program (SHRP), a federal research project. These reliable systems are in operation at numerous state, federal, and international agencies; at major research universities; at the National Asphalt Training Center; and at asphalt mix manufacturing companies worldwide.

## Direct Tension Test System

(Not pictured)

- Tension testing of asphalt binder to SHRP B-004 standard test method
- Computer control, data acquisition, and analysis

See DTTS for more information

## Asphalt Testing Equipment



## ▲ Bending Beam Rheometer

- Flexural testing of asphalt binder to SHRP B-002 and AASHTO requirements
- Computer control, data acquisition, and analysis

See BBR for more information



## ▲ Pressure Aging Vessel

- Accelerated aging of asphalt binder to SHRP and AASHTO requirements
- Accurate, reliable, and easy to use

See PAV for more information

Sealants used in building construction must endure the expansion and contraction caused by changing environmental conditions. To simulate these cycles of tension and compression, ATS provides a line of three **Sealant Testers** designed to test in accordance with ASTM, JIS, and similar requirements. Up to 12 specimens can be tested simultaneously at temperatures from -75°F (-59°C) to 450°F (232°C). These versatile machines can also be used for cyclic testing of adhesive bonds.

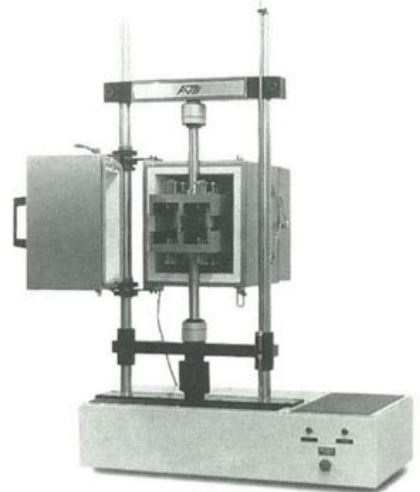
## Sealant Testers



## ▲ Series 510/520 Sealant Testers

- 1,000 lbf. (4.4kN) capacity
- Up to 12 specimens
- Variable velocity (520 only)
- Cooling chamber available

See B500 for more information



## ▲ Series 904 Vertical Sealant Tester

- Computer-controlled
- 4000 lbf. (17.8kN) capacity
- Variable velocity
- Environmental chamber shown

See B904 for more information

# How to Contact ATS



**Phone: (724) 283-1212**

*Monday through Friday, 8:00 a.m. to 5:00 p.m. ET*

**Fax: (724) 283-6570**

1. For quick  information, print this page

2. Fill in the fax form

3. Fax to ATS and we will send detailed product literature

## Fax Form for quick information

**Fax to: (724) 283-6570**



Send free information  on the following products:

- |   |                               |                                |                                |
|---|-------------------------------|--------------------------------|--------------------------------|
| <input type="checkbox"/> Universal Testing Machines     | <input type="checkbox"/> B900 | <input type="checkbox"/> B11xx | <input type="checkbox"/> B1600 |
| <input type="checkbox"/> Creep Testing Systems          | _____                         |                                |                                |
| <input type="checkbox"/> Testing Accessories            | _____                         |                                |                                |
| <input type="checkbox"/> Furnaces                       | B3110 and _____               |                                |                                |
| <input type="checkbox"/> Industrial Furnaces            | _____                         |                                |                                |
| <input type="checkbox"/> Ovens                          | B3610                         |                                |                                |
| <input type="checkbox"/> Heating Elements               | B3001                         |                                |                                |
| <input type="checkbox"/> Pressure Testing Systems       | B1800                         |                                |                                |
| <input type="checkbox"/> Ultrasonic Reference Standards | B134                          |                                |                                |
| <input type="checkbox"/> EDM Notching Service           | B135                          |                                |                                |
| <input type="checkbox"/> Sealant Testers                | <input type="checkbox"/> B500 | <input type="checkbox"/> B904  |                                |
| <input type="checkbox"/> Asphalt Testing Equipment      | <input type="checkbox"/> BBR  | <input type="checkbox"/> PAV   | <input type="checkbox"/> DTTS  |

Our need is immediate. Please have an ATS product manager contact me

Name \_\_\_\_\_ Phone \_\_\_\_\_

Title \_\_\_\_\_ Fax \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ ZIP \_\_\_\_\_ Country \_\_\_\_\_



Calibration Laboratory  
Certificate No. 2132.01



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http://www.atspa.com



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