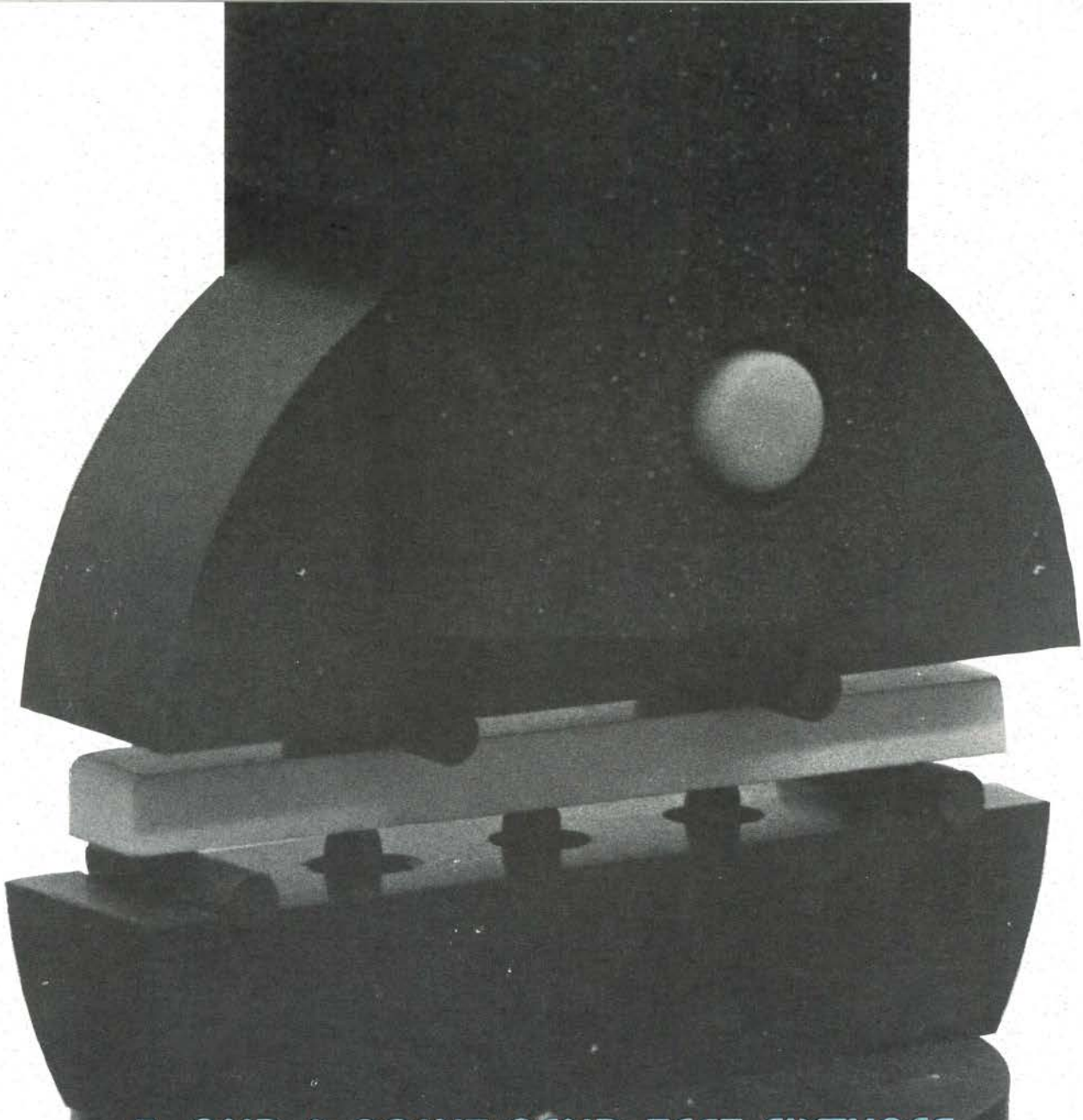
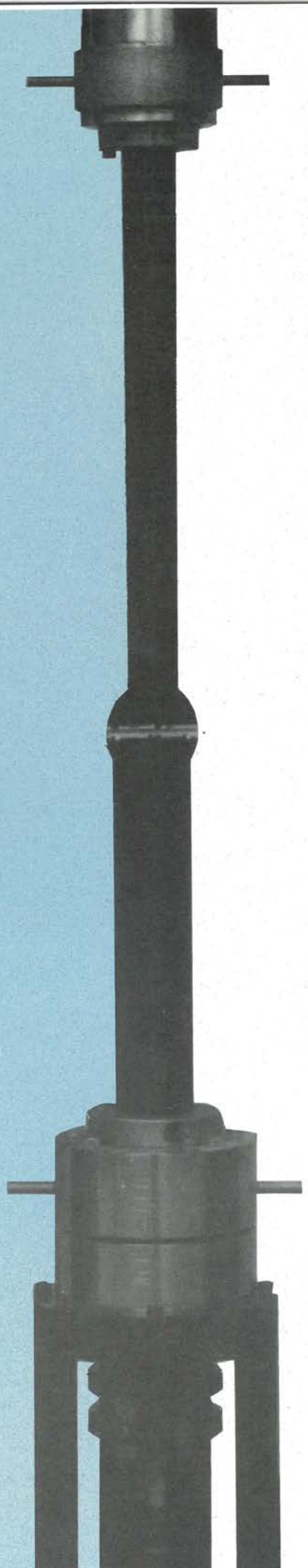


3- AND 4-POINT BEND TEST FIXTURES PRECISELY MEASURE DEFLECTION OF CERAMICS TO 3000° F

fixtures . . . testers . . . furnaces

APPLIED TEST SYSTEMS, INC.

bulletin no. 4040



Today's technology has paved the way for the development of ceramics into a leading contender with metals. In many instances, ceramic materials are winning out over metals because they offer greater strength, lighter weight, longer life and are capable of withstanding higher temperatures.

With the growing awareness of these advantages, has come an increase in the demand for ceramics testing to develop its full potential.

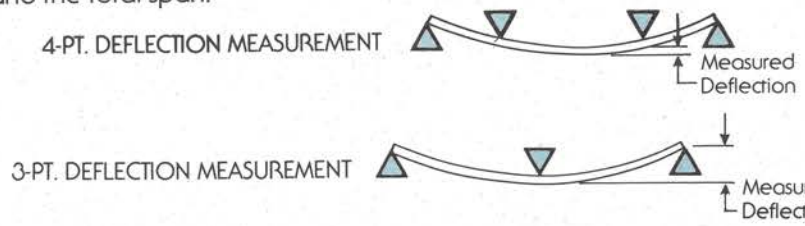
To meet this demand, Applied Test Systems has developed and proven a fixture for 3- and 4-point bend testing of ceramic materials. It accurately measures deflection of ceramics at 3000°F (1650°C).

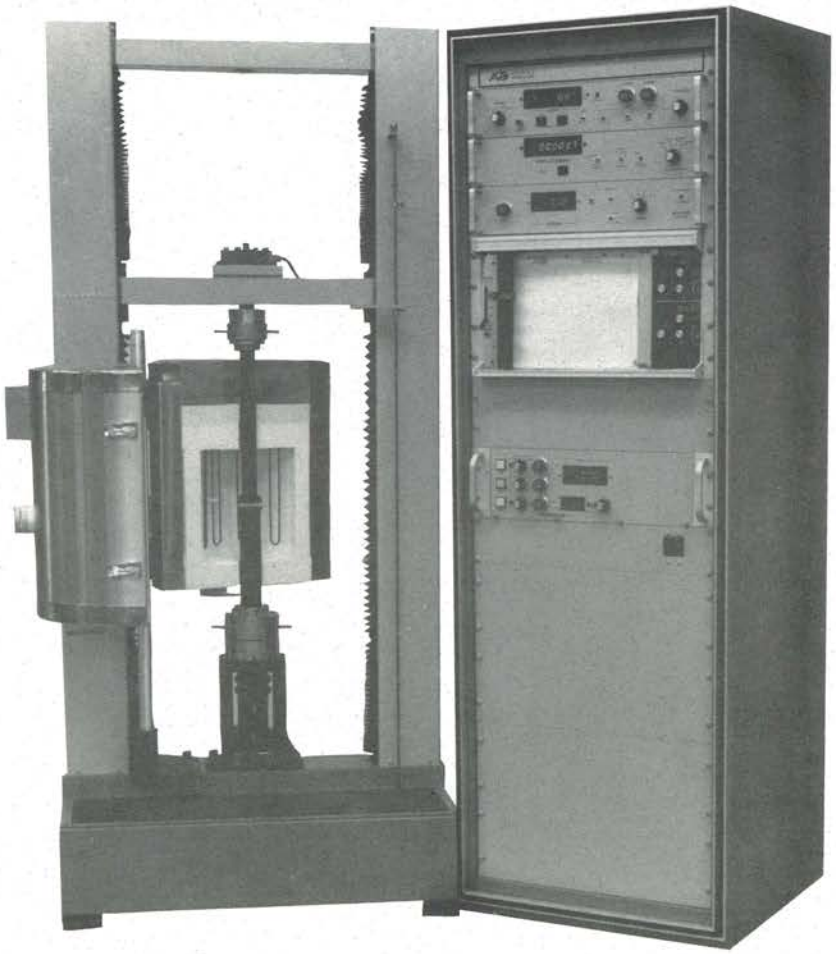
Components of the 4-point bend test fixture are made of high-grade alpha silicon carbide to provide high-temperature stability. Upper ram has a floating head for precise alignment and fast, easy set-up of specimens. Lower ram holds the bend test fixture and end cap which are available in various widths.

For 3-point testing, the upper ram has a chisel-point head. Ram couplings are water-cooled for protection of load cell and test frame.

A built-in deflectometer precisely measures the amount of bend (flexure) which has occurred during each test. An exclusive design of three retractable rods provides highly accurate test results. All three rods can be locked in a retracted position to gage the set-up of pre-heated specimens. During a 4-point test, the deflection of the specimen at the center rod is measured in comparison to the deflection at the outer rods.

For 3-point testing, the outer two rods can be locked in a retracted position to allow a measured deflection between the specimen center and the total span.





A 4-range signal conditioner transmits data from the deflectometer to a recorder or digital readout meter.

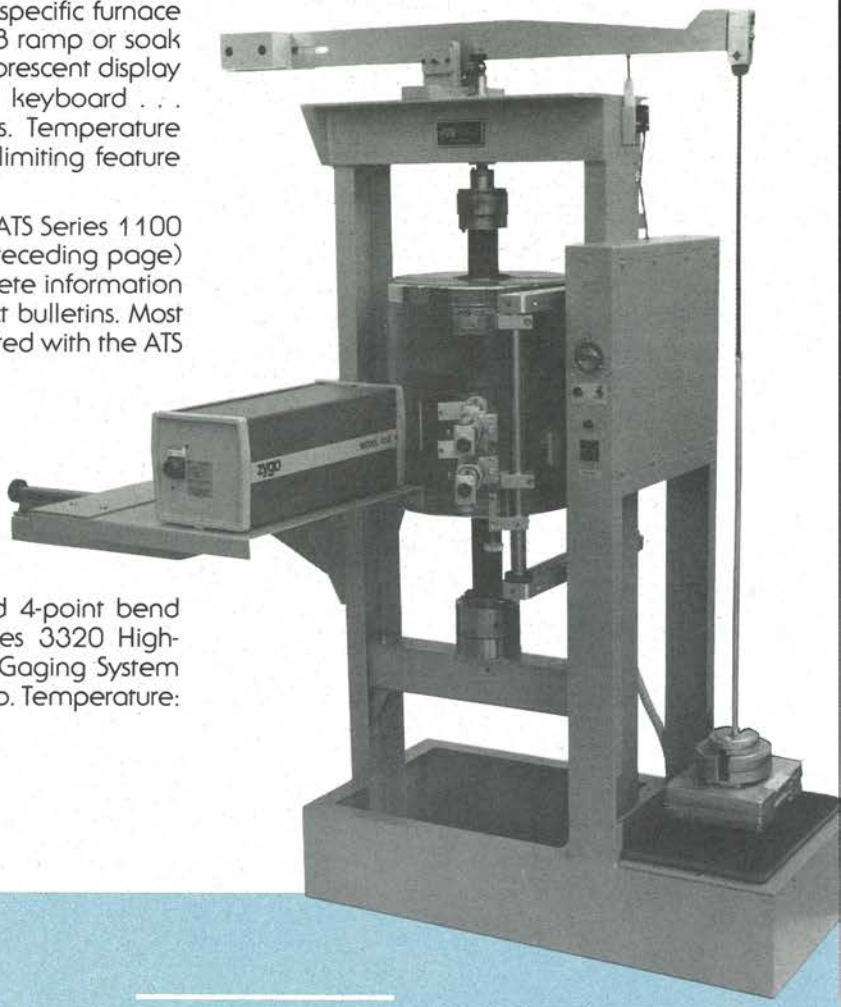
An ATS Series 3320 Split Tube or Series 3350 High-Temperature Box Furnace is ideal for 3- and 4-point bend tests. They have a maximum temperature rating of 3100°F (1700°C). These furnaces have several outstanding features: Rapid heat-up and cool-down . . . low "K" factor vacuum cast ceramic fiber insulation . . . stainless steel shell . . . low shell temperature . . . wide selection of sizes.

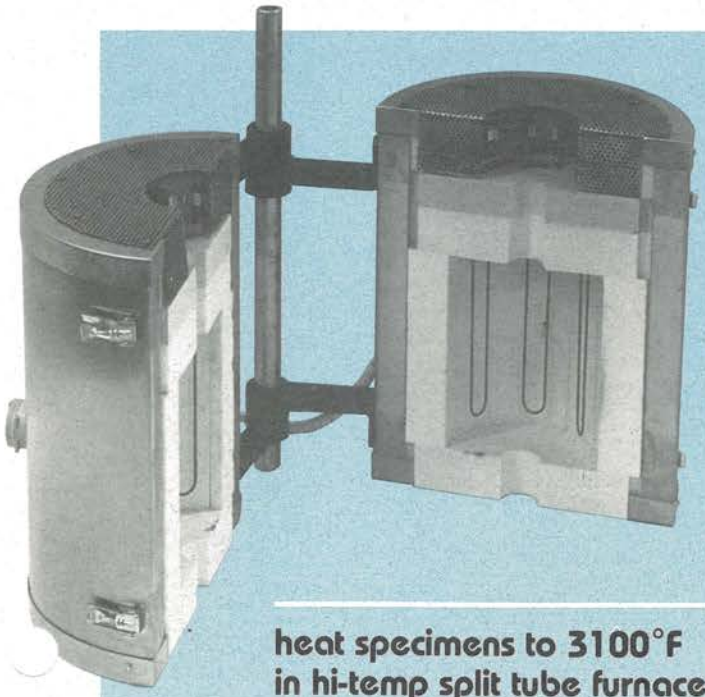
A Series 2010 Microprocessor High-Temperature Control System is used with the above furnaces. It's programmable, enabling a specific furnace temperature to be preset to desired durations in up to 8 ramp or soak intervals. Other features include: Easy-to-read vacuum fluorescent display . . . step-by-step temperature control on a touch-panel keyboard . . . battery backup to protect memory against power loss. Temperature control systems include a phase angle SCR with current limiting feature and transformer for inductive loads.

The 3- and 4-point test system can be easily installed on ATS Series 1100 and 1200 Universal Testing Machines (pictured on the preceding page) as well as Series 2390 Compression Creep Tester. Complete information on these testers are presented in their respective product bulletins. Most other makes of universal testing machines can be retrofitted with the ATS bend test fixture . . . Call for details.

perform hi-temp bend tests on compression creep tester

Compression Creep Tester Series 2390 performs 3- and 4-point bend tests at high temperatures. Shown equipped with Series 3320 High-Temperature Split Furnace, Bend Test Fixture and Laser Gaging System for measuring specimen deflection. Load capacity: 6000 lb. Temperature: To 3000°F (1650°C).





heat specimens to 3100°F in hi-temp split tube furnace

Series 3320 Furnace offers high-temperature capability to 3100°F (1700°C). Features low power consumption, fast heat-up, low shell temperature, stainless steel shell.

grips securely hold specimens in hi-temp test environment

Made from 713C or Mar-M246, Series 4053 High-Temperature Wedge Grips can be used in tensile and creep test applications up to 2000°F (1100°C). Grips can be used in the center of the furnace's heat zone with minimum oxidation, providing greater specimen temperature uniformity. Grips are designed to hold specimens in sizes from 0.015" to 0.266" thick by 1.25" wide.

These grips can be coupled with Series 4043 High-Temperature Pull Rods. Also available are threaded, clevis, buttonhead specimen holders and alignment couplings.

- creep/stress rupture test systems
- stress relaxation test systems
- constant stress test systems
- tension/compression test systems
- universal test systems
- pressure test systems
- lab/test furnaces, ovens
- extensometers
- temperature controllers

THE MARK OF RELIABILITY

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