

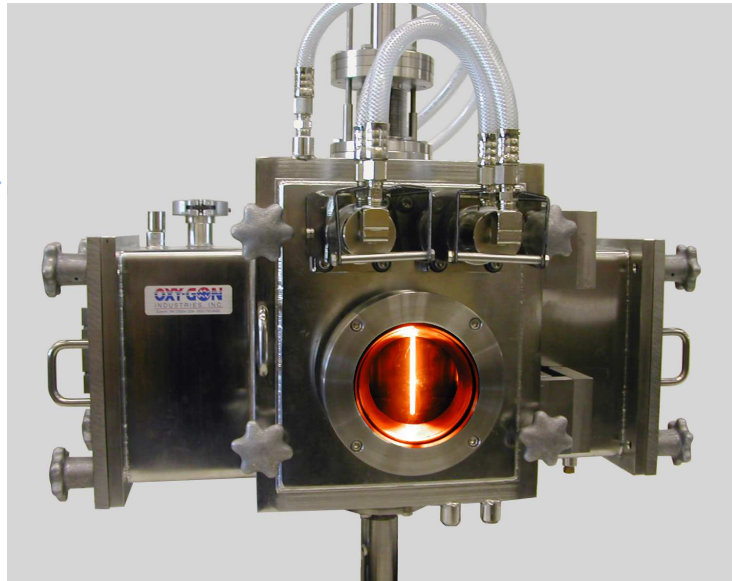
Temperatures up to 2500°C

*“Degrees  
Ahead in  
Quality”*



**OXY-GON's Modified FR Series Universal Application Furnaces are configured specifically for tensile testing. OXY-GON engineers and constructs these systems for ease of operation and to provide years of continuous service.**

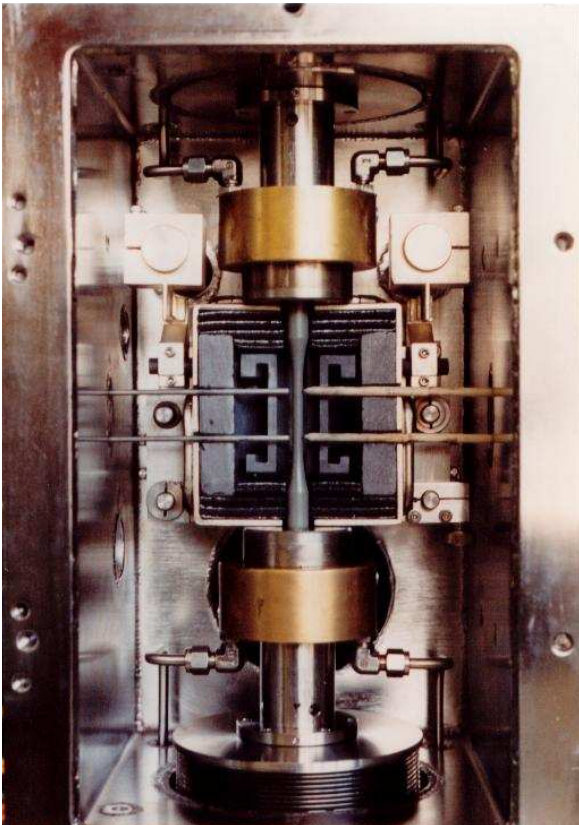
This photograph shows the chamber portion of an FR Series Tensile Testing Furnace with convenient easy access extensometer chambers. A large water-cooled sight window allows the operator to view the test specimens.



Generally, the basic furnace system includes the following components:

- \* Furnace Assembly
- \* Power Supply
- \* Heat Zone
- \* Evacuation System
- \* Inert Gas Supply
- \* Designed to fit most Test Frames

The furnace can be rated up to a maximum operating temperature of 2500°C (4532°F) and will operate in vacuum, inert atmospheres, Nitrogen and wet or dry Hydrogen.

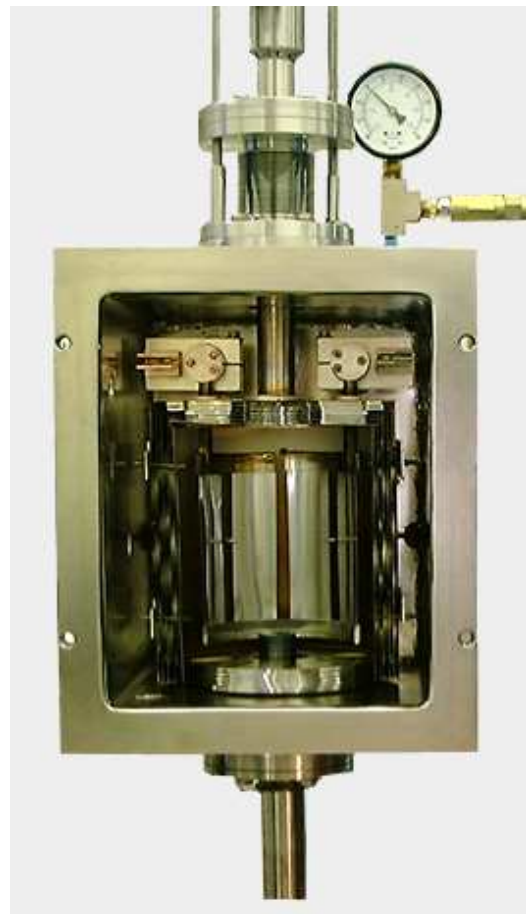


#### GRAPHITE HEAT ZONE:

This photograph shows the chamber portion of an FR Series Tensile Testing Furnace with a graphite heat zone. Water-cooled grips hold the test specimen.

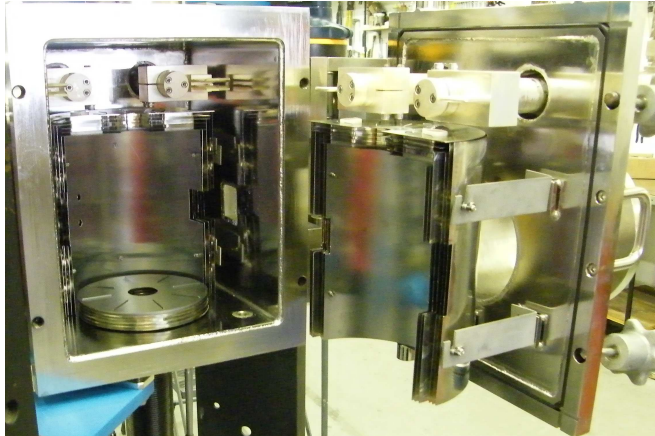
#### REFRACTORY METAL HEAT ZONE:

This photograph shows the refractory metal heat zone of an FR Series Universal Application Furnace used for tensile testing. The top pull rod is movable while the bottom pull rod remains stationary. The chamber is mounted into a commercially available testing apparatus.

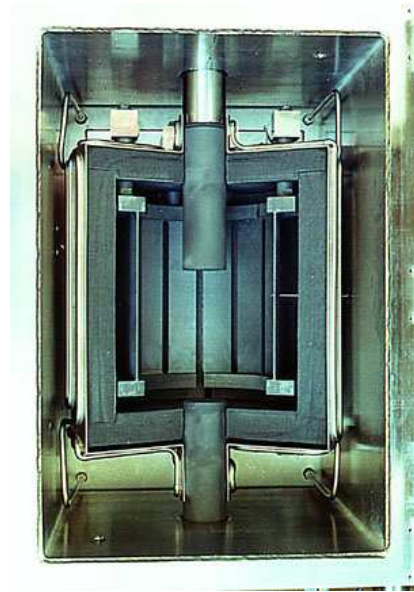


**OXY-GON**  
INDUSTRIES, INC.

DETAILS:



Metal Heat Zone- Split Shield Pack



Graphite Heat Zone for Compression Load Testing



Standard Series FR Universal Application Furnace



Tungsten Mesh Heating Element for 2500°C



#### FURNACE ASSEMBLY:

The chamber and front door are double walled, 304L stainless steel construction. Each component is electropolished to attain highest vacuum quality. Ports are incorporated in the chamber and front door for a sight window, thermocouples, or an optical pyrometer. Power to the rear half of the heating element is supplied by nickel-plated, water-cooled power feedthroughs located on the rear surface of the main chamber. Power to the front element half is through silver-plated copper knife switches which eliminates the need for power cables to be mounted on the front door.

#### HEAT ZONE:

One half of the heating element, the side and top shield packs are mounted on the front door providing easy access to the work area. The element and shield packs can be supplied in Graphite, Molybdenum, Tungsten or Tantalum depending on operating temperature. Work zone sizes range from 1 inch diameter x 2 inches high to 5 inches diameter x 10 inches high.

#### POWER SUPPLY:

Power supplies can be provided with any of these characteristics: single or three phase, 120, 208, 380 or 480 volts and 50 or 60 Hertz. A typical power supply incorporates a step-down transformer, SCR, circuit breaker, contactor, and amp and volt meters. Power supplies, 25 kVA and above, are housed in a free-standing cabinet separate from

#### TEMPERATURE CONTROL:

A programmable process temperature controller and a separate over temperature limiter are standard components. Types of sensors include thermocouple, optical pyrometer, or power transducer. Recorders and data logging devices specific to the Customer's requirements are available as options.

#### PUMPING SYSTEM:

Fully automatic, PLC controlled, pumping systems can be provided for the range of  $10^{-2}$  Torr (rough pump with mechanical pump only) through  $10^{-10}$  Torr (cryo and ion pumps). Our standard system is automatic and consists of a diffusion or turbomolecular high vacuum pump, a rotary vane or oil free scroll type mechanical pump, isolation valves, and vacuum gauge controller. The system will consistently operate in the  $10^{-5}/10^{-6}$  Torr range.

#### INERT GAS/NITROGEN SYSTEM :

To allow operation using inert (Noble) gases or Nitrogen, a kit which includes inlet and outlet valves and a pressure/vacuum gauge is supplied.

#### WET OR DRY HYDROGEN SYSTEM:

This is an optional system that can be manual or fully automatic using flow control and variable percent mixing of Hydrogen with other gases. All necessary safety interlocks and devices such as blow-off port, igniter, etc., are included with this system. The system conforms to NFPA 86 Standard for Ovens and Furnaces.

For a comprehensive review of your specific requirements, please contact OXY-GON'S technical sales personnel for a customized proposal with specifications.



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