

“Degrees Ahead in Quality”



OXY-GON's Bench Top Hot Press Furnaces offer an advanced thermal design at an affordable price. OXY-GON engineers and constructs these systems for ease of operation and to provide years of continuous service.

Applications for this furnace include:

- * Ceramic/Metal Matrix and Inter-metallic Composites
- * Diffusion Bonding studies
- * Hot Compacting of oxides, nitrides, borides, carbides, sulfides and mixtures thereof to near theoretical densities
- * Sintering

Generally, the basic furnace system includes the following components:

- * Furnace Assembly
- * Power Supply
- * Heat Zone
- * Evacuation System
- * Press Frame
- * Hydraulic System
- * Inert Gas Supply

Perfect for University and Research laboratories



The hot press is rated up to a maximum operating temperature of 2000°C and will operate in vacuum, argon, nitrogen and forming gas (95%N₂/5%H₂) atmospheres.

Force:	25 and 30 Ton rating
Heat Zone Size:	Accepts dies up to 3” diameter x 4” high
Heating Elements:	Tungsten Mesh Elements with tungsten/ molybdenum metallic heat shield package
Maximum Temperature:	2000°C
Atmospheres:	Gas at 2 PSIG to 2000°C, Vacuum from 10 ⁻² to 10 ⁻⁶ Torr

FURNACE ASSEMBLY:

The chamber and front door are double walled, 304L stainless steel. Each component is electropolished to attain highest vacuum quality. Ports are incorporated in the chamber and the front door for a sight window and thermocouples. Power to the heating element is supplied by nickel-plated, water-cooled power feedthroughs located on the rear surface of the main chamber. An internal knife switch supplies power to the nickel-plated, water-cooled supports for the front half of the element which eliminates the need for bulky power cables on the front door for easier operation.

HEAT ZONE:

The split heat zone is designed to allow full access to the interior when the front door is opened for ease of loading and removing die and punch assemblies.

POWER SUPPLY:

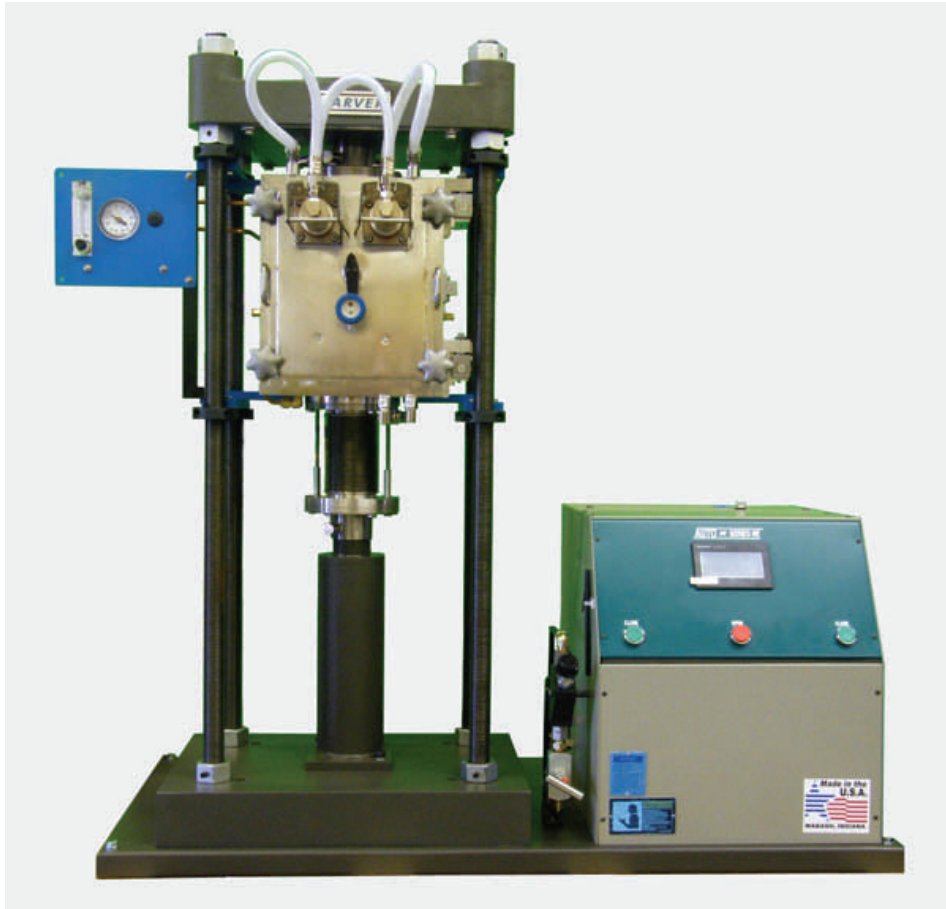
The power supply is single phase wired, 208 volts, and 50 or 60 Hertz. A typical power supply incorporates a 16kVA step-down transformer, SCR, 90 amp circuit breaker, contactor, ammeter and volt meter.

TEMPERATURE CONTROL:

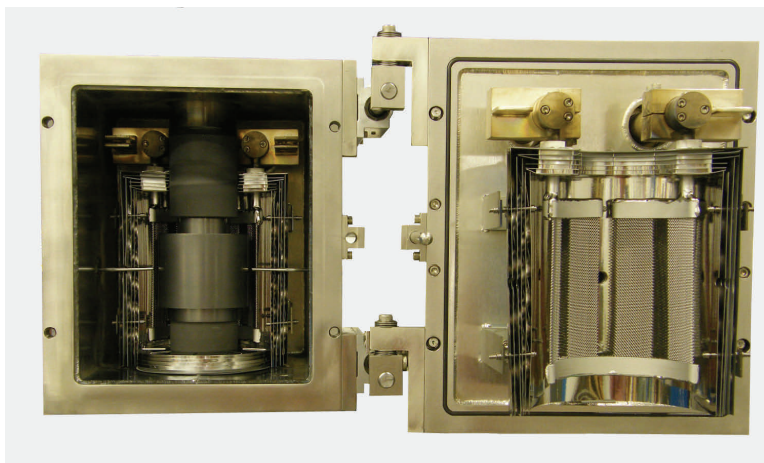
A programmable process temperature controller, separate over-temperature limiter and Type “C” temperature control and over-temperature thermocouples are standard.



DETAILS:



Model FR210-30T-A-200-EVC
Automatic Hydraulic Control



Graphite Hot Rods and Punch/Die
Assembly Shown with Easy Access Split
Hot Zone Construction



PUMPING SYSTEM:

All pumping systems are fully automatic PLC controlled with vacuum gauge controller and provide a range of 10^{-2} through 10^{-6} Torr at room temperature with a clean dry and empty chamber. High vacuum system consists of a turbomolecular/mechanical backing pump combination connected directly to the furnace chamber. Rough vacuum system consists of a two-stage mechanical pump with isolation valve.

POST and PLATEN PRESS FRAME:

A press frame of this design offers the most in economy and space savings.

COMPRESSION RODS:

Water-cooled, cold, compression rods are made from hardened 17-4 PH stainless steel. The bottom cold rod is connected to the furnace chamber by a flexible stainless steel metal bellows. The top cold rod is stationary and is connected to the chamber with a compression seal. Hot compression rods are made from fine grain, high strength graphite and connected to the cold rods. A pyrolytic spacer is between the hot/cold compression rods to act as a thermal barrier thus decreasing heat loss and improving temperature uniformity.

HYDRAULIC SYSTEM:

The hydraulic system consists of a bottom mounted, single action cylinder with a manual or automatic control option. With automatic control, turndown ratio is 60:1 and pressure is momentarily released prior to lowering the set point variable. The ram position does not change. During heating, an automatic over-pressure bypass valve opens at approximately 100 lbs. above setpoint to compensate for thermal expansion of compression ram and work.

INERT GAS SYSTEM :

A gas kit which includes inlet and outlet valves and a pressure/vacuum gauge is supplied.

AVAILABLE CONFIGURATIONS:

<u>MODEL</u>	<u>FEATURES</u>
FR210-25T-M-200-EVC	25 Ton rating, manual hydraulic control, 10^{-2} Torr vacuum
FR210-25T-M-200-04T	25 Ton rating, manual hydraulic control, 10^{-6} Torr vacuum
FR210-30T-A-200-EVC	30 Ton rating, automatic hydraulic control, 10^{-2} Torr vacuum
FR210-30T-A-200-04T	30 Ton rating, automatic hydraulic control, 10^{-6} Torr vacuum

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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