

The OXY-GON Ten Ton Benchtop Hot Press Furnace

OXY-GON
INDUSTRIES, INC.

Degrees Ahead in Quality

OXY-GON'S Bench Top Hot Press Furnace offers 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

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: 10 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,

Generally, the basic furnace system includes the following components:

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



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GENERAL ARRANGEMENT:

Compact one-piece design, 48" (122cm) Wide X 36" (91.5cm) Deep X 76" (193cm) Tall

FURNACE ASSEMBLY:

The chamber and front door are double walled, 304L stainless steel. Each component is electro-polished to attain the 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 silver-plated, water-cooled power feedthroughs located on the rear surface of the main chamber. An internal knife switch supplies power to the silver-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, 208/220/230/240 volts, and 50 or 60 Hertz. A typical power supply incorporates a 16kVA step-down transformer, SCR, 100 amp circuit breaker, contactor, ammeter and voltmeter.

INTUITIVE HMI CONTROL:

An HMI controls temperature, force, valve sequence and interlocks. The HMI has Ramp/Soak programming. A load cell is used for accurate load control. Downloadable Data Acquisition via the HMI. Parallel overtemperature protection is supplied outside of the HMI.

POST and PLATEN PRESS FRAME:

This press frame design offers the most in economy and space savings.

PUMPING SYSTEM:

All pumping systems are fully automatic 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. The rough vacuum system consists of a two-stage mechanical pump with isolation valve.

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.

PNEUMATIC SYSTEM:

Automatic control via the HMI system consists of a bottom mounted, double-action cylinder

INERT GAS SYSTEM:

The standard inert gas kit includes a solenoid inlet valve, flow meter, pressure gauge, and a 2 psig relief exhaust valve.

AVAILABLE CONFIGURATIONS:

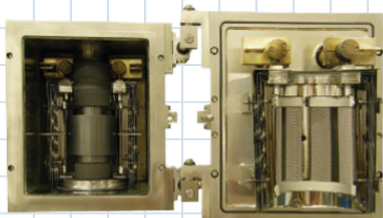
MODEL/FEATURES

FR210-10T-3x4-W-W/Mo-200-EVC

10 Ton rating, automatic pneumatic control, 10⁻² Torr vacuum

FR210-10T-3x4-W-W/Mo-200-04T

10 Ton rating, automatic pneumatic control, 10⁻⁶ Torr vacuum



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

Model FR210-25T-A-200-EVC Automatic Hydraulic Control

