

INDUSTRIAL FURNACES AND OVENS

Electra Products has been manufacturing electric furnace products since 1959.

We have a full range of standard, modified, and custom furnaces to fit your needs, including:

- ▶ Box Types (Radiant & Recirculating)
- ▶ Retort (Inert & Active Atmospheres)
- ▶ Muffle
- ▶ Car Bottom
- ▶ Pot Types (Salt & Soft Metal)
- ▶ Quench Tanks
- ▶ Custom Designs & Applications

Sizes: 1/4 to 360 cubic feet

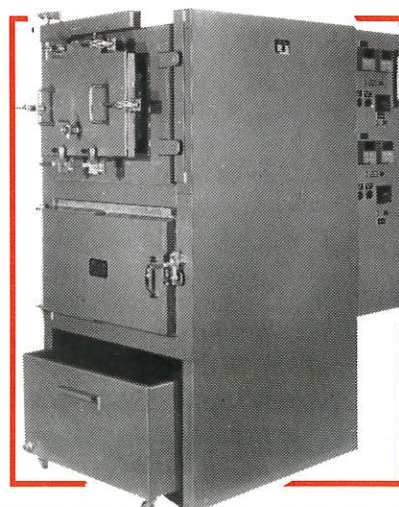
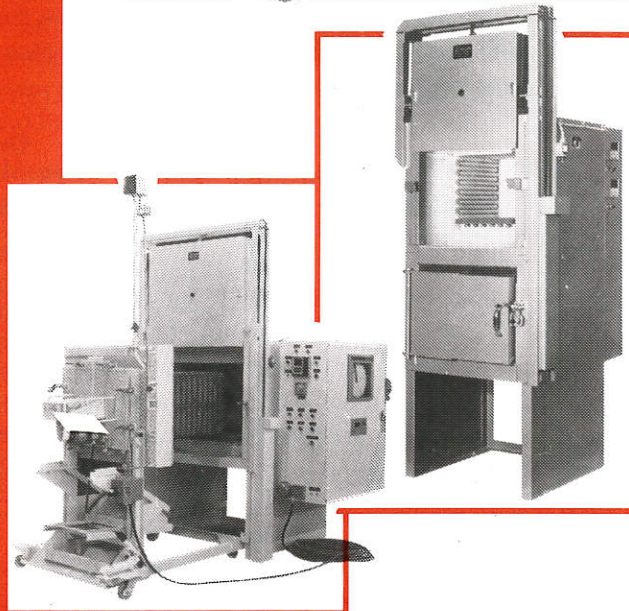
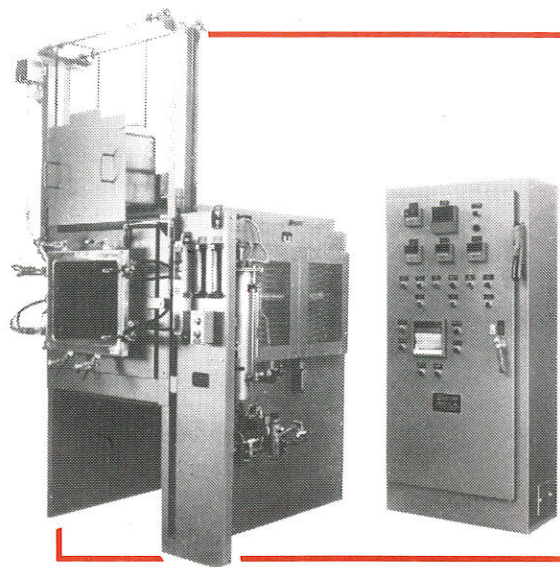
Temperatures: 800°F to 3000°F

INDUSTRIES SERVED

- ▶ Ferrous and non-Ferrous Heat Treating
- ▶ Tool and Die
- ▶ Ceramic
- ▶ Laboratory
- ▶ Powder Metallurgy
- ▶ Thermal Coatings
- ▶ Salt Bath
- ▶ Soft Metal Melting

Electra Products takes pride in being known as a service-oriented company. We work with our customers to meet their specific needs and applications.

We would be happy to assist you with your design and application questions.



RADIANT & RECIRCULATING RETORT SERIES FURNACES FOR USE WITH PROTECTIVE ATMOSPHERES

WHAT IS A RETORT FURNACE?

A Retort Furnace incorporates a high temperature alloy gas tight vessel in its design. The interior of the gas tight vessel (retort) is the work chamber of the furnace. It totally segregates the work load and protective atmosphere from the contaminating influence of porous refractory insulating materials commonly utilized in furnace construction. Excellent atmosphere integrity is maintained at low and economic flow rates. The Retort design is particularly effective when using simple inert atmospheres such as argon or nitrogen. Combustible atmospheres may also be used when essential optional safety controls are included.

ADVANTAGES:

- No Gas Generator required • Scale-free surfaces WITHOUT decarburization • Non-hazardous or toxic with inert gases

Model#	Retort Chamber Size			Draw Chamber Size		
	H	W	D	H	W	D
91619	7"	12"	18"	9"	16"	19"
121925	10"	15"	24"	12"	19"	25"
121940	10"	15"	38"	12"	19"	40"
181925	16"	15"	24"	18"	19"	25"
182525	16"	21"	24"	18"	25"	25"
182538	16"	21"	36"	18"	25"	38"
242550	22"	21"	48"	24"	25"	50"
243139	22"	26"	36"	24"	31"	39"
243150	22"	26"	48"	24"	31"	50"

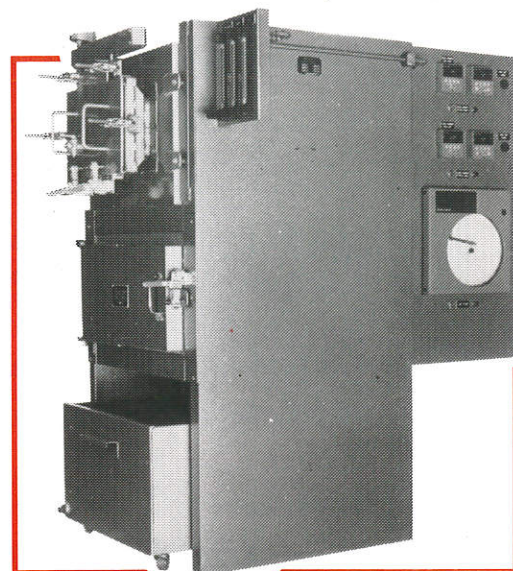
Draw chambers available in Retort H&D Series only

Single chamber retort - specify Retort Series & Model #

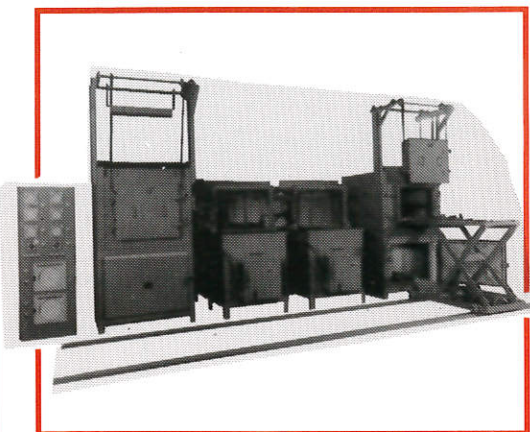
Dual chamber (retort chamber & draw chamber) - specify Retort H&D Series & Model #

FEATURES:

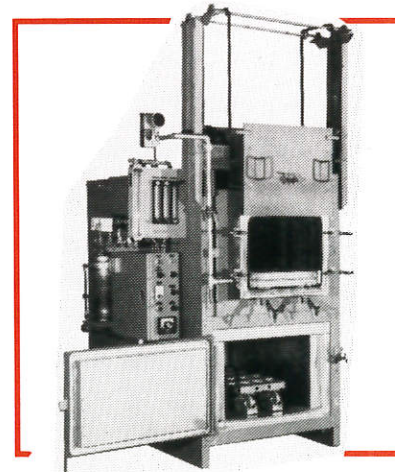
- 2200°F Maximum Operating Temperature • Retorts fabricated from 330 alloy or optional Inconel alloy • Corrugated design maximizes strength & minimizes warping • Retort doors are horizontal swing double pivot type (no lifting) • Deep encapsulated insulating door plug keeps seals cool & distortion free • Flow meter & control valve provided • Furnace construction and controls are identical to Series 2300 radiant box furnace models or Series H&D dual-chamber box furnace models.



SERIES RETORT H&D MODEL 121925



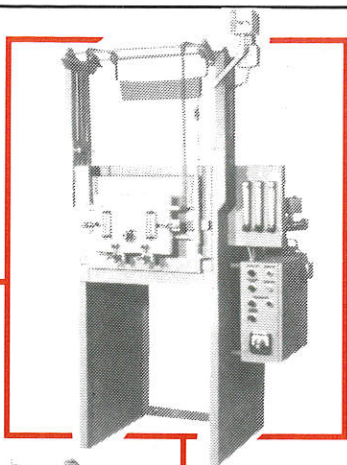
SERIES RETORT H&D MODEL 243125 WITH SEPARATE QUENCH TANKS & TRANSFER CAR



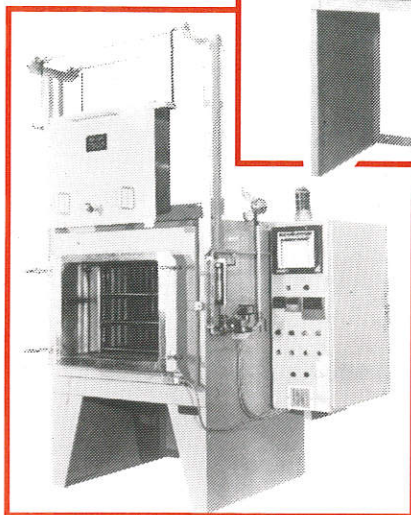
SERIES RETORT H&D MODEL 182538 WITH CARBURIZING PACKAGE

RADIANT & RECIRCULATING RETORT SERIES FURNACES FOR USE WITH PROTECTIVE ATMOSPHERES

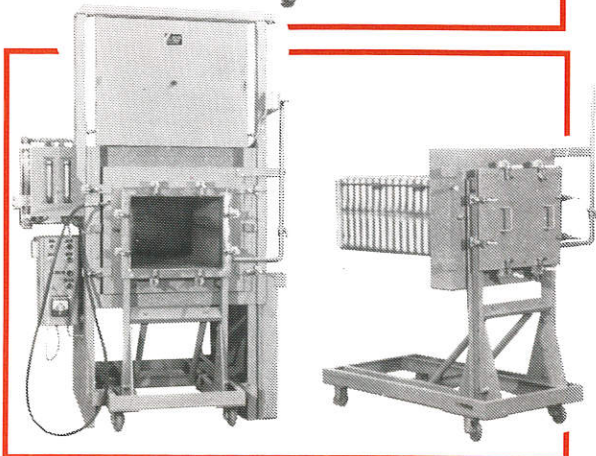
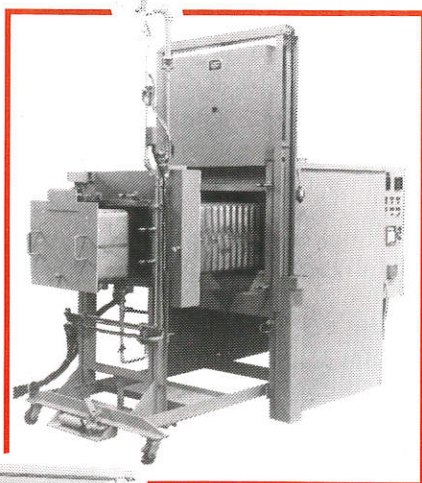
RETORT SERIES
MODEL 91619 WITH
CARBURIZING
PACKAGE



RECIRCULATING
RETORT
SERIES
MODEL
242424



RETORT
SERIES
MODEL
182538 WITH
CART
MOUNTED
RETORT



RETORT SERIES MODEL 182538 WITH CART
MOUNTED RETORT AND HYDROGEN SYSTEM

AVAILABLE RETORT CONFIGURATIONS

RECIRCULATION:

Air-cooled or water-cooled, gas-tight recirculating fans may be provided to enhance temperature uniformity and heat transfer. Air-cooled fans are provided for applications up to 1400°F. Water-cooled fans can operate up to 2000°F. Internal baffling is provided for positive horizontal atmosphere applications. Recirculation allows the retort design to be effectively used over a wide range of operating temperatures.

COOLING BLOWER:

A blower with inlet and exhaust manifold may be supplied for introducing room air into the furnace chamber external to the retort to enhance the retort cooling rate while maintaining the retort under protective atmosphere. Blower activation may be manual or automatic by command from a process programmer.

CART-MOUNTED RETORT:

Single chamber retorts may be cart mounted to allow it to be removed entirely from the furnace chamber while maintaining the retort under protective atmosphere. This arrangement achieves the most rapid cooling of the retort and work load. Retort carts include a lifting mechanism to raise the retort above the furnace hearth level for insertion and removal from the furnace chamber.

COMBUSTIBLE ATMOSPHERE SYSTEM:

Retort furnaces may be equipped with safety controls to allow the retort to be safely operated under hydrogen containing atmospheres. A gas carburizing atmosphere system is also available. The safety system insures that adequate purging takes place before introducing combustible atmospheres, provides for atmosphere ignition and burn off, and insures fail-safe recovery from power failures and atmosphere flow interruption.

We welcome the opportunity to quote non-standard sizes, configurations, and control systems.

RECIRCULATION BOX FURNACES AND OVENS

800°F TO 1600°F

STANDARD MODELS

Model#	Chamber Size		
	High	Wide	Long
6715	6"	7"	15"
61315	6"	13"	15"
91019	9"	10"	19"
91619	9"	16"	19"
121315	12"	13"	15"
121325	12"	13"	25"
121340	12"	13"	40"
121919	12"	19"	19"
121925	12"	19"	25"
121940	12"	19"	40"
121952	12"	19"	52"
181919	18"	19"	19"
181925	18"	19"	25"
181938	18"	19"	38"
242525	24"	25"	25"
242539	24"	25"	39"
243139	24"	31"	39"
242550	24"	25"	50"
243150	24"	31"	50"

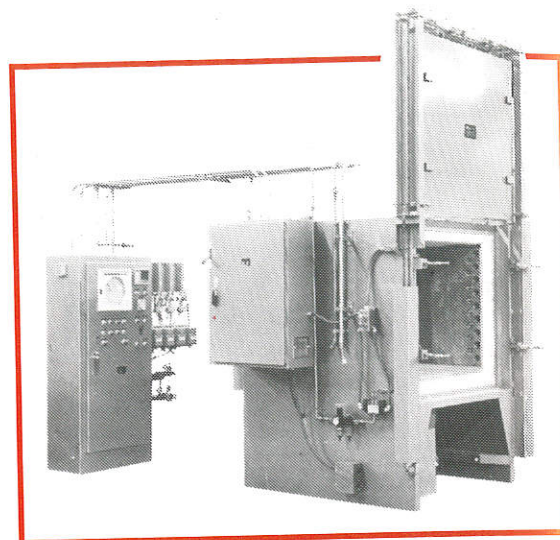
STANDARD FEATURES:

Rugged 1/8" Steel Casing • Counterweighted Vertical Lift Door • 4 1/2"-6" Multilayered Insulation • Stainless Steel Inner Liner • Low Watt Density Metallic Resistance Heating Elements • Rear Mounted Radial Blower • Positive Horizontal Recirculation Pattern • Completely Wired Furnace Mounted Control Systems Including Indicating Digital Time Proportioning Temperature Controller

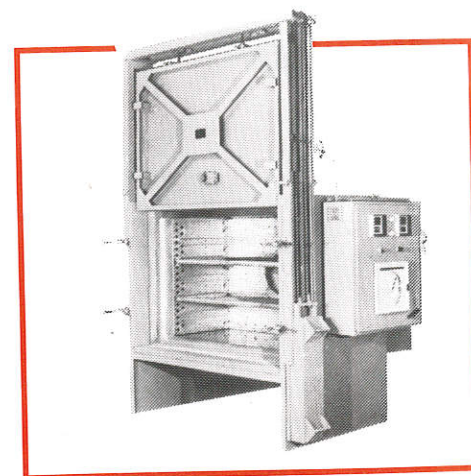
AVAILABLE OPTIONS:

Horizontal Swing Door • Air Operated Vertical Lift Door • Removable Shelving • Vertical Recirculation Pattern • Custom Designed Control Systems Including Free Standing NEMA 12 Panels, Temp Recorders, Process Programmers, High Limit, Timers, Alarms

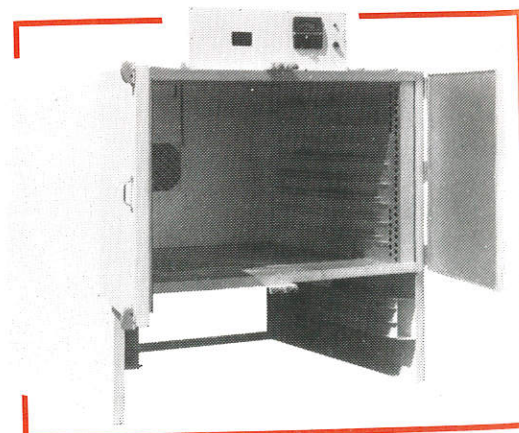
Special sizes and temperature combinations are available. We welcome the opportunity to quote non-standard applications.



SERIES 1200 MODEL 363648



SERIES 1200 MODEL 382448

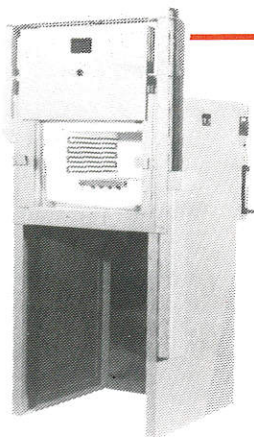


SERIES 800 MODEL 365847

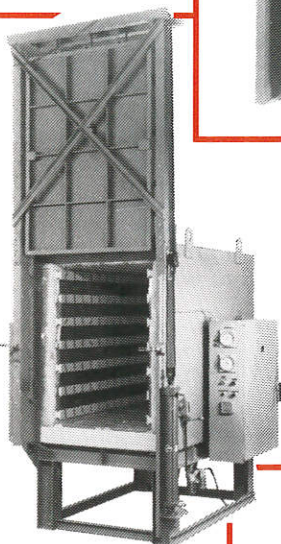
RADIANT BOX FURNACES

SERIES 2000, SERIES 2300, SERIES 2500

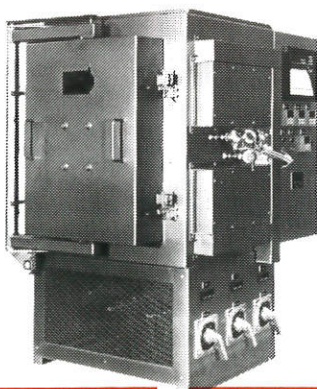
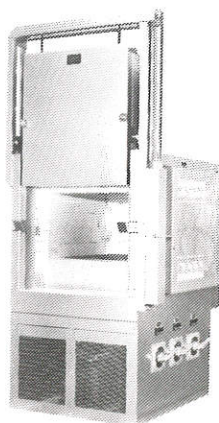
SERIES 2300
MODEL 91619



SERIES 2300
MODEL 543272



SERIES 2500
MODEL 182525



SERIES 2600 MODEL 121315

SERIES 2000 & SERIES 2300

Sizes: Standard model numbers apply (See page four)
Temperatures: 2000°F - 2300°F

FEATURES:

1/8" Steel Casing • 6" Multilayered Insulation • Vertical Lift Counterweighted Door • Heat Resistant Peep Sight • Low Watt Density Heavy Gauge Elements in Open Groove Ceramic Holders on Two Walls & Floor of Chamber • Silicon Carbide Health Plate • Safety Door Interlock Switch • Completely Prewired Control System with Digital Time Proportioning Temperature Controller

OPTIONS:

Air-Operated Doors • Control Type & Location • Gas-Tight Construction • Temperature Recording & Indicating • Process Programming • Loading & Unloading Mechanisms • Roller Hearth or Rail • Manual or Automatic Load Transfer • Ceramic Fiber Insulation

We welcome the opportunity to quote non-standard sizes.

SERIES 2500

Sizes: Standard model numbers apply (See page four)
Temperatures: 2500°F - 2800°F

FEATURES:

1/8" Steel Casing • Vertical Lift Counterweighted Door • Silicon Carbide Rod-Type Heating Elements Horizontally Mounted Across Width of Work Chamber, below Hearth Plate, and above Work Zone • Silicon Carbide Health Plate • Completely Wired Control System with Current Output Digital Proportioning Temperature Controller • 7" - 11" Multilayer Insulation • SCR Power Controller with Current Limiting.

OPTIONS:

Gas-Tight Construction • Flame Curtain • Atmosphere Control Systems • Independent Multi-Zoned Temperature Controls • Horizontal Swing Door • Air-Operated Vertical Lift Door • SCR Power Control with Current Limiting and Multi-Tapped Transformer Power Supply • Custom-Designed Control Systems Including: Free-Standing NEMA 12 Panels, Temperature Recorders, Process Programmers, High Limit, Timers, and Alarms.

HARDENING & DRAW COMBINATION FURNACES

SERIES H & D

AVAILABLE IN 5 ARRANGEMENTS

Maximum Operating Temperature

	Hardening	Draw
Arrangement #1	2000°F	800°F
Arrangement #2	2000°F	1200°F
Arrangement #3	2300°F	800°F
Arrangement #4	2300°F	1200°F
Arrangement #5	2500°F	1200°F

Arrangement #1	2000°F	800°F
Arrangement #2	2000°F	1200°F
Arrangement #3	2300°F	800°F
Arrangement #4	2300°F	1200°F
Arrangement #5	2500°F	1200°F

Unique "piggy back" design provides a complete heat treat facility using a minimum of floor space. Two chambers are provided, the top chamber for hardening and the lower chamber for draw, each with separate controls mounted and wired. Just connect the main power service to operate. A portable quench tank with casters is also included with models having 6", 9" and 12" chamber heights.

FEATURES:

HARDENING CHAMBER

Automatic digital indicating controller (solid state time proportioning type with thermocouple break protection) mounted and wired with an 8 gauge thermocouple assembly, dual magnetic contractors, control power ON OFF switch and indicating light • A fused control transformer provides 115 V. power to all controls • Vertical lift door, counterweighted roller chain suspension provided with a ceramic fiber seal and a heat resistant glass peep sight • Safety door interlock switch provided to shut power OFF when door is opened • Insulation walls 6" thick • Uniform heating with long life elements located on two sides and under the hearth plate. One piece, open groove type holders can be easily replaced without disturbing insulation • Silicon carbide refractory hearth plate

DRAW CHAMBER

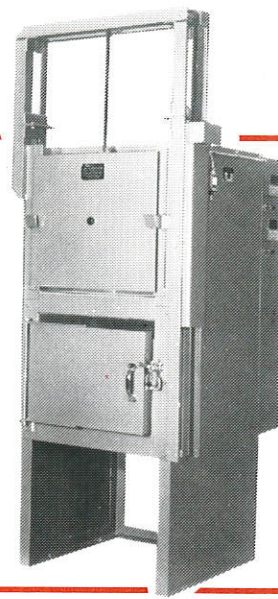
Controls same as top chamber • Magnetic motor started with safety thermal overloads • Recirculation provided by a stainless steel fan with motor • Stainless steel inner liner assures positive horizontal front-to-back air flow pattern • Heating elements are completely shielded and mounted directly in air stream • Side-hinged plug-type door closed against ceramic fiber seal and includes cam-type latch

QUENCH TANK:

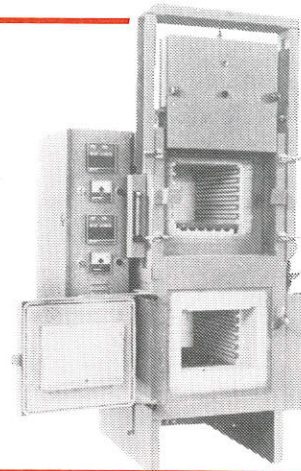
Portable type with casters fits under the draw chamber. Included on models 6", 9" and 12" chamber heights.

OPTIONS:

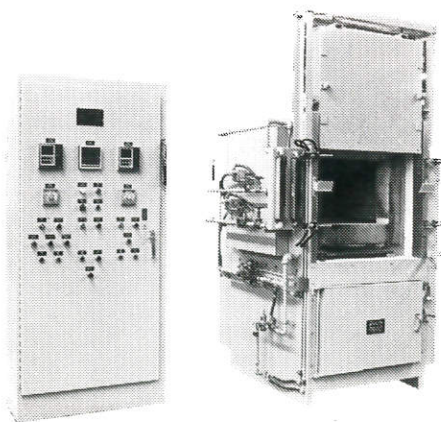
Custom Control Systems Including NEMA 12 Packages with High Limits, Recorders, Programmers, Timers and Alarms • Air Operated Door (Top Chamber) • Gas-Tight Construction • Atmosphere Systems • Roller Rail & Tray Assemblies • Control Type & Location • Temperature Recording & Indicating • Process Programming • Loading and Unloading Mechanisms • Roller Hearth or Rail • Manual or Automatic Load Transfer • Ceramic Fiber Insulation • Flame Curtain • Independent Multi-Zoned Temperature Controls • Horizontal Swing Door • Removable Shelving



SERIES H&D ARR #4 MODEL 121919

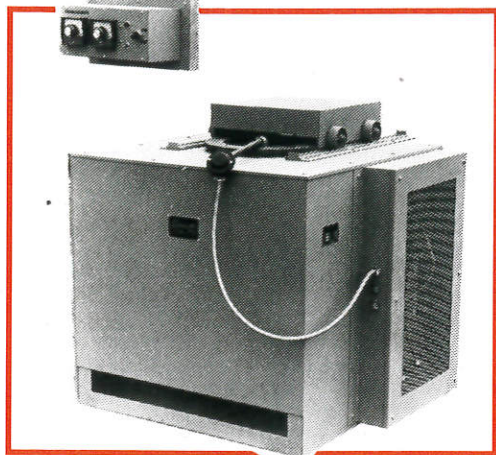


SERIES H&D MODEL 121325

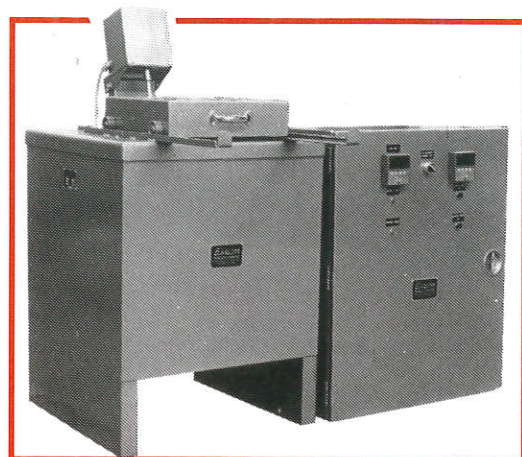


SERIES H&D ARR #5 MODEL 182538

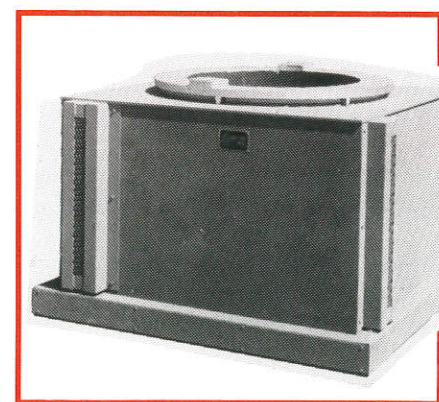
SALT POT AND SOFT METAL MELTING FURNACES ELECTRIC



SALT POT MODEL 1218



SALT POT MODEL 1018
WITH AGITATION



LEAD POT MODEL 3000

Electra Salt Pot and Soft Metal Melting Furnaces are electric, externally heated, metal pot furnace systems. Heating elements are mounted on all four sides of a furnace chamber, external to a mild steel, cast iron, or alloy top loading pot. Mild steel pots are supplied with external surfaces plasma coated with a heat resistant ceramic coating to minimize pot oxidation and scaling. Clay bonded graphite or silicon carbide crucibles can be supplied as well.

STANDARD SALT POT FURNACES INCLUDE THE FOLLOWING FEATURES:

- Six inches Multi-Layer Chamber Insulation • Ceramic Coated Mild Steel Pot • Remote (Wall) mounted NEMA 1 control enclosure • Digital time proportioning temperature controller • Dual Thermocouples (immersion and element reading) with thermocouple selector switch • Roll away insulated pot cover

AVAILABLE OPTIONS:

- Alloy pot • High Limit Controller • Non-Standard Sizes • Salt Agitation

Soft metal melting, lead or babbitt, and aluminum melting furnaces are supplied with identical features as salt bath furnaces. Cast iron, clay bonded graphite, or silicon carbide pots are supplied per process requirements. Specific sizes are quoted upon request.

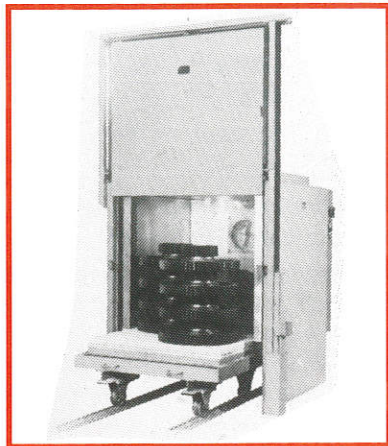
Model#	Pot Size		Overall Size*			Power KW	Voltage	Approx. Ship Wt.
	Dia	Depth	H	W	D			
P 614	6"	14"	36"	26"	30"	9	220V/30/60Hz	700#
P818	8"	18"	42"	30"	32"	14	220V/30/60Hz**	900#
P1015	10"	15"	38"	32"	34"	18	220V/30/60Hz**	1000#
P1212	12"	12"	36"	34"	36"	13	220V/30/60Hz**	1000#
P1218	12"	18"	42"	34"	36"	18	220V/30/60Hz**	1100#
P1224	12"	24"	42"	34"	36"	18	220V/30/60Hz**	1300#

* Does not include control enclosure

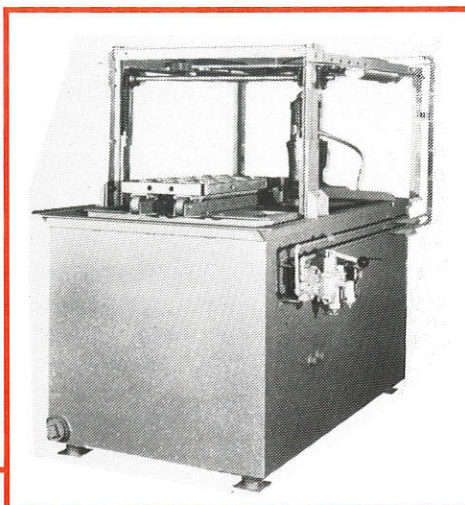
** Also available in 440V/30/60Hz

SOME OF **ELECTRA**'S CUSTOM CAPABILITIES...

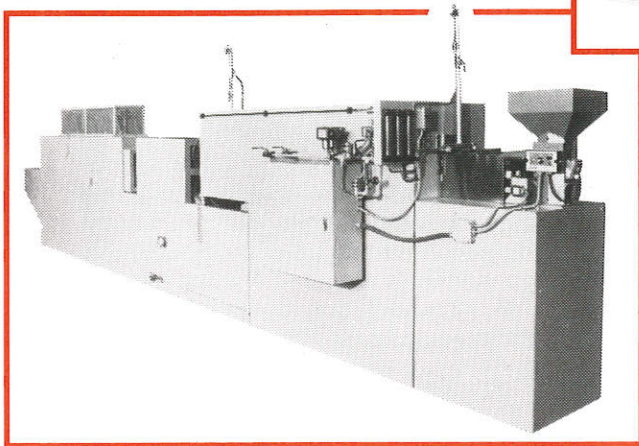
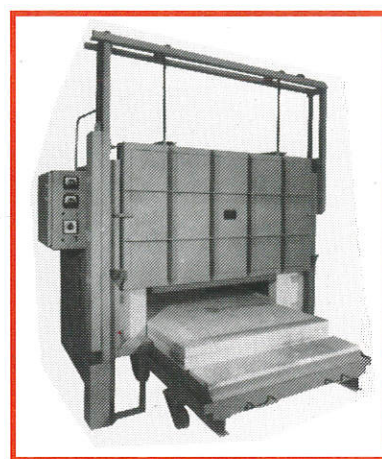
SERIES 4000
MODEL
484048 CAR
BOTTOM



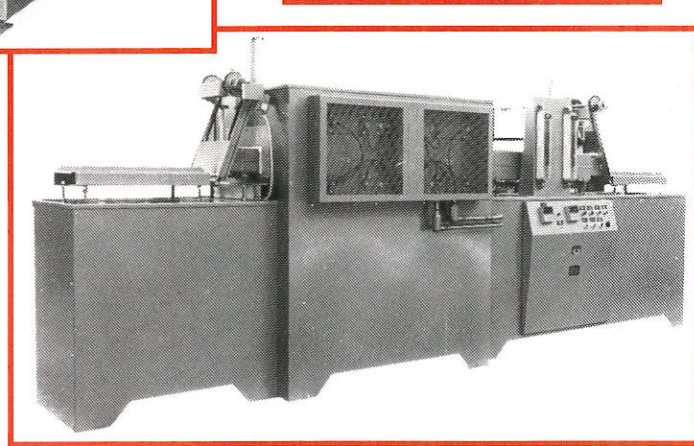
MODEL 283648 OIL QUENCH TANK



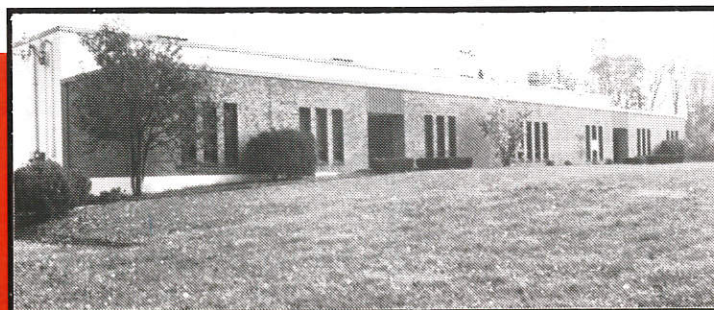
SERIES 2000 MODEL 304848 CAR BOTTOM



MODEL 4624 PUSHER FURNACE WITH INTERNAL
QUENCH AND TEMPER



MODEL 6624 MUFFLE FURNACE



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PARTIAL LIST OF CUSTOMERS:

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General Motors
Westinghouse
Owen Corning
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