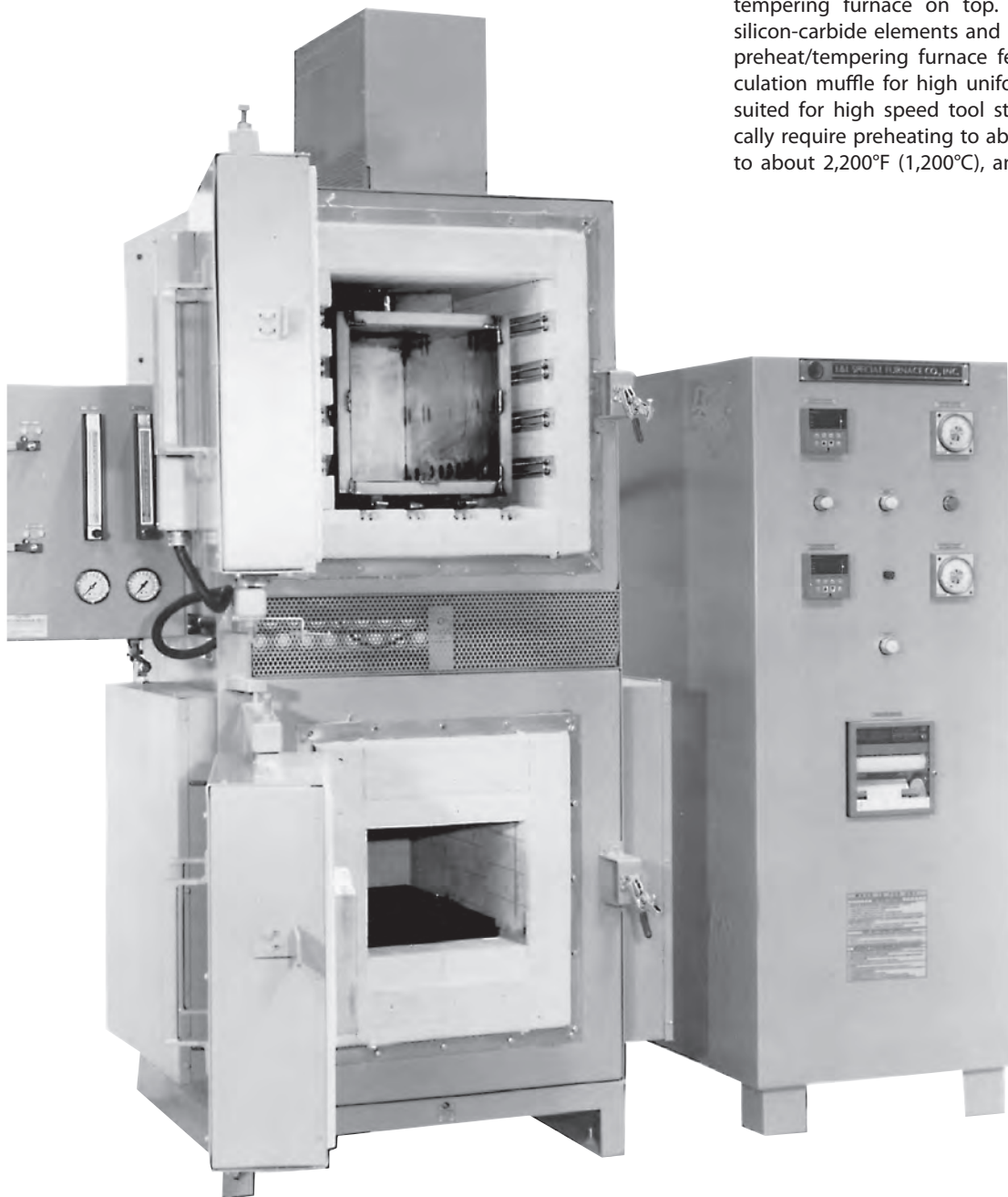


DUAL CHAMBER OVER/UNDER HEAT TREATING FURNACES 2,500°F/1,875°F (1,370°C/1,025°C)

APPLICATIONS

The QDG 29 Dual Chamber Heat Treating furnace features a 2,500°F (1,370°C) high heat chamber for hardening and a 1,875°F (1,025°C) recirculating oven for preheating and tempering. The over/under configuration saves floor space. The hardening furnace is mounted on the bottom, with the preheat/tempering furnace on top. The hardening furnace includes silicon-carbide elements and a silicon-carbide hearth plate. The preheat/tempering furnace features a powerful fan and recirculation muffle for high uniformity. This dual furnace is ideally suited for high speed tool steels. High speed tool steels typically require preheating to about 1,600°F (870°C), quick heating to about 2,200°F (1,200°C), and then various tempering cycles.



FEATURES

HIGH TEMPERATURE UNIFORMITY

The hardening furnace is uniform to within +/-25°F (+/-10°C) above 2,000°F (1,095°C). The tempering oven is uniform to within +/-10°F (+/-5°C) above 300°F (150°C).

SILICON CARBIDE ELEMENTS

The elements of the hardening furnace are silicon-carbide rods mounted over and under the hearth for even heating. All element connections are on the side. The elements are designed to run at line voltage. These elements easily permit the 2500°F (1370°C) maximum temperature under continuous operating conditions.

EFFICIENT MULTILAYERED INSULATION

The hardening chamber features 4-1/2" of 2,800°F (1,535°C) insulating firebrick backed up with 4" of mineral wool. The tempering oven is insulated with 4-1/2" of 2,300°F (1,260°C) firebrick backed up with 2" of mineral wool. All refractory is coated with a special facing that prolongs firebrick life and helps prevent spalling and dusting. The refractory sections are available completely shaped for easy replacement without cementing. All sections fit together with engineered heat locks that improve the insulating integrity of the furnace. No asbestos is used.

HEAVY-DUTY INTEGRATED CASE

Both chambers are mounted in one integrated 10-gauge steel case with structural stiffeners and lifting rings. The entire case is primed with 800°F silicone paint and finished in machine enamel.

FAN AND RECIRCULATION MUFFLE

The tempering oven features a vertically mounted four bladed alloy fan. It is belt driven with a 3/4 H.P. motor. A heat dissipator protects the bearings. The removable recirculation muffle is constructed of 330 alloy. The muffle protects the work from direct radiation of the elements and creates a recirculation pattern for the air.

SILICON-CARBIDE HEARTH

The hardening furnace features a 1-1/2"-thick silicon carbide hearth plate for strength and good heat transfer.

DOUBLE PIVOTED PLUG DOORS

Both doors are double pivoted horizontal doors with refractory plugs (1/2" on the low heat chamber and 1-1/2" on the high heat chamber) for a superb heat lock around the door seal. The double pivoting allows the door to be opened so that the hot face stays away from the operator. A vestibule around the perimeter of the hardening furnace door reduces heat loss

when the door is opened. This also aids temperature uniformity while protecting the elements from physical damage.

DIGITAL PID CONTROL AND HIGH LIMIT SYSTEM

The standard controls are Honeywell UDC 2500 digital PID 3 mode tuning controls. All fuses, transformers, contactors and controls are housed in a NEMA 1 panel. Quiet, long-life solid-state contactors are standard. The thermocouples on the hardening furnace are Type R while the tempering oven has Type K. Thermocouple break protection is included. Limit switches shut off power when doors are opened or the backs are removed. Control voltage is transformed to 120 volts. A NEMA 13 lighted on/off switch is included. The control circuit and each power branch circuit are fully fused. A Honeywell UDC 1200 digital high limit backup control with manual reset, backup contactors and separate thermocouple is standard for both chambers. The customer must connect the fused power supply to a single point on the panel.

TESTING AND INSTRUCTIONS

The furnace is power tested to ensure proper watt ratings. A complete instruction manual includes easy startup instructions, theory of operation, maintenance instructions, parts list and a detailed troubleshooting guide. A ladder logic and panel layout diagram are prepared on CAD for easy readability.

WARRANTY

The furnace is warranted for one year except for elements and thermocouples, which are warranted for six months.

OPTIONS

- **JIC CONTROL OPTION:** This includes a NEMA 12 control cabinet, all oil tight switches and a panel mounted fused disconnect switch. Zone switches are percentage timers.
- **HIGH K.W.:** Available on hardening furnace. Approximately 30% more power. Check with factory.
- **SCR POWER CONTROL:** For greater precision.
- **INERT ATMOSPHERE CONTROL:** Available on one or both chambers. Mixing panels for nitrogen/propane atmosphere are available for the hardening chamber.
- **RAMP/SOAK PROGRAM CONTROLS**
- **TEMPERATURE RECORDERS:** Round and strip chart.
- **VERTICAL DOORS:** Counterbalanced vertical door is available for the tempering/preheat chamber only. Manual hand crank, pneumatic or electric operation.
- **AGITATED, HEATED QUENCH TANKS:** These provide superior quenching results. Request QT Bulletin.

SPECIFICATIONS

Model Number	Hard Chamber Actual Inside Dimension			Hard Chamber Uniform Inside Dimension			Temp Chamber Inside Recirc Muffle Dimension			Outside Dimensions			Hard Chamb K.W.	Temp Chamb K.W.	Max Load Lbs	Apprx Ship Lbs
	W	H	D	W	H	D	W	H	D	W	H	D				
QDG 29	17	18	24	12	8	20	12	11	20	45	96	44 1/12	25.0	13.5	150	2,000

Dimensions are in inches. Weight is in pounds. Typical control panel adds another 36" to layout width. 240 or 460 volts is normal; 208, 380 and 575 volts are optional. Three phase is normal, although single phase is available. Inside tempering chamber dimensions are also working dimensions for that chamber. Specifications are subject to change without notice.

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