

# TILTING BARREL

**Melting Furnaces  
for  
Non-Ferrous Metals**



**SECO/WARWICK  
CORPORATION**





# SECO/WARWICK Tilting Barrel Furnaces

## for melting aluminum and other non-ferrous metals

Tilting barrel furnaces are designed employing the natural advantages of an arch configuration to provide a compact melting furnace that is both productive and economical. The inherent self-supporting steel shell and refractory lining offers the greatest resistance to heat, pressure or motion distortion. This design produces improved heat transfer for faster melting rates. By rotating the entire furnace chamber on its base, controlled pouring is achieved without the need for complicated equipment. The combination of fundamental design and rugged construction has provided the solution to the problems of production melting.

### APPLICATION

Die casters, sand casters and permanent molders find barrels are ideal central melters for supplying hot metal to holding and dispensing equipment. Low loss melting of chips, flash and other fine section scrap is achieved by charging through an external end well to avoid flame impingement. Ingot, heavy scrap and returns may be easily charged through a full width access door at the opposite end. Together these give you efficient charging and melting centralized in one furnace.

### ADVANTAGES

**INCREASED MELTING RATE TO SIZE RATIO** — The cylindrical roof focuses re-radiated heat on the bath for efficient melting. Burners are mounted to fire across the roof before spreading at low velocity to return over the bath creating a double pass firing pattern. The cylindrical floor increases the surface to bath ratio speeding heat transfer.

**ALTERNATE CHARGING** — Solids are charged in the end door for fast loading. Fine section material can be charged continuously into the end well to avoid the metal loss that occurs from flame impingement.

**CONTROLLED POURING** — Tilting on its own axis, a barrel can pour any quantity up to capacity. Operator can easily adjust the rate of discharge by varying the degree of furnace tilt.

**LONGER FURNACE LIFE** — The combination of a cylindrical steel shell and an interlocking circular refractory lining provides self-supporting construction that eliminates hangers or separate roof construction.

**CLEANER METAL** — The well opening has a submerged arch that extends below the normal bath level to keep dross originating with the scrap charge from contaminating the main bath. The wall mounted luminous flame burners reduce the superheating and oxide buildup caused by short flame roof burners.

**LOW MAINTENANCE** — Simplified design and construction improve furnace life and reduce maintenance to a minimum.

### DESIGN FEATURES

**STEEL SHELL AND BASE** — The rugged steel shell consists of rolled plate reinforced with structural members for additional strength. Casters mounted on the base supporting the furnace allow rotation.

**REFRACTORY LINING** — The interlocking cylindrical lining resists damage and thermal distortion. The refractory brick backed with insulation assures low heat loss. The end well and ramp are lined with castable refractory for long life.

**TILTING MECHANISM** — A pneumatic or hydraulic cylinder mounted on the base and connected to the furnace rotates the furnace on the casters for pouring. The operating valve is mounted adjacent the pouring spout allowing visual pour control.

**DOOR AND OPENINGS** — A fabricated steel refractory lined door gives complete access to furnace for charging, cleaning and fluxing. All doors are designed to keep the hot refractory away from the operator. The pouring spout is located below the metal surface to avoid discharging any impurities.

**COMBUSTION SYSTEM** — Barrels are furnished with a complete combustion system including burners, blower, piping and controls. This system is mounted directly to the furnace shell to eliminate complicated piping.

## STANDARD EQUIPMENT

**WELL DOOR** — This vertical lifting door has special skim tiles on the bottom that submerge into the metal when the door is in the "down" position. This prevents dross originating in the scrap well from contaminating the main bath.

**HIGH ALUMINA BRICK** — High alumina chemically bonded burned firebrick, in the metal contact area, has greater metal penetration resistance and is easily cleaned.

**TEMPERATURE CONTROLS** — Automatic temperature control equipment consists of an indicating-controlling two-position instrument, thermocouple with protection tube and an automatic combustion valve operator.

**EXCESS TEMPERATURE PROTECTION** — Equipment consisting of a manual reset indicating high-limit instrument and thermocouple with protection tube mounted in the combustion chamber will shut down the furnace in the event of excess temperature conditions.

**COMBUSTION SAFEGUARDS** — A basic combustion safeguard package as specified by NFPA, offers protection during a utility failure. The flame failure relays and electric ignition portion of this equipment are mounted in an enclosure prewired to marked terminal strips. The furnace mounted equipment is completely piped and wired into the combustion equipment.

**PREWIRED CONTROL PANEL** — The instrumentation and applicable electrical components of the safeguard package can be mounted in a free-standing Nema 12 prewired panel enclosure.

## OPTIONAL EQUIPMENT

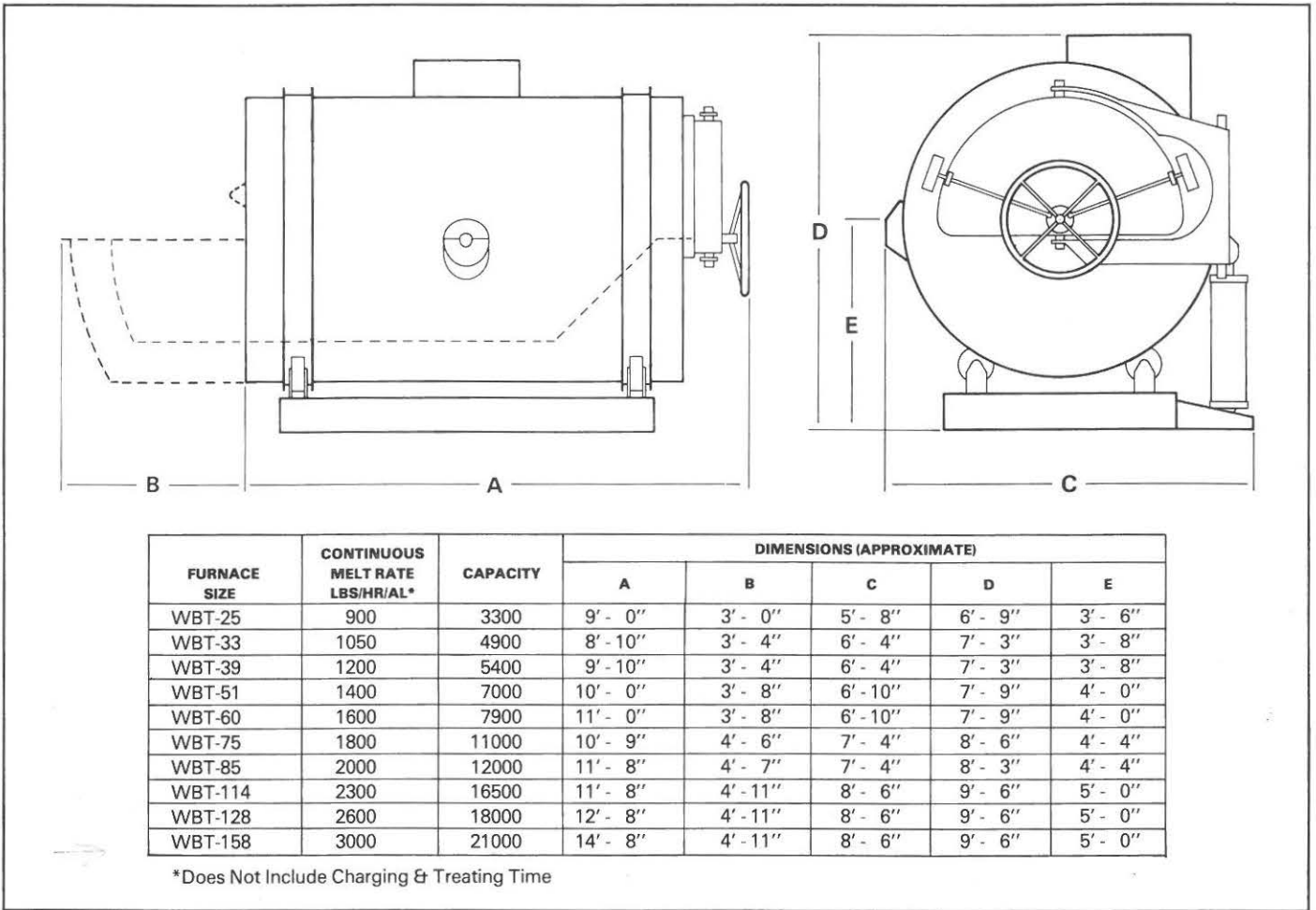
**AIR DAMPER** — To conserve fuel and reduce operating costs the combustion flue can be equipped with an air damper to reduce the negative pressure in the furnace when the combustion burners are on low fire. Fuel savings up to 10% can be realized.

**FLOW METERS** — Individual flow meters are available to monitor air, oil or gas flow.

**PRE-HEAT THROAT** — Pre-heat throat extension utilizes the normally wasted products of combustion to preheat ingot, improving the melt rate and thermal efficiency.

**PROPORTIONAL BURNER CONTROL** — To provide closer temperature control of the bath and the correct input of heat, a proportional system can be substituted for the two-position system.

**STACK MUFFLER** — To reduce sound levels in the operator area, a stack muffler can be mounted on top of the flue.



## SPECIAL ADAPTATIONS

In addition to the range of standard SECO/WARWICK barrel furnaces, larger sizes may be engineered to fit specific applications. Special features such as double chamber (dry hearth

melting, wet bath holding), conical ends, dipout wells, varied tilting configurations and special refractory linings may be incorporated.

*SECO/WARWICK reserves the right to change design, materials and specifications without notice.*



## SECO/WARWICK CORPORATION

*We Bring A World Of Experience To Heat Processing Equipment*

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