

TILTING BARREL

Melting Furnaces
for
Non-Ferrous Metals

Cat. # 5636




WARWICK
FURNACE COMPANY
DIVISION SUNBEAM EQUIPMENT CORPORATION

Warwick Tilting Barrel Furnaces

for melting aluminum and other non-ferrous metals

Tilting Barrel furnaces are designed employing the natural advantages of a cylindrical container to provide a compact melting furnace that is both productive and economical. Neither heat, pressure or motion will distort the inherent self-supporting steel shell and refractory lining. This same cylindrical design in the combustion chamber and holding bath 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 thru an optional external end well to avoid flame impingement. Ingot, heavy scrap and returns may be easily charged thru a full width access door at the opposite end. Together these give you efficient charging and melting centralized in one furnace. Combining the best features of crucible furnaces and tilting reverbs, barrels assure pure, clean aluminum from a furnace that is easy to operate and maintain.

Barrel furnaces are available in a broad range of standard sizes for aluminum or zinc and can be engineered to meet special applications such as melting lead, copper and brass or smelting and refining grindings, borings, wash metal and ore.

ADVANTAGES

INCREASED MELTING RATES — 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 optional 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 adjust the rate of discharge by varying the degree of furnace tilt.

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

LOW METAL LOSS — Barrel furnaces may be completely drained and cleaned. Now you can avoid the hard spot "stars" and sludging caused by holding a molten bath over weekends or non-productive periods.

CLEANER METAL — The optional 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.

ELIMINATES TAPPING — Below the surface pouring delivers clean metal by simply moving a lever. Pouring can be repeated time after time safely and without effort.

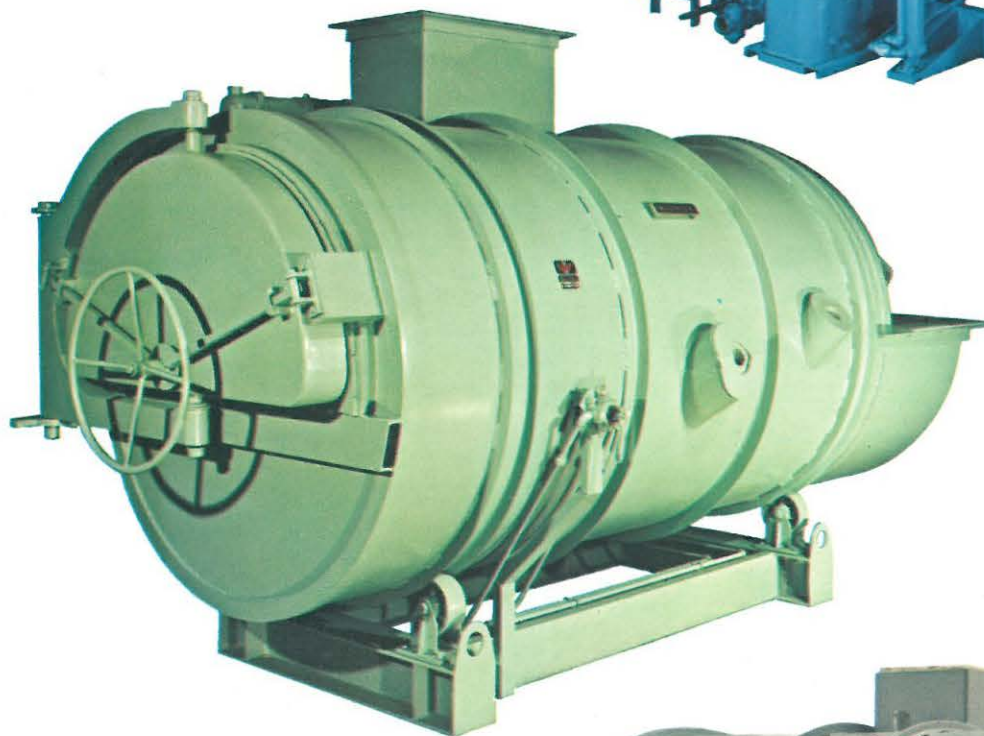
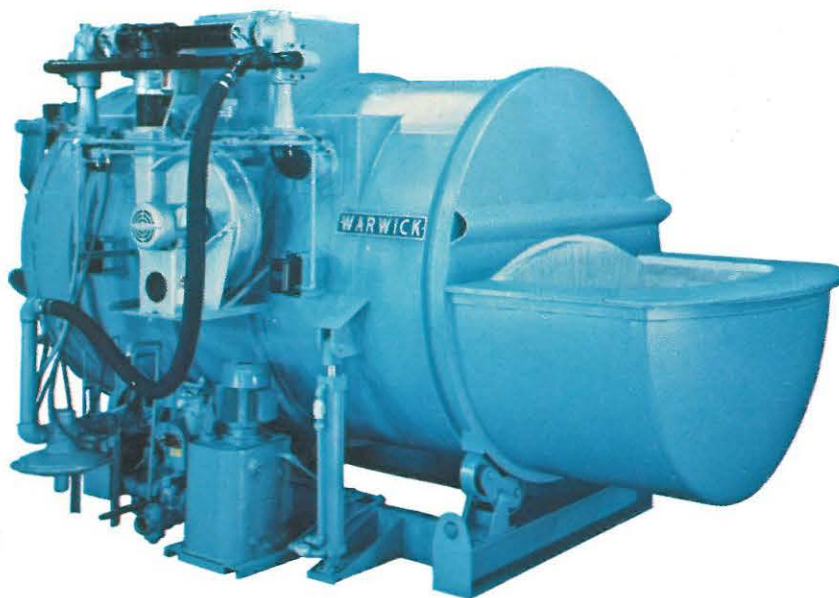
REDUCED DROSS AND OXIDE INCLUSION — Wall mounted luminous flame burners firing tangentially provide fast melting without the superheating and oxide buildup caused by short flame roof burners.

LOW MAINTENANCE — Simplified design and construction improves furnace life and reduces maintenance to a minimum.

STANDARD EQUIPMENT — Tilting barrels are engineered in a variety of sizes and models. They can be built, delivered and installed quickly.

TYPICAL STANDARD BARRELS

This WBT-75 features an optional end well with skim arch, hydraulic tilt cylinder with power pack, and basic combustion safeguards.



A swing away access door, tilt activator lever, pouring spout and thermocouple port are shown on this WBT-60.



Full or partial access is provided on this WBT-85 by the hydraulic flip up door. Tilt lever is adjacent to the spout for controlled pouring.

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.

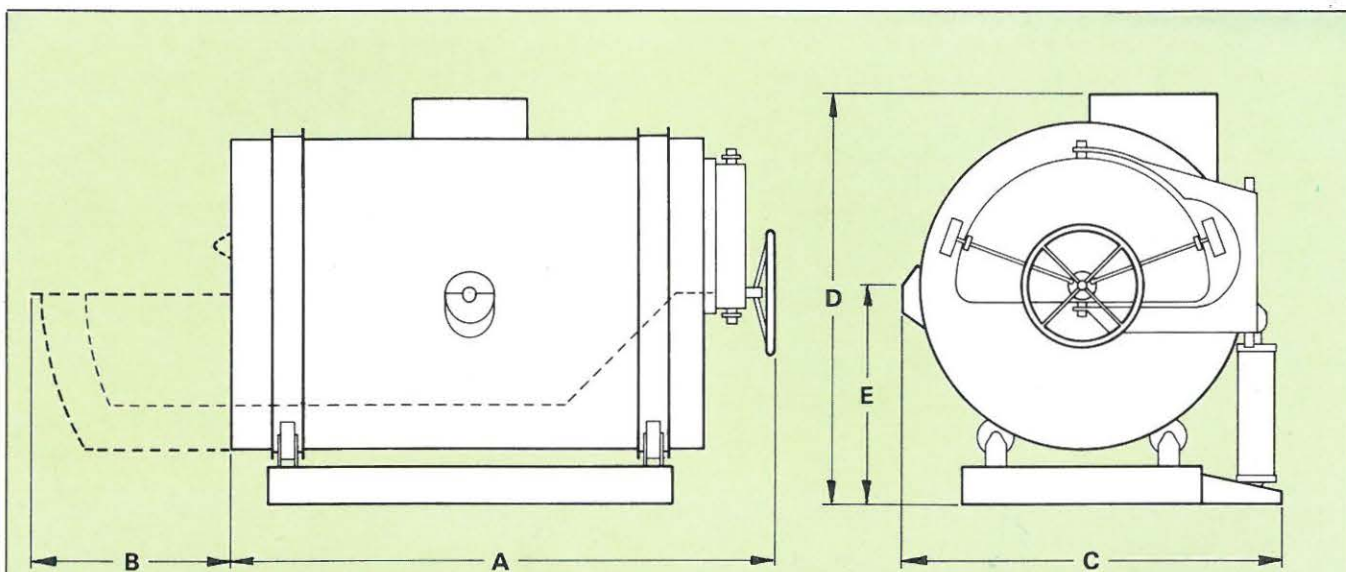
REFRACTORY LINING — The interlocking cylindrical lining resists damage and thermal distortion. Super duty hard burned firebrick backed with insulation assures low heat loss. The end well and ramp are lined with castable refractory for long life.

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.

DOORS 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.



FURNACE SIZE	CONTINUOUS MELT RATE LBS/HR/AL*	ALUMINUM CAPACITY		DIMENSIONS (APPROXIMATE)				
		FURNACE	OPTIONAL WELL	A	B	C	D	E
WBT-10	450	1000	500	6' - 0"	2' - 4"	4' - 6"	5' - 10"	3' - 0"
WBT-15	625	1500	500	7' - 3"	2' - 4"	4' - 6"	5' - 10"	3' - 0"
WBT-20	750	2000	1000	8' - 0"	3' - 0"	5' - 8"	6' - 9"	3' - 6"
WBT-25	900	2500	1000	9' - 0"	3' - 0"	5' - 8"	6' - 9"	3' - 6"
WBT-33	1050	3300	1800	8' - 10"	3' - 4"	6' - 4"	7' - 3"	3' - 8"
WBT-39	1200	3900	1800	9' - 10"	3' - 4"	6' - 4"	7' - 3"	3' - 8"
WBT-51	1400	5100	2600	10' - 0"	3' - 8"	6' - 10"	7' - 9"	4' - 0"
WBT-60	1600	6000	2600	11' - 0"	3' - 8"	6' - 10"	7' - 9"	4' - 0"
WBT-75	1800	7500	3500	10' - 9"	4' - 6"	7' - 4"	8' - 6"	4' - 4"
WBT-85	2000	8500	3500	11' - 8"	4' - 7"	7' - 4"	8' - 3"	4' - 4"
WBT-114	2300	11400	5100	11' - 8"	4' - 11"	8' - 6"	9' - 6"	5' - 0"
WBT-128	2600	12800	5100	12' - 8"	4' - 11"	8' - 6"	9' - 6"	5' - 0"
WBT-158	3000	15800	5100	14' - 8"	4' - 11"	8' - 6"	9' - 6"	5' - 0"

*Does Not Include Charging & Treating Time

OPTIONAL EQUIPMENT

CHARGE WELL — Chips, flash and other fine section scrap are charged thru an external end well to avoid flame impingement. Wells are located on the end of the furnace opposite the access door.

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 — The super duty burned firebrick in the metal contact area can be replaced with 85% alumina chemically bonded burned firebrick having greater metal penetration resistance and easier cleanability.

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

The thermocouple is located adjacent the pouring spout to accurately control the temperature of the metal to be poured.

EXCESS TEMPERATURE PROTECTION — Equipment consisting of a manual reset indicating hi-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 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.

FM or FIA safety equipment is available for insurance approval, if required.

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.

EQUIPMENT SUPPLIED

A Standard Tilting Barrel melting furnace is supplied with:

- Furnace completely assembled, prelined, piped and wired on fabricated base with casters.
- Complete combustion system including combustion air blower mounted on furnace proper.
- Refractory pour spout molded to shell and furnace interior.
- Large access door on end of furnace chamber.
- Complete hydraulic or pneumatic tilting mechanism piped to valve operator.
- Operating and maintenance instruction manual.

SPECIAL ADAPTATIONS

In addition to the range of "Standard" 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.



The special stationary barrel above has a scrap charge well, a stack throat charge door for ingot preheating and an end mounted dipout well.

FACTORY ASSEMBLED

All WARWICK Barrel furnaces are completely shop prefabricated, prepiped, prewired and assembled with refractory lining installed except where shipping or site unloading conditions prohibit. The inherent structural integrity of the cylindrical barrel makes it possible for these furnaces to be relocated intact when future needs dictate.

Rotary Furnaces

WARWICK Rotary Furnaces are designed for fast melting of copper, brass and lead . . . economically, with low furnace maintenance. 360° rotation of the furnace revolves the hot refractory lining under the metal for maximum heat transfer and longer refractory life. An oil, gas or dual fuel burner is provided on either a rollaway or swingaway mechanism to provide clear access for furnace charging. A rollaway stack elbow on the opposite end allows additional fast charging either manually or mechanically. Both conical ends are removable for fast, easy relining of the unit. Power for furnace rotation is provided by a heavy

duty motor and gear reducer. The integral drive sprocket is designed for field adjustments to easily compensate for wear and movement.

Low maintenance, fast melting and flexibility are designed into these cylindrical rotary furnaces. Self supporting construction is the key to furnace performance while permitting safe transportation to both the plant site and varied cast house locations as the need requires. Rotary furnaces combine all of the advantages of standard barrel furnaces plus the desirability of complete rotation in a range of sizes and capacities to meet your needs.




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