

CAST HOUSE

EQUIPMENT



WOODINGS
INDUSTRIAL



CAST HOUSE OVERVIEW

Woodings provides a full complement of cast house equipment that directly answers your need for high performance, high reliability and high value.

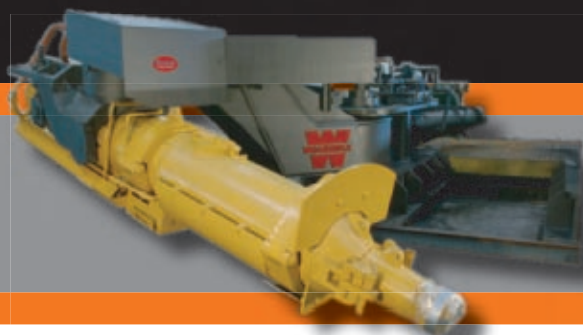
From guns, drills and drifters to cover manipulators, runners, bar changers and all the hydraulics and electrics, Woodings delivers equipment that not only takes the heat of the brutal cast house environment but also delivers superior performance, day after day after day.

It's the kind of performance that can help you lower costs, improve productivity and run your operation with efficiency.

As a recognized world leader in the design and manufacture of hot metal equipment, Woodings has the experience and technical know-how to meet any cast house equipment need. And we can do that anywhere in the world.



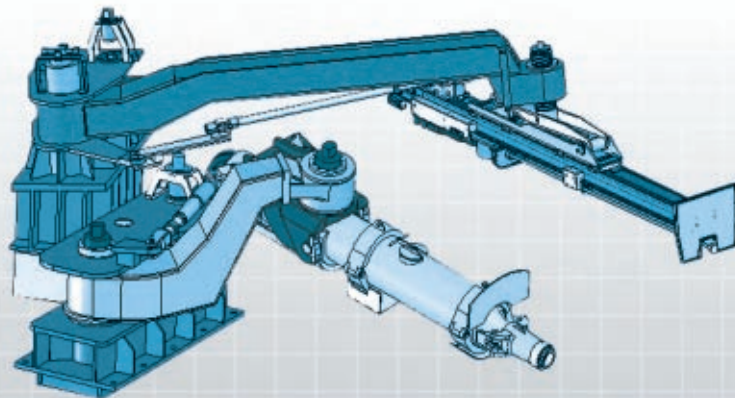
GUNS/DRILLS



Woodings is the world's largest and most innovative manufacturer of taphole drills and clayguns. By combining the latest technology with superior engineering, Woodings creates the world's most advanced, most reliable guns and drills, each designed to customer specification and manufactured to perform brilliantly and efficiently even under the harshest blast furnace environments.

GUNS Design

From heavy duty anti-friction roller bearings for durability to proprietary cylinder design for longer life; from hydraulic swivels and optional stainless steel hard piping for reliability to chrome barrel interiors for longer service life, everything about Woodings clayguns is designed for performance and durability. Guns also are designed to meet today's need for greater strength and lighter weight. Design checks, including finite element analysis, ensure lower operating stresses and longer life. Woodings designs its guns to support the highest required nozzle pressure while retaining heavy duty construction. The end result: efficiency.





Construction

- Hydraulic cylinder may be larger than clay barrel diameter (No limits on clay pressure)
- Large clean out area for clay leakage
- Cylinder and nozzle adapter assembled with clamp
- Case hardened chrome plated cylinder rod
- Cylinder rod has protective cover in clean out area
- Easy to change wear rings (remove clamp and extend rod)
- Hinge nozzle for easy cleanout
- Replaceable nozzle tip
- Chrome plated clay barrel

Operation

- Pedestal mounted taphole angle: as required
- Vertical adjustment $\pm 8^\circ$
- Lateral adjustment $\pm 10^\circ$
- Clay gun capacity: 6-9 ft
- Holding pressure: 30-60 ton
- Hydraulic system design pressure: 345 BAR/5,000 psi
- Hydraulic operating pressure: 280 BAR/4,100 psi
- Nozzle pressure: 280 BAR/4,100 psi
(lower or higher as req'd)
- Clay extrusion time: 50 seconds
- Swing time: 12-15 seconds
- Electronic metering
- Taphole location detection
- Automatic operation

DRILLS

Design

Woodings offers a variety of drill designs each perfectly adaptable to your specific furnace arrangement. All drills may be equipped for water mist drilling. Options include:

- Column-mounted
- All hydraulic
- Hydraulic combined with pneumatics
- Conventional, soaking bar and/or water mist drilling
- Fully automated operation
- Electronic metering of taphole length

Construction

- Heavy plate fabrication
- Anti-friction roller bearings
- Strong support mechanism supports feed shell, minimizes vibration
- Split spacers for vertical adjustment
- Turnbuckle for angular adjustment
- Cushions on both ends of swing cylinder for fast swing with soft stops
- Heavy roller chain
- No furnace attachments
- Completely shielded

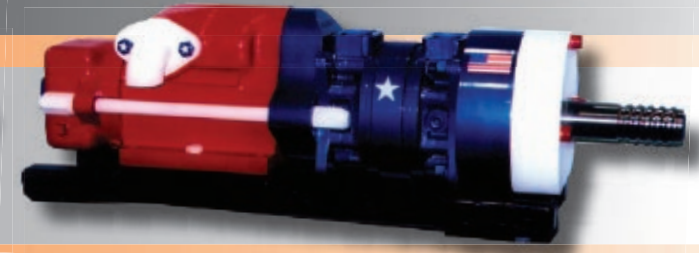
Operation

- Taphole angle: as required
- Vertical adjustment $\pm 5^\circ$
- Lateral adjustment $\pm 10^\circ$
- Drive: Hydraulic
- Rotation: 120°
- Hydraulic operating pressure: 2000-4000 psi
- Swing Time: 12 seconds
- One motion from park to work positions
- Adjustable arm, transfers radial motion to straight line at taphole
- Hydraulic or pneumatic feed-motor
- Hydraulic chain pull: 8000 lb (3600 KG)
- Pneumatic chain pull: 2600 lb (1200 KG)
- Retract speed: 3 fps (1 meter/sec)
- Widest variety of drifters

Finite Element Analysis ensures lower operating stresses and long service life



HAMMERS/DRIFTERS



HAMMERS/DRIFTERS

Engineered to provide the best performance within the worst environments, Woodings drill drifters are considered “the standard” in U.S. industry. Woodings offers the widest range of drifters available including:

- Pneumatic
- Hydraulic/pneumatic
- All-hydraulic

Design

Woodings takes an innovative approach to designing and building drifters. For example, Woodings drifters utilize water mist purging operation which provides myriad benefits. Woodings has also raised the bar with the innovative WHR 600 drifter that features hydraulic and pneumatic operation. Recently, Woodings again pushed the envelope with the introduction of an all-hydraulic drifter. Built with a single, common housing for forward and reverse hammer, this drill is the most technologically advanced product on the market.

Wooding’s state-of-the-art hammers are designed for high torque and high frequency, low impact energy. End results:

- Clean, uniform taphole
- Faster taphole opening translates to lower operating cost
- Minimized refractory and mushroom damage

Operation *Water Mist Drilling*

- Efficient purging.** Increases in purging pressures result in efficient removal of cuttings and allows more impact energy to reach the drill bit
- Effective cooling.** Atomized water keeps the drill bit much cooler than with compressed air or nitrogen
- Faster penetration.** Water-cooled drill bit retains its cutting edges longer, operation is faster
- Improved taphole uniformity.** Sharper drill bit produces more uniform hole which prolongs taphole life
- Cleaner process.** Water vapors mix with the “purge dust” providing better dust control

SPECIFICATIONS	DRIFTERS		
	WFP-600	WFP-700	WFP-1700
TYPE	PNEUMATIC		
ROTATION			
TORQUE FT-LB	140	140	140
TORQUE Nm	190	190	190
RPM	200-260	200-260	200-260
FORWARD HAMMER			
IMPACT ENERGY FT-LB	185	255	205
IMPACT ENERGY Nm	250	345	275
BPM	2050	2050	1700
REVERSE HAMMER	N/A	N/A	
IMPACT ENERGY FT-LB			188
IMPACT ENERGY Nm			255
BPM			1850

SPECIFICATIONS	DRIFTERS		
	WHR-600	WHR-600-17	HC-105-MRP
TYPE	HYDRAULIC ROTATION PNEUMATIC HAMMER		HYDRAULIC
ROTATION			
TORQUE FT-LB	1100	1100	945
TORQUE Nm	1490	1490	1275
RPM	0-800	0-800	145
FORWARD HAMMER			
IMPACT ENERGY FT-LB	185	185	130-260
IMPACT ENERGY Nm	250	250	175-350
BPM	2050	2050	3000
REVERSE HAMMER	N/A		
IMPACT ENERGY FT-LB		188	260
IMPACT ENERGY Nm		255	350
BPM		1850	3000

COVER MANIPULATORS, RUNNERS & BAR CHANGERS



Utilizing the latest technology and 100 years of technical experience and know-how, Woodings provides equipment that delivers long-term reliability and efficiency. Often designed to customer specification, Woodings equipment is always designed to allow maximum productivity and economical operation.

Manipulators

Compact and able to be efficiently operated through remote control with a manual over-ride back up. Features include:

- Repeatable positioning and your choice of operation
- Normal operation is hydraulic and may be automated
- Pedestal or under tuyere platform mount

Runners

Two types of designs depending on customer specification and suitability of cast house floor configuration. Both are available in hydraulic, electromechanical or pneumatic operation with manual back up.

Wedge type design:

- Requires more elevation
- May be removed from above or lowered to below cast house floor
- Economical

Cradle type design:

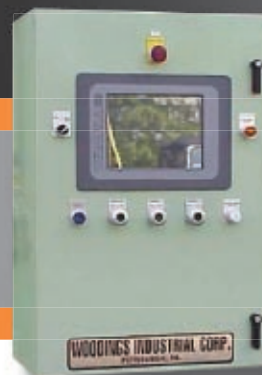
- Requires less elevation
- Removed by lifting to the cast house floor
- Drive linkage does not have to be disconnected when runner is replaced

Bar Changers

Robotic machine removes various sized drill rods or soaking bars from a rack and loads the rod or bar into the taphole drill. Also removes a used rod or bar from the drill and places it on the rack.

- Hydraulic operators and hydraulic valve stand controls the motions
- Hydraulic power (supplied from the mud gun and taphole drill hydraulic system)

HYDRAULICS/ELECTRICS



Woodings hydraulic and electrical systems are integrated systems that are completely designed, engineered and manufactured by Rexroth to our specifications. To minimize start-up time and the need for field testing, all Woodings systems are tested and inspected as one unit, prior to shipping.

Designs are available for:

- Combination guns and drills
- Cast house floor equipment
- Individual equipment

Hydraulic Equipment:

- Hydraulic power units
- Hydraulic control consoles
- Hydraulic large volume reservoir
- Side filtration system
- Heaters
- Hydraulic pumps
- Hydraulic control consoles

Electrical System:

- PLC control and, if required, automation systems
- All systems monitored and screen displayed
- Automatic operation available
- Electrical control console
- Screen display same as HPU
- Radio controls available





Bringing the most reliable,
most innovative hot metal
equipment to applications
around the globe.

Woodings' 100+ years of involvement in all aspects of the hot metal process has provided us with a unique and profound understanding of the industry's mechanical and environmental requirements. The result: new and improved products that consistently meet the ever-changing needs of the world's iron and steelmakers.

If you need it, we can make it.



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