

Coil Grinding & Polishing



A DIVISION OF

MAGNUM
INTEGRATED TECHNOLOGIES INC.



High Production Grinding

For over 100 years Hill Acme™ grinding and polishing lines have been recognized around the world for their dependability, rigidity and trouble-free performance.

Hill Acme™ abrasive belt coil grinding and polishing systems are designed for corrective grinding and/or finishing applications, grinding "dry," or with a flood of coolant on ferrous or non-ferrous alloys.

Standard or custom-designed systems, with single or multiple head, one or two-sided simultaneous operation, and reversing or non-reversing line direction can be provided. Ancillary equipment such as grinding coolant filtration, coolant recovery devices, mist collection systems, sound abatement units, etc., can also be furnished per application.

For more than 60 years, massive construction, simple operation, low maintenance, and equipment incorporating the latest technological advances have created a worldwide enthusiastic acceptance of Hill Acme™ equipment.

Typical Applications

- Corrective grinding of ferrous and non-ferrous hot-rolled strip prior to cold rolling
- Polishing stainless steel to No.3 and No.4 Commercial Finishes
- Producing "hairline" finishes
- Surface preparation prior to bonding of bi-metals
- Cross-sectional shape correction
- Scale and surface oxide removal

General Specifications

- Width Capacities: 18" thru 84" (457 thru 2134 mm)
- Spindle Drive: 20 thru 300 H.P. (15 thru 225 kW)
- Line Tension: Up to 144,000 lbs. (65, 318 kg)



Optional Features

Electrical Controls

The operator computer touch screen or pushbutton station contains a pneumatic regulator and gauge which governs abrasive belt tension, the main drive motor percent-of-load meter, as well as pushbuttons and pilot lights for the operation of the machine.

All electrics conform to J.I.C. General Purpose Standards, with NEMA 12 enclosures. Machines come completely wired to the electrical control panel. When controls are provided by others, all components are wired to a terminal box.

Options

- Motorized billy roll parallel adjustment
- Motorized billy roll lateral offset
- Polisher-mounted hairline-finish attachment
- D.C. main drive motors
- Left-to-right or right-to-left strip travel

Solid Table Type Sheet-Polishing Machines

Solid Table Type Grinding and Polishing Machines are designed for accurate sizing, tapering and contouring of ferrous and non-ferrous metals in sheet or plate form.

The material is held against the table with full coverage vacuum chucks while passing back and forth under the polishing head.

Available with optional oscillating contact roll to increase stock removal and shorten grit lines, resulting in a finer finish.

Reciprocating Table Type Sheet- Polishing Machines

Hill Acme™ Reciprocating Table Type Grinding and Polishing Machines are designed for producing high quality finishes on many kinds of ferrous and non-ferrous metals in flat (sheet) form.

They are also designed to handle thinner sheets. The work is clamped to a rider sheet and passes back and forth under the polishing head. The billy roll drops out on the reverse stroke to prevent marking or tapering of the sheet.



Polishing Machines

Pinch Roll Type Sheet-Polishing Machines

Hill Acme™ Pinch Roll Type Grinding and Polishing Machines are designed for production line or stand-alone processing of ferrous and non-ferrous metals in flat form. Two sets of vertically adjustable pinch rolls mounted on the entry and exit side, pass the sheet under the polishing head, either back and forth for stand-alone applications or through for production-line applications. Available with optional oscillating contact roll, brushing and buffing attachments.



Precise System Control

Positive Belt Centering

The highly-efficient Hill Acme™ Pneumatic Belt-Centering System assures positive belt tracking, regardless of dust, coolant, or similar hazards. The system is easily adjusted from front to center of the head to compensate for varying widths of belt and material.

The centering system consists of an air-sensing unit and a power unit. As the belt runs over the rolls, it passes between the air jet tube and the two brass paddles. When properly centered, the belt interrupts the air jet to the inner paddle but does not disturb the air hitting the outer paddle. The outer paddle is connected to a normally closed micro-switch, which is held open. If the belt walks to the outside, the air jet is interrupted and the open switch closes. When this happens, one of the

pneumatic solenoid valves is energized, directing compressed air to actuate the roll-centering cylinder. This cylinder pivots the idler roll around the front support shaft, and the belt tracks back to the center. Then, when the belt is centered again, the Normally Closed switch opens, the valve de-energizes, and a spring mechanism returns the roll and the air cylinder to neutral.



Constant Belt Tension

All Hill Acme™ Grinding Machines maintain constant belt tension automatically so that the operator does not have to continuously adjust it. When a belt is in place, the operator pushes a button that energizes a solenoid valve, and air pressure is exerted on the rod end of the cylinder. Pinned to the piston rod, a horizontal rack rotates a pinion which is on a common shaft with a second pinion that meshes with a vertical rack.

These assemblies are placed at both ends of the idler roll to assure constant, even tension on the belt, regardless of belt stretching. The cylinder moves until belt tension overcomes the force of the air pressure action on the cylinder. As the belt stretches, air pressure, which is applied constantly to the cylinder during operation, automatically moves the piston to maintain even belt tension.



Contact Roll Dresser Assembly

With this pneumatically-powered attachment, the operator can rapidly dress the rubber-covered contact roll in the machine at operating speed to assure an accurately-dressed roll that is also in proper balance. Downtime is minimized since typical dressing time is less than 10 minutes.

The unit consists of a flame-hardened, cast guide rail that is permanently mounted and aligned with the contact roll/spindle centerline. The dresser unit itself is composed of an air tool, tool holder, and a 4"-diameter rubber-covered roll that uses standard abrasive.



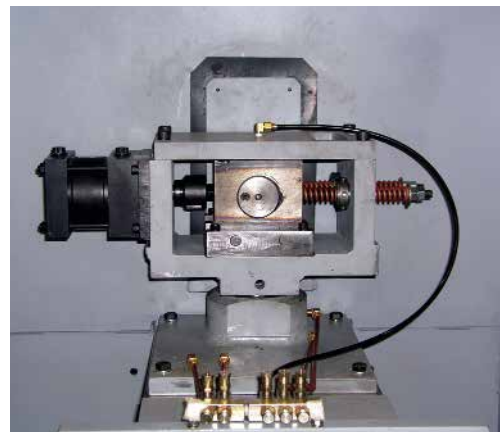
Doubleside Operation Doubles Protection

Hill Acme™ has built more wide abrasive belt doubleside coil grinders than any other manufacturer. These innovative machines permit simultaneous grinding of both sides of the strip in a single pass, more than doubling production capabilities of single-side grinding lines.

Available in all width capacities, doubleside grinders can be equipped for "wet" or "dry" grinding. Also, in multiple-head lines, grinding the alternate sides of the strip from head to head enhances the ability of the grinder to improve shape correction. Dramatic line space savings are realized by joining top and bottom heads with massive connection brackets. This exclusive Hill Acme™ design promotes ease of installation and ensures maximum rigidity without compromising accessibility for maintenance.

Custom-Designed Machines

Hill Acme™ Grinders can be furnished in single or multiple-head configuration for top and/or bottomside operation. Common base machines provide the ultimate in line space savings without affecting grinding performance.



Abrasive Belt Head

Hill Acme™ coil grinding systems use endless coated abrasive belts which are driven over a two-roll vertical head featuring an idler roll and contact roll. Belts are 126" to 150" (3200 to 3810 mm) depending on the width of the machine.

Main Drive Spindle

The precision spindle for the solid-steel rubber-covered contact roll is a dynamically-balanced, hardened, ground steel shaft that runs in a constant oil bath on heavy-duty, high-speed bearings. Designed and built by Hill Acme™, the entire unit is mounted in a sturdy cast housing.

Both the inside diameter of the drive spindle nose and the outside diameter of the mating end of the contact roll are tapered. This quill design speeds removal of the contact roll when replacement is necessary. A draw bar running through the entire length of the main spindle locks the contact roll to the spindle. A pneumatic brake on the spindle quickly stops the contact roll and the idler roll when belt changes are required.

Contact Roll

Solid steel rubber-covered contact roll construction ensures minimum deflection under heavy grinding loads. Because the roll core is solid, precise dynamic balancing is possible even after many coverings.

Idler Roll

To insure absolute minimum maintenance and vibration free operation, the dynamically-balanced idler roll features cartridge type bearings rotating on a stationary shaft. Large vertical posts support the idler roll at each end.

Contact Roll Bearing Support

On all machines over 30" wide, the front or operator's end of the contact roll is supported by a hinged bearing support, fastened by a single "T" bolt and pivoted for fast, positive operation. In closed position, this support forms a bridge, linking the machine base and abrasive belt head into a single, chatter-free, vibrationless unit. This support pivots down and out of the way when changing belts.

Billy Roll

The hydraulically-actuated billy roll is located opposite the contact roll. By overcoming strip tension created by the terminal equipment, the billy roll presents the surface of the strip to the abrasive belt for grinding. Limited in its vertical travel by mechanical stop boxes, the billy roll provides very accurate control of grinding pressure. Because billy rolls are actuated

hydraulically, the strip can be immediately disengaged from the abrasive belts if need be.

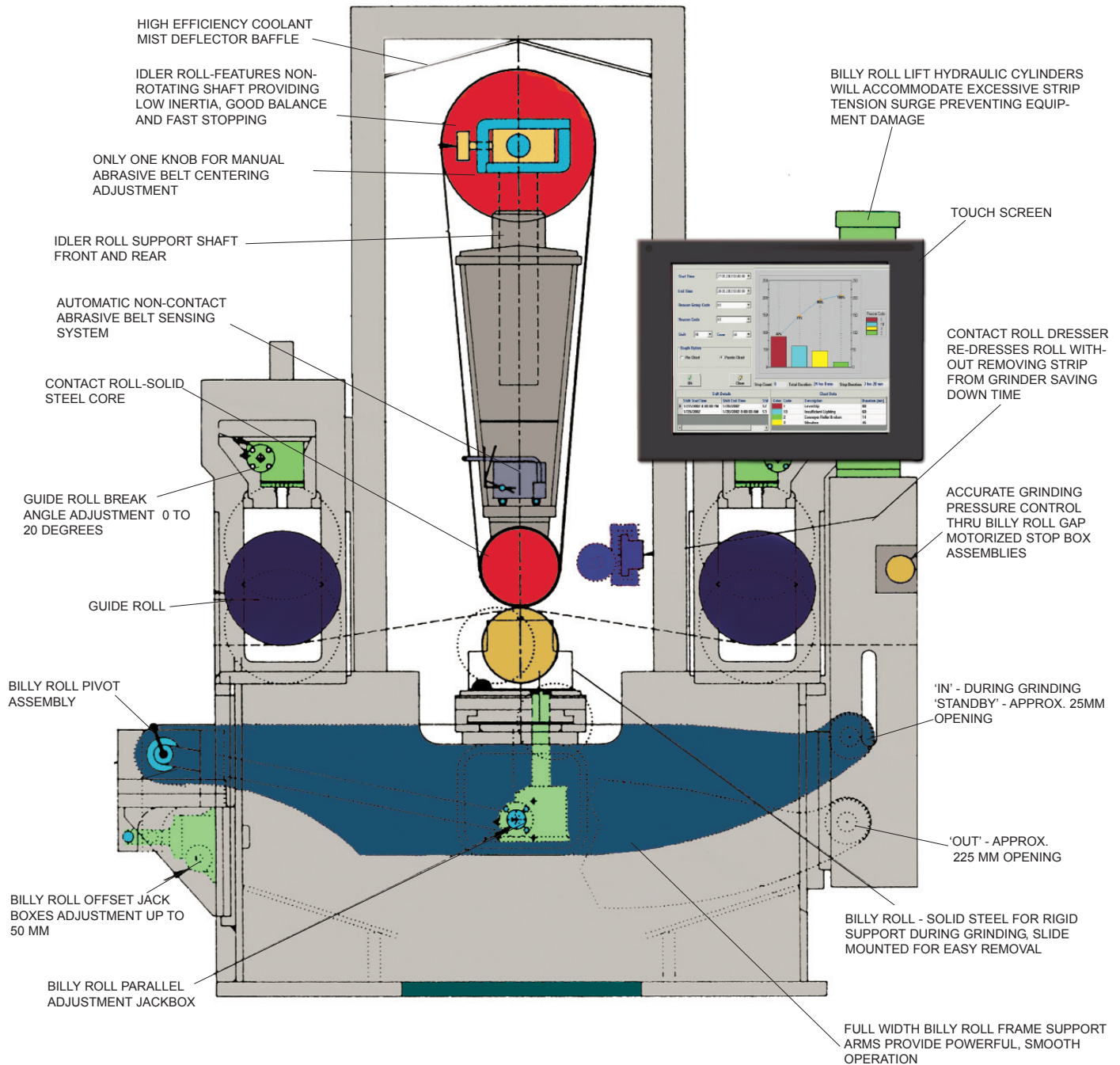
The solid-steel billy roll is mounted on precision anti-friction bearings and can be adjusted not only vertically, but horizontally and laterally as well.

Guide Rolls

Large-diameter, rubber-covered guide rolls are installed on each side of the grinding head. Strip passes under these rolls and over the billy roll in the center. With this arrangement, the guide rolls break the strip over the billy roll to maintain constant pressure the entire width of the strip.

This angle of break also creates a flattening effect on the strip as it passes over the billy roll at the point of contact with the abrasive belt. Guide rolls are adjustable vertically to change the break angle from 0 to 20 degrees.





ABRASIVE BELT COIL GRINDER



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