

# Winslow® HR

Quality Grinding For Optimum Performance



**Winslow**  
**Engineering Inc.**

# Brighten Your Profit Picture With The Model HR



## Increased Productivity

Productivity increases result from higher efficiency at the drill point. The selection of the correct point geometry combined with precision grinding methods insures a quality point to meet today's manufacturing demands. Together these benefits mean faster machining, reduced machine idle time for tool changes and a reduction of machining operations no longer required.

## Greater Precision

The automatic-cycle Model HR can grind quality drill points—drill after drill. The precision colleting and guide bushing method combined with the generative cams and rotating workhead is the most accurate method of drill grinding. Set the machine for the same

number of grind cycles and link all of these features to a constant automatic infeed—results in consistent, high-finish, precise drill points.

## Simple, Easy Operation

Operation of the Model HR is simplicity itself. Anyone can operate the grinder with an absolute minimum of instruction. It's as simple as setting the dials and pushing the buttons. No need to change generative cams for each size or type of drill. You get a drill with accurately duplicated point geometry and assured concentricity.

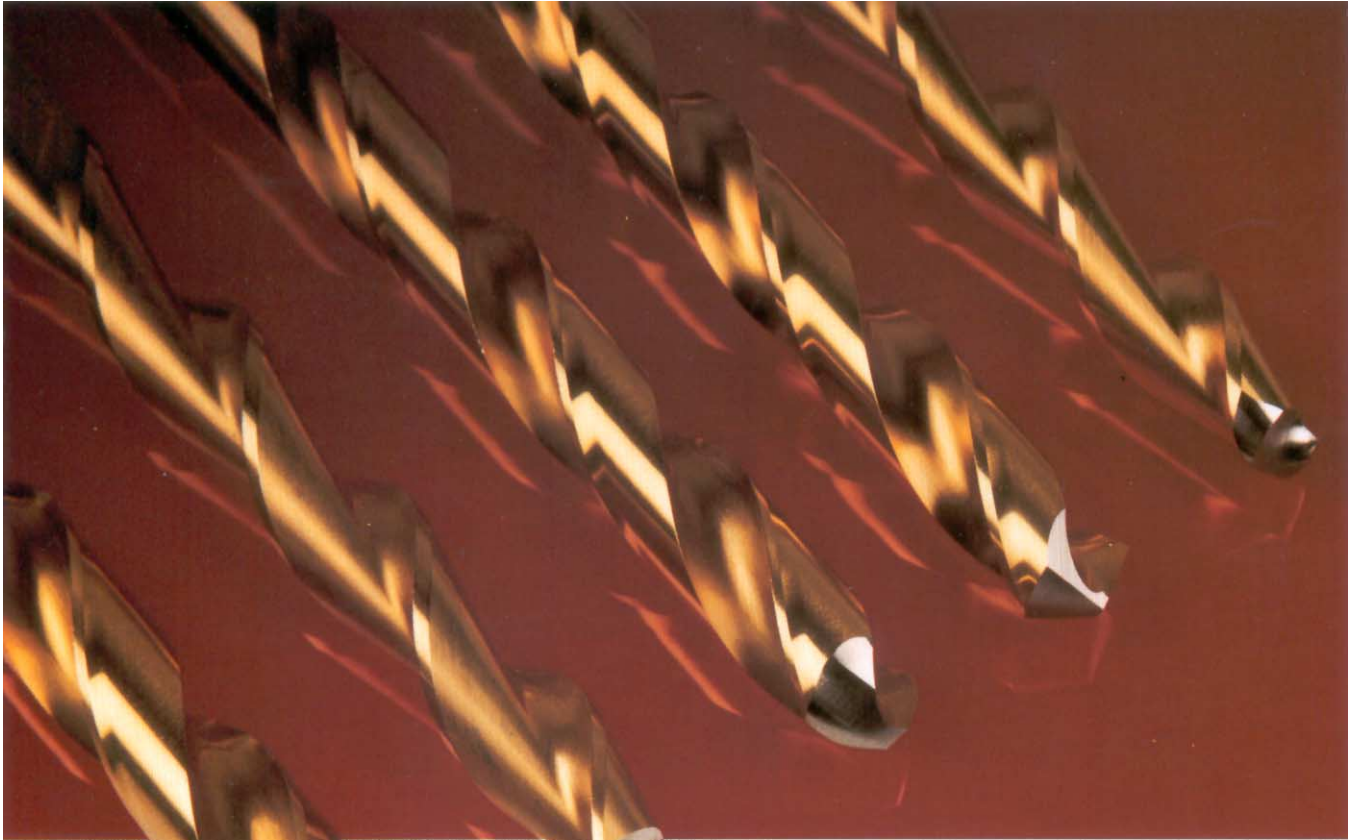
## Neat, Convenient, Totally Self-Enclosed

The Model HR is a completely self-contained, compact unit, totally enclosed for clean, neat appearance and operation. Electrics, pneumatics, coolant systems and storage space for dresser cams and drills holders are all included in the modern-styled cabinet.

## Versatility - Grinds Most Points In A Single Operation

BICKFORD POINT, Racon®, Helical and Conventional Points - the Model HR grinds them all, accurately, consistently in one operation. Grinds drills from 1/16" (1.55mm) through 1-1/2" (38.0mm) handles point angles from 60° through 160°. Split points are also available as an option: ground in two operations.

# Grinds Any Point Fast



## Conventional Point

Used where precision or high production work is not required.

## Helical

S-Shaped crown chisel. Excellent centering abilities. Produces close relationship between drill and hole size. Feeds faster and last longer.

## Split-Point

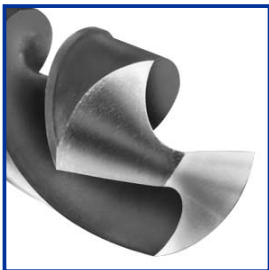
Flat secondary, usually 30° to 50°, which meets at the center of chisel point. Good centering and chip removal on deep hole applications. Requires two operations.

## Racon®

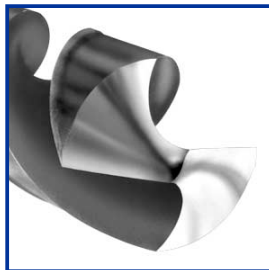
Curved radial lip point. Reduces burrs, dissipates heat, delivers longer life, feed rates.

## BICKFORD POINT

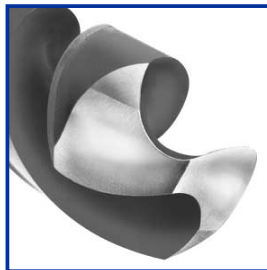
Combines all the advantages of the Helical and Racon points. The modern point for modern machining for most materials.



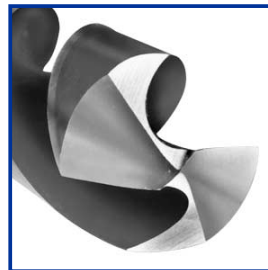
**Conventional -**  
Primary grind for the production of split points.



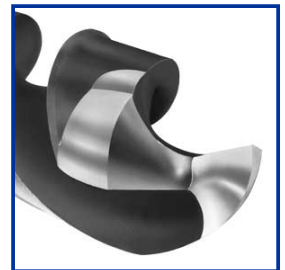
**Helical - Exclusive Winslow®-Helical Grind** features S-shaped crown chisel. Excellent self-centering. Reduces thrust, increases feed-rates, extends drill life, improves hole quality.



**Racon - Exclusive Winslow®-Racon Point** features full radiused cutting lip. Greatly extends drill life... minimizes burrs at breakthrough.



**Split/Notched -**  
Creates secondary cutting edge in chisel. Helps drill centering, chip and coolant flow. Advantageous where drill feed cannot be controlled.



**Bickford - Exclusive Winslow-Bickford Point®** is self-centering, greatly increases drill life, minimizes burrs at breakthrough, produces excellent hole quality.



# Simple Set-Up — Time-saving Operation

The Model HR makes drill point grinding a simple, time-saving operation that anyone can do. The simultaneous three-axis motion at the drill point assures precise generative grinding, eliminating the variables so common in manual grindings.

## Here Is All There Is To It

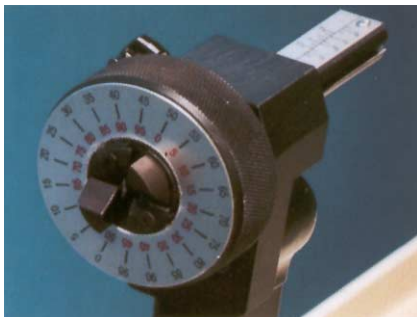
The operator checks the reference charts mounted on the HR for the proper settings of the particular size of drill and point configuration required. Then he sets the controls.

## E300 Operator Interface



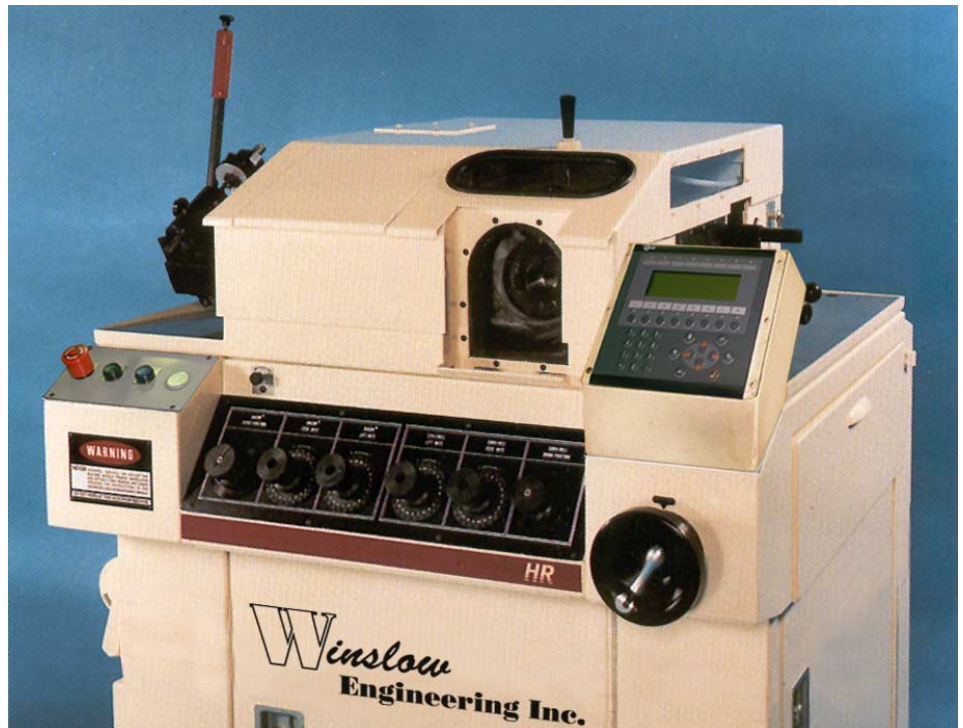
The machine is equipped with a E300 operator interface touch

screen. The screen controls the following functions point style selection, grinding wheel on/off, coolant on/off, workhead on/off, manual auto mode, and the number of grinding cycles. A control knob located on the rear side of the workhead angle drive sets the selection for either Helical or Conventional points.



## Drilltiming

The drill loading device provides correct axial and radial timing of the drill. The operator measures drill web thickness, sets timer dial to measurement, inserts the drill into the holder (on the loader), pushes the handle and establishes the



correct drill timing against two positive stops.

## Grind selector knobs

There are six selector knobs. Three control Conventional/Helical point generation, three control Racon point generation. One knob adjusts the workhead height. The other two select the rise and infeed rates of the workhead.

## Pushbuttons

There are three pushbuttons located on the front of the machine. Emergency stop stops all machine functions, control on turns on power to the control, cycle start to start a grinding cycle.

## Point Angle Adjustment

To change the included angle ground on the drill, simply unlock the workhead and tilt it to the desired angle. This is calibrated on a point angle noteplate mounted on the workhead angle drive. This allows adjustment of drill point angles from 90° through 140°. Optional equipment is available to accommodate 60° through 90° and 140° to 160° point angles.

After the setup has been made for a particular drill, the operator simply inserts the drill holder into the workhead and pushes the start button. The grinding cycle stops automatically when completed. The operator just unloads and loads another drill, repeating the cycle until all drills of that type have been ground. Setup time can vary from a few seconds to approximately five minutes depending on the extent of changes required from the previous setup.

Production rates of 90 to 120 drills per hour can be achieved when regrinding 3/8" diameter drills. Production rates will vary with drill size, stock removal, point geometry and finish desired.

The air-operated, in-feed control assures a constant stock removal rate for maximum production efficiency.

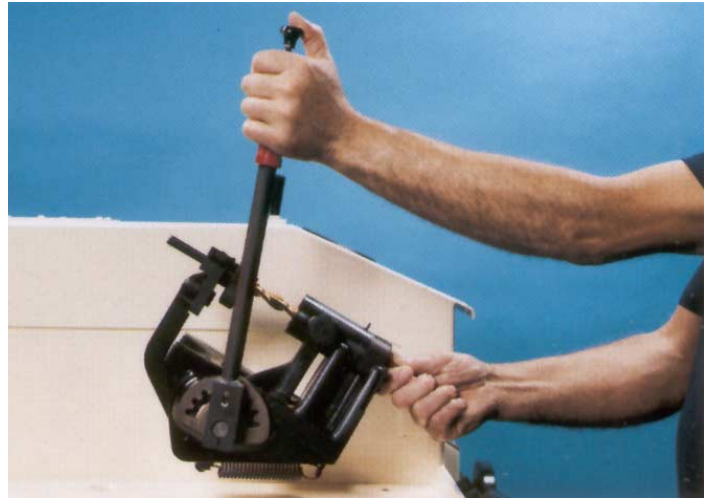
The HR is specifically designed to provide rapid setup changes.

# Push Button-Automatic Cycle Drill Point Grinding

Here's All There Is To It



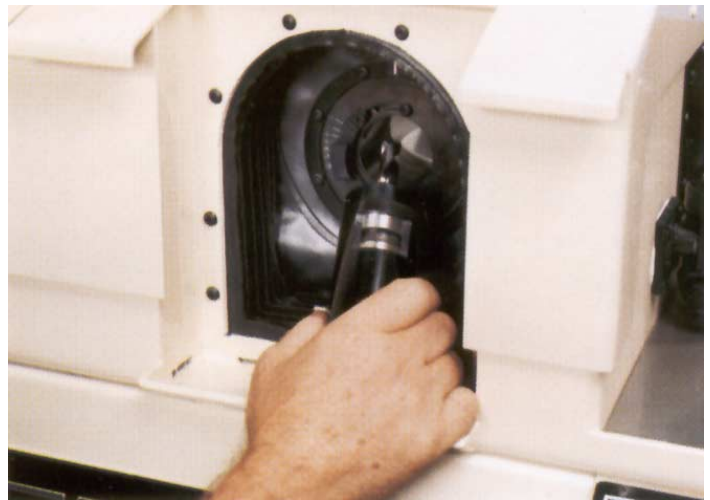
1. Determine correct settings from chart on top of cabinet.



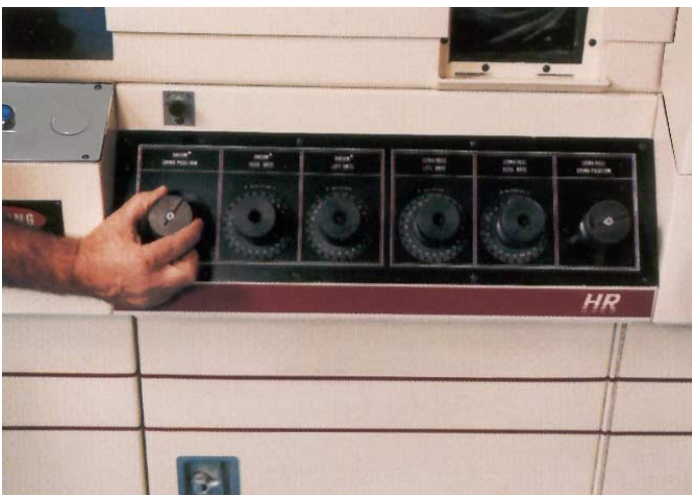
4. Load and time the drill.



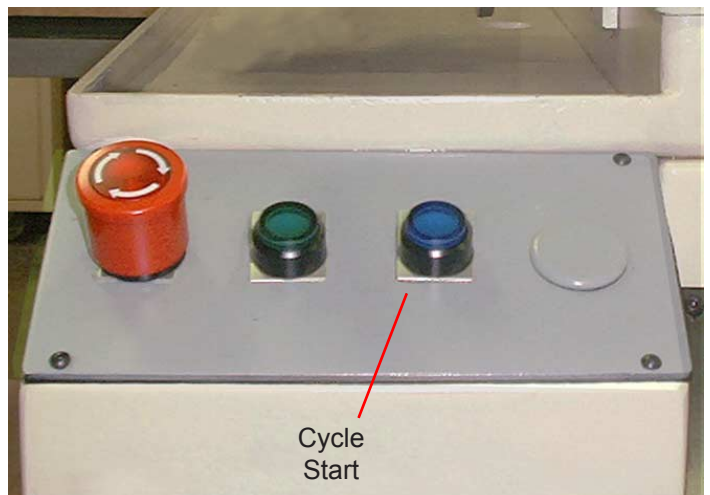
2. Select the proper geometry from the E300 touch screen.



5. Insert drill holder into workhead.



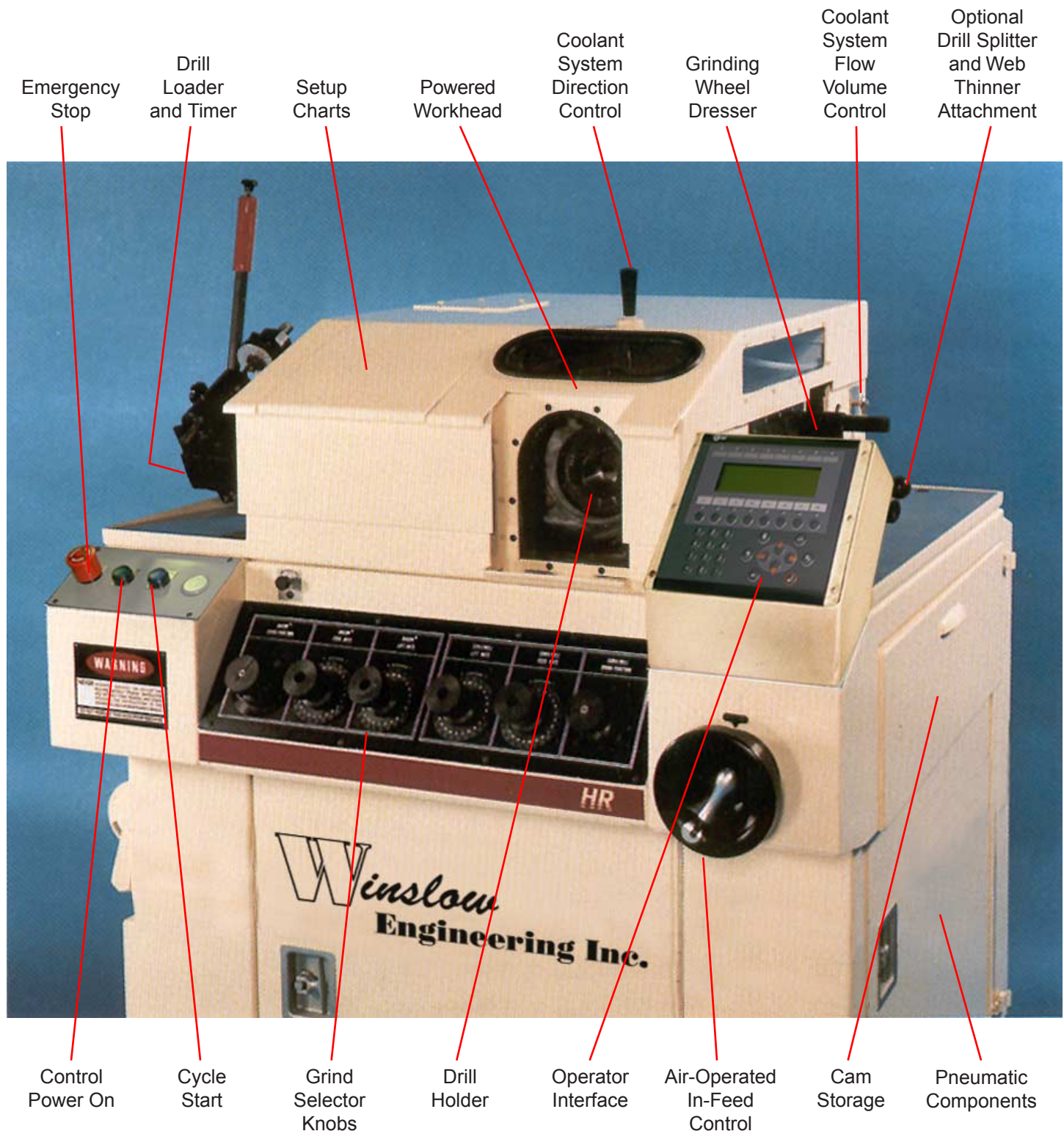
3. Set Grind Selector knobs.



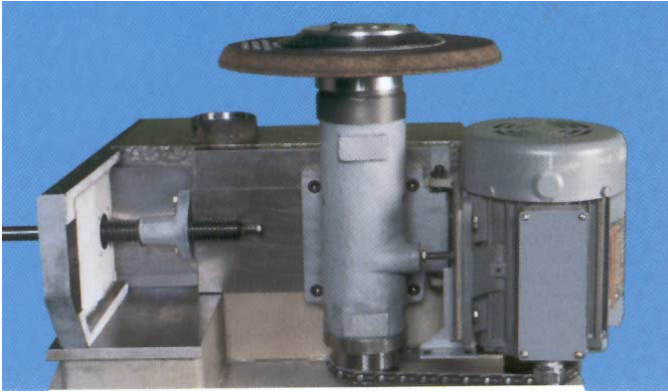
6. Push cycle start button. Grinder stops automatically when grinding is completed. Repeat steps 4 through 6 until all drills of that size are ground.



# Quality Construction For Unmatched Performance



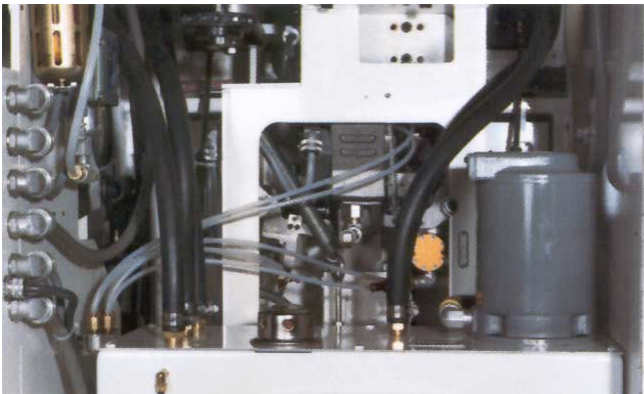
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## Heavy-Duty Spindle Drive Assembly

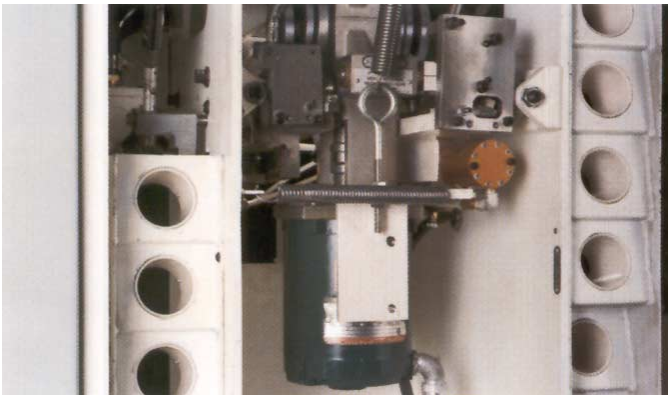
The spindle drive assembly is designed for accurate positioning and rigid operation through years of dependable service. In keeping with the overall machine tool design concept, the frame is a heavy, steel weldment and has a 1/4"-thick shroud surrounding the grinding wheel.

The grinding wheel mounts on a ball-bearing spindle driven by a 1 HP motor. The entire wheel drive assembly slides along cast iron dovetail ways. Accurately hand-scraped ways and a ground lead screw assure precise location of the wheel in the grinding position following a wheel dressing operation.



## Pressurized Coolant System

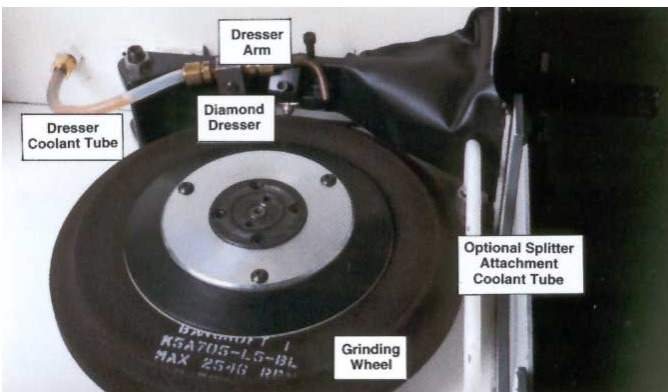
A large pump and 10 gallon reservoir provides constant, full-flow cooling for maximum stock removal and high finish. Coolant is piped to the dresser, workhead or optional splitter attachment with flow controls for each point. Workhead coolant flow direction and volume is adjustable from the outside of the HR while in operation. View ports permit coolant-free viewing during operation.



## Simultaneous Three-Axis Motion At The Drill Point Means Total Accuracy

The cam-actuated Model HR accurately and consistently duplicates the point geometry, drill after drill. The precision cams produce a generative motion in synchronization with the rotary workhead. Each cam motion is easily setup with the controls on the operator's console. No need to change generative cams for different drill configurations.

Both flutes of the drill are ground sequentially during the cycle assuring equal lip height, point angle, and concentricity. Drills maintain a balanced chip load for faster cooler cutting and longer life

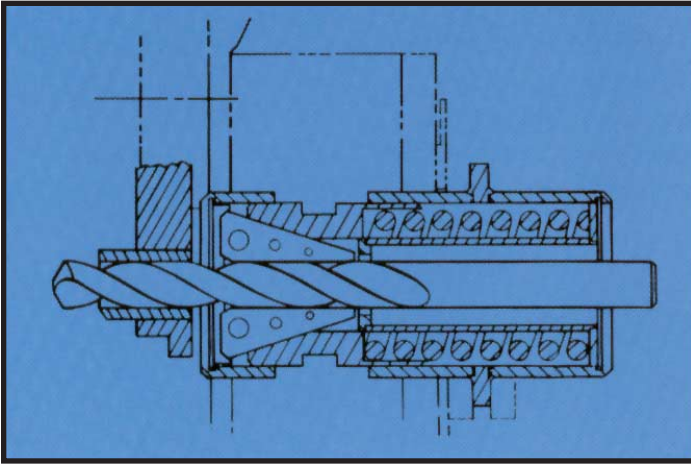


## Simple, Manual-control Wheel Dresser

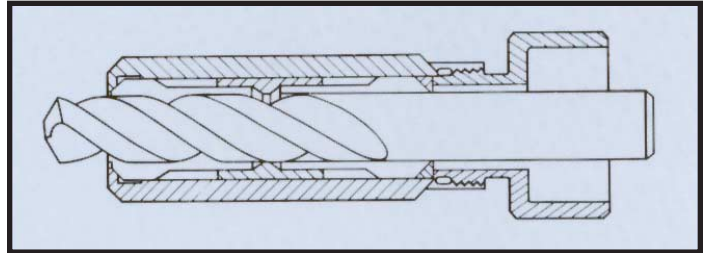
Wheel dressing is a simple operation. Built-in wheel dresser is used to manually dress the grinding wheel. Dresser arm follows a cam, accurately duplicating the desired contour onto the wheel. Both plain and geometric curves can be transferred onto the wheel. Dresser arm is hydraulically counter-balanced to provide smooth, easy wheel dressing. Dresser cams are changed for various point styles and alternate cams are stored in the convenient cabinet.



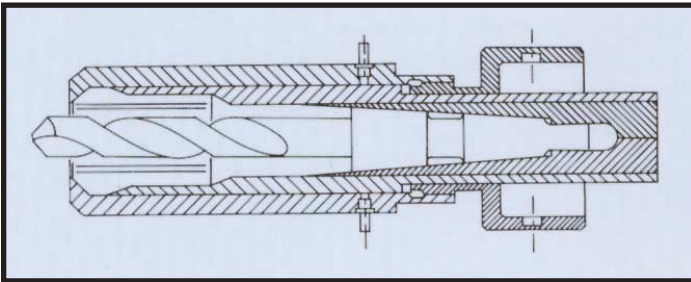
# Assured Accuracy And Concentricity With Precision Holders And Guide Bushings



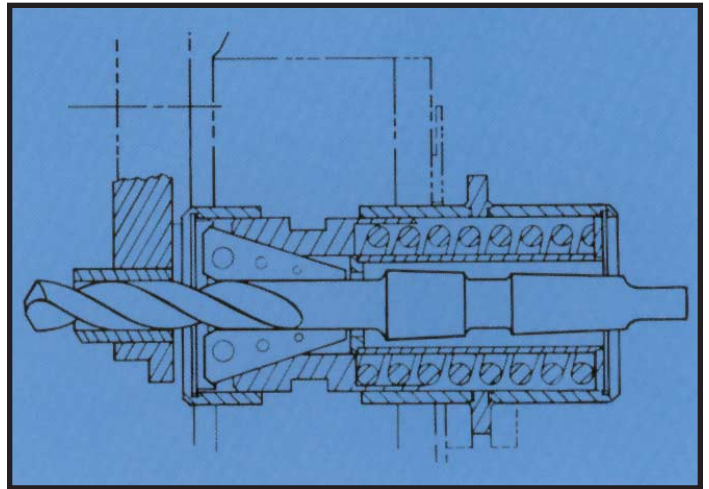
Drills with diameters from 1/16" to 3/4"



Drills with diameters from 49/64" to 1"



Drills with #2 and #3 Morse Taper up to 1" diameter  
(Morse Taper holders and closure sleeves are optional)



Drills with Morse taper shanks, 1/16" to 3/4"

## Drill Holders

Two styles of drill holders are used with Model HR. Drills with diameters from 1/16" to 3/4" (1.55 to 19.0mm) are securely held in rubber flex collet holders. There are nine drill holders covering the entire range.

Drills with diameters from 49/64" to 1" (19.05 to 25.4 mm) are mounted in holders that grip the drill with two expandable collets. A hand-tightened collar actuates the collets.



Drills with Morse #1 or #2 taper shanks are held in standard flexible grip holders that contact the drill in the shank area ahead of the taper. Morse taper holders are available for short drills with #2 and #3 Morse taper shanks.

Drill holders are stored in the Model HR cabinet.

## Indexable Bushing Plates

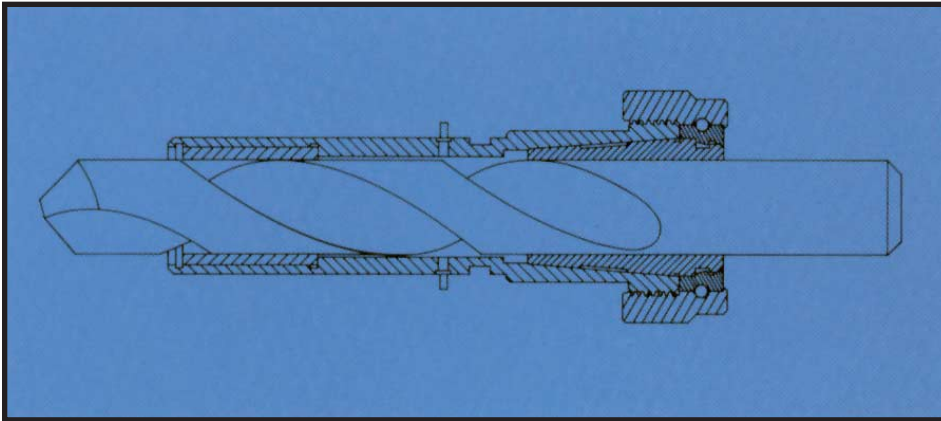
Precision guide bushings provide positive support for the drill, at the very end. This feature means assured concentricity.

Six quick-change indexable bushing plates handle all letter, numbered, or fractional-size drills within the 1/16" to 3/4" range. No index plate is required for drill diameters from 49/64" to 1-1/2". Seven metric plates are also available for the range of 1.55 through 19.0mm.

Index plates can be easily and quickly changed by rotating the locking knob one-sixth turn, sliding the plate off its mounting taper, mounting the new plate, and securing the locking knob.



# Optional Equipment



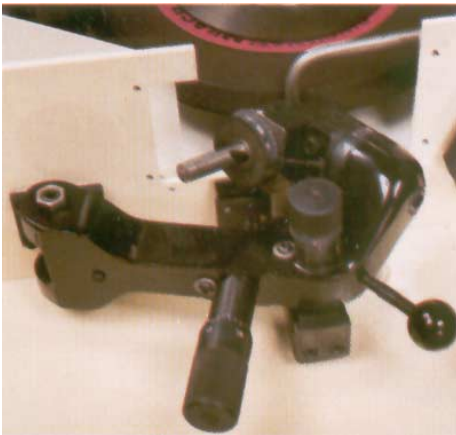
Drills with Diameters from 1" to 1-1/2 "

Drills with diameters from 1.00" to 1.50" (25.5 to 38.0mm) are securely held in a holder that grips the drill with an expandable collet and supports the drill in a bushing. A hand-tightened collar actuates the collet.

Morse taper adapters are available for short length drills with #3 and #4 Morse taper shanks.

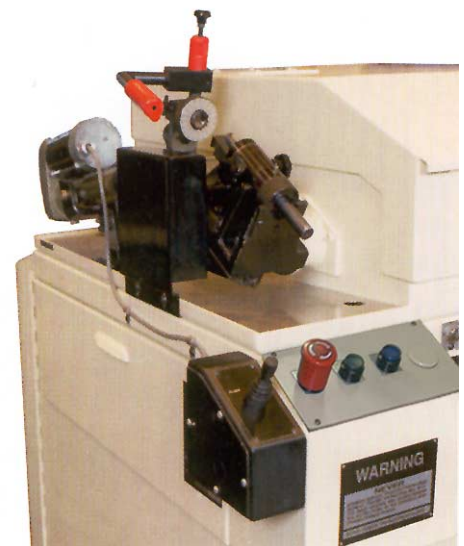
## Drill Loader Automation

Electronic joystick operation reduces operator manual motions when loading and timing drills. Replaces manual drill loader shown on page 5.



## Drill Splitter And Web Thinner Attachment

This convenient attachment is used for grinding the secondary cutting edge on split point drills or crankshaft drills. The splitter permits web thinning (notching) of thick webs. Adjustments are provided for down feed and infeed movements. Drills from 1/16" (1.55mm) through 1/2" (12.5mm) can be split; drills through 1" (25.5mm) can be web thinned.



## Other Options

Additional equipment available for the Model HR includes: 60° to 90° and 140° to 160° point angles, mist collection system, left-handed drills, step drills, metric bushings, 3- and 4-flute drills, holders for step shank drills, shank end axial locator, additional drill holders, silicon carbide, diamond and borazon grinding wheels.

Specifications		Metrics
<b>Drill Capacity</b>		
Conventional Point	1/16" through 1-1/2" dia.	1.55mm through 38.0mm
Helical Point	1/16" through 1-1/2" dia.	1.55mm through 38.0mm
Racon Point	1/8" through 1" dia.	3.2mm through 25.4mm
Bickford Point	1/8" through 1" dia.	3.2mm through 25.4mm
Split/Notch Point	1/16" through 1" dia.	1.55mm through 25.4mm
<b>Grinding Wheel Size</b>		
	12" x 3/4" x 5"	305mm x 19mm x 127mm
	horizontally mounted for 12" x 1" x 5"	305mm x 25.4mm x 127mm
<b>Motor Data</b>		
Spindle	1-HP; 1800 RPM; all standard voltages, 50 or 60-Hz; 3-phase; TEFC, frame 143T	.75 kW
Workhead	1/3-HP; 1800 RPM; all standard voltages, 50 or 60-Hz; 3-phase; TEFC, frame 56C	.25 kW
Coolant	1/4-HP; 3450 RPM; all standard voltages, 50 or 60-Hz; 3-phase; TEFC, frame H426	.20 kW
<b>General Information</b>		
All electrics to NFPA-79 standards		
Weight: 2,000 pounds approximate		900 kg
Floor space 46" x 44" x 62" high		1168mm x 1118mm x 1575mm

# Winslow Engineering... for Every Drill Grinding Need

## **Model HC Drill Point Grinder**

Extremely versatile, semi-automatic machine from 1/16" (1.55mm) to 1-1/2" (38.0mm) at a rate up to 100 per hour. Handles right-hand and left-hand drills, point angles from 60° to 160°. Capable of grinding conventional, Winslow-Helical, Racon®, Bickford Point®, four-facet and split points.



## **Model 520 Drill Point Splitter**

Automatic wheel dressing and infeed cycle permits accurate splitting at a rate up to 350 per hour. Splits drills from 3/32" (2.4mm) to 1/2" (12.5mm); web thins drills from 5/16" (8.0mm) to 3/4" (19.0mm). Meets or exceeds all NAS 907 specifications.



## **Model 525 Drill Point Splitter**

Automatic chucking and indexing of the drill permits precision splitting at up to a rate up to 400 per hour. Splits drills from 1/16" (1.55mm) to 1" (25.5mm); web thins drills from 1/8" (3.2mm) to 1" (25.5mm). Meets or exceeds all NAS 907 specifications.



## **Model 100C & 1000CC Drill Point Grinder**

High production machines for grinding with high accuracy, including fully automatic cycle and wheel dresser. The 100C grinds drills from 1/16" (1.55 mm) to 1-1/2" (38.0mm), point angles from 90° to 140° up to 500 units per hour. Point styles include conventional, Winslow-Helical, Racon®, Bickford Point®, core drills, step drills, taps and reamers. The hopper-feed 1000CC grinds jobber drills from 3/32" (2.4mm) to 1/2" (13.0mm), up to 600 units per hour. Point styles include conventional, Winslow-Helical and wide-web helical points. For drill manufacturers only.



## **Model FR200 Form Relief Grinder**

High versatility for precision form relief grinding, OD and ID grinding and surface grinding of most cutting tools. Tool types include step drills, subland drills, taps, form tools, trepanning tools, reamers, center drills, boring tools, multi-flute cutters, punch inserts, porting tools and countersinks. Accommodates tools with 1 through 18 flutes.



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