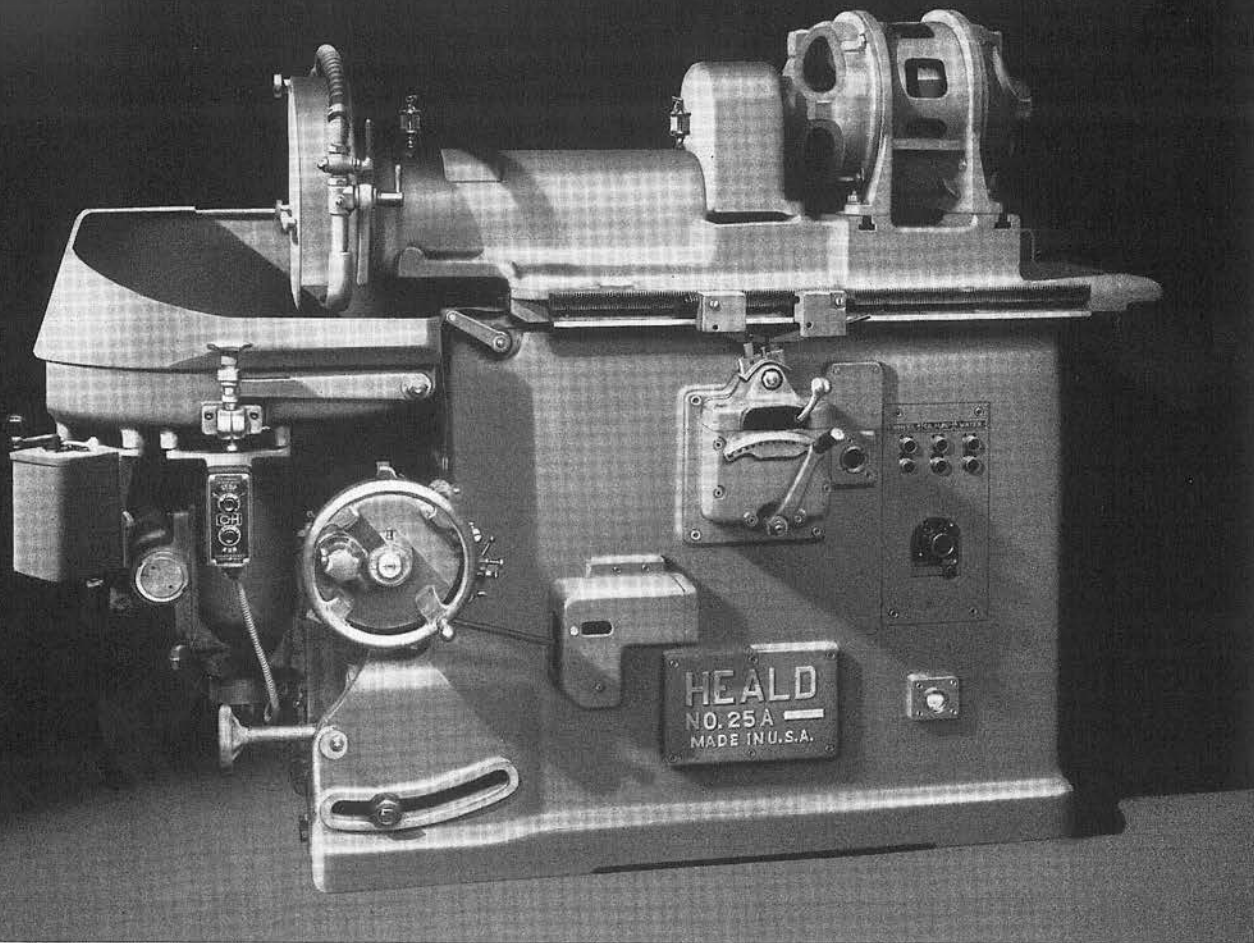


*The HEALD Style No. 25-A*  
**ROTARY SURFACE GRINDING MACHINE**

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*Front view of No. 25A Rotary Surface Grinding Machine showing vertical rotary chuck mounting and horizontal reciprocating wheel slide. Note convenience of controls, also direct, positive motor drive to wheel spindle. Automatic vertical feed to the chuck shown on this machine is furnished as extra equipment.*

## **STYLE NO. 25A**

# *Rotary Surface Grinding Machine*

**T**HE Style No. 25A Rotary Surface Grinding Machine with its power to remove stock, ability to give finish, its range and capacity, is an ideal tool for parts of all kinds that require surface grinding.

These machines can be furnished with 16", 24" or 30" magnetic chucks, holding work of those sizes, and in all cases there is a small additional swing inside of the pan which can be used to good advantage on certain shapes of work.

Heald Rotaries grind with the periphery

of the wheel giving a superior concentric finish which is much desired by many manufacturers.

These machines are fully motor equipped including an adjustable speed motor for driving the chuck, a back shaft motor for driving the hydraulic pump, and a third motor on the wheel slide for driving the grinding wheel spindle.

The wheel slide is reciprocated hydraulically giving unlimited speeds between the maximum and minimum.

Machines with chucks in all sizes can be equipped with a micrometer diamond truing device which furnishes the operator a means of duplicating the thickness of successive parts conveniently and accurately, which is very desirable on production work.

The entire machine is arranged with anti-friction bearings for almost all revolving parts.

*The Base* of the Style No. 25A machine is a massive, extremely rigid casting, heavily ribbed and designed to eliminate all strains and vibrations, thus making it possible to remove considerable stock when roughing and obtain a good surface when finishing.

The oil reservoir is completely enclosed in the lower part of the base thus keeping the oil clean and free from foreign substances and also adding weight and rigidity to the machine.

All electrical controls, including push buttons for starting and stopping the grinding spindle, the oil pump, the water pump, and the chuck speed control are centralized in one panel on the front of the base, except the push buttons for starting and stopping the chuck which are located on the front of the chuck pan.

Also conveniently located on the front of the base are two oil indicators, one which tells at a glance the height of oil in the reservoir and the other whether ways are correctly lubricated.

Four holes in the foot of the base are provided for lifting bars over which crane hooks or slings can be placed when lifting or installing the machine.

*The Wheel Slide* which carries the grinding wheel spindle travels on flat and V ways and is of sufficient length to cover and protect the ways from grit and dirt regardless of the position of the slide.

These ways are lubricated by a pressure feed system insuring a positive and abundant supply of oil automatically controlled.

A motor mounted on the wheel slide provides a short direct drive to the wheel spindle by "V" belts, thus delivering a maximum of power to the spindle with very little loss.

The wheel spindle runs in a large heavy-duty ball bearing at the rear and an adjustable bronze bushing at the front, thus providing an extremely rigid spindle mounting which contributes materially to producing good finish.

The slide is equipped with two adjustable dogs having worm adjustment which provide quick, accurate means of setting the grinding stroke.

The slide is driven by a simple hydraulic arrangement operated by oil under constant pressure giving complete control of speeds and direction of movement at all times.

Reversal of the slide is obtained by moving a ball-handled lever in the direction movement is desired and can be accomplished at any point in the travel.

Grinding speeds are controlled by throttle and range from 0 to 20 feet per minute.

*The Chuck Bracket* is a massive casting with dovetail ways that slides on an intermediate swiveling member. This construction gives minimum overhang and maximum vertical adjustment for the chuck and bracket, and at the same time makes possible rigid clamping of the swiveling member to the base.

When desired, the chuck can be tilted by a convenient hand wheel to permit concave and convex grinding. The amount, depending on the size of the chuck and height of work, ranges from 0° to 15°.

The chuck bracket is automatically lubricated by a gravity feed system.



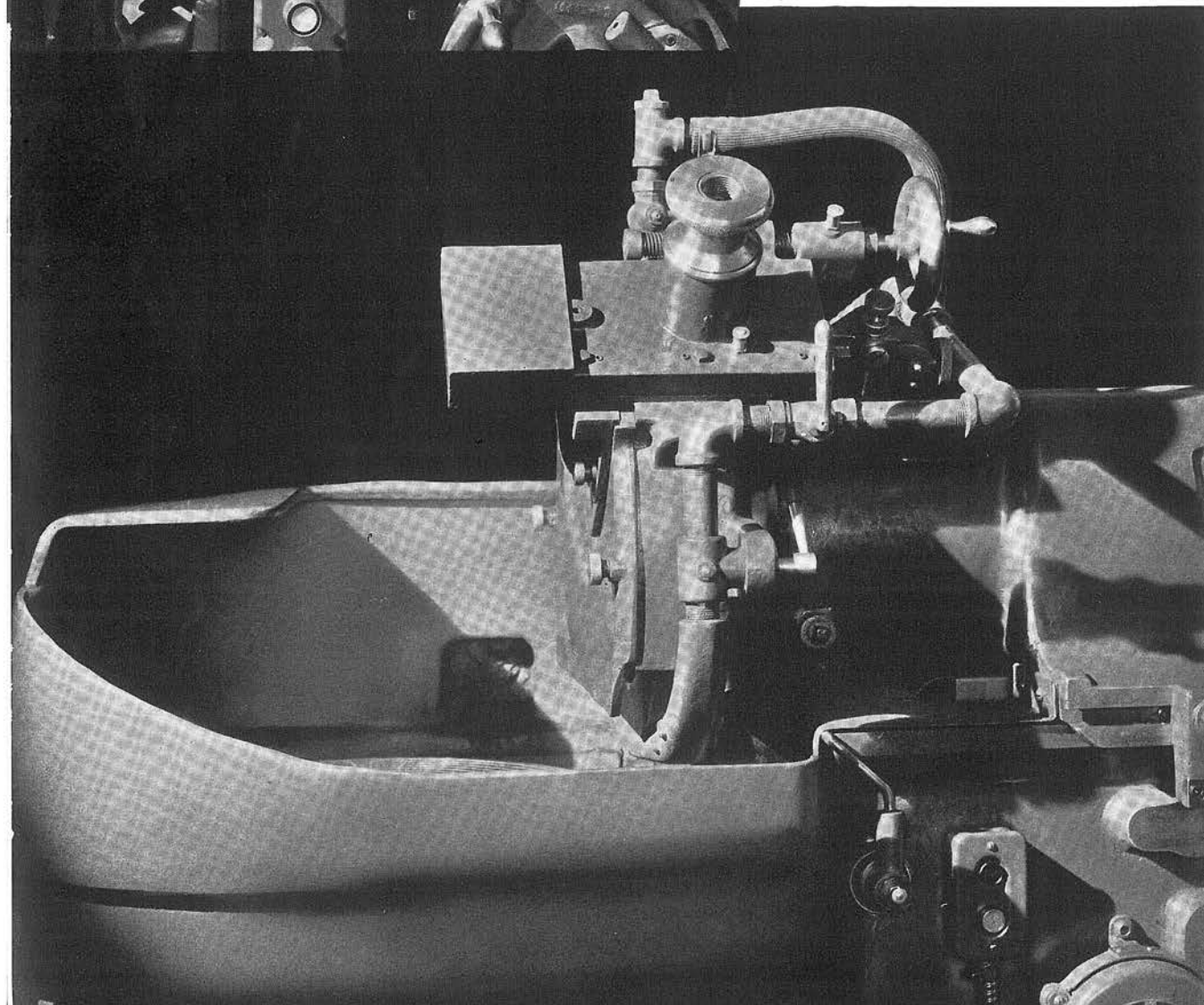
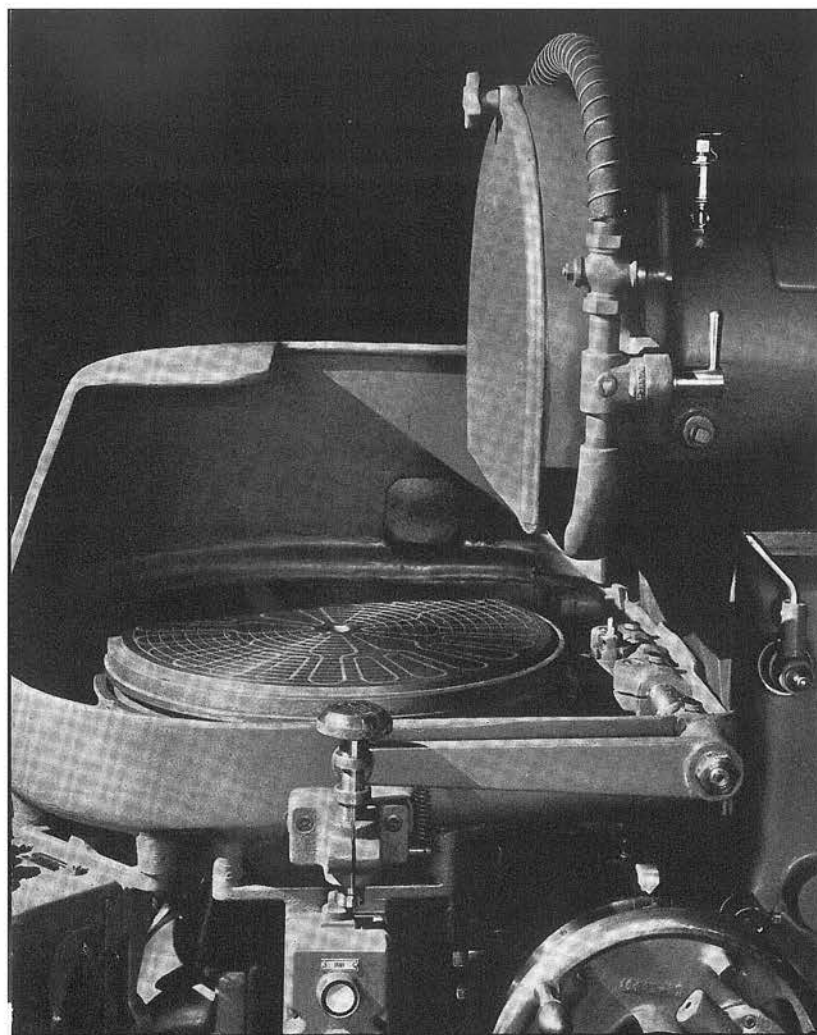
## *The Chuck Spindle* on 16'' machines

is supported by a broad flat bearing under the spindle flange and runs in a precision radial ball bearing at the top with a straight adjustable bronze bearing at the lower end. The 24''-30'' styles have a ball bearing at both ends.

In mounting the magnetic chuck onto the spindle an adapter plate is first bolted to the flange of the spindle after which the chuck is bolted to the adapter plate. With this construction there is no danger of the chuck loosening and it is easier to remove as there is no danger of its sticking.

A considerable space between the brush collector rings on the bottom of the chuck

*Left—Micrometer wheel truing device furnished on all sizes except 30'' which is equipped with a unit as shown below.*



eliminates any chance of short circuiting from one collector ring to the other.

*Feed to Chuck* is accomplished by a hand wheel and a vertical screw through a nut in the chuck bracket. The hand wheel for elevating the chuck is a hand compensating type that permits the graduations on the hand wheel dial to be kept in constant relation with the work being ground. In other words, the amount removed from the wheel because of truing and wheel wear can be compensated for by the compensating knob on the hand wheel so that when the work is to size the pointer will indicate the same graduation on the hand wheel that it did on the previous piece ground.

Each graduation on the hand wheel dial indicates .001" movement of the chuck.

Automatic vertical feed for the chuck can be supplied as extra equipment.

*A Micrometer Diamond* wheel truing device with graduated knob is furnished as standard equipment on all size machines except the 30". The diamond is located in the water pan directly in back of the chuck, while the graduated hand knob is conveniently located on the front side of the water pan. This arrangement permits the wheel to be trued by simply amplifying the grinding stroke and letting the wheel pass over the diamond without changing the relative vertical position of the chuck. The micrometer knob is graduated so a complete turn moves the diamond up or down .005".

This micrometer diamond arrangement in conjunction with the chuck compensating hand wheel will be of great assistance to the operator. Once having set the diamond so a newly trued wheel finishes the work to

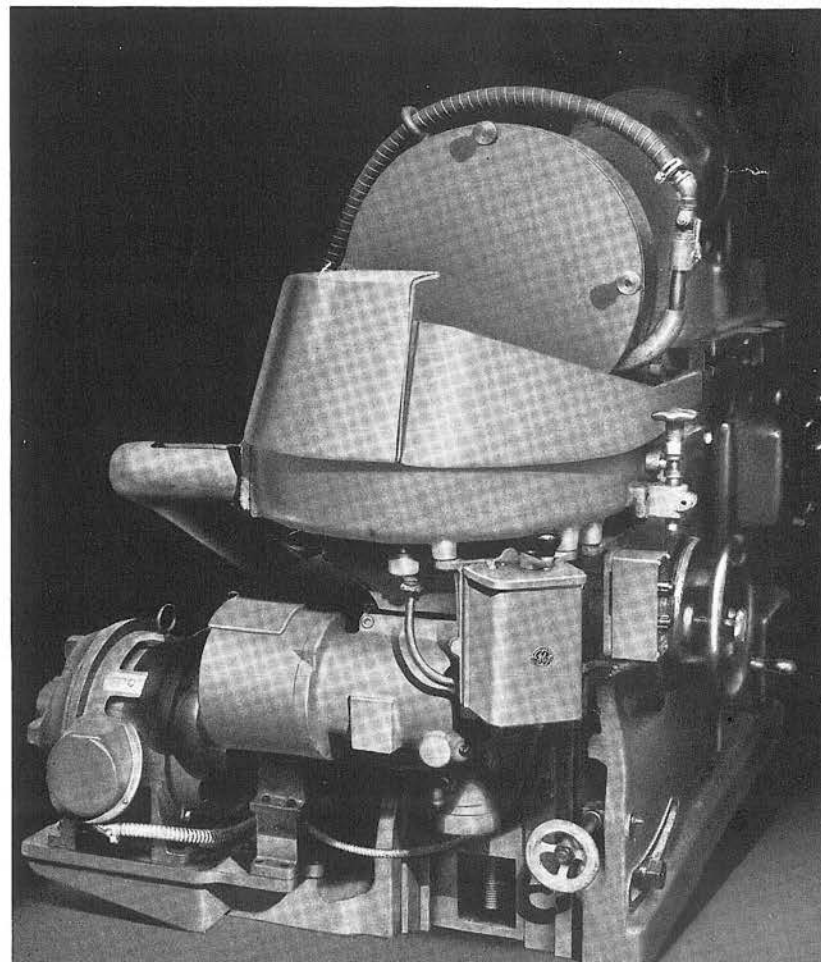
just within finish size, it is possible by redressing and compensating to automatically bring subsequent pieces of work within the required limits of size.

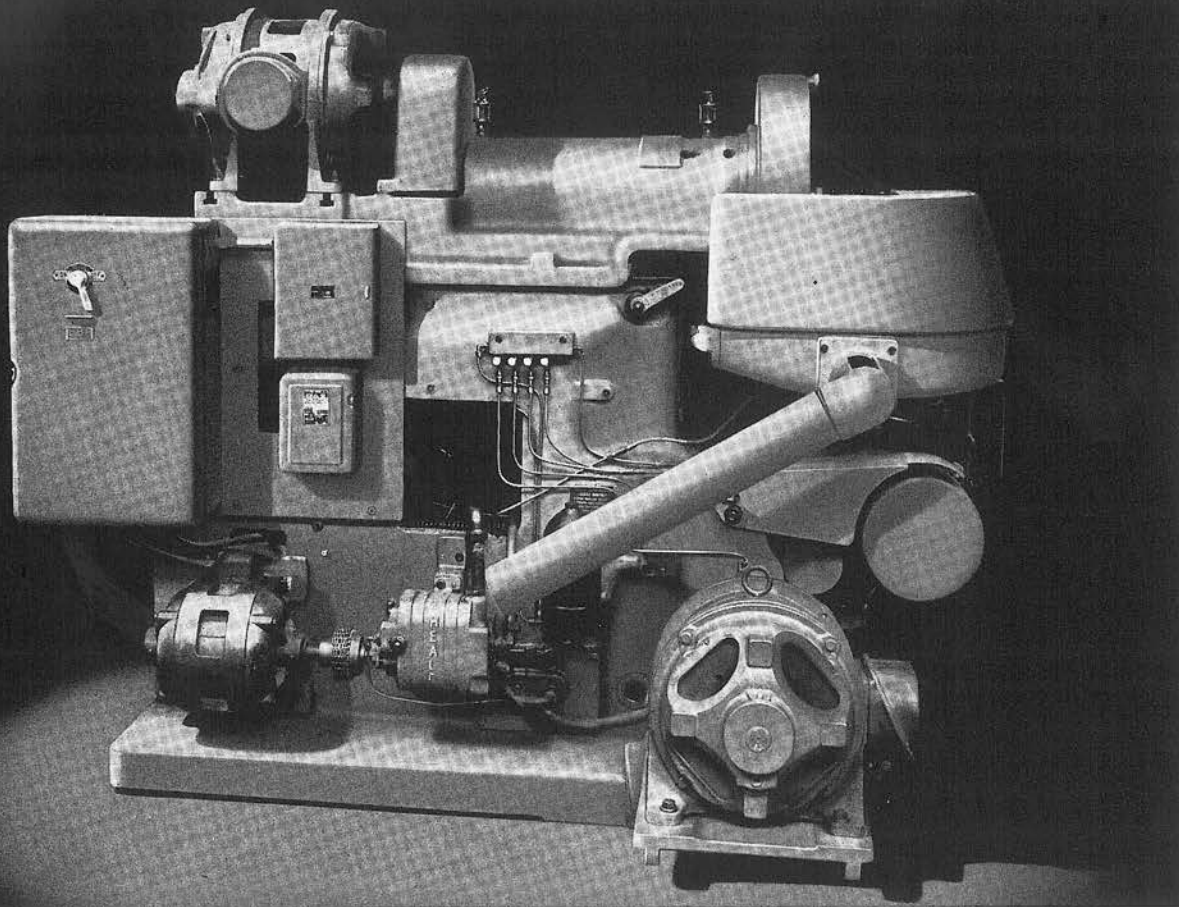
Such a micrometer diamond is limited to work not over 3" in height. Therefore, on work over 3" as well as on all machines with 30" chucks we furnish a wheel truing device located on the wheel guard that operates independently of any other unit.

A hand wheel passes the diamond across the wheel with a steady even movement. A hand knob gives micrometer adjustment for the stock to be removed.

*The Chuck Drive* is from a motor mounted at the rear of the base. A belt from the motor pulley over a flexible idler drives a worm shaft which in turn drives a worm gear on the spindle, thus furnish-

*The chuck on the No. 25A Rotary is driven by its own variable speed motor. Starting and stopping is controlled by push buttons mounted on the front of the chuck pan.*





*Hydraulic power for reciprocating the table on the No. 25A Rotary is furnished by a hydraulic pump with direct-drive motor as shown in this rear view.*

ing power for the chuck. The flexible idler is designed to allow for angular and also vertical movement of the chuck without need of adjustment. Lubrication of the chuck drive as well as other components of the chuck bracket is automatic by a gravity feed system.

Starting and stopping of the chuck is accomplished by means of electrical push buttons conveniently located on the front of the chuck pan. This control also allows the chuck to be inched around to any position desired. With the D.C. motor stopping of the chuck, of course, is accomplished by dynamic braking. When an A.C. motor is used a solenoid brake is provided on the motor shaft.

When the chuck drive motor is D.C. chuck speeds are changed by a rheostat mounted in an electric control panel on the

front of the machine, an infinite number of speeds in the range provided being thus available. When the chuck motor is A.C. four speeds are available by means of a four-speed switch mounted in place of the D.C. rheostat in the control panel.

**The Rear Shaft** consists of an electric motor directly connected by a flex-

ible coupling to an oil pump which furnishes hydraulic power for reciprocating the wheel slide. The entire unit is enclosed in smooth-fitting light-weight sheet metal guards.

**Motors** furnished as standard equipment on the No. 25A machine include a 2 H.P., 1200 R.P.M.,



A.C. motor for the rear shaft hydraulic pump drive.

The wheel drive motor is a 10 H.P., 1800 R.P.M., A.C. motor.

For the chuck drive a four-speed A.C. motor is standard. This motor is a  $1\frac{2}{3}$ ,  $2\frac{1}{2}$ ,  $3\frac{1}{2}$ , 5 tapered H.P., A.C., 600, 900, 1200, 1800 R.P.M.

A D.C. motor can be furnished for the chuck drive in place of the A.C. motor if

desired. This motor can be furnished for either 115 or 230 volts D.C. as desired. These are the same voltages which are used for the magnetic chuck and in most cases this motor which requires approximately 4100 watts can be connected to the same source of supply as the magnetic chuck.

If a generator is desired to take care of both the magnetic chuck and chuck motor, a 5 K.W. generator set will be required.

### General Specifications

CHUCK SIZE . . . . .	16"	24"	30"
Chuck Magnetic Holding Surface . . . . .	16"	24"	30"
Chuck Face Diameter . . . . .	$16\frac{7}{8}$ "	$24\frac{7}{8}$ "	$30\frac{1}{2}$ "
Chuck Speeds R.P.M. . . . .	59-176 R.P.M.	29-86 R.P.M.	29-86 R.P.M.
Swing inside of coolant pan, Maximum . . . . .	20"	$26\frac{3}{4}$ "	34"
Standard Wheel Size . . . . .	$18'' \times 2'' \times 8''$ $10\frac{1}{2}'' \times 1\frac{1}{2}''$ counterbore both sides	$18'' \times 2'' \times 8''$ $10\frac{1}{2}'' \times 1\frac{1}{2}''$ counterbore both sides	$18'' \times 2'' \times 8''$ $10\frac{1}{2}'' \times 1\frac{1}{2}''$ counterbore both sides
Wheel—Minimum and Maximum Dia. . . . .	14"-18"	14"-18"	14"-18"
Wheel Spindle Speed . . . . .	1285 R.P.M.	1285 R.P.M.	1285 R.P.M.
Distance from top of chuck to center of grinding wheel			
Maximum . . . . .	$14\frac{3}{4}$ "	$13\frac{3}{4}$ "	$13\frac{3}{4}$ "
Minimum . . . . .	7"	7"	7"
Maximum Angle			
Convex . . . . .	15°	15°	15°
Concave . . . . .	5°	5°	0°
Wheel Drive Motor 1800 R.P.M., 50 or 60 cycles, A.C.	10 H.P.	10 H.P.	10 H.P.
Chuck Drive Motor 600, 900, 1200, 1800 R.P.M., A.C.	$1\frac{2}{3}$ , $2\frac{1}{2}$ , $3\frac{1}{3}$ , 5 Tapered H.P.	$1\frac{2}{3}$ , $2\frac{1}{2}$ , $3\frac{1}{3}$ , 5 Tapered H.P.	$1\frac{2}{3}$ , $2\frac{1}{2}$ , $3\frac{1}{3}$ , 5 Tapered H.P.
Pump Drive Motor 1200 R.P.M., A.C.	2 H.P.	2 H.P.	2 H.P.
Coolant pump motor 1800 R.P.M., A.C.	$\frac{1}{4}$ H.P.	$\frac{1}{4}$ H.P.	$\frac{1}{4}$ H.P.
Capacity of oil reservoir . . . . .	20 gals.	20 gals.	20 gals.
Capacity of coolant tank . . . . .	50 gals.	50 gals.	50 gals.
Base of machine on floor . . . . .	$58'' \times 30\frac{1}{4}''$	$58'' \times 30\frac{1}{4}''$	$58'' \times 30\frac{1}{4}''$
Floor Space with coolant tank . . . . .	$76\frac{1}{2}'' \times 59\frac{5}{16}''$	$84\frac{1}{2}'' \times 65\frac{5}{16}''$	$88'' \times 65\frac{5}{16}''$
Approximate weight complete with motors . . . . .	7065 lbs.	8580 lbs.	9000 lbs.
Approximate weight of tank . . . . .	400 lbs.	400 lbs.	400 lbs.
Approximate weight complete, boxed for shipment . . . . .	9030 lbs.	10,500 lbs.	10,725 lbs.
Approximate weight of tank, boxed for shipment . . . . .	410 cu. ft. 500 lbs.	475 cu. ft. 500 lbs.	475 cu. ft. 500 lbs.

Standard equipment includes magnetic chuck, grinding wheel, complete diamond unit with diamond, belts and necessary wrenches.

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