

120

# **A**brasive SURFACE GRINDERS

REPRESENTED BY  
**HENES - MORGAN MACHINERY CO., Ltd.**  
2026 SANTA ANE AVENUE  
JEfferson 7185  
LOS ANGELES 21, CALIFORNIA

**ABRASIVE MACHINE TOOL COMPANY**  
EAST PROVIDENCE 14, RHODE ISLAND



[www.SterlingMachinery.com](http://www.SterlingMachinery.com)



THE ABRASIVE MACHINE TOOL COMPANY was founded in 1916 with sound ideas for the manufacture of Surface Grinding Machines capable of producing unusually accurate, smooth, flat surfaces.

One such idea was that of having the bed of the machine a one piece casting, heavily ribbed to give the machine the rigid foundation which must be a basis of all accurate grinding.

Another important idea was that of the unit system

of construction which permits easy access to parts for adjustment or repair.

Improvements made since 1916 have been the result of constantly expanding experience which has led to better design; use of better materials as they have become available; improved workmanship; and the most careful supervision of every operation.

Further information about Abrasive products — machines or accessories — will be furnished upon request.

## SPECIFICATIONS

### Type

No. 1½ Horizontal Spindle, Reciprocating Table. Hand Feed.

### Capacity

Longitudinal, 15" (381 mm.).

Transverse, 10" (254 mm.), with Wet Grinding Attachment 9½" (241 mm.).

Vertical, 12" (305 mm.) under a 12" wheel.

### Work Table

Work Surface, 15" x 10" (381 mm. x 254 mm.).

Overall, 11¼" x 48" (286 mm. x 1219 mm.).

Three Tee-slots, 7/16" (11.11 mm.) Spaced 2¾".

Front edge of working surface ground square with Spindle and can be used for setting up work.

### Spindle

Hardened, ground and lapped. Alloy steel. 1¼" diameter, taper nose. Carried in one phosphor-bronze adjustable box and two ball bearings (middle and rear).

Normal Speed, 1750 R.P.M. REMOVABLE CARTRIDGE TYPE ASSEMBLY.

### Wheels

Standard wheel is 12" diam. x ½" thick x 3" hole.

### Feeds

All feeds by hand. Elevating handwheel graduated in quarter thousandths of an inch.

Transverse handwheel graduated in thousandths. One turn advances Saddle ¼". Metric equipment can be supplied if specified.

Automatic feeds cannot be furnished for this machine.

### Drive

Motor drive only. Motor mounted directly on spindle. Power required is 1 H.P. at 1750 R.P.M. Shaftless motor, precision balanced, dynamically and electrically. Push button starter, switch mounted inside base, is standard equipment.

For electrical circuits other than 2 or 3 phase, 60 cycle, ask the factory for information.

### Wet or Dry Arrangement

Abrasive individual Motorized Exhaust Attachment or Wet Grinding Attachment can be furnished for these machines.

### Standard Equipment

Standard equipment consists of motor and control, one 12" x ½" grinding wheel, diamond holder, necessary wrenches, and bolts.

### Floor Space

Transversely, 50" (1270 mm.). Longitudinally, 65" (1651 mm.).

### Weights

Net weight, 1350 lbs. (610 kgs.).

Gross Domestic shipping weight, 1540 lbs. (700 kgs.).

Gross Foreign shipping weight, 1600 lbs. (735 kgs.).

### Shipping Dimensions

Domestic, 73" high x 36" wide x 50" deep.

Export, 74" high x 37" wide x 51" deep.

### Miscellaneous

Magnetic Chucks can be supplied for this machine.



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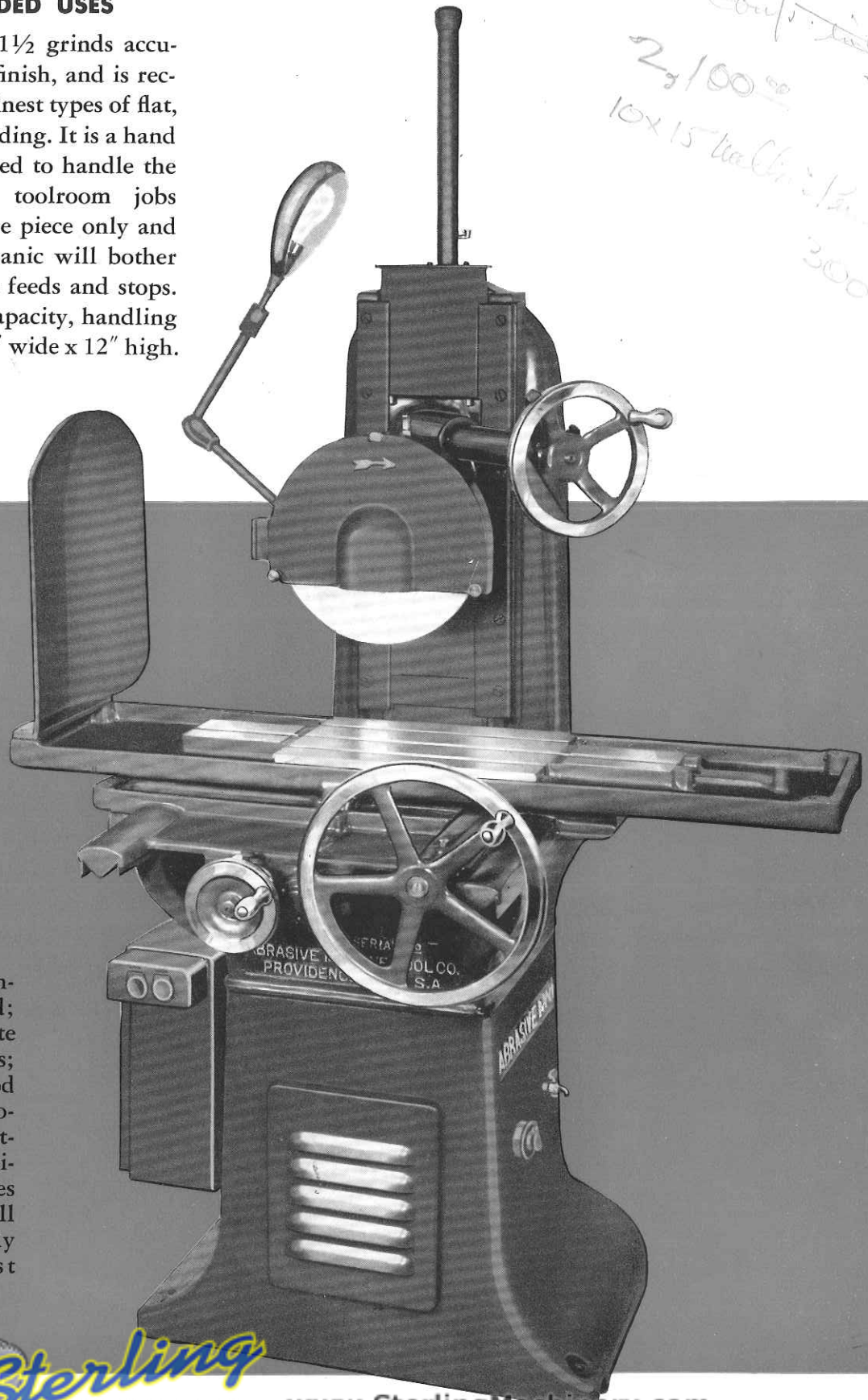


# No. 1½ SURFACE GRINDING MACHINE

## RECOMMENDED USES

The Abrasive No. 1½ grinds accurately, gives a fine finish, and is recommended for the finest types of flat, form, and gage grinding. It is a hand feed grinder designed to handle the large number of toolroom jobs which consist of one piece only and for which no mechanic will bother to adjust automatic feeds and stops. It has an unusual capacity, handling work 15" long x 10" wide x 12" high.

*2575 del  
Comp. Inc. Ch...  
2,100.00  
10x15 table...  
300.00*



## FEATURES

Built-in motor, an integral part of head; hand feeds eliminate many moving parts; hand wheels of good size, conveniently located; vertical adjustment rapid and sensitive; wearing surfaces easily lubricated. All scraped ways fully protected against grinding dust.



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EAST PROVIDENCE 14, RHODE ISLAND



# No. 3B SURFACE GRINDING

## RECOMMENDED USES

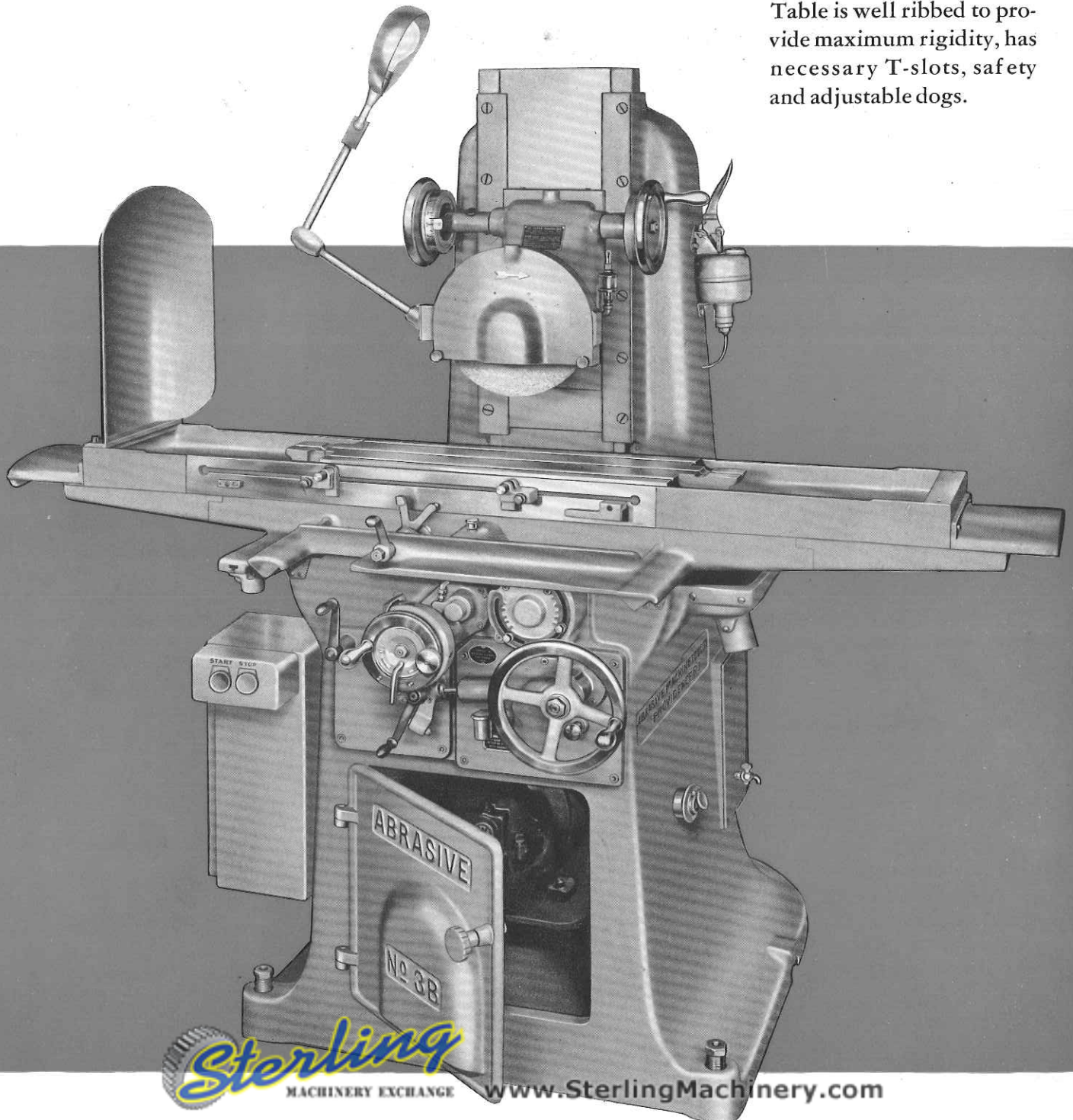
The Abrasive No. 3B is recommended for production and tool room jobs calling for a fast, accurate surface grinding machine with power table traverse and cross feed.

Hundreds of No. 3B are now in use in automotive, airplane engine, and tool plants helping to produce the accurate, interchangeable parts necessary to maintain mass production schedules.

## FEATURES OF CONSTRUCTION

The bed is of typical Abrasive design, a one-piece casting made rigid by heavy ribs and strongly reinforced openings. The head is suspended on a ball thrust bearing and accurately cut Acme threaded screw. Adjustments for wear are provided. Elevating handwheel is graduated to .0001". The saddle is of the deep box type for stiffness; ample means of oiling the ways are provided.

Table is well ribbed to provide maximum rigidity, has necessary T-slots, safety and adjustable dogs.



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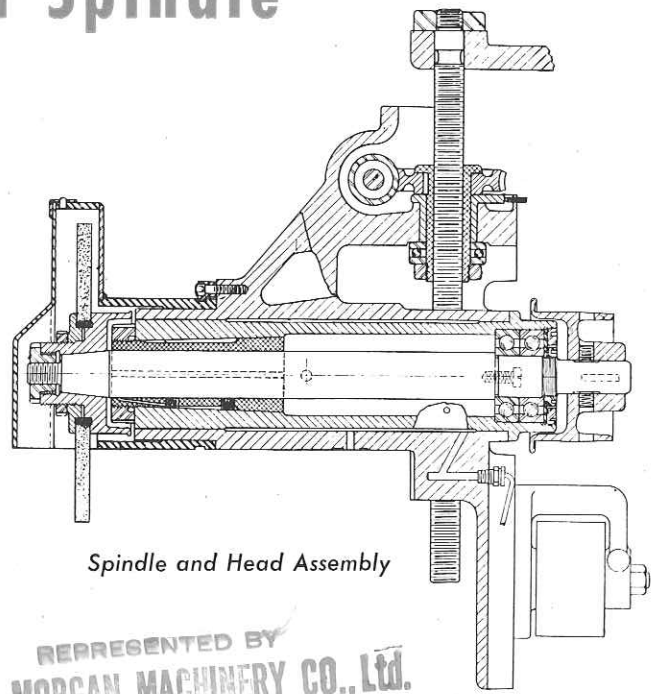
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# MACHINE—Horizontal Spindle

The cross feed mechanism is a carefully built, simple, durable unit. The handwheel has .001" graduations, an adjustable index pointer, and a micrometer feed gear for use in fine adjustments for side wheel grinding. A one-shot lubrication system is used.

The No. 3B can be furnished, at an extra price, with hardened and ground feed screws, hardened and ground ways and full automatic pressure lubricating system. It is then known as the No. 3S.



Spindle and Head Assembly

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**HENES-MORGAN MACHINERY CO., Ltd.**  
 2026 SAN JUAN AVENUE  
 JEFFERSON 7105  
 LOS ANGELES 21, CALIFORNIA

## SPECIFICATIONS

### Type

No. 3B Horizontal Spindle, Reciprocating Table, Mechanical Feeds.

### Capacity

Longitudinal, 24" (610 mm.). Total movement, 26" (660 mm.).  
 Transverse, 8" (220 mm.) Total transverse movement, 9" (229 mm.).  
 Vertical, 12" (300 mm.). Total vertical movement, 13" (330 mm.).

### Work Table

Work Surface, 24" x 8" (610 x 200 mm.). Overall, 59" x 10½" (1500 x 270 mm.).  
 Three Tee-slots, 9/16" for ½" std. T Bolts (14.28 mm.).

### Spindle

Alloy steel, hardened, ground and lapped. 1½" diameter, taper nose, carried in phosphor bronze box at front, adjustable for wear, and super-precision ball bearings at rear. Whole assembly mounted in removable cartridge type housing.  
 Normal speed, 2290 R.P.M.  
 Spindle driven by endless flat belt.

### Wheels

Standard wheel, Type 1, Face "A," 10" diameter x ¾" thick x 3" hole. (254 x 19 x 76 mm.). Larger diameters furnished on special order.

### Speeds

Two table speeds of 20 ft. and 40 ft. per minute respectively.  
 Change of speed made with push-pull knob at front of gear box.

### Feeds

Automatic in longitudinal and transverse directions.  
 Adjustable dogs on table and saddle control length of feeds and safety dogs prevent damage to mechanism.  
 Wheel slide provided with one handwheel graduated in 1/10 thousandths for fine feed and one handwheel with 1 to 3 ratio for quick movement.  
 Transverse feed handwheel provided with micrometer adjustment and dial graduated in thousandths.  
 Table handwheel provided with automatic lock-out so that it will not revolve when power feed is thrown in, and cannot be engaged.  
 All handwheels located in most natural positions for operator.  
 A built-in shock absorber in the gear case cushions table reversal.

Automatic cross feed adjustable from 0 to .070 at either or both ends of table stroke.

A friction gear in longitudinal feed mechanism protects same from damage in case of collision.

### Drive

One motor only required, 3 HP at 1750 RPM. Standard motor and magnetic starter with push button control used. A 5 or 7½ HP motor can be used for special grinding.  
 Magnetic starter is mounted in enclosed compartment in base.

### Wet or Dry Arrangement

Either Dust Exhaust or Wet Grinding Attachments are available. Both attachments can be furnished on the same machine, whether or not it is equipped with generator or motor or both.  
 Wet grinding attachment consists of table guards, wheel hood, connections, portable tank, and motorized centrifugal pump.

### Standard Equipment

Standard equipment consists of one grinding wheel 10" x ¾", diamond holder less diamond, necessary tools, wrenches, etc.  
 Efficient dust protection for all scraped ways.

### Floor Space

Transversely 48" (1220 mm.). Longitudinally, 98" (2480 mm.).

### Weights

Net weight, 2700 lbs. (1230 Kgs.). Gross Domestic Shipping Weight, 3000 lbs. (1379 Kgs.)  
 Gross Foreign Shipping Weight, 3300 lbs. (1500 Kgs.).

### Shipping Dimensions

Domestic, 48" x 53" x 73". (1219 x 1346 x 1854 mm.).  
 Export, 50" x 58" x 74". (1285 x 1490 x 1880 mm.).

### Miscellaneous

Magnetic chucks, vises, high speed attachment, and generator or rectifier for operating magnetic chuck, can be furnished for this machine.  
 The Saddle is carried in V-ways.  
 The Wheel Slide is carried in square ways, and provided with adjustable taper gib.



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# No. M3 GRINDER—Motorized Spindle

## RECOMMENDED USES

The Abrasive No. M3 Surface Grinding Machine combines the features of the No. 3B with a motorized spindle which eliminates spindle driving belt, pulleys, etc. Table feed is provided by V-Belt drive from individual 1/2 HP motor mounted in base to two-speed gear box. In the toolroom and on the production line, wherever interchangeable parts must be produced quickly and precisely, the accurate, trouble-free performance of the No. M3 has earned wide approval.

## FEATURES OF CONSTRUCTION

With the exception of its motorized spindle, the M3 is similar in construction to the No. 3B shown on pages 4 and 5. It has the same rigid, one-piece bed with heavy ribs and strongly reinforced openings, the same deep, box-type saddle and well-ribbed table. The No. M3 can be furnished, at an extra price, with hardened and ground ways and full automatic pressure lubricating system. When so furnished, it is called the No. M3S.



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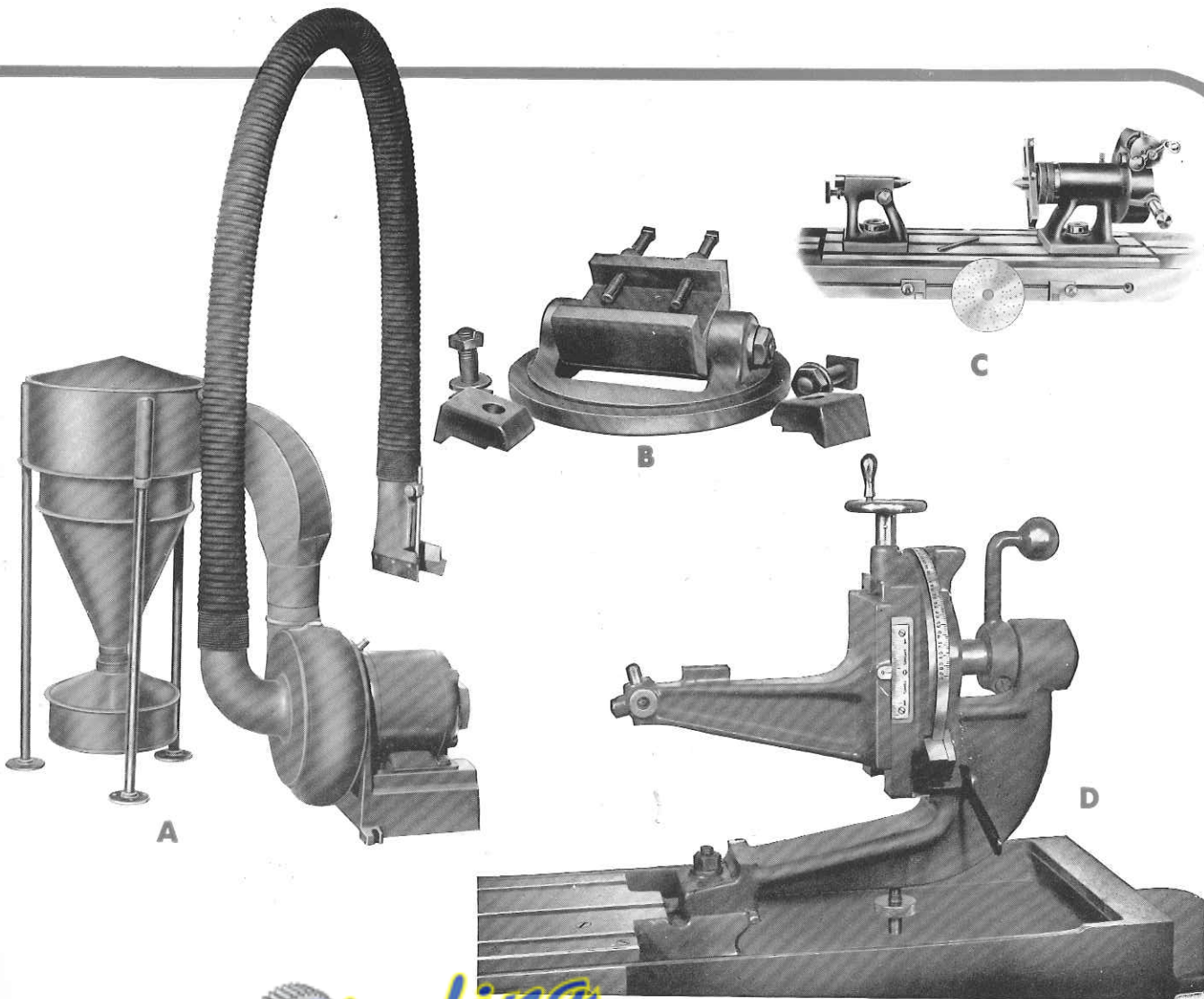
# Auxiliary Equipment for ABRASIVE Grinders

**A. DUST EXHAUSTER.** This self-contained unit is ideal for Abrasive Grinding Machine service or wherever efficient dust removal is required. The  $\frac{3}{4}$  HP motor is of ample size to create a powerful air stream that draws most dust particles into the separator where 90% of the dust and dirt is removed by means of the cyclonic action and baffles. Net weight 130 lbs.

**B. SWIVEL VISE.** A very simple device for holding small pieces by clamping them against one ground jaw with set screws. Body may be tilted  $90^\circ$  and base swiveled  $360^\circ$ .

**C. EIGHT INCH INDEX CENTERS.** Practically all numbers to 50, and many beyond, can be divided with the index plate furnished. Combined length of head and footstocks  $11''$ . Capacity  $8''$  diam. Ideal for light grinding service.

**D. RADIUS AND ANGULAR TRUING DEVICE.** This attachment is always in position and dresses wheel at grinding point. It will true wheels up to  $1\frac{1}{2}''$  wide, either concave or convex. A separate slide is designed to dress angles which may be read directly on the scale. Net weight 45 lbs.



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# 1218 HYDRABRASIVE

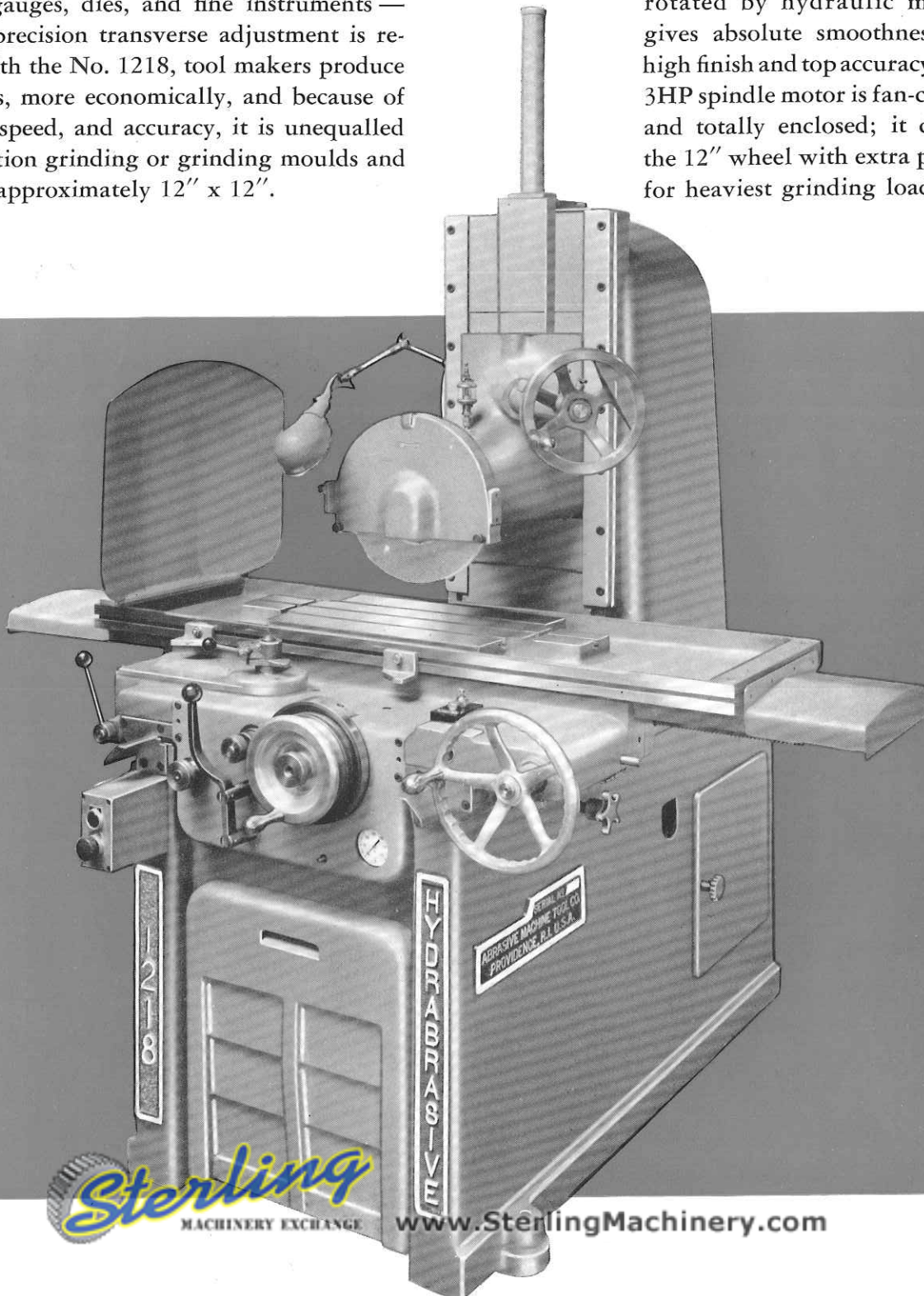
## RECOMMENDED USES

Ruggedly built and hydraulically operated, the 1218 Hydrabrasive answers the universal need for a surface grinder with wide cross-travel (12") and moderate table length (18"). Abrasive's use of saddle ball ways is of great value to manufacturers of gauges, dies, and fine instruments — wherever precision transverse adjustment is required. With the No. 1218, tool makers produce better tools, more economically, and because of its power, speed, and accuracy, it is unequalled for production grinding or grinding moulds and dies up to approximately 12" x 12".

## FEATURES OF CONSTRUCTION

In operation, the No. 1218 is vibrationless because there are no belts, pulleys or running gears. Transverse adjustment is ultra-precise with thirty  $\frac{3}{4}$ " steel balls mounted on hardened steel ways.

A specially ground steel screw, rotated by hydraulic motor, gives absolute smoothness for high finish and top accuracy. The 3HP spindle motor is fan-cooled and totally enclosed; it drives the 12" wheel with extra power for heaviest grinding loads.

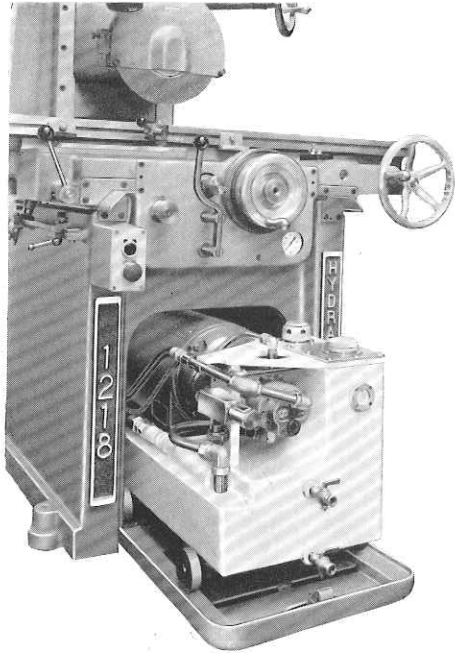


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# SURFACE GRINDER



The No. 1218 is engineered for high operating efficiency, and for accessibility, too. With Abrasive unit-design all major parts are separate units, easy to get at and easy to service. The entire pump and tank unit, built to J.I.C. standards, rolls out on wheels. Table speeds are adjustable over the wide range from 1/2 ft. per min. to 90 ft. per min. with 3/8" of cross feed movement in 1/5 of a second. In addition, table speed reduces from 90 ft. per min. to 0 in only 1" of run-over beyond the work.

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## SPECIFICATIONS

### Type

Horizontal Grinding Wheel Spindle.  
 Reciprocating Work Table.

### Capacity

Longitudinal, 18". Total — 22".  
 Transverse, 12". Total — 13 1/2".  
 Vertical, 12" under a 12" diameter wheel.

### Work Table

Length of work surface — 18".  
 Width of work surface — 12".  
 Three Tee-Slots, 7/16" for 3/8" Std. Tee-Bolts.

### Transverse Slide

Mounted on thirty 3/4" hardened steel precision balls between SAE 52100 hardened steel ways.

### Spindle

Hardened, ground and lapped. Chrome carbon tool steel . . . 1 5/8" diameter, taper nose. Carried in one phosphor-bronze adjustable box and two super-precision ball bearings (midde and rear). Speed, 1750 R.P.M. Removable Cartridge Type Assembly.

### Wheels

Standard wheel is 12" diam. x 1" thick x 3" hole. Type 1 straight.

### Speeds

Grinding Wheel Spindle, 1750 R.P.M. Work Table, adjustable from six inches to ninety feet per minute.

### Power Feeds

Automatic cross feed per table stroke adjustable 1/64" to 3/8".  
 Adjustable continuous power cross feed 5 inches to 100 inches per minute.

### Hand Feeds

Vertical for wheel slide, dial graduated to .0001". Cross traverse, dial graduated to .001", Vernier graduated to .0001".  
 Table traverse, hand or power.

### Drives

Spindle, motor drive only, 3 H.P. built-in totally enclosed, fan cooled, 1750 R.P.M., A.C.  
 Hydraulic system, 1 H.P. totally enclosed 1200 R.P.M. motor.  
 Coolant pump, (extra equipment) 1/4 H.P., totally enclosed 1800 R.P.M. motor.

### Wet or Dry Arrangement

Abrasive Motorized Exhaust Attachment or Wet Grinding Attachment can be furnished.  
 Both attachments can be furnished on the same machine.

### Standard Equipment

Standard equipment consists of: one grinding wheel 12" x 1" x 3", diamond holder less diamond, necessary tools, wrenches, etc.

### Floor Space

Transversely ..... 68"  
 Longitudinally ..... 92"

### Weights

Machine only, Net 3490 lbs.  
 Crated, Domestic Gross 3990 lbs.  
 Boxed, Export Gross 4200 lbs.

### Miscellaneous

Magnetic chucks, vises, and generator or rectifier for operating magnetic chuck can be furnished.  
 Lubrication, Bijur "one-shot" oiling system lubricates all moving parts except spindle and ball ways.  
 Spindle has sight feed oil cup.  
 Ball ways are grease lubricated.  
 Crossfeed and table hand wheels are positively locked out of engagement while power feeds are being used.



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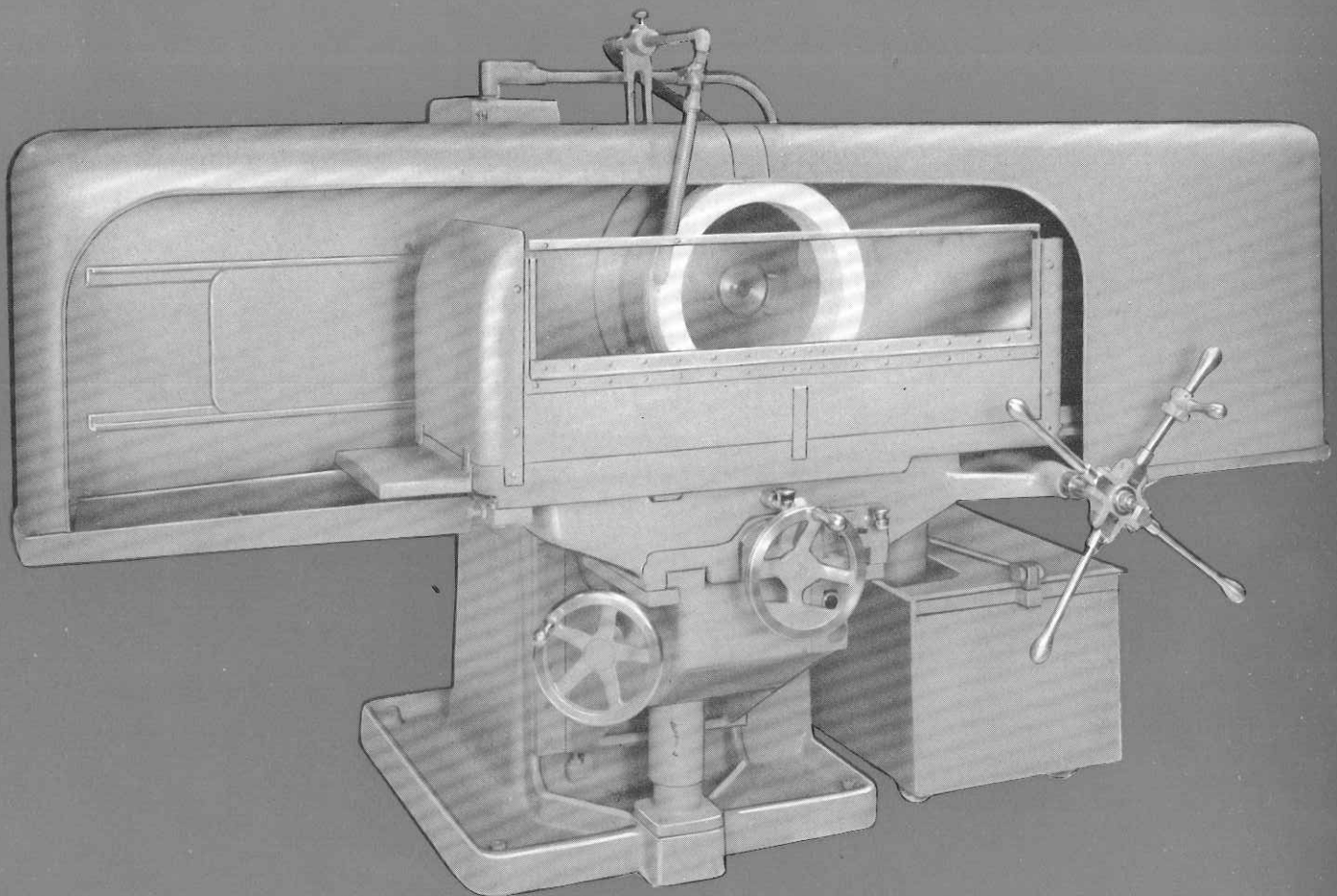
# 18" FACE GRINDER-

## RECOMMENDED USES

The Abrasive 18" Face Grinder handles big work, odd shapes and special fixtures. It is widely used to face off castings, grind automobile dies, square up die blocks, and wherever a flat, square surface is required. The heavy duty 15 HP motorized spindle operates without gearing or belting — furnishes exceptional power at the cutting point. This grinding machine is a natural for finishing surfaces on blocks of rough steel, forgings, and similar materials previous to their being machined as dies and moulds.

## FEATURES OF CONSTRUCTION

Heavy, box-type ways give maximum rigidity; Abrasive design includes extremely rugged base, knee, saddle and table. The 15 HP 900 RPM motor is fan-cooled and built for heavy duty, with the motorized spindle mounted on pre-loaded ball bearings to insure long life and smooth-running, chatter-free operation. The elevating mechanism is completely enclosed for protection from grit or coolant. Cross feed is graduated to .00025" for convenience in setting. Hand feed saves set up time, eliminates table overrun.



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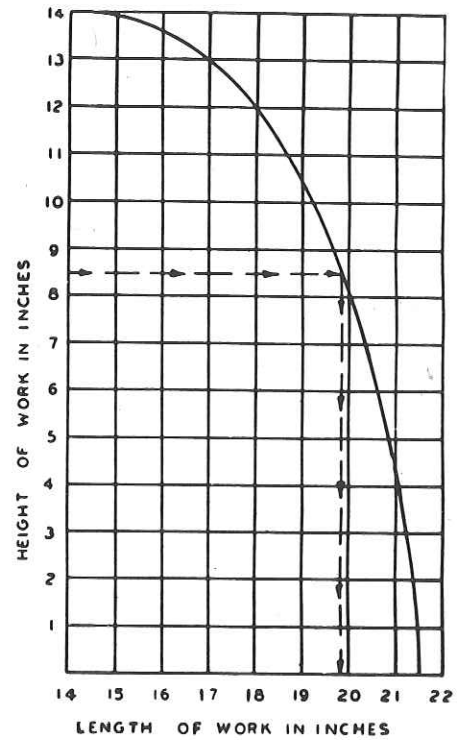
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# Motorized Spindle

Since most of the work ground with this machine requires the use of coolant, a 60 gallon tank and motorized coolant pump is standard equipment. Table water guards and a removable Plexiglas front guard are carefully designed to confine dirt, mist, and spray. When desired, a special motorized pulley grinding attachment and a wide choice of accessories can be furnished.

The 24" table travel governs the length of work which can be ground in relation to the height of the work. At the right is shown a work capacity chart revealing the sizes which can be ground with the 18" Face Grinder. For example, the arrows on the chart show work as large as 8½" wide x 19¾" long can be handled.



## SPECIFICATIONS

### Type

Face Grinder. Hand Feeds.

### Capacity

See chart above for wide range of work which can be ground.

### Work Table

Work surface 13" x 36". 4 Tee-slots ¼", spaced 3⅝".

### Spindle

Extra heavy, ball bearing, motorized. 15 HP 900 R.P.M. heavy duty motor.

### Wheels

Standard equipment 18" O.D. mounted Steelback. When desired Ring (18" dia., 4" deep, 2" wall); or Segmental (4 segment 18" O.D.) may be furnished as special equipment.

### Feeds

All movements by hand feed only. Transverse 3½"; vertical 7¼"; 24" longitudinal; when using ring wheel.

### Wet or Dry Arrangement

Most work requires a coolant. Wet Grinding Attachment supplied as standard equipment.

### Standard Equipment

Complete Wet Grinding Attachment consisting of motorized coolant pump, large coolant tank, table water guards, necessary hose and piping, wheel truing device and wrenches.

### Floor Space

Approximately 48 square feet. Transversely 6 ft., longitudinally 8 ft.

### Weights

Net approximately 3900 lbs. Crated for domestic shipment (including Wet Attachment). Gross approximately 4500 lbs.

### Shipping Dimensions

65" high, 66" wide, 71" deep.

### Miscellaneous

Motorized Pulley Grinding Attachment can be supplied.



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EAST PROVIDENCE 14, RHODE ISLAND



# No. M34 SURFACE GRINDING

## RECOMMENDED USES

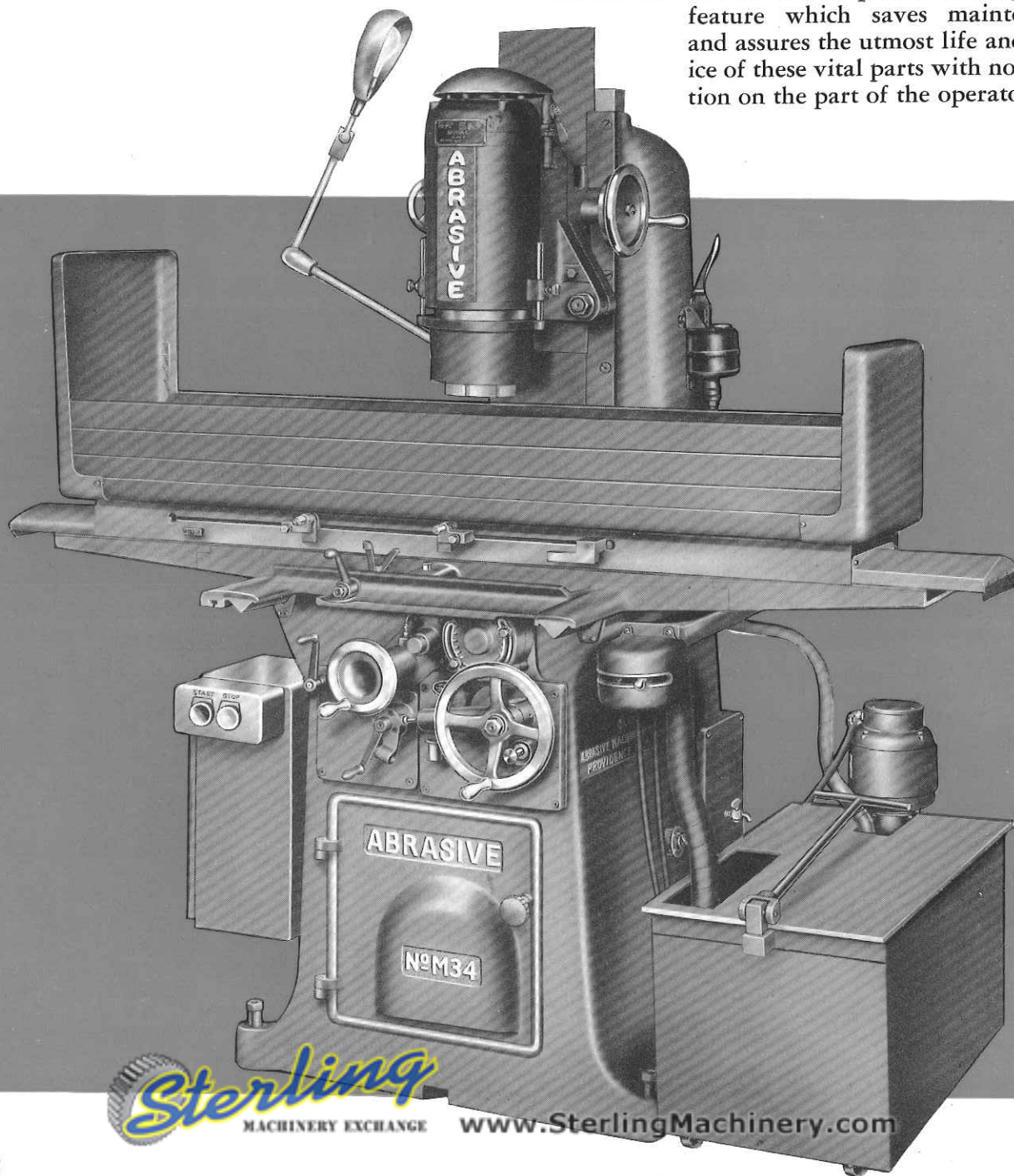
The Abrasive No. M34 is recommended for the many types of flat grinding that can be done faster and more economically by a properly designed surface grinder using a vertical spindle and ring wheel. Standard wheel furnished is segmental type. Small flat dies, washers, punches, spacers, parallels, chasers, and raising blocks are good examples of such work. The use of a rotary magnetic chuck, as illustrated on page 13, will increase production of small parts.

## FEATURES OF CONSTRUCTION

The bed is a one-piece casting, strongly ribbed, and well proportioned. It follows the well-known Abrasive principle of design which was originated by this Company.

This machine is equipped with a Pope-SKF anti-friction bearing Spindle of the most modern design. A 5 HP, 3450 R.P.M. Motor is built-in on the Spindle, thus affording maximum power with minimum friction losses and eliminating all gearing, belting and other power-consuming types of drives.

Sealed lubrication of the spindle bearings is a feature which saves maintenance and assures the utmost life and service of these vital parts with no attention on the part of the operator.





# MACHINE - Vertical Spindle

The table is comparatively light in weight but deep to maintain proper alignment. It reciprocates on the saddle in one V-way and one flat way. The transmission case is a complete drive unit, readily detachable from the machine. A built-in shock absorber eliminates shock of table reversal, and two table speeds are available. Lubrication of most of the bearings is by means of a Bijur one-shot system. Transmission case, table ways and saddle ways are automatically lubricated from ample reservoirs.



Circular grinding attachment complete with rotary magnetic chuck can be provided as shown.

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## SPECIFICATIONS

### Type

No. M34 Vertical Spindle, Reciprocating Table. Automatic Down Feed. Built-in Motor on Spindle.

### Capacity

Longitudinal, automatic, 24" (610 mm.) total movement 33" (838 mm.)  
Transverse, hand, 8" (200 mm.) total movement 9" (229 mm.)  
Vertical, automatic, 12" (305 mm.) total movement 13" (330 mm.)

### Work Table

Work surface, 8" x 24" (200 x 610 mm.) overall 59" x 10½" (1500 x 270 mm.). Three 9/16" T-Slots (14.28 mm.) for ½" T-Bolts.

### Spindle

Most modern design of Pope-SKF with combinations of ball and roller bearings, sealed-in lubrication and built-in 5 HP, 3450 R.P.M. Motor. A powerful, trouble-free unit provided with automatic adjustment for wear and end thrust.

Spindle is carried in a very heavy wheel slide which has square vertical ways and taper gib to take up wear. This slide is suspended on a ball thrust bearing and actuated by means of worm and worm wheel, elevating screw and bronze nut.

### Wheels

Segment type, 6" diameter, Cortland type wheel chuck. By using a special adapter, Type 2 steelback wheel can be accommodated. 3450 R.P.M. with 60 cycle motor; 2950 R.P.M. with 50 cycle motor.

### Feeds

Table feed provided by V-belt drive from individual ½ HP Motor mounted in base to two-speed gear box. Hydraulic Shock Absorber reduces shock of table reversal to a minimum. Transmission case self-lubricating. Table feed automatic in either direction, length of stroke being obtained by setting of adjustable dogs. Reversing lever in saddle so table can be reversed by hand at any point.

A friction gear prevents damage to driving parts if table or work meets with a collision.

Transverse feed by hand.

Vertical feed automatic or hand adjustment. The amount of feed can be adjusted to advance from 0.000125" to 0.002", or 0.0025 mm. to 0.04 mm. at each table reversal. The dial is adjustable or it can be locked for continuous feeding. Wheel wear must be considered when working to close figures.

Handwheel for fine adjustment, on left side of wheel slide is provided with dial graduated to 0.00025", or to 1/100 mm. if desired. Handwheel for rapid adjustment, on the right side, having 3 to 1 acceleration.

### Drive

Two Motors:—one 5 HP built-in on spindle, one ½ HP mounted in base, magnetic starter with overload and under-voltage protection, push button control. All wiring fully enclosed in rigid conduit wherever possible.

### Standard Equipment

Standard equipment consists of wet grinding attachment which includes table guards, wheel guard, connections, portable tank and motorized coolant pump, 6" segmental type grinding wheel chuck and wheel, wrenches and Star Wheel Dresser. Working surfaces are fully protected against abrasive dust.

### Floor Space

Transversely, 48" (1220 mm.). Longitudinally, 108" (2746 mm.).

### Weights

Net weight, about 3000 lbs. (1360 Kg.).  
Gross domestic shipping weight, about 3240 lbs. (1470 Kg.).  
Gross foreign shipping weight, about 3620 lbs. (1640 Kg.).

### Shipping Dimensions

Domestic, 48" x 53" x 77".  
Export, 49" x 58" x 78" (1244 x 1473 x 1981mm.).  
Space occupied, about 128 cu. ft. (3.62 cu. meters).

### Miscellaneous

Several makes and sizes of magnetic chucks are available for use and are recommended for a large variety of work. Most of the lubrication is taken care of by a central one-shot system.



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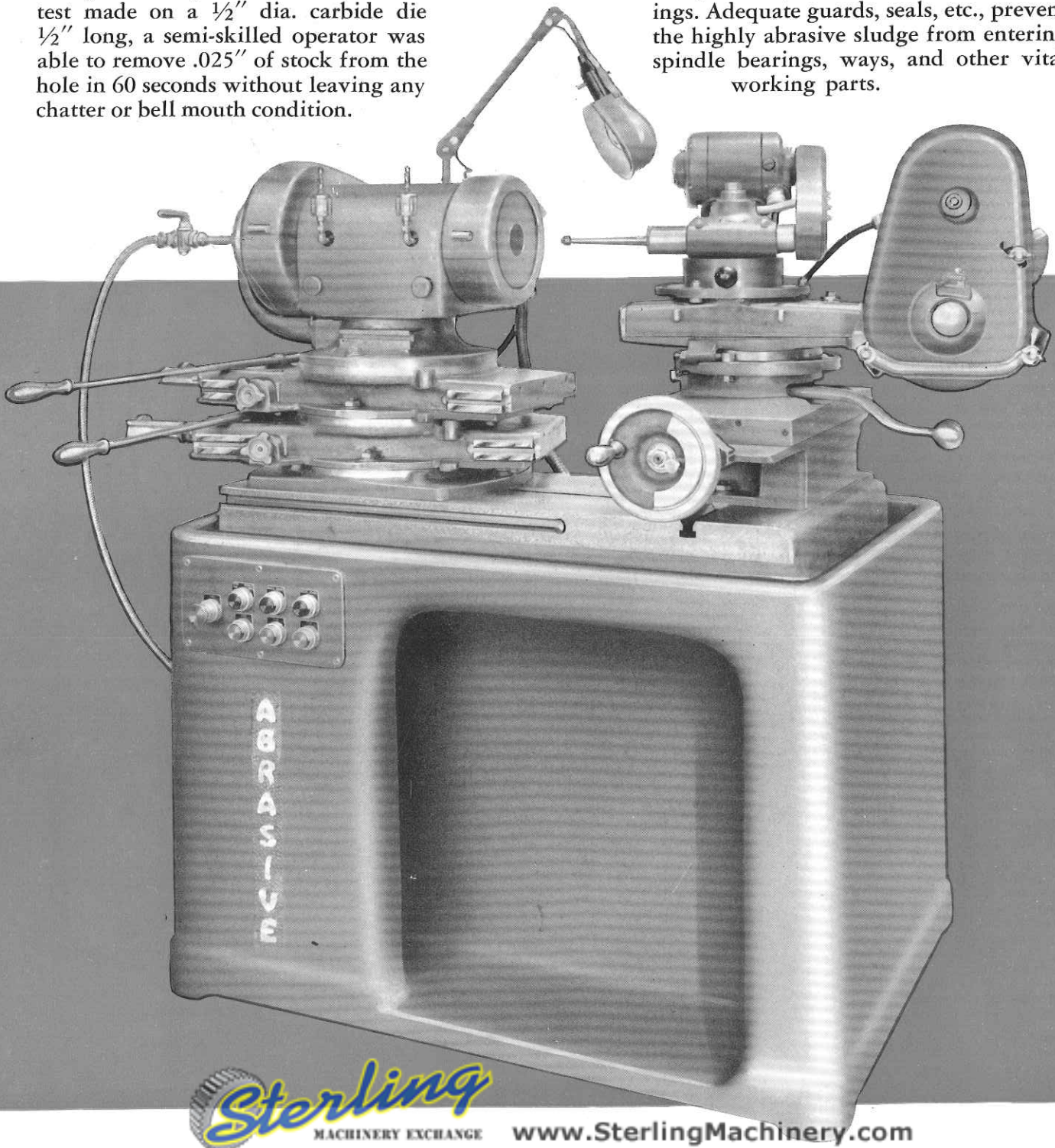
# No. 5 AWF INTERNAL FINISHER . . .

## RECOMMENDED USES

The increasing use of carbides and similar materials for dies, gages, bushings, etc. has created an urgent need for this accurate machine. Manufactured and sold under the W. G. Wessman patents, it is capable of grinding and micro-finishing at one chucking several angles or combinations of straight and angular surfaces. It grinds carbides to extremely high finish (approx. 2 micro-inches) and permits rapid stock removal as well. In a test made on a 1/2" dia. carbide die 1/2" long, a semi-skilled operator was able to remove .025" of stock from the hole in 60 seconds without leaving any chatter or bell mouth condition.

## FEATURES OF CONSTRUCTION

Unusual speed and accuracy are due to the patented reciprocating motion which puts more of the abrasive to work and prevents gouging by the wheel. Both the speed and length of reciprocation are adjustable. Multiple work head slides and swivels are provided to permit grinding two angles or a straight and angular bore at the same setup. Each slide is independent, with hardened steel bearing surface, and mounted on ball bearings. Adequate guards, seals, etc., prevent the highly abrasive sludge from entering spindle bearings, ways, and other vital working parts.

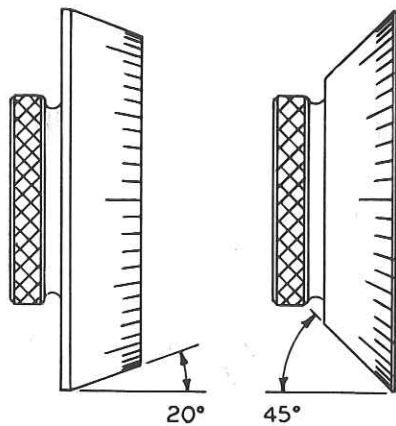


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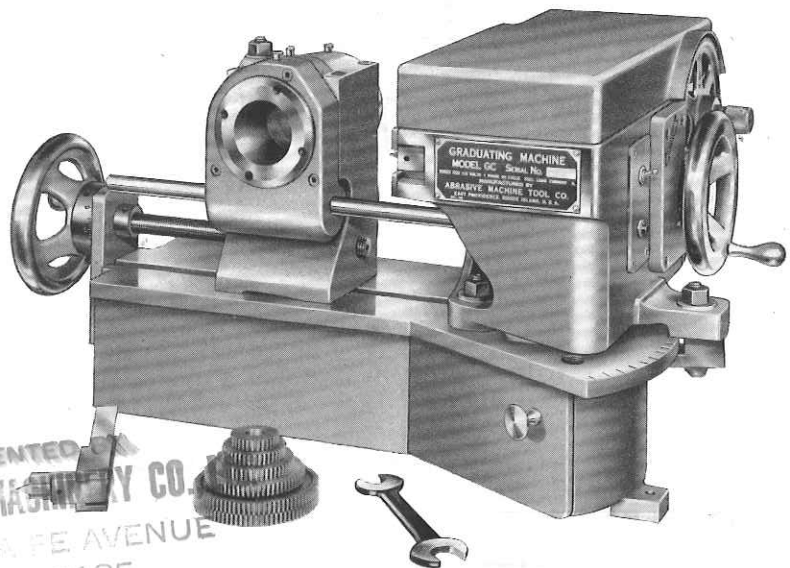
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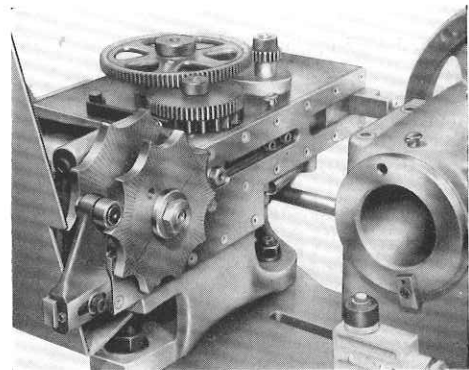
# Model GC CIRCULAR GRADUATING MACHINE



When the side of bevel to be graduated is at small ends, 20° is maximum. When next to large end, 45° is maximum.



The Model GC CIRCULAR GRADUATING MACHINE accurately and quickly graduates hand wheels, dials, knobs, and similar parts. This machine is capable of a wide range in both the *number* and *type* of graduations for all commonly used systems. Cutting of graduations is performed by a single-point tool which produces a clear, sharp line of almost any desired length or combination of lengths. Spacing of graduations is controlled by a set of change gears and a worm and worm wheel, assuring "Dividing Head" accuracy. Graduations parallel with the axis of the work and angular graduations up to 45° can be cut. This unit is power-driven and is designed for uniform, rapid production. Automatic cut-out stops the machine at completion of each cycle. To change from one size and type of work to another is but a matter of minutes.



Rear view of machine with cover guard lifted to show accessibility of cams and gears for changing from one job to the next. Hollow 2" spindle hole accommodates various work holding devices.

## SPECIFICATIONS

### TYPE

Circular Graduating Machine Model GC

### CAPACITY

Smallest diameter graduated with std. equip. 1 1/2".  
Largest diameter graduated with std. equip. 20".  
Will graduate straight dials or angular dials up to and including 45° angle.

Maximum diameter for angular dials varies with the work, i.e. for 60° included angle, the maximum diameter is approx. 18"; and for 90° included angle, the maximum diameter is approx. 15".  
(Special tool holder slide required.)

Number of Graduations cut — 40 to 1000

Types of Graduations cut ..... 5  
Length of graduation ..... 0-5/16"

### SPEED

Cutting speed 145 to 180 graduations per minute according to the indexing cam used. Example: A 10" diameter cast iron handwheel requiring 100 graduations was graduated on Model GC with production rate 30 to 35 per hour, including handling time.

### WORK HEAD

Designed for No. 3J Collet, 1 3/4" round maximum capacity, or suitable work holding fixture.

### GRADUATING TOOL SLIDES

Graduating Tool Slides made of hardened and ground steel, for 1/4" tool bit.

### DRIVE

One motor 1/4 HP 1750 RPM 220/440 volt, 3 phase 60 cycle. Power is engaged by a solenoid operated on line voltage.

### STANDARD EQUIPMENT

Standard equipment consists of motor and switch, 9 change gears, 2 cams (1 graduating and 1 indexing), 2 graduation cutting tools, extended tool holder slide, and wrench.

### SIZE OF MACHINE — Boxed for Shipping

Width 25" . Length 42" . Height 19" .

### WEIGHT

Net. 180 lbs. Boxed 280 lbs.

### ADDITIONAL EQUIPMENT (Available as extras)

Extra or special cams.  
Collets up to 1 3/4" capacity with nut.  
Cabinet Stand.  
Work holding fixtures, etc.



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