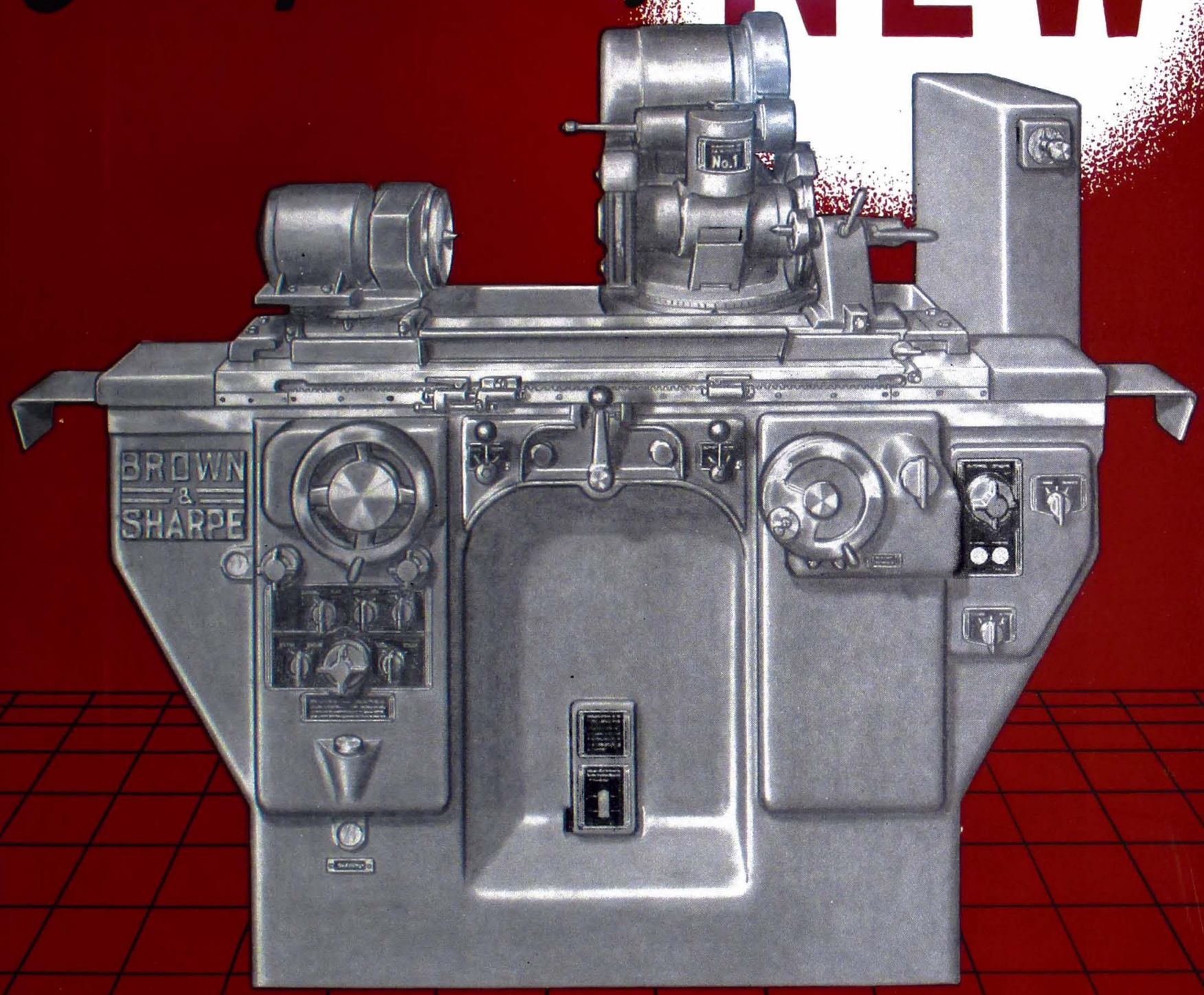


NORTHERN MACHINERY
SUPPLY COMPANY
MINNEAPOLIS, MINNESOTA

OCT 7 - 1953

Completely **NEW**



No. 1 Universal Grinding Machine

BROWN & SHARPE

Brown & Sharpe New

Having many desirable features including—

- ▶ Unit type wheel spindle with antifriction bearings and sealed lubrication.
- ▶ Practical wheel speeds of 2500, 3000 and 3600 R.P.M. which provide the maximum in wheel efficiency and economy.
- ▶ Independently driven, instantly available internal grinding spindle furnished as standard equipment (choice of spindle for 16,500, 24,000 or 35,000 R.P.M.).
- ▶ Hydraulic table drive providing smooth table movement with speeds infinitely variable from 3" to 150" per minute.
- ▶ Variable speed headstock drive — 60 to 600 R.P.M.
- ▶ Universal turret providing 4" adjustment of wheel spindle head at right angles or parallel to, wheel slide.
- ▶ Easily removed tanks for hydraulic and coolant systems.
- ▶ Fine cross feed, adjustable to .0001" on work diameter, providing extremely accurate sizing.
- ▶ Positive stops on cross feed for either external or internal grinding.
- ▶ Kneehole for operator's convenience and comfort.
- ▶ Conformity of machine to J.I.C. Electrical and Hydraulic Standards.
- ▶ Available additional equipment to augment the flexibility of the machine for economical small or moderate lot production.

Completely Universal Wheel Spindle Head

THE design of the wheel spindle head permits either the external grinding spindle or the internal grinding spindle to be used in any desired horizontal position. Accurate compound settings can be made for combination straight and taper, or double taper grinding (both external and internal) with only one set-up.

An exclusive feature of this wheel spindle head is a Universal Turret on which the upper members of the head rest. This turret can be turned and locked in any one of four angular positions. Turning the turret gives a 4" horizontal movement of the grinding spindle either parallel or at right angles to the wheel slide. This movement extends the range of usefulness.

Efficient External Grinding Spindle Speeds

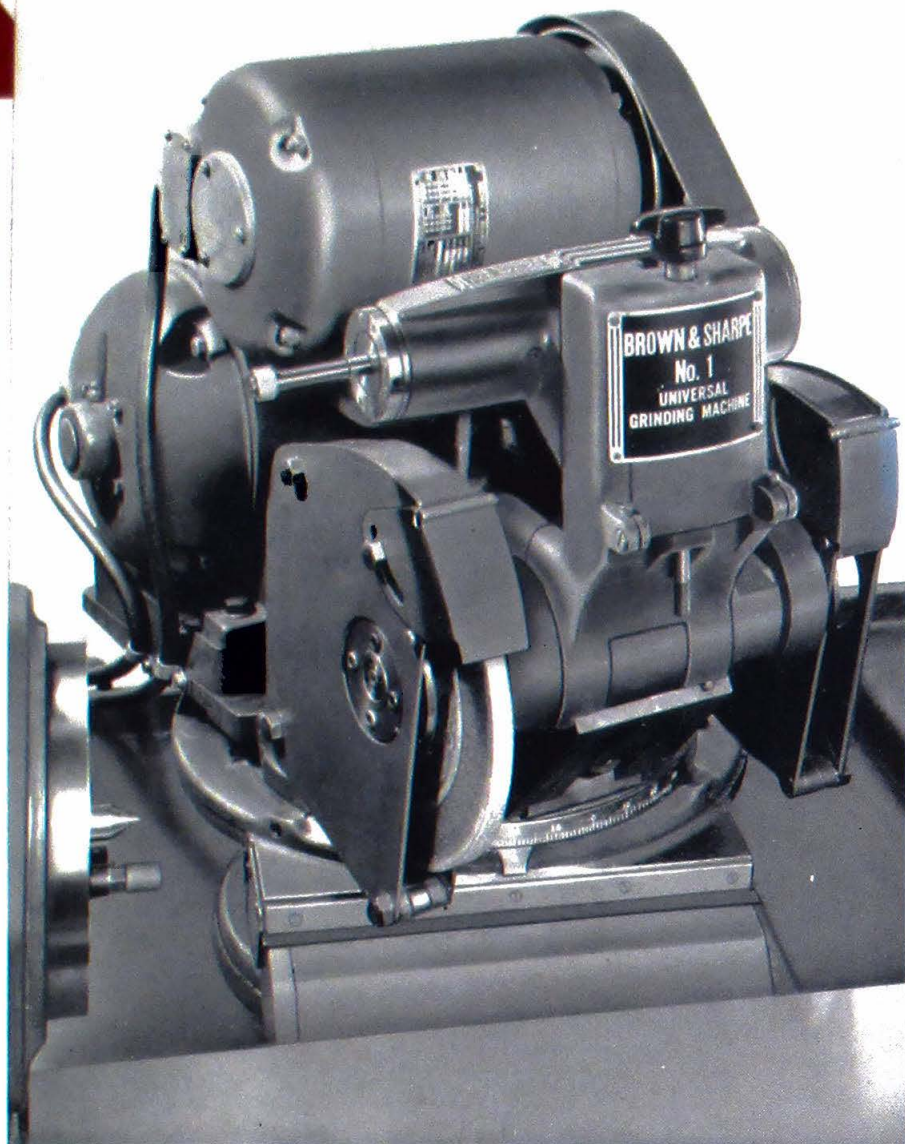
SPINDLE speeds of 2500, 3000 and 3600 R.P.M. together with work speeds from 60 to 600 R.P.M. permit grinding wheels to operate at the most efficient surface speed on an extremely wide range of work diameters for the ultimate in surface finish and stock removal.

Internal Grinding Spindle Instantly Available

THE internal grinding spindle is hinge-mounted at the front of the wheel spindle unit where it can be instantly moved into operating position and rigidly clamped.

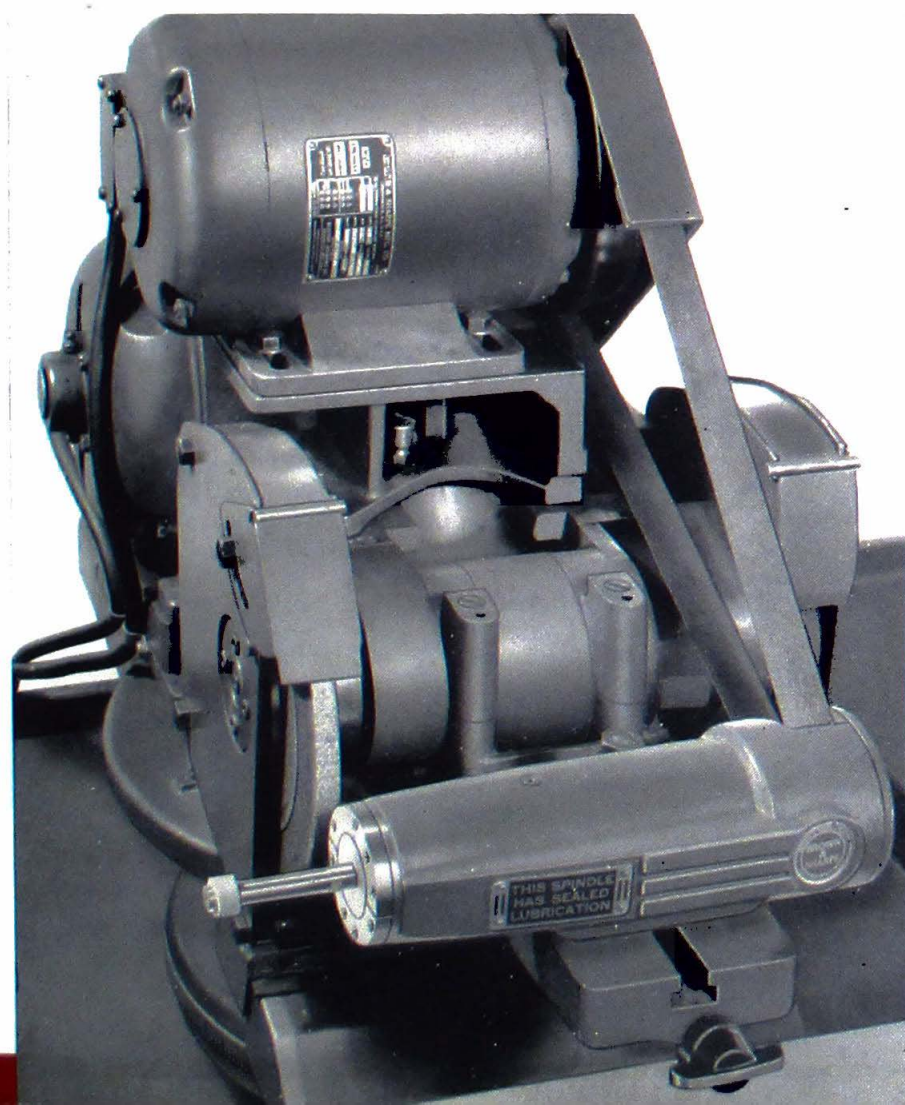
Interchangeable internal grinding spindle units having antifriction bearings and sealed lubrication with speeds of 16,500, 24,000 or 35,000 R.P.M. are available. A choice of one is furnished with the machine as standard equipment. These units provide the proper peripheral speed of the wheel to give the best possible surface finish and the maximum in wheel economy.

A wide range of wheel arbors for each of the internal grinding spindles is available.



Above — The completely universal wheel spindle head.

Below — The internal grinding spindle in operating position.



No. 1 Universal Grinding

Removable unit type external grinding spindle. Mounted on preloaded precision antifriction bearings with sealed lubrication.

Angular settings of headstock indicated on scale, graduated in degrees to 90°, by either of two zero marks 90° apart. Double V-belt drive remains unchanged for either dead-center or revolving spindle drive. Change from dead-center to revolving spindle drive is extremely easy. Up to 1" stock can be taken through spindle.

Table reverse lever operated manually or by table dogs (left-hand dog also acts as positive stop).

Two position lever controls starting and stopping of headstock and coolant pump or starting and stopping of headstock, coolant pump and table simultaneously.

Headstock "jog" button. Headstock rotates while button is held down (useful when setting up). For inspection of work being ground, depressing button stops flow of coolant without affecting headstock rotation.

One revolution of handwheel moves table .1" or 2.5" depending on rate selected. Automatically disengaged when power movement is engaged and reengaged when power travel is turned off. Graduated in increments of .001" at slow rate.

Table throttle gives any desired rate of longitudinal table travel from 3" to 150" per minute. Adjustable stops at knob facilitate changing from grinding to pre-selected wheel truing speed (3" to 30" per minute) and vice versa.

Selector knob for Continuous In-Feed Arrangement (available as an extra). With knob engaged, power table travel is inoperative.

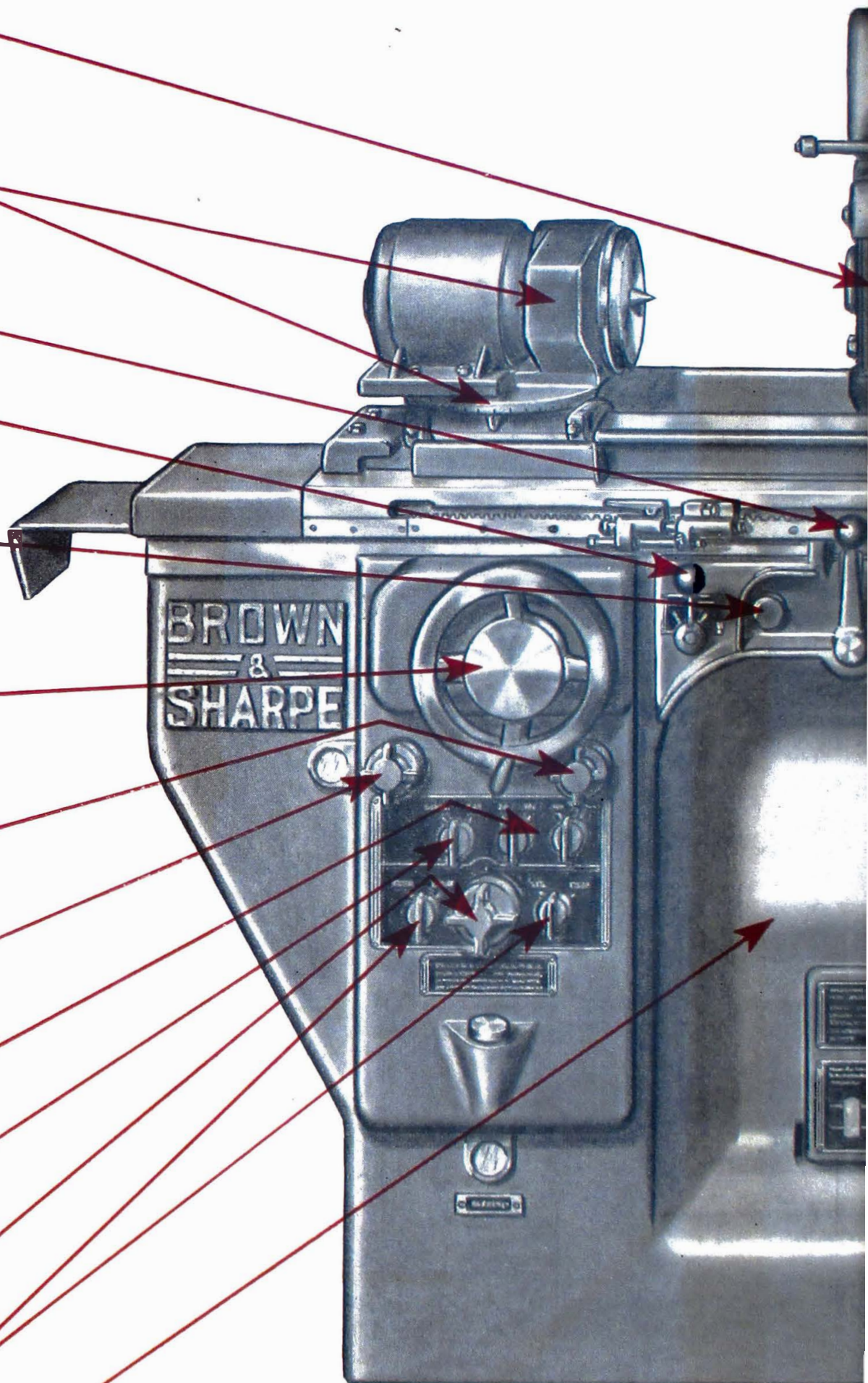
Separate knobs control the amount of table dwell, from 0 to 2½ seconds, at each table reversal.

Knob selects rate of in-feed (from .015" to .300" per min.) when using Continuous In-Feed Arrangement (available as an extra).

Power cross feed rate selector. Rates available from .0001" to .003" on diameter of work at each table reversal.

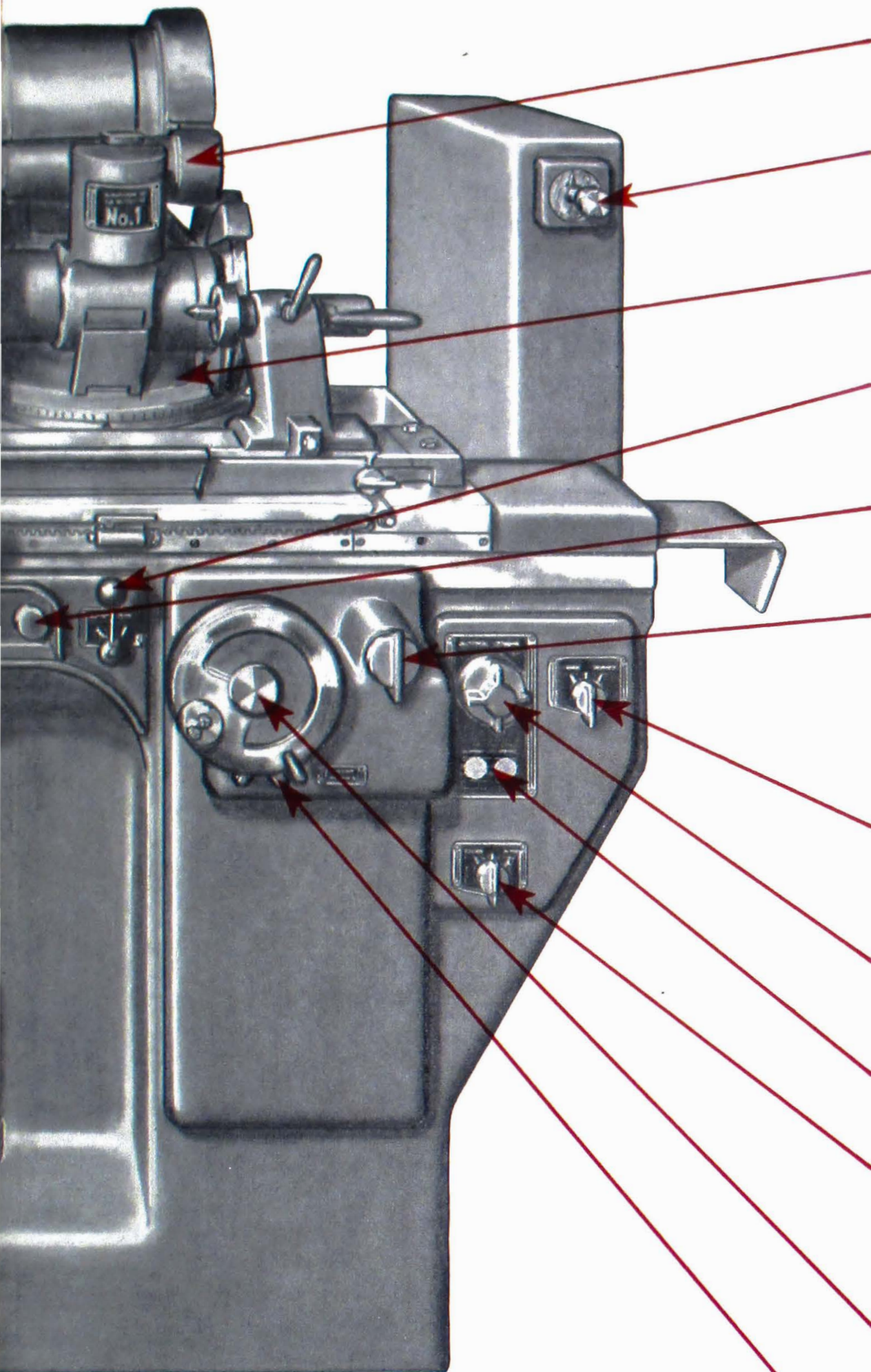
Knobs determine whether automatic cross feed is operative at each table reversal or at alternate reversals only.

Knee hole permits complete manipulation of the machine from a relaxed seated position as well as from the standing position.



Flexible - Accurate

Machine



Hinged construction of internal grinding spindle unit permits it to be easily moved up out of the way when not in use.

Knob selects amount of spark-out time (in seconds) when using Spark Timing Arrangement (available as an extra).

Wheel spindle head permits setting the external and internal grinding spindles to any angle in the horizontal plane, independent of the wheel slide.

Power cross feed engaged and disengaged by conveniently located lever.

Button operates Cross Feed Handwheel Power Retraction mechanism (available as an extra). Pressing button causes handwheel to return to starting position.

Knob engages coarse hand cross feed. Also can be set to permit turning handwheel counterclockwise to advance grinding wheel into work for internal as well as external grinding (this facilitates using handwheel graduations and positive stop grinding).

Position of knob determines whether external or internal grinding spindle motor will start when main starting button is pressed.

Headstock speed selector dial. Infinite number of work speeds available from 60 to 600 R.P.M. for both dead-center and revolving spindle grinding.

Main push-button switch governs power supply to all motors.

Knob selects either "lever" or "handwheel" control.

Rotation of cross feed handwheel counterclockwise, when using "handwheel control", starts headstock, table and coolant pump as well as advancing wheel to work. When grinding is completed and cross feed automatically stopped, rotation of handwheel clockwise to starting position withdraws the wheel, and simultaneously stops headstock, table and coolant pump.

Engagement lever for Automatic Spark Timing Mechanism (available as an extra).

te - Dependable

Specifications

CAPACITY

Swing over table Diameter, 10"
Distance between centers {Nominal, 20"
..... {Maximum, 22 $\frac{3}{4}$ "
Distance, centerline of work to centerline {Max., 11"
of external grinding spindle {Min., 2"
Center rest takes work to Diameter, 2"

EXTERNAL GRINDING SPINDLE

Removable unit type.
Mounted on preloaded precision antifriction bearings.
Driven through V-belt by ball-bearing type
motor 1 $\frac{1}{2}$ H.P.
Speeds 2500, 3000 and 3600 R.P.M.
Lubrication Sealed
Takes wheels 10" diam., $\frac{3}{8}$ " or $\frac{1}{2}$ " thick, with 3"
diam. holes.

INTERNAL GRINDING SPINDLE

Mounted on superprecision ball-bearings.
Driven through flat belt by ball-bearing type
motor 1 H.P.
Lubrication Sealed
Speed *24,000 R.P.M.

*Speed of spindle regularly furnished with machine. Spindles operating at 35,000 or 16,500 R.P.M. can be substituted or furnished in addition at extra cost.

HEADSTOCK

Driven through double V-belt by ball-bearing type
motor $\frac{1}{4}$ H.P.
Spindle nose 5" Lathe-Nose Type A2
(modified), has No. 7 B&S taper hole.
Spindle mounted on preloaded precision antifriction
bearings.
Speeds; infinite number for both dead-center and
revolving-spindle grinding from 60 to 600 R.P.M.
Swivels 180°; base scale graduated in degrees to 90°;
settings indicated by either of two zero marks 90° apart.

FOOTSTOCK

Center has No. 7 B&S taper.

SLIDING TABLE

Traversed hydraulically or by hand.
Any rate of power travel available from 3" to 150"
per minute.
Adjustable stops at speed selector dial provide rapid
change from grinding to preselected wheel truing
speed.
Travel per revolution of handwheel {Slow, .1"
..... {Fast, 2.5"
Table dwell 0 to 2 $\frac{1}{2}$ seconds available for either or
both ends of table travel.

SWIVEL TABLE

Scales for angular settings gradu- {8 $\frac{1}{4}$ °
ated to {3 $\frac{1}{2}$ " taper per ft.
..... {28%

CROSS FEEDS

Automatic and hand operated.
Automatic; reduction in diameter of work at each
reversal, or at alternate reversals only, .0001" to .003"
Hand; feed per revolution of handwheel, {Slow .100"
..... {Fast .300"

HYDRAULIC SYSTEM RESERVOIR

Removable, wheel-mounted steel tank,
Capacity, 13 gallons

COOLANT SYSTEM RESERVOIR

Removable, wheel-mounted steel tank,
Capacity, 10 gallons

LUBRICATING SYSTEM RESERVOIR

In base of machine Capacity, 3 gallons

FLOOR SPACE

At right angles to spindle, 77". Parallel to spindle, 94".

WEIGHT

5700 lbs. (approximately)

STANDARD EQUIPMENT

Both external and internal grinding spindles; table type
wheel truing fixture; footstock type wheel truing fix-
ture; center rest; wheel sleeve, right; wheel sleeve, left;
wheel sleeve puller; 2 universal back rests and 2 adjust-
able bronze shoes; face plate; 3 motor sheaves; 2 grind-
ing wheels (straight) 10" diameter, $\frac{1}{2}$ " thick, 3" hole;
set of work driving dogs; 6" 4-jawed independent
chuck; table splash guard; set of wrenches and tool box.

Optional Mechanisms

Available at extra cost. Must be applied to machine
before shipment from our factory.
Automatic Cycle and Spark Timing Arrangement
Automatic Cycle and Sizing Arrangement
Electralign (for electronic alignment of swivel table)
Electralign - Comparator Selector
Continuous In-Feed Arrangement
Cross Feed Handwheel Power Retraction

Additional Equipment

Available at extra cost

Single Screw Double-Shoe Back Rest (carbide shoes)
Universal Back Rest (Spring Type)
Solid Shoes (range $\frac{1}{4}$ " to $1\frac{1}{2}$ ") for Universal Back Rest
Adjustable Shoe (range 1" to 2 $\frac{1}{2}$ ") for Universal Back
Rest
Nos. 5R, 7R and 9R Rotary Magnetic Chucks and Adapters
(available only in the United States of America and its
Territories)
Face Chuck Attachment
1" Wide Wheel Equipment, Right Hand
1" Wide Wheel Equipment, Left Hand
~~Headstock Draw-In Collet Attachment (handwheel oper-
ated) discontinued~~
No. 11 Internal Grinding Spindle Unit
(operates at 35,000 R.P.M.)
No. 13 Internal Grinding Spindle Unit
(operates at 16,500 R.P.M.)
Arbors and Wheels for Internal Grinding Spindle Units