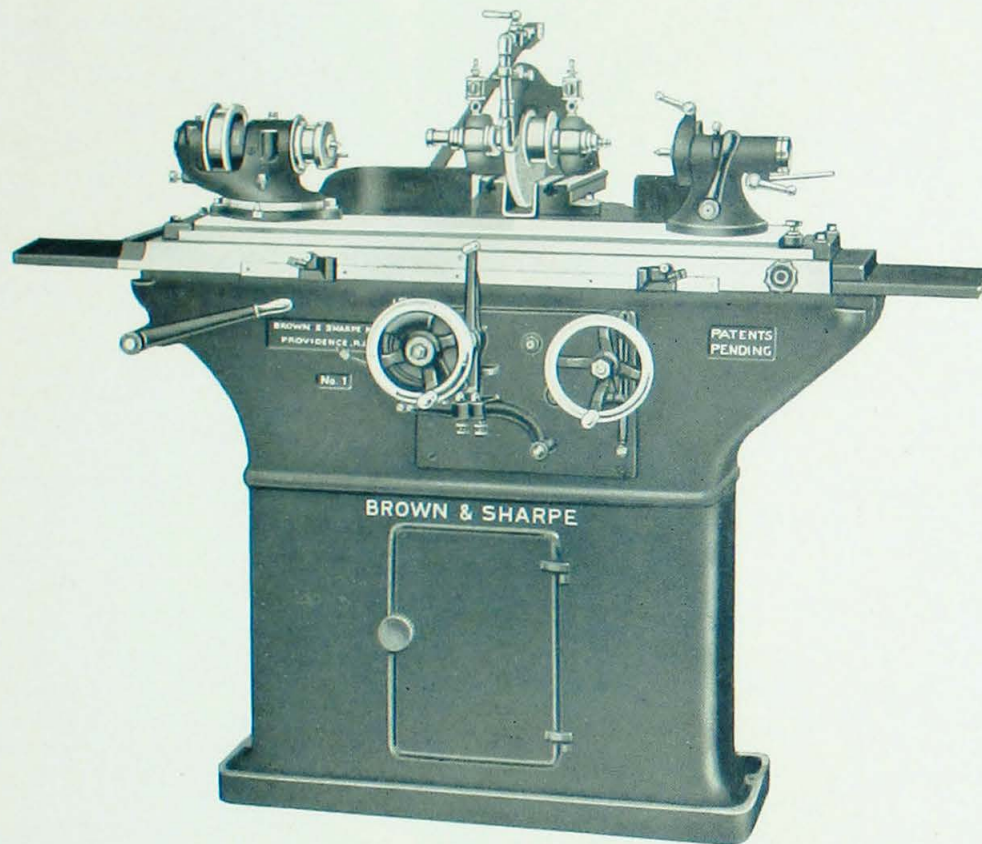


# No. 1 UNIVERSAL GRINDING MACHINE



**CAPACITY:**

CENTERS SWING 10" DIAMETER  
CENTERS SWING 8½" OVER WATER GUARDS  
CENTERS TAKE 24" IN LENGTH

**BROWN & SHARPE MFG. CO.**  
Providence, R. I., U. S. A.



# No. 1 Universal Grinding Machine

2 H. P. required to operate machine at its maximum capacity.

**CAPACITY** Centers swing 10" diameter, 8½" over water guards; take 24" length.

**WHEEL SPINDLE** Of tool steel. Bearings hardened, ground and lapped. Self-aligning phosphor bronze boxes provided with means of compensation for wear. Driven by 1¼" belt. Spindle and wheel quickly removed. Takes wheels to 10" diameter, ⅜" to ½" thick.

**WHEEL STAND SLIDE** Solidly supported on bed and base which form rear column of machine. Counterweighted to take up backlash. Swivels. Base graduated in degrees to 90° either side of zero. Wheel can be used in any position without interference. Transverse movement controlled by handwheel. Graduations read to thousandths of an inch on diameter of work. Metal cover protects ways from dust and water.

**AUTOMATIC CROSS FEED** Accurate. Crossfeed mechanism runs on anti-friction bearings with adjustment for wear. Range .00025" to .004" on diameter of work at each reversal of the table. Integral part of the machine. Easily and quickly set. Automatically thrown out when work is to size. Can be set to feed full amount at both ends of the table travel or any part of the full amount at either end.

**SWIVEL TABLE** Turns on a large central stud, hardened and ground; bronze bushing provides means of compensation for wear. Clamped at both ends. Can be set at an angle to table ways. Scale graduated to 7° reads half the included angle. Scales reading to 3" taper per foot and 25% indicate the included angle. 1 T-slot ⅜" wide.

**TABLE** Travel automatic. Controlled by adjustable dogs; dog brackets slide on a rack. Ways proportioned to give large wearing surfaces. Oil distributed evenly by rolls. Ways protected by metal covers.

**SPEEDS** Speeds of wheel, work, and table entirely independent of each other. Changes obtained by use of change and cone pulleys. There are 3 changes of wheel spindle speed: 2444, 2850 and 3560 R. P. M.; 8 changes of work speed: 75, 125, 147, 212, 244, 345, 412 and 673 R. P. M.; 8 changes of table speed: 3", 5", 7", 10", 15", 23.5", 35" and 50" per minute. A single lever starts and stops the rotation of the work and speed of the table.

**REVERSING MECHANISM** Accurate. Allows work to be ground close to shoulder.

**HEADSTOCK** Turns on stud. Can be clamped at any desired angle. Swivels. Graduated scale on base indicates setting in degrees to 100° either side of zero. Spindle hardened, ground and lapped. Phosphor bronze boxes provided with means of compensation for wear. Front end threaded, 1½" diameter, 6 R. H., U. S. S.; has No. 6 Taper Hole. Drives on either live or dead centers.

**FOOTSTOCK** Clamped to swivel table by a lever. Metal cover protects spindle. Holder for diamond tool attached. Wheel can be trued without removing work.

**UNIVERSAL BACK RESTS** For supporting slender work or splined shafts. Universal in all movements. Capable of most delicate adjustments. Automatically compensate for difference in diameter as the work approaches size. Pressure on the shoe automatically released when work is to size. Equipped with adjustable bronze shoes which can be easily and quickly adjusted to different diameters.

**WET GRINDING** Provision for abundant supply of water. Tank and centrifugal pump attached to rear of machine. Pump simple in construction; needs no priming or packing.

**BASE** Hollow. Rigidly braced internally. Fitted as a closet to hold small tools and accessories. Supported at three points, preserving alignments.

**COUNTERSHAFT** One pair of tight and loose pulleys, 8" diameter. 3" belt. Speed: 290 R. P. M.

**FLOOR SPACE** At right angles to spindle, 49". Parallel to spindle, 106".

**EQUIPMENT** No. 03 Internal Grinding Fixture; countershaft for use with Internal Grinding Fixture; 6" 4-jawed independent chuck, face plate, face chuck, wheel truing stand, 2 universal back rests, 2 adjustable bronze shoes, center rest. 2 grinding wheels: 1, 10" diameter, ½" thick, 3" hole; 1, 6" diameter, ½" thick, 2" hole. Set of dogs, set of telescopic water guards, wrenches and everything else shown in cut on cover and in panel below, together with overhead works.



WEIGHTS AND SHIPPING DATA	Net Weight, Lbs. (Approx.)	Domestic Shipping Weight, Lbs. (Approx.)	Foreign Shipping Weight, Lbs. (Approx.)	Dimensions For Shipment, Inches	Space Occupied, Cu. Ft.
Machine, belt drive, without countershaft	2225	3150	3250	79x36x48	79
Countershaft	525	Boxed with Machine			

The Universal Head is available for use on the No. 1 Universal Grinding Machine as an extra. Separate specifications are issued on the Motor Driven No. 1 Universal Grinding Machine.



## Features of Construction

Wheel guard affords ample protection for operator.

Reversing lever actuated by table dogs. May be operated by hand. Connected with the cross feed mechanism for automatically feeding wheel to work.

Rugged headstock with drives for both live and dead centers. Base swivels. Scale graduated to read to degrees.

Main starting lever.

Table guards protect ways of bed from injury by grit or coolant.

Adjustable reversing dog slides on rack. Has fine thumb screw adjustment.

Cross feed handwheel.

Base supported at three points to preserve alignments. Large closet affords ample room for storage of accessories.

Hardened and ground spindle carried in adjustable phosphor bronze boxes.

Footstock slides on table. Clamped in position by convenient lever.

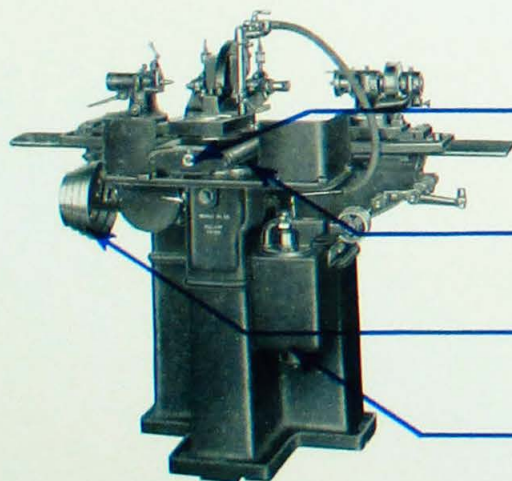
Spindle operated by spring lever. Hand clamp locks spindle for heavy work.

Spring latch for engaging fine adjustment of swivel table.

Fine adjustments of swivel table made by knob at front.

Lever for engaging either hand or automatic feed of table.

Table handwheel.



Screw arrangement for reversing the direction of pull of counterweight for internal grinding.

Wheel platen swivels on base. Scale, graduated to 90° either side of zero, indicates adjustment.

Cone pulley for obtaining changes of table speed.

Ample supply of coolant provided by pump and tank attached to base at rear of machine.



## Details of Construction

### Wheel Stand Completely Adjustable

**T**HE grinding wheels of the Brown & Sharpe Universal Grinding Machines may be used in practically any horizontal position of the spindle as the wheel stand is completely universal in its construction. The wheel can be mounted either on the left end of the self-aligning spindle or between its bearings.

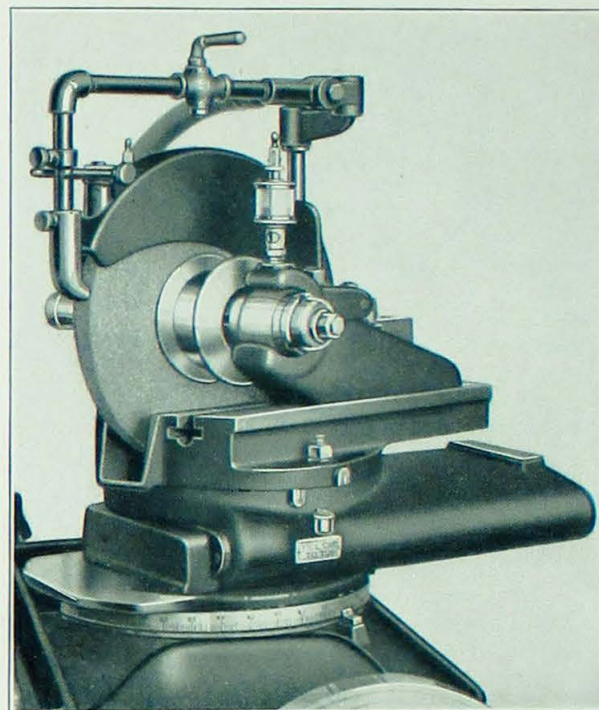
The spindle is mounted in a wheel stand carried on a swivelled platen in which there are T-slots allowing transverse adjustments of the wheel stand. The wheel platen is carried, in turn, on a counterweighted wheel stand slide which has both transverse and angular adjustments.

The cross feed mechanism, which may be operated automatically or by hand, controls the transverse movements of the wheel stand slide. The automatic cross feed is accomplished by means of a ratchet and pawl which can be made to feed from .00025" to .004" on the diameter of the work at each reversal of the table. The mechanism can be set to feed the full amount at both ends of the table or any part of it at either end. The automatic cross feed is automatically thrown out when the work is to size. Hand operation of the cross feed is by a handwheel which is graduated to read to thousandths of an inch.

Every effort has been made to assure long life and accuracy for these machines. The worm shaft is mounted in self-aligning radial ball bearings and ball thrust bearings, and adjustments for wear are easily made from the front of the machine by turning a notched locking screw. The cross feed worm threads are hardened and ground, and the worm wheel is made of hard bronze. An adjustment is provided to take up wear between the worm and wheel. The cross feed rack pinion shaft is mounted on tapered roller bearings and has means of compensation for wear.

As an aid to the elimination of backlash, the cross slide is counterweighted by suspending a weight on a chain that is fastened to an auxiliary slide which may be adjusted in relation to the cross slide. The chain runs through the center of the rack pinion thereby allowing full angular movement of the cross slides. The position of the auxiliary slide and resultant pull of the counterweight are adjusted by a screw at the rear of the platen. The pull of the counterweight steadies the infeed in both external and internal grinding.

Angular settings of the wheel stand slide to 90 degrees either side of zero are made by means of the graduated swivel base. The entire assembly is solidly supported on a heavy bed and base which forms the rear column of the machine.



WHEEL STAND

## BROWN & SHARPE GRINDING SERVICE

Among the many departments maintained to provide service for our customers is one developed solely to solve grinding problems. Our engineers have at their disposal an abundance of data and a wealth of experience acquired through years of operation on many kinds of grinding work, both in our own shop and in others where our machines are at work. Because of this fund of information and experience we are especially fitted to design correct grinding methods for any particular job to which our machines may be applied.

Layouts and fixtures produced by this Service have helped many manufacturers to faster and better grinding with Brown & Sharpe machines. Do not hesitate to call on this Service in connection with your requirements.