

# RIVETT

# 1020



RIVETT LATHE & GRINDER Inc.  
BRIGHTON • BOSTON • MASS • U • S • A •

BULLETIN 1020

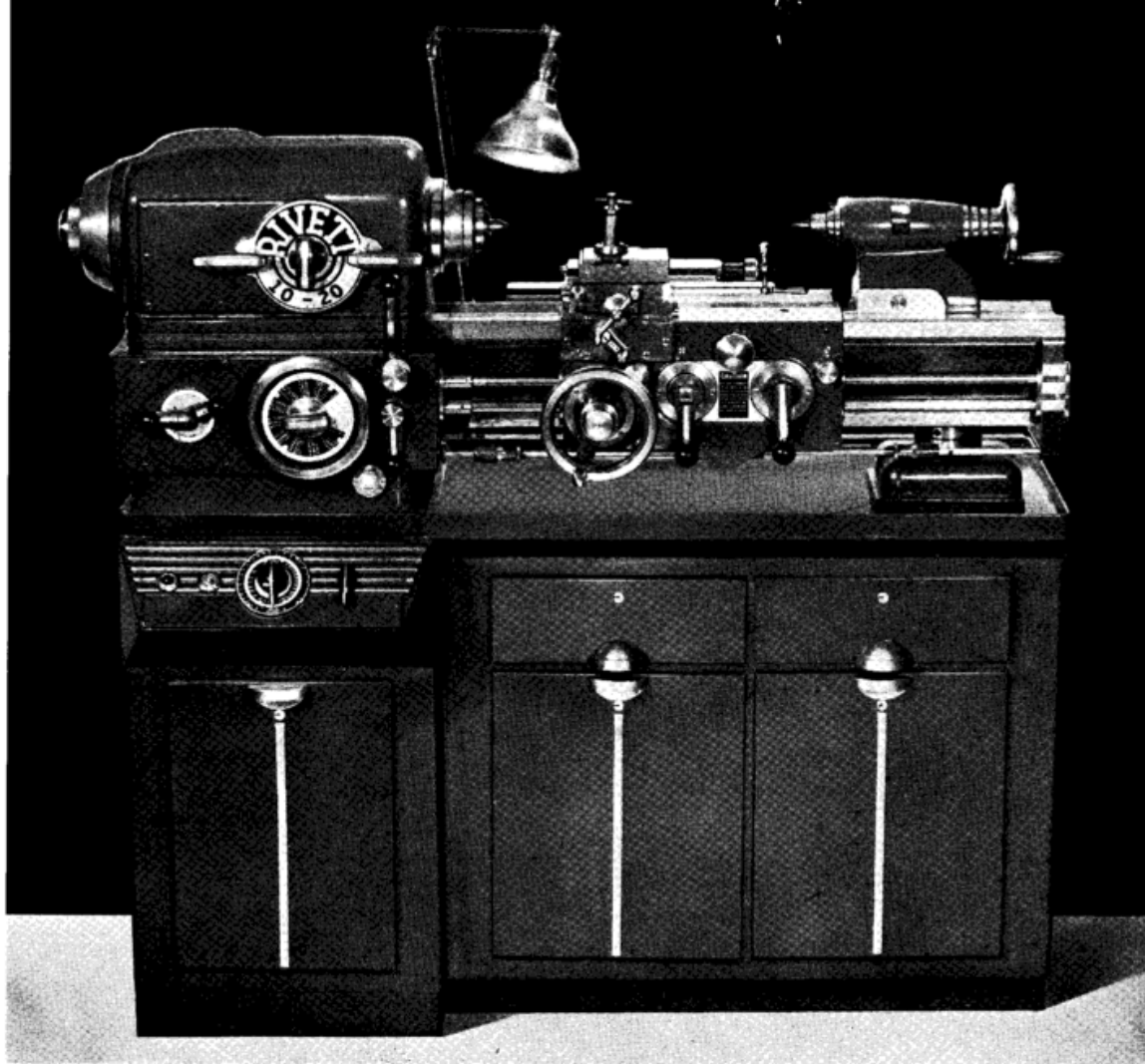


Fig. 1

**T**HE RIVETT 1020 Cabinet Lathe bridges the existing gap between precision screw cutting bench and tool-room lathes. It is a strictly modern machine, incorporating the best in structural design and the latest in operating convenience and appearance. The lathe is capable of fine manufacturing and of rapid and accurate toolroom and experimental work. Substantial construction assures many years of active service.

The Rivett 1020 is a full precision back-gearred, screw cutting lathe with steel cabinet and integral motor drive. The headstock is fully enclosed and mates with a housing cast in the bed which forms an oil-tight enclosure with flood lubrication for shaft bearings and gears. The hardened and ground spindle is ball bearing. Spur gears are heat treated alloy steel, worm and worm gears are steel on bronze and back gears are Meehanite, approximately 230 Brinell, on steel for quiet running. Shaving of spur and helical gears assures accuracy of profile, contour and tooth spacing. The strongly ribbed, box-sectioned bed provides separate ways for the carriage and tailstock. The compound slide rest is removable from the saddle to permit mounting attachments and gauges. All driving vee belts are adjustable and may quickly be replaced without disturbing the lathe or drive assembly or removing the spindle from its bearings. Saddle and tailstock shoe are Meehanite, somewhat softer than bed ways.

The Rivett 1020 can conveniently be run from standing or sitting position. All controls are located at the front of the machine within comfortable reach. Slanted panel at base of headstock mounts electrical controls completely segregated and insulated from the lathe proper. Single lever governs forward, reverse and stop with electric brake while selector with graduated dial gives any open belt spindle speed from 100 to 2300 r.p.m. or any back-gearred speed from 20 to 460 r.p.m. Quick change gearing provides feed changes .001" to .028" or thread changes 7 to 156 per inch. Carriage travel in either direction is controlled by adjustable micrometer stops. When driven by the lead screw, the carriage can be reversed in train and independently of the lathe spindle at thread cutting speeds, or when driven by the feed rod the carriage can be reversed without shock at any lathe speed, by use of selective low-speed clutch, without reversing spindle. For protection, safety interlocks are provided between lead screw and feed rod and between power longitudinal and cross feeds. Ball stop on cross feed provides means for withdrawing and resetting tool when thread cutting without loss of micrometer reading.

## CABINET

Welded steel cabinet, having rimmed top surface to form chip or oil pan, mounts lathe assembly and houses attachments and motor drive. Two drawers, one with collet board and one with sliding shelf, and two compartments provide locked storage space for all lathe attachments. Separate compartment at left with louvres at rear for motor ventilation encloses drive. A locked door at left front and a small locked door in left end of cabinet give access respectively to drive and controller.

## SPINDLE DRIVE

Any spindle speed, 20 to 460 r.p.m. through back gears or 100 to 2300 r.p.m. open belt is provided by Submarine Signal Company variable speed drive. A 1 H.P. commutator type, constant-torque motor drives spindle direct by twin vee belts. A grid-controlled rectifier unit converts current and furnishes overload and under-voltage protection to motor. Reversing switch on control panel governs direction of lathe spindle rotation. Electrical action instantly brakes spindle when switch is positioned at stop. A speed selector with graduated dial, also mounted on control panel, establishes any spindle speed within the available ranges, through back gears or by open belting. A pilot light on control panel indicates that power is available for the motor. Driving vee belts to spindle are properly tensioned by screw adjustment and may quickly be replaced at any time without disturbing drive or removing lathe spindle or headstock.

## SPINDLE AND SPINDLE BEARINGS

Forged steel spindle is mounted in precision ball bearings. The two front bearings are in opposition with a predetermined end thrust imposed to secure maximum accuracy in operation while the rear bearings provide for spindle expansion and contraction. Spindle may selectively be driven in high-speed range or through back gears of five to one ratio controlled by lever on front of headstock. When turning spindle by hand wheel, driving sheave is disengaged. Spindle takes draw-in collets up to 1" dia. and step chucks up to 6" dia. and has long taper key-drive nose for positive mounting and driving of other chucking attachments.

## HEADSTOCK

Totally enclosed headstock is securely fastened to mating enclosure cast integral with the bed. Gears and shaft bearings within this housing are flood lubricated by filtered oil visible in sight gauge. The spindle bearings are grease-packed with easy means

for infrequent renewal of lubricant. The bearing mountings are cast in the headstock frame and are connected over their full circumference to withstand all possible stresses and high spindle speeds.

## QUICK CHANGE GEARING

Spindle gear, controlled by convenient lever, engages quick change gearing enclosed within headstock and bed housing. Circular index plate shows proper positioning of compound gears, operated by ball-handled levers, and gear box, operated by hand wheel, to obtain 51 thread pitches including 11½ and 27, and 51 feed changes. A compartment with removable cover plate at extreme left of bed provides for mounting pick-off gears used for cutting special threads not obtained through quick change gearing. Feed rod or lead screw may selectively be driven by setting ball-handled control lever.

## BED

Heavy box-sectioned bed with substantial cross ribbing insures the alignment of headstock, carriage and tailstock. The carriage saddle and tailstock travel on separate ways. The lead screw is mounted in pre-loaded precision ball bearings and may be reversed to distribute wear. The feed rod also runs in anti-friction bearings. The right hand pedestal supports the bed on spherical bearing to avoid distortion and has screw adjustment for exact levelling.

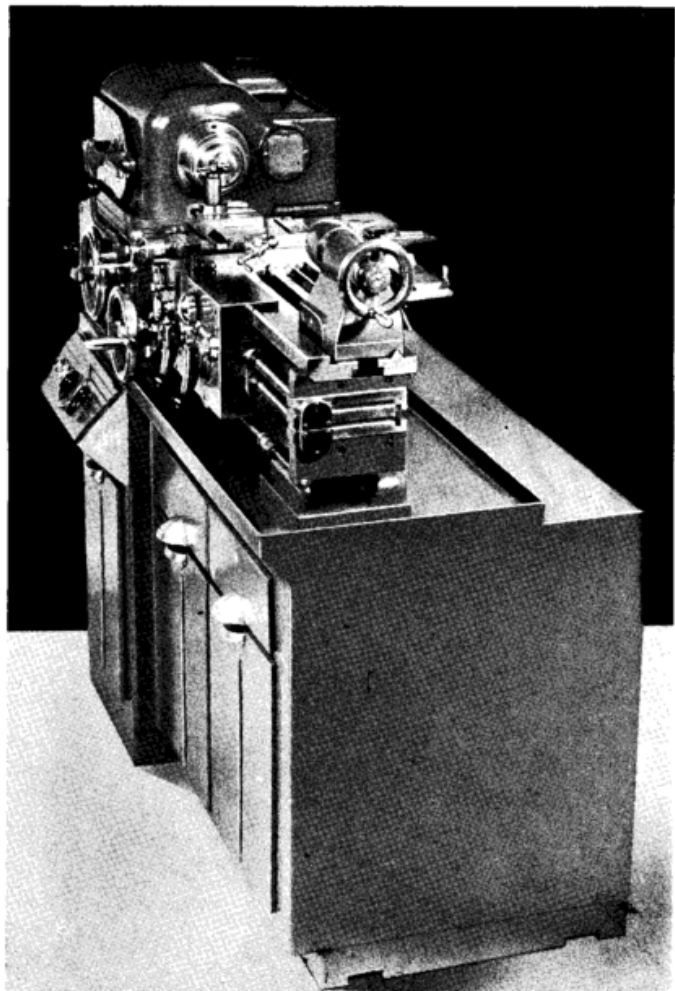


Fig. 2

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# CARRIAGE

Carriage has full-length bearing on front, top and rear of bed and is fitted with adjustable gibs to compensate for wear. Wipers with properly formed retainers protect the ways at both ends of carriage. Hand traverse is obtained by hand wheel with friction dial graduated by 64ths. Power longitudinal feed for turning and power cross feed for facing are transmitted through feed rod, train of gears in double-walled carriage apron and friction clutch with interlocked selector. Split nut has full engagement with lead screw for threading. Threading dial on front of carriage indicates proper engagement of nut. Interlock prevents simultaneous engagement of feed rod and lead screw. Stop rod with adjustable micrometer stops controls the carriage travel in either direction. Carriage can be locked to bed for facing or similar work.

## COMPOUND SLIDE REST

Compound slide rest removably mounts on carriage saddle and consists of cross slide, intermediate swivel and tool post slide. Slide movements are registered on adjustable dials graduated to .001" on tool post slide and .0005" on cross slide. Feed screw nuts

have adjustment to compensate for wear. The cross slide feed screw has adjustable ball stop for retracting and resetting threading tool without losing the micrometer reading. The intermediate swivel is graduated in degrees over its full circumference. The top slide has removable steel facing and carries tool post swivably mounted in block held in single tee slot.

## TAPER ATTACHMENT

Tee slot at rear of bed mounts taper attachment in any desired position. Slide rest slides freely on dovetail of carriage saddle. Cross-feed screw with dial is used for obtaining diameter and depth of cut. Tapers up to 12" long and 10° either side of center, measured in degrees or inches per foot, can be turned or threaded.

## TAILSTOCK

Tailstock shoe has bearing on vee and flat ways of bed and carries tailstock frame with set-over screw adjustment. Hardened, ground and lapped spindle has full bearing in honed frame in all positions, has ball thrust bearing and has travel measured by 3½" scale and by adjustable dial.

## SPECIFICATIONS

### GUARANTEED ACCURACY

Turn or bore 6", work held in collet, within	0.0001"
Turn or bore 6", work held on centers, within	0.0001"
Face to 8" dia. within	0.0002" concave, 0.0000" convex
Cut threads 12" long within	0.0005"
Cut threads 3" long within	0.0003"
Bed alignment over any 12" within	0.0005"
Tailstock spindle alignment with bed within	0.0002"
Headstock spindle mouth concentric within	0.0001"

### HEADSTOCK

Max. dia. round hole in collet	1"
Max. dia. round stock passed through spindle	1¼"
Max. square hole in collet	23/32"
Max. size across flats, hexagon hole in collet	7/8"
Swing over bed, dia.	10"
Swing over tool slide, dia.	2¼"
Swing over compound swivel of slide rest, dia.	35/8"
Swing over cross slide of slide rest, dia.	6"
Swing over carriage saddle, dia.	7¾"

### SPINDLE

Number of spindle speeds	Infinite
Range of spindle speeds through back gears	20-460 r.p.m.
Range of spindle speeds open belt	100-2300 r.p.m.
Length of spindle	22¼"
Type of spindle nose	Long taper key-drive
Back gear reduction ratio	5-1

### QUICK CHANGE GEARING

Number of feeds or lead changes	51
Range of feeds through feed rod	.001"-.028"
Range of threads through lead screw	7-156

### BED

Length of bed	39"
Width of bed	7¼"

Distance between centers with tailstock flush	20"
Distance between centers with tailstock overhung	23"
Diameter and pitch of lead screw	7/8" dia. 8 pitch Acme

### CARRIAGE

Length of carriage	157/16"
Width of carriage saddle	9¾"
Graduation of carriage stops	.001"

### COMPOUND SLIDE REST

Travel of cross slide	6"
Travel of tool post slide	4¼"
Swivel graduated to	360°
Travel of ball stop on cross slide screw	5/16"

### TAPER ATTACHMENT

Maximum length of taper	12"
Maximum taper either side of center	10°
Graduations	Degrees and inches per foot

### TAILSTOCK

Spindle diameter	1¼"
Travel of spindle	3½"
Graduations of travel	1/16" on scale, .001" on dial
Adjustment of screw set-over	3/16"

### CABINET

Floor dimensions	53" x 26"
Height of lathe center from floor	46½"
Dimensions of drawers	23" x 12¾" x 4¾"
Dimensions of attachment compartments	14¾" wide x 17" high x 24" deep

### WEIGHT

Lathe, standard attachments, mount and drive, net	1475 lbs.
Shipping weight, domestic, one crate, approx.	1675 lbs.
Shipping weight, ocean shipment, one box, approx.	1950 lbs.
Cubic feet, boxed for ocean shipment, approx.	.85

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