

BULLETIN No. 50

BOYÉ & EMMES  
14 to 36-inch

541-2520

HEAVY DUTY  
ENGINE LATHES



THE BOYÉ & EMMES MACHINE TOOL CO.

*Heavy Duty Lathes Since 1895*

125 CALDWELL DRIVE, HARTWELL :: CINCINNATI 15, OHIO, U. S. A.



# Look



*to* **BOYÉ & EMMES**

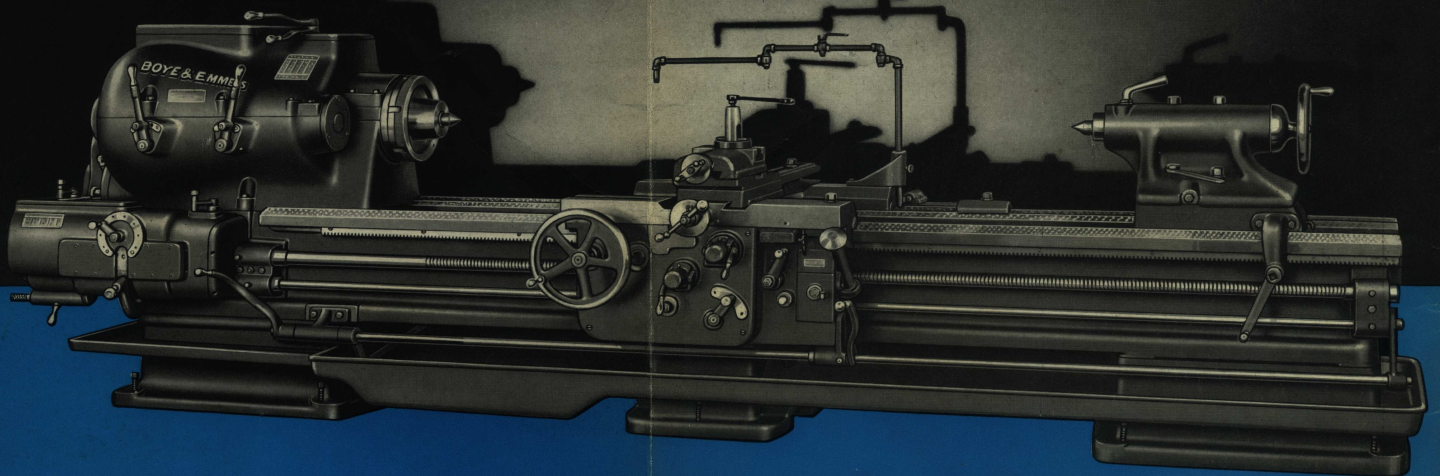
*"The Lathe with the Longer Life"*





**24-inch**

**HEAVY DUTY  
ENGINE LATHE**



*"The Lathe with the Longer Life"*



# GOOD JUDGMENT...

## FIFTY YEARS

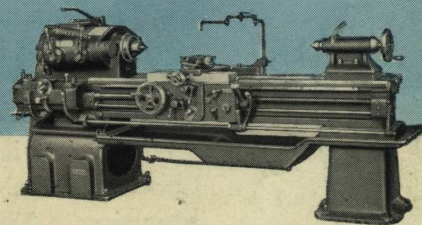
For more than fifty years Boyé & Emmes has continued to build fine Lathes . . . and has confined every effort in engineering, design, and manufacture to the production of an outstanding machine tool . . . that will better serve turning requirements.

## SOUND DESIGN

Accuracy with dependability must be "built into" a machine tool. In every Boyé & Emmes Lathe, materials and design, coupled with high fidelity craftsmanship, bear out the term . . . Look to Boyé & Emmes, "The Lathe with the Longer Life".

## HEADSTOCK

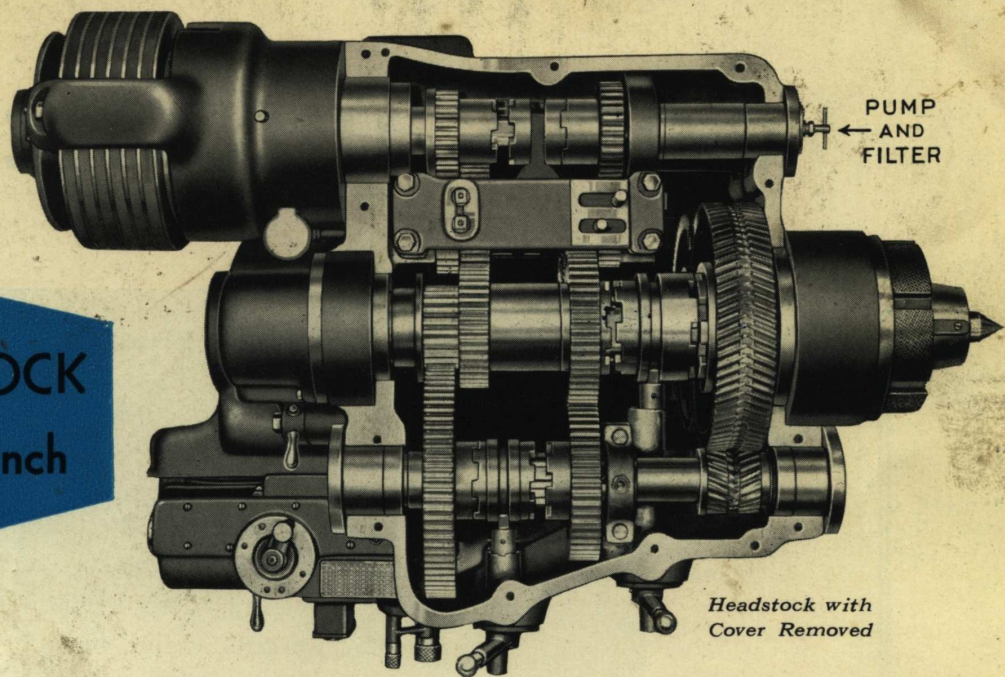
Boyé & Emmes Headstock design permits the high metal cutting speeds that are so necessary to meet today's demands. The headstock is an extra heavy cast section with gearing constantly in mesh, and speed changes are effected thru positive clutches. No sliding gears. Back Gear Shaft located at front of headstock neutralizes effect of tool lift under heavy cuts.



**THE BOYÉ & EMMES MACHINE TOOL CO.**



## HEADSTOCK 14 to 36-inch



### *Smooth... Selective Type*

#### DEPENDABLE PERFORMANCE BEGINS AT THE GEARED HEAD...

Twelve selective speeds are obtained through positive jaw clutches and thirteen wide face gears. Gears are alloy steel forgings, and with the exception of the herringbone gears used for final drive are heat-treated spur gears. Clutches slide on splined alloy steel shafts and clutch teeth are cut with an included angle with radially backed off faces assuring easy engagement. A combination of splash and filtered pump lubrication assures ample oil supply to all gearing and anti-friction bearings in which all shafts are mounted. A visual oil level gauge is furnished.

To counteract the lifting action of the spindle when under cut the back gears are in the front of the headstock. Whipping action is eliminated as all gears are in constant mesh.

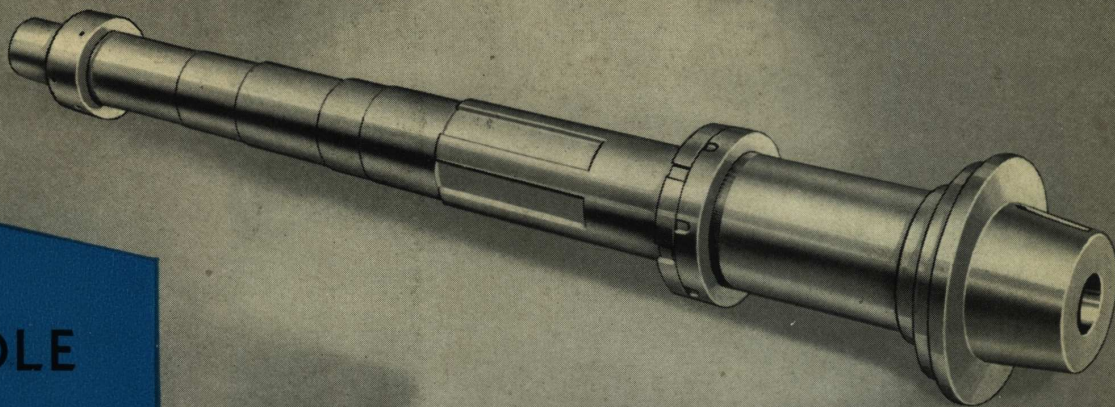
The twelve selective speeds are obtained from four levers and no conflicting gear ratios can be engaged. Levers at carriage and headstock start and stop spindle. Driving pulley is mounted on two wide inner race ball bearings and is supported at outer end in Timken roller bearings mounted in rigid arm.

The clutch is of multiple disc type with large contact area and ample power. The one point adjustment is easily accessible from outside the housing. The cone type brake is self-adjusting for wear and operated by very slight movement of control levers.

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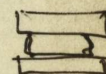
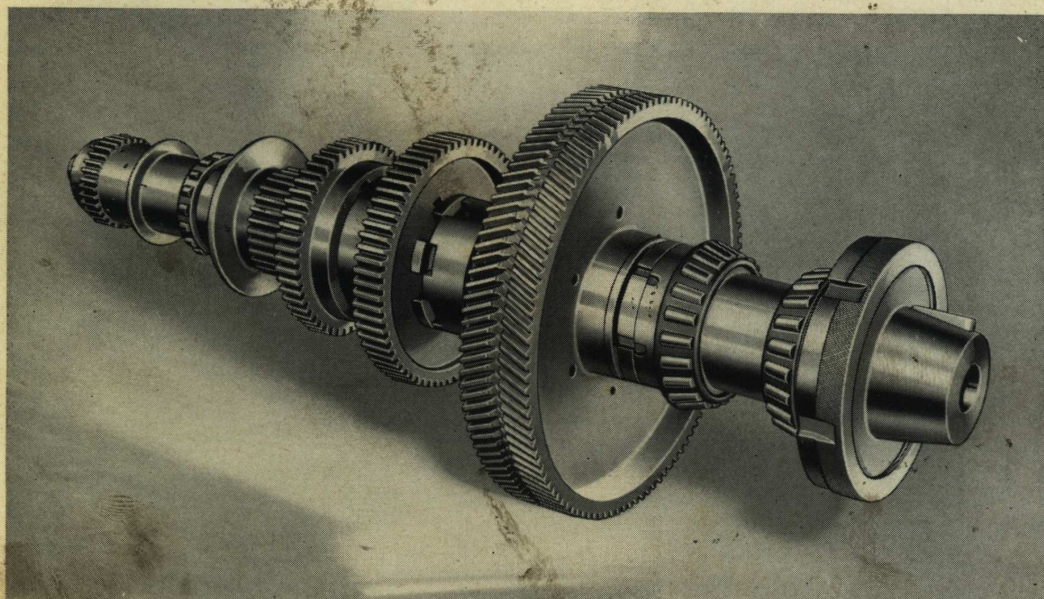


## SPINDLE



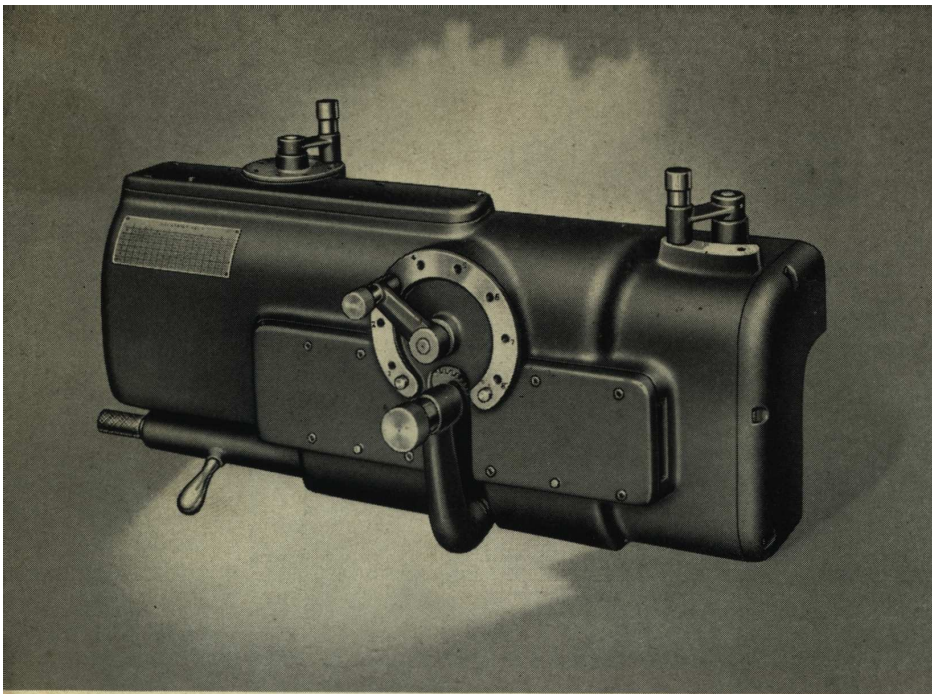
The spindle is heat-treated alloy steel mounted in Timken No. 0 Super Precision Bearings. Two opposed bearings are provided on all spindles up to and including 22" size lathe. On larger sizes two opposed Timken No. 0 Super Precision Bearings are provided in front spindle bearing with straight roller bearing float mounted at rear of spindle.

### SPINDLE ASSEMBLY



*"The Lathe with the Longer Life"*

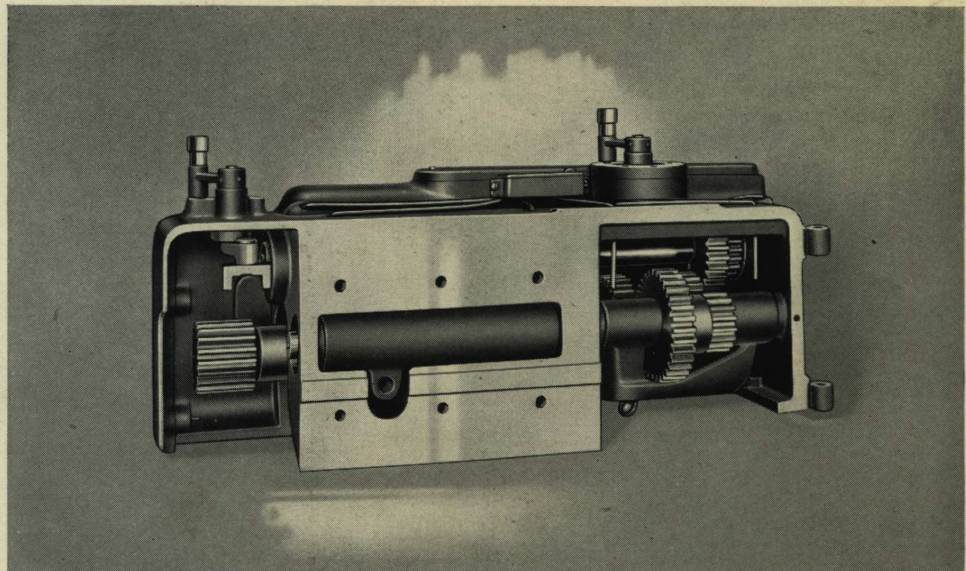




## *Quick* CHANGE MECHANISM

### A COMPLETE SELF-CONTAINED UNIT...

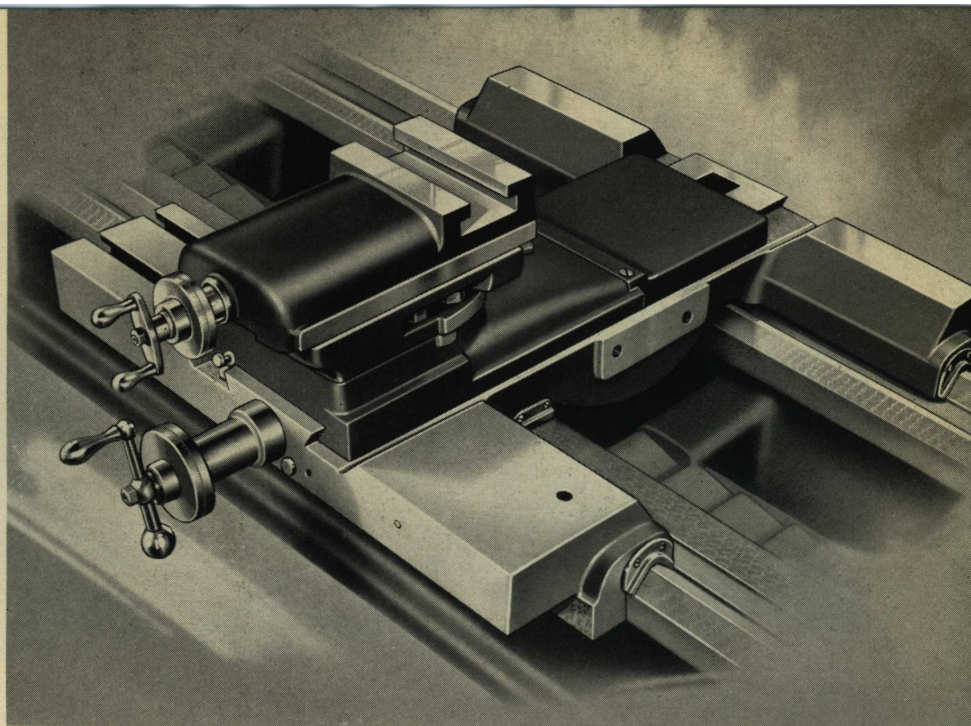
The gear box is a self-contained unit with no openings to admit dirt or chips. All gears and shafts are alloy steel. All gear box bearings are oiled from central reservoir. Lead screw and feed rod are independently controlled, and both cannot be operated at the same time. Standard range of English thread pitches is provided. Change gears can be supplied for cutting Metric and special pitches. Complete Metric gear box and lead screw can be supplied. All gearing connecting spindle to gear box is of high carbon steel with wide faces of coarse pitch. This entire train of gears with its bearings is oiled from a central reservoir.



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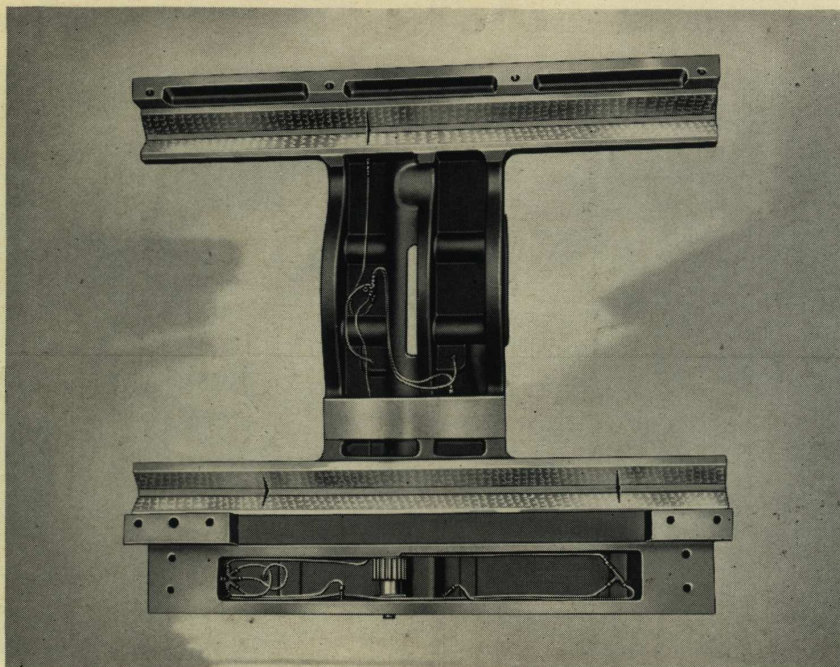


## CARRIAGE



### RIGID DESIGN WITH AMPLE BEARING AREA . . .

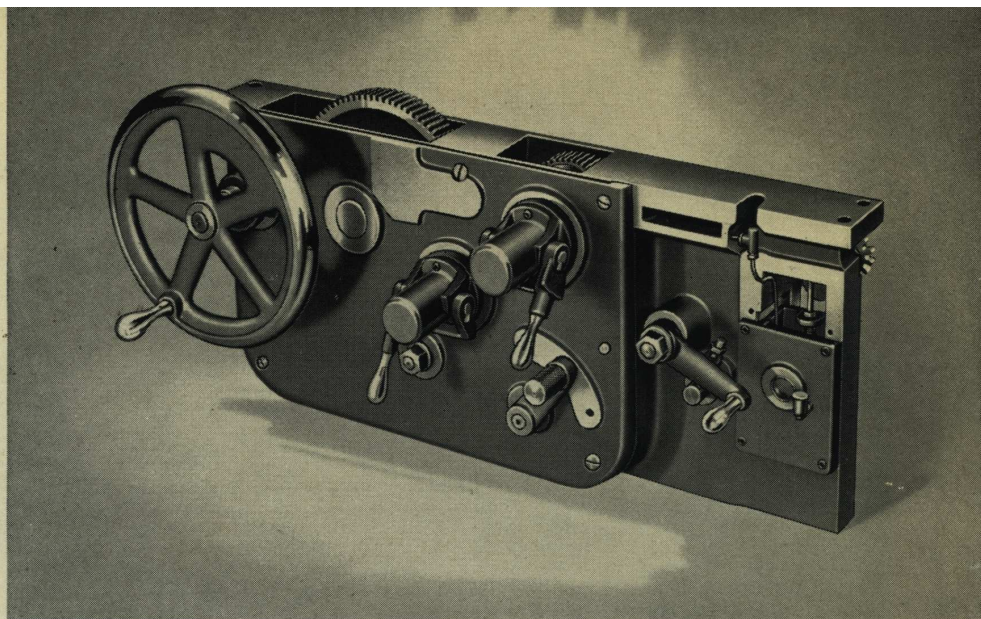
Bearings consist of two inverted 90-degree vees and a wide flat which is in direct line of tool thrust. Bridge is wide with deep dovetails and is reinforced under bridge by heavy ribs. All carriages are jig drilled and tapped to receive taper attachment and follow rest at any time. The cross feed screw of large diameter is high carbon steel turned and ground. Cross feed dials are large in diameter, graduated in thousandths. Compound rest is standard equipment, but plain and special types with provision for production tooling are available.



*"The Lathe with the Longer Life"*

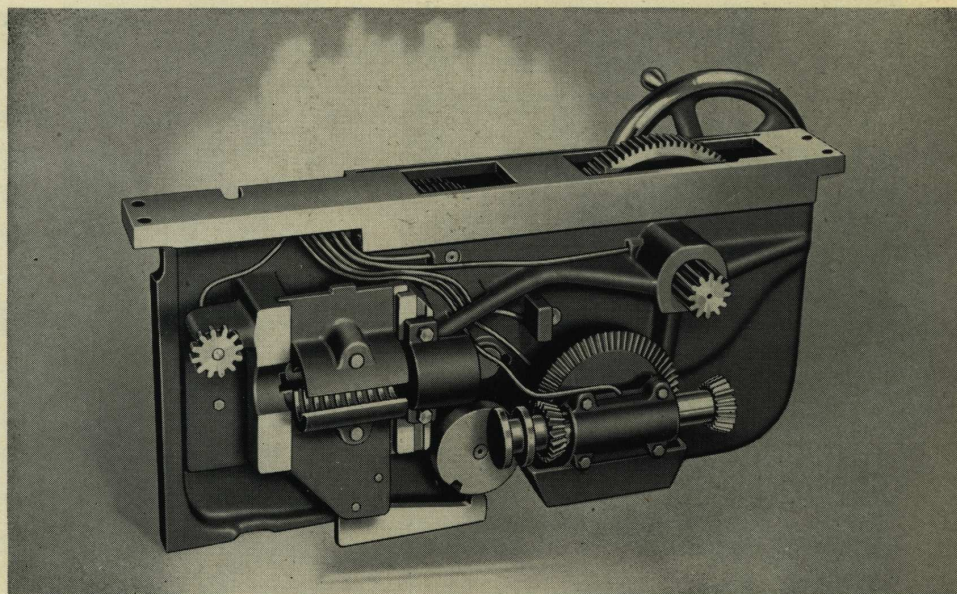


# APRON



## A COMPACT . . . RIGIDLY SUPPORTED UNIT . . .

The apron is of double plate construction with shafts supported at both ends. Rack pinion is wide face of coarse pitch and is supported in large diameter bearings in both plates of apron. Half-nut is interlocked with feed. Engagement of nut with lead screw is impossible while feeding gear train is in operation. Carriage bed bearings, dovetail for bottom slide, and apron revolving shafts are lubricated by adjustable automatic pump shown in cutaway. The lever feed controls consist of a gear and plate having cone of large diameter and depth mounted on a shaft, all revolving free when idle, but locked together when feeding by two hardened cams with thrust taken by two large ball bearings.



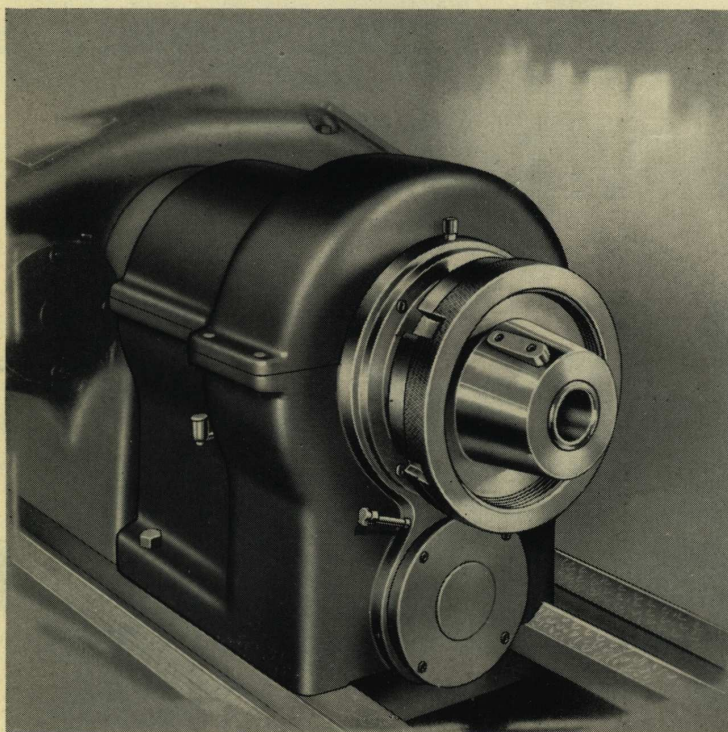
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**BED . . .** The bed is wide and extra deep with heavy wall sections braced by closely spaced box section girths. Bed metal of 20% to 25% steel with 1½% to 2% nickel provides a hard dense iron taking a high lustrous finish with great resistance to wear.

**TAILSTOCK . . .** The tailstock is massive with long bearing on bed. The spindle of alloy steel is of large diameter ground and lapped to burnished hole in barrel. Spindle is locked in any part of its travel without misalignment. Hole in spindle is standard Morse taper.

**DRIVE . . .** Multiple vee belt drive is standard on lathes to 24" rated swing, with motor mounting in leg. Motor mounting on lathes 24" rated swing and above may be either on top of headstock or at rear of bed.

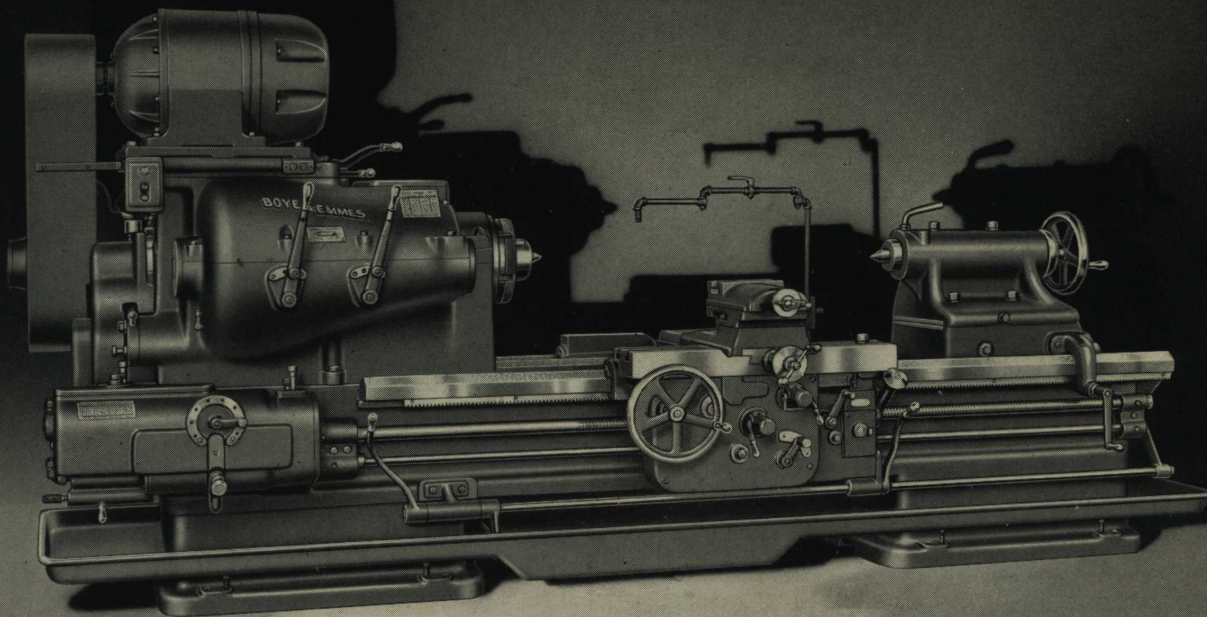


#### **SUB HEAD**

The Sub Head is used with relieving attachment, or when chasing long thread leads beyond the capacity of the quick change gear box.

*"The Lathe with the Longer Life"*

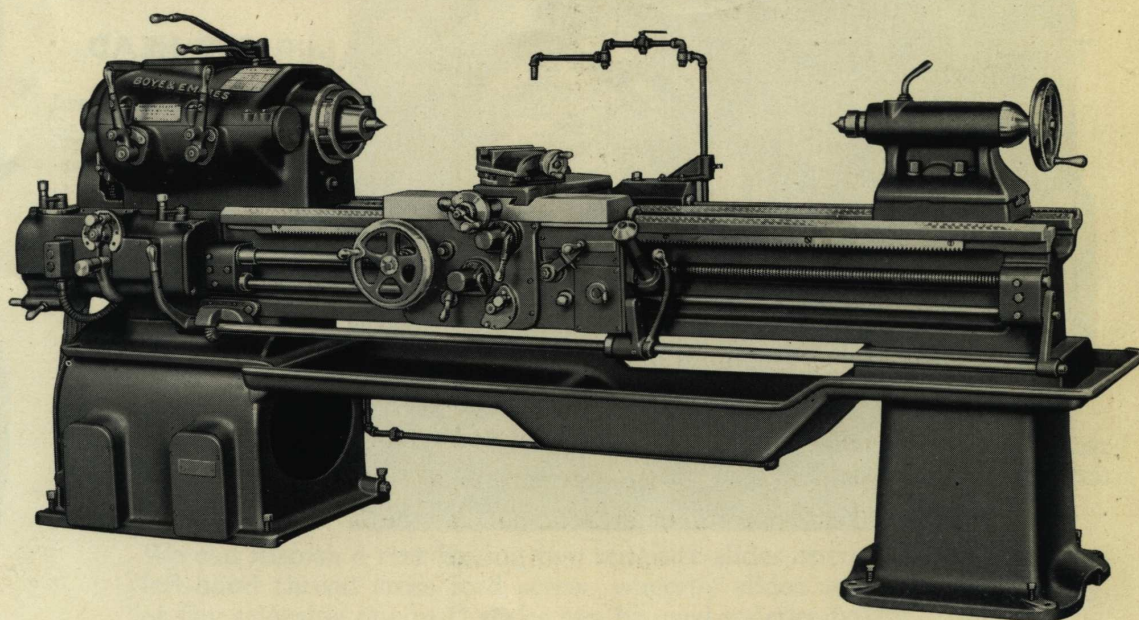




MODEL "H" 30-inch GEARED HEAD LATHE

DESIGNED FOR SPEED . . . ACCURACY . . . *Plus* HIGH PRODUCTION

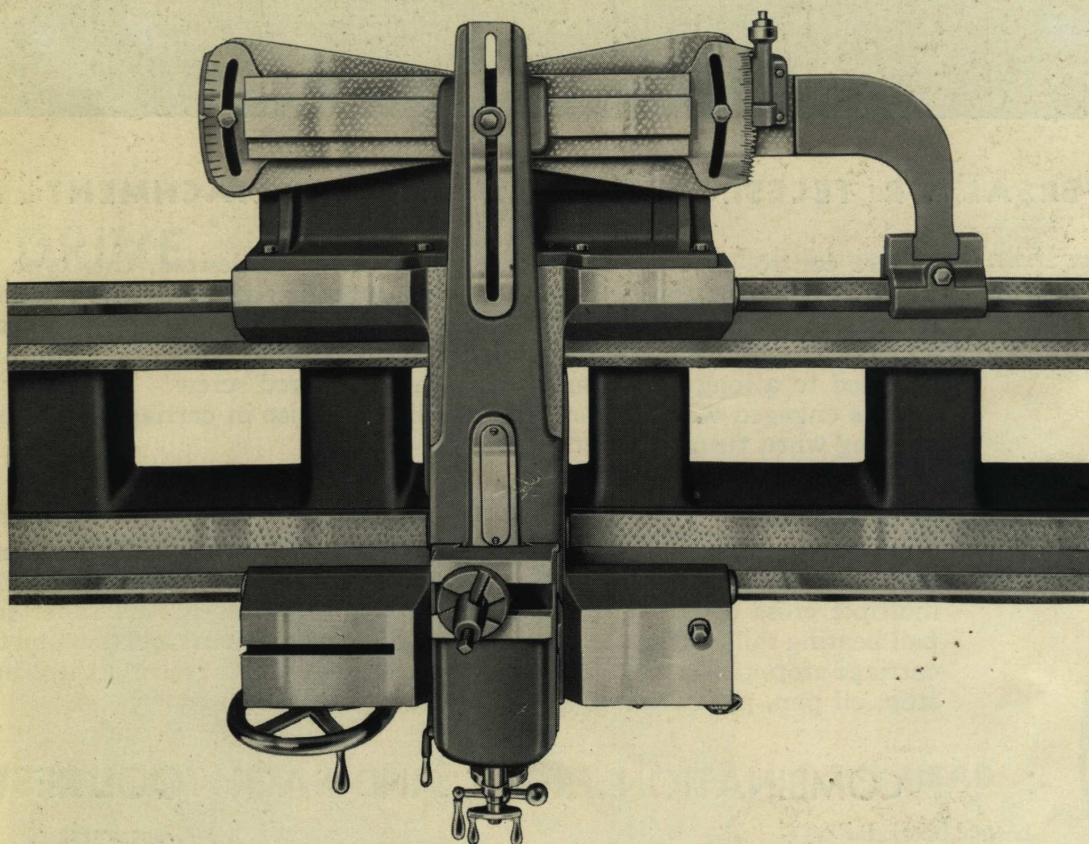
MODEL "A" 16-inch GEARED HEAD LATHE



*Look to* BOYÉ & EMMES



**REGULAR EQUIPMENT . . .** Each size lathe is regularly furnished with spindle bushing, pair of hardened and ground 60-degree included angle centers, large face plate, dog plate, round type tool post, steady rest and necessary wrenches.

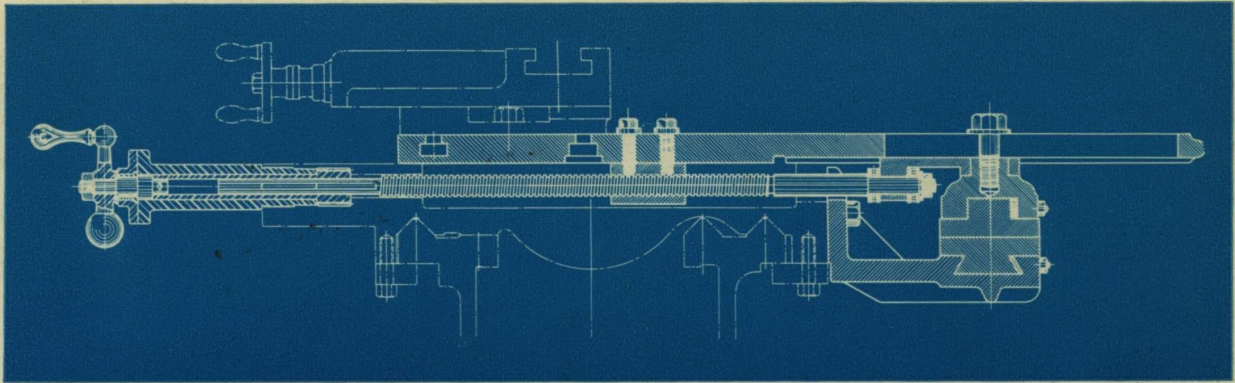


**TAPER ATTACHMENT . . .** The taper attachment has rigid connection between one-piece bottom slide of tool rest and sliding shoe on taper swivel bar. Graduations in inches per foot and in degrees with micrometer adjustment are furnished. The taper attachment travels with carriage, and is firmly bolted and doweled in place. All connections and sliding members are scraped to perfect fits, and all back and side-lash is eliminated. Telescopic taper attachment can be furnished, but must be ordered with the lathe as original equipment.

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*"The Lathe with the Longer Life"*



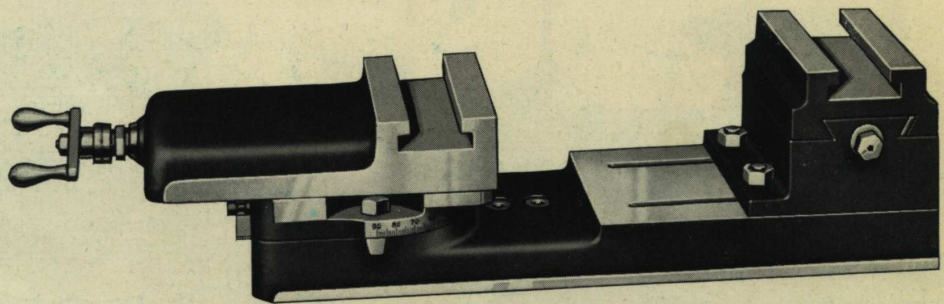


### UNIVERSAL OR TELESCOPIC SCREW TAPER ATTACHMENT . . .

Where control of cross feed screw at all times is desired, this type of taper attachment can be furnished when lathe is ordered. The bracket, horn, and swivel slide are the same as our regular taper attachment. The bottom slide is a one-piece casting connecting to swivel shoe which is clamped to a long block, supporting the cross feed screw. The screw is always engaged with nut and free to slide endwise in carriage cross feed bushing when turning taper.

**ACCESSORIES . . .** A complete line of special attachments can be supplied, including collet chuck and collets, combination front and back tool rest, heavy duty two-screw tool post, turret tool posts, follow rests, multiple cross and longitudinal stops, roller type steady rest, roller and ball bearing tailstock centers, power rapid traverse to carriage, micrometer carriage stop, power feed to compound rest, quick withdrawing threading stop, oil pan, pump and piping, sub head, duplicator, etc.

### COMBINATION FRONT AND BACK TOOL REST



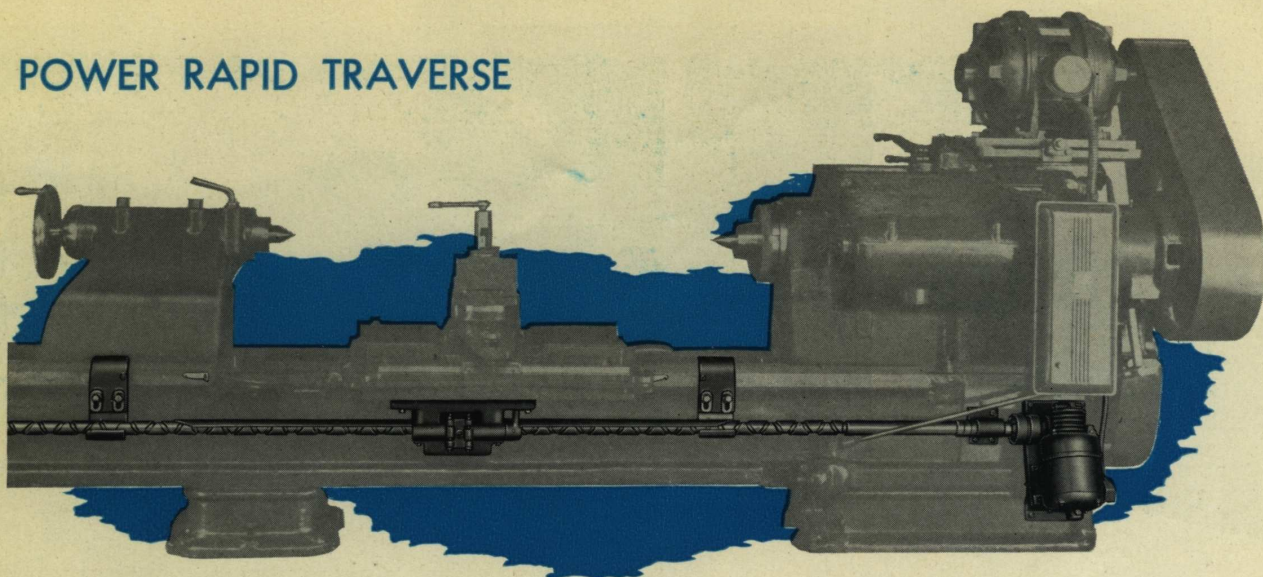
This rest has a side set-over as well as an in and out adjustment on rear tool holder. While cut shows compound rest mounted in front, it can be furnished with plain tool rest or four-way turret tool holder.

We can furnish a rest having two separate slides operated by a right and left-hand thread cross feed screw, whereby slides move simultaneously, or (by releasing one nut) slides can be used independently.

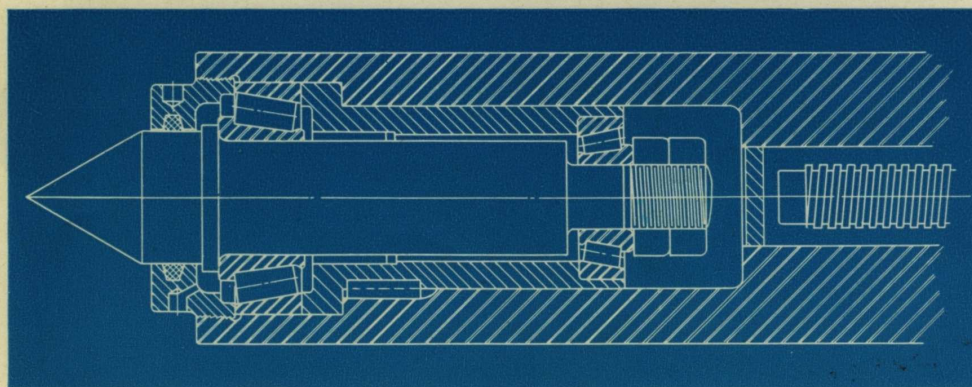
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## POWER RAPID TRAVERSE



The Power Rapid Traverse is extremely simple in its operation and consists of a substantial housing bolted and doweled to the back of the carriage, and a coarse pitch right and left-hand traverse screw, engaged by two friction nuts which are controlled from a lever at front of carriage. This screw, as well as the lead screw and feed rod on all long bed lathes, is supported by self-spacing support brackets. There is an interlocking arrangement between feeds and power traverse operating lever which declutches apron hand-wheel, avoiding possibility of injury to the machine or operator.

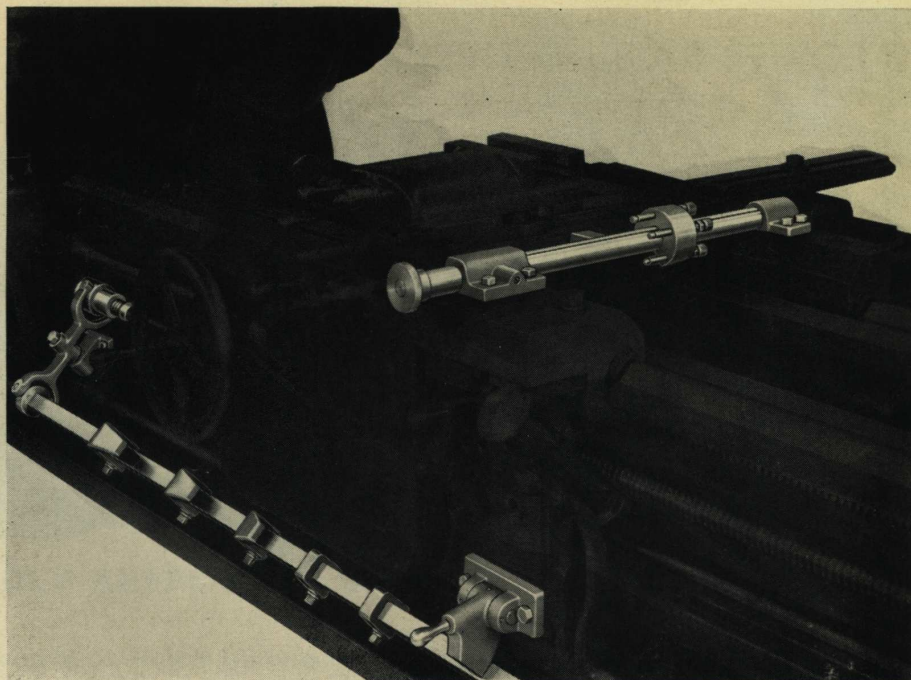


BUILT-IN ANTI-FRICTION LIVE TAILSTOCK CENTER

*"The Lathe with the Longer Life"*



## *Automatic* STOPS



### **MULTIPLE AUTOMATIC LENGTH FORWARD FEED STOPS**

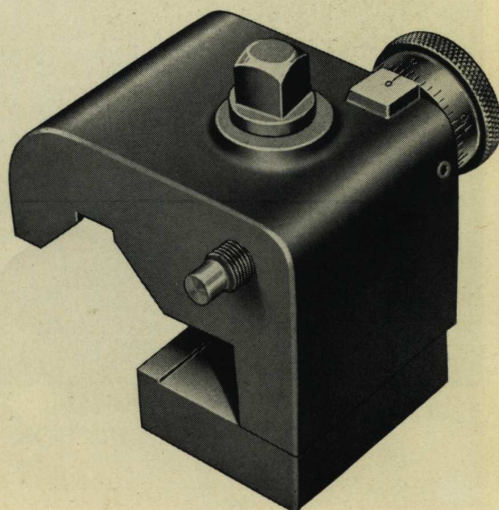
The stops on the bar can be placed in any required position to control length of tool travel. After initial stop, the lever is raised, allowing bar to return to neutral position. Releasing the lever places it in operating position to engage the next stop.

### **MULTIPLE POSITIVE CROSS FEED STOPS**

The cross feed stop is operated from the front of the machine. The cross slide feeds up to the first stop, set in a pre-determined position. The slide is moved back to free the stop to permit indexing for the next position.

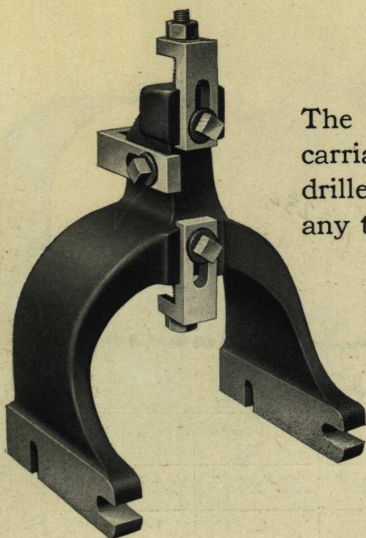
### **MICROMETER CARRIAGE STOP**

The micrometer stop has dial graduated in thousandths of an inch. It clamps to bed vee and can be used at either side of carriage.



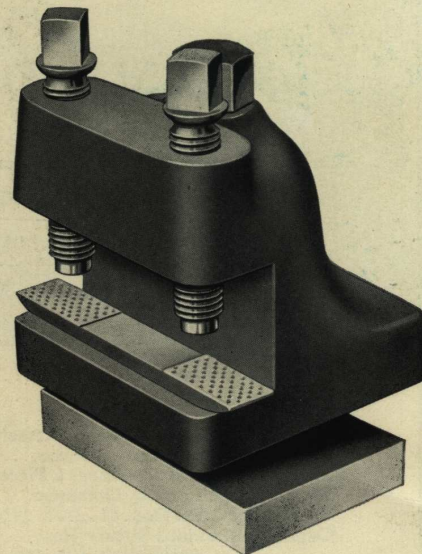
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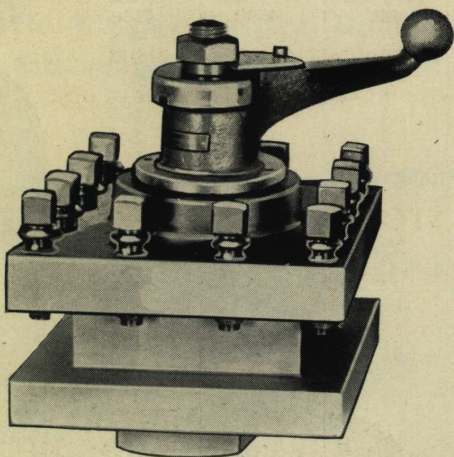
## FOLLOW REST

The rest straddles and is clamped to carriage bridge. All carriages are jig drilled and tapped to receive rest at any time.



## HEAVY DUTY TOOL POST

The European or two-screw tool post has adjustable rocker wedge. It is interchangeable with conventional type tool post.

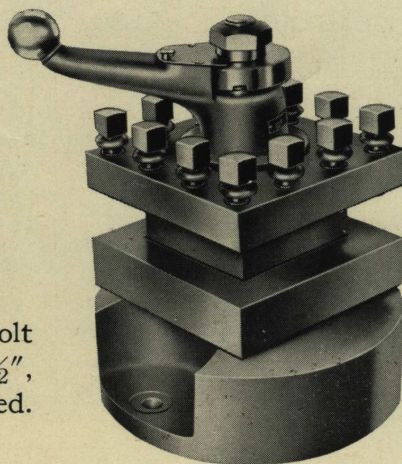


STYLE "O" TURRET

## TURRETS

Style "O" Turrets are fitted for mounting in the T slot in place of the ordinary tool post. Three sizes: 5½", 7" and 8½" square, can be furnished.

Style "OL" Turret is bolted to bolt circle of main slide. Three sizes: 5½", 7" and 8½" square, can be furnished.



STYLE "OL" TURRET

*"The Lathe with the Longer Life"*



# SPECIFICATIONS

## 14 to 22-inch HEAVY DUTY ENGINE LATHES

MODEL	AA	A	B	C	D
RATED SIZE	14"x30"	16"x30"	18"x30"	20"x48"	22"x48"
<b>CAPACITY</b>					
Swing Over Bed.....	16 $\frac{1}{2}$ "	18 $\frac{1}{2}$ "	20 $\frac{1}{2}$ "	22 $\frac{1}{2}$ "	24 $\frac{1}{2}$ "
Swing Over Carriage Bridge.....	10 $\frac{3}{4}$ "	12 $\frac{3}{4}$ "	14 $\frac{1}{4}$ "	15 $\frac{1}{2}$ "	17 $\frac{1}{2}$ "
Swing Over Plain Bottom.....	10"	12"	13 $\frac{1}{2}$ "	14 $\frac{3}{4}$ "	16 $\frac{3}{4}$ "
Swing Over Taper Attachment.....	8 $\frac{5}{8}$ "	10 $\frac{5}{8}$ "	11 $\frac{1}{2}$ "	13 $\frac{1}{8}$ "	15 $\frac{1}{8}$ "
Bed Base Length.....	6'	6' 4"	7' 4"	9' 2"	9' 2"
Floor Space Base Length.....	3' 0"-8'	3' 3"-8' 4"	4'-9' 6"	4' 4"-11'	4' 4"-11'
Floor Space Base and Taper Attachment..	3' 6"-8'	4' 2"-8'	4' 6"-9' 6"	5'-11'	5'-11'
Maximum Bed Length, 1 Piece.....	16'	20' 4"	23' 4"	27' 2"	27' 2"
Maximum Center Distance, 1 Piece.....	12' 6"	16' 6"	18' 6"	22'	22'
Weight, Base Length, Domestic.....	3,660 lbs.	4,100 lbs.	5,500 lbs.	8,000 lbs.	8,220 lbs.
Weight per 2-Ft. Bed.....	260 lbs.	300 lbs.	360 lbs.	500 lbs.	500 lbs.
Capacity Standard Steady Rest.....	5"	5"	6"	7"	8"
<b>HEADSTOCK (12 Speeds)</b>					
Standard Speed Range.....	18-540	16-480	12 $\frac{1}{2}$ -436	12 $\frac{1}{2}$ -436	11-388
Driving Pulley R.P.M.....	540	480	460	460	410
Diameter and Face Driving Pulley.....	11"-3 $\frac{1}{2}$ "	11"-3 $\frac{1}{2}$ "	14"-4 $\frac{1}{2}$ "	14"-4 $\frac{1}{2}$ "	14"-4 $\frac{1}{2}$ "
H.P. (Motor 1200 R.P.M.) Recommended..	3-5	5-7 $\frac{1}{2}$	5-10	7 $\frac{1}{2}$ -15	7 $\frac{1}{2}$ -15
Diameter Hole Through Spindle.....	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "
Taper Hole in Spindle, Morse.....	5	5	6	6	6
Number of Morse Taper Centers.....	4	4	4	5	5
Long Taper, Key Drive Nose No.....	1	1	2	2	2
Amt. Timken Precision Front Bearings....	1	1	1	1	1
Type Rear Precision Spindle Bearing.....	Timken	Timken	Timken	Timken	Timken
<b>TAILSTOCK</b>					
Diameter Spindle.....	2 $\frac{3}{4}$ "	2 $\frac{3}{4}$ "	3 $\frac{3}{8}$ "	3 $\frac{3}{8}$ "	4"
Travel and Set-Over of Spindle.....	7"x $\frac{3}{4}$ "	7"x $\frac{3}{4}$ "	9 $\frac{1}{2}$ "-1"	12"-1"	12"-1"
Length Bottom on Ways.....	12"	12 $\frac{1}{2}$ "	14"	16"	16"
Bottom Will Overhang Bed.....	4"	4"	4 $\frac{3}{4}$ "	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "
<b>CARRIAGE AND COMPOUND</b>					
Carriage Bearing, Square Inches.....	100	100	132	170	170
Length Carriage Bearing on Bed.....	24"	24"	30"	32"	32"
Carriage Bridge Width.....	6 $\frac{3}{4}$ "	6 $\frac{3}{4}$ "	8 $\frac{1}{4}$ "	9 $\frac{1}{4}$ "	9 $\frac{1}{4}$ "
Travel Comp. Rest Top.....	4"	4"	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "
Size of Tool.....	$\frac{5}{8}$ "x1 $\frac{1}{4}$ "	$\frac{5}{8}$ "x1 $\frac{1}{4}$ "	$\frac{3}{4}$ "x1 $\frac{1}{2}$ "	$\frac{3}{4}$ "x1 $\frac{1}{2}$ "	$\frac{3}{4}$ "x1 $\frac{1}{2}$ "
Diameter and Pitch Cross Feed Screw....	$\frac{3}{4}$ "-5	$\frac{3}{4}$ "-5	$\frac{7}{8}$ "-5	$\frac{7}{8}$ "-5	$\frac{7}{8}$ "-5
<b>GEAR BOX</b>					
Number Feed and Thread Changes.....	48	48	48	48	48
Range of Feeds per Revolution Spindle...{	.0025	.0025	.0025	.0027	.0027
	.142	.142	.142	.154	.154
Range Threads, includes 11 $\frac{1}{2}$ .....	2-112	2-112	2-112	1-56	1-56
Diameter and Pitch Lead Screw.....	1 $\frac{9}{16}$ "-4	1 $\frac{9}{16}$ "-4	1 $\frac{9}{16}$ "-4	1 $\frac{3}{4}$ "-2	1 $\frac{3}{4}$ "-2
<b>TAPER ATTACHMENT</b>					
Turns included Angle Degrees.....	16 $\frac{1}{2}$ °	16 $\frac{1}{2}$ °	16 $\frac{1}{2}$ °	20°	20°
Turns, Inches per Foot.....	3 $\frac{1}{8}$ "	3 $\frac{1}{8}$ "	3 $\frac{1}{2}$ "	4 $\frac{1}{4}$ "	4 $\frac{1}{4}$ "
Turns, Length One Setting.....	15"	15"	18"	21"	21"

Look to BOYÉ & EMMES



# SPECIFICATIONS

## 24 to 36-inch HEAVY DUTY ENGINE LATHES

MODEL	E	F	H	J
RATED SIZE	24"x48"	27"x48"	30"x60"	36"x60"
<b>CAPACITY</b>				
Swing Over Bed.....	27½"	30½"	34½"	37½"
Swing Over Carriage Bridge.....	19¼"	21¾"	24½"	29½"
Swing Over Plain Bottom.....	17¾"	20½"	23"	27½"
Swing Over Taper Attachment.....	16¾"	19¼"	21½"	26½"
Bed Base Length.....	10' 8"	10' 8"	12' 6"	12' 6"
Floor Space Base Length.....	4' 8"-13' 6"	4' 8"-13' 6"	5' 4"-15'	5' 4"-15'
Floor Space Base and Taper Attachment.....	6'-13' 6"	6'-13' 6"	7'-15'	7'-15'
Maximum Bed Length, 1 Piece.....	30' 8"	30' 8"	30' 6"	30' 6"
Maximum Center Distance, 1 Piece.....	24'	24'	23'	23'
Weight, Base Length, Domestic.....	11,800 lbs.	12,200 lbs.	15,500 lbs.	16,100 lbs.
Weight per 2 Ft. Bed.....	700 lbs.	700 lbs.	960 lbs.	960 lbs.
Capacity Standard Steady Rest.....	9"	9"	10"	10"
<b>HEADSTOCK (12 Speeds)</b>				
Standard Speed Range.....	7-301	7-301	6-250	6-250
Driving Pulley R. P. M.....	430	430	420	420
Diameter and Face Driving Pulley.....	18"-5½"	18"-5½"	20"-6½"	20"-6½"
H. P. (Motor 1200 R. P. M.) Recommended.....	10-25	10-25	15-30	15-30
Diameter Hole Through Spindle.....	2½"	2½"	2½"	2½"
Taper Hole in Spindle, Morse.....	6	6	6	6
Number of Morse Taper Centers.....	5	5	6	6
Long Taper, Key Drive Nose No.....	3	3	3	3
Amt. Timken Precision Front Bearings.....	2	2	2	2
Type Rear Precision Spindle Bearing.....	Norma Hoffman	Norma Hoffman	Norma Hoffman	Norma Hoffman
<b>TAILSTOCK</b>				
Diameter Spindle.....	4"	4"	5"	5"
Travel and Set-Over of Spindle.....	14"-1"	14"-1"	16"-1½"	16"-1½"
Length Bottom on Ways.....	21"	21"	24"	24"
Bottom Will Overhang Bed.....	6½"	6½"	7½"	7½"
<b>CARRIAGE AND COMPOUND</b>				
Carriage Bearing, Square Inches.....	232	232	287	287
Length Carriage Bearing on Bed.....	37¼"	37¼"	41"	41"
Carriage Bridge Width.....	10¼"	10¼"	12½"	12½"
Travel Compound Rest Top.....	6¼"	6¼"	7"	7"
Size of Tool.....	7/8"x1¾"	7/8"x1¾"	1"x2"	1"x2"
Diameter and Pitch Cross Feed Screw.....	1"-4	1"-4	1¼"-4	1¼"-4
<b>GEAR BOX</b>				
Number Feed and Thread Changes.....	40	40	40	40
Range of Feeds per Revolution Spindle.....	.009 .250	.009 .250	.009 .250	.009 .250
Range Threads, includes 11½.....	1-28	1-28	1-28	1-28
Diameter and Pitch Lead Screw.....	2"-2	2"-2	2"-2	2"-2
<b>TAPER ATTACHMENT</b>				
Turns included Angle Degrees.....	25°	25°	25°	25°
Turns, Inches per Foot.....	5¼"	5¼"	5¼"	5¼"
Turns, Length One Setting.....	26"	26"	26"	26"

*"The Lathe with the Longer Life"*



We furnish Gap Bed Lathes with removable block in the following sizes:

SIZE	SWING THRU GAP	SPINDLE NOSE TO END OF GAP
16"	28½"	10¼"
20"	35¼"	16"
24"	41"	18"

*Look to* **BOYÉ & EMMES**

*"The Lathe with the Longer Life"*





*Since 1895*

**HEAVY DUTY LATHES**