

BULLETIN NO.110

# "AMERICAN"

*Precision Tool Room Lathe*

DELUXE MODEL



*The Aristocrat of the Tool Room*

THE AMERICAN TOOL WORKS CO. CINCINNATI, OHIO, U.S.A.  
LATHES AND RADIAL DRILLS



FEB 14 1967  
BOSS MACHINERY CO.  
381-389 U. S. ROUTE #22  
SPRINGFIELD, N. J. 07081  
(201) 376-1535



**"AMERICAN"**

**PRECISION  
TOOL ROOM  
LATHE**

*De Luxe Model*



## **STANDARD EQUIPMENT**

### **"American" Pacemaker Precision Tool Room Lathes**

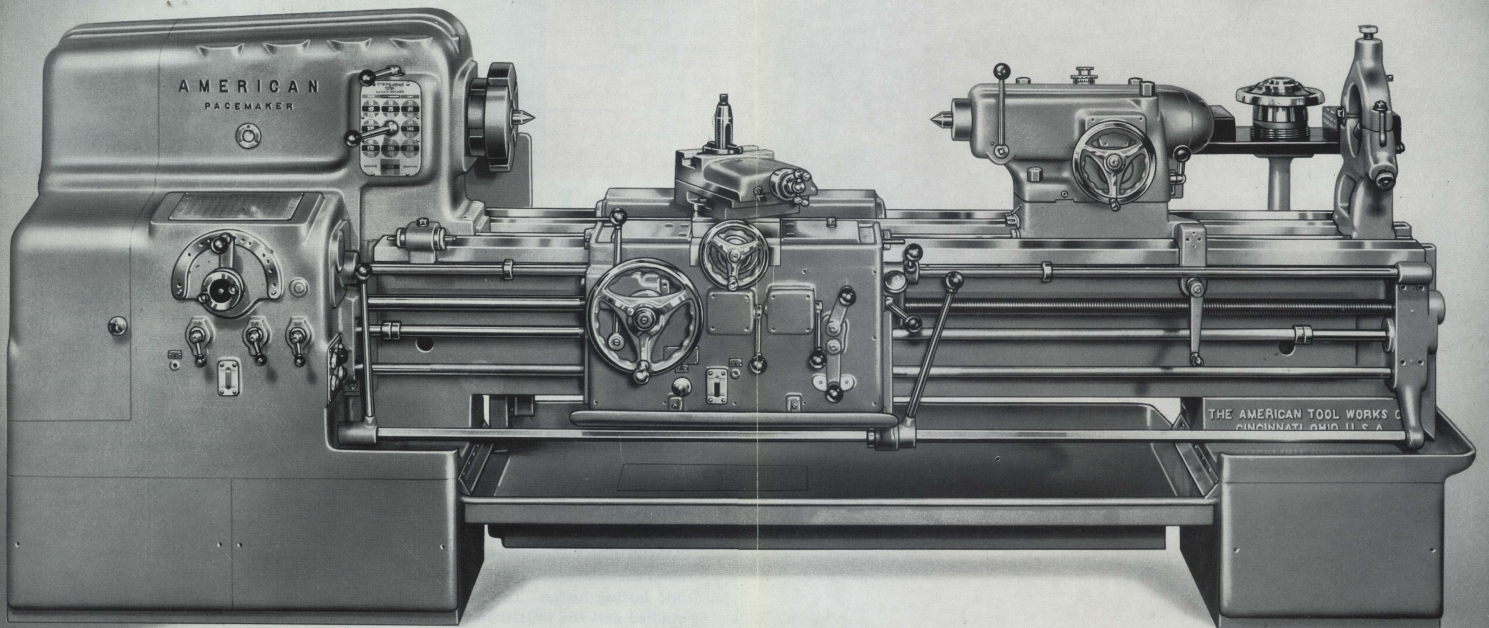
Hardened tool steel outside bed vees.  
Micrometer ball threading stop.  
Chasing dial. (For English lathe only.)  
Chip and coolant pan with reservoir.  
Chromium-plated hand wheels and handles.  
Compound rest and round tool post.  
English leadscrew (Metric optional).  
Face plates—large and small.  
Mechanical apron control of spindle.  
Multiple vee belt motor drive not including electrical equipment.  
Precision leadscrew.  
Graduated Length Measuring Dial.  
Two (2) speed tailstock on 14"B, 16"C and 20"D sizes only.  
Reversing leadscrew with automatic chasing stop in both directions.  
Spindle nose—Cam-Lock or Standard Key Drive Taper (Optional).  
Stainless steel dials.  
Steady rest.  
Two round centers.  
Wiring complete when we furnish electrical equipment.

## **Guaranteed Accuracy**

"AMERICAN" Pacemaker Precision Tool Room Lathes are guaranteed to meet or excel the tool room lathe accuracy standards established by the Lathe Group of the National Machine Tool Builders' Association.



**DELUXE MODEL**



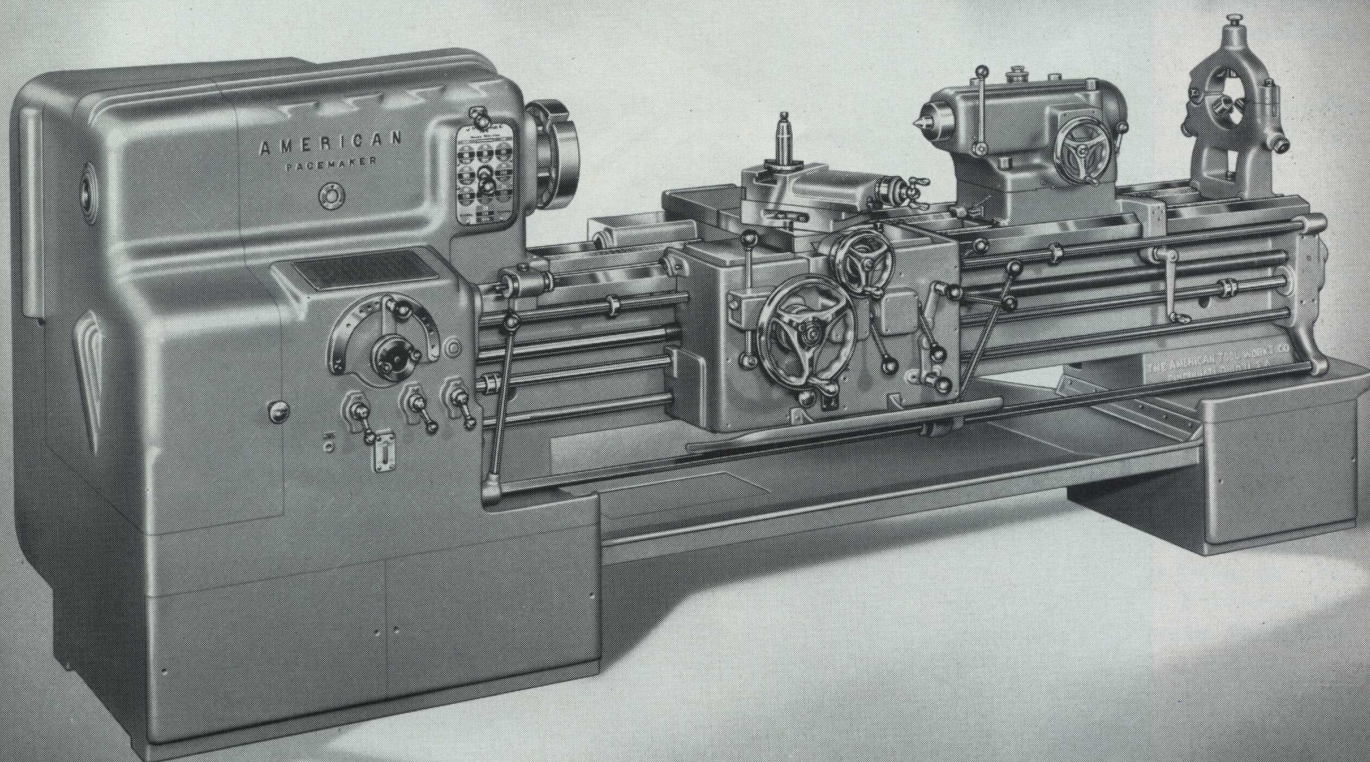


## OUTSTANDING ADVANTAGES

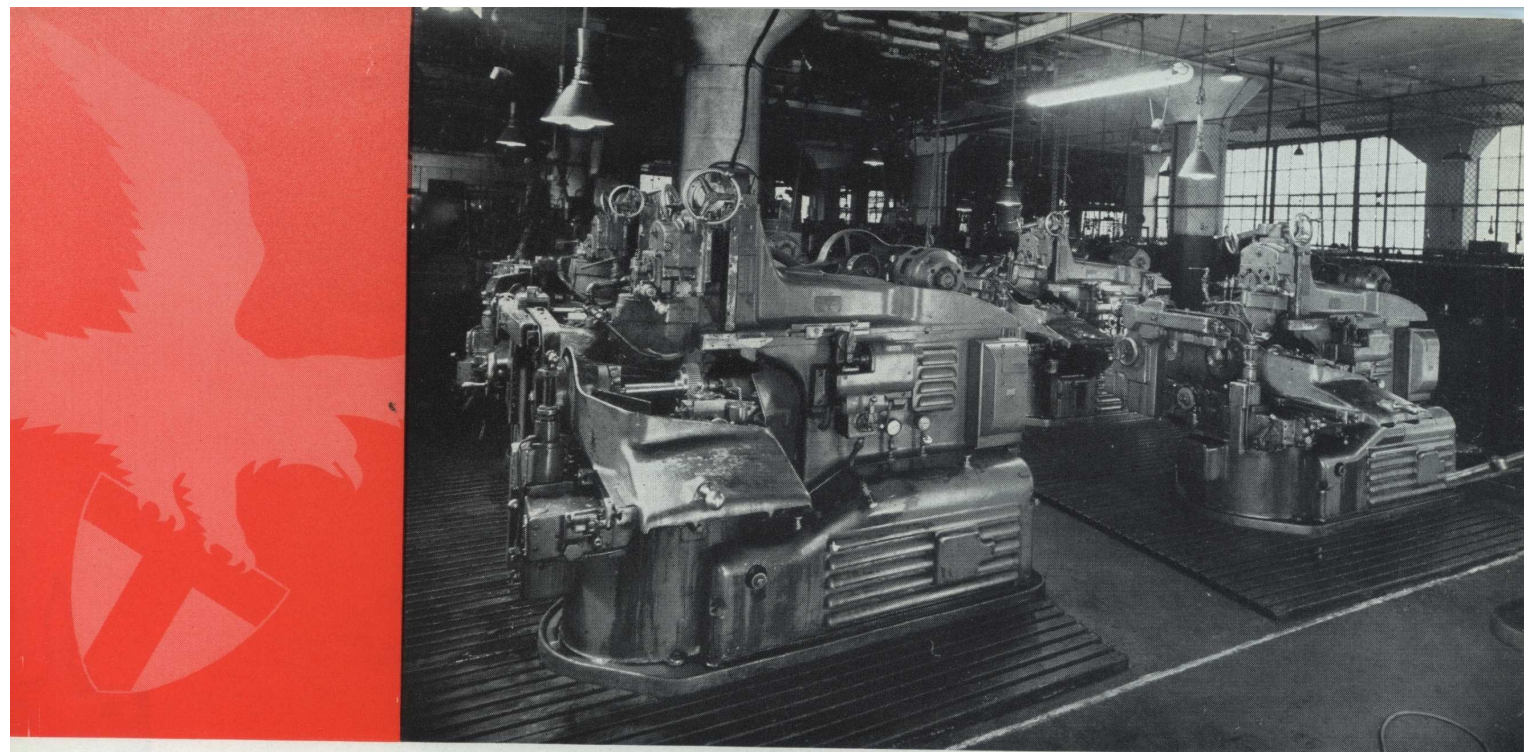
The description which follows will be devoted primarily to a portrayal of the remarkable adaptability of this new Pacemaker Lathe to tool room requirements, to those inherent characteristics which insure a permanency of its original accuracy, and to its sensitivity and responsiveness which, in themselves, are largely accountable for the universal popularity of this new lathe in the leading tool rooms throughout the world.

## CONVENIENCE and EASE OF OPERATION

If we were asked what, in our opinion, is the outstanding requirement for a highly satisfactory tool room lathe, our answer would unhesitatingly be Convenience of Control and Ease and Smoothness of Operation. Realizing the absolute necessity for these characteristics in a modern tool room lathe, we have concentrated upon and emphasized these features, perhaps above all others, in the new "AMERICAN". It is next to impossible to adequately describe by words the degree of operative ease and convenience inherent in this machine—the lathe must be seen, handled and operated to fully appreciate how closely it approaches absolute perfection in this respect. To our prospective customers we say without fear of contradiction that the new "AMERICAN" De Luxe Model Precision Tool Room Lathe is unsurpassed in handling efficiency, while to ourselves, we can honestly say that in our own opinion, it is the most convenient to handle, the easiest to operate and the smoothest running tool room lathe that has ever been designed.







View of Gear Grinding Department

The advent of the new "AMERICAN" De Luxe Model Pacemaker Precision Tool Room Lathe marks the culmination of a decade of unbroken progress in lathe development. The past ten years have witnessed the greatest advancement in tool room lathe design that the industry has ever before encountered in a like period and, coming as it does, at what appears to be the end of a cycle of development, our designing engineers have had an unusual opportunity of selecting and incorporating in this new "AMERICAN" the most practicable and advantageous of advanced ideas and conceptions of design.

This lathe has established a new perspective of tool room lathe value. Its many outstanding features of advanced design—its inherent stamina—its highly developed sensitivity of control—its mechanical perfection, precision and minimized maintenance cost have definitely raised the standard of tool room lathe service and efficiency.

"AMERICAN" Pacemaker Precision Tool Room Lathes are entirely new in design from the drafting board to the finishing paint that is used to give them their beautiful and lasting luster. The function of every individual unit has been analyzed and studied and the unit then designed to accommodate every requirement of modern service. Nothing has been overlooked, either in design or construction, to make this the finest Tool Room Lathe that money, brains, experience and determination can produce.

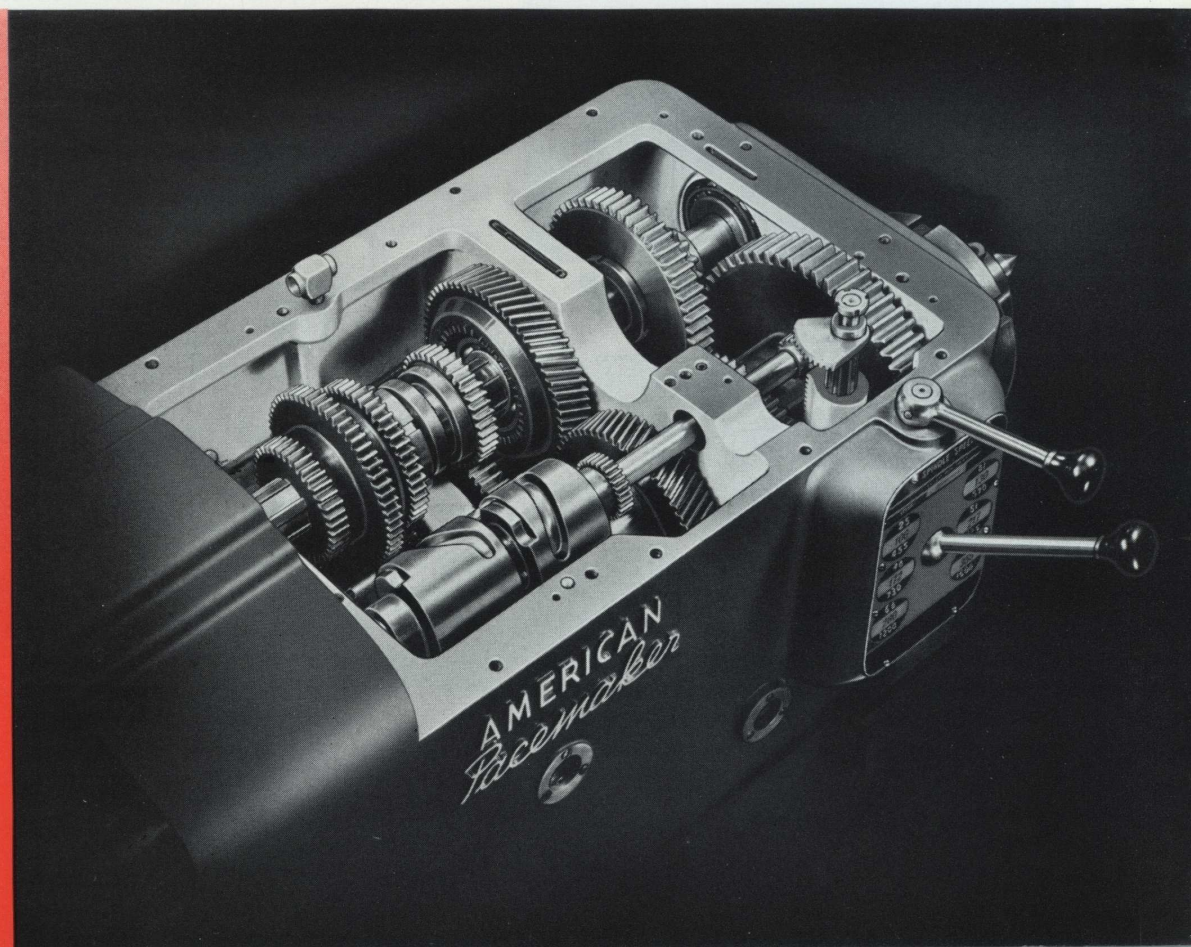
It is truly "The Aristocrat of The Tool Room".



## HEADSTOCK

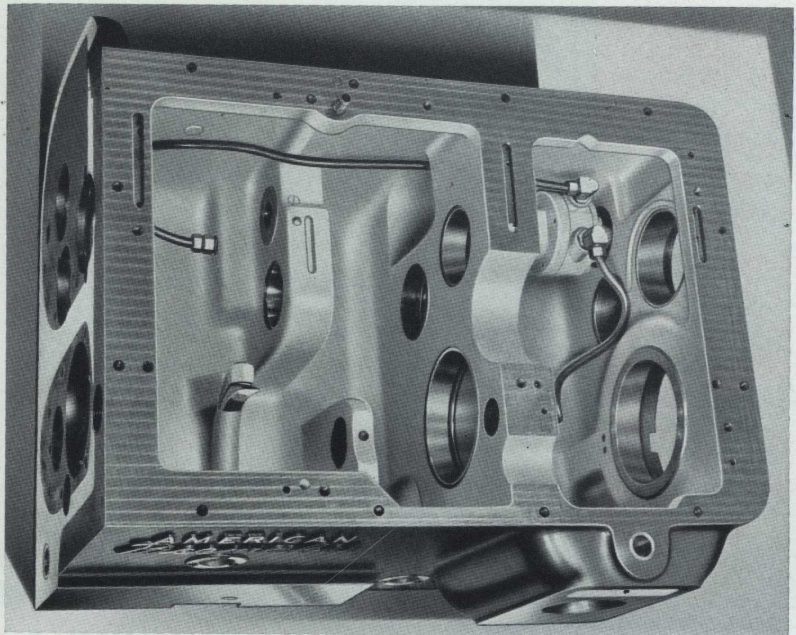
The trend of progress in the art of metal cutting is definitely toward higher cutting speeds. What an inexcusable oversight it would be, therefore, if, in the development of a new lathe, the highest speeds of the present and probable higher speeds of the future were not adequately provided for. The headstock of the new "AMERICAN" Pacemaker provides not only for the high speeds made practicable by Cemented Carbide cutting tools, but supplies an ideal range of lower spindle speeds for the great variety of operations not included in the category of high-speed work. Twenty-seven (27) spindle speeds are provided, in geometric progression, which may properly be divided into three ranges—a low-speed range, an intermediate range and a high-speed range. The low and intermediate ranges are secured thru hardened spur gears, while the high-speed range is thru wide-faced, 20° helical gears. All gears are finish ground except the large slow speed spindle gear on the 20" Style E and 25" Style F sizes which, owing to its size, is beyond the capacity of our Pratt & Whitney gear tooth grinders. On these sizes this large gear is finished lapped on a "Michigan" Cross Axis gear lapping machine.

Headstock Assembly





Headstock Frame showing  
Transverse Ribbing and  
Intermediate Supports for  
Spindle and Shafts

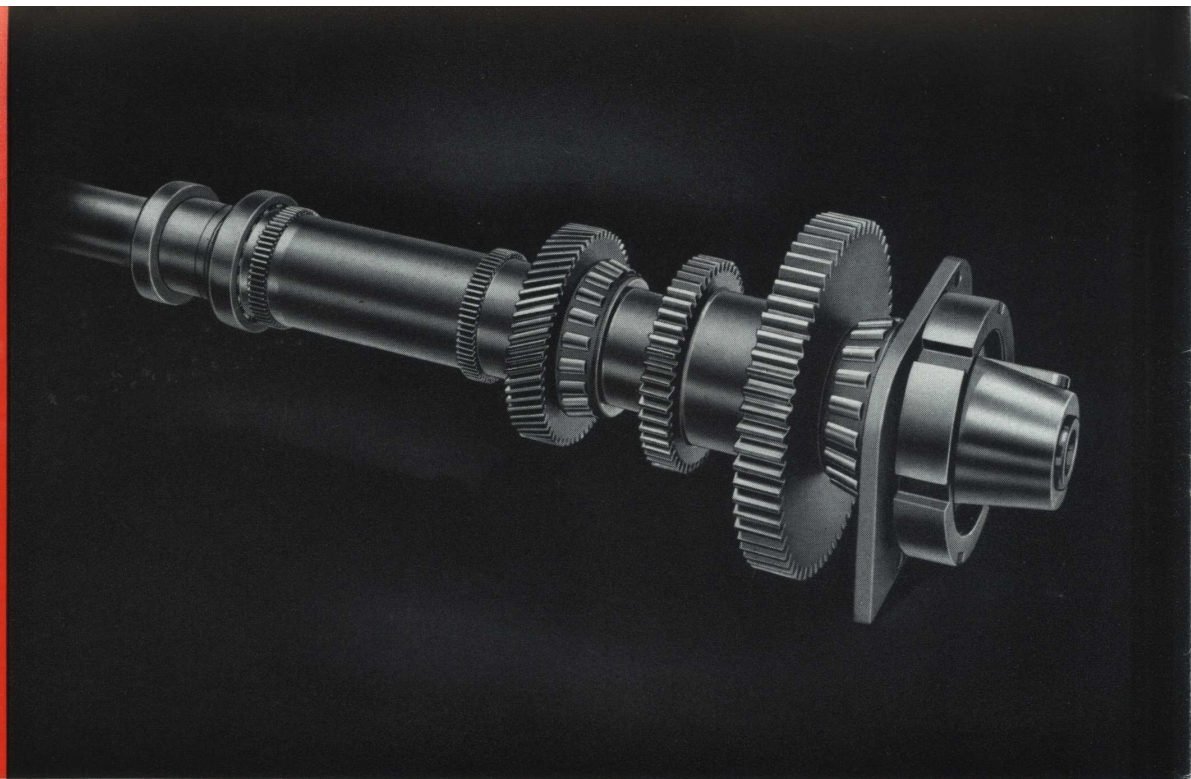


All speeds are selective, and in no way is it possible to simultaneously engage conflicting gear runs. Should the prospective customer feel that he does not require the close speed increments provided by the full range of 27 spindle speeds, the headstock mechanism may be simplified to produce either 9 or 18 speeds, with a corresponding reduction in price. The 9 speed head should be used only with a 2 to 1 adjustable speed motor.

## **100% ANTI-FRICTION**

There are no sleeve or plain bearings in the head mechanism. Only short, stub shafts are used and all are mounted on anti-friction bearings. This construction brings the shaft bearings close to the gears when in the driving position and minimizes the tendency to deflect under load. Shafts are made from heat-treated alloy steel, are multiple splined and finished ground on latest model spline grinders.





Spindle Assembly showing Selective Triple Drive

## SPINDLE

The spindle, which is of unusually liberal proportions, is a hammered forging made from special, high tensile alloy spindle steel and is mounted in large Timken Zero Precision Taper Roller Bearings at the front and center and floats in a ball bearing at the rear. This type of spindle mounting has proven to possess unquestionable merit for the most advanced lathe service. The front and center bearings are opposed to provide for easy adjustment without removing the head cover and to absorb spindle thrusts in either direction, thus completely eliminating the necessity for the usual thrust washers at the rear bearing. The center bearing also supplies a rigid support for the spindle midway between the front and rear bearings and prevents deflection even under the heaviest loads.

A very convenient and novel means is provided for adjusting the front and intermediate spindle bearings. The removal of a small plate at the rear of the head exposes the adjusting shaft, the movement of which actuates a worm and worm wheel which in turn actuate the adjusting collar. This adjusting mechanism is self-locking, resulting in positive and lasting adjustment. One turn of the adjusting shaft supplies .001" adjustment to the bearings.

The spindle nose is exceptionally large and is regularly provided with the almost universally accepted Standard Key Drive Taper Nose, although the Cam-Lock type of nose will be furnished on all sizes when preferred and specified by the purchaser.



All gears employed throughout the entire head mechanism are made of alloy steel, oil hardened. In addition to being accurately machined on the very latest and most modern gear cutting equipment, they are finished ground for accurate tooth spacing and profile. The entire head transmission is located in the headstock bowl, all transmission mechanism being eliminated from the cover.

## AUTOMATIC OILING

The entire mechanism of the new headstock is automatically oiled by a pump system which forces thoroughly filtered oil directly to all the bearings, including the spindle bearings, and sprays oil onto the transmission gears. The entire starting clutch and brake mechanism is also oiled directly by the pump system. The oil supply is carried in a reservoir beneath the headstock and below the gear line which prevents churning of the oil by the gears when revolving at high speeds. This is an important feature which is deserving of consideration, for, experience has shown that churning of the oil by immersed gears running at high speeds not only generates heat but rapidly destroys its lubricating efficiency. A reversing type, packless pump driven from the initial drive shaft forces the oil through a quick-cleansing metal oil filter. A flow indicator at the front of the head assures the operator that the oiling system is functioning. An oil level gauge, also at the front, shows at a glance the amount of oil in the reservoir.

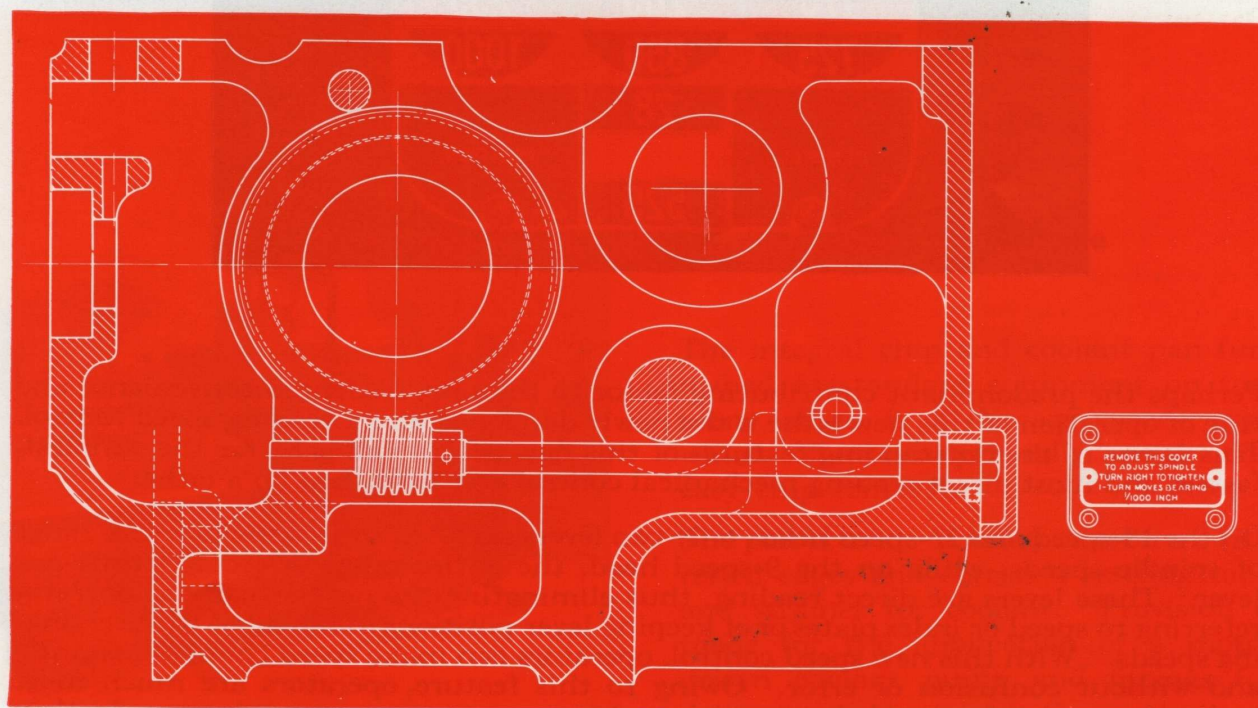


Diagram showing means for adjusting Spindle Bearings



## INSTANTANEOUS DIRECT READING SPEED CONTROL



Perhaps the predominant contributing factor to the unprecedented convenience and ease of operation of this new lathe is the newly developed direct reading speed control. This is one of the outstanding features of this new design and is by far the simplest, fastest and most direct reading mechanical control ever furnished on a lathe.

On the 18-speed and 27-speed heads only two levers are used to secure the entire range of spindle speeds, while on the 9-speed head, the entire range is secured thru one lever. These levers are direct reading, thus eliminating the necessity of the operator referring to speed or index plates or of keeping lever positions in his mind while changing speeds. With this new speed control, operators can make speed changes instantly and without confusion or error. Owing to this feature, operators are much more inclined to make the speed changes required for securing correct cutting speeds, thus providing work at lower cost.



## STARTING CLUTCH and BRAKE

This very important unit of the new Pacemaker Lathe is unquestionably an outstanding example of masterly machine tool design. It is a highly developed, complete and compact unit, mounted on anti-friction bearings. It is solidly bolted and doweled to the head, provides an outboard bearing for the initial driving shaft and carries a patented hard plate multiple disc driving clutch and brake, operated by either of two levers, one located at the head, the other attached to and traveling with the apron. This entire unit is automatically oiled by means of the pump system with pure, filtered oil. The outstanding characteristics of this mechanism are its tremendous pulling power, its dependability and its extreme ease of operation. The clutch, itself, is composed of a series of plates made from the best saw blade steel, with each alternate plate die formed to cause it to spring away from the mating flat plate the instant the pressure of engagement is removed. This action completely frees the adjacent plates of contact when the clutch is released and overcomes any tendency for the plates to drag and cause spindle creepage. This clearance of the plates also permits the oil to flow in ample volume to thoroughly lubricate the mechanism and to carry away any heat that might develop under severe service. Adjustment for the driving clutch is through a single adjusting nut from the outside of the head, located at the end of the initial drive shaft. The multiple disc brake is self-adjusting for wear.

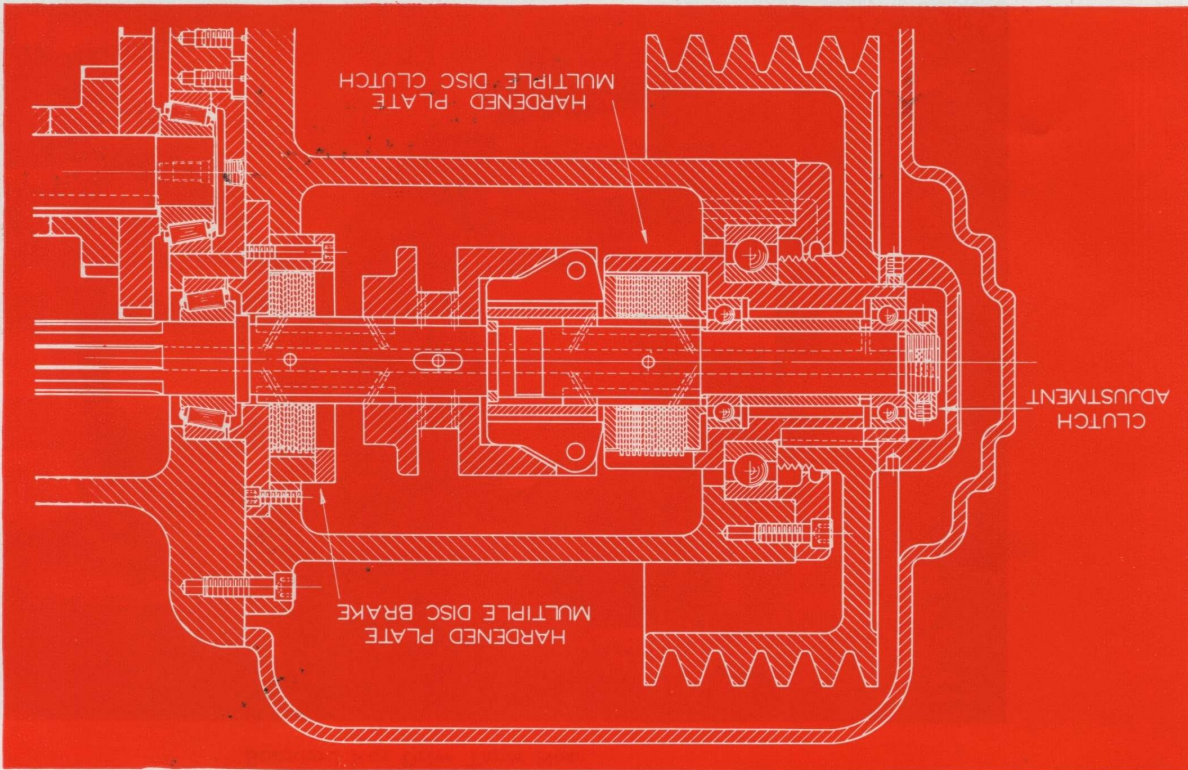


Diagram of Clutch and Brake Unit



## TYPE OF SPINDLE NOSE OPTIONAL

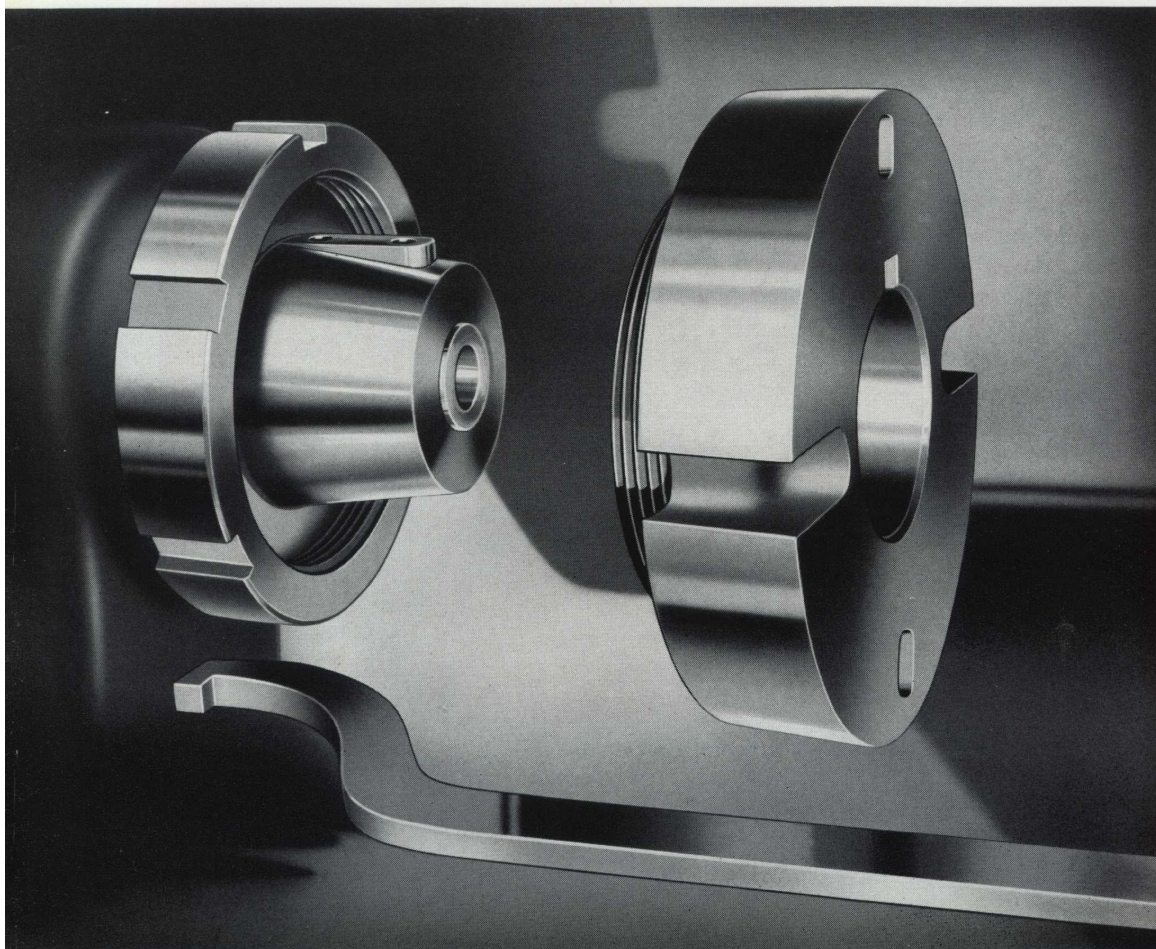
Two types of spindle noses are offered for the customer to choose from. The character of the work to be done by the lathe should be carefully considered, and the type of spindle nose selected that is best suited to the service.

### Type No. 1. Standard Key Drive Taper Nose

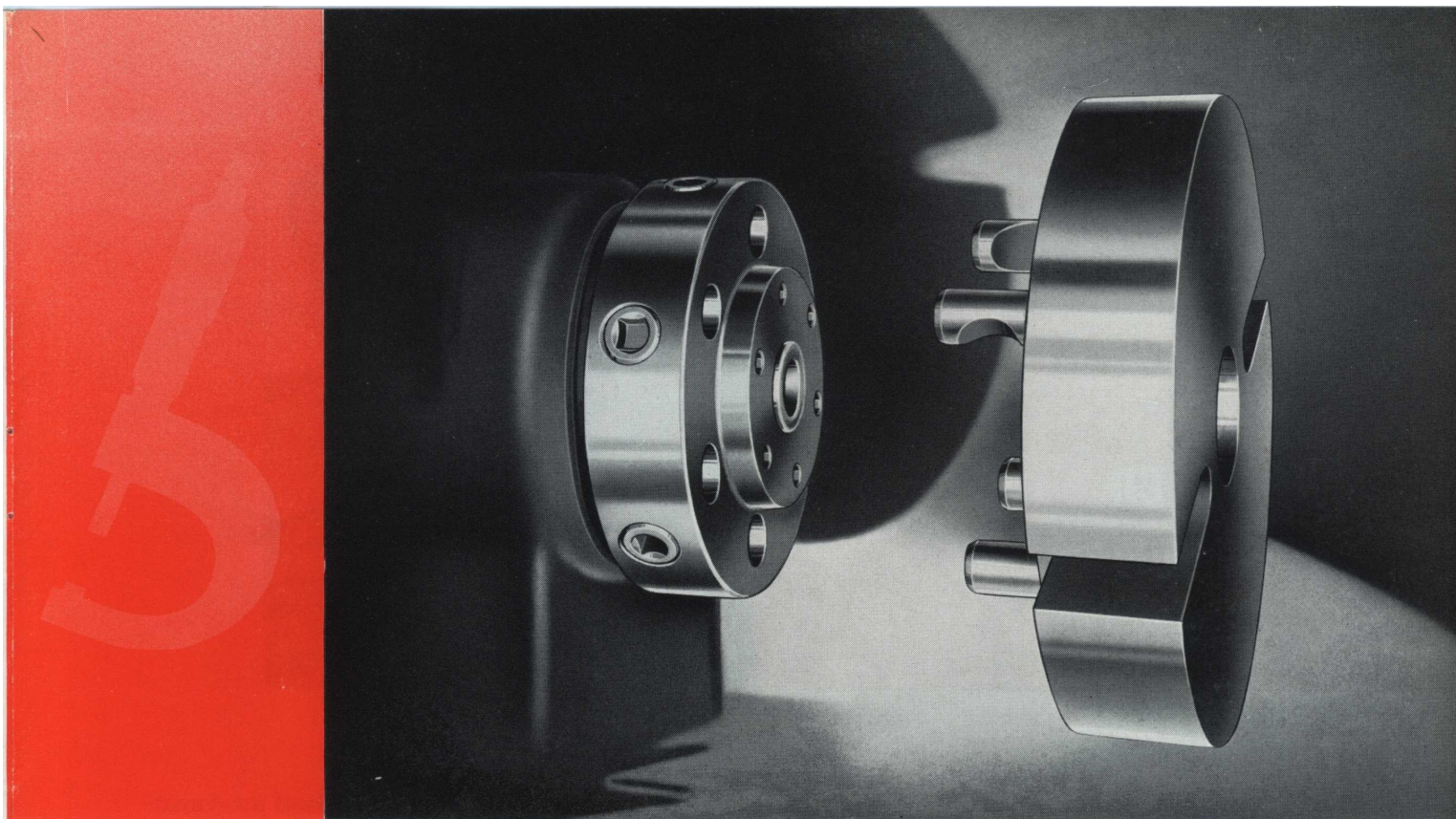
This type of nose is the most recent development in spindle noses and is offered for all sizes of "AMERICAN" Pacemaker Lathes. For the more severe classes of service it is preferable to the Cam-Lock type. It is very simple in design, having but a few component parts, is substantial and long lived. It consists primarily of a locating and seating taper for guiding and seating chucks, face plates and fixtures, has a substantial driving key and a large locking collar for securely holding the fixture in place. Application and removal of chucks, face plates and fixtures are accomplished quickly and with the greatest safety, as the taper prevents the fixture from falling when the locking collar is released.

This type of nose is offered in two sizes: No. 1 for 14"B, 16"C and 20"D.; No. 2 for the 20"E and 25"F sizes.

Standard Key Drive Taper Nose







Cam-Lock Spindle Nose

## Type No. 2. "Cam-Lock" Spindle Nose

### OPTIONAL SPINDLE SPEED RANGES

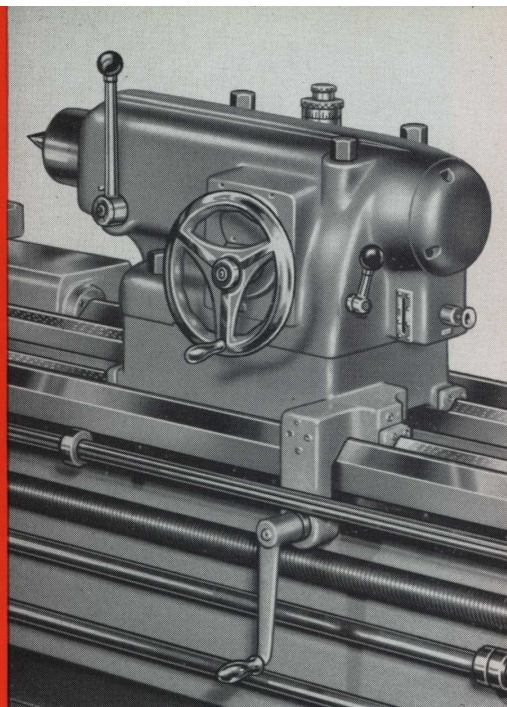
14"B—16"C—20"D						20"E—25F					
27 Speeds			18 Speeds			27 Speeds			18 Speeds		
Low	Med.	High	Low	Med.	High	Low	Med.	High	Low	Med.	High
15	23	30	17	25	34	12	18	24	13	20	26
18	26	36				14	21	28			
21	31	42	21	31	42	17	25	34	17	25	34
24	37	48	27	40	54	20	30	40	21	32	42
28	43	56				23	35	46			
34	51	68	34	51	68	27	41	54	27	41	54
40	60	80	43	66	86	32	48	64	34	51	68
47	70	94				37	56	74			
55	83	110	55	83	110	44	65	88	44	65	88
65	97	130	70	106	140	51	77	102	55	82	110
75	113	150				60	91	120			
89	133	178	89	133	178	71	106	142	71	106	142
105	157	210	114	172	228	84	126	168	90	135	180
122	183	244				98	148	196			
144	217	288	144	217	288	115	174	230	115	174	230
170	256	340	185	280	370	135	203	270	145	217	290
200	300	400				159	238	318			
235	355	470	235	355	470	186	279	372	186	279	372
275	415	550	300	455	600	220	330	440	235	353	470
325	480	650				258	388	516			
380	570	760	380	570	760	304	455	608	304	455	608
445	670	890	485	730	970	360	540	720	385	580	770
525	780	1050				420	630	840			
615	925	1230	615	925	1230	495	745	990	495	745	990
725	1090	1450	790	1200	1580	580	870	1160	620	930	1240
850	1270	1700				680	1020	1360			
1000	1500	2000	1000	1500	2000	800	1200	1600	800	1200	1600

The 9-speed head in combination with a 2 to 1 adjustable speed motor provides 54 spindle speeds with very close increments.





## TWO-SPEED TAILSTOCK



Quick Clamping Tailstock. (Fig. No. 1)

On 14" B, 16" C and 20" D Tool Room Lathes a two-speed tailstock is furnished as standard equipment. The purpose of this type of tailstock is to provide a fast spindle travel for conventional tool room operations and a slower travel for facilitating drilling operations frequently encountered in tool room service. This two-speed tailstock provides a spindle traverse ratio of 6 to 1. The change from the fast to the slow traverse or vice versa may be made almost instantly by means of a speed change lever conveniently located at the front of the tailstock within easy reach of the operator.

On the 20" E and 25" F sizes a single speed tailstock is furnished as standard equipment. However, a two-speed tailstock may be substituted at slight additional cost.

Both of these tailstocks are newly designed and have large diameter extension barrels, giving clearance to the carriage bridge for short work. The barrels are solid, the spindles in each case being clamped by a double plug binder which clamps without affecting the spindle alignment.

Oiling of the complete tailstock including the vee bearings on the bed is accomplished by means of an efficient plunger pump system which includes close fitting synthetic rubber shear wipers which trap the oil to prevent leakage and thus insure constant lubrication of the bearings on the bed vees.

The spindle travel is by means of a hardened pinion actuated by a worm and worm wheel which run in oil and incidentally provide a secure locking means for preventing spindle movement under heavy service. For accurate depth drilling a circular measuring dial graduated in 16ths, located where it may be easily read, is provided for accurately measuring the spindle travel.

These tailstocks are securely clamped to the bed by means of 4 large diameter hex headed bolts, which actuate clamps at the front and rear. The two front bolts are dropped below the two rear bolts in order to facilitate using the clamping wrench. Tailstocks have provision for manual movement along the bed also for power movement by means of the longitudinal power rapid traverse through connecting means to the carriage. This provides the operator with the option of moving the tailstock either manually or by power.

A tang slot in the spindle may be provided if desired and specified.



# QUICK CHANGE GEAR MECHANISM

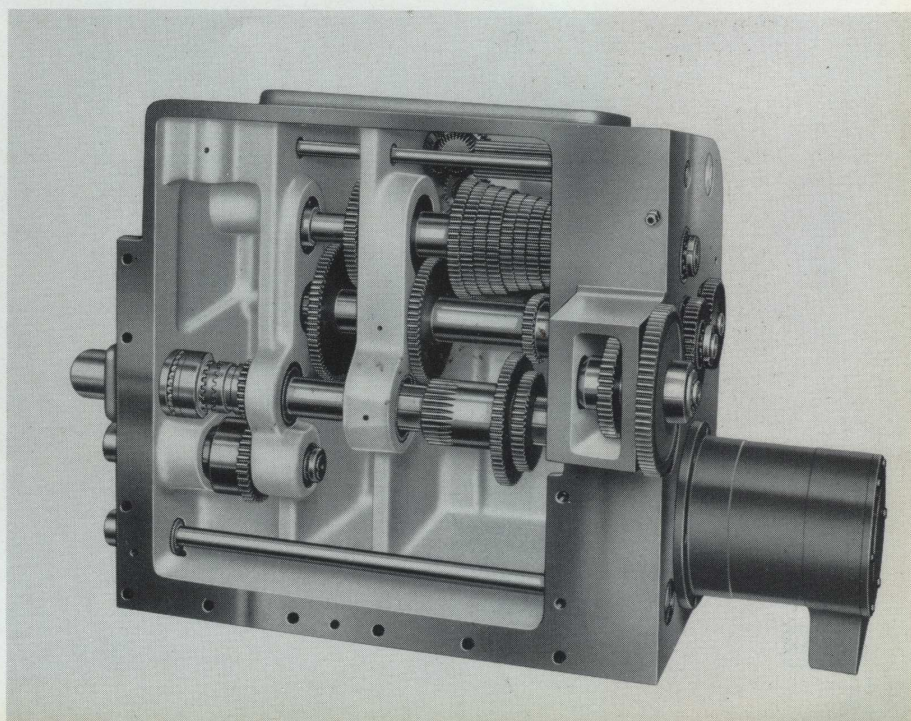


No. 1. Quick Change Gear Box—Exterior

The new quick change gear mechanism designed for "AMERICAN" Pacemaker Lathes is one of the most universal mechanisms of its kind ever developed. It cuts every standard thread ordinarily used without transposing or adding gears, and by the substitution of a very few gears can be quickly converted to metric, or vice versa. Means is also provided thru the addition of a few gears to the quadrant and first stud of the gear box to cut either a coarser or finer range than standard, also diametral and module pitches. To secure the full range of standard threads and feeds, however, no substitutions or additions are required as all changes are made in the gear box. A range of 66 threads is regularly provided from 2 to 120 on 14"B, 16"C and 20"D sizes and 1 to 60 on sizes 20"E and 25"F.

Complete thread and feed ranges are shown on succeeding pages.

No. 2. Quick Change Gear Box—Interior





## AUTOMATIC OILING for Quick Change Gear Box

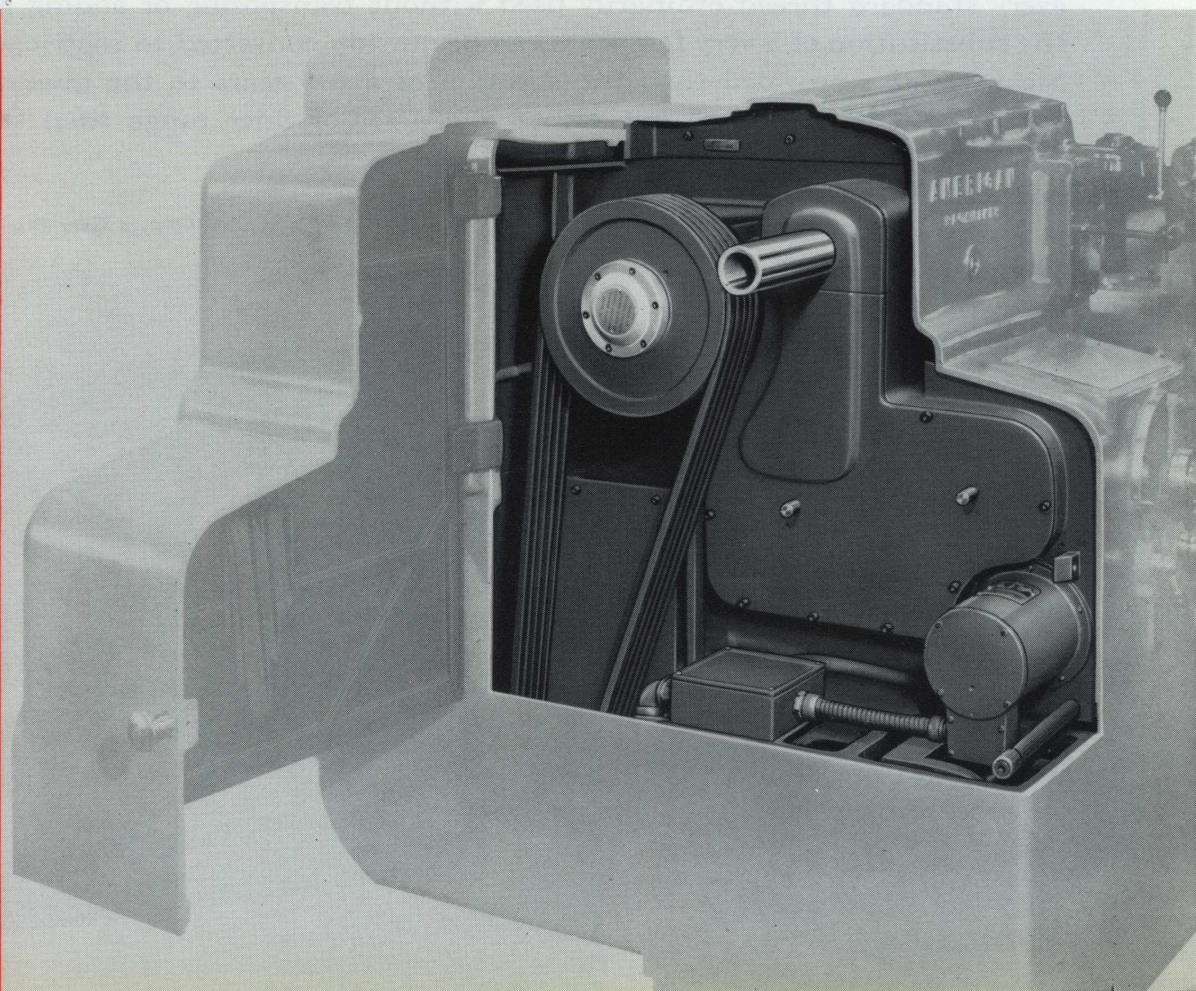
This new quick change gear box is a totally enclosed unit attached to the front of the bed; is completely anti-friction, automatically pump lubricated with filtered oil and has all hardened steel gears and heat treated shafts.

The ease with which the threads and feeds may be selected and secured without complication or confusion is one of the new Pacemaker features of outstanding value.

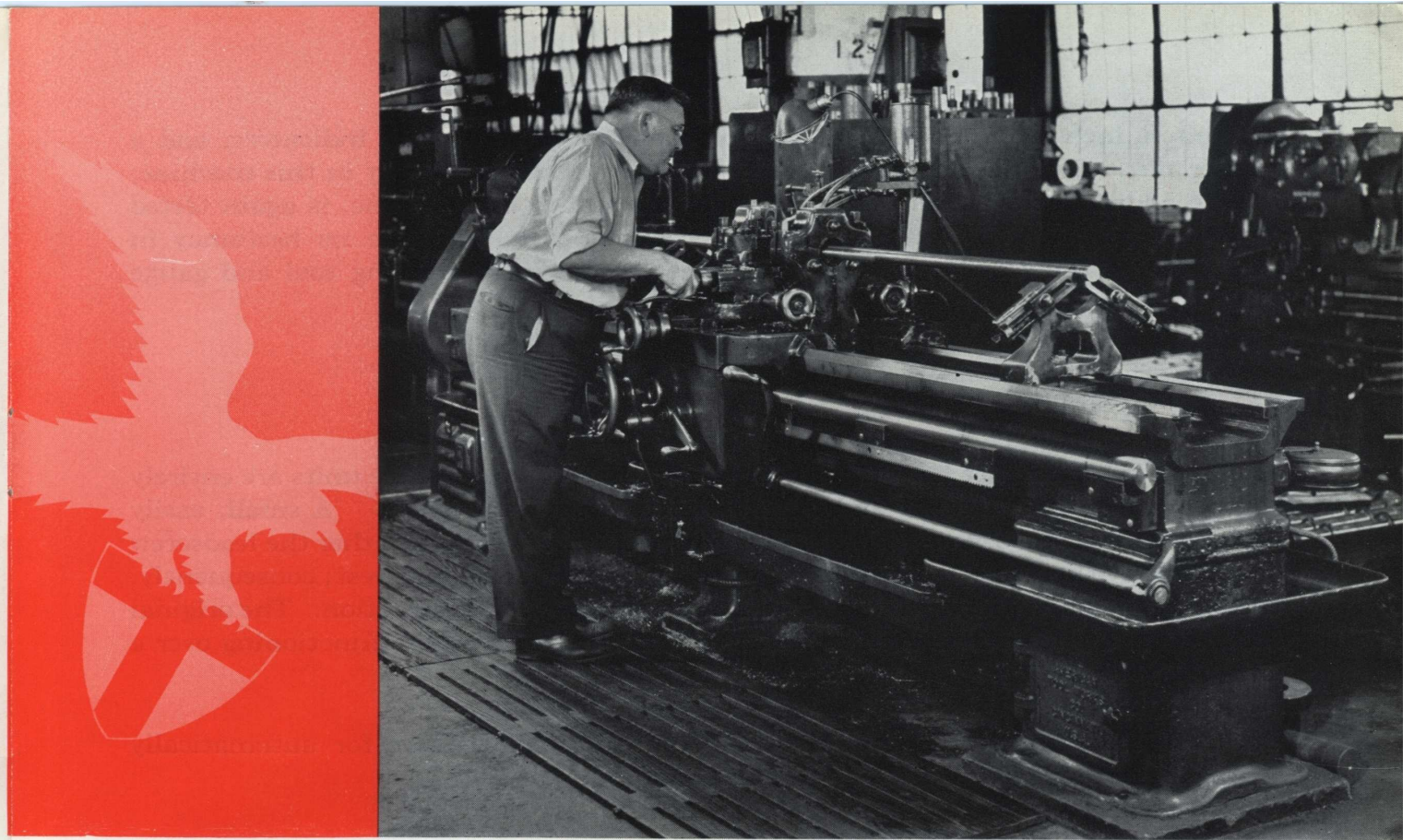
A brand new exclusive feature is the addition of a safety clutch to prevent damage to the transmission from shock or over loading. This wear resistant safety clutch embodies automatic adjustment, thus completely eliminating maintenance or need for attention.

The large diameter solid leadscrew is held between ball thrust bearings at each end to take thrusts in either direction and means for adjustment is provided. This construction places the screw in tension when chasing in either direction—the ideal condition. The feed rod is anti-friction mounted at both ends.

Head-end door opened, showing enclosed connecting gear train.  
All gears are hardened, anti-friction mounted and run in oil.







Chasing Precision Leadscrews

## PRECISION LEADSCREWS

One of the major requirements of the modern tool room lathe is a precision threading mechanism. This requirement is met in the "AMERICAN" by a precision quick change gear threading mechanism including precisely cut and accurately machine-lapped gears and, as regular equipment without additional cost to the purchaser, a precision, minimum error, tested and guaranteed leadscrew.

Our precision leadscrews are produced on a highly specialized, recently developed, super-accurate leadscrew lathe which has been engineered, designed and developed for the express purpose of producing leadscrews of great precision. The utmost care is exercised in the production of these screws, and an exhaustive accuracy test is made upon completion, a record of which is retained for reference and upon which our accuracy guarantee is based.

All precision leadscrews are first roughed out to within approximately .015" of the finished size and are then removed from the lathe and set up on end to season. After seasoning they are returned to the leadscrew lathe and finished from the master screw, after which they are carefully tested for accuracy on a machine built especially for that purpose, which measures the pitch of the screw in .0001". Readings can be taken at



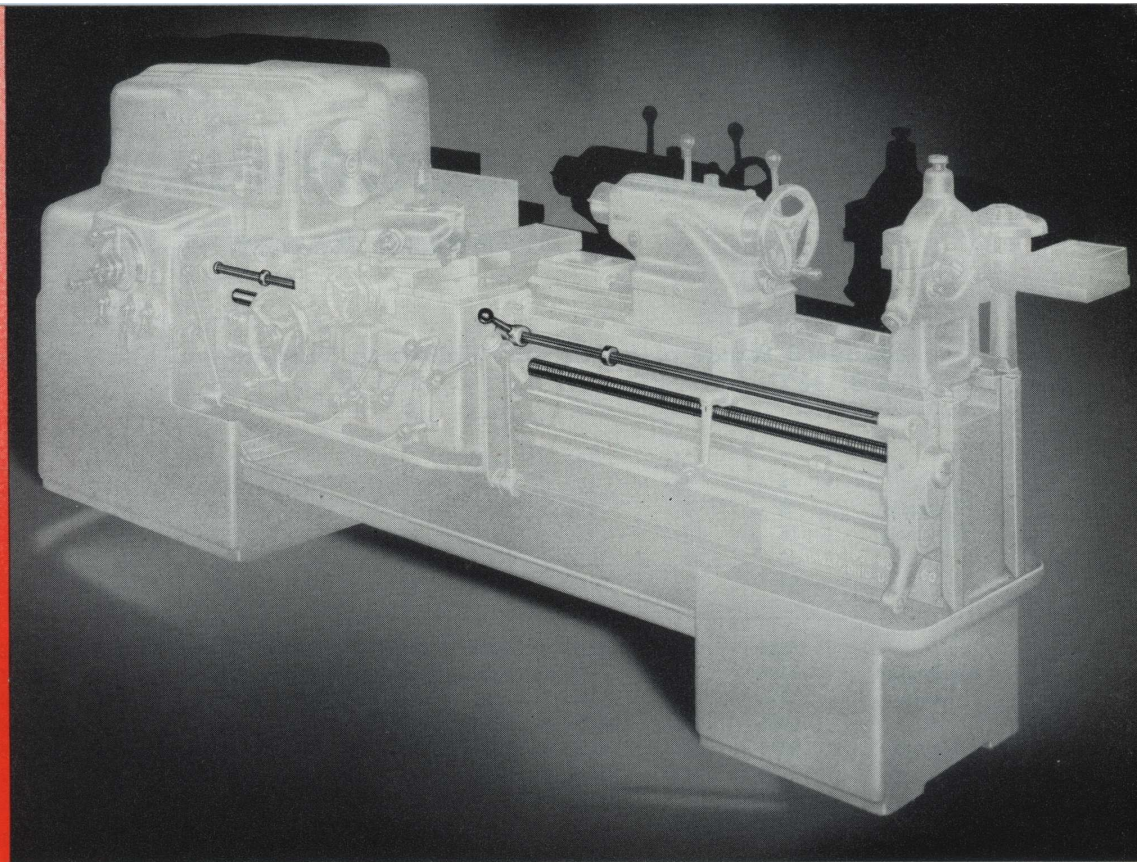
## INDEPENDENT LEADSCREW and FEED ROD

The feed rod is regularly supplied with adjustable stop collars for automatically stopping the carriage traverse in either direction.

## CARRIAGE STOPS and REVERSE (Leadscrew Reverse)

20





Reversing Leadscrew With Automatic Chasing Stops

tion of the leadscrew and feed rod is changed without changing the direction of the spindle rotation. This reversing mechanism is located entirely within the head and runs in oil.

An automatic stop collar is provided for each direction of carriage travel by means of which the carriage travel may be stopped instantly at any predetermined point. When these stops are used, the entire quick change gear mechanism is disconnected by contact between the contactor attached to the apron and the stop collar. The quick change gear mechanism may then be re-engaged and the direction of the leadscrew or feed rod reversed, by means of the manual control lever at the right-hand side of the apron. When the automatic stop collars are not used, the carriage may be stopped through the disconnection of the quick change gear mechanism and its direction of travel reversed by manually operating this control lever.

In order to relieve the highly accurate change gearing which actuates the precision thread chasing mechanism from excessive service, and in that way to prolong its original accuracy, a mechanical feed reverse is regularly provided in the apron through a double bevel gear through which the direction of the carriage may be reversed without reversing the direction of the spindle, or using the leadscrew reversing mechanism for this purpose.



# ENGLISH LEADSCREW LATHES

## Standard Range

Standard Range of English or Whitworth Threads and Feeds obtainable on 14"B, 16"C and 20"D sizes.

	2	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	2 $\frac{7}{8}$	3	3 $\frac{1}{4}$	3 $\frac{3}{8}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$
	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6	6 $\frac{1}{2}$	6 $\frac{3}{4}$	7	7 $\frac{1}{2}$
Threads Per Inch	8	9	9 $\frac{1}{2}$	10	11	11 $\frac{1}{2}$	12	13	13 $\frac{1}{2}$	14	15
	16	18	19	20	22	23	24	26	27	28	30
	32	36	38	40	44	46	48	52	54	56	60
	64	72	76	80	88	92	96	104	108	112	120
Equivalent Leads in Inches	.5000	.4444	.4210	.4000	.3636	.3478	.3333	.3077	.2962	.2857	.2666
	.2500	.2222	.2105	.2000	.1818	.1739	.1666	.1538	.1481	.1428	.1333
	.1250	.1111	.1052	.1000	.0909	.0869	.0833	.0769	.0740	.0714	.0666
	.0625	.0555	.0526	.0500	.0454	.0434	.0416	.0384	.0370	.0357	.0333
	.0312	.0277	.0263	.0250	.0227	.0217	.0208	.0192	.0185	.0178	.0166
	.0156	.0138	.0131	.0125	.0113	.0108	.0104	.0096	.0092	.0089	.0083
Feeds in Thousandths Per Revolution of Spindle	.0913	.0812	.0769	.0731	.0664	.0635	.0609	.0562	.0541	.0522	.0487
	.0457	.0406	.0384	.0365	.0332	.0318	.0304	.0281	.0271	.0261	.0243
	.0228	.0203	.0192	.0183	.0166	.0159	.0152	.0140	.0135	.0130	.0122
	.0114	.0101	.0096	.0091	.0083	.0079	.0076	.0070	.0068	.0065	.0061
	.0057	.0051	.0048	.0046	.0042	.0040	.0038	.0035	.0034	.0032	.0030
	.0028	.0025	.0024	.0023	.0021	.0020	.0019	.0018	.0017	.0016	.0015

Standard Range of English or Whitworth Threads and Feeds obtainable on 20"E and 25"F sizes.

	1	1 $\frac{1}{8}$	1 $\frac{3}{16}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{7}{16}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{11}{16}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$
	2	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	2 $\frac{7}{8}$	3	3 $\frac{1}{4}$	3 $\frac{3}{8}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$
Threads Per Inch	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6	6 $\frac{1}{2}$	6 $\frac{3}{4}$	7	7 $\frac{1}{2}$
	8	9	9 $\frac{1}{2}$	10	11	11 $\frac{1}{2}$	12	13	13 $\frac{1}{2}$	14	15
	16	18	19	20	22	23	24	26	27	28	30
	32	36	38	40	44	46	48	52	54	56	60
Equivalent Leads In Inches	1.000	.8888	.8421	.8000	.7272	.6956	.6666	.6154	.5925	.5714	.5333
	.5000	.4444	.4210	.4000	.3636	.3478	.3333	.3077	.2962	.2857	.2666
	.2500	.2222	.2105	.2000	.1818	.1739	.1666	.1538	.1481	.1428	.1333
	.1250	.1111	.1052	.1000	.0909	.0869	.0833	.0769	.0740	.0714	.0666
	.0625	.0555	.0526	.0500	.0454	.0434	.0416	.0384	.0370	.0357	.0333
	.0312	.0277	.0263	.0250	.0227	.0217	.0208	.0192	.0185	.0178	.0166
Feeds in Thousandths Per Revolution of Spindle	.1506	.1338	.1268	.1205	.1095	.1048	.1004	.0927	.0892	.0860	.0803
	.0753	.0669	.0634	.0602	.0547	.0524	.0502	.0463	.0446	.0430	.0401
	.0376	.0334	.0317	.0301	.0273	.0262	.0251	.0231	.0223	.0215	.0200
	.0188	.0167	.0158	.0150	.0136	.0131	.0125	.0115	.0111	.0107	.0100
	.0094	.0083	.0079	.0075	.0068	.0065	.0062	.0057	.0055	.0053	.0050
	.0047	.0041	.0039	.0037	.0034	.0032	.0031	.0028	.0027	.0026	.0025



# ENGLISH LEADSCREW LATHES

## Coarse Range (Optional)

The coarse range of threads and feeds shown below is optional in lieu of the standard range, at no additional charge. If desired both ranges may be provided at slight additional charge.

### SIZES 14"B—16"C—20"D

Threads Per Inch	1	1 $\frac{1}{8}$	1 $\frac{3}{16}$	1 $\frac{1}{4}$	1 $\frac{5}{8}$	1 $\frac{7}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{11}{16}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$
	2	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	2 $\frac{7}{8}$	3	3 $\frac{1}{4}$	3 $\frac{3}{8}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$
	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6	6 $\frac{1}{2}$	6 $\frac{3}{4}$	7	7 $\frac{1}{2}$
	8	9	9 $\frac{1}{2}$	10	11	11 $\frac{1}{2}$	12	13	13 $\frac{1}{2}$	14	15
	16	18	19	20	22	23	24	26	27	28	30
	32	36	38	40	44	46	48	52	54	56	60
Equivalent Leads in Inches	1.0000	.8888	.8421	.8000	.7272	.6956	.6666	.6154	.5925	.5714	.5333
	.5000	.4444	.4210	.4000	.3636	.3478	.3333	.3077	.2962	.2857	.2666
	.2500	.2222	.2105	.2000	.1818	.1739	.1666	.1538	.1481	.1428	.1333
	.1250	.1111	.1052	.1000	.0909	.0869	.0833	.0769	.0740	.0714	.0666
	.0625	.0555	.0526	.0500	.0454	.0434	.0416	.0384	.0370	.0357	.0333
	.0312	.0277	.0263	.0250	.0227	.0217	.0208	.0192	.0185	.0178	.0166
Feeds in Thousandths Per Revolution of Spindle	.1826	.1624	.1538	.1462	.1328	.1270	.1218	.1124	.1082	.1044	.0974
	.0913	.0812	.0769	.0731	.0664	.0635	.0609	.0562	.0541	.0522	.0487
	.0457	.0406	.0384	.0365	.0332	.0318	.0304	.0281	.0271	.0261	.0243
	.0228	.0203	.0192	.0183	.0166	.0159	.0152	.0140	.0135	.0130	.0122
	.0114	.0101	.0096	.0091	.0083	.0079	.0076	.0070	.0068	.0065	.0061
	.0057	.0051	.0048	.0046	.0042	.0040	.0038	.0035	.0034	.0032	.0030

### SIZES 20"E—25"F

Threads Per Inch	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{11}{16}$	$\frac{5}{8}$	$\frac{11}{8}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{1}{2}$	$\frac{11}{8}$
	1	1 $\frac{1}{8}$	1 $\frac{3}{16}$	1 $\frac{1}{4}$	1 $\frac{5}{8}$	1 $\frac{7}{8}$	1 $\frac{1}{2}$	1 $\frac{5}{8}$	1 $\frac{11}{16}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$
	2	2 $\frac{1}{4}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	2 $\frac{7}{8}$	3	3 $\frac{1}{4}$	3 $\frac{3}{8}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$
	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6	6 $\frac{1}{2}$	6 $\frac{3}{4}$	7	7 $\frac{1}{2}$
	8	9	9 $\frac{1}{2}$	10	11	11 $\frac{1}{2}$	12	13	13 $\frac{1}{2}$	14	15
	16	18	19	20	22	23	24	26	27	28	30
Equivalent Leads in Inches	2.0000	1.7777	1.6842	1.6000	1.4545	1.3913	1.3333	1.2308	1.1851	1.1429	1.0666
	1.0000	.8888	.8421	.8000	.7272	.6956	.6666	.6154	.5925	.5714	.5333
	.5000	.4444	.4210	.4000	.3636	.3478	.3333	.3077	.2962	.2857	.2666
	.2500	.2222	.2105	.2000	.1818	.1739	.1666	.1538	.1481	.1428	.1333
	.1250	.1111	.1052	.1000	.0909	.0869	.0833	.0769	.0740	.0714	.0666
	.0625	.0555	.0526	.0500	.0454	.0434	.0416	.0384	.0370	.0357	.0333
Feeds in Thousandths Per Revolution of Spindle	.3012	.2677	.2536	.2410	.2190	.2096	.2008	.1854	.1784	.1720	.1606
	.1506	.1338	.1268	.1205	.1095	.1048	.1004	.0927	.0892	.0860	.0803
	.0753	.0669	.0634	.0602	.0547	.0524	.0502	.0463	.0446	.0430	.0401
	.0376	.0334	.0317	.0301	.0273	.0262	.0251	.0231	.0223	.0215	.0200
	.0188	.0167	.0158	.0150	.0136	.0131	.0125	.0115	.0111	.0107	.0100
	.0094	.0083	.0079	.0075	.0068	.0065	.0062	.0057	.0055	.0053	.0050



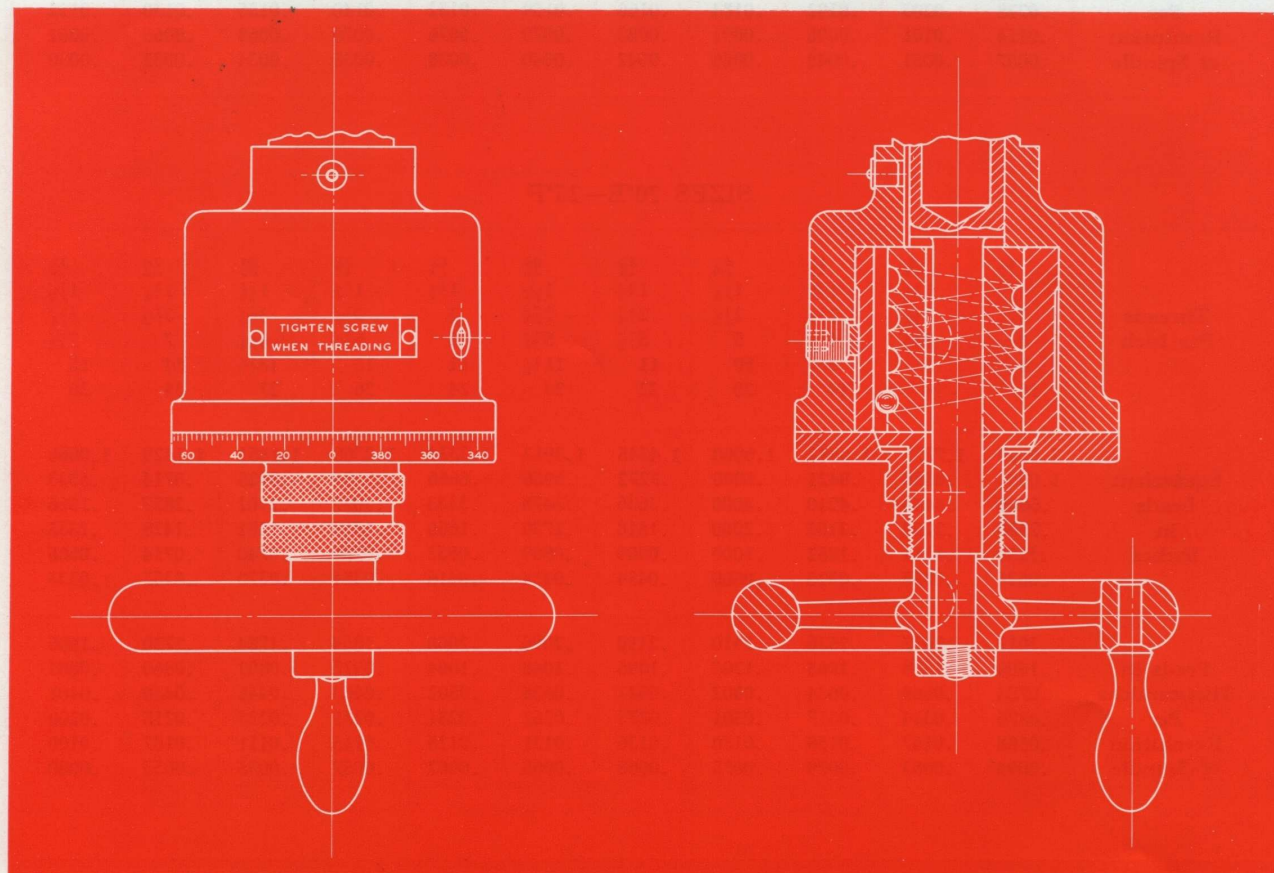
## THREAD DIAL

A thread dial, conveniently located at the right-hand side of the apron in full view of the operator, is regularly furnished. This dial is marked plainly to indicate the correct point for engaging the half nuts for commonly used threads.

## MICROMETER BALL STOP

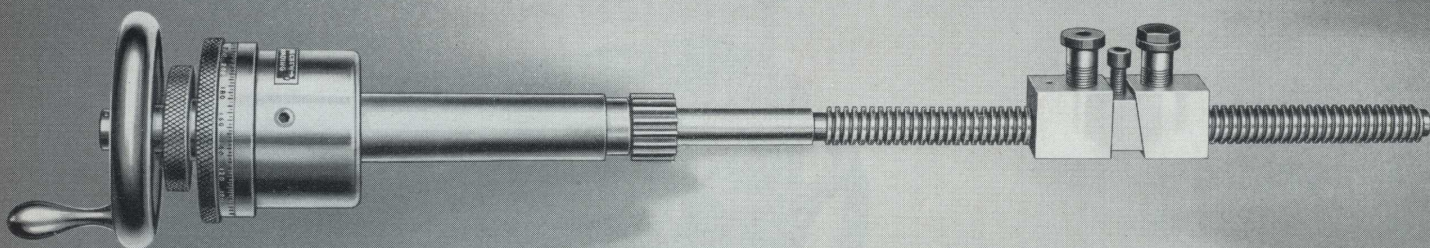
To facilitate threading operations a micrometer ball threading stop is provided as standard equipment. This stop permits the withdrawal of the tool from the cut up to three revolutions of the cross feed screw without disturbing the tool setting. At the end of each cut this permits the quick withdrawal of the tool to the starting point; the tool may then be quickly advanced to the original depth, after which additional depth may be secured thru the compound rest top slide screw and nut and accurately determined by means of the stainless steel compound rest top slide micrometer collar. When circumstances prevent the use of the top slide screw for securing additional depth of cut, the ball stop unit may be used as a "slip-stop" for this purpose simply by loosening the binder screw slightly. This permits it to yield under pressure and thus to provide through the cross feed screw, additional depth for succeeding cuts.

This stop is quite versatile as it will function in both forward and reverse directions and may be used for both external and internal chasing operations. Furthermore, on occasions it may be employed as a positive single diameter stop for duplicating diameters.



Micrometer Ball Stop





Hardened cross feed screw with large direct reading micrometer dial, automatically oiled, bronze compensating nut and Micrometer Ball Threading Stop.

## 4-WAY POWER RAPID TRAVERSE

Safety power rapid traverse to the carriage and tool rest is offered as accessory equipment on the new Pacemaker.

These traverses are independently operated in order to avoid operator confusion and work damage. The carriage longitudinal traverse is actuated by a convenient control lever at the left side of the apron, while the control lever for the tool rest cross travel is located at the right side of the apron. Not only does the separation of these control levers minimize the possibility of engaging the wrong traverse but permits traverses being operated simultaneously. A further safety feature is provided by spring actuated safety clutches which control the traverses. These disc clutches are engaged and disengaged by spring action applied by the actuation of the control levers. As a result the traverses operate only while the operator holds the levers in operating position. The instant he releases them the frictions are disengaged and the traverse stops. Due to this safety design there is no possibility of damage should the carriage or tool rest be accidentally run into an obstruction: the clutches would simply slip.

The spring actuation of the traverse clutches offers another decided advantage in imparting a smooth start and stop to the traverses which eliminates the initial jerk and jump so frequently encountered.

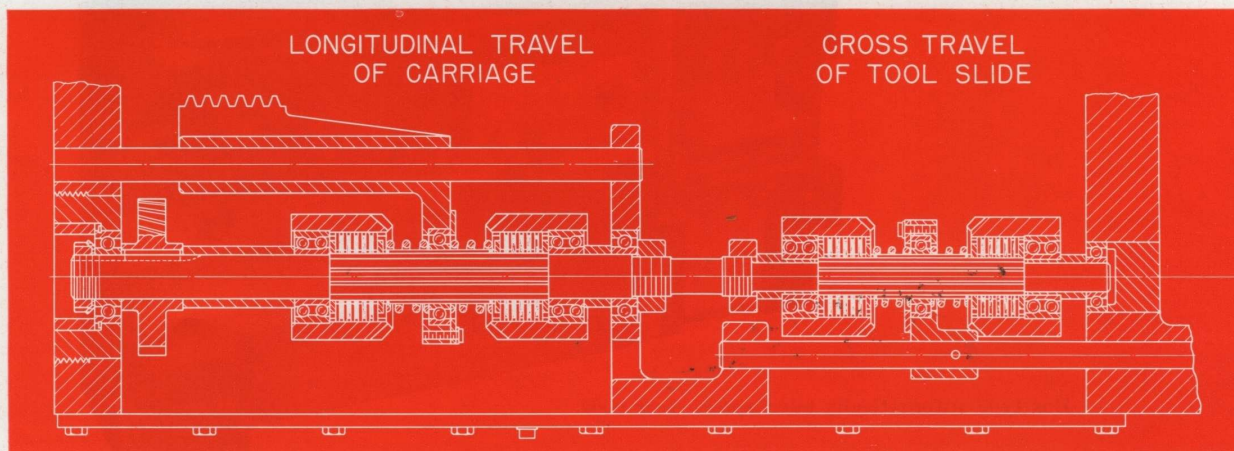
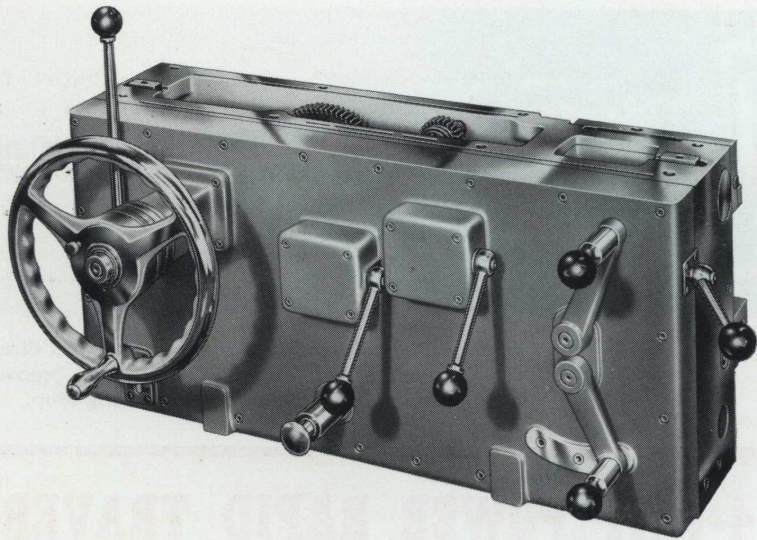


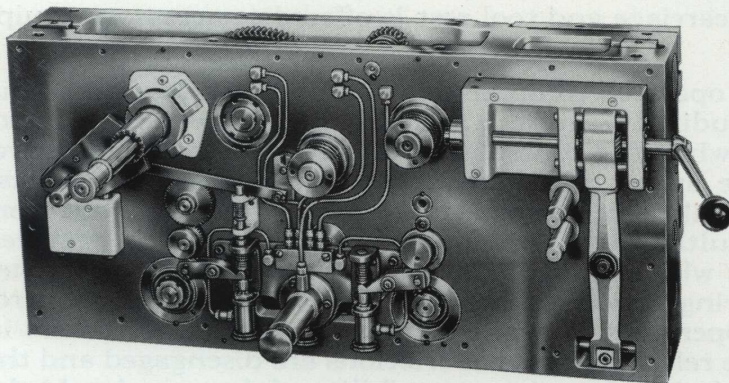
Diagram of Power Traverse Safety Clutch Unit



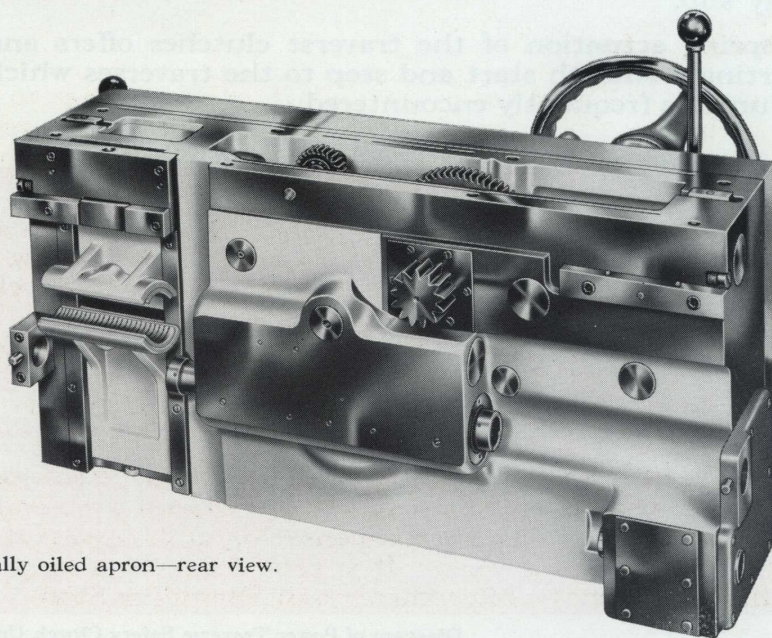
# APRON



Box type automatically oiled apron—front view.



Front view of apron with front cover plate removed exposing all adjusting members.



Box type automatically oiled apron—rear view.



## APRON

The apron is of one piece, box type construction, completely anti-friction and automatically pump oiled thru a metering system which completely eliminates the use of wicks for oil distribution.

All gears are hardened and all studs have outer supports.

Power to the longitudinal and cross feeds is transmitted through positive, hardened tooth, jaw clutches, providing instantaneous finger-tip control.

The cross feed clutch is designed to automatically disengage under overload to prevent damage to the taper attachment, carriage and apron mechanisms, should operator inadvertently permit the tool rest to feed to its outer limit of travel.

The longitudinal feed is also thoroughly protected against accident by a novel, self-adjusting safety clutch.

The dual automatic pump pressure lubricating system built into the apron thoroughly oils not only the entire apron mechanism but the front and rear carriage bearings on the bed, the bottom slide and the cross feed screw and nut with clean, filtered oil. A manual pump supplementary to the automatic system is provided. A few actuations of the plunger knob at front of the apron provide a copious supply of oil to the carriage bearings on the bed, cross slide and carriage bridge. This prevents starting dry after long periods of inoperation.

This new dual pump lubricating system provides copious lubrication for all turning and facing operations.

## LENGTH MEASURING DIAL

A large diameter, easily read length measuring dial graduated in .005" is furnished as standard equipment. This dial, located directly behind the manual longitudinal traverse wheel, indicates the carriage movement up to 1". Each complete revolution of the dial represents 1" of carriage travel.

At slight additional cost a Length Travel Accumulator may be furnished which operates in conjunction with the length dial and indicates the total travel of the carriage.

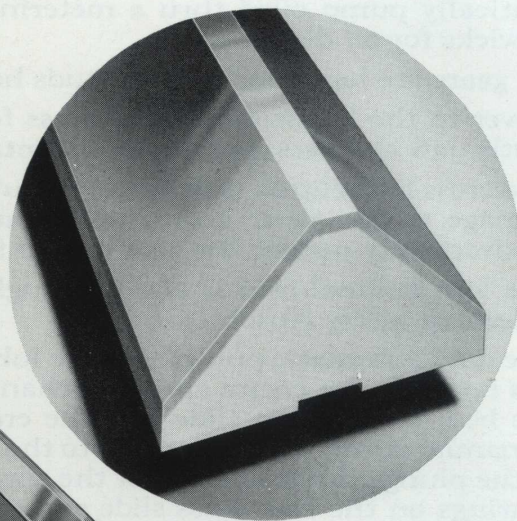
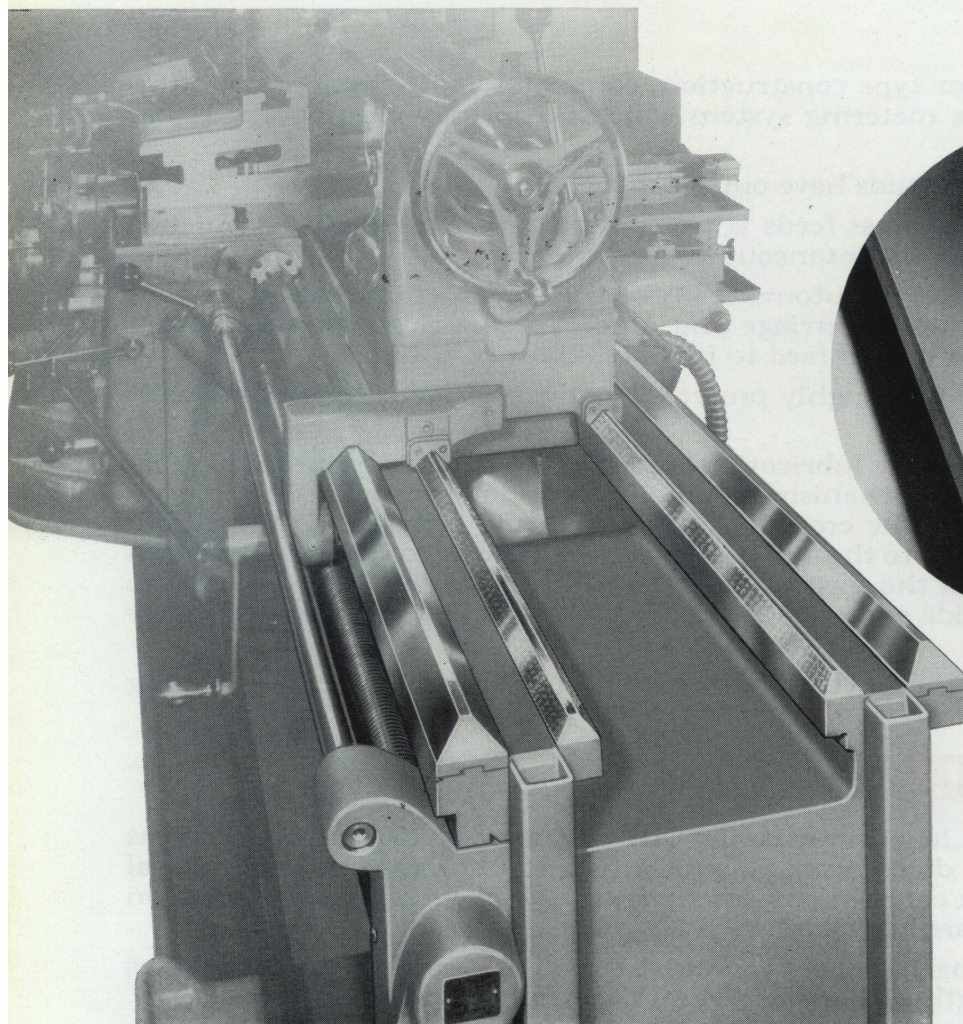
## CARRIAGE

The carriage has been made particularly rigid in order to offer a stable and vibrationless support for the cutting tool even under the most severe conditions resulting from the use of modern cutting tools, high cut speeds and driving motors up to the maximum horse power recommended.

Taper gibs are provided under the front and rear outer vees. The gib under the front vee is used to clamp the carriage to the bed for facing operations. Hardened and ground wipers are fitted to the carriage wings which cleanse the vees and exclude chips and dirt thus protecting the vees against scoring. These wipers carry oil resistant synthetic rubber cleansers which wipe the vees perfectly clean and trap the oil which is fed under pump pressure to the carriage bed bearings. The remarkable ease of carriage movement along the bed is due largely to this excellent oiling and cleansing system.

The cross feed screw is *surface hardened to about 70 scleroscope* in such a manner that the original accuracy is retained. It is equipped with ball thrust bearings and a large automatically oiled, bronze compensating cross feed nut, which is conveniently and quickly adjustable for wear. It is provided with a large diameter micrometer cross feed dial and carries a Micrometer Ball Threading Stop.





***Patented drop vee bed  
with hardened tool steel  
outside vees***

## **ANGULAR TYPE BED**

The new angular type bed is one of the novel and definitely valuable features of the new Pacemaker. As shown by the accompanying illustration the bed walls are rigidly tied together between the girths by an angular web which forms a chute for quick disposal of chips through vents provided in the bed wall at the rear.

The bed itself has been widened, deepened and thickened to provide, in our opinion, the most substantial and force resistant lathe bed that has ever been developed. In addition, the four vees have been greatly enlarged to provide an unusually large area of bearing surface for the carriage. The two inner vees are dropped below the outer vees to provide additional swing without raising and for greater carriage bridge depth and stiffness.

The outside bed ways are equipped with hardened steel vees 60 to 62 Rockwell C, made of solid tool steel and ground to gauge tolerances for interchangeability, should replacement be required.

After hardening, the metallurgical structure of these vees is stabilized by cold treatment at minus 150° Fahrenheit for an 8-hour period to prevent twisting or warping.



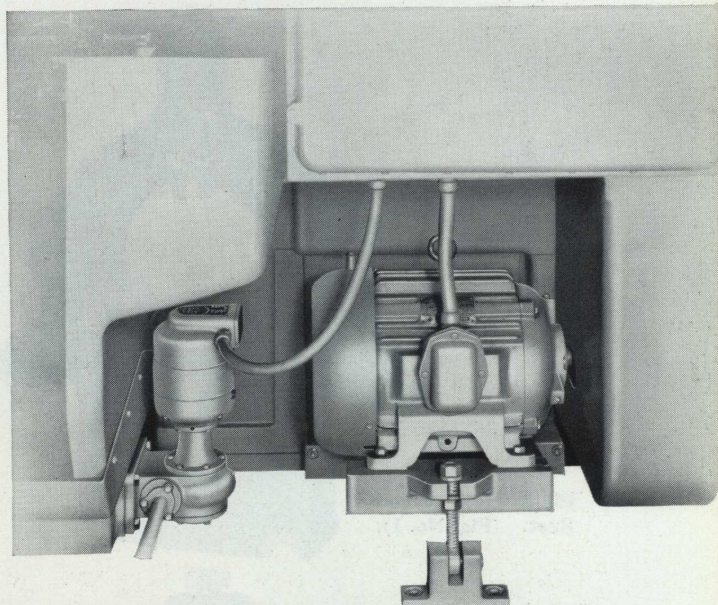
## MOTOR DRIVE

### **adjustably mounted at rear**

The driving motor, either A.C. or D.C., is adjustably mounted on a hinged plate attached to the rear of the head-end leg. Thus adjustment is provided for maintaining proper tension for the multiple vee driving belts which connect the motor and the main driving unit of the head.

The location of the motor provides accessibility for oiling and cleaning.

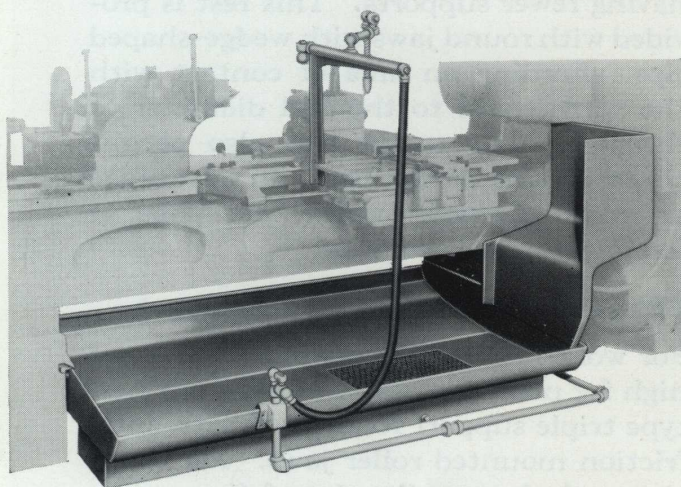
Directly above the motor and attached to the head casting is located the control box which completely encloses the electrical control mechanism. This location raises the control mechanism sufficiently off the floor to meet J.I.C. specifications and also keeps it clean and free from interference. Attached to the inside of the control box door is a latch which operates a disconnect switch when the door is opened which automatically shuts off the power and prevents accidents and damage.



Adjustably mounted motor at rear of head end leg. This illustration also shows the mounting of the coolant pump motor.

## COOLANT PAN (Standard Equipment)

### **easy access type**

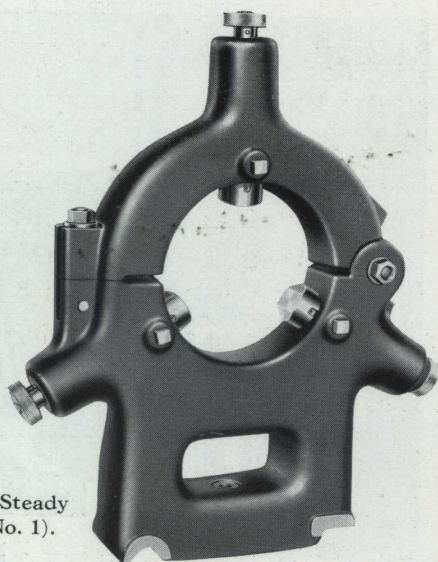


New type easy access pan especially designed for convenient removal of chips.

The integral chip and coolant pan furnished as standard equipment on tool room lathes, is of the easy access type which offers exceptionally quick and easy chip removal.

The pan is made of heavy sheet iron with rolled edges and carries a settling tank and strainer for coolant. Provision is made for the application of a motor driven coolant pump and fittings for delivering coolant in copious volume to the cutting tool.

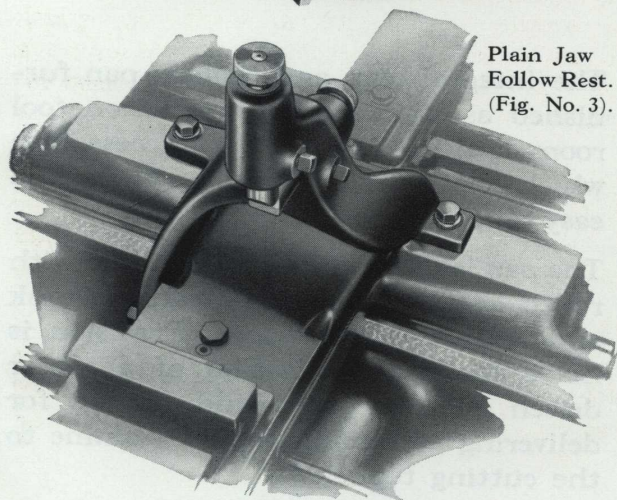




Plain Jaw Steady Rest. (Fig. No. 1).



Roller Jaw Steady Rest. (Fig. No. 2).



Plain Jaw Follow Rest. (Fig. No. 3).

### **STEADY RESTS (Plain Jaw Type)**

A substantial 3-jaw cast-iron body steady rest is standard equipment on tool room lathes.

Larger capacity steady rests in both cast iron and steel bodies are also available, the capacities of which are shown under specifications on page 41.

### **STEADY RESTS (Roller Jaw Type)**

When machining work at the high surface speeds permitted by cemented carbide cutting tools, plain jaw steady rests are often found to be inadequate owing to the rapid wear of the plain jaws. We have, therefore, developed and are prepared to furnish antifriction mounted roller jaw steady rests with approximately the same capacities as the plain jaw rests as indicated on page 41.

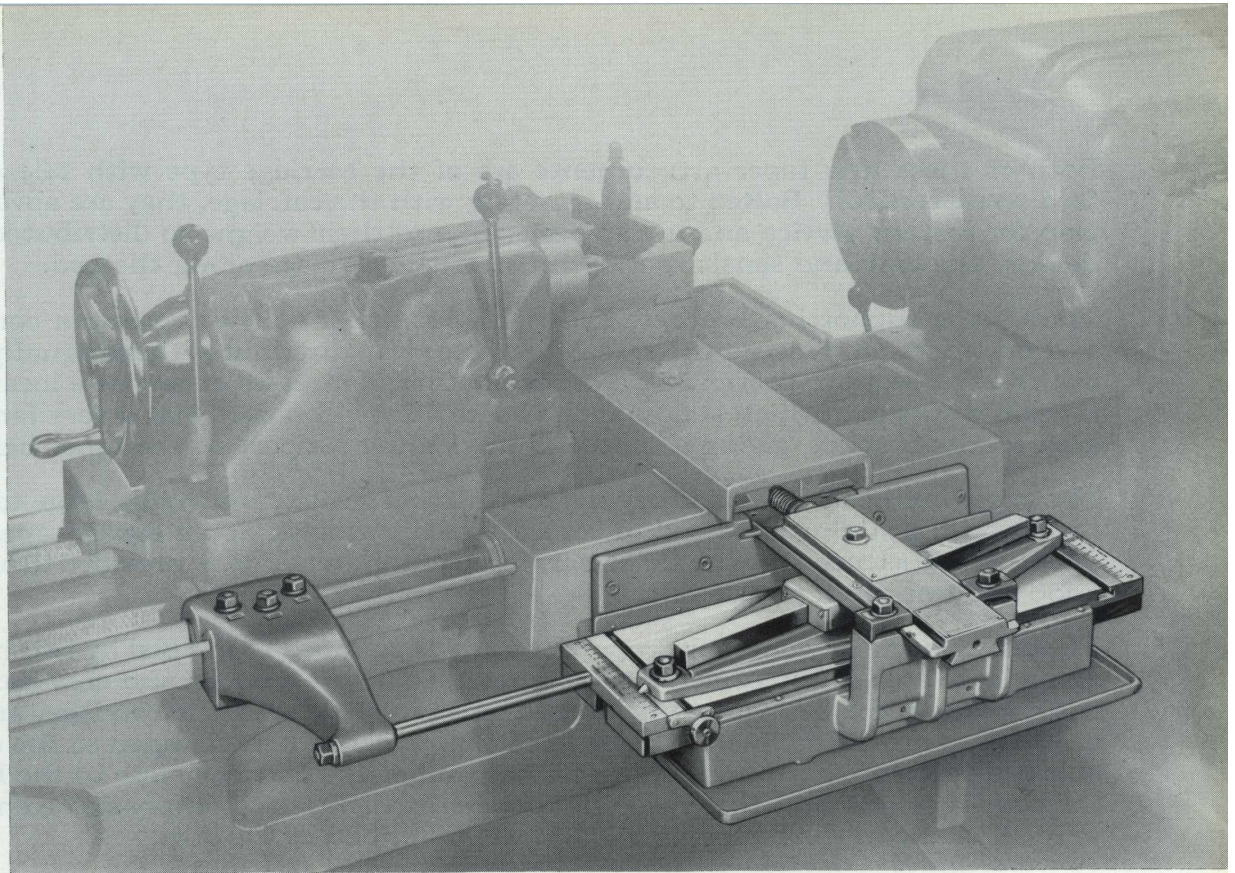
### **FOLLOW RESTS (Plain Jaw Type)**

A more substantial follow rest has been designed for work requiring a follow rest support. This new rest has a three-bearing support on the carriage, two on the carriage wings and one on the carriage bridge. This triple support construction imparts a degree of rigidity to the rest that is absent in other designs having fewer supports. This rest is provided with round jaws with wedge-shaped tips, affording an area of contact with the work equal to the full diameter of the jaw. The wedge tips also permit closer setting of the jaws, an advantage on small diameter work. See page 41 for follow rest capacities.

### **FOLLOW RESTS (Roller Jaw Type)**

For work revolving at surface speeds too high for plain jaw rests, we offer our new type triple support follow rest with anti-friction mounted roller jaws. For capacities of these roller jaw follow rests, refer to page 41.





View of Plain Bearing Taper Attachment with guards removed.

## **"AMERICAN" TAPER ATTACHMENT**

The "AMERICAN" Improved Taper Attachment is offered in two types: PLAIN TYPE WITH HARDENED STEEL GUIDE WAYS and BALL BEARING TYPE, completely anti-friction in design. These new attachments are the very last word in accuracy, ease of control and frictionless operation.

The new Plain Bearing Taper Attachment is not just another Taper Attachment. It is without doubt the finest of all plain bearing attachments. It is essentially the same sturdy design as the anti-friction attachment except that the Meehanite slides operate on hardened and ground steel ways with full length Meehanite taper gibs for quick and easy adjustment. This construction reduces friction between the slides to a minimum. In fact, comparative physical tests actually show the frictional load on both the anti-friction and plain bearing attachments to be virtually the same.

The Ball Bearing Type is equipped with 24 permanently sealed anti-friction bearings which are concealed in such a manner that they are never exposed to dust, dirt or chips. A simple and effective adjusting means is provided to compensate for any wear that might occur in the anti-friction bearings.

To insure permanent accuracy and minimize wear, hardened and ground steel contacting surfaces or "ways" are supplied for the anti-friction bearings, both in the sliding shoe and the bottom slide. These surfaces are extremely hard and are kept scrupulously clean by improved Duprene wipers. All exposed surfaces are protected by effective dirt guards.

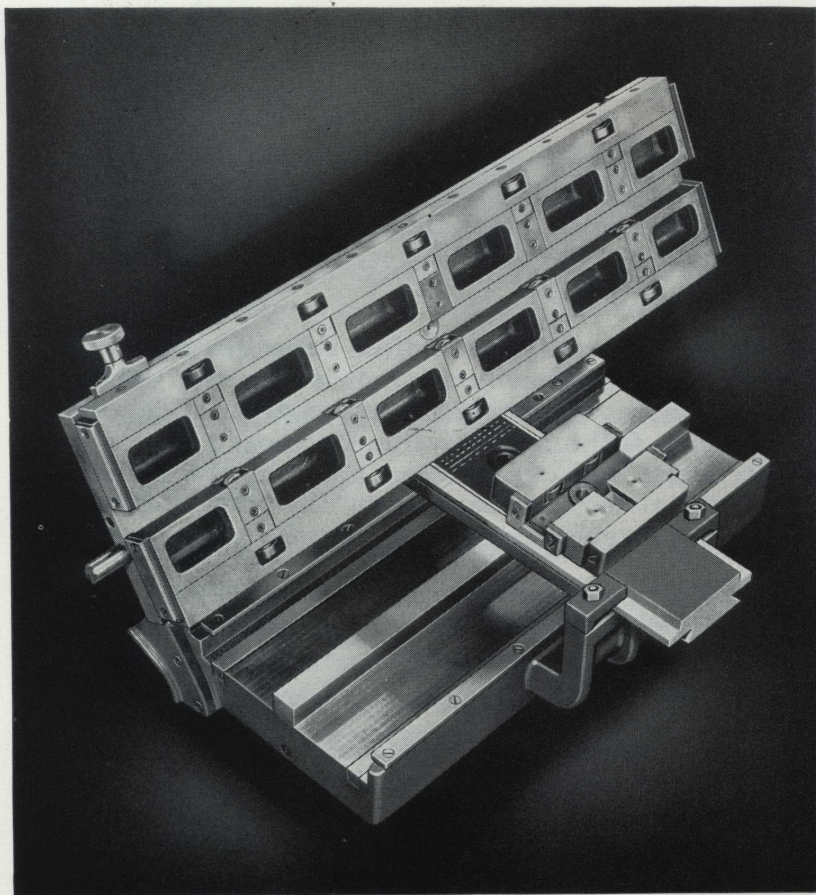


Both of these new taper attachments are of the carriage type with telescopic cross feed screw control. Bolted to and traveling with the carriage, they are always in position for instant service and are so designed and their weight so distributed as not to destroy the easy and sensitive movement of the carriage along the bed.

The U-type supporting bracket, tied rigidly together at the top into a complete box section, effectually resists the severest stresses and distributes them equally throughout the box section, preventing a concentration of stresses at any one location. The taper bar support, which slides on the base of the U bracket, has a very large bearing area on the bracket, giving a solid and unyielding support to the taper bar.

The taper bar bearing on the bar support has been made unusually large to resist the thrust on the sliding shoe and to insure extreme accuracy on steepest tapers. A very sensitive adjustment for the taper bar, for accurate settings, is provided thru a knurled knob and fine pitch screw.

The clamp dog is of generous proportions and is clamped to the bed by two heavy bolts and a large area clamp under the outer vee. To insure smooth and easy movement of the dog along the bed when unclamped and traveling with the carriage, an auxiliary draw bar is provided close to the bed bearing, which, when clamped to the dog by the bolt provided for that purpose, directs the pull of the carriage close to the bearing on the bed and eliminates the cramping tendency which would otherwise be encountered were all of the moving effort applied at the outer end of the dog.



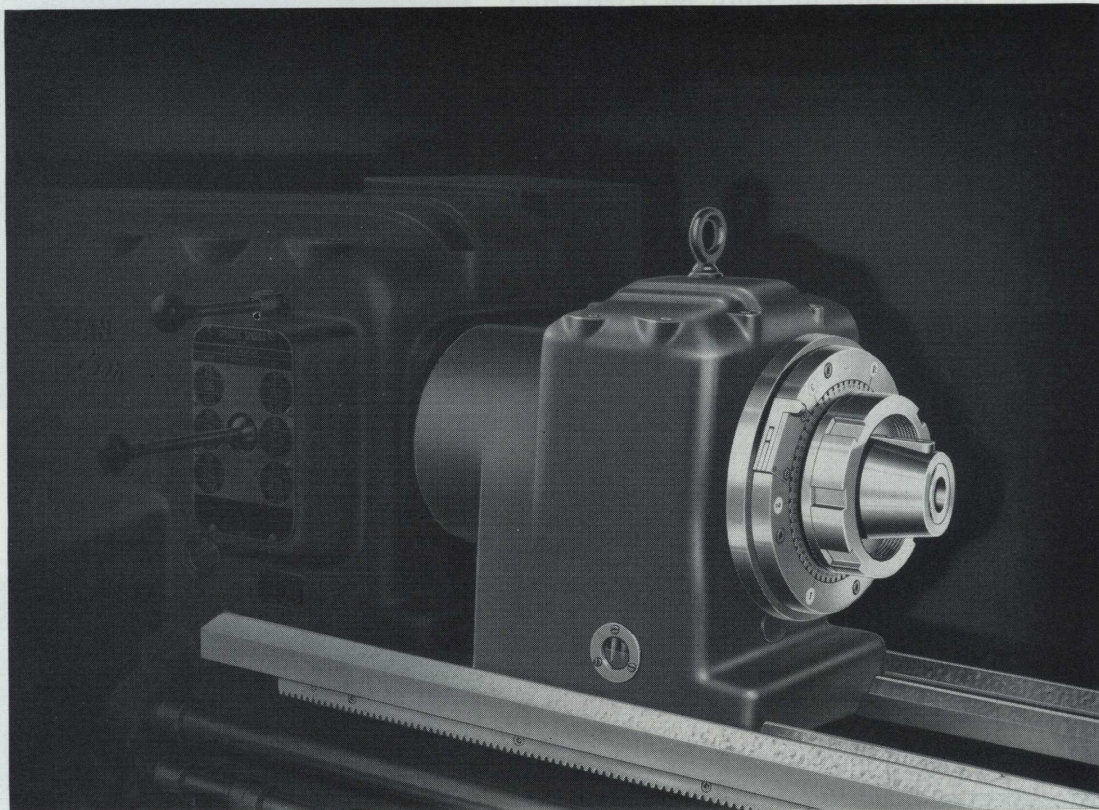
The telescopic cross-feed screw is of large diameter and made of a fine grade of steel and surface hardened to approximately 70 scleroscope. It is provided with a bronze-lined journal in the yoke and is equipped with ball thrust bearings at each end. The cross feed nut is made of special alloy bronze and is automatically oiled. It is of the two-piece compensating type, with wedge adjustment for wear.

A dirt guard shields the cross feed screw and nut from chips and dirt.

Showing Anti-friction Bearing Application to Taper Attachment and hardened steel "ways".



## SUB-HEAD (Speed Reducer)



Sub-head and Multiple Indexing Face Plate

The sub-head or speed reducer, as it is sometimes called, is a valuable unit for operations such as coarse worm cutting and chasing long leads—in fact, any operation requiring very slow work speeds.

This attachment is available for fitting either to the standard Key Drive Taper Spindle Nose or to the Cam-Lock Spindle Nose. It is securely clamped to the bed and provides a speed reduction of 6 to 1 for the slow work speeds required for such operations.

This unit also functions as an indexing face plate, being suitably marked for the chasing of multiple threads. This entire unit is anti-friction mounted, is provided with accurately hobbed and machine-lapped helical gears, automatic lubrication, and may be quickly applied and removed as desired.

When the sub-head is in place, the normal distance between centers is reduced 17" on the 14"B, 16"C and 20"D sizes and 20" on the 20"E and 25"F sizes.

## MULTIPLE INDEXING FACE PLATE

This Indexing Face Plate may be furnished independently of the sub-head and is available for application to either the Standard Key Drive Taper Spindle Nose or the "Cam-Lock" Spindle Nose. It is designed for application of Chucks and Fixtures for either type of spindle nose mounting and is especially desirable for accurate indexing of the work when chasing multiple threads.



## COLLET CHUCKS and COLLETS

Two types of collet chucks may be furnished for either Cam-Lock or Standard Key Drive Taper Spindle Noses: the Key Operated nose type and the Wheel Operated nose type.

The Key Operated chuck takes a maximum size collet of  $1\frac{3}{4}$ " on all sizes.

The Wheel Operated chuck accommodates a maximum size collet of  $1\frac{3}{8}$ " capacity on the 14"B, 16"C and 20"D sizes and  $1\frac{3}{4}$ " capacity on the 20"E and 25"F sizes.



Wheel-Type Collet Chuck (Sjogren)  
(Fig. No. 1)

## MICROMETER CARRIAGE STOP

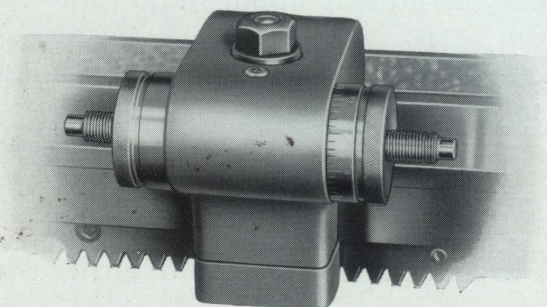
The micrometer carriage stop, furnished as extra equipment on the "AMERICAN" Precision Tool Room Lathe, is provided for accurately locating the carriage or tool with relation to the work. It is a positive stop, which is used in connection with hand feed only, and must not be used in combination with power feed.

This mechanism consists of a body casting carrying an adjusting screw with knurled knob, and a micrometer collar graduated for fine adjustments of the screw. Hardened plugs are provided in the ends of the front carriage wings to contact the adjusting screw.

The stop screw can be used at either end, which permits placing the stop at any point on front Vee, and at either end of carriage wings.



Nose-type Collet Chuck. (Fig. No. 2)

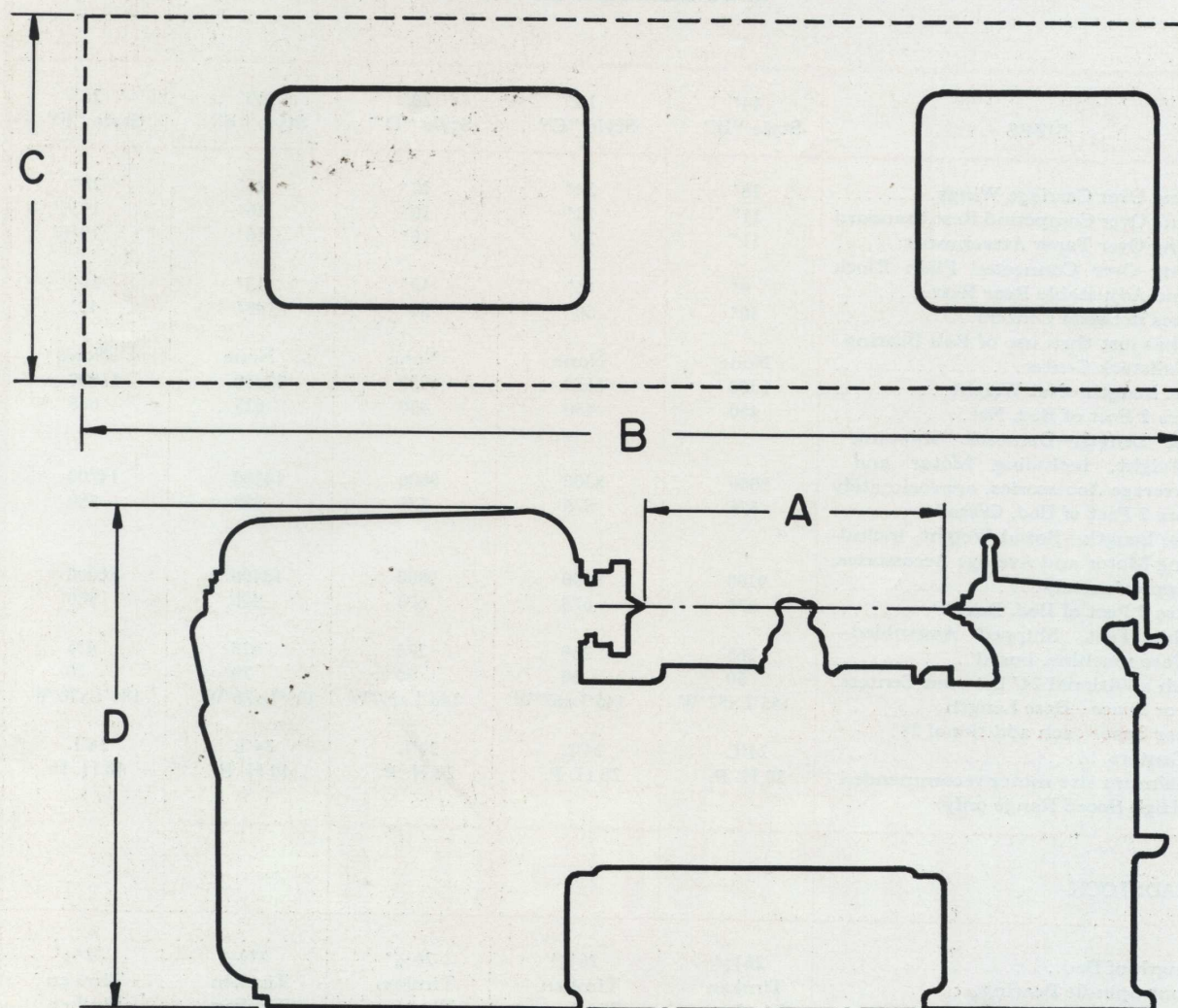


Micrometer Carriage Stop. (Fig. No. 3)



# FLOOR SPACE REQUIRED FOR "AMERICAN" PACEMAKER LATHES

DIMENSIONS GIVEN ARE IN INCHES



SIZE LATHE	A	B	C	D
14" B	30	145	57	52
16" C	30	145	57	53
20" D	30	145	57	55
20" E	48	189	76	54
25" F	48	189	76	56

ADD 24" TO DIMENSION "B" FOR EACH ADDITIONAL 24" OF CENTER DISTANCE "A"



## DIMENSIONS

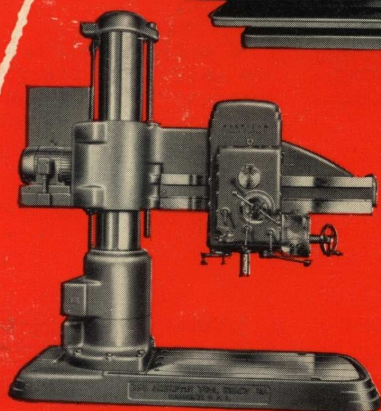
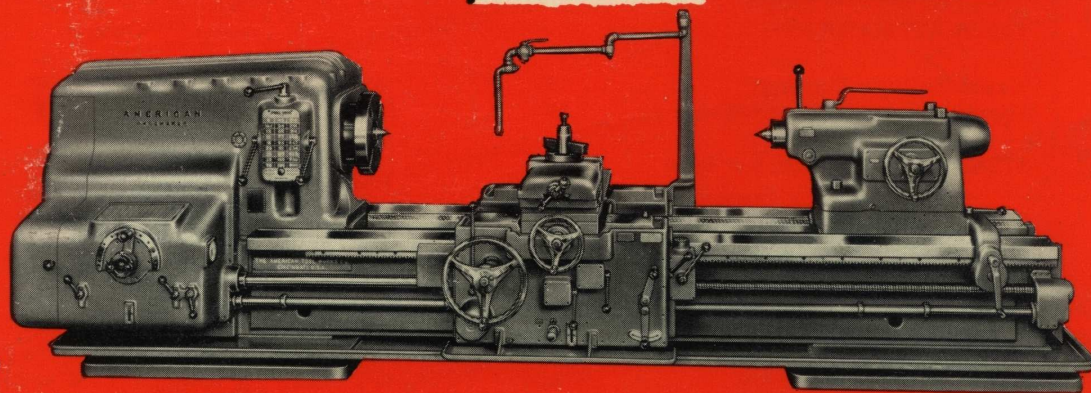
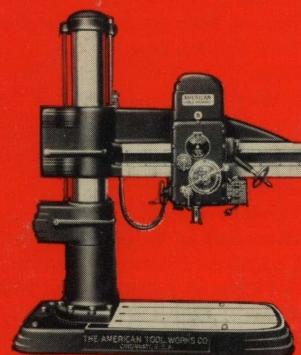
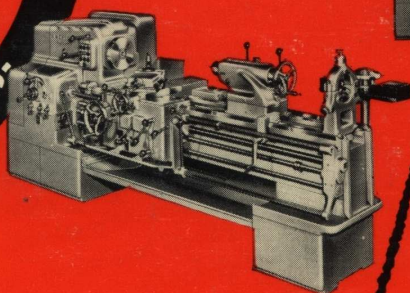
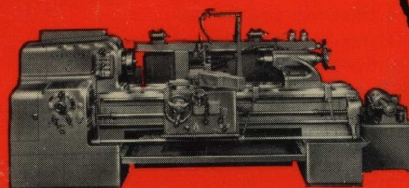
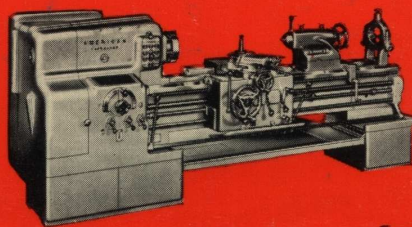
SIZES	14" Style "B"	16" Style "C"	20" Style "D"	20" Style "E"	25" Style "F"
Swing Over Carriage Wings.....	18"	20"	23"	25"	28"
Swing Over Compound Rest, Standard	11"	13"	16"	16"	19½"
Swing Over Taper Attachment.....	11"	13"	16"	16"	19½"
Swing Over Connected Plain Block and Adjustable Rear Rest.....	9"	11"	13"	13"	16"
Takes Between Centers.....	30"	30"	30"	48"	48"
Inches lost thru use of Ball Bearing Tailstock Center.....	None	None	None	None	None
Base Length—Net Weight.....	6350	6650	6950	11300	11900
Extra 2 Feet of Bed, Net.....	450	450	450	625	625
Base Length—Domestic Shipping Weight, including Motor and Average Accessories, approximately	8000	8300	8600	14100	14700
Extra 2 Feet of Bed, Crated.....	575	575	575	850	850
Base Length—Boxed Weight, includ- ing Motor and Average Accessories, approximately.....	9200	9500	9800	15400	16000
Extra 2 Feet of Bed, Boxed.....	675	675	675	950	950
Cubic Feet, Shipped Assembled— Base machine, boxed.....	265	269	273	425	435
Each additional 24" between Centers.	50	50	50	70	70
Floor Space—Base Length.....	145"Lx57"W	145"Lx57"W	145"Lx57"W	189"Lx76"W	189"Lx76"W
Floor Space each additional 24" Centers.....	24"L	24"L	24"L	24"L	24"L
Maximum size motor recommended (High Speed Range only)	20 H. P.	20 H. P.	20 H. P.	40 H. P.	40 H. P.
HEADSTOCK					
Length of Bed.....	26¼"	26¼"	26¼"	32⅝"	32⅝"
Front Spindle Bearing.....	Timken	Timken	Timken	Timken	Timken
Intermediate Spindle Bearing.....	Timken	Timken	Timken	Timken	Timken
Rear Spindle Bearing.....	Ball Bearing	Ball Bearing	Ball Bearing	Ball Bearing	Ball Bearing
Radial Load Capacity—Front Bearing at 100 R.P.M.....	20,300 lbs.	20,300 lbs.	20,300 lbs.	23,700 lbs.	23,700 lbs.
Thrust Load Capacity at 100 R.P.M..	15,300 lbs.	15,300 lbs.	15,300 lbs.	22,900 lbs.	22,900 lbs.
Radial Load Capacity—Center Bear- ing at 100 R.P.M.....	12,600 lbs.	12,600 lbs.	12,600 lbs.	15,900 lbs.	15,900 lbs.
Hole in Spindle.....	2"	2"	2"	2½"	2½"
Taper of Center.....	No. 4	No. 4	No. 4	No. 5	No. 5
Large Face Plate Diameter.....	17"	19"	22"	24"	27"
Small Face Plate Diameter.....	10"	10"	10"	13"	13"
Number of Vee Belts.....	5	5	5	8	8
Number of Spindle Speeds.....	9-18-27	9-18-27	9-18-27	9-18-27	9-18-27
For range of spindle speeds see page 15					
BED					
Width of Bed.....	16"	16"	16"	20"	20"
Depth of Bed.....	15"	15"	15"	18½"	18½"



## DIMENSIONS

SIZES	14" Style "B"	16" Style "C"	20" Style "D"	20" Style "E"	25" Style "F"
QUICK CHANGE BOX					
Number of Threads Can be cut.....	66	66	66	66	66
Range of Threads can be cut per inch	2 to 120	2 to 120	2 to 120	1 to 60	1 to 60
Number of Feeds can be cut.....	66	66	66	66	66
Range of Feeds in Thousandths Per Revolution.....	.0015 to .091	.0015 to .091	.0015 to .091	.0025 to .1506	.0025 to .1506
Diameter of Leadscrew.....	1½"	1½"	1½"	2"	2"
Pitch of Leadscrew.....	¼ Pitch	¼ Pitch	¼ Pitch	½ Pitch	½ Pitch
COMPOUND REST					
Travel of Top Slide.....	4"	4"	4"	6"	6"
Round Tool Holder (Size of Tool)....	⅝" to 1¼"	⅝" to 1¼"	⅝" to 1¼"	1" x 1½"	1" to 1½"
Tool Holder Size.....	No. 2	No. 2	No. 2	No. 4	No. 4
High Duty Tool Holder (Size of Tool)	⅝" to 1¼"	⅝" to 1¼"	⅝" to 1¼"	1" x 1½"	1" x 1½"
4-Way Tool Block (Size of Tool).....	1" x 1"	1" x 1"	1" x 1"	1" x 1½"	1" x 1½"
TAILSTOCK					
Length on Bed.....	14⅞"	14⅞"	14⅞"	19¼"	19¼"
Diameter of Tailstock Spindle.....	4"	4"	4"	5"	5"
Length of Tailstock Spindle.....	24⅞"	24⅞"	24⅞"	30"	30"
Set Over of Tailstock, on Side.....	⅛"	⅛"	⅛"	⅛"	⅛"
Spindle Travel.....	10"	10"	10"	12"	12"
Taper of Center—Morse.....	No. 4	No. 4	No. 4	No. 5	No. 5
TAPER ATTACHMENT					
Maximum Taper Per Foot.....	5"	5"	5"	6"	6"
Maximum Length at one setting.....	18"	18"	18"	24"	24"
STEADY RESTS—Plain Jaw Type					
Standard Capacity (3 Jaws).....	½" to 6"	½" to 6"	½" to 6"	¾" to 8"	¾" to 8"
Medium Capacity (3 Jaws).....	4" to 8"	4" to 8"	4" to 10"	7" to 12"	7" to 12"
Large Capacity (3 Jaws).....	6" to 12"	6" to 12"	8" to 14"	8" to 16"	8" to 16"
STEADY RESTS—Roller Jaw Type					
Standard Capacity (3 Jaws).....	½" to 6"	½" to 6"	½" to 6"	¾" to 8"	¾" to 8"
Medium Capacity (3 Jaws).....	4" to 8"	4" to 8"	4" to 10"	7" to 12"	7" to 12"
Large Capacity (3 Jaws).....	6" to 12"	6" to 12"	8" to 14"	8" to 16"	8" to 16"
FOLLOW REST—Plain Jaw Type					
Standard Capacity.....	½" to 4"	½" to 4"	½" to 4"	¾" to 6"	¾" to 6"
FOLLOW REST—Roller Jaw Type					
Standard Capacity.....	⅞" to 4"	⅞" to 4"	⅞" to 4"	⅞" to 6"	⅞" to 6"





**THE AMERICAN TOOL WORKS CO.**  
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