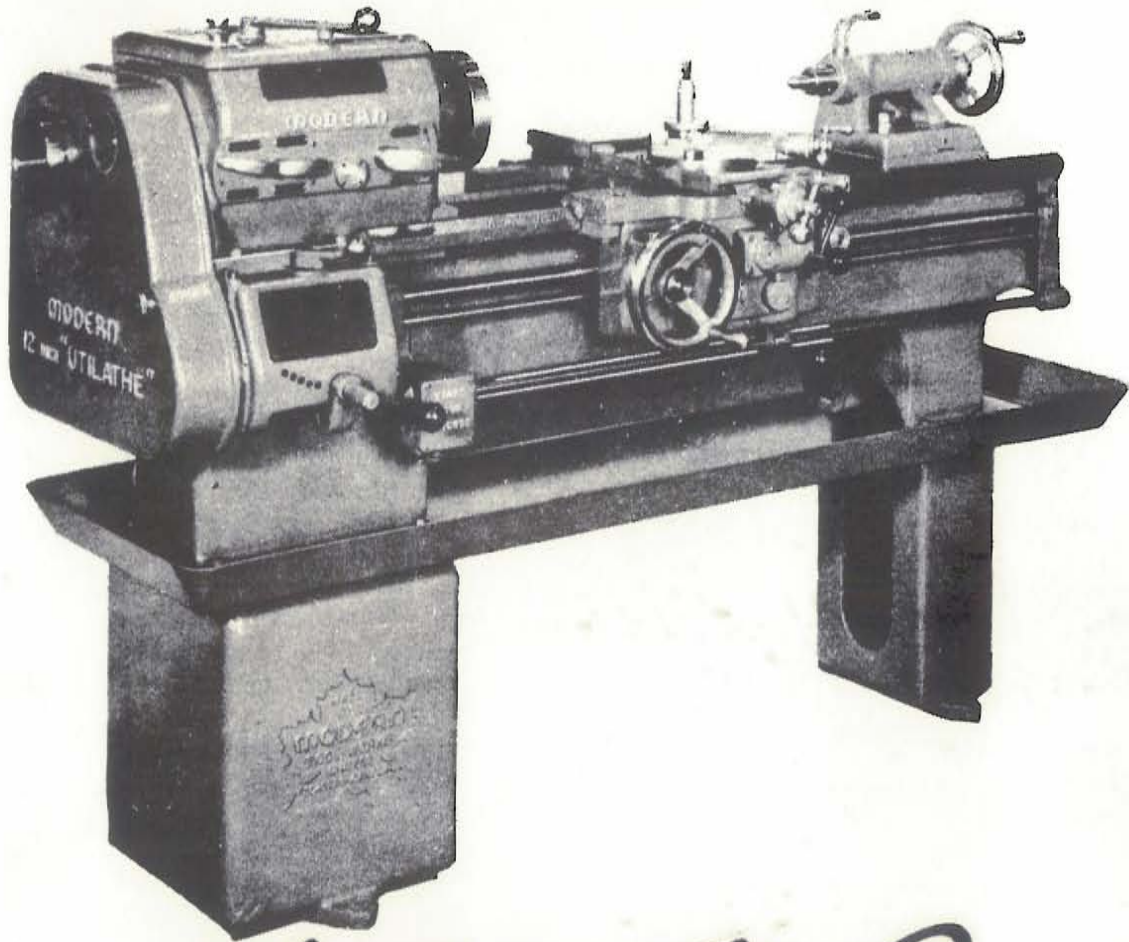


REVISED - SEPT 1962.

OPERATOR'S HANDBOOK.



MASTER
ONLY.

12"-14" and 16"

UTILATHE

Lifting and Installation Instructions

1. Lifting the Machine:

To lift all machines fitted with motor on rear of bed by the use of chain slings, run the carriage down to the tailstock and place the slings around the two centre bed cross ribs. (See Fig. 1.)

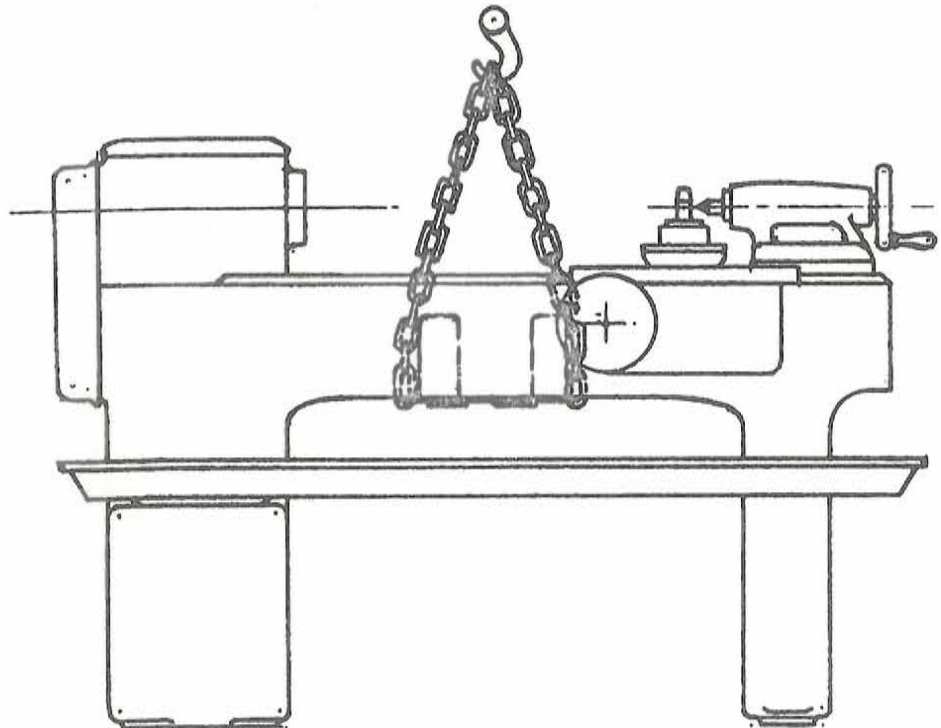


Figure 1.

To lift machines with motor in Cabinet leg, place one sling around third bed cross rib from end and the other around the back wall of bed immediately in front of headstock using wooden packing pieces to keep machine in balance. Protect painted surfaces with thick pads.

Do not attempt to lift this machine with a crane having less than one ton capacity for 30" machines and two tons capacity for 54" machines. The shipping weight of the machine including electrics is 1,800 lbs. for 30" machines and 2,500 lbs. for 54" machines with motor in cabinet base.

Do not remove skids from the machine until it is brought to its final position especially if the machine is to be moved on rollers.

2. Cleaning:

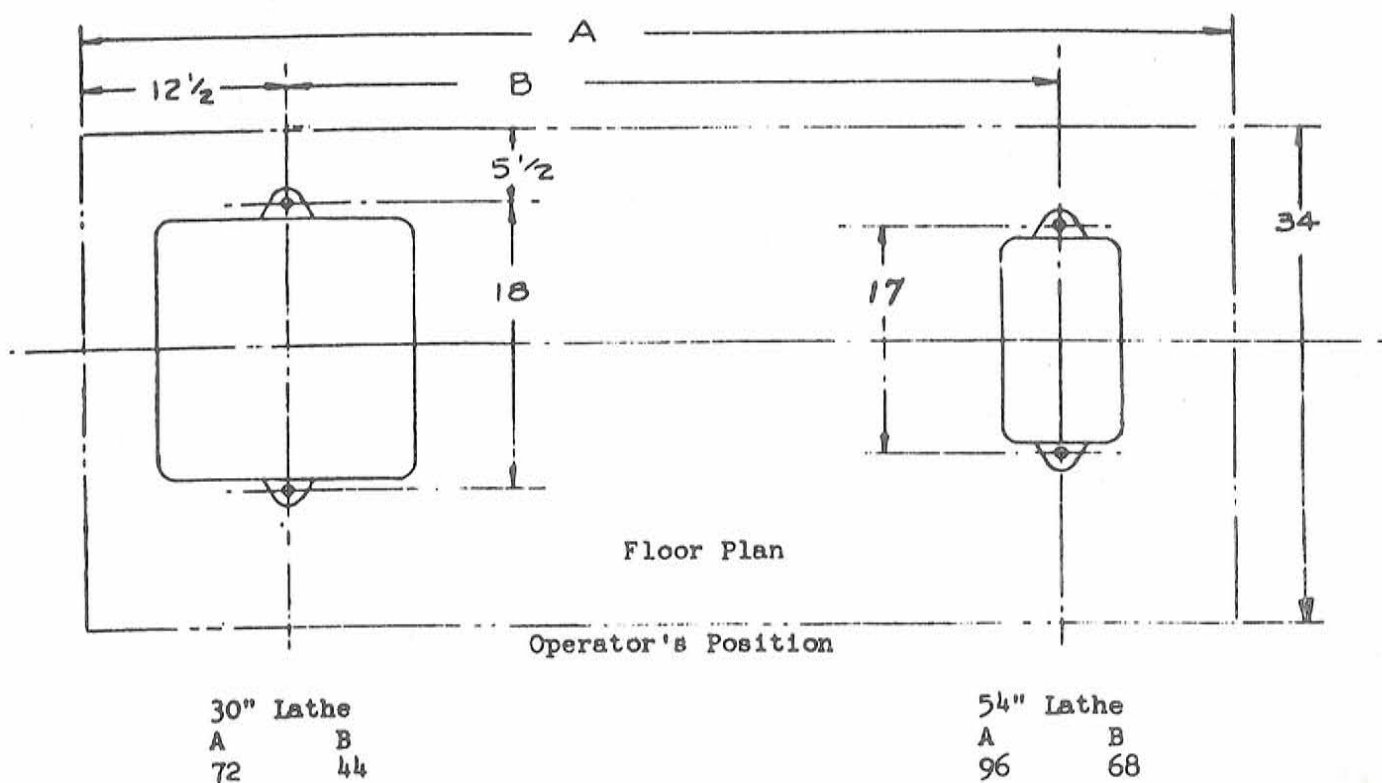
All unpainted parts of the machine have been coated with an anti-rust compound. This should be thoroughly removed after the machine is installed, and before moving the carriage, compound rest or tailstock on their respective slides.

To remove the compound use a wiper dipped in Varsol or Kerosene.

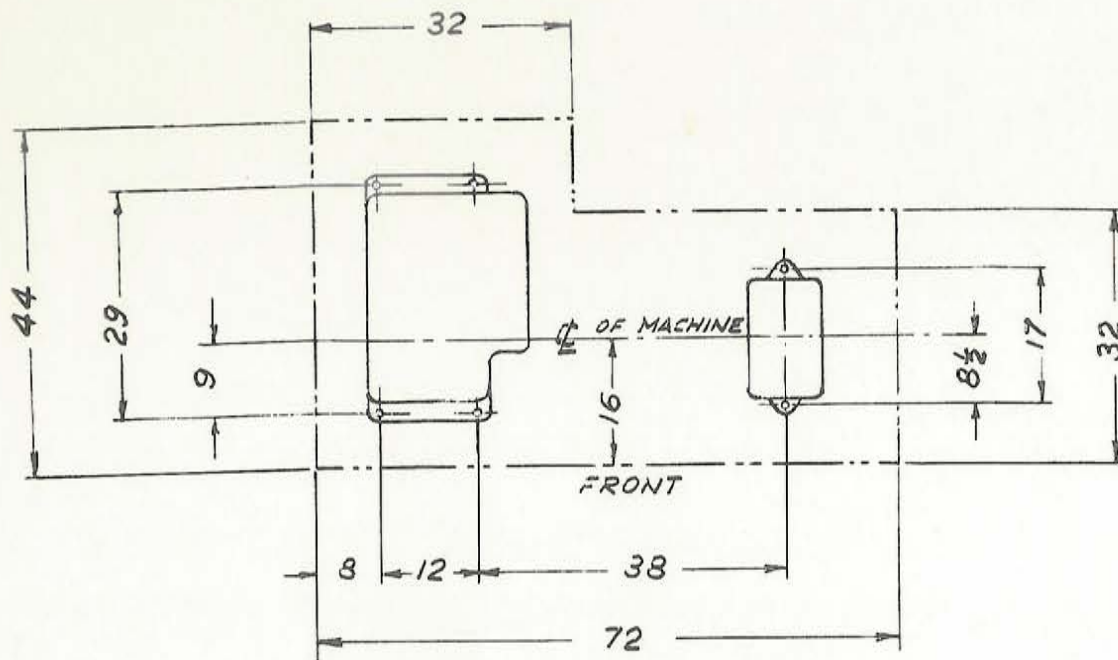
All unpainted surfaces should immediately be coated with a film of light machine oil to prevent rust. If the finished surfaces are kept clean and well coated with oil, the lathe will retain its new appearance indefinitely.

3. Inspection:

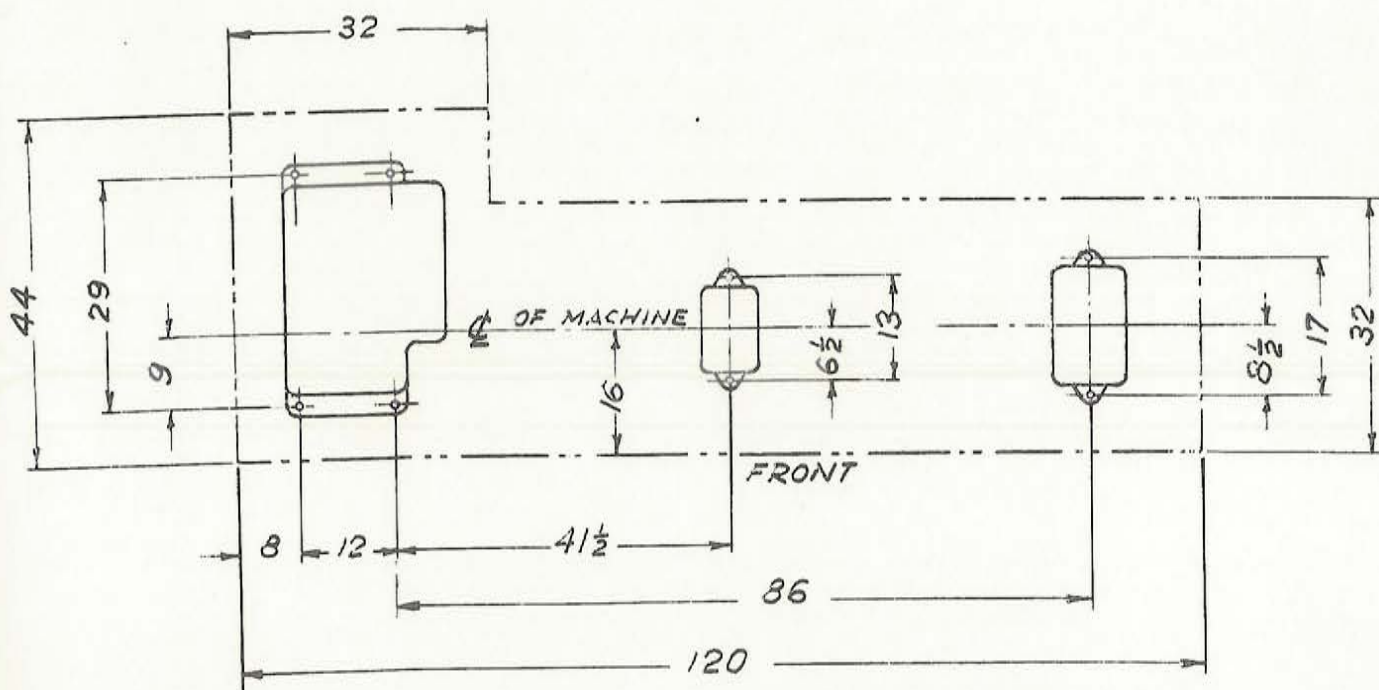
Check your delivery slip against the accessories that were ordered with the machine. If there is a shortage or error, report it to Standard Modern Tool Co. Ltd. immediately, giving the serial number of the machine which is stamped on the finished face, on the top of the bed at the tailstock end.



Floor Plan for 12" & 14" Utilathes.



FLOOR PLAN OF 16" x 30" UTILATHE



FLOOR PLAN OF 16" x 78" UTILATHE

LUBRICATION

All machines are shipped with the lubricating oil drained from the oil sumps in the headstock and apron, and must be serviced before being put in use. For proper lubrication follow the instructions listed in this manual.

Oil capacities listed under lubrication instructions are based on British Imperial Measure.

Headstock

The lubrication of the headstock is automatic so that an even distribution throughout the headstock is assured.

To service the headstock, fill the reservoir to the centre of the oil sight gauge through the oil cap at the rear of the cover plate.

A high grade oil should be used, the equivalent of S.A.E. #30.

The reservoir capacity of the headstock is 7 quarts for 12" and 14" Utilathes and 11 quarts for the 16".

Depending on operating conditions, usually about every six months, the headstock should be drained and thoroughly flushed out, before adding new oil.

A light blending oil to which a small percentage of kerosene has been added may be used to flush out any dirt or sediment.

Run the machine for several minutes without load so that the flushing oil can circulate through the reservoir and remove the dirt.

The flushing oil should then be drained and new oil added.

Because most solvents tend to soften paints they are not recommended as flushing mediums.

Quick Change Gear Box

Three oilers located at the top ends of the quick change gear box casting lubricate all the bearings and gears in the quick change gear box. Built in oil lines carry the oil to all the vital parts.

Fill the three oilers with machine oil at least once each eight hours of operation, and make sure all oil covers are closed after oiling. Use an S.A.E. #30 oil.

Carriage

On the right hand side of the carriage two oilers lubricate the bearing surfaces of the carriage.

The oil flows down through the oilers out onto the ways and along the length of the carriage through oil grooves. The oil is retained at the bearing surfaces by felt seals located at either end of the carriage which also provides even distribution of the lubricant over the ways.

Apron

The box construction of the apron completely encloses all moving parts and prevents the entry of dust or dirt.

The lower half of the apron forms a large oil reservoir in which all the gears run to provide an even distribution of lubricant.

Service the apron reservoir through the oil cap at the back of the hand feed wheel.

Fill with oil to the centre of the oil sight gauge using an S.A.E. #30 oil. The reservoir capacity of the apron is 1 quart.

The apron oil reservoir should be drained, flushed with kerosene, and refilled with fresh clean oil at least once every 6 months.

Tailstock

The tailstock spindle mechanism is lubricated by means of an oiler located on top of the spindle housing.

The bed ways on which the tailstock slides should be cleaned and oiled frequently.

Dry red lead mixed with machine oil to a creamy consistency is an excellent lubricant for the tailstock centre when machining work between centres.

Compound Rest and Cross Slide

On the compound rest one oil hole lubricates both ways and screw, while an oiler lubricates the screw bearing.

On the cross feed, one oiler lubricates each way and a third oiler, in the clamping screw, oils the cross feed screw. A fourth oiler in the extension bearing lubricates the screw bearing.

Leadscrew Bracket and Leadscrew

A single oiler located on top of the lead screw bracket lubricates both the end of the feed shaft and the end of the leadscrew.

Before cutting a thread, fill the oiler above the half nut lever, and also oil the leadscrew. The half nuts are designed so that when they are engaged oil flows from the oiler out on to the half nuts and leadscrew.

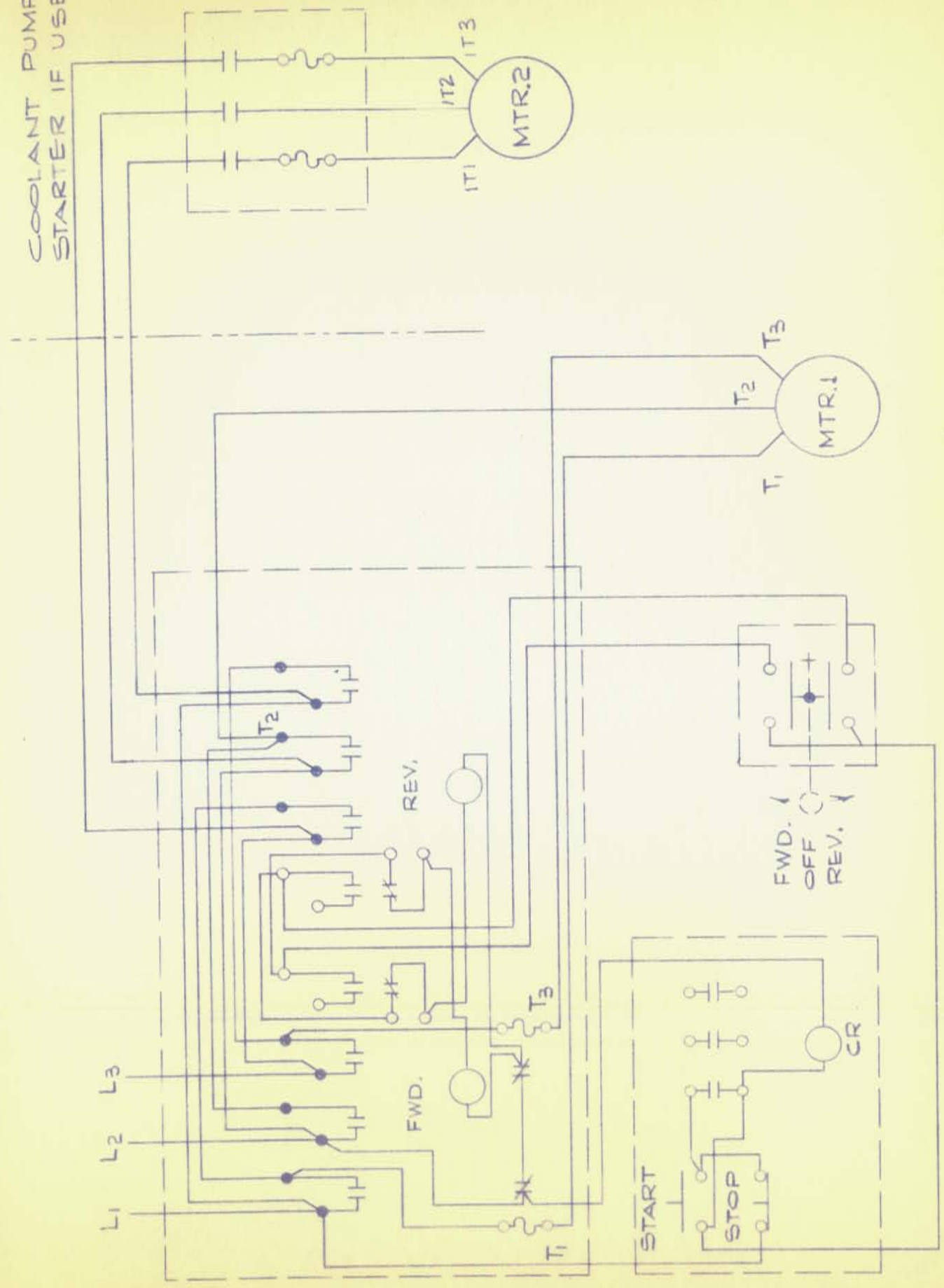
Taper Attachment

Apply a small amount of oil to the taper attachment slide before using.

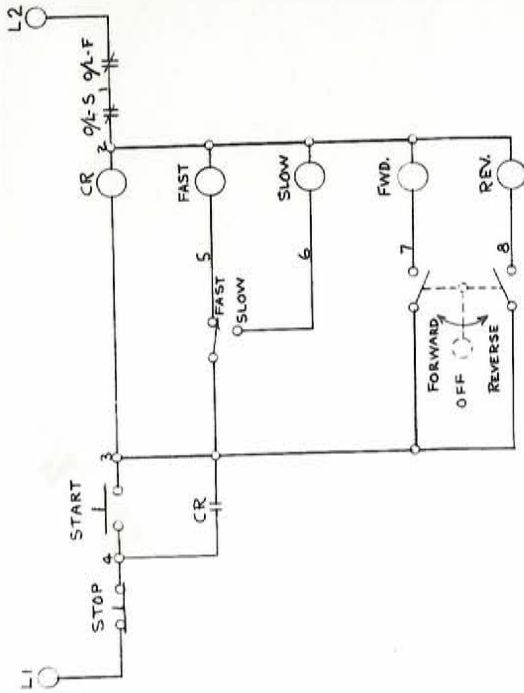
Miscellaneous Lubrication

For all oilers on the machine use a medium machine oil. Before filling reservoirs or oil cups, always wipe off with a clean rag any accumulation of old oil, grease or dirt that might get into a part being lubricated.

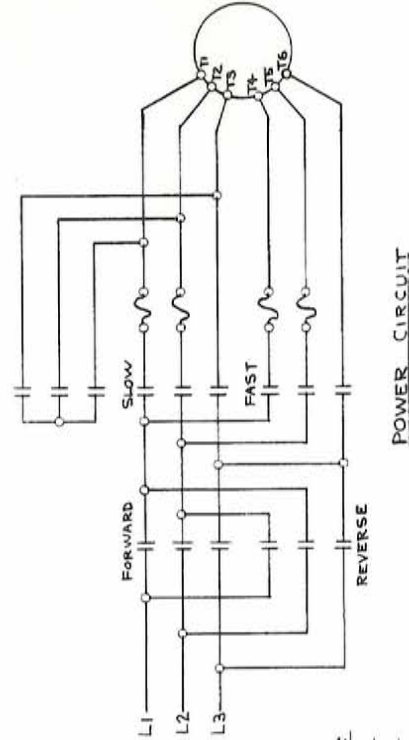
COOLANT PUMP &
STARTER IF USED.



WIRING DIAGRAM FOR 12"-14" AND 16"
UTILATHE USING 3-PHASE MOTOR.



CONTROL CIRCUIT

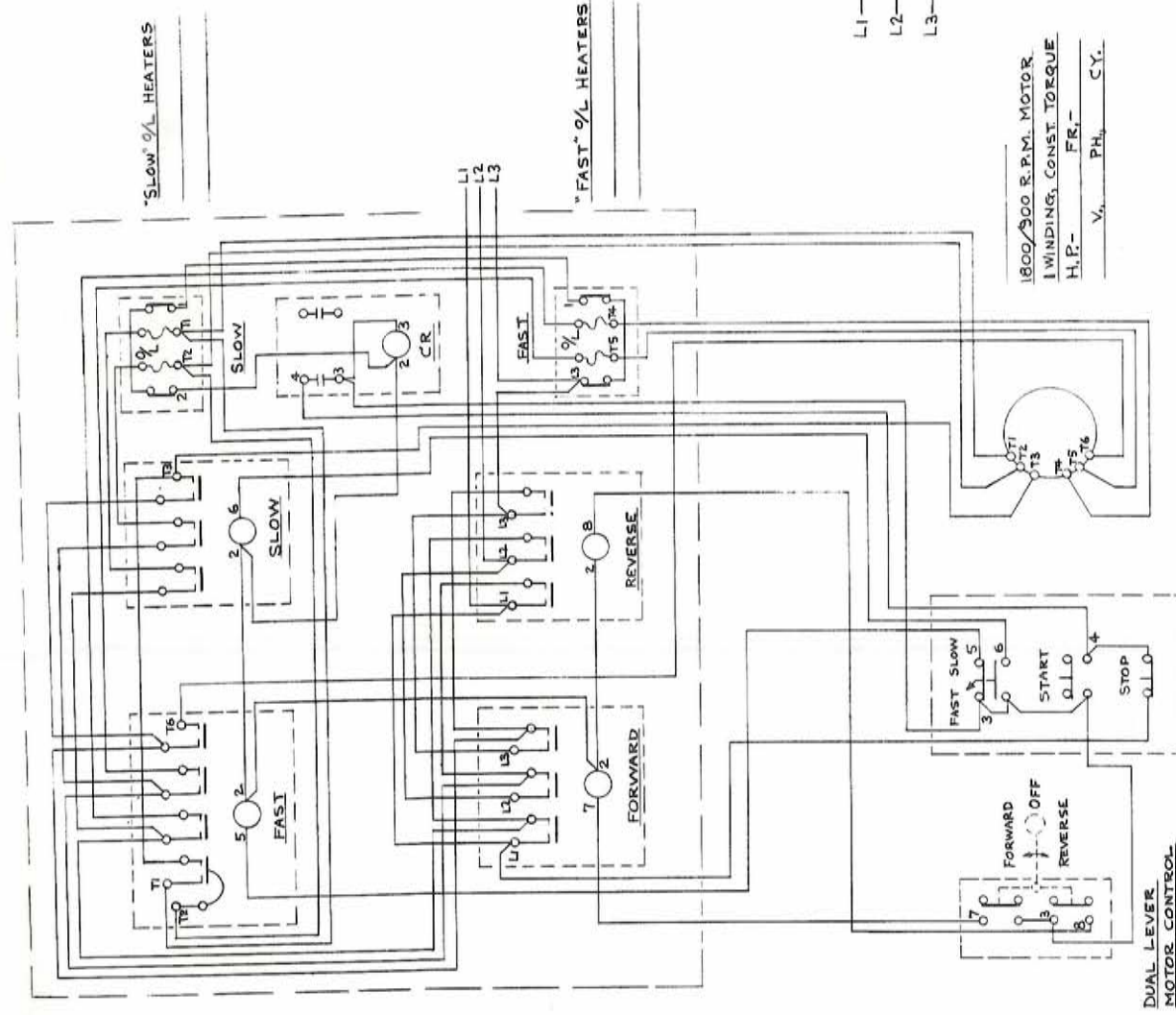


POWER CIRCUIT

"SLOW" 1/2 HEATERS

"FAST" 1/2 HEATERS

1800/500 R.P.M. MOTOR.
1 WINDING, CONST. TORQUE
H.P. - FR. -
V, PH, CY.



DUAL LEVER MOTOR CONTROL

WIRING DIAGRAM
12" 14" & 16" STANDARD DUTY UTILATHES
USING TWO-SPEED MOTOR.

Operating Instructions

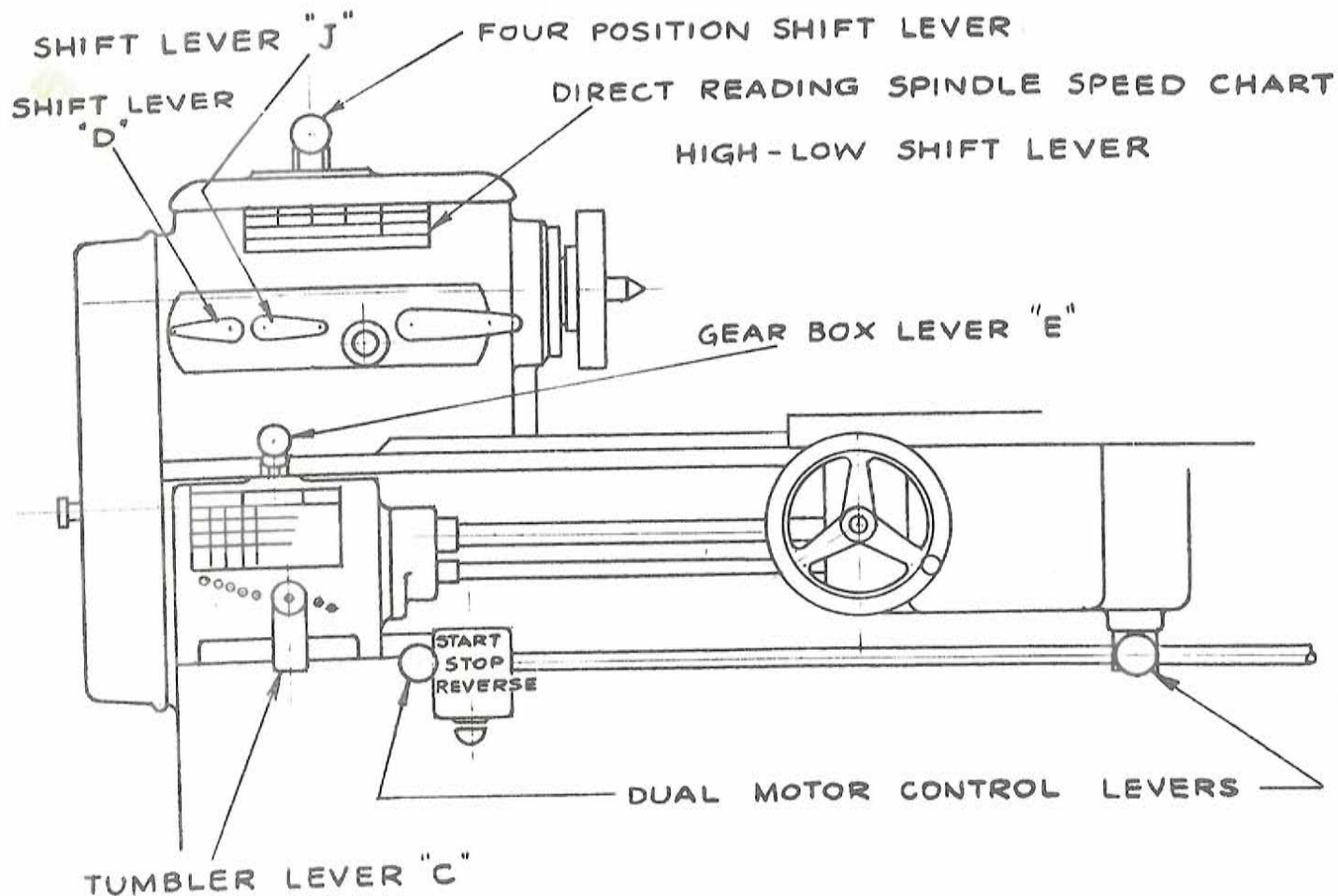
1. Motor Control

The dual control levers located in line with the bottom of the apron govern the operation of the motor. See Fig. 4.

Move the levers to "Start" and the motor turns the spindle in the normal direction for turning, drilling, boring, etc.

Move the levers to "Stop" and the motor is shut off.

Move the levers to "Reverse" and the spindle direction is reversed.



2. Spindle Speed Control Levers

At the top front of the headstock, Fig. 4 is the Four position shift lever.

Immediately below, on the front of the headstock, is the Direct Reading Spindle Speed Chart.

The desired spindle speed is obtained by placing the Four position shift lever in one of the four positions and moving the High-Low Shift Lever to either the high or low range.

The resultant spindle speed may be noted directly from the chart.

For free hand rotation of the spindle, move the High-Low shift lever to it's neutral position.

Do not operate the shift levers while the spindle is revolving.

3. Power Carriage Feeds

For power longitudinal feed or power cross feed, arrange the shift levers on the headstock and the Quick Change Gear Box, to correspond to the desired feed rate as shown on the feed chart Fig. 4.

Set the shift lever "J", Fig. 4, for a right or left hand cut as required.

Set the shift lever "D", Fig. 4, for fine or coarse feed, depending on the type of cut to be taken.

Move the Gear Box Lever "E" and the tumbler Lever "C", Fig. 4, to the positions required by the feed chart.

With the motor on, move the Feed Control Lever Fig. 5, to the "Up" position and the tool will move along the bed parallel to the spindle.

Move the Feed Control Lever, Fig. 5, to the "Down" position and the tool will move across the bed, at right angles to the spindle.

The Feed Control Lever has a side action safety interlock in the central or neutral position, and when moving the lever from the "Up" to the "Down" position, the shaft must be slid horizontally to pass through the safety interlock.

The coarse range of feeds should not be engaged when spindle speeds are above 100 R.P.M.

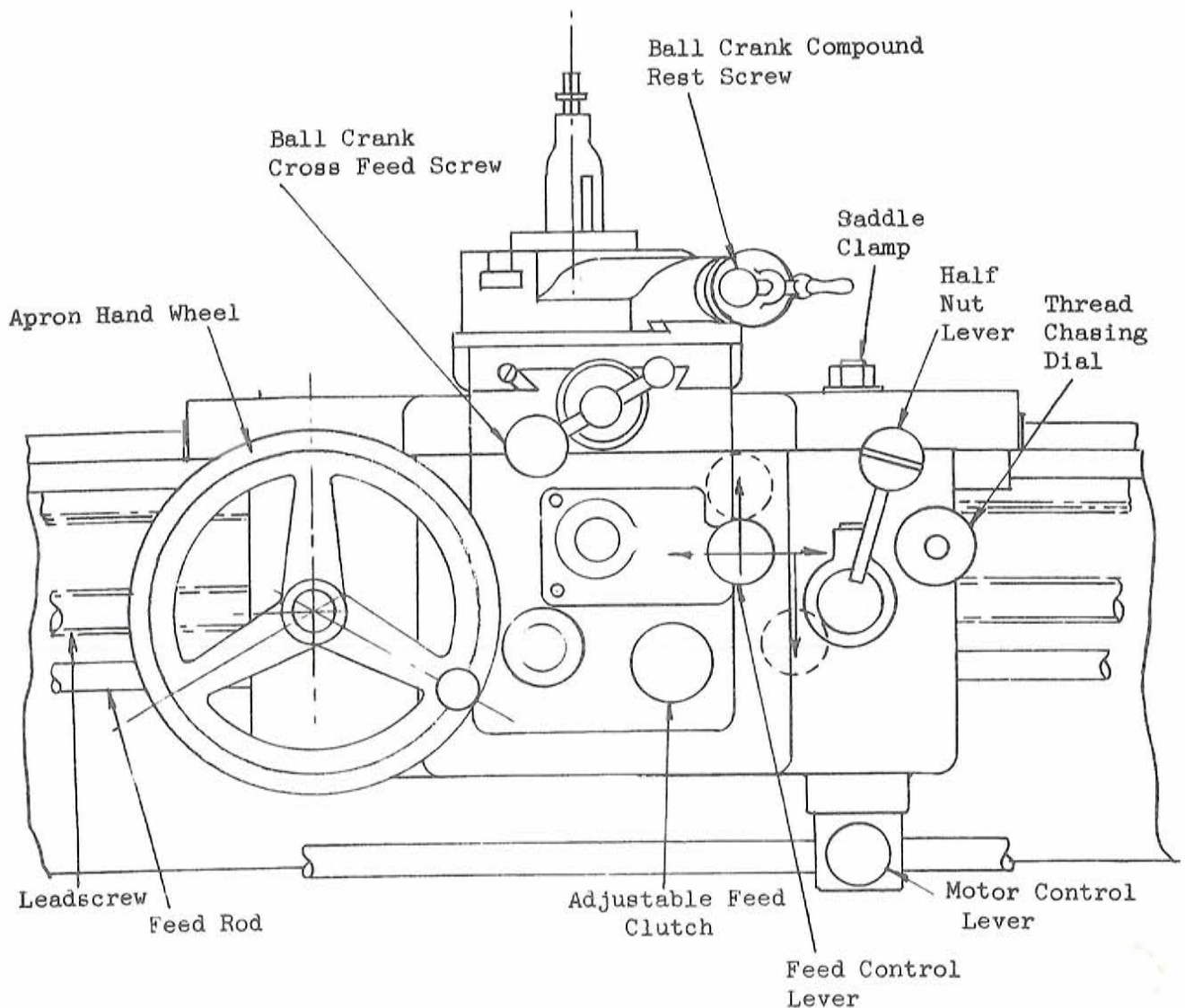


Fig. 5.

4. Half Nut Control and Thread Chasing Dial

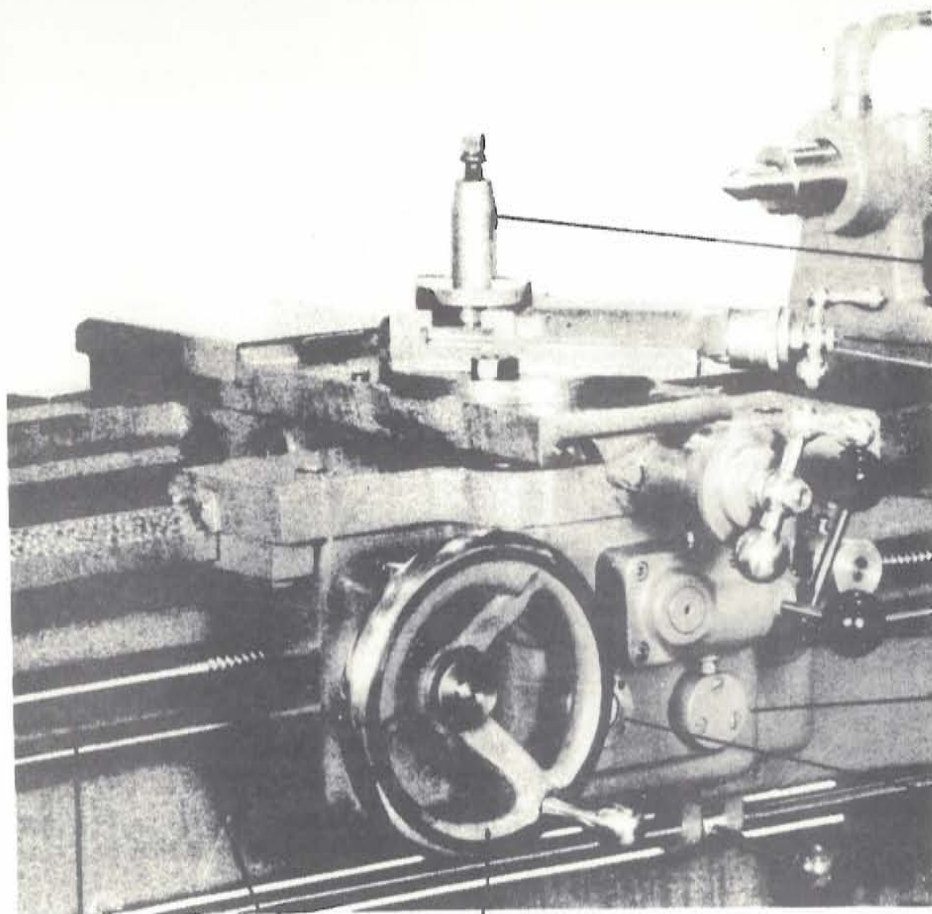
For cutting screw threads the same procedure is adopted, except that the Threads Per Inch figures on the feed chart are used in place of the decimal feed figures.

As a safety measure, the Feed Control Lever "A" Fig. 5, must be in the neutral position before the Half Nut Control Lever can be engaged.

Thread Chasing Dial Instructions.

Threads divisible by 4	-	disregard dial
Even threads	-	close half nuts at any line on dial
Odd threads	-	close at any numbered line
1/2 threads	-	close at opposite numbered lines
1/4 threads	-	close at same numbered line

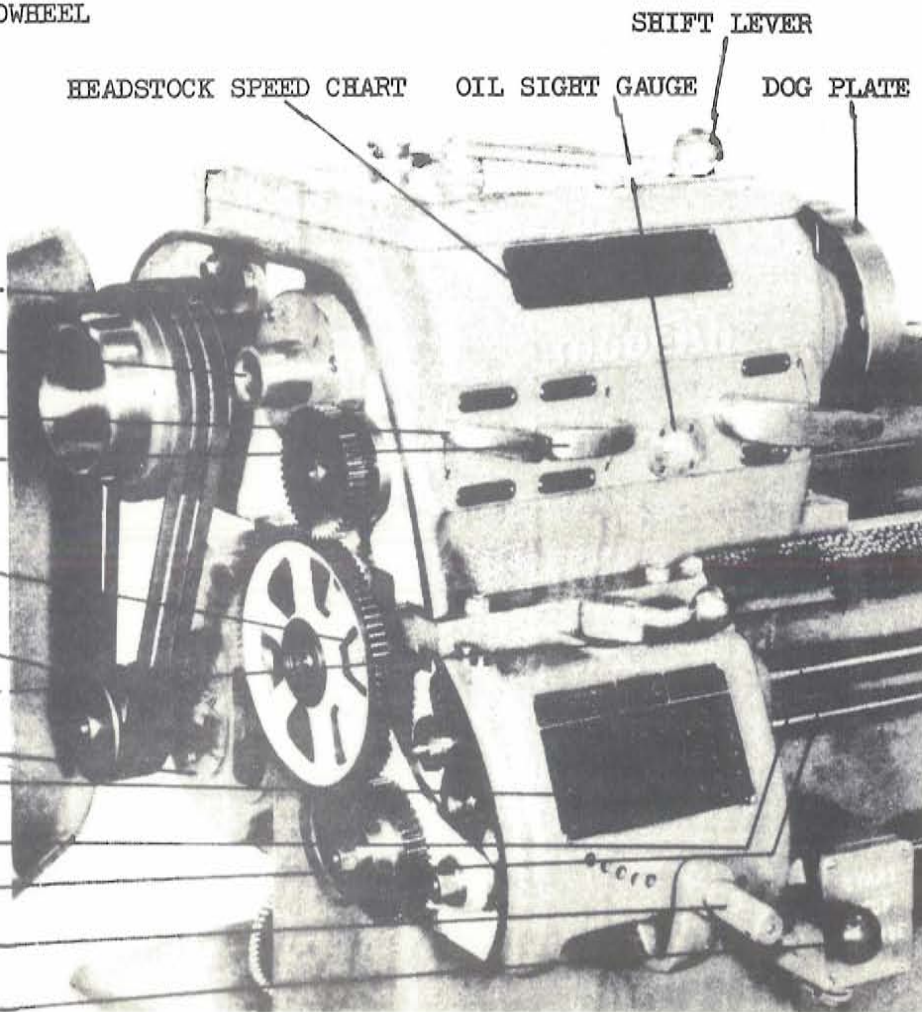
VIEW OF CARRIAGE SHOWING PRINCIPLE PARTS



- TOOL POST
- BALL CRANK COMPOUND REST SCREW
- BALL CRANK CROSS FEED SCREW
- HALF NUT LEVER
- THREAD CHASING DIAL
- POWER FEED CONTROL LEVER
- ADJUSTABLE FEED CLUTCH
- MOTOR CONTROL LEVER
- OIL SIGHT GAUGE

- LEAD SCREW
- FEED ROD
- HANDWHEEL

VIEW OF HEADSTOCK SHOWING PRINCIPLE PARTS



- HEADSTOCK SPEED CHART
- OIL SIGHT GAUGE
- SHIFT LEVER
- DOG PLATE

- V-BELTS
- HOLLOW SPINDLE
- SHIFT LEVER (FINE & COARSE)
- SHIFT LEVER (R.H. & L.H.)
- GEAR QUADRANT
- DRIVE PULLEY
- SHIFT LEVER
- MOTOR
- FEED CHART
- LEADSCREW
- FEED ROD
- TUMBLER LEVER
- MOTOR CONTROL LEVER

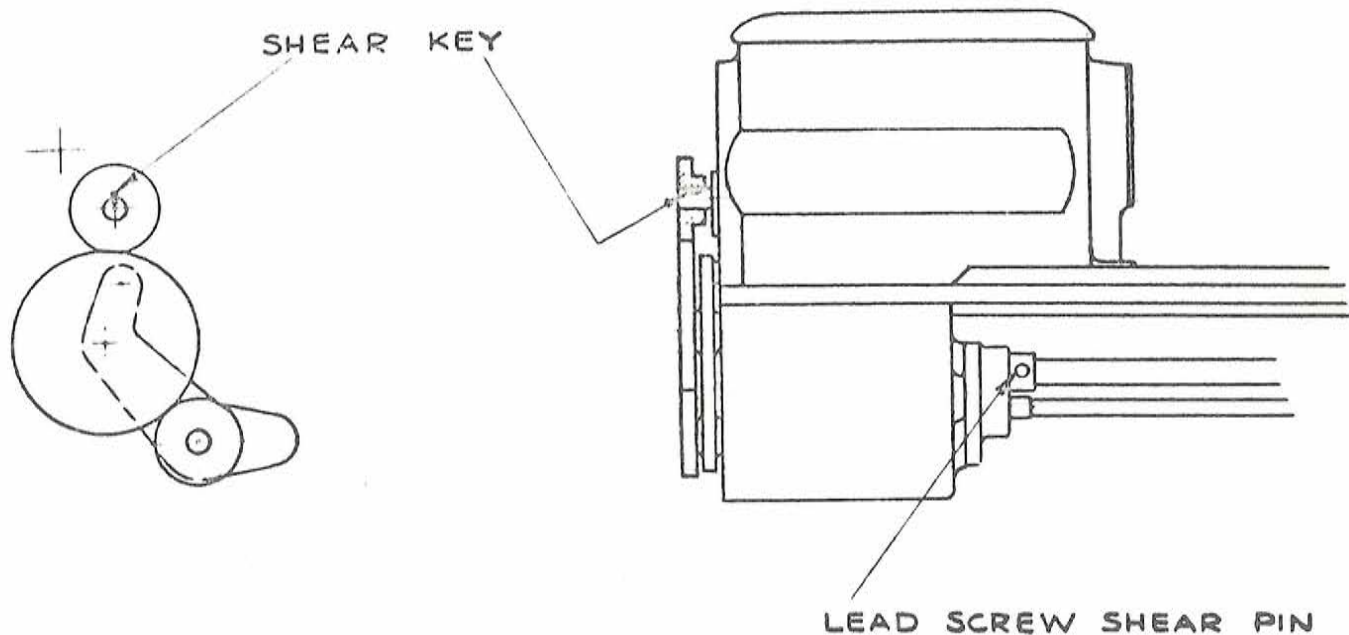
Lead Screw Shear Pin

This brass shear pin is located at the left-hand end of the lead screw (see sketch) and is provided to prevent damage to the lead screw should the carriage be allowed to come in contact with the headstock or some other obstruction which acts as a positive stop. When the stoppage takes place the lead screw continues to turn in the half nuts and will begin to move endwise thus shearing the pin longitudinally. The shear pin can be readily replaced by first withdrawing the lead screw from the coupling to remove the three portions of broken pin. It is then returned to the coupling and rotated by hand until the zero line on the screw coincides with that on the coupling. A new shear pin, which is provided with the machine, is then driven into place.

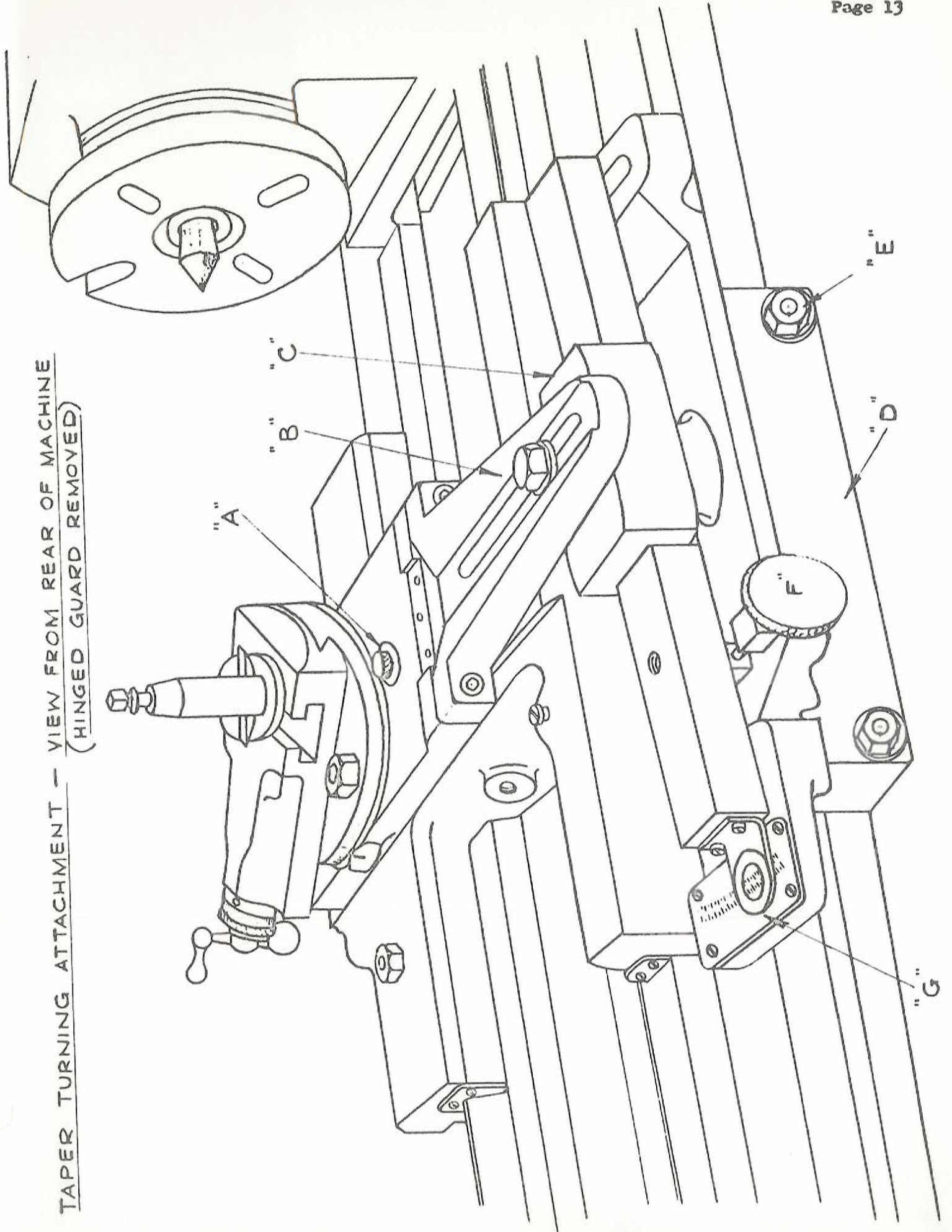
Shear Key

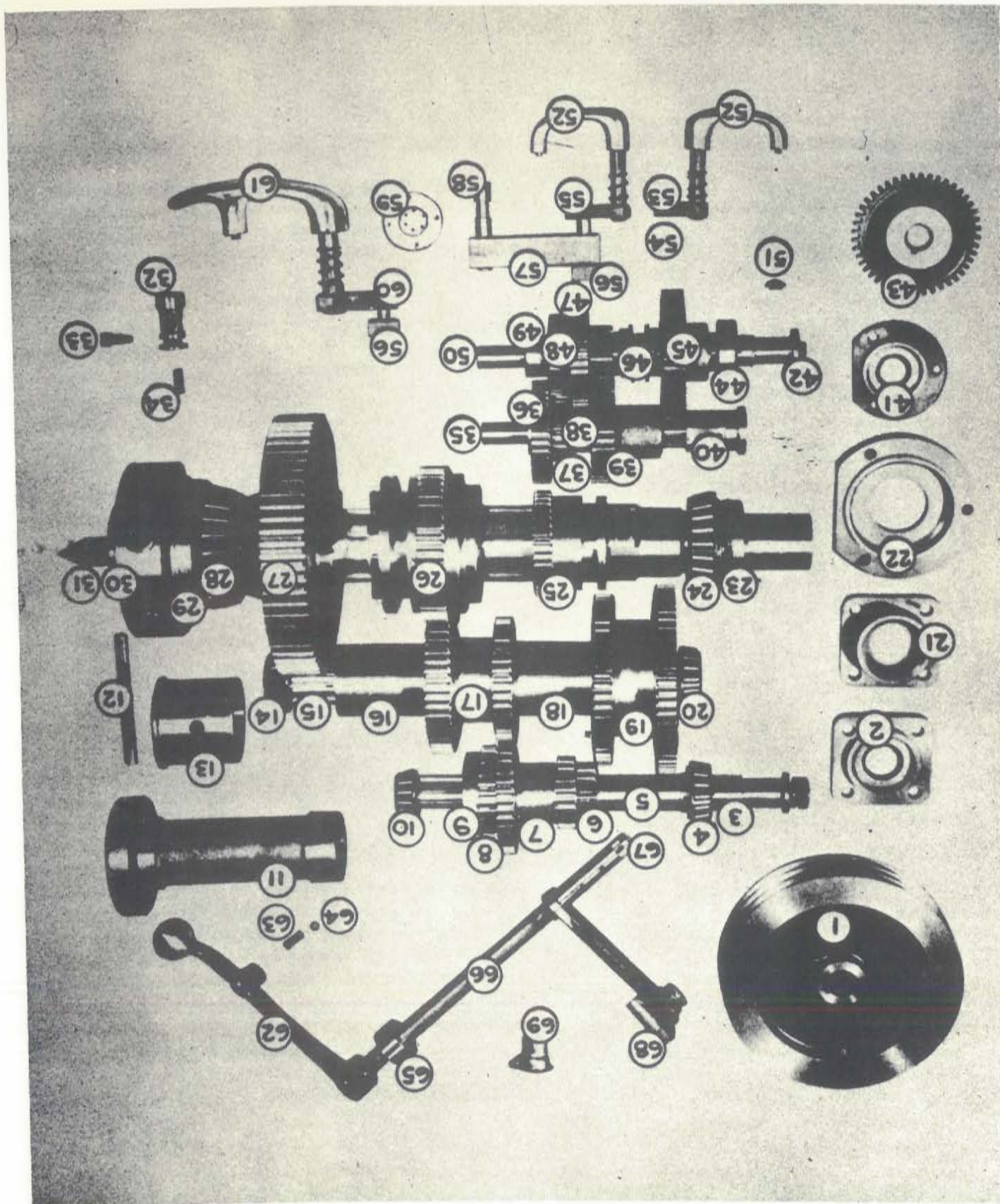
This brass shear key is located in the feed compound shaft and drives the top gear of the end gear train (see sketch). It is provided to prevent damage to the feed compound gears in the headstock due to a possible seizure in the feed box.

A new shear key, which is provided with the machine, can be readily fitted by first removing the gear and knocking the broken portions of key out of the shaft with a small square nosed chisel. The new key is then fitted to the shaft and the gear assembled. It is important of course, to locate and remedy the cause of the seizure.



TAPER TURNING ATTACHMENT - VIEW FROM REAR OF MACHINE
(HINGED GUARD REMOVED)





HEADSTOCK PARTS LIST

		<u>Part No.</u>	<u>Part No.</u>
1.	Driving Pulley	5-3/8 O.D. - 3 "A" Grooves	B 21500
2.	Rear Cover - Pulley Shaft	A 21023	
	Perfect Oil Seal	NO. 21218	
3.	Torrington Inner Race	NO. 1R 1616	
4.	Timken Bearing Cup	15250	
	Cone	15106	
5.	Pulley Shaft	B 21424	
6.	18 T Sleeve Gear	B 22728	
7.	23 T and 40 T Double Gear	B 22729	
8.	31 T Gear	B 22730	
9.	Driving Ring	B 22730	
10.	Timken Bearing Cup	09195	
	Cone	09067	
11.	Bearing Cartridge		
	12" and 14"	B 21032	
	16"	B 21419	
12.	Special Dowel 16" only	A 21420	
13.	Front Cover Int. Shaft 12" and 14"	A 21026	
	Bearing Cartridge 16"	B 21440	
14.	Timken Bearing Cup	15250	
	Cone	15106	
15.	Intermediate Shaft	C 22703	
16.	Spacer for Int. Shaft	A 22704	
17.	40 T and 49 T Double Gear	B 22731	
18.	Spacer for Int. Shaft	A 21443	
19.	62 T and 57 T Double Gear	C 22732	
20.	Timken Bearing Cup	15250	
	Cone	15106	
21.	Rear Cover Int. Shaft	B 21025	
22.	Spindle Rear Cover	A 21038	
23.	Timken Lock Nut and Washer No. N.10 and No. W.10		
24.	Timken Bearing Cup	28521	
	Cone	28580	
25.	40 T Splined Gear	B 21436	
26.	49 T Splined Spindle Gear	B 22733	
27.	Spindle Bull Gear	C 21031	
28.	Timken Bearing Cup	3920	
	Cone	3982	
29.	Bearing Shield and Oil Slinger (Cam-lock Spindle Only)	A 21438 A 21439	
30.	Main Spindle (cam-lock)	D 21407	
31.	Lathe Centre and Spindle Nose Sleeve	A 22639 A 22640	
32.	Cam		A 21413) cam-lock
33.	Cam Screw		A 21414) spindle
34.	Cam Spring		A 21415) only.
35.	Pinion Shaft		B 21433
36.	40 T Feed Idler		A 21431
37.	30 T Feed Idler		A 21432
38.	Idler Sleeve		A 21434
39.	40 T Feed Compound Gear		B 21422
40.	Bearing Bush		A 21059
41.	Rear Cover and Perfect Oil Seal		A 21024 No. 17431
42.	Washer		A 21144
43.	45 T Feed Gear		B 21178
44.	SKF Ball Bearing		No. 6205
46.	Feed Clutch Bobbin		A 21056
47.	40 T Feed Idler		A 21431
48.	30 T Feed Idler		A 21432
49.	20 T Feed Idler		A 21430
50.	Feed Compound Shaft		B 21429
51.	Shear Key for Feed Train		A 21180
52.	Feed Shift Lever		B 21043
	Assy. 50734		
53.	Shifter - Feed Compound		A 21068
	Shifter Spring		A 21122
54.	Shifter Shoe		A 21069
55.	Shifter - Spindle Feed Gear		A 21064
	Shifter Spring		A 21122
56.	Shifter Shoe		A 21063
57.	Shifter Support		A 21065
	Shifter Pin		A 21129
58.	Fulcrum Pin		A 21067
59.	Bijour Oil Window Unit		B 5093
60.	Shifter (High-Low)		A 21062
	Shifter Spring		A 21121
61.	High-Low Shift Lever		B 21042
62.	4-Position Shift Lever		B 21037
63.	Spring		A 23064
64.	3/8 dia. Steel Ball		
65.	Collar for Gear Shifter		A 21072
66.	4-Position Gear Shifter		B 21061
67.	Pivot Plug		A 21060
68.	Shifter Shoe		A 21044
69.	Gits Oiler		No. 308B

December 15th, 1955.

APPENDIX "A" TO HEADSTOCK PARTS LIST

All headstocks built during the years 1950 to early 1955 were equipped with $14\text{-}1/2^{\circ}$ P.A. gears. After that period, 20° P.A. gears were used, and part numbers have been changed as follows:-

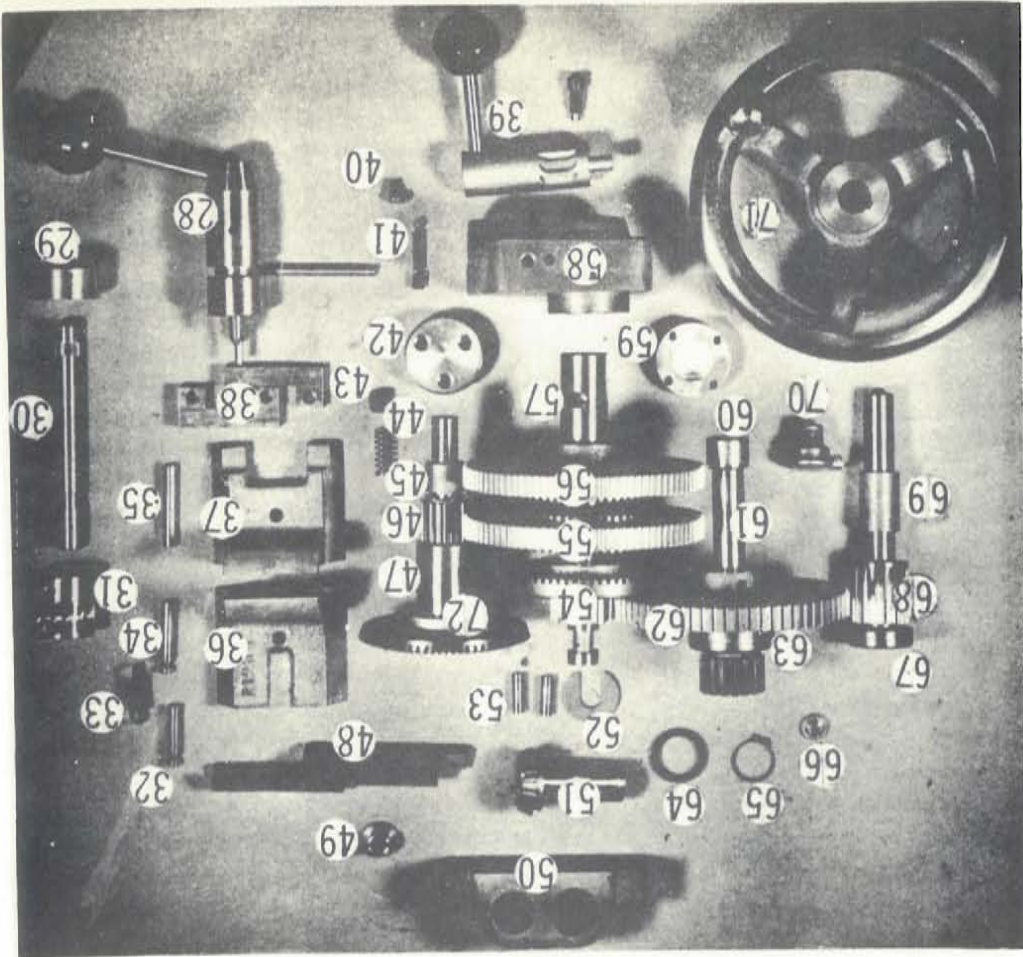
Detail 6 becomes Part No: B-22728
Detail 7 becomes Part No: B-22729
Detail 8 and Detail 9 were combined
to become Part No: B-22730
Detail 17 becomes Part No: B-22731
Detail 19 becomes Part No: B-22732
Detail 26 becomes Part No: B-22733

Note: Headstocks equipped with 20° P.A. gears are stamped (20° P.A.) at left end of headstock under the belt guard.

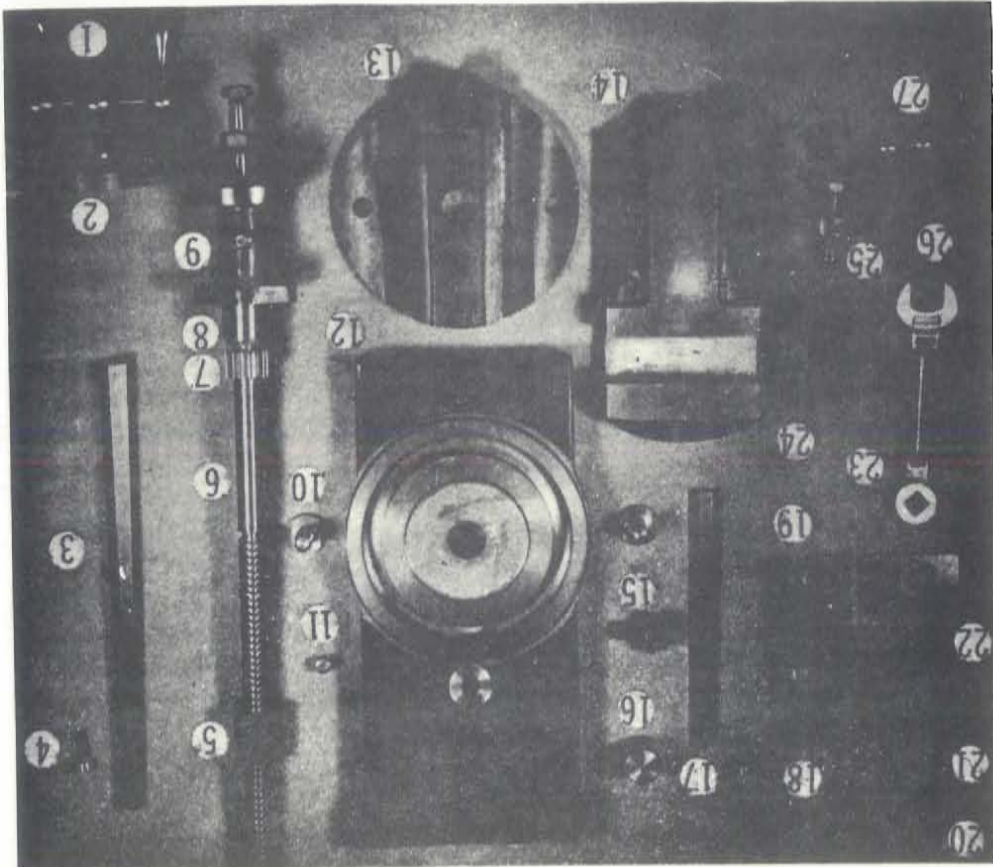
APPENDIX "B" TO HEADSTOCK PARTS LIST

Detail 15 was revised in 1953 to become Part No: 22703, but it is interchangeable with original pinion shafts in all 12", 14" and 16" headstocks when supplied with revised spacer Part No: 22704.

APRON PARTS



CROSS AND COMPOUND TOOL SLIDE PARTS



CROSS AND COMPOUND TOOL SLIDE PARTS LIST

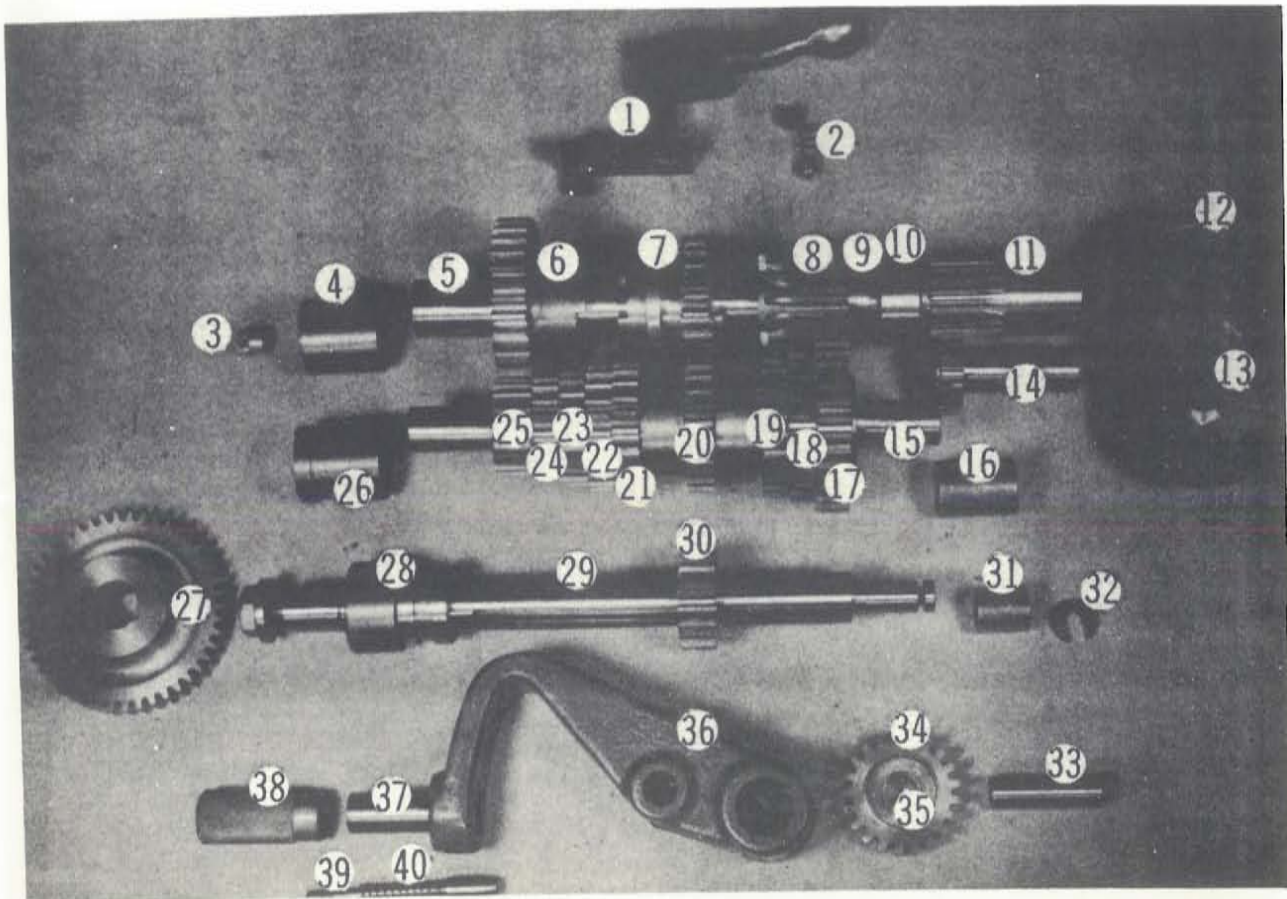
	<u>Part No.</u>		<u>Part No.</u>
1. Ball Crank (Cross Feed)	A 21208	18. Tool Post Screw 12"	$\frac{1}{2}$ -13 x 2" lg.
2. Dial Assy. (Cross Feed)	A 21206	14" and 16"	
3. Taper Gib	B 21196	19. No. 1 Tool Post 12"	B 21198
4. Gib Screw	A 21222	No. 2 Tool Post	
5. Cross Slide Nut	A 21195	14" and 16"	B 21459
6. Cross Feed Screw	B 21202	20. Tool Post Wedge 12"	A 21200
7. 18 T. Gear	A 21203	14" and 16"	Williams #15
8. Thrust Washer	A 21204	21. Tool Post Ring 12"	A 21199
9. Extension Bearing	B 21194	14" and 16"	A 21460
10. Tee Head Bolt 12"	B 21210	22. Clamping Block 12"	A 21201
14" and 16"	A 21462	14" and 16"	A 21461
11. Gits Oiler	No. 304	23. Armstrong Tool Post	
12. Cross Slide 12" and 14"	D 21191	Wrench 12"	No. 563B
16"	D 21189	14" and 16"	No. 563D
13. Compound Swivel Base 12"	C 21495	24. Compound Feed Screw 12"	A 21498
14"	C 21492	14" and 16"	A 21211
16"	C 21454	25. Bearing Plate 12"	A 21497
14. Compound Slide 12"	C 21496	14" and 16"	A 21456
14" and 16"	C 21455	26. Compound Dial and	
15. Hex. Bolt $\frac{1}{2}$ - 13 x 1-1/8	No. 6009	Crank Sleeve Assy. 12"	A 21224
Wespo Washer		Compound Dial Assy.	
16. Obsolete		14" and 16"	A 21458
17. Taper Gib for Compound		27. Ball Crank 14" and 16"	A 21212
Slide 12"	B 21499		
14" and 16"	B 21457		

APRON PARTS LIST

28. Control Shaft and Handle for engaging half nuts	A 21251	50. Bevel Pinion Bracket	B 21235
	A 21266	51. Bevel Pinion	B 21245
29. Thread Chasing Dial	A 21263	52. U Washer	A 21242
30. Dial Shaft	A 21265	53. Standard Stock Dowels	
31. 16 T Worm Gear	A 21264	5/16 x 1	
32. Groove Pin No. 7 5/16 x 1-3/4		54. 17 T Clutch Gear	B 21230
		55. 90 T Double Clutch Gear	B 21231
33. Tension Spring for half nuts	A 21257	56. 90 T Single Clutch Gear	B 21232
34. Groove Pin No. 7 5/16 x 1-1/2		57. Clutch Shaft	B 21239
		58. Feed Control Box	B 21233
35. Standard Stock Dowels 5/16 x 2		59. Bijour Oil Window Unit	B 5093
36. Lower Half Nut	C 21234	60. Torrington Needle Bearing	No. M 1212
37. Upper Half Nut		61. Rack Pinion Shaft	B 21238
38. Half Nut Links	A 21253	62. 66 T Gear	B 21229
39. Clutch Control Shaft and Handle	A 21262	63. S.K.F. Bearing	No. 6304-Z
	B 21240	64. Thrust Washer	A 21250
40. Gits Oiler	No. 330	65. Tru-arc Snap Ring	No. 5100-100
41. Set Screw, Spring and Ball (spring)	A 21268	66. Retaining Washer	A 21261
	A 21249	67. S.K.F. Bearing	No. 6203-2
42. Cover for Feed Slip Clutch		68. Handwheel Pinion Shaft	B 21237
43. Set Screw		69. Oilite Bushing	No. AA-1049-4
44. Spring	A 21267		
45. Feed Slip Clutch	A 21247	70. Gits Oiler	No. 307
46. 18 T Slip Clutch Pinion	A 21246	71. Handwheel	B 21236
47. Bevel Gear Shaft	B 21244	72. Perfect Oil Seal	No. 199112
48. Feed Interlock Bar	B 21259		
49. Shoulder Bush	A 21260		

FEED BOX PARTS LIST

	<u>PART NO.</u>		<u>PART NO.</u>
1. 3 Position Shift Lever	A-21136	19. 26 T. Spur Gear	A 21158
	A-21172	20. 24 T. Spur Gear	A 21157
2. Spring Ball and Set Screw	A 23064	21. 23 T. Spur Gear	A 21156
3. Plug	A 21169	22. 22 T. Spur Gear	A 21155
4. Bearing Bush	A 21164	23. 20 T. Spur Gear	A 21154
5. Clutch Shaft	B 21146	24. 18 T. Spur Gear	A 21153
6. 32 T. Clutch Gear	B 21137	25. 16 T. Spur Gear	A 21152
7. 24 T. Double Clutch Gear	B 21147	26. Bearing Bushing	A 21165
8. 16 T. Clutch Gear	A 21148	27. Drive Gear	B 21178
9. Spacer	A 21168	28. Bearing Bush	A 21166
10. S.K.F. Bearing	No. 3204	29. Power Input Shaft	B 21161
11. Lead Screw Coupling Gear	A 21149	30. 16 T. Sliding Gear	A 21162
Wespo Retaining Washer (Hidden)	No. 6008	31. Oilite Bushing	No. AA 832-1
12. Small Gear Box	B 21134	32. V. Washer	A 21171
13. Oilite Bushing	AA 1108-12	33. Idler Pin	A 21167
14. Feed Shaft Coupling Gear	A 21150	34. 21 T. Idler Gear	A 21163
15. Cluster Gear Shaft	B 21151	35. Oilite Bushing	No. AA 710-6
16. Oilite Bushing	AA 1108-12	36. Tumbler Bracket	C 21135
17. 32 T. Spur Gear	A 21160	37. Plunger Housing	A 21174
18. 28 T. Spur Gear	A 21159	38. Plunger Handle	A 1749
		39. Plunger	A 21173
		40. Spring	A 1751



FEED BOX PARTS