

OPERATOR'S HANDBOOK

DENHAM JUNIOR

4 $\frac{1}{2}$ " HIGH SPEED LATHE

DENHAM'S ENGINEERING CO. LTD.

Empire Works

Holmfield

Halifax, Eng.

SPARE PARTS LIST and INSTRUCTION BOOK

for

DENHAM JUNIOR HIGH-SPEED LATHE

4½" to 5" Centres



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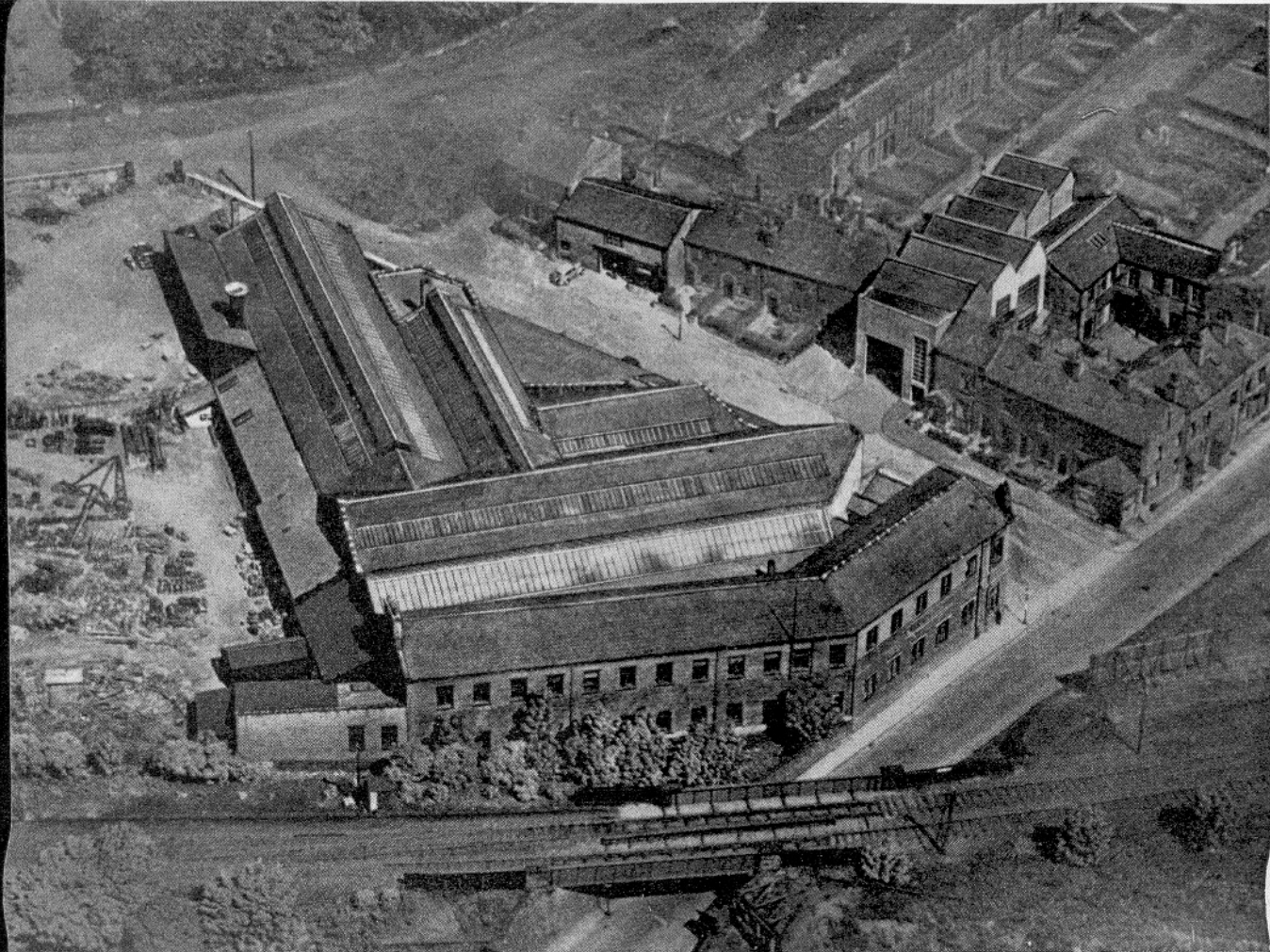
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Aerial view of Empire Works

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Foreword

We believe that in the Denham Junior High Speed Lathe (Fig. 1) we have produced a machine tool which will do justice to the skilled craftsman.

With co-operation in careful use and proper maintenance, this lathe will produce the results required, and give efficient, trouble-free service.

Should there arise any points on which information is required do not hesitate to write to us and give details. If you do, please quote the serial number of the machine which will be found on the spindle speed plate on top of the headstock.

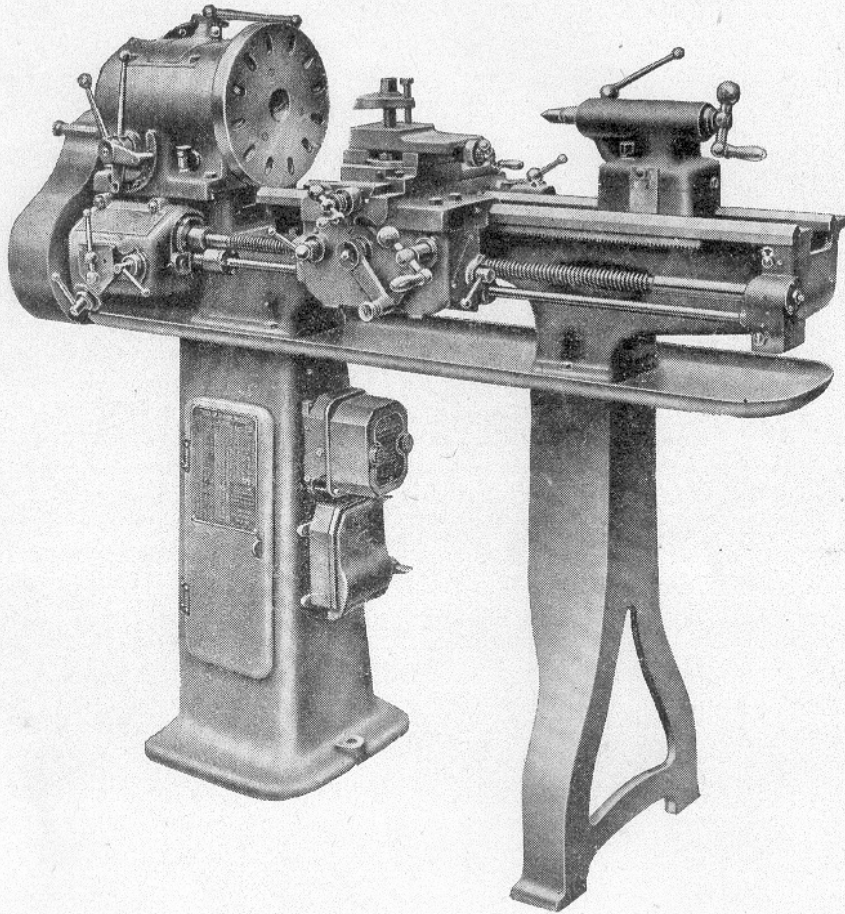


Fig. 1.
FRONT VIEW OF LATHE

NOTES TO OPERATOR

1. It is essential that all sliding surfaces should be kept in their original condition except for the effects of normal wear.
2. Do not use the bed as a receptacle for tools or work pieces as they may be trapped between the saddle and headstock, and also cause damage to the vee guides (see Fig. 5, item 19) to both saddle and tailstock.
3. Do not use the slides as tool rests or allow work pieces to drop on them.
4. The lathe bed must not be used for straightening bars.
5. Clean the leadscrew and sliding surfaces thoroughly at least twice a day.

Cuttings lodged in the threads of the leadscrew will damage the half-nuts.

6. Lubricate the machine regularly in accordance with the instructions on pages 5 and 6.

7. The keys and spanners supplied are sufficient for any work that is suitable for the lathe. It is not necessary to increase leverage by adding lengths of piping. No benefit would result and screw threads would undoubtedly be damaged or stripped.

8. Do not rely as a matter of course on the lathe remaining level. Re-check at six-monthly intervals by using the method described in the installation instructions below.

TO INSTAL AND TEST

Installation. 1. First remove the rust-preventing compound with the aid of paraffin or turpentine substitute.

2. Careful installation is essential. Careless slinging when using lifting tackle may damage the alignment of the machine.

3. After preparing the floor or foundation, set the lathe in position and check the longitudinal level by using an accurate spirit level on the slides of the bed. To eliminate possible errors, reverse the spirit level and use the average of the two readings. If the lathe is not level, insert packers at the low end, i.e., between the floor and either the cabinet or open leg. Do not use packing material which will compress under the weight of the lathe.

4. At each end of the bed place two accurately ground steel blocks of equal thickness. They must project slightly above the vee guides. Place the spirit level across each of the blocks in turn to test the transverse level.

5. When the lathe is level in all respects, bolt it down firmly and re-check with the spirit level, inserting extra packing if necessary.

6. Lubricate throughout according to the instructions on pages 5 and 6.

Test Piece. A test piece should now be turned. A bar of $1\frac{3}{4}$ in. diameter, having two collars $1\frac{7}{8}$ in. diameter, about 10 in. apart, will be suitable.

Use a very light cut and check the diameters of the collars. If the difference exceeds 0.0005 in. the lathe is not accurately positioned, and the level must be altered by inserting additional packing beneath the feet of the cabinet or open leg.

If this adjustment has been made, another light cut should be taken along the two collars of the test piece, and the diameters re-checked.

TO LUBRICATE

Correct and regular lubrication is essential and must never be forgotten.

Type of Oil. Shell-Mex "R-1", or an equivalent light oil.

Headstock. Remove the cover and fill with oil until the level reaches halfway up the elbow (see Fig. 2, item 5) on the front of the

head. (The cap screw must be removed to see this level.)

To drain the oil from the inside of the head, remove the Allen screw at the back of the head but be careful to replace this before refilling. Renew this oil at intervals of six months or whenever contamination is suspected.

Oil all nipples on the outside of the headstock daily with the oil gun provided.

Gearbox. The gearbox is filled with grease on assembly and no other internal lubrication should be necessary.

Various oiling nipples are, however, fitted externally and these should have daily attention. Use the oil gun supplied with the lathe.

Apron. The apron is liberally greased internally on assembly, but the various oiling nipples which are fitted should have a daily application of oil from the oil gun.

Saddle. Inject oil daily through the various nipples fitted.

Tailstock. Oil daily through the fitted nipple; also smear the spindle lightly with clean oil.

Tail End Bracket. Oil daily the nipples fitted for the lubrication of the leadscrew and feed shaft.

TO OPERATE THE LATHE

Starting. Before starting the lathe, make sure that all lubricating instructions (see pages 5 and 6) have been carried out.

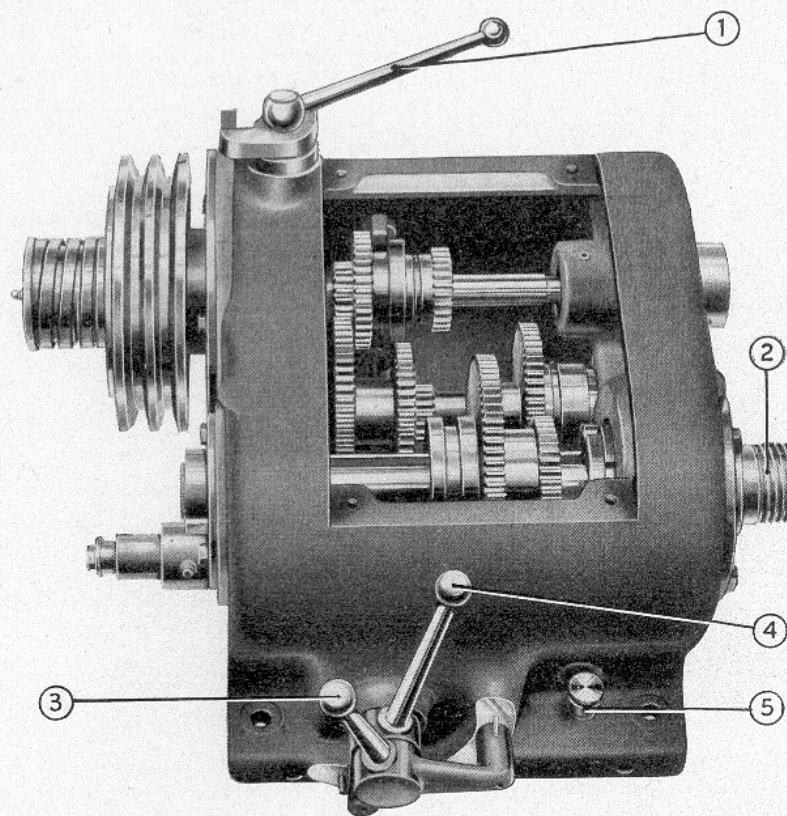


Fig. 2.
HEADSTOCK WITH COVER REMOVED TO SHOW GEARS

1. Starting and stopping lever.
2. Screwed nose spindle.
3. Small lever for 1st shaft gears.
4. Large lever for spindle gears.
5. Oil level elbow.

When the lathe is motor-driven, the motor is mounted at the back of the bed, and is switched on by either a push-button or lever-type switch. In some cases the switch may be of the reversing type.

After the motor has been started, the starting and stopping lever (Fig. 2, item 1) at the top of the head casting should be moved towards the operator to set the spindle in motion. This lever operates the friction cone mechanism.

Before any actual work is done on the lathe, it is advisable to run the machine through all its motions at slow speed for some little time to ensure that oil reaches all the bearings, and to minimise the risk of seizure.

Headstock. (Fig. 2) Six spindle speeds are obtained by operating the two gear levers at the front of the head casting. The large lever (item 4) has three positions, namely: A; Neutral; and B. The small lever (3) has three positions: 1, 2, 3. The spindle speeds provided are:

A1 — 600 r.p.m.	B1 — 97 r.p.m.
A2 — 335 r.p.m.	B2 — 54 r.p.m.
A3 — 185 r.p.m.	B3 — 30 r.p.m.

The headstock is in neutral when the larger lever is in the central position.

Certain lathes may be specially built with higher spindle speeds up to a maximum of 1400 r.p.m. The lathe is fitted with a spindle having a screwed nose (2), but with higher maximum spindle speeds a spindle

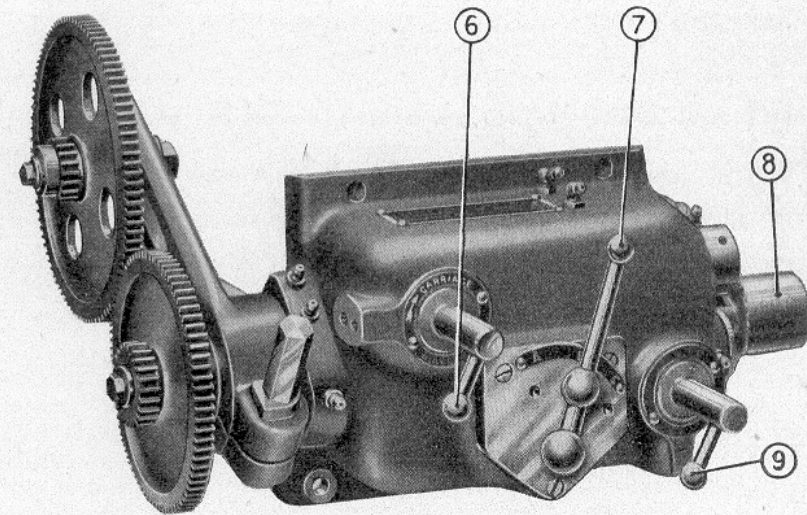


Fig. 3.
GEARBOX CONTROLS

- 6. *Left hand lever for reversing screwcutting and feed motions.*
- 7. *Central lever for three changes of feed.*
- 8. *Slipping clutch.*
- 9. *Right hand lever for putting leadscrew or feed shaft in motion.*

is fitted terminating in a flange to which faceplates, driver plates and chucks are direct-mounted and bolted.

Gearbox. (Fig. 3) The gearbox provides for three rates of feed with each screwcutting train of change wheels.

The leadscrew is used for screwcutting only, with a separate feed-shaft for both the sliding and surfacing feeds.

The left hand lever (item 6) controls the reverse of both screwcutting and feed motions.

The central lever (7) provides the three changes of feed.

The right-hand lever (9) puts either the leadscrew or the feed shaft in motion as desired, one only of these being in motion at one time.

A slipping clutch (8) is fitted on the feedshaft to prevent damage through overloading, but the slipping disc can be tightened by three screws to cater for work presenting particular difficulties.

NEVER ATTEMPT to change the feeds, the direction of the feeds, or from feeds to screwcutting, when the lathe is running at high speed. Damage to gear teeth will result and it is advisable to bring the machine almost to a standstill before changing gear.

Apron. (Fig. 4) The feeds and screwcutting motion are controlled from the apron, on the front of which are three levers, or handles.

The lever to the left (item 12) engages the screwcutting motion, the one in the centre (11) changes the feed motions from sliding to surfacing or vice versa, whilst that to the right (10) gives hand traverse along the bed to the saddle. A lever on the right side (13) of the apron engages or disengages the feed motions.

Each of the three motions is interlocking and prevents the engagement of two conflicting motions at the same time.

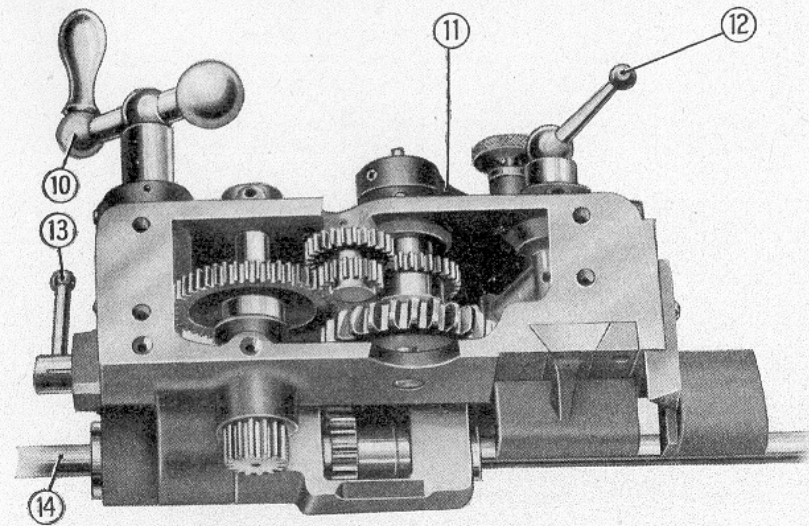


Fig. 4.

**APRON VIEWED FROM REAR OF LATHE SHOWING FEEDS
AND SCREWCUTTING GEARS**

- 10. *Hand traverse lever.*
- 11. *Lever to change feed motions from sliding to surfacing, or vice-versa.*
- 12. *Lever to engage screw cutting motion.*
- 13. *Lever to engage or disengage feed motions.*
- 14. *Feed shaft.*

The dials on the surface and rest screws give readings of 0.001 in.

Tailstock. The tailstock is carried on a shoe on which it is adjustable sideways for taper turning (including Morse tapers) over a distance of $\frac{1}{4}$ in. on each side of the central position, through the screws and nuts provided.

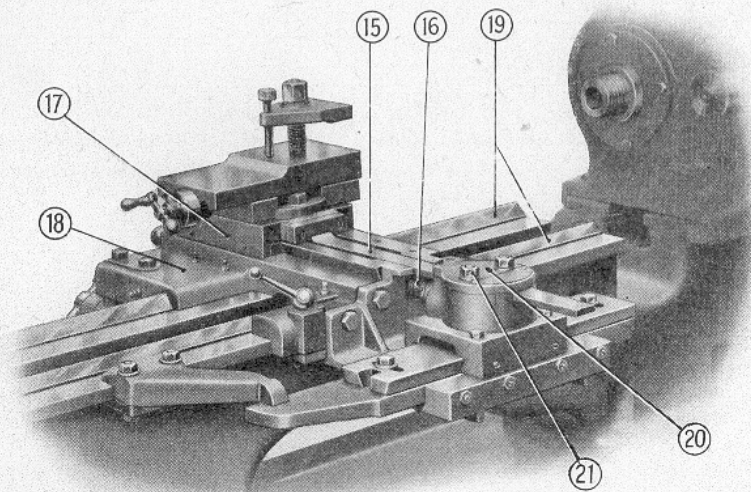


Fig. 5.

TAPER TURNING ATTACHMENT FITTED TO REAR OF SADDLE

- | | |
|--|-------------------|
| 15. Tangent bar. | 18. Saddle. |
| 16. Surfacing screw. | 19. Vee guides. |
| 17. Cross slide. | 20. Keeper plate. |
| 21. Adjustable nut for parallel turning. | |

Taper Turning Attachment. (Fig. 5) This fitment is not usually provided, but can be embodied in the lathe if ordered with it (not being capable of attachment afterwards). It is dowel located to the rear of the saddle (item 18) and secured by bolts, the tangent bar (15) being fastened to the surfacing screw (16) and nut. The required degrees of taper can be obtained by slackening the nuts on top of the keeper plate (20). After the setting has been made according to the index plate, the nuts must be locked before operation is begun.

For parallel turning with the attachment in position, the rear nut (21) i.e., the nut further from the headstock, should be slackened, all in accordance with the metal instruction plate fixed on the lathe.

Adjustments. Two "C" spanners are supplied for adjusting the rear spindle bearing and the two adjusting nuts on the front spindle bearing, though it should not be necessary to use these for some considerable time, if ever, after the lathe is installed.

Three screws are fitted on the sides of both the surface cross slide (see Fig. 5, item 17) and top rest for adjusting the strip after wear.

A screw in the tail-end of the leadscrew bearing provides for any

necessary adjustment of the leadscrew, which should not have a play of over 0.0005 in.

The vee rope drive between the motor and the headstock should not be allowed to become unduly slack. Adjustment is made by slackening the nut at the top of the motor pedestal and allowing the motor to move slightly backward, thus giving greater tension on the ropes.

ADDITIONAL EQUIPMENT

1. Collets with drawbar and chuck (Fig. 6). These are available from $\frac{1}{8}$ in. to $\frac{1}{2}$ in., rising by $\frac{1}{32}$ in.

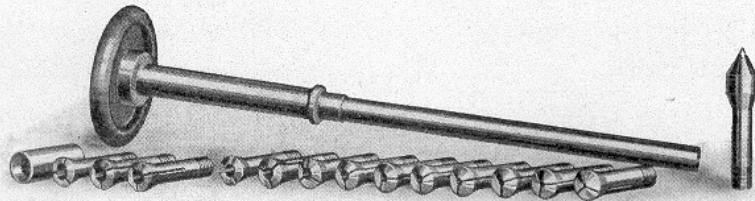


Fig. 6.

COLLETS WITH CHUCK AND DRAWBAR

2. Ring and disc chucks with drawbar (Fig. 7). These are available from $\frac{1}{2}$ in. to $2\frac{1}{2}$ in., rising by $\frac{1}{16}$ in.

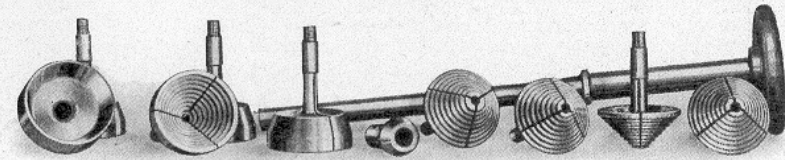


Fig. 7.

RING AND DISC CHUCKS WITH DRAWBAR

3. Milling and wheel cutting attachment (Fig. 8). This feature is also available for general milling of a light character within the capacity of the lathe, and is complete with dividing plates.

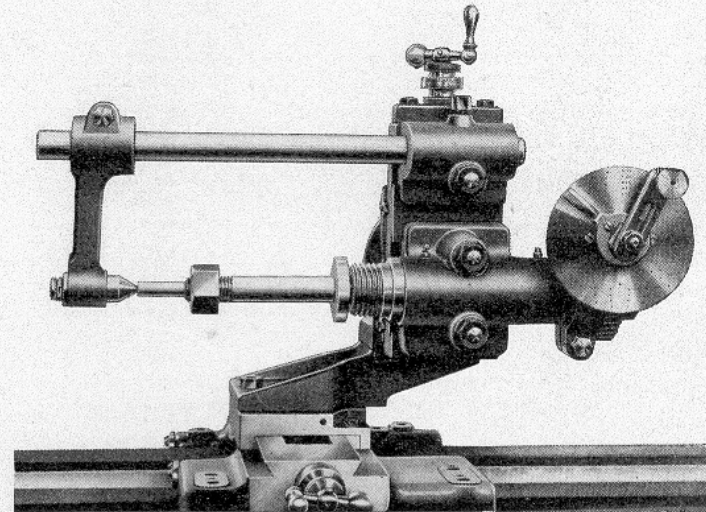


Fig. 8.

MILLING AND WHEEL CUTTING ATTACHMENT

4. Square turret toolpost (Fig. 9) in lieu of standard toolpost.

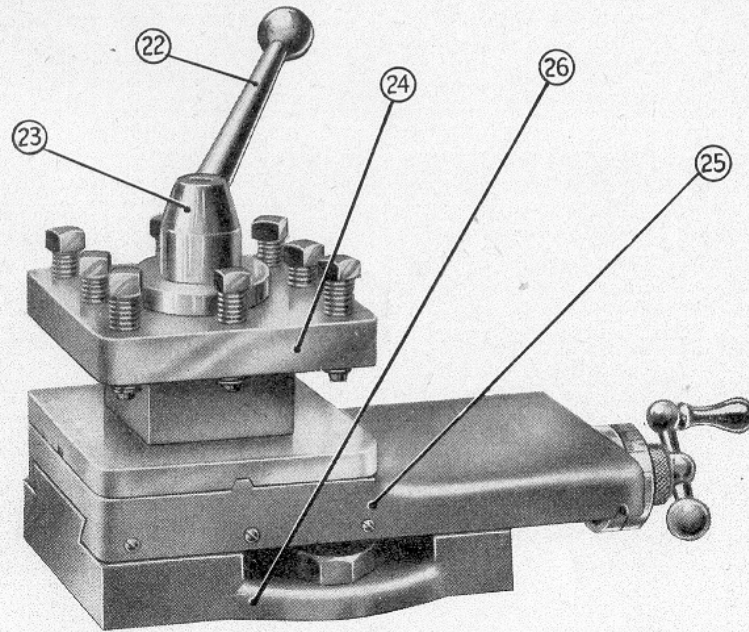


Fig. 9.

SQUARE TURRET TOOLPOST

22. Locking handle.

24. Square turret.

23. Turret screw.

25. Pillar slide.

26. Swivel slide.

SPARE PARTS LIST

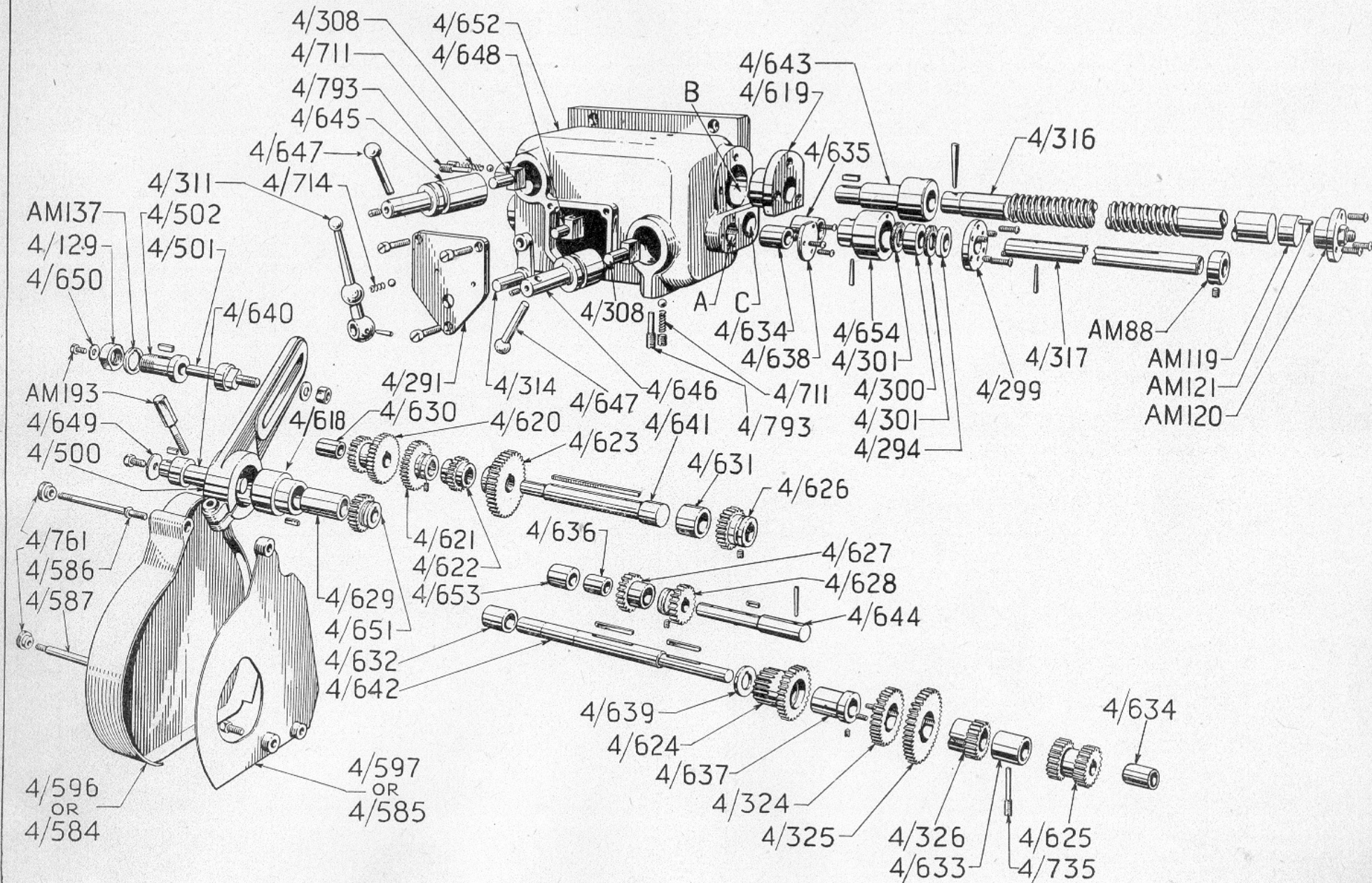
See pages Twelve to Twenty-eight.

GEAR BOX

Part No.	Description	No. Off
4/129	Change Wheel Lock Nut	1
4/291	Gearbox Lever Plate	1
4/294	Slipping Clutch Washer	1
4/299	Slipping Clutch Cover	1
4/300	Slipping Clutch Collar	1
4/301	Slipping Clutch Fibre Washer	2
4/308	Brass Die for Gearbox	2
4/311	Gearbox Outside Lever	1
4/314	Gearbox Inside Lever	1
4/316	Lead Screw	1
4/317	Feed Shaft	1
4/324	Gearbox 3rd Shaft Gear 30T×16P	1
4/325	Gearbox 3rd Shaft Gear 40T×16P	1
4/326	Gearbox 3rd Shaft Gear 20T×16P	1
4/500	Swing Plate	1
4/501	Change Wheel Stud... ..	1
4/502	Change Wheel Socket	1
4/618	Bearing for Swing Plate	1
4/619	Flanged Bush for Lead Screw Coupling	1
4/620	Gearbox 2nd Shaft Gear 20T & 30T×16P	1
4/621	Gearbox 2nd Shaft Gear 30T×16P	1
4/622	Gearbox 2nd Shaft Gear 20T×16P	1
4/623	Gearbox 2nd Shaft Gear 40T×16P	1
4/624	Gearbox 3rd Shaft Gear 20T & 30T×16P	1
4/625	Gearbox 3rd Shaft Gear 20T & 20T×16P	1
4/626	Gear for Lead Screw Coupling 20T×16P... ..	1
4/627	Gear for Slipping Clutch Shaft 20T×16P... ..	1
4/628	Gear for Slipping Clutch Shaft 20T×16P... ..	1
4/629	Bush for Gearbox 1st Shaft... ..	1
4/630	Bush for Gearbox 2nd Shaft	1
4/631	Bush for Gearbox 2nd Shaft	1
4/632	Bush for Gearbox 3rd Shaft	1
4/633	Bush for Gearbox 3rd Shaft	1
4/634	Bush for Gearbox 3rd Shaft	1
4/635	Bush for Slipping Clutch Shaft	1
4/636	Bush for Slipping Clutch Shaft Gear	1
4/637	Flanged Bush for Gearbox 3rd Shaft	1
4/638	End Plate for 3rd Shaft	1
4/639	Brass Washer for 3rd Shaft... ..	1
4/640	Gearbox 1st Shaft	1
4/641	Gearbox 2nd Shaft	1
4/642	Gearbox 3rd Shaft	1
4/643	Lead Screw Coupling	1

Part No.	Description	No. Off
4/644	Slipping Clutch Shaft	1
4/645	Gearbox Lever Shaft (Long)	1
4/646	Gearbox Lever Shaft (Short)	1
4/647	Gearbox Outside Lever	2
4/648	Brass Die for Inside Lever	1
4/649	Change Wheel Binding Washer	1
4/650	Washer for Change Wheel Stud	1
4/651	Gearbox 1st Shaft Gear 20T×16P	1
4/652	Gearbox (Casting)	1
4/653	Bush for Slipping Clutch Shaft	1
4/654	Slipping Clutch Casing	1
4/584	Change Wheel Guard when Belt Driven... ..	1
4/585	Backplate for Ch/Whl. Guard when Belt Driven	1
4/596	Change Wheel Guard when Motor Driven	1
4/597	Backplate for Ch/Whl. Guard when Motor Driven	1
4/586	Stud for Change Wheel Guard (Long)	1
4/587	Stud for Change Wheel Guard (Short)	1
4/761	Knurled Nut for Holding Guard	2
4/711	Spring for Lever Shaft	2
4/714	Spring for Front Lever	1
4/735	Screw for Holding Bush No. 4/633	1
AM119	Lead Screw Thrust Pad	1
AM120	Lead Screw Thrust Pad Keeper Plate	1
AM121	Pin for Thrust Pad	1
AM137	Change Wheel Distance Washer	2
AM193	Swing Plate Lock Stud	1
AM88	Feed Shaft Collar	1
4/792	Change Wheel Spacing Collar	1
4/793	Screw for Holding Gearbox Lever Shafts... ..	2

GEAR BOX

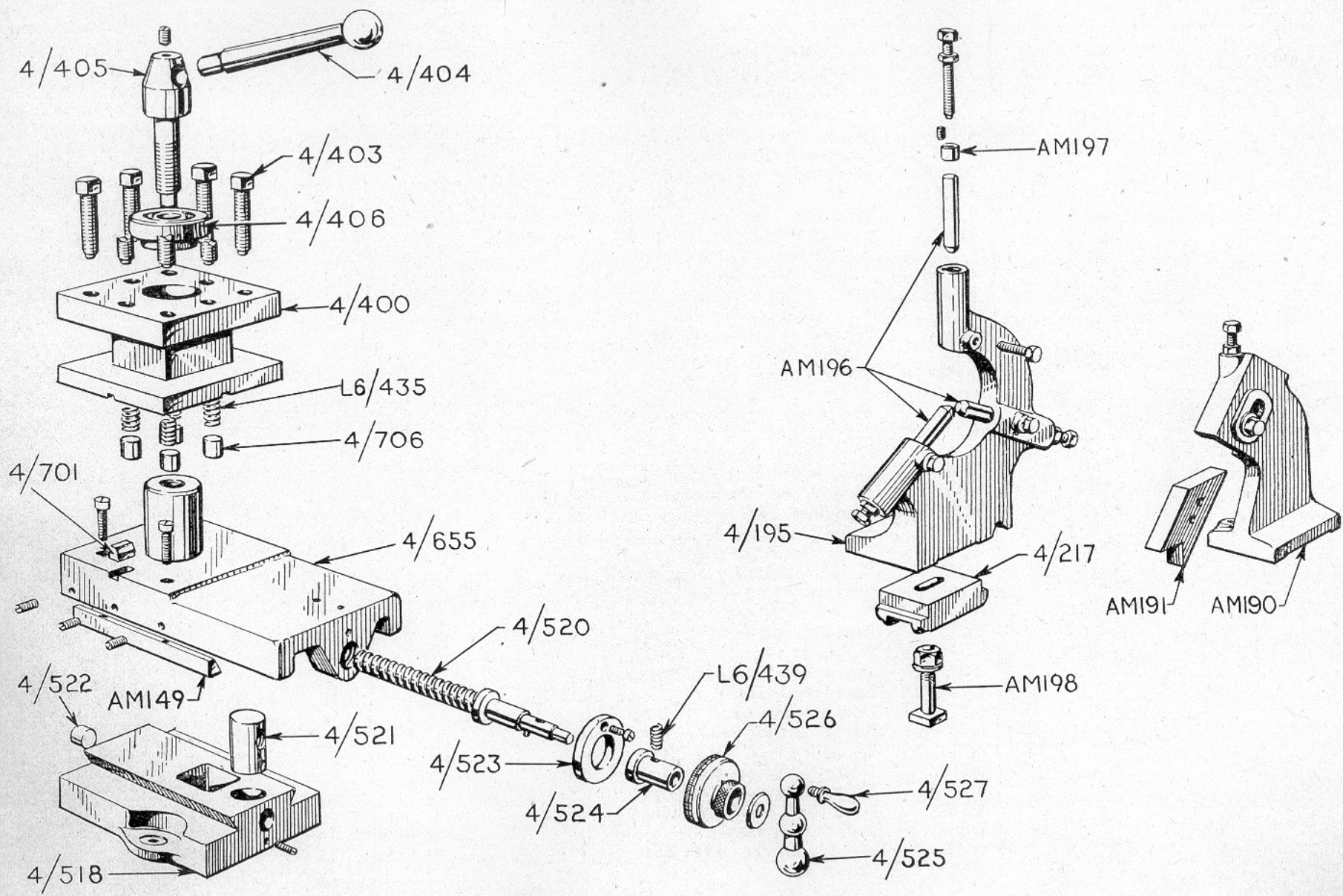


STEADIES, SWIVEL SLIDE AND SQUARE TURRET

Part No.	Description	No. Off
FOLLOWING STEADY		
AM190	Steady... ..	1
AM191	Plunger	1
CENTRE STEADY		
4/195	Steady... ..	1
AM196	Plunger	3
AM197	Plunger Bush	3
4/217	Holding Down Plate... ..	1
AM198	Holding Down Bolt	1
SWIVEL SLIDE		
4/518	Swivel Slide	1
4/519	Top Slide	1
4/520	Rest Screw	1
4/521	Rest Screw Nut	1
4/522	Plug for Swivel Slide	1
4/523	Index Ring	1
4/524	Bush for Micro Dial	1
4/525	Ball Handle	1
4/526	Micro Dial	1
4/527	Ball Handle Fitting	1
4/736	Bush for Locating Pin	1
4/737	Locating Pin	1
AM145	Tool Plate	1
AM146	Tool Plate Stud	1
AM149	Top Slide Strip	1
L6/439	Spring for Micro Dial	1
SQUARE TURRET		
4/400	Square Turret	1
4/403	Set Screws for Turret (Hardened)... ..	8
4/404	Locking Handle for Turret	1
4/405	Turret Screw... ..	1
4/406	Turret Washer	1
4/518	Swivel Slide	1
4/520	Rest Screw	1
4/521	Rest Screw Nut	1
4/522	Plug	1
4/523	Index Ring	1
4/524	Bush for Micro Dial	1
4/525	Rest Screw Ball Handle	1
4/526	Rest Screw Micro Dial	1

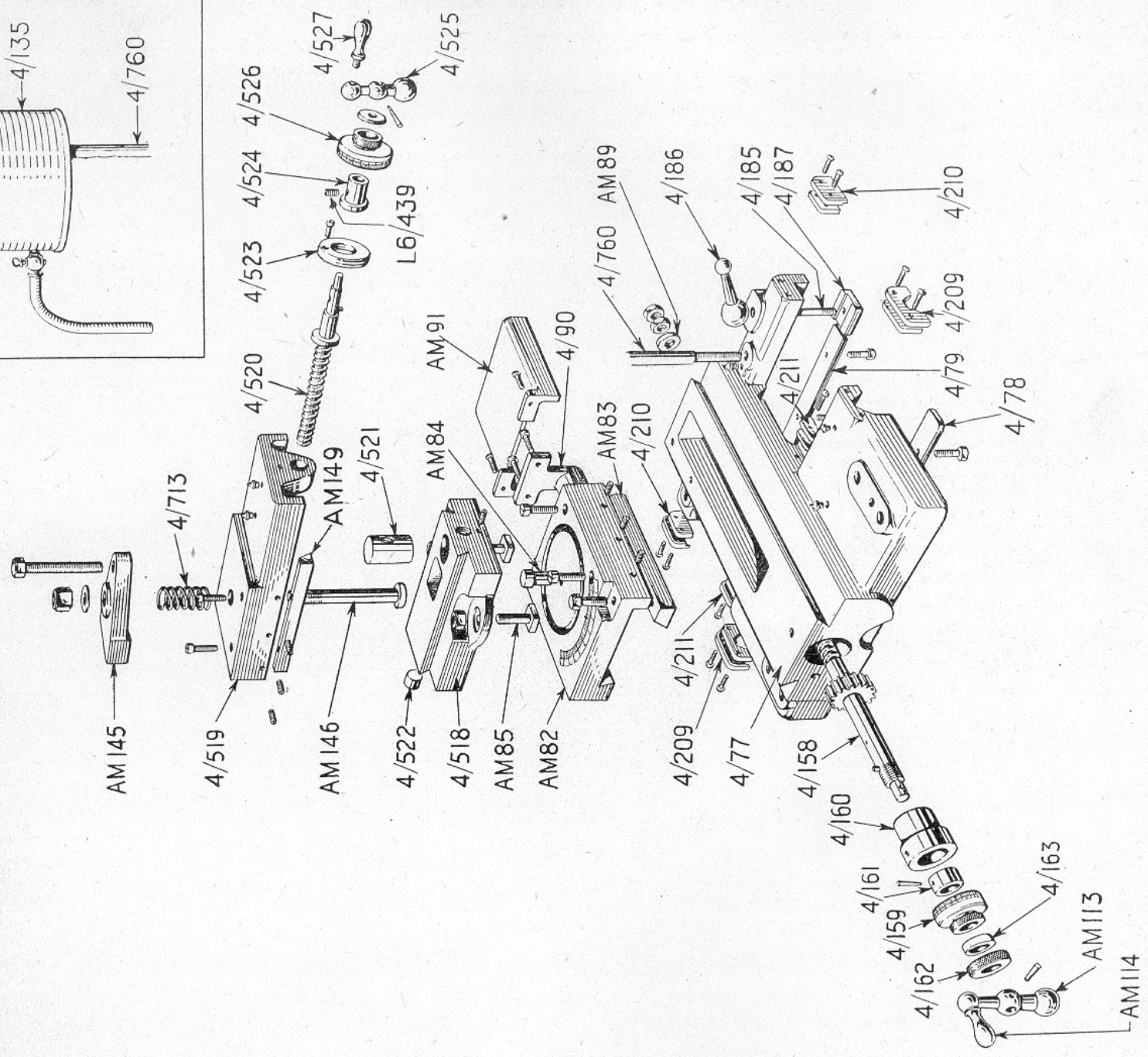
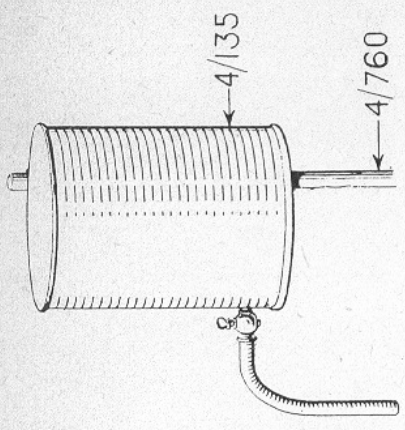
Part No.	Description	No. Off
4/527	Ball Handle Fitting	1
4/655	Pillar Slide	1
4/701	Key for Turret	1
4/706	Lifting Plunger	4
L6/435	Spring for Lifting Plunger	4
L6/439	Spring for Rest Screw Micro Dial	1
AM85	Swivel Bolt	2
AM149	Top Rest Strip	1

STEADIES, SWIVEL SLIDE AND SQUARE TURRET



SADDLE AND APRON

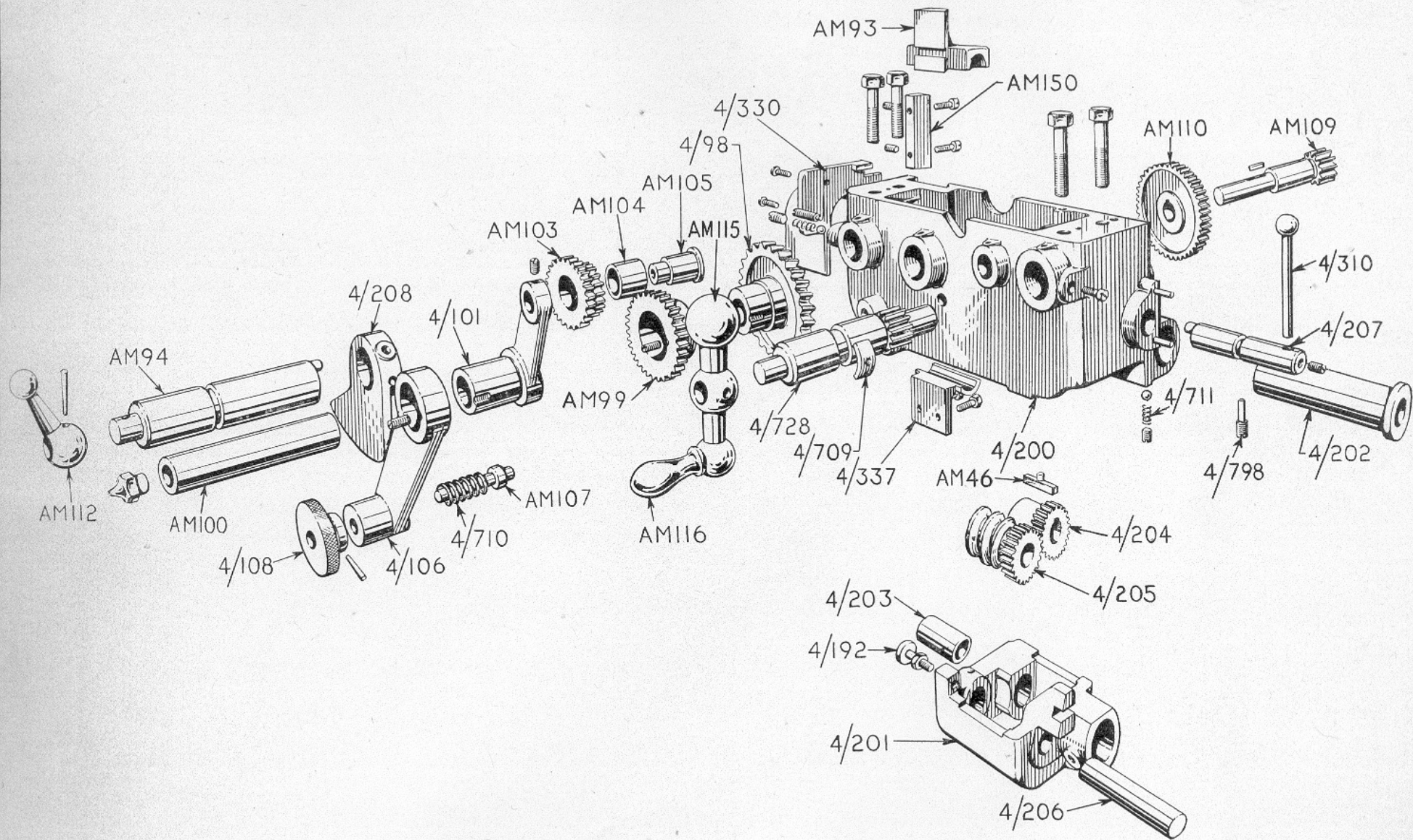
Part No.	Description	No. Off
4/77	Saddle	1
4/78	Saddle Strip (Front)	1
4/79	Saddle Strip (Back)	1
4/90	Surface Screw Nut	1
4/98	Worm Wheel 25T $\times \frac{3}{8}$ " C.P.	1
4/101	Inside Tumbler Feed Lever	1
4/106	Outside Tumbler Feed Lever	1
AM107	Plunger for Outside Tumbler Feed Lever	1
4/108	Knurled Knob for Plunger	1
4/135	Drip Can	1
4/158	Surface Screw	1
4/159	Surface Screw Micro Dial	1
4/160	Surface Screw Sleeve	1
4/161	Surface Screw Collar	1
4/162	Micro Dial Locking Nut	1
4/183	Micro Dial Locking Washer	1
4/185	Saddle Locking Stud	1
4/186	Saddle Locking Handle	1
4/187	Saddle Locking Plate	1
4/192	Worm Box Interlocking Stud	1
4/200	Apron	1
4/201	Drop Worm Box	1
4/202	Drop Worm Box Sleeve	1
4/203	Drop Worm Box Bush	1
4/204	Feed Shaft Gear	1
4/205	Drop Worm and Pinion	1
4/206	Drop Worm Shaft	1
4/207	Eccentric Shaft for Drop Worm Box	1
4/208	Interlocking Lever for Lead Screw Nut	1
4/209	Front Vee Wiper	2
4/210	Back Flat Wiper	2
4/211	Front Flat Wiper	2
4/310	Worm Box Eccentric Shaft Lever	1
4/330	Lead Screw Guard	1
4/337	Lead Screw Support Bracket	1
4/709	Keeper Die for Sliding Handle Shaft	1
4/710	Spring for Feed Lever Plunger	1
4/711	Spring for Worm Box Eccentric Shaft	2
4/713	Spring for Tool Plate	1
4/728	Handwheel Shaft and Pinion 14T \times 16P	1
4/685	Suds Pipe Bracket	1
AM46	Tee Key for Feed Shaft Gear	1
AM82	Square Slide	1



SADDLE AND APRON

Part No.	Description	No. Off
AM83	Square Slide Strip	1
AM84	Swivel Pin	1
AM85	Swivel Bolts	2
AM89	Surface Screw Washer	1
AM91	Saddle Vee Cover	1
AM93	Lead Screw Nut	1
AM94	Eccentric Shart for Lead Screw Nut	1
AM99	Worm Wheel Pinion 32T×16P	1
AM100	Worm Wheel Shaft	1
AM103	Tumbler Lever Pinion 24T, 17T×16P	1
AM104	Brass Bush for 24T, 17T×16P Pinion	1
AM105	Stud for Tumbler Lever and Pinion	1
AM109	Rack Shaft 14T×14P	1
AM110	Rack Shaft Wheel 48T×16P	1
AM112	Outside Lever for Lead Screw Nut	1
AM113	Surface Screw Ball Handle	1
AM114	Surface Screw Ball Handle Fitting	1
AM115	Sliding Ball Handle	1
AM116	Sliding Ball Handle Fitting	1
4/760	Stud for Drip Can	1
AM150	Strip for Lead Screw Nut	1
4/798	Positioning Screw for Worm Box Eccentric Shaft	1

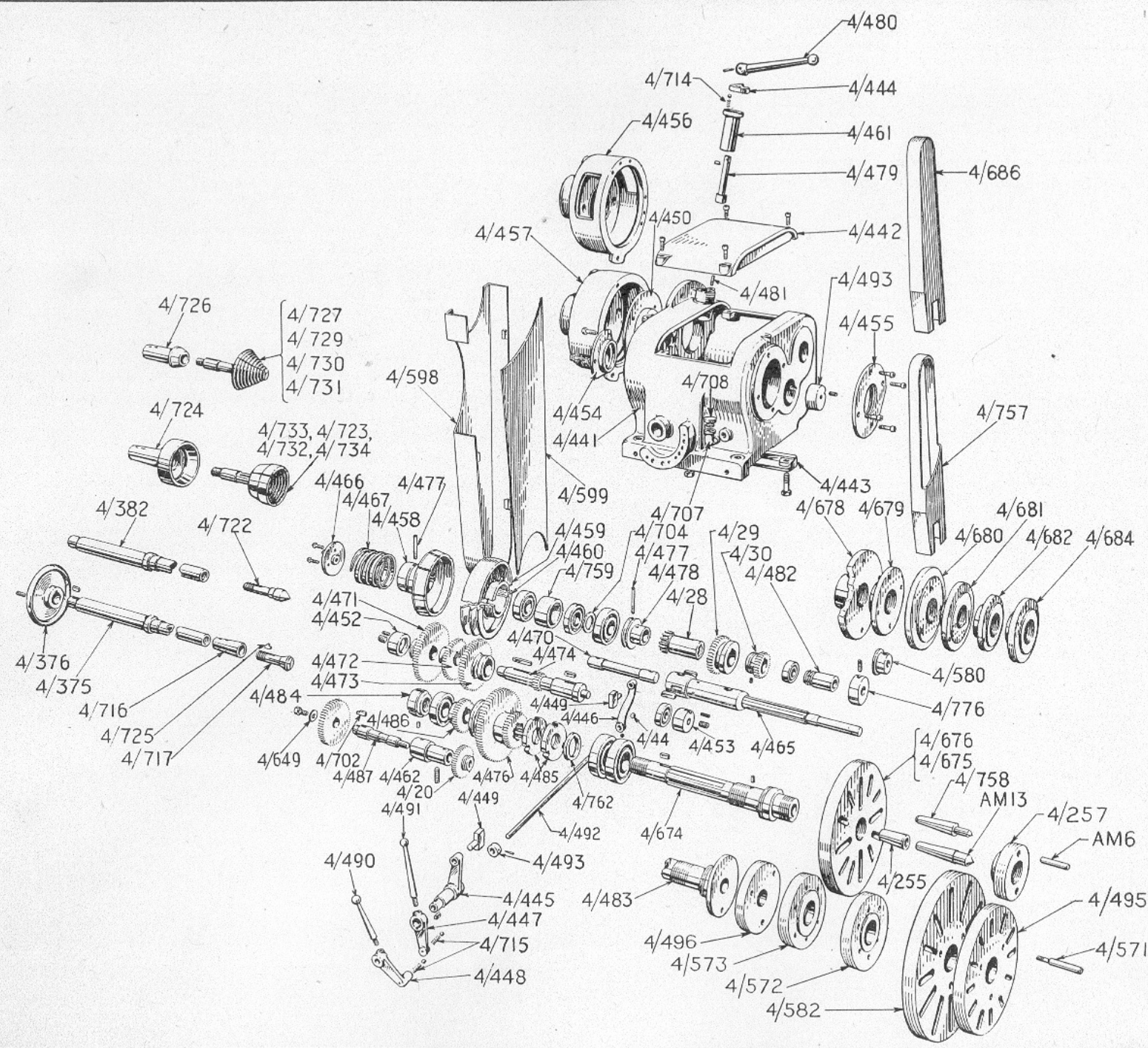
APRON



ALL GEAR HEAD

Part No.	Description	No. Off
4/20	Mandril Stud Wheel 40T×16P	1
4/28	1st Shaft Gear 16T×14P	1
4/29	1st Shaft Gear 36T×14P	1
4/30	1st Shaft Gear 25T×14P	1
4/44	Plug for Gear Levers Shaft	1
4/255	Centre Bush	1
4/257	Driver Plate (Threaded Spindle)	1
4/441	Headstock Casting	1
4/442	Inspection Lid	1
4/443	Holding Down Strip... ..	1
4/444	Stop for Starting Handle	1
4/445	Spindle Gears Inside Lever	1
4/446	1st Shaft Gears Inside Lever	1
4/447	Outside Lever Fitting for Spindle Gears	1
4/448	Outside Lever Fitting for 1st Shaft Gears	1
4/449	Die for Moving Sliding Gear	2
4/450	Back Adaptor for 1st Shaft	1
4/452	Back Adaptor for Inter Shaft	1
4/453	Front Adaptor for Inter Shaft	1
4/454	Cap for Back Spindle Bearing	1
4/455	Cap for Front Spindle Bearing	1
4/456	Guard for Flat Belt Pulley	1
4/457	Guard for Vee Rope Pulley... ..	1
4/458	Friction Cone for Driving Pulley	1
4/459	Driving Pulley (Flat Belt)	1
4/460	Driving Pulley (Vee Rope)	1
4/461	Eccentric Bush for Starting Handle	1
4/462	Bush for Mandril Stud	1
4/465	Driving Shaft	1
4/466	Washer for End of Driving Shaft	1
4/467	Spring for Friction Cone	1
4/470	Connecting Stud for Starting Motion	1
4/471	Inter-shaft Gear 64T×14P	1
4/472	Inter-shaft Gear 44T×14P	1
4/473	Inter-shaft Gear 55T×14P	1
4/474	Inter-shaft and Pinion 17T×14P	1
4/476	Spindle Gear 79T×14P and 41T×14P	1
4/477	Connecting Pin for Starting Motion	2
4/478	Connecting Bobbin for Starting Motion	1
4/479	Starting Lever Stud	1
4/480	Starting Lever	1
4/481	Stop Pin for Starting Lever... ..	1
4/482	Bush for 1st Shaft	1
4/484	Spindle End Round Nut	1
4/485	Round Nut for Front Spindle Bearing	2
4/486	Spindle End Gear 40T×16P	1
4/487	Mandril Stud	1
4/490	Outside Lever for 1st Shaft Gears... ..	1
4/491	Outside Lever for Spindle Gears	1
4/492	Shaft for Gear Levers	1
4/493	Collar for Gear Lever Shaft	1
4/762	Washer for Front Spindle Bearing	1
4/580	Pump Pulley (A.G.H.)	1
4/598	Vee Rope Guard (Spindle Speeds 600-30 r.p.m.)	1
4/599	Backplate for Vee Rope Guard (Sp. Speeds 600-30 r.p.m.)	1
4/674	Spindle (Threaded Spindle)	1
4/675	14" Diam. Faceplate (Threaded Spindle)	1
4/676	10" Diam. Faceplate (Threaded Spindle)	1
4/678	Backplate for 8" Dia. Ind. 4 Jaw Chuck (Threaded Spindle)	1
4/679	Backplate for 6" Dia. Ind. 4 Jaw Chuck (Threaded Spindle)	1

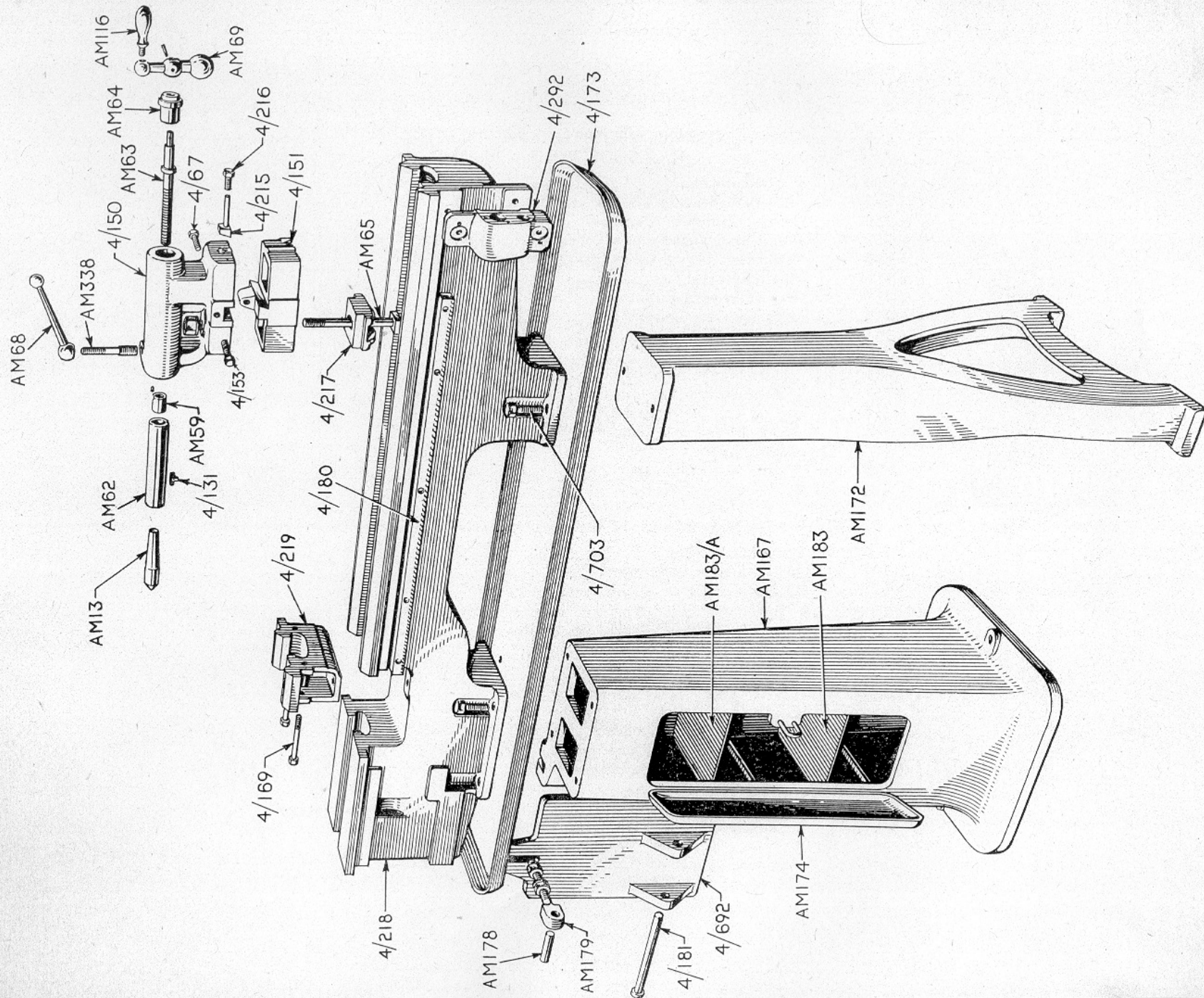
Part No.	Description	No. Off
4/680	Backplate for 6" Dia. Scroll 3 Jaw Chuck (Threaded Spindle)	1
4/681	Backplate for 5" Dia. Scroll 3 Jaw Chuck (Threaded Spindle)	1
4/682	Backplate for 4" Dia. Scroll 3 Jaw Chuck (Threaded Spindle)	1
4/684	Backplate for 4½" Dia. Taylor Chuck (Threaded Spindle)	1
4/757	Pump Belt Guard (Threaded Spindle)	1
4/702	Key for Change Wheel on Mandril Stud	1
4/704	Distance Washer Behind Pulley on Driving Shaft	1
4/707	Oil Level	1
4/708	Cover for Oil Level	1
4/714	Spring for Starting Lever	1
4/715	Spring for Front Levers	2
4/759	Spacing Bush in Driving Pulley	1
4/770	Vee Rope Guard (Spindle Speeds 1,000-50 r.p.m.)	1
4/771	Backplate for Vee Rope Guard (Sp. Speeds 1,000-50 r.p.m.)	1
AM6	Driver Plate Pin (Threaded Spindle)	1
AM13	Centre	1
4/649	Change Wheel Washer on End of Mandril Stud... ..	1
4/758	Light Centre	2
4/776	Driving Shaft Collar... ..	1
4/375	Draw Bar for Internal Collets	1
4/376	Handwheel	1
4/382	Draw Bar for External Collets	1
4/716	Adaptor for Spring Collets	1
4/717	Collet	—
4/722	Special Centre for Use with Collet	1
4/723	Female Brooke Disc Chuck No. 1	1
4/724	Female Adaptor for Disc Chucks	1
4/726	Male Adaptor for Disc Chucks	1
4/727	Male Brooke Disc Chuck No. 1	1
4/729	Male Brooke Disc Chuck No. 2	1
4/730	Male Brooke Disc Chuck No. 4	1
4/731	Male Brooke Disc Chuck No. 3	1
4/732	Female Brooke Disc Chuck No. 2	1
4/733	Female Brooke Disc Chuck No. 3	1
4/734	Female Brooke Disc Chuck No. 4	1
4/725	Tee Key for Brooke Male and Female Disc Chuck Adaptors	1
PARTS REQUIRED FOR FLANGED SPINDLE WHEN SPINDLE SPEEDS ARE 800 R.P.M. OR OVER		
4/468	Adjusting Screws for Brake Ring	4
4/469	Brake Ring	1
4/483	Spindle (Flanged)	1
4/495	10" diam. Faceplate (Flanged Spindle)	1
4/496	Driver Plate (Flanged Spindle)	1
4/571	Driver Plate Pin (Flanged Spindle)	1
4/572	Adaptor Plate for 4" dia. Scroll Chuck (Flanged Spindle)	1
4/573	Adaptor Plate for 5" dia. Scroll Chuck (Flanged Spindle)	1
4/574	Cheese Hd. Screw for 4" and 5" Scroll Chuck and Driver Plate (F.S.)	3 ea. & 2 ea.
4/575	Cheese Hd. Screw for 6" dia. Scroll Chuck (Flanged Spindle)	3
4/581	14" diam. Faceplate (Flanged Spindle)	1 ea.
4/582	Cheese Hd. Screw for Faceplates (Flanged Spindle)	3 ea.
4/590	Stud for Scroll Chucks (Flanged Spindle)... ..	3 ea.
4/591	Adaptor Plate for 6" dia. Scroll Chuck (Flanged Spindle)	1
4/593	Cheese Hd. Screw for 8" ind. Chuck (Flanged Spindle)	4
4/594	Adaptor Plate for 8" dia. Ind. Chuck (Flanged Spindle)	1
4/595	Adaptor Plate for 6" dia. Ind. Chuck (Flanged Spindle)	1
4/686	Pump Belt Guard when Flanged Spindle	1



BED AND LOOSE HEAD

Part No.	Description	No. Off
4/169	Gap Screw	2
AM172	Leg	1
4/173	Tray without Sump	1
AM174	Door for Cabinet	1
AM178	Pin for Eye Bolt	1
AM179	Hinge Plate Eye Bolt	1
4/180	Rack 14 D Pitch in 2' 0" Lengths	1
4/181	Hinge Pin for Motor Plate	1
AM183	Shelf for Cabinet Leg (Large)	1
4/218	4' 0" Gap Bed V Type	1
4/219	Gap Piece	1
4/292	Tail End Bracket	1
4/617	Tray with Sump	1
4/814	Perforated Lid for Tray with Sump	1
4/692	Motor Hinge Plate	1
4/703	Screw for Holding Bed to Leg	6
AM167	Cabinet Leg	1
4/744	6' 0" Gap Bed — 2 Cabinet Legs	1
AM183A	Shelf for Cabinet Leg (Small)	1
4/150	Loose Head	1
4/151	Loosehead Shoe	1
AM62	Shoot	1
AM63	Shoot Screw	1
AM64	Cap	1
AM13	Centre	1
AM65	Holding Down Bolt	1
4/217	Holding Down Plate... ..	1
4/67	Shoe Screw (Short)	1
4/153	Shoe Screw (Long)	1
AM/68	Locking Lever	1
AM/69	Ball Handle	1
AM/116	Ball Handle Fitting	1
4/131	Tee Key	1
4/215	Alignment Tee Pin	1
4/216	Alignment Screw	1
AM338	Locking Stud	1
AM59	Shoot Nut	1

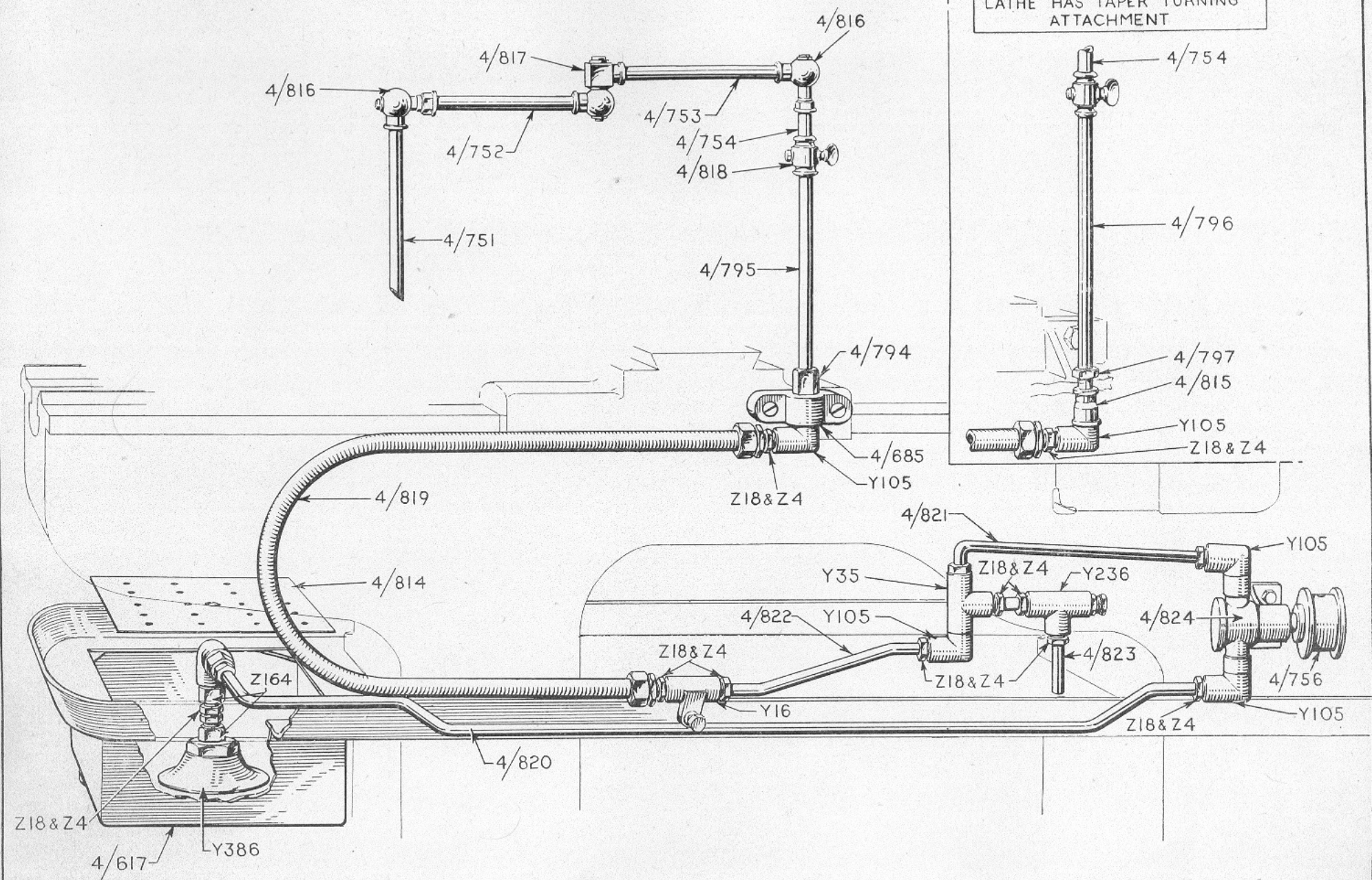
BED AND LOOSE HEAD



SUDS EQUIPMENT

Part No.	Description	No. Off
SPECIAL DETAILS REQUIRED WHEN LATHE HAS SUDS PUMP		
4/580	Pump Pulley	1
4/685	Suds Pipe Bracket	1
4/756	Driving Pulley on Pump	1
4/757	Pump Belt Guard when Threaded Spindle Nose	1
4/686	Pump Belt Guard when Flanged Spindle Nose ...	1
4/751	Final Delivery Tube	1
4/752	Short Delivery Tube	1
4/753	Long Delivery Tube	1
4/754	Short Stand Pipe	1
4/795	Long Stand Pipe	1
4/816	$\frac{1}{8}$ " Gas Single Swivel Joint	2
4/817	$\frac{1}{8}$ " Gas Double Swivel Joint	1
4/818	$\frac{1}{8}$ " Gas Tap (Threaded Internally Both Ends) ...	1
4/794	Adaptor for Long Stand Pipe ($\frac{1}{8}$ " Gas Female to $\frac{1}{4}$ " Gas Male)	1
	$\frac{1}{4}$ " Gas Female Elbow	1
4/824	8G. "Suddo" Pump	1
EXTRA PARTS FOR TAPER TURNING		
4/796	Long Stand Pipe	1
4/797	Lock Nut for Long Stand Pipe	1
4/815	$\frac{1}{4}$ " Gas Female to $\frac{3}{8}$ " Gas Female Reducer ...	1
"ENOTS" FITTINGS REQ.		
	Shallow Strainer	1
	Tubing Tee	1
	Relief Valve	1
	Elbow Connection	4
	Flexible Tube Connection	1
	Adaptor	3
	Tubing Nut	13
	Tubing Sleeve	13
4/819	$\frac{5}{16}$ " Bore Oil Resisting Rubber Hose, 30" long, with Connections at Both Ends	1
4/820 to 4/823	Approx. Length of "Enots" "One-Shot" $\frac{5}{16}$ " O.D. Copper Tube, Required per Lathe — 4' 2" ...	1 off ea.

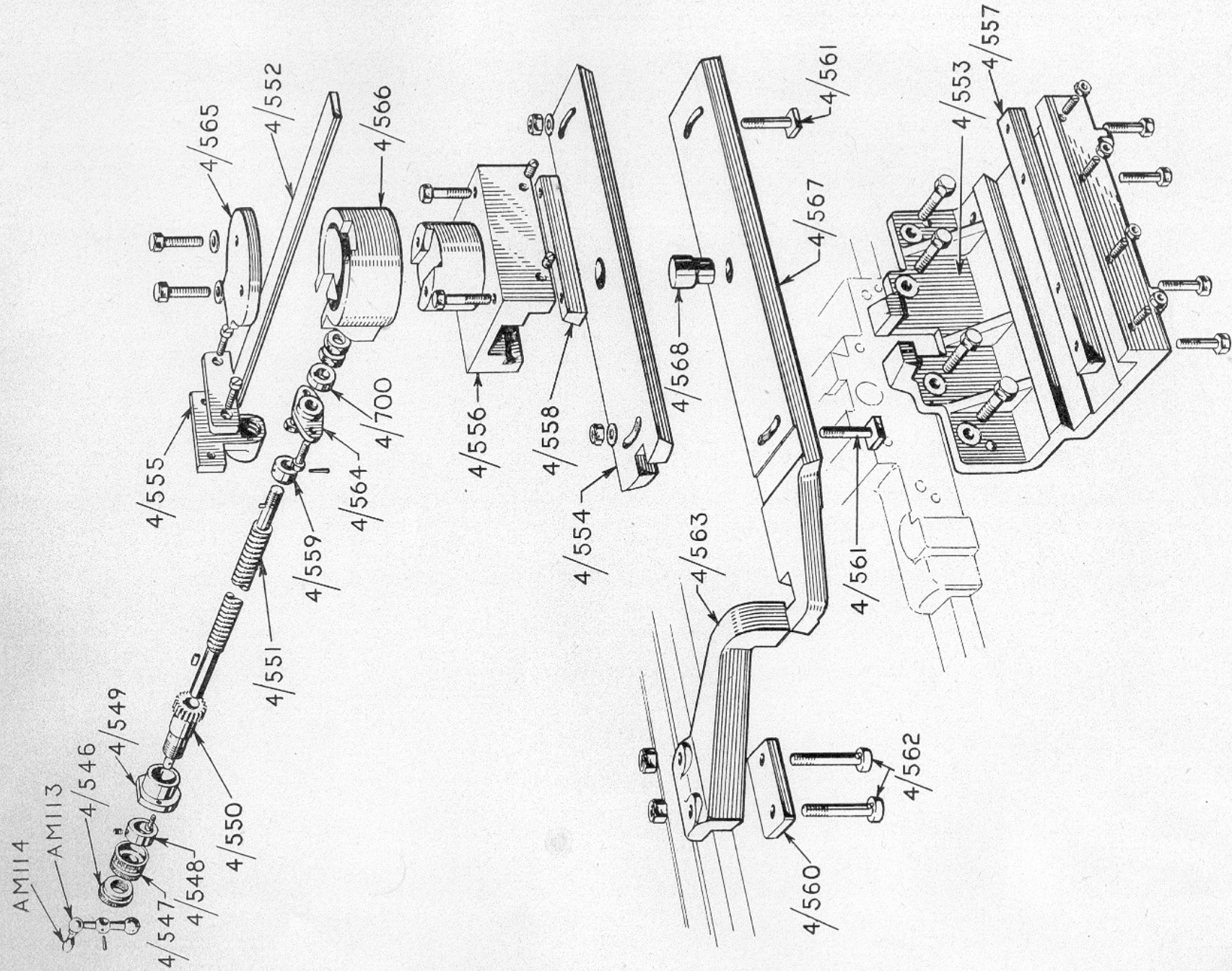
ARRANGEMENT OF STAND WHEN
LATHE HAS TAPER TURNING
ATTACHMENT



TAPER TURNING

Part No.	Description	No. Off
4/546	Micrometer Locking Nut	1
4/547	Micrometer Dial	1
4/548	Positioning Collar	1
4/549	Brass Bush	1
4/550	Surfacing Feed Pinion 18T × 16P	1
4/551	Surfacing Screw	1
4/552	Tangent Bar	1
4/553	Support Bracket	1
4/554	Top Slide	1
4/555	Surfacing Screw Nut	1
4/556	Swivelling Pillar	1
4/557	Bottom Slide Strip	1
4/558	Top Slide Strip	1
4/559	Thrust Collar... ..	1
4/560	Clamping Plate (for Retaining Bracket)	1
4/561	Taper Binding Bolt	2
4/562	Bolt for Retaining Bracket	2
4/563	Slide Retaining Bracket	1
4/564	Thrust Piece	1
4/565	Clamping Plate (for Tangent Bar)	1
4/566	Tapering Swivel	1
4/567	Bottom Slide	1
4/568	Swivel Pin	1
4/700	Surface Screw Thrust Washer	1

TAPER TURNING



CHANGE WHEELS

Part No.	Description	No. Off
WHEELS: 16 DP — $\frac{3}{4}$ " BORE — $\frac{3}{8}$ " WIDE		
AM220	20T×16DP	1
AM221	25T×16DP	1
AM222	30T×16DP	1
AM223	40T×16DP	1
AM224	50T×16DP	1
AM225	65T×16DP	1
4/226	66T×16DP	1
AM227	70T×16DP	1
4/228	76T×16DP	1
AM229	80T×16DP	1
AM230	90T×16DP	1
AM231	100T×16DP	1
4/232	120T×16DP	1
4/212	125T×16DP	1
AM233	127T×16DP	1
4/213	Change Wheel Rack for Above Wheels ...	1
4/370	68T×16DP	1
4/378	110T×16DP	1
} Additional Wheels when Range is 2 to 80 T.P.I. ...		
AM234	35T×16DP	1
4/365	39T×16DP	1
4/366	43T×16DP	1
AM219	45T×16DP	1
4/367	48T×16DP	1
4/368	53T×16DP	1
4/369	59T×16DP	1
4/371	73T×16DP	1
4/372	81T×16DP	1
} Additional Wheels when B.A. Thds. are required ...		

