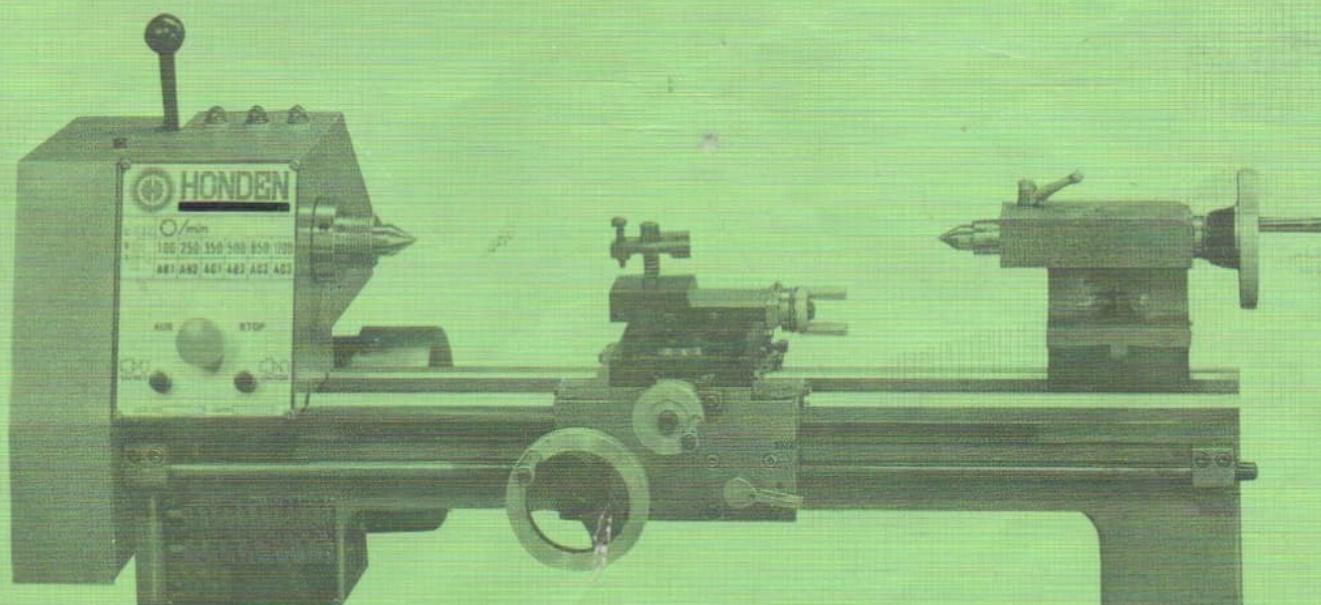


L-450, 450E INSTRUCTION AND PARTS MANUAL





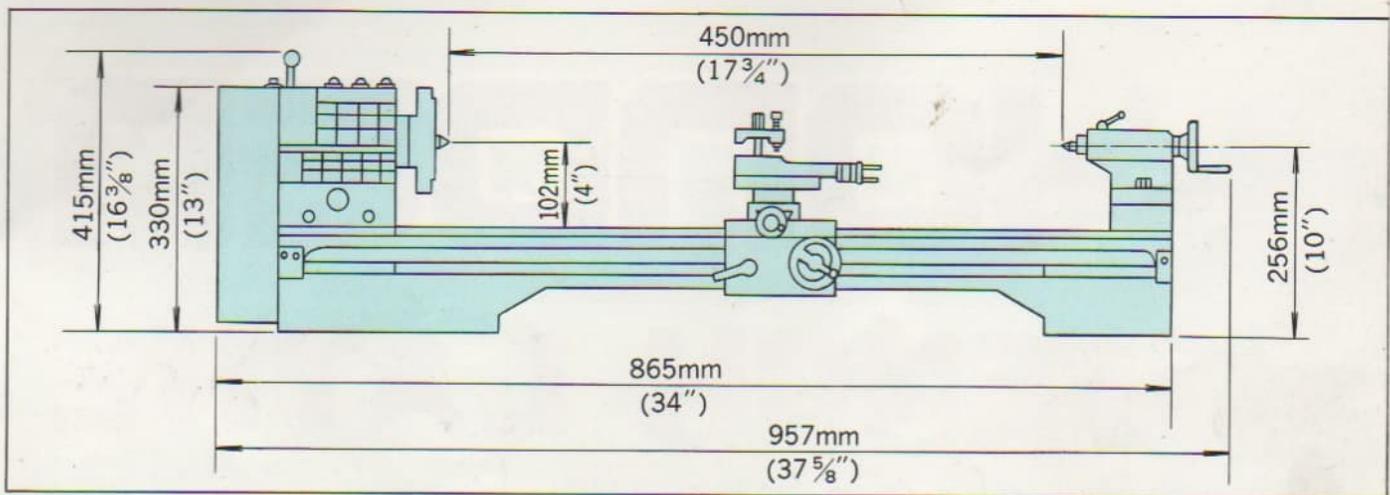
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BENCH LATHE

L-450 (WITH DRUM SWITCH)

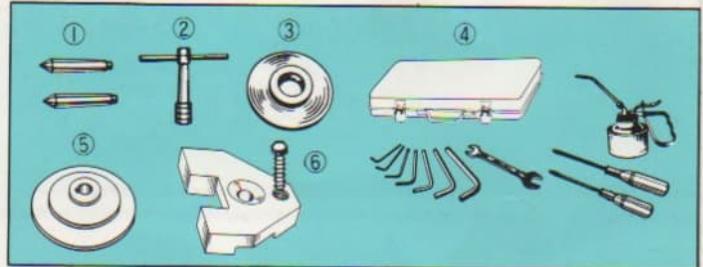
L-450E (WITH MAGNETIC SWITCH)





STANDARD ACCESSORIES

1. Center (M.T. 2 & 3)
2. Toolpost wrench
3. Driving plate (Back plate)
4. Tool box & kits
5. Motor pulley
6. Single toolpost



SPECIAL ACCESSORIES

1. Steady rest
2. Follow rest
3. Drill chuck (M.T. 2)
4. Rolling center (M.T. 2)
5. Face plate 7"
6. 3-jaw Scroll chuck 4"
7. 4-jaw Independent chuck 5"
8. Motor (1PH 1/2 HP)
9. Floor stand
10. Quick change tool post
11. Carriers (1/2", 3/4" & 1")
12. 4-way Tool post
13. Change gear sets
14. Thread dial indicator



SUMMARIZED SPECIFICATION

Centres	Height	102mm(4")
	Admits Between	450mm(17 3/4")
Swing	Over Bed	203mm(8")
	Over Cross Slide	115mm(4 1/2")
Spindle	Bored to Pass	22mm(7/8")
	Nose	M.T. 3
Speeds	Number	6
	Range (50Hz)	100-1700 r.p.m.
	Range (60Hz)	150-2000 r.p.m.
Motor	Single Phase	1/2 HP
Bed	Length	788mm(31")
	Width	114.5mm(4 1/2")
Leadscrew	Diameter	15mm(1/2")
	Thread	17 T.P.I.
Threads	English Pitches	10-44 T.P.I.
	Module Pitches	0.2-0.7 MOD.
	Metric Pitches	0.4-3mm
Cross Slide	Width	100mm(3 15/16")
	Travel	102mm(4")
Top Slide	Width	55mm(2 3/16")
	Travel	53mm(2 1/8")
Tailstock	Quill-Travel	38mm(1 1/2")
	-Morse Taper	No. 2
Weight	Net Weight	70 kgs
	Gross Weight	75 kgs
Packing Size	Carton (LxWxH)	37"x19"x17"

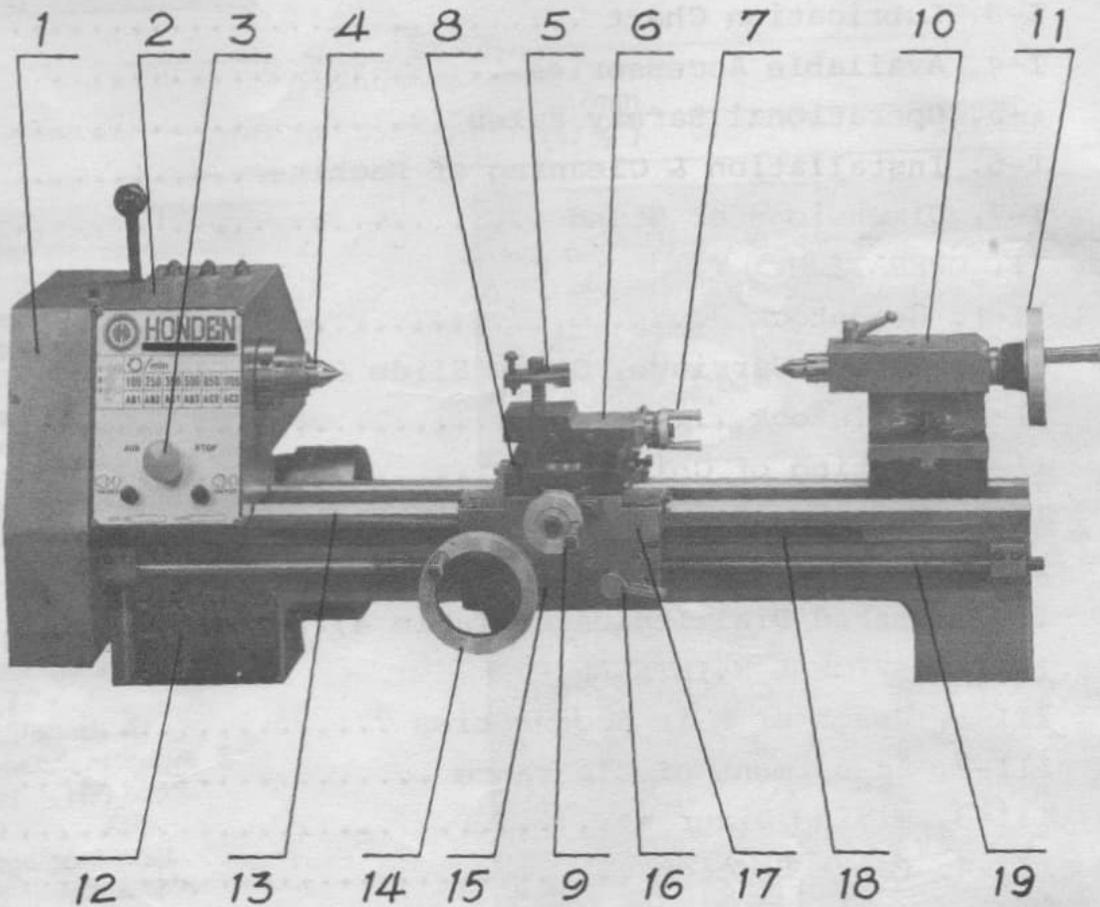
MAGNETIC SWITCH TYPE



I. GENERAL INTRODUCTION

I-1. MACHINE & EQUIPMENTS

Model: L-450E



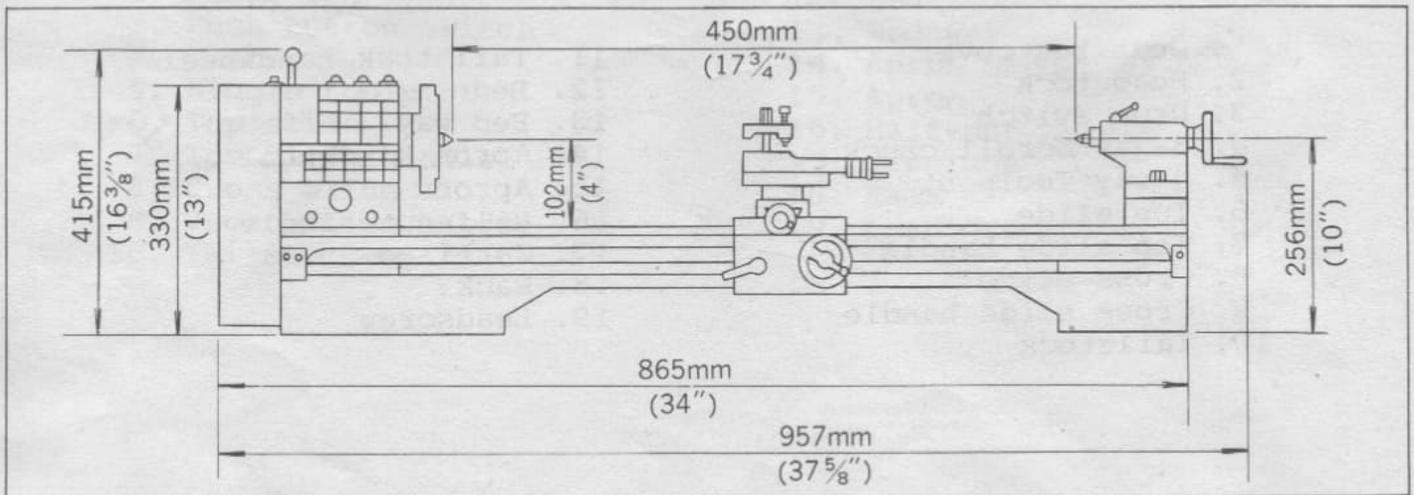
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|-----------------------|-------------------------|
| 1. Gear box cover | 11. Tailstock handwheel |
| 2. Headstock | 12. Bed |
| 3. Push button switch | 13. Bed way |
| 4. Center | 14. Apron handwheel |
| 5. Single toolpost | 15. Apron |
| 6. Top slide | 16. Half-nut handle |
| 7. Top slide handle | 17. Carriage |
| 8. Cross slide | 18. Rack |
| 9. Cross slide handle | 19. Leadscrew |
| 10. Tailstock | |

INDEX

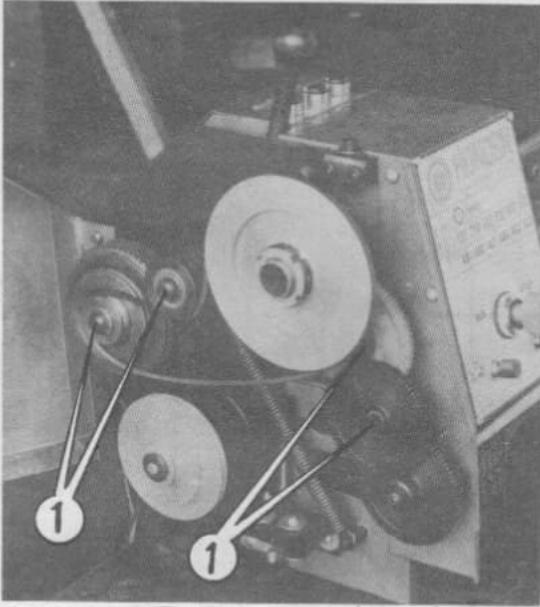
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I-3. Lubrication Chart	5
I-4. Available Accessories	6
I-5. Operational Safety Rules	6
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I-2. SPECIFICATIONS

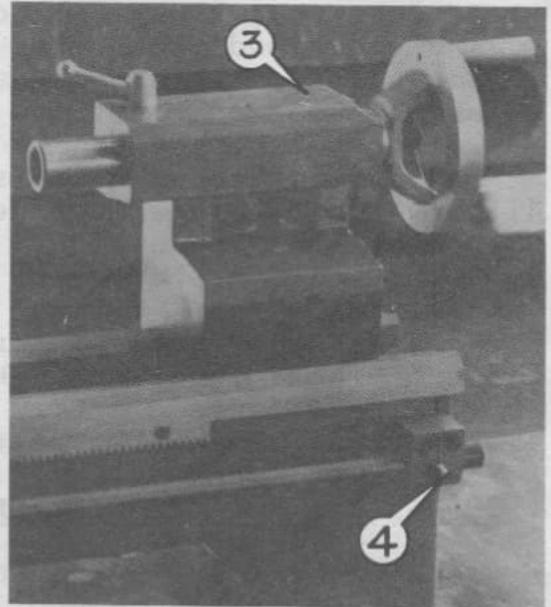
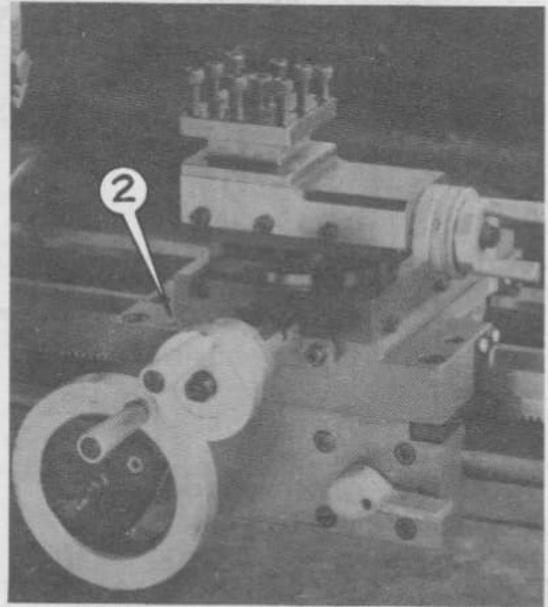
Centres	Height	102mm(4")
	Admits Between	450mm(17 ³ / ₄ ")
Swing	Over Bed	203mm(8")
	Over Cross Slide	115mm(4 ¹ / ₂ ")
Spindle	Bored to Pass	22mm(⁷ / ₈ ")
	Nose	M.T. 3
Speeds	Number	6
	Range (50Hz)	100-1700 r.p.m.
	Range (60Hz)	150-2000 r.p.m.
Motor	Single Phase	¹ / ₂ HP R.P.M. 1720
Bed	Length	788mm(31")
	Width	114.5mm(4 ¹ / ₂ ")
Leadscrew	Diameter	15mm(¹⁹ / ₃₂ ")
	Thread	17 T.P.I.
Threads	English Pitches	10-44 T.P.I.
	Module Pitches	0.2-0.7 MOD.
	Metric Pitches	0.4-3mm
Cross Slide	Width	100mm(3 ¹⁵ / ₁₆ ")
	Travel	102mm(4")
Top Slide	Width	55mm(2 ³ / ₁₆ ")
	Travel	53mm(2 ¹ / ₈ ")
Tailstock	Quill-Travel	38mm(1 ¹ / ₂ ")
	-Morse Taper	No. 2
Weight	Net Weight	70 kgs
	Gross Weight	75 kgs
Packing Size	Carton (LxWxH)	37"x19"x17"



I-3. LUBRICATION Chart



1720 RPM MOTOR



1. Gears train oil inlet
2. Apron oil inlet
3. Tailstock oil inlet
4. Leadscrew bracket oil inlet

I-4. AVAILABLE ACCESSORIES

<u>DESCRIPTION</u>	<u>Q'TY</u>
1. Centres (M.T. No. 2 & 3)	2 pcs
2. Toolpost wrench	1 pc
3. Driving plate (Back plate)	1 pc
4. Motor pulley	1 pc
5. Tool box & kits	1 set
6. Single toolpost	1 pc
7. Steady rest	1 pc
8. Follow rest	1 pc
9. Drill chuck (M.T. No. 2)	1 pc
10. Rolling center (M.T. No. 2)	1 pc
11. Face plate	1 pc
12. 3-jaw Scroll chuck	1 pc
13. 4-jaw Independent chuck	1 pc
14. Motor ($\frac{1}{2}$ HP)	1 pc
15. 4-way Toolpost	1 pc
16. Floor stand	1 pc
17. Quick change toolpost	1 set
18. Carriers ($\frac{1}{2}$ ", $\frac{3}{4}$ " & 1")	1 set
19. Change gear sets	1 set
20. Thread dial indicator	1 pc

I-5. OPERATIONAL SAFETY RULES

1. Be sure that every part of machine is in correct position and good condition before starting the machine.
2. For safety, it is necessary and important that the operator should wear a protective glasses and hat.
3. Do not touch, set or remove at random any part or accessory on the machine when it is running.
4. To watch over the machine and do not leave it alone during the machine in running.
5. Do not open the cover of gear box during the machine in running.
6. To use the steady rest or carrier for stability when machining a long work like columnar pipe or tube.
7. To take off the electric plug to stop electricity supply before adjusting the belt or changing gears.

I-6. INSTALLATION & CLEANING OF MACHINE

1. To avoid vibration and noisy during running and to ensure perfect performance and long durability, the working table or stand must be stable and the machine should be mounted securely on the flat surface of it.
2. To use diesel oil for cleaning of corrosion shield which been put on the machined parts of the machine to protect from moisture or rust during transportation or storage.

II. OPERATION

II-1. HEADSTOCK

The machine is driven by a A.C. motor of $\frac{1}{2}$ HP. Through a V-belt connecting the motor pulley with the pulley of main spindle, the motion of motor is transmitted to the spindle of headstock and have the machine run.

The spindle forwards and reverses by control of a drum switch(for model L-450) or a push button switch(for model L-450E). To put the handle (A on Fig. 1) of drum switch on forward or reverse position, or to push the forward or reverse button (A on Fig. 2) then the machine will run forward and reversely respectively.

There is a safety control device on the model L-450E. When we push the mushroom type button (B on Fig. 2) to stop the running then the button will fix securely in the position and have to turn it clockwise for starting again. A micro switch (A on Fig. 3) is also fitted at the side of bed in the position connecting with the cover of gear box. When we open the cover, the machine will stop running automatically. When the cover be closed then the machine will start again automatically.

To set the V-belt according to the arrangements of Table 1 to get the running speed expected. The handle (B on Fig. 3) is used for adjustment of V-belt through a roller. To put the handle on the position as shown on Fig. 3 to tighten the V-belt. To put it as shown on the position of Fig. 4 to loosen the V-belt. (Table 1)

C B A	 / min						
	50 HZ	100	250	350	500	850	1700
	60 HZ	150	340	400	600	1100	2200
		AB1	AB2	AC1	AB3	AC2	AC3

II-2. APRON, CARRIAGE, CROSS SLIDE & TOP SLIDE

The carriage is fitted on the V-way of the bed without clearance. To control the apron handwheel for its longitudinal moving back and forth. To press the half-nut handle (A on Fig. 5) then it will move forward automatically through the leadscrew when the machine is running.



Fig. 1



Fig. 2

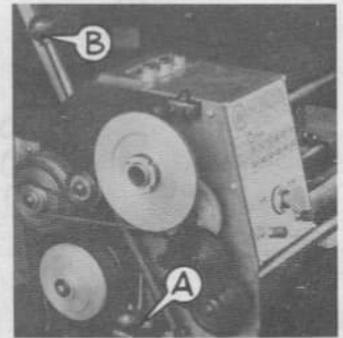


Fig. 3



Fig. 4

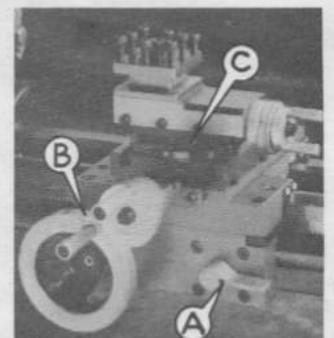
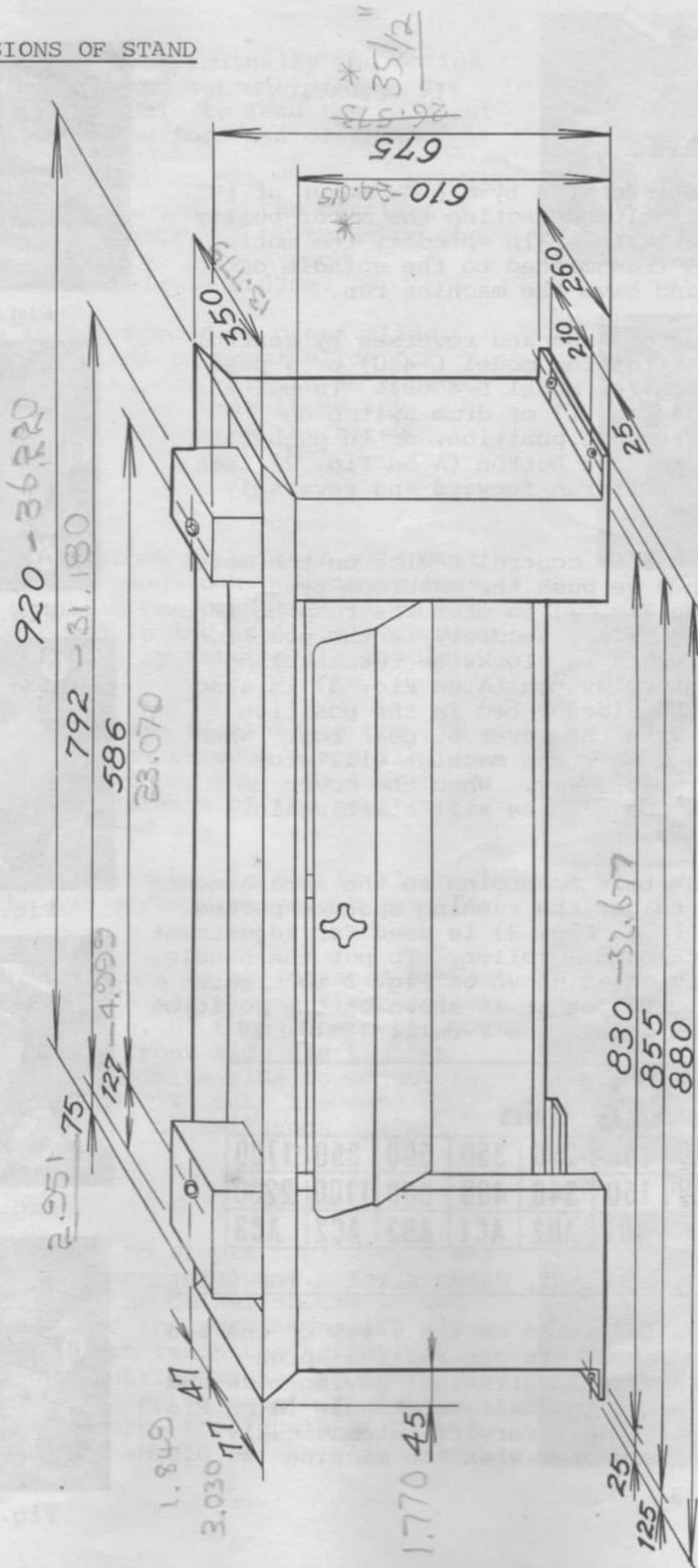


Fig. 5

I-7. DIMENSIONS OF STAND



II-5. FEEDING

To move the apron, carriage, cross slide and top slide by controlling those handwheel and handles built-in for feeding. To arrange the gears combination as Table 2 and to press the half-nut handle for automatic feeding.

mm/⌀	0.09		0.18		
	WS				
	Z1	30	80	60	80
	Z2	80	25	80	25
LZ	H	80	H	80	

Table 2

II-6. THREAD CUTTING

The machine is available for cutting of English, Metric and Module threads. To arrange the combination of gear sets as Table 3 to cut threads expected. Be sure the gears mesh exactly when setting any set of gears combination.

The standard gears combination supplied with the machine are W_s , Z_1 , Z_2 & L_z as shown on Table 2.

To press the half-nut handle on the apron to clutch the half nut at the leadscrew then the carriage will feed longitudinally thus to get thread cutting.

During cutting threads, the half-nut handle can not be disengaged until the cutting process being finished except cutting metric threads with pitch same as that of leadscrew or multiple of that of leadscrew. But when a thread dial indicator be fitted and used then it can be disengaged after each cutting during cutting metric threads.

II-7. THREAD DIAL INDICATOR (To be supplied as special request)

A thread dial indicator is fitted at the end of side of apron and used for metric threads cutting through a worm gear clutching the leadscrew.

By setting the correct worm gear and selecting the appropriate index number as indicated on Table 4 to clutch at the leadscrew to obtain the thread expected.

When the thread dial indicator be used, it will be more convenient in operation because the carriage can be moved reversely by controlling the apron handwheel only after disengaged the half-nut handle.

To loosen the hexagonal setscrew (A on Fig.8-1) to disengage the worm gear of indicator from leadscrew for release of cutting control and change of worm gear.

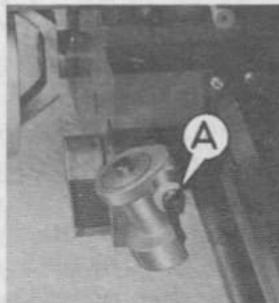


Fig. 8-1

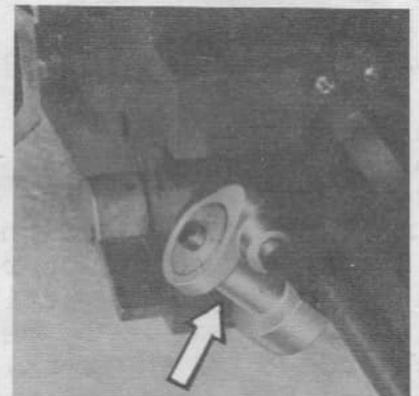


Fig. 8

III. SERVICE & MAINTENANCE

II-1. USAGE OF MAIN ACCESSORIES

(1). 3-jaw Scroll Chuck

The three jaws scroll chuck is good to grasp the cylindrical or symmetrical works. To use the handle supplied with chuck for mounting and dismantling chuck. When use the handle to tighten or loosen the jaw from the hole then three jaws will grasp or release the work simultaneously.

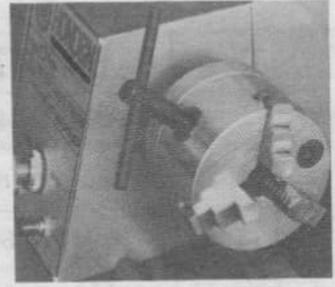


Fig. 9

(2). 4-jaw Independent Chuck

The 4-jaw independent chuck is good to grasp multilateral works such as trigonal, tetragonal, hexagonal, octagonal and so on. The 4 jaws will be adjusted to clamp or release the work separately. The cylindrical work is also can be clamped by a 4-jaw chuck for eccentric machining.

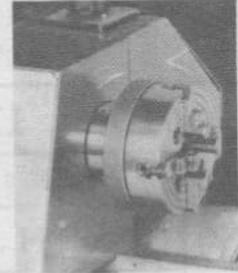


Fig. 10

(3). Drill Chuck

The drill chuck M.T. 2 with 3 self-centering jaws can be fitted inside of the spindle of tailstock for twist and center drilling.

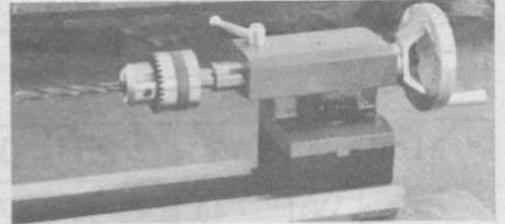


Fig. 11

(4). Rolling Center

The rolling center M.T. 2 can be fitted inside of the spindle of tailstock. It is used to support the end of the work for smooth running.

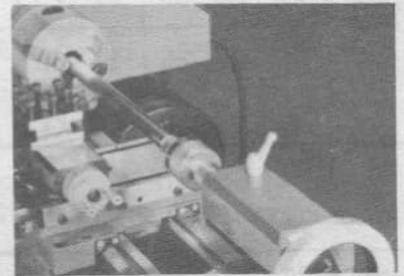


Fig. 12

(5). Steady Rest

The steady rest is mounted on the bed way by a setscrew through a mounting plate at the bottom of the bed way. It is used to support the columnar work for smooth cutting by three slide backings which to be adjusted to hold the work symmetrically.

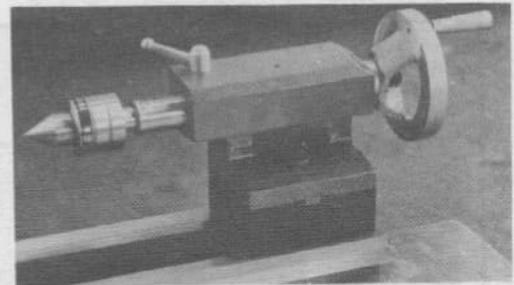


Fig. 12-1

To loosen the hexagonal nut (A on Fig. 13) and knurl screw (B on Fig. 13) to pull out the slide backings (C on Fig. 13) then adjust it to hold the work. The slide backings should hold the work without clearance but not to clamp it. The slide points should be lubricated well to prevent from damage.

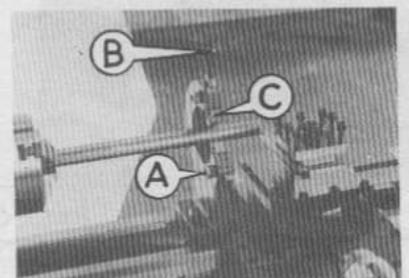


Fig. 13

Metric Threads

mm	0.4	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2.5	3
	W _s 40	40	40	40	40	40	40	40	40	40	40
	Z ₁ H 80	H 80									
	Z ₂ 30 60	40 60	35 60	40 60	50 40	50 40	75 60	70 60	80 60	75 60	75 60
	L _z 75 H	80 H	50 H	50 H	75 H	60 H	50 H	40 H	40 H	30 H	25 H

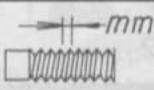
English Threads

n/1"	10	11	13	19	20	22	40	44
	W _s 40	40	40	40	40	40	40	40
	Z ₁ H 80	H 50	H 60					
	Z ₂ 55 20	50 20	65 40	50 30	55 40	50 40	55 80	50 80
	L _z 65 H	65 H	50 H	75 H	65 H	65 H	65 H	65 H

Module Threads

Mod	0.2	0.25	0.3	0.5	0.6	0.7
	W _s 40	40	40	40	40	40
	Z ₁ H 60	H 75	H 80	H 80	H 80	H 80
	Z ₂ 55 75	55 60	55 50	55 30	55 25	55 20
	L _z 70 H	75 H				

Table 3

 mm		
0.4	32 T	1
0.5		
0.7		
0.8		
1.0		
1.25		
1.75		
2.0		
2.5		
3.0		
1.5	1 - 8	

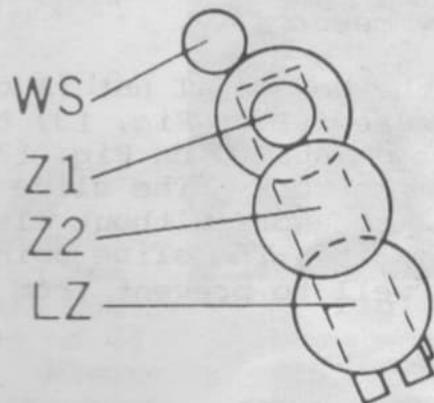


Table 4

(6) Follow Rest

The follow rest is mounted on the carriage by two setscrews and moves together with the carriage. It is used to support the work to prevent vibration during drilling or cutting. The two slide backings to be adjusted to hold the chisel at the same way as the steady rest.

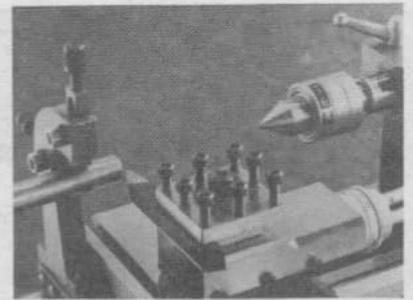


Fig. 14

(7). Single Toolpost

It is mounted on the top slide and used to set the chisel.

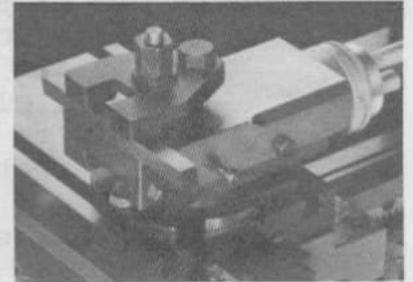


Fig. 15

(8). 4-way Toolpost

The 4-way toolpost is mounted on the top slide and used to set the chisel. It can set 2 chisels simultaneously. The chisel can be adjusted to the required position by moving the toolpost after adjusting the hexagon nut.

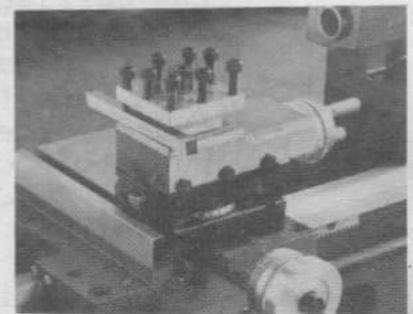


Fig. 16

(9). Quick Change Toolpost

The quick change toolpost is also mounted on the top slide and used to set the chisel. It also can set 2 chisels simultaneously. The chisel is fixed on a toolholder in advance so we just change the toolholder to get the required chisel quickly.

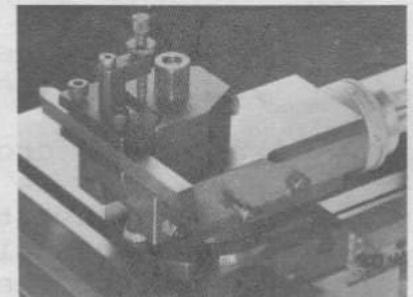


Fig. 17

(10.) Carrier

The carrier is used to hold the columnar work like cone for machining between the centers. It can be supported by a screw fitted in the driving plate for stable motion. Three carriers in size 1", 3/4" & 1/2" can be supplied as request.

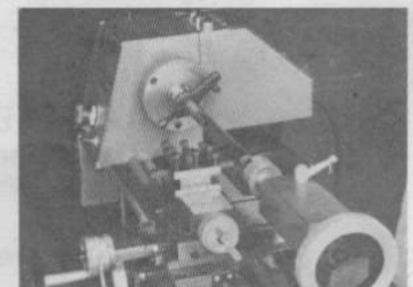


Fig. 18

(11). Gear Sets

There are 9 pcs of change gears and one sleeve can be supplied as request for cutting threads. With these change gears, the threads can be cut from 0.4mm to 3mm in metric pitch, from 0.2 MOD to 0.7 MOD in module pitch and from 10 threads to 44 threads per inch in English pitch. Please see the Table 3 on page 11 for arrangement of gears combination.

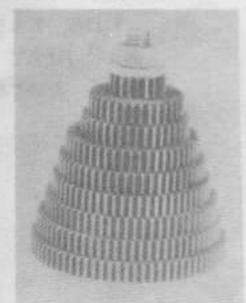


Fig. 19

III-2. ADJUSTMENT OF CLEARANCE

After operation of a certain period, a clearance may be appeared. To take the procedures mentioned below for rectification.

(1). Pulley and gear on the drive spindle

To loosen the screw pin (part No. LH-012 of Fig. 27) and turn the nut by anticlockwise then adjust the pulley and gear (part No. LH-011 of Fig. 27) close to the collar securely. Finally to fasten the nut and screw pin to rectify the clearance.

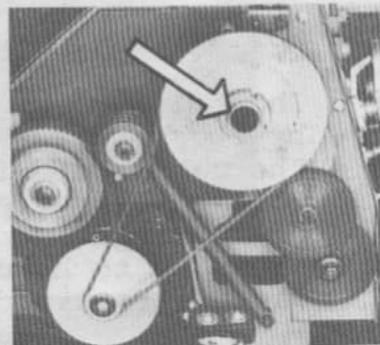


Fig. 20

(2). Cross Slide

The movement of the cross slide on the carriage is supported by a gib strip along the slideway. The gib strip is fastened by three screw pins with nuts (A on Fig. 21). To loosen the nut then fasten the screw pin and nuts to rectify the clearance.

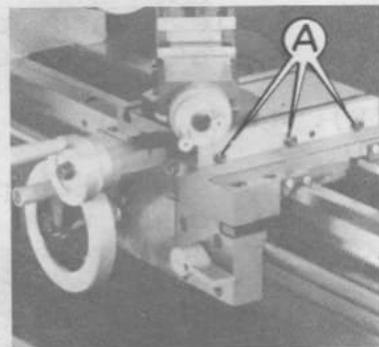


Fig. 21

(3). Top slide

The top slide is moved on the slideway above the cross slide by the support of a gib strip. To adjust the three screw pins (A on Fig. 22) with the same way as that of cross slide to rectify the clearance.

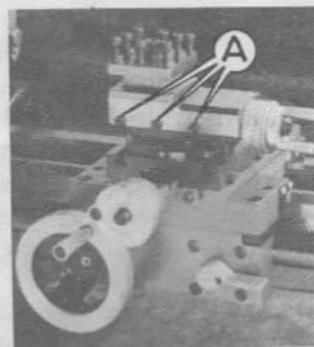


Fig. 22

(4). Between cross slide & carriage

To adjust the screw pin (A on Fig. 23) on cross slide to rectify the clearance between the cross feed screw (part No. LS-007 on Fig. 29) and the feed nut (part No. LS-008 on Fig. 29).

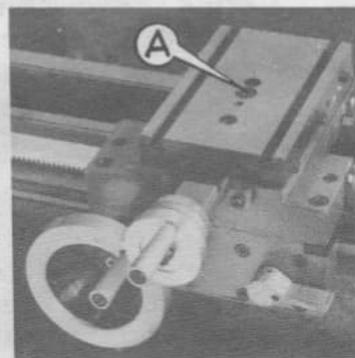


Fig. 23

(5). Feed screw on cross slide & top slide

To loosen the nut in central part of the handle wheel of both slides then adjust the feed screw to rectify the clearance.

(6). Between the Half-nut & Leadscrew

To loosen the two hexagonal screws at the right side of half-nut handle then adjust the screw pin at the underside of apron to rectify the clearance.

(7). Replacement of Leadscrew Shear Pin

The leadscrew shear pin may be broken due to overload or improper operation. To loosen the hexagon screw then take off the gear and shear pin. To set shear pin and gear then tighten the screw again.

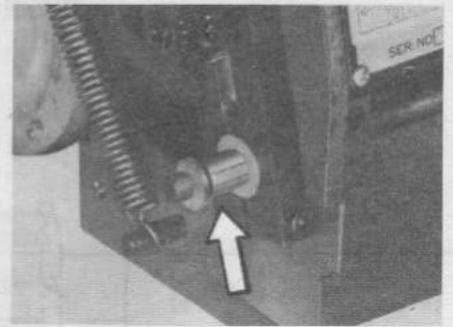
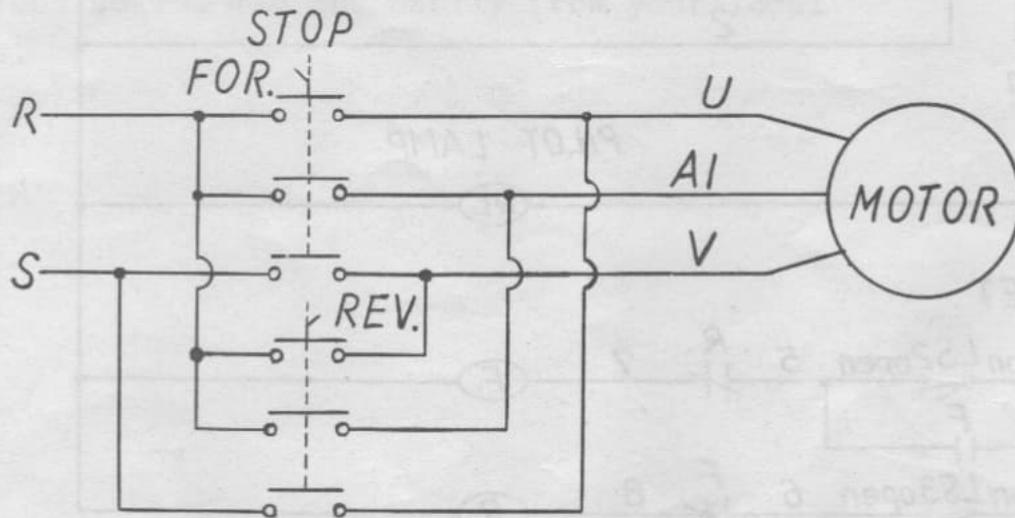


Fig. 24

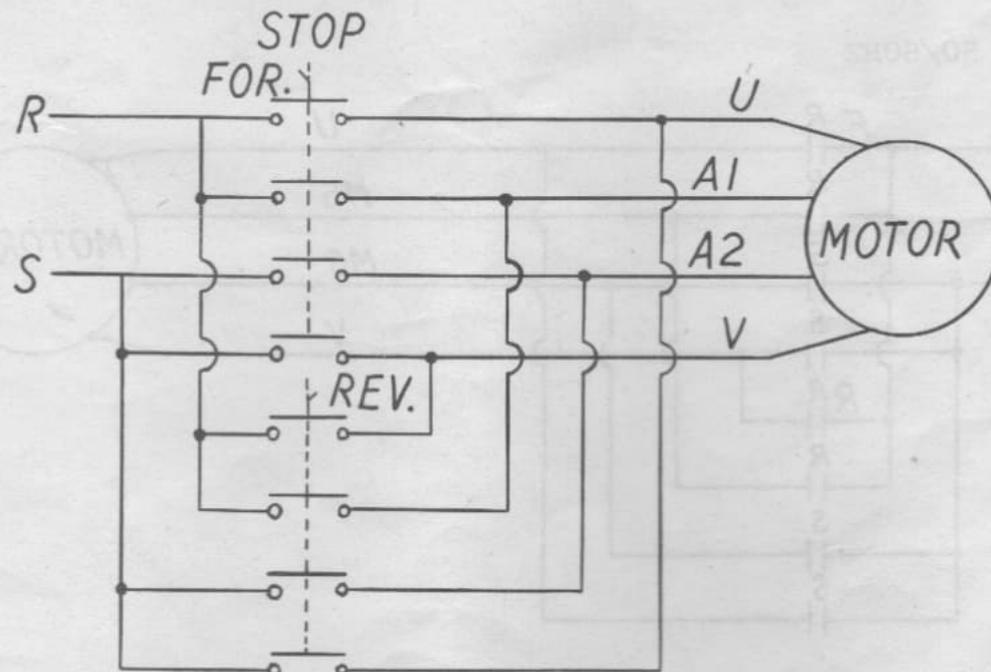
III-3. WIRING DIAGRAM

DRUM SWITCH TYPE

1PH 220V 50/60HZ

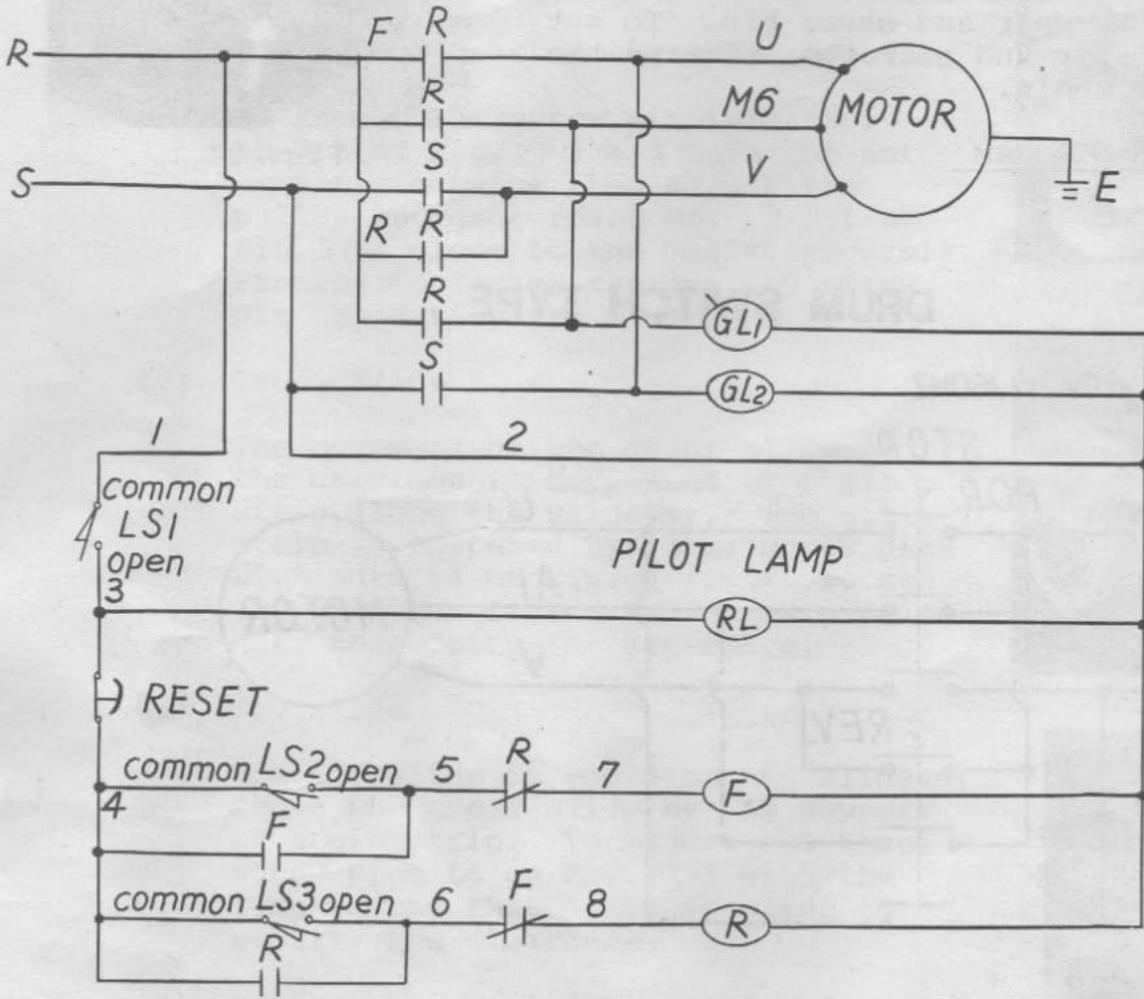


1PH 110V 50/60HZ

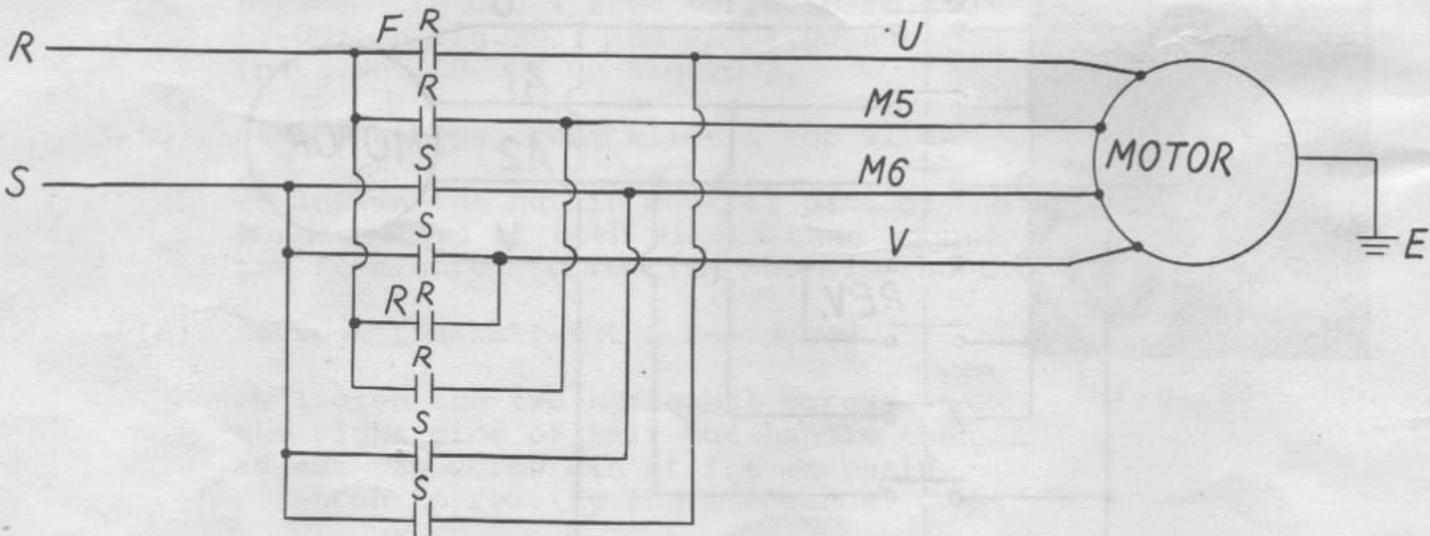


PUSH BUTTON SWITCH TYPE

1PH 220V 50/60HZ



1PH 110V 50/60HZ



F: FORWARD
R: REVERSE

RL: POWER LAMP
GL1: FORWARD LAMP

GL2: REVERSE LAMP

III-4. PARTS SECTION

NOTICE

When ordering parts or making enquiries, please mention the manufacturing serial number & model number shown on the nameplate of machine; and part number as well as description of parts indicated in the following illustrations.

Some parts like nuts, bolts, screws, springs, washers, pins and bearings are in standard dimensions so you may get easily from your local markets.

Fig. 26. GENERAL CHART

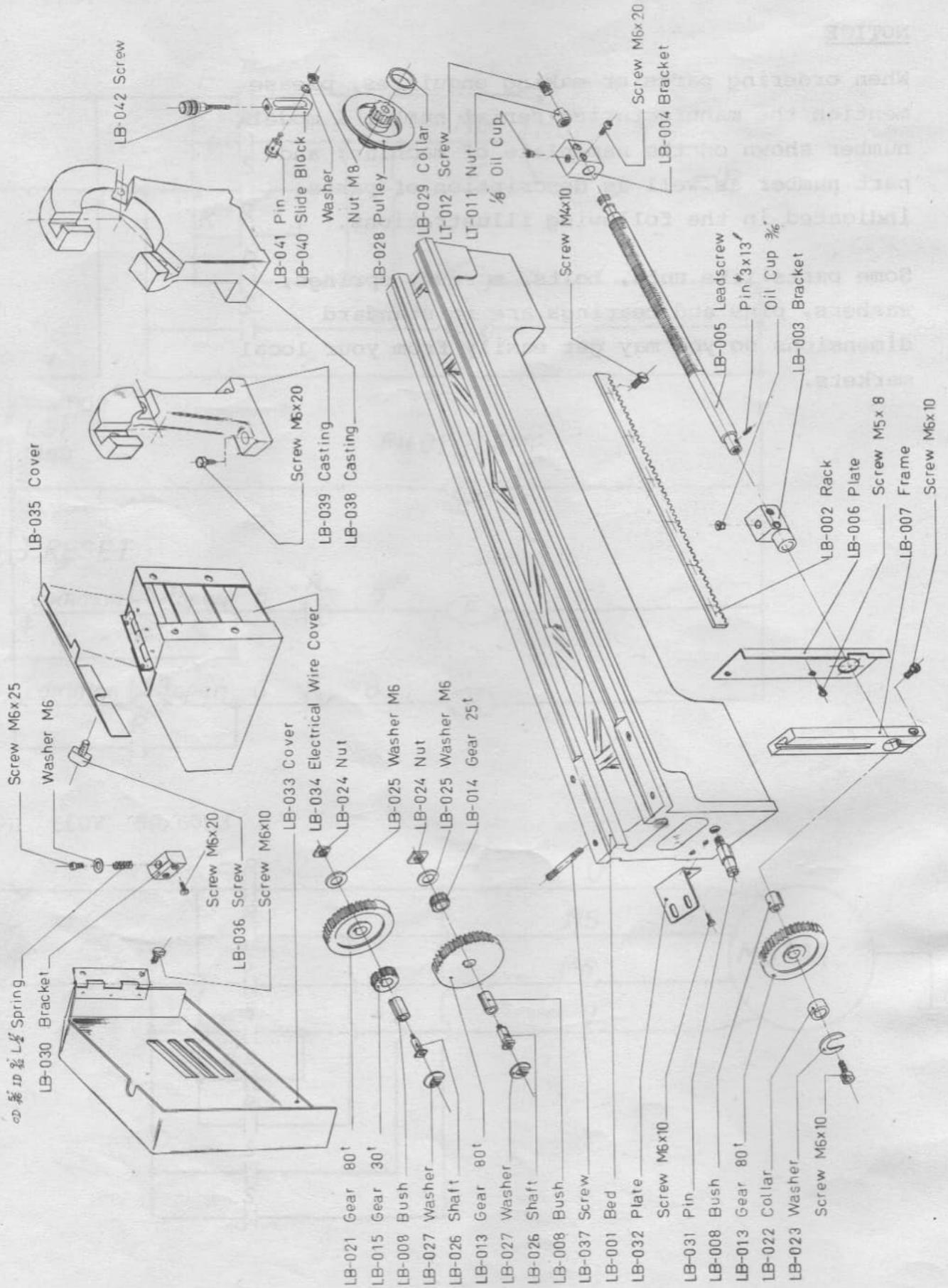


Fig. 27. HEADSTOCK

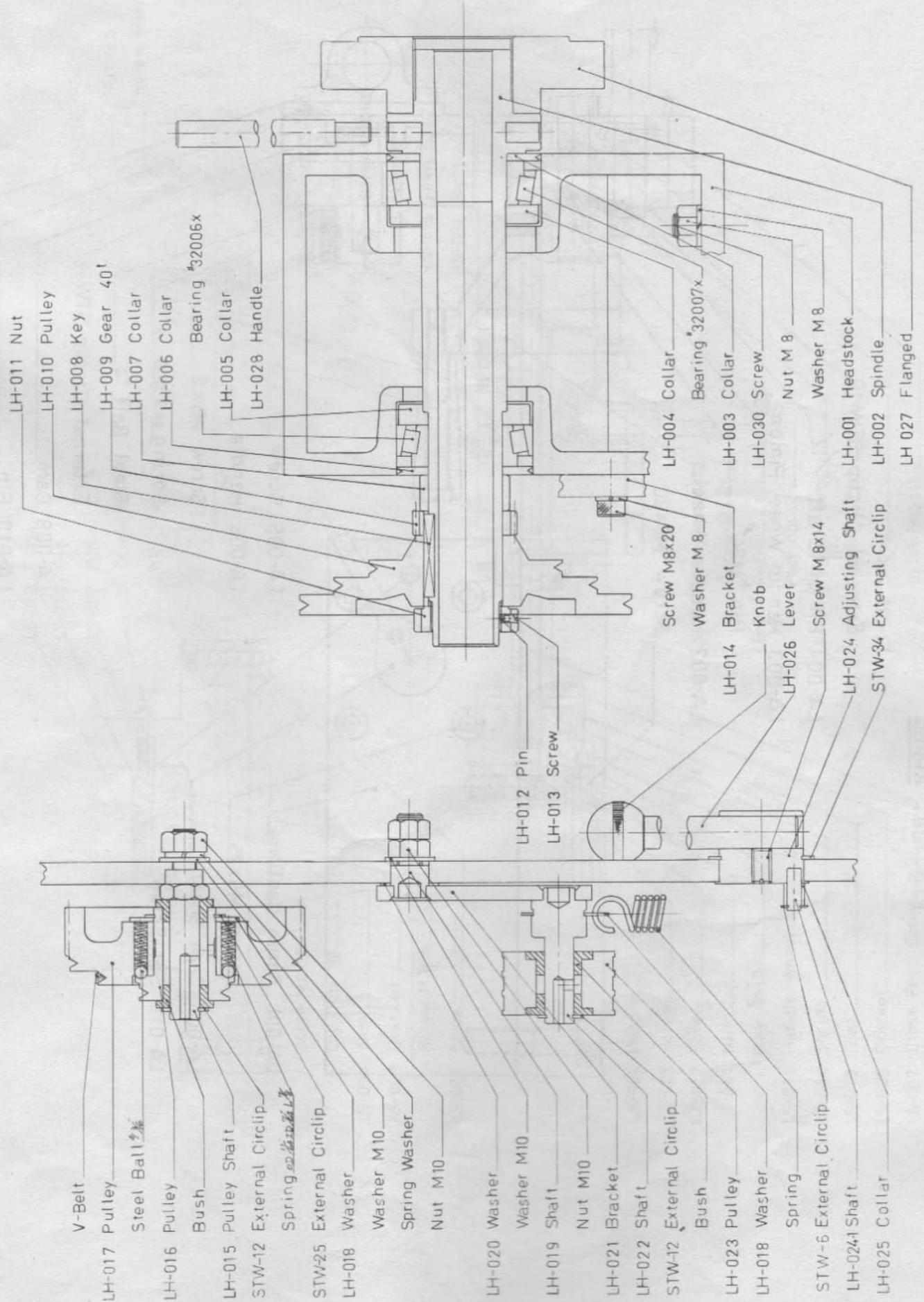


Fig. 28. APRON

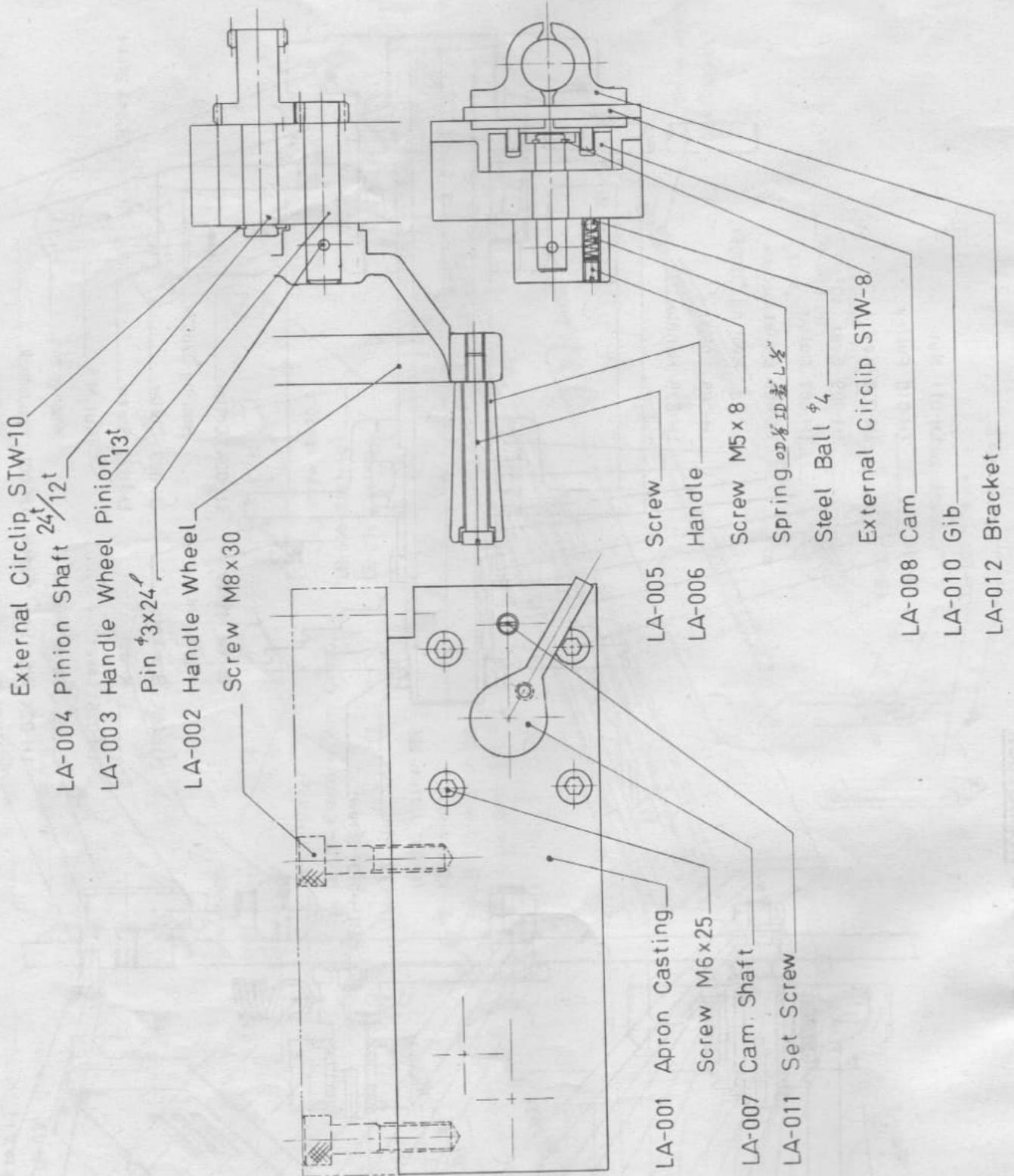


Fig. 29. CROSS SLIDE

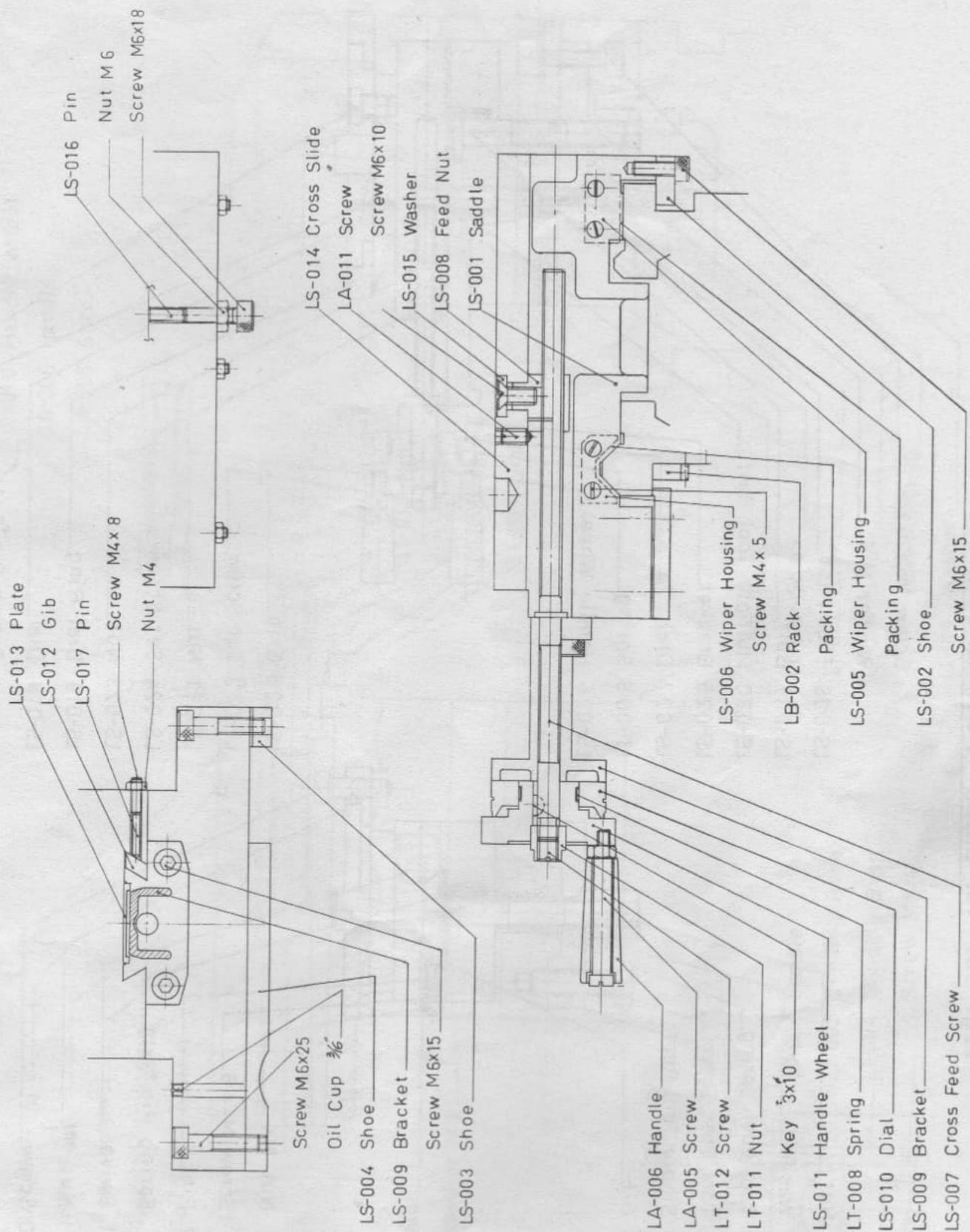
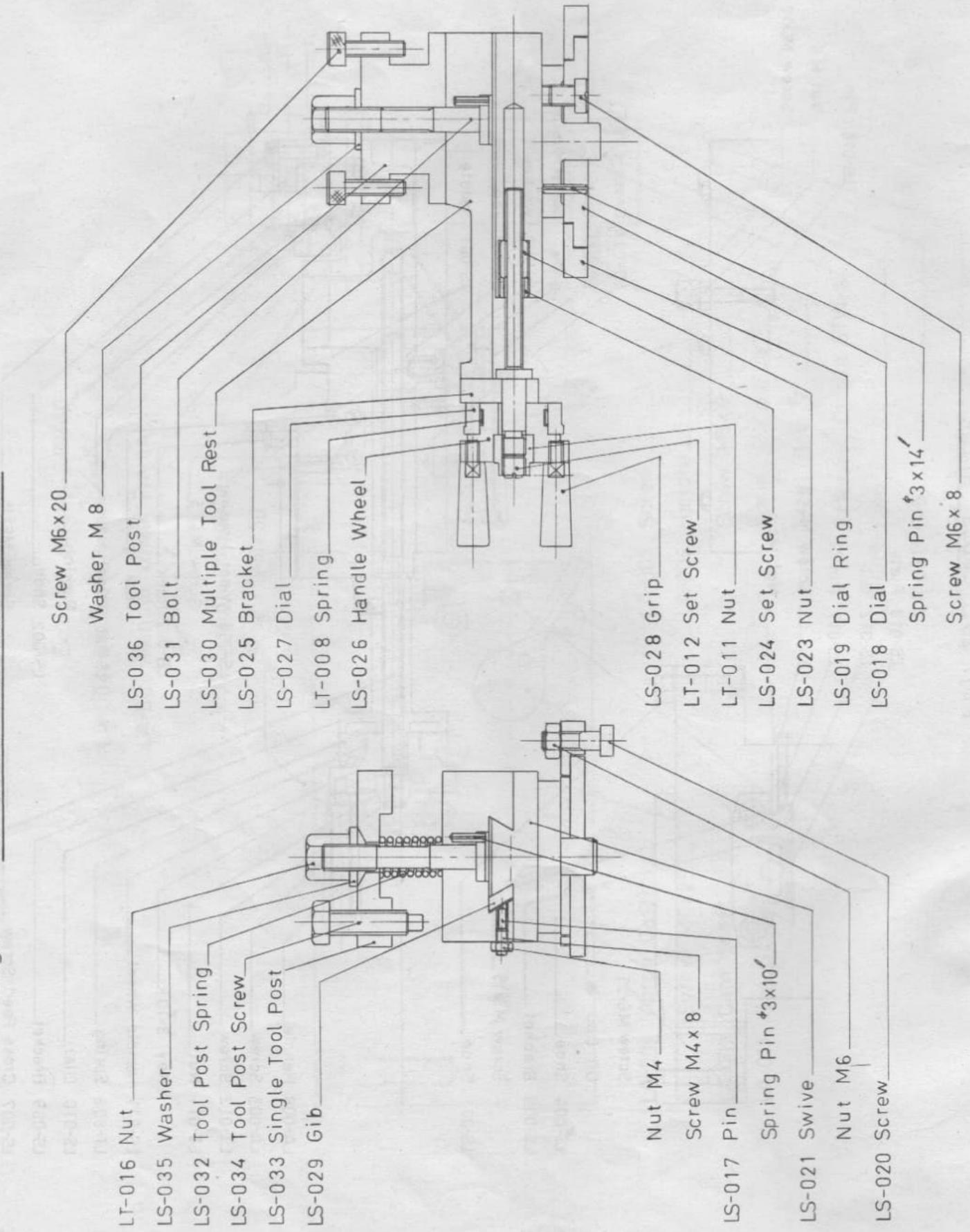


Fig. 30. TOP SLIDE & SINGLE TOOLPOST



LT-016 Nut

LS-035 Washer

LS-032 Tool Post Spring

LS-034 Tool Post Screw

LS-033 Single Tool Post

LS-029 Gib

Nut M4

Screw M4x8

LS-017 Pin

Spring Pin #3x10

LS-021 Swive

Nut M6

LS-020 Screw

Screw M6x20

Washer M8

LS-036 Tool Post

LS-031 Bolt

LS-030 Multiple Tool Rest

LS-025 Bracket

LS-027 Dial

LT-008 Spring

LS-026 Handle Wheel

LS-028 Grip

LT-012 Set Screw

LT-011 Nut

LS-024 Set Screw

LS-023 Nut

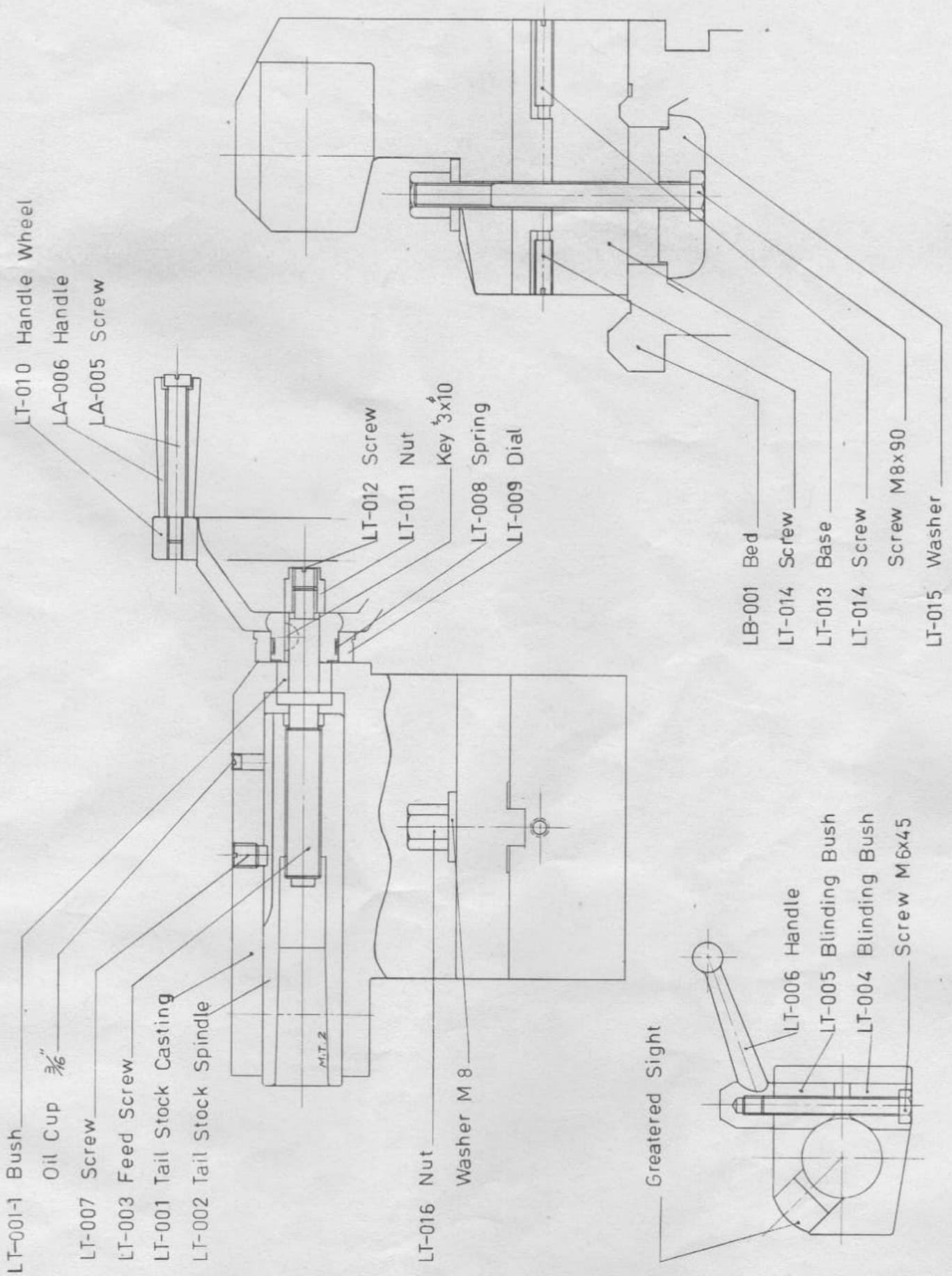
LS-019 Dial Ring

LS-018 Dial

Spring Pin #3x14

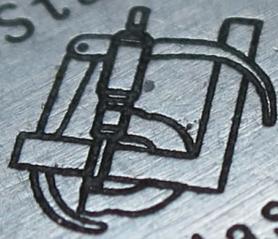
Screw M6x8

Fig. 31. TAILSTOCK



NOTES

The L.S. Starrett Co.



Athol, Mass. U.S.A.