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PREFACE

Thank you for purchasing our lathe to be your manufacturing tool. Before operating the lathe, it is necessary to study our manual. If operated correctly, the machine is very efficient and very easy-to-work with.

This manual consists of 7 chapters, mainly including operation, maintenance and list of spare parts. Please read the manual thoroughly from the first page to the last in order to be familiar with this machine, and to work efficiently and accurately with the lathe. Besides, based on safety consideration, the operator must be well trained according to all the instructions in the manual. Any damage of the machine and injury on the operator that is caused by miss-operation and disregard of our instruction are not covered under warranty.

In addition to the instructions listed in our manual, there are some matters needing attention as well:

1. Do not expose the machine outdoors in order to avoid any damage caused by the weather. Besides, please keep the machine away from cooling blower.
2. Lubricate the machine with recommended or specified lubricant or grease.
3. Remove chips from time to time to keep the machine clean, this will prolong the life span of the lathe.
4. If the bedway is dented, please do not move the carriage till the bedway is repaired.

If you have any question, please do not hesitate to contact personnel at ACER group.

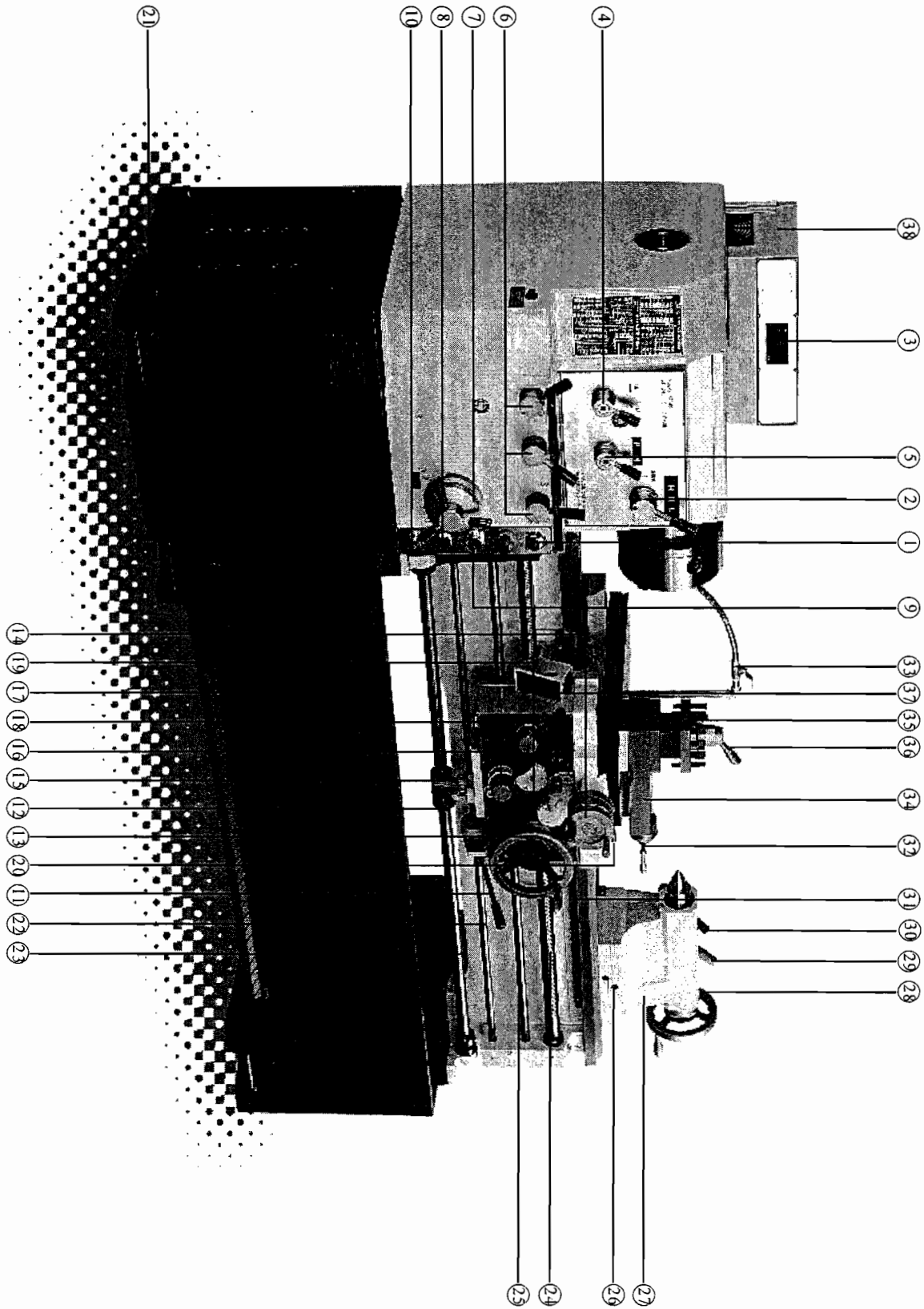
SPECIFICATIONS

Unit: Metric

Model	E-lathe 1930V	E-lathe 1940V	E-lathe 1960V	E-lathe 1980V	E-lathe 2140V	E-lathe 2160V	E-lathe 2180V
Swing over bed	470mm (18.5")						
Swing over cross slide	280mm (11.02")						
Center distance (mm)	760mm/29.92"	1000mm/39.37"	1500mm/59.06"	2000mm/78.74"	1000mm/39.37"	1500mm/59.06"	2000mm/78.74"
Swing over gap	690mm (27.17")						
Bed width	300mm (11.81")						
Spindle nose	ASA D1-6/DI-8 (Opt)						
Spindle bore	58mm/2.28"; 78mm/3.07" (Opt)						
Taper of spindle bore	MT#6						
Spindle speed	Low range 20~170 RPM; High range: 235~2000RPM						
Inch threads range	4~56 TPI						
Metric threads range	P0.5~p7						
Longitudinal feeds range	0.05~0.82mm (0.002~0.0322")						
Cross feeds range	0.02~0.4mm (0.00079~0.01575")						
Leadscrew diameter	35mm (1.38")						
Leadscrew pitch	4TPI or 6mm						
Taper of Tailstock' quill	MT#4						
Tailstock quill travel	150mm (5.9")						
Tailstock quill's diameter	68mm (2.68")						
Main motor drive	5.625KW/7.5HP; 7.5KW/10 HP						
Coolant pump	0.1KW (1/8HP)						
Compound rest travel	125mm (4.92")						
Cross slide travel	245mm (9.65")						
Machine dimension (cm)	189x81x122	215x81x122	265x81x122	317x81x122	215x81x125	265x81x125	317x81x125
(inch)	74.5x31.9x48"	84.7x31.9x48"	104.4x31.9x48"	124.9x31.9x48"	84.7x31.9x49.3"	104.4x31.9x49.3"	124.9x31.9x49.3"
Packing dimension (cm)	198x95x162	228x95x162	279x95x162	337x95x162	228x95x162	279x95x162	337x95x162
(inch)	78x37.5x63.8"	89.7x37.5x63.8"	109.9x37.5x63.8"	132.7x37.5x63.8"	89.8x37.5x63.8"	109.9x37.5x63.8"	132.7x37.5x63.8"
Net weight (kgs)	1720	1800	2075	2380	1810	2135	2440
(lbs)	3784	3960	4565	5236	3982	4697	5368
Gross weight (kgs)	1820	1900	2225	2530	1910	2285	2590
(lbs)	4004	4180	4895	5566	4202	5027	5698

1. INVERTER DRIVE ENGINE LATHE

1-1 Machine Assembly



Note: Photo is shown with longitudinal handwheel on the right side of the apron.

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Spindle speed control switch	20	Carriage clamping lever
2	Spindle speed H/L shifting lever	21	Foundation leveling screw
3	Speed display	22	Spindle operation control rod
4	Forward/Reverse Shifting lever	23	4 position automatic feed stop selection rod
5	Thread/Feed Selection lever	24	Leadscrew
6	Thread/Feed Shifting lever	25	Auto-feed rod
7	10-step feed selection dial	26	Tailstock adjusting gib screw
8	Alarm removing button	27	Tailstock body
9	Jog button	28	Tailstock handwheel
10	Coolant supply button	29	Tailstock body clamping lever
11	Spindle control lever	30	Tailstock spindle locking lever
12	Adjustable trip dog	31	Rack
13	Longitudinal feed hand wheel	32	Compound rest handle
14	Cross slide handle	33	Coolant control ball valve
15	Trip plunger	34	Compound rest
16	Auto feeding engaged lever	35	Four way tool post
17	Foot brake pedal	36	Tool post clamping lever
18	Half nut engaged lever	37	Thread chasing dial
19	Feed axis selector	38	Electric Cabinet

2. UNPACKING & MACHINE INSTALLATION

2-1 Unpacking

When the machine arrives,

Check first to see if the crate or container is damaged.

Open the crate and inspect for any damage to the machine or missing parts.

If you find any damage or missing parts, please contact your distributor or the appropriate insurance company immediately.

Failure to report any discrepancies or damage immediately could result in a delay or the possibility of a claim being denied.

2-2 Lifting

Please refer to figure 2-2 for unloading and moving of machine.

1. Use hanging jig to lift the lathe.
2. Locate the jig at approximately the center of the lathe.
3. Move apron and tailstock towards the end of bed to balance the weight.
4. To insure the accuracy of machine, not to jar the machine when it is placed on its foundation.
5. The backside of the machine should be at least 600mm (24") away from any wall or obstruction to have sufficient space for wiring the input power.

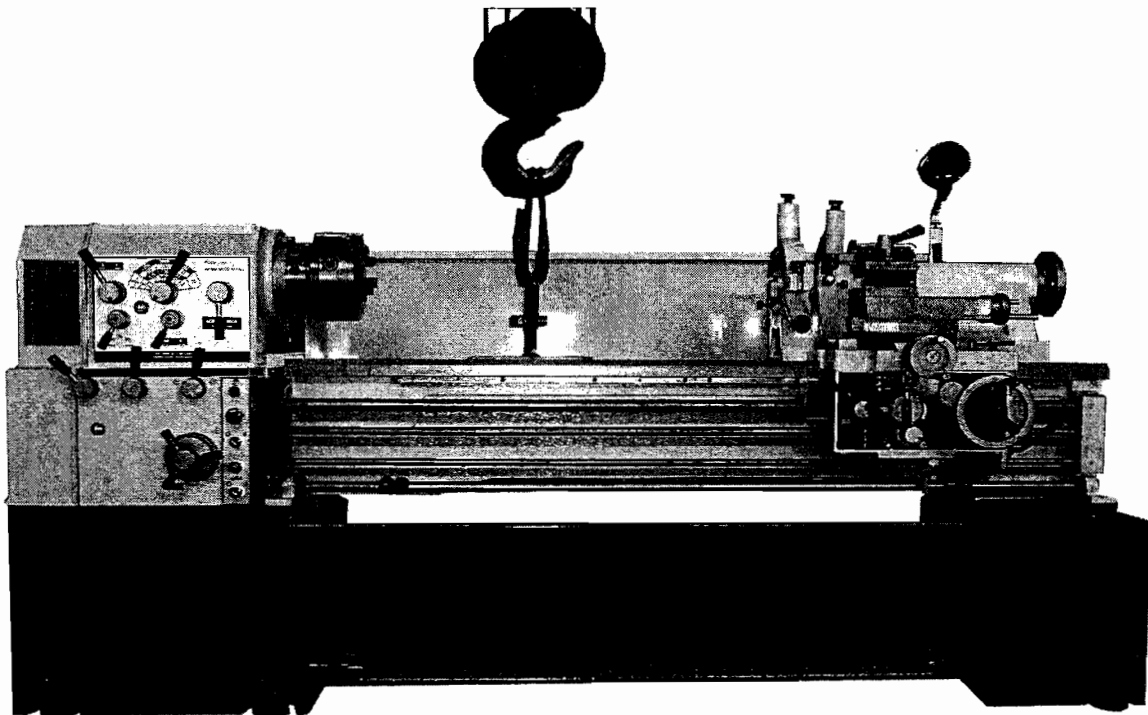
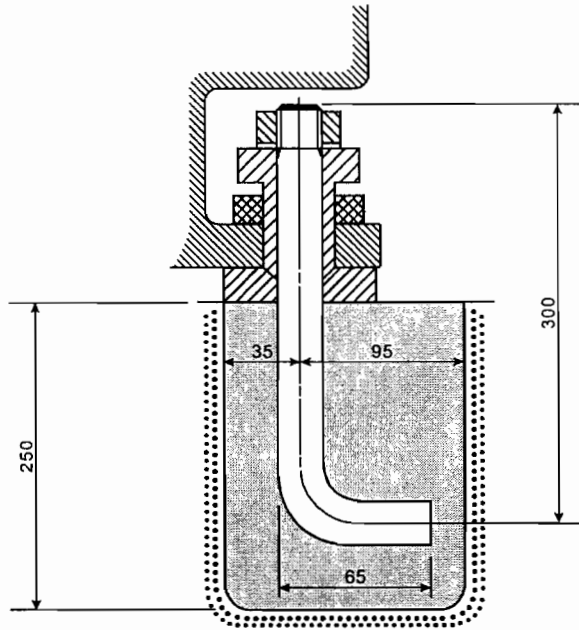


Fig.2-2

2-3 Basic Foundation

With today's common usage of tungsten carbide cutting tools, heavy cutting practice and higher spindle speed, a good foundation is a must to avoid vibration. Please refer to figure 2-3 for recommended foundation.



UNIT-mm

Fig2-3

2-4 Cleaning

Before shipping, the machine is protected with a special anti-rust agent. Before operating the machine, this agent must be removed. This can be done using a soft brush/cloth soaked with cleaning solvent or kerosene. To avoid the danger of fire or explosion, do **NOT** use gasoline or cellulose solvent. After the anti-rust agent is removed, the machine should be properly lubricated and all moving parts be checked for proper operation.

2-5 Leveling

Once the machine is on its foundation, it is time for leveling. Two machinist levels (accuracy 0.02mm/1000mm) should be used. Place levels on top-slide to level machine for longitudinal and transverse directions. Tighten foundation bolts, and re-check. If the lathe is not level, loosen foundation bolts and re-level the machine. Tolerance should be within 0.04mm/1000mm.

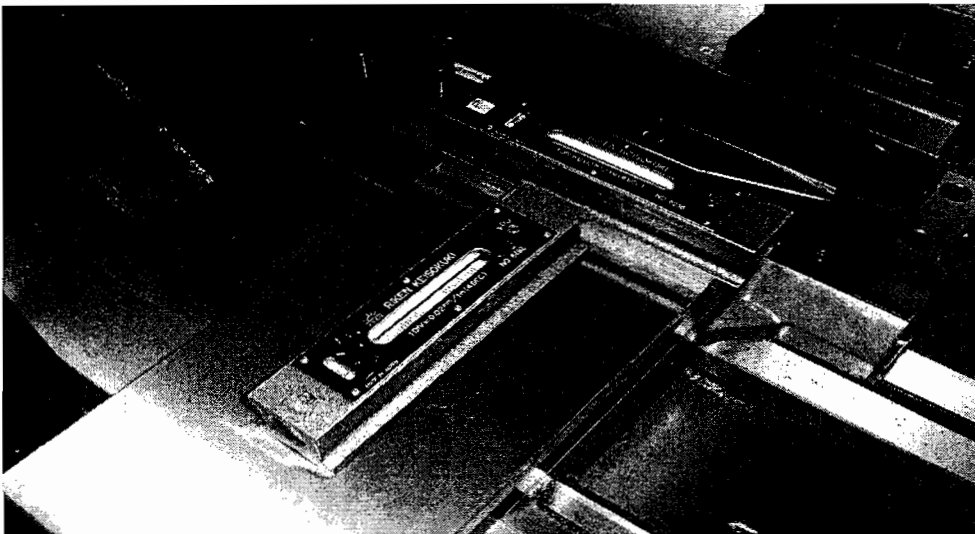


Figure 2-5

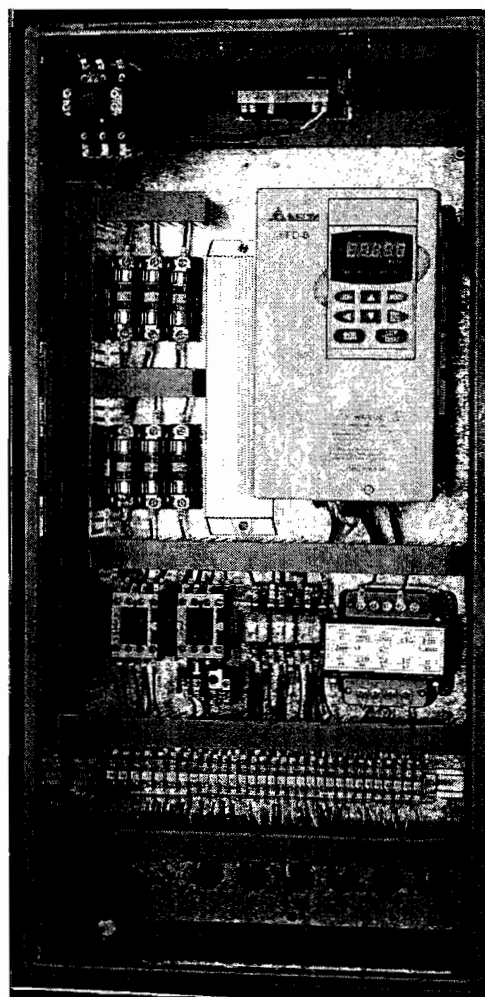
3. ELECTRICAL CIRCUIT CONTROL

3-1 Electrical wiring

The electrical wiring can be found by opening the electrical cabinet located on the back of the machine. Connect the input power source wires to the terminals labeled R.S.T. (For 16", 18" & 21" use 6 gauge wire, for 22" & 26" use 4 gauge wire).

The connection between the power source and the machine should be equipped with a safety fuse-breaker. Also please make sure the machine is properly grounded.

Note: Inverter brand may be different on some regional requirements.



3-2 Electrical Equipment

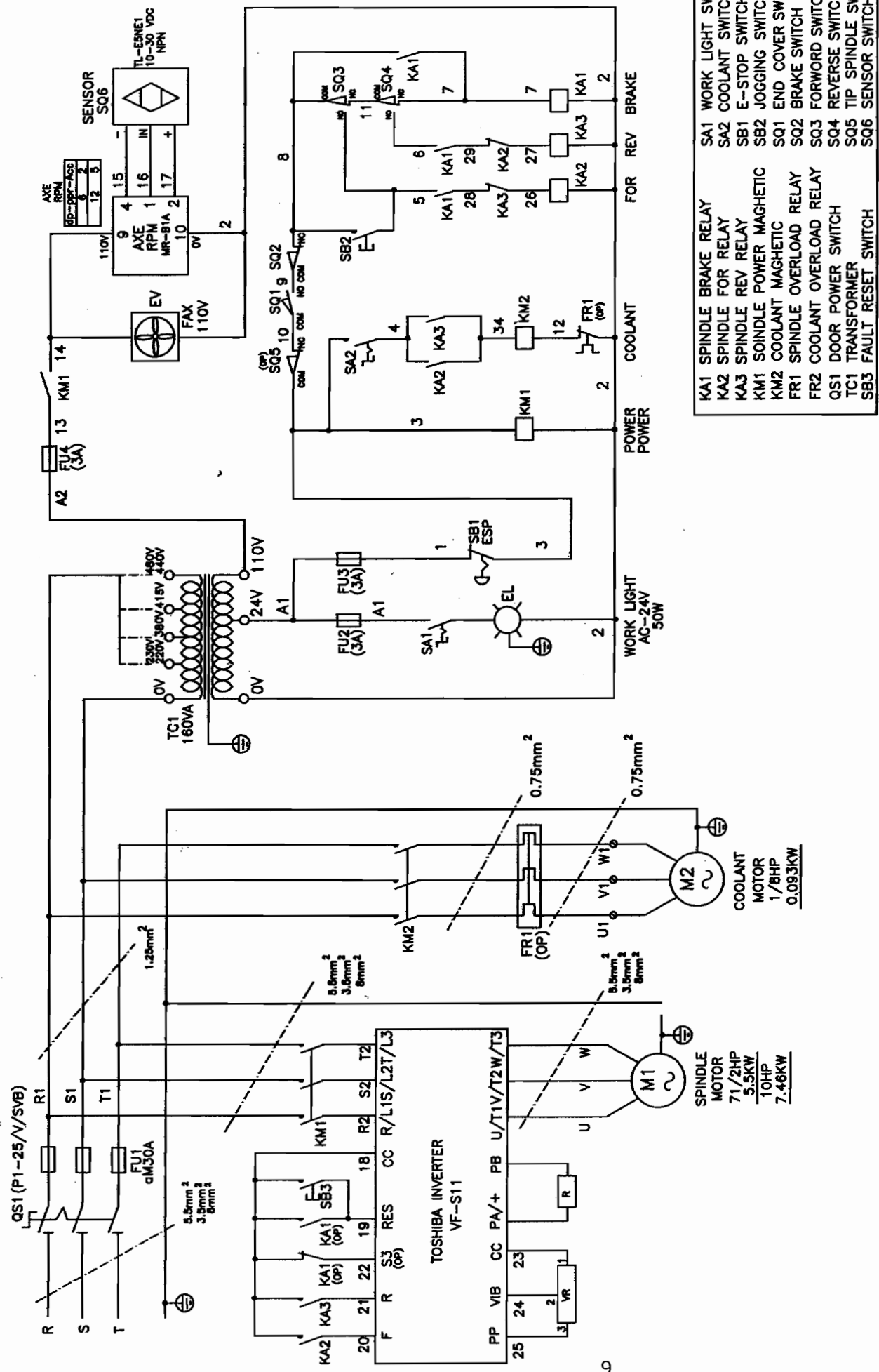
1. To protect the motors from burning out due to an overload, the electrical control box is equipped with overload circuit breakers and magnetic contactors.
2. A micro switch is connected to the main switch.
3. The foot brake is connected to a micro switch. Stepping on the foot brake stops the lathe much faster than turning off the switch. After stepping on the foot brake, the forward/reverse lever must be set to neutral before the spindle can be operated again.
4. The spindle will rotate continuously as long as the jog button $\text{\textcircled{T}}$ is pressed.

3-3 Electrical Cautions

After power connection, the rotation of the spindle must be checked. To do this, turn the main switch to "ON" and push the jog button $\text{\textcircled{T}}$, if the rotation is counter clockwise (looking from the tailstock), the rotation is correct. If the rotation is clockwise, please exchange any two of the three wires on R.S.T. This will correct the problem.

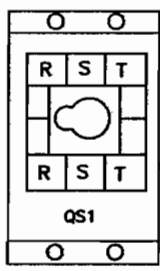
Electric Circuit, Diagram & Breakdown of Electrical Components

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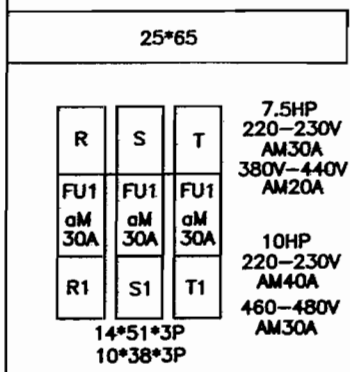
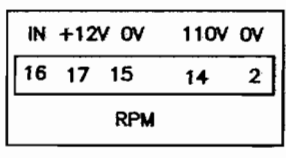
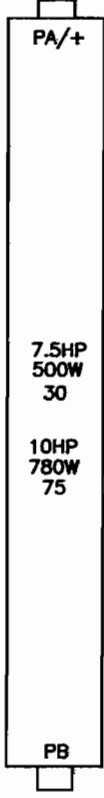
- KA1 SPINDLE BRAKE RELAY
- KA2 SPINDLE REV RELAY
- KA3 SPINDLE POWER MAGNETIC
- KM1 SPINDLE POWER MAGNETIC
- KM2 COOLANT MAGNETIC
- FR1 SPINDLE OVERLOAD RELAY
- FR2 COOLANT OVERLOAD RELAY
- QS1 DOOR POWER SWITCH
- TC1 TRANSFORMER
- SB3 FAULT RESET SWITCH
- SA1 WORK LIGHT SWITCH
- SA2 COOLANT SWITCH
- SB1 E-STOP SWITCH
- SB2 JOGGING SWITCH
- SQ1 END COVER SWITCH
- SQ2 BRAKE SWITCH
- SQ3 FORWARD SWITCH
- SQ4 REVERSE SWITCH
- SQ5 TIP SPINDLE SWITCH
- SQ6 SENSOR SWITCH

Company	Model	Description	Coil Voltage	Picture number
	2160	220V-480V 7.5HP-10HP SPINDLE INVERTER	AC-24V	



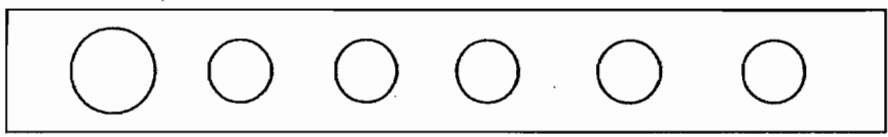
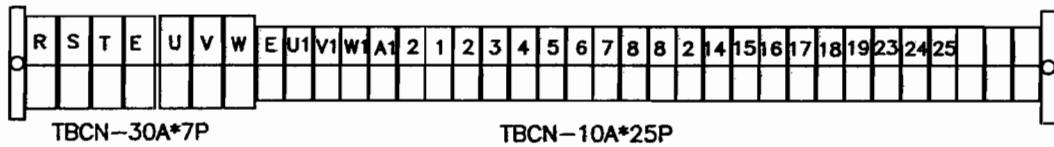
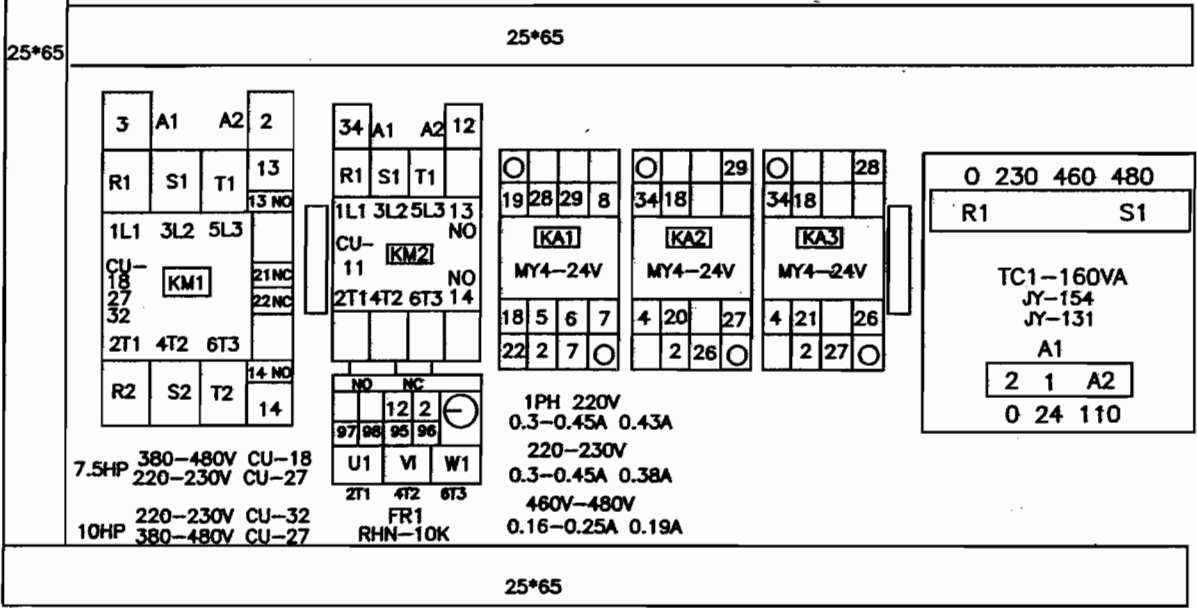
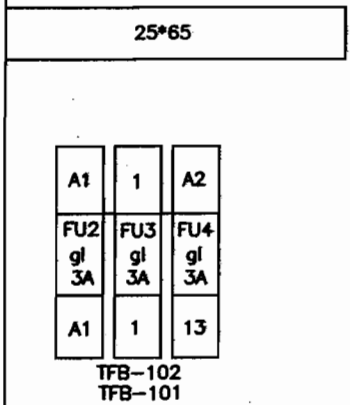
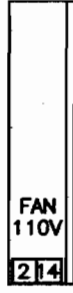
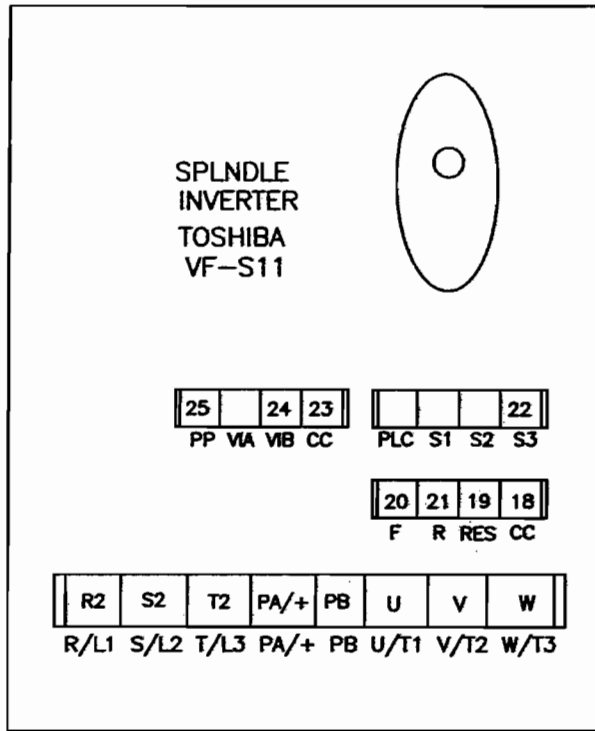
7.5HP
220V-480V
P1-25/V/SVB

10HP
220V-230V
P1-32/V/SVB



7.5HP
220-230V
AM30A
380V-440V
AM20A

10HP
220-230V
AM40A
460-480V
AM30A









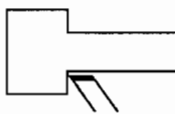









Company	Model	Description	Coil Voltage	Picture number
	2160	220V-480V 7.5HP-10HP SPINDLE INVERTER TOSHIBA	AC-24V	

Item designation	Description and function	Suppliers Reference	Technical data	Supplier	Remarks
1 TC1	Transformer	LCP-TBS jy-154	160VA 0V-480V	LUNG GHI	
2 QS1	Supply disconnecting switch	P1-25/V/SVB	600V 10KA 50A	MOELLER	
3 FU1	Fuse Blocks	FSX-303	3P-600V/30A	GIKOKA	
4 FU2.FU3	Fuse Blocks	TFB-102	250V/10A	GIKOKA	
5 FU4	Fuse Blocks	TFB-101	250V/10A	GIKOKA	
6 FU1	Fuse	10*38*3P	500V/50KA/aM30A	CHANGXIN	
7 FU2.FU3	Fuse	30mm	250V/50KA/gL3A	GIN SING	
8 FU4	Fuse	10*38*1P	250V/50KA/gL3A	GIN SING	
9					
10					
11 KMI	Power magnetic contactor	CU-27	coil AC-24V/15KW	TECO	UL/CSA/CE
12 KM2	Coolant magnetic contactor	CU-11/4a	coil AC-24V/5.5KW	TECO	UL/CSA/CE
13 KA1	Braake relay	MR-4N	coil AC-24V/5A	ARITA	
14 KA2	Spindle for relay	MR-4N	oil AC-24V/5A	ARITA	
15 KA3	Spindle rev relay	MR-4N	coil AC-24V/5A	ARITA	
16 FR1	Coolant overload relay	RHU-10K1	0.16-0.25A/(0.19A)	TECO	UL/CSA/CE
17 INVERTER	Spindle Inverter	VF-S11-4075PL-WN	380V-500V/7.5KW	TOSHIBA	UL/CSA/CE
18 RPM	Spindle rpm	MR-B1A	1P/R(NPN,EXC:12V)	AXE	
19 SQ6	Proximity sensor	TL-E5NE1	10-30VDC / 600HZ	KFPS	
20 X1	Terminal blocks	TBCN-30A	600VA 30A	TEND	
21 X2	Terminal blocks	NHT-2	600VA 10A	TEND	
22 SA2	Coolant selection switch	LSS-251AG	250V 6A/1A	RENY	
23 SB1	Emergency stop switch	LBK-251BR	250V 6A/1B	RENY	
24 SB2	Jogging push button switch	LBFR-251AG	250V 6A/1A	RENY	
25 SB3	Fault reset switch	LBFR-251AR	250V 6A/1A	RENY	
26 VR	Spindle speed	RV24YN20S	B202/2K	TOCOS	
27 SQ1	End cover limit switch	Mj2-1704	250V 15A	MOUJEN	
28 SQ2	Brake limit switch	Z-15GW22-B	250V 15A	OMRON	
29 SQ3	Forward limit switch	Mj2-1704	250V 15A	MOUJEN	
30 SQ4	Reverse limit switch	Mj2-1704	250V 15A	MOUJEN	
31 SQ5	Tip spindle limit switch	XCKN2102G11	240V 10A	TE	
32 M1	Spindle motor	E-4P-60HZ	480V/7.5KW		
33 M2	Coolant motor	YC-220V/380V	480V/ 0.093KW		
34 M3					
35 EV	Fan	GA1123XST	AC-115V/18W	GULF	
36 EL	Work light	A-L81A	AC-24V/50W	ARC	
37 R	Brake resistor	780W/75			

4. TESTING & OPERATION

4-1 Operation Symbols

1	HIGH	High speed revolution	11		Variable adjustment Clockwise: Speed increase Counterclockwise: Speed decrease
2	LOW	Low speed revolution	12		Electrical cabinet
3		Forward revolution	13		Inch threads
4		Neutral gear	14		Metric threads
5		Reverse revolution	15		Auto feeding Rate per revolution
6		Feeding	16		Coolant pump
7		Jogging button	17		Power switch-ON
8		Cross feeding	18		Power switch-OFF
9		Longitudinal feeding	19	OIL	Oil inlet (hole)
10		Cone clutch			

4-2 Transmission & Spindle Operation

After all the previously described procedures have been done, it is time to test the machine. Position the spindle H/L lever ② to “L”, turn speed control knob ① counterclockwise to lowest speed and forward/reverse lever ④ to the “N” position. Lift the spindle control lever (① of item 1-1), and the spindle will rotate in the forward direction. To reverse spindle direction, push the lever down. Place lever in neutral to stop spindle. The foot brake is used for emergency stop. After using the foot brake, the forward/reverse lever must be returned to neutral before the spindle can be operated again.

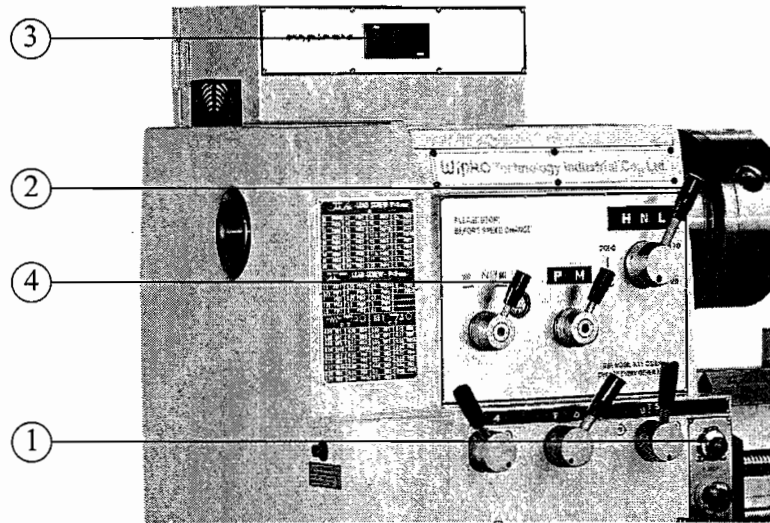


Fig 4-2

4-3 Spindle Speed Selection

There are three speeds on inverter transmission lathe: H (High), N (Neutral) and L (Low). Speed range in H is from 235rpm to 2000rpm; in L speed is from 20rpm to 170rpm.

Turn speed control knob ① counterclockwise to the lowest speed and select speed range by moving lever ② to proper position, then lift or press down spindle control lever (① of item 1-1) to start spindle. Rotate speed control knob ① to choose applicable speed, clockwise for speeding up and counterclockwise for slowing down. Spindle speed shows on digital display ③.

For safety consideration and to protect the gears from damage, spindle speed H/L lever ② can only be shifted when the motor is completely stopped. If the gears do not engage easily, please use jog button ① to assist in engaging gears. Be sure gears are properly engaged before starting the lathe.

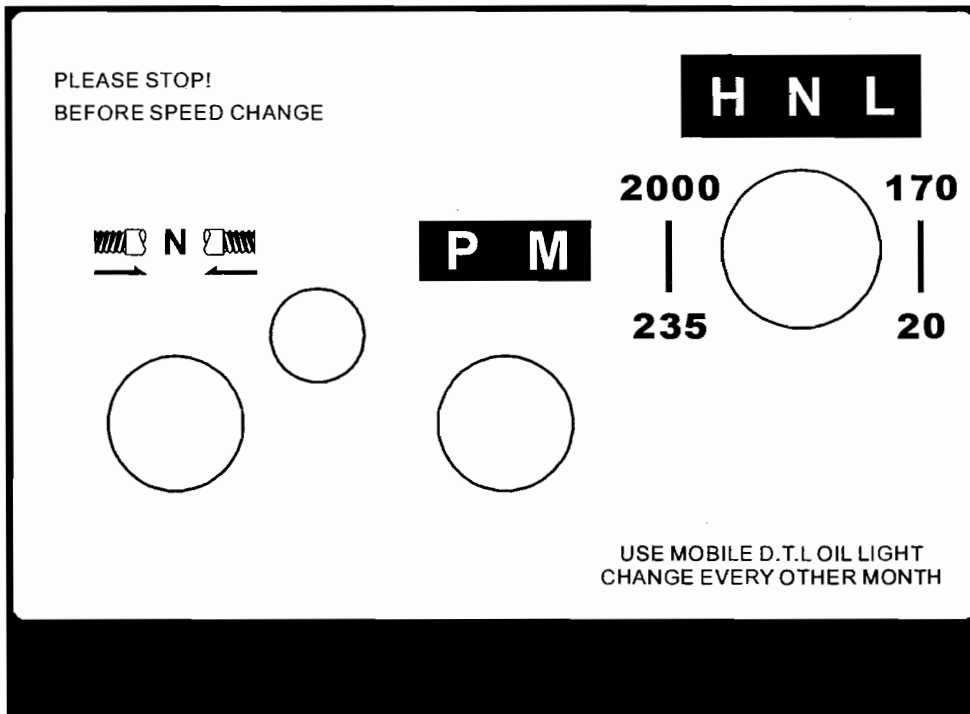
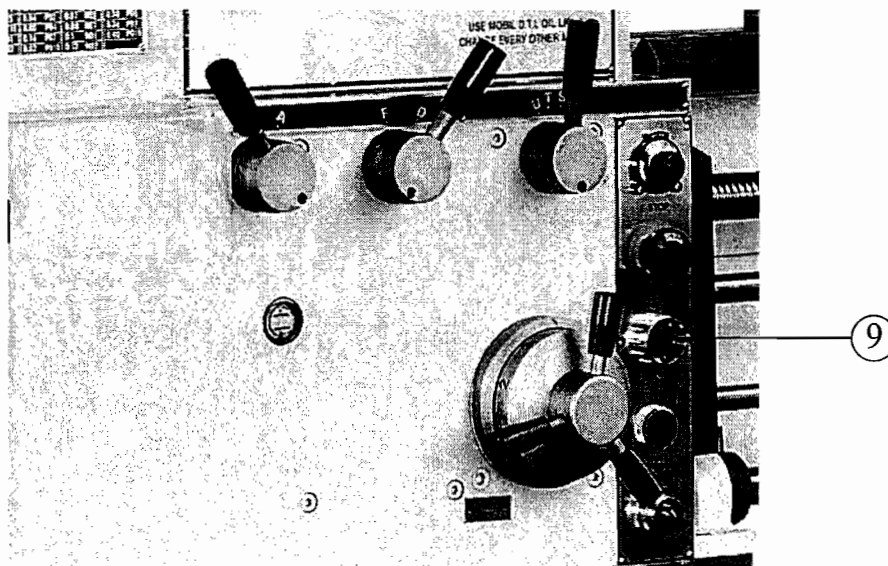


Fig 4-3

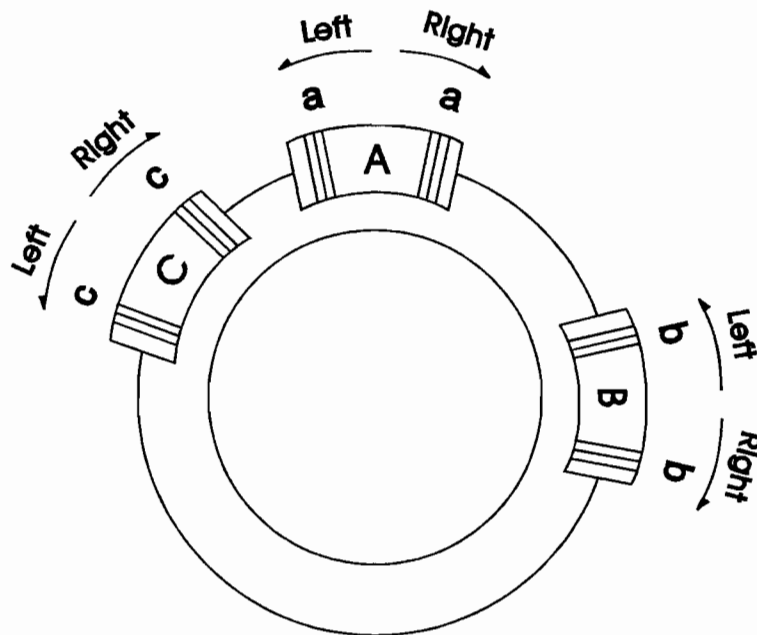
4-4 Jogging Operation of Spindle

The lathe has been equipped with a jogging button ⑨ to simplify speed-change, checking rotation and work piece center lining. This function only works in the forward direction.



4-5 The Importance and Method of Spindle Balancing

1. A lathe with a spindle that is out of balance can cause chatter and poor finish on the work piece. To ensure proper spindle balance, our lathes have equipped with balancing weights located on the locking ring at the rear of the spindle.
2. To properly balance the spindle, first run the lathe at 1350rpm. Put the fingers of your hand on the headstock to check for any vibration. Moving the balance weights left or right can eliminate vibration felt by the fingers.



4-6 Transmitting Power to the Gear Box

Lever ④ of item 1-1, controls the direction of the lead screw. This lever has three positions, Left, Right and Neutral.

4-7 Gear Box Operation

1. Threading

With our special design, there is no need to re-arrange the back gears for threading. Please refer to the threading and feed tables for correct settings. The levers used for setting the feed rate or T.P.I are:

- a. Feed direction ④ of item 1-1.
- b. Thread/Feed lever ⑤ of item 1-1.
- c. Thread/Feed lever ⑥ of item 1-1
- d. 10 step selection dial ⑦ of item 1-1

2. Auto feed

After selecting the proper setting for either feed rate or threading, you can use the appropriate levers to do the desired operation--auto feed ⑯ of item 1-1, or half-nut engagement lever ⑰ of item 1-1.

4-8 Manual Operation

For manual operation, move both the half-nut lever ⑰ and lever ④ of item 1-1 to neutral position. Hand wheel ⑬ on Fig. 4-8 controls the apron movement, ⑭ controls the cross slide and ⑳ control the compound. The graduations on the dials are graduated in both metric and inch. Metric is 0.02mm per graduation and inch is 0.001" per graduation.

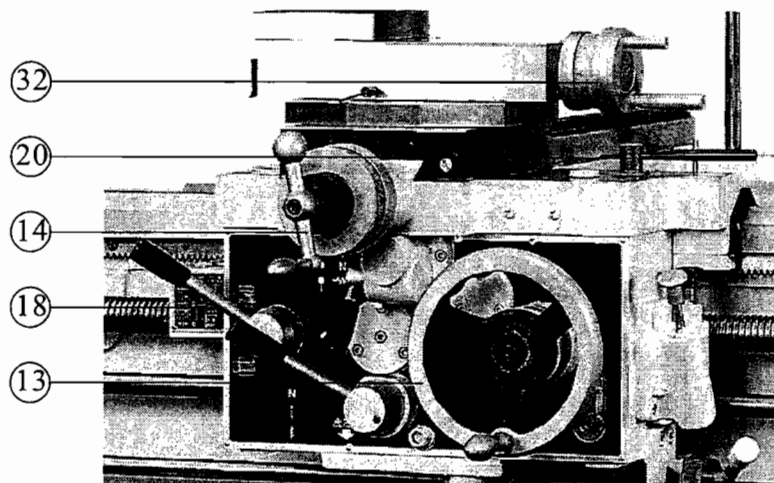


Fig. 4-8

Note: Photo is shown with longitudinal handwheel on the right side.

4-9 Automatic Feed

1. Position lever ④ of item 1-1 to the required position.
2. Move lever ⑤ & ⑥ of item 1-1 to the desired feed rate or thread.
3. For threading, use lever ⑱ of item 1-1. Be sure lever is fully engaged.
4. For cross feed, please push in the feed axis selector lever ⑲ of item 1-1 down.
5. To reverse the cross feed, please pull the feed axis selector lever ⑲ of item 1-1 up.

4-10 Automatic Feed Stop

The apron is equipped with an automatic stop device. To set this mechanism, loosen the setscrew on the top of the tripping dog ⑫ on Fig. 4-10 and move it to the desired location. With the tripping dog in place and the top tip facing out, please tighten the setscrew. When tripping dog comes in contact with the trip plunger, (⑳ of item 1-1 located at the bottom of the apron) the carriage will stop. Always test the mechanism before you start machining to avoid damage to the lathe and or work piece.

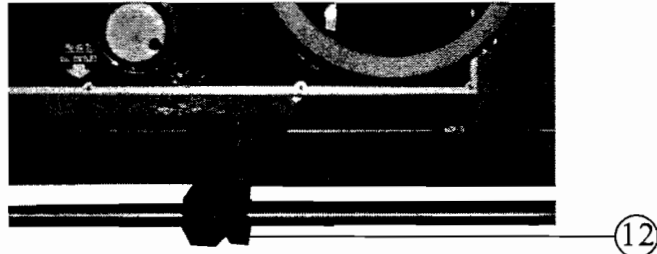


Fig. 4-10

4-11 Positioning Automatic Feed Stop

This feature gives you the option to set-up, up to 4 stops. Tripping dogs are set individually and can be set to trip the plunger going in either direction. If the tripping dog is not needed, simply turn it so the top tip is facing inward and the plunger will not engage it.

4-12 Tailstock Operation

1. The tailstock handwheel dial is divided in 0.001" per graduation. Rotating the handwheel clockwise moves the quill out, counterclockwise retracts the quill. Retracting quill will release the inserted center or other tool being used.
2. To lock the quill, push locking lever forward. (30 Fig. 4-12).
3. The centerline of the tailstock can be adjusted using gib adjusting screws 26 on Fig.4-12. After adjusting, be sure to tighten the gib screws on both sides.

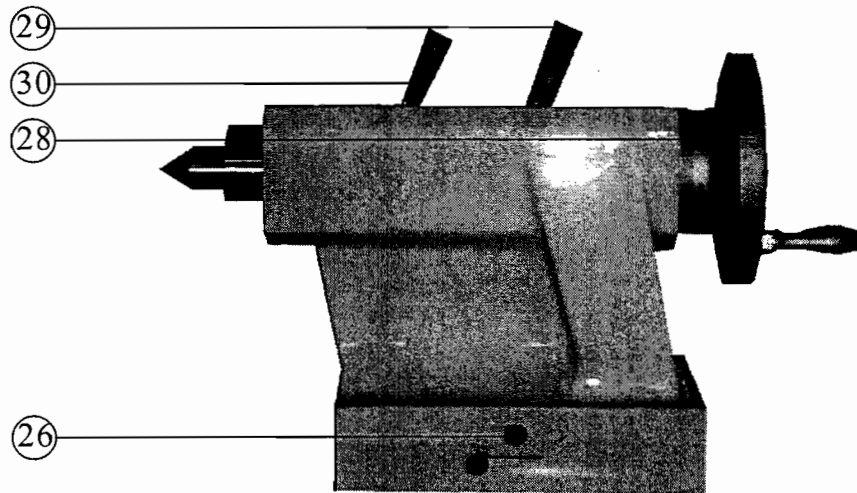


Fig. 4-12

5. THREADING

5-1 Leadscrew Drive

Moving the Forward/Reverse lever (4 of item 1-1) to the right will cause the leadscrew to rotate backwards, moving the lever to the left the leadscrew will rotate forward and when lever is in neutral the leadscrew will not turn.

5-2 Threading

1. After selecting the thread to be cut, set the following levers to the appropriate position: 5, 6 & 7 of item 1-1. (Example 18 T.P.I.: PAE2)
2. Turn off the lathe.
3. Engage the half-nut by pushing half-nut engagement lever 18 of item 1-1 down, and please make sure it is fully engaged.

5-3 Thread Chasing Dial

1. Thread chasing dial for Inch leadscrew

To cut even number threads the leadscrew can be engaged on any number or line. For odd number threads the leadscrew can be engaged on any number. Fractional threads (1/2, 1/4 etc.), leadscrew can only be engaged on the same number or line.

Note: When cutting metric threads on a lathe with an Inch leadscrew, be sure the half nut is engaged at all times. (If not, the thread will not repeat.)

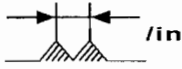

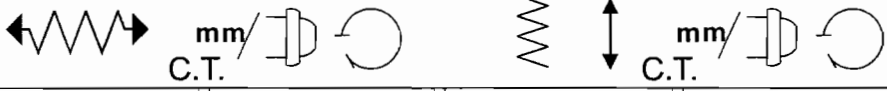
2. Thread chasing dial for Metric leadscrew for cutting metric threads

There are two dials used for metric leadscrews, 2 & 7 divisions and 3 & 5 divisions. To cut threads with pitches of 1.25, 2.5, 5.0, 2.25 and 4.5, please use the 3 & 5 division dial. For the rest of threads, please use the 2 & 7 division dial. For cutting thread pitches of 0.5, 0.75, 1.0, 1.5, 2.0, 3.0, 4.0 and 6.0, please use the 14T worm gear and 2 & 7 division dial. The maximum number of divisions on the dial is 7, however, you can only engage the dial on two of the numbers.

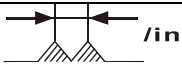


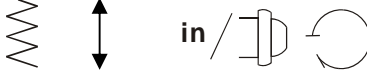
Gear Teeth	Pitch		Dial Division	Half-nut Engaged Number
11T	2.75	5.5	2	1
13T	3.25	6.5	2	1
14T	1.75	3.5	2	1,2
	7			
	0.5	0.75	7	1,2,3,4,5,6,7
	1	1.5		
	2	3		
	4	6		
15T	1.25	2.5	3	1,2,3
	5			
	2.25	4.5	5	1,2,3
18T	6.75		2	1,2

5-4 Thread & Feed Chart

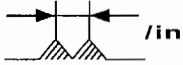
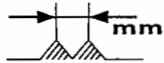
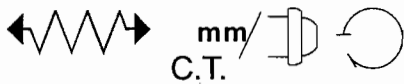
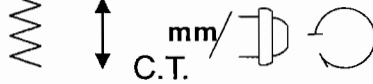
For Swing 17", 19", & 21" (430mm, 470mm, 530mm) Series with Metric Leadscrew & Feed.

							
LEAD SCREW-P=6mm							
R							
56	PAD10	32	PAD1	18	PAE2	9 1/2	PAF3
54	PAD9	28	PAE10	16	PAE1	9	PAF2
52	PAD8	27	PAE9	14	PAF10	8	PAF1
48	PAD7	26	PAE8	13 1/2	PAF9	7	PBF10
46	PAD6	24	PAE7	13	PAF8	6	PBF7
44	PAD5	23	PAE6	12	PAF7	5 1/2	PBF5
40	PAD4	22	PAE5	11 1/2	PAF6	5	PBF4
38	PAD3	20	PAE4	11	PAF5	4 1/2	PBF2
36	PAD2	19	PAE3	10	PAF4	4	PBF1
							
LEAD SCREW-P=6mm							
C							
0.5	PSF1	1.75	PSE10	3.5	PSD10	6	PUD7
0.75	PSF7	2	PSD1	4	PUD1	7	PUD10
1	PSE1	2.25	PSD2	4.5	PUD2		
1.25	PSE4	2.5	PSD4	5	PUD4		
1.5	PSE7	3	PSD7	5.5	PUD5		
							
0.05	MF1	0.30	MD4	0.02	MF1	0.15	MD5
0.06	MF2	0.34	MD5	0.03	MF3	0.17	MD7
0.08	MF5	0.37	MD7	0.04	MF7	0.20	MD10
0.10	MF10	0.42	MD10	0.05	ME1	0.24	PD2
0.13	ME2	0.48	PD1	0.06	ME3	0.27	PD4
0.17	ME5	0.54	PD2	0.07	ME5	0.30	PD5
0.21	ME10	0.60	PD4	0.08	ME7	0.34	PD7
0.24	MD1	0.74	PD7	0.1	MD1	0.40	PD10
0.27	MD2	0.82	PD10	0.12	MD2		

For Swing 17", 19", 21" (430mm, 480mm, 530mm) Series with Inch thread Leadscrew & Inch Feed

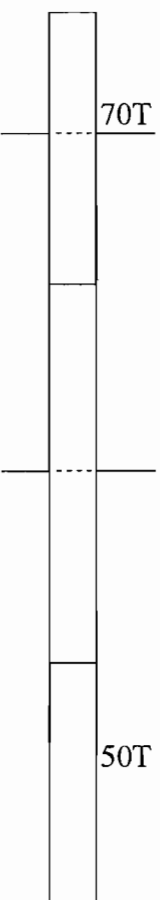
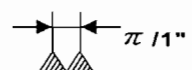
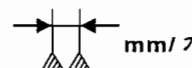
		LEAD SCREW - 4TPI					
R							
56	PAD10	32	PAD1	18	PAE2	9 1/2	PAF3
54	PAD9	28	PAE10	16	PAE1	9	PAF2
52	PAD8	27	PAE9	14	PAF10	8	PAF1
48	PAD7	26	PAE8	13 1/2	PAF9	7	PBF10
46	PAD6	24	PAE7	13	PAF8	6	PBF7
44	PAD5	23	PAE6	12	PAF7	5 1/2	PBF5
40	PAD4	22	PAE5	11 1/2	PAF6	5	PBF4
38	PAD3	20	PAE4	11	PAF5	4 1/2	PBF2
36	PAD2	19	PAE3	10	PAF4	4	PBF1
		LEAD SCREW-P – 4TPI					
C							
0.5	PSF1	1.75	PSE10	3.5	PSD10	6	PUD7
0.75	PSF7	2	PSD1	4	PUD1	7	PUD10
1	PSE1	2.25	PSD2	4.5	PUD2		
1.25	PSE4	2.5	PSD4	5	PUD4		
1.5	PSE7	3	PSD7	5.5	PUD5		
							
C.T.		C.T.					
0.002	MF1	0.011	MD4	0.0008	MF1	0.0046	MD5
0.0025	MF2	0.012	MD5	0.001	MF3	0.005	MD7
0.003	MF5	0.013	MD7	0.0012	MF7	0.006	MD10
0.004	MF10	0.016	MD10	0.0017	ME1	0.007	PD2
0.005	ME2	0.017	PD1	0.002	ME3	0.008	PD4
0.006	ME5	0.020	PD3	0.0023	ME5	0.009	PD5
0.008	ME10	0.021	PD4	0.0025	ME7	0.010	PD7
0.009	MD1	0.026	PD7	0.0034	MD1	0.011	PD10
0.010	MD2	0.03	PD10	0.0038	MD2		

For Swing 17", 19", & 21" (430mm, 470mm, 530mm) Series with Inch Leadscrew but Metric Feed

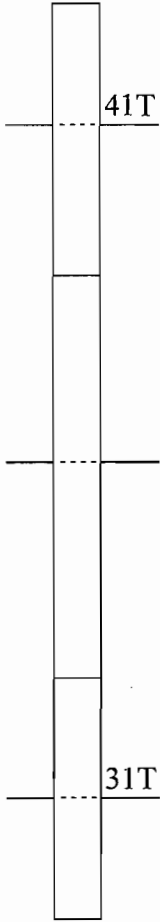
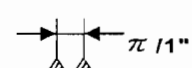

LEAD SCREW – 4TPI							
				R			
56	PAD10	32	PAD1	18	PAE2	9 1/2	PAF3
54	PAD9	28	PAE10	16	PAE1	9	PAF2
52	PAD8	27	PAE9	14	PAF10	8	PAF1
48	PAD7	26	PAE8	13 1/2	PAF9	7	PBF10
46	PAD6	24	PAE7	13	PAF8	6	PBF7
44	PAD5	23	PAE6	12	PAF7	5 1/2	PBF5
40	PAD4	22	PAE5	11 1/2	PAF6	5	PBF4
38	PAD3	20	PAE4	11	PAF5	4 1/2	PBF2
36	PAD2	19	PAE3	10	PAF4	4	PBF1
LEAD SCREW – 4TPI							
				C			
0.5	PSF1	1.75	PSE10	3.5	PSD10	6	PUD7
0.75	PSF7	2	PSD1	4	PUD1	7	PUD10
1	PSE1	2.25	PSD2	4.5	PUD2		
1.25	PSE4	2.5	PSD4	5	PUD4		
1.5	PSE7	3	PSD7	5.5	PUD5		
							
0.05	MF1	0.29	MD4	0.02	MF1	0.14	MD5
0.06	MF2	0.32	MD5	0.03	MF3	0.16	MD7
0.08	MF5	0.35	MD7	0.04	MF7	0.18	MD10
0.10	MF10	0.40	MD10	0.05	ME1	0.2	PD1
0.13	ME2	0.45	PD1	0.06	ME3	0.24	PD2
0.16	ME5	0.52	PD2	0.07	ME5	0.28	PD5
0.20	ME10	0.58	PD4	0.08	ME7	0.32	PD7
0.23	MD1	0.70	PD7	0.1	MD1	0.36	PD10
0.26	MD2	0.80	PD10	0.12	MD2		

5-5 Module & D.P Thread Chart

For Swing 17", 19", & 21" (430mm, 470mm, 530mm) Series with Metric Leadscrew

	LEAD SCREW-P=6mm							
					R			
	56	PAD10	32	PAD1	18	PAE2	9 1/2	PAF3
	54	PAD9	28	PAE10	16	PAE1	9	PAF2
	52	PAD8	27	PAE9	14	PAF10	8	PAF1
	48	PAD7	26	PAE8	13 1/2	PAF9	7	PBF10
	46	PAD6	24	PAE7	13	PAF8	6	PBF7
	44	PAD5	23	PAE6	12	PAF7	5 1/2	PBF5
	40	PAD4	22	PAE5	11 1/2	PAF6	5	PBF4
	38	PAD3	20	PAE4	11	PAF5	4 1/2	PBF2
	36	PAD2	19	PAE3	10	PAF4	4	PBF1
	LEAD SCREW-P=6mm							
					C			
	0.5	PSF1	1.75	PSE10	3.5	PSD10	6	PUD7
	0.75	PSF7	2	PSD1	4	PUD1	7	PUD10
	1	PSE1	2.25	PSD2	4.5	PUD2		
	1.25	PSE4	2.5	PSD4	5	PUD4		
	1.5	PSE7	3	PSD7	5.5	PUD5		

For Swing 17", 19", & 21" (430mm, 470mm, 530mm) Series with Inch Leadscrew

	LEAD SCREW – 4TPI							
					R			
	56	PAD10	32	PAD1	18	PAE2	9 1/2	PAF3
	54	PAD9	28	PAE10	16	PAE1	9	PAF2
	52	PAD8	27	PAE9	14	PAF10	8	PAF1
	48	PAD7	26	PAE8	13 1/2	PAF9	7	PBF10
	46	PAD6	24	PAE7	13	PAF8	6	PBF7
	44	PAD5	23	PAE6	12	PAF7	5 1/2	PBF5
	40	PAD4	22	PAE5	11 1/2	PAF6	5	PBF4
	38	PAD3	20	PAE4	11	PAF5	4 1/2	PBF2
36	PAD2	19	PAE3	10	PAF4	4	PBF1	
LEAD SCREW – 4TPI								
				C				
0.5	PSF1	1.75	PSE10	3.5	PSD10	6	PUD7	
0.75	PSF7	2	PSD1	4	PUD1	7	PUD10	
1	PSE1	2.25	PSD2	4.5	PUD2			
1.25	PSE4	2.5	PSD4	5	PUD4			
1.5	PSE7	3	PSD7	5.5	PUD5			

6. LUBRICATION

6-1 Headstock Lubrication

Headstock lubrication is splash injection type. Oil grooves are equipped around the headstock to provide lubricant flowing from oil grooves to the spindle, and then finally reach the bottom of the headstock. To add oil, please take off the oil plug on the top of the headstock cover, and fill the oil to the centerline of oil sight glass. Oil drain hole is located on the right bottom side of the headstock.

Before operating the lathe, be sure the headstock is filled with oil to the proper level. If not, please add Shell Tellus #32. Exchange oil after one month use for the first time. Thereafter every six months is recommended.

6-2 Gear Box & Apron Lubrication

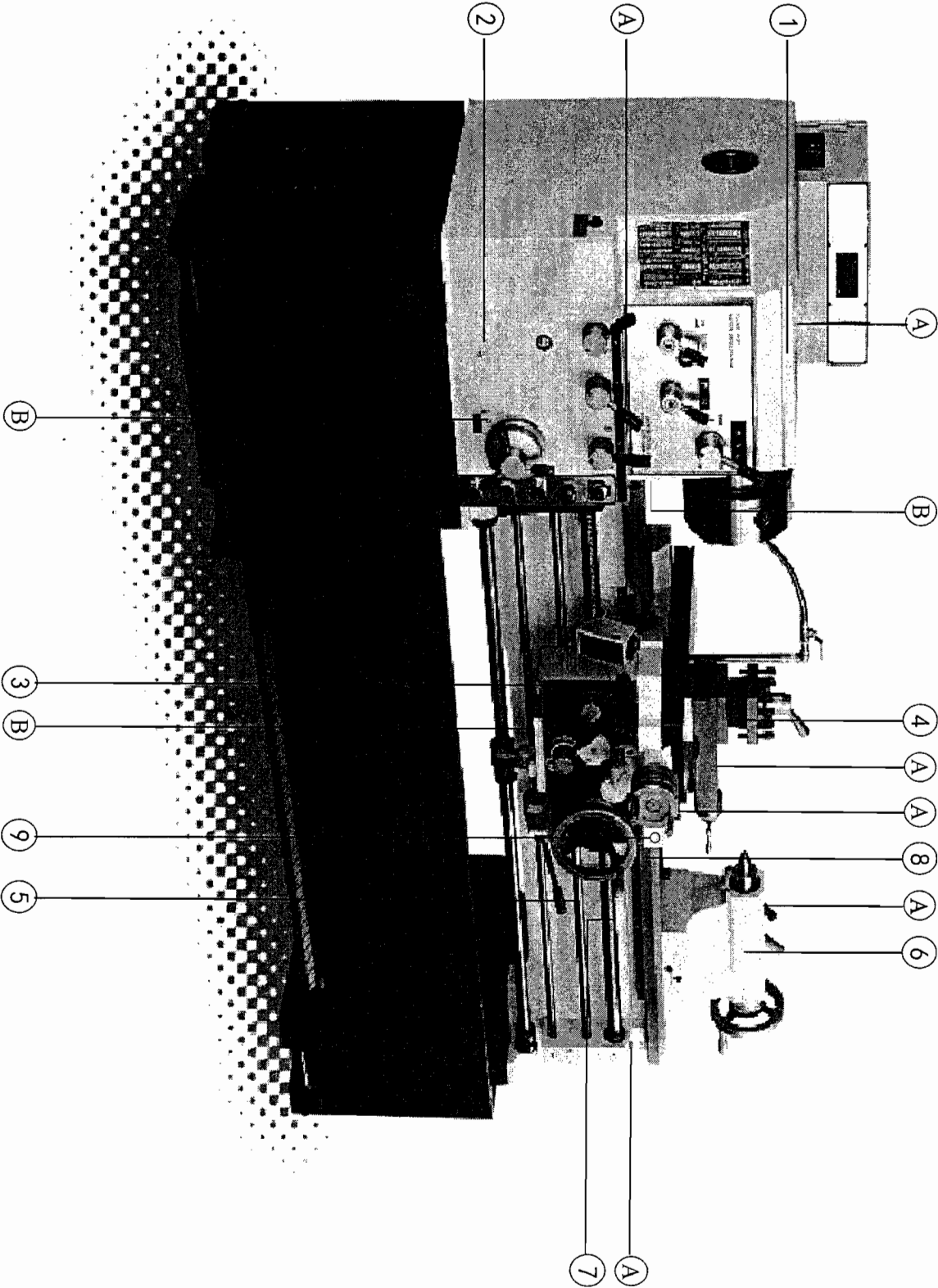
1. The gearbox is a reservoir oil bath type. To ensure the long service life of the gearbox and bedways, change the oil every six months.
2. The apron is also a reservoir oil bath type. Add oil as soon as the oil is lower than the centerline of the sight glass.

6-3 Lubrication Charts

No.	Location	Methods	Quantity	Oil time	Exchange time
1	Headstock	Loosen the oil input cap on the top left side of the headstock cover	L	Once per month	One month at the beginning, thereafter every six months
2	Gear Box	Open the top cover and loosen the oil input cap.	L	Once per month	Every six months
3	Apron	Loosen the oil input cap	L	Once per day	
4	Compound rest	Add oil with oil can	As required	Once per day	
5	Auto Feeding rod	Add oil with oil can	As required	Once per day	
6	Tailstock	Add oil with oil can	As required	Once per day	
7	Leadscrew	Add oil with oil can	As required	Once per day	
8	Bedway	Press the manual oil pump	As required	Once per day	

6-4 Lubrication Location

A: Oil input hole
B: Oil drain hole



7. MAINTENANCE & ADJUSTMENT

7-1 Headstock

1. Headstock cover leaks:

When the headstock cover is removed it is important to re-install it properly to prevent leakage. To re-install, the connecting surfaces must be cleaned and coated with a thin layer of grease so it could seal properly.

2. There are three possible causes for oil to leak from the spindle covers.

1. Reservoir over filled. (Correction: drain oil to proper level).
2. Wrong weight oil. (Correction: Change to recommended lubricant)
3. Blocked oil return. (Correction: Remove the headstock cover and while turning the spindle blow air through the small oil holes located on the top of the head stock.

3. Spindle bearing adjustment:

The front and center bearings on the spindle are precision taper roller type. To maintain the accuracy and proper operation, the bearings must have the proper preload. To adjust the bearings, please loosen the set screws on lock-nuts ⑥ (Fig. 7-1.3) and tighten lock-nuts ⑥ to get the proper preload. Please do not over tighten! After adjusting the lock-nut, be sure to re-tighten the setscrews again.

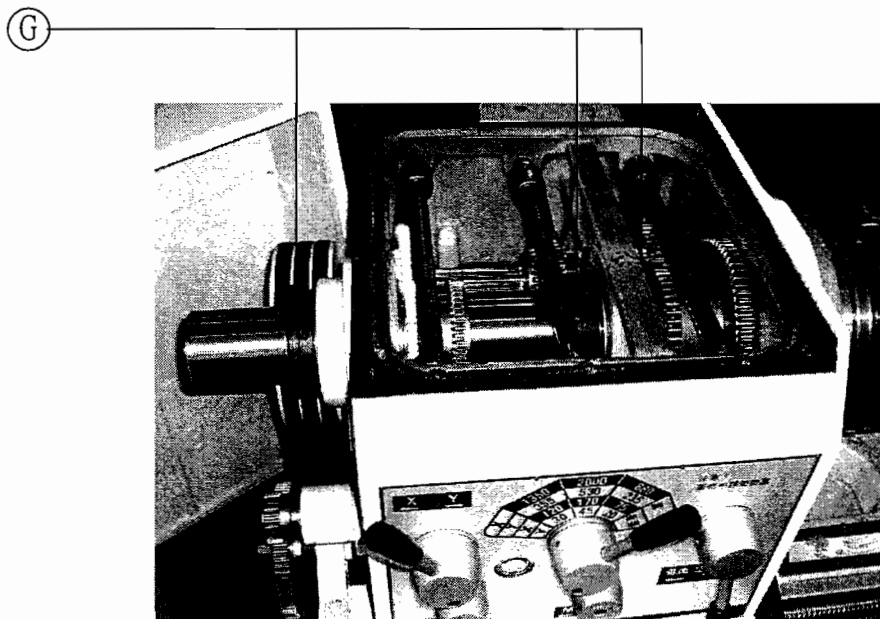


Fig. 7-1.3

7-2 Apron & Saddle

1. The oil inlet is located on the right top of the saddle base. (Plug marked "OIL")
2. The apron oil drain is located on the bottom of the apron. (See drawing)
3. Recommended lubricant is Shell Tellus No. 220 and changed every 6 months.
4. Half-nut adjustment: First move the thread chasing dial, then find the 4 gib strip adjusting screw and loosen slightly. While pressing down on the half nut engagement lever adjust gib as needed. Re-tighten screw and replace the thread chasing dial.
5. If the manual oil pump fails, it may need to be cleaned or repaired. To remove the pump, remove the pump body and loosen the plug lever to dismantle the unit. Use air to blow out the line, if the oil flow is too slow the O-ring may need replacing. After replacing the O-ring, please re-install pump and test.
6. The cone clutch in the center of the apron is an overload device. The safety overload weight limitation is 12kgs. This can be adjusted using the hexagon screw, located in the center of the apron. Turning the screw clockwise will increase the tension, counter clockwise will decrease the tension. This device should automatically slip out if the loading is over 12kgs, when the auto-feed mechanism is engaged (Fig. 7-2.6) or the handwheel is held.

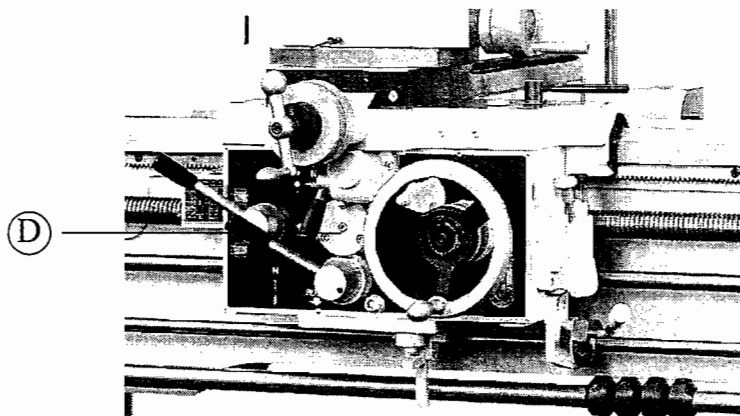
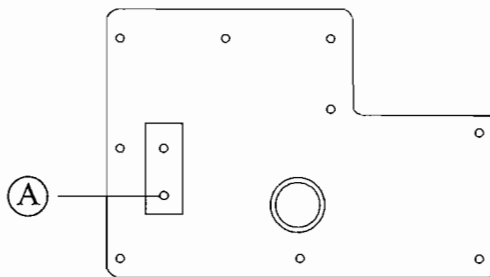


Fig. 7-2.6

7-3 Gear Box

1. The oil inlet for the gearbox is located at the cover on top of the gearbox.
(See Fig. 7-3Ⓐ)
2. The drain is located on the left bottom side of the gearbox near the 10 step feed selection dial as shown by arrow Ⓑ Fig. 7-3.
3. Recommended lubricant is Shell Tellus No. 220 and should be changed every 6 months.

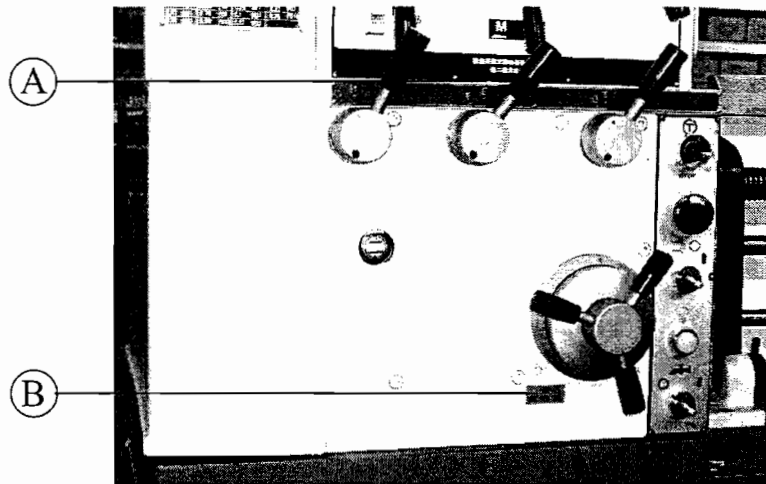


Fig. 7-3

7-4 Tailstock Adjustment

1. Unclamp the tailstock – clamping lever.
2. Loosen the 2 hexagon head screws. (one on each side of tailstock)
3. Using a test bar between dead centers, make necessary adjustments by turning in or out the gib adjusting screws. (one on each side)
4. After adjustment, re-tighten the two hexagon head screws and re-check for alignment.

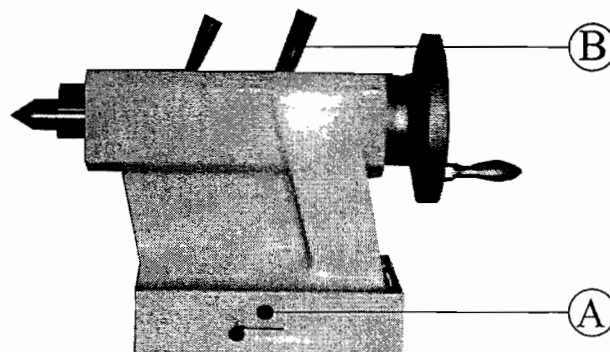


Fig. 7-4

7-5 Belt Tension Adjustment

After prolonged usage, the belts will stretch and require periodic adjustment.

To adjust belts:

1. Take off the cover on the left side of the lathe.
2. Loosen adjusting lock-nuts \textcircled{A} Fig. 7-5 and adjust the belts to proper tension.
3. After adjustment is made, re-tighten lock nut and replace the cover.

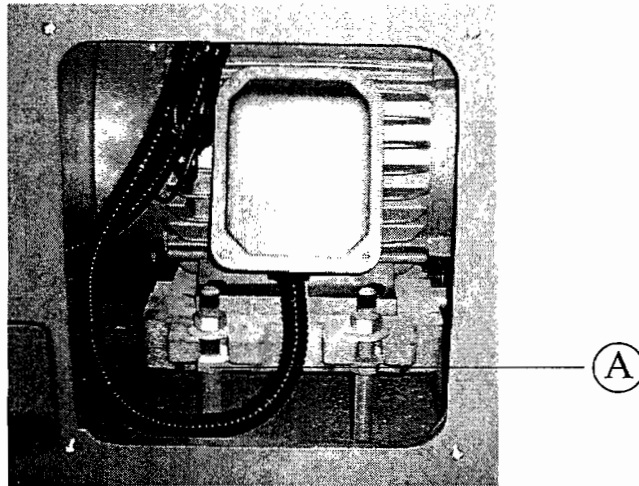


Fig 7-5

7-6 Brake Belt Adjustment

If the brake belt becomes worn or has a loose nut like \textcircled{H} Fig 7-6 on the brake band must be adjusted. This can be done by:

1. Remove the side lower cover.
2. Loosen the nuts on the top and tighten the nuts on the bottom to the appropriate height.
3. Re-tighten the top nuts and replace the cover.

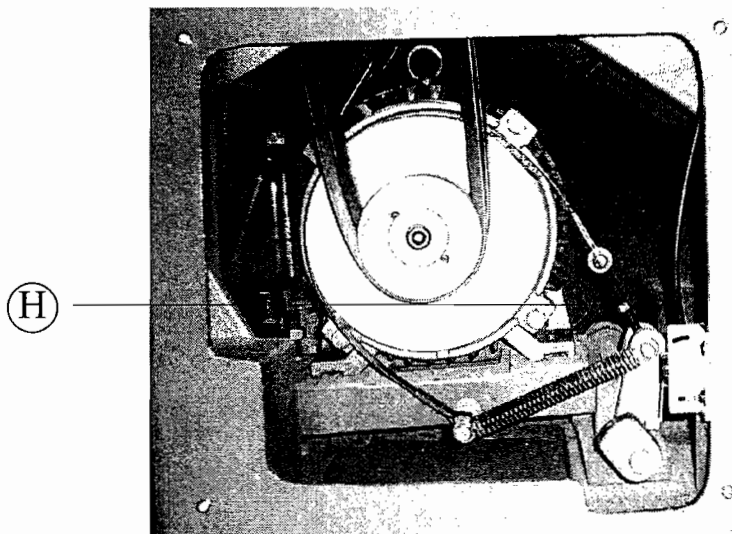


Fig 7-6

7-7 Brake & Micro Switch Adjustment

The foot brake is connected with the micro switch. There should be 0-1mm end play between the brake arm and the head of the micro switch (See Fig. 7-7). The proper function of the brake is to cut off the power and then engage the brake belt. After using the brake, it is necessary to use the control lever to re-start the lathe.

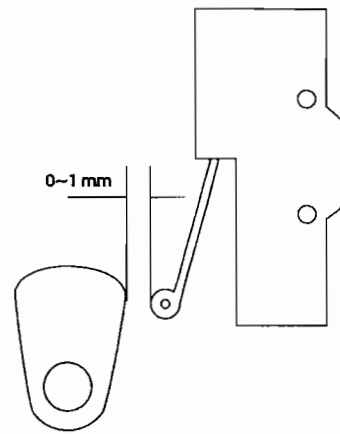


Fig. 7-7

7-8 Leadscrew Backlash Adjustment

Should the threading not repeat, the cause is most likely the leadscrew has backlash. To adjust the backlash, remove the plastic cover on the leadscrew bracket (Fig. 7-8), loosen nut (A) then tighten the left side nut (B). To check the backlash, engage the half nut and while observing the connecting section of the leadscrew to the gearbox move the apron handwheel back and forth. If the backlash is properly set, there should be no movement in the shaft. After adjustment, re-tighten nut (A) and replace plastic cover.

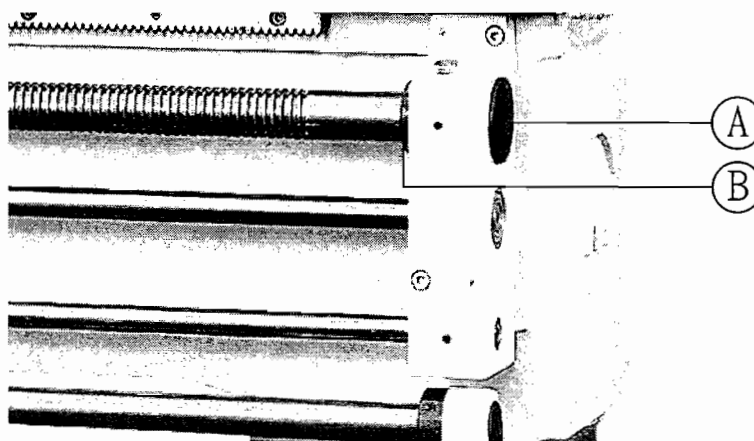


Fig. 7-8

7-9 Coolant System Repair

Problem: No coolant flow:

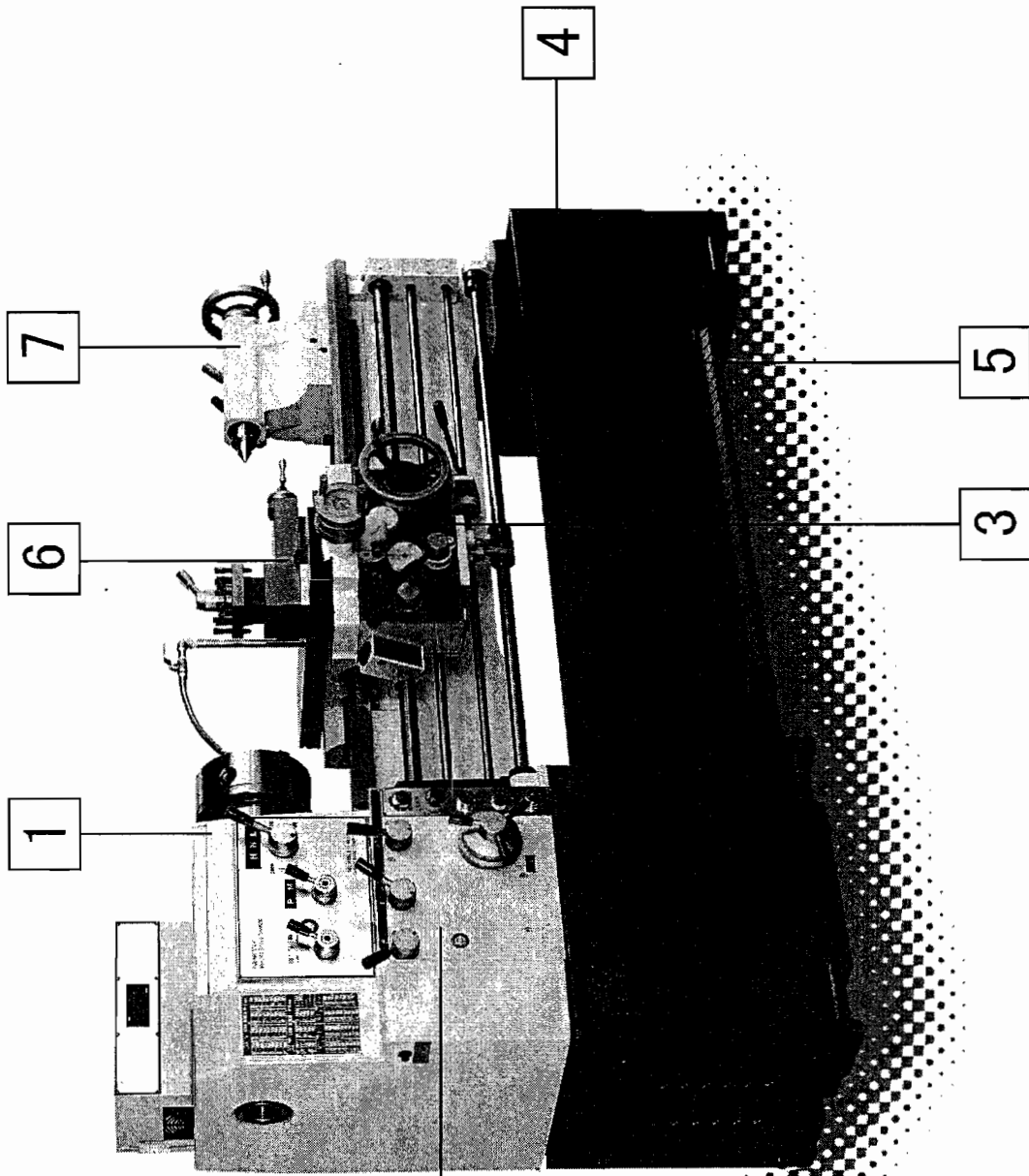
Solution:

1. Make sure the switch is on.
2. Check if the pump motor is working.
3. Check coolant level.
4. If all of the above are normal, please change the pump.

Mechanical Drawings & Parts Breakdown List

Note: When ordering parts, please be prepared with,

1. Machine model & serial number.
2. Item number.
3. Part number and description.
4. Year of Production.
5. Voltage & horsepower.
6. Quantity



2

1

6

7

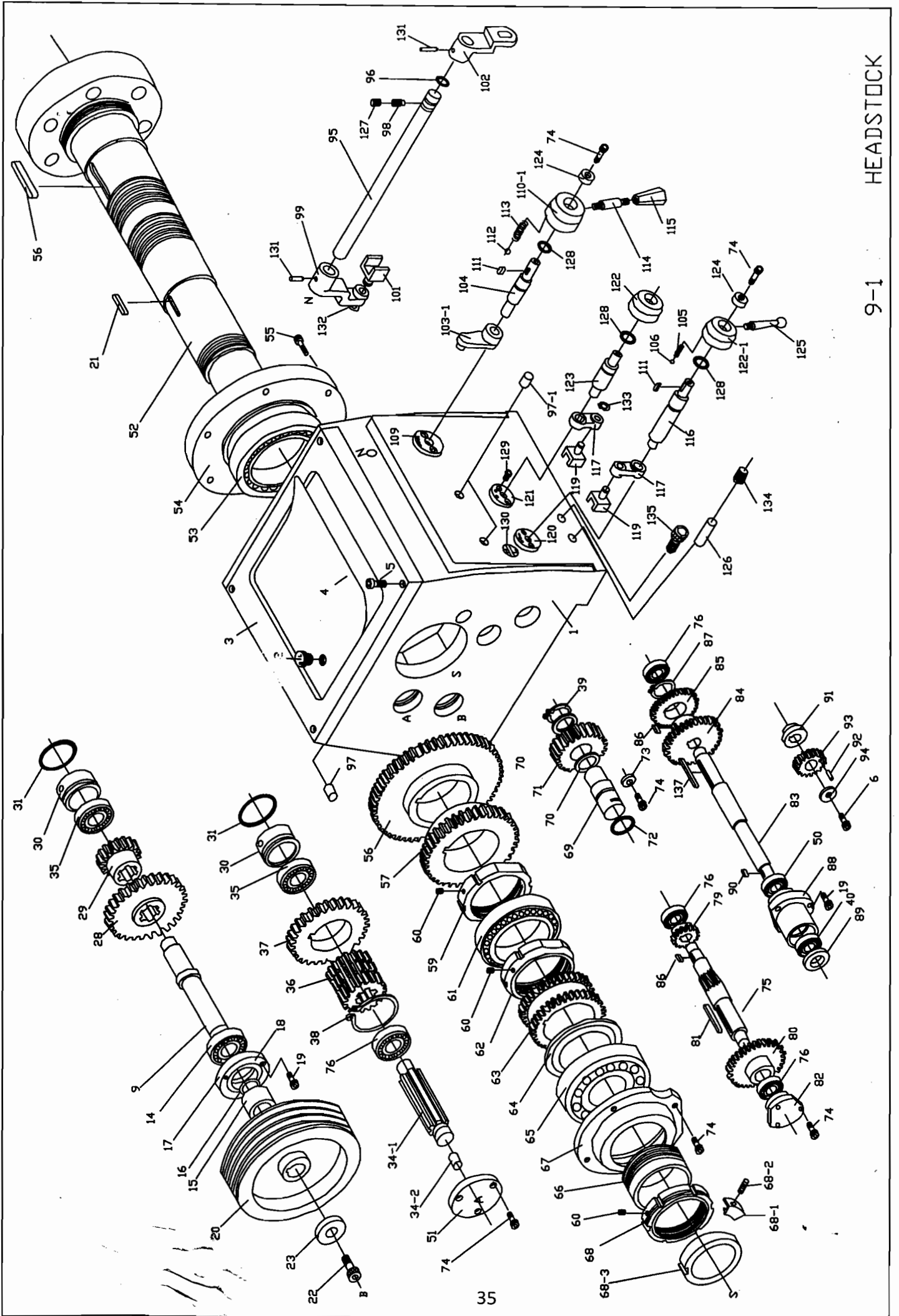
4

5

3

- 9-1 HEADSTOCK
- 9-2 GEAR BOX
- 9-3 APRON
- 9-4 BED AND BASE
- 9-5 BRAKE SYSTEM
- 9-6 CARRIAGE AND CROSSFEED
- 9-6A CARRIAGE AND CROSSFEED
- 9-7 TAILSTOCK

9 SYSTEM IN EACH UNIT



HEADSTOCK ASSEMBLY (Spindle Bore : 58mm or 2")

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Head stock	1	3001001-173	3001001-193	3001001-213	主軸箱本體
2	Oil plug	1	3001002	3001002	3001002	油塞
3	Head stock cover	1	3001003	3001003	3001003	主軸箱蓋
4	Blanket	1	3001004	3001004	3001004	主軸箱蓋鐵皮
5	Hexagon socket screw, M8xP1.25x35L	4	91110835	91110835	91110835	六角承窩螺絲
6	Hexagon socket screw, M8xP1.25x25L	1	91110825	91110825	91110825	六角承窩螺絲
9	Input-shaft	1	3001009	3001009	3001009	輸入軸
14	Ball bearing , 6206	2	91301021	91301021	91301021	滾珠軸承
15	Collar	1	3001015	3001015	3001015	間隔圈
17	Housing	1	3001017	3001017	3001017	軸承蓋
18	Oil-seal , TC30x50x8	1	91523001	91523001	91523001	油封
19	Hexagon socket screw, M6xP1.0x25L	6	91110625	91110625	91110625	六角承窩螺絲
20	Pulley	1	3001020	3001020	3001020	從動皮帶輪
21	Square key , 8x7x45L	2				雙圓平行鍵
22	Hexagon socket screw, M12xP1.75x30L	1	91111230	91111230	91111230	六角承窩螺絲
23	Spring washer , 12	1				彈簧華司
28	Gear-k	1	3001028	3001028	3001028	齒輪
29	Gear-o	1	3001029	3001029	3001029	齒輪
30	Plug-cover	2	3001030	3001030	3001030	護蓋
31	O-ring , P55x3.5	2	9151P055	9151P055	9151P055	O型環
34-1	Shaft-L	1	3001034-001	3001034-001	3001034-001	L軸
34-2	Plug	1	3001034-002	3001034-002	3001034-002	塞子
35	Ball bearing , 6305	2	91301029	91301029	91301029	滾珠軸承
36	Gear-l	1	3001036	3001036	3001036	齒輪
37	Gear-m	1	3001037	3001037	3001037	齒輪
38	Snap ring , S65	2	9171S065	9171S065	9171S065	扣環
40	Ball bearing , 6005	3	91301010	91301010	91301010	滾珠軸承
50	Ball bearing , 6205	2	91301020	91301020	91301020	滾珠軸承
51	Cover	1	3001051	3001051	3001051	護蓋
52	Spindle (A1-6)	1	3001052-A01	3001052-A01	3001052-A01	主軸
	(D1-6)	1	3001052-D01	3001052-D01	3001052-D01	
53	Taper roller bearing, 32018	1	91302014	91302014	91302014	滾錐軸承
54	Cover (A1-6)	1	3001054-A01	3001054-A01	3001054-A01	主軸前護蓋
	(D1-6)	1	3001054-D01	3001054-D01	3001054-D01	
55	Hexagon socket screw, M6xP1.0x35L	6	91110635	91110635	91110635	六角承窩螺絲
56	Gear-p	1	3001056	3001056	3001056	齒輪
57	Gear-n	1	3001057	3001057	3001057	變速齒輪
58	Square key , 8x7x85L	1	91620806	91620806	91620806	雙圓平行鍵
59	Lock-nut	1	3001059	3001059	3001059	逼緊螺帽
60	Set screw, M8xP1.25x8L	5	91120808	91120808	91120808	固定螺絲

HEADSTOCK ASSEMBLY (Spindle Bore : 58mm or 2")

61	Taper roller bearing, 32017	1	91302013	91302013	91302013	滾錐軸承
62	Lock-nut	1	3001062	3001062	3001062	逼緊螺帽
63	Gear	1	3001063	3001063	3001063	齒輪
64	Collar	1	3001064	3001064	3001064	軸環
65	Ball bearing , 6215	1	91301024	91301024	91301024	滾珠軸承
66	Oil return collar	1	3001066	3001066	3001066	回油軸環
67	Cover	1	3001067	3001067	3001067	主軸後護蓋
68	Lock-nut	1	3001068	3001068	3001068	逼緊螺帽
68-1	Balance piece	2	3001068-001	3001068-001	3001068-001	平衡片
68-2	Set screw, M5x8	4	3001068-002	3001068-002	3001068-002	定位螺絲
68-3	Touch collar	1	3001068-003	3001068-003	3001068-003	感應輪
69	Idle gear shaft	1	3001069	3001069	3001069	惰輪軸
70	Spacer	2	3001070	3001070	3001070	間隔圈
71	Idle gear	1	3001071	3001071	3001071	惰輪
72	O-ring , P29	1	9151P029	9151P029	9151P029	O型環
73	Washer	1	3001073	3001073	3001073	墊圈
74	Hexagon socket screw, M6xP1.0x16L	16	91110616	91110616	91110616	六角承窩螺絲
75	Gear shaft-C	1	3001075	3001075	3001075	齒輪軸
76	Ball bearing , 6204	5	91301018	91301018	91301018	滾珠軸承
79	Gear	1	3001079	3001079	3001079	齒輪
80	Gear	1	3001080	3001080	3001080	齒輪
81	Square key , 6x6x65L	1				雙圓平行鍵
82	Cover	1	3001082	3001082	3001082	護蓋
83	Shaft-D	1	3001083	3001083	3001083	D軸
84	Gear	1	3001084	3001084	3001084	齒輪
85	Gear	1	3001085	3001085	3001085	齒輪
86	Square key , 6x6x18L	2	91610604	91610604	91610604	雙圓平行鍵
87	Snap ring , S40	1	9171S040	9171S040	9171S040	扣環
88	Housing	1	3001088	3001088	3001088	後列齒輪軸護蓋
89	Oil-seal , TC25x47x8L	1	91522501	91522501	91522501	油封
90	Square key , 6x6x12L	1	91610601	91610601	91610601	雙圓平行鍵
91	Collar	1	3001091	3001091	3001091	軸環
92	Taper pin ,0 #25L	1	82010025	82010025	82010025	推拔銷
93	Gear (24T in)	1	3001093	3001093	3001093	輸出齒輪
	Gear (41T mm)	1	3001093-001	3001093-001	3001093-001	
94	Washer	1				華司
95	Shifting shaft	1	3001095	3001095	3001095	撥桿軸
96	O-ring , P16	6	9151P016	9151P016	9151P016	O型環
97	Plug	3	3001097	3001097	3001097	塞子
97-2	Plug	1	3001097-002	3001097-002	3001097-002	塞子
98	Set screw	3	3001098	3001098	3001098	定位螺絲
99	Shifting lever	3	3001099	3001099	3001099	搖臂
101	Shifting fork	1	3001101	3001101	3001101	撥塊
102	Shifting lever	1	3001102	3001102	3001102	撥叉
103-1	Shifting lever	1	3001103-001	3001103-001	3001103-001	搖臂
104	Shaft	1	3001104	3001104	3001104	撥桿軸

HEADSTOCK ASSEMBLY (Spindle Bore : 58mm or 2")

105	Spring , D6xd0.8x25L	2	91901060102902	91901060102902	91901060102902	彈簧
106	Ball steel , ϕ 1/4"	2	91820104	91820104	91820104	鋼珠
109	Detent plate	1	3001109	3001109	3001109	定位片
110-2	Hub	1	3001110-002	3001110-002	3001110-002	變速把手
111	Square key , 5x5x15L	2	91610501	91610501	91610501	雙圓平行鍵
112	Ball steel , ϕ 5/16"	1	91820516	91820516	91820516	鋼珠
113	Spring , D8xd0.8x25L	1	3001113	3001113	3001113	彈簧
114	Lever	1	3001114	3001114	3001114	撥桿軸套
115	Knob	3	3001115	3001115	3001115	電木把手
116	Shaft	1	3001116	3001116	3001116	撥桿軸
117	Shifting lever	2	3001117	3001117	3001117	搖臂
118	Shifting fork	1	3001118	3001118	3001118	撥塊
119	Shifting fork	1	3001119	3001119	3001119	撥塊
119-1	Shifting fork	1	3001119-001	3001119-001	3001119-001	撥塊
120	Detent plate	1	3001120	3001120	3001120	定位片
121	Detent plate	1	3001121	3001121	3001121	定位片
122	Knob	1	3001122	3001122	3001122	變速把手
122-1	Knob	1	3001122-001	3001122-001	3001122-001	變速把手
123	Shaft	1	3001123	3001123	3001123	撥桿軸
124	Washer	5	3001124	3001124	3001124	墊圈
125	Lever	2	3001125	3001125	3001125	電木把手
126	Pin	2	3001126	3001126	3001126	調整銷
127	Set screw , M8xP1.25x10L	3	91120810	91120810	91120810	固定螺絲
128	O-ring , P18xP1.0x14L	5	9151P018	9151P018	9151P018	O型環
129	Screw , M6xP1.0x14L	10	91160614	91160614	91160614	六角孔埋頭螺絲
130	Lenz-oil , ϕ 29	1	93902003000004	93902003000004	93902003000004	油鏡
131	Spring pin , ϕ 5x32L	9	92030532	92030532	92030532	彈簧銷
	Spring pin , ϕ 5x26L	2	92030526	92030526	92030526	彈簧銷
132	Snap ring , S12	3	9171S012	9171S012	9171S012	扣環
133	Snap ring , S10	2	9171S010	9171S010	9171S010	扣環
134	Set screw , M10xP1.25x20L	2	91121020	91121020	91121020	固定螺絲
135	Hexagon socket screw, M10xP1.5x95L	2	91111095	91111095	91111095	六角承窩螺絲
136	Hexagon socket screw, M6xP1.0x40L	4	91110640	91110640	91110640	六角承窩螺絲
137	Square key , 6x6x70L	1	91610608	91610608	91610608	雙圓平行鍵

HEADSTOCK ASSEMBLY (Spindle Bore : 78mm or 3")

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Head stock	1	3001001-173	3001001-193	3001001-213	主軸箱本體
2	Oil plug	1	3001002	3001002	3001002	油塞
3	Head stock cover	1	3001003	3001003	3001003	主軸箱蓋
4	Blanket	1	3001004	3001004	3001004	主軸箱蓋鐵皮
5	Hexagon socket screw, M8xP1.25x35L	4	91110835	91110835	91110835	六角承窩螺絲
6	Hexagon socket screw, M8xP1.25x25L	1	91110825	91110825	91110825	六角承窩螺絲
9	Input-shaft	1	3001009	3001009	3001009	輸入軸
14	Ball bearing , 6206	2	91301021	91301021	91301021	滾珠軸承
15	Collar	1	3001015	3001015	3001015	間隔圈
17	Housing	1	3001017	3001017	3001017	軸承蓋
18	Oil-seal , TC30x50x8	1	91523001	91523001	91523001	油封
19	Hexagon socket screw, M6xP1.0x25L	6	91110625	91110625	91110625	六角承窩螺絲
20	Pulley	1	3001020-001	3001020-002	3001020-002	從動皮帶輪
21	Square key , 8x7x45L	2				雙圓平行鍵
22	Hexagon socket screw, M12xP1.75x30L	1	91111230	91111230	91111230	六角承窩螺絲
23	Spring washer , 12	1				彈簧華司
28	Gear-k	1	3001028	3001028	3001028	齒輪
29	Gear-o	1	3001029-001	3001029-001	3001029-001	齒輪
30	Plug-cover	2	3001030	3001030	3001030	護蓋
31	O-ring , P55x3.5	2	9151P055	9151P055	9151P055	O型環
34-1	Shaft-L	1	3001034-001	3001034-001	3001034-001	L軸
34-2	Plug	1	3001034-002	3001034-002	3001034-002	塞子
35	Ball bearing , 6305	2	91301029	91301029	91301029	滾珠軸承
36	Gear-l	1	3001036-001	3001036-001	3001036-001	齒輪
37	Gear-m	1	3001037-001	3001037-001	3001037-001	齒輪
38	Snap ring , S65	2	9171S065	9171S065	9171S065	扣環
40	Ball bearing , 6005	3	91301010	91301010	91301010	滾珠軸承
50	Ball bearing , 6205	2	91301020	91301020	91301020	滾珠軸承
51	Cover	1	3001051	3001051	3001051	護蓋
52	Spindle (A2-8)	1	3001052-A03	3001052-A03	3001052-A03	主軸
	(D1-8)	1	3001052-D03	3001052-D03	3001052-D03	主軸
53	Taper roller bearing, 32922	1				滾錐軸承
54	Cover	1	3001054-003	3001054-003	3001054-003	主軸前護蓋
55	Hexagon socket screw, M6xP1.0x35L	6	91110635	91110635	91110635	六角承窩螺絲
56	Gear-p	1	3001056-001	3001056-001	3001056-001	齒輪
57	Gear-n	1	3001057-001	3001057-001	3001057-001	變速齒輪
58	Square key , 8x7x85L	1	91620806	91620806	91620806	雙圓平行鍵
59	Lock-nut	1	3001059	3001059	3001059	逼緊螺帽
60	Set screw, M8xP1.25x8L	5	91120808	91120808	91120808	固定螺絲
61	Taper roller bearing, 32920	1				滾錐軸承

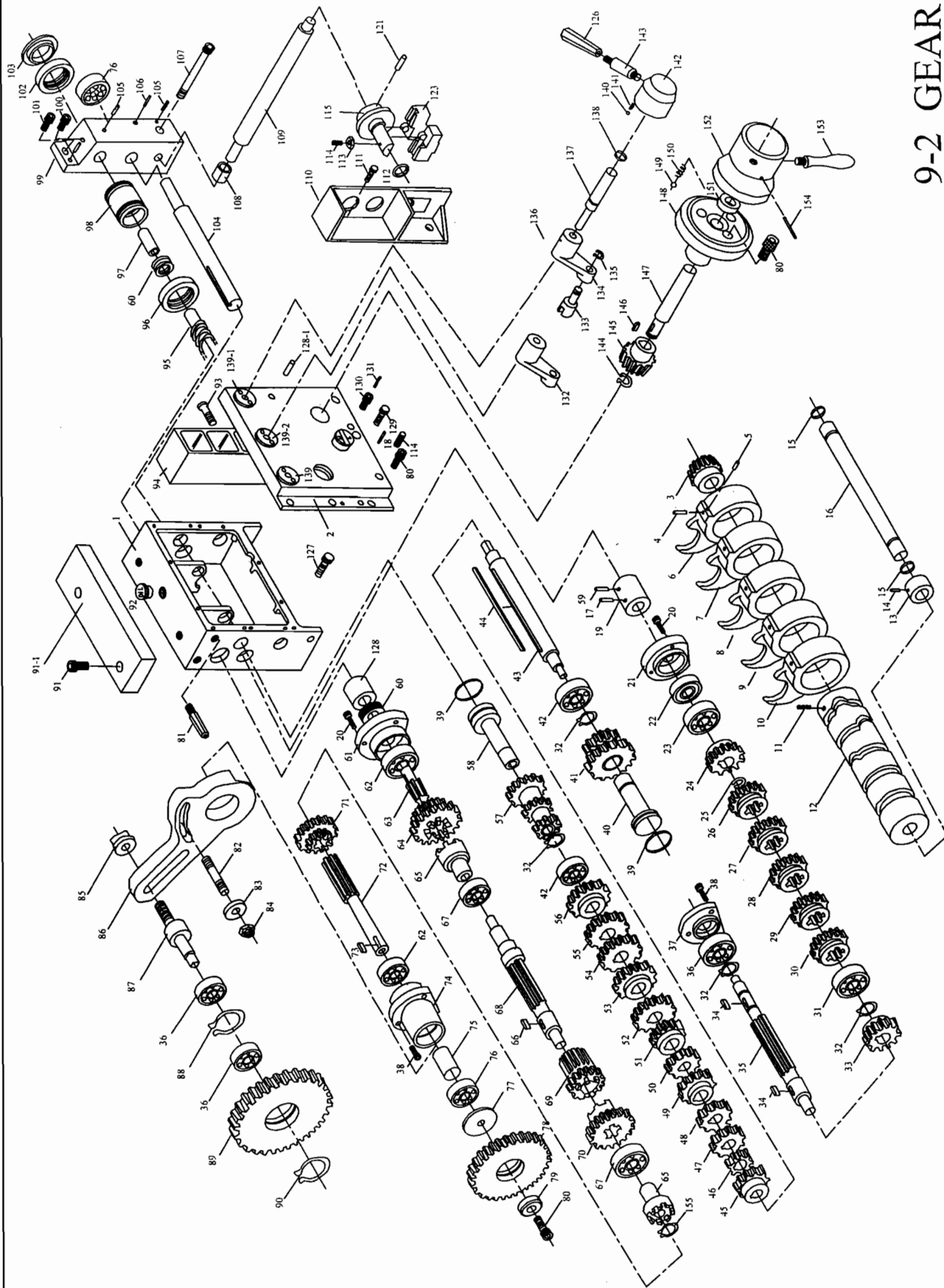
HEADSTOCK ASSEMBLY (Spindle Bore : 78mm or 3")

62	Lock-nut	1	9124F100	9124F100	9124F100	通緊螺帽
63	Gear	1	3001063-001	3001063-001	3001063-001	齒輪
64	Collar	1	3001064-001	3001064-001	3001064-001	軸環
65	Ball bearing , 6018	1				滾珠軸承
66	Oil return collar	1	3001066-001	3001066-001	3001066-001	回油軸環
67	Cover	1	3001067-001	3001067-001	3001067-001	主軸後護蓋
68	Lock-nut	1	3001068	3001068	3001068	通緊螺帽
68-1	Balance piece	2	3001068-003	3001068-003	3001068-003	平衡片
68-2	Set screw, M5x8	4	3001068-002	3001068-002	3001068-002	定位螺絲
68-3	Touch collar	1	3001068-004	3001068-004	3001068-004	感應輪
69	Idle gear shaft	1	3001069	3001069	3001069	惰輪軸
70	Spacer	2	3001070	3001070	3001070	間隔圈
71	Idle gear	1	3001071	3001071	3001071	惰輪
72	O-ring , P29	1	9151P029	9151P029	9151P029	O型環
73	Washer	1	3001073	3001073	3001073	墊圈
74	Hexagon socket screw, M6xP1.0x16L	16	91110616	91110616	91110616	六角承窩螺絲
75	Gear shaft-C	1	3001075	3001075	3001075	齒輪軸
76	Ball bearing , 6204	5	91301018	91301018	91301018	滾珠軸承
79	Gear	1	3001079	3001079	3001079	齒輪
80	Gear	1	3001080-001	3001080-001	3001080-001	齒輪
81	Square key , 6x6x65L	1				雙圓平行鍵
82	Cover	1	3001082	3001082	3001082	護蓋
83	Shaft-D	1	3001083-001	3001083-001	3001083-001	D軸
84	Gear	1	3001084	3001084	3001084	齒輪
85	Gear	1	3001085	3001085	3001085	齒輪
86	Square key , 6x6x18L	2	91610604	91610604	91610604	雙圓平行鍵
87	Snap ring , S40	1	9171S040	9171S040	9171S040	扣環
88	Housing	1	3001088	3001088	3001088	後列齒輪軸護蓋
89	Oil-seal , TC25x47x8L	1	91522501	91522501	91522501	油封
90	Square key , 6x6x12L	1	91610601	91610601	91610601	雙圓平行鍵
91	Collar	1	3001091	3001091	3001091	軸環
92	Taper pin ,0 #25L	1	82010025	82010025	82010025	推拔銷
93	Gear (24T in)	1	3001093	3001093	3001093	輸出齒輪
	Gear (41T mm)	1	3001093-001	3001093-001	3001093-001	
94	Washer	1				華司
95	Shifting shaft	1	3001095-001	3001095-001	3001095-001	撥桿軸
96	O-ring , P16	6	9151P016	9151P016	9151P016	O型環
97	Plug	3	3001097	3001097	3001097	塞子
97-2	Plug	2	3001097-002	3001097-002	3001097-002	塞子
98	Set screw	3	3001098	3001098	3001098	定位螺絲
99	Shifting lever	3	3001099	3001099	3001099	搖臂
101	Shifting fork	1	3001101	3001101	3001101	撥塊
102	Shifting lever	1	3001102	3001102	3001102	撥叉
103-1	Shifting lever	1	3001103-001	3001103-001	3001103-001	搖臂
104	Shaft	1	3001104	3001104	3001104	撥桿軸
105	Spring , D6xd0.8x25L	2	91901060102902	91901060102902	91901060102902	彈簧

HEADSTOCK ASSEMBLY (Spindle Bore : 78mm or 3")

106	Ball steel , $\phi 1/4"$	2	91820104	91820104	91820104	鋼珠
109	Detent plate	1	3001109	3001109	3001109	定位片
110-1	Hub	1	3001110-001	3001110-001	3001110-001	變速把手
111	Square key , 5x5x15L	2	91610501	91610501	91610501	雙圓平行鍵
112	Ball steel , $\phi 5/16"$	1	91820516	91820516	91820516	鋼珠
113	Spring , D8xd0.8x25L	1	3001113	3001113	3001113	彈簧
114	Lever	1	3001114	3001114	3001114	撥桿軸套
115	Knob	3	3001115	3001115	3001115	電木把手
116	Shaft	1	3001116	3001116	3001116	撥桿軸
117	Shifting lever	2	3001117	3001117	3001117	搖臂
118	Shifting fork	1	3001118	3001118	3001118	撥塊
119	Shifting fork	1	3001119	3001119	3001119	撥塊
119-1	Shifting fork	1	3001119-001	3001119-001	3001119-001	撥塊
120	Detent plate	1	3001120	3001120	3001120	定位片
121	Detent plate	1	3001121	3001121	3001121	定位片
122	Knob	1	3001122	3001122	3001122	變速把手
122-1	Knob	1	3001122-001	3001122-001	3001122-001	變速把手
123	Shaft	1	3001123	3001123	3001123	撥桿軸
124	Washer	5	3001124	3001124	3001124	墊圈
125	Lever	2	3001125	3001125	3001125	電木把手
126	Pin	2	3001126	3001126	3001126	調整銷
127	Set screw , M8xP1.25x10L	3	91120810	91120810	91120810	固定螺絲
128	O-ring , P18xP1.0x14L	5	9151P018	9151P018	9151P018	O型環
129	Screw , M6xP1.0x14L	10	91160614	91160614	91160614	六角孔埋頭螺絲
130	Lenz-oil , $\phi 29$	1	93902003000004	93902003000004	93902003000004	油鏡
131	Spring pin , $\phi 5 \times 32L$	9	92030532	92030532	92030532	彈簧銷
	Spring pin , $\phi 5 \times 26L$	2	92030526	92030526	92030526	彈簧銷
132	Snap ring , S12	3	9171S012	9171S012	9171S012	扣環
133	Snap ring , S10	2	9171S010	9171S010	9171S010	扣環
134	Set screw , M10xP1.25x20L	2	91121020	91121020	91121020	固定螺絲
135	Hexagon socket screw , M10xP1.5x95L	2	91111095	91111095	91111095	六角承窩螺絲
136	Hexagon socket screw , M6xP1.0x40L	4	91110640	91110640	91110640	六角承窩螺絲
137	Square key , 6x6x70L	1	91610608	91610608	91610608	雙圓平行鍵

9-2 GEAR BOX



GEAR BOX ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)
			Part No.	Part No.	Part No.
1	Gear box	1	1210300307	1210300307	1210300307
2	Cover-gear	1	1210300101	1210300101	1210300101
3	Gear-driven bevel	1	1210300405	1210300405	1210300405
4	Pin-fixed	5	1210300503	1210300503	1210300503
5	Pin-split	5			
6	Claw-shifter	1	1210300601	1210300601	1210300601
7	Claw-shifter	1	1210300709	1210300709	1210300709
8	Claw-shifter	1	1210300807	1210300807	1210300807
9	Claw-shifter	1	1210300905	1210300905	1210300905
10	Claw-shifter	1	1210301000	1210301000	1210301000
11	Set screw , 8x12	1	1210301108	1210301108	1210301108
12	Cam-shifter	1	1210301206	1210301206	1210301206
13	Collar	1	1210301304	1210301304	1210301304
14	Set screw , M8x12	2			
15	Ring-"O" , P18	2			
16	Shaft-"A"	1	1210301402	1210301402	1210301402
17	Pin-taper , 4x38	3	92010438	92010438	92010438
18	Pin-taper , 6x38	2	1210702301	1210702301	1210702301
19	Collar-linkage	2	1210301500	1210301500	1210301500
20	Hexagon socket screw , M6xP1.0x16L	6			
21	Cap-right	1	1210301608	1210301608	1210301608
22	Seal-oil	1			
23	Bearing-ball , 6204	1	91301018	91301018	91301018
24	Gear-"B" shaft	1	1210301706	1210301706	1210301706
25	Snap ring , S25	2	9171S025	9171S025	9171S025
26	Gear-"B" shaft (22T)	1	1210301804	1210301804	1210301804
27	Gear-"B" shaft (22T)	1	1210301902	1210301902	1210301902
28	Gear-"B" shaft (33T)	1	1210302007	1210302007	1210302007
29	Gear-"B" shaft (22T)	1	1210302105	1210302105	1210302105
30	Gear-"B" shaft (22T)	1	1210302203	1210302203	1210302203
31	Ball bearing	1	91301006	91301006	91301006
32	Snap ring , S20	2			
33	Gear-"B" shaft (22T)	1	1210302301	1210302301	1210302301
34	Key square , 6x6x20L	2			
35	Shaft-"B"	1	1210302409	1210302409	1210302409
36	Bearing-ball , 6003	3	91301005	91301005	91301005
37	Cap-left	1	1210302507	1210302507	1210302507
38	Hexagon socket screw , M6xP1.0x12L	6			
39	Ring-"O" , P36	2			
40	Shaft-"C"	1	1210302605	1210302605	1210302605
41	Gear-"C" shaft (20T · 20T)	1	1210302703	1210302703	1210302703
42	Bearing , 6203	2	91301016	91301016	91301016
43	Shaft-"D"	1	1210302801	1210302801	1210302801

GEAR BOX ASSEMBLY

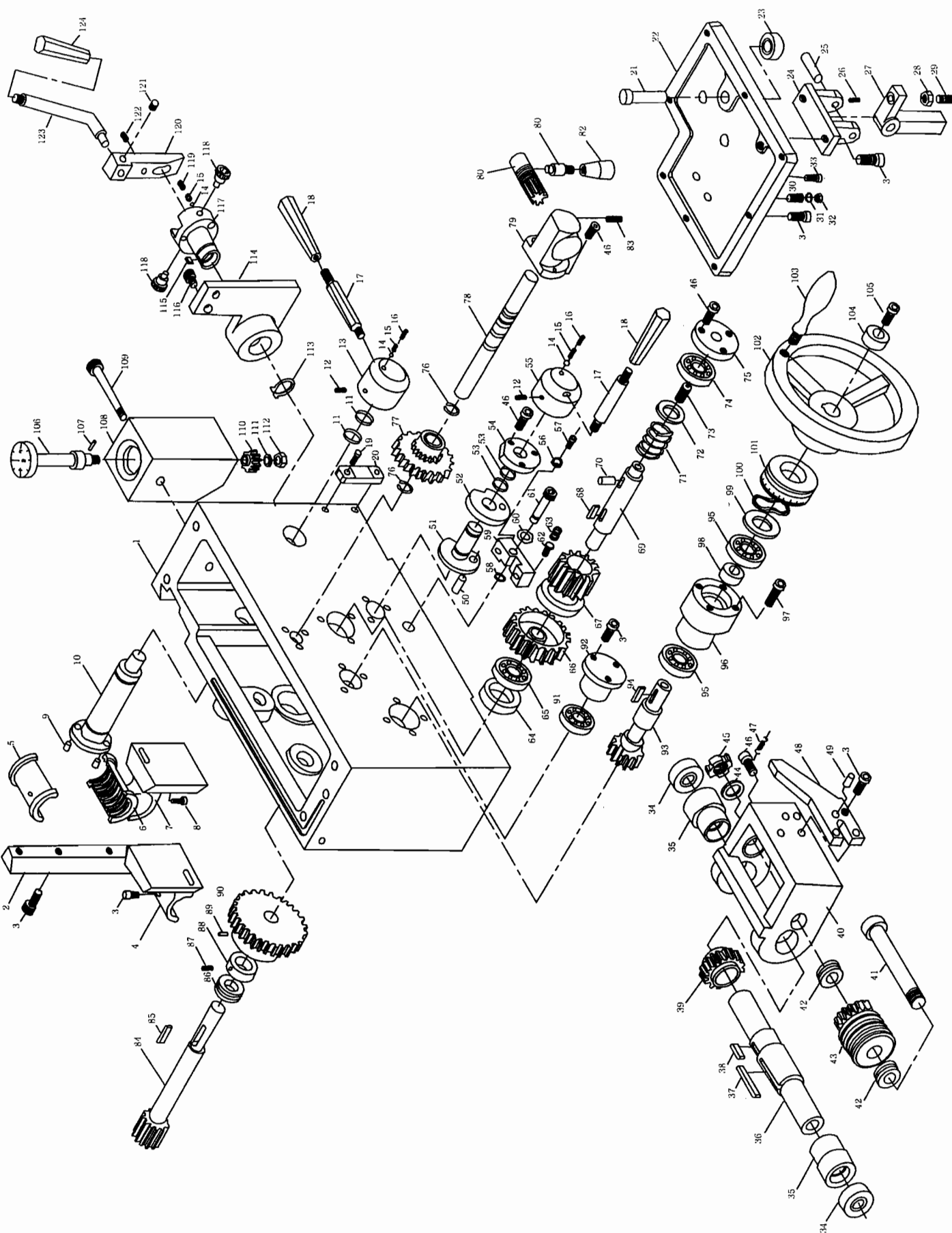
ITEM NO.	Part Name	Amt.	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)
		Used	Part No.	Part No.	Part No.
44	Key square , 6x6x146L	1			
45	Gear-"D" shaft (19T)	1	1210302909	1210302909	1210302909
46	Gear-"D" shaft (18T)	1	1210303004	1210303004	1210303004
47	Gear-"D" shaft (20T)	1	1210303102	1210303102	1210303102
48	Gear-"D" shaft (22T)	1	1210303200	1210303200	1210303200
49	Gear-"D" shaft (23T)	1	1210303308	1210303308	1210303308
50	Gear-"D" shaft (24T)	1	1210303406	1210303406	1210303406
51	Gear-"D" shaft (27T)	1	1210303504	1210303504	1210303504
52	Gear-"D" shaft (24T)	1	1210303602	1210303602	1210303602
53	Gear-"D" shaft (26T)	1	1210303700	1210303700	1210303700
54	Gear-"D" shaft (36T)	1	1210303808	1210303808	1210303808
55	Gear-"D" shaft (27T)	1	1210303906	1210303906	1210303906
56	Gear-"D" shaft (28T)	1	1210304001	1210304001	1210304001
57	Gear-"E" shaft (18T • 36T)	1	1210304109	1210304109	1210304109
58	Shaft-"E"	1	1210304207	1210304207	1210304207
59	Pin-taper	1	1003502904	1003502904	1003502904
60	Bearing-thrust , 51104	2	91303003	91303003	91303003
61	Cap	1	1210304305	1210304305	1210304305
62	Bearing-ball , 6004V	2	91301008	91301008	91301008
63	Shaft-"F"	1	1210304403	1210304403	1210304403
64	Gear-"F" shaft (35T • 35T)	1	1210304501	1210304501	1210304501
65	Gear-"F" shaft (left side)	1	1210304609	1210304609	1210304609
65-1	(right side)	1	1210304707	1210304707	1210304707
66	Square key , 4x4x20L	2			
67	Bearing-ball, 6005	2	91301010	91301010	91301010
68	Shaft-"G"	1	1210304805	1210304805	1210304805
69	Gear-"G" shaft	1	1210304903	1210304903	1210304903
70	Gear-"G" shaft (36T)	1	1210305008	1210305008	1210305008
71	Gear-"H" shaft (38T • 19T)	1	1210305106	1210305106	1210305106
72	Shaft-"H"	1	1210300209	1210300209	1210300209
73	Key-square , 6x6x13L	1			
74	Cap-bearing	1	1210305204	1210305204	1210305204
75	Bushing-"H" shaft	1	1210305302	1210305302	1210305302
76	Bearing-ball , 6004Z	1	91301007	91301007	91301007
77	Spacer	1	1121600905	1121600905	1121600905
78	Gear-drive shaft (57T in)	1	1121600601	1121600601	1121600601
79	Washer	3	1121602105	1121602105	1121602105
80	Hexagon socket screw , M8xP1.25x16L	1			
81	Bolt-lock end cover	1	1122100208	1122100208	1122100208
82	Stud	1	1121601108	1121601108	1121601108
83	Washer , 1/2	1	1121602301	1121602301	1121602301
84	Nut , W1/2	1			
85	Nut-lock stud	1	1121601706	1121601706	1121601706
86	Quadrat	1	1121601000	1121601000	1121601000

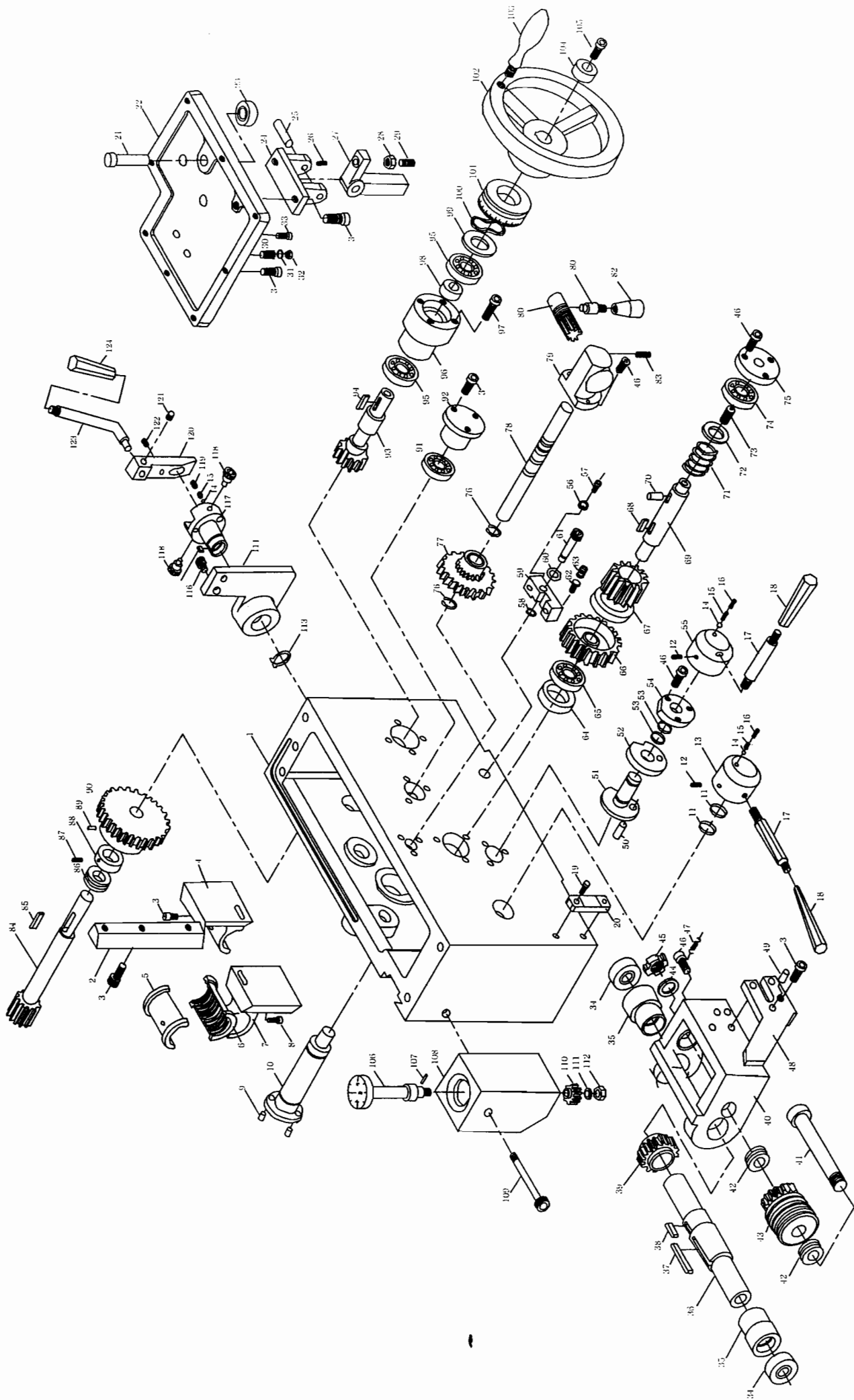
GEAR BOX ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)
			Part No.	Part No.	Part No.
87	Stud-gear	1	1121601206	1121601206	1121601206
88	Snap ring , R35	1			
89	Geat-quadrat (71T in)	1	1121600209	1121600209	1121600209
90	Snap ring , S16	1			
91	Hexagon socket screw , M6xP1.0x25L	2			
91-1	Cover	1	1222100200	1222100200	1222100200
92	Plug-oil inlet	1	1122101401	1122101401	1122101401
93	Hexagon socket screw , M6xP1.0x65L	2			
94	Seat-pilot light	1	1210701206	1210701206	1210701206
95	Lead-screw (5 feet in)	1	1210700209	1210700209	1210700209
	(5 feet mm)	1	1210700101	1210700101	1210700101
	(6 feet in)	1	1220700202	1220700202	1220700202
	(6 feet mm)	1	1220700104	1220700104	1220700104
	(8 feet in)	1	1230700205	1230700205	1230700205
	(8 feet mm)	1	1230700107	1230700107	1230700107
	(10 feet in)	1	1240700208	1240700208	1240700208
	(10 feet mm)	1	1240700100	1240700100	1240700100
96	Nut-lock	1	1210700709	1210700709	1210700709
97	Bushing-leadscrew	1			
98	Plug-lead screw	1	1210700709	1210700709	1210700709
99	Supporter-for leadscrew, feed rod	1	1210700807	1210700807	1210700807
100	Plug-oil inlet	1	1122101509	1122101509	1122101509
101	Hexagon socket screw , M8xP1.25x30L	1			
102	Nut-lock	1	1210700709	1210700709	1210700709
103	Plug-plastic	1	1122101607	1122101607	1122101607
104	Rod-feed	1	1210700307	1210700307	1210700307
105	Set screw , M6xP1.0x20L	2			
106	Pin-taper , 6x100L	1	1210700601	1210700601	1210700601
107	Hexagon socket screw , M8xP1.25x80L	1			
108	Bushing-spindle starting rod	1	1210700905	1210700905	1210700905
109	Rod-spindle starting switch				
	(5 feet)	1	1210700405	1210700405	1210700405
	(6 feet)	1	1220700408	1220700408	1220700408
	(8 feet)	1	1230700401	1230700401	1230700401
	(10 feet)	1	1240700404	1240700404	1240700404
110	Seat-switch	1	1210701304	1210701304	1210701304
111	Hexagon socket screw , M8xP1.25x25L	2			
112	Snap ring , S30	1			
113	Nut , M6xP1.0	1			
114	Set screw , M6xP1.0x20L	1	1210305400	1210305400	1210305400

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ITEM NO.	Part Name	Amt. Used	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)
			Part No.	Part No.	Part No.
115	Bracket	1	1210701402	1210701402	1210701402
121	Pin , 5x30L	1			
122	Screw socket. headless set , M6xP1.0x8L	1			
123	Switch	2			
126	Knob	3	1120207400	1120207400	1120207400
127	Hexagon socket screw , M10xP1.5x35L	4	1210701500	1210701500	1210701500
128	Pin-taper , #4x38	4	1003502904	1003502904	1003502904
128-1	Pin-taper , 6x45	1			
129	Hexagon socket screw , M8xP1.25x40L	7			
130	Screw-taper, oil outlet PT3/8	1			
131	Screw-set , taper , PT1/8	1			
132	Shifter (middle)	1	1210305606	1210305606	1210305606
	Shifter (left side)	1	1210306005	1210305606	1210305606
133	Shoe-shifter (middle and right side)	2	121030571	121030571	121030571
	Shoe-shifter (left side)	1	1210305802	1210305802	1210305802
134	Shifter (right side)	1	1210306005	1210306005	1210306005
135	Snap ring , S10	3			
136	Pin-spring , 5x25	3			
137	Shaft-shifter	3	1210306103	1210306103	1210306103
138	Ring-"O" , P12	3			
139	Detent Plate	1	121030621	121030621	121030621
139-1	Detent Plate	1	1210306309	1210306309	1210306309
139-2	Detent Plate	1	121030641	121030641	121030641
140	Ball steel , 1/4	3			
141	Spring , 5x26	3			
142	Hub	3	1210306505	1210306505	1210306505
143	Lever	3	1210306701	1210306701	1210306701
144	Snap ring , S15	1			
145	Gear-drive bevel	1	1210306809	1210306809	1210306809
146	Key-square , 5x5x15L	1			
147	Shaft-bevel gear	1	1210306907	1210306907	1210306907
148	Seat-gear shifting	1	1210307002	1210307002	1210307002
149	Ball-steel , 5/16	1			
150	Spring , 8x20	1			
151	Seal-oil , 20x35x10	1			
152	Hub	1	1210307100	1210307100	1210307100
153	Handle	1	1120207204	1120207204	1120207204
154	Pin , 5x50	1			
155	Snap ring , S18	2			





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ITEM NO.	Part Name	Amt. Used	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)	名稱
			Part No.	Part No.	Part No.	
1	Body-Apron (right hand)	1	3003001-002	3003001-002	3003001-002	護床本體
	(left hand)	1	3003001-001	3003001-001	3003001-001	
2	Gib	1	3003002	3003002	3003002	嵌條
3	Hexagon socket screw , M6xP1.0x16L	18	91110616	91110616	91110616	六角承窩螺絲
4	Holder-half nut (right hand)	1	3003004	3003004	3003004	半開螺帽座
	(left hand)	1	3003004-001	3003004-001	3003004-001	
5	Nut-half (in)	1	3003005	3003005	3003005	半開螺帽
	(mm)	1	3003005-001	3003005-001	3003005-001	
6	Nut-half (in)	1	3003006	3003006	3003006	半開螺帽
	(mm)	1	3003006-001	3003006-001	3003006-001	
7	Holder-half nut (right hand)	1	3003007	3003007	3003007	半開螺帽座
	(left hand)	1	3003007-001	3003007-001	3003007-001	
9	Pin-sliding	2	3003009	3003009	3003009	滑塊銷
10	Shaft-haft nut (right hand)	1	3003010	3003010	3003010	半開螺帽心軸
	(left hand)	1	3003010-001	3003010-001	3003010-001	
11	Ring-O , P26	2	9151P026	9151P026	9151P026	O型環
12	Set screw , M8xP1.25x20L	2	3003012	3003012	3003012	固定螺絲
13	Hub (right hand)	1	3003013	3003013	3003013	撥桿軸套
	(left hand)	1	3003013-001	3003013-001	3003013-001	
14	Ball-steel , 1/4"	3	91820104	91820104	91820104	鋼珠
15	Spring , ϕ 1x6x30L	3				彈簧
16	Set screw , M8xP1.25x10L	2	91120810	91120810	91120810	固定螺絲
17	Lever	2	3003017	3003017	3003017	手柄
18	Knob	2	3003018	3003018	3003018	黑色電木把手
19	Screw , 4x10	4				五彩十字螺絲
20	Lenx-oil, CTA-8	1	3003020	3003020	3003020	油鏡
21	Shaft-auto stop	1	3003021	3003021	3003021	挺桿
22	Cover-bottom apron	1	3003022	3003022	3003022	護床底蓋
23	Seal-oil , 15x25x7	1				油封
24	Seat-tappet	1	3003024	3003024	3003024	自動停止挺桿座
25	Shaft-tappet	1	3003025	3003025	3003025	止動心軸
26	Set screw , M6xP1.0x16L	2	91120616	91120616	91120616	固定螺絲
27	Tappet	1	3003027	3003027	3003027	自動停止挺桿
28	Nut , M8xP1.25	1				螺帽
29	Set screw , M8xP1.25x30L	1	91120830	91120830	91120830	固定螺絲
30	Set screw , M6xP1.0x40L	1	91120640	91120640	91120640	固定螺絲
31	Set screw , M6x40	1				車削止付
32	Nut , M6xP1.0	2				螺帽
33	Screw-oil leakage , PT1/4	1	92590601	92590601	92590601	油塞
34	Seal-oil , 32x42x10	1				油封
35	Bushing	2	3003035	3003035	3003035	軸襯
36	Sleeve-feed rod	1	3003036	3003036	3003036	自動進刀軸套
37	Key-sqaure , 6x6x42L	1	91610607	91610607	91610607	雙圓平行鍵

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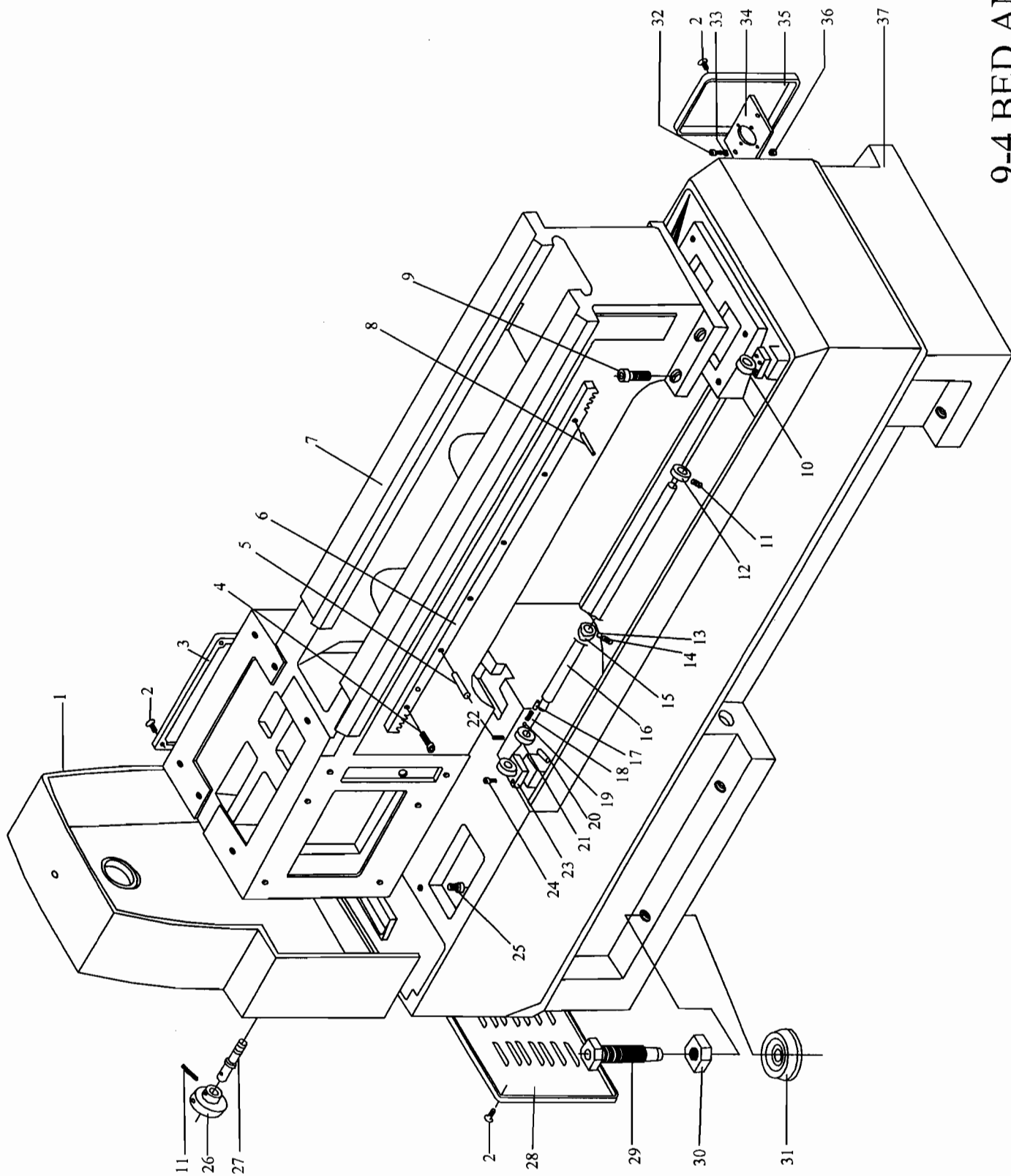
ITEM NO.	Part Name	Amt. Used	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)	名稱
			Part No.	Part No.	Part No.	
38	Key-sqaure , 6x6x12L	1	91610601	91610601	91610601	雙圓平行鍵
39	Gear	1	3003039	3003039	3003039	齒輪
40	Seat-worm	1	3003040	3003040	3003040	蝸桿座
41	Shaft-worm	1	3003041	3003041	3003041	蝸桿心軸
42	Bearing-thrust , 2904	2	91311005	91311005	91311005	止推軸承
43	Worm gear	1	3003043	3003043	3003043	蝸桿
44	Washer-lock , 20	1				太陽墊圈
45	Nut	1				蝸桿心軸螺帽
46	Hexagon socket screw , M6xP1.0x30L	1	91110630	91110630	91110630	六角承窩螺絲
47	Spring , ϕ 1x10x60L (right)	1	3003047	3003047	3003047	彈簧
	(left)	1	3003047-001	3003047-001	3003047-001	
48	Block-safe device (right)	1	3003048	3003048	3003048	安全塊
	(left)	1	3003048-001	3003048-001	3003048-001	
49	Pin , 5x18L	2				彈簧銷
50	Pin	1				銷
51	Shaft-auto feed (right)	1	3003051	3003051	3003051	撥動軸
	(left)	1	3003051-001	3003051-001	3003051-001	
52	Collar (right)	1	3003052	3003052	3003052	撥動軸
53	Ring-O , P16	2	9151P016	9151P016	9151P016	O型環
54	Cover	1	3003054	3003054	3003054	軸蓋
55	Hub (right)	1	3003055	3003055	3003055	撥桿軸套
	(left)	1	3003055-001	3003055-001	3003055-001	
56	Spring washer , M8	1				彈簧華司
57	Hexagon socket screw , M8xP1.25x12L	1	91110812	91110812	91110812	六角承窩螺絲
58	Snap ring , S10	1	9171S010	9171S010	9171S010	扣環
59	Lever	1	3003059	3003059	3003059	自動停止槓桿
60	Spring washer , M12	1				彈簧墊圈
61	Screw, M12x30	1				螺絲
62	Hexagon socket screw , M5xP0.8x20L	1	91110520	91110520	91110520	六角承窩螺絲
63	Spring	1	3003063	3003063	3003063	彈簧
64	Spacer	1	3003064	3003064	3003064	密封塊
65	Bearing-ball , 6005V	1	91301012	91301012	91301012	滾珠軸承
66	Worm-wheel	1	3003066	3003066	3003066	蝸輪
67	Wheel friction	1	3003067	3003067	3003067	離合齒輪
68	Key-square , 7x7x12L	1	91610701	91610701	91610701	雙圓平行鍵
69	Shaft-worm wheel	1	3003069	3003069	3003069	離合器心軸
70	Pin	1	3003070	3003070	3003070	墊圈擋塊
71	Spring-compressing	1	3003071	3003071	3003071	彈簧
72	Washer	1	3003072	3003072	3003072	墊片
73	Set screw	1				固定螺絲
74	Bearting-ball , 6204	1	91301018	91301018	91301018	滾珠軸承

APRON ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)	名稱
			Part No.	Part No.	Part No.	
75	Cover	1	3003075	3003075	3003075	離合器
76	Snap ring , S20	2	9171S020	9171S020	9171S020	扣環
77	Gear	1	3003077	3003077	3003077	齒輪
78	Shaft-cross feed	1	3003078	3003078	3003078	縱橫變換軸
79	Set (right hand)	1	3003079	3003079	3003079	變換軸套
	(left hand)	1	3003079-001	3003079-001	3003079-001	
80	Shaft-lever	1	3003080	3003080	3003080	縱橫變換齒輪
81	Lever	1	3003081	3003081	3003081	手柄
82	Knob	1	3003082	3003082	3003082	電木把手
83	Set screw , M4xP0.7x10L	1	91120410	91120410	91120410	固定螺絲
84	Pinion rack	1	3003084	3003084	3003084	中間軸
85	Key-square , 6x6x20L	1	91610605	91610605	91610605	雙圓平行鍵
86	Bearing niddle , NK20/22	1	91311001	91311001	91311001	滾針軸承
87	Set screw , M8x10	1	91120810	91120810	91120810	固定螺絲
88	Collar	1	3003088	3003088	3003088	固定圈
89	Pin-spring , 6x36L	1	92030636	92030636	92030636	彈簧銷
90	Gear	1	3003090	3003090	3003090	中間軸齒輪
91	Bearing-ball , 6003	1	91301005	91301005	91301005	滾珠軸承
92	Cover	1	3003092	3003092	3003092	軸套
93	Pinion-handwheel		3003093	3003093	3003093	手輪心軸
94	Key-square , 6x6x25L	1	91610606	91610606	91610606	雙圓平行鍵
95	Bearing-ball , 6004V	1	91301008	91301008	91301008	滾珠軸承
95-1	Bearing-ball , 6005Z	1	91301007	91301007	91301007	滾珠軸承
96	Seat		3003096	3003096	3003096	軸承套
97	Hexagon socket screw , M6xP1.0x30L	4	91110630	91110630	91110630	六角承窩螺絲
99	Washer		3003099	3003099	3003099	墊塊
100	Washer-wave type	1				浪型墊圈
101	Dial-rack	1	3003101	3003101	3003101	刻度環
102	Handwheel	1	3003102	3003102	3003102	手輪
103	Handle	1	3003103	3003103	3003103	手柄
104	Washer-lock	1	3003104	3003104	3003104	鎖緊墊片
105	Hexagon socket screw , M8xP1.25x20L	1	91110820	91110820	91110820	六角承窩螺絲
106	Dial-thread chasing					指示表現
	(in 4 parts)	1	3003106	3003106	3003106	
	(mm 5 parts)	1	3003106-001	3003106-001	3003106-001	
	(mm 7 parts)	1	3003106-002	3003106-002	3003106-002	
107	Pin	1				
108	Seat-dial shaft	1	3003108	3003108	3003108	車牙表現座
109	Hexagon socket screw , M10xP1.5x65L	1	91111065	91111065	91111065	六角承窩螺絲
110	Gear (in 16T)	1	3003110	3003110	3003110	齒輪
	(mm 11T)	1	3003110-001	3003110-001	3003110-001	

APRON ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
	(mm 13T)	1	3003110-002	3003110-002	3003110-002	
	(mm 14T)	1	3003110-003	3003110-003	3003110-003	
	(mm 15T)	1	3003110-004	3003110-004	3003110-004	
	(mm 18T)	1	3003110-005	3003110-005	3003110-005	
111	Washer-spring , 10	1				彈簧墊圈
112	Nut , M10xP1.5	1				螺帽
113	Snap ring , S30	1	9171S030	9171S030	9171S030	扣環
114	Seat-switch	1	3003114	3003114	3003114	開關座
115	Key-square , 6x8x25L	1	91610610	91610610	91610610	雙圓平行鍵
116	Hexagon socket screw , M8xP1.25x16L	2	91110816	91110816	91110816	六角承窩螺絲
117	Bracket	1	3003117	3003117	3003117	啟動槓桿座
118	Screw-lock	2	3003118	3003118	3003118	特殊固定螺栓
119	Screw-hexa. socket headless cap	1	3003119	3003119	3003119	停止定位銷
120	Seat-lever	1	3003120	3003120	3003120	啟動桿
121	Set screw , M8xP1.25x8L	2	91120808	91120808	91120808	固定螺絲
122	Spring	1				彈簧
123	Lever	1	3003123	3003123	3003123	把手
124	Knob	1	3003124	3003124	3003124	電木把手(白)



9-4 BED AND BASE

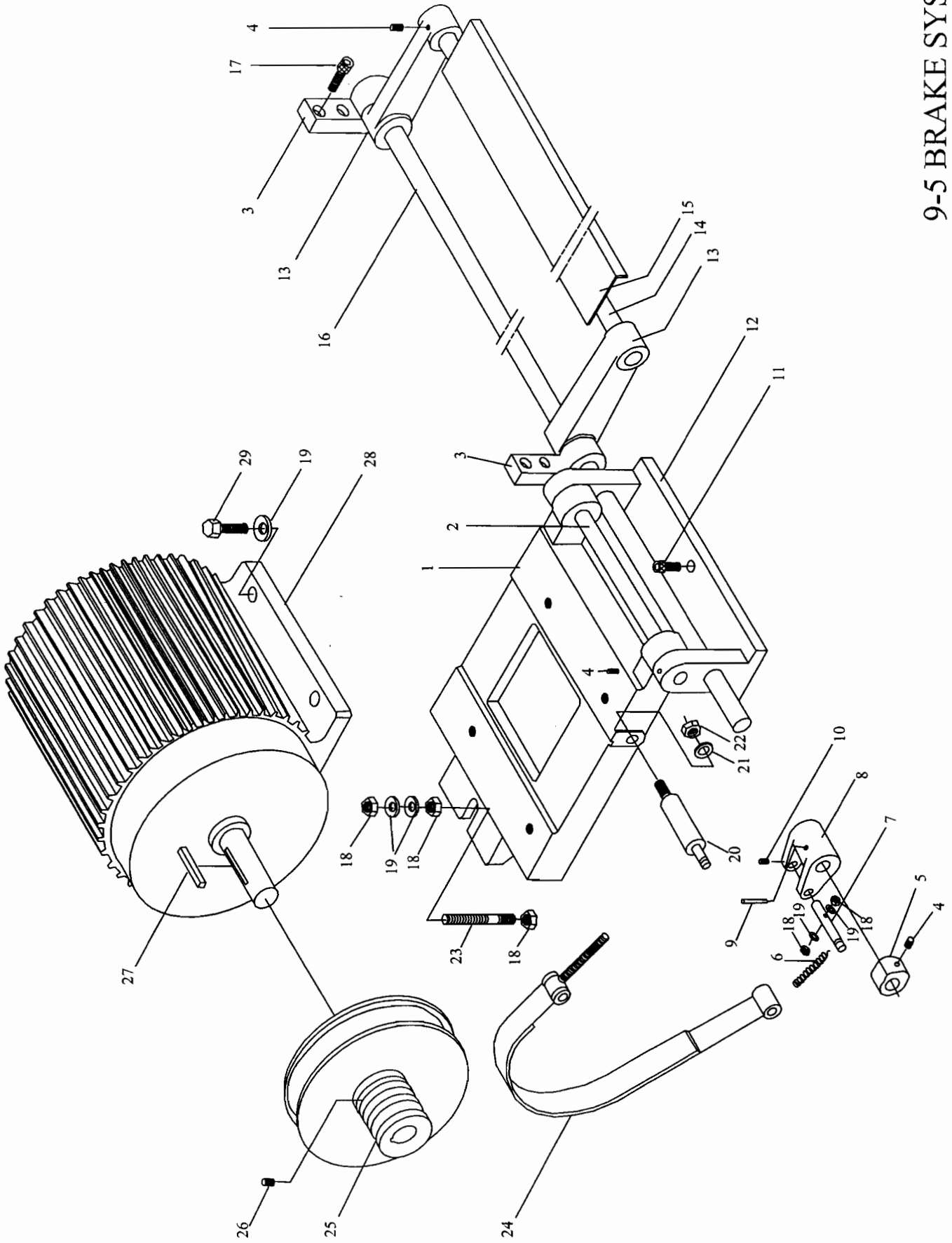
BED AND BASE ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Cover-end	1	1221600201	1221600103	1221600103	主軸側蓋
2	Screw-cross-recessed head , M6xP1.0x20L	12				十字埋頭螺絲
3	Cover-electric box	1	1122102006	1122102006	1122102006	配電箱板蓋
4	Hexagon socket screw , M6xP1.0x25L	10				六角承窩螺絲
5	Pin-taper , 6x36	2				彈簧銷
6	Rack (5 feet)	1	1210701000	1210701000	1210701000	齒條
	(6 feet , right)	1	1220700604	1220700604	1220700604	
	(6 feet , left)	1	1220700506	1220700506	1220700506	
	(8 feet)	1	1230700509	1230700509	1230700509	
	(10 feet)	1	1240700502	1240700502	1240700502	
7	Bed (5 feet)	1	1210100101	1210100101	1210100101	床身
	(6 feet)	1	1220100104	1220100104	1220100104	
	(8 feet)	1	1230100107	1230100107	1230100107	
	(10 feet)	1	1240100100	1240100100	1240100100	
8	Pin-taper , 6x36	2				彈簧銷
9	Hexagon socket screw , M16xP2.0x45L	4				六角承窩螺絲
10	Supporter-shaft	1	1122102104	1122102104	1122102104	右軸台
11	Set screw, M6xP1.0x10L	2				固定螺絲
12	Collar	1	1122102202	1122102202	1122102202	停止軸套環
13	Shoe-brass	4	1122102300	1122102300	1122102300	停止凸輪墊塊
14	Set screw, M6xP1.0x6L	1				固定螺絲
15	Cam-auto feed stopping	4	1122102408	1122102408	1122102408	自動進刀停止凸輪
16	Shaft-auto stopping (5 feet)	1	1212100109	1212100109	1212100109	停止軸
	(6 feet)	1	1222100308	1222100308	1222100308	
	(8 feet)	1	1232100105	1232100105	1232100105	
	(10 feet)	1	1242100108	1242100108	1242100108	
17	Set screw , M8xP1.25x8L	1				固定螺絲
18	Spring , 1x6x8L	1				彈簧
19	Ball-steel , 1/4"	1				鋼珠
20	Lever-turning shaft	4	1122102506	1122102506	1122102506	停止轉輪把手
21	Collar	1	1122103905	1122103905	1122103905	自動停止轉輪
22	Set screw, M8xP1.25x10L	1	91120810	91120810	91120810	固定螺絲
23	Supporter-shaft	1	1122102604	1122102604	1122102604	左軸台
24	Hexagon socket screw , M8xP1.25x16L	4				六角承窩螺絲
25	Hexagon socket screw , M16xP2.0x55L	8				六角承窩螺絲
26	Plug	1	1122102702	1122102702	1122102702	側蓋鎖緊螺栓塞
27	Bolt-lock	1	1122100208	1122100208	1122100208	側蓋鎖緊螺絲
28	Cover-motor seat	2	1122100806	1122100806	1122100806	床頭馬達孔蓋板
29	Bolt-set machine	6	112210281	112210281	112210281	固定螺栓

BED AND BASE ASSEMBLY

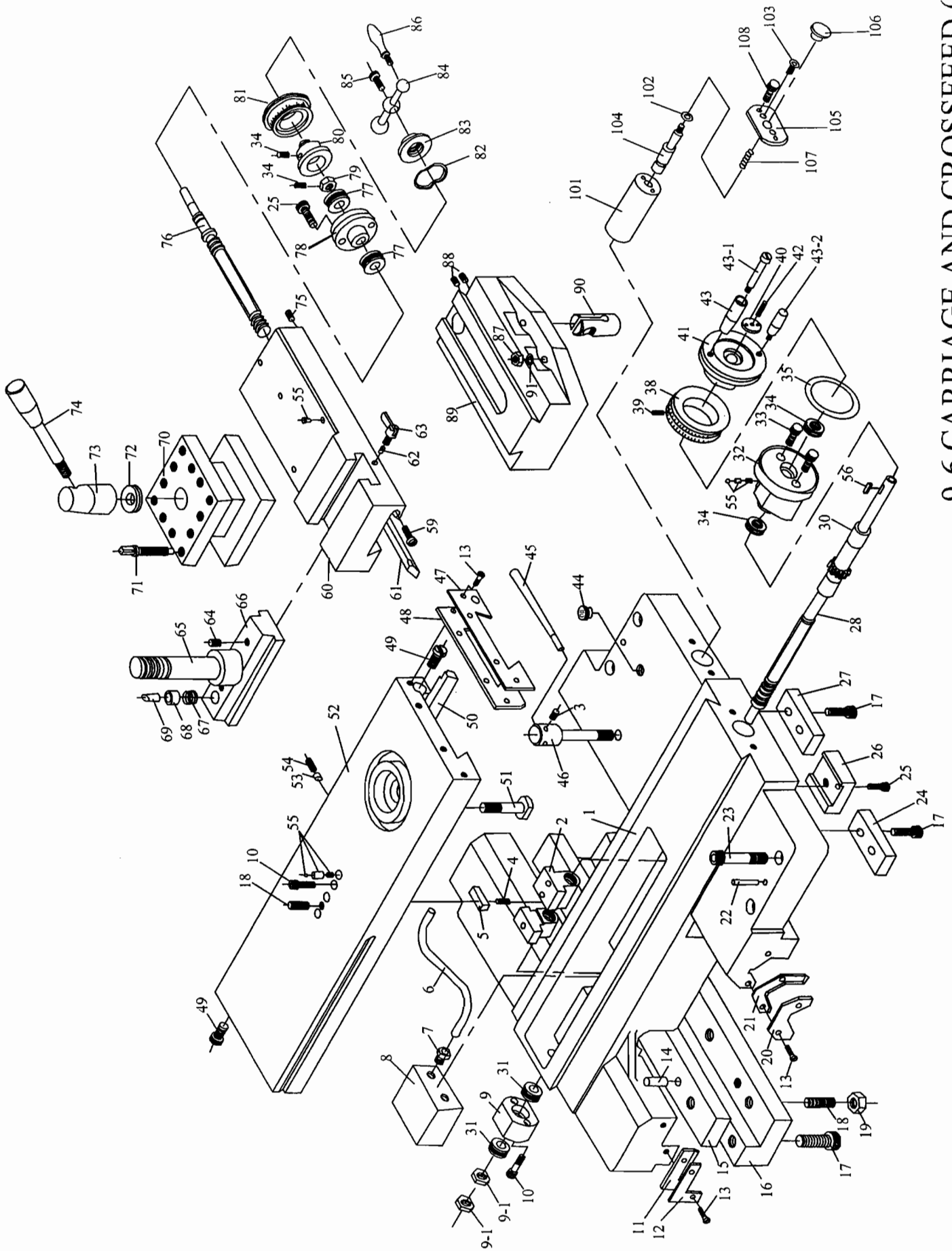
ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
30	Nut-lock	6	1122102800	1122102800	1122102800	固定螺栓螺帽
31	Block-leveling	6	1003501809	1003501809	1003501809	墊塊
32	Bolt-hexa. head W1/4"x25	2				六角頭螺絲
33	Washer , W5/8"	2				墊圈
34	Seat-coolant pump	1	121010051	121010051	121010051	冷卻泵浦座
35	Cover-coolant motor seat	1	1005000403	1005000403	1005000403	泵浦孔蓋板
36	Nut-lock , W1/4"	2				螺帽
37	Base (5 feet)	1	1210100209	1210100209	1210100209	底座
	(6 feet)	1	1220100202	1220100202	1220100202	
	(8 feet)	1	1230100205	1230100205	1230100205	
	(10 feet)	1	1246100208	1246100208	1246100208	

9-5 BRAKE SYSTEM



BRAKE SYSTEM

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Seat-motor	1	1210400106	1210400106	1210400106	馬達底板
2	Shaft-motor seat	1	1210400204	1210400204	1210400204	基座樞軸
3	Block	2	1210100601	1210100601	1210100601	軸台
4	Set screw , M6xP1.0x15L	4				固定螺絲
5	Cam	1	1210400606	1210400606	1210400606	凸輪
6	Spring	1	1210400302	1210400302	1210400302	彈簧
7	Shaft-brake	1	1210400704	1210400704	1210400704	煞車帶插銷
8	Arm-brake	1	1210400802	1210400802	1210400802	制動搖臂
9	Pin-taper , 4"x38L	1				推拔銷
10	Set screw, M6xP1.0x10L	1				固定螺絲
11	Hexagon socket screw , M10xP1.5x20L	3				六角承窩螺絲
12	Bracket-motor seat	1	1210100709	1210100709	1210100709	馬達基座托架
13	Bracket-pedal	2	1210400900	1210400900	1210400900	踏板支架
15	Pedal-brake (5 feet)	1	1210400508	1210400508	1210400508	踏板
	(6 feet)	1	1220400109	1220400109	1220400109	
	(8 feet)	1	1230400102	1230400102	1230400102	
	(10 feet)	1	1240400105	1240400105	1240400105	
16	Shaft-pedal bracket (5 feet)	1	1210100105	1210100105	1210100105	制動踏板軸
	(6 feet)	1	1220100300	1220100300	1220100300	
	(8 feet)	1	1230100401	1230100401	1230100401	
	(10 feet)	1	1240100404	1240100404	1240100404	
17	Hexagon socket screw , M10xP1.5x20L	4				六角承窩螺絲
18	Nut , M16	5				螺帽
19	Washer , M16	8				平墊圈
20	Bolt-adjusting	1	1210401005	1210401005	1210401005	調整螺栓固定銷
21	Washer , M12	1				平墊圈
22	Nut , M12	1				螺帽
23	Bolt-adjusting	1	1210400400	1210400400	1210400400	調整螺栓
24	Belt-brake (5HP , 15HP)	1	1003519605	1003519605	1003519605	煞車帶
	(7.5HP , 10HP)	1	1003519703	1003519703	1003519703	
25	Belt pulley (5HP/60HZ)	1	3005025	3005025	3005025	馬達皮帶輪
	(7.5HP、10HP/60HZ)	1	3005025-004	3005025-004	3005025-004	
26	Set screw , M8xP1.25x8L	1				固定螺絲
27	Key , 8x7.5x40 (5HP)	1				雙圓平行鍵
	10x8x65 (7.5HP)	1				
	(10HP)	1				
	12x8x80 (15HP)	1				
28	Motor (5HP/220/440/60)	1	81000103	81000103	81000103	馬達
	(7.5HP/220/440/60)	1	81000205	81000205	81000205	
29	Bolt-hexa. head , M10x30L	4				六角頭螺絲



9-6 CARRIAGE AND CROSSFEED (export)

CARRIAGE AND CROSSFEED ASSEMBLY

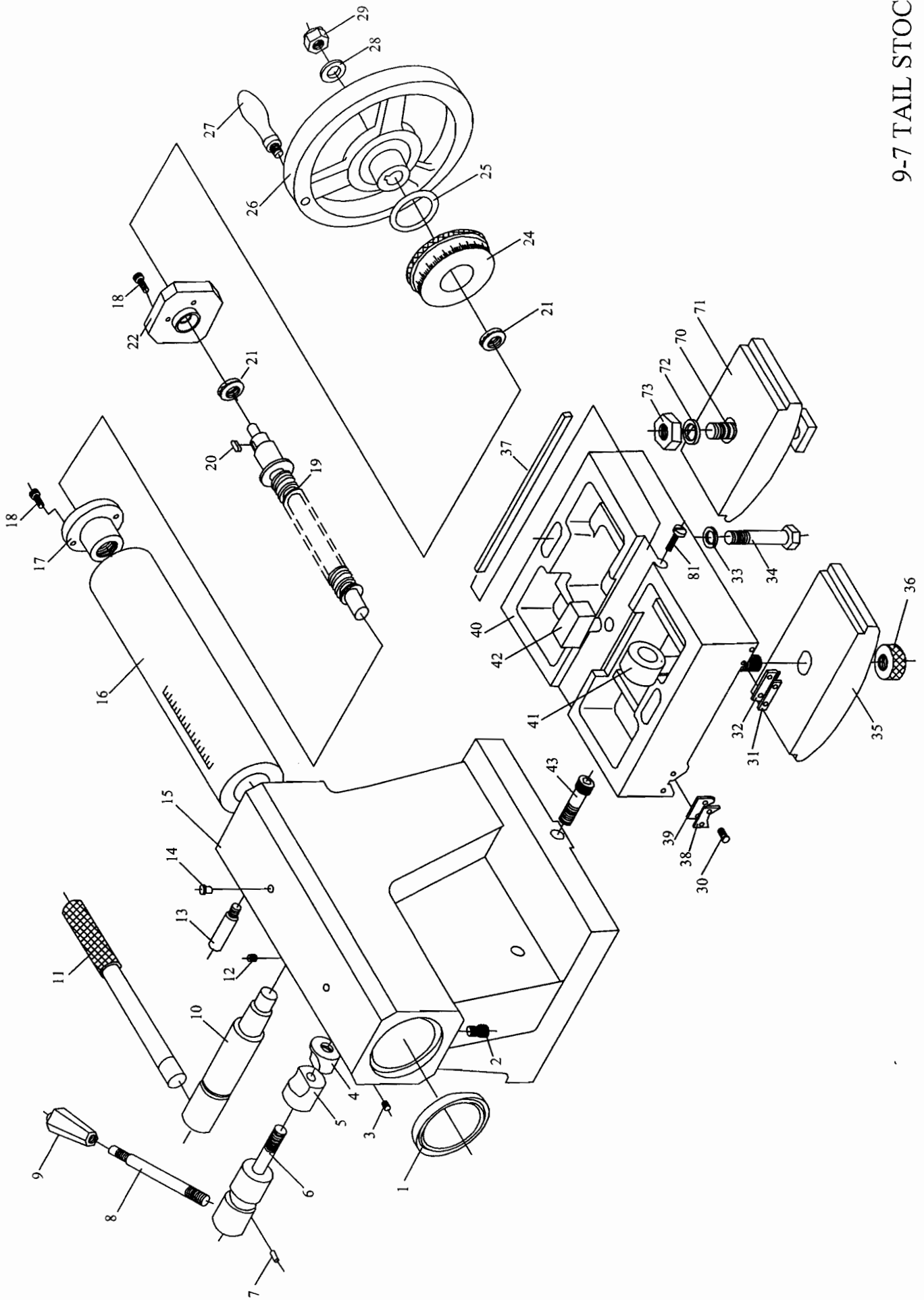
ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Carriage	1	1220800109	1220800109	1220800109	滑座本體
2	Nut-crossfeed	1				螺帽
3	Nut-crossfeed	1				螺帽
4	Spring , 0.3x5x15L	1				彈簧
5	Shim-crossfeed nut	1	1120800901	1120800901	1120800901	契
6	Pipe-lubrication oil	1				銅油管
7	Nut-copper	1				銅螺帽
8	Conveyor-oil	1	1120801006	1120801006	1120801006	分油器
9	Cap-crossfeed screw	1	1120801104	1120801104	1120801104	拖架
9-1	Nut-hexa. Head , M12xP1.25	1				六角螺帽
10	Hexagon socket screw , M8xP1.25x35L	2				六角承窩螺絲
11	Wiper-rear	1	1122100100	1122100100	1122100100	右後防塵油封
12	Case-wiper , rear	1	1122100306	1122100306	1122100306	後防塵油封固定片
13	Screw-cross-recessed , M4xP0.7x10L	8				十字圓頭螺絲
14	Pin	2				直銷
15	Gib	1	1220800207	1220800207	1220800207	炭條
16	Holder-gib	1	1220800403	1220800403	1220800403	後扁栓
17	Hexagon socket screw , M8xP1.25x20L	2				六角承窩螺絲
18	Set screw , M8xP1.25x20L	5				固定螺絲
19	Nut , M8xP1.25	4				螺帽
20	Case-wiper , front	1	1122100404	1122100404	1122100404	前防塵油封固定片
21	Wiper-front	1	1122100100	1122100100	1122100100	防塵油封
22	Pin-taper , 6 # 75L	2	1210700503	1210700503	1210700503	推拔銷
23	Hexagon socket screw , M10xP1.5x70L	4				六角承窩螺絲
24	Gib-left-front	1	1120801202	1120801202	1120801202	左前扁栓
25	Set screw , M6xP1.0x20L	3				固定螺絲
26	Clamp-carriage	1	1120801300	1120801300	1120801300	滑座夾緊塊
27	Gib-right-front	1	1120801408	1120801408	1120801408	右前扁栓
28	Screw-crossfeed (8TPI , in)	1	1000800403	1000800403	1000800403	導螺桿
	(5MM , mm)	1	1000800109	1000800109	1000800109	
29	Pin-spring , 5x30L	1				彈簧銷
30	Pinion-crossfeed (local)	1	1220800501	1220800501	1220800501	齒輪軸
	(export)	1	1220800609	1220800609	1220800609	
31	Bearing thrust , 51101	1	91303001	91303001	91303001	止推軸承
32	Bracket	1	1120800107	1120800107	1120800107	托架
33	Bolt-hexa. Socket, M8xP1.25x40L	2				六角承窩螺絲
34	Bearing-thrust , 51103	2	91303002	91303002	91303002	止推軸承
35	Washer-wave type , 6210	2				浪型墊圈
36	Set screw , M6xP1.0x10L	1				固定螺絲

CARRIAGE AND CROSSFEED ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
37	Clutch-dial	1	1120802807	1120802807	1120802807	測微規基座
38	Dial-crossfeed (8TPI/export)	1	1000808203	1000808203	1000808203	刻度環
	(5MM/export)	1	1000802603	1000802603	1000802603	
39	Hexagon socket screw , M6xP1.0x15L	1				六角承窩螺絲
40	Set screw	1	1120803000	1120803000	1120803000	測微規基座
41	Handle-wheel (local)	1	1120802601	1120802601	1120802601	手柄
	(export)	1	1120802709	1120802709	1120802709	手輪
42	Screw-adjusting , M6xP1.0x30L	1				止付螺絲
43	Knob-handle (local)	1	1120803206	1120803206	1120803206	握把
	(export)	1	1120803304	1120803304	1120803304	
43-1	Screw-handle (export)	1				螺絲
43-2	Knob-handle	1	1120803402	1120803402	1120803402	握把
44	Plug-oil inlet	1	1121103405	1121103405	1121103405	油塞
45	Lever	1	1120801506	1120801506	1120801506	固定把手
46	Screw-carriage clamp	1	1120800607	1120800607	1120800607	固定螺栓
47	Case-wiper	1				
48	Wiper	1	1222100102	1222100102	1222100102	橫滑座防塵油封
49	Screw-adjusting	1				調整螺栓
50	Gib	1	1220800305	1220800305	1220800305	嵌條
51	Bolt	1	1120800509	1120800509	1120800509	特殊螺帽
52	Cover-cross sliding	1	1430800802	1430800802	1430800802	橫滑座
53	Shoe-clamp	1	1220800707	1220800707	1220800707	鎖緊銷
54	Set screw , M6xP1.0x20L	1				固定螺絲
55	Spring	1				彈簧
56	Button	1				固定銷
57	Ball-steel , 1/4"	1				銅入珠
58	Hexagon socket screw , M6xP1.0x3	3				六角承窩螺絲
59	Screw-gib	2				調整螺栓
60	Compound rest	1				複式刀座
61	Gib-compound rest	1	1000804509	1000804509	1000804509	船座嵌條
62	Shoe-clamp	1	1220800707	1220800707	1220800707	鎖緊銷
63	Screw-clamp	1				鎖緊螺絲
64	Screw-hexa. socket headless cap , M8xP1.25x10L	4				
65	Shaft-tool post	1				刀架心軸
65-1	Shaft-tool post	1				刀架心軸
66	Block-tee	1				T型塊
67	Spring , 1x8x20L	1				彈簧
68	Sleeve	1				
69	Button	1				固定銷
70	Tool post square (export)	1	1003512802	1003512606		四方刀架
	(local)	1	1003512704	1003512508		

CARRIAGE AND CROSSFEED ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
71	Screw-square head	1	1000804107	1000804107	1000804107	刀架螺絲
72	Bearing-thrust , 51104	1	91303003	91303003	91303003	止推軸承
73	Knob-lever	1	1000810605	1000810605	1000810605	鎖緊輪
74	Lever	1	1000810605	1000810605	1000810605	煙斗
75	Screw-gib , M8xP1.25x31L	1				
76	Screw-compound rest	1	1000803904	1000803904	1000803904	船座導螺桿
77	Bearing-thrust , 51102	2				止推軸承
78	Seat-compound rest screw	1				
79	Nut	1				螺帽
80	Collar	1				
81	Dial-compound rest	1	1000820003	1000820003	1000820003	船座刻度環
82	Washer-wave type	1				浪型墊圈
83	Nut	1				
84	Handle	1				手柄
85	Hexagon socket screw , M6xP1.0x16L	1				六角承窩螺絲
86	Knob-handle	1				手柄
87	Nut , M10xP1.5	4				螺帽
88	Set screw , M8xP1.25x8L	2				固定螺絲
89	Swivel	1				
90	Nut-compound rest screw	1				船座導螺桿螺帽
91	Spring washer , M10	4				
101	Body-pump	1	1120801800	1120801800	1120801800	泵浦本體
102	Ring-O , P10	1				O型環
103	Screw , M5xP0.8x12L	2				
104	Rod-pump	1	1120801908	1120801908	1120801908	活塞桿
105	Stopper	1	1120802003	1120802003	1120802003	固定板
106	Plug	1	1120802101	1120802101	1120802101	把手
107	Spring-compressing , φ1.2x10x63L	1				彈簧
108	Screw-hexa. Socket head cap , M6xP1.0x16L	2				十字圓頭螺絲



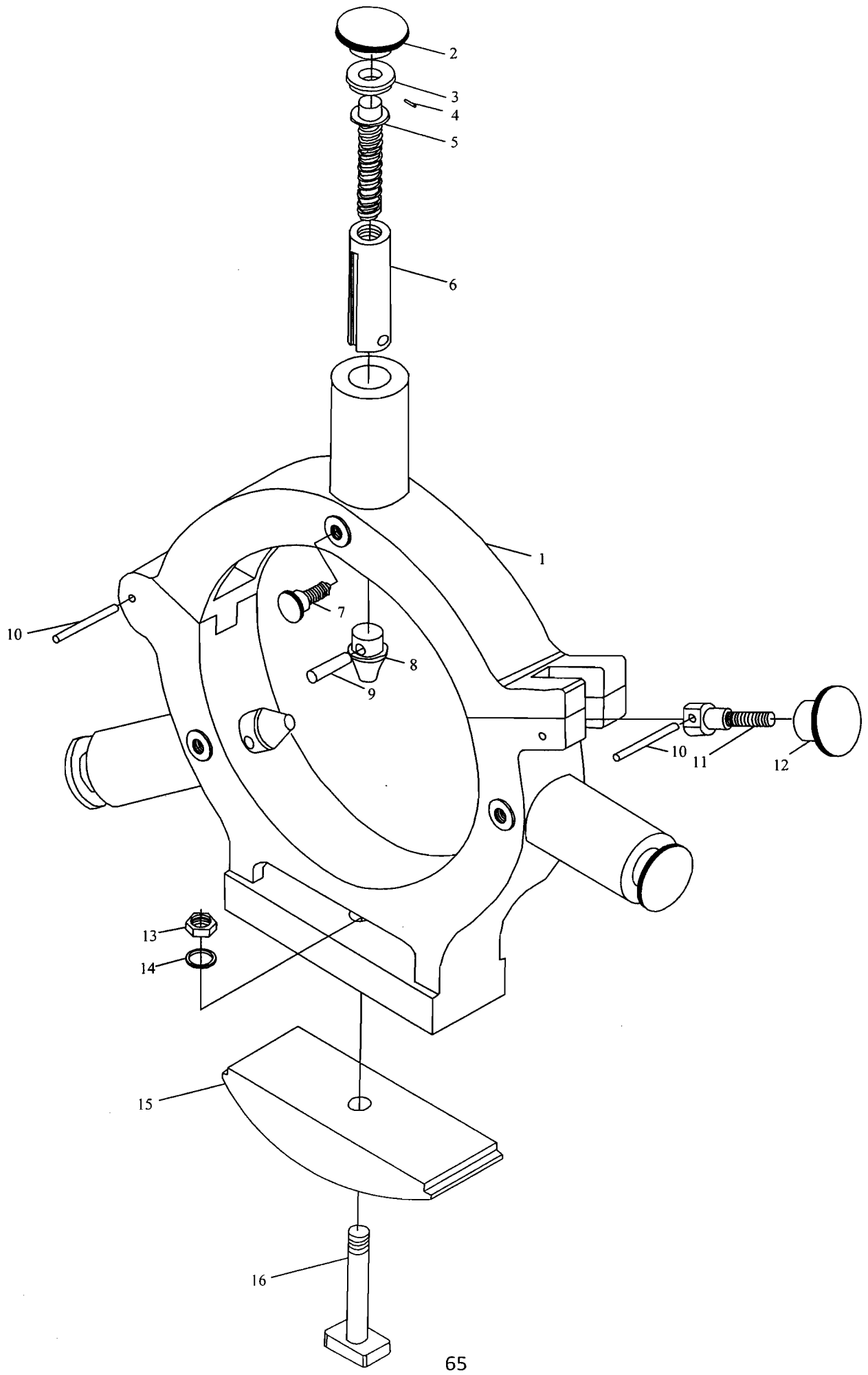
TAILSTOCK ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Seal-oil , TC68x90x12	1				油封
2	Hexagon socket screw, M8xP1.25x10L	1				六角承窩螺絲
3	Set screw , M6xP1.0x10L	1				固定螺絲
4	Block-clamp	1	1121101005	1221100706	1221100706	鎖緊軸套
5	Block-clamp	1	1121101005	1221100706	1221100706	鎖緊軸套
6	Shaft-clamp spindle	1	1121101103	1221100804	1221100804	鎖緊螺栓
7	Pin , 5x12	1				彈簧銷
8	Lever	1	1121102100	1121102100	1121102100	手柄
9	Sleeve-lever	1	1120207400	1120207400	1120207400	電木把手
10	Shaft-clamp bottom	1	1121101201	1221100902	1221100902	偏心軸柄
11	Lever	1	1121101201	1221100902	1221100902	偏心軸柄
12	Set screw , M6xP1.0x20L	1				固定螺絲
13	Screw-brake	1	1121102306	1121102306	1121102306	制動銷
14	Plug-oil	3				油杯
15	Body-tailstock	1	1121100106	1221100108	1221100108	尾座本體
16	Spindle-tang slot	1	1121101309	122110101	122110101	套筒
17	Cap-spindle	1				銅螺帽
18	Hexagon socket screw , M8xP1.25x10L	3				六角承窩螺絲
19	Screw-spindle feed (in)	1	122110031	122110031	122110031	螺旋軸
	(mm)	1	122110041	122110041	122110041	螺旋軸
20	Key-square , 6x6x25	1				雙圓平行鍵
21	Bearing-thrust , 51204	2	91303005	91303005	91303005	止推軸承
22	Cap-body end	1	1121101407	1221101105	1221101105	尾座後護蓋
23	Screw-hexa. Socket head cap , 96xP1.0x25L	4				
24	Dial-feed (in)	1	1121100508	1221100500	1221100500	刻度環
	(mm)	1	1121100606	1221100608	1221100608	刻度環
25	Washer-wave type , 6205	1				浪型墊圈
26	Handwheel	1	1121100900	1121100900	1121100900	手輪
27	Knob	1	1121102002	1121102002	1121102002	握把
28	Washer , 1/2"	1				平墊圈
29	Nut , 1/2-20UNF	1				特殊耐龍鎖緊螺帽
30	Screw-cross-recessed , M4xP0.7x12L	4				十字圓頭螺絲
31	Case-wiper	2	1122100600	1122100600	1122100600	平型防塵油封固定片
32	Wiper	2	1122100100	1122100100	1122100100	防塵油封
33	Washer-flat , M10	2				平墊圈
34	Bolt-clamp , M10xP1.5x75L	2				六角頭螺絲
35	Clamp	1	1122100708	1122100708	1122100708	制動塊
36	Washer	1	1122103503	1122103503	1122103503	螺帽
38	Case	1	1122100502	1122100502	1122100502	V型防塵油封固定片
39	Wiper	1	1122100100	1122100100	1122100100	防塵油封

TAILSTOCK ASSEMBLY

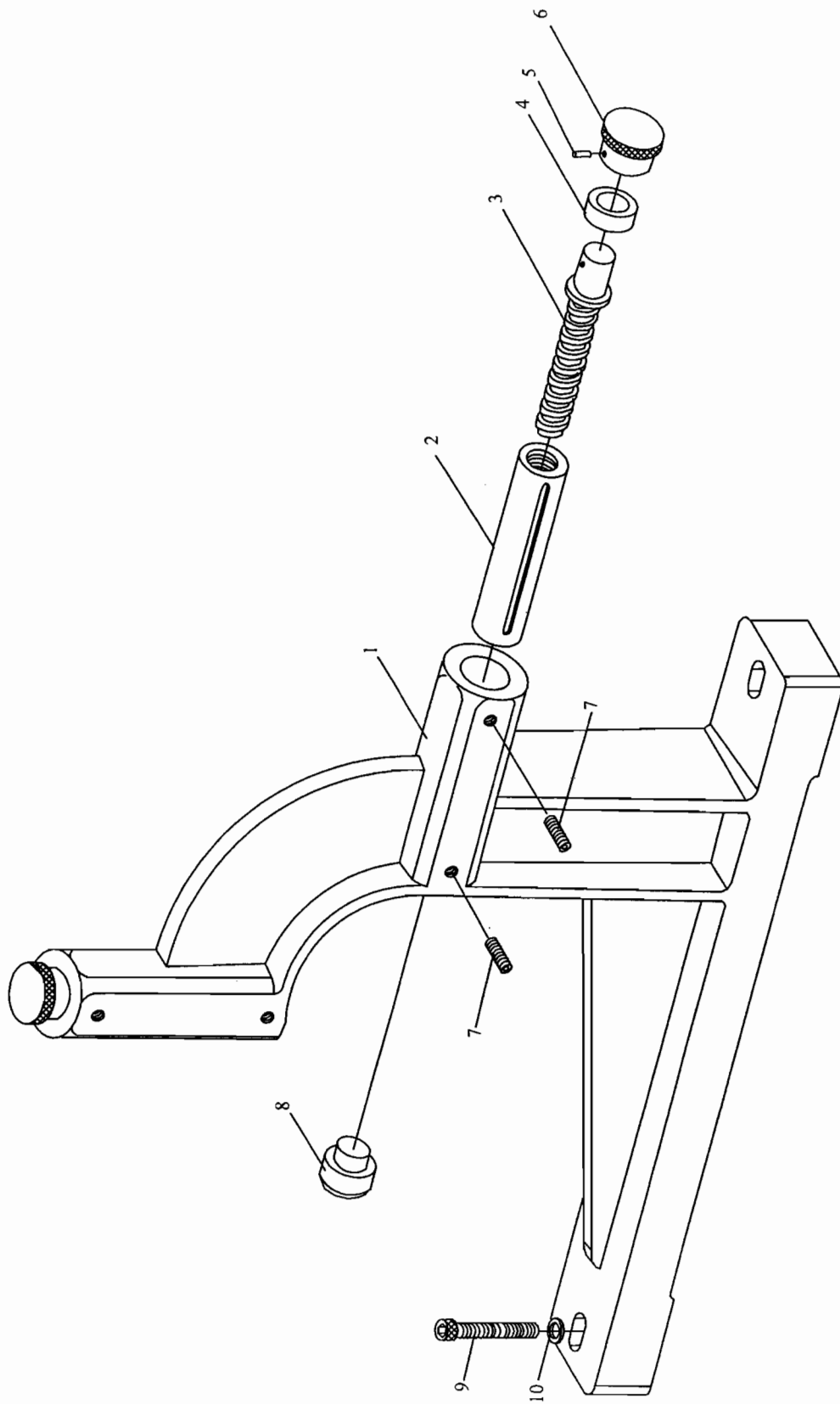
ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
40	Bottom-tailstock	1	122110141	122110021	9307040	尾座底板
41	Bolt-clamp	1	9307041-1	9307041-2	9307041-3	環首螺栓
42	Block-adjusting	1	1221101301	1221101301	1221101301	左右調整塊
43	Screw-hexa. socket , M10xP1.5x80L	2				六角承窩螺絲

9-8 STEADY REST



STEADY REST ASSEMBLY

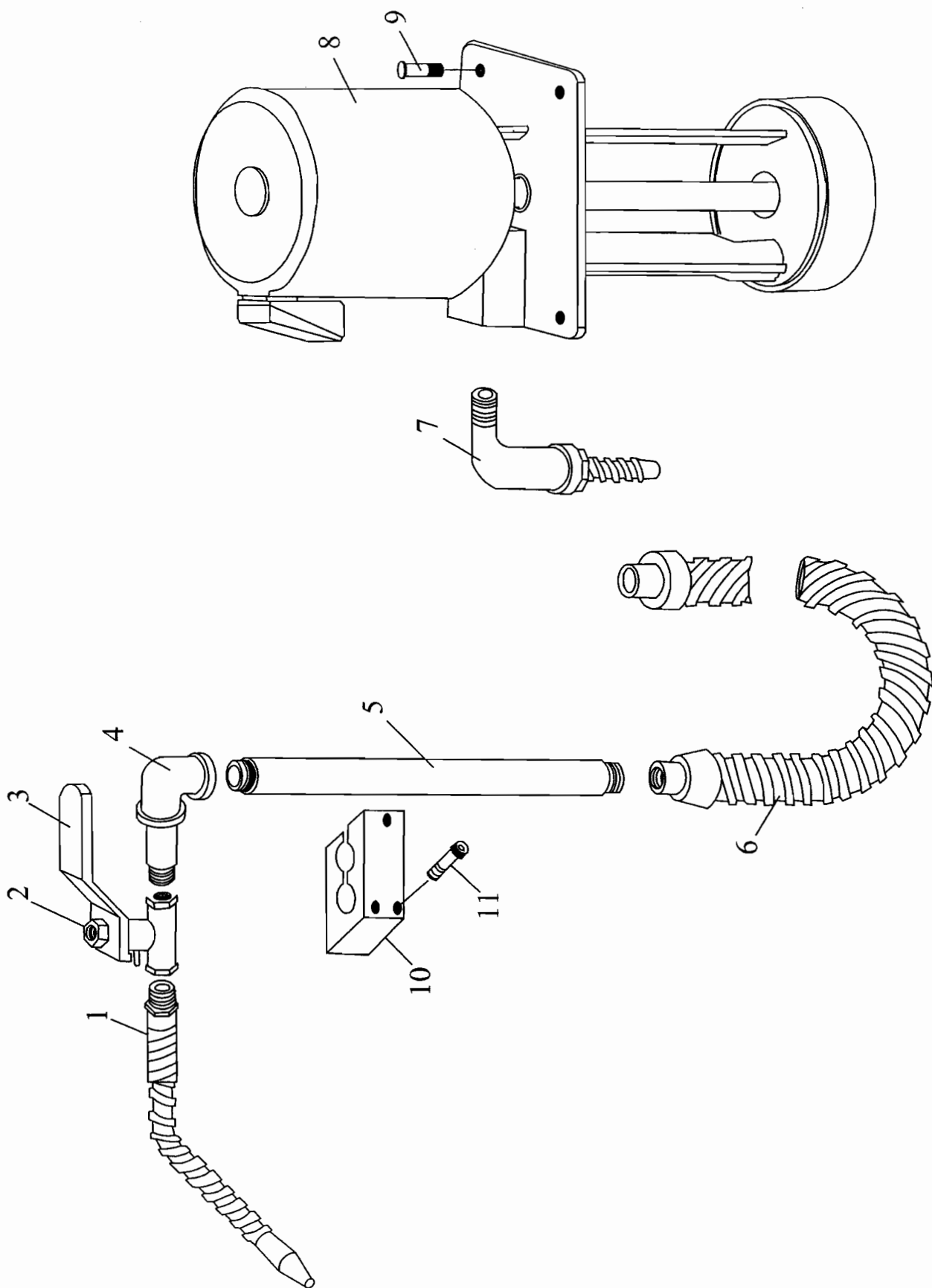
ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Steady-rest (6" Bronze tip type)	1	1003519203	1003501103		中心架
	(6" Roller type)	1	1003519301	1003501201		
	(9" Bronze tip type)	1		1003501309	3008001-008	
	(9" Roller type)	1		1003501407	3008001-007	
2	Plug-lead screw	3				
3	Cap , 6x52L	3				
4	Pin	3				
5	Lead-screw	3				鎖緊螺絲
6	Nut-lead screw	3				心軸
7	Screw-fixed	3				固定螺絲
8	Jaw	3				
9	Pin-fixed	3				
10	Pin , 9x25L	2				
11	Screw	1				螺絲
12	Plug	1				螺帽
13	Nut , W5/8"	1				螺帽
14	Washer	1				墊圈
15	Block-clamp	1	3008015	3008015	3008015	固定架制動塊
16	Bolt	1	1003500400	1003500400	1003500400	制動塊螺栓



9-9 FOLLOW REST

FOLLOW REST ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430)	Model: 19" (480)	Model: 21" (530)	名稱
			Part No.	Part No.	Part No.	
1	Body-follow rest (Bronze tip type)	1	1003519409	1003503107	3008021-003	跟刀架
	(Roller type)	1	100352700	100352710	3008021-004	
2	Nut-lead screw	2				
3	Lead-screw	2				
4	Collar	2				
5	Pin , 4x25L	2				
6	Plug-lead screw	2				
7	Screw-hexa. Socket headless cap , M8xP1.25x10L	4				六角承窩螺絲
8	Shoe	2				
9	Screw-hexa. Socket head cap , M10xP1.5x30L	2				六角承窩螺絲
10	Washer	2				墊圈



COOLANT SYSTEM ASSEMBLY

ITEM NO.	Part Name	Amt. Used	Model: 17" (430) Part No.	Model: 19" (480) Part No.	Model: 21" (530) Part No.	名稱
1	Nozzle	1				噴嘴
2	Nut-lock	1				
3	Cock-lever	1				凡而
4	Elbow	1				直角接頭
5	Metal pipe	1				
6	Pipe (5 , 6 feet)	1	92605002	92605002	92605002	噴水軟管
	(8 feet)	1	92605003	92605003	92605003	
	(10 feet)	1	92605001	92605001	92605001	
7	Elbow	1				直角接頭
8	Pump body (220V/380V)	1	92111801	92111801	92111801	泵浦
	(220V/440V)	1	92111802	92111802	92111802	
	(415V)	1	92111804	92111804	92111804	
	(600V)	1	92111806	92111806	92111806	
	(110V)	1	92111807	92111807	92111807	
9	Bolt-hex. Head , M6xP1.0x12L	2				
10	Supporter-lock pipe	1				固定塊
11	Screw-hexa. Socket head cap , M6xP1.10x20L	3				六角承窩螺絲