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PREFACE

SAFETY IS FIRST !!

Thanks for choosing machine attend to your wonderful production line!

Accumulated techniques and experiences in the field of machine tool manufacture over twenty years, this series of precision high speed lathe are designed in high stiffness, high performance and easy operation to offer high accuracy, and long service life.

This operation manual offers correct basic instructions for installation, operation, maintenance and service procedures. In order to keep the machine in high performance and operate it safely, You should familiarize yourself with this operation manual before installing and operating the machine.

Please check the title of this operation manual to make sure that it is the correct one for the machine while you receive it, and let everybody who is intended to operate the machine read and study it. If any part of it is found unclear or missing, please contact this company or our local agent immediately.

keep this operation manual nearby the machine for future reference, and remind all the operators use it propriately, and **work safely**.

1995.01

1. THE PRINCIPLE OF SAFETY

NOTICE: Only the personnel who are properly trained and have adequate knowledge and skill is allowed to operate this machine !

1-1 The moving elements of the machine

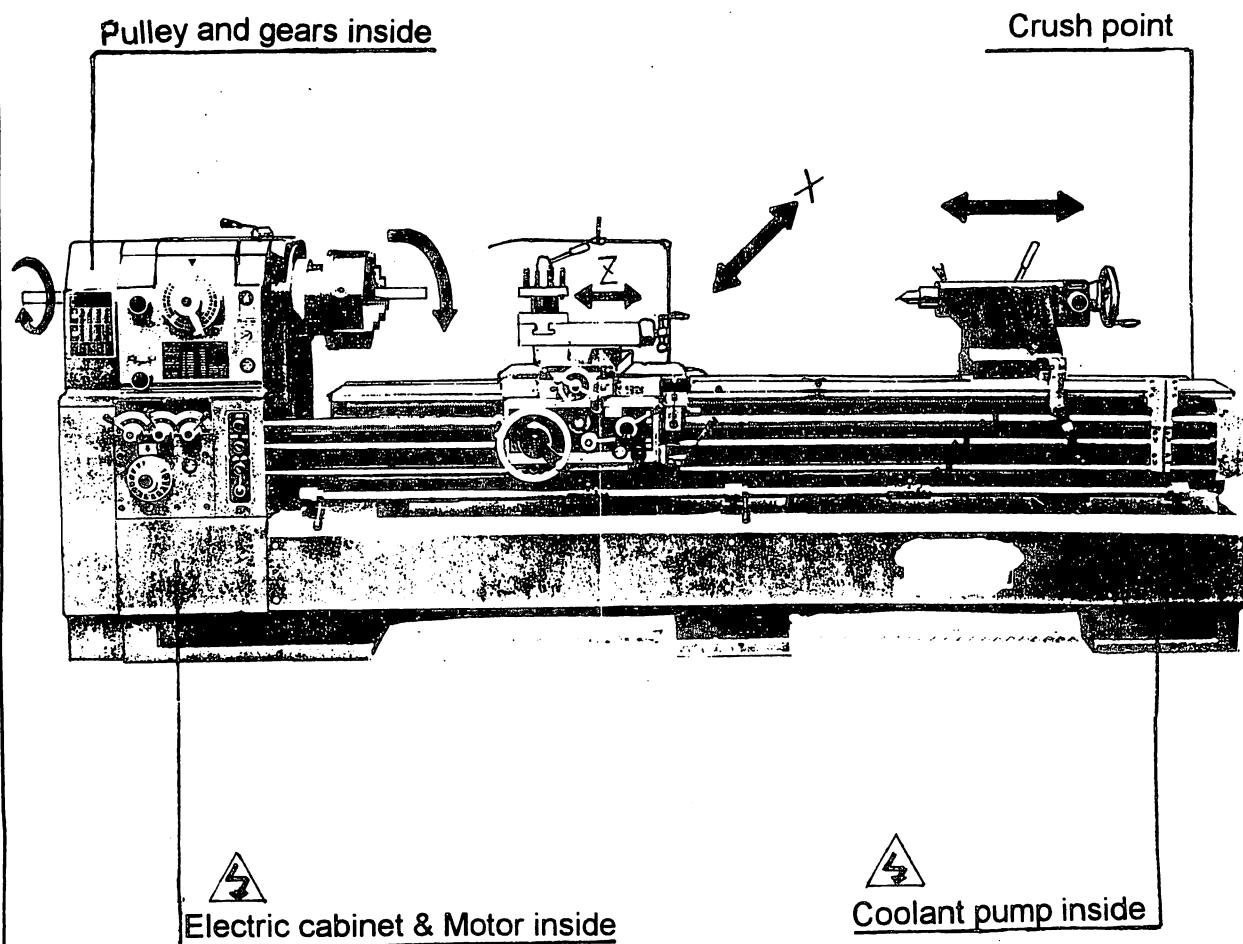


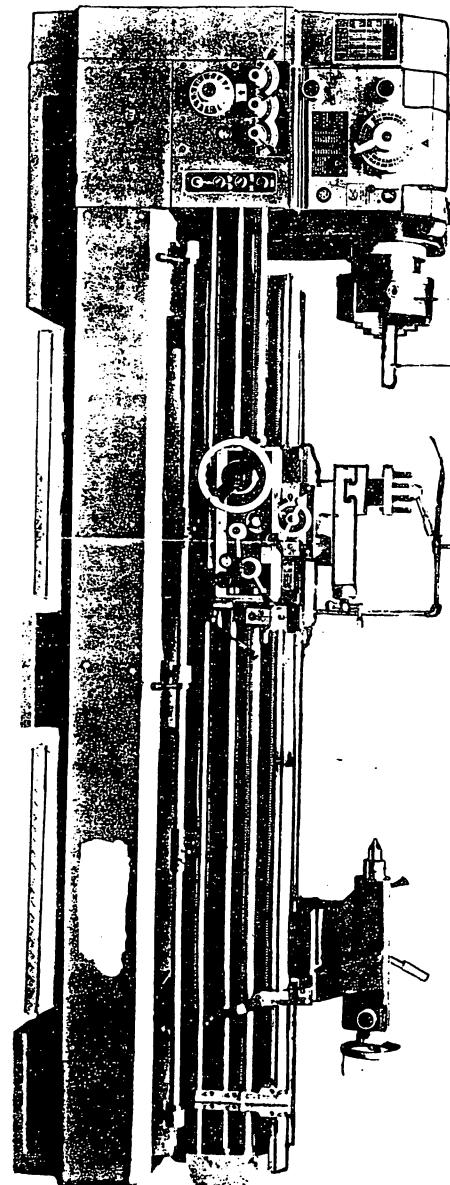
Fig. 1

1-2 The warning signs on the machine

DANGER!

Never left anything on
the circle of chuck.

Always balance and
tighten workpiece.



DANGER!

Pulley and gears inside.

Turn off power before
open this guard.

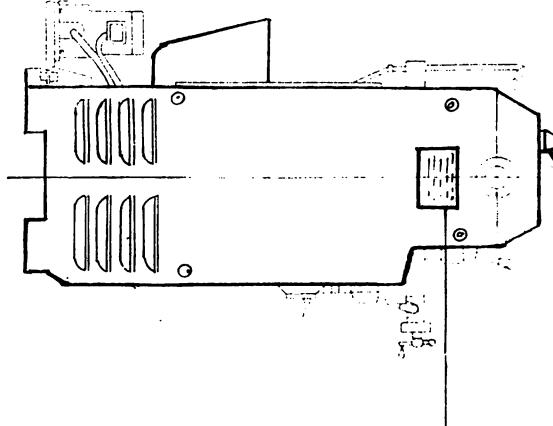


Fig. 2

1-3 Safety precautions

- (1) The employer is responsible for selecting competent and qualified employee to operate this machine.
- (2) Do not operate the machine by the way contray to the operation manual.
- (3) The working zone have to have proper lighting.
- (4) Put on the safety shoes to protect feet against rolling objects, falling objects, and accidentally kicking sharp-edged materials.
- (5) Wear the safety spectacles for eye protection during cutting the material.
- (6) Do not wear loose fitting clothes, wear the working clothes well-regulated and tie the cuff & trousers exactly.
- (7) Cover long hair with a hair net or cap.
- (8) Be sure to take off the necklace, necktie or put it into the working clothes.
- (9) Do not operate or maintain the machine after drinking or in sick.
- (10) Do not wear the gloves or other hand covering articles around the moving part.
- (11) Do not use saw or file to machine the rotating workpiece.
- (12) All covers on junction box must be closed before leaving any job, do not open it while the machine is energized.
- (13) Be sure you know how to stop the machine before you start it.
- (14) Do not clean the cutting chips before the machine complete stop.
- (15) Press the brake pedal by foot while clamp or tighten the workpiece.
- (16) Do not put the T spanner, screw driver or screw on the chuck.
- (17) After clamping the workpiece, use the low speed to assure the workpiece balance.
- (18) When using two centers for machining, be careful the clamping method for safety.
- (19) Notice the chuck weight and uphold method when disassembly the chuck for safety.
- (20) Do not use the hand to stop the machine movement.
- (21) Check the spindle speed before rotate the spindle.
- (22) Be aware of conditions that may cause fire hazard or hurt the people around working area due to the ejected cutting chips.

2. SPECIFICATION DESCRIPTION

According to the swing diameter, this type of machine has 3 different models:

- (1) 560
- (2) 660
- (3) 760

According to the distance between two centers, it has 5 different bed sizes:

- (1) 1500mm (60" inch)
- (2) 3000mm (120" inch)
- (3) 4000mm (160" inch)

We suggest that to choose the proper machine according to the requirements of the size of workpiece those you are planing to do in present and future.

Different model and bed size have different specification, weight and required foundation area. Be sure to choose the proper data from the specification chart according to the machine model and bed size for use. As to the information of operation and maintenance, there is no difference with them.

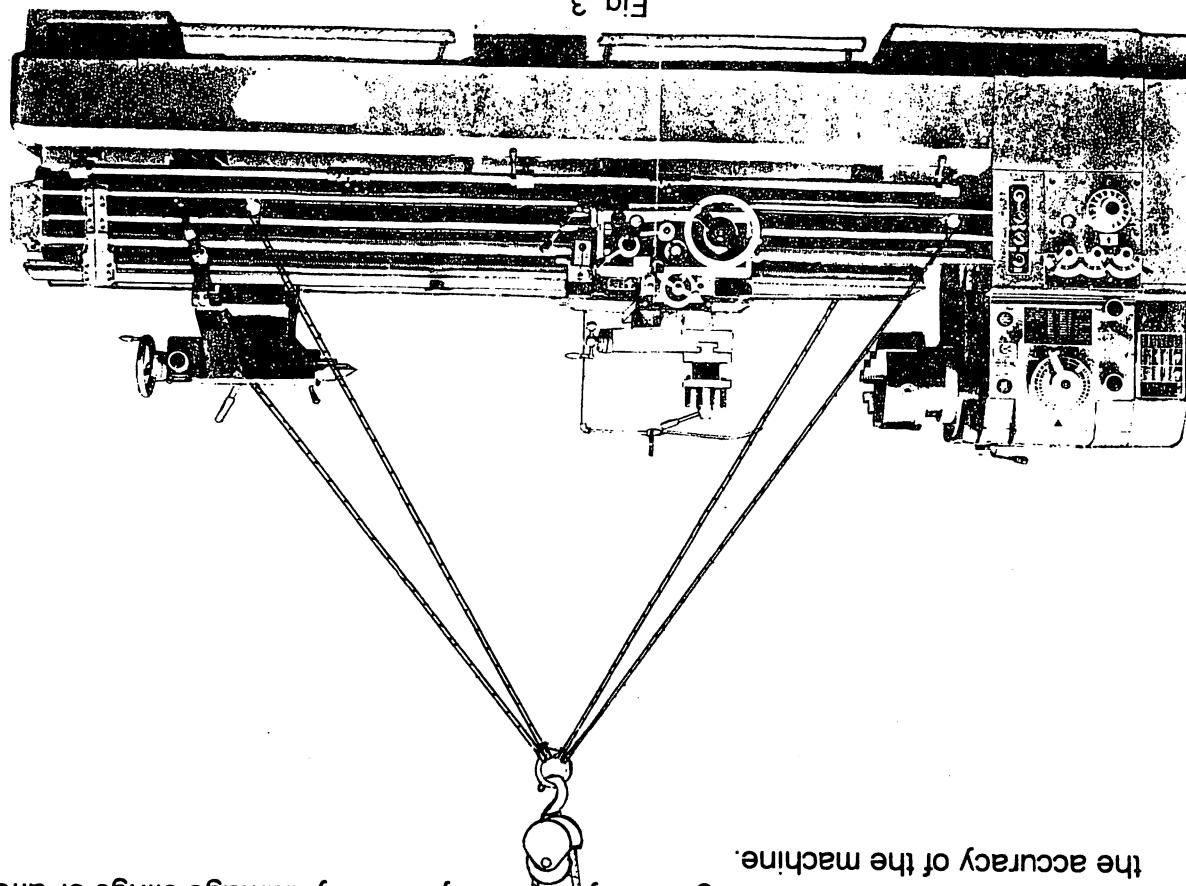
Specifications Chart

ITEMS	MODEL	560	-660	-760
		,1500, 3000,4000	,1500, 3000,	,1500, 3000
CAPACITY	Swing over bed mm	560(22")	660(26")	760(30")
	Swing over carriage mm	340(13-3/8")	445(17-1/2")	548(21-1/2")
	Swing over gap mm	797(31-3/8")	892(35-1/8")	990(39")
	Width of gap in front of face plate mm		270(10-5/8")	
	Distance between centers mm	890(35"),1525(60"),2300(90"),3950(120"), 4065(160")		
	Width of bed mm		400(15-3/4")	
	Total travel of tool post mm		242(9-1/2")	
	Total travel of cross slide mm		400(15-3/4")	
	Height of center from leg bottom mm	1067.5 (42")	1125 (44-5/16")	1182.5(46-1/2")
HEADSTOCK	Spindle bore mm	86(3-3/8"), *** 104(4-1/16")		
	Taper of spindle bore & center MT		MT. No.7 * No.5	
	Type of spindle nose	ASA:A1-8,D1-8, *** A1-11,D1-11		
	Number of spindle speeds	12		
	Spindle speeds 4P Spindlemotor(rpm)	13,20,30,47,70,105,150,230,340,530,800,1200		
	6P Spindlemotor(rpm)	8,13,20,31,47,70,100,153,227,353,800		
THREADING & FEEDS	Number of longitudinal feeds	36		
	Range of cross feeds mm/rev	Half of longitudinal feeds		
	Range of longitudinal feeds mm/rev	INCH: 0.035-0.99(0.0014"-0.039") METRIC: 0.037-1.04(0.0014"-0.041")		
	Leadscrew diameter & pitch mm	45(1-3/4") pitch: 4TPI or 6mm , 2TPI 4TPI: 2-72(44changes), 2TPI: 1-36(44changes) 6mm: 0.2-14(44changes), 12mm: 0.4-28(44changes)		
TAILSTOCK	Travel of tailstock spindle mm	178(7")		
	Diameter of tailstock spindle mm	75(2-15/16")		
	Taper hole of tailstock spindle	MT. No.5		
MOTOR	Main motor Hp	7.5Hp/4P (10Hp/4P) ** (7.5Hp/6P)		
	Coolant pump motor Hp	1/8		
MACHINE DIMENSION AND WEIGHT	Space required mm	2300/2900/3700/4500/5500 x 1200 x 1500		
	Net weight Kgs	2300,2400, 2800,3050, 3500	2400,2500, 2850,3150, 3600	2550,2650, 2900,3300

** The bed is gap type

*** When the spindle motor is 7.5HP/6P,rpm is 8-800

Fig. 3



In order to have the machine properly balanced before hoisting, it is advisable to clamp Tailstock and Carrage at the extreme right hand position firmly. It is necessary to use 4 strips of steel wire rope for lifting work, all the steel wire rope should have diameter over 1/2" (12.7mm). Put two solid steel bars of 1-1/2" (38mm) diameter, 40" (1016mm) long into the lifting holes, it should extrude at least 6" (150mm) each side of lathe for sling. Do not use hollow steel pipes! Place wood blocks or cloth between the sling and the machine to prevent damage of spindle, lead screw, handwheels and panting. The machine must be lifted gradually. Sudden jerks may damage slings or affect the accuracy of the machine.

! Warning: Check the machine weight and rope strength before lifting.

3-2 Lifting

The machine is packaged in wood crate in container for long distance transportation, or put on truck directly for local transportation. When you receive it, please examine for freight damage or shortage to verify a complete shipment. Freight damage claims must be filed immediately with the carrier. Carefully unpack and remove all items from crate. Shortage should be reported to the distributor immediately.

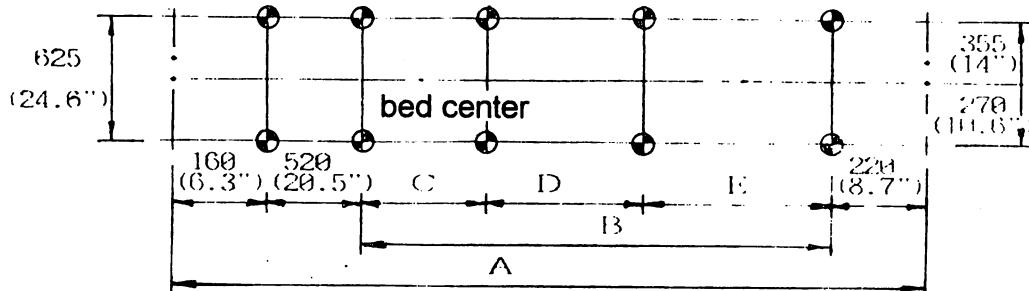
3-1 Unpacking

3. INSTALLATION

3-3 Foundation plan

In order to avoid the excessive vibration and keep the machining accuracy ,it is necessary to prepare a firm and stable foundation for installation, Fig.5 is one of the recommended example for getting the high performance of this machine.

The required space is different depend on the model and bed size, please check it before you prepare the foundation, it is also necessary to prepare more space around the machine so that the operator can work safely. For the reason of cleaning the swarf or opening the junction box, the rear side of the machine have to keep over 600mm away from the wall or obstacles, for the reason of opening the side cover of headstock and of pulling out leadscrew and feedrod, both head side and tailstock side have to have free spaces over 500mm.



ITEM	560,660,760			
	1500 (60")		3000 (120")	4000 (160")
A	1980 (77.9")	2590 (102")	3390 (133.5")	4154 (163.5")
B	1080 (42.5")	1690 (66.5")	2492 (98.1")	3254 (128.1")
C			1171 (46.1")	1552 (61.1")
D			1321 (52")	1702 (67")
E				1488 (58.6")

Fig. 4 Base and bed dimensions

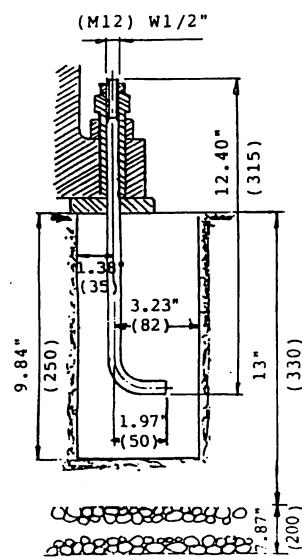


Fig. 5 Detail view of foundation

3-4 Cleaning

This machine is protected with a special anti-corrosion oil during shipping. Before operating the machine, clean all parts especially the lead screw, rack, and all ground surfaces with soft brush or cloth soaked with cleaning solvent or kerosene, and then, lubricate the machine properly.

3-5 Levelling

- (1) Place two precision levels A & B on the cross slide of the lathe. (see fig.6). The accuracy of level should be 0.02mm/1000mm
- (2) Use the apron handwheel to move the apron from spindle side to tailstock side and adjust the foundation bolt to get the tolerance according to the following chart.
- (3) After complete the adjustment, please check the lock nut again.

DESCRIPTION	INSPECTION ITEM	ALLOWANCE	
		SWING DIA. <500	SWING DIA. 500-1000
a.	Parallelism between bed and slideway	a.Longitudinal(Vertical plane)	0.04/M 0.05/M
b.		b.Cross(Vertical plane)	0.04/M 0.05/M
c.		c.Lon gitudi nal(H orizo ntal plane)	(1)Center distance<1000 0.01/M 0.01/M (2)Center distance 1000-2000 0.02/M 0.02/M (3) When the center distance is over 2000, add 0.005mm for every 1000 mm to the above data 0.04/M 0.04/M

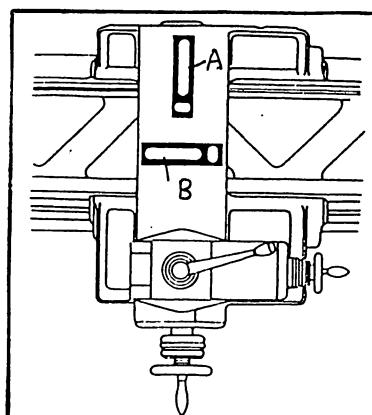


Fig. 6

4. LUBRICATION

4-1 Lubrication and lubricant

It is necessary to keep sufficient lubricant in the rotating, sliding and gear meshing portions of the machine, this is the most effective method to maintain the accuracy and ensure the life of the machine.

The operator should be responsible for the proper lubrication of the lathe. The grade and quantity of lubricants are given in the following chart of oil recommended. The instructions are essential to the proper oiling of the internal parts of the lathe. Oil level should be strictly observed for it is of primary importance for proper operation.

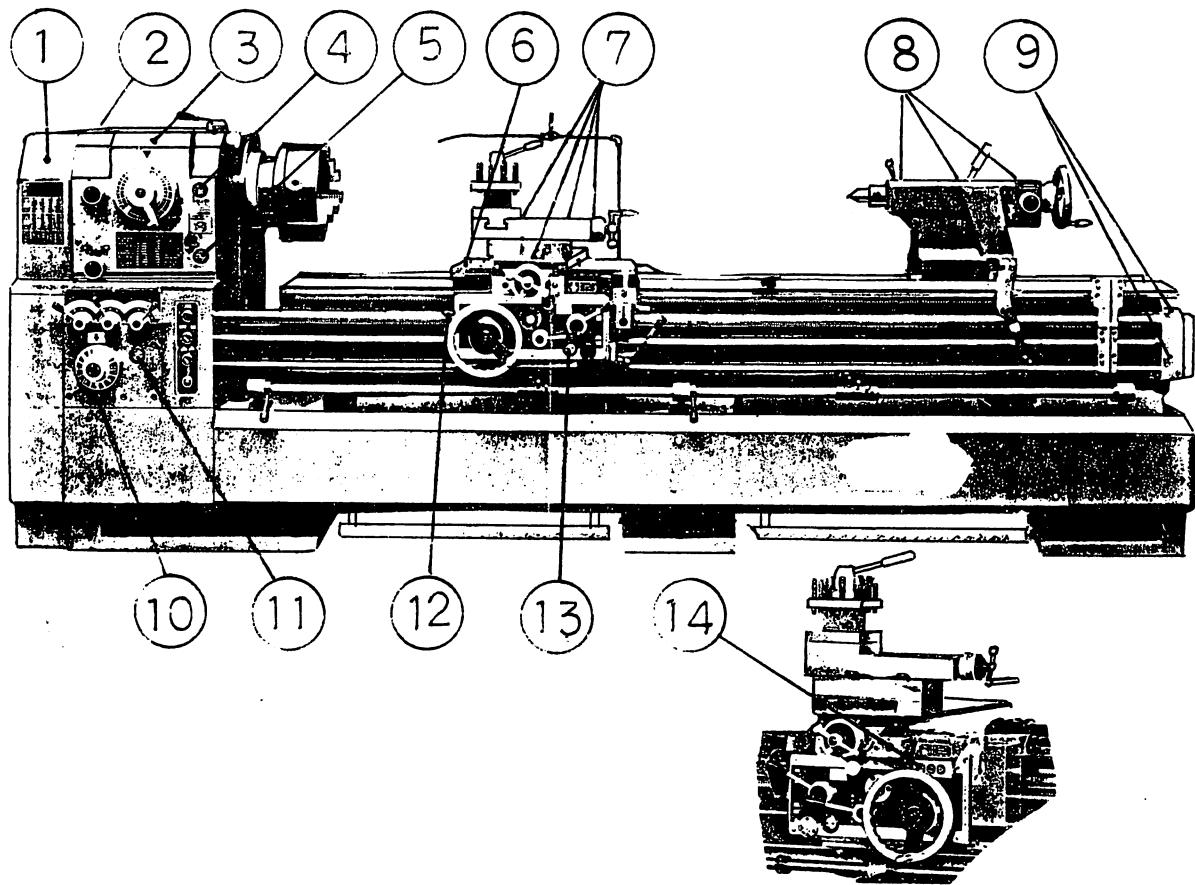
Lubrication Chart

Lubricating point	Oil exchange and/or replenishment	Quantity	Grade
Headstock	Twice a year	13 Litres	15-22
Feed gear box	Twice a year	6 Litres	68
Cross slide	Once a day		68
Apron & Carriage	Twice a month	5 Litres	68
End bracket	Once a day		68
Tailstock	Once a day		68
Quadrant & Tool slide	Twice a day		68
Other parts			

Oil recommended

	HEADSTOCK 13 LITRES	FEED BOX 6 LITRES	APRON 5 LITRES
SHELL	TELLUS 27	TELLUS 27	TONNA 33
ESSO	TERESSO 43	TERESSO 43	TERESSO 52
CALTEX	REGALAR & O	REGALAR & O	WAY LUBRICANT D
MOBIL	D.T.E. LIGHT	D.T.E. LIGHT	VACTORA NO. 2

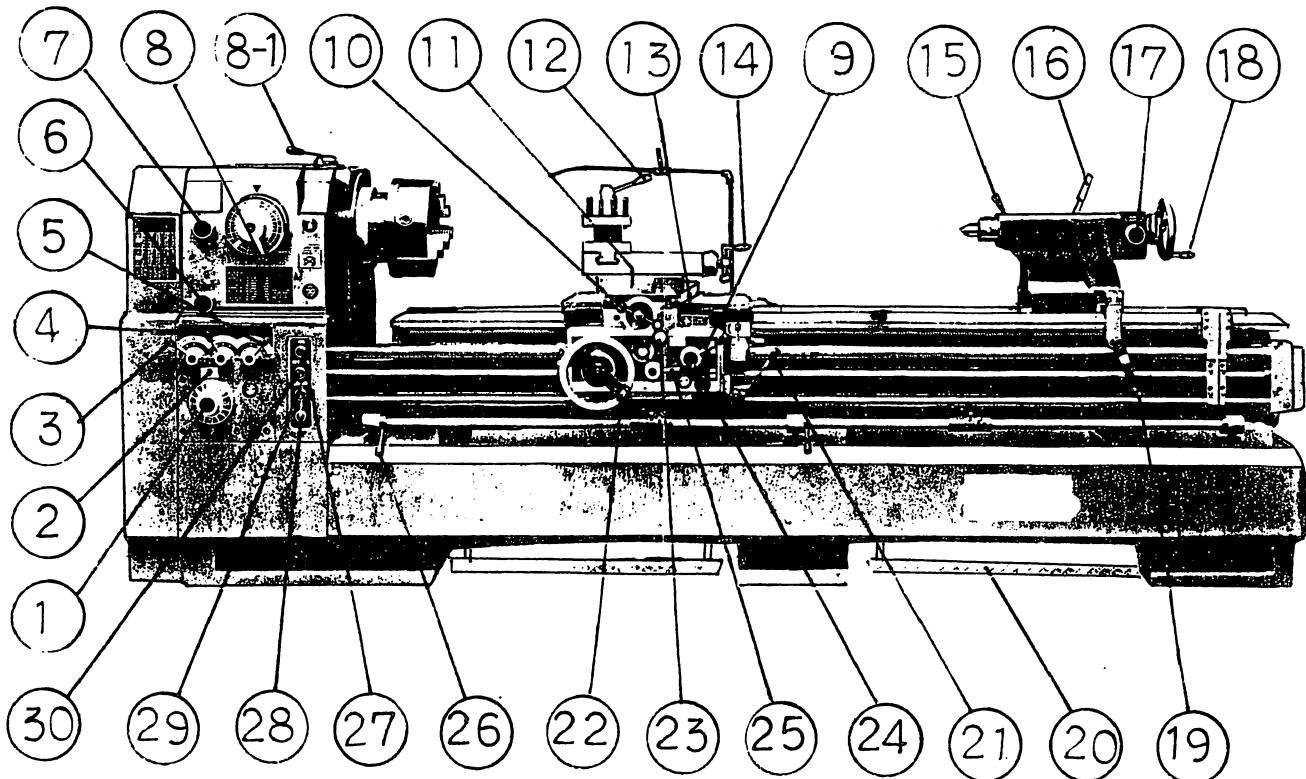
4-2 Lubricating points



- (1) Oil inlet of feed gear box (inside of the gear box cover).
- (2) Drain plug of headstock (rearside of the headstock)
- (3) Oil inlet of headstock
- (4) Oil sight glass
- (5) Oil gauge of headstock. Keep 1/2 quantity
- (6) Oil inlet of apron
- (7) Oil inlet of slideway & lead screw
- (8) Oil inlet of tailstock. Lub every day.
- (9) Oil inlet of lead screw. Lub every day.
- (10) Oil drain plug of gear box.
- (11) Oil gauge of gear box. Keep 1/2 quantity.
- (12) Oil pump
- (13) Oil gauge of apron
- (14) Longitudinal lubrication interchange

Fig. 7

5. DESCRIPTION OF DRIVING UNIT



- | | |
|--|--|
| (1) 8 steps feed select lever | (16) Clamping lever for tailstock body |
| (2) 8 steps feed select indicator | (17) Handwheel for tailstock |
| (3) Thread & feed selector lever | (18) The lever for tailstock gear box speed change (H.L) |
| (4) Thread & feed selector lever | (19) Tailstock lever -560 have not assembled) |
| (5) Thread & feed speed change lever | (20) Foot brake pedal |
| (6) Rotation selector lever | (21) Spindle start/stop control lever |
| (7) High/low feed change lever | (22) Apron handwheel |
| (8)&(8-1) Spindle speed change lever | (23) Longi./cross auto-infeed lever |
| (9) Screw cutting lever | (24) Apron auto/manual pump |
| (10) Cross slide hand handle & dial | (25) Auto-infeed engagement lever |
| (11) Tool slide lock screw | (26) Automatic stop selector lever |
| (12) Square turret clamping lever | (27) Jog push button (JOG) |
| (13) Cross slide lockscrew | (28) Power indicator |
| (14) Tool slide handle & dial | (29) Pump switch |
| (15) Sleeve lock lever for tailstock | (30) Power switch |

Fig. 8

6. OPERATION AND USE

! Warning: Never put wrench on the chuck or any moving area.

6-1 Preparation before starting

- (1) Check the rotation: Main spindle rotation should be counter clockwise by pushing the Jog button. Wrong direction of rotation can be rectified by interchanging any two of the three phase lines of the power source.
- (2) Run the spindle in low speed for a few minutes, check from the oil sight gauge to ensure that the headstock lubrication pump is effective.

6-2 Starting and stopping

Before starting up the machine, make sure that proper lubrication to all running parts has been done as per lubrication chart on page 12. Switch the power switch on after ensuring the starting lever on apron being placed in the neutral position.

Upon switching on, the pilot lamp is on. The starting-up of main spindle is accomplished by moving the starting lever which incorporates a safety pin preventing an abrupt starting.

Move the starting lever horizontally to disengage the safety pin and then downward to get the main spindle running in a forward revolution, or upward to get a reverse revolution. When the lever comes back to the neutral position, it engages the safety pin and the main spindle stops revolving.

A thermal relay is provided to protect the motor from overheating or excessive in-coming current. If the spindle can not run while moving the starting lever, please check it and reset the thermal relay by pushing the reset button.

A foot brake is also provided for stopping. This function override any start command. After release the brake, it have to operate the starting lever to restart the spindle.

This machine is installed a spindle inching button which provide the operator to hold to run or jog the spindle. (Before press the inching button, place the forward-reverse lever at neutral position.)

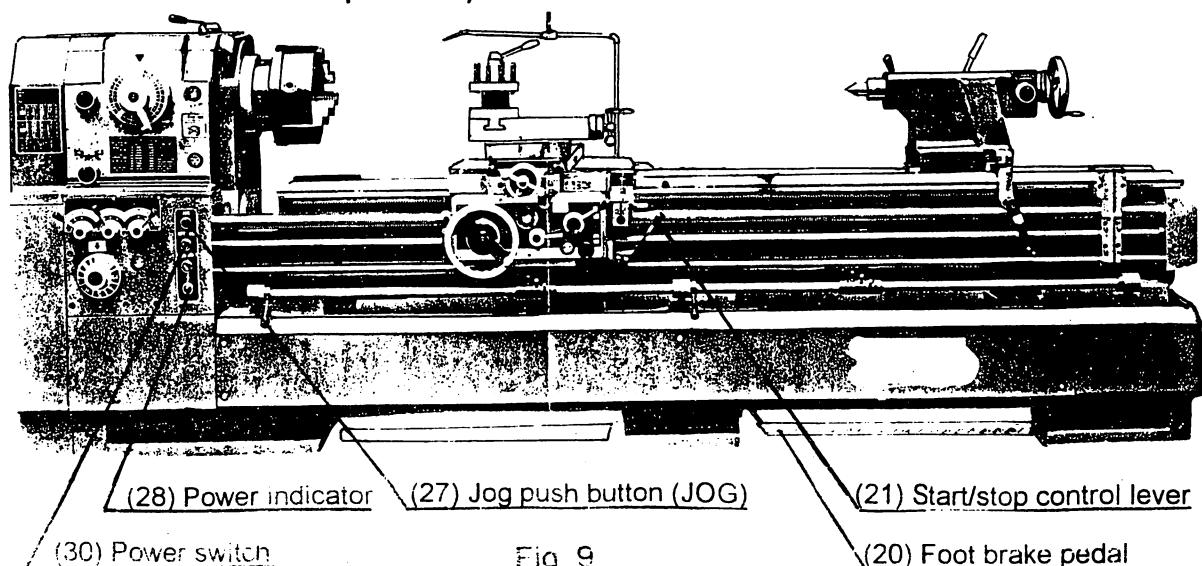


Fig. 9

6-3 Selection of spindle speeds :

Notice: (1) During the spindle rotates, do not change the speed.
(2) Never attempt to use the jog switch to help the engagement while turn the spindle speed lever.

Range of spindle speeds (RPM) are:

13,20,30,47,70,105,150,230,340,530,800,1200

The selection of spindle speeds is carried out by two levers (8) & (8-1)

Lever (8) performs the change of six steps of spindle speeds.

Lever (8-1) selects H or L.

Selector (7) selects H or L for the rear transmission gears.

Selector (6) carries out the change of the forward and reverse revolution for feeds and threads.

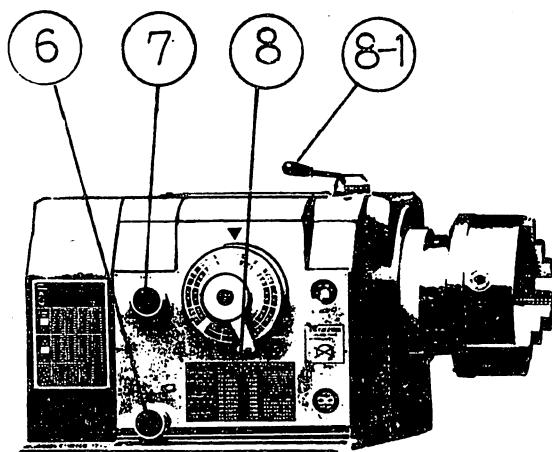


Fig. 10

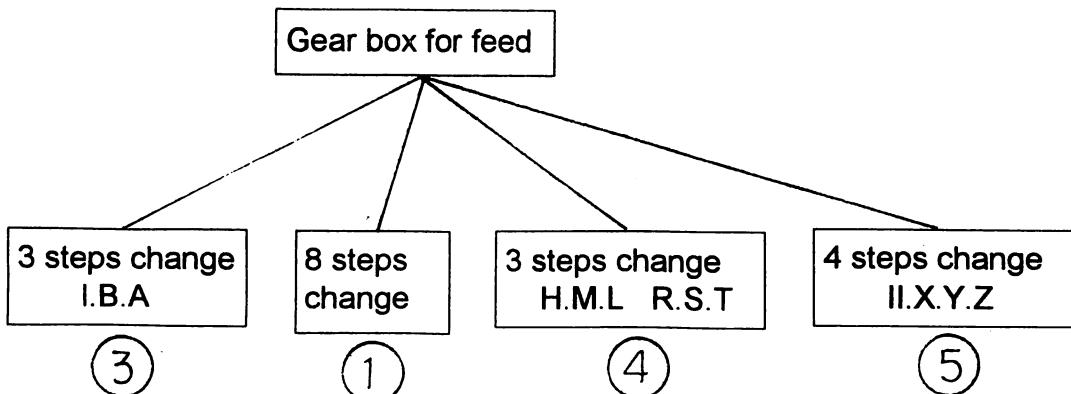
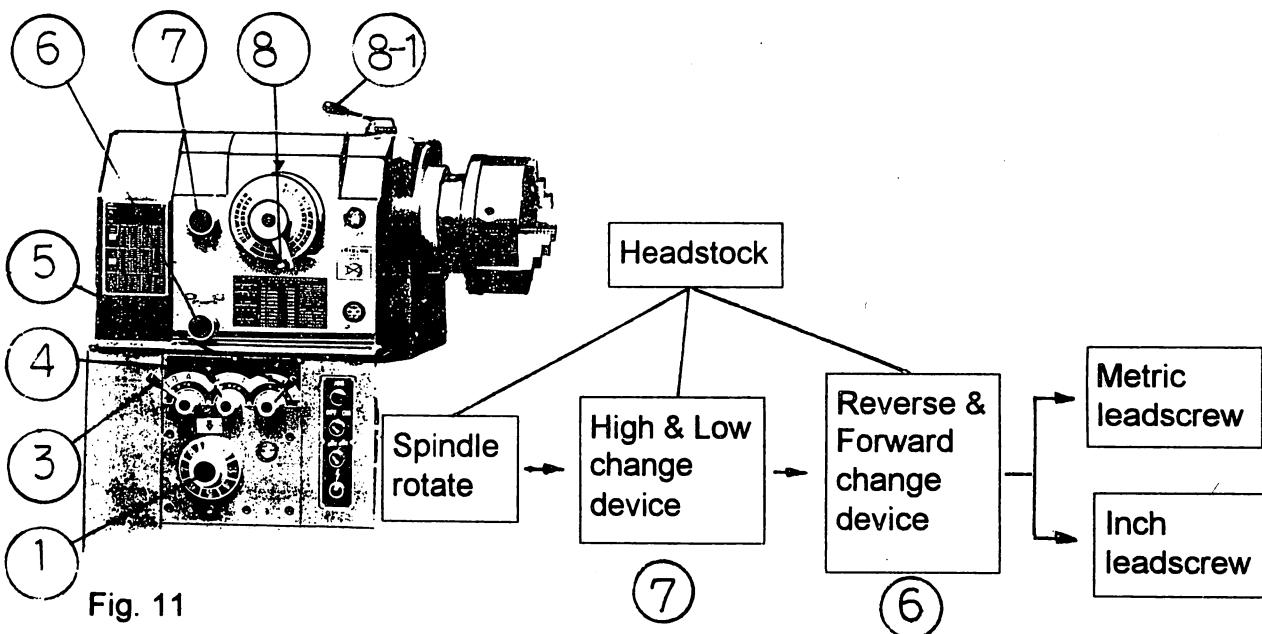
6-4 Selection of feeds:

First, put lever (3) and lever (5) in I & Y position respectively and turn Dial Selector (1), Lever (4) and knob (7) to meet the desired feed according to the feed chart.

6-5 Selection of threads:

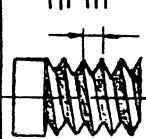
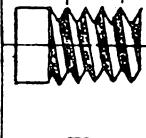
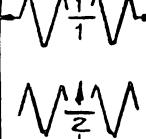
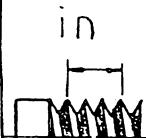
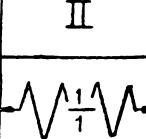
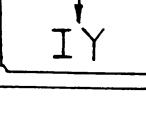
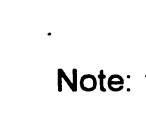
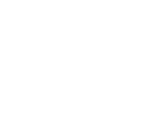
First, put Lever (5) in II position, then turn Lever (3), Lever (4), Knob (7) and Dial Selector (1) to meet the desired thread according to the Thread Chart. The further preparatory procedure is exactly same as in feed selection.

Notice: Any change of the levers of gear box should be carry out under 320 r.p.m. or rotate the main spindle by hand.

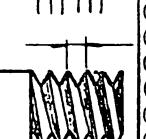
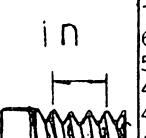
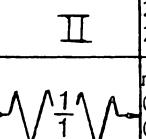
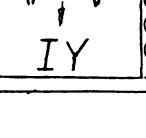
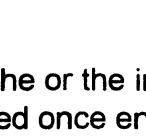
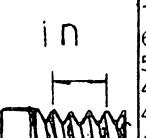
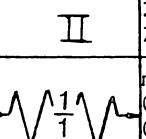
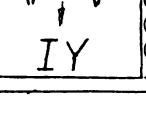
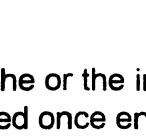
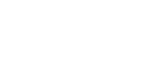


6-6 Thread and feed chart

(1) L=6mm leadscrew end gear train
for auto-infeed

P = 6 MM Leadscrew								
	54	55	56	64				
	0.2	LTX1	0.75	LTZ6	1.75	LSZ8	6.5 HSZ7	
I	0.225	LTX2	0.8	LRX1	2	LRZ1	7 HSZ8	
	0.25	LTX3	0.9	LRX2	2.5	LRZ3	8 HRZ1	
II	0.3	LTX6	1	LSZ1	3	LRZ6	9 HRZ2	
	0.35	LTX8	1.1	LRX4	3.5	LRZ8	10 HRZ3	
	0.4	LSX1	1.2	LRX6	4	HSZ1	11 HRZ4	
IY	0.45	LSX2	1.25	LSZ3	4.5	HSZ2	12 HRZ5	
	0.5	LTZ1	1.3	LRX7	5	HSZ3	13 HRZ6	
IY	0.6	LSX6	1.4	LRX8	5.5	HSZ4	14 HRZ7	
	0.7	LSX8	1.5	LSZ6	6	HSZ6		
<hr/>								
	72	LAR6	26	LBS7	13	LBT7	4½ HAT6	
I	60	LAR3	24	LAS1	12	LAT1	4 HBS1	
	56	LBR8	23	LBS5	11½	LBT5	3¾ HAT3	
II	48	LAR1	22	LBS4	11	LBT4	3½ HBT8	
	44	LBR4	20	LBS3	10	LBT3	3¼ HBT7	
IY	40	LBR3	19	LIS8	9	LBT2	3 HAT1	
	36	LAS6	18	LAT6	8	LBT1	2½ HBT5	
IY	32	LBR1	16	LBS1	7½	HAS3	2¾ HBT4	
	30	LAS3	15	LAT3	7	HBS8	2½ HBT3	
IY	28	LBS8	14	LBT8	6	HAS12	2¼ HBT2	
	27	LAS2	13½	LAT2	5	HBS3	2 HBT1	
<hr/>								
mm/ ∞		in/ ∞		mm/ ∞		in/ ∞		
0.037	LT1	0.0012	0.22	LR6	0.0087	0.21	LR6	0.0083
0.045	LT3	0.0018	0.26	LR8	0.010	0.24	LR8	0.0095
0.055	LT6	0.0022	0.33	HS2	0.013	0.31	HS2	0.012
0.074	LS1	0.0028	0.42	HS5	0.017	0.40	HS5	0.016
0.09	LS3	0.0031	0.52	HS8	0.020	0.49	HS8	0.019
0.11	LS6	0.0045	0.67	HR2	0.026	0.63	HR2	0.025
0.15	LR1	0.0059	0.85	HR5	0.033	0.80	HR5	0.032
0.18	LR3	0.0071	1.04	HR8	0.041	0.98	HR8	0.039

(2) 4 T.P.I leadscrew end gear train
for auto-infeed

4 T P I Leadscrew								
	16	19						
	0.2	LTX1	0.75	LTZ6	1.75	LSZ8	6.5 HSZ7	
I	0.225	LTX2	0.8	LRX1	2	LRZ1	7 HSZ8	
	0.25	LTX3	0.9	LRX2	2.5	LRZ3	8 HRZ1	
II	0.3	LTX6	1	LSZ1	3	LRZ6	9 HRZ2	
	0.35	LTX8	1.1	LRX4	3.5	LRZ8	10 HRZ3	
IY	0.4	LSX1	1.2	LRX6	4	HSZ1	11 HRZ4	
	0.45	LSX2	1.25	LSZ3	4.5	HSZ2	12 HRZ5	
IY	0.5	LTZ1	1.3	LRX7	5	HSZ3	13 HRZ6	
	0.6	LSX6	1.4	LRX8	5.5	HSZ4	14 HRZ7	
IY	0.7	LSX8	1.5	LSZ6	6	HSZ6		
<hr/>								
	72	LAR6	26	LBS7	13	LBT7	4½ HAT6	
I	60	LAR3	24	LAS1	12	LAT1	4 HBS1	
	56	LBR8	23	LBS5	11½	LBT5	3¾ HAT3	
II	48	LAR1	22	LBS4	11	LBT4	3½ HBT8	
	44	LBR4	20	LBS3	10	LBT3	3¼ HBT7	
IY	40	LBR3	19	LIS8	9	LBT2	3 HAT1	
	36	LAS6	18	LAT6	8	LBT1	2½ HBT5	
IY	32	LBR1	16	LBS1	7½	HAS3	2¾ HBT4	
	30	LAS3	15	LAT3	7	HBS8	2½ HBT3	
IY	28	LBS8	14	LBT8	6	HAS12	2¼ HBT2	
	27	LAS2	13½	LAT2	5	HBS3	2 HBT1	
mm/ ∞		in/ ∞		mm/ ∞		in/ ∞		
0.035	LT1	0.0012	0.21	LR6	0.0083	0.044	LT3	0.0015
0.044	LT3	0.0018	0.24	LR8	0.0095	0.053	LT6	0.0020
0.053	LT6	0.0022	0.31	HS2	0.012	0.07	LS1	0.0028
0.074	LS1	0.0028	0.40	HS5	0.017	0.087	LS3	0.0031
0.09	LS3	0.0031	0.52	HS8	0.020	0.11	LS7	0.0040
0.11	LS6	0.0045	0.67	HR2	0.026	0.14	LR1	0.0056
0.15	LR1	0.0059	0.85	HR5	0.033	0.17	LR3	0.0067
0.18	LR3	0.0071	1.04	HR8	0.041			

Note: 1. To cut metric thread on an inch lathe or the inch thread on a metric lathe,
the half nut must not be disengaged once engaged.
2. The end gear in inch leadscrew is using timing pulley.

6-7 Special specification of leadscrew

(3) L=12mm leadscrew end gear train
for auto-infeed

P=12 mm Leadscrew			
	54	55	56
	64		
I	0.4 LTX11.4 LSX84.5 LRZ212 HSZ6 0.45 LTX21.5 LTZ65 LRZ313 HSZ7 0.5 LTX31.75 LTZ85.5 LRZ414 HSZ8 0.6 LTX62 LRX36 LRZ616 HRZ1 0.7 LTX82.25 LSZ26.5 LRZ718 HRZ2 0.8 LSX12.5 LSZ37 LRZ820 HRZ3 0.9 LSX22.75 LSZ48 HRX322 HRZ4 1 LSX33 LSZ69 HSZ223 HRZ5 1.2 LSX63.25 LSZ710 HSZ324 HRZ6 1.25 LTZ33.5 LSZ811 HSZ426 HRZ7 1.3 LSX74 LRZ111.5 HSZ528 HRZ8		
II	42 LAR816 LBR17½ LAT32½ HAT8 36 LAR615 LAS37 LBT82½ HBS3 30 LAR314 LBS86 LAT12½ HBS2 28 LBR813½ LAS25 LBT32½ HBS1 27 LAR213 LBS77½ LBT21½ HAT3 26 LBR712 LAS14 LBT11½ HBT8 24 LAR111½ LBS53½ HAS31½ HBT7 23 LBR511 LBS43½ HBS81½ HAT1 22 LBR410 LBS33½ HBS71½ HBT4 21 LAS89½ LIS83 HAS11½ HBT3 20 LBR39 LBS22½ HBS51½ HBT2 18 LBR28 LBS12½ HBS41 HBT1		
III	mm/in mm/in mm/in 1 0.037 LT1 0.00120 0.22 LR6 0.0087 1 0.045 LT3 0.00180 0.26 LR8 0.010 1 0.055 LT6 0.00220 0.33 HS2 0.013 2 0.074 LS1 0.00280 0.42 HS5 0.017 2 0.09 LS3 0.00310 0.52 HS8 0.020 0.11 LS6 0.00450 0.67 HR2 0.026 0.15 LR1 0.00590 0.85 HR5 0.033 0.18 LR3 0.00710 1.04 HR8 0.041		

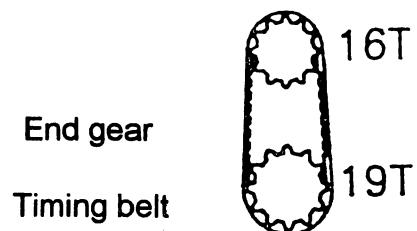
(4) 2 T.P.I. leadscrew end gear train
for auto-infeed

2 T.P.I. Leadscrew			
	16	19	
	mm		
I	0.4 LTX11.4 LSX84.5 LRZ212 HSZ6 0.45 LTX21.5 LTZ65 LRZ313 HSZ7 0.5 LTX31.75 LTZ85.5 LRZ414 HSZ8 0.6 LTX62 LRX36 LRZ616 HRZ1 0.7 LTX82.25 LSZ26.5 LRZ718 HRZ2 0.8 LSX12.5 LSZ37 LRZ820 HRZ3 0.9 LSX22.75 LSZ48 HRX322 HRZ4 1 LSX33 LSZ69 HSZ223 HRZ5 1.2 LSX63.25 LSZ710 HSZ324 HRZ6 1.25 LTZ33.5 LSZ811 HSZ426 HRZ7 1.3 LSX74 LRZ111.5 HSZ528 HRZ8		
II	42 LAR816 LBR17½ LAT32½ HAT8 36 LAR615 LAS37 LBT82½ HBS3 30 LAR314 LBS86 LAT12½ HBS2 28 LBR813½ LAS25 LBT32½ HBS1 27 LAR213 LBS77½ LBT21½ HAT3 26 LBR712 LAS14 LBT11½ HBT8 24 LAR111½ LBS53½ HAS31½ HBT7 23 LBR511 LBS43½ HBS81½ HAT1 22 LBR410 LBS33½ HBS71½ HBT4 21 LAS89½ LIS83 HAS11½ HBT3 20 LBR39 LBS22½ HBS51½ HBT2 18 LBR28 LBS12½ HBS41 HBT1		
III	mm/in mm/in mm/in 1 0.035 LT1 0.00120 0.21 LR6 0.0083 1 0.044 LT3 0.00150 0.24 LR8 0.0095 1 0.053 LT6 0.00200 0.31 HS2 0.012 2 0.07 LS1 0.00280 0.40 HS5 0.016 2 0.087 LS3 0.00310 0.49 HS8 0.019 0.11 LS7 0.00400 0.63 HR2 0.025 0.14 LR1 0.00560 0.80 HR5 0.032 0.17 LR3 0.00670 0.98 HR8 0.039		

Note: 1. To cut metric thread on an inch lathe or the inch thread on a metric lathe,
the half nut must not be disengaged once engaged.
2. The end gear in inch leadscrew is using timing pulley.

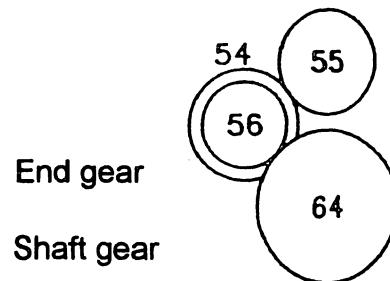
6-8 The examples of thread cutting

(a) 4 T.P.I leadscrew rod inch lathe



Example		Right thread 11 1/2 TPI	Left thread 4 TPI	Right thread Pitch = 2.5 mm
Process	Lever	L	H	L
1	Lever 7	L	H	L
2	Lever 6	---- Forward	---- Reverse	---- Forward
3	Lever 3	B	BI	I
4	Lever 4	T	S	R
5	Lever 5	II	II	Z
6	Lever 1	5	1	3
Thread dial indicator		2 points	4 points	Half nut must not be engaged
		Refer to Fig.12		

(b) 6mm leadscrew metric lathe



Example		Right thread Pitch = 1.5 mm	Left thread Pitch = 6 mm	Right thread 16 TPI
Process	Lever	L	H	L
1	Lever 7	L	H	L
2	Lever 6	---- Forward	---- Reverse	---- Forward
3	Lever 3	I	I	B
4	Lever 4	S	S	S
5	Lever 5	Z	Z	II
6	Lever 1	6	6	1
Thread dial indicator		2 points	4 points	Half nut must not be engaged
		Refer to Fig.13		

- Note:
1. To cut metric thread on an inch lathe or the inch thread on a metric lathe, the half nut must not be disengaged once engaged.
 2. The end gear in inch leadscrew is using timing pulley.

6-9 Thread dial indicator

The thread dial indicator located on the side of the apron is used to indicate the engagement timing of the half nut and lead screw when the thread cutting is carried out, for a particular thread lead, while cutting threads on an inch leadscrew lathe, select the gear of 16 teeth on a metric leadscrew lathe, select the gear of 14 and 15 teeth and refer to the chart below:

Inch leadscrew lathe (worm gear 16 teeth, leadscrew 4 T.P.I) (Refer to Fig-12)

Lead screw by inch	Clutch point
4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 56, 60, 72	Any point
2, 6, 10, 14, 18, 22, 26, 30	8 div. point
3, 5, 7, 9, 11, 13, 15, 19, 21, 23, 27	4 div. point
2-1/2", 3-1/2", 4-1/2", 7-1/2", 11-1/2", 13-1/2"	2 div. point
8-1/2"	One point

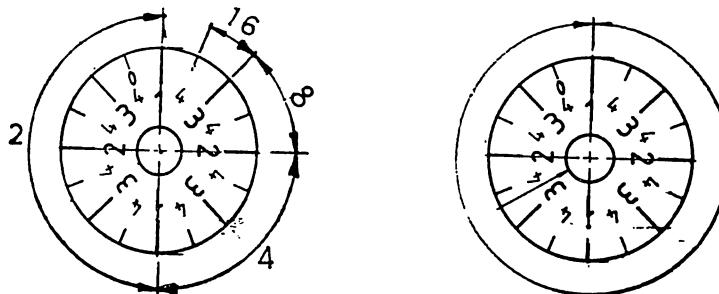


Fig -12

Metric leadscrew lathe (L=6mm) (Refer to Fig -13)

Worm gear	Clutch point	Pitch range
14T	7 div. point	0.8, 4, 12
	2 div. point	0.35, 0.7, 1.4, 1.75, 3.5, 7, 14
15T	15div. point	0.2, 0.25, 0.3, 0.4, 0.5, 0.6, 0.75, 1, 1.2, 1.5, 2, 3, 6
	5 div. point	0.225, 0.45, 0.9, 4.5, 9
	3 div. point	1.25, 2.5, 5, 10

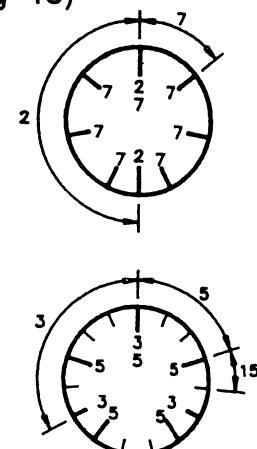


Fig-13

- Note:
1. To cut metric thread on an inch lathe or the inch thread on a metric lathe, the half nut must not be disengaged once engaged.
 2. The end gear in inch leadscrew is using timing pulley.

6-10 Thread dial indicator (Special Specification)

The thread dial indicator located on the side of the apron is used to indicate when the half nut can be engaged for particular thread lead. In case of cutting threads on 2TPI inch leadscrew lathe, a 12 teeth worm can be used for many types of thread on any clutch point, on a L=6 mm metric leadscrew lathe, 14 or 15 teeth worm can be selected for suitable types of lead.

The reference chart for selection of the clutch point for the particular lead are shown below:

Inch leadscrew lathe (worm gear 12 teeth, leadscrew 2TPI) (Refer to fig-14)

Type of inch thread	Clutch point
2,4,6,8,10,12,14,16,18,20,22,24,26,	Any point
28,30,32,36,42	12 div. point
1,3,5,7,9,11,13,15,21,23,27	6 div. point
1-1/2", 2-1/2", 3-1/2", 4-1/2", 7-1/2", 9-1/2", 11-1/2", 13-1/2"	3 div. point

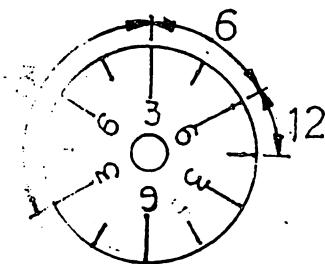


Fig - 14

Metric leadscrew lathe (L=12 mm) (Refer to Fig-15)

Worm gear	Clutch point	Pitch range
14T	7 div. point	8,24
	2 div. point	0.7,1.4,1.75,3.5,7,14,28
15T	15 div. point	0.4,0.5,0.6,0.8,1.0,1.2,1.5, 2.0,3.0,4.0,6.0,12
	5 div. point	0.45,0.9,1.8,2.25,4.5,9,18
	3 div. point	1.25,2.5,5,10,20

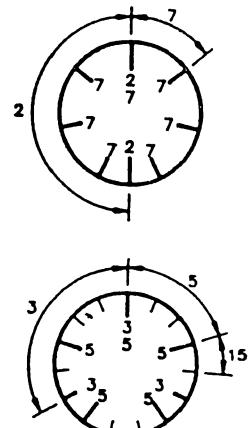


Fig-15

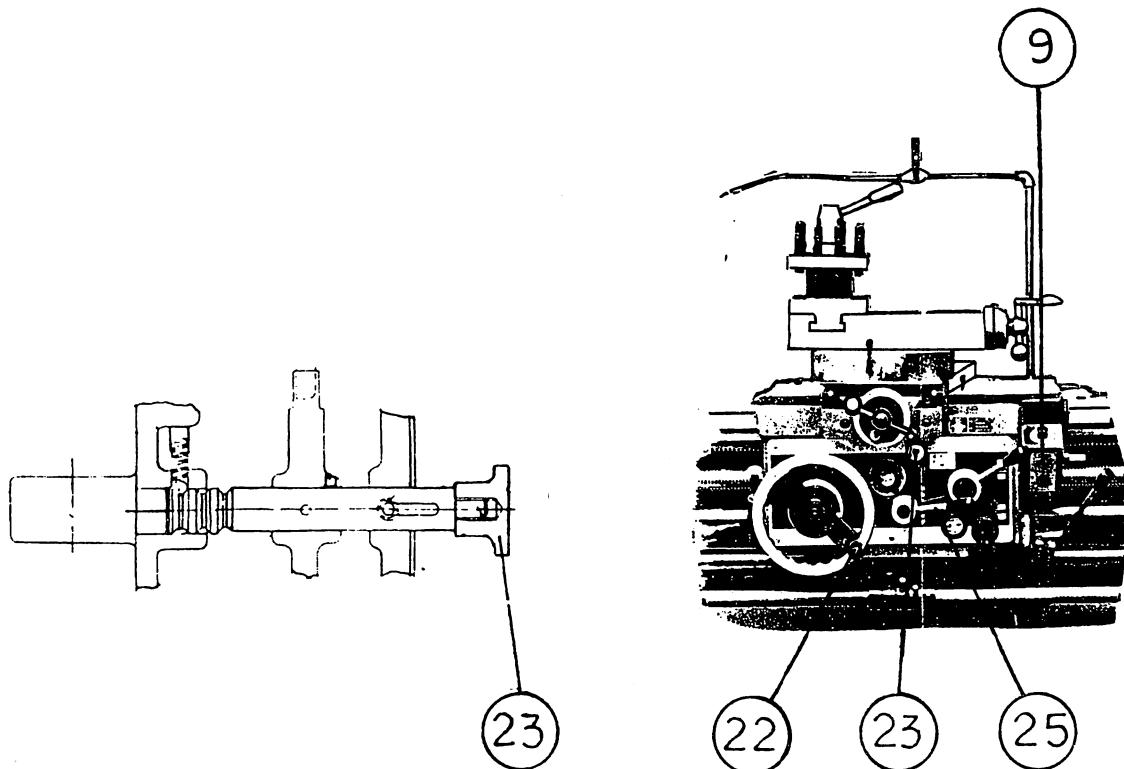
- Note: 1. To cut metric thread on an inch lathe or the inch thread on a metric lathe, the half nut must not be disengaged once engaged.
 2. The end gear in inch leadscrew is using timing pulley.

6-11 Carriage and Apron

The engaging and disengaging of longitudinal and cross feeds is accomplished by lever (25), and of thread cutting is accomplished by lever (9).

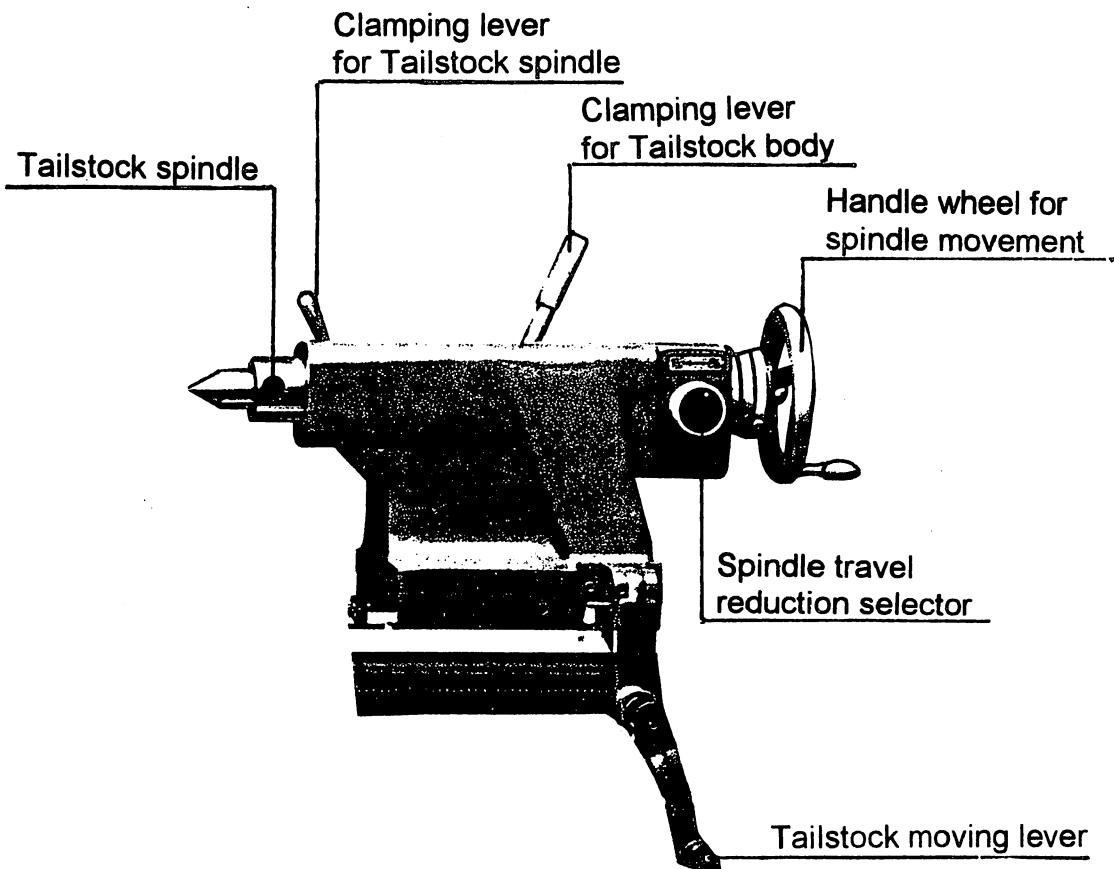
The change of longitudinal feeds, cross feeds or thread cutting can be carried out by knob (23).

The interlocking device is incorporated, so that the feeds and the half nut engagement can not work at the same time.



6-12 Tailstock

A 1 to 1/4 reduction provide two spindle speeds: the fast one for quick positioning and the slow one principally for drilling operation.



7. SAFETY DEVICE

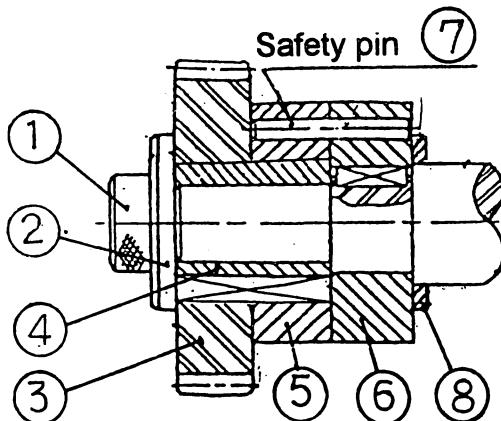
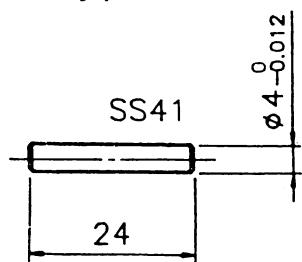
7-1 Safety pin of Quadrant system

In order to prevent damages of the machine when excessive cutting power occurred during the thread cutting, the safety pin (7) will be broken by shearing force. In this case, replace it with a new safety pin.

The replace method is:

- a) Turn the screw (1) counter clockwise and remove it. Remove the thrust washer (2) of the pulley of timing belt.
- b) Remove the timing belt pulley (3).
- c) Remove the gear sleeve (4), safety pin inner locking ring (5), safety pin outer locking ring (6), safety pin (7) and safety pin stopper (8) in the sequence.
- d) Use a 3mm rod to remove the broken safety pin and replace a new one.
(There are 2 safety pins in tool box prepared for this purpose)
- e) Reassembly the parts to the state as shown on fig 16.

Safety pin dimension



Quadrant system

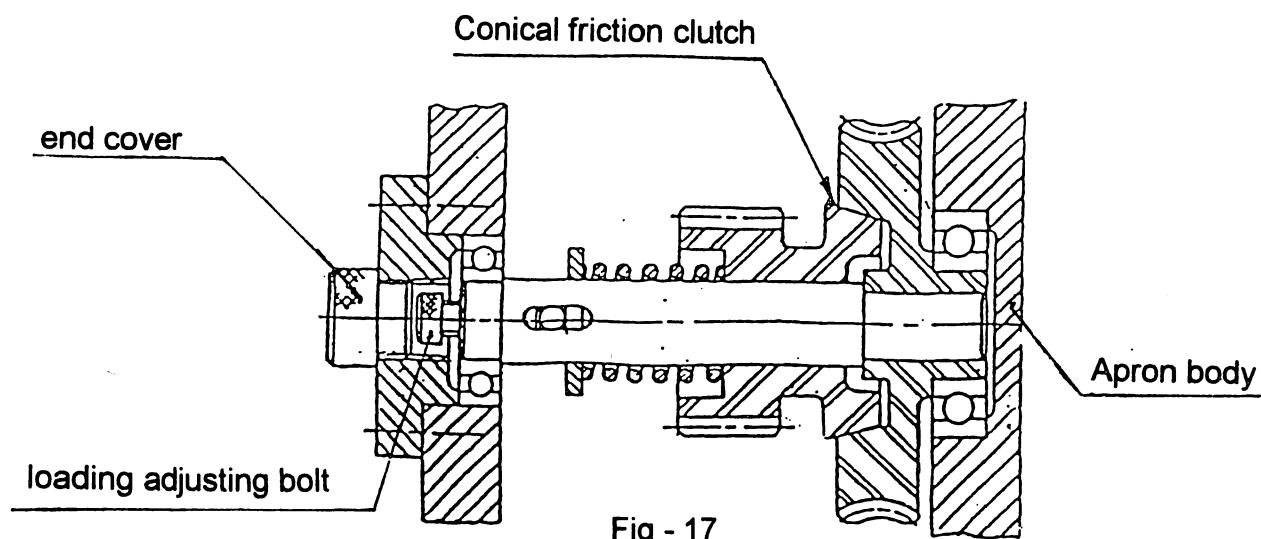
Fig. 16

7-2 Overload safety device for apron automatic infeed

There is a taper safety sleeve between worm and gear in the apron. When the infeed loading is over the setting load, the taper sleeve will slide, so that the cross and longitudinal automatic infeed cannot transmit to prevent the apron gear break down.

The adjusting method is as follows:

- a) Turn c.c.w to open the end cover.
- b) Use 8mm hexagonal spanner for adjustment of getting the proper loading, turn c.w to tight the adjusting bolt when you want to carry out heavy cutting or turn c.c.w to release the adjusting bolt for light cutting.
- c) Turn c.w to close the end cover.



8. MAINTENANCE AND ADJUSTMENT

8-1 Headstock adjustment (When the cylindrical accuracy is out of tolerance)

- (1) Check the parallelism between the headstock and the bed way. If they do not parallel, adjust the parallel and then machining the workpiece.
- (2) If it cannot get good accuracy after adjusting the parallel, please adjust the headstock according to the fig.18 description.
 - (a) Using a dial gauge to contact to the workpiece in horizontal plane to measure the movement.
 - (b) For adjusting the headstock, refer to the following fig.18. Loose the screw (1), (2), (3) in headstock but finger tight the (4), (5) screw.
 - (c) According to the fig.18, if the workpiece right side is larger, loose the B screw and tighten the A screw, if the left side is larger, loose the A screw and tighten the B screw. (Be careful don't strike it)
 - (d) Tighten the screw (1),(2),(3),(4),(5) to hold the headstock securely after getting the correct reading on the dial gauge.

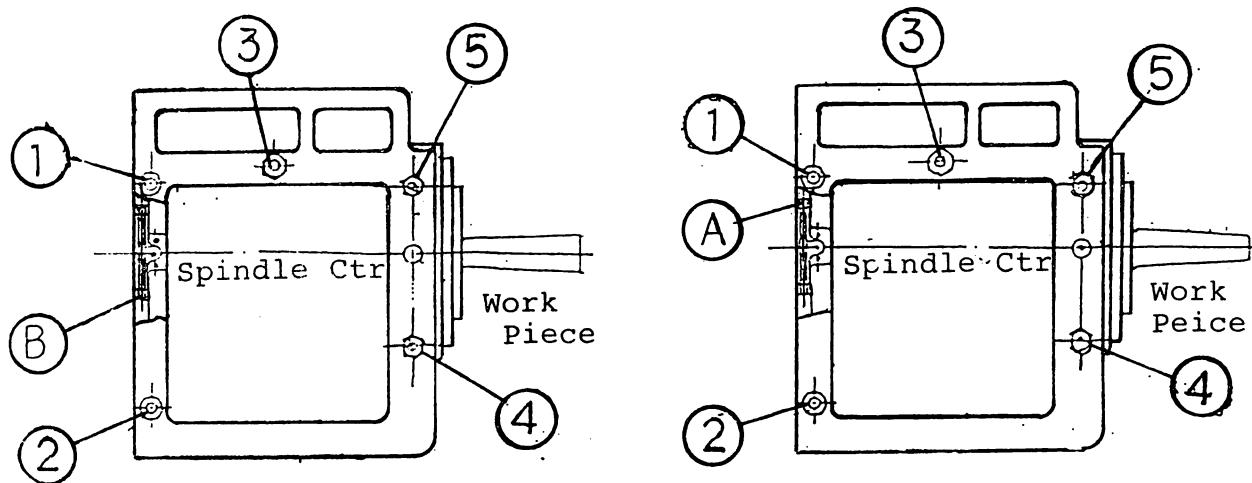


Fig - 18

8-2 Spindle bearing adjustment

Spindle bearing are already adjusted correctly at our plant before delivery, so please avoid adjustment unless it is necessary. However, the spindle bearing adjustment can be carried out in a successive order as follows:

- (1) Loosen the set screws of the lock nut A, B at Fig 19.
- (2) Turn the locknut B counter clockwise to loose it.
- (3) Turn the locknut A clockwise little by little, and rotate spindle by hand to check for correct adjustment, then tighten the set screw of the locknut A.
- (4) Retighten the locknut B, and then tighten its set screw.

8-3 Spindle balance adjustment

When an excess vibration happened after changing the new chuck or adjusting the lock nut A, B (see fig.19), a balance adjustment of the spindle is necessary.

The method of adjusting is as follow:

- (1) Make sure that all the foundation bolts are secure.
- (2) Set the spindle speed at high speed position, and the infeed H/L lever (7) at idle position.
- (3) Mark the balancing disk by 30 degree each as shown on fig 19.C.
Rotate the spindle each time when fixing a piece of balancing weight on each marked position from 0 degree, until the best position is found.
- (4) If one balancing weight is not enough, more 1 - 4 pieces can be used according to the method (3) to find out the best result.
- (5) When reassembly the 3-jaws chuck, you have to keep the original screw hole to mount it, otherwise you may loose the balance.

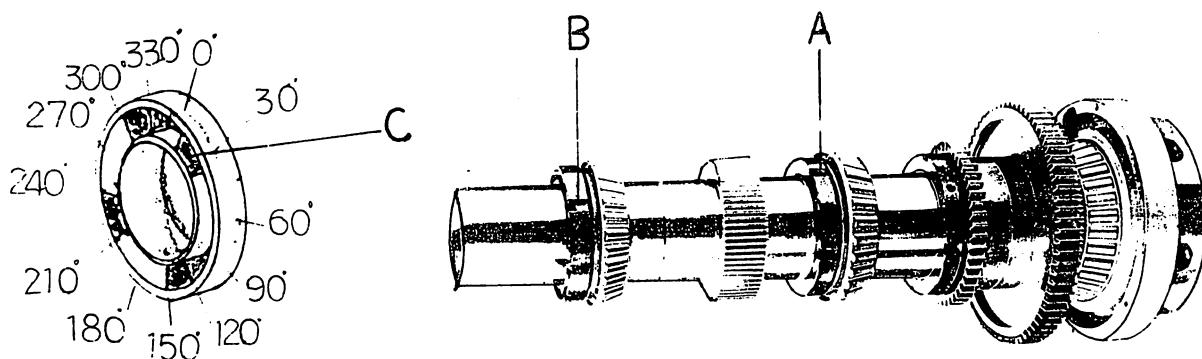


Fig. 19

8-4 Brake adjustment (Refer to fig. 20)

When the brake band worn, the brake pedal will treat itself near to the ground, and cause difficulty of stop.

To get the normal position, adjust the screw (A), (B) at the brake band.

- (1) Turn down the (B) screw.
- (2) Turn down the (A) screw till the brake can stop the machine exactly.
- (3) Turn the (B) screw up.

After this adjustment, if the dog(C) touch the limit micro switch(D), it have to adjust it to prevent their contact before the brake pedal is pushed down.

8-5 The method of replace brake band (Refer to fig.20)

- (1) Place a block (E) under the brake pedal (F).
- (2) Remove the spring carefully.
- (3) Remove the screw (A) and fixing block (G).
- (4) Remove the screw (H).
- (5) Using the grip to remove the retaining ring C12.
- (6) To avoid the operator injured, be careful to remove the brake band. There are some potential hazards exist in motor, pulley and band, Be sure to know what will happen before you do it, and Be careful to do it to avoid the injury.
- (7) Reassemble all the accessories after replace the band.

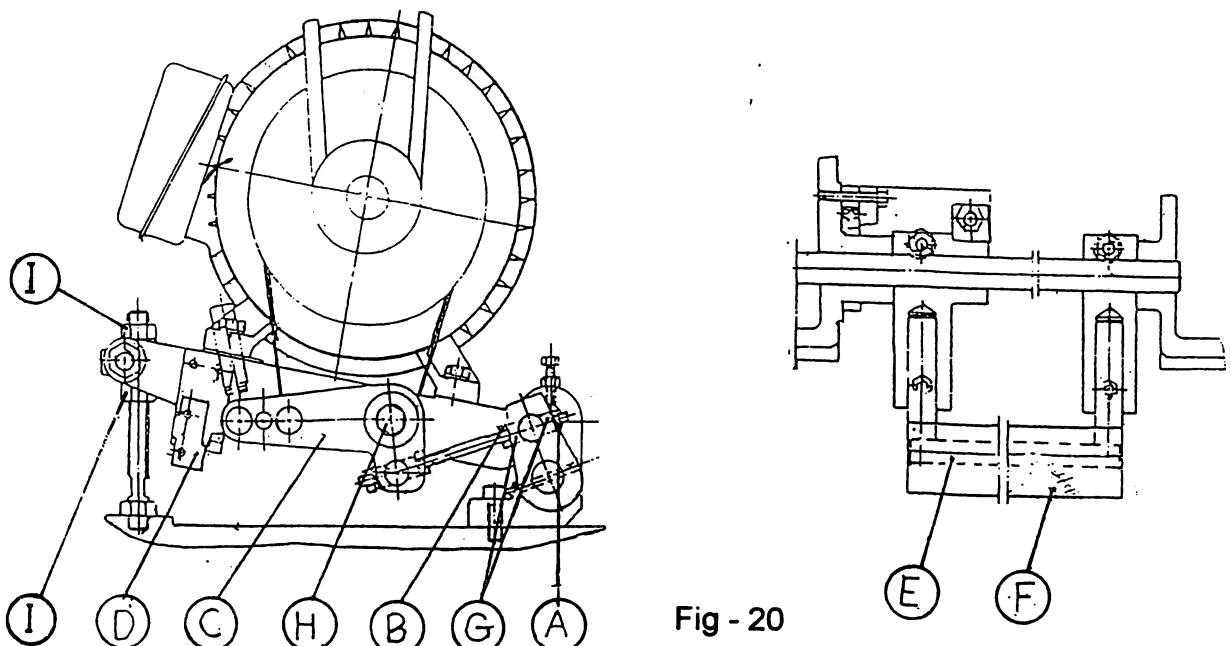


Fig - 20

8-6 V-belt tension adjustment

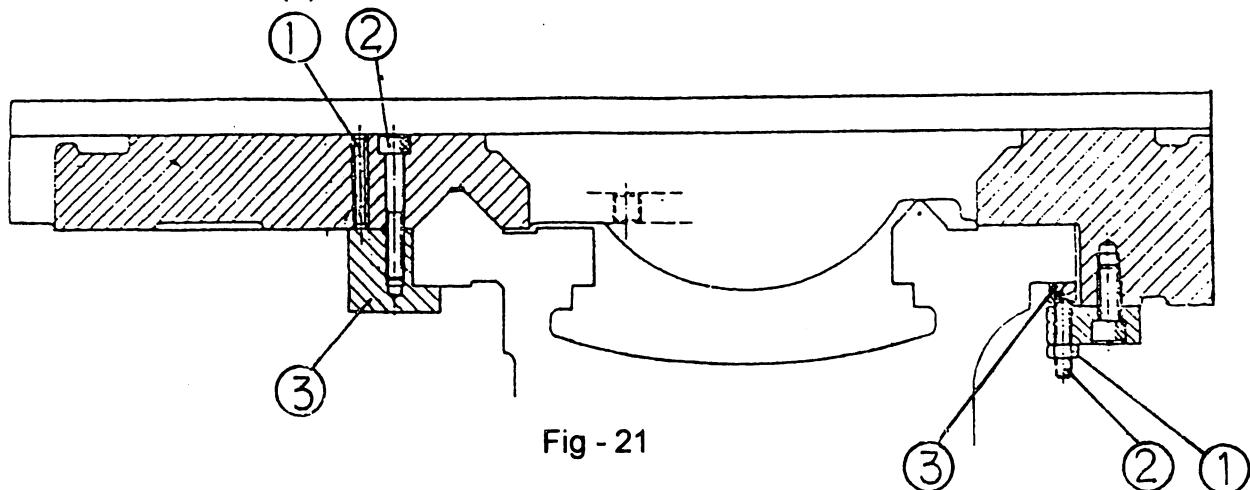
After a period of use, V-belt may require the tension adjustment.

- (1) Open the motor cover at lower rear of headstock pedestal leg.
- (2) Loosen adjusting nut to let the motor down till desire tension is achieved.
- (3) Tighten the adjusting nut.

After adjusting the belt tension, the brake assembly & the micro limit switch will change the position, it must be checked and may be necessary to adjust. (Refer to brake adjustment)

8-7 Adjustment of Carriage gib (Refer to fig.21)

Underneath the Carriage at the rear part is a straight gib which bears against the underside of the main bed way. After a period of use, clearance between gib and bed way may become excessive. This clearance can be reduced by loosening the locknut (1), tightening the adjusting screw (2) to a proper amount and tighten the locknut (1).



8-8 Adjustment of cross slide female screw backlash (Refer to fig.22)

The backlash can be adjusted within a certain amount by a special designed screw of a two nuts set on the cross slide leadscrew.

This adjustment is carried out by means of the three screws on the center of cross slide. Release the lock screw (1) from the water-proof cover. Using a magnetic stand of dial gauge to remove the waterproof cover(2) and waterproof gasket (3). Don't release the screw (4) unless it is necessary. Release the screw (6) a little and slowly tighten the screw (5). Turn the handwheel and tighten the screw (6) slowly until the backlash become satisfactory.

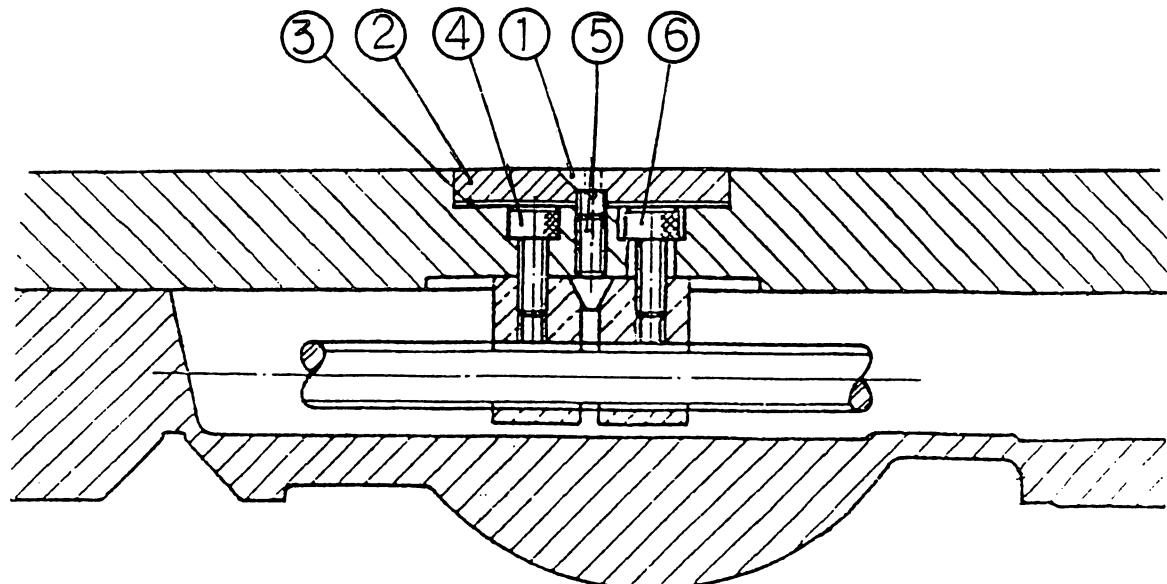


Fig - 22

9. ELECTRICAL WIRING

! Warning : All the electrical work should be undertaken only by personnel who are properly trained and have adequate knowledge and skill.

9-1 Safety Notices

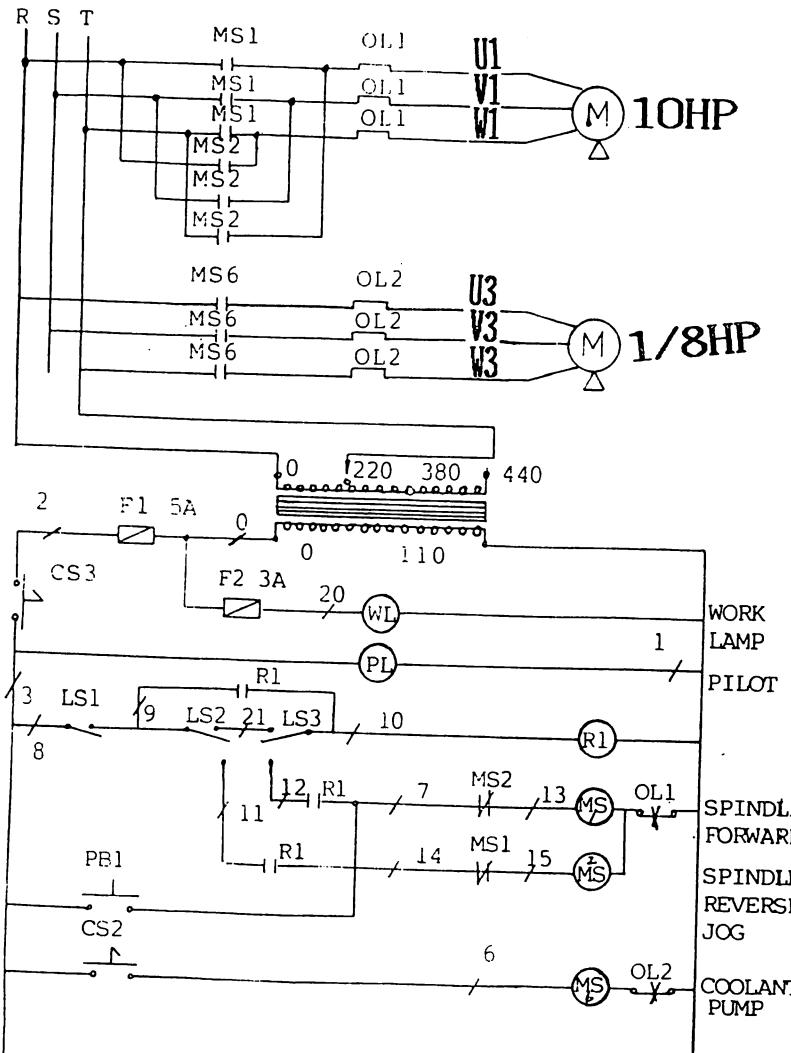
- (1) Be sure to use properly rated wires.
- (2) Be sure to ground the machine properly.
- (3) Be sure to protect the electrical cable, exposed cable may damage by swarf or crush, it may cause electrical hazards.

9-2 Electrical power requirement

This machine is equipped with 10 Hp main motor and 1/8 Hp coolant pump. If an electric wire is used a cap-tired code, use size over AWG # 8. The use of extremely fine wires causes the fall of the voltage which often brings the troubles on a magnetic contactor.

Protect carefully the electric wires exposed to the outside, which will be liable to be damaged by chips. This will induce a layer-short accident and will lower an efficiency to a considerable extent. The respective wirings should be connected with terminals R.S.T. at the control box. In this instance, check the revolving direction of the main spindle.

9-3-1、ELECTRIC DISTRIBUTION DIAGRAM 10HP 4P

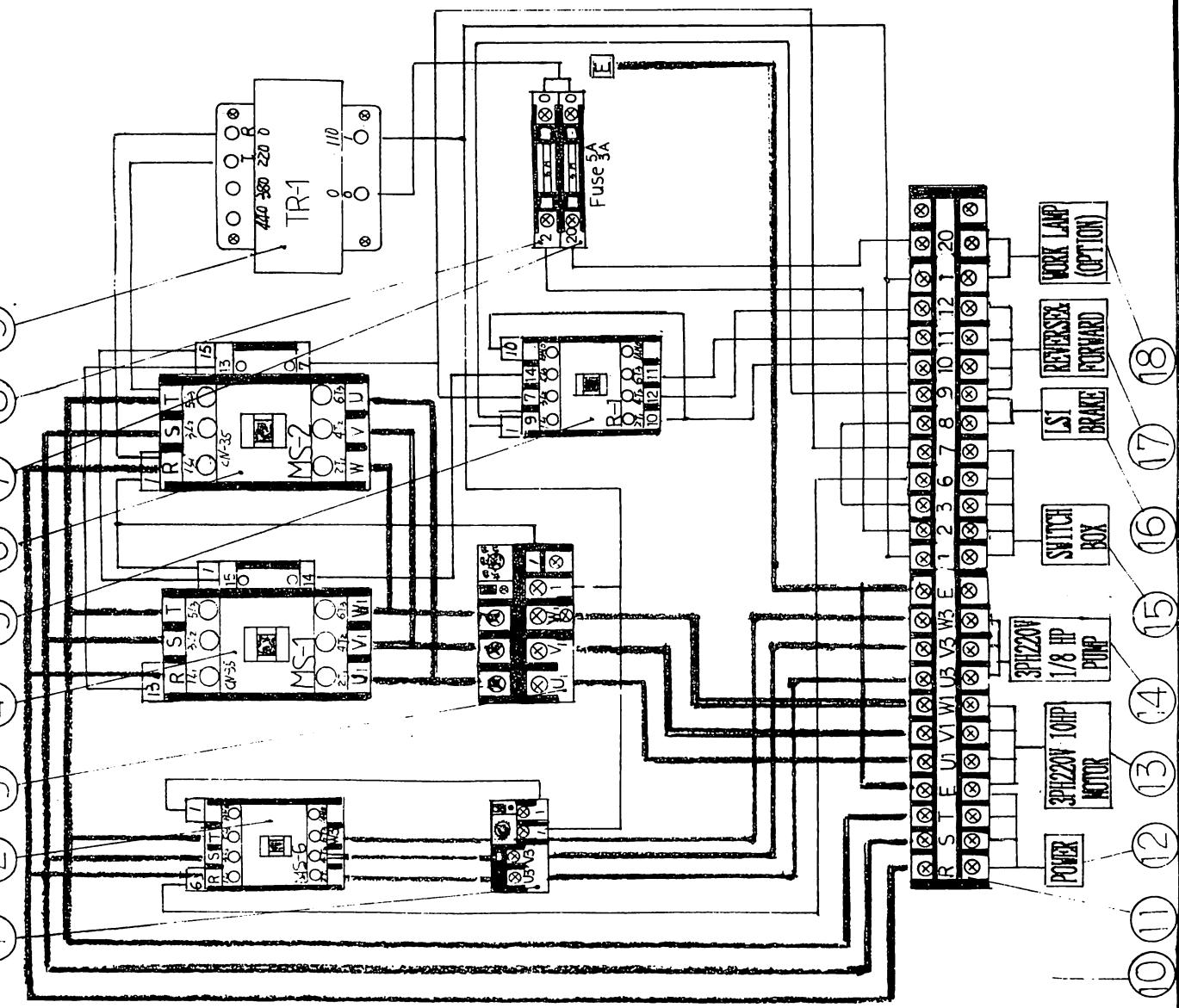
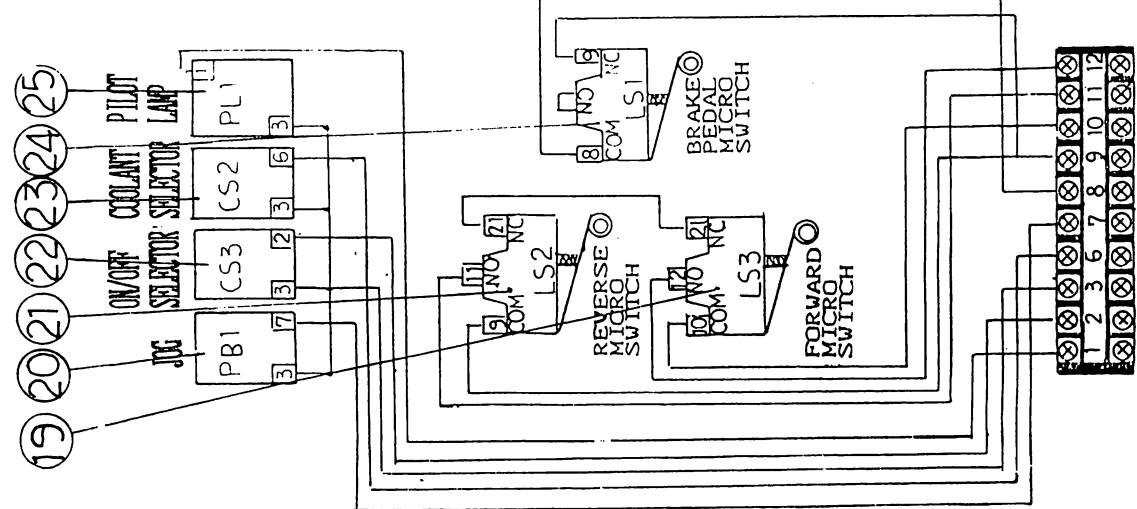


代號 SYM	型式 TYPE	廠牌 MPG	英 文 名稱 Part Name	中 文 名稱 Part Name
MS1	CN-35L.AC110V	TAIAN	Spindle forward switch	主軸正轉開關
MS2	CN-35L.AC110V	TAIAN	Spindle reverse switch	主軸逆轉開關
MS6	CN-11L.AC110V	TAIAN	Coolant pump switch	冷卻泵浦開關
R-1	CN-11L.AC110V	TAIAN	Auxiliary relay switch	輔助繼電器開關
OL1	RH-35/42A,10HP	TAIAN	Overload relay for spindle	主軸過負荷繼電器
OL2	RH-10BC/1.2A,1/8HP	TAIAN	Overload relay for coolant pump	冷卻泵浦過負荷繼電器
TR1	0,220,380,440 /60HZ,110V,110VA	YIIEC	Trans former	變壓器
CS3	o30-1A	SHANHO	ON/OFF Power switch	ON/OFF 電源開關
CS2	o30-1A-B	SHANHO	Collant selective switch	冷卻劑選擇開關
PB1	o30-1A-G	SHANHO	Inch power switch (Jog)	吋動開關
PL1	o30,110V/18V	SHANHO	Pilot lamp	指示燈
LS1	Z-15.GW-22B	OMRON	Microswitch for brake pedal	剎車踏板微動開關
LS2	Z-15.GW-22B	OMRON	Reverse micro switch	逆轉微動開關
LS3	Z-15.GW-22B	OMRON	Forward micro switch	正轉微動開關
F1	5A-250V-2P	SHANHO	Circuit fuse	電路保險絲
F2	3A-250V-2P	SHANHO	Fuse for working lamp	工作燈用保險絲
WL1	110V,60W	FONG CHI	Working lamp(option)	工作燈

9-3-1. ELECTRIC CONTROL CIRCUIT DIAGRAM 10HP 4P

CONTROL CIRCUIT WIRING DIAGRAM

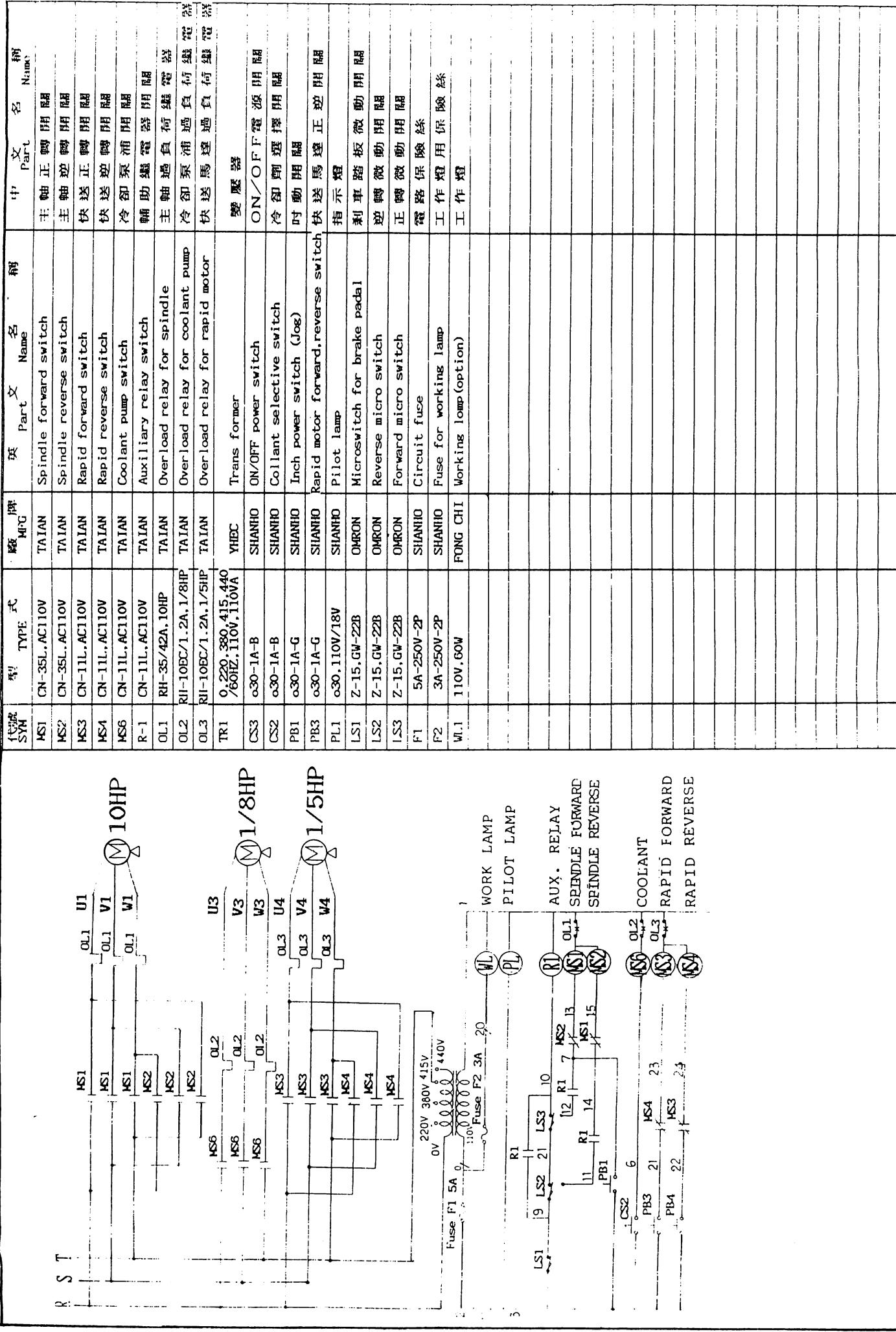
ELECTRIC CONTROL PANEL



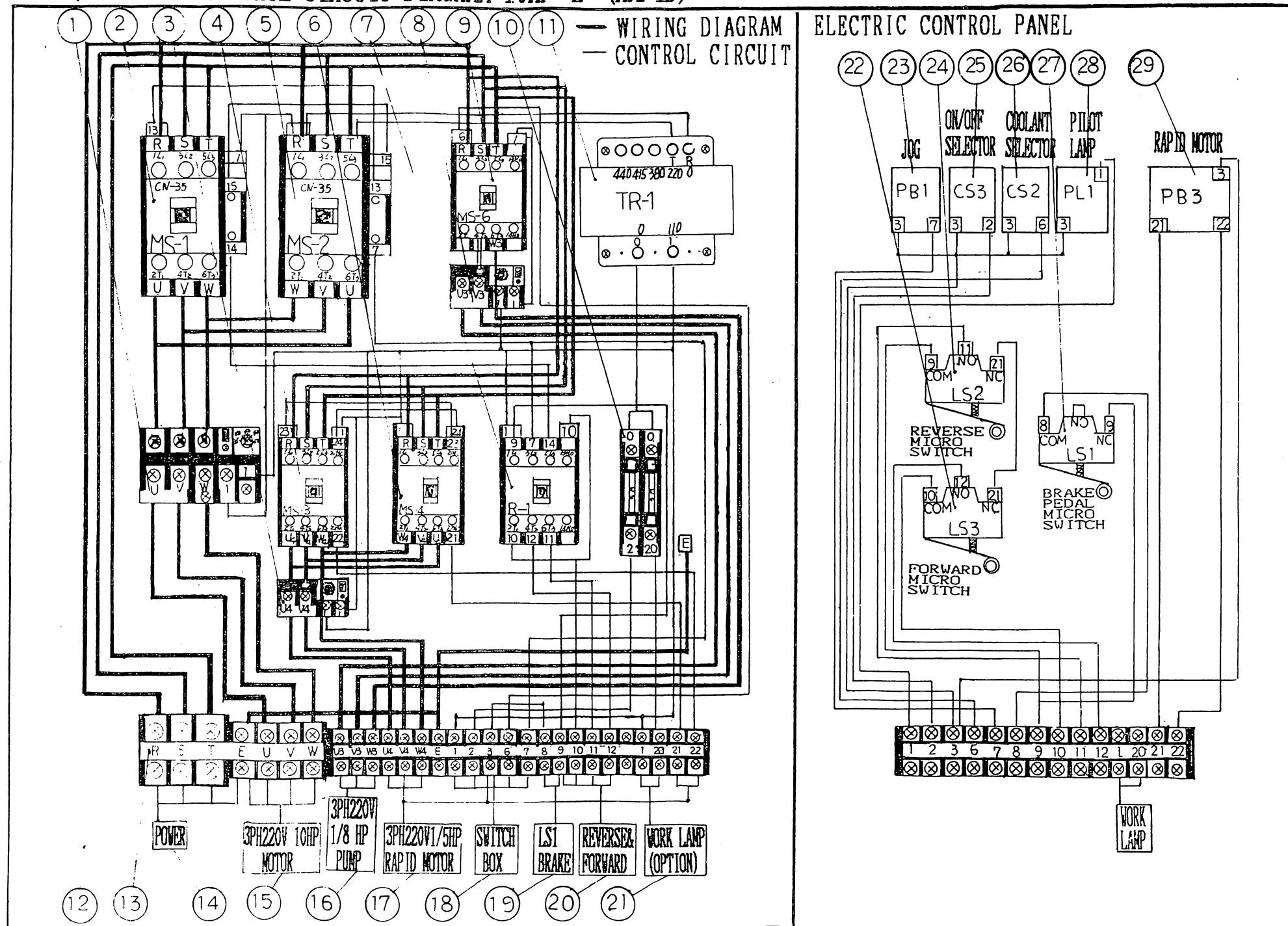
9-3-1、ELECTRIC CONTROL CIRCUIT DIAGRAM 10HP 4P

件號 No.	圖號 Part No.	英 文 名 稱 Part Name	中 文 名 稱 Part Name	數量 Qty	規 格 Dimension
1	26004-A	Overload relay coolant pump(OL-2)	冷卻泵浦過負荷繼電器 (OL-2)	1	RH-10EC/1.2A, 1/8HP
2	26004-B	Coolant pump switch (MS6)	冷卻泵浦開關 (MS-6)	1	CN-11L, AC110V
3	26004-C	Overload relay for spindle(OL-1)	主軸過負荷繼電器 (OL-1)	1	RH-35/42A, 10HP
4	26004-D	Spindle forward switch (MS-1)	主軸正轉開關 (MS-1)	1	CN-35L, AC110V
5	26004-E	Auxiliary relay switch(R-1)	輔助繼電器開關 (R-1)	1	CN-11L, AC110V
6	26004-F	Spindle reverse switch (MS-2)	主軸逆轉開關 (MS-2)	1	CN-35L, AC110V
7	26004-G	Fuse wire (F2)	保險絲 (F2)	1	5A
8	26004-H	Fuse wire (F1)	保險絲 (F1)	1	3A
9	26004-I	Transformer (TR-1)	變壓器 (TR-1)	1	0, 220, 380, 440V
10	26004	Electric appliance seat	電器座	1	
11	26004-J	Contact wire plate	接線板	1	
12	26004-K	Electric source wire (Power)	電源線	1	5.5M/M, 4C
13	26004-L	Pump wire (1/4HP)	泵浦電線(1/4HP)	1	0.75M/M, 4C
14	26004-M	Motor wire (10HP)	馬達電線(10HP)	1	5.5M/M, 4C
15	26004-N	Switch box wire	開關電線	1	1.25M/M, 5C
16	26004-O	Brake wire	剎車電線	1	0.75M/M, 2C
17	26004-P	Forward & Reverse wire	正逆轉電線	1	0.75M/M, 4C
18	26004-Q	Work lamp wire	工作燈電線	1	0.75M/M, 2C
19	26005-R	Forward micro switch (LS3)	正轉微動開關 (LS3)	1	Z-15, GW22B
20	26006-A	Inch power switch (PB1)	吋動開關 (PB1)	1	ø30 -1A- G
21	26005-A	Reverse micro switch (LS2)	逆轉微動開關 (LS2)	1	Z-15, GW22B
22	26006-B	ON/OFF Power switch (CS3)	ON/OFF電源開關(CS3)	1	ø30-1A-B
23	26006-C	Coolant selective switch (CS2)	冷卻劑選擇開關(CS2)	1	ø30-1A-B
24	26023-A	Microswitch for brake pedal (LS1)	剎車踏板微動開關(LS1)	1	Z-15, GW22B
25	26006-D	Pilot lamp (PL1)	指示燈 (PL1)	1	ø30, 110V/18V

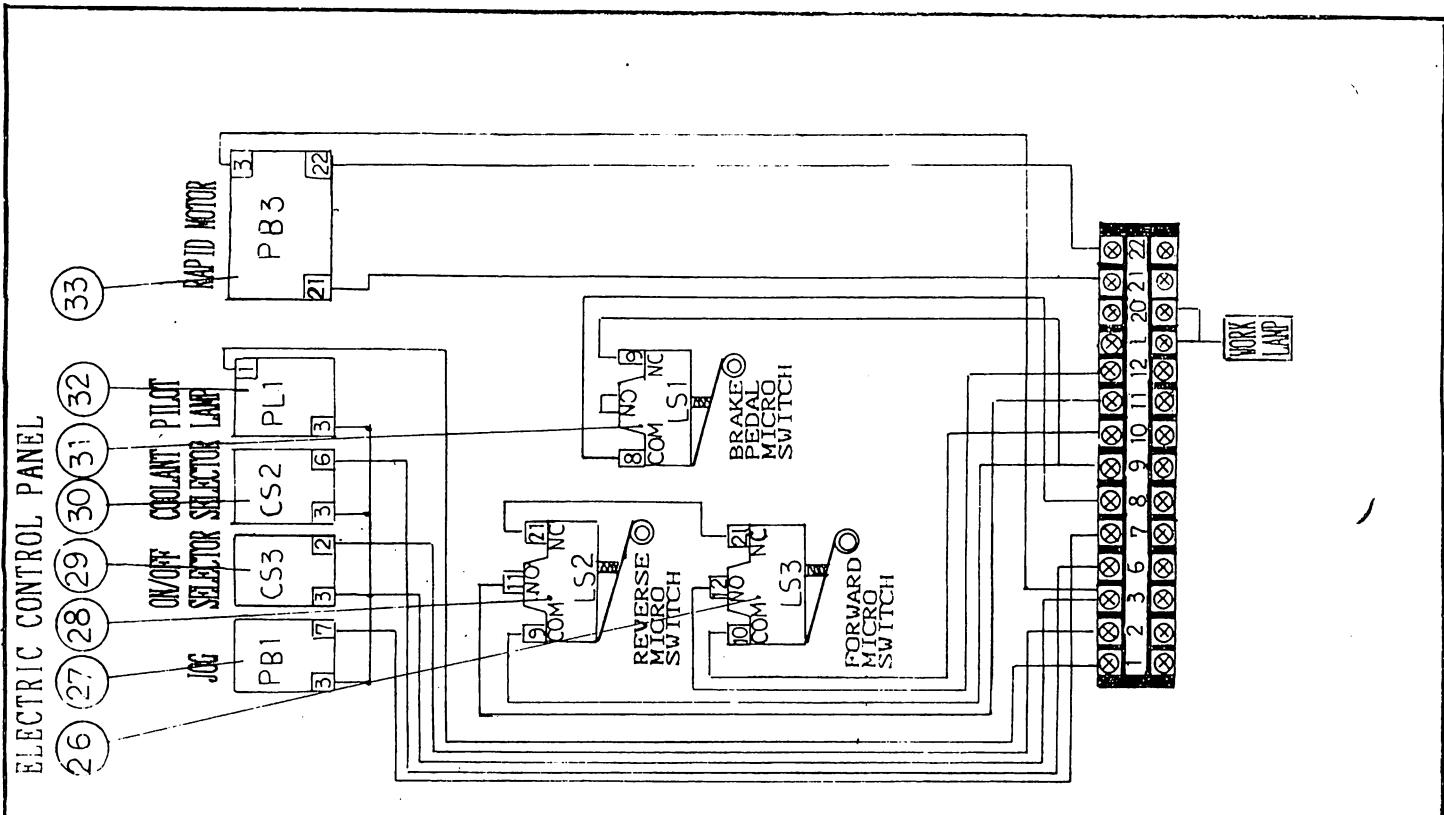
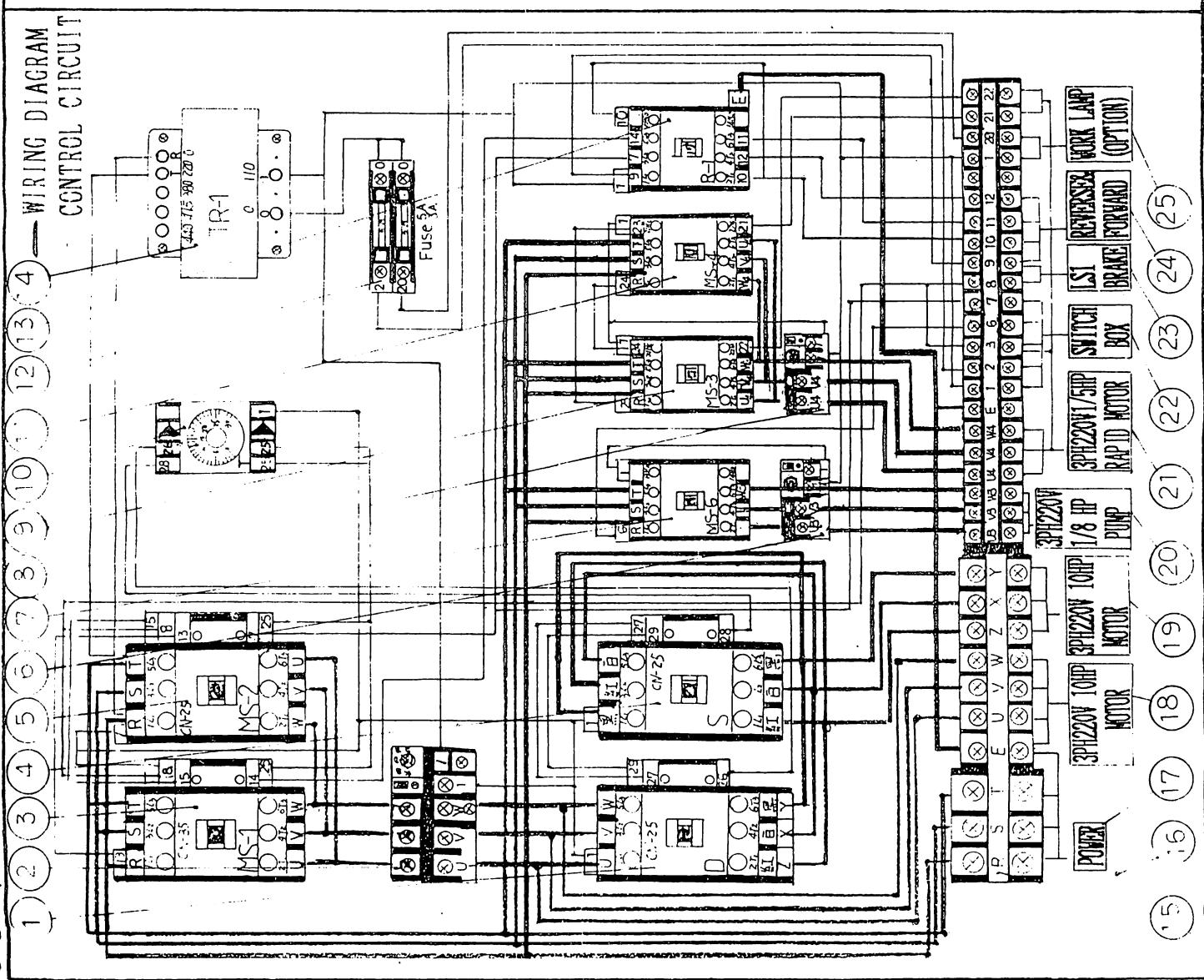
9-3-2、ELECTRIC DISTRIBUTION DIAGRAM 10HP 4P (RAPID) (OPTION)



9-3-2, ELECTRIC CONTROL CIRCUIT DIAGRAM 10HP 4P (RAPID)



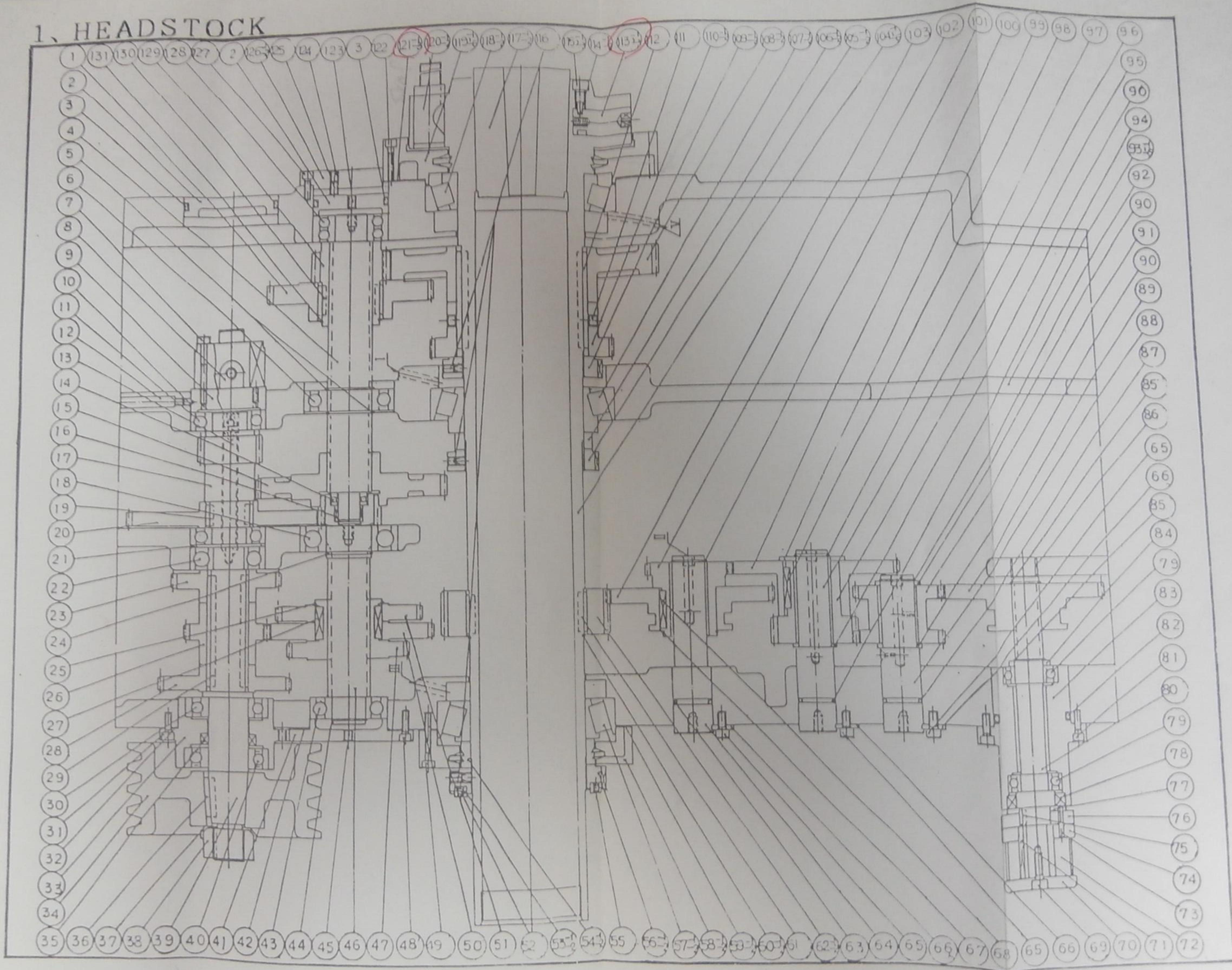
9-3-3. ELECTRIC CONTROL CIRCUIT DIAGRAM 10HP 4P (YΔSTARTING RAPID) (OPTION)



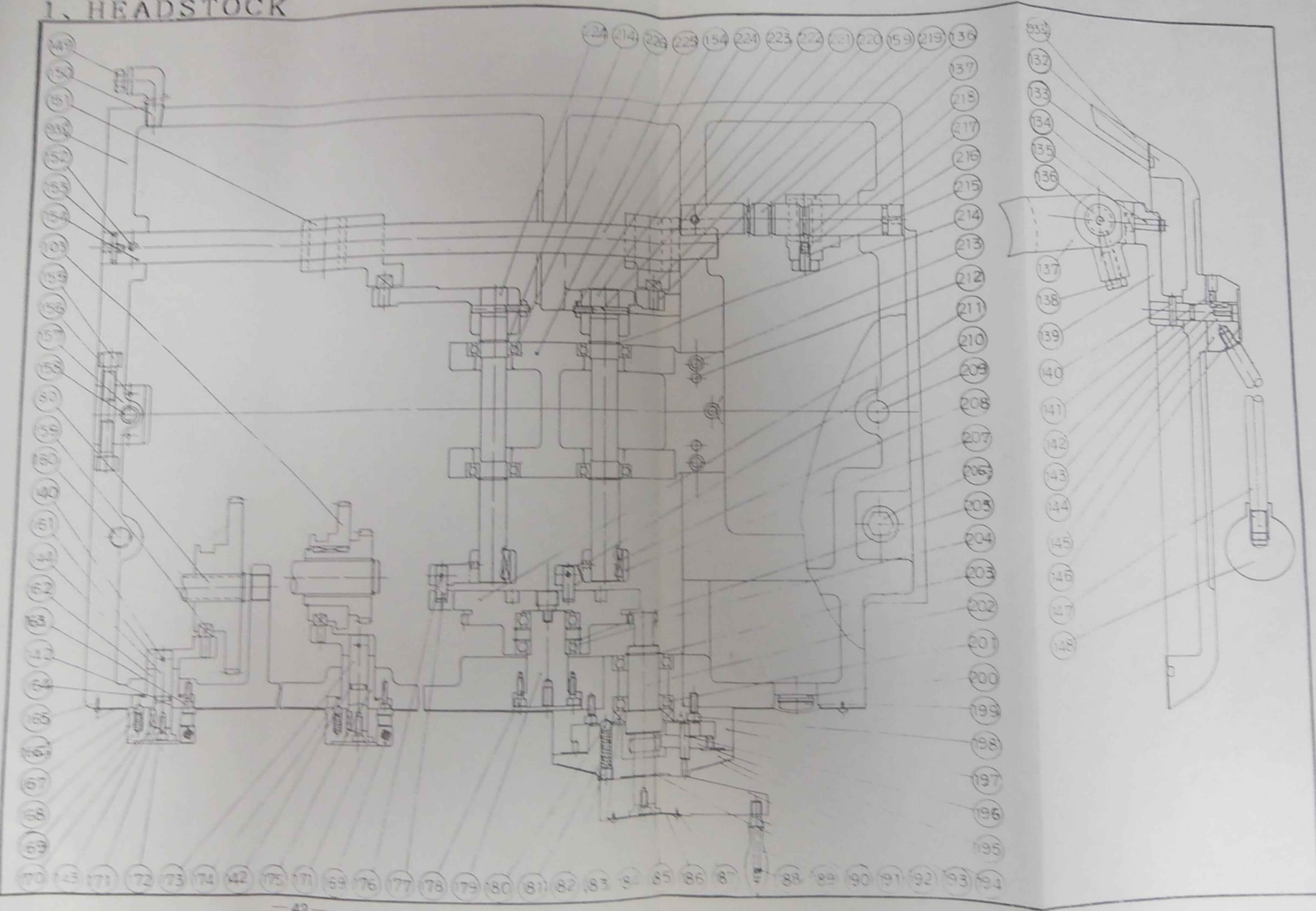
oil tank open

901-300-3100

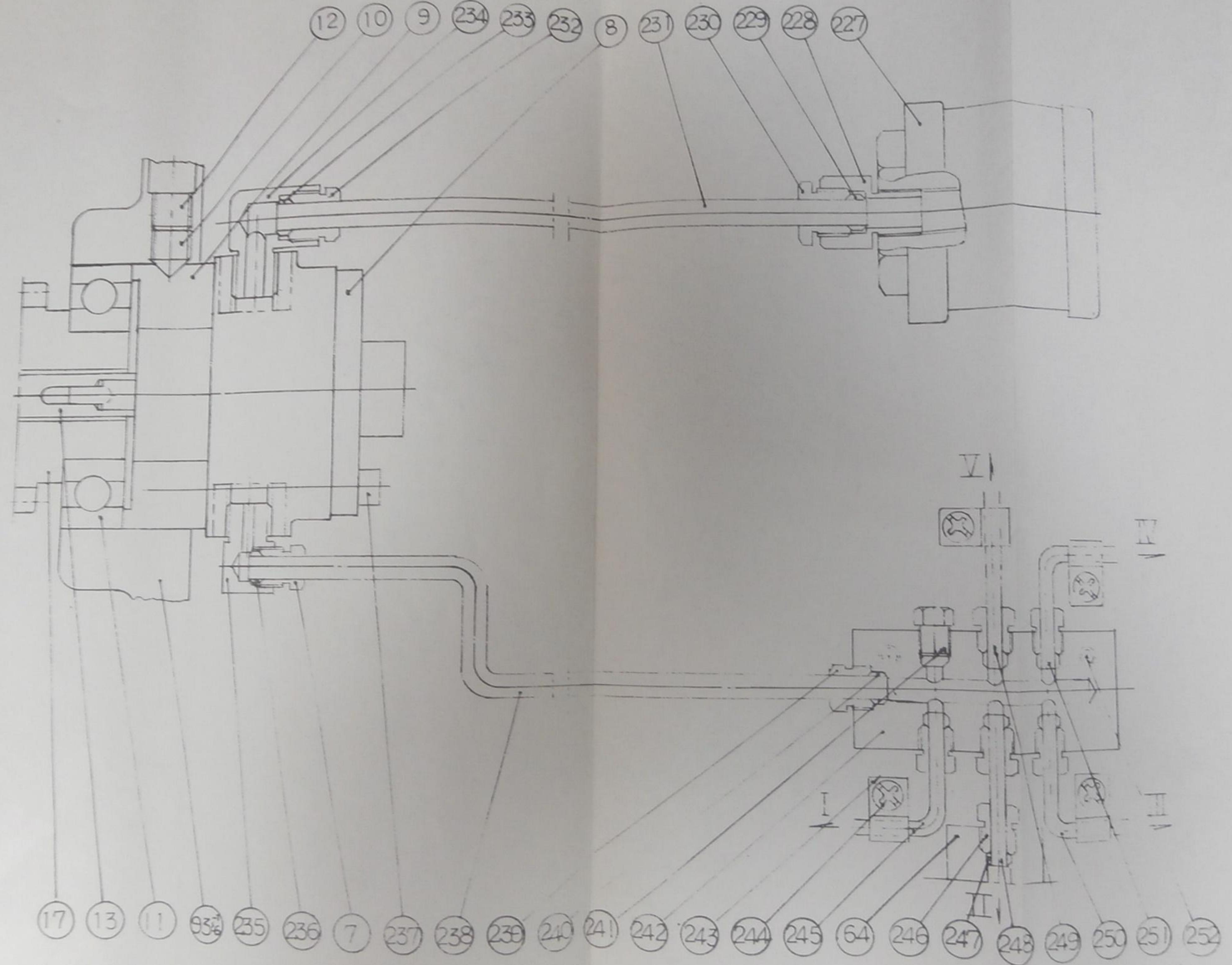
1. HEADSTOCK



1. HEADSTOCK



1. HEADSTOCK (LUBRICATION)



1. HEAD STOCK

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
1	51027	44T Gear for shaft D	D 軸 44T 齒輪	1	
2	51028	Thrust sleeve for shaft D	D 軸軸承止推套	2	
3	51028-A	O ring	O 形環	2	P62(Φ61.6xΦ5.7)
4	51022	Shaft D	D 軸	1	
5	51022-A	C-Type snap ring (external)	C 形扣環 (軸用)	2	S45(Φ41.5x1.8t)
6	51001-A	Deep groove ball bearing	深槽滾珠軸承	1	6209#(48x85x19)
7	51014-A	Hexagon socket head bolt	六角承窩螺絲	3	M6x50
8	51014	Oil pump	泵浦	1	
9	51012	Thrust sleeve for shaft B	B 軸軸承止推套	1	
10	51001-B	Hexagon socket taper screw	六角承窩錐形螺絲	1	M10x10
11	51001-C	Deep groove ball bearing	深槽滾珠軸承	2	6207#(35x72x17)
12	51001-D	Hexagon socket set screw	六角承窩固定螺絲	1	M10x10
13	51013	Oil pump drive rod	油泵傳動連桿	1	
14	51022-B	Thrust bearing	止推軸承	1	51104#(20x35x10)
15	51023	60T Gear for shaft D	D 軸 60T 齒輪	1	
16	51022-C	Needle bearing	滾針套	1	HK 2016#
17	51010	Shaft B	B 軸	1	
18	51001-E	Deep groove ball bearing	深槽滾珠軸承	1	6308#(40x90x23)
19	51010-A	Sunk key	雙頭圓鍵	2	10x8x20
20	51011	60T Gear for shaft B	B 軸 60T 齒輪	1	
21	51009	Washer for shaft B	B 軸墊圈	1	
22	51001-F	Deep groove ball bearing	深槽滾珠軸承	1	6306#(30x72x19)
23	51008	40T Gear for shaft A	A 軸 40T 齒輪	1	
24	51016-A	C-Type snap ring (External)	C 型扣環 (軸用)	1	S40(Φ37x1.8t)
25	51019-A	C-Type snap ring (External)	C 型扣環 (軸用)	1	S55(Φ50.8x2t)
26	51007	31T Gear for shaft A	A 軸 31T 齒輪	1	
27	51019-B	Sunk key	雙頭圓鍵	2	10x8x20
28	51006	48T Gear for shaft A	A 軸 48T 齒輪	1	
29	51002-A	Sunk key	雙頭圓鍵	2	10x8x100
30	51004-A	Deep groove ball bearing	深槽滾珠軸承	1	6208#(40x80x18)
31	51004-B	Hexagon socket head bolt	六角承窩螺絲	6	M6x20
32	51005	Axle cover packing for shaft A	A 軸軸蓋密合墊	1	
33	51004	Bearing block for shaft A	A 軸軸承座	1	
34	51003	Spindle box pulley	主軸箱皮帶輪	1	
35	51004-C	Oil seal	油封	1	TC405509
36	51002-B	Sunk key	雙頭圓鍵	1	10x8x40
37	51002-C	Lock washer	梅花墊圈	1	AW06(Φ30x1.2t)
38	51002-D	Hexagon nut	六角螺帽	1	M30xP1.5
39	51002	Shaft A	A 軸	1	
40	51004-D	Deep groove ball bearing	深槽滾珠軸承	1	6208ZZ#(40x80x18)

1. HEAD STOCK

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
41	51017	Axle cover for shaft C	C 軸軸蓋	1	
42	51018	Axle cover packing for shaft C	C 軸軸蓋密合墊	1	
43	51017-A	Deep groove ball bearing	深槽滾珠軸承	1	6306#(30x72x19)
44	51016-B	C-Type snap ring (External)	C 型扣環(軸用)	1	S30(Φ27.9x1.6t)
45	51017-B	Hexagon socket Set bolt	六角承窩固定螺絲	1	M10x10
46	51016	Shaft C	C 軸	1	6205#(25x52x15)
47	51019	43T Gear for shaft C	C 軸 43T 齒輪	1	
48	51017-C	Hexagon socket head bolt	六角承窩螺絲	1	M6x20
49	51039-1-A	Hex. socket head bolt(A1-11,D1-11,A1-8,D1-8)	六角承窩螺絲	4	M6x40
50	51020	61T Gear shaft C	C 軸 61T 齒輪	1	
51	51021	52T Gear shaft C	C 軸 52T 齒輪	1	
52	51043-1-A	Steel ball (A1-11,D1-11,A1-8,D1-8)	鋼珠 (A1-11,D1-11,A1-8,D1-8)	1-3	Φ5
53-1	51043-1	Balancing fin(A1-11,D1-11)	主軸平衡片(A1-11,D1-11)	1-3	
53-2	51043-2	Balancing fin(A1-8 ,D1-8)	主軸平衡片(A1-8 ,D1-8)	1-3	
54-1	51041-1	Labyrinth ring (A1-11,D1-11)	去油環 (A1-11,D1-11)	1	
54-2	51041-2	Labyrinth ring (A1-8 ,D1-8)	去油環 (A1-8 ,D1-8)	1	
55	51043-1-B	Hex.socket set screw (A1-11,D1-11,A1-8,D1-8)	六角承窩固定螺絲	1-3	M6x8
56-1	51042-1	Rear bearing lock nut (A1-11,D1-11)	後軸承鎖定螺帽(A1-11,D1-11)	1	
56-2	51042-2	Rear bearing lock nut(A1-8 ,D1-8)	後軸承鎖定螺帽(A1-8 ,D1-8)	1	
57-1	51001-G	Taper roller bearing(A1-11,D1-11)	斜角滾柱軸承(A1-11,D1-11)	1	32024#(120x180x38)
57-2	51001-G	Taper roller bearing(A1-8 ,D1-8)	斜角滾柱軸承(A1-8 ,D1-8)	1	32021#(105x160x35)
58-1	51039-1	Back cover for spindle (A1-11,D1-11)	主軸後蓋(A1-11,D1-11)	1	
58-2	51039-2	Back cover for spindle (A1-8,D1-8)	主軸後蓋(A1-8 ,D1-8)	1	
59-1	51040-1	Back cover packing (A1-11,D1-11)	主軸後蓋密合墊(A1-11,D1-11)	1	
59-2	51040-2	Back cover packing (A1-8 ,D1-8)	主軸後蓋密合墊(A1-8 ,D1-8)	1	
60-1	51030- ¹ ₃ -A	Snap ring(External)(A1-11,D1-11)	C 型扣環(軸用)(A1-11,D1-11)	1	S125(Φ118x4t)
60-2	51030- ² ₄ -A	Snap ring(External)(A1-8 ,D1-8)	C 型扣環(軸用)(A1-8 ,D1-8)	1	S105(Φ98x4t)
61	51030-1-B	Sunk key (A1-11,D1-11,A1-8,D1-8)	雙頭圓鍵(A1-11,D1-11,A1-8,D1-8)	2	10x8x35
62-1	51038-1	60T Gear for shaft S(A1-11,D1-11)	S 軸 60T 齒輪(A1-11,D1-11)	1	
62-2	51038-2	60T Gear for shaft S(A1-8 ,D1-8)	S 軸 60T 齒輪(A1-8 ,D1-8)	1	
63	51048-A	O ring	O 形環	1	P29(Φ28.7xΦ3.5)
64	51048	Shaft E	E 軸	1	
65	51051-A	Hexagon socket head blot	六角承窩螺絲	3	M6x16
66	51051	Fixed washer	固定墊圈	3	與 21026 通用
67	51049-A	C-Type snap ring (External)	C 型扣環(軸用)	1	S50(Φ45.8x2t)
68	51049-B	Sunk key	雙頭圓鍵	1	6x6x35
69	51068-A	Hexagon socket head bolt	六角承窩螺絲	1	M8x25
70	51068	Pulley thrust washer	帶輪止推墊圈	1	與31055通用
71	51067-A	Sunk key	雙頭圓鍵	1	6x6x45
72	51067	Output axle for Timing pulley	出力軸時規帶輪	1	與31054通用

1. HEAD STOCK

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
73	51069	Safety pin	安全梢	1	與21039通用
74	51065	Safety pin outer fixed ring	安全梢外固定圈	1	與21038通用
75	51059-1-A	Sunk key	雙頭圓鍵	1	6x6x12
76	51064	Safety pin inner fixed ring	安全梢內固定圈	1	與21036通用
77	51063	Safety pin sheet shield	安全梢檔片	1	與21035通用
78	51061-A	Oil seal	油封	1	TC355509
79	51061-B	Deep groove ball bearing	深槽滾珠軸承	1	6205#(25x52x15)
80	51059-1	Timing pulley for shaft H	H 軸時規帶輪	1	
81	51061-C	Hexagon socket head bolt	六角承窩螺絲	4	M6x20
82	51061-D	O ring	O 形環	1	P62(Φ61.6xΦ5.7)
83	51061	Bearing block for shaft H	H 軸軸承座	1	
84	51062	Washer	墊圈	1	與21028通用
85	51059-1-B	C-Type snap ring (External)	C 型扣環(軸用)	2	S25(Φ23.2x1.2t)
86	51001-H	Dry bearing (A1-11,D1-11)	自潤軸承(A1-11,D1-11)	1	DU202315
87	51057-1-A	O ring	O 形環	1	P29(Φ28.7xΦ3.5)
88	51057-1	Shaft G	G 軸	1	
89	51060	60T Gear for shaft H	H 軸 60T 齒輪	1	
90	51055	Washer	墊圈	1	
91	51058	30T Gear for shaft G	G 軸 30T 齒輪	1	
92	51057-1-B	C-Type snap ring (External)	C 型扣環(軸用)	1	S30(Φ27.9x1.6t)
93-1	51001-1	Head stock (High center,Large bore)	主軸箱(高,大)	1	760型,內孔Φ104
93-2	51001-2	Head stock (Mid. center,Large bore)	主軸箱(中,大)	1	660型,內孔Φ104
93-3	51001-3	Head stock (Low center,Large bore)	主軸箱(低,大)	1	560型,內孔Φ104
93-4	51001-4	Head stock (High center,Small bore)	主軸箱(高,小)	1	760型,內孔Φ86
93-5	51001-5	Head stock (Mid. center,Small bore)	主軸箱(中,小)	1	660型,內孔Φ86
93-6	51001-6	Head stock (Low center,Small bore)	主軸箱(低,小)	1	560型,內孔Φ86
94	51052-A	O ring	O 形環	1	P29(Φ28.7xΦ3.5)
95	51053	30T Gear for shaft F	F 軸 30T 齒輪	1	
96	51052	Shaft F	F 軸	1	
97	51052-B	C-Type snap ring (External)	C 型扣環(軸用)	1	S30(Φ27.9x1.5t)
98	51053-A	Sunk key	雙頭圓鍵	1	6x6x35
99	51056	Thrust big washer for shaft F	F 軸止推大墊圈	1	
100	51054	60T Gear for shaft F	F 軸 60T 齒輪	1	
101	51048-B	C-Type snap ring (External)	C 型扣環(軸用)	1	S30(Φ27.9x1.6t)
102	51049	30T Gear for shaft E	E 軸 30T 齒輪	1	
103	51050	60T Gear for shaft E	E 軸 60T 齒輪	1	
104-1	51030-1	Spindle (A1-11)	主軸(A1-11)	1	
104-2	51030-2	Spindle (D1-11)	主軸(D1-11)	1	
104-3	51030-3	Spindle (A1-8)	主軸(A1-8)	1	

1. HEAD STOCK

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
104-4	51030-4	Spindle (D1-8)	主軸(D1-8)	1	
104-5	51030-5	Spindle (A2-8)	主軸(A2-8)	1	
104-6	51030-6	Spindle (D2-8)	主軸(D2-8)	1	
105-1	51037-1	Locking nut (mid.A1-11,D1-11)	中軸承鎖定螺帽(A1-11,D1-11)	1	
105-2	51037-2	Locking nut (mid.A1-8 ,D1-8)	中軸承鎖定螺帽(A1-8 ,D1-8)	1	
106-1	51036-1	Bearing washer (A1-11,D1-11)	中軸承墊圈 (A1-11,D1-11)	1	
106-2	51036-2	Bearing washer (A1-8 ,D1-8)	中軸承墊圈 (A1-8 ,D1-8)	1	
107-1	51001-I	Taper roller bearing (A1-11,D1-11)	斜角滾柱軸承(A1-11,D1-11)	1	32026#(130x200x45)
107-2	51001-I	Taper roller bearing (A1-8 ,D1-8)	斜角滾柱軸承(A1-8 ,D1-8)	1	32022#(110x170x38)
108-1	51033-1	72T Gear for shaft S (A1-11,D1-11)	S軸 7 2 T 齒輪(A1-11,D1-11)	1	
108-2	51033-2	72T Gear for shaft S (A1-8 ,D1-8)	S軸 7 2 T 齒輪(A1-8 ,D1-8)	1	
109-1	51035-1	Locking nut (Front,A1-11,D1-11)	前齒輪鎖定螺帽(A1-11,D1-11)	1	
109-2	51035-2	Locking nut (Front,A1-8 ,D1-8)	前齒輪鎖定螺帽(A1-8 ,D1-8)	1	
110-1	51034-1	48T Gear for shaft S (A1-11,D1-11)	S軸 4 8 T 齒輪(A1-11,D1-11)	1	
110-2	51034-2	48T Gear for shaft S (A1-8 ,D1-8)	S軸 4 8 T 齒輪(A1-8 ,D1-8)	1	
111	51034-1-A	Hex. socket set screw (A1-11,D1-11,A1-8,D1-8)	六角承窩固定螺絲	2	M10x10
112	51030-1-C	Sunk key (A1-11,D1-11,A18,D1-8)	雙頭圓鍵(A1-11,D1-11,A1-8,D1-8)	2	12x8x90
113-1	51046-1	D1-Type cam (D1-11)	D1型凸輪 (D1-11)	6	
113-2	51046-2	D1-Type cam (D1- 8)	D1型凸輪 (D1- 8)	6	
113-3	51046-3	D1-Type cam (D2- 8)	D1型凸輪 (D2- 8)	6	
114-1	51080-1	D1-Type spring (D1-11)	D1型彈簧 (D1-11)	6	與21067通用
114-2	51080-2	D1-Type spring (D1- 8)	D1型彈簧 (D1- 8)	6	與21067通用
114-3	51080-3	D1-Type spring (D2- 8)	D1型彈簧 (D2- 8)	6	與21067通用
115-1	51047-1	D1-Type bolt (D1-11)	D1型螺絲 (D1-11)	6	
115-2	51047-2	D1-Type bolt (D1- 8)	D1型螺絲 (D1- 8)	6	
115-3	51047-3	D1-Type bolt (D2- 8)	D1型螺絲 (D2- 8)	6	
116	51030-1-D	Hex.socket set screw (A1-11,D1-11,A1-8,D1-8)	六角承窩固定螺絲	各 3	M8x10
117-1	51044-1	Center sleeve (A1-11, D1-11)	頂心套筒 (A1-11, D1-11)	1	
117-2	51044-2	Center sleeve (A1-8, D1-8)	頂心套筒 (A1-8, D1-8)	1	
118-1	51001-J	Taper roller bearing (A1-11,D1-11)	斜角滾柱軸承 (A1-11,D1-11)	1	32028#(140x210x45)
118-2	51001-J	Taper roller bearing (A1-8 ,D1-8)	斜角滾柱軸承 (A1-8 ,D1-8)	1	32024#(120x180x38)
119-1	51031-1	Front cover (A1-11)	主軸前蓋(A1-11)	1	
119-2	51031-2	Front cover (D1-11)	主軸前蓋(D1-11)	1	
119-3	51031-3	Front cover (A1-8)	主軸前蓋(A1-8)	1	
119-4	51031-4	Front cover (D1-8)	主軸前蓋(D1-8)	1	
119-5	51031-5	Front cover (A2-8)	主軸前蓋(A2-8)	1	
119-6	51031-6	Front cover (D2-8)	主軸前蓋(D2-8)	1	
120-1	51045-1	D1-Type stud (D1-11)	D1型鎖棒(D1-11)	6	
120-2	51045-2	D1-Type stud (D1-8)	D1型鎖棒(D1-8)	6	
121-1	51032-1	Front cover packing (A1-11,D1-11)	主軸前蓋密合墊(A1-11,D1-11)	1	

1. HEAD STOCK

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
121-2	51032-2	Front cover packing (A1-8 ,D1-8)	主軸前蓋密合墊(A1-8 ,D1-8)	1	
121-3	51032-3	Front cover packing (A2-8 ,D2-8)	主軸前蓋密合墊(A2-8 ,D2-8)	1	
122	51031-1-A	Hex.socket head cap screw	六角承窩螺絲	6	M6x45
123	51028-B	Hexagon socket set screw	六角承窩固定螺絲	1	M8x10
124	51029-1-A	Hex.socket set screw (A1-11,D1-11,A1-8, D1-8)	六角承窩固定螺絲	1	M8x10
125	51029-1-B	Hex.socket set screw (A1-11,D1-11,A1-8, D1-8)	六角承窩固定螺絲	1	M8x10
126-1	51029-1	Axle cover shaft D (A1-11,D1-11)	D 軸 軸 蓋(A1-11,D1-11)	1	
126-2	51029-2	Axle cover shaft D (A1-8, D1-8)	D 軸 軸 蓋(A1-8 ,D1-8)	1	
127	51029-1-C	Hex. socket head bolt (A1-11,D1-11,A1-8, D1-8)	六角承窩螺絲	3	M8x16
128	51001-K	Double law deep groove ball bearing	雙列深槽滾珠軸承	1	4306#(30x72x27)
129	51026	19T Gear for shaft D	D 軸 19 T 齒 輪	1	
130	51026-A	Sunk key	雙頭圓鍵	2	14x9x30
131	51026-B	Snap ring (External)	C 型 扣 環 (軸用)	1	S60(Φ55.8x2t)
132	51081	Spindle box cover	主軸箱蓋	1	
133	51150	Spindle box cover packing	主軸箱蓋密合墊	1	
134	51181-A	Snap ring (External)	C 型 扣 環 (軸用)	1	E9(Φ9x0.8t)
135	51181	Feed shift block	進刀撥塊	1	
136	51175	Shaft O	O 軸	1	
137	51176	Front shifting yoke	前移位叉	1	
138	51176-A	Hexagon nut	六角螺帽	1	M12xP1.75
139	51195	Shifting arm	移位臂	1	
140	51072-A	Spring pin	彈簧梢	3	Φ5x30
141	51194-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x15
142	51072-B	O ring	O 形 環	3	P12(Φ11.8xΦ2.4)
143	51072-C	Sunk key	雙頭圓鍵	3	5x5x15
144	51072	Feed shifting lever	進刀移位桿	1	與21042通用
145	51194	Handle block	把手塊	1	與31068通用
146	51193	Handle block name plate	把手塊銘板	1	與21057通用
147	51191	Handle lever	握手	1	
148	51191-A	Handle grip	握手柄	1	
149	51001-M	Tube plug	管塞	1	PT3/8"
150	51001-L	90° Elbow	90° 內外牙彎管	1	PT3/8"
151	51172	Rear shifting yoke	後移位叉	1	
152	51171-A	Hexagon socket set bolt	六角承窩固定螺絲	2	M8x8
153	51171-B	O ring	O 形 環	1	P24(Φ23.7xΦ3.5)
154	51171	Shaft N	N軸	1	
155	51122	Special screw	特殊螺絲	2	
156	51121-A	Spring pin	彈簧梢	2	#6x30
157	51121	Governing part	調節金具	1	
158	51121-B	Hexagon head bolt	六角頭螺絲	1	M12x45

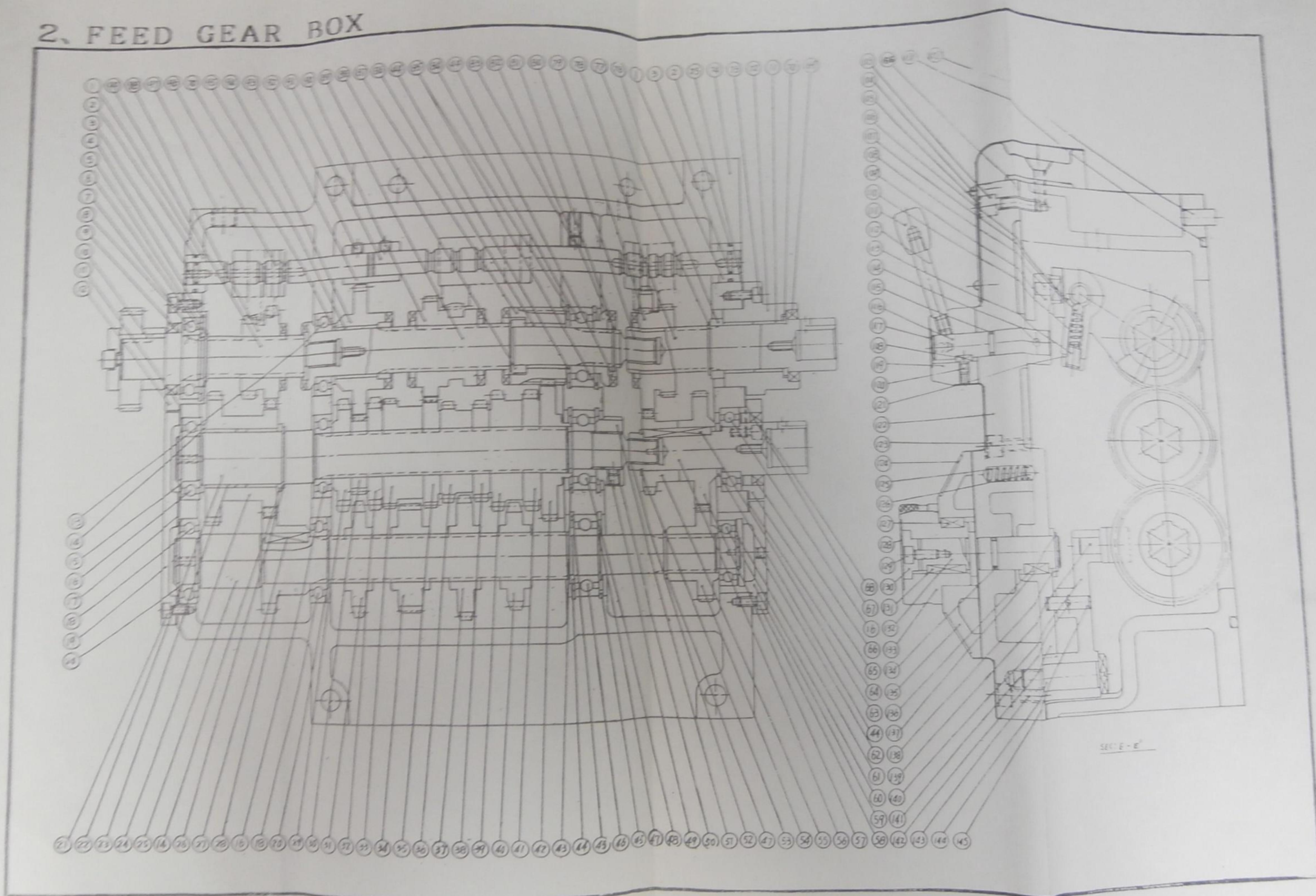
1. HEAD STOCK

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
159	51071	Feed shifting block	進刀撥塊	4	與21044通用
160	51001-N	Hexagon socket bolt	六角承窩螺絲	各 4	M20x60(560,660,760)
161	51070	Feed shifting arm	進刀移位臂	2	與21043通用
162	51073	Shifting rod bracket for shaft I	I 軸移位桿承座	1	
163	51073-A	Hexagon socket head bolt	六角承窩螺絲	4	M5x12
164	51073-B	O ring	O 形環	1	P30(Φ29.7xΦ3.5)
165	51117-A	Cross recessed round head screw	十字圓頭機器螺釘	1	M5x5
166-1	51117-1	Spindle box name plate (High)	主軸箱銘牌(高)	1	
166-2	51117-2	Spindle box name plate (Mid.)	主軸箱銘牌(中)	1	
166-3	51117-3	Spindle box name plate (Low)	主軸箱銘牌(低)	1	
167	51075-A	Steel ball	鋼珠	4	Φ5/16"
168	51075	Compressing spring	壓縮彈簧	4	與21174通用
169	51074	Feed handle block	進刀把手塊	2	與21045通用)
170	51077	Handle block name plate	把手塊銘板	2	與21046通用
171	51076	Washer	墊圈	2	與21040通用
172	51076-A	Hexagon socket head bolt	六角承窩螺絲	2	M6x16
173	51078-1	Shaft J	J 軸	1	
174	51079-A	O ring	O 形環	1	P30(Φ29.7xΦ3.5)
175	51079	Shifting rod bracket for shaft J	J 軸移位桿承座	1	
176	51184-A	Spring pin	彈簧梢	2	Φ3x18
177	51185	Shifting arm axle for shaft Q&R	Q & R 軸移位臂支軸	2	
178	51161-A	Hexagon socket head bolt	六角承窩螺絲	4	M6x20
179	51161	Shaft L	L 軸	1	
180	51154-A	Steel ball	鋼珠	1	Φ10
181	51156	Compressing spring	壓縮彈簧 (與22097通用)	1	Φ7.5xΦ1.2x26
182	51154-B	Hexagon socket head bolt	六角承窩螺絲	1	M12x10
183	51153-A	Oil seal	油封	1	TC355510
184	51159-A	Hexagon socket head bolt	六角承窩螺絲	1	M6x10
185	51159	Washer	墊圈	1	與22007通用
186	51158	Name plate	銘牌	1	與61100通用
187	51158-A	Cross recessed round head screw	十字圓頭機器螺釘	3	M2x5
188	51160	Handle grip pin	握柄梢	1	與23006通用
189	51160	Handle grip	握把	1	與23006通用
190	51151-A	C-Type snap ring (External)	C 型扣環(軸用)	2	S20(Φ18.5x1.2t)
191	51160	Handle grip shaft	握把軸	1	與23006通用
192	51157	Rocker arm for change speed	變速轉動曲臂	1	
193	51088-1	Speed indicating plate	轉速指示牌	1	
194	51154	Rocker disc for speed indicator	轉速指示牌轉盤	1	
195	51155	24T Gear for shaft K	K 軸 24 T齒輪	1	
196	51154-C	Pin	梢	1	Φ8x30

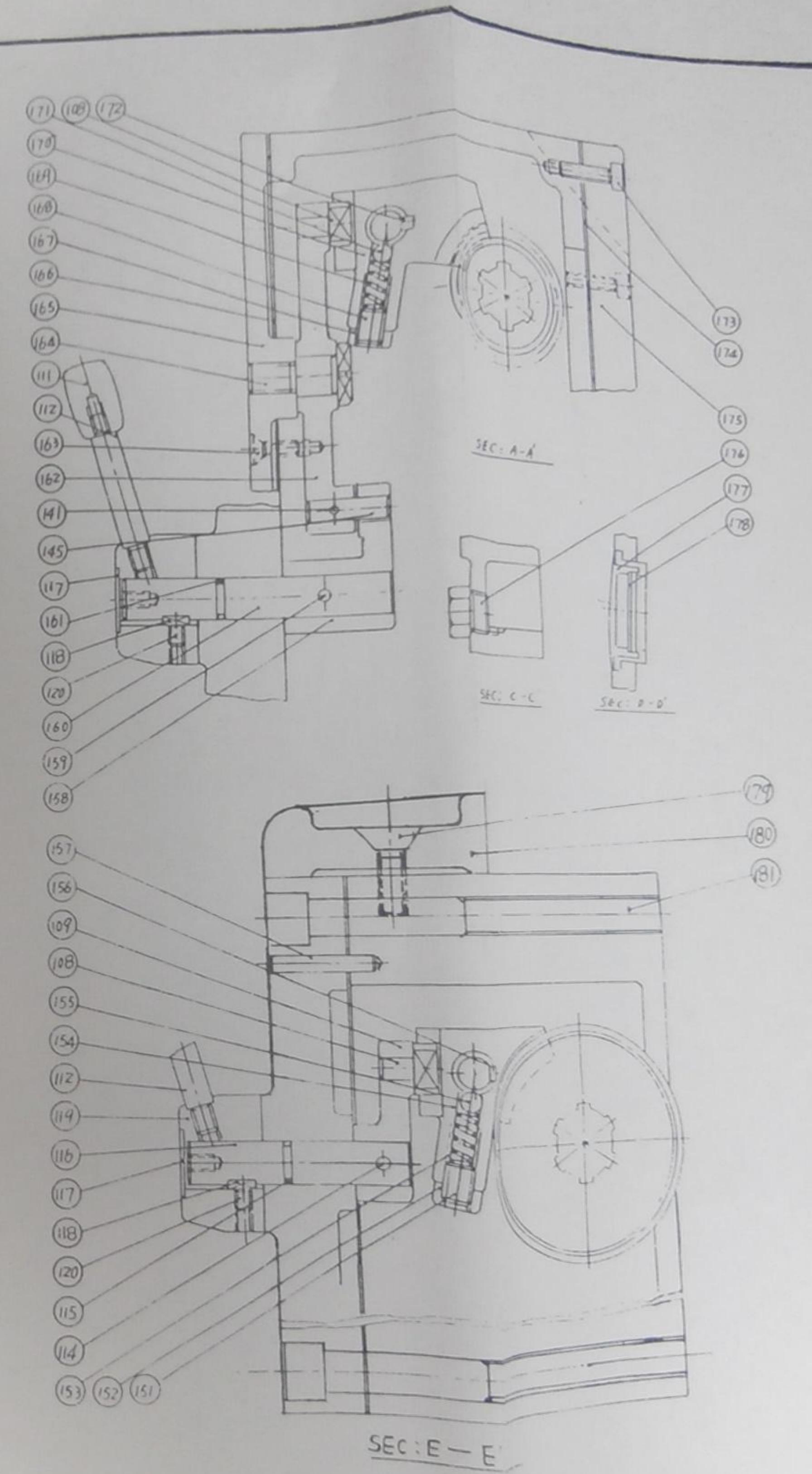
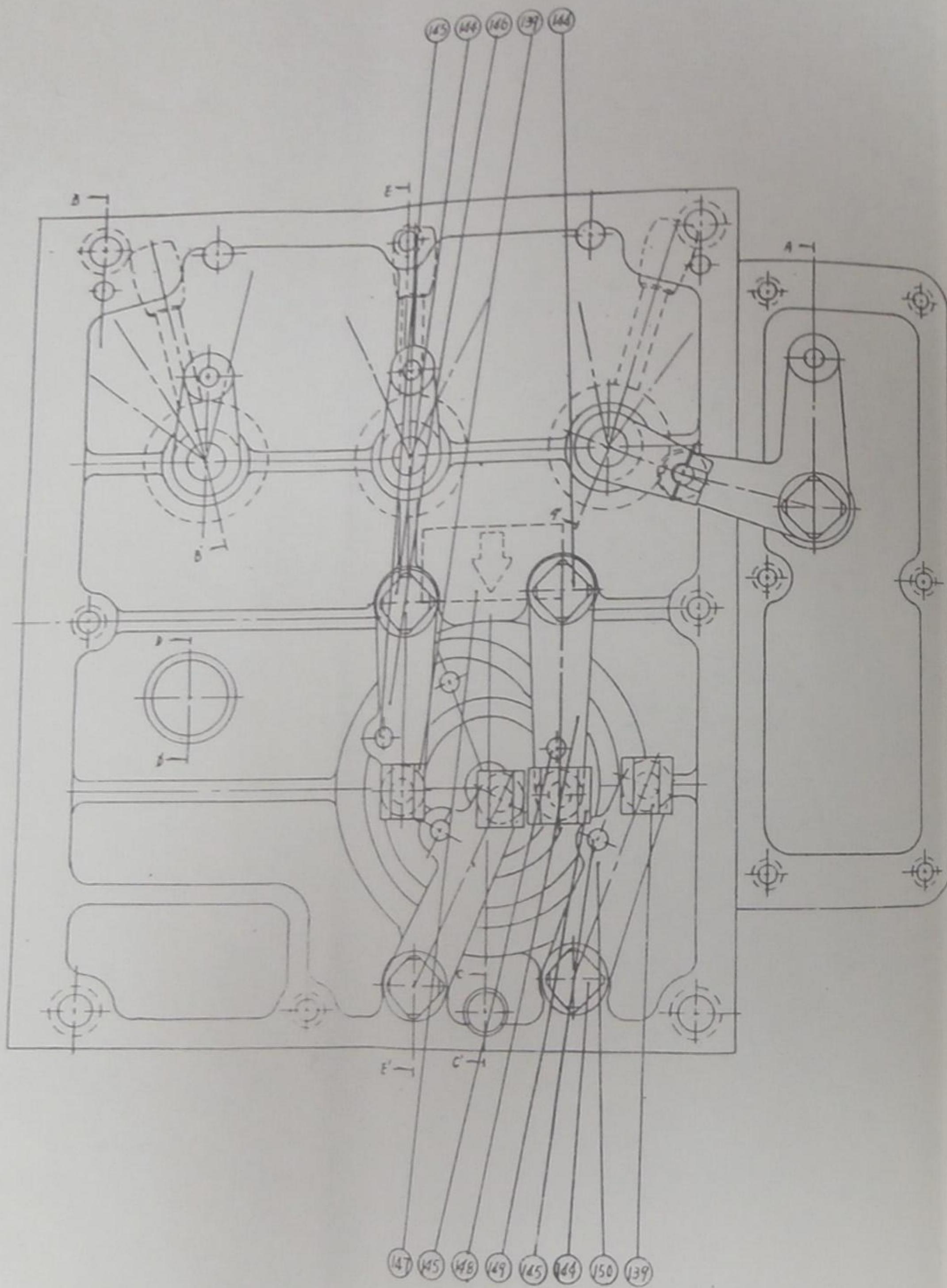
1. HEAD STOCK

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
197	51153	Beading block for shaft K	K 軸軸承座	1	
198	51153-B	Hexagon socket head bolt	六角承窩螺絲	4	M6x20
199	51118	Oil sash indicator (up)	油窗指示牌(上)	1	與21081通用
200	51119	Oil sash indicator (down)	油窗指示牌(下)	1	與21082通用
201	51153-C	Deep groove ball bearing	深槽滾珠軸承	2	6006#(30x55x13)
202	51151	Shaft K	K 軸	1	
203	51151-B	C-Type snap ring (External)	C 型扣環(軸用)	1	S55(Φ50.8x2t)
204	51183-A	Deep groove ball bearing	深槽滾珠軸承	2	6006#(30x55x13)
205	51183-B	C-Type Snap ring (internal)	C 型扣環(孔用)	1	R55(Φ59.2x2t)
206-1	51001-1-O	Hexagon head bolt	六角頭螺絲	2	M20x55,560型
206-2	51001-1-O	Hexagon socket head bolt	六角承窩螺絲	各2	M20x65,660,760型
207	51184	Cam shifting arm for shaft Q & R	Q & R 軸凸輪移位臂	1	
208	51184-B	Sunk key	雙頭圓鍵	2	7x7x25
209	51120	Special pin	特殊梢	1	與21071通用
210	51184-C	Hexagon socket set screw	六角承窩固定螺絲	2	M8x8
211	51162	Internal cam for shaft L	L 軸內凸輪	1	
212	51183-C	Pin	梢	2	Φ8x60
213	51184-D	Hexagon socket head bolt	六角承窩螺絲	3	M8x25
214	51182-A	C-Type Snap ring (External)	C 型扣環(軸用)	4	S25(Φ23.2x1.2t)
215	51176-B	Hexagon socket set bolt	六角承窩固定螺絲	1	M12x16
216	51175-A	O ring	O 形環	1	P24(Φ23.7xΦ3.5)
217	51177	Compressing spring	壓縮彈簧	1	Φ3/8"x35
218	51176-C	Steel ball	鋼珠	1	Φ10
219	51187	Cam shifting arm for shaft Q & R	Q & R 軸曲臂	2	
220	51175-B	Hexagon socket set bolt	六角承窩固定螺絲	2	M8x8
221	51187-A	Band thread tapered pin	帶螺紋推拔梢	1	#5x50
222	51173	Mid shifting yoke	中移位叉	1	
223	51182	Shaft Q & R	Q & R 軸	2	
224	51118-B	Hexagon nut	六角螺帽	1	M12xP1.5
225	51183	Bearing block for shaft Q & R	Q & R 軸軸承座	1	
226	51183-A	Deep groove ball bearing	深槽滾珠軸承	4	6005#(25x47x12)
227	51014-B	Oil filter	濾油網	1	IOGPM
228	51014-C	D-Type joint head	D 型接頭	1	PD-8
229	51014-D	Sleeve ring	套圈	1	PB-8
230	51014-E	Compressing joint head	壓緊接頭	1	PA-8
231	51014-F	Oil pipe	油管	1	Φ8
232	51014-G	Compressing joint head	壓緊接頭	1	PA-8
233	51014-H	Sleeve ring	套圈	1	PB-8
234	51014-I	H-Type elbow joint head	H 型肘接頭	1	PH-8
235	51014-J	H-Type elbow joint head	H 型肘接頭	1	PH-6

2. FEED GEAR BOX



2. FEED GEAR BOX



2. FEED GEAR BOX

件號 NO.	圖號 Part NO.	英文名稱 Part Name	數量 Qty	中文名稱 Part Name	規格 Dimension
1	22036	Axle bush	2	軸襯	
2	22036-A	O ring	2	O 形環	P22(Φ21.8xΦ2.4)
3	22034-A	O ring	2	O 形環	P14(Φ13.8xΦ2.4)
4	22038-A	C-Type snap ring (internal)	1	C 型扣環(孔用)	R55(Φ59.2x2t)
5	22040-A	C-Type snap ring (external)	1	C 型扣環(軸用)	S28(Φ25.9x1.6t)
6	22042	Washer	1	墊圈	
7	22038-B	Hexagon socket head bolt	4	六角承窩螺絲	M6x16
8	22038-C	Deep groove ball bearing	1	深槽滾珠軸承	6006z#(30x55x13)
9	22038-D	Oil seal	1	油封	TC354808
10	22040-B	Sunk key	1	雙頭圓鍵	6x6x20
11	22039	Bearing cover packing (shaft A)	1	A 軸軸承蓋密合墊	
12	22038	Bearing cover for shaft A	1	A 軸軸承蓋	
13	22001-A	Deep groove ball bearing	1	深槽滾珠軸承	6006#(30x55x13)
14	22062	Washer	2	墊圈	
15	22061-A	C-Type snap ring (external)	1	C 型扣環(軸用)	S30(Φ27.9x1.6t)
16	22001-B	Deep groove ball bearing	1	深槽滾珠軸承	6006#(30x55x13)
17	22060	Rear cover packing for shaft D&F	1	D & F 軸後蓋密合墊	
18	22001-C	Deep groove ball bearing	1	深槽滾珠軸承	6006#(30x55x13)
19	22059	Rear cover for shaft D&F	1	D & F 軸後蓋	
20	22080-A	C-Type snap ring (external)	1	C 型扣環(軸用)	S30(Φ27.9x1.6t)
21	22059-A	Hexagon socket head bolt	6	六角承窩螺絲	M6x12
22	22061	Shaft D	1	D 軸	
23	22063-A	Dry bearing	2	自潤軸承	DU353920
24	22063	D1 Gear (36T/24T)	1	D1齒輪(36T/24T)	
25	22080	Shaft F	1	F 軸	
26	22061-B	C-Type Snap ring (external)	1	C 型扣環(軸用)	S35(Φ32.2x1.6t)
27	22080-B	Sunk key	1	雙頭圓鍵	6x6x30
28	22081	F1 Gear (22T)	1	F1齒輪(22T)	
29	22064	D2 Gear (22T)	1	D2齒輪(22T)	
30	22065	D3 Gear (26T)	1	D3齒輪(26T)	
31	22082	F2 Gear (22T)	1	F2齒輪(22T)	
32	22066	D4 Gear (20T)	1	D4齒輪(20T)	
33	22067	D5 Gear (48T)	1	D5齒輪(48T)	
34	22083	F3 Gear (44T)	1	F3齒輪(44T)	
35	22068	D6 Gear (46T)	1	D6齒輪(46T)	
36	22069	D7 Gear (24T)	1	D7齒輪(24T)	
37	22084	F4 Gear (33T)	1	F4齒輪(33T)	
38	22070	D8 Gear (27T)	1	D8齒輪(27T)	
39	22071	D9 Gear (26T)	1	D9齒輪(26T)	
40	22085	F5 Gear (22T)	1	F5齒輪(22T)	

2. FEED GEAR BOX

件號 NO.	圖號 Part NO.	英文名稱 Part Name	數量 Qty	中文名稱 Part Name	規格 Dimension
41	22072	D10 Gear (28T)	1	D10齒輪(28T)	
42	22073	D11 Gear (52T)	1	D11齒輪(52T)	
43	22001-D	Snap ring (internal)	2	C型扣環(孔用)	R52(Φ56.2x2t)
44	22051	Washer	4	墊圈	
45	22001-E	C-Type snap ring (internal)	1	C型扣環(孔用)	R52(Φ56.2x2t)
46	22001-F	Deep groove ball bearing	1	深槽滾珠軸承	6205#(25x52x15)
47	22080-C	C-Type snap ring (external)	1	C型扣環(軸用)	S25(Φ23.2x1.2t)
48	22001-G	Deep groove ball bearing	1	深槽滾珠軸承	6205#(25x52x15)
49	22074-A	Hexagon socket head set screw	1	六角承窩固定螺絲	M8x8
50	22057	Copper gasket	1	銅墊	
51	22074	Locking nut	1	鎖緊螺帽	6x6x20
52	22077-A	Dry bearing	1	自潤軸承	U151715
53	22077-B	C-Type snap ring (external)	1	C型扣環(軸用)	S25(Φ23.2x1.2t)
54	22086	F6 Gear (36T)	1	F6齒輪(36T)	
55	22078	E1 Gear (20T)	1	E1齒輪(20T)	
56	22077	Shaft E	1	E軸	
57	22079	E2 Gear (50T)	1	E2齒輪(50T)	
58	22087-A	Hexagon socket head bolt	4	六角承窩螺絲	M6x12
59	22087	Axle cover for shaft F	1	F軸軸蓋	
60	22087-B	Deep groove ball bearing	1	深槽滾珠軸承	6004#(20x42x12)
61	22080-D	C-Type snap ring (external)	2	C型扣環(軸用)	S20(Φ18.5x1.2t)
62	22087-C	Hexagon socket headset screw	1	六角承窩固定螺絲	M6x6
63	22077-C	Sunk key	1	雙頭圓鍵	5x5x45
64	22088	Axle cover packing for shaft F	1	F軸軸蓋密合墊	
65	22075	Axle cover for shaft E	1	E軸軸蓋	
66	22075-A	Oil seal	1	油封	TC354808
67	22076	Axle cover packing for shaft E	1	E軸軸蓋密合墊	
68	22075-B	Hexagon socket head bolt	4	六角承窩螺絲	M6x12
69	22053-C	Oil seal	1	油封	TC354808
70	22046	Washer	2	墊圈	
71	22053-B	Dry bearing	2	自潤軸承	DU1303430
72	22053	Axle cover for shaft C	1	C軸軸蓋	
73	22053-C	Hexagon socket head bolt	4	六角承窩螺絲	M6x16
74	22001	Gear box casting	1	齒輪箱本體	
75	22054	Axle cover packing for shaft C	1	C軸軸蓋密合墊	
76	22056	Axle collar	1	軸環	
77	22055-A	C-Type snap ring (external)	1	C型扣環(軸用)	S30(Φ27.9x1.6t)
78	22055	Shaft C	1	C軸	
79	22058	C1 Gear (35T/35T)	1	C1齒輪(35T/35T)	
80	22055-B	Dry bearing	2	自潤軸承	DU151715

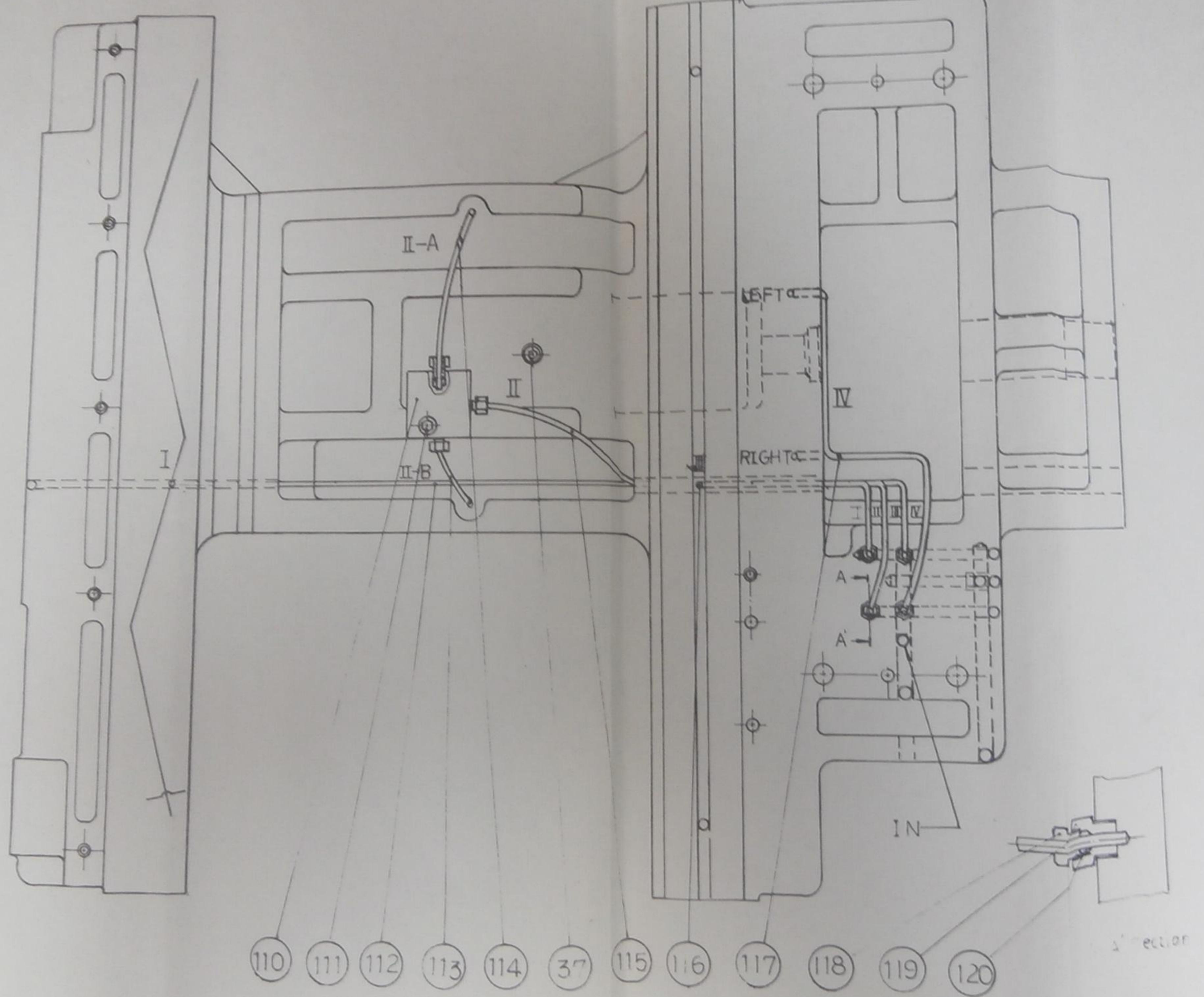
2. FEED GEAR BOX

件號 NO.	圖號 Part NO.	英文名稱 Part Name	數量 Qty	中文名稱 Part Name	規格 Dimension
81	22045-A	C-Type snap ring (external)	1	C型扣環(軸用)	S25(Φ23.2x1.2t)
82	22052	Clutch	1	離合器	
83	22001-H	Hexagon socket head set screw	4	六角承窩固定螺絲	M8x8
84	22001-I	Deep groove ball bearing	1	深槽滾珠軸承	6205#(25x52x15)
85	22001-J	C-Type snap ring (internal)	2	C型扣環(孔用)	R52(Φ56.2x2t)
86	22050-A	Dry bearing	1	自潤軸承	DU252825
87	22050	B3 Gear (26T)	1	B3齒輪(26T)	
88	22049	Axle collar	1	軸環	
89	22045	Shaft B	1	B軸	
90	22048	B2 Gear (46T)	1	B2齒輪(46T)	
91	22035	Detent rod (Long)	1	定位桿(長)	
92	22037-A	Hexagon socket head set screw	2	六角承窩固定螺絲	M8x8
93	22037	Coupling	1	聯結器	
94	22047	B1 Gear (52T)	1	B1齒輪(52T)	
95	22047-A	Dry bearing	1	自潤軸承	DU303430
96	22034	Detent rod (Short)	1	定位桿(短)	
97	22001-K	Hexagon hole pipe plug	1	六角孔管塞	PT3/8"
98	22044	A1 Gear (19T/19T)	1	A1齒輪(19T/19T)	
99	22040	Shaft A	1	A軸	
101	22001-M	O ring	1	O形環	(Φ5)
102	22001-L	Hole Taper pin	2	孔牙斜梢	6#x56
103	42002-A	Hexagon socket head bolt	4	六角承窩螺絲	M10x45
104	22095-A	Cross recessed round head screw	7	十字圓頭機器螺釘	M5x8
105	22095	Change speed indicating plate	1	變速指示牌	
106	22032	Shifting yoke	1	移位叉	
107	22032-A	Steel ball	1	鋼珠	Φ5/16"
108	22024-B	Shifting pin	3	移位梢	
109	22021	R.S.T Shifting arm	2	R、S、T移位臂	
110	22097	Compressing spring	1	壓縮彈簧(與21174通用)	Φ7.5xΦ1.2x26
111	22012	Hand grip	3	握柄	
112	22030	Rocker	3	搖桿	
113	22032-C	Hexagon socket head set screw	1	六角承窩固定螺絲	M10x14
114	22021-A	Spring pin	2	彈簧梢	Φ5x30
115	42027-A	O ring	2	O形環	P12(Φ11.8xΦ2.4)
116	42027	Shifting lever	2	移位桿	
117	22029	Handle seat nameplate	3	把手座銘板	
118	22027-A	Sunk key	3	雙頭圓鍵	5x5x10
119	22028	Handle seat	3	把手座	
120	22028-A	Hexagon socket head set screw	3	六角承窩固定螺絲	M6x6
121	22032-D	Hexagon nut	1	六角螺帽	M10

2. FEED GEAR BOX

件號 NO.	圖號 Part NO.	英文名稱 Part Name	數量 Qty	中文名稱 Part Name	規格 Dimension
122	42002	Gear box cover	1	齒輪箱蓋	
123	42002-B	Hexagon socket head bolt	2	六角承窩螺絲	M8x45
124	22009	8-Step feed indicating plate	1	八段指示牌	
125	22099	Compressing spring	1	壓縮彈簧	φ9.5xφ1x40
126	42002-D	Steel ball	2	鋼珠	φ3/8"
127	22005-A	Sunk key	1	雙頭圓鍵	6x6x15
128	22010	8-Step feed name plate	1	八段銘板	
129	22004-A	Hexagon socket head bolt	1	六角承窩螺絲	M8x45
130	22007	Washer	1	墊圈	
131	22004-B	Sunk key	1	雙頭圓鍵	6x6x250
132	22004	Cam spindle	1	凸輪心軸	
133	22005	Rocker support seat	1	搖桿承座	
134	22004-C	O ring	2	O形環	P12(φ11.8xφ2.4)
135	22008	8-Step indicating dial	1	八段指示盤	
136	22004-D	Sunk key	1	雙頭圓鍵	6x6x20
137	22004-E	C-Type snap ring (external)	1	C型扣環(軸用)	S20(φ18.5x1.2t)
138	22011	Washer	1	墊圈	
139	22019	Drive block	3	撥塊	
140	22013	1-2 Speed shifting arm	1	1—2速移位臂	
141	22023-A	Spring pin	5	彈簧梢	φ3x18
142	22003	Cam	1	凸輪	
143	42002-E	Hexagon socket head bolt	1	六角承窩螺絲	M8x45
144	22017	Fixed pin	4	固定梢	
145-1	22023-1	Pin	4	梢	
145-2	22023-2	Pin	1	梢	
146	22016	7-8 Speed shifting arm	1	7—8速移位臂	
147	22093	Index plate	1	指標牌	
148	22015	5-6 Speed shifting arm	1	5—6速移位臂	
149	22018	5-6 Speed drive block	1	5—6速撥塊	
150	22014	3-4 Speed shifting arm	1	3—4速移位臂	
151	22033-A	Hexagon socket set screw	1	六角承窩固定螺絲	M10x14
152	22033-B	Hexagon nut	1	六角螺帽	M10
153	22098	Compressing spring	1	壓縮彈簧	φ7.5xφ1.2x20
154	22033	Shifting yoke	1	移位叉	
155	22033-D	Steel ball	1	鋼珠	φ5/16"
156	22035-A	Sunk key	1	雙頭圓鍵	6x6x60
157	42002-F	Spring pin	2	彈簧梢	φ6x30
158	22022	I.B.A Shifting arm	1	I、B、A移位臂	
159	22022-A	Spring pin	1	彈簧梢	φ5x30
160	42026	I.B.A Shifting lever	1	I、B、A移位桿	

3. CARRIAGE (LUBRICATION)



3. CARRIAGE

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
1	23006-A	handle bar pin	握把梢	1	
2	23006-B	Handle bar shaft	握把軸	1	
3	23006	Handle bar	握把	1	
4	23008	Hand grip set screw	握柄固定螺絲	2	
5	43002	Hand grip	握柄	1	
6	23003	Grooved nut	深槽螺母	2	
7	23005	Graduation micro collar top screw	分刻環頂螺絲	1	
8	23004	Graduation micro collar housing	分刻環襯套	1	
9	43010-A	Sunk key	雙頭圓鍵	1	5x5x25
10-1	43007-1	Graduation micro collar (mmxP5xL)	分刻環(公制xP5x左旋)	1	
10-2	43007-2	Graduation micro collar (mmxP5xR)	分刻環(公制xP5x右旋)	1	
10-4	43007-4	Graduation micro collar (IN,MMx8TPIxL)	分刻環(公英制x8TPIx左旋)	1	
11	23004-A	Steel ball	鋼珠	1	ø1/4"
12	43009	Cross feed screw bracket	橫向螺桿座	1	
13	43016-A	Cross recessed round head screw	十字圓頭機器螺絲	3	M6x12
14	43017	Dust pad keeper	防塵墊片	1	
15	43016	Dust pad cover	防塵墊蓋	1	
16	43009-A	Oil cup	油嘴	1	1/4"
17	43009-B	Hexagon head bolt	六角頭螺絲	1	M8x25
18	43010	Gear shaft	惰齒軸	1	
19	43038	Idle gear spindle	惰齒輪心軸	2	
20	23057	Hexagon nut	六角螺母	4	
21-1	43040-3-A	Hexagon socket head bolt	六角承窩螺絲	4	M10x75
21-2	43040-4-A	Hexagon socket head bolt	六角承窩螺絲	4	M10x45
22	43038-A	C-Type snap ring (external)	C型扣環(軸用)	2	S14(ø12.9x1t)
23-1	43037-1	Idle gear (16T)	惰齒輪(16T)	1	
23-2	43037-2	Idle gear (16T)	惰齒輪(16T) ✓	1	
24	43037-1-A	Dry bearing	自潤軸承	2	DU141612
25	43001-A	Oil seal	油封	1	TC243506
26	43028	Special key	特殊鍵	1	
27	23024	Water proof cover packing	防水蓋密合墊	1	
28	23020	Water proof cover	防水蓋	1	
29	43014-A	Hexagon socket head bolt	六角承窩螺絲	2	M8x16
30	43014-B	Hexagon countersunk head screw	六角平頭承窩螺絲	1	M8x12
31	43014-C	Hexagon socket set screw	六角承窩固定螺絲	1	M8x8
32	23027	Wedge	楔	1	
33-1	43026-1	Female screw (MMxP5xL)	母螺紋(公制xP5x左旋)	1	
33-2	43026-2	Female screw (MMxP5xR)	母螺紋(公制xP5x右旋)	1	
33-4	43026-4	Female screw (INx8TPIxL)	母螺紋(英制x8TPIx左旋)	1	
34	43033	Dust pad cover	防塵蓋	2	

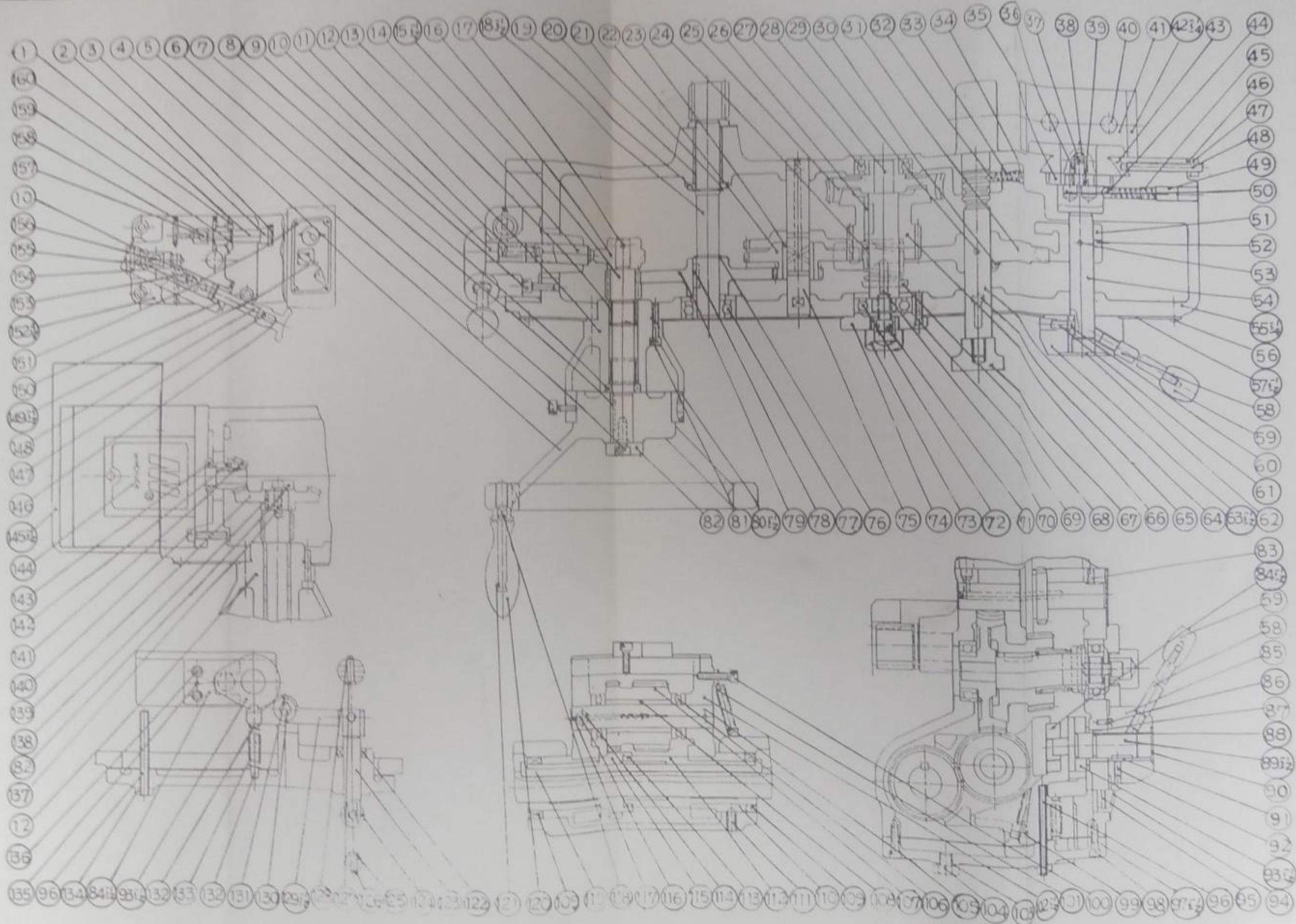
3. CARRIAGE

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
35	43033-A	Cross recessed round head screw	十字圓頭機器螺釘	4	
36	43034	Dust pad keeper	防塵墊板	2	
37	43001-B	Plug head	塞頭	1	PT1/4"
38	43001	Carriage body	鞍座本體	1	
39-1	43011-1	Thread shaft (MMxP5xL)	螺紋軸(公制xP5x左旋)	1	
39-2	43011-2	Thread shaft (MMxP5xR)	螺紋軸(公制xP5x右旋)	1	
39-4	43011-4	Thread shaft (INx8TPIxL)	螺紋軸(英制x8TPIx左旋)	1	
40	43014	Cross feed slide	橫向滑座	1	
41	43023-A	Hexagon nut	六角螺帽	5	M8
42	43023-B	Hexagon socket set taper screw	六角承窩固定錐形螺絲	5	M8x30
43	43022-A	Spring pin	彈簧梢	2	φ5x25
44	43036	Dust proof gasket plate	防塵墊板	2	
45	43035-A	Cross recessed round head screw	十字圓頭機器螺釘	4	M6x12
46	43022	Wedge strip	楔條	1	
47	43035	Dust proof gasket plate cover	防塵墊板蓋	2	
48	43023	Pressing plate	壓板	1	
49	43023-C	Hexagon socket head bolt	六角承窩螺絲	5	M8x25
50	23013	Lack-proof gasket plate	防漏墊板	1	
51	23012	Bearing block	軸承座	1	
52	23012-A	Oil seal	油封	1	TC152507
53	23012-B	Thrust bearing	止推軸承	2	51202(15x32x12)
54	23029	Round nut	圓螺母	1	
55	23029-A	Hexagon socket head set screw	六角承窩固定螺絲	1	M8x6
56	23030	Copper gasket	銅墊	1	
57	43059	Bushing	襯套	1	
58	43049	Tacking pin	定位梢	1	
59	43047	Square head bolt	四角螺栓	1	2
60	43074	Compressing spring	壓縮彈簧	1	φ10xφ1x38
61	23044	Washer	墊圈	1	
62	43045	Clamp tool rest handle bar seat	夾刀架鎖緊把手座	1	
63-1	43048-1	Tool rest spindle (T-slot)	刀架心軸(T型槽)	1	
63-2	43048-2	Tool rest spindle (General)	刀架心軸(一般型)	1	
64	23044-A	Thrust bearing	止推軸承	1	51204#(20x40x14)
65	43043	Clamping Tool rest	夾刀架	1	
66	43048-2-A	Hexagon socket head bolt	六角承窩螺絲	3	M6x16
67	43046	Clamp tool rest handle bar	夾刀架鎖緊把手	1	
68	23064	Fixed block	固定塊	1	
69-1	43040-3	Compound table (Mid.)	刀架基座(中)	1	
69-2	43040-4	Compound table (Low)	刀架基座(低)	1	
70	43018	Gib	楔子	1	

3. CARRIAGE

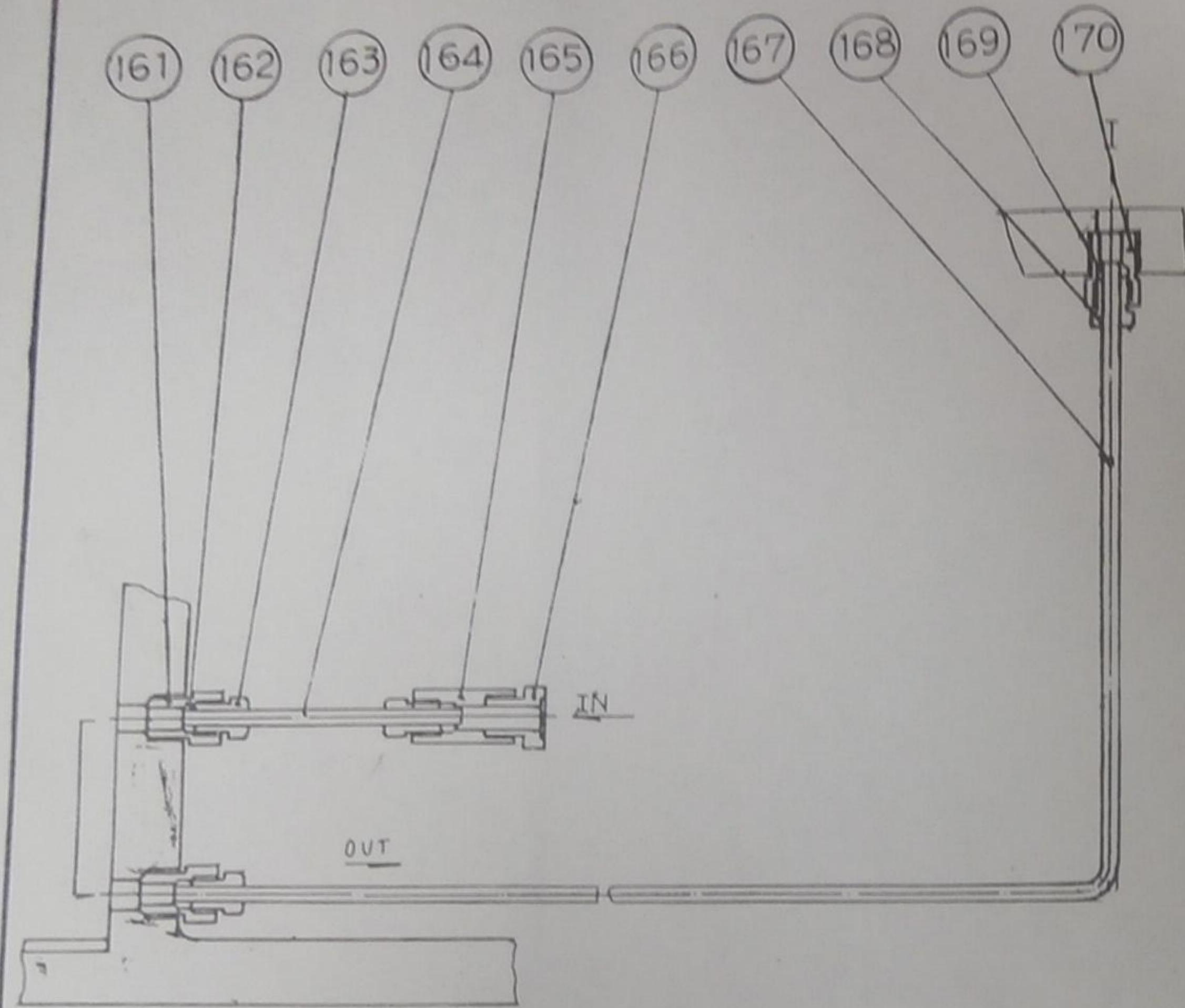
件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
71	23015	Lock pin	梢子	1	
72-1	43050-1	Female thread (MMxP4xR)	滑板螺帽(公制xP4x右旋)	1	
72-2	43050-2	Female thread (MMxP4xL)	滑板螺帽(公制xP4x左旋)	1	
72-3	43050-3	Female thread (INx8TPIxR)	滑板螺帽(英制x8TPIx右旋)	1	
73	23019	Adjusting bolt (Gib)	調整螺絲	2	
74	43014-D	Hexagon socket set screw	六角承窩固定螺絲	1	M8x8
75	43041-1-A	Oil cup	油嘴	4	1/4"
76	43061-A	Hexagon socket set screw	六角承窩固定螺絲	1	M6x30
77	43061	T-block	T型塊	1	
78-1	43051-1	Female screw (MMxP4xR)	螺桿(公制xP4x右旋)	1	
78-2	43051-2	Female screw (MMxP4xL)	螺桿(公制xP4x左旋)	1	
78-3	43051-3	Female screw (MMx8TPIxR)	螺桿(英制x8TPIx右旋)	1	
79-1	43041-1	Compound sliding (T-slot)	刀架滑座(T型槽)	1	
79-2	43041-2	Compound sliding (General)	刀架滑座(一般型)	1	
80	43052	Bearing block	軸承座	1	
81	43052-A	Thrust bearing	止推軸承	2	51202#(15x32x12)
82-1	43053-1	Graduated micro collar (MMxP4xR)	分刻環(公制xP4x右旋)	1	
82-2	43053-2	Graduated micro collar (MMxP4xL)	分刻環(公制xP4x左旋)	1	
82-3	43053-3	Graduated micro collar (INx8TPIxR)	分刻環(英制x8TPIx右旋)	1	
83	43052-B	Hexagon socket head bolt	六角承窩螺絲	2	M8x16
84	43051-1-A	Sunk key	雙頭圓鍵	1	5x5x25
85	23075	Compressing spring	壓縮彈簧	1	φ6xφ1.2x10
86	43054-A	Steel ball	鋼珠	1	φ1/4"
87	23054	Graduated micro collar bushing	分刻環襯套	1	
88	23056	Hand grip	握柄	1	
89	23062	Wing screw	翼形螺絲	1	
90	23063	Adjusting screw	調整螺絲	1	
91	23076	Tool rest lock pin	刀架梢子	1	
92	43041-1-B	Hexagon socket set screw	六角承窩固定螺絲	1	M8x45
93	43042	Gap adjusting pin	間隙調整梢	1	
94	23031-A	Cross recessed round head screw	十字圓頭機器螺釘	4	M4x6
95	23031	Distributed indicating plate	分油指示牌	1	
96	23032	Distributed	分油器	1	
97	23032-A	O ring	O形環	1	P9(φ8.8xφ1.9)
98	43001-C	Straight pin	直梢	1	φ2x10
99	43001-D	Hexagon socket set screw	六角承窩固定螺絲	1	M8x25
100	43001-E	Hexagon socket head bolt	六角承窩螺絲	1	M10x75
101	43001-F	Straight pin	直梢	1	φ8x55
102	43001-G	Hexagon socket head bolt	六角承窩螺絲	4	M12x45
103	23025	Shield iron	檔鐵	1	

4. APRON

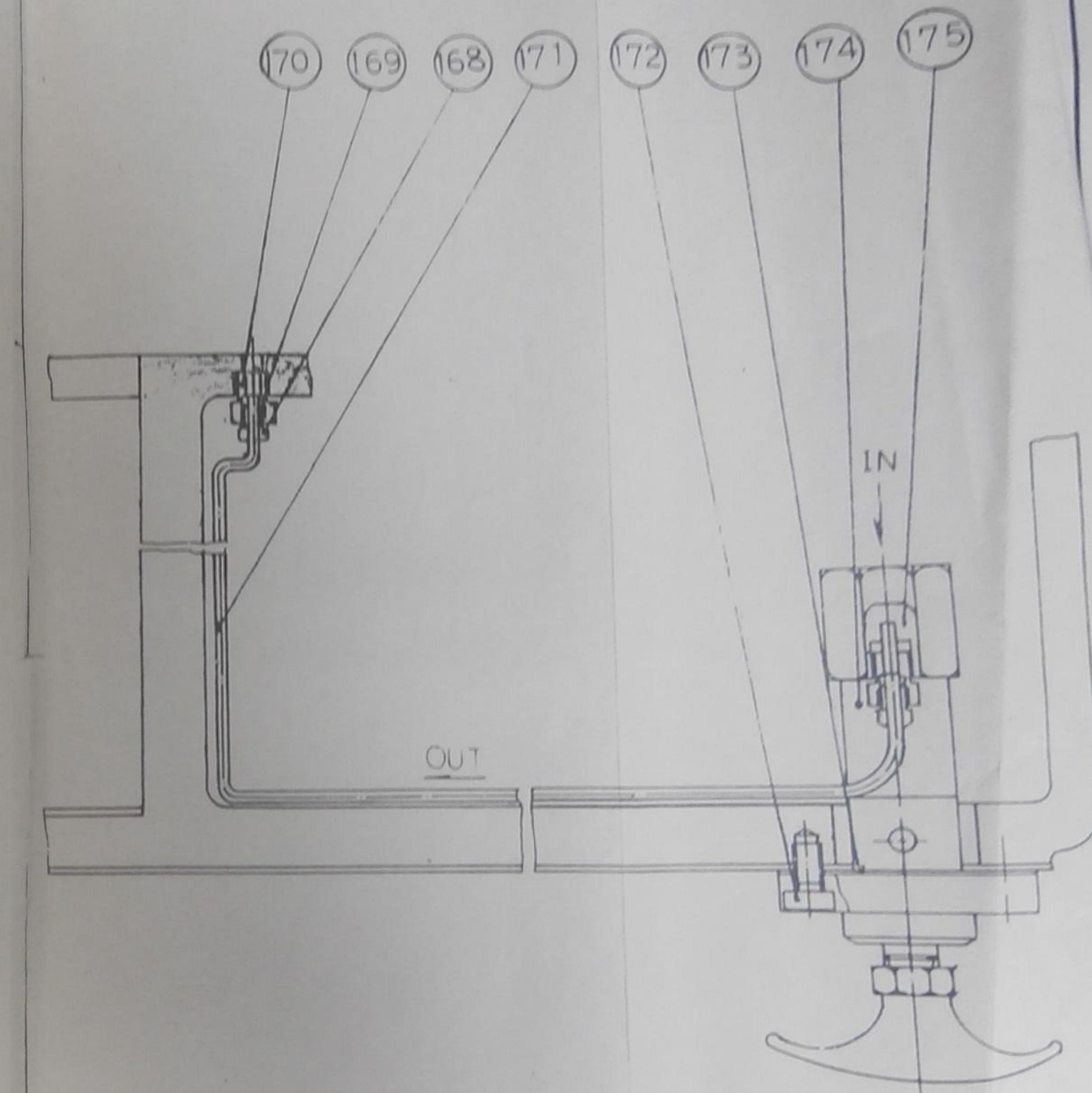


4. APRON (LUBRICATION)

(GENERAL)



(RAPID FEED)



4. APRON

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
1	24093	Governing bolt	調節螺栓	1	
2	24094	Sleeve	套子	1	
3	24092	Oil pump name plate	油泵銘牌	1	
4	44005	Hand wheel for apron	床護手輪	1	
5	24008	Set screw	固定螺絲	1	與25013通用
6	44003-2-A	Hexagon socket head bolt	六角承窩螺絲	1	M8x16
7	44003-2-B	Sunk key	雙頭圓鍵	1	5x5x25
8	44009-A	Oil seal	油封	1	TC203006
9	24076-1-A	Hexagon socket head bolt	六角承窩螺絲	4	M6x16
10	24077	Blank plug	盲栓	2	
11	24083	Compressing spring	壓縮彈簧	1	Φ9.5xΦ1.0x49
12	44009	Bracket of hand wheel	手輪托架	1	
13	44009-A	Needle bearing	滾針軸承	2	HK 2016#
14	24080	Manual piston	手動活塞	1	
15-1	44003-2	Gear shaft (General)	齒輪軸(一般)	1	
15-2	44003-3	Gear shaft (Rapid feed)	齒輪軸(快送)	1	
16	24010	Cam	凸輪	1	
17	24010-A	Tapered pin	推拔梢	1	3#x30
18-1	24011-1	Pinion wheel shaft (mm)	小齒輪(公制)	1	
18-2	24011-2	Pinion wheel shaft (in)	小齒輪(英制)	1	
19	24014	Axle collar	軸環	2	與22011通用
20	44001-1-1-A	Dry bearing	自潤軸承	2	DU222520
21	24011-1-A	C-Type snap ring (external)	C型扣環(軸用)	1	S22(Φ20.5x1.2t)
22	24021-2	Gear (21T/44T)	齒輪(21T/44T)	1	
23	24022	Axle bushing	軸襯	1	
24	24028	compressing spring	壓縮彈簧	1	Φ34xΦ4x42
25	24030	Worm gear	蝸輪	1	
26	24023-A	Sunk key	雙頭圓鍵	1	7x7x25
27	44001-1-1-B	Deep groove ball bearing	深槽滾珠軸承	1	6005#(25x47x12)
28	24023	Worm gear shaft	蝸輪軸	1	
29	24057-A	Spring pin	彈簧梢	1	Φ5x36
30	24057-B	Hexagon socket set screw	六角承窩固定螺絲	1	M6x6
31	24057	Gear shifter	齒輪移位器	1	
32	44001-1-1-C	Steel ball	鋼珠	1	Φ5/16"
33	24100	Compressing spring	壓縮彈簧	1	Φ7.8x1.0x14.5
34	24058	Set screw	固定螺絲	1	M10x10
35	24066	Bend connection plate	曲形連接板	2	
36	44001-1-1-D	Hexagon nut	六角螺帽	2	M8
37	24070	Stopper pin	停止梢	1	
38	44001-1-1-E	Hexagon socket set screw	六角承窩固定螺絲	1	M8x30

4. APRON

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
39	24067	Pin	梢	2	
40	44068-A	Hexagon head bolt	六角頭螺絲	4	M8x16
41	44068	Half nut seat	半螺母座	1	
42-1	44069-1	Half nut (MM x P6 x R)	半螺母(公制xP6x右旋)	1	
42-2	44069-2	Half nut (IN x 4TPI x R)	半螺母(英制x4TPIx右旋)	1	
42-3	44069-3	Half nut (MM x P12 x R)	半螺母(公制xP12x右旋)	1	
42-4	44069-4	Half nut (IN x 2TPI x R)	半螺母(英制x2TPIx右旋)	1	
43	24071	gap adjusting plate	間隙調整板	1	
44	44001-1-1-F	Steel ball	鋼珠	1	φ5/16"
45	24101	Compressing spring	壓縮彈簧	2	φ7.0xφ1.0x44.5
46	44072-A	Spring washer	彈簧墊圈	3	M8
47	44072-B	Hexagon nut	六角螺帽	3	M8
48	44072	Adjusting screw	調整螺絲	3	
49	44001-1-1-G	Hexagon socket set screw	六角承窩固定螺絲	1	M10x10
50	24065	Pin	梢	2	
51	24064	Safeguard rocker block	安全裝置搖塊	1	
52	24064-A	Hexagon socket set screw	六角承窩固定螺絲	1	M6x8
53	24064-B	Spring pin	彈簧梢	1	φ5x36
54	24059	Half nut shaft	半螺母分合軸	1	
55-1	44001-1-1	Apron body (Left x Rapid)	護裙本體(左手 x 快送)	1	
55-2	44001-1-2	Apron body (Left x General)	護裙本體(左手 x 一般)	1	
55-3	44001-2-1	Apron body (Right x Rapid)	護裙本體(右手 x 快送)	1	
55-4	44001-2-2	Apron body (Right x Rapid)	護裙本體(右手 x 一般)	1	
56	44002-1-1-A	Cross recessed round head screw	十字圓頭機器螺絲	4	M5x8
57-1	44002-1-1	Indicator of apron (Left x Rapid)	護裙指示牌(左手 x 快送)	1	
57-2	44002-2-1	Indicator of apron (Right x Rapid)	護裙指示牌(右手 x 快送)	1	
58	24035	Hand lever	握手	2	與21055通用
59	24036	hand grip	握手柄	2	與21056通用
60	24059-B	Sunk key	雙頭圓鍵	1	
61	44060-1-A	Hexagon socket set screw	六角承窩固定螺絲	1	
62	24061	Hand lever seat nameplate	握手座銘板	1	
63-1	44060-1	Hand lever seat (Left)	握手座(左手)	1	
63-2	44060-2	Hand lever seat (Right)	握手座(右手)	1	
64	24054	Locating shaft	定位軸	1	
65	24056	Locating screw	定位螺絲	1	
66	24029	Band tooth cone clutch	帶齒離合器	1	
67	24055	Hand grip	握手柄	1	
68	24027	Axle collar	軸環	1	與21028通用
69	24025-A	Cross countersunk head screw	十字平頭機器螺釘	3	M6x12
70	24026	Pin	梢	1	

4. APRON

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
71	24023-A	Hexagon socket head bolt	六角承窩螺絲	1	M10x30
72	44001-1-1-H	Deep groove ball bearing	深槽滾珠軸承	1	6204z#(20x47x14)
73	24024	Top cover	端蓋	1	
74	24025	bearing cover	軸承蓋	1	
75	24020	Shifting gear shaft	移位齒輪軸	1	
76	24011-1-B	C-Type snap ring (external)	C型扣環(軸用)	1	S20(Φ18.5x1.2t)
77	44001-1-1-I	Deep groove ball bearing	深槽滾珠軸承	1	6204z#(20x47x14)
78	24011-1-C	Sunk key	雙頭圓鍵	1	7x7x20
79	24013-2	66T Gear (Right)	66T齒輪(右手用)	1	
80-1	24007-1	Graduation ring (MM)	刻度環(公制)	1	
80-2	24007-4	Graduation ring (IN)	刻度環(英制)	1	
81	44009-B	Hexagon socket head bolt	六角承窩螺絲	4	M6x25
82	24006	Locking plate	鎖緊片	1	
83	44001-1-1-J	Hexagon socket head bolt	六角承窩螺絲	1	M6x25
84-1	24038-1	Plate (Left)	板(左手)	1	
84-2	24038-2	Plate (Right)	板(右手)	1	
85	24033	Handle lever seat	握桿座	1	
86	44001-1-1-k	Hexagon socket set screw	六角承窩固定螺絲	1	M6x10
87	24033-1	Copper bushing	銅襯	1	
88	24032-1-A	O ring	O形環	1	P16(Φ15.8xΦ2.4t)
89-1	24032-1	Worm gear disengage control axle (L)	蝸輪離合操作軸(左手)	1	
89-2	24032-2	Worm gear disengage control axle (R)	蝸輪離合操作軸(右手)	1	
90	24034	Handle lever seat nameplate	握桿座銘板	1	
91	24032-1-B	Sunk key	雙頭圓鍵	1	5x5x15
92	24033-A	Hexagon socket head set screw	六角承窩固定螺絲	2	M6x6
93-1	24037-1	Crank plate (Left)	曲柄板(左手)	1	
93-2	24037-2	Crank plate (Right)	曲柄板(右手)	1	
94	44001-1-1-L	Oil sash	油窗	1	
95	24088	Oil sash indicating plate	油窗指示牌	1	
96	24074-1-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x70
97-1	24074-1	Bottom cover (Left)	底蓋(左手)	1	
97-2	24074-2	Bottom cover (Right)	底蓋(右手)	1	
98	24074-1-B	Hexagon socket head bolt	六角承窩螺絲	10	M6x16
99	44001-1-1-M	Hexagon socket head bolt	六角承窩螺絲	1	M6x25
100	24039-1-A	Hexagon socket head bolt	六角承窩螺絲	1	M6x25
101	24047	Draw spring	拉簧	1	Φ10xΦ1.5x33
102-1	24039-1	Worm box (Left)	蝸杆箱(左手)	1	
102-2	24039-2	Worm box (Right)	蝸杆箱(右手)	1	
103	24074-1-C	O ring	O形環	1	P10(Φ9.8xΦ1.9)
104	24074-1-D	Hexagon head bolt	六角頭螺絲	1	M12x16

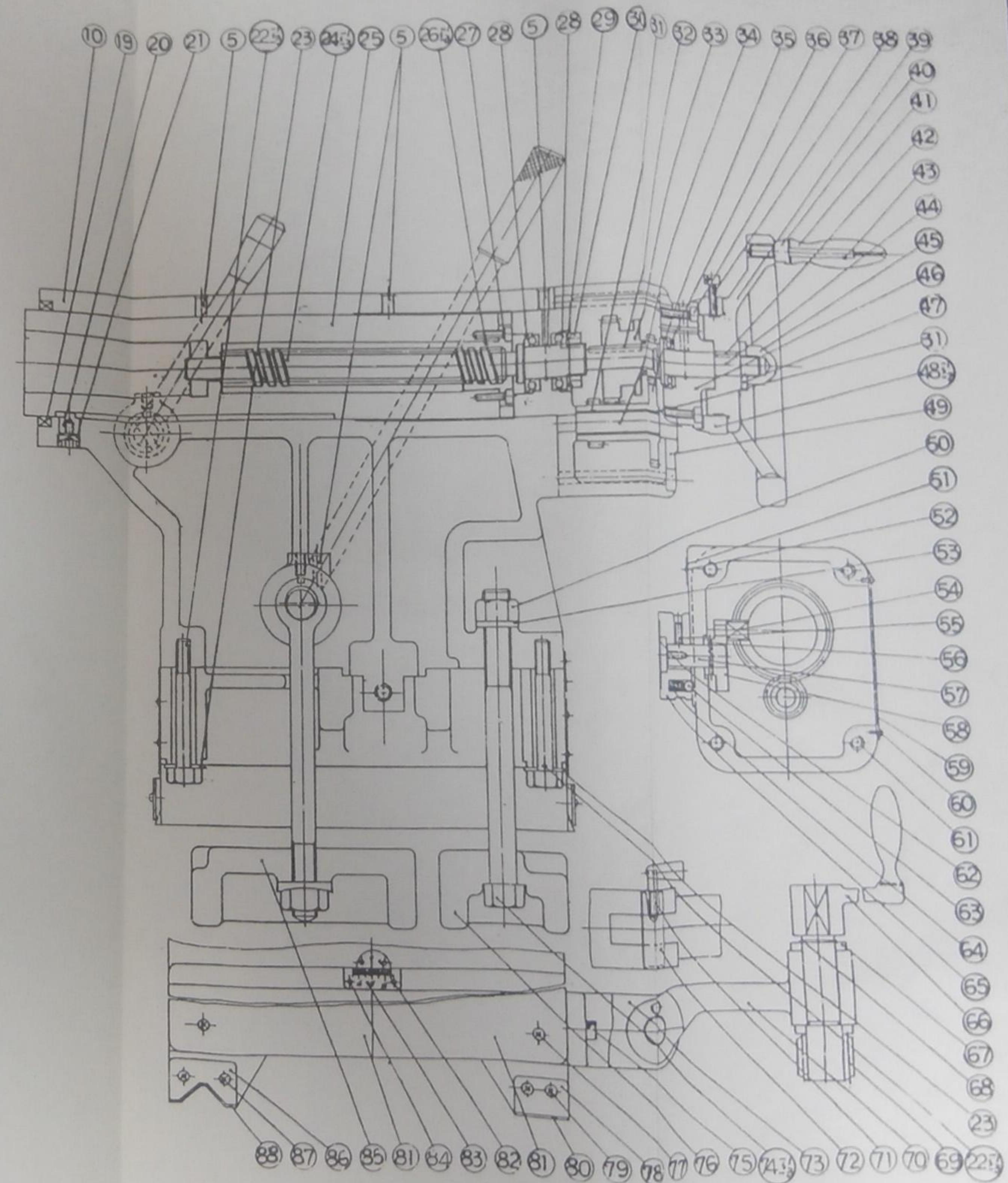
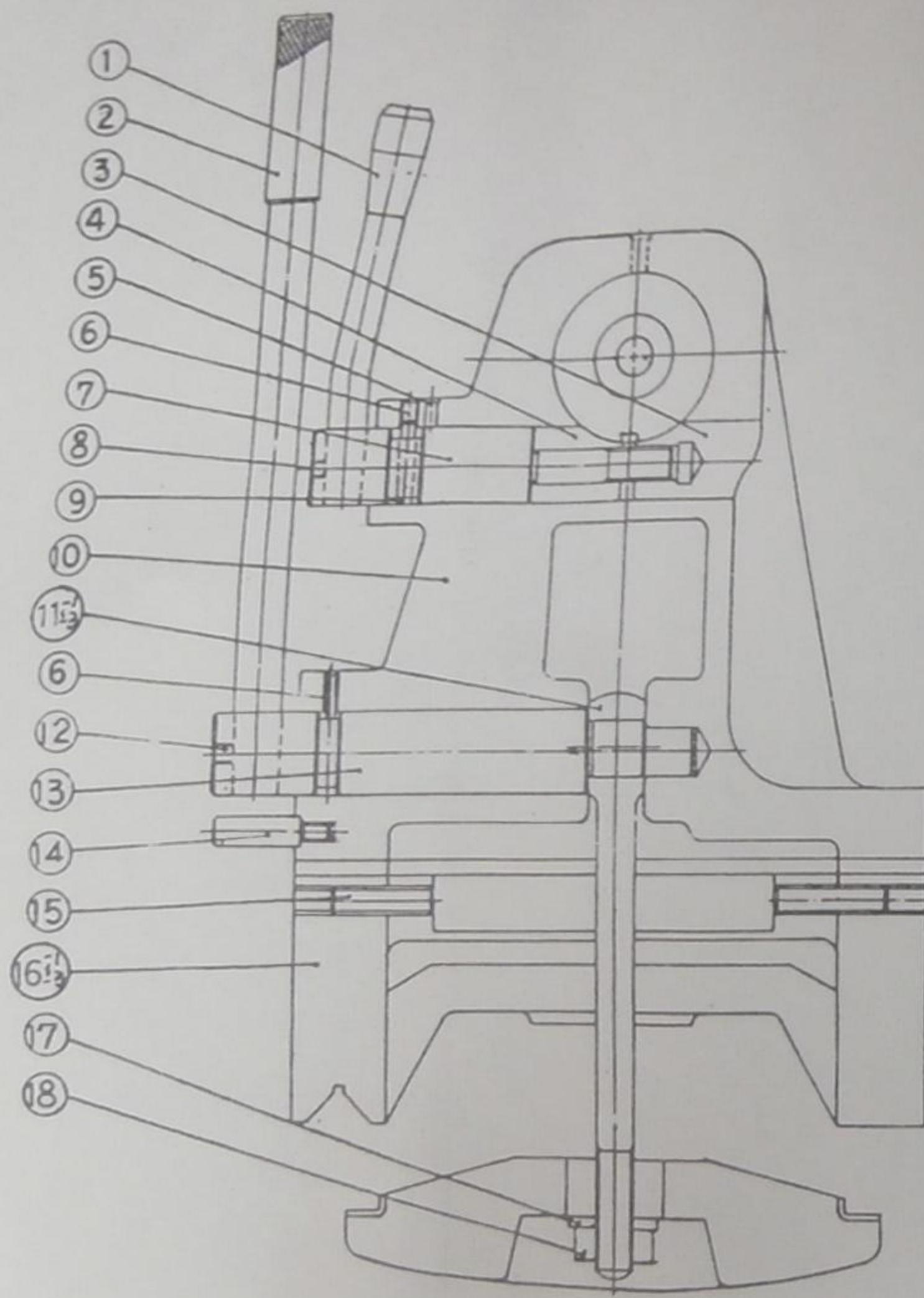
4. APRON

件號 NO.	圖 號 Part NO.	英 文 名 稱 Part Name	中 文 名 稱 Part Name	數量 Qty	規 格 Dimension
105	24040	Worm shaft	蝸桿軸	1	
106	24039-1-B	Thrust bearing	止推軸承	2	2904#(37x20x12)
107	24041	Worm	蝸桿	1	
108	24042	Packing hush	襯套	1	
109	24045-A	Oil seal	油封	2	TC364706
110	24046	Packing sleeve	襯筒	2	
111	44001-1-1-N	Hexagon socket cone set screw	六角承窩錐形固定螺絲	1	M10x14
112	24044	Packing sleeve	襯筒	1	
113	24044-A	O ring	O 形環	1	P36(Φ35.5xΦ3.5)
114	24039-1-C	Hexagon nut	六角螺帽	1	M6
115	24043	Gear (22T)	齒輪(22T)	1	
116	24039-1-D	Hexagon socket set screw	六角承窩固定螺絲	1	M6x20
117	24040-A	Blank plug	盲栓	1	
118	24004	Hand grip shaft	握柄軸	1	
119	24045	Special key	特殊鍵	1	
120	24004	Hand grip	握柄	1	
121	24004	Pin	梢	1	
122	24074-1-E	Oil seal	油封	1	TC152507
123	24050	Crank shaft	曲軸	1	
124	24052-A	Deep groove ball bearing	深槽滾珠軸承	1	626zz#(5x16x5)
125	24052	Fixed pin	固定梢	1	
126	24052-B	E-Type snap ring (external)	E 形扣環(軸用)	1	E5(Φ5x0.6t)
127	24051	Fixed pin	固定梢	1	
128	24051-A	E-Type snap ring (external)	E 形扣環(軸用)	1	E5(Φ5x0.6t)
129-1	24048-1	Rocker (Left)	搖桿(左手)	1	
129-2	24048-2	Rocker (Right)	搖桿(右手)	1	
130	24048-1-A	Straight pin	直梢	1	Φ10x30
131	24074-1-F	Hexagon socket set screw	六角承窩固定螺絲	1	M5x8
132	24074-1-G	Straight pin	直梢	2	Φ6x15
133	24049	Compressing spring	壓縮彈簧	2	2904#(37x20x12)
134	24074-1-H	Hexagon nut	六角螺帽	1	M8
135	24038-1-A	Spring pin	彈簧梢	1	Φ5x20
136	24038-1-B	Hexagon socket head bolt	六角承窩螺絲	1	M6x16
137	44003-2-C	Hexagon socket head bolt	六角承窩螺絲	1	M6x16
138	44003-2-D	Sunk key	雙頭圓鍵	1	5x5x15
139	44095	15T Bevel gear (Rapid)	15T傘齒輪(快送)	1	
140	44001-1-1-O	Hexagon socket head bolt	六角承窩螺絲	1	M6x16
141	44096	15T Bevel gear shaft (Rapid)	15T傘齒軸(快送)	1	
142	44096-A	Hexagon socket set screw	六角承窩固定螺絲	1	M6x5
143	44001-1-1-P	Oil seal	油封	1	TC152506

4. APRON

件號 NO.	圖 號 Part NO.	英文 名 稱 Part Name	中 文 名 稱 Part Name	數量 Qty	規 格 Dimension
144	44001-1-1-Q	Motor	馬達	1	
145-1	44097-1	Motor seal cover (Left,Rapid)	馬達封蓋(左手,快送)	1	
145-2	44097-2	Motor seal cover (Right,Rapid)	馬達封蓋(右手,快送)	1	
146	24081	Plunger sleeve pressing head seat	柱塞唧筒用按頭座	1	
147	24079-A	Spring pin	彈簧梢	1	Φ3x12
148	24079	Piston pin	活塞梢	1	
149-1	24087-1	Indicating plate of pump (Left)	泵浦指示牌(左手)	1	
149-2	24087-2	Indicating plate of pump (Right)	泵浦指示牌(右手)	1	
150	24082	Gap adjusting nut	間隙調整螺帽	1	
151	24087-1-A	Rivet	鉚釘	4	Φ2.5x5
152-1	24076-1	Pump body (Left)	泵浦本體(左手)	1	
152-2	24076-2	Pump body (Right)	泵浦本體(右手)	1	
153	24078	Compressing spring	壓縮彈簧	1	Φ12.5xΦ1.2x76
154	24086-A	O ring	O形環	1	P14(Φ13.8xΦ2.4)
155	24086	Special bolt	特殊螺栓	1	
156	24086-B	Steel ball	鋼珠	1	Φ5/16"
157	24085-A	Steel ball	鋼珠	1	Φ5/16"
158	24085	Oil restrained ring	止油環	1	
159	24093-A	O ring	O形環	1	P7(Φ6.8xΦ1.9)
160	24084	Special bolt	特殊螺栓	1	
161	44001-1-1-R	D-Type nipple joint	D型接頭	1	PD-6
162	44001-1-1-S	Sleeve Ring	套圈	1	PB-6
163	44001-1-1-T	Compressing nipple joint	壓縮接頭	1	PA-66
164	44001-1-1-U	Oil pipe (inlet)	油管(入)	1	Φ6
165	24111	Oil filter seat	濾油座	1	
166	24112	Oil filter net	濾油網	1	
167	44001-1-1-V	Oil pipe (Outlet)	油管(出)	1	Φ4
168	44001-1-1-W	Compressing nipple joint	壓縮接頭	1	PA-66
169	44001-1-2-X	Sleeve Ring	套圈	1	PB-4
170	44001-1-1-Y	D-Type nipple joint	D型接頭	1	PD-4
171	44001-1-1-Z	Oil pipe (Outlet)	油管(出)	1	Φ4
172	44001-1-1-Z1	Hexagon socket head bolt	六角承窩螺絲	3	M5x10
173	44113	Packing	密合墊	1	
174	44001-1-1-Z2	Manual pump (Rapid feed)	手動泵浦(快送)	1	
175	44001-1-1-Z3	H-Type elbow joint	H型肘接頭	1	PH-4

5. TAIL STOCK



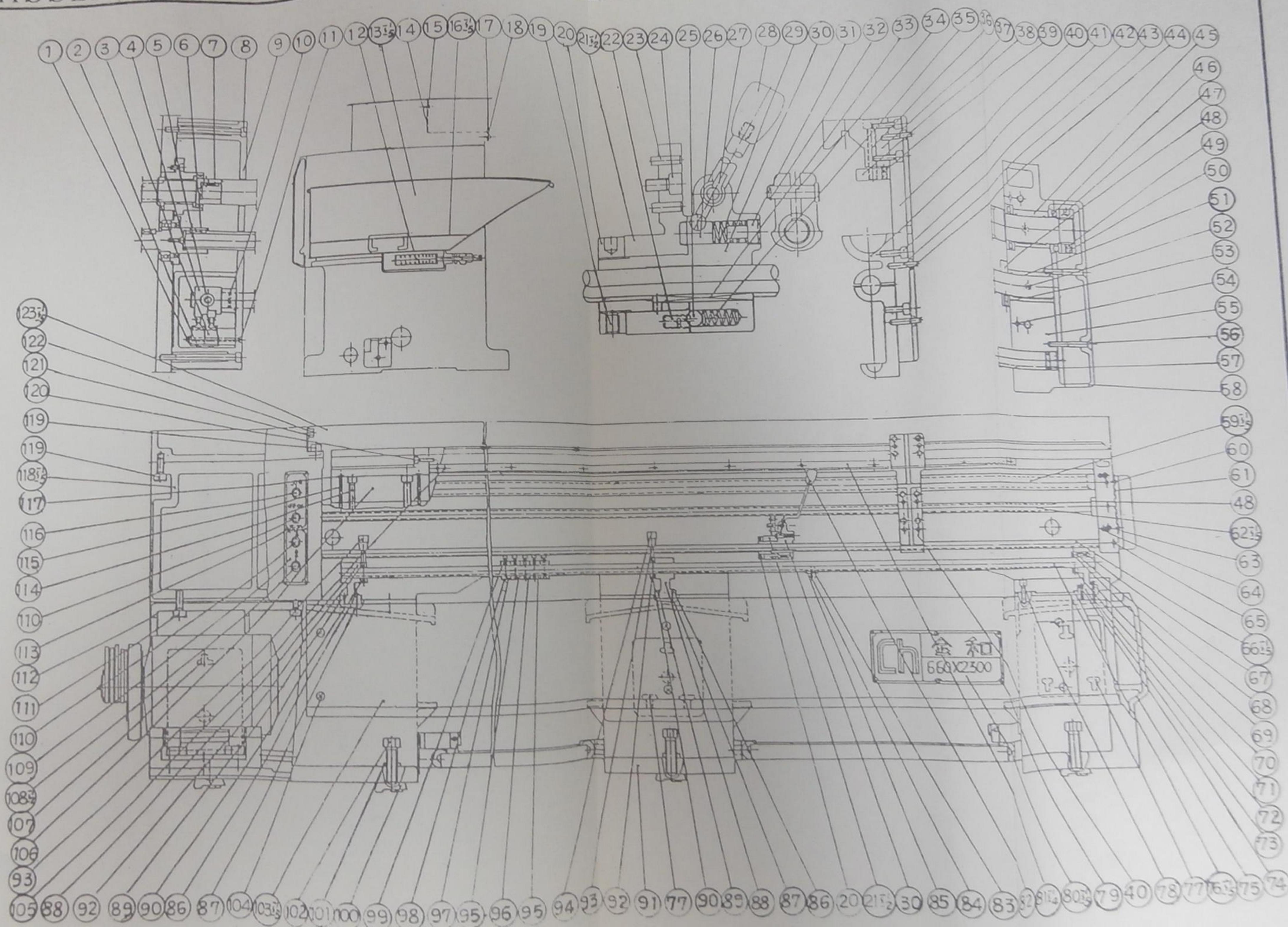
5. TAILSTOCK

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
1	25003	Hand lever	握 桿	1	
2	45018	Hand lever (lock)	握 桿	1	
3	45006	Adjusting nut	調整螺母	1	
4	45005	Packing sleeve	襯 套	1	
5	45001-A	Oil cup	油 嘴	5	ø5/16"
6	45019	Hexagon socket set screw	六角承窩固定螺絲	1	M12xP1.75
7	45002	Adjusting screw rod	調整螺絲桿	1	
8	45002-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x8
9	45002-B	Taper pin	推拔梢	1	5#x32
10	45001	Tailstock body	尾座本體	1	
11-1	45020-4	Eyelet bolt (High)	眼孔螺絲(高)	1	
11-2	45020-5	Eyelet bolt (Mid.)	眼孔螺絲(中)	1	
11-3	45020-6	Eyelet bolt (Low)	眼孔螺絲(低)	1	
12	45017-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x8
13	45017	Eccentric shaft	偏心軸	1	
14	25036	position pin	定位梢	1	
15	45023-4-A	Hexagon socket set screw	六角承窩固定螺絲	1	M12x55
16-1	45023-4	Tailstock seat (High)	尾架座(高)	2	760型
16-2	45023-5	Tailstock seat (Mid.)	尾架座(中)	1	660型
16-3	45023-6	Tailstock seat (Low)	尾架座(低)	1	560型
17	25022	Special washer	特殊墊圈	1	
18	45020-4-A	Hexagon nut	六角螺帽	1	3/4"-10TPI
19	45001-B	Oil seal	油 封	1	DKB758908
20	25007	Special key	特殊鍵	1	
21	45001-C	Plunger	柱 塞	1	PT3/8"
22-1	45023-4-B	Hexagon head screw	六角頭螺絲	2	M12x140
22-2	45023-5-B	Hexagon head screw	六角頭螺絲	2	M12x90
22-3	45023-6-B	Hexagon head screw	六角頭螺絲	2	M12x65
23	45023-4-C	Washer	墊 圈	2	M12
24-1	45010-3	Male screw (MMxP5xLxMT5#)	梯形螺桿(公制xP5x左旋) L	1	
24-2	45010-4	Male screw (INx5 tooth/in xLxMT5#)	梯形螺桿(英制x5牙/吋x左旋)	1	
24-3	45010-7	Male screw (MMxP5xRxMT5#)	梯形螺桿(公制xP5x右旋) R	1	
25	45008-2	Sleeve (MT5#)	套 筒 (M T 5 #)	1	
26-1	25009-1	Female screw (MMxP5xL)	公螺絲(公制xP5x左旋) L	1	
26-2	25009-2	Female screw (INx5 tooth/in xL)	公螺絲(英制x5牙/吋x左旋)	1	
26-3	25009-3	Female screw (MMxP5xL)	公螺絲(公制xP5x右旋) R	1	
27	25009-1-A	Hexagon socket head bolt	六角承窩螺絲	1	M6x12
28	45040-A	Thrust bearing	止推軸承	2	51105#(25x42x11)
29	45010-3-A	Locking washer	梅花墊圈	1	AW05(ø25x1.2t)
30	45010-3-B	Bearing nut	軸承螺帽	1	AW05(M25xP1.5)

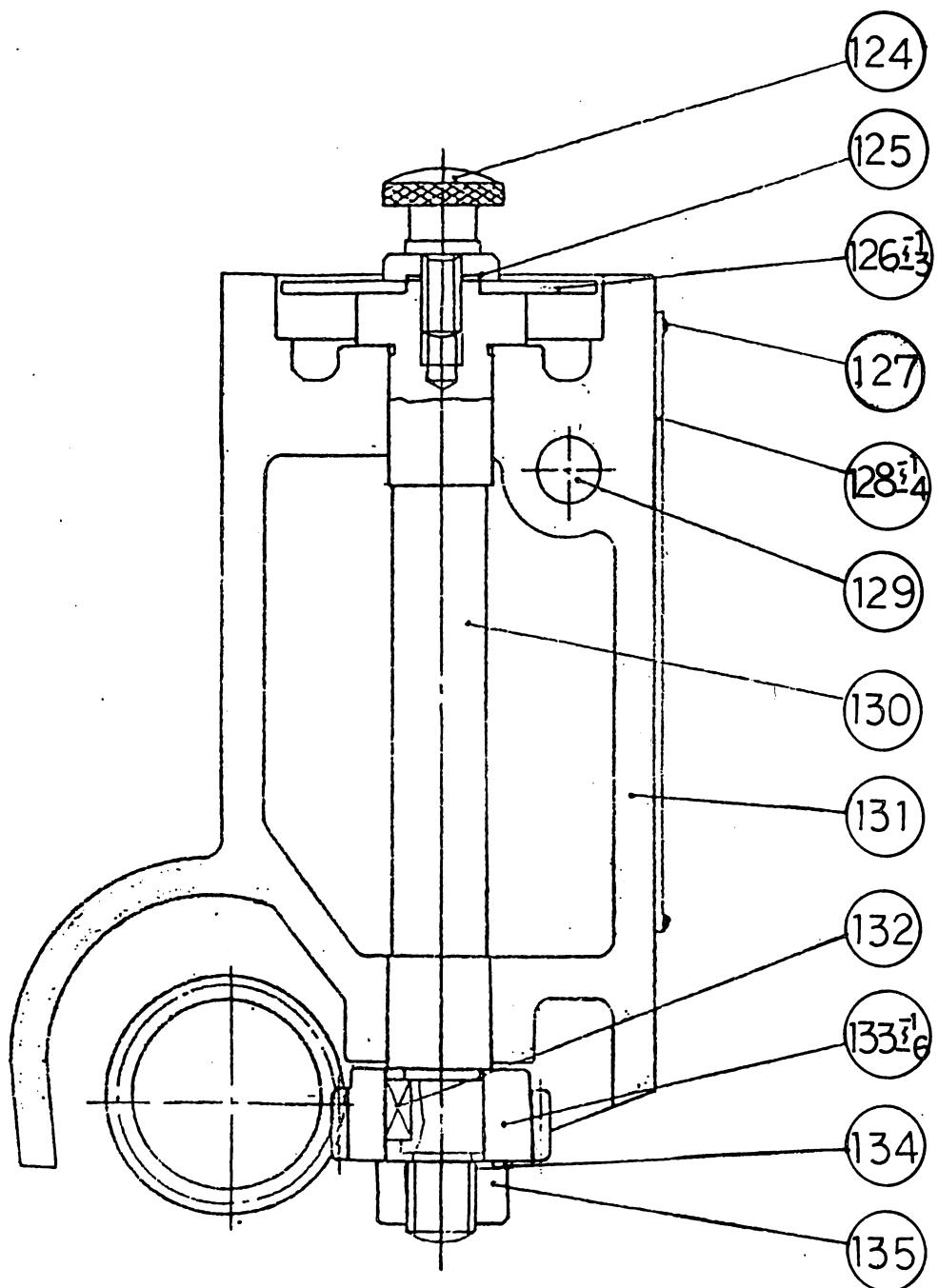
5. TAILSTOCK

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
31	45043-A	Dry bearing	自潤軸承	2	DU151715
32	45010-3-A	Sunk key	雙頭圓鍵	1	5x5x35
33	45042	30T Gear	30T齒輪	1	
34	45044	Gear shaft	齒論軸	1	
35	45043	(30T/15T) Double gear	(30T/15T) 雙齒輪	1	
36	45011-A	Thrust bearing	止推軸承	1	51104#(20x35x10)
37	25011-B	Hexagon socket head bolt	六角承窩螺絲	3	M6x25
38	25013	Set screw	固定螺絲	1	
39	25014	Tailstock hand wheel	尾架手輪	1	
40	25015	Hand grip shaft	握柄軸	1	
41	25015	Hand grip	握柄	1	
42	45041-A	Sunk key	雙頭圓鍵	1	5x5x15
43	25015	Pin	梢	1	
44	45041	Hand wheel shaft	手輪軸	1	
45	25031	Hood nut	袋螺母	1	
46	45011	Support basket	支持器	1	
47	25016	Special washer	特殊墊圈	1	
48-1	25012-1	Graduating (MM)	刻度環(公制)	1	
48-2	25012-2	Graduating (IN)	刻度環(英制)	1	
49	45040	Tailstock gear box	尾座齒輪箱	1	
50	45053-A	Hexagon nut	六角螺帽	1	
51	45051	Hi-Lo Speed indicating plate	快慢速指示牌	1	
52	45051-A	Rivet	鉚釘	2	Φ2.5x5
53	45053-B	Washer	墊圈	1	
54	45046	Shifting block	撥塊	1	
55	45062-A	Hexagon socket set screw	六角承窩固定螺絲	1	M6x16
56	45045-A	Spring pin	彈簧梢	1	Φ4x25
57	45047	Shifting rod	移位桿	1	
58	45045	Shifting dice	移位盤	1	
59	45052	Tailstock gear box cover	尾座齒輪箱蓋	1	
60	45052-A	Hexagon socket head bolt	六角承窩螺絲	2	M5x10
61	45040-B	Hexagon socket head bolt	六角承窩螺絲	4	M8x95
62	45063	Handle bar block nameplate	把手塊銘牌	1	與21046通用
63	45062-B	Steel ball	鋼珠	1	Φ5/16"
64	45064	Compressing spring	壓縮彈簧(與21174通用)	2	Φ7.5xΦ1.2x26
65	45062	Feed handle bar block	進刀把手塊	1	與21045通用
66	45061	Handle bar	把手	1	
67	45065	Axle collar	軸環	1	與24014通用
68	45058-1-A	C-Type snap ring (external)	C型扣環(軸用)	1	S22(Φ20.5x1.2t)
69	45058-1	Gear spindle (MM)	齒輪心軸(公制)	1	

6. ASSEMBLY OF BED AND LEG



6. ASSEMBLY OF BED AND LEG (THREAD CHASING DIAL)



6. ASSEMBLY OF BED AND LEG

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
1	46005-A	Hexagon nut	六角螺帽	2	M4
2	26007	Pad	襯墊	1	
3	46005-B	Micro switch	微動開關	2	
4	26021	Switch cam	開關凸輪	1	
5	26021-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x8
6	26018	Special key	特殊鍵	1	
7	46009-1-1-A	Sunk key	雙頭圓鍵	1	6x6x20
8	46005-C	Hexagon socket head bolt	六角承窩螺絲	2	M8x160
9	46005	Switch box	開關箱	1	
10	46011-1-A	O ring	O形環	1	P16(Φ15.8xΦ2.4)
11	46005-D	Cross recessed round head screw	十字圓頭機器螺釘	2	M4x100
12	26059	Oil filter	濾油	1	
13-1	46057-1	Oil tank (900 only)	()	1	
13-2	46057-2	Oil tank (1500 only)	油槽(1500用)	1	
13-3	46057-3	Oil tank (2300 only)	()	1	
13-4	46057-4	Oil tank (3000 only)	油槽(3000用)	1	
13-5	46057-5	Oil tank (4000 only)	油槽(4000用)	1	
14	26004	Electric appliance seat	電器座	1	
15	46001-1-A	Cross recessed round head screw	十字圓頭機器螺釘	2	M6x12
16-1	46058-1	Duster cover (900 only)	()	1	
16-2	46058-2	Duster cover (1500 only)	除塵蓋(1500用)	1	
16-3	46058-3	Duster cover (2300 only)	()	1	
16-4	46058-4	Duster cover (3000 only)	除塵蓋(3000用)	1	
16-5	46058-5	Duster cover (4000 only)	除塵蓋(4000用)	1	
17	46003	Electric appliance box cover	電器箱蓋	1	
18	46003-A	Cross recessed round head screw	十字圓頭機器螺釘	6	M6x8
19	26033-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x8
20	26033	Nut	螺母	1	
21-1	26031-1	Handle bar seat bracket (Left)	把手座托架(左手)	1	
21-2	26031-2	Handle bar seat bracket (Right)	把手座托架(右手)	1	
22	26032	Special screw	特殊螺絲	1	
23	26031-1-A	Tapered pin	推拔梢	2	4#x30
24	26031-1-B	Hexagon socket head bolt	六角承窩螺絲	1	M8x20
25	26022-A	Steel ball	鋼珠	1	Φ3/8"
26	26026	Locating pin	定位梢	1	
27	46023-1	Switch grip	開關柄	1	
28	26024	Handle grip	握柄	1	與 21056 通用
29	26027	Compressing spring	壓縮彈簧	1	Φ13xΦ1.55x30
30	26022	Handle bar seat	把手座	1	
31	26028	Adjusting screw	調整螺絲	1	

6. ASSEMBLY OF BED AND LEG

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
32	26025-A	E-Type snap ring (external)	E 形 扣 環(軸用)	1	E6(ϕ 6x0.9t)
33	26029	Special key	特 殊 鍵	1	
34	26025	Switch grip pin	開 關 柄 梢	1	
35	26030	Compressing spring	壓 縮 彈 簧	1	ϕ 8.5x ϕ 1.25x42
36	46092-A	Hexagon socket head bolt	六 角 承 窩 螺 絲	1	M12x65
37	46092	Slide base	基 座 滑 座	1	
38	46093	Pressing plate	壓 板	1	
39	46093-A	Hexagon socket set screw	六 角 承 穴 固 定 螺 絲	2	M8x16
40	46094	Copper liner base	銅 襯 基 座	1	
41	46095	Copper liner	銅 襯	1	
42	46094-A	Hexagon socket head bolt	六 角 承 穴 螺 絲	1	M8x20
43	46094-B	Band thread straight pin	帶 螺 紋 直 梢	6	M8x30
44	46094-C	Hexagon nut	六 角 螺 帽	6	M8
45	26015	Screw bushing	螺 桿 襯 套	1	
46	26013-A	Thrust bearing	止 推 軸 承	2	2906#(30x50x14)
47	26016	Round nut	圓 螺 母	1	
48	26020	Axle collar	軸 環	1	
49	26017	Copper pad	銅 墊	1	
50	26016-A	Hexagon socket set screw	六 角 承 穴 固 定 螺 絲	1	M8x6
51	26019	Bushing	襯 套	1	
52	26013-B	Oil cup	油 嘴	1	
53	26020-A	Hexagon socket set screw	六 角 承 穴 固 定 螺 絲	1	M8x16
54	26013-C	Band thread tapered pin	帶 螺 紋 推 拔 梢	2	6#x100
55	26013	Lead screw bracket	導 螺 桿 托 架	1	
56	26014-A	Cross countersunk head screw	十 字 平 頭 機 器 螺 釘	1	M6x50
57	26013-D	O ring	O 形 環	1	P20(ϕ 19.8x ϕ 2.4t)
58	26014	Bracket cover	托 架 蓋	1	
59-1 59-2 59-3 59-4 59-5	46009-1-1 46009-1-4 46009-2-1 46009-2-4 46009-3-1 46009-3-4 46009-4-1 46009-4-4 46009-5-1 46009-5-4	Lead screw (MMxP6,P12x900 only) (INx4TPI,2TPIx900 only) Lead screw (MMxP6,P12x900 only) (INx4TPI,2TPIx900 only) Lead screw (MMxP6,P12x900 only) (INx4TPI,2TPIx900 only) Lead screw (MMxP6,P12x900 only) (INx4TPI,2TPIx900 only) Lead screw (MMxP6,P12x900 only) (INx4TPI,2TPIx900 only)	導 螺 桿 (公 制 xP6,P12x900 用) (英 制 x4TPIx2TPIx900 用) 導 螺 桿 (公 制 xP6,P12x1500 用) (英 制 x4TPIx2TPIx1500 用) 導 螺 桿 (公 制 xP6,P12x2300 用) (英 制 x4TPIx2TPIx2300 用) 導 螺 桿 (公 制 xP6,P12x3000 用) (英 制 x4TPIx2TPIx3000 用) 導 螺 桿 (公 制 xP6,P12x4000 用) (英 制 x4TPIx2TPIx4000 用)	1 1 1 1 1	
60	46060-A	Rivet	鉚 釘	4	ϕ 2.5x4
61	46060	Name plate	廠 名 銘 板	1	
62-1	46010-1	Feed rod (900 only)	進 紿 桿 (900 用)	1	

6. ASSEMBLY OF BED AND LEG

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
62-2	46010-2	Feed rod (1500 only)	進給桿 (1500 用)	1	
62-3	46010-3	Feed rod (2300 only)	進給桿 (2300 用)	1	
62-4	46010-4	Feed rod (3000 only)	進給桿 (3000 用)	1	
62-5	46010-5	Feed rod (4000 only)	進給桿 (4000 用)	1	
63	26013-E	Hexagon socket head bolt	六角承窩螺絲	2	M10x80
64	26013-F	Hexagon nut	六角螺帽	2	M8
65	26013-G	Hexagon nut	六角螺帽	1	M6
66-1	46011-1	Starting rod (900 only)	起動桿 (900用)	1	
66-2	46011-2	Starting rod (1500 only)	起動桿 (1500 用)	1	
66-3	46011-3	Starting rod (2300 only)	起動桿 (2300 用)	1	
66-4	46011-4	Starting rod (3000 only)	起動桿 (3000 用)	1	
66-5	46011-5	Starting rod (4000 only)	起動桿 (4000 用)	1	
67	26040	Compressing spring	壓縮彈簧	2	Φ7.5xΦ1.2x26
68	26035-A	Steel ball	鋼珠	2	Φ5/16"
69	26037	Right axle collar	右軸環	1	
70	46035-B	Hexagon nut	六角螺帽	2	M6
71	26037-A	Hexagon socket set screw	六角承窩固定螺絲	1	M10x12
72	26035-C	Band thread tapered pin	帶螺紋推拔梢	2	6#x100
73	46035	5-Step shaft right bracket	五段軸右托架	1	
74	46035-D	Hexagon socket head bolt	六角承窩螺絲	2	M8x16
75	46048	Right foundation seat	右腳座	1	
76-1	46012-1	5-Step shaft (900 only)	五段軸 (900用)	1	
76-2	46012-2	5-Step shaft (1500 only)	五段軸 (1500 用)	1	
76-3	46012-3	5-Step shaft (2300 only)	五段軸 (2300 用)	1	
76-4	46012-4	5-Step shaft (3000 only)	五段軸 (3000 用)	1	
76-5	46012-5	5-Step shaft (4000 only)	五段軸 (4000 用)	1	
77	26053-4	Right foundation cover	右腳蓋	1	
78	46001-1-B	Hexagon socket head bolt	六角承窩螺絲	4	M20x45
79	46061-1-1-A	Rivet	鉚釘	各6	Φ3
80-1	46061-1-1 46061-1-3	Name plate (760,660,560x900 Only)	機型銘牌 (760,660,560型x900 用)	1	
80-2	46061-2-1 46061-2-3	Name plate (760,660,560x1500 Only)	機型銘牌 (760,660,560型x1500 用)	1	
80-3	46061-3-1 46061-3-3	Name plate (760,660,560x2300 Only)	機型銘牌 (760,660,560型x2300 用)	1	
80-4	46061-4-1 46061-4-3	Name plate (760,660,560x3000 Only)	機型銘牌 (760,660,560型x3000 用)	1	
80-5	46061-5-1 46061-5-3	Name plate (560,660,760x4000 Only)	機型銘牌 (760,660,560型x4000 用)	1	
81-1	46008-1	Rack (MMxM2.5x900 only)	排齒 (公制 x 900 用)	1	

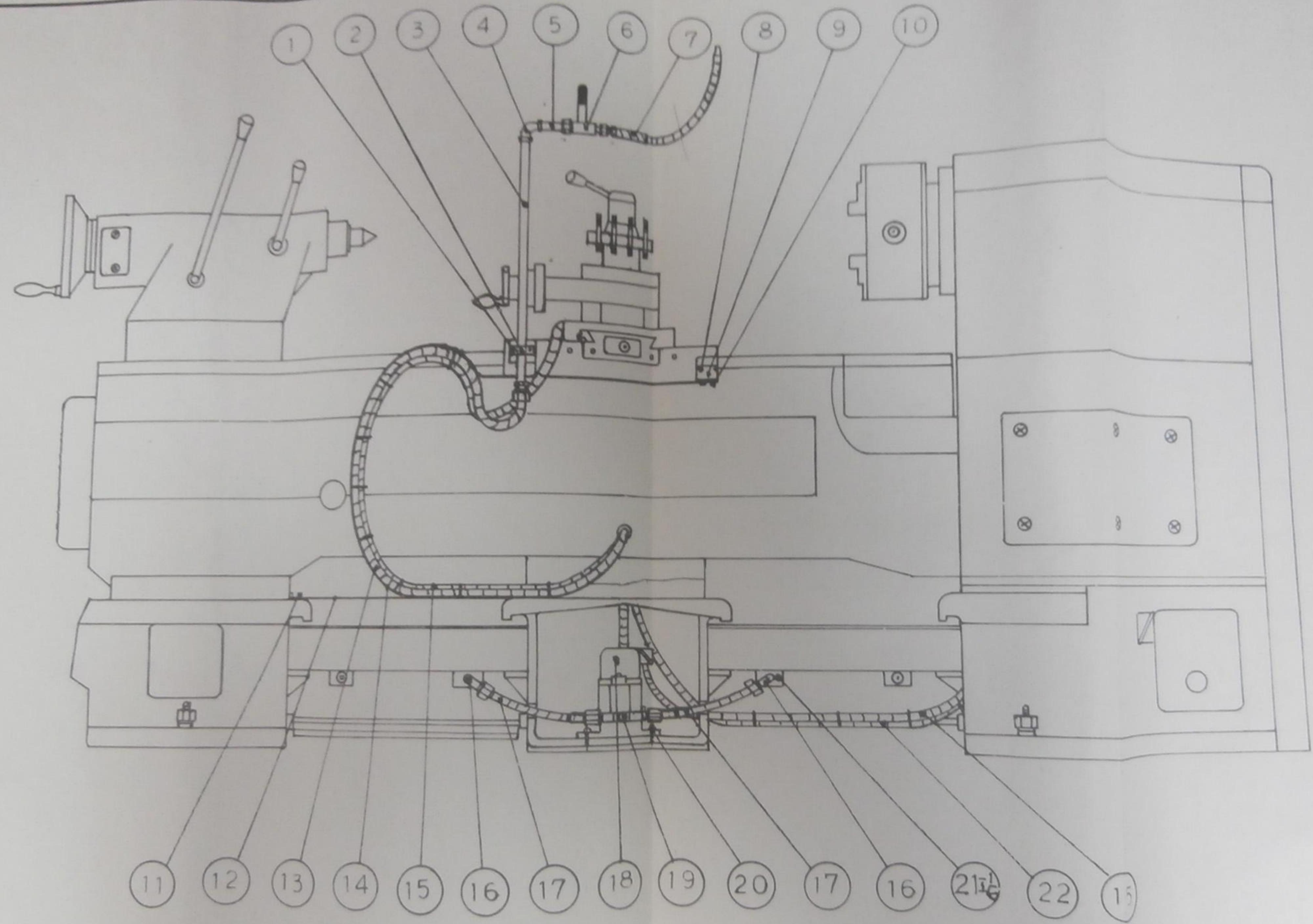
6. ASSEMBLY OF BED AND LEG

件號 NO.	圖號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規格 Dimension
81-2	46008-2	Rack (INxDP10x900 only)	排齒(英制 x 900 用)	1	
81-3	46008-3	Rack (MMxM2.5x1500 only)	排齒(公制 x 1500 用)	1	
81-4	46008-4	Rack (INxDP10x1500 only)	排齒(英制 x 1500 用)	1	
82	46008-1-A	Hexagon socket head bolt	六角承窩螺絲	10	M6x30
83	46046-A	Hexagon socket set screw	六角承窩固定螺絲	4	M8x12
84	46046-B	Hexagon head bolt	六角頭螺絲	2	M8x25
85	46046	5-Step shaft supported plate (1500)	五段軸支持板 (1500 用)	1	
86	46034-A	Hexagon nut	六角螺帽	4	M6
87	26034-B	Band thread tapered pin	帶螺紋推拔梢	4	4#x45
88	46034	5-Step shaft left bracket	五段軸左托架	2	
89	46034-c	Hexagon socket head bolt	六角承窩螺絲	4	M8x16
90	46036-A	Hexagon socket set screw	六角承窩固定螺絲	2	M10x12
91	46091	Mid. foundation seat	中腳座	1	
92	26036	Left axle collar	左軸環	2	
93	26038	Handle lever	握桿	2	
94	26039	Hand grip	握柄	2	
95	26042	Locator (20°)	定位器 (20°)	2	
96	26041	Locator	定位器	1	
97	26043	Locator (40°)	定位器 (40°)	2	
98	26044	Sleeve set screw	套筒固定螺絲	5	
99	26045	Hexagon roundhead bolt	六角圓頭螺絲	5	
100	26050	Foundation bolt seat	基礎螺栓座	8	
101	26051-A	Hexagon nut	六角螺帽	8	1"-12NC
102	26051	Foundation bolt	基礎螺栓	8	
103-1	46056-1	Table protection plate (900 only)	床台護板 (900 用)	1	
103-2	46056-2	Table protection plate (1500 only)	床台護板 (1500 用)	1	
103-3	46056-3	Table protection plate (2300 only)	床台護板 (1500 用)	1	
103-4	46056-4	Table protection plate (3000 only)	床台護板 (1500 用)	1	
103-5	46056-5	Table protection plate (4000 only)	床台護板 (4000 用)	1	
104	46056-1-A	Cross countersunk head screw	十字平頭機器螺絲	6	M8x60
105	46008-1-A	Tapered pin	推拔梢	2	5#x38
106	46002	Auxiliary bed	輔助床身	1	
107	26054-4	Left foundation cover	左腳蓋	1	
108-1	26006-1-A	Electric source indicating lamp	電源指示燈 (110V)	1	
108-2	26006-2-A	Electric source indicating lamp	電源指示燈 (220V)	1	
109	26001-1	Switch box name plate (4P only)	開關箱銘牌 (4P 變極用)	1	
110	26006-1-B	Selective switch	選擇開關	2	
111	46047-A	Hexagon socket head bolt	六角承窩螺絲	4	M20x60
112	46047	Left foundation seat	左腳座	1	
113	26006-1-C	Cross round head screw	十字圓頭機器螺絲	6	M5x8

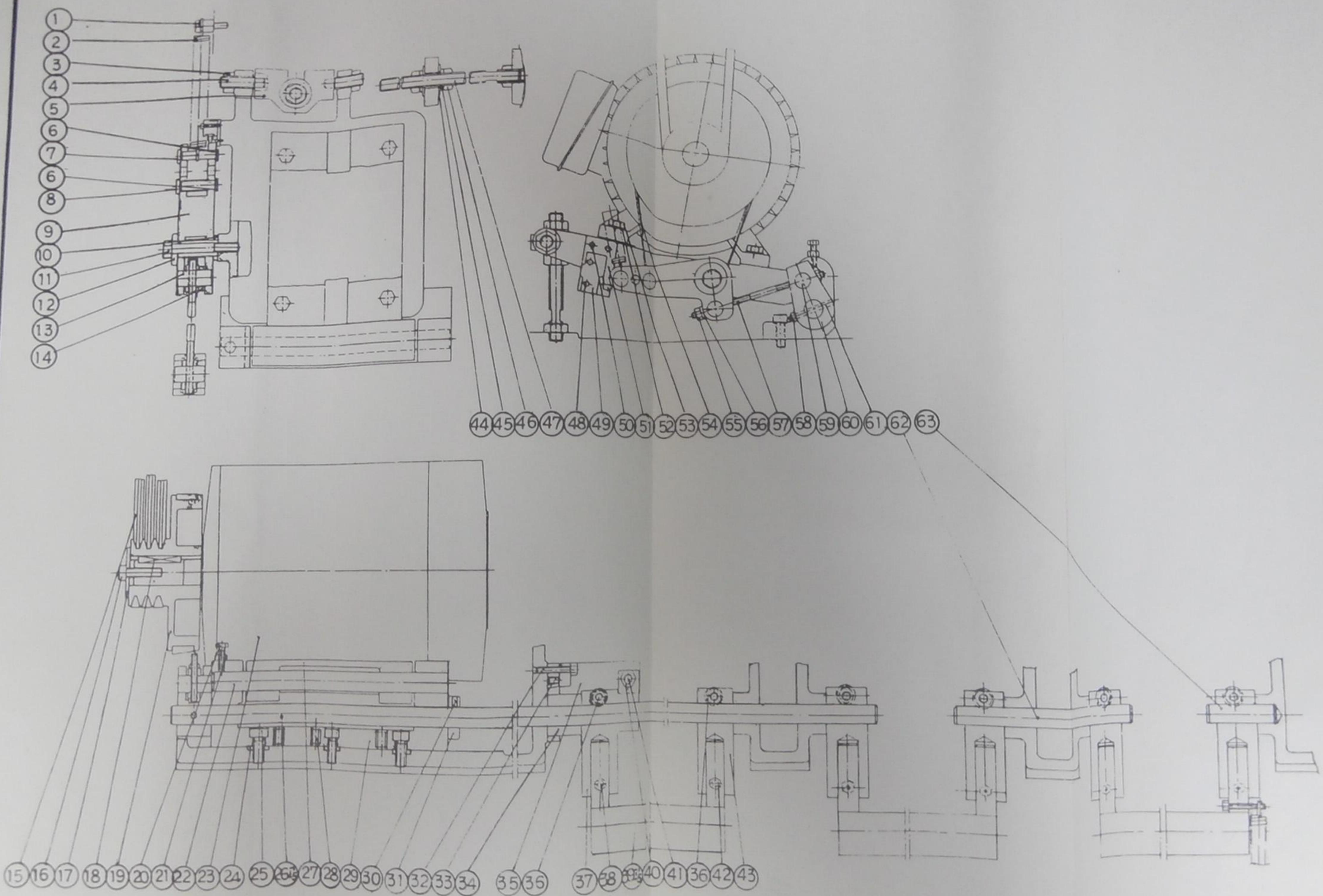
6. ASSEMBLY OF BED AND LEG

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
114	46002-A	Hexagon socket head bolt	六角承窩螺絲	4	M16x60
115	46002-B	Band thread tapered pin	帶螺紋推拔梢	2	8#x85
116	26006-1-D	Push button switch (JOG)	按扭開關 (JOG)	1	
117	46002-C	Hexagon nut	六角螺帽	2	M10xP1.0
118-1	46001-1	Bed table (900 only)	床身(900用)	1	
118-2	46001-2	Bed table (1500 only)	床身(1500用)	1	
118-3	46001-3	Bed table (2300 only)	床身(2300用)	1	
118-4	46001-4	Bed table (3000 only)	床身(3000用)	1	
118-5	46001-5	Bed table (4000 only)	床身(4000用)	1	
119	46001-1-C	Hexagon socket head bolt	六角承窩螺絲	4	M20x55
120	46002-D	Hexagon head bolt	六角頭螺絲	2	M10x60
121	46055-1-A	Spring washer	彈簧華司	6	M10
122	46055-1-B	Hexagon socket head bolt	六角承窩螺絲	6	M10x12
123-1	46055-1	Big damper (900 only)	大檔板(900用)	1	
123-2	46055-2	Big damper (1500 only)	大檔板(1500用)	1	
123-3	46055-3	Big damper (2300 only)	大檔板(2300用)	1	
123-4	46055-4	Big damper (3000 only)	大檔板(3000用)	1	
123-5	46055-5	Big damper (4000 only)	大檔板(4000用)	1	
124	26063	Special bolt	特殊螺栓	1	
125	26064	Washer	墊圈	1	
126-1	26065-1	Tooth index dial (MM,P=6,P=12 only)	牙標盤(公制,P=6,P=12用)	1	
126-2	26065-2	Tooth index dial (IN,4TPI only)	牙標盤(英制,4TPI用)	1	
126-3	46065-3	Tooth index dial (IN,2TPI only)	牙標盤(英制,2TPI用)	1	
127	26068-1-A	Rivet	鉚釘	4	φ2.5x4
128-1	26068-1	Indicating plate (MM,P=6 only)	牙標指示牌(公制,P=6用)	1	
128-2	26068-2	Indicating plate (IN,4TPI only)	牙標指示牌(英制,4TPI用)	1	
128-3	46068-3	Indicating plate (IN,2TPI only)	牙標指示牌(英制,2TPI用)	1	
128-4	46068-4	Indicating plate (MM,P=12 only)	牙標指示牌(公制,P=12用)	1	
129	46062-1-A	Hexagon socket head bolt	六角承窩螺絲	1	M10x90
130	26066	Tooth index shaft	牙標軸(公英制)	1	
131	46062-1	Tooth index seat (MM,IN)	牙標座(公英制,左右用)	1	
132	26066	Sunk key	雙頭圓鍵	1	4x4x8
133-1	26067-1	14T Gear (MM,P=6 only)	齒輪(公制 P = 6用)	1	
133-2	26067-2	15T Gear (MM,P=6 only)	齒輪(公制 P = 6用)	1	
133-3	26067-3	16T Gear (IN,4TPI only)	齒輪(英制 4 T P I用)	1	
133-4	46067-4	12T Gear (IN,2TPI only)	齒輪(英制 2 T P I用)	1	
133-5	46067-5	14T Gear (MM,P=12 only)	齒輪(公制 P = 12用)	1	
133-6	46067-6	15T Gear (MM,P=12 only)	齒輪(公制 P = 12用)	1	
134	26066-B	Spring washer	彈簧墊圈	1	M10
135	26066-C	Hexagon nut	六角螺帽	1	M10

6-1. ASSEMBLY OF BED AND LEG (COOLANT SYSTEM)



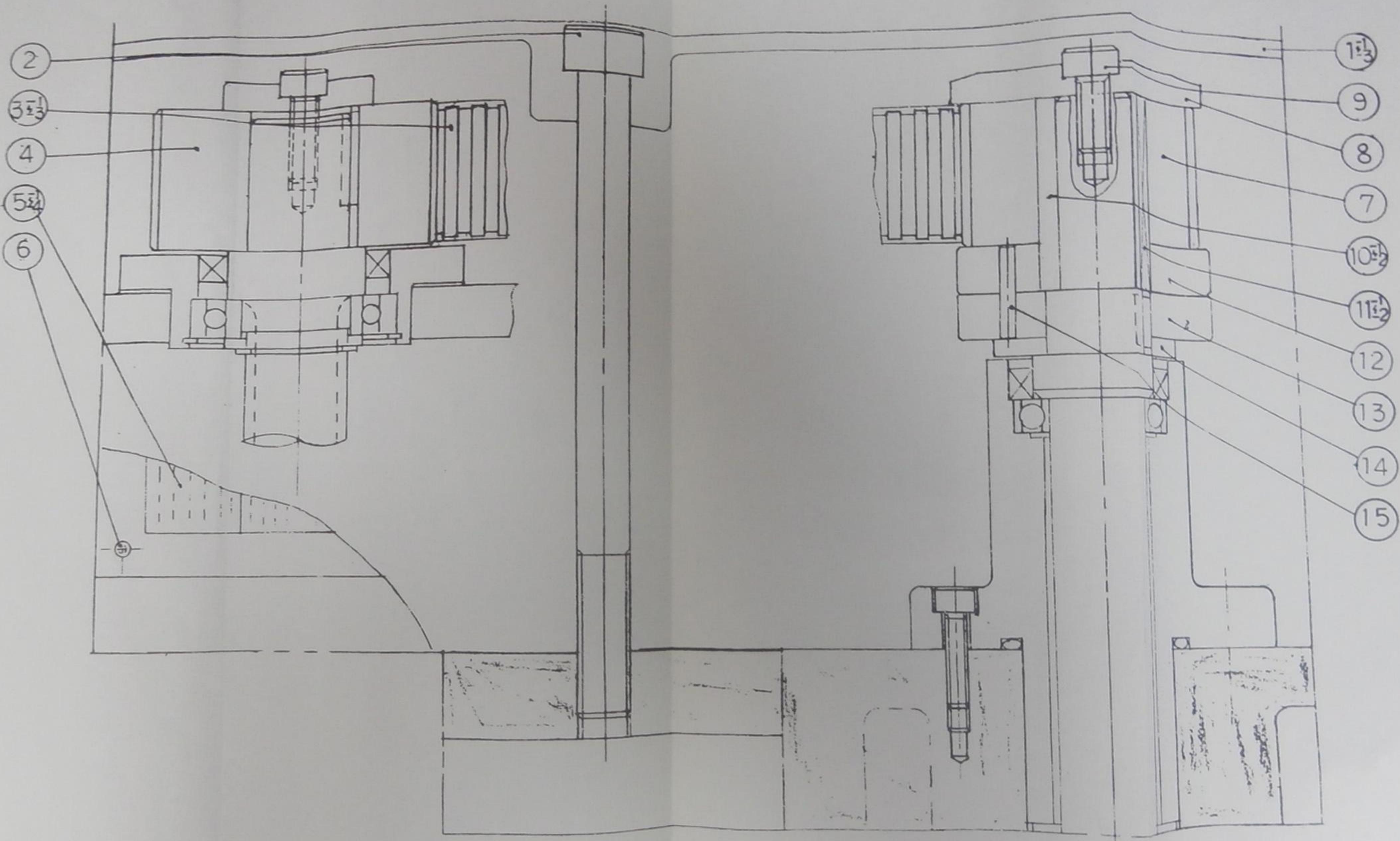
7. BRAKE MECHANISM



7. BRAKE MECHANISM

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
1	27022	Spring set screw	彈簧固定螺絲	1	
2	27021	Draw spring	拉簧	1	Φ25xΦ3x150
3	27028-A	Hexagon nut	六角螺帽	2	M16
4	27028	Special screw	特殊螺絲	2	
5	27026	Liner for motor base	馬達座襯墊	1	
6	27020-A	C-Type snap ring (external)	C型扣環(軸用)	2	S12(Φ11.1x1t)
7	27020	Spring set pin	彈簧固定梢	1	
8	27019	Brake ring of set pin	剎車環固定梢	1	
9	27013	Brake arm	剎車臂	1	
10	27018	Washer	墊圈	1	
11	27016-A	Hexagon head bolt	六角頭螺絲	1	M12x80
12	27016	Bushing	襯套	1	
13	27014	Pin	梢	1	
14	27015	Spacing bush	間隔套	1	
15	47029-1-A	Triangular belt	三角皮帶	4	
16	27030-A	Hexagon socket head bolt	六角承窩螺絲	1	M12x30
17	27030	Washer	墊圈	1	
18	47029-1-B	Key	鍵	1	10x10x60
19	47029-1	Motor pulley	馬達皮帶輪	1	
20	27001-A	Hexagon head screw	六角頭螺絲	1	M8x25
21	27001-B	Hexagon nut	六角螺帽	1	M8
22	27024	Bracket rod	托架桿	1	
23	27025-2-A	Motor	馬達	1	7.5HP/10HP
24	27031-1	Washer	墊圈	3	與 21053通用
25	27001-C	Hexagon socket head bolt	六角承窩螺絲	3	M12x30
26-1	47002-1	Tension rod (900 only)		1	
26-2	47002-2	Tension rod (1500 only)	拉力桿(1500用)	1	
26-3	47002-3	Tension rod (2300 only)	拉力桿(2300用)	1	
26-4	47002-4	Tension rod (3000 only)	拉力桿(3000用)	1	
26-5	47002-5	Tension rod (4000 only)	拉力桿(4000用)	1	
27	27025-2	Motor base (10HP,7-1/2" only)	馬達座(10HP,7-1/2"變極用)	1	
28	27001-D	Hexagon socket set screw	六角承窩固定螺絲	3	M12x20
29	27001	Motor base bracket	馬達座托架	1	
30	27003-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x12
31	27003	Axle collar (900 only)		1	
32	27005-A	Hexagon head bolt	六角頭螺絲	2	M8x40
33	27003-A	Hexagon socket set screw	六角承窩固定螺絲	1	M8x12
34	27004	Brake shaft bracket	剎車軸托架(1500用)	1	
35	27005	Brake pedal damper	剎車板檔鐵	1	
36	27006-A	Hexagon head bolt	六角頭螺絲	2	M10x45

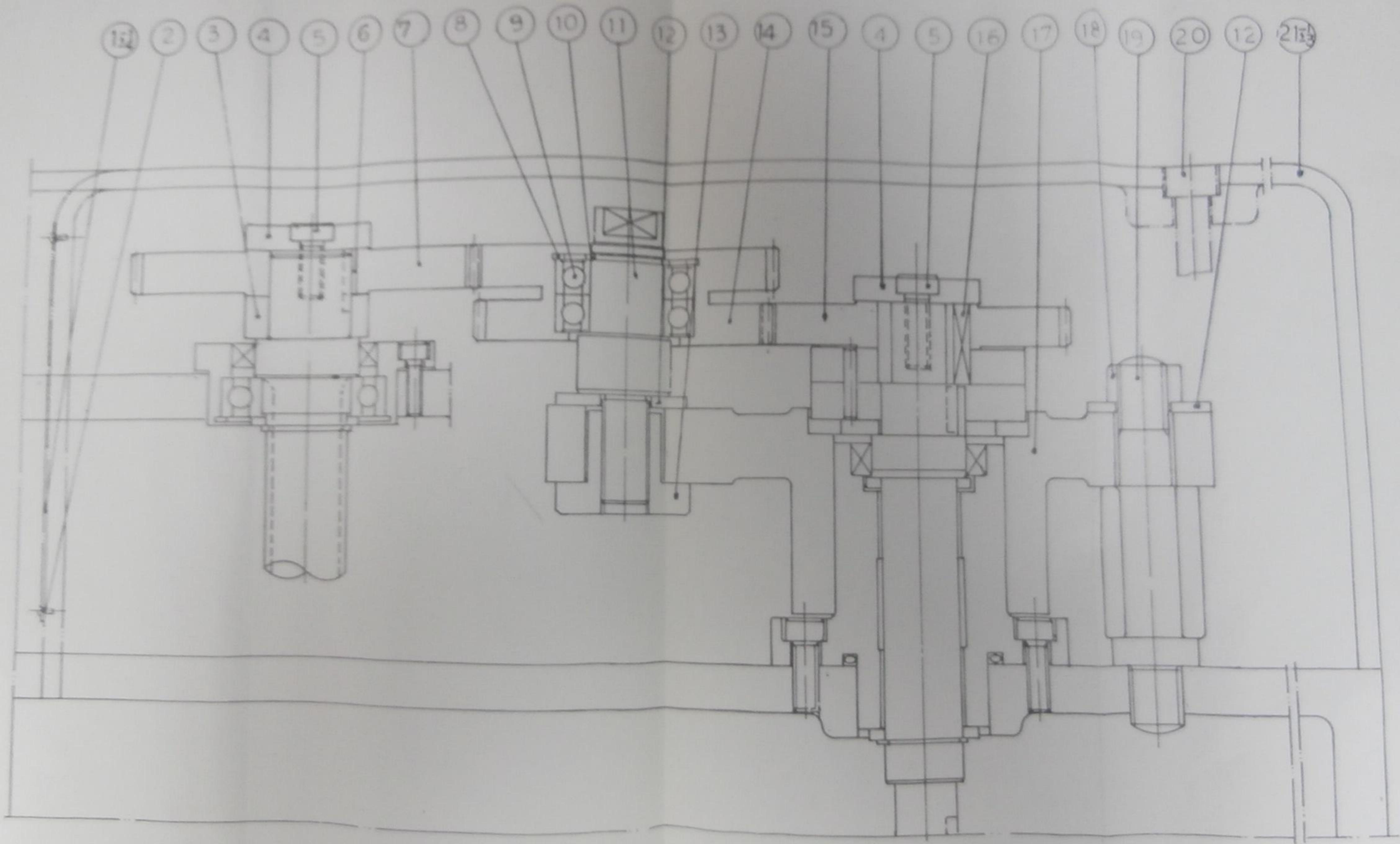
8-1、QUADRANT (INCH SYSTEM)



8-1. QUADRANT (INCH SYSTEM)

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
1-1	48001-4	Side cover (high)	側蓋(高)	1	760 型
1-2	48001-5	Side cover (mid.)	側蓋(中)	1	660 型
1-3	48001-6	Side cover (low)	側蓋(低)	1	560 型
2	48001-4-A	Hexagon socket head blot	六角承窩螺絲	4	M10x160
3-1	48001-4-B	Timing belt	時規皮帶	1	320H
3-2	48001-5-B	Timing belt	時規皮帶	1	280H
3-3	48001-6-B	Timing belt	時規皮帶	1	240H
4	48003	Timing pulley (19T)	入力軸時規皮帶輪 (19T)	1	與38003 通用
5-1	48002-1	P=6 Name plate (bolt)	車螺絲銘牌 P=6	1	
5-2	48003-1	4TPI Name plate (bolt)	車螺絲銘牌 4TPI	1	
5-3	48002-2	P=12 Name plate (bolt)	車螺絲銘牌 P=12	1	
5-4	48003-2	2TPI Name plate (bolt)	車螺絲銘牌 2TPI	1	
6	48002-1-A	Rivet	鉚釘	4	φ2.5x4
7	51067	Timing pulley (16T)	出力軸時規皮帶輪 (16T)	1	與31054 通用
8	51068	Band belt thrust washer	帶輪止推墊圈	1	與31055 通用
9	51068-A	Hexagon socket head blot	六角承窩螺絲	1	M8x16
10-1	51066-1	Bushing gear (in)	掛齒輪襯套	1	與31053 通用
10-2	51066-2	Bushing gear (in)	掛齒輪襯套	1	與21037 通用
11-1	51066-1-A	Sunk key	雙頭圓鍵	1	6x6x45
11-2	51066-2-A	Sunk key	雙頭圓鍵	1	6x6x25
12	51064	Safety pin inner fixed ring	安全梢外固定圈	1	與21038 通用
13	51065	Safety pin outer fixed ring	安全梢內固定圈	1	與21036 通用
14	51063	Safety pin sheet shield	安全梢檔片	1	與21035 通用
15	51069	Safety pin	安全梢	1	與21039 通用

8-2. QUADRANT (METRIC SYSTEM)

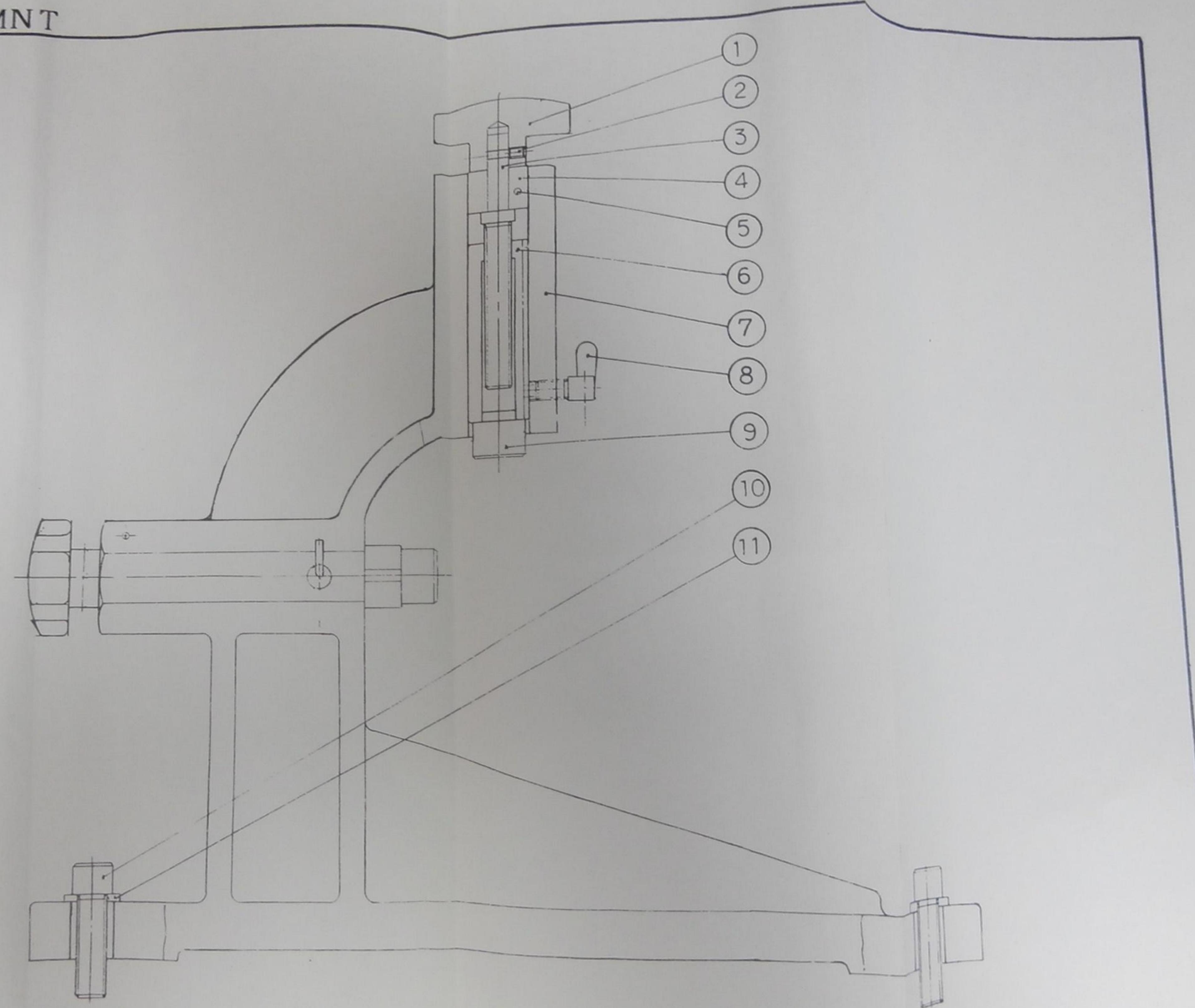


8-2. QUADRANT (METRIC SYSTEM)

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
1-1	48002-1	P=6 Name plate	P = 6 車螺絲銘牌	1	
1-2	48002-2	P=12 Name plate	P = 1 2 車螺絲銘牌	1	
1-3	48003-1	4TPI Name plate	4 T P I 車螺絲銘牌	1	
1-4	48003-2	2TPI Name plate	2 T P I 車螺絲銘牌	1	
2	48002-1-A	Rivet	鉚釘	4	Φ2.5x4
3	28009	Spacing sleeve	間隔套	1	
4	28010	Washer	墊圈	1	
5	28010-A	Hexagon socket head bolt	六角承窩螺絲	1	M8x16
6	48031-1-A	Sunk key	雙頭圓鍵	1	6x6x20
7	48031-1	64T Gear (MM only)	6 4 T 齒輪 (公制用)	1	
8	48035-1-A	C-Type snap ring (internal)	C 型 扣環 (孔用)	1	R47(Φ50.5x1.75t)
9	28011-A	Deep groove ball bearing	深槽滾珠軸承	2	6005#(25x47x12)
10	28011-B	C-Type snap ring (External)	C 型 扣環 (軸用)	1	S25(Φ23.2x1.2t)
11	28011	Change gear shaft	掛齒輪軸	1	
12	28013	Washer	墊圈	2	
13	28012	Special nut	特殊螺母	1	
14	48035-1	54T/56T Gear (MM only)	54 T / 56 T 齒輪 (公制用)	1	
15	48029-1	55T Gear (MM only)	5 5 T 齒輪 (公制用)	1	
16	48029-1-A	Sunk key	雙頭圓鍵	1	
17	48018-2	Gear shifting bracket	交換齒輪托架	1	
18	28019-A	Hexagon nut	六角螺帽	1	M16
19	28019	Special bolt	特殊螺栓	1	
20	48001-4-A	Hexagon socket head bolt	六角承窩螺絲	2	M10x160
21-1	48001-4	Side cover (high)	側蓋(高)	1	760型
21-2	48001-5	Side cover (mid.)	側蓋(中)	1	660型
21-3	48001-6	Side cover (low)	側蓋(低)	1	560型

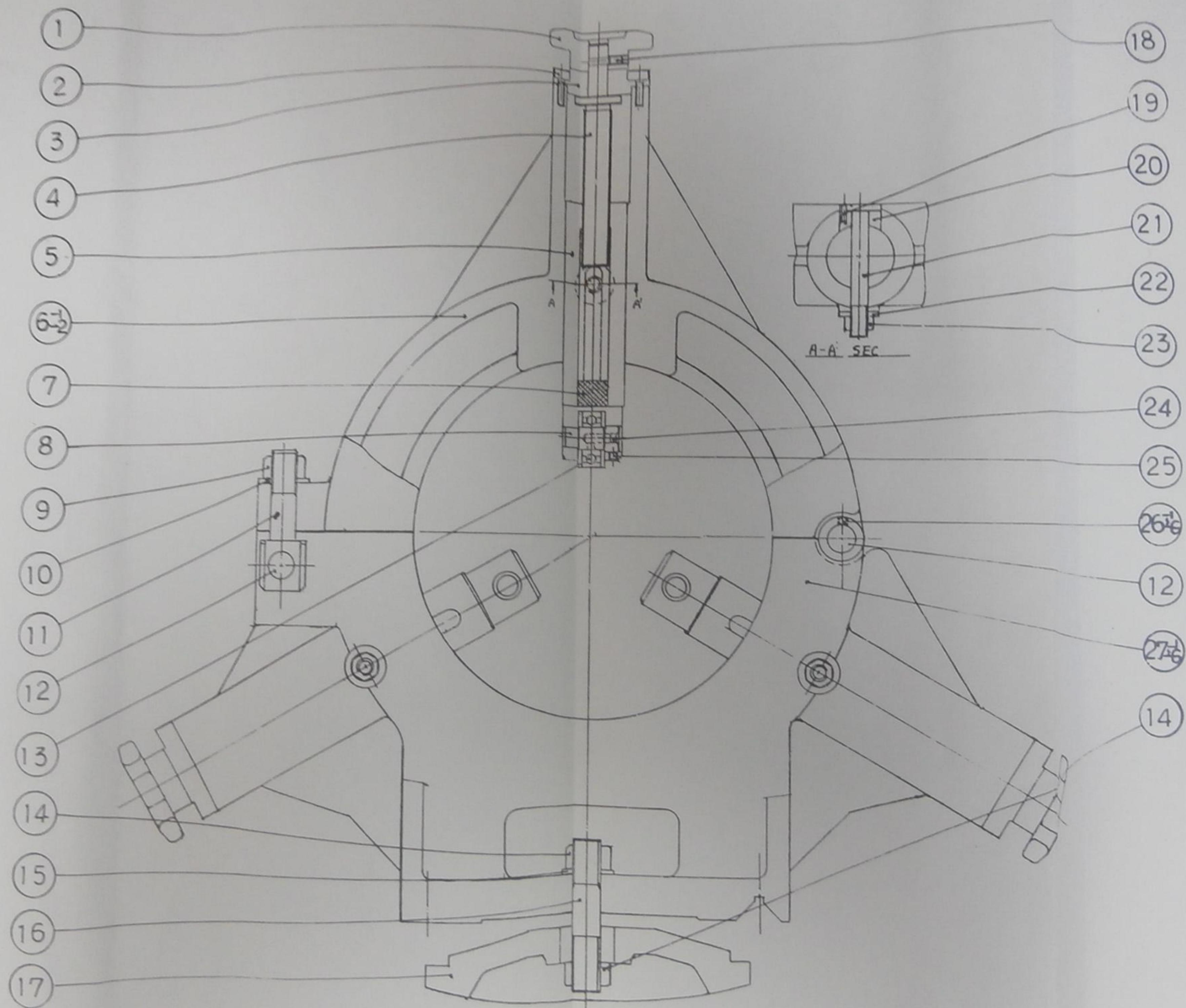
9. ATTACHMNT

9-1. FOLLOWER



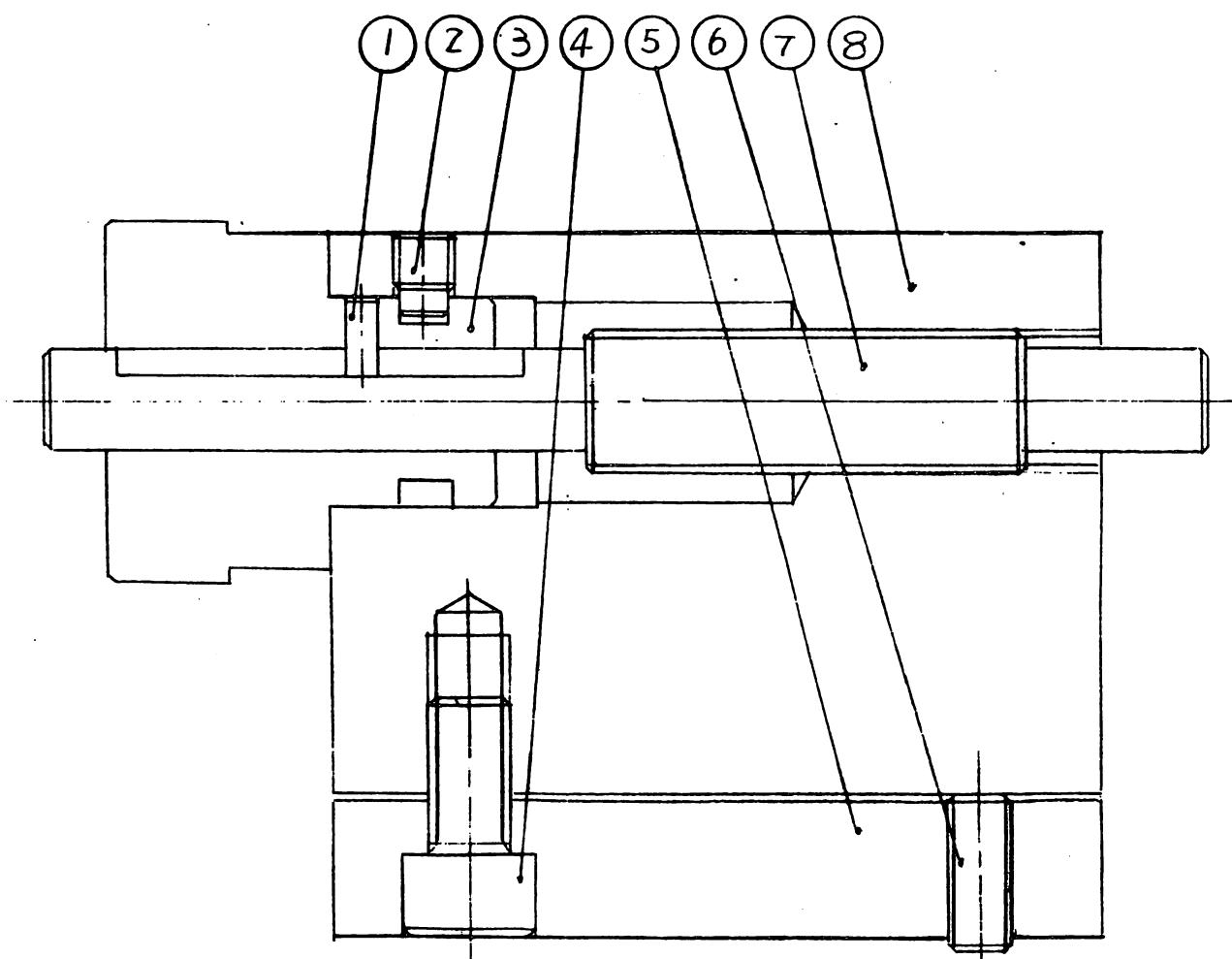
9. ATTACHMNT

9-2. STEADY REST



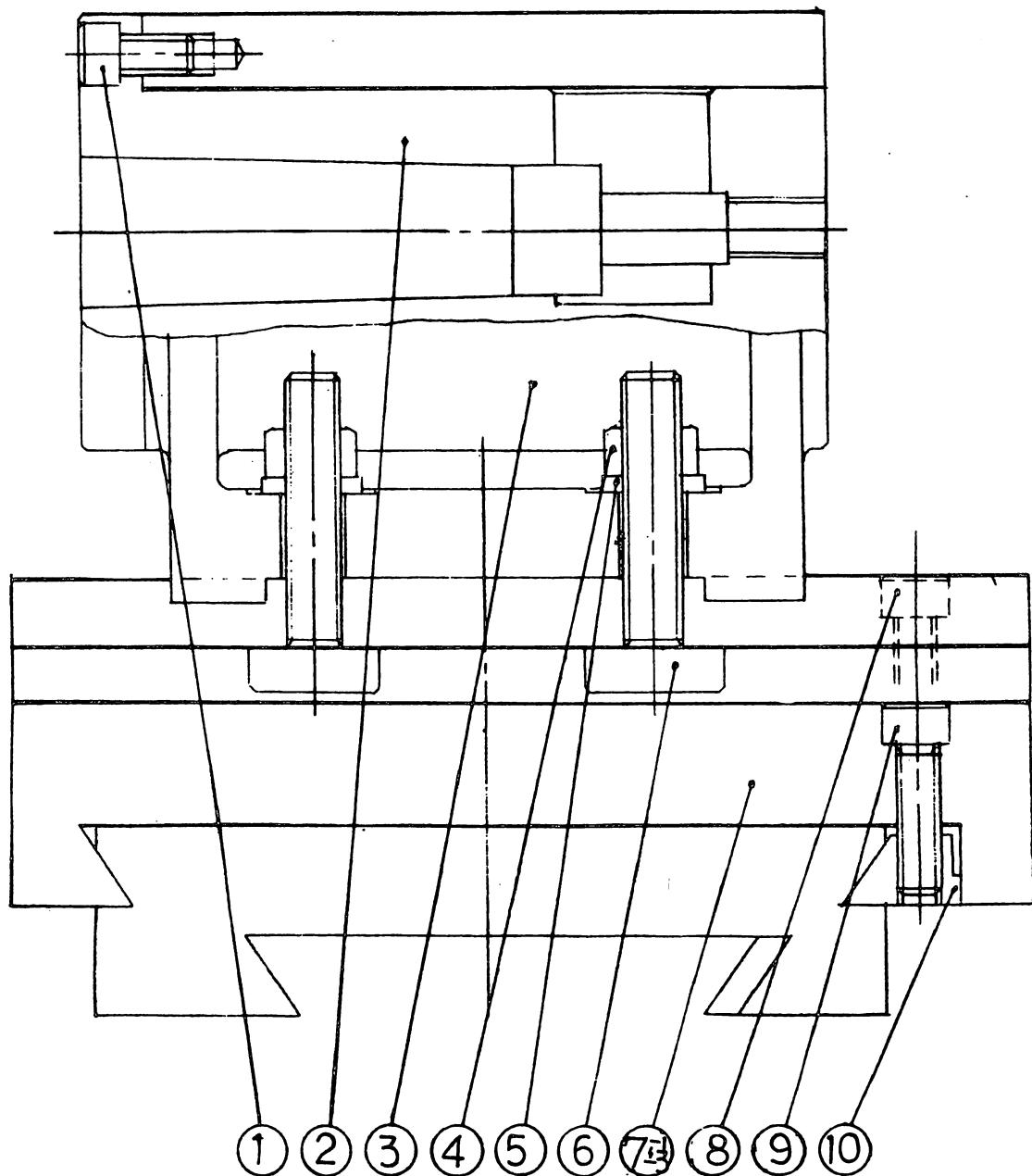
9. ATTACHMNT

9-3. MICRO CARRIAGE STOP



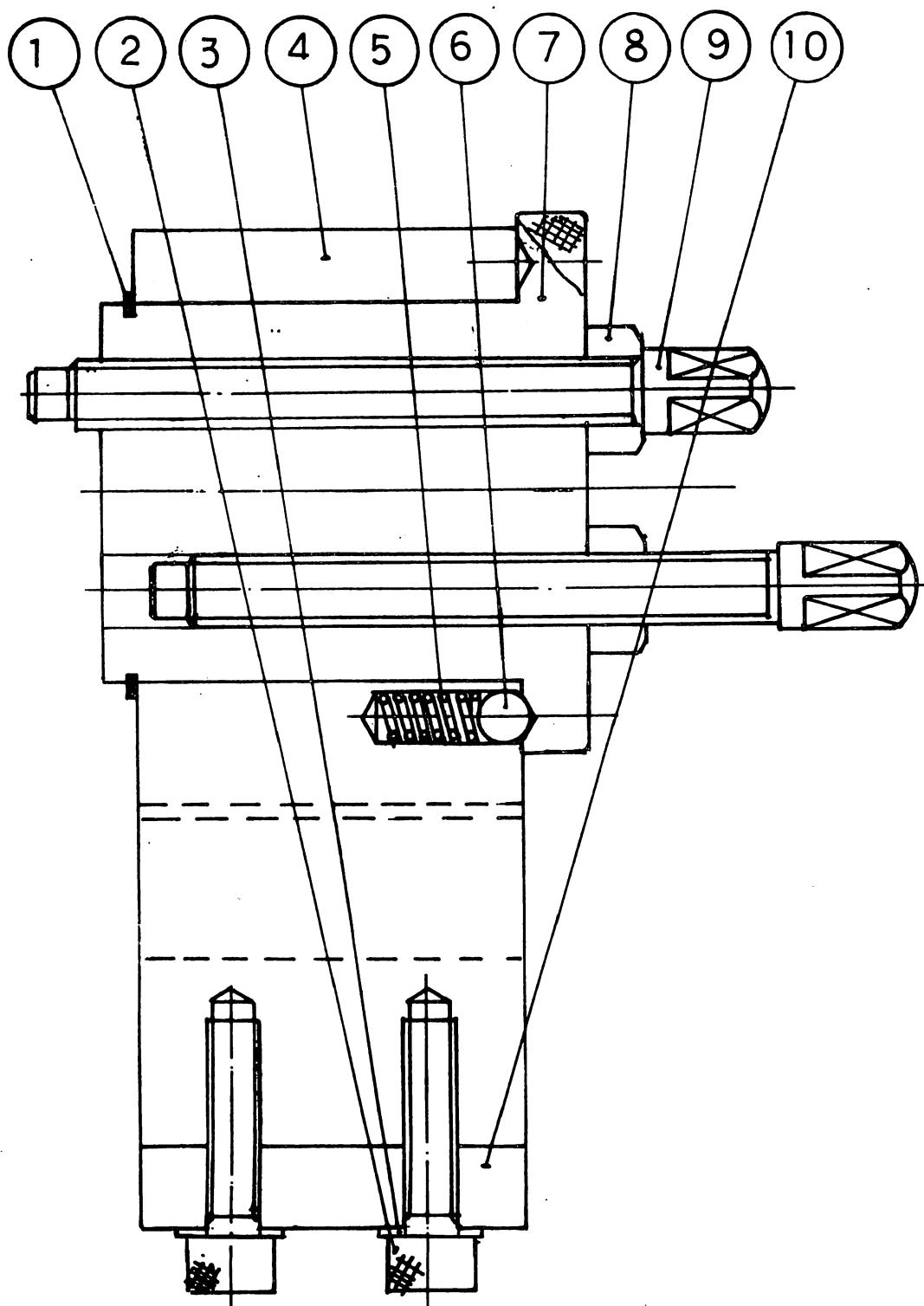
9. ATTACHMNT

9-4. DRILLING DEVICE)



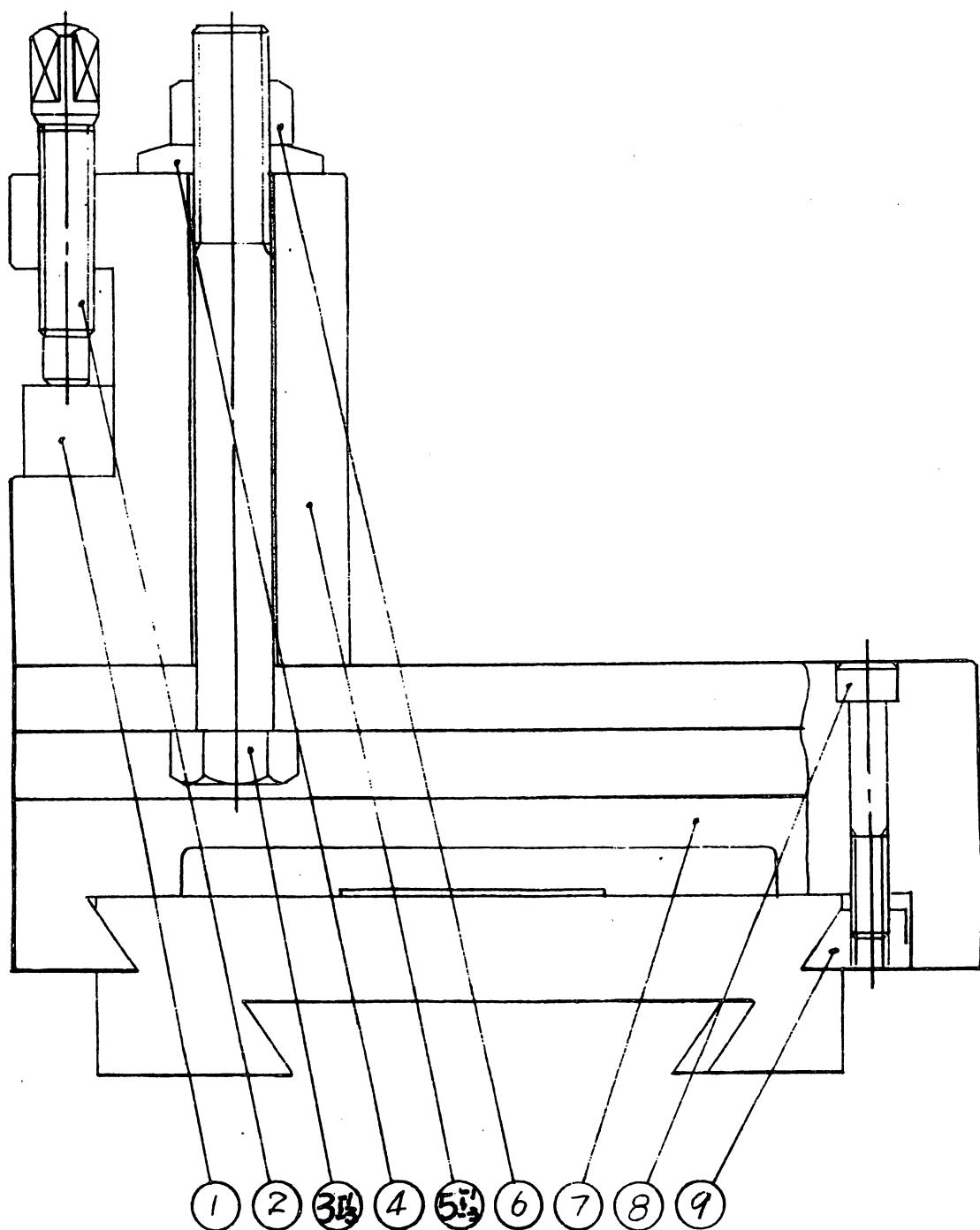
9. ATTACHMNT

9-5. TURRET CARRIAGE STOP



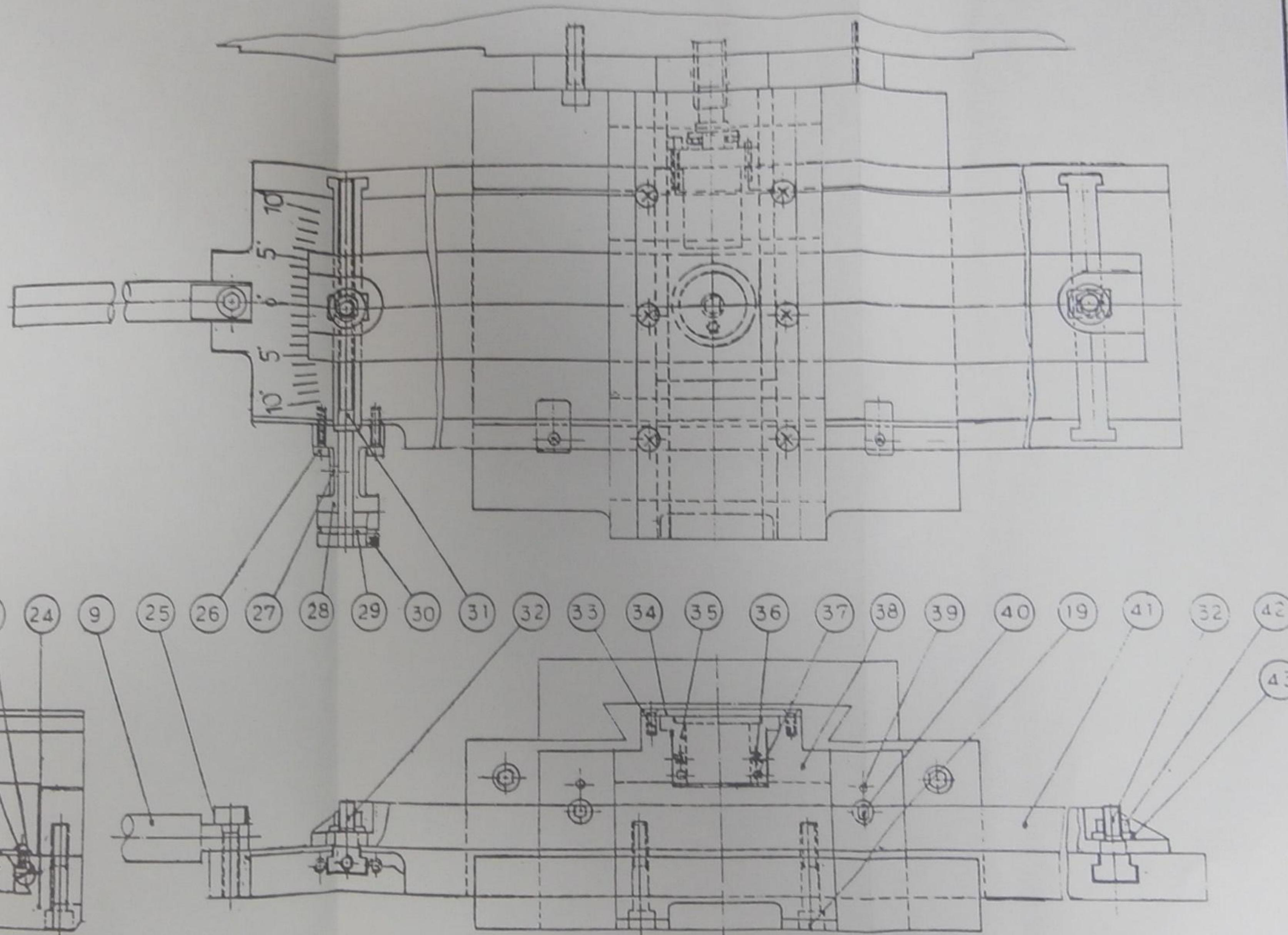
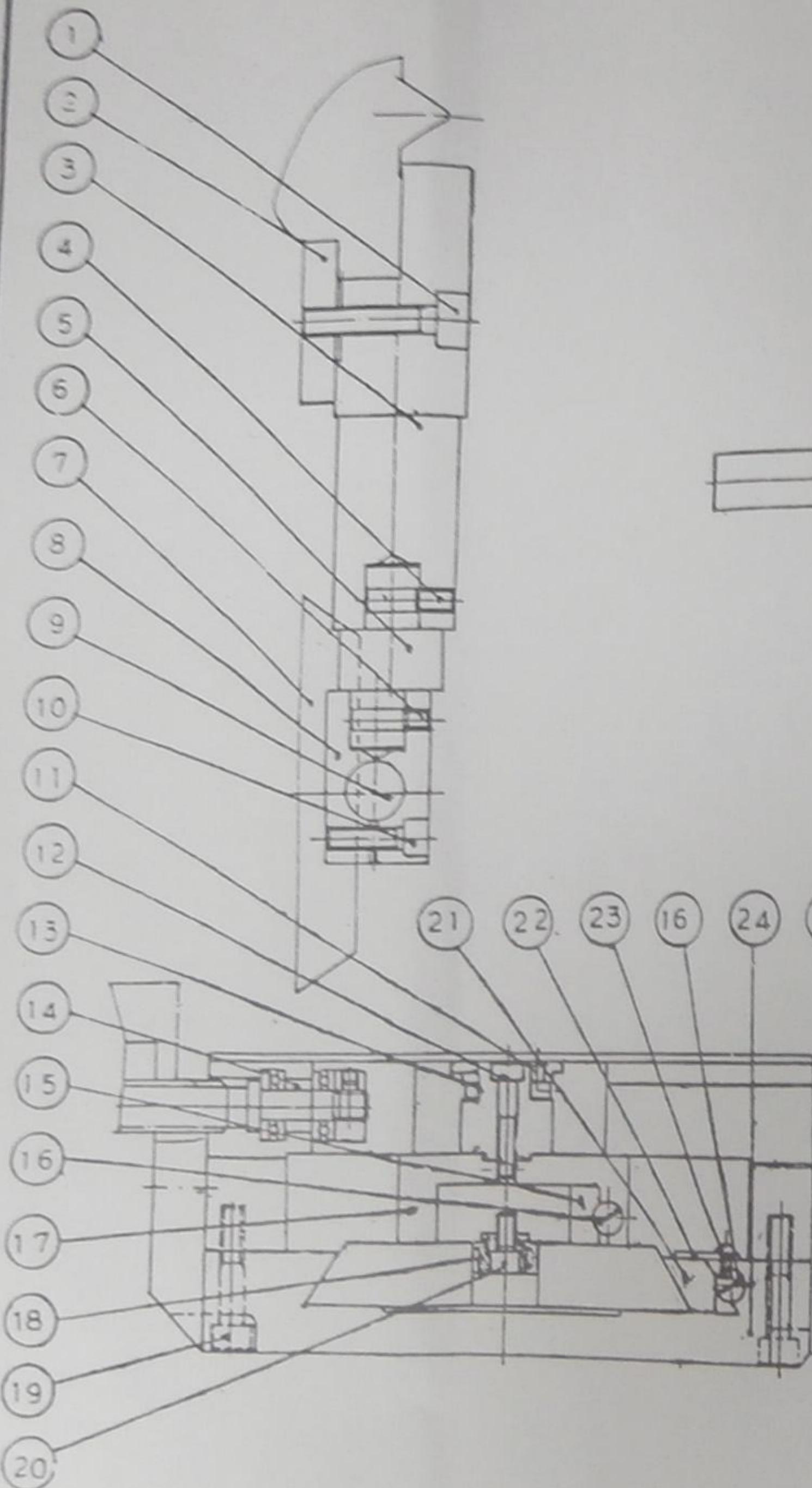
9. ATTACHMNT

9-6. INFEED PLUNGE CUTTING ATTACHMENT



9. ATTACHMNT

9-7. TAPER TURNING ATTACHMENT



9. ATTACHMENT (9-7. TAPER TURNING ATTACHMENT)

件號 NO.	圖 號 Part NO.	英文名稱 Part Name	中文名稱 Part Name	數量 Qty	規 格 Dimension
1	49719-A	Hexagon socket head bolt	六角承窩螺絲	2	M16x55
2	49721	Locating press plate	定位壓板	1	
3	49719	Pull rod fixed seat	拉桿固定座	1	
4	49719-B	Hexagon socket set screw	六角承窩固定螺絲	1	M10x10
5	49718	Eccentric connecting lever	偏心聯接桿	1	
6	49717-B	Hexagon socket set screw	六角承窩固定螺絲	1	M10x10
7	49702	Longitudinal slide plate	縱向滑板	1	
8	49717	Pull rod clamp	拉桿夾板	1	
9	49713	Pull rod	拉桿	1	
10	49717-B	Hexagon socket head bolt	六角承窩螺絲	1	M10x35
11	49724-A	Oil cup	油嘴	1	1/4"
12	49724-B	Hexagon socket head bolt	六角承窩螺絲	1	M8x45
13	49724	Upper locating sleeve	上定位軸套	1	
14	49708	Thrust plate	止推板	1	
15	49720	Gap adjusting pin	間隙調整梢	1	
16	49723	Adjusting screw	調整螺絲	4	與23019通用
17	49705	Rotation slide chair	旋轉滑座	1	
18	49704	Locating spindle	定位心軸	1	
19	49701-A	Hexagon socket head bolt	六角承窩螺絲	4	M10x45
20	49704-A	Hexagon socket head bolt	六角承窩螺絲	1	M8x16
21	49715	Gap adjusting gib	間隙調整板	1	
22	49722	Press plate	壓板	2	
23	49722-A	Cross recessed round screw	十字圓頭機器螺釘	2	M6x8
24	49701	Base	基座	1	
25	49713-A	Hexagon socket head bolt	六角承窩螺絲	1	M12x30
26	49711-A	Hexagon socket head bolt	六角承窩螺絲	2	M6x20
27	49711-B	Oil cup	油嘴	1	1/4"
28	49711	Thrust seat	止推座	1	
29	49714-A	Spring pin	彈簧梢	1	Φ4x35
30	49714	Hand wheel	手輪	1	
31	49710	Adjusting screw	調整螺桿	1	
32	49712	Nut	牽動螺帽	2	
33	49709-A	Cross counter sunk head screw	十字平頭機器螺絲	6	M6x6
34	49709	Upper press cover	上壓蓋	1	
35	49707	Cross slide	橫向滑座	1	
36	49708-A	Hexagon socket head bolt	六角承窩螺絲	2	M6x25
37	49708-B	Tapered pin	推拔梢	2	#3x25
38	49706	Fixed base	固定基座	1	
39	49701-B	Tapered pin	推拔梢	2	#4x25
40	49701-C	Hexagon socket head bolt	六角承窩螺絲	2	M12x40

9. ATTACHMNT

9-9. FACE PLATE AND CHUCK

