

MAXMILL

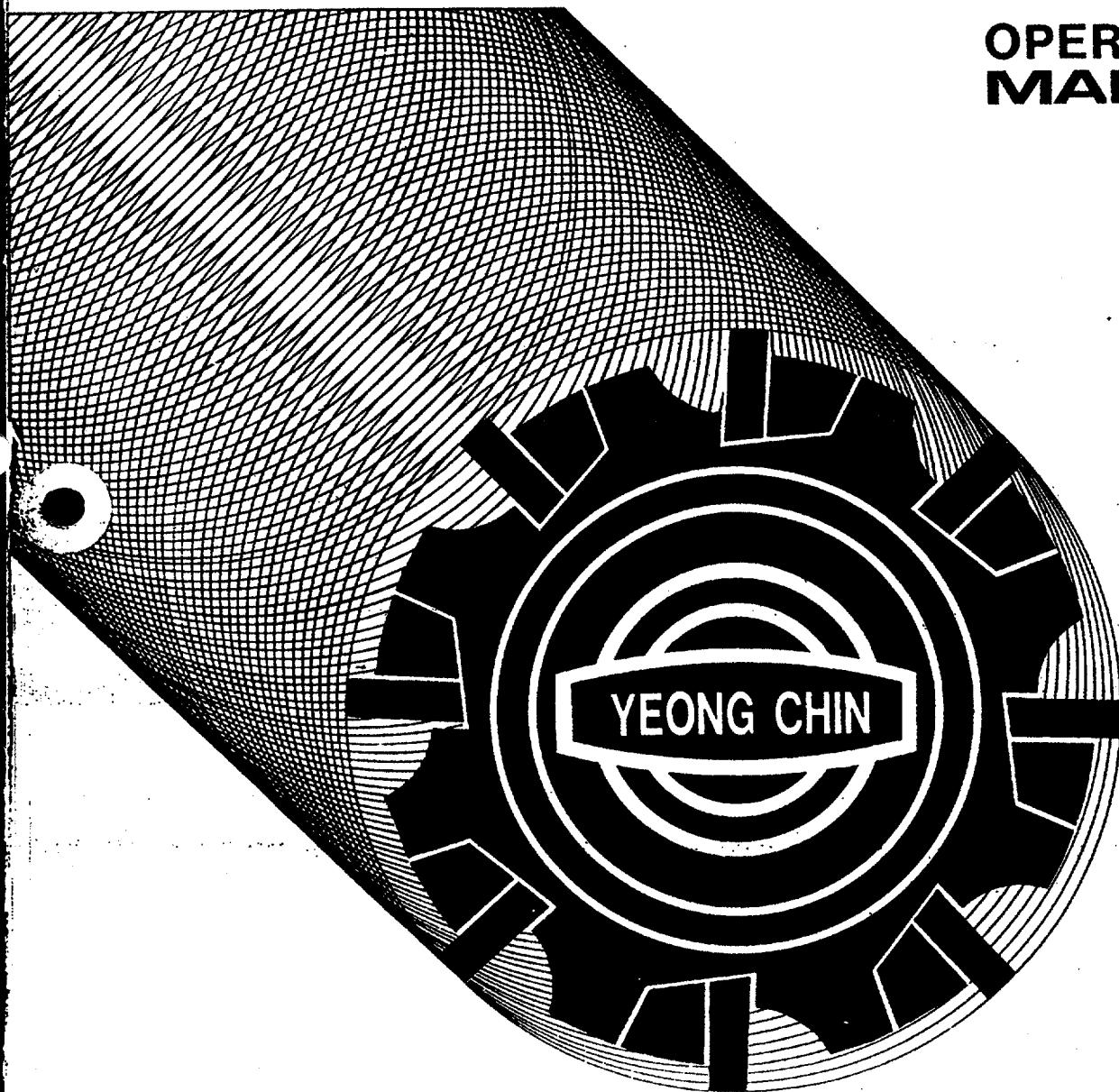
TURRET TYPE MILLING MACHINE

YC -1 $\frac{1}{2}$ VA
-1 $\frac{1}{2}$ VS



使用説明書

OPERATOR'S MANUAL



目 錄 CONTENTS

機型 MODEL

YC-1 1/2 VA	1
YC-1 1/2 VS	2

規格 SPECIFICATION

YC-1 1/2 VA機體Basic machine	3
YC-1 1/2 VS機體Basic machine	4
YC-1 1/2 VA頭部Head	5
YC-1 1/2 VS頭部Head	6

安裝 INSTALLATION

機器之搬動Handling	7
機器之清潔Cleaning	9
場地佈置圖Floor plan	10
地基、電源供給Foundation—Power supply	11
平車方法leveling	13
機器之歸零校正Initial setting	14

機器各部份名稱 LEGEND

YC-1 1/2 VA	15
YC-1 1/2 VS	16
YC-1 1/2 VA頭部Head	17
YC-1 1/2 VS頭部Head	18

操作 OPERATION

起動停車Starting stopping	19
機器控制Machine controls	20
YC-1 1/2 VA頭部控制Head controls	22
YC-1 1/2 VA頭部控制Head controls	26

潤滑 LUBRICATION

YC-1 1/2 VA頭部Head	30
YC-1 1/2 VS頭部Head	31
機體Basic machine	32

預防保養 PREVENTIVE MAINTENANCE

保養 MAINTENANCE

簡介Introduction	34
YC-1 1/2 VA頭部頂座Head top housing	35
YC-1 1/2 VS頭部頂座Head top housing	37
頭部Head	41
前後螺桿調整Cross screw adjustment	46
工作台螺桿調整Table screw adjustment	47
調整楔調整Gib strip adjustment	48

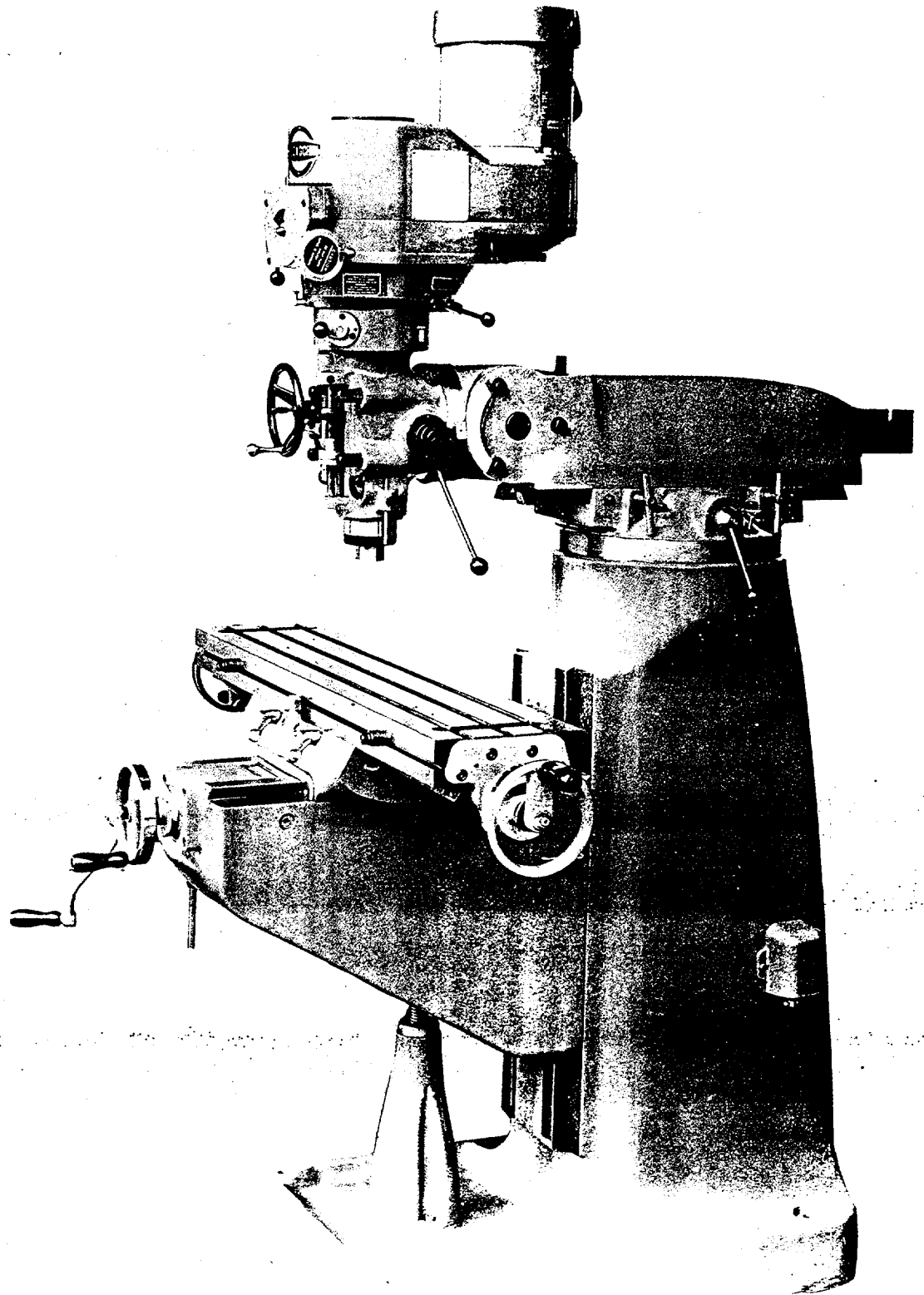
故障排除 TROUBLESHOOTING

檢驗規格表Inspection chart	51
電氣回路圖Electric circuit diagram	54

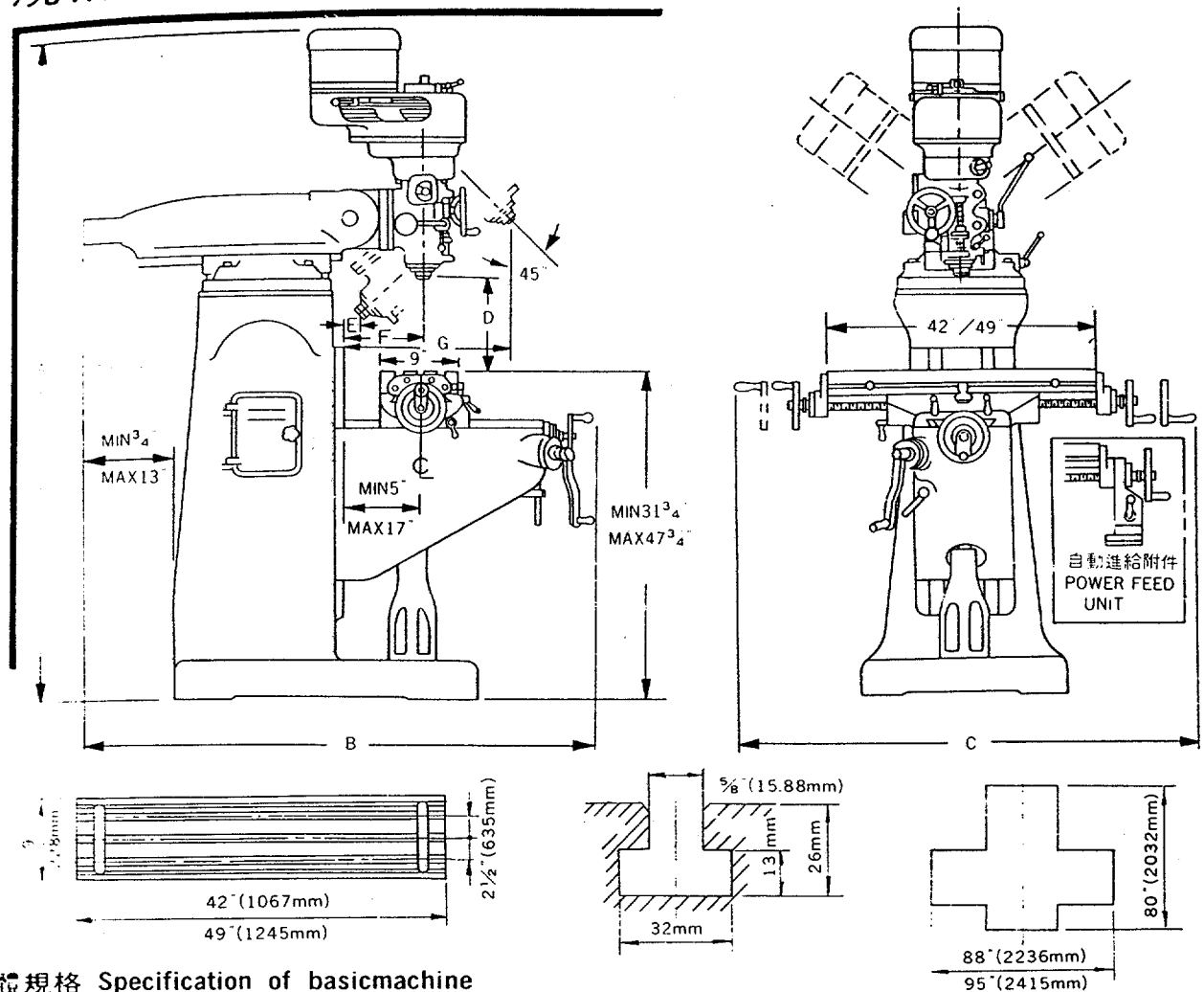
零件圖與零件表 SPARE PARTS DRAWING & PARTS LIST

YC-1 1/2 VA頭部頂座Head top housing	55
YC-1 1/2 VS頭部頂座Head top housing	59
YC-1 1/2 VS頭部後列齒輪Head back gear	62
頭部組件Head assembly	65

機 型 Model



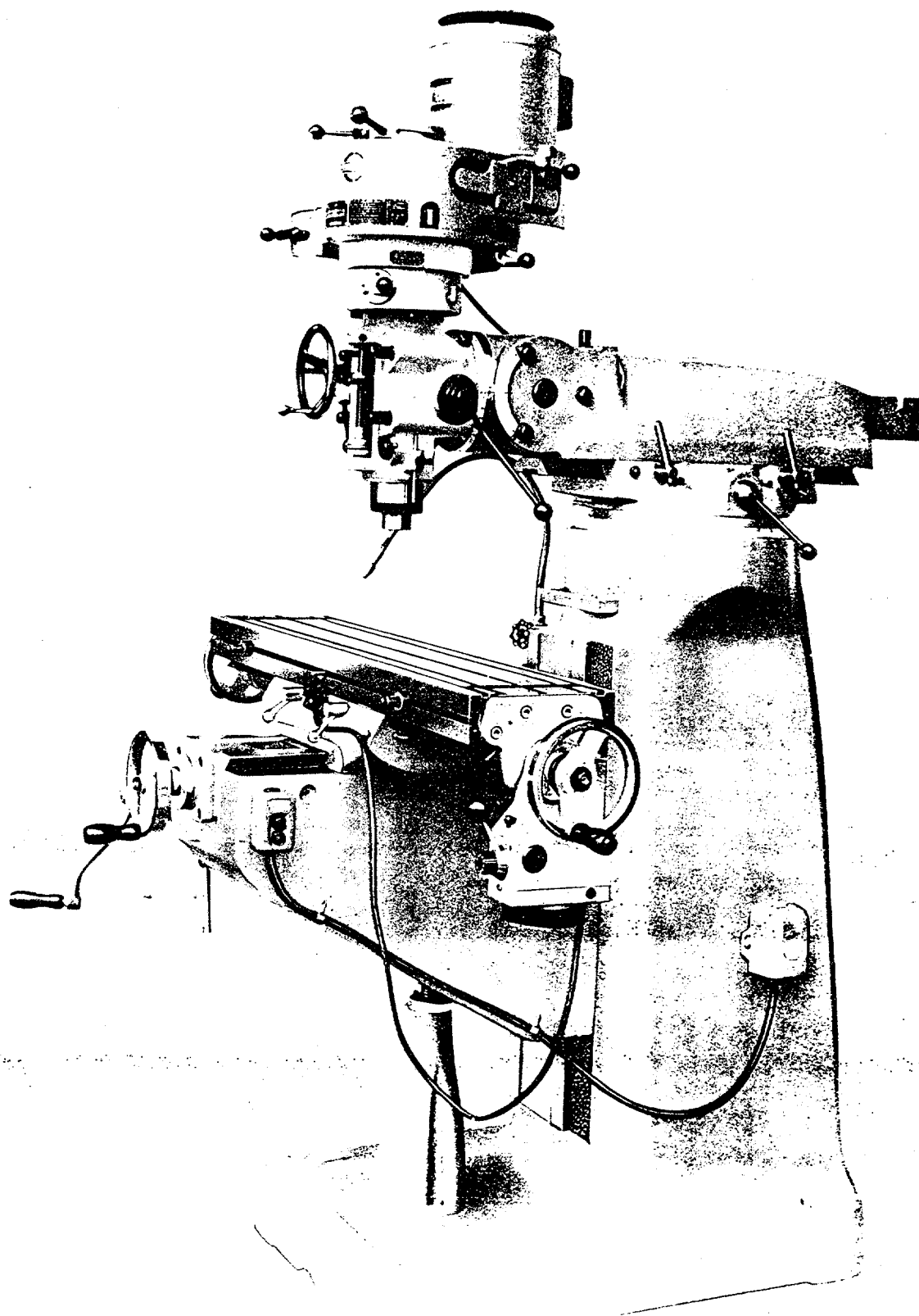
規格 Specification



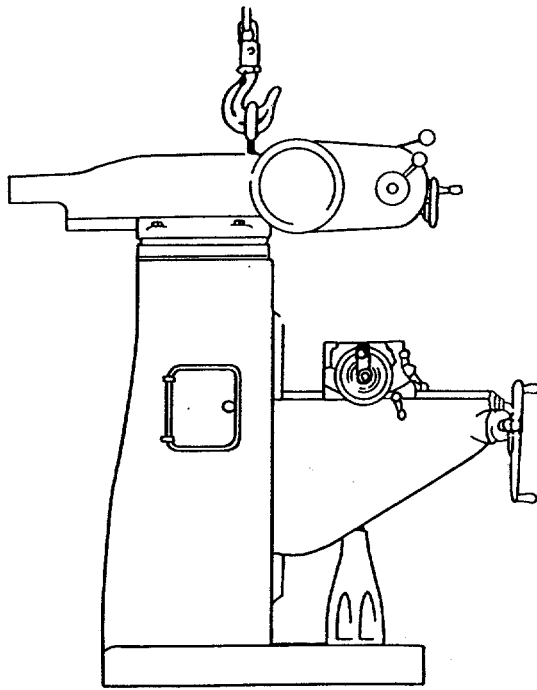
機體規格 Specification of basic machine

項 目	Items	INCHES(")		METRIC(mm)	
Table length	Table length	42	49	1067	1245
Longitudinal traverse (Manual)	Longitudinal traverse (Manual)	29 3/4	34 3/4	745	878
Longitudinal traverse (Power feed)	Longitudinal traverse (Power feed)	26 3/4	31 3/4	665	793
Cross traverse	Cross traverse	12		305	
Vertical traverse	Vertical traverse	16		406	
Number of Tee slots	Number of Tee slots	3			
Width and Centres	Width and Centres	5/8" at 2 1/2"		15.88 at 63.5	
Ram movement	Ram movement	12		305	
Spindle speeds—Number	Spindle speeds—Number	8			
Spindle speeds—Range r.p.m.	Spindle speeds—Range r.p.m.	80—2720 r.p.m.			
Quill feeds, per Rev. of spindle	Quill feeds, per Rev. of spindle	.0017-.0032-.0053		.04-.08-.13	
Motor H.P.	Motor H.P.	2			
Overall height	Overall height	80 1/2		2045	
Overall depth	Overall depth	63 3/4		1620	
Overall width	Overall width	87 3/4	94 3/4	2230	2408
Table to spindle gage line (min-max)	Table to spindle gage line (min-max)	0—18 3/8		0—466	
Head 45 inward (min-max)	Head 45 inward (min-max)	0—11 1/4		0—285	
Head 90 (min-max)	Head 90 (min-max)	6 3/4—19		171—482	
Head 45 outward (min-max)	Head 45 outward (min-max)	9—21		228—533	
Floor area occupied	Floor area occupied	88(95) × 80		2236(2415) × 2032	
Case space occupied	Case space occupied	55 1/2 × 58 × 76		1410 × 1473 × 1930	
Net weight	Net weight	2194 lb	2223 lb	997 kg	1010 kg
Gross weight	Gross weight	2972 lb	3001 lb	1350 kg	1363 kg

機 型 Model



安裝Installation



本機重量約為2200 lbs.(997kgs)

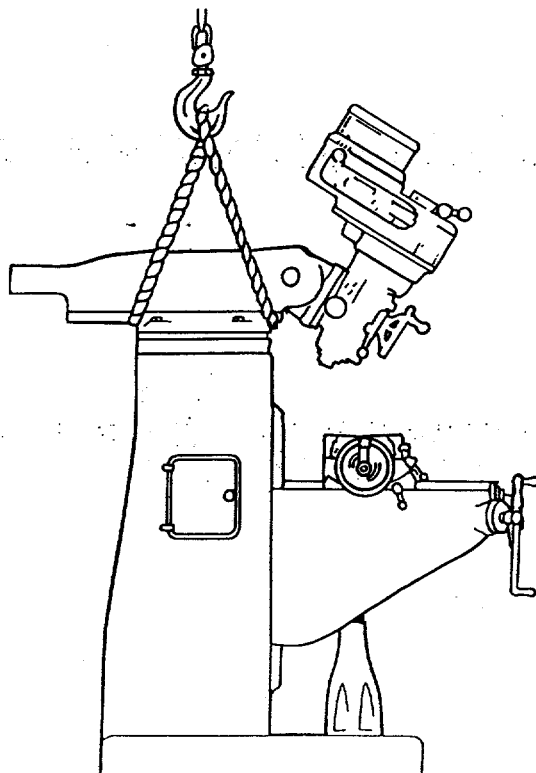
This machine approximately 2200 lb (997kgs)

方法 1

如左圖所示：在吊起機器之前，先將頭部迴轉並固定，然後用 $\frac{5}{8}$ " 惠氏螺紋之吊環將其確實鎖牢於伸出臂之螺紋孔內再行吊動。

METHOD 1

Insert $\frac{5}{8}$ " Whitworth eye bolt in tapped hole. Ensure bolt is fully secured before lifting. It is advisable to swivel head before lifting machine.



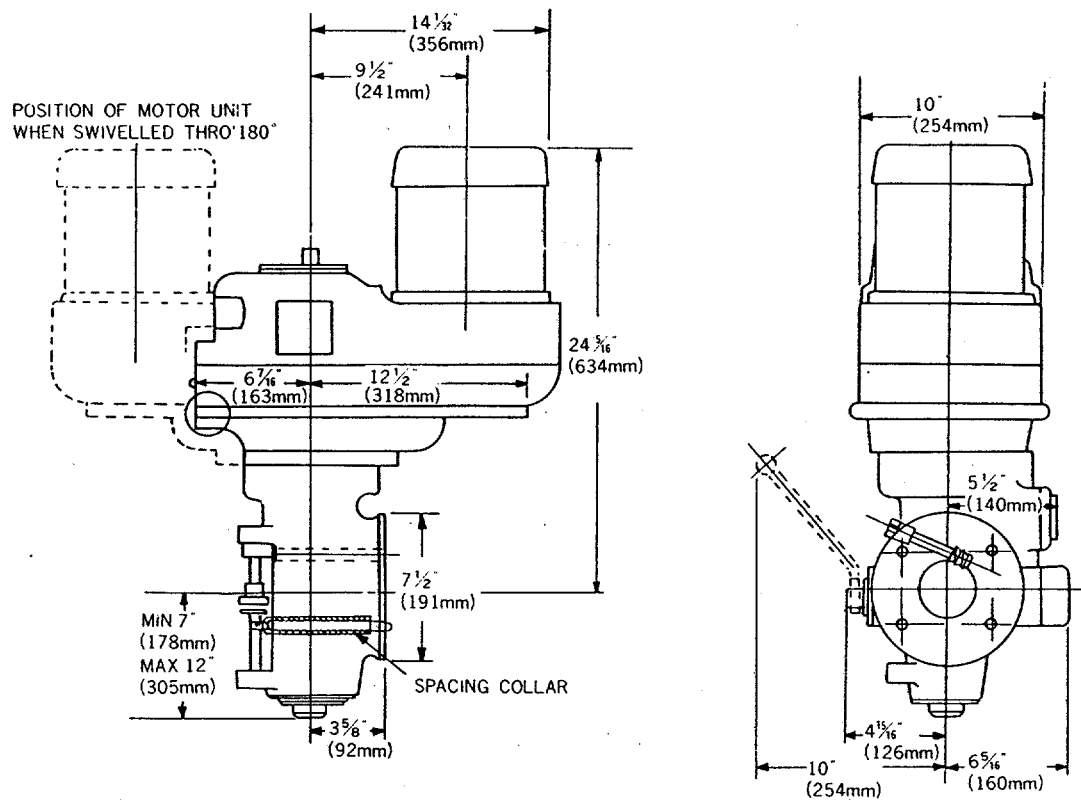
方法 2

如左圖所示：在吊起機器之前，先將頭部前傾並固定，然後掛上適當的繩索，並在繩與機器接觸處墊上軟布墊，再行吊動。

METHOD 2

Use rope sling as illustrated. Insert pads of soft cloth between rope and machined edges. It is advisable to tilt the head before lifting machine.

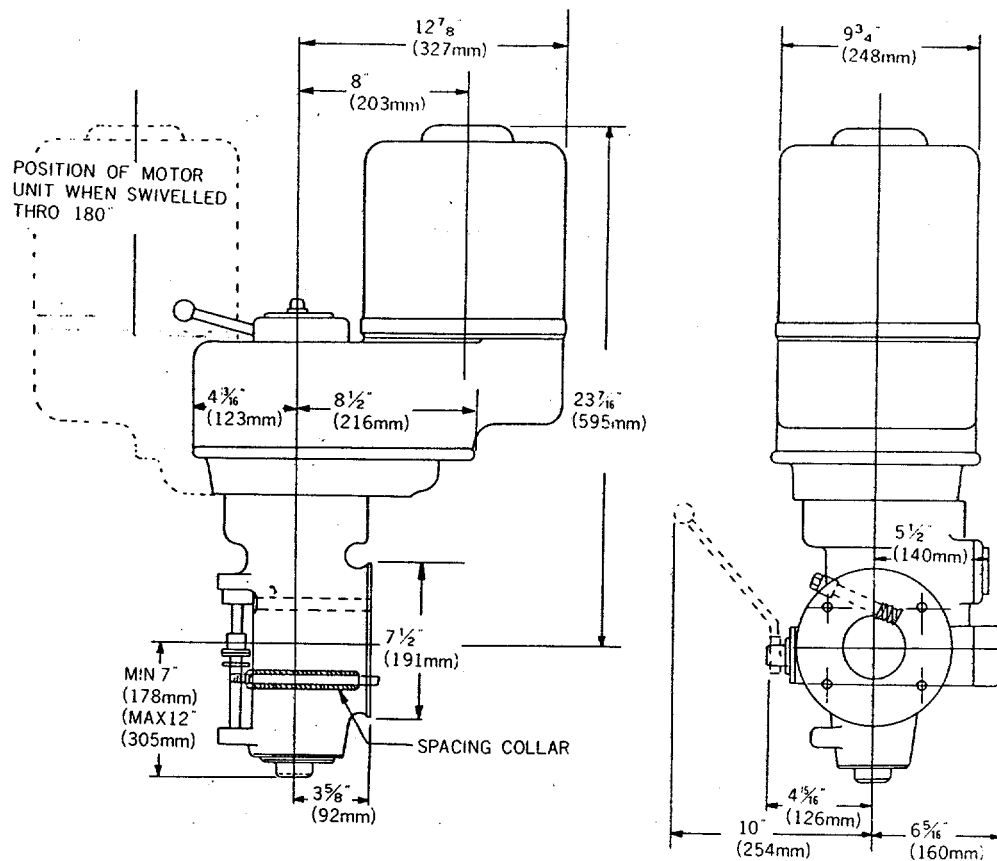
規格 Specification



頭部規格 Specification of head

主軸迴轉數(無段)(轉/每分) Spindle speeds R.P.M. (60 cycles)-60~4200 (Infinitely variable)
主軸一迴轉之自動進給量 Power feed per spindle revolution-.0017" .0032" .0053"(.04 .08 .13mm)
主軸端孔斜度 Spindle taper-R 8 or N. S. T. #30
主軸昇降套之進給行程 Quill travel-5" (127mm)
夾持範圍 Collet capacity- $\frac{1}{8}"$ to $\frac{3}{4}"$ (3mm-19mm)
馬達馬力數 H. P. of Motor - 2
重 量 Weight-196 lbs. (89kgs)

規格 Specification



頭部規格 Specification of head

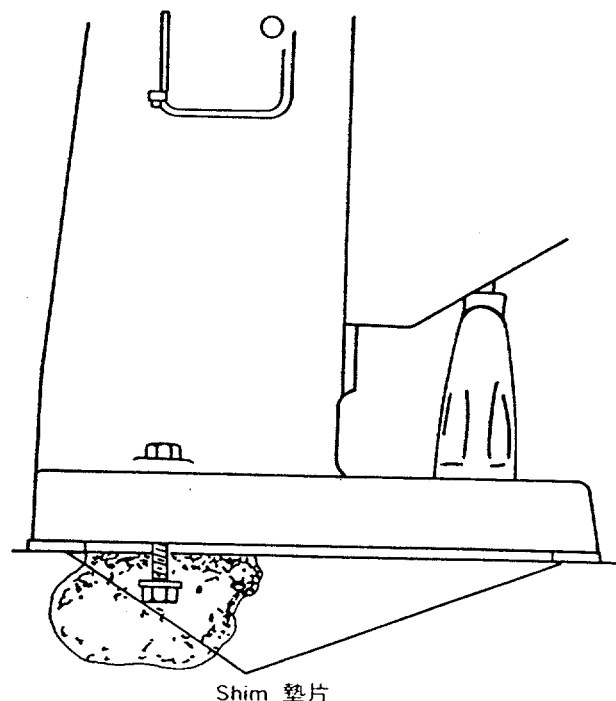
主軸迴轉數(轉/每分) Spindle speeds R.P.M. (60 cycles)-80,135,210,325,660,1115,1750,2720
主軸一迴轉之自動進給量 Power feed per spindle revolution-.0017" .0032" .0053" (.04 .08 .13mm)
主軸端孔斜度 Spindle taper-R 8 or N. S. T. #30
主軸昇降套之進給行程 Quill travel-5" (127mm)
夾持範圍 Collet capacity- $\frac{1}{8}$ " to $\frac{3}{4}$ " (3mm-19mm)
馬達馬力數 H. P. of Motor - 2
重 量 Weight-183 lbs. (83 kgs.)

安裝Installation

地基 FOUNDATION

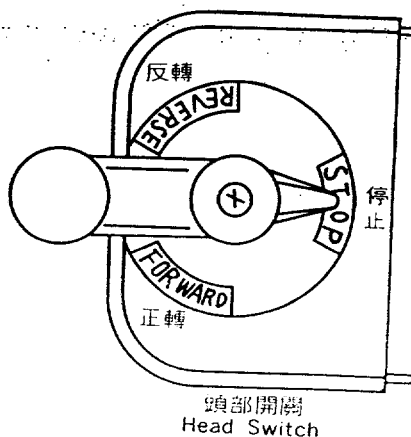
所有銑床應以螺栓鎖於一混凝土地基
本機器應安裝於固體水平地板或
防振墊片上以防止任何震動所產生的
移動。

Ideally all milling machines should
be bolted to a concrete foundation.
The machines however should be
placed on a solid level floor or
anti-vibration pads to prevent any
rocking movement.

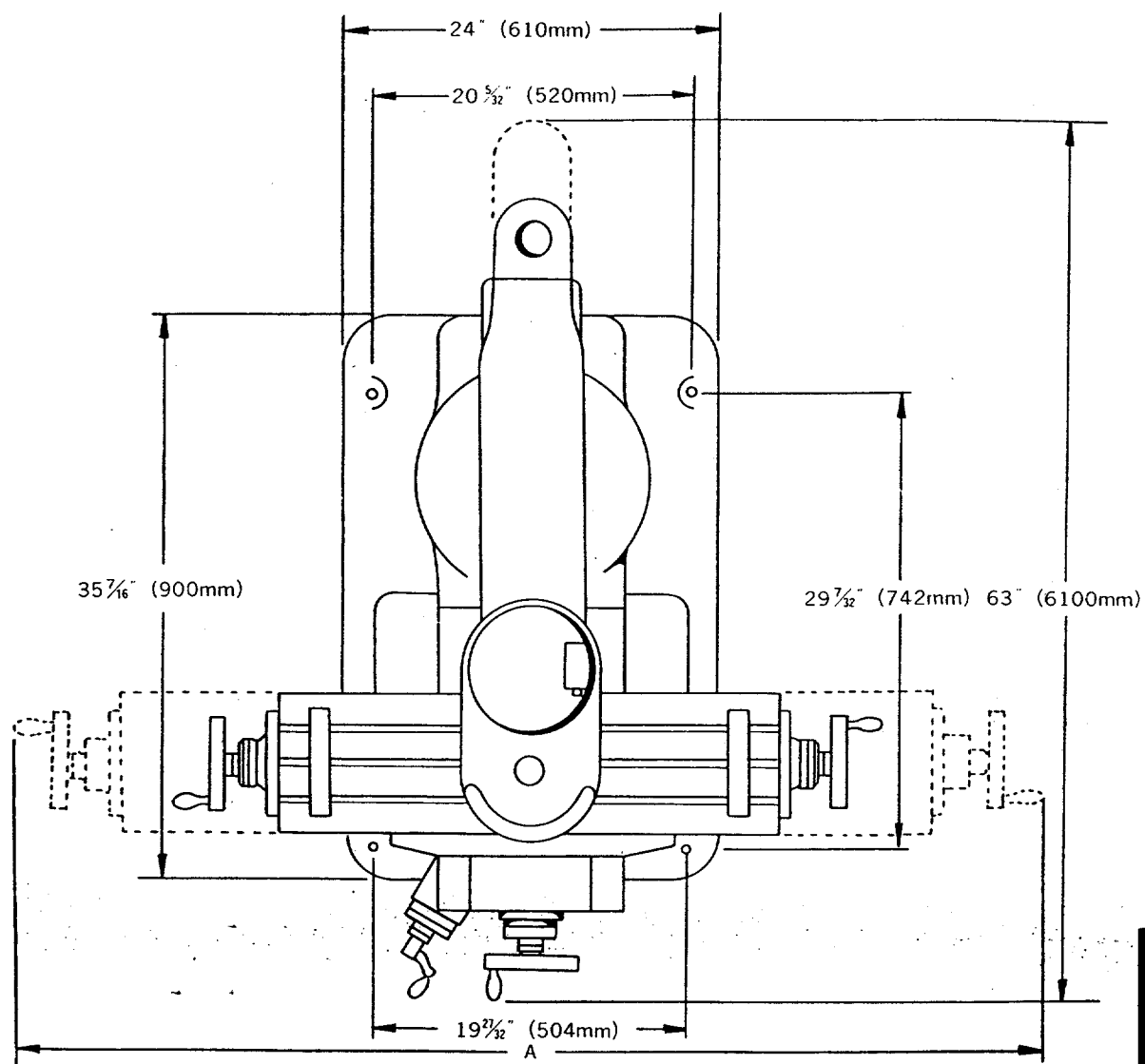


電源供給 Power supply

- a) 檢查馬達電源之電壓。
- b) 確使電源連接符合當地安全規章。注意當未裝控制盤時，頭部開關無過負荷保護作用。
- a) Check motor voltages against supply.
- b) Ensure that the supply is connected to comply with the local safety regulations. Note the Head switch has NO overload protection, when a control panel is not fitted.

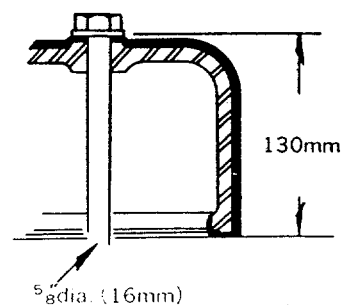


安裝Installation



'A'尺寸 'A' DIMENSION

工作台大小 Table size	機器長度 Plain machine	進給最大長度 Power Feed
42"	87 3/4" (2230mm)	87 3/4" (2230mm)
49"	94 3/4" (2408mm)	94 3/4" (2408mm)



安裝Installation

1. 移動任一滑道前先除去防銹劑。

1. Remove rust preventative before moving any slideways.

2. 防護層最好以清潔刷沾石腊油除去之，當護層軟化後以清潔破布擦乾淨。

2. The coating is best removed by using paraffin applied with a clean brush. When the coating has softened, remove with clean rags.

3. 以油或黃油潤滑潤滑點，參考此說明書的潤滑部份。

3. Oil or grease all lubrication points. Refer to the lubrication section of this manual.

安裝Installation

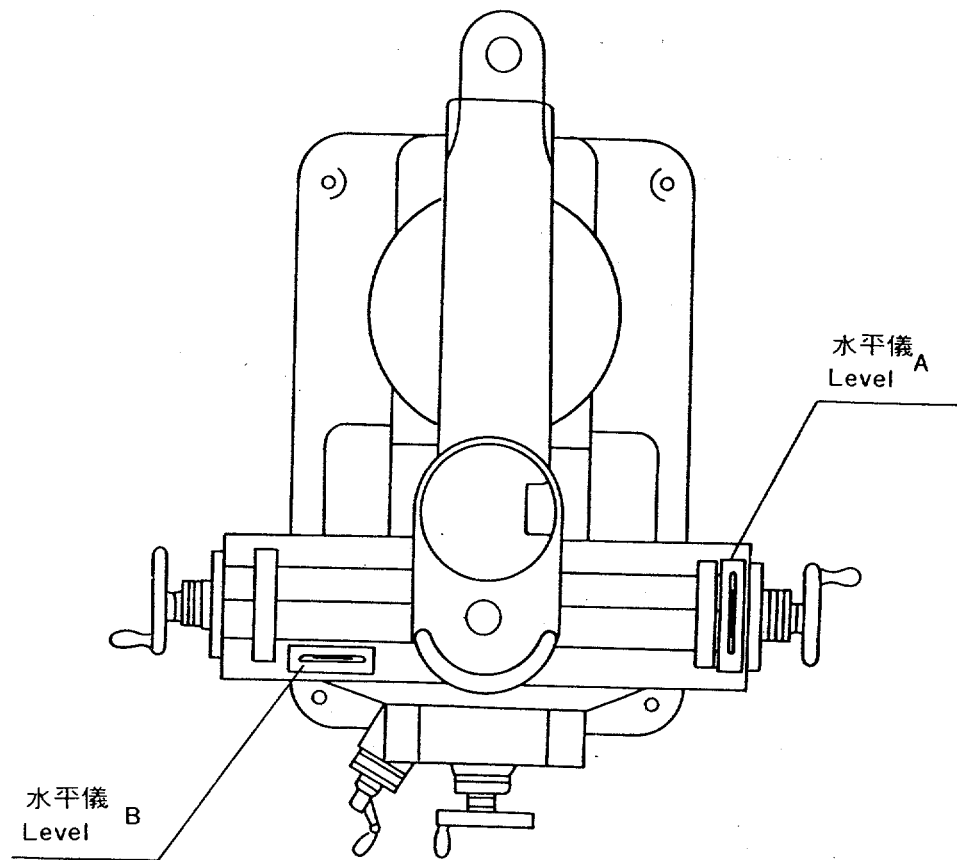
木箱搬運 Transfer package



當機器用木箱裝訂時，其搬運方法如圖示
利用堆高機。

Using lift truck to transfer the package as illustrated.

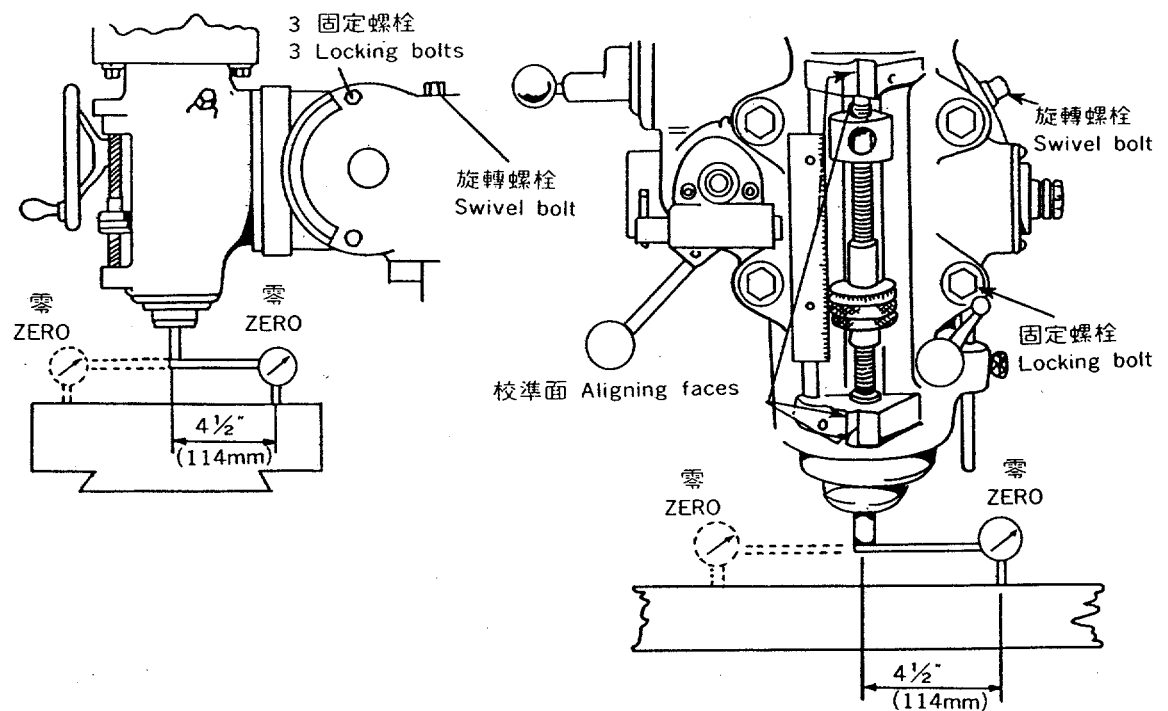
安裝 Installation



1. 用水平儀放在工作台上，如上圖示。
2. 檢查水平儀 A.B 的水平，其允許值 0.06mm/M .
3. 調整時用墊片墊入底床，調整畢鎖緊固定螺栓。

1. Putting levels on the table as illustrated.
2. Check the level A and B. The allowance approximate 0.06mm/M .
3. Putting the shims under the bad if necessary, lock the anchor bolt.

安裝 Installation



機器安裝後要校正頭部與工作台的垂直度，有兩個方法：

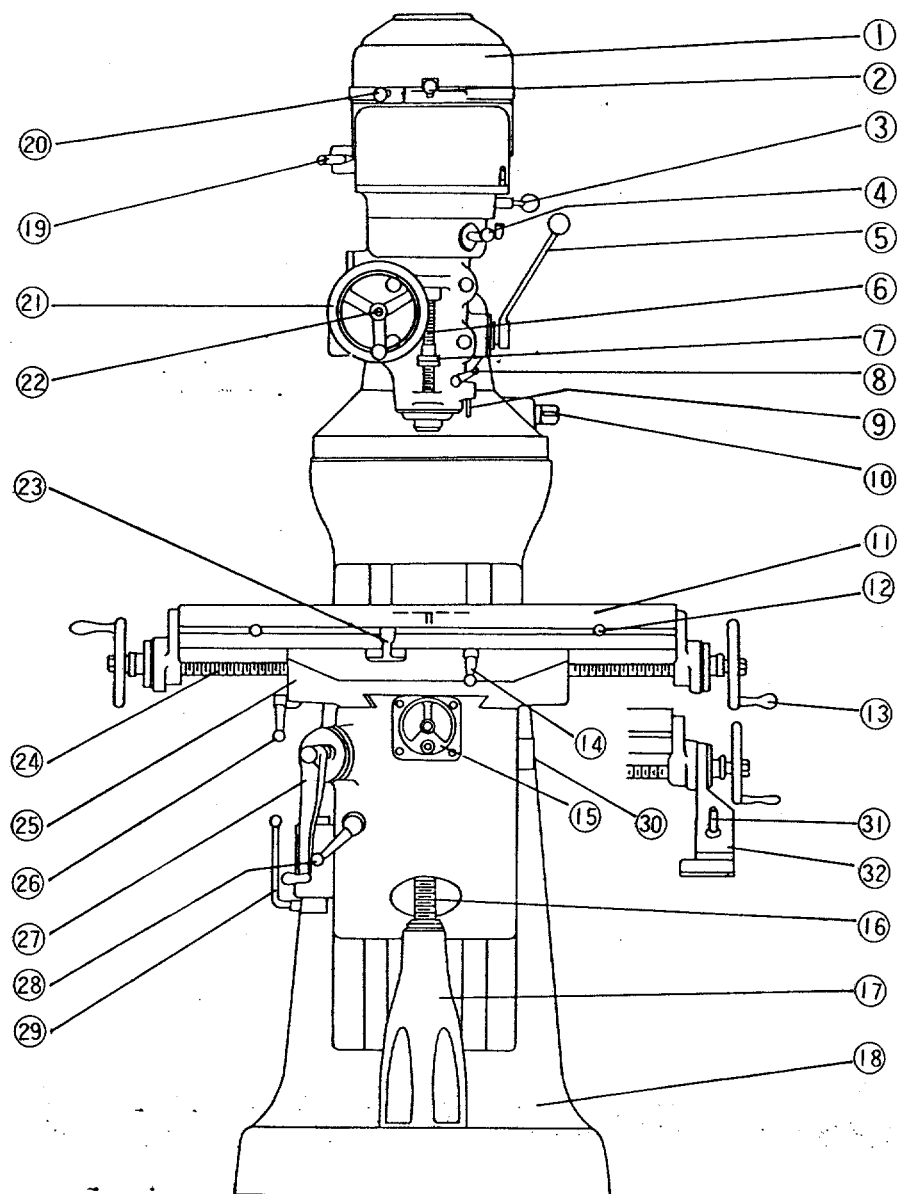
- I. 用一大的90°角尺放在工作台上。以此校正頭部的校準面，如上圖示。
 - II. 用百分錶裝在主軸端面上，以4 1/2"半徑之圓轉動，如上圖示。
- 校正後每個螺栓需鎖緊。

To set a milling head square to the table two methods are available:

- I. Using a large 90° setsquare mounted on the table, align faces with square.
- II. An indicator mounted in a spindle nose travelling in a 4 1/2" radius.

It is important that each axis is set separately and locked.

機器各部名稱Legend

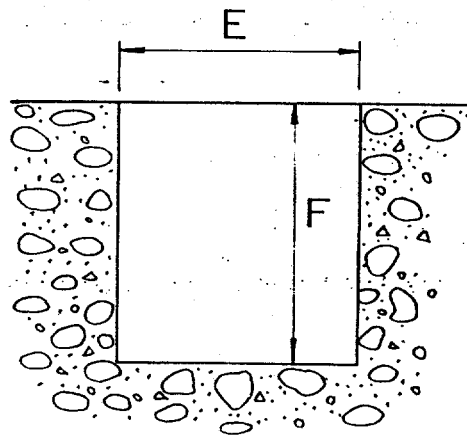
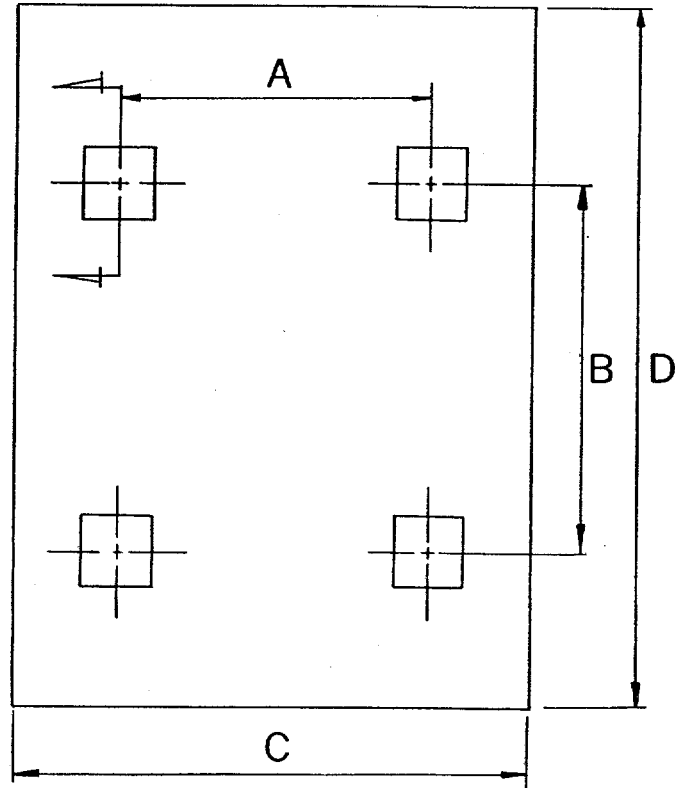


代號	名 稱	代號	名 稱
1	馬 達 Motor	17	昇降螺桿座 Elevating screw housing
2	主軸離合器桿 Spindle clutch lever	18	機 身 Basic
3	後列齒輪選擇柄 Back gear selector	19	控制開關 Control switch
4	自動進給驅動柄 Auto quill feed engagement	20	主軸剎車及固定桿 Spindle brake and lock lever
5	昇降套進給把手 Quill feed handle	21	手動微量進給手輪 Fine feed handwheel
6	深度控制螺桿 Micrometer depth control screw	22	進給方向控制鈕 Feed reverse knob
7	深度控制游標刻度環 Micrometer depth control	23	橫向進給控制塊 Longitudinal feed control
8	昇降套固定桿 Quill clamp lever	24	橫向進給螺桿 Longitudinal feed screw
9	指示器裝置桿 Dial indicator rod	25	鞍 座 Saddle
10	伸出臂調整把手 Ram adjustment handle	26	鞍座固定把手 Saddle lock handle
11	工作台 Table	27	昇降套進給把手 Elevating feed handle
12	工作台停止擋 Table stop	28	昇降套固定桿 Elevating lock lever
13	橫向進給手輪 Longitudinal feed handwheel	29	給油把手 On feed lever
14	工作台固定桿 Table lock lever	30	工作台自動進給開關 Table power feed switch
15	縱向進給手輪 Cross feed handwheel	31	工作台自動進給把手 Table powerfeed lever
16	昇降進給螺桿 Elevating screw	32	工作台自動進給附件 Table power feed unit

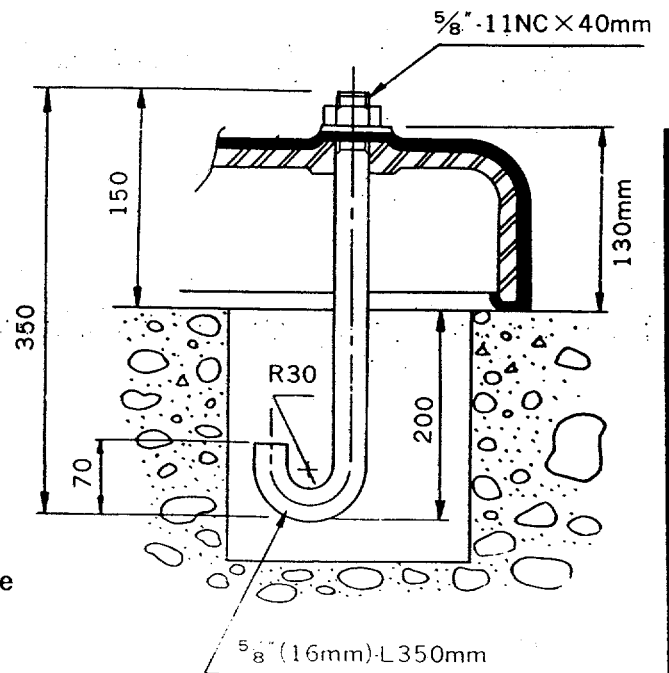
安裝Installation

地基平面 Foundation plane

尺寸	
A	520mm(20 ¹⁵ / ₃₂ ")
B	742mm(24 ⁷ / ₃₂ ")
C	1020mm(40 ⁵ / ₃₂ ")
D	1242mm(48 ⁷ / ₈ ")
E	200mm(7 ⁷ / ₈ ")
F	250mm(9 ²⁷ / ₃₂ ")



地基構築圖 Foundation Structure



機器各部名稱Legend

正轉/停止/反轉控制開關
Forward/Off/reverse
switch

主軸剎車及固定桿
Spindle brake and
lock lever

進給量選擇曲柄
Feed rate selector

昇降套停止檔
Quill depth stop

微量進給手輪
Fine feed
handwheel

進給方向控制鈕
Feed reverse knob

進給控制桿
Feed engagement lever

昇降套
Quill

主軸
Spindle

調速手輪
Speed selector
handwheel

高低速選擇把手
Spindle range
selector

自動進給驅動柄
Auto quill feed
engagement

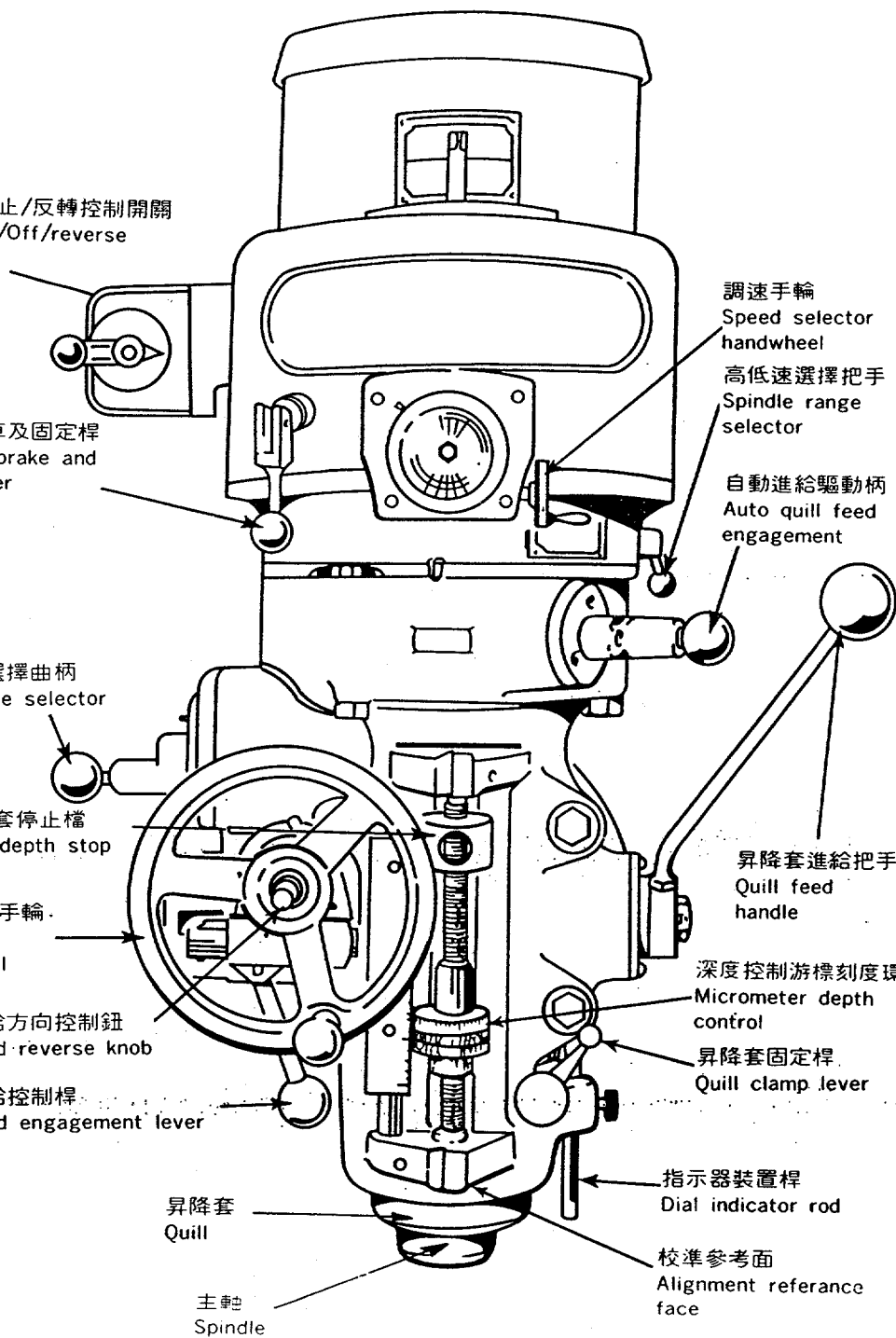
昇降套進給把手
Quill feed
handle

深度控制游標刻度環
Micrometer depth
control

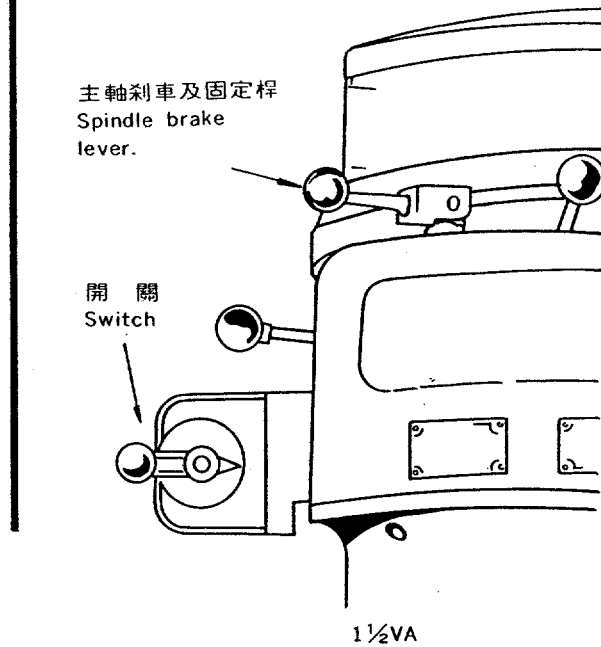
昇降套固定桿
Quill clamp lever

指示器裝置桿
Dial indicator rod

校準參考面
Alignment reference
face

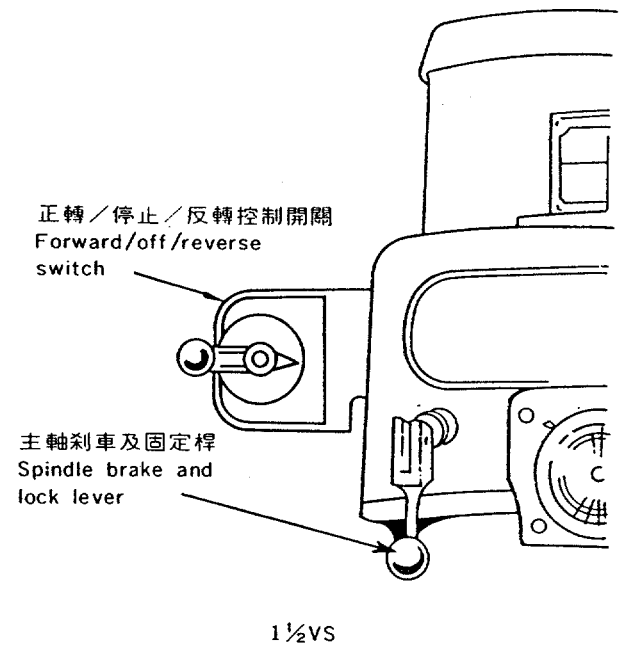


操作Operation



起 動 方 法

- 1) 接通電源。
- 2) 扳動頭部左側的開關至所需之轉向(正轉或反轉)。



Starting

- 1) Connect power.
- 2) Turn switch to required position (Forward or Reverse).

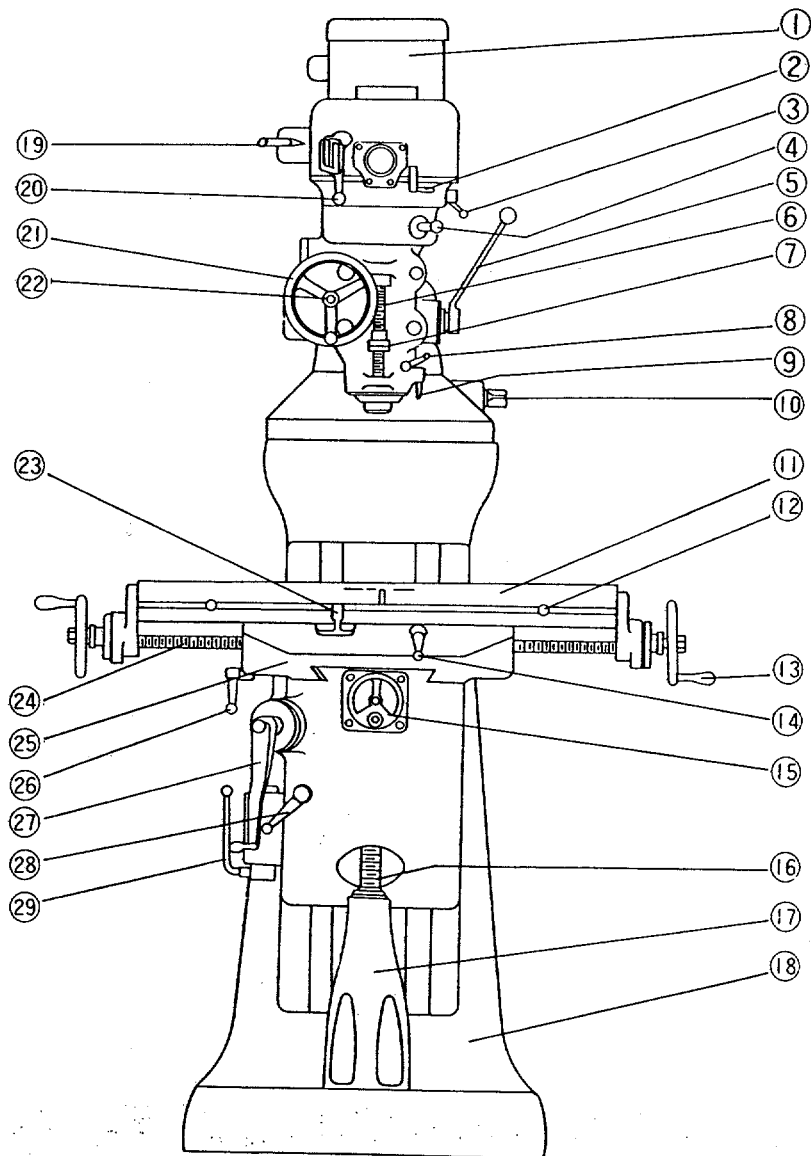
停 車 方 法

- 1) 停止進行中的進給。
- 2) 關掉電源開關。
- 3) 扳動主軸剎車桿，直到主軸完全停止。

Stopping

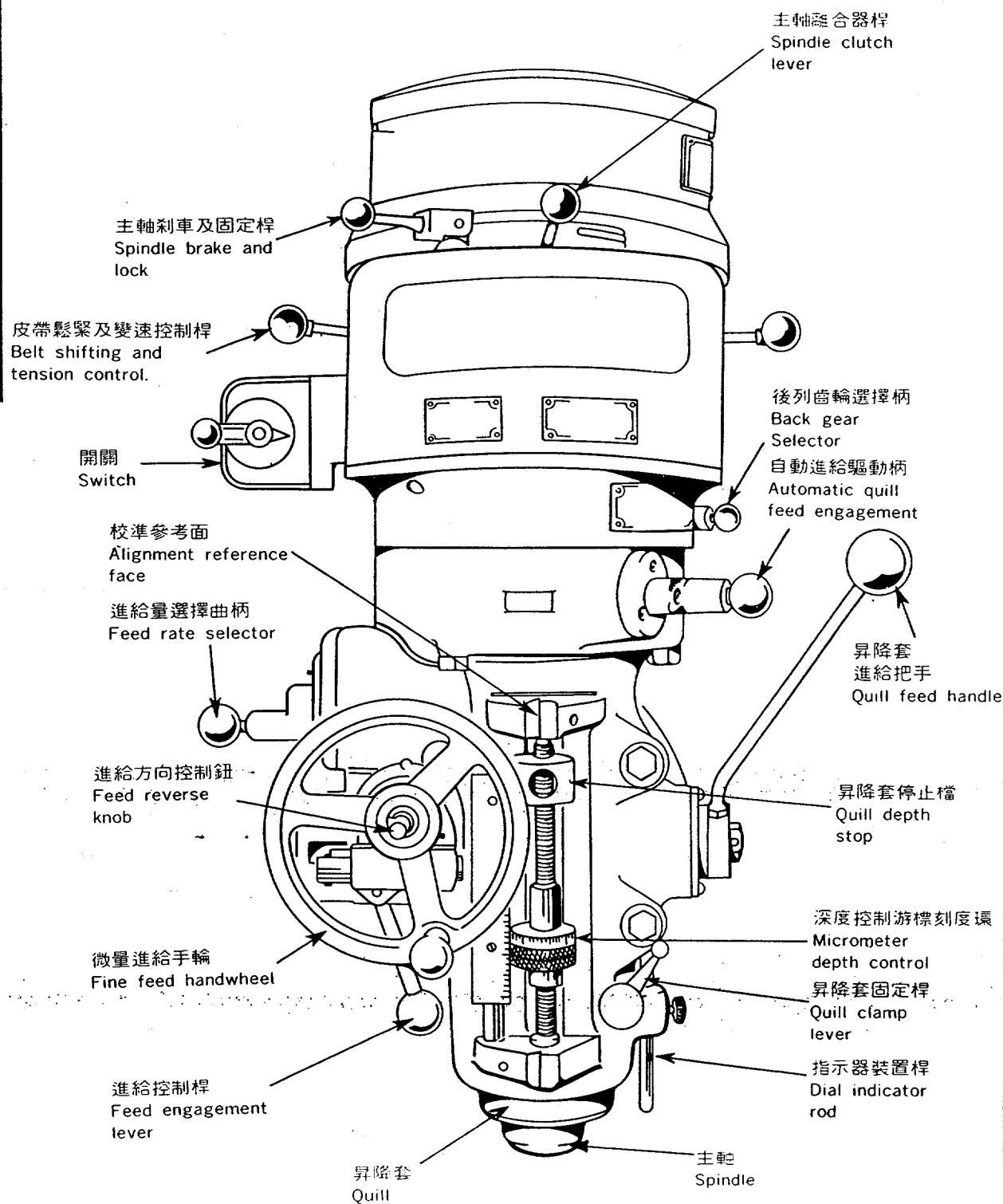
- 1) Stopping feed.
- 2) Turn switch to "off".
- 3) Turn spindle brake lever to "brake" till spindle stop.

機器各部名稱Legend



代號	名 稱	代號	名 稱
1	馬 達 Motor	17	昇降螺桿座 Elevating screw housing
2	調速手輪 Speed selector handwheel	18	機身 Basic
3	高低速選擇把手 Spindle range selector	19	控制開關 Control Switch
4	自動進給驅動柄 Auto quill feed engagement	20	主軸剎車及固定桿 Spindle brake and lock lever
5	昇降套進給把手 Quill feed handle	21	手動微量進給手輪 Finefeed handwheel
6	深度控制螺桿 Micrometer depth control screw	22	進給方向控制鈕 Feed reverse knob
7	深度控制游標刻度環 Micrometer depth control	23	橫向進給控制塊 Longitudinal feed control
8	昇降套固定桿 Quill clamp lever	24	橫向進給螺桿 Longitudinal feed screw
9	指示器裝置桿 Dial indicator rod	25	鞍 座 Saddle
10	伸出臂調整把手 Ram adjustment handle	26	鞍座固定把手 Saddle lock handle
11	工作台 Table	27	昇降套進給把手 Elevating feed handle
12	工作台停止擋 Table stop	28	昇降套固定桿 Elevating lock lever
13	橫向進給手輪 Longitudinal feed handwheel	29	給油桿 Oil feed lever
14	工作台固定桿 Table lock lever	30	
15	縱向進給手輪 Cross feed handwheel	31	
16	昇降套進給螺桿 Elevating screw	32	

機器各部名稱Legend



操作 Operation

b) 變更速度範圍

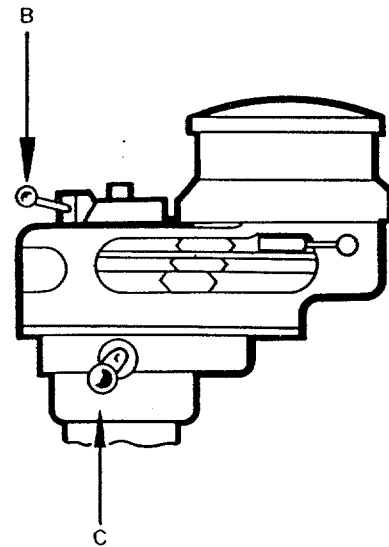
b) Change Range

1. 從直接變至後列齒輪驅動：

- I. 移動桿B至右方。
- II. 移動控制鈕'C'指向'IN'位置。

1. From direct to back gear drive:

- I. Move lever B to the right.
- II. Move knob 'C' to 'IN' position.



註：此時主軸轉向相反。

轉動馬達開關於相反位置，以得到與變速前相同的轉向。

NOTE: This action will REVERSE the spindle rotation.

Move motor switch to reverse position to obtain original direction of spindle rotation.

2. 從後列齒輪變至直接驅動：

- I. 移動桿'B'至前方位置。
- II. 用手轉動主軸直至感覺離合器嚙合為止。
- III. 移動控制鈕'C'指向'OUT'位置。

2. From back gear to direct drive:

- I. Move lever 'B' to the front position.
- II. Rotate spindle by hand until the clutches are felt to engage.
- III. Move knob 'C' to 'OUT' position.

註：此時主軸轉向相反。

轉動馬達開關於相反位置，以得到與變速前相同的轉向。

NOTE: This action will REVERSE the spindle rotation.

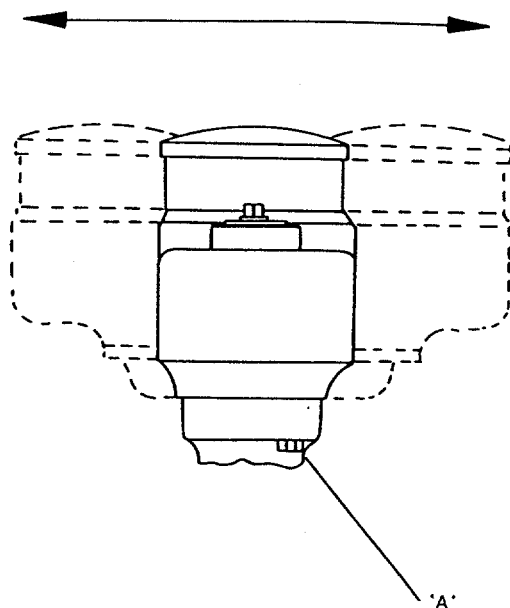
Move motor switch to reverse position to obtain original direction of spindle rotation.

操作Operation

1. 皮帶箱旋轉

SWIVEL BELT HOUSING

- I. 放鬆三固定螺帽'A' (完全地放鬆以避免束縛力存在)。
 - II. 旋轉至所需要之角度。
 - III. 鎖緊三固定螺帽最後鎖緊前先轉動主軸使栓槽正確對準。
- I. Slacken three Locking Nuts 'A'. (Retain sufficiently to stop binding).
 - II. Swivel to required angular setting.
 - III. Tighten three Locking Nuts; before finally securing, run spindle to give correct spline alignment.

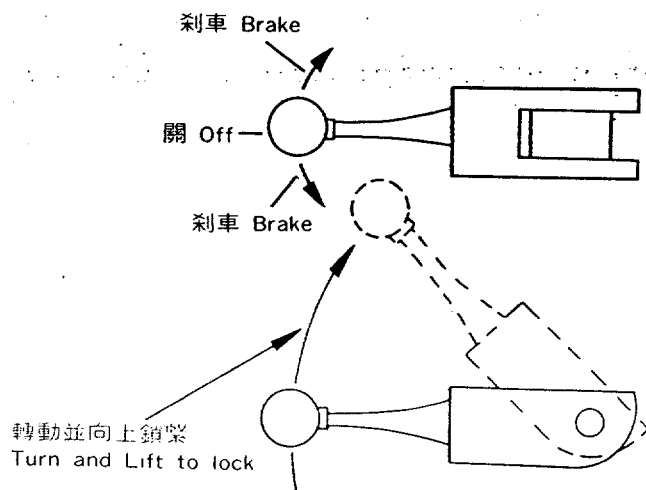


注意：鎖固定螺帽時，若三個不均勻會使昇降套產生剛性變化而造成昇降套內栓槽不正，使進給困難，此現象在操作昇降套進給時可感覺出來。

NOTE: Incorrect spline alignment can be caused by unequal tightening of the locking nuts 'A' causing varying stiffness of the quill feed which can be felt through the sensitive feed handle.

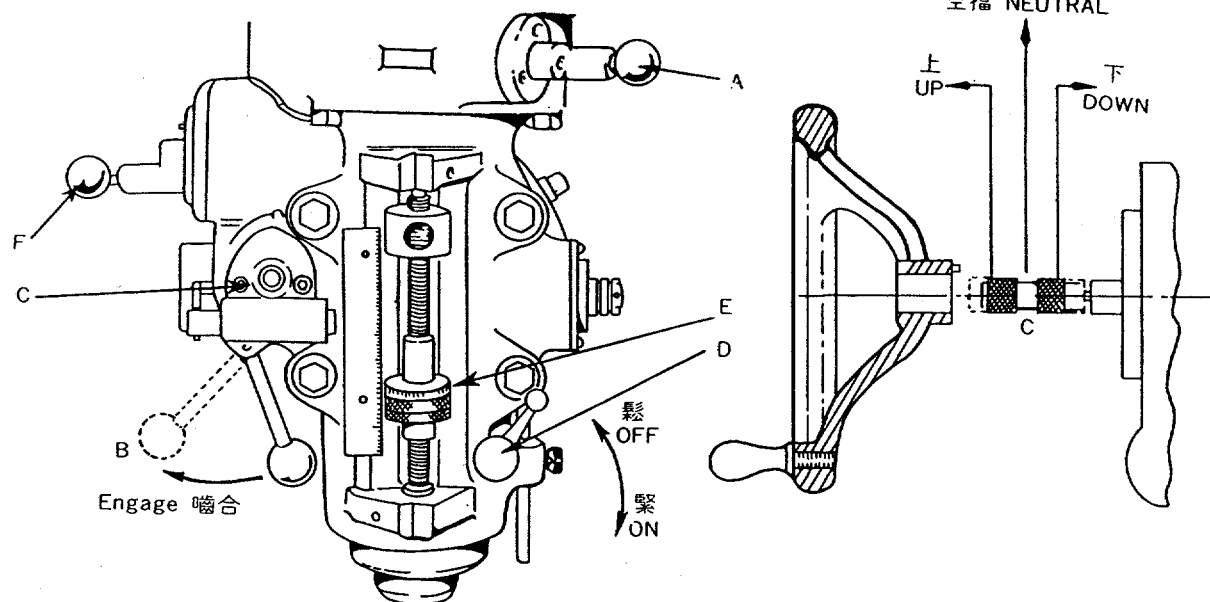
2. 主軸剎車

SPINDLE BRAKE



操作Operation

3. 昇降套進給 3. QUILL FEED



a) 手動微量進給操作步驟

- I. 鬆開自動進給驅動柄'A'。
- II. 將'C'置於中央(空擋)位置。
- III. 板動進給控制桿'B'使離合器嚙合。
- IV. 此時昇降套之進給，即可用手輪來控制。

b) 自動進給操作步驟

最大鉗孔徑為 $\frac{3}{8}$ "(9.5mm)

(材料：鋼)。

- I. 放鬆昇降套固定桿'D'。
- II. 調整游標指示環'E'至所需要之深度。
- III. 板動自動進給驅動柄'A'。(馬達要停止)
- IV. 由進給量控制柄'F'選擇進給量。
- V. 由進給方向控制鈕'C'選定進給方向。
- VI. 板動進給控制桿'B'使離合器嚙合。
- VII. 這時昇降套即可行自動進給。

注意：當三軸轉速超過3000轉／每分時，勿使用自動進給。

a) FINE HAND FEED

- I. Disengage Auto Quill Feed 'A'.
- II. Locate 'C' in mid (neutral) position.
- III. Engage Feed Trip Lever 'B'.
- IV. The Quill is now under handwheel control.

b) AUTOMATIC FEED

Maximum loading $\frac{3}{8}$ " (9.5mm) dia. drill in steel.

- I. Ensure quill lock is off 'D'.
- II. Set micrometer dial to required depth 'E'.
- III. Engage auto quill feed 'A'. (when motor has stopped).
- IV. Select feed rate 'F'.
- V. Select feed direction 'C'.
- VI. Engage feed trip lever 'B'.
- VII. The Quill is now automatic feed.

NOTE: Do not engage quill feed 'A' over 3000 R.P.M.

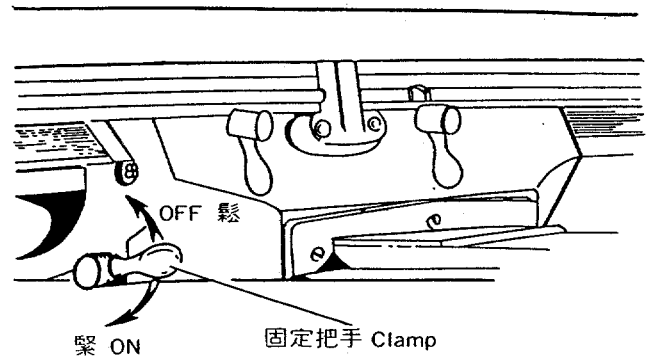
操作 Operation

1. 固定鞍座與升降座之滑動。

Clamping the saddle knee slide.

固定時，用適當的壓力即可，用力太大會變形及使得工作台彎曲。

Moderate pressure is sufficient. Excess pressure will cause distortion and make the table stiff to wind.

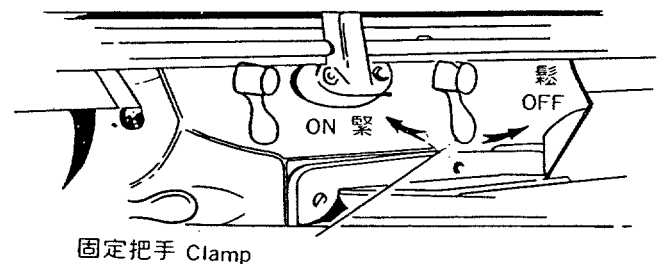


2. 固定工作台與鞍座間之滑動。

Clamping the table saddle slide.

固定時，用適當的壓力即可。

Moderate pressure is sufficient.

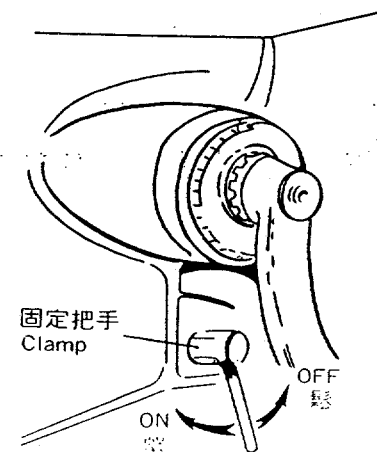


3. 固定升降座與機身之滑動。

Clamping the knee column slide.

固定時，用適當的壓力即可。

Moderate pressure is sufficient.

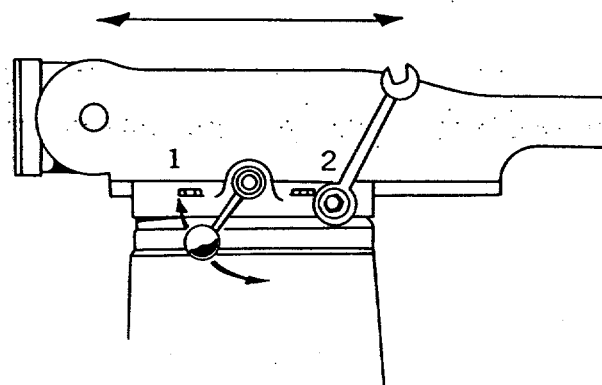
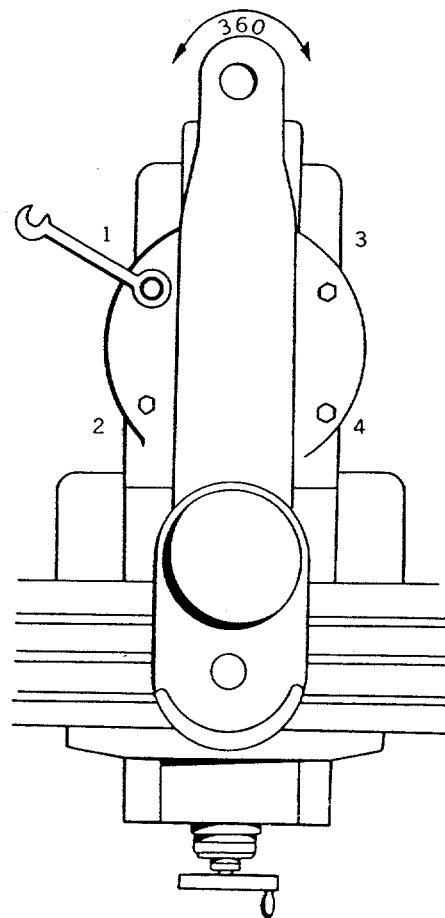


操作 Operation

4. 轉塔之旋轉

SWIVEL TURRET

- a) 用固定板手，放鬆四個螺栓，
- b) 旋轉至所需要的角度。。
- c) 鎖緊四個螺栓。
- a) Use spanner and unlock the 4 bolts.
- b) Index to the required setting.
- c) Lock the 4 bolts.



5. 伸出臂之移動

MOVE RAM SLIDE

- a) 用固定板手放鬆兩個螺栓。
- b) 轉動控制把手至所需要之位置。
- c) 固定(先鎖後面的螺栓)。
- a) Use spanner and unlock the two bolts.
- b) Turn the handle to move the slide to the desired position.
- c) Lock, tightening the rear bolt first.

操作 Operation

b) 變更速度範圍。

b) Change Range.

1. 從直接變至後列齒輪驅動：

I. 開關'B'扭至off。

II. 移動'C'桿經空擋至低速擋。

(這時主軸轉向相反)

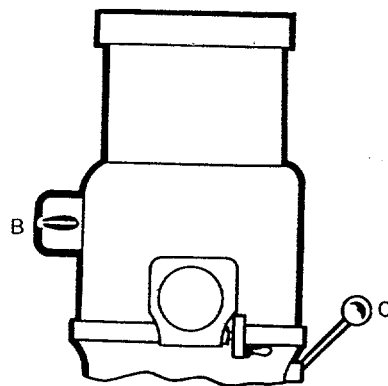
III. 開關'B'扭至低速。

1. FROM DIRECT TO BACK GEAR DRIVE:

I. Switch 'B' to OFF.

II. Move lever 'C' through neutral to LOW. (This reverses the spindle rotation).

III. Switch 'B' to LOW.



主軸在運轉中勿變換把手'C'之位置！
DO NOT CHANGE RANGE WHILST
THE SPINDLE IS RUNNING

2. 從後列齒輪變至直接驅動：

I. 開關'B'扭至off。

II. 移動桿'C'經過空擋至高速擋。

III. 用手轉動主軸直至感覺離合器
嚙合為止。

IV. 開關'B'扭至高速。

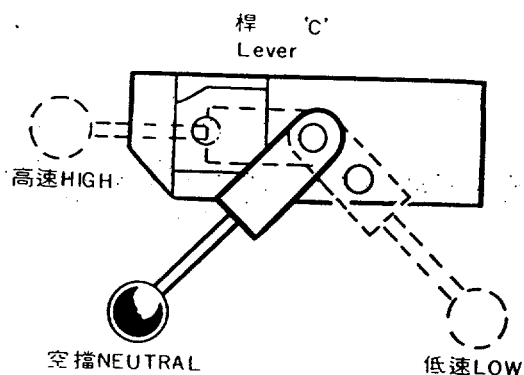
2. FROM BACK GEAR TO DIRECT DRIVE:

I. Switch 'B' to OFF.

II. Move lever 'C' through neutral to HIGH.

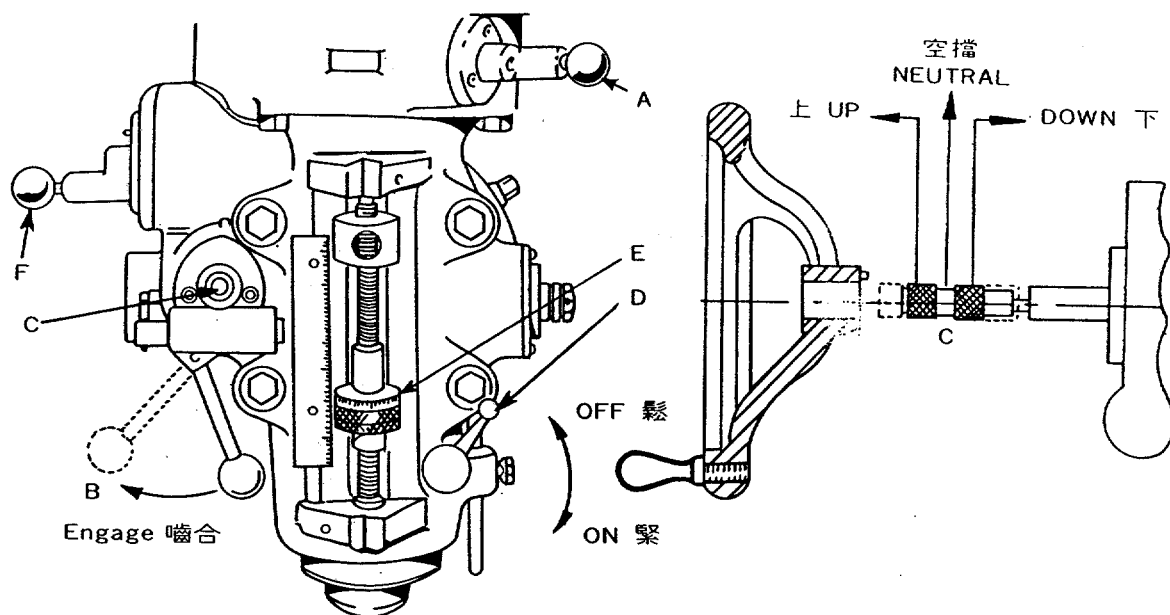
III. Rotate spindle by hand until the clutches are felt to engage.

IV. Switch 'B' to HIGH.



操作 Operation

3. 昇降套進給 3. QUILL FEED



a) 手動微量進給操作步驟

- I. 鬆開自動進給驅動柄'A'。
- II. 將'C'置於中央(空擋)位置。
- III. 扳動進給控制桿'B'使離合器啮合。
- IV. 此時昇降套之進給即可用手輪來控制

a) FINE HAND FEED

- I. Disengage Auto Quill Feed 'A'.
- II. Locate 'C' in mid (neutral) position.
- III. Engage Feed Trip Lever 'B'.
- IV. The Quill is now under handwheel control.

b) 自動進給操作步驟

最大鉗孔徑為 $\frac{3}{8}$ " (9.5mm)
(材料：鋼)

- I. 放鬆昇降套固定桿'D'。
- II. 調整游標指示環'E'至所需要之深度。
- III. 扳動自動進給驅動柄'A'。
(馬達要停止)
- IV. 由進給量選擇柄'F'選擇進給量。
- V. 由進給方向控制鈕'C'選定進給方向。
- VI. 扳動進給控制桿'B'。
- VII. 這時昇降套即可行自動進給。

b) AUTOMATIC FEED

Maximum loading $\frac{3}{8}$ " (9.5mm) dia. drill in steel.

- I. Ensure quill lock is off 'D'.
- II. Set micrometer dial to required depth 'E'.
- III. Engage auto quill feed 'A'.
(when motor has stopped).
- IV. Select feed rate 'F'.
- V. Select feed direction 'C'.
- VI. Engage feed trip lever 'B'.
- VII. The Quill is now automatic feed.

注意：(當主軸速度超過3000轉／每
分時勿使用自動進給)。

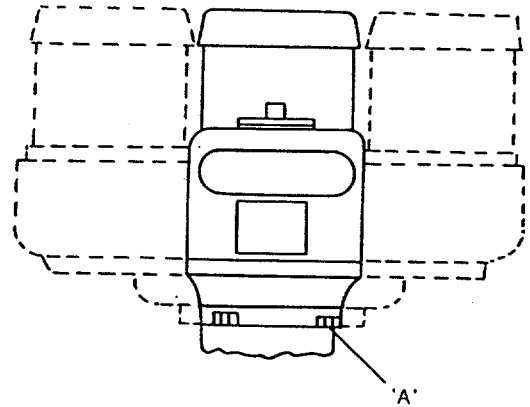
NOTE: (Do not engage quill feed 'A'
over 3,000 R.P.M.)

操作 Operation

1. 皮帶箱旋轉

SWIVEL BELT HOUSING

- I. 放鬆三個固定螺帽'A' (完全地放鬆以避免束縛力存在)。
 - II. 旋轉至所需要之角度。
 - III. 鎖緊三個固定螺帽, 最後鎖緊前轉動主軸使栓槽正確對準。
- I. Slacken 3 Locking Nuts 'A' (Retain sufficiently to stop binding).
 - II. Swivel to required angular setting.
 - III. Tighten 3 Locking Nuts; before finally securing, run spindle, to give correct spline alignment.

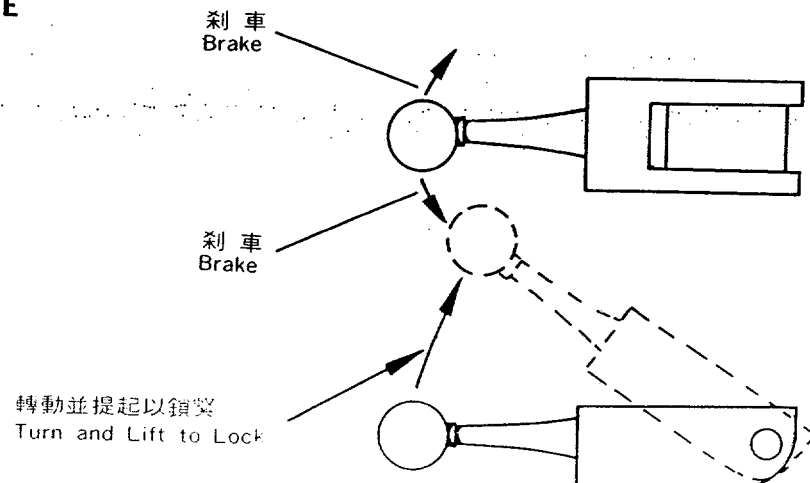


註：鎖固定螺帽時，若三個不均勻會使昇降套產生剛性變化，而造成昇降套內栓槽不正，使進給困難，此現象在操作昇降套進給時可感覺出來。

NOTE: Incorrect spline alignment can be caused by unequal tightening of the locking nuts 'A' causing varying stiffness of the quill feed which can be felt through the sensitive feed handle.

2. 主軸剎車

SPINDLE BRAKE

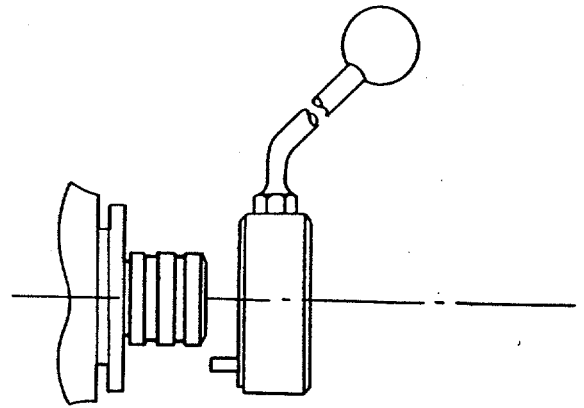


操作 Operation

4. 昇降套快速手動進給

4. QUILL SENSITIVE HAND FEED

- I. 置手柄於輪轂上。
- II. 選擇最適當之位置。
- III. 推動手柄直至定位銷嚙合。
- I. Place the handle on the boss.
- II. Select the most suitable position.
- III. Push home until the locating pin engages.



5. 主軸速度 (變速前停止馬達)

5. SPINDLE SPEEDS

(Stop motor before changing speed).

80	135	210	325
660	1115	1750	2720

後列齒輪傳動
BACK GEAR
直接傳動
DIRECT

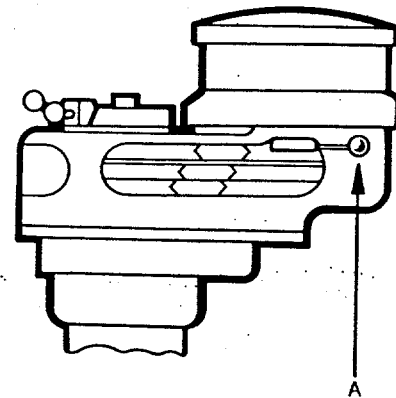
6. 速度變換 CHANGE SPEED

a) 同範圍內之變速

- I 關掉電源。
- II 放鬆2馬達固定桿'A'。
- III. 向前移動馬達。
- IV. 將皮帶置入合適之皮帶輪溝內。
- V. 將馬達推向後方，使V形皮帶拉緊。
- VI. 鎖緊2馬達固定桿。

a) Change Speed Within Range

- I. Isolate machine
- II. Slacken 2 motor lock levers 'A'.
- III. Slide motor forward.
- IV. Position belt on appropriate pulleys.
- V Slide motor to the rear to tension vee belt.
- VI. Tighten 2 motor locking levers



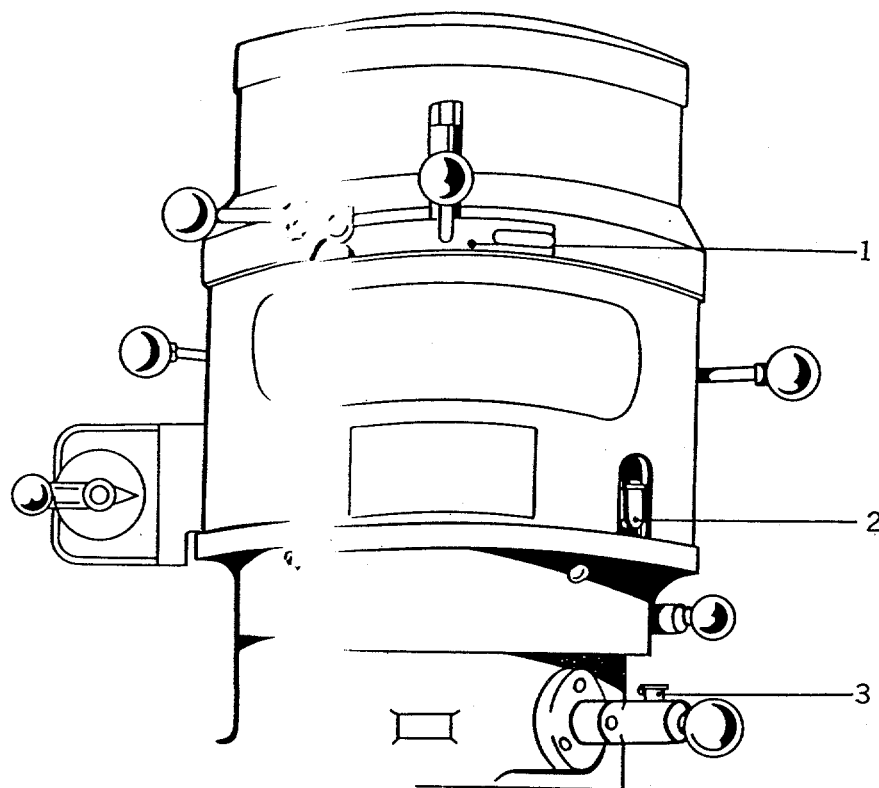
預防保養 Preventive Maintenance

爲了確保機器之精密與增加使用壽命，我們提供下列預防保養表給操作者。

For securing the accuracy and life of the machine, we offer the following preventive maintenance charts.

週 期 Frequency	項 目 Item
每 日 Daily	1. 操作前必須依照潤滑說明把各部位加油。 It is necessary to oil each lubrication point before operation. 2. 檢查手動油泵的油量，不足須補充。 Check the level of the oil lubricator and fill if necessary. 3. 操作完畢，所有固定桿應放鬆，工作台面須清除乾淨並潤滑少許的油，以保護工作台面。 It is necessary to release the clamps, clean and lubricate the table after operation.
每 月 Monthly	1. 檢查各部調整楔之鬆緊情形，並作適當的調整。 Check all the gibs and adjust if necessary. 2. 檢查所有螺桿與螺帽間之間隙，並作適當的調整。 Check all the backlash between screws and nuts, and adjust if necessary.
每 季 Quarterly	1. 根據精度檢查表核對各部精度，(看本說明書51頁到53頁並作調整)。 Check and adjust the machine accuracy. (manual P. 51 to P. 53).

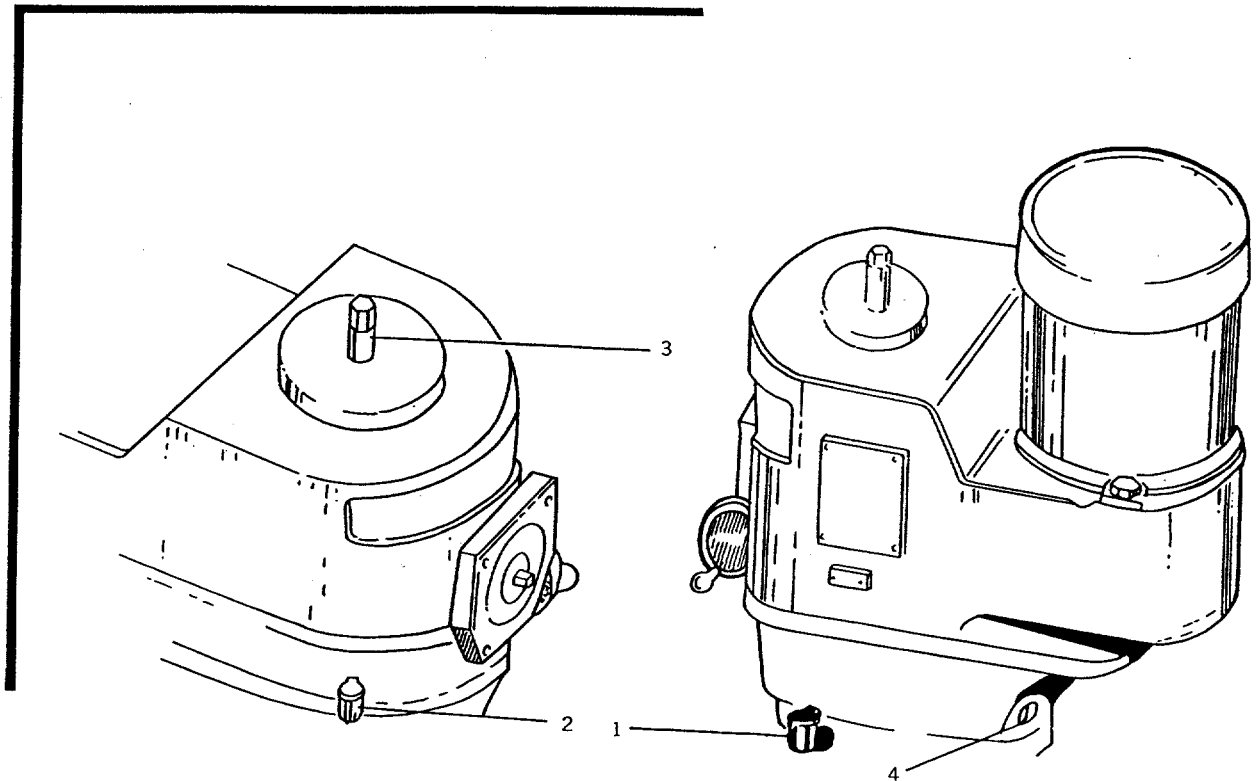
潤滑 Lubrication



週 期 FREQUENCY	潤 滑 部 位 LUBRICATE	潤 滑 劑 LUBRICANT	數 量 QUANTITY	代號 AT.
每週兩次 Twice Weekly	皮帶輪/齒輪 Pulley / Gear	中國石油 R53 Vactra Heavy Medium S.A.E. 10 or 10W Light	5 滴 5 Drops	1
每天兩次 Twice Daily	主軸軸承 升降套進給 Spindle Bearings Quill feed	中國石油 R53 Vactra Heavy Medium S.A.E. 10 or 10W Light	加 滿 Top-Up	2
每天兩次 Twice Daily	升降套軸承 Quill Bearings	中國石油 R53 Vactra Heavy Medium S.A.E. 10 or 10W Light	加 滿 Top-Up	3

註：'3'昇降套軸承潤滑錯誤，將導致昇降套太緊，且使得昇降套緊束於座內。
 NOTE: Failure to lubricate "quill bearings" at 3 can result in tight quills and partial seizure of quill in housing.

潤滑 Lubrication



週 期 FREQUENCY	潤 滑 LUBRICATE	潤 滑 劑 LUBRICANT	數 量 QUANTITY	潤滑代號 LUB. AT.
每天兩次 Twice Daily	昇降套軸承 Quill bearings	中國石油 R53 Vactra Heavy Medium S.A.E. 10 or 10W Light	5-10滴 5-10 drops	1
每天兩次 (當操作進給時) Twice Daily (When feed is in use)	主軸向下進給 Spindle Down Feed	中國石油 R53 Vactra Heavy Medium S.A.E. 10 or 10W Light	加 滿 Top-Up	2
每週一次 Weekly	拉桿栓軸(將昇降套降下 2") Drawbar splines(move quill down 2")	中國石油 R53 Vactra Heavy Medium S.A.E. 10 or 10W Light	5 滴 5 drops	3

註：錯誤潤滑1“昇降套軸承”會使昇降套太緊且使昇降套部份束縛於座內。

NOTE: Failure to lubricate "Quill bearings" at 1 can result in tight quills and partial seizure of quill in housing.

週 期 FREQUENCY	潤 滑 LUBRICATE	潤 滑 劑 LUBRICANT	數 量 QUANTITY	潤 滑 代 號 LUBRICATE AT.
每二個月一次 (正常使用下) Every 2 months (of normal use)	後列齒輪 Back gear	黃 油 Grease	相當於一茶匙 Equivalent of 1 teaspoonful	4. 註：加黃油前將齒輪桿退 向'LO'位置並保持主軸停止 NOTE: Before greasing put gear lever back to 'LO' & keep spindle stationary.

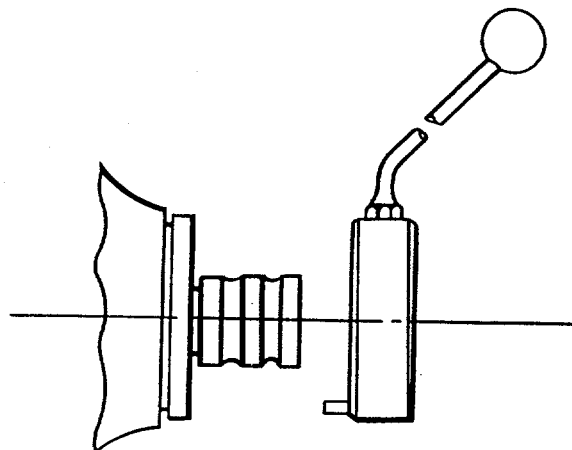
操作 Operation

4. 昇降套快速手動進給

4. QUILL SENSITIVE HAND FEED

- I. 置手柄於輪轂上。
- II. 選擇適當之位置。
- III. 推動手柄直至定位銷嚙合。

- I. Place the handle on the boss.
- II. Select the most suitable position.
- III. Push home until the locating pin engages.



5. 主軸速度 (在主軸運轉時才可變速)

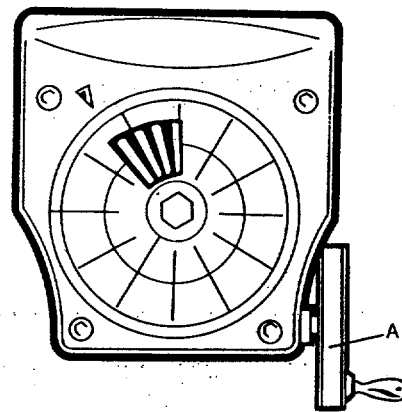
5. SPINDLE SPEED (Change only when spindle is running).

a) 範圍內之速度

- I. 啟動主軸。
- II. 轉動手輪'A'至選定所需速度。

a) Change Speed Within Range

- I. Start spindle.
- II. Turn handwheel 'A' to select required speed.
change only when spindle is running.



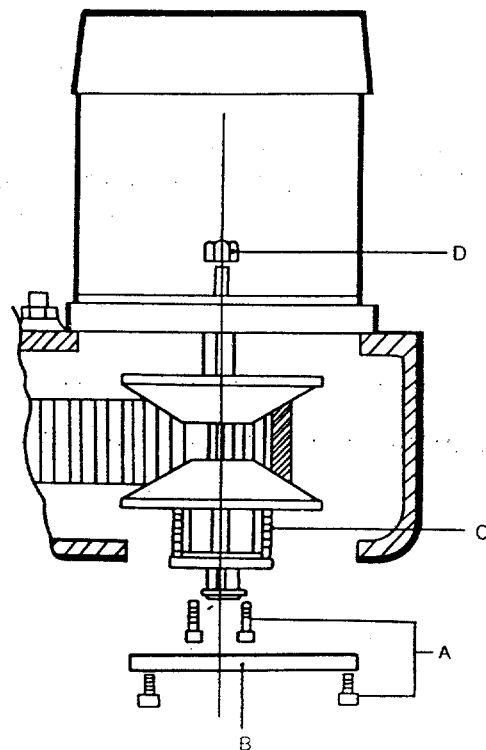
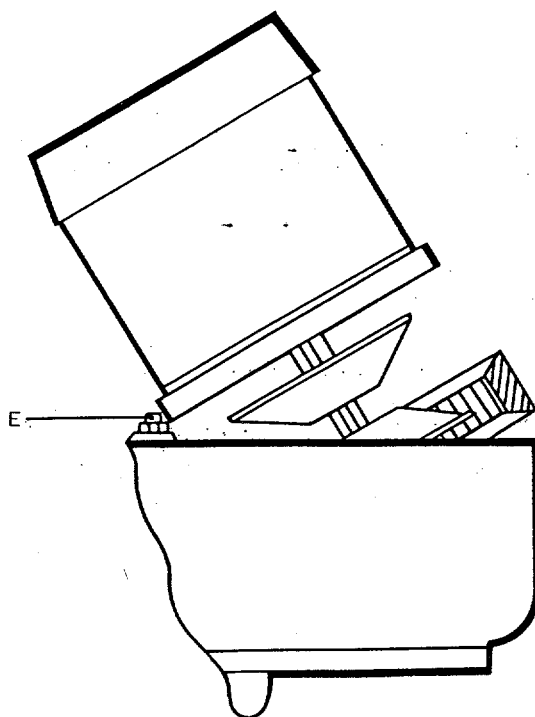
主軸停止時不可變速
DO NOT CHANGE SPEED
WHILST SPINDLE HAS STOPPED

保養Maintenance

馬達拆卸步驟 MOTOR REMOVAL

1. 轉動頭部調整至最低速。
2. 關掉電源。
3. 取下三個螺絲'A'及蓋'B'。
4. 用兩個螺絲'A'壓住彈簧'C'。
5. 轉動變速器至最高速。
6. 從皮帶箱取下開關。
7. 取下兩個固定螺帽'D'。
8. 提起馬達，將馬達箱放在螺樁'E'上。
9. 放鬆皮帶，並繞過驅動盤，即可取下馬達。

1. Run head to adjust to lowest speed.
2. Isolate machine.
3. Remove 3 screws 'A' & cover 'B'.
4. Using the two screws 'A', compress spring 'C'.
5. Rotate the speed changer to the highest speed.
6. Remove the reversing switch from the belt housing.
7. Remove the two locking nuts 'D'.
8. Lift the motor and rest the case on stud 'E'.
9. Ease the belt over the lower drive disc and remove the motor.



保養 Maintenance

敝公司真誠的向您建議：

當您欲保養機械前，爲了您的安全，請關掉機器之電源，且爲了迅速之保養請閱讀此手冊之相關部份。

當訂購更換零件時請說明：

- 機器系列號碼。
註於機身左側門之上方。
- 頭部系列號碼。
於皮帶箱前方。
- 項目號碼。
- 零件號碼。
- 概述。
- 數量。

May We Suggest That.

Before attempting any maintenance in the interests of safety you isolate the machine electrically and in the interests of efficiency you read the relevant section of this manual.

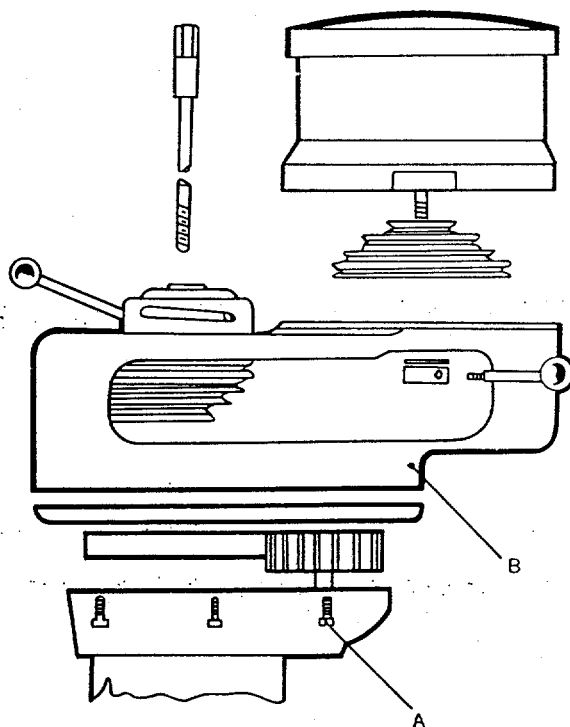
When ordering replacement parts please quote:

- THE MACHINE SERIAL No.
situated above the door on the left hand side of the column.
- THE HEAD SERIAL No.
found on the front of the Belt Housing.
- ITEM NUMBER.
- PART NUMBER.
- DESCRIPTION.
- QUANTITY.

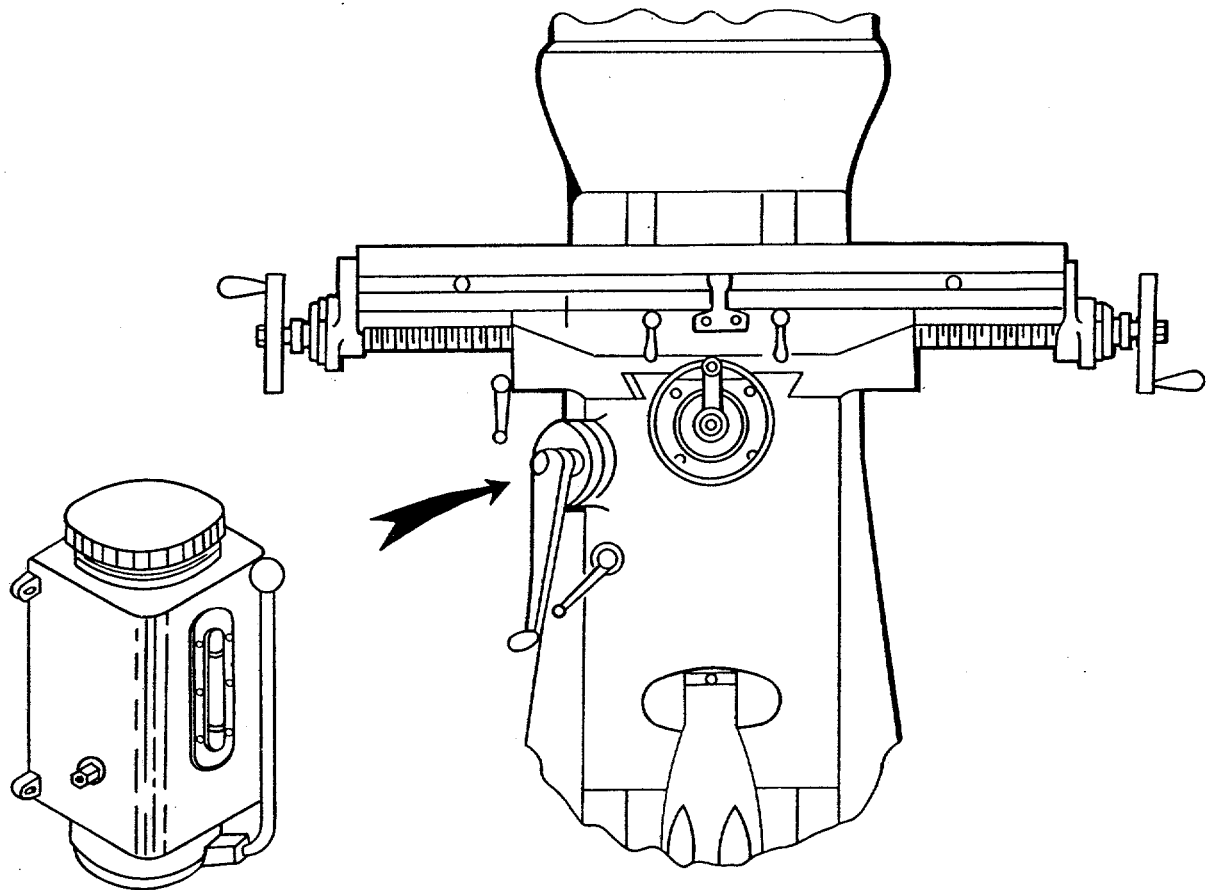
保養 Maintenance

皮帶更換步驟 BELT REPLACEMENT

- | | |
|----------------------------|---|
| 1. 關掉電源。 | 1. Isolate machine. |
| 2. 取下拉桿。 | 2. Remove drawbar. |
| 3. 拆下馬達。 | 3. Remove motor. |
| 4. 將昇降套降至最下方。 | 4. Lower quill to full extension. |
| 5. 取下六個螺絲'A'。 | 5. Remove 6 screw 'A'. |
| 6. 取下皮帶箱（輕輕敲動使其脫離
連結銷）。 | 6. Remove belt housing 'B', tap to
withdraw from dowels. |
| 7. 此時即可更換皮帶。 | 7. The belts may now be changed. |



潤滑 Lubrication



週 期 FREQUENCY	潤 滑 LUBRICATE	潤 滑 劑 LUBRICANT	數 量 QUANTITY
每天注滿潤滑泵 Centralized Lub. Pump Daily 每週檢查油面高 Check Level Weekly	導 螺 桿 Lead Screw	Shell Cornea Oil 41 MOBIL X2 Socony Gargoyle Vactra No.2	一泵浦 One Pump
	鞍座—工作台滑道 Saddle-Table Ways	"Sunoco" Waylube #80 MOBIL X2	一泵浦 One Pump
	鞍座—昇降座滑道 Saddle-Knee Ways	"Sunoco" Waylube #80 MOBIL X2	一泵浦 One Pump
	昇降座機身滑道 Knee Column Ways	"Sunoco" Waylube #80 MOBIL X2	一泵浦 One Pump
每週兩次 Twice Weekly	升降螺桿 Elevating Screw	Shell Cornea Oil 41 MOBIL X2 Socony Gargoyle Vactra No.2	油槍打 5 次 5 Shots (Oil Gun)

保養Maintenance

剎車環更換步驟

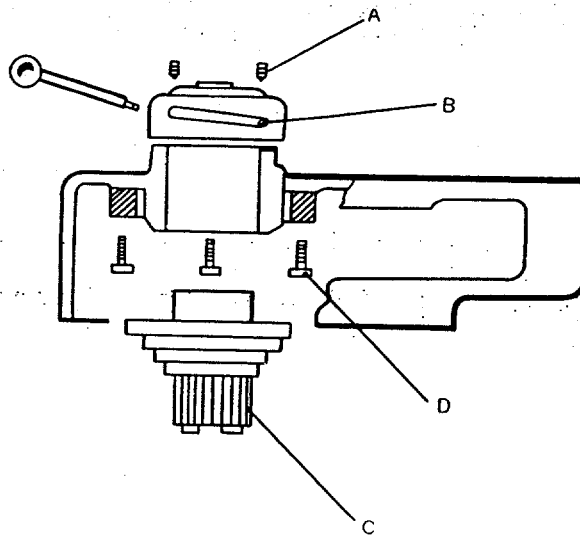
BRAKE SHOE REPLACEMENT

重覆前頁1~6之順序後。

1. 取下兩個螺絲'A'。
2. 取下兩個螺絲'B'。
3. 從座內推出軸承殼'C'。
4. 取下三個螺絲'D'。
5. 更換剎車塊。
6. 更換後鎖緊螺絲'D'，並用墊圈與螺帽固定。

Repeat the sequence 1. to 6. on page 35.

1. Remove 2 screws 'A'.
2. Remove 2 screws 'B'.
3. Push bearing hub 'C' clear of housing.
4. Remove 3 screws 'D'.
5. Replace shoe.
6. Ensure screws 'D' are fully tightened and locked with washers and nuts.

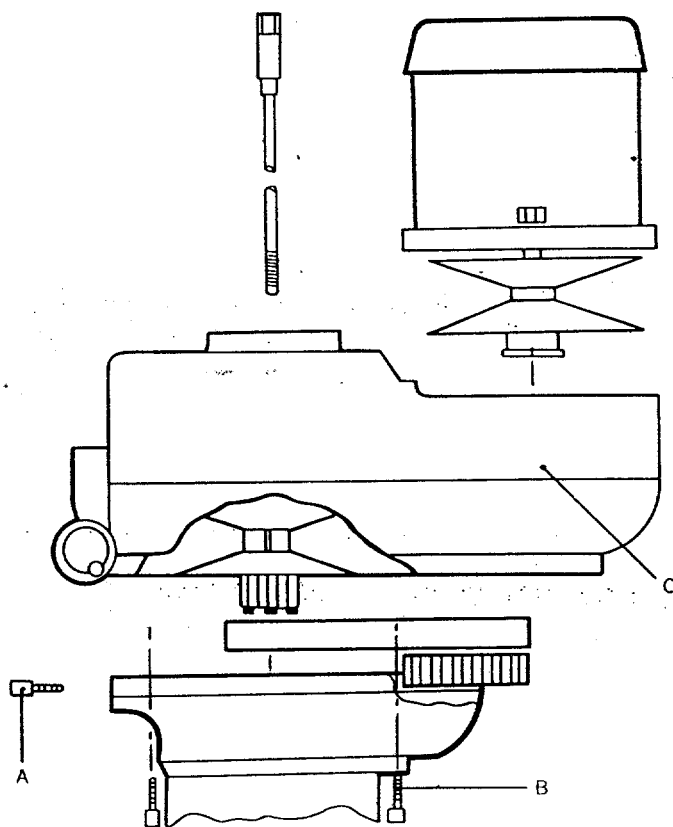


保養 Maintenance

齒型皮帶更換法 TIMING BELT REPLACEMENT

1. 如前頁所述取下馬達
2. 昇降套降至最低位置。
3. 從變速箱下方取出兩個螺絲'A'。
4. 取下四個螺絲'B'。
5. 退出連結銷，使上部份'C'分離。
6. 此時即可更換皮帶。

1. Remove the motor.
2. Lower the quill to full extent.
3. Remove the two lower cap screws 'A' from the speed changer housing.
4. Remove the four cap screws 'B'.
5. Remove the top assembly 'C' and tap to clear dowels.
6. Replace the belt.



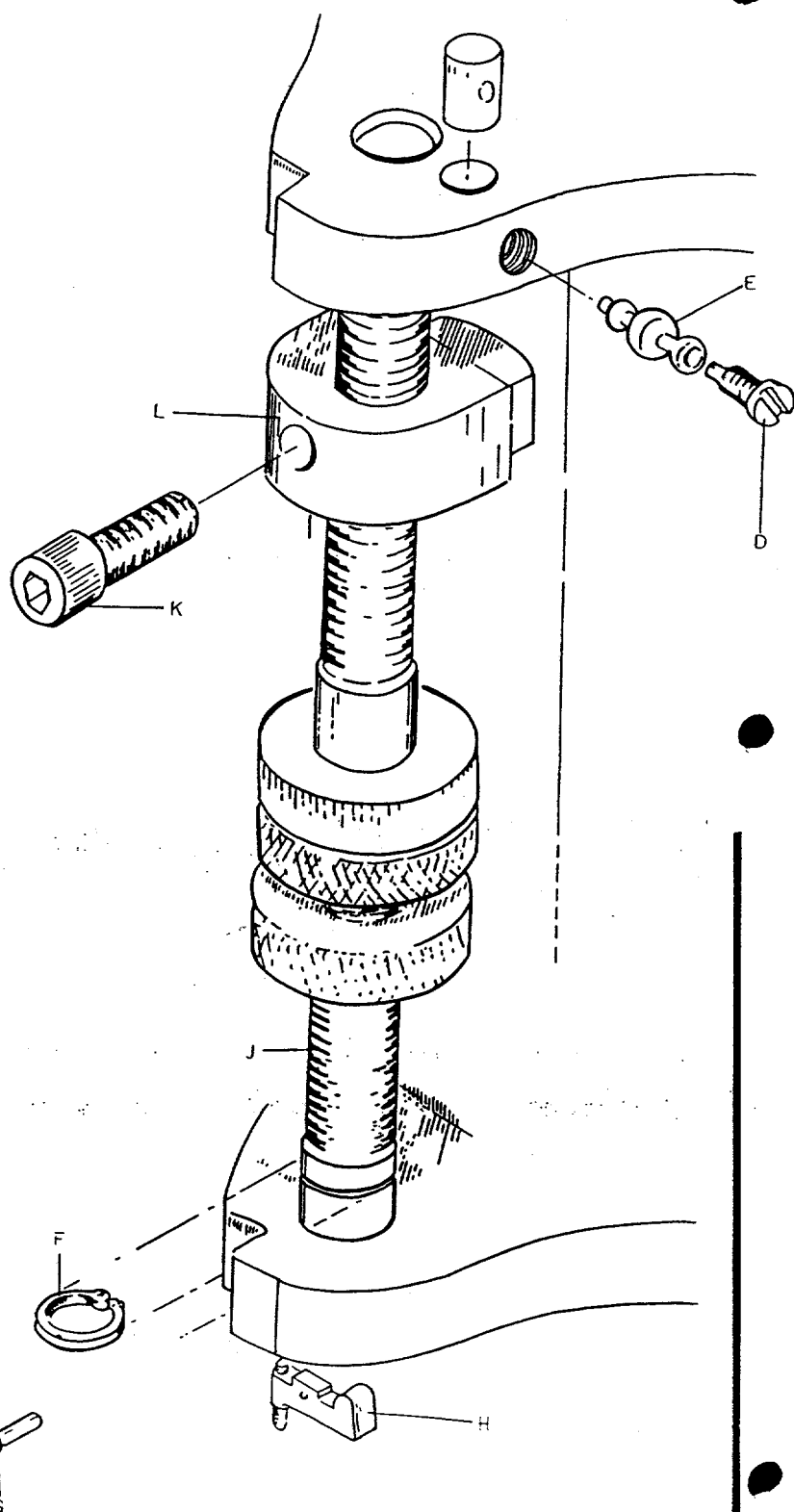
保養 Maintenance

9. 取下螺絲'D'與球形槓桿'E'。
10. 取下C形環'F'，螺絲'G'及臂'H'。
11. 將螺桿軸'J'旋出微動螺帽，並取下。
12. 取下螺絲'K'與停止板'L'。
13. 拆下昇降套。
14. 清潔所有表面，加油，並重新組合。
15. 檢查進給控制桿是否正確，看44頁之說明。

組合後栓槽之校準參看22頁說明。

9. Remove screw 'D' and ball reverse lever 'E'.
10. Remove circlip 'F', screw 'G' and arm 'H'.
11. Thread shaft 'J' through micro nuts and remove.
12. Remove screw 'K' and stop 'L'.
13. Remove quill.
14. Clean all areas, oil liberally and reassemble.
15. Check correct operation of feed trip linkage. See instruction on page 44.

Re-assembly of spline alignment. See page 22.

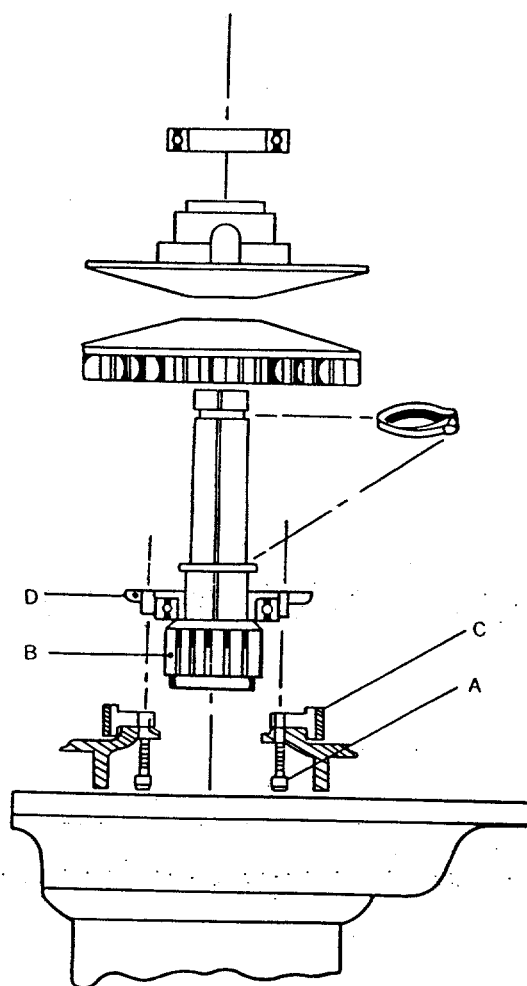


保養 Maintenance

剎車環更換步驟 BRAKE SHOE REPLACEMENT

1. 拆下頂部。
2. 取下兩個螺絲'A'。
3. 取出離合器殼組件'B'和'D'。
4. 更換剎車環'C'。

1. Remove the top section.
2. Remove the two screws 'A'.
3. Remove the clutch hub assembly 'B' & 'D'.
4. Replace the brake shoes 'C'.



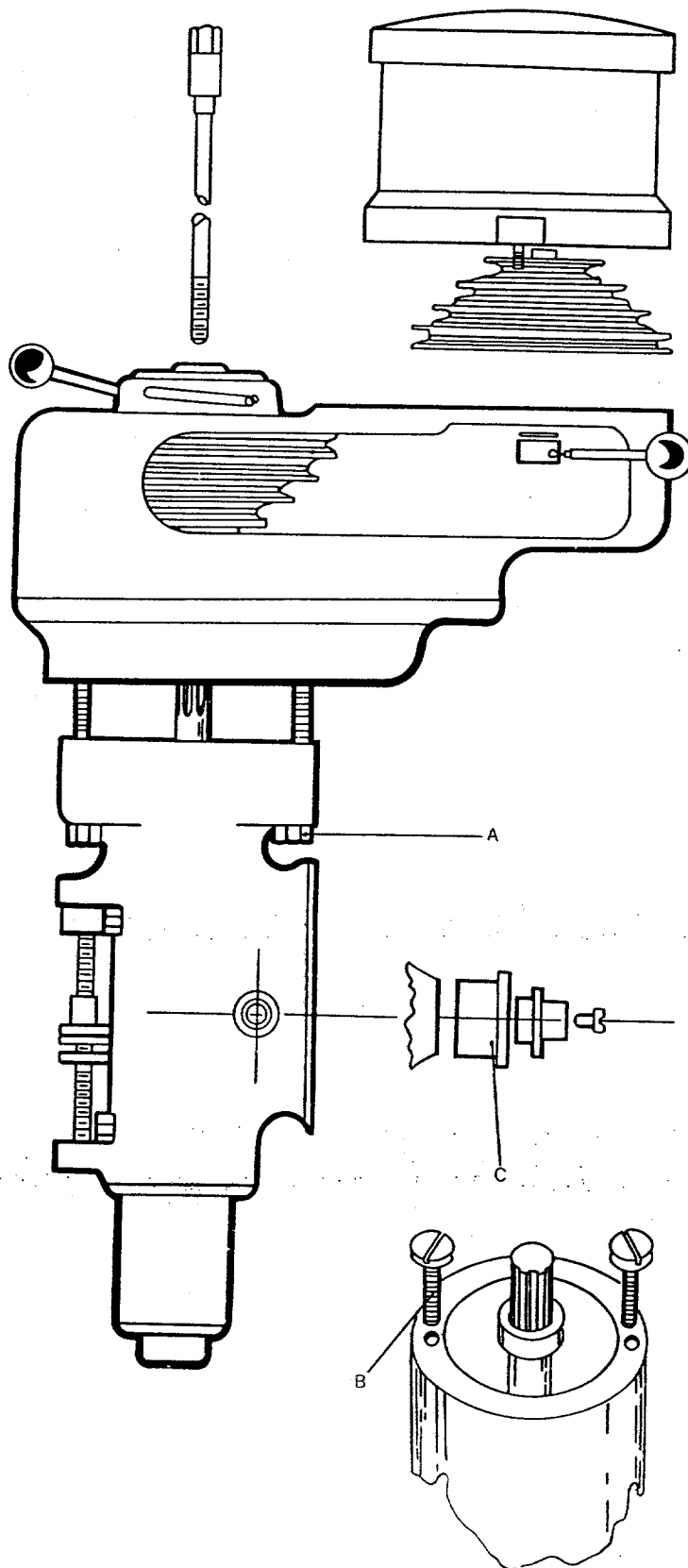
保養Maintenance

昇降套拆卸法 QUILL REMOVAL

1. 關掉電源。
2. 拆下馬達。
3. 取出拉桿。
4. 昇降套降至最低。
5. 取下三個螺帽'A'。
6. 頂部完全地拆出。
7. 取出昇降套頂部兩個螺絲'B'。
8. 拆下彈簧座'C'。

參看43頁更換彈簧說明。

1. Isolate machine.
2. Remove motor.
3. Remove drawbar.
4. Fully extend quill.
5. Remove 3 nuts 'A'.
6. Remove top section completely.
7. Remove 2 screws 'B' from top of quill.
8. Remove clock spring housing 'C'-see instruction on replacing spring page 43.

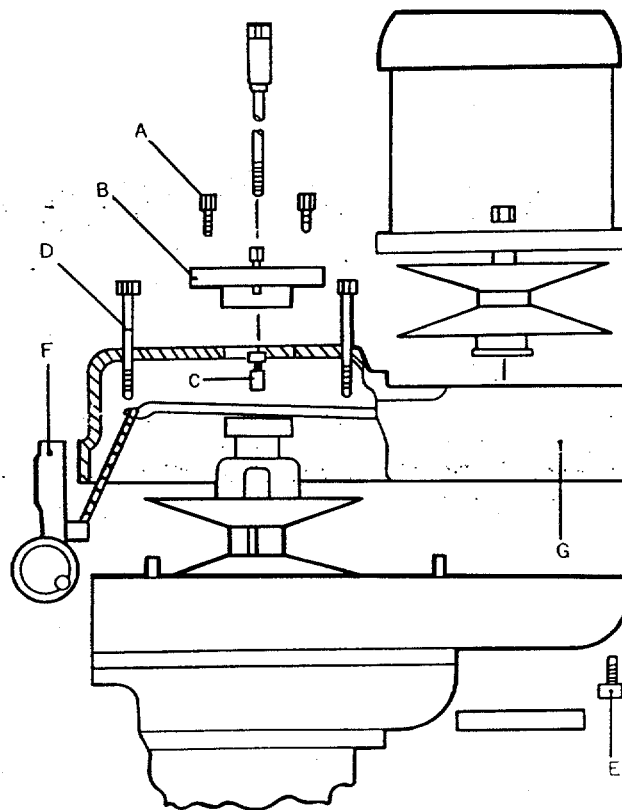


保養 Maintenance

驅動皮帶更換法

DRIVE BELT REPLACEMENT

1. 如37頁所述取下馬達。
 2. 取下三個螺絲'A'，鎖進附近之牙孔，退出軸承座'B'。
 3. 取下兩個螺絲及襯套'C'。
 4. 取出四個螺絲'D'與一個螺絲'E'。
 5. 取下四個固定變速器之螺絲'F'。
 6. 退出連結銷，並移開頂座'G'。
 7. 此時即可更換皮帶。
1. Remove the motor as described on page 37.
 2. Remove the three screws 'A'; insert into the adjacent tapped holes and withdraw bearing housing 'B'.
 3. Remove the two screws and the bushes 'C'.
 4. Remove four screws 'D' and one screw 'E'.
 5. Remove four screws securing the speed changer 'F'.
 6. Remove top housing 'G'; tap to clear the dowels.
 7. Replace the belt.

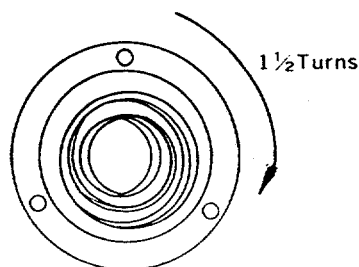
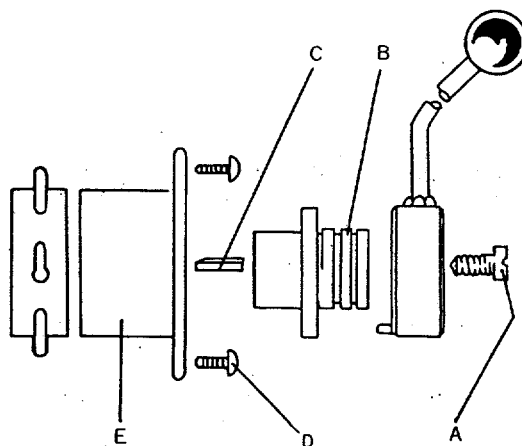


保養 Maintenance

回覆彈簧更換法

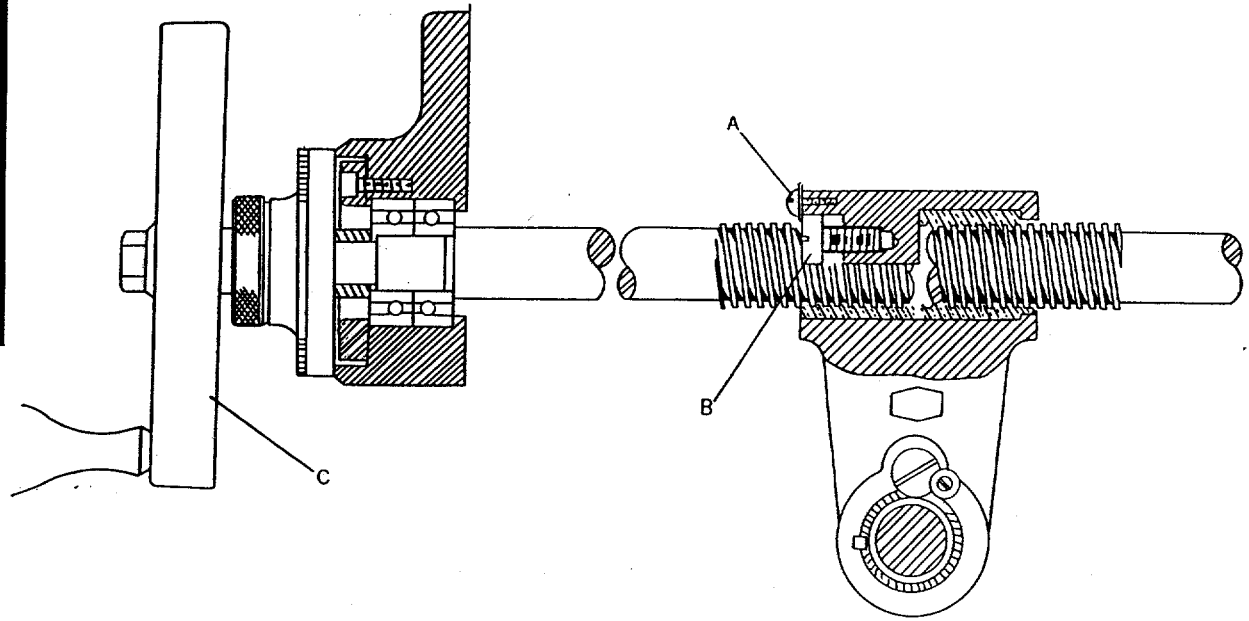
BALANCE SPRING REPLACEMENT

1. 移動昇降套於頂部，並固定住。
 2. 拆下螺絲'A'，轂'B'及鍵'C'。
 3. 拆下螺絲'D'，慢慢轉動座E使彈簧張力得以釋放。
 4. 將彈簧之一端從小齒輪軸的釘上提出。
 5. 逆時針轉動座'E'（從頭部鑄件來看）。
 6. 從座內取出彈簧並更換之。
 7. 重新將彈簧組合於座之鑄件上，並應順時針轉動座，直到彈簧進入小齒輪軸之釘上。
1. With quill, at top of movement apply quill lock.
 2. Remove screw 'A', hub 'B', and key 'C'.
 3. Remove screws 'D', allowing housing to rotate slowly releasing spring tension.
 4. Lift end of spring from peg on the pinion shaft.
 5. Rotate housing 'E' anti-clockwise from head casting.
 6. Remove spring from housing and replace.
 7. Refit spring to main housing casting turning housing clockwise until spring locates on peg in pinion shaft.



保養Maintenance

左右進給螺桿間隙調整法 TABLE SCREW BACKLASH ADJUSTMENT



1. 將工作台移至左方。
2. 螺絲'A'旋出 $\frac{1}{2}$ 轉。
3. 慢慢旋轉手輪'C'，並鎖緊螺絲'B'直至產生間隙0.004"或0.005"為止。
4. 最後將固定螺絲'A'鎖在'B'上。

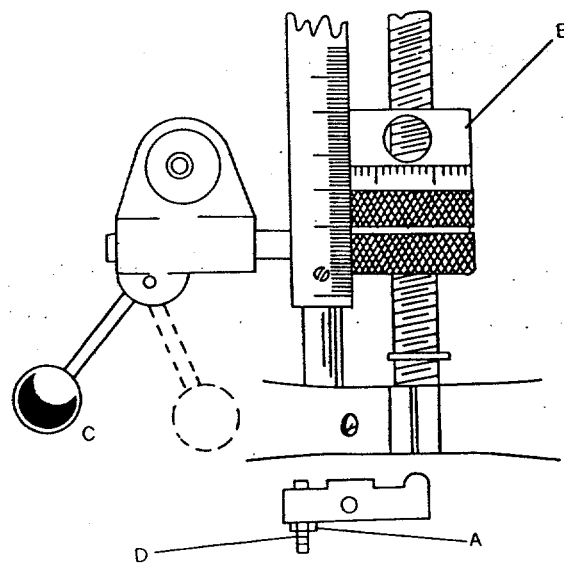
1. Crank the table to the left.
2. Withdraw screw 'A' $\frac{1}{2}$ a turn.
3. Tighten screw 'B' whilst slowly turning handle 'C' until .004" or .005" is obtained.
4. Finally lock screw 'A' on to 'B'.

保養 Maintenance

進給控制調整法 FEED TRIP ADJUSTMENT

1. 放鬆固定螺帽 'A'。
2. 嚙合把手 'C'。
3. 調整微調螺帽至碰到升降套停止塊 'B'。
4. 慢慢轉動調整螺絲 'D' 直到桿 'C' 跳離。
5. 在此點鎖緊固定螺帽
6. 檢查跳動的動作是否正確。

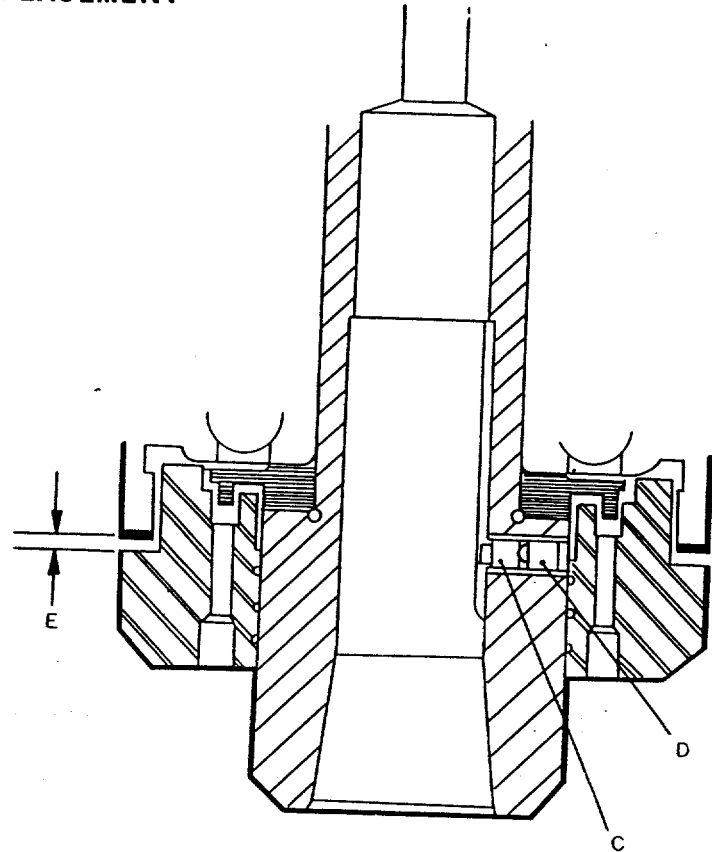
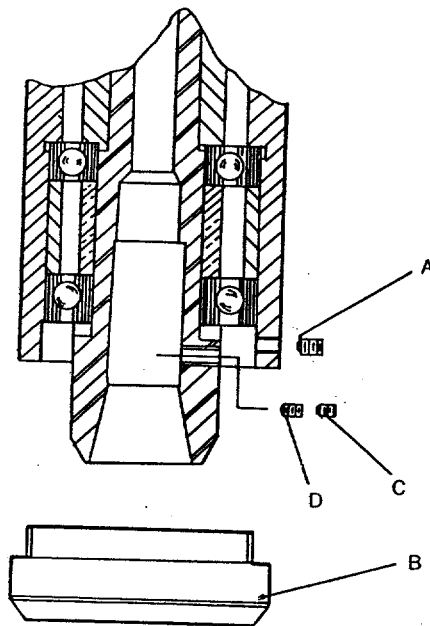
1. Release locknut 'A'.
2. Engage trip handle 'C'.
3. Adjust micro nuts against quill stop 'B'.
4. Slowly turn adjusting screw 'D' until lever 'C' trips.
5. At this point secure locknut 'A'.
6. Check that smart trip action is obtained.



保養 Maintenance

筒夾校準螺絲更換法

COLLET ALIGNING SCREW REPLACEMENT

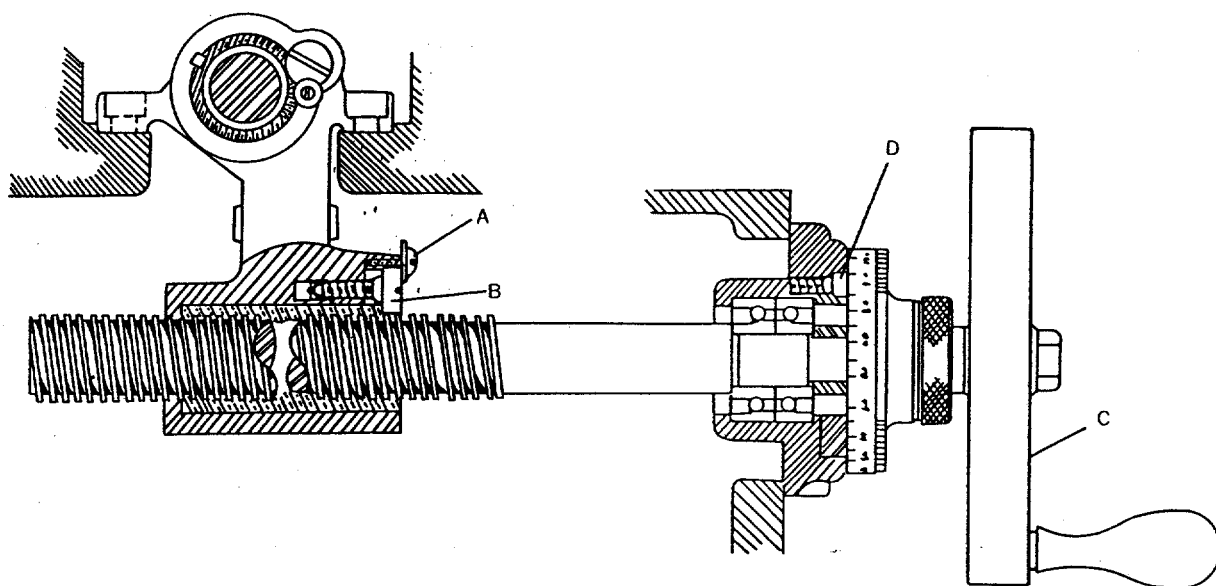


1. 用氈筆在昇降套和主軸端蓋'B'劃一參考線。
2. 拆下固定螺絲'A'。
3. 取下端蓋'B'。
4. 取下固定螺絲'C'與筒夾校準螺絲'D'。
5. 更換'D'套入R.8筒夾,並檢查,勿使螺絲末端碰到導槽之底部。
6. 更換固定螺絲'C'。
7. 重新裝上'B',檢查參考線是否對準。
8. 裝上固定螺絲'A'。
注意:不可鎖太緊免造成變型。
9. 檢查間隙'E'(0.003"=.08mm)。

1. Use felt pen, mark reference line on quill and nose cap 'B'.
2. Remove set screw 'A'.
3. Unscrew nose cap 'B'.
4. Remove lock screw 'C' and collet aligning screw 'D'.
5. Replace 'D'; insert R.8 collet and check that the dog on the end of the screw does not foul on the bottom of the guide slot.
6. Replace lock screw 'C'.
7. Replace nose cap 'B'; check felt pen markings for correct alignment.
8. Replace set screw 'A'.
Caution: do not overtighten as this will cause distortion.
9. Check gap 'E'. (0.003"=.08mm)

保養 Maintenance

前後進給螺桿間隙調整法 CROSS SCREW BACKLASH ADJUSTMENT



1. 轉動曲柄使鞍座位於中間位置。
2. 旋出四個螺絲'D'。
3. 將鞍座拉向前，以露出螺絲'A'與'B'。
4. 螺絲'A'旋出 $\frac{1}{2}$ 轉。
5. 慢慢轉動手輪'C'，並鎖緊螺絲'B'直到產生間隙0.004"或0.005"為止。
6. 將固定螺絲'A'鎖於'B'上。
7. 最後將鞍座移到昇降座之前方，重新組合四個螺絲'D'。

1. Crank the saddle to Mid position.
2. Withdraw 4 screws 'D'.
3. Pull the saddle forward to expose screws 'A' & 'B'.
4. Withdraw screw 'A', $\frac{1}{2}$ a turn.
5. Whilst slowly turning handle 'C' tighten screw 'B' until .004" or .005" is obtained.
6. Lock screw 'A' onto 'B'.
7. Finally crank the saddle to the front of the knee and replace 4 screws 'D'.

保養 Maintenance

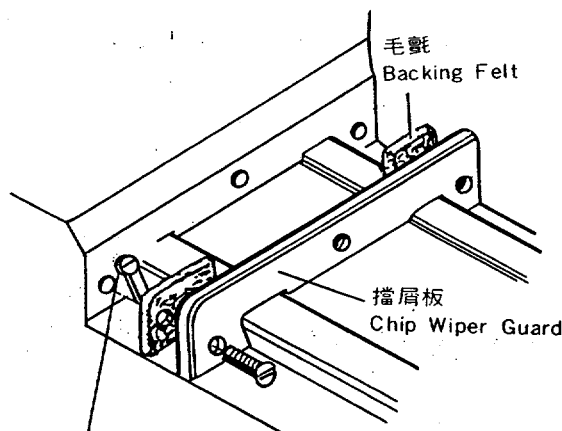
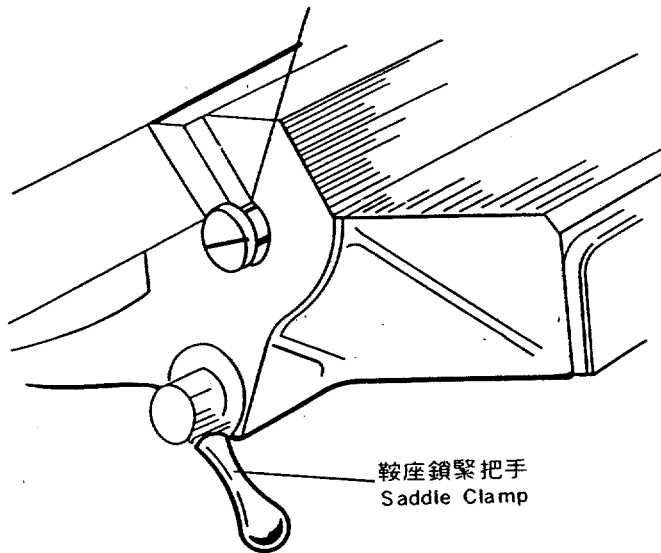
a) 工作台鞍座滑道

1. 清除所有的切削屑。
2. 移動工作台時，順時針轉動工作台調整楔調整螺絲，直到感覺輕微阻力即可。

a) Table Saddle Ways

1. Remove all swarf from area.
2. Turn the table gib screw clockwise whilst moving the table until slight drag is felt.

工作台調整楔調整螺絲
Table Gib Screw



b) 鞍座、昇降座滑道

1. 清除所有切削屑。
2. 拆下擋屑板和毛氈。
3. 移動鞍座時，順時針轉動調整楔螺絲，直至感覺輕微阻力為止。
4. 重新裝上擋屑板與毛氈。

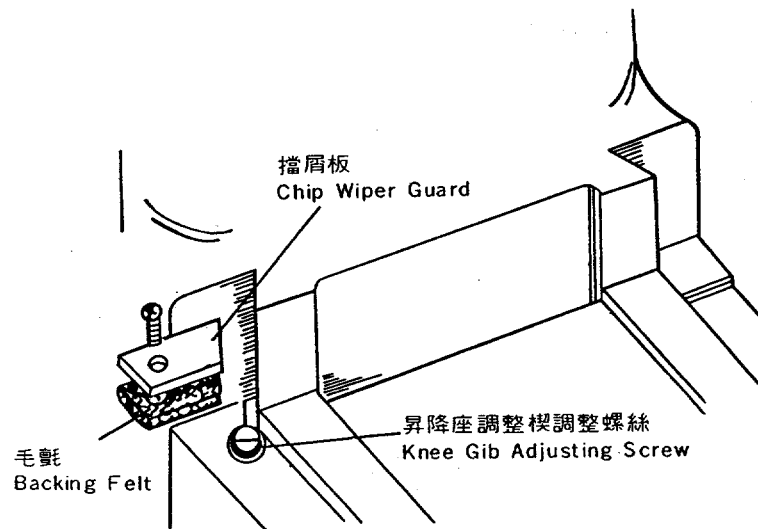
b) Saddle Knee Ways

1. Remove all swarf from area.
2. Remove chip wiper guards and felt.
3. Turn gib adjusting screw clockwise whilst moving the saddle until slight drag is felt.
4. Ensure chip wiper guard and felt are replaced.

保養 Maintenance

C) 昇降座機身滑道

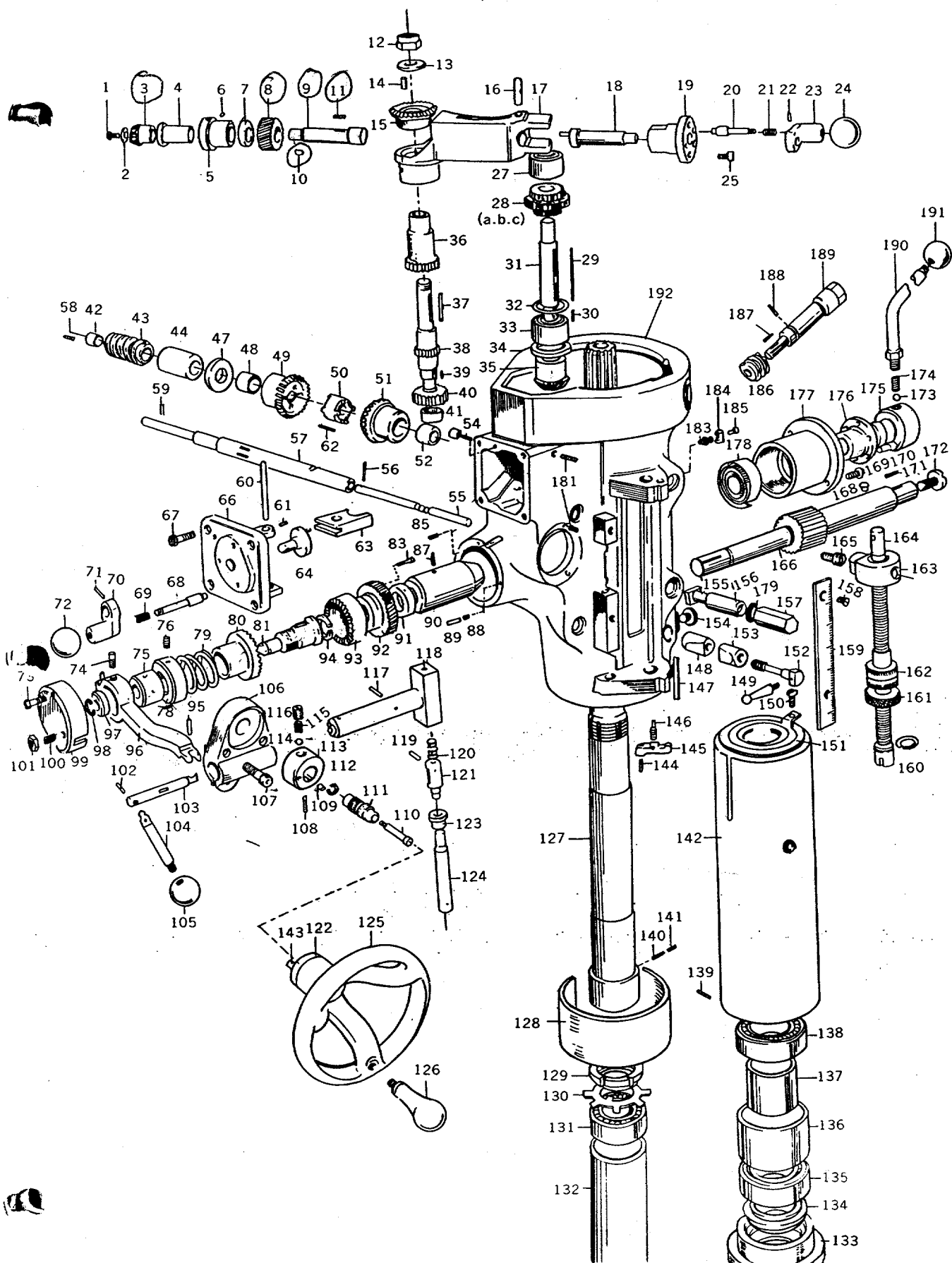
C) Knee Column Ways



1. 清除所有切削屑。
2. 拆下擋屑板。
3. 拆下毛氈。
4. 移動昇降座時，順時針轉動調整楔螺絲直至感覺輕微阻力為止。
5. 重新裝上擋屑板與毛氈。

1. Remove all swarf from area.
2. Remove chip wiper guard.
3. Remove felt.
4. Turn gib adjusting screw clockwise whilst moving knee until slight drag is felt.
5. Ensure chip wiper guard and felt are replaced.

Spare parts HEAD ASSEMBLY



PARTS LIST

HEAD ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
1	FA-158	$\frac{3}{16}$ "-24 NC Round Head Screw	1
2	FA-159	Bevel Pinion Washer	1
3	FA-160	Feed Bevel Pinion	1
4	FA-161	Feed Worm Gear, Shaft Sleeve	1
5	FA-162	Worm Cradle Bushing	1
6		M 6X6 Socket Set Screw	1
7	FA-163	Worm Gear Spacer	1
8	FA-164	Feed Drive Worm Gear	1
9	FA-165	Feed Drive Worm Gear Shaft	1
10		Feed Drive Gear Key 3X3X8	1
11		Key 3X3X20	1
12	FA-152	Locknut	1
13	FA-153	Washer	1
14		Key 3X3X8.5	1
15	FA-154	Feed Reverse Bevel Gear	1
16	FA-167	Feed Engage Pin	1
17	FA-166	Worm Gear Cradle	1
18	FA-001	Worm Gear Cradle Throw-out	1
19	FA-002	Shift Sleeve	1
20	FA-004	Gear Shift Plunger	1
21	FA-005	Compression Spring	1
22		Spring Pin 3ØX22	1
23	FA-003	Shift Crank	1
24	FA-006	Black Plastic Ball 1" Dia	1
25		M 5X10 Cap Screw	3
27	FA-147	Cluster Gear Shaft upper Bushing	1
28a	FA-146	Cluster Gear (Upper)	1

PARTS LIST

HEAD ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
28b	FA-145	Cluster Gear (Middle)	1
28c	FA-144	Cluster Gear (low)	1
29		Cluster Gear Key 3X3X46	1
30		Key 3X3X15	1
31	FA-143	Cluster Gear Shaft	1
32		Circlip	1
33	FA-142	Bevel Gear Bushing	1
34	FA-141	Bevel Gear Thrust Spacer	1
35	FA-140	Feed Reverse Bevel Pinion	1
36	FA-155	Feed Driving Gear	1
37		Key 3X3X20	1
38	FA-156	Cluster Gear Input Shaft	1
39		Key 3X3X10	1
40	FA-157	Feed Drive Gear	1
41		IKO BA-66 Needle Bearing	1
42	FA-168	Bushing	1
43	FA-139	Worm	1
44	FA-138	Feed Worm Shaft Bushing	1
47	FA-137	Feed Worm Shaft Thrust Washer	1
48	FA-134	Feed Reverse Bevel Gear Bushing	1
49	FA-135	Feed Reverse Bevel Gear	1
50	FA-136	Feed Reverse Clutch	1
51	FA-135	Feed Reverse Bevel Gear	1
52	FA-134	Feed Reverse Bevel Bushing	1
54	FA-171	Set Screw	1
55	FA-132	Reverse Clutch Rod	1
56		Spring Pin 2.5ØX20	1

PARTS LIST

HEAD ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
57	FA-133	Feed Worm Shaft	1
58		Set Screw M 6X6	1
59		Spring Pin 2.5ØX12	1
60	FA-150	Feed Shift Rod	1
61		Set Screw M 5X10	1
62		Key 3X3X15	1
63	FA-149	Feed Gear Shift Fork	1
64	FA-151	Cluster Gear Shift Crank	1
66	FA-148	Cluster Gear Cover	1
67		M 5X10 Cap Screw	4
68	FA-004	Gear Shift Plunger	1
69	FA-005	Compression Spring	1
70	FA-003	Shift Crank	1
71		Spring 3ØX20	1
72	FA-006	Black Plastic Ball 1" Dia	1
73		M 5X35 Cap Screw	2
74	FA-081	Clutch Ring Pin	2
75	FA-080	Clutch Ring	1
76		Set Screw M 6X8	1
78	FA-082	Overload Clutch Locknut	1
79	FA-083	Safety Clutch Spring	1
80	FA-084	Overload Clutch	1
81	FA-085	Overload Clutch Sleeve	1
83		M 4X15 Cap Screw	3
85		Set Screw M 6X20	1
87		Set Screw M 6X12	1
88	FA-090	Compression Spring	1
89	FA-089	Overload Clutch lever Spring Plunger	1

PARTS LIST

HEAD ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
90	FA-123	Quill Pinion Shaft Bushing	1
91	FA-122	Pinion Shaft Worm Gear Spacer	1
92	FA-087	Overload Clutch Worm Gear	1
93	FA-086	Overload Clutch Ring	1
94		A-15mm Circlip	1
95	FA-077	Dowel Pin	1
96	FA-079	Overload Clutch Trip Lever	1
97	FA-078	Overload Clutch Washer	1
98		A- $\frac{3}{8}$ " Circlip	1
99	FA-076	Clutch Arm Cover	1
100		Socket Set Screw M 6X16	1
101		Locknut M 6X19	1
102	FA-077	Dowel Pin	1
103	FA-091	Cam Rod	1
104	FA-100	Trip Handle	1
105	FA-006	Black Plastic Ball 1" Dia	1
106	FA-092	Feed Trip Bracket	1
107		M 6X20 Cap Screw	2
108		Set Screw M 6X10	1
109		Key 3X3X10	1
110	FA-130	Feed Reverse Knob Stud	1
111	FA-131	Reverse Knob	1
112		A- $\frac{1}{4}$ " Circlip	1
113	FA-129	Handwheel Clutch	1
114		$\frac{3}{16}$ " Steel Ball	1
115	FA-129B	Compression Spring	1
116	FA-129A	Handwheel Clutch Spring Screw	1
117		Spring Pin 3 $\times$ 15	1

PARTS LIST

HEAD ASSEMBLY

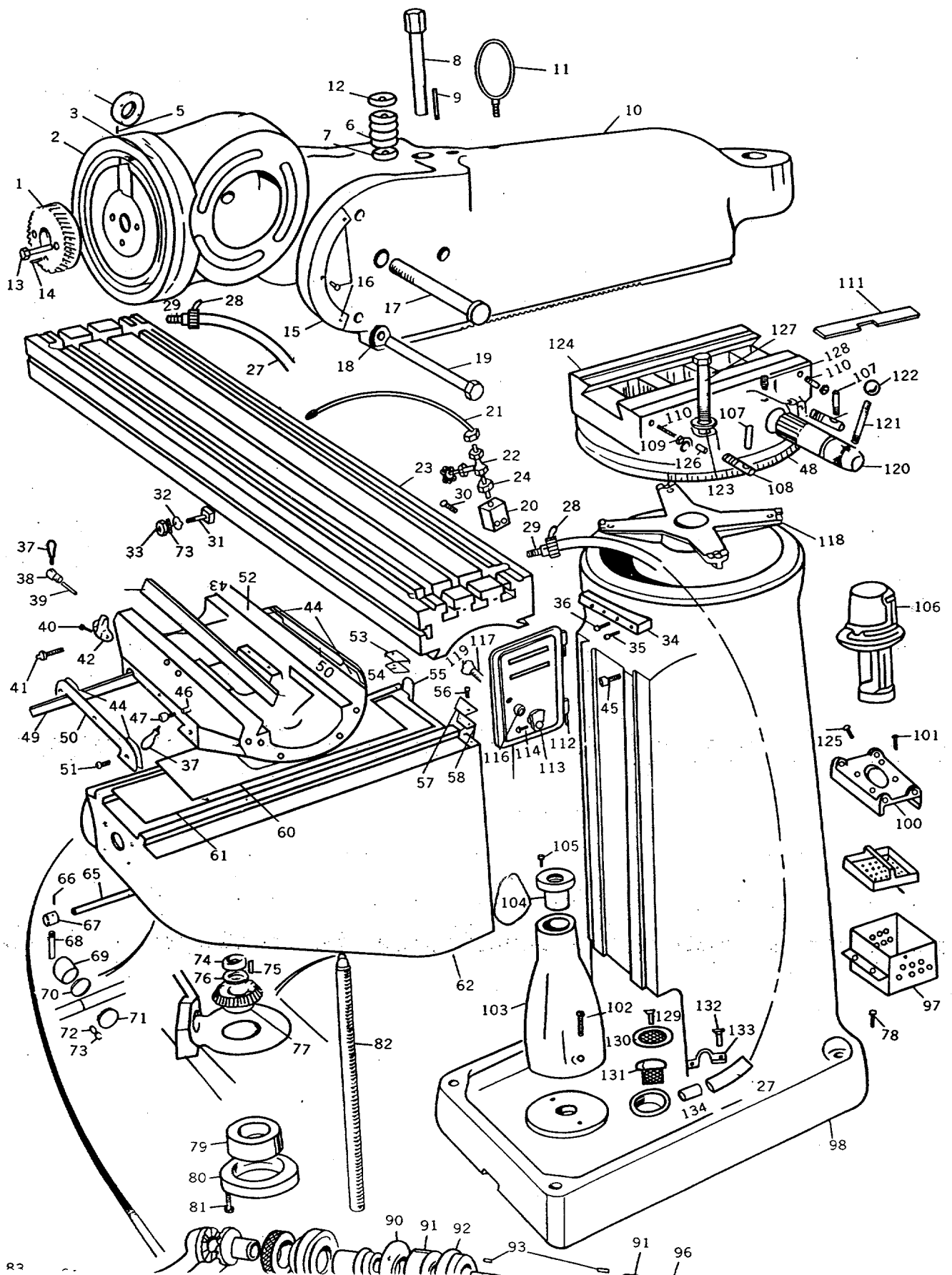
ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
118	FA-093	Cam Rod Sleeve Assembly	1
119		Spring Pin 3ØX12	1
120	FA-094	Compression Spring	1
121	FA-095	Trip Plunger	1
122	FA-127	Handwheel Bushing	1
123	FA-121	Trip Plunger Bushing	1
124	FA-097	Feed Trip Plunger	1
125	FA-126	Handwheel	1
126	FA-125	Handwheel Handle	1
127	FA-50A	Spindle (Taper 30 #)	1
	FA-50B	Spindle (R8)	1
128	FA-060	Quill Skirt	1
129	BB-010	Locknut Washer	1
130	BB-011	Locknut Washer	1
131		#6206 Bearing	1
132	FA-055	Sleeve	1
133	FA-051B	Nose-Piece	1
134	FA-052	Spindle Dirt Shield	1
135		#7207 Bearing	1
136	FA-054	Bearing Spacer (large)	1
137	FA-053	Bearing Spacer (small)	1
138		#7207 Bearing	1
139		Socket Set Screw	1
140	FA-172	Special Socket Set Screw	1
141		M 6X6 Collet Alignment Screw	1
142	FA-058	Quill	1
143	FA-128	Spring Pin 3ØX12	1
144		Set Screw M 4X20	1

PARTS LIST

HEAD ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
145	FA-098	Feed Trip Lever	1
146	FA-099	Trip Lever Pin	1
147	FA-119	Indicator Rod	1
148	FA-111	Drilled Lock Sleeve	1
149	FA-109	Lock Handle	1
150		W $\frac{3}{16}$ " X $\frac{1}{4}$ " Round Head Screw	2
151	FA-057	Oil Strainer for Quill Bearing	1
152	FA-108	Quill Lock Bolt	1
153	FA-110	Quill Lock Sleeve Tapped	1
154	FA-120	Indicator Rod Screw	1
155	FA-143	$\frac{1}{2}$ "-12 NC Tee Bolt	4
156	FA-046	Lower Clamping Bolt Spacer	2
157	FA-040	$\frac{1}{2}$ "-12 NC Adaptor Nut	4
158		W $\frac{3}{16}$ " X $\frac{1}{4}$ " Round Head Screw	2
159	FA-118A	Micrometer Scale (Metre)	1
	FA-118B	Micrometer Scale (Inch)	1
160		A-16mm Circlip	1
161	FA-115A	Quill Micro-Stop Nut (Metre)	1
	FA-115B	Quill Micro-Stop Nut (Inch)	1
162	FA-116A	Micro meter Nut (Metre)	1
	FA-116B	Micro meter Nut (Inch)	1
163	FA-117	Quill Stop Knob	1
164	FA-112A	Quill Stop Micro-Screw (Metre)	1
	FA-112B	Quill Stop Micro-Screw (Inch)	1
165		M 10X15 Cap Screw	1
166	FA-101	Quill Pinion Shaft	1
168	FA-101A	Pin	1
169		M 5X12 Cap Screw	8
170		5/8X18 Spring Pin	1

Spare parts BASIC MACHINE



PARTS LIST HEAD ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
171		Key 4X4X18	1
172	FA-107	Pinion Shaft Hub Screw	1
173		$\frac{3}{16}$ " $\varnothing$ Steel Ball	1
174	FA-105A	Compression Spring	1
175	FA-106	Back Feed Handle Hub	1
176	FA-104	Pinion Shaft Hub Sleeve	1
177	FA-103	Spring Cover	1
178	FA-102	Clock Spring	1
179	FA-042	Washer	4
181		Set Screw M 6X12	2
183	FA-113	Reverse Trip Ball Lever	1
184	FA-114	Feed Reverse Trip plunger	1
185	FA-124	Reverse Trip Ball Lever Screw	1
186	FA-018	Worm Gear	1
187		Key 4X4X18	1
188	FA-173	Socket Set Screw	1
189		ADJ Worm Shaft	1
190	FA-105	Pinion Shaft Hub Handle	1
191	AA-039	Black Plastic Ball	1
192	FA-016	Quill Housing	1

PARTS LIST

BASIC MACHINE

ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
1	FD-001	Quill Housing Adjusting Gear	1
2	FD-002	Ram Adaptor	1
3	FD-002A	Adaptor Scale	1
4	FD-006	Adaptor Pivot Stud Locknut	1
5		M 4X8 Grub Screw	1
6	FD-011	Vertical Adjusting Worm	1
7	FD-012	Worm Thrust Washer	1
8	FD-009	Vertical Adjusting Worm Shaft	1
9		Key 5X5X50	1
10	FD-004	Ram	1
11	FD-004B	Hook	1
12	FD-010	Worm Thrust Washer	1
13		M 6X25 Socket Cap Screw	2
14		6ØX30 Spring Pin	1
15	FD-003	Angle Plate	1
16		2ØX6 Rivet	17
17	FD-005	Adaptor Pivot Stud	1
18	FD-008	Washer	3
19	FD-007	Adaptor Locking Bolt	3
20	FD 039	Tap Bracket	1
21		Coolant Pipe	1
22	AD-036	Oil Valve	1
23	FC-009	Table (42")	1
	FC-009B	Table (49")	1
24		Valve Adaptor	1
27		Plastic Hose	1
28		Hose Clip	1
29		Hose Adaptor	1

PARTS LIST

BASIC MACHINE

ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
30		M 5X45 Hollow Head Cap Screw	2
31	FC-010	Stop Piece T-Bolt	2
32	FC-011	Table Stop Piece	2
33	FC-010a	$\frac{3}{8}$ "-16 NC Hexagon Nut	2
34	FD-063	Bracket for Neoprene Rearway Cover	1
35		M 6X30 Hollow Head Cap Screw	2
36		$\frac{3}{16}$ " X $\frac{3}{8}$ " Oval Head	4
37	FA-125	Table Lock Bolt Handle	3
38	FC-014	Saddle Lock Bolt	1
39	FC-015	Saddle Lock Plunger	1
40		M 10X20 Hollow Head Cap Screw	2
41	AC-90	Adjusting Screw	6
42	FC-016	Table Stop Bracket (Length 52m/m)	1
	FC-016A	Table Stop Bracket (Table 49")	1
	FC-016B	Table Stop Bracket (Length 36m/m)	1
43	FC-013A	Saddle Table Gib (Table 42")	1
	FC-013B	Saddle Table Gib (Table 49")	1
44	FC-021A	Left Felt Wipers	2
	FC-021B	Right Felt Wipers	2
45	FE-034	Cap Screw	1
46	FC-019	Table Lock Plunger	2
47	FC-014A	Table Lock Bolt (Table 42")	2
	FC-014B	Table Lock Bolt (Table 49")	2
48	FD-013A	Turret Scale	1
49	FC-020A	Saddle Knee Gib (Table 42")	1
	FC-020B	Saddle Knee Gib (Table 49")	1
50	FC-022	Saddle Knee Wiper Plate	2
51		W $\frac{3}{16}$ " X $\frac{3}{8}$ " oval Head Screw	6

PARTS LIST

BASIC MACHINE

ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
52	FC-017	Saddle (Table 42")	1
	FC-017B	Saddle (Table 49")	1
53	FE-001	Left Hand Column Wiper Holder	1
54	FE-002B	Knee Wiper Felt	1
55	FE-003	Knee Column Gib	1
56		W 1/4" X 5/8" Oval Head Screw	2
57	FE-001	Right Hand Column Wiper Holder	1
58	FE-002A	Knee Wiper Felt	1
60	FE-004	Chip Guards (up)	1
61	FE-005	Chip Guards (down)	1
62	FE-006	Knee	1
63	AA-029	Set Screw	1
64	FC-01C	Handle Shaft	1
65	FE-012	Knee Lock Shaft	1
66		5/8" X 24 Pin	2
67	FE-014	Lock Shaft boss	1
68	FE-013	Lock Shaft Handle	1
69	FE-009	Knee Lock Plunger	1
70	FE-010	Washer Distance/Spacer	1
71	FE-030	Knee Binder Plug (Plastic)	1
72	FE-011	Knee Binder Set Screw	1
73	FC-011A	Washer	2
74		1/2"-20NF NUT	1
75		Key 5X5X23	1
76	FE-023	1/4"-20 NF Washer	1
77	FE-024	Bevel Gear	1

PARTS LIST

BASIC MACHINE

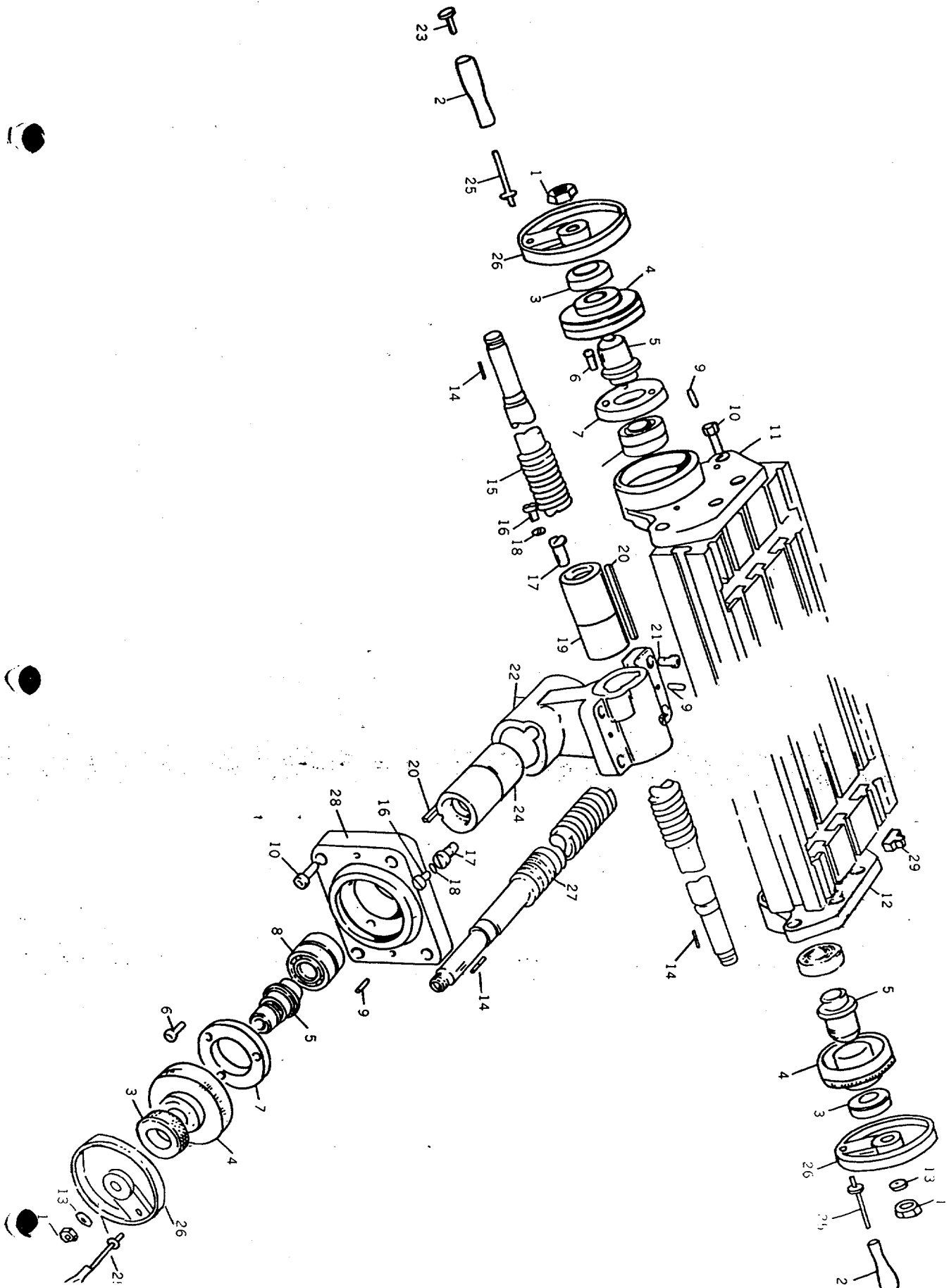
ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
78		M 8X12 Hollow Head Cap Screw	2
79		#7305 Bearing	1
80	FE-026	Bearing Retainer Ring	1
81		M 10X15 Hollow Head Cap Screw	3
82	FE-027A	Elevating Screw (Metric)	1
	FE-027B	Elevating Screw (inch)	1
83	AC-053	Black Plastic Handle	1
84	FE-021	Elevating Crank	1
85	FE-020	Gear Shaft Clutch Insert	1
86	FC-002	Dial Lock Nut	1
87	FE-19A	Dial With 125 Graduation	1
	FE-19B	Dial With 100 Graduation	1
88	FE-018	Dial Holder	1
89		M 6X20 Hollow Head Cap Screw	3
90	FC-005	Bearing Retainer Ring	1
91		#6204 2RS Bearing	2
92	FE-016	Bearing Cap	1
93		K 4X4X18	2
94	FE-017	Elevating Shaft	1
95		M 6X6 Grub Set Screw	1
96	FE-015	Bevel Pinion	1
97	FD-032	Strainer Case	1
98	FC-024	Column	1
99	FD-033	Strainer	1
100	FD-034	Coolant Pump Motor Set	1
101		M 6X20 Hollow Head Cap Screw	4
102		M 10X35 Hollow Head Cap Screw	2
103	FE-029	Elevating Screw Housing	1
104	FE-028A	Elevating Screw Nut (Metric)	1

PARTS LIST

BASIC MACHINE

ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
105		M 6X25 Hollow Head Cap Screw	3
106		Coolant Pump Motor	1
107	AC-024	Ram Lock Screw Handle	2
108	AC-040	Ram Lock Screw	2
109		Gib Lock Screw Nut	2
110	FD-038	Gib Lock Screw Nut	2
111	FD-036	Turret-Ram Gib	1
112		5ØX40 Spring Pin	2
113	FD-025	Door Locking Cam	1
114		M 6X6 Grub Screw	1
115	FD-027	Door	1
116	FD-026	Spring	1
117	FD-028	Door Knob Shaft	1
118	FD-023	Spider	1
119	FD-029	Door Knob	1
120	FD-017	Ram Pinion	1
121	FD-016	Ram Pinion Handle	1
122	FD-015	35Ø Ball 3/8" X16 NC	1
123	FD-008	Spring Washer	4
124	FD-013	Turret	1
125		3/8"-16 NC Hexagon Bolt	4
126	EA-111	Ram Lock Plunger	2
127	FD-022	Locking Bolt	4
128	FD-014	Ram Pinion Set Screw	1
129		W3/16" X3/8" Screw	6
230	FD-030	Strainer	2
131	FD-031	Strainer can	2
132		W3/16" X3/8" Screw	4
133	FD-042	Hose clip	2
134	FD-043	Pipe	2

Spare parts LEADSCREW ASSEMBLY



PARTS LIST

LEADSCREW ASSEMBLY

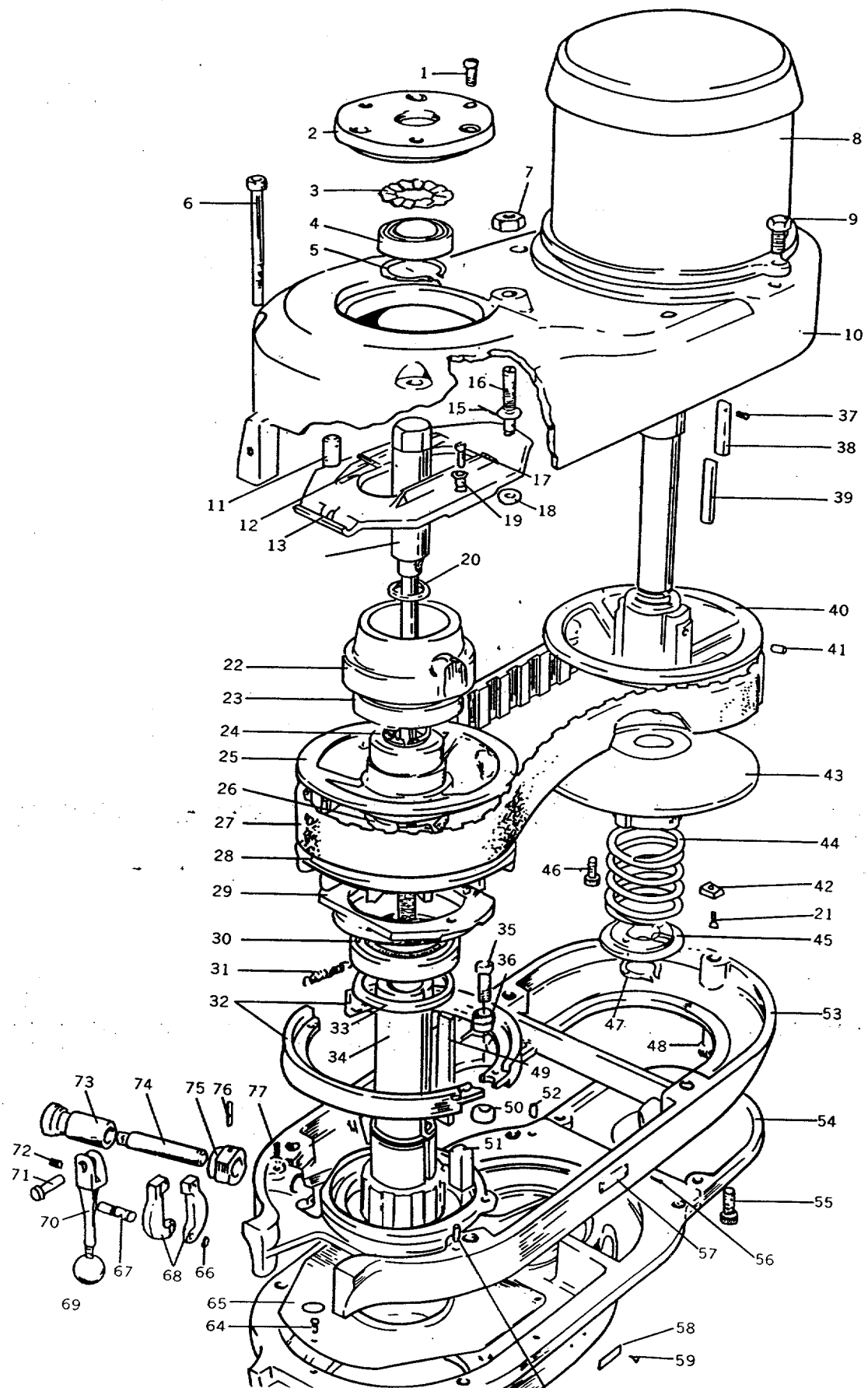
ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
1		1/2"-20 NF Jam Nut	3
2	AC-53	Black Plastic Handle	3
3	FC-002	Dial Lock Nut	3
4	FC-003A	Dial With 250 Graduation (Metric)	3
	FC-003B	Dial With 200 Graduation (Inch)	3
5	FC-004	Dial Holder	3
6		M 6X20 Hollow Head Cap Screw	6
7	FC-005	Bearing Retainer Ring	3
8		#6204 2RS Ball Bearing	5
9		5/8"X40 Spring Pin	8
10		M 10X25 Hollow Head Cap Screw	12
11	FC-006	Left Bearing Bracket	1
12	FC-006	Right Bearing Bracket	1
13	FC-01d	Washer	3
14		Key 4X4X25	3
15	FC-007A	Longitudinal Feed Screw (Metric Table) 49"	1
	FC-007B	Longitudinal Feed Screw (Inch Table) 49"	1
	FC-008A	Longitudinal Feed Screw (Metric Table) 42"	1
	FC-008B	Longitudinal Feed Screw (Inch Table) 42"	1
16	FC-027	5/32"-32NC Oval Head Screw	2
17	FC-026a	Cross Feed Nut Retaining Screw	2
18		3/16" Washer	2
19	FC-023A	Longitudinal Feed Nut (Metric)	1
	FC-023B	Longitudinal Feed Nut (Inch)	1
20		Key 5X5X41	2
21		M 10X25 Hollow Head Cap Screw	4
22	FC-024	Feed Nut Bracket	1
23	AA-029	Set Screw	3

PARTS LIST

LEADSCREW ASSEMBLY

ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
24	FC-025A	Cross Feed Nut (Metric)	1
	FC-025B	Cross Feed Nut (Inch)	1
25	FC-001C	Handle Shaft	3
26	FC-001b	Handle Wheel	3
27	FE-007A	Cross Feed Screw (Metric)	1
	FE-007B	Cross Feed Screw (Inch)	1
28	FE-008	Cross Feed Bearing Bracket	1
29	FC-028	T-Slot Plug	6

Spare parts 1 1/2 VS HEAD TOP HOUSING



PARTS LIST

YC-1 $\frac{1}{2}$ VS HEAD TOP HOUSING

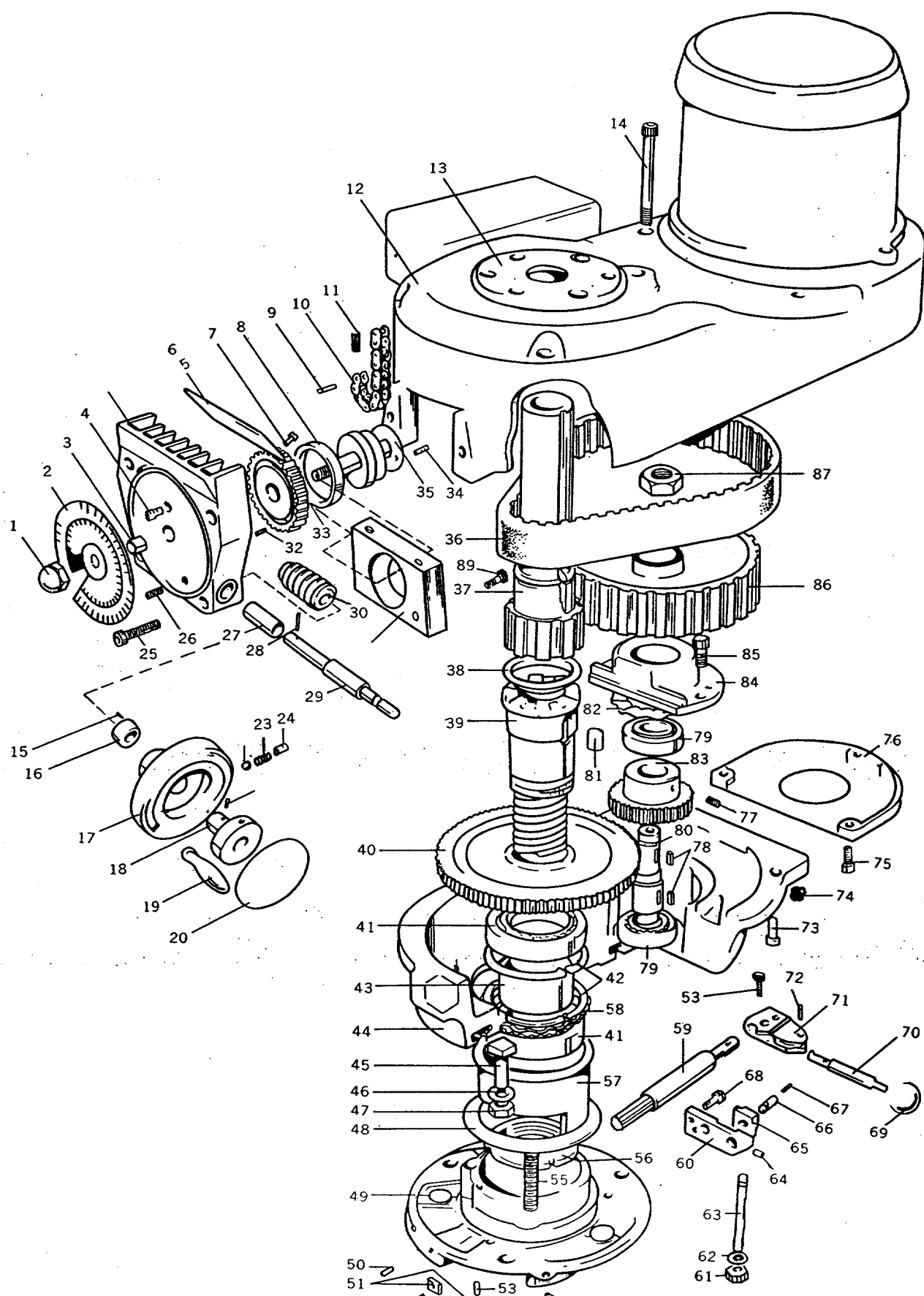
ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
1		M 6X20 Socket Cap Screw	3
2	FB-006	Top Bearing Cap	1
3	FB-028	Wave Spring Washer	1
4		Ball Bearing #6007 2RS	1
5		Snap Ring A-35mm	1
6	FB-078A	Socket Head Cap Screw	2
7		$\frac{3}{8}$ "-16 UNC Nut	1
8	FB-032	Motor 2HP 4P	1
9		$\frac{3}{8}$ "-16 UNC x 1 $\frac{1}{4}$ " Hex Head Screw	2
10	FB-001	Belt Housing	1
11	FB-059	Speed Change Chain Stud	1
12		4 $\emptyset$ X30 Spring Pin	1
13	FB-057	Speed Change Plate	1
14	FB-086A,086B	Drawbar 086A for #30, 086B for R8	1
15		2 $\emptyset$ x28 Cotter Pin	1
16	FB-060	Speed Change Plate Pivot Stud	1
17		M 5X20 Socket Head Cap Screw	2
18	FB-084	Washer for FB-060	1
19	FB-058	Pivot Sleeve	2
20	FA-212	Drawbar Washer	1
21		W $\frac{1}{8}$ "-40 NC Socket Cap Screw	1
22	FB-014	Spindle Pulley Bearing Sliding Housing	1
23		Ball Bearing #6010 2RS	1
24	FB-009	Bushing	1
25	FB-008	Adjustable-Driven Varidisc	1
26		Snap Ring A-40mm	1
27	FB-082	Belt	1
28	FB-012	Stationary Driven Varidisc	1
29	FB-007	Brake Bearing Cap	1
30		Ball Bearing #6010 2RS	1
31	FB-063	Brake Spring	2
32	FB-062	Brake Shoes	2
33	FB-016	Spindle Pulley Spacer	1
34	FB-015	Spindle Pulley Hub	1
35		$\frac{1}{4}$ "-20 UNC X 1" Hex. Head Screw	1
36	FB-069	Brake Shoe Pivot Sleeve	1
37		1.6 $\emptyset$ X12 Spring Pin	1
38	FB-033	Drive Key	1
39	FB-034	Key for ADJ Varidisc Motor Shaft	1
40	FB-030	Stationary Motor Varidisc	1
41		M 6X10 Socket Set Screw	1
42	FB-036A	Key for FB-036	1
43	FB-029	Adjustable Motor Varidisc	1
44	FB-035	Spring for Varidisc Motor Shaft	1
45	FB-036	Adjustable Varidisc Spring Collar	1
46		M 5X50 Socket Head Cap Screw	2
47		Ret. Ring A-24mm	1
48		M 8X20 Socket Cap Screw	1
49	FB-010	Key for FB-008	1
50		Chem Bracket Locknut $\frac{1}{4}$ "-20 UNC	1

PARTS LIST

YC-1 $\frac{1}{2}$ VS HEAD TOP HOUSING

ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
51	FB-013	Key for FB-015, FB-012	1
52	FB-079	Taper Pin	2
53	FB-002	Belt Housing Base	1
54	FB-037	Motor Pulley Cover	1
55		M 5X20 Socket Cap Screw	3
56		Rivets	4
57	FB-081A	Lubrication Nameplate	1
58	FB-081C	HI-LOW Range Nameplate	1
59		Rivets	2
60	FB-079	Taper Pin	2
61	FB-081B	Quill Feed Nameplate	1
62		Rivets	4
63	FB-003	Gear Housing	1
64		$\frac{3}{16}$ " X $\frac{5}{8}$ " Round Head Machine Screw	3
65	FB-022	Gear Housing Plate	1
66		Snap Ring A-6mm	1
67	FB-067	Brake Finger Pivot Stud	1
68	FB-068	Brake Operating Finger	2
69	EB-047	Ball Handle	1
70	FA-039	Brake Lock Handle	1
71	FA-038	Brake Lock Pin	1
72		M 4X6 Socket Set Screw	1
73	FB-065	Sleeve for Brake Lock Shaft	1
74	FB-066	Brake Lock Shaft	1
75	FB-064	Brake Lock Cam	1
76		4 $\emptyset$ X24 Spring Pin	1
77		M 6X5 Socket Set Screw	1

Spare parts 1 1/2 VS HEAD BACK GEAR



PARTS LIST

YC-1 $\frac{1}{2}$ VS HEAD BACK GEAR

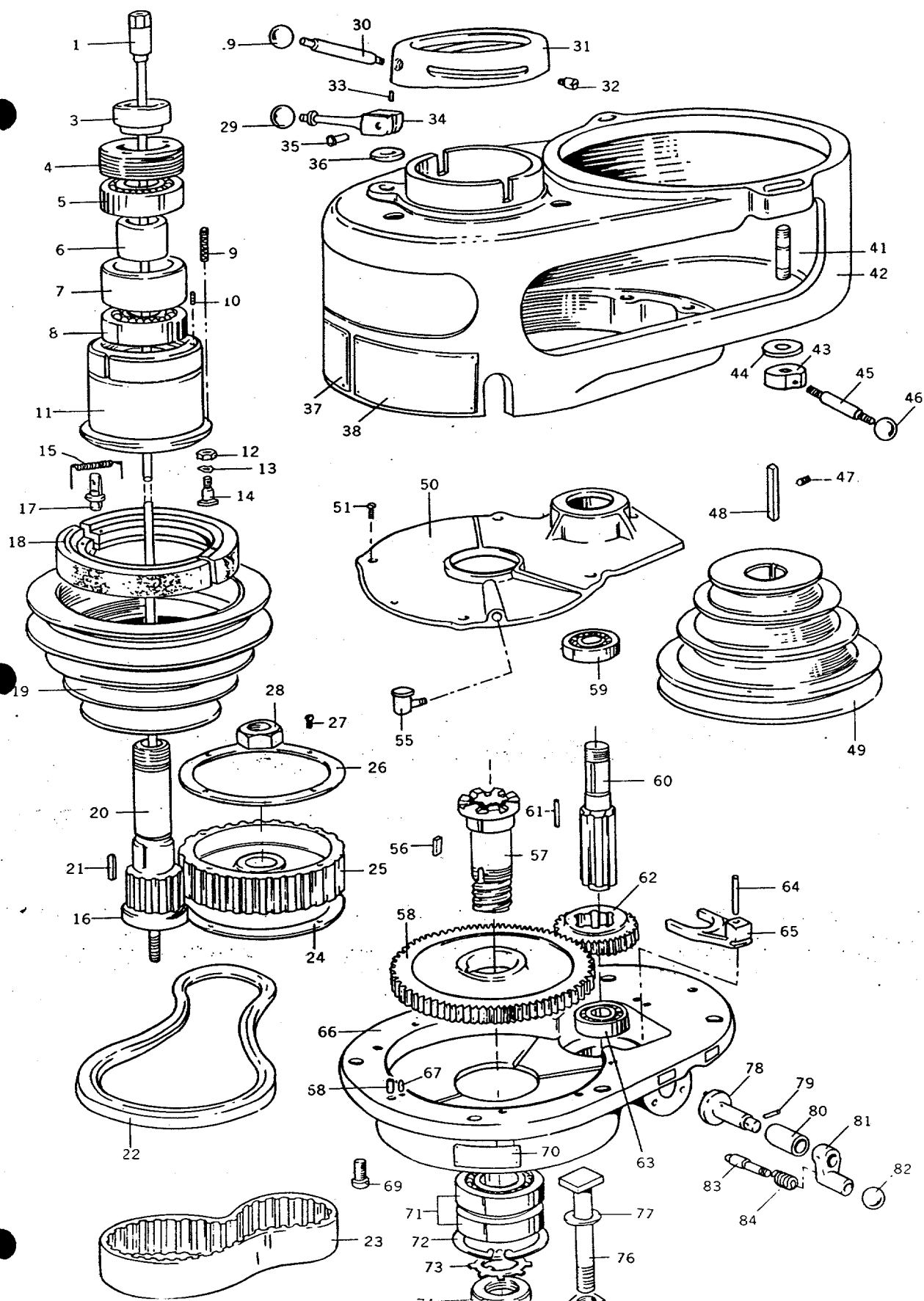
ITEM NO.	COMP. NO.	DESCRIPTION	Q. T. Y.
1	FB-056	Hex Cap Nut	1
2	FB-055	Vari-Speed Dial	1
3	FB-047	Bushing	1
4	FB-085	Full Dog	1
5	FB-005	Speed Changer Housing	1
6	FB-046	Speed Changer Chip Shield	1
7		W $\frac{3}{16}$ "-24 NC X $\frac{1}{4}$ " Machine Screws	2
8	FB-045	Bushing	1
9		Chain Pin	1
10	FB-061	Speed Changer Chain	1
11		Split Link Supplied with FB-061	1
12	FB-001	Belt Housing	1
13	FB-006	Top Bearing Cap	1
14	FB-078B	Socket Head Cap Screw	2
15		1.6 ϕ X8 Spring Pin	1
16	FB-054	Washer	1
17	FB-052	Speed Change Hand Knob	1
18	FB-050	Flange Sleeve	1
19	FB-053	Machine Handle	1
20	FB-055	Caution Plate	1
21		M 5X5 Socket Set Screw	1
22		5 ϕ Steel Ball	1
23	FB-051	Spring	1
24		M 6X6 Socket Set Screw	1
25		M 6X40 Socket Head Cap Screw	4
26		M 6X8 Socket Set Screw	1
27	FB-042	Bushing	1
28		2.5 ϕ X11 Spring Pin	1
29	FB-043	Speed Control Shaft	1
30	FA-139	Worm Gear	1
31			
32		3 ϕ X20 Spring Pin	1
33	FB-049	Speed Changer Spur Gear	1
34		3 ϕ X25 Spring Pin	1
35	FB-048	Speed Change Chain Drum	1
36	FB-083	Timing Belt	1
37	FB-015	Spindle Pulley Hub	1
38	FB-017	Timing Pulley Clutch Sleeve	1
39	FB-018	Spindle Gear Hub	1
40	FB-021	Spindle Bull Gear	1
41		Ball Bearing #6908 2RS	2
42		Snap Ring B-62mm	2
43	FB-027	Bull Gear Bearing Spacer	1
44	FB-003	Gear Housing	1
45	FB-080	Vert. Tee Bolts	3
46		$\frac{7}{16}$ " Washer	3
47		$\frac{7}{16}$ " Nut	3
48	FB-025	Ball Bearing Gear Sleeve Washer	1
49	FB-004	Fixed Clutch Bracket	1
50		M8X14 Socket Set Screw	1

PARTS LIST

YC-1 $\frac{1}{2}$ VS HEAD BACK GEAR

ITEM NO.	COMP. NO.	DESCRIPTION	Q.	T.	Y.
51	FB-026	Guide		2	
52		W $\frac{3}{16}$ 24 NC Flat Head Socket Cap Screw		2	
53		M 5X10 Socket Cap Screw		2	
54		Oil Cup $\frac{1}{8}$ "-28PT		1	
55	FB-024	Spring		3	
56	FB-019	Bearing Locknut		1	
57	FB-023	Bearing Sleeve		1	
58	FB-028	Wave Spring Washer		1	
59	FB-076	Bull Gear Shift Pinion		1	
60	FB-073	HI-LOW Detent Plate		1	
61		$\frac{3}{8}$ "-16 UNC Hex Nut		3	
62		$\frac{3}{8}$ " Lock Washer		3	
63	FB-077	Studs		3	
64		M 5X8 Socket Set Screw		1	
65	FB-074	Adjustable Plate		1	
66	FB-071	HI-Low Detent Plunger		1	
67	FB-072	Spring		1	
68		M 5X10 Socket Cap Screw		2	
69	FA-006	Bakelite Ball Handle		1	
70	FB-070	HI-LOW Shift Crank		1	
71	FB-075	HI-LOW Pinion Block		1	
72		3 $\emptyset$ X15 Spring Pin		1	
73		M 8X20 Socket Cap Screw		4	
74		$\frac{1}{8}$ "-28 PT Nipple		1	
75		M 5X20 Socket Head Cap Screw		3	
76	FB-037	Motor Pulley Cover		1	
77		M 6X5 Socket Set Screw		1	
78		Key 5X5X18		2	
79		Ball Bearing #6203 2RS		2	
80	FB-039	Pinion Shaft		1	
81	FB-020	Key for FB-018, FB-021		1	
82	FB-038	Wave Spring Washer		1	
83	FB-040	Pinion		1	
84	FB-031	Pinion Bearing Cap		1	
85		M 5X10 Socket Head Cap Screw		2	
86	FB-041	Timing Belt Pulley		1	
87		$\frac{5}{8}$ " Nut		1	
88	FB-044	Bracket for FB-045, FB-048		1	
89		M 6X20 Socket Head Cap Screw		2	

Spare parts 1 1/2VA HEAD TOP HOUSING



PARTS LIST

YC-1 $\frac{1}{2}$ VA HEAD TOP HOUSING

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
1	FA-072A	Drawbar for R8	1
2	FA-072B	Drawbar for 30 # Taper	1
3	FA-071	Upper Bearing Locknut	1
4	FA-070	Bearing Sleeve Locknut	1
5		Bearing #6207 zz	1
6	FA-068	Upper Bearing Spacer (small)	1
7	FA-069	Upper Bearing Spacer (large)	1
8		Bearing #6207 zz	1
9	FA-169	Compression Spring	4
10		S 6X6 Socket Set Screw	2
11	FA-066	Spindle Pulley Bearing Sleeve	1
12		$\frac{5}{16}$ "-18NC Nut	3
13		Spring Washer	3
14	FA-034	Brake Ring Screw	3
15	FA-036	External Spring	2
16	FA-063	Spindle Pulley Hub Ring	4
17	FA-037	Brake Lock Stud	1
18	FA-035	Brake Block	1
19	FA-065	Spindle Pulley	1
20	FA-064A	Spindle Pulley Hub	1
21		Key 6X6X25	1
22		"V" Belt	1
23	FA-030	Timing Belt 1 $\frac{1}{4}$ " Wide	1
24	FA-027	Timing Belt Pulley Flange	1
25	FA-028A	Timing Belt Pulley	1
26	FA-027	Timing Belt Pulley Flange	1

PARTS LIST

YC-1 $\frac{1}{2}$ VA HEAD TOP HOUSING

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
27		Flat Head Screw $\frac{1}{8}$ " X $\frac{3}{8}$ "	12
28	FA-029	$\frac{5}{8}$ "-18NF Nut	1
29	FA-006	Black Plastic Ball 1" Dia	2
30	FA-074	Spindle Clutch Lever	1
31	FA-073	Cam Ring	1
32	FA-067	Spindle Clutch Cam Ring Pin	2
33		S 4X6 Socket Set Screw	1
34	FA-039	Brake Lock Handle	1
35	FA-038	Brake Lock Pin	1
36	FA-047	Brake Lock Washer	1
37		Spindle Speed Plate	1
38		Operating Instruction Plate	1
41	FA-012	Motor Mounting Studs	2
42	FA-015	Belt Housing	1
43	FA-007	Motor Lock Nut	2
44	FA-008	Motor Locknut Washer	2
45	FA-009	Motor Locknut Handle	2
46	FA-006	Black Plastic Ball 1" Dia	1
47		M 6X10 Socket Set Screw	1
48		Key 7X7X25	1
49	FA-011	Motor Pulley	1
50	FA-013	Gear Housing Cover	1
51		M 5X10 Socket Cap Screw	5
55		Oil Cap	1
56		Bull Gear Key 8X8X15	1
57	FA-062	Spindle - Gear Hub	1
58	FA-061	Spindle Bull Gear	1
59		#6203 2RS Bearing	1

PARTS LIST

YC-1 $\frac{1}{2}$ VA HEAD TOP HOUSING

ITEM NO.	PART NO.	DESCRIPTION	Q. T. Y.
60	FA-026	Counter Shaft	1
61		Key 4X4X18	1
62	FA-025	Counter Shaft Gear	1
63		#6203 2RS Bearing	1
64	FA-032	Dowel Pin	1
65	FA-031	Back Gear Shifter fork	1
66	FA-014	Gear Housing	1
67		Spring Pin 5 $\emptyset$ X20	2
68		Spring Pin 6 $\emptyset$ X20	2
69		M 6X15 Scket Cap Screw	6
70		Disengage Feed Instruction Plate	1
71		#6208 ball Bearing	2
72		Snap Ring B-80mm	1
73	AB-003	Lock Washer	1
74	FA-059	Bearing Locknut	1
75		$\frac{7}{16}$ "-14 NC Nut	3
76	FA-Q45	Vertical Tee Bolt	3
77		$\frac{7}{16}$ " Spring Washer	3
78	FA-033	Back Gear Shift Crank	1
79		Spring Pin 3 $\emptyset$ X20	1
80	FA-044	Back Gear Shift Bushing	1
81	FA-003	Shift Crank	1
82	FA-006	Black Plastic Ball 1" Dia	1
83	FA-004	Gear Shift Plunger	1
84	FA-005	Compression Spring	1