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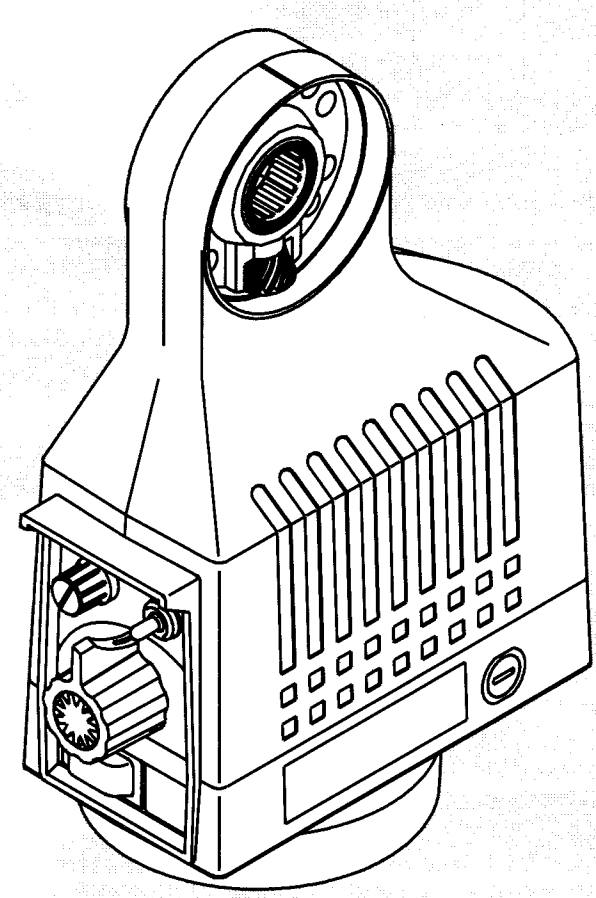
進給器安裝及使用說明書
POWER TABLE FEED INSTALLATION & OPERATION MANUAL



摘 要(INDEX)

◆安裝或使用前請詳細閱讀說明書
PLEASE READ THE OPERATION MANUAL BEFORE USE.

◆閱讀後請妥善收藏保管
KEEP THE MANUAL AND INSTALLATION DIRECTIONS AFTER PERUSAL.

◆安裝前注意事項 (CAUTION BEFORE INSTALLATION)

- 安裝前務必將銑床之電源關閉，進給器(POWER TABLE FEED)亦不可接通電源。(避免發生觸電，對人員造成傷害)
- Please be sure the power is off before installation. Even the power table feed not connected to the power. To avoid the accident caused during installation.
- 本產品採用AC 110V 60Hz之電源，若與使用地區或國家之電源不符合時，須自行準備變壓器。(避免使用錯誤電源，燒毀機體線路及電路機板)
- This power table feed has AC 110V / 60Hz circuit. Please be sure the input power is compliance with the power table feed. If the input power at user's place is not AC 110V / 60Hz, please prepare the transformer. (To avoid burn down to the wires & circuit board caused by the wrong power supply).
- 除消耗品及維修零件部份，不可強行拆裝此機體。(避免機件誤裝、遺漏、線路誤接或短路造成機器及人員之損傷)
- Except the consumable parts or maintenance parts, do not disassembly the power table feed. To avoid any injury to operator and damage to machine caused by the wrong assembly, omission, wrong connection and short circuit.

◆安裝方法 (INSTALLATION)

X軸-左右向適用 (AVAILABLE FOR TABLE TRAVEL)

● 前置作業

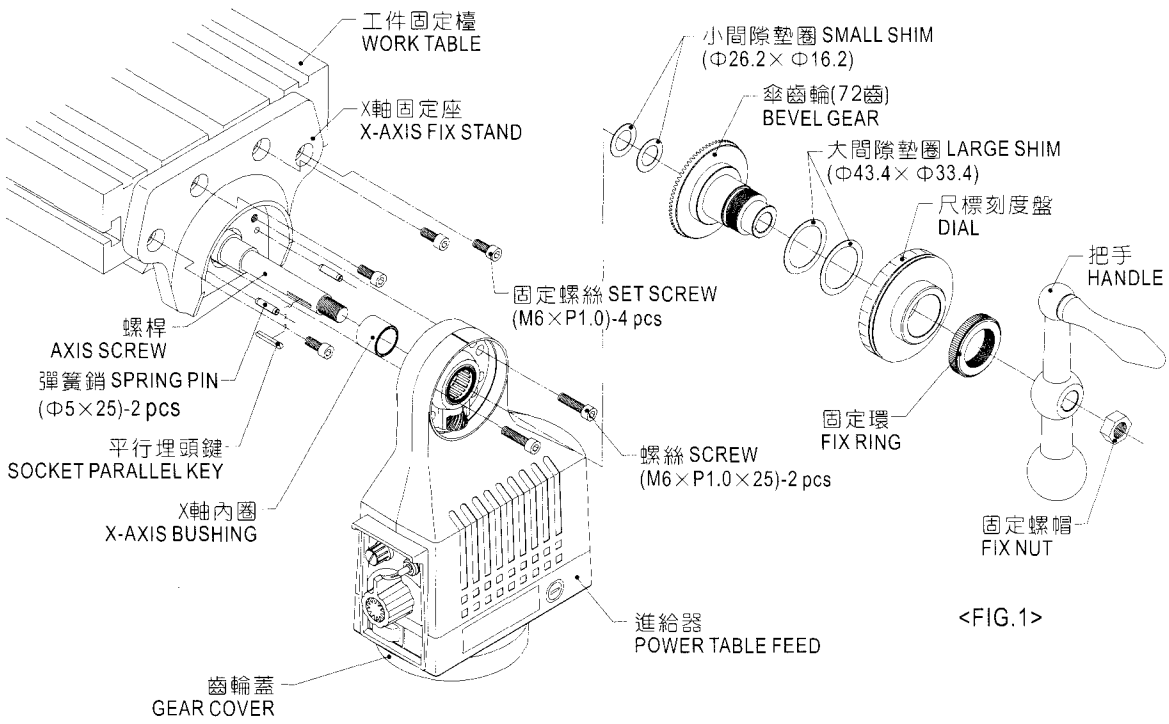
1. 從銑床上拆下把手固定螺帽，把手(轉輪)、平行埋頭鍵及尺標刻度盤。
2. 鬆開原有固定座之固定螺絲(M6×P1.0-4pcs)，輕敲固定座從螺桿上取下。

● INSTALLATION

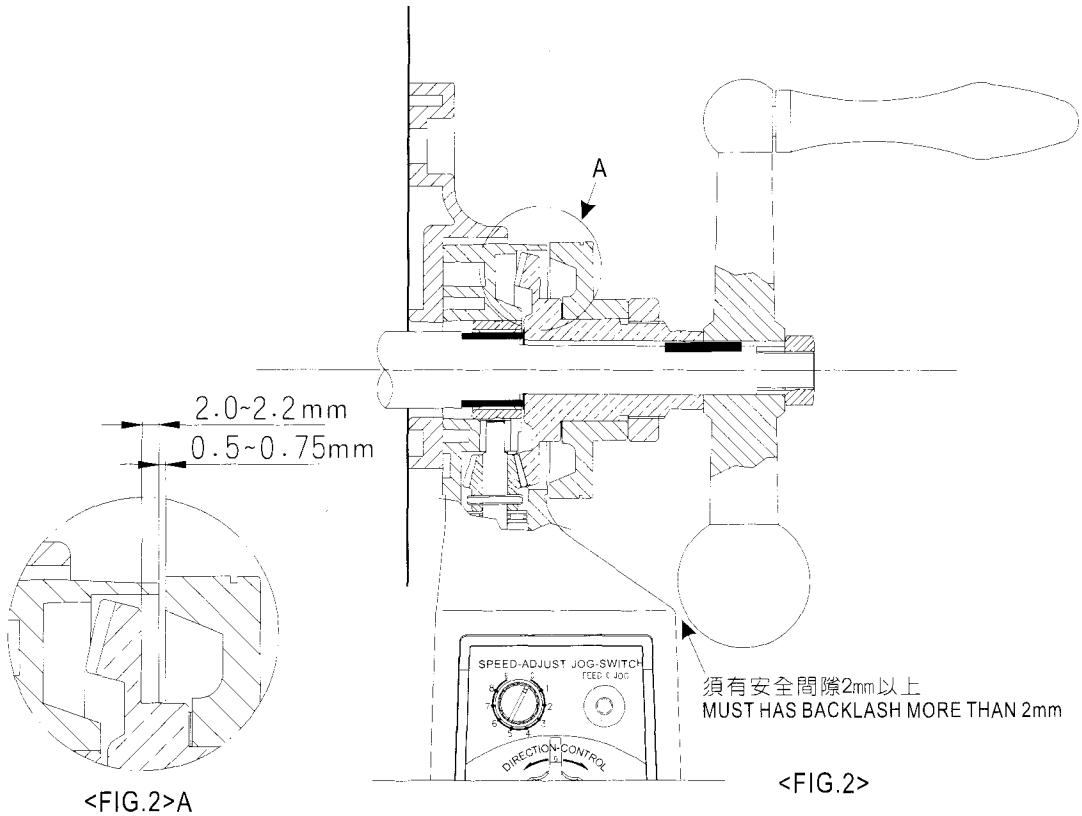
1. Disassembly handle fix screws, handle (hand wheel), parallel socket key and dial from the milling machine.
2. Loosen fix screws (M6xP1.0 - 4 pcs) from fix stand. Gently knock fix stand in order to take out the fix stand from the axis screw.

● 安裝進給器<圖一>

1. 將工件固定檯移到最左邊。
2. 在X軸固定座打入所附Φ5彈簧銷(2pcs)定位。
3. 安裝X軸固定座，以剛才拆下之固定螺絲(M6×P1.0-4pcs)鎖緊。
4. 將X軸內圈套上螺桿，推到最內處。
5. 將進給器機體對正定位彈簧銷套上X軸內圈輕輕敲入，安裝基準面貼合X軸固定座以所附六角承窩螺絲(M6×P1.0×25-2pcs)鎖緊。



<FIG.1>



<FIG.2>A

<FIG.2>

● INSTALL THE POWER TABLE FEED (FIG.1)

1.Move worktable to the left end.
2.Push the spring pin (Φ5 - 2 pcs) into X-axis fix stand for positioning.
3.Install X-axis fix stand, tighten up with fix screws (M6×P1.0 - 4 pcs).
4.To set X-axis bushing onto the axis screw and push bushing to the end.
5.To set power table feed at the right position & align with spring spin, set X-axis bushing & gently knock in. Surface attach to the X-axis fix stand. Then tighten up with inner hex socket screw (M6×p1.0×25 - 2 pcs).

● 安裝驅動組件及間隙調整<圖一、圖二>

1. 將小間隙墊圈(Φ26. 2× Φ16. 2)套上螺桿，建議先使用0. 25t3片。
2. 在螺桿之鍵槽中放入平行埋頭鍵，對準鍵槽再套入銅質傘齒輪(72齒)。
3. 拆下下方之齒輪蓋，握住進給器軸心(見圖十一)將傘齒輪推到底，並左右搖動檢查間隙(<圖二>A)2. 0~2. 2mm加減間隙墊圈，直到間隙正確為止。
4. 套上大間隙墊圈(Φ43. 4× Φ33. 4)建議先使用0. 25t 2片，然後裝上尺標刻度盤。
5. 檢查尺標刻度盤與機體端面之間隙尺寸(0. 5~0. 75mm)，若不在此範圍內請重覆4、5步驟，直到間隙尺寸正確為止。
6. 鎖上固定環，將尺標刻度盤固定。
7. 裝上把手(或轉輪)，鎖上固定螺帽。
8. 轉動把手幾圈檢查是否會碰觸到進給器機體，並感覺齒輪轉動時是否平順，若有明顯之齒間咬合聲即表示步驟3之間隙不正確，須重複3~8步驟，直到平順為止。

●INSTALL THE DRIVING SET & BACKLASH ADJUSTMENT (FIG.1\ FIG.2)

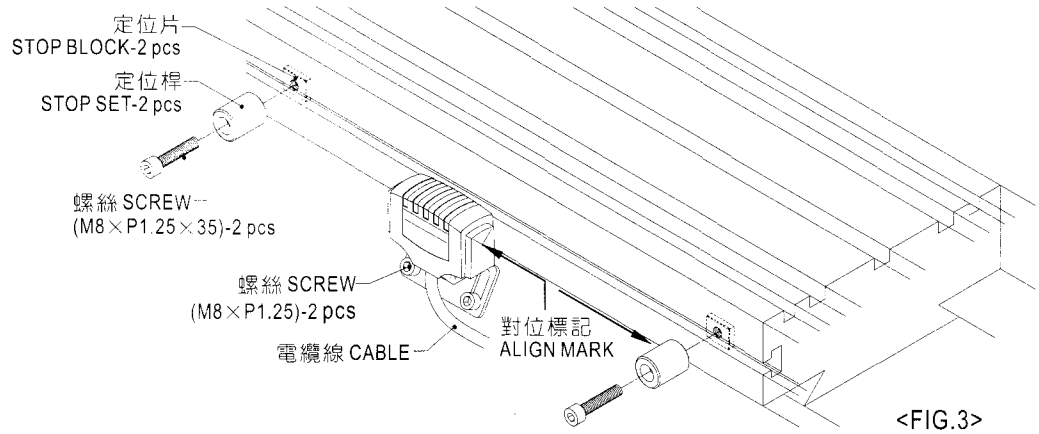
1.To add shim (Φ26.2× Φ16.2) onto axis screw. It is suggested to use 0.25t - 3pcs at beginning.
2.To set parallel key into key way of axis screw, align with the key way, to set the bevel gear (72T)
3.Disassembly the lower gear housing, hold power table feed shaft center(refer to FIG.11), push bevel gear to the end, and check the backlash. (FIG.2 A) To add few shims (2.0 ~ 2.2mm) for proper backlash.
4.To set the shim (Φ43.4× Φ33.4). It is suggested to use 0.25t - 2 pcs, and then set the dial.
5.To check backlash (0.5 ~ 0.75mm) between dial and surface of power table feed. If it's not in the range, please repeat the procedures step 4 to step 5 until the proper backlash is obtained.
6.To lock fix ring and dial.
7.To set handle (or hand wheel), tighten fix nut.
8.Rotate the handle few times and check whether it is interfere to power table feed. Also check whether the gear rotated smoothly. If any noise of gear mash, it shows the backlash checked in step 3 is not correct. Please repeat the procedures from step 3 to step 8 until gear rotating is smoothly.

● 安裝極限開關<圖三>

1. 將極限開關組鎖緊(M8×P1. 25-2pcs)。
2. 以所附螺絲(M8×P1. 25×35)鎖緊定位片及定位桿(左右各一)，請依照各別須要自行調整位置。
3. 將電纜線適度的整理固定，務必預留工件固定檯移動之最大距離。

● INSTALL THE LIMIT SWITCH (FIG.3)

1.Tighten limit switch unit. (M8×P1.25 - 2pcs)
2.According to the distance required, to set stop block & stop set in position with screw (M8×P1.25×35).
3.Arrange and sort the cable. Be sure to keep the maximum travel distance for worktable movement.



<FIG.3>

Y軸-前後向適用 (AVAILABLE FOR CROSS TRAVEL)

●前置作業

1. 從銑床上拆下把手固定螺帽，把手(轉輪)、平行埋頭鍵及尺標刻度盤。
2. 鬆開原有固定座之固定螺絲(M6×P1.0 - 3 pcs)，取下原有固定座。

●PREPARATION

1.Disassembly handle fix nut, handle (hand wheel), parallel socket key and dial from milling machine.
2.Loosen fix screws (M 6×P1.0 - 3 pcs) from fix stand. Take out fix stand from axis screw.

● 安裝進給器<圖四>

1. 將Y軸車臂移到最內側。
2. 安裝Y軸固定座，以剛才拆下之固定螺絲(M6×P1.0-3 pcs)鎖緊。
3. 將Y軸內圈套上螺桿，推到最內處。
4. 將進給器機體套上Y軸內圈，安裝基準面貼合Y軸固定座以所附螺絲(M6×P1.0×25-2 pcs)鎖緊。

●INSTALL THE POWER TABLE FEED (FIG.4)

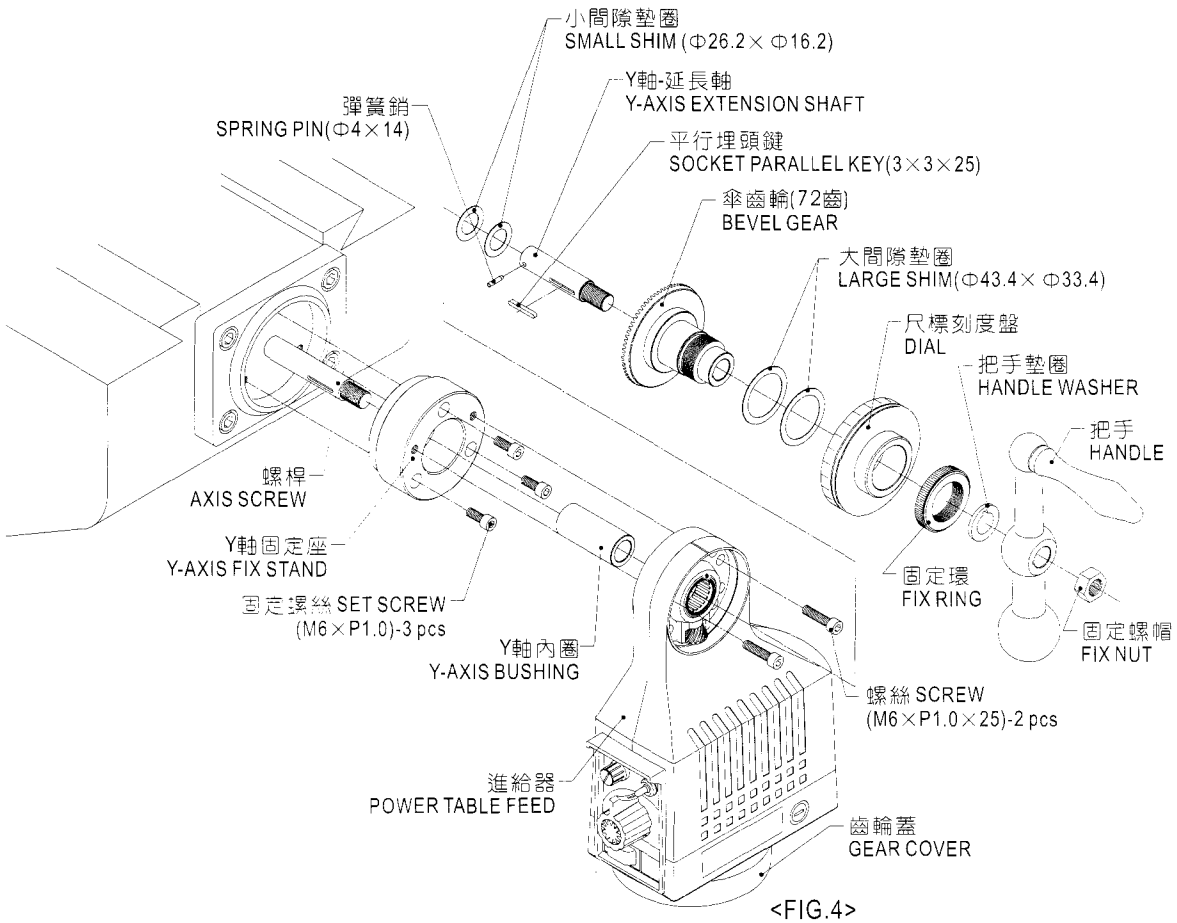
1.Move cross table to the column end.
2.Install Y-axis fix stand, tighten up with fix screws (M6×P1.0 - 3 pcs).
3.To set Y-axis bushing onto axis screw and push bushing back.
4.To set power table feed at the right position and align with spring spin, set Y-axis bushing & gently knock in. Surface attach to Y-axis fix stand. Then tighten up with inner hex socket screw (M6×P1.0×25 - 2 pcs)

●安裝驅動組件及間隙調整<圖四、圖五>

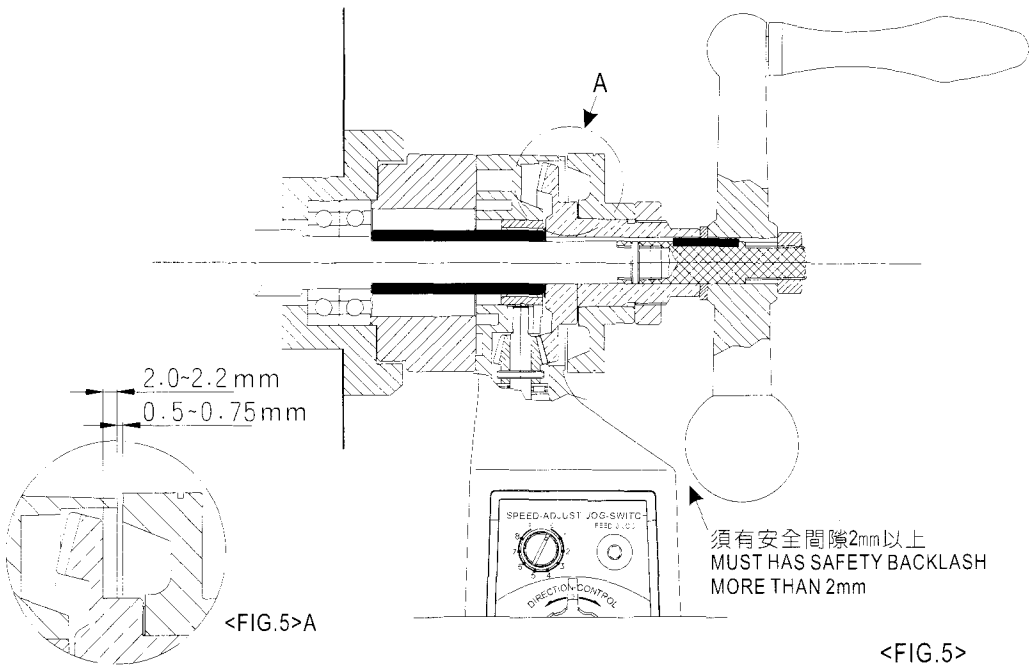
1. 將延長軸與螺桿鎖緊，對正延長桿鍵槽之延伸方向在螺紋鎖合處鑽孔Φ4. 0貫穿並以彈簧銷(Φ4×14)插入固定，(必要時請自行切削延長軸之長度)。
2. 將小間隙墊圈(Φ26. 2×Φ16. 2)套上螺桿，建議先使用0. 25t 3片。
3. 在延長軸之鍵槽中放入平行埋頭鍵，對準鍵槽再套入銅質傘齒輪(72齒)。
4. 拆下下方之齒輪蓋，握住進給器軸心(見圖十一)將齒輪推到底，並左右搖動檢查間隙或量測(<圖五>A)尺寸2. 0~2. 2mm，若不在此範圍內請重覆2、3、4步驟，加減小間隙墊圈，直到間隙尺寸正確為止。
5. 套上大間隙墊圈(Φ43. 4×Φ33. 4)建議先使用0. 25t 2片，然後裝上尺標刻度盤。
6. 檢查尺標刻度盤與機體端面之間隙尺寸(0. 5~0. 75mm)，若不在此範圍內請重覆5、6步驟，直到間隙尺寸正確為止。
7. 鎖上固定環，將尺標刻度盤固定。
8. 裝上把手墊圈(可視實際需要自行決定要或不要)、把手(或轉輪)，鎖上固定螺帽。
9. 轉動把手幾圈檢查是否會碰觸到進給器機體，並感覺齒輪轉動時是否平順，若有明顯之齒間咬合聲即表示步驟4之間隙不正確，須重複4~9步驟，直到平順為止。

●INSTALL THE DRIVING SETS & BACKLASH ADJUSTMENT (FIG.4\FIG.5)

1.Tighten up extension shaft with axis screw. To align with the direction of key way of extension shaft, drill a through hole Φ4.0 at the screw, then set into spring pin (Φ4×14) (If necessary, can cut the length of extension shaft)
2.To add shims (Φ26.2× Φ16.2) onto the axis screw. It is suggested to use 0.25t - 3pcs at beginning.
3.To set parallel key into the key way of extension shaft, align with the key way, to set the bevel gear (72T).
4.Disassembly the lower gear cover, holding the power table feed shaft center (refer to FIG.11), push bevel gear to the end, and check backlash. (FIG.5A), to add few shims (2.0 - 2.2mm) for proper backlash. If it's not in the range, please repeat the procedures step 2, step 3 & step 4 until proper backlash is obtained.
5.To set the shim (Φ43.4× Φ33.4). It is suggested to use 0.25t - 2 pcs, then to set the dial.
6.To check backlash (0.5 ~ 0.75mm) between dial and surface of power table feed. If it's not in the range, please repeat the procedures step 5 & step 6 until proper backlash is obtained.
7.To lock fix ring and dial.
8.To set handle washer < If necessary > / handle (or hand wheel), tighten fix nut.
9.Rotate the handle few times, to check whether it is interfere with power table feed. Also check whether the gear rotate smoothly. If any noise from gear mash, it shows the backlash checked in step 4 is not correct. Please repeat the procedures from step 4 to step 9 until gear rotating is smoothly.



<FIG.4>



<FIG.5>A

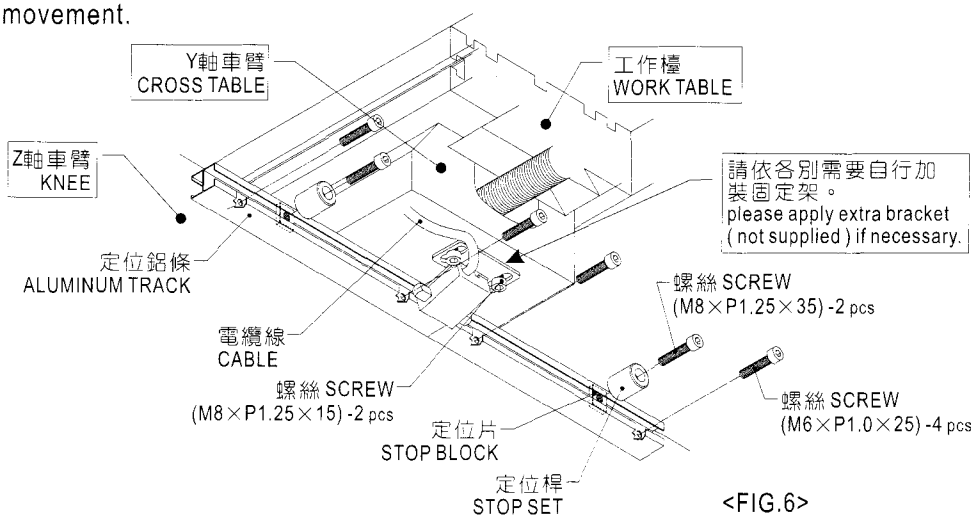
<FIG.5>

●安裝極限開關<圖六>

1. 於銑床Y軸車臂下方中心位置進行鑽孔攻牙(M8×P1. 25，攻牙深度20mm)。
2. 依圖示以螺絲(M8×P1. 25×15-2pcs)鎖緊極限開關，必要時請自行加裝固定架。
3. 先依自己的須要模擬Y軸車臂的行程，決定鋁條之前後位置及極限開關裝設預定之位置決定高度，進行銑床Z軸車臂之鑽孔攻牙(M6×P1. 0、攻牙深度25mm)。
4. 將所附之2支定位鋁條，依圖示以螺絲(M6×P1. 0×25-4pcs)鎖緊於銑床Y軸上，(2支定位鋁條務必成一直線)
5. 以螺絲(M8×P1. 25×35)-2pcs鎖緊定位片及定位桿(前後各一)，請依照各別須要自行調整位置。
6. 將電纜線適度的整理固定，務必預留工件移動之最大距離。

●INSTALL THE LIMIT SWITCH (FIG.6)

1.On the center position of cross table , to drill 2 holes (M8×P1.25, tapping depth 20mm).
2.Refer to drawing, tighten limit switch with screw (M8×P1.25×15-2 pcs),please apply extra bracket (not supplied) if necessary.
3.According to travel of cross table, to decide the position of aluminum track, also the height of limit switch. To drill 4 holes (M6×4P1.0, tapping depth 25mm) on knee.
4.By using screws (M6×P1.0×25-4 pcs), tighten two aluminum tracks onto the knee of milling machine. (Two aluminum tracks must be aligned to each other)
5.According to the distance required, to set stop block & stop set in position with screws (M8×P1.25×35-2 pcs)
6.Arrange and sort the cable. Be sure to keep the maximum travel distance for cross table movement.



<FIG.6>

Z軸-上下向適用 (AVAILABLE FOR KNEE TRAVEL)

●前置作業

1. 從銑床上拆下把手、平行埋頭鍵、把手連動環、尺標刻度環及其他結構件。
2. 鬆開原有固定座之固定螺絲(M6×P1. 0-3pcs)，現取下原有固定座。

●PREPARATION

1.Disassembly handle fix screws, handle (hand wheel), parallel socket key and dial from the milling machine.
2.Loosen fix screws (M6×P1.0-3 pcs) from fix stand. Take out fix stand from axis screw.

●安裝進給器<圖七>

1. 將Z軸車臂，移到最下方。
2. 安裝Z軸固定座，以剛才拆下之固定螺絲(M6×P1. 0-3pcs)鎖緊。
3. 將Z軸延長桿直接鎖入Z軸螺桿，直到迫緊培林。
4. 將進給器機體套入延長桿，貼近固定座，以所附(M6×P1. 0×25-2pcs)螺絲鎖緊。

●INSTALL THE POWER TABLE FEED (FIG. 7)

1.Move knee to the lowest position.
2.Install Z-axis fix stand, tighten up fix screws (M6×P1.0- 3 pcs).
3.To set Z-axis extension shaft onto Z-axis screw, until the bearing is pressed.
4.To set power table feed onto extension shaft and close to fix stand. And tighten up with inner hex socket screws (M6xp1.0×25-2pcs)

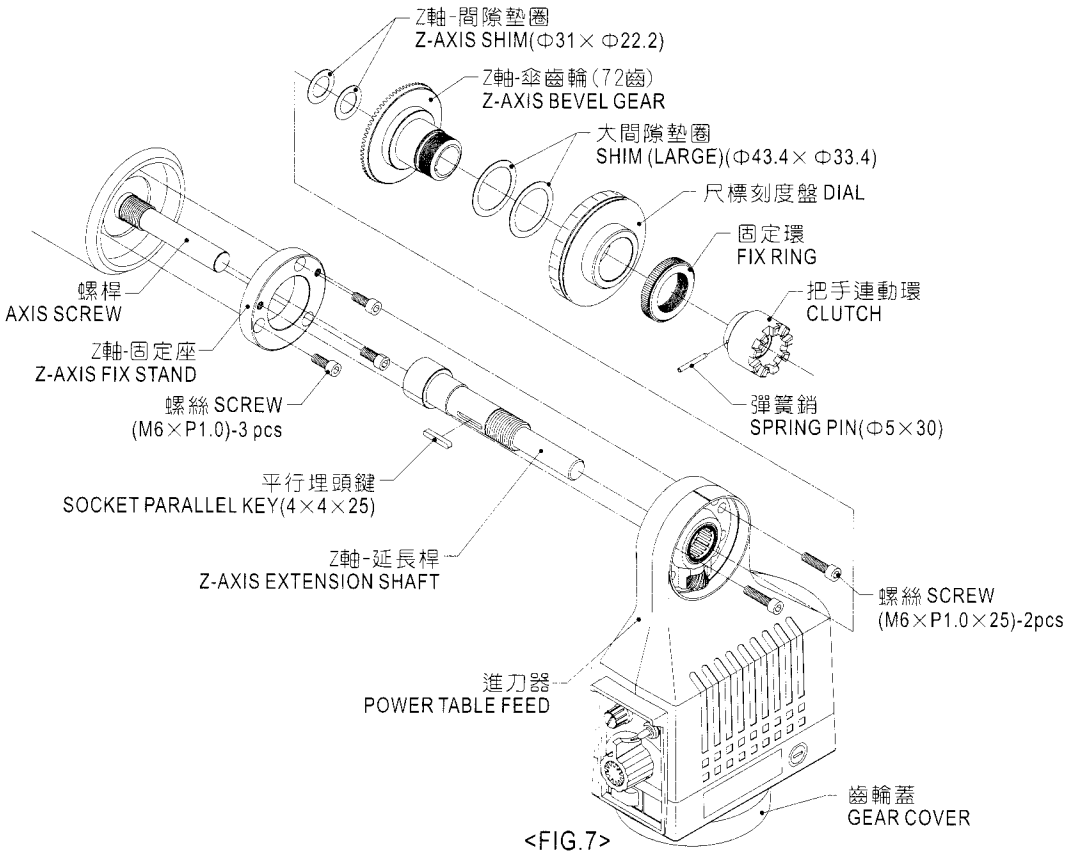
●安裝驅動組件及間隙調整<圖七、圖八>

1. 將Z間隙墊圈(Φ31. 0× Φ22. 2)套上延長桿，建議先使用0. 25t3片。
2. 在延長軸之鍵槽中放入平行埋頭鍵(4×4×25)，對準鍵槽再套入Z軸專用銅質傘齒輪(72齒)。
3. 拆下下方之齒輪蓋，握住進給器軸心(見圖十一)將齒輪推到底，並左右搖動檢查間隙或量測試(<圖八>A)尺寸2. 0~2. 2mm若不再此範圍內，請重覆1、2、3步驟，加減Z間隙墊圈，直到間隙尺寸正確為止。
4. 套上大間隙墊圈(Φ43. 4× Φ33. 4)，建議先使用0. 25t 2片，然後裝上尺標刻度盤。
5. 檢查尺標刻度盤與端面之間隙尺寸(0. 5~0. 75mm)，若不在此範圍內，請重覆4、5步驟，直到間隙尺寸正確為止。
6. 鎖上固定環，將尺標刻度盤固定。
7. 鎖上把手連動環，套入曲柄把手，轉動幾圈，檢查是否動作順暢，並感覺齒輪轉動時是否平順，若有明顯之齒間咬合聲即表示步驟3之間隙不正確，須重複3~7步驟，直到平順為止。
8. 在(<圖八>B)所示位置鑽孔Φ5貫通延長軸，並以所附彈簧銷(Φ5×30)插入固定。

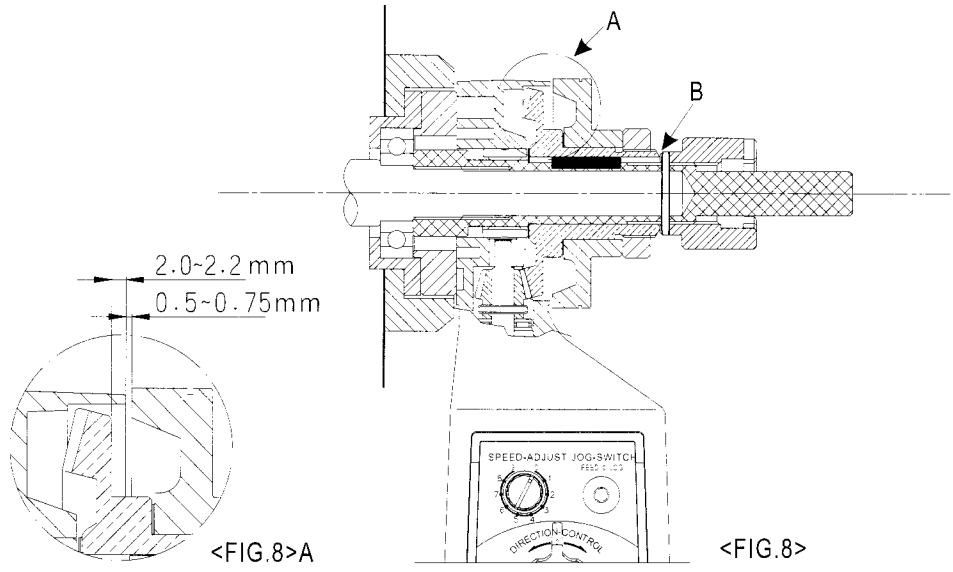
●INSTALL THE DRIVING SETS & BACKLASH ADJUSTMENT (FIG.7/ FIG. 8)

1.To add Z shim (Φ31.0× Φ22.2) onto extension shaft. It is suggested to use 0.25t - 3 pcs at beginning.
2.To set parallel key (4×4×25) into key way of extension shaft, align with the key way, to set the bevel gear (72T).
3.Disassembly the lower gear cover, holding the power table feed shaft center (refer to fig. 11), push bevel gear to the end, and check backlash. (FIG. 8 A), to add few shims (2.0 - 2.2mm) for proper backlash. If it's not in the range, please repeat the procedures step1 , step 2 & step 3 until proper backlash is obtained.
4.To set the shim (Φ43.4× Φ33.4). It is suggested that to use 0.25t - 2 pcs, then to set the dial.
5.To check backlash (0.5 - 0.75mm) between the dial and surface of power table feed. If it's not in the range, please repeat procedures step 4 & 5 until the proper backlash is obtained.
6.To lock fix ring and dial.

7. To set handle (or hand wheel), tighten the dial. Rotate handle few times, to check whether it is interfere with power table feed. Also check whether the gear rotate smoothly. If there any noise from gear mash, it shows the backlash in step 3 is not correct. Please repeat the procedures from step 3 to step 7 until gear rotating is smoothly.
8. Drill a through hole (Φ5) at position as FIG.8 B, then set with spring pin (Φ5×30).



<FIG.7>



<FIG.8>A

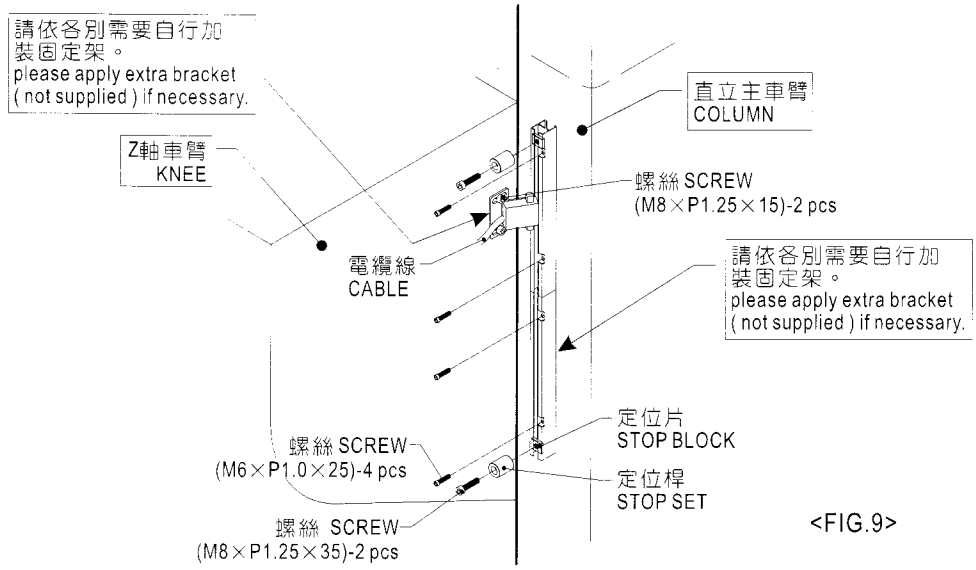
<FIG.8>

●安裝極限開關<圖九>

1. 於Z軸車臂靠近直立主車臂之接縫處鑽孔(M8×P1. 25，攻牙深度20mm)。
2. 以所附螺絲(M8×P1. 25×15-2pcs)鎖緊極限開關，必要時請自行加裝固定架。
3. 先依自己的須要模擬工作檯的行程，決定鋁條之上下位置，<圖九>進行直立主車臂之鑽孔(M6×P1. 0，深度25mm)
4. 將所附之鋁條，以螺絲(M6×P1. 0×25-2pcs)鎖緊於銑床上，必要時請自行加裝固定架。
5. 以螺絲(M8×P1. 25×35-2pcs)分別鎖緊上下兩組定位片及定位桿，請依自己須要自行調整高低位置。
6. 將電纜線適度的整理固定，務必預留工作移動之最大距離。

●INSTALL THE LIMIT SWITCH (FIG. 9)

1.On the position of knee (close to column), drill 2 holes (M 8×P1.25, tapping depth 20mm).
2.Tighten the limit switch with screw (M 8×P1.25×15- 2 pcs).
3.Refer to FIG.9, according to the travel of knee upward & downward, to decide the position of aluminum track, also the height of limit switch. To drill 4 holes (M 6×P1.0, tapping depth 25mm) on column.
4.By using screw (M 6×P1.0×25-2 pcs), tighten the two aluminum tracks onto the column of milling machine. (Two aluminum tacks must be aligned),please apply extra bracket (not supplied) if necessary.
5.According the distance required, to set the stop strain & stop set in position with screw (M 8×P1.25×35 - 2 pcs).
6.Arrange and sort cable. Be sure to keep the maximum travel distance for knee move ment.



<FIG.9>

X/Y/Z 適用 (AVAILABLE FOR TABLE / CROSS / KNEE TRAVEL)

●電源接通

※本機設計使用110V 50/60Hz交流電，若與使用地區之電源不同時，使用者務必自備變壓器轉換為110V 50/60Hz方可使用。

1. 直接插上110V 50/60Hz之交流電源即可。

※請注意電源線經過之處應避免高溫、潮溼的地區及尖銳的異物，更不可以重物直接壓在電源線之上。

● POWER CONNECTING

※This power table feed has AC 110V 50/60Hz circuit. Please be sure input power is compliance with the power table feed.
If input power at user's place is not AC 110V 50/60Hz, please prepare the transformer.

1.Just simply connect to 110V 50/60Hz AC power.

※Please avoid cable track explore in the circumstance with high temperature, high humidity or any sharp pieces around.

●檢查與確認

1. 寸動開關位置在"FEED"，速度調整鈕稍微調離"0"之位置，進給旋鈕指向"0"之位置。
2. 打開電源開關(ON)，轉動"進給旋鈕"向左(或向右)，看是否動作正常。
3. 在工件固定檯向左／向右進行中，按壓左極限(右極限)按鈕，看是否正常停止，鬆開後又繼續動作。

● CHECKING & CONFIRMING

1.Set "jog switch" at "FEED" position, "speed adjust knob" slight away from "0" position. "feed knob" at "0" position.
2.Turn on "ON" switch. Turn "feed knob" to left (or right), to check whether the movement is at normal status.
3.During worktable travels left / right, press left limit switch button (or right limit switch button), to check whether it is stop at normal status, loosen and then repeat the operation.

◆使用說明<圖十> OPERATION (FIG.10)

●電源開關及過載復歸按鈕

1. 電源開關右按ON，左按OFF，ON時會有紅色燈顯示。
2. 另外右側扁圓形之紅色小按鍵，即為過載復歸鍵，當機器負載過大達危險點時，按鍵會跳起來切斷電源，使用者必須減小切削負載後，再按下過載復歸鍵，即可正常運轉。

●POWER SUPPLY SWITCH AND RESET SWITCH

1.The right side of power switch is "ON". The left side is OFF. The red light will shown when press "ON".
2.The red round button on right side is "reset switch".
When machine is overload, "reset button" will jump up to cut off the power. The operator must reduce cutting load, then press "reset switch". The machine can be operated again.

●進刀旋鈕及快送按鈕

1. 電源起動後，轉動進給旋鈕，左轉則左向進給，右轉則右向進給。
2. 中間紅色之按鈕為快送按鈕，按下不放，刀具以最快速度向左(右)移動，鬆開後，則維持原來速度方向繼續工作。

● FEED KNOB AND RAPID BUTTON

1.After power is "ON", turn "feed knob". Turn left for left side feeding, turn right for right side feeding.
2.The button in the middle is "rapid button". The tool travel rapidly to left side (right) if kept pressing the button. The power table feed will back to normal speed when release the button.

●速度調整鈕

1. 正常工作可依個人經驗，調整正常切削之速度，由0(停止)~9(最高速)。

● SPEED ADJUST KNOB

1.The speed can be adjusted according to operator's requirement. The speed range is 0 to 9. (stop to highest speed)

●寸動開關

1. 正常位置應擺放在"FEED"之位置，須要進行寸動微調時，撥到"0"之位置，依微調位置須要往右撥動，按住不放，直到前進到須要之位置後再放開。

● JOG SWITCH

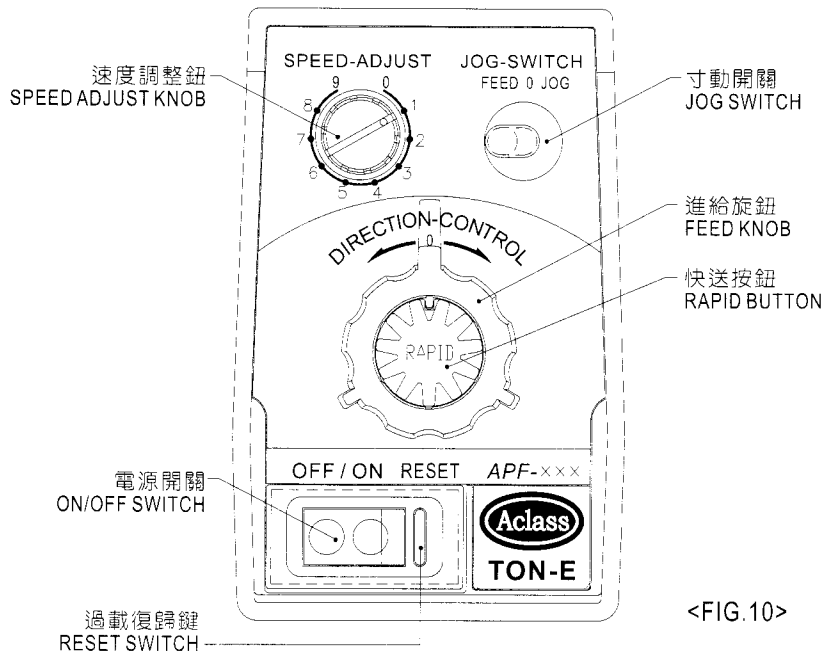
1.Normally, "jog switch" should be at "FEED" position. For jog movement, just switch to "0" position. Kept holding the switch, don't release the switch until it travels to the position required.

注意：當停止寸動工作時，請務必依序將進給旋鈕關至"0"(OFF)之位置，再將寸動開關撥到"FEED"之位置。

Note: To stop jog operating, must turn "FEED KNOB" to "0" (OFF) position. Then move "JOG SWITCH" to "FEED" position.

※使用寸動開關務必遵循上述之動作順序養成習慣，否則容易造成錯誤動作。

※Be sure to follow the procedure required for jog operation. To avoid any damage caused by the wrong operation.



<FIG.10>

◆保養與維修 MAINTENANCE

●齒輪潤滑保養：<圖十一>

每半年應打開齒輪蓋檢查一次螺旋齒輪之潤滑油是否足夠！潤滑油可選用石墨類，絕對不可使用矽膠類。

●MAINTENANCE FOR GEAR LUBRICATION (FIG. 11)

In every 6 months, open the gear cover, and check if lubrication for spiral gear is sufficient. It is suggested to take graphite type lubrication, do not use silicon type lubrication.

●齒輪磨耗檢查：<圖十一>

螺旋齒輪(塑膠製107齒)，齒形是否已磨損！若磨耗嚴重，則應儘快換新。

更換步驟如下：

1. 打開齒輪蓋(以手指按壓兩側卡鉤下緣拉下)。
2. 鬆開C型-扣環，依序取下平墊圈／連動盤組(吸附軟鐵組/連動盤)／平行銷／耐磨墊圈／齒輪轉軛組(螺旋齒輪/轉軛組)／止推軸承。
3. 拆解齒輪轉軛組更換螺旋齒輪後再依反順序裝回。

※吸附軟鐵組及轉軛組表面務必保持清潔，不可沾上油污，若不慎沾染必須以揮發性清洗劑洗淨，決不可用水清洗。

●CHECKING FOR GEAR WEAR OUT (FIG. 11)

To check the gear shape of spiral gear (made of plastic 107T) is wore out. If gear wore out badly, please replace a new gear. The procedure to replace the gear at follows:

1.Open the gear cover (press the edge of hooks on both sides, and pull down.)
2.Loosen C type ring, sequentially take out washer / Pouple disk set (Occlusion soft set / Pouple disk) / Pin / abrasive washer / Gear york set (spiral gear /York set) / thrust bearing.
3.Disassembly Gear york set , replace spiral gear, then install it back by sequentially.

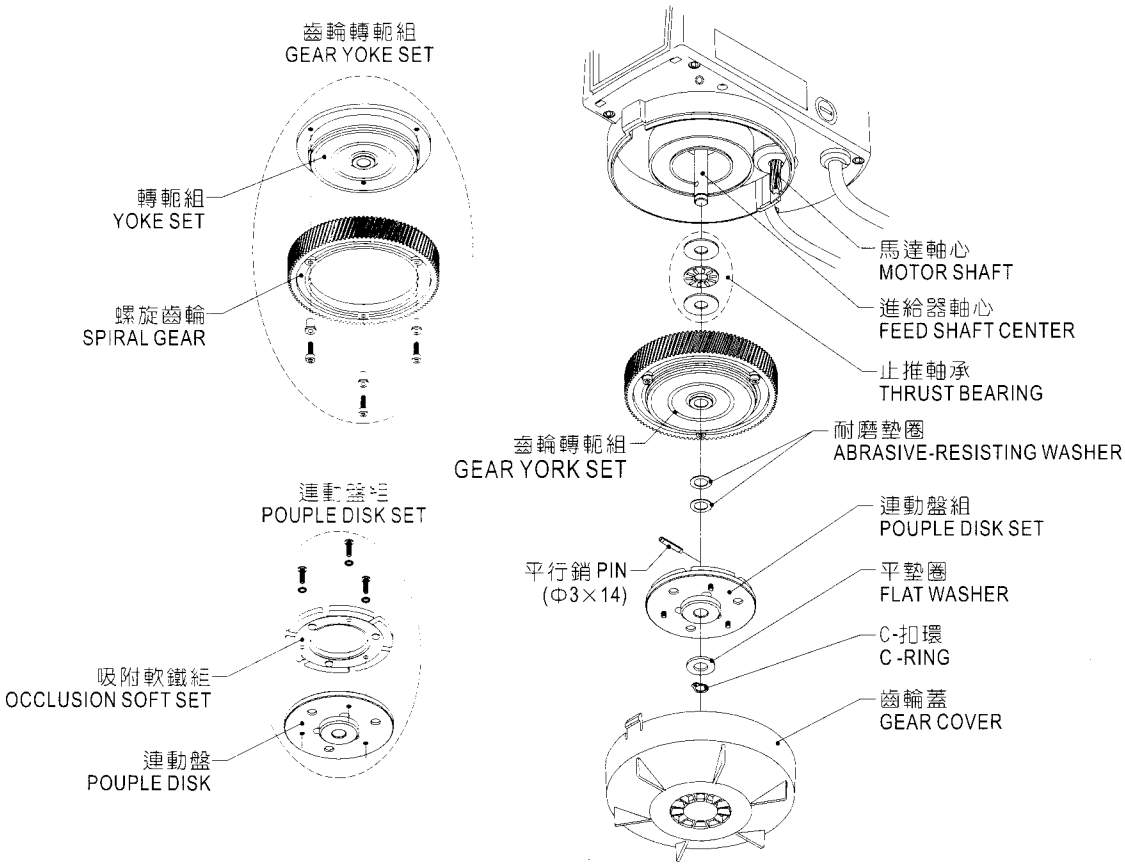
※Occlusion soft set and surface of York set must be kept clean, can not attached with oil. If there are any oil, please clean it by volatile solvent, do not clean by water.

●碳刷磨耗檢查：<圖十二>

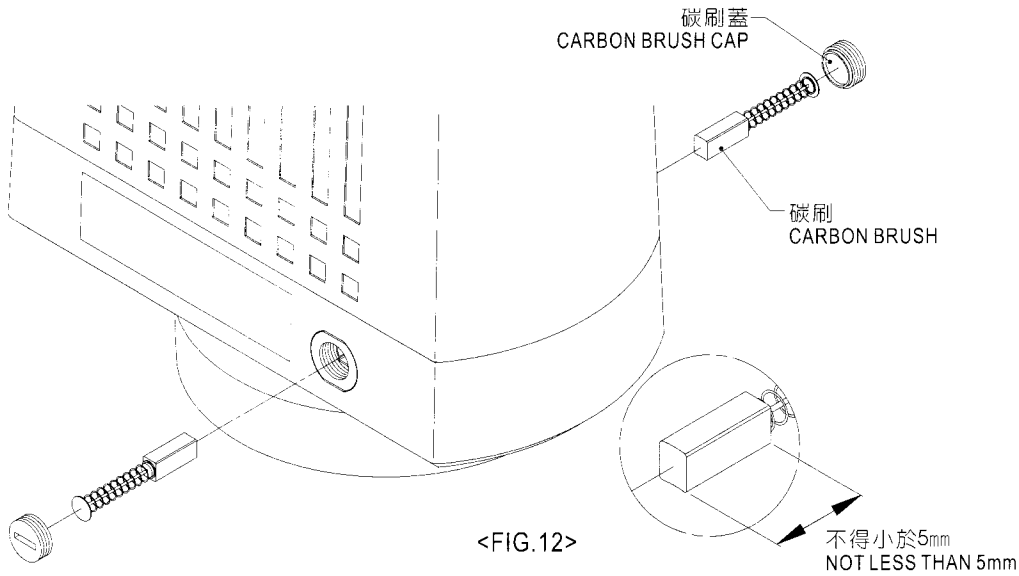
每半年應打開碳刷蓋，檢查碳刷是否已磨耗，若長度少於5mm則應立即更換(前後共2組須同時更換)。

●CHECKING FOR CARBON BRUSH WEAR OUT (FIG. 12)

In every 6 months, open carbon brush cap, to check brush is wore out. If the length of brush is less than 5mm, the brush must be replace immediately. (2 sets at the front & back).


齒輪轉軛組
GEAR YOKE SET
轉軛組
YOKE SET
螺旋齒輪
SPIRAL GEAR
連動盤組
POUPLE DISK SET
吸附軟鐵組
OCCLUSION SOFT SET
連動盤
POUPLE DISK
馬達軸心
MOTOR SHAFT
進給器軸心
FEED SHAFT CENTER
止推軸承
THRUST BEARING
齒輪轉軛組
GEAR YORK SET
耐磨墊圈
ABRASIVE-RESISTING WASHER
連動盤組
POUPLE DISK SET
平行銷 PIN
(Φ3×14)
平墊圈
FLAT WASHER
C-扣環
C -RING
齒輪蓋
GEAR COVER

<FIG.11>

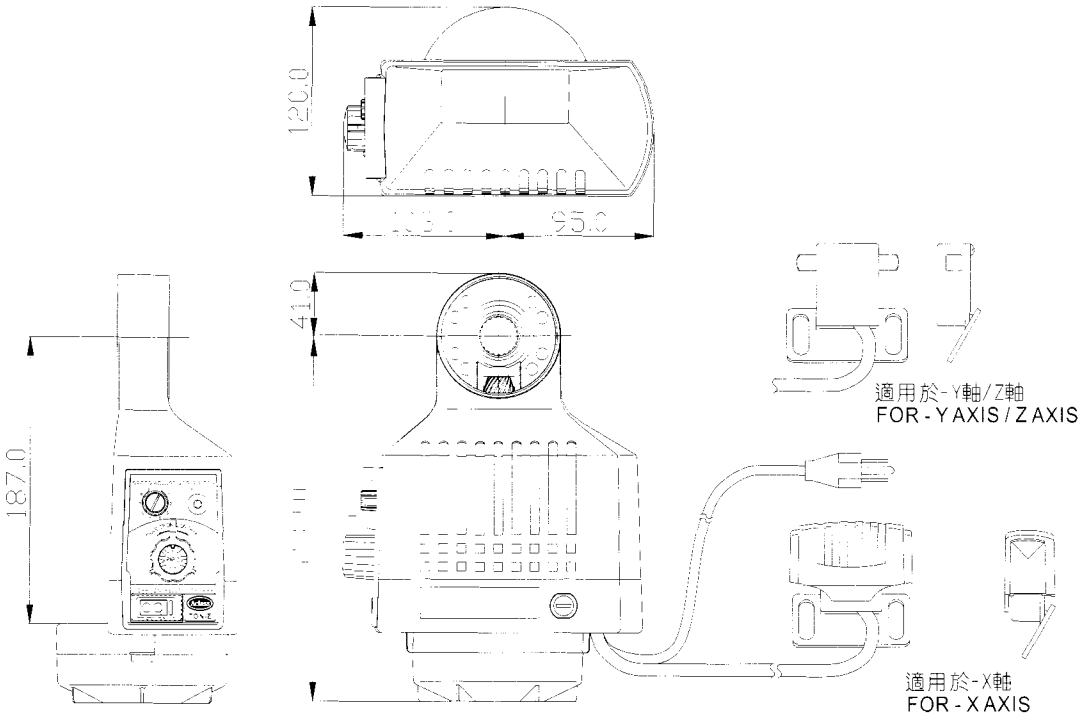

碳刷蓋
CARBON BRUSH CAP
碳刷
CARBON BRUSH
不得小於5mm
NOT LESS THAN 5mm

<FIG.12>

◆故障排除 (TROUBLE SOLUTION)

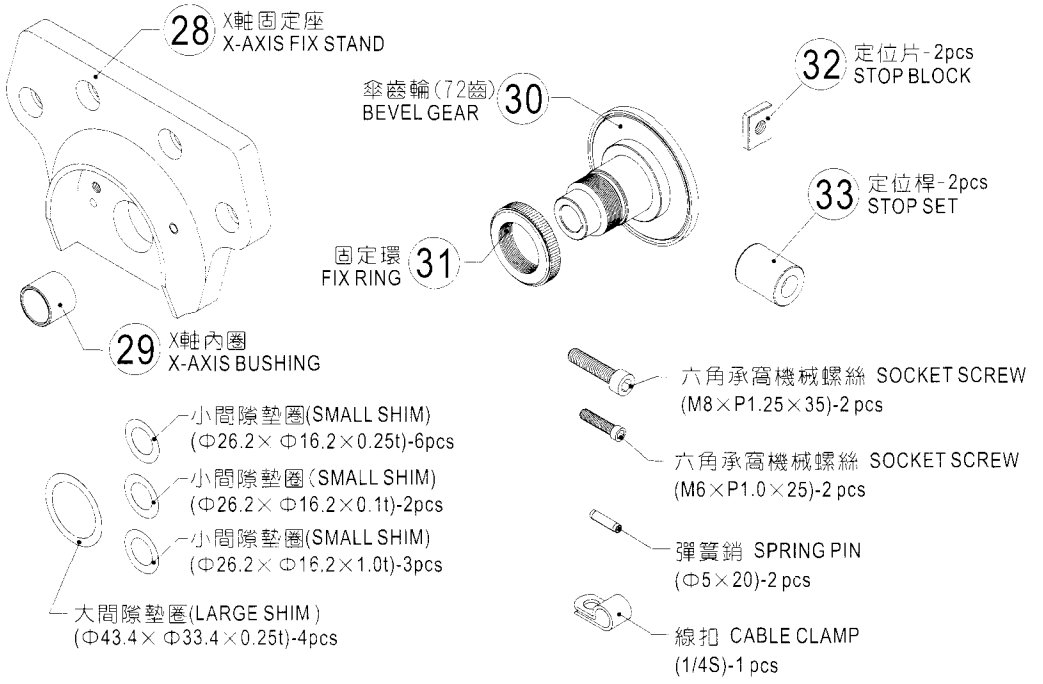
現象 (Condition)	檢查 (Checking)	對策 (Solution)
電源指示燈不亮，且進給器不動作。 ON/OFF light is not ON, power table feed is not working.	1. 電源插頭是否鬆脫？ 1. Check the power is not plug on.	●重新插好插頭。 ●Check power connecting & plug.
	2. 電源開關是否確實在ON的位置上。 2.ON/OFF switch at ON position.	●將電源開關按在ON之位置。(紅色燈點亮) ●Press the switch to ON position. (Red light is ON)
	3. 過載保護器是否動作了？(跳起來) 3.Reset switch is jump up.	●減輕加工刀具之負荷，再按下過載復歸鍵，重新啟動進給器。 ●To reduce tool load, press reset switch , restart the power table feed.
電源ON指示燈亮，啟動進刀旋鈕，而進給器不動作。 ON/OFF light is ON, start feed knob, but power table feed is not working	1. 寸動開關是否在"FEED"的位置？ 1.Check jog switch at "FEED" position?	●將進給旋鈕撥至"0"(OFF)的位置將寸動開關撥到"FEED"位置，再重新啟動進給器。 ●Turn feed knob to "0" OFF position. Jog switch to "FEED" position, restart the power table feed again.
	2. 速度調整旋鈕是否停在"0"的位置？ 2.Speed adjust knob at "0" position?	●將速度調整鈕順時針轉動直到理想速度為止。 ●Turn the speed adjust knob clockwise direction until the required speed achieved.
(多年使用以後)使用中進給器無力，或常無故打滑。 After few years operation, the power table feed loosing or sliding.	1. 打開齒輪蓋，檢查馬達軸心與齒軸軸心未正常連動。 1.Open gear cover, check the motor shaft & gear shaft not engaged.	●離合器磨耗失效，更換轉軛組及吸附軟鐵組。(圖十一) ●Clutch wore out, to replace york set and occlusion soft set (FIG. 11)
	2. 打開齒輪蓋，檢查齒輪，齒形崩損。 2.Open gear cover and check whether gear shape is wore out.	●更換齒輪。(圖十一) ●Replace gear. (FIG. 11)
	3. 碳刷是否已磨耗完畢？(約剩下5mm) 3.Carbon brush wore out. (Less than 5mm.)	●以起子旋開碳刷蓋同時更換兩個碳刷。 ●Open the carbon brush cap and replace two carbon brushes.

◆外觀尺寸圖 (OUTSIDE DIMENSION)

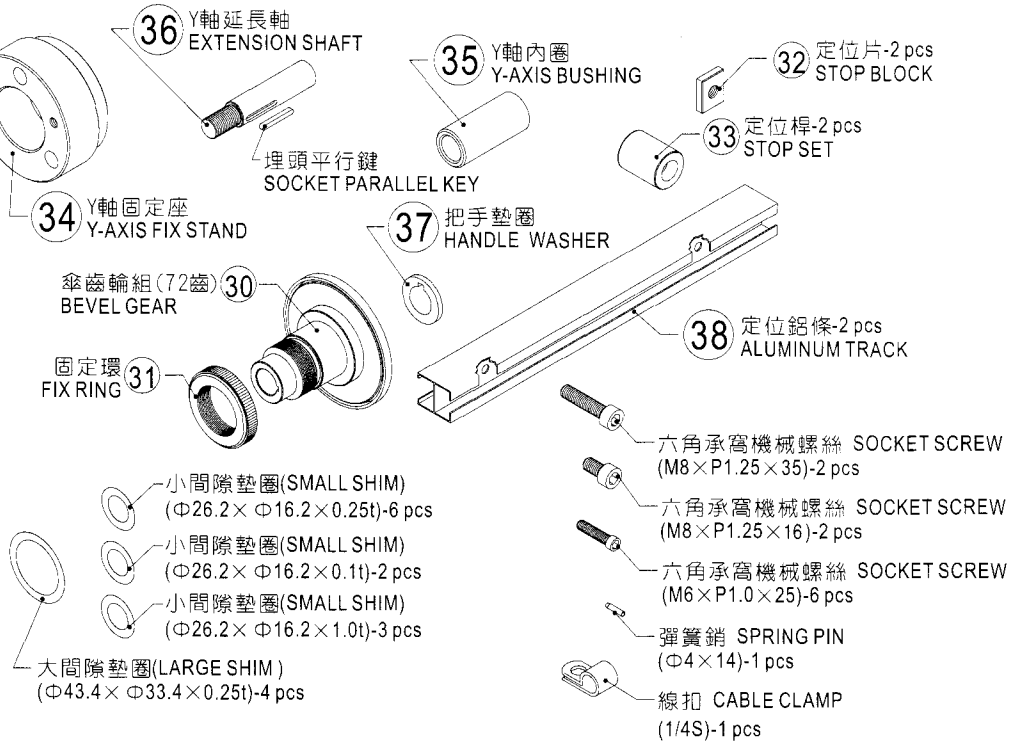


◆附件及維修零件表 (ACCESSORIES & PARTS LIST)

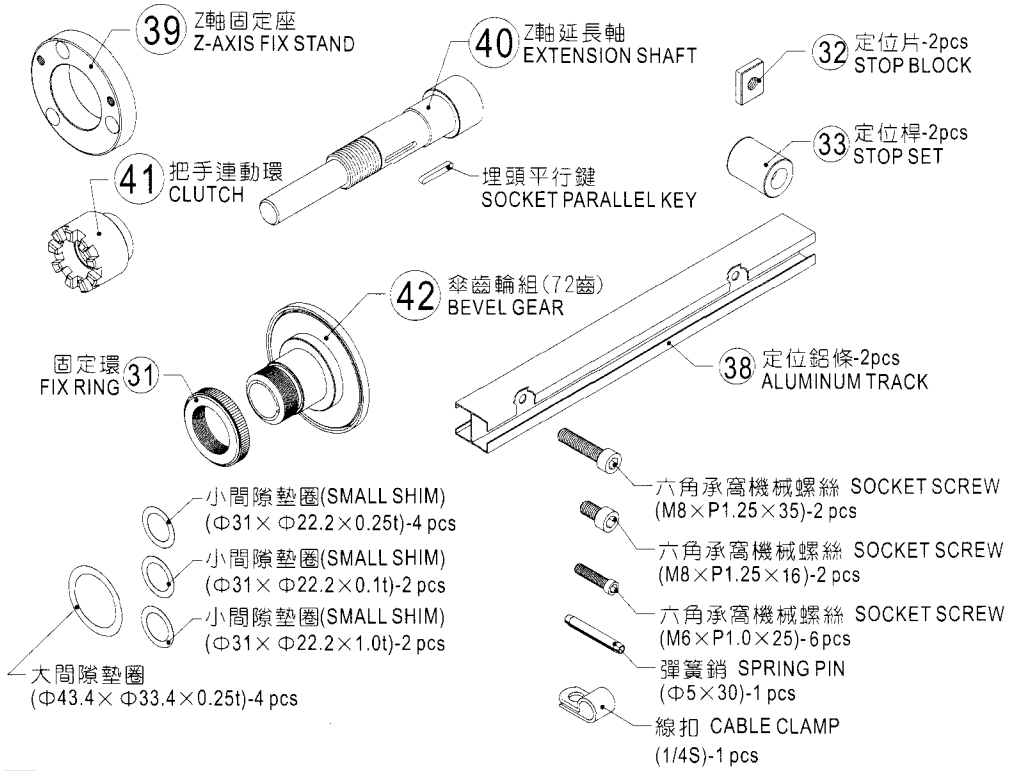
● ACCESSORIES SPECIAL FOR X-AXIS



● ACCESSORIES SPECIAL FOR Y-AXIS

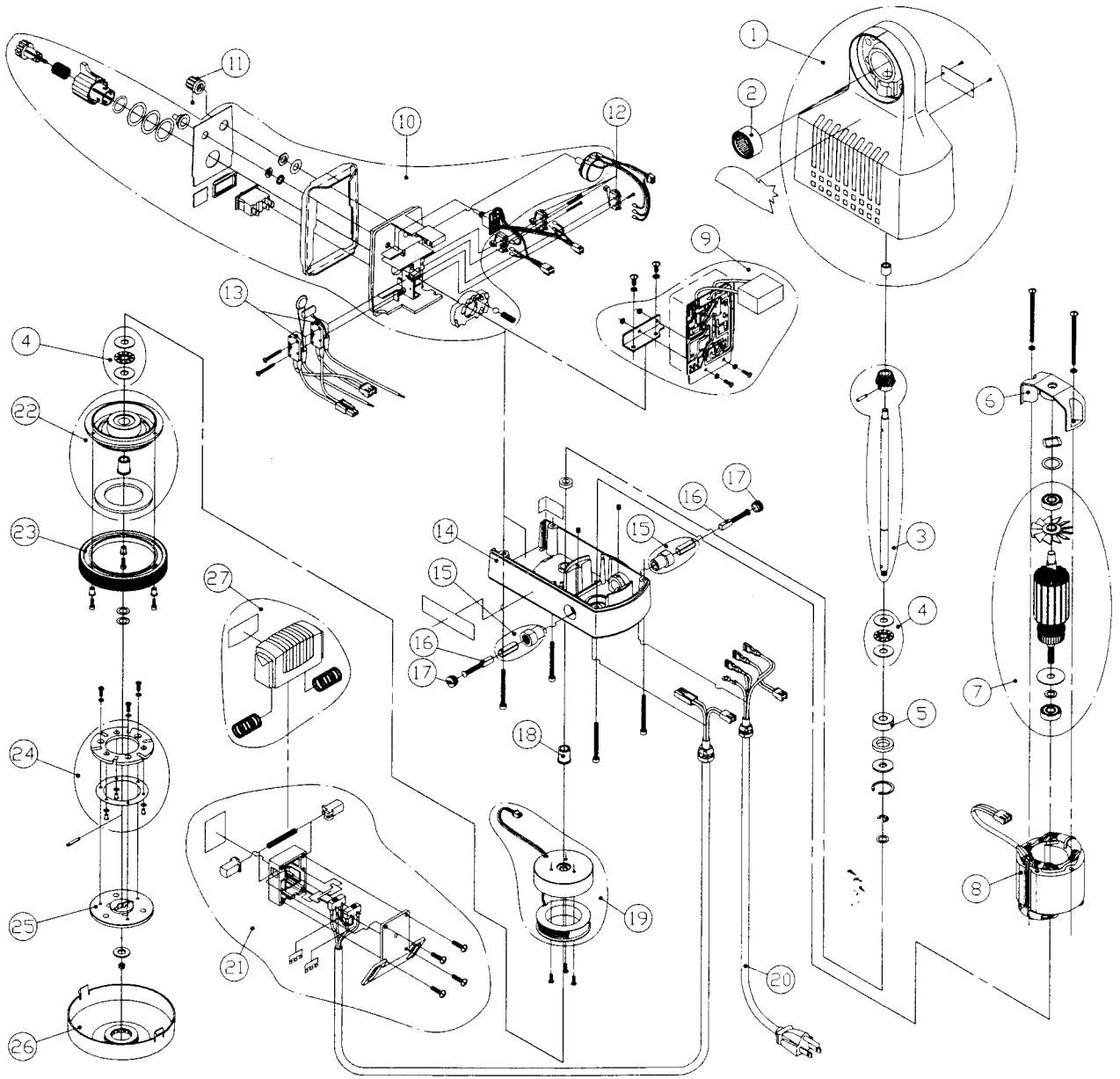


● ACCESSORIES SPECIAL Z-AXIS



◆維修零件表 (PARTS LIST)

	No.	零件名稱 PART NAME	料號 PART NO.	X	Y	Z
機體維修零件 (MECHANICAL PARTS)	1	機殼組 TOP HOUSING	6801-001-000	*	*	*
	2	滾針軸承 NEEDLE BEARING	0109-416-014	*	*	*
	3	小傘齒輪組(18齒) BEVEL GEAR SET(18T)	6802-001-004	*	*	*
	4	止推軸承 THRUST BEARING	0109-821-015	*	*	*
	5	T型合銅 TALLOY BRASS	0110-108-078	*	*	*
	6	馬達托架 MOTOR BRACKET	6605-010-001	*	*	*
	7	轉子組 ARMATURE SET	6815-001-009	*	*	*
	8	定子組 STATOR SET	6816-001-003	*	*	*
	9	電路基板組 CIRCUIT BOARD SET	6803-001-008	*	*	*
	10	開關框架組 SWITCH BRACKET SET	6804-001-002	*	*	*
	11	速度調整鈕 SPEED ADJUST KNOB	6616-010-008	*	*	*
	12	滾輪微動開關 ROLLER MICRO SWITCH	0601-010-010	*	*	*
	13	微動開關 MICRO SWITCH	0601-010-021	*	*	*
	14	機座 BOTTOM HOUSING	6601-011-003	*	*	*
	15	碳刷座組 CARBON BRUSH SET	6805-011-006	*	*	*
	16	碳刷組 CARBON BRUSH	5617-070-003	*	*	*
	17	碳刷蓋 CARBON BRUSH COVER	5702-010-111	*	*	*
	18	T型合銅2 TALLOY BRASS	0110-108-056	*	*	*
	19	磁軛組 MAGNETIC YORK SET	6806-001-000	*	*	*
	20	電源線 POWER CABLE	0501-000-144	*	*	*
	21	X軸極限開關組 X AXIS LIMIT SWITCH SET	6807-001-004	*		
		Y軸極限開關組 Y AXIS LIMIT SWITCH SET	6808-001-008		*	
		Z軸極限開關組 Z AXIS LIMIT SWITCH SET	6809-001-002			*
	22	XY軸轉軛組 X Y AXIS YORK SET	6810-001-009	*	*	
		Z軸轉軛組 Z AXIS YORK SET	6811-001-003			*
	23	螺旋齒輪(107齒) SPIRAL GEAR(107T)	6625-010-118	*	*	*
	24	吸附軟鐵組 OCCLUSION SOFT SET	6812-001-007	*	*	*
	25	連動盤 ADAPTER	6606-011-003	*	*	*
	26	齒輪蓋 GEAR HOUSING	6614-010-199	*	*	*
	27	極限罩組	6833-001-007	*		
附屬配件 (ACCESSORIES)	28	X軸固定座 X-AXIS FIX STAND	6627-011-003	*		
	29	X軸內圈 X-AXIS BUSHING	0109-416-025	*		
	30	XY軸傘齒輪組(72齒) XY-AXIS BEVEL GEAR(72T)	6813-001-001	*	*	
	31	固定環 FIX RING	6632-010-119	*	*	*
	32	定位片 STOP BLOCK	6630-010-111	*	*	*
	33	定位桿 STOP SET	6629-010-003	*	*	*
	34	Y軸固定座 Y-AXIS FIX STAND	6633-011-000		*	
	35	Y軸內圈 Y-AXIS BUSHING	6634-011-004		*	
	36	Y軸延長軸 Y-AXIS EXTENSION SHAFT	6635-011-008		*	
	37	把手墊圈 HANDLE WASHER	6608-090-009		*	
	38	定位鋁條 ALUMINUM TRACK	6636-010-004		*	*
	39	Z軸固定座 Z-AXIS FIX STAND	6637-011-006			*
	40	Z軸延長軸 Z-AXIS EXTENSION SHAFT	6638-011-000			*
	41	把手連動環 CLUTCH	6639-011-004			*
	42	Z軸傘齒輪組(72齒) Z-AXIS BEVEL GEAR SET(72T)	6814-001-005			*



◆性能規格 (SPECIFICATIONS)

機　型 MODEL	電　源 POWER	最大扭力MAX TORQUE		轉速 RPM
		lb-in	kg-cm	
APF-500	110V 50/60Hz	131	150	0~210
APF-750	110V 50/60Hz	152	175	0~210
APF-950	110V 50/60Hz	170	195	0~180