

KA-66 全自動 P.C.板切腳機 說明書

壹. KA-66 全自動 P.C 板切腳機之介紹

1. P.C 板經過插件，且完全焊錫，太長或殘餘的零件腳，用自動化及高效率方法剪除殘餘線腳。
2. 本機器有一組傳送鍊條，可將 P.C 板夾持傳送，運用圓形鋒利錫鋼刀片高速旋轉，將線全部切除。
3. 本機器有擴充性，可單機獨立作業，也可選購前銜接導軌與自動焊錫爐連線成一貫作業，不需人工放料。

貳. 規格與使用範圍

1. 錫鋼刀：內徑 $\varnothing 70\text{mm}$
外徑 $\varnothing 200\text{mm}$ 及 $\varnothing 250\text{mm}$ 兩種規格皆可使用。
2. P.C 板厚度：0.8mm~2.5mm
3. P.C 板最大範圍：長 600mm * 寬 300mm
4. 電壓：AC220V .50Hz 或 60Hz (訂購時需說清楚)
5. 主軸轉速：4500rpm
6. 主軸馬達：3/4HP
7. 軌道速度：傳送速度可調，每分鐘 0~3m
8. 最低切腳長度：0.6mm(標準配備，要切更低的腳，需另外訂購底軌更換)

參. 切腳機構說明

A. 錫鋼刀安裝方法：

1. 用 C189 T 型把手將刀座固定螺絲放鬆，轉動 D14 刀座升降輪將 C181 刀軸降下。
2. 將 C187 刀蓋取出，擦乾淨 C181 刀軸平面，C18 切刀放正，C187 刀蓋鎖定，用手將 C18 切刀試旋轉，確定切刀平穩再將 C187 刀蓋鎖緊，啟動 A114 刀座啟動鈕，確定正常再開始切腳作業。



B. 刀座升降調整:

1. 要轉動 D14 刀座升降輪，必需先放鬆刀座固定螺絲。
2. 切腳的長度用調整刀座來決定，當切刀越接近軌道，所保留的腳長就越短。
3. 切刀與軌道相距約 0.2~0.1mm 最為適當，請勿讓切刀接觸到軌道。
4. 調整完成後，開始切腳作業前，必需將 C189 螺絲固定。

C. 刀轉問題:

1. 馬達 C185 用皮帶傳動 C181 刀軸，每分鐘轉速 4500rpm，為高速旋轉，會有風阻而產生聲音。
2. C183 皮帶 A23 太緊會加大刀軸噪音，皮帶太鬆會降低 C18 鋼刀切腳力量，造成切腳無力。
3. C181 刀軸在高速旋轉，如有異常噪音，即可能是 C192 和 C193 培林損壞，更換後可恢復正常聲音。

D. 鎢鋼刀使用及研磨

C181 鎢鋼刀材質超硬且銳利，經過切腳就會產生缺口，屬於正常現象。

當鎢鋼刀經過使用，累積的缺口佈滿刀片圓周時，就必需拆下研磨。

刀片質量好壞與刀片使用所產生的缺口無關，但相同的 P.C 板，同樣的條件下使用，耐久性且使用片數較多者，就是好刀片。

1. 刀片研磨角度以 18~22 度最理想。P.C 板上的殘腳越細角度要銳角。例:18 度。線腳較粗或較硬，角度要鈍角。例:22 度。

肆. 傳送機構解說

A. P.C 板入料

1. 轉動 D13 軌道開合轉輪，B161 左軌道、B162 右軌道即可同時開合。
2. 將 P.C 板放置於 B20 及 B21 左右導軌上，推入讓 B151 爪片鍊夾持，試送查核鬆緊度適合即可。



3. 啓動 A117 開關即可輸送 P.C 板。

B. P.C 板輸送及切腳

P.C 板之夾持是利用 B153 爪片夾送，爪片本身有彈性且有良好的夾送效果。

依照 P.C 板上的線腳粗細，決定軌道夾持力量，可自行斟酌調整。B151 爪片鍊傳送時速度可調，由 A119 調速鈕控制。例：切粗線腳速度要放慢。

C. 彈片與軌道

B153 彈片及 B152 U 型片屬於消耗品，可做單片更換。

B152 U 型片套在鍊條上面，依靠鍊條傳送，所以 B151 爪片鍊之鬆緊度，會影響 P.C 板輸送效果。

B163 底軌使用部位厚度 0.6mm 容易損壞，屬於消耗品。另一種 B163 底軌(無板邊)屬於選購品爪片鍊專門提供給要將腳切到 0.3~0.5mm 之特別製品。

D. 爪片鍊條鬆緊度調整

B151 爪片鍊經過一段時間使用後會慢慢鬆弛，必需要再調緊，否則會刮傷 B163 底軌，而造成軌道損壞。

調整方法步驟

放鬆 B215 螺姆(左右軌道上各一個)

轉動 B213 調整螺姆

試看鍊條鬆緊(不可太緊，否則會造成 B126 傳動軸彎曲或斷裂)

將 B215 螺姆鎖緊。

E. 軌道平行度之調整

1. 左右軌道 B161 及 B162 必需平行，才能將 P.C 板順利輸送。
2. 兩組軌道不平行，造成的原因是殘屑卡在 D132 及 D135 螺桿上，在調整軌道時沒清理乾淨，單邊打滑的結果。

軌道同步開合是利用 D133 鍊條，傳動兩個 D134 鍊齒，同時轉度動 D132 及 D135 螺桿，而帶動軌道同步開合，這是軌道平行度的聯動組合。

造成平行度的位置，是由兩個 D134 鍊齒其中一個打滑所產生的



問題。

調整方法：

將 D134 鍊齒上方兩個螺絲放鬆

- a.六角板手依然插於螺絲上
- b.轉動 D13 開合轉輪，此時只有 D132 前螺桿單支旋轉，也只帶動前面軌道開合。
- c.用 P.C 板測試達到兩組軌道真正平行
- d.鎖緊 D134 鍊齒螺絲，調整即告完成。

伍. P.C 板變形彎曲處理

A. 頂針之輔助使用

預防 P.C 板下彎，讓切刀切到 P.C 板的安全裝置

頂針之調整

放鬆 C176 兩個螺絲，整組頂針即可前後推動

放鬆 C177 螺絲，轉動 C170 偏心軸，頂針即可高低調整

頂針最高點約高出錫鋼刀平面 0.5mm 最佳

B. 上壓電木板之使用

放鬆 A236 螺絲，將整組電木壓條推到中央

放下 A237 電木壓條，找整排沒有零件的位置，直接壓在 P.C 板上，即可防止 P.C 板往上彎曲

P.C 板上的零件太多時，需用 A238 電木腳座，放在 P.C 板上，A237 電木壓在 A238 電木腳座上，即可克服 P.C 板上彎。

陸. 電源控制系統



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- A. 電源開關 A112 開啓，指示燈 A113 即亮起，表示電源輸入。
- B. 按 A114 刀座啓動，C18 切刀開始運轉。
註：當 A117 轉到 OFF 時，軌道鍊條爪片會同時傳動。
- C. 按 A116 停止開關時，所有動作全部停止。
- D. A117 軌道運轉開關，只在試車時使用，要正式作業需先切換到 OFF。
- E. 軌道速度可無段變速，可隨需要自行調整 A119 調速鈕。
- F. A110 安全開關是當 A235 壓克力蓋開啓時，會將全部電控系統關閉。

柒. 保養須知

- A. 殘存在 D132 及 D135 螺桿上的腳屑必需清除，否則將影響到軌道的調整。
- B. D136 導桿也必需保持清潔，經一段時間使用即咬要擦油潤滑導桿。
- C. B122 六角軸是傳動軌道，需擦潤滑油或機油。
- D. B150 軌道蓋經一段時間使用，要拆下加油讓鍊條滑順。

捌. 服務與技術指導

- A. 將操作使用說明書的圖面影印。
- B. 提出您使用上的問題點，並用箭頭指向圖面所想要解決的問題位置，將圖 FAX 回公司，即可獲得完整的答覆。
- C. 機器如有零件耗損，需要更換或訂購，也請將圖面及代號寫清楚，FAX 回公司，您將會得到快速而滿意的服務。
- D. 以上說明如有疑問請隨時來電諮詢。



KA-66 零件表

零件編號	零件名稱	零件編號	零件名稱
A10	右台身	B2	軌道送料機構
A101	左台身	B20	右導軌
A102	滑輪	B21	左導軌
A103	台身連桿	B210	墊片
A104	滑輪桿	B211	套圈
A105	前封板	B212	導軌板
A106	後封板	B213	調鍊螺姆
A107	出料板	B214	調鍊座
A108	廢料板	B215	鍊條固定螺姆
A109	左中板架	B216	鍊條鬆緊桿
A100	右中板架	B217	鍊齒軸
		B218	護 P.C.B 螺絲
A11	電料盒		
A111	電源	C17	頂針組
A112	電源開關	C170	偏心軸
A113	電源指示燈	C171	頂針
A114	刀座啟動鈕	C172	套筒
A115	刀座指示燈	C173	螺絲
A116	停止	C174	偏心座
A117	軌道運轉開關	C175	滑行座
A118	軌道指示燈	C176	螺絲
A119	軌道調速開關	C177	螺絲
A110	微動開關	C178	前擋屑板
		C179	後擋屑板
A231	電木連桿		
A232	手轉螺絲	C18	鎢鋼刀
A233	左上殼	C180	刀軸套筒
A234	右上殼	C181	刀軸
A235	壓克力蓋	C182	大皮帶輪
A236	電木固定桿	C183	皮帶 A23
A237	電木壓板	C184	刀座
A238	電木腳座	C185	3/4HP 馬達
		C186	小皮帶輪
B12	齒輪蓋	C187	刀蓋



B120	馬達齒輪	C188	檔刀桿
B121	傳動齒輪	C189	六角板手
B122	六角軸	C190	刀蓋螺絲
B123	傘齒座	C191	培林蓋
B124	傘形齒	C192	6205zz 培林
B125	傘形齒	C193	6304zz 培林
B126	傘齒軸	C194	刀軸螺姆
B127	6003zz 培林	C195	固定螺絲
B128	6005zz 培林	C196	浮動螺絲
B129	馬達 40W	C197	刀軸中板
B130	減速箱 90GN		
B150	軌道蓋	D13	軌道開合轉輪
B151	爪片鍊條	D131	轉把
B152	U 型片	D132	前螺桿
B153	爪片	D133	連動鍊條
B154	爪片螺絲	D134	鍊齒
B155	前軌道座	D135	後螺桿
B156	後軌道座	D136	滑桿
		D137	6001zz 培林
B16	軌道組	D138	橢桿
B160	軌道保護片	D139	鍊條蓋
B161	左軌道	D14	刀座升降輪
B162	右軌道	D140	螺桿
B163	軌道中間段/支	D141	升降座
B164	鍊條鬆緊齒輪	D142	升降六角桿
B165	鍊條傳動齒輪	D143	U 型座
B166	入料底軌	D144	升降支軸
B167	鍊齒鍵	D145	螺絲
B168	6001zz 培林		
B169	傘齒鍵		



User's manual - KA-66 Automatic PCB lead cutter

I. KA-66 - Introduction

1. A model design to trim the extra long leads automatically and efficiently on the PCBA that components inserted and soldered.
2. A pair of conveyor chain is equipped in the model in which clamp and deliver the PCBA to the blade turning in high speed for trimming.
3. Expandable in function and working independently– The model can be optional connecting in line with wave soldering machine by Connection Bridge and operates automatically.

II. Spec and application range

1. Tungsten carbide blade: I.D $\varnothing$ 70mm, O.D $\varnothing$ 200mm& $\varnothing$ 250mm both size
2. Thickness of P.C.B: 0.8mm~2.5mm
3. MAX.PCB Range: Length 600mm * width 300mm
4. Power: AC220V .50Hz or 60Hz (Please specify in ordering)
5. Main spindle speed: 4500rpm
6. Main spindle motor: 3/4HP
7. Conveyor speed: Free step adjustable, 0~3m/minute.
8. Cutting height: 0.6mm min. (optional track for less height)

III. Description – Cutting construction

A 、 Blade – installation steps:

1. Release the main spindle fixed screw by T allen-key(C189).
2. Down the spindle by hand wheel (D14).
3. Remove the blade cover (C187), cleaning the surface on the spindle for the blade, place the blade to the right position. Tighten the blade cover screw. Checks wobble by turning the blade manually. Repeat the steps if necessary.

B 、 Height adjustment – Cutting spindle:

1. Release first the spindle fixed screw before move the height adjustment hand wheel.
2. The cutting height of the wire leads is adjusted by the height of spindle in which the more closer to the track, the less cutting height will be.
3. The most adequate distance between the blade and track will be at range of 0.2~0.1mm. The blade and track must



not be crashed (touched).

4. Tighten the spindle fixed screw after adjustment.

C 、 Tips for sound when blade is turning:

1. The sound generated by air-resistance while the spindle running in 4500RPM high speed is normal.
2. Belt (A23) too tight will make noise in running, however, too loose may slip the pulley and powerless to trim the leads.
3. An abnormal noise may possible caused by damaged bearing (C192&C193). Please replace it if true.

D 、 Tungsten carbide blade –Resharpener and usage

1. The blade is super hard and sharp but fragile in property. It is normal condition while the knife-edge crack after trimming.
2. Resharpen the blade if the crack is around the edge.
3. The quality of the blade is nothing to do with the crack except comparing in same cutting condition. The more throughput blade is the best.
4. Cutting angle- $18^{\circ} \sim 22^{\circ}$. The cutting angle depends on the cutting property of the leads. Small angle for fine (or soft) one, big angle for big or hard wires.

IV. Description – Delivery system

A 、 Feeding the PCBs

1. The left conveyor (B161) and right conveyor (B162) will open and close synchronously when turning the hand wheel (D13).
2. Place the PCB on the track (B20,B21), push it forward to be clamped by the clamp finger (B151) in the conveyor. Check the tightness to ensure the PCB is held properly. Re-adjust it if necessary.
3. Turn on the switch (A117) that will move the conveyor.

B 、 Cutting and PCB delivery

1. The PCB is held and clamped by the spring finger (B153) which has good tension and good at clamping the PCBs.
2. Adjusting the holding force of the finger according to the property of wire leads (wire lead diameter or hardness)
3. Free step adjusting the conveyor speed by the knob A119. For instance, must slow down to cut the big wire leads.

C 、 Spring finger and the track



1. The spring finger (B153) and U brackets (B152) can be

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replaced independently when worn out.

2. The U bracket (B152) is assembled on the chain. The tightness of the chain will affect the efficiency of the PCB delivery.
3. The track bottom plate (B163) in thickness of 0.6mm is consumable which need to be replaced when worn out. An optional track bottom plate with more thin for cutting height 0.3 ~ 0.5.

D 、 Tightness adjustment – spring finger chain

1. The spring finger chain (B151) will be lengthen and loose the tightness after a working period.
2. It has to be adjusted to avoid damaging the bottom track.
3. Adjustment steps
 - (1). Release the nut(B215)(each in both conveyor)
 - (2). Turning the nut (B213)
 - (3). Check the tightness (Don't too tight! The transmission shaft will be damaged or bent if so)
 - (4). Fastening the nut released

E 、 Parallel adjustment - conveyor

1. The left and right conveyor (B161&B162) must be parallel to delivery the PCB smoothly.
2. The chip block the screw rod (D132,D135) is the main reason which cause the un-parallel condition. The synchronous motion of both side conveyors is linked by the chain D133 and chain wheel (D134) and screw rod of (D132&D135).
3. The main reason to cause the un-parallel is one of the chain wheel slip out of the position.
4. Adjusting steps:
 - (1). Release the fixed screw on the chain wheel (D134)
 - (2). Keep the allen-key on the socket.
 - (3). Turn the hand wheel (D13), moving only the front screw rod and the front part of conveyor.
 - (4). Check the parallel by actual PCB.
 - (5). Tighten the chain wheel screw (D134)

V. Remedy – Warp PCB

1. Application - Thimble wheel

- (1). The equipped thimble wheel is a security device to



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prevent damaging the warp boards in trimming operation

- (2). Adjustment of the thimble wheel
- (3). Release the screw (C176) for moving the assembly forward or backward.
- (4). Release the screw (C177), adjusting the height by turning the eccentric shaft (C170)
- (5). The best height of the wheel is around 0.5mm higher than the surface of blade.

2. **Application – Pressure bar**

- (1). Release the screw (A236). Move the device to the center of shaft.
- (2). Down the pressure bar (A237) to the place without components to press down the warp.
- (3). Two(2) bakelite frames are attached for the PCB which is no space for the pressure bar directly.

VI. Electric control

- (1). The lamp (A113) indicate the power condition when turn on/off the power switch (A112).
- (2). Cutter pushbutton (A114) – Activate the turning of cutting blade
- (3). **Note: The finger chain will move even if the conveyor switch is in off position when the cutting is activated.**
- (4). Emergency button (A116) – Stop all function of the machine.
- (5). Conveyor switch (A117) – Move chain in “on” position for test run. Turn to “off” when turn “on” the cutter
- (6). Chain speed control knob (A119): Free step control the speed of the delivery conveyor.
- (7). Security switch(A110) – Ensure the safety acrylic cover is closed. Break whole the circuit if open cover.

VII. Tips for maintenance



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- (1). Clean the chip or foreign matter on the screw rod (D132,D135). Otherwise will block the width adjustment.
- (2). Lubricate the guide shaft (D136) in regular maintenance period.
- (3). Lubricate the (B122) hex shaft that is for power transmission.
- (4). Dismantle and lubricate the track cover (B150) in regular period for smoothing the move of chain.

VIII. Maintenance and technical support

1. Please copy the sketch on the manual for further questions.
2. Descript the question and contact us by Fax. We'll reply you very soon.
3. For spare parts requirement, please ordering by fax in which specified part number or indicate by sketch.
4. Welcome your inquiry for any question if unclear



KA-66 Spare Part list

Part No.	Part name	Part No.	Part name	Part No.	Part name
A10	Right frame	B150	Track cover	C180	Spindle bushing
A100	Right mid. frame	B151	Clamp finger chain	C181	Spindle
A101	Left frame	B152	Chain U bracket	C182	Pulley (Big)
A102	Castor	B153	Clamp finger	C183	belt A23
A103	Construction bar	B154	Finger screw	C184	Blade bracket
A104	Castor Bar	B155	Front track base	C185	3/4HP motor
A105	Front cover	B156	Rear track base	C186	Pulley (S)
A106	Rear cover	B16	Conveyor	C187	Blade cover
A107	Outlet board	B160	Track guard plate	C188	Hole for stopper
A108	Waste chute	B161	Left track	C189	T allen-key
A109	Left mid. frame	B162	Right track	C190	Blade cover screw
A11	Electric Material Box	B163	Bottom track	C191	Bearing cover
A110	Micro switch	B164	Chain wheel	C192	Bearing 6205zz
A111	Power	B165	Chain wheel	C193	Bearing 6304zz
A112	Power switch	B166	Feeding bottom track	C194	Nut – spindle
A113	Power lamp	B167	Key chain wheel	C195	Fixed screw
A114	Cutter button	B168	Bearing 6001zz	C196	Screw –lever adj
A115	Cutter lamp	B169	Key – tooth wheel	C197	Blade - mid frame
A116	Emergency stop	B2	Conveyor system	D13	Hand wheel
A117	Conveyor switch	B20	Right conveyor	D131	Handle
A118	Conveyor lamp	B21	Left conveyor	D132	Front screw rod
A119	Speed knob	B210	Washer	D133	Connection chain
A231	Pressure bar shaft	B211	Bushing	D134	Chain wheel
A232	Screw	B212	Plate– feeding track	D135	Rear screw rod
A233	Left cover	B213	Nut- chain adjust	D136	Guide shaft
A234	Right cover	B214	Bracket–chain adjust	D137	Bearing 6001zz
A235	Acrylic cover	B215	Nut- fixed chain	D138	Eccentric shaft
A236	Fixed post	B216	Chain rod	D139	Chain cover
A237	Pressure bar	B217	Chain shaft	D14	Hand wheel
A238	Bakelite frame	B218	Screw	D140	Screw rod
B12	Tooth wheel cover	C17	Thimble wheel ASSY	D141	Bracket
B120	Motor tooth wheel	C170	Eccentric shaft	D142	Hex rod
B121	Tooth wheel	C171	Thimble wheel	D143	U bracket

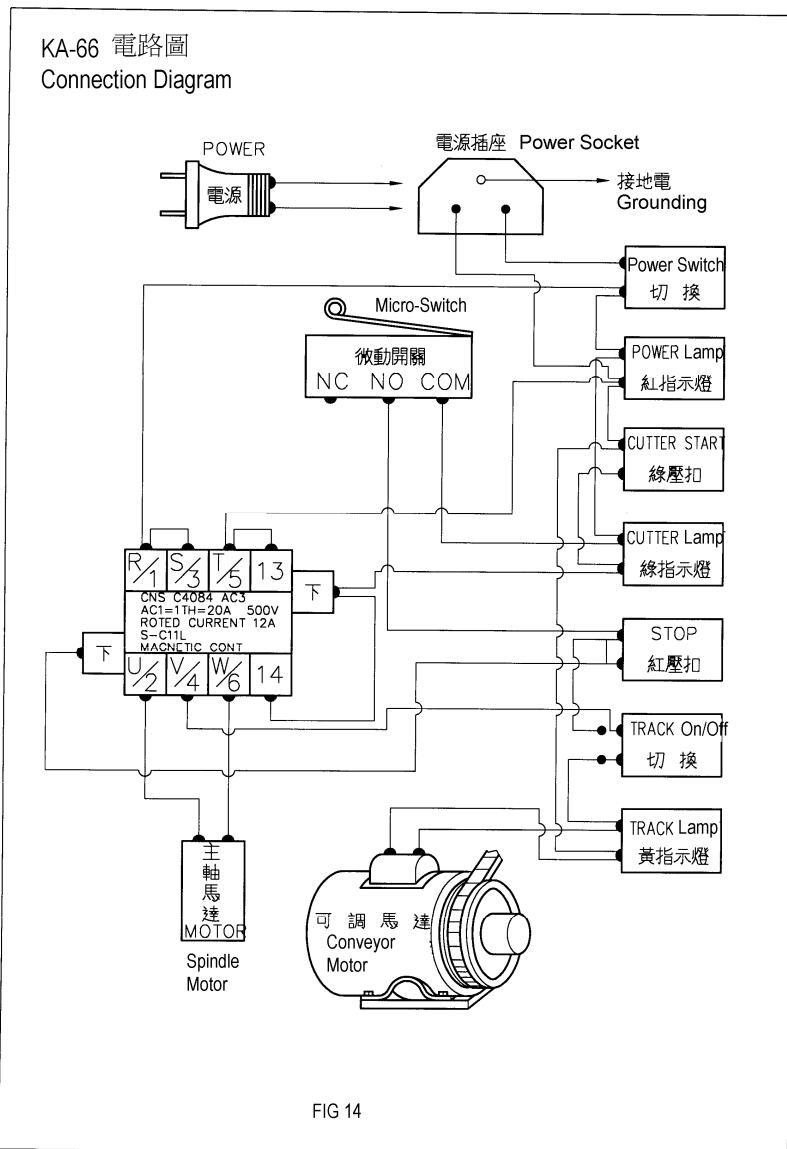


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B122	Hex shaft	C172	Bushing	D144	Shaft
B123	Angle tooth wheel	C173	Screw	D145	Screw
B124	Angle tooth wheel	C174	Bracket		
B125	Angle tooth wheel	C175	Base – thimble wheel		
B126	Angle tooth wheel	C176	Screw		
B127	Bearing 6003zz	C177	Screw		
B128	Bearing 6005zz	C178	Front chip barrier		
B129	Motor -40W	C179	Rear chip barrier		
B130	Gear box 90GN	C18	Blade		



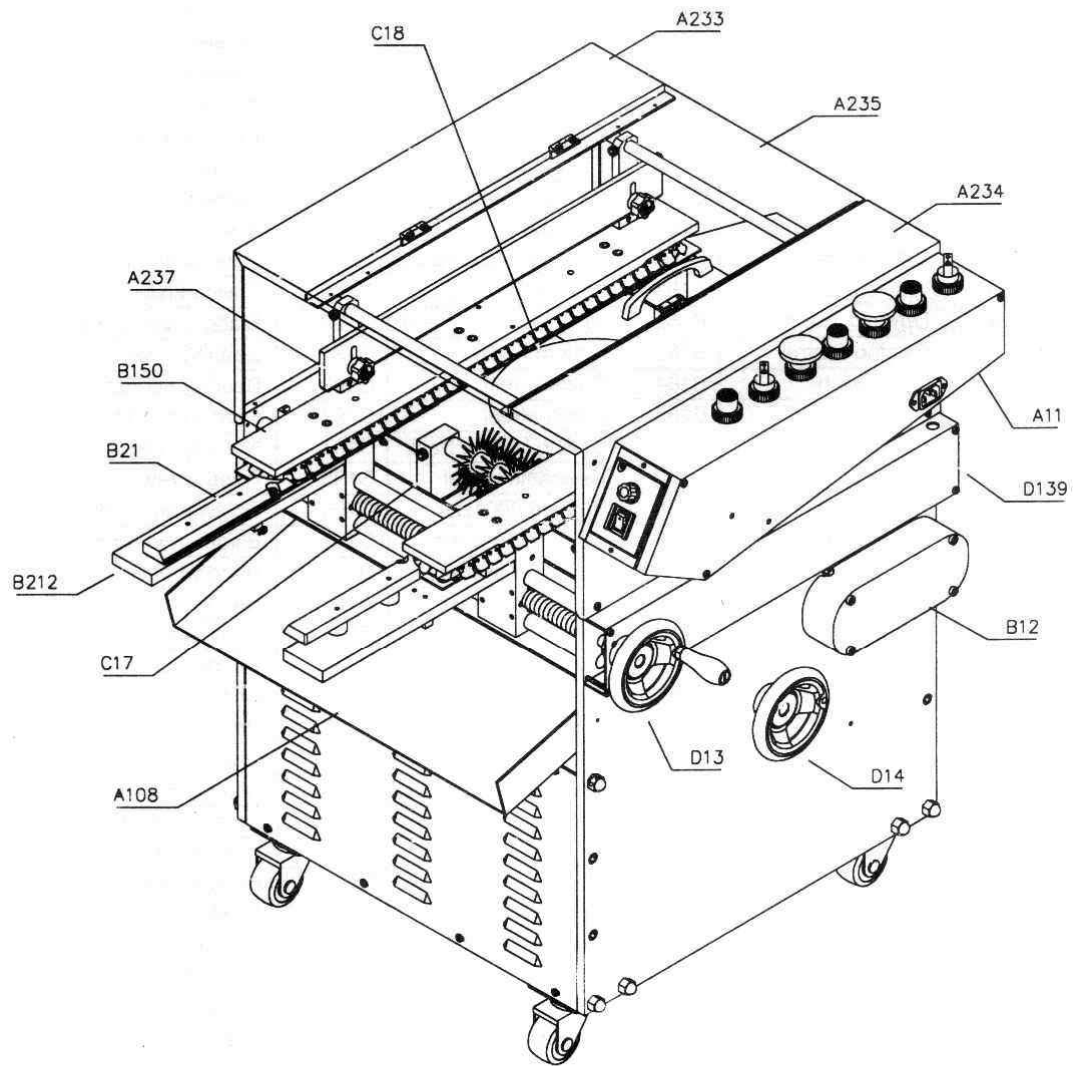


FIG-1



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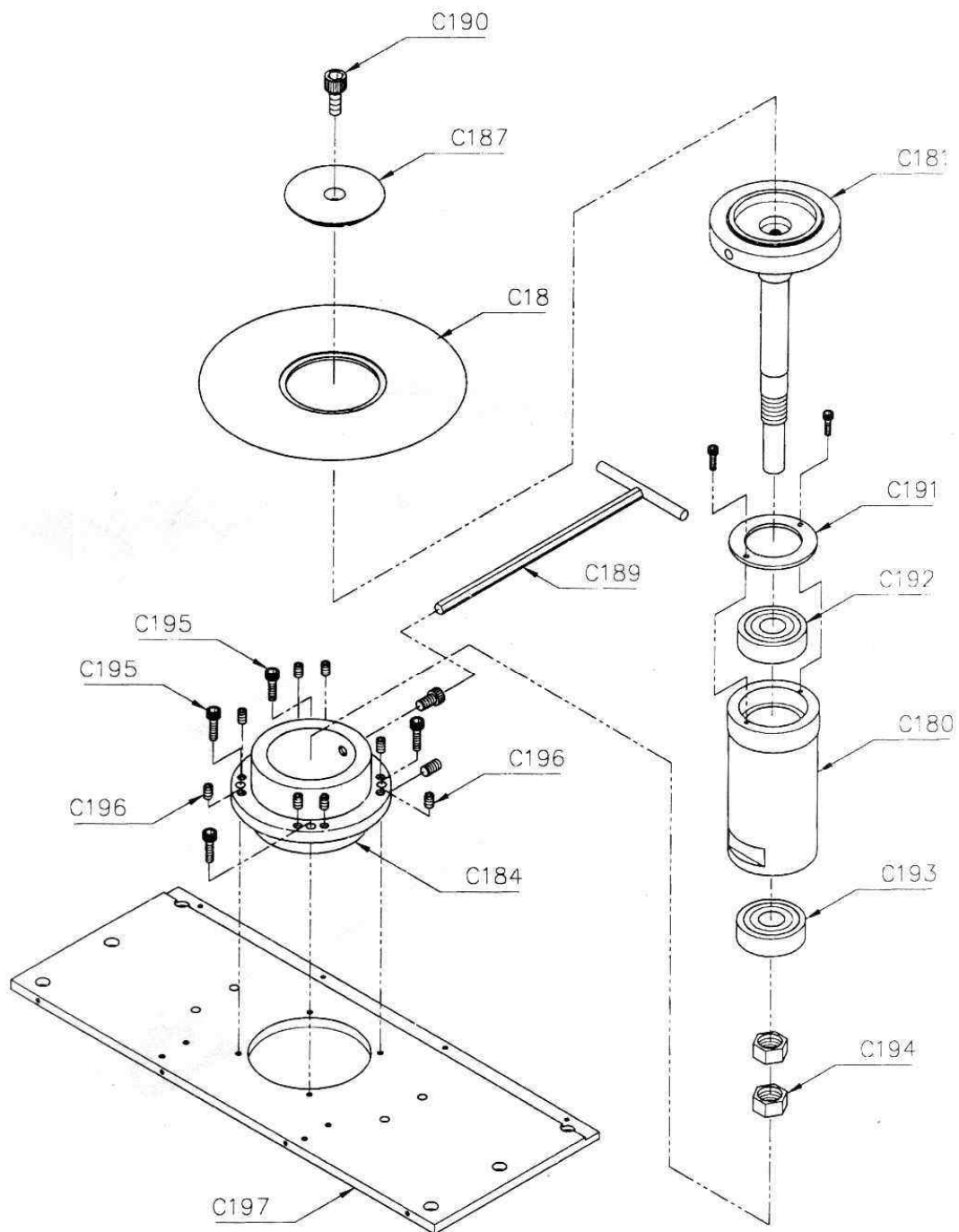


FIG-2



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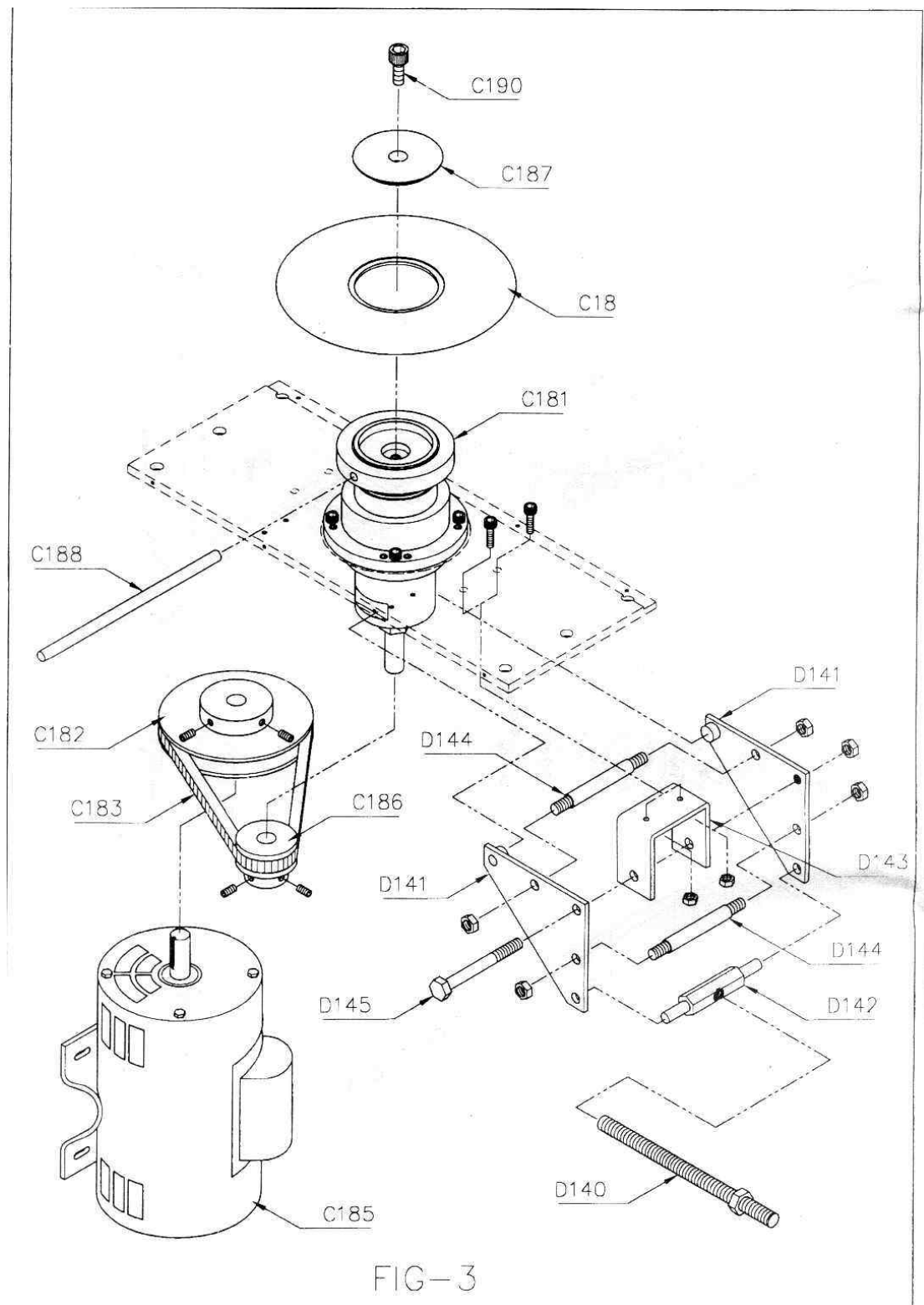
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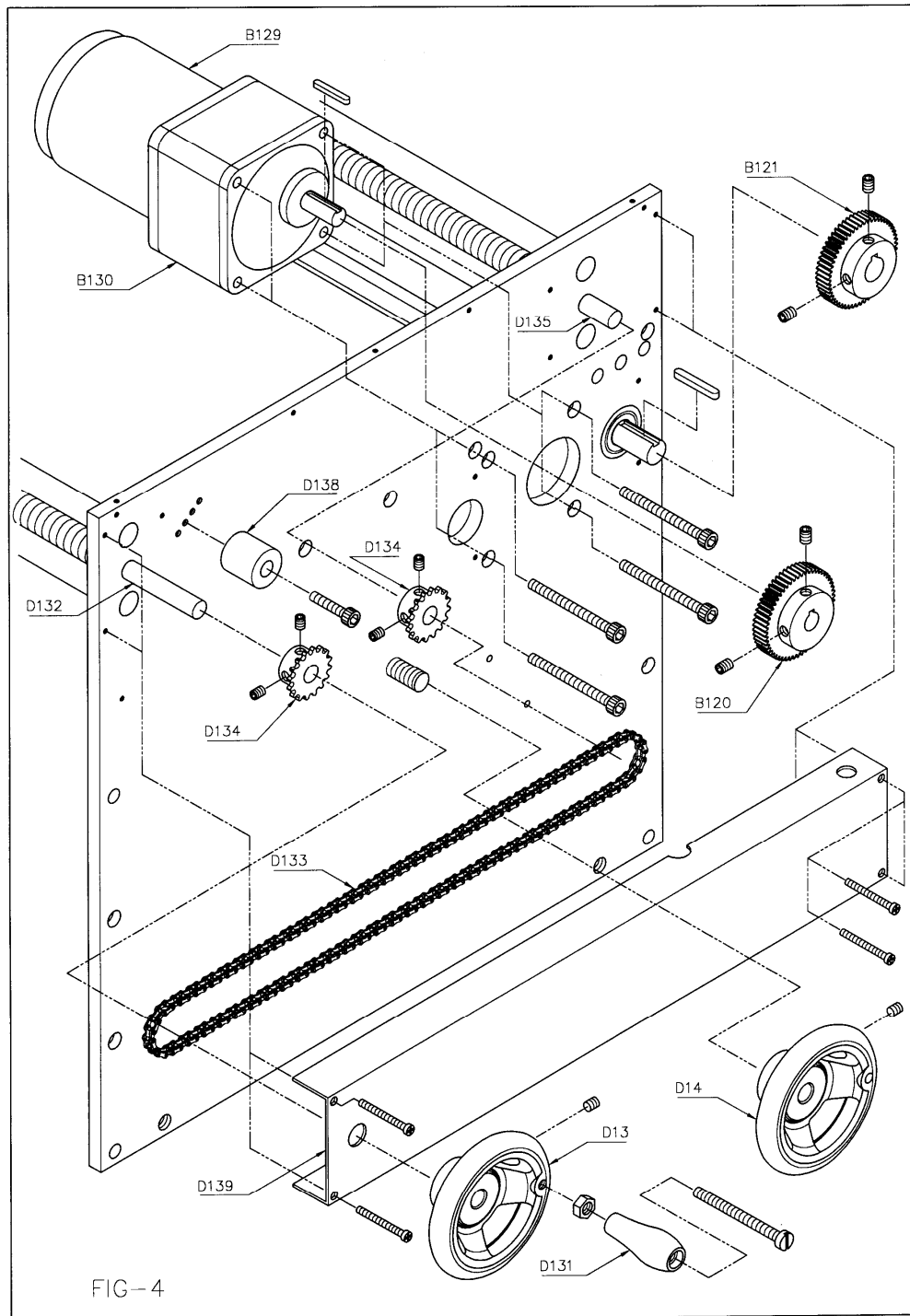
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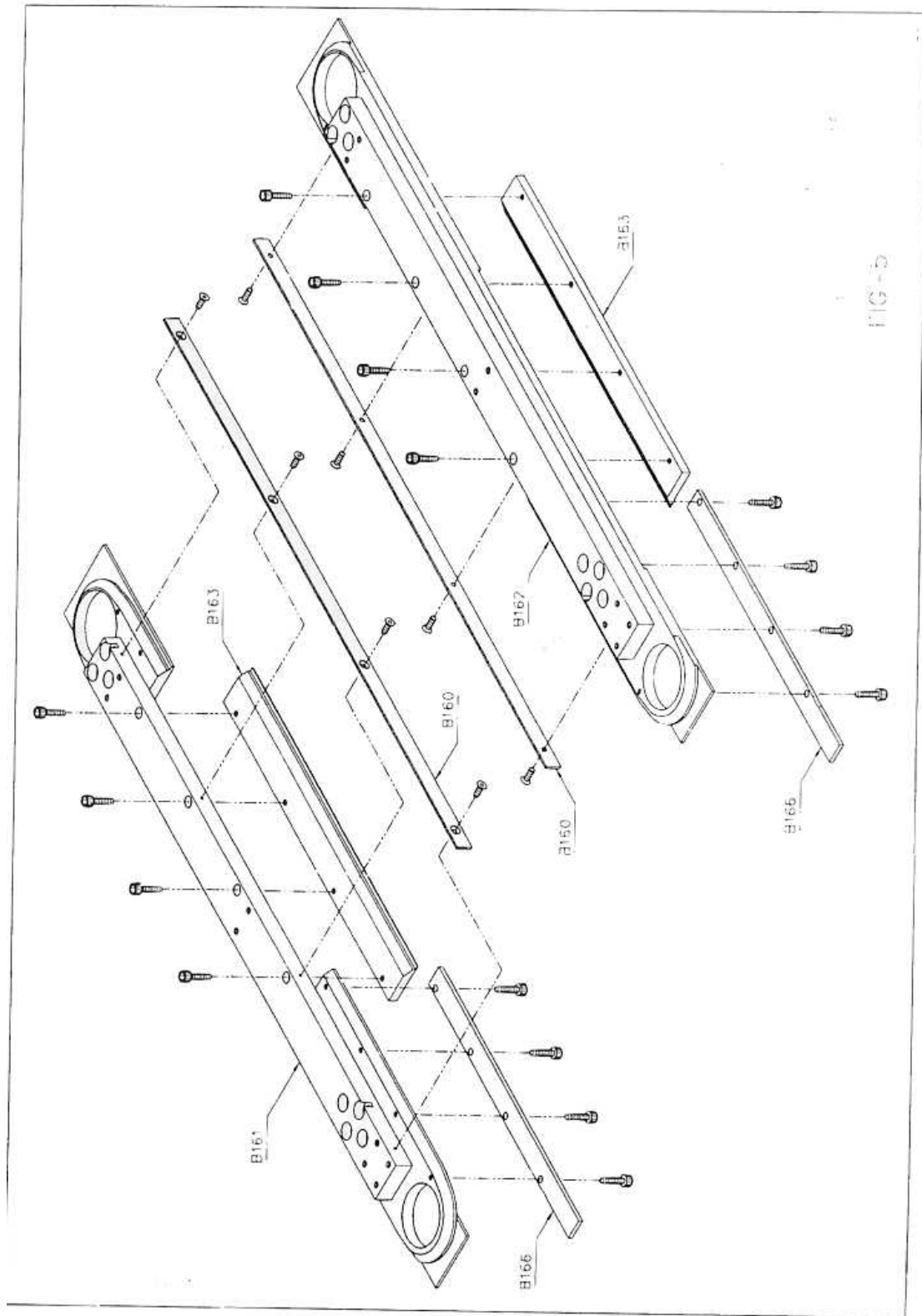
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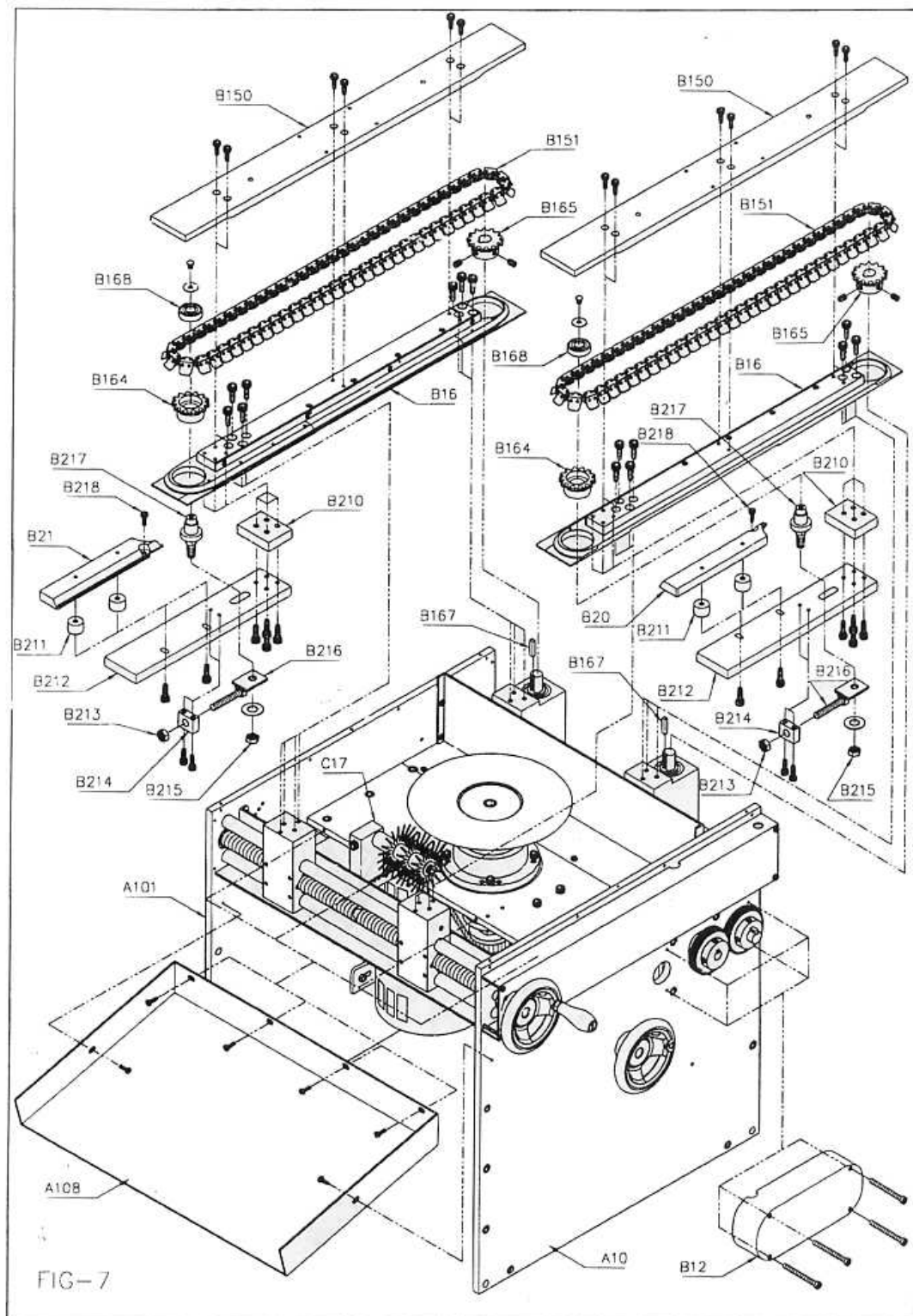
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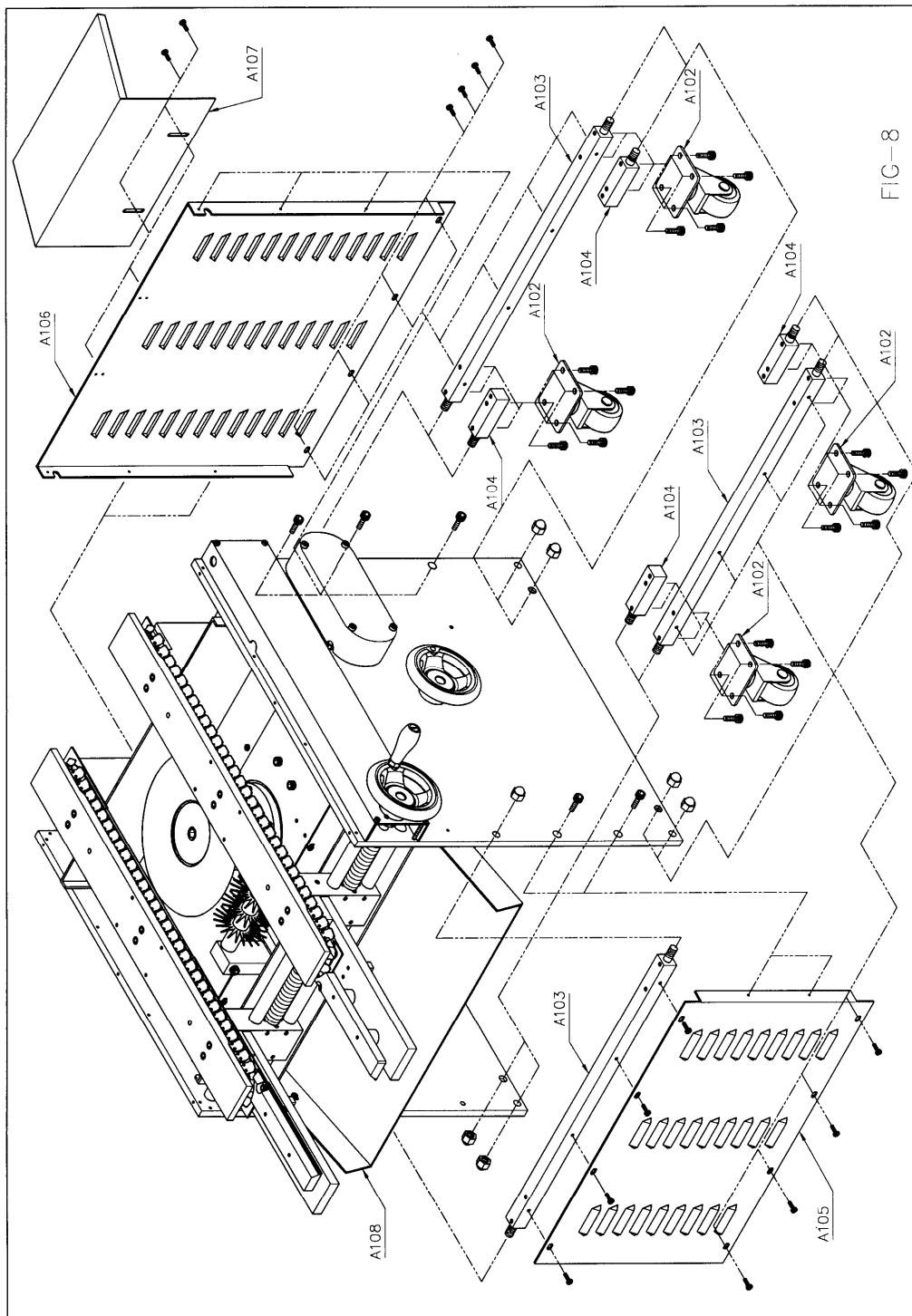


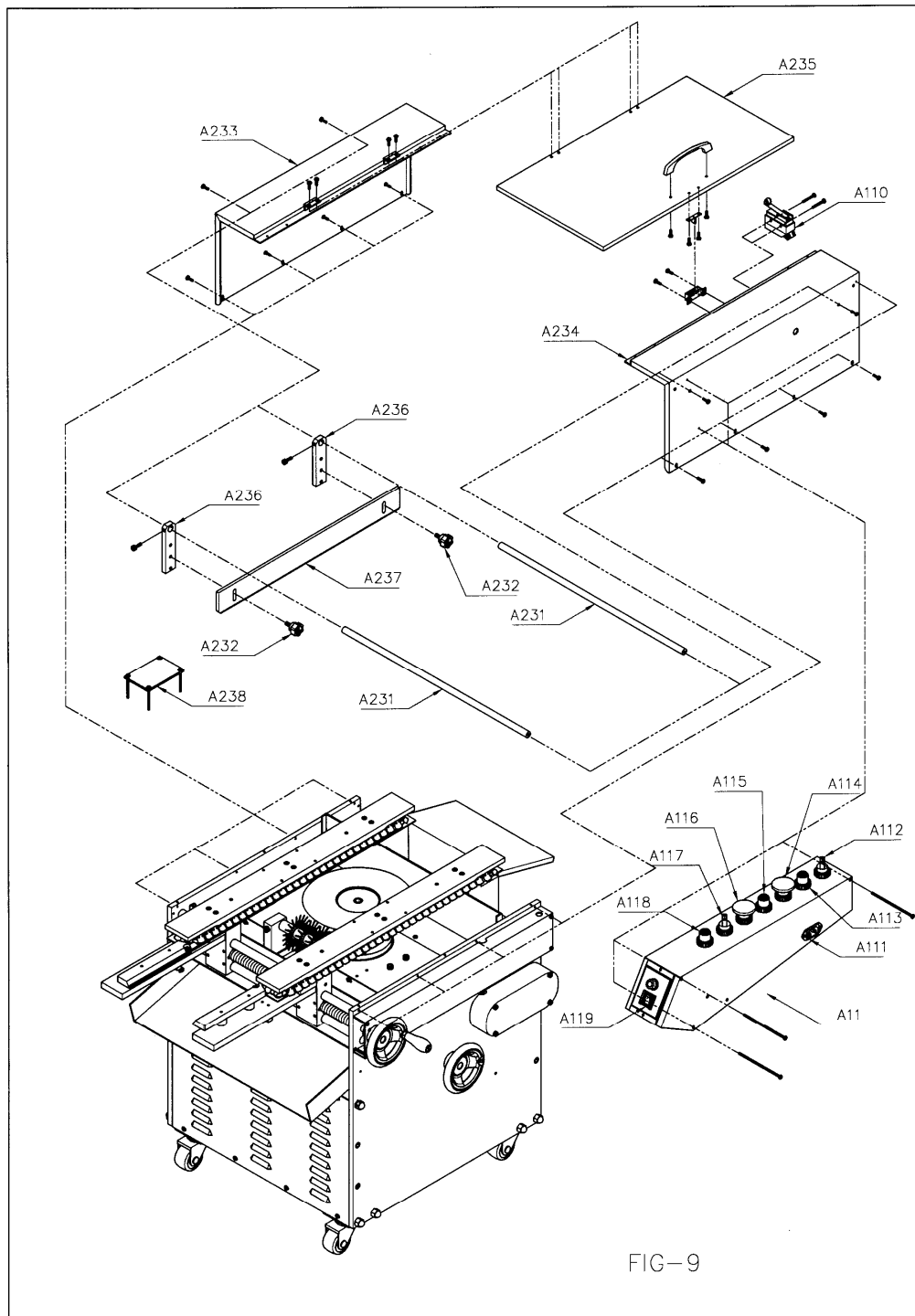
FIG-8



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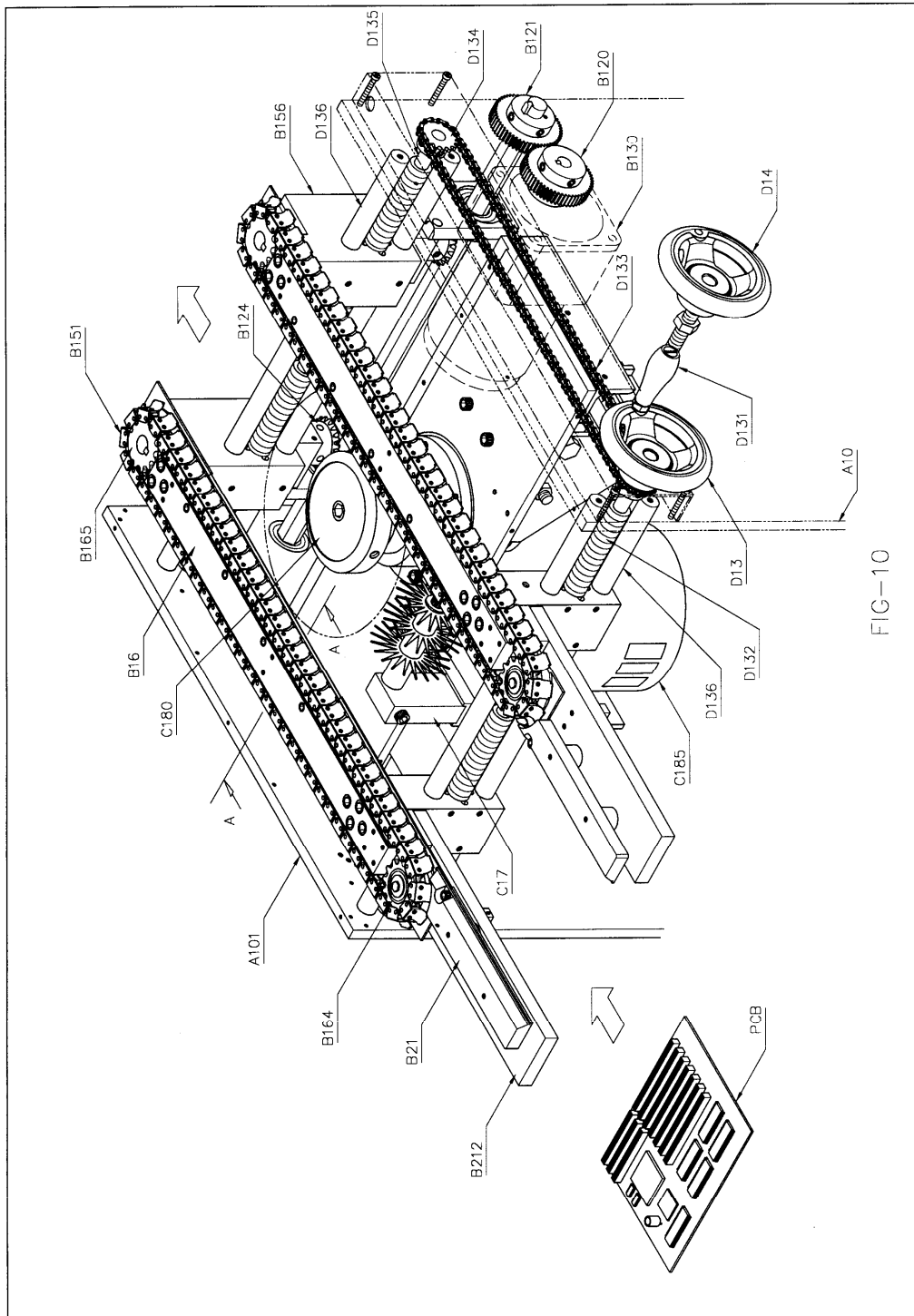
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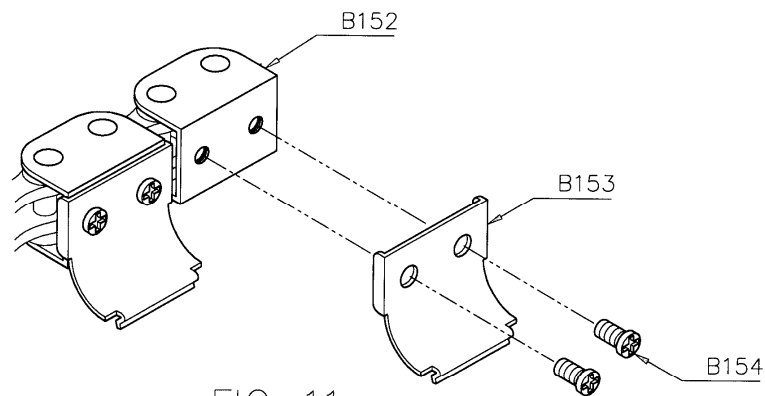
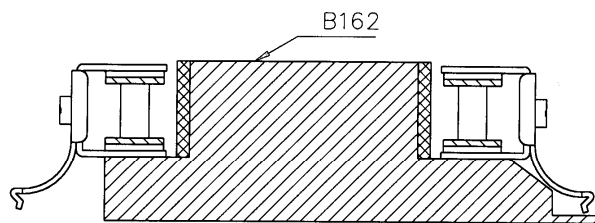


FIG-11



SECTION A-A
FIG-12

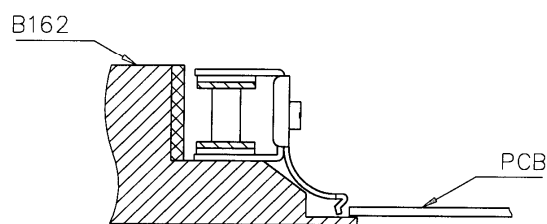


FIG-13

