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Packaging Machinery - Cartons - Shrink Film - Bubble Wrap - Strapping - Tape



# Automatic Banding Machine



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# **1. SAFETY INSTRUCTIONS**

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This manual gives you information on safety instructions, specifications, operation and maintenance of banding machines.

Before operating or servicing the machine, please read the following safety instructions carefully.

## **⚠ Operation**

- (1) Do not operate the machine with table or cover off.
- (2) Check the voltage and use the specified electric power to insure the proper operation of machine.
- (3) Never put any part of your body near, under or into an operating machine.
- (4) Do not operate the machine with safety device removed.
- (5) Follow the instructions provided in this manual.
- (6) Only trained person should operate the machine, although operation is simple and easy.
- (7) Do not band any part of your body.
- (8) Do not overload the machine by exceeding the performance limitations specified in this manual.

## **⚠ Servicing, repairing, adjusting, and maintaining**

- (9) Shut off and lock out all electric power and make sure that the electric power is off and discontinued.
- (10) Use the proper tools and parts to repair the machine.
- (11) Follow the instructions provided in this manual.
- (12) Only trained person should service the machine.

## **⚠ Others**

- (13) Do not touch heater and surrounding area right after operation. It requires sufficient time to cool the Heater. The Heater needs sufficient time to cool down.
- (14) The machine should be placed on a level floor and the surrounding area should be kept clean. Keep floor around the machine free from discarded tape.
- (15) If you are unsure about operation and maintenance of the machine, immediately contact your nearest distributor who sold you the machine.

Special attention to the handling and careful maintenance are requested for obtaining long – life usage at your site.

If any question arises or a complicated adjustment becomes necessary, please contact your distributor who sold you the machine or Nichiro Kogyo's head office/factory immediately for advice.

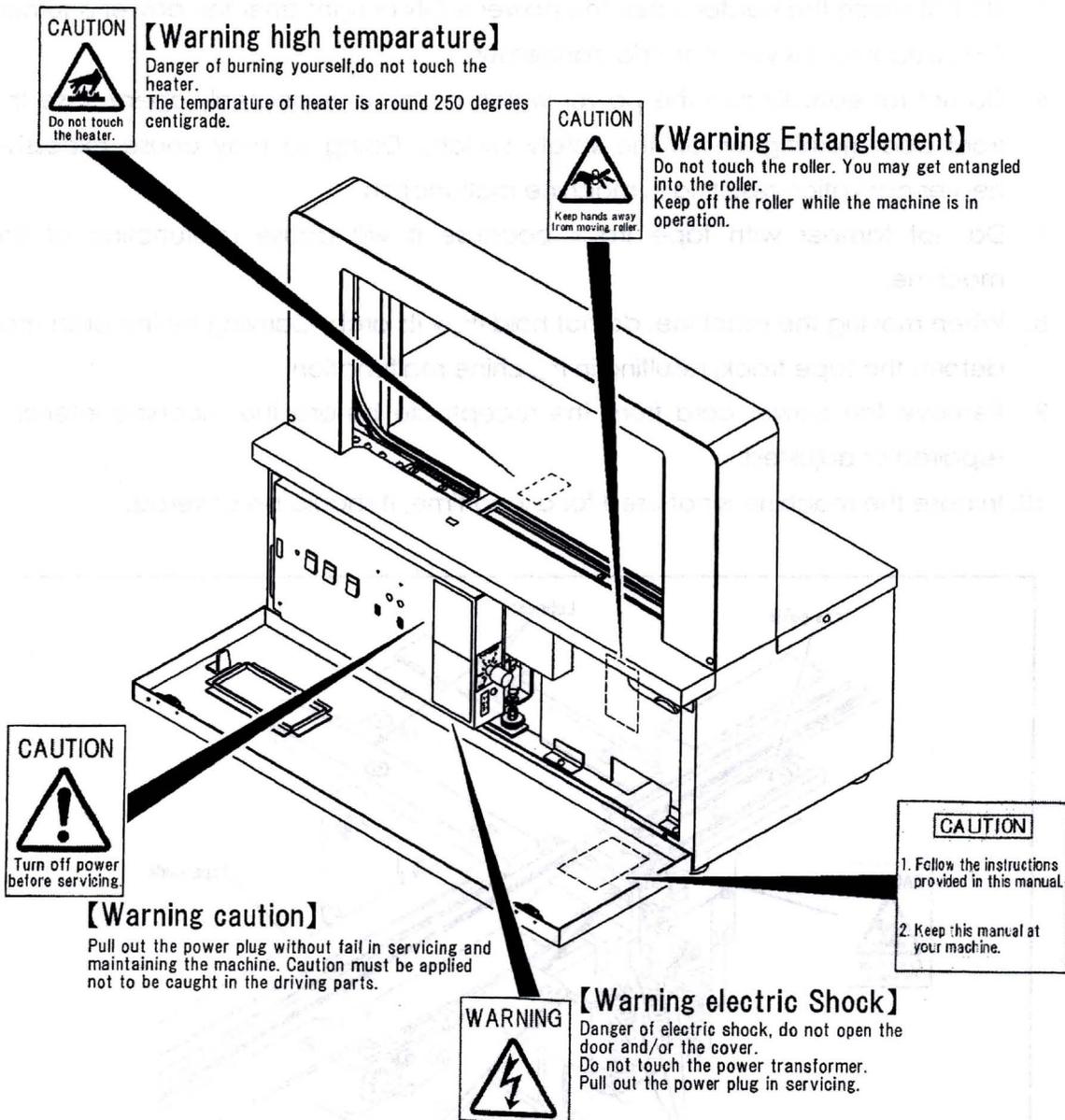
## ⚠ Warning Label

(1) The warning labels are put on certain positions of the machine.

Please fully understand these meanings and follow the instructions.

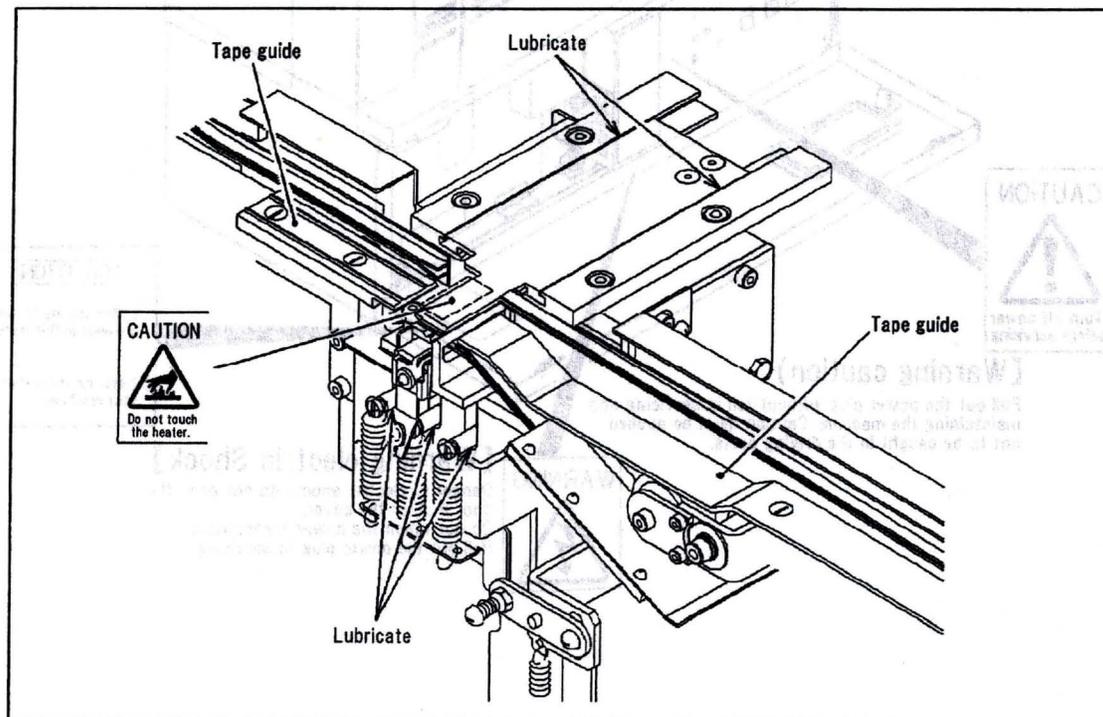
(2) If the warning labels come off or become unable to read it with dirt, please put the new ones to the same positions as replacement.

(3) The positions of putting the warning labels and their meaning are as follows.



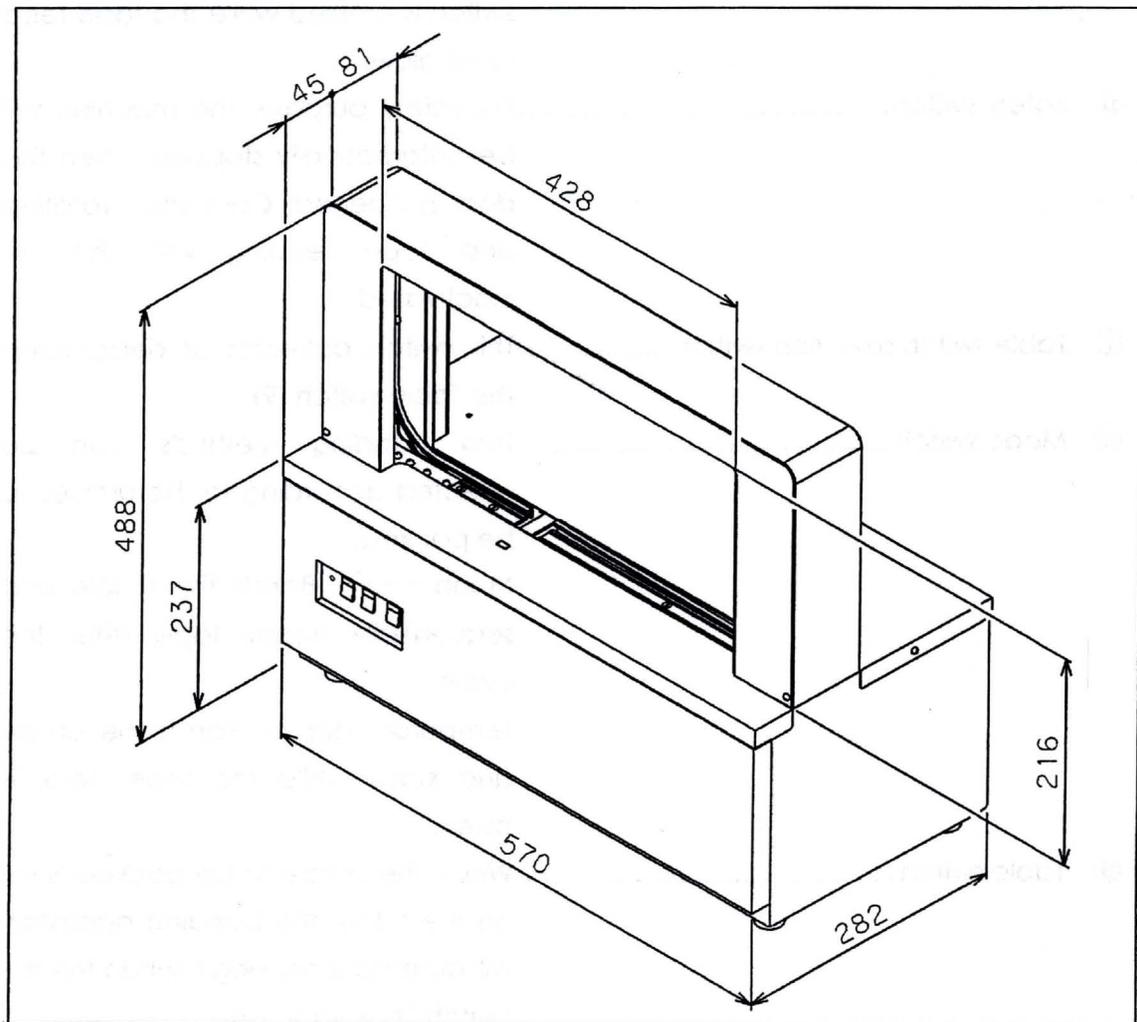
## 2. HANDLING PRECAUTIONS

1. Connect to a proper power source.
2. Avoid the use at a place exposed to direct sunlight or a bright place near the window because it will cause malfunction.
3. Avoid the use at a hot or humid place because it will cause tape feeding failure, etc.
4. Be sure to clean and lubricate the machine. Lubricate at the illustrated points about once in a week.
5. Do not touch the heater when the power is ON or right after the power is turned OFF, because it is very hot and dangerous.
6. Do not repeatedly turn the power switch on/off or repeatedly open/close the front door (turning on/off the safety switch). Doing so may cause excessive heater activation resulting in machine malfunction.
7. Do not tamper with tape track because it will cause malfunction of the machine.
8. When moving the machine, do not hold it by its arch. Carrying by the arch may deform the tape track, resulting in machine malfunction.
9. Remove the power cord from the receptacle before the machine interior is repaired or adjusted.
10. In case the machine is not used for a long time, it should be covered.



### 3. SPECIFICATIONS

Tape	: Width 30mm × 190m 80g (paper tape) : Width 30mm × 370~200m 60~110 μm (film tape)
Banding speed	: 30 cycles/min (maximum)
Tension	: 5~30N (adjustable)
Package size, minimum	: Width 30 × height 10mm
Package size, maximum	: Width 420 × height 210
Power supply	: Single phase 100~120V or 200~240V (50,60Hz common use)
Machine dimensions	: 570(W) × 282(D) × 488(H)mm
Machine weight	: 25.5kg



## 4. NAMES AND FUNCTIONS

- ① Power switch..... Turns power on and off. "I" is on.
- ② Power lamp..... Glows while the power switch is turned on.
- ③ Tape feed switch..... Feeds tape into the arch guide. The lamp glows when the tape is fed and the tip of the tape is detected.
- ④ Reset switch ..... Turns the cam shaft one cycle rotation. Use this switch to reset the tape position if the tape is jammed or power fails.
- ⑤ Start switch..... Banding operation begins when this switch is pressed while the tape feed lamp glows.
- ⑥ Safety switch..... For safety purpose, the machine will be automatically stopped when the door is opened. Cam shaft rotating and tape feeding will also be inactivated.
- ⑦ Table switch selection switch ..... This switch activates or deactivates the Table switch (9).
- ⑧ Mode switch ..... Two banding methods can be selected according to the articles to be packed.  
Mono —— Bands the article and sequentially supply tape after the cycle.  
Temporary stop --- Bands the article and stops while the tape track is open.
- ⑨ Table switch ..... When the article to be packed is set on the table, the banding operation will automatically begin when the this Switch (7) is set to on.
- ⑩ Power plug..... Connects to a specified AC power outlet.
- ⑪ Tape insertion slot..... Insert tape into this slot.
- ⑫ Tape holder..... Supply the specified tape to here.
- ⑬ Tension adjustment screw..... Tension force can be adjusted by turning this screw.

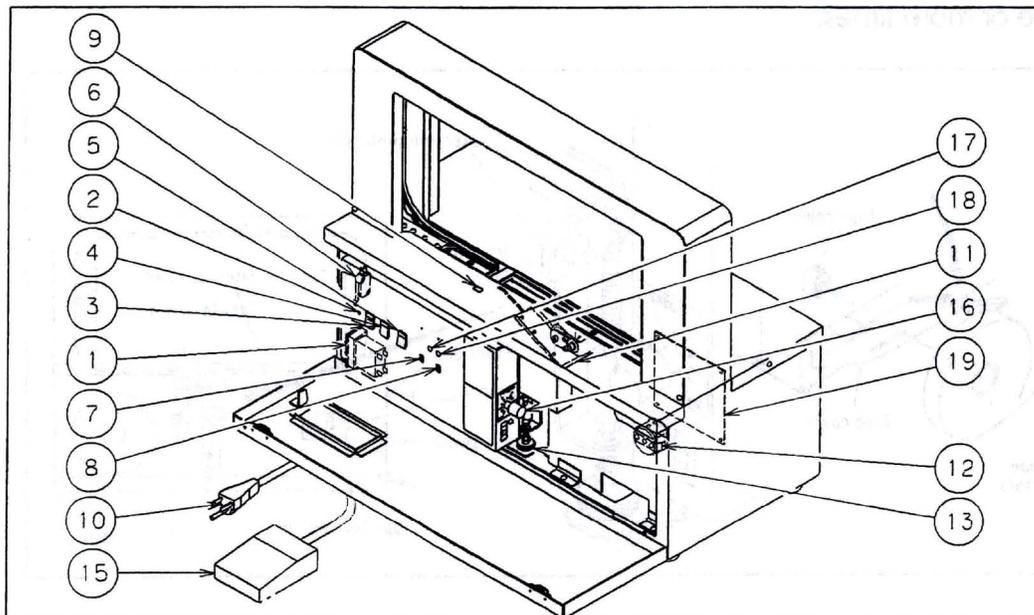
⑮ Foot switch .....This switch can start banding operation instead of the hand operated Start switch.

⑯ Heater temperature adjustment potentiometer ..... The heater temperature can be adjusted by turning this potentiometer. The temperature is increased by clockwise turning and vice versa.

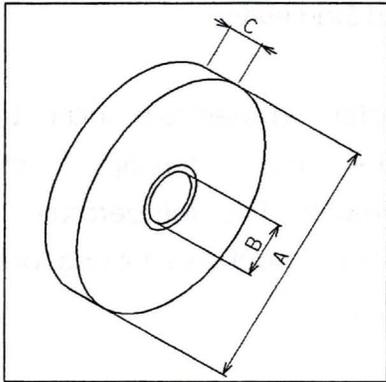
⑰ Tape retraction time adjustment potentiometer .....The tape retraction time can be adjusted by turning this potentiometer. The tape retraction time is extended by this potentiometer's clockwise turning and vice versa.

⑱ Cooling time adjustment potentiometer ..... The cooling time can be extended by turning this potentiometer if a paper tape has popped due to an article's strong rebound force.

⑲ Control circuit board ..... This circuit board controls machine operation. Tape feeding speed adjustment (VR1), tape retraction speed adjustment (VR2), and secondary tightening time adjustment (VR3) potentiometers are mounted here.



## 5. APPLICABLE TAPES



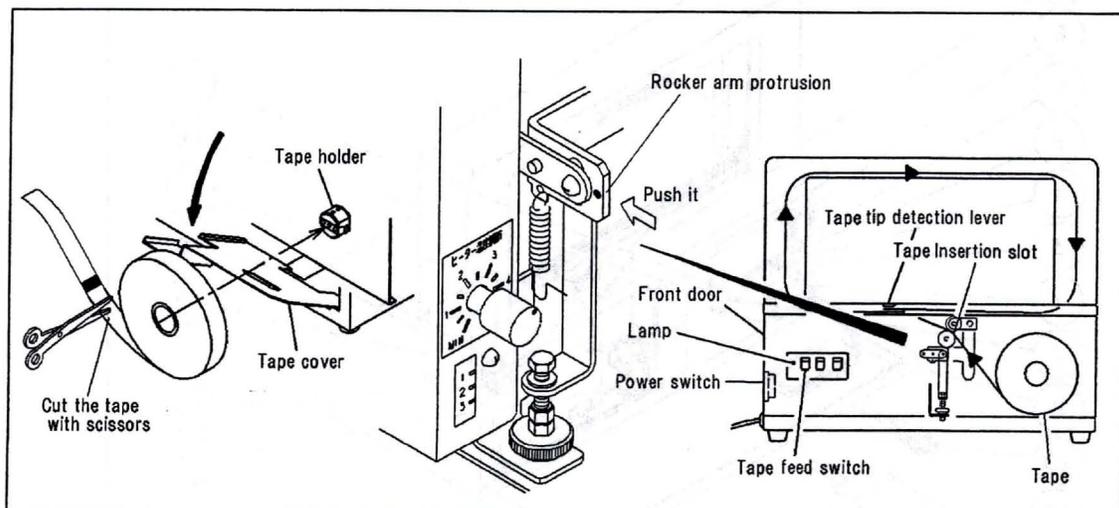
Use the exclusive tape.

	Diameter A	Diameter B	Width C
Paper tape	180 mm	40 mm	30 mm
110 $\mu$ film tape	180 mm	40 mm	30 mm
60 $\mu$ film tape	180 mm	40 mm	30 mm

## 6. TAPE SETTING

Open the front door and set the tape according to the following procedure.

1. Remove the tip of the new tape and dispose of the circumferential tape cut by scissors. (If any part of tape with adhesive remains, it may stick to the roller and tape track causing machine malfunction.)
  2. Open the tape cover, and push the center core of the tape against the tape holder. Make sure to set the tape in the proper winding direction.
  3. Insert the tip of the tape into the tape insertion slot while pressing the rocker arm protrusion to the left. If the tip of the tape is bent or torn off, the tape cannot be inserted. If so re-cut the tape tip squarely.
  4. Close the tape cover.
  5. Close the front door. Then turn on the Power switch.
  6. When the Tape Feed switch is pressed, the tape will be fed, pass the arch tape track, the tape's tip will be sensed, and the tape will stop. The Tape Feed switch lamp will glow to indicate the completion of tape setting.
- ※ If the tape is not fed after the Tape Feed switch is pressed, repeat sequence 1 to 6 one or more times.



## **7. BANDING PROCEDURE**

- (1) Set the tape.  
Refer to "6. Tape Setting" (Page 7).
- (2) Check that Operating mode, Table Switch ON/OFF and the Tightening Force adjustment screw are all set to your desired positions.
- (3) Adjust heater temperature by turning the Heater Temperature potentiometer.  
(Refer to page 12.)
- (4) Turn on the Power switch.  
Check that the Power lamp glows.  
Check that the Tape Feed Switch lamp glows.  
(The Tape Feed Switch lamp should glow about 10 seconds after power is supplied. If this lamp is not lit, check whether tape is set properly.)  
The machine is usable 10 seconds after power is supplied.
- (5) Start the banding operation.  
[A] When the Table Switch is on:
  - ① When the article is set on the table, banding operation will automatically start.  
NOTE 1: If no article is positioned on the table switch window, banding operation will fail to start.  
NOTE 2: If the article is removed or drifts from the table switch window, the operation cycle will be interrupted in the process of tape retraction in order to prevent banding without the article. For resumption, press the Reset switch.
  - ② When a cycle is completed, the tape will be fed and the Tape Feed lamp will glow until the next banding operation.  
NOTE: If the next article is set on the table before this lamp glows, the next operation will fail to start. If so, remove the article from table once.
  - ③ The movement of the cycle differs depending on operation mode. Select a mode you can operate easily by Operation Selection Switch.
    1. MONO  
The next cycle will be able to start only after the previous article is removed from the table. Use this mode for normal banding.
    2. TEMPORARY STOP  
The machine will stop while the tape track is open after completion of the sealing process. When the article is removed from the table, tape track returns to home position and more tape is fed in preparation for the next banding operation.  
During low tension banding, the slide table may tend to catch the tape after the article is banded. If such risk arises, select this mode.

[B] When the Table Switch is off:

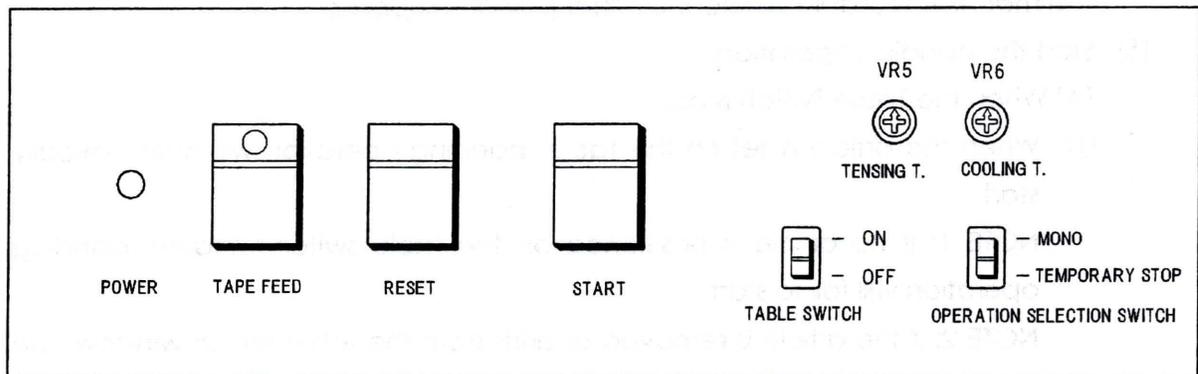
- ① Set the article on the table, and then press the Start switch. Banding operation will start.

NOTE 1: If no article is positioned on the table switch window, the operation will not start even if the Start switch is pressed.

NOTE 2: If the article is removed or drifts from the table switch window, the operation cycle will be interrupted in the process of tape retraction in order to prevent banding without the article. For resumption, press the Reset switch.

NOTE 3: Convenient both-handed packing work is available through foot switch use.

- ② See step ② of aforementioned [A] "When the Table Switch is on:".
- ③ See step ③ of aforementioned [A] "When the Table Switch is on:".



#### (6) Function to prevent banding without article

1. To prevent banding without article, the banding operation will fail to finish if the article does not remain on the table. If the machine stops during tape retraction process, reset the machine according to the following procedure.

- ① If an article remains on the table, remove it.
- ② Press the Reset switch to remove the tape.
- ③ Press the Tape Feed switch to feed more tape and then confirm that the Tape feed lamp glows.

2. An article that is difficult for the Table Switch to sense cannot be banded by the standard procedure. If one of the following types of article is to be banded, consult the agent or manufacturer. It may be possible to band it by applying a special procedure. See examples below:

- ① The article is black so undetectable by the table switch.
- ② The article is too small to fully cover the table switch window.
- ③ The bottom of the article is not flat, e.g. is recessed, so it does not properly cover the table switch window.

(7) Caution when residual tape is removed from the tape track

If tape remains or is jammed in the tape track due to a banding failure or another reason, keep the Reset switch pressed. The machine will remain stopped while the tape track is open. Carefully remove the residual tape from the tape track. Never open the tape track manually or pull the tape harshly. Doing so may cause tape track deformation leading to machine malfunction.

(8) Heater temperature when banding operation is interrupted

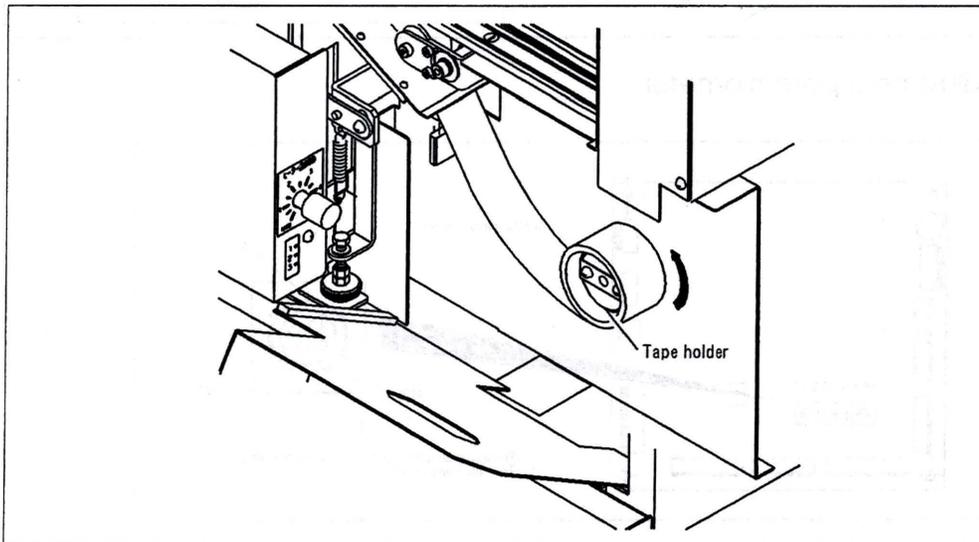
If the banding operation is interrupted for more than 10 minutes, the heater will revert to its stand-by temperature and the tape feed Switch's green lamp will wink. Tape retraction will start 4 seconds after pushing the start switch or detection of the article by table switch, when operation restarts.

(9) Tape replacement

① Tape End indication

When the tape comes near to its end, a red mark on the tape will become visible. In this case, replace the tape roll with a new one.

② Open the tape cover and turn the tape holder in the arrowed direction described in the figure below to rewind residual tape completely.



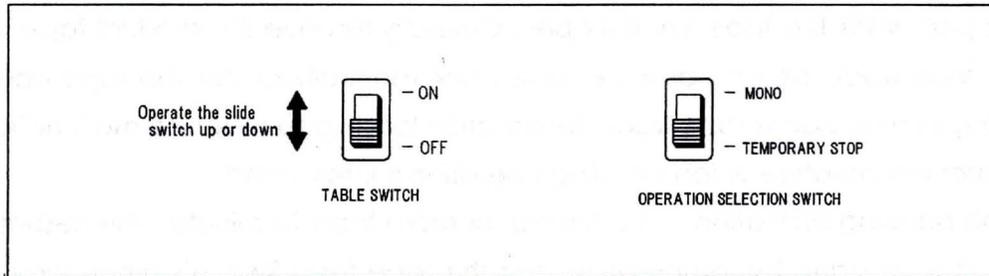
③ Remove the tape roll from the tape holder, and install a new tape roll.  
Refer to "6. TAPE SETTING" (Page 7).

(10) End of operation

When banding operation has ended, turn off the Power switch.

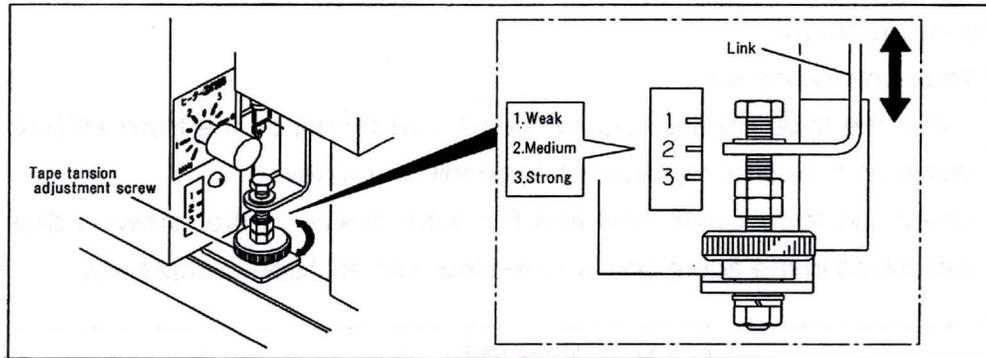
## 8. ADJUSTMENT

### (1) Operation Mode, Table Switch ON/OFF selection

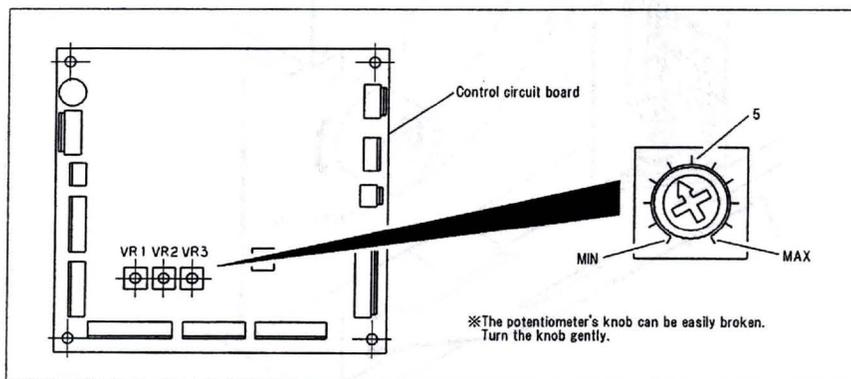


### (2) Tape tension adjustment

Turn the screw to elevate the link.



### (3) Adjustment potentiometer



VR 1: Tape feed speed control

The setting at shipment is "5".

To increase cycle speed, increase this setting.

However, as the tape feed speed increases, tape feed noise also increases. Adjust the potentiometer according to priorities.

VR 2: Tape retraction speed control

The setting at shipment is "MAX".

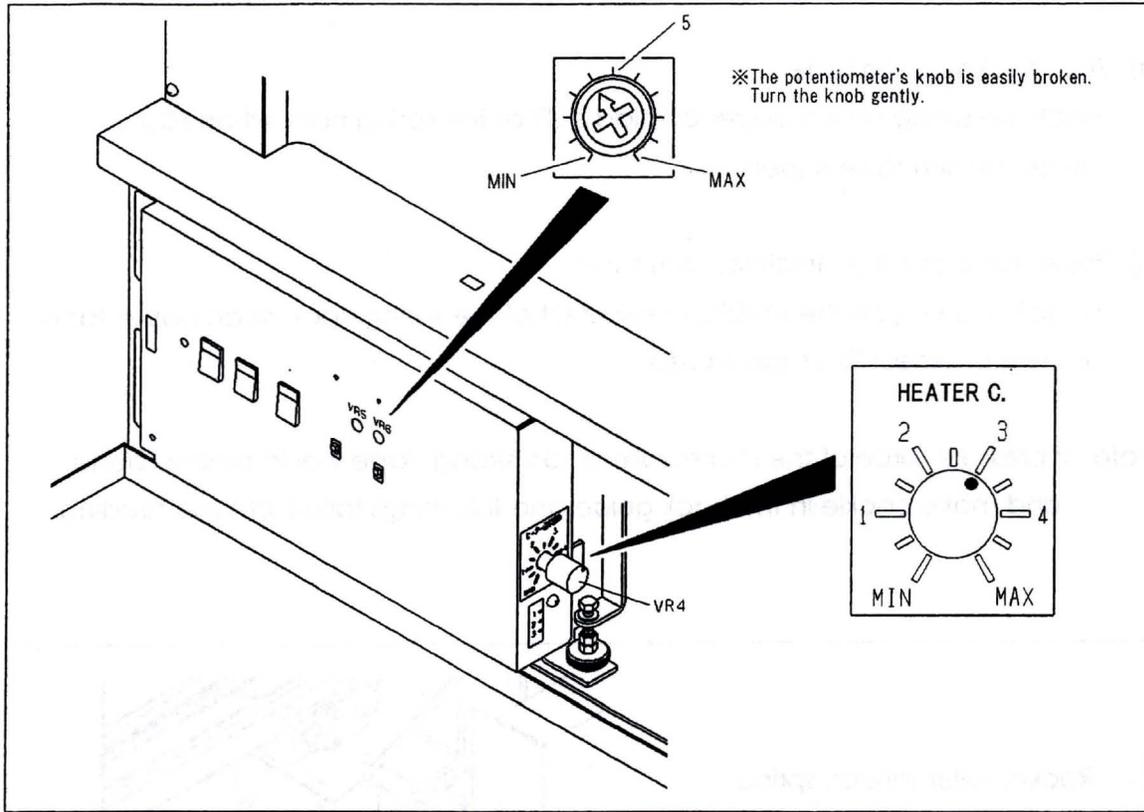
To bundle the article softly, adjust this potentiometer accordingly.

### VR 3: Second tightening time control

The setting at shipment is "MIN".

To bundle a soft article tightly while holding it manually, increase the second tightening time.

However, as the roller will heat, avoid using this mode too frequently.



### VR 4: Heater temperature control

The setting at shipment is between "2.5" ~ "3".

As heater temperature differs according to input voltage and ambient temperature. Adjust this potentiometer while checking the welding condition of the tape, if necessary. Under normal conditions, set this potentiometer between 2.5 ~ 3 for 60  $\mu$  thickness film tape, and between 3.5 ~ 4 for 110  $\mu$  thickness film tape and paper tape.

The tape may break during welding, if the heater temperature is too high. If such risk arises, decrease the heater temperature.

### VR 5: Tape retraction time control

The setting at shipment is "4".

The tensioning time can be adjusted according to article size, if necessary.

### VR 6: Cooling time control

The setting at shipment is "MIN".

When paper tape is used, the tape may pop due to an article's strong rebound force. If this occurs, increase the cooling time. Under normal conditions, set this potentiometer to MIN for normal film tape and 2 ~ 5 for paper tape.

(4) Position of rocker roller tension spring in accordance with substance of the tape to be used

Please set the position of the rocker roller tension spring hook in accordance with substance of the tape to be used.

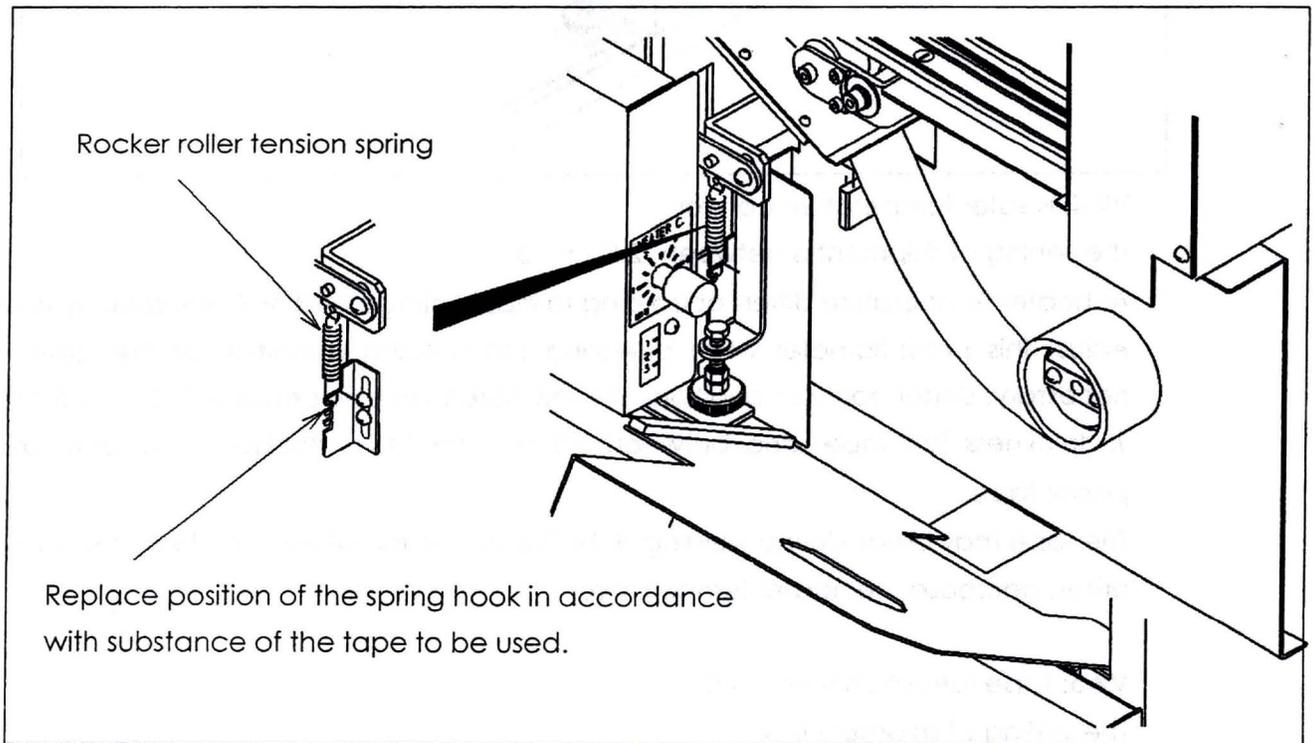
a)  $60\mu$  thickness film tape

Hook the spring on the upper or middle slit of the spring hook when  $60\mu$  thickness film tape is used.

b) Paper tape or  $110\mu$  thickness film tape

Hook the spring on the middle or lower slit of the spring hook when paper tape or  $110\mu$  thickness film tape is used.

Note : If pressure force of the rocker roller is too strong, tape would tend to bend and make cockle in the track guide and this brings failure of tape feeding.



## 9. TROUBLESHOOTING

**⚠ For safe operation, be sure to turn off the Power switch and disconnect the power plug before beginning machine repair.**

### 1. Trouble causes and countermeasures

Symptom	Causes	Countermeasures
The power lamp will not glow when the power switch is turned on.	<ol style="list-style-type: none"> <li>1. Power source trouble (power failure)</li> <li>2. Power cord damage, improper plug insertion</li> <li>3. The safety switch is not turned "on".</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the power supply.</li> <li>2. Check the power cord and power plug.</li> <li>3. Close the front door firmly to set the safety switch to on.</li> </ol>
The banding operation will not start when the start switch is pressed or while the table switch is set to "on", the banding operation will not start when the article is loaded on the table.	<ol style="list-style-type: none"> <li>1. Incomplete tape feeding (The tape feed switch lamp does not glow.)</li> <li>2. Heater is under preheating.</li> <li>3. Table switch is not properly set.</li> <li>4. The article is not placed on the table switch.</li> <li>5. The table switch does not function because the article's color is too dark.</li> <li>6. The heater is at its stand-by temperature.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check that the tape is properly set.</li> <li>2. Be sure to wait for 10 seconds after the power switch is turned on.</li> <li>3. To use the Table Switch function, set the Table switch to on.</li> <li>4. Position the article fully over the table switch window.</li> <li>5. Contact the agent.</li> <li>6. Wait for 4 seconds. The machine will start banding operation after 4 seconds.</li> </ol>

Symptom	Causes	Countermeasures
While the table switch is set to "on", the banding operation starts although no article is set on the table. Or although a new article is set on the table, its next cycle does not start.	<ol style="list-style-type: none"> <li>1. Improper machine installation</li> <li>2. The table switch (sensor) window is dirty.</li> </ol>	<ol style="list-style-type: none"> <li>1. If the machine is installed in a bright place, the table switch sensor may function improperly. Change the installation site or run in manual mode (Table Switch: OFF).</li> <li>2. Remove the dirt.</li> </ol>
The tape feed switch lamp does not glow after the tape is fed.	<ol style="list-style-type: none"> <li>1. The tape is insufficiently advanced.</li> <li>2. Tape is caught in the guide.</li> </ol>	<ol style="list-style-type: none"> <li>1. Press the tape feed switch.</li> <li>2. Press the Reset switch to remove the tape from the track, and then press the Tape Feed switch.</li> </ol>
Tape is not fed.	<ol style="list-style-type: none"> <li>1. Improper tape setting</li> <li>2. Tape was used up.</li> <li>3. Tape was jammed.</li> <li>4. Tape was broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reel out the tape, and set the tape again.</li> <li>2. Set a new roll of tape.</li> <li>3. Open the front door and the tape cover to reel out the tape. Cut the tip of the tape and set the tape again.</li> <li>4. When the tape is strongly tightened, the tape may be severed under certain condition of the article. Cut the tip of the tape and set the tape again.</li> </ol>

Symptom	Causes	Countermeasures
The machine stops during cycle.	<ol style="list-style-type: none"> <li>1. Power has been shut off during cycle.</li> <li>2. Insufficient lubrication of any lubricating point.</li> <li>3. Tape has been improperly cut.</li> <li>4. The article has deviated from the table switch.</li> <li>5. Safety switch is turned off.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check that the power lamp glows. Then press the Reset switch.</li> <li>2. Lubricate all relevant points.</li> <li>3. Adjust the cutter. (Call the agent.)</li> <li>4. Keep the article positioned on the table switch during banding.</li> <li>5. Make sure that front door is closed neatly to turn on the safety switch and push the reset key.</li> </ol>
Tape is not sealed	<ol style="list-style-type: none"> <li>1. Heater temperature is too low.</li> <li>2. Disconnection of heater lead wire or screw of terminal is loosened.</li> <li>3. Heater temperature is too high.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase the heater temperature properly with turning of VR4 heater temperature control potentiometer clockwise.</li> <li>2. Check the heater lead wire and terminal, then replace disconnected heater lead wire with new one if necessary or tighten screw of the terminal.</li> <li>3. Decrease the heater temperature properly with turning of VR4 heater temperature control potentiometer anticlockwise.</li> </ol> <p>It tends to come out failure of sealing soon after sealing process if heater temperature is too high particularly when paper tape is used.</p>

	<p>4. Cooling compression time is short when paper tape is used.</p> <p>5. Foreign object like residue of melted tape is adhering on surface of press head, heater plate or insulating plate.</p>	<p>4. Extend cooling compression time by turning of VR6 cooling time control potentiometer clockwise properly till sealing condition is ensured.</p> <p>5. Scrape off the foreign object by knife or slotted screwdriver from surface of press head, heater plate or insulating plate.</p>
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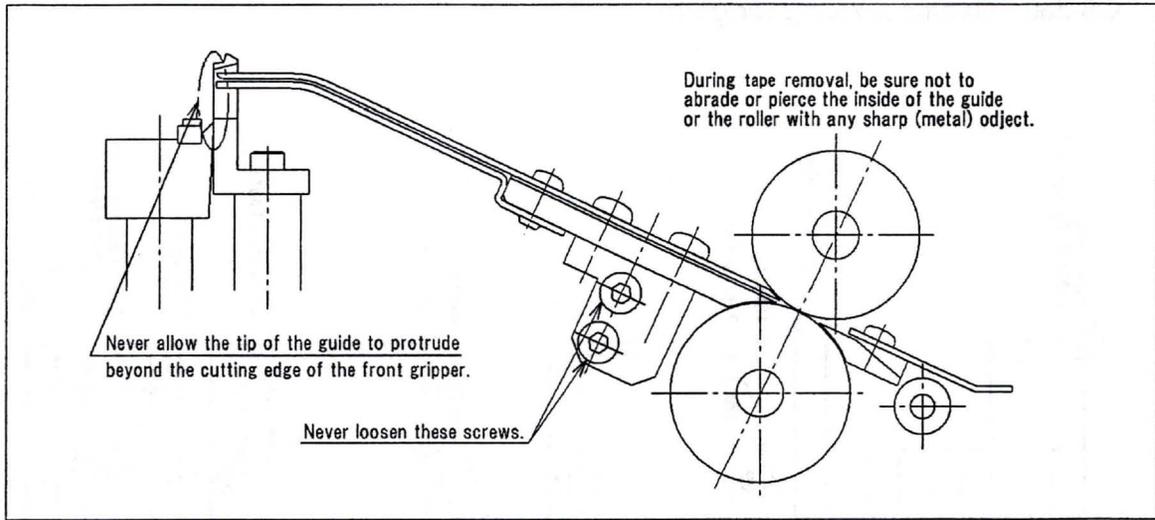
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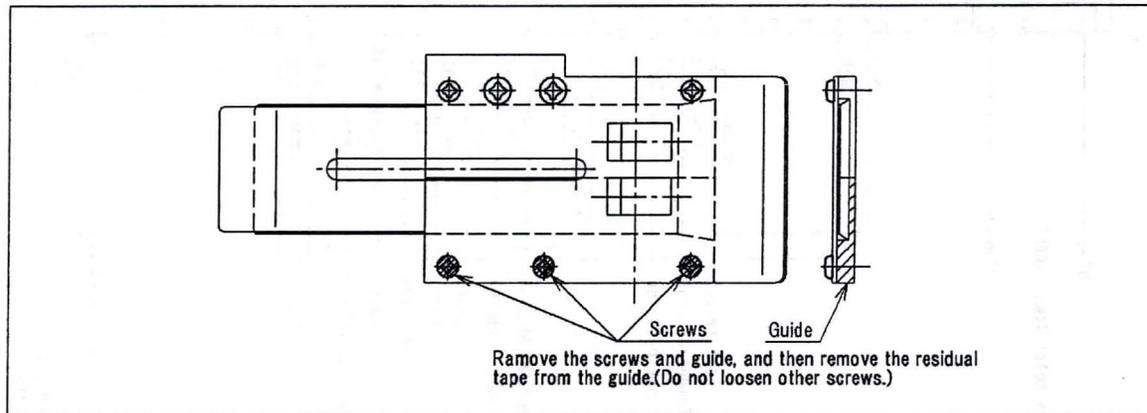
## 2. Countermeasures when tape is jammed in the roller inlet guide unit

### (1) Actions to be avoided:

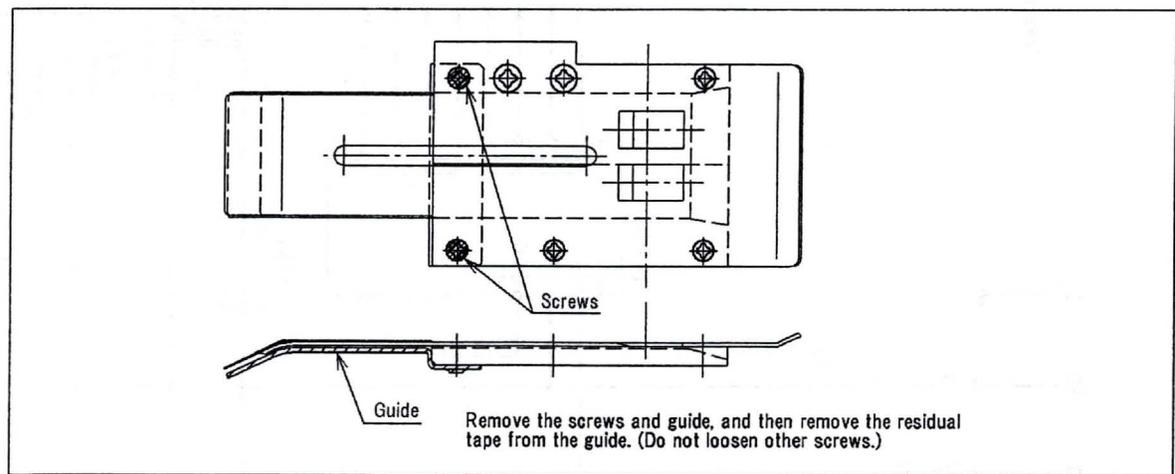


### (2) Basic tape removal

①

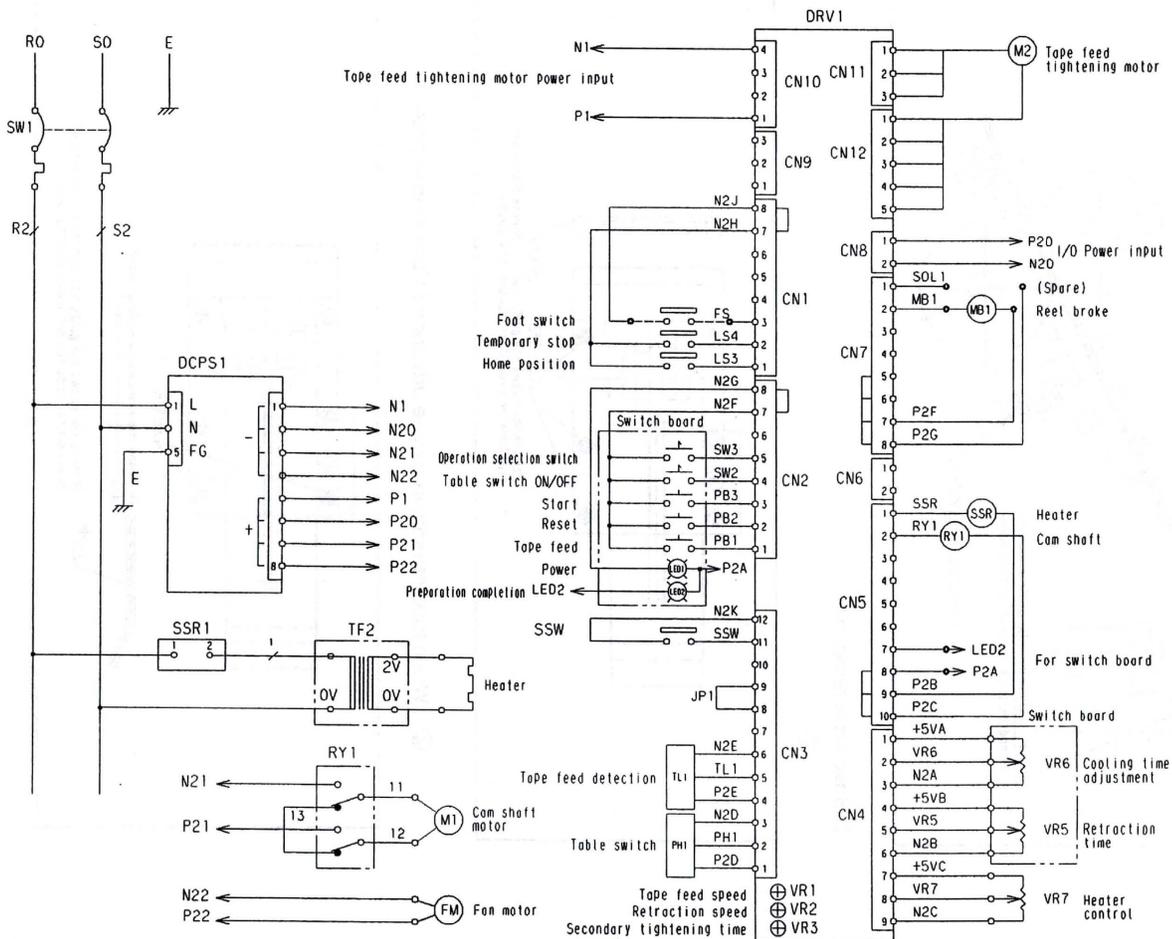


② . When tape remains in a more advanced state than in case ①:



# 10. ELECTRICAL WIRING DIAGRAM

Electrical Wiring Diagram



## 11. PARTS LISTS

### ■ Mechanical parts

Code NO.	Part No.	Name of Part	Q'ty
1	ND03X101A2	Cam Bracket (R)	1
2	ND03X102A1	Cam Bracket (L)	1
3	ND03Y103A0	Plunger Block	1
4	ND03Y104A0	Motor Bracket	1
5	ND03Z105A0	Guide Block	1
6	ND03Z106B0	Guide Block (A)	1
7	ND03Z107B0	Guide Block (B)	1
8	ND03Z108A0	Shaft	1
11	ND03Z109A0	Cam Shaft	1
12	ND03Z110A1	Opener Cam	1
13	ND03Z111A1	Separator Cam	1
14	ND03Z112A2	Rear Grip Cam	1
15	ND03Z113A1	Slide Table Cam	1
16	ND03Z114A1	Press Cam	1
17	ND03Z115A1	Pressure Cam	1
18	ND03Z116A1	Front Grip Cam	1
19	ND03Z117A0	LS-3 Cam	1
20	ND03Z118A0	LS-4 Cam	1
21	OB300111	Collar (A)	1
22	OB300112	Collar (B)	1
23	ND03Z119A1	Collar (C)	1
24	ND03Z120A1	Collar (D)	6
25	7503-A	Washer	1
26	ND03Z121A1	LS Mounting Plate	1
29	50208	Return Spring	3
30	7212	Spring Hook	3
31	ND1SE092A0	Spring Hook	1
33	ND03Z201A1	Front Gripper	1
34	ND03Z202A0	Rear Gripper	1
35	ND03Z203A0	Head Plunger (A)	2
36	ND03Z204A0	Head Plunger (B)	1
37	ND03Z205A1	Grip bar	3

Code NO.	Part No.	Name of Part	Q'ty
39	ND03Z206A0	Plunger Spring (D)	3
40	ND03Z207A0	Press Head	1
42	ND03Y301A1	Slide Table	1
43	ND03Z302A1	Separator	1
44	ND03Z303A1	Center Guide	1
45	ND03Z304A0	Center Guide Plate	1
46	ND03Z305A0	Separator Hook	1
47	ND03Z306A0	Table Hook	1
48	ND03Z307A4	Switch Lever	1
49	ND03Z308A0	Sensor Bracket	1
51	12309-A	Return Spring	1
52	7346	Switch Lever Fulcrum pin	1
53	ND03Z309A1	Base Guide (A)	1
54	ND03Z310A1	Base Guide (B)	1
56	ND03Z311A0	Table Arm	1
57	ND03Z312A0	Link	1
58	ND03Z313A0	Link Pin	2
59	ND03Z314A0	Separator Arm (A)	1
60	ND03Z315A0	Separator Arm (B)	1
61	ND03Z316A0	Fulcrum Shaft	1
63	ND03Z317A2	Table Receiver (B)	1
64	ND02Z303A0	Bracket	2
65	OB300316-B	Spring	2
67	ND03Y401A0	Heater Plate	1
68	ND03Z402B1	Insulating Plate (A)	1
69	ND03Z403A0	Insulating Plate (B)	1
70	ND03Z404A0	Insulating Plate (C)	1
71	ND03Z405A0	Bush	2
72	ND03Z406A1	Press Head Support	1
73	ND03Z407A0	Carbon Ribbon Line A	1
74	ND03Z408A0	Carbon Ribbon Line B	1
77	ND03Z501A0	Pressure Spring	1
78	ND03Z502A0	Rocker Arm Fulcrum pin	1

Code NO.	Part No.	Name of Part	Q'ty
79	ND03Z503A0	Rocker Collar	1
80	ND03Z504A0	Link (A)	1
81	ND03Z505A0	Link (B)	1
82	ND03Z506A0	Driving Roller	1
83	ND03Y507A0	Rocker Arm (A)	1
84	ND03Z508A0	Rocker Arm (B)	1
85	ND03Z509A0	Rocker Shaft (A)	1
86	ND03Z510A1	Adjusting Knob	1
87	ND03Z511A0	Bracket	1
88	ND03Z512A0	Spring Post	1
89	OB300508	Pressure Arm	1
90	ND03Z513A1	Spring Hook	1
91	ND03Z514A1	Spring	1
92	ND03Z515A0	Spring Hook	1
93	22423	Spring	3
94	ND2SE050A0	Spring Hook	1
97	ND03Y601A0	Arch	1
98	ND03Y602A0	Arch Cover	2
100	ND03Y604A2	Right Side Guide (R)	1
102	ND03Y606A1	Left Side Guide (R)	1
104	ND03Y607A0	Inlet Guide (A)	1
105	ND03Y608A0	Inlet Guide (A)	1
106	ND03Y609A2	Guide Cover	1
107	ND03Z610A0	Under Cover	1
108	ND03Z611A0	Guide Roller	1
110	ND03W612A4	Tape Guide (F1)	1
111	ND03W613A3	Tape Guide (R1)	1
116	ND03Z618A0	Opener bar	2
117	ND03Z619A0	Cushion Rubber	(10)
118	TPF6-141 	Guide Spring	2
120	ND03Y620A0	Rail Block	1
121	ND03Z621A0	Opener Shaft	1

Code NO.	Part No.	Name of Part	Q'ty
122	ND03Z622A0	Opener Block (A)	1
123	ND03Z623A0	Opener Block (B)	1
124	ND03Z624A0	Wire Hook	1
125	ND03Z625A0	Plate nut	4
126	ND03Z626A0	Spacer	2
129	ND03Z627A0	Opener Arm	1
130	ND03Z628A0	Opener Shaft	1
133	ND03Z629A0	Roller Bracket (A)	1
134	ND03Y630A0	Roller Bracket (B)	1
135	ND03Z631A0	Corner Bracket	1
136	ND01E613A0	Roller	5
137	12622	Pin	3
138	ND03Z632A0	Roller Pin	2
140	ND03Y633A1	Tape Rail (R)	1
141	ND03Z634A0	Tape Rail (L)	1
142	ND03Y635A2	Side Guide (R)	1
143	ND03Y636A1	Side Guide (L)	1
144	ND03Y637A1	Top Guide	1
146	ND03Y638A1	Rail Bracket (B)	1
147	ND03Z639A0	Corner Block	1
148	ND03Z640A0	Corner Shaft	1
150	ND03Z641A0	Opener Link	8
151	ND03Z642A1	Pin	8
152	ND03Z643A0	Slide Base (B)	2
153	ND03Z644A0	Wire Hook	4
154	ND03Z645A0	Wire Rope (A)	1
155	ND03Z646A0	Wire Rope (B)	1
156	ND03Z647A0	Wire Rope (C)	1
158	ND03Z648A0	Stopper	1
159	ND03Z649A0	Cushion Rubber(A)	1
161	ND03Z650A0	Brush	1

Code NO.	Part No.	Name of Part	Q'ty
162	ND03Z651A1	Brush	3
164	ND03W701A0	Body Frame	1
165	ND03Y702A1	Top Table (Front)	1
166	ND03Y703A0	Top Table (Rear)	1
167	ND03Y704A0	Front Door	1
168	ND03Y705A0	Rear Cover	1
169	ND3SX856A1	Switch Panel	1
170	ND03Z707A0	Cover	1
171	ND03Z708B0	S.S Mounting Plate	1
172	OB300712	Vinyl Cover	1
174	ND03Y801A0	Reel Cover	1
175	ND03Y802A0	Tape Guide (B)	1
176	OB300803	Paper Core Holder	1
177	OB300804-A	Holder Pin	1
178	OB300805	Leaf Spring	1
179	OB300806	Plate	2
181	ND03Y901A2	Board Mounting Plate	1
183	K-0100S	Earth Name Plate	1
184	ND3SZ857A0	Heater Control Name Plate	1
185	ND03Z910A0	Name Plate (1-2-3)	1
189	ND3SZ931A1	Power Cord	1
201	ND03Z652A0	Tape Stopper A	2
202	ND03Z653A0	Tape Stopper B	2
203	ND03Z516A0	Spring (B)	1
205	ND03Y655A0	Front Guide	1
206	ND03Z122A0	Plate	1
207	ND03Z709A0	Plate	1
208	ND03Z911A0	Fan Motor	1

■ Items on the general market

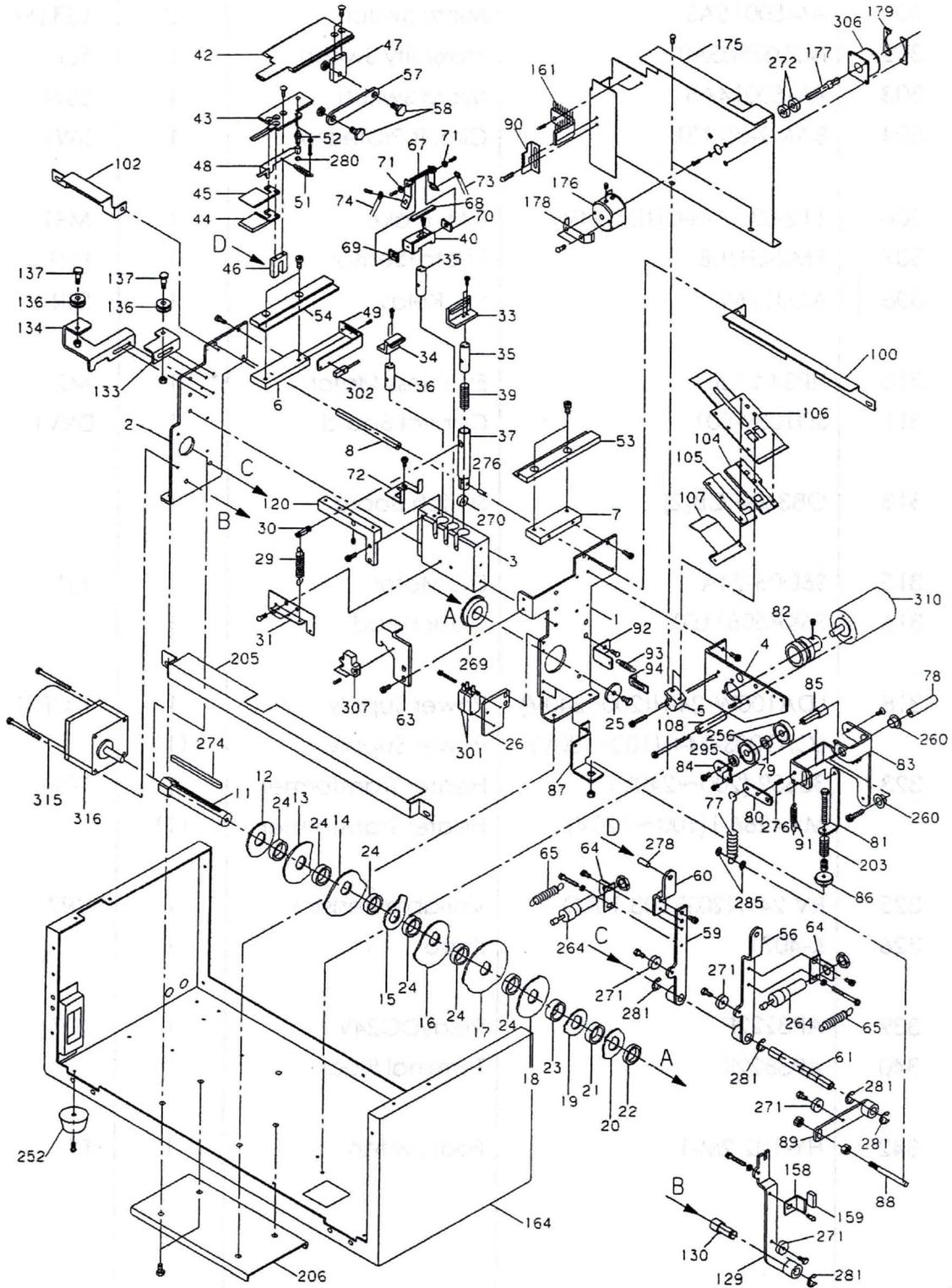
Code NO.	Part No.	Name of Part	Q'ty
251	SA-10 NG-F	Grommet	2
252	SA-9 RK-34	Rubber Leg	4
253	SP-15E A-1(4×8×96)	Rubber Magnet	1
254	YS-002	Magnet Catch	2
256	MGA828ZZ	Bearing	2
258	LFTM6-UU	Linear Bush	4
260	R-MLCF1006	Bush	2
262	TM-232-1 (2pcs.per Set)	Slide Rail	1set
264	FA-1212C1-C-MZ1	Soft Absorber	2
269	6003ZZNR	Bearing	1
270	624ZZ	Bearing	3
271	634ZZ	Bearing	4
272	696ZZ	Bearing	2
274	KF-5×5×85(WR)	Key	1
276	PR-4×10	Spring Pin	5
278	PR-6×15	Spring Pin	1
280	E-3	Snap Ring	1
281	E-8	Snap Ring	5
285	GS-6	Grip Ring	2
287	PM-4	Pin	4
294	ND03Z656A0	Washer	2
295	SSWA13-4.0	Washer	1
296	SBD-O3-10	Hex. Spacer	4

■ Electrical Parts, Etc.

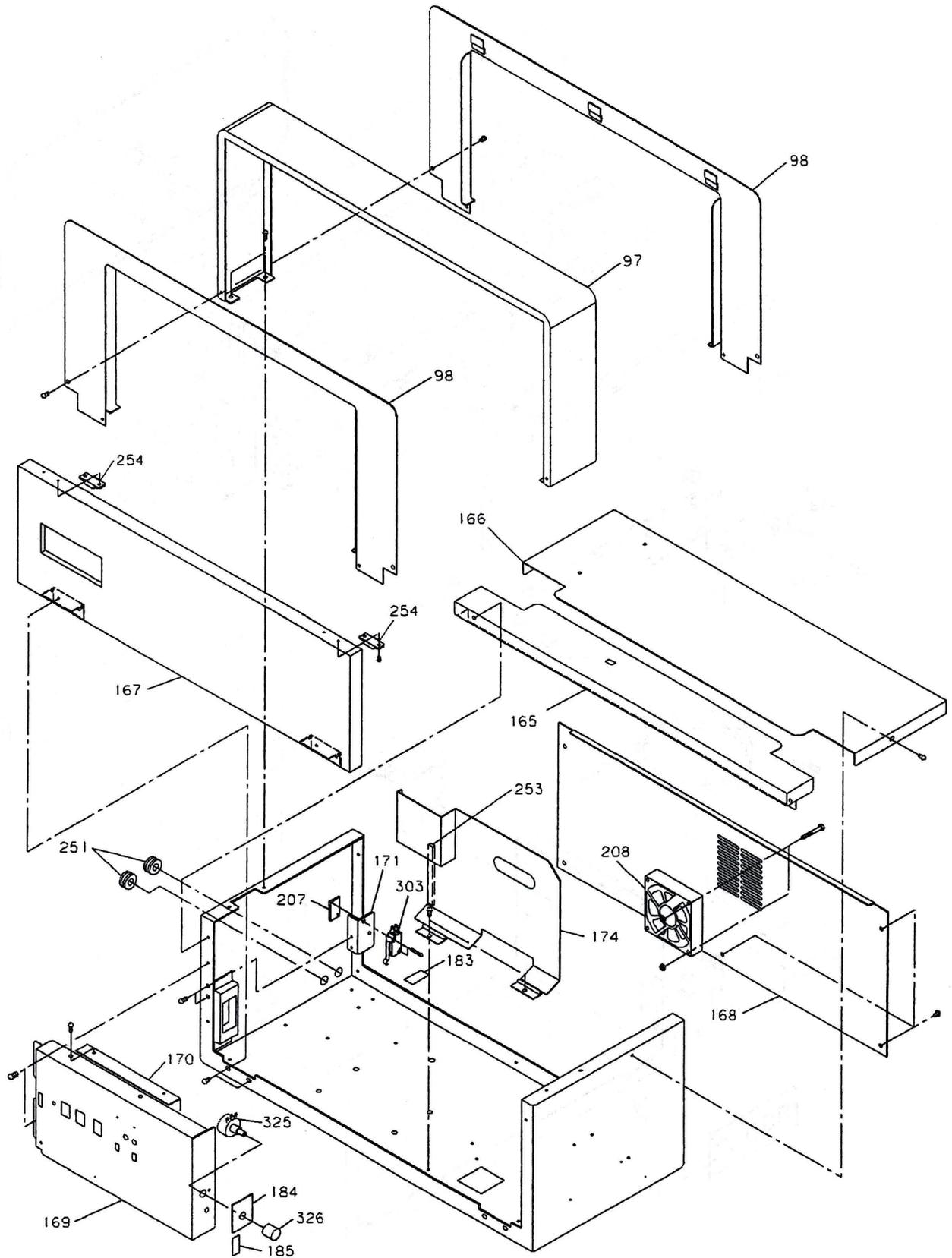
Code NO.	Part No.	Name of Part	Q'ty	
301	AM50015A5	Micro Switch	2	LS3,LS4
302	ND03Z903A0	Proximity Switch	1	TL1
303	AM50014A5	Micro Switch	1	SSW
304	BAM2-05-131	Circuit Protector	1	SW1
306	112-03-11-H-01(DC24V)	E.M. Brake	1	MB1
307	PM2-LH10B	Photo-Sensor	1	PH1
308	AQJ116V	S.S. Relay	1	SSR
310	HPS4-212B	Brushless Motor	1	M2
311	SD1039-E01	Control Board	1	DRV1
313	OB360-PCB(2)	Switch Board	1	
315	S6D06-24A	DC Motor	1	M1
316	S6KA50B1 (D)	Gear Head	1	
318	LDA100W-24-H(200~240V)	Power Supply	1	DCPS1
	LCA100S-24-H(100~120V)	Power Supply	(1)	
323	36659 (200~240V)	Heater Transformer	1	TF2
	MA4266-1(100~120V)	Heater Transformer	(1)	
325	RV 24YN20SB103 10k $\Omega$	Variable Resistor	1	VR7
326	K-4071	Knob	1	
339	AP3222F	RelayDC24V	1	RY1
340	AP3822K	Terminal Block	1	
342	HY-102 2M-1	Foot Switch	1	FS

# 12. ILLUSTRATIONS

## ●Parts for engine unit



●Parts for Frame Etc.



●Parts for Electrical Controls Etc.

