

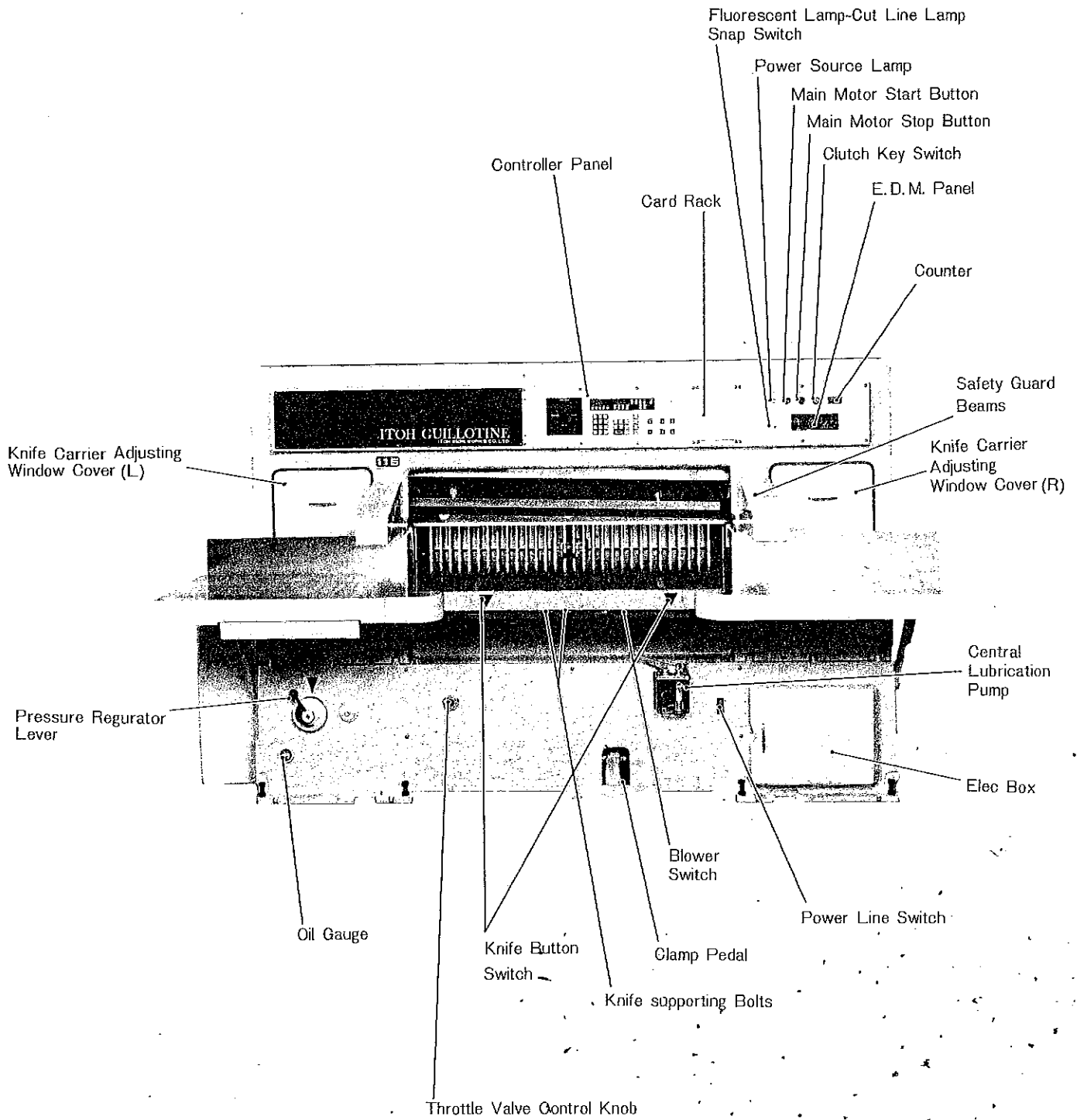
ITOH GUILLOTINE FC

INSTRUCTION MANUAL

C O N T E N T S

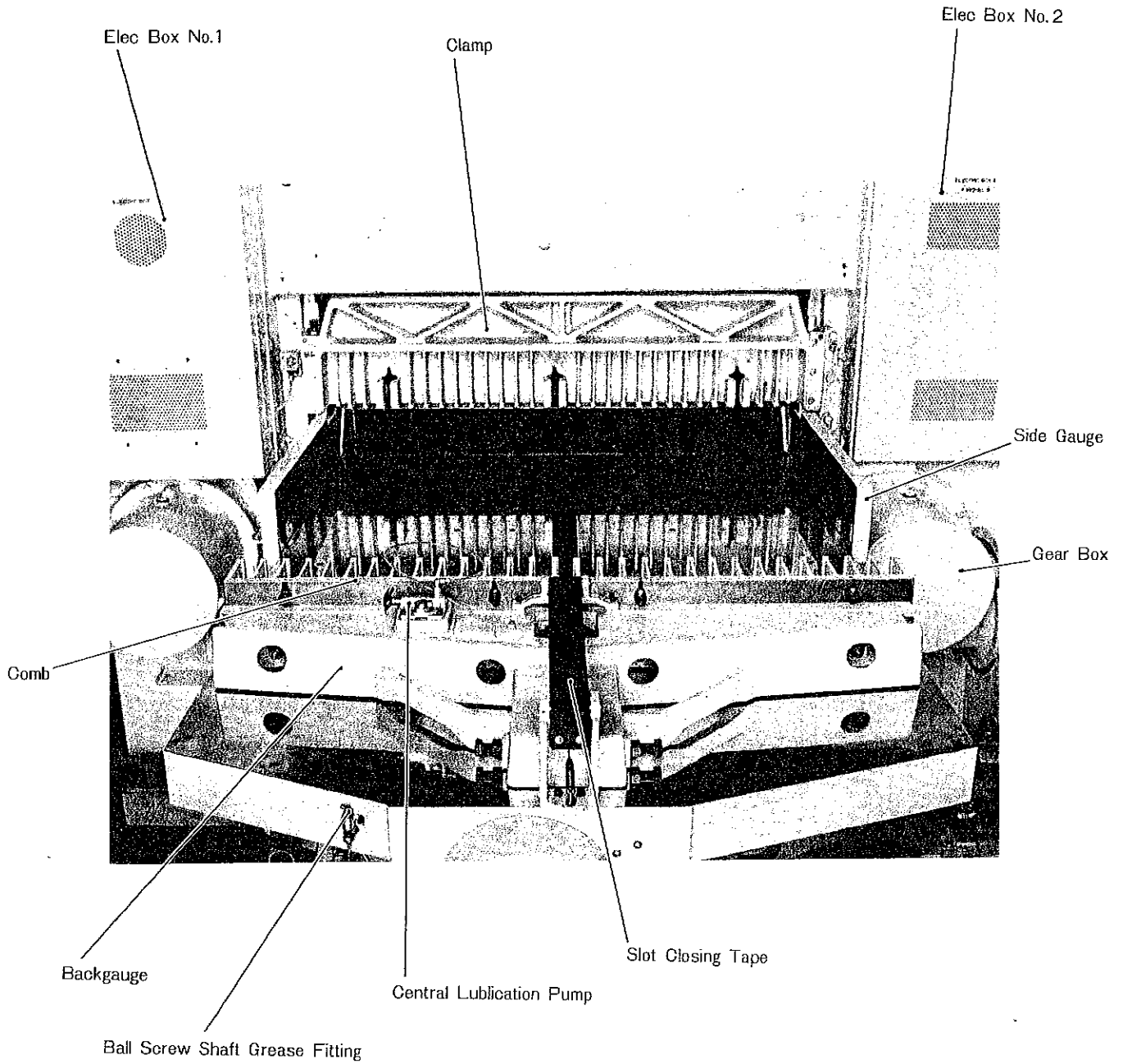
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Out Line (1)



(Photo 1)

Out Line (2)



(Photo 2)

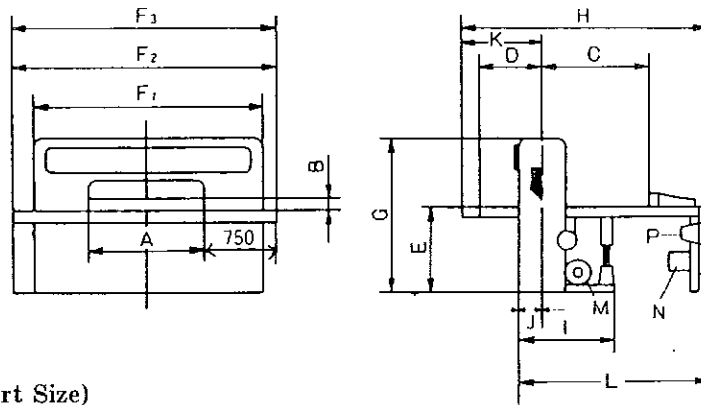
Introduction

This cutting machine is designed and manufactured to make it possible to cut such sheet materials as papers, alfoils, plastic films, etc. with accuracy, high speed and also with great safety. This machine utilizes a numerical control system for the setting of cutting dimensions and many other sophisticated systems for operational efficiency and safety.

This instruction manual is written, describing the machine operations and its maintenance and to inform the operator regarding safe operating procedures.

We, the manufacturer of this machine, hope that all of the machine users read this instruction manual thoroughly in order to achieve correct operation results with safety and efficiency.

ITOH GUILLOTINE FC SPECIFICATIONS



(Standard Export Size)

Machine Type	85	100	115	132	160	170
A. Max. cut capacity width (mm)	870	1016	1168	1320	1600	1700
B. Max. cut capacity thickness (mm)	130	145	165	165	165	165
C. Max. cut capacity length (mm)	870	1016	1160	1320	1600	1700
D. Front table length (mm)	630	650	700	700	700	750
E. Table height (mm)	870	875	875	855	890	890
F1 Main body width (mm)	1925	2200	2380	2590	2960	3055
F2 Table width (mm)	2370	2516	2668	2820	3100	3200
F3 Machine width (mm)	2420	2620	2790	2950	3340	3430
G Machine height (mm)	1560	1590	1640	1620	1730	1730
H Machine length (mm)	2320	2470	2610	2760	3120	3280
I (mm)	940	940	1030	1030	1030	1060
J (mm)	235	235	235	235	235	265
K (mm)	810	810	810	810	830	830
L (mm)	1745	1895	2030	2180	2520	2710
M. N. P. (Kw)	3.7	0.6 0.4	3.7 0.6	0.75	5.5 0.6	0.75 × 2
Machine weight (kg)	2800	3200	3950	4400	5500	5800

(U. S. Market)

Machine Type	100	115	132	160	170
A. Max. cut capacity width (inch)	40"	46"	52"	63"	67"
B. Max. cut capacity thickness (inch)	5 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"
C. Max. cut capacity length (inch)	40"	45 1/2"	52"	63"	67"
D. Front table length (inch)	25 1/2"	27 1/2"	27 1/2"	27 1/2"	29 1/2"
E. Table height (inch)	39"	39"	39"	39"	40 1/2"
F1 Main body width (inch)	86 1/2"	93 2/3"	102"	116 1/2"	120 2/3"
F2 Table width (inch)	99"	105"	126 2/3"	137 2/3"	141 2/3"
F3 Machine width (inch)	103"	109 3/4"	126 2/3"	137 2/3"	141 2/3"
G Machine height (inch)	66 3/8"	72"	68 1/4"	72"	72"
H Machine length (inch)	97 1/4"	102 3/4"	112 1/2"	126 3/4"	133"
I (inch)	37"	40 1/2"	40 1/2"	40 1/2"	41 3/4"
J (inch)	9 1/4"	9 1/4"	9 1/4"	9 1/4"	10 1/2"
K (inch)	31 3/4"	31 3/4"	35 3/4"	36 1/2"	36 1/2"
L (inch)	74 1/2"	80"	85 3/4"	99 1/4"	106 3/4"
M. N. P. (Kw)	3.7	0.6 0.4	3.7 0.6	0.75	5.5 0.6 0.75 × 2
Machine weight (lb)	7,700	9,700	10,600	13,800	14,000

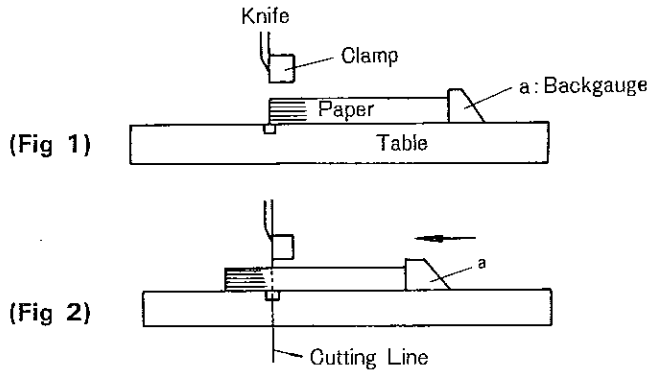
Safety Procedures

- 1) Always exercise caution when operating machinery.
- 2) Never place hands or arms under clamp.
- 3) Never allow two operators to operate the cutter at the same time.
- 4) Never depress clamp pedal while hands are under clamp.
- 5) Never operate cutter with safety covers removed.
- 6) Exercise extreme caution when changing knife blades.
- 7) Always keep spare knives in protective wood holders.
- 8) Do not operate cutter if any function becomes erratic or if unusual noise develops.

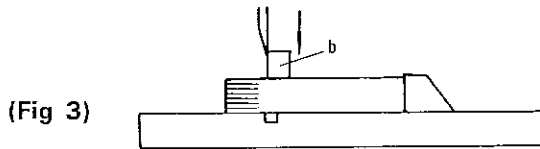
FUNCTION OF MACHINE

There are three cutting operation modes: fully automatic, semi-automatic and manual. Operation mechanisms and functions of above three modes remain basically the same.

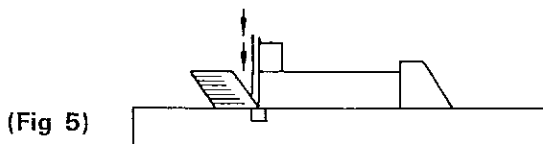
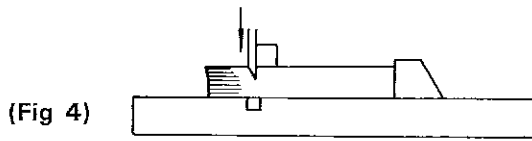
- 1) Backgauge which is set at the predetermined position (Fig 1). will move forward by just a length in which the materials are to be cut by means of the feed ball screw driving, then stop (Fig 2).



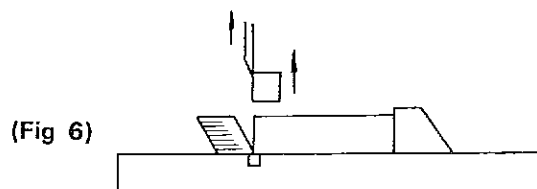
- 2) As soon as the backgauge stops, a clamp comes down and presses the materials to be cut (Fig 3). Clamping is done by hydraulic cylinder with present oil pressure, through the crank mechanism. Hydraulic cylinder has a special 2-stage clamping mechanism.



- 3) A few seconds after finishing the press clamp of materials, the knife will start to descend, cut the materials, and continue to move through the bottom dead center, then go up until it arrives at the top dead center of knife movement, then stop.



- 4) As soon as the knife goes up, the clamp starts to move upward, until it arrives at the top dead center of clamp movement, then stops (Fig 6).



OPERATION (Preparation)

- 1) Clean up the table.
- 2) Be sure there are no obstacles around the machine, near the operator's working position, especially around the operating foot pedal. You must keep the area orderly so as not to cause materials to fall on the foot pedal which could result in injury to the operator.
- 3) Lubrication
There are two lubrication pumps for central lubrication system. Work the pump unit up and down three times. Pump unit descends gradually by its weight supplying tank when the remaining oil becomes less than one quarter of tank capacity.
- 4) Confirm the knife edge height.
Power line is to be switched on. (pilot lamp on)
Clutch key on. (insert the key, turn to the right)
***Clutch on after around 90 seconds**
***Don't switch on the main motor yet**
***Don't hold the clutch key over 5 minutes to avoid the damage of the clutch power line over heating**

Apply the crank handle (Photo 3-b) on the power shaft end (Photo 3-a), which you can find on the side of worm gear box, (on the right side of main machine body) then turn it to the left direction. Knife will descend gradually as the shaft turns. At the bottom end of knife movement. Knife edge will cut about 0.2-0.3mm mean depth on both sides into the plastic stick. Thus after touching the plastic, the knife will move up. This is right setting of the knife height.

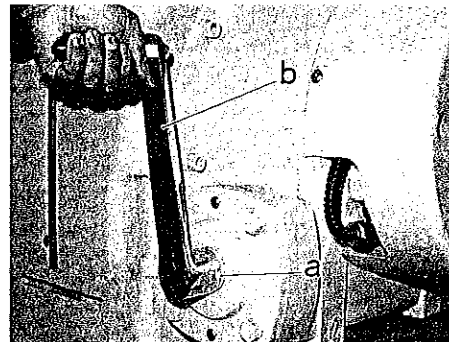
***In the case of checking, put a paper with full table width on the table, confirm the cutting performance of the knife on the full length of cutting line.**

- 5) Knife height adjusting
If there is any unbalance of cutting performance on the right or left, the knife height must be re-adjusted. Remove the cover doors of both sides of the front part of main body. Pull up the fixing pin (Photo 4-a) then turn. Knife will move up and down by turning to the left and right directions of adjusting handle (Photo 4-b).

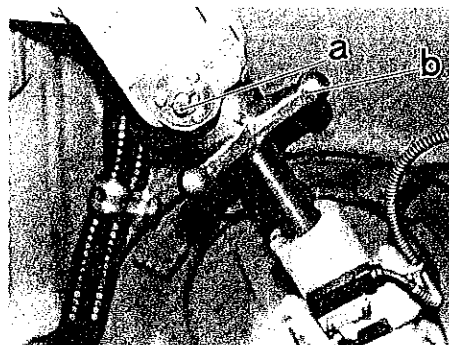
After cutting materials (a sheet of paper), the knife edge will cut in about 0.2-0.3mm into the plastic stick. This is the right setting of the knife height. Moving the knife height up and down by turning the adjusting handle, find the right setting position in which the knife will go up. Then, return the fixing pin to fix the knife in the original position.

Fixing pin will fit into its initial fixing hole, but when you can't get the right fixing hole, move the adjusting handle a little to the right or left until you get the fixing hole.

***Don't over turn to the right, safety bolts will be broken and knife will be stopped immediately.**

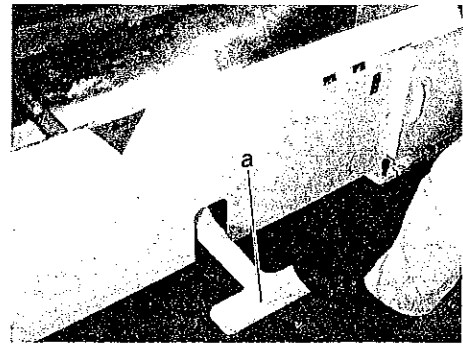


(Photo 3)



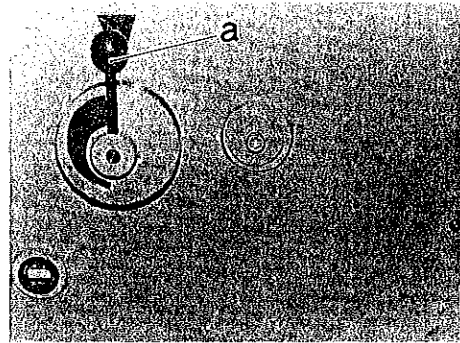
(Photo 4)

- 6) Confirmation of clamping
 After 20 seconds passed since the main motor started, only the clamp will descend gradually by pressing clamp pedal (Photo 5-a). Confirm if the clamp moves down smoothly until it makes contact with the table surface.

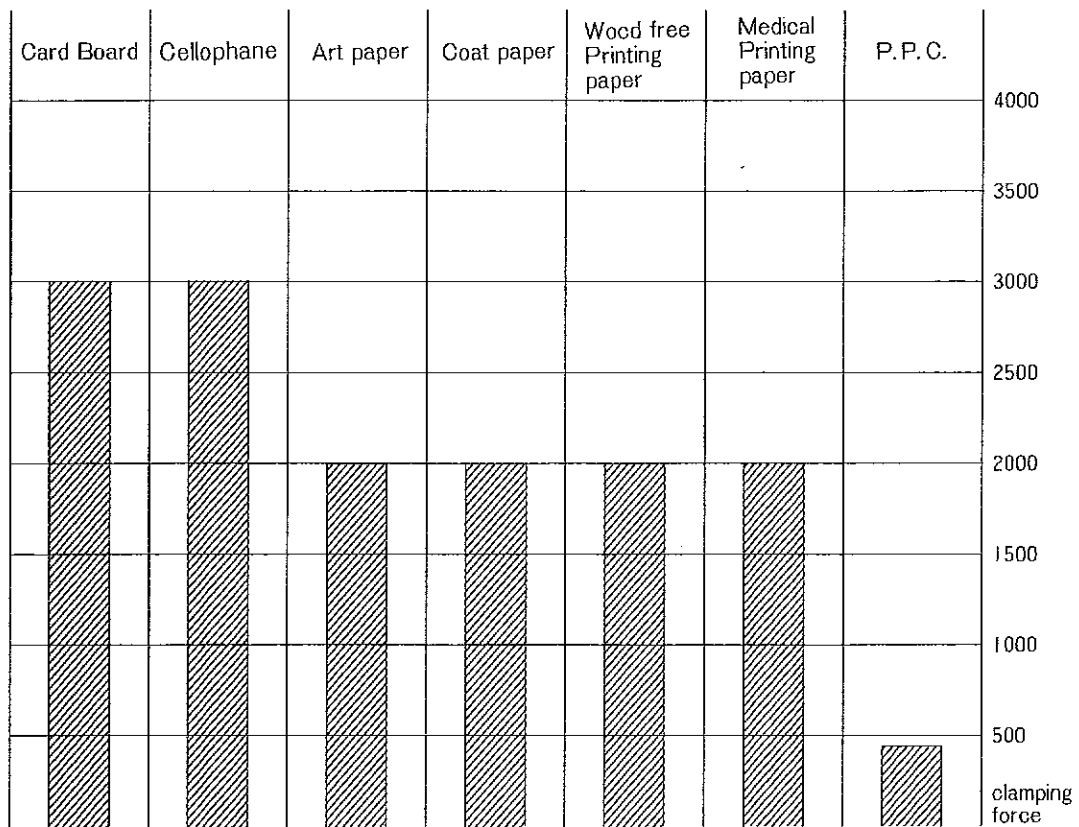


(Photo 5)

- 7) Selection of the clamping force
 The clamping force is necessary to be selected by materials to be cut.
 The clamping force can be selected within the range of 400-4000kg (880-8800 lbs), by adjusting hydraulic oil pressure of cylinder with the pressure regulator lever (Photo 6-a).



(Photo 6)

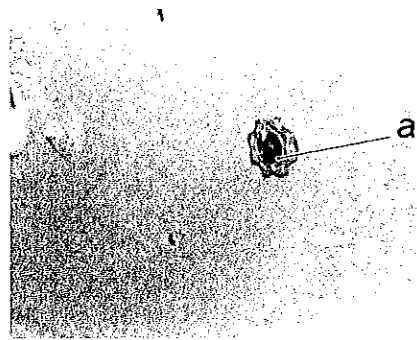


NOTE: ALWAYS USE EXTREME CAUTION WHEN CHANGING KNIVES.

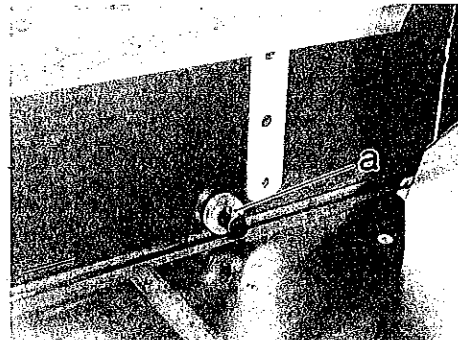
EXCHANGE OF THE KNIFE

Removal of the Knife

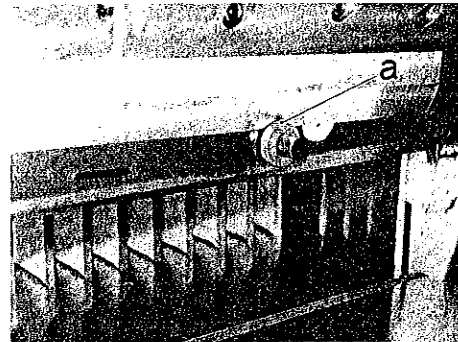
- 1) Remove two left side knife fixing bolts. Turn the throttle valve (Photo 8-a) to the left direction. In this state, main motor and hydraulic pump motor keep on running, but the vertical motion of the clamp will be slowed down with the throttle valve setting.
- 2) Lower the clamp by pushing the clamp pedal and keep it depressed, then fit two knife support bolts (Photo 9-a) on both sides of the clamp.
- 3) When the clamp pedal is released slowly, the clamp will gradually goes up, and will reach a position where the knife will be supported by its supporting bolts on its cutting edge.
- 4) Remove all knife fixing bolts and insert the knife handles (Photo 11-a) into the holes of blade which will meet the grooved portions of the knife holder (Photo 12-a)



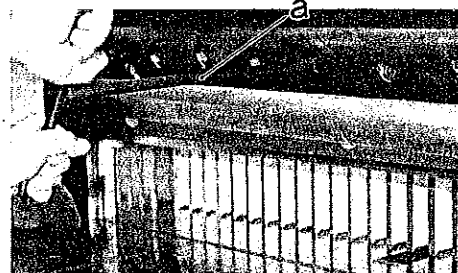
(Photo 8)



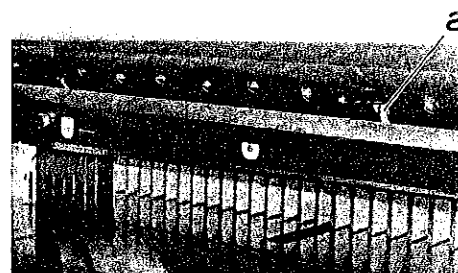
(Photo 9)



(Photo 10)

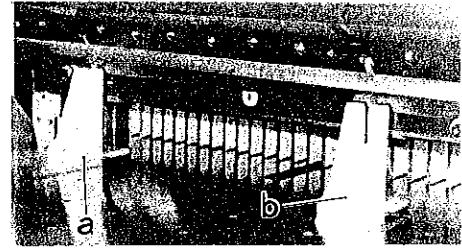


(Photo 11)

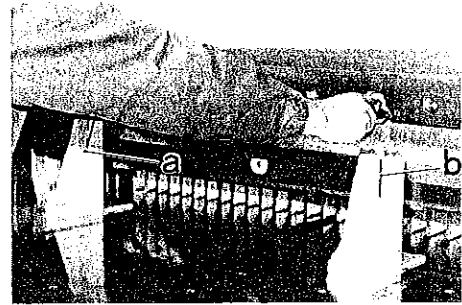


(Photo 12)

- 6) Set the blade holders (Photo 13 a,b) just under the blade handles.
- 7) Press the clamp pedal, slowly lower down the clamp, so as to fit the blade handles just into the grooved portions of blade holders (Photo 14-a, b,)
- 8) Fasten the blades, and blade will be fixed on the blade holders.
- 9) Screw off the knife support bolts.
- 10) Release the clamp pedal slowly, then the clamp will move up slowly.
- 11) Pull out the blade with its blade handles to the front side of machine.
- 12) Loosen the blade handle a little and lift up the blade, then the blade holder will come off.
- 13) Carry the blade by holding its blade handles to the storage, and then remove the blade handles.



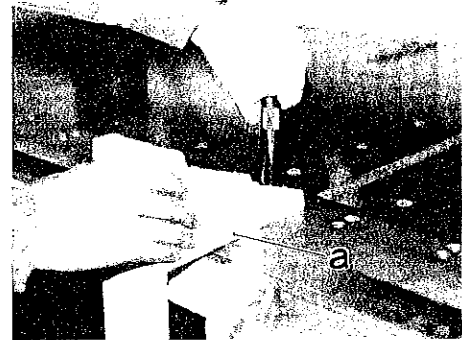
(Photo 13)



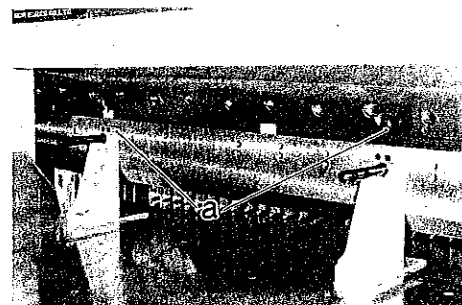
(Photo 14)

Fixing of the Knife

- 1) Put the blade flat on the machine table. Insert the blade handles into the knife. Clamp the blade holders down on the blade shown in (Photo 15-a). Caution: Be sure the holders are securely clamped to the knife.
- 2) Stand the knife up on the table, then move it toward the knife bar. Place it just under the position where the blade handles can pass into the grooved portion of knife bar as shown in (Photo 16-a).
- 3) Keep the throttle valve remained in the same position as it was when the knife was removed. Lower down the clamp by pressing the clamp pedal, then set two knife support bolts.



(Photo 15)



(Photo 16)

- 4) Release the clamp pedal slowly and the clamp will move up.
Knife support bolts which are fitted on the clamp front face, also move up, catching the blade on its edge.
- 5) Loosen the blade handles a little.
- 6) Remove the blade handles from the blade, and carry them with the blade holders to the prescribed storage place.
- 7) Fix the blade with knife fixing bolts to the knife holder. Fasten the fixing bolts evenly starting from the middle. Avoid a single hard fastening.
- 8) Let the clamp down by pressing the clamp pedal, then remove two knife support bolts.
***These supporting bolts have to be restored to the right position as shown in (Photo 17).
If they are not restored to their right position, LED of No.2 or No.3 on E.D.M. Panel will lit.
*refer OPERATING MANUAL.**
- 9) Move the throttle valve knob to the right direction completely.



(Photo 17)

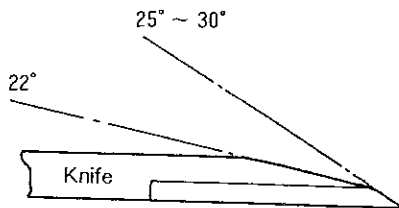
Grinding of knife blade

a) Selection of blade angle

Blade angle and grinding quality of blade affect the cutting performance very much. It is better to make a good selection of the blade angle by the materials to be cut.

Our standard blade angle is 22° (U.S. MARKET. 23.5°)
 for harder materials 25°
 for softer materials $19 \sim 20^\circ$

You must keep it in mind that if you use a blade with very sharp angle such as 19° or under, the edge often apts to be nicked. Don't select a too sharp angle. And when you have to use very large blade angle, such as $25^\circ \sim 30^\circ$, it is better to adopt two stepped blade angle as shown in Fig. 7.



(Fig. 7)

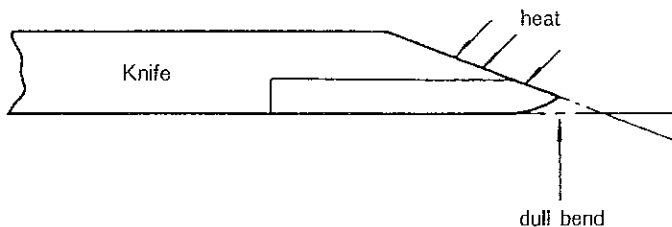
Materials and Blade Angle

materials (paper)	Thin softer paper	Wood free and Mechanical Printing paper	Coat paper Art paper (hard paper)	Artificial paper Parchment paper Cellophane
blade angle	$19^\circ \sim 20^\circ$	$21^\circ \sim 22^\circ$	$23^\circ \sim 23.5^\circ$	$24^\circ \sim 25^\circ$

b) Caution on Grinding

Keep the grinding stone always very functional condition to grind the blade edge fine. Grinding with dull grinding stone will cause the burn and break off of the blade edge, and will cause a partial or wider range of dull bend on the other side of the blade as shown is Fig. 8.

To avoid these, use dressing stone for the sharpening of grinding stone whenever it is necessary, reserve enough coolant water and pour ample cooling water to the grinding portion while grinding.



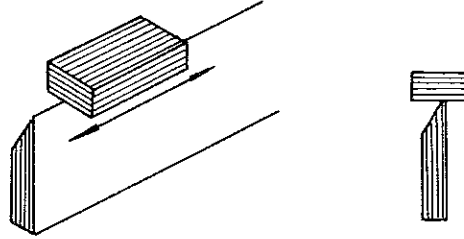
(Fig. 8)

c) Finishing of grinding

Even if the blade is ground with good machine grinding operation, the cutting edge is very coarse and wavy just like as wood cutting saw with a micro scopic eye. It is recommended to amend and finish the cutting edge gradually by hand with the use of oil stones until it becomes straight.

Practice of finish

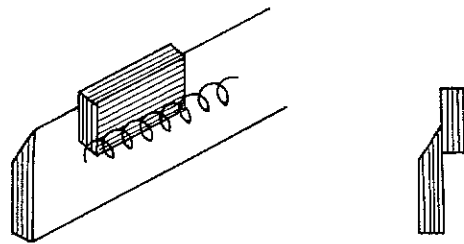
- 1) Move the coarse oil stone touched at the right angle to the blade edge forward and backward two or three times gently, as shown in Fig. 9.



(Fig. 9)

- 2) Removal of burring

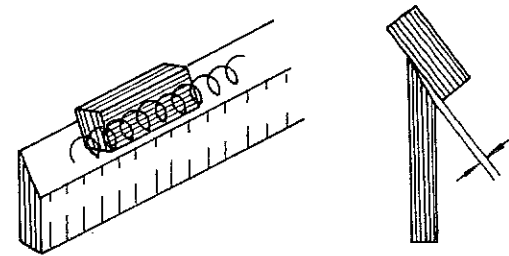
Press the coarse oil stone on the opposite side of the blade, and move it along on its face with spiral motion as shown in Fig. 10.



(Fig. 10)

- 3) Finishing of cutting edge

Press the fine oil stone rather hard on the cutting face with a little angle to its face, and move it along on the cutting face with spiral motion as shown in Fig. 11.



(Fig. 11)

After finishing the above process, grind it again by 1), 2) process with a coarse stone, and 2), 3) process with a fine stone in order.

It is still rather difficult to get extra fine finish with oil stone by manual grinding practice, because we cannot always expect the uniform motion and pressure of hand operation.

Lapping with blade lapping machine is more recommendable, especially when you need fine precise cutting.

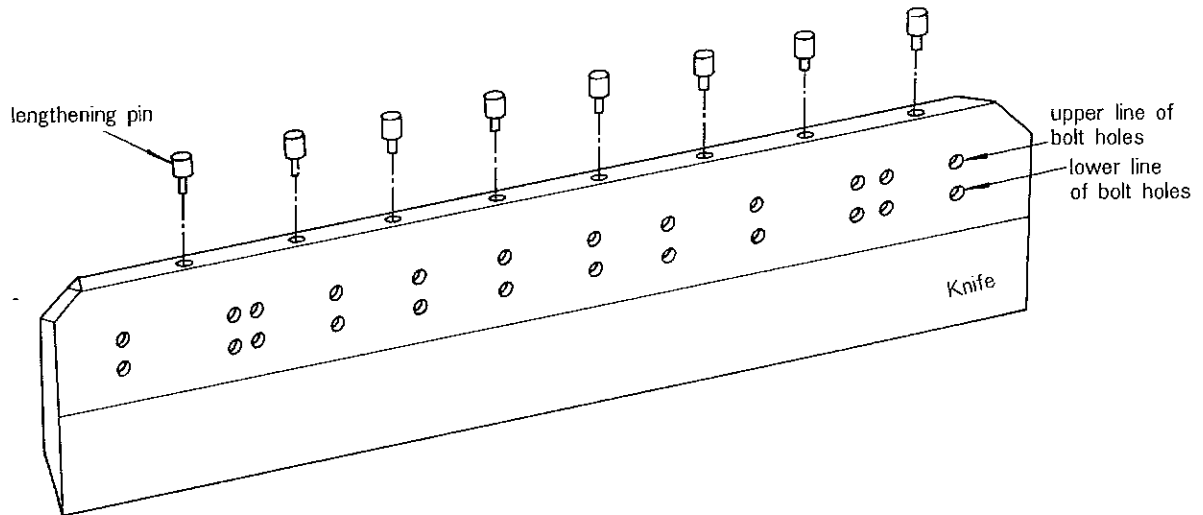
Mechanical lapping process will offer us a more accurate and fine cutting edge, and will bring not only more precise cutting but also more stable and durable cutting function of blade.

Double line of knife fixing bolt holes

There are two lines of knife fixing bolt holes on a knife blade.

It is common to fix the blade on the knife holder with lower line of bolt holes at first, but when the worn out length reaches 20 mm (durability limit), blade edge can't catch the plastic stick.

Then you must use the upper line of bolt holes as shown in Fig. 12.



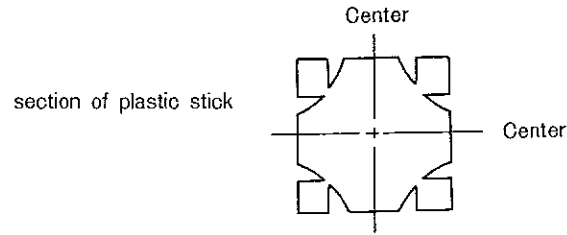
(Fig. 12)

* Don't use upper line of bolt holes when the width of the knife exceeds 110 mm. Too wide knife blade will cut in the plastic stick deeply, and occasionally cause the machine damage. Please be careful when handling the knife.

Exchange of plastic stick

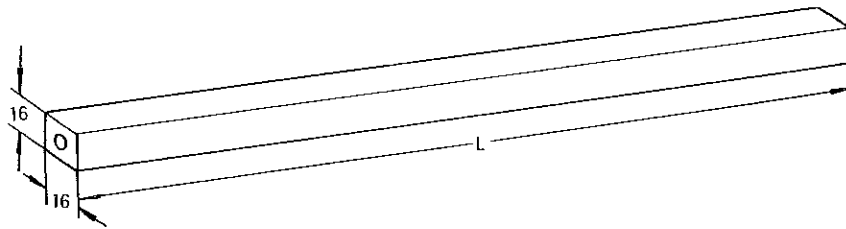
Plastic stick is made of synthetic resin applicable to our cutting machine. Each side and both rows of stick can be used.

See the section of plastic stick.



(Fig. 13)

When the knife cuts in too deeply with the plastic stick and prevents fine cutting of lower sheets of materials, plastic stick must be exchanged. And when the knife is exchanged, plastic stick must also be changed.



(Fig. 14)

Model	Length of plastic stick (mm)
ITOH- 85	895
100	1041
115	1193
132	1338
147	1495
160	1618
170	1725

* allowance $-0.1 \sim 0.3$ mm

Removing of the plastic stick.

Insert a driver edge from left or right side of the plastic stick, then lift it up gradually, and remove it.

After removing the plastic stick, clean up the groove on the table.

Fitting of the plastic stick.

Insert the plastic stick of its full length softly into either side of the table groove for plastic stick, then press the clamp pedal. Clamp will press and fix the plastic into the groove tightly.



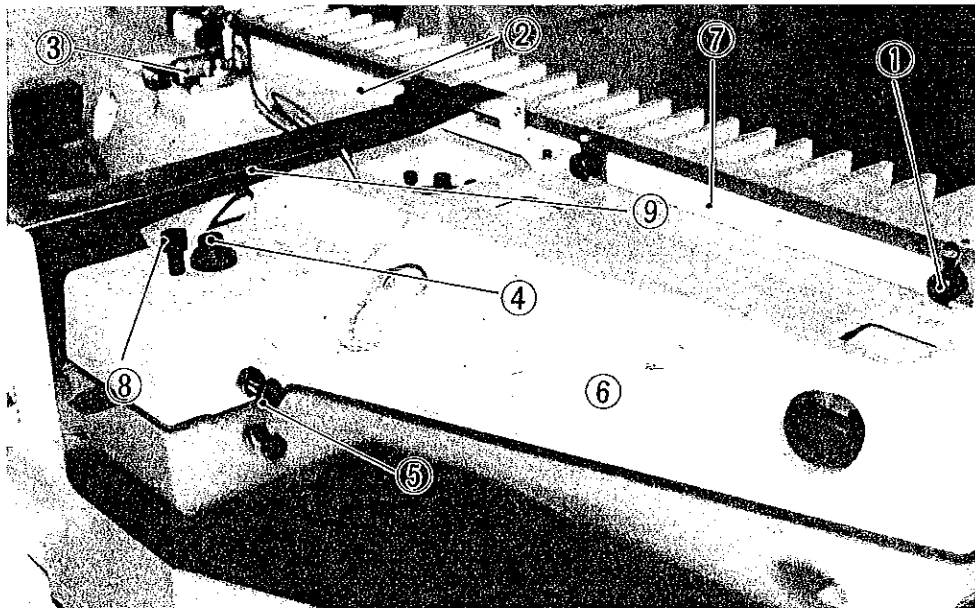
(Photo 19)

Adjusting of backgauge

Backgauge is adjustable to both directions left and right, and up and down.

Naming of backgauge and its accessories

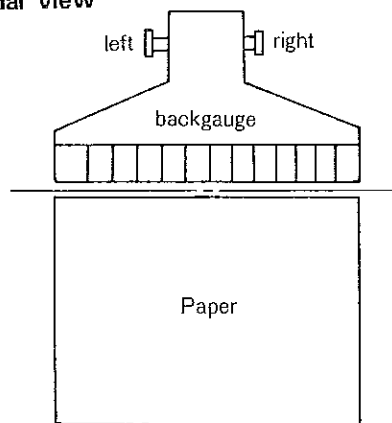
(Photo 20)



- | | |
|-----------------------------------|--------------------------------|
| 1) adjusting pins for comb | 6) backgauge body |
| 2) comb. right side | 7) comb. left side |
| 3) central lubrication pump | 8) up and down adjusting screw |
| 4) fixing bolt | 9) slot closing tape |
| 5) left and right adjusting screw | |

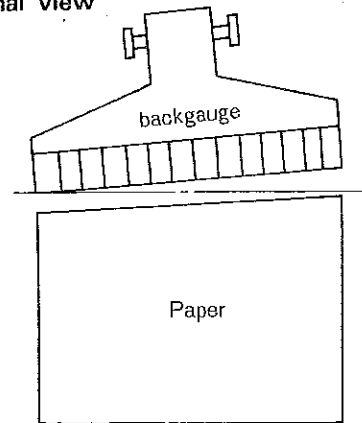
a) Adjusting to left and right direction

Normal view



(Fig. 15)

Abnormal view



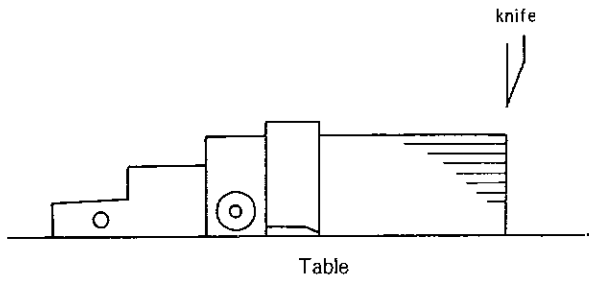
(Fig. 16)

Method of adjusting from abnormal condition as shown is Fig 16.

- 1) Turn the backgauge fixing bolt (Photo 20) counterclockwise and loosen it.
- 2) Turn the right side adjusting screw of backgauge (Photo 20-5) and loosen it.
- 3) Turn the left side adjusting screw clockwise gradually until backgauge gets to correct position.
- 4) After finishing the adjustment. turn the right side adjusting screw (Photo 20-5) clockwise to lock the backgauge on its correct position.
- 5) Turn the fixing bolt (Photo 20-4) clockwise and fasten it.

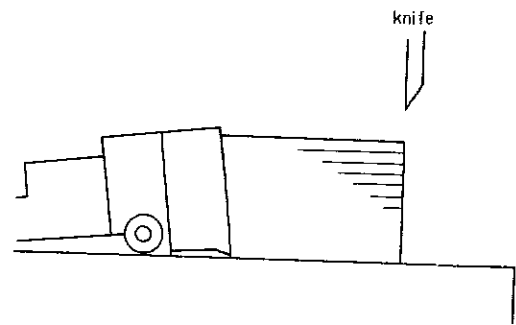
b) Adjusting to up and down direction

Normal view



(Fig. 17)

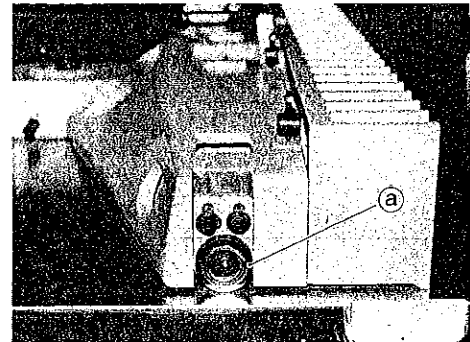
Abnormal view



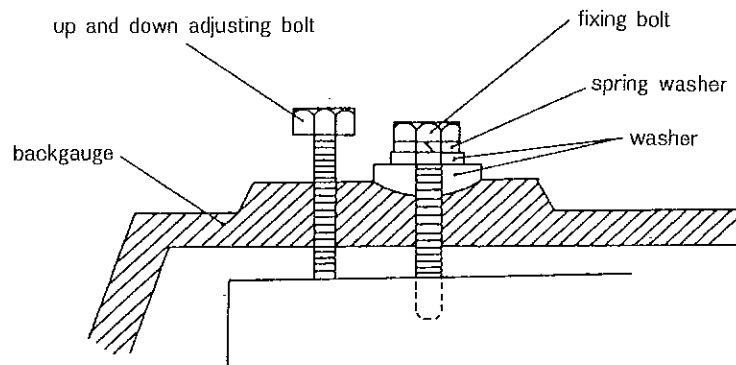
(Fig. 18)

Method to adjust from abnormal to normal condition

- 1) Turn the backgauge fixing bolt (Photo 20-4) counterclockwise gently and loosen it.
- 2) Turn the up and down adjusting bolt (Photo 20-8) clockwise.
- 3) After finishing correct adjustment, fasten the backgauge fixing bolt.
- 4) Readjust and fasten the up and down adjusting pins (Photo 20-1).
- 5) If the guide roller (Photo 21-a) position is too high and apart from the table or too low to the table, unfasten the height fixing bolts, and adjust the height by moving up and down direction with the height adjusting bolt.
- 6) After finishing the setting adjustment, fasten the height fixing bolts of guide roller.



(Photo 21)



(Fig. 19)

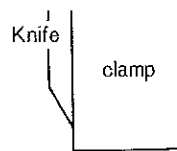
Adjusting of electromagnetic clutch

Repeated use of electromagnetic clutch will cause the wear of its linings.

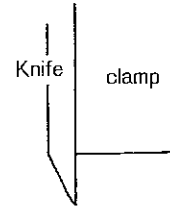
As a result, the clearance of clutch will become narrow when the clutch is on, and become wider when clutch is off.

It is necessary for the clutch operation to keep correct clearance limit for the transmission of its torque rightly.

And also, when the brake lining clearance becomes too large by its wearing, magnetic force of electromagnet will decrease, then the knife will stop on rather lower position, not just on the top dead center of knife movement. (right stop position of knife is normally just on top of knife moving cycle) Fig. 20, 21.



(Fig. 20)



(Fig. 21)

Adjusting process

- 1) Turn off the main motor switch.
- 2) Remove the fly wheel cover.
- 3) Measure the clearance of clutch by inserting the clearance gauge between magnet body (Photo 22-2) and Armature (Photo 22-1). This is the measurement of clearance of brake side.

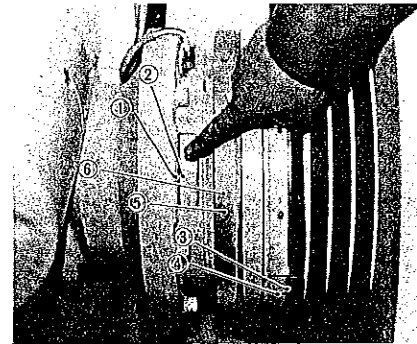
Correct clearance : 1.5 mm

- 4) Turn on the clutch key.
- 5) Remove the brake plate key fixing bolt (Photo 22-3) and take off the brake plate key (Photo 22-4).
- 6) Remove the set bolt of brake. (Photo 22-5).
- 7) Turn the brake adjusting nut (Photo 22-6) to the left or right direction by one or two of its thread.

*** While you are checking the brake clearance, clutch key must be turned off to avoid the accident.**

*** Clearance will become narrow (small) when you turn the brake adjusting nut to the direction shown by an arrow.**

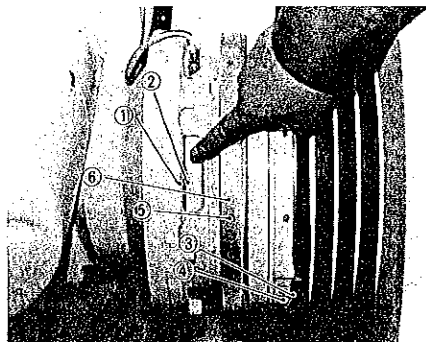
- 8) Fit the brake plate key with correct clearance, then loosen the fixing bolt, and fasten up its set bolt.



(Photo 22)

The above is a clearance measurement of brake, and the next is that of clutch.

- 1) Turn off the main motor switch.
- 2) Remove the fly wheel cover.
- 3) Turn on the clutch key.
*Don't keep clutch key "ON" over 5 minutes to avoid the damage by over heat of clutch power line.
- 4) Measure the clearance of clutch by inserting the clearance gauge between magnet body and armature.
*Correct clearance : 1.0 mm

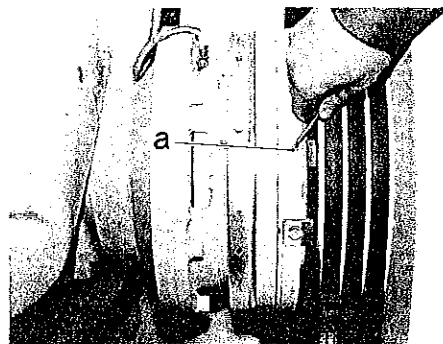


(Photo 23)



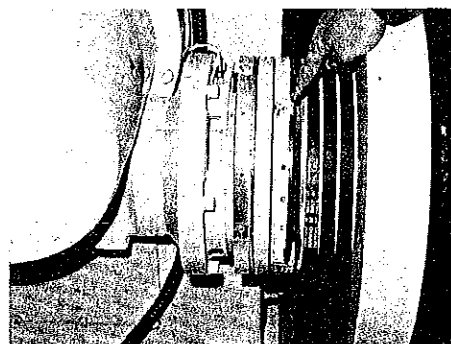
(Photo 24)

- 5) Turn off the clutch key after finishing the clearance measurement.
- 6) Remove the clutch plate key fixing bolt (Photo 24-a) and take off the clutch plate key (Photo 24-b).
- 7) Remove the set bolts of clutch. (Photo 25-a)
*There are two clutch plate keys and two set bolts on diagonal line.



(Photo 25)

- 8) Turn the clutch adjusting nut to the left or right direction by one or two thread.
*Clutch key must be kept on when you check the clearance of clutch while adjusting.
*Clutch clearance will become narrow when you turn the adjusting nut to the direction shown by an arrow.



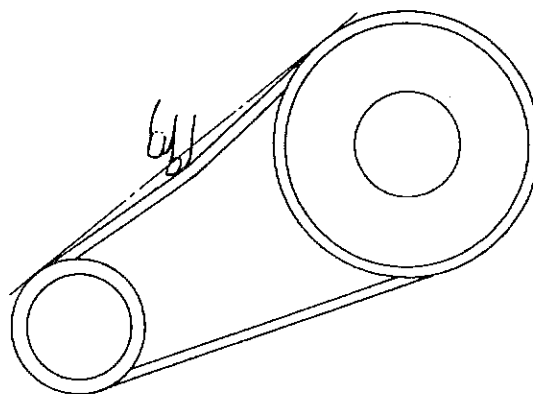
(Photo 26)

- 9) Fit the clutch plate key with correct clearance, fasten the fixing bolt and set bolt.
- 10) After finishing the adjustment, remove the knife and ascertain the condition of movement. Especially it is necessary to check two points, the first of which is to check the correct stop position on the top dead center, the second is to check if the perfect full one cycle of knife motion (start and stop from T.D.C. to T.D.C.) can be obtained so as not to over run or keep on running.

Adjusting of main motor V belt

Over tightness or over looseness of V belt tension will affect the moving function of machine. Over tightness will cause damage on the main motor ball bearing and shaft bearing by over pressure.

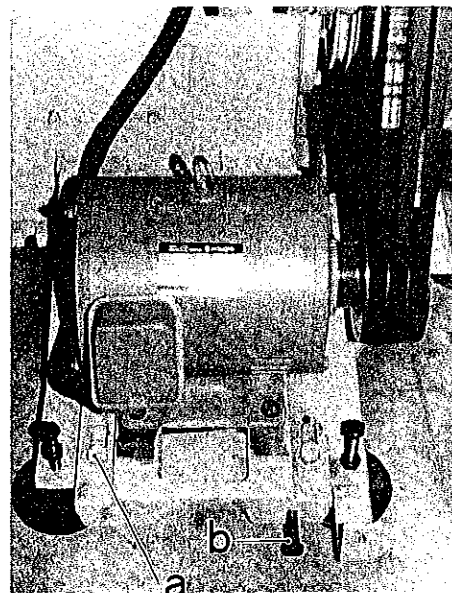
Over looseness will cause the malfunction of machine movement by slipping between V-belt and pulley.



(Fig. 22)

V-belt tightness should be adjusted so that the displacement of the V-belt might be the thickness of a finger as shown in Fig. 22.

When it is too tight, loosen four motor mounting bolts (Photo 27-a), and push the adjusting bolt (Photo 27-b).

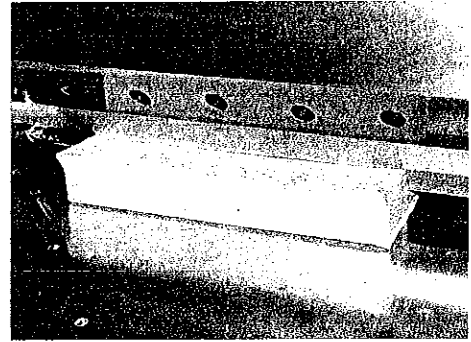


(Photo 27)

Safety Bolts (Shear Bolts)

In case of cutting of hard materials or use of dull knife. The safety bolts will be broken immediately for safety.

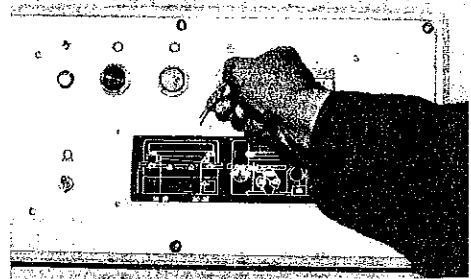
If these safety bolts have break, indicate lamp No.1 or No.4 goes on and off on E.D.M. panel.



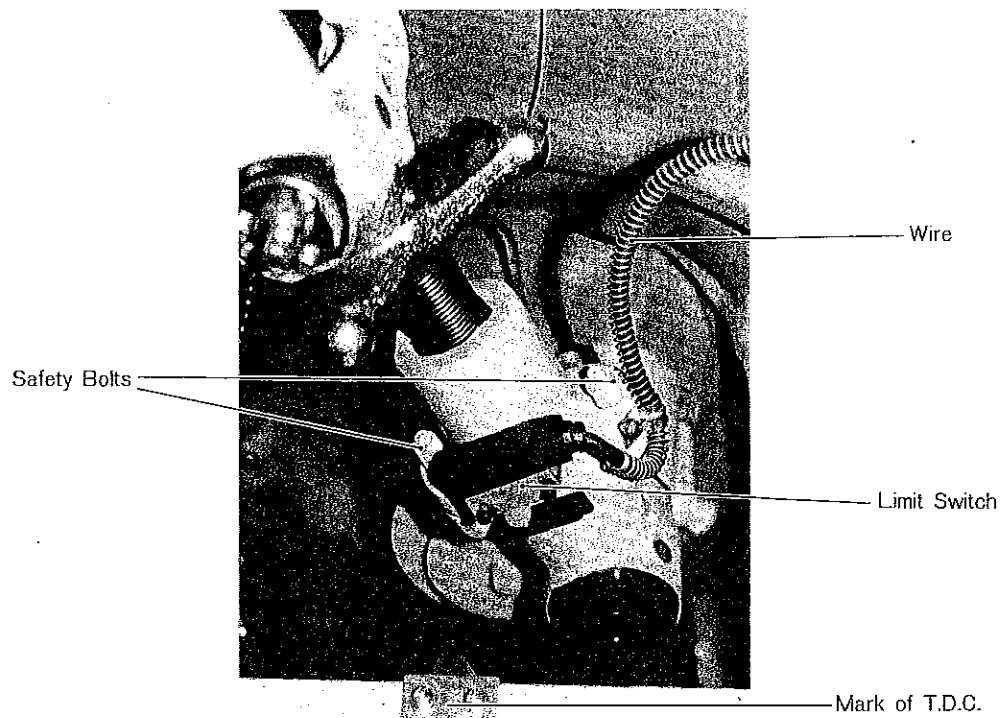
(Photo 28)

Exchange the safety bolts

1. Stop the main motor.
2. Clutch key switch ON. (Photo 29) after about 90 seconds, magnetic clutch ON.
3. Turn the hand crank on the power shaft end. (clockwise)
Stop at T.D.C.
4. Clutch key switch OFF.
5. Pull out the paper pile.
6. Exchange to new safety bolts.
7. Confirm the lamp on E.D.M. panel.



(Photo 29)



(Photo 30)

Measurement of oil pressure and oil exchange

a) Measurement of oil pressure

Checking of clamping oil pressure.

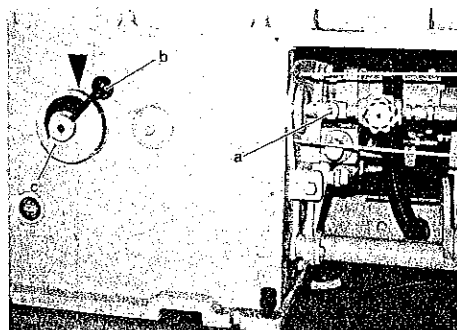
Remove the false plug for gauge (Photo 31-a). Set the pressure gauge, which can measure the maximum pressure of 300 kg/cm^2 and with thread pitch $1/2$.

Check the error between gauge pressure and actual clamp pressure. Set the oil pressure control lever (Photo 31-c) at 3500 kg (clamping force), then press the knife buttons.

Knife and clamp will descend to the lowest end.

At that time, if the oil pressure gauge indicates 70 kg/cm^2 gauge is correct.

When there is an error between gauge and actual pressure. turn adjust control lever until it reaches the indication of 70 kg/cm^2 on oil pressure gauge, then loosen the lever (Photo 31-c). Set the dial at 3500 kg. Then again fasten the fixing bolt of control lever.



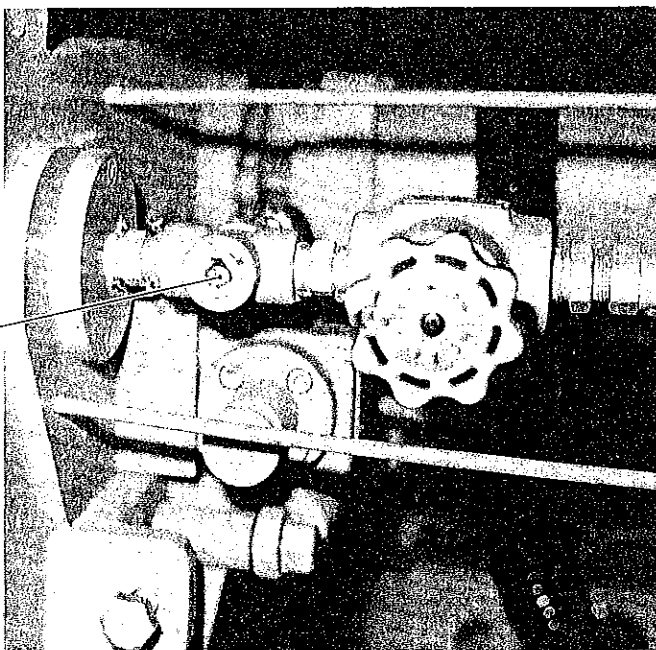
(Photo 31)

b) Hydraulic oil exchange (every 2 years)

1. Preparation, extraction of used oil

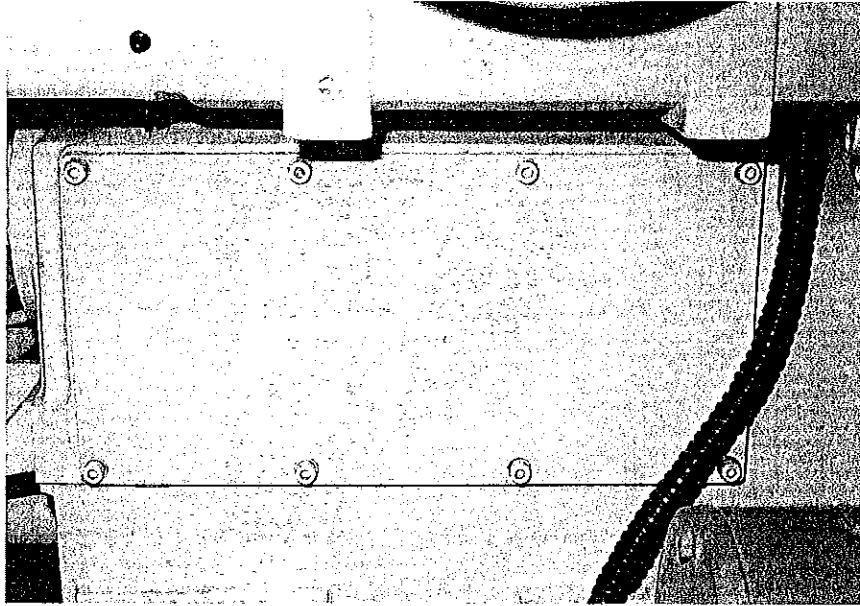
- 1) Main motor is to be stopped.
- 2) Prepare two 18 liter cans to receive used oil.
- 3) Remove false plug. and set 18 liter can to receive.

False plug
(Extraction port of used oil)



(Photo 32)

2. Extraction of used oil
(Right side under machine rearside)

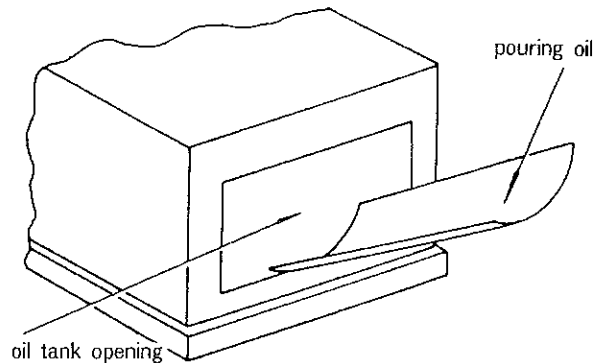


(Photo 33)

- 1) Switch on the main motor.
Used oil runs out rapidly from the extraction (front side).
When oil does not come out, press the foot pedal with caution.
2. Normally 5 gallon can will be filled up soon.
prepare the next one.
3. When run out oil stops, stop the main motor.
and remove the oil tank cover. (Photo 33)
4. Suck up the remaining used oil in the bottom
of oil tank with a manual syphon pump.
5. Remove and clean up dirt remaining oil in the bottom of tank
with waste.
6. Flushing with kerosene is recommendable.

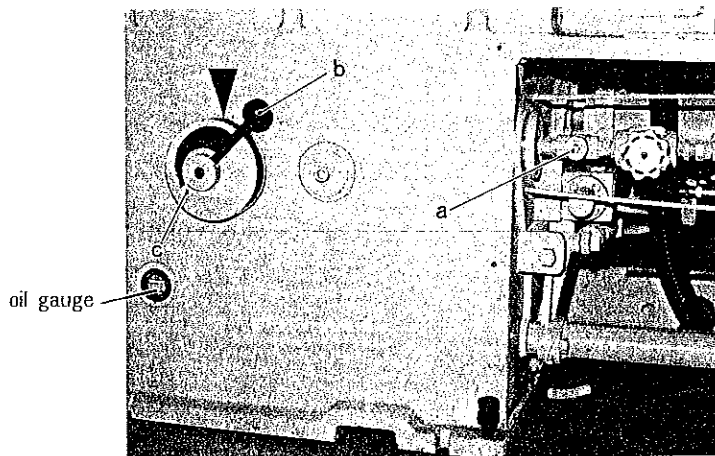
3. Filling with new oil

- 1) Fit the cleaned strainer.
- 2) Fasten the false plug of oil extraction port.
- 3) Pour the new oil by use of zinc sheet or corrugated sheet metal to make it easier to flow oil to the oil tank.
Oil capacity is about 32ℓ. Fill up until it reaches the midpoint between H-L of oil gauge.
- 4) Fasten the oil tank cover by putting packing tightly. Check again if the plug extraction port is tightly fasten.



(Fig. 23)

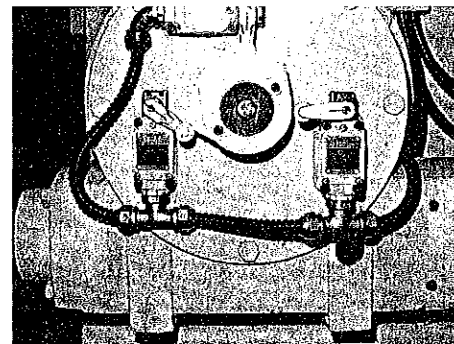
<Left side under machine front>



(Photo 34)

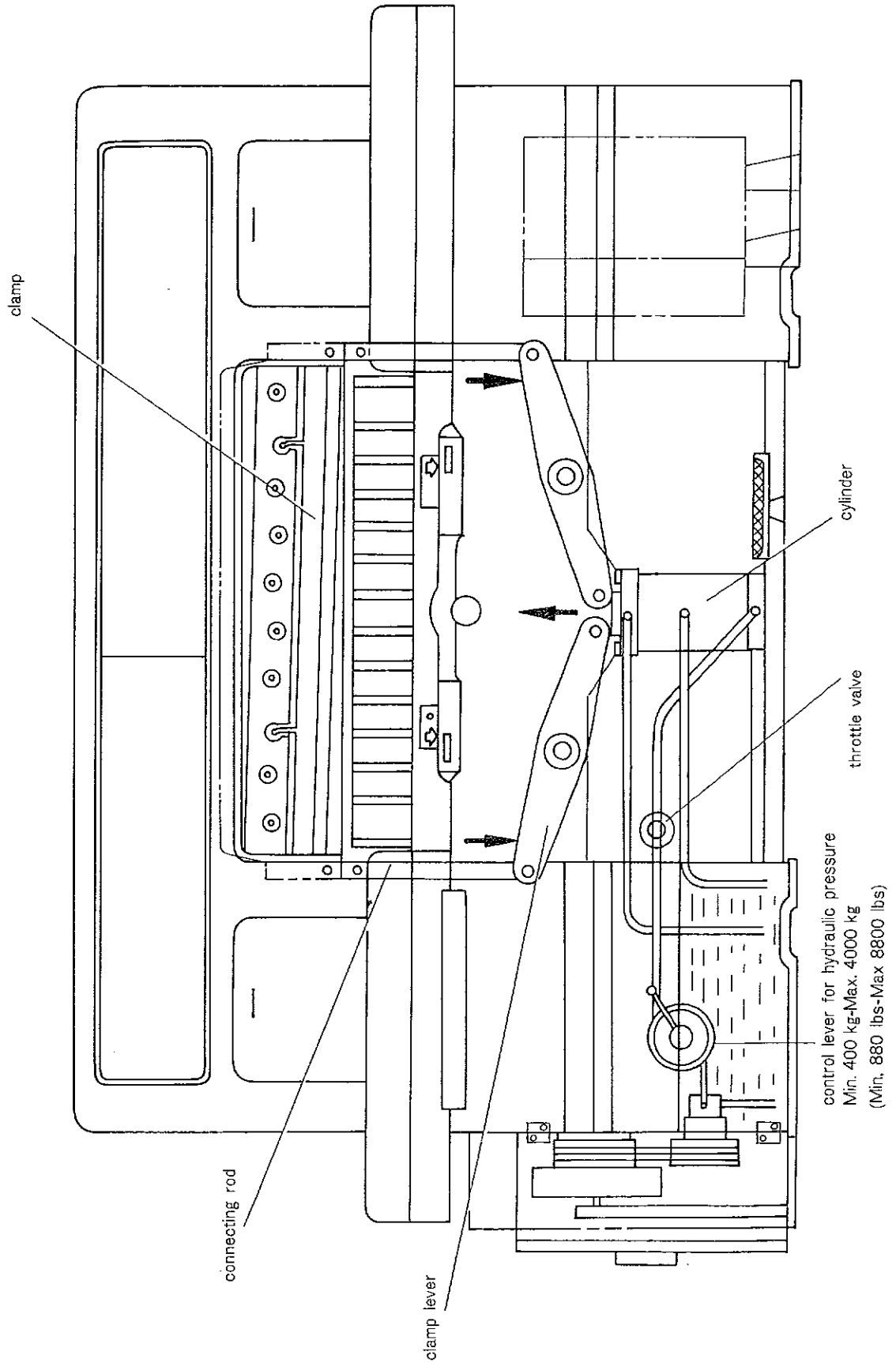
Gear oil exchange

1. **Preparation for extraction of used oil**
Prepare 4 liter can
2. **Extraction of used gear oil**
Remove false plug, and receive the used oil from the both side ports on the rear side of the machine.
3. **Pouring of new oil**
 - 1) Fasten the false plug.
 - 2) Remove the oil port cap.
 - 3) Pour about one liter gear oil to the left and right side port.
 - 4) Check if the oil gage indicates about the mid point between H-L.
 - 5) Put the caps on oil ports.

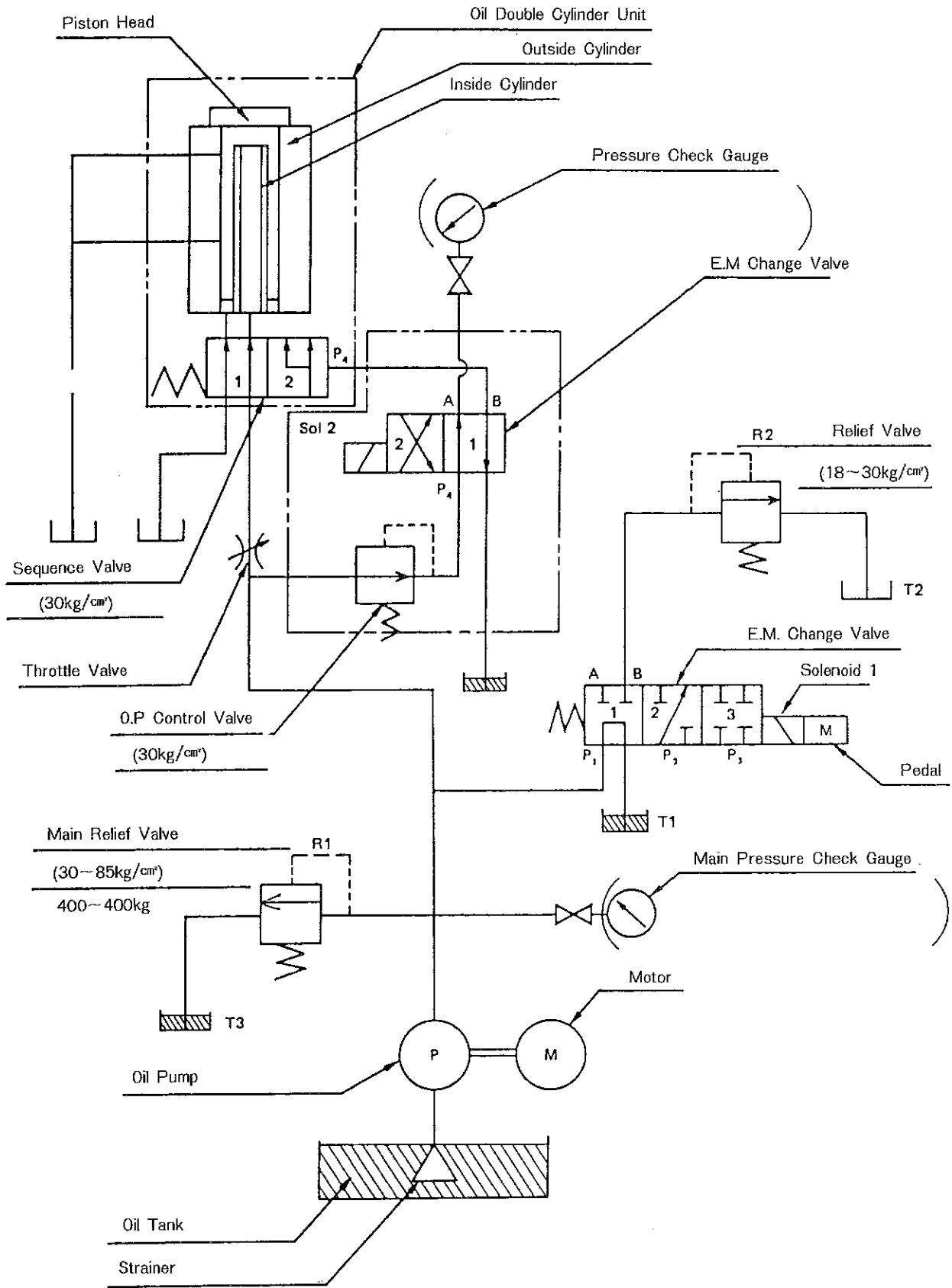


(Photo 35)

<Material clamping mechanism by hydraulic pressure>



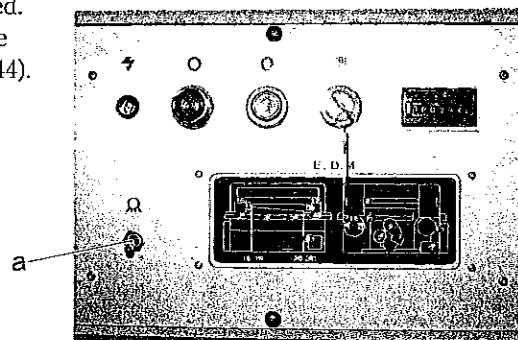
(Fig. 24)



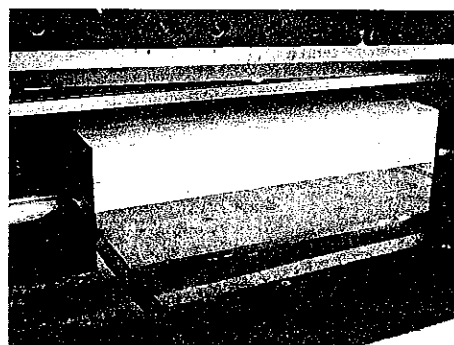
(Fig. 25)

Optical cutting line indication system

Turn off a snap switch of fluorescent lamp (Photo 43-a) lighting on the table will go out, then optical cutting line indication system will be actuated. A fine light line is projected on the table or on the piled materials which shows the cutting line (Photo 44).

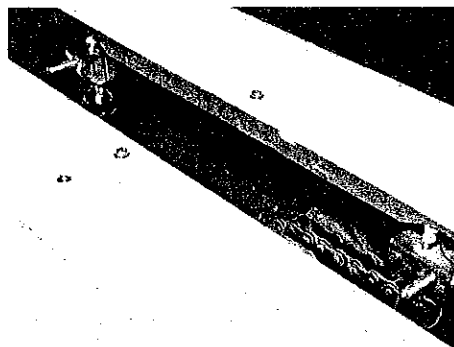


(Photo 43)



(Photo 44)

Two lamps (45W/24V) are used. To exchange these bulbs, remove the cover (Photo 45) of main machine body. turn the bulb 90° (loosen side), then you can easily take out the bulb from its holder. When you put the bulbs on their holders, please set the bulb filaments parallel to the knife carrier surface.

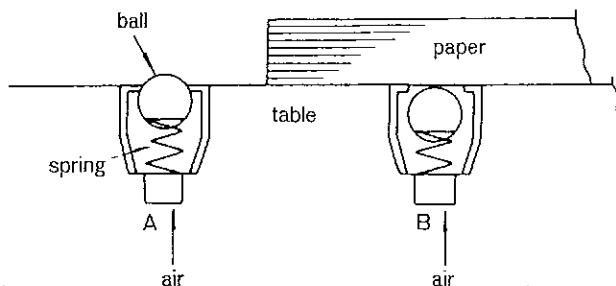


(Photo 45)

Air cushion table

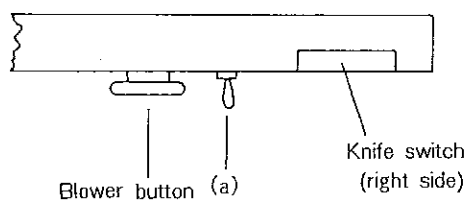
It is very difficult for a worker to handle very heavy materials on the table. This machine has an air cushion table device to float the heavy materials, and to make operator's work easy.

Mechanism of air cushion (Air floating)



(Fig. 26)

- 1) When there is no heavy material on the table, valve ball is lifted up by its spring, and the clearance between ball and table is shut up so that no air flows out.
- 2) When the materials are piled up on the table, valve ball will sink until its top is pushed to the same height as the surface of the table by the table by the materials weight, then the air will flow out to float the materials with its pressure.
- 3) Air is supplied by one electric blower.



(Fig. 27)

After setting the cutting materials on the table, and pressing the knife switches (buttons) on, blower is stopped instantly, and a solenoid valve on air pipe line is actuated to stop air supplying, then the knife will start to descend.

*** Thus the air cushion system is kept inactive during the cutting cycle so that there is no slippery movement of materials at the time of cutting.**

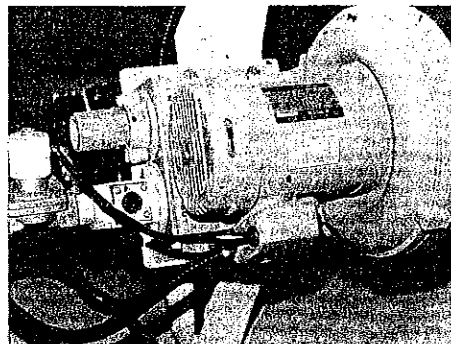
When you need to handle the materials on the table, push the blower button again.

● Air cushion system on the automatic or semi-automatic operations which are available with computer memory system.

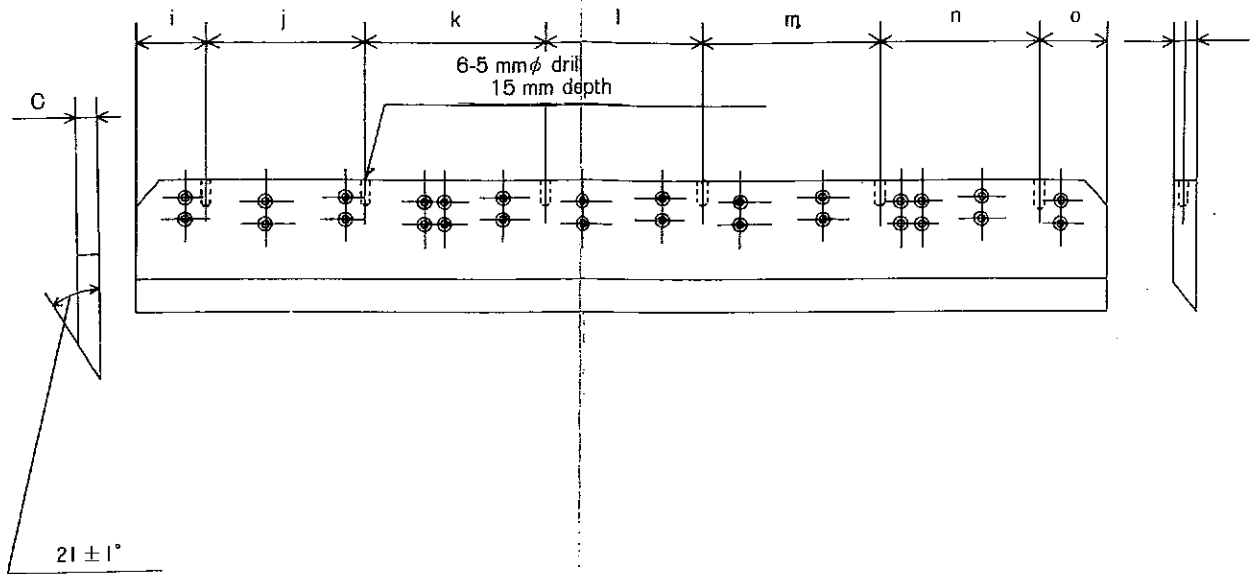
Blower air is not supplied while the backgauge continues to feed advance, but when after finishing all cutting cycles and the backgauge begins to move backward, air cushion blower will be ON automatically.

*** When you want to stop blower while operation, push either side of knife button, then blower will stop.**

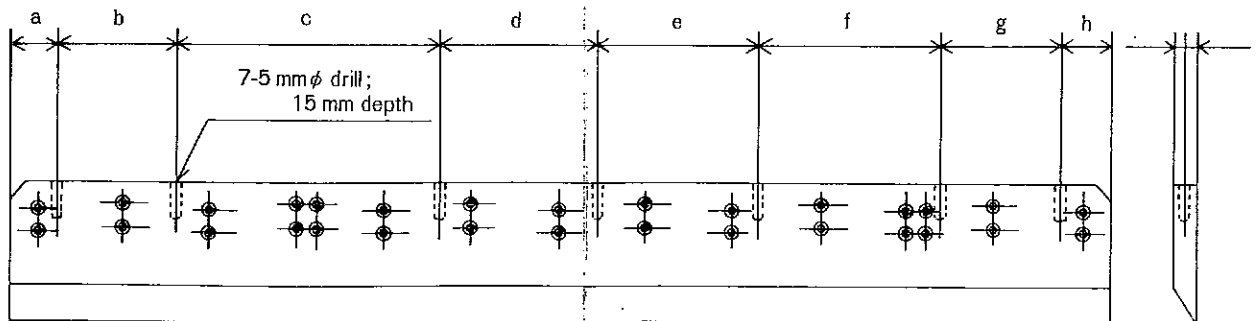
Note: Clean the blower intake and solenoid bypass filters monthly.



(Photo 46)

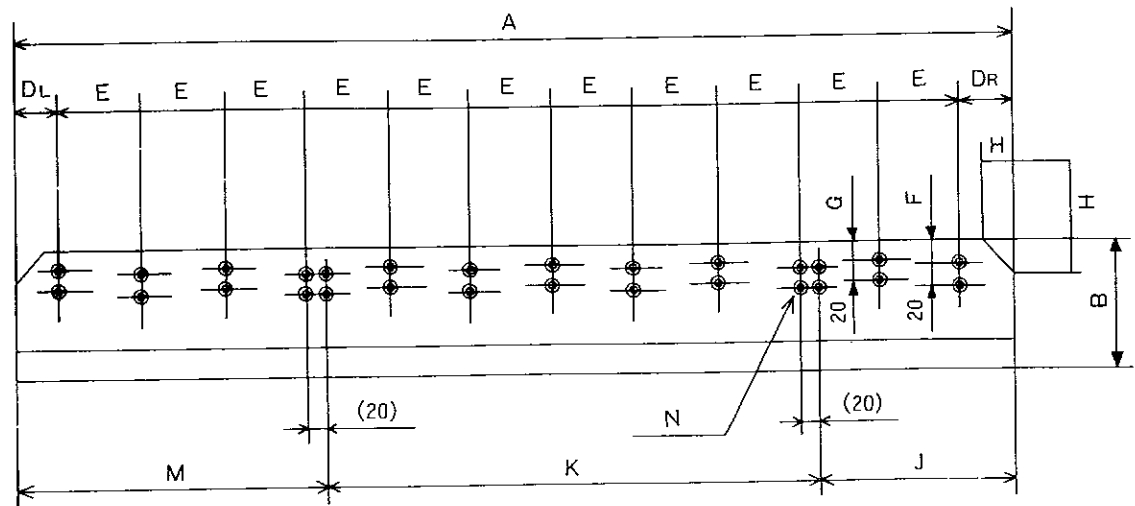


Size	i	j	k	l	m	n	o
85	60	150	250	150	250	150	60
100	85	200	225	200	225	200	85



Size	a	b	c	d	e	f	g	h
115	60	150	335	200	200	235	150	80
132	90	160	330	200	200	330	160	90
147	89	158	402	208	208	402	158	75
160	96	255	295	314	244	295	255	96
170	60	280	330	280	280	330	280	60

Knife drawing adequate modification will be necessary



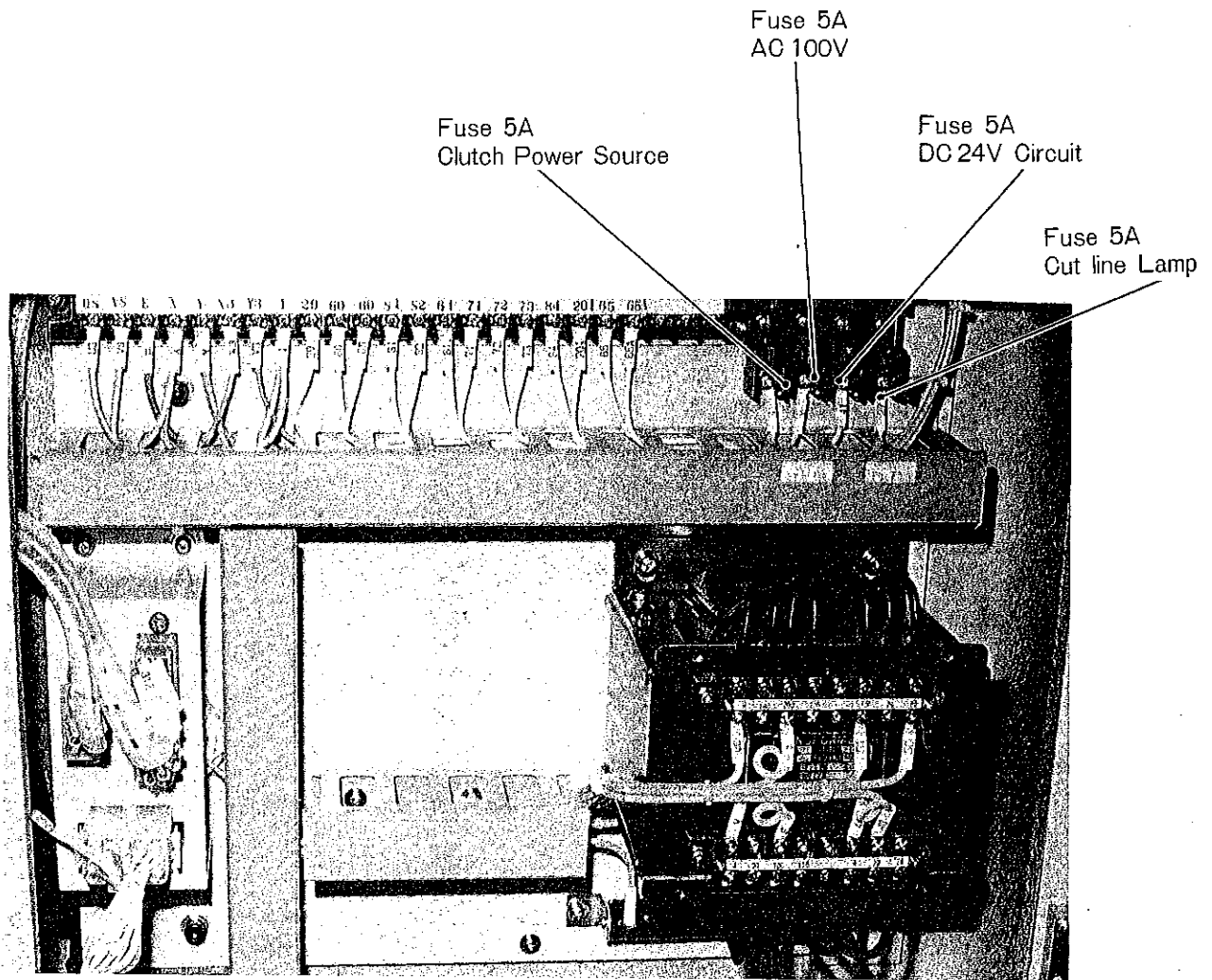
Size	A	B	C	DL	DR	E	F
85	1070	130	12.7	35	35	100	25
100	1220	140	12.7	60	60	100	25
115	1410	150	13.7	35	55	110	28
132	1560	150	13.7	65	65	110	28
147	1700	150	14.2	64	50	122	30
160	1850	165	14.2	71	71	122	30
170	1900	165	14.2	35	35	122	30

Size	G	H	J	K	M	N	The number of screw holes
85	20	15	-	-	-	W1/2	22
100	20	30	240	600	380	W1/2	28
115	22	15	255	770	385	W1/2	30
132	22	25	375	770	415	W1/2	32
147	24	0	396	854	450	W1/2	32
160	24	35	539	854	457	M12	34
170	24	00	503	976	421	M12	36

Notice 1) Start from right end hole, drill zigzag.
 2) Drill ϕ holes on the mid point of blade thickness.

(Fig 31)

Transformer Box (in right)



(Photo 52)