SL-135 T
Instruction Manual

Marunaka Tekkosho Inc.
Japan

S/N 1022

Note for users.

Wear suitable clothes for working.

* Don't wear clothes with wide sleeves or tie to prevent from being caught in the rotating parts in the machine.
* Wear goggles , safety shoes, working cap or mask according to the working condition while working.

Avoid electric shock.

* Wet motor causes a poor electric insulation and results in electric shock. Don't use in the wet, humid environment or the place where the machines might contact with water or oil.
* The machine requires No.3 ground installation.

In terms of power supply (first stage power connection), be sure wiring installation is carried out by a wiring service company.

Our company installation is a temporary wiring for trial.

Safety in the working place.

* Working place should be always bright and everything in order.

Poor scaffolding is extremely dangerous.

* Don't let people, especially kids, who are not involved in the work, approach the working place.

Machine Preparation.

* Don't use the knives which are not correct. Be sure to use them following the use limit showed.
* Be sure to carry out the installation of knives or accessory following the instruction. Loosening or overly tightening with inadequate tools is very dangerous.
* Make sure there are no screws are loose or coming-off before operation.

Note to users.

* Make sure rotary part of machine or knives do not contact the processed materials.
* When the parts are loaded or unloaded for replacement, maintenance or adjustment, bear in mind that it should be done in a cleaned place , not to get dust, sand or scratches.
* Stop operation immediately if anything wrong with the machine is found.
* Don't exceed a capability of the machine or accessorize, and go overboard with operation.

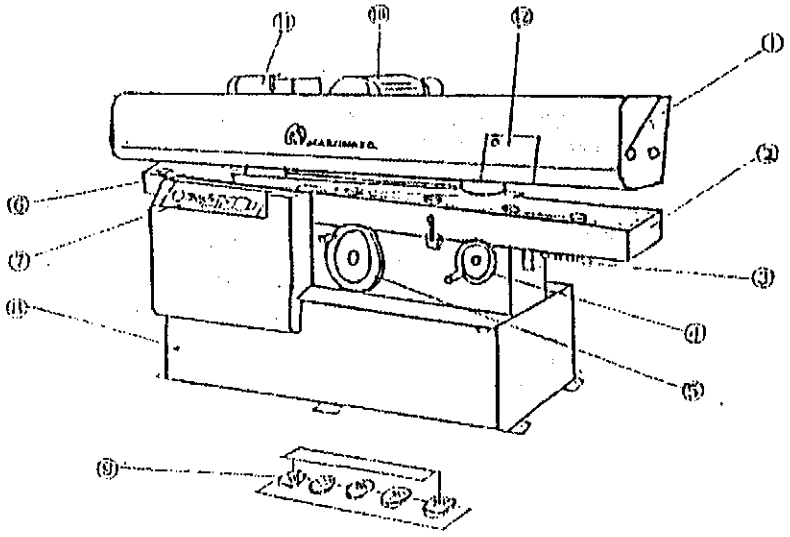
*During the operation, don't let your head or hand touch dangerous points of the machine.
* Be sure to turn a switch off and disconnect a power supply right after the operation is done, or when a black-out occurs.
* Read the instruction with care, and follow it completely.

Inspection, maintenance and storing of the machine.
* Be sure to switch off and disconnect a power supply when a inspection, maintenance and parts replacement are carried out. And be sure to work while communicating to each other when more than two workers operate.
* Keep machines in good condition at all times with constant maintenance.
* Keep knives in a best condition , that is, in order to be cut well, and can be operated smoothly and excellent finish can be obtained.
* Be sure to replace or repair the parts which can not work well.
* Be sure to use specific Marunaka-specified parts, when replacing parts.
* Constant inspection is recommended for safety and effective operation.

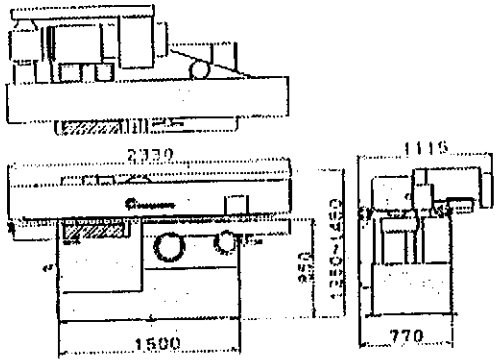
Contents

1. Parts name.

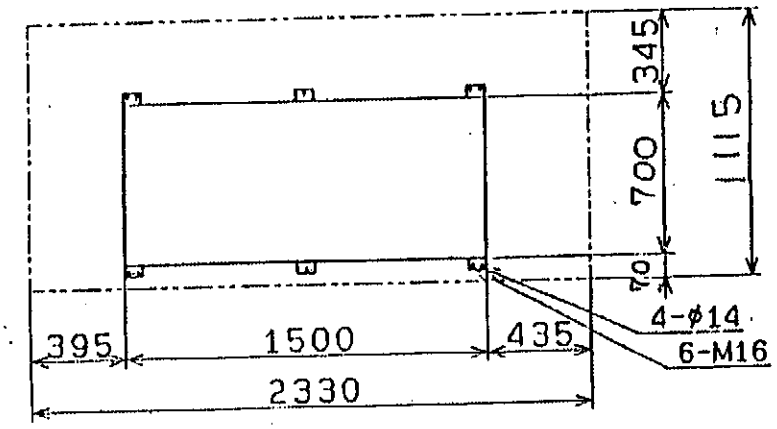
1) Head cover.
2) Front table.
3) Front table stopper.
4) Adjustment handle for nose-bar width.
5) Elevation handle for table.
6) Rear table.
7) Switch panel.
8) Base.
9) Foot switch.
10) Feeding motor.
11) Elevation motor.
12) Gauge for thickness.



2. Figure for size.



3. Figure for installation.



4. Specifications.

Flitch size:

maximum width	135mm (78°)
maximum thickness	200mm
amount of table climbing	0~8 mm
bias angle	78°
feeding speed	65mm/min 50/60 HZ

5. Drive:

feeding motor	7.5 KW
elevation motor	0.4 KW
height of table	850mm
knife size : back knife type	715~175~20.5mm
knife face type	715~135~6mm

feeding belt size t25~135~ ϕ496 (inner diameter x inner circle length 4700mm)

V belt size 3V-900 (two of them) matched set

Machine size:

width	1115mm
length	2330mm
height	1200~ 1400mm

Machine weight: 2120 Kg

5. Standard accessories	number required
grind stone (king Deluxe)	1
L-shaped spanner 4,5,6,8,10mm	1 (each)
single spanner 24mm	1
T box wrench 30mm	1
Knife edge adjustment T wrench	1
nose-bar adjustment T wrench	1
knife setting T box wrench	1
double - ended spanner	1 (each)
8~10,10~13,17~19mm	1
dial gauge 1/100mm	1
magnet base	
screw driver (+,-)	1 (each)
knife carring tools	2
knife edge adjustment screw (flat bottom M8 x 12)	1
back type knife :	10 pcs.
face type:	12 pcs.
grease gun	1
tool box	1

6. Oiling

lubricate to a machine before operation.

In terms of oil level, choice of lubrication , oiling timing and replacement timing should be proceeded as follows:

When oiling, care must be taken not let wood scraps or foreign matter in the oil.

(1) Reduction gear (oil 4.8Kg)

Lubrication of the reduction gear is shipped so that oiled surface will reach to the indicated point of oil gauge while operated, but if a shortage is found, fill it to the indicated point.

Exchange of lubrication should be done as follows: first time after 500 hours, then ,2500 hours or use for 6 months. Cleaning inside the machine when exchanging lubrication, can prolong the life of reduction gear and be performed easily.

See Table on last page

(2) Gear motor for head elevation. (grease 0.25 Kg)
Oiling is not necessary for reduction gear of gear motor touched on head due to it's grease lubricating system.
(exchange of grease: after 4~5 years, or 10000 hours)

(3) Greasing for columns.
In terms of column greasing,, since there is grease nipple on a mobile part of the column support, supply the grease once a month. If the machine is used everyday, supply it once a week or once a 10 days.

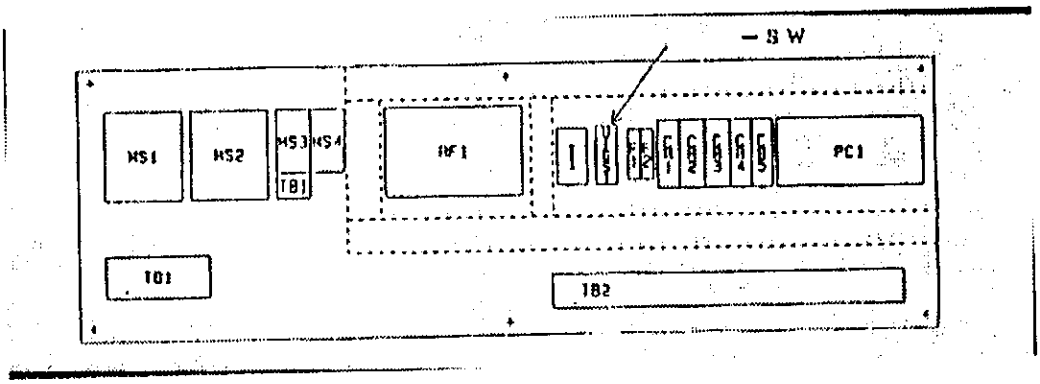
7. Preparation for operation.
As for a operation for the machine, proceed as follows, be sure to do a trial run to those have not been used the machine for an extended period.

7-1. Preparation for trial run.
1. Pick up the green color wire out of lead wires of the machine as a ground.
2. Connect the lead wire , coming out of the machine, to a power supply.
3. Check to be sure if insulation is good or bad.
4. Turn on a switch and make sure if a motor rotates correctly by stepping "rising"and"descending"foot switch.
5. Clean surface on a table , and remove the dust.
6. Make sure the correct volume of the specified lubrication in the reduction gear.
7. Adjust the tension of the feeding belt (endless belt) to get a correct tension.

7-2. Daily set-up.
1. Make sure that objects like tools do not remain on the machine.
2. Supply oil to each parts.
3. Make sure of correct tension of the feeding belt and that the surface is not slippery.
4. Make sure of the correct set for the knife and that the knife is not damaged.

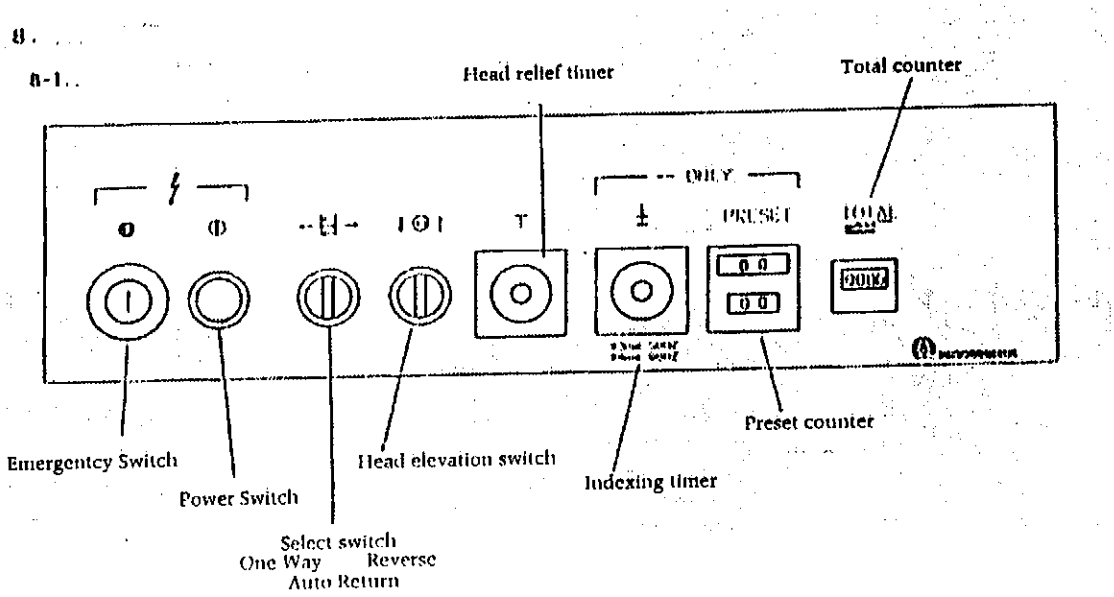
Operation.

1. Set a knife and lower the front table by thickness sliced. (see 9-1)
2. Turn on power switch.
3. Step a head elevation foot switch to rise the head beyond the flitch thickness.
4. Place a flitch on the table and insert it at the position , perceived by a gauge for thickness. (marked position for inserting material)
5. Lower the head and when the feeding belt touches a flitch, the head will be automatically stopped.
6. Set an indexing timer by the thickness of veneer, In case of the auto-return, a set value of the timer becomes a one-time indexing amount of the foot switch. (Set a timer at "0" when the indexing is not needed.)
7. Head relief timer can be used when it is on auto-return. Adjust the amount of the relief with the timer on the operation panel and it is already set at 0.2 seconds at shipping.



8. Handling for each parts.

8-1 Switch Panel



1) Power switch.

The light-operated press button switch (①)is just for a power control and the lamp is lit when pressed once, then the power is on. When pressed again, the lamp is turned off , then unit operation will be stopped.

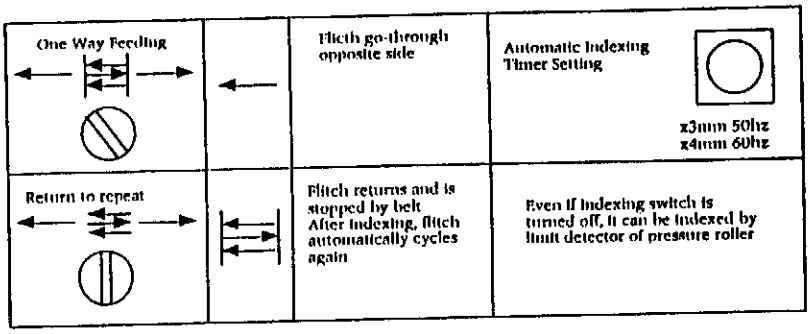
The lamp is not lit when a fuse is broken. The lamp of the power may not be lit when a pilot lamp is broken. In this case, make sure by the lighting of a photo switch lamp in the controller.

2) Emergency stop button.

A red colored press button with a key should be used when there is something wrong while feeding or to stop a operation. All operations will be stopped. When pressing the button firmly, it will be locked. Therefore, turn the key clockwise to unlock, when the operation is started again. Without unlocked, the operation can not be done even if the power lamp is on.

3) Feeding system and indexing timer.

diagram



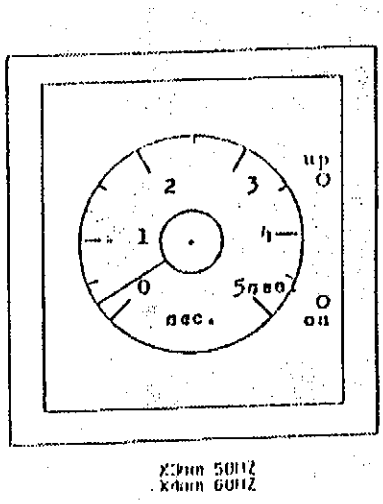
Reverse Feeding
Flitch can be fed backward. It stops by releasing.
And don't rotate it in reverse while the belt is cycling normally.

4) Head relief timer.
When a timer is set at the figure (except "0"), head reliefs upward to prevent excessive pressure which is generated when the minutes flitch comes back in a reverse feeding situation during the back and forth operation.
When a timer is at "0",the head will not be relieved even in a reverse feeding situation.

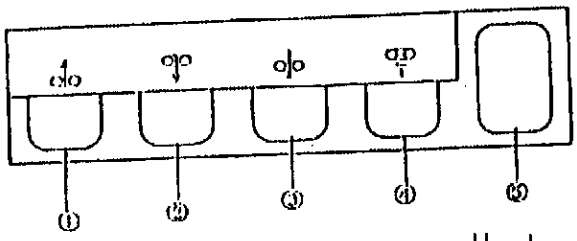
5) Set for indexing. (only the case of one-way feeding)
a) When return to repeat operation, it can be indexed automatically without any setting for indexing.
b) An indexing value should be set on a one-way feeding.
(The indexing might be unexpectedly lowered more than the set value , depending on machines. In this case, set it at the lower value.)

(Ex) The case a 1.0mm thickness veneer would be sliced at the 60HZ area.

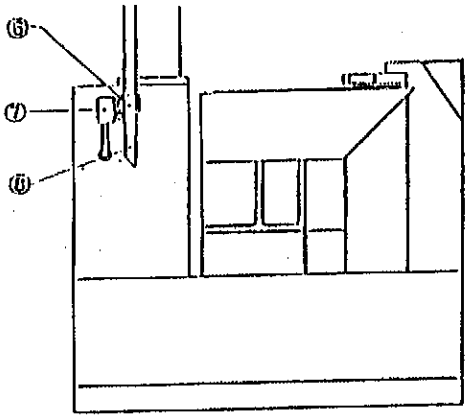
$$\frac{\text{veneer thickness}}{\text{converted value}} = \frac{1\text{ mm}}{4\text{mm}} = 0.25 \text{ second (this is the figure which should be adjusted)}$$



8-2 Foot Switch



① Head Up
② Head Down
③ Indexing one time
④ Feed on
⑤ Stop feeding
⑥ Dog for head lowest limit switch
⑦ Limit switches
⑧ Dog for upper most limit switch



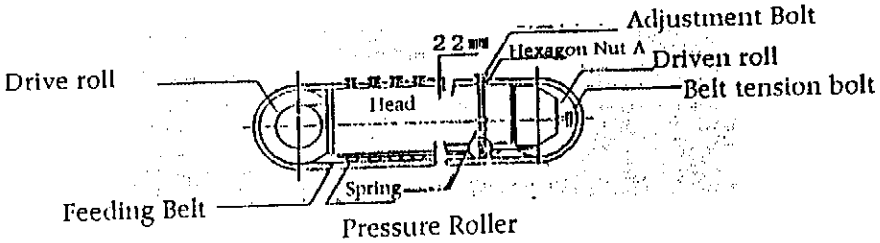
1) Head up-down
This switch makes a head up and down, and the head is rising and descending only for while stepping the pedal. On up and down limit, the operation is automatically stopped by means of a limit switch.
(A dog for limit switch can be moved.)

2) Indexing one time.
This switch is used when indexing beside automatic indexing.
The once indexing volume is equivalent to that of the indexing timer on the switch panel.

3) Feeding ON.
This switch is used for the start of the feeding belt.
Use "stop" of stepping switch or "power off" of the switch panel button to stop the feeding.

4) Stop feeding.
The operation both for one-way and back- and-forth is stopped.

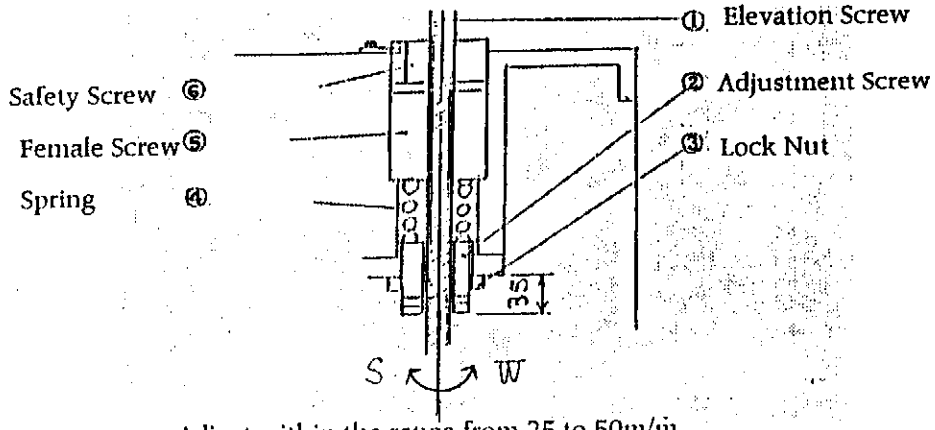
8-3. Adjustment of pressure rollers.



The pressure rollers , existing at between drive roll and driven roll, supports a parallel belt ,and functions to disperse pressure equally which is against the flitch .Although it is supposed to be adjusted when shipped, in the case the pressure adjustment of pressure rollers, proceed as follows:
The pressure rollers are supported by a spring , indicated as figure. Cushion of the spring is adjusted to secure about the 22mm space from upper surface of the head to the head of a adjustment bolt . When adjusting cushion, loosen hexagon nut A and shift a adjustment bolt. The cushion can be strong by tightening and be weak by loosening When adjusting, bear in mind the power of the each pressured roll can be equal. And be sure to tighten a hexagon nut A after adjusting.

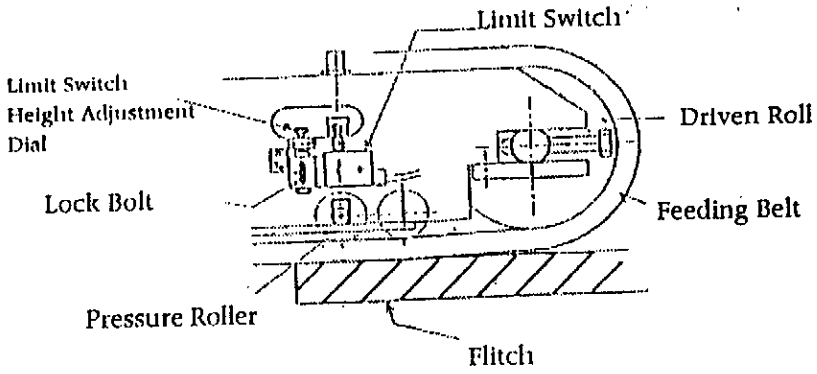
8-4. Head cushion.

As a head is supported by spring to have elasticity, it is cushioned (a difference between a table space and the thickness of flitch) according to the thickness of the flitch, and as as result , a knife will be avoided receiving a excessive pressure.
As a head cushion of this unit is positioned at the head side, the operation can be done smoothly without influenced by the weight of the flitch ,and a head support, consisting of two columns, is extremely stable. A head cushion makes lock nut loosen and with turning a adjustment bolt counterclockwise, the elasticity of the cushion will be weak and with turning it clockwise, it will be strong.



Adjust within the range from 25 to 50m/in.

8-5. Gauge for thickness.



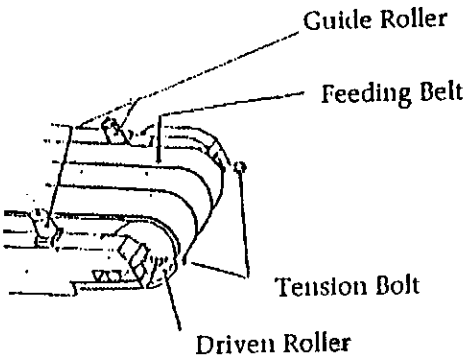
When feeding, make sure the bottom surface of the belt is raised against the thickness of the flitch, then insert the flitch from driven roll to pressure roller ,and at this point the top
surface of the flitch will be touched the belt by lowering
the head and the head ends up being stopped. And then, with stepping the feeding ON of the footpedal, the belt will be rotated right to be fed.

• Adjustment of head pressure

Raising a limit switch slightly will increase pressure. Moving it the opposite direction , lower pressure can be obtained.

(using with a adjustment dial for the height of the limit switch.)

8-6. Feeding belt.



The feeding belt used in this machine is a unique core of artificial fiber cord sandwitched between an external circl and inner circle of rubber. Some high elastic material which avoids a abrasion is used in the external circle rubber and some high elastic artificial rubber with wear proof function is used to the inner circle rubber. Consequently, smooth feeding can be conducted. Regarding a feeding belt, check and adjust as follows;

① Belt tension.

Adjust the tension of the feeding belt by using a right and left tension bolt along with watching a running of the belt.

② Correcting incline.

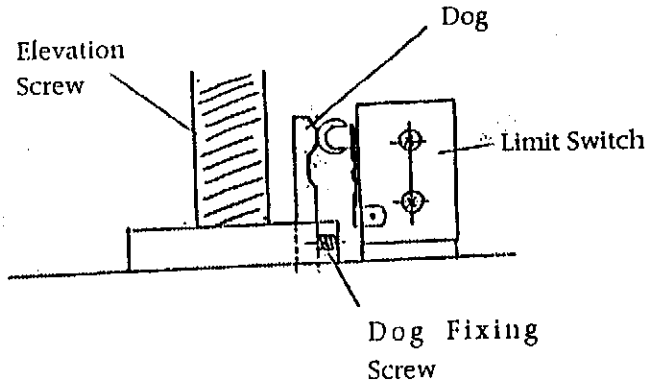
Turn the tension bolt on the right position clockwise when the belt inclines toward the right side and turn the tension bolt on the left position clockwise when inclining toward the left side and then shift it to the center position gradually with keeping the belt rotating.

③ Belt replacement.

A worn belt can be removed easily by unscrewing a tension bolt on the left side (but bolt on the right side should be loosened completely) and moving roll is moved inside.

8-7. Adjustment of detector for thickness.

This is the unit to detect whether or not a feeding belt position against the flitch is correct.



Position at -3mm with 0 operation position.
Proceed after moving dog.

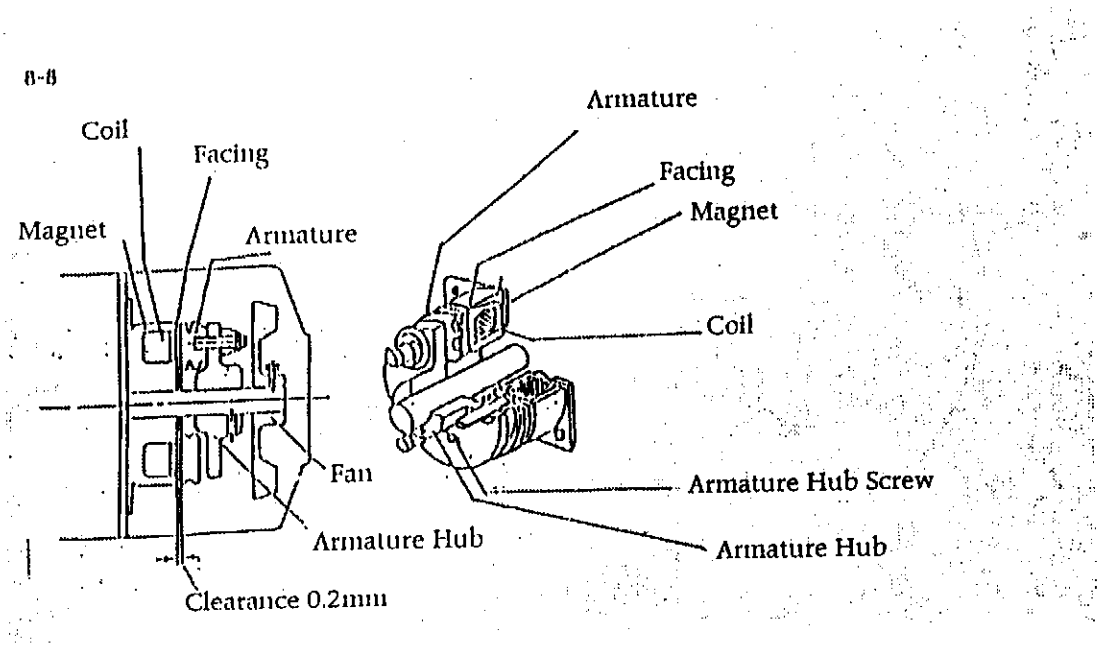
√ Excessive cushion

When a limit switch takes off from the dog by that flitch is caught and the head is cushioned, it means the feeding belt position is too low (too much pressure) and indexing won't work.

⑤ Normal cushion.

When a limit switch is not turned off by that flitch is caught and the head is cushioned, it means the feeding belt position is correct and the head will be descended by the dial set value. And the position of the limit switch against the dock is already adjusted when shipping, but set it at the point which is 3 mm lower than the limit switch work point. The position should be changed according to the veneer thickness or the hardness of the flitch..

8-8. Adjustment of brake.



1) Brake for head elevation.

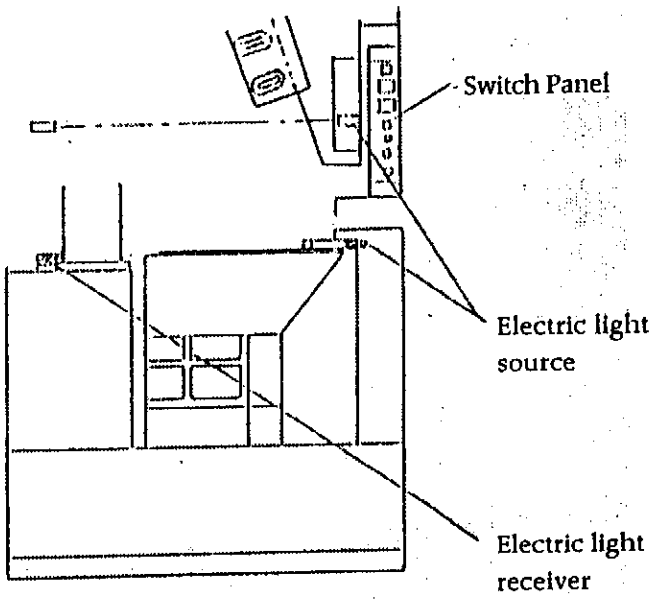
This brake is mounted directly to the gear motor and positioned at between a fan and motor. This brake has function of stopping the head at certain position or conducting a precise indexing. A gap between armature (rotary point) and magnet surface (facing) is adjusted at 0.2mm. However if it used for ages, the gap is getting wider gradually and the brake will not work correctly. Consequently, when it has been used for long hours or head inertia gets great (indexing value is higher than set value) , loosen armature hub screw and plug a clearance gauge into the right and left side of the gap to get a standard gap, then adjust by striking the armature hub slightly. (gap should be the same size in a outer circle.)

2) Brake for feeding.

This brake is mounted to the fan of a motor for feeding and the adjustment of the brake gap is not necessary due to that auto-gap system.

8-9. Adjustment of flitch detector.

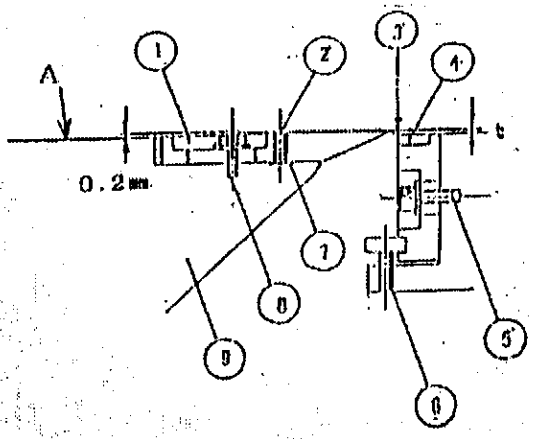
A photo switch is mounted at the point where the flitch is out of the place for a knife in order to detect the flitch-passing on the rear side. Return to repeat operation can be performed by this photo switch function. If the photo switch does not work during the back and forth operation, (A lens of the photo switch is damaged by chip or the incorrect casting lens position and so forth.) a feeding belt can not be rotated in reverse and finally the material would jump off from a table.

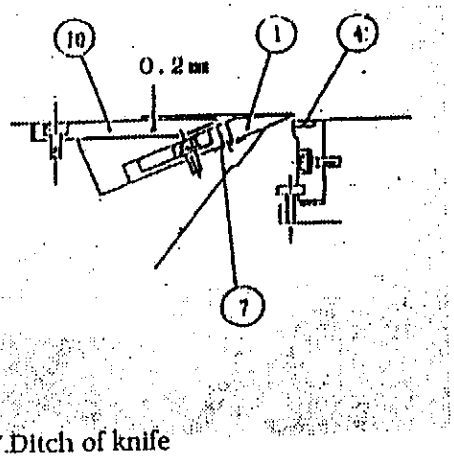


9. Handling of knives.

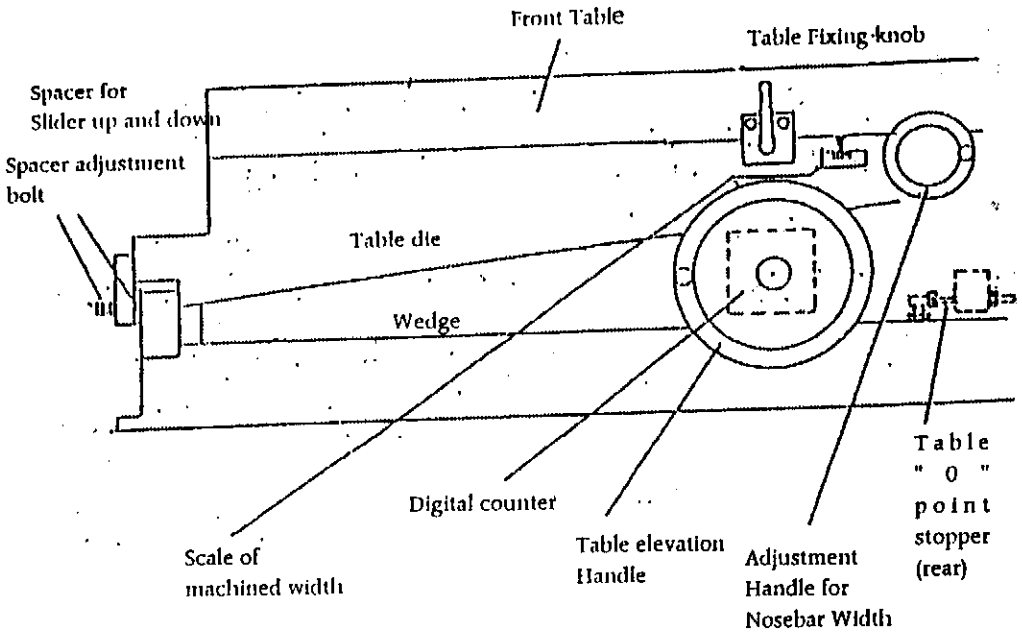
9-1. Knife setting.

1) Mount a knife and tighten the knife with T box so that the knife edge can be the same height as a nose-bar and parallel.
2) As for a subtle adjustment of a knife protrusion, proceed as below figure (to get 0.2mm protrusion from surface A) with a knife edge adjustment screw. The screws without being adjusted should be placed at the ditch on the knife bed and keep the knife sharp. And the screw must be adjusted at the position where it can fit to the ditch on the knife bed.
3) Reset the digital counter to get a "0"(indicator) at the position where the height of the knife edge and nose-bar are matched.
4) At this point, lower the table by the thickness along with watching a indication. And get one slice , then measure a veneer thickness.
When the veneer is thicker than the one in the indication, turn the boosting handle a little bit clockwise, and raise the table by a difference of the thickness along with watching the indication. See the handling section for a digital counter next page if you want the veneer thickness to become the same value of the indication. Normally, the veneer should be sliced 10% thicker than the knife edge.





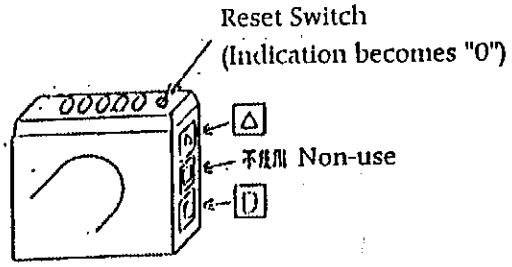
1.Knife
2.Adjustment screw for edge
3.Knife edge
4.Nose-bar
5.Install bolt for nose-bar
6.Adjustment bolt for nose-bar
7.Ditch of knife
8.Set bolt for knife
9.Rear table
10.Spacer



9-2. Handling for digital counter.

(The case, changing a indication without any handle operation.)

1. Pressing [D] makes a left side digital blink.
2. Pressing [D] repeatedly makes the digital figure , you want change, blink after the blinked digital shifts toward the right one after another.
3. Change the digital figure with . [△]
4. Finally press [D] twice and finished.



9-3. Knife replacement.

1) The knife edge should be separated off at least 10mm from nose-bar with a adjustment handle for nose-bar width.

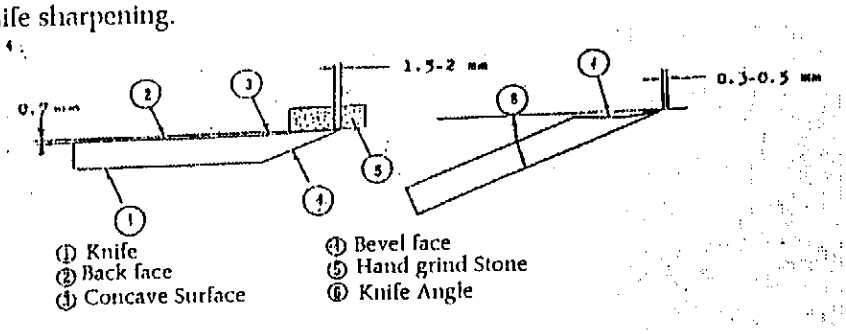
2) Loose off a knife mounting bolt.

3) Loosen a knife edge adjustment screw and keep it not to protrude from the bottom surface of the knife.

4) Mount a knife carring tool (accessory) to the knife.

5) Take out the knife from the knife bed with a care that the edge would not touch a scale.

9-4. Knife sharpening.



Knives must be completely ground. Grind as follows:

1) Knife back face.

Roughly whet the knife back face along concave surface with King Deluxe. Finish it with a fine water stone to get a smooth and precise plane. At this point, be sure not get a ground scratch on the back-face at the position where it is at least 1.5~2.0mm from the edge. (Do not press hard because of getting a rounded edge.)

2) Bevel face grinding. (rough grinding)

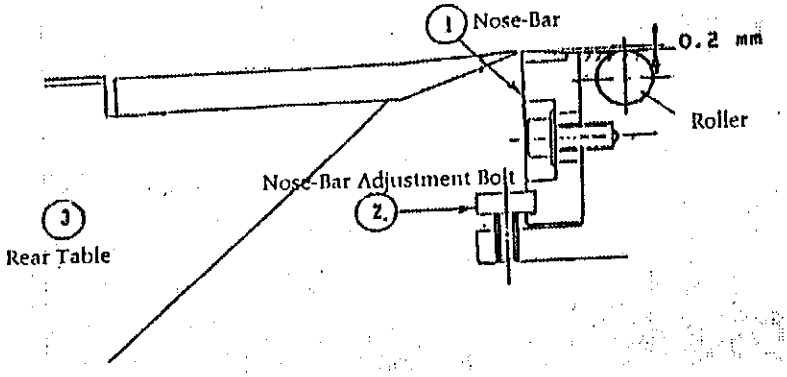
Grind a bevel face with a rough grind stone. Lean the knife bed at 18 degree when the edge is at 18 degree, and set so that the center of the grind stone could be matched with the center of the knife bevel face : (Idealy grind the knife at the same angle so as to match former bevel face,but the angle can be changed according to kind of flitch..)

3) Knife edge (lapping)

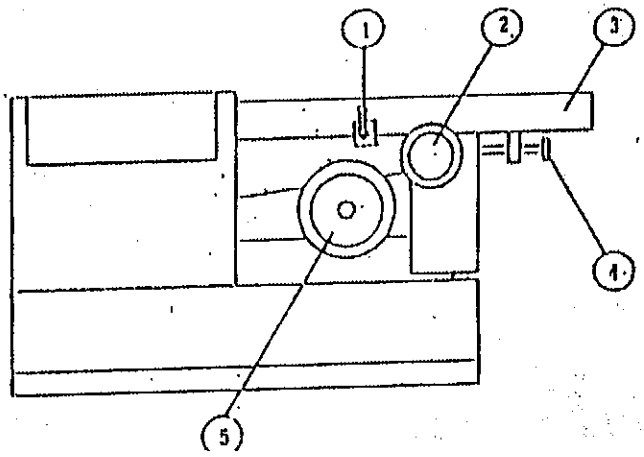
Finally,lap the bevel edge so that the lapping area becomes 0.3 ~ 0.5mm in width.Finish it with a lapping stone (#4000 fine stone) to get an ideal edge angle.

9-5. Nose-bar adjustment .

The edge of the nose-bar should be protruded about at 0.2mm from the upper surface of a roller. If an upper surface of the nose-bar wears, adjust with a nose-bar adjustment bolt according to the tolerance as indicated in a figure. And a parallel degree between the upper surface of the nose-bar and the knife mounting surface is already adjusted when shipping, but if adjusting , proceed it within 0.03mm.



9-6. Space between knife edge and nose-bar.



1) Table Fixing Knob
2) Adjustment Handle for Nose-bar width.
3) Front Table
4) Front Table Stopper
5) Front Table Elevation Handle

1) Loosen the table fixed knob and turn the adjustment handle for nose-bar width counterclockwise so that the nose-bar could be placed under the knife (to be covered) by moving forward. (In general a reverse grain stops.)

2) When you want to expand the space by moving backward, turn the handle 2 clockwise. (In general, the outshooting for veneer becomes easy, but veneer tends to be rough on the surface.)

10. Bearings which are used.

		Number Required.
Guide Roller	6206LLU	2
	6005LLU	8
Driven Roll	6011LLU	2
Drive Roll	6012LLU	4
Head Elevation Screw	6006ZZ / 6806 ZZ	1 / 1
	51106	1
	51206	1
Feeding Belt Guide	6303LLU	8
Pressure Roller	6205LLU	22
Front Table Moving Back & Forth	512032	2
Front Table for Elevation	51204	2
	51104	1
	6904ZZ	1

II. Trouble shooting and adjustment.

II-1 Trouble for feeding and suspenston for flitch.

Problem	Cause	Solution
A) Stopped Motor	• Thermal relay still working • Blown fuse (No blink with power on) • Roaring motor • Roaring motor by over load	•Press reset button of thermal relay •Replace fuse •Check wiring with power OFF •Reduce cutting mount
B) Belt Slip	• Slipping at between feeding belt and flitch • Slipping between driving roll and inner feeding belt • Reduction gear does not work with motor rotating	•Extend belt firmly •Increase pressure level •Reduce cutting amount •Extend belt firmly •Reduce cutting amount •Extend V belt firmly
C) Head cushion (head lifting system)	• Head not cushioned (belt position too high) • Head overly cushioned (belt position too low)	•Increase material catching pressure •Reduce catching pressure •Adjust thickness gauge
D) Head spring cushion	• Overburden of head by overly tightened adjustment screw	•Lose head weight to tighten screw
E) Pressure roller spring cushion	• Pressure roll run away by half tightened adjustment bolt	• Tighten bolt and strong pressure cushion
F) Head slide	• No smooth head running away	•Clean column moving parts and grease
G) Feeding belt	•Slipping by crooked and and hardened surface • Bad shaped belt •Crooked belt and no friction by wearing	•Clean surface with thinner •Reinstall belt Grind surface to get precise deviation •Replace belt
H) Broken knife, incorrect knife set	•Burr at knife edge •Chipped knife (slice flitch without knots) •Narrow space between knife and nose-bar	•Re-grind knife •Replace knife •Re-grind •Replace knife •Adjust space according to kind of wood or thrusting thickness
I) Inferior flitch	• Bent or twisted flitch • Flitch with knots	•Change to correct one •Repair with planner •Remove knots.

Problem	Cause	Solution
A) Inconsistent veneer thickness	•Inconsistent head pressure •Excessive Pressure roll cushion	•Inconsistent flitch thickness at head & tail •Keep correct pressure •Loosen bolt to weaken cushion
B) Thickness different between right & left	•Knife edge not in order •Thick slicing (3.5~4.0mm) to narrow material (30~40 mm) with nose-bar (front is rising)	•Adjust edge •Change proper nose-bar (89°)
C) Thickness different between front and rear	• (Note) Front is often sliced thicker than rear.	•Weaken head cushion •Make edge obtuse
D) Thicker veneer than expected	•Backlash out of table elevation • Knife not match with material * when slicing soft material Veneer is 10% thicker than edge protrusion	•Lower handle more than set value, then put it back to set value •Select suitable knife angle for flitch • Raise front table and set lower than set value (minus set)
E) Scratches	•Chipped knife •Knife with burr •Resin/refuse stuck to knife edge, table • Burr on table or knife	• Replace knife, regrind •Remove dust or foreign from flitch both ends •Replace knife, regrind • Remove foreign matter without damaging knife •Remove burr •Keep table clean
F) Reverse grain	•Material dried •Incorrect preprocess •No match knife, type of wood and slice thickness •Incorrect knife set	•Perform correct preprocess(boiling) •Select correct edge angle •Make space between edge and nose bar narrower
A) ~F)	•Rear point higher than edge (No.2 relief angle too low)	•Raise edge 0.2mm higher than rear table

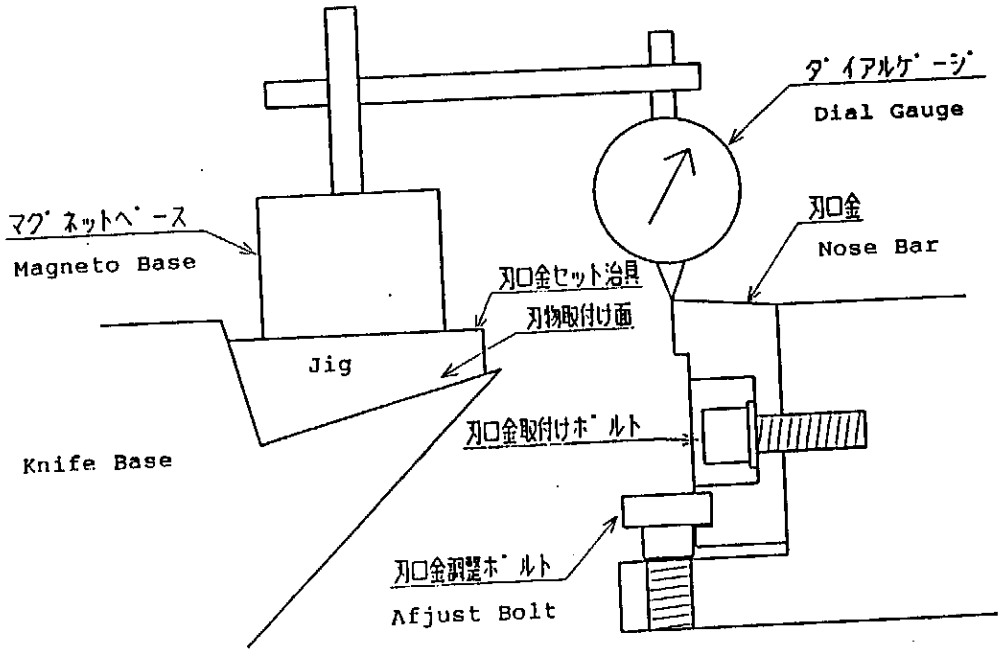
Problem	Cause	Solution
Worn Belt	•Partly worn •External circle excessively •Inner circle worn	•Feed material equally •change belt direction (column side → open side, open side → column side) •Strong belt tension Strengthen •Get enough pressure •Broken belt •Strong belt tension Strengthen
Handle '0' not matched with edge height		• Make height of edge same as nose-bar upper surface and get indication '0' by digi-color-reset
Material return incompletely machined	• Photo switch position installed incorrectly	• Incorrect position of light source photo (photp switch)
Material doesn't return during return to repeat operation		• Incorrect adjustment of digital SW • Excessive pressure • Low pressure Less

Problem	Cause	Solution
Material does not return in rounding operation to repeat	• Incorrect adjustment of digital SW	• Increase digital SW value
Material runs away in return to repeat operation	• Brake not working • Photo switch (OHS1) does not work (with normal spin)	• Worn brake (replace) • Check for blown fuse in power unit • Check power voltage (DC 24V) • Check installed height of photo switch • Check wire of photo switch
Feed motor stops when start	• Complicated lead wire wrong operation by longer lead wire (also causes wrong indexing	• Use wire bigger than 8.0mm^2 •Cable should be used short distance
Flitch thrown out to original position in return to repeat operation	•Brake not working (motor stops slowly, get in normal spin) • Photo switch not working	• Worn brake (replace) • Check wiring • Check power voltage (DC24V) for brake • Check for blown fuse of brake power supply • Check installed height of photo switch • Check wiring of photo switch
No indexing	• Motor for head elevation not working • Limit switch still working • Foot switch for one time indexing not working • Noise from power source	• Check wiring (also brake wiring • Check install height • Check wiring • Replace foot switch • Make sure indexing timer set at slicing value • Needs grounding

Lubrication	Temp	JIS	Esso	Idemitsu	Mitsubishi	Mobile	Nihon	Shell
	-10°~10° 11°~35 36°~55°	Gear oil 2-#3 2-#4 2-#5 2-#6	Pen-O Red EP-2 EP-2 EP-3 EP-4	Daphne CE Compound #65 #75 #85~#100 #105~115	Diamond #630 #640 #650 #660	Mobile Compound #630 #630 DD EE	Bonnoc Lub. BB Lub. BB No.3 No.4	Shell Macoma Oil #68 Oil #69 #72 #72~#75
Grease	-10°~55°	Saucer for roll axis 2-#2	Nebula EP-2	Coronex Grease No.2	Diamond Multi No. 2	Mobilux No. 2	Epinoc No. 2	Alrania No. 2

表刃取付け方式の場合

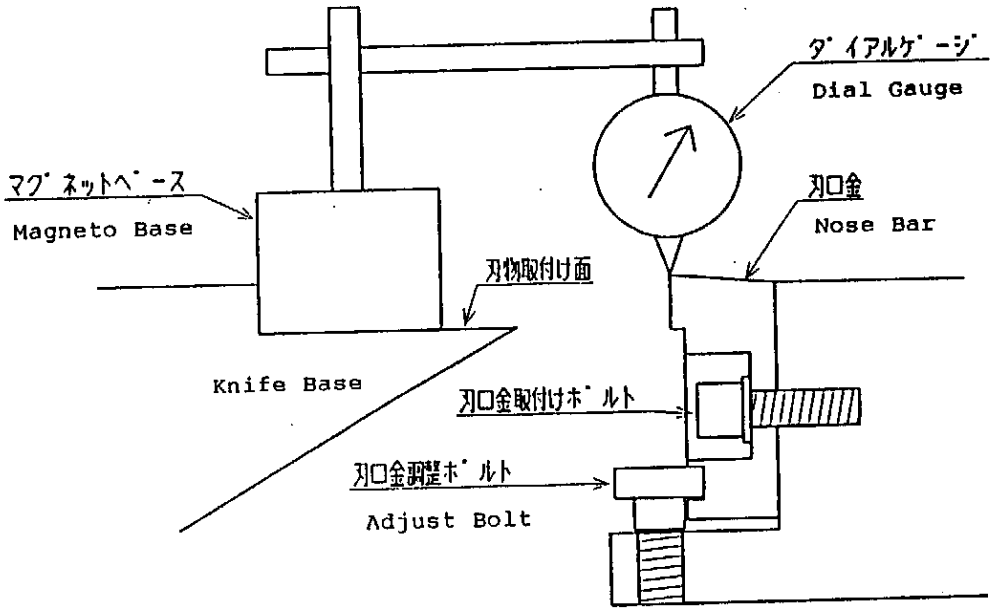
Seting of Nose Bar



SL-20VA
SL-25VA
SL-250V
SL-135T

裏刃取付け方式の場合

Seting of Nose Bar



SL-20VA	SL-135T
SL-250V	SL-25T
SL-250V2	SL-35T
SL-350V	SL-500N