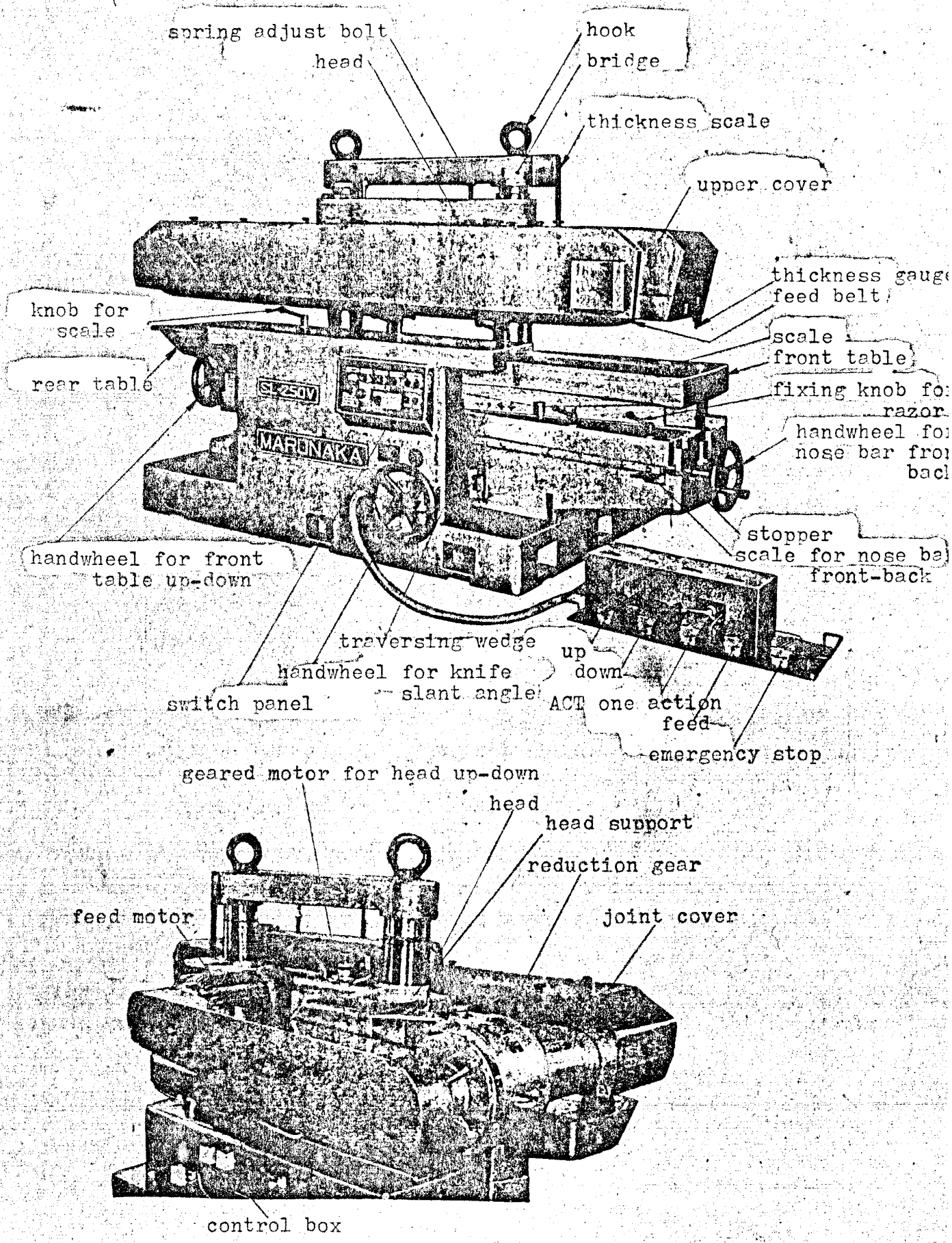
INSTRUCTION MANUAL

S L – 2 5 0V

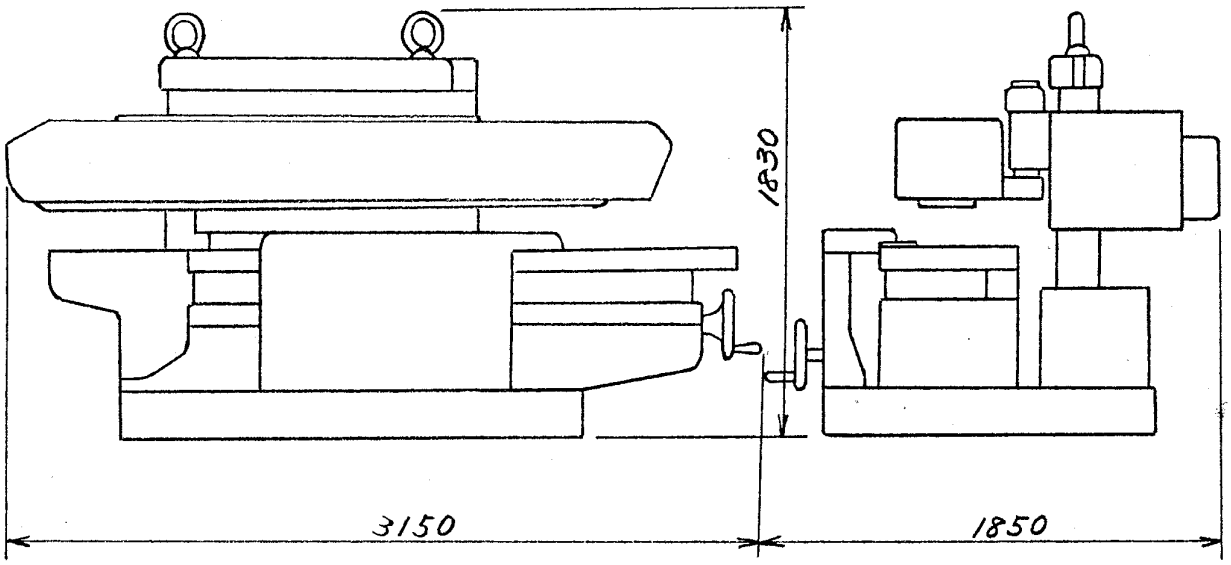
MARUNAKA TEKKOSHO INC.

CONTENTS

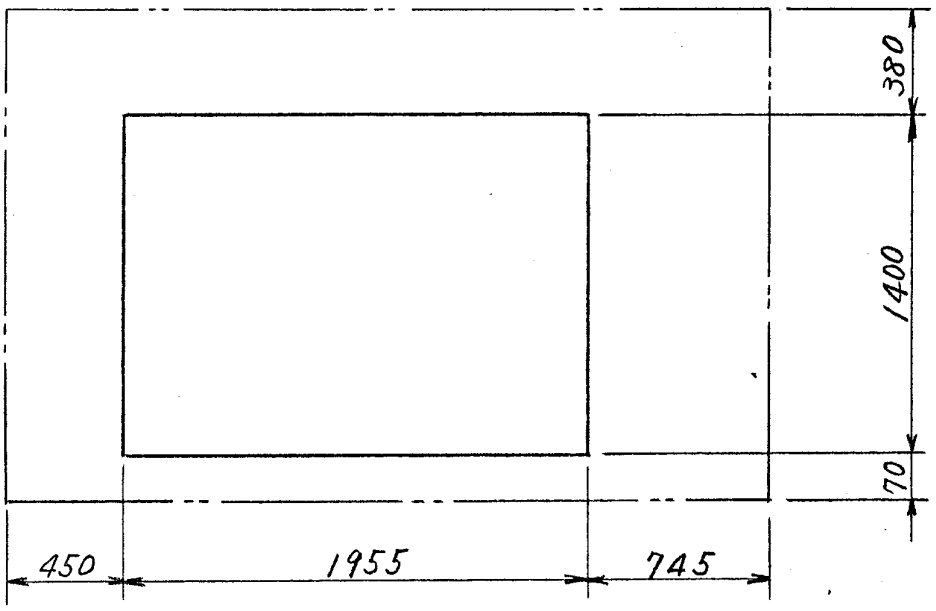
1. Names of Machine Parts



(2) Dimentional Drawing



(3) Installation Drawing



4. Specifications

Motor for feed(with brake)	11KW, 4P 3ph.
Motor for head up-down(with brake)	0.75KW, 4P 3ph.
Work capacity	
Max. work width	250mm(75^{o})
Min. work width	100mm(85^{o})
Max. thickness	240mm
Feed speed	43m/min.
Knife slant angle	75^{o} - 85^{o}(variable)
Table height	800mm
Machine size W x L x H	1,850 x 3,150 x 1,830mm
Net weight	5,200KG
Packing volume	555cft

5. Standard Accessories

Hexagonal wrench key(2 - 14)	1 set
Special wrench key(pipe shaped)19	1 pc.
Box wrench, 30	1 pc.
Single ended wrench, 24, 30, 36	3 pcs.
Double ended wrench, 19 x 24	1 pc.
Dial gauge with magnet base(unit; 0.01mm)	1 set
Hammer(plastic, 1 pound)	1 pc.
Screw driver(+ & -)	2 pcs.
Oiler	1 pc.
Silicone spray	1 pc.
Water stone	1 pc.
King Deluxe	1 pc.
Tool box	1 pc.

6. Lubrication Instructions

The machine must be oiled before operation. Be careful that wood chips or dust are not mixed in the oil.

1) Reduction Gear
Prior to shipment, oil is enough supplied for operation. If not enough, add gear oil up to the level indicated on the oil gauge. The first oil change should be done after 500 hours operation. Hereforth, oil should be changed every 2,500 hours or after every 6 months' operation. When changing the oil, clean the reduction gear with a oil cleaning solvent to provide the machine with longer life and higher performance for a long period. The grease for input shaft of the reduction gear is replenished in advance. Grease replenishment is necessary once a year.

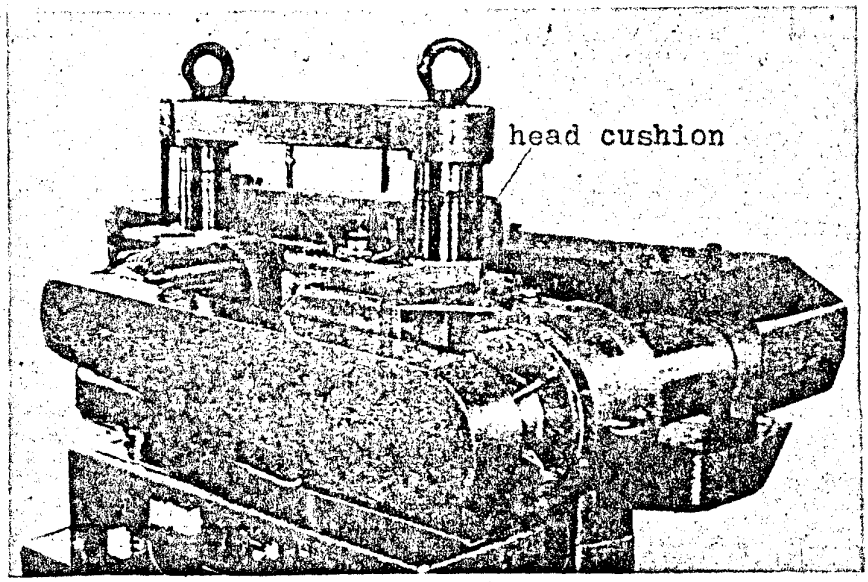
	Lubricating Oil			Grease
Atomospheric temp.	-10°C-10°C	11°C-35°C	36°C-55°C	-10°C-55°C
JIS	Gear Type2 #3	Gear Type2 #4	Gear Type2 #5,#6	Roller Bearing2 #2
Esso	Pen-o-Red EP-2	Pen-o-Red EP-2	EP-3,EP-4	Nebula EP-2
Idemitsu Kosan	Daphne CE Compound #65	Daphne CE Compound #75	Daphne CE Compound #85-90 #105-115	Coronex Grease No.2
Mitsubishi Sekiyu	Diamond #630	Diamond #640	Diamond #650,#660	Diamond-multi-purpose GreaseNo.2
Mobil Oil	Mobil Compound BB	Mobil Compound BB,	Mobil Compound DD,EE	Mobilux GreaseNo.2
Nihon Sekiyu	Bonnoc Lubricant #2	Bonnoc Lubricant #2	Bonnoc Lubricant #3,#4	Epinoc Grease #2
Shell Oil	Shell Macoma Oil #68	Shell Macoma Oil #69	Shell Macoma Oil #72 #73-#75	Shell Alvania Grease No.2

2) Geared Motor for Head up-down

The reduction gear of the geared motor, located at the head support, is of grease lubrication system which requires no replenishment. (The grease should be replaced every 4-5 years, or after 10,000 hour's operation.)

3) Column Lubrication

Oil supply port for column is located at the center of head support. Lubricate the column about once a month.
There are two oil ports for column and four for head cushion.



4) Table up-down

Take off stainless plate on table, then replenish grease at inner screw and gear.

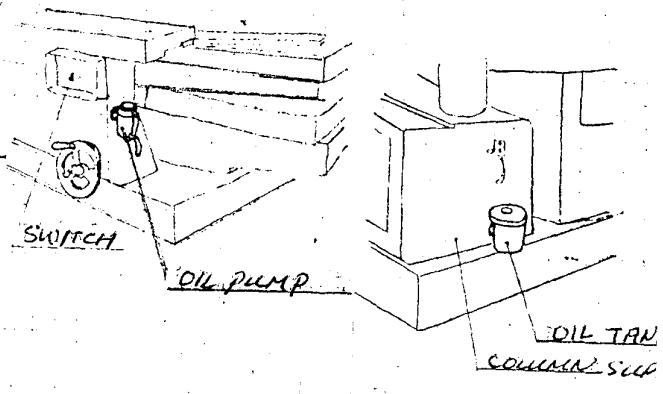
5) Front-back movement of front table

Oil supply is done through two oil cups at left and right sliding face(ref. 9-4). Screw for sliding is oiled by removing a little cover above the screw(located behind the razor fixing knob).

6) Lubricate to the screw of head up & down.
Oil supply to the up & down screw, located between the columns is done by the oil-pump, located at the side-frame.
Supply enough oil before operation, otherwise the screw will caus a trouble of wear and tear.

Specified oil	cSt(37.8°C)
Gear oil incl. extreme pressure additive.	460

*Supplied oil to the screw is recovered by the oil tank, located at clumn-side.



7. Preparation for Operation

Prior to operation, preparation must be done in the following order. When the machine is used after a long period of non-operation, trial run is recommended.

7-1. Preparation for Trial Operation

1 Earth the green lead wire.

2 Connect the lead wire to the power source.

3 Check the proper insulation.

4 Turn on the switch and check to see the head moves up-down correctly by pressing foot switch.

5 Clean the table and machine.

6 Check the amount of specified lubricant in the reduction gear.

7 Check the feed belt(endless rubber belt) for proper tension.

7-2. Daily Preparation for Operation

1 Keep all tools and materials clear off the machine.

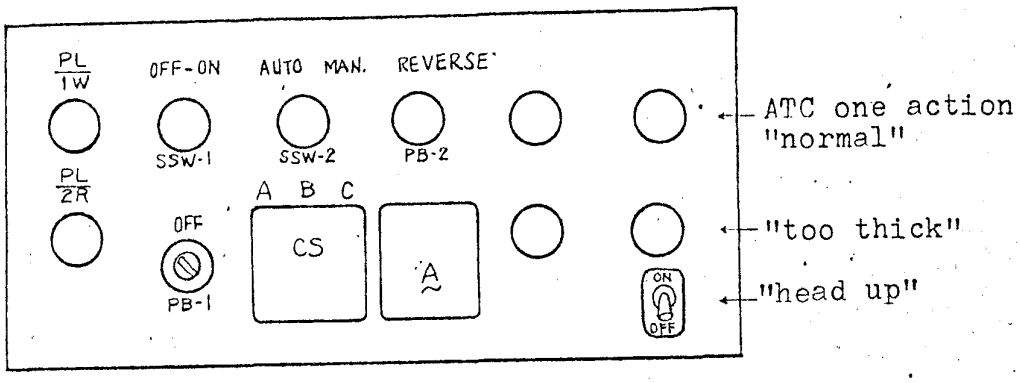
2 Oil all lubrication points.

3 Check the feed belt for proper tension and friction of its surface.

4 Check the proper knife setting and inspect the knife edge for sharpness and for nicks.

8. Machine Adjustment & Operation

fig. 6



8-1. Switch Panel and Display Device.

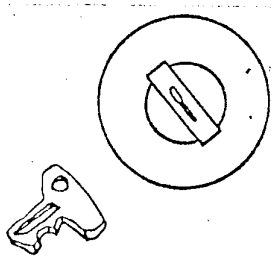
1) Power source switch(SSW-1)

Select switch(SSW-1), located at the upward left side, is for controlling the entire power source. When it is turned off toward left, the machine stops all its operation. When it is turned on toward right, the pilot lamp(PL-1W) is lighted and the machine can be operated. The blown fuse or filament of PL-1W cause the lamp off. In such case, check the power source switch amplifier.

2) Emergency Stop Button(PB-1)

Red push button with key is pressed when something abnormal happens during operation or when the operation is to be stopped. When this button is pressed strongly, emergency stop is locked. The machine can not be operated again unless the lock is released.

fig. 7



3) Select Switch(SSW-2) and Cam Switch(CS)

Operation of both switches is instructed in the following chart.

SSW-2	CS	movement
Auto	Auto Return (A)	Thickness control acts after workpiece returns and released from belt. (Belt returns to forward feed)
	Forward only (B)	Thickness control acts after workpiece is held off at the opposite end. (Belt remains in the forward feed)
	Return to Repeat (C)	Workpiece returns and is held between the feed belt and the table, and then the thickness control acts. After this, belt does forward feed.

SSW-2	CS	Movement
Man.	Auto Return (A)	Workpiece returns and is held off. Thickness control does not act. (Belt returns to forward feed.)
	Forward only (B)	Workpiece is held off at the opposite end. Thickness control does not act. (Belt remains in the forward feed.)
	Return to Repeat (C)	Workpiece returns and is held between the feed belt and the table. The thickness control does not act. (Belt returns to forward feed.)

* Auto-Manual of switch(SSW-2) determines automatic movement of thickness control.

4) Reverse to feed button(PB-2)

Workpiece is reversed to feed with this PB-2 pressed. When released, reversing feed belt is stopped. PB-2 must not be pressed during the feed belt is forwarding or during operation. Make sure to press this button after pressing stop button.

5) Head-up Switch

If put the "head up" switch on, when in "Return to Repeat" operation, the head comes up a bit not to press the material too much, just before it changes the forward feeding to reverse. The head up volume is determined by "Timer 5".

5)-1. Thickness Control

fig. 8

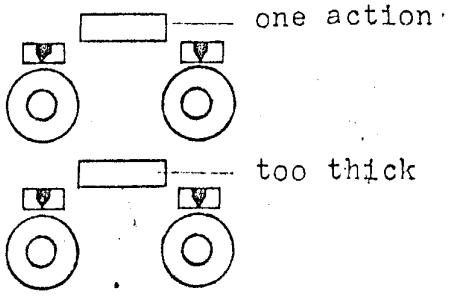
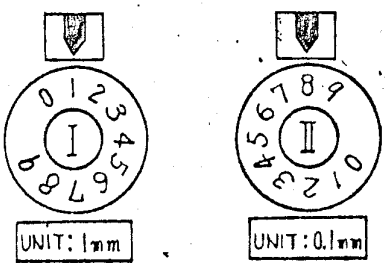


fig. 9
ex. when sliced sheet is 1.8 mm



Thickness is controlled by setting two dials located at the right sided upward in switch panel.
For instance, a product of 1.8 mm thickness, set the dial I to "1", and the dial II to "8". The head drops in proportion to the thickness of the product. (In the case stated "5) Head-up Switch", set the dials according to the thickness of product plus head up volume.)

5)-2. Thickness Control at "too thick"

When the head is over cushioned during operation, automatic thickness control does not work for machine protection. Then, sometimes enough pressure to feed the workpiece can not be obtained. In such case the lower thickness controler works and compensates the pressure with these lower two dials' set value. This dial set value is determined according to the thickness detector(ref. to 8-7).
Therefore, normally thickness controler (upper two dials) works and when "too thick", lower thickness controler works according to the lower two dials' set value.

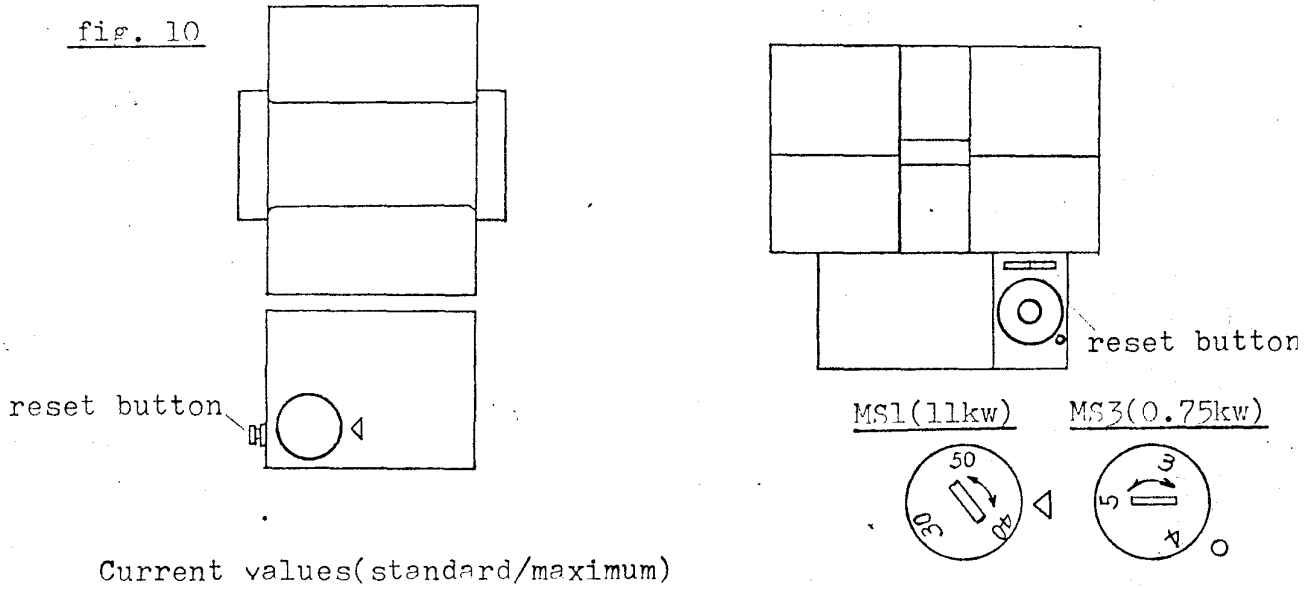
Remarks;

1. Don't operate with the combination of I at "0" and II at "0", for it will cause a trouble with the cycle counter in control box.
2. Be sure to set the dials appropriately for thickness of the product.
3. The head may drop 0.2 mm lower than it is set in case of automatic operation. So, set the dial taking this into consideration.

6) Thermal Work Lamp(PL-2R)

While the thermal work lamp(PL-2R) is lighted, either the motor for feed or for the head up-down movement, or the both of them will not work due to over-heating.
Remove the cover of control box at the back side of the base and push the white thermal relay button below the magnet switch. When the white button is pushed several times and the lamp is still lighted , wait for several minutes and push again.

fig. 10



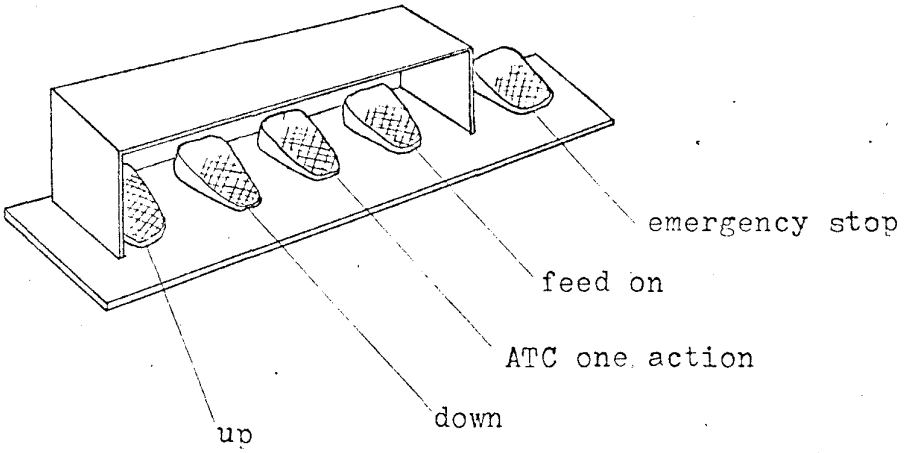
Current values(standard/maximum)

voltage		200	200	220
Hz		50	60	60
current	0.75kw	3.7/4.4	3.4/4.0	3.3/3.9
	11kw	42/50	41/49	38/45

Remarks; Thermal relay works when the ampere comes up to a set value in white disk of magnet switch (MS 1, MS3.)

8-2 Foot Switch

fig. 11



1) "Up" and "Down"

These foot switches control the up and down movements of the head. It will act during the foot switch is pressed. Limit switch acts at the top and bottom position.

fig. 12

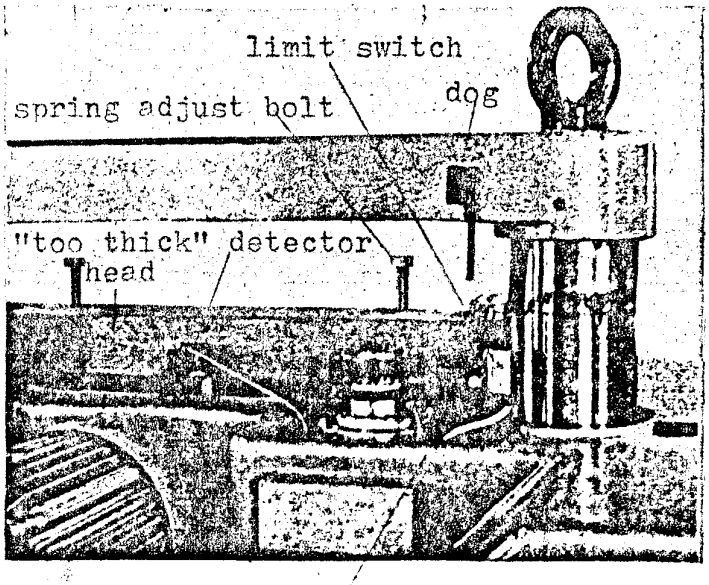
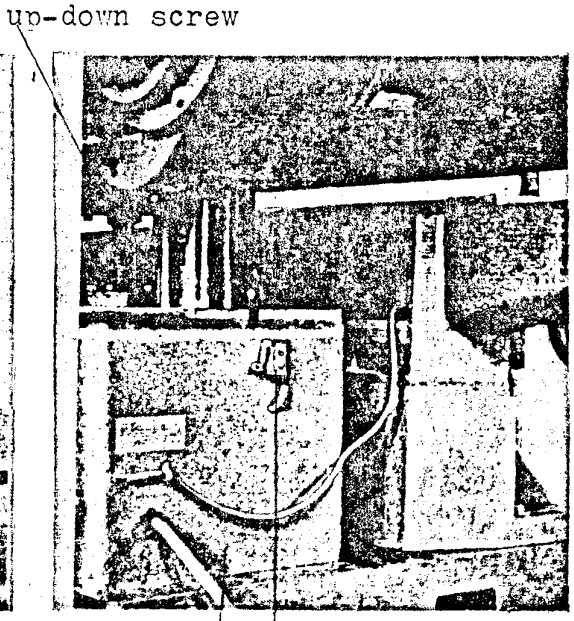


fig. 13



2) ATC(automatic thickness control) One Action

This foot switch, separated from the automatic thickness control, is used for individual thickness control. The head will only drop to a set value of the upper two dials on switch panel.
This is used for especially "Manual" operation.

3) Feed On

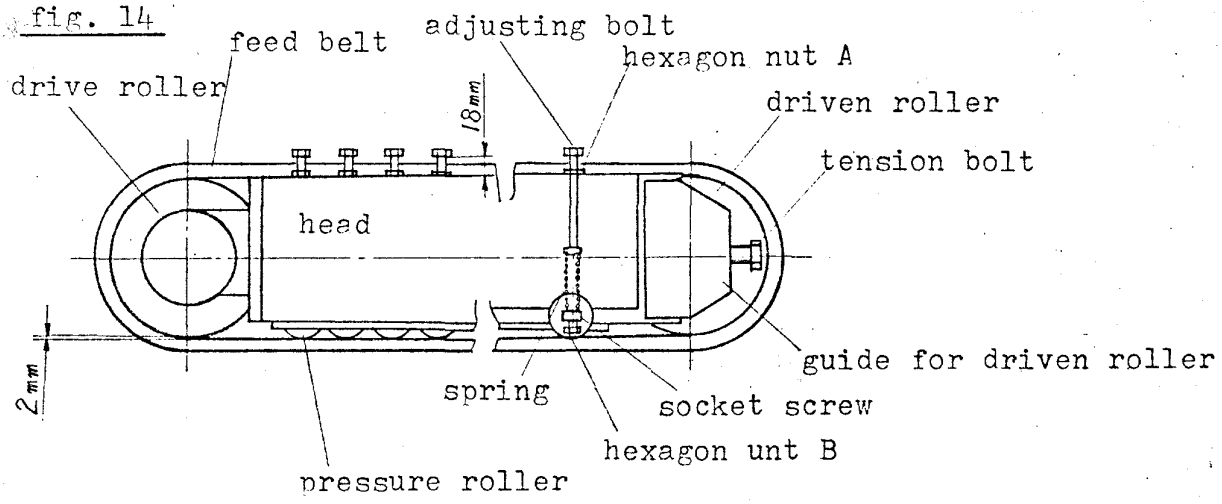
This switch is used to operate the feed belt. To stop, use the "emegency stop" foot switch or emergency stop button on switch panel.

4) Emergency Stop

This foot switch functions the same as the emergency stop button on switch panel. Everything will stop by pressing this foot switch.

8-3 Adjustment of Pressure Rollers

fig. 14



To keep the belt surface flat and to press the workpiece evenly, pressure rollers are provided between the drive and the driven rollers. To adjust the pressure rollers, though the adjustment is done prior to the shipment, pay attention under mentioned.

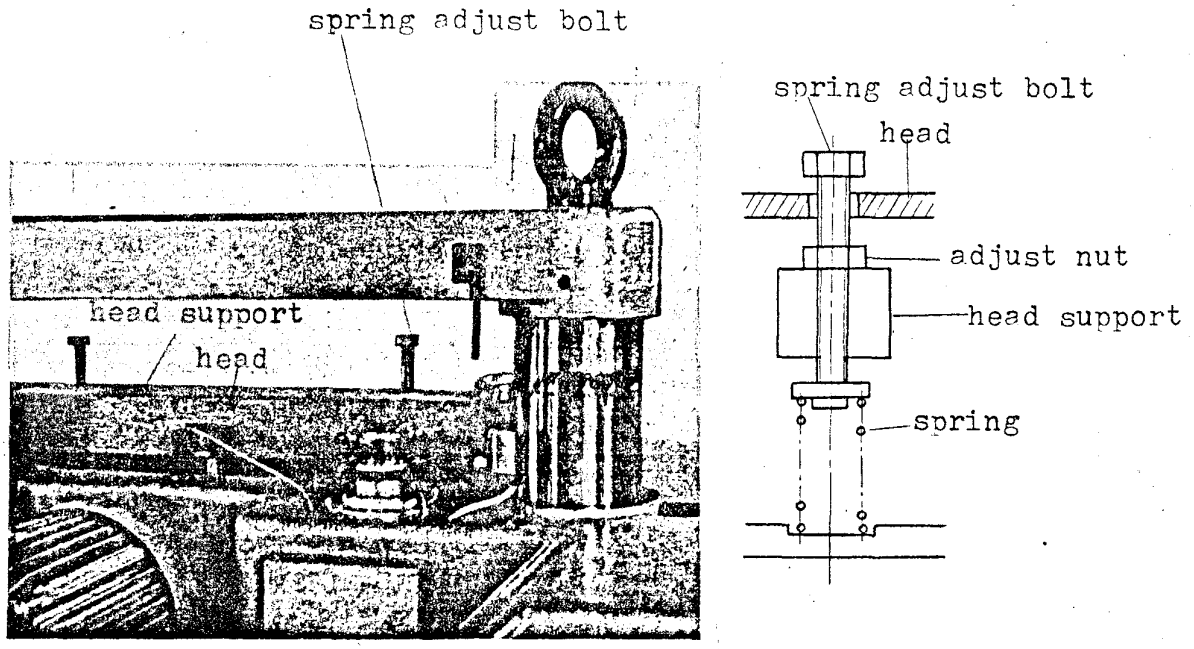
1) Cushion Adjustment of Pressure Rollers
These pressure rollers are held respectively with springs so that the belt will cushion against the workpiece of uneven thickness. To adjust the spring tension, loosen the hexagon nut(A) and turn the adjusting bolt. Clockwise turn is for tightening, and the reverse is for loosening. The proper tension will be obtained when the head of adjusting bolt is 18 mm above from the top of the head. Repeat this on each spring of the rollers and when finishing the adjustment, retighten the hexagon nut(A).

2) Height Adjustment of Pressure Rollers

To feed workpiece correctly, the pressure rollers should be 5 mm below the driven and the driver rollers' bottom sides. To adjust the location, loosen the hexagon nut (B) and turn the hexagon socket headless set screw.
The clockwise turn moves the rollers upwards and the counter clockwise downwards.
Repeat for each roller's location and when finishing the adjustment, lock the hexagon nut (B).

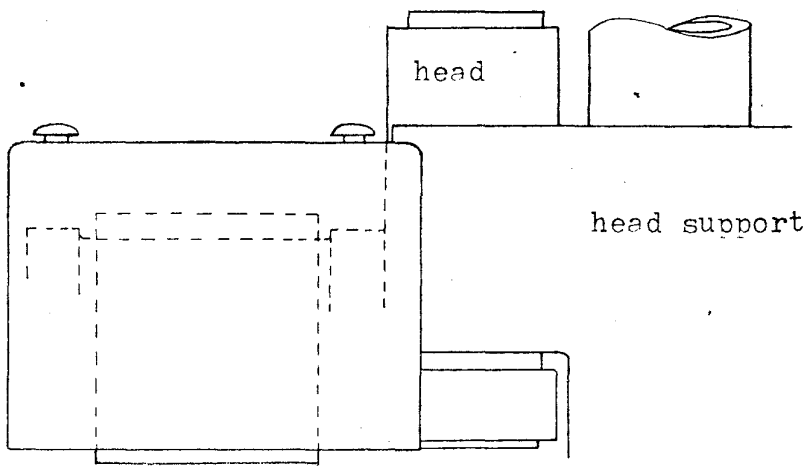
8-4 Head Cushion

fig. 15



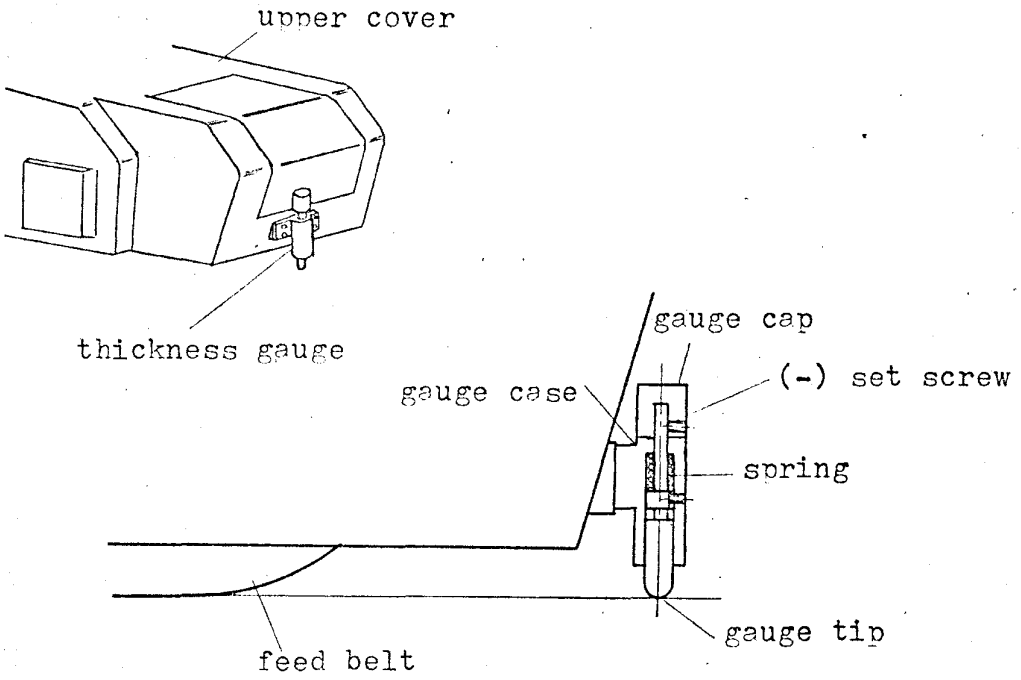
The head is supported by spring so that it cushions against the workpiece of uneven thickness and prevents the excess load to the knife. Rigidly supported by the two columns, the buffer action on head side operates smoothly without any relation to the weight of workpiece(head support does not move).
The proper head cushion is obtained by tightening adjusting nut loosely with hand. Clockwise turn makes spring heavy, and counter clockwise light.

fig. 16



8-5 Thickness Gauge

fig. 17



The thickness gauge is used to determine the feed belt positioning in accordance with the workpiece thickness. For proper feeding, the gauge is set so that the tip comes the same height as the feed belt bottom side. This has already been set properly prior to shipment.
When the belt wears out or readjustment is required, adjustment is done as following instructions.

1. Place a flat plate against feed belt bottom face and a tip of the thickness gauge.
2. Loosen the (-) set screw in the thickness gauge.
3. When this screw is loosened, the tip comes down to the plate.
4. Rigidly tighten and fix the screw.

Before operation head positioning is determined so that the thickness gauge tip touches lightly the workpiece surface having 3 - 4 mm clearance between the bottom face of gauge cap and the upper face of gauge case when the workpiece is placed on the table. Adjust this clearance according to thickness and material of sliced sheet.

8-6 Feed Belt

The feed belt used on this machine is of specially made endless belt, composed of the belt core of synthetic fiber, the outer peripheral of friction proof elastic rubber and inner peripheral of wear proof synthetic rubber.

fig. 18

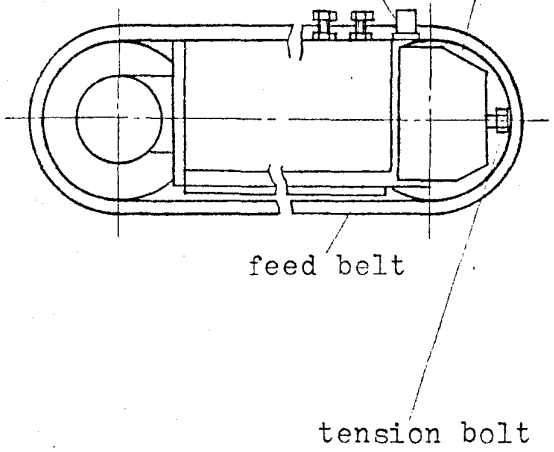
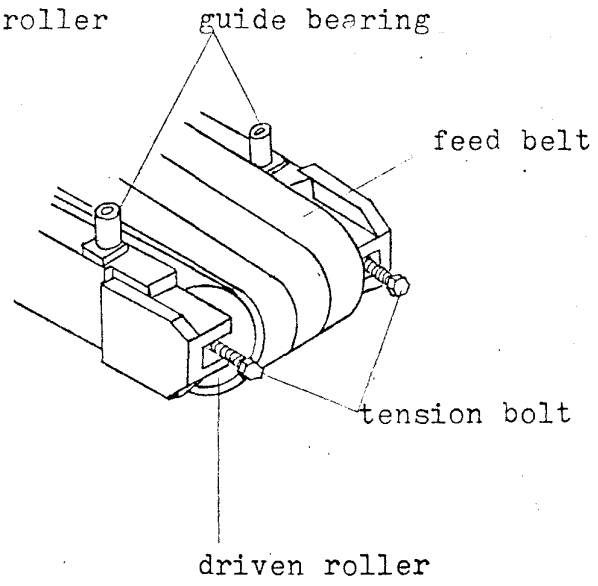


fig. 19



1) Adjusting Feed Belt Tension

The feed belt tension is adjusted with tension bolts on both sides, while belt is operating. The proper tension is obtained when all of the pressure rollers touch the inside surface of the feed belt and begin rotating. The guide bearings are provided on both sides of the drive and driven rollers and its periphery lightly touches the feed belt. This prevent the belt from slipping off and keeps it between the bearings.

2) Correction of the Feed Belt Position

The feed belt should always run true between the guide bearings. When the belt is one-sided to the right, correct it by clockwise turn of the tension bolt located at the right side of the driven roller, and when one-sided to the left, correct it with clockwise turn of the tension bolt at the left side.
Do it while the belt is operating and gradually adjust the belt tension.

3) Exchange the Feed Belt

To exchange the worn-out feed belt, first remove the left side tension bolt(completely loose right side tension) and push the driven roller towards the drive roller. In this way, the feed belt can easily be removed. When doing this, be sure to turn off the power source switch.

8-7 Adjustment of Thickness Control Detector

This device detects the proper feed belt position in relation to the workpiece.

fig. 20

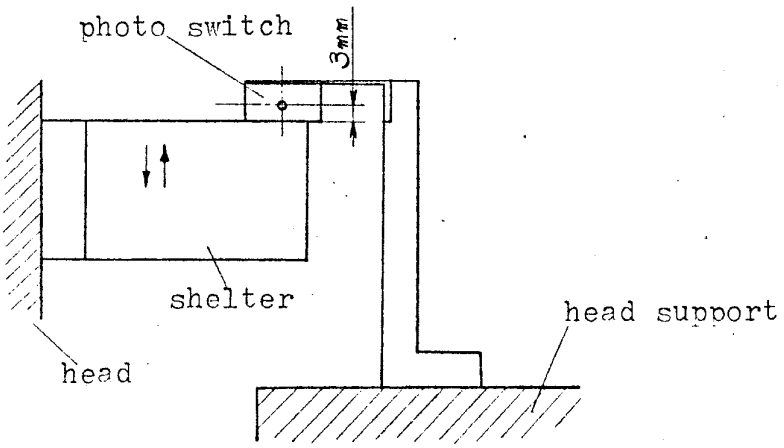


	Photo Switch
too thick	sheltered
normal	not sheltered

1) too thick

The head cushions when the workpiece is held between belt and table. When the photo switch(named H1/in wiring diagram) is sheltered, it is indicated that the feed belt position is too low(that the head drops too much).
The head will descend according to set values of thickness control(right sided lower two dials on switch panel).

2) normal

Holding down the workpiece, the head cushions. When the photo switch is not sheltered, it is indicated that the feed belt position is proper. The head descends according to set values of thickness control(right sided upper two dials on switch panel).
The position of shelter against the photo switch is adjusted at the time of delivery. Set the shelter 3 mm below the center of the beam of the photo switch.

a) Alter the position according to the thickness of the product, hardness of the workpiece, etc.

b) The cable for the sender is the one with a red line.

"too thick"

The following items sometimes cause "too thick".

1. Head descends more than the thickness of sliced sheet.
2. Hard wood is sliced thin.
3. Head position is too low against the workpiece.

"too thick" is not favorable for the machine.

"normal"

Head descends according to set balues(upper two dials on switch panel).

By means of these two actions, "normal" & "too thick", the machine keeps certain pressure and is protected.

Example of thickness control dial set;

sheet thickness	1.8	2.5	4.0	0.5	1.0
upper dials	1.8	2.5	4.0	0.5	1.0
lower dials	1.0	1.3	2.0	0.1	0.5
(a)	3.0	4.0	5.0	3.0	3.0

(a) means the

* a; distance between shelter and photo switch.

8-8 Brake Adjustment

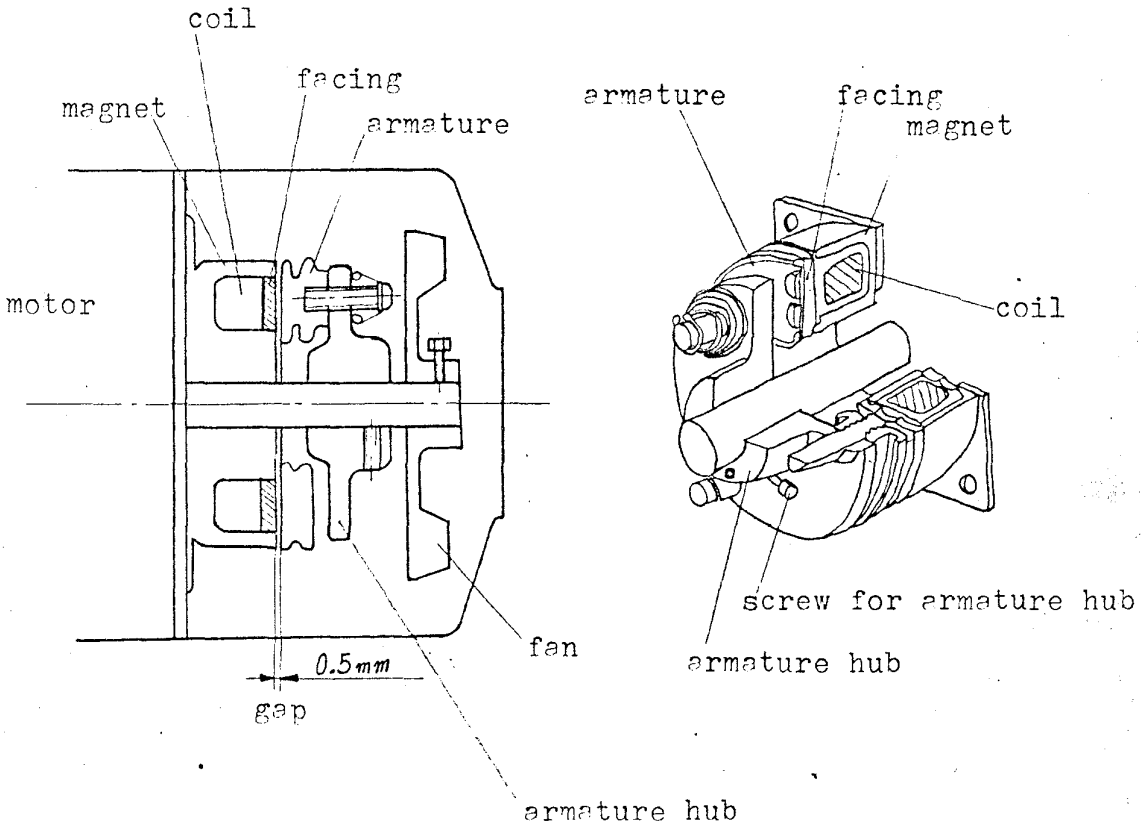
1) Brake for Head up-down

By removing the motor cover, the brake(as shown on fig. 21) is mounted between the fan and the motor. This brake is used for accurate thickness control and the head is moved to the appointed position.
The gap between the armature and the magnet facing is held 0.2 mm. The brake facing and armature will cause friction and the both surface will wear out, the gap will be widening. So the brake's effectiveness will decrease gradually. Therefore, after a certain period, or when the inertia of the head becomes great, loosen the screw for the armature hub, insert clearance gauge and lightly tap the armature hub so that the gap is adjusted to 0.5 mm. Be sure to tighten the screw, after the adjustment is completed.

2) Brake for Feed

The brake is mounted at the side of motor fan, and the gap is automatically adjusted. Gap adjustment is not necessary.

fig. 21



8-9 Adjustment of Workpiece Detector

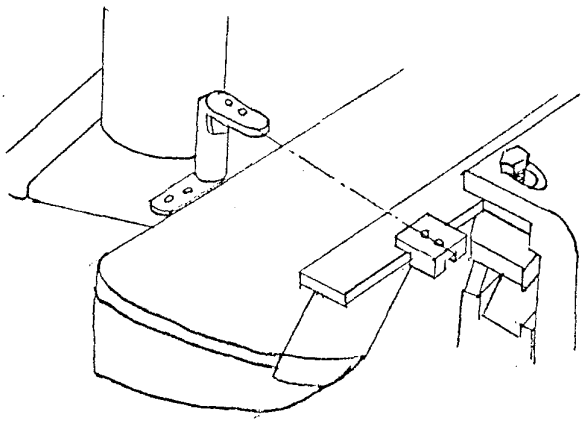
One set of photoelectric switch is installed to detect the passage of the workpiece.
By means of this detecting device, operations mentioned par. 8-1, 8-2 and 8-3 are effected.
Unless this works, feed belt does not reverse and workpiece passes through the table.

Adjustment of photo switches is done as follows;

1) One set of photo switch consists of the two switches, light source and receiver.
The former is connected by red shield cable and fixed to the scale on the table.
While the latter connected by gray shield cable is located on the rear table side, and adjustable to up and down and right and left side.

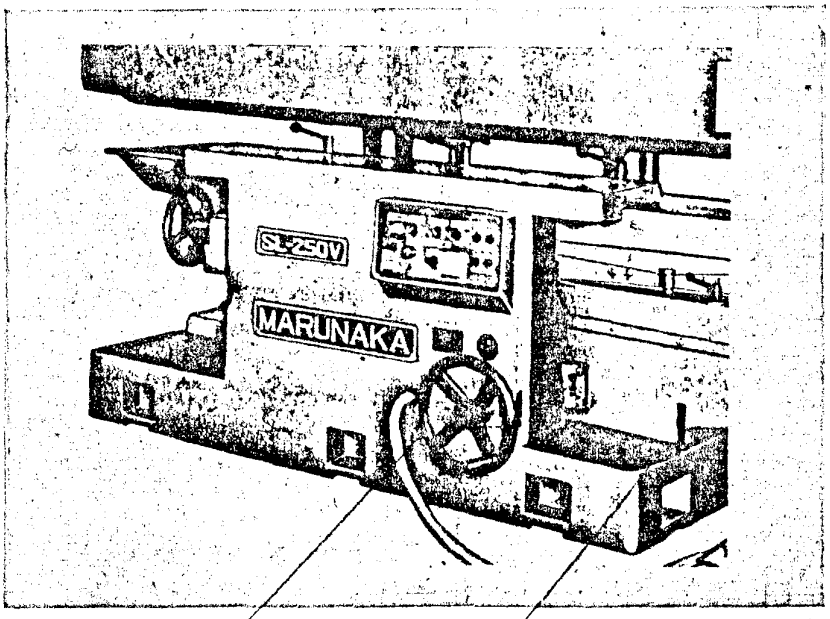
2) Be the optical axis of the photo switches in a straight line by adjusting the position of the receiver. (Refer to fig.22.)

fig. 22



8-10 Adjustment of Knife Slant Angle

fig. 24



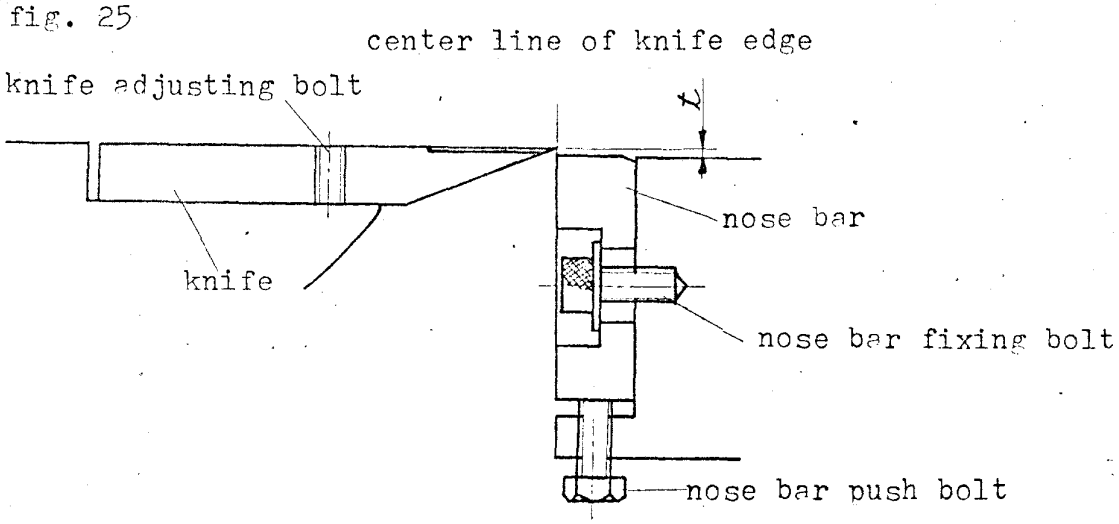
Knife slant angle is varied by this handwheel. Knife slant angle is determined according to material, thickness of sliced sheet, preprocessing of workpiece.
If the workpiece is easy to make interlocked grains(against grain), for instance, knife slant angle should be bigger.
And veins of wood is smaller than straight-grained of wood.
If the sliced sheet has chaps in back face, smaller knife slant angle is effected for the better.
Knife slant angle becomes bigger when this handwheel is turned right, whereas it becomes smaller when turned left.

There are provided hexagon nuts to fix rear and front tables under the both tables. These nuts must be tightened after adjusting knife slant angle.

9. Knife Handling Instruction

9-1 Knife Setting

fig. 25



To produce fine sheets, knife setting is done as follows.

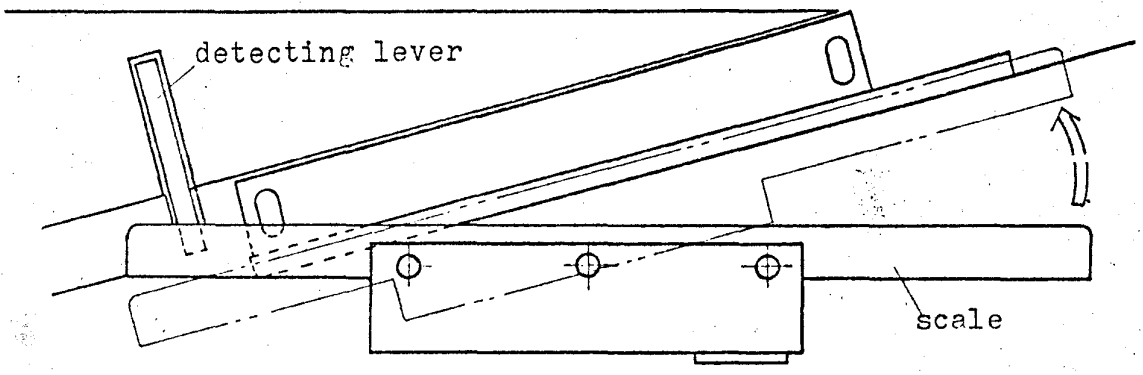
1) Set so the knife and the nose bar are parallel.
2) Fix the knife lightly with pipe shaped special wrench.
3) Set the highest part of knife edge to the same level with the edge of nose bar by turning handwheel for front table up-down.
4) Level up the lower part of knife edge with the edge of nose bar by knife adjusting bolt. At the same time, knife edge should be set the same level with rear table.
5) Adjust the scale to "0" which is located at the side of handwheel(Loosen wing bolt and set the scale "0" to the mark.)
6) Turn left the handwheel for front table a little bit lower than the thickness "t" of sliced sheet desired. Then, turn it a little bit right and adjust the scale to "t".
7) Set the right sided upper two dials on switch panel to the thickness "t"(ref. 8-1 - 8-5)
8) Slice the workpiece and measure the thickness of sliced sheet. Then adjust the thickness by turning handwheel(minimum measurement is 0.01 mm).
   If the sliced sheet has different thickness within one sheet, the thinner part of the knife is moved up by knife adjusting bolt upward and level the knife.
   Or if the sliced sheet has interlocked grain(against grain), adjust the gap between knife and nose bar by moving forward the nose bar.

9-1-2 Knife Exchange

Knife exchange is done as in the following order).

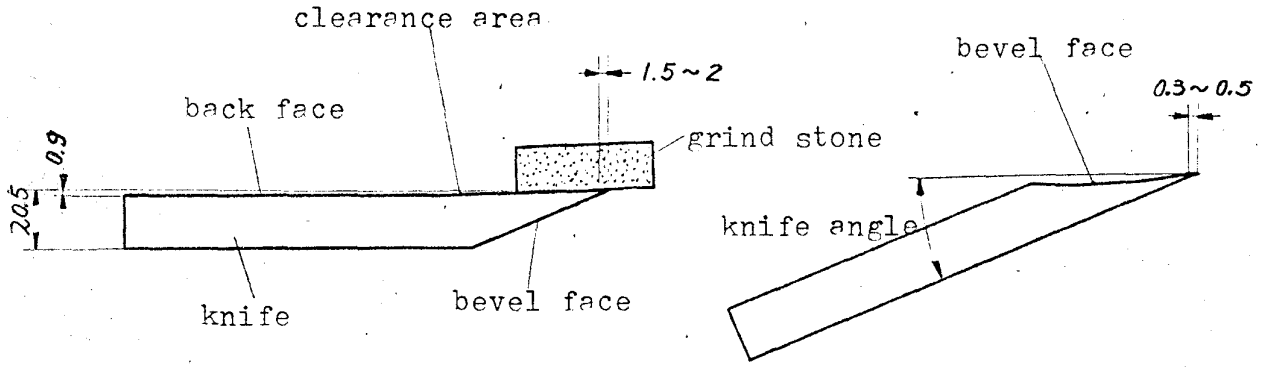
1) Move away the nose bar from the knife edge(ref. 9-4).
2) Move the nose bar a little bit higher than knife edge.
3) Loosen scale fixing knobs(Two knobs of right hand side are removed and the other one is just loosened.)
4) Angle the scale in parallel with nose bar.
5) Loosen the knife fixing bolts.
6) Loosen the knife adjusting bolts so they are not protruded to the back face of the knife.
7) Move the knife backward with knife carring bolts.
8) Screw off the fixing bolts.
9) Exchange the knife by lifting up the knife. When doing this, it is recommended not to drag the knife on the table.

fig. 26



9-2 Knife Grinding

fig. 27



To obtain accuracy, the knife should be carefully ground before the setting. Follow the grinding instructions below.

1) Back Face Lapping

Roughly whet the knife back face along its clearance area with attached King Deluxe(grind stone), then whet there manually with a water stone. When doing this, be careful not leave grind marks in the area of 1.5 - 2.0 mm in width from the cutting edge.

2) Bevel Face Lapping

Next, the bevel face is worked by the grinding wheel, in case of knife angle 22°, incline the knife setting bed of grinder to 22° and grind the knife so that the center of the grinding wheel should be coincided with the center of bevel face. (It is the best way to be in accordance with the previous bevel face. However, the center of bevel face might be changeable according to the quality of workpieces.)

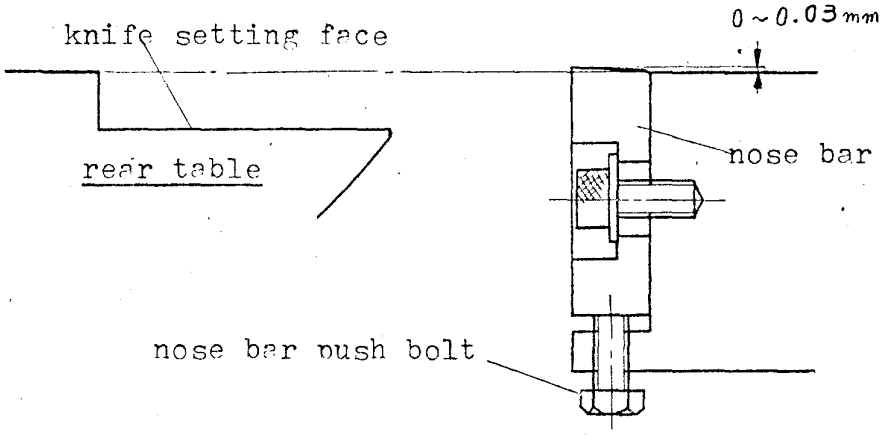
3) Bevel Face Lapping Finishing

Finally, lap the bevel edge so that the lapping area becomes 0.3 - 0.5 mm in width and slants at 22° to the knife back face. The standard slicing knife angle is specified to 18°, however, 15°, 22°, and 28° slicing knife angles are available upon request.

9-3 Nose Bar Adjustment

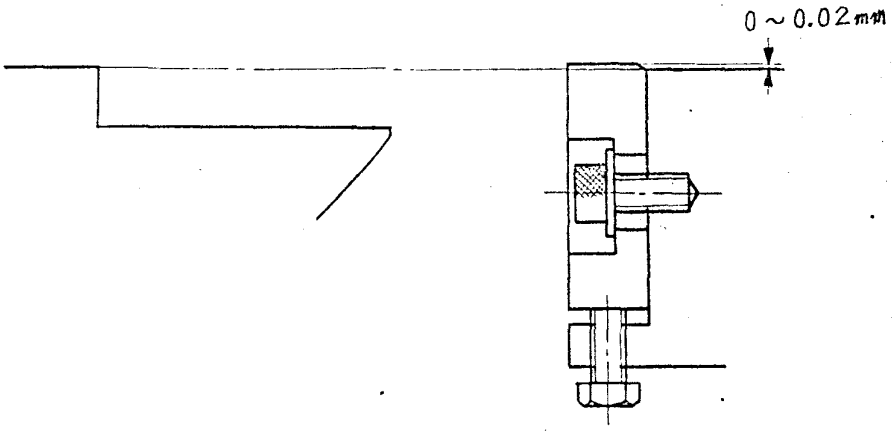
1) When the nose bar edge protrudes, allowable limitation is 0 - 0.03 mm.

fig. 28



2) When the nose bar is parallel and above the rear table surface, allowable limitation is 0 - 0.02 mm.

fig.29



Nose bar edge should be parallel or slightly protrude in respect to the table face. When the nose bar surface wears out, adjust it by using the push bolt to the allowable limitation.

The parallel between the knife setting face and nose bar surface is is checked prior to the shipment. When adjusting, the tolerance should be within o.o3mm.

9-4 Adjustment of Clearance between Knife and Nose Bar

The clearance between knife edge and nose bar is adjusted according to material, preprocess of workpiece and slicing thickness.

fig. 30

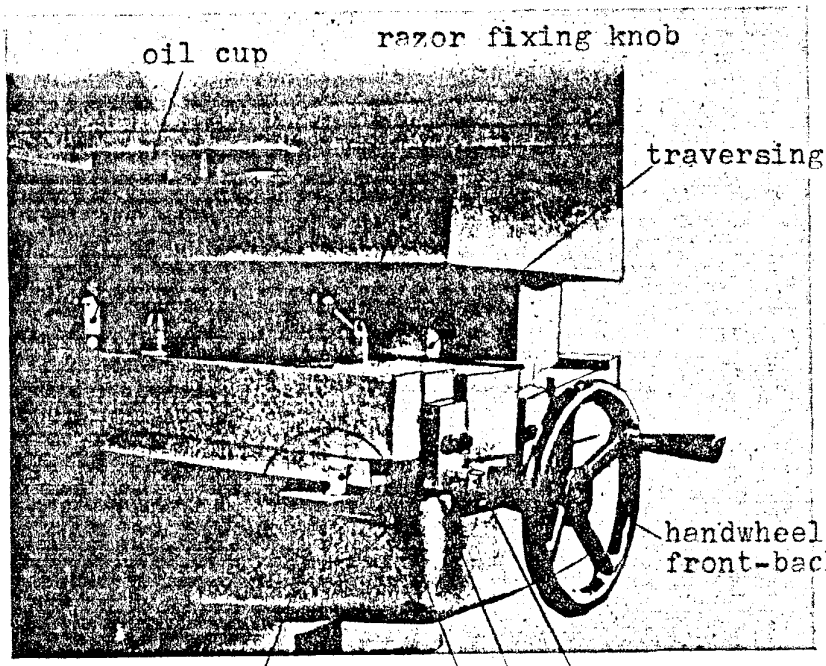
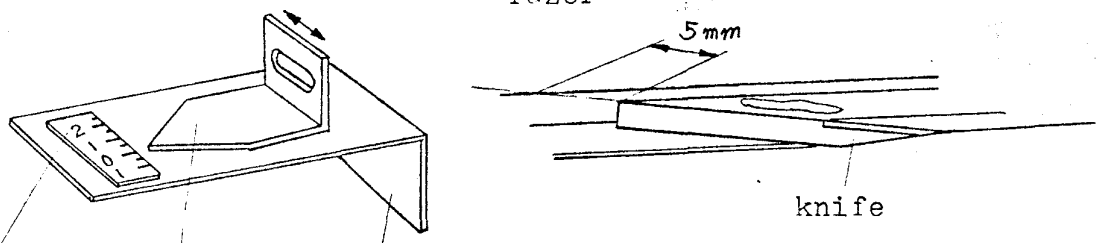


fig. 31



1) The position of scale "0" means that there is no clearance between knife edge and nose bar when the knife without use is set.

2) To set the nose bar beneath the knife edge, turn the handwheel right. Generally this setting prevent the sliced sheet from interlocked grain(against grain).

3) To set the nose bar having clearance with knife edge, turn the handwheel left. Generally the feeding smoothness becomes better, while the surface of sliced sheet becomes rough.

Operation Method

1) Move the nose bar beneath the knife.(Handwheel for front table up-down is turned left)
2) Loosen razor fixing knob.
3) Turn the front-back handwheel to the position desired.
4) Work stopper bolt by tightening nut.
5) Tighten the razor.

Note: Usually, set the knife at the position of scale "0".* After setting the knife, lower the table and forward

***the table, then let the nose bar under the knife. Aim at the stopper bolt and fix the table of advanced position.**

10. Bearing Used

Bridge	6201LLU 20TAG11	2 pcs. 4 pcs.
Driven roller	6211LLU	2 pcs.
Drive roller	6216LLU	1 pc.
Drive roller	6310LLU	1 pc.
Up-down screw	51207	2 pcs.
Guide for feed belt	6003LLU	20 pcs.
Pressure roller	62052Z	62 pcs.

11. Electric Parts List

Mark	Name	Type	Maker
MS-1	Magnet switch	SRC3931-3	Fuji Electric
MS-2	"	SRC3631-3	Fuji Electric
MS-3	"	SRC3938-06RM	"
MS-4	"		
CT	Converter(100:1)		Gomi Electric
H1	Photo swich unit	OPE-S3A	Tateishi Electric
T1	Timer	STP-N(5 sec.)	"
T2	"	"	"
T3	"	"	"
T4	"	"	"
D.C1	Digital counter	KCB-2	Koyo Electronic
R1	Relay	SRC50-2F	Fuji Electric
R2	"	HH54P	"
R3	"	SRC50-2U	"
R4	"	HH54P	"
R5	"	SRC50-2U	"
R6	"	HH54P	"
R7	"	SRC50-2F	"
R8	"	HH54P	"
R9	"	"	"
R10 > R11	"	"	"
R12	"	"	"
R13	"	"	"
	Power module	HD-110M2	Osaki Dengyosha
	Power box(feed motor)	WKYU-04S	Fuji Electric
M1	Brake motor(feed)	MKE-2165A	"
M2	Brake motor(head up-down)	GFMN-32-60-075	Nissei Kogyo
PB1	Emergency stop button	ABN-3K01R	Izumi Electric
PL1W	Pilot lamp(white)	AHR-MW-2M	Fuji Electric
PL2R	Pilot lamp(red)	AHR-MR-2M	"
SSW-1	Power switch	AHC-P2B-20N1	"
SSW-2	Select switch	AHC-P2B-11N1	
PB-2	Push button	ABS-111B	Izumi Electric
C.S	Cam switch	RC310-1MCRB	Fuji Electric
	Ampere meter	J-60 p	Gomi Electric
	Rotary swich	F-2210	Alps Electric

Mark	Name	Type	Maker
	Rotary switch knob	K-3061	Alps Electric
P.W1	Proximity Switch	SHD12/12	Sam Taku
F	Fuse(3A)	[illegible]	
	Fuse holder	F-10	Kimjin
	Foot switch	SF-1	Kokusai Dengyo
	Diode(100mA)	IS-2076	Hitachi
	Print plate		
T 5	Timer	DTS 1 sec.	Tateishi
R14	Relay	HH54P	Fuji
R15	"	G2A	Tateishi
R16	"	HH54P	Fuji
R17	"	"	"
	Digital counter	H7A-T4M	Tateishi

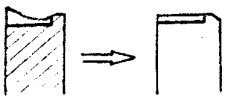
12. Repair and Adjustment

12-1 Bad Feeding and

Condition	Cause	Trouble shooting
A) Stop of the motor	1. The thermal relay is acting (ref. 8-1-6). The red thermal lamp is lighted.	• Push the thermal relay reset button.
	2. The fuse is blown(ref. 8-1-1). The power lamp is off though the electric power is on.	• Exchange the fuse with new one(3A).
	3. The motor roars owing to single phase operation.	• Turn the power source off and check the wiring.
	4. The motor roars owing to over- loaded.	• Reduce the slicing load.
B) Slip of the belt	1. The workpiece slips on the feed belt. (Black traces are on the workpiece.)	• Tense the feed belt. Add the pressure. Reduce the slicing load.
	2. The drive roller slip inside the feed belt.	• Tense the feed belt. Reduce the slicing load.
	3. The motor rotates but the reduction gear does not act.	• Tense the V-belt.
	4. The motor and the reduction gear act but the drive roller does not rotate.	• Check the chain coupling.
C) Head cushion	1. The head hardly cushions. (The feed belt is too high.)	• Enlarge the pressure to the workpiece.
	2. The head cushions excessively. (The feed belt is too low.)	• Reduce the pressure to the workpiece.
D) Cushion of the head spring (ref. 8-4)	1. The whole weight of the head falls on the spring because of over-tightening the adjusting screw.	Loosen the adjusting screw, reducing the head weight.
E) Cushion of the pressure rollers spring (ref. 8-3)	The pressure rollers slip because the adjusting bolt is not tightened enough.	Tighten the adjusting bolt and intensify the cushion of the pressure rollers.
F) Head traverse	The head does not traverse well.	Clean the columns and lubricate them.
G) Feed belt	1. The belt is likely to slip because its surface is degenerated and hardened.	• Wipe the surface with a thinner. Grind the surface with a sand paper.
	2. The feed belt is not adjusted flat.	• Adjust the belt to be flat.
	3. The friction of the belt becomes smaller because of exhaustion of the belt.	• Sand the surface of the belt. Exchange the belt.

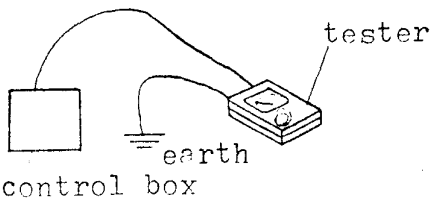
H) Troubles with the knife or with setting the knife	1. The blade has "burrs"	Grind it again. Exchange the knife.
	2. The blade is chipped.	Grind it again. Exchange the knife.
	3. The gap between the blade and the nose bar is too small.	Adjust the gap according to the thickness and the quality of the workpiece. (The thicker, the wider.)
I) Inferior workpiece	1. The workpiece has curves or distortions. 2. The workpiece has knots.	Exchange with a superior workpiece.
J) Troubles with electric parts.	Errors in detecting lever. (When the tip of workpiece touches the detecting lever, brake works and the workpiece returns at hand.)	Adjust the height of detecting lever. Check the wiring of limit-switch(LS4)

12-2 Inferior Product

Condition	Cause	Trouble shooting
A) The thickness of the product is not even	1. The pressure of the head is irregular.	The thickness of workpiece is not even Be careful to get proper pressure. Reset the dial when the product is too thick.(ref. 8-1-5)
	2. The pressure rollers cushion excessively.	Loosen the adjusting bolt of the pressure rollers and weaken the cushion of them.
B) The left & the right parts of the product are diffrent in thickness	In case of thick slicing (3.5-4.0mm) of narrow workpiece(30-40mm) using extra-nose bar(ref. right fig.) for thick slicing	Adjust the knife projection evenly. Replace with the standard nose bar. 
C) The front and rear parts of the product are different in thickness.	*The front part is usually thicker than the rear part.	Weaken the head cushion. (Raise the head) Weaken the head spring cushion. (Tighten the adjusting screw. ref. 8-4)
D) The product is thicker than the setting on the dial.	1. "0" mark of scale for table up-down is not coincide with knife edge.	The indicator and scale are to be coincided.
	2. There is a mistake in setting the handle for head up-down movement to "0".	Loosen the bolt and reset graduation to "0".
	3. Backlash in table up-down.	When adjust the table, lower it more than desired values. Then raise it up to the set values.
	4. The knife is not suitable for the workpiece. This occurs especially in case of thick slicing of soft-wood.	Choose the suitable knife for the quality and thickness of the workpiece. Raise the front table a little.
E) The product has cracks.	1. The edge of the knife is chipped. 2. The blade has "burr". 3. Waste wood or resin is stuck to blade.	Exchange or grind the knife. Remove the dust and sand from the workpiece. Remove them from the knife.
F) Interlocked grain(against grain)	1. The workpiece is too dry. 2. The pre-treatment is unsatisfactory.	Treat the workpiece enough in advance of the slicing.
	3. The knife is not suitable for the workpiece.	Choose the proper knife.
	4. Poor knife setting	Choose proper knife slant angle Adjust the gap between knife and nose bar.

12-3 Troubles with the electric system

Condition	Cause	Trouble shooting
A) The work-piece is not remove when "Auto. Return Feed"	Bad setting of the timer.	Turn the timer(T2) to the right and change the time. (The graduation of the timer T3 should be smaller than that of the timer T2.)
	2. Error in limit switch(LS4)	Ref. 12-1,J.
B) The work-piece is removed when "Auto.Return Feed-Forward and Return"	1. The brake does not act. (The motor stops slowly and begins to reverse after the set time on the timer T1.)	Check the wiring. Check the fuse. Check the voltage(DC24V)
	2. Limit switch(LS4) does not act.(The motor remains rotating.)	Check the height of limit switch. Check the wiring of limit switch.
C) The motor rotates only in one direc-tion.	1. The lead wire is too fine or too long.(The fine lead wire is apt to cause incorr-ect thickness control.)	Use the lead wire of more than 14mm² Arrange to be able to use shorter lead wire.
	2. The machine acts wrongly when the motor returns to the original rotation.	The graduation of the timer T2 is larger than that of timer T3.
D) The work-piece returns and is re-moved when "Forward and Return."	1. The brake does not act. (The motor stops slowly and begins to rotate after the seconds set on T3.)	Check the wiring. Check the brake voltage(DC24V) Check the fuse.
	2. Limit switch does not act. (Motor rotates in reverse)	Check the height of limit switch. Check the wiring of limit switch.
	3. Motor stops after work-piece is removed, then after T3 it rotates in reverse.	The graduation of the timer T4 is not proper. Set the timer(T4) shorter.
E) Thickness control does not act at all.	1. The motor for the head up-down movement does not work.	Check the wiring(incl. brake)
	2. Limit switch(LS4) does not work.	Check the position of limit switch.and wiring.
	3. The machine works properly when "Auto" operation, but it does not work in case of ATC one action of foot switch	Check the wiring. Exchange the foot switch.
	4. Picking up noise in the power line.	Provide the earth.



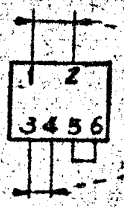
F) Thickness control does not act in case of particular thickness.	1. The connection of the rotary switch (The dial for ATC) is detached. 2. The wiring on the back of the terminal holder furnished with cycle counter is disconnected. 3. Poor diode.	Take the switch panel off and solder the connection. Take the wiring off and solder the disconnected part. Exchange the diode.
G) Thicker slicing than the setting on the dial. (Tolerance is ±0.1mm)	1. The workpiece is sliced 2 - 4 mm thicker. (The brake does not act.) 2. The brake does not act well. 3. The workpiece is always sliced 0.2-0.3mm thicker than the setting on the dial.	• Check the wiring. Adjust the brake clearance. (ref.8-8) Exchange the brake. Check the brake voltage. (DC90V) Cool the brake. • Adjust the brake clearance. Check the power source voltage. Cool the brake. • Set the dial reducing the extra thickness.
H) The workpiece is sliced thinner than the setting on the dial.	1. Picking up noise during the operation. 2. Working "too thick" (ref. 8-1-5 & 8-7)	• Provide the earth. • Check the photo switch. (amplifier, wiring, sender & receiver)
I) The head descends but does not stop. (It stops when the workpiece is held down because of the acting of LSW3.)	1. The red lamp of the cycle counter remains on when the head is moved up and down. 2. There is a trouble with the relay to check the completion of thickness control. 3. Troubles in proximity switch. (Input lamp of cycle counter is not lighted. Check this by moving the head up-down.) 4. Bad connection of the socket of cycle counter. 5. Co of rotary switch is disconnected.	Exchange the cycle counter. Exchange the relay R6. • Exchange the proximity switch. Solder the connection.

12-4 Other trouble likely to happen

Condition	Cause	Trouble shooting
A) The feed belt is worn out.	1. The feed belt is worn out partially. 2. The out-side of the feed belt is worn out easily. 3. The in-side of the feed belt is worn out easily.	Supply the workpiece evenly Change the feeding side of the belt. Tense the belt. Increase the pressure of belt. Exchange the inferior belt. Tense the belt. Hardness of the belt is poor.
B) The front table is not on the same level as the blade when the handle is set to the graduation"0".		Loosen the wing bolt and adjust the graduation of the handle.
C) In case of "Forward Only", the thickness control works before the workpiece does not pass through the blade.		Check the limit switch.
D) In case of "Auto. Return to repeat", the workpiece is not returned.		Adjust timer(T4). Too much pressure. Lack of pressure.

13. Measurement of the Source Voltage

(1) Brake for the head up-down movement

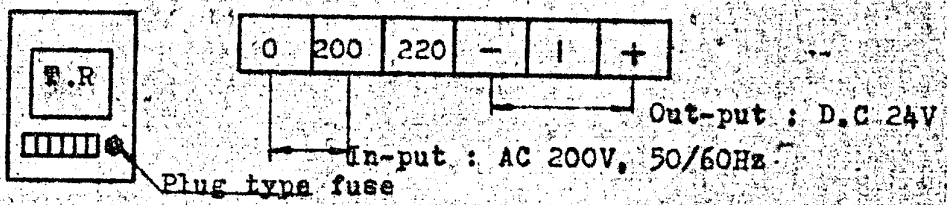


Input : AC 200/220V, 50/60 Hz.

Output : DC 180/90V

When you measure the output voltage, connect the wire No.5 to No. 6, and confirm that each output from No.3 and No. 4 is DC 90V. (It may go up to DC 180V momentarily).

(2) Brake for feed



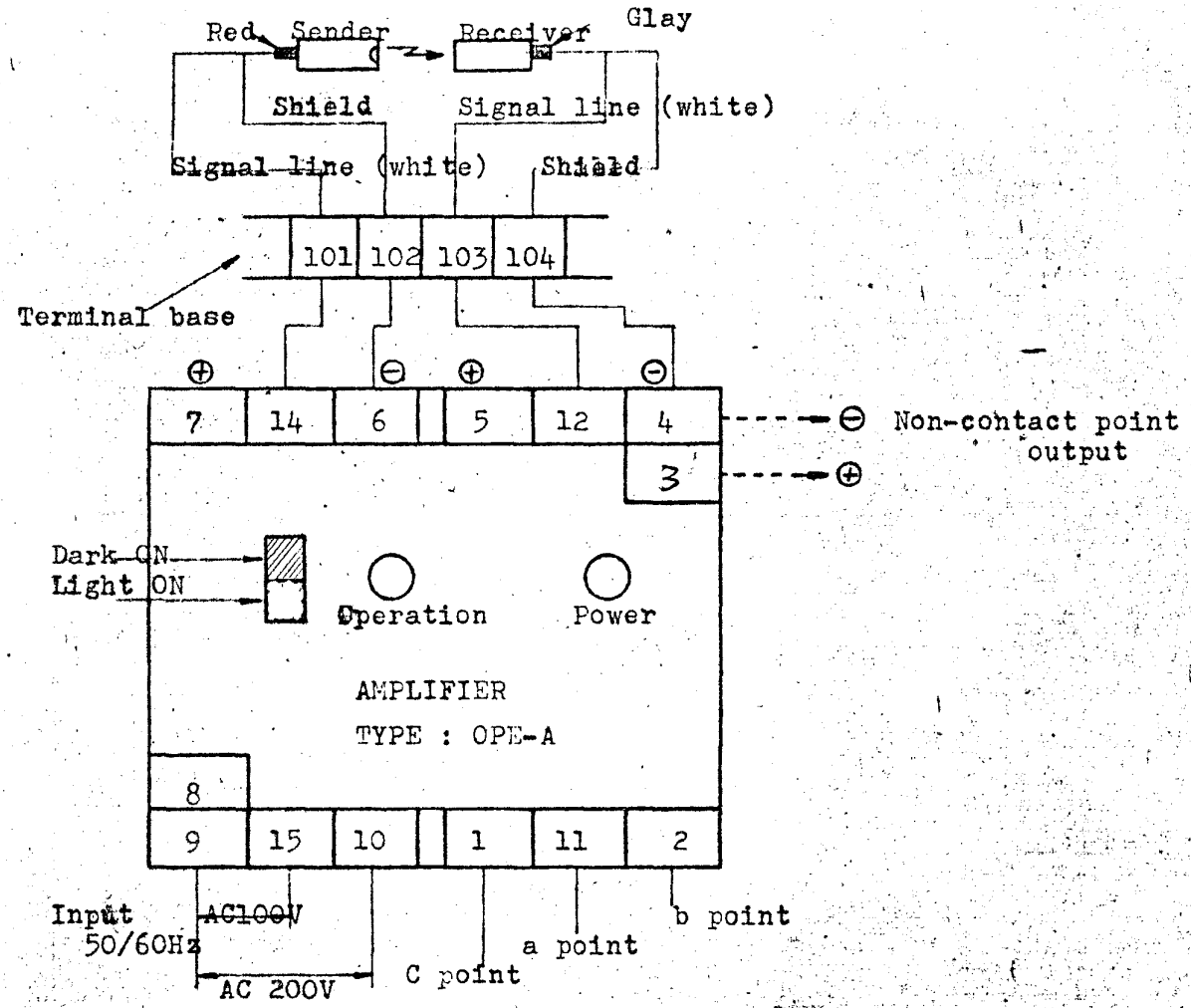
The rated output is DC 24V.
If the fuse blows, its central pink part comes out.

(3) Amplifier for the photo-electric switch

1.) Maintenance of photo switch
Be careful that dust or oil are not sticked on the surface of the lens. Clean away the dust or oil with soft cloth when it is sticked.(When doing this, be sure to turn off the power source switch.)

2.) Inspection of photo-electric switch and Amplifier

Open the door located rear side of the base and check the photo-electric switch.



The change-over switch is set to DARK ON (the upper side) as the above. When the power source is on, the power lamp is lighted. In case the OPERATION lamp is also on, its reasons are as follows:

i) There is a workpiece before the photo electric switch, which shades the beam.

ii) The optical axes of the two photo electric switched are not in alignment.

iii) Troubles with the photo electric switch, namely arise from the snapping and short-circuiting of the singial line or the shielding wire.

(3) How to adjust the optical axes.

The adjustment of optical axes of photo electric switch is very important compornent in order to operate correctry both the photo electric switch and the machine. The more adjust the optical axes, the more endure against the dust and voltage fluctuation.

Adjust the axes of photo electric switch in the following way.

i) Adjust the height and direction of the sender & receiver to the proper position with eye measurement.

ii) Set the terminal No. 7 (or No. 5) to plus and the terminal No. 6 (or No.4) to minus. (Set the scale of tester to DC 10V range)

iii) Adjust the receiver in the direction of up and down and right and left, then fixed the position when the amplifier of tester became maximum. The voltage of tester is about 5.5V - 7.5V. Incase the tester dose not vibrate during the adjustment of receiver, adjust the sender again. (5.5V - 7.5V is desirable even if more than the half part of the lens is shaded.)

iv) When the surface of sender or the surface of receiver is shaded gradually , the index of the tester descend gradually and the OPERATION lamp of amplifier is turn off at approximately 1.8V.

v) When the lens is shaded gradually, the OPERATION lamp is turn off before the index tester dose not change, the following causes are thinkable.

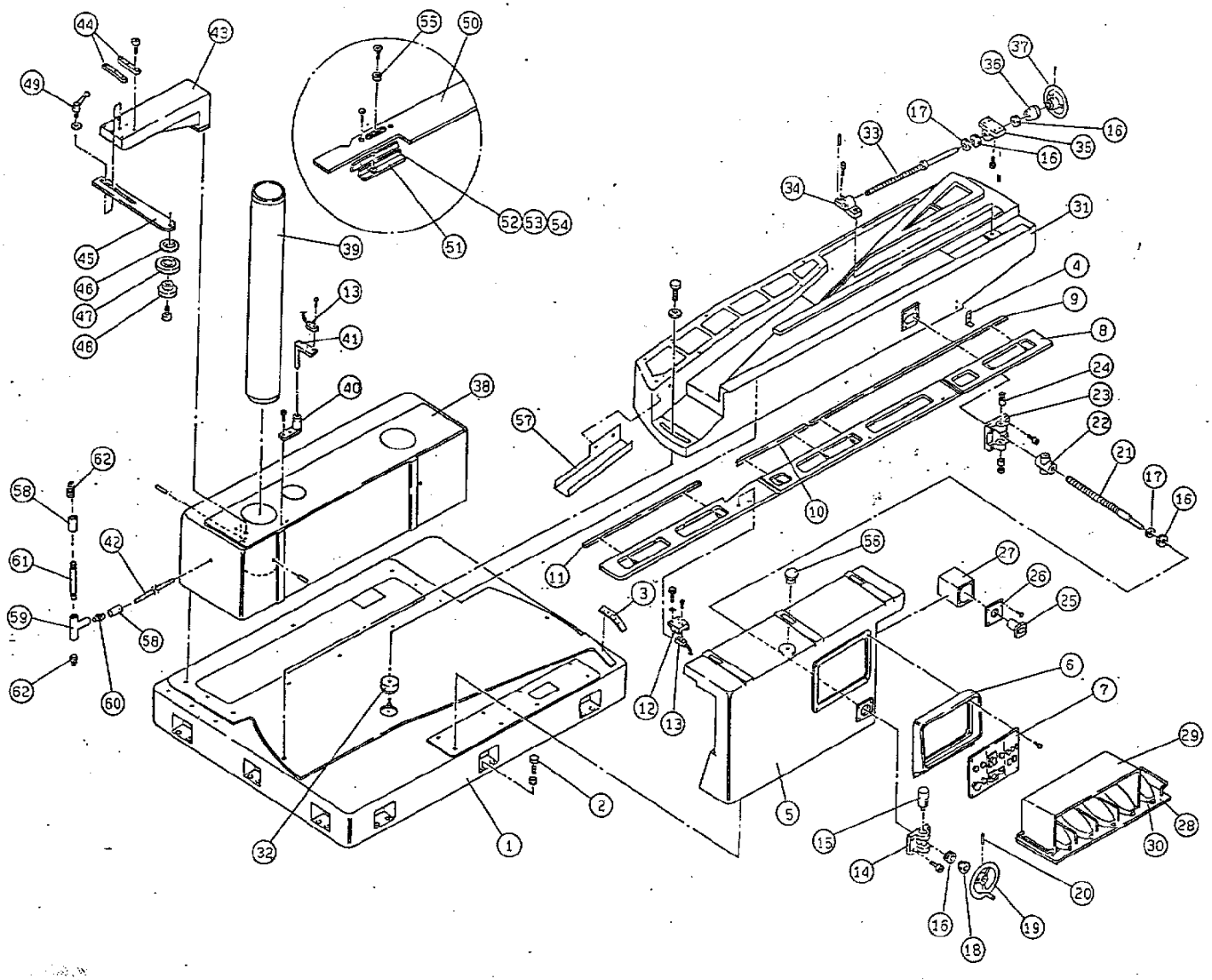
a. The wiring became loose. ; Check the wiring
b. The lead wire is likely to snap. ;

PARTS LIST

SLICER SL-250V

CRAFTONICS MARUNAKA

CONTENTS (SL-250V)



C	B	A	NO.	PARTS DRAWING NO.	PARTS	
1	X	X	61		PIPE	パイプ 3/8
2	X	X	62		PLUG	プラグ 3/8

C	B	A	NO.	PARTS DRAWING NO.	PARTS	
1	X	X	60		NIPPLE	ニップル3/8
1	X	X	59		T	T 3/8
2	X	X	58		SOCKET	ソケット 3/8
1	1	X	57	322138	1 DRAIN	ドレーンC
1	1	1	56	401386	2 CAP	ウメビン
X	X	4	55	403477	1 WASHER	サガネ
X	X	1	54	406607	1 GUIDE	ステンジョウキ B
X	X	1	53	406604	2 GUIDE	ステンジョウキ A
X	X	1	52	406604	1 GUIDE	ステンジョウキ A
X	X	1	51	300887	1 GUIDE	ジョウキ
X	X	1	50	200375	1 GUIDE	ジョウキ
1	1	1	49		CLAMP LEVER	クランプレバー
1	1	1	48	421946	1 BUSH	ガイドローラジク
1	1	1	47		BEARING	886210LLU
1	1	1	46	405211	1 WASHER	サガネ
1	1	1	45	429489	1 PLATE	ガイドローラワク
2	2	2	44	427412	1 GUIDE	ガイド
1	1	1	43	306918	1 BRACKET	ローラダイ
1	1	1	42	403488	1 PIPE	3/8パイプ
1	1	1	41	401785	1 BASE	コウデンSWダイ
1	1	1	40	401784	1 HOLDER	コウデンSWサヤエ
2	2	2	39	300311	2 COLUMN	コラム
1	1	1	38	100411	1 COLUMN SUPPORT	コラムサポート
1	1	1	37	400980	1 HANDLE	ハンドル
1	1	1	36	400990	1 BUSH	カンザ
1	1	1	35	400950	1 HOLDER	ジクウケ
1	1	1	34	400951	1 FEMALE SCREW	メネジ
1	1	1	33	400979	1 MALE SCREW	オネジ
1	1	1	32	400996	1 CENTER AXIS	カイテンチュウシンジク
1	1	1	31	100088	1 UPPER FRAME	ジョウブベース
5	5	5	30		FOOT SW	フットSW, SF-1(コアティ
1	1	1	29	300403	2 COVER	フットSWカバー
1	1	1	28	300403	1 BASE	フットSWトリツケバン
1	1	1	27	302808	1 BOX	カウンタボックス
1	1	1	26	401910	1 COVER	カウンタカバー
1	1	1	25		PRESET COUNTER	プリセットカウンタ KTAK-201(オムロン)
2	2	2	24	400997	1 PIN	カナグジク
1	1	1	23	300304	1 HOLDER	シジカナグB
1	1	1	22	400949	1 FEMALE SCREW	メネジ
1	1	1	21	300318	1 MALE SCREW	オネジ
1	1	1	20		TAPER PIN	φ6テーパピン
1	1	1	19	400980	2 HANDLE	ハンドル
1	1	1	18	401173	1 BUSH	カンザ
2	2	2	17	400989	1 COLLAR	カラー
4	4	4	16		BEARING	8851104
1	1	1	15	400963	1 AXIS	センカイジクウケ
1	1	1	14	300303	1 HOLDER	シジカナグA
1	1	1	13		PHOTO SWITCH	フォトスイッチ PM-L25(オムロン)
1	1	1	12	401882	1 BASE	コウデンスイッチダイ
1	1	X	11	430982	1 GUIDE	ステンジョウキ C
1	1	X	10	430981	1 GUIDE	ステンジョウキ B
1	1	X	9	308781	1 GUIDE	ステンジョウキ A
1	1	X	8	203525	1 GUIDE	ジョウキ
1	1	1	7	202007	1 SWITCH PANEL	スイッチパネル
1	1	1	6	300402	1 BASE	スイッチパネルダイ
1	1	1	5	100090	1 SIDE FRAME	サイドフレーム
1	1	1	4	401353	1 INDICATOR	シシン
1	1	1	3	300398	1 ANGLE SCALE	カクドメモリ
12	12	12	2		SCREW	BT M20x70
1	1	1	1	100089	1 BASE	ベース

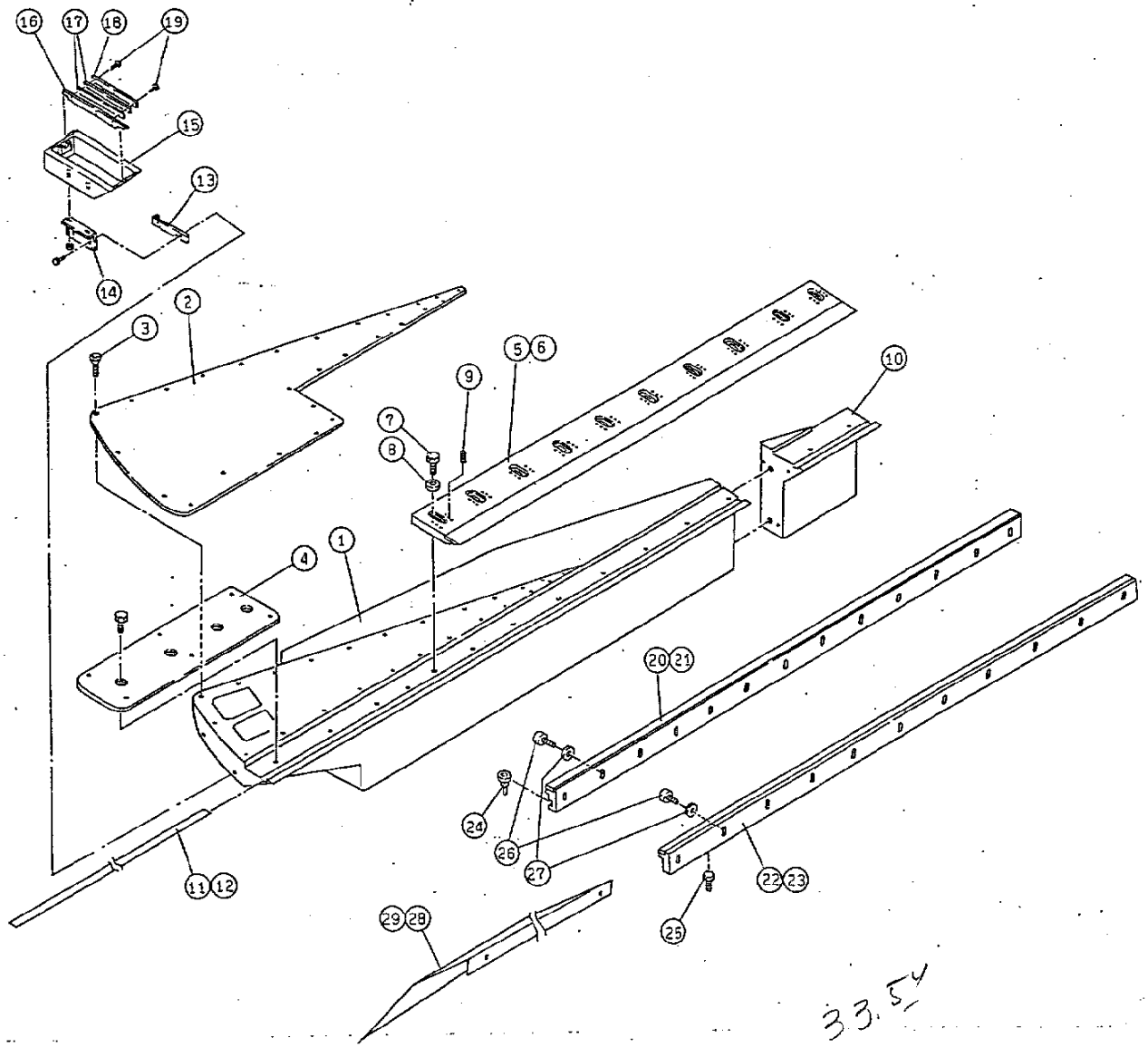
C	B	A	NO.	PARTS DRAWING NO.	PARTS

NO. 1261~1264~
NO. 1265~1280
NO. 1001~1235
MACHINE NO.

MARUNAKA TEKKOSHO INC.
㈱丸仲鉄工所

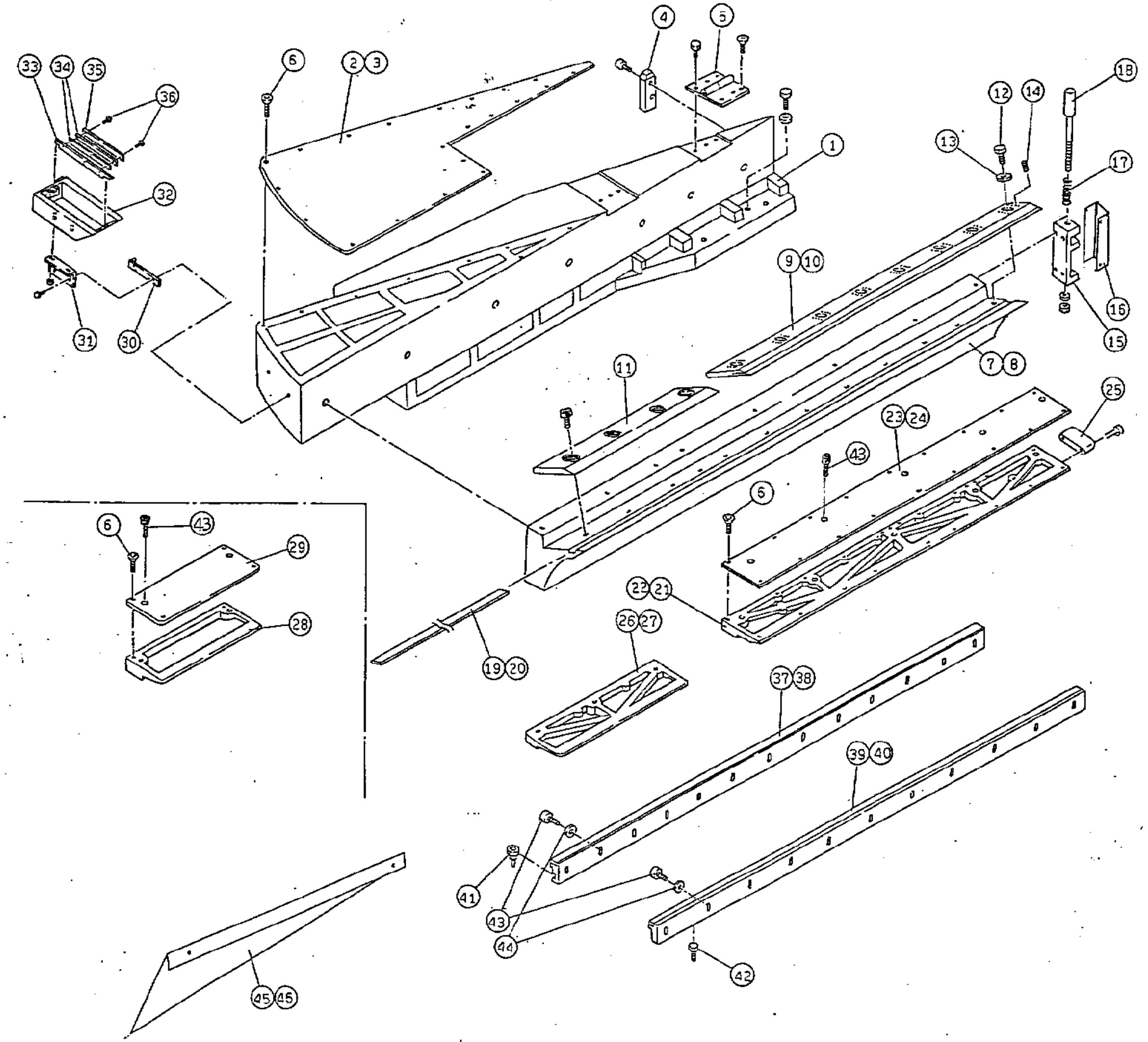
94. 5. 10
S. IKEDA

TYPE	DRAWING NAME	DRAWING NO.
SL-250V	BASE ASS.	205377



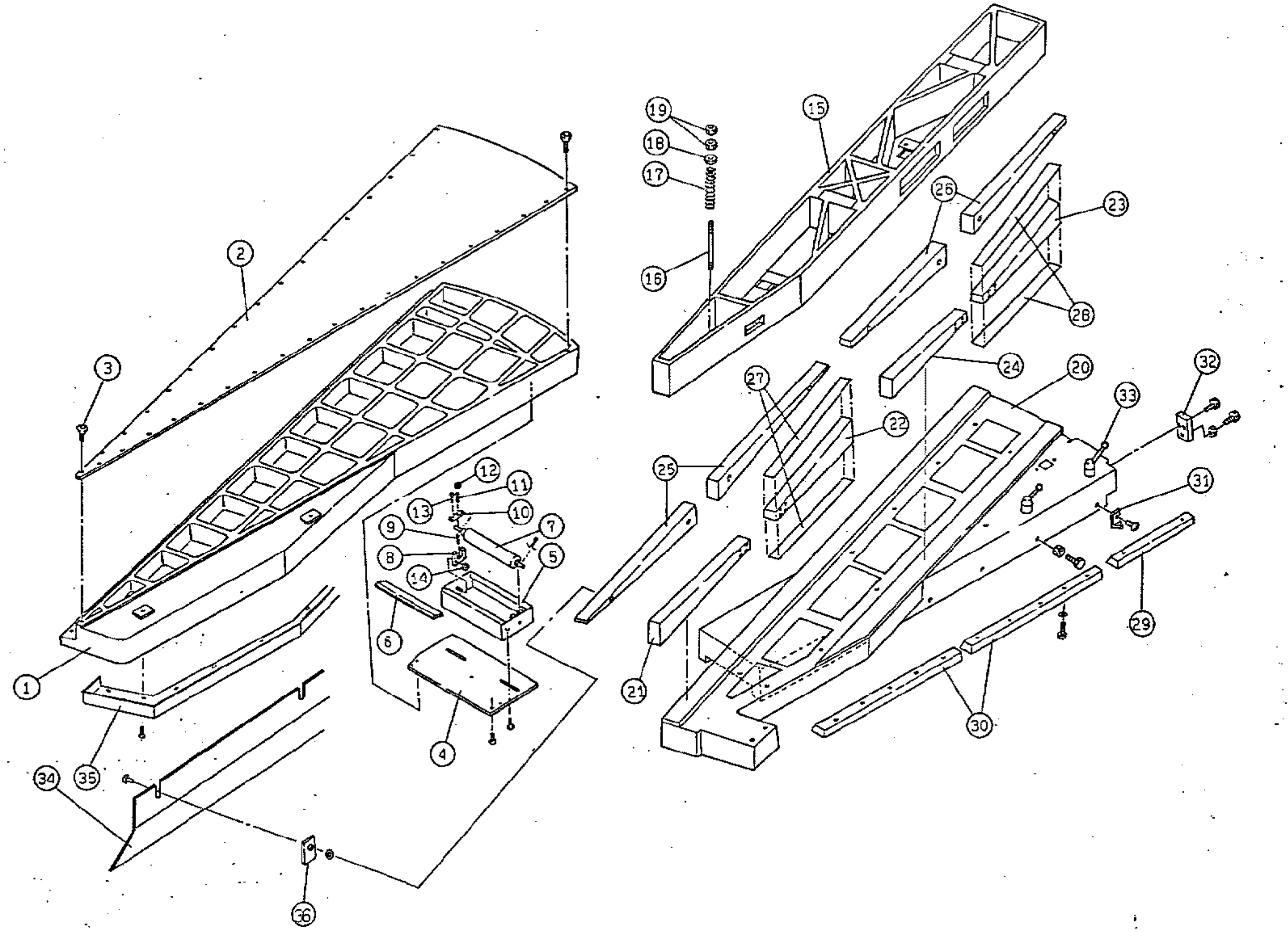
					60				
					59				
					58				
					57				
					56				
					55				
					54				
					53				
					52				
					51				
					50				
					49				
					48				
					47				
					46				
					45				
					44				
					43				
					42				
					41				
					40				
					39				
					38				
					37				
					36				
					35				
					34				
					33				
					32				
					31				
					30				
	1	1		⊠	29	300404	:3	COVER	カバー(ハグチ)
	⊠	⊠		1	1	28	300404	:2	COVER	カバー(ハグチ)
	1	1	1	1	9	9	27	400968	:1	WASHER	ヒラザガネ
	1	1	1	1	9	9	26			SCREW	CB M12x35(ステンレス)
	2	1	2	1	2	1	25			SCREW	BT M12x35
	1	1	⊠		9	⊠	24	408536	:1	BOLT	ハグチクミアゲボルト
	⊠	1		⊠	⊠		23	300524	:	NOSE BAR	ハグチ L-1500
	⊠	⊠		⊠	1		22	300312	:	NOSE BAR	ハグチ L-1200
	1	⊠		⊠	⊠		21	307954	:	NOSE BAR	ハグチ L-1500
	⊠	⊠		1	⊠		20	307966	:	NOSE BAR	ハグチ L-1200
	3	3		3	3		19			SCREW	BT M6x25(ステンレス)
	1	1		1	1		18	401908	:1	PLATE	フェルトアテガネ(2)
	2	2		2	2		17			FELT	フェルト 91x100x150
	1	1		1	1		16	300687	:1	PLATE	フェルトアテガネ(1)
	1	1		1	1		15	200213	:1	WATER TANK	ミズタンク(ワシロ)
	1	1		1	1		14	300591	:1	HOLDER	ミズタンクリヨウカダイ
	1	1		1	1		13	300592	:1	PLATE	ミズタンクウケ
	1	1		⊠	⊠		12	431651	:3	BASE PLATE	ハモノシキイタ
	⊠	⊠		1	1		11	431651	:2	BASE PLATE	ハモノシキイタ
	1	1		⊠	⊠		10	200165	:1	SUB TABLE	キジョウテーブル
	16	16		16	16		9			SCREW	HS(平先) M8x16
	10	10		8	8		8	401209	:1	WASHER	φ14ヒラザガネ
	10	10		8	8		7	401208	:1	BOLT	M12チボルト
	1	1		⊠	⊠		6	300525	:	KNIFE	ハモノ L-1500
	⊠	⊠		1	1		5	300296	:	KNIFE	ハモノ L-1200
	1	1		1	1		4	301023	:1	SPACER	スペーサ
	24	24		24	24		3			SCREW	サラBT M6x12
	1	1		1	1		2	302409	:	STAINLESS PLATE	ステンイタ
	1	1		1	1		1	100084	:1	REAR TABLE	リアテーブル
	B	A		B	A		NO.	PARTS DRAWING NO.		PARTS	

KNIFE L-1500	KNIFE L-1200	MACHINE NO.	MARUNAKA TEKKOSHO INC. 丸仲鐵工所		
No. 1231~ No. 1901-1234	No. 1036~ No. 1002-1033		TYPE	DRAWING NAME	DRAWING NO.
			SL-250V	REAR TABLE ASS. (BACK KNIFE)	205378



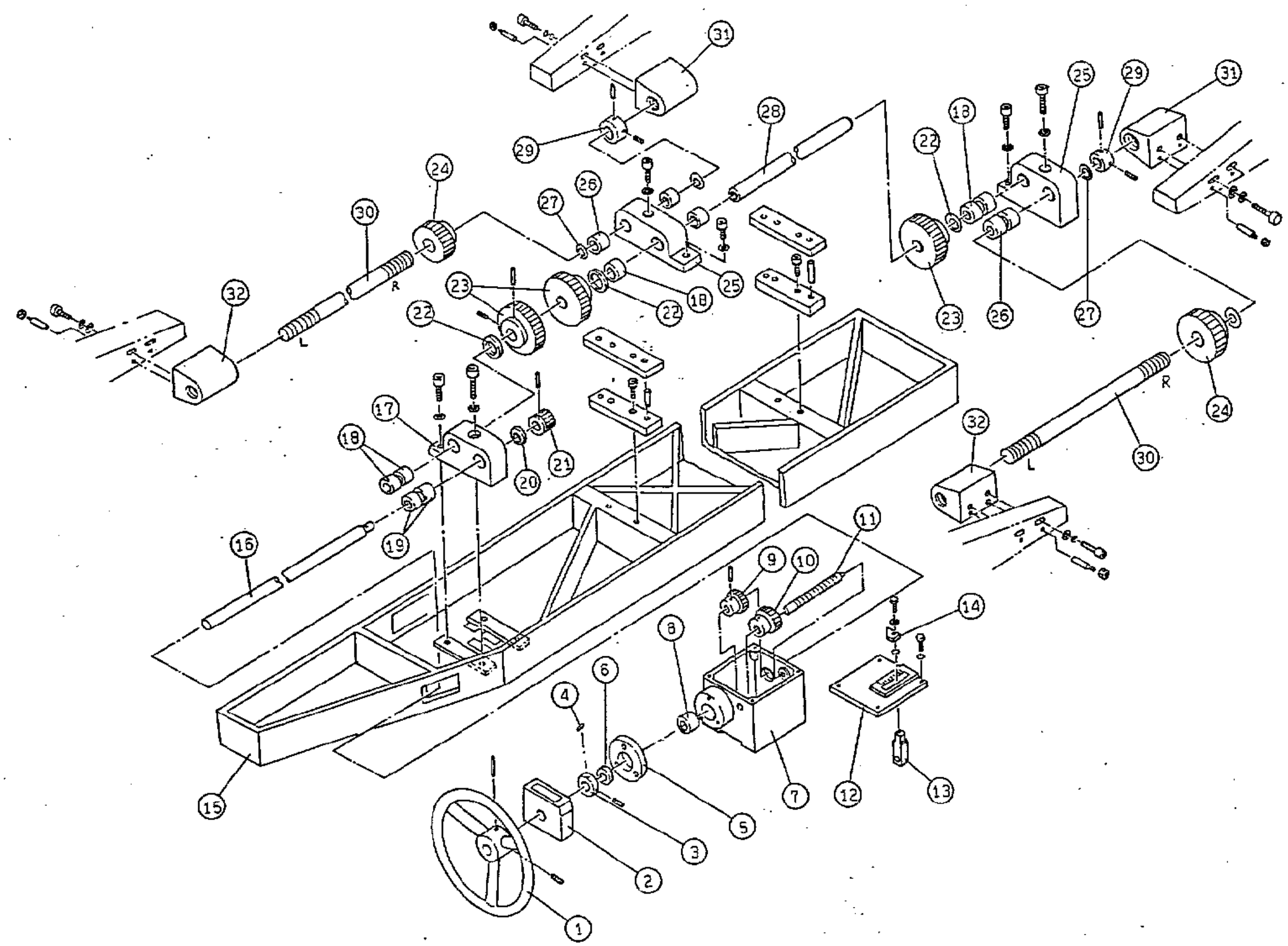
KNIFE L-1500 B (NO.1244~)	KNIFE L-1500 A (NO.1082~1170)	KNIFE L-1200 B (NO.1237~)	KNIFE L-1200 A (NO.1069~1035)	NO.	PARTS DRAWING NO.		PARTS	
				60				
				59				
				58				
				57				
				56				
				55				
				54				
				53				
				52				
				51				
				50				
				49				
				48				
				47				
1	1	X	X	46	301189	2	COVER	ｶﾊﾞｰ(ﾊｸﾞﾃ)
X	X	1	1	45	301189	1	COVER	ｶﾊﾞｰ(ﾊｸﾞﾃ)
11	11	9	9	44	400968	1	WASHER	ﾋﾗｻﾞｶﾞﾈ
11	11	9	9	43			SCREW	CB M12x35(ｽﾃﾝﾚｽ)
21	21	21	21	42			SCREW	BT M12X35
11	X	9	X	41	408536	1	BOLT	ﾊｸﾞﾁｻｹｱｹﾞﾎﾞﾙﾄ
X	1	X	X	40	300524		NOSE BAR	ﾊｸﾞﾁ L-1500
X	X	X	1	39	300312		NOSE BAR	ﾊｸﾞﾁ L-1200
1	X	X	X	38	307954		NOSE BAR	ﾊｸﾞﾁ L-1500
X	X	1	X	37	307966		NOSE BAR	ﾊｸﾞﾁ L-1200
3	3	3	3	36			SCREW	BT M5x25(ｽﾃﾝﾚｽ)
1	1	1	1	35	401908	1	PLATE	ﾌｪﾙﾄｱﾃｶﾞﾈ(2)
2	2	2	2	34			FELT	ﾌｪﾙﾄ 9x100x350
1	1	1	1	33	300687	1	PLATE	ﾌｪﾙﾄｱﾃｶﾞﾈ(1)
1	1	1	1	32	200213	1	WATER TANK	ﾐｽﾞﾀﾝｸ(ｸﾐ)
1	1	1	1	31	300591	1	HOLDER	ﾐｽﾞﾀﾝｸﾄﾘﾂｹﾀﾞｲ
1	1	1	1	30	300592	1	PLATE	ﾐｽﾞﾀﾝｸｳｹ
1	1	X	X	29	301183	1	PLATE	ｽﾃﾝｲﾀ(4)
1	1	X	X	28	301182	1	SPACER	ｽﾍﾟｰｻ(4)
(1)	(1)	(1)	(1)	27	303028	1	SPACER	ｽﾍﾟｰｻ(2) 23ﾐﾘ
(1)	(1)	(1)	(1)	26	301046	1	SPACER	ｽﾍﾟｰｻ(2) 18ﾐﾘ
1	1	1	1	25	407091	1	PLATE	ｳｹｲﾀ
(1)	(1)	(1)	(1)	24	200966	1	STAINLESS PLATE	ｽﾃﾝﾚｽﾊﾞﾝ(2) 23ﾐﾘ
(1)	(1)	(1)	(1)	23	200458	1	STAINLESS PLATE	ｽﾃﾝﾚｽﾊﾞﾝ(2) 18ﾐﾘ
(1)	(1)	(1)	(1)	22	200829	1	SPACER	ｽﾍﾟｰｻ(1) 23ﾐﾘ
(1)	(1)	(1)	(1)	21	200450	1	SPACER	ｽﾍﾟｰｻ(1) 18ﾐﾘ
1	1	X	X	20	431651	5	BASE PLATE	ﾊﾓﾉｼｷｲﾀ
X	X	1	1	19	431651	4	BASE PLATE	ﾊﾓﾉｼｷｲﾀ
1	1	1	1	18	407390	1	AXIS	ｵｼｼﾞｸ
1	1	1	1	17	407090	1	SPRING	ｱｯｼｭｸｺｲﾙﾊﾞﾈ
1	1	1	1	16	407395	1	COVER	ｻｻﾞｰﾄｶﾊﾞｰ
1	1	1	1	15	407891	1	SUPPORT	ｵｼｼﾞｸｻﾎﾟｰﾄ
20	20	16	16	14			SCREW	HS(ﾃﾓ) M8x16
10	10	8	8	13	401209	1	WASHER	φ14ﾋﾗｻﾞｶﾞﾈ
10	10	8	8	12	401208	1	BOLT	M12ﾎﾞﾙﾄ
1	1	1	1	11	301047		SPACER	ｽﾍﾟｰｻ(3)
1	1	X	X	10	200668		KNIFE	ﾊﾓﾉ L-1500
X	X	1	1	9	200667		KNIFE	ﾊﾓﾉ L-1200
1	1	X	X	8	100506		BASE	ﾊﾓﾉﾀﾞｲ
X	X	1	1	7	101700		BASE	ﾊﾓﾉﾀﾞｲ
24	24	20	20	6			SCREW	ｻﾗBT M6x12(ｽﾃﾝﾚｽ)
2	2	2	2	5	407889	1	HINGE	ﾁｮｳﾊﾞﾝ
1	1	1	1	4	407092	1	STOP POST	ｽﾄｯﾌﾟﾎﾟｽﾄ
(1)	(1)	(1)	(1)	3	303027	1	STAINLESS PLATE	ﾘｱｽﾃﾝﾚｽｲﾀ(23ﾐﾘ)
(1)	(1)	(1)	(1)	2	304168	1	STAINLESS PLATE	ﾘｱｽﾃﾝﾚｽｲﾀ(18ﾐﾘ)
1	1	1	1	1	100344	1	REAR TABLE	ﾘｱﾃｰﾌﾞﾙ(2)

MACHINE NO.	TYPE	DRAWING NAME	DRAWING NO.
MARUNAKA TEKKOSHO INC. 株式会社 丸仲鐵工所			S TAKEDA
	SL-250V	REAR TABLE ASS. (FRONT KNIFE)	205379



B	A	NO.	PARTS DRAWING NO.		PARTS	
		60				
		59				
		58				
		57				
		56				
		55				
		54				
		53				
		52				
		51				
		50				
		49				
		48				
		47				
		46				
		45				
		44				
		43				
		42				
		41				
		40				
		39				
		38				
		37				
1	1	36	440077	1	STOPPER	ストッパ
1	X	35	322137	1	DRAIN	ドレーンB
1	X	34	322136	1	DRAIN	ドレーンA
2	2	33	400957	1	LEVER	ロッキングレバー
2	2	32	400984	1	STOPPER	ストッパプレート
1	1	31	400982	1	INDICATOR	シシン
1	1	30	400970	1	SLIDEWAY	カミソリ
2	2	29	400969	1	SLIDEWAY	カミソリ
4	4	28			RESIN SHEET	ルーロンシート [illegible]
4	4	27			RESIN SHEET	ルーロンシート [illegible]
2	2	26	300309	1	FIXED WEDGE	コテイウェッジ
2	2	25	300308	1	FIXED WEDGE	コテイウェッジ
1	1	24	300307	2	SLIDE WEDGE	イドウウェッジ
1	1	23	300307	1	SLIDE WEDGE	イドウウェッジ
1	1	22	300306	2	SLIDE WEDGE	イドウウェッジ
1	1	21	300306	1	SLIDE WEDGE	イドウウェッジ
1	1	20	100086	1	LOWER FRAME	カブフロントテーブル
6	6	19			NUT	86ナット AN-02
3	3	18	400987	1	WASHER	ヒラザガネ
3	3	17	400986	1	SPRING	スプリング
3	3	16	400985	1	SCREW	ウエコミボルト
1	1	15	100082	1	WEDGE GUIDE	シュウドウウェッジガイド
2	2	14			NUT	NT M8(ステンレス)
4	4	13			SCREW	ナベ M6x12(ステンレス)
2	2	12			NUT	NT M6(ステンレス)
2	2	11			SCREW	HS M6x12(ステンレス)
2	2	10	422766	1	STOPPER	ストッパ
2	2	9	422765	1	SPRING	スプリング
2	2	8	423016	1	HOLDER	ローラウケ
1	1	7	422344	2	PLASTIC ROLLER	プラスチックローラ
1	1	6	424242	1	GUIDE	ナガシ
1	1	5	300534	1	WATER TANK	ミズタンク
1	1	4	300535	1	PLATE	ミズタンクウケ
40	40	3			BOLT	M6x12 サラボルト
1	1	2	300396		STAINLESS PLATE	ステンレスイタ
1	1	1	203207	1	FRONT TABLE	フロントテーブル

MACHINE NO.	MARUNAKA TEKKOSHO INC. 丸仲鐵工所		
NO. 1001~1237 / NO. 1238~	TYPE	DRAWING NAME	DRAWING NO.
	SL-250V	FRONT TABLE ASS.	205380

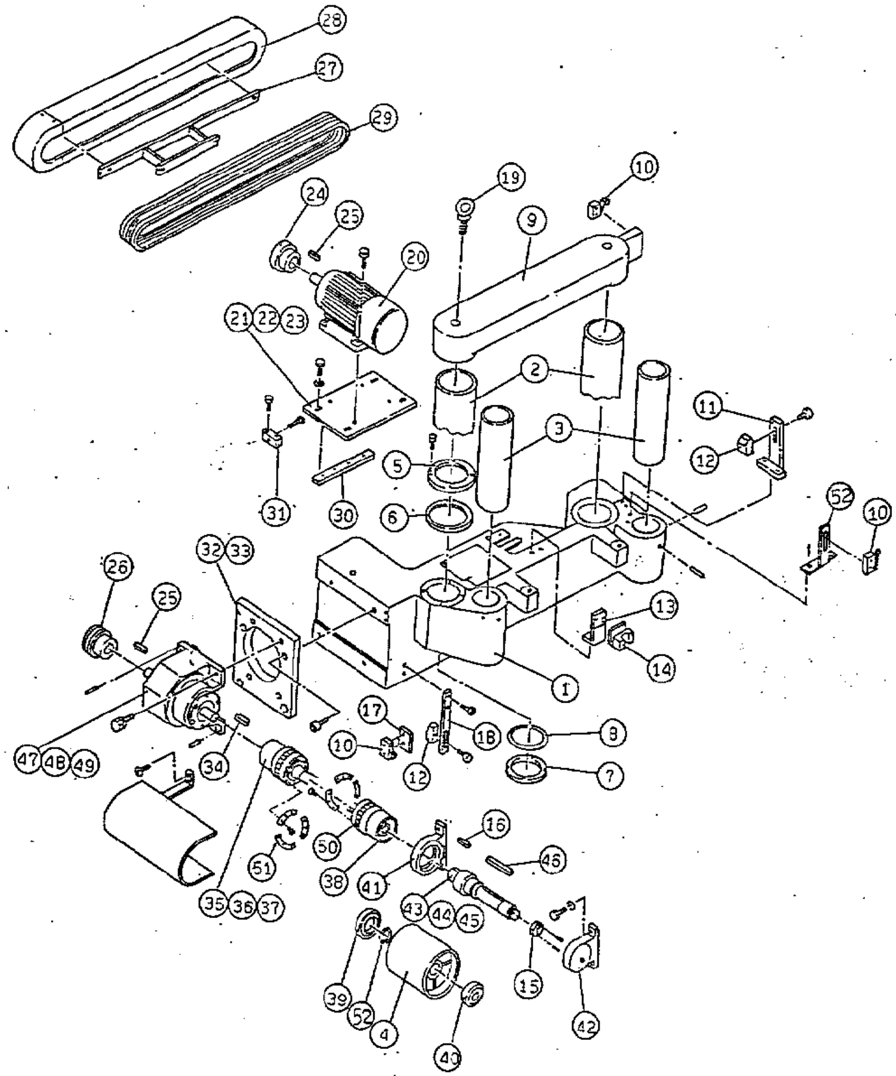


A	NO.	PARTS DRAWING NO		PARTS	
	60				
	59				
	58				
	57				
	56				
	55				
	54				
	53				
	52				
	51				
	50				
	49				
	48				
	47				
	46				
	45				
	44				
	43				
	42				
	41				
	40				
	39				
	38				
	37				
	36				
	35				
	34				
	33				
2	32	400953	2	FEMALE SCREW	ﾒﾈｼﾞ L
2	31	400953	1	FEMALE SCREW	ﾒﾈｼﾞ R
2	30	400941	1	SCREW	ﾃｰﾌﾞﾙｼﾞｮｳｺｳﾈｼﾞ
2	29	400942	1	COLLAR	ｶﾗｰ
1	28	400966	1	SPINDLE	ｼﾞｸ
4	27			OILESS	ｵｲﾚｽ 70W2515
4	26			OILESS	ｵｲﾚｽ 70B2520
2	25	400943	1	HOLDER	ｼﾞｸｳｹ
2	24	400938	1	GEAR	ﾋﾗﾊｸﾞﾙﾏ
3	23	400937	1	GEAR	ﾋﾗﾊｸﾞﾙﾏ
3	22			OILESS	ｵｲﾚｽ 70W2215
1	21	400947	1	GEAR	ﾋﾗﾊｸﾞﾙﾏ
1	20			OILESS	ｵｲﾚｽ 70W2015
2	19			OILESS	ｵｲﾚｽ 70B2020
6	18			OILESS	ｵｲﾚｽ 70B2220
1	17	400952	1	HOLDER	ｼﾞｸｳｹ
1	16	400946	1	HANDLE AXIS	ﾊﾝﾄﾞﾙｼﾞｸ
1	15	100082	1	WEDGE GUIDE	ｼｭｳﾄﾞｳｳｪｯｼﾞｶﾞｲﾄﾞ
1	14	400962	1	INDICATOR	ｼｼﾝ
1	13	400961	1		ｼｼﾝﾀﾞｲ
1	12	400967	1	COVER	ｶﾊﾞｰ
1	11	400960	1	SPINDLE	ｼﾞｮｳｺｳｽｹｰﾙｼﾞｸ
1	10	400955	1	GEAR	ﾋﾗﾊｸﾞﾙﾏB
1	9	400954	1	GEAR	ﾋﾗﾊｸﾞﾙﾏA
1	8			OILESS	ｵｲﾚｽ 70B2030
1	7	200131	1	BOX	ｼﾞｮｳｺｳｼﾞｸｳｹ
1	6	409624	1	WASHER	ｶﾝｻﾞA
1	5	409625	1	RING	ﾄﾒﾜ
1	4			KEY	ｷｰ 3x3x10
1	3	409623		BUSH	ﾌﾞｯｼｭ
1	2			DIGICOLLAR	[illegible]
1	1	400980	1	HANDLE	ﾊﾝﾄﾞﾙ

MACHINE NO.

MARUNAKA TEKKOSHO INC.
㈱丸中鐵工所

TYPE	DRAWING NAME	DRAWING NO.
SL-250V	FRONT TABLE UP-DOWN ASS.	205381

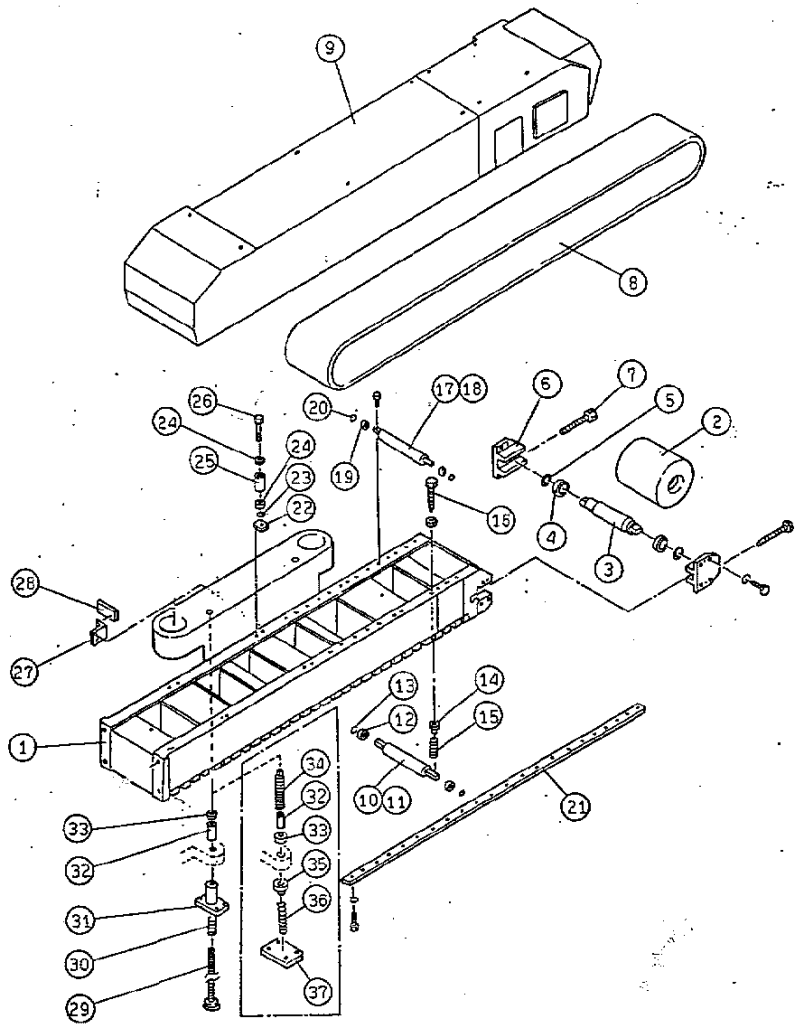


D	C	B	A	NO.	PARTS DRAWING NO.		PARTS	
				60				
				59				
				58				
				57				
				56				
				55				
				54				
1	1	1	1	53			PLATE	リミットダイ
1	1	1	1	52			RING	Cトメワ S-60
6	X	X	X	51	440063	1	ROCK PLATE	ロックプレート
1	1	1	1	50			BALL-JOINT	ボールジョイント
X	X	X	1	49			REDUCTION GEAR	ゲンソクキ(シマンド) EZ815-1/20
X	X	1	X	48			REDUCTION GEAR	ゲンソクキ(サイクロ) H5218-17
1	1	X	X	47			REDUCTION GEAR	ゲンソクキ(SEW) PG287-1/17
1	1	1	1	46			KEY	キー
X	X	X	1	45	200129	1	SPINDLE	クドウジク
X	X	1	X	44	304053	1	SPINDLE	クドウジク L-473
1	1	X	X	43	304053	1	SPINDLE	クドウジク L-433
1	1	1	1	42	300293	1	HOLDER	ジクウケB
1	1	1	1	41	300292		HOLDER	ジクウケA
1	1	1	1	40			BEARING	BB6310LLU
1	1	1	1	39			BEARING	BB6216LLU
1	1	X	X	38	421462	3	FLANGE	フランジ
1	1	X	X	37	421462	2	FLANGE	フランジ
X	X	2	X	36	421462	1	FLANGE	フランジ
X	X	X	1	35	300294	1	COUPLING	カップリング
1	1	1	1	34			KEY	キー
1	1	X	X	33	322295	1	BASE	ゲンソクキダイ
X	X	1	X	32	304052	1	BASE	ゲンソクキダイ
1	1	1	1	31	401155	1	PLATE	テンションカナグ
1	1	1	1	30	407552	1	PLATE	スライドカナグ
4	4	4	3	29			V-BELT	Vベルト 3V-1180
1	1	1	1	28	304054	1	COVER	プーリカバー
1	1	1	1	27	300324	1	HOLDER	プーリカバーササエ
1	1	1	1	26			PULLEY	ゲンソクキプーリ
1	1	1	1	25			KEY	キー
1	1	1	1	24			PULLEY	モータプーリ
X	X	X	1	23	300310	1	MOTOR BASE	モータベース
1	1	X	X	22	322296	1	MOTOR BASE	モータベース
X	X	1	X	21	304074	1	MOTOR BASE	モータベース
1	1	1	1	20			MOTOR	モータ 11KW 4P ON ブレーキ付
3	3	3	3	19			EYE BOLT	アイBT M48
1	1	1	1	18	401175	1	PLATE	トリツケダイ
1	1	1	1	17	401174	1	PLATE	トリツケダイ
1	1	1	1	16			KEY	キー
2	2	2	2	15	400917	1	NUT	M64 ロックナット
1	1	1	1	14			PHOTO SW	コウデンSW DPE-53 カナグ付
1	1	1	1	13	401133		BASE	トリツケダイ
2	2	2	2	12	401168	1	DOG	ドッグ
1	1	1	1	11	401169	1	DOG BASE	ドッグトリツケダイ
3	3	3	3	10			LIMIT SW	リミットSW D4MC-2020
1	1	1	1	9	300302	1	BRIDGE	ブリッジ
2	2	2	2	8			RUBBER RING	スクレーパ SDR-180
2	2	2	2	7	403505	1	COVER	カバー
2	2	2	2	6			FELT	フェルト 10x10x600
2	2	2	2	5	401794	1	COVER	カバー
1	1	1	1	4	300288	1	DRIVE ROLL	クドウロール
2	2	2	2	3	300299	1	COLUMN B	コラムB
2	2	2	2	2	300311	2	COLUMN A	コラムA
1	1	1	1	1	100080	1	HEAD SUPPORT	ヘッドサポート

MACHINE NO.: D = NO. 1261~ ; C = NO. 1254~1260 ; B = NO. 1152~1253 ; A = NO. 1001~1151

MARUNAKA TEKKOSHO INC.
㈱丸仲鐵工所

TYPE	DRAWING NAME	DRAWING NO.
SL-250V	FEED(1) ASS.	205382

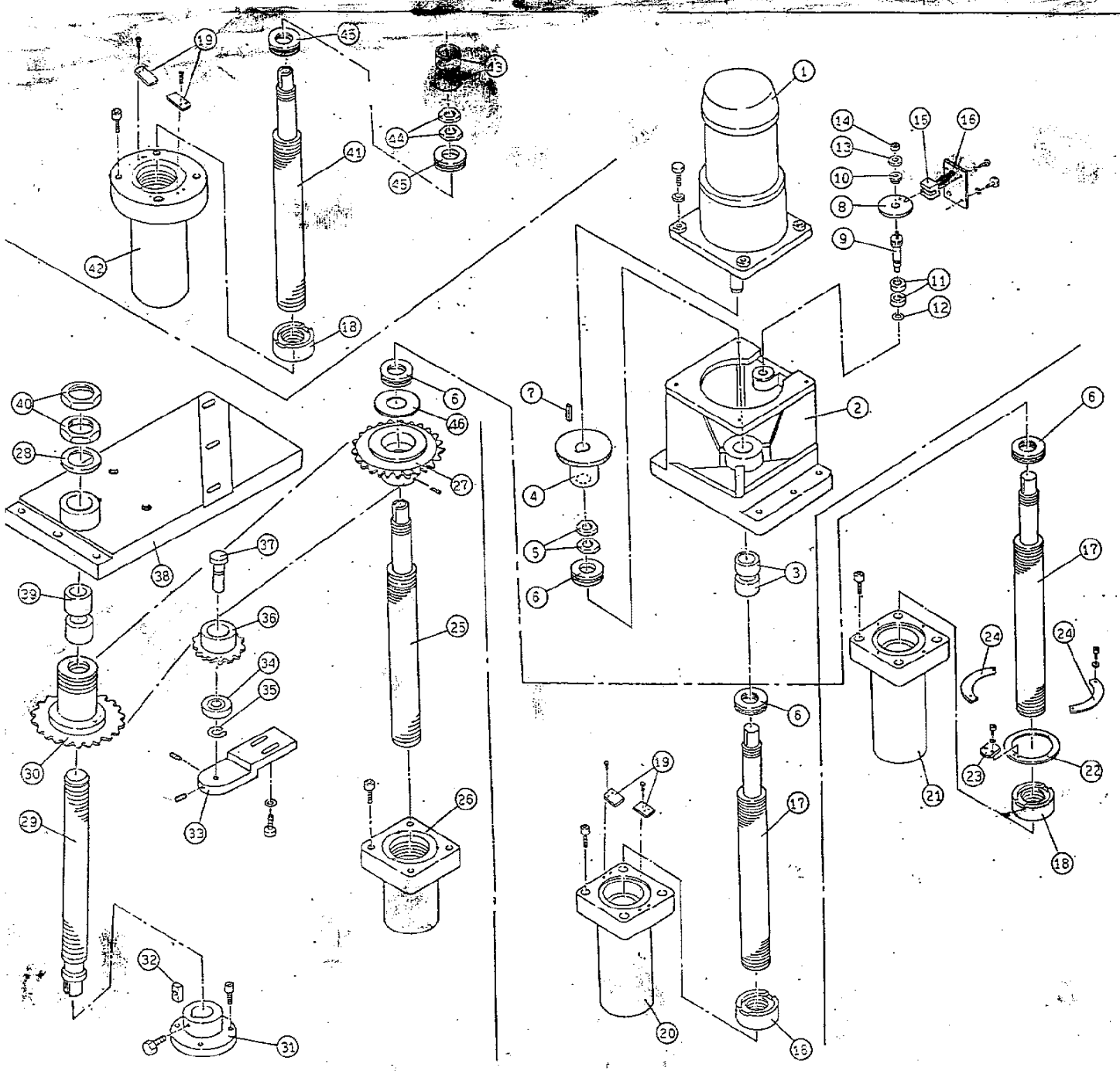


		50				
		49				
		48				
		47				
		46				
		45				
		44				
		43				
		42				
		41				
		40				
		39				
		38				
2	X	37	400925	1	HOLDER	ｽﾌﾟﾘﾝｸﾞﾎﾙﾀA
2	X	36	400977	2	SPRING	ｽﾌﾟﾘﾝｸﾞ
2	X	35	400975	1	HOLDER	ｽﾌﾟﾘﾝｸﾞﾎﾙﾀB
2	X	34	400965	1	BOLT	ﾁｮｳｾﾂﾎﾞﾙﾄ
	X	33	431924	1	NUT	M24ﾅｯﾄ
	X	32	431720	1	COLLAR	ｶﾗｰ
	X	31	401957	1	SPRING CASE	ｽﾌﾟﾘﾝｸﾞｹｰｽ
	X	30	401949	1	SPRING	ｽﾌﾟﾘﾝｸﾞ
	X	29	401955	1	ADJUST BAR	ﾁｮｳｾｲﾎﾞｳ
1		28	401134	1	SHADE	ｼｬｺｳﾊﾞﾝ
1	1	27	401135	1	BASE	ﾄﾘｯｹﾀﾞｲ
10	10	26	401127	1	AXIS	ﾛｰﾗｼﾞｸ
10	10	25	401126	1	ROLLER	ﾛｰﾗ
20	20	24			BEARING	BB6003LLU
10	10	23			WASHER	SW M12
10	10	22	401128	1	PLATE	ﾛｰﾗｼﾞｸｻｻｴ
2	2	21	400924	1	PLATE	ｱﾃｶﾞﾈ
6	6	20			STOP RING	Cﾄﾒﾜ S-17
6	6	19			BEARING	BB6003LLU
2	2	18	300371	2	AXIS	ﾛｰﾙｼﾞｸ
2	2	17	300371	1	ROLL	ﾁｮｳｾｲﾛｰﾙ
6	2	16	400964	1	BOLT	ﾁｮｳｾｲﾎﾞﾙﾄ
6	2	15	400978	1	SPRING	ｽﾌﾟﾘﾝｸﾞ
6	2	14	400976	1	HOLDER	ｽﾌﾟﾘﾝｸﾞﾎﾙﾀC
6	2	13			STOP RING	Cﾄﾒﾜ S-25
6	2	12			BEARING	BB6205LLU
3	1	11	300291	1	AXIS	ｶｱｯﾛｰﾙｼﾞｸ
3	1	10	300290	1	PRESSURE ROLL	ｶｱｯﾛｰﾙ
1	1	9	202374		COVER	ｼﾞｮｳｱﾞｶﾊﾞｰ
1	1	8	300300	1	ENDLESS BOLT	ｴﾝﾄﾞﾚｽﾎﾞﾙﾄ
2	2	7	400971	1	TENSION BOLT	ﾃﾝｼｮﾝﾎﾞﾙﾄ
2	2	6	400923	1	ROLL GUIDE	ﾛｰﾙｶﾞｲﾄﾞ
2	2	5			RING	Cﾄﾒﾜ H-100
2	2	4			BEARING	BB6211LLU
1	1	3	400918	1	SPINDLE	ｼﾞｭｳﾄﾞｳｼﾞｸ
1	1	2	300289	1	DRIVEN ROLL	ｼﾞｭｳﾄﾞｳﾛｰﾙ
1	1	1	202375	1	HEAD	ﾍｯﾄﾞ
S	A	NO.	PARTS DRAWING NO.		PARTS	

AND PRESSURE TYPE / NORMAL TYPE — MACHINE NO.

MARUNAKA TEKKOSHO INC.
㈱丸仲鐵工所

TYPE	DRAWING NAME	DRAWING NO.
SL-250V	FEED(2) ASS.	205383

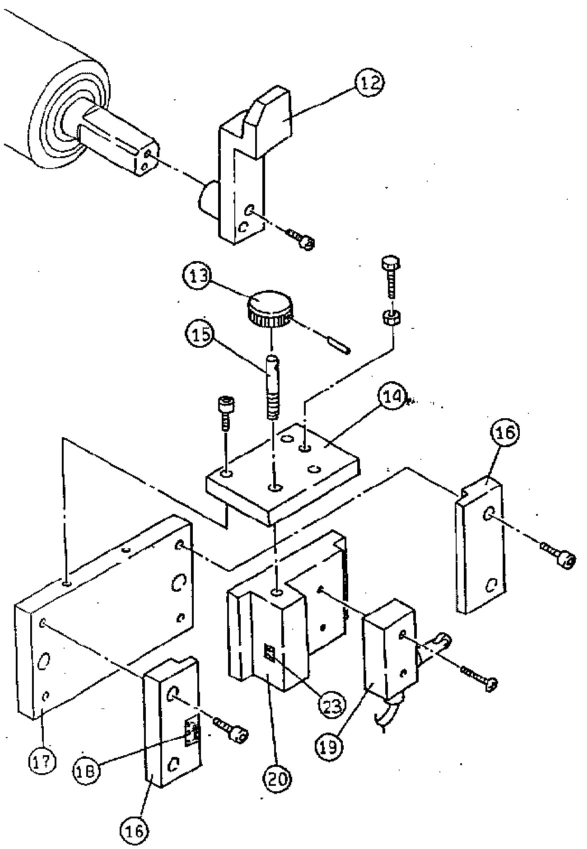


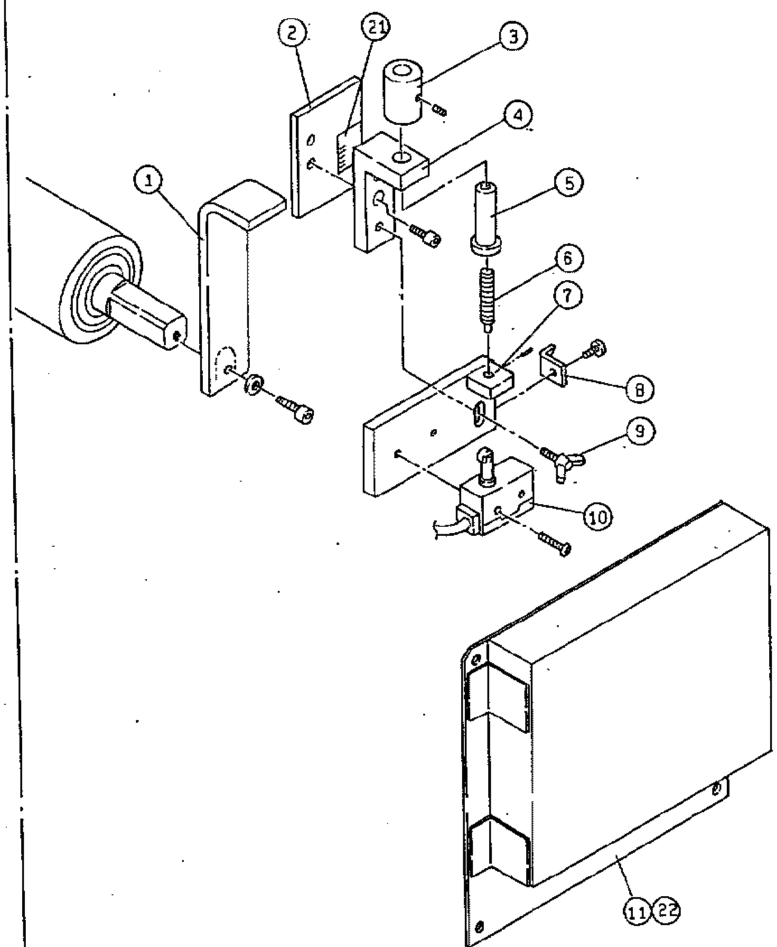
			60				
			59				
			58				
			57				
			56				
			55				
			54				
			53				
			52				
			51				
			50				
			49				
			48				
			47				
		1	46	403963	2	WASHER	ワッシャー
		2	45			BEARING	BB51207
		2	44			NUT	ベアリングナット AN-07
		2	43			OILLESS	オイルス BCB354530
		1	42	323247		FEMALE SCREW	メネジ
		1	41	320642	1	MALE SCREW	オネジ
		2	40	403964	1	NUT	ナット
		1	39			OILLESS	オイルス 7066080
		1	38	301400	1	BASE	ジグワク
		1	37	404256	1	AXIS	アイドラジク
		1	36	404257	1	SPROCKET	アイドラスプロケット
		1	35			STOP RING	CトメワH-47
		1	34			BEARING	BB6204LLU
		1	33	404255	2	BASE	アイドラサヤエ
		1	32	403961	1	KEY	キー
		1	31	301397	1	METAL	メタル
		1	30	301405	1	SPROCKET	スプロケット(4)
		1	29	403962	1	MALE SCREW	オネジ
		1	28	403963	3	WASHER	ワッシャー
		1	27	301401	1	SPROCKET	スプロケット
		1	26	301223		FEMALE SCREW	メネジ
		1	25	301222	1	MALE SCREW	オネジ
		2	24	434892	1	R-PLATE	エンコバン
		2	23	434156	1	STOPPER	ストッパー
		1	22	434153	1	RING	ストッパワク
		1	21	320640	1	FEMALE SCREW	メネジ
1			20	323246		FEMALE SCREW	メネジ
2			19	439450	1	STOPPER	ストッパ
1	1		18	320645	1	FEMALE SCREW	アンビンメネジ
1	1		17	321808	1	MALE SCREW	オネジ
1	1	1	16	400928	1	PLATE	センサイタ
1	1	1	15			SWITCH	
1	1	1	14			NUT	NT M8
1	1	1	13			WASHER	W M8
1	1	1	12			STOP RING	CトメワS-12
2	2	2	11			BEARING	BB6201LLU
1	1	1	10	400929	1	WASHER	カンザ
1	1	1	9	403448	1	AXIS	カンザジク
1	1	1	8	403449	1	SLIT PLATE	スリットバン
1	1	1	7			KEY	キー
2	2	2	6			BEARING	BB51208
2	2	2	5			NUT	ベアリングナット AN-08
1	1	1	4	403447	1	COUPLING	カップリング
2	2	2	3			OILLESS	オイルス BCB354530
1	1	1	2	200546	1	GEAR CASE	ジグワク
1	1	1	1			GEARED MOTOR	
D	C	B	A	NO.	PARTS DRAWING NO.	PARTS	

NO. 1272~
NO. 1253~1272
NO. 1008~1252
MACHINE NO.

MARUNAKA TEKKOSHO INC.
㈱ 丸仲鉄工所

TYPE	DRAWING NAME	DRAWING NO.
SL-250V	HEAD UP-DOWN ASS.	205384





B	A	NO.	PARTS DRAWING NO.		PARTS	
		60				
		59				
		58				
		57				
		56				
		55				
		54				
		53				
		52				
		51				
		50				
		49				
		48				
		47				
		46				
		45				
		44				
		43				
		42				
		41				
		40				
		39				
		38				
		37				
		36				
		35				
		34				
		33				
		32				
		31				
		30				
		29				
		28				
		27				
		26				
		25				
		24				
X	1	23	406209	1	INDICATOR	シシン
1	1	22			MAGNET	マグネットキャッチ C-100-B2([illegible])
1	X	21	125414	1	SCALE	メモリ
X	1	20	404349	1	BASE	リミットスイッチダイ
X	1	19			LIMIT SW	リミットSW D4MC-5020(オムロン)
X	1	18	400507	1	SCALE	メモリ
X	1	17	404351	1	PLATE	トリツケバン
X	2	16	404348	1	GUIDE	ガイド
X	1	15	401591	3	AXIS	ゲージネジ
X	1	14	404350	1	HOLDER	オサエカナグ
X	1	13	401592	1	KNOB	ツマミ
X	1	12	404347	1	DOG	ドック
1	1	11	202376	1	COVER	カバー
1	X	10			LIMIT SW	リミットSW D4MC-5020(オムロン)
1	X	9			BOLT	チョウBT M6X16
1	X	8	425413	1	INDICATOR	シシン
1	X	7	422564	1	BASE	リミットダイ
1	X	6	422100	1	MALE SCREW	ゲージオネジ
1	X	5	422099	1	FEMALE SCREW	ゲージメネジ
1	X	4	422056	1	GUIDE	ブダショウガイド
1	X	3	424512	1	KNOB	ゲージツマミ
1	X	2	425412	1	PLATE	カンザ
1	X	1	425153	1	GAUGE DOG	ゲージドック

NO. 1203~	NO. 1001-1202	MACHINE NO.	
MARUNAKA TEKKOSHO INC. 丸仲鐵工所			'94. 5. 10 S. IKEDA
TYPE	DRAWING NAME	DRAWING NO.	
SL-250V	THICKNESS GAUGE ASS.	205385	