OPERATION MANUAL

Thin Cutting Frame Saw

WINTER FRAMEMAX 250

WARNING!

The operator must thoroughly read this manual before operation. Keep this manual for future reference.

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This manual provides:

The correct method for installation, usage, service, and maintenance of the thin cutting frame saw.

Please read this manual in detail immediately after it is available to you so as to understand the important messages we provide.

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Chapter 1 Basics

1-1 Preface

It is required for those who try to use this machine for the first time and the maintenance personnel to read this manual in detail. The manufacturer shall not be liable for any damage due to improper usage by the operators. Thus, this manual shall be read carefully before operating the machine.

1-2 Special Attention

To prevent any danger from occurring, all information in the user manual shall be read in detail and be observed especially for the service, maintenance, and test personnel of the machine. Special attention shall be paid with regard to the “Safety Regulation” part.

1-3 Special Remark

This section is especially written for those who are in charge of transport and maintenance of the machine.

1-4 Correct Usage

- The machine employs the saw blades that are special designed to cut the wood blocks into thin pieces.
- The proper usage methods shall be observed while operating the machine. The manufacturer shall not be liable for any damage due to improper usage by the operators.
- To follow the operating steps, the operators have to refer to the formal operating methods, service, and maintenance instructions provided by the manufacturer.
- To avoid accidents during the operation, the safety rules shall be observed truly.
- The manufacturer shall not be liable for any damage due to improper change or disobedience to the rules by the operators.
- The manufacturer ought to make steady improvements to the product in pursuit of quality perfection. However, any change done by the manufacturer shall not affect the function and performance of the machine.
- All information about the equipment, weight, or other data of the machine can be found in the manual.

1-5 Safety Guidance

A. Overview

1. The machine is to be operated by the skilled operators or those who are willing to truly observe the safety rules.
2. Accord with the correct voltage.
3. The voltage reading is shown on the cover of the electrical cabinet.
4. Please make sure if this reading lie in the proper voltage range.
5. The machine shall only be used after the protective shield and the safety devices are set up.
6. Please don’t connect the main power source while moving the machine devices or making any change.
7. Always use the factory parts and expendables while servicing the machine. Any damage to the machine from not using the factory parts shall be at the operator’s own risk.
8. The switch of the machine must be

shut off when the protective device or the protective door needs to be opened.

9. The baffle can only be removed when the machine switch is shut off.
10. The safety switch may be removed if it is useless.
11. All protective shields need to be placed and used in a correct manner. These shields shall be replaced immediately if they are damaged.
12. While setting and replacing the machine parts, the switch of machine needs to be closed and the safety bolt shall be used. When the machine is in operation, make sure no one is handling the switch. Set the 'Machine Failure' sign if required.
13. Please don't touch any moving part of the machine.

1-6 Transportation

The wagon with sufficient loading capacity shall be used to transport the machine from one place to another safely.

The machine can be hung up from the top (4 forged eye bolts are required).

It is better to carry with the hoist (the minimum weight is 3000kg).

Note:

The net weight of the machine is 2350 kg.

During transportation, the stumbling and collision situation shall be avoided.

1-7 Settings

Please refer to the following information before operating and setting.

1. The power supply, compressed air and the dust collector shall be installed.
2. All used cables shall be quad cables. The maximum diameter of the cable shall be used in correspondence with the current value (For cable specification, please refer to the cable table in chapter 4).
3. View from the right side and make sure the motor rotates to the right direction.
4. The minimum pressure required for the compressed air is 6 kg/cm^2. If vapor is produced for too much water is contained in the compressed air, the air drier shall be installed or the water deposited in the air tank shall be drained regularly.
5. The minimum air speed from the suction inlet is 30 m/sec. The suction capacity of the vacuum pump is 3700 m^3/hour and the power consumption is approx. 5.5 kw.
6. The lubricant must be filled up.
7. Any cushion pad (e.g.: rubber cushion) placed at the bottom of machine for shock absorption will induce the operation resonance.
8. Insert the wood wedges – it is not suitable to use oil-contained wood material; use of hard wood from northern America, such as oak, is better -- into the gaps at the four corners of the machine base so that the operation resonance can be eliminated effectively.
9. The floor where the machine is to be positioned must be taken into consideration whether it is strong enough to withstand the vibration of the machine for the vibration is

so great during operation. It is not suitable to place the machine higher than the 2nd floor.

10. The machine is heavy enough so the ground bolts are not required for mounting.
11. Warning: The vent of the main motor shall not be blocked. The machine damage caused by improper ventilation is not within the scope of warranty.

1-8 Description of the key points for operation

Main Switch

The power supply is controlled by the power switch.

A. Start Button
   - The press-feeding system lowers.
   - After 10 seconds or so, the saw blades begin to move reciprocally.

B. Stop Button
   - The main motor shuts down.
   - After 10 seconds or so, the saw blades stop reciprocation and the press-feeding system is relieved and rises.

C. Emergency Stop Button
   - Use this button in case of emergency.
   - Use this button while the machine is being maintained or serviced.
   - Note: If this button is pressed, B button will be disabled. Rotate D button clockwise to cancel this condition. Press B button to initiate the machine.
   - If this button is pressed while the machine is in operation, the main motor will stop and the press-feeding system will keep the press-down condition.
   - To relieve the press-down condition of the press-feeding system, please push the red buttons (Fig.12: F1, F2, F3, F4) manually and the pressing wheels will rise again to the proper position.

D. Troubleshooting indicator lights
   Flash of the indicator lights: Indication of error message (please see the "Warning about the Error Message" section).

E. Pedal Switch
   - Stamp on the pedal switch, the 1st set of upper pressing wheels will rise and the 1st set of side pressing wheels will move to both sides so that the wood can be fed; if the pedals are released it will be restored to the original state.

Chapter 2 Identification of the Machine

2-1 Machine ID

The Machine ID is stamped on the right part of the left side of the machine. The following specification information is provided:

1. Machine Type
2. Serial Number
3. Date of Manufacture

2-2 Machine Specifications

Horsepower of the main shaft: 15 or 20 HP
Horsepower of the blower: 1 HP
Applicable saw blade length: 500or 550 mm
Applicable sawing height: 70 to 250 mm
Frame stroke: 210 mm
Height tolerance of wood: ± 0.5 mm
Sawing width (side guide plate): 60 to 150 mm
Sawing width (central guide plate): 2x 30 to 70 mm
Sawing width (multi-guide plate): 2~4 x 15~65 mm
Minimum length of the wood material: 300 mm
Minimum thickness of the slice: >=2.0 mm
Sawing accuracy (less than 120mm): ± 0.1 mm
Sawing accuracy (greater than 120mm): ± 0.15 mm
Kerf loss: according to saw blade size
Frame rotation speed: 450 RPM
Maximum quantity allowed for the saw blades: 21
Net weight of the machine: 2350 kg

2-3 For Maintenance of your machine

Contact with the supplier or the local retailer and inform us of the following information:

1. Machine type
2. Factory number
3. Date of purchase
4. Detail description of the problem

Chapter 3 Machine Architecture

3-1 Introduction

The design concept of the machine is to provide the users with a machine that integrates high sawing accuracy, high durability, and high safety as a whole and is easy to operate at the same time. While manufacturing, the least amount of fault machines and the least maintenance requirement is our critical demand, thus all the components and parts we use are both of high quality and costly.

3-2 Introduction to the principal mechanism

A.> Flywheel & Coupling Rod:

The main motor drives the flywheel to rotate at a rotation speed of 450 rpm. The rotation of the flywheel drives the frames, by the coupling rod, to reciprocate up and down in a simple harmonic manner.

B.> Conveyance Mechanism:

A mechanical architecture is adopted for the conveyance mechanism of the machine. The time points of action and stop are controlled with accuracy. The advantages are the following:

1.> Reduced fracture probability of the saw blade.
2.> Extended working hour of the saw blade.
3.> Reduced noise level.
4.> Reduced feeding resistance.

C.> Lubricating System:

The lubricating system is composed of one mechanical lubricator and one motor.

(This timer controls the oil supply interval. The factory setting of oil supply interval is once per 3 minutes. If the amount of oil is to be increased, the interval shall be shortened)

The lubricator adopts the empty-lubricant-auto off design.

D.> Press-feeding System:

The press-feeding system is composed of four feeding cylinders and two side holder cylinders. There are eight sets of pressing wheels: two sets are made by steel and the other six are made by anti-wear rubber.

E.> Cooling System:

The blower sends in a great amount of air to remove the wood chips and cool down the saw blades. The vents are located both at the upper and lower part of the saw blades. The air is blown from the rear to the front.

F.> Electrical Control Panel:

The electrical control panel is composed of the following parts:

1. Start button of the main motor: After the button is pressed for 10 seconds, the main motor starts to function.
2. Stop button of the main motor: After the button is pressed for 10 seconds, the main motor ceases to function. Use this button to stop the machine under normal condition.
3. Blowing start button: The manual start switch of the blower.
4. Blowing stop button: The manual stop switch of the blower.
5. Force oil-supply key: Press this key for 3 to 5 minutes before starting.
6. Power indicator: The power indicator will be lit if the power supply reaches the machine.
7. Power switch of the control circuit: The power switch of the 110V control circuit.
8. Emergency stop button: The emergency stop switch of the main motor. When pressed, the button knob must be rotated so that the stop state can be cancelled.
9. Indicator: 4 fault lights (red), 1 status light (yellow). The machine can't be started if (one of) the fault lights is/are lit.
10. Ammeter: For indicating the load of the main motor.
11. Timer: For counting the machine operation time. To reset, press the middle button.

G.> Electrical Cabinet:

A standard electrical cabinet shall contain the following principal electrical components:

a. One computer (PLC) that controls all the action processes.
b. Three magnetic contactors: For low voltage start of the main motor.
c. One magnetic contactor: For initiating the blower.

d. One buzzer: For warning there is no oil in the lubricator.
e. One timer: For setting the pause time of the lubricator.
f. One converter: For dropping the main voltage to 110V for the electrical components.
g. Power supplier: For dropping the voltage from 110V to DC 24V for the PLC.
h. One filter: For protecting the PLC.
i. Two load protectors: Auto-cutting the circuit to save the spindle motor from overloading.

When the load protector trips, wait for two minutes and push the “RESET” button on the thermal relay to recover.

The maximum current of the thermal relay was set at factory. Please don’t adjust arbitrarily unless it is done by the skilled maintenance personnel. The maximum current of the load protector is set by the supplier as following:

Voltage / Motor	220V	380V	415V	440V
15 HP	42A	23A	21.5A	20A
20 HP	56A	32A	30A	28A

j. Selector switch: For switching between the manual/auto mode for the blower (default: auto mode). The buttons on the control panel take the control if the manual mode is set.
k. Fuse base: The 2A fuse protects the device by opening the circuit when the current is overloaded.
l. Relay: For motion control.
m. Current transformer: For indicating the current reading on the ammeter.

temperature controller(photo 2), 4pcs install in behind Slippery track. thermal sensor(photo 3) detect temperature of Slippery track. The machine will be stop when the temperature over default. (100℃ is standard)

Photo 2

photo 3

Chapter 4 Installation

4-1 Unloading

Unrecoverable damages may occur if the machine is dropped or stroke. Please be careful while carrying.

The machine can only be lifted and carried from the bottom with a stacker (over 2.5 tons).

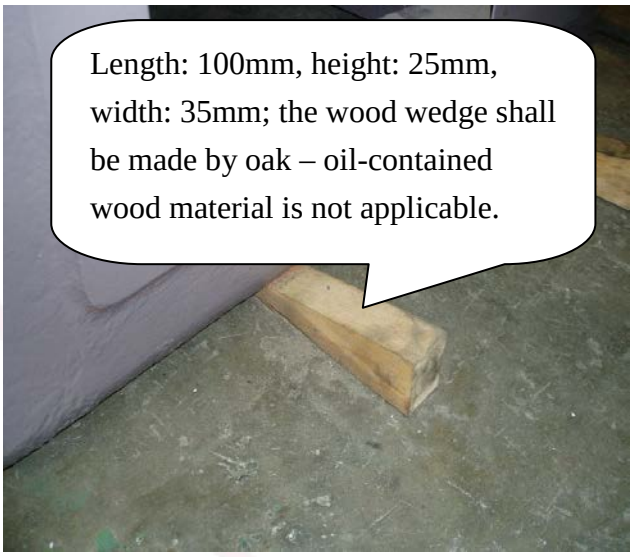
4-2 Positioning

Criterion for selecting the proper mount location:

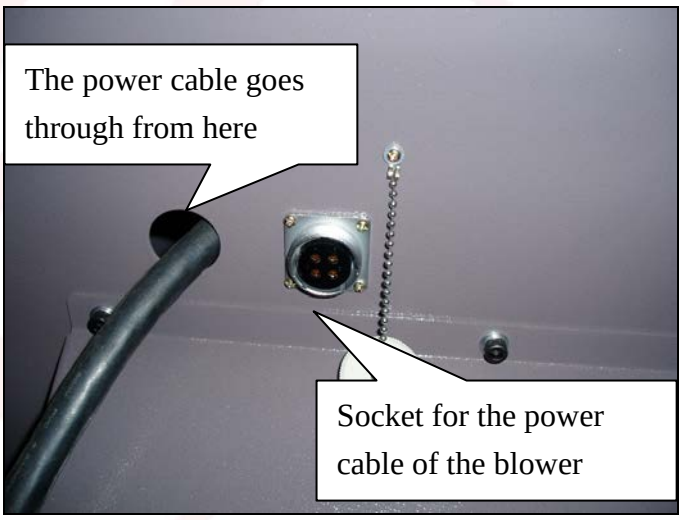
a. The hardness of the floor must be strong enough to support the machine and bear the vibration during the machine operation.
b. The location shall be near to the power supply.
c. The pneumatic connector shall be available.
d. The dust suction equipment shall be available.
e. In addition to the above criterion, the harness that fastens the electrical cabinet shall only be cut off after the machine is mounted. (The electrical cabinet shall not be fixed on the machine)

4-3 Mounting the Machine

The vibration is very strong when the machine is in operation. The wood wedge shall be used for fixing. The wood wedge shall be made by oak – oil-contained wood material is not applicable.



At the lower right corner of the electrical cabinet there is a hole where the cable can go through and connect with the machine.



(The power cable inlet and the socket for the power cable of the blower)

The supplier asks to set a fuse-free breaker applicable for the machine on the connecting cable between the main power supply and the machine. When the machine is not in use, cut the power off from this breaker.

For the applicable specification of the fuse-free breaker, please refer to the following table:

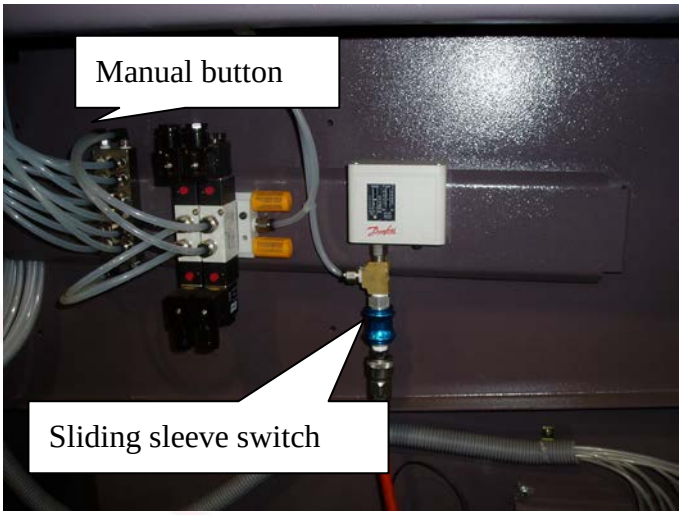
Voltage / Motor	220V	380V	415V	440V
15 HP	3P 60AT	3P 40AT	3P 40AT	3P 30AT
20 HP	3P 100AT	3P 50AT	3P 50AT	3P 50AT

Also, for the power cables that come from the outside, please refer to the specification in the following table:

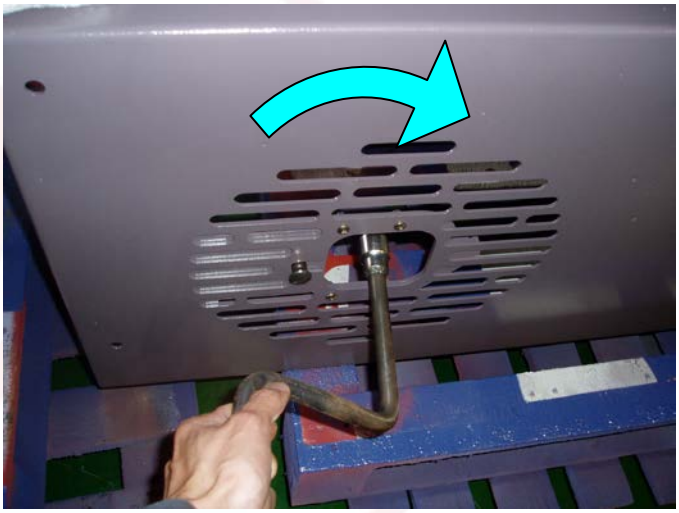
Voltage / Motor	220V	380V	415V	440V
15 HP	14 mm^2	8 mm^2	5.5 mm^2	5.5 mm^2
20 HP	22 mm^2	14 mm^2	14 mm^2	8 mm^2

4-5 Coupling the pneumatic equipment

1. Add the lubricant of viscosity grade 32 at the F.R.L combination and in the lubricator.
2. Connect the pressure pipe for the compressed air.
3. Push the sliding sleeve switch upward.
4. Check if the air pressure is over 6 kg/cm^2.
5. Push the operation key of the magnetic switch manually (The cylinder lowers when the upper key is pressed; the cylinder rises when the lower key is pressed).
6. Check if the motion of the cylinder is correct and smooth.

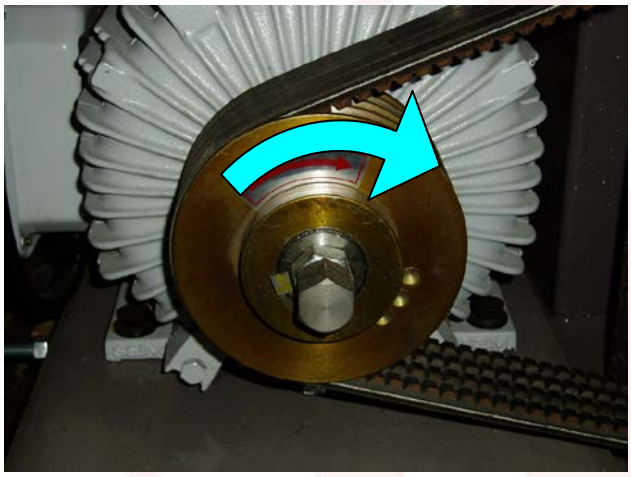


4-6 Validate the rotation direction of the motor

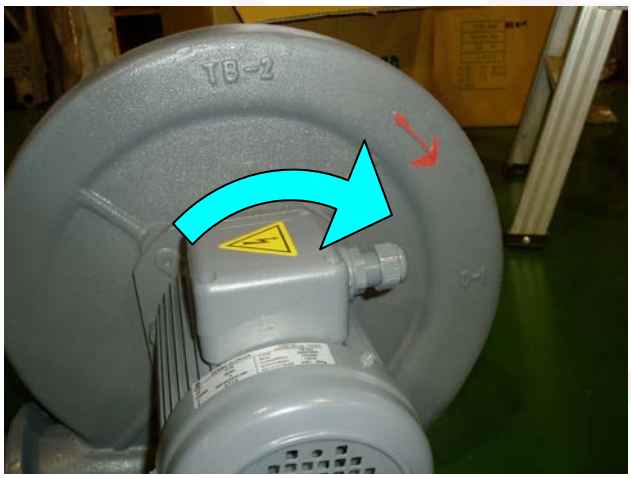


1. Open the lid at the lower right part.
2. Insert a crank, rotate it clockwise, and check if there is any foreign matter blocked in the way.
3. Press down the force oil-supply key for 2~3 minutes. Lubricate the guide rail and the sliding block and make sure the rotation direction is correct.

4. You can now start the motor if all the above processes are done.



5. Make sure the motor rotates to the right direction.



6. Make sure the blower rotates to the right direction.

4-7 Coupling of the blowing equipment

There are two vents on the machine for cooling the saw blades and removing the wood chips: one located at the upper part and the other one at the rear bottom part of the machine.

(Upper vent: diameter 50mm)

(Rear bottom vent: diameter 65mm)

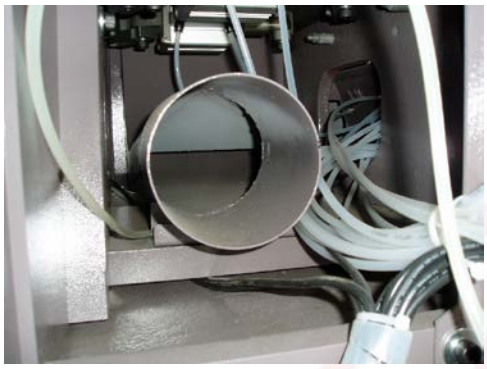
4-8 Coupling of the suction equipment

There are three dust-suction ports, which are located at the front, rear bottom, and the upper part on the machine.

Outer diameter of the dust-suction ports: 3x125 mm

Required suction capacity of the vacuum pipe:

3700 m^3/hour
Required air ventilation speed: 30 m/sec
Ventilation pressure: approx. 250 mm/Hq
Consumed power of the suction equipment: approx. 5.5 HP



(The front dust-suction port is hidden in the inner side at the lower part)

(Rear dust-suction port)

4-9 Installation of the calibration device

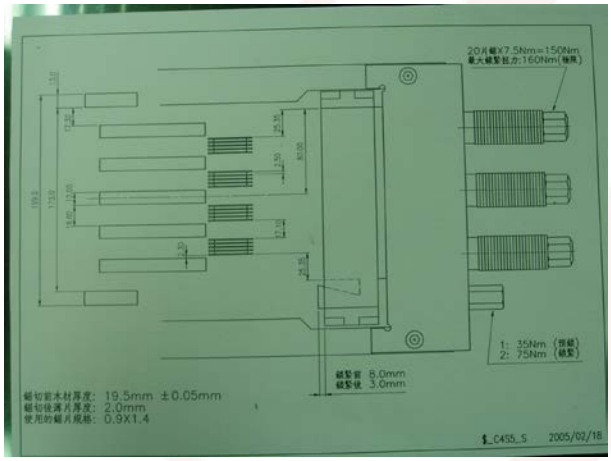
1. Prepare a solid and level workbench of 70~90 cm in height.

2. Mount the tool holder on the workbench (uneven workbench shall not be used for the torque is great when the frame is tightened)
3. Assemble the adjusting platform for the feeding base
   a. Screw the M12*100 hexagon screws and bolts at the four corner locks of the platform and adjust the platform level.
   b. Screw the adjusting bolts.

Chapter 5 Usage Steps of the Frame

5-1 Calculation of the frame dimension

1. This part of work demands precision. If the calculation is not accurate, problems may occur in assembling the frames or the product size may be improper.
2. While calculating, please calculate according to the dimension look-up table provided by the manufacturer.
3. Please use the operation diagram while calculating the dimension.



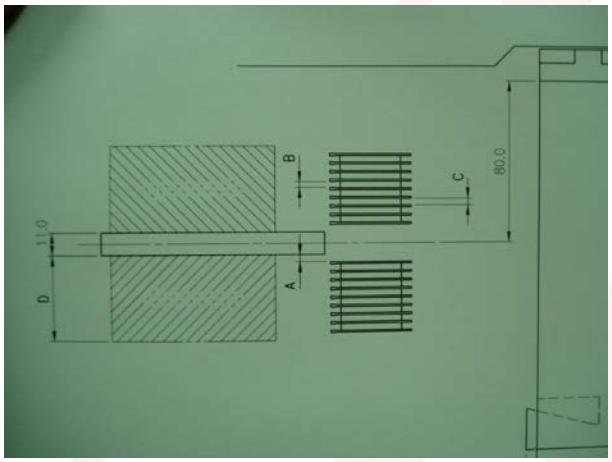
a. Please set the dimension labeled on the left lower side of the operation diagram:
   (a) Wood thickness before cutting
   (b) Slice thickness after cutting
   (c) Specification of the saw blade
   Figure example:
   Wood width before cutting: 19.5 mm ±0.05mm
   Slice width after cutting: 2.0 mm
   Specification of the saw blade: 0.9*1.4

b. Calculation for the dimension of the feeding base
   (a) Set the size of the input material (refer to the dimension look-up table)
   Figure example: 19.60 mm
   (b) [173-(size of the input material * input quantity) – (grate plate size * grate plate quantity)]/2
   Figure example:
   [173-(19.6*4)-(2*5)]/2=17.3

c. Frame size for assembling (shim size)
   (a) Set the slice thickness after cutting and the saw blade specification and then calculate.
   (Saw blade length – saw body length) = spacing shim size for the saw blade
   Figure example: 2.0 + (1.4 - 0.9) = 2.5
   (b) Calculation: (saw body length * quantity of one set of saw blades) + [(a) * quantity of the shims] = (0.9 * 5) + (2.5 * 4) = 14.5
   (c) The spacing shim size between the saw blade sets
   Calculation: Material size - (b) + size of material grate plate
   Figure example: 19.6 – 14.5 + 12 = 17.1
   (d) The shim size from the baseline to the first saw blade
   Calculation (for 4 sets): length from the central point to the baseline – (c) – [(c)/2] – [(b) * number of sets]
   Calculation (for 3 sets): length from the central point to the baseline – (c) – (b) – [(b)/2]

Figure example (for 4 sets): 80 - 17.1 - (17.1/2) – (14.5*2) = 25.35

(e) Calculation for the lock plate dimension if the side holder is used:
Calculate separately from the central point according to the position where the front middle feeding grate plate is located.



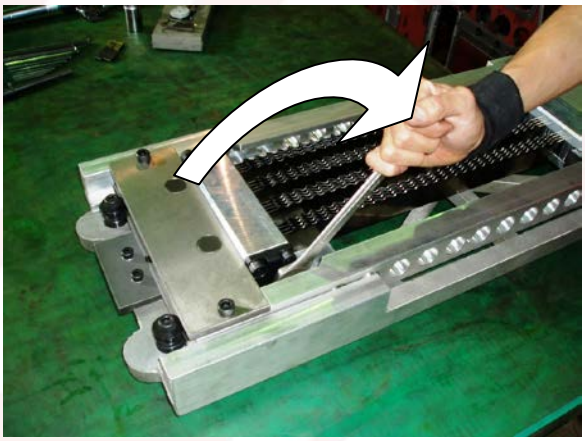
(f) Calculation for the outlet base:
Calculation: Material size – (quantity of saw blades – 1) = 19.6 – (5-1) = 15.6

5-2 Assembling of the frames

This part of work process is much more significant. Please follow the steps – the service life of the saw blade will be extended, more stable, and predictable, if the saw blades are locked properly.

In principal, we lock the saw blades twice:

1. The first time is pre-lock, and the second time is full lock.
2. When full-locked, each saw blade is locked to 7.5Nm.
3. When pre-locked, each saw blade is locked to 3.75Nm.
4. If a frame is installed with 16 saw blades and are full-locked, the torque value is 16x7.5Nm = 120Nm, whereas the torque value is 16x3.75Nm = 60Nm if they are pre-locked.
5. While pre-locked, the saw blades are able to slide in the holder and that is for an even draw-in force for each blade.
6. Each of the three draw-in bolts shall be screwed evenly in order with 90°.
7. When the locking is completed, the parallelism of the saw blades and the frame shall be kept below 0.05mm.

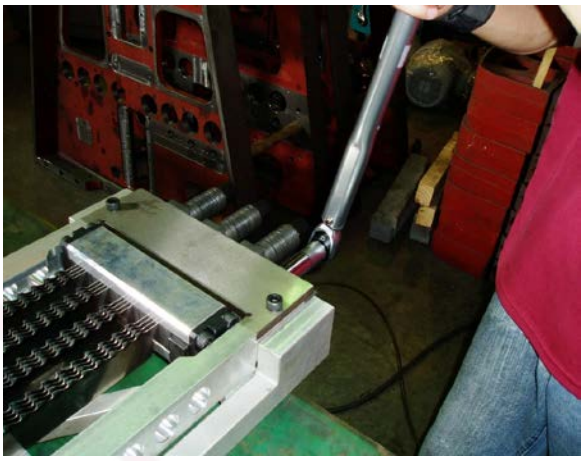


(1. Locking)

(2. Loosen the blades by pulling upward the handle in 90°)

(3. Manually tighten this nut)

(4. Insert into the clearance with four 5mm shims, and then properly screw these three nuts with hands so that the clearance becomes 10mm. Withdraw the shims)



(5. Screw the push bolts to 35Nm – the saw blades are not fully clamped at this time)

(6.1 Adjust the torque wrench to 60Nm)
(There are 16 saw blades in the figure. Torque vale = 16x3.75Nm = 60Nm)
(Then, the three draw-in bolts are screwed evenly and perpendicularly one by one in order)

(6-2.)

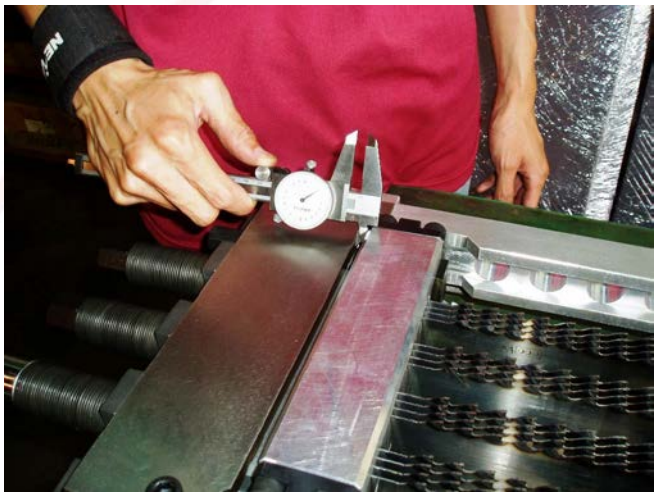
(6-5.)

(6-3.)

(6-6.)

(6-4.)

(7. Check the parallelism of the clearance.
Keep the parallelism below 0.15mm)



(8. The parallelism error of the clearance can be corrected with the three draw-in bolts)

(9. Fully tighten this screw)

(10. Tighten the push bolts to 75Nm. Now the saw blades are fully clamped and unable to slide)

(11. Adjust the torque wrench to 120Nm)

(There are 16 saw blades in the figure. Torque vale = 16x7.5Nm = 120Nm)
(Then, the three draw-in bolts are screwed evenly and perpendicularly one by one in order)

(12. Check the parallelism between the saw blades and the frame)

(13. The parallelism between the saw blades and the frame shall be kept below 0.05mm)

(14. Check the parallelism between the saw blades)

(15. If the parallelism error exceeds 0.2mm, there is something wrong with the shim)

(The frame assembly is now completed)

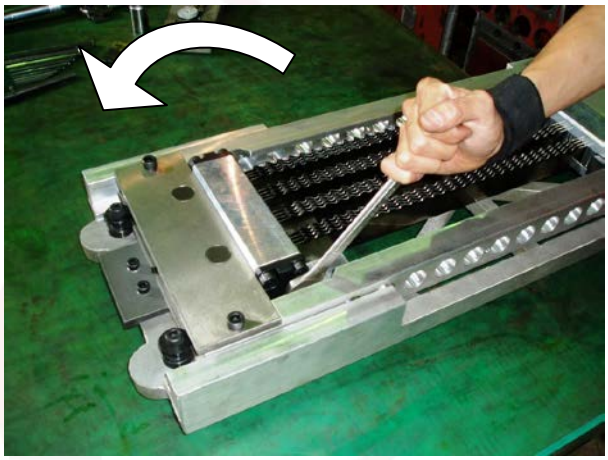
5-3 Loosen the saw blades

(Adjust the torque wrench to 120Nm)

(There are 16 saw blades in the figure. Torque vale = 16x7.5Nm = 120Nm)

(Then, the three draw-in bolts are loosened evenly and perpendicularly one by one in order)

Loosen the push bolts, and knock the push bolts loose with a hammer.



Loosen this bolt.

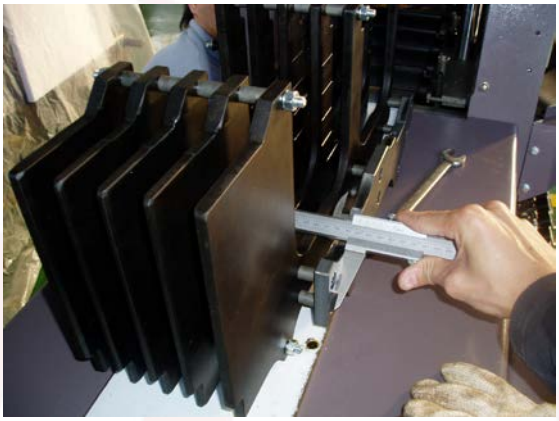
5-4 Calibration of the feeding base

1. Machine the iron tube by the required size (parallelism of the iron tube: ± 0.02mm)
2. Use a suitable material grate plate. Place the iron tube between the grate plates, and fix the grate plates with threaded rods.

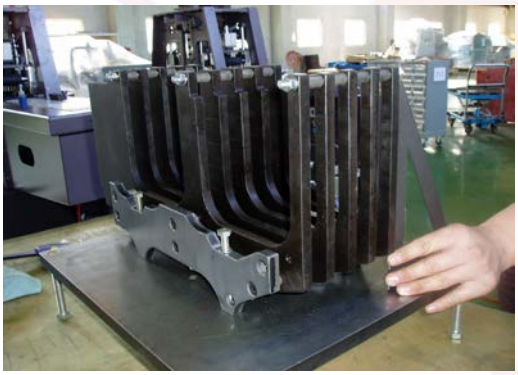
bracket and the right bracket. Adjust with the two adjusting bolts on the platform.

c. Upon completion of the above steps, tighten the screws from the left bracket and the right bracket. Make the final validation. The dimension is measured to be 199± 0.3 m/m.

3. Calibrate the perpendicularity on the adjusting platform for the feeding base.
   (Please use the plastic hammer; metal hammer is not allowed)



4. Tighten the left bracket and the right bracket for the feeding grate. (The tightening screws shall vary in correspondence with the size of the iron tubes. There are various dimensions of screws available for option from the originating manufacturer)



5. Calibrate the perpendicularity of the feeding base again.
   a. Fix the feeding base on the adjusting platform. Screw on the M8*90 hexagonal screws.
   b. Loosen the screws from the left

6. All the above actions shall be done, otherwise the cut slices won't parallel to each other.
7. Mounting of the outlet base
   Install the outlet grate plates and the iron tubes in order and tighten them.

5-5 Mounting of the feeding base and the outlet base

1. Rise the four sets of pressing wheels to the top, switch on the pneumatic sliding sleeve switch, allow the pressing wheel to rise, mount the feeding base, and tighten it with the M8*90 hexagonal screws. (If the material can't be fed in, please check whether the size of the iron tube and the overall size are correct or whether there is any foreign matter in the fed-in inlet)

2. While mounting the outlet base, feed in two pieces of intact woods from the two grate inlets at both sides, one piece for each grate inlet. Push the material to the grate inlet of the receiving base. Visually inspect if the woods are fixed in parallel. (If the slice size is greater than 3m/m, the receiving bracket shall not be used)

3. have to added install M8 immovable screws in side when using 250mm feeding base

5-6 Installation of the frame

1. Rotate and move the frame base to the top, insert the pins for fixing, and push the bakelite bracket upward. (Installation of the frame would not be able if the bracket is not pushed upward)

2. Install the frame and tighten the frame to 60Nm with a torque wrench. Withdraw the pin.

2.1 install the immovable axle that add spacer to underside hole when using 200mm frame (saw blade is 500mm in length)

2.2 install the immovable axle to top hole when using 250mm frame (saw blade is 550mm in length)

2.3 be careful about inlay that immovable and frame channel is correct whether or not when install immovable.

3. Install the dust-suction head and screw on the upper dust-suction pipe with the retaining nuts.

5-7 Adjust the height of the pressing wheels

There are 4 sets of pressing wheels (8 pressing wheels):

1. For the 1st set and the 2nd set, press down 4mm.
2. For the 3rd set and the 4th set, press down 2mm.
3. For the 1st set and the 2nd set, the air pressure is approx. 5 to 6 kg/cm^2
4. For the 3rd set and the 4th set, the air pressure is approx. 2 to 3 kg/cm^2

5-8 Launch the vacuum cleaner equipment

See if the suction capacity is sufficient. If it is unable to take away the wood chips effectively, please make improvement.

5-9 Start operation

Press down the start button of the main motor, wait for the main motor to run normally, and then press the start button of the blower motor or you can also set the auto-start mode with the electrical cabinet.

5-10 Adjusting the lubrication system

The quantity of oil supplied by the lubrication system shall be adjusted according to the efficiency of the dust collecting equipment. When the dust collecting equipment can't take away all wood chips, large amount of oil shall be supplied.

It is necessary to perform a daily check on the guide rail and the sliding block if there is enough lubricant for protection.

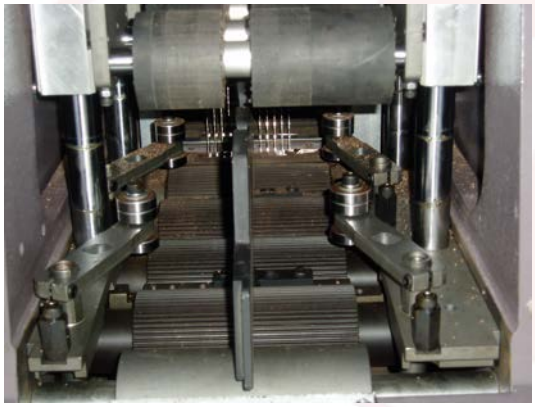
(This timer controls the oil supply interval. The factory setting of oil supply interval is once per 3 minutes. If the amount of oil is to be increased, the interval shall be shortened)

The lubricator adopts the empty-lubricant-auto-off design.
The recycled oil is strictly forbidden for the lubricating system.
For the specification of the lubricant used by the lubricator, please refer to the sticker on the lubricator.

5-11 Use of the pressing side holder

There are two sets of pressing side holders:

1. The 1st set is the left front holder and the right front holder (air pressure: approx. 2 to 3 kg/cm^2).
2. The 2nd set is located at the rear of the 1st set (air pressure: approx. 2 to 3 kg/cm^2).
3. Please use the left side holder and the right side holder while the front middle feeding grate plate is to be mounted in the center.



4. Please use the right side holder while the front middle feeding grate plate is to be mounted by the side. Long side holder wheels can be used if required.

5. While applying the middle feeding grate plate, please note if it interferes with the pressing wheels. If there is interference, please adjust the positions of the pressing wheels.
6. After the front middle feeding grate plates are mounted, mount the front middle extending plates (parallelism adjustment is required)

7. Adjust the material size
   a. Manually place the wood to be cut at a distance where the 2nd side holder can reach.
   b. Loosen the short adjusting bolts for the grate base. Manually rotate the adjusting bolts for the side holder to reach the positioning block and turn one cycle (approx. 2m/m) in counterclockwise direction.

Chapter 6 Device that Prevents the Slice from Fracture During Cutting Process

6-1 The structure of the fracture-preventing device

The mechanism that prevents the slice from fracture during cutting is composed of three parts:

1. Bakelite: During working process, the bakelite will be cut in for about 1mm by the threaded rod.
2. Bakelite bracket: For supporting the traverse rod of the bakelite.
3. Bracket base: The bracket base can be folded up, and it is folded up when the frame is to be inserted.

To void the fracture from occurring on the bottom of the slice, the fracture-preventing mechanism needs to be adjusted properly. The height of the fracture-preventing bakelite can be adjusted to the same height as the conveying wheel.

6-2 Adjust the height of bakelite and pre-cut

- Remove the frame
- Apply five hexagon socket countersunk head screws (M5) to install a new bakelite. The screws must be tightened properly.
- Loosen the two hexagonal round head screws (M6) and move the bakelite to the rightmost (Now the bakelite shall be below the conveying wheels)
- Put a straight wood block on the conveying wheels across the bakelite.
- Move the bakelite to the left until it touches the bottom of the wood (Now the bakelite shall be the same height as the conveying wheel).
- Tighten the two hexagonal round head screws (M6).
- Install the frame.
- Move the frame to the top by the rotating the crank.
- Screw down the bakelite.
- Pre-cut the bakelite by rotating the crank.

Caution:
When the width of other slice is to be adjusted, the new bakelite needs to be pre-cut in advance.

Chapter 7 Maintenance & Service

7-1 Lubrication

For the least amount of maintenance, the lubricating system shall be applied on the guide rail. This system is built to separately supply sufficient lubricant on the twelve lubricating locations.

If the oil level drops below the smallest reading, the fault indicator on the control panel will be lit and the machine operation is halted automatically. Please refill the lubricant in the oil tank.

After long time of suspension, we suggest that you wash the deposited sludge in the oil tank to ensure the lubricating pipe is unclogged. We use the lubricant of viscosity grade 32.

Recommended oil:

ISO Spec.		VG-32
Viscosity cst@40℃		32
Brand	Chinese Petroleum Corp.	R32
	Mobil	DTE Light
	ESSO	Teresso 32
	SHELL	Torbo T32

- The lubricator is controlled by the computer in the electrical cabinet.
- The timer at the left upper corner of the electrical cabinet controls the oil supply interval. The factory setting of oil supply interval is once per 3 minutes. If the amount of oil is to be increased, the interval shall be shortened.
- There is a button on the control panel. Press it for 3 minutes before you go to work.
- Shut down the machine and check if the lubricant is applied on the twelve lubricating locations. If there is no lubricant or the amount is too little, please consult the technical department immediately for checking and repairing.

7-2 Clearance between the slide rail and the sliding block

We ask the operators to check the clearance between the slide rail and the sliding block. If necessary, the clearance can be adjusted in the range between 0.3mm and 0.4mm (using feeler gauge).

If the clearance between the guide rail and the sliding block is less than 0.25mm, the strong friction will raise rapidly the heat of the guide rail and the sliding block. If you observe the increase in friction heat, please extend the clearance between the guide rail and the sliding block.

The guide rail and the sliding block must be kept in cool condition.

The guide rail and the sliding block bear great load therefore they shall be inspected regularly to make sure the clearance between them is proper. After checking and adjusting, all nuts and screws shall be tightened.

7-3 Replace the expendables

After the machine has been functioning for a long period of time, some expendables must be replaced.

1. Saw blades: each saw blade could be ground 8 to 12 times.
2. Shims: the shims need to be replaced according to the slice size. The shims are reusable.
3. Iron tubes: the iron tubes need to be machined by a lathe according to the size of the wood to be cut. The iron tubes are reusable.
4. Chains: chains shall be used where there is any loose condition.

   Replace method: Use a long nose plier to take off the snap ring, remove the O-ring, connect a new chain, and clip the snap ring.
5. Bakelite: A bakelite is used when there is a fracture on the slice or if more wood chips are produced during cutting.

   Replace method: Please refer to section 6-2.
6. Belt: A belt is used when adjustment is not possible or there is a skid.

   Replace method: Loosen the adjusting bolts and the retaining screws for the motor base. Remove the connecting rods and the chains from the right side. Replace the belt. Connect the connecting rods, chains, and adjust the belt to a proper tension. Tighten the motor base.
7. Transmission engine oil: Use the 32# engine oil or the same class. The first replacement of the oil shall be after 300 hours, and every 1000 hours later on.

   Replace method: Remove the screws on the lower part of the transmission, drain the oil empty, tighten the screws, and replenish new oil from the upper priming hole to the quantity more than 2/3 of the visual gauge.
8. Rubber pressing wheel: The rubber pressing wheel is used when there is any damage or it is unable to press.

Replace method: Loosen the retaining screws M6 under the fixing plate of the pressing wheels, loosen the retaining screws for the pressing wheel slides, and take off the pressing wheels. Take off the snap rings with a snap ring plier and replace the snap rings.

Chapter 8 Selection of Saw Blade and grinding

Selection of saw blades:

The quality of the saw blades depends on the cutting purpose. Please specify that the saw blades are specially designed and manufactured for use of the thin cutting frame saw if you intend to cooperate with another saw blade supplier. The saw blade is made with precision by flat rolled steel.

Note: Please don't substitute our saw blades with other band saw blades. Never use damaged blades.

Grinding steps for the saw blades:

Cleaning: Use powerful detergent to remove the oil stain on the blades and lubricate again

Tensing: To attain better sawing quality, higher tension is required on the saw teeth, and for this purpose, a ridge is made on the blade.

When there is other improper tension applied on the blade, the blade will fluctuate and twist.

Please use our saw sharpener (G5) to grind your saw blades. The sawing precision and the sawing hours is related to the precision the saw blades were ground.

The saw blades can be ground for about 8 to 12 times.

Examination: Every tooth of the blade shall be sharp. Examine the teeth with a low power stereomicroscope (magnification: x15). If any of the teeth in the row is not sharp, please grind again. Measure the tooth height after grinding with an electronic vernier caliper. The height tolerance is 0.03mm.

size torque list of saw blades

Size of saw blade	Nm	Lb.ft
0.5*0.9*40	4.2	3.1
0.6*1.0*40	5	3.8
0.7*1.1*40	5.8	4.3
0.8*1.2*40	6.6	4.8
0.9*1.4*40	7.5	5.5

Note: Please use the saw blades provided by us. We can't guarantee the cutting quality if other saw blades are used.

Chapter 9 Manufacturer's Advice for the Operators

The machine is hazardous when it is used. Injury may occur because of improper operation by the users. Thus, the manufacturer asks that only the skilled technician be allowed to operate the machine.

During machine operation, tiny wood blocks may be ejected because of the uneven wood material that is being sawed. Though the probability of ejection is not high, the manufacturer still ask the operator to wear leather groves and a leather scarf during operation, and the operators are forbidden to stand in front the machine in operation, only the sideway is allowed.

Before operating the machine, the operators shall read the instructions of the machine in detail.

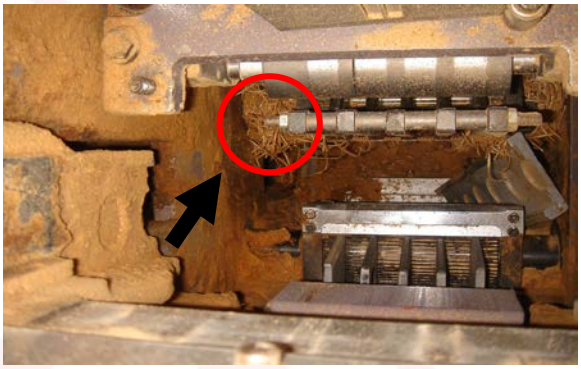
Before operating the machine, please make sure each safety protective mechanism functions normally.

Please shut off the power of the machine and leave the machine unpowered before cleaning, adjusting, repairing or servicing the machine.

It is strictly forbidden to touch any motive part of the machine with hands or other part of your body.

The machine must be installed properly and firmly settled on the ground before operation.

when every day using the frame saw machine or change the frame, have to cleaning the mouth of inhale dust and the saw dust that around the slippery track.
If cut the wood with longer fiber must have to cleaning usually to avoid frame become deformed and broken.
Have to cleaning saw dust



Scope of warranty:

1. The warranty period of the machine is one year. The warranty is not valid if the damage is caused by improper operation.
2. The warranty period of the electrical control equipment is three months. The warranty is not valid if the damage is caused by unstable power supply due to improper operation.
3. The expendables such as saw blades, chains, bakelite, belt, rubber pressing wheel, and the engine oil, are not within the scope of warranty.

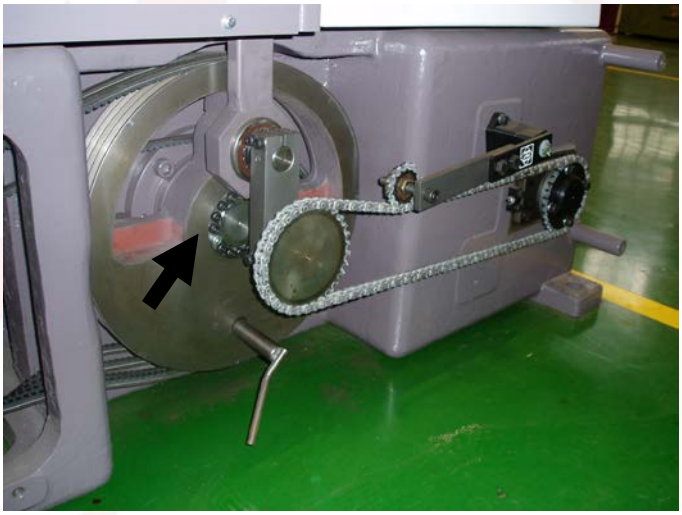
Chapter 10 Devices to be adjusted

1. Adjustment for the feeding speed: Rotate the prime wheel for speed setting to the required feeding speed (please use the data provided by the originating manufacturer). Fix the wing screws when the speed setting is completed.

Feeding speed:
Soft wood……0.6 to 0.8 min/m
Hard wood……..0.3 to 0.4 min/m
(For reference)

2. Adjustment for the feeding base: This mechanism can be used if the difference of size is greater between the slices at both sides. Adjust the parallelism for the slices at the both sides (please use the data provided by the originating manufacturer). Please judge by the centimeter for calibration.

3. Adjustment for the feeding locations: The feeding locations shall only be adjusted if a loud striking sound is produced during working or vibration is produced when the wood is hit by the saw blade moving upward – otherwise, the adjustment is not required. (Most wood material can be cut via the factory setting)



Adjusting method:

a. Fix the flywheel by inserting a pin
b. Loosen flywheel chain wheel screw (M8)
c. Adjust the chain wheels to the required angle by the adjusting handle
d. Tighten flywheel chain wheel screw.

4. Adjustment for the frame inclination:

If the upward movement of the frame interferes with the feeding motion, loosen the two M10 nuts at the rear part of the frame base, adjust the bolts (the parallelism between the two bolts shall be ±0.02 m/m), and then tighten the bolts.

Chapter 11 Service Checklist Table

	Service Work	Before Initialization/ After Shutdown	Daily	Per week	Per month	Per year
1	Before you start to operate the machine, press the manual oil supply button for 3 to 5 times (released after 2 sec.)(fig. 2). Shut down the machine and check if there is oil at the 12 oil outlets.	Δ Before Initialization	Δ			
2	After you stop operating the machine, thoroughly clean the guide rail, sliding block, and three dust-suction ports. (fig.2)	Δ After Shutdown	Δ			
3	Check for enough lubricant (fig.2)		Δ			
4	Empty the F.R.L water tank (fig.2)		Δ			
5	Check for the enough pneumatic oil (fig.2)			Δ		
6	Lubricate all grease nozzles (fig.2)			Δ		
7	Tighten & lubricate the chains (fig. 2)			Δ		
8	Check for the tension of the main motor belt (fig. 2)			Δ		
9	Check if the clearance between the guide rail and the sliding block is within the range: 0.3 to 0.4mm (fig. 2)				Δ	
10	Use the tap and the screw die to repair the damaged bolts and nuts on the frame (frame: M16, M12; frame base: M16) (fig. 2)				Δ	
11	Check if the pipes for the pneumatic system and the lubricating system are tight				Δ	
12	Check all the mobile devices; check screws, bearings, and belts for wear					Δ
13	Check any loose or overheated parts of the pressing system					Δ

Chapter 12 Troubleshooting for Start Failure

Problem	Cause	Strategy
The machine does not function after the start button is pressed	The main switch is OFF (fig. 2)	Switch ON the main switch
	The emergency stop button is pressed (fig. 2)	Release the emergency stop button
	Fault power	Check the fuse for the main power. Check the three phases.
	Insufficient air pressure (the air pressure indicator light is lit)	Check the air compressor. Set the pressure above 6 kg/cm^2
	Insufficient lubricant (the empty-oil indicator light is lit)	Refill the oil tank in the lubricating system
	The cover is not shut properly (the cover indicator light is lit)	Check and close the 6 covers of the machine
	Main motor overloading (the overload indicator light is lit)	The overload protector of the main motor is tripped. Press the red button and then the green button to restore
	Problems from other control circuit	Check and replace a new fuse
	The pin for the flywheel is not withdrawn	Withdraw the pin
The air pressure is over 6 kg/cm^2 and the air pressure indicator light is still lit	Wood chips are accumulated in the inside of pneumatic switch which causes poor contact of the contactor	Remove the shield of the pneumatic switch and remove the wood chips inside
The cover indicator light is still lit while the 6 covers are closed	Wood chips are accumulated in the inside of cover safety switch which causes poor contact of the contactor	Remove the shield of the cover safety switch and remove the wood chips inside
The empty-oil indicator light is still lit while there is enough oil in the oil tank	The float switch in the oil tank fails	Replace the float switch
The blower is not started	Manual mode (fig. 2)	Switch to auto mode
	Blower overloading	The load protector is tripped. Press the red button and then the green button to restore