Code 501004



SS-512ML Spindle Moulder



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CHAPTER 1. GENERAL INFORMATION 1.0 OUTLOOKING OF SPINDLE MOULDERS



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1.1 MACHINE IDENTIFICATION

Machine model and serial number are punched onto a metallic plate placed on the machines frame giving access to the electric housing. Refer to Fig. 1.1.

For information concerning specifically the electric system pneumatic supply you must specify the data punched on the metallic plate.

Note: I.C.U.: Interruption short-circuit Capacity (KA) of breaking Utility

1.2 NOTES FOR THE USER

The machine was designed for shaping, tenoning wood as well as wood material; therefore the user is responsible for the damages due to the different use of the machine.

The handbook describes all the operations usually required for the machine maintenance.

Do not carry out operations not described in the handbook.

Operations which require the demounting of machine members as well as maintenance operations shall be carried out only by authorized technicians.

1.3 SPECIFICATIONS

spindle moulder		SS-510	SS-511	SS-512	SS-512L	SS-513	SS-513 pro	SS-513 plus
Dimension of working table	mm	600x700/600x900	700x900	800x1000	850x1300	900x1100	900x1300	950x1300
Dimension of extension table	mm	—	—	800x2500	850x2500	900x2500	900x2500	950x2500
Max. extension table support	mm	—	—			450		
spindle vertical stroke	mm	100	180	140/180	170	180	250	180
below table top	mm	180	180	210	210	250	250	320
above table top	mm	200	225	335	335	335	320	360
spindle speed	rpm	5500/7500/10000		3000/4000/60)00/8000/100000(std.) 1500/3500/5500/7	500/9000(opt.)	
Motor power	Kw	1.5/2.2/3	3.75	3.75/5.5	3.75/5.5	3.75/5.5/7.5	3.75/5.5/7.5	3.75/5.5/7.5
Rated current	А	~: 13/20/25 3~: 4/5.5/7.5	37(~)/11(3~)	11/15	11/15	11/15/20	11/15/20	11/15/20
Working stroke of the sliding	mm	640	840	940	1230	1070	1230	1230
spindle tilting	degree	-5~+30	-5~+45	-5/-45~+45/+10	-5~+45	-5~+45	-5~+45	-45~+45
Overall size(Basic)	mm	850x690x1200	850x900x1170	1230x1000x1340	1300x900x1320	1100x900/1350x1350	1300x1210x1300	1300x1210x1400
					1300X1340X1320			
Net weight(Basic)	kg	200	370	470/480	530/650	480/650	760	770
Range milling cutter diameter	mm	100	120	180	180	180	180	180
Range router bit diameter	mm	25.4	25.4	38	38	38	38	38
Max. workpiece (LxWxT)	mm	530x330x80(st.)	680x360x80(st.)	760x410x80(st.)	1000x450x80(st.)	850x450x80(st)	1000x450x80(st)	1000x450x80(st)
Electrical power supply: single phase models: AC 220 ~ 240V, 50 Hz,, 3 phase models: AC 3~, 380 ~415V, 50Hz								

	Rulong	RU LONG WOOD MACHINE CO., LTD NO. 62 Ta Shun St., Feng Yuan City, Taichung, Taiwan TEL:886-4-25571126-8 FAX:886-4-25571129 E-mail:rulongli@ms27. hinet . net	0
	MODEL		
	MFG. NO.	DATE	
	TOTAL HP	AMP	
	VOLTAGE	HZ	
0		Made in Taiv	wan ()

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Fig.1.1

BASIC MODEL IDENIFICATION



M with fixed spindle & table



TS with tilting spindle and sliding table

1.4 NOISE LEVEL

A-weighted sound pressure level measuring at workstation:

99.04 dB(A)
92.93 dB(A)
93.79 dB(A)
96.01 dB(A)

A-weighted sound power level measuring : SS-510TS 110.6 dB(A) SS-513T plus 104.56 dB(A) SS-512TL 104.74 dB(A) SS-512M+TC1 115.57 dB(A) Associated uncertainty K = 4 dB Measured made in accordance with EN ISO 3746:1995

"The figures quoted are emission levels and are not necessarily safe working levels. Whilst there is a correlation between the emission and exposure levels, this cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of the work-force include the characteristics of the work room, the other sources of noise, etc. i.e. the number of machines and other adjacent processes and the length of time for which an operator is exposed to the noise. Also the permissible exposure level can vary from country to country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk

《NOTE》 Dust extraction equipment shall be connected and be switched on before commencing machining.



T with tilting spindle and fixed table





1.5 SAFETY WARNINGS

Woodworking can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result. Safety equipment such as guards, push sticks, (table pressure pad) hold-down, goggles, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. Always use common sense and exercise caution in the workshop. If a procedure feels dangerous, don't try it. Figure out an alternative procedure that feels safer. Remember: Your personal safety is your responsibility.

This machine was designed for certain applications only. We strongly recommend that this machine not be modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, do not use the machine until you have first contacted us to determine if it can or should be performed on the product.

GENERAL SAFETY RULES

《WARNING》 Failure to follow these rules may result in serious personal injury.

- 1. Do not operate your shaper (spindle moulder) until it is completely assembled and installed according to the instruction manual.
- 2. For your own safety, read instruction manual before operating the tool. Learn the tools application and limitations as well as the specific hazards peculiar to it.
- 3. If you are not thoroughly familiar with the operation of Wood Shapers, obtain advice from your supervisor, instructor, or other qualified person.
- 4. Keep guards in place and in working order.
- 5. Always wear eye protection or safety glasses. Also use face or dust mask if cutting operation is dusty.
- 6. Make sure wiring codes and recommended electrical connections are followed and that machine is properly grounded.
- 7. Remove adjusting keys and wrenches. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it "ON".
- 8. Always keep hands away from cutting tool.
- 9. Wear proper apparel. No loose clothing, gloves, neckties, rings, bracelets, or other jewelry to get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.
- 10. Keep work area clean. Cluttered areas invite accidents.
- 11. Don't use in dangerous environment. Don't use woodworking machinery in damp or wet locations, or expose them to rain. The workshop should be with a sufficient general lighting for a normal operation. Keep work area well-lighted.

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- 12. Keep children and visitors away. All children and visitors should be kept a safe distance from work area.
- 13. Don't force tool. It will do the job better and be safer at the rate for which it was designed.
- 14. Use right tool. Don't force tool or attachment to do a job for which it was designed.
- 15. Replace the warning labels if they fall off or wear off.
- 16. Don't overreach. Keep proper footing and balance at all times.
- 17. Maintain tools in top condition. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
- 18. Keep cutters sharp and free of all rust and pitch.
- 19. Disconnect machine before servicing and when changing accessories such as bits, cutters, etc.
- 20. Make all adjustments with the power "OFF".
- 21. Use recommended accessories. The use of improper accessory may cause hazards or risk of injury.
- 22. Check damaged parts. Before further use of the machine a guard or other part that is damaged should be carefully checked to ensure that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
- 23. Never leave machine running unattended. Don't leave tool until it comes to a complete stop.
- 24. Before leaving the machine, make sure the work area is clean.
- 25 Do not operate tool while under the influence of drugs, alcohol or any medication.
- 26. The dust generated by certain woods and wood products can be injurious to your health. Always operate machinery in well-ventilated areas and provide for proper dust removal. A use of a wood dust collection system shall be connected in the guard intended outlet.

Special safety rules for the wood moulder

- 1. Never run the stock between the fence and the cutting tool.
- 2. The fence halves should be adjusted endwise so the opening is never more than that, which is required to clear the cutter.
- 3. The cutter should be positioned below the workpiece whenever possible. This lessens the possibility of injury or a damaged workpiece which could occur if the workpiece becomes trapped between the cutter and table.
- 4. Always use the miter gage and clamp attachment when edge shaping work less than 150mm wide.
- 5. Make sure the keyed washer is positioned directly under spindle nut and that spindle nut is securely tightened before operating.
- 6. Do not use awkward hand positions.
- 7. Make certain spindle lock is released before starting machine.
- 8. When shaping with collars, the cutter should be positioned below the collar whenever possible.
- 9. Check speed setting to make sure it is proper for the cutter and workpiece.

- 10. Always feed workpiece against the cutter rotation.
- 11. Make sure spindle draw bar and draw bar nuts are securely tightened before operating.
- 12. Turn the main switch to "O", indicate so with a sign and padlock the main switch before making all adjustments or servicing. (CE)
- 13. The wood dust collection system shall be used during maching. (Please refer to 3-10)
- 14. Dust extraction equipment shall be switched on before commencing a machining.
- 15. Make sure power "OFF" before cleaning with vacuum cleaner.

1.6 SAFE WORKING PRACTICE

1. Operator training

It is essential that all operators of vertical spindle molding machines are adequately trained in the use, adjustment and operation of the machine, this covers in particular:

- a) The dangers associated with the operation of the machine.
- b) The principles of machine operation, correct use and adjustment of the fence, jigs and safeguards.
- c) The correct selection of tools for each operation.
- d) The safe handing of the workpiece when cutting.
- e) The position of the hands relative to the cutters and the safe stacking of the workpieces before and after cutting.
- f) The dealer should provide the Information that operators are adequately trained in the use, adjustment and operation of the machine including the correct use, connection instruction for a demountable power feed unit and positions to be taken by operator. This includes in particular:
 - 1) for training:
 - i) the principles of machine setting and operation including the correct use and adjustment of workpiece holding and guiding devices, guards and tool selection.
 - ii) the safe handing of the workpiece when cutting.
 - iii) the correct use and adjustment of safety appliances such as jigs, templates, extension tables and end stops.
 - iv) the use of personal protective equipment for ear and eye protection.
- 2) before machine setting to:
 - i) ensure that the tools used are sharp, selected, maintained and adjusted in accordance with the tool manufactures instructions.
 - ii) use table rinfs or table insert to close the gap between the table and the spindle to a minimum.
 - iii) use special equipment for setting e.g. gauges where practicable.
 - iv) take care when handing tools.
 - v) ensure that when using a demountable power feed unit it is plugged into the socket provide for that purpose on the machine.

3) for workpiece guiding the use of:

i) a fence.

- ii) a false fence wherever possible to minim is the gap between the cutter(s) and the fence plates.
- iii) a push block or push stick to aid hand feeding or wherever possible a de-mountable power feed unit.
- iv) roller or extension table to support long workpiece.
- 4) before machine to:
 - i) fit the tooling to the machine to operate in the correct direction of rotation and feed the workpiece to the tools against the direction of the spindle.
 - ii) ensure that the selected rotational speed is appropriate for the tooling being used.
 - iii) select and adjust the guard.
 - iv) because of the wide variety of work which can be undertaken on vertical spindle moulding machine no one type of safeguard can be considered effective for all conditions. Each operation should be considered separately and the best practicable safeguard selected. The type of tool, cutting edge projection and the height at which the tool is set, will determine the minimum size of the hole in the table.
 - for straight work: in order to prevent access to the tool during straight work it is necessary to use in conjunction with the fence either a de-mountable power feed unit or fence and table pressure pads equipped with special shoes depending upon the workpiece dimension.
 - 2) stopped work: in order prevent access to the tool during stopped work it is necessary to use in conjunction with the fence, table and fence pressure pad equipped with special shoes depending upon the workpiece dimension.
 - 3) in order to prevent kickback it is necessary to use back and/or front end stops fixed to the fence, table or fixed to an extension table.
 - 4) unless the workpiece is large enough to provide a safe and adequate hand hold, the use of a jig is recommended.
 - 5) for curved work: in addition to the use of a guiding steady(lead in device) and in conjunction with the adjustable guard (hand protector) a template is useful to prevent access to the tool.
 - 6) for bevel cutting: in addition to the use of the fence and de-mountable power feed unit or pressure pads, it is important to ensure firm support of the workpiece by using a special jig or adjustable canting fence in order to prevent access to the tool.
 - 7) for tenoning: in order to feed the workpiece safely passed the tool during tenoning it is necessary to use the traveling table and enclosure provided by the manufacturer.



Vertical spindle moulding machine fitted with two Shaw guards forming a tunnel. The dimensions of the pressure pads prevent access by the operator to the cutters when the workpiece is removed

Fig. 1.1.1



Use of power feed and side pressure pad for straight work \$\$Fig. 1.1.2\$\$



Straight work with only the top pressure pad in use

Fig1.1.3



Jig (note toggle clamps and handles) and back/front stops for producing stopped work

Fig. 1.1.4



Example of guard and guiding device for curved work (source BS EN 848-1: 1999)

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Fig.1.1.5



2. Stability

For the machine to be used safety the machine shall be stable and securely fixed to the floor or a stable structure.

3. Machine setting and adjustment

- a) The machine shall be isolated from the power source before any adjustments are made.
- b) For clamping and setting of tools refer tool manufacturers recommendations.
- c) For safe and efficient cutting the tooling shall be suitable for the material being cut.

The tools shall be sharp and properly set with tools holders carefully balanced.

d) After a set/or adjustment/or repair work or a trouble shooting, please check the safety relevant functions whether normal or not before a use.

4. Handing of tools

- i) Care shall be exercised when handing tools, tool carriers shall be used wherever practicable.
- ii) That only tools conforming to EN 848-1:2005 and EN 848-2:2001 and marked MAN shall be used in order to reduce severity of injuries and kickback speed.

5. Setting the tool in the machine

Use special equipment e.g. gauges for setting the tool when machine is standstill. Table rings shall be used to close the gap between the table and the spindle to a minimum.

6. Fence adjustments

- a) The fence shall always be used for straight work cutting to provide adequate guiding workpiece.
- b) A false fence shall be used wherever possible to minimize the gap between the cutters and the main fence.

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The false fence greatly reduces the exposure of dangerous parts

Fig. 1.1.7



Fig. 1.1.8

- c) A power feed device shall be used wherever possible to minimize the gap between the cutters and the main fence.
- d) When hand feeding against the fence a push stick to aid feeding shall be used in conjunction with the guard.
- e) Roller trestles or extension table shall be used to support long workpieces.

7. Direction of rotation

It is most important that the tooling is fitted to the machine to operate in the correct direction of rotation. The operator shall ensure that the workpiece is fed to the tools against the direction of spindle rotation.

7a. Speed selection

The operator must ensure that the correct rotational speed has been selected and is appropriate for the tooling being used on the machine.

8. Machine operation, guard selection and adjustment

Because of the wide variety of work which van be undertaken on vertical spindle molding machines using different types of top spindles, cutter blocks and cutters, no one type of safeguard can be considered effective for all conditions. Each operation should be considered separately and the best practicable safeguard selected for that particular job. Also, the type of cutter block, the cutter projection and the height at which the block is set, will determine the minimum size of the hole in the table. This can be obtained by using the loose rings provided so as to give the smallest possible hole, thus reducing the risk of the workpiece dipping and catching the edge as it passes over the gap.

Guarding shall enclose the cutters to the greatest extent permitted by the nature of the operation.

A power feed unit fitted to a vertical spindle molding machine with a straight fence can have the effect of enclosing the cutters to the greatest extent practicable and often represents the best method of guarding on these machines. Such feed units shall be easily adjustable to suit different sizes of workpieces and should not in themselves create a trapping hazard.

If a power feed is not used, pressure pads with the table and fence spring loaded pressures forming a tunnel through which the workpiece can be fed shall be used in conjunction with a false fence or other means of closing the gap between fences.

9. Straight work where the molding extends over the full length of the workpiece

Work of this type is done with the aid of a straight fence and, in most cases; the workpieces are of regular rectangular section throughout their length. The workpieces, can, therefore, be guided in the angle formed by the table and the fence. Vertical and horizontal spring loads pressure pads van be arranged to form a tunnel through which the workpiece can be fed. A following piece can be used to feed the previous one, with the final piece being completed by using a push stick. When machining thin panels the top spring pressure pad only may be necessary, providing its width is adequate.

Specialized shoes shall be used according to the workpiece dimension.

On a vertical spindle molding machine the gap between the two halves of the straight fence has to be wide enough to give clearance for the cutters. This allows unnecessary exposure of the cutters, the cutter block and the spindle, and in addition the leading end of the workpiece may foul the edge of the take-off half of the fence. These risks are eliminated by the use of a false fence or by a suitable proprietary alternative which fills the gap between the fences. Care shall be taken in the making of a false fence. It is recommended that the cutter opening shall be made by a controlled screw adjustment on the fence on to the cutter and not by pushing the fence on to cutter by hand.

10. Stopped work

Straight work where the cut extends over part of the length of the workpiece.

Work of this nature is usually referred to as stopped work. The cutters have to break into the solid face, instead of starting the cut at the beginning of the workpiece, and/or have to break out before reaching the end. Unless the workpiece is large enough to protects the cutters as far as practicable. A solidly fixed back and/or front stop shall also be used.

The jig shall permit the workpiece to be located quickly and accurately and to be held firmly in position. The most convenient means of holding the workpiece is to use manually operated quick acting clamps which operate with either a toggle or a cam action. Back and/or front stops fixed to the fence or table allow for greater control of the jig and a lead in and out may be provided by means of a template on the jig.



Stopped straight work

Fig. 1.1.9

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11. Curved work

A jig shall be used for all curved work unless the nature of the operation makes it impracticable; that is where the workpiece is so large that the addition of a jig would make the job unmanageable, or where the workpiece is so small, or so complicated that it cannot be held securely in a jig.

Please buy the safety guard for curved work with a profession manufactures which products are in compliance with of relevant (CE) regulations, such as Suva (French), Aigner (German) etc.

12. Bevel cutting

Where bevel cutting is done firm support shall be provided either by a miter gauge or by an adjustable false fence. Push sticks shall be used at the end of the cut.

13. Glass bead work

This machine is not designed / equipped with glass bead unit for glass bead work. Please do not install the special equipment for glass bead work.

Fig. 1.1.11

Glass bead work

Fig. 1.1.10





14. Other work

Where other work is produced on a machine i.e. tenon or comb joints, proprietary jigs or work holders must be used to reduce the risk of accident.

Use of safety appliances

The following appliances may be used to assist the operator when machining:

-jigs or work holder

-push sticks

-demountable power feed

-extension tables

-lead in guide

15. Noise reduction

a) The condition of the tools are important to minimize noise levels.

b) The material and positioning of guards shall be such to reduce noise levels.

- c) Selection of speed tooling shall be used to reduce the noise levels.
- d) Use of personal protection equipment is not an alternative to the above.

1.7 WARNING LABLES

This machine has warning labels attached on it as shown below to ensure proper and safe operation. These warning labes are very important, so do not damage or remove them. If damage or lost, contact your dealer or us and quote the warning label identification rumber for servicing. Please refer to Fig.1.9 and Fig.1.10.

Label No. Remarks

- 1. Safety rules
- 2. Never try to contact a turning spindle and cutters
- 3. Ear and eye protection
- 4. Optimum speed range
- 5. Hazardous voltage
- 6. Speed chart (inside of the cabinet door)
- 7. Open door delay



8. CE MARK





Fig. 1.2

1.8 DIMENSIONS FOR SPINDLE AND TOOLS

Tool shall comply to EN 847-1:2005 and/or EN 847-2:2001.

Acceptable dimension for spindles and tools are given in Fig. 1.3

spindle	diameter d	Maximu spi	m useable length of ndle from the shoulder l ₁	$\begin{array}{c} \text{Maximum tool diamete} \\ \text{(that can be mounted in guard)} \\ \text{d}_2 \end{array}$		
($d_1 g^6$	Single piece spindle	Removable spindle	Shaping	Tenoning	
30 ^b	mm	140	140	250	300	
40°	mm	180	160	250	350	
50	mm	220	160	275	400	
b	values given for d1=30 mm are also valid for spindle diameters larger than 30mm and smaller than 40 mm.					
c	values given for d1=40 mm are also valid for spindle diameters larger than 40mm and smaller than 50 mm.					

Fig. 1.3

1.9 RECOMMENDED WORK AREA

Below shows the work area needed for maintenance of the electrical panel located at the rear side of the machine as well work area of pneumatic panel which is located at the side of the machine.

Straight work station



Tenoning work station



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CHAPTER 2. INSTALLATION

2.1 UNPACKING AND CLEANUP

To ensure maximum performance from your spindle shaper, clean it properly; and install it accurately before use.

As soon as you receive the spindle shaper, we recommend you follow these procedures:

- 1. Inspect packing crate for damage in transit. Record damage, and report it immediately to shipper.
- 2. Open crate and check that machine arrived in good condition. If not, let your industrial distributor know immediately.
- 3. Before lifting machine, remove all foot bolts locking it to its shipping base.
- 4. Transport machine to location with a hand truck or dolly.
- 5. Do not use solvents on plastic parts and electric cord; solvents dissolve or damage plastic and electric cord.

Transportation after Unpacking: crane or fork lift recommended for transportation

The machine can be lifted by using a crane placing the cables as shown in Fig.2.1 or with a fork lift inserting the forks as close as possible to the supports. Refer to Fig.2.2.

The hoist and sling/cables must be with capability of withstanding machine weight. Their cables should be capable of lifting 2tons. Two ends of sling should be at an angle of under 60 degrees.

Fork lift, two forks, should be capable of lifting 2 tons. To move the machine must slow down, especially pay attention to it's balance.

The machine is lifted by crane or removed by fork lift and the removal of pallet packing is achieved.







2.2 Installation and leveling

The spindle moulder comes assembled except interchangeable spindle, fence assembly, dust chute, miter gauge, clamp attachment and some other loose items.

Carefully remove machine from wooden shipping skid. For best shaping performance, locate spindle moulder on a soild, level foundation.

With machine in position, check table surface left to right and front to back with a machine level.

If necessary, place metal shims under the corners of the machine to insure that the machine is level.

Check to be sure that all four corners of the machine are supported and fasten the machine to the floor using foot (leveling) screws. Re-check to make sure table is level and re-adjust if necessary.

2.3 Grounding information and power connections

Before connecting your spindle moulder to the power source, be sure that the electric current of the power source is of the same characteristics as the electrical system supplied with your machine.

	c,	SS-510 1PH	ł	SS	-510 3F	Н	SS-511 1PH	SS-51	1/512/513	3PH
KW (spindle motor)	1.5	2.2	3	1.5	2.2	3	3.75	3.75	5.5	7.5
Mains Fuse A	16	25	32	6	8	10	40	16	16	20
PVC Power cable mm ²	2	3.5	5.5	2	2	2	8	2	2	3.5

Machine overcurrent protective device and power cable to be prepared by the user site:

To connect power to the machine, proceed as follows:

- 1. Remove two screws (A) Fig.2.3, and remove terminal strip cover (B).
- 2. Remove clear plastic insulator (C) Fig.2.4 that covers the terminals.
- 3. Insert power line through opening (D) Fig.2.3, of terminal strip box (G).
- 4. Connect the three power lines to terminals L1, L2, shown at (E) Fig.2.5, and the yellow green ground wire to ground terminal (F).
- 5. Reassemble the clear plastic insulator that was removed in STEP 2 and the terminal strip cover that was removed in STEP 1.



Fig. 2.3

Fig. 2.4

Fig. 2.5

 $\langle CAUTION \rangle$ The best work conditions for the machine is to furnish the right tension indicated on the motor plate, however it can adapt itself to tensions superior or inferior in a tolerance field of +/-5%.(e.g. a machine with a work tension of 380 volts has a tolerance field ranging from 360 to 400 volts).

The necessary wiring from the starter to the power source should be completed by a competent electrician.

For personal safety, this machine must be properly grounded.

The spindle moulder must be grounded while in use to protect the operator from electric shock.

Never connect the yellow green wire to a live terminal.

《WARNING》 After connecting this machine to power source, the terminal box is still electrified even while the power switch is shut off.

When wiring is completed, tape all power box joints to keep out dust.

Make sure the direction of the shafts rotation is correct by starting the machine as described in its appropriate paragraph. If the direction is wrong, please check the power phase sequence again.

«CAUTION»

Voltage Steady state voltage: 0,9 to 1,1 of nominal voltage.

Frequency 0,99 to 1,01 of nominal frequency continuously;

0,98 to 1,02 short time.

Harmonics Harmonic distortion not exceeding 10 % of the total r.m.s. voltage between live conductors for the sum of the 2nd through to the 5th harmonic.

Voltage interruption Supply interrupted or at zero voltage for not more than 3 ms at any random time in the supply cycle with more than 1 s between successive interruptions.

Voltage dips Voltage dips not exceeding 20 % of the peak voltage of the supply for more than one cycle with more than 1 s between successive dips.

No relevant statement provided in the manual:

Environment Requirement

The minimum requirement for all electrical equipment is correct operation between air temperature of $+5^{\circ}$ C and $+45^{\circ}$ C.

Electrical equipment is capable of operating correctly when the relative humidity does not exceeding 50% at a maximum temperature of $+45^{\circ}$ C.

Electrical equipment is capable of operating correctly at altitude up to 1000 m.

Electrical equipment is designed to withstand to protected against the effects of transportation, and storage temperature within a range of -25° C to $+55^{\circ}$ C and for short periods not exceeding 24h at up to $+70^{\circ}$ C.

Avoid exposing to vibration environment.

Avoid exposing to direct sunlight or heat rays.

Have to connect to the factory grounding system correctly

Away from electric magnetic interference source sites, such welding, discharge machine.

FOR 5-SPEED SPINDLE MOULDER A control panel is provided with your spindle moulder as shown in Fig. 3.1. & Fig. 3.2.

CHAPTER 3. USE-ADJUSTMENT

A. power indicator (CE)

3.1 Control Unit

- B. on-off switch
- C. forward/reverse switch
- D. start indicator (CE)
- E. emergency stop
- F. switch for unlock the motor brake(on request)
- G. forward indicator (CE)
- H. speed indicator (CE)

FOR 3-SPEED SPINDLE MOULDER

An on-off switch and a forward/reverse switch are provided with the machine and should be used as follows to operate your machine.



The control unit should be used as the following to operate your machine:

- 1. Make certain the spindle lock is disengaged as explained in the section "SPINDLE LOCK" and that the cabinet door is in the closed position.
- Rotate the forward/reverse switch (C) Fig.3.1 to either the forward rotation, or reverse rotation.
 Rotate the start switch (B) to the right to start the machine. Switch (B) is a magnetic switch and as soon as the machine is started the switch will return to the center position as shown.
- 3. To stop the machine, push the mushroom shaped stop button (E), or turn the start/stop switch (B) to the left, or simply step on brake pedal (B) Fig.3.12, to stop the machine in seconds if this device is available.





To reverse the rotation of the spindle simply shut off the motor; then rotate the forward/reverse switch after the spindle stop completely. For CE machine, a main switch is mounted on the right side of the machine frame. Turning the switch to zero, indicate so with a sign and padlock it before servicing. The electrical cabinet door is lockable. Always close and lock this door except for service.

- **«WARNING**» Never attempt to reverse the rotation of the spindle with the motor/spindle running. Remember !
- **《CAUTION》** Do not use the for/rev. switch to stop the machine or it will damage the electrical controls. Use stop push button or brake pedal for normal stop.
- **《WARNING**》 Open the electrical cabinet door only while the main switch is shut off, or it may result in electric shock.

3.3 SPEED CHANGE AND BELT ADJUSTMENT

a) the relationship between tool diameter, cutting length and max. rotational speed

Since the max. safe spindle speed will depend on:

- a) The spindle diameter
- b) Te usable length of the spindle
- c) The length of cut
- d) The tool cutting diameter

The following charts can be used to determine the max. spindle speed for various tool cutting diameters given the values of d, l, and b.





*d*1: spindle diameter

d2: tool cutting diameter

b: length of cut

l1:maximum useable length of spindle



b) FOR 5-SPEED SPINDLE MOULDER

Your machine is supplied with a 5-step motor pulley and a 5-step spindle pulley that provides spindle speeds of 3000, 4000, 6000, 8000 and 10000 RPM as standard; or 1500, 3500, 5500, 7500, 9000 RPM as alternative for some specific models.

A large speed chart Fig. 3.3, is located on the inside of the cabinet door for easy reference of the belt position on the pulleys for the five speeds available.

Fig.3.3

Check machine speed setting before operating. Make sure cutter meets or exceeds speed rating of tool. In the diagram Fig.3.4 a concrete example of choosing a speed in function to the diameter of the utensil, and the most opportune peripheral speed for the type of material to be worked on.

Guide values for cutt	ing speed		OP	тім	UM S	Speed range for tools on spindle moulder
11-1-2-1	Cutter HS	Cutter HW		4	50 20 00 80	DANGER OF BURST
Softwood	50-80	60-90		3	20	
Hardwood	40-60	50-80	IWW	3	80 80	
Chipboard	-	60-80	METER	2	20	
Coreboard	_	60-80		2	80	SPEED RANGE
Hard fibreboard	_	40-60	P	2	60 40	
Plastic-coated board		40-60		1	25	
Example: Cutter: 160 mm diameter Cutter speed formula $v= (D \times \pi \times N) / (60 \times 10^{\circ})$ D: Tool diameter (mm N: Tool spindle speed	er, v _c =76m s-1→n=9 : 000) n) d (rpm)	2000 min ^{.1}		6	2800	B B
1 60 100 120 140 160 180 220 35 40 420 250 37 39 46 280 37 41 44 51 6	34 3 35 38 41 37 41 44 48 6 38 42 47 50 54 5 37 42 47 50 54 5 37 42 47 50 54 5 36 42 47 50 54 5 37 42 47 52 59 63 68 7 42 52 58 65 70 75 8 52 59 65 3 9 59 59 53 55 5	31 38 33 38 42 60 7 39 42 47 52 63 4 47 50 57 63 75 1 55 59 666 73 88 9 63 67 75 84 5 71 75 85 3 79 84)			Spindle dia. Tool length 30 mm 140 40 mm 160 50mm 160 1. hazard-bad machining conditions
300 39 44 47 56 6 \$20 42 47 50 59 6 350 46 51 55 64 7 380 60 56 60 70 8 400 52 59 63 73 6 420 55 62 66 77 8 450 59 66 71 82	33 71 79 57 75 84 73 82 80	2 1 1 1 1 1 1 1 1 1 1 1 1 1	Fig	.3	.4.1	 2. bursting hazard 3. recommended spindle tool speed D tool diameter N tool spindle speed
The cutting speed ra	nge m/sec (low	er and upper limits) is sel	ec	ete	d
according to the tool diameter (mm) D (left vertical axis in the						
above chart) and the	tool spindle sp	eed N min ⁻¹ (botton	n horiz	20	nta	al
axis in the above cha	art) to avoid the	risk of kickback of	r tool d	la	ma	age
respectively.						

The cutting speed shall always exceed 40 m/s to lessen kickback risk but shall never exceed 70 m/s to lessen the risk of tool damage.

To change the speed and adjust the proper belt tension, proceed as follows:

- 1. Disconnect machine from the power source.
- 2. Open the door guard.
- **(NOTE)** A limit switch is provided which prevents the machine from being turned on when the cabinet door is in the open position. (CE)

《CAUTION》 The normal stop (B) Fig. 3.1, should not be replaced by this above-mentioned limit switch inside the door guard.

- Move belt tension lever (A) Fig. 3.5, to the right as shown, to loosen belt tension. The belt (B) can then be moved to the desired steps of the motor pulley (C) and spindle pulley (D), while at the same time, rotate knob (A) Fig. 3.5.1 to slide speed bar (B) up or down so that the belt will be positioned in the cut-out in speed bar if this device is available on your machine.
- After the belt (B) Fig.3.6, is positioned on the desired steps of the motor pulley (C) and spindle pulley (D), move tension lever (A) to the left to apply belt tension as shown.

During the first work phase, the belt will settle and thus a

reduction of the tension. Turn the two nuts (E&F) Fig.3.6,

Tension is checked by pressing the center of the belt span

with a force of 3kg; tension is correct when a 5mm

5. Close the door guard.

to obtain the best tension of the belt.

deflection is observed.

Fig. 3.5



Fig.3.5.1



For 3-SPEED SPINDLE MOULDER

The 3-speed spindle moulder is supplied with a 3-step motor pulley and a 3-step spindle pulley that provides spindle speeds of 5500, 7500 and 10000 RPM.

A speed chart Fig.3.7 is located in the front of the machine for easy reference of the belt position on the pulleys for three speeds available. To change speeds, proceed as follows:

1. Shut off the power and open the cabinet door.

- **(NOTE)** A limit switch is provided which prevents the machine from being turned on when the cabinet door is in the open position.
- 2. Loosen lock lever (A) Fig.3.8, then move tension lever (B), to the left to loosen belt tension. The belt (C) can then be moved to the desired steps of the motor pulley (D) and spindle pulley (E).
- 3. After the belt is positioned on the desired steps of the motor pulley and spindle pulley, move tension lever (B) to the right to apply belt tension and tighten lock lever (A).









3.4 Spindle lock

A spindle lock is provided with your machine in on of the following types to assist you when changing spindle or installing and removing cutters.

《CAUTION》 Spindle lock is provided with your machine in one of the following types to assist you when changing spindle or installing and removing cutters.



Fig. 3.9

BASIC TYPE

- 1. Open rear cover of the machine. Rotate lock knob (A) Fig. 3.9, until the hole on the knob engages the pin on the other end of the knob. The knob (A) will then be latched in "lock spindle".
- 2. Close rear door.

STANDARD TYPE A

- To position the spindle in "loose spindle" (where the spindle will rotate freely), pull out knob (A) Fig.3.10, and turn it clockwise. The knob (A) will then be latched in "loose spindle". Fig.3.10 illustrated the knob (A) pulled out in the loose spindle position.
- 2. To engage the spindle lock, turn knob (A) Fig.3.11, counterclockwise and push in to the locked position, as shown in Fig.3.11.



- 1. To position the spindle in "loose spindle (where the spindle will rotate freely), turn knob (A) Fig. 3.10, and push in to the loose position.
- 2. To engage the spindle lock, pull out knob (A) and turn spindle by hand till the spindle is locked, and then turn knob. The knob will then be latched in "locked spindle".



Fig. 3.10



Fig. 3.11

《CAUTION》 Make sure spindle lock knob is in the loose position before turning "ON" the machine.

3.5 INTERCHANGEABLE SPINDLE INSTALLATION AND REPLACEMENT

One of the features of this machine is that it can replace the different sizes of the spindle and uses router bits. To install the spindle, proceed as follows:

FOR INTERCHANGEABLE SPINDLE WITH DRAW BAR

- 1. Disconnect the machine from the power source and remove the table rings.
- 2. Turn the spindle raising and lowering handwheel and raise the main shaft all the way to the top.
- 3. The taper of the interchangeable spindle and the internal taper of the shaft must be cleaned thoroughly using a cloth moistened with kerosene or mineral spirits. Do not use gasoline or lacquer thinner for this purpose.



Fig. 3.12

4. Thread the short threaded end of the draw bar (B) Fig. 3.12, into the threaded hole in the bottom of the interchangeable spindle (A) and remove the two lock nuts and special bevel washer from the other end of the draw bar (B).

shown. The two lock nuts (I) were removed from the draw bar (B)

10. Disengage the spindle lock.

onto threads (F).

LOCK".

in STEP 4.

9.

FOR INTERCHANGEABLE SPINDLE WITHOUT DRAW BAR

1. Disconnect the machine from the power source and remove the table rings.

7. Using the special spanner wrench (G) Fig.3.13, as supplied by

washer (H) was removed from the draw bar in STEP 4.

8. Open the cabinet door and assemble the special level washer (H) to the bottom of the draw bar (B), as shown in Fig.3.14. The bevel

Assemble and securely tighten the two lock nuts (I) Fig. 3.14 as

RULONG, tighten spindle nut (E) as shown.

- Turn the spindle raising and lowering handwheel and raise the 2. main shaft all the way to the top.
- 3. Engage spindle lock as explained in the section "SPINDLE LOCK".
- The taper of the interchangeable spindle and the internal taper of 4. the shaft must be cleaned thoroughly using a cloth moistened with kerosene or mineral spirits. Do not use gasoline or lacquer thinner for this purpose.
- Very carefully insert the spindle (A) Fig.3.15 to the hole of main shaft. Make sure the tang (B) on the 5. spindle is engaged with the notch, then lock it with nut (C), and lock nut (D) in reverse direction.
- 6. At the upper part of the lock nut (D) there are two screws (E). Turn the two screws (E) by pressing the threads of the nuts (D) tightly in order to prevent the spindle from loosening when it is used in the forward and reverse directions.

To take off spindle:

- Before lock nut (D) is loosened, two screws (E) must be loosened first. 1.
- 2. The lock nut (D) can not be taken away alone. Only loosen the lock nut by turning twice only, then loosen the nut (C) until the spindle is taken off.

5. Very carefully insert the draw bar (B) and spindle (A) Fig.3.12, down through the shaft as shown. Make sure the tang (C), on the I spindle, is engaged with the notch (D), and thread spindle nut (E) 6. Engage spindle lock as explained in the section "SPINDLE



Fig. 3.14



Fig.3.15

3.6 SPINDLE VERTICAL TRAVEL ADJUSTMENT

FOR 5-SPEED SPINDLE MOULDER

TYPE A

- 1. Loosen handwheel lock (A) Fig. 3.16, before making adjustment of spindle height.
- 2. To raise the spindle, turn handwheel (B) counterclockwise and to lower the spindle, turn handwheel (B) clockwise.
- 3. Tigten handwheel lock (A) when desired spindle height is obtained.
- 4. One complete turn of the handwheel moves the spindle up or down by 1 or 2.5mm indicated on the machine frame.

TYPE B

- 1. Loosen locking lever (A) and knob (b) Fig. 3.17, before making adjustment of spindle height.
- 2. To raise the spindle, turn handwheel (C) counterclockwise and to lower the spindle, turn handwheel (C) clockwise.
- 3. Tigten knob (B) and locking lever (A) when desired spindle height is obtained.
- 4. The dial indicator (D) is for the use of micro-adjustment of spindle.
- One complete turn of the handwheel moves the spindle up or down by 1 or 2.5mm indicated on the machine frame.

TYPE C

- 1. Loosen the locking handle (A) and knob (B) Fig. 3.18.
- 2. Turn the handwheel (C) and adjust the height to the required position.
- 3. Lock the knob (B) and locking handle (A).
- One complete turn of the handwheel moves the spindle up or down by 1mm.

Fig.3.18

Digital read-out (A) Fig. 3.19, for spindle height is available for some specific models.



Fig. 3.16



Fig.3.17





FOR 3-SPEED SPINDLE MOULDER

- 1. Loosen handwheel lock (a) Fig. 3.20, before making adjustment of spindle height.
- 2. To raise the spindle, turn handwheel (B) clockwise and lower the spindle, turn handwheel (B) counterclockwise.
- 3. Tighten handwheel lock (A) when desired spindle height is obtained.
- One complete turn of the handwheel moves the spindle up or down by 2mm.



Fig. 3.20

《WARNING》 Final height setting of the cutter should always be from the bottom to the up position.

3.7 SPINDLE TILTING ADJUSTMENT

Stop the machine before tilting the spindle. Unlock the spindle. Be sure that the cutter does not touch the table and the fences.

FOR 5-SPEED SPINDLE MOULDER

Forward tilt type

The dial indicator of tilting degree indicates the figures from -5 or -10 to 45 degree. When adjust the tilt of spindle:

- 1. Replace the table rings and install the one for use with tilting spindle.
- 2. Loose the knob (B) Fig. 3.21 on the handwheel (A).
- 3. Loose the two locking handles (C) on the both sides of machine.
- 4. Turn the handwheel (A) to the required tilting degree and position.
- 5. Tighten the knob (B) and locking handles (C).

Digital read-out for spindle tilting degree is available for some specific models.

Backward tilt type

The dial indicator of tilting degree indicates the figures from 10 to -45 degree. When adjust the tilt of spindle:

- 1. Replace the table rings and install the one for use with tilting spindle.
- 2. Loose the knob (C) Fig. 3.21.1 on the handwheel (B).







- 3. Loose the locking handles (D) on the right side of machine.
- Turn the handwheel (B) to the required tilting degree and position.
 A dial indicator showing existing tilting degree is provided for your convenient adjustment.
- 5. Tighten the knob (C) and locking handles (D).

FOR 3-SPEED SPINDLE MOULDER

The scale of tilting degree indicates the figures from -5 to 30 degree. When adjust the tilt of spindle:

- 1. Replace the table rings and install the one for use with tilting spindle.
- 2. Loose the knob (C) Fig. 3.20.
- 3. Turn the knob (D) to the required tilting degree and position.
- 4. Tighten the knob (C).

3.8 ASSEMBLING CUTTERS TO SPINDLE

Before changing the tool, the electricity power should be shut off.

- 1. Disconnect the machine from the power source and engage the spindle lock as explained in the section "SPINDLE LOCK".
- 2. Place the cutter (A) Fig. 3.22, and desired spindle rings (B) on the spindle as shown.
- 3. Tighten nut (D) using the wrench supplied and disengage spindle lock.

Or tighten safety nut w/washer (E) using the wrench supplied and disengages spindle lock.



Fig.3.22

《WARNING》 Whenever possible, the cutter should be position on the spindle in such a way that the cut us being performed from under the surface of the workpiece.

- **《WARNIN**G》 Always place the "keyed" washer (C) Fig. 3.22, on spindle before threading on nut (D). The "keyed" washer (C) prevents the nut (D), from loosening when spindle turns counterclockwise.
- **《WARNIN**G》 After installing and replacing cutter please check one more time carefully. Be sure that the direction of cutter is correct and the keyed washer, spindle rings are directly under spindle nut and spindle nut is tightened securely.

3.9 TABLE RINGS

A set of table rings is supplied with your machine and can be removed individually for use with various size cutters.

A table ring for use with tilting spindle is also available.

3-11

3.10 ASSEMBLING AND INSTALLING FENCE AND DUST CHUTE

ASSEMBLING FENCE

- 1. Place fence body (A) Fig.3.23 on the table. Fasten bar (C) to the front of the fence half using the locking lever (B) and washer. Assemble the remaining bar to the fence half in the same manner.
- **《NOTE》** Locking levers (B) are spring-loaded and can be repositioned by pulling out the handle and repositioning it on the nut located underneath the hub of the handle.
 - 2. Locate the two fence locking handles (D) Fig. 3.24 and washers, and fasten fence body (A) to one of the two sets of holes located on the machine table.
 - Loosen locking lever (B) Fig.3.23, and slide rear of fence half (E) Fig. 3.24 onto locking bar (C) Fig, 3.23. Assemble remaining fence half in the same manner. Then tighten locking lever (B).
 - 4. Assemble top cover (F) Fig.3.24, to top of fence body using the two locking knobs (G) and washers.

ASSEMBLING GUARDS TO FENCE BODY

- Assemble spring guard (A) Fig.3.25, hold-down (D) and clear plastic guard (C) to mounting rod (D) located on top of fence cover or fence body using rod (E) and clamps.
- 2. The spring guard (fence pressure pad) (A), hold-down (table pressure pad) (B) and clear (C) can be flipped up out of the way when not in use or when making adjustments.

Realignment of fence plates parallel:

Placing a solid ruler along the fixed fence plate, adjust the movable fence plate to contact the fixed fence plate.

FENCE CONTROLS AND ADJUSTMENTS

- **《WARNIING》** The fence halves (E) Fig3.24 should be adjusted endwise so the opening at the spindle is never more than is required to clear the cutter.
 - 1. To adjust the fence halves (E) Fig.3.24 endwise, loosen the two fence locking levers, slide the fence halves to the required positions and tighten locking levers (B).



Fig.3.23



Fig.3.24



Fig.3.25

- 2. Each fence half (E) can be moved independently, in o out, depending on the type of shaping operation that is being performed. To move the fence halves in or out, loosen one of the locking knobs (H) and turn one of the adjusting knobs (I) until the correct setting is obtained and tighten locking knob (H).
- 3. The complete fence assembly can be rapidly positioned on the table by loosening two locking handles (D), moving the fence assembly to the desired position and tightening the two locking handles (D).

ASSEMBLING DUST CHUTE

For 5-speed spindle moulder

Assemble dust chute (A) Fig.3.26. to rear of machine table, using the two screws and washers (B) as shown.

Air suction (A) for table: 101.6 mm (4")



Fig.3.26

Assemble dust chute (A) Fig.3.26.1 for safety fence assembly, using the two screws and washers (B) as shown. Air suction (A) for safety fence assy. SS-510/511series: 101.6mm (4") SS-512~PS-515 series : 127 mm (5")





For 3-speed spindle moulder

Two 4" diameter dust chutes are provided to allow you to connect your machine to a dust collector or central dust collection system. One dust chute opening is provided on the fence and another dust chute opening (A) Fig.3.27 is provided on the machine frame. Air suction (A): 101.6 mm (4")

《WARNING》 The suction system should have a flow rate with a speed of at least 4900 F/M to 5900 F/M (25M/S to 30 M/S). Air delivery: 45∼50 M³/Min





3-13 3.11 ASSEMBLING MITER GAUGE AND CLAMP

ASSEMBLING MITER GAUGE

For 5-speed spindle moulder with fixed table

- 1. Locate the miter gauge bar (A) Fig.3.28, and insert washer and (B) of bar into T-slot (C) of machine table.
- 2. Fig.3.29 illustrates the miter gauge bar (A) in the table slot. Place the miter gauge (D) on the bar with stud (E) of bar protruding up through opening in miter gauge body as shown. Fasten in place using washer (F) and lock knob (G).









For 5-speed spindle moulder with sliding table

- 1. Insert post (A) Fig.3.30 of the clamp assembly down through hole (B) of the miter gauge body (C), and threat post (A) into hole (D) of sliding table.
- 2. Insert shaft of locking handle (E) down through opening (F) of miter gauge and thread shaft into hole (G) of slogging table.



Fig. 3.30

For 3-speed spindle moulder with fixed table

- 1. Locate the miter gauge bar (A) Fig.3.31, and insert washer end (B) of bar into T-slot (C) of machine table.
- 2. Fig.3.32 illustrates the miter gauge bar (A) in the table slot. Place the miter gauge (F) on the bar. Fasten in place using washer (E) Fig.3.31 and locking knob (D).





For 3-speed spindle moulder with sliding table

- 1. Insert post (A) Fig.3.33 of the clamp assembly down through hole (B) of the miter gauge body (C), and thread post (A) into hole (D) of sliding table.
- 2. Insert shaft of locking handle (E) down through opening (F) of miter gauge and thread shaft into hole (G) of sliding table.
- 3. Fig.3.34, illustrates miter gauge (C) and locking handle (E) assembled to the sliding table.

ASSEMBLING STOP ROD/FENCE AND STOP TO MITER GAUGE

Stop rod for 5-speed spindle moulder

- 1. Insert stop rod (A) Fig.3.35, into hole on side of miter gauge body and lock in place with locking knobs (B).
- 2. Assemble stop (C) to stop rod (A) as shown, and tighten locking knob (D).







Fig.3.32



Fig. 3.34

Miter gauge clamp

A clamp (E) Fig.3.35 is supplied with your miter gauge to securely hold workpieces when shaping small piece across the gain.

The clamp (E) can be moved up or down as required on post (F).





Stop fence for silding table (optional)

- 1. Insert two nuts (A) Fig.3.36 of locking levers (B) into fence channel (C).
- 2. Position fence (E) Fig.3.37 on miter gauge with two screws(D) Fig.3.36 of locking levers engaged into two notch (F)Fig.3.37 on top of miter gauge.
- To slide fence (E) Fig.3.37, to the left or right, loosen locking levers (B), slide fence (E) to the desired position and tighten locking levers (B). To tilt the fence (E), loosen locking handle (G).

A scale (H) is provided to indicate the miter angle of the fence (E).

- 4. Loose locking levers (I) Fig.3.38, and insert nut (J) of stock stop assembly into channel on end of fence as shown.
- 5. Slide stock stop (K) Fig.3.39, to desired position on fence and tighten locking levers (I).









Fig. 3.38



Fig. 3.39

3-16 **3.12 SLIDING TABLE ADJUSTMENT** (For sliding table only)

There are six adjustable eccentric rollers (A) Fig.3.40, on sliding table. Wherever the table is unstable or not traveling in line, adjust the sliding table as follow:

- 1. Use open end wrench (B) to adjust the rollers.
- 2. Lock the rollers by using the hex. Wrench (C)

SLIDING TABLE LOCK

To operate the sliding table (G) Fig.3.40, pull out and rotate knob (D) until it stays in the out position as shown. The sliding table can then be moved back and forth. To lock the sliding table, preventing it from moving, simply rotate knob (D), until knob (D) moves to the up position and the pin on the other end of the knob engages a hole underneath the table.





3.13 EXTENSION SUPPORT ADJUSTMENT (For extension table only)

- 1. Loosen the two locking knobs (A) Fig.3.41 to loosen the extension bars.
- 2. Pull the extension support to the desired position
- 3. Tighten the two locking knobs to lock it.



Fig. 3.41

3.14 TENONING CARRIAGE (optional) IN UP POSITION FOR TENONING WORK

The 2-position tenoning carriage shall be used with tenoning hood and clamp attachment to ensure the safety and stability during operations. To operate the tenoning carriage, proceed as follows:

- 1. Push downwanrd the handle (A) Fig.3.42, to raise the table support (B) and tenoning table (C), than rotate the knob (D) until it moves to the right position.
- 2. Loosen the two locking levers (E) and slide the tenoning table (C) to the desired position. For accurate shaping with minimal vibration, the tenoning table should run close to he spindle.
- 3. Tighten two locking levers (E).



IN DOWN POSITION AS EXTENSION TABLE

The tenoning carriage can be lowered to be at the same level of the machine table and used as an extension table for the machine of long workpiece.

- 1. Loosen the two locking levers (E), and slide the tenoning table (C) just away from machine table.
- 2. Slightly push downward the handle (A) to pull out and rotate the knob (D) until it stays in the out position, then guide the handle (A) to the top position, the tenoning table can be lowered.
- 3. Slide the tenoning carriage to the proper position on the rail.
- 4. Tighten locking lever (F) against the nearest screw head on the rail to prevent the tenoning carriage from moving.

3.15 INSTALLING TENONING HOOD (optional)

- Lean the hood on the table, regulate the distance from the cutters and secure the position by tightening the locking levers (A) Fig.3.43, Fig.3.44.
- 2. Regulate the height of the protection in respect of the cutters by turning the knobs (B)
- 3. Fences (C) Fig 3-44 shall always be used for tenoning work cutting to provide adequate guiding workpiece.

《WARNING》 The machine should be equipped with the tenoning hood when doing tenoning work.

*TC1-e Tenoning Carriage/ Economic type Fig. 3.42.1









3-18 **3.16 INSTALLING CURVED WORK GUIDING (optional)**

The machine should be equipped with the curved work guiding when doing curved work. Please buy the safety guard for curved work with a profession manufactures which products **are in compliance with of relevant (CE) regulations** such as Suva (French), Aigner(German) etc.

The curve-cutting safety guard allows curved workpieces to be safely and economically shaped.

• Good view of the workpiece from above and from the front, thanks to the window and the transparent guard

- Pressure on the workpiece can be adjusted
- Integral connection outlet for a chip and dust extraction
- Very robust aluminium die casting
- Quick and easy to adjust
- Available in different versions



Fig. 3.45

For moulding curved workpieces. A ball-bearing race (ball ring guard) or a curve cutting fence (ring guard) can be used as a fence. Consists of a curve-cutting safety guard, integral feed guide and two screws for installation on the machine table.

ring guard: Two curve ring guard for large and small curves with the required fixing bolts	ball ring guard: inner bore diameter 30 mm, 35 mm, 40 mm, 50 mm, 1.25 inch and 1.5 inch.
	<image/>

CHAPTER 4. OPERATION

4.1 STRAIGHT WORK

Using the fence is the safest and most satisfactory method of shaping, and should always be used when the work permits. Almost all straight work can be done with the fence.

- 1. For normal work, where a portion of the original edge of the stock is not touched by the cutter, both the infeed and outfeed fences are in a straight line, as shown in Fig.4.1.
- 2. When the shaping operation removes the entire edge of the stock, e.g. in jointing or making a full bead, the shaped edge will not be supported by the outfeed fence edge when both fences are in line, as shown in Fig. 4.2. In this case, the stock should be advanced to the position shown in the Fig.4.2 and stopped. The outfeed fence should then be moved forward to contact the work, as shown in Fig.4.3. The outfeed fence will then be in line with the cutting circle, and the operation can continue.













《WARNING》 Keep guards in place and in working order. Always use fence assembly when the work permits.

4.2 POSITION OF COLLARS

When shaping with collars, the collar must have sufficient bearing surface, as shown in Fig.4.4. Also the work must be fairly heavy relative to the cut being made. Under no circumstances should a short, light work-piece be shaped against the collars, as shown in Fig. 4.5.

The collars may be used in any of the following positions: above, below, or between the cutters.

- When the collar is used below the cutter, as shown in Fig.4.6, the progress of the cut can be seen throughout the operation. However, any accidental lifting of the work will gouge the wood and ruin the work-piece.
- 2. When the collar is used above the cutter, as shown in Fig. 4.7, the cut can not be seen, but this method offers an advantage in that the cut is not affected by light variations in the thickness of the stock. Also, accidental lifting of the work-piece will not gouge the work-piece; simply repeat the operation to correct the mistake.
- 3. Using the collar between two cutters has the advantages and disadvantages of the first two procedures, and is frequently used where both edges of the work are to be molded, see Fig.4.8.
 - **《NOTE》** It is advisable to place the cutter as low as possible on the spindle to reduce spindle deflection and ensure the best possible finish. Also make sure that the contacting

surfaces of the cutter are smooth, clean and without



dents.

Fig.4.7









Fig.4.6





Fig. 4.8

4.3 TENONING

The provided miter gauge and clamp can be used for tenoning operations. The tenoning hood fitted with adjustable sections shall be used to guard the tool form above the work-piece and from the sides.

《WARNING》 Keep guards in place and in working order. Always use tenoning hood when processing tenoning machining.

4.4 CURVED WORK

Keep guards in place and in working order. Always use curved work guiding when processing curved work. Please buy the safety guard for curved work with a profession manufactures which products **are in compliance with of relevant (CE) regulations,** such as Suva (French), Aigner(German) etc.

It is with integral outlet for connection with a dust and chip collection. To machine curved and circular workpieces economically, accurately and with maximum regard for safety.

This safety and working unit enables fast and low risk machining of curved workpieces, the power feed unit can also be used with this device. The guard can be easily and quickly fitted to the table of spindle moulder with the use of tools. Adjustment for transparent guide height and position is both quick and accurate. It is possible to use the guard for both clockwise and counter-clockwise machining. The guard brushes are infinitely adjustable.



Example of curved work Fig. 4.9

CHAPTER 5. MAINTENANCE

Before any maintenance/lubrication works, the electricity power should be shut off to avoid any involuntary retstart.

5.1 LUBRICATION

Do not operate machine until properly lubricated.

Apply a drop of light machine oil occasionally on the ledge and wall of the table opening to facilitate the

changing of table rings.

The bearings in the motor are sealed for life and do not require lubrication.

The spindle bearings should be lubricated every 200 hours of use by using the grease gun (A) Fig.5.1, supplied.

Two grease fittings, one of which is shown at (B), are supplied on the

spindle housing for this purpose. The other grease fitting is directly

opposite fitting (B). Before lubricating, clean grease fittings (B) thorough and lubricate the spindle bearings with two pumps of one of the following greases:

Shell Alvania grease R2 Dow Corning MolyKoke R BR2 Esso-Becon 2 Mobile-Mobilplex 47 Texaco-Startex 2



SUGGESTED CHECKING

Index position	Interval / Situation
Spindle ball bearings	Every 200 hours of use
Belt	Every 1000 hours of use or check belt whenever get frayed
Emergency stop	Every day/ by functional test-press checking
Interlocked guards	Every day/ by opening each guard in turn to stop the machine and by proving the inability to start the machine with each guard in the open position
The mechanical brake	Every 100 hours of an operation use or by brake function testing to check that the machine is braked within the specified time (less than 10 sec)
Electrical cabinet/system	Monthly check: wiring terminals loosening, insulation deterioration

(NOTE) After a set/or adjustment/or repair work or a trouble shooting, please check the safety relevant functions whether normal or not before a use.

5.2 PERIODICAL MAINTENANCE

Periodically clean the inside of the machine from eventual presence of shaving or dust. Machine cleaning increases the machine life and its performance.

To replace the ball bearings you should call skilled technician, then for this necessity contact your local agent.

Clean the spindle with compressed air.

Do not get oil on the pulleys and belts. If they are dirty, use paper or a soft rag to clean and dry them. Never place the V-belt under excessive strain, as this can overload the motor and damage the bearings, spindle or belt.

5.3 KEY HANDLE FOR CONTROL CABINET

Using special key handle (A), as supplied by RULONG, open the control cabinet as shown. (Fig. 5.2)



Declaration of Conformity CE

We RU LONG WOOD MACHINE Co. Ltd. (No.62 TA SHUN ST., FENG YUAN, Taichung, Taiwan, R.O.C. No.62 TA SHUN ST., FENG YUAN, Taichung, Taiwan, R.O.C.) declare under our sole responsibility that the products Single spindle vertical molding machines (shapers) SS-510 M/MS/T/TS plus, SS-511 M/MS/T/TS, SS-512 M/MS/T/TS/ML/MSL/TL/TSL, SS-513 EM/EMS/M/MS/T/TS/L/TL, SS-513M/MS/T/TS pro, SS-513T/TS plus; described under this manual is in conformity with the following Directives/ or standardization documents: Machinery Directive 2006/42/EC, Low Voltage Directive 2006/95/EC, EN 60204-1, EN 848-1. EC- type examination certification is carried out by Notified body TÜV NORD (0044).

CHAPTER 6. TROBULE SHOOTING

TROUBLE	POSSIBEL CAUSE	SOLUTION
Machine will not start.	1. Fuse blown or circuit breaker tripped.	1. Replace fuse or reset circuit breaker.
	2. Cord damaged.	2. Have cord replaced by authorized service person.
Overload kicks out	1. Extension cord too light or too long.	1. Replace with adequate size cord.
frequently.	2. Feed stock too fast.	2. Feed stock more slowly.
	3. Cutter is dull or has gum on it.	3. Clean or replace cutter.
Tool does not come up	1. Extension cord too light or too long.	1. Replace with adequate size cord.
to speed.	2. Low current.	2. Contact local electric company.
_	3. Motor not wired for correct voltage.	3. Refer to motor nameplate for correct wiring.
	4. Spindle is locked.	4. Replace spindle lock knob.
Machine makes	1. Dull cutter.	1. Replace cutter.
unsatisfactory cuts.	2. Gum or pitch on cutter.	2.Remove cutter and clean with
	3. Gum or pitch on table causing erratic feed.	turpentine and steel wool.
	4. Feeding work in wrong direction.	3. Clean table with turpentine and steel wool.
		4. Feed work against cutter rotation.
Stock burns.	1. Dull cutter.	1. Sharpen by honing on flat side.
	2. Cutter too deep.	2.On hardwoods take light cuts; attain
	3. Forcing work.	full depth of cut with several passes.
		3.Feed slowly and steadily.
Machine vibrates	1. Damaged tool.	1. Replace tool.
excessively.	2. Stand or bench on uneven floor.	2. Reposition on flat, level surface.
-	3. Bad V-belt.	3. Replace belt.
	4. V-belt not tensioned correctly.	4. Adjust belt tension by moving motor bracket.
	5. Bent pulley.	5. Replace pulley.
	6. Improper motor mounting.	6. Check and adjust motor mounting.
Edge splits off on	Characteristic of cut.	1.Make cross-grain cuts first then finish with
cross-grain cut.		grain.
		2. Use scrap block to support at end of cut.
Raised areas on	Variation in pressure which holds work	1.Keep work firmly against fence or collars
shaped edge.	against cutter.	throughout pass.
		2. Use hold-downs.
Work pulled from	Not support.	1.Use miter gauge with hold-down to start
hand of cut.		cut when freehand; hold work firmly against fence.
		2. Adjust the tension of spring plate.
Depth of cut not	1. Misalignment.	1. Adjust out-feed fence.
uniform.	2. Side pressure not uniform.	2.Use hold-downs; keep pressure
		against fence or collars consistent.
Variation in Height of	Variation in pressure which holds work	1. Keep pressure firm throughout pass.
cut.	down on table.	2. Use hold-downs.
		3. Make pass slowly and steadily.
		4. Whenever possible, keep cutter under stock.
Cuts not smooth.	1. Wrong R.P.M.	1. Use faster speed.
	2. Feeding too fast.	2 .Pass stock more slowly.
	3. Working against grain.	3. Work with grain whenever possible.
	4. Cutting too deep.	4. On very deep cuts make several passes.
Spindle does not	Sawdust and dirt in raising mechanisms.	Brush or blow out loose dust and dirt.
raise freely.		

Rev. CE 02 26 01 2010



515F-101A Ø30直軸/接触式主轴-拉桿+5131100銀緊螺帽,CE/無CE共用 2013.08/16整理

REF NO.	PART NUMBER		DESCRIPTION	Q'TY
101	5111521	SPINDLE NUT	M30x12 thread/inch	1
	5111520	SPINDLE NUT	M30x2.0P	
102	5111570	KEYED WASHER		1
103	5111521-P30	SAFETY NUT W/WASHER	M30x12 thread/inch	
	5111521-P30-1	SAFETY NUT W/WASHER	M30x2.0P	
104	5111120	40mm RING WASHER	Ø40-single piece	
	5111530	50mm RING WASHER	Ø50-single piece	
105	5117153	30mm SPACER SET	Ø30	1
	5117154	1-1/4" SPACER SET	Ø1-1/4"	
	5117155	35mm SPACER SET	Ø35	
	5117156	40mm SPACER SET	Ø40	
106	5132070	SPACER	for single piece	1
107		HEX SOC HD SCR	M6x20-single piece	4
108	5151520	PLATE		1
109		BEARING	6010Z	2
111	5151448	SINGLE PIECE SPINDLE (Thread: M30*2.0P)	Ø30	1
112		KEY	M6x54	Î
113		DISK SPRING	74.5x55.5x0.8t	2
114		BEARING	6009Z	1
115	5151270	SPACER LH(IN)	Ø45x16 thread/inch	1
	55F6030	SPACER LH(MM)	M45x1.5P	-
116	5111160	SPINDLE PULLEY-St.	3000/4000/6000/8000/10000R Pt	1
	12C2120	SPINDLE PULLEY-Opt.	1500/3500/5500/7500/9000RMP	
	5131140A	SPINDLE PULLEY-St. 10HP	3000/4000/6000/8000/10000RPM	
117		BELT	3V400 (50HZ)	1
118	5111170	NUT(IN)	Ø28x16 thread/inch	1
	5111171	NUT(MM)	M28x1 5P	1
119	51111/1	M6x6 HEX SOC SET SCR	For nulley	1
#120~130	for interchangeable spir	ndle only	1 of pulley	1
120 130	for interentingedore spir	RETAINING RING	\$50	an an
120	5151511_1	SPINDLE (for inter Spindle)	5 5/7 5HP W/DRAW BOLT	1
121	5151511	SPINDLE (for inter Spindle)	5 5/7 SHP W/O DRAW BOLT	1
	55E6010-1	SPINDLE (for inter Spindle)	10HP W/DRAW BOLT	
122	551-0010-1	BEARING	60107	n
122	5151520	DI ATE	00102	4
123	5151520	HEX SOC HD SCR	M5v16	1
124	5121070	COLLET CHICK	WJX10	- 4
125	5131070	PUSUDIC	÷	opt.
120	5131060	DUSHING INTEDCHANCEADI E SDINIDI E	Ø20mm*140mm	ορι. 1
127	5131062	INTERCHANCEABLE SPINDLE	Q1 1/4" *140mm	1
	5131061	INTERCHANCEABLE SPINDLE	Ø1-1/4 140mm	
	5131060	INTERCHANGEABLE SPINDLE	Ø35mm*145mm	
	5131065	IN I EKCHANGEABLE SPINDLE	1240mm	100
128	5131090			1
129	5131100			1
130		HEX SOC HD SCR	M5X10	2
131	55F6011-1	DRAW BOLT	tor 7.5HP	1
3	55F6012-2	DRAW BOLT	For 10HP	2
132	5111060	SPECIAL WASHER	N	1
133		NUT	M12	2

Electrical components list SPINDLE MOULDER SS-511/512/513 series

			- Contro - Lock d - feeder	iller for the arbor oor switch connector	- 主种LOCK KNK - 用門断電閉] - 送料機装頭	₩ Bue植莓加美物開闢 M
Item Designation	Description	Technical data	Quantity	Supplier & reference		Remark
SBI	emergency stop	7.5A 380 -600V 10A 250V	L	SHAN-HO	EN60947-5-1 · IEC 947-1	CE . CSA . UL
SB2/3	start/stop for motor	Ith=20A 300VAC	1	KRAUS&NAIMER CA10	1EC60947	CSA · UL · CE
HLI	lamp for motor start	250V/1.2W	1	Ү.К.	73/23/EEC · 93/68/EEC	UL • CE
HL2	power lamp	250V/1.2W	1	Ү,К.	73/23/EEC ·	UL · CE
SAI	direction switch	7.5HP 380V AC1 20A	1	KRAUS&NAIMER CA10	EN60947-3 ·	CE
QSI	power switch	AC21-25A-690V	1	TEND	IEC60947-1 · EN 60947-4	CE · TUV
KM 1/2/3/4	contactor	600VAC 220V	4	TECO · CU-16/CU-11	EN60947-1 . EN60947-4	CE · TUV
FR1	overload relay	8.5-12.5A(11.2A) or	1	TECO	EN60047.1 .	CE · TUV
	(for 7.5HP or 5.5HP motor)	5.5-8.5A (8A)		RHN-10	EN60947-4	
TRI	transformer	50VA	1	SUENNLIANG SP-TBSK	EN50081-1 · EN50081-2 ·	
SQ 1/2	limit switch	AC15 2A/125V	2	OMRON SHL-Q2155or2255	IEC947-5-1	CE - TUV
FUI	fuse for power	500V 20A or 32A	3	LEGRAND	73/23/EEC	CE
FU 2/3	fuse for control circuit	500V/2A	3	LEGRAND	73/23/EEC	CE
FU 4	fuse for R.P.M lamp	500V/1A	1	LEGRAND	73/23/EEC	CE
MI	motor/ w brake	7.5HP(5.5 HP)3PH 380V/415v 2P/BXL-06-10 for 1.5kw-3.75kw • BXL-08-10 for 5.5kw • BXL- 10-10 for 7.5kw	1	SUPERB	EN60034-1 • EN60034-5 • IEC60072-1 • IEC60072-2	KEMA
кті	timer relay	30 SEC ASTP-N	1	ANV	IEC61612-1	UL · CSA · CE
PBI	Switch for Unlocking the Motor Brake	220V/2A	1	MACK	IEC255	CSA, CE · VDE
HL 5,6,7,8,9	R.P.M. lamp	250V/1.2W	5	FENG PIN	-	-
SW1	speeds selection cont	actor	1	RULONG	2006/95/EC	CE
QS2	Socket/plug for feeder	16A · 690V PE 1664PP	1	ILME		CE/EN60309-2
HL3	clockwise indicator	250VAC/5A/1.2W	1	Switch Lab.	EN61058-1 · 73/23/EEC	VDE · CE

w/ Switch for Halacking the Motor Brake

201002/09

=/- 马達熊車釋着

单释发经

新CE



REF NO.	PART NUMBER	DESCRIPTION		Q'TY
48	FA31111	BAR VERT		1
49	5112420	HOLD DOWN (TOP)		1
50	FA31040	CLIP	t=1mm	8
51	FA31101	BAR VERT	L=375mm	1
52	5112410-1	GUIDE (PC)		1
53		COPPER CHEESE HD SCREW	M6x25	2
54		WARNING LABEL		1
55		LOCK LEVER	M8x45	2
56		SPECIAL WASHER	M8(t=5mm)	2
57	5105025	BLOCK LH		1
58	5105024	BLOCK RH		1
59		HEX SOC HD SCR	M8x35L	4
60	5122281	CAP LH		1
61	5122210	BLOCK		2
62	5122223	ALUM. FENCE(LH) std.	150x450mm	1
63	5122224	ALUM. FENCE(RH) std.	150x450mm	1
64	5122280	CAP RH		1
65		HEX SCR	M6x35	1
66		HEX NUT	M6	1
67		HEX SOC SET SCR	M8x10L	2

501004	SS-512 / 512L Series	SS-512series/標準式靠板+19mm+上掀式新CE規格 2010/		
	Safety fence w/ Std.	Alum. Fence Assy. FA-01-512-19mm-std-New C		CE
REF NO.	PART NUMBER	DESCRIPTION		Q'TY
1	5122192	DUST COLLECTOR	CE type	1
2		FLAT WASHER	M5	4
3	 (c) 	CHEESE HD SCREW	M5x12L	4
4		HEX SOC SET SCR	M8x20L	2
5	5112091	ADJ KNOB		2
6		RETAINING RING	S13	2
0 7		FLAT WASHER		2
8	5122080	PLATE		2
Q	,	HEX SOC HD SCR	M5x12L	6
10	5112070/5112071	ADL SCREW BOLT (RH+LH)		2
10	5122060A	RAM		2
10	5112050	LOCK HANDLE		2
12	5112050	WASHED	M14	2
15		CHEESE'UD SCREW for fence hody	M4x20I	4
14		CHEESE HD SCREW for fence cover	M4x10I	4
15	11.050	CHEESE HD SCREW for fence cover	MAXIOL	2
15	FI-202	HAOP	M9-251	1
10	5112540-4		MQ	1
1/	5164101	FLAI WASHER	IVIO	1
18	5104191	PLATE	MO	1
19	5110540.0		IVIO MO-251	2
20	5112540-3	LUCK HANDLE	IVIOXZJL MO	2
21	6161101	FLAT WASHER	IVIð	2 1
22	5164181	PROTECT COVER		1
23	5122040A	FENCE BODY	2	1
24	5164150	BLOCK	N.C. 001	1
25		HEX SOC FLAT HD SCR	M5x30L	2
26	5112100	KNOB	10	2
27		HEX NUT	M8	1
28		HEX SOC SET SCR	M8x35L	1
29		SPRING WASHER	M5	2
30		NYLON NUT	M5	2
31	FA31050	LATCH	t=1.8mm	1
32		HEX SOC HD SCR	M5x10L	2
33	5112430	CAM WASHER		2
34		HEX SOC HD SCR	M5x25L	2
35	FA31030	BRACKET		1
36		HEX SOC HD SCR	M6x35L	4
37		FLAT WASHER	M6	4
38	FA31070	BAR VERT	L=260mm	1
39	5164170	LOCK BUSHING		2
40		HEX SOC SET SCR	M6x6L	2
41	FA31010	BLOCK		3
42	FA31080	BAR HORZ	L=260mm	2
43	FA31020	BLOCK		1
44		HEX SOC SET SCR	M8x16L	4
45	5164160	BUSHING		2
46		BUTTON HEAD SOC SCREW	M6x16L	2
47	5112540-2	LOCK LEVER	M8x15	4



SPINDLE HEIGHT ASSY.

55F-001C升降機構手輪附錶 2011.03.24

• •

REF NO.	PART NUMBER	DESCRIPTION		Q'TY
48	55F1080	PLATE	<i>2</i>	1
49		BEARING	51107	1
50	55F1060A	WORM		1
51		BEARING	51106	1
52		HEX SOC HD SCR	M6x20	4
53		KEY	M6x54	1
54	55F1160A	WORM SHAFT		1
	55F1162	WORM SHAFT		
55		KEY	M4x12	1
56	55F2050A	SCREW SHAFT		1
57		RETAINING RING	R42	1
58		BEARING	6204ZZ	1
59		HEX SOC HD SCR	M6x20	3
60	12C2030	HOUSING		1
61	12C2040	HOUSING		1
62	55F3060	CABLE ASSY		1
63	11C3030	HOUSING		1
64	11C3040	HOUSING		1
65		HEX SOC SET SCR	M10x10	1
66		SPRING		1
67		STEEL BALL	8.5mm	1
68	5111451-1	LOCK KNOB/STUD		1
71		HEX SOC HD SCR	M5x16	3
72	55F1091	WORM SHAFT		1
73	11C3020	BUSHING		1
74	5111600A	HOUSING		1
75	55F1192	SLEEVE		1
76	55F3070	HOUSING		1
77	55F3040	PIN		1
78	5111351	SPRING		1
79		HEX SOC HD SCR	M5x20	1
80	11C1060	KEY		1
81	11C1070	BUSHING		1
82		CHEESE HD SCR	M4x25	2
83		LIMIT SWITCH	SHL-Q2155	1
84	11C1050	HOUSING		1
85	5112540-7	LOCK LEVER	M8x70	1

501004				
SPINDLE	HEIGHT ASSY.		55F-001C升降機構手輪附錶	2011.03.24
REF NO.	PART NUMBER	DESCRIPTION		Q'TY
1	5121220	BUSHING		1
2	5111230	50HZ MOTOR PULLEY	50HZ	1
3	5111550	RETAINER		1
4		HEX SOC SET SCR	M10x45	1
6		HEX NUT	M10	2
7		HEX SCR	M10x35	4
8		SPRING WASHER	M10	4
9	5121190	MOTOR PLATE		1
10	5111480	SPACER		1
11		FLAT WASHER	M10	1
12		HEX SCR	M10x50	1
13	5111470	SPACER		1
14	0.111.170	FLAT WASHER	M10	1
15		HEX SCR	M10x30	1
16		HEX NUT	M5	1
17		CHEESE HD SCR	M5x50	1
18		HEX SCR	M8x16	1
10		FLAT WASHER	M8	1
20	5121/30	LINK	1.10	1
20	5111440	STUD		1
21	5111440	HEX NUT	M16	2
22		3/8" BALL HANDLE	3/8"	1
23	5111460	HANDLE	272	1
27	5111400	HEX NUT	M16	1
25	55E1170A	SUPPORT		1
20	55F11/0A	WASHER	M16	1
27	5111450	STUD		1
20	5111450	WASHER	M8	1
29		HEY SCP	M8x16	1
30	5501020 4	SUDDOPT	WORLD	1
22	55F1030A	HEY SOC HD SCR	M10x35	4
32	6601070	WORM PLOCK	WITCASS	1
33	55F1070	DETAINED		1
54 25	SSFITOIA		M8x20	, 1
35	12020504	HANDWHEEI		1
30 27	12C2050A	RETAINER		1
27	1202060	HEY SOC HD SCR	M6x12	1
38 20		DIAL INDICATOR SPINIDLE LIFICHT	PIODA60R25SX	1
39		DIAL INDICATOR-SPINDLE HEIGHT	M5v8	· • •
40	6601111A	KNOP	1413/20	1
41	SSFIIIA	KNOD SDDINC		1
42	55F1112	SPRING		1
43	55F1113A		M10	1
44	2		M12x25	1
45		ELA SUR	M12	1
46		OFAINO WASHED	1/2"	1
4/		STEVIAL WASHER	1/2	1









SPEED INDICATOR 515F-901 2010.10.19製 DESCRIPTION **O'TY REF NO. PART NUMBER** M4x10 2 901 CHEESE HD STEEL SCR 1 902 5117550A FORK 2 903 CHEESE HD STEEL SCR M4x16 1 904 RACK 5162270A • M8x5 1 905 HEX SOC SET SCR 1 906 5117470B GEAR 907 5117410 HOUSING 1 5117430 1 908 SENSOR SPINDLE 1 5117420 1 COPPER SENSOR 909 5117510 5 PAN HD MACHINE SCR M3x10 910 5/32"x1-1/4" 1 PAN HD MACHINE SCR 911 PAN HD MACHINE SCR 5/32"x1-1/2" 1 912 913 TERMINAL 12 5117480 HEX NUT 5/32" 1 914 1 HEX SOC SET SCR M8x8 915 1 SPRING 916 5117460 Ø7 1 STEEL BALL 917 M6x16 1 HEX SOC SET SCR 918 919 5117450 SPRING 1 1 920 5117530 SPRING BRACKET 1 921 5123290 M6 2 FLAT WASHER 922 2 M6x20 923 HEX SOC HD SCR 2 Ø1/4" FLAT WASHER 924 CHEESE HD STEEL SCR 1/4"x3/4" 2 925



REF NO). PART NUMBER		DESCRIPTION	Q'TY
249	5112380	STOP BLOCK		1
250	5121491	SWITCH COVER		1
251		HEX SOC SET SCR	M10x8	1
252		HANDLE PLATE		1
253		MAIN POWER SWITCH	TDS25-ERB	1
254		CHEESE HD SCREW	M4x10	4
255		WIRED BOX	A02	1
256		CHEESE HD SCREW	M5x75	2
257		CHEESE HD SCREW	M4x10	2
258		SOCKET/PLUG FOR FEEDER	4pin	1
259		CHEESE HD SCREW	M4x10	4
260		HEX SOC FLAT HD SCR	M4x12	2
261		CHEESE HD SCREW	M4x20	2
262		LIMIT SWITCH	SHL-Q2255	1
263	5109070	BLOCK	8	1
264	5109080	SCREW BOLT		1
265	5101010	KNOB		1
266		HEX SOC SET SCR	M8x12	1
267	55F2020-1	BLOCK		2
268		HEX SOC HD SCR	M8x40	2
			5. 1	

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			JIJI LIJII		2010.10.19
REF NO.	PART NUMBER	DESCRIPTION			Q'TY
201	5157110A	INSERT RING			1
202	5157120A	INSERT RING			1
203	5157130A	INSERT RING	5 <u>.</u>		1
204	5125040	INSERT RING			1
205	5111560	DUST COLLECTOR			1
206		CHEESE HD SCREW		M5x10	2
207		FLAT WASHER		M5	2
208	5127060	TABLE			1
210	55F2010A	CABINET			1
211	516L4120	SCREW BOLT	le.		4
212		HEX SCR		M12x70	4
213	55F5011	PANEL			1
214		BUTTON HEAD SOC SCREW		M4x10	6
215	55F2020	MACHINE DOOR		enador o br	1
216	551 5020	HANDLE		А-172-Н	1
217		LATCH		A-172-1	1
218	55F1240	HOUSING			1
210	551 1210	HEX SOC HD SCR	18	M6x16	4
217		CHEESE HD SCREW		M6x40	4
220	55E2030	REAR COVER			1
221	551 2050	CHEESE HD SCREW		M6x30	4
222	55530104	CONTROL BOX		MONDO	1
225	JJFJUIUA	ROLL PIN Ø8×45		(8x45	1
224	5110200	ROLL I II CONTO		001-0	1
225	5112520	HEV SOC SET SCD		M6x8	1
220	5110050	HEA SOC SET SCR		MUXO	1
221	5112550				1
228	5112300				4.
229	5112330	SDDDIC			1
230	5112340	SPRING		M0-10	1
231		HEX SOC SET SCR		IVI8X12	1
232	5112310	RODHORZ			1
233	5112291	ROD VERT			1
234	5112300	BLOCK			1
235	2	LOCK WASHER		MIO	2
236		HEX SCR		M10x35	2
237	5112280A	KNOB			1
238	5112260	STUD			1
239		M10 FLAT WASHER		M10	1
240	5112270A	BODY			1
241		HEX SOC SET SCR		M8x12	1
242		HEX SOC HD SCR		M6x16	1
243	5112240	GUIDE BAR		100 30000 NE 20000	1
244	5112540-3	KNOB W/STUD		M8x25	2
245		BUTTON HEAD SOC SCREW		M4x10	1
246	5112250	RETAINER NUT			1
247	5112370	EXT. ROD			1
248	5112540-3	KNOB W/STUD		M8x25	1

The **Axminster guarantee** is avalible on Hobby, Trade, Industrial, Engineer, Air Tools & Axcnc Technology Series machines

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Free Three Year Guarantee on Axminster Hobby, Trade and Industrial Series woodworking and engineering machines, Axminster Air compressors and Air Tools, and bench top grinders - no registration necessary just proof of purchase.

We will repair or replace at our discretion and will collect only from a UK mainland address, irrespective of the original delivery address

The Guarantee assumes that you have bought the correct machine for the required operation, in accordance with our guidelines; have operated and maintained it in accordance with the instruction manual; and that all cutting machines will be used with a blade which is sharp and serviceable at all times. It does not cover consumable items purchased with the original product, including original blades or abrasives

for more information visit axminster.co.uk/3years

Normal wear and tear, misuse, abuse and neglect are excluded and the machine should not have been modified in any way. Please do not attempt to service the product without first contacting us; we are happy to guide you but failure to do so may invalidate the guarantee

The Guarantee is transferrable from owner to owner in the first three years but you must have original proof of purchase. Should we need to replace a machine in the first three years the guarantee will still continue to be effective from the original purchase date

Full Terms and Conditions can be found here. This guarantee does not affect your statutory rights.



Please dispose of packaging for the product in a responsible manner. It is suitable for recycling. Help to protect the environment, take the packaging to the local recycling centre and place into the appropriate recycling bin.

Only for EU countries



Do not dispose of electric tools together with household waste material. In observance of European Directive 2002/96/EC on waste electrical and electronic equipment and itsimplementation in accordance with national law, electric tools that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

Axminster Tool Centre, Unit 10 Weycroft Avenue, Axminster, Devon EX13 5PH

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