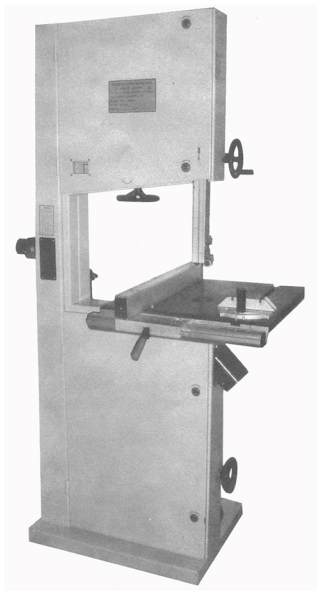


OPERATOR'S MANUAL

BS16N/20N/22N BANDSAW



FOR YOUR SAFETY

READ ALL INSTRUCTIONS CAREFULLY BEFORE USING THIS MACHINE

Operator Safety: Required Reading

Important

Safety is the single most important consideration in the operation of this equipment.

The following instructions must be followed at all times.

There are certain applications for which this tool was designed. We strongly recommend that this tool not be modified and/or used for any other application other than that for which it was designed.

If you have any questions about its application, do not use the tool until you have written us and we have advised you.

General safety warnings

KNOW YOUR POWER TOOL. Read the owner's manual carefully. Learn the tool's applications, work capabilities, and the special potential to it.

DANGER! ALWAYS GROUND ALL TOOLS.

If your tool is equipped with a three-pronged plug, you must plug it into a three-hole electric receptacle. If you use an adapter to accommodate a two-pronged receptacle, you must attach the adapter plug to a known ground. Never remove the third prong of the plug.

ALWAYS AVOID DANGEROUS ENVIRONMENTS.

Never use power tools in damp or wet locations. Keep your work area well lighted and clear of clutter.



DANGER! ALWAYS REMOVE THE ADJUSTING KEYS AND WRENCHES FROM TOOLS AFTER USE.

Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.

ALWAYS KEEP YOUR WORK AREA CLEAN.

Cluttered areas and benches invite accidents.



DANGER! ALWAYS KEEP VISITORS AWAY FROM RUNNING MACHINES.

All visitors should be kept a safe distance from the work area.

ALWAYS MAKE THE WORKSHOP CHILDPROOF with padlocks, master switches, or by removing starter keys.



DANGER! NEVER OPERATE A TOOL WHILE UNDER THE INFLUENCE OF DRUGS, MEDICATION, ORAL COHOL.



DANGER! ALWAYS WEAR PROPER APPAREL.

Never wear loose clothing or jewelry that might get caught in moving parts. Rubber-soled footwear is recommended for the best footing.



DANGER! ALWAYS USE SAFETY GLASSES.

Also use a face or dust mask if the cutting operation is dusty.



DANGER! NEVER OVERRACH.

Keep your proper footing and balance at all times.



DANGER! ALWAYS DISCONNECT TOOLS.

Before servicing and when changing accessories such as blades, bits, and cutters.

ALWAYS AVOID ACCIDENTAL STARTING.

Make sure switch is in "OFF" position before plugging in cord.

NEVER LEAVE TOOLS RUNNING UNATTENDED.



DANGER! NEVER STAND ON TOOLS.

Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted.



DANGER! ALWAYS CHECK FOR DAMAGED PARTS.

Before initial or continual use of the tool, a guard or other part that is damaged should be checked to assure 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 damaged parts should immediately be properly repaired or replaced.



Special Safety Rules For Bandsaws

Always stop the bandsaw before removing scrap pieces from the table.

Always keep hands fingers away from the blade.

Never attempt to saw stock that does not have a flat surface, unless a suitable support is used.

Always hold material firmly and feed it into the blade at a moderate speed.

Always turn off the machine if the material is to be backed out of an uncompleted cut.

Adjust the upper guide about 1/8" above the material being cut.

Check for proper blade size and type for the thickness and type of material being cut.

Make sure that the blade tension and blade tracking are properly adjusted.

Make "relief" cuts before cutting long curves.

Release blade tension when the saw will not be used for a long period of time.

User Responsibility/Warranty

This machine will perform in conformity with the description contained in the instructions provided. This machine must be checked periodically. Defective equipment (including power cable) should not be used.

Parts that are broken, missing, obviously worn, distorted or contaminated, should be replaced immediately. Should such repair or replacement become necessary, it is recommended that only genuine replacement parts are used and that such repairs are carried out by qualified persons. This machine or any of its parts should not be altered or changed from standard specifications. The user of this machine shall have the sole responsibility for any malfunction that results from improper use or unauthorized modification from standard specifications, faulty maintenance, damage or improper repair by anyone other than a qualified person.

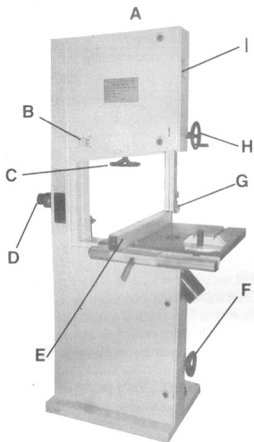
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1.0 Specification

MODEL	BS16N	BS20N	BS22N
Throat width	14-7/10"(375mm)	18-3/8"(465mm)	21"(535mm)
Sawblade length	120"(3050mm)	134"(3405mm)	151-4/5"(3855mm)
Sawblade width	1/4"~1-1/5(6-30mm)	1/4"~1-1/5(6-30mm)	1/4"~1-1/5(6-30mm)
Sawblade tilt	0~20° (0~45°)	0~20° (0~45°)	0~45°
Max.cutting depth	9-4/5"(250mm)	11-1/4"(285mm)	11-4/5"(300mm)
Sawtable size	21"×19"(535mm×485mm)	21"×19"(535mm×485mm)	27-1/2"×19"(700×485mm)
Sawblade speed	10m/s	9m/s,14 m/s	15m/s
Motor power	1.5kw	2.2kw	3kw

2.0 Getting to know your bandsaw



A. Hang Up Ring

B. Tension Indicator Window

C. Blade Tension Handwheel

D. Main Switch

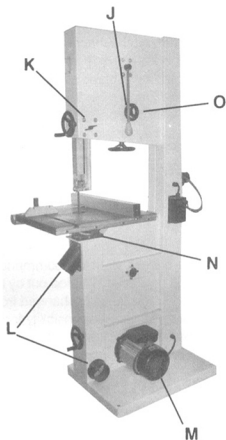
E. Rip Fence

F. Speed Handwheel

G. Blade Guide

H. Guide Post Handwheel

I. Blade Tracking Window



J. Quick Release Lever

K. Guide Post Lock Knob

L. 4" Dust Ports

M. Motor

N. Table Tilting Knob

O. Blade Track Knob

3.0 Assembly

The machine is supplied partly assembled. Prior to use, the following items have to be assembled; working table, rip fence and crank handle.

WARNING! To ensure sufficient upright stability of this bandsaw and safety, you need to bolt this bandsaw to floor on M14 screw. (Fig.1)

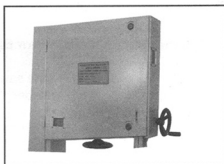


Fig.1

Fitting Working Table

With the help of another person, lift the working table onto the trunnion.

Mount the working table to trunnion using the Supplied (4) hex bolts and (4) washers (A—Fig.2).

Using Hex socket screw, bushing, washer and Wingnut (B—Fig.2) for the working table flatness.

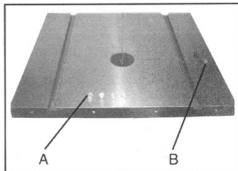


Fig.2

Fitting Rip Fence

Install the rear fence rail to the table with (4) M6-1.0×20 hex bolt and (4) flat washer M6(Fig.3)

Install the front fence rail to table with (4) screw and (4) flat washer M8 (Fig.3).

Make sure the end cap is locked into the rear fence rail. Then set the fence on the front and rear rails.

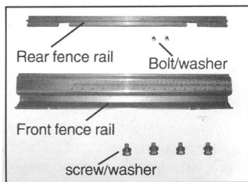


Fig.3

Fitting Crank Handle

Attach the big crank handle (Fig.4) and small crank handle (Fig.4) with 14mm and 10mm wrench separately.

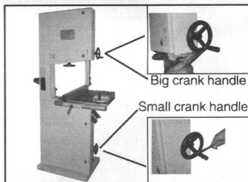


Fig.4

4.0 Adjustment

Setting the Table Square to Saw Blade

The table may be set at 90° to the saw blade by adjusting the table stop screw under the table. The table stop screw rests on the top of the lower wheel bandwheel housing. By first slackening the locking nut (A—Fig.5) and then adjusting the screw (B—Fig.5), the table can be set correctly. Retighten the locking nut (A—Fig.5) making sure that the setting is maintained.

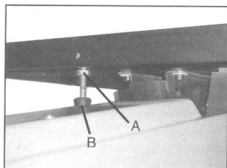


Fig.5

Tilting the Table

Loosen the lock bolt (A—Fig.6) on the table trunnion to adjust the table to the desired angle. Use the angle indicator scale on the trunnion bracket to find the desired angle. Retighten the lock handle to secure the table.

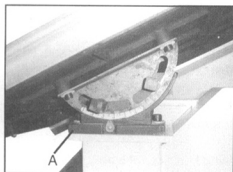


Fig.6

Tracking the Saw Blade

WARNING! Unplug the bandsaw.

Firstly, make sure the upper and lower blade guides are adjusted away from the blade the tension scale reading corresponds to the width blade you are using.

Then loosen the lock lever (Fig.7) by turning it counterclockwise and turn the blade tracking knob (Fig.7) clockwise/counterclockwise while turning the upper wheel by hand at least three rotations until the blade tracks centered on the wheel. Finally, tighten the lock lever and close the doors.

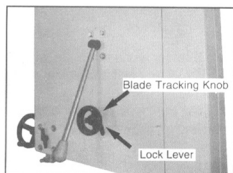


Fig.7

Adjusting the Blade Tension

To loosen the tension of the blade, turn the blade tension handwheel (Fig.8) counter clockwise. To tighten the tension of the blade, turn the blade tension handwheel.

Tension the blade until the tension readings corresponds to the width blade you are using through the tension indicator window (Fig.8)

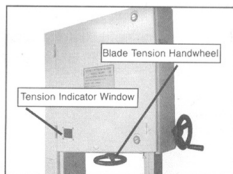


Fig.8

Adjusting the Blade Guides

Upper Guides:

To adjust the upper blade guides, first position the roller guides relative to the blade by slacking off the hex nut (A—Fig.9) and moving the guide carrier until the roller guides are approx. $1/16''$ behind the gullets of the blade. Next set the roller guides to within $1/32''$ of the blade by releasing the screw (B—Fig.9) on each side of the blade. Do not set the guides too close as this will adversely affect the life of the blade. Finally, adjust the thrust bearing to be just clear of the back of the blade by unlocking the hex nut (C—Fig.9). When the correct adjustment is reached, lock the thrust bearing in position with the hex nut (A—Fig.9).

Lower Guides:

To adjust the lower blade guides, first slacken off the hex nut (A—Fig.10) then move the guide carrier casting to the approx. $1/16''$ behind the gullets of the bandsaw blade and tighten the hex nut (A—Fig.10). Next set the roller guides to within $1/32''$ of the blade by releasing the screw (B—Fig.10) on each side of the blade. Finally, adjust the thrust bearing to be just clear of the back of the blade by unlocking the hex nut (C—Fig.10).

Adjusting the Rip Fence Guide Scale

Slide the rip fence against to blade along the rail. Then move the scale (B—Fig.11) sideways and align the zero of scale with the line on the magnifying window (C—Fig.11). Retighten the fixing screw when the adjustment is correct.

The adjustment may be checked by setting the rip fence to a thickness and cutting a test piece.

When the adjustment is correct the thickness of the test piece will correspond with the rip fence scale setting.

Adjusting the Cutting Height

Loose the guide post lock knob (Fig.12) and turn the guide post handwheel (Fig.12) to raise or lower the guide post/upper blade guide assembly to the desired height. Then bottom edge of the guide bearings are approximately $1.4''$ above the top surface of the workpiece.

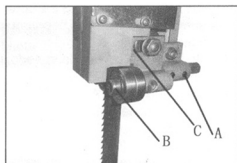


Fig.9

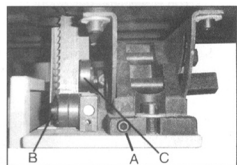


Fig.10

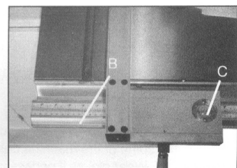


Fig.11

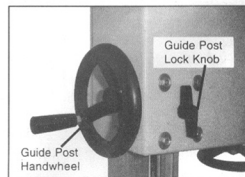


Fig.12

Changing the Blade Speed

WARNING! Before changing the speed always make sure the machine has been unplugged from the electrical supply.

This bandsaw has two blade speeds, low speed and high speed.

The lower bandwheel (A—Fig.13) has two, integral, multi-vee from, pulleys and the motor shaft has a twin multi-vee from pulley (B—Fig.13).

The multi-vee belt (C—Fig.13) passes around the bandwheel pulley and the motor pulley. The belt tension is released and applied by using the cranked handle (D—Fig.13).

For the high speed, the belt should be fitted to the rear pulley on both the motor and bandwheel. As shown in Fig.13.

For the low speed, the belt should be fitted to the front pulley on both the motor and bandwheel. As shown in Fig.13.

Replacing the Bandsaw Blade

WARNING! Unplug the machine from the electrical supply. This ensures that the Bandsaw will not accidentally turn on if the ON/OFF switch is bumped.

- a) Open the top and bottom bandwheel doors by turning the locking knobs.
- b) Remove the rip fence rail from the front of the table by releasing the 4 thump screws (Fig.3 on page 5).
- c) Release the blade tension by rotating the quick release lever (Fig.14) clockwise.
- d) Remove the saw blade by feeding it through the slot in the table, upper and lower guides and the slot in the spine of the machine being careful not to cut yourself. Wear gloves if necessary.
- e) When fitting the new blade ensure the blade teeth are pointing downwards and towards you at the position where the blade passes through the table.
- f) Re-tension the new blade by rotating the quick release lever (Fig.14) counterclockwise and check the blade tracking. The blade should turn in the center of the bandwheel. Refer to "Tracking the Saw Blade" on page 6 for more details.
- g) Reset the blade guides as described in the section "Adjusting the Blade Guide" on page 7.
- h) Reset the blade tension as described in the section "Adjusting the Blade Tension" on page 6.
- i) Replace the rip fence guide, and retighten the 4 thump screws (Fig.3 on page 5).
- j) Close and lock both the bandwheel doors before reconnecting the power supply.

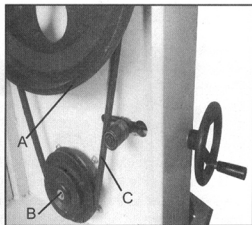


Fig.13

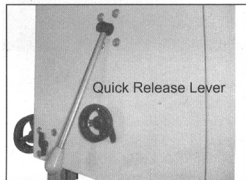


Fig.14

5.0 Operation

The blade cuts on a continuous downstroke.

With both hands, firmly hold the workpiece down on the table, and feed it towards the blade slowly, keeping your hands away from the blade.

For best result the blade must be sharp. A dull blade will not cut correctly, especially when straight cutting, and causes excess pressure to be applied on the rear guide bearings.

Select the right blade for the job, depending on the thickness of the wood and the cut to be made. The thinner and harder the wood, the finer the teeth of the blade.

Use a fine tooth blade for cutting sharp curves.

The machine is especially suited for cutting curves, but will also make straight cuts.

When cutting, follow the design marked out by pushing and turning the workpiece evenly.

Do not attempt to turn the workpiece without pushing it, as this may cause the workpiece to get stuck, or the blade to bend.

For straight cuts, use the fence provided to feed the workpiece along the blade slowly and in a straight line.

6.0 Maintenance

CAUTION! BEFORE CLEANING OR CARRYING OUT MAINTENANCE WORK, DISCONNECT THE MACHINE FROM THE POWER SOURCE (WALL SOCKET).

NEVER USE WATER OR OTHER LIQUIDS TO CLEAN THE MACHINE. USE A BRUSH. REGULAR MAINTENANCE OF THE MACHINE WILL PREVENT UNNECESSARY PROBLEMS.

Keep the table clean to ensure accurate cutting.

Keep the outside of the machine clean to ensure accurate of all moving parts and prevent excessive wear.

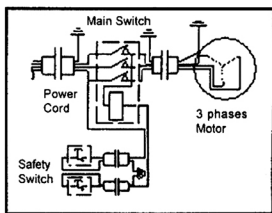
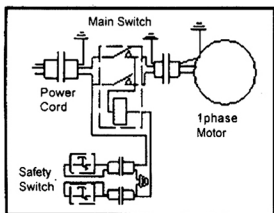
Keep the ventilation slots of the motor clean to prevent it from overheating.

Keep the inside (near the saw blade, etc) clean to prevent accumulation of dust.

7.0 Wiring diagram

WARNING! This machine must be grounded.

Replacement of the power supply cable should only be done by qualified electrician.

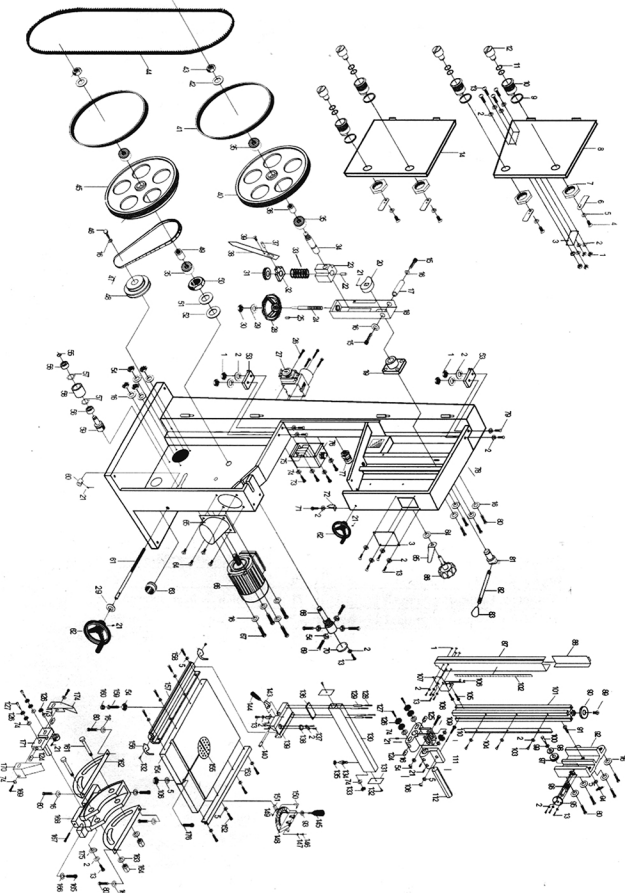


8.0 Troubleshooting

WARNING: FOR YOUR OWN SAFETY, ALWAYS TURN OFF AND UNPLUG THE MACHINE BEFORE CARRYING OUT ANY TROUBLESHOOTING.

TROUBLE	PROBABLE CAUSE	REMEDY
The machine does not work when switched on.	<ol style="list-style-type: none">1. No. power supply.2. Defective switch.	<p>Check the cable for breakage. Contact your local dealer for repair.</p>
The blade does not move with the motor running.	<ol style="list-style-type: none">1. The quick release lever or blade tension handwheel has not been tightened.2. The blade has come off one of the wheels.3. The saw blade has broken.4. The drive belt has snapped.	<p>Switch off the motor, tighten the quick release lever or blade tension handwheel.</p> <p>Open the hinged door and check.</p> <p>Replace the blade. Replace the belt.</p>
The blade does not cut in a straight line.	<ol style="list-style-type: none">1. Fence for cutting not used.2. Too fast feed rate.3. The blade teeth are dull or damaged.4. Blade guides not suitably adjusted.	<p>Use a fence.</p> <p>Put light pressure on the workpiece & make sure the blade does not bend.</p> <p>Use a new blade.</p> <p>Adjust the blade guides(see the section on page 7).</p>
The blade does not cut, or cuts very slowly.	<ol style="list-style-type: none">1. The teeth are dull, cause by cutting hard material or long use.2. The blade was mounted in the wrong direction.	<p>Replace the blade, use a 6 T.P.I. blade for wood and soft materials. Use a 14 T.P.I. blade for harder materials. A 14 T.P.I. blade always cuts slower due to the finer teeth and the slower cutting performance. Fit the blade correctly.</p>
Sawdust builds up inside the machine.	<ol style="list-style-type: none">1. This is normal.	<p>Clean the machine regularly. Open the hinged door and remove the sawdust with a vacuum cleaner.</p>
Sawdust inside the motor housing.	<ol style="list-style-type: none">1. Excessive dust build-up on the machine exterior components.	<p>Clean the ventilating slots of the motor with a vacuum cleaner. From time to time remove the sawdust to prevent it from being sucked into the housing.</p>
The machine does not cut at 45° or 90° angles.	<ol style="list-style-type: none">1. The table is not at right angles to the blade.2. The blade is dull or too much pressure was put on the workpiece.	<p>Adjust the table.</p> <p>Replace the blade or put less pressure on the workpiece.</p>
The blade cannot be properly positioned on the bandwheels.	<ol style="list-style-type: none">1. The wheels are not in alignment. Defective bearing.2. The blade tracking knob hasn't been properly adjusted.3. Inferior blade.	<p>Contact your local dealer for repair.</p> <p>Adjust the knob (see the section on page 6).</p> <p>Replace the blade.</p>

9.0 Parts diagram



PASTS LIST

NO.	DESCRIPTION	QT'Y	NO.	DESCRIPTION	QT'Y
1	Nut M4		43	Nut M24×1.5	
2	Flat washer ø4		44	Saw blade	
3	Clear window		45	Lower wheel	
4	Screw M6×8		46	Hex bolt M8×30	
5	Plastic washer ø6		47	V-belt	
6	Lock plate		48	Motor pulley	
7	Plastic nut		49	Bush	
8	Upper door		50	Nut M30×1.5	
9	Plastic washer		51	Washer	
10	Door axis bush		52	Washer	
11	Washer ø10		53	Microswitch	
12	Door axis		54	Nut M8	
13	Rivet M4×10		55	Ring retaining 12	
14	Lower door		56	Bearing 101	
15	Hex bolt M8×10		57	Ring retaining	
16	Flat washer ø8		58	V-belt pulley	
17	Upper shaft		59	Shaft for V-belt pulley	
18	Upper wheel sliding bracket		60	Bush	
19	Pillow block		61	Thread rod	
20	Cam		62	Small handwheel	
21	Hex bolt M6×10		63	Dust chute	
22	Roll pin 5×35		64	Screw M5×6	
23	Upper wheel shaft hinge		65	Dust chute	
24	Adjusting rod		66	Motor	
25	Screw M4×20		67	Bolt M8×30	
26	Screw M4×60		68	Lower wheel shaft	
27	Switch		69	Hex bolt M8×25	
28	Big handwheel		70	Plate	
29	Washer ø12		71	Semicircle head screw M4×8	
30	Nut M12		72	Pointer	
31	Bearing 8101		73	Semicircle head screw M5×10	
32	Block		74	Washer ø5	
33	Spring		75	Contacto	
34	Upper wheel shaft		76	Contacto box	
35	Bearing 105		77	Wire hanger	
36	Bush		78	Frame	
37	Screw		79	Semicircle head screw M4×30	
38	Pointer		80	Nut M8×16	
39	Step screw		81	Shaft	
40	Upper wheel		82	Rod	
41	Tire		83	Shaft end	
42	Washer 24		84	Washer ø10	

PASTS LIST

NO.	DESCRIPTION	QT'Y	NO.	DESCRIPTION	QT'Y
85	thread handle		138	Convex window	
86	Knob bolt		139	Adjustable base	
87	Protective cover		140	Shaft	
88	Sliding plate		141	Spring piece	
89	Screw M6×12		143	Lock mechanism	
90	Washer		144	Locking handle	
91	Bolt M6×30		145	Handle	
92	Guide bracket		146	Washer ø6	
93	Big washer ø6		147	Screw M6×6	
94	Butterfly nut M6		148	Miter gauge	
95	Ring retaining		149	Hex bolt M4×6	
96	Worm cylinder		150	Pointer	
97	Gear		151	Guide bar	
98	Gear		152	Hex bolt M6×12	
99	Washer		153	Rear fence rail	
100	Fixed bolt		154	Table	
101	Upper guide hose		155	Table insert	
102	Scale		156	Slide guide end plate	
103	Screw M4×8		157	Front fence rail	
104	Rack		158	Bolt M6×16	
105	Bolt M6×12		159	Bolt M8×25	
106	Nut M6		160	Washer	
107	Locking plate		161	Carriage bolt	
108	Adjusting bolt		162	Trunnion plate	
109	Small washer ø10		163	Washer ø14	
110	Bolt M6×16		164	Square nut	
111	Upper guide support block		165	Hex bolt M10×30	
112	Adjusting bar		166	Big washer ø10	
124	Guide ring		167	Hex bolt M6×50	
125	Upper blade guide support		168	Trummion support bracket	
126	Bearing		169	Hex bolt M5×10	
127	Hex bolt		170	Right cover	
128	Hex bolt M6×65		171	Lower blade guide seat	
129	Bush		173	Eccentric bearing bar	
130	Support tube		174	Left cover	
131	Side plastic insert		175	Pointer	
132	Screw M3×10		176	Hex bolt M6×35	
133	Nut M5				
134	Ball bearing bar				
135	Ball bearing				
136	Bracket				
137	Hex bolt M4×5				