

INSTRUCTION MANUAL

BS-4A

Metal Cutting Band Saw (240V)
150 x 100mm (W x H) Rectangle



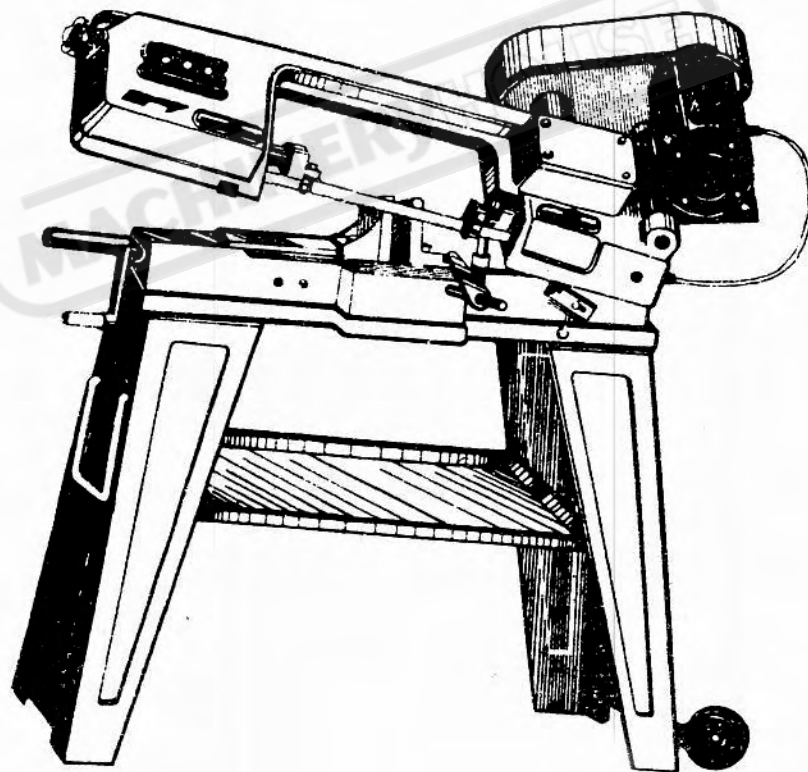
B002

B002 BS4A BANDSAW

8/4/03

Horizontal and Vertical

Metal Cutting Band Saw



S A F E T Y

1. Know your bandsaw. Read the operator's Manual carefully. Learn the operations, applications and limitations.
2. Use recommended accessories. Improper accessories may be hazardous.
3. Wear proper apparel.
4. Keep unnecessary people away.
5. Don't overreach or stand on tool.
6. Avoid dangerous environment. Don't use bandsaw in damp or wet locations. keep work area well lighted.
7. Keep work area clean. Cluttered and slippery floors invite accidents.
8. Remove adjusting keys and wrenches from bandsaw before turning on power.
9. Avoid accidental starting. Make sure switch is off before plugging in power cord.
10. Don't force bandsaw. It is safe to operate at the cutting rate for which it was designed.
11. Be specially careful when using bandsaws in vertical position to keep fingers and hands out of the path of blade, both above and beneath the table.
12. Never hand hold the material with saw in horizontal position. Always use the vise, clamp securely.
13. Keep belt guard and wheel covers in place and in working order.
14. Support long, heavy work from the floor.
15. Always remember to switch off the machine when the work is completed.
16. Disconnect power cord before adjusting, servicing and changing blade.
17. Check damaged parts. Damaged parts must be replaced or repaired.
18. Moving parts should keep in alignment. All adjustments are to be made with power disconnected.
19. Use a sharp blade and keep tool clean for best and safest performance.
20. Safety is a combination of operator's common sense and alertness at all times when the saw is functioning.
21. Keeping the bandsaw in top condition is essential for safety.

FEATURES

1. Special designed horizontal and vertical band saw.
2. Offers three speeds for cutting metal plastic or wood.

3. Shuts off automatically when material is cut.
4. With scale for the mitering vise.
5. No noise while operating.
6. Casters (optional) quick and easy moving.

SPECIFICATIONS

1. Capacity : 4 1/2" (115mm) round
4"×6" (100mm×150mm) rectangular
2. Speeds : 80-120-200 FPM 60HZ (65-95-165 FPM 50HZ)
3. Motor : 1/3HP or 1/2HP 1700 RPM 60HZ (1400 RPM 50HZ)
4. Blades : 1/2"×.025"×64 1/2" (12.5mm×0.64mm×1638mm)
5. Blade Wheels: 73/8"(187mm) High strength flanged cast iron.

ASSEMBLY

1. Assemble stand legs on Band Saw Base. see assembly diagram
2. Assemble handle vice wheel, tighten set screw.

BLADE GUIDE BEARING ADJUSTMENT

This is the most important adjustment on your saw. It is impossible to get satisfactory work from your saw if the blade guides are not properly adjusted. The blade guide bearings for your Metal cutting Bandsaw are adjusted and power tested with several test cuts before leaving the factory to insure proper setting. The need for adjustment should rarely occur when the saw is used properly. If the guides do get out of adjustment, it is extremely important to readjust immediately. If proper adjustment is not maintained, the blade will not cut straight and if the situation is not corrected, it will cause blade damage.

Because guide adjustment is a critical factor in the performance of your saw, it is always best to try a new blade to see if this will correct poor cutting before beginning to adjust the bearings. If a blade becomes dull on one side sooner than the other, for example, it will begin cutting crooked. A simple blade change should correct this problem—the more difficult guide adjustment will not.

If a new blade does not correct the problem, check the blade guides for proper spacing.

There should be 0.001" clearance between the 0.025" thickness blade and guide bearings. To obtain this clearance adjust as follows:

1. The inner guide bearing is fixed and cannot be adjusted.

2. The outer guide bearing is mounted to an eccentric bolt and can be adjusted.
3. Loosen the nut while holding the bolt with a wrench.
4. Position the eccentric by turning the bolt to the desired position of clearance.
5. Tighten the nut.
6. Adjust the second blade guide bearing in the same manner.
7. The back edge of the blade should just touch the lip of the Blade Guide Bearing.

BLADE GUIDE ASSEMBLY ADJUSTMENT

The Metal Cutting Bandsaw is equipped with two adjustable blade guide assemblies. This feature will permit you to adjust the position of the blade guides for various widths of workpieces.

To effect the most accurate cut and prolong the life of the blade. The blade guide assemblies should be adjusted to just clear the piece to be cut. This is done as follows:

1. Place the workpiece in the vise of bandsaw and clamp tightly.
2. Adjust catch blade guide assembly to the desired position by loosening the hand knobs and positioning the guides as required.
3. Tighten the hand knobs.

ADJUSTING BLADE TENSION

1. Make sure the motor is shut off.
2. Press the blade lightly with the left hand, make the rear blade against the flange of blade wheel and test the blade tension.
3. Adjust the blade tension adjustable knob with the right hand until the blade obtain the proper tension.

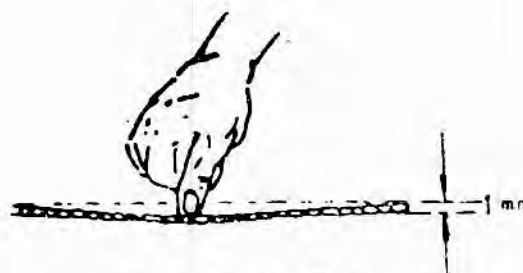


Fig (1) Adjusting Blade Tension

CHANGING SPEED

When using your Band Saw, always change the blade speed to best suit the material being cut. The material cutting chart is shown in fig(2).

2. Cut off power. Open the pulley guard cover. Loosen the lead screw (#98.), you are now able to change the position of the belt to gain the desired speed. Check the belt tension.

as instructed before. When the tension of belt is well adjusted, lock the motor firmly. Close the pulley guard cover

MATERIAL CUTTING CHART

Material Tool, Stainless or Alloy Steel, Bearing Bronzes Mild Steel, Hard Brass or Bronze Soft Brass, Aluminum other light materials	Speed(SFM)		Blet Groove Used	
	60HZ	Motor Pulley	Saw Pulley	
	80FPM	Small	Large	
	120FPM	Medium	Medium	
	200FPM	Large	Small	

Fig (2) Material Cutting Chart

BLADE SELECTION

1. Special note: $1(1/2" \times 0.025" \times 64_{1/2} \text{min}, 65_{1/2} \text{max})$ 14 tooth per inch general use blade is furnished with the metal cutting Band Saw. Additional blades in 10 and 14 tooth sizes are available.
2. The choice of blade pitch is governed by the thickness of the work to be cut; the thinner the workpiece, the more teeth advised. A minimum of 3 teeth should be in the workpiece at all times for proper cutting.
3. If the teeth of the blade are so far apart that they straddle the work, severe damage to the workpiece and to the blade can result.

CHANGING BLADE

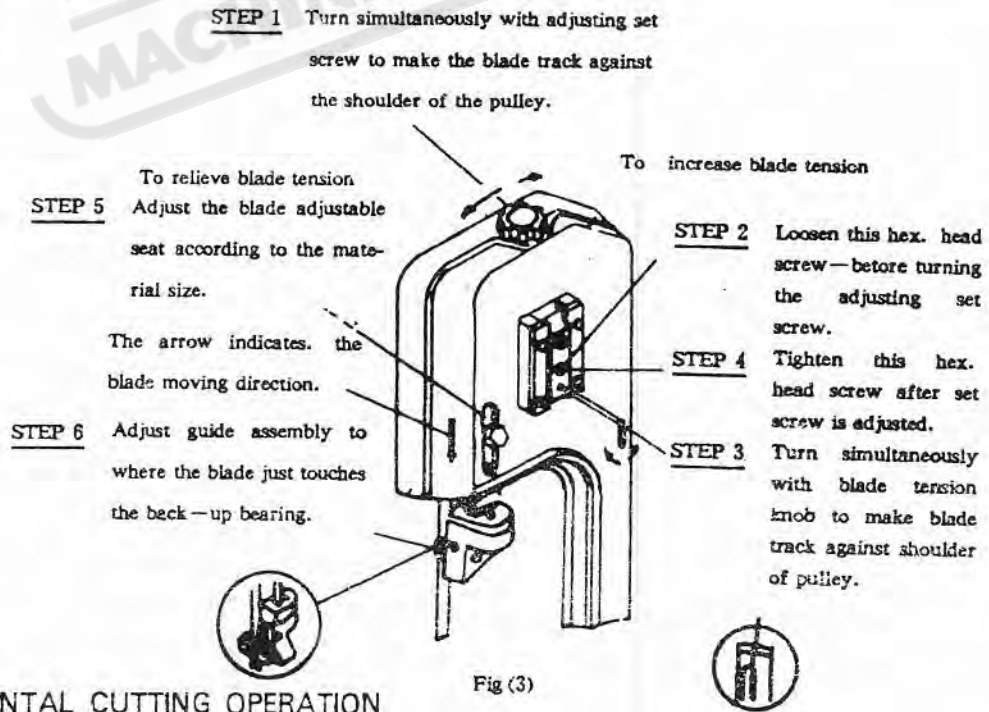
Raise saw head to vertical position. Loosen blade tension adjustable knob sufficiently to allow the saw blade to slip off the wheels. Install the new blade as follows:

1. Place the blade in between each of guide bearing.
2. Slip the blade around the motor pulley (bottom) with the left hand and hold in position.
3. Hold the blade taut against the motor pulley by pulling the blade upward with the right hand which is placed at the top of the blade.

4. Remove left hand from bottom pulley and place it a the top side of the blade to continue the application on the upward pull on the blade.
5. Remove right hand from blade and adjust the position of the top pulley to permit left hand to slip the blade around the pulley using the thumb, index and little finger as guides.
6. Adjust the blade tension knob clockwise until it is just right enough so no blade slippage occurs. Do not tighten excessively.
7. Place 2-3 drops of oil on the blade.
8. Replace the blade guard.

ADJUSTING THE BLADE TRACKING

This adjustment has been completed and power-tested at the factory. The need for adjustment should rarely occur when the saw is used properly. If the tracking goes out of adjustment the blade will leave the wheel and damage will result. The method of adjustment is listed below.



HORIZONTAL CUTTING OPERATION

Before operating, please read instruction manual and examine every part including speed, Blade selection, guide assemble position, etc. Operation is as follows:

WORK SET UP

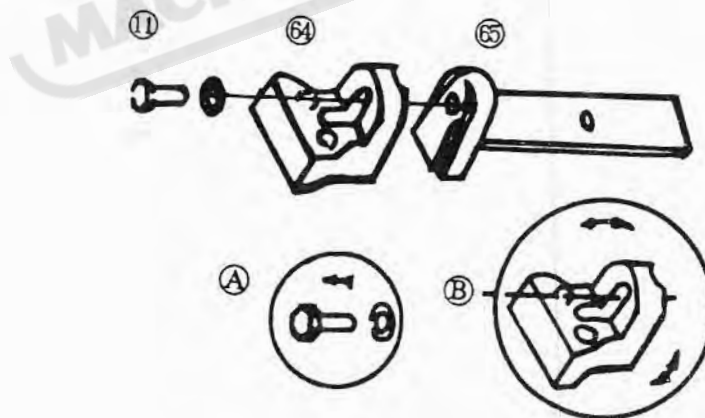
1. Raise the saw head to the vertical position.
2. Open the vise to accept the piece to be cut by rotating the wheel at the end of the base (counter clockwise).
3. Place the workpiece on the saw bed. If the piece is long, support the end.
4. Clamp the workpiece securely in the vise by rotating the hand wheel clockwise.

CUTTING

Close switch, letting the head down slowly onto the work, Do not drop or force. let the weight of the saw head provide the cutting force. The saw automatically shuts off at the end of the cut.

Method of adjusting blade:

- A. Loosen the screw #11.
- B. Adjust the blade adjustable seat #64 to make the blade vertical to bed.
- C. Place the square on the bed to check if the blade is vertical, if not, repeat the process A to C.
- D. Tighten the screw #11.



Fig(4) Adjusting the blade

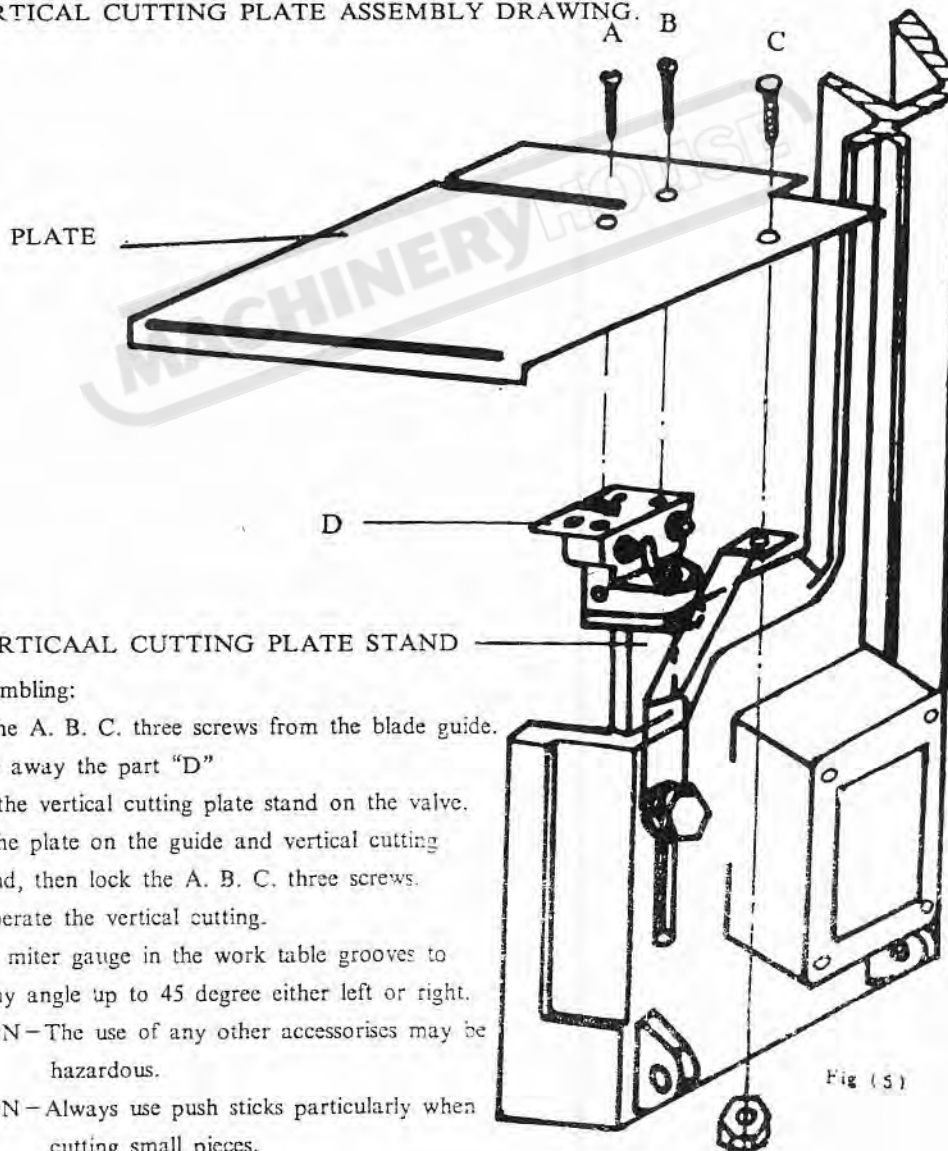
LUBRICATION

Lubricate the following components using Lubricant, L - HV32

1. Ball bearing - none.

2. Blade guide bearing – none.
3. Driven wheel bearing – none.
4. Vise lead screw – as needed.
5. The drive gears run in the oil bath and will not require a lubricant change more often than once a year. When needing a change, first put down the head to a Horizontal position, then loosen 4 screw (#75) of the gear box open the cover (#93). Placing a pan under the tight lower corner of the gear box, slowly raise the head until the oil flows out, Lower head. Then wipe up excess oil and foreign matter with soft rags. Then add lubricant into the box until it is full and not flow over. Close the cover, tighten 4 screws.

THE VERTICAL CUTTING PLATE ASSEMBLY DRAWING.



VERTICAL CUTTING PLATE STAND

Steps for assembling:

1. Loosen the A. B. C. three screws from the blade guide. And take away the part "D"
2. To lock the vertical cutting plate stand on the valve.
3. To put the plate on the guide and vertical cutting plate stand, then lock the A. B. C. three screws.
4. Please operate the vertical cutting.
5. Use the miter gauge in the work table grooves to obtain any angle up to 45 degree either left or right.

CAUTION – The use of any other accessories may be hazardous.

CAUTION – Always use push sticks particularly when cutting small pieces.

Wiring Diagram

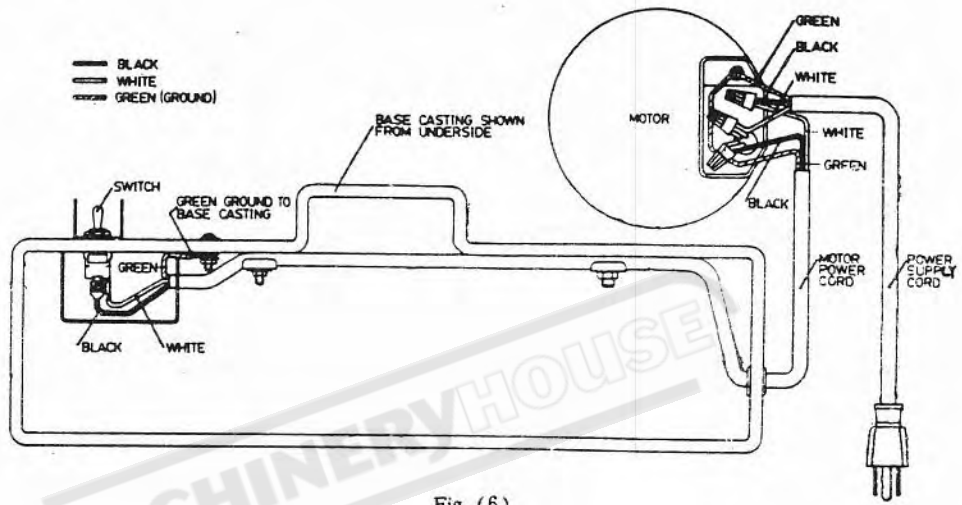


Fig (6)

TROUBLE SHOOTING CHART

Symptom	Possible Cause (s)	Corrective Action
Excessive Blade Breakage	<ol style="list-style-type: none"> 1. Material loose in vise 2. Incorrect speed or feed 3. Blade teeth spacing too large 4. Material too coarse 5. Incorrect blade tension 6. Teeth in contact with material before saw is started 7. Blade rubs on wheel flange 8. Misaligned guide bearings 9. Cracking at weld 	<ol style="list-style-type: none"> 1. Clamp work securely 2. Adjust speed or feed 3. Replace with a small teeth spacing blade 4. Use a blade of slow speed and small teeth spacing 5. Adjust where blade just does not slip on wheel 6. Place blade in contact with work after motor is started 7. Adjust wheel alignment 8. Adjust guide bearings 9. Weld again, note the weld skill
Premature Blade Dulling	<ol style="list-style-type: none"> 1. Teeth too coarse 2. Too much speed 3. Inadequate feed pressure 4. Hard spots or scale on material 5. Work hardening of material 6. Blade twist 7. Insufficient blade 	<ol style="list-style-type: none"> 1. Use finer teeth 2. Decrease speed 3. Decrease spring tension on side of saw 4. Reduce speed, increase feed pressure 5. Increase feed pressure by reducing spring tension 6. Replace with a new blade, and adjust blade tension 7. Tighten blade tension adjustable knob
Unusual Wear on Side/Back of Blade	<ol style="list-style-type: none"> 1. Blade guides worn 2. Blade guide bearings not adjusted properly 3. Blade guide bearing bracket is loose 	<ol style="list-style-type: none"> 1. Replace 2. Adjust as per operators manual 3. Tighten

Symptom	Possible Cause (s)	Corrective Action
Teeth Ripping from Blade	<ol style="list-style-type: none"> 1. Tooth too coarse for work 2. Too heavy pressure, too slow speed 3. Vibrating workpiece 4. Gullets loading 	<ol style="list-style-type: none"> 1. use finer tooth blade 2. Decrease pressure, increase speed 3. Clamp work piece securely 4. Use coarser tooth blade or brush to remove chips
Motor running too hot	<ol style="list-style-type: none"> 1. Blade tension too high 2. Drive belt tension too high 3. Gears need lubrication 4. Cut is binding blade 5. Gears alligned improperly 	<ol style="list-style-type: none"> 1. Reduce tension on blade 2. Reduce tension on drive belt 3. Check oil bath 4. Decrease feed and speed 5. Adjust gears so that worm is in center of gear
Bad Cuts (Cr(x)ked)	<ol style="list-style-type: none"> 1. Feed pressure too great 2. Guide bearings not adjusted properly 3. Inadequate blade tension 4. Dull blade 5. Speed incorrect 6. Blade guides spaced out too much 7. Blade guide assembly loose 8. Blade truck too far away from wheel flanges 	<ol style="list-style-type: none"> 1. Reduce pressure by increasing spring tension on side of saw 2. Adjust guide bearing, the clearance can not greater than .001 3. Increase blade tension by adjust blade tension 4. Replace blade 5. Adjust speed 6. Adjust guides space 7. Tighten 8. Retrack blade according to operating instructions
Bad Cuts (Rough)	<ol style="list-style-type: none"> 1. Too much speed or feed 2. Blade is too coarse 3. Blade tension loose 	<ol style="list-style-type: none"> 1. Decrease speed or feed 2. Replace with finer blade 3. Adjust blade tension
Blade is twisting	<ol style="list-style-type: none"> 1. Cut is binding blade 2. Too much blade tension 	<ol style="list-style-type: none"> 1. Decrease feed pressure 2. Decrease blade tension

PARTS LIST

Parts No.	Description	Number pcs required
1	Hexagon head screw	2
2	Hexagon nut	2
3	Washer	4
4	Floor stand (right)	1
5	Wheel assy (optional)	1
6	Cotter pin	2
11	Hexagon head screw	13
12	Hexagon nut	10
13	Floor stand (left)	1
14	Floor stand handle (optional)	1
15	Adjusting rod	1
16	Electric cord	1
17	Pivoting rod	1
18	Support plate	1
19	Stock stop	1
20	Hexagon socket headless screw	1
21	Stock stop rod	1
22	Wire relief retainer	1
23	Switch	1
24	Hexagon nut	1
26	Switch panel	1
27	Adjusting rod support	1
28	Hand wheel	1
30	Thrust washer	1
32	Lead screw	1
33	Vise nut	1
34	Movable vise plate	1
35	Washer	1
36	Hexagon head screw	1
37	Bed	1
39	Scale	1
40	Electric cord corver	1
43	Rubber ring	2
44	Electric cord	1
45	Nut plate	2
46	Spring adjusting screw	1
47	Spring	1
48	Screw	4
49	Mitering vise plate	1
50	Hexagon head screw	1
51	Washer	5

Parts No.	Description	Number pcs required
52	Hexagon head screw	4
53	Hexagon head screw	1
54	Pivot	1
55	Vertical cutting plate	1
56	Vertical cutting plate stand	1
57	Adjustable bracket (left)	1
58	Plum screw	1
59	Blade back safety cover	1
60	Thrust washer	4
61	Bearing	6
62	Guide pivot	4
63	Bearing shaft pin	2
64	Blade adjustable seat	2
65	Adjustable bracket (right)	1
66	Blade roller bearing guide adjustable lock	2
67	Spring washer	2
68	Screw	5
69	Blade guard	1
70	Hexagon nut	4
71	Blade wheel (front)	1
72	Blade wheel bearing cover	1
73	Key	5
75	Hexagon head screw	1
76	Switch cut off tip	1
77	Blade wheel(rear)	1
79	Blade tension adjustable knob	1
80	Spring	1
81	Body frame	1
83	Hexagon head screw	2
84	Motor mount plate	1
85	Motor	1
86	Motor pulley	1
87	Ball bearing	4
88	Bearing bushing	1
89	Oil seal	2
90	Transmission wheel shaft	1
91	Transmission gear	1
92	Gear box gasket	1
93	Gear box cover	1
94	Worm gear	2
96	Bearing bushing	1

Parts No.	Description	Number pcs required
98	Plum screw	1
99	Washer	1
100	Screw	6
101	Worm gear pulley	1
103	Blade tension sliding plate	1
104	Hexagon socket headless screw	2
105	Spring pin	1
106	Sliding plate draw block	1
107	Blade wheel shaft	1
108	Shaft block	1
109	Blade tension sliding guides	2
110	Motor pulley cover	1
112	Belt	1
113	Blade	2
114	Washer	2
117	Washer	1
118	Thrust washer	1
120	Bearing	1
121	Round head cross socket screw	1
122	Hexagon nut	3
126	Bushing	1
131	Switch protection bracket	1
132	Blade safe guard	2
134	Screw	4
140	Hexagon nut	4
156	Round head cross socket screw	3
157	Star washer	1
169	Cross socket screw	2
170	Tool plate	1
171	Hexagon head screw	4
172	Hexagon nut	4
173	Washer	4
174	Wheel stand	1
175	cotter pin	4
176	Axle	1

