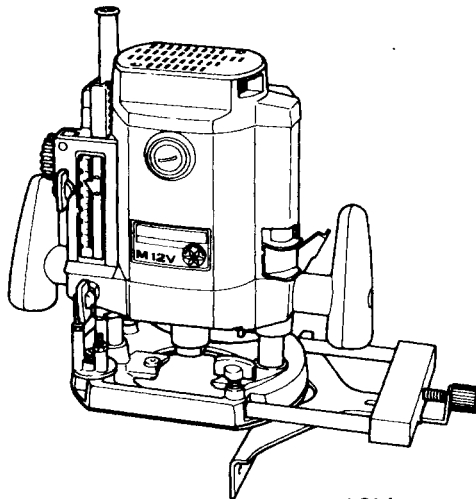


HITACHI

ROUTER

**MODEL M 12V • M 12SA
M 8V • M 8**

INSTRUCTION MANUAL



M12V

Note

Before using this Electric Power Tool, carefully read through this INSTRUCTION MANUAL to ensure efficient, safe operation. It is recommended that this MANUAL be kept readily available as an important reference when using this power tool.



DOUBLE INSULATION

We sincerely thank you for selecting a HITACHI ELECTRIC POWER TOOL. To operate this electric power tool safely and efficiently, please read this INSTRUCTION MANUAL carefully to get a good understanding of the precautions in operation, the capacity of the electric power tool, uses and the like.

IMPORTANT INFORMATION : SAFETY RULES FOR POWER TOOLS

WARNING : When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury, including the following.

READ ALL INSTRUCTIONS

1. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite injuries.
2. **CONSIDER WORK AREA ENVIRONMENT.**
 - Don't expose power tools to rain.
 - Don't use power tools in damp or wet locations.
 - Keep work area well lit.
 - Don't use tool in presence of flammable liquids or gases.
 - Power tools produce sparks during operation. They also spark when switching ON/OFF. Never use power tools in dangerous sites containing lacquer, paint, benzine, thinner, gasoline, gases, adhesive agents, and other materials which are combustible or explosive.
3. **GUARD AGAINST ELECTRIC SHOCK.** Prevent body contact with grounded surfaces. For example: pipes, radiators, ranges, refrigerator enclosures.
4. **KEEP CHILDREN AWAY.** Do not let visitors contact tool or extension cord. All visitors should be kept away from work area.
5. **STORE IDLE TOOLS.** When not in use, tools should be stored in dry, and high or locked-up place — out of reach of children.
6. **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was intended.
7. **USE RIGHT TOOL.** Don't force small tool or attachment to do the job of a heavy-duty tool. Don't use tool for purpose not intended—for example—don't use circular saw for cutting tree limbs or logs.
8. **DRESS PROPERLY.** Do not wear loose clothing or jewelry. They can be caught in moving parts.
 - Rubber gloves and non-skid footwear are recommended when working outdoors.
 - Wear protective hair covering to contain long hair.
9. **USE SAFETY GLASSES.** Also use face or dust mask if cutting operation is dusty.
 - All persons in the area where power tools are being operated should also wear safety eye protectors and face or dust masks.
10. **DON'T ABUSE CORD.** Never carry tool by cord or yank it to disconnect

from receptacle.

Keep cord from heat, oil and sharp edges.

11. **SECURE WORK.** Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.
12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories.
Inspect tool cords periodically and if damaged, have repaired by authorized service facility.
Inspect extension cords periodically and replace if damaged.
Keep handles dry, clean, and free from oil and grease.
14. **DISCONNECT TOOLS.** When not in use, before servicing, and when changing accessories, such as blades, bits, cutters.
15. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
16. **AVOID UNINTENTIONAL STARTING.** Don't carry plugged-in tool with finger on switch. Be sure switch is off when plugging in.
17. **OUTDOOR USE EXTENSION CORDS.** When tool is used outdoors, use only extension cords intended for use outdoors and so marked.
18. **STAY ALERT.** Watch what you are doing. Use common sense. Do not operate tool when you are tired.
19. **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine 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 by an authorized service center unless otherwise indicated elsewhere in this instruction manual.
Have defective switches replaced by authorized service center.
Do not use tool if switch does not turn it on and off.
20. **AVOID USING A POWER TOOL FOR APPLICATIONS OTHER THAN THOSE SPECIFIED.**
Never use a power tool for applications other than those specified in the instruction manual.
21. **ENSURE SAFE OPERATION THROUGH CORRECT HANDLING.**
Secure safe operation through correct handling by observing the instructions described herein.

Do not employ accessories other than those specified herein; otherwise, a hazardous condition may be created.

Never allow a power tool to be used by persons not familiar with correct handling (such as children) or by those who cannot handle the tool correctly.

22. **CONFIRM THAT NO ITEMS SUCH AS AN ELECTRIC CABLE OR CONDUIT ARE BURIED INSIDE.** In places where live wiring may be hidden behind a wall, floor, ceiling, etc. do not hold or contact any metal parts of the tool. In such cases, metal parts could become electrically live and present a serious shock hazard.
23. **KEEP THE RIGHT PARTS IN THE RIGHT POSITIONS.**
Do not remove covers and screws which have been factory-mounted. They perform important respective roles. Keep them in the right positions.
24. **SHOULD THE PLASTIC HOUSING OR HANDLE OF A POWER TOOL BE CRACKED OR DEFORMED, DO NOT USE IT.**
Since cracked or deformed parts may lead to an operator receiving an electric shock, do not use such a power tool. Immediately have it repaired.
25. **SECURELY MOUNT ACCESSORIES AND BLADES TO THE TOOL MAIN BODY.** Extra care must be taken when using tools on elevated location (such as a roof ladder, scaffold, or the like) to prevent injury to someone on a lower level in the event the tool and/or accessory should drop.
26. **ALWAYS KEEP THE MOTOR AIR VENT FULLY OPENED.**
A constantly open motor air vent is necessary to allow air to come in and out for cooling the motor. Do not allow it to become clogged up, even if dust is blown through it.
27. **OPERATE POWER TOOLS AT THE RATED VOLTAGE.**
Operate power tools at voltages specified on their nameplates.
28. **NEVER TOUCH THE MOVING PARTS.**
Never touch the moving parts such as blades, bits, cutters and others.
29. **STOP OPERATION IMMEDIATELY IF ANY ABNORMALITY IS DETECTED.**
Should a power tool be detected as out of order or should other abnormalities be observed during operation, stop using the tool immediately.
30. **NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF.**
Don't leave tool until it comes to a complete stop.
31. **CAREFULLY HANDLE POWER TOOLS.**
Should a power tool be dropped or struck against hard materials inadvertently, it may be deformed, cracked, or damaged.
32. **DO NOT WIPE PLASTIC PARTS WITH SOLVENT.**
Solvents such as gasoline, thinner, benzine, carbon tetrachloride, and

alcohol may damage and crack plastic parts. Do not wipe them with such solvents. Wipe plastic parts with a soft cloth lightly dampened with soapy water.

33. WHEN REPLACING A COMPONENT PART, ADOPT THE SAME TYPE.

When replacing a component part with a new one, adopt the same type of new part. Also, never attempt to repair a power tool yourself.

SERVICE AND REPAIRS

All quality tools will eventually require servicing or replacement of parts due to wear from normal use. These operations should **ONLY** be performed by an **AUTHORIZED HITACHI POWER TOOL REPAIR SHOP.**

REPLACEMENT PARTS

When servicing use only identical replacement parts.

POLARIZED PLUGS

To reduce the risk of electric shock, this equipment has a polarized plug (one blade is wider than the other).

This plug will fit in a polarized outlet only one way.

If the plug does not fit fully in the outlet, reverse the plug.

If it still does not fit, contact a qualified electrician to install the proper outlet.

Do not change the plug in any way.

EXTENSION CORD

Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

MINIMUM GAGE FOR CORD SETS

		Total Length of Cord in Feet (Meter)			
		0-25 (0-7.6)	26-50 (7.9-15.2)	51-100 (15.5-30.5)	101-150 (30.8-45.7)
Ampere More Than	Rating Not More Than	AWG			
	0-6	18	16	16	14
	6-10	18	16	14	12
	10-12	16	16	14	12
	12-16	14	12	Not Recommended	

DOUBLE INSULATION SYSTEM ENHANCES SAFE OPERATION

To enhance safe operation of this electric power tool, HITACHI has adopted a double insulation system. The term "double insulation" used here denotes an insulation system with two insulations physically separated and arranged between the electrically conductive material connected to the power supply and the outer frame subject to contact by the operator. Thus, the power tool is termed double insulated and both the "Ⓢ" mark and "Double insulation", or either one is indicated on the name plate. While no external grounding is required with this system, normal safety precautions as outlined in this manual must still be followed.



DOUBLE INSULATION

To maintain the effectiveness of the double insulation system, follow the precautions described below:

1. Always contact your dealer or an authorized HITACHI service agent when assembling, disassembling or replacing parts other than accessories or carbon brushes. Improper assembly and/or replacement with wrong parts may result in eliminating the double insulation-feature.
2. Clean the exterior of the tool with a soft cloth moistened with soapy water, and dry thoroughly. Chloric solvent, gasoline, and thinner will cause plastic components to dissolve.

PRECAUTIONS ON USING ROUTER

1. Don't operate with only single hand.
2. Don't touch the bit with bare hands immediately after working.

SAVE THESE INSTRUCTIONS.

NAME OF PARTS

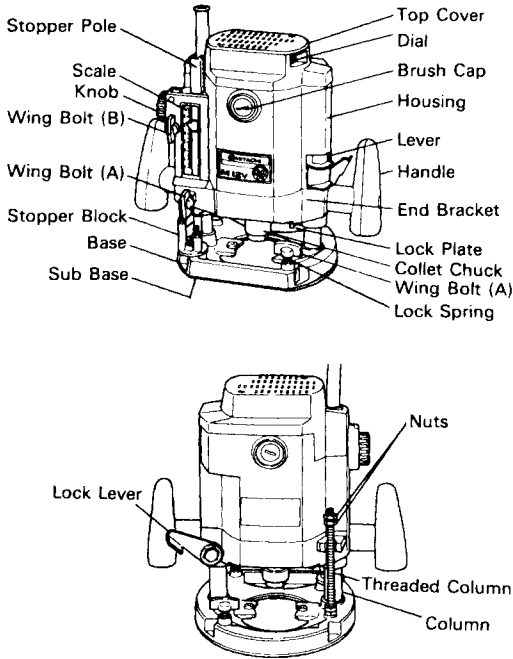


Fig. 1

SPECIFICATIONS

Model	M12V	M12SA	M8V	M8
Motor	Single-Phase, Series Commutator Motor			
Power Source	Single-Phase 115V AC 60Hz			
Collet Chuck Capacity	1/2" (12.7mm)		1/4" (6.35mm)	
Main Body Stroke	2-7/16" (62mm)		2" (50mm)	
Current	15A	14.6A	7.3A	7.3A
No-Load Speed	8000rpm-20000rpm	22000rpm	10000rpm -25000rpm	25000rpm
Weight (with cord)	12.4lbs (5.6kg)	12.1lbs (5.5kg)	7.1lbs (3.2kg)	6.9lbs (3.1kg)

ACCESSORIES

Caution: Recommended accessories for this Electric Power Tool are mentioned in this manual. The use of any other attachment or accessory might be hazardous.

STANDARD ACCESSORIES

1. Model M12V, M12SA

TYPE A

- (1) Wrench (Code No. 956923)1
- (2) Chuck Sleeve
1/4" (6.35mm) (Code No. 956927Z) ...1
- (3) Wing Bolt (A) (M6×15, for mounting the
guide bars) (Code No. 301806)2
- (4) Lock Spring (for mounting the guide bars)
(Code No. 947859)2

TYPE B

- (1) Straight Guide
(Code No. 956797)1
- (2) Bar Holder (Code No. 956792)1
Feed Screw (Code No. 956793)1
Wing Bolt (Code No. 949394Z)1
- (3) Template Guide
(Code No. 956790)1
- (4) Wrench (Code No. 956923)1
- (5) Straight Bit (Tungsten Carbide)
1/2" (12.7mm) (Code No. 956817Z) ...1
- (6) Chuck Sleeve 1/4" (6.35mm)
(Code No. 956927Z)1
- (7) Template Guide Adartor
(Code No. 956756)1
- (8) Wing Bolt (A)
(M6×15, for mounting the guide bars)
(Code No. 301806)2
- (9) Lock Spring (for mounting the guide bars)
(Code No. 947859)2

2. Model M8V, M8

TYPE A

- (1) Wrench (Code No. 971859)1
- (2) Wing Bolt (A) (M6×15, for mounting the
guide bars) (Code No. 301806)2
- (3) Lock Spring (for mounting the guide bars)
(Code No. 947859)2

TYPE B

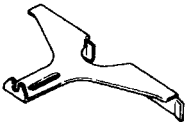
- (1) Parallel Guide (Code No. 971851)1
- (2) Template Guide (Code No. 956790)1
- (3) Wrench (Code No. 971859)1
- (4) Straight Bit (Tungsten Carbide) 1/4"
(6.35mm) (Code No. 971878)1
- (5) Template Guide Adaptor (Code No.
956756)1
- (6) Wing Bolt (A) (M6×15, for mounting the
guide bars) (Code No. 301806)2
- (7) Lock Spring (for mounting the guide bars)
(Code No. 947859)2

Standard accessories are subject to change without notice.

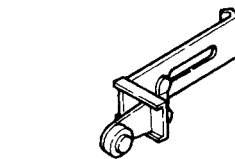
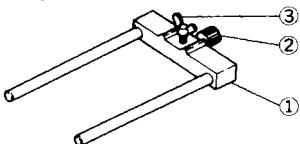
OPTIONAL ACCESSORIES ---sold separately

1. Model M12V, M12SA

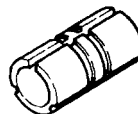
- (1) Straight Guide (Code No. 956797)
- (2) Trimmer Guide Ass'y (Code No. 956794)



- (3) ① Bar Holder (Code No. 956792)
- ② Feed Screw (Code No. 956793)
- ③ Wing Bolt (Code No. 949394Z)



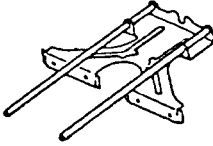
- (4) Chuck Sleeve



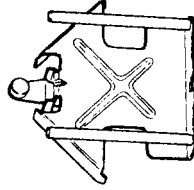
- 1/4" (6.35mm)
(Code No. 956927Z)
- 3/8" (9.5mm)
(Code No. 956928Z)

2. Model M8V, M8

(1) Parallel Guide (Code No.971851)



(2) Trimmer Guide (Code No.971868)

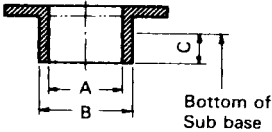


(3) Feed Screw Ass'y (Code No.971864)



3. Model M12V, M12SA, M8V, M8

(1) Template Guide



Part No.	A	B	C
303 347	19/64" (7.5mm)	3/8" (9.5mm)	3/16" (4.5mm)
303 348	5/16" (8mm)	25/64" (10mm)	
303 349	23/64" (9mm)	7/16" (11.1mm)	
303 350	25/64" (10mm)	15/32" (12mm)	
303 351	27/64" (10.7mm)	1/2" (12.7mm)	
303 352	15/32" (12mm)	35/64" (14mm)	
303 353	35/64" (14mm)	5/8" (16mm)	
956 790	21/32" (16.5mm)	45/64" (18mm)	
956 932Z	47/64" (18.5mm)	25/32" (20mm)	
303 354	57/64" (22.5mm)	15/16" (24mm)	
956 933Z	1" (25.5mm)	1-1/16" (27mm)	
956 934Z	1-1/8" (28.5mm)	1-3/16" (30mm)	
303 355	1-33/64" (38.5mm)	1-37/64" (40mm)	

(2) Template Guide Adaptor
(Code No.956756)



(3) Dust Collector Set (Code No.997466)



(4) Scale (mm)(Code No.301824)



Optional accessories are subject to change without notice.

APPLICATIONS

○ Woodworking jobs centered on grooving and beveling.

For example, grooving beveling, cutting, copying, Engraving, shape cutting, combinations and others.

PRIOR TO OPERATION

1. Power source

Ensure that the power source to be utilized conforms to the power requirements specified on the product nameplate.

2. Power switch

Ensure that the power switch is in the OFF position. If the plug is connected to a power receptacle while the power switch is in the ON position, the power tool will start operating immediately, inviting serious accident.

3. Extension cord

When the work area is removed from the power source, use an extension cord of sufficient thickness and rated capacity. The extension cord should be kept as short as practicable.

4. Setting the attachment angle of the handle

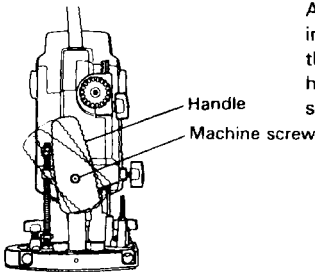


Fig. 2

As Fig. 2 shows, the handle attachment angle can be set in three stages. Use a plus head screwdriver to loosen the machine screw attached to the handle, adjust the handle to the desired position and re-tighten the machine screw.

MOUNTING AND DISMOUNTING BITS

Caution: Be sure to switch power OFF and disconnect the attachment plug from the power receptacle to avoid serious trouble.

1. Mounting Bits:

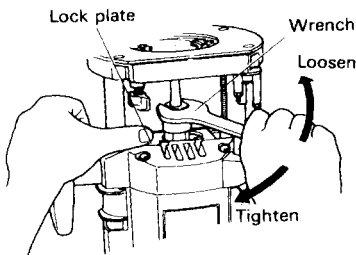


Fig. 3

(1) Insert the bit deeply in the collet chuck hole. As shown in Fig. 3, press the lock plate, tighten the collet nut and then use the accessory wrench to firmly tighten the collet chuck.

Caution

Ensure that the collet chuck is firmly tightened after inserting a bit. Failure to do so will result in damage to the collet chuck.

Model M12V, M12SA

Be sure to use a chuck sleeve when using bits of 1/4" (6.35mm) or 3/8" (9.5mm). First insert the chuck sleeve deeply in the collet chuck, then insert the bit in the chuck sleeve. Tighten the collet chuck firmly as in step (1).

2. Dismounting Bits:

When dismantling the bits, do so by following the steps for mounting bits in reverse order.

HOW TO USE THE ROUTER

1. Setting the cutting depth:

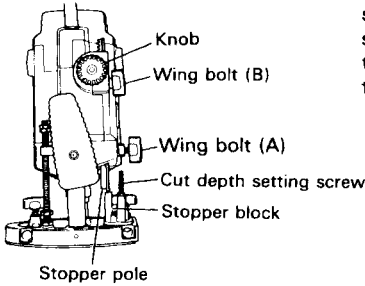


Fig. 4

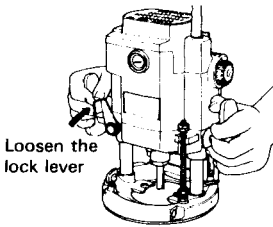


Fig. 5

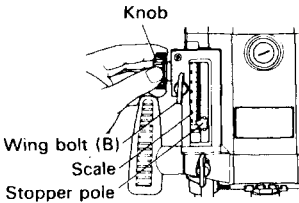


Fig. 6

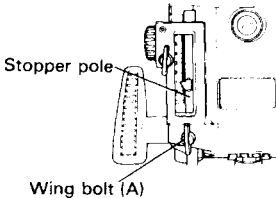


Fig. 7

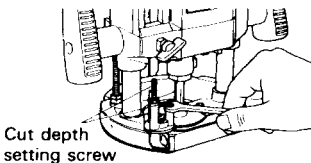


Fig. 8

(1) As shown in Fig. 4, turn the stopper block so that the section to which the cut depth setting screw on stopper block is not attached comes to the bottom of the stopper pole. Loosen wing bolt (A) and turn knob to bring stopper pole in contact with stopper block.

(2) As shown in Fig. 5, loosen the lock lever and press down the main unit until the bit comes into slight contact with the surface of the materials. Tighten the lock lever at this point.

(3) As shown in Fig. 6, loosen wing bolt (B). Turning knob while pulling it outward will cause to move. Pushing it back and turning will cause stopper pole to move.

Turn knob while pulling and align the arrow on stopper pole to "0" of scale. Tighten wing bolt (B). This condition is the "0" cutting depth.

(4) As shown in Fig. 7, turn back knob and then tighten the wing bolt (A) when the arrow on the stopper pole indicates the desired cutting depth.

(5) Loosen the lock lever and press the main unit down until the stopper pole comes in contact with the stopper block to obtain the desired cutting depth.

(6) The two cut-depth setting screws attached to the stopper block can be adjusted to simultaneously set three different cutting depths. As shown in Fig. 8, use a wrench to tighten the nuts so that the cut-depth setting screws do not come loose at this time.

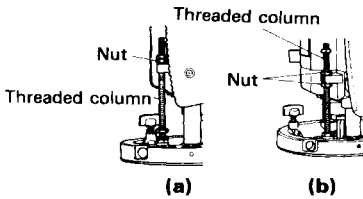


Fig. 9

- (7) As shown in Fig. 9 (a), loosening the two nuts on the threaded column and moving them down will allow you to move down to the end position of the bit when the lock lever was loosened. This is helpful when moving the router to align the bit with the cutting position. As shown in Fig. 9 (b), tighten the upper and lower nuts to secure the cutting depth.
- (8) When you are not using the scale to set the cutting depth, push up the stopper pole so that it is not in the way.

2. Guiding the Router

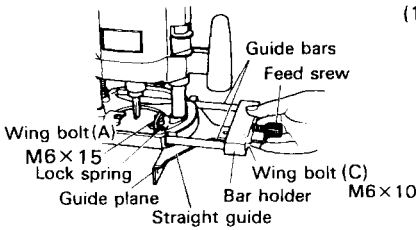


Fig. 10

- (1) Straight Guide (Model M12V, M12SA) :
Use the straight guide for chamfering and groove cutting along the materials side. First of all, as shown in Fig. 10, attach the two wing bolts (A) (M6 × 15) and the two lock springs (both standard accessories) to the screw holes on the top side of the base. Use the feed screw and the wing bolt (C) M6×10 to attach the bar holder to the straight guide. Insert the guide bar in the hole on the base. Attach and tighten the two wing bolts (A) (M6 × 15) in the approximate position. Use feed screw to make minute adjustments of the measurements from the bit to the guide plane. Tighten wing bolt (C) M6×10 and secure straight guide.

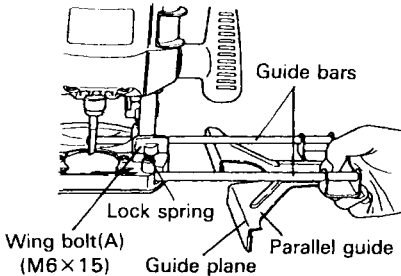


Fig. 11

- (2) Parallel Guide (Model M8V, M8) :
Use the parallel guide for chamfering and groove cutting along the materials side. First of all, as shown in Fig.11, attach the two wing bolts(A) (M6× 15) and the two lock springs to the screw holes on the top side of the base. Insert the guide bar in the hole on the base and adjust the distance from the bit to the guide plane. Tighten the two wing bolts (A) (M6×15) to secure the parallel guide.

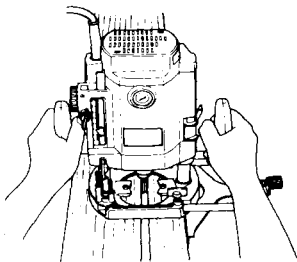


Fig. 12

As shown in Fig.12, securely attach the bottom of the base to the processed surface of the materials. Feed the router while keeping the guide plane on the surface of the materials.

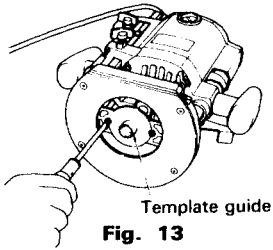


Fig. 13

(3) Template Guide:

Use the template guide when employing a template for producing a large quantity of identically shaped products.

As shown in Fig. 13, secure the template guide to the base of the router with two accessory screws. At this time, ensure that the projection side of the template guide is facing the bottom surface of the base of the router.

A template is a profiling mold made of plywood or thin lumber. When making a template, pay particular attention to the matters described below and illustrated in Fig. 14.

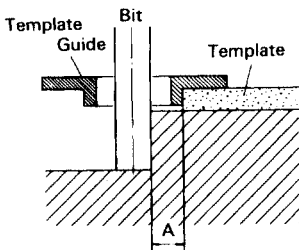


Fig. 14

When using the router along the interior plane of the template, the dimensions of the finished product will be less than the dimensions of the template by an amount equal to dimension "A", the difference between the radius of the template guide and the radius of the bit. The reverse is true when using the router along the exterior of the template.

Secure the template to the workpiece. Feed the router in the manner that the template guide moves along the template as shown in Fig. 15.

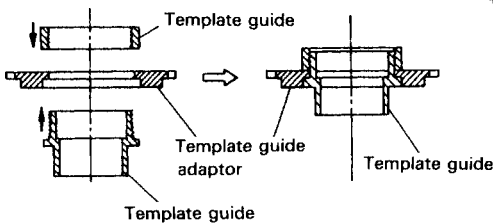


Fig. 15

Template Guide Adaptor:

If you are using a template guide adaptor, it is possible to use template guides produced by other firms. The template guide adaptor, like the template guide, is attached to the base with two accessory screws. Attach template guides made by other firms to the template guide adaptor.

3. Adjusting the rotating speed (Model M12V, M8V only)

The M12V and M8V have an electronic control system that allows stepless rpm changes.

As shown in Fig. 16, dial position "1" is for minimum speed and position "5" for maximum speed.

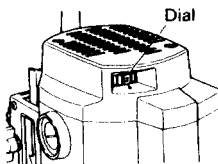


Fig. 16

4. Cutting

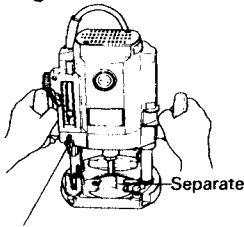


Fig. 17

- (1) As shown in Fig. 17, remove the bit from the work pieces and press the switch lever up to the ON position. Do not start cutting operation until the bit has reached full rotating speed.

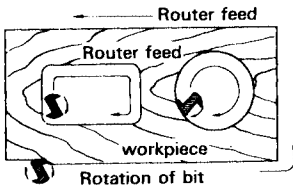


Fig. 18

- (2) The bit rotates clockwise (arrow direction indicated on the base). To obtain maximum cutting effectiveness, feed the router in conformance with the feed directions shown in Fig. 18.

USING THE OPTIONAL ACCESSORIES

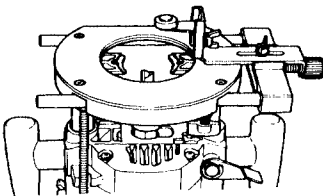


Fig. 19

1. Model M12V, M12SA

- (1) Trimmer Guide :

Use the trimmer guide for chamfering.

As shown in Fig. 19 use the wing bolt to mount and secure the trimmer guide on the bar holder.

Use the two wing bolts to align the trimmer guide in the desired position, and use it as shown in Fig. 20.

2. Model M8V, M8

- (1) Trimmer Guide :

Use the trimmer guide for trimming, chamfering or working the inner surface. Attach the trimmer guide to the base as shown in Fig. 21.

After aligning the roller to the appropriate position, tighten the two wing bolts (A) and the other wing bolt (C). Use as shown in Fig. 22.

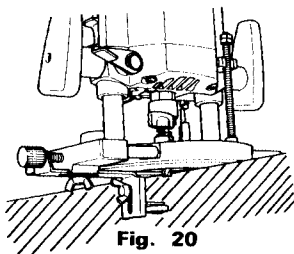


Fig. 20

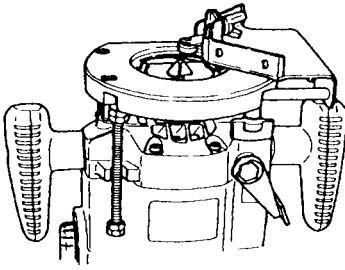


Fig. 21

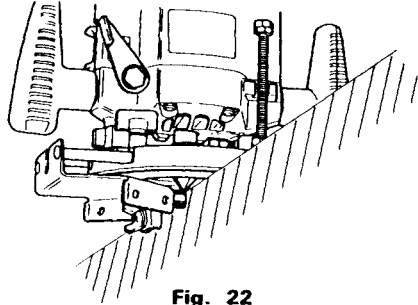


Fig. 22

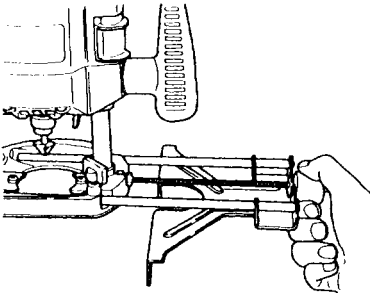


Fig. 23

(2) Feed screw ass'y

The feed screw assembly can be used to make fine adjustments in the distance between the bit and the parallel guide or trimmer guide. Attach the feed screw to the parallel guide or the trimmer guide as shown in Fig. 23. and then attach the rod to the base using the nuts provided. Turn the feed screw to make fine adjustments. Push the button on the feed screw to release the grip of the screw and allow fast movement of the guide.

3. Model M12V, M12SA, M8V, M8

(1) Dust corrector set

Used to collect cutting particles by connecting a cleaner.

(2) Scale (Unit : mm)

Used when setting the cutting depth in mm units

MAINTENANCE AND INSPECTION

Caution: Be sure to disconnect the plug during maintenance and inspection.

1. Adjusting the lock lever position:

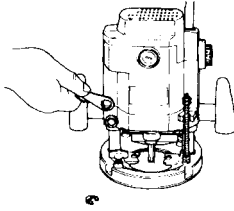


Fig. 24

The lock lever part is provided with a brass lock piece to protect the column. When the lock piece becomes excessively worn, the lock position of the lock lever tends to drop. Should router operation and handling become difficult as a result, remove the E-type retaining ring and adjust the setting position of the dodecagonal hole on the lock lever and the hexagonal axis of the lock screw, as shown in Fig. 24.

2. Oiling:

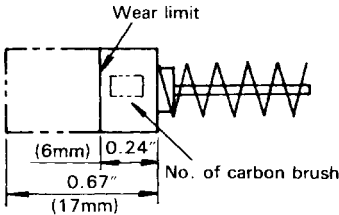
To ensure smooth vertical movement of the router, occasionally apply a few drops of machine oil to the sliding portions of the columns and end bracket.

3. Inspecting tightness of various screws

Periodically inspect each screw for tightness. If any screws are loosened, securely retighten them. Loosened screws, if unheeded, may cause a hazardous situation.

4. Inspecting the carbon brushes: (Fig. 25)

The motor employs carbon brushes which are consumable parts. Since an excessively worn carbon brush could result in motor trouble, replace a carbon brush with a new one having the same carbon brush No. shown in the figure when it becomes worn to or near the "wear limit". In addition, always keep carbon brushes clean and ensure that they slide freely within the brush holders.



○ Replacing a carbon brush:

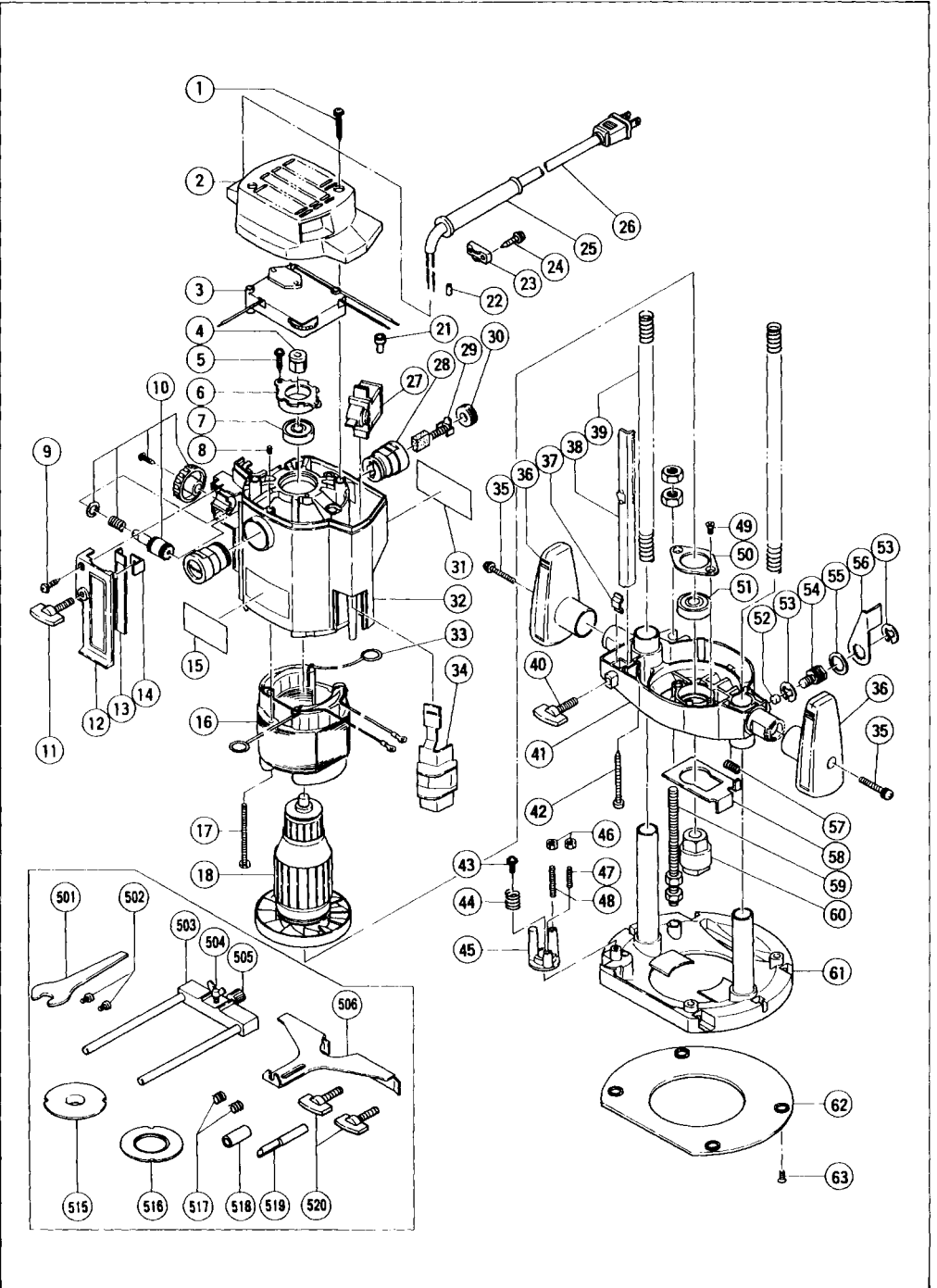
Disassemble the brush cap with a minus-head screwdriver. The carbon brush can then be easily removed.

	No. of carbon brush
M12V, M12SA	44
M8V, M8	43

Fig. 25

Note:

Due to HITACHI'S continuing program of research and development, the specifications herein are subject to change without prior notice.



M12V

Item No.	Part Name	
1	Tapping Screw (W/Washer)	D4×45
2	Top Cover (B)	
3	Controller Circuit	
4	Magnet	
5	Tapping Screw	D4×12
6	Bearing Bushing	
7	Ball Bearing (6200VVCMP2S)	
8	Hex. Socket Set Screw	M5×8
9	Tapping Screw (W/Washer)	D4×16
10	Knob Pinion	
11	Wing Bolt	M6×27
12	Front Cover	
13	Scale	
14	Scale Stopper	
15	HITACHI Label	
16	Stator Ass'y	
17	Hex. Hd. Tapping Screw	D5×70
18	Armature	
21	Connector (50092)	
22	Tube (D)	
23	Cord Clip	
24	Tapping Screw (W/Flange)	D4×16
25	Cord Armor	
26	Cord	
27	Switch	
28	Brush Holder	
29	Carbon Brush	
30	Brush Cap	
31	Name Plate	
32	Housing Ass'y	
33	Brush Terminal	
34	Lever	
35	Machine Screw (W/Washer)	M5×25
36	Handle	
37	Stopper Piece	
38	Stopper Pole	
39	Spring	
40	Wing Bolt	M6×15
41	End Bracket	
42	Tapping Screw	D5×55
43	Self Tapping Screw (W/Washer)	D4×12
44	Spring (A)	
45	Stopper Block	
46	Nut	M5
47	Hex. Socket Set Screw	M5×20

Item No.	Part Name	
48	Hex. Socket Set Screw	M5×35
49	Seal Lock Flat Hd. Screw	M4×10
50	Bearing Cover	
51	Ball Bearing (6201VVCMP2S)	
52	Lock Piece	
53	Retaining Ring (E-Type)	
54	Lock Screw	
55	Wave Washer	
56	Lock Lever	
57	Spring	
58	Lock Plate	
59	Screw	M8
60	Collet Chuck	
61	Base	
62	Sub Base	
63	Seal Lock Flat Hd. Screw	M5×14
501	Wrench	21mm
502	Machine Screw	M5×6
503	Bar Holder	
504	Wing Bolt	M6×10
505	Feed Screw	
506	Straight Guide	
515	Template Guide	D18
516	Template Guide Adapter	
517	Lock Spring	
518	Chuck Sleeve	
519	Straight Bit	
520	Wing Bolt	M6×15

Parts are subject to possible modification without notice due to improvements.

The drawing and the list are parts structural drawing and parts list of model M12V.

For other models refer to the drawing and the list.

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