

MODEL

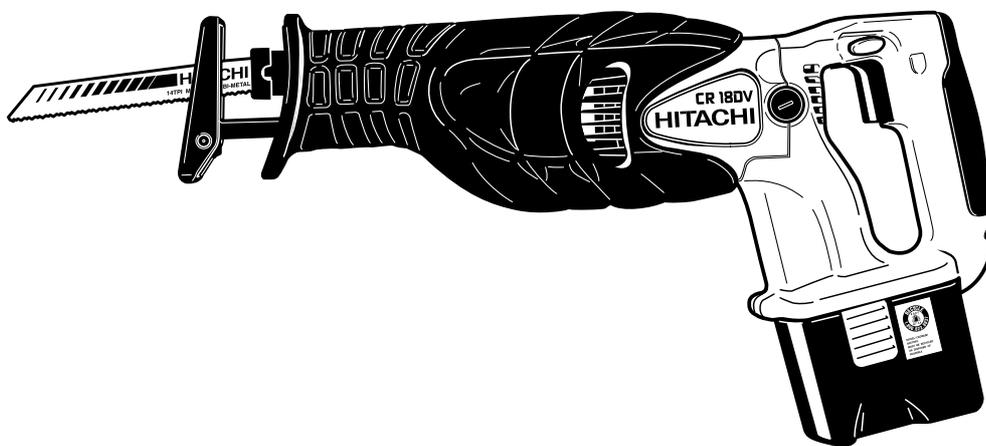
CR 18DV

**HITACHI**  
POWER TOOLS

**CORDLESS  
RECIPROCATING SAW  
CR 18DV**

**TECHNICAL DATA  
AND  
SERVICE MANUAL**

C



LIST No. F878

Dec. 2002

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

REMARK:

Throughout this TECHNICAL DATA AND SERVICE MANUAL, a symbol(s) is(are) used in the place of company name(s) and model name(s) of our competitor(s). The symbol(s) utilized here is(are) as follows:

Symbols Utilized	Competitors	
	Company Name	Model Name
P	DEWALT	DW938
C	MAKITA	JR180DWB

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## 1. PRODUCT NAME

Hitachi 18 V Cordless Reciprocating Saw, Model CR 18DV

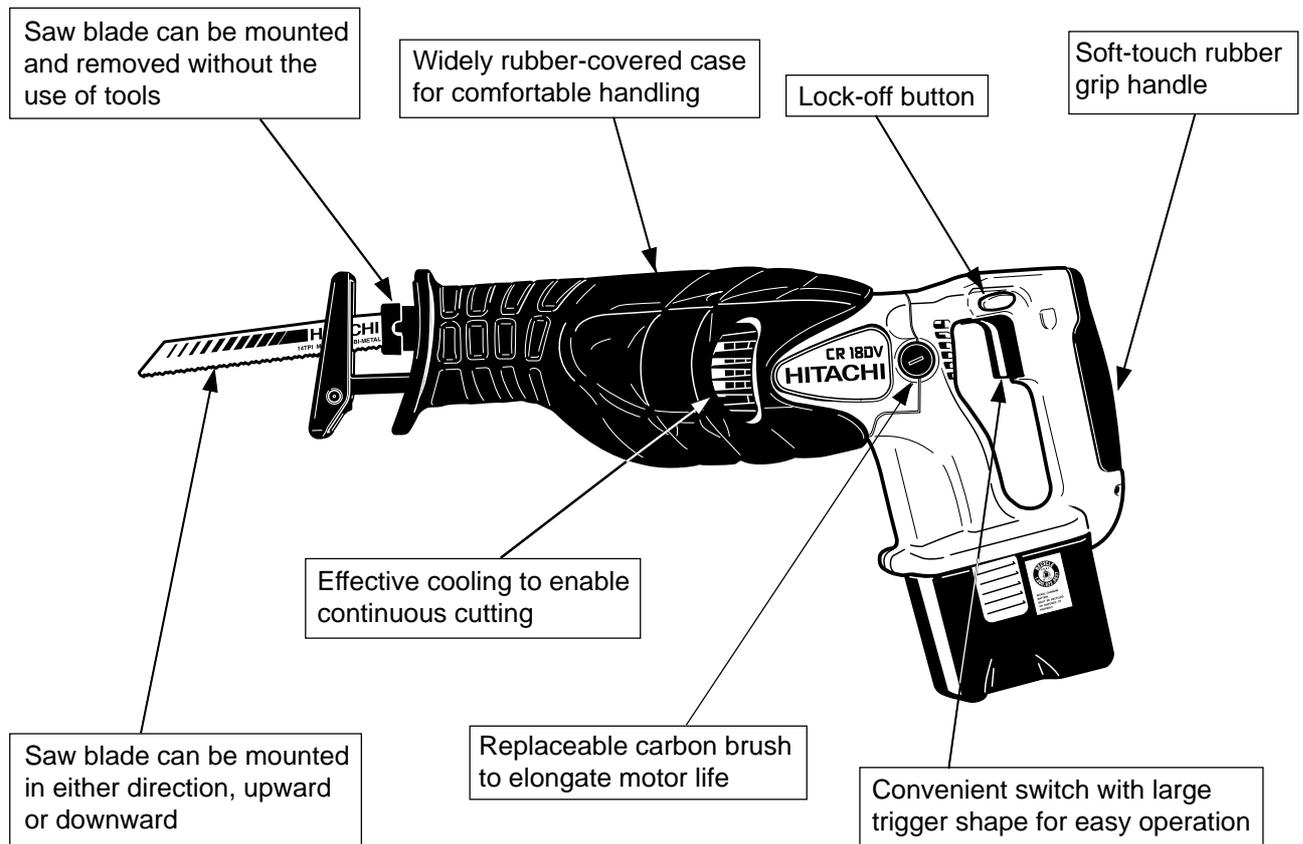
## 2. MARKETING OBJECTIVE

The new Model CR 18DV is a cordless reciprocating saw developed as one of the HITACHI 18-V product series. The Model CR 18DV features the carbon brush-replaceable, powerful and long-life motor, Hitachi-original mechanism that enables one-hand mounting and dismounting of saw blades and comfortable rubber grip handle for ease of operation. In addition, the Model CR 18DV is equipped with the high-strength components equivalent to the 24-V product Model CR 24DV.

## 3. APPLICATIONS

- Cutting metal, wood, plastics, etc.

## 4. SELLING POINTS



## 4-1. Selling Point Descriptions

### (1) Saw blade can be mounted and removed without the use of tools

The Model CR 18DV eliminates such inconvenience by adopting the Hitachi-original detachable mechanism that enables one-hand mounting and removal of saw blades without the use of a wrench or other tools.

< Features of the Hitachi-original detachable mechanism >

- ① The saw blade can be mounted and removed just by turning the holder sleeve.
  - ② The holder sleeve can be automatically secured in a released state by turning it all the way. In the released state, the built-in spring force pulls the holder pin back to the correct position automatically.
- Thus, saw blades can be smoothly replaced with one hand.

Refer to the Handling Instructions for detailed information about saw blade replacement.

### (2) Saw blade can be mounted in either direction, upward or downward

The Model CR 18DV is convenient for cutting materials on the floor or near window frames, and also for plunge cutting on plywood panels because the saw blade can be installed upside down.

< Plunge cutting on plywood panels >

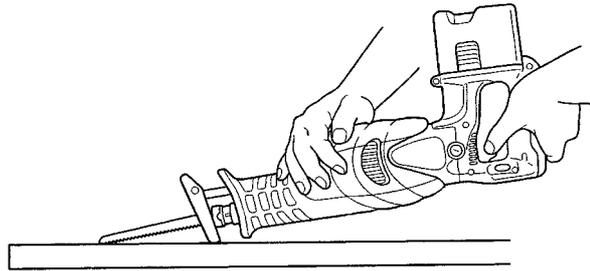


Fig. 1

### (3) Replaceable carbon brush to elongate motor life

The carbon brush can be replaced from the outside of the motor to elongate the motor life and to enhance the maintainability. The carbon brush can be easily removed from the motor with a flat-blade screwdriver as shown in Fig. 2, and can also be easily and securely mounted to the motor by hooking the nail of the carbon brush on the contact portion outside the brush tube.

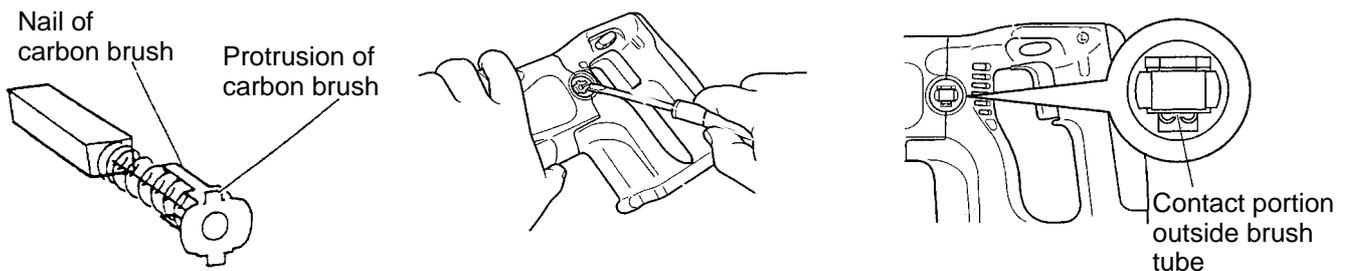


Fig. 2

(4) Lock-off button

The lock-off button is adopted to avoid the switch from unintentionally being turned on during storage or carrying.

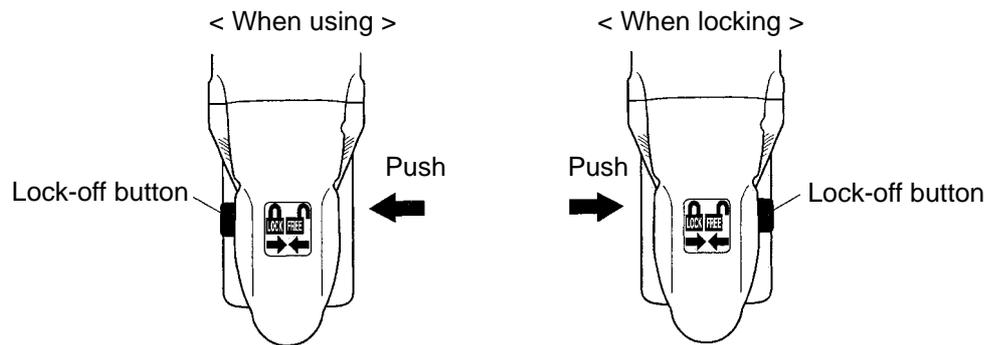


Fig. 3

(5) Convenient switch trigger shape for easy operation

The switch trigger is large enough to operate with two fingers for ease of operation. Even if the tool is upside down as shown in Fig. 1, the trigger switch can be easily operated.

## 5. SPECIFICATIONS

### 5-1. Specifications

Capacity	Max. cutting size	Steel pipe outer diameter 90 mm (3-1/2") Wood thickness 90 mm (3-1/2") Mild steel plate (thickness) 10 mm (3/8")
Number of stroke	0 – 2,100/min.	
Stroke	28 mm (1-1/8")	
Type of motor	DC magnet motor	Max. output: 380 W
Enclosure	Housing ..... Glassfiber reinforced polycarbonate resin Handle ..... Polycarbonate resin Grip cover ..... Polycarbonate resin + Elastomer Front cover ..... NBR (Acrylonitrile-butadiene rubber) Gear cover and upper cover ... Aluminum alloy die casting Storage battery ..... Glassfiber reinforced polyamide resin Charger ..... ABS resin	
Type of switch	Variable trigger switch (with brake)	
Handle shape	D-type handle	
Weight	Main body 3.9 kg (8.6 lbs.) (with EB 1820 battery) Battery EB 1820 1.0 kg (2.2 lbs.) EB 1830H 1.1 kg (2.4 lbs.) Charger UC 24YFA 0.6 kg (1.3 lbs.)	
Battery (Model EB 1820)	Sealed cylinder nickel cadmium storage battery Nominal voltage: DC 18 V Nominal life: Charging/discharging approximately 1,000 cycles (in case of Model UC 24YFA) Nominal capacity: 2.0 Ah	
Battery (Model EB 1830H)	Sealed cylinder nickel-metal hydride storage battery Nominal voltage: DC 18 V Nominal life: Charging/discharging approximately 500 cycles (in case of Model UC 24YFA) Nominal capacity: 3.0 Ah	
Charger (Model UC 24YFA)	Power source: Single-phase AC 50/60 Hz Voltage: Depending on the order specification Power input: 90 W Charging system: Constant current charge with feedback control Overcharge protection system: (1) Battery voltage detection ( $\Delta V$ system) for EB 1820 battery Ni-MH battery temperature detection (dT/dt system) for EB 1830H battery (2) Battery surface temperature detection (thermister) (3) 120 minutes timer  Output voltage: DC 18 V Output current: 2.5 A Charging time: Approx. 50 minutes (for EB 1820 at 20°C (68°F)) Approx. 70 minutes (for EB 1830H at 20°C (68°F)) Operable ambient temperature range: 0°C – 40°C (32°F – 104°F) The maximum allowable temperature of the Model EB 1820 battery is 60°C (140°F) and the Model EB 1830H battery is 45°C (113°F).	



(2) BI-METAL blades

The blade numbers of BI-METAL blades in Table 2 are engraved in the vicinity of the mounting position of each blade. Select appropriate blades by referring to Table 2 and 3 below.

Table 2: BI-METAL blades

Blade No.	Uses	Thickness (mm)
No. 101	For cutting steel and stainless pipes less than 60 mm (2-3/8") in outer diameter	2.5 – 6 (3/32" – 1/4")
No. 102	For cutting steel and stainless pipes less than 100 mm (4") in outer diameter	2.5 – 6 (3/32" – 1/4")
No. 103	For cutting steel and stainless pipes less than 60 mm (2-3/8") in outer diameter	2.5 – 6 (3/32" – 1/4")
No. 104	For cutting steel and stainless pipes less than 100 mm (4") in outer diameter	2.5 – 6 (3/32" – 1/4")
No. 105	For cutting steel and stainless pipes less than 60 mm (2-3/8") in outer diameter	2.5 – 6 (3/32" – 1/4")
No. 106	For cutting steel and stainless pipes less than 100 mm (4") in outer diameter	2.5 – 6 (3/32" – 1/4")
No. 107	For cutting steel and stainless pipes less than 60 mm (2-3/8") in outer diameter	Below 3.5 (1/8")
No. 108	For cutting steel and stainless pipes less than 100 mm (4") outer diameter	Below 3.5 (1/8")
No. 121	For cutting and roughing lumber	100 (4")
No. 131	All purpose	—
No. 132	All purpose (except for cutting steel and stainless pipes more than 30 mm (1-3/16") in outer diameter)	—

(3) Selection of blades for other materials

Table 3

Material to be cut	Material quality	Thickness (mm)	Blade No.
Iron plate	Mild steel plate	2.5 – 10 (3/32" – 3/8")	No. 1, 2, 101, 102, 103, 104, 105, 106, 131, 132
		Below 3.5 (1/8")	No. 3, 6, 107, 108
Nonferrous metal	Aluminum Copper Brass	5 – 10 (3/16" – 3/8")	No. 1, 2, 101, 102, 103, 104, 105, 106, 131, 132
		Below 5 (3/16")	No. 3, 6, 107, 108
Synthetic resin	Phenol resin Melamine resin etc.	10 – 30 (3/8" – 1-3/16")	No. 1, 2, 4, 101, 102, 103, 104, 131, 132
		5 – 20 (3/16" – 3/4")	No. 3, 5, 8, 105, 106, 107, 108
	Vinyl chloride Acrylic resin etc.	10 – 30 (3/8" – 1-3/16")	No. 1, 2, 4, 101, 102, 103, 104, 131, 132
		5 – 20 (3/16" – 3/4")	No. 3, 5, 8, 105, 106, 107, 108

## 6. COMPARISONS WITH SIMILAR PRODUCTS

### 6-1. Specification Comparisons

Maker			HITACHI	P	C
Model			CR 18DV		
Stroke	mm		28 (1-1/8")	22 (7/8")	23 (15/16")
No-load speed	/min.		0 – 2,100	0 – 2,800	0 – 2,700
Max. output	W		380	340	370
Dimensions	Length	mm	462 (18-3/16")	434 (17-3/32")	447 (17-19/32")
	Height	mm	248 (9-3/4")	189 (7-7/16")	208 (8-3/16")
	Width	mm	80 (3-5/32")	89 (3-1/2")	95 (3-3/4")
Net weight	kg		3.9 (8.6 lbs.)	3.0 (6.6 lbs.)	3.5 (7.7 lbs.)
Vibration	dB		122	122	118
No-load noise	dB		80	88	79
Battery	Voltage	V	18	18	18
	Capacity	Ah	2.0	2.4	2.2
Features	Variable speed		○	○	○
	Blade tool-less		○	○	○
	Base tool-less		×	Fixed base type	○
	Front cover		Rubber	Rubber	Rubber
	Cutting action		×	×	×
	Soft grip		○	○	×
	Counter balance		×	×	×
	Conversion mechanism		Bevel gear	Recipro	Bevel gear
	Replaceable outer carbon brush		○	×	○

### 6-2. Working Performance per Single Charge (reference only)

< Cutting steel pipes >

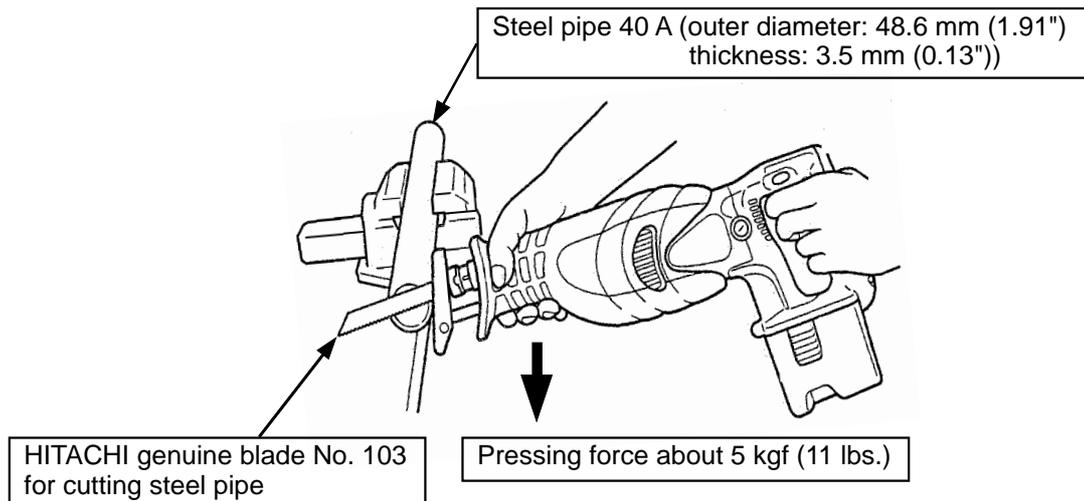


Fig. 4

< Cutting wood >

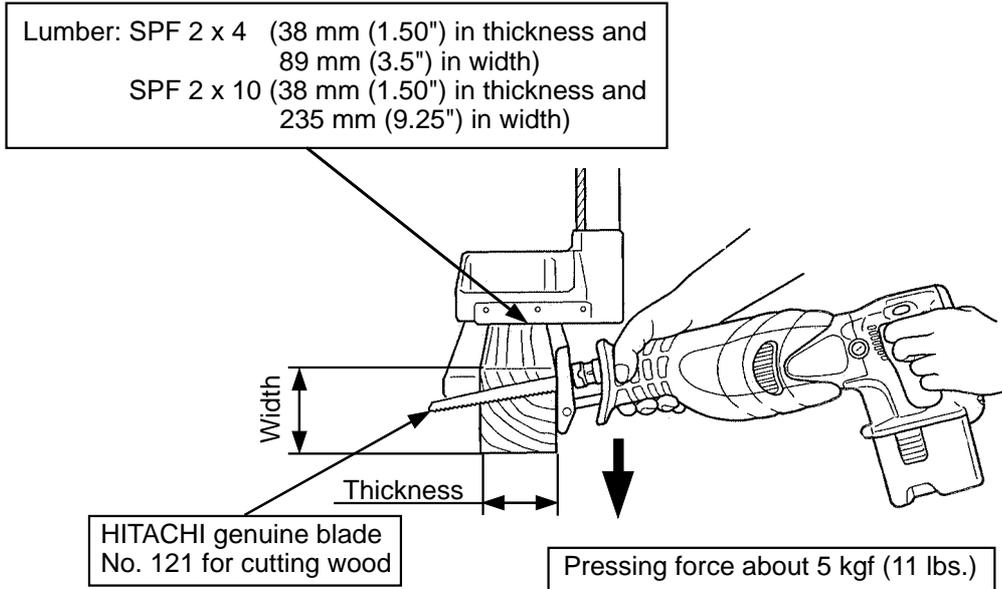


Fig. 5

The following test data should be used for reference purposes only since the cutting speed and the working capacity may vary depending on the operating conditions such as the pressing force, type of blades, materials, etc.

(In terms of 2.0 Ah battery)

Material	Maker	Model	Working capacity					Cutting speed (sec/pc.)
			20	40	60	80	100	
Steel pipe 40A	HITACHI	CR18 DV	17					17.8
		P	15					23.8
		C	15					18.5
SPF 2 x 10	HITACHI	CR18 DV	35					11.4
		P	34					10.7
		C	29					12.0
SPF 2 x 4	HITACHI	CR18 DV	64					5.2
		P	68					5.3
		C	46					7.9

## 7. PRECAUTIONS IN SALES PROMOTION

### 7-1. Safety Instructions

In the interest of promoting the safest and most efficient use of the Model CR 18DV by all our customers, it is very important that at the time of sale the salesperson carefully ensures that the buyer seriously recognizes the importance of the contents of the Handling Instructions, and fully understands the meaning of the precautions listed on the Caution Plate and Name Plate attached to each tool.

#### A. Handling Instructions

Salespersons must be thoroughly familiar with the contents of the Handling Instructions in order to give pertinent advice to the customer. In particular, they must have a thorough understanding of the precautions in the use of the cordless (battery charger type) electric power tools which are different from those of ordinary electric power tools.

(1) Before use, ensure that the unit is fully charged.

New units are not fully charged. Even if the units were fully charged at the factory, long periods without use, such as during shipping, cause the storage battery to lose its charge. Customers must be instructed to fully charge the unit prior to use.

(2) When charging storage batteries, use only the exclusive Model UC 24YFA Charger provided with the tool.

Because of designed rapid-charging feature (about one hour), use of other battery chargers is hazardous.

(3) Ensure the power source voltage is the same as that indicated on the Name Plate of the charger. Use of any other power source (DC outlet, fuel powered generator, etc.) will cause the charger to overheat and burnt out.

(4) Do not use any voltage increasing equipment (transformer, etc.) between the power source and the charger.

If the charger is used with voltage over and above that indicated on the unit, it will not function properly.

(5) Conduct battery charging at an ambient temperature range of 0°C -- 40 °C (32°F -- 104°F).

Special temperature sensitive devices are employed in the charger to permit rapid charging.

Ensure that customers are instructed to use the charger at the indicated ambient temperature range.

At temperature over 40°C (104°F), the storage battery cannot be sufficiently charged. The optimum temperature range is 20 -- 25°C (68°F -- 77°F).

(6) The battery charger should not be used continuously.

At high ambient temperatures, if over three storage batteries are charged in succession, the temperature of the coils on the transformer will rise. After charging one battery, please charge the next battery after about a fifteen-minute interval.

(7) Do not insert foreign objects into the air vents on the charger.

The charger case is equipped with air vents to protect the internal electronic components from overheating.

Caution the customer not to allow foreign materials, such as metallic or inflammable objects, to be dropped or inserted into the air vents. This could cause electrical shock, fire or other serious hazards.

(8) Do not attempt to disassemble the storage battery or the charger.

Special devices, such as a thermistor, are built into the storage battery and charger to permit rapid charging.

Incorrect parts replacement and/or wiring will cause malfunctions which could result in fire or other hazards.

Instruct the customer to bring these units to an authorized service center in the event repair or replacement is necessary.

(9) Disposal of the Model EB 1820 or EB 1830H storage battery

Ensure that all customers understand that Model EB 1820 or EB 1830H Storage Batteries should be returned to the Hitachi power tool sales outlet or authorized service center when they are no longer capable of being recharged or repaired. If thrown into a fire, the batteries may explode, or if discarded indiscriminately, leakage of the cadmium compound contained in the battery may cause environmental pollution.

B. Caution Plates

(1) The following basic safety precautions are listed on the Name Plate attached to the main body of each tool.

- For Australia and New Zealand

**CAUTION**

- Read thoroughly **HANDLING INSTRUCTIONS** before use.

- For the U.S.A. and Canada

**WARNING**

- To reduce the risk of injury, user must read and understand instruction manual.

**AVERTISSEMENT**

- Afin de réduire le risque de blessures, l'utilisateur doit lire et bien comprendre le mode d'emploi.

(2) The following cautions are listed on the Name Plate attached to the Model EB 1820 and EB 1830H batteries.

- For Europe

**CAUTION** • Read thoroughly **HANDLING INSTRUCTIONS** before use. • Do not disassemble nor throw into fire.

- For the U.S.A. and Canada

**CAUTION** • For safe operation, see instruction manual. • Use **HITACHI** charger UC 24YFA for recharging.

(3) The following caution is listed on the Name Plate attached to the Model UC 24YFA Charger.

- For the U.S.A.

- For safe operation, see Instruction Manual.
- Charge **HITACHI** rechargeable battery types EB7, EB9, EB12, EB14, EB18 series, and EB24B. Other types of batteries may burst causing personal injury and damage.
- Charge between 32° and 104°F.
- Indoor use only.
- Replace defective cord immediately.

## **7-2. Inherent Drawbacks of Cordless Reciprocating Saw Requiring Particular Attention during Sales Promotion**

The cordless reciprocating saw offers many advantages; it can be used in places where no power source is available, the absence of a cord allows easy use, etc. However, any cordless tool has certain inherent drawbacks. Salespersons must be thoroughly familiar with these drawbacks in order to properly advise the customer in the most efficient use of the tool.

### **A. Suggestions and precautions for the efficient use of the tool**

#### **(1) Do not insert a foreign object into body vent holes.**

The body of this tool has vent holes for improving the cooling efficiency. As a fan is built into the motor, a foreign object inserted through a vent hole may cause a failure. Please instruct customers to never insert a foreign object into the vent hole.

#### **(2) Avoid "locking" of the motor**

Locking of the motor will cause an overload current that could result in burning of the motor and/or rapid deterioration of the battery. Salespersons should advise the customer to immediately release the switch and stop operation if the motor becomes locked.

#### **(3) Variation in amount of work possible per charge**

Although the nominal chargeable capacity of the storage batteries used with the Model CR 18DV is 2.0 Ah and 3.0 Ah, the actual capacity may vary within 10% of that value depending on the ambient temperature during use and charging, and the number of times the batteries have been recharged. It should be noted that other factors which may have a bearing on the amount of work possible per charge are the working conditions (ambient temperature, type and moisture content of the workpiece, sharpness of the saw blades, etc.) and operational skill of the user.

### **B. Suggestions and precautions for the efficient use of the charger and storage batteries**

If the Model EB 1820 Storage Battery is exposed to direct sunlight for an extended period or if the tool has just been operated for a long time, charging may not be possible if the temperature of the battery is above 60°C (140°F). If the Model EB 1830H Storage Battery is exposed to direct sunlight for an extended period or if the tool has just been operated for a long time, charging may not be possible if the temperature of the battery is above 45°C (113°F). In such a case, the customer should be advised to place the battery in a shaded area with a good airflow, and allows sufficient cooling before recharging. This phenomenon is common to all existing batteries and chargers which employ temperature sensitive overcharge protection devices. The cooling time required before recharging can be accomplished varies from a few minutes to 30 minutes, depending on the load, duration of use, and ambient temperature.

### 7-3. Front Cover

#### [WARNING]

The Model CR 18DV is equipped with the front cover to protect the operator against possible electric shock, and it is not intended for cutting live lines. The front cover covers both the gear cover and the upper cover to protect the operator against electric shock in the event that a live line is accidentally cut and electricity flows from the blade to the metallic enclosure. Customers must be instructed to hold the handle (made of polycarbonate resin) with one hand and the other hand on the front cover to support the main body during the cutting operation. Be sure to instruct the customers that the front cover must not be removed when using the Model CR 18DV.

## 8. REPAIR GUIDE

### 8-1. Precautions in Disassembly and Reassembly

Please follow the precautions below for disassembly and reassembly procedures. The circled numbers in the following figures and the **[Bold]** numbers in the descriptions below correspond to the item numbers in the Parts List. Prior to attempting disassembly or replacement of the saw blade, ensure that the battery is removed.

#### 8-1-1. Disassembly

##### (1) Removal of the Upper Cover Ass'y [20]

Remove the Saber Saw Blade [501]. Remove the Hex. Socket Hd. Bolt (W/Flange) M5 x 12 [30] and pull out the Base [21]. Remove the two Machine Screws (W/Sp. Washer) M4 x 12 [22] and the Cover Plate [23], and pull out the Front Cover [24]. Remove the four Hex. Socket Hd. Bolts (W/Sp. Washer) M5 x 16 [19] from the Upper Cover Ass'y [20]. Pull the Upper Cover Ass'y [20] straight and remove it.

##### (2) Removal of the Plunger [14] from the Upper Cover Ass'y [20]

Remove the two Seal Lock Hex. Socket Flat Hd. Bolts M5 x 12 [33] from the Connector [38]. If the Seal Lock Hex. Socket Flat Hd. Bolts M5 x 12 [33] are too tight, heat the Upper Cover Ass'y [20] to 100 – 150°C then loosen the Seal Lock Hex. Socket Flat Hd. Bolts M5 x 12 [33]. Pull the Plunger [14] forward (toward the blade) and remove from the Upper Cover Ass'y [20].

##### (3) Removal of the Gear Cover Ass'y [32] and the Housing [52]

Remove the two Brush Caps [63] and the two Carbon Brushes [64]. Remove the four Tapping Screws (W/Sp. Washer) D5 x 30 [31]. Then the Gear Cover Ass'y [32] (together with the Armature Ass'y [46]), Housing [52] and Fan Guide [48] can be removed.

##### (4) Removal of the Gear Cover Ass'y [32] from the Armature Ass'y [46]

Remove the three Machine Screws (W/Sp. Washer) M4 x 12 [22]. Then the Gear Cover Ass'y [32] can be removed from the Armature Ass'y [46].

##### (5) Disassembly of the Armature Ass'y [46]

Remove the Retaining Ring (E-type) for D10 Shaft [43] from the Armature Ass'y [46] with a flat-blade screwdriver. Remove the Ball Bearing 6001VVCMP2L [44] from the pinion side with the bearing puller ass'y (J-30). Then Bearing Cover (A) [45] can be removed. Remove the Ball Bearing 608VVC2PS2L [47] from the commutator side with the bearing puller ass'y (J-30).

(6) Removal of the Gear [42] from the Gear Cover Ass'y [32]

Remove the three Seal Lock Flat Hd. Screws M4 x 12 [25] through the hole of the Balance Weight [41]. Then the Gear [42] (together with the Balance Weight [41], Spindle [28] and others) can be removed from the Gear Cover Ass'y [32].

(7) Removal of the Gear [42] from the Spindle [28]

Hold at the width-across-flat portions of the Spindle [28] with a vise and remove the Nylock Hex. Socket Flat Hd. Bolt M6 x 16 [34]. Remove the Balance Weight [41], Gear [42], Bearing Cover (B) [26] and Ball Bearing 6901ZZCMPS2L [27].

(8) Disassembly of the blade mounting section

Remove the Retaining Ring (E-type) for D14 Shaft [13] from the Plunger [14] with a flat-blade screwdriver. Be careful that the Retaining Ring (E-type) for D14 Shaft [13] is always loaded by Spring (A) [9]. Slide the Guide Washer [7] backward and remove the two Steel Balls D4.76 [5]. Move Holder Sleeve (B) [4] backward and align the notch of Holder Sleeve (B) [4] so that the Holder Pin [1] can be removed. Remove the Holder Pin [1] and Spring (B) [2] with a magnet. Do not damage Spring (B) [2] by forced removal or omission of removal. Remove Holder Sleeve (A) [3], Holder Sleeve (B) [4], Holder Sleeve (C) [6], Guide Washer [7], Dust Washer [8], Spring (A) [9], Washer (E) [10], Thrust Bearing [11] and Washer (D) [12] from the Plunger [14].

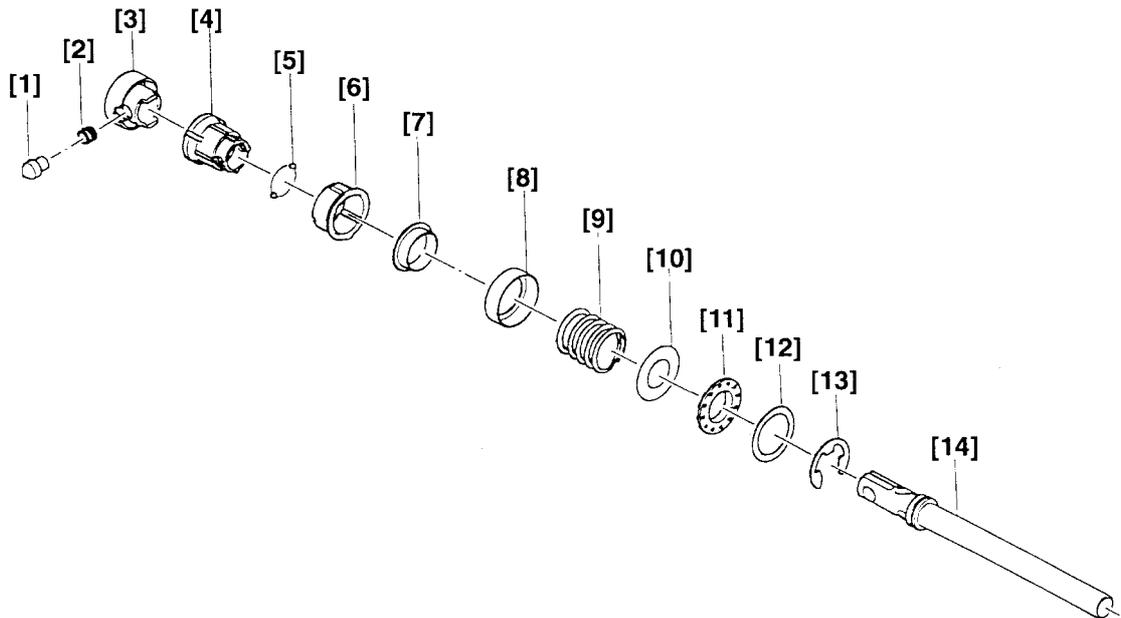


Fig. 6

(9) Disassembly of the handle section

Remove the two Tapping Screws (F/Flange) D4 x 25 (Black) [61] and pull out the Grip Cover [60] backward. Remove the three Tapping Screws (W/Flange) D4 x 30 (Black) [59], two Tapping Screws (W/Flange) D4 x 25 (Black) [61] and Handle (A).(B) Set [57]. Then the Pushing Button [66] and the power supply ass'y (DC-Speed Control Switch [56], Brush Holder (B) [54], Brush Holder (A) [65] and Terminal Piece Set [69] are mounted) can be removed.

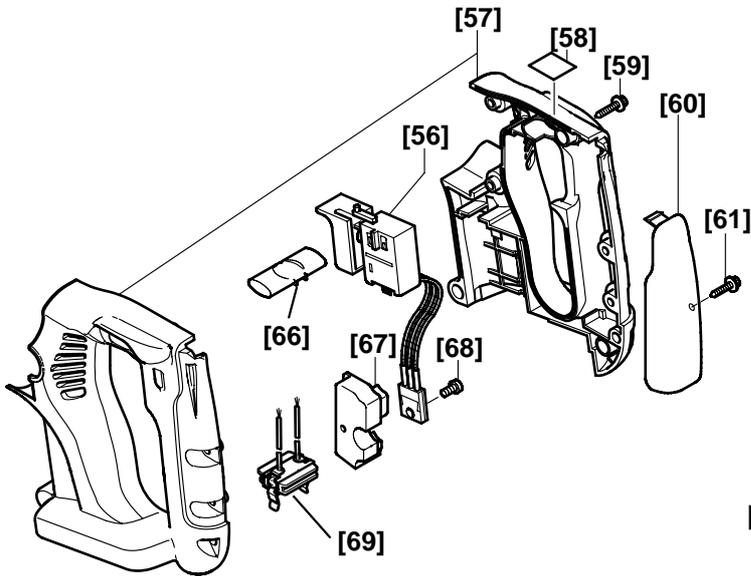


Fig. 7

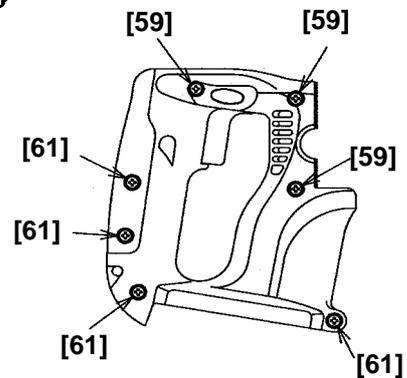


Fig. 8

(10) Removal of the power supply ass'y from the Housing [52]

Disconnect the internal wire from the Housing [52] and pull out Brush Holder (B) [54] and Brush Holder (A) [65] backward.

(11) Disassembly of the Housing [52]

Remove the two Hex. Hd. Tapping Screws D4 x 60 [50] and remove the Magnet [49].

### 8-1-2. Reassembly

Reassembly can be accomplished by following the disassembly procedures in reverse. However, special attention should be given to the following items.

#### (1) Reassembly of the blade mounting section (Figs. 9, 10 and 11)

Apply Doubrex 251 grease (Code No. 971042) to the inner circumference of Holder Sleeve (B) [4] and the cam groove of the Plunger [14]. Insert the tip of the Plunger [14] into Holder Sleeve (C) [6], Holder Sleeve (B) [4] and Holder Sleeve (A) [3] in order. Next, align the hole of the Plunger [14] with the notches of Holder Sleeve (A) [3] and Holder Sleeve (B) [4] as shown in Fig. 10. Insert the Holder Pin [1] (together with the Spring (B) [2]) into the hole and push it in. Slide Holder Sleeve (B) [4] and Holder Sleeve (C) [6] forward and turn them about 90° clockwise viewing from "A". Insert the two Steel Balls D4.76 [5] (use the arrow marks shown in Figs. 10 and 11 as the reference). Insert the other end of the Plunger [14] into the Guide Washer [7], Dust Washer [8], Spring (A) [9], Washer (E) [10], Thrust Bearing [11] and Washer (D) [12] in order. Mount the Retaining Ring (E-type) for D14 Shaft [13] securely by adjusting Spring (A) [9]. Be careful of the projections and depressions on Holder Sleeve (B) [4] and Holder Sleeve (C) [6] when mounting. After reassembly, test-mount and remove a saw blade to check for proper operation.

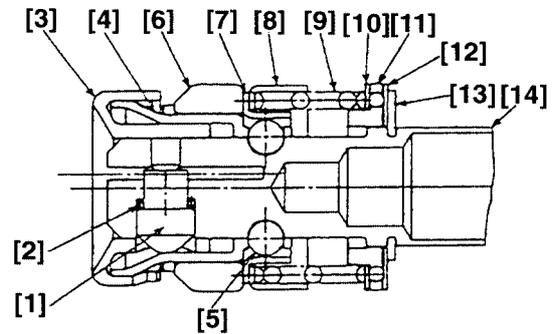


Fig. 9

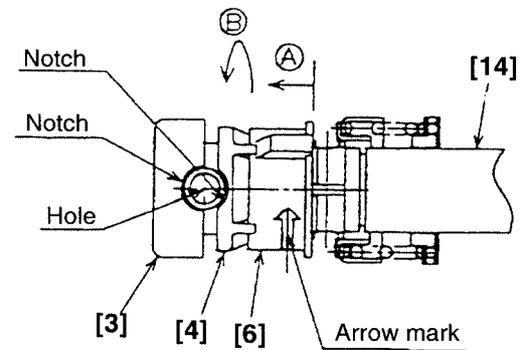


Fig. 10

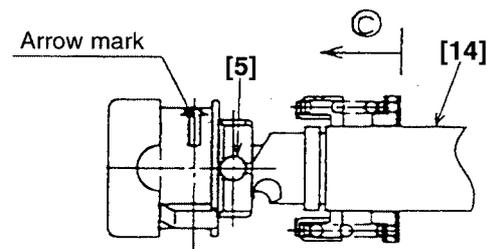


Fig. 11

(2) Reinstallation of the spindle and gear section to the Gear Cover Ass'y [32]

Insert the Spindle [28] into the Ball Bearing 6901ZZCMPS2L [27], Bearing Cover (B) [26], Gear [42] and Balance Weight [41] in order. Secure the spindle and gear section secured with the Nylock Hex. Socket Flat Hd. Bolt M6 x 16 [34] to the Gear Cover Ass'y [32] with the three Seal Lock Flat Hd. Screws M4 x 12 [25] aligning the holes of the Balance Weight [41] with the holes of Bearing Cover (B) [26] and the screw holes of the Gear Cover Ass'y [32]. If the first Seal Lock Flat Hd. Screw M4 x 12 [25] is tightened firmly, the other two Seal Lock Flat Hd. Screws M4 x 12 [25] cannot be aligned. Lightly tighten the first Seal Lock Flat Hd. Screw M4 x 12 [25].

(3) Mount the Felt Packing [16], Packing Washer [15] and O-ring [17] without fail before inserting the Plunger [14] into the Upper Cover Ass'y [20].

(4) Mount the Seal Packing [35] and Packing (B) [36] without fail when mounting the Upper Cover Ass'y [20] to the Gear Cover Ass'y [32].

(5) Align the notch of the Magnet [49] with the protrusion of the Housing [52] when mounting the Magnet [49] to the Housing [52].

(6) Do not pinch internal wires between the mating surfaces of Handle (A).(B) Set [57] when mounting Handle (A).(B) Set [57] to the Housing [52].

(7) Adhesives are applied to the following screws and bolts. When reusing these screws and bolts, apply Cemedine 1500 or Three Bond TB2410 to them.

- Nylock Hex. Socket Flat Hd. Bolt M6 x 16 [34] ..... Cemedine 1500
- Seal Lock Hex. Socket Flat Hd. Bolt M5 x 12 [33] ..... Cemedine 1500
- Seal Lock Flat Hd. Screw M4 x 12 [25] ..... Three Bond TB2410

(8) A total of 50 g Nippeco SEP-3A grease is applied in the Gear Cover Ass'y [32] and the Upper Cover Ass'y [20].

Apply grease sufficiently to the following portions:

- Needle Roller [40] in the Gear Cover Ass'y [32]
- Connecting Piece (A) [39]
- Tooth space and D7 pin of the Gear [42]
- Inside of the Connector [38]
- Sliding surface between the Connector [38] and the Upper Cover Ass'y [20]
- Sliding surface between the Metal [18] and the Plunger [14]
- Inside of the Gear Cover Ass'y [32]
- Sliding surface of the Spindle [28]

(9) Tightening torques

Tapping Screw (W/Flange) D4 x 30 (Black) <b>[59]</b> .....	2.0 ± 0.5 N•m (20 ± 5 kgf•cm)
Tapping Screw (W/Flange) D4 x 25 (Black) <b>[61]</b> .....	2.0 ± 0.5 N•m (20 ± 5 kgf•cm)
Hex. Hd. Tapping Screw D4 x 60 <b>[50]</b> .....	2.0 ± 0.5 N•m (20 ± 5 kgf•cm)
Tapping Screw (W/Sp. Washer) D5 x 30 <b>[31]</b> .....	2.9 ± 0.5 N•m (30 ± 5 kgf•cm)
Machine Screw (W/Washers) M3 x 12 <b>[68]</b> .....	0.5 to 0.8 N•m (5 to 8 kgf•cm)
Machine Screw (W/Sp. Washer) M4 x 12 <b>[22]</b> .....	1.8 ± 0.4 N•m (18 ± 4 kgf•cm)
Seal Lock Flat Hd. Screw M4 x 12 <b>[25]</b> .....	1.8 ± 0.4 N•m (18 ± 4 kgf•cm)
Hex. Socket Hd. Bolt (W/Sp. Washer) M5 x 16 <b>[19]</b> .....	8.8 ± 1.0 N•m (90 ± 10 kgf•cm)
Seal Lock Hex. Socket Flat Hd. Bolt M5 x 12 <b>[33]</b> .....	5.4 ± 0.5 N•m (55 ± 5 kgf•cm)
Nylock Hex. Socket Flat Hd. Bolt M6 x 16 <b>[34]</b> .....	11.8 ± 1.0 N•m (120 ± 10 kgf•cm)

### 8-1-3. Wiring diagram

Be sure to perform wiring connections as indicated in Figs. 12, 13, 14 and 15.

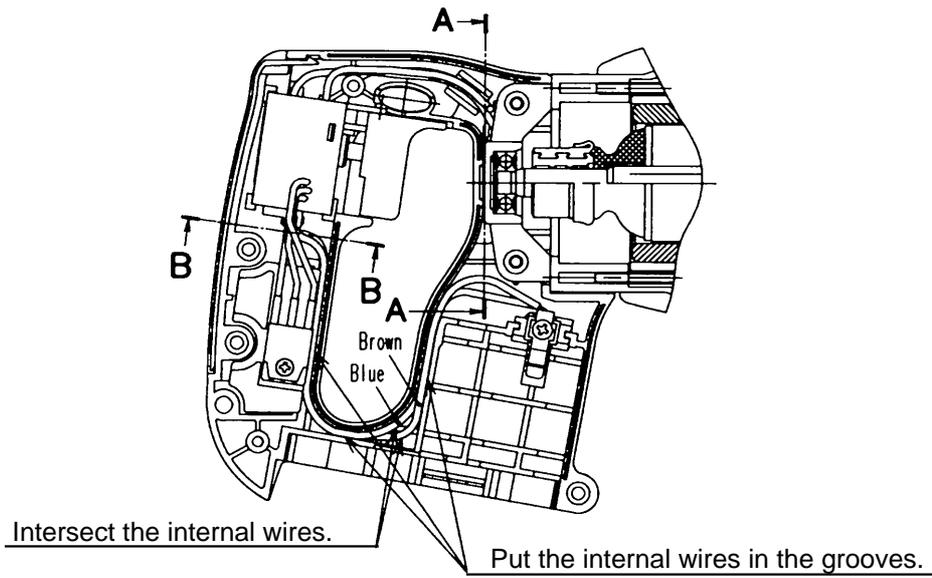


Fig. 12

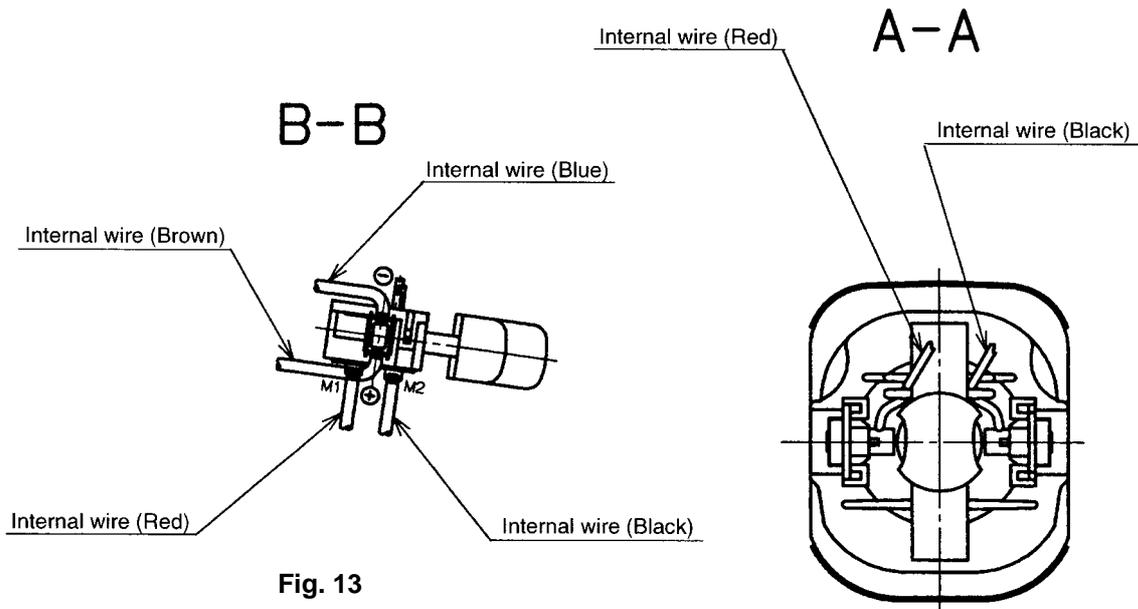


Fig. 13

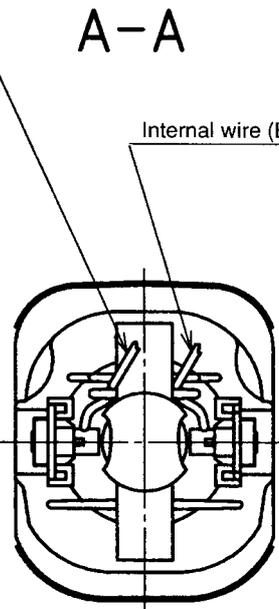


Fig. 14

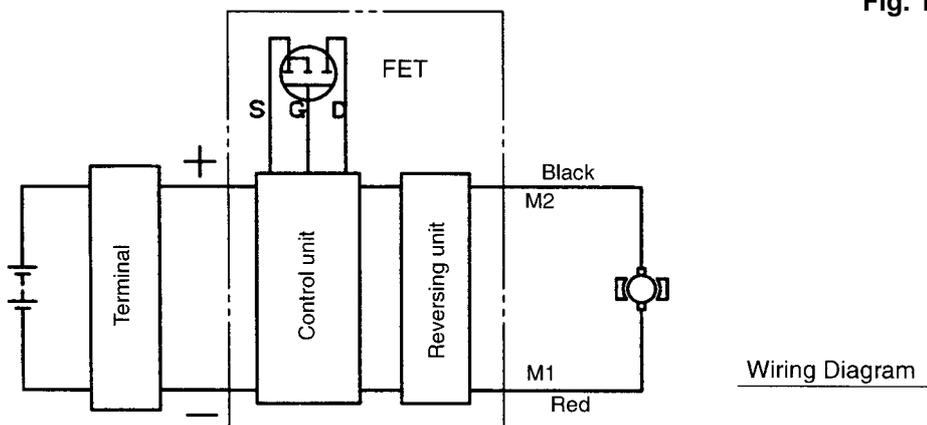


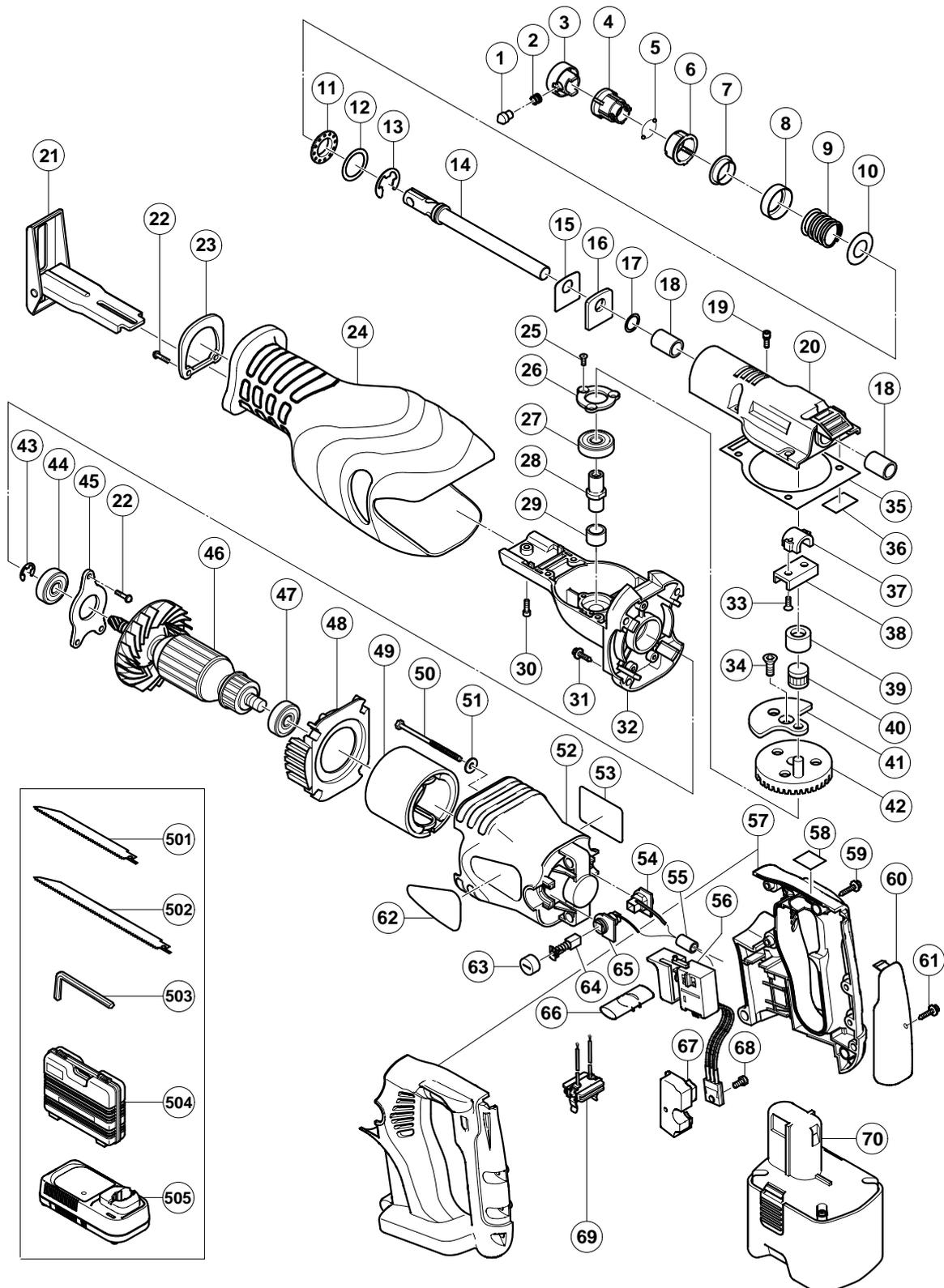
Fig. 15

**9. STANDARD REPAIR TIME (UNIT) SCHEDULES**

MODEL	Variable		10	20	30	40	50	60
	Fixed							
CR 18DV		Work Flow						
		Handle (A).(B) Set DC-Speed Control Switch Terminal Piece Set		Armature Ball Bearing (608VV) Ball Bearing (6001VV)	Housing Magnet			
	General Assembly	Base Front Cover		Gear Cover Ass'y Spindle Ball Bearing (6901ZZ) Gear Needle Roller Connecting Piece (A) Connector Connector Holder				
				Plunger Thrust Bearing Spring (A) O-ring Upper Cover Ass'y Seal Packing				

## ELECTRIC TOOL PARTS LIST

■ CORDLESS RECIPROCATING SAW 2002·12·10  
Model CR 18DV (E1)



**PARTS**

CR 18DV

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	318-481	HOLDER PIN	1	
2	318-483	SPRING (B)	1	
3	318-478	HOLDER SLEEVE (A)	1	
4	318-479	HOLDER SLEEVE (B)	1	
5	959-149	STEEL BALL D4.76 (10 PCS.)	2	
6	318-480	HOLDER SLEEVE (C)	1	
7	318-477	GUIDE WASHER	1	
8	318-487	DUST WASHER	1	
9	318-482	SPRING (A)	1	
10	318-484	WASHER (E)	1	
11	318-485	THRUST BEARING	1	
12	318-486	WASHER (D)	1	
13	318-453	RETAINING RING (E-TYPE) FOR D14 SHAFT	1	
14	319-854	PLUNGER	1	
15	996-401	PACKING WASHER	1	
16	996-400	FELT PACKING	1	
17	996-407	O-RING (1AP-12)	1	
18	956-589	METAL	2	
19	305-574	HEX. SOCKET HD. BOLT (W/SP.WASHER) M5X16	4	
20	319-853	UPPER COVER ASS'Y	1	INCLUD. 18
21	319-866	BASE	1	
22	951-039	MACHINE SCREW (W/SP. WASHER) M4X12	5	
23	319-868	COVER PLATE	1	
24	319-867	FRONT COVER	1	
25	993-244	SEAL LOCK FLAT HD. SCREW M4X12	3	
26	319-849	BEARING COVER (B)	1	
27	690-1ZZ	BALL BEARING 6901ZZCMPS2L	1	
28	319-848	SPINDLE	1	
29	954-789	METAL (B)	1	
30	996-399	HEX. SOCKET HD. BOLT (W/FLANGE) M5X12	1	
31	986-011	TAPPING SCREW (W/SP. WASHER) D5X30	4	
32	319-844	GEAR COVER ASS'Y	1	INCLUD. 29
33	319-875	SEAL LOCK HEX.SOCKET FLAT HD. BOLT M5X12	2	
34	319-851	NYLOCK HEX. SOCKET FLAT HD. BOLT M6X16	1	
35	319-856	SEAL PACKING	1	
36	319-874	PACKING (B)	1	
37	983-567	CONNECTOR HOLDER	1	
38	996-405	CONNECTOR	1	
39	983-541	CONNECTING PIECE (A)	1	
40	983-560	NEEDLE ROLLER H-7108	1	
41	319-852	BALANCE WEIGHT	1	
42	319-850	GEAR	1	
43	670-514	RETAINING RING (E-TYPE) FOR D10 SHAFT	1	
44	600-1VV	BALL BEARING 6001VVCMP2L	1	
45	319-843	BEARING COVER (A)	1	
46	360-598	ARMATURE ASS'Y DC 18V	1	INCLUD. 43-45, 47
47	608-VVM	BALL BEARING 608VVC2PS2L	1	
48	319-788	FAN GUIDE	1	
49	319-846	MAGNET	1	
50	960-108	HEX. HD. TAPPING SCREW D4X60	2	
51	319-956	WASHER (B)	2	





