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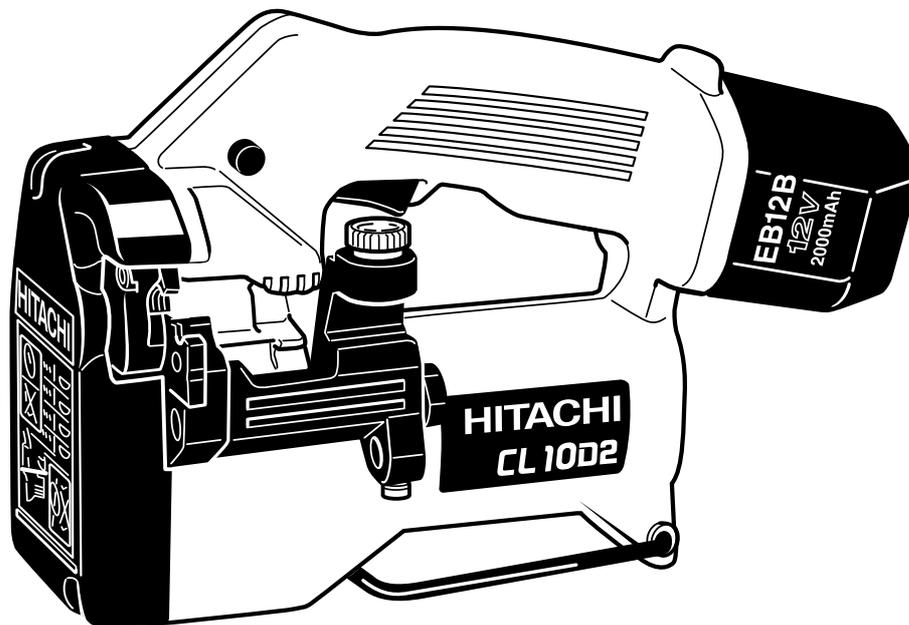
CL 10D2

HITACHI
POWER TOOLS

**CORDLESS STUD CUTTER
CL 10D2**

**TECHNICAL DATA
AND
SERVICE MANUAL**

C



LIST No. F842

Jan. 2001

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Notice for use

Specifications and parts are subject to change for improvement.

Refer to Hitachi Power Tool Technical News for further information.

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1. PRODUCT NAME

Hitachi 10 mm Cordless Stud Cutter, Model CL 10D2

2. MARKETING OBJECTIVE

One of the primary uses of studs is for hanging of electric cable racks, air-conditioning ducts, and plumbing pipes and drains. Studs are usually sold in standard lengths of 1 to 3 meters, and must be cut to desired lengths in accordance with installation needs. They are currently being cut by cut-off machines, disc grinders, or manual hack saws, frequently require the use of files and grinders for deburring and finishing before they can be used. The Model CL 10D2 is the upgraded version of the Model CL 10D and is easier to operate and less expensive with the same features such as clean cutting without sparks, dust and noise, minimal damage to studs and easy processing after cutting. Thanks to the weight reduction of the motor, decelerating and cutting mechanisms, the Model CL 10D2 weighs only 3.2 kg even though it uses the 12 V battery while the Model CL 10D using the 9.6 V battery weighs 3.4 kg. The Model CL 10D2 becomes low price thanks to renewing the manufacturing processes and sharing components with other models. In addition, the Model CL 10D2 is capable of cutting up to 550 studs per single charge (when cutting M10 soft steel studs using the 12 V NiMH battery with nominal capacity 3.0 Ah). This is about 4 times the capacity of the Model CL 10D. The Model CL 10D2 can correspond to various applications with the wide selection of cutters (M10, M8, M6 and W3/8) and can be used anywhere since it is cordless.

3. APPLICATIONS

○ Cutting of mild-steel studs

[Typical threaded stud applications]

Electric installation Suspension of luminaires, cable racks, conduit pipes, etc.

Air-conditioning Suspension of air-conditioning ducts, exhaust ducts, etc.

Plumbing installation Suspension of feed and drain pipes

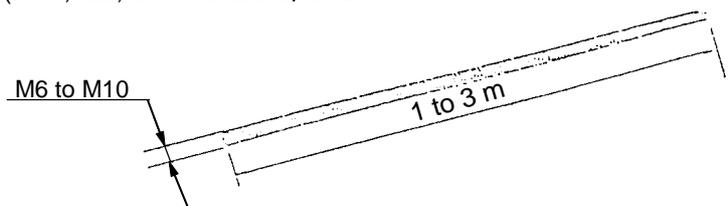
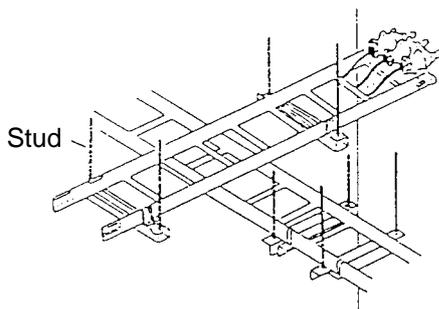
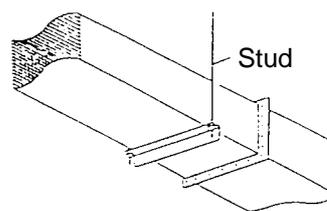


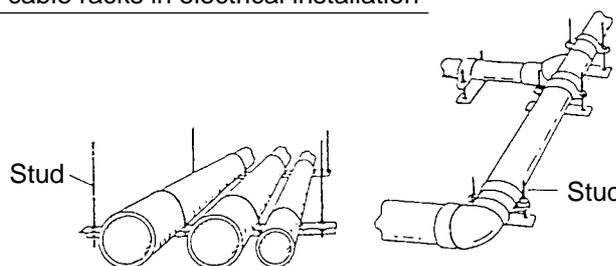
Fig. 1



(1) Suspension of cable racks in electrical installation



(2) Suspension of air-conditioning ducts



(3) Suspension of feed and drain pipes in plumbing work

Fig. 2

4. SELLING POINTS

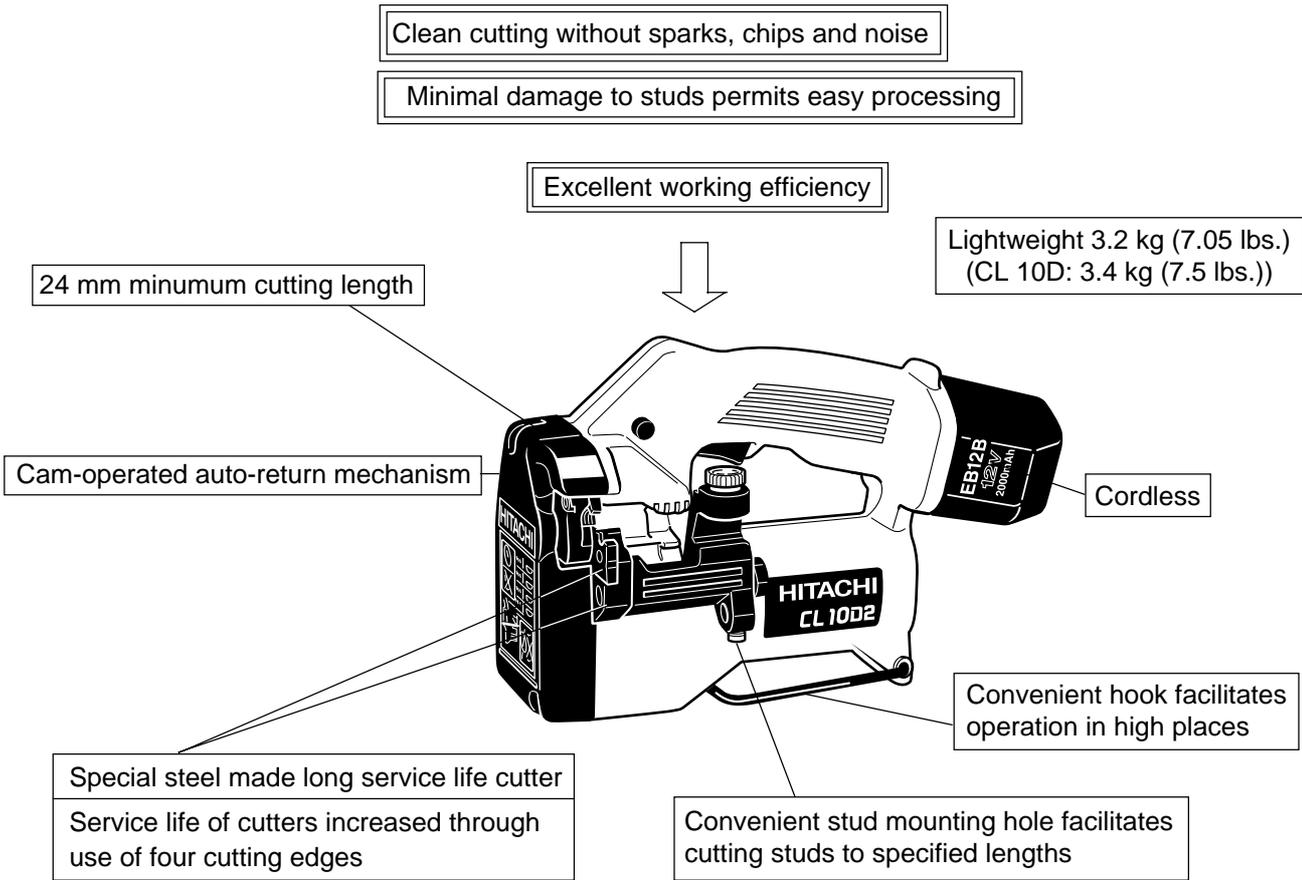


Fig. 3

4-1. Selling Point Descriptions

(1) Clean cutting without sparks, chips and noise

A safer and better working environment without fear of fire or scattering of chips and dust is ensured because the Model CL 10D2 does not produce the chips, dust, and sparks unlike cut-off machines and disc grinders.

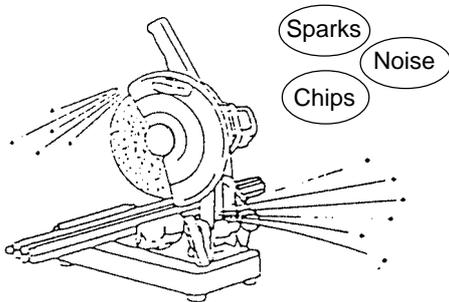


Fig. 4 Cutting by cut-off machine

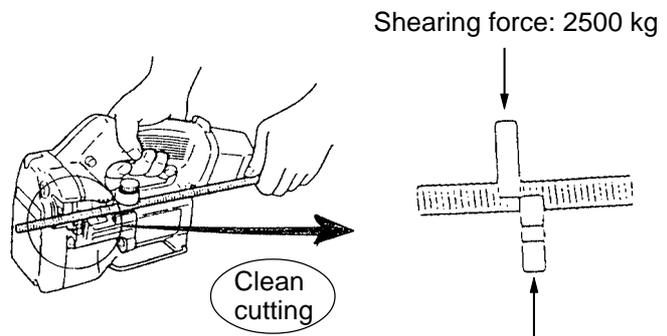
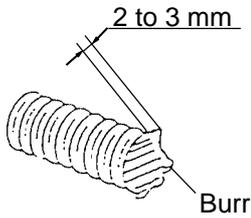


Fig. 5 Clean shearing with Model CL 10D2

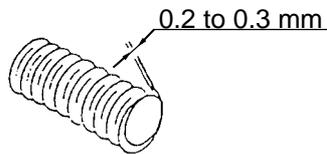
(2) Minimal damage to studs permits easy processing

Because of the special cutters employed, few burrs are caused during cutting, and nuts can be attached to the studs smoothly and easily. Deburring can be done easily and quickly by means of the provided trimmer.

[Stud cut with cut-off machine]



[Stud cut with Model CL 10D2]



Necessary torque: 5 kg-cm or below

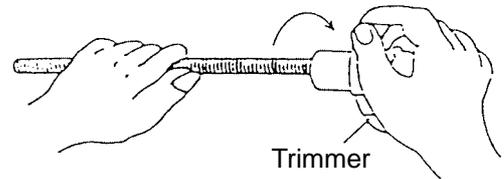


Fig. 6 Comparison of stud condition after cutting

Fig. 7 Deburring of stud with trimmer

(3) Cordless

The length of a stud is basically determined by the various needs of the work site. If the ceiling is slanted, for example, it is hard to determine appropriate lengths. In such a case, it is common to hang studs which are longer than the required length, and mark and cut them off later. When mounting ducts, up to 20 studs can be cut at a time at floor level (with a cut-off machine, for example). When mounting luminaires, however, often only two studs are cut in one spot. This means that the cut-off machine must be moved from one spot to another over a wide area.

The Model CL 10D2 is compact, lightweight, and cordless, so it is easily transportable and particularly convenient for cutting off hanged studs. In addition, it is capable of cutting up to 550 studs per single charge, so it has sufficient operability to cut many studs at floor level as well.

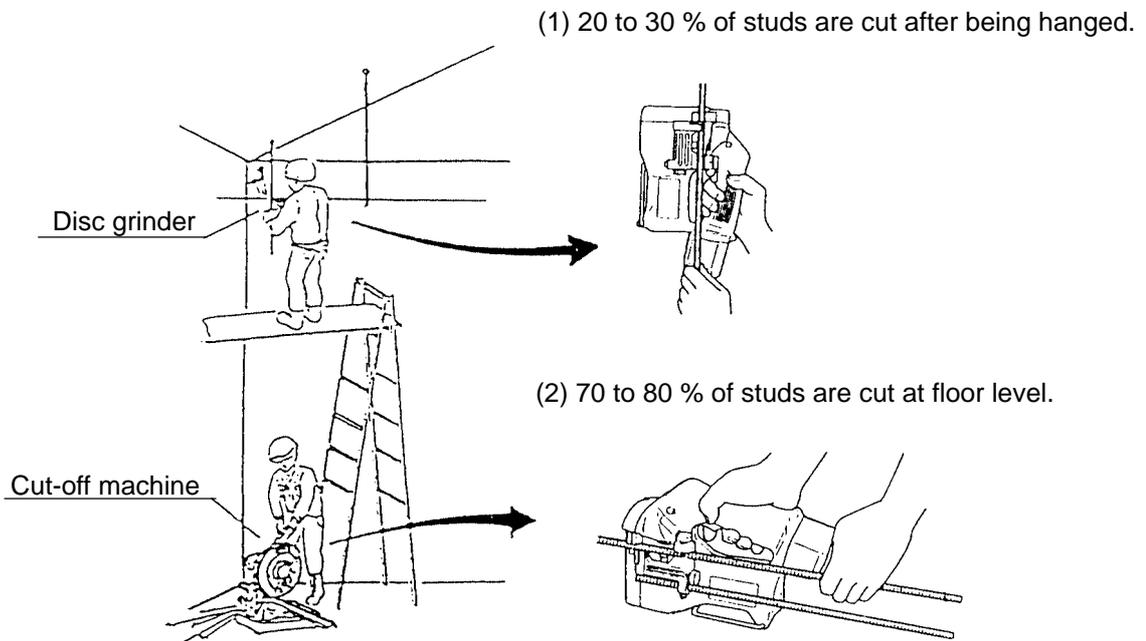


Fig. 8 Illustration of stud cutting work

(4) Long service life through use of stud cutting edges

Because of the uniquely shaped cutters specially developed by HITACHI, each cutter has four (front, back, upper, and lower) which can be used in turn for cutting studs. Each cutter is made of high wear-resistant, special steel, and is capable of cutting up to 500 studs with each of its cutting edges. Accordingly, up to 2,000 studs can be cut with appropriate use of the four cutting edges.

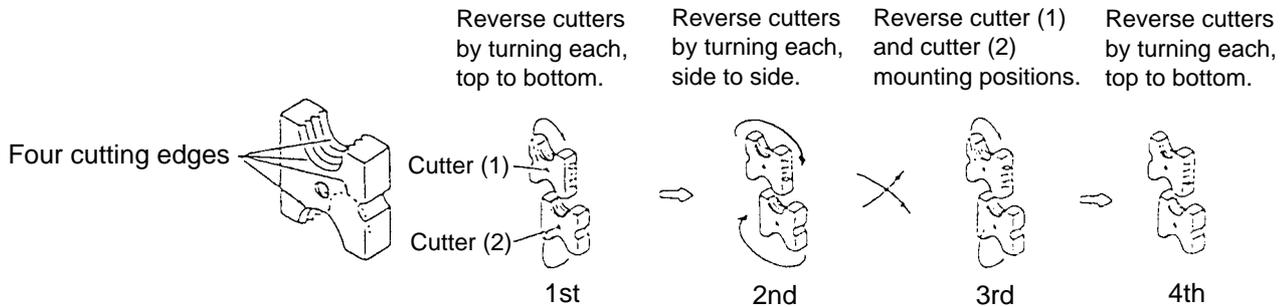


Fig. 9

(5) Excellent working efficiency

In conventional cutting with a cut-off machine or disc grinder, considerable time is required for deburring after the studs have been cut. In actual tests, the Model CL 10D2 is approximately three times more efficient than cut-off machines or disc grinders.

Table 1. Cutting time comparison

Type of cutting tool	Cutting time (sec.)		
	10	20	30
Cordless stud cutter CL 10D2	2.4 (M10)		
Cordless stud cutter CL 10D	2.6 (M10)		
• High-speed cut-off machine • Grinder	8		
Hand saw			30 to 60

Table 2. Number of studs that can be cut per battery charge

Stud size	Number of cuts per charge		(Piece)
	EB 1230H	EB 12B	
M6			1270 850
M8			850 570
W 3/8"			620 410
M10			550 370

(6) Minimum cutting length

As illustrated in Fig. 10, it is sometimes necessary to cut studs 30 mm or less from the ceiling surface when installing fluorescent lamps in electrical installation work. The Model CL 10D2 permits cutting protruding studs to a minimum length of 24 mm from the ceiling surface.

In addition, when installing ducts in air-conditioning equipment installation work, it may be necessary to enclose the ducts with insulation (lagging) after installation to prevent the formation of dew. In such a case, studs must be cut as short as possible so that they do not protrude from L-shaped angles, in order to prevent damage of the lagging. As illustrated, the Model CL 10D2 permits cutting of studs within an L-shaped angle measuring 25 mm x 25 mm x 3 mm (t).

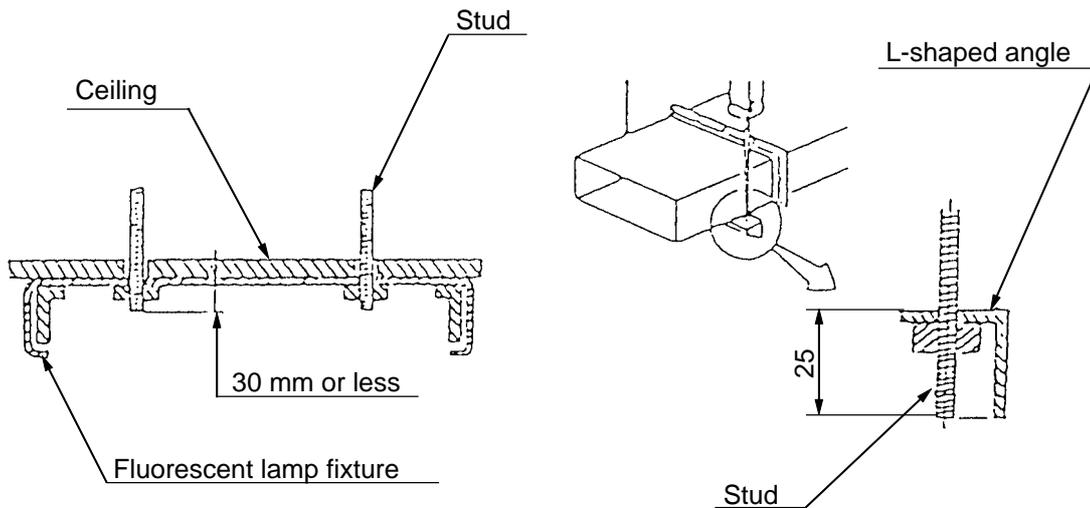


Fig. 10 Minimum cutting length

(7) Convenient hook facilitates operation in high places

When performing equipment installation work in high places, cutting of hanging studs is often only one of several jobs that must be performed. Accordingly, it is sometimes necessary to put the stud cutter aside and use both hands for some other job. In such cases, the hook is very useful for hanging the stud cutter from a nearby conduit, steel grounding material, cable rack, or similar support when not in use.

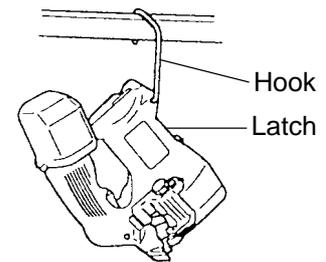


Fig. 11 Convenient hook facilitates operation in high places

(8) Convenient stud mounting hole facilitates cutting studs to specified lengths

The stud mounting hole is very convenient when cutting many studs to the same length at floor level. The adjustable stud mounting hole permits mounting of M6 to M10 studs, and can be used as an accurate cutting length guide for the full range of applicable studs. It can be used not only to align cutting lengths to the rear of the main body, as shown in Fig. 12-(1), but also to align cutting lengths to the front of the main body, as shown in Fig. 12-(2). The stud mounting hole is particularly convenient when it is necessary to cut several studs at the same length from, for example, the surface of a ceiling.

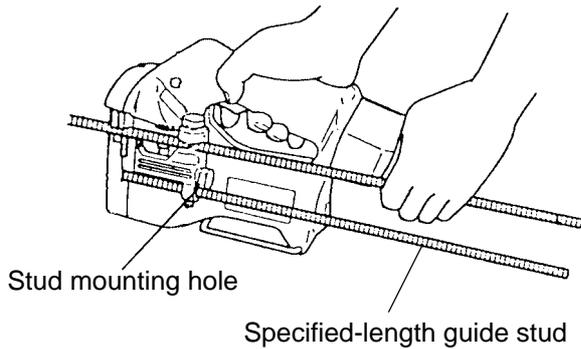


Fig. 12-(1) Length alignment to rear of main body

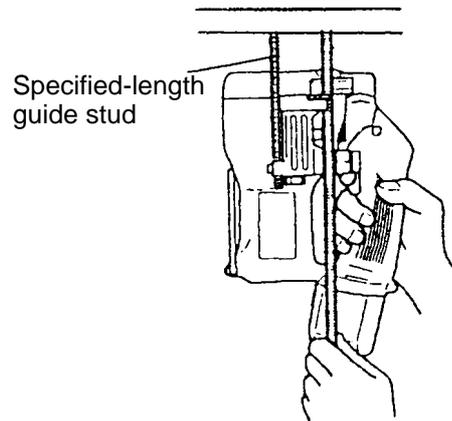


Fig. 12-(2) Length alignment to front of main body

Fig. 12 Stud mounting hole facilitates cutting to specified lengths

(9) Cam-operated auto-return mechanism

After cutting, the cutter is forcibly returned (opened) by means of a plate cam commonly called a "return plate". This mechanism prevents such malfunctions as the cutter becoming jammed and not returning.

5. SPECIFICATIONS

5-1. Specifications

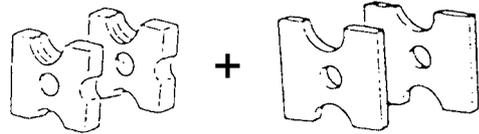
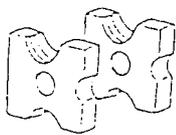
Capacity		Mild steel studs: M10, M8, M6 or W3/8"
Number of cuttings per battery charge (M10)		550 cuts powered by Battery EB 1230H
Cutting time		2.3 (sec.)
Type of motor		DC magnet motor
Enclosure		Main body : Glass fiber reinforced polyamide resin Battery: ABS resin Charger: ABS resin
Type of switch		Trigger switch with forward/reverse changeover (with brake)
No-load stroke		30/min.
Weight	Main body	3.2 kg (7.05 lbs.) (includes battery)
	Battery	EB 1230H: 0.66 kg (14.6 lbs.), EB 12B: 0.67 kg (14.8 lbs.)
Packaging and packaged weight	W/Charger	Corrugated cardboard box < W/Plastic case: 6.2 kg (13.7 lbs.)>
Standard accessories		Plastic case 1 pc. Battery (EB 1230H or EB 12B) 1 pc. Charger (UC 14YF2) 1 pc. Hex. bar wrench 1 pc. M8 cutter ass'y 1 pc. M8 trimmer 1 pc.
Battery (Type EB 12B)		Sealed cylindrical nickel-cadmium batteries Nominal voltage: DC 12V Nominal life: Charging/discharging approximately 1,000 cycles (in case of Model UC 14YF2) Nominal capacity: 2.0 Ah
Battery (Type EB 1230H)		Sealed cylindrical nickel-metal hydride batteries Nominal voltage: DC 12V Nominal life: Charging/discharging approximately 500 cycles (in case of Model UC 14YF2) Nominal capacity: 3.0 Ah
Charger (Type UC 14YF2)		Sealed power source: Single-phase AC 50/60 Hz Voltage: Depending on the order specification Power input: 44 W Charging system: Constant current charge with full wave phase control Overcharge protection system: (1) Battery voltage detection (Δ^2V system) (2) Battery surface temperature detection (thermostat or thermistor) (3) 120-minute timer Output voltage: 7.2 V – 14.4 V Output current: 1.9 A Charging time: Approx. 60 minutes (for B-type storage battery at 20°C (68°F)) Approx. 90 minutes (for H-type storage battery at 20°C (68°F)) Product weight: 1.3 kg Operable ambient temperature range: 0°C – 40°C (32°F – 104°F) The maximum allowable temperature of the EB 12B type battery is 60°C (140°F) and the EB 1230H type battery is 45°C (113°F).

Pilot lamp indications (UC 14YF2)

Read pilot lamp remains lit or flashes.	Prior to charging	Blinks	0.5 sec ON, 0.5 sec OFF ■ ■ ■ ■ ■	
	During charging	Lit	Stays ON constantly ■■■■■■■■■■	
	Charging completed	Blinks	0.5 sec ON, 0.5 sec OFF ■ ■ ■ ■ ■	
	Charging not possible	Flickers	0.1 sec ON, 0.1 sec OFF ■ ■ ■ ■ ■ ■ ■ ■	Storage battery or charger is faulty.
Green pilot lamp is lit.	High battery temperature	Lit	Stays ON constantly ■■■■■■■■■■	Charging not possible because storage battery temperature is too high.

5-2. Optional Accessories

• Cutter ass'y

Stud size	Code No.	Combining cutters and spacers		
M10 x 1.5	308565	M10 Cutter 2	M10 Spacer 2	
M8 x 1.25	308564	M8 Cutter 2	M8 Spacer 2	
M6 x 1	308563	M6 Cutter 2	M6 Spacer 2	
* W3/8" x 1.5875	998479	W3/8" Cutter 2		

* The W3/8" is used without spacers.

• Trimmer

Stud size	Code No.	
M10 x 1.5	308570	
M8 x 1.25	308569	
M6 x 1	308568	
* W3/8" x 1.5875	308567	

6. COMPARISONS WITH SIMILAR PRODUCTS

6-1. Specification Comparisons

Item		Maker, model		Hitachi		
				CL 10D2	CL 10D	CL 10SA
Catalog specifications	Capacity: Soft steel studs (Size of studs for cutting)		○ M10 x 1.5 ○ M8 x 1.25 ○ M6 x 1 ○ W3/8" x 1.5875	○ M10 x 1.5 ○ M8 x 1.25 ○ M6 x 1 ○ W3/8" x 1.5875	○ M10 x 1.5 ○ M8 x 1.25 ○ M6 x 1 ○ W3/8" x 1.5875	
	Voltage	V	DC 12	DC 9.6	AC 230 or more	
	Power input	W	—	—	190	
	No-load stroke	min ⁻¹	30	0 to 28	0 to 32	
	No-load sound pressure level	dB (A)	61	66	73	
	Dimensions	Length		281 mm (11-1/16")	258 mm (10-5/32")	235 mm (9-1/4")
		Height		179 mm (7-3/64")	179 mm (7-3/64")	182 mm (7-11/64")
		Width		107 mm (4-7/32")	107 mm (4-7/32")	107 mm (4-7/32")
Weight			3.2 kg (7.05 lbs.) (including battery)	3.4 kg (7.5 lbs.) (including battery)	2.7 kg (5.95 lbs.) (excluding cord)	
Cutting time (M10)	sec.		2.4	2.6	2.4	
Number of cuttings per battery charge (M10)			550	140	NA	
Type of motor			DC magnet	DC magnet	AC single-phase series commutator motor	
Type of switch			Trigger switch with forward/reverse changeover pushing button with brake	Trigger switch with forward/reverse changeover pushing button with brake and variable	Trigger switch with forward/reverse changeover pushing button with brake and variable	
Battery	Type		EB 1230H or EB 12B	EB 9B	—	
	Nominal capacity	Ah	EB 1230H: 3.0 EB 12B: 2.0	2.0	—	
	Nominal voltage	V	12	9.6	—	
Charger	Model		UC 14YF2	UC 12Y	—	
Standard accessories			<ul style="list-style-type: none"> • Plastic tool case • Charger (UC 14YF2) • Hexagon bar wrench • M8 cutter ass'y • M8 trimmer 	<ul style="list-style-type: none"> • Plastic tool case • Charger (UC 12Y) • Hexagon bar wrench • M8 cutter ass'y • M8 trimmer 	<ul style="list-style-type: none"> • Hexagon bar wrench • M8 cutter ass'y • M8 trimmer 	

7. PRECAUTIONS IN SALES PROMOTION

7-1. Safety Instructions

In the interest of promoting the safest and most efficient use of these tools by all of 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 tool 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 out of 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 14YF2 Charger provided with the tool.

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

(3) Follow prescribed steps in using the Charger.

First connect the EB 1230H or EB 12B Storage Battery to the Model UC 14YF2 Charger, then plug the Charger into an AC outlet (ensuring that the voltage matches that indicated on the unit). If this order is reserved, the charger may not function properly.

(4) 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 burn out.

(5) 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.

(6) Conduct battery charging at an ambient temperature range of 0°C to 40°C (32°F to 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 under 0°C (32°F), the thermostat will not function properly, and the storage battery may be over-charged.

At temperature over 40°C (104°F), the storage battery cannot be sufficiently charged.

The optimum temperatures range is 20°C to 25°C (68°F to 77°F).

(7) 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 and there is a chance that the temperature fuse inserted in the interior of the transformer will inadvertently melt. After charging one battery, please charge the next battery after about a fifteen-minute interval.

(8) 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 flammable objects, to be dropped or inserted into the air vents. This could cause electrical shock, fire or other serious hazards.

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

Special devices, such as a thermostat, 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.

- (10) Disposal of the Model EB 1230H or EB 12B Storage Battery

Ensure that all customers understand that Model EB 1230H or EB 12B Storage Batteries should be turned into any 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.

- (11) Perform cutting only after confirming that the threads of the stud cutter properly engage the threads of the stud. If the threads are not properly engaged, damage to the threads of the stud during cutting may make the stud unusable, and/or the cutter blade may be damaged.

- (12) Ensure that the portion cut off of the stud is at least 10 mm in length.

As the blade portion of the cutter is very thin, if only one or two threads of the cutter are engaged with the threads of the stud, as illustrated in Fig. 13, the excessive concentration of load on the blade portion will cause it to break after only a few cutting operations. The length of stud cut off should be at least 10 mm. Instruct customers to confirm that all of the threads of the cutter engage the threads of the stud during cutting.

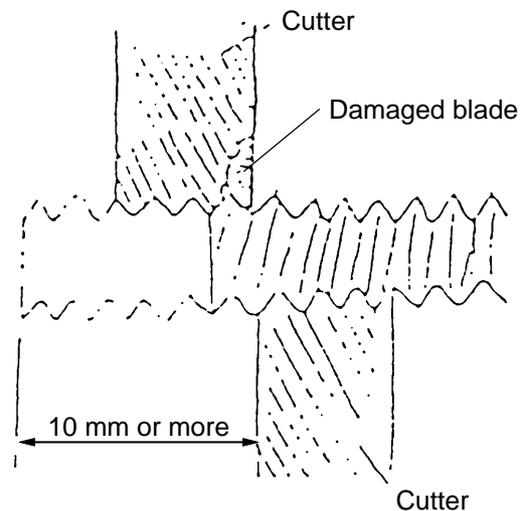


Fig. 13

- (13) Care should be exercised when performing cutting in narrow places.

For example, in building construction work, studs that are used to hang ducts are often fitted with L-shaped angles. Instruct the customers to ensure that there is a clearance of at least 8 mm between the stud and the angle when 25 mm or 30 mm L-shaped angles are used, as illustrated in Fig. 14, before starting the cutting operation. If the clearance is less than 8 mm, Bracket (A) will come in contact with the side surface of the angle, preventing proper engagement of the threads of the cutters and the threads of the stud, and causing damage to the threads of the stud and/or the cutter blade.

Also, since the minimum cutting length of a stud is 14 mm from the surface of the nut, the stud can be cut off at a point 5 mm within the tip of the angle in the case of a 30 mm L-shaped angle, and approximately even with the tip of the angle in the case of a 25 mm L-shaped angle, as illustrated in Fig. 14. If cutting is attempted shorter than indicated, Bracket (A) will come in contact with the nut, causing possible damage to the cutter. Accordingly, particular caution is necessary.

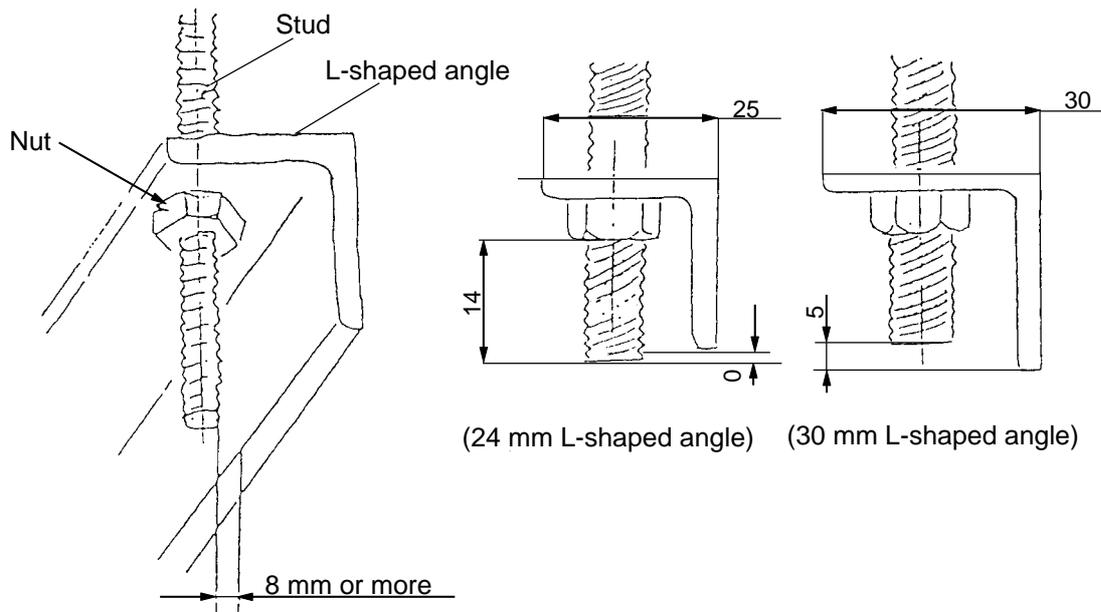


Fig. 14

(14) Precautions in cutter replacement

The cutters must be mounted in the proper directions. Instruct the customers to ensure that the notched grooves on the side surfaces of the cutters are in a "Yes" and "No" relationship when viewed from the front end of the main body, as illustrated in Fig. 15. In other words, when the notched groove is present (Yes) on one cutter, it must not be present (No) on the other. If the two cutters are in "Yes" and "Yes" alignment, or "No" and "No" alignment, the pitch of the threads of the stud will not match the pitch of the threads of the cutters, as illustrated in Fig.16. In such a case, the cutter blade will be damaged and/or the main body of the stud cutter will become defective after a short period of operation.

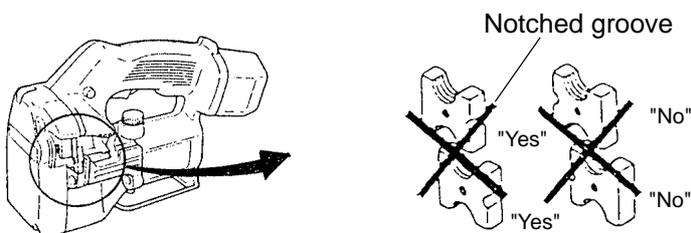


Fig. 15 Cutter replacement method

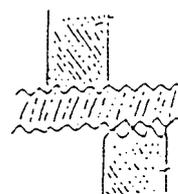


Fig. 16

(15) Never attempt cutting operation at the  position.

If the storage battery charge runs out and motor rotation stops during cutting, pull the switch (in the  position) while pressing the forward/reverse changeover button from the left, as shown in Fig. 17, to disengage the cutter from the stud. As the motor is locked at the  position, cutting of a stud cannot be performed, even if the storage battery is fully charged. In addition, as excessive pressure or twisting force applied to the main body can seriously damage the tool, the customers should be instructed never to attempt to forcibly free the cutters from the stud.

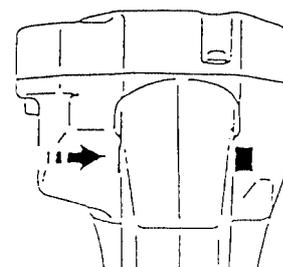


Fig. 17

- (16) The amount of work possible per battery charge varies. The nominal capacity of the storage battery in the main body is 3.0 or 2.0 Ah. However, the actual capacity varies plus or minus approximately 10% depending on the ambient temperature during charging/discharging and the number of times the battery has been recharged. As the amount of work per charge also varies depending on the working conditions (ambient temperature, sharpness of the cutters, etc.), the data contained herein is intended for reference value only.
- (17) The Model CL 10D2 is designed for cutting mild steel studs. If the tool is used for cutting brass or stainless steel studs, the threads of the studs will be deformed so that nuts cannot be applied. In addition, as use of the tool to cut hardened bolts, different-sized studs, reinforcing rods, etc. will cause damage to the main body, the customers should be cautioned never attempt to use the tool for such purposes.
- (18) Carefully ensure that replacement cutters are appropriate for the stud sizes. As use of wrong-sized cutters will cause damage to the studs and/or cutter blades, the customers should be cautioned to ensure that correct cutters are used.
- (19) If the cutters are not mounted in the proper direction, or if the fastening hexagon socket head bolts are not properly tightened, it will cause damage to the cutters and the main body of the tool. Instruct the customer to ensure that the cutters are properly mounted.
- (20) When operating the tool in high places, the falling cut-off stud portions are extremely dangerous. The customers should be cautioned to be particularly careful at such times. In addition, the tool should be stored in a safe, secure place when not in use.
- (21) When the tool is being carried, when it is stored away, or when it is temporarily not in use, instruct the customer to set the forward/reverse changeover button to the  position so that the switch cannot be turned on inadvertently.
- (22) When operating the switch, carefully ensure that fingers are kept away from the cutters. To enhance safe operation, the Model CL 10D2 is provided with a cover for the moving portion of the cutters, a housing shaped so that fingers are kept away from the cutters, a switch without a stopper, and other safety features. However, the opening to the cutters must be exposed to permit operation. Should the switch be turned on inadvertently when the fingers are carelessly near the cutters during replacement or cleaning of the cutters, while carrying the tool, or at any other time, serious injury could result. The customers should be cautioned to keep fingers away from the cutters whenever the storage battery is installed in the tool.

B. Caution Plate

- (1) The following cautions are listed on the caution plate attached to each Model EB 1230H or EB 12B Storage Battery.

For Europe

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

7-2. Suggestions and Precautions for Efficient Use of Charger

- Batteries may not be chargeable immediately after use:

If the type EB 1230H or EB 12B storage batteries are exposed to direct sunshine for an extended period, or if the temperature of the batteries is 40°C (104°F) or higher immediately after they have been used in the tool, the pilot lamp may not light up when the batteries are connected to the Model UC 14YF2 Charger. This is because the built-in-thermostat functions to stop the charging when the temperature of the storage batteries reaches 40°C (104°F) or more. In such a case, the customer should be advised to place the batteries in a shaded area with a good airflow, and allow sufficient cooling before recharging.

This phenomenon is common to all existing batteries which employ temperature sensitive over-charge devices. The cooling time required before charging can be accomplished varies from a few minutes to about 30 minutes, depending on the load, duration of use, and ambient temperature.

8. REPAIR GUIDE

WARNING: Without fail, remove the storage battery from the main body of the tool before starting repair or maintenance work. If the battery is left in and the switch is activated inadvertently, the motor will start rotating unexpectedly, which could cause serious injury.

8-1. Precautions in Disassembly and Reassembly

The **[Bold]** numbers in the description below correspond to the item numbers in the Parts List and exploded assembly diagram for the Model CL 10D2.

8-1-1. Preparation to disassembly (Fig. 18)

Before disassembly, set the Pushing Button **[3]** to the  position and depress the trigger switch until Bracket (A) **[42]** opens. Then release the trigger switch and remove the storage battery.

Remove the two Special Bolts M5 x 9 **[50]** from the two Cutter Ass'y M8 **[52]** with the Hex. Bar Wrench 4 mm **[11]** (standard accessory). Insert the storage battery in the main body. Depress the trigger switch keeping the Pushing Button set to the  position until Bracket (A) **[42]** is positioned to the maximum cutting position. Then release the trigger switch and remove the storage battery.

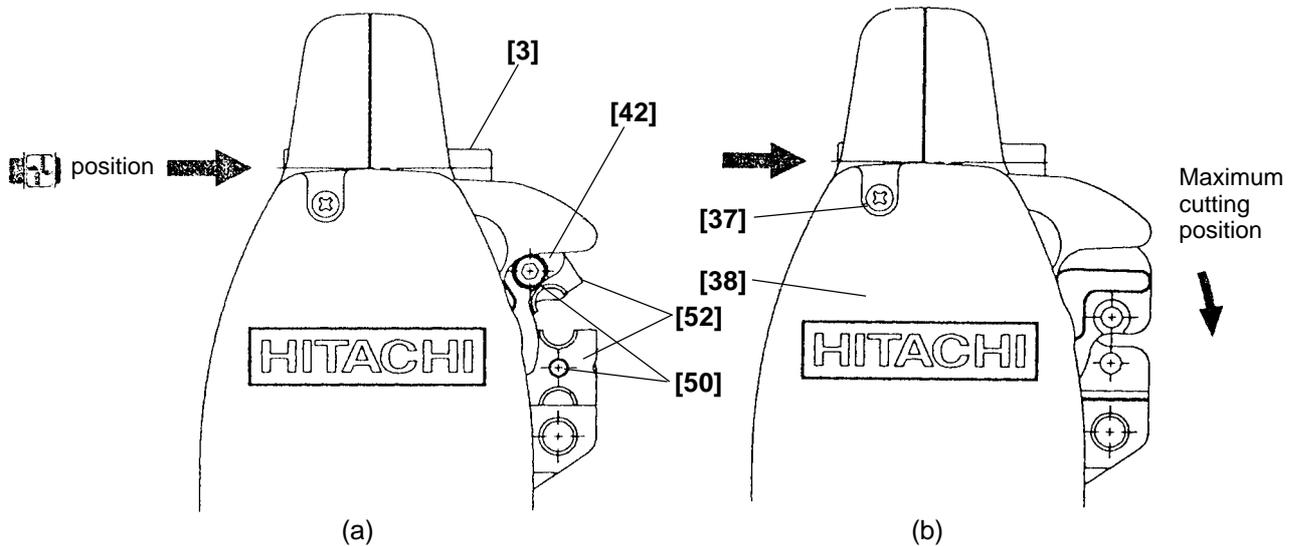


Fig. 18

On completion of the above preparation, be sure to disconnect and remove the battery. Remove the Bolt W3/8 x 75 **[48]**, loosen the Spring Washer M10 **[47]**, and take off the Stud Guide Ass'y **[46]**. (Fig. 19)

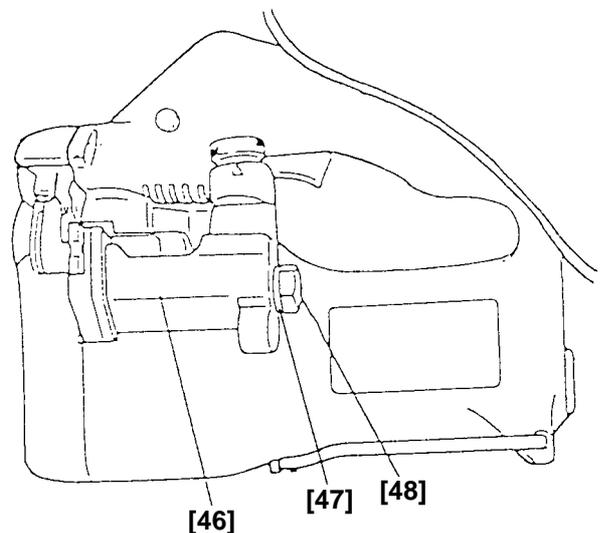


Fig. 19

8-1-2. Disassembly

(1) Bracket ass'y section

(a) Removal of the Cover [38] (Fig. 18)

Remove the two Machine Screws (W/Washers) M4 x 20 (Black) [37] from the Cover [38] and remove the Cover [38].

(b) Removal of the Return Plate [41] (Fig. 20)

Remove the two Seal Lock Screws (W/SP. Washer) M4 x 12 [40] and remove the Return Plate [41].

(c) Removal of the Gear Cover [19] (Fig. 20)

Remove the four Tapping Screws (W/Flange) D5 x 25 (Black) [17] and the two Tapping Screws D5 x 35 [43].

Hold Bracket (B) [44] and Bracket (A) [42] and remove them being careful not to move Bracket (A) [42].

Then the Second Gear [22] and the Third Pinion [21] can be removed (Fig. 21).

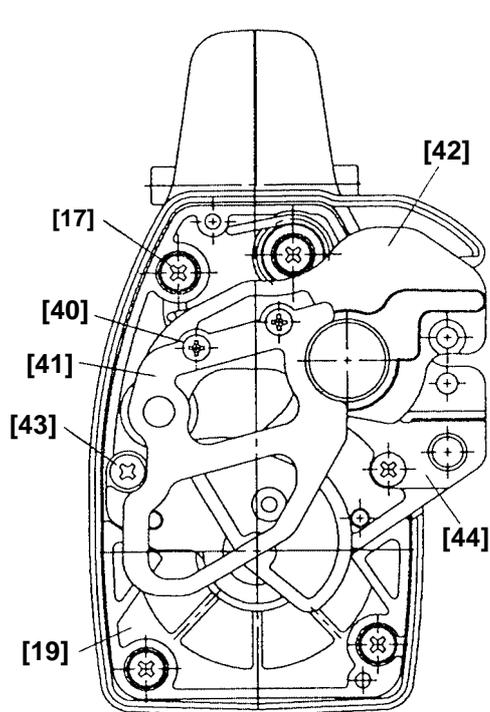


Fig. 20

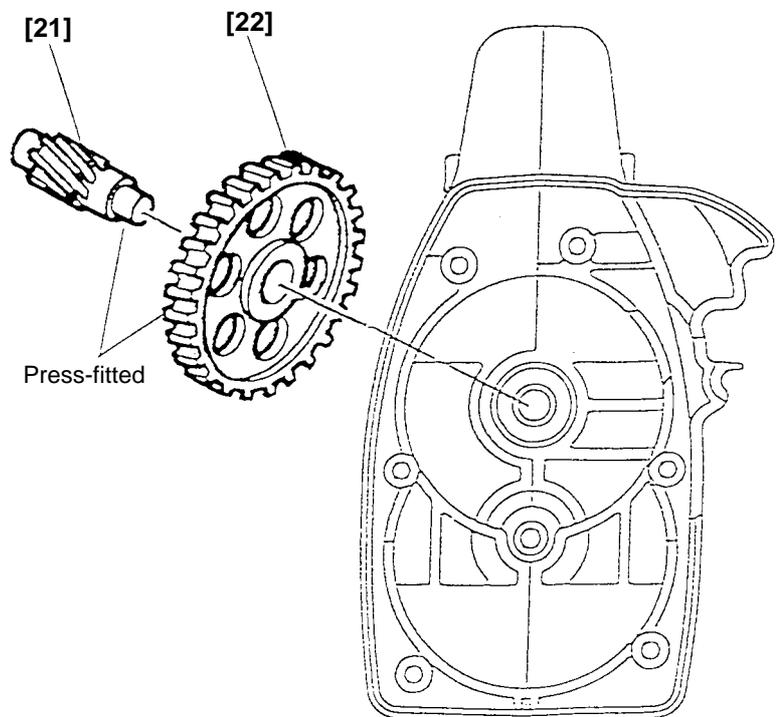


Fig. 21

(d) Removal of the Final Gear [35] (Fig. 22)

Remove the Retaining Ring for D18 Shaft [36] that retains the Final Gear [35] and the Cam Shaft [55] with the stop ring pliers. Remove the Final Gear [35] and the two Feather Keys 5 x 5 x 10 [56]. Then the Cam Shaft [55] can be removed.

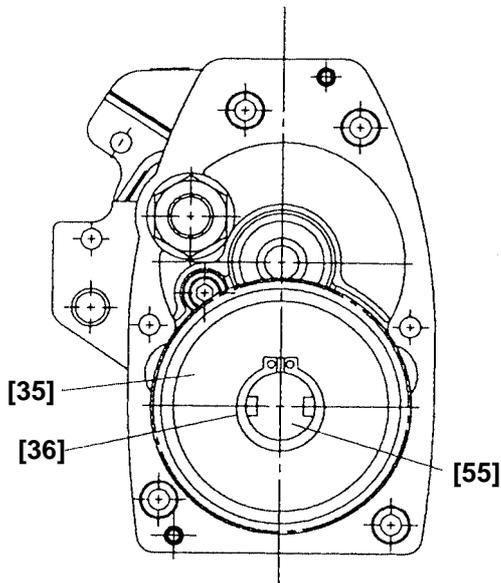


Fig. 22

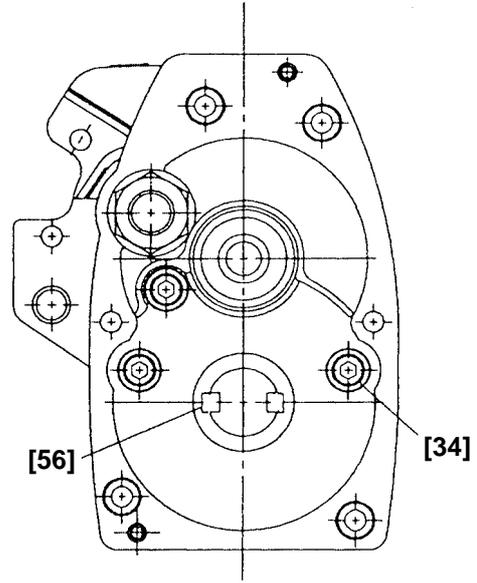


Fig. 23

(e) Removal of the bracket ass'y (Figs. 23 and 24)

Remove the three Hex. Socket Hd. Bolts M5 x 12 [34] from Bracket (B) [44] with the Hex. Bar Wrench 4 mm [11]. Holding Bracket (A) [42] and Bracket (B) [44], remove the bracket ass'y being careful not to make the Return Spring [18] jump up.

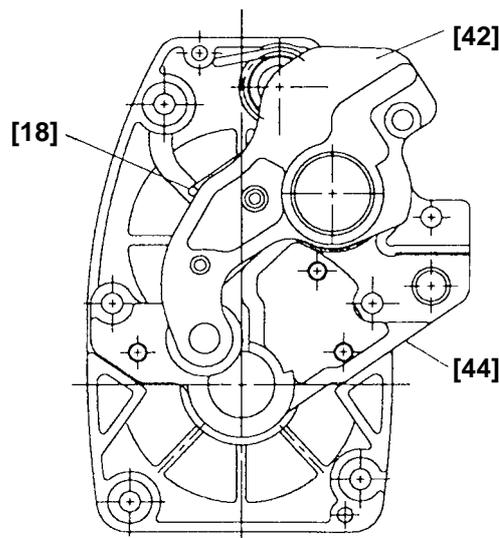
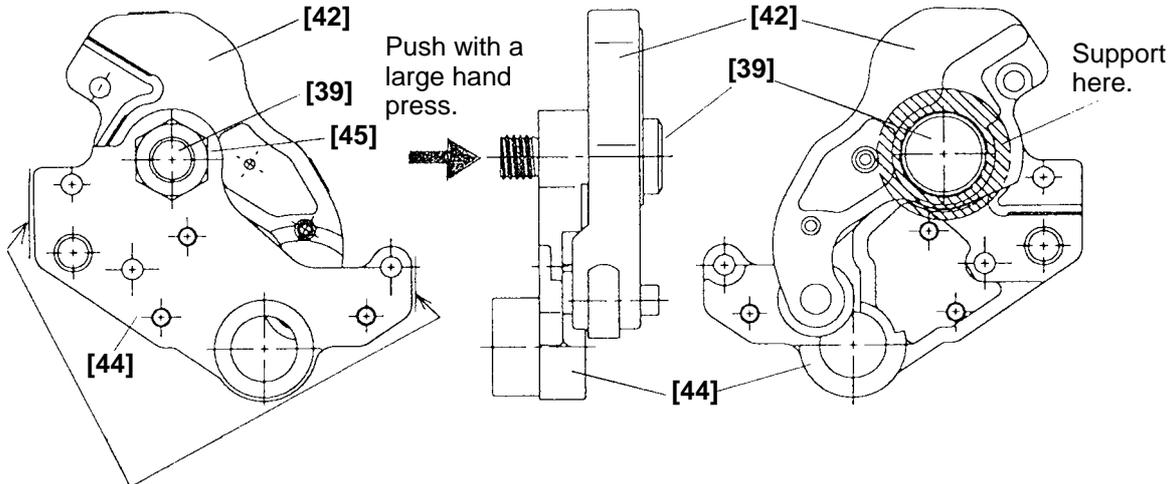


Fig. 24

(f) Disassembly of the bracket ass'y

(i) Removal of Bolt (A) [39] (Fig. 25)

Bolt (A) [39] that secures Bracket (A) [42] to Bracket (B) [44] is press-fitted into Bracket (B) [44] and tightened with the Lock Nut M12 [45]. Hold Bracket (B) [44] with a vise and loosen the Lock Nut M12 [45] with a wrench (loosening torque: about 350 kg•cm). Supporting around the head of Bolt (A) [39] of Bracket (A) [42], push the screw side of Bolt (A) [39] with a hand press to separate Bracket (A) [42] from Bracket (B) [44].



Hold at these positions with a vise and loosen the Lock Nut M12 [45].

Fig. 25

(ii) Removal of Roller (A) [53] (Fig. 26)

The Roller Pin [54] that secures Roller (A) [53] is press-fitted into Bracket (A) [42]. Remove the Roller Pin [54] by pushing in either direction with a hand press. Then Roller (A) [53] can be removed.

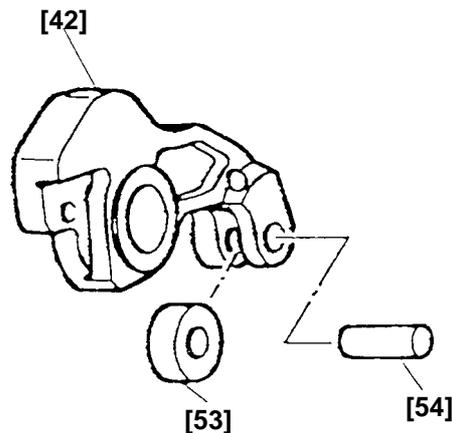


Fig. 26

(2) Housing ass'y section

(a) Removal of the Hook [6] (Fig. 27)

Remove the Retaining Ring (E-Type) for D4 Shaft [10] that retains the Hook [6] with a small flat-blade screwdriver. Then the Hook [6] can be removed.

(b) Removal of Housing (B) [2]

Remove the nine Tapping Screws (W/Flange) D4 x 20 (Black) [8] that secure Housing (A) [2] to Housing (B) [2]. Holding the compartment of the Gear Cover [19] in Housing (A) [2] and Housing (B) [2] or the compartment of the battery, remove Housing (B) [2] carefully.

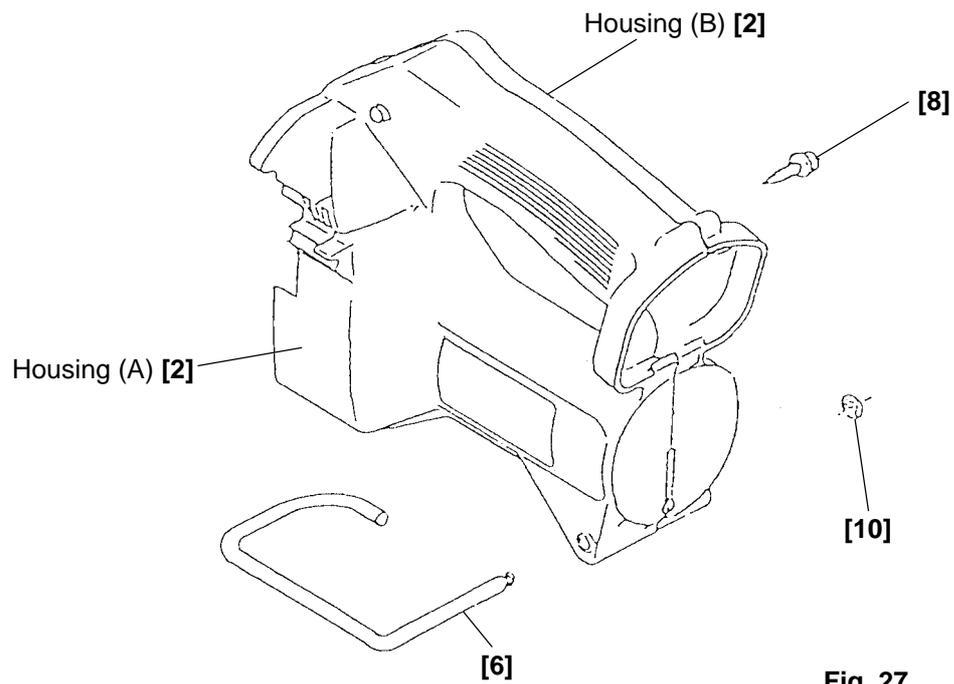


Fig. 27

(c) After removal of Housing (B) [2], the internal assemblies and parts can be removed (Fig. 28).

First, remove the Switch Holder [12]. Holding the Pushing Button [3] and the Spring [4], remove the Switch [13]. Remove the Terminal Support [15]. Remove the Motor [33] and the Second Pinion [28] from Housing (A) [2].

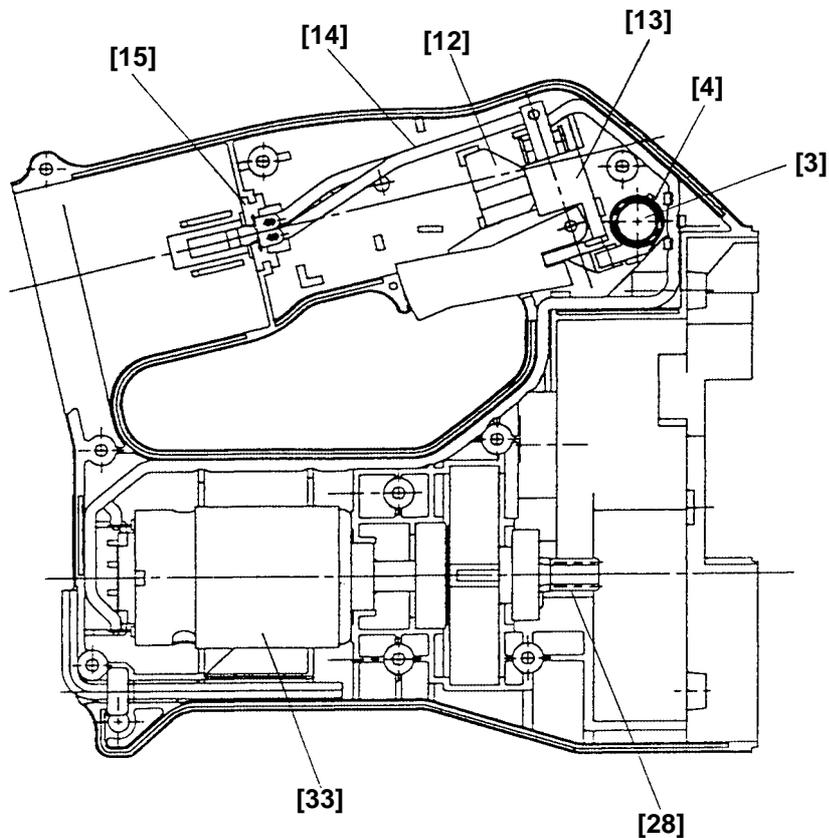


Fig. 28

(3) Power supply unit section

Remove the internal wires coming from the Motor [33] and the Switch Ass'y [14] from the Switch [13] with a soldering iron.

CAUTION: Do not apply heat to the Switch [13] for a long time with the soldering iron when removing the internal wires. Otherwise, the electronic circuit in the Switch [13] can be damaged.

(4) Second pinion section (Fig. 29)

Remove the Ball Bearing 6001VVCMP2L [32] press-fitted into the Second Pinion [28] with a bearing puller. Then the Washer [31] can be removed. Remove the Ball Bearing 609VVC2PS2L [24] in the same manner and remove the Retaining Ring for D15 Shaft [25] with the stop ring pliers. Then the Washer [26] can be removed. Remove the Needle [30] and the Idle Gear [29].

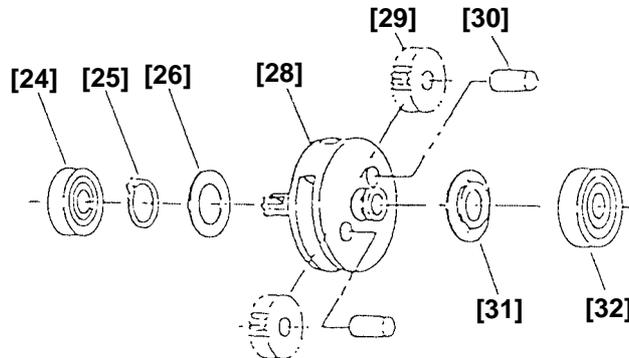


Fig. 29

8-2. Reassembly

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

(1) Reassembly of the power supply unit section

Be sure to perform wiring connections as indicated in the wiring diagram below (Fig. 30).

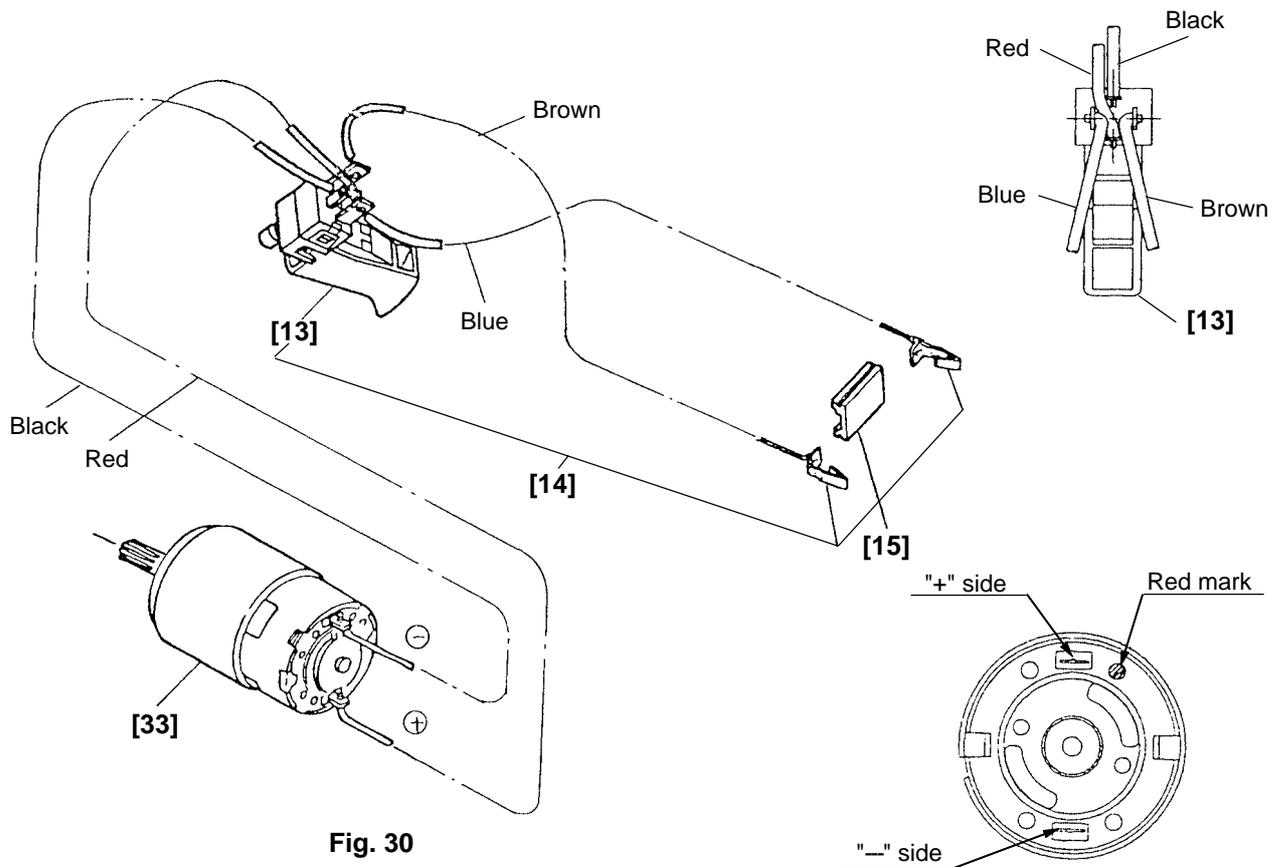


Fig. 30

Fig. 31

The "+" side is indicated with a red mark on the Motor [33] (Fig. 31).

(2) Reassembly of the housing section

(a) Second Pinion [28] (Fig. 32)

Before inserting the Needle [30] in the Second Pinion [28], apply grease (Nippeco SEP-3A) to the inner circumference of the two Idle Gears [29]. Mount the Washer [31] facing its smaller diameter side to the Ball Bearing 6001VVCMP2L [32]. Mount the Washer [26] and then the Retaining Ring for D15 Shaft [25] using the stop ring pliers. Press-fit the Ball Bearing 6001VVCMP2L [32] and the Ball Bearing 609VVC2PS2L [24].

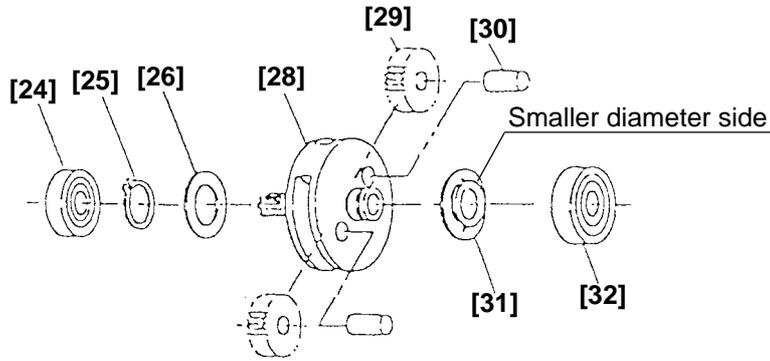


Fig. 32

(b) Planet gear (Fig. 33)

First, apply grease (Nippeco SEP-3A) to the inner circumference of the Ring Gear [27]. Mount the pinion of the Motor [33] to the Second Pinion [28] assembled according to the above step (a) and mount the Ring Gear [27]. Check that the Ring Gear [27] and the Second Pinion [28] are rattling. If there is no rattle (gears are not engaged properly), the Motor [33] will be locked. Mount this assembly to Housing (A) [2] mating the protrusion of the Ring Gear [27] to the groove of Housing (A) [2].

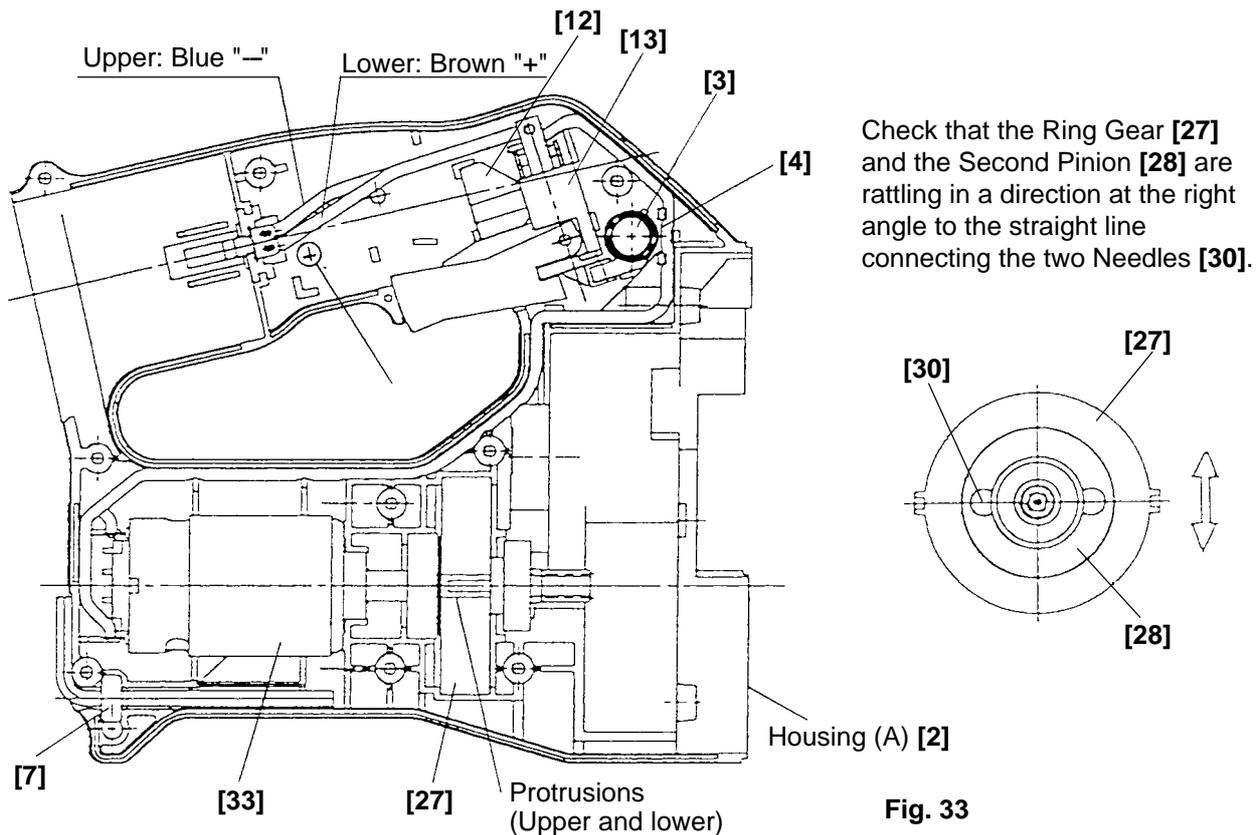


Fig. 33

(c) Power supply unit (Fig. 33)

Mount the power supply unit assembled according to the above step (1) to Housing (A) [2]. Connect the internal wires of the Switch Ass'y [14] locating the blue internal wire at the upper position and the brown internal wire at the lower position. (Housing (A) [2] and Housing (B) [2] are indicated with "+" and "-" respectively. Be sure to connect the brown internal wire to the "+" side and the blue internal wire to the "-" side. Otherwise the Switch [13] can be broken.) Then mount the Switch Holder [12] being careful of the direction.

(d) Mount the Pushing Button [3] mating its groove to the lever of the Switch [13] (Fig. 34).

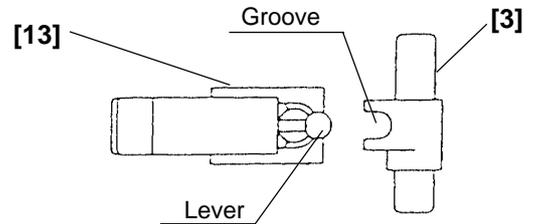


Fig. 34

(e) Mount the Spring [4] to the Pushing Button [3] (Fig. 33).

(f) Mount the Wrench Holder [7] to Housing (A) [2] (Fig. 33).

(g) Place the internal wires to the proper positions in Housing (A) [2]. Secure Housing (B) [2] with the nine Tapping Screws (W/ Flange) D4 x 20 (Black) [8] being careful not to catch the internal wires.

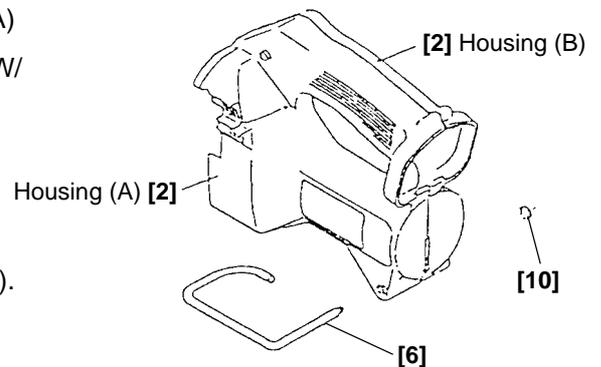


Fig. 35

(h) Mount the Hook [6] in the proper direction.

Mount the Retaining Ring (E-type) for D4 Shaft [10] (Fig. 35).

(3) Reassembly of the bracket ass'y section

(a) Lubrication (Fig. 36)

Sufficiently apply grease to Bracket (A) [42], Bracket (B) [44], Roller (A) [53], Cam Shaft [55], coupling portion and rotating portion of Bolt (A) [39] because high loads are applied to these parts. Also apply grease to the inner circumferences of the punched holes of the Return Plate [41] and the sliding portions of the Return Spring [18] and Bracket (A) [42]. Apply TUFREX 251 grease to the shafts, holes and surfaces indicated with diagonal lines and two-dot chain lines in Fig. 36. Carefully apply grease to the inner circumference of the hole of Roller (A) [53] until the grooves in the hole are completely greased.

(b) Mounting Roller (A) [53]

Check the position of the smaller diameter end of the Roller Pin [54] and insert the Roller Pin [54] in the hole of Bracket (A) [42] in the proper direction as shown in Fig. 36. Align Roller (A) [53] with the hole of Bracket (A) [42] and press-fit the Roller Pin [54] until it becomes flush with the end surface of Bracket (A) [42] (Fig. 36).

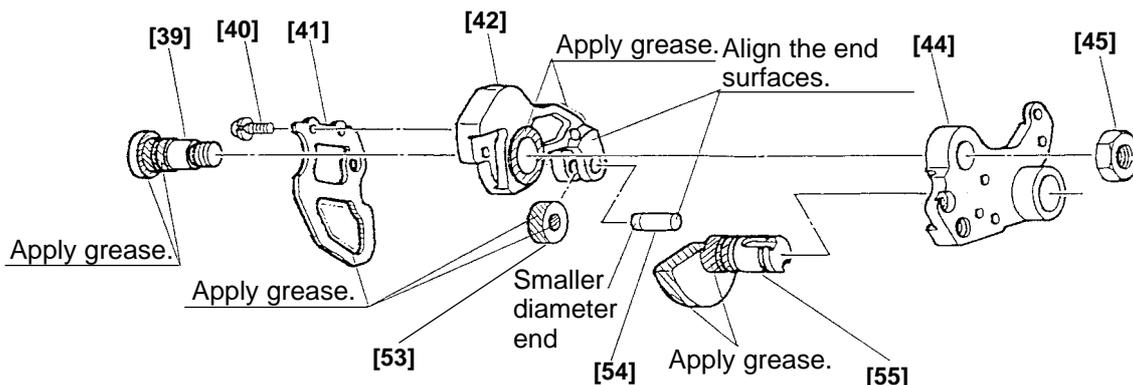


Fig. 36

(c) Press-fitting Bolt (A) [39]

Put Bolt (A) [39] through the hole of Bracket (A) [42] and press-fit it in Bracket (B) [44] completely (Fig. 36). At this time, a clearance is made between Bracket (A) [42] and Bracket (B) [44] due to the dimensional tolerance.

(d) Observe the specified tightening torque of the Lock Nut M12 [45] because it is very important for the strength.

(e) Reassembly of the bracket ass'y

(i) Mount the Return Spring [18] to the Gear Cover [19]

(Fig. 37).

(ii) Mount the bracket ass'y assembled in the above steps

(b) and (c) to the Gear Cover [19] hooking the

Return Spring [18] on Bracket (A) [42] (Fig. 37).

(iii) Tighten the three Hex. Socket Hd. Bolts M5 x 12 [34] with the Hex. Bar Wrench 4 mm [11] at the specified tightening torque because they are very important for the strength (Fig. 38).

(iv) Mount the Ball Bearing 629VVC2PS2L [20] to the Gear Cover [19] (Fig. 38).

(v) Mount the two Feather Keys 5 x 5 x 10 [56] to the Cam Shaft [55]. Insert the Final Gear [35] in the proper direction. Mount the Retaining Ring for D18 Shaft [36] to it using the stop ring pliers (Fig. 39).

Apply grease (Nippeco SEP-3A) to the outer circumference of the Final Gear [35].

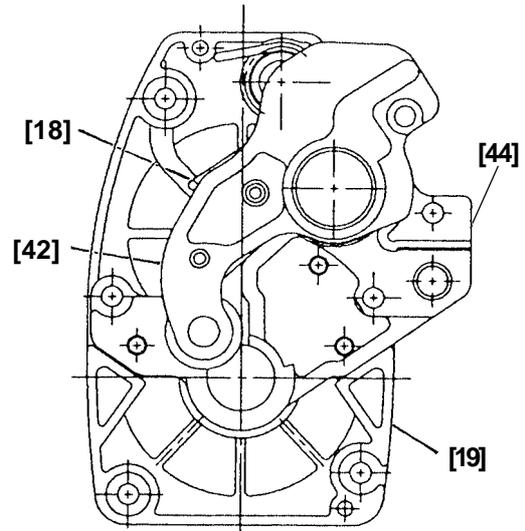


Fig. 37

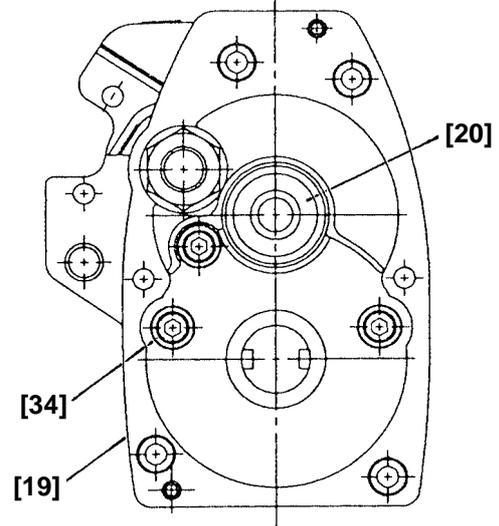


Fig. 38

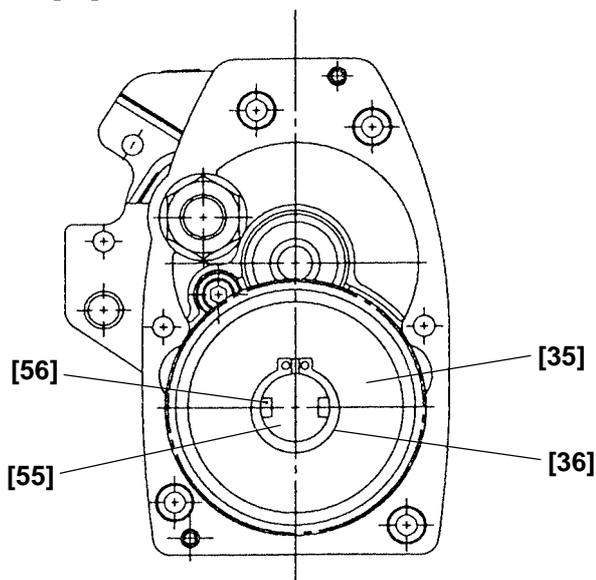
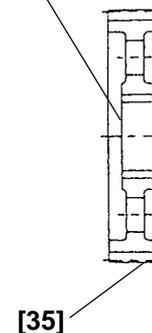


Fig. 39

Face the side where the boss portion is lower than the end surface of the gear to the Retaining Ring for D18 Shaft [36].



(f) Mounting the assembly to the main body

(i) Insert the Ball Bearing 608VVC2PS2L [23] in the ball bearing chamber of Housing (A) [2] (Fig. 40).

(ii) Press-fit the Third Pinion [21] in the Second Gear [22] and insert it in the Ball Bearing 608VVC2PS2L [23] of Housing (A) [2] (Fig. 40). At this time, apply grease (Nippeco SEP-3A) to the outer circumference of the Second Gear [22].

(iii) Mount the Gear Cover [19] to the housing keeping Bracket (A) [42] at the maximum cutting position in the same manner as the removal procedure (be careful of the spring force) (Fig. 41).

(iv) Tighten the four Tapping Screws (W/Flange) D5 x 25 (Black) [17] and the two Tapping Screws D5 x 35 [43] (Fig. 41).

CAUTION: Check that there is no scratch, dust or chips on the surfaces of the cam and the roller.

(g) Reassembly of the Return Plate [41]

Align the Return Plate [41] with the Roller Pin [54] and Bolt (A) [39]. Insert the pin of the Cam Shaft [55] in the hole of the Return Plate [41] and secure them with the two Seal Lock Screws (W/SP. Washer) M4 x 12 [40] (Fig. 41).

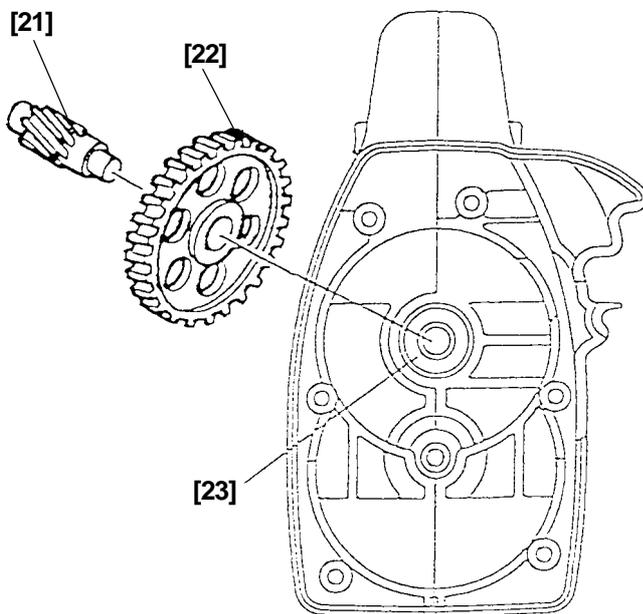


Fig. 40

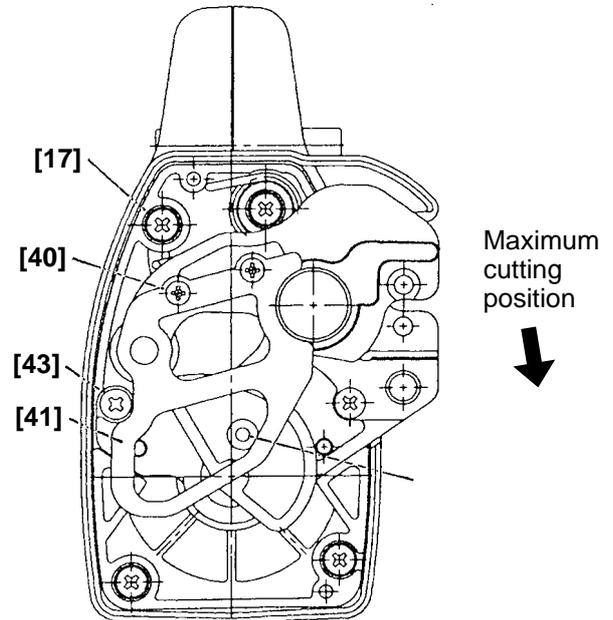


Fig. 41

(h) Confirmation after reassembly

Before mounting the Cover [38]. Install the battery and check the following operations.

- (i) Set the Pushing Button [3] to the  position and check that the Cam Shaft [55] rotates clockwise as shown in Fig. 42.
- (ii) Set the Pushing Button [3] to the  position and depress the trigger switch. Check that the motor does not rotate.
- (iii) Pressing the Pushing Button [3] to the  position, depress the trigger switch. Check that the Cam Shaft [55] rotates counterclockwise (in the reverse direction of Fig. 42).
- (iv) Check that the Pushing Button [3] returns to the  position when releasing the Pushing Button [3].

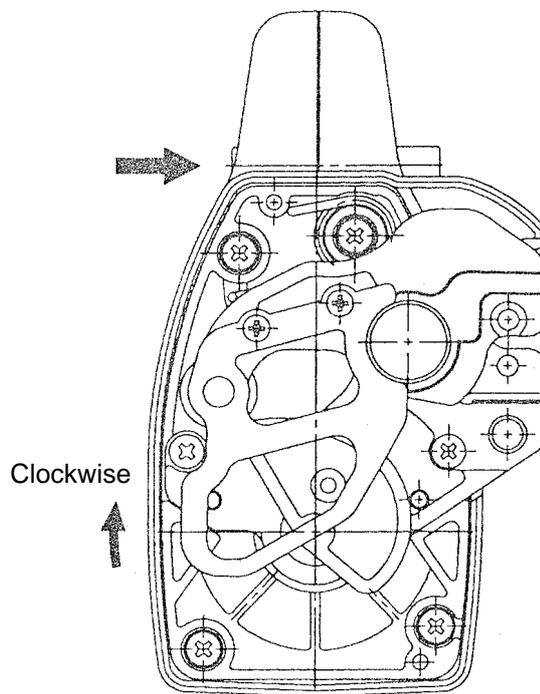


Fig. 42 Rotating direction of the Cam Shaft [55] when the Pushing Button [3] is set to the  position

(g) Mounting the Cover [38] or the Cutter Ass'y M8 [52]

Remove the Battery [16], and fasten the Cover [38] with the two Machine Screws (W/Washers) M4 x 20 (Black) [37].

The Cutter Ass'y M8 [52] must be mounted in the proper directions. As shown in Fig. 43, they must be mounted so that if the groove in the side of one cutter is present (Yes), the groove in the side of the outer cutter is not present (No). After mounting direction has been confirmed, fasten the cutters with the two Special Bolts M5 x 9 [50].

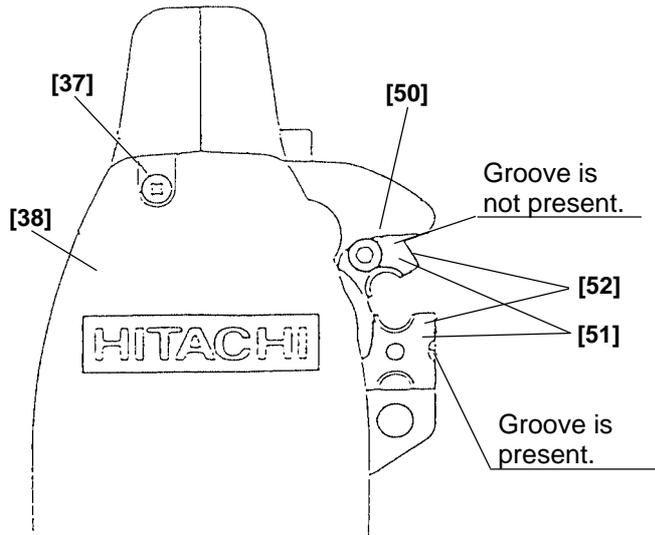


Fig. 43

Size	Attachment
M10	
M8	
M6	
W3/8"	

(h) Fasten the Stud Guide Ass'y [46] with the Bolt W3/8 x 75 [48] and Spring Washer M10 [47] as shown in Fig. 19.

(i) Tightening torques are as follows:

Tapping Screw (W/Flange) D4 x 20 (Black) [8]	$1.96 \pm 0.49 \text{ N}\cdot\text{m}$ ($20 \pm 5 \text{ kgf}\cdot\text{cm}$, $17.4 \pm 4.3 \text{ in-lbs.}$)
Machine Screw (W/Washers) (Black) M4 x 20 [37]	$1.76 \pm 0.49 \text{ N}\cdot\text{m}$ ($18 \pm 5 \text{ kgf}\cdot\text{cm}$, $15.7 \pm 4.3 \text{ in-lbs.}$)
Seal Lock Screw (W/SP. Washer) M4 x 12 [40]	$1.76 \pm 0.49 \text{ N}\cdot\text{m}$ ($18 \pm 5 \text{ kgf}\cdot\text{cm}$, $15.7 \pm 4.3 \text{ in-lbs.}$)
Tapping Screw (W/Flange) D5 x 25 (Black) [17]	$3.43 \pm 0.49 \text{ N}\cdot\text{m}$ ($35 \pm 5 \text{ kgf}\cdot\text{cm}$, $30.5 \pm 4.3 \text{ in-lbs.}$)
Tapping Screw D5 x 35 [43]	$3.43 \pm 0.49 \text{ N}\cdot\text{m}$ ($35 \pm 5 \text{ kgf}\cdot\text{cm}$, $30.5 \pm 4.3 \text{ in-lbs.}$)
Hex. Socket Hd. Bolt M5 x 12 [34]	$5.88 \pm 1.47 \text{ N}\cdot\text{m}$ ($60 \pm 15 \text{ kgf}\cdot\text{cm}$, $52.2 \pm 13 \text{ in-lbs.}$)
Special Bolt M5 x 9 [50]	$5.88 \pm 1.47 \text{ N}\cdot\text{m}$ ($60 \pm 15 \text{ kgf}\cdot\text{cm}$, $52.2 \pm 13 \text{ in-lbs.}$)
Lock Nut M12 [45]	$34.3 \pm 7.35 \text{ N}\cdot\text{m}$ ($350 \pm 75 \text{ kgf}\cdot\text{cm}$, $304.5 \pm 65 \text{ in-lbs.}$)
Bolt W3/8 x 75 [48]	$15.68 \pm 3.92 \text{ N}\cdot\text{m}$ ($160 \pm 40 \text{ kgf}\cdot\text{cm}$, $139.2 \pm 35 \text{ in-lbs.}$)

8-3. Precautions in Disassembly and Reassembly of Battery Charger

Refer to the Technical Data and Service Manual for precautions in disassembly and reassembly of the Model UC 14YF2 battery charger.

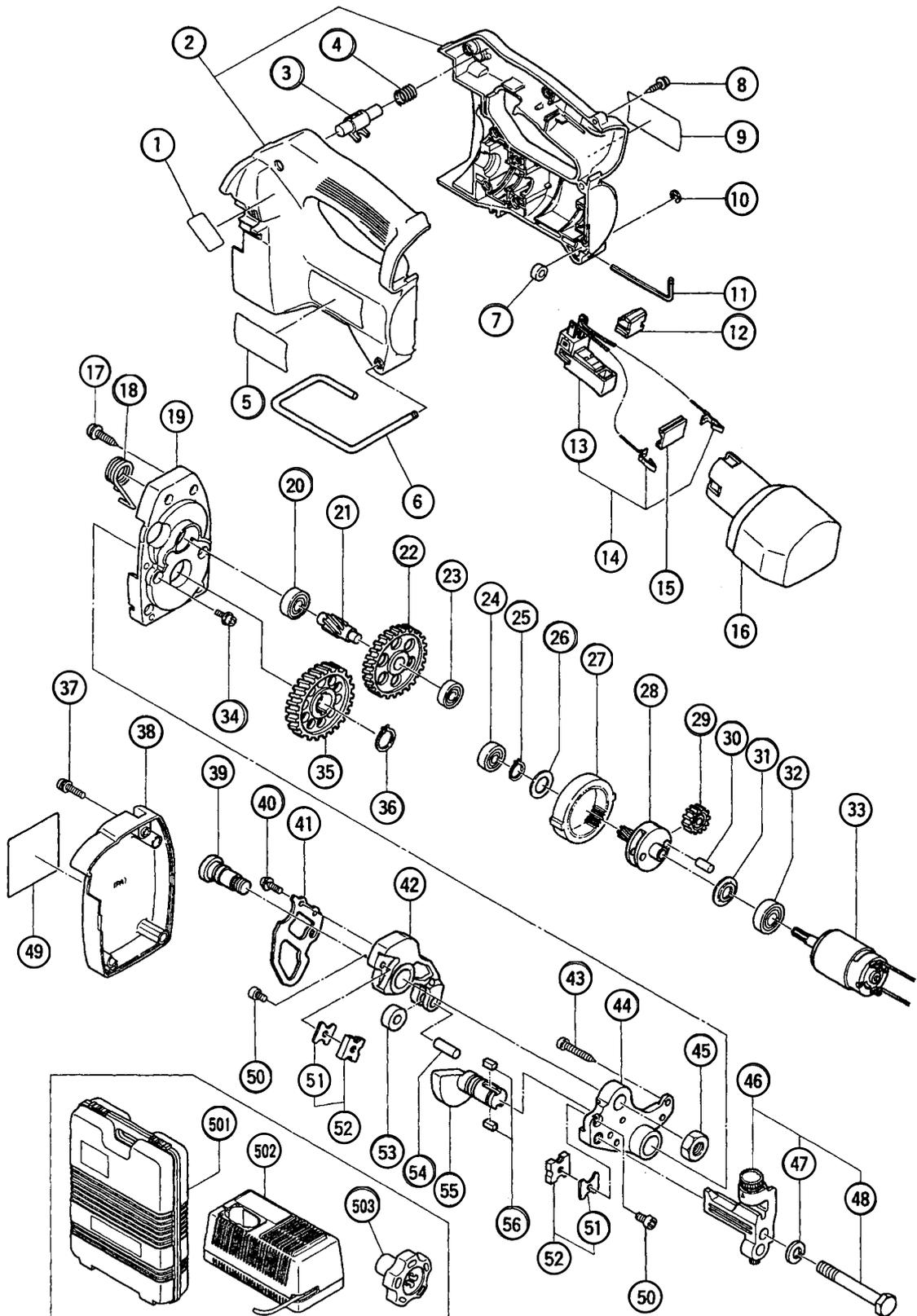
9. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60 min.	
	Fixed								
CL 10D2		Work Flow							
					Second Pinion Ball Bearing (6001VV) Washer x 2 Ball Bearing (609VV) Retaining Ring for D15 Shaft Ring Gear Needle x 2 Idle Gear x 2				
			Hook Retaining Ring (E-type) for D4 Shaft			Pushing Button Spring Terminal Support Switch Ass'y Housing (A),(B) Set Motor			
		General Assembly	Cover	Final Gear Feather Key (5 x 5 x 10) x 2 Retaining Ring for D18 Shaft	Gear Cover Return Spring	Bolt (A) Lock Nut M12 Bracket (B) Cam Shaft Stud Guide Ass'y			
			Second Gear Third Pinion Ball Bearing (629VV) Ball Bearing (608VV)		Return Plate Bracket (A) Roller (A) Roller Pin				

ELECTRIC TOOL PARTS LIST

■ CORDLESS STUD CUTTER
Model CL 10D2

2001 · 1 · 25
(E1)



PARTS

CL 10D2

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1		CAUTION PLATE (C)	1	
2	319-416	HOUSING (A).(B) SET	1	
3	307-604	PUSHING BUTTON	1	
4	319-773	SPRING	1	
5		HITACHI LABEL	1	
6	319-401	HOOK	1	
7	307-607	WRENCH HOLDER	1	
8	301-653	TAPPING SCREW (W/FLANGE) D4X20 (BLACK)	9	
9		NAME PLATE	1	
10	968-643	RETAINING RING (E-TYPE) FOR D4 SHAFT	1	
11	944-458	HEX. BAR WRENCH 4MM	1	
12	319-839	SWITCH HOLDER	1	
13	303-988	SWITCH (IP SOLDER TYPE) W/O LOCK	1	
14	319-414	SWITCH ASS'Y	1	INCLUD.13
15	991-666	TERMINAL SUPPORT	1	
* 16	318-370	BATTERY EB 1230H (W/ENGLISH N.P.)	1	
* 16	310-378	BATTERY EB 12B (W/ENGLISH N.P.)	1	
17	305-558	TAPPING SCREW (W/FLANGE) D5X25 (BLACK)	4	
18	307-624	RETURN SPRING	1	
19	307-622	GEAR COVER	1	
20	629-VVM	BALL BEARING 629VVC2PS2L	1	
21	319-407	THIRD PINION	1	
22	319-406	SECOND GEAR	1	
23	608-VVM	BALL BEARING 608VVC2PS2L	1	
24	609-VVM	BALL BEARING 609VVC2PS2L	1	
25	939-544	RETAINING RING FOR D15 SHAFT (10 PCS.)	1	
26	302-714	WASHER	1	
27	310-254	RING GEAR	1	
28	319-405	SECOND PINION	1	
29	319-404	IDLE GEAR	2	
30	307-609	NEEDLE	2	
31	307-608	WASHER	1	
32	600-1VV	BALL BEARING 6001VVCMP2S2L	1	
33	319-413	MOTOR	1	
34	998-471	HEX. SOCKET HD. BOLT M5X12	3	
35	319-393	FINAL GEAR	1	
36	939-546	RETAINING RING FOR D18 SHAFT (10 PCS.)	1	
37	307-606	MACHINE SCREW (W/WASHERS) M4X20 (BLACK)	2	
38	319-838	COVER	1	
39	319-396	BOLT (A)	1	
40	987-203	SEAL LOCK SCREW (W/SP. WASHER) M4X12	2	
41	319-398	RETURN PLATE	1	
42	319-397	BRACKET (A)	1	
43	931-875	TAPPING SCREW D5X35	2	
44	319-395	BRACKET (B)	1	
45	949-574	LOCK NUT M12 (10 PCS.)	1	
46	309-180	STUD GUIDE ASS'Y	1	INCLUD.47,48
47	949-458	SPRING WASHER M10 (10 PCS.)	1	
48	309-621	BOLT W3/8X75	1	
49		CAUTION PLATE (F)	1	
50	998-486	SPECIAL BOLT M5X9	2	

* ALTERNATIVE PARTS

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