

PRODUCT NAME

Hitachi 4" Cutter

Model CM 4ST

C

MARKETING OBJECTIVE

The Model CM 4ST is the 4" cutter version of the low-end ST series model based on the CM 4SB. Overload strength is increased by adopting a powerful motor with maximum output of 1,950 W, while a rubber cover over the switch trigger section and lock button prevents the entry of dust, thus improving durability. We are marketing this new 4" cutter with these features to increase market share and expand sales.

APPLICATIONS

- Cutting and scribing of concrete, stone brick, tile, and similar materials

SELLING POINTS

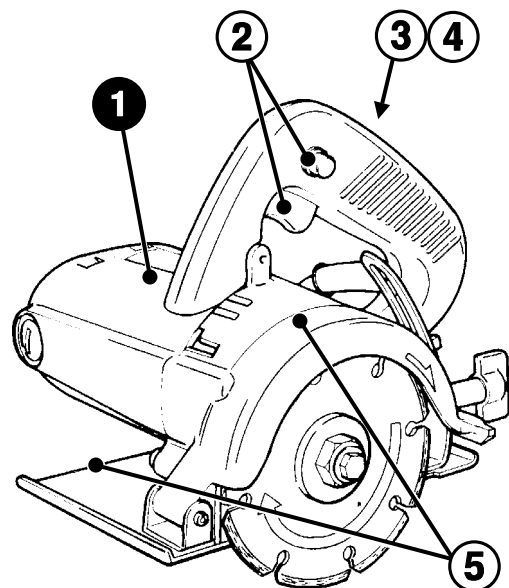
[NEW FEATURES]

- ① Powerful Motor

[SAME FEATURES AS THE CONVENTIONAL MODELS]

- ② Dust-proof Switch
- ③ Low vibration and noise
- ④ Compact body
- ⑤ Smart gear cover and base

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.



REMARK:

- For more information about HANDLING INSTRUCTIONS, visit our website at:

http://www.hitachi-koki.com/manual_view_export/

- 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
C	MAKITA	4100NHZ

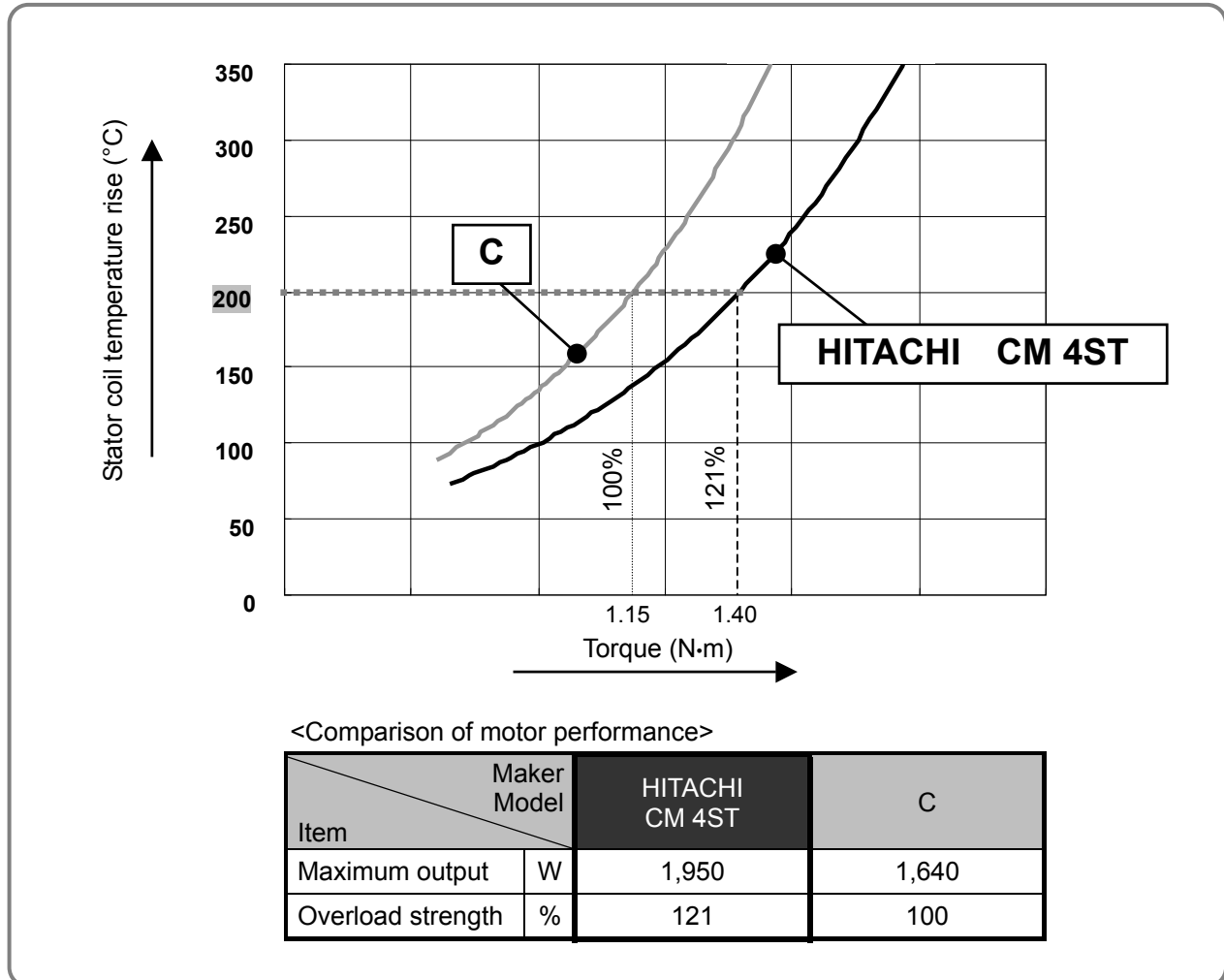
CONTENTS

	Page
SELLING POINTS	1
SPECIFICATIONS	3
1. Specifications	3
COMPARISON WITH SIMILAR PRODUCTS	4
1. Comparison of Specifications	4
PRECAUTIONS ON SALES PROMOTION	5
1. Safety Instructions	5
REPAIR GUIDE	7
1. Precautions on Disassembly and Reassembly	7
STANDARD REPAIR TIME (UNIT) SCHEDULES	11
Assembly Diagram for CM 4ST	

SELLING POINTS

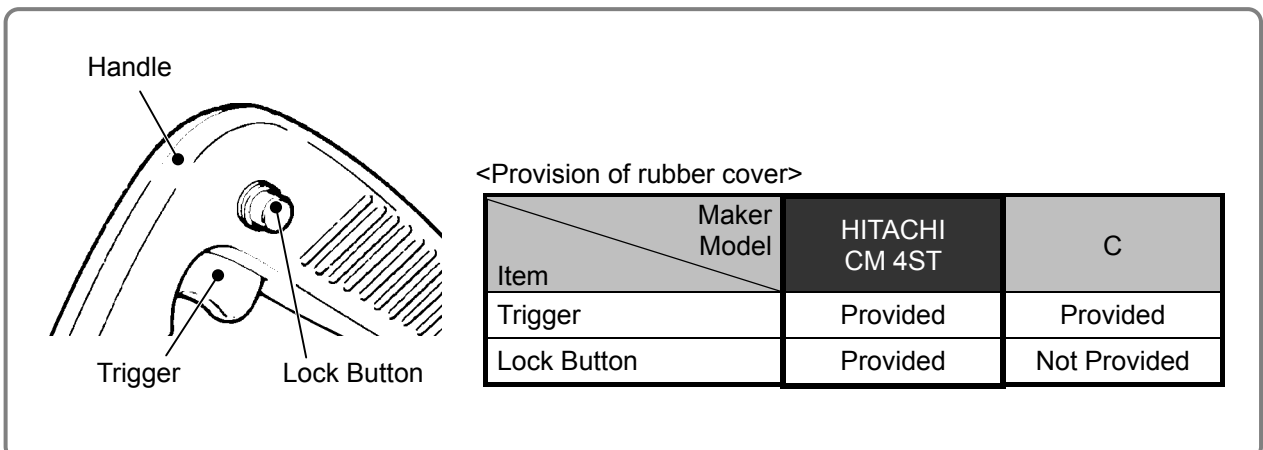
1 Excellent overload durability

The powerful motor with maximum output of 1,950 W achieves overload durability 1.2 times greater than that of the conventional model.



2 Dust-proof switch

Because the switch trigger section and lock button are both covered with rubber, this model is structured to prevent the entry of dust into the handle that contains the switch and wiring.



③ Low vibration and noise

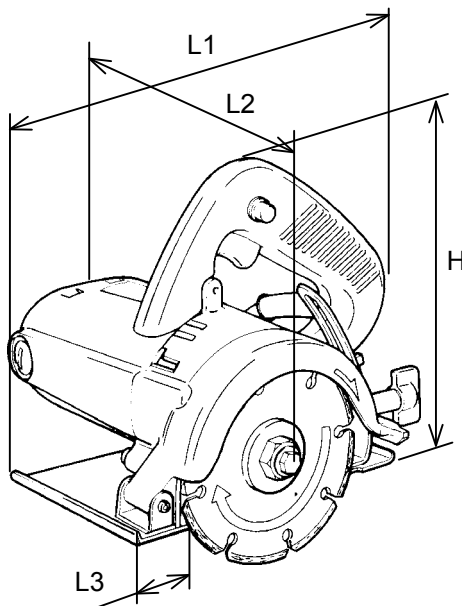
The rubber between the ball bearing and outer frame on both sides of the armature ensures less vibration and noise with no load than the conventional model.

<Vibration and noise with no load (ø110 mm rim type with diamond wheel attached)>

Item		Maker Model	HITACHI CM 4ST	C
Noise with no load	m/s ²		2.0	3.7
Vibration with no load	dB		87	90

④ Compact body

The compact body improves operability compared with the conventional model.



<Comparison of size>

Item		Maker Model	HITACHI CM 4ST	C
L1	mm		214	228
L2	mm		201	204
L3	mm		38	40
H	mm		156	168

⑤ Smart gear cover and base

The silver-painted gear cover and glossy coated base enhance product appearance compared with the conventional model.

<Comparison of product appearance>

Item		Maker Model	HITACHI CM 4ST	C
Gear cover			Paint finish	Shot finish
Base			With gloss	Without gloss

SPECIFICATIONS

1. Specifications

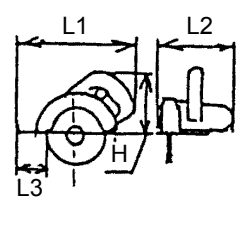
Item	Model	CM 4ST		
Capacity		Max. cutting depth 34 mm (for 110 mm diamond wheel) 31.5 mm (for 105 mm diamond wheel)		
Diamond wheel size		Max. diameter 110 mm external dia. x 1 mm thickness x 20 mm internal dia. (Korea only: 15 mm internal dia.)		
Type of motor		AC single phase commutator motor		
Type of switch		Trigger switch		
Enclosure		<ul style="list-style-type: none"> • Housing ----- Polyamide resin • Handle cover ----- Polyamide resin • Gear cover ----- Die-cast aluminum alloy • Base ----- Steel 		
Full-load current and Power input		Voltage	Full-load current	Power input
		110 V	12.4 A	1,300 W
		120 V	11.4 A	
		127 V	10.8 A	
		220 V	6.2 A	
		230 V	5.9 A	
		240 V	5.7 A	
Power input		1,300 W		
Rotation speed	No-load	13,000 min ⁻¹		
Weight	Net	2.9 kg (6.4 lbs.)		
	Gross	3.6 kg (8.0 lbs.)		
Packing		Corrugated cardboard box		
Cord	Type	Two-core cabtire cable		
	Overall length	2.0 m (6.6 ft.)		
Standard accessories		• Wrench ----- 2		
Optional accessories		<ul style="list-style-type: none"> • Water plug • Rubber adapter • Vinyl hose • Diamond wheel <ul style="list-style-type: none"> Segment type (for dry cutting) ----- Diameter 105 mm (4") Rim type (for wet cutting) ----- Diameter 110 mm (4") 		

NOTE: The weight does not include the cord and diamond wheel.

COMPARISON WITH SIMILAR PRODUCTS

1. Comparison of Specifications

(Superior specifications:)

Item		Maker Model	HITACHI		C	
			CM 4ST	CM 4SB2		
Catalog specifications	Diamond wheel dia.	mm	110 (4-3/8")	110 (4-3/8")	110 (4-3/8")	
	Max. cutting depth	mm	34 (1-3/8")	34 (1-3/8")	34 (1-3/8")	
	No-load speed	min ⁻¹	13,000	11,500	13,000	
	Power input	W	1,300	1,320	1,300	
	Weight (excluding cord)	Kg	2.9* (6.4 lbs.)	2.8* (6.2 lbs.)	2.9* (6.4 lbs.)	
Characteristics	Voltage	V	220	220	220	
	No-load	Speed	min ⁻¹	13,900	11,700	13,400
		Noise level	dB	87	85	90
		Vibration level	dB	106 (2.0 m/s ²)	103 (1.4 m/s ²)	111 (3.7 m/s ²)
	Full-load	Current	A	6.2	6.3	6.1
		Speed	min ⁻¹	8,900	7,900	8,500
		Torque	N·m	0.82 (1.11 ft-lbs.)	0.90 (1.22 ft-lbs.)	0.82 (1.11 ft-lbs.)
		Output	W	770	740	730
	Max. output	W	1,950	2,090	1,640	
	Max. torque	N·m	12.6 (17.1 ft-lbs.)	16.5 (22.4 ft-lbs.)	9.4 (12.8 ft-lbs.)	
	Weight (excluding cord)	Kg	2.99* (6.6 lbs.)	2.94* (6.5 lbs.)	2.94* (6.5 lbs.)	
Features		L1	mm	214 (8-27/64")	204 (8-1/32")	228 (8-63/64")
		L2	mm	201 (7-29/32")	204 (8-1/32")	204 (8-1/32")
		L3	mm	38 (1-1/2")	28 (1-7/64")	40 (1-37/64")
		H	mm	156 (6-9/64")	156 (6-9/64")	168 (6-39/64")
	Dust-proof structure			Trigger and Button	Trigger and Button	Trigger
Cutting depth setting			Wing bolt	Large lever	Wing bolt	

*: Excluding the cord and diamond wheel

PRECAUTIONS ON SALES PROMOTION

1. Safety Instructions

In the interest of promoting the safest and most efficient use of the Model CM 4ST Cutter by all of our customers, it is very important when concluding a sale that the salesperson carefully ensure that the buyer seriously recognizes the importance of the Handling Instructions, and fully understands the precautions listed on the Name Plate or Caution Plate attached to each tool.

A. Handling instructions

Although every effort is made in each step of design, manufacture, and inspection to provide protection against safety hazards, the dangers inherent in the use of any electric power tool cannot be completely eliminated. Accordingly, the Handling Instructions list general precautions and suggestions on the use of electric power tools, and specific precautions and suggestions on the use of impact drills to enhance the safe and efficient use of the tool by the customer. Salespersons must be thoroughly familiar with the Handling Instructions in order to offer appropriate guidance to the customer during sales promotion activities.

B. Caution on the Name Plate

Each tool is provided with a Name Plate that contains the following basic safety precautions on use of the tool.

[For Mexico and Panama]

ADVERTENCIA

- Lea las instrucciones de manejo antes de usar.

[For Taiwan]

注意

- 使用前請詳讀使用說明書

C. Precautions on usage

While basic precautions on use are listed in the Handling Instructions and on the Name Plate, make sure that the customer understands and follows the special precautions listed below.

- The Model CM 4ST is an electric power tool designed for use with water. Accordingly, it is provided with double insulation and a special waterproofing system at the handle portion to help prevent electric shock. However, since the effectiveness of insulation is affected by how the user operates the tool, normal tool wear and other factors, the operator cannot be considered protected 100% against possible electric shock. Therefore, to prevent possible serious injury, customers who frequently use water while cutting stone, tile, masonry, and similar materials should ensure that an earth leakage circuit breaker is installed.
- Before use, carefully inspect the diamond wheel without fail. If there is any indication of cracks, bending, or other damage, do not use the wheel.
- When using a segment type (dry cut) of diamond wheel, do not apply water or cutting fluid during cutting operation. (Doing so will significantly shorten the service life of the diamond wheel.)

- Single-operation cutting must be restricted to cutting depths of 20 mm or less, at slow feed speed. Cutting at deeper than 20 mm must be done in two or three separate cutting operations. Attempting single-operation cutting at deeper than 20 mm will shorten the service life of the diamond wheel, and could cause motor burnout.
- Zigzag, angled or curved cutting, the use of the side-face surface of the wheel, or other irregular cutting operations will seriously shorten the service life of the diamond wheel, and must be strictly avoided.
- As cutting operation produces dust and chips, the operator should always wear protective goggles and a dust mask.

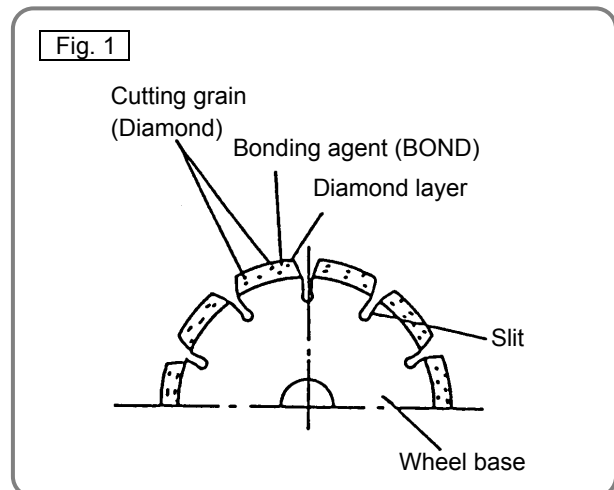
D. Diamond wheel service life

The service life of a diamond wheel depends on the type of work, the operator's level of skill, and the type and quality of the diamond wheel itself. The table below shows the average service life expectancy for the diamond wheel when used for the normal cutting of concrete. (Diamond wheels are optional accessories.)

Dry or wet	Workpiece	Diamond wheel	Cutting depth	Service life
Dry	Concrete (Compressive strength: 240 kg/cm ²)	105 dia. diamond wheel (Segment type)	10 mm	Approx. 200 m
Wet	Concrete (Compressive strength: 240 kg/cm ²)	110 dia. Diamond wheel (Rim type)	20 mm	Approx. 200 m

E. Diamond wheel

As illustrated in Fig.1, the diamond wheel consists of a thin layer of diamond material permanently fused to the outer circumference of the wheel base material. The diamond layer consists of diamond grain and its bonding agent.



F. Diamond wheel clogging

For diamond grain containing BOND, the degree of abrasion varies depending on the type of material being cut and the cutting speed. When the cutting particles produced are large, the degree of abrasion quickly expands, and the wheel cuts into the material very well. However, the degree of abrasion is less when the cutting particles produced are very small, thereby reducing the effectiveness of cutting. In such case, additional force applied in an attempt to speed up cutting will cause sparks to fly around the outer circumference of the diamond wheel due to a phenomenon known as "clogging."

In the event of clogging, do not apply additional force. Instead, withdraw the cutting edge of the wheel from the material, wait a moment, and then reapply the cutting edge to the material with little pressure. Then, when effective cutting is restored, normal cutting operation can be continued. This process is known as "dressing."

REPAIR GUIDE

1. Precautions on Disassembly and Reassembly

[Bold] numbers in the descriptions below correspond to item numbers in the Parts List and exploded assembly diagram for the Model CM 4ST.

Disassembly

Note on disassembly: Before starting disassembly, be sure to disconnect the power plug from the power supply.

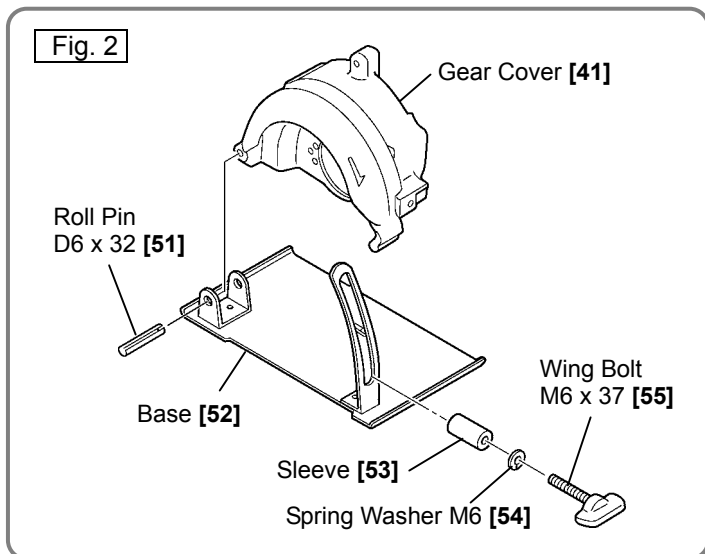
1. Removal of the diamond wheel

Remove the diamond wheel while being very careful to avoid damaging it and causing possible injury.

(Note that the Bolt (Left Hand) M7 x 15 [49] that secures the diamond wheel in place is left-hand threaded.)

2. Disassembly of the gear cover and base (Fig. 2)

- (1) Loosen the three Machine Screw (W/Washers) M5 x 25 [20] that fasten the Housing Ass'y [16] and Gear Cover [41], and then remove the Gear Cover.
- (2) Loosen the Wing Bolt M6 x 37 [55] that couples the Base [52] and Gear Cover [41], and then remove the Spring Washer M6 [54] and Sleeve [53].
- (3) Extract the Roll Pin D6 x 32 [51] that fastens the Base [52] and Gear Cover [41], and then remove the Base [52].

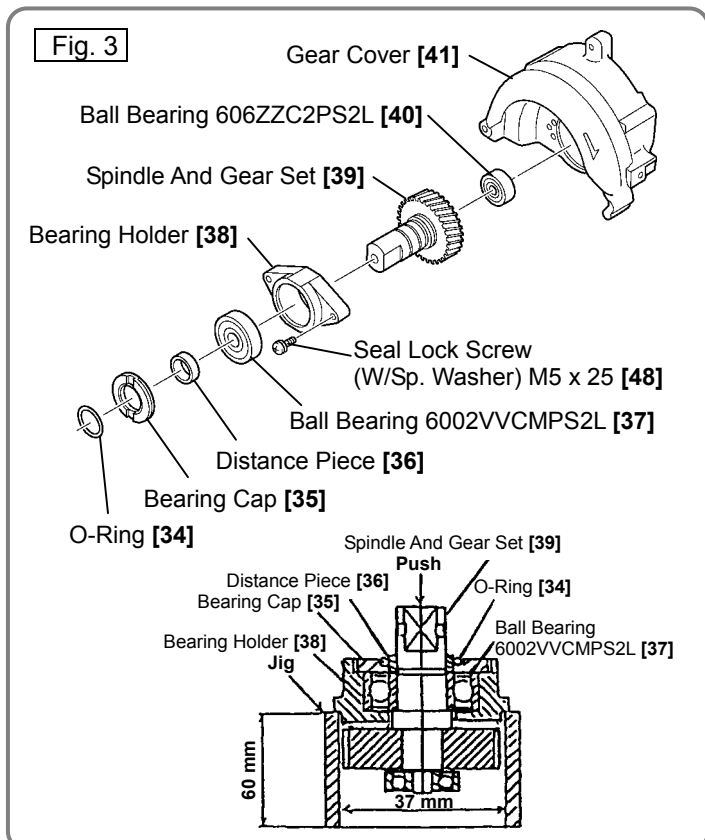


3. Disassembly of the spindle gear

- (1) Loosen the two Seal Lock Screw (W/Sp. Washer) M5 x 25 [48], and then use a wooden or plastic hammer to gently tap on the end surface of the Gear Cover [41] to loosen and remove the Bearing Holder [38], Spindle And Gear Set [39], and related parts as shown in Fig. 3.
- (2) Support the Bearing Holder [38] with an appropriate jig, and then use a hand press to push down on the end surface of the spindle, to order to remove the Spindle And Gear Set [39], Distance Piece [36], and O-Ring [34].

CAUTION:

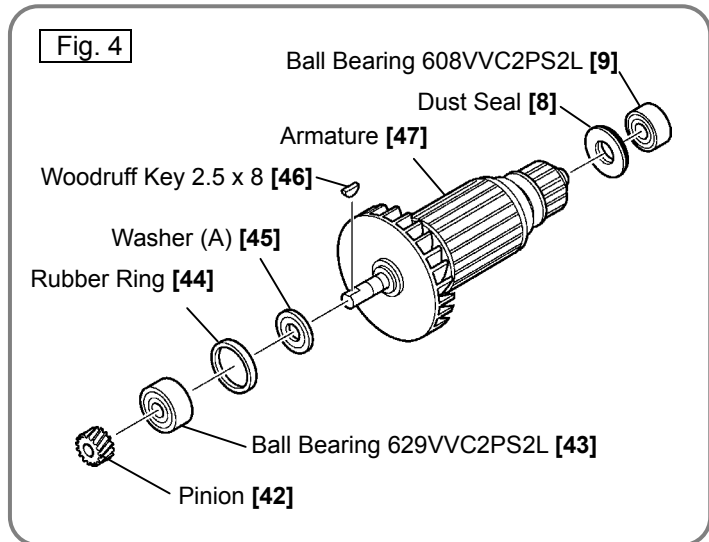
If the spindle must be replaced, replace both the spindle and gear without fail. As both parts are joined by keyless pressure fitting, attempting to join old and new components will reduce the fitting strength.



4. Disassembly of the armature

(Fig. 4)

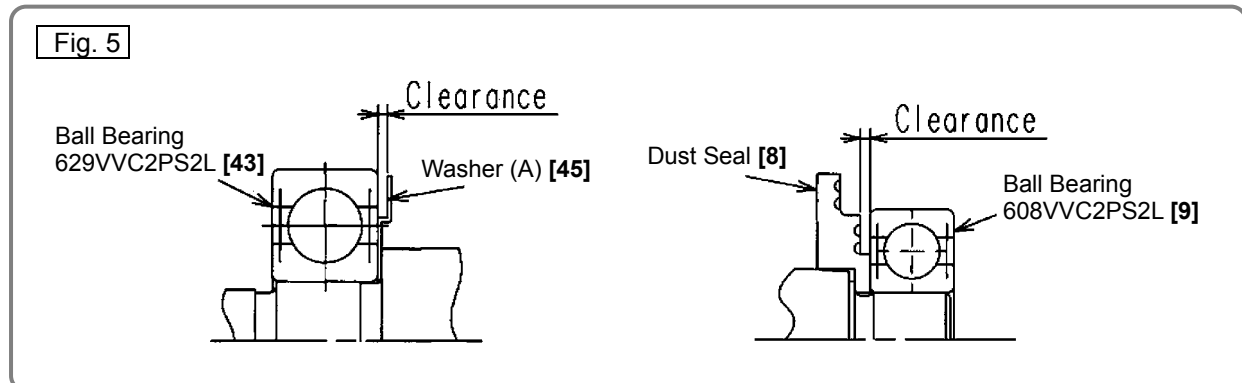
- (1) Use a wooden or plastic hammer to gently tap on the end surface of the Housing Ass'y [16], in order to loosen and remove the Armature [47].
- (2) Use a bearing puller to extract the Pinion [42] and Ball Bearing 629VVC2PS2L [43], and then remove Washer (A) [45] and the Woodruff Key 2.5 x 8 [46].
- (3) Finally, use the bearing puller to extract the Ball Bearing 608VVC2PS2L [9], and then remove the Dust Seal [8].



Reassembly

Reassembly can be conducted by reversing the disassembly procedures. However, special attention should be given to the following items.

- (1) Ensure that the Rubber Ring [44] is properly inserted into the bearing chamber of the Gear Cover [41]. During reassembly, be very careful not to damage the Rubber Ring [44].
- (2) When only replacing the Ball Bearing 629VVC2PS2L [43] and Ball Bearing 608VVC2PS2L [9], be very careful to ensure that Washer (A) [45] and the Dust Seal [8] are reassembled in the proper direction, as shown in Fig. 5.



Application of lubricant

- Insert 5 g of grease (Nippeco SEP-3A, Code No.930035 recommended) into the gear chamber of the Gear Cover [41].
- Grease the teeth of the Pinion [42] and the gear of the Spindle And Gear Set [39] (by using a brush).
- Liberally apply grease (Nippeco SEP-3A, Code No.930035 recommended) to the inner and outer surfaces of the Rubber Ring [44] and O-Ring [34].

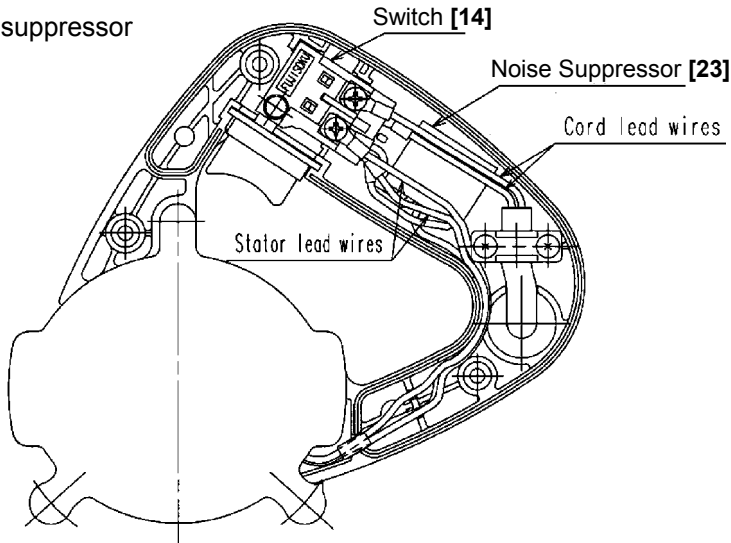
Screw Tightening Torques

- Tapping Screw (W/Flange) D4 x 20 (Black) [18] -----2.0 ± 0.5 N•m (20 ± 5 kgf•cm)
- Hex. Hd. Tapping Screw D5 x 65 [3] -----3.4 ± 0.5 N•m (35 ± 5 kgf•cm)
- Machine Screw (W/Washers) M5 x 25 [20] -----3.4 ± 0.7 N•m (35 ± 7 kgf•cm)
- Seal Lock Screw (W/Sp. Washer) M5 x 25 [48] -----3.9 ± 1.0 N•m (40 ± 10 kgf•cm)
- Machine Screw M3.5 (Switch [14]) -----0.6 ± 0.2 N•m (6 ± 1.5 kgf•cm)

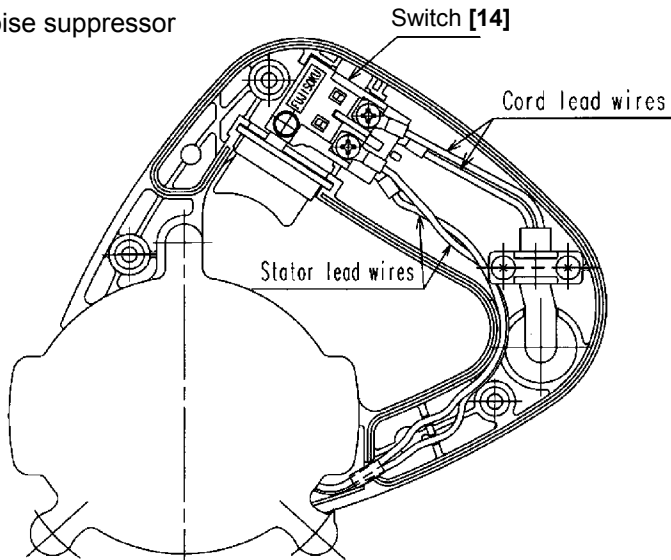
Internal Wiring

Fig. 6

(1) For products with noise suppressor



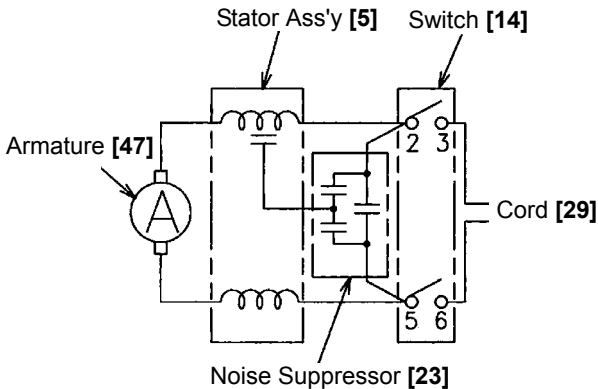
(2) For products without noise suppressor



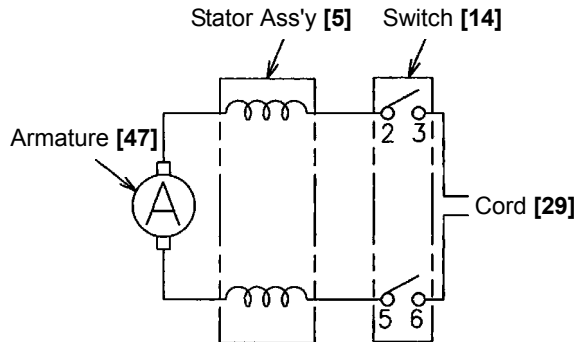
Wiring Diagram

Fig. 7

(1) For products with noise suppressor



(2) For products without noise suppressor



Insulation Tests

Upon completing reassembly after repair, measure the insulation resistance and conduct a dielectric strength test.

Insulation resistance: 7 MΩ or more using AC 500 V megohm tester

Dielectric strength: AC 4,000 V/1 minute, with no abnormalities (220 V to 240 V)

AC 2,500 V/1 minute, with no abnormalities (110 V to 127 V)

No-Load Current Value

After no-load operation for 30 minutes, the no-load current values should be as follows:

Voltage (V)	110	120	127	220	230	240
Current (A) Max.	5.0	4.4	4.6	2.7	2.6	2.7

Product Accuracy

Diamond wheel runout: Deflection of the diamond wheel must be 0.6 mm or less at the 100 mm dia. points.

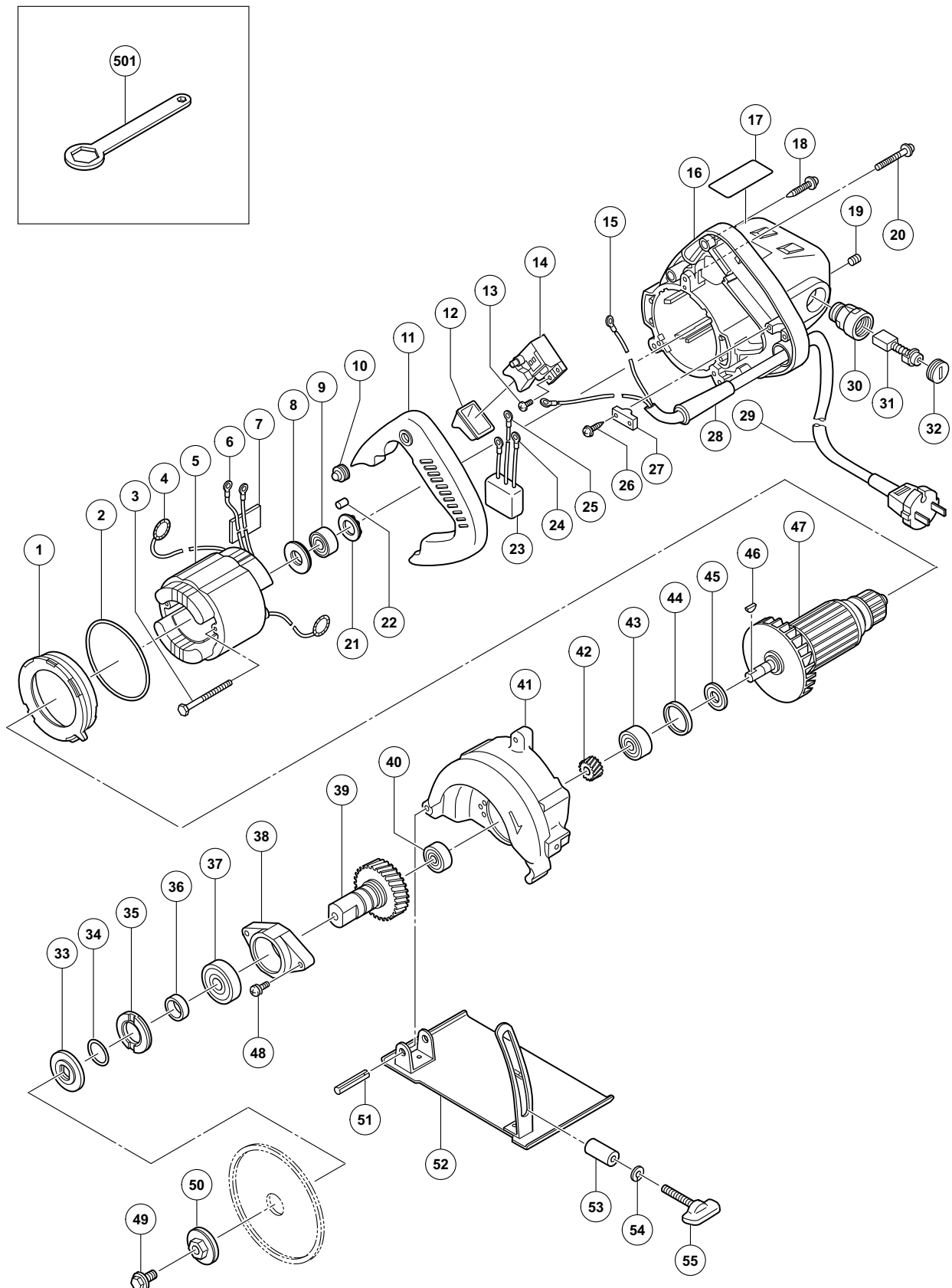
STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable Fixed	10	20	30	40	50	60 min.
CM 4ST	General Assembly	Work Flow					
		Handle Cover Cord Cord Armor Switch					
		Housing Ass'y Stator Ass'y					
		Armature Ball Bearing 608VVC2PS2L Ball Bearing 629VVC2PS2L					
		Pinion Gear Cover Spindle And Gear Set Bearing Holder Bearing Cap Ball Bearing 606ZZC2PS2L Ball Bearing 6002VVCMP2SL					
	Base						

ELECTRIC TOOL PARTS LIST

CUTTER
Model CM 4ST

2010·8·16
(E1)



PARTS

CM 4ST

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	317-758	FAN GUIDE	1	
2	317-756	O-RING	1	
3	960-251	HEX. HD. TAPPING SCREW D5 X 65	2	
4	930-703	BRUSH TERMINAL	2	
*	5	340-783C	1	STATOR ASS'Y 110V INCLUD. 4
*	5	340-783G	1	STATOR ASS'Y 110V INCLUD. 4 FOR TPE
*	5	340-783D	1	STATOR ASS'Y 120V-127V INCLUD. 4
*	5	340-783E	1	STATOR ASS'Y 220V INCLUD. 4
*	5	340-783F	1	STATOR ASS'Y 230V-240V INCLUD. 4
6	930-804	TERMINAL M4.0 (10 PCS.)	2	
7	983-858	SEAL PACKING	1	
8	317-757	DUST SEAL	1	
9	608-VVM	BALL BEARING 608VVC2PS2L	1	
10	956-866	RUBBER COVER (B)	1	
11	333-137	HANDLE COVER	1	
12	303-328	SWITCH RUBBER COVER	1	
13	305-499	MACHINE SCREW (W/WASHER) M3.5 X 6	4	
14	325-531	SWITCH (1P SCREW TYPE) W/LOCK	1	INCLUD. 13
*	15	980-063	2	TERMINAL
*	15	930-804	2	TERMINAL M4.0 (10 PCS.) FOR VEN, TPE, BRA (127V)
16	317-752	HOUSING ASS'Y	1	INCLUD.19,30
17		NAME PLATE	1	
18	301-653	TAPPING SCREW (W/FLANGE) D4 X 20 (BLACK)	3	
19	938-477	HEX. SOCKET SET SCREW M5 X 8	2	
20	317-751	MACHINE SCREW (W/WASHERS) M5 X 25	3	
21	316-394	THRUST WASHER	1	
22	931-701	BEARING LOCK	1	
*	23	994-273	1	NOISE SUPPRESSOR FOR TPE,KOR
*	24	980-063	2	TERMINAL FOR NOISE SUPPRESSOR
*	25	938-108	1	TERMINAL FOR NOISE SUPPRESSOR
26	984-750	TAPPING SCREW (W/FLANGE) D4 X 16	2	
27	960-266	CORD CLIP	1	
*	28	953-327	1	CORD ARMOR D8.8
*	28	938-051	1	CORD ARMOR D10.1
*	29	500-234Z	1	CORD (CORD ARMOR D8.8)
*	29	500-474Z	1	CORD (CORD ARMOR D10.1) FOR VEN, TPE
*	29	500-423Z	1	CORD (CORD ARMOR D8.8) FOR SIN, KUW
*	29	500-468Z	1	CORD (CORD ARMOR D8.8) FOR THA
*	29	500-435Z	1	CORD (CORD ARMOR D8.8) FOR HKG
*	29	500-434Z	1	CORD (CORD ARMOR D8.8) FOR MEX, PAN (120V)
*	29	500-488Z	1	CORD (BRA) (CORD ARMOR D8.8) FOR BRA (127V)
*	29	500-487Z	1	CORD (CORD ARMOR D8.8) FOR BRA (220V)
30	958-900	BRUSH HOLDER	2	
31	999-043	CARBON BRUSH (1 PAIR)	2	
32	945-161	BRUSH CAP	2	
*	33	956-879	1	WASHER (B)
*	33	333-125	1	WASHER (C) FOR KOR
34	944-486	O-RING (1AP-20)	1	
35	956-872	BEARING CAP	1	
36	303-323	DISTANCE PIECE	1	

PARTS

CM 4ST

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
37	600-2VV	BALL BEARING 6002VVCMP2L	1	
38	333-240	BEARING HOLDER	1	
39	333-241	SPINDLE AND GEAR SET	1	
40	606-ZZM	BALL BEARING 606ZZC2PS2L	1	
41	333-126	GEAR COVER	1	
42	333-242	PINION	1	
43	629-VVM	BALL BEARING 629VVC2PS2L	1	
44	318-647	RUBBER RING	1	
45	958-915	WASHER (A)	1	
46	940-220	WOODRUFF KEY 2.5 X 8	1	
* 47	360-900C	ARMATURE 110V	1	
* 47	360-900D	ARMATURE 120V-127V	1	
* 47	360-900E	ARMATURE 220V	1	
* 47	360-900F	ARMATURE 230V-240V	1	
48	303-327	SEAL LOCK SCREW (W/SP. WASHER) M5 X 25	2	
49	303-326	BOLT (LEFT HAND) M7 X 15	1	
50	956-878	WASHER (A)	1	
51	949-576	ROLL PIN D6 X 32 (10 PCS.)	1	
52	317-759	BASE	1	
53	303-330	SLEEVE	1	
54	949-455	SPRING WASHER M6 (10 PCS.)	1	
55	303-331	WING BOLT M6 X 37	1	

STANDARD ACCESSORIES

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
501	941-057	WRENCH (HEX. SOCKET 10/19.2MM)	2	

OPTIONAL ACCESSORIES

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
601	303-648	WATER PLUG	1	
602	956-885	RUBBER CONNECTOR	1	
603	956-883	HOSE	1	
* 604	321-192	DIAMOND WHEEL (SEGMENT) 106MM-D20 HOLE	1	EXCEPT FOR KOR
* 605	939-586	DIAMOND WHEEL (RIM) 100MM-D20 HOLE	1	EXCEPT FOR KOR
* 606	939-587	DIAMOND WHEEL (RIM) 110MM-D20 HOLE	1	EXCEPT FOR KOR

