

MODEL

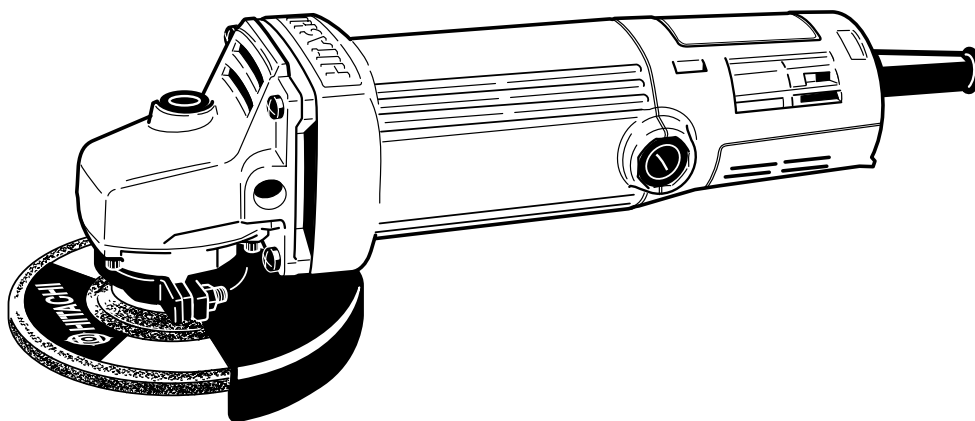
G 10SF3

HITACHI
POWER TOOLS

DISC GRINDER
G 10SF3

TECHNICAL DATA
AND
SERVICE MANUAL

G



LIST No. E243

Aug. 2001

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 |
| C | MAKITA | 9523NB |
| | | |
| | | |

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1. PRODUCT NAME

Hitachi Disc Grinder, Model G 10SF3 [100 mm (4")]

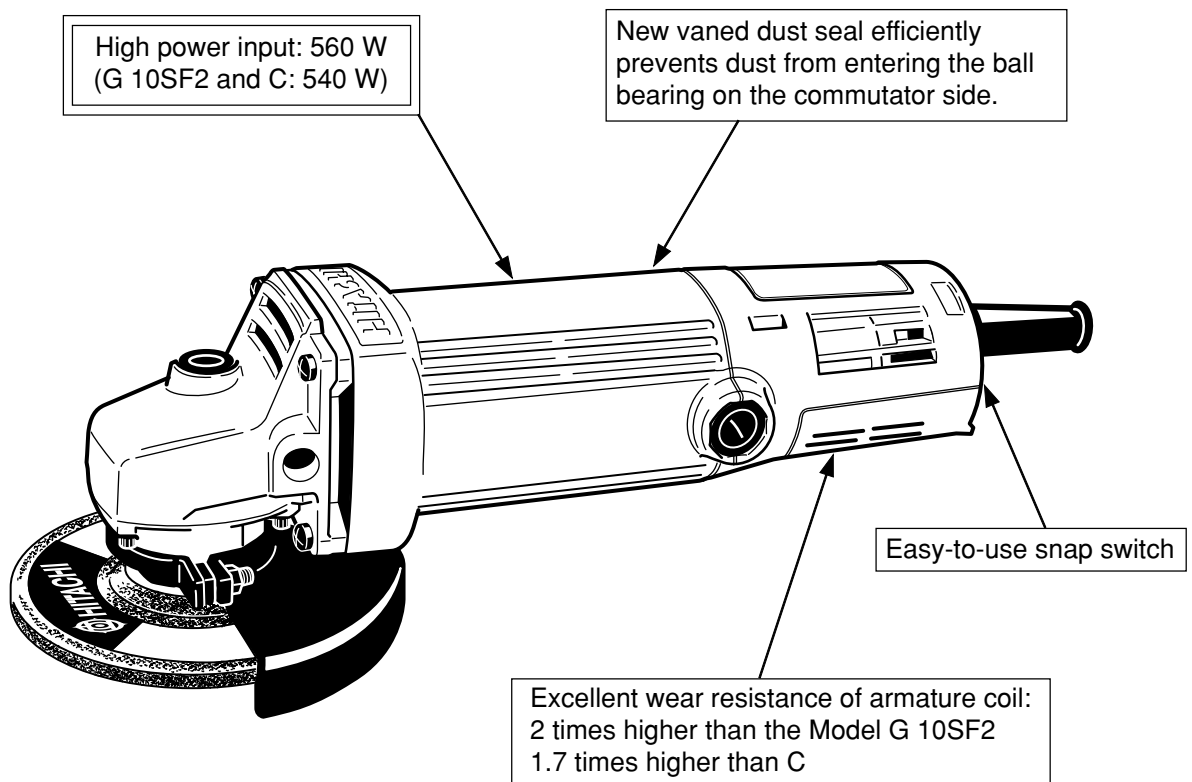
2. MARKETING OBJECTIVE

The current Model G 10SF2 has been favorably accepted in the compact disc grinder market in China. However, recent Chinese market is fiercely competitive due to a price war. To address the severe situation, we have developed a new disc grinder Model G 10SF3 that is comprised of parts manufactured in China. The Model G 10SF3 is more powerful than the current Model G 10SF2 thanks to the improved cooling efficiency of the motor. The components of the Model G 10SF3 are the same as those of the Model G 10SF2 except the enclosure and the wiring components.

3. APPLICATIONS

- Removal of casting fin and finishing of various types of steel, bronze, aluminum, and other metallic materials and castings
- Grinding of welded sections, or sections cut by acetylene torch
- Grinding of slate, brick, marble and similar materials

4. SELLING POINTS

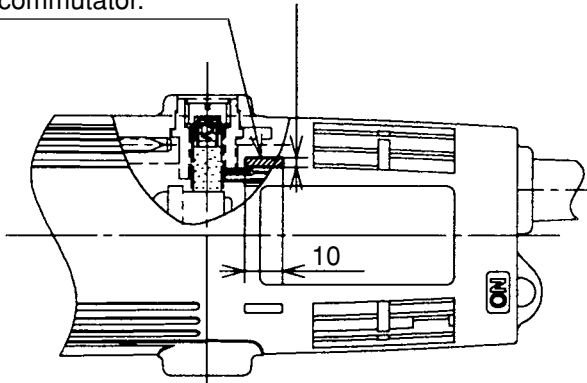


- Excellent wear resistance of armature coil

Wear resistance of the armature coil is greatly increased thanks to the smaller air vent to minimize sucking dust and fine gravel into the machine.

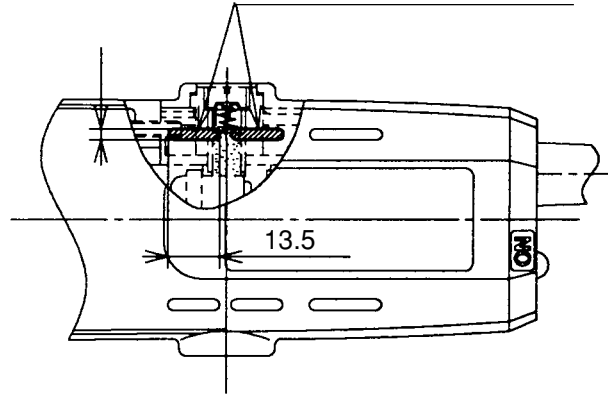
(Comparison of air vents near the commutator)

Smaller air vent is provided near the commutator.



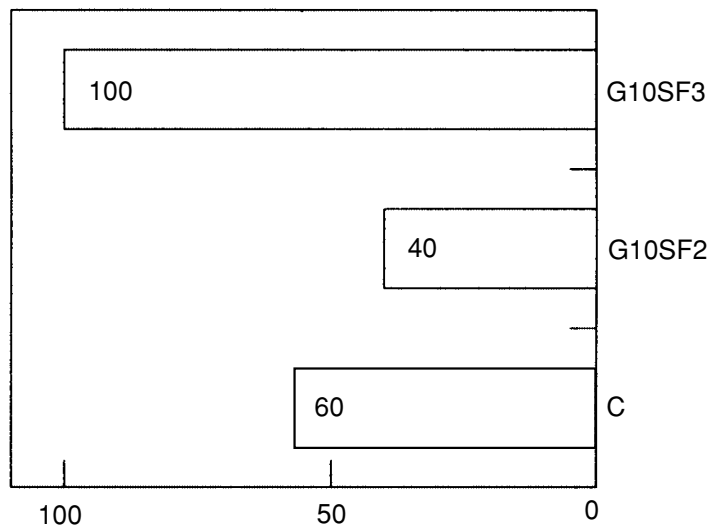
G 10SF3

Two air vents are provided near the commutator.



G 10SF2

(Comparison of wear resistance of armature coils when dust and fine gravel are sucked into the machines)



5. SPECIFICATIONS

| Item | | Model | G 10SF3 | | | | | | | |
|----------------------------------|---------------------------|--|---------|--|-------------|-----|-------------|-----|-----------------|-----|
| Depressed center wheel | Dimensions | O.D. 100 mm (4") x Thickness 4 mm (5/32") x I.D. 16 mm (5/8") Offset amount: 4 mm (5/32") | | | | | | | | |
| | Max. peripheral speed | 4,300 m/min (14,100 ft/min, 72 m/s) | | | | | | | | |
| Power source | | AC single phase 50 or 60 Hz | | | | | | | | |
| Voltage, current and power input | | <table><tr><td>Voltage (V)</td><td>220</td></tr><tr><td>Current (A)</td><td>2.7</td></tr><tr><td>Power input (W)</td><td>560</td></tr></table> | | | Voltage (V) | 220 | Current (A) | 2.7 | Power input (W) | 560 |
| Voltage (V) | 220 | | | | | | | | | |
| Current (A) | 2.7 | | | | | | | | | |
| Power input (W) | 560 | | | | | | | | | |
| No-load speed | | 12,000/min | | | | | | | | |
| Type of motor | | AC single phase commutator motor | | | | | | | | |
| Enclosure | Housing tail cover | Glassfiber reinforced polycarbonate resin (Green) | | | | | | | | |
| | Gear cover | Aluminum alloy die casting (Metallic silver) | | | | | | | | |
| | Inner cover packing gland | Aluminum alloy die casting | | | | | | | | |
| Type of switch | | Snap switch | | | | | | | | |
| Weight | Net: *1 | 1.4 kg (3.09 lbs.) | | | | | | | | |
| | Gross: | 2.4 kg (5.3 lbs.) | | | | | | | | |
| Packaging | | Corrugated cardboard box | | | | | | | | |
| Standard accessories*2 | | Depressed center wheel [Outer dia.100 mm (4")] 1 Wrench 1 | | | | | | | | |

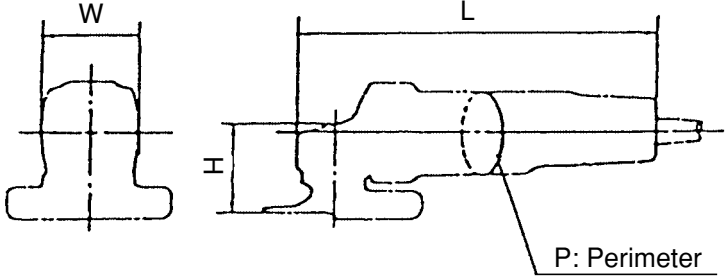
*1 : Net weight excludes cord, depressed center wheel, wheel nut, wheel washer and wheel guard.

*2 : Standard accessories are subject to change without prior notice.

6. COMPARISONS WITH SIMILAR PRODUCTS

6-1. Specification Comparisons

| Maker | | | HITACHI | | C |
|-------------------|------|----|---------|---------|--------|
| Model | | | G 10SF3 | G 10SF2 | |
| Wheel diameter | mm | | 100 | 100 | 100 |
| No-load speed | /min | | 12,000 | 12,000 | 11,000 |
| Power input | W | | 560 | 540 | 540 |
| Power output | W | | 380 | 330 | 290 |
| Max. power output | W | | 640 | 610 | 620 |
| Dimensions | L | mm | 254 | 254 | 256 |
| | W | mm | 67 | 67 | 81 |
| | H | mm | 60 | 60 | 70 |
| | P | mm | 200 | 200 | 195 |
| Weight * | kg | | 1.4 | 1.4 | 1.4 |
| | | | (1.5) | (1.5) | (1.5) |
| Type of switch | — | | Snap | Snap | Slide |



P: Perimeter

* Weight excludes cord, depressed center wheel, wheel nut, wheel washer and wheel guard.

6-2. Comparisons in Torque vs. Rotation Speed and Stator Coil Temperature Rise

Figure 1 shows comparisons of the rotation speed and the stator coil temperature rise between a competitive model with respect to torque. Torque represents the magnitude of load, i.e., the amount of pressing force, cutting depth and forward force in actual cutting jobs. This shows that a powerful motor is less likely to burn out because it has both a minimum drop of rotation speed even at a greater torque and a lower stator coil temperature rise at the same torque.

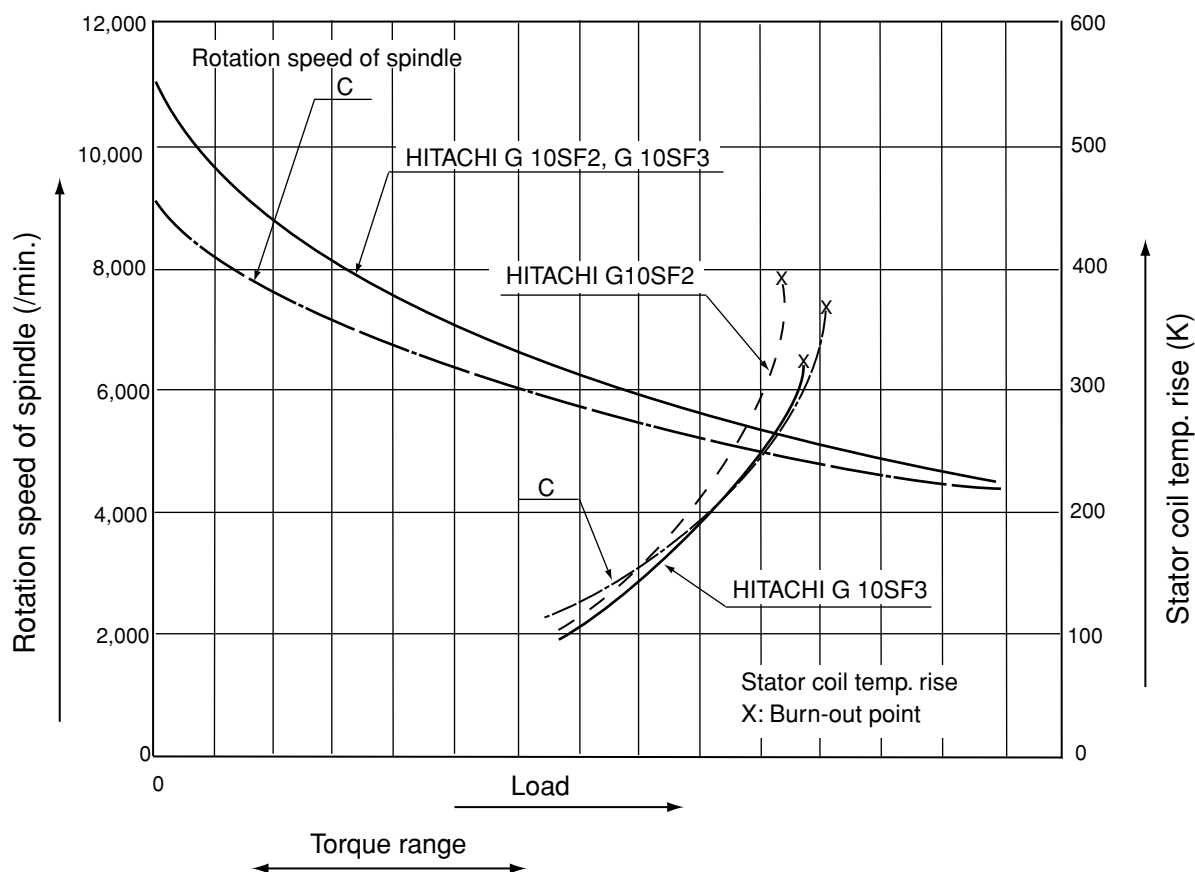


Fig. 1 Comparisons in torque vs. rotation speed and stator coil temperature rise

Figure 1 indicates the followings:

- ① The motor speed of the Model G 10SF3 is higher than that of C at the same torque. This means that the working efficiency of the Model G 10SF3 is superior to C (Model G 10SF2 is also superior to C).
- ② The stator coil temperature rise of the Model G 10SF3 is lower than the Model G 10SF2 thanks to the improved cooling mechanism and it is equivalent to that of C. This means that the Model G 10SF3 has a burn-resistant and tenacious motor.

7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Model G 10SF3 Disc Grinder 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 Name Plate attached to each tool.

7-1. Handling Instructions

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

7-2. Caution Plate (For China only)

The following caution is listed on the Name Plate attached to the main body of each tool.

注意：使用前请仔细阅读使用说明书

7-3. Precautions on Usage

Instruct the customer to pay particular attention to the two points described below.

(1) Use of the side handle (Optional accessory)

When the side handle is used, the customer must be instructed to ensure without fail that the wheel guard is mounted in the manner so that it protects the operator's hand from coming into contact with the depressed center wheel.

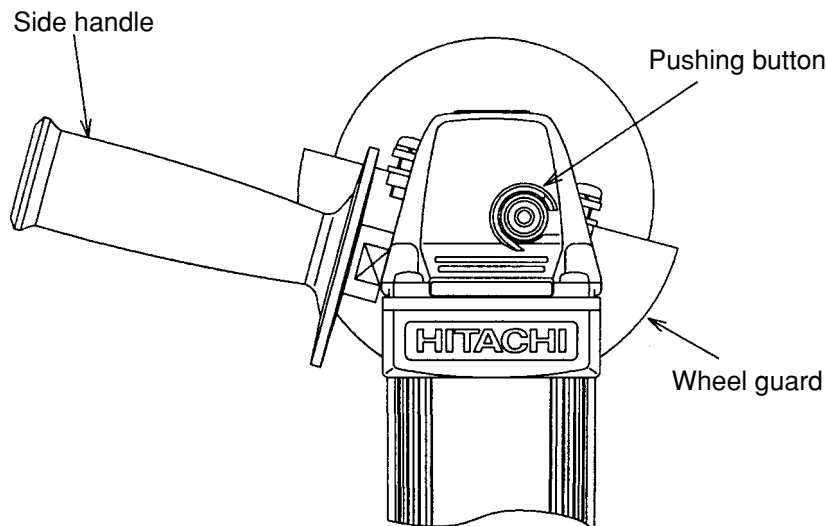


Fig.2

(2) Never press the pushing button while the depressed center wheel is rotating.

If the pushing button (Fig. 2) is pressed while the depressed center wheel is rotating, the spindle will stop immediately. In such a case, there is a danger that the wheel nut may be loosened, so that the depressed center wheel flies out unexpectedly and may cause possibly serious injury.

8. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

Procedures and precautions for disassembly and reassembly are described below. The **[Bold]** numbers in the descriptions below correspond to the item numbers in the Parts List and the exploded assembly diagram.

8-1. Disassembly

(1) Disassembly of the armature

- ① Remove the Brush Caps **[39]**, and take out the Carbon Brushes **[40]**.
- ② Loosen the four Tapping Screws D5 x 25 **[1]** which fix the Gear Cover Ass'y **[3]**, and remove the Inner Cover **[8]** together with the Armature 220 V **[9]** from the Housing **[34]**.

(2) Disassembly of the pinion

Loosen the Special Nut M7 **[4]** on the Armature 220 V **[9]**, and remove the Pinion **[5]**.

(3) Disassembly of the stator

- ① Remove the Armature 220 V **[9]** and loosen the Tapping Screw (W/Flange) D4 x 25 (Black) **[48]** to remove Tail Cover (B) **[47]**.
- ② Loosen the Machine Screw (W/Washer) M3.5 x 6 **[49]** that secures the internal wire of the Cord **[51]** to the Switch **[50]** and also the screw on the cord side of the Pillar Terminal **[43]**. Remove the two internal wires from the Cord **[51]**.
- ③ Remove the Tapping Screw (W/Flange) D4 x 40 **[38]** and the Tapping Screw (W/Flange) D4 x 20 (Black) **[37]**. Remove Tail Cover (A) **[36]** then remove the Earth Terminal **[44]** from the Housing **[34]**.
- ④ Disconnect the two Internal Wires **[13]** coming from the Brush Holder **[41]** from the Stator **[11]**.
- ⑤ Remove the Internal Wires **[12]** and **[14]** from the Stator **[11]** with the Pillar Terminal **[43]**, Noise Suppressor **[46]** and Switch **[50]** connected.
- ⑥ Loosen the Hex. Hd. Tapping Screw D4 x 65 **[10]** securing the Stator **[11]**. Remove the Stator **[11]** from the Housing **[34]**.

(4) Disassembly of the gear (Fig. 3)

- ① Loosen the Seal Lock Screw (W/Sp. Washer) M4 x 12 [23] fixing the Packing Gland [22], and remove the Packing Gland [22] from the Gear Cover Ass'y [3].
- ② Support the button of the Packing Gland [22] with a jig, and push down on the upper portion of the Spindle M10 x P1.5 [25] with a hand press until the end surface of the Woodruff Key 2.5 x 8 [24] contacts the Ball Bearing 6001VVCMP2L [20] and the Spindle M10 x P1.5 [25] cannot be pushed down any more. Be careful not to deform the Fringer [26].
- ③ Turn the Packing Gland [22] upside down and fix it, then push down the Spindle M10 x P1.5 [25].
- ④ Insert the gear puller J-128 (use of a steel plate is permitted as a substitute) between the Gear [17] and the Packing Gland [22], and push down the Spindle M10 x P1.5 [25] with a hand press to remove it.

- Replace the Ball Bearing 6001VVCMP2L [20] with new one every time the Gear is disassembled because the force to pull out the Gear is applied to the Ball Bearing 6001VVCMP2L [20].

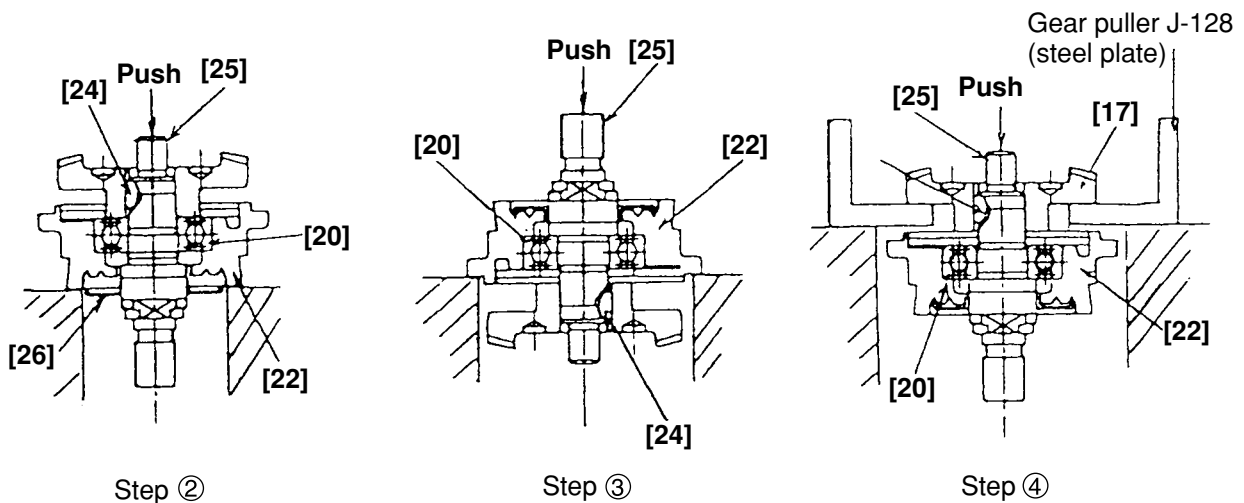


Fig. 3

8-2. Reassembly

Push the parts together in the reverse order of disassembly, with the precautions given below.

- (1) Ensure that the terminals of the stator are not bent or otherwise damaged.
- (2) Generously lubricate the teeth of Gear [17] and Pinion [5] with grease. Rub grease onto the teeth with your fingers so that the grease reaches each tooth bottom. Note that the Gear [17] and the Pinion [5] may wear faster than normal if under-lubricated.
- (3) Be sure to soak the inner diameter of the Felt Packing [21] with machine oil. Otherwise, its dust-sealing function will fail to work properly, resulting in earlier damage of the Ball Bearing 6001VVCMP2L [20].
- (4) When replacing the Armature 220 V [9] and the Ball Bearing 608VVC2PS2L [7] on the commutator side, press inward on the Dust Seal [15] while taking care of its direction until the end face of the Dust Seal [15] contacts against the end surface of the Armature 220 V [9] and make sure that Dust Seal [15] cannot be turned freely by hand. Keep the end face of the armature shaft approximately 0.2 mm (reference) distance inward of the end face of the Ball Bearing 608VVC2PS2L [7]. (See Fig. 5.)

The Dust Seal [15] is an important element for improved dust protection of the Ball Bearing 608VVC2PS2L [7]. Be sure to replace with a new one each time.

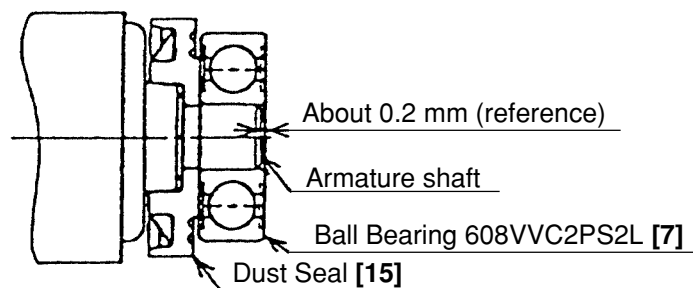


Fig. 5

- (5) When connecting the Earth Terminal [44] to the internal wire (the middle wire among three) of the Noise Suppressor [46], strip the insulation sheath on the internal wire by about 6 mm and press connect it together with the Earth Terminal [44] with a clamping tool available on the market.

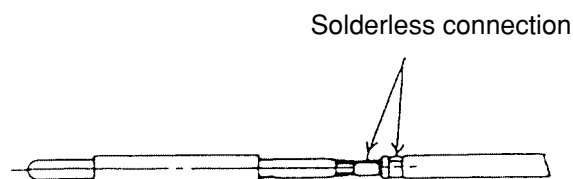


Fig. 6

- (6) Connect the Internal Wires [12], [13] and [14] to the Stator [11] correctly as shown in Fig. 7.
- (7) Connect each internal wire correctly as shown in Fig. 8 being careful not to put them between the parts.

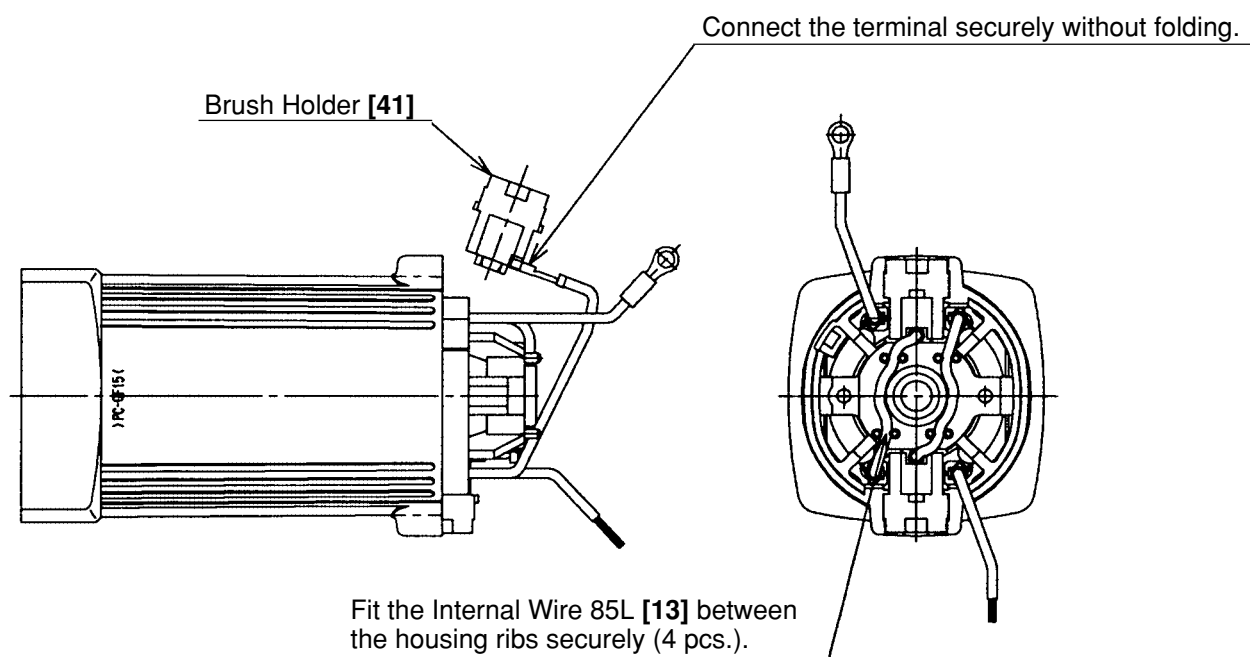


Fig. 7

Fit each internal wire between the ribs.

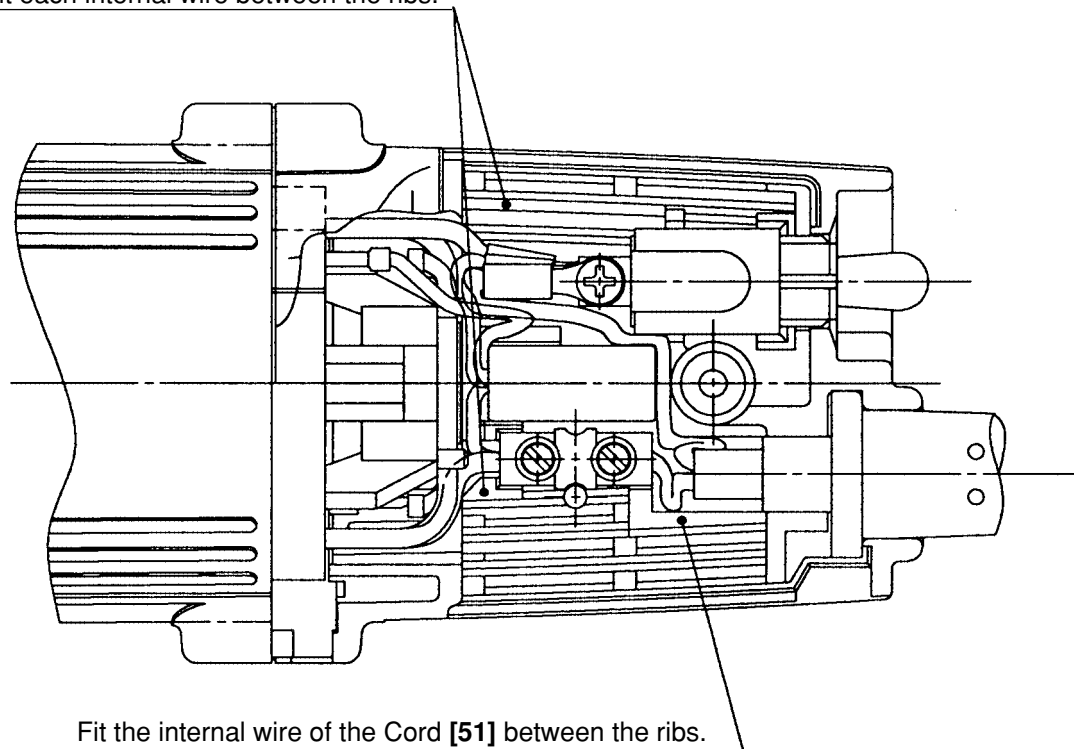


Fig. 8

Mixed oil: A mixture of Hitachi Power Tool Grease No. 2 (Unilube No. 00 Code No. 939302 is recommended)
and turbine oil

- ### 8-3. Lubrication Points and Types of Lubricant

- Generously rub grease onto the gear and pinion.

- Mixed oil: Mixture of Hitachi Power Tool Grease No. 2
(Unilube No. 00, Code No. 939302) and
turbine oil
Mixture ratio 1:1 (weight ratio)

| | |
|---|---|
| D4 Tapping Screws [10] [37] [38] [48] | 2.0 ± 0.5 N•m (20±5 kgf•cm, 1.5 ± 0.4 lb-lbs.) |
| M4 Slotted Hd. Tapping Screw (Seal Lock) [6] | 1.8 ± 0.4 N•m (18±4 kgf•cm, 1.3 ± 0.3 lb-lbs.) |
| M4 Seal Lock Screws (W/Sp. Washer) [18] [23] | 1.8 ± 0.4 N•m (18±4 kgf•cm, 1.3 ± 0.3 lb-lbs.) |
| D5 Tapping Screw [1] | 2.9 ± 0.5 N•m (30±5 kgf•cm, 2.2 ± 0.4 lb-lbs.) |
| M5 Machine Screw (W/Sp. Washer) [27] | 1.6 ± 0.4 N•m (16 ± 4 kgf•cm, 1.2± 0.3 lb-lbs.) |
| M7 Special Nut [4] | 6.4 ± 1.0 N•m (65±10 kgf•cm, 4.7± 0.7 lb-lbs.) |
| Brush Cap [39] | 0.6 ± 0.2 N•m (6±2 kgf•cm, 0.4± 0.1 lb-lbs.) |

8-6. Insulation Tests

On completion of disassembly and repair, carefully measure the insulation resistance and conduct a dielectric strength test.

Insulation resistance: 7 M Ω or more with 500 V DC Megohm Tester

Dielectric strength test: AC 4,000 V/1 minute with no abnormalities

8-7. No-load Current Value

After no-load running for 30 minutes, the no-load current value should be as follows.

| | |
|------------------|-----|
| Voltage (V) | 220 |
| Current (A) max. | 1.1 |

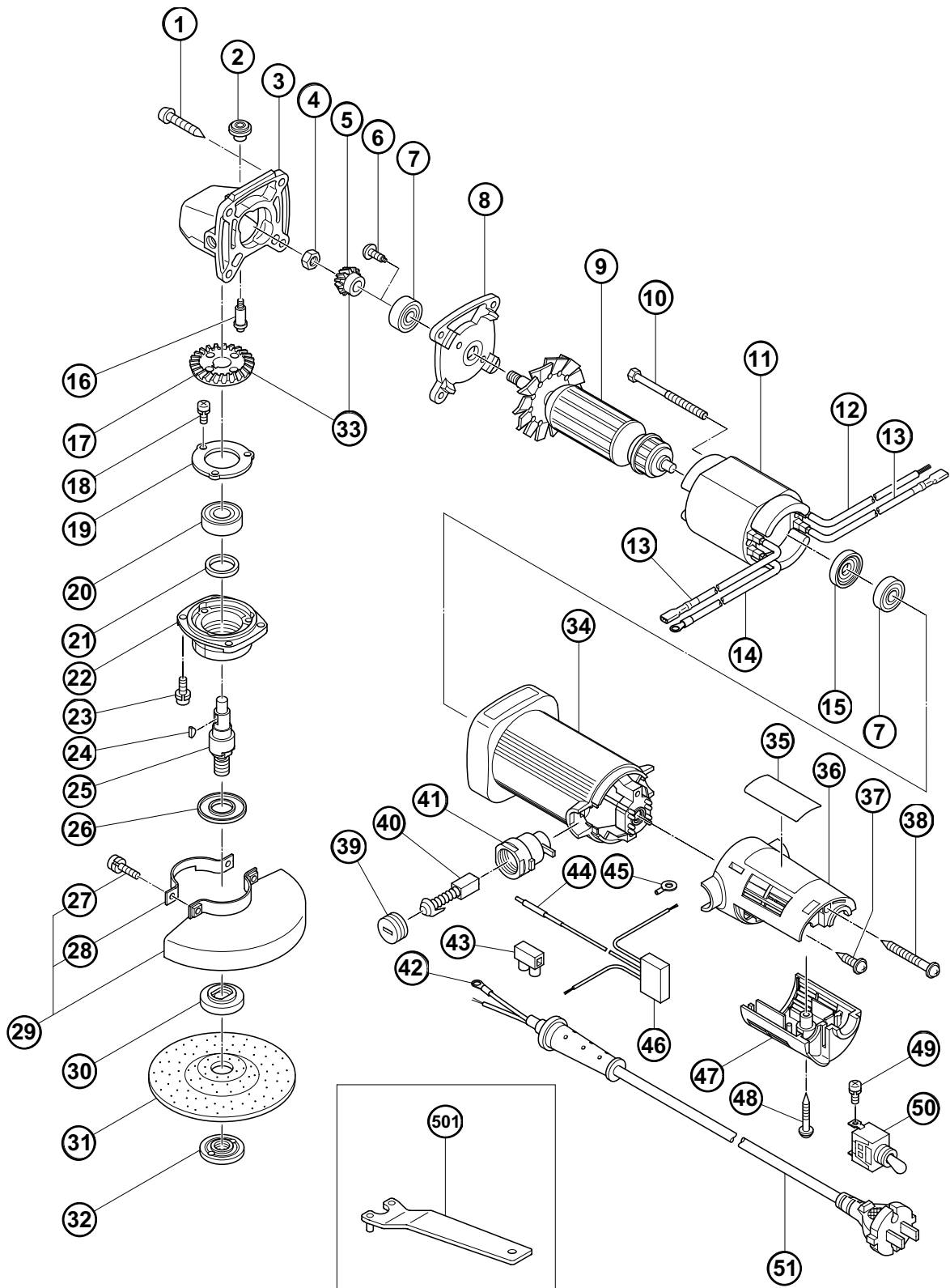
9. STANDARD REPAIR TIME (UNIT) SCHEDULES

| MODEL | Variable | | 10 | 20 | 30 | 40 | 50 | 60 min. |
|---------|----------|--|----|--|---|----|----|---------|
| | Fixed | | | | | | | |
| G 10SF3 | | Work Flow | | | | | | |
| | | | | | | | | |
| | | Wheel Guard Ass'y | | | | | | |
| | | | | Housing Stator | | | | |
| | | General Assembly | | | | | | |
| | | | | Pinion Ball Bearing 608VVC2PS2L x 2 Inner Cover Armature Dust Seal | | | | |
| | | | | Pushing Button Gear Cover Ass'y | Bearing Cover (B) | | | |
| | | Switch Cord Tail Cover (A) Tail Cover (B) | | Lock Pin Gear | Ball Bearing 6001VVCMP2L Felt Packing Packing Gland Spindle Fringer | | | |
| | | | | | | | | |
| | | | | | | | | |

ELECTRIC TOOL PARTS LIST

■ DISC GRINDER
Model G 10SF3

2001.8.10
(E1)



PARTS

G 10SF3

| ITEM NO. | CODE NO. | DESCRIPTION | NO. USED | REMARKS | |
|----------|----------|---|----------|----------------------|--|
| 1 | 937-807 | TAPPING SCREW D5X25 | 4 | | |
| 2 | 301-944 | PUSHING BUTTON | 1 | | |
| 3 | 303-078 | GEAR COVER ASS'Y | 1 | INCLUD.2,16 | |
| 4 | 301-941 | SPECIAL NUT M7 | 1 | | |
| 5 | 301-939 | PINION | 1 | | |
| 6 | 301-936 | SLOTTED HD. SCREW (SEAL LOCK) M4X10 | 2 | | |
| 7 | 608-VVM | BALL BEARING 608VVC2PS2L | 2 | | |
| 8 | 301-935 | INNER COVER | 1 | | |
| 9 | 360-464E | ARMATURE 220V | 1 | | |
| 10 | 963-712 | HEX. HD. TAPPING SCREW D4X65 | 2 | | |
| 11 | 340-428E | STATOR 220V | 1 | | |
| 12 | 320-273 | INTERNAL WIRE 70L | 1 | | |
| 13 | 320-274 | INTERNAL WIRE 85L | 2 | | |
| 14 | 320-275 | INTERNAL WIRE 60L | 1 | | |
| 15 | 315-877 | DUST SEAL | 1 | | |
| 16 | 301-943 | LOCK PIN | 1 | | |
| 17 | 301-940 | GEAR | 1 | | |
| 18 | 997-263 | SEAL LOCK SCREW (W/SP. WASHER) M4X10 | 3 | | |
| 19 | 938-058 | BEARING COVER (B) | 1 | | |
| 20 | 600-1VV | BALL BEARING 6001VVCMP2L | 1 | | |
| 21 | 301-946 | FELT PACKING | 1 | | |
| 22 | 301-947 | PACKING GLAND | 1 | | |
| 23 | 307-127 | SEAL LOCK SCREW (W/SP. WASHER) M4X12 | 4 | | |
| 24 | 940-220 | WOODRUFF KEY 2.5X8 | 1 | | |
| 25 | 302-046 | SPINDLE M10XP1.5 | 1 | | |
| 26 | 301-945 | FRINGER | 1 | | |
| 27 | 308-386 | MACHINE SCREW (W/SP. WASHER) M5X16(BLACK) | 2 | | |
| 28 | 301-949 | SET PLATE | 1 | | |
| 29 | 301-948 | WHEEL GUARD ASS'Y | 1 | INCLUD.27,28 | |
| 30 | 310-787 | WHEEL WASHER | 1 | | |
| 31 | 316-820 | D. C. WHEELS 100MMX4T A36Q (25 PCS.) | 1 | | |
| 32 | 314-437 | WHEEL NUT (C) | 1 | | |
| 33 | 301-938 | GEAR AND PINION ASS'Y | 1 | INCLUD.5,17 | |
| 34 | 320-271 | HOUSING | 1 | | |
| 35 | | NAME PLATE | 1 | | |
| 36 | 320-276 | TAIL COVER (A) | 1 | | |
| 37 | 302-086 | TAPPING SCREW (W/FLANGE) D4X20 (BLACK) | 1 | | |
| 38 | 306-664 | TAPPING SCREW (W/FLANGE) D4X40 | 1 | | |
| 39 | 936-551 | BRUSH CAP | 2 | | |
| 40 | 999-021 | CARBON BRUSH (1 PAIR) | 2 | | |
| 41 | 313-777 | BRUSH HOLDER | 2 | | |
| 42 | 980-063 | TERMINAL | 1 | FOR CORD | |
| 43 | 938-307 | PILLAR TERMINAL | 1 | | |
| 44 | 314-854 | EARTH TERMINAL | 1 | | |
| 45 | 980-063 | TERMINAL | 1 | FOR NOISE SUPPRESSOR | |
| 46 | 994-273 | NOISE SUPPRESSOR | 1 | | |
| 47 | 320-272 | TAIL COVER (B) | 1 | | |
| 48 | 304-035 | TAPPING SCREW (W/FLANGE) D4X25 (BLACK) | 1 | | |
| 49 | 305-499 | MACHINE SCREW (W/WASHER) M3.5X6 | 2 | | |
| 50 | 955-509 | SWITCH (1P SCREW TYPE) | 1 | | |
| 51 | 315-879 | CORD | 1 | | |

*

PARTS

G 10SF3

[illegible]

STANDARD ACCESSORIES

G 10SF3

[illegible]

