

MODEL

G 12SA2

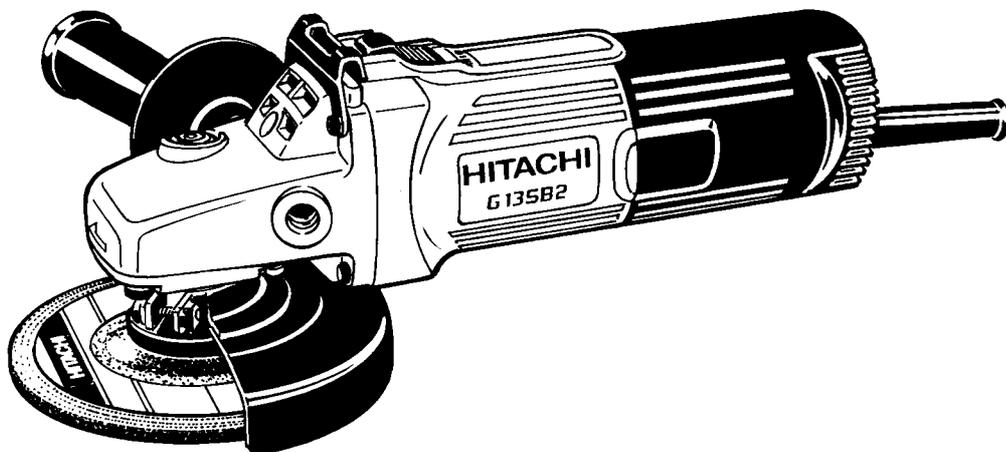
G 13SB2

HITACHI
POWER TOOLS

DISC GRINDER
G 12SA2
G 13SB2

TECHNICAL DATA
AND
SERVICE MANUAL

G



LIST Nos. E239, E240

Feb. 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.

CONTENTS



Page

1. PRODUCT NAME	1
2. MARKETING OBJECTIVE	1
3. APPLICATIONS	1
4. SELLING POINTS	1
5. SPECIFICATIONS	3
6. COMPARISONS WITH SIMILAR PRODUCTS	4
6-1. Specification Comparisons	4
6-2. Practical Test Data	4
7. PRECAUTIONS IN SALES PROMOTION	5
7-1. Handling Instructions	5
7-2. Caution on Name Plate	5
7-3. Precautions on Usage	5
8. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY	6
8-1. Disassembly	6
8-2. Reassembly	8
8-3. Lubrication Points and Types of Lubricant	10
8-4. Tightening Torque	10
8-5. Wiring Diagrams	11
8-6. Insulation Tests	12
8-7. No-load Current Value	12
9. STANDARD REPAIR TIME (UNIT) SCHEDULES	13

[Appendix]

Assembly Diagrams for G 12SA2 / G 13SB2

1. PRODUCT NAME

Hitachi Electronic Disc Grinder, Model G 12SA2 115 mm (4-1/2")

Model G 13SB2 125 mm (5")

2. MARKETING OBJECTIVE

The Models G 12SA and G 13SB Disc Grinders have been on the market for 15 years. To meet a strong demand for a remodeled, we now offer totally renewed design with increased power input, for increased competitiveness and expanded sale.

The Models G 12SA2 and G13SB2 have been developed to upgrade and replace the current Models G 12SA and G 13SB.

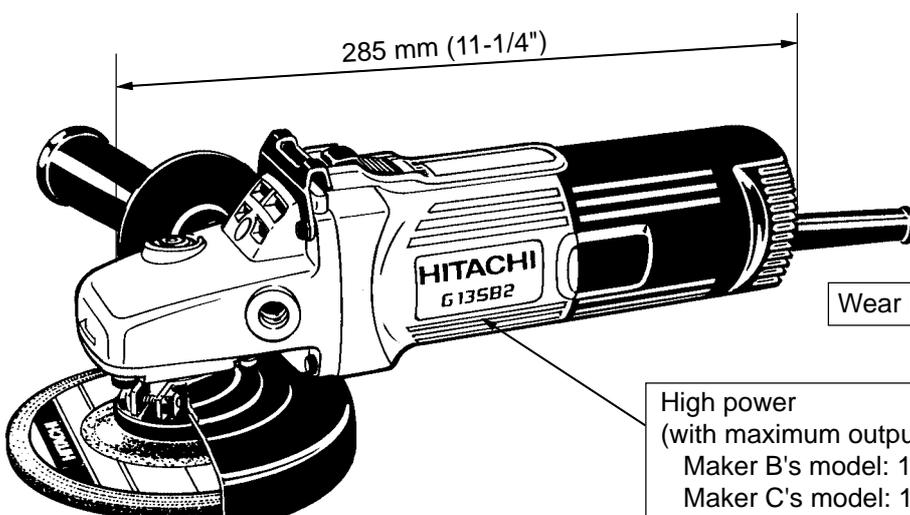
The key features for the Models G 12SA2 and G 13SB2 are as follows:

- (1) Powerful motor with input of 950 W (Depends on market)
- (2) Excellent overload durability
- (3) Prolonged service life of the carbon brushes
- (4) Compact, lightweight and easy to operate
- (5) Renewed design

3. APPLICATIONS

- Deburring diecast products and finishing iron, bronze, aluminum and diecast products
- Finishing welds and torch-cut surfaces
- Cutting soft steel materials
- Grooving and cutting concrete and other stone materials

4. SELLING POINTS



The diagram shows a Hitachi G13SB2 disc grinder. A dimension line above the grinder indicates a length of 285 mm (11-1/4"). The grinder has a label that reads "HITACHI G13SB2".

Compact body: 285 mm (11-1/4")
Maker B's model: 298 (11-3/4")
Maker C's model: 305 (12")

Prolonged service life of the carbon brushes:
1.4 times higher compared to maker B's model
2.2 times higher compared to maker C's model

Wear resistance of armature coil

High power
(with maximum output of 1,430 W)
Maker B's model: 1,190 W
Maker C's model: 1,430 W

Excellent overload durability:
1.3 times higher compared to maker B's model
1.3 times higher compared to maker C's model

Low noise, cooling-air-flow design: 84 dB
Maker B's model: 88 dB
Maker C's model: 86 dB

- Excellent overload durability

The Models G 12SA2 and G 13SB2 provide excellent overload durability thanks to an improved cooling mechanism and a high-power motor.

Practical test data: Comparison of torque when the stator coil temperature rise is 200° K

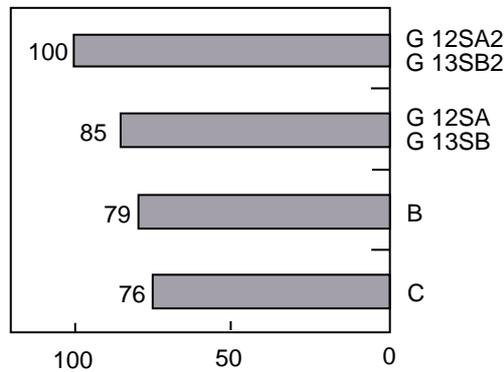


Fig. 1

- Prolonged service life of the carbon brushes

The service life of the carbon brushes is prolonged thanks to the adoption of the internally placed carbon brushes and the improved winding specifications.

Practical test data: Comparison of service life of carbon brushes in the continuous rated load test

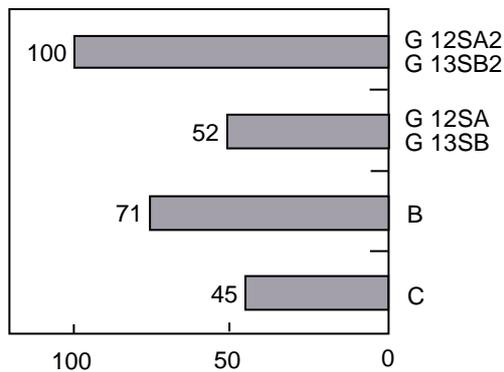


Fig. 2

- Wear resistance of armature coil

Both ends of the armature coil are sealed with heat-resistant adhesive in addition to varnish treatment to minimize wear of the armature coil caused by dust.

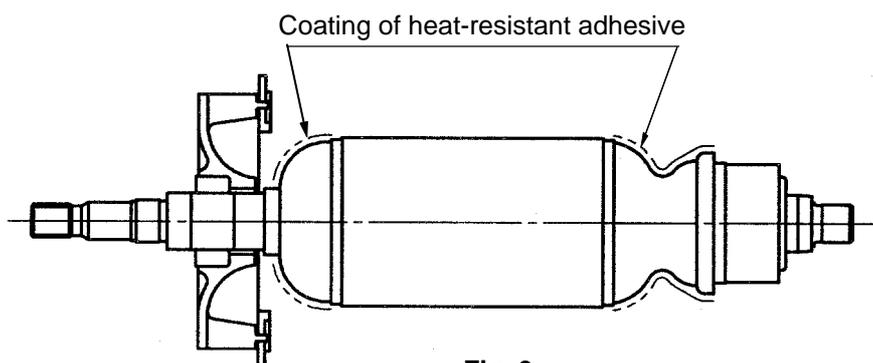


Fig. 3

5. SPECIFICATIONS

Item		Model	G 12SA2	G 13SB2												
Depressed-center wheels	Dimensions		O.D. 115 mm (4-1/2") x Thickness 6 mm (1/4") x I.D. 22.2 mm (7/8")	O.D. 125 mm (5") x Thickness 6 mm (1/4") x I.D. 22.2 mm (7/8")												
	Max. practical peripheral speed		4,800 m/min (15,756 ft/min)													
	Type		A, 36, Q, B													
	Spindle thread		M14 x 2	M14 x 2												
Power source			AC single phase 50 or 60 Hz													
Voltage and power input			<table border="1"> <thead> <tr> <th>Voltage (V)</th> <th>Current (A)</th> <th>Power input (W)</th> </tr> </thead> <tbody> <tr> <td>110</td> <td>8.1</td> <td>850</td> </tr> <tr> <td>120</td> <td>7.7</td> <td>880</td> </tr> <tr> <td>230</td> <td>4.4</td> <td>950</td> </tr> </tbody> </table>		Voltage (V)	Current (A)	Power input (W)	110	8.1	850	120	7.7	880	230	4.4	950
Voltage (V)	Current (A)	Power input (W)														
110	8.1	850														
120	7.7	880														
230	4.4	950														
No-load speed			10,000/min													
Type of motor			AC single phase commutator motor													
Enclosure			Housing (Green) } Polyamide resin with glassfiber Tail cover (Black) } Gear cover, packing gland Aluminum alloy diecasting													
Type of switch			Slide switch													
Weight		Net: *(main body)	1.9 kg (4.2 lbs.)													
		Gross:	3.2 kg (7.1 lbs.)	3.3 kg (7.2 lbs.)												
Type of packing			Corrugated cardboard box													
Standard accessories			Depressed-center wheel 115 mm (4-1/2") 1 Side handle 1 Wrench 1	Depressed-center wheel 125 mm (5") 1 Side handle 1 Wrench 1												
Optional accessories			Super washer (Code No. 310338)													

* Net weight excludes cord, side handle, depressed-center wheel, wheel nut, wheel washer and wheel guard.

6. COMPARISONS WITH SIMILAR PRODUCTS

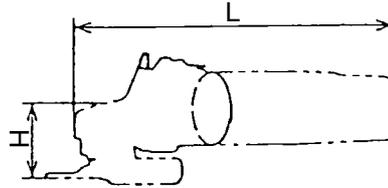
6-1. Specification Comparisons

Maker	HITACHI		B	C
	G 12 SA2 G 13SB2	G 12SA G 13SB		
Capacity:	115/125	115/125	125	115/125
Depressed-center wheel dia. (mm)	(4-1/2"/5")	(4-1/2"/5")	(5")	(4-1/2"/5")
Power input *1 (W)	950	750	900	900
Power output *1 (W)	690	520	540	430
Max. power output *1 (W)	1,430	1,150	1,190	1,430
No-load speed (/min)	10,000	10,000	11,000	10,000
No-load sound pressure level (dB/A)	84	80	88	86
Service life of carbon brushes *2 (hr)	210	110	150	95
Weight *3 (kg)	1.9 (4.2 lbs.)	2.1 (4.6 lbs.)	1.75 (3.9 lbs.)	1.75 (3.9 lbs.)
(Actual weight) (kg)	2.0 (4.4 lbs.)	2.2 (4.9 lbs.)	1.8 (4.0 lbs.)	1.8 (4.0 lbs.)
Dimensions	L (mm)	285 (11-1/4")	288 (11-5/16")	305 (12")
	H (mm)	70 (2-3/4")	70 (2-3/4")	70 (2-3/4")

*1 Depends on market

*2 Service life of carbon brushes in the continuous rated load test

*3 Weight without cord, side handle, depressed-center wheel, wheel nut, wheel washer and wheel guard



6-2. Practical Test Data

Comparison of temperature rise of stator coil section:

The graph below shows the relationship between load and temperature rise of the stator coil. The temperature rise of the Models G 12SA2 and G 13SB2 is the lowest among similar models. This means that the resistance to overload usage of the Models G 12SA2 and G 13SB2 is superior to other models.

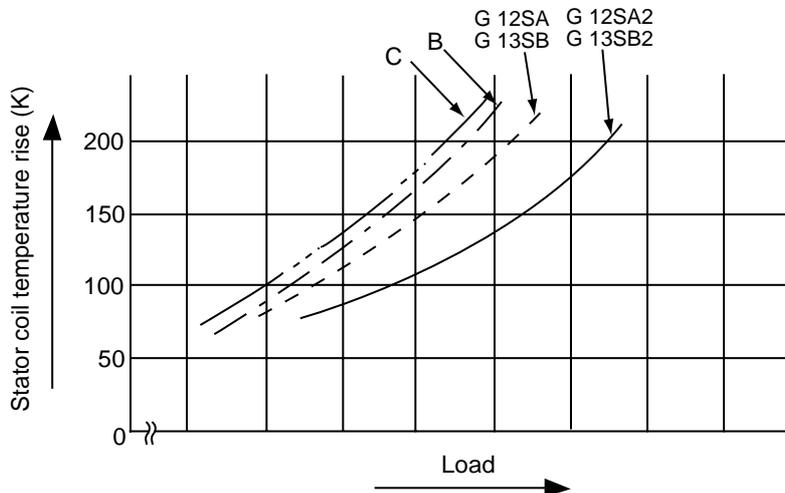


Fig. 4

7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Models G 12SA2 and G 13SB2 Disc Grinders 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 or Caution 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 safety hazards, the dangers inherent in the use of any electric power 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 and 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 on Name Plate

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

(1) For New Zealand

CAUTION

Read thoroughly HANDLING INSTRUCTIONS before use.

(2) For U.S.A. and Canada

WARNING

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

Always use proper guards when grinding and wear eye protection.

Use only accessories rated at least 13,300 /min.

AVERTISSEMENT

Afin de réduire les risques de blessure, l'utilisateur doit lire et bien comprendre le mode d'emploi.

Utilisez toujours un outil muni d'un protecteur adéquat et portez des lunettes ou une visière.

N'utilisez que des accessoires prévus pour au moins 13,300 /min.

7-3. Precautions on Usage

Never press the pushing button while the depressed-center wheel is rotating.

If the pushing button 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 off unexpectedly to cause possible serious injury.

8. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

The **[Bold]** numbers in the descriptions below correspond to the numbers in the Parts List and the exploded assembly diagram for G 12SA2, and the **<Bold>** numbers to those in the Parts List and the exploded assembly diagram for G 13SB2.

8-1. Disassembly

(1) Removal of the Armature [14] <14>

1. Loosen the Machine Screw M5 x 20 [32] <32>, and remove the Wheel Guard Ass'y [34] <34>.
2. Loosen the Tapping Screw (W/Flange) D4 x 16 (Black) [56] <55>, and remove the Tail Cover [55] <54>.
3. Remove the two Carbon Brushes [46] <45> from the Brush Holders [47] <46>.
4. Remove the four Tapping Screws D5 x 25 [1] <1>. The Armature [14] <14> can then be taken out simultaneously with the Gear Cover Ass'y [4] <4>, Packing Gland [28] <28>, and related parts.
5. Remove the four Seal Lock Screws (W/SP. Washer) M5 x 16 [29] <29>.
6. After removing the three Seal Lock Screws (W/SP. Washer) M4 x 10 [20] <20>, the Armature [14] <14> can be extracted together with the Bearing Cover [13] <13>, and related parts.
7. Carefully wrap the Armature [14] <14> with a soft, clean rag to protect it from being damaged, and clamp it securely in a vise. Then, remove the Special Nut M7 [6] <6>, and extract the Pinion [7] <7>.
8. For the models indicated under Fig. 5, the Ball Bearing [10] <10> can be removed from the Armature [14] <14> by utilizing a J-204 Bearing Puller (special repair tool, Code No. 970982) as illustrated. After the Ball Bearing has been removed, the Bearing Cover [13] <13> can be easily taken off.

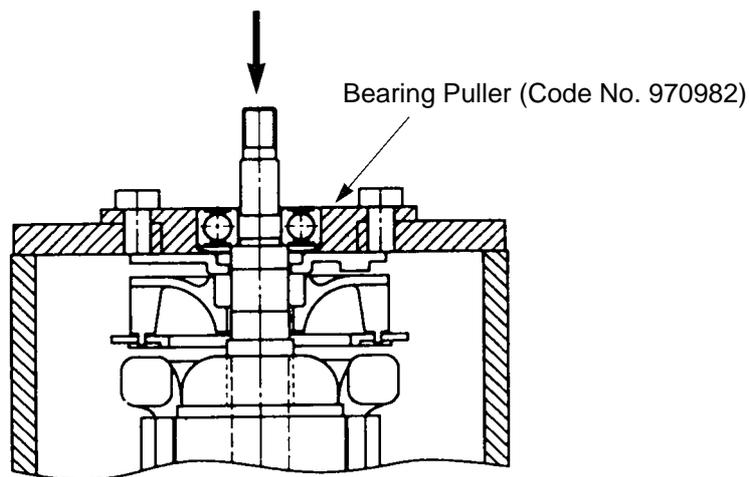


Fig. 5

(2) Removal of the Dust Seal [18] <18>

1. Insert the hooks of the J-204 bearing puller between the commutator and the Dust Seal [18] <18> from both sides, and fix the hooks with the wing bolts.
2. Place the J-204 bearing puller on a supporting jig and push down on the armature shaft with a hand press to remove the Dust Seal [18] <18> together with the Ball Bearing [19] <19>. Replace the Dust Seal [18] <18> with new one because it is damaged by the removal of the Ball Bearing [19] <19>.

(3) Removal of the Stator [17] <17>

1. After removing the Armature [14] <14> and Pushing Button Switch [49] <48>, disconnect the lead wires connected to the Brush Holders [47] <46>.
2. Loosen the two Hex. Hd. Tapping Screws D4 x 70 [16] <16> and remove the Stator [17] <17> from the Housing [40] <40>. If the Stator [17] <17> cannot be easily removed from the Housing [40] <40>, disassembly can be facilitated by heating the Housing [40] <40> to a temperature of approximately 60°C (140°F) with an appropriate heating device.

(4) Removal of the Gear [22] <22>

1. Loosen the four Seal Lock Screws (W/SP. Washer) M5 x 16 [29] <29>, and remove the Packing Gland [28] <28> together with the Spindle [31] <31> and Gear [22] <22> from the Gear Cover Ass'y [4] <4> in a single body.
2. When it is necessary to remove the Gear [22] <22> from the Spindle [31] <31>, it is highly recommended that the special repair tools described below are utilized.

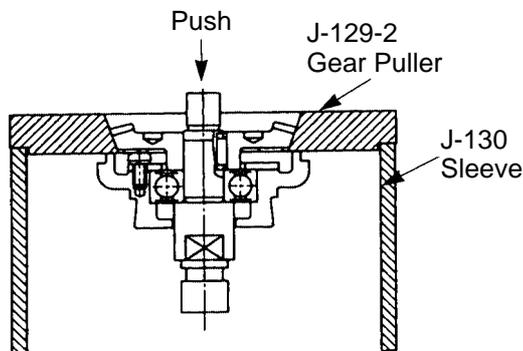


Fig. 6

As illustrated in Fig. 6, support the angled surface of the Gear [22] <22> with a J-129-2 Gear Puller (special repair tool, Code No. 970906), rest the J-129-2 Gear Puller on a J-130 Sleeve (special repair tool, Code No. 970907), and push down on the tip of the Spindle [31] <31> with a hand press to remove the Gear [22] <22>.

(5) Removal of the Slide Knob [39] <39>

1. Loosen the Tapping Screw (W/Flange) D4 x 16 (Black) [56] <55> and remove the Tail Cover [55] <54>.
2. Hold the Housing [40] <40> and raise the Slide Bar [44] <43> until the Slide Knob [39] <39> moves to the "ON" position.
3. Check that the Slide Knob [39] <39> has not moved to the "ON-LOCK" position, and push down the Slide Knob [39] <39> until it clicks while keeping the Slide Bar [44] <43> raised.
4. Raise the Slide Knob [39] <39> straight up and remove it keeping the Slide Bar [44] <43> raised.

(6) Removal of the Pushing Button Switch [49] <48>

1. Loosen the Tapping Screw (W/Flange) D4 x 16 (Black) [56] <55> and remove the Tail cover [55] <54>.
2. Loosen the two Tapping Screws (W/Flange) D4 x 20 (Black) [58] <57> and remove the Switch Holder [50] <49> from the Housing [40] <40>.
3. Pressing the Pushing Button Switch [49] <48> in the arrow "A" direction, press the latches of the Switch Holder [50] <49> in the arrow "B" direction with a small flat-blade screwdriver to remove the Pushing Button Switch [49] <48> from the Switch Holder [50] <49> (See Fig. 7).
4. Pressing the button of the Pushing Button Switch [49] <48> in the arrow "C" direction, press the Pushing Button Switch [49] <48> in the arrow "A" direction to remove the Pushing Button Switch [49] <48> (See Fig. 8).

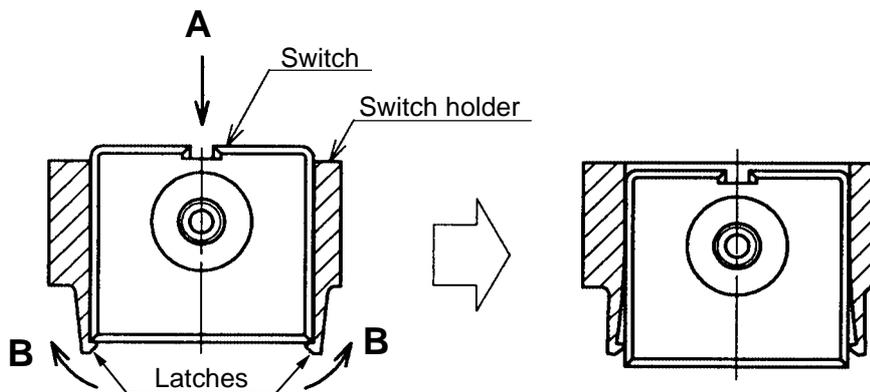


Fig. 7

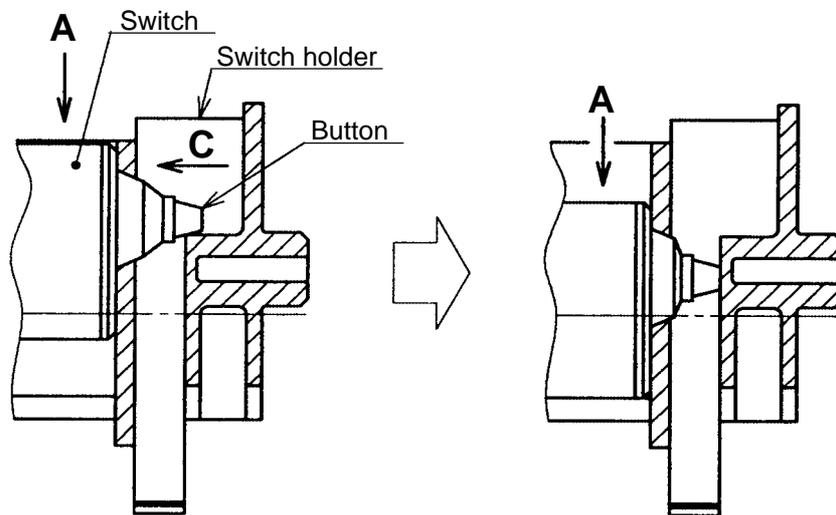


Fig. 8

8-2.Reassembly

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

- (1) Generously lubricate the teeth of Gear [22] <22> and Pinion [7] <7> with grease. Rub grease onto the teeth with your fingers so that the grease reaches each tooth bottom. Note that under-lubricated Gear [22] <22> and Pinion [7] <7> may wear at a faster rate.

(2) When replacing the Armature [14] <14> and the Ball Bearing [19] <19> on the commutator side, press inward on the Dust Seal [18] <18> while taking care of its direction until the end face of the Dust Seal [18] <18> hits against the butting surface of the Armature [14] <14> and make sure that the Dust Seal [18] <18> cannot turn freely. (See Fig. 9.)

The Dust Seal [18] <18> is an important element for improved dust protection of the Ball Bearing [19] <19>. Be sure to use a new one at every disassembly work of the Ball Bearing [19] <19>.

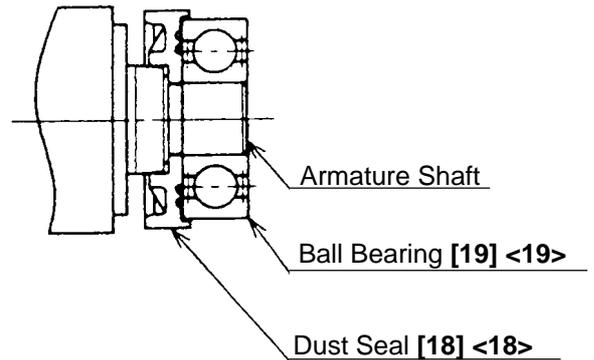


Fig. 9

(3) Apply Three Bond TB 1406 Screw Locking Agent to the following screws.

- Three Seal Lock Screws (W/SP. Washer) M4 x 10 [20] <20> which fix Bearing Cover [13] <13> in place.
- Three Seal Lock Screws (W/SP. Washer) M4 x 8 [23] <23> which fix Bearing Cover (B) [24] <24> in place.
- Four Seal Lock Screws (W/SP. Washer) M5 x 16 [29] <29> which fix Packing Gland [28] <28> in place.

(4) When connecting the Earth Terminal [51] <50> to the internal wire (the middle wire among three) of the Noise Suppressor [52] <51>, strip the insulation sheath on the internal wire by about 6 mm and press connect it together with the Earth Terminal [51] <50> with a clamping tool available on the market.

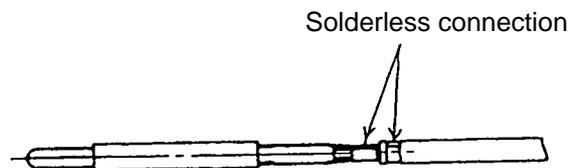


Fig. 10

(5) Check that the spring end does not hold the pigtail when mounting the carbon brush. Do not catch the pigtail in the tail cover when mounting the tail cover.

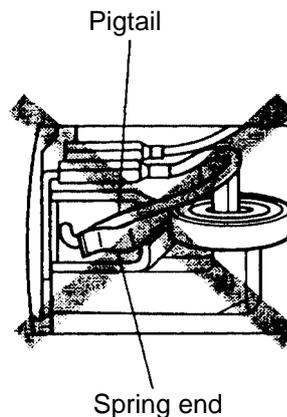


Fig. 11

(6) When replacing the Gear Cover Ass'y [4] <4>, lubricate the needle bearing with mixed oil.

Mixed oil: Mixture of Hitachi power tool grease No. 2 (Unilube No. 00) and turbine oil

- Mixture ratio ... 1:1 (weight ratio)
- Volume ... 0.5 cc

8-3. Lubrication Points and Types of Lubricant

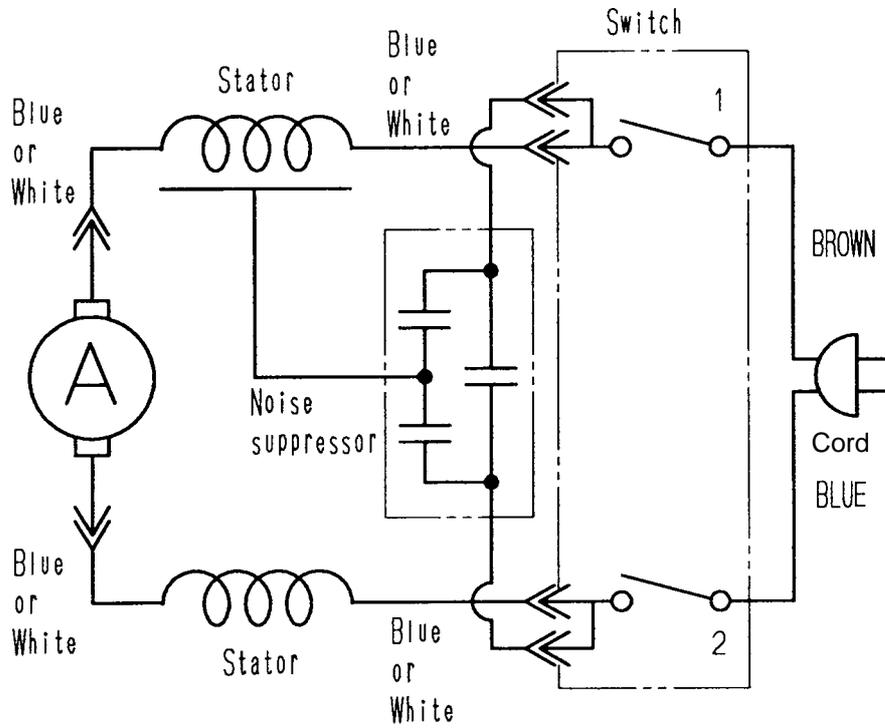
Pinion chamber of Gear Cover Ass'y [4] <4>	Nippeco grease (JF-375) 18 g
	Generously rub grease onto the gear and pinion.
Needle bearing	Mixed oil 0.5 cc
	Mixed oil: Mixture of Hitachi power tool grease No. 2 (Unilube No. 00) and turbine oil Mixture ratio 1:1 (weight ratio)

8-4. Tightening Torque

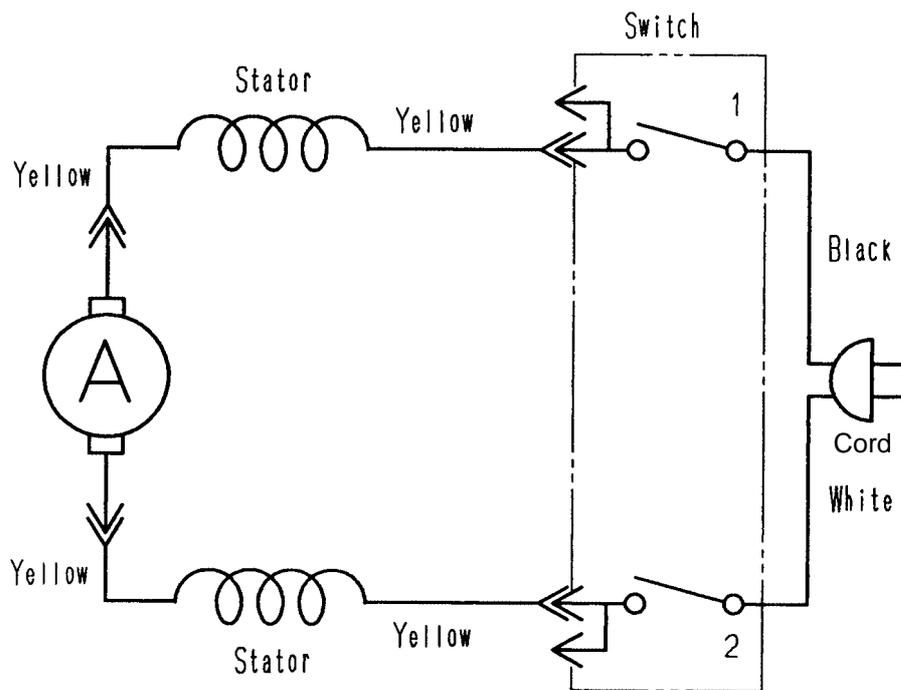
Tapping Screws D4 [16] <16> [56] <55> [58] <57> [60] <59>	2.0 ± 0.5 N•m (20±5 kgf•cm, 1.5 ± 0.4 ft-lbs.)
Seal Lock Screws (W/SP. Washer) M4 [20] <20> [23] <23>	1.8 ± 0.4 N•m (18±4 kgf•cm, 1.3 ± 0.3 ft-lbs.)
Tapping Screw D5 x 25 [1] <1>	2.9 ± 0.5 N•m (30±5 kgf•cm, 2.2 ± 0.4 ft-lbs.)
Seal Lock Screw (W/SP. Washer) M5 x 16 [29] <29>	3.4 ± 0.7 N•m (35±7 kgf•cm, 2.5 ± 0.5 ft-lbs.)
Special Nut M7 [6] <6>	8.8 ± 1.0 N•m (90±10 kgf•cm, 6.3± 0.7 ft-lbs.)

8-5. Wiring Diagrams

(1) For European countries and New Zealand



(2) For U.S.A. and Canada



8-6. Insulation Tests

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

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

Dielectric strength test: AC 4,000 V/1 minute, with no abnormalities 220 V -- 240 V products
AC 2,500 V/1 minute, with no abnormalities 110 V -- 127 V products

8-7. No-load Current Value

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

Voltage (V)	110	120	230
Current (A) max.	3.4	3.1	1.7

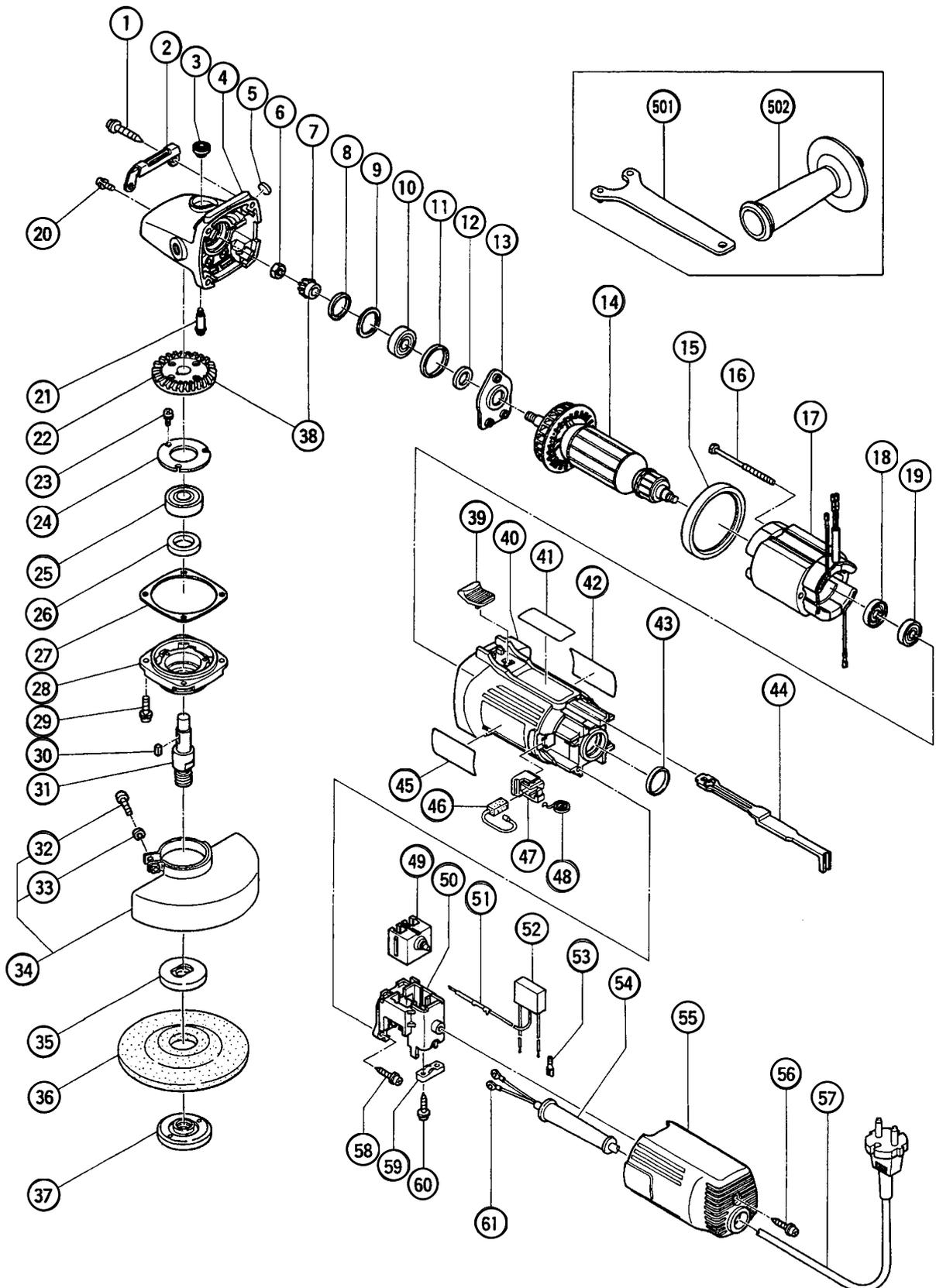
9. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
<div style="border: 1px solid black; border-radius: 10px; padding: 2px; display: inline-block;">G 12SA2</div> <div style="border: 1px solid black; border-radius: 10px; padding: 2px; display: inline-block;">G 13SB2</div>		Work Flow						
			Wheel Guard Ass'y General Assembly				Stator Housing Slide Bar	
				Gear Cover Ass'y Pinion Seal Ring (A) Washer (C) Ball Bearing (629T12) Rubber Ring Felt Bearing Cover Armature Dust Seal Ball Bearing (608VVC2)				
			Carbon Brush x 2 Spring x 2 Pushing Button Switch Cord Armor Tail Cover Cord	Pushing Button Lock Pin Gear Seal Packing	Bearing Cover (B) Ball Bearing (6201DDCM) Felt Packing Packing Gland Feather Key Spindle			

ELECTRIC TOOL PARTS LIST

■ DISC GRINDER
Model G 12SA2

2000・11・15
(E1)



PARTS

G 12SA2

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	937-807	TAPPING SCREW D5X25	4	
2	319-315	GUARD PLATE	1	
3	301-944	PUSHING BUTTON	1	
4	308-542	GEAR COVER ASS'Y	1	INCLUD.3,5,21
5	315-049	FELT WASHER	1	
6	301-941	SPECIAL NUT M7	1	
7	308-541	PINION	1	
8	308-543	SEAL RING (A)	1	
9	980-866	WASHER (C)	1	
10	629-T12	BALL BEARING 629T12DDC3PS2-L	1	
11	957-754	RUBBER RING	1	
12	994-320	FELT	1	
13	308-538	BEARING COVER	1	
* 14	360-541U	ARMATURE ASS'Y 120V	1	INCLUD.10,12,18,19
* 14	360-541E	ARMATURE 230V	1	
15	308-537	FAN GUIDE	1	
16	982-021	HEX. HD. TAPPING SCREW D4X70	2	
* 17	340-485D	STATOR 120V	1	
* 17	340-485E	STATOR 230V	1	
18	315-877	DUST SEAL	1	
19	608-VVM	BALL BEARING 608VVC2PS2L	1	
20	303-255	SEAL LOCK SCREW (W/SP. WASHER) M4X10	3	
21	301-943	LOCK PIN	1	
22	308-540	GEAR	1	
23	991-207	SEAL LOCK SCREW (W/SP. WASHER) M4X8	3	
24	936-680	BEARING COVER (B)	1	
25	620-1DD	BALL BEARING 6201DDCMPS2L	1	
26	308-546	FELT PACKING	1	
27	308-547	SEAL PACKING	1	
28	308-545	PACKING GLAND	1	
29	307-046	SEAL LOCK SCREW (W/SP. WASHER) M5X16	4	
30	944-109	FEATHER KEY 3X3X8	1	
* 31	994-301	SPINDLE (A)	1	
* 31	994-302	SPINDLE (B)	1	FOR USA,CAN
32	949-241	MACHINE SCREW M5X20 (10 PCS.)	1	
33	949-454	SPRING WASHER M5 (10 PCS.)	1	
34	315-157	WHEEL GUARD (A) ASS'Y	1	INCLUD.32,33
* 35	937-817Z	WHEEL WASHER	1	
* 35	937-928Z	WHEEL WASHER (A) FOR D16 HOLE	1	FOR USA,CAN
36	316-821	D. C. WHEELS 115MM A36Q (25 PCS.)	1	
* 37	994-324	WHEEL NUT M14	1	
* 37	937-923P	WHEEL NUT 5/8"-11UNC	1	FOR USA,CAN
38	308-539	GEAR ASS'Y	1	INCLUD.7,22
39	314-428	SLIDE KNOB	1	
40	319-314	HOUSING	1	
* 41		CAUTION PLATE	1	
* 42		NAME PLATE	1	
43	995-662	RUBBER RING	1	
44	319-317	SLIDE BAR	1	
45		HITACHI LABEL	1	
46	999-088	CARBON BRUSH (1 PAIR)	2	

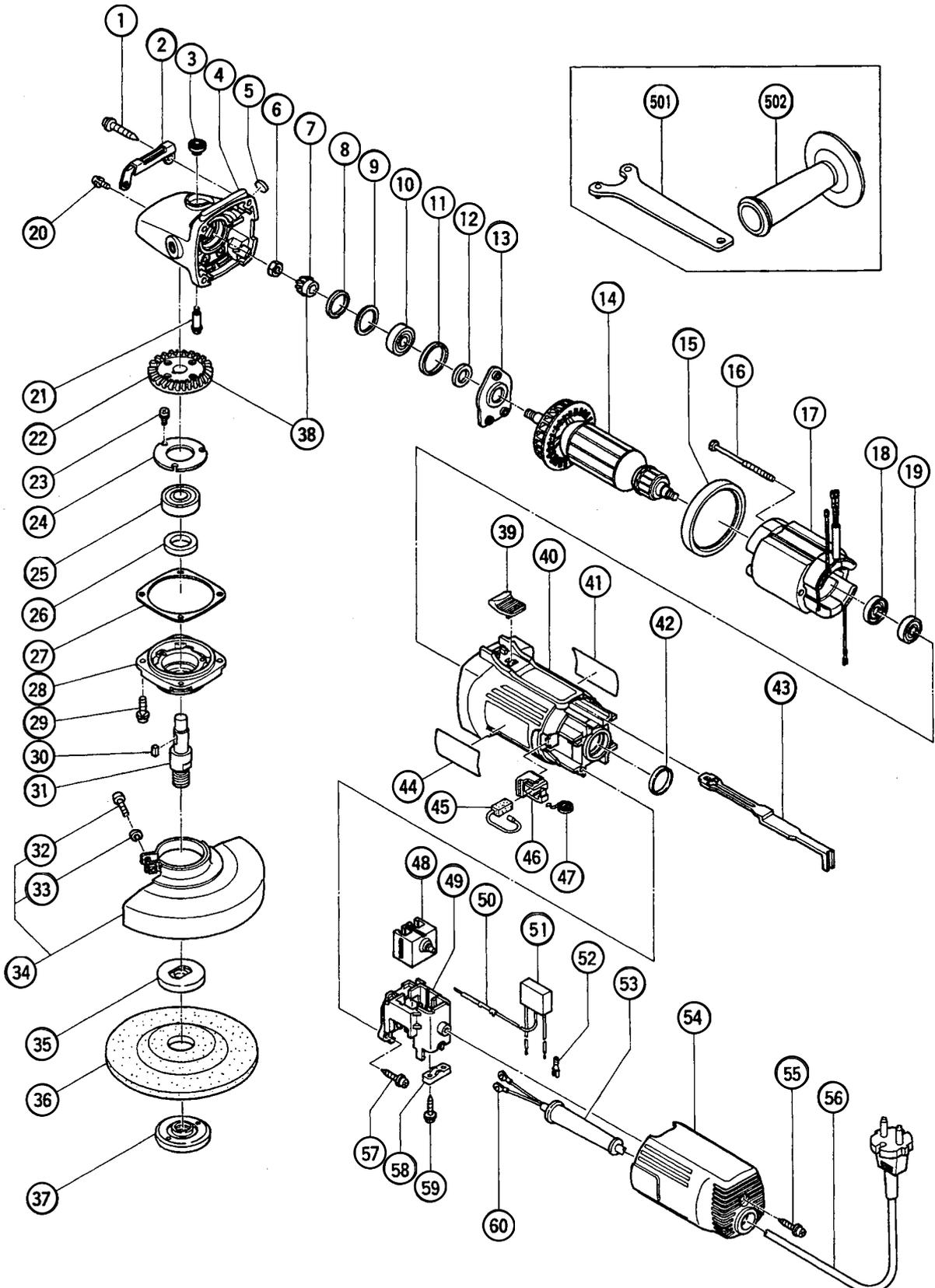
* : ALTERNATIVE PARTS

11 - 00

ELECTRIC TOOL PARTS LIST

■ DISC GRINDER
Model G 13SB2

2000.11.15
(E1)



PARTS

G 13SB2

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	937-807	TAPPING SCREW D5X25	4		
2	319-315	GUARD PLATE	1		
3	301-944	PUSHING BUTTON	1		
4	308-542	GEAR COVER ASS'Y	1	INCLUD.3,5,21	
5	315-049	FELT WASHER	1		
6	301-941	SPECIAL NUT M7	1		
7	308-541	PINION	1		
8	308-543	SEAL RING (A)	1		
9	980-866	WASHER (C)	1		
10	629-T12	BALL BEARING 629T12DDC3PS2-L	1		
11	957-754	RUBBER RING	1		
12	994-320	FELT	1		
13	308-538	BEARING COVER	1		
*	14	360-541C	ARMATURE 110V	1	
*	14	360-541E	ARMATURE 230V	1	
15	308-537	FAN GUIDE	1		
16	982-021	HEX. HD. TAPPING SCREW D4X70	2		
*	17	340-485C	STATOR 110V	1	
*	17	340-485E	STATOR 230V	1	
18	315-877	DUST SEAL	1		
19	608-VVM	BALL BEARING 608VVC2PS2L	1		
20	303-255	SEAL LOCK SCREW (W/SP. WASHER) M4X10	3		
21	301-943	LOCK PIN	1		
22	308-540	GEAR	1		
23	991-207	SEAL LOCK SCREW (W/SP. WASHER) M4X8	3		
24	936-680	BEARING COVER (B)	1		
25	620-1DD	BALL BEARING 6201DDCMPS2L	1		
26	308-546	FELT PACKING	1		
27	308-547	SEAL PACKING	1		
28	308-545	PACKING GLAND	1		
29	307-046	SEAL LOCK SCREW (W/SP. WASHER) M5X16	4		
30	944-109	FEATHER KEY 3X3X8	1		
31	994-301	SPINDLE (A)	1		
32	949-241	MACHINE SCREW M5X20 (10 PCS.)	1		
33	949-454	SPRING WASHER M5 (10 PCS.)	1		
34	994-323	WHEEL GUARD ASS'Y	1	INCLUD.32,33	
35	937-817Z	WHEEL WASHER	1		
36	316-822	D. C. WHEELS 125MM A36Q (25 PCS.)	1		
37	994-324	WHEEL NUT M14	1		
38	308-539	GEAR ASS'Y	1	INCLUD.7,22	
39	314-428	SLIDE KNOB	1		
40	319-314	HOUSING	1		
*	41	NAME PLATE	1		
42	995-662	RUBBER RING	1		
43	319-317	SLIDE BAR	1		
*	44	HITACHI LABEL	1		
45	999-088	CARBON BRUSH (1 PAIR)	2		
46	317-810	BRUSH HOLDER	2		
47	308-536	SPRING	2		
48	319-319	PUSHING BUTTON SWITCH	1		
49	319-318	SWITCH HOLDER	1		

* : ALTERNATIVE PARTS

11 - 00

