

MODEL

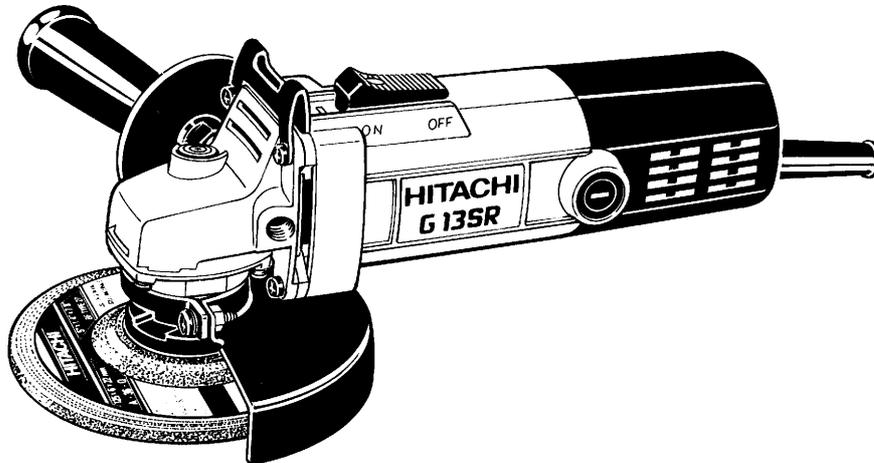
G 13SR

HITACHI
POWER TOOLS

DISC GRINDER
G 13SR

TECHNICAL DATA
AND
SERVICE MANUAL

G



LIST No. E238

May. 2000

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Notice for use

Specifications and parts are subject to change for improvement.
Refer to the Hitachi Power Tool Technical News for further information.

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1. PRODUCT NAME

Hitachi Disc Grinder, Model G 13SR 125 mm (5")

2. MARKETING OBJECTIVE

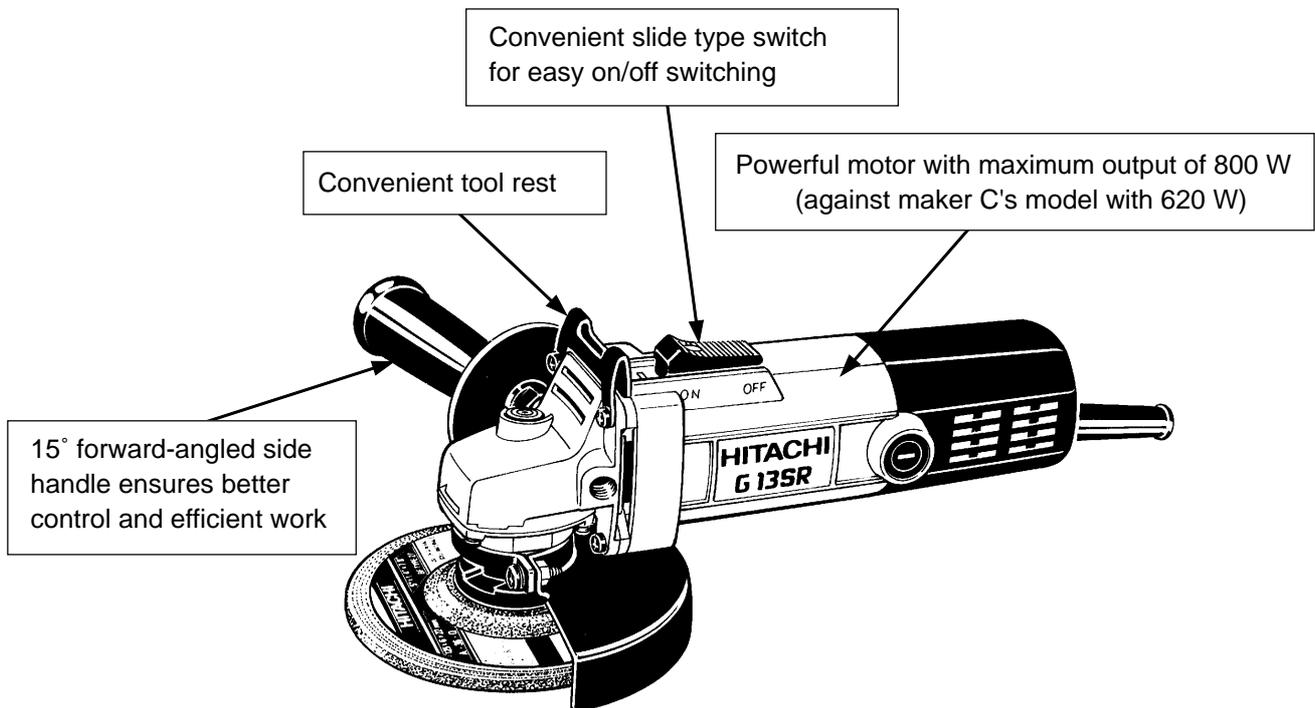
In order to compete with maker C which has introduced an economy series of the slide-switch type disc grinder to the market, Hitachi has developed the new Model G 13SR, which is based on the G 12SR. This follows comprehensive overall productivity improvements to enhance the competitive power of our compact disc grinders in export sales.

The performance and other features of Model G 13SR are basically the same as for Model G 12SR, except for the wheel size and gear ratio.

3. APPLICATIONS

- Removal of casting fin and finishing of various types of steel, bronze, aluminum, and other metallic materials and castings
- Grinding of welds, or sections cut by acetylene torch
- Cutting steel bars, steel pipes, shaped steel, and various other types of steel
- Cutting of concrete, stone, brick, tile, and similar materials

4. SELLING POINTS



5. SPECIFICATIONS

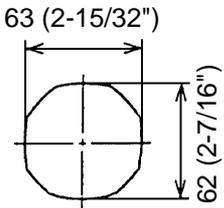
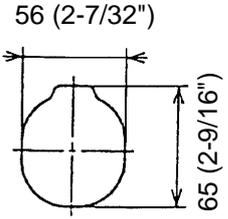
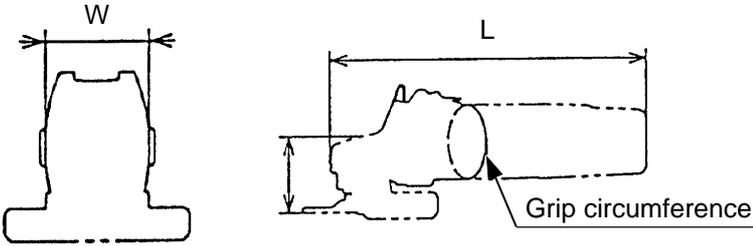
Item		Model	G 13SR										
Depressed center wheel	Dimensions	O.D. 125 mm (5") x Thickness 6 mm (1/4") x I.D. 22 mm (7/8") Offset amount : 4.8 mm (3/16")											
	Max. practical peripheral speed	4,800 m/min. (15,800 ft/min., 80 m/s) with DSA approved Red Belt on the label											
	Type	A, 36, Q, BF											
Power source		AC single phase 50 or 60 Hz											
Voltage, current and input		<table border="1"> <thead> <tr> <th>Voltage (V)</th> <th>Current (A)</th> <th>Input (W)</th> </tr> </thead> <tbody> <tr> <td>220</td> <td>2.9</td> <td rowspan="2">600</td> </tr> <tr> <td>230</td> <td>2.7</td> </tr> </tbody> </table>				Voltage (V)	Current (A)	Input (W)	220	2.9	600	230	2.7
Voltage (V)	Current (A)	Input (W)											
220	2.9	600											
230	2.7												
No-load speed		10,000 /min.											
Type of motor		AC single phase commutator motor											
Type of switch		Slide switch											
Enclosure		Material: Housing (green) } Glassfiber reinforced polycarbonate resin Tail cover (black) } Gear cover, Packing gland } Aluminium alloy die casting Inner cover } Painting: Gear cover, Packing gland } Metallic silver Inner cover }											
Weight	Net* ¹⁾	1.6 kg (3.5 lbs.)											
	Gross	3.0 kg (6.6 lbs.)											
Packaging		Corrugated cardboard box											
Standard accessories* ²⁾		Side handle 1 Wrench 1											

*¹⁾ Net weight excludes cord, side handle, 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 13SR	G 10SR/G 12SR	
Wheel diameter	mm	125 (5")	100/115 (4"4-1/2")	125 (5")
Power input	W	600	550	540
Power output	W	390	360	300
Max. power output	W	800	800	620
No-load speed	/min.	10,000	11,000	10,000
Grip diameter	mm			
Grip circumference	mm	207 (8-5/32")	207 (8-5/32")	195 (7-11/16")
Dimensions	L	mm	261 (10-1/4")	261 (10-1/4")
	H	mm	60 (2-3/8")	60 (2-3/8")
	W	mm	67 (2-5/8")	67 (2-5/8")
Weight*	kg	1.6 (3.5 lbs.)	1.6 (3.5 lbs.)	1.4 (3.1 lbs.)
(Actual weight)		(1.6) (3.5 lbs.)	(1.6) (3.5 lbs.)	(1.5) (3.3 lbs.)
				

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

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

Fig. 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.

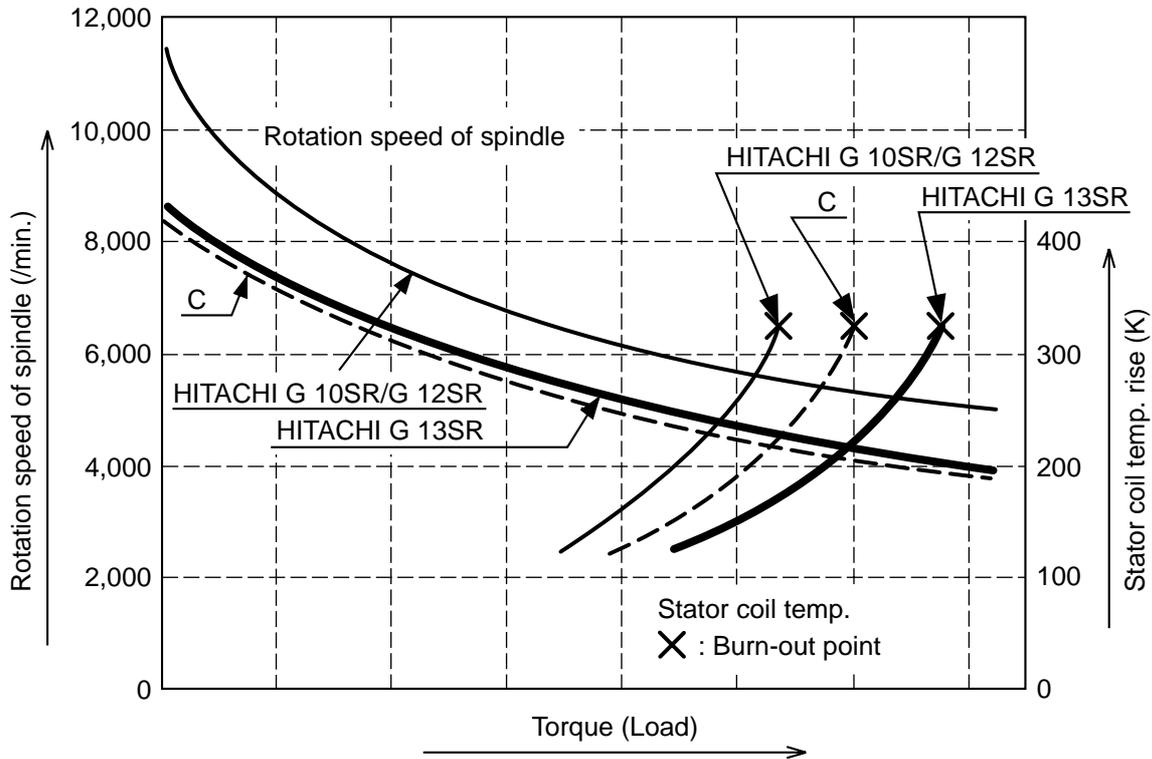


Fig. 1 Comparisons in torque vs. rotation speed and stator coil temperature rise

Fig. 1 indicates:

- ① The rotation speed of maker C's model at the same torque is low and the stator coil temperature rise is high, which causes low motor power.
- ② The rotation speed of HITACHI G 13SR at the same torque is high and the stator coil temperature is low. As the speed and the temperature are well balanced, HITACHI G 13SR ensures excellent performance for different jobs regardless of the magnitude of load.

7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Model G 13SR 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 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, 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 lists the following basic safety precaution in the use of the tool.

For China, Hong Kong

CAUTION

Read thoroughly HANDLING INSTRUCTIONS before use.

7-3. Precautions on Usage

(1) The wheel guard must be aligned in relation to the side handle mounting position.

As illustrated in Figs. 2 and 3 the customer should be instructed that the wheel guard mounting angle must be aligned and fixed in accordance with the side handle mounting position so that the operator's hand will not contact the depressed center wheel.

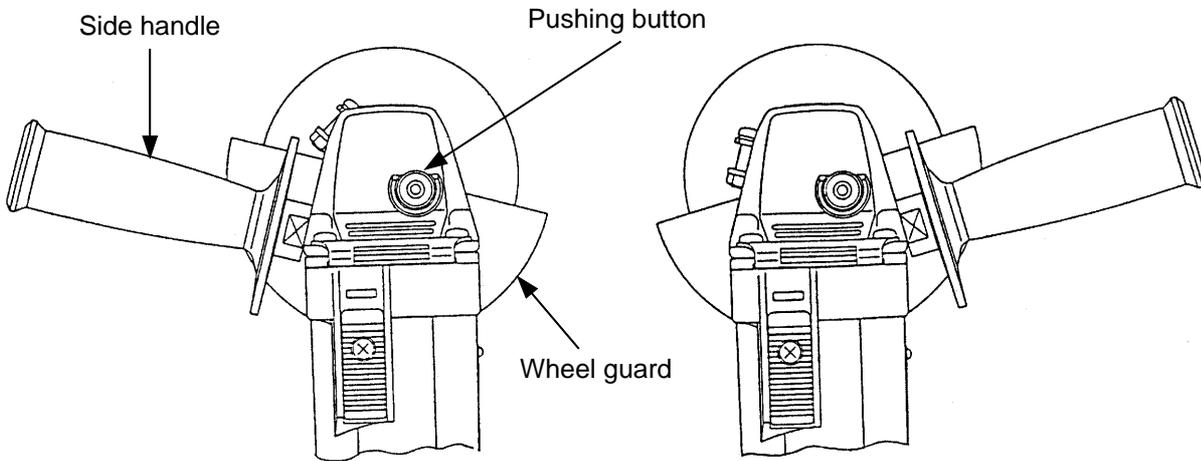


Fig. 2

Fig. 3

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

If the pushing button (illustrated in Figs. 2 and 3) 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. Eventually the depressed center wheel may fly 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 Lists and exploded assembly diagrams for G 13SR.

8-1. Disassembly of the Armature

- (1) Loosen the Machine Screw (W/SP. Washer) M5 x 16 **[26]** and remove the Wheel Guard Ass'y **[28]**.
- (2) Remove the Brush Caps **[40]**, and take out the Carbon Brushes **[41]**.
- (3) Loosen the Tapping Screws D5 x 25 **[1]**, and remove the Gear Cover Ass'y **[4]**. Separate the Inner Cover **[9]** from the Housing Ass'y **[36]** with a flat-blade screwdriver, and remove the Inner Cover **[9]** together with the Armature **[10]**.
- (4) Holding the Armature **[10]**, loosen the Special Nut M7 **[5]** with a wrench, and remove the Pinion **[6]**.
- (5) Support the Inner Cover **[9]** with a tubular jig (inner diameter 63 – 72 mm is recommended), and push down on the armature shaft with a hand press to remove the Armature **[10]**. (See Fig. 4.)

8-2. Disassembly of the Stator Ass'y

- (1) After removing the Armature **[10]**, disconnect the lead wires of the Stator Ass'y **[12]** from the Slide Switch **[44]**. Then, remove the Brush Terminals **[13]** from the Brush Holders **[42]**.
- (2) Loosen the Hex. Hd. Tapping Screws D4 x 70 **[11]**, and remove the Stator Ass'y **[12]**.

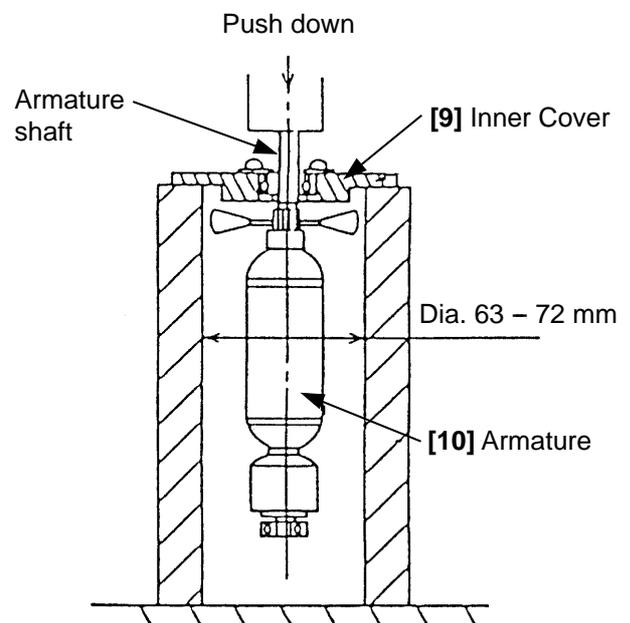


Fig. 4

8-3. Disassembly of the Gear

- (1) Loosen the Seal Lock Screw (W/SP. Washer) M4 x 12 **[23]**, and remove the Packing Gland **[22]** together with the Spindle **[25]**, and Gear **[17]** from the Gear Cover Ass'y **[4]** in a single body.
- (2) As illustrated in Fig. 5, support the angled surface of the Gear **[17]** with a J-129 gear puller (special repair tool, Code No. 970905), rest the J-129 gear puller on a J-130 sleeve (special repair tool, Code No. 970907), and push down on the tip of the Spindle **[25]** with a hand press to remove the Gear **[17]**.

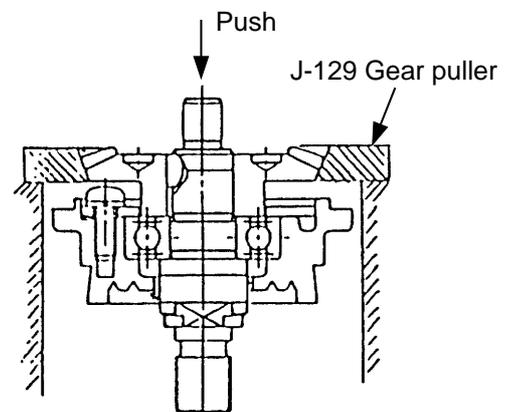


Fig. 5

8-4. Precautions on Reassembly

1) Thoroughly coat the grease (Hitachi Motor Grease N.P.C. SEP-3A, Code No. 930035, is recommended) on the gear teeth of the gear and pinion. Special attention must be given to ensure that the grease is applied properly all the way to the base of each gear teeth.

Failure to do so could result in early wear and/or damage to the gear and pinion.

2) Liberally moisten the inner circumference of the felt packing with machine oil:

Failure to properly moisten the inner circumference of the felt packing could cause early wear and/or damage of the ball bearing.

3) When replacing the gear cover assembly with a new one, apply mixed oil into the inner roller of the needle bearing (metal).

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

Mixture ratio: 1:1 (Weight ratio)

Supply amount: 0.5 cc

8-5. Amount of Lubricant

- Pinion chamber of Gear Cover Ass'y [4] (supply from inner cover side)..... 8 gr. of N.P.C. SEP-3A grease (Code No. 930035)

Also, thoroughly apply grease on the gear teeth of the gear and pinion. (See Para. 8-4.)

- Needle bearing (Metal) Mixed oil 0.5 cc

Mixed oil: Hitachi Power Tool Grease No. 2 (Code No. 939302) and turbine oil.

Mixture ratio: 1:1 (Weight ratio)

8-6. Tightening Torque of Each Screw or Nut

- Slotted Hd. Screw (Seal Lock) M4 [7]

and Seal Lock Screw (W/SP. Washer) M4 [18] [23] $1.8 \pm 0.5 \text{ N}\cdot\text{m}$ ($18 \pm 4 \text{ kgf}\cdot\text{cm}$, $1.3 \pm 0.3 \text{ ft}\cdot\text{lbs.}$)

- Tapping Screws D4 [11] [43] [46] [52] $2.0 \pm 0.5 \text{ N}\cdot\text{m}$ ($20 \pm 5 \text{ kgf}\cdot\text{cm}$, $1.5 \pm 0.4 \text{ ft}\cdot\text{lbs.}$)

- Tapping Screws D5 [1] $2.9 \pm 0.5 \text{ N}\cdot\text{m}$ ($30 \pm 5 \text{ kgf}\cdot\text{cm}$, $2.2 \pm 0.4 \text{ ft}\cdot\text{lbs.}$)

- Special Nut M7 [5] $6.4 \pm 1.0 \text{ N}\cdot\text{m}$ ($65 \pm 10 \text{ kgf}\cdot\text{cm}$, $4.7 \pm 0.7 \text{ ft}\cdot\text{lbs.}$)

- Flat Hd. Screw M4 [34] $0.6^{+0.3}_0 \text{ N}\cdot\text{m}$ ($6^{+3}_0 \text{ kgf}\cdot\text{cm}$, $0.4^{+0.2}_0 \text{ ft}\cdot\text{lbs.}$)

8-7. Wiring Diagram

(1) For China

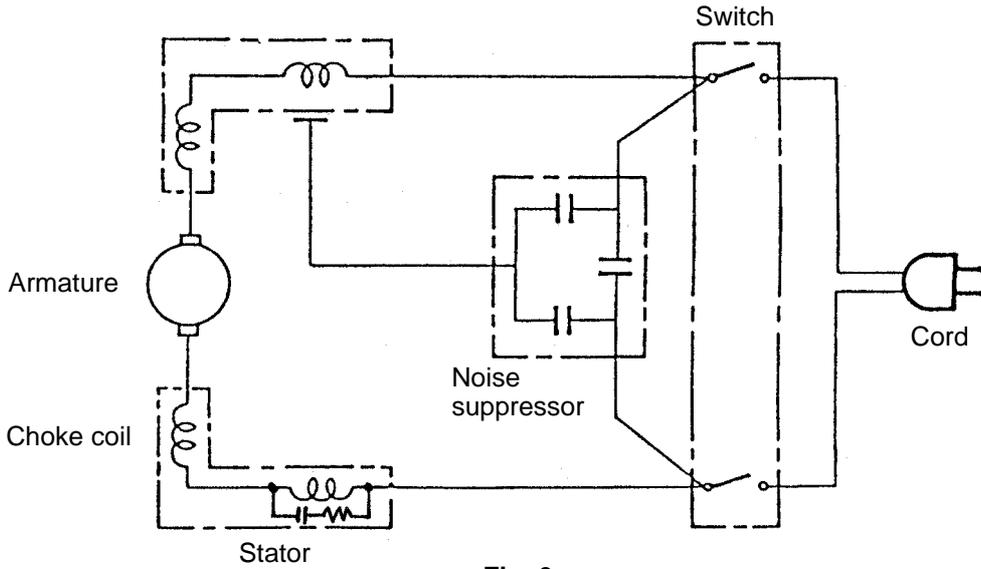


Fig. 6

(2) For other countries

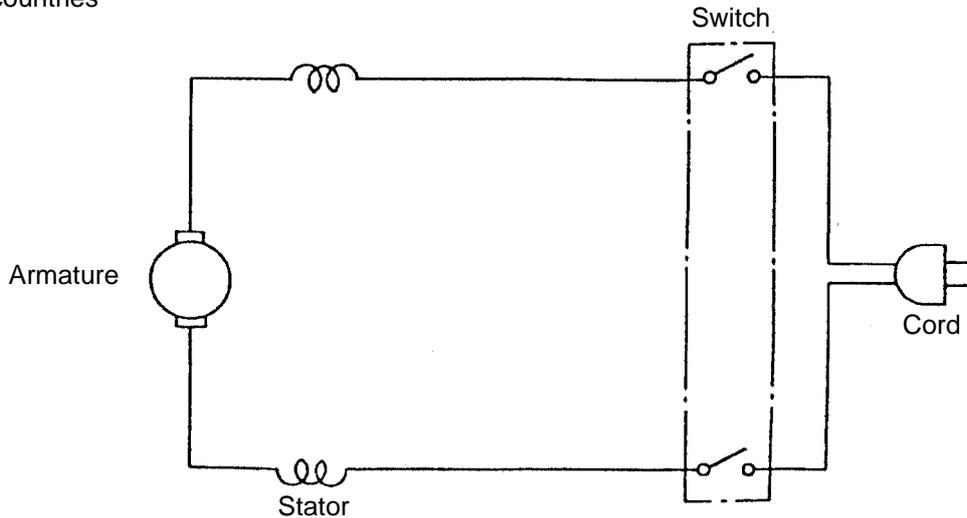


Fig. 7

8-8. Remaining Reassembly

Remaining reassembly can be accomplished by following the disassembly procedures in reverse.

8-9. Insulation Tests

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

Insulation resistance: 7 MΩ or more with DC 500 V Megohm Tester.

Dielectric strength: AC 4000 V/1 minute, with no abnormalities 220 V – 230 V

8-10. No-Load Current Value

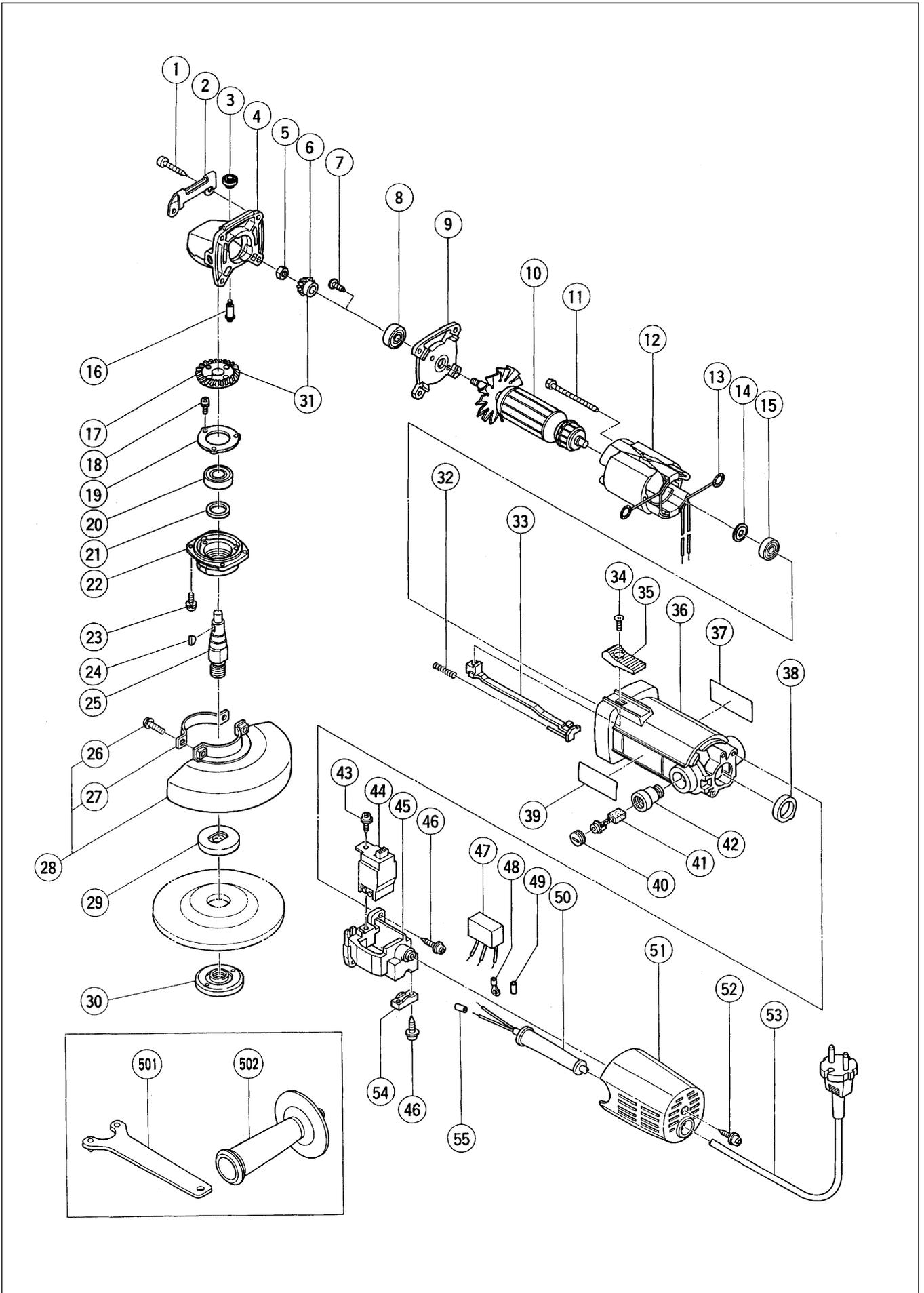
After no-load operation for 30 minutes, the no-load current value should be as follows:

Voltage (V)	220	230
Current (A) (max.)	1.3	1.2

9. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
G 13SR		Work Flow						
		Slide Switch Cord Tail Cover			Housing Ass'y Stator Ass'y Slide Bar			
	General Assembly			Pinion Bearing Cover Ball Bearing (608 VVMC) Inner Cover Armature Ball Bearing (626 VVMC)				
				Pushing Button Gear Cover Ass'y Lock Pin Gear	Bearing Cover Ball Bearing (6001 VVCM) Felt Packing Packing Gland Spindle Flinger			
		Wheel Guard Ass'y						

Assembly Diagram for G 13SR



PARTS

G 13SR

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	937-807	TAPPING SCREW D5X25	1		
2	302-149	GUARD PLATE	1		
3	301-944	PUSHING BUTTON	1		
4	314-125	GEAR COVER ASS'Y	1	INCLUD.3,16	
5	301-941	SPECIAL NUT M7	1		
6	301-939	PINION	1		
7	314-430	SLOTTED HD. SCREW (SEAL LOCK) M4X10	2		
8	608-VVM	BALL BEARING 608VVC2PS2L	1		
9	301-935	INNER COVER	1		
10	360-163E	ARMATURE 220V-230V	1		
11	982-021	HEX. HD. TAPPING SCREW D4X70	2		
* 12	340-187E	STATOR ASS'Y 220V	1	INCLUD.13	
* 12	340-477G	STATOR ASS'Y 220V	1	INCLUD.13 FOR CHN	
13	931-867	BRUSH TERMINAL	2		
14	980-865	WASHER (A)	1		
15	626-VVM	BALL BEARING 626VVC2PS2L	1		
16	301-943	LOCK PIN	1		
17	301-940	GEAR	1		
18	987-201	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	987-203	SEAL LOCK SCREW (W/SP. WASHER) M4X12	4		
24	940-220	WOODRUFF KEY 2.5X8	1		
25	319-117	SPINDLE	1		
26	308-386	MACHINE SCREW (W/SP. WASHER) M5X16(BLACK)	2		
27	301-949	SET PLATE	1		
28	319-116	WHEEL GUARD ASS'Y	1	INCLUD.26,27	
29	937-817Z	WHEEL WASHER	1		
30	994-324	WHEEL NUT M14	1		
31	301-938	GEAR AND PINION ASS'Y	1	INCLUD.6,17	
32	938-299	SPRING	1		
33	982-033	SLIDE BAR	1		
34	949-322	FLAT HD. SCREW M4X10 (10 PCS.)	1		
35	994-298	SLIDE KNOB (C)	1		
36	315-493	HOUSING ASS'Y	1	INCLUD.42	
* 37		NAME PLATE	1		
38	307-010	BEARING BUSHING	1		
39		HITACHI LABEL	1		
40	937-847	BRUSH CAP	2		
41	999-021	CARBON BRUSH (1 PAIR)	2		
42	937-846	BRUSH HOLDER	2		
43	305-720	TAPPING SCREW (W/FLANGE) D4X12	1		
44	980-778	SLIDE SWITCH (2P PILLAR TYPE)	1		
45	982-044	SWITCH HOLDER	1		
46	984-750	TAPPING SCREW (W/FLANGE) D4X16	4		
* 47	994-273	NOISE SUPPRESSOR	1	FOR CHN	
* 48	959-144	TERMINAL 50051 (10 PCS.)	1	FOR CHN	
* 49	981-373	TUBE (D)	2	FOR CHN	
50	953-327	CORD ARMOR D8.8	1		

