

MODELS

**G 18MR, G 18MRU
G 23MR, G 23MRU**

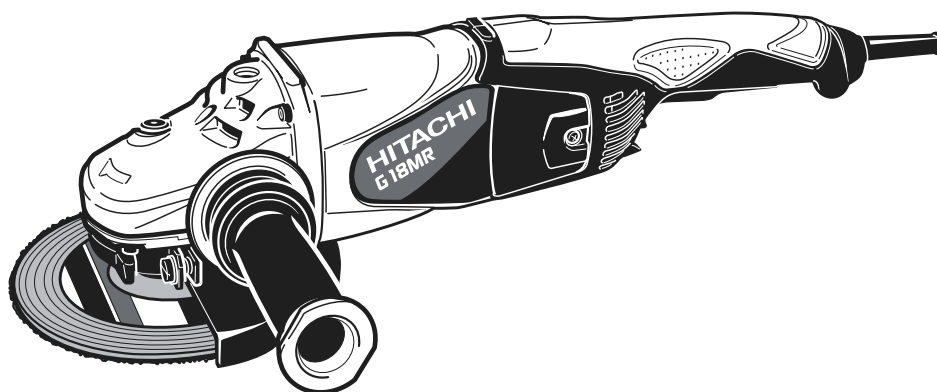
Hitachi Power Tools

DISC GRINDER

**G 18MR, G 18MRU
G 23MR, G 23MRU**

**TECHNICAL DATA
AND
SERVICE MANUAL**

G



LIST Nos. G 18MR: E266, G 18MRU: E267, Feb. 2004
G 23MR: E268, G 23MRU: E269

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	9047, 9047SF, 9049, 9049SF, 9057, 9057SF, 9059, 9059SF
B	B-1	BOSCH	GWS24-180, GWS24-180JB
	B-2		GWS24-230, GWS24-230JB
	B-3		GWS26-180, GWS26-180JB
	B-4		GWS26-230, GWS26-230JB



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1. PRODUCT NAME

- 1) Hitachi 180 mm (7") Disc Grinder, Model G 18MR
- 2) Hitachi 180 mm (7") Disc Grinder, Model G 18MRU (With soft start)
- 3) Hitachi 230 mm (9") Disc Grinder, Model G 23MR
- 6) Hitachi 230 mm (9") Disc Grinder, Model G 23MRU (With soft start)

2. MARKETING OBJECTIVE

Our lineup of large disc grinders has been marketed mainly in Europe. They have been fully redesigned into more competitive and higher performance models between 2002 and 2003. This time, the new G 23MR series is put on the market. They are equipped with Hitachi's original double-insulated aluminum housing that has been well reputed in the current small disc grinders, hammers and hammer drills.

Expansion and increase of sales are expected in both the big European market and the North American and Southeast Asian markets where a disc grinder equipped with an aluminum housing is highly needed.

The key features of the new G 23MR series in comparison with the current G 23SC3 series are as follows:

- 1) Strong body thanks to the aluminum housing
- 2) Comfortable soft grip handle
- 3) Vibration-absorbing side handle
- 4) New design aimed at the feeling as if the handle is integrated with the housing

Vigorous sales promotion of Hitachi disc grinders is anticipated with the introduction of the new G 23MR series.

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

Class-first double-insulated aluminum housing

- Safety for an electric leak in spite of aluminum housing
- Strong body → Unbreakable
- Great heat resistance (3.3 times higher than mold housing)
→ No deform by burning Ar or BB, No St core gap

Class-top overload durability

- 1.2 times higher compared to maker C's model
- 1.1 times higher compared to maker B's model

Wear resistance of armature coil

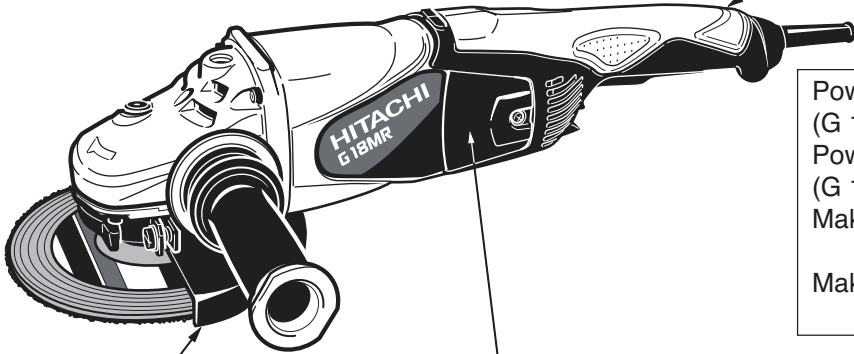
Soft grip handle

Power 2,400 W motor design (G 18MR, G 23MR)
Power 2,500 W motor design (G 18MRU, G 23MRU)
Maker B's model: 2,400 W : 2,600 W
Maker C's model: 2,300 W : 2,500 W

Tool-less wheel guard

Prolonged service life of the carbon brushes thanks to the new construction

Vibration-absorbing side handle
Vibration reduction: 50 % (compared to the current model)



4-1. Class-first Double-insulated Aluminum Housing

The G 23MR series is equipped with the class-first double-insulated aluminum housing. The outer frame and the ball bearing chamber are sturdy (highly rigid) aluminum die castings. In addition, the inside of the housing is injection-molded with resin to realize the double-insulated housing. Thanks to this highly rigid double-insulated housing, the durability of the motor and the service life of the carbon brushes are increased while it decreases deviation of the core and welding of the ball bearing chamber

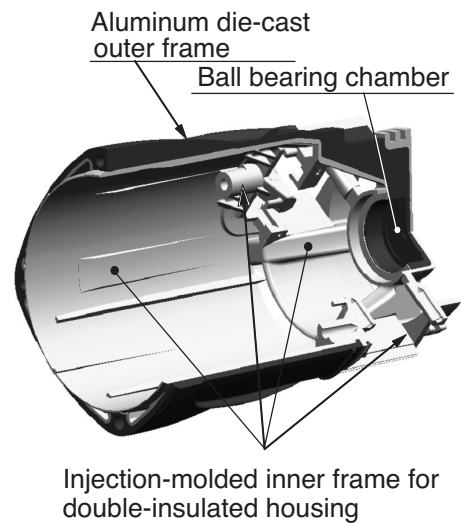


Fig. 1

4-2. Prolonged Service Life of the Carbon Brushes thanks to the New Construction

The service life of the carbon brushes is 1.1 times longer than the G 23SC3 series.

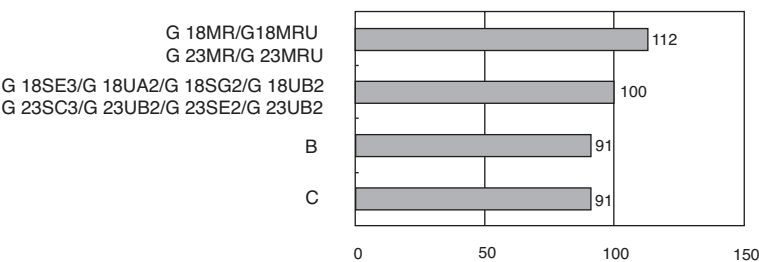


Fig. 2

4-3. Vibration-absorbing Side Handle

Vibration-absorbing side handle for vibration reduction: Vibration to side handle is reduced to 50 %.

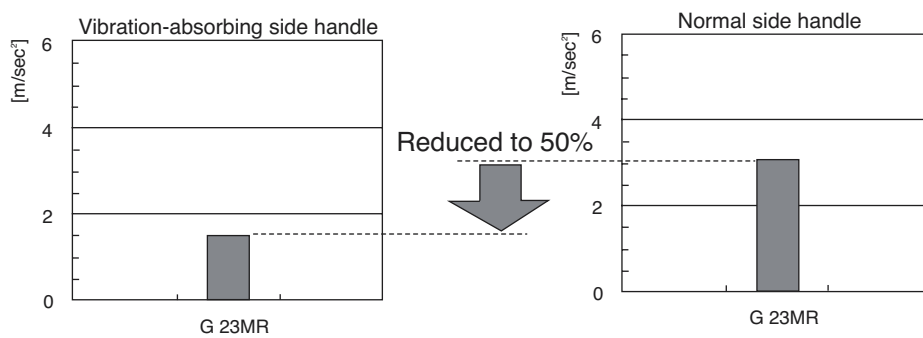


Fig. 3

4-4. Class-top Overload Durability

The Models G 18MR, G 18MRU, G 23MR and G 23MRU provide excellent overload durability thanks to the improved motor winding and carbon brush material in common with the current models (the service life of the carbon brushes is also prolonged). Figure shows the comparison of overload durability when the stator coil temperature rise is 200°K using the Model G 23MR as the reference. As is evident from this, the Models G 18MR, G 18MRU, G 23MR and G 23MRU are superior to the competitors in overload durability.

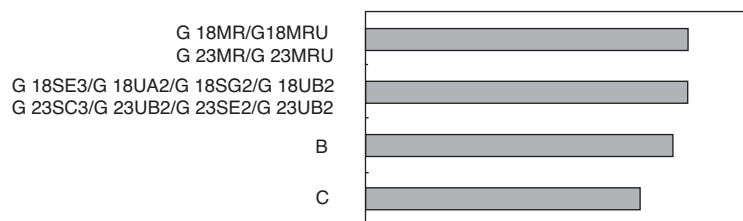


Fig. 4

4-5. Wear Resistance of Armature Coil

Both ends of the armature coil are sealed with protect tape in addition to varnish treatment to minimize wear of the armature coil caused by dust.

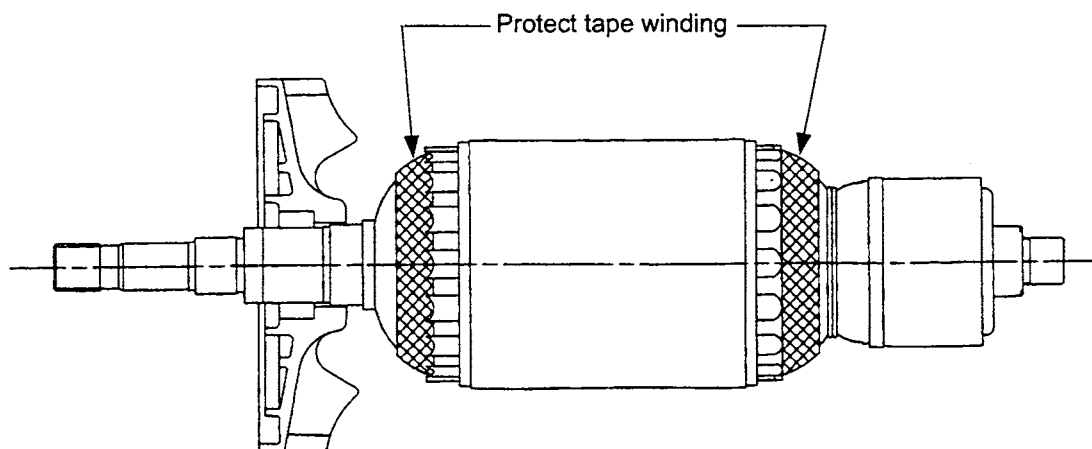


Fig. 5

4-6. Soft Grip Handle

The double-layer molded handle consists of a nylon resin base covered with a soft plastic layer to ensure a soft touch and firm, non-slip grip of the handles.

4-7. Angle-adjustable Wheel Guard without Using a Tool

By following the procedure described below once, the newly developed tool-less wheel guard can be adjusted to a desired angle without using any tool.

[Installation and adjustment of the wheel guard]

- Set the Wheel Guard Ass'y [37] <37> on the Packing Gland [28] <28>.
- With the Lever [32] <32> closed, tighten the Bolt M8 x 22 [33] <33> until the wheel guard is locked in position.
- Open the Lever [32] <32> for angle adjustment of the wheel guard. (If the wheel guard is difficult to turn, loosen the Bolt M8 x 22 [33] <33> and readjust the wheel guard.)
- Be sure to close the Lever [32] <32> after finishing adjustment before starting operation.
- When the Lever [32] <32> becomes dull in motion, lubricate the sliding area between the Set Piece [35] <35> and the Lever [32] <32>.

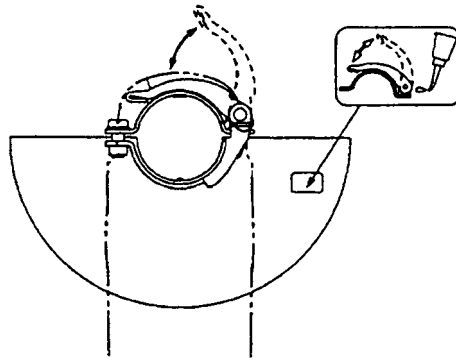


Fig. 6

5. SPECIFICATIONS

Item \ Model		G 18MR		G 23MR																			
Depressed-center wheels	Dimensions	O.D. 180 mm (7") x Thickness 6 mm (1/4") x I.D. 22.2 mm (7/8")		O.D. 230 mm (9") x Thickness 6 mm (1/4") x I.D. 22.2 mm (7/8")																			
	Max. practical peripheral speed	80 m/s (15,800 ft/min)																					
	Type	A, 24, R, B																					
	Spindle thread	*1	M14 x 2	*1	M14 x 2																		
Power source		AC single phase 50 or 60 Hz																					
Voltage and power input *2		<table><tr><td>Voltage (V)</td><td>Current (A)</td><td>Power input (W)</td></tr><tr><td>110</td><td>21.8</td><td>2,400</td></tr><tr><td>120</td><td>15</td><td>1,700</td></tr><tr><td>220</td><td>11.5</td><td>2,400</td></tr><tr><td>230</td><td>11</td><td>2,400</td></tr><tr><td>240</td><td>10.5</td><td>2,400</td></tr></table>				Voltage (V)	Current (A)	Power input (W)	110	21.8	2,400	120	15	1,700	220	11.5	2,400	230	11	2,400	240	10.5	2,400
Voltage (V)	Current (A)	Power input (W)																					
110	21.8	2,400																					
120	15	1,700																					
220	11.5	2,400																					
230	11	2,400																					
240	10.5	2,400																					
No-load speed		*3	8,500/min	*3	6,600/min																		
Type of motor		AC single phase commutator motor																					
Enclosure		Housing Aluminum alloy die casting (Silver green metallic) and glassfiber reinforced polyamide resin (green) Handle Glassfiber reinforced polyamide resin (black) and thermoplastic elastomer (green) Gear cover, packing gland Aluminum alloy diecasting																					
Type of switch		Trigger switch																					
Weight	Net: *4 (main body)	5.4 kg (11.9 lbs.)																					
	Gross:	8.6 kg (19 lbs.)																					
Type of packing		Corrugated cardboard box																					
Standard accessories		Depressed-center wheel 180 mm (7") (Code No. 316824) 1*5 Side handle (Code No. 322411) 1 Wrench (Code No. 937913Z) 1		Depressed-center wheel 230 mm (9") (Code No. 316825) 1*5 Side handle (Code No. 322411) 1 Wrench (Code No. 937913Z) 1 Wheel nut (B) (Code No. 937917Z) 1*5 Wheel washer (A) (Code No. 937907Z) 1*5																			

*1 For U.S.A.: 5/8-11 UNC

*2 Be sure to check the nameplate on product as it is subject to change by areas.

*3 For U.S.A.: 6,000/min

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

*5 Standard accessories may vary depending on market areas.

Item \ Model		G 18MRU		G 23MRU										
Depressed-center wheels	Dimensions	O.D. 180 mm (7") x Thickness 6 mm (1/4") x I.D. 22.2 mm (7/8")		O.D. 230 mm (9") x Thickness 6 mm (1/4") x I.D. 22.2 mm (7/8")										
	Max. practical peripheral speed	80 m/s (15,800 ft/min)												
	Type	A, 24, R, B												
	Spindle thread	M14 x 2		M14 x 2										
Power source		AC single phase 50 or 60 Hz												
Voltage and power input *1		<table><tr><td>Voltage (V)</td><td>Current (A)</td><td>Power input (W)</td></tr><tr><td>230</td><td>11.5</td><td>2,500</td></tr><tr><td>240</td><td>10.0</td><td>2,400</td></tr></table>				Voltage (V)	Current (A)	Power input (W)	230	11.5	2,500	240	10.0	2,400
Voltage (V)	Current (A)	Power input (W)												
230	11.5	2,500												
240	10.0	2,400												
No-load speed		8,500/min		6,600/min										
Type of motor		AC single phase commutator motor												
Enclosure		Housing Aluminum alloy die casting (Silver green metallic) and glassfiber reinforced polyamide resin (green) Handle Glassfiber reinforced polyamide resin (black) and thermoplastic elastomer (green) Gear cover, packing gland Aluminum alloy diecasting												
Type of switch		Trigger switch												
Weight	Net: *2 (main body)	5.4 kg (11.9 lbs.)												
	Gross:	8.6 kg (19 lbs.)												
Type of packing		Corrugated cardboard box												
Standard accessories		Depressed-center wheel 180 mm (7") (Code No. 316824) 1*3 Side handle (Code No. 322411) 1 Wrench (Code No. 937913Z) 1		Depressed-center wheel 230 mm (9") (Code No. 316825) 1*3 Side handle (Code No. 322411) 1 Wrench (Code No. 937913Z) 1 Wheel nut (B) (Code No. 937917Z) 1*3 Wheel washer (A) (Code No. 937907Z) 1*3										

*1 Be sure to check the nameplate on product as it is subject to change by areas.

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

*3 Standard accessories may vary depending on market areas.

6. COMPARISONS WITH SIMILAR PRODUCTS

6-1. Specification Comparisons

Maker	HITACHI		B-1
Model name	G 18MR	G 18SE3	
Capacity:	180	180	180
Depressed-center wheel dia. (mm)	(7")	(7")	(7")
Power input *1 (W)	2400	2300	2400
Power output *1 (W)	1500	1500	1500
Max. power output *1 (W)	4600	4600	4100
No-load speed (/min)	8500	8500	8500
No-load sound pressure level (dB (A))	88	88	89
Service life of carbon brushes *2 (hr)	195	175	160
Weight *3 (kg)	5.4 (11.9 lbs.)	5.0 (11.0 lbs.)	5.1 (11.2 lbs.)
(Actual weight) (kg)	5.6 (12.3 lbs.)	5.2 (11.5 lbs.)	5.2 (11.5 lbs.)
Dimensions	L mm (inch)	492 (19-3/8)	478 (18-13/16)
	H mm (inch)	83 (3-9/32)	83 (3-9/32)
		83 (3-9/32)	92 (3-10/16)

Maker	HITACHI		B-2
Model name	G 23MR	G 23SC3	
Capacity:	230	230	230
Depressed-center wheel dia. (mm)	(9")	(9")	(9")
Power input *1 (W)	2400	2300	2400
Power output *1 (W)	1500	1500	1500
Max. power output *1 (W)	4600	4600	4100
No-load speed (/min)	6600	6600	6600
No-load sound pressure level (dB (A))	88	88	89
Service life of carbon brushes *2 (hr)	195	175	160
Weight *3 (kg)	5.4 (11.9 lbs.)	5.0 (11.0 lbs.)	5.1 (11.2 lbs.)
(Actual weight) (kg)	5.6 (12.3 lbs.)	5.2 (11.5 lbs.)	5.2 (11.5 lbs.)
Dimensions	L mm (inch)	492 (19-3/8)	478 (18-13/16)
	H mm (inch)	83 (3-9/32)	83 (3-9/32)
		83 (3-9/32)	85 (3-11/32)

*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

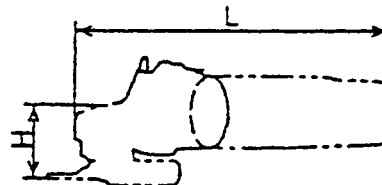


Fig. 7

Maker	HITACHI		B-3
Model name	G 18MRU	G 18UB2	
Capacity:	180	180	180
Depressed-center wheel dia. (mm)	(7")	(7")	(7")
Power input *1 (W)	2500	2500	2600
Power output *1 (W)	1680	1680	1600
Max. power output *1 (W)	4600	4600	4200
No-load speed (/min)	8500	8500	8500
No-load sound pressure level (dB (A))	88	88	89
Service life of carbon brushes *2 (hr)	185	165	150
Weight *3 (kg)	5.4 (11.9 lbs.)	5.0 (11.0 lbs.)	5.1 (11.2 lbs.)
(Actual weight) (kg)	5.6 (12.3 lbs.)	5.2 (11.5 lbs.)	5.2 (11.5 lbs.)
Dimensions L mm (inch)	492 (19-3/8)	478 (18-13/16)	470 (18-1/2)
H mm (inch)	83 (3-9/32)	83 (3-9/32)	85 (3-11/32)

Maker	HITACHI		B-4
Model name	G 23MRU	G 23UB2	
Capacity:	230	230	230
Depressed-center wheel dia. (mm)	(9")	(9")	(9")
Power input *1 (W)	2500	2500	2600
Power output *1 (W)	1680	1680	1600
Max. power output *1 (W)	4600	4600	4200
No-load speed (/min)	6600	6600	6500
No-load sound pressure level (dB (A))	88	88	89
Service life of carbon brushes *2 (hr)	185	165	150
Weight *3 (kg)	5.4 (11.9 lbs.)	5.0 (11.0 lbs.)	5.1 (11.2 lbs.)
(Actual weight) (kg)	5.6 (12.3 lbs.)	5.2 (11.5 lbs.)	5.2 (11.5 lbs.)
Dimensions L mm (inch)	492 (19-3/8)	478 (18-13/16)	470 (18-1/2)
H mm (inch)	83 (3-9/32)	83 (3-9/32)	85 (3-11/32)

*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

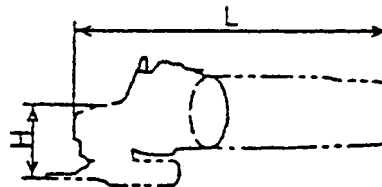


Fig. 8

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 23MR is the lowest among the competitive models. This means that the resistance to overload usage of the Model G 23MR is superior to other maker's models.

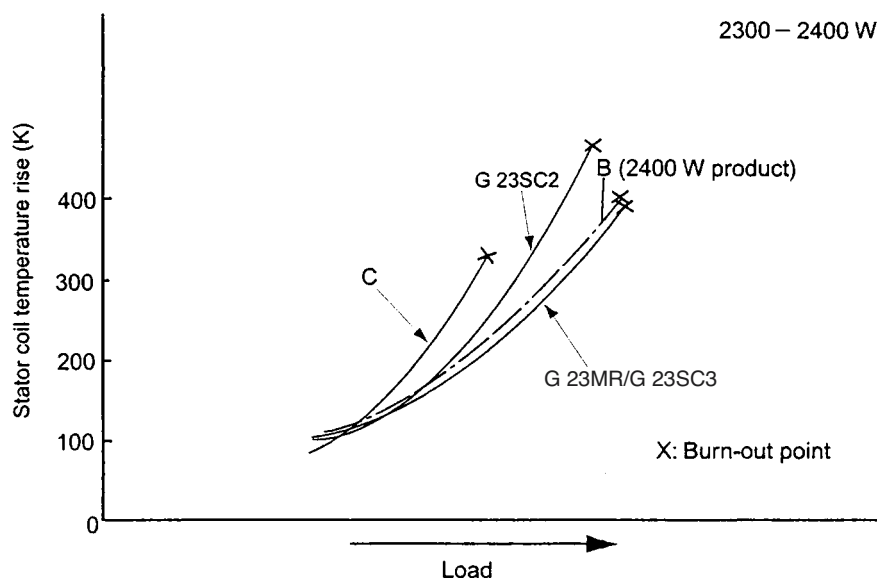


Fig. 9

The temperature rise of the Model G 23MRU is lower than the Model G 23SE.

(B is the lowest.)

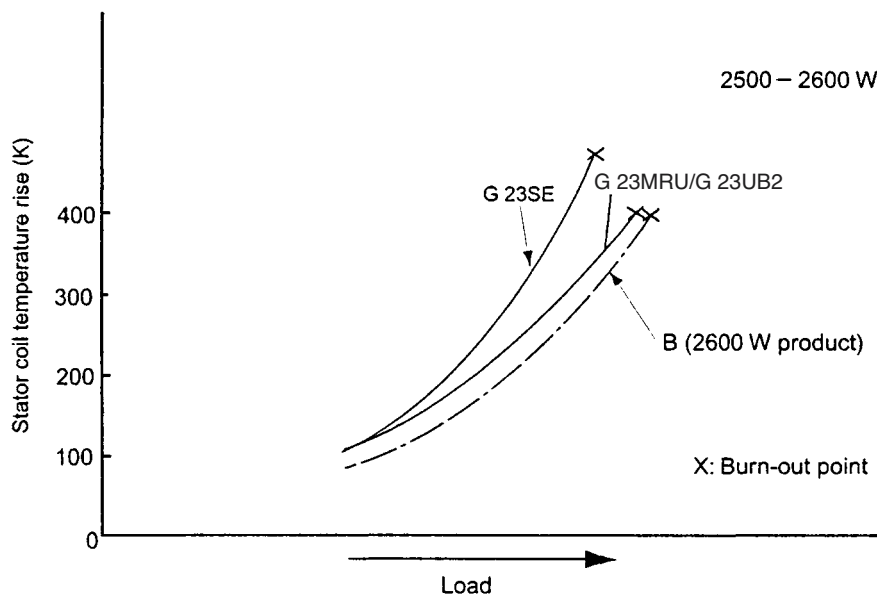


Fig. 10

7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Models G 18MR, G 18MRU, G 23MR and G 23MRU 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.

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 U.K., Germany, Belgium, France, Netherlands, Austria, Spain, Italy, Finland, Norway and Switzerland



(2) For Australia and New Zealand

CAUTION

Read thoroughly HANDLING INSTRUCTIONS before use.

(3) 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 * ____/min.

AVERTISSEMENT

Afin de réduire le risque de blessures, 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 * ____/min.

* G 23MR For U.S.A.: 6,600
For CAN: 6,600

* G 18MR For U.S.A.: 6,600
For CAN: 8,500

(4) For China

注意：使用前请仔细阅读使用说明书

(5) For Taiwan

使用前請詳讀使用說明書
禁止在雨中使用

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 the Models G 18MR and G 23MR, and the **<Bold>** numbers to those in the Parts List and the exploded assembly diagram for the Models G 18MRU and G 23MRU.

8-1. Disassembly

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

1. Open the Lever [32] <32> and loosen the Bolt M8 x 22 [33] <33>, and remove the Wheel Guard Ass'y [37] <37>.
2. Loosen the Tapping Screw (W/Flange) D4 x 16 (Black) [58] <58>, and remove the Brush Cover [48] <48>.
3. Remove the two Carbon Brushes [50] <50> from the Brush Holder Set [53] <53>.
4. Remove the four Hex. Socket Hd. Bolts (W/Flange) M5 x 30 [3] <3>. The Armature [14] <14> can then be taken out simultaneously with the Gear Cover Ass'y [6] <6>, Packing Gland [28] <28> and related parts.
5. Remove the four Hex. Socket Hd. Bolts (W/Flange) M5 x 16 [29] <29>.
6. After removing the two Seal Lock Hex. Socket Hd. Bolts M5 x 14 [1] <1>, the Armature [14] <14> can be extracted together with the Bearing Cover (A) [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 M10 [7] <7>, and extract the Pinion [8] <8>.
8. As illustrated in Fig. 11, the Ball Bearing 6301DDCMPS2L [11] <11> can be removed from the Armature [14] <14> by utilizing the J-204 Bearing Puller (special repair tool, Code No. 970982). After the ball bearing has been removed, Bearing Cover (A) [13] <13> can be easily taken off.

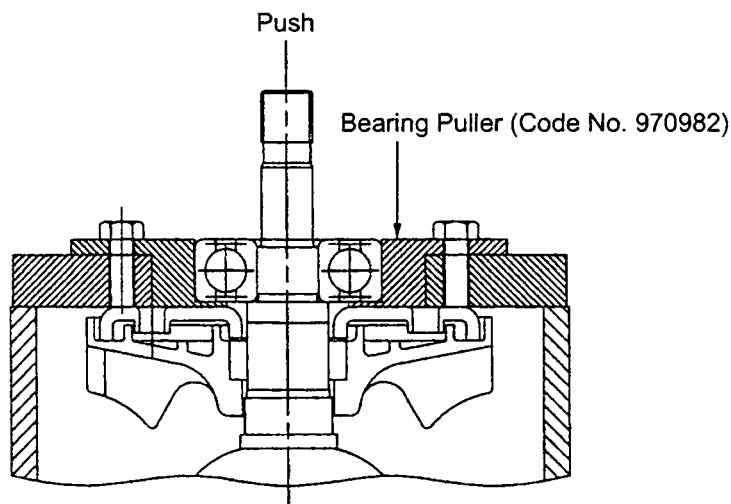


Fig. 11

(2) Removal of the Dust Seal [44] <44>

1. Insert the hooks of the J-204 bearing puller between the commutator and the Dust Seal [44] <44> 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 [44] <44> together with the Ball Bearing 6200VVCMP52L [45] <45>. Replace the Dust Seal [44] <44> with new one because it is damaged by the removal of the Ball Bearing 6200VVCMP52L [45] <45>.

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

1. After removing the Armature [14] <14>, disconnect the internal wires connected to the Brush Holder Set [53] <53> and the Switch [55] <56> .
2. Loosen the two Hex. Hd. Tapping Screws D5 x 75 [16] <16> and remove the Stator [17] <17> from the Housing [46] <46>. If the Stator [17] <17> cannot be easily removed from the Housing [46] <46>, disassembly can be facilitated by heating the Housing [46] <46> to a temperature of approximately 60°C (140°F) with an appropriate heating device.

(4) Removal of the Gear [21] <21>

1. Loosen the four Hex. Socket Hd. Bolts (W/Flange) M5 x 16 [29] <29>, and remove the Packing Gland [28] <28> together with the Spindle [26] <26> and Gear [21] <21> from the Gear Cover Ass'y [6] <6> in a single body.
2. Remove the Retaining Ring for D12 Shaft [20] <20> from the Spindle [26] <26>.
3. When it is necessary to remove the Gear [21] <21> from the Spindle [26] <26>, it is highly recommended that the special repair tools described below are utilized.

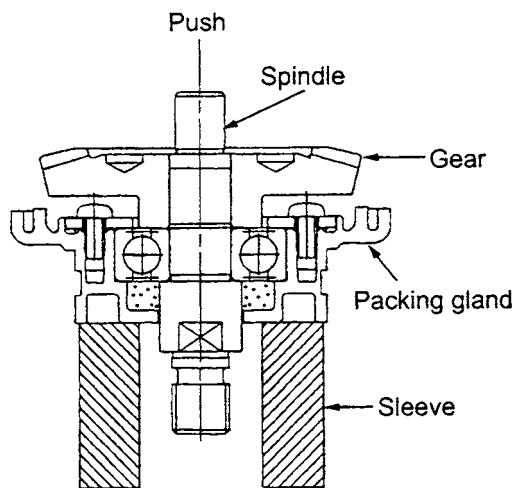


Fig. 12

Place the assembly on a sleeve that matches the dimension of the Packing Gland [28] <28> and push down on the top of the Spindle [26] <26> with a hand press to remove the Gear [21] <21> as shown in Fig. 12.

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 [21] <21> and Pinion [8] <8> with grease. Rub grease onto the teeth with your fingers so that the grease reaches each tooth bottom. Note that under-lubricated Gear [21] <21> and Pinion [8] <8> may wear at a faster rate.

(2) When replacing the Armature [14] <14> and the Ball Bearing 6200VVCMP2L [45] <45> on the commutator side, press inward on the Dust Seal [44] <44> while taking care of its direction until the end face of the Dust Seal [44] <44> hits against the butting surface of the Armature [14] <14> and make sure that the Dust Seal [44] <44> cannot turn freely. (See Fig. 13.)

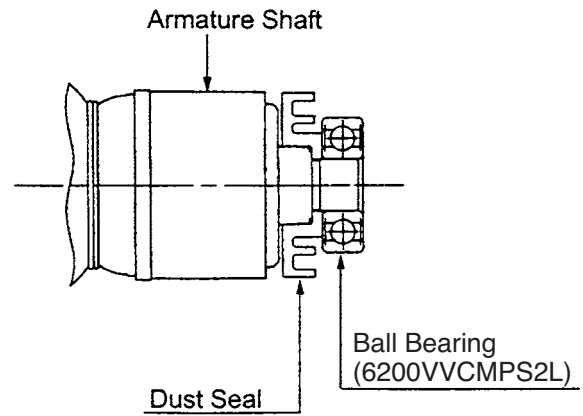


Fig. 13

The Dust Seal [44] <44> is an important element for improved dust protection of the Ball Bearing 6200VVCMP2L [45] <45>. Be sure to use a new one at every disassembly work of the Ball Bearing 6200VVCMP2L [45] <45>.

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

- Two Seal Lock Hex. Socket Hd. Bolts M5 x 14 [1] <1> which fix Bearing Cover (A) [13] <13> in place.
- Four Hex. Socket Hd. Bolt (W/Flange) M5 x 16 [29] <29> which fix Packing Gland [28] <28> in place.

(4) Check that the spring end does not hold the terminal when mounting the carbon brush. Do not catch the terminal in the brush cover when mounting the brush cover.

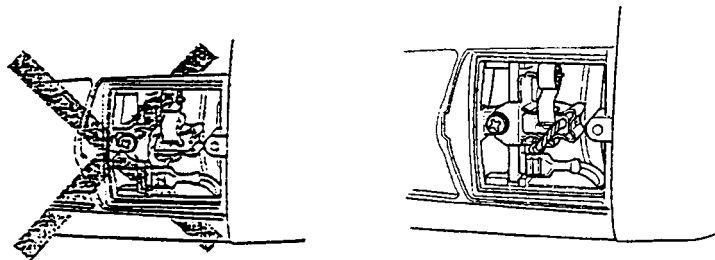
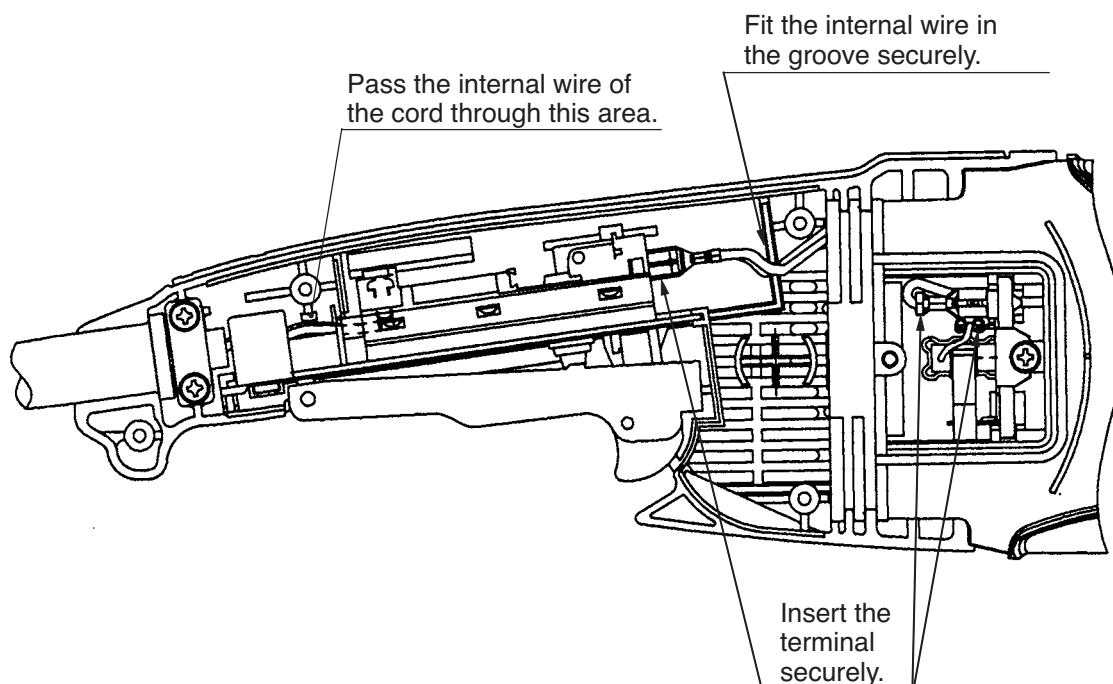
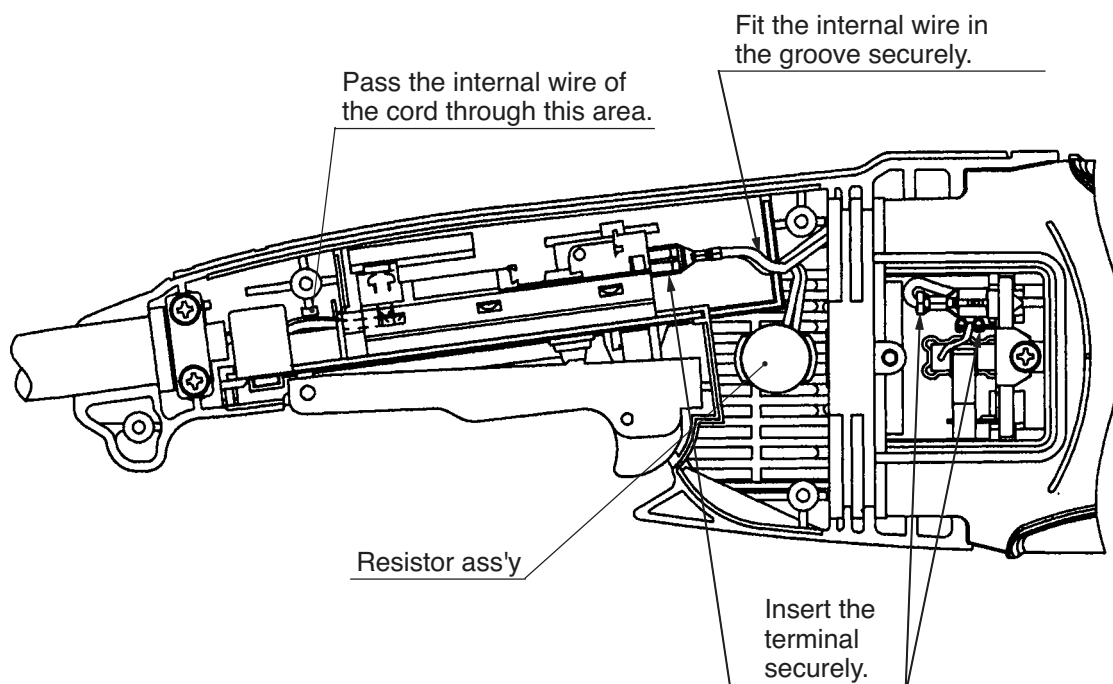


Fig. 14

- (5) Arrange the internal wires as shown in Figs. 15 and 16 being careful not to connect in wrong direction or position and not to get the internal wires caught in parts.



(a) G 18MR/G 23MR



(b) G 18MRU/G 23MRU

Fig. 15

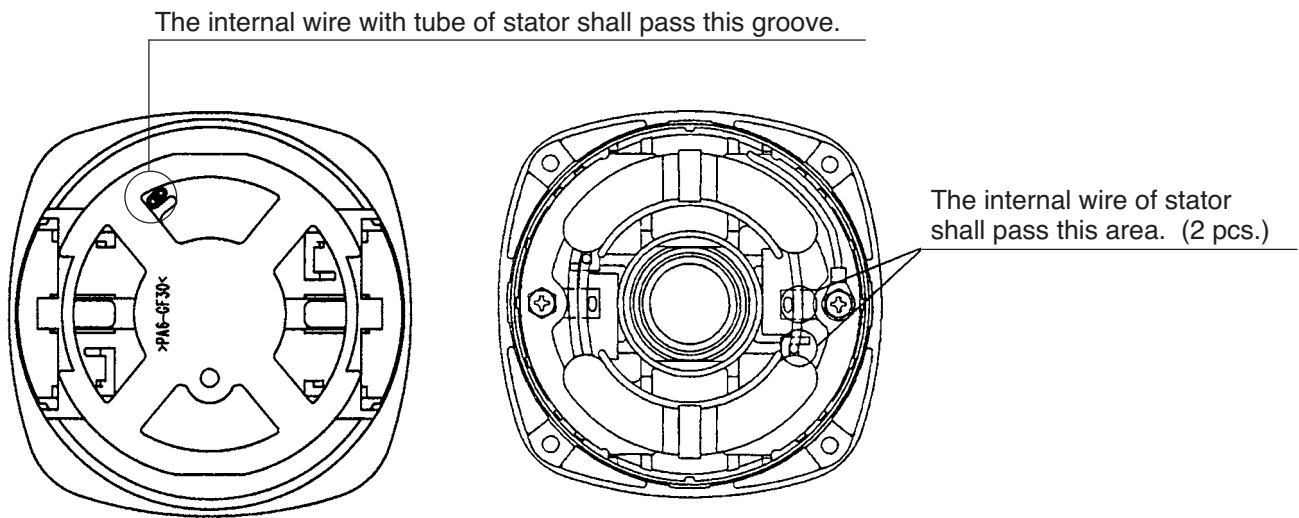


Fig. 16

(6) Mount the cord clip as shown in Fig. 17 being careful of the direction.

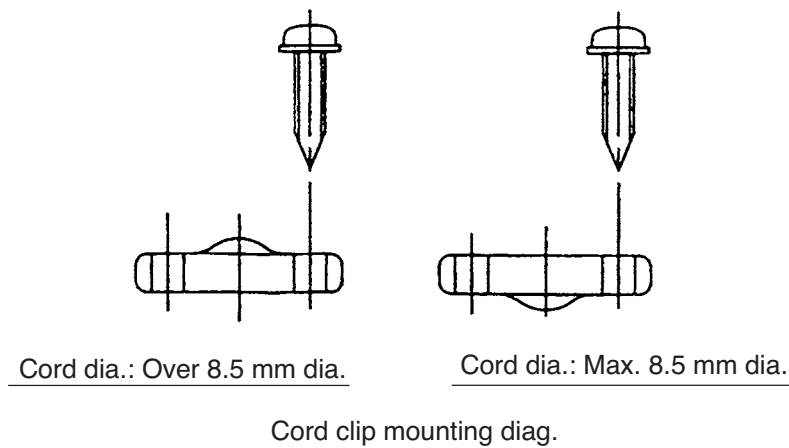


Fig. 17

8-3. Lubrication Points and Types of Lubricant

Pinion chamber of Gear Cover Ass'y [6] <6> ALVANIA grease EP (LF) O 35 g

Generously rub grease onto the gear and pinion
and inner circumference of metal.

8-4. Tightening Torque

Tapping Screws (W/Flange) D4 x 16

[49] <49> [58] <58> 2.0 ± 0.5 N·m (20 ± 5 kgf·cm, 1.5 ± 0.4 ft-lbs.)

Seal Lock Hex. Socket Hd. Bolt M5 x 14 [1] <1> 4.9 ± 1.0 N·m (50 ± 10 kgf·cm, 3.7 ± 0.8 ft-lbs.)

Hex. Socket Hd. Bolt (W/Flange) M5 x 30 [3] <3> 5.9 ± 1.5 N·m (60 ± 15 kgf·cm, 4.4 ± 1.1 ft-lbs.)

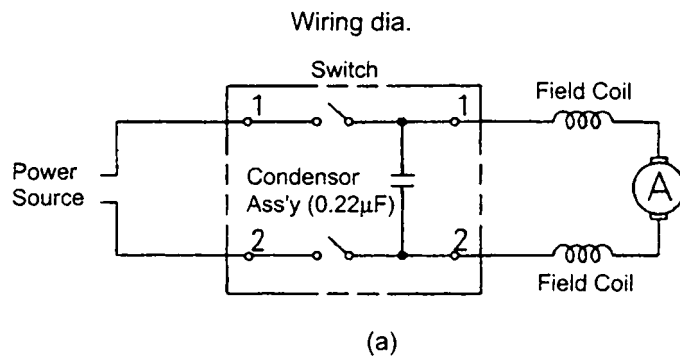
Hex. Socket Hd. Bolt (W/Flange) M5 x 16 [29] <29> 7.8 ± 1.5 N·m (80 ± 15 kgf·cm, 5.8 ± 1.1 ft-lbs.)

Special Nut M10 [7] <7> 15.3 ± 3.1 N·m (150 ± 30 kgf·cm, 10.8 ± 2.2 ft-lbs.)

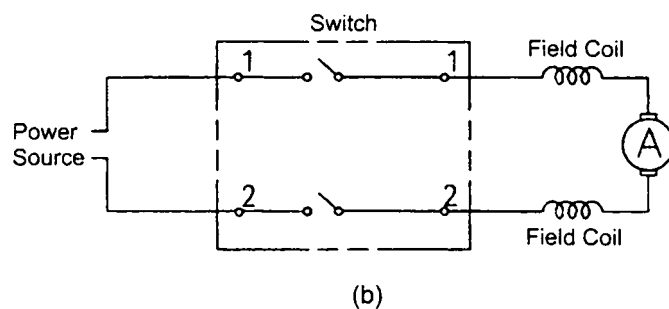
Machine Screw M5 x 10 [22] <22> 5.9 ± 1.5 N·m (60 ± 15 kgf·cm, 4.3 ± 1.1 ft-lbs.)

8-5. Wiring Diagram

(1) G 18MR/G 23MR



<For U.S.A.>



(2) G 18MRU/G 23MRU

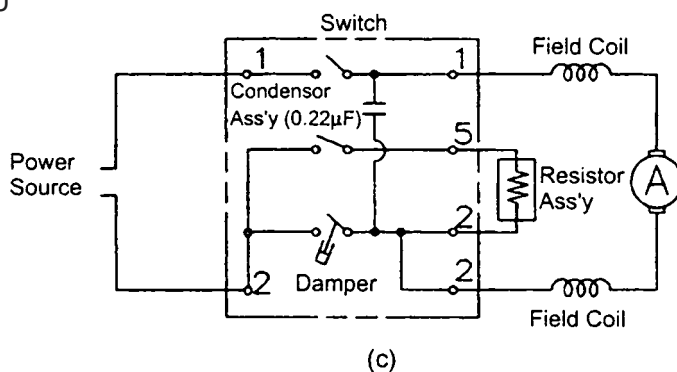


Fig. 18

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	220	230	240
Current (A) max.	6.3	6.8	3.6	3.8	3.7

9. STANDARD REPAIR TIME (UNIT) SCHEDULES

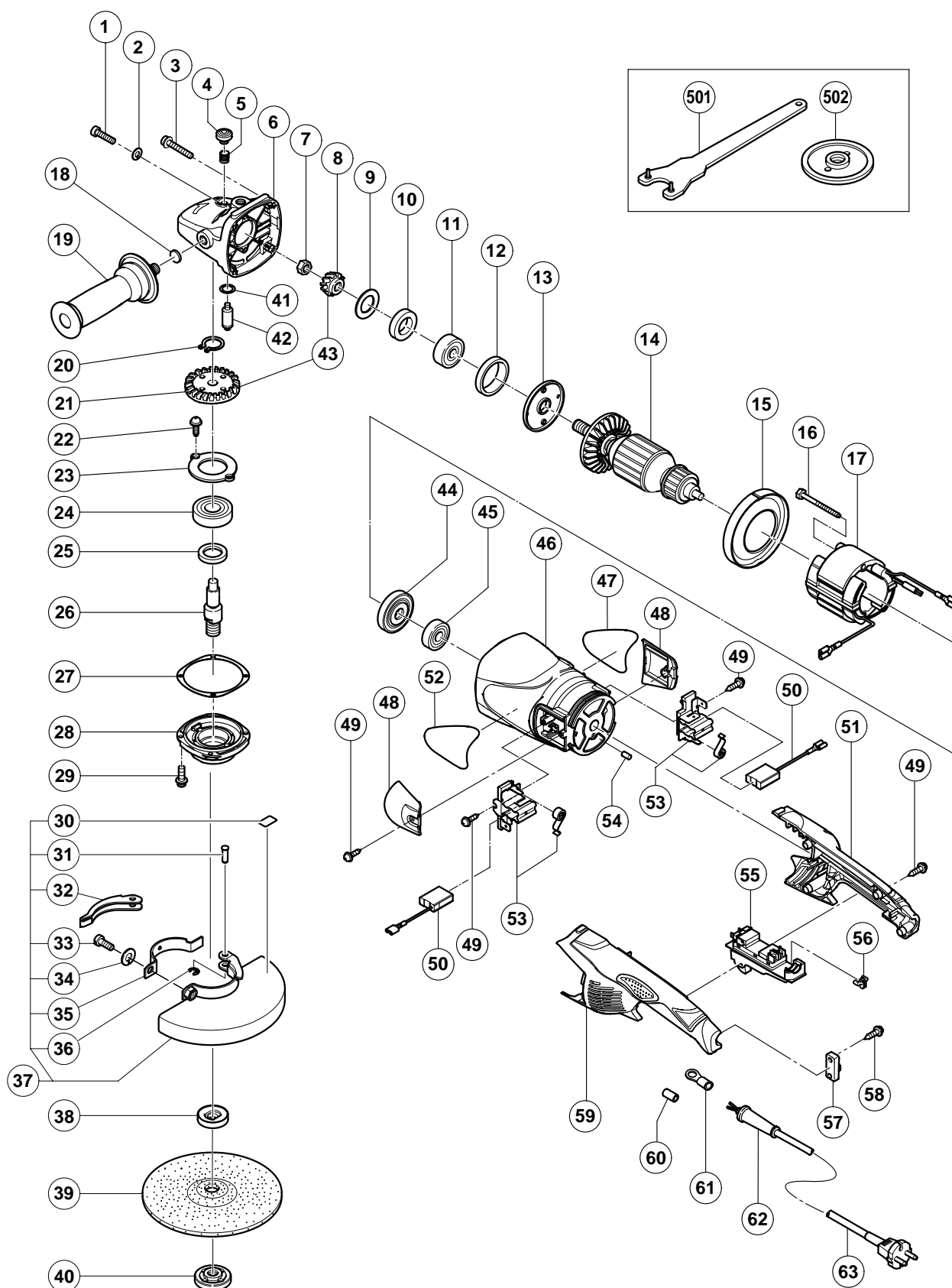
MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
<div>G 18MR</div> <div>G 18MRU</div> <div>G 23MR</div> <div>G 23MRU</div>		Work Flow						
		Wheel Guard Ass'y						
		General Assembly						
				Gear Cover Ass'y Rubber Ring (B)	Pinion Armature Ball Bearing (6301DD) Ball Bearing (6200VV) Seal Washer Felt Packing Bearing Cover (A) Dust Seal	Housing Stator		
				Seal Plate	Gear	Bearing Cover (B) Ball Bearing (6302DD)		
		Handle (B) Cord Armor	Handle (A) Switch Cord			Felt Packing (B) Packing Gland Spindle Gear Ass'y or Gear and Pinion Ass'y		

ELECTRIC TOOL PARTS LIST

DISC GRINDER Model G 18MR

2004 • 2 • 20

(E1)



PARTS

G 18MR

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	984-509	SEAL LOCK HEX. SOCKET HD. BOLT M5X14	2		
2	949-454	SPRING WASHER M5 (10 PCS.)	2		
3	313-585	HEX. SOCKET HD. BOLT (W/FLANGE) M5X30	4		
4	306-888	PUSHING BUTTON	1		
5	320-219	SPRING	1		
6	322-544	GEAR COVER ASS'Y	1	INCLUD. 4, 5, 18, 41, 42	
7	320-226	SPECIAL NUT M10	1		
* 8	320-243	PINION	1		
* 8	320-225	PINION	1	FOR USA	
9	320-221	SEAL WASHER	1		
10	320-222	FELT PACKING	1		
11	630-1DD	BALL BEARING 6301DDCMPS2L	1		
12	994-208	RUBBER RING (B)	1		
13	320-220	BEARING COVER (A)	1		
* 14	360-629U	ARMATURE ASS'Y 110V-120V	1	INCLUD. 10, 11, 44, 45	
* 14	360-594E	ARMATURE 220V-230V	1		
* 14	360-594F	ARMATURE 240V	1		
15	320-215	FAN GUIDE	1		
16	984-271	HEX. HD. TAPPING SCREW D5X75	2		
* 17	340-546C	STATOR 110V-120V	1		
* 17	340-546E	STATOR 220V-230V	1		
* 17	340-546F	STATOR 240V	1		
18	937-033	FELT WASHER	1		
19	322-411	SIDE HANDLE	1		
20	939-542	RETAINING RING FOR D12 SHAFT (10 PCS.)	1		
* 21	320-242	GEAR	1		
* 21	320-224	GEAR	1	FOR USA	
22	949-236	MACHINE SCREW M5X10 (10 PCS.)	2		
23	320-229	BEARING COVER (B)	1		
24	630-2DD	BALL BEARING 6302DDCMPS2L	1		
25	990-852	FELT PACKING (B)	1		
* 26	320-234	SPINDLE	1		
* 26	321-541	SPINDLE	1	FOR USA, CAN	
27	320-228	SEAL PLATE	1		
28	320-227	PACKING GLAND	1		
29	994-192	HEX. SOCKET HD. BOLT (W/FLANGE) M5X16	4		
30	311-492	LABEL	1		
31	321-546	SET PIN	1		
32	321-545	LEVER	1		
33	306-887	BOLT M8X22	1		
34	949-457	SPRING WASHER M8 (10 PCS.)	1		
35	321-544	SET PIECE	1		
36	673-489	RETAINING RING (E-TYPE) FOR D5 SHAFT	1		
37	321-543	WHEEL GUARD ASS'Y	1	INCLUD. 30-36	
* 38	937-907Z	WHEEL WASHER (A)	1		
* 38	937-922P	WHEEL WASHER (B) FOR D5/8" HOLE	1	FOR USA, CAN	
* 38	937-908Z	WHEEL WASHER (B)	1	FOR NZL	
* 39	316-824	D. C. WHEELS 180MM A24R (25 PCS.)	1	EXCEPT FOR GBR, EUROPE, USA	
* 40	937-909Z	WHEEL NUT M14X2	1		
* 40	937-923P	WHEEL NUT 5/8"-11UNC	1	FOR USA, CAN	
41	320-218	O-RING	1		

G 18MR

- 3 -

STANDARD ACCESSORIES

G 18MR

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OPTIONAL ACCESSORIES

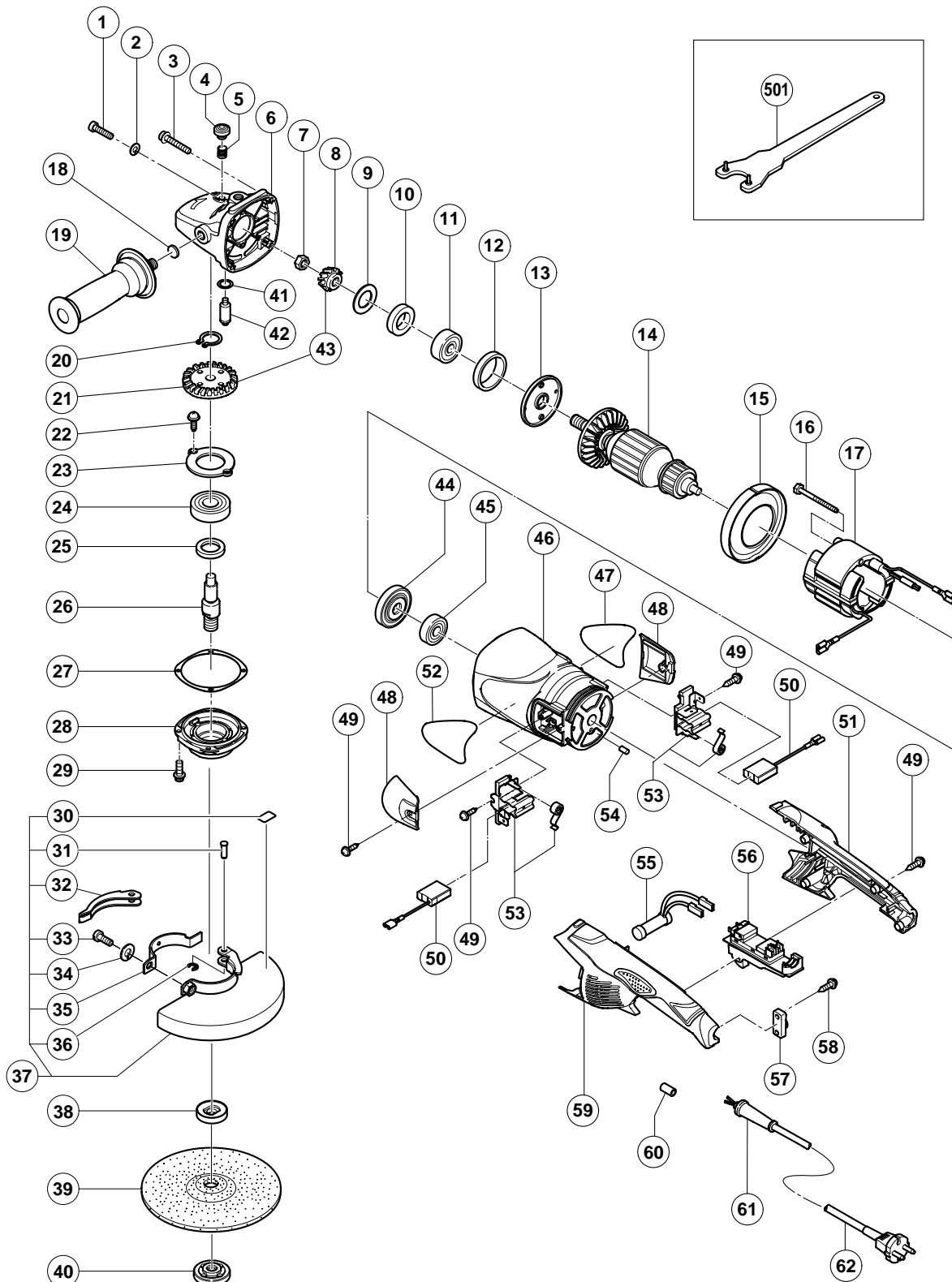
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ELECTRIC TOOL PARTS LIST

DISC GRINDER Model G 18MRU

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(E1)



PARTS

G 18MRU

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	984-509	SEAL LOCK HEX. SOCKET HD. BOLT M5X14	2		
2	949-454	SPRING WASHER M5 (10 PCS.)	2		
3	313-585	HEX. SOCKET HD. BOLT (W/FLANGE) M5X30	4		
4	306-888	PUSHING BUTTON	1		
5	320-219	SPRING	1		
6	322-544	GEAR COVER ASS'Y	1	INCLUD. 4, 5, 18, 41, 42	
7	320-226	SPECIAL NUT M10	1		
8	320-243	PINION	1		
9	320-221	SEAL WASHER	1		
10	320-222	FELT PACKING	1		
11	630-1DD	BALL BEARING 6301DDCMPS2L	1		
12	994-208	RUBBER RING (B)	1		
13	320-220	BEARING COVER (A)	1		
14	360-594E	ARMATURE 220V-230V	1		
15	320-215	FAN GUIDE	1		
16	984-271	HEX. HD. TAPPING SCREW D5X75	2		
17	340-546E	STATOR 220V-230V	1		
18	937-033	FELT WASHER	1		
19	322-411	SIDE HANDLE	1		
20	939-542	RETAINING RING FOR D12 SHAFT (10 PCS.)	1		
21	320-242	GEAR	1		
22	949-236	MACHINE SCREW M5X10 (10 PCS.)	2		
23	320-229	BEARING COVER (B)	1		
24	630-2DD	BALL BEARING 6302DDCMPS2L	1		
25	990-852	FELT PACKING (B)	1		
26	320-234	SPINDLE	1		
27	320-228	SEAL PLATE	1		
28	320-227	PACKING GLAND	1		
29	994-192	HEX. SOCKET HD. BOLT (W/FLANGE) M5X16	4		
30	311-492	LABEL	1		
31	321-546	SET PIN	1		
32	321-545	LEVER	1		
33	306-887	BOLT M8X22	1		
34	949-457	SPRING WASHER M8 (10 PCS.)	1		
35	321-544	SET PIECE	1		
36	673-489	RETAINING RING (E-TYPE) FOR D5 SHAFT	1		
37	321-543	WHEEL GUARD ASS'Y	1	INCLUD. 30-36	
38	937-907Z	WHEEL WASHER (A)	1		
39	316-824	D. C. WHEELS 180MM A24R (25 PCS.)	1		
40	937-909Z	WHEEL NUT M14X2	1		
41	320-218	O-RING	1		
42	306-890	LOCK PIN	1		
43	320-241	GEAR ASS'Y	1	INCLUD. 8, 21	
44	320-216	DUST SEAL	1		
45	620-0VV	BALL BEARING 6200VVCMP2L	1		
46	322-543	HOUSING	1		
47		NAME PLATE	1		
48	322-547	BRUSH COVER	2		
49	305-812	TAPPING SCREW (W/FLANGE) D4X16 (BLACK)	8		
* 50	999-061	CARBON BRUSH 7X17X22.5 (1 PAIR)	1		
* 50	999-089	CARBON BRUSH (AUTO STOP TYPE) (1 PAIR)	1		

G 18MRU

2 - 04	* ALTERNATIVE PARTS	- 3 -
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STANDARD ACCESSORIES

G 18MRU

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OPTIONAL ACCESSORIES

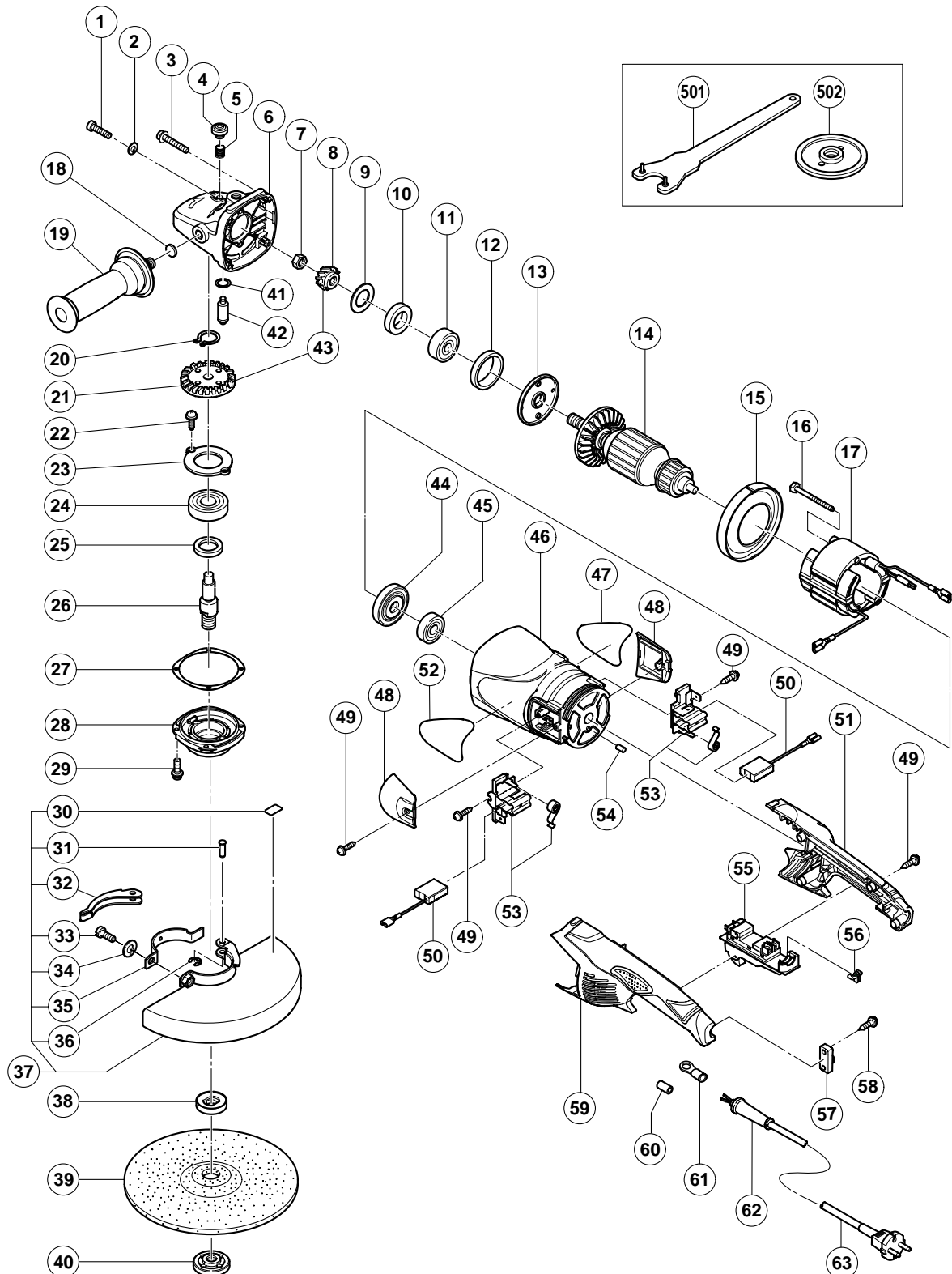
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ELECTRIC TOOL PARTS LIST

DISC GRINDER Model G 23MR

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(E1)



PARTS

G 23MR

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	984-509	SEAL LOCK HEX. SOCKET HD. BOLT M5X14	2		
2	949-454	SPRING WASHER M5 (10 PCS.)	2		
3	313-585	HEX. SOCKET HD. BOLT (W/FLANGE) M5X30	4		
4	306-888	PUSHING BUTTON	1		
5	320-219	SPRING	1		
6	322-544	GEAR COVER ASS'Y	1	INCLUD. 4, 5, 18, 41, 42	
7	320-226	SPECIAL NUT M10	1		
8	320-225	PINION	1		
9	320-221	SEAL WASHER	1		
10	320-222	FELT PACKING	1		
11	630-1DD	BALL BEARING 6301DDCMPS2L	1		
12	994-208	RUBBER RING (B)	1		
13	320-220	BEARING COVER (A)	1		
* 14	360-629U	ARMATURE ASS'Y 110V-120V	1	INCLUD. 10, 11, 44, 45	
* 14	360-594E	ARMATURE 220V-230V	1		
* 14	360-594F	ARMATURE 240V	1		
15	320-215	FAN GUIDE	1		
16	984-271	HEX. HD. TAPPING SCREW D5X75	2		
* 17	340-546C	STATOR 110V-120V	1		
* 17	340-546E	STATOR 220V-230V	1		
* 17	340-546F	STATOR 240V	1		
18	937-033	FELT WASHER	1		
19	322-411	SIDE HANDLE	1		
20	939-542	RETAINING RING FOR D12 SHAFT (10 PCS.)	1		
21	320-224	GEAR	1		
22	949-236	MACHINE SCREW M5X10 (10 PCS.)	2		
23	320-229	BEARING COVER (B)	1		
24	630-2DD	BALL BEARING 6302DDCMPS2L	1		
25	990-852	FELT PACKING (B)	1		
* 26	320-234	SPINDLE	1		
* 26	321-541	SPINDLE	1	FOR USA, CAN	
27	320-228	SEAL PLATE	1		
28	320-227	PACKING GLAND	1		
29	994-192	HEX. SOCKET HD. BOLT (W/FLANGE) M5X16	4		
30	311-492	LABEL	1		
31	321-546	SET PIN	1		
32	321-545	LEVER	1		
33	306-887	BOLT M8X22	1		
34	949-457	SPRING WASHER M8 (10 PCS.)	1		
35	321-544	SET PIECE	1		
36	673-489	RETAINING RING (E-TYPE) FOR D5 SHAFT	1		
37	321-547	WHEEL GUARD ASS'Y	1	INCLUD. 30-36	
* 38	937-907Z	WHEEL WASHER (A)	1		
* 38	937-922P	WHEEL WASHER (B) FOR D5/8" HOLE	1	FOR USA, CAN	
* 38	937-908Z	WHEEL WASHER (B)	1	FOR AUS, NZL	
* 38	310-337	SUPER WASHER	1	FOR BEL	
* 39	316-825	D. C. WHEELS 230MM A24R (25 PCS.)	1	FOR INA, SYR, NZL, AUS, SAF, CAN, CHN	
* 40	937-909Z	WHEEL NUT M14X2	1		
* 40	937-923P	WHEEL NUT 5/8"-11UNC	1	FOR USA, CAN	
41	320-218	O-RING	1		
42	306-890	LOCK PIN	1		

G 23MR

2-04 * ALTERNATIVE PARTS -3-

STANDARD ACCESSORIES

G 23MR

[illegible]

OPTIONAL ACCESSORIES

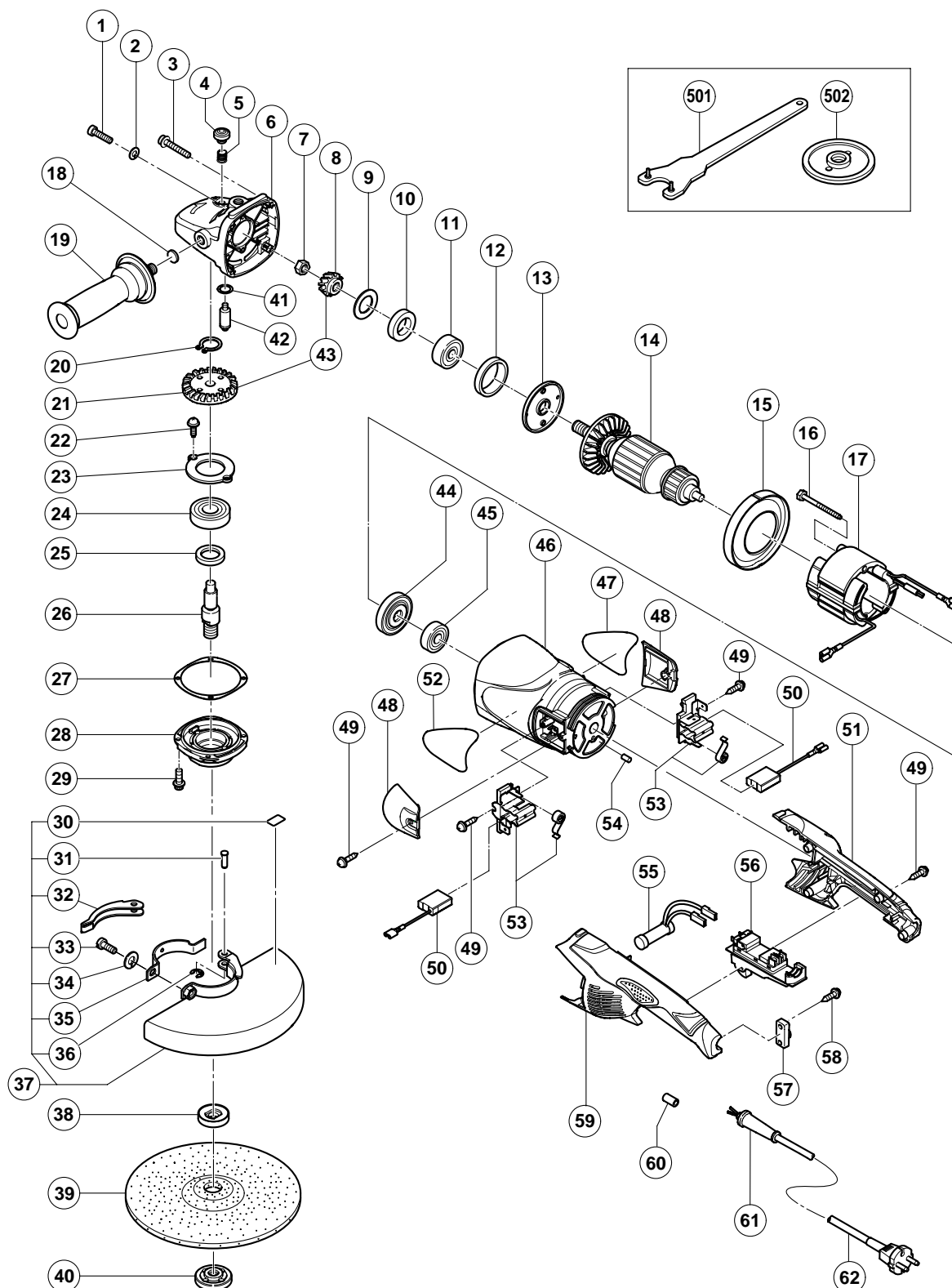
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ELECTRIC TOOL PARTS LIST

DISC GRINDER Model G 23MRU

2004 • 2 • 20

(E1)



PARTS

G 23MRU

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
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2	949-454	SPRING WASHER M5 (10 PCS.)	2		
3	313-585	HEX. SOCKET HD. BOLT (W/FLANGE) M5X30	4		
4	306-888	PUSHING BUTTON	1		
5	320-219	SPRING	1		
6	322-544	GEAR COVER ASS'Y	1	INCLUD. 4, 5, 18, 41, 42	
7	320-226	SPECIAL NUT M10	1		
8	320-225	PINION	1		
9	320-221	SEAL WASHER	1		
10	320-222	FELT PACKING	1		
11	630-1DD	BALL BEARING 6301DDCMPS2L	1		
12	994-208	RUBBER RING (B)	1		
13	320-220	BEARING COVER (A)	1		
* 14	360-594E	ARMATURE 220V-230V	1		
* 14	360-594F	ARMATURE 240V	1		
15	320-215	FAN GUIDE	1		
16	984-271	HEX. HD. TAPPING SCREW D5X75	2		
* 17	340-546E	STATOR 220V-230V	1		
* 17	340-546F	STATOR 240V	1		
18	937-033	FELT WASHER	1		
19	322-411	SIDE HANDLE	1		
20	939-542	RETAINING RING FOR D12 SHAFT (10 PCS.)	1		
21	320-224	GEAR	1		
22	949-236	MACHINE SCREW M5X10 (10 PCS.)	2		
23	320-229	BEARING COVER (B)	1		
24	630-2DD	BALL BEARING 6302DDCMPS2L	1		
25	990-852	FELT PACKING (B)	1		
26	320-234	SPINDLE	1		
27	320-228	SEAL PLATE	1		
28	320-227	PACKING GLAND	1		
29	994-192	HEX. SOCKET HD. BOLT (W/FLANGE) M5X16	4		
30	311-492	LABEL	1		
31	321-546	SET PIN	1		
32	321-545	LEVER	1		
33	306-887	BOLT M8X22	1		
34	949-457	SPRING WASHER M8 (10 PCS.)	1		
35	321-544	SET PIECE	1		
36	673-489	RETAINING RING (E-TYPE) FOR D5 SHAFT	1		
37	321-547	WHEEL GUARD ASS'Y	1	INCLUD. 30-36	
* 38	937-907Z	WHEEL WASHER (A)	1		
* 38	937-908Z	WHEEL WASHER (B)	1	FOR AUS	
* 38	310-337	SUPER WASHER	1	FOR BEL	
* 39	316-825	D. C. WHEELS 230MM A24R (25 PCS.)	1	FOR AUS	
40	937-909Z	WHEEL NUT M14X2	1		
41	320-218	O-RING	1		
42	306-890	LOCK PIN	1		
43	320-223	GEAR AND PINION ASS'Y	1	INCLUD. 8, 21	
44	320-216	DUST SEAL	1		
45	620-0VV	BALL BEARING 6200VVCMP2L	1		
46	322-543	HOUSING	1		
47		NAME PLATE	1		

PARTS

G 23MRU

[illegible]

STANDARD ACCESSORIES

G 23MRU

[illegible]

OPTIONAL ACCESSORIES

[illegible]

