

MODELS

D 13VB3

D 13VH

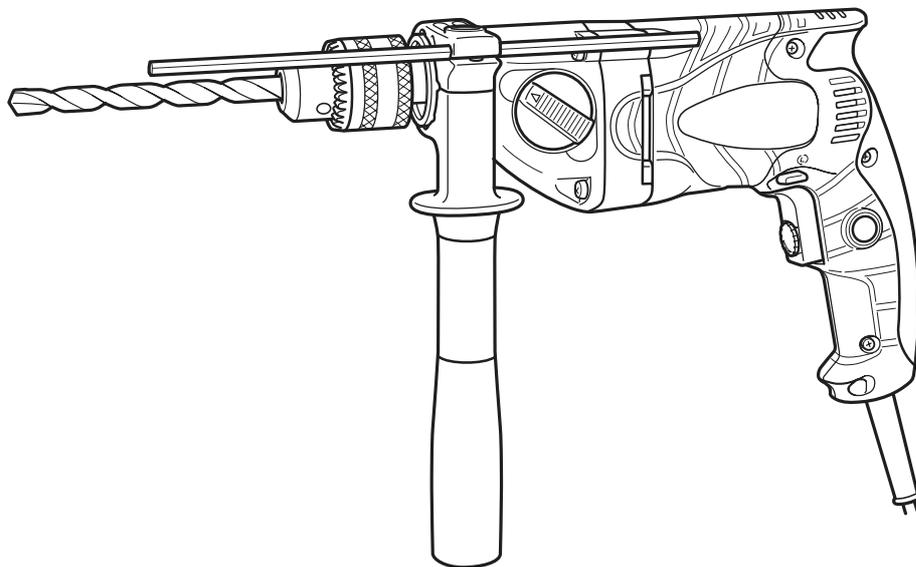
D 10VJ

# Hitachi Power Tools

13 mm (1/2") DRILL D 13VB3  
D 13VH  
10 mm (3/8") DRILL D 10VJ

TECHNICAL DATA  
AND  
SERVICE MANUAL

D



LIST Nos. D 13VB3: E107  
D 13VH: E108  
D 10VJ: E106

Nov. 2004

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:

For Models D 13VB3 and D 13VH

Symbols Utilized	Competitors	
	Company Name	Model Name
B	BOSCH	GBM13-2RE

For Model D 10VJ

Symbols Utilized	Competitors	
	Company Name	Model Name
B	BOSCH	GBM10-2RE



## CONTENTS

	Page
<b>1. PRODUCT NAME .....</b>	<b>1</b>
<b>2. MARKETING OBJECTIVE .....</b>	<b>1</b>
<b>3. APPLICATIONS .....</b>	<b>1</b>
<b>4. SELLING POINTS .....</b>	<b>1</b>
4-1. Selling Point Descriptions .....	2
<b>5. SPECIFICATIONS .....</b>	<b>3</b>
5-1. Specifications .....	3
<b>6. COMPARISONS WITH SIMILAR PRODUCTS .....</b>	<b>6</b>
6-1. Specification Comparisons .....	6
6-2. Drilling Speed Comparisons .....	7
<b>7. PRECAUTIONS IN SALES PROMOTION .....</b>	<b>8</b>
7-1. Handling Instructions .....	8
7-2. Cautions on Name Plate .....	8
7-3. Precautions on Usage .....	9
<b>8. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY .....</b>	<b>11</b>
8-1. Disassembly .....	11
8-2. Reassembly .....	16
8-3. Wiring Diagrams .....	19
8-4. Internal Wire Arrangement and Wiring Work .....	20
8-5. Insulation Tests .....	23
8-6. No-Load Current Value .....	23
<b>9. STANDARD REPAIR TIME (UNIT) SCHEDULES .....</b>	<b>24</b>
For Model D 13VB3 .....	24
For Models D 13VH and D 10VJ .....	25
Assembly Diagram for D 13VB3	
Assembly Diagram for D 13VH	
Assembly Diagram for D 10VJ	

## 1. PRODUCT NAME

Hitachi 13 mm (1/2") Drill, Models D 13VB3, D 13VH

Hitachi 10 mm (3/8") Drill, Model D 10VJ

## 2. MARKETING OBJECTIVE

The Models D 13VB3, D 13VH and D 10VJ are upgraded versions of the current Models D 13VB2, D 13T2, DUT-13, DUT-10 and DU 10. The performance is greatly improved.

These three models are developed under the concept for compact, lightweight and powerful drills. The main features of the Models D 13VB3, D 13VH and D 10VJ are as follows:

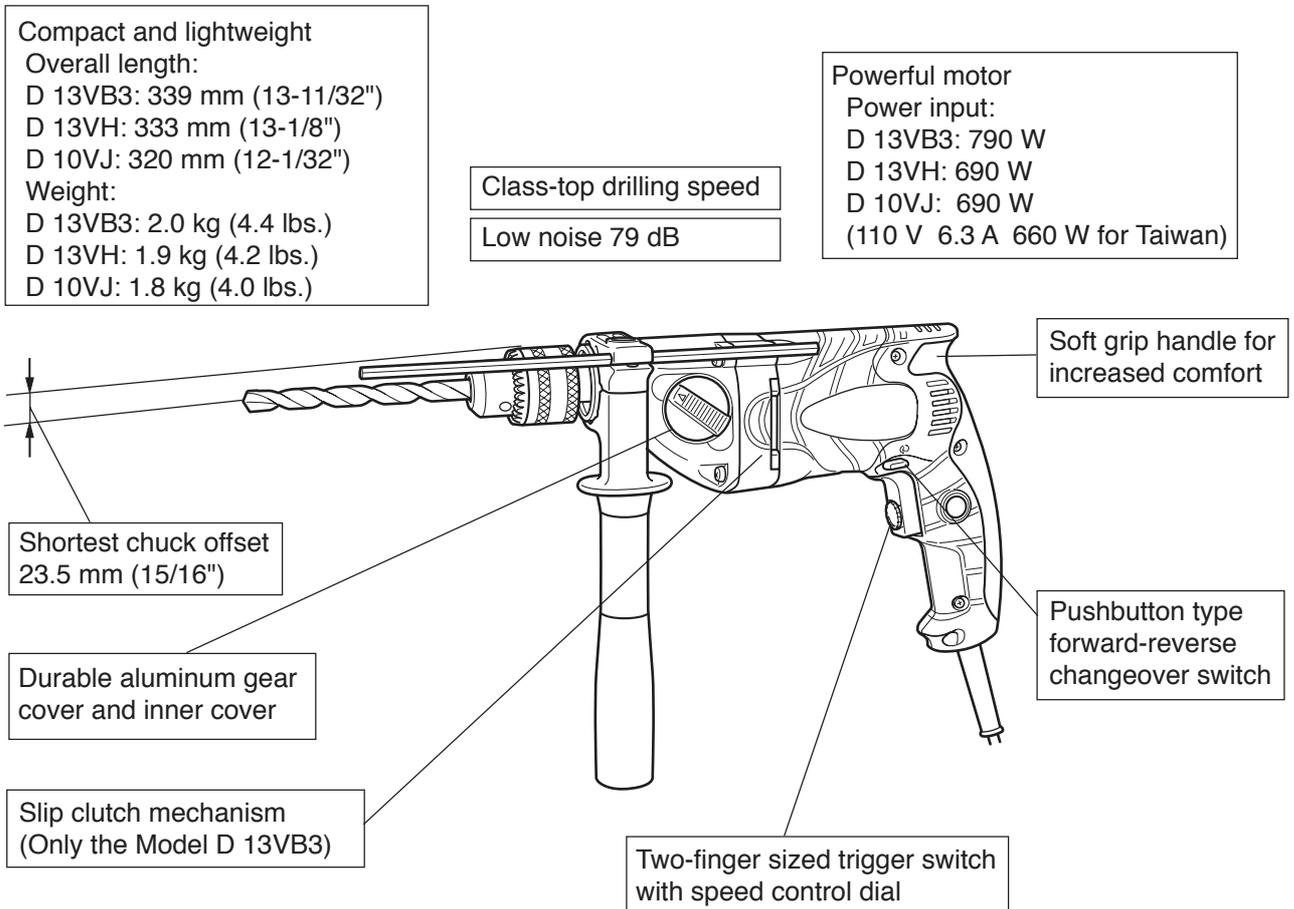
- (1) Compact and lightweight
- (2) Class-top drilling speed
- (3) Powerful motor
- (4) Shortest chuck offset
- (5) Durable aluminum gear cover and inner cover
- (6) Two-finger sized trigger switch with speed control dial
- (7) Low noise 79 dB

## 3. APPLICATIONS

- (1) Rotation only function

Drilling into metal, wood and plastics

## 4. SELLING POINTS



#### 4-1. Selling Point Descriptions

(1) Compact and lightweight design for less user fatigue

To make the Models D 13VB3, D 13VH and D 10VJ compact is the first priority at designing.

Model	Overall length (mm)	Chuck offset (mm)	Weight (kg)
D 13VB3	339 (13-11/32")	23.5 (15/16")	2.0 (4.4 lbs.)
D 13VH	333 (13-1/8")	23.5 (15/16")	1.9 (4.2 lbs.)
D 10VJ	320 (12-19/32")	23.5 (15/16")	1.8 (4.0 lbs.)

Its ease of operation is the class-top level.

(2) Class-top drilling speed

Thanks to the powerful motor (rated power consumption: D 13VB3: 790 W, D 13VH/D 10VJ: 690 W), the Models D 13VB3, D 13VH and D 10VJ can drill at the class-top speed while it is compact and lightweight. And powerful motor also provides high performance for heavy-duty applications.

(3) Easy-to-operate 2-finger sized trigger switch with speed control dial

The pulling amount of the trigger can be adjusted on the dial. It is convenient for operation keeping at a desired speed. The large variable speed control dial and the 2-finger sized trigger switch are easy to operate.

(4) Reliable and convenient push-button type forward/reverse changeover switch

The Models D 13VB3, D 13VH and D 10VJ are equipped with the push-button type forward/reverse changeover switch that is more convenient and reliable than the lever-type switch. In addition, this switch is properly shaped and located not to make the push-button an obstacle at drilling.

(5) Durable aluminum die-casting inner cover and gear cover

The Models D 13VB3, D 13VH and D 10VJ are equipped with the aluminum die-casting inner cover and gear cover for increased durability.

(6) Low operating noise 79 dB

The Models D 13VB3, D 13VH and D 10VJ are so constructed that the motor cooling air is discharged quietly. Thanks to the new construction, the operating noise level is 79 dB. The Models D 13VB3, D 13VH and D 10VJ can be used indoors without concern for the operating noise.

(7) Slip clutch mechanism (Only the Model D 13VB3)

The Model D 13VB3 is equipped with the slip clutch mechanism to avoid direct and strong reactive force due to a sudden and heavy load by slipping the transmission portion between the motor and the drill bit.

## 5. SPECIFICATIONS

### 5-1. Specifications

Model		D 13VB3
Capacities	Steel	Low speed: 13 mm (1/2") / High speed: 8 mm (5/16")
	Wood	Low speed: 40 mm (1-9/16") / High speed: 25 mm (1")
Drill chuck		Mount type: UNF 1/2" – 20 Capacity: 13 mm (1/2")
Type of motor		AC single phase commutator motor
Enclosure	Housing	Glassfiber reinforced polycarbonate + elastomer
	Handle	
	Inner cover	Aluminum alloy die casting
	Gear cover	
Type of switch		Variable speed control trigger switch with reversing switch
Power source		AC single phase 50/60 Hz
Rated voltage		110 V, 230 V, 240 V
Rated current		110 V: 7.6 A, 230 V: 3.6 A, 240 V: 3.5 A
Power input		790 W
Cord		2-core cabtire cord 2.5 m (8.3 ft.)
No-load speed		Forward: 0 – 1000/0 – 3000/min      Reverse: 0 – 600/0 – 1800/min
Weight	Net*1	2.0 kg (4.4 lbs.)
	Gross	3.0 kg (6.6 lbs.)
Packaging		Corrugated cardboard box
Standard accessories		Side handle ..... 1 Depth gauge ..... 1 Chuck wrench (spec. only for chuck with chuck wrench ) ..... 1

\*1 : Without cord

Model		D 13VH
Capacities	Steel	Low speed: 13 mm (1/2") / High speed: 8 mm (5/16")
	Wood	Low speed: 40 mm (1-9/16") / High speed: 25 mm (1")
Drill chuck		Mount type: UNF 1/2" – 20 Capacity: 13 mm (1/2")
Type of motor		AC single phase commutator motor
Enclosure	Housing	Glassfiber reinforced polycarbonate + elastomer
	Handle	
	Inner cover	Aluminum alloy die casting
	Gear cover	
Type of switch		Variable speed control trigger switch with reversing switch
Power source		AC single phase 50/60 Hz
Rated voltage		220 V, 230 V, 240 V
Rated current		220 V: 3.3 A, 230 V: 3.2 A, 240 V: 3.0 A
Power input		690 W
Cord		2-core cabtire cord 2.5 m (8.3 ft.)
No-load speed		Forward: 0 – 1000/0 – 3000/min      Reverse: 0 – 600/0 – 1800/min
Weight	Net*1	1.9 kg (4.2 lbs.)
	Gross	2.9 kg (6.4 lbs.)
Packaging		Corrugated cardboard box
Standard accessories		Side handle ..... 1 Depth gauge ..... 1 Chuck wrench (spec. only for chuck with chuck wrench ) ..... 1

\*1 : Without cord

Model		D 10VJ
Capacities	Steel	Low speed: 10 mm (3/8") / High speed: 6 mm (1/4")
	Wood	Low speed: 25 mm (1") / High speed: 13 mm (1/2")
Drill chuck		Mount type: UNF 1/2" – 20 Capacity: 10 mm (3/8")
Type of motor		AC single phase commutator motor
Enclosure	Housing	Glassfiber reinforced polycarbonate + elastomer
	Handle	
	Inner cover	Aluminum alloy die casting
	Gear cover	
Type of switch		Variable speed control trigger switch with reversing switch
Power source		AC single phase 50/60 Hz
Rated voltage		110 V* <sup>1</sup> , 220 V, 230 V, 240 V
Rated current		110 V: 6.3A* <sup>1</sup> , 220 V: 3.3 A 230 V: 3.2 A 240 V: 3.0 A
Power input		690 W (660 W* <sup>1</sup> )
Cord		2-core cabtire cord 2.5 m (8.3 ft.)
No-load speed		Forward: 0 – 1000/0 – 3000/min Reverse: 0 – 600/0 – 1800/min
Weight	Net* <sup>2</sup>	1.8 kg (4.0 lbs.)
	Gross	2.8 kg (6.2 lbs.)
Packaging		Corrugated cardboard box
Standard accessories		Side handle ..... 1 Depth gauge ..... 1 Chuck wrench (spec. only for chuck with chuck wrench ) ..... 1

\*<sup>1</sup> : For Taiwan only

\*<sup>2</sup> : Without cord

## 6. COMPARISONS WITH SIMILAR PRODUCTS

### 6-1. Specification Comparisons

#### 13 mm drill class

Maker			HITACHI				B
Model			D 13VB3	D 13VH	D 13VB2	DUT-13	
Capacities	Steel	mm (in.)	13 (1/2")	13 (1/2")	13 (1/2")	13 (1/2")	13 (1/2")
	Wood	mm (in.)	40 (1-9/16")	40 (1-9/16")	40 (1-9/16")	—	32 (1-3/16")
Rated power input		W	790	690	750	600	550
No-load speed	Low	/min.	0 – 1,000	0 – 1,000	0 – 1,100	1,050	0 – 1,000
	High	/min.	0 – 3,000	0 – 3,000	0 – 2,600	1,800	0 – 1,900
Max. torque	Low	N·m	30.4*	53.0	44.5	34.3	11.5
	High	N·m	11.0*	19.2	18.1	19.6	6.0
No-load noise level		dB	79	79	81	82	82
Housing structure		—	Cylindrical	Cylindrical	Cylindrical	Cylindrical	Cylindrical
Gear cover material		—	Aluminum	Aluminum	Plastic	Aluminum	Plastic
Slip clutch		—	○	×	×	×	×
Soft grip handle		—	○	○	×	×	×
Speed control dial		—	○	○	×	—	○
Type of reversing switch		—	Pushbutton	Pushbutton	Lever	×	Lever
Overall length		mm (in.)	339 (13-11/32")	333 (13-1/8")	340 (13-3/8")	327 (12-7/8")	332(13-1/16")
Chuck offset		mm (in.)	23.5 (15/16")	23.5 (15/16")	29 (1-5/32")	25 (1")	28.5 (1-1/8")
Weight		kg (lbs.)	2.0 (4.4 lbs.)	1.9 (4.2 lbs.)	2.1 (4.6 lbs.)	2.2 (4.9 lbs.)	2.0 (4.4 lbs.)

\* : When the slip clutch mechanism is working

#### 10 mm drill class

Maker			HITACHI			B
Model			D 10VJ	DUT-10	DU-10	
Capacities	Steel	mm (in.)	10 (3/8")	10 (3/8")	10 (3/8")	10 (3/8")
	Wood	mm (in.)	25 (1")	—	—	25 (1")
Rated power input		W	690	550	550	500
No-load speed	Low	/min.	0 – 1,000	1,250	1,250	0 – 1,150
	High	/min.	0 – 3,000	2,800	—	0 – 2,100
Max. torque	Low	N·m	53.0	29.4	29.4	9.5
	High	N·m	19.2	12.7		5.0
No-load noise level		dB	79	82	82	81
Housing structure		—	Cylindrical	Cylindrical	Cylindrical	Cylindrical
Gear cover material		—	Aluminum	Aluminum	Aluminum	Plastic
Slip clutch		—	×	×	×	×
Soft grip handle		—	○	×	×	×
Speed control dial		—	○	—	—	○
Type of reversing switch		—	Pushbutton	×	×	Lever
Overall length		mm (in.)	320 (12-19/32")	316 (12-7/16")	288 (11-11/32")	309 (12-1/64")
Chuck offset		mm (in.)	23.5 (15/16")	25 (1")	25 (1")	28.5 (1-1/64")
Weight		kg (lbs.)	1.8 (4.0 lbs.)	2.0 (4.4 lbs.)	1.8 (4.0 lbs.)	1.8 (4.0 lbs.)

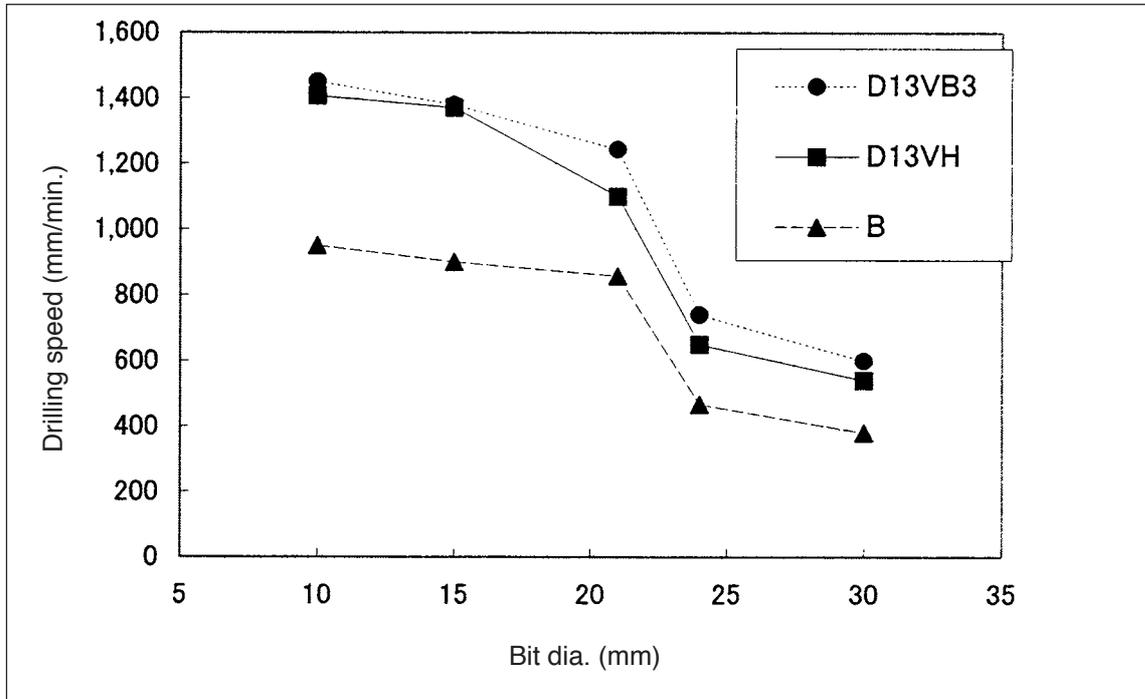
## 6-2. Drilling Speed Comparisons

Drilling speed depends on the operating conditions. The test results are based on actual factory tests, and should be used as a reference only.

13 mm drill class

- Auger bit

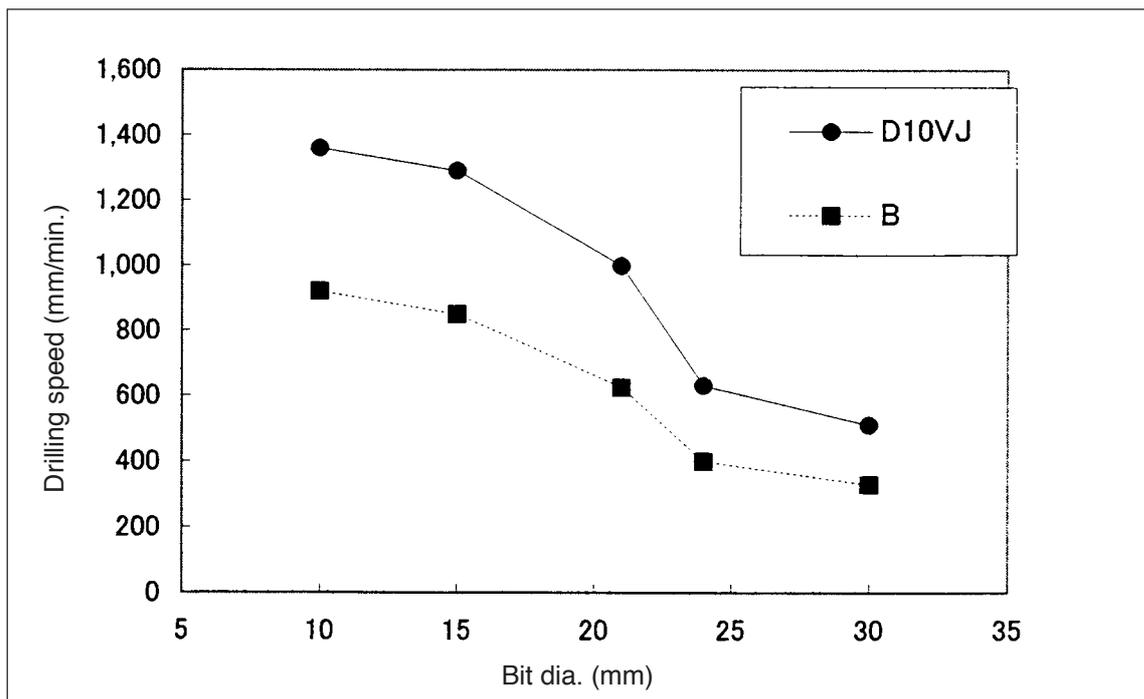
Test material: Western hemlock



10 mm drill class

- Auger bit

Test material: Western hemlock



## 7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Models D 13VB3, D 13VH and D 10VJ Drills by all of our customers, it is very important that at the time of sales 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 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 Drill 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. Cautions on Name Plate

The following basic safety precautions are listed on the Name Plate attached to the main body of each tool.

For Australia, New Zealand and China

CAUTION

- Read thoroughly HANDLING INSTRUCTIONS before use.

For Taiwan

**使用前請詳讀使用說明書**

These precautions are not listed on the Name Plates of the products destined for the countries other than Oceania, Taiwan and China.

### 7-3. Precautions on Usage

#### (1) High-speed/Low-speed changeover

Prior to changing speed, ensure that the switch is in the OFF position, and the drill has come to a complete stop.

To change speed, rotate the gear shift dial as indicated by the arrow in Fig. 1. The numeral "1" engraved on the drill body denotes low speed, the numeral "2" denotes high speed.

If it is hard to turn the gear shift dial, turn the chuck slightly in either direction and then turn the gear shift dial again.

#### (2) Checking the rotational direction (Fig. 2)

The bit rotates clockwise (viewed from the rear) by pushing the R-side of the pushbutton.

The L-side of the pushbutton is pushed to turn the bit counterclockwise. (The (L) and (R) marks are provided on the body.)

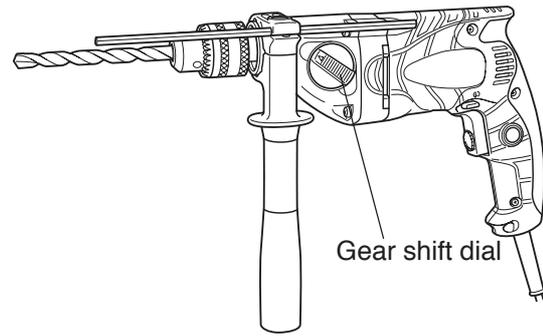


Fig. 1

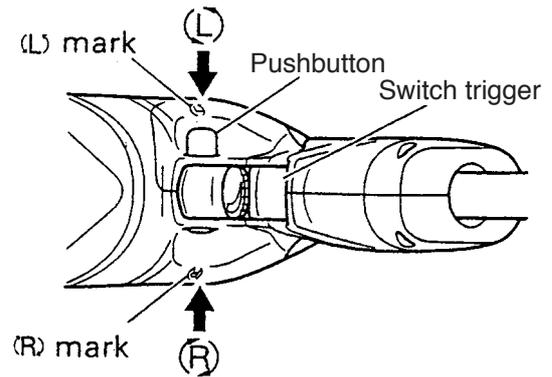


Fig. 2

#### (3) Switch operation

- When the trigger switch is depressed, the tool rotates. When the trigger is released, the tool stops.

- The rotational speed of the drill can be controlled by varying the amount that the trigger switch is pulled. Speed is low when the trigger switch is pulled slightly and increases as the trigger switch is pulled more.

- The desired rotation speed can be preselected with the speed control dial. Turn the speed control dial clockwise for higher speed and counterclockwise for lower speed. (Fig. 3)

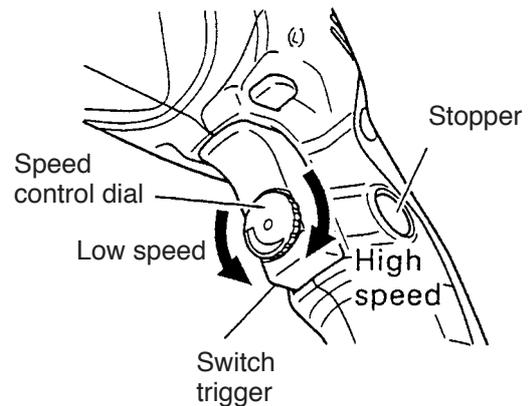


Fig. 3

- Pulling the trigger and pushing the stopper, it keeps the switched-on condition which is convenient for continuous running. When switching off, the stopper can be disconnected by pulling the trigger again.

**NOTE: If the L-side of pushbutton is pressed for reverse bit rotation, the stopper cannot be used.**

#### (4) Drilling

- When drilling, start the drill slowly, and gradually increasing speed as you drill.
- Always apply pressure in a straight line with the bit. Use enough pressure to keep drilling, but do not push hard enough to stall the motor or deflect the bit.
- To minimize stalling or breaking through the material, reduce pressure on drill and ease the bit through the last part of the hole.
- If the drill stalls, release the trigger immediately, remove the bit from the work and start again. Do not click the trigger on and off in an attempt to start a stalled drill. This can damage the drill.

**⚠ WARNING: The larger the drill bit diameter, the larger the reactive force on your arm. Be careful not to lose control of the drill because of this reactive force. To maintain firm control, establish a good foothold, use side handle, hold the drill tightly with both hands, and ensure that the drill is vertical to the material being drilled.**

(5) Slip clutch mechanism (Only the Model D 13VB3)

The Model D 13VB3 is equipped with the slip clutch mechanism to avoid direct and strong reactive force due to a sudden and heavy load by slipping the transmission portion between the motor and the drill bit.

**⚠ CAUTION:**

- **Turn off the switch immediately if the rotation of the drill bit is stopped by the slip clutch. Be careful not to actuate the slip clutch frequently.**
- **The spindle shaft torque and the reactive force applied to the side handle when the slip clutch actuates are shown in the table below. In the case of the low gear, the reactive force applied to the side handle may be 150.4 N {15.3 kgf} at the maximum. Instruct the customers to use the side handle without fail and securely hold the Model D 13VB3 with both hands standing on a sturdy scaffold, not to be affected by the reactive force.**

		Spindle shaft torque		Reactive force applied to the side handle	
		N·m	kgf·m	N	kgf
High gear	Minimum	6.1	0.6	30.2	3.1
	Maximum	11.0	1.1	54.5	5.6
Low gear	Minimum	16.8	1.7	83.4	8.5
	Maximum	30.4	3.1	150.4	15.3

## 8. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

The numbers in the descriptions below correspond to the item numbers in the Parts List and exploded assembly diagram.

The **[Bold]** numbers are for the Model D 13VB3, the **<Bold>** numbers for the Model D 13VH, and the **(Bold)** numbers for the Model D 10VJ.

### 8-1. Disassembly

#### 8-1-1. Motor section disassembly

##### (1) Removal of the handle cover

Loosen the Tapping Screws (W/Flange) D4 x 20 (Black) **[32] <31> (31)**, and remove the Handle Cover **[33] <32> (32)**.

##### (2) Removal of the carbon brushes

With a small flat-blade screwdriver, slightly lift the Brush Holders **[38] <38> (38)**. Then, while pushing the Carbon Brushes (1 Pair) **[37] <37> (37)** to the bottom of the brush holders, gently pull out and disconnect the internal wire terminals. (See Figs. 4 and 5.)

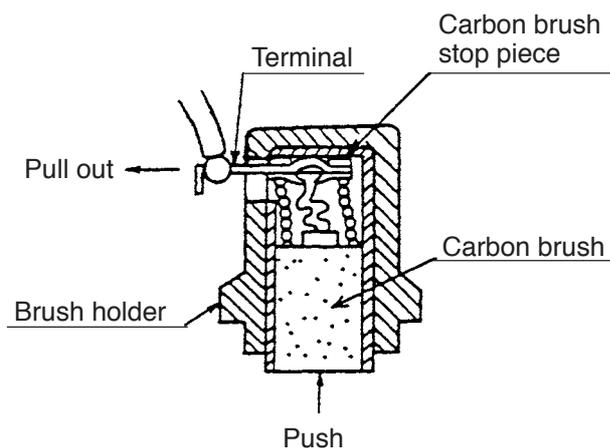


Fig. 4

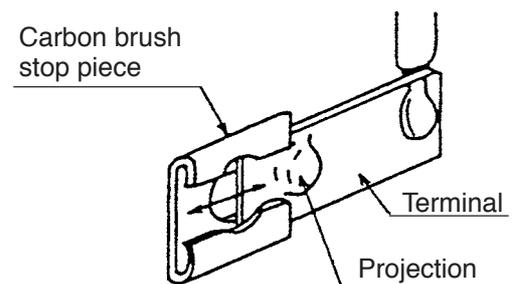


Fig. 5

##### (3) Removal of the gear cover from the housing

Loosen the Tapping Screws (W/Flange) D5 x 50 **[8]**, D5 x 45 **<8> (8)** and separate Gear Cover (A) **[9] <9> (9)** from the Housing **[30] <29> (29)**. Then, remove the Inner Cover **[12] <12> (12)** together with the Armature **[24] <23> (23)** from the Housing **[30] <29> (29)**.

(4) Removal of the armature from the inner cover

As illustrated in Fig. 6, support the Inner Cover [12] <12> (12) with a tubular jig, and push down on the top of the pinion of the Armature [24] <23> (23).

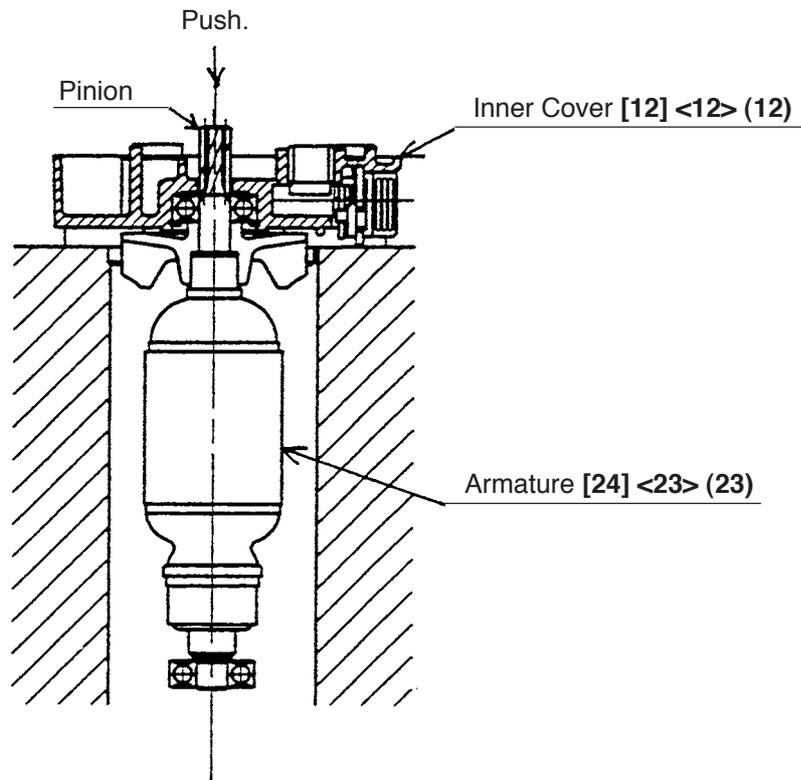


Fig. 6

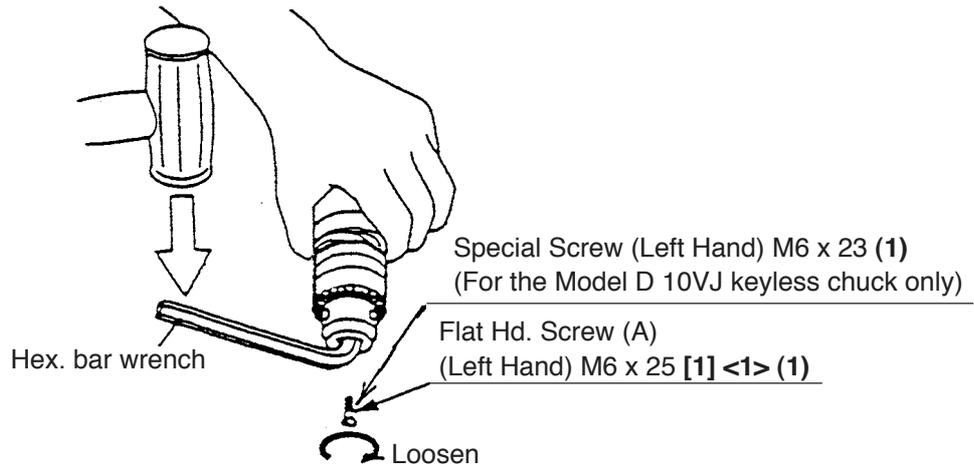
(5) Removal of the stator from the housing

First, disconnect the internal wires from the Switch [35] <34> (34). To disconnect the internal wires from the switch, insert a small flat-blade screwdriver into the windows near the terminals and pull out the internal wires. Remove the Hex. Hd. Tapping Screws D4 x 50 [26], D4 x 45 <25> (25) and tap the end surface of the Housing [30] <29> (29) slightly with a wooden hammer. Then the stator can be removed from the housing.

**8-1-2. Removal of the drill chuck**

The Drill Chuck [3] <3> (3) is secured to the Spindle [4] <4> (4) with 1/2"-20 UNF (right hand) and Flat Hd. Screw (A) (Left Hand) M6 x 25 [1] <1> (1). At first, open the chuck jaw as far as possible and loosen Flat Hd. Screw (A) (Left Hand) M6 x 25 [1] <1> (1) by turning it clockwise. (Special Screw (Left Hand) M6 x 23 (1): For the Model D 10VJ keyless chuck only)

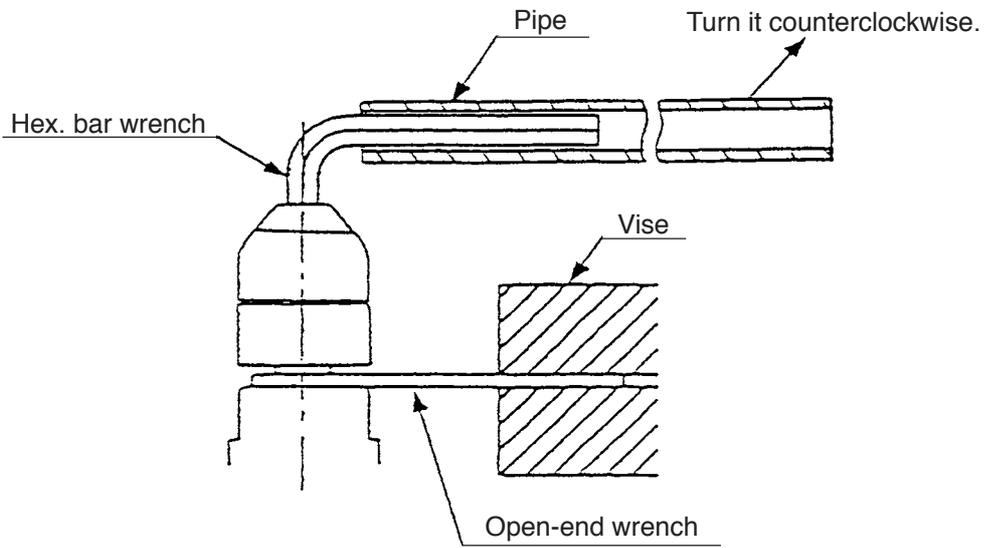
- a. Hold the drill so that only the Drill Chuck [3] <3> (3) rests firmly and squarely on the edge of a solid bench. Install the hex. bar wrench into the drill chuck. Turn the drill chuck until the wrench is at about a 30° angle to the bench top and strike the wrench sharply with a hammer so the drill chuck turns in the counterclockwise direction. (Fig. 7)



**Fig. 7**

If the drill chuck cannot be removed by striking the wrench, do not strike the wrench forcibly and try another way as follows.

- b. Hold the Spindle [4] <4> (4) with the open-end wrench secured to the vise as shown in Fig. 8. Mount the pipe to the hex. bar wrench. Turn the hex. bar wrench counterclockwise to loosen the drill chuck. (Fig. 8)



**Fig. 8**

c. (For keyed chuck only)

Secure the drill chuck with a disassembly tool: Ring (J-78) to the drill chuck, which in proper sequence should be secured with a vise. Then fit a disassembly tool: Wrench Ass'y (J-140) to the spindle, and turn it counterclockwise. (Fig. 9)

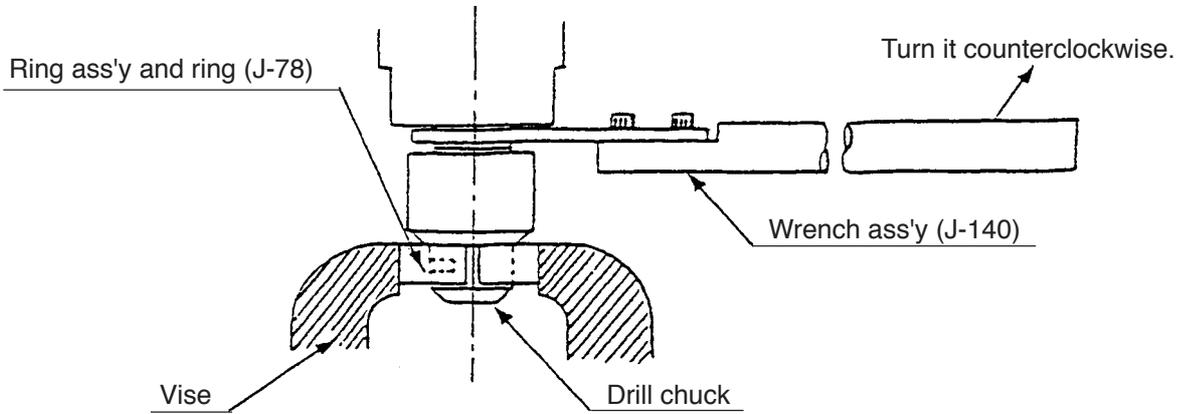


Fig. 9

### 8-1-3. Gear cover section disassembly

(1) Removal of the spindle

Remove the Retaining Ring For D35 Hole [5] <5> (5). Support the tip of Gear Cover (A) [9] <9> (9) with a cylindrical jig of inside diameter 35 mm or more, and push the rear portion of the Spindle [4] <4> (4) lightly. Then the spindle can be removed together with the Ball Bearing 6202DDCMPS2L [6] <6> (6).

(Fig. 10)

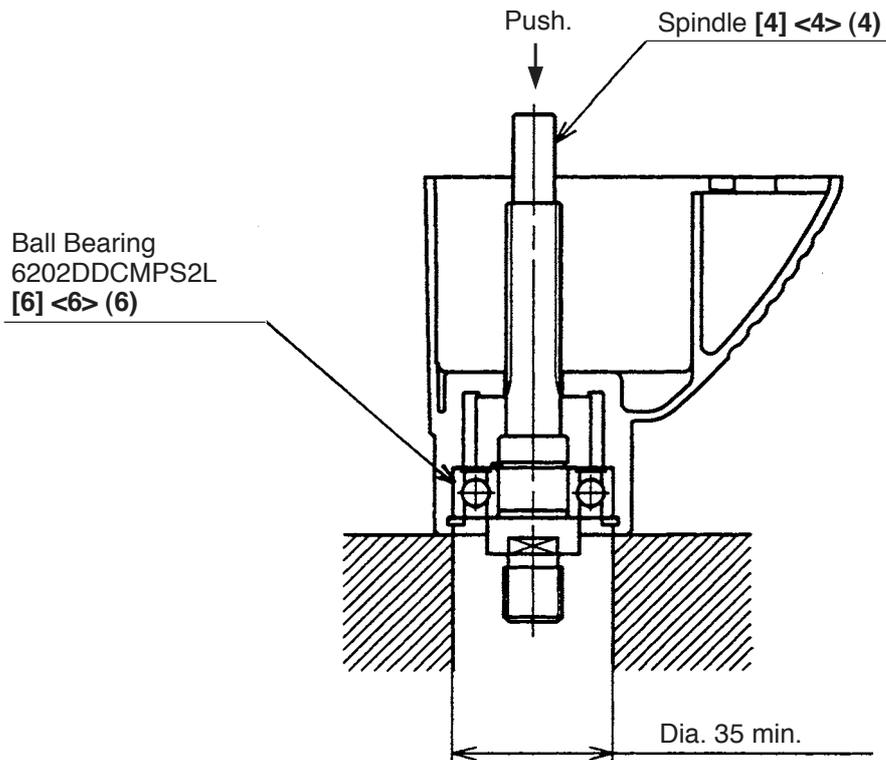


Fig. 10

(2) Removal of the shift lever

Position the Shift Lever Ass'y [15] <15> (15) as shown in Fig. 11. Push both ends of the Retaining Ring (E-type) for D15 Shaft [18] <18> (18) with a pair of long-nose pliers until a clearance about 1 to 2 mm is made. Keeping the clearance, turn the Shift Lever Ass'y [15] <15> (15) by 180 degrees together with the Retaining Ring (E-type) for D15 Shaft [18] <18> (18). Insert a flat-blade screwdriver into the clearance and pry the Retaining Ring (E-type) for D15 Shaft [18] <18> (18) off upward.

**NOTE:**

If the Retaining Ring (E-type) for D15 Shaft [18] <18> (18) is pushed excessively, the Shift Lever Ass'y [15] <15> (15) cannot be turned due to a wide clearance.

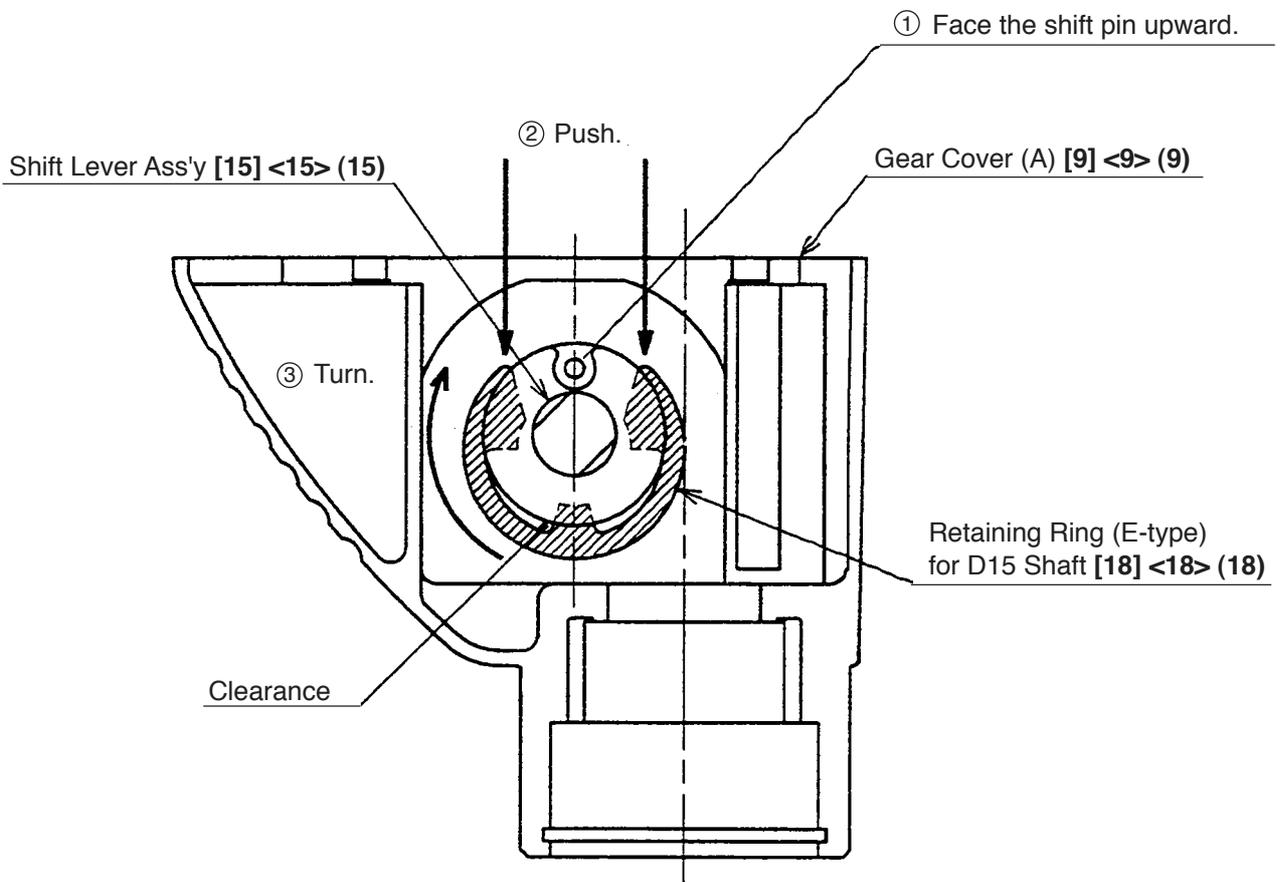


Fig. 11

## 8-2. Reassembly

Reassembly can be accomplished by following the disassembly procedures in reverse. However, special attention should be given to the following items.

### 8-2-1. Internal wire arrangement

- (1) Arrange the internal wires according to "8-4. Internal Wire Arrangement and Wiring Work".
- (2) Be careful not to catch the internal wires when mounting the handle cover.

### 8-2-2. Lubrication

(1) Apply ATTLUB MS No. 2 Grease to the following parts.

- Teeth of the Second Pinion and Gear Set [11] <11> (11) and the Gear Set [21] <21> (21).
- On the Spindle [4] <4> (4).  
Ground portion for fitting the Ball Bearing 6202DDCMPS2L [6] <6> (6), splined portion and hole of rear side.
- On the Shift Lever Ass'y [15] <15> (15).  
Outer circumference portions of the Shift Pin [14] <14> (14) and the O-ring (S-22) [13] <13> (13).
- On the Inner Cover [12] <12> (12).  
Metal portion.
- Inside of Gear Cover (A) [9] <9> (9): 5 g

### 8-2-3. Tightening torque

- |   |                                       |
|---|---------------------------------------|
| (1) Flat Hd. Scerw (A) (Left Hand) M6 x 25 [1] <1> (1) .....      | 4.0 to 5.0 N·m (39.0 to 47.8 in-lbs.) |
| (2) Tapping Screw (W/Flange) D4 x 20 (Black) [32] <31> (31) ..... | 1.5 to 2.5 N·m (13.3 to 22.1 in-lbs.) |
| (3) Tapping Screw (W/Flange) D5 [8] <8> (8) .....                 | 2.4 to 3.4 N·m (21.3 to 30.1 in-lbs.) |
| (4) Drill Chuck [3] <3> (3) .....                                 | 29.4 to 39.2 N·m (260 to 347 in-lbs.) |

#### 8-2-4. Reassembly of the gear cover section

Figure 12 shows the assembly drawing. Reassemble the gear cover section according to the following figure.

Models D 13VH and D 10VJ

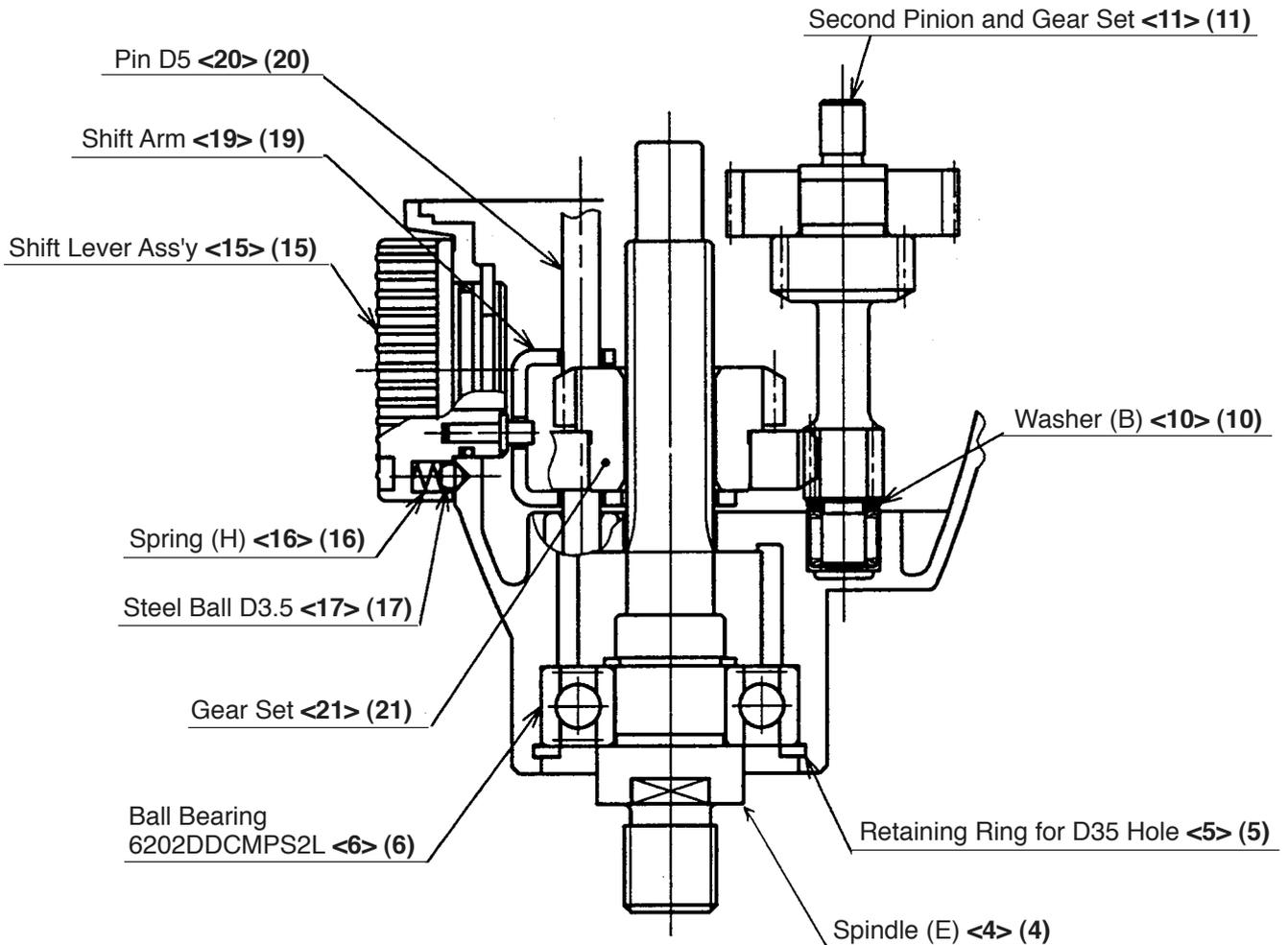


Fig. 12

#### ⚠ CAUTION:

- Mounting directions of the Shift Arm <19> (19) and the Gear Set <21> (21) are specified. Mount these parts in the specified directions as shown in the above figure.

Model D 13VB3  
(With slip clutch)

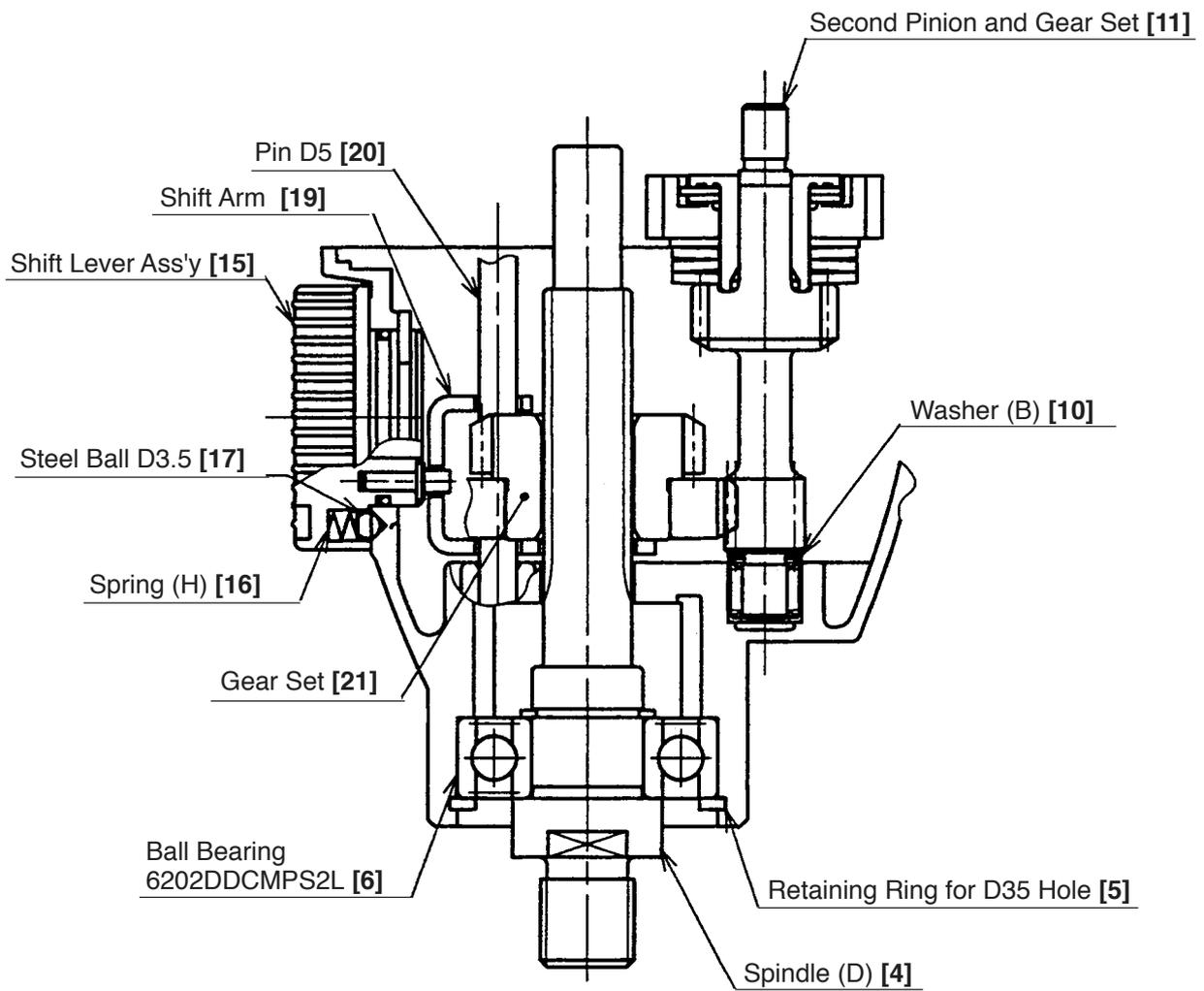


Fig. 13

**⚠ CAUTION:**

- Mounting directions of the Shift Arm [19], Gear Set [21] and Spring (H) [16] are specified. Mount these parts in the specified directions as shown in the above figure.

### 8-3. Wiring Diagrams

(1) For products with noise suppressor

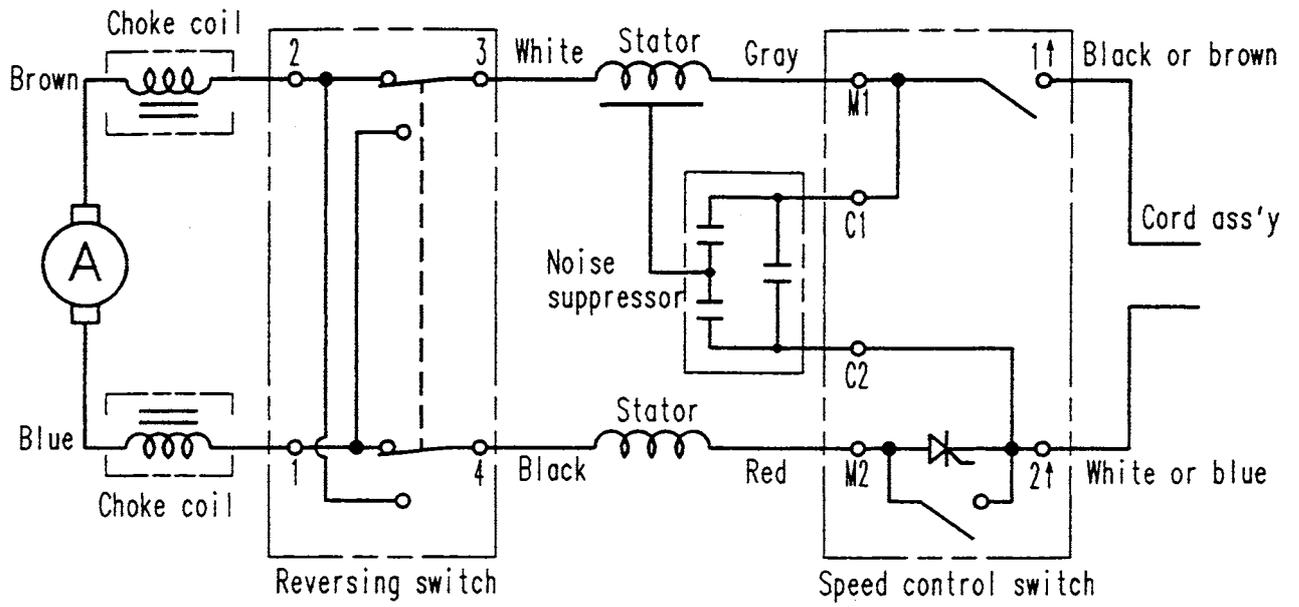


Fig. 14

(2) For products without noise suppressor

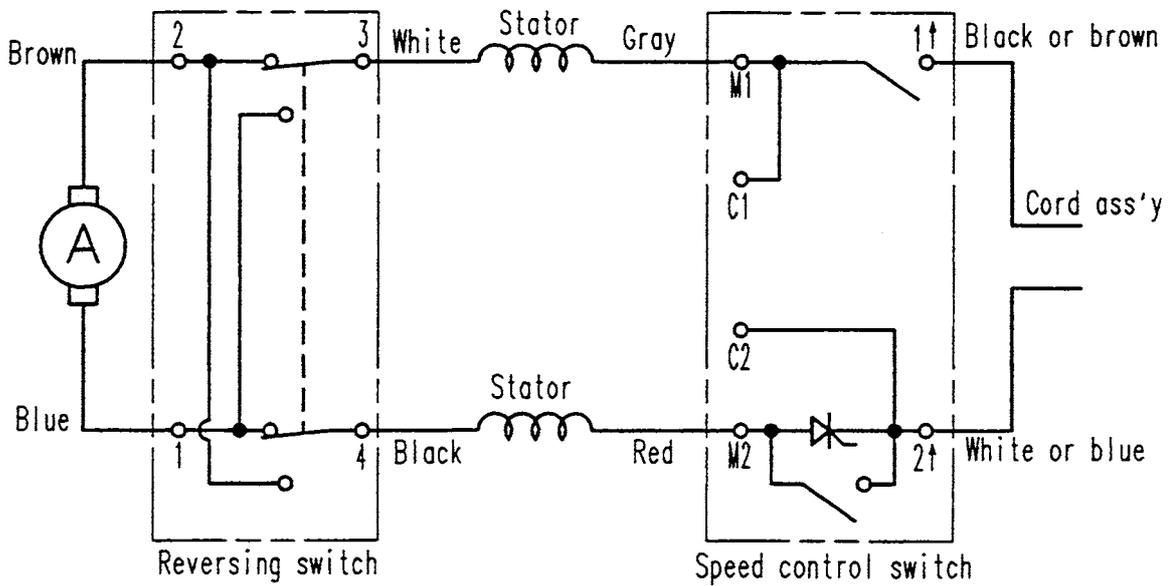


Fig. 15

## 8-4. Internal Wire Arrangement and Wiring Work

### A. Internal wire arrangement

(1) For products with noise suppressor

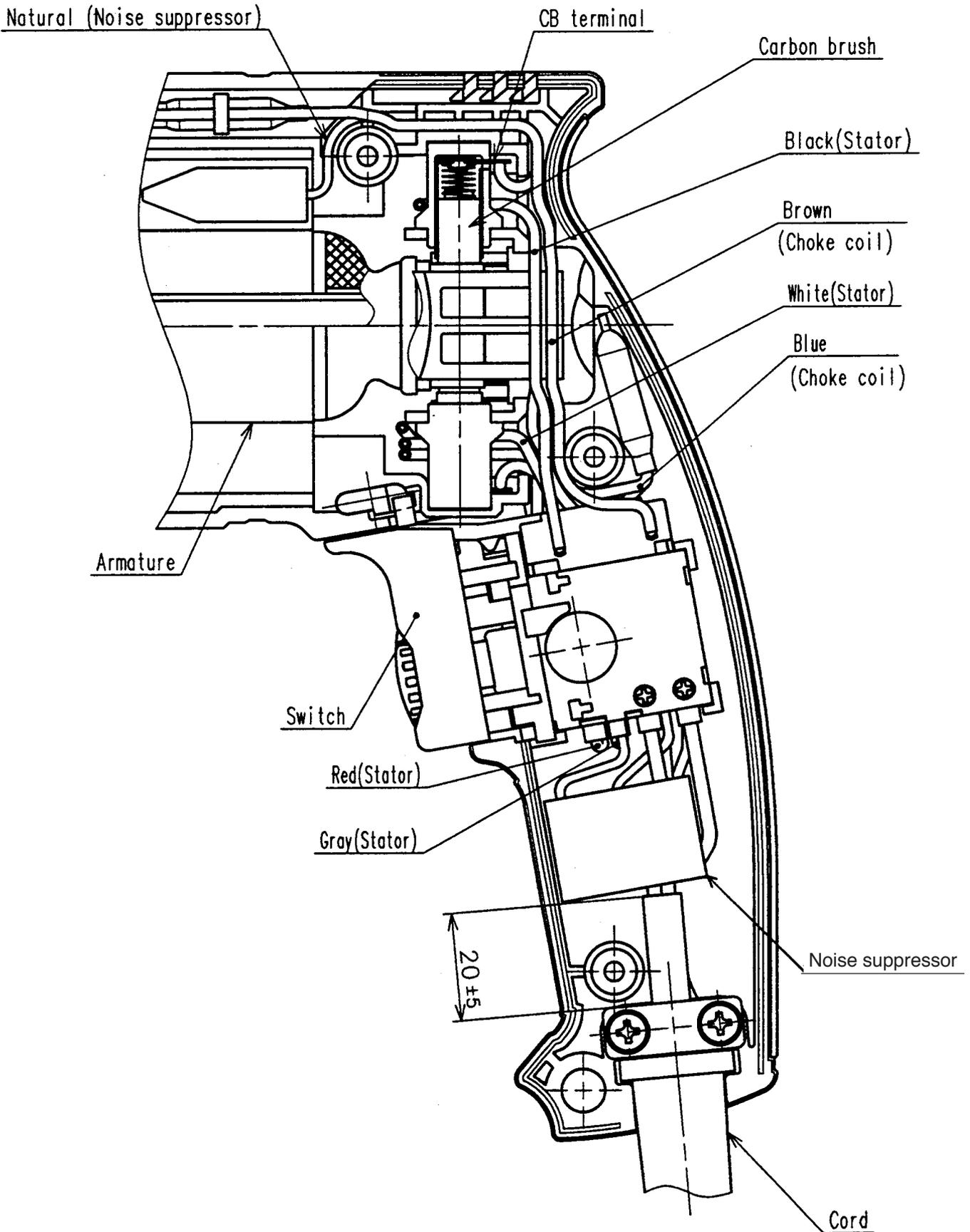


Fig. 16

(2) For products without noise suppressor

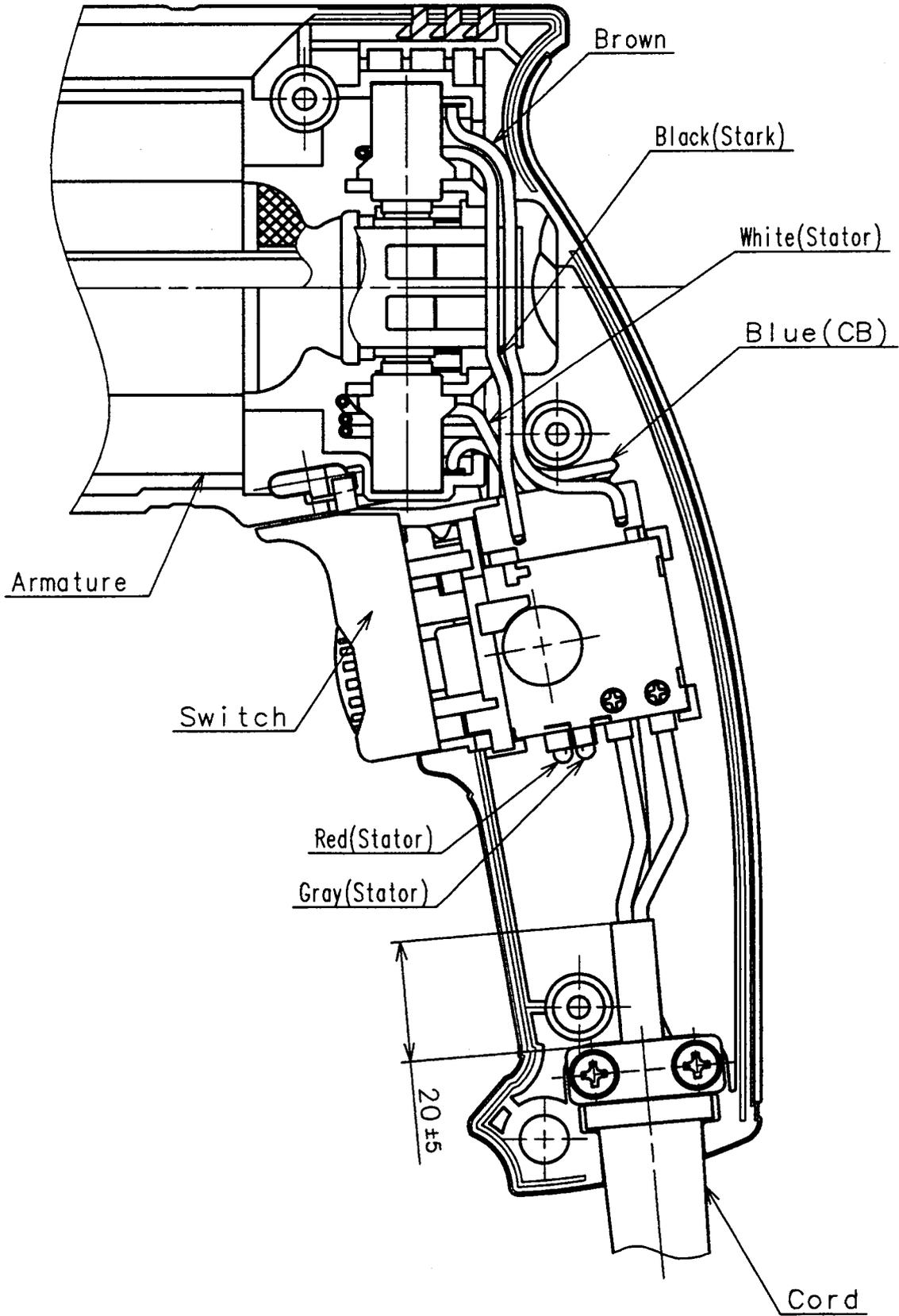


Fig. 17

B. Switch connection

(1) Wiring of reversing switch

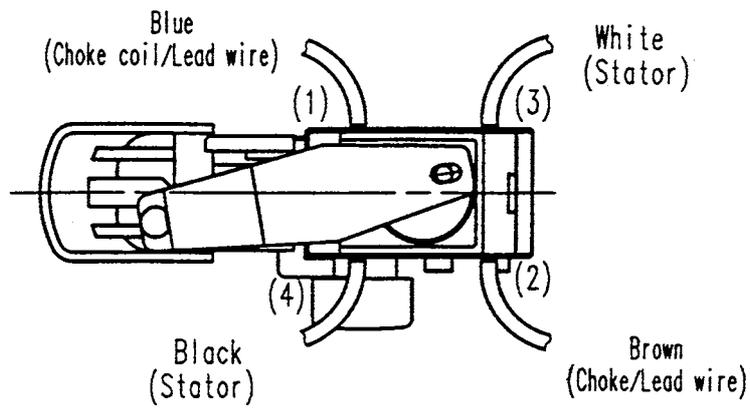


Fig. 18

(2) Wiring of speed control switch

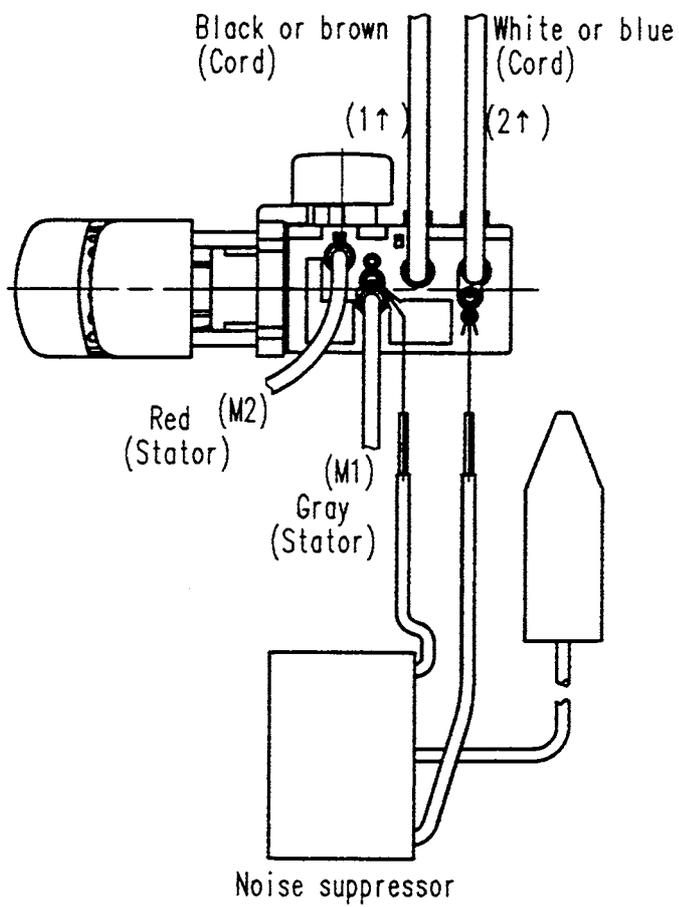


Fig. 19

### 8-5. Insulation Tests

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

Insulation resistance: 7 M  $\Omega$  or more with DC 500 V megohm tester

Dielectric strength: AC 4,000 V/1 minute, with no abnormalities 220 V – 240 V (and 110 V for U.K. products)

AC 2,500 V/1 minute, with no abnormalities 110 V – 127 V (except U.K. products)

### 8-6. No-Load Current Value

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

Model D 13VB3

Voltage (V)	110	230	240
Current (A) Max.	3.5	1.6	1.5

Model D 13VH

Voltage (V)	220	230	240
Current (A) Max.	1.7	1.6	1.5

Model D 10VJ

Voltage (V)	110	220	230	240
Current (A) Max.	3.5	1.7	1.6	1.5

### 9. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
D 13VB3		Work Flow						
		Handle Cover Cord Armor		Switch Cord				
					Housing Stator			
	General Assembly			Armature Ball Bearing (608DD) Ball Bearing (698T1)	Inner Cover (A) Second Pinion and Gear Set			
		Drill Chuck		Spindle (D) Ball Bearing (6202DD)	Gear Cover (A) Shift Lever Ass'y Spring (H) Shift Arm Gear Set			

MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
D 10VJ D 13VH		Work Flow						
			Handle Cover Cord Armor	Switch Cord				
					Housing Stator			
	General Assembly			Armature Ball Bearing (608DD) Ball Bearing (698T1)	Inner Cover (B) Second Pinion and Gear Set			
				Spindle (E) Ball Bearing (6202DD)	Gear Cover (A) Shift Lever Ass'y			
			Drill Chuck		Spring (H) Shift Arm Gear Set			

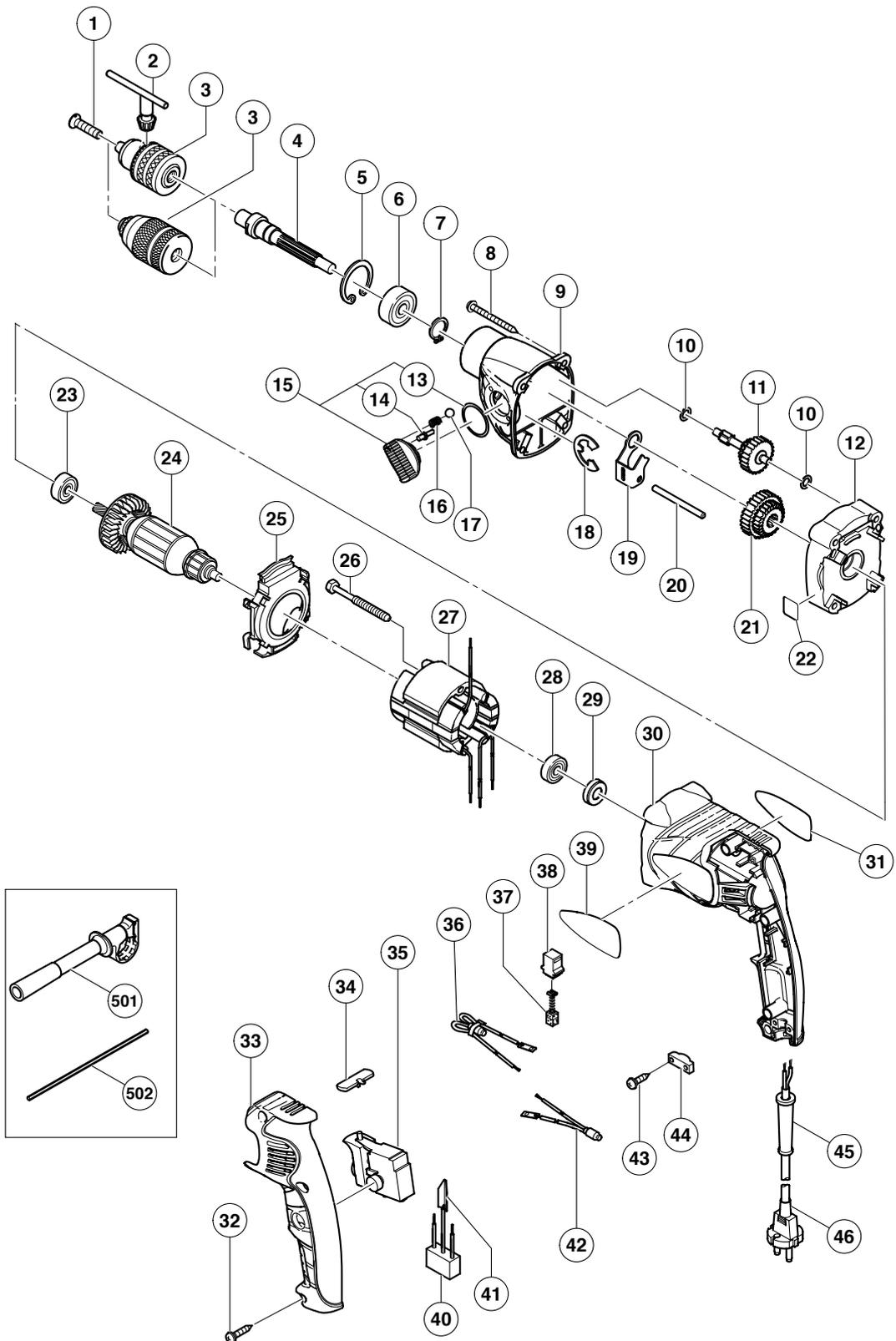
## ELECTRIC TOOL PARTS LIST

■ DRILL

2004 · 11 · 15

Model D 13VB3

(E1)



**PARTS**

D 13VB3

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	995-344	FLAT HD. SCREW (A) (LEFT HAND) M6X25	1	
2	987-576	CHUCK WRENCH FOR 13VLB-D, 13VLR-D	1	
* 3	321-814	DRILL CHUCK 13VLRB-D	1	INCLUD. 1, 2
* 3	319-546	DRILL CHUCK 13VLR-N (W/O CHUCK WRENCH)	1	
4	323-971	SPINDLE (D)	1	
5	939-556	RETAINING RING FOR D35 HOLE (10 PCS.)	1	
6	620-2DD	BALL BEARING 620DDCMPS2L	1	
7	939-544	RETAINING RING FOR D15 SHAFT (10 PCS.)	1	
8	322-869	TAPPING SCREW (W/FLANGE) D5X50 (BLACK)	4	
9	323-959	GEAR COVER (A)	1	
10	322-852	WASHER (B)	2	
11	322-867	SECOND PINION AND GEAR SET	1	
12	323-972	INNER COVER (A)	1	
13	306-353	O-RING (S-22)	1	
14	322-848	SHIFT PIN	1	
15	322-847	SHIFT LEVER ASS'Y	1	INCLUD. 13, 14
16	981-328	SPRING (H)	1	
17	319-535	STEEL BALL D3.5 (10 PCS.)	1	
18	323-048	RETAINING RING (E-TYPE) FOR D15 SHAFT	1	
19	322-849	SHIFT ARM	1	
20	984-104	PIN D5	1	
21	322-846	GEAR SET	1	
22		LABEL (FOR SLIP CLUTCH)	1	
23	608-DDM	BALL BEARING 608DDC2PS2L	1	
* 24	360-652C	ARMATURE 110V	1	
* 24	360-652E	ARMATURE 230V	1	
* 24	360-652F	ARMATURE 240V	1	
25	322-843	FAN GUIDE	1	
26	961-672	HEX. HD. TAPPING SCREW D4X50	2	
* 27	340-587C	STATOR 110V	1	
* 27	340-587E	STATOR 230V	1	
* 27	340-587F	STATOR 240V	1	
28	698-T1X	BALL BEARING 698T1XZZ1MC2E NS7L	1	
29	309-929	RUBBER BUSHING	1	
30	322-861	HOUSING	1	
31		NAME PLATE	1	
32	301-653	TAPPING SCREW (W/FLANGE) D4X20 (BLACK)	3	
33	322-862	HANDLE COVER	1	
34	322-853	PUSHING BUTTON	1	
35	322-854	SWITCH (1P PILLAR TYPE)	1	
* 36	322-517	CHOKE COIL (BROWN) 220V-240V	1	
* 36	322-518	CHOKE COIL (BROWN) 110V	1	FOR GBR (110V)
37	999-041	CARBON BRUSH (1 PAIR)	2	
38	955-203	BRUSH HOLDER	2	
39		HITACHI LABEL	1	
40	994-273	NOISE SUPPRESSOR	1	
41	992-635	EARTH TERMINAL	1	
* 42	321-634	CHOKE COIL (BLUE) 110V-240V	1	
* 42	322-519	CHOKE COIL (BLUE) 110V	1	FOR GBR (110V)
43	984-750	TAPPING SCREW (W/FLANGE) D4X16	2	
44	937-631	CORD CLIP	1	





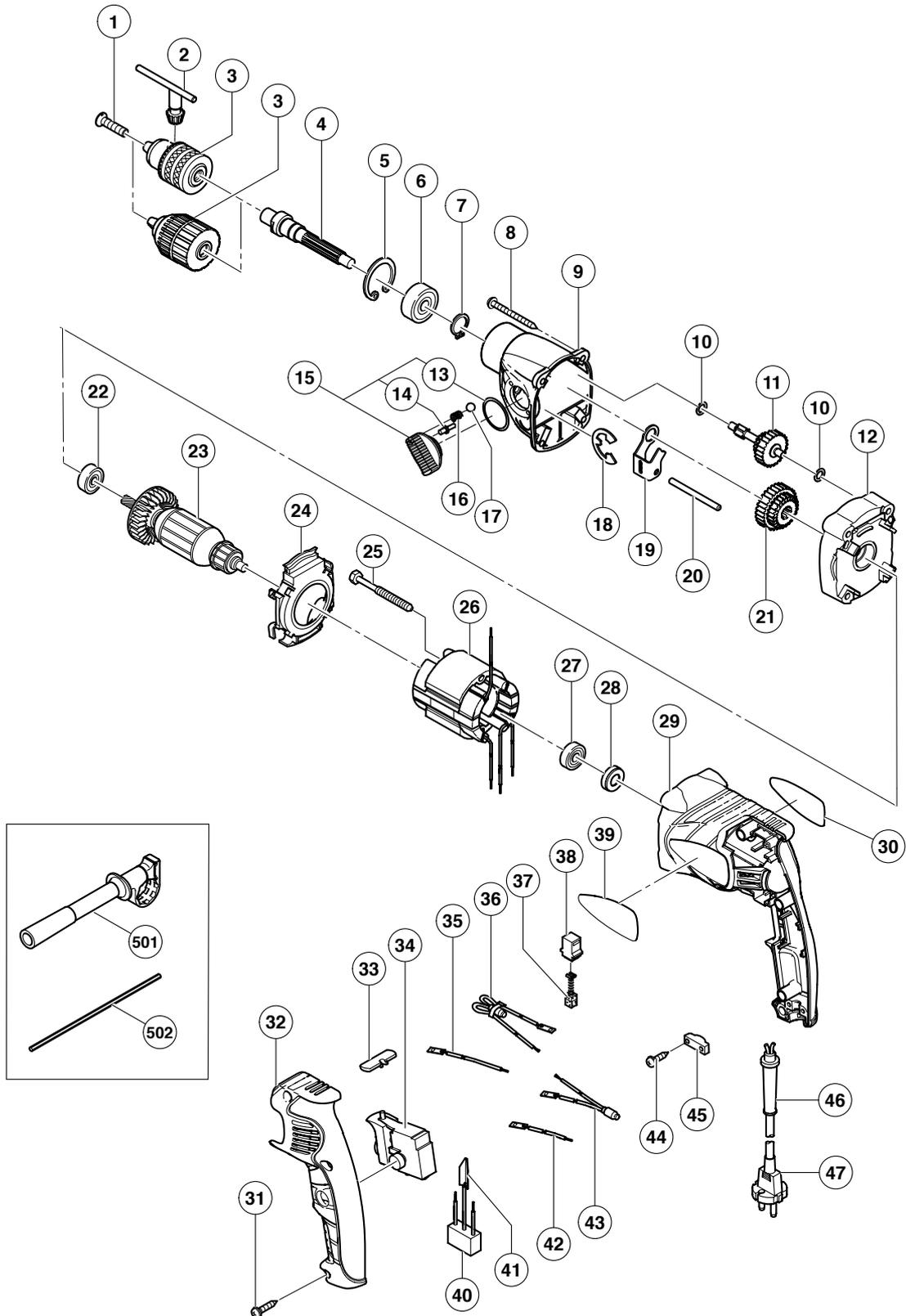
## ELECTRIC TOOL PARTS LIST

■ DRILL

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Model D 13VH

(E1)



**PARTS**

D 13VH

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	995-344	FLAT HD. SCREW (A) (LEFT HAND) M6X25	1	
2	987-576	CHUCK WRENCH FOR 13VLB-D,13VLR-D	1	
* 3		DRILL CHUCK 13VLRB-D	1	INCLUD. 2 SUPPLIED WITH ITEM NO. 601
* 3	322-625	DRILL CHUCK 13VLRJ-N (W/O CHUCK WRENCH)	1	
4	323-956	SPINDLE (E)	1	
5	939-556	RETAINING RING FOR D35 HOLE (10 PCS.)	1	
6	620-2DD	BALL BEARING 620DDCMPS2L	1	
7	939-544	RETAINING RING FOR D15 SHAFT (10 PCS.)	1	
8	316-321	TAPPING SCREW (W/FLANGE) D5X45	4	
9	323-959	GEAR COVER (A)	1	
10	322-852	WASHER (B)	2	
11	322-858	SECOND PINION AND GEAR SET	1	
12	323-958	INNER COVER (B)	1	
13	306-353	O-RING (S-22)	1	
14	322-848	SHIFT PIN	1	
15	322-847	SHIFT LEVER ASS'Y	1	INCLUD. 13, 14
16	981-328	SPRING (H)	1	
17	319-535	STEEL BALL D3.5 (10 PCS.)	1	
18	323-048	RETAINING RING (E-TYPE) FOR D15 SHAFT	1	
19	322-849	SHIFT ARM	1	
20	322-860	PIN D5	1	
21	322-846	GEAR SET	1	
22	608-DDM	BALL BEARING 608DDC2PS2L	1	
* 23	360-655E	ARMATURE 220V-230V	1	
* 23	360-655F	ARMATURE 240V	1	
24	322-843	FAN GUIDE	1	
25	981-824	HEX. HD. TAPPING SCREW D4X45	2	
* 26	340-589E	STATOR 220V-230V	1	
* 26	340-589F	STATOR 240V	1	
27	698-T1X	BALL BEARING 698T1XZZ1MC2E NS7L	1	
28	309-929	RUBBER BUSHING	1	
29	322-861	HOUSING	1	
30		NAME PLATE	1	
31	301-653	TAPPING SCREW (W/FLANGE) D4X20 (BLACK)	3	
32	322-862	HANDLE COVER	1	
33	322-853	PUSHING BUTTON	1	
34	322-820	SWITCH (A)	1	
* 35	321-630	INTERNAL WIRE (BROWN) 100L	1	FOR KUW, INA, SAU, SIN
* 36	322-517	CHOKE COIL (BROWN) 220V-240V	1	EXCEPT FOR KUW, INA, SAU, SIN
37	999-041	CARBON BRUSH (1 PAIR)	2	
38	955-203	BRUSH HOLDER	2	
39		HITACHI LABEL	1	
* 40	994-273	NOISE SUPPRESSOR	1	FOR FRA, AUS, SAF, CHN
* 41	992-635	EARTH TERMINAL	1	FOR FRA, AUS, SAF, CHN
* 42	321-631	INTERNAL WIRE (BLUE) 55L	1	FOR KUW, INA, SAU, SIN
* 43	321-634	CHOKE COIL (BLUE) 110V-240V	1	EXCEPT FOR KUW, INA, SAU, SIN
44	984-750	TAPPING SCREW (W/FLANGE) D4X16	2	
45	937-631	CORD CLIP	1	
46	953-327	CORD ARMOR D8.8	1	
* 47	500-409Z	CORD	1	(CORD ARMOR D8.8)
* 47	500-439Z	CORD	1	(CORD ARMOR D8.8) FOR AUS





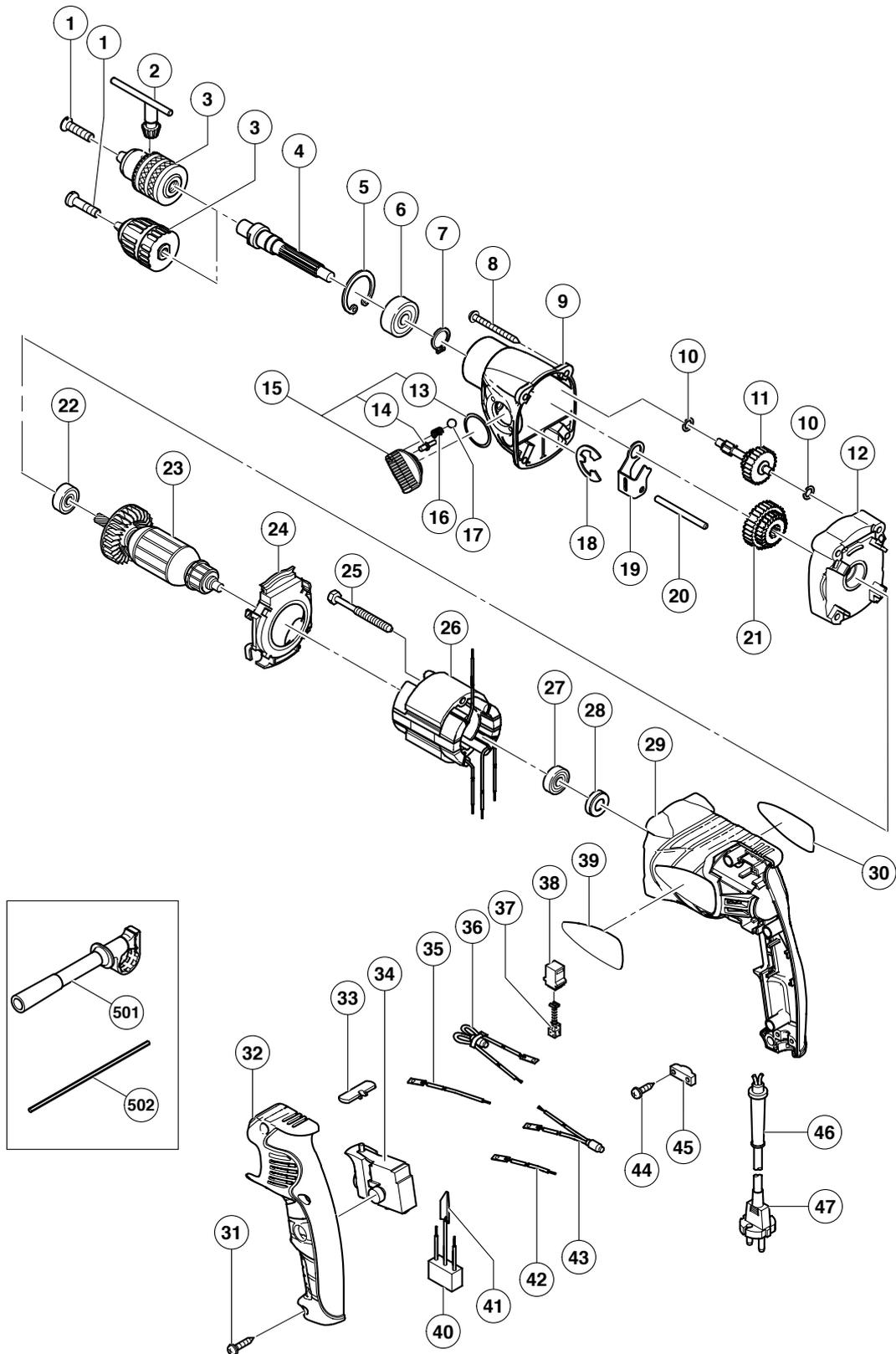
## ELECTRIC TOOL PARTS LIST

■ DRILL

2004 · 11 · 15

Model D 10VJ

(E1)



## PARTS

D 10VJ

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
* 1	995-344	FLAT HD. SCREW (A) (LEFT HAND) M6X25	1	FOR DRILL CHUCK 10VLR-D
* 1	311-959	SPECIAL SCREW (LEFT HAND) M6X23	1	FOR DRILL CHUCK 10MM AND 10VLRG-N
* 2	987-575	CHUCK WRENCH FOR 10VLB-D, 10VLR-D	1	
* 3	322-581	DRILL CHUCK 10VLR-D	1	INCLUD. 1, 2
* 3		DRILL CHUCK 10MM (W/O CHUCK WRENCH)	1	SUPPLIED WITH ITEM NO. 601
4	323-956	SPINDLE (E)	1	
5	939-556	RETAINING RING FOR D35 HOLE (10 PCS.)	1	
6	620-2DD	BALL BEARING 6202DDCMPS2L	1	
7	939-544	RETAINING RING FOR D15 SHAFT (10 PCS.)	1	
8	316-321	TAPPING SCREW (W/FLANGE) D5X45	4	
9	323-959	GEAR COVER (A)	1	
10	322-852	WASHER (B)	2	
11	322-858	SECOND PINION AND GEAR SET	1	
12	323-958	INNER COVER (B)	1	
13	306-353	O-RING (S-22)	1	
14	322-848	SHIFT PIN	1	
15	322-847	SHIFT LEVER ASS'Y	1	INCLUD. 13, 14
16	981-328	SPRING (H)	1	
17	319-535	STEEL BALL D3.5 (10 PCS.)	1	
18	323-048	RETAINING RING (E-TYPE) FOR D15 SHAFT	1	
19	322-849	SHIFT ARM	1	
20	322-860	PIN D5	1	
21	322-846	GEAR SET	1	
22	608-DDM	BALL BEARING 608DDC2PS2L	1	
* 23	360-655C	ARMATURE 110V	1	
* 23	360-655E	ARMATURE 220V-230V	1	
* 23	360-655F	ARMATURE 240V	1	
24	322-843	FAN GUIDE	1	
25	981-824	HEX. HD. TAPPING SCREW D4X45	2	
* 26	340-589C	STATOR 110V	1	
* 26	340-589E	STATOR 220V-230V	1	
* 26	340-589F	STATOR 240V	1	
27	698-T1X	BALL BEARING 698T1XZZ1MC2E NS7L	1	
28	309-929	RUBBER BUSHING	1	
29	322-861	HOUSING	1	
30		NAME PLATE	1	
31	301-653	TAPPING SCREW (W/FLANGE) D4X20 (BLACK)	3	
32	322-862	HANDLE COVER	1	
33	322-853	PUSHING BUTTON	1	
34	322-854	SWITCH (1P PILLAR TYPE)	1	
* 35	321-630	INTERNAL WIRE (BROWN) 100L	1	EXCEPT FOR TPE, NZL, AUS, EUROPE, CHN
* 36	322-517	CHOKE COIL (BROWN) 220V-240V	1	FOR NZL, AUS, EUROPE, CHN
* 36	322-518	CHOKE COIL (BROWN) 110V	1	FOR TPE
37	999-041	CARBON BRUSH (1 PAIR)	2	
38	955-203	BRUSH HOLDER	2	
39		HITACHI LABEL	1	
* 40	994-273	NOISE SUPPRESSOR	1	FOR TPE, NZL, AUS, EUROPE, CHN
* 41	992-635	EARTH TERMINAL	1	FOR TPE, NZL, AUS, EUROPE, CHN
* 42	321-631	INTERNAL WIRE (BLUE) 55L	1	EXCEPT FOR TPE, NZL, AUS, EUROPE, CHN
* 43	321-634	CHOKE COIL (BLUE) 110V-240V	1	FOR NZL, AUS, EUROPE, CHN
* 43	322-519	CHOKE COIL (BLUE) 110V	1	FOR TPE





