

Hitachi Power Tools

SERVICE MANUAL

LIST Nos.
DS 12DVF3 G818
DS 9DVF3: G817
Mar. 2005

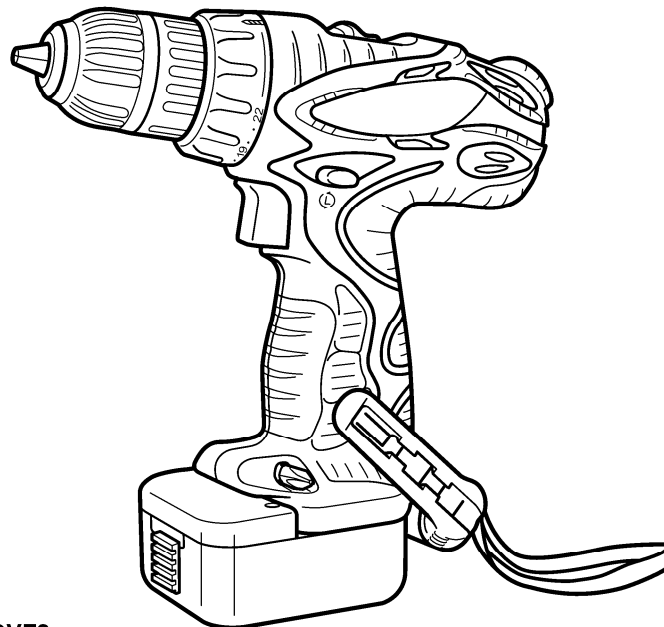
PRODUCT NAME

Hitachi Cordless Driver Drill

Models **DS 12DVF3**
DS 9DVF3

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DS 12DVF3

HITACHI

 **Hitachi Koki Co., Ltd.**
International Sales Division

1. REPAIR GUIDE

Be sure to remove the storage batteries from the main body before servicing. Inadvertent triggering of the switch with the storage battery connected will result in the danger of accidental turning of the motor.

1-1. Precautions in Disassembly and Reassembly

The **[Bold]** numbers in the description below correspond to the item numbers in the Parts List and exploded assembly diagram.

1-1-1. Disassembly

(1) Removal of the Hook Ass'y **[39]**

Remove the Special Screw M5 **[44]** with a flat-blade screwdriver or a coin. Remove the Hook Ass'y **[39]** and the Hook Spring **[43]**.

(2) Removal of Housing (A). (B) Set **[30]**

First, align the drill mark "▲" at the Clutch Dial **[4]** with the triangle mark at Housing (A). (B) Set **[30]**.

Remove the eight Tapping Screws (W/Flange) D3 x 16 (Black) **[26]** secured to the main body. Gently open housing (A) and housing (B) while holding their battery loading sections.

(3) After housing (B) has been removed, all the internal parts, assembled or separate, can be taken out as they are. Lift the entire contents from housing (A) while holding the Motor **[25]** and the Clutch Dial **[4]**.

(4) Removal of the Drill Chuck 10TLRK-N (W/O Chuck Wrench) **[2]** (See Fig. 1.)

(a) Turn the Motor **[25]** counterclockwise (when viewed from the rear) and remove it from the Rear Case **[14]**.

Remove the Shift Knob **[36]** from the Shift Arm **[16]**. Take care not to remove the Shift Arm **[16]** from the Rear Case **[14]** in this operation.

(b) Attach the motor spacer (an accessory of the special repair tool J-292, Code No. 316-379) to the assembly of the Drill Chuck 10TLRK-N (W/O Chuck Wrench) **[2]**, Clutch Dial **[4]**, Front Case **[9]** and Rear Case **[14]** then mount it in special repair tool J-292 clamped in the vise as illustrated in Fig. 1. In this operation, check that the pinion press-fitted in the special repair tool J-292 and Planet Gear (A) Set **[21]** are engaged properly.

(c) Secure the Slide Ring Gear **[17]** to the Front Case **[9]** side with the Shift Arm **[16]**.

(d) Turn the sleeve of the Drill Chuck 10TLRK-N (W/O Chuck Wrench) **[2]** counterclockwise (when viewed from the front) to fully open the jaws of the Drill Chuck 10TLRK-N (W/O Chuck Wrench) **[2]**. Turn the Special Screw (Left Hand) M5 x 27 **[1]** clockwise and remove it. (Note that the special screw is left-hand threaded.)

(e) Fit the hexagonal bar wrench M10 into the Drill Chuck 10TLRK-N (W/O Chuck Wrench) **[2]** as illustrated in Fig. 1 and remove the Drill Chuck 10TLRK-N (W/O Chuck Wrench) **[2]** by turning the hexagonal bar wrench counterclockwise.

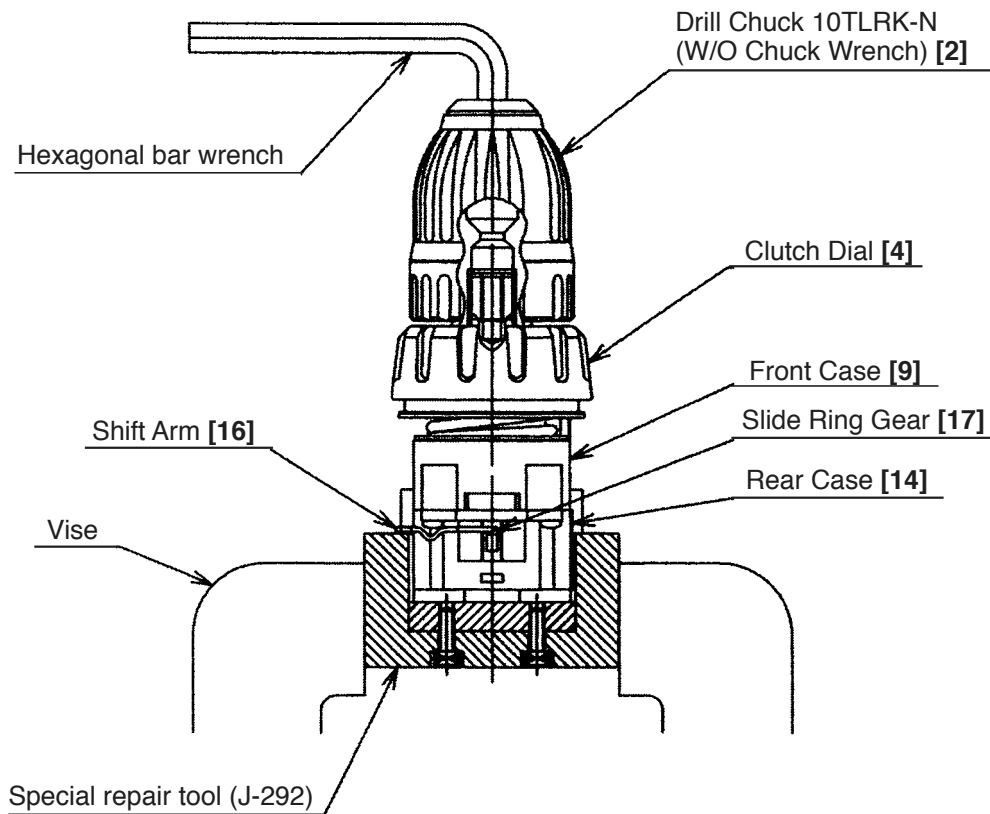


Fig. 1

(5) Disassembly of the gear unit

Remove the Shift Arm [16] from the Rear Case [14], then remove the Screw Set D3 x 12 (4 pcs.) [15] connecting the Front Case [9] and the Rear Case [14]. Remove Washer (A) [13], Planet Gear (C) Set (3 pcs.) [12], Ring Gear [11] and six Steel Balls D5 [10] from the Front Case [9] in order. Take care not to lose the six Steel Balls D5 [10] in this operation.

(6) Disassembly of the clutch unit

(a) After press up the hook of Front Case [9] with the small flat-blade screwdriver, the Clutch Dial [4] and Click Spring [5] can be taken out as they are. (See Fig. 2.)

(b) Turn the Nut [6] counterclockwise and remove it from the Front Case [9], then remove the Spring [7] and Washer (D) [8] from the Front Case [9].

NOTE: Do not remove the Front Case [9].

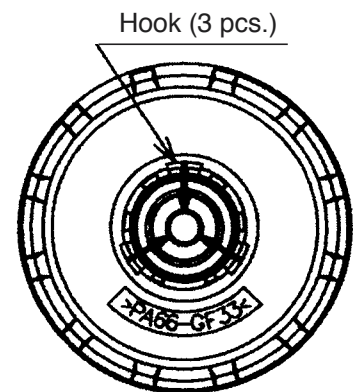


Fig. 2

(7) Disassembly of the power supply unit

NOTE: Do not remove the heat sink secured to the DC-Speed Control Switch [33] with a screw.

Remove the two Machine Screws M3 x 8 [28], and take the Motor [25] and the Motor Spacer [24] apart. Disconnect Internal Wires (B) [31] [32] from the Motor [25] with a soldering iron, then disconnect them from the DC-Speed Control Switch [33] with a soldering iron in the same manner.

1-1-2. Reassembly

Reassembly can generally be carried out as the reverse of the disassembly procedure, with some items to be noted as follows.

(1) Reassembly of the power supply unit

(a) Perform wiring according to the wiring diagram (Fig. 3).

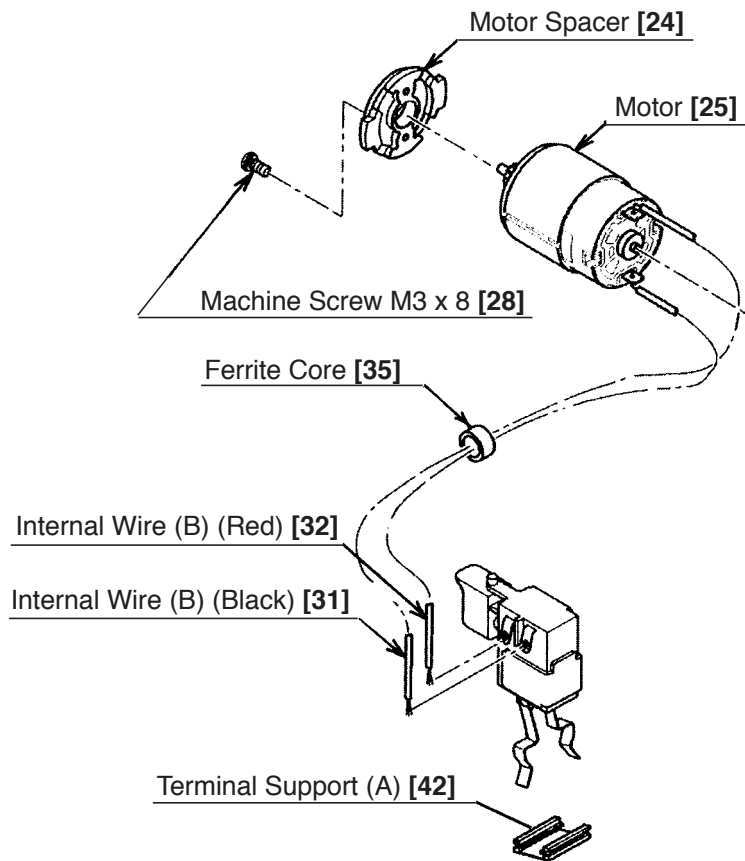


Fig. 3

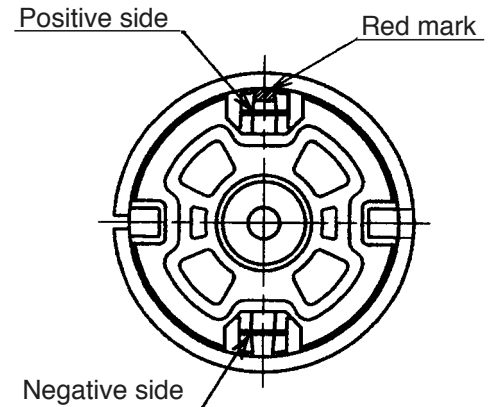


Fig. 4

(b) Pay attention to the polarity of the Motor [25] when soldering Internal Wires (B) [31] [32] to the Motor [25].

The red-marked side of the Motor [25] is positive. (See Fig. 4.)

(c) Apply grease (Hitachi Motor Grease No. 29, Code No. 930035 is recommended) to the pinion press-fitted on the Motor [25] shaft.

(2) Reassembly of the clutch unit

(a) Mount Washer (D) [8] and the Spring [7] to the Front Case [9]. (See Fig. 5.)

When mounting Washer (D) [8] into the Front Case [9], align the projection on the Front Case [9] with the notch of Washer (D) [8].

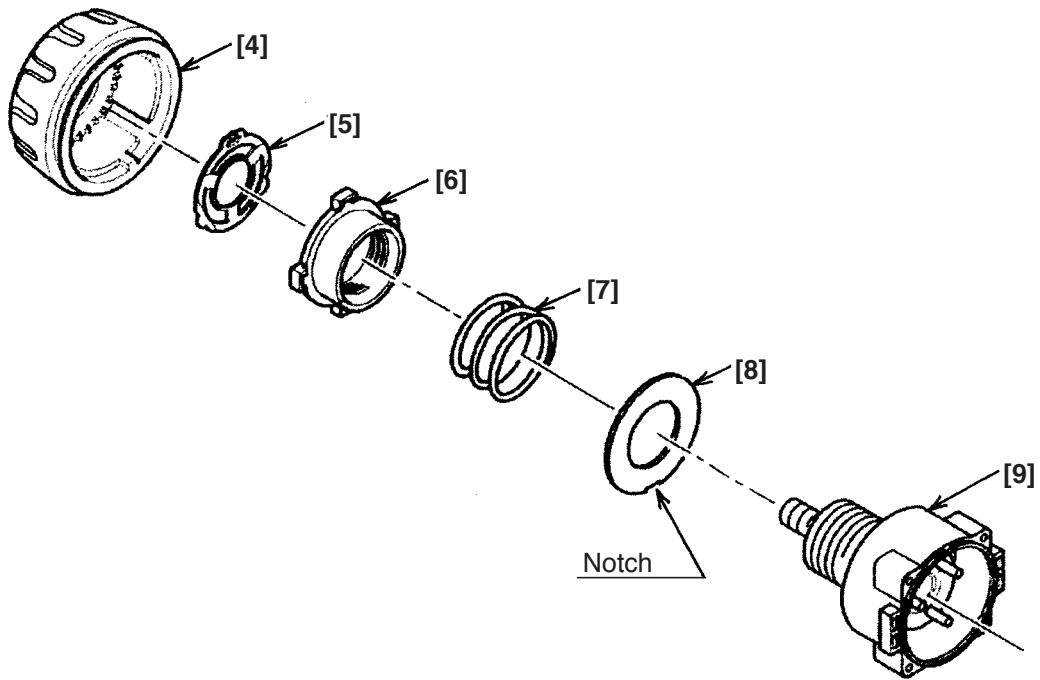


Fig. 5

(b) Mount the Nut [6] to the Front Case [9]. (See Fig. 6.)

Align the register mark (o) on the Nut [6] with the register mark on the Front Case [9]. Turn the Nut [6] about 1-1/2 turns clockwise so that the register mark (Δ) on the Nut [6] is aligned with the register mark on the Front Case [9]. Check that the Y surface of the Nut [6] is aligned with the Z surface of the Front Case [9].

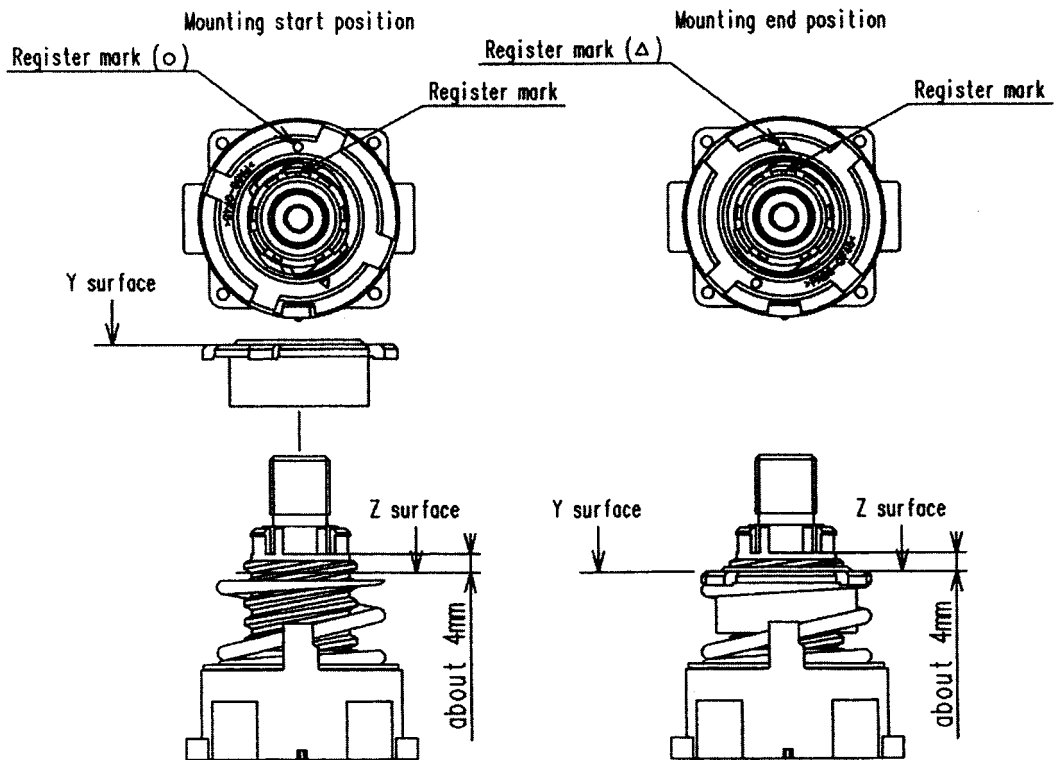


Fig. 6

(c) With the ridge at the Click Spring [5] facing the front-side, insert Click Spring [5] into the recess of the Front Case [9]. (See Fig. 7.)

(d) Insert the Clutch Dial [4] to the Front Case [9]. (See Fig. 8.)

Mount the Nut [6] into the Clutch Dial [4] engaging the wider projection of the Nut [6] with the wider recess of the Clutch Dial [4]. (The wider recess of the Clutch Dial [4] is positioned at "5" when viewed from the outside.) Make sure that the hook of Front Case [9] is fitted into the hole in the Clutch Dial [4].

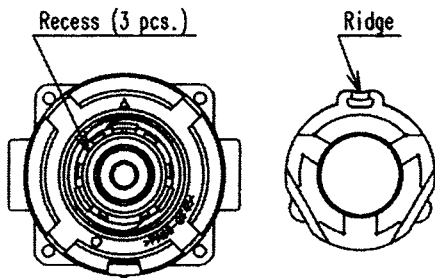


Fig. 7

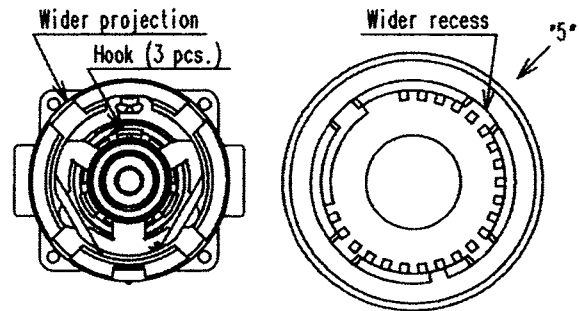


Fig. 8

(3) Reassembly of the gear unit

(a) Apply grease (Hitachi Motor Grease No. 29, Code No. 930035) to the meshing parts of the gear.

(b) Install the parts series from the six Steel Balls D5 [10] to Washer (B) [23] into the assembly reassembled in step (2). (See Fig. 9.)

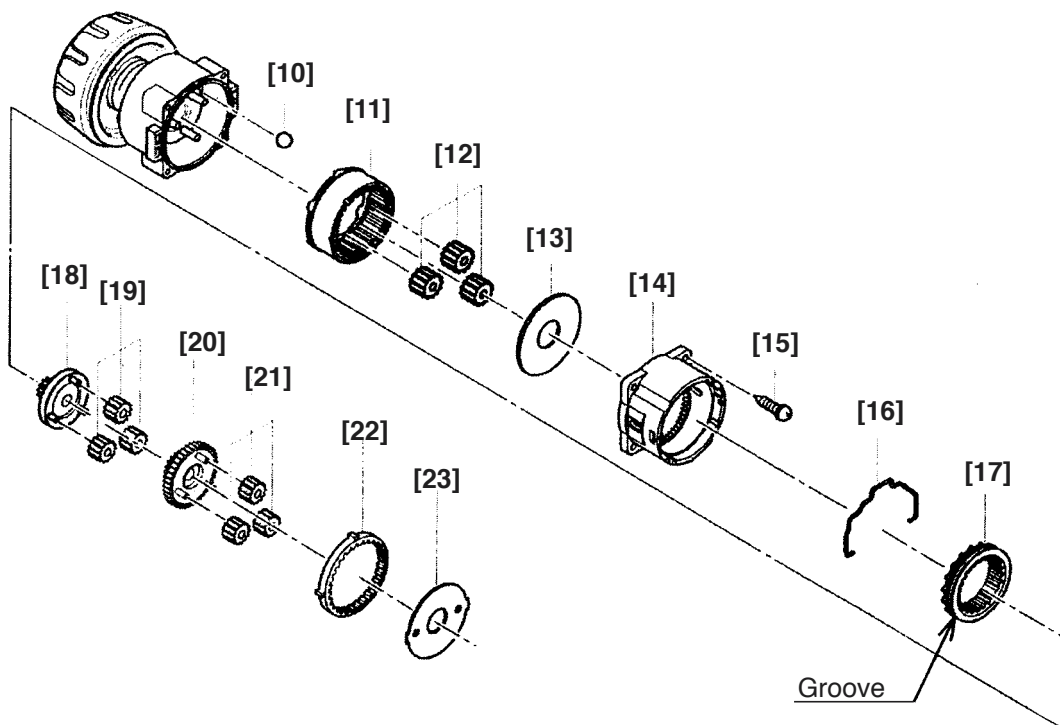


Fig. 9

- (i) Note the direction of the groove when installing the Slide Ring Gear [17] so that the groove faces toward the Motor [25].
- (ii) Install the Front Case [9] and the Rear Case [14] together with the mark on the Front Case [9] aligned with the mark on the Rear Case [14]. (See Fig. 11.)
- (iii) Install Washer (B) [23] in the Rear Case [14] with the projections of Washer (B) [23] engaged with the recesses in the Rear Case [14], and turn Washer (B) [23] clockwise until it can turn no further. (See Fig. 10.)

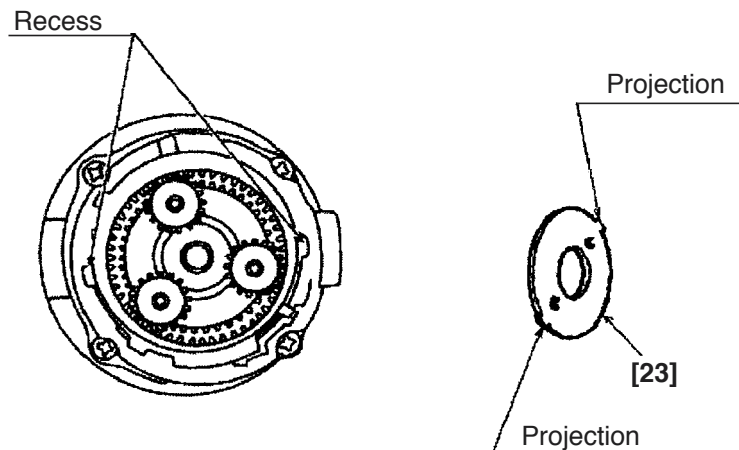


Fig. 10

- (c) Install the Shift Arm [16] into the assembly reassembled in step (b).
With the ridge at the Shift Arm [16] facing the Motor [25] side, first install them on the unmarked side of the assembly reassembled in step (b). Then insert the projections on the Shift Arm [16] into the holes in the Rear Case [14] and make sure that the projections are fitted into the grooves in the Slide Ring Gear [17] mounted within the Rear Case [14]. (See Fig. 11.)

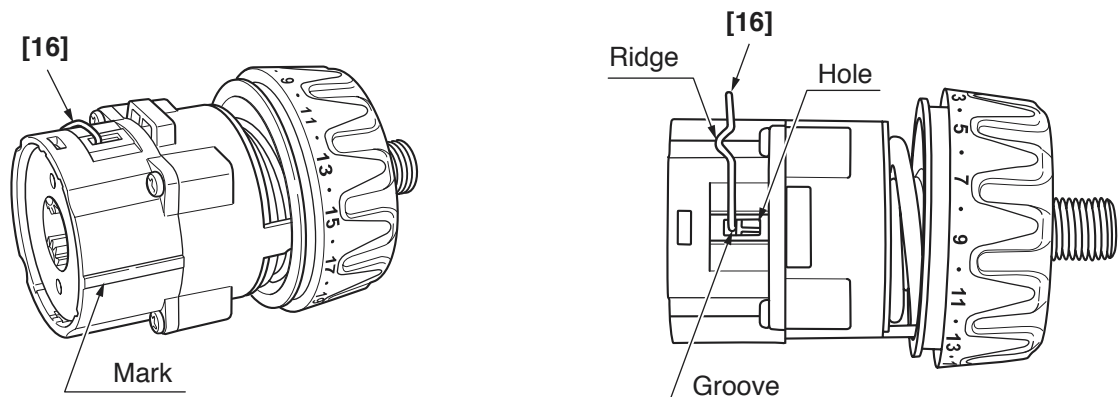


Fig. 11

- (d) Install the Drill Chuck 10TLRK-N (W/O Chuck Wrench) [2].
Install the Drill Chuck 10TLRK-N (W/O Chuck Wrench) [2] using the special repair tool (J-292, Code No. 316-379) and secure it with the Special Screw (Left Hand) M5 x 27 [1].
- (e) Install the Shift Knob [36] into the assembly reassembled in step (d).
When installing the Shift Knob [36] into the Shift Arm [16], note that the "LOW" mark on the Shift Knob [36] faces the Motor [25] with the Shift Arm [16] engaged with the recess in the Shift Knob [36].

(f) Install the assembly reassembled in step (1) and the assembly reassembled in step (e) together. (See Fig. 12.)

Fit the projection on the Motor Spacer [24] into the recess in the Rear Case [14] while ensuring that the Shift Knob [36] is aligned with the positive side of the Motor [25] and turn the Motor Spacer [24] clockwise when viewed from the rear of the Motor [25] until it can turn no further. During installation, make sure that the pinion press-fitted onto the shaft of the Motor [25] and Planet Gear (A) Set [21] mesh properly.

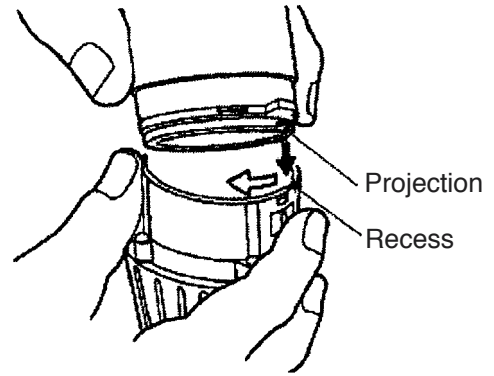


Fig. 12

(4) Installation of the assembly reassembled in step (3) into Housing (A). (B) Set [30]

(a) Install the assembly reassembled in step (3) into housing (A). Note that the projections on the Front Case [9] and the Motor Spacer [24] are engaged in the recesses in housing (A), and the projection on housing (A) is engaged in the groove of the Clutch Dial [4]. (See Fig. 13.)

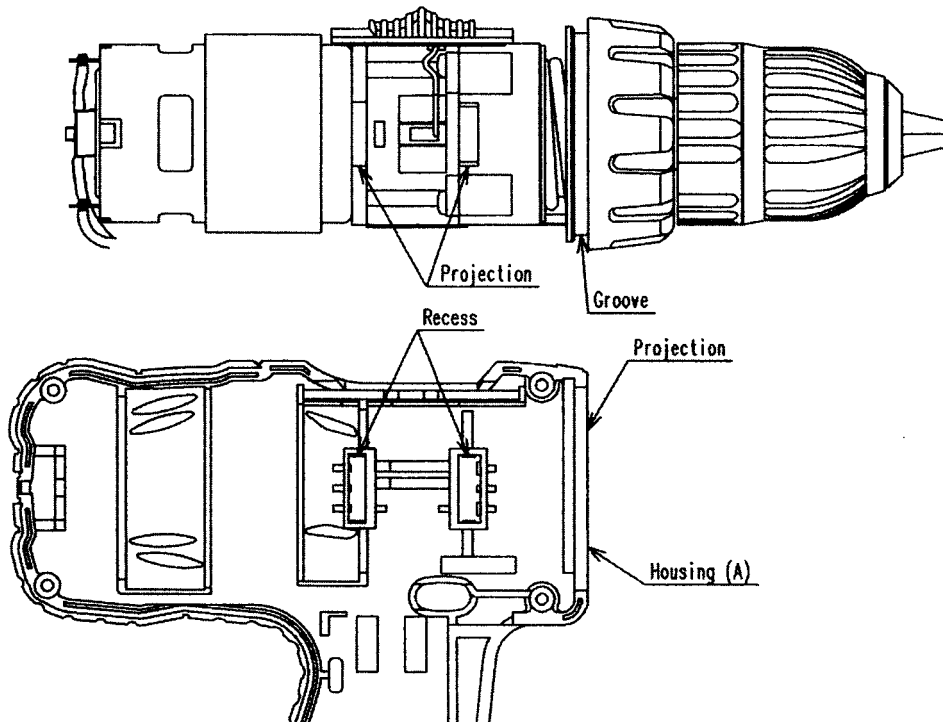


Fig. 13

(b) Mount the Pushing Button [34] to housing (A). Check that the protrusion of the forward/reverse changeover lever of the DC-Speed Control Switch [33] is inserted into the groove of the Pushing Button [34].

(c) Mount the Strap [41] to Housing (A) [30].

(d) Set the assembly reassembled in step (C) to housing (B) and secure it with the eight Tapping Screws (W/ Flange) D3 x 16 (Black) [26].

(e) Verify proper operation of the Clutch Dial [4] and the Shift Knob [36].

When the reassembly procedure up to step (d) is completed, ensure that the number "1" through the drill mark "◀" on the Clutch Dial [4] are in alignment with the triangle mark on Housing (A). (B) Set [30] respectively and the Clutch Dial [4] turns moderately. If the number "1" or the drill mark "◀" on the Clutch Dial [4] cannot reach the triangle mark on Housing (A). (B) Set [30], correctly reinstall the Clutch Dial [4] referring to step (2) as it is improperly mounted. Verify proper operation of the Shift Knob [36]. Check that the speed changes between high and low properly by shifting the Shift Knob [36]. If the speed cannot change properly or moderately, correctly reinstall the Shift Knob [36] referring to step (3) as it is improperly mounted.

(5) Reassembly of the Hook Ass'y [39]

Check that the V-Lock Nut M5 [40] is mounted to the Hook Ass'y [39]. Mount the Hook Spring [43] and secure it with the Special Screw M5 [44]. Make sure to mount the Hook Spring [43] with its larger diameter side pointing inward the housing.

(6) Other precautions in reassembling

After completion of reassembly, check that the rotating direction of the Drill Chuck 10TLRK-N (W/O Chuck Wrench) [2] matches the position of the Pushing Button [34]. When the Pushing Button [34] is pressed from the (R) side, the rotating direction of the Drill Chuck 10TLRK-N (W/O Chuck Wrench) [2] should be clockwise as viewed from behind. Switch on and off the Models DS 12DVF3 and DS 9DVF3 using the battery. Check that the runout of the Drill Chuck 10TLRK-N (W/O Chuck Wrench) [2] is 0.8 mm or less at the position 85 mm away from the tip of the chuck using a 9-mm dia. test bar.

(7) Screw tightening torque

Special Screw (Left Hand) M5 x 27 [1]	: 2.9 – 3.9 N·m (30 – 40 kgf·cm)
Drill Chuck 10TLRK-N (W/O Chuck Wrench) [2]	: 12.7 – 16.7 N·m (130 – 170 kgf·cm)
Screw Set D3 x 12 [15]	: 0.6 – 1.0 N·m (6 – 10 kgf·cm)
Machine Screw M3 x 8 [28]	: 1.1 – 1.9 N·m (11 – 19 kgf·cm)
Tapping Screw (W/Flange) D3 x 16 [26]	: 1.1 – 1.9 N·m (11 – 19 kgf·cm)
Special Screw M5 [44]	: 1.5 – 2.5 N·m (15 – 25 kgf·cm)

1-2. Precautions in Disassembly and Reassembly of Battery Charger

Please refer to the Technical Data and Service Manual for precautions in disassembly and reassembly of the Battery Charger UC 18YG.

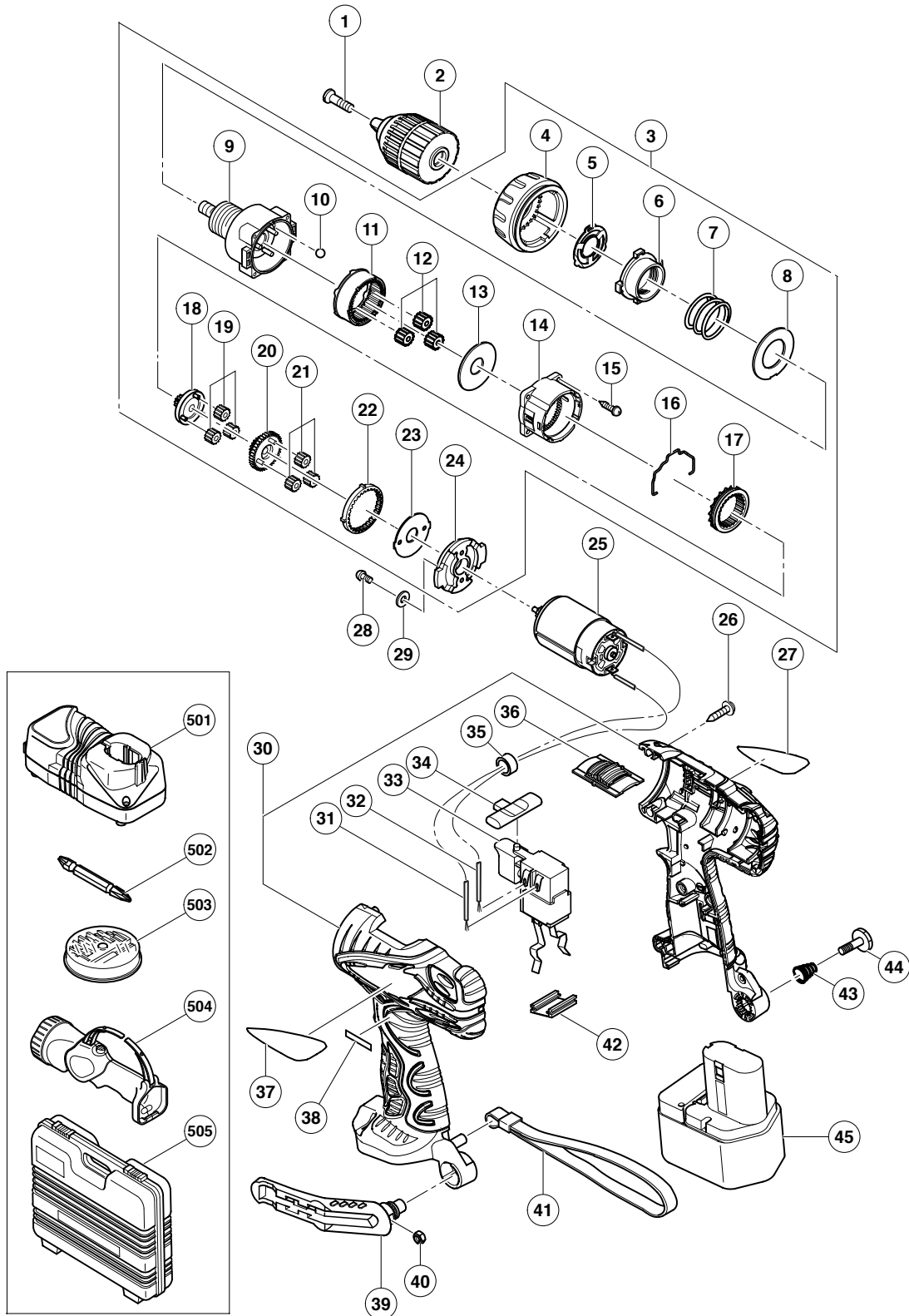
& STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60
	Fixed							
DS 9DVF3 DS 12DVF3		Work Flow						
				Housing (A).(B) Set Motor DC-Speed Control Switch Shift Knob				
	General Assembly			Gear Box Ass'y Clutch Dial Click Spring Nut				
		Drill Chuck (Keyless)		Spring				
		Hook Ass'y		Front Case Ring Gear Planet Gear (C) Set Rear Case Shift Arm Slide Ring Gear Pinion (C) Planet Gear (B) Set Pinion (B) Planet Gear (A) Set First Ring Gear				

ELECTRIC TOOL PARTS LIST

CORDLESS DRIVER DRILL
Model DS 12DVF3

2005 · 3 · 30
(E1)



PARTS

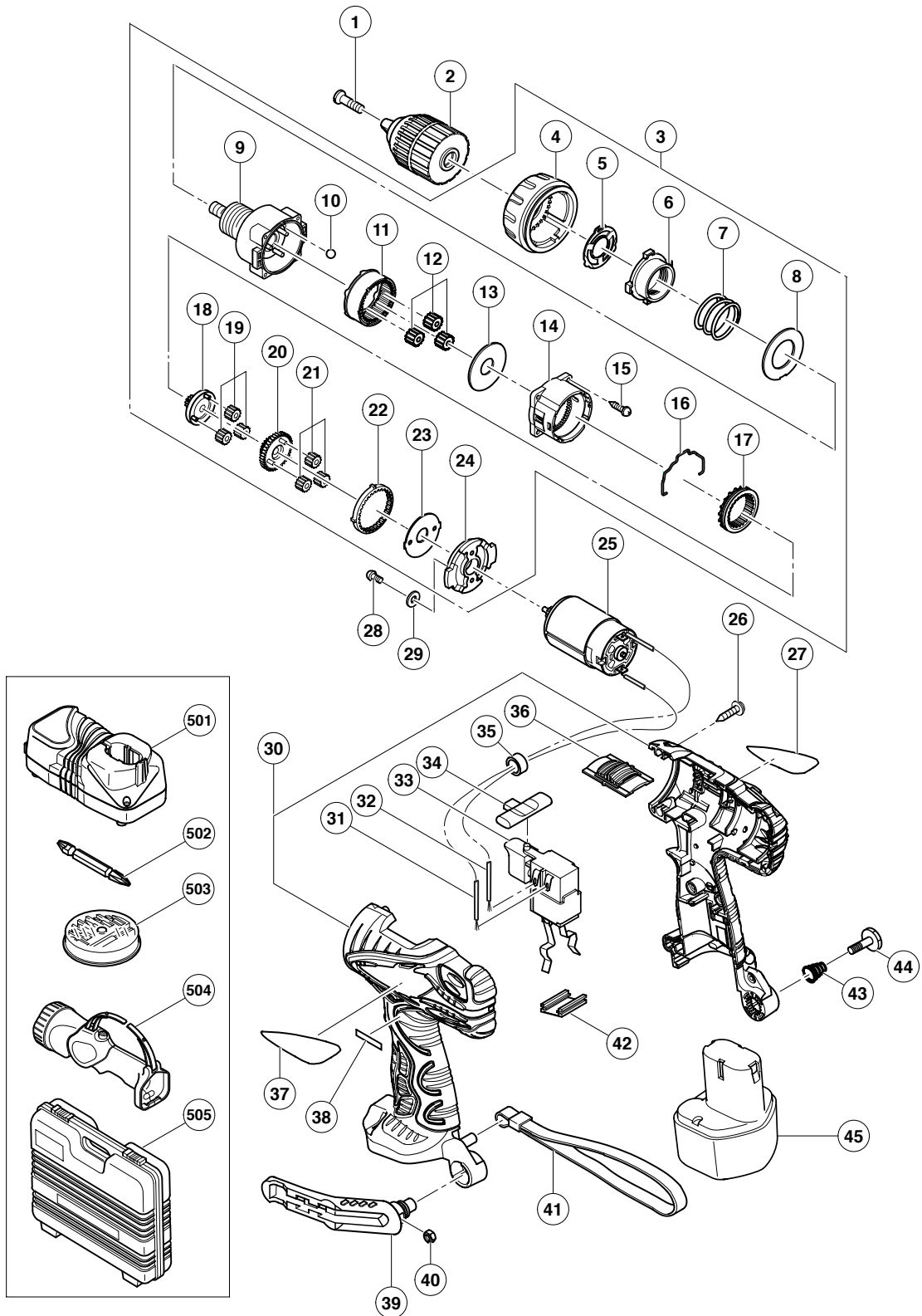
DS 12DVF3

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	318-228	SPECIAL SCREW (LEFT HAND) M5X27	1	
2	323-250	DRILL CHUCK 10TLRK-N (W/O CHUCK WRENCH)	1	
3	324-106	GEAR BOX ASS'Y	1	INCLUD. 4-24
4	324-114	CLUTCH DIAL	1	
5	324-108	CLICK SPRING	1	
6	324-109	NUT	1	
7	324-110	SPRING	1	
8	324-347	WASHER (D)	1	
9	324-107	FRONT CASE	1	
10	306-936	STEEL BALL D5	6	
11	324-111	RING GEAR	1	
12	324-348	PLANET GEAR (C) SET (3 PCS.)	3	
13	324-349	WASHER (A)	1	
14	324-350	REAR CASE	1	
15	324-357	SCREW SET D3X12 (4 PCS.)	4	
16	324-115	SHIFT ARM	1	
17	324-351	SLIDE RING GEAR	1	
18	324-112	PINION (C)	1	
19	324-352	PLANET GEAR (B) SET (3 PCS.)	3	
20	324-113	PINION (B)	1	
21	324-354	PLANET GEAR (A) SET (3 PCS.)	3	
22	324-353	FIRST RING GEAR	1	
23	324-355	WASHER (B)	1	
24	324-356	MOTOR SPACER	1	
25	318-244	MOTOR	1	
26	313-687	TAPPING SCREW (W/FLANGE) D3X16 (BLACK)	8	
27		NAME PLATE	1	
28	949-203	MACHINE SCREW M3X8 (10 PCS.)	2	
29	949-451	SPRING WASHER M3 (10 PCS.)	2	
30	324-363	HOUSING (A). (B) SET	1	
31	324-121	INTERNAL WIRE (B) 90L (BLACK)	1	
32	324-120	INTERNAL WIRE (B) 140L (RED)	1	
33	324-119	DC-SPEED CONTROL SWITCH	1	
34	324-117	PUSHING BUTTON	1	
* 35	323-229	FERRITE CORE	1	FOR EUROPE
36	324-116	SHIFT KNOB	1	
37		HITACHI LABEL	1	
* 38		LABEL (CHINA)	2	FOR TPE
39	320-287	HOOK ASS'Y	1	INCLUD. 40
40	320-288	V-LOCK NUT M5	1	
41	306-952	STRAP (BLACK)	1	
42	315-141	TERMINAL SUPPORT (A)	1	
43	319-926	HOOK SPRING	1	
44	319-927	SPECIAL SCREW M5	1	
* 45	320-387	BATTERY EB 1220BL (W/ENGLISH N.P.)	2	
* 45	322-629	BATTERY EB 1214S (W/ENGLISH N.P.)	2	
* 45	324-360	BATTERY EB 1214S (W/ENGLISH N.P.)	2	FOR USA, CAN
* 45	324-361	BATTERY EB 1214S (W/ENGLISH N.P.)	2	FOR TPE
* 45	324-362	BATTERY EB 1214S (W/ENGLISH N.P.)	2	FOR KOR

ELECTRIC TOOL PARTS LIST

CORDLESS DRIVER DRILL
Model DS 9DVF3

2005 · 3 · 30
(E1)



PARTS

DS 9DVF3

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	318-228	SPECIAL SCREW (LEFT HAND) M5X27	1	
2	323-250	DRILL CHUCK 10TLRK-N (W/O CHUCK WRENCH)	1	
3	324-106	GEAR BOX ASS'Y	1	INCLUD. 4-24
4	324-114	CLUTCH DIAL	1	
5	324-108	CLICK SPRING	1	
6	324-109	NUT	1	
7	324-110	SPRING	1	
8	324-347	WASHER (D)	1	
9	324-107	FRONT CASE	1	
10	306-936	STEEL BALL D5	6	
11	324-111	RING GEAR	1	
12	324-348	PLANET GEAR (C) SET (3 PCS.)	3	
13	324-349	WASHER (A)	1	
14	324-350	REAR CASE	1	
15	324-357	SCREW SET D3X12 (4 PCS.)	4	
16	324-115	SHIFT ARM	1	
17	324-351	SLIDE RING GEAR	1	
18	324-112	PINION (C)	1	
19	324-352	PLANET GEAR (B) SET (3 PCS.)	3	
20	324-113	PINION (B)	1	
21	324-354	PLANET GEAR (A) SET (3 PCS.)	3	
22	324-353	FIRST RING GEAR	1	
23	324-355	WASHER (B)	1	
24	324-356	MOTOR SPACER	1	
25	318-244	MOTOR	1	
26	313-687	TAPPING SCREW (W/FLANGE) D3X16 (BLACK)	8	
27		NAME PLATE	1	
28	949-203	MACHINE SCREW M3X8 (10 PCS.)	2	
29	949-451	SPRING WASHER M3 (10 PCS.)	2	
30	324-363	HOUSING (A). (B) SET	1	
31	324-121	INTERNAL WIRE (B) 90L (BLACK)	1	
32	324-120	INTERNAL WIRE (B) 140L (RED)	1	
33	324-119	DC-SPEED CONTROL SWITCH	1	
34	324-117	PUSHING BUTTON	1	
* 35	323-229	FERRITE CORE	1	EXCEPT FOR SAF, TPE, KOR
36	324-116	SHIFT KNOB	1	
37		HITACHI LABEL	1	
38		LABEL (CHINA)	1	FOR TPE
39	320-287	HOOK ASS'Y	1	INCLUD. 40
40	320-288	V-LOCK NUT M5	1	
41	306-952	STRAP (BLACK)	1	
42	315-141	TERMINAL SUPPORT (A)	1	
43	319-926	HOOK SPRING	1	
44	319-927	SPECIAL SCREW M5	1	
* 45	324-079	BATTERY EB 914S (W/ENGLISH N.P.)	2	
* 45	324-078	BATTERY EB 914S (W/ENGLISH N.P.)	2	FOR SAF, KOR
* 45	324-080	BATTERY EB 914S (W/ENGLISH N.P.)	2	FOR TPE

