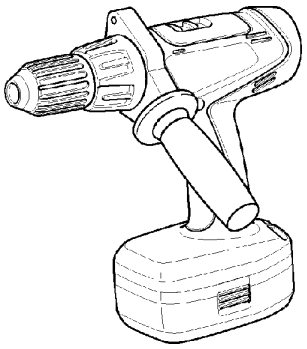
ORDER NO.PTD0310U37C1
F16

Service Manual

Cordless Hammer Drill Driver



EY6950-U1

SPECIFICATIONS

MAIN UNIT

Motor			DC Motor 18V
Capability	Screw driving	Wood screw	ϕ4.2mm (3/16") x 75mm (3")
		Self-drilling screw	ϕ3mm (1/8") x 13mm (1/2") SPC t = 1.6mm (1/16")
		Masonry screw	ϕ6.5mm (1/4") x 35mm (1-3/8") Soft concrete, Soft brick, Mortar
	Drilling	Masonry	ϕ13mm (1/2") x 40mm (1-9/16") Soft concrete, Soft brick, Mortar
		Wood	ϕ50mm (2") Yellow pine t = 38mm (1-1/2")
		Metal	ϕ13mm (1/2") SPC t = 1.6mm (1/16")
No load speed		LOW	75-450/min (rpm)
		HIGH	250-1550/min (rpm)
Blows rate per minute		LOW	1400-8100/min (rpm)
		HIGH	4500-28000/min (rpm)
Chuck capacity			ϕ1.5 – ϕ13mm (1/16" – 1/2")
Chuck stage		Stage 1-15	Approx. 2Nm (20kgf-cm, 18in-lbs.) - 12Nm (122kgf-cm, 106in-lbs.)
			For powerful driving and drilling.
			Percussion
Overall length			255mm (10")
Weight (with battery pack)			2.7kg (5.9lbs.)

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CONTENTS

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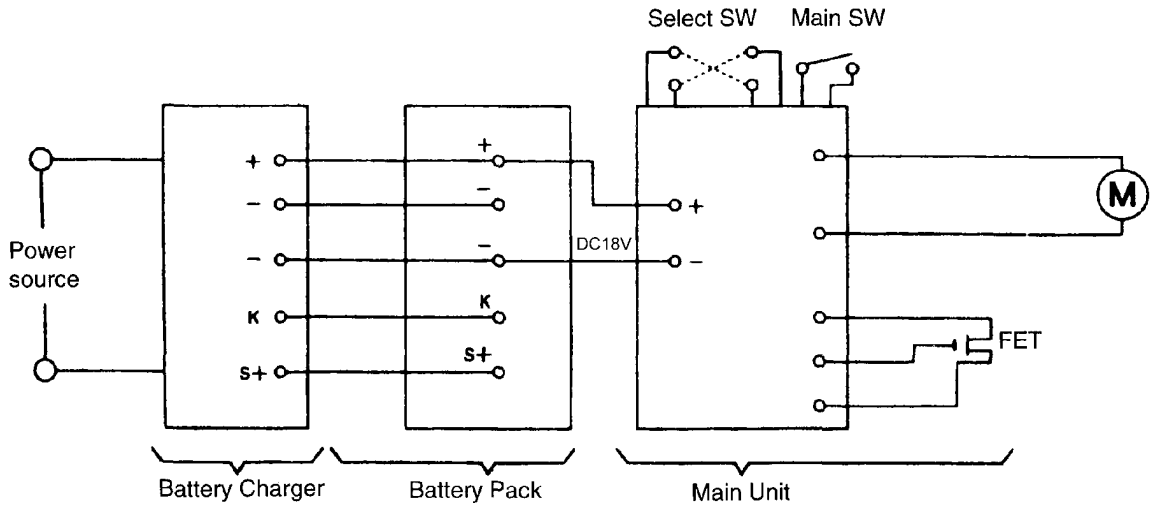
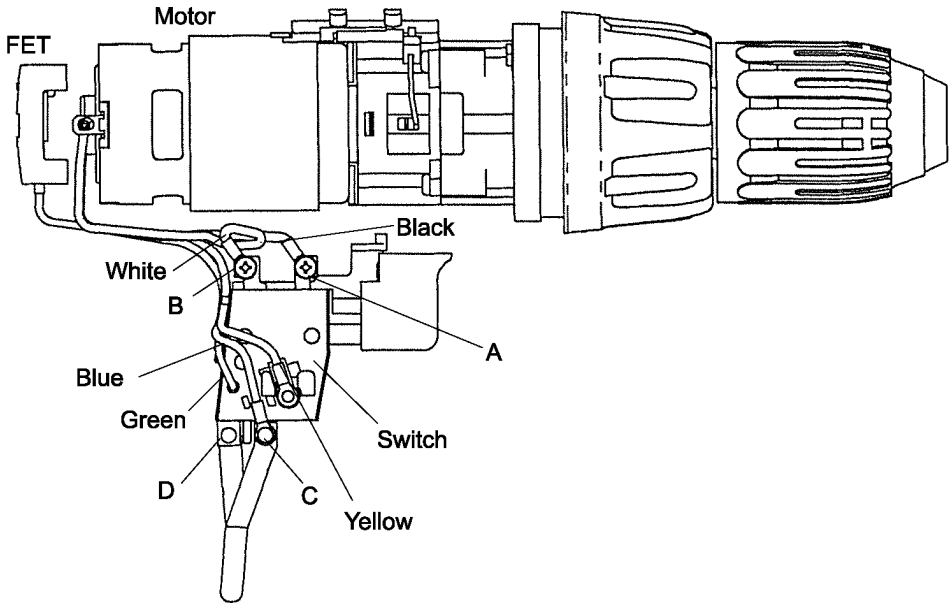
1 SCHEMATIC DIAGRAM



2 WIRING CONNECTION DIAGRAM



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3 DISASSEMBLY/ASSEMBLY INSTRUCTIONS

■HOW TO DISASSEMBLE KEYLESS CHUCK.

Ref. No. 1A	Procedure 1A	Removal of the Keyless Drill Chuck.

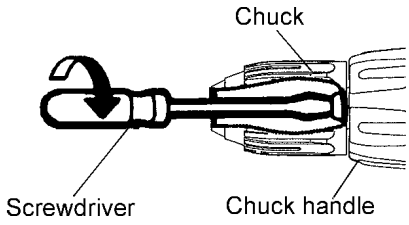

Fig. 1

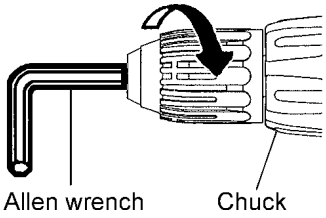

Fig. 2

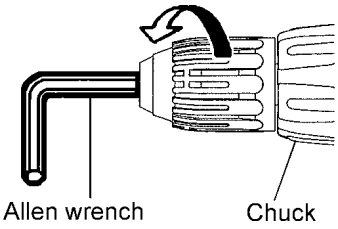

Fig. 3

1. Set the clutch handle to position 1 and select "LOW" position.
2. Turn the lock collar counterclockwise direction to open the chuck jaws.
3. Use a screwdriver to turn the chuck fastening screw inside the chuck clockwise direction of the arrow, and remove the screw. (See Fig. 1)

NOTE :

If the chuck fastening screw will not come loose, insert the allen wrench into the chuck and lightly tap in the clockwise direction with a hammer to tighten the chuck, and then loosen the chuck fastening screw. (See Fig. 2)

4.Insert the allen wrench into the chuck, and turn counterclockwise direction in the arrow with holding the unit by the vise to remove the chuck. (See Fig. 3)

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■HOW TO DISASSEMBLE MAIN UNIT.

Ref. No. 2A	Procedure 2A	Removal of the Housing.

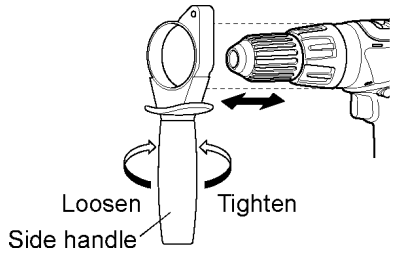

Fig. 4

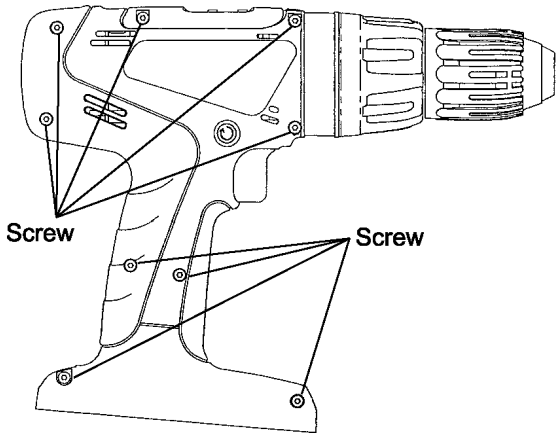

Fig. 5

1. Remove the side handle. (See Fig. 4)
2. Remove nine housing screws. (See Fig. 5)

NOTE :

Grease rubbing part of housing with Shell Alvania for assembly. (See Fig. 6)

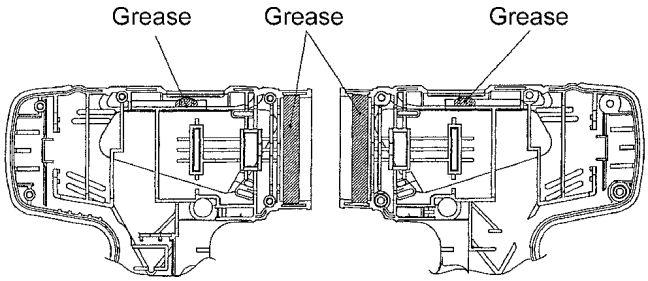

Fig. 6

Ref. No. 2B	Procedure 2A → 2B	Removal or attachment of the Motor.

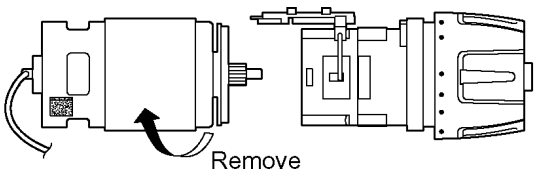

Fig. 7

(Removal)
1. Take out the motor with the gear box block from housing.
2. Separate the motor from the gear box block by twisting the motor to unlock tabs. (See Fig. 7)

(Attachment)
3. Motor mounting base and the positioning rib of gear case should be set.

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Ref. No. 2C	Procedure 2A → 2B → 2C	Removal or attachment of the Gear Box Block.

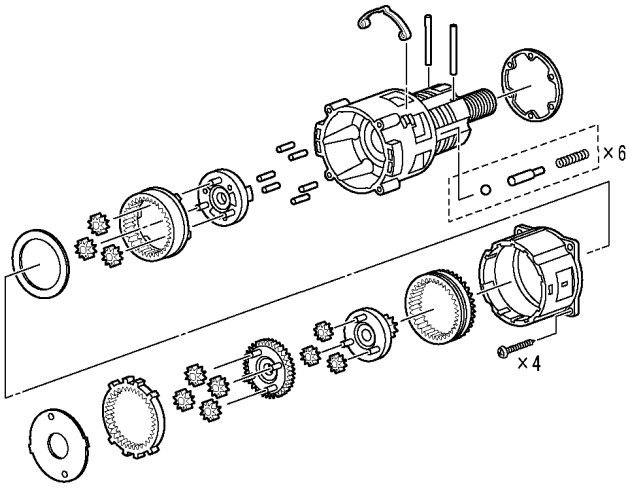

Fig. 8

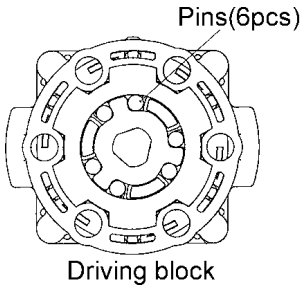

Fig. 9

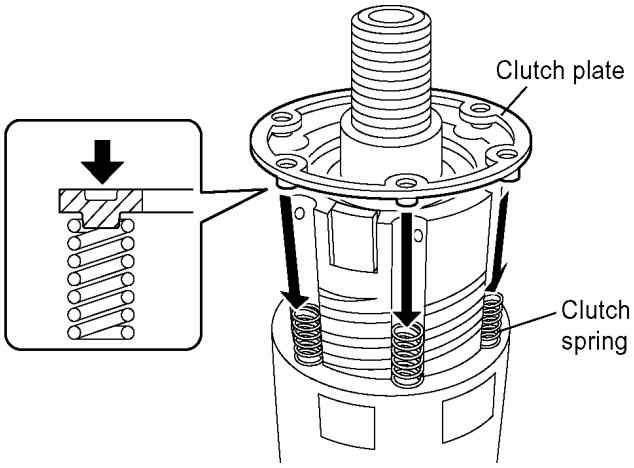

Fig. 10

(Removal)
1. Turn the thrust plate to remove.
2. The internal parts of gear box block can be removed one after another. (See Fig. 8)

(Attachment)
1. Start from inserting 6 pins into the driving block as shown in the Fig. 9.
2. Assemble the other parts in reverse order as shown in the Fig. 8.
3. Install steel balls, pins and clutch springs into 6 holes. (See Fig. 10)

NOTE:

Carrier, Ring gear, and Clutch plate have their own correct directions for proper assembly.

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Ref. No. 2D	Procedure 2D	Assembly of the Adjusting Screw and the Clutch Handle.

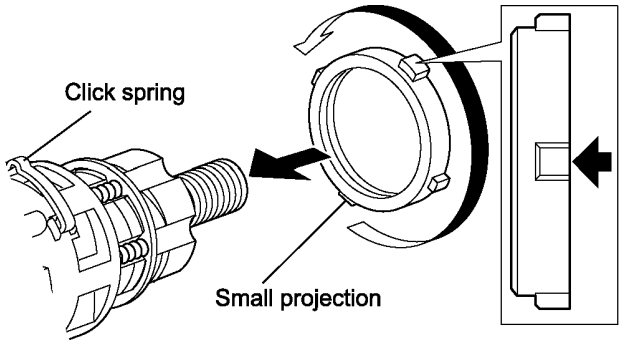

Fig. 11

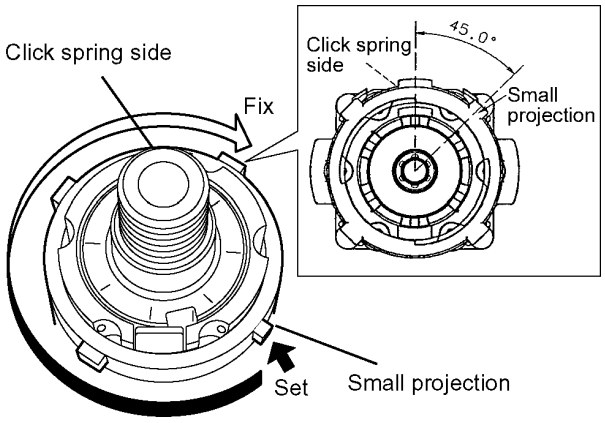

Fig. 12

1. Hold the driving block with the click spring on top, and align the smallest projection of adjusting screw with the clutch case at 5 o´clock position.

NOTE:

Make sure that the adjusting screw has its own correct direction for proper assembly.

Failure to do so, the clutch handle does not rotate properly. (See Fig. 11)

2. Turn the adjusting screw into the driving block about 255° rotation (at 2 o´clock position) for clockwise direction. (See Fig. 12)
3. Insert 2 pins and set each length on top and bottom should be same. (See Fig. 13)
4. Set the clutch handle with position 1 on top. (See Fig .14)

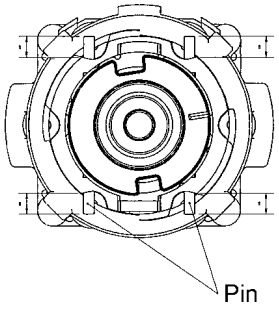

Fig. 13

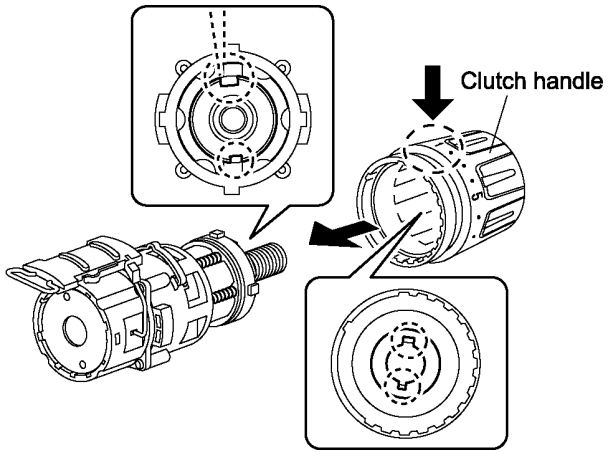

Fig. 14

Ref. No. 2E	Procedure 2A → 2B → 2C→ 2D → 2E	Assembly of the Switch.

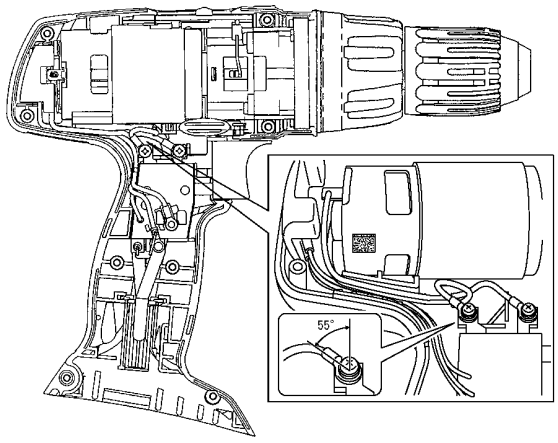

Fig. 15

1. Press fit the lead wires firmly and set the black lead wire on top.
2. Connect the switch with the white and black lead wire at 55° position. (See Fig .15)

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4 TROUBLESHOOTING GUIDE

(Refer to WIRING CONNECTION DIAGRAM)

< TROUBLE >	< CHECK >		< REMEDY >
Does not operate. →	<CHECK BATTERY PACK.> If no less than 18V DC is available across the (+) and (-) terminals, the battery pack is OK. **NOTE:** The battery pack is sold separately as an optional accessory. See the nearest sales dealer for details. The battery pack has a limited life. The pack should be replaced if - after being charged for the rated charging time the battery voltage is less than 18V DC or the usable time is extremely short. - the battery leaks. Check battery for leaks and terminals for corrosion.	NO →	Replace battery pack.
	↓OK		
	<CHECK TERMINAL CONNECTIONS BETWEEN MAIN UNIT AND BATTERY PACK.> Check for proper terminal contacts.	NO →	Repair contacts.
	↓OK		
	<CHECK SWITCH BLOCK.> (See WIRING CONNECTION DIAGRAM.) Check continuity between following terminals. * Inspection of the forward / reverse selection switch. When switch handle is depressed all the way: - There should be 0Ω between (A) - (D) , and between (B) - (C) ; when switch lever is set to forward side. - There should be 0Ω between (A) - (C) , and between (B) - (D) ; when switch lever is set to reverse side.	NO →	Contacts in switch block are defective. Replace switch & FET block.
	↓OK		
	<CHECK MOTOR.> The motor normally operates with its white (+) and black (-) lead wires connected to 18V DC.	NO →	Replace motor.
Does not speed-control.	<CHECK FET.> Even if FET block is defective, it can not be replaced individually. Replace whole switch block. Remove the FET circuit block and check the lead wire terminals. These terminals are open normally when there is an open circuit (∞ Ω) between the green and yellow lead wires, and between the blue and yellow lead wires. **NOTE:** * FET is weak against static electricity. ** The resistance value may be some differences depends on the measurement range.	NO →	Repair the contact or replace switch & FET block.

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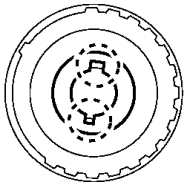
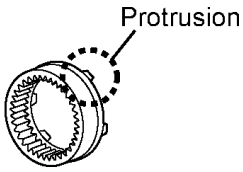
< TROUBLE >	< CHECK >		< REMEDY >
Does not vibrate. (When setting clutch handle to .)	→ <CHECK CLUTCH HANDLE.> Check the condition of inside of clutch handle if two projections were broken or not. 	NO →	Replace clutch handle.
Weakness of vibration. (When setting clutch handle to .)	→ <CHECK DRIVING BLOCK.> Check wear condition of driving shaft and cam.	NO →	Replace driving block.
Weakness of clutch operation.	→ <CHECK RING GEAR.> Check wear condition of protrusion parts of ring gears. 	NO →	Replace ring gear.
	↓OK		
	<CHECK CLUTCH SPRING.> Check wear condition of 6 pieces of clutch springs. connected to 18V DC.	NO →	Replace clutch springs.
	↓OK		
	<CHECK ADJUSTING SCREW.> Check wear condition of projection parts of adjusting screw.	NO →	Replace adjusting screw.
	↓OK		
	<CHECK GEAR CASE.> Check wear condition of gear case if it is cracked or broken.	NO →	Replace gear case.

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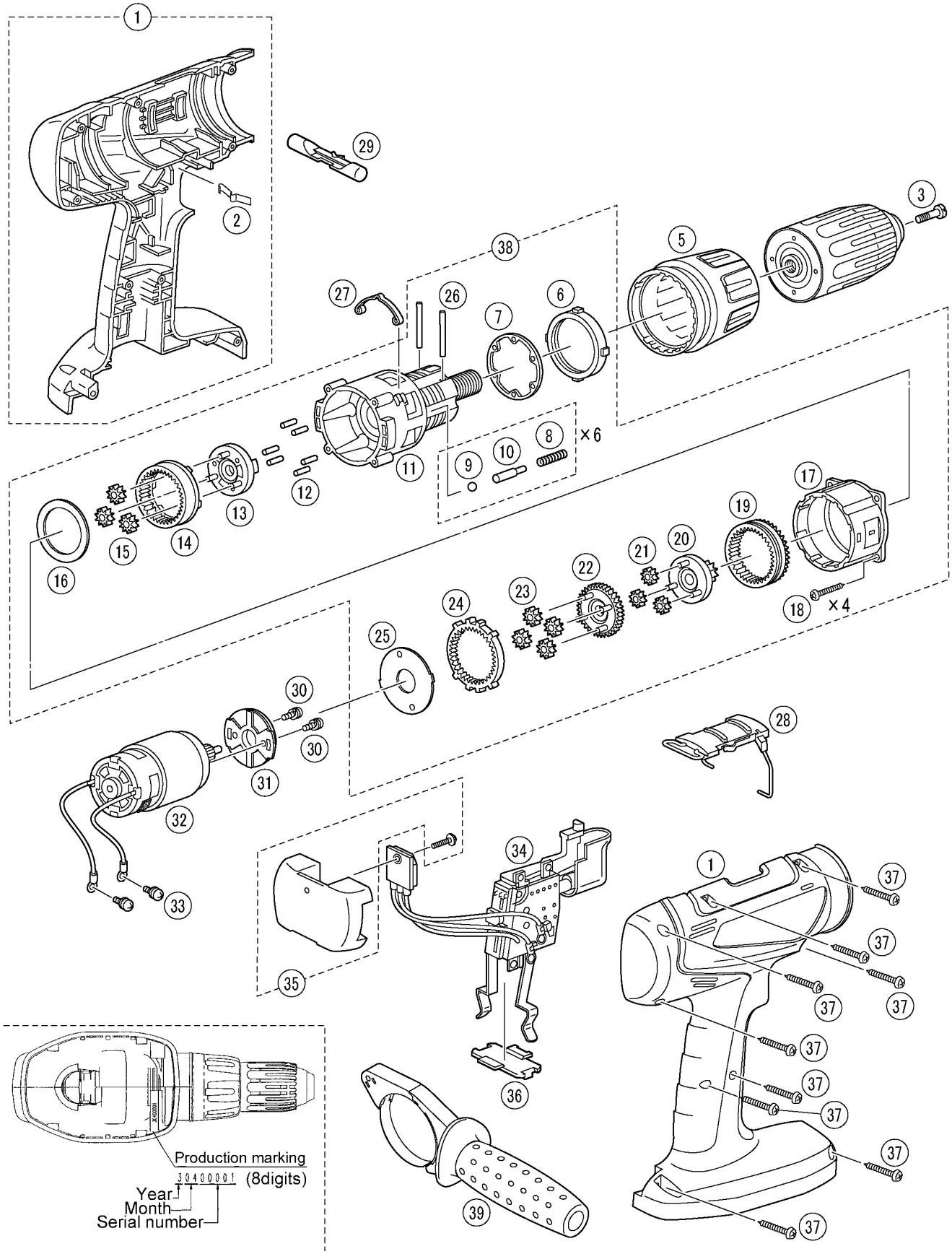
5 EXPLODED VIEW



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6 REPLACEMENT PARTS LIST

NOTE:

*B=only available as set

*C=available individually

Ref.No.	Part No.	Part Name & Description	Remarks			Per Unit
1	WEY6950K3078	HOUSING AB SET			▲	1
2	EY6481L0177	CLICK SPRING				1
3	WEY6450L6808	CHUCK FASTENING SCREW			▲	1
5	WEY6950Y3228	CLUTCH HANDLE			▲	1
6	WEY6450L0638	ADJUSTING SCREW			▲	1
7	WEY6450L0578	CLUTCH PLATE			▲	1
8	WEY6450L0168	CLUTCH SPRING	*B	(6pcs/PK)	▲	6
9	WEY6813L1927	STEEL BALL	*B	(6pcs/PK) φ5	▲	6
10	WEY6450L0388	PIN	*B	(6pcs/PK) φ5.3*20.3	▲	6
11	WEY6950L1078	DRIVING BLOCK			▲	1
12	EY6283L0377	PIN	*B	(6pcs/PK) φ3.175*7.2		6
13	EY6901L1107	CARRIER				1
14	WEY6450L1488	RING GEAR			▲	1
15	WEY6450L1348	PLANET GEAR	*B	(3pcs/PK)	▲	3
16	WEY6450L0858	THRUST PLATE			▲	1
17	WEY6450L1768	GEAR CASE			▲	1
18	EY6406K9038	TORX TAPPING SCREW	*C	K3-12	▲	4
19	WEY6450L1128	CARRIER A			▲	1
20	WEY6450L1358	PLANET GEAR A	*B	(3pcs/PK)	▲	3
21	WEY6200B1468	RING GEAR B			▲	1
22	WEY6950L1118	CARRIER			▲	1
23	WEY6950L1478	RING GEAR			▲	1
24	EY6230L1367	PLANET GEAR	*B	(4pcs/PK)		4
25	WEY6450L0868	THRUST PLATE			▲	1
26	WEY6950L0358	PIN	*B	(2pcs/PK)		2
27	WEY6450L0178	CLICK SPRING A			▲	1
28	WEY6450Y3238	H/L CHANGE HANDLE			▲	1
29	WEY6405Y3248	F/R SELECTOR HANDLE			▲	1
30	EYT184L6077	SCREW	*C	K4-6		2
31	WEY6450L0028	MOTOR MOUNTING PLATE			▲	1
32	WEY6450L1008	DC MOTOR			▲	1
33	WEY6450S6028	SEMS SCREW	*C	K3-5	▲	2
34	WEY6950Y2008	SWITCH			▲	1
35	EY6406L2568	HEAT SINK		with a screw	▲	1
36	EY6230L0207	DUST PREVENTIVE PLATE			▲	1
37	EY6230K9218	TORX TAPPING SCREW	*C	K3-20	▲	9
38	WEY6950L1458	GEAR BOX BLOCK			▲	1
39	WEY6450K4628	SIDE HANDLE			▲	1
-	WEY6950K8108	OPERATING INSTRUCTIONS			▲	1

**Battery Pack, Keyless Chuck, and Tool Case are available as an optional accessory.

See the nearest sales dealer for details.

***For replacement parts of charger, see the charger service manual.
Charger complete set is available as an optional accessory. See the nearest sales dealer for details.

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