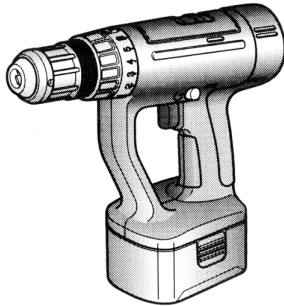


# Service Manual

## Cordless Hammer Drill & Driver

### EY6931



### SPECIFICATIONS

Capability	Screw driving	Machine screw	M3.5 - M6
		Wood screw	Ø2.1 - Ø5.8mm (5/64" - 15/64")
	Drilling	Mortal Brick	Ø3 - Ø13mm (1/8" - 1/2")
		Wood	Ø3 - Ø36mm (1/8" - 1-27/64")
		Metal	Ø1.5 - Ø13mm (1/16" - 1/2")
Motor			DC Motor 15.6V
No load speed		LOW	80 - 550/min (rpm)
		HIGH	300 - 2,000/min (rpm)
Blows rate per minute		LOW	1,200 - 8,250/min (bpm)
		HIGH	4,500 - 30,000/min (bpm)
Chuck capacity			Ø1.5 - Ø13mm (1/16" - 1/2")
Maximum torque		LOW	25.5Nm (260kgf-cm, 255in-lbs.)
		HIGH	5.9Nm (60kgf-cm, 52in-lbs.)
Blow strength			1.7kN (170kgf, 370lbs.f)
Overall length			236mm (10-23/32")
Weight (with battery pack)			2.3kg (5.1lbs.)

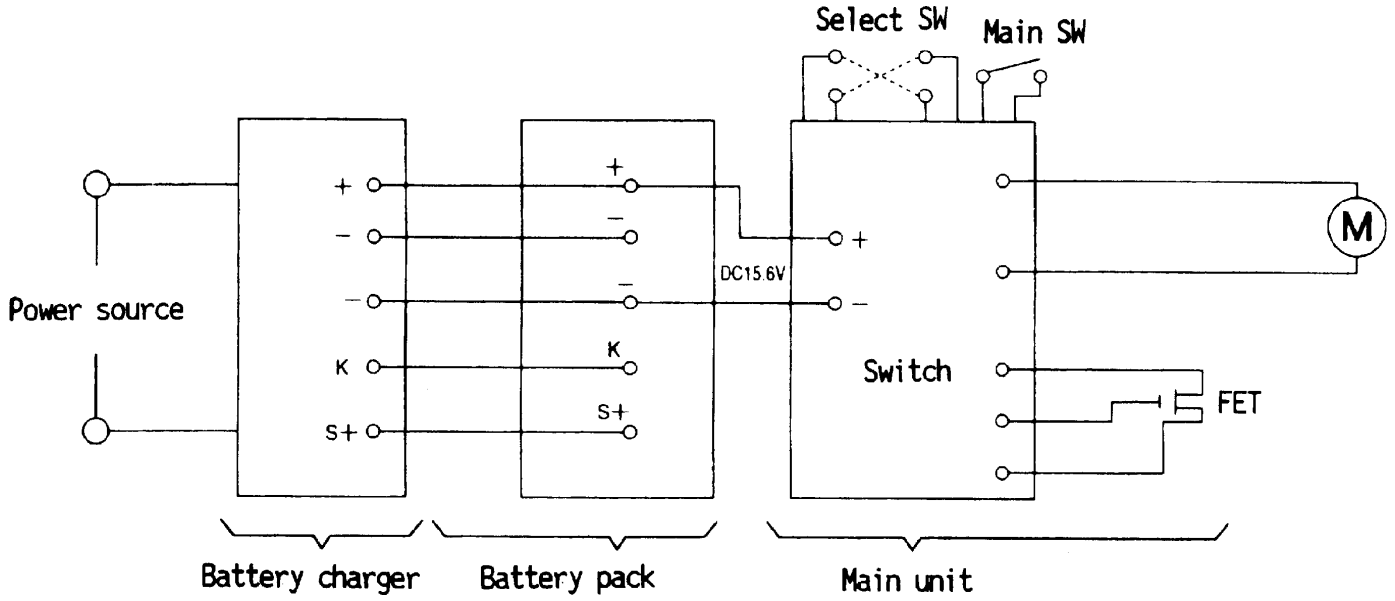
### WARNING

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.

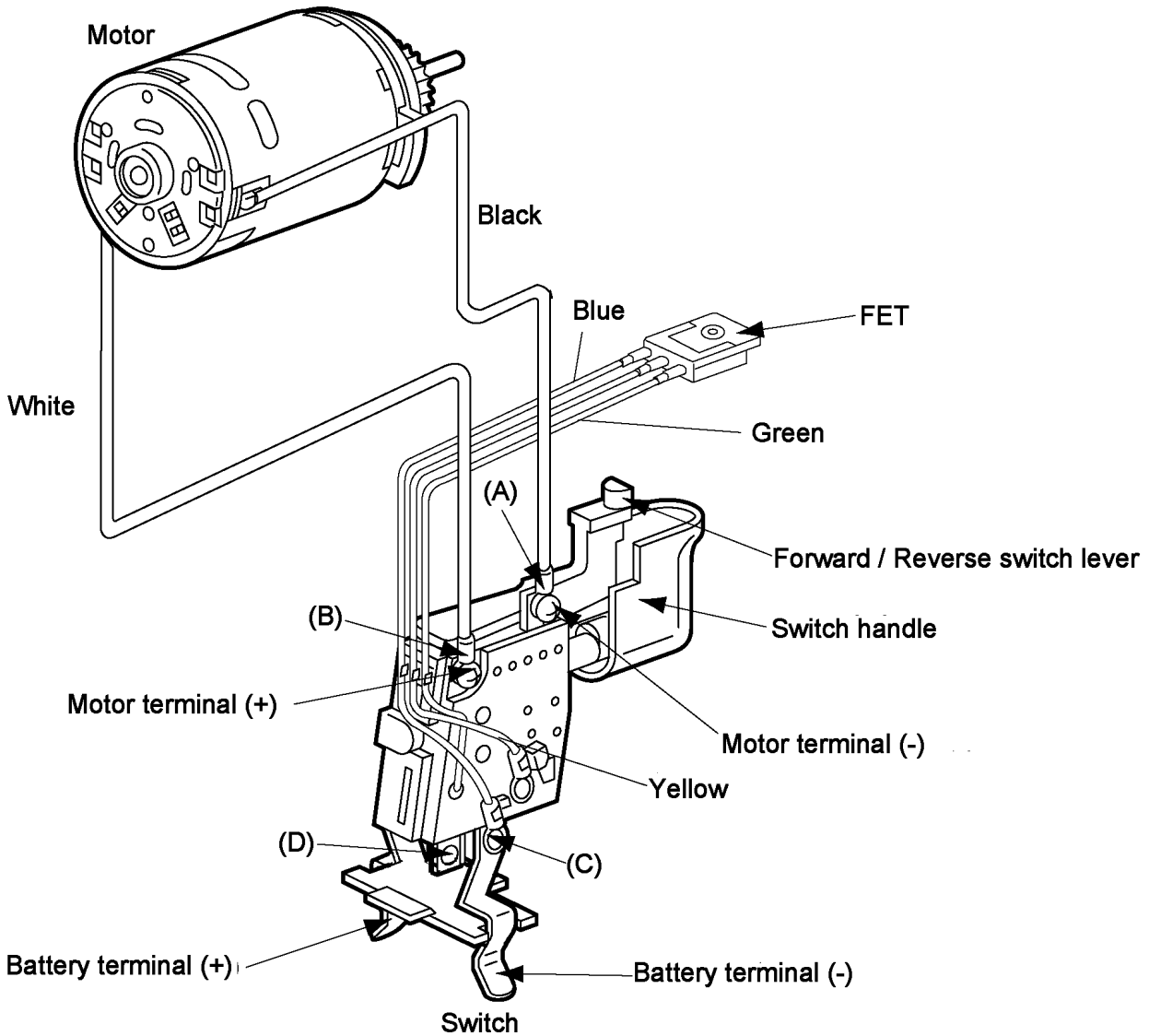
### CONTENTS

	Page		Page
1 SCHEMATIC DIAGRAM .....	2	5 TROUBLESHOOTING GUIDE .....	8
2 WIRING CONNECTION DIAGRAM .....	2	6 TRIAL OPERATION .....	10
3 DISASSEMBLY INSTRUCTIONS .....	3	7 EXPLODED VIEW .....	11
4 ASSEMBLY INSTRUCTIONS .....	5	8 REPLACEMENT PARTS LIST .....	12

# 1 SCHEMATIC DIAGRAM

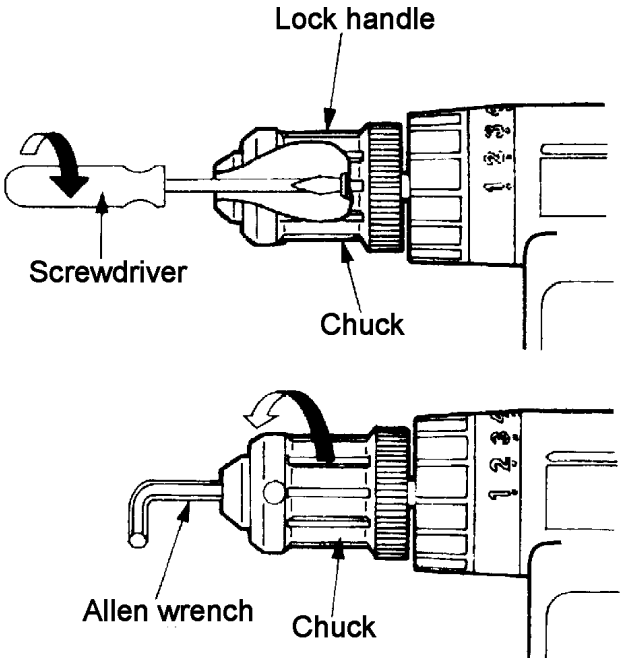



# 2 WIRING CONNECTION DIAGRAM



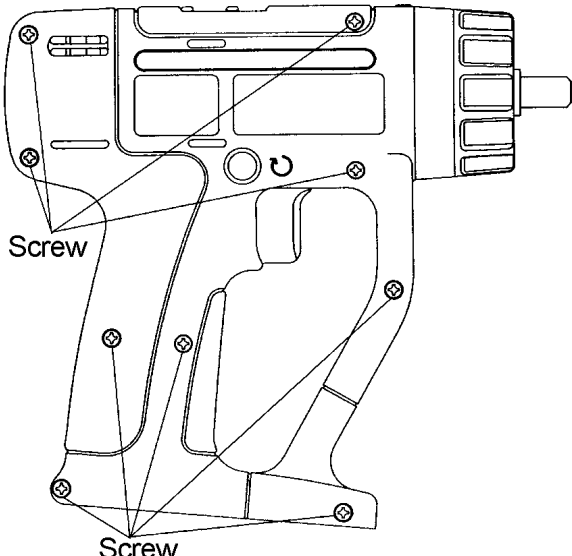
### 3 DISASSEMBLY INSTRUCTIONS

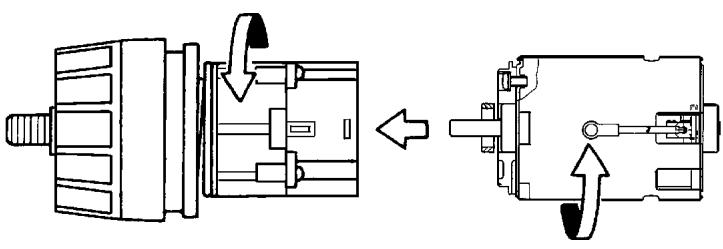
#### 3.1. HOW TO REMOVE KEYLESS DRILL CHUCK.

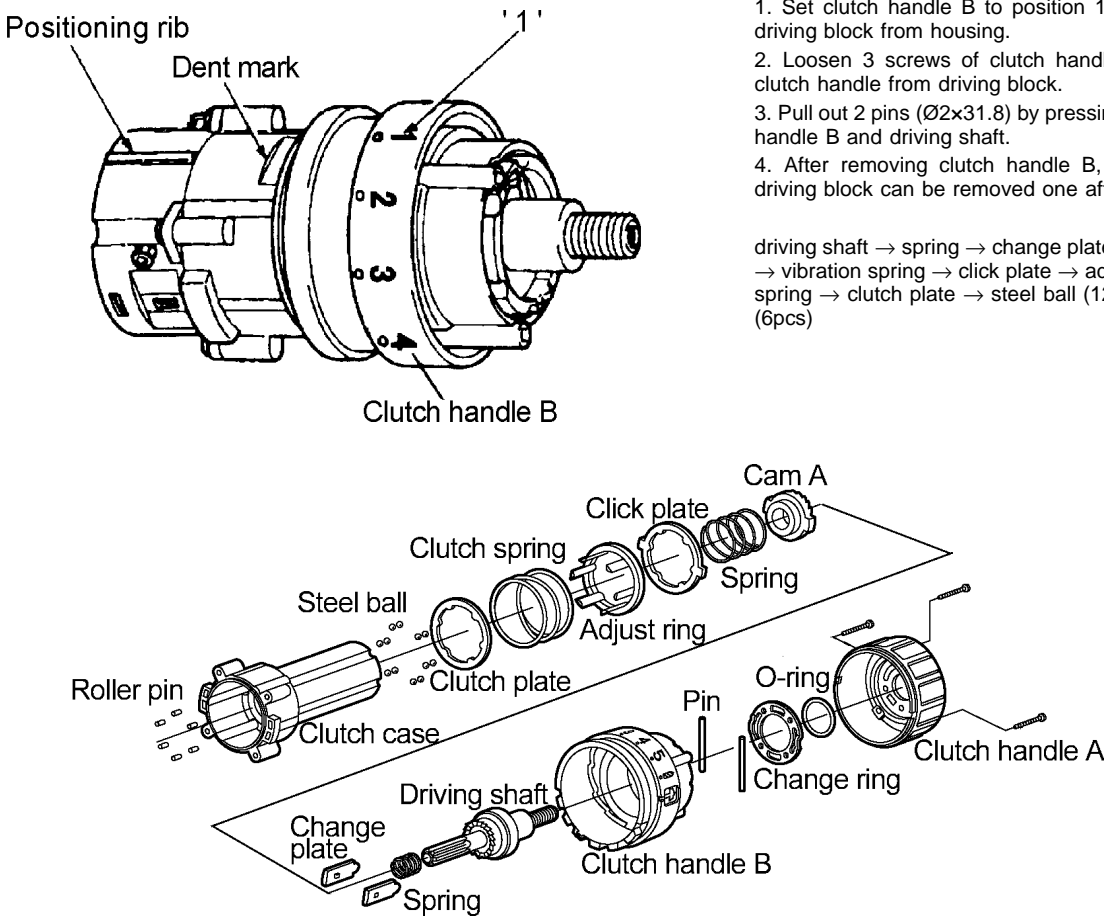
Ref. No. 1A	Procedure 1A	Removal of keyless drill chuck.
		<p>1. Set clutch handle to position .</p> <p>2. Turn lock handle counterclockwise direction to open chuck jaws.</p> <p>3. Use a screwdriver to turn chuck fastening screw inside chuck clockwise direction of arrow, and remove the screw.</p> <p><b>NOTE :</b> If chuck fastening screw will not come loose, insert an allen wrench into chuck and lightly tap in clockwise direction with a hammer to tighten chuck, and then loosen chuck fastening screw.</p> <p>4. Insert an allen wrench into chuck, and turn counterclockwise direction in arrow with holding main unit by vise to remove chuck.</p>

#### 3.2. HOW TO DISASSEMBLE MAIN UNIT.

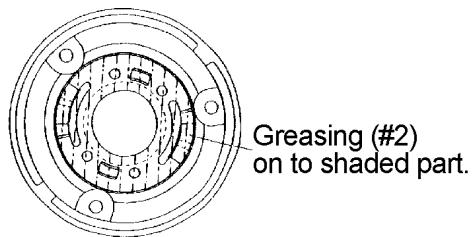
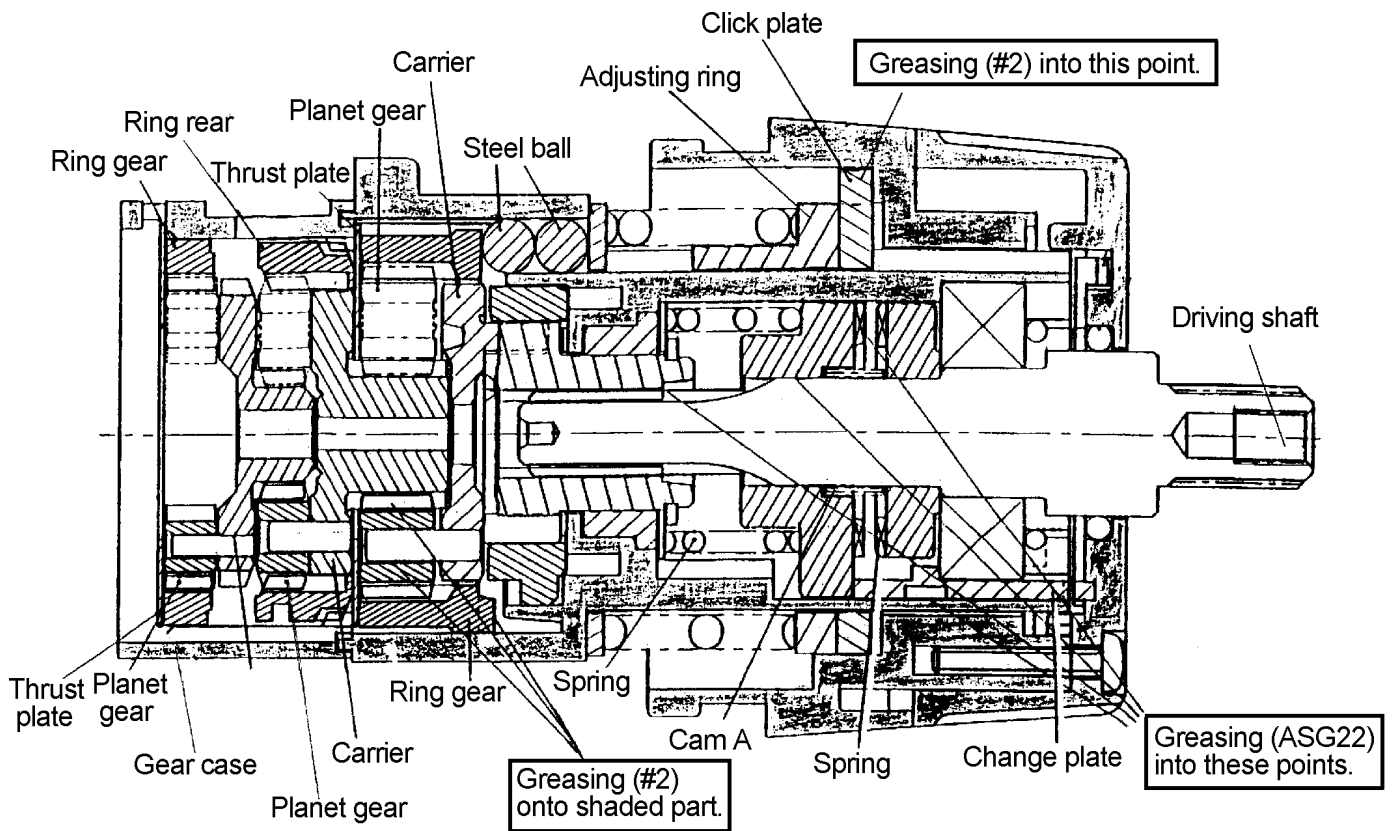
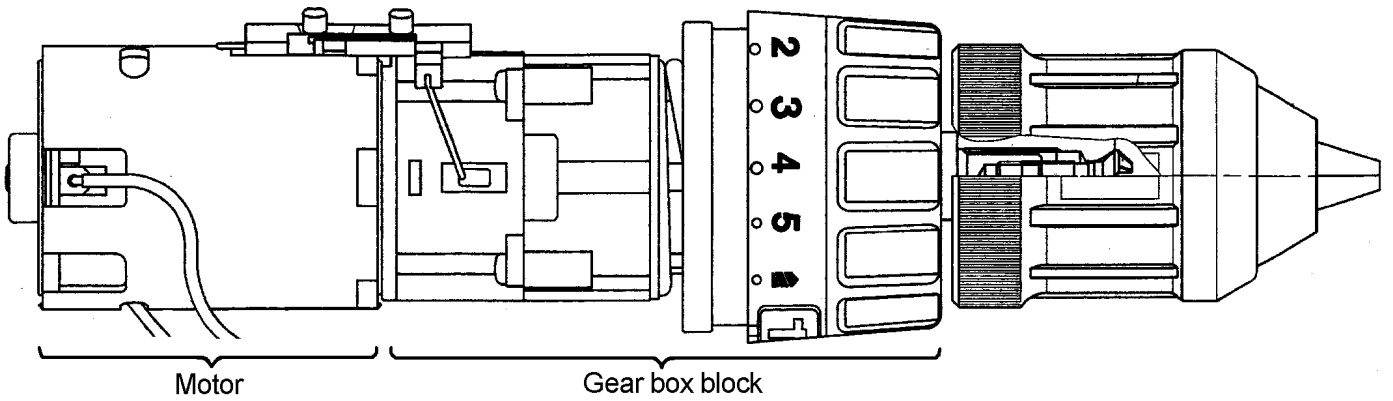
(Housing AB set can be opened without disassembling chuck.)

Ref. No. 2A	Procedure 2A	Removal of housings.
		<p>1. Remove 9 housing screws.</p>

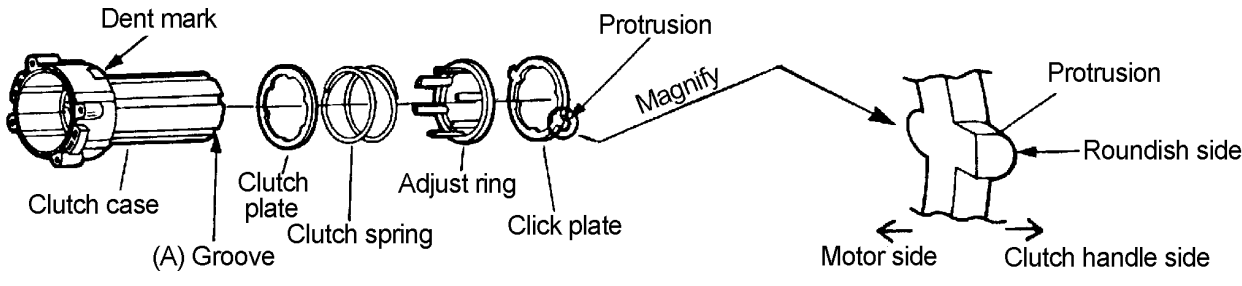
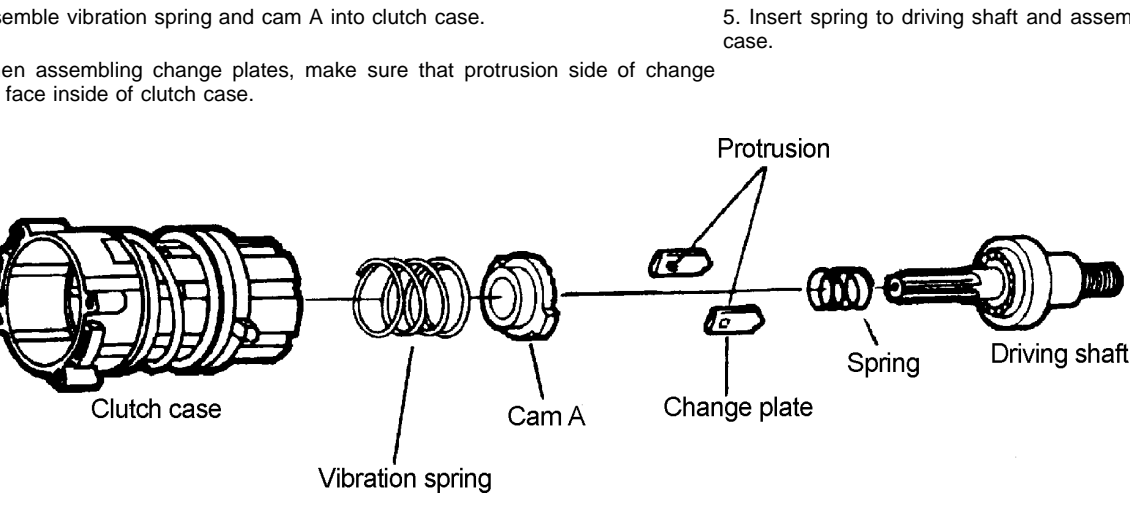
Ref. No. 2B	Procedure 2A → 2B	Removal or attachment of motor.
		<p>(Removal of motor.)</p> <ol style="list-style-type: none"> <li>1. Remove motor with gear block from housing.</li> <li>2. Separate motor from gear box block by twisting motor to unlock tabs.</li> </ol> <p>(Attachment for motor.)</p> <ol style="list-style-type: none"> <li>3. Motor mounting base and positioning rib of gear case should be set.</li> </ol>

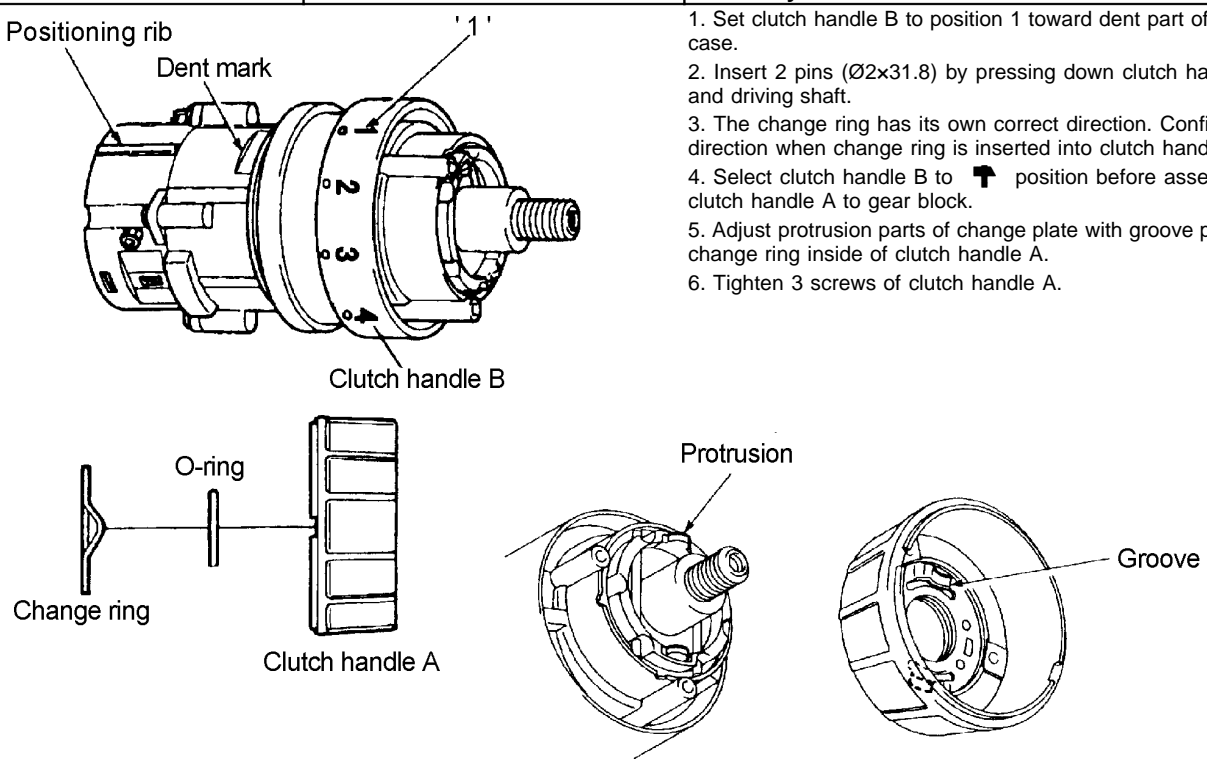
Ref. No. 2C	Procedure 2A → 2B → 2C	Removal of gear box block.
		<ol style="list-style-type: none"> <li>1. Set clutch handle B to position 1 before replacing driving block from housing.</li> <li>2. Loosen 3 screws of clutch handle A and remove clutch handle from driving block.</li> <li>3. Pull out 2 pins (Ø2x31.8) by pressing down on clutch handle B and driving shaft.</li> <li>4. After removing clutch handle B, internal parts of driving block can be removed one after another.</li> </ol> <p>driving shaft → spring → change plate (2pcs) → cam A → vibration spring → click plate → adjust ring → clutch spring → clutch plate → steel ball (12pcs) → roller pin (6pcs)</p>

# 4 ASSEMBLY INSTRUCTIONS



## 4.1. HOW TO ASSEMBLE DRIVING BLOCK AND GEAR CASE.

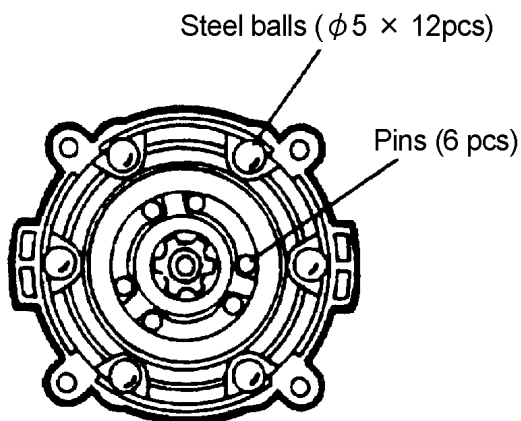
Ref. No. 3A	Procedure 3A	Assembly of driving block.
<p>1. Assemble clutch plate, clutch spring and adjust ring to outside of clutch case.</p>	<p>2. The click plate has its own correct direction for proper assembly. Adjust (A) groove of clutch case to protrusion part of click plate.</p>	<p>3. Assemble vibration spring and cam A into clutch case.</p> <p>4. When assembling change plates, make sure that protrusion side of change plates face inside of clutch case.</p>
		<p>5. Insert spring to driving shaft and assemble them to clutch case.</p>
		

Ref. No. 3B	Procedure 3A → 3B	Assembly of clutch handle.
		<p>1. Set clutch handle B to position 1 toward dent part of clutch case.</p> <p>2. Insert 2 pins (Ø2x31.8) by pressing down clutch handle B and driving shaft.</p> <p>3. The change ring has its own correct direction. Confirm the direction when change ring is inserted into clutch handle.</p> <p>4. Select clutch handle B to ↑ position before assembling clutch handle A to gear block.</p> <p>5. Adjust protrusion parts of change plate with groove parts of change ring inside of clutch handle A.</p> <p>6. Tighten 3 screws of clutch handle A.</p>

Ref. No. 3C

Procedure 3A → 3B → 3C

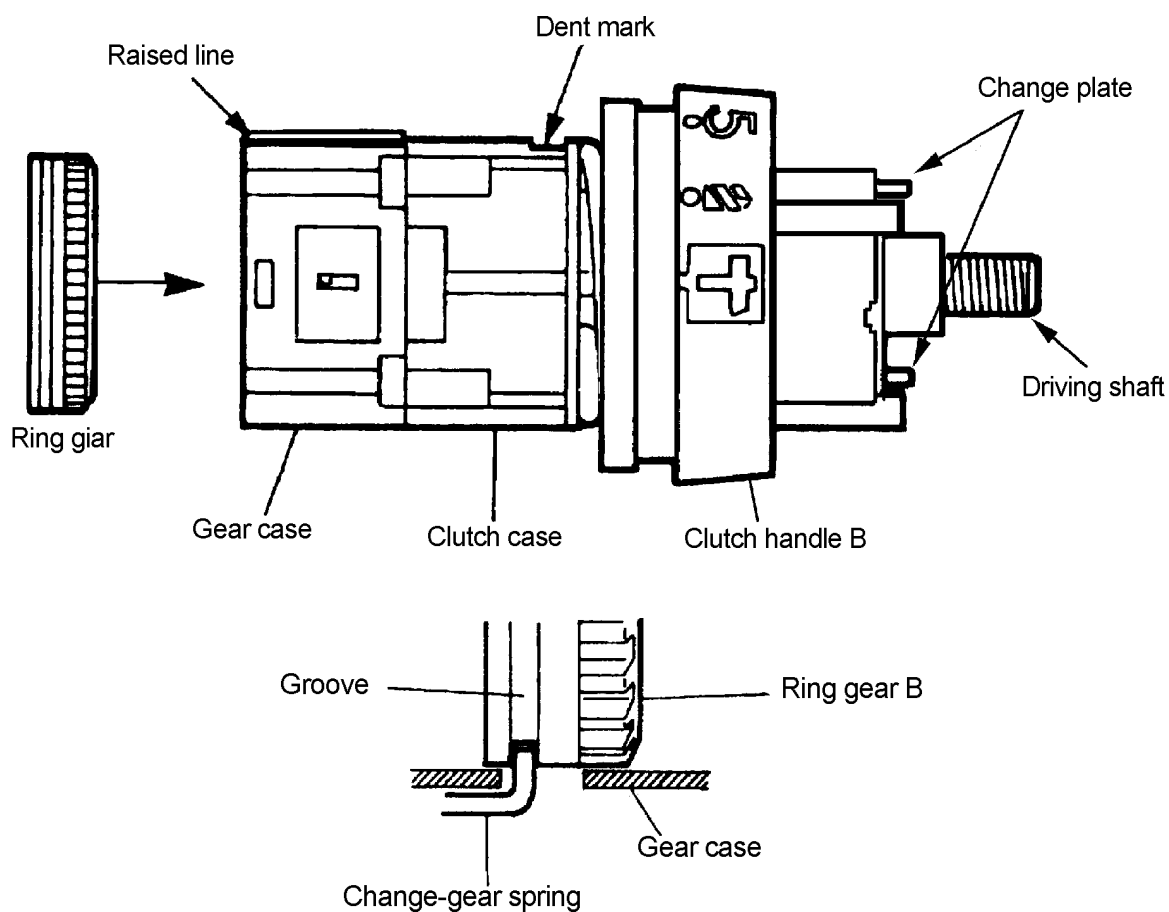
Assembly of gear case



1. Reinstalling place 2pcs of steel balls into each of 6 holes.
2. Insert 6 pins into clutch case.
3. Assemble carrier, ring gear, 3 pieces of planet gear and thrust plate.
4. Align the dent part of clutch case with positioning rib of gear case. And tighten them with 4 screws.
5. Assemble ring gear B, carrier A, planet gear A, carrier B, ring gear A, planet gear B and thrust plate.

**NOTE :**

- Ring gear B has its own correct direction for proper assembly.
6. Confirm proper position of High/Low change gear handle when it is assembled. Both ends of spring must be put into grooves of ring gear B.



# 5 TROUBLESHOOTING GUIDE


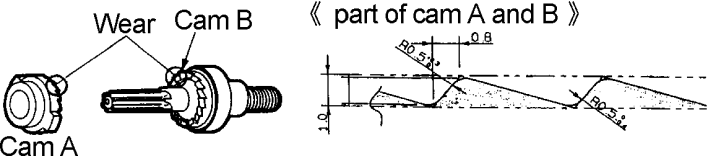
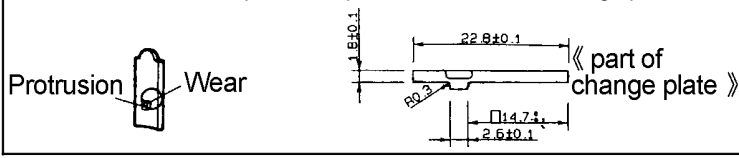
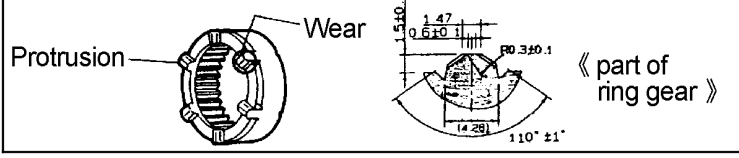
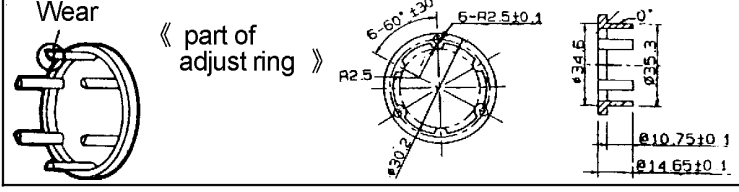
(Refer to WIRING CONNECTION DIAGRAM.)

## 5.1. CHECK POINTS FOR ELECTRICAL PARTS.

< TROUBLE >	< CHECK >	< REMEDY >
Does not operate.	<p align="center">&lt;CHECK BATTERY PACK.&gt;</p> <p>If no less than 15.6 V DC is available across the (+) and (-) terminals, the battery pack is OK.</p> <p><b>NOTE :</b>            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</p> <ul style="list-style-type: none"> <li>- after being charged for the rated charging time the battery voltage is less than 15.6V DC or the usable time is extremely short.</li> <li>- the battery leaks. Check battery for leaks and terminals for corrosion.</li> </ul>	NO → Replace battery pack.
	↓ OK	
	<p align="center">&lt;CHECK TERMINAL CONNECTIONS BETWEEN MAIN UNIT AND BATTERY PACK.&gt;</p> <p>Check for proper terminal contacts.</p>	NO → Repair contacts.
	↓OK	
	<p align="center">&lt;CHECK SWITCH BLOCK.&gt; (See WIRING CONNECTION DIAGRAM.)</p> <p>Check continuity between following terminals.            * Inspection of the forward / reverse selection switch. When switch handle is depressed all the way :</p> <ul style="list-style-type: none"> <li>- There should be 0Ω between (A) - (D) , and between (B) - (C) ; when switch lever is set to forward side.</li> <li>- There should be 0Ω between (A) - (C) , and between (B) - (D) ; when switch lever is set to reverse side.</li> </ul>	NO → Contacts in switch block are defective. Replace switch & FET block.
	↓OK	
	<p align="center">&lt;CHECK MOTOR.&gt;</p> <p>The motor normally operates with its white (+) and black (-) lead wires connected to 15.6V DC.            Ref.: motor rotating speed 17,700 ±1,500.</p>	NO → Replace motor.
Does not speed control.	<p align="center">&lt;CHECK SWITCH BLOCK.&gt;</p> <p>Though FET block may be defective, FET block can not be replaced without replacing switch block.</p>	NO → Replace switch & FET block.




## 5.2. CHECK POINTS FOR DRIVING BLOCK.

< TROUBLE >	< CHECK >	< REMEDY >
Does not vibrate or weakness of vibration. (When setting clutch handle to  )	<p align="center">&lt;CHECK DRIVING SHAFT (CAM B) AND CAM A.&gt;</p> <p>Check wear condition of driving shaft (cam B) and cam A inside of clutch case.</p> 	NO → Replace driving shaft or cam A.
	<p align="center">↓ OK</p> <p align="center">&lt;CHECK CHANGE PLATES.&gt;</p> <p>Check wear condition of protrusion parts for both side of change plates.</p> 	NO → Replace change plates.
Weakness of clutch operation.	<p align="center">&lt;CHECK CLUTCH HADNEL A.&gt;</p> <p>Check wear condition of torque changing cam inside of clutch handle A.</p>	NO → Replace clutch handle A.
	<p align="center">↓ OK</p> <p align="center">&lt;CHECK RING GEAR.&gt;</p> <p>Check wear condition of protrusion parts of ring gear.</p> 	NO → Replace ring gear.
	<p align="center">↓ OK</p> <p align="center">&lt;CHECK ADJUST RING.&gt;</p> <p>Check wear condition of tip parts of adjust ring.</p> 	NO → Replace adjust ring.
The bit-locking function does not work.	<p align="center">&lt;CHECK ROLLER AND CARRIER.&gt;</p> <p>Check wear condition of roller set and carrier.</p>	NO → Replace roller set or carrier.

## 6 TRIAL OPERATION


(after checking TROUBLESHOOTING GUIDE.)

1. Check vibrating operation by setting clutch handle to  , then touching bit on a board.

Impact rate per minutes : (HIGH) 4,500 - 30,000 b.p.m. (LOW) 1,200 - 8,250 b.p.m.  
Impact strength : 1.7kN (170kgf)

2. Check clutch operation by setting clutch handle between 1-5.

Clutch torque : 5 steps (approx. 1.0 - 1.5 - 2.5 - 3.4 - 4.4 Nm)  
(approx. 10 - 15 - 25 - 34 - 45 kg-cm)

3. Check rotation of clutch (without clutch operation) by setting to .

4. Check speed control in proportion to depression amount of switch handle.

Low : approx. 300 - 2,000 r.p.m.  
High : approx. 80 - 550 r.p.m.

5. Check operation by selecting forward or reverse switch.

6. Check if 3 chuck claws open or close smoothly by turning lock handle.

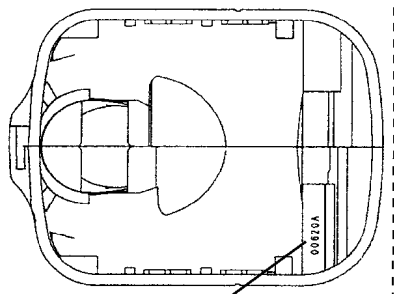
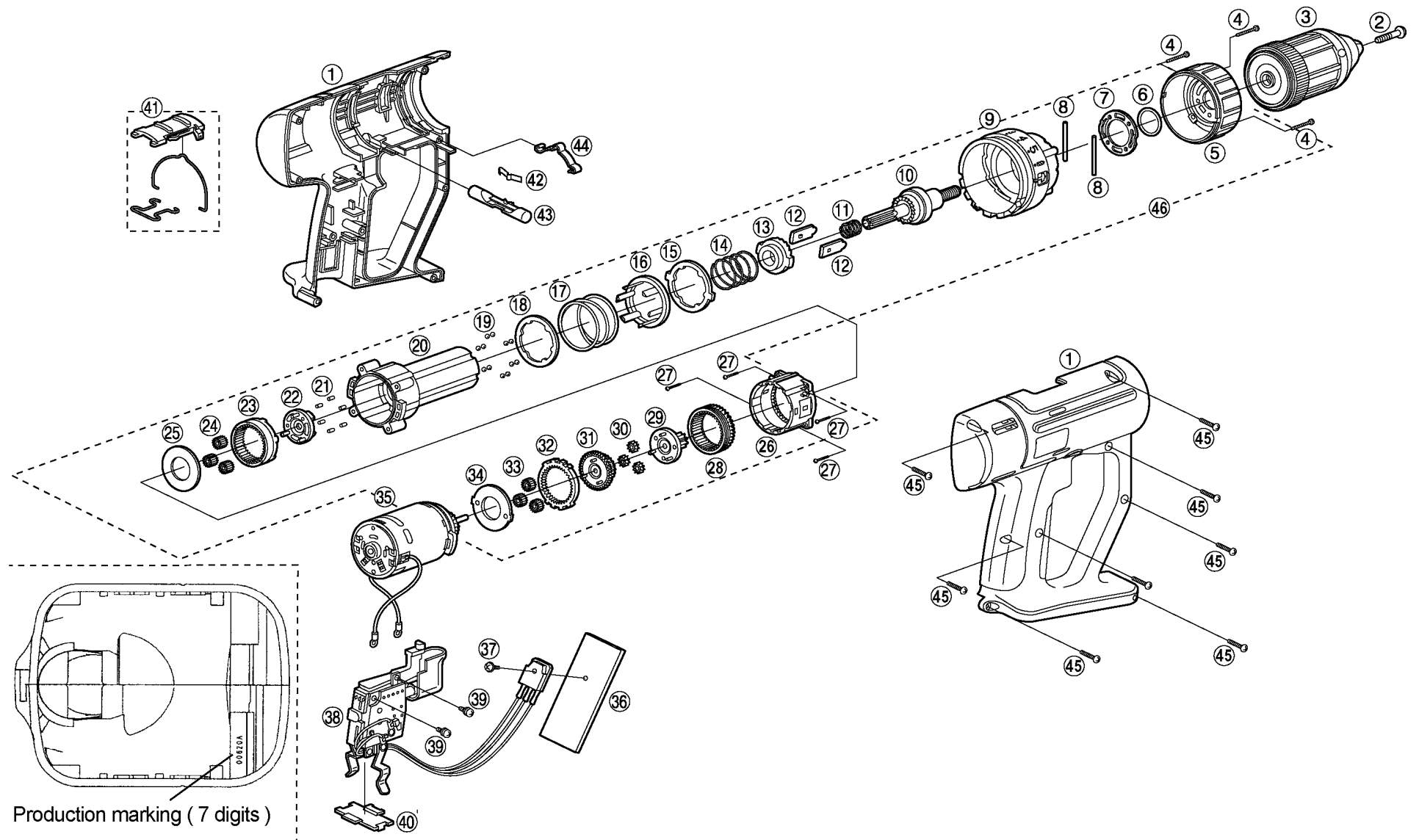
Chuck :  $\varnothing$ 1.5 - 13 mm

7. Screwdriver bit locks in place, check if it is locked and can be used as a manual screwdriver.

Torque : max. 25.5Nm (260kgf-cm)

# 7 EXPLODED VIEW

11



Production marking ( 7 digits )

0100001  
 |           |  
 Year    Month    Serial number

## 8 REPLACEMENT PARTS LIST

### NOTE:

\*A --- available as an optional accessory

\*B --- only available as set

\*C --- available individually

Ref. No.	Part No.	Part Name & Description	Remarks	Per Unit
1	WEY6931K3078	HOUSING AB SET		▲ 1
2	EYT103L6807	CHUCK FASTENING SCREW		▲ 1
3	EY6930K7917	KEYLESS DRILL CHUCK		1
4	EY6930K9157	SCREW	*C K3-16	3
5	EY6901H3227	CLUTCH HANDLE A		1
6	EY509B0977	O-RING		1
7	EY6901L0567	CHANGE RING		1
8	EY6901L0357	PIN	*B Ø2-31.8	2
9	WEY6902H3257	CLUTCH HANDLE B		1
10	WEY6902L1137	DRIVING SHAFT		1
11	EY6900B0177	SPRING		1
12	EY6901L0907	CHANGE PLATE	*B	2
13	EY6901L1387	CAM A		1
14	EY6901L0197	VIBRATION SPRING		1
15	EY6901L0457	CLICK PLATE		1
16	EY6901L0637	ADJUST RING		1
17	EY6901L0167	CLUTCH SPRING		1
18	EY6901L0577	CLUTCH PLATE		1
19	EY560B6967	STEEL BALL	*B Ø5	12
20	EY6901L1797	CLUTCH CASE		1
21	EY6705L0377	ROLLER PIN	*B Ø3.175*7.2	6
22	EY6901L1107	CARRIER		1
23	EY6901L1477	RING GEAR		1
24	EY6900B1347	PLANET GEAR	*B	3
25	EY6200B0857	THRUST PLATE		1
26	WEY6902L1767	GEAR CASE		1
27	EY6930L9577	SCREW	*C K3-12	4
28	WEY6902L1467	RING GEAR		1
29	WEY6902L1357	CARRIER		1
30	EY6200B1357	PLANET GEAR	*B	3
31	EY6900B1127	CARRIER		1
32	EY6930B1457	RING GEAR		1
33	EY560B1367	PLANET GEAR	*B	3
34	EY6901L0887	THRUST PLATE		1
35	WEY6931L1007	MOTOR		▲ 1
36	WEY6902L2567	RADIATING PLATE		1
37	WEY6902L6017	SEMS SCREW	2.6-7	1
38	WEY6931Y2007	SWITCH BLOCK		▲ 1
39	EY6230L6037	SEMS SCREW	*C M3-5	2
40	EY6481L0207	DUST PREVENTIVE PLATE		▲ 1
41	EY6406Y3238	HIGH/LOW HANDLE		▲ 1
42	EY6481L0177	CLICK SPRING		1
43	WEY6402Y3247	F/R SELECTOR HANDLE		▲ 1
44	EY6930L0177	CLICK SPRING A		1
45	WEY6930K9218	SCREW	*C K3-20	▲ 9
46	WEY6902L1458	GEAR BOX BLOCK		1
-	WEY6931K8008	INDIVIDUAL BOX		▲ 1
-	WEY6931K8108	OPERATING INSTRUCTIONS		▲ 1

\*\* Battery Pack 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.