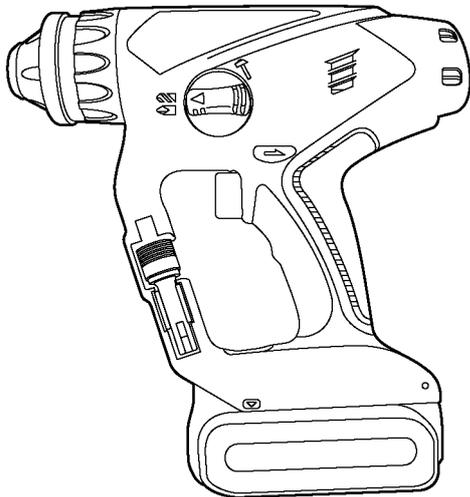


# Service Manual

**Cordless Rotary Hammer Drill & Driver**

**Model No. EY78A1**

Europe  
Oceania



## **⚠ 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.

## **IMPORTANT SAFETY NOTICE**

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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# 1 Warning

## Caution:

- Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70°F (30 - 40°C) higher. Please use a soldering iron with temperature control and adjust it to 750 ± 20°F (400 ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- Pb free solder will tend to splash when heated too high (about 1100°F / 600°C).

# 2 Specifications

## Main Unit

Model No.		EY78A1	
Motor voltage		14.4VDC	18VDC
Maximum drilling diameter	Concrete	$\phi$ 16.5mm For work that can be completed with one battery pack. ( $\phi$ 12.5mm-16.5mm)	
	Steel	$\phi$ 13mm	
	Wood	$\phi$ 18mm	
Speed at no load (RPM)		0~1000rpm	0~1250rpm
Blows rate per minute (BPM)		3800bpm	4750bpm
Weight		2.45kg	-
Weight		2.45kg	-
Weight		-	2.6kg
Weight		-	2.6kg
Overall length		249mm	
Noise, Vibration		Typical Noise Emission Values according to EN 60745; Sound Pressure Level ( $L_{pA}$ ): 85,8 dB (A) Sound Power Level ( $L_{WA}$ ): 96,8 dB (re1pw) Typical Vibration according to EN 60745: 12 m/s <sup>2</sup>	

## Battery Pack

Model No.	EY9L41	EY9L42	EY9L44	EY9L45	EY9L50	EY9L51
Storage battery	Li-ion Battery					
Motor Voltage	14.4V DC (3.6V x 4cells)		14.4V DC (3.6V x 8cells)		18V DC (3.6V x 10cells)	

# 3 Troubleshooting Guide

《TROUBLE》

《CHECK》

《REMEDY》

**Does not operate.**

**<CHECK BATTERY PACK.>**  
 If no less than (EY9L51)18V DC / (EY9L45)14.4V 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 (EY9L51) 18V DC / (EY9L45) 14.4V DC or the usable time is extremely short.
- the battery leaks. Check battery terminals for corrosion, And check if there is any deformation or cracks on battery pack housing.

Check the condition of:  
 (1) fusing resistor. (Fig. 1)  
     \*Normal:  $V1=V2$   
     \* $V1 \neq V2$ : breakage of fusing resistor  
 (2) connector. (Fig. 2)  
 If there is grease or dust, wipe it off.

NO → Replace battery pack.

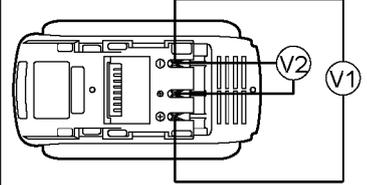


Fig.1

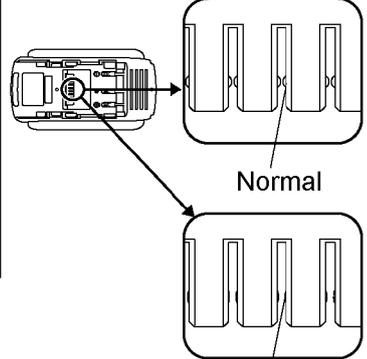


Fig.2

OK

**<CHECK TERMINAL CONNECTIONS BETWEEN MAIN UNIT AND BATTERY PACK.>**

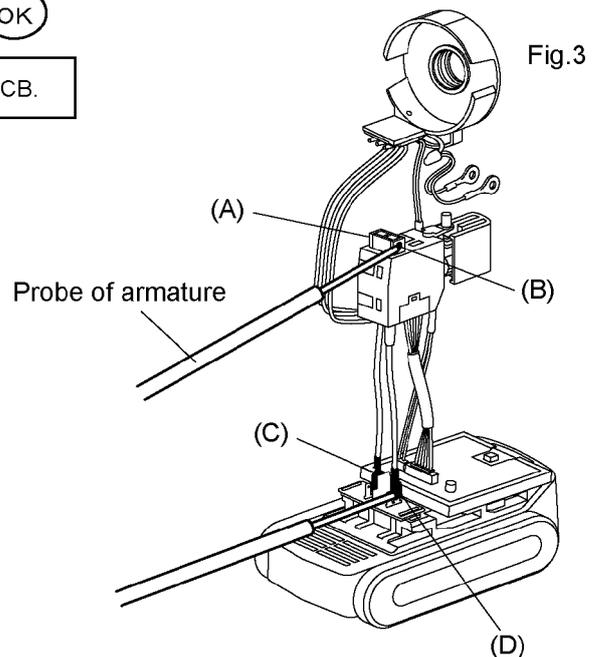
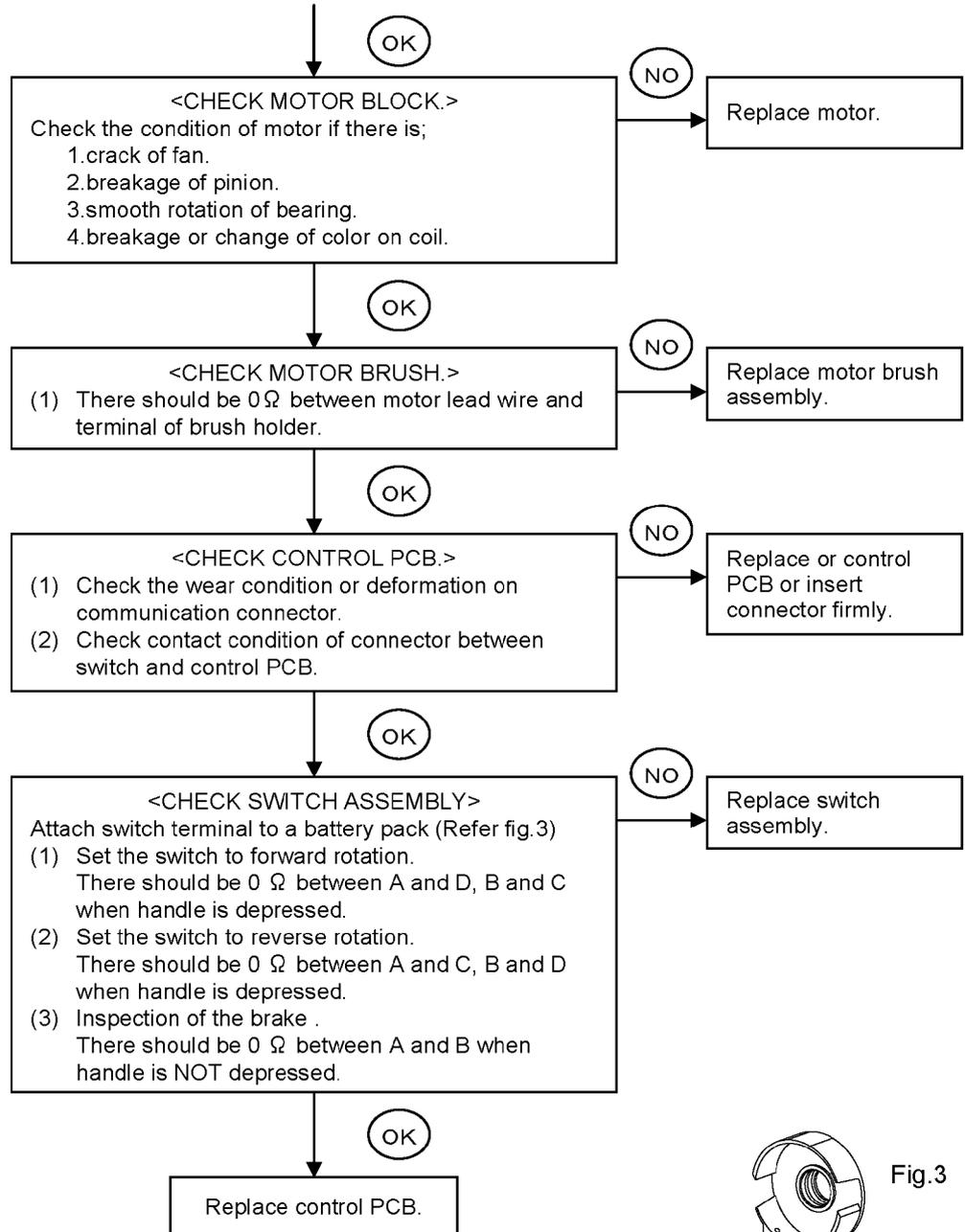
- There are no much gull.
- Terminal connections are not blackened and allow conduction.

NO → Replace switch assembly or control PCB.

《TROUBLE》

《CHECK》

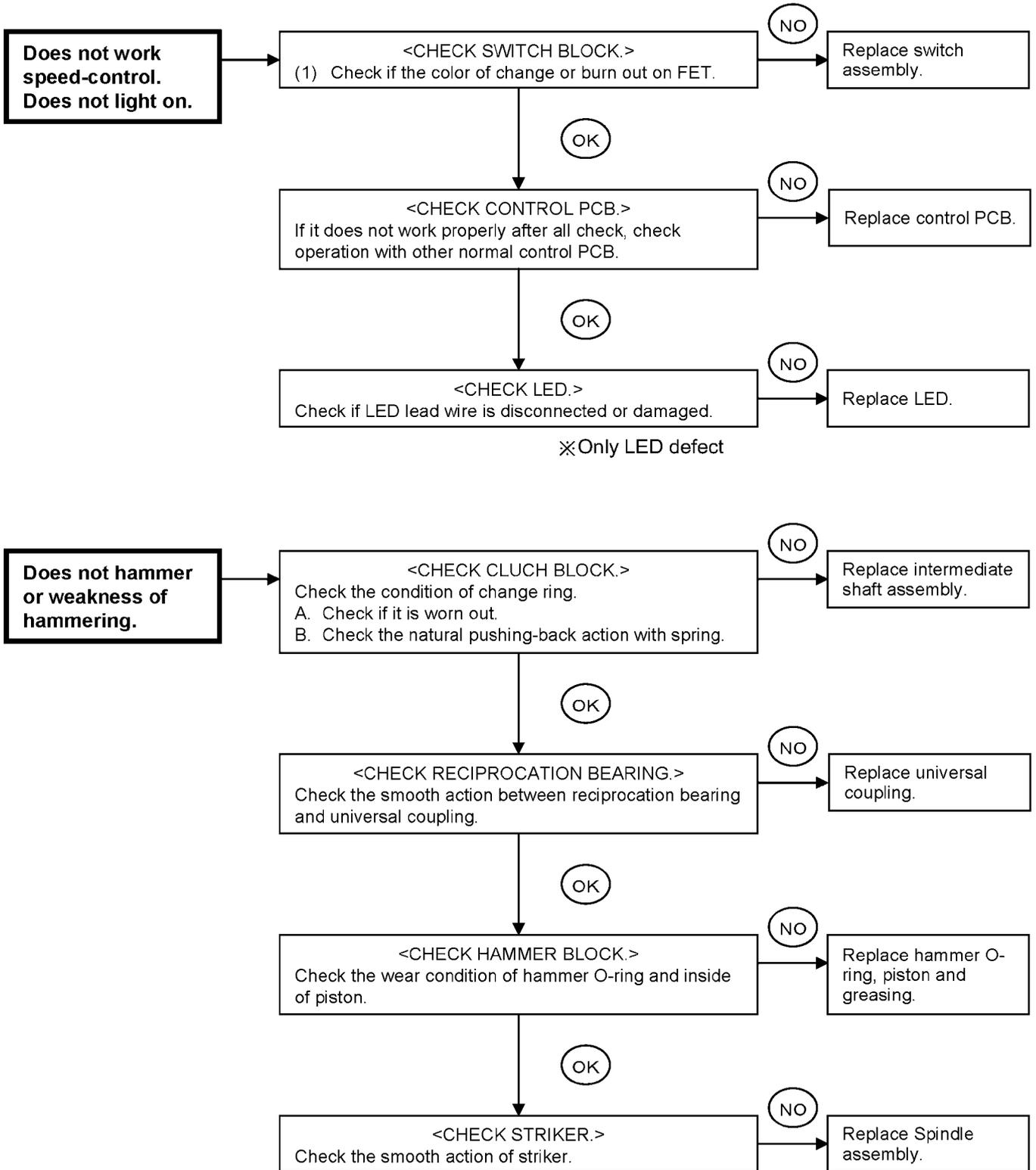
《REMEDY》



《TROUBLE》

《CHECK》

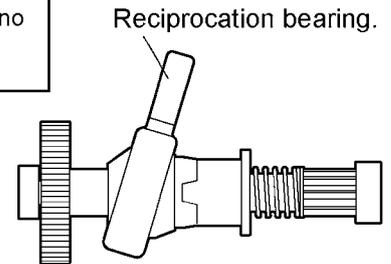
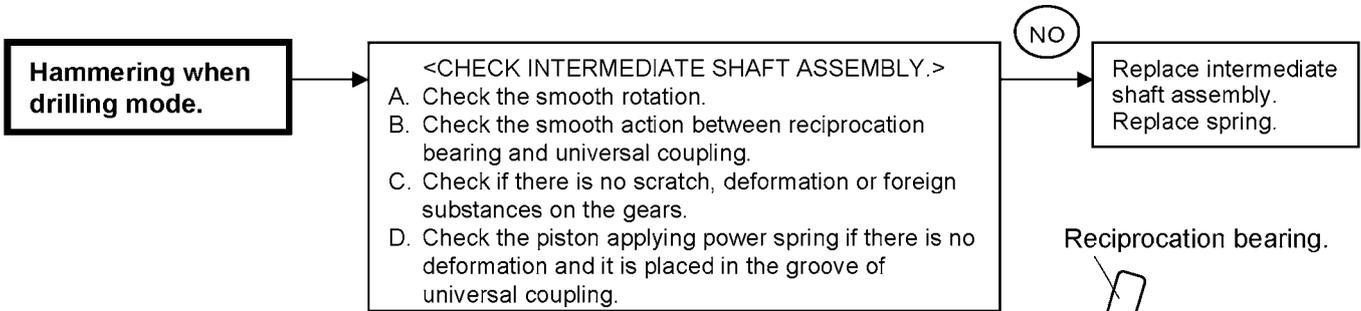
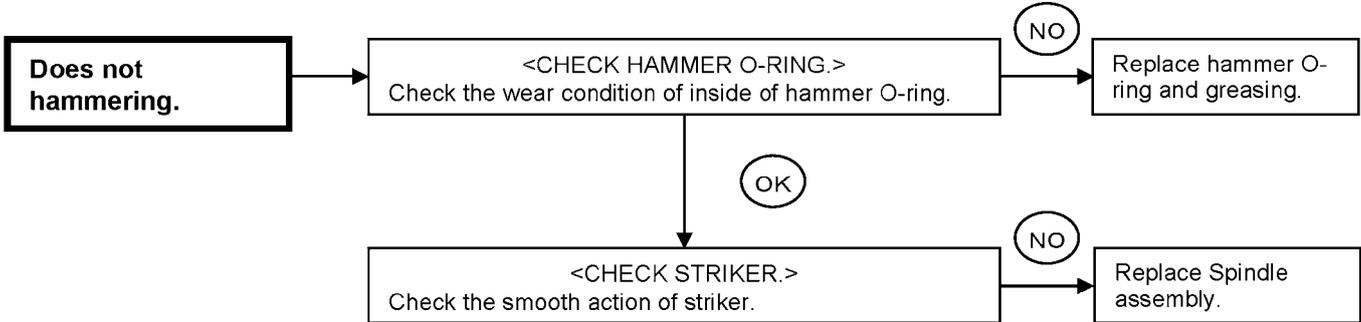
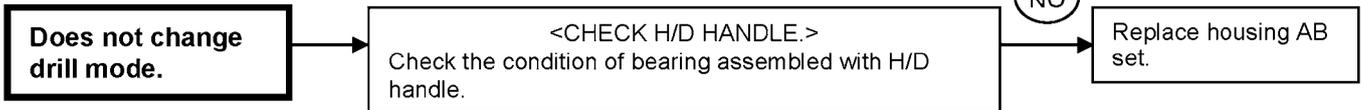
《REMEDY》



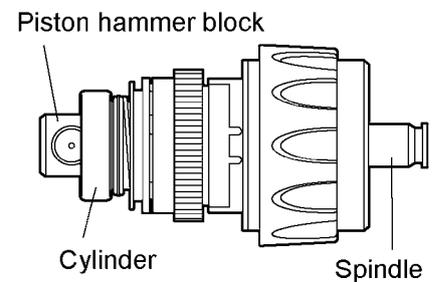
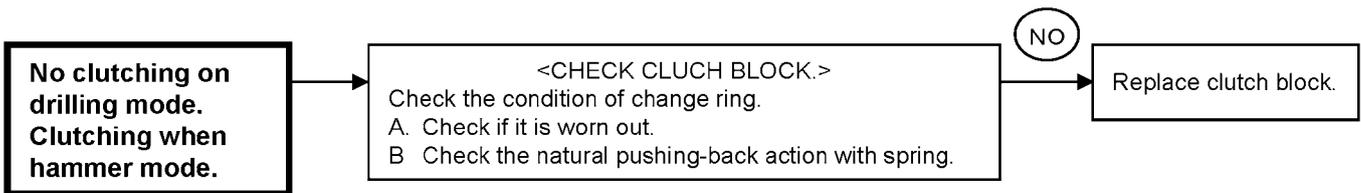
《TROUBLE》

《CHECK》

《REMEDY》



Intermediate shaft assembly



## **4 Trial Operation (After Checking Troubleshooting Guide)**

### **4.1. Hammer/Drill**

Confirm the action when setting the H/D handle to HAMMER mode.

Rotation with hammering may work when the drill bit touches something like concrete or hard type of wood block. And confirm the power.

It is OK, if it takes about 4-6 seconds by 20kgf to hole( $\Phi 6 \times 30$ ) on the concrete.

Confirm the action when setting the H/D handle to DRILL mode.

No hammering when the drill bit touches something like concrete or hard type of wood block.

And confirm the forward and reverse side of rotation.

### **4.2. Switch**

Change the rotation speed in proportion to the amount of pushing level on switch trigger.

0 ~ 1000rpm (14.4V)

0 ~ 1250rpm (18V)

### **4.3. Clutch**

Check if the clutch torque changes suited for the number of clutch.

Check if the bit does not slip on Drilling mode.

### **4.4. Assembly**

Confirm if there is NO gap between Housing A and B by pinching the lead wires.

Confirm all screws are tightened firmly and gaskets are attached.

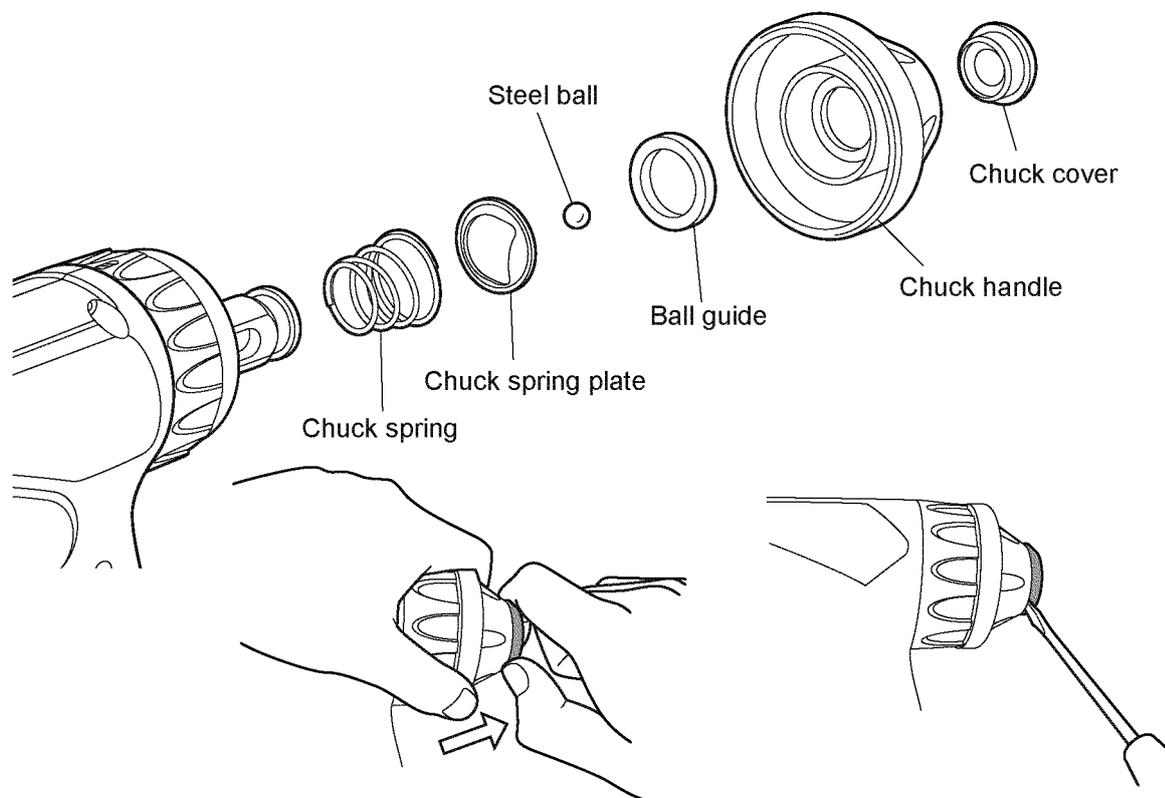
There should be no metallic sound and abnormal sound.

## 5 Disassembly and Assembly Instructions

### 5.1. Disassembly Instructions

#### 5.1.1. Remove chuck handle.

Take out a chuck cover and others in order.



#### ■ How to remove by hand:

- Push a chuck handle into the body side and remove a chuck cover with your thumb.

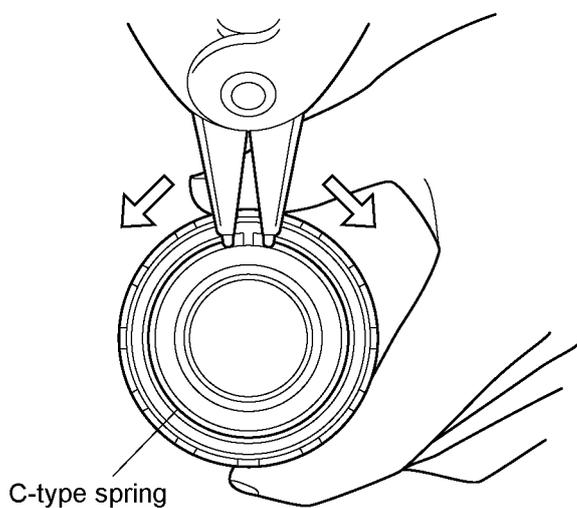
#### ■ If it's hard to remove by hand:

- Remove a chuck cover with a flathead screwdriver.

#### 5.1.2. Remove C-type spring and white felt.

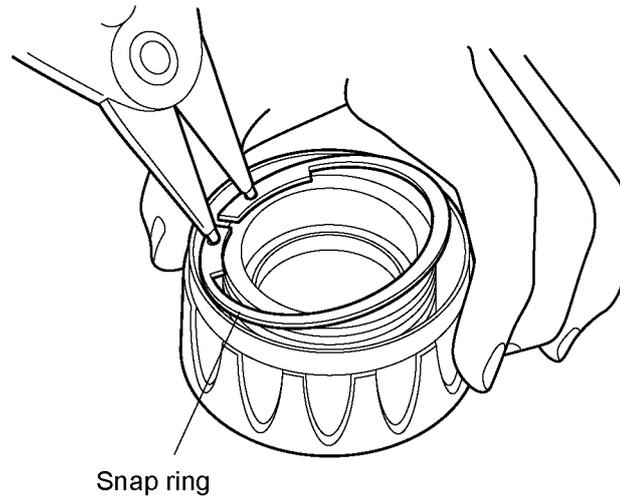
1. Remove C-type spring.
2. Remove a felt with tweezers.

\*Be careful not to break the felt.

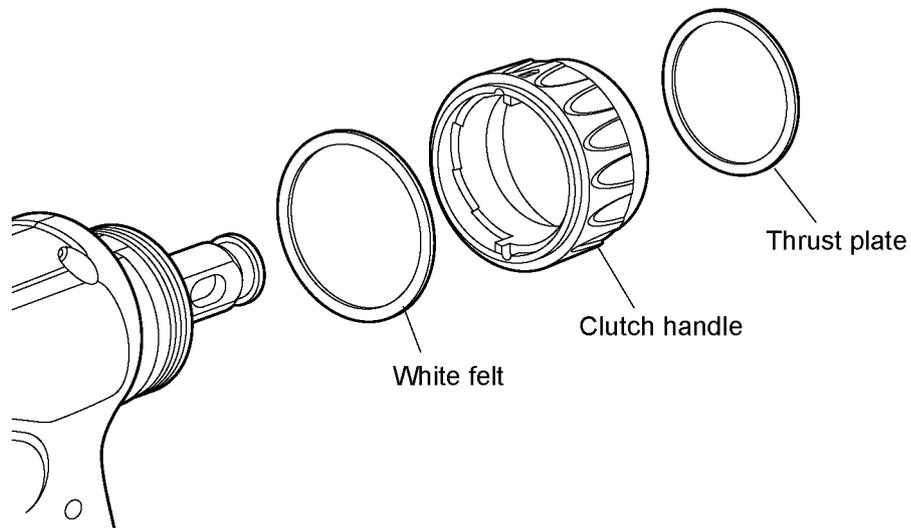


### 5.1.3. Remove a clutch handle.

1. Remove snap ring.



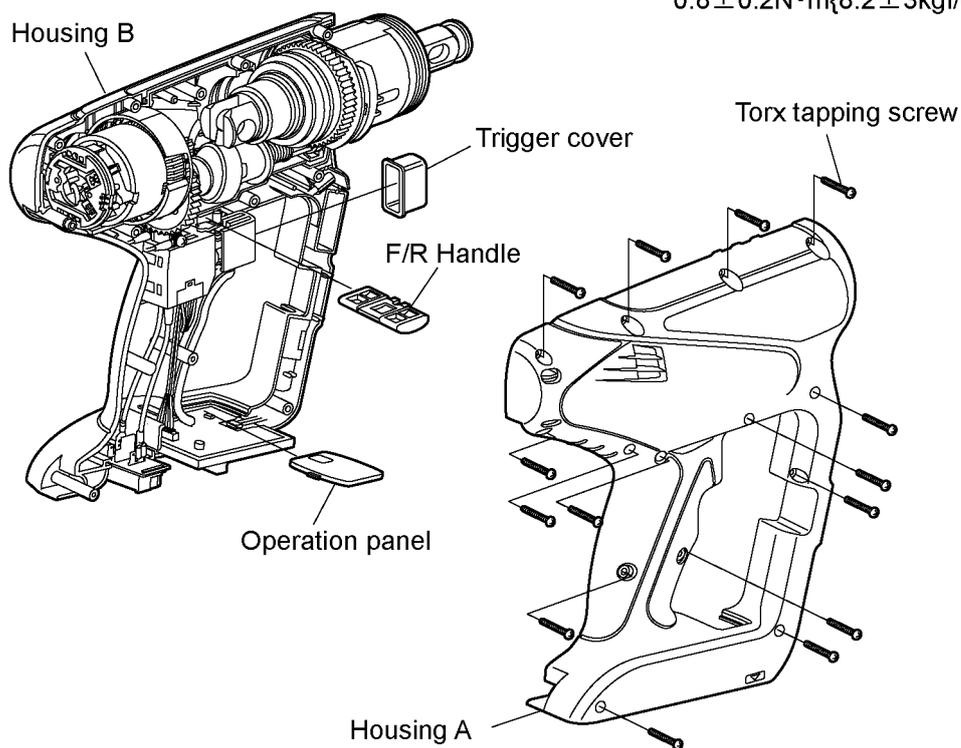
2. Separate a clutch handle.



#### 5.1.4. Remove the housing.

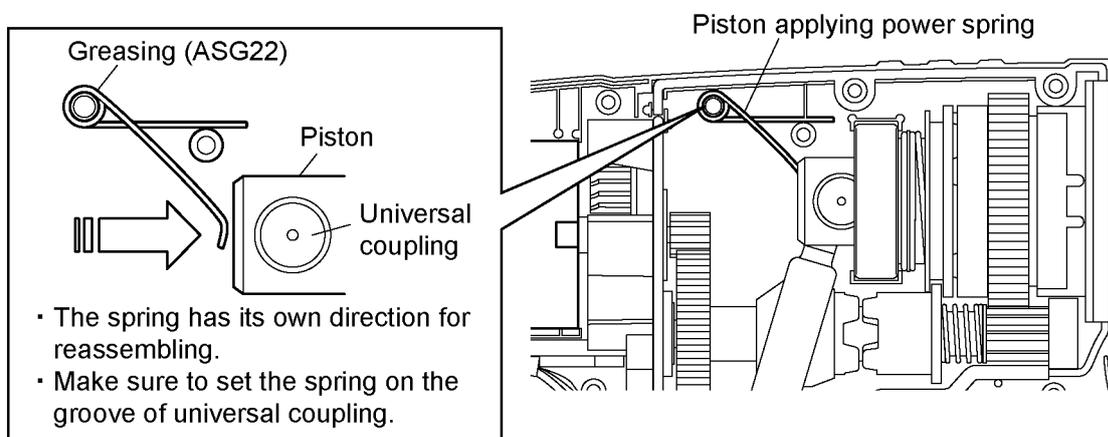
**For assembly :**

Tightening torque value;  
 $0.8 \pm 0.2 \text{ N} \cdot \text{m} \{ 8.2 \pm 3 \text{ kgf/cm} \}$

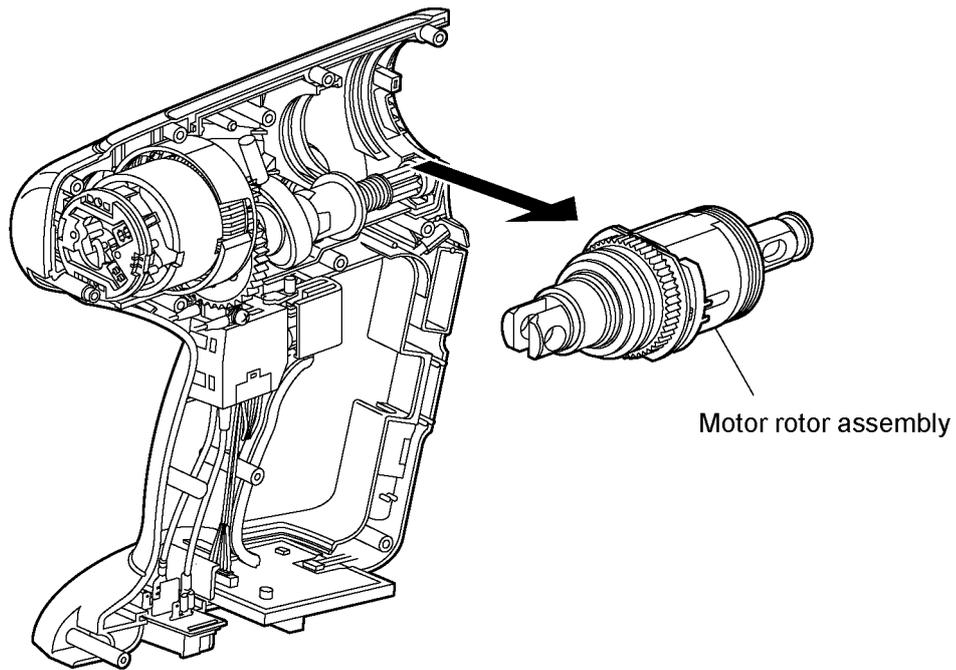


#### 5.1.5. Remove the piston applying power spring.

\*Be careful not to loose the spring when it is removed.

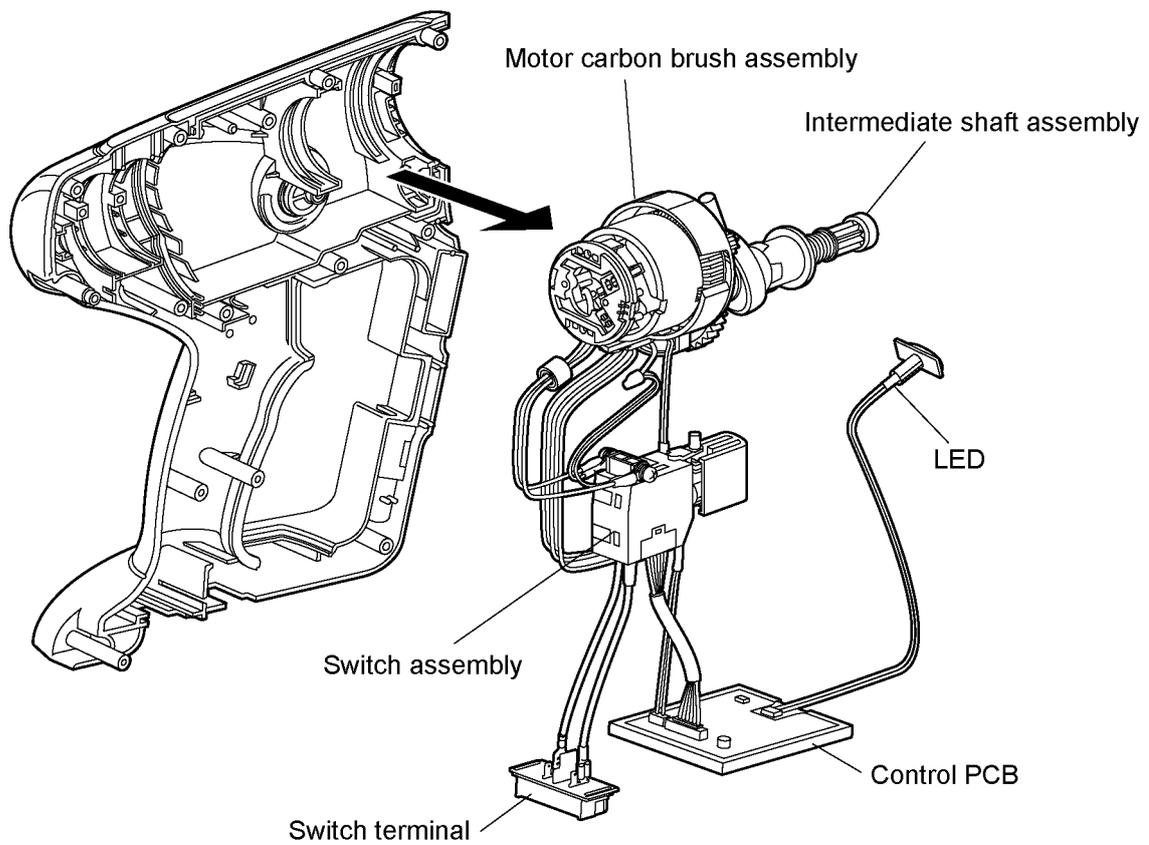


### 5.1.6. Remove a motor rotor assembly.

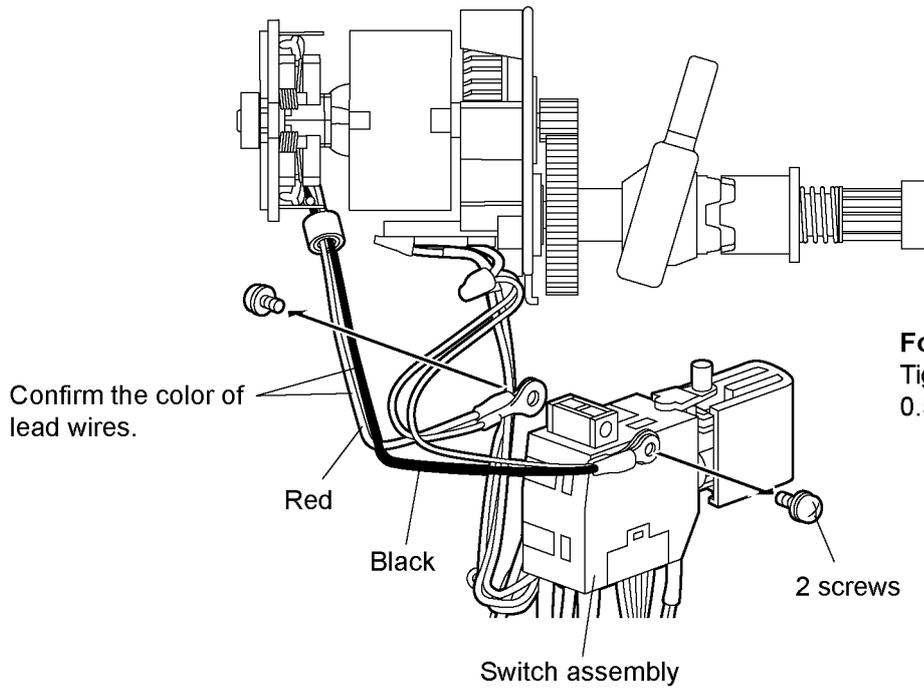


### 5.1.7. Take out the other blocks from the housing.

- Motor carbon brush assembly/switch assembly/control PCB/Intermediate shaft assembly
- \*Loose all blocks from the housing and then take out them.

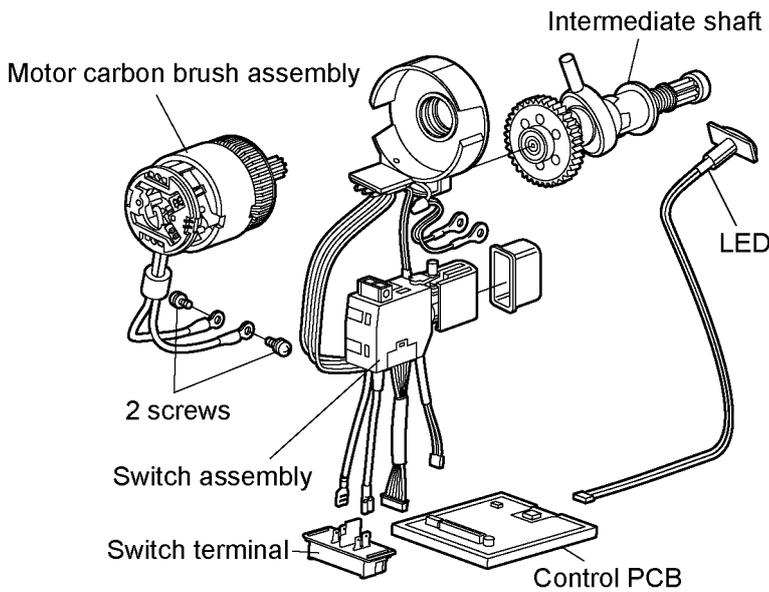


### 5.1.8. Remove motor lead wires.



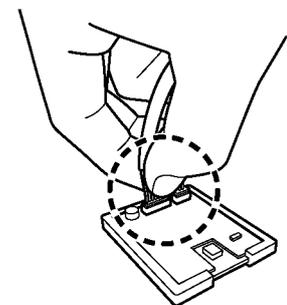
**For assembly :**  
Tightening torque value;  
 $0.5 \pm 1.0 \text{N} \cdot \text{m} \{5 \pm 1 \text{kgf} / \text{cm}\}$

### 5.1.9. Separate each blocks.

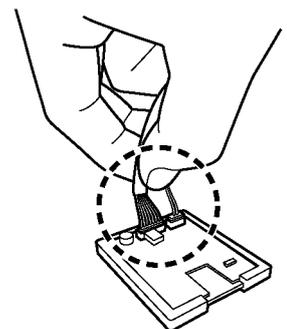


#### How to remove connectors

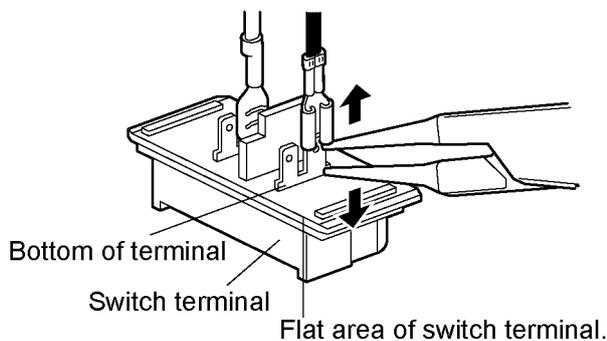
 Pull a connector out holding the base of it.



 Pulling out holding the lead wire makes break the wire.

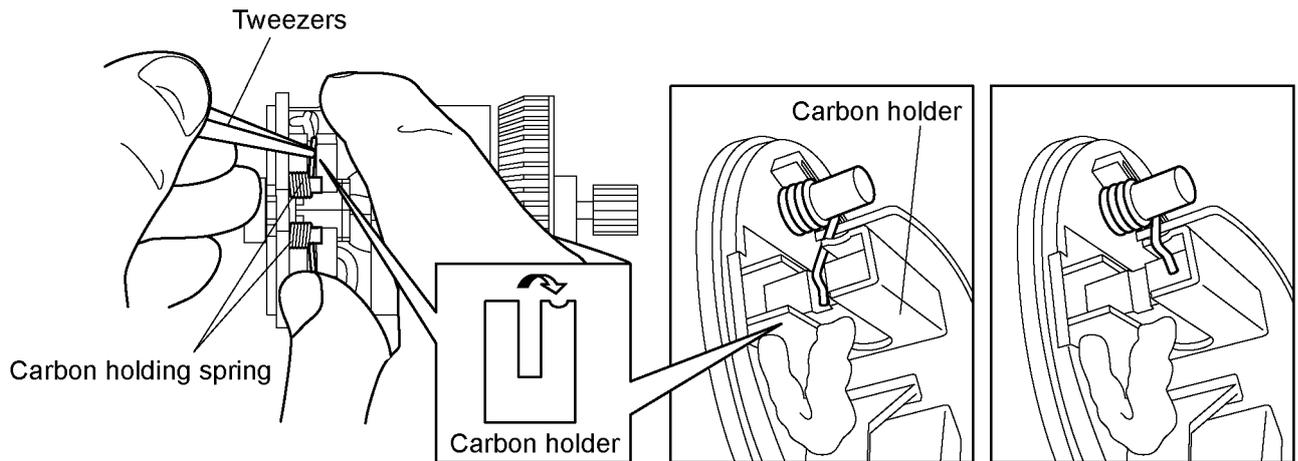


#### If it's hard to remove:

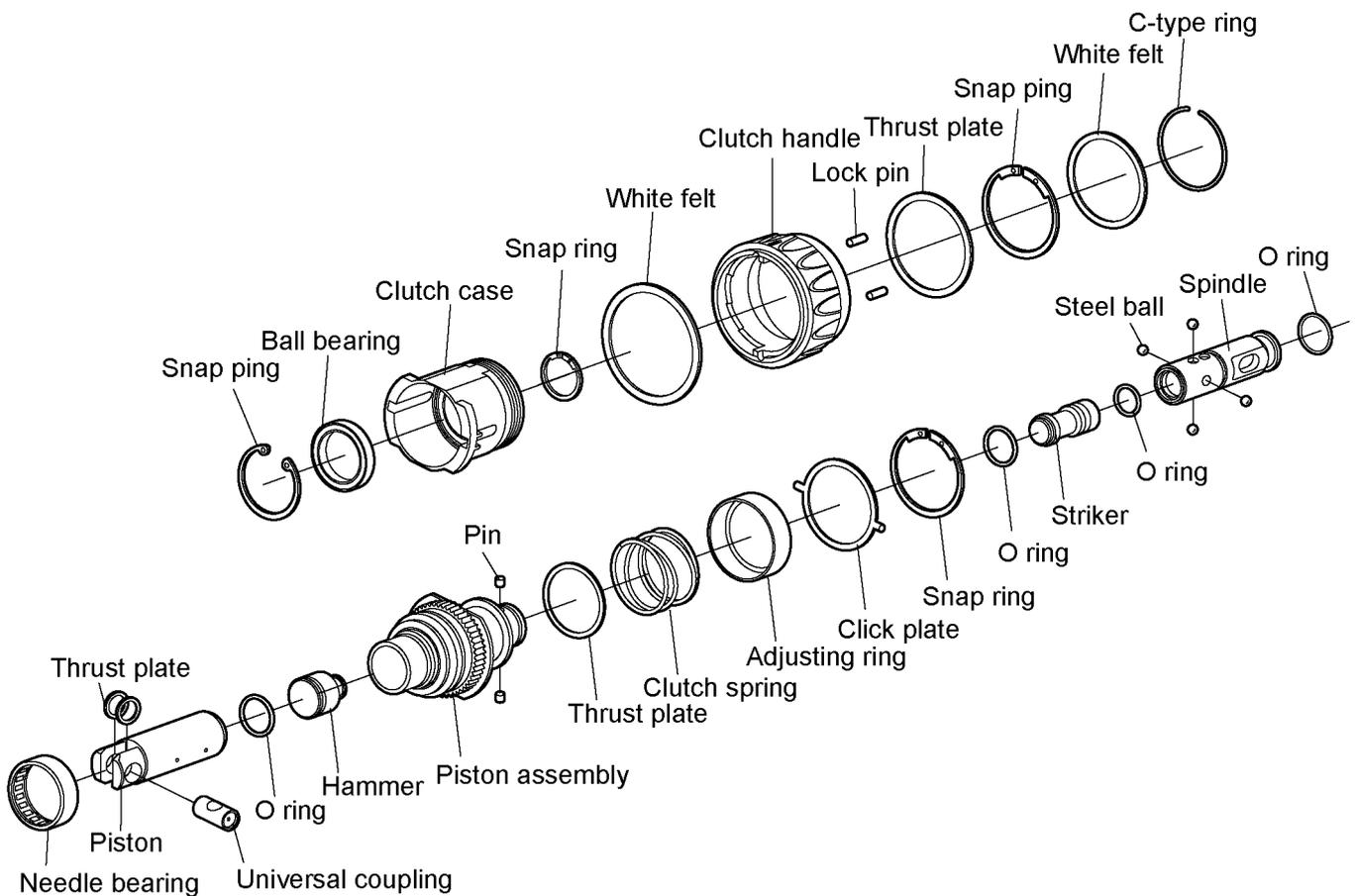


### 5.1.10. Separate motor carbon brush assembly.

- Removal of the carbon brush assembly.  
Hitch up two springs to the chase of carbon holder with tweezers.



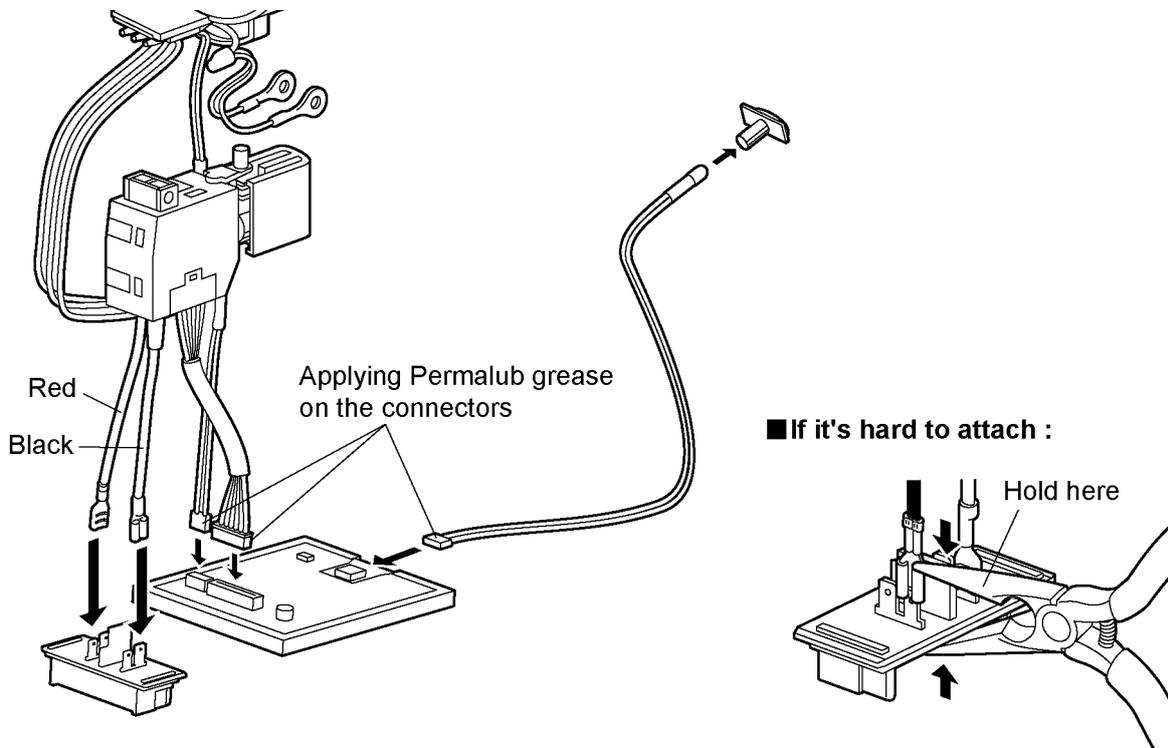
### 5.1.11. Removal of the gear box block.



## 5.2. Assembly Instructions

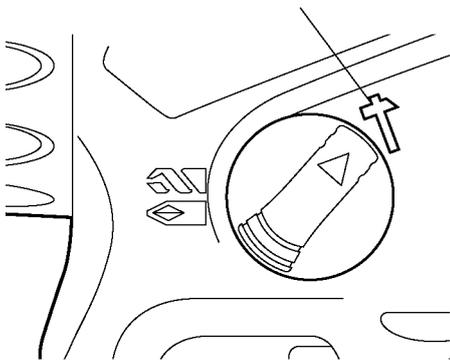
### 5.2.1. How to attach the terminal

- For assembly :  
How to attach the terminal



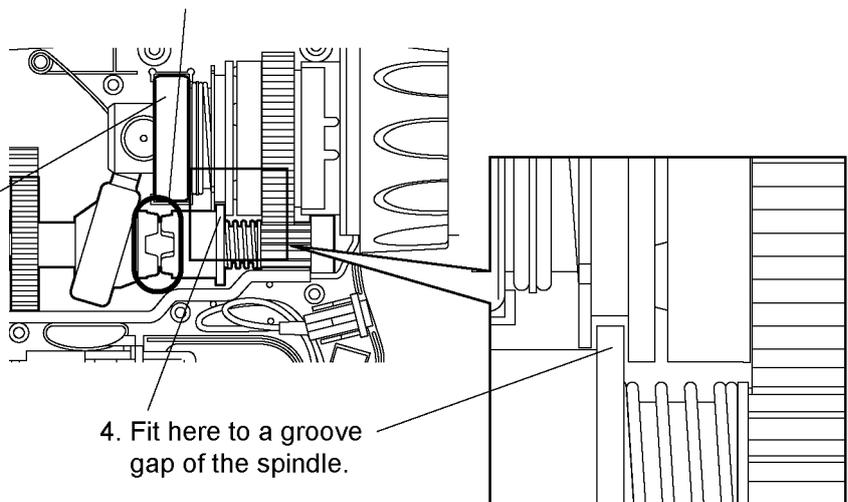
### 5.2.2. How to reassemble spindle assembly and intermediate shaft assembly

1. Set the HAMMER mode



3. insert the reciprocation bearing shaft into the hole of universal coupling. Make sure two thrust plates should be set both side of reciprocation bearing shaft one of each.

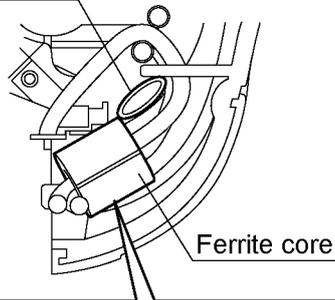
2. Be careful of direction of bearing.



### 5.2.3. Caution for assembly

- Put a ferrite core after placing a motor brush in a housing.
- Confirm that cushion protects the ferrite core not to touch the motor brush.

Motor terminal rib



Do not place a ferrite core between a motor terminal rib and a housing. Put it at the place as shown in illustration.

Confirm the direction - large cutting is placed gear block side.  
Gear block side: 5mm (wider)  
Motor brush side: 4.5 mm

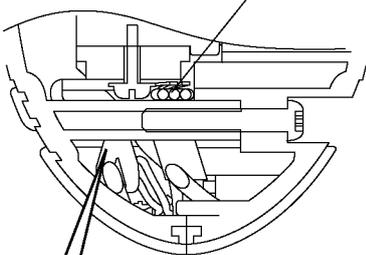
Place seal C firmly without pinching.

Apply grease (ASG22)

Set the brush spring properly. (2 parts)

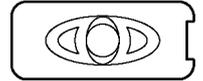
Confirm to set shrinking tube.

Thermistor lead wire



Put the condenser under lead wire in housing A.

Confirm the direction of LED cover.



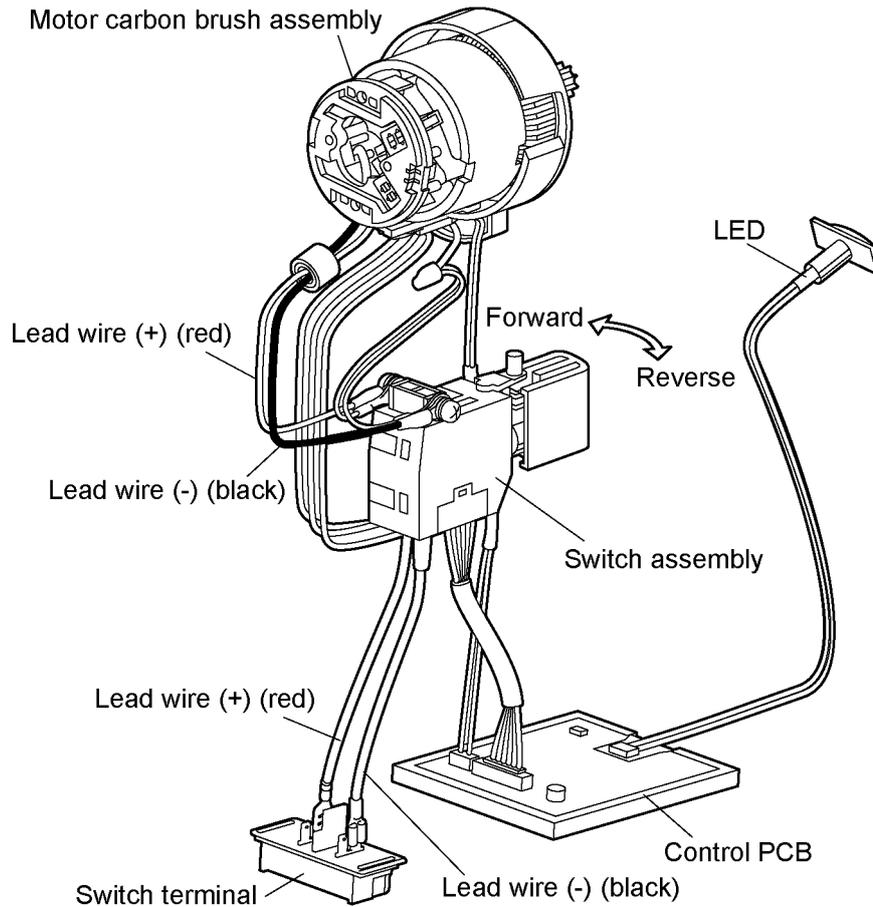
Confirm to set cushion rubber.

Press fit lead wires between ribs in a housing firmly.

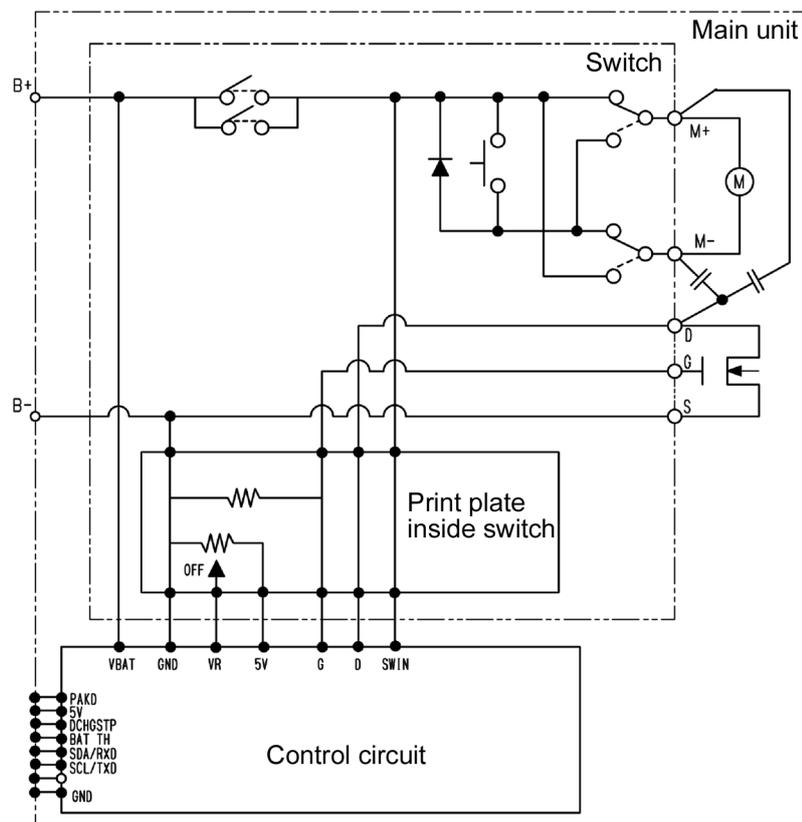
Press fit lead wires firmly without pinching.

Set RED lead wire on top.

## 6 Wiring Connection Diagram

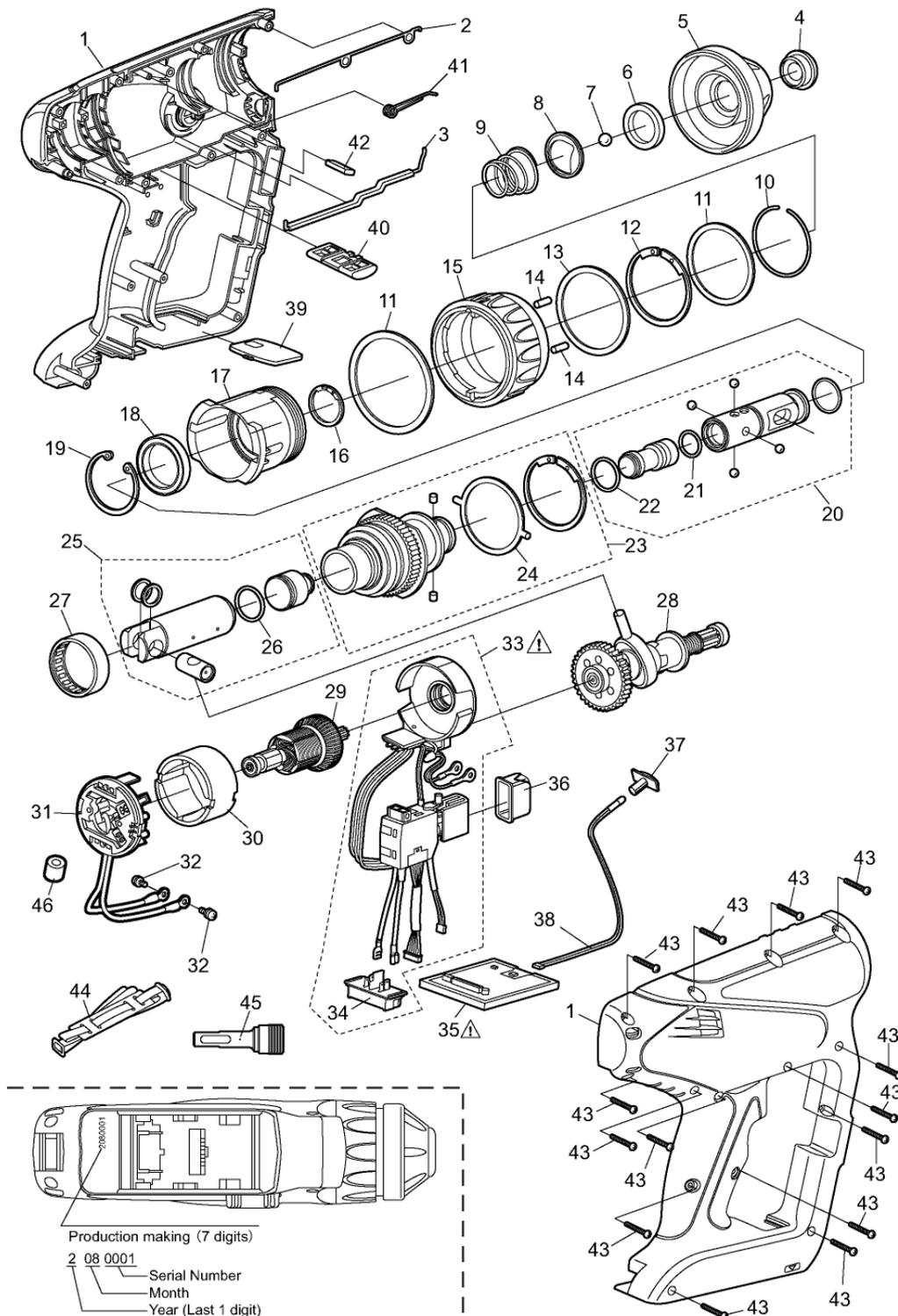


## 7 Schematic Diagram



# 8 Exploded View and Replacement Parts List

Model No. : EY78A1 Exploded View



- \* Battery Pack is 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.

## Model No. : EY78A1 Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	1	WEY78A1H3078	HOUSING AB SET	1	(For Europe)
	1	WEY78A1H3079	HOUSING AB SET	1	(For OCEANIA)
	2	WEY6803L3997	SEAL A	1	
	3	WEY6803L3987	SEAL B	1	
	4	WEY6813H3117	CHUCK COVER	1	
	5	WEY6803K3127	CHUCK HANDLE	1	
	6	WEY6813L0427	BALL GUIDE	1	
	7	WEY6813L1917	STEEL BALL	1	φ7
	8	WEY6813L0437	CHUCK SPRING STRIKE	1	
	9	WEY6813L0917	CHUCK SPRING	1	
	10	WEY6803L1167	C-TYPE RING	1	
	11	WEY6803L3137	FELT	1	
	12	WEY6803L0467	SNAP RING	1	ISTW42
	13	WEY6803L0857	THRUST PLATE	1	
	14	WEY6803L1707	LOCK PIN	2	
	15	WEY78A1H3227	CLUTCH HANDLE	1	
	16	WEY6813L0477	SNAP RING	1	ISTW-25
	17	WEY6803Y3297	CLUTCH CASE	1	
	18	WEY6813L4957	BEARING	1	6805LUX
	19	WEY6803L0477	SNAP RING	1	RTW37
	20	WEY6803L4067	SPINDLE ASSEMBLY	1	
	21	WEY6813L0327	O RING	1	P10A
	22	WEY6813L0347	O RING	1	AS112
	23	WEY7840L4907	CLUTCH ASSEMBLY	1	
	24	WEY6803L0087	CLICK PLATE	1	
	25	WEY7840L1247	PISTON ASSEMBLY	1	
	26	WEY6803L0977	O RING	1	
	27	WEY6803L0387	NEEDLE BEARING	1	
	28	WEY6803L4057	INTERMEDIATE SHAFT ASSEMBLY	1	
	29	WEY7840L1467	MOTOR ROTOR ASSEMBLY	1	
	30	WEY7840L1187	MOTOR STATOR ASSEMBLY	1	
	31	WEY7840L2307	MOTOR BRUSH ASSEMBLY	1	
	32	WEY6230L6027	SCREW FOR MOTOR	2	K3-6, (5PCS/PK)
	33	WEY78A1L2008	SWITCH ASSEMBLY	1	
	34	WEY7880L2157	BATTERY TERMINAL BASE	1	
	35	WEY78A1L2118	MAIN PCB ASSEMBLY	1	
	36	WEY7840K3137	TRIGGER COVER	1	
	37	WEY6803L2337	LED COVER	1	
	38	WEY7840L2337	LED LIGHT	1	
	39	WEY7804K3338	OPERATION PANEL	1	
	40	WEY7880L3147	F/R HANDLE	1	
	41	WEY6803L0927	POWER SPRING	1	
	42	WEY6803L0137	CUSHION RUBBER	1	

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**Model No. : EY78A1 Parts List**

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Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	43	WEY6230K9216	TORX TAPPING SCREW	14	K3-20, (5PCS/PK)
	44	WEY7880L3417	SHOULDER BELT	1	
	45	WEY9HX403	BIT ADAPTOR	1	
	46	WEY7840K0208	FERRITE CORE	1	
	-	WEY9L40R2788	BATTERY PACK COVER	1	
	-	WEY78A1K7019	TOOL CASE	1	
	-	WEY78A1K8108	OPERATING INSTRUCTIONS	1	