

# Service Manual

Cordless Drill &amp; Driver

## EY6220

### < Specifications >

#### DRILL/DRIVER

Motor voltage	: 2.4V DC
No load speed	: LOW 200 r.p.m. HIGH 400 r.p.m.
Speed reducer type	: Epicyclic gear
Speed reduction ratio	: LOW 1/97.2 HIGH 1/48.6
Maximum torque	: LOW 26in. lbs., 30kg-cm, 2.9Nm HIGH 13in. lbs., 15kg-cm, 1.5Nm
Maximum clutch torque	: 17.5in. lbs., 20kg-cm, 2.0Nm at 5 position
Overall length	: 9-3/8", 239mm
Weight (with battery pack)	: 0.9 lbs., 0.4kg

#### BATTERY PACK

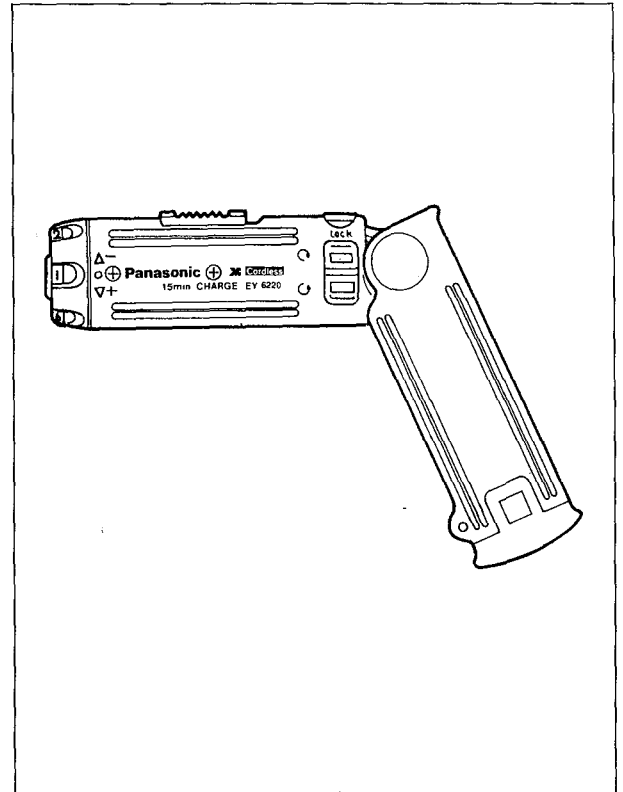
Storage battery	: Ni-Cd battery
Battery voltage	: 2.4V DC (1.2V×2 cells)

#### BATTERY CHARGER

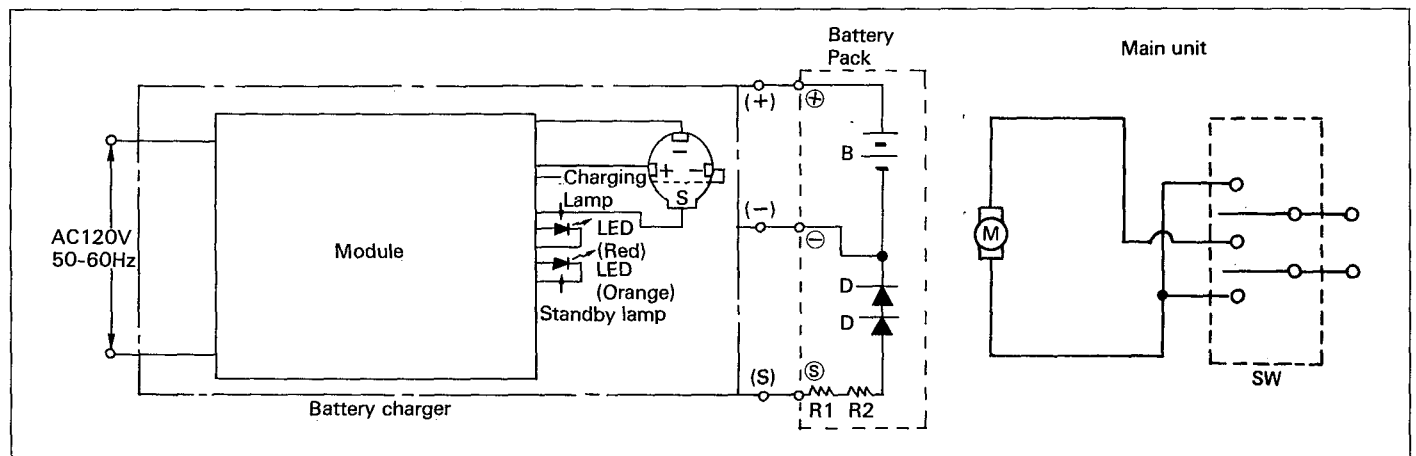
Input	: 120V AC, 50-60Hz
Output	: 2.4V DC
Weight	: 0.86 lbs., 0.39kg
Charging time	: Standard 15 minutes

### < Standard equipment >

Battery charger  
 Battery pack  
 # 1 phillips bit  
 # 2 phillips bit  
 Slotted-head bit



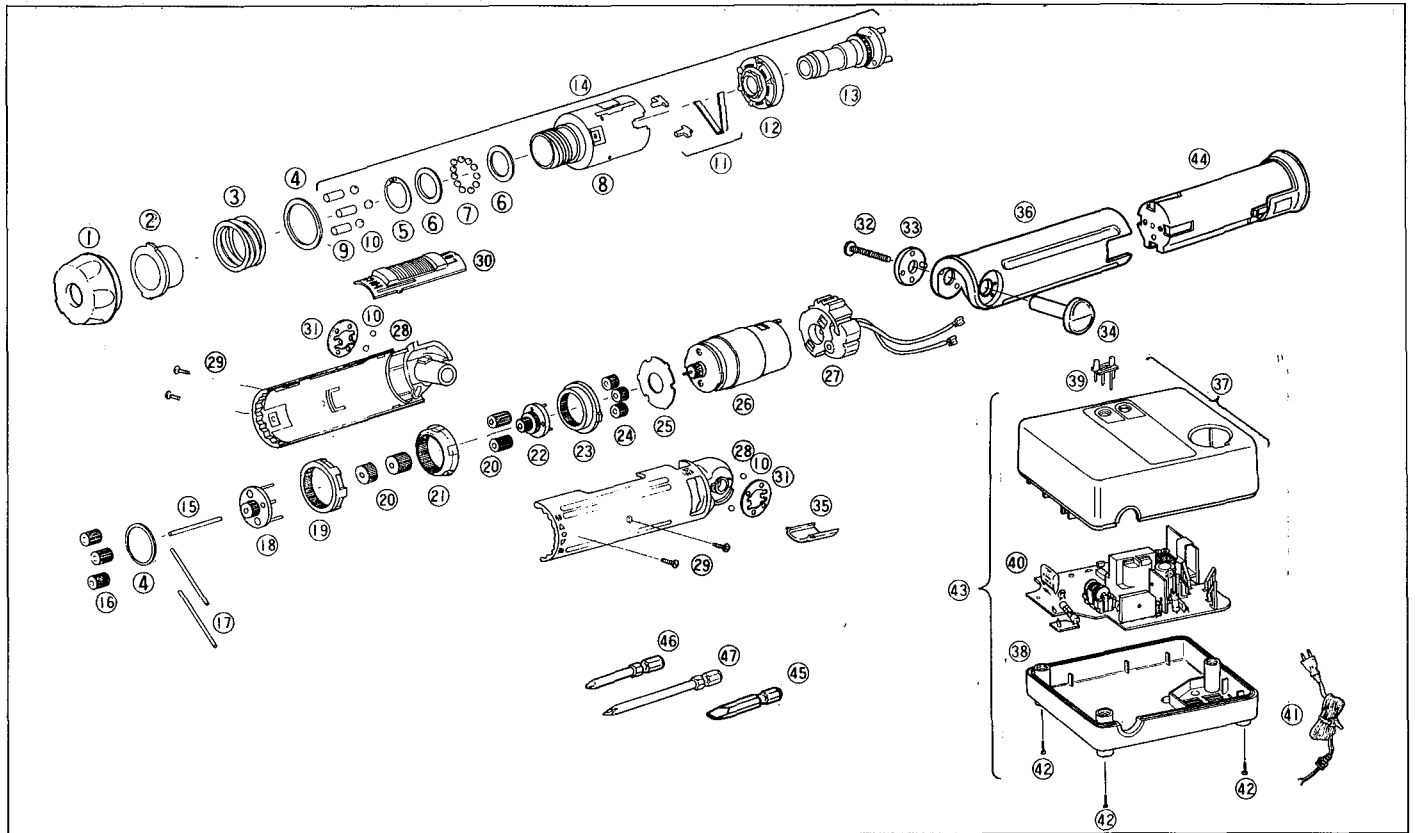
## SCHEMATIC DIAGRAM



# Panasonic

Matsushita Electric Corporation of America  
 One Panasonic Way, Secaucus, New Jersey 07094

# EXPLODED VIEW



# REPLACEMENT PARTS LIST

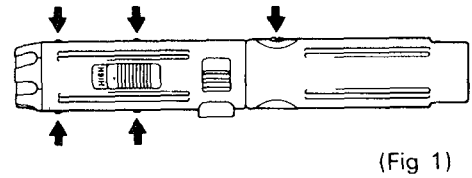
Ref No.	Part No.	Part Name & Descriptions	Per set	Remarks	Ref No.	Part No.	Part Name & Descriptions	Per set	Remarks
1	EY503H3228	Clutch handle	1		26	EY503B1007	Motor	1	
2	EY503B0637	Adjust ring	1		27	EY503Y2008	Switch	1	
3	EY503B0167	Spring for clutch	1		28	EY6220B3078	Housing AB set	1	
4	EY503B0847	Thrust plate	2	Available individually	29	EY503B9167	Housing screw	4	Available individually
5	EY502B0417	Stop ring	1		30	EY503H3238	Change gear handle	1	
6	EY502B6437	Washer	2	Available individually	31	EY502B0187	Click spring	2	Available individually
7	EY503B1927	Steel ball B set	18	Only available as set	32	EY502B6217	Screw for grip	1	
8	EY503B1767	Gear case	1		33	EY503H6248	Decorative washer	1	
9	EY503B0397	Clutch pin set	3	Only available as set	34	EY503H6348	Fastening nut	1	
10	EY503B1917	Steel ball A set	7	Only available as set	35	EY502B0877	Hinge cover	1	
11	EY503B0927	Lock spring lug set	1		36	EY6220B3938	Grip block	1	
12	EY503B1457	Ring gear A	1		37	EY0220B3098	Housing A for charger	1	
13	EY503B1127	Driving shaft	1		38	EY0220B3028	Housing B for charger	1	
14	EY503B1797	Gear case block	1		39	EY0200C0547	Lamp cover	1	
15	EY503B0367	Pin E	1		40	EY0220B2128	Module	1	
16	EY503B1357	Planet gear A	3	Only available as set	41	EY0202B2058	Power cord	1	
17	EY503B0357	Pin D set	2	Only available as set	42	EY0001B6237	Screw for charger	3	Available individually
18	EY503B1647	Carrier A	1		43	EY0220B7658	Battery charger	1	
19	EY503B1467	Ring gear B	1		44	EY9021B	Battery pack	1	Commercial available
20	EY503B1367	Planet gear set	1		45	EY502B7937	Slotted bit	1	
21	EY503B1477	Ring gear C	1		46	EY502B7927	No. 1 Phillips bit	1	
22	EY503B1117	Carrier C	1		47	EY502B7957	No. 2 Phillips bit	1	
23	EY503B1487	Ring gear D	1		-	EY6220B8008	Individual box	1	
24	EY503B1377	Planet gear D	3	Only available as set	-	EY6220B8108	Operating instructions	1	
25	EY502B0207	Internal presser	1						

# DISASSEMBLY/ASSEMBLY INSTRUCTIONS

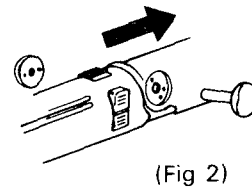
Before disassembly, remove the battery pack from the main unit

## (Housing/Grip Handle Disassembly)

- 1 Remove the four housing screws and one grip fastening screw (Fig 1)

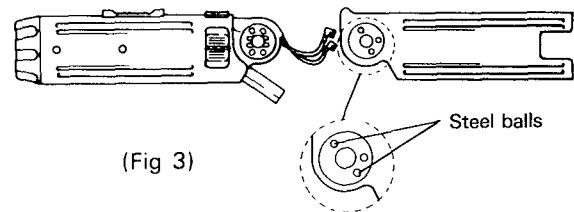


- 2 Remove the decorative washer and fastening nut to separate grip handle from housings A and B (Fig 2)



Note The steel balls (four pieces for both sides of hinge) may fall out during disassembly and could be lost  
Handle accordingly

(Fig 3)



- 3 Separate housings A and B, and take out clutch, gear-box, motor, and switch

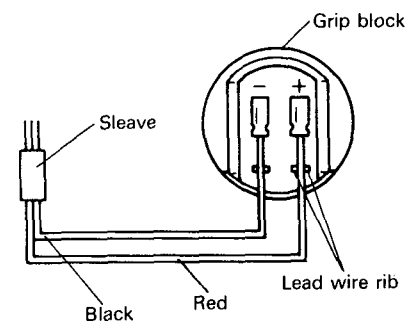
## (Housing/Grip handle Assembly)

- 1 When reassembling, connect the black wire to  $\ominus$  terminal and red one to  $\oplus$  terminal of the grip handle. Also be sure to pinch the wires into small ribs.

Note. Do not twist or cross the wires to avoid pinching of wires.

Note. Once remove the wires from terminals, the contact may become loose. Reform the metal contact parts at the end of wires with pinchers. These contactors pivot on the terminals after snapped in place.

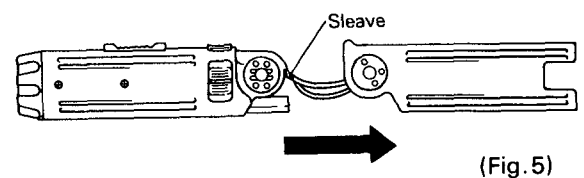
(Fig 4)



2. Set the wire protection sleeve at the base of housings A and B, then couple grip handle to housings.

Note: Be sure to insert hinge cover into grip handle as shown.

(Fig 5)

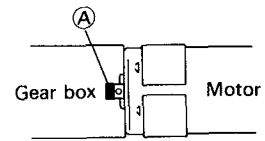


(Motor Removal/Replacement)

1. Slowly remove motor with switch from gear-box block.

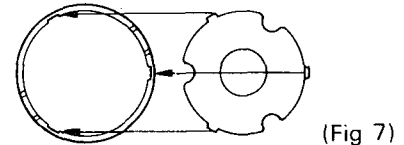
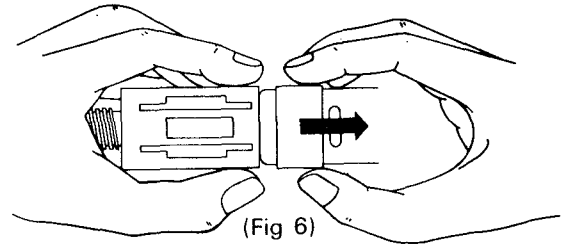
Note. When removing, the gears may come out. Grasp the both ends (A) of the motor to prevent this

(Fig.6)



If the internal divider come off, replace it into gear-box block accordingly as shown to keep the gears from falling out

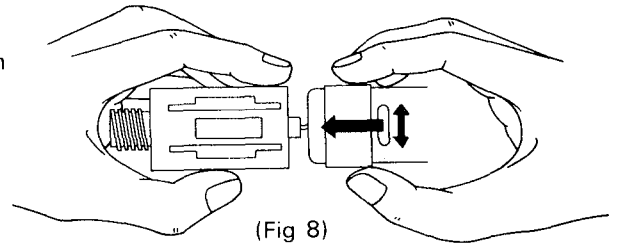
(Fig 7)



(Fig 7)

2. When connecting the motor to gear-box block, slowly insert the motor gear twisting slightly into the gear-box block for proper match

(Fig 8)



(Fig 8)

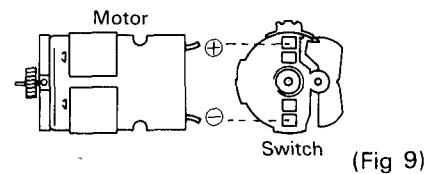
(Switch Removal/Replacement)

- 1 Remove switch from motor

Note When connecting the switch to the motor, be sure to check the direction as shown. If connect incorrectly, it is impossible to replace them into the housings

Connect the switch firmly to the motor as far as it will go

(Fig 9)



(Fig 9)

(Clutch Assembly/Disassembly)

Note To disassemble the clutch, first disassemble the housings and grip block

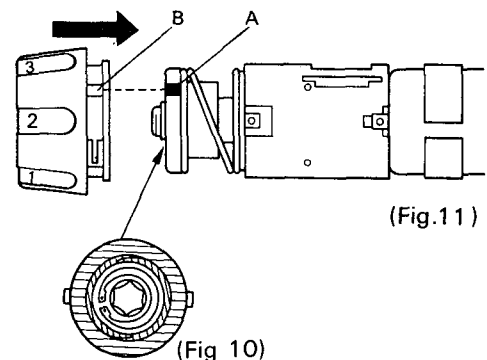
- 1 Remove the clutch handle
2. Unscrew the adjust ring, and remove it  
Note: Be careful not to lose the clutch pins and steel balls.
- 3 When reassembling, screw the adjust ring so far as the surfaces of adjust ring and gear-box top come to the same surface level

(Fig.10)

By this, one of the projection (A) of adjust ring come to the position as shown

4. Replace the clutch handle fitting the groove B to the projection A.

(Fig.11)



(Fig.11)

**Assembly procedure**

**Assembly method**

**Notes**

- ① Gear case
- ② Lock spring lug set
- ③ Lock spring lug set
- ④ Lock spring lug set

**A**  
Insert the two lock lugs in the gear case. There is a left lug and a right lug, so refer to the figure for correct assembly method

- ⑤ Ring gear A
- ⑥ Driving shaft

**B**  
Insert ring gear A and turn it slightly to open the lock spring, then insert the driving shaft.

- ⑦ Washer
- ⑧ Steel ball B set (18 balls)
- ⑨ Washer
- ⑩ Stop ring
- ⑪ Steel ball A set (3 balls)
- ⑫ Clutch pin set
- ⑬ Thrust plate
- ⑭ Spring for clutch
- ⑮ Adjust ring

**C**  
Secure ring gear A and the driving shaft in place and insert the washers and steel ball B set, then attach the stop ring.

Be particularly careful not to lose; balls from the steel ball B set (18 balls) or A set (3 balls); or any of the clutch pins.

- ⑯ Planet gear set A (metal)
- ⑰ Thrust plate

- ⑱ Pin D set
- ⑲ Pin E set
- ⑳ Carrier A (metal)
- ㉑ Ring gear B
- ㉒ Planet gear set (metal)

**E/F**  
Ring gear B must be assembled in the correct orientation, if assembled with an incorrect orientation, switching between low and high will not be possible.

- ㉓ Ring gear C
- ㉔ Planet gear set (metal)
- ㉕ Planet gear set (metal)

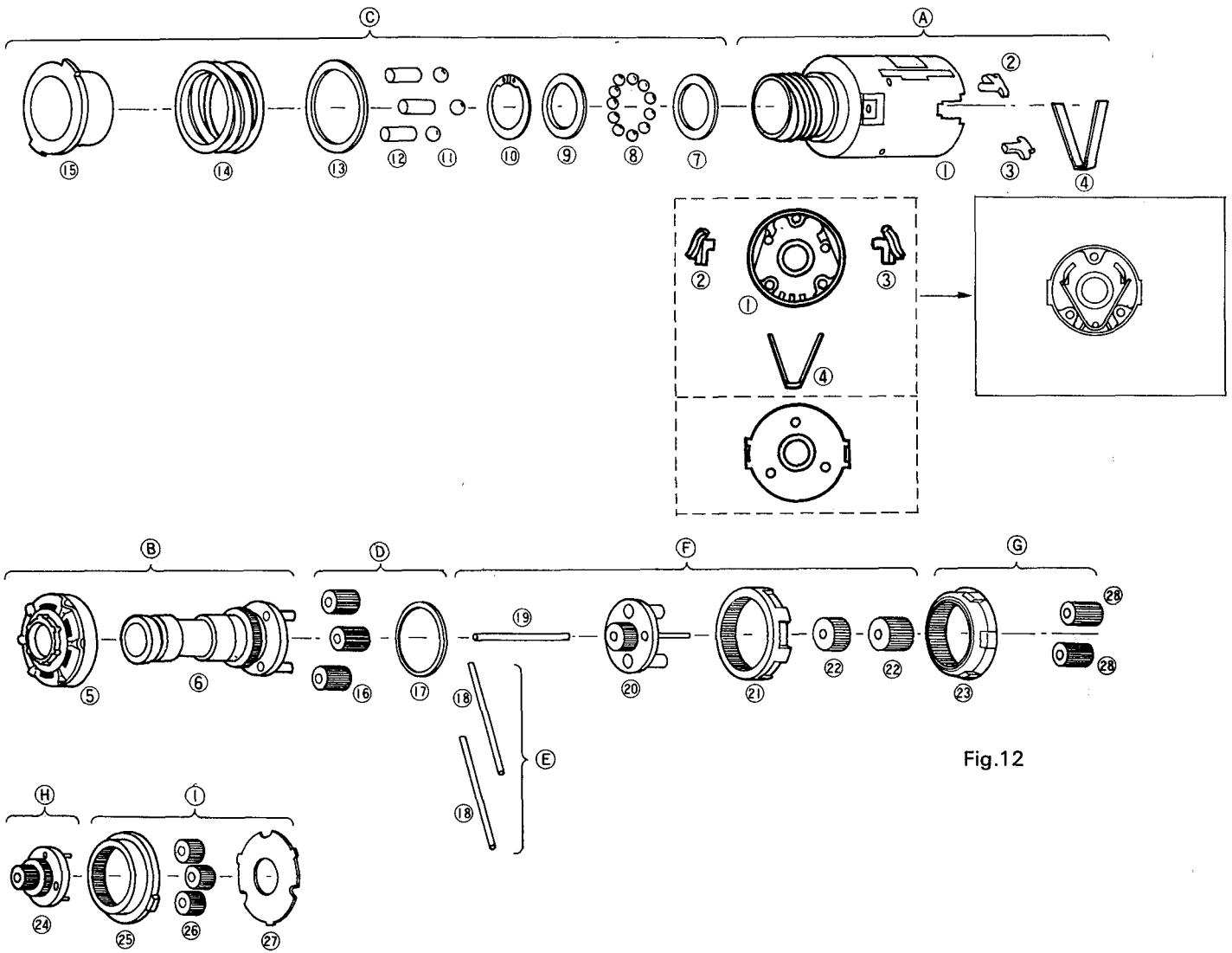
**G**  
Ring gear C must be assembled in the correct orientation, if assembled with an incorrect orientation, switching between low and high will not be possible.

- ㉖ Carrier B (resin)

**H**  
After inserting carrier B, turn it several times with your finger, if it becomes hard to turn, the gears are not meshing properly and it should be reassembled.

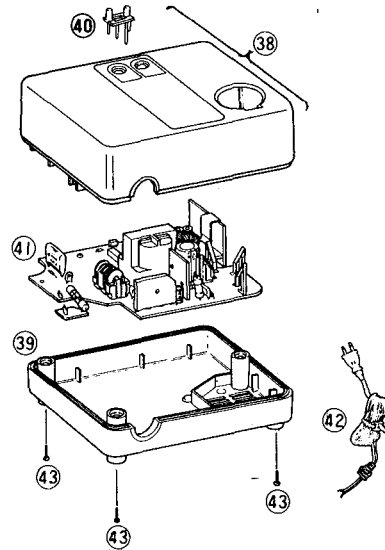
- ㉗ Ring gear D
- ㉘ Planet gear set D (resin)
- ㉙ Internal presser

**I**  
Ring gear D must be assembled with the correct orientation.



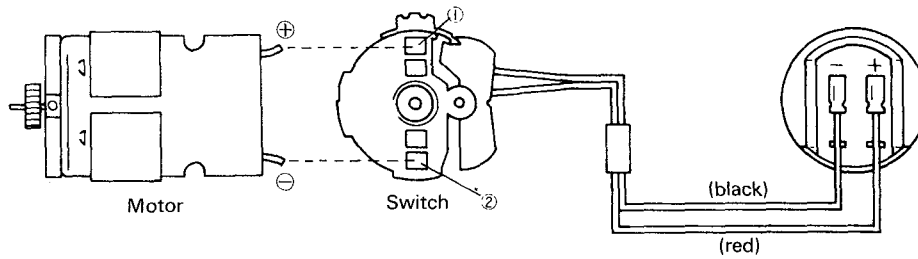
< Battery Charger Disassembly >

1. Remove the 4 holding screws and separate housings.



# WIRING CONNECTION DIAGRAM

## Main Unit



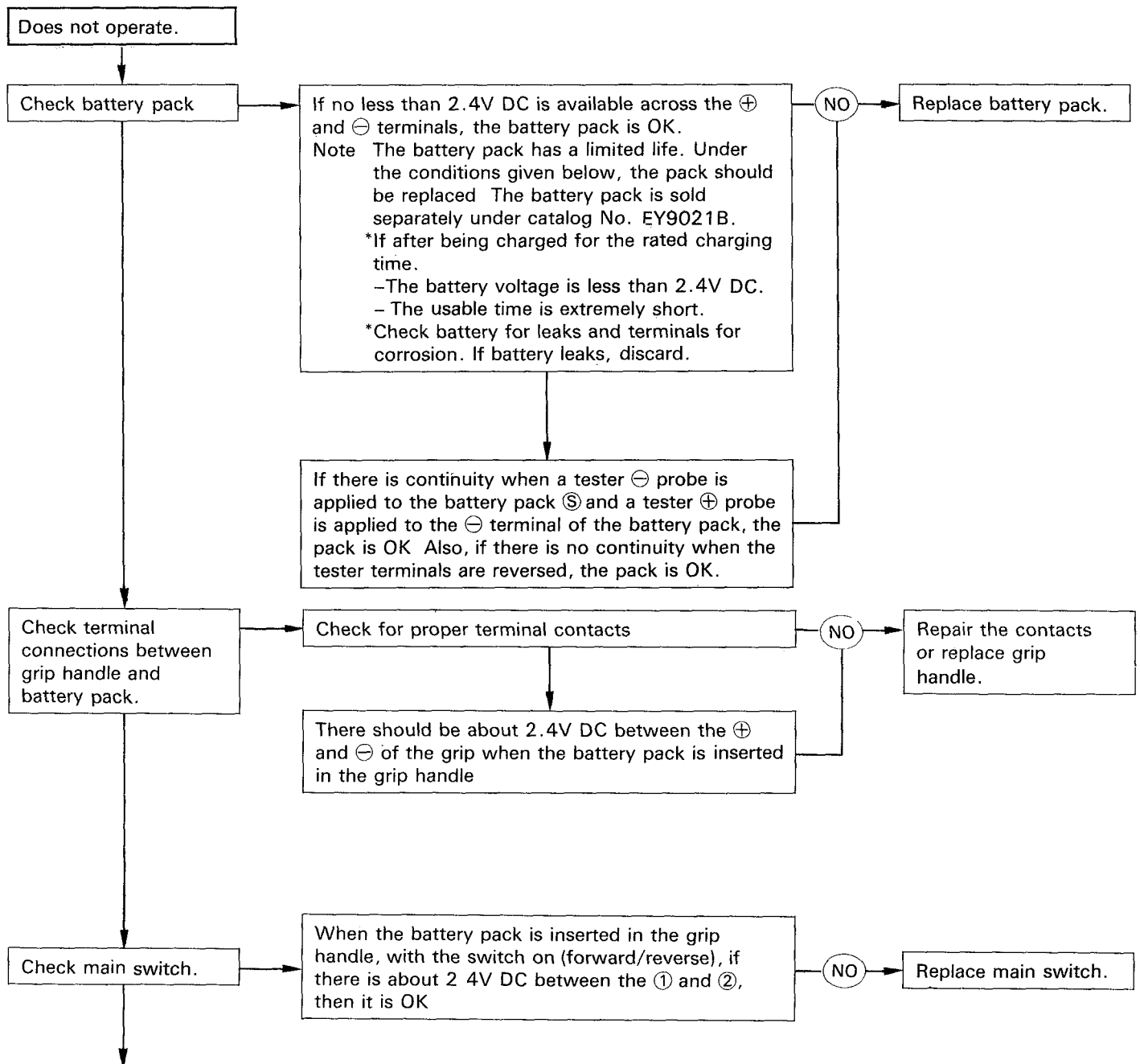
※The color of wires are subject to change without notice.

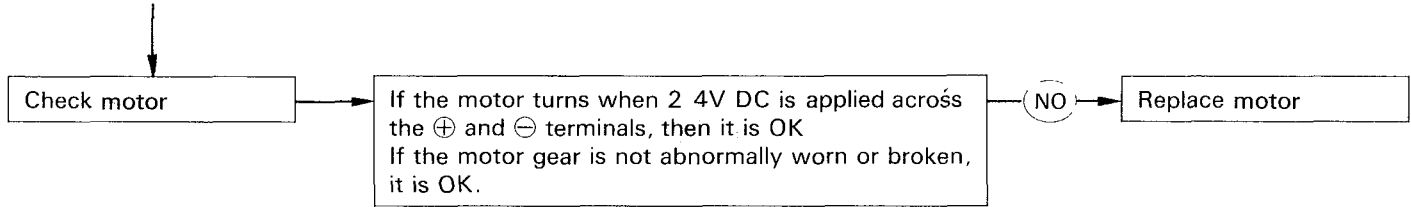
## TROUBLESHOOTING GUIDE (Refer to WIRING CONNECTION DIAGRAM)

< TROUBLE >

< CHECK >

< REMEDY >





Does not charge

