



MODEL G 10SD2, G 12S2, G 13SD

1. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

The **[Bold]** numbers in the descriptions below correspond to the numbers in the Parts List and the exploded assembly diagram for G 10SD2 and G 12S2, and the **<Bold>** numbers to those in the Parts List and the exploded assembly diagram for G 13SD.

1-1. Disassembly

(1) Disassembly of the Armature

- 1) Loosen the Tapping Screw D4 x 16 **[51]** **<52>** to pull out the Tail Cover **[50]** **<51>**.
- 2) Remove the two Carbon Brushes **[39]** **<40>** from the Brush Holders **[40]** **<41>**.
- 3) Loosen the four Tapping Screws D5 x 25 **[1]** **<1>** which fix the Gear Cover Ass'y **[4]** **<4>** to remove the Armature **[9]** **<9>** from the Housing **[35]** **<36>** together with the Bearing Holder **[8]** **<8>**.
- 4) Loosen the Special Nut M7 **[5]** **<5>** which fixes the Pinion **[6]** **<6>** to remove the Pinion **[6]** **<6>**.
- 5) Insert the hooks of the J-204 bearing puller between the Ball Bearing **[7]** **<7>** and the Bearing Holder **[8]** **<8>** from both sides and fix the hooks with the wing bolts.
- 6) Place the J204 bearing puller on a supporting jig and push down on the tip of the armature shaft with a hand press to remove the Ball Bearing **[7]** **<7>**. Then remove the Bearing Holder **[8]** **<8>**.

(2) Disassembly of the Dust Seal

- 1) Insert the hooks of the J-204 bearing puller between the commutator and the Dust Seal **[13]** **<13>** from both sides, and fix the hooks with the wing bolts.
- 2) Place the J204 bearing puller on a supporting jig and push down on the armature shaft with a hand press to remove the Dust Seal **[13]** **<13>** together with the Ball Bearing **[14]** **<14>**. Replace the Dust Seal **[13]** **<13>** with new one because it is damaged by the removal of the Ball Bearing **[14]** **<14>**.

(3) Disassembly of the Stator Ass'y

- 1) Remove the Armature **[9]** **<9>** and then pull out the two Brush Holders **[40]** **<41>** from the Housing **[35]** **<36>**.
- 2) Disconnect the internal wires of the Stator (A) **[12]** **<12>** from the Brush Holders **[40]** **<41>**.
- 3) Loosen the set screw of the Slide Switch **[44]** **<45>** and disconnect the two internal wires coming from the Stator (A) **[12]** **<12>**.
- 4) Remove the Fan Guide **[10]** **<10>** from the Housing **[35]** **<35>**.
- 5) Loosen the two Hex. Hd. Tapping Screws D4 x 70 **[11]** **<11>** to remove the Stator (A) **[12]** **<12>** from the Housing **[35]** **<35>**. If the Stator (A) **[12]** **<12>** cannot be removed easily, heat the Housing **[35]** **<35>** to about 60 °C. Then the Stator (A) **[12]** **<12>** can be removed.

(4) Disassembly of the Slide Knob

- 1) Loosen the Tapping Screw D4 x 16 **[51]** **<52>** to pull out the Tail Cover **[50]** **<51>**.
- 2) Hold the Housing **[35]** **<35>** and raise the Slide Bar **[42]** **<43>** until the Slide Knob **[34]** **<35>** moves to the "ON" position.
- 3) Check that the Slide Knob **[34]** **<35>** has not moved to the "ON-LOCK" position, and push down the Slide Knob **[34]** **<35>** until it clicks while keeping the Slide Bar **[42]** **<43>** raised.
- 4) Raise the Slide Knob **[34]** **<35>** straight up and remove it keeping the Slide Bar **[42]** **<43>** raised.

(5) Disassembly of the gear (Fig. 1)

- ① Loosen the four Seal Lock Screws M4 x 12 [23] <23> fixing the Packing Gland [22] <22>, and remove the Packing Gland [22] <22> from the Gear Cover Ass'y [4] <4>.
- ② Support the bottom of the Packing Gland [22] <22> with a jig, and push down on the upper portion of the Spindle [25] <25> with a hand press until the end surface of the Woodruff Key [24] <24> contacts the Ball Bearing [20] <20> and the Spindle [25] <25> cannot be pushed down any more. Be careful not to deform the Finger [26] <26>.
- ③ Turn the Packing Gland [22] <22> upside down and fix it, then push down the Spindle [25] <25>.
- ④ Insert the J-128 gear puller (use of a steel plate is permitted as a substitute) between the Gear [17] <17> and the Packing Gland [22] <22>, and push down the Spindle [25] <25> with a hand press to remove it.

- Replace the Ball Bearing [20] <20> with new one every time should the gear be disassembled because the stress while pulling out the gear is applied to the Ball Bearing [20] <20>.

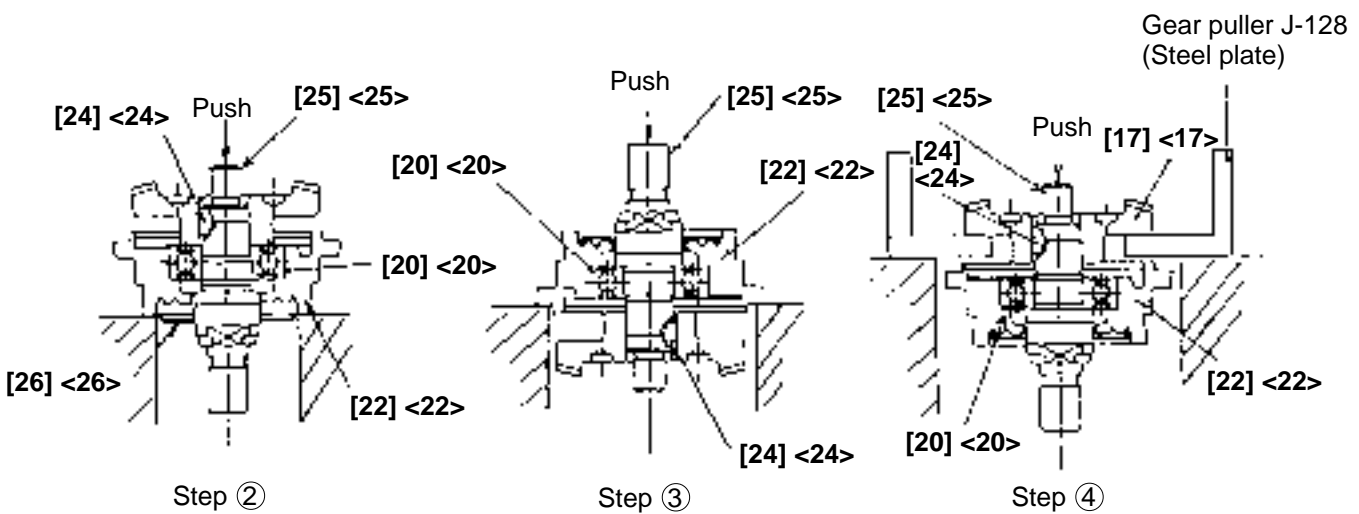


Fig. 1

1-2. Reassembly

Push the parts together in the reverse order of disassembly, with the precautions given below.

- (1) Generously lubricate the teeth of Gear [17] <17> and Pinion [6] <6> with grease. Rub grease onto the teeth with your fingers so that the grease reaches each tooth bottom. Note that the Gear [17] <17> and Pinion [6] <6> if under-lubricated may wear at an faster rate.
- (2) Be sure to soak the inner diameter of the Felt Packing [21] <21> with machine oil. Otherwise, its dust-sealing function will fail to work properly, resulting in an earlier damage of the Ball Bearing [20] <20>.
- (3) When replacing the Armature [9] <9> and the Ball Bearing [14] <14> on the commutator side, press inward on the Dust Seal [13] <13> while taking care of its direction until the end face of the Dust Seal [13] <13> hits against the butting surface of the Armature [9] <9> and make sure that Dust Seal [13] <13> cannot turn freely. (See Fig. 2)

The Dust Seal [13] <13> is an important element for improved dust protection of the Ball Bearing [14] <14>. Be sure to use a new one at every disassembly work of the Ball Bearing [14] <14>.

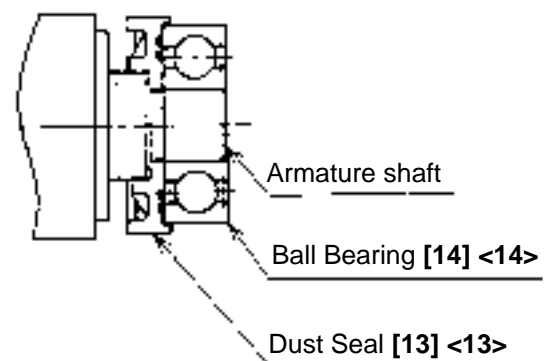


Fig. 2

(4) Connect the four internal wires of Stator (A) [12] <12> with the parts indicated in Fig. 3.

Connect the internal wires correctly as shown in Fig. 4.

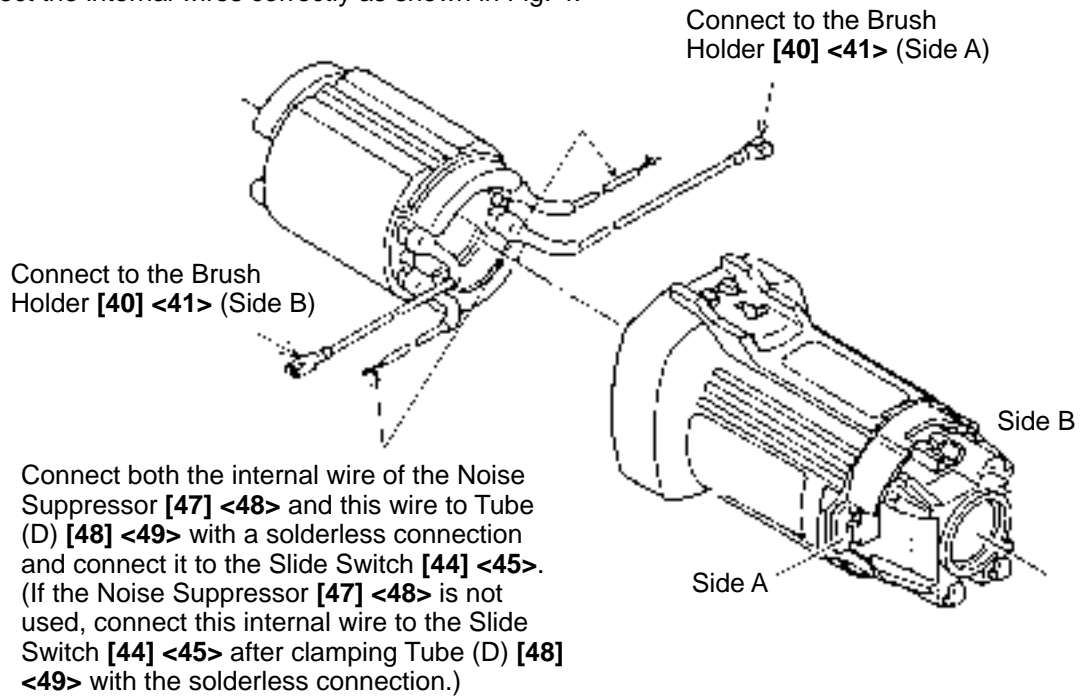


Fig. 3

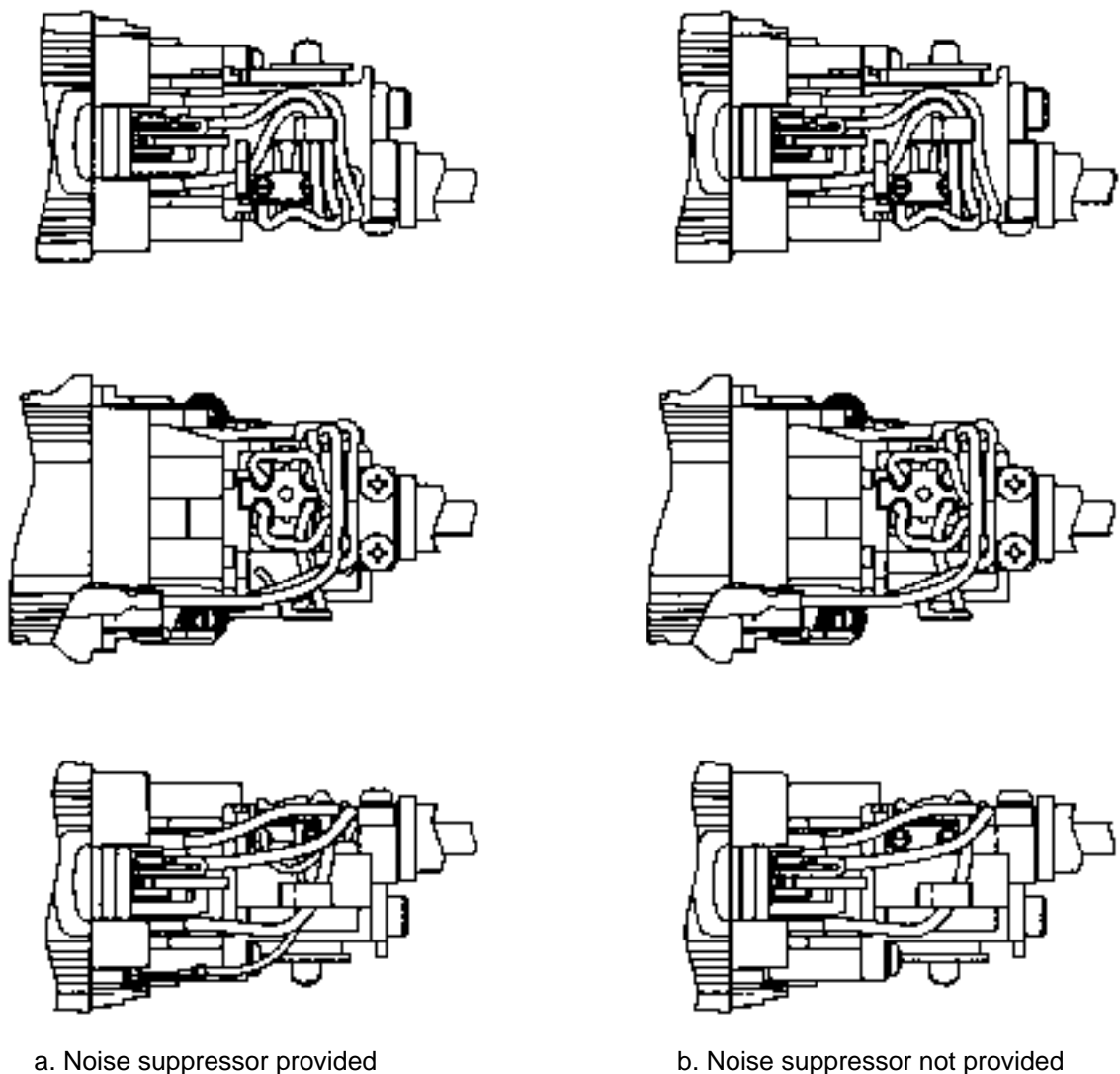


Fig. 4

(5) When connecting the Earth Terminal [46] <47> to the internal wire (the middle wire among three) of the Noise Suppressor [47] <48>, strip the insulation sheath on the internal wire by about 6 mm and press connect it together with the Earth Terminal [46] <47> with a clamping tool available on the market.

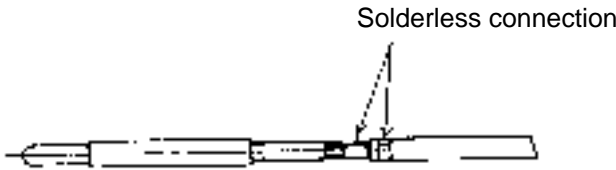


Fig. 5

(6) Check that the spring end does not hold the pigtail when mounting the carbon brush. Do not catch the pigtail in the tail cover when mounting the tail cover.

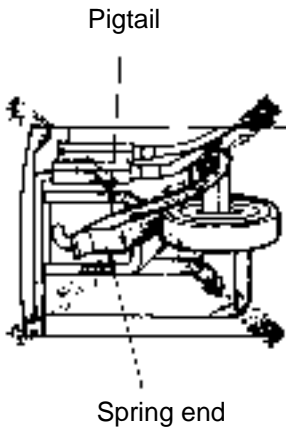


Fig. 6

(7) When replacing the Gear Cover Ass'y [4] <4>, lubricate the metal part with mixed oil.
Mixed oil: Mixture of Hitachi power tool grease No. 2 (Unilube No. 00) and turbine oil

- Mixture ratio...1:1 (weight ratio)
- Volume... 0.5 cc

1-3. Lubrication Points and Types of Lubricant

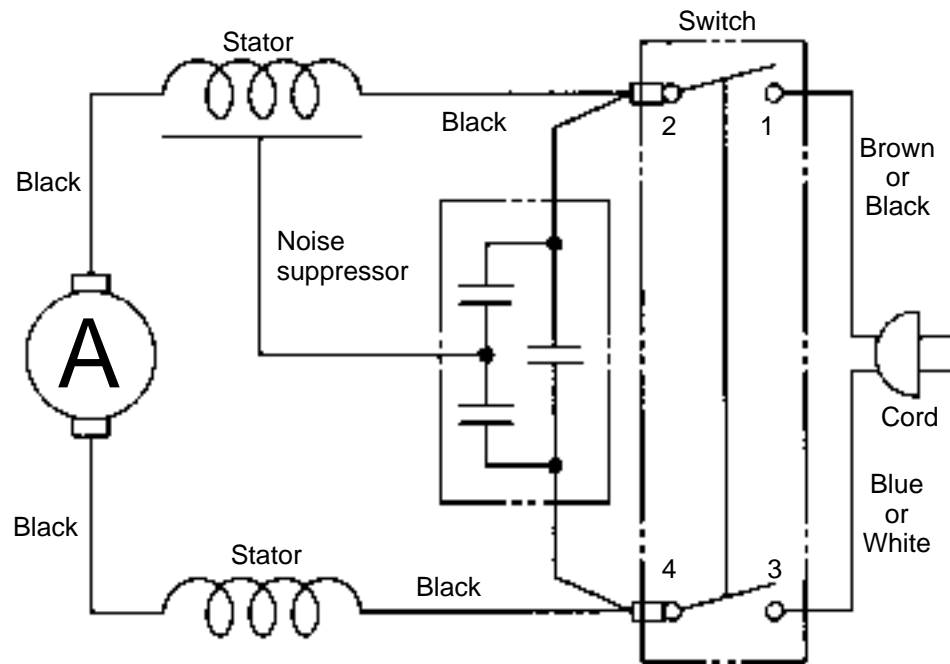
- Pinion chamber of Gear Cover Ass'y [4] <4>Nippeko grease (SEP-3A) 5g
 - Generously rub grease onto the gear and pinion.
 - MetalMixed oil 0.5 cc
- Mixed oil: Mixture of Hitachi power tool grease No.2
(Unilube No. 00) and turbine oil
Mixture ratio 1:1 (weight ratio)

1-4. Tightening Torque

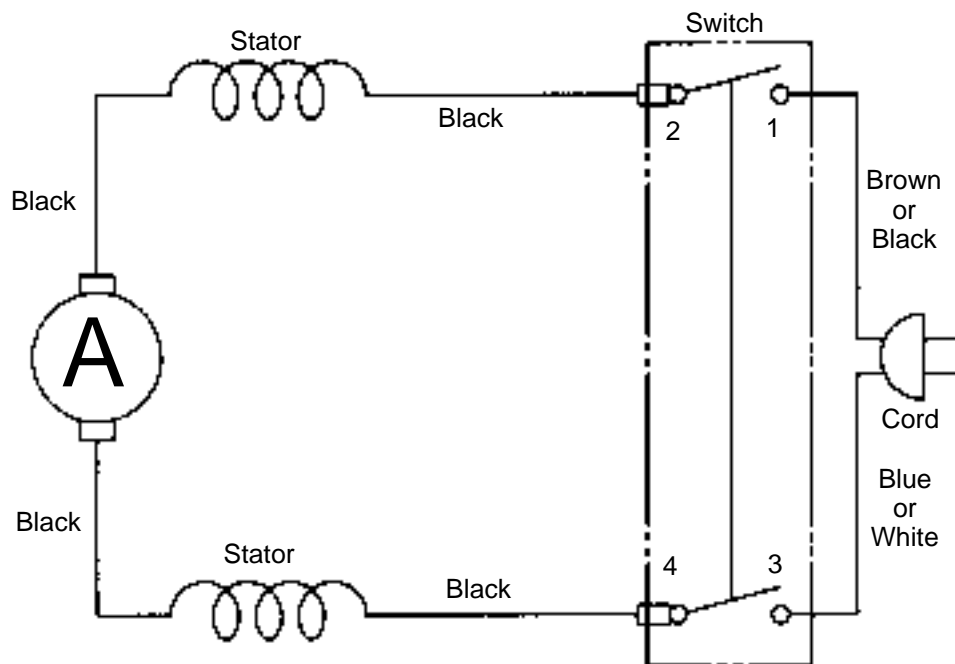
D4 Tapping Screws [11] <11> [45] <46> [51] <52>	2.0 ± 0.5 N·m (20 ± 5 kgf·cm, 1.5 ± 0.4 ft-lbs)
M4 Seal Lock Screws (W/SP. Washer) [18] <18> [23] <23> ...	1.8 ± 0.5 N·m (18 ± 4 kgf·cm, 1.3 ± 0.3 ft-lbs)
D5 Tapping Screw [1] <1>	2.9 ± 0.5 N·m (30 ± 5 kgf·cm, 2.2 ± 0.4 ft-lbs)
M5 Machine Screw (W/SP. Washer) [27] <27>	1.6 ± 0.4 N·m (16 ± 4 kgf·cm, 1.2 ± 0.3 ft-lbs)
Special Nut M7 [5]	6.4 ± 1.0 N·m (65 ± 10 kgf·cm, 4.7 ± 0.7 ft-lbs)

1-5. Wiring Diagrams

(1) For European countries, Australia, New Zealand, South Africa and China



(2) For other countries



1-6. Insulation Tests

On completion of disassembly and repair, measure the insulation resistance, and conduct the dielectric strength test.

Insulation resistance: 7 M Ω or more with DC 500V Megohm Tester

Dielectric strength test: AC 4,000 V/1 minute, with no abnormalities 220 V – 240 V products

AC 2,500 V/1 minute, with no abnormalities 110 V – 127 V products

1-7. No-Load Current Value

After no-load operation for 30 minutes, the no-load current value should be as follows.

Voltage (V)	110	220	230	240
Current (A) max.	3.2	1.7	1.7	1.6

2. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
<div>G 10SD2</div> <div>G 12S2</div> <div>G 13SD</div>		Work Flow						
		Slide Switch Cord Tail Cover Carbon Brush x 2			Housing Stator (A) Slide Bar			
		General Assembly						
				Pinion Ball Bearing (628 VV) Bearing Holder Armature Ball Bearing (608 VV)				
				Pushing Button Gear Cover Ass'y Lock Pin Gear Needle Bearing	Bearing Cover Ball Bearing (6201 DD) Felt Packing Packing Gland Spindle Fringer			
		Wheel Guard Ass'y						