



MODELS G 12SE/G 13SE

1. PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

Describes procedures and precautions for disassembly and reassembly. The **bold** numerals in [] denote the numbers in the G 13SE or G 12SE Parts List.

1-1. Disassembly of the Armature Ass'y

(1) Open the Lever [33], loosen the M5 x 25 Machine Screw [34], and remove the Wheel Guard Ass'y [37].

(2) Loosen the two D4 x 35L Tapping Screws [50] and the D4 x 20L Tapping Screw [53], and remove Tail Covers A and B [58] [49].

(3) Remove the two Carbon Brushes [54] from the Brush Holders [55].

(4) Remove the four D5 x 25 Tapping Screws [2].

The Armature Ass'y [13] can then be taken out simultaneously with the Gear Cover Ass'y [4]. Packing Gland [27], and related parts.

(5) Remove the four M5 x 16L Seal Lock Screws [28].

(6) After removing the three M4 x 10 Seal Lock Screws [1], the Armature [13] can be extracted together with the Bearing Cover [12], and related parts.

(7) Carefully wrap the Armature Ass'y [13] with a soft, clean rag to protect it from being damaged, and clamp it securely in a vise. Then, remove the M7 Special Nut [5], and extract the Pinion [6].

(8) For the models indicated under Fig. 4, the Ball Bearing [9] can be removed from the Armature [13] by utilizing a J-204 Bearing Puller (special repair tool, Code No. 970982) as illustrated. After the Ball Bearing has been removed, the Bearing Cover [12] can be easily taken off.

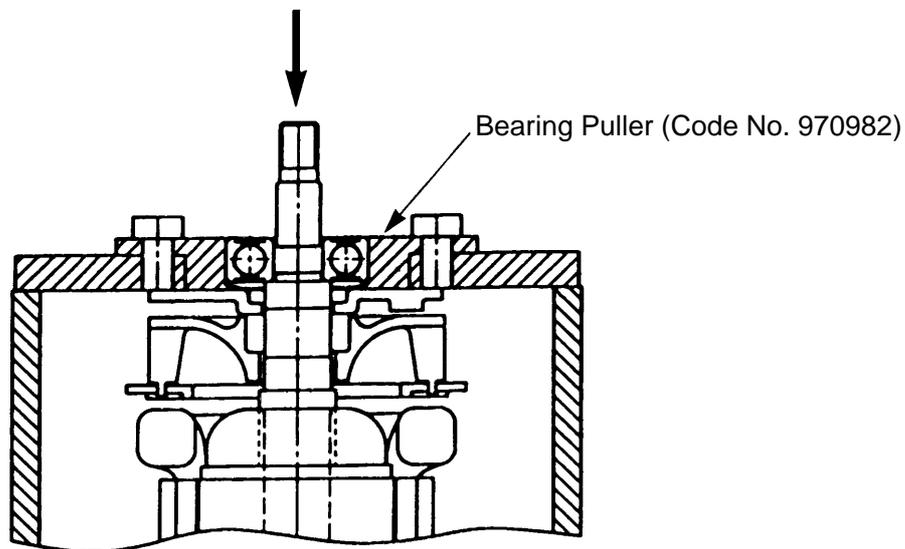


Fig. 4

1-2. Disassembly of the Stator Ass'y:

- (1) After removing the Armature Ass'y [13] and Switch Box [46], disconnect the lead wires connected to the Brush Holders [55].
- (2) Loosen the two D4 x 70L Hex. Hd. Tapping Screws [15] and remove the Stator Ass'y [16] from the Housing [43]. If the Stator Ass'y [16] cannot be easily removed from the Housing [43], disassembly can be facilitated by heating the Housing [43] to a temperature of approximately 60°C (140°F) with an appropriate heating device.

1-3. Disassembly of the Gear:

- (1) Loosen the four M5 x 16L Seal Lock Screws [28], and remove the Packing Gland [27] together with the Spindle [30], and Gear [21] from the Gear Cover Ass'y [4] in a single body.
- (2) When it is necessary to remove the Gear [21] from the Spindle [30], it is highly recommended that the special repair tools described below be utilized.

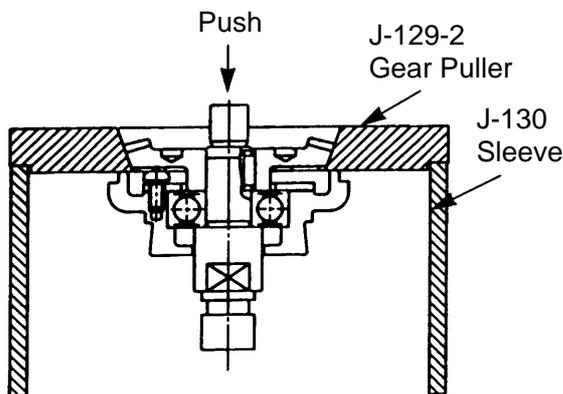


Fig. 5

As illustrated in Fig. 5, support the angled surface of the Gear [21] with a J-129-2 Gear Puller (special repair tool, Code No. 970906), rest the J-129-2 Gear Puller on a J-130 Sleeve (special repair tool, Code No. 970907), and push down on the tip of the Spindle [30] with a hand press to remove the Gear [21].

1-4. Reassembly:

Reassembly can be accomplished by following the disassembly procedures in reverse. However, special attention should be given to the following items.

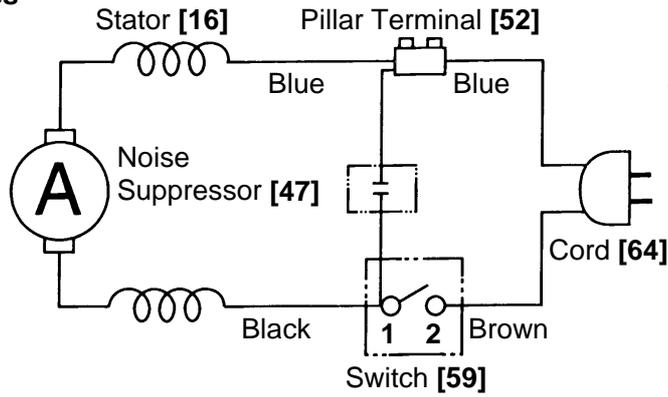
- (1) After disassembly, thoroughly remove old grease from the inside of the Gear Cover Ass'y [4], and insert 18 g of new grease (Nippeco JF-375, Code No. 930036, is recommended) prior to reassembly. When inserting grease, apply it to the Pinion Gear tooth surfaces, and to the Needle Bearing inside the Gear Cover.
- (2) When replacing the Ball Bearing on the commutator side of the Armature, be very careful to ensure that the Dust Seal (A) [18] is assembled in the proper direction. The Dust Seal (A) [18] plays an important role in dustproofing of the Ball Bearing, and must be replaced with a new one if disassembled. Do not forget to insert the Thrust Washer [17] on the Armature side of the Dust Seal (A) [18].
- (3) Apply Three Bond TB 1406 Screw Locking Agent to the following screws.
 - Three M4 x 10 Seal Lock Screws [1] which fix Bearing Cover [12] in place.
 - Three M4 x 8 Seal Lock Screws [22] which fix Bearing Cover (B) [23] in place.
 - Four M5 x 16 Seal Lock Screws [28] which fix Packing Gland [27] in place.

1-5. Tightening Torque of Each Screw:

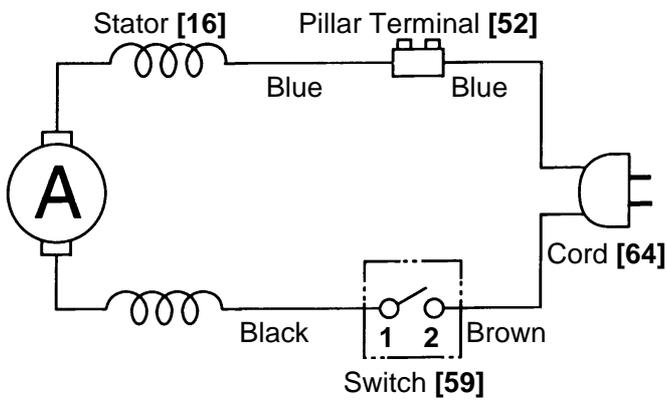
D3 Tapping Screw [56]	0.74 ± 0.15 N·m (7.5 ± 1.5kgf-cm, 0.5 ± 0.4 ft-lb)
D4 Tapping Screw (W/Flange) [50] [53] [60] and D4 Hex. Hd. Tapping Screw [15]	1.96 ± 0.49 N·m (20 ± 5kgf-cm, 1.4 ± 0.4 ft-lb)
D5 Tapping Screw [2]	2.94 ± 0.49 N·m (30 ± 5kgf-cm, 2.2 ± 0.4 ft-lb)
M4 Seal Lock Screw (W/Sp. Washer) [1] [22]	1.76 ± 0.39 N·m (18 ± 4kgf-cm, 1.3 ± 0.3 ft-lb)
M5 Seal Lock Screw (W/Sp. Washer) [28].....	3.43 ± 0.96 N·m (35 ± 7kgf-cm, 2.5 ± 0.5 ft-lb)
M7 Special Nut [5]	5.88 ± 0.98 N·m (60 ± 10kgf-cm, 3.6 ± 0.7 ft-lb)

1-6. Wiring Diagrams

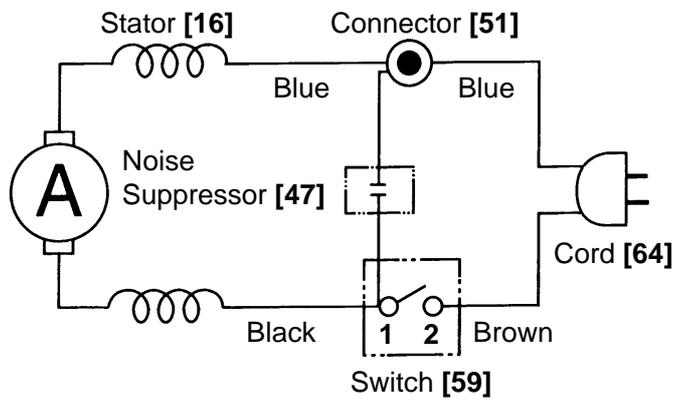
For European countries



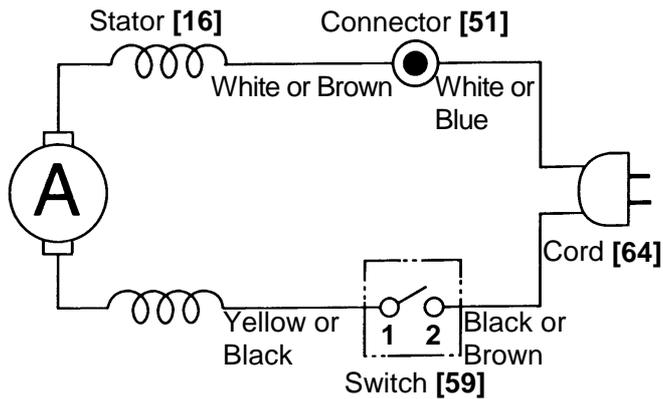
For Asian countries (except Singapore)



For New Zealand



For U.S.A., Canada, Australia and Singapore



1-7. Insulation Tests:

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

Insulation Resistance: 7 MΩ or more with DC 500 V Megohm Tester.

Dielectric Strength: AC 4000 V for 1 minute, with no abnormalities 220 V - 240 V
(and 110 V for U. K. products)
AC 2500 V for 1 minute, with no abnormalities 110 V -127 V
(except U. K. products)

1-8. Gear Backlash Value:

Gear backlash should be maintained at a value of 2 mm or less measured at the outer edge of a fresh Depressed-Center Wheel.

1-9. No-Load Current Value:

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

Voltage	110 V	115 V	220 V	230 V	240 V
Current (A) Max.	3 A	2.5 A	1.5 A	1.5 A	1.5 A

2. STANDARD REPAIR TIME (UNIT) SCHEDULES

Model	Variable		10	20	30	40	50	60	
	Fixed								
G 12SE G 13SE	Fixed Costs Switch Wheel Guard Tail Cover (A) Tail Cover (B) Cord 10 min. Other 20 min.	Work Flow							
		Wheel Guard Ass'y					Housing Stator		
		General Assembly							
					Pinion Armature Ass'y Gear Cover Seal Ring (A) Washer (C) Ball Bearing (629T12) Rubber Ring Felt Bearing Cover Dust Seal (A) Ball Bearing (608VVMC2)				
					Pushing Button Lock Pin Gear Seal Packing	Bearing Cover (B) Ball Bearing (6201DD) Felt Packing Packing Gland Spindle Key (3 x 3 x 8)			
					Tail Cover (A) Tail Cover (B) Carbon Brush x 2 pcs. Spring x 2 pcs. Switch Cord Cord Armor Paddle Lever Lock Lever Spring Spring (F)	Switch Box Rubber Ring Brush Holder x 2 pcs.			