

MODEL DH 28Y

1. PRECAUTIONS ON DISASSEMBLY AND ASSEMBLY

(The numbers used in the description indicate the numbers specified in the parts price list.)

1-1. Disassembly

- Disassembly of the retainer

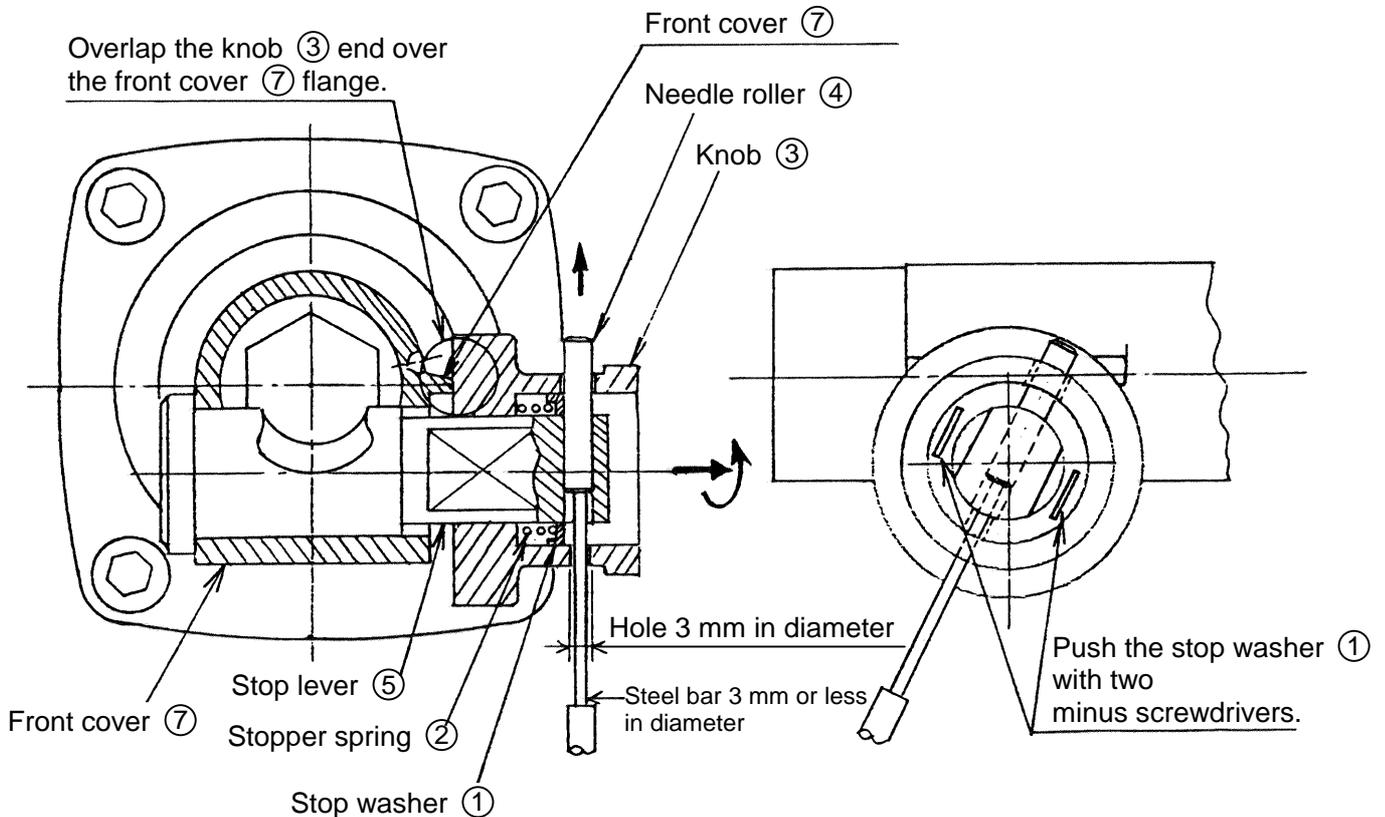


Fig. 6

To disassemble the retainer, as shown in Fig. 6, pull the knob (3) in direction of the arrow and rotate it slightly to overlap the knob end over the front cover (7) flange. Push the stop washer (1) with two minus screwdrivers to compress the stopper spring (2). Insert the steel bar 3 mm or less in diameter into the 3 mm diameter hole of the knob (3). Push the needle roller (4) out and remove it. Then, the stop washer (1), stopper spring (2) stop lever (5) and knob (3) come off.

- Disassembly of the piston, striker and O-ring

Remove M6 hexagon socket head bolts (58) (4) fastening the cylinder case (60). Then, the cylinder case comes off from the crank case (33), remove the oil cap (21) (by using the wrench assembly code No. 936728) and disconnect the connecting rod (56) from the crank shaft (36). The striker (51) can be removed by tapping the cylinder case (60) end surface with a plastic hammer. If the striker is difficult to remove, push the removed piston (54) connected to the connecting rod (56) into the cylinder (50) and then pull it out suddenly. Then, the striker can be removed together with piston assembly.

The O-ring (52) should be removed from the striker and piston by using a minus screwdriver, taking care not to damage the O-ring.

- Disassembly of the cylinder unit

Remove the cylinder case (60) from the crank case (33). Remove the front cover (7) from the cylinder case (60).

Then, the third gear (64), damper washer (11), damper (12), urethane ring (14) and second hammer (10) come off. Insert the second hammer (10) into the bit fixed in the vise.

Loosen the cylinder cap (13) by using the wrench (J-144) into the width between flat surfaces. (See Fig. 7)

The cylinder cap has a right-hand screw, and is loosened by turning it counter-clockwise. After removing the cylinder cap, take off the ball bearing (15) using a hand press.

Then, the cylinder (50) comes off.

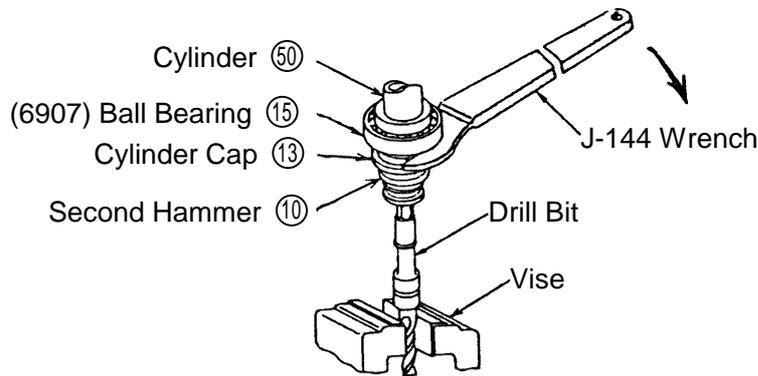


Fig. 7

- Disassembly of the gear in the crank case

The slip mechanism will come off by tapping the crank case (33) end surface with a plastic hammer from the gear cover (44) side. The first gear can be pulled out upward if it is put on a mount installed in the crank case (33) as shown in Fig. 8 and the clutch shaft (43) is pressed with a press to disengage the gear from the steel ball (4) (25).

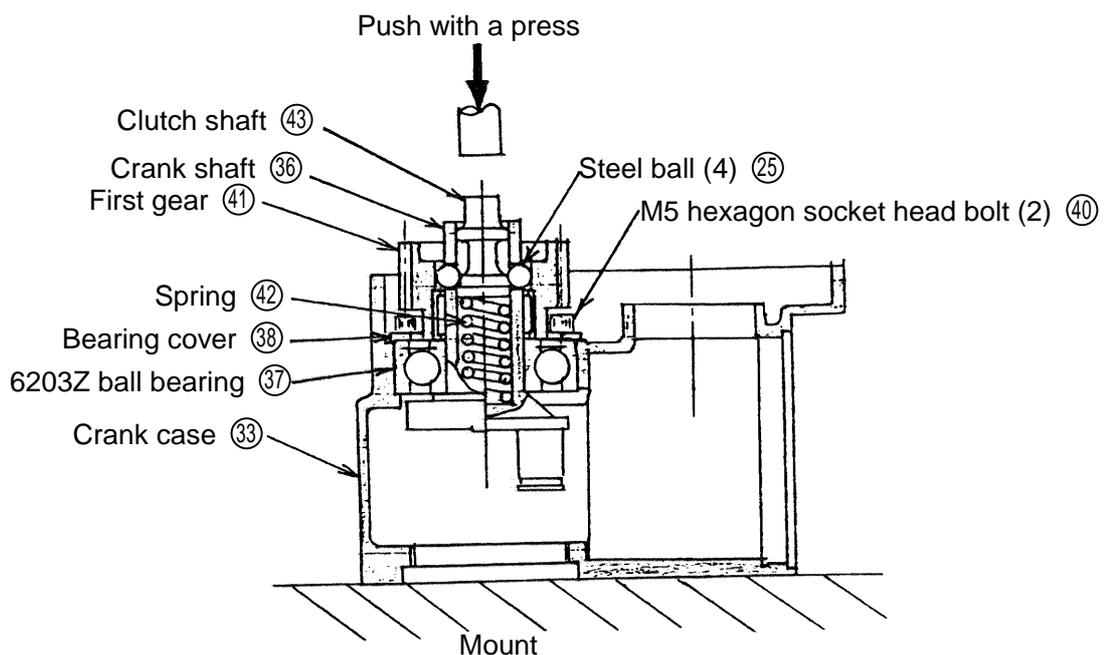


Fig. 8

To disassemble the slip mechanism, fix the second gear block assembly (J-141) in the vise. As shown in Fig. 9, put the second gear (24) into the second gear block assembly. Loosen the special nuts (A) (30) and (B) (29) with the wrench (J-122). Then, all the parts come off.

The screw is a right-hand screw.

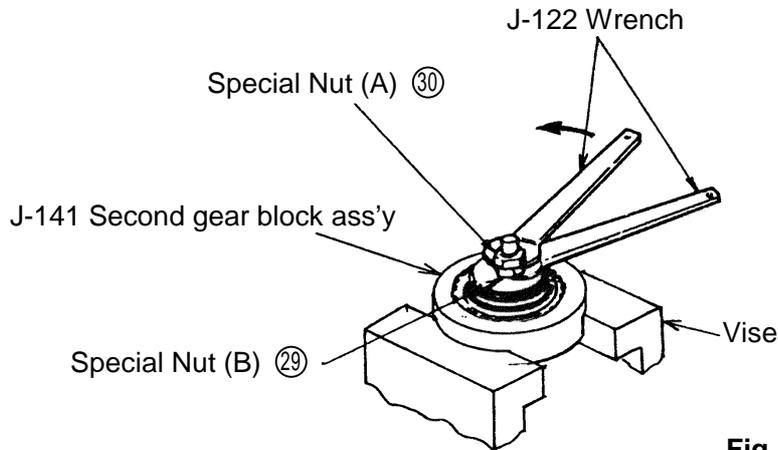


Fig. 9

- Disassembly of the change lever (B)

Remove the gear cover (44) from the crank case (33). Take off the spring (c) (45) by pulling it upward using a minus screwdriver. Then, the change lever (B) (47) comes off from the switch handle side.

1-2. Assembly

Assembly should be carried out in the reverse order to disassembly. Points requiring special attention are shown below.

- Lubrication

Before proceeding with assembly, apply the special lubricant (impact drill grease) to the needle bearing (57) of the connecting rod (56), the ball bearing (37) supporting the crank shaft (36), the O-ring (52) attached to the piston (54) and striker (51), the O-ring (C) (9) attached to the second hammer (10), the oil seal (83), the ball bearing (15) supporting the cylinder (50), the part to insert the third pinion (19) and second gear (24) of the slip mechanism, the needle bearing (125), 12 steel balls (25), the first gear (41) and the pinion of the armature (85). Lubricate further according to 7-3.

- Assembly of the retainer

Before proceeding with assembly, apply Molub-alloy #777-1 (lubricant) to the sliding part of the stop lever (5).

Align the notches of stop lever (5) and knob (3) as shown in Fig. 10. If they are incorrectly aligned, the tool cannot be inserted. As shown in Fig. 6, overlap the stop lever (5) end over the front cover (7) flange. Push the stop washer (1) with a minus screwdriver to compress the stopper spring (2). Align the holes of the stop lever (5) and knob (3), and insert the needle roller (4).

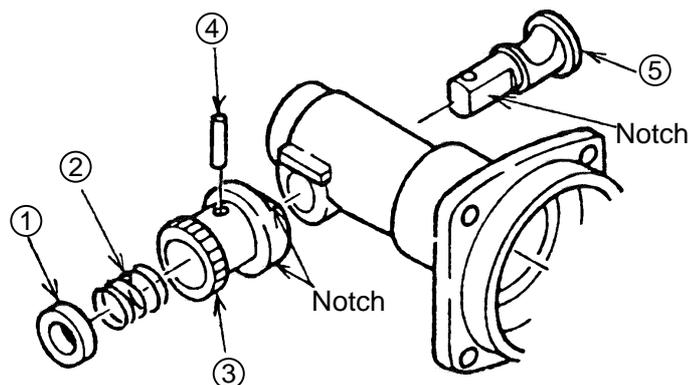


Fig. 10

- Assembly of the sealed parts

Take special care not to damage the O-ring ③② of the oil cap ②①, the O-ring ⑥① of the crank case ③③, the O-rings ⑧ and ⑦⑤ of the seal packing ③④ and cylinder case ⑥⑦, the O-ring ④⑥ of the gear cover ④④, the oil seal ⑧③, the O-ring (C) ⑨ of the second hammer ⑩, and the O-ring ⑤② of the striker ⑤① and piston ⑤④.

- Assembly of the change lever (B)

Attach the O-ring ④⑥ to the change lever (B) ④⑦ and insert the lever into the gear cover ④④. Hold the spring (C) ④⑤ as shown in Fig. 11 and push it in the direction of the arrow with a minus screwdriver so that the $\phi 8$ parts of the spring and change lever are engaged.

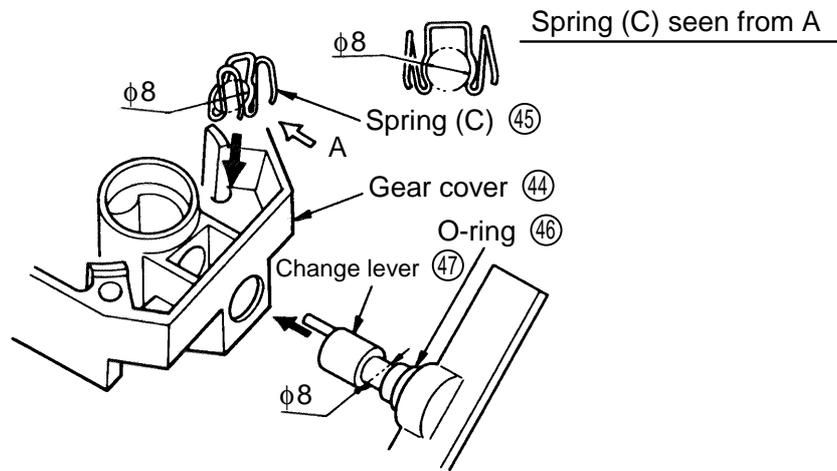


Fig. 11

- Assembly of the slip mechanism

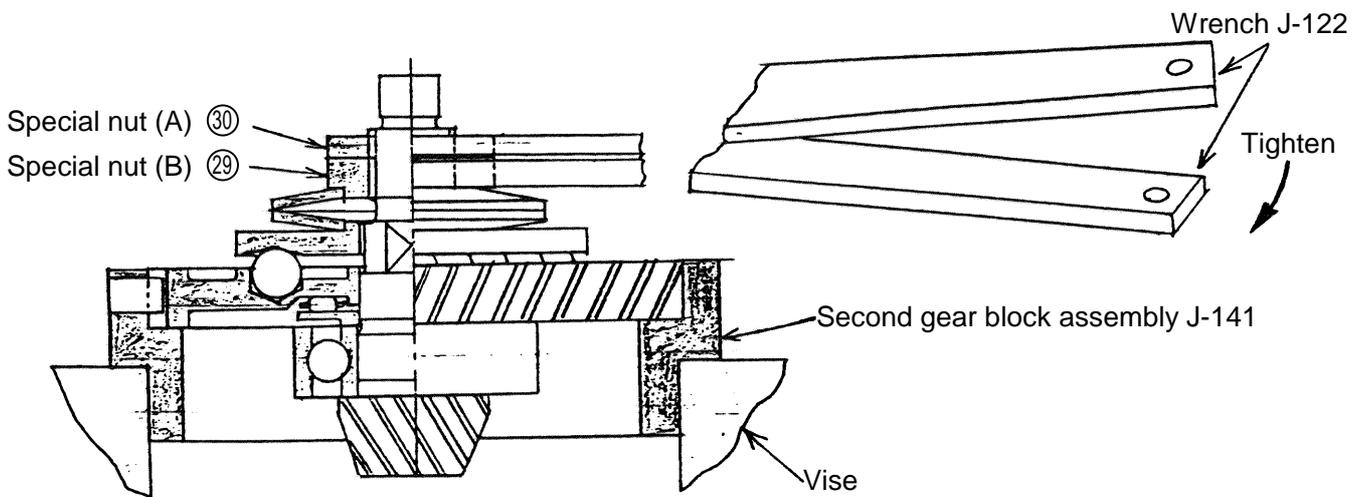


Fig. 12

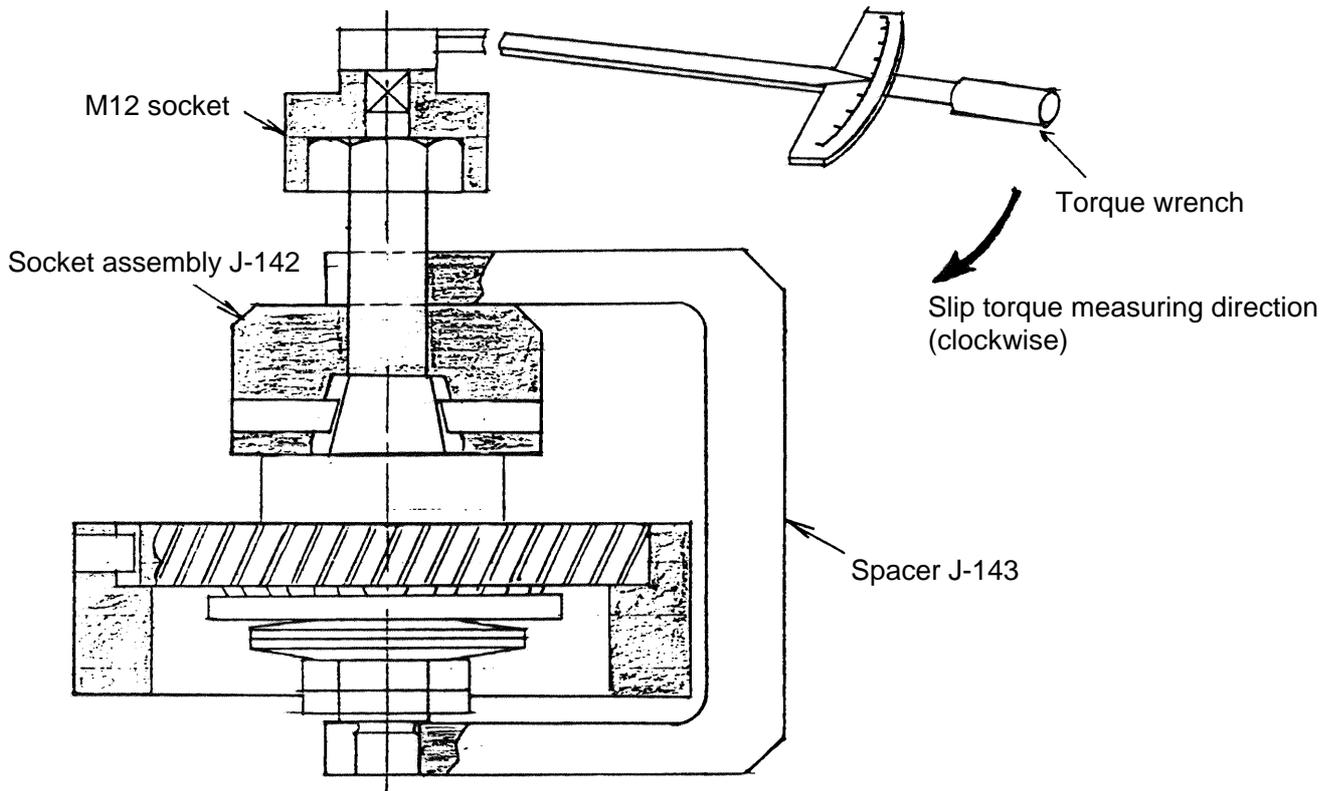


Fig. 13

Press the ball bearing ②② into the third pinion ①⑨. Insert the thrust washer ②③, needle bearing ①②⑤ and second gear ②④. Put 12 steel balls ②⑤ into the steel ball hole of the second gear ②④. Fasten the clutch plate ②⑦, two Belleville springs ②⑧ and special nuts (A), (B) ③⑩, ③⑨ and hold them with the second gear block assembly (J-141) secured with the vise. Fasten the special nut (B) ②⑨ lightly with the wrench (J-122). (Fig. 12)

Set the third pinion ①⑨ in the opposite direction as shown in Fig. 13 and hold it with the second block assembly. Put the socket assembly (J-142) on the third pinion ①⑨ and insert the spacer (J-143) over the socket assembly. Measure the slip torque on the third pinion ①⑨ axis with the torque wrench.

Adjust the torque by increasing or decreasing the tightening torque of the special nut (B) ②⑨ so that the torque is 1.8 - 2.1 kg. m (156 - 182 lb-in). After adjustment, set the mechanism as shown in Fig. 12, fasten the special nut (B) ②⑨ with one wrench (J-122) and tighten the special nut (A) ③⑩ with the other wrench (J-122) to a torque of 1.5 kg. m (130 lb-in).

Code Nos. of jigs used for disassembly and assembly are as follows.

Name	Code No.
J-144 Wrench	970922
J-122 Wrench	970884
J-144 Second gear block assembly	970923
J-142 Socket assembly	970924
J-143 Spacer	970925

1-3. Adhesive

- Apply Screw Locking Agent TB 1401 to all M4, M5 and M6 hexagon socket head bolts, (87), (40), (58), (65) and (94) before tightening them.
- Apply Cemedine 1500 to the front cover fastening M6 hexagon socket head bolt (6) and the thread of cylinder cap (13) before tightening them.

Note: If the bolts become loose due to vibration, the tool body may be damaged. Be sure to apply the specified adhesive to the threads before tightening the bolts. Before applying the adhesive, clean the male and female screws with gasoline or thinner.

1-4. Tightening torque of screws and bolts.

M4 tapping screw	20 ± 5 kg-cm	(17.4 ± 4.3) lb-in)
M5 tapping screw	30 ± 5 kg-cm	(26.0 ± 4.3) lb-in)
M6 tapping screw	40 ± 5 kg-cm	(34.7 ± 4.3) lb-in)
M4 hexagon socket head bolt	50 ± 5 kg-cm	(43.4 ± 4.3) lb-in)
M5 hexagon socket head bolt	$80 \begin{smallmatrix} +20 \\ 0 \end{smallmatrix}$ kg-cm	$(69.4 \begin{smallmatrix} +17.4 \\ 0 \end{smallmatrix})$ lb-in)
M6 hexagon socket head bolt	$100 \begin{smallmatrix} +20 \\ 0 \end{smallmatrix}$ kg-cm	$(86.8 \begin{smallmatrix} +17.4 \\ 0 \end{smallmatrix})$ lb-in)
Housing fastening M6 x 65 bolt (94)	$50 \begin{smallmatrix} +20 \\ 0 \end{smallmatrix}$ kg-cm	$(43.4 \begin{smallmatrix} +17.4 \\ 0 \end{smallmatrix})$ lb-in)
Front cover fastening M6 x 20 bolt (6)	$140 \begin{smallmatrix} +10 \\ 0 \end{smallmatrix}$ kg-cm	$(121 \begin{smallmatrix} +9 \\ 0 \end{smallmatrix})$ lb-in)
Cylinder cap	$600 \begin{smallmatrix} +50 \\ 0 \end{smallmatrix}$ kg-cm	$(521 \begin{smallmatrix} +43 \\ 0 \end{smallmatrix})$ lb-in)

1-5. Insulation test

After disassembly for repair servicing, the insulation resistance should be measured and the dielectric strength test (withstand voltage test) performed.

Insulation resistance: 7MΩ or greater Dielectric strength: Normal after applying 4000V for one minute.

1-6. No-load current value

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

- 2.6A or less at 220V, 50/60 Hz
- 5.2A or less at 110V, 50/60 Hz
- 5.0A or less at 115V, 50/60 Hz
- 4.8A or less at 120V, 50/60 Hz
- 4.5A or less at 127V, 50/60 Hz
- 2.5A or less at 230V, 50/60 Hz
- 2.4A or less at 240V, 50/60 Hz