

Hitachi Power Tools

SERVICE MANUAL

CONFIDENTIAL

LIST No.
DH 40MC: F440
Dec. 2016

PRODUCT NAME

Hitachi Rotary Hammer

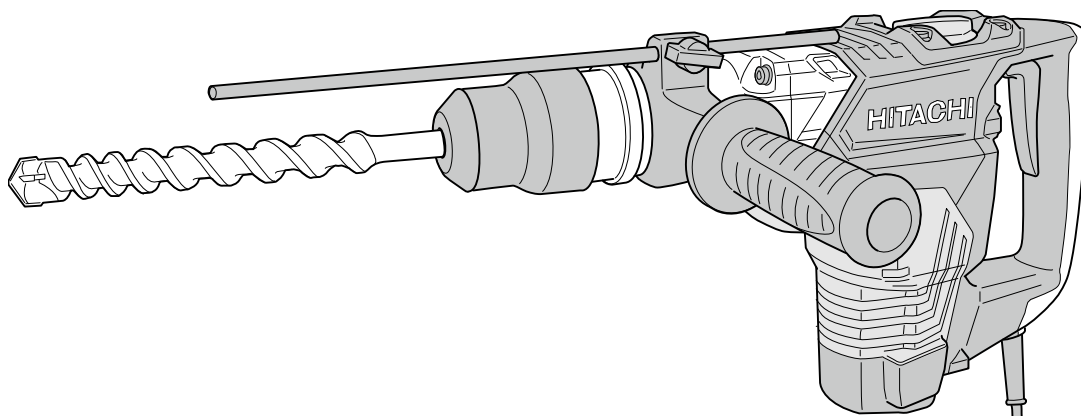
Model DH 40MC

D

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HITACHI

 **Hitachi Koki Co., Ltd.**
Overseas Sales Division

REPAIR GUIDE

1. Precautions on disassembly and reassembly

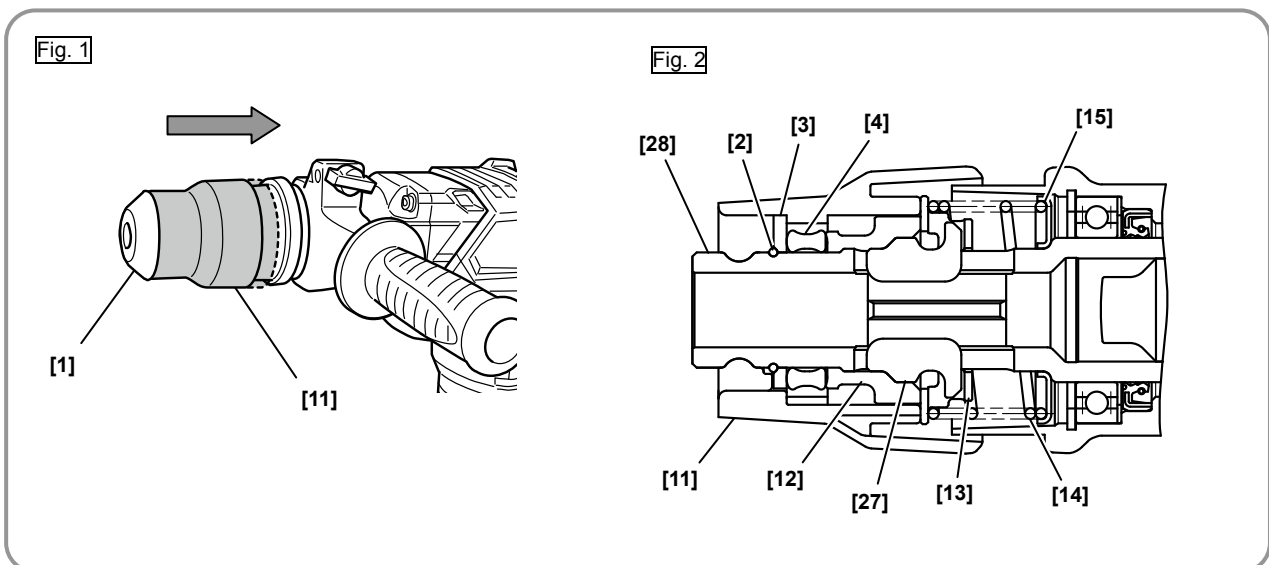
WARNING: Be sure to disconnect the power cord plug from the wall outlet before conducting repair. Otherwise, the motor may run suddenly and you could get injured.

[Bold] numbers in the description below correspond to the item numbers in the parts list and exploded assembly diagram for the Model DH 40MC.

Disassembly

1. Disassembly of the tool retainer

- Forcibly pull out the Front Cap [1] from the Retainer Sleeve [28] while pulling the Grip [11] in the arrow direction as shown in Fig. 1.
- Remove the Stopper Ring [2] by using a retainer ring puller. Then the Grip [11], Retainer Washer [3], Retainer Damper (A) [4], Bit Lock Holder [12], two Bit Locks [27], Thrust Plate [13], Retainer Spring [14] and Spring Holder (A) [15] can be removed from the Retainer Sleeve [28] (Fig. 2).

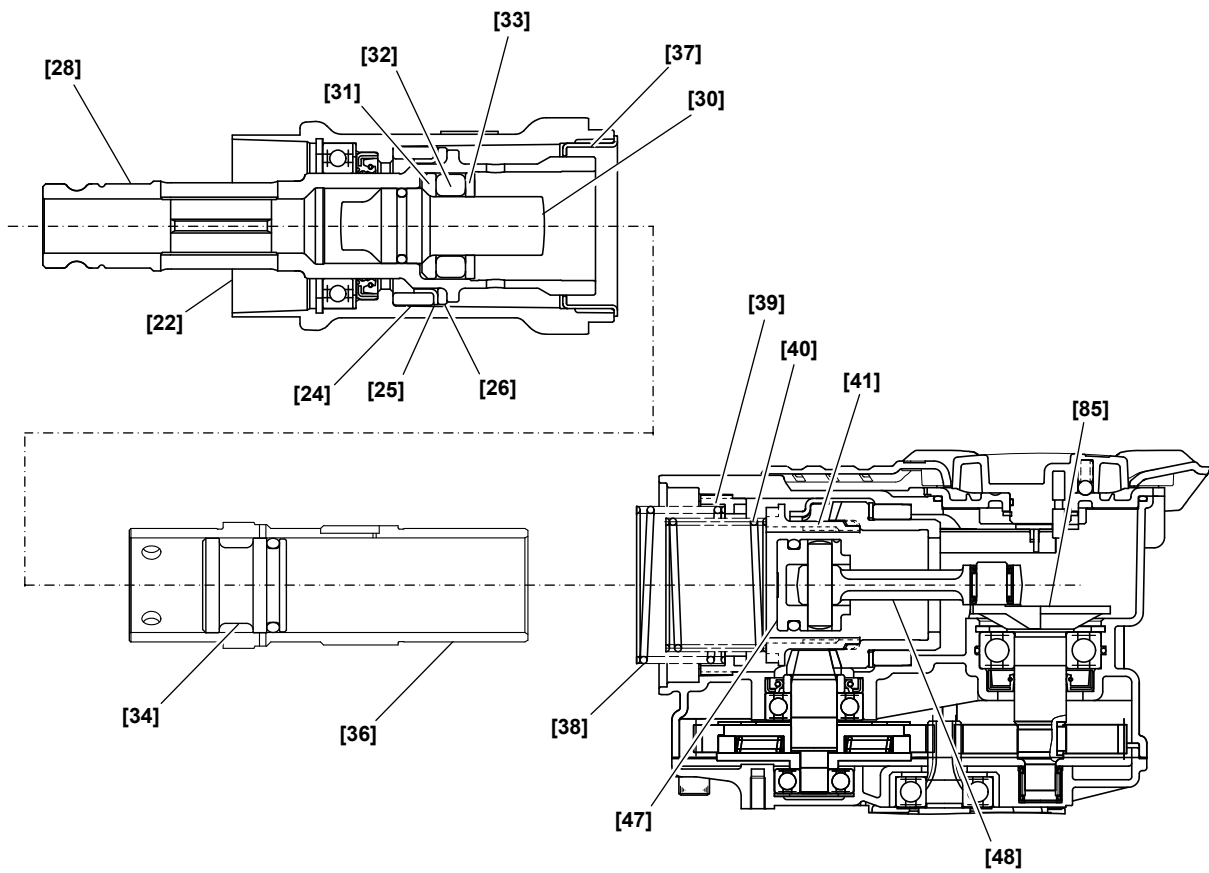


2. Disassembly of the hammering mechanism

(1) Removing the second hammer and striker

- Remove the Hex. Socket Hd. Bolt M6 x 25 [21] to remove the Cylinder Case [22], Spring Holder (B) [37], Retainer Sleeve [28] and other parts from the main body.
- Remove the Second Hammer [30] from the Retainer Sleeve [28] together with the Damper Holder [33], Damper [32] and Damper Washer [31].
- Pull out the Cylinder [36] from the main body together with the Lock Spring [38], Lock Sleeve [39], Clutch Spring [40] and Clutch [41].
- Remove the Striker [34] by tapping the end surface of the Cylinder [36] with a plastic hammer.

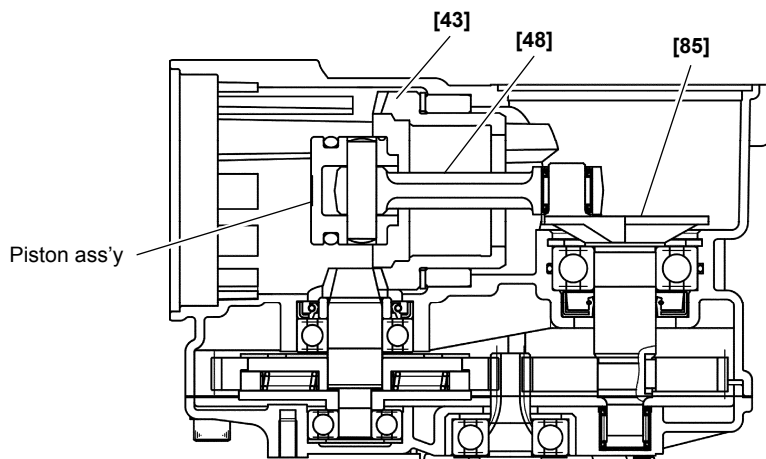
Fig. 3 • Removing the second hammer and striker



(2) Removing the piston ass'y

- Remove the Hex. Socket Hd. Bolt M5 [110] from the Crank Cover [111]. Detach the Crank Cover [111] and the assembly of the Lever Shaft Holder [116] from the Crank Case Ass'y [91].
- Remove the Change Plate [119] from the Crank Case Ass'y [91].
- The piston ass'y can be removed from the main body without removing the Bevel Gear [43] and Slip Clutch Ass'y [93]. Move the Connecting Rod [48] as shown below to remove the piston ass'y from the Crank Shaft [85].

Fig. 4 • Removing the piston ass'y



(3) Removing the first gear and crank shaft

- Remove the Hood [126] from the Crank Case Ass'y [91] by removing the Hex. Socket Hd. Bolt M5 x 12 [127] from the Hood [126].
- Remove the Seal Lock Hex. Socket Hd. Bolt M6 x 20 [109], Seal Lock Hex. Socket Hd. Bolt M6 x 45 [92], Hex. Socket Hd. Bolt M5 x 16 [75] and Tapping Screw D5 x 20 [65].
- Separate the Crank Case Ass'y [91] from the Housing Ass'y [55], Handle [76], and Gear Cover [108].
- Remove the Slip Clutch Ass'y [93] from the Crank Case Ass'y [91].

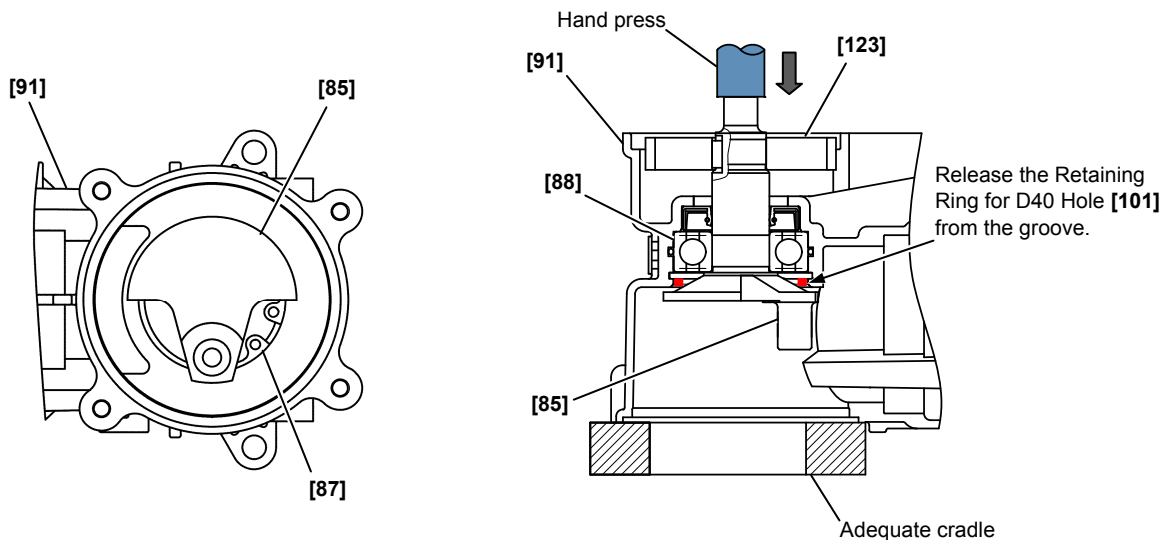
NOTE: Remove the Slip Clutch Ass'y [93] from the Crank Case Ass'y [91] beforehand because the Bevel Gear [43] cannot be removed if the Slip Clutch Ass'y [93] remains in the Crank Case Ass'y [91].

- Remove grease from the Piston [47] side and First Gear [123] side of the Crank Case Ass'y [91].
- Use a retaining ring puller to remove the Retaining Ring for D40 Hole [87] fixing the Ball Bearing 6203DD [88].

NOTE: At this time, turn the Crank Shaft [85] to expose the hole of the Retaining Ring for D40 Hole [87] prior to removal.

- Use a hand press to press the end face of the Crank Shaft [85], and then remove the First Gear [123] and Crank Shaft [85] from the Crank Case Ass'y [91] as shown in Fig. 5.

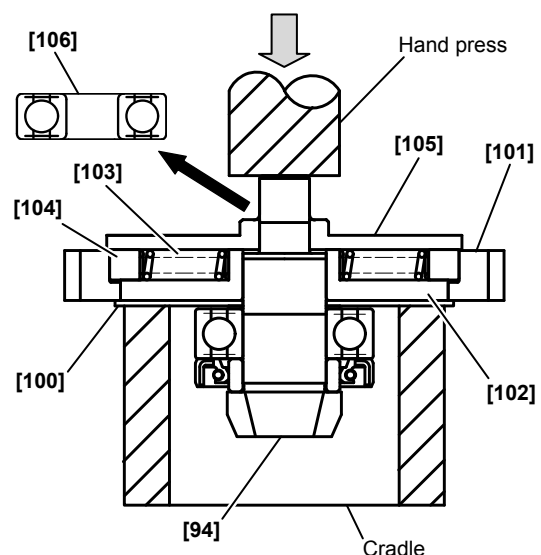
Fig. 5 • Removing the first gear and crank shaft



(4) Disassembly of the slip clutch ass'y

- Remove the Ball Bearing 629VV [106] by using a bearing puller.
- Support Washer (A) [100] by an adequate sleeve-like cradle as shown in Fig. 6.
- Use a hand press to press the Bevel Pinion [94] on the Spacer [105] side.
- Detach the Gear Holder [102] and Spacer [105] from the Bevel Pinion [94].
- When removing the Second Gear [101] from the Gear Holder [102], put these parts in a plastic bag and disassemble in the bag to avoid losing Spring (C) [103] and Needle [104].

Fig. 6 • Disassembly of the slip clutch ass'y



Reassembly

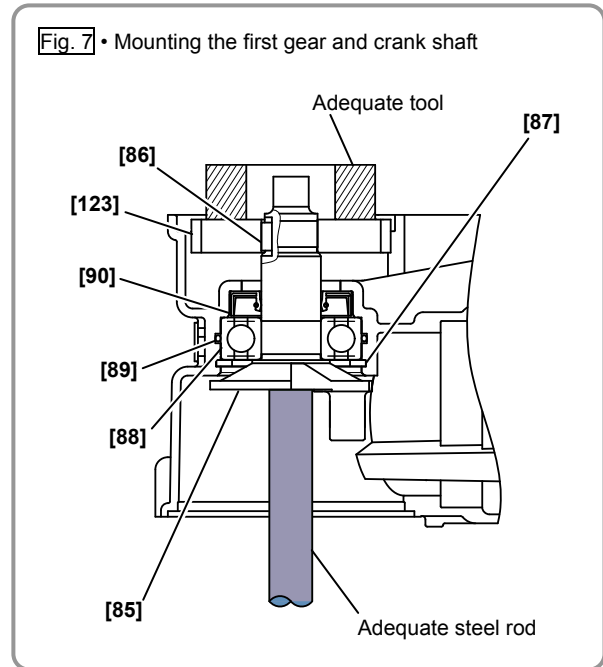
Reassembly can be accomplished by reversing the disassembly procedure. However, special attention should be given to the following items.

1. Reassembly of the hammering mechanism

(1) Mounting the first gear and crank shaft

- Press-fit Oil Seal (B) [90] to the Crank Case Ass'y [91].
- Mount the O-ring (S-40) [89].
- Press-fit the Ball Bearing 6203DD [88].
- Use a retaining ring puller to mount the Retaining Ring for D40 Hole [87].
- Press-fit the Crank Shaft [85] to the Ball Bearing 6203DD [88].
- Insert the Feather Key 3 x 3 x 8 [86] into the Crank Shaft [85] groove.
- Support the plane of the Crank Shaft [85] with an adequate steel rod and use an adequate tool to press-fit the First Gear [123].

NOTE: Prior to press-fitting, make sure the Feather Key 3 x 3 x 8 [86] matches the key groove of the First Gear [123].



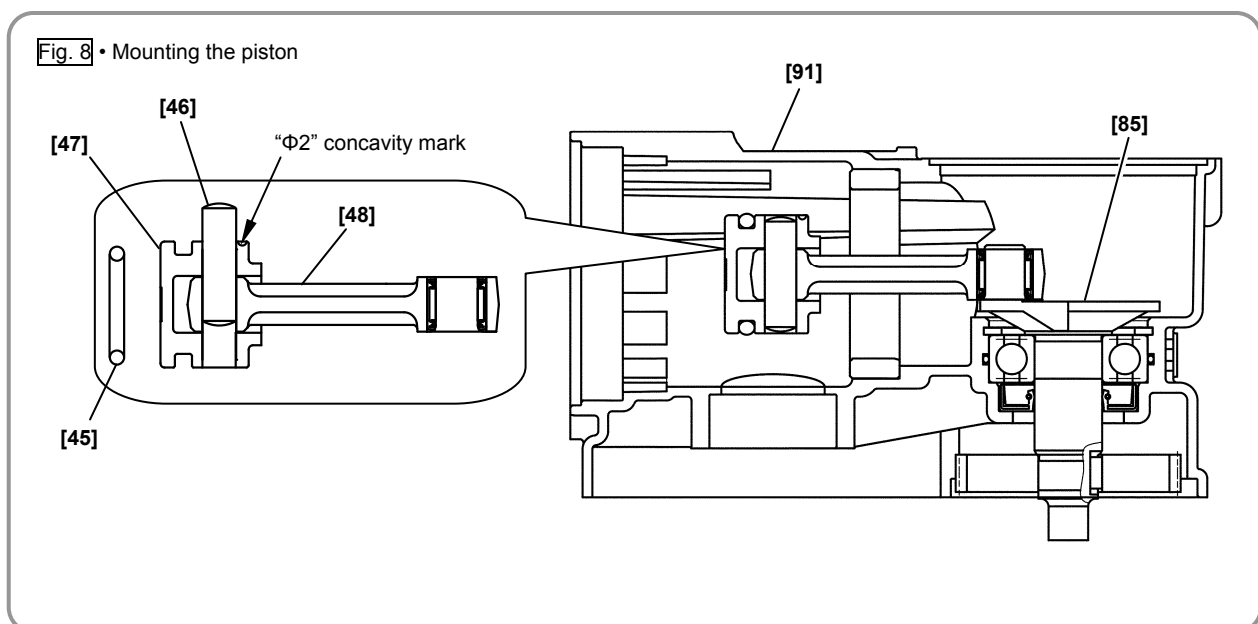
(2) Mounting the piston

- Insert the Connecting Rod [48] into the Piston [47], and then press-fit the Piston Pin [46] from the D8 hole (marked side) of the Piston [47].

NOTE: Be careful not to let the Piston Pin [46] project from the outer diameter of the Piston [47].

- Mount the O-ring [45] on the Piston [47] to make the piston ass'y.
- Next, turn the Crank Shaft [85] to the position shown below, and then mount the piston ass'y to the Crank Shaft [85] from the Cylinder Case [22] side of the Crank Case Ass'y [91].

NOTE: The piston ass'y can be assembled even when the Bevel Gear [43] and Slip Clutch Ass'y [93] are mounted to the Crank Case Ass'y [91].



(3) Mounting the cylinder and retainer sleeve

- Mount the Retainer Damper Washer [26], Damper Sleeve [25], and Retainer Damper (B) [24] to the Retainer Sleeve [28] in this order, while aligning the rounded surface of the Retainer Damper Washer [26] with the rounded surface of the Retainer Sleeve [28].
- Insert the Second Hammer [30] (equipped with O-ring (C) [29]), Damper Washer [31], Damper [32], and Damper Holder [33] into the Retainer Sleeve [28] in this order, while aligning the rounded surface of the Damper Washer [31] with the rounded surface of the Second Hammer [30].
- Insert the assembly of the Retainer Sleeve [28] into the Cylinder Case [22].

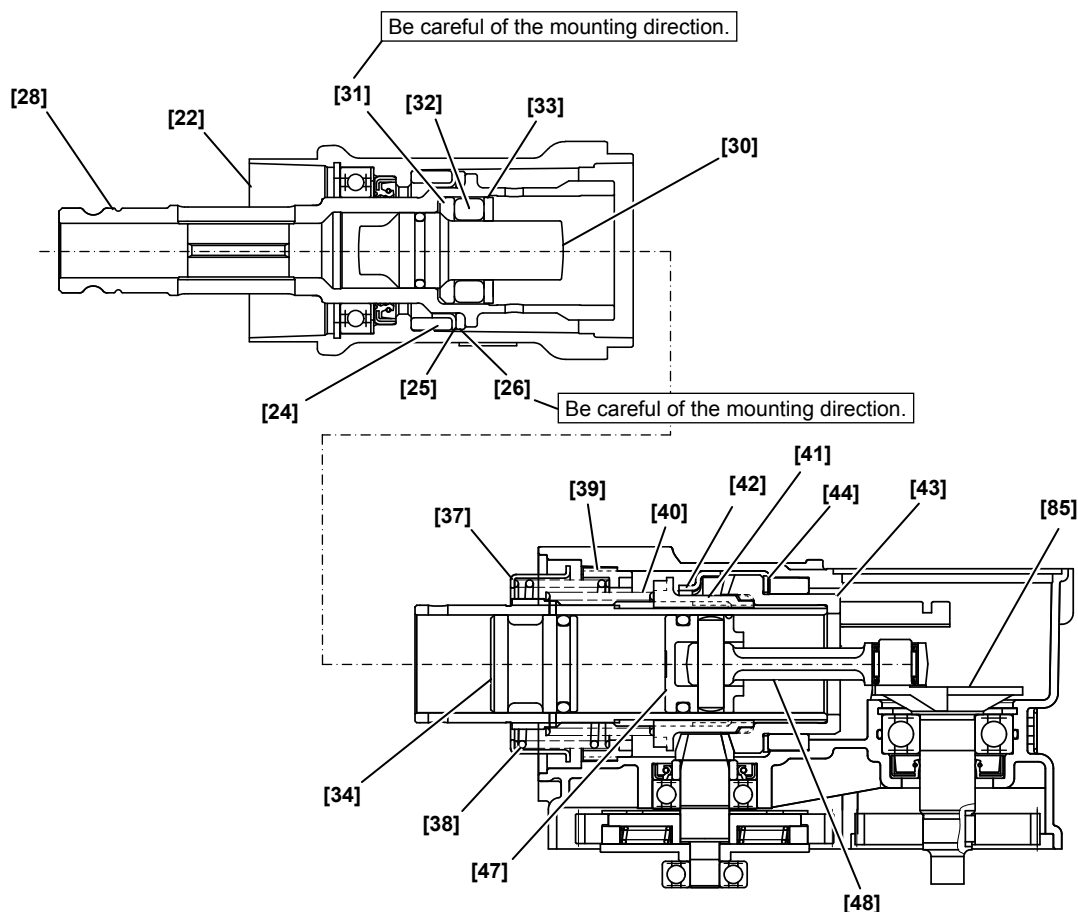
NOTE: Be careful not to curl the lip of the oil seal.

- After inserting the Thrust Washer [44] and the Bevel Gear [43] into the Crank Case Ass'y [91], insert the Slider [42] into the outer periphery of the Bevel Gear [43] along the Crank Case Ass'y [91] groove.

NOTE: The Bevel Gear [43] cannot be inserted if the Slip Clutch Ass'y [93] is mounted to the Crank Case Ass'y [91] on ahead.

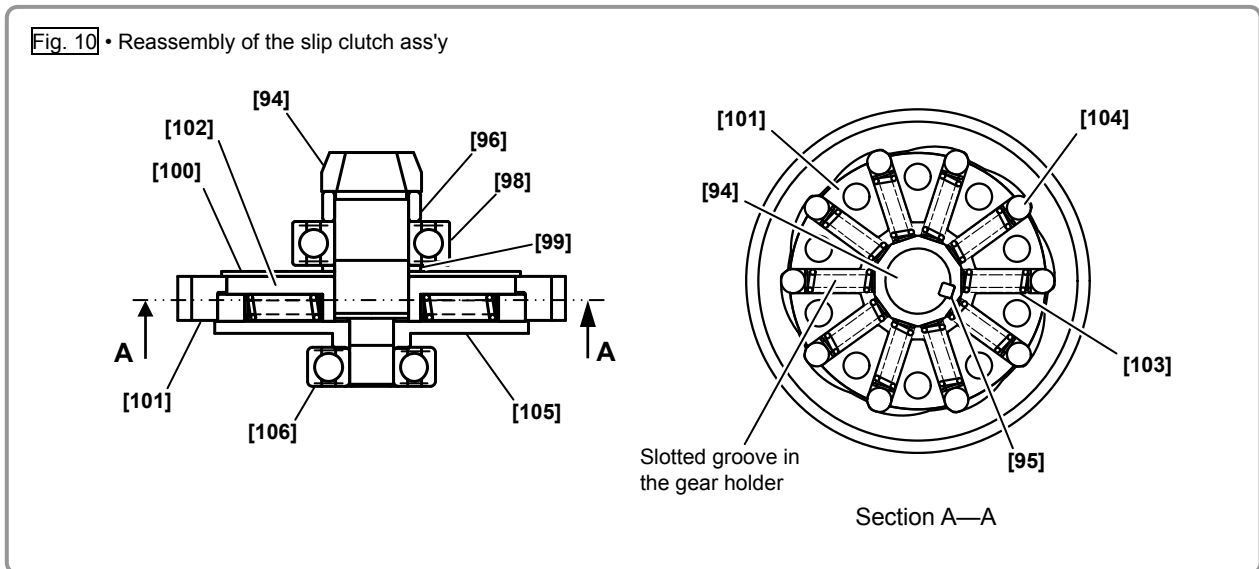
- Insert the Clutch [41] so that it engages with the internal claw of the Bevel Gear [43].
- Insert the Striker [34] equipped with the O-ring [35] into the Cylinder [36]. Fit the Clutch Spring [40] to the Cylinder [36], and then insert the assembly of the Cylinder [36] into the Crank Case Ass'y [91].
- Insert the Lock Sleeve [39] into the Crank Case Ass'y [91], while aligning the inner spline groove of the Crank Case Ass'y [91] with the Lock Sleeve [39] spline.
- Place the Lock Spring [38] and Spring Holder (B) [37] on the Lock Sleeve [39].
- Fit the protrusion of the Retainer Sleeve [28] in the Cylinder [36] groove, and then mount the Cylinder Case [22] equipped with the Retainer Sleeve [28] to the Crank Case Ass'y [91] equipped with the Cylinder [36].

Fig. 9 • Mounting the cylinder and retainer sleeve



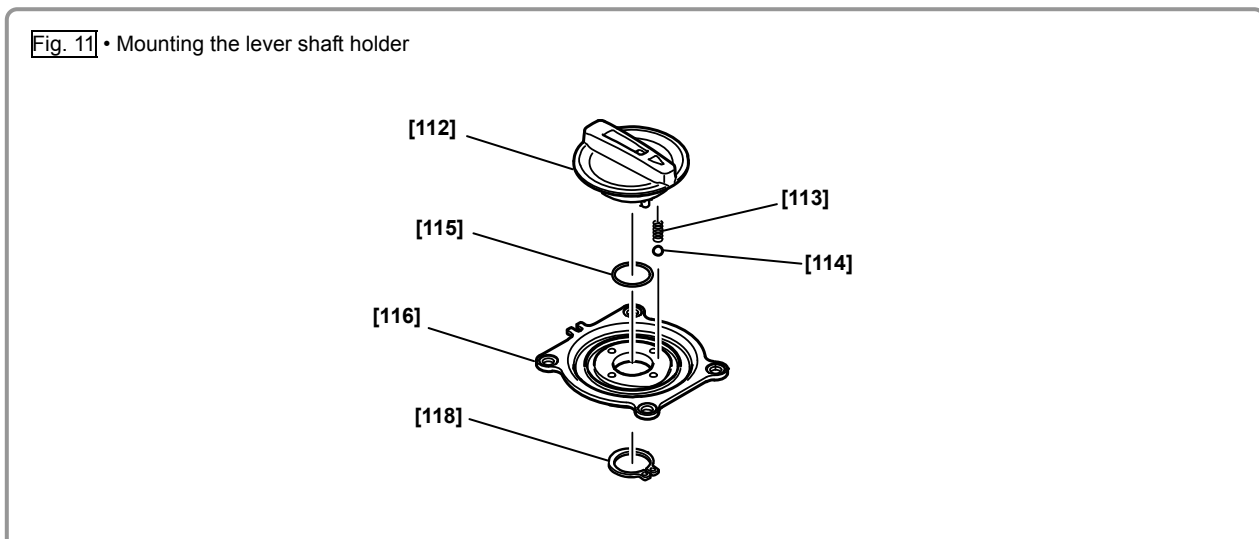
(4) Reassembly of the slip clutch ass'y

- Press-fit the Collar [96] and Ball Bearing 6002DD [98] in this order to the Bevel Pinion [94], and then insert the Washer [99] and Washer (A) [100] in this order.
- Mount the Feather Key 3 x 3 x 8 [95] to the Bevel Pinion [94] and press-fit the Gear Holder [102].
- Insert the Second Gear [101] into the outer periphery of the Gear Holder [102]. Apply Hitachi Motor Grease No. 29 to the inner periphery of the Second Gear [101] in advance.
- Insert the ten Needles [104] upright as shown below, and then push in ten Springs (C) [103].
- Fill up the slotted groove and through-hole portions of the Gear Holder [102] with Hitachi Motor Grease No. 29, and then press-fit the Spacer [105] and Ball Bearing 629VV [106] to the Bevel Pinion [94] in this order.



(5) Mounting the lever shaft holder

- Apply Hitachi Motor Grease No. 29 to the O-ring (S-18) [115], and then attach the O-ring to the Change Lever [112]. Insert the Lever Spring [113] into the change lever hole.
 - Apply Hitachi Motor Grease No. 29 to the Steel Ball D4.76 [114] and place it into the concave portion of the Lever Shaft Holder [116].
 - Position the Lever Spring [113] and Steel Ball D4.76 [114] properly. Insert the Change Lever [112] into the hole of the Lever Shaft Holder [116] and fix it with the Retaining Ring for D20 Shaft [118].
- NOTE: Rotate the Change Lever [112] to check that the lever clicks at each mode position. Insert the Change Lever [112] into the Lever Shaft Holder [116] straight to avoid damaging the O-ring.**



(6) Mounting the crank cover

- Insert the stepped portions of the Change Plate [119] into the notches of the Slider [42].

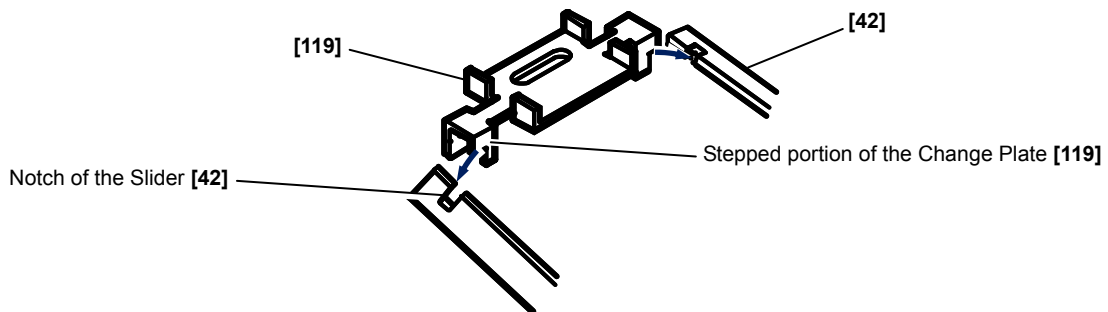
NOTE: Be careful of the inserting direction. See the figure below.

- Mount the Cylinder O-ring [117] to the outer diameter portion on the bottom of the Lever Shaft Holder [116]. Set the Change Lever [112] to "Rotation + Hammering" mode position.
- Put the assembly of the Lever Shaft Holder [116] and Crank Cover [111] on the Crank Case Ass'y [91] and fix them with the Hex. Socket Hd. Bolts M5 [110].

NOTE: After tightening the Hex. Socket Hd. Bolts M5 [110], check the following:

- The Change Lever [112] rotates smoothly.
- The Retainer Sleeve [28] is kept from rotating when the Change Lever [112] is set to "Hammering" mode.
- The Retainer Sleeve [28] rotates smoothly when the Change Lever [112] is set to "Neutral" mode.

Fig. 12 • Inserting the change plate



Lubrication points and types of lubricant

Specified grease (for hammer and hammer drill)

- Fill 20 g of specified grease in the Cylinder Case [22].
- Fill 69 g of specified grease in the Crank Case Ass'y [91] on the Connecting Rod [48] side.
- Apply specified grease to the inside and outside of the Cylinder [36].
- Apply specified grease to the inner diameter portion of the Connecting Rod [48].
- Apply specified grease to the sliding portion of the Second Hammer [30] and O-ring (C) [29] of the Second Hammer [30].
- Apply specified grease to the sliding portion of the Striker [34] and O-ring [35] of the Striker [34].
- Apply specified grease to the outer diameter portion of the Piston [47] and O-ring [45] of the Piston [47].
- Apply specified grease to the inner lips of Oil Seal (A) [97].
- Apply specified grease to the inner lips of Oil Seal (B) [90].
- Apply specified grease to the inner and outer diameter portions of the Bevel Gear [43].
- Apply specified grease to the Thrust Washer [44].
- Apply specified grease to the inner lip of the Oil Seal [20].
- Apply specified grease to the inside of the Clutch [41].
- Apply specified grease to the Damper [32].
- Apply specified grease to Retainer Damper (B) [24].

Hitachi Motor Grease No. 29

- Fill a total of 20 g of Hitachi Motor Grease No. 29 in the Crank Case Ass'y [91] on the First Gear [123] side and the Gear Cover [108] side.
- Fill a total of 5 g of Hitachi Motor Grease No. 29 in the slotted groove and the 6 mm dia. holes of the Gear Holder [102].
- Apply Hitachi Motor Grease No. 29 to the Needle Bearing [124].
- Apply Hitachi Motor Grease No. 29 to the pinion portion of the Armature [74].
- Apply Hitachi Motor Grease No. 29 to the Bit Lock [27].

Fig. 13 • Specified grease (for hammer and hammer drill)



Net weight	Code No.
500 g	980927
70 g	308471
30 g	981840

CAUTION: Both viscosity and consistency of the specified grease are optimized for the rotary hammer Model DH 40MC in order to prolong the service life. Therefore, applying ordinary grease intended for other models to the Model DH 40MC may dramatically shorten the product's service life.

Tightening torque

CAUTION: Be sure to apply TB1401 screw locking agent to the threads of the following screws and bolts before tightening. Otherwise, the screw or bolt loosened by vibration may cause damage to the tool body.

Item No.	Part name	No. used	Tightening torque	
			N•m	lbf-ft
[21]	Hex. Socket Hd. Bolt (W/Flange) M6 x 25	4	10 to 12	7.4 to 8.9
[50]	Hex. Hd. Tapping Screw D5 x 55	2	3.0 ± 0.5	2.2 ± 0.4
[65]	Tapping Screw (W/Flange) D5 x 20 (Black)	4	3.0 ± 0.5	2.2 ± 0.4
[75]	Hex. Socket Hd. Bolt (W/Flange) M5 x 16	2	6 to 8	4.4 to 5.9
[80]	Tapping Screw (W/Flange) D4 x 25 (Black)	2	2.0 ± 0.5	1.5 ± 0.4
[84]	Tapping Screw (W/Flange) D4 x 16	2	2.0 ± 0.5	1.5 ± 0.4
[92]	Seal Lock Hex. Socket Hd. Bolt M6 x 45	4	10 to 12	7.4 to 8.9
[109]	Seal Lock Hex. Socket Hd. Bolt M6 x 20	2	10 to 12	7.4 to 8.9
[110]	Hex. Socket Hd. Bolt (W/Flange) M5 x 18	4	8 to 10	5.9 to 7.4
[121]	Cap Screw	1	7 to 9	5.2 to 6.6
[127]	Hex. Socket Hd. Bolt (W/Flange) M5 x 12	1	4.0 ± 0.5	3.0 ± 0.4

Insulation test

After completing disassembly and repair, measure the insulation resistance and dielectric strength.

Insulation resistance: 7 MΩ or higher (as measured with a 500 VDC megohm tester)

Dielectric strength: 4,000 VAC/1 minute, with no abnormalities ----- 220 V – 240 V

(and 110 V for UK products)

2,500 VAC/1 minute, with no abnormalities ----- 110 V – 127 V

(except UK products)

No-load current value

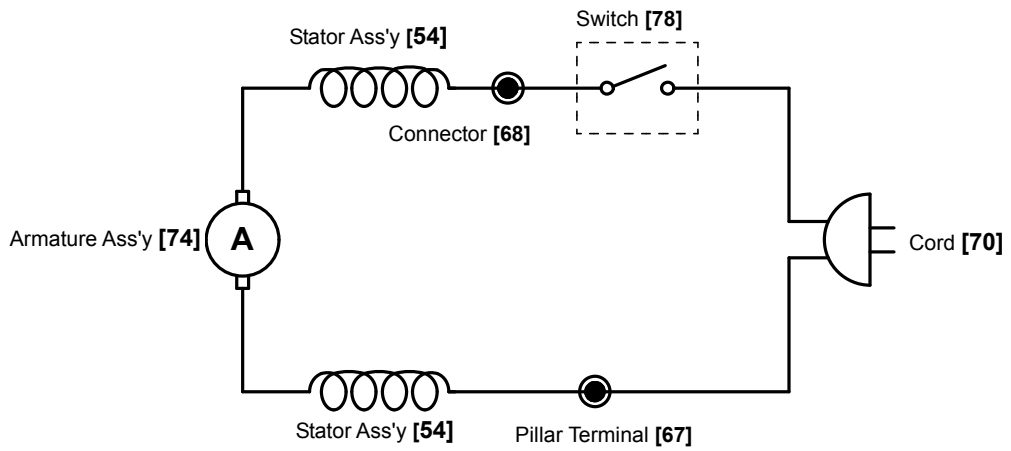
After no-load operation for 30 minutes, the no-load current values should be as follows:

Voltage	110 V	120 V	127 V	220 V	230 V	240 V
Current max.	6.5 A	5.9 A	4.6 A	3.4 A	3.3 A	3.2 A

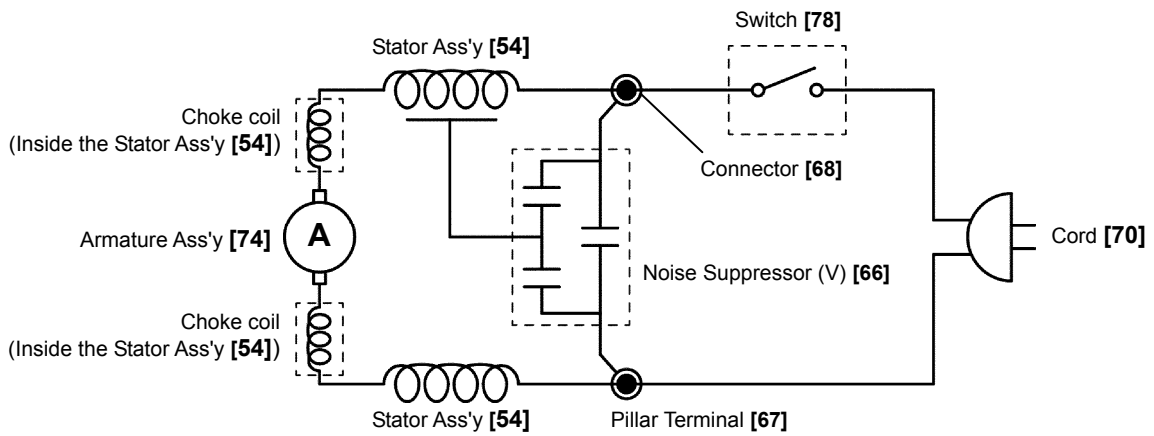
Connecting diagram

Fig. 14 • Connecting diagram

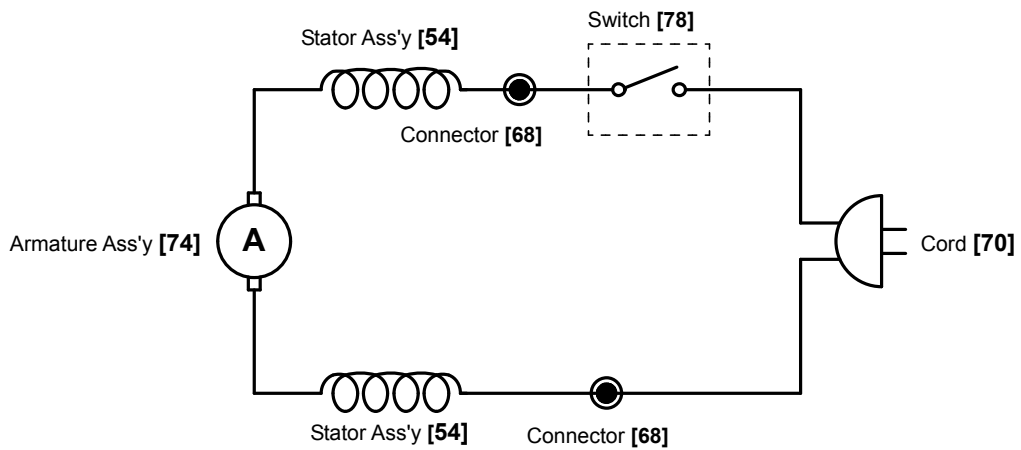
<For the USA, Canada, Mexico, and Panama (120 V)>



<For Taiwan, Australia, New Zealand, Europe, South Africa, Turkey, Vietnam, Russia, China, and Korea>



<For the other countries>



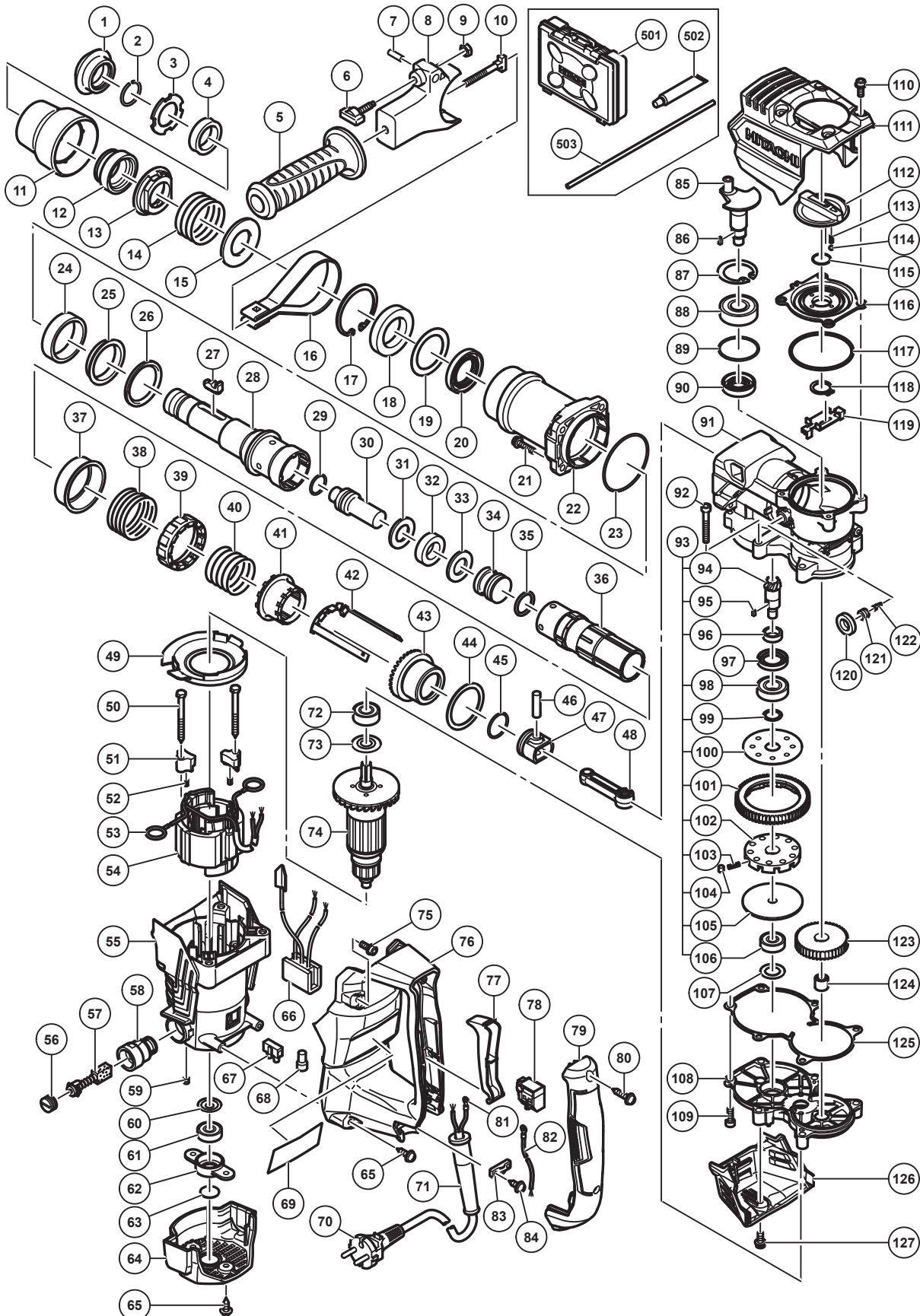
STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable	10 min.	20 min.	30 min.	40 min.	50 min.	60 min.	
DH 40MC		Work Flow						
							Housing Ass'y Stator Ass'y	
		Handle Cover Switch Cord Cord Armor	Handle				Gear Cover Armature Ball Bearing 6201DD Ball Bearing 629VV	
		Tail Cover Hood						
	General assembly	Crank Cover Change Lever Lever Shaft Holder Change Plate					Crank Shaft Ball Bearing 6203DD First Gear	Crank Case
		Front Cap Grip	Cylinder Case Retainer Sleeve	Cylinder Striker O-ring Clutch Lock Sleeve Spring Holder (B)			Slip Clutch Ass'y Bevel Gear	
		Retainer Washer Retainer Damper (A) Bit Lock Holder Bit Lock Thrust Plate Retainer Spring Spring Holder (A)	Damper (B) Sleeve Retainer Damper Washer Second Hammer Damper Washer Damper Holder	Clutch Spring Slider	Piston O-ring Connecting Rod			

ELECTRIC TOOL PARTS LIST

■ ROTARY HAMMER Model DH 40MC

2016·12·7
(E1)



PARTS

DH 40MC

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	371151	FRONT CAP	1	
2	331540	STOPPER RING	1	
3	371138	RETAINER WASHER	1	
4	371152	RETAINER DAMPER (A)	1	
5	330209	SIDE HANDLE	1	
6	337577	WING BOLT	1	
7	949859	ROLL PIN D2 X 8 (10 PCS.)	1	
8	371135	MOUNT	1	
9	949556	NUT M6 (10 PCS.)	1	
10	331247	HANDLE BOLT	1	
11	371133	GRIP	1	
12	371157	BIT LOCK HOLDER	1	
13	371159	THRUST PLATE	1	
14	371167	RETAINER SPRING	1	
15	371145	SPRING HOLDER (A)	1	
16	331246	BAND	1	
17	371141	RETAINING RING D55	1	
18	6907DD	BALL BEARING 6907DDU	1	
19	371142	BEARING WASHER	1	
20	371148	OIL SEAL	1	
21	991712	HEX. SOCKET HD. BOLT (W/FLANGE) M6 X 25	4	
22	371125	CYLINDER CASE	1	
23	956996	O-RING (1AS-60)	1	
24	371153	RETAINER DAMPER (B)	1	
25	371144	DAMPER SLEEVE	1	
26	371161	RETAINER DAMPER WASHER	1	
27	370654	BIT LOCK	2	
28	371155	RETAINER SLEEVE	1	
29	313396	O-RING (C)	1	
30	371160	SECOND HAMMER	1	
31	371163	DAMPER WASHER	1	
32	371316	DAMPER	1	
33	371164	DAMPER HOLDER	1	
34	371165	STRIKER	1	
35	986104	O-RING	1	
36	371156	CYLINDER	1	
37	331533	SPRING HOLDER (B)	1	
38	331534	LOCK SPRING	1	
39	331535	LOCK SLEEVE	1	
40	371166	CLUTCH SPRING	1	
41	371137	CLUTCH	1	
42	371147	SLIDER	1	
43	371158	BEVEL GEAR	1	
44	331234	THRUST WASHER	1	
45	986104	O-RING	1	
46	331221	PISTON PIN	1	
47	326369	PISTON	1	
48	371175	CONNECTING ROD	1	
49	371172	FAN GUIDE	1	
50	953174	HEX. HD. TAPPING SCREW D5 X 55	2	

PARTS

DH 40MC

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
51	371123	STATOR HOLDER	2	
52	338755	RUBBER BUSH	2	
53	930703	BRUSH TERMINAL	2	
* 54	340963C	STATOR ASS'Y 110V	1	INCLUD.53
* 54	340963D	STATOR ASS'Y 120V	1	INCLUD.53
* 54	340963K	STATOR ASS'Y 127V	1	INCLUD.53
* 54	340963M	STATOR ASS'Y 220V	1	INCLUD.53
* 54	340963L	STATOR ASS'Y 220V	1	INCLUD.53 FOR CHN
* 54	340963E	STATOR ASS'Y 230V	1	INCLUD.53
* 54	340963H	STATOR ASS'Y 230V	1	INCLUD.53 FOR SIN,IND
* 54	340963F	STATOR ASS'Y 240V	1	INCLUD.53
* 54	340963J	STATOR ASS'Y 240V	1	INCLUD.53 FOR MAL
55	371174	HOUSING ASS'Y	1	INCLUD.58,59
56	945161	BRUSH CAP	2	
57	999043	CARBON BRUSH (1 PAIR)	1	
57	999073	CARBON BRUSH (AUTO STOP TYPE) (1 PAIR)	1	
58	958900	BRUSH HOLDER	2	
59	938477	HEX. SOCKET SET SCREW M5 X 8	2	
60	958915	WASHER (A)	1	
61	629VVM	BALL BEARING 629VV	1	
62	371139	BEARING HOLDER	1	
63	331547	DUST SEAL	1	
64	371127	TAIL COVER	1	
65	302089	TAPPING SCREW (W/FLANGE) D5 X 20 (BLACK)	4	
* 66	371177	NOISE SUPPRESSOR (V)	1	FOR EUROPE,GBR,AUS,NZL,SAF,RUS,TUR,CHN
* 67	938307	PILLAR TERMINAL	1	EXCEPT FOR THA,INA,SIN,MAL,IND,PAN (220V)
* 68	959141	CONNECTOR 50092 (10 PCS.)	1	
* 68	959141	CONNECTOR 50092 (10 PCS.)	2	FOR THA,INA,SIN,MAL,IND,PAN (220V)
69		NAME PLATE	1	
* 70	500390Z	CORD	1	(CORD ARMOR D8.2)
* 70	500434Z	CORD	1	(CORD ARMOR D8.2) FOR USA,CAN, MEX,PAN (120V)
* 70	500235Z	CORD	1	(CORD ARMOR D8.2) FOR INA,IND,PAN (220V)
* 70	500439Z	CORD	1	(CORD ARMOR D8.2) FOR AUS,NZL
* 70	500440Z	CORD	1	(CORD ARMOR D8.2) FOR SIN,MAL
* 70	500446Z	CORD	1	(CORD ARMOR D8.2) FOR GBR (230V)
* 70	500467Z	CORD	1	(CORD ARMOR D10.7) FOR GBR (110V)
* 70	500457Z	CORD	1	(CORD ARMOR D10.7) FOR CHN
* 70	500239Z	CORD	1	(CORD ARMOR D10.7) FOR THA
* 71	940778	CORD ARMOR D10.7	1	
* 71	958049	CORD ARMOR D8.2	1	
72	6201DD	BALL BEARING 6201DDCMPS2L	1	
73	325003	DUST WASHER (B)	1	
* 74	361058C	ARMATURE 110V	1	
* 74	361058U	ARMATURE ASS'Y 120V	1	INCLUD.60,61,72,73
* 74	361058G	ARMATURE 127V	1	
* 74	361058H	ARMATURE 220V	1	
* 74	361058E	ARMATURE 230V	1	
* 74	361058F	ARMATURE 240V	1	
75	994192	HEX. SOCKET HD. BOLT (W/FLANGE) M5 X 16	2	

PARTS

DH 40MC

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
76	371129	HANDLE	1	
77	371128	TRIGGER	1	
78	371171	SWITCH	1	
79	371130	HANDLE COVER	1	
80	307028	TAPPING SCREW (W/FLANGE) D4 X 25 (BLACK)	2	
*	81	980063	1	TERMINAL
*	81	930804	1	TERMINAL M4.0 (10 PCS.) FOR USA,CAN,MEX,PAN (120V),GBR (110V)
82	371149	INTERNAL WIRE	1	
83	960266	CORD CLIP	1	
84	984750	TAPPING SCREW (W/FLANGE) D4 X 16	2	
85	371136	CRANK SHAFT	1	
86	944109	FEATHER KEY 3 X 3 X 8	1	
87	948391	RETAINING RING FOR D40 HOLE	1	
88	6203DD	BALL BEARING 6203DDCMPS2L	1	
89	996363	O-RING (S-40)	1	
90	321274	OIL SEAL (B)	1	
91	371173	CRANK CASE ASS'Y	1	INCLUD.121,122
92	986940	SEAL LOCK HEX. SOCKET HD. BOLT M6 X 45	4	
93	371176	SLIP CLUTCH ASS'Y	1	INCLUD.94-96,98-106
94	331211	BEVEL PINION	1	
95	944109	FEATHER KEY 3 X 3 X 8	1	
96	321279	COLLAR	1	
97	313050	OIL SEAL (A)	1	
98	6002DD	BALL BEARING 6002DDCMPS2L	1	
99	331213	WASHER	1	
100	331214	WASHER (A)	1	
101	331215	SECOND GEAR	1	
102	321281	GEAR HOLDER	1	
103	321282	SPRING (C)	10	
104	331217	NEEDLE	10	
105	331219	SPACER	1	
106	629VVM	BALL BEARING 629VV	1	
107	331220	BEARING WASHER (C)	1	
108	371124	GEAR COVER	1	
109	992803	SEAL LOCK HEX. SOCKET HD. BOLT M6 X 20	2	
110	371170	HEX. SOCKET HD. BOLT (W/FLANGE) M5	4	
111	371131	CRANK COVER	1	
112	371134	CHANGE LEVER	1	
113	371168	LEVER SPRING	1	
114	959149	STEEL BALL D4.76 (10 PCS.)	1	
115	878885	O-RING (S-18)	1	
116	371126	LEVER SHAFT HOLDER	1	
117	877315	CYLINDER O-RING (I.D 63.9)	1	
118	939547	RETAINING RING FOR D20 SHAFT (10 PCS.)	1	
119	371146	CHANGE PLATE	1	
120	371178	FELT PACKING (A)	1	
121	371179	CAP SCREW	1	
122	995396	VALVE	1	
123	371162	FIRST GEAR	1	
124	371169	NEEDLE BEARING	1	

