

MODEL

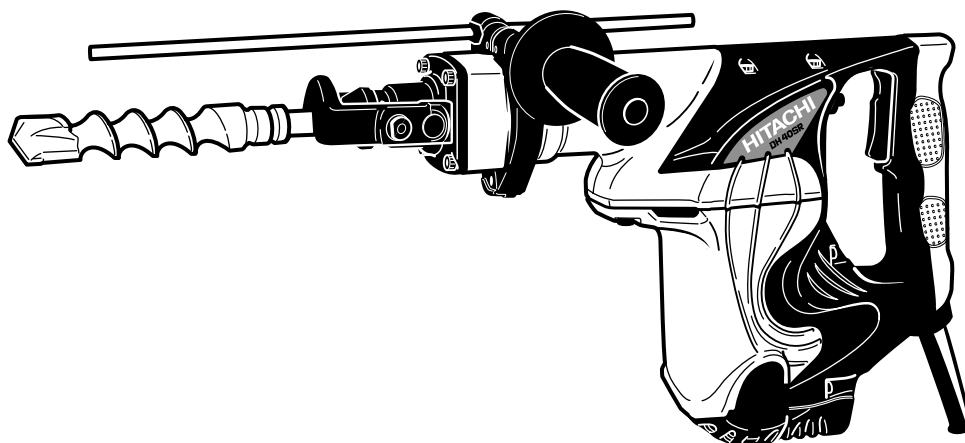
DH 40SR

HITACHI
POWER TOOLS

ROTARY HAMMER
DH 40SR

TECHNICAL DATA
AND
SERVICE MANUAL

D



LIST No. E471

Apr. 2003

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

REMARK:

Throughout this TECHNICAL DATA AND SERVICE MANUAL, symbols are used in the place of company names and model names of our competitors. The symbols utilized here are as follows:

Symbols Utilized	Competitors	
	Company Name	Model Name
C	MAKITA	HR3811



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1. PRODUCT NAME

Hitachi Rotary Hammer, Model DH 40SR

2. MARKETING OBJECTIVE

The Model DH 40SR is an upgraded version of the current Model DH 40SA, which features the use of Hitachi 13 mm hexagonal tools. The performance, durability and operability are greatly improved. With this competitive Model DH 40SR, we aim to enhance the share of Hitachi 13 mm hexagonal shank type rotary hammers.

The main specifications are as follows:

- (1) High drilling speed with low vibration and noise level
- (2) Self-drilling (Good feeling)
- (3) Internal double-insulation construction with sturdy aluminum frame
- (4) Constant speed control
- (5) Soft-touch grip for easier handling
- (6) A highly reliable mechanism for prevention of idle hammering and shock-absorbing mechanism results in prolonged service life and comfortable operation.
- (7) A very original design

3. APPLICATIONS

- Drilling holes in concrete and drilling anchor holes
- Demolishing and chiseling of concrete. Edging, gravel road digging, compacting and tamping, grooving, cutting, stripping and roughing, etc.

[Application examples]

- Air conditioning
- Piping and wiring
- Electric fixtures
- Sanitary facilities
- Interior finishing
- Other building, construction and repair work

4. SELLING POINTS

- High drilling speed with low vibration and noise level
- Self-drilling (Good feeling)
- A very original design

A highly reliable mechanism for prevention of idle hammering and shock-absorbing mechanism results in prolonged service life and comfortable operation.

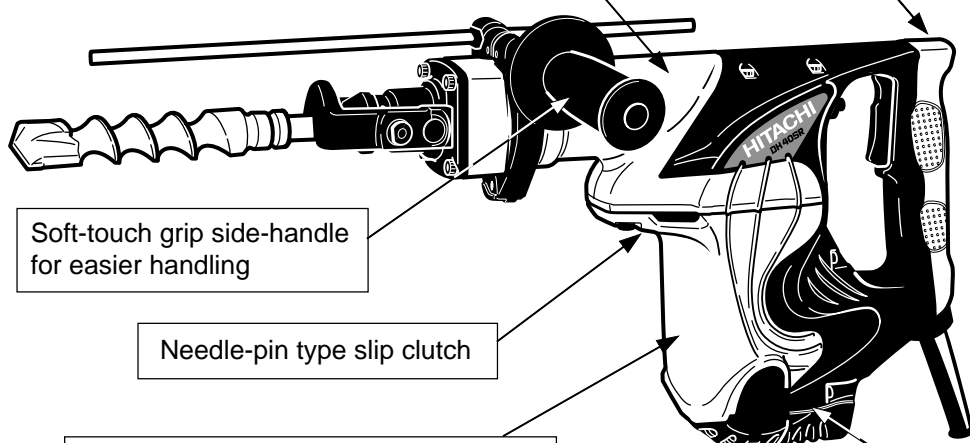
Soft-touch grip handle for easier handling

Soft-touch grip side-handle for easier handling

Needle-pin type slip clutch

Internal double-insulation construction with sturdy aluminum frame

Constant speed control



4-1. Selling Point Descriptions

4-1-1. High drilling speed with low vibration and noise level

The drilling speed is 10 % faster than that of similar products thanks to efficient striking energy transmission.

Even so, the Model DH 40SR produces lower vibration and noise levels than those of similar products.

Maker • Model		HITACHI DH 40SR	HITACHI DH 40SA	C
Ratio of drilling speed	%	100	72	72
Full-load vibration level	dB (VL)	118	118	120
	m/s ²	8.0	8.0	10.2
Full-load noise level	dB (A)	95	95	96
No-load noise level	dB (A)	79	88	87

* Each product used a 25-mm dia. drill bit for the above measurement.

4-1-2. Self-drilling (Good feeling)

Thanks to the computer-simulated optimum striking characteristics, the quantity of body jumping is less than that of the current Model DH 40SA and the working tool smoothly penetrates into the workpiece with a light pressing force. The Model DH 40SR realizes quicker self-drilling with better impact feeling.

4-1-3. Internal double-insulation construction with sturdy aluminum frame

The aluminum die-cast outer frame is very sturdy (same as the Models H 45MR/H 45SR and DH 40MR).

In addition, a plastic internal S holder is adopted to realize double-insulation construction. Thus the housing has greater rigidity and the double-insulated motor has greater durability. The Model DH 40SR is heavy-duty and the service life of the carbon brush is greatly prolonged (1.5 times longer than the conventional one) minimizing disconnection of the armature, deviation of the core and grease leakage.

4-1-4. Constant speed control

The Model DH 40SR is equipped with a built-in electronic control circuit that can keep constant speed in either no-load operation or actually loaded operation. The Model DH 40SR provides better operability and stable, efficient drilling performance even if the load varies because the constant speed control minimizes changes in speed and number of hammering.

4-1-5. Soft-touch grip for easier handling

The double-layer molded handle consists of a nylon resin base covered with a soft plastic layer to ensure a soft touch and firm, non-slip grip of the handles.

4-1-6. A highly reliable mechanism for prevention of idle hammering and shock-absorbing mechanism results in prolonged service life and comfortable operation

Conventional mechanism for prevention of idle hammering is to open and close the air holes according to the movement of the striker. The Model DH 40SR has air holes located at the position unaffected by the rebound of the striker at no load. The air holes are opened and closed by the movement of slide sleeve (A) provided around the cylinder that interlocks with the tool and the second hammer to prevent to idle hammering. This mechanism securely prevents idle hammering even if the striker rebounds heavily when drilling holes using a large-diameter drill bit. The Model DH 40SR has prolonged service life and improved operability even in the operation that requires care not to destroy the surroundings.

At the instance of releasing the working tool from the workpiece by moving the main body up, the second hammer contacts driver then the cushion (damper (B)) provided between driver holder and front cover absorbs the striking force of the second hammer. Thus the Model DH 40SR has greater durability than the similar products.

4-1-7. Needle-pin type slip clutch

The Model DH 40SR is equipped with a needle-pin type slip clutch for higher slip torque accuracy and enhanced safety (same as the Model DH 40SA).

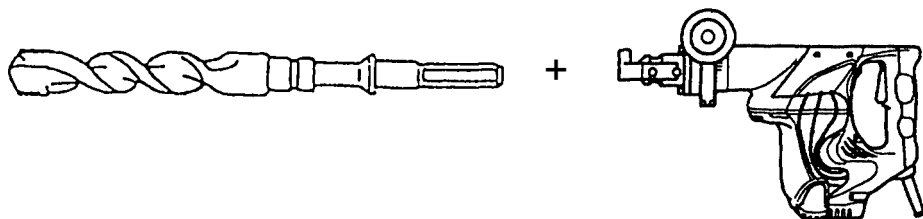
5. SPECIFICATIONS

5-1. Specifications

Capacity	Drill bit (Max. diameter): 40 mm (1-9/16") Core bit (Max. diameter): 120 mm (4-3/4")	
Power source	AC single phase 50 Hz or 60 Hz	
Voltage	110 V	230 V
Current	10 A	4.8 A
Power input	950 W	
Motor type	AC single-phase series commutator motor	
Insulation structure	Double insulation	
Enclosure	Materials: Aluminum alloy die casting Nylon resin (Handle, handle cover, tail cover and crank cover) Paint : Silver green metallic, black	
Switch	Trigger switch	
Type of handles	D-shaped handle and side handle	
Rotation rate	No load and full load: 510 min ⁻¹	
Impact rate	No load and full load: 2,800 min ⁻¹	
Weight	Product: 6.5 kg (14.3 lbs.); excluding cord and side handle Packed: 10.0 kg (22.1 lbs.)	
Packaging	Corrugated cardboard box with plastic tool case	
Standard accessories	<ul style="list-style-type: none"> • Plastic case 1 • Side handle 1 • Hex. bar wrench (for M6) 1 • Hex. bar wrench (for M5) 1 • Hex. bar wrench (for M4) 1 • Stopper 1 • Grease (A) 1 	

5-2. Optional Accessories

1. Drilling work for through-holes (rotation + hammering)

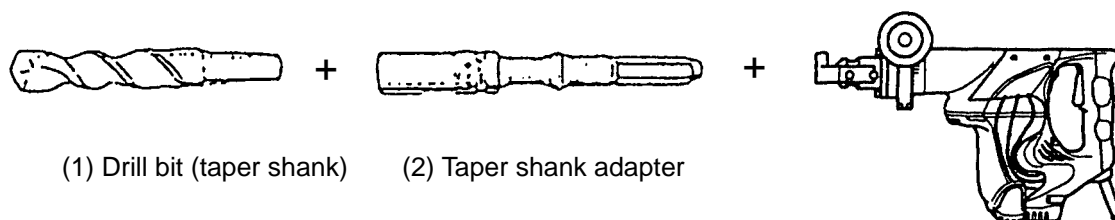


(1) Drill bit (hexagon shaft)

Outer length (mm)	280 (11")	400 (15-3/4")	505 (19-7/8")	550 (21-5/8")
Outer diameter (mm)	Code No.	Code No.	Code No.	Code No.
16 (5/8")	985721	985720	985722	991330
18 (11/16")	—	—	—	991331
19 (3/4")	985724	985723	985725	991332
20 (25/32")	—	—	991334	991333
22 (7/8")	985727	985726	985728	991335
25 (1")	985730	985729	985731	991336
28 (1-1/8")	985733	985732	985734	991337
30 (1-3/16")	—	—	—	991338
32 (1-1/4")	985736	985735	985737	991339
35 (1-3/8")	—	—	—	991340
38 (1-1/2")	985739	985738	985740	991341
40 (1-9/16")	313322	—	—	—

2. Drilling work for anchor holes (rotation + hammering)

1 Drill bit (Taper shank)



(1) Drill bit (taper shank)

(2) Taper shank adapter



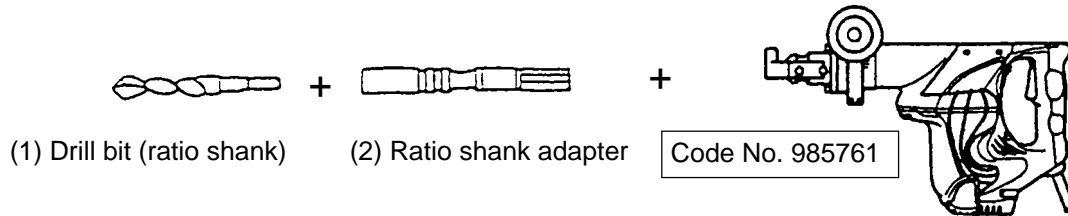
(3) Cotter

(1) Drill bit (Taper shank)		(2) Taper shank adapter		(3) Cotter
Outer diameter (mm)	Code No.	Taper dimension	Code No.	Code No.
11 (7/16")	944460	Morse taper No. 1	985750	944477
12.3 (15/32")	944461			
12.7 (1/2")	993038			
14.3 (9/16")	944462			
14.5 (9/16")	944500			
17.5 (11/16")	944463			
21.5 (7/8")	944464	Morse taper No. 2	985751	

A-taper	9.7 mm (3/8") x 1/20 Taper (A)	985754	Taper shank adapters for A-taper or B-taper shanks are provided as optional accessories. Taper shank drill bits are not provided.
B-taper	12.9 mm (1/2") x 1/20 Taper (B)	985755	

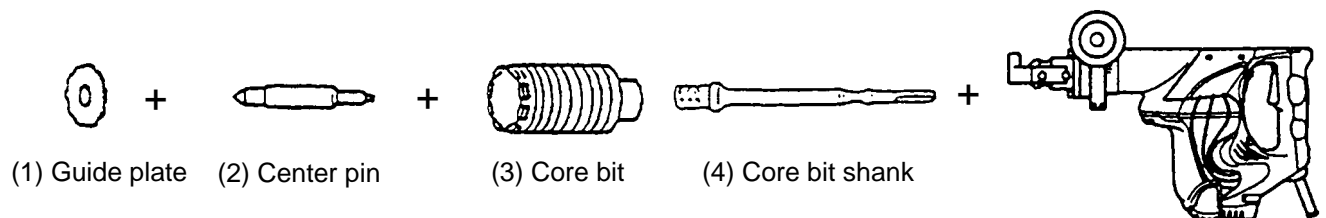
For Australia

K-taper shank adapter	992813
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A ratio shank adapter is provided as an optional accessory, but corresponding drill bits are not provided.

3. Boring work for large-dia. holes (rotation + hammering)



(1) Guide plate

Core bits with outer diameter of 32, 35, 38, 45, 54, 64, 79, 94, 105, 120 mm (1-1/4", 1-3/8", 1-1/2", 1-3/4", 2-1/8", 2-2/1", 3-1/8", 3-1/16", 4-1/8", 4-3/4")

[Guide plate is not used with core bits with outer diameter of 25 mm (1") and 29 mm (1-1/8")]

(2) Center pin

- Code No. 956009 for core bits with outer diameter of 32, 35 mm (1-1/4", 1-3/8")
- Code No. 955165 for core bits with outer diameter of 38, 45, 54, 64, 79, 94, 105, 120 mm (1-1/2", 1-3/4", 2-1/8", 2-1/2", 3-1/8", 3-11/16", 4-1/8", 4-3/4")

[Center pin is not used with core bits with outer diameter of 25 mm (1") and 29 mm (1-1/8").]

(3) Core bit

Outer diameter (in.)	Code No.	Outer diameter (in.)	Code No.
25 mm (1")	955994	54 mm (2-1/8")	955155
29 mm (1-1/8")	955995	64 mm (2-1/2")	986002
32 mm (1-1/4")	955996	79 mm (3-1/8")	955157
35 mm (1-3/8")	955998	94 mm (3-11/16")	956004
38 mm (1-1/2")	956000	105 mm (4-1/8")	955159
45 mm (1-3/4")	955154	120 mm (4-3/4")	956006

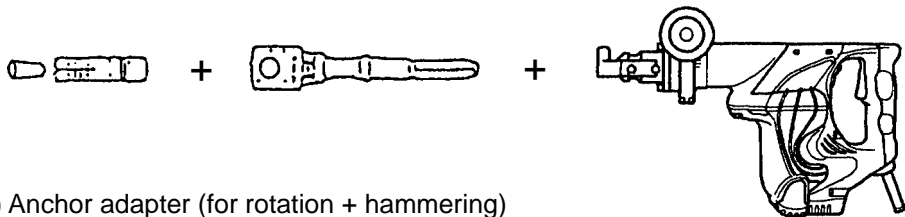
(4) Core bit shank

- Code No. 956008 for core bits with outer diameter of 25, 29, 32, 35 mm (1", 1-1/8", 1-1/4", 1-3/8")
- Code No. 955163 for core bits with outer diameter of 38, 45, 54, 64, 79, 94, 105, 120 mm (1-1/2", 1-3/4", 2-1/8", 2-1/2", 3-1/8", 3-11/16", 4-1/8", 4-3/4")

(5) Core bit for efficient drilling

Center pin (C)	Core bit (with guide plate)		Core bit shank
Code No.	Outer diameter (in)	Code No.	Code No.
903901	65 mm (9-2/16")	992814	992819
	80 mm (3-5/32")	992815	
	90 mm (3-1/2")	992816	
	100 mm (3-15/16")	992817	
	105 mm (4-1/8")	992818	

4. Anchor work for self-drilling anchors (rotation + hammering)



(1) Anchor adapter (for rotation + hammering)

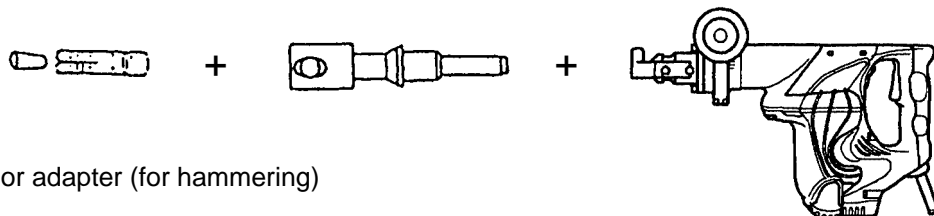
Anchor size W1/4" (No. 20), W5/16" (No. 25), W3/8" (No. 30),
W1/2" (No. 40), W5/8" (No. 50)



(1) Anchor size	Code No.
W1/4" (No. 20)	985756
W5/16" (No. 25)	985757
W3/8" (No. 30)	985758
W1/2" (No. 40)	985759
W5/8" (No. 50)	985760

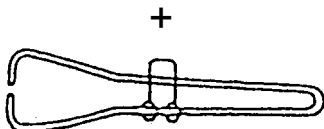
(2) Drift key (Code No. 944574)

5. Anchor work for self-drilling anchors (hammering)



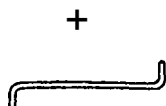
(1) Anchor adapter (for hammering)

Anchor size: W3/8" (No. 30), W1/2" (No. 40)
W5/8" (No. 50)



(1) Anchor size	Code No.
W3/8" (No. 30)	981929
W1/2" (No. 40)	981930
W5/8" (No. 50)	981931

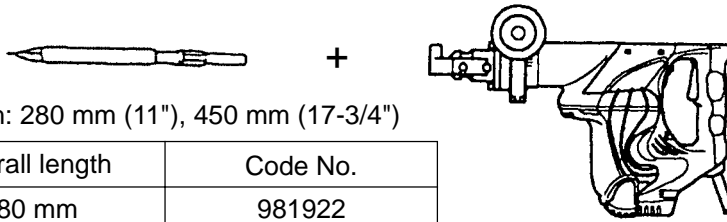
(2) Turning handle (Code No. 944573)



(3) Drift key (Code No. 944574)

6. Demolition work (hammering)

(1) Bull point

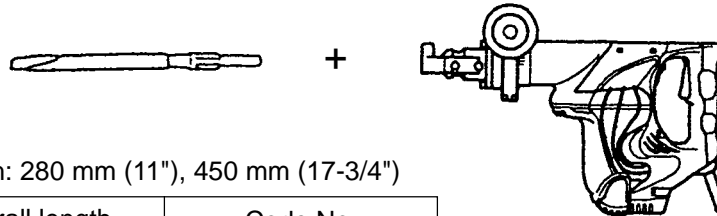


Overall length: 280 mm (11"), 450 mm (17-3/4")

Overall length	Code No.
280 mm	981922
450 mm	981923

7. Grooving and edging work (hammering)

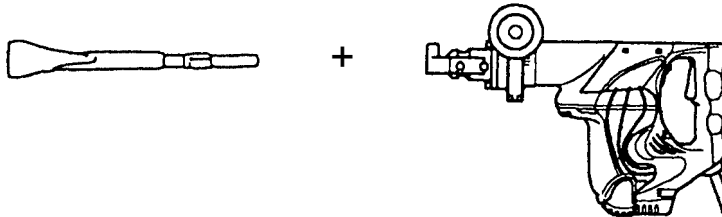
(1) Cold chisel



Overall length: 280 mm (11"), 450 mm (17-3/4")

Overall length	Code No.
280 mm	981925
450 mm	981926

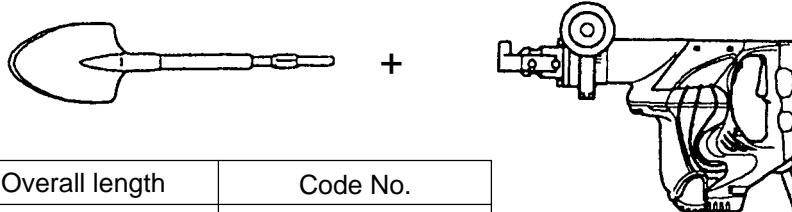
8. Cutting and stripping (asphalt cutting, etc.) (hammering)



(1) Cutter

Width	Overall length	Code No.
45 mm (2")	280 mm (11")	981924

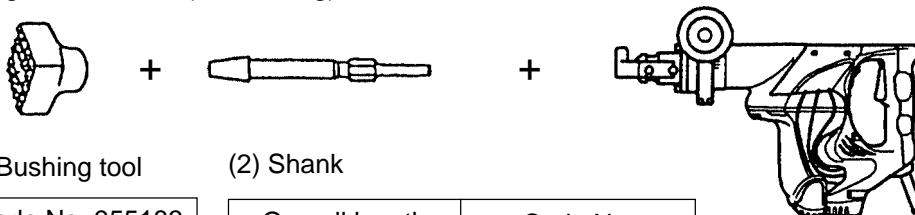
9. Digging work (substitute pick-ax) (hammering)



(1) Scoop

Overall length	Code No.
405 mm (16")	956126

10. Roughing surface work (hammering)



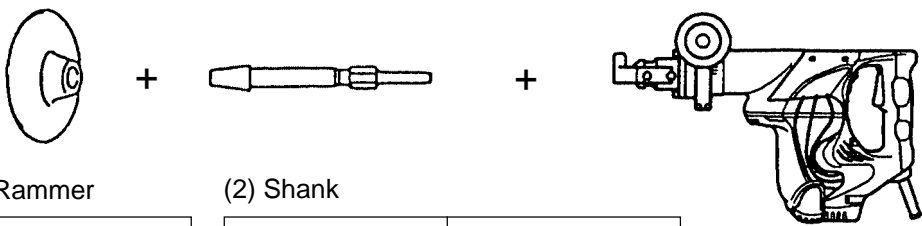
(1) Bushing tool

Code No. 955183

(2) Shank

Overall length	Code No.
250 mm (10")	955186

11. Tamping work (hammering)



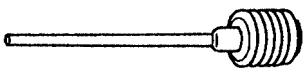
(1) Rammer

Code No. 955181
O. D. 140 mm (5-1/2")

(2) Shank


Overall length	Code No.
250 mm (10")	955186

12. Syringe (for chip removal)



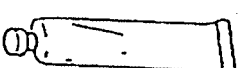
Code No. 318085

13. Grease for hammer, hammer drill



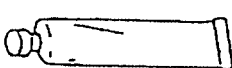
500 g (1.1 lbs.) Can

Code No. 980927



70 g (2.5 oz) Tube

Code No. 308471



30 g (1 oz) Tube

Code No. 981840

Note: Code numbers listed above are subject to change without notice. Please refer to periodic Technical News Bulletins for updates.

6. COMPARISONS WITH SIMILAR PRODUCTS

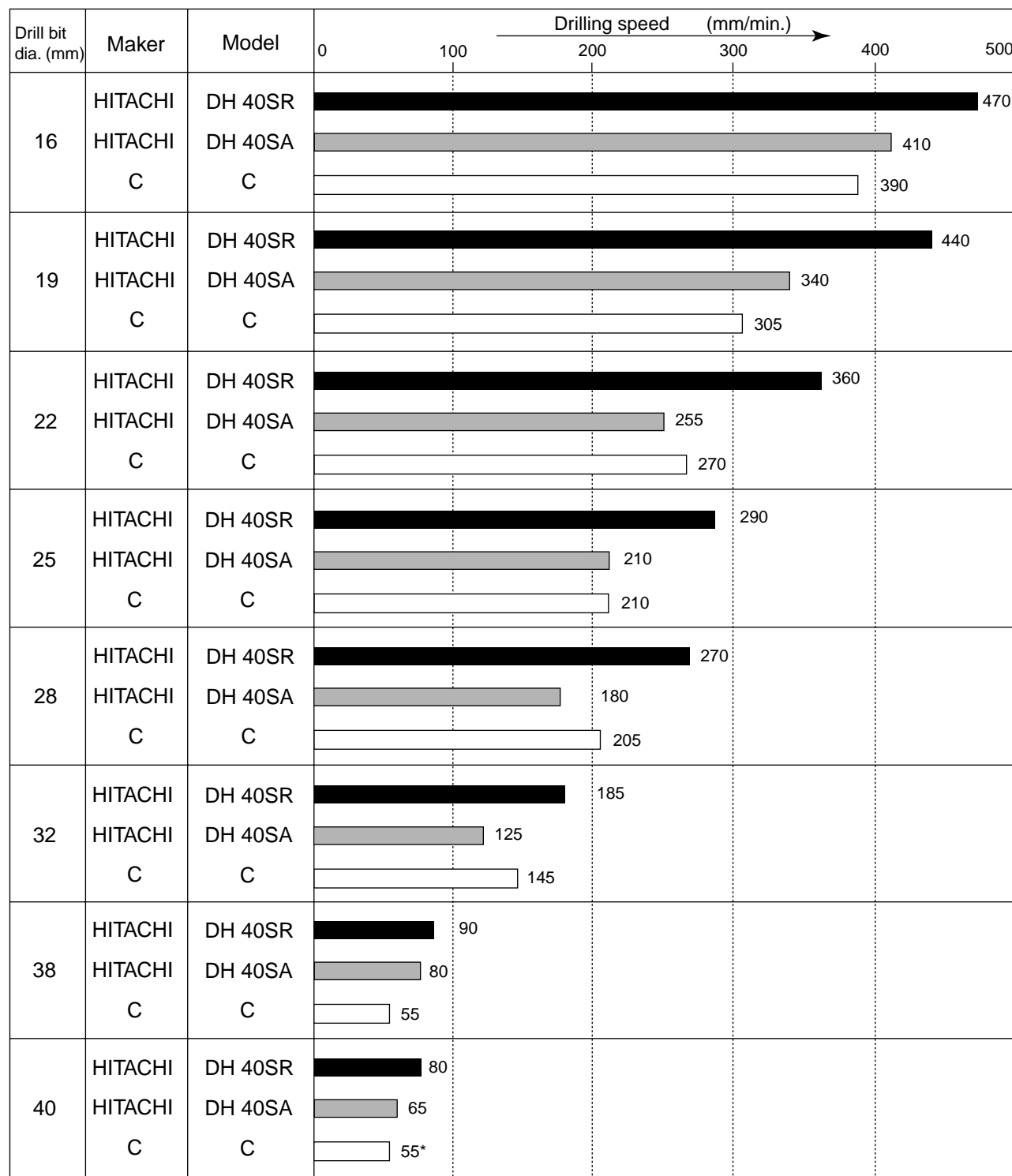
6-1. Specification Comparisons

Maker • Model Item		HITACHI DH 40SR	HITACHI DH 40SA	C
Capacity	Drill bit dia. (mm)	40 (1-9/16")	40 (1-9/16")	38 (1-1/2")
	Core bit dia. (mm)	120 (4-3/4")	105 (4-1/8")	118 (4-21/32")
Power input (W)		950	950	1,130
Impact energy per stroke (J)		10	8	8
Full-load rotation rate (min ⁻¹)		510	360	270
Full-load impact rate (min ⁻¹)		2,800	2,800	3,300
Full-load vibration level (dB(VL))		118	118	120
Full-load noise level (dB(A))		95	95	96
No-load noise level (dB(A))		79	88	87
Dimensions	Length (mm)	435 (17-1/8")	425 (16-23/32")	435 (17-1/8")
	Height (mm)	255 (10-3/64")	252 (9-15/16")	245 (9-21/32")
	Width (mm)	104 (4-7/64")	103 (4-1/16")	108 (4-1/4")
Weight * (kg)		6.5 (14.3 lbs.)	6.5 (14.3 lbs.)	7.7 (17.0 lbs.)
Insulation structure		Double insulation	Double insulation	Single insulation

* Weight does not include cord and side handle.

6-2. Drilling Speed Comparisons

Drilling speed varies considerably depending on the work conditions. Use the factory test results shown in Fig. 1 for comparison purpose only.



*: Note that the data marked with asterisks are test results using drill bits which are beyond the tool's rated capacity. Use the above data as a reference, for comparisons only.

Fig. 1

[Test conditions]

- Direction : Downward drilling
- Pushing force : 98 N (10 kgf)
- Test material : Concrete panel with a compression strength of 2,352 N/cm² (240 kgf/cm²)

6-3. Chiseling Performance Comparison

Chiseling performance varies considerably depending on the work conditions. Use the factory test results shown in Fig. 2 for comparison purposes only.

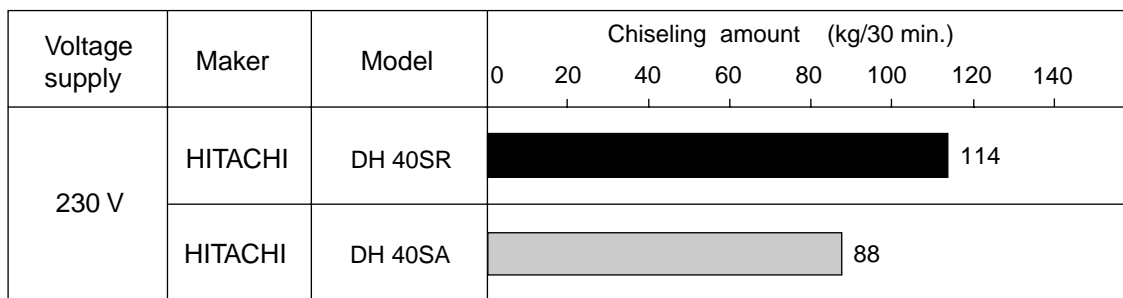


Fig. 2

7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Model DH 40SR Rotary Hammer by all of our customers, it is very important that at the time of sale the salesperson carefully ensures that the buyer seriously recognizes the importance of the contents of the Handling Instructions, and fully understands the meaning of the precautions listed on the Caution Plate attached to each tool.

7-1. Handling Instructions

Although every effort is made in each step of design, manufacture and inspection to provide protection against safety hazards, the dangers inherent in the use of any electric power tool cannot be completely eliminated. Accordingly, general precautions and suggestions for the use of electric power tools, and specific precautions and suggestions for the use of the Rotary Hammer are listed in the Handling Instructions to enhance the safe, efficient use of the tool by the customer. Salespersons must be thoroughly familiar with the contents of the Handling Instructions to be able to offer appropriate guidance to the customer during sales promotion.

7-2. Caution Plate

The Model DH 40SR unit is provided with a Caution Plate (illustrated below) which lists basic safety precautions in use. Carefully ensure that the customer fully understands and follows these precautions before using tool.

For Taiwan

注意

●使用前請詳讀使用說明書

進口商：明峯永業股份有限公司

地址：台北市大同區延平北路1段35號2F

8. REFERENCE INFORMATION

8-1. Grease Replacement

The striking portion and the speed reduction portion of the Model DH 40SR respectively use different types of grease. It is not necessary to replenish the grease unless the tool is disassembled for repair or there is grease leakage due to a damaged seal.

The striking portion uses special grease. To change the grease in the striking portion (inside the cylinder crank case), carefully wipe the old grease off the parts, and re-lube with 50 g (1.8 oz) into the cylinder crank case (connecting rod side). Take care not to overfill the grease as an excessive amount of grease can cause hammer failure.

The speed reduction portion (inside the gear cover) uses Hitachi Motor Grease No. 29. The proper supply volume is 30 g (1 oz). Never use the striking portion special grease in the speed reduction portion. Special grease would leak into the motor portion and cause subsequent trouble.

Periodically replenish the inside of the slip clutch with Hitachi Motor Grease No. 29 to the full.

The tool retainer portion (inside the front cover) uses Doubrex 251 grease. The proper supply volume is 8 g.

8-2. O-Ring Replacement

The O-rings (mounted on the striker and piston) are extremely important to ensure adequate sealing of the air pressure. Although the O-rings are made of special rubber to give them a long service life, they do nonetheless become worn, and should be replaced by new ones periodically depending on frequency of use of the tool. With average use, it is recommended that the O-rings be replaced at least every six months to ensure maximum effectiveness.

8-3. Structure of the Model DH 40SR Rotary Hammer

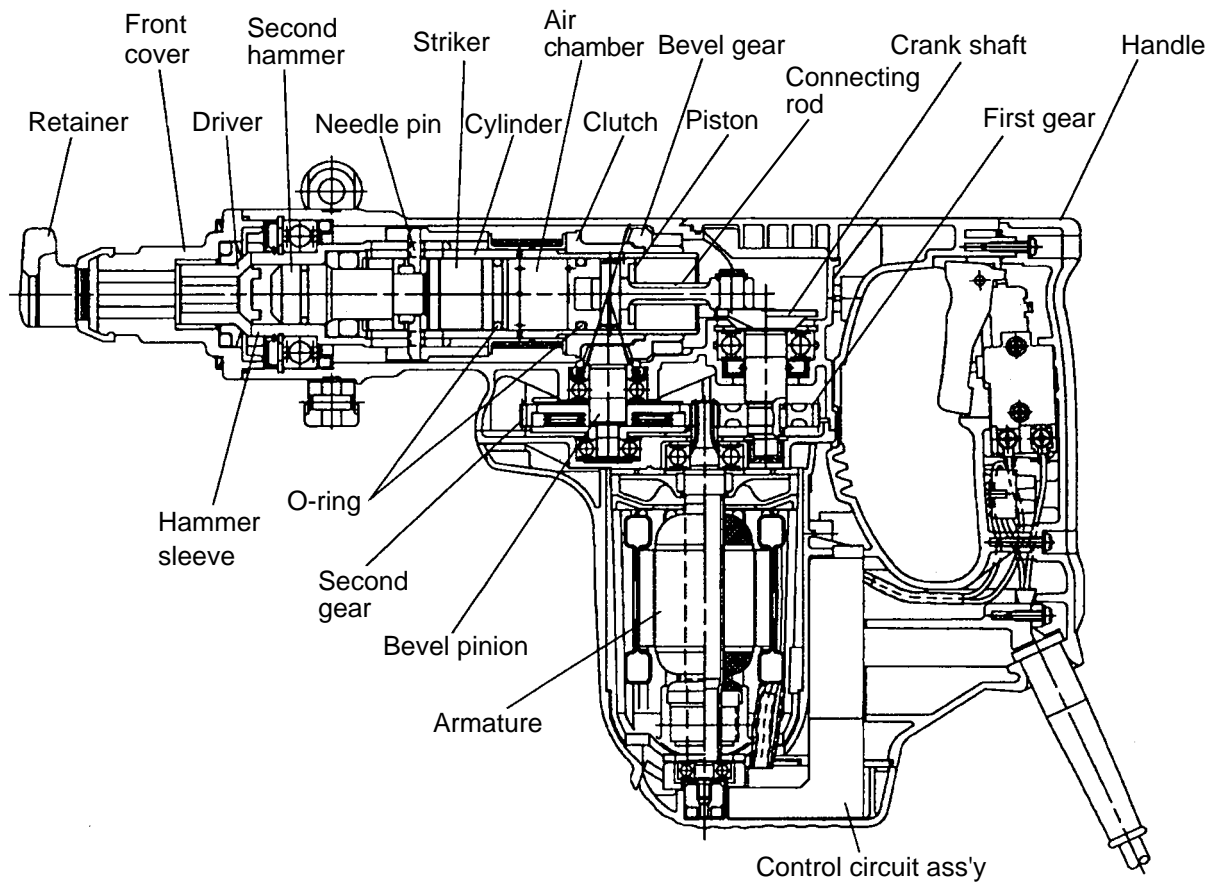


Fig. 3

○ Torque transmission

Armature revolution is transmitted to the second gear to rotate the bevel gear via the slip mechanism between the second gear and bevel pinion axes. Bevel gear revolution is transmitted to the cylinder via the clutch. Cylinder revolution is transmitted to the hammer sleeve that is connected with four needle pins. As the hammer sleeve meshes with the driver at the claws, they rotate together. The drill bit is connected into the hexagonal hole of the driver to transmit the revolution.

○ Striking operation

The rotation of the armature is transferred to the crank shaft and connecting rod, which in turn cause the piston to reciprocate inside the cylinder. As the piston reciprocates, the changing air pressure inside the air chamber between the piston and the striker causes the striker to continuously strike against the end of the second hammer. At the same time, the air-cushion effect within the air chamber absorbs the impact of the striker. Should the air escape from the air chamber, the air-cushion effect would cease, and the impact energy would not be absorbed. Accordingly, the o-rings mounted on the striker and piston play an extremely important role in sealing the air within the air chamber.

○ Mechanism to prevent idle hammering

When the working tool is released from the workpiece, slide sleeve (A) and the second hammer are forcibly moved to the position illustrated in Fig. 4 by spring (A), and the striker moves out of striking position. When this occurs, the air holes located at the position unaffected by the rebound of the striker at no load are opened and the pressure within the air chamber remains unchanged even though the piston continues to reciprocate, thereby preventing striking operation.

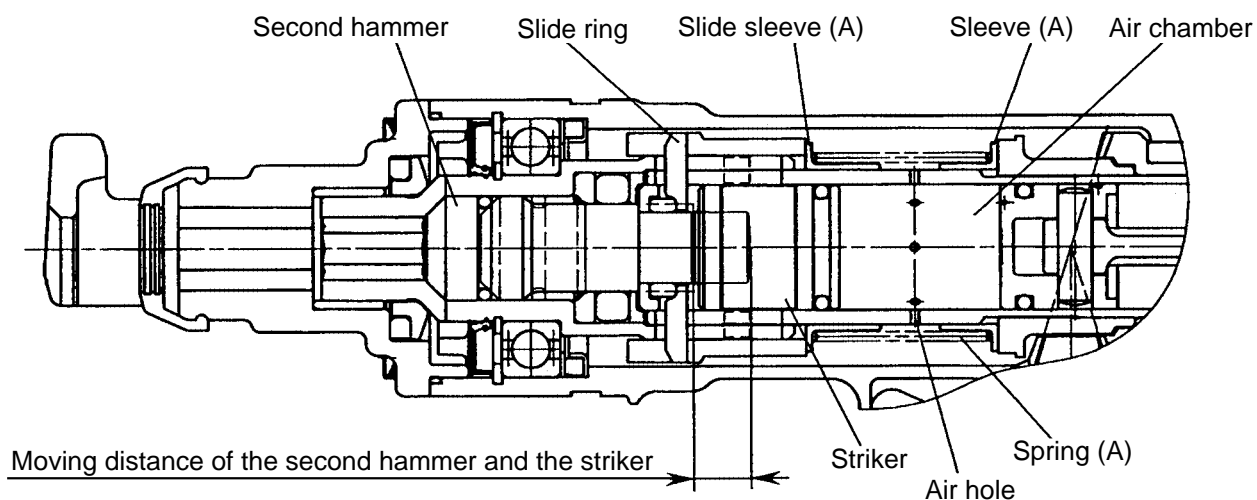


Fig. 4

○ Shock-absorbing mechanism

At the instance of releasing the working tool from the workpiece by moving the main body up, the second hammer contacts driver as shown in Fig. 5 then the cushion (damper (B)) provided between driver holder and front cover absorbs the striking force of the second hammer. Thus the durability of the Model DH 40SR is increased greatly because the second hammer does not strike the tool retainer directly.

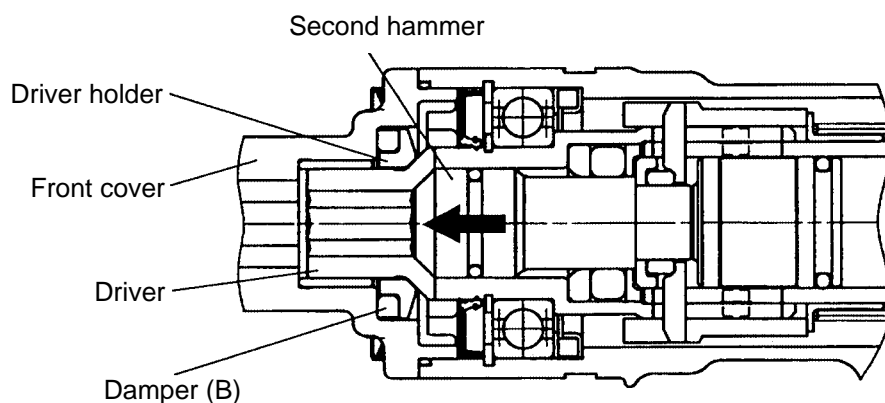


Fig. 5

○ Slip clutch mechanism

The slip clutch mechanism is described below with reference to Fig. 6. The bevel pinion and the gear holder are coupled together by the key and press-fitting. Spring (C) and needle pins are housed in elongated grooves of the gear holder. The needle pin is pressed against the inner face of second gear by spring (C) to allow idle rotation of the second gear relative to the gear holder. When an excess torque is exerted on the bevel pinion shaft, the needle pin is raised upon the projection of the second gear against the load of spring (C) to allow idle rotation of the second gear. With the arrangement, the clutch slips when an excessive torque is applied to the working tool as when the drill bit contacts steel bar/wire in the concrete, protecting the operator from unexpected motion of the side handle.

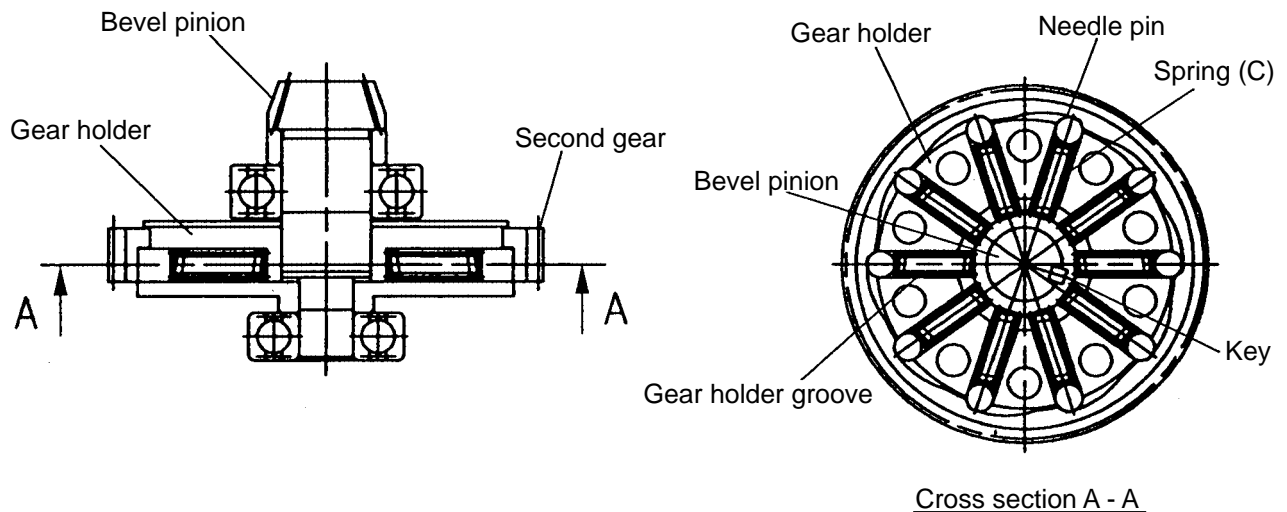


Fig. 6

○ Tool holder

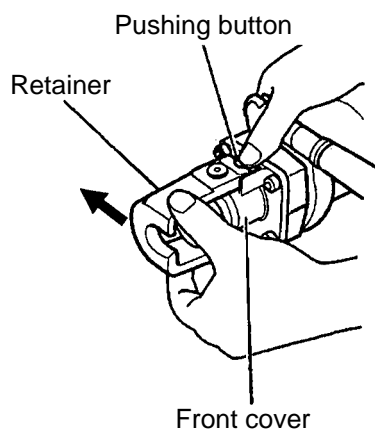


Fig. 7

The Model DH 40SR is equipped with an easy pushbutton-type tool holder. To attach a tool, pull up the retainer in the arrow direction and insert a tool into the hexagonal hole of the front cover then pull down the retainer (Fig. 7).

○ Handle and side handle

The handle section is of a two-layer structure. The base is made of glassfiber-reinforced plastic and the outside layer is soft resin. They are molded in one piece.

The side handle also has a two-layer structure. The base is made of glassfiber-reinforced plastic base with a steel nut and the outside layer is soft resin. They are molded in one piece. The newly designed handle and side handle structure ensures more comfortable grip for improved operability.

○ Sealing and dust-proof structure

The cylinder crank case section is tightly sealed with three o-rings, three oil seals and rubber seal as shown in Fig. 8. This prevents leakage of grease from the cases, while also protecting them against dust from outside. The tool holder is also protected from foreign dust by means of a rubber dust cover.

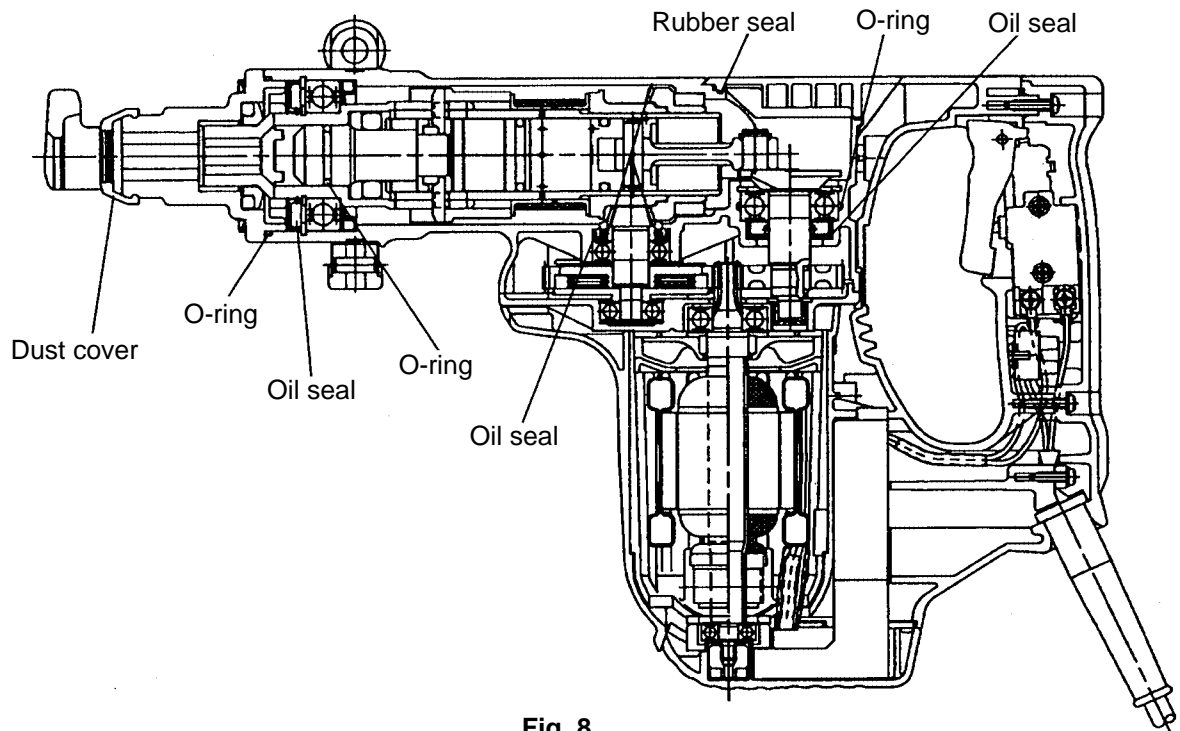


Fig. 8

9. REPAIR GUIDE

The numbers in **[Bold]** correspond to the item numbers in the Parts List and exploded assembly diagrams.

9-1. Disassembly

(1) Disassembly of the retainer

Remove Front Cover (A) **[9]** from the Cylinder Crank Case **[56]** and pull out the Roll Pin D4 x 20 **[4]**. Turning the holder (J212 No. 970992) so that the special bolt M5 (J213 No. 970993) can be vertically inserted into the screw hole of the Retainer Pin **[5]**, make the bottom of the holder contact with the flat portion of the Retainer **[1]**. Holding the special bolt M5 with a wrench to prevent turning, turn the special nut M5 (J211 No. 970991) with a wrench and pull out the Retainer Pin **[5]**. Pull out the other Retainer Pin **[5]** by pushing an 8 mm-dia. steel bar into the hole of Front Cover (A) **[9]** (Figs. 9 and 10).

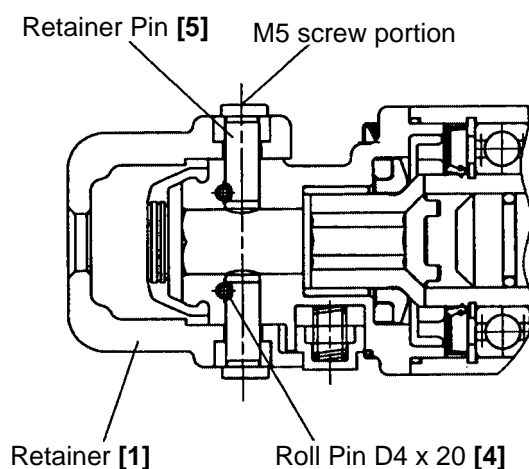


Fig. 9

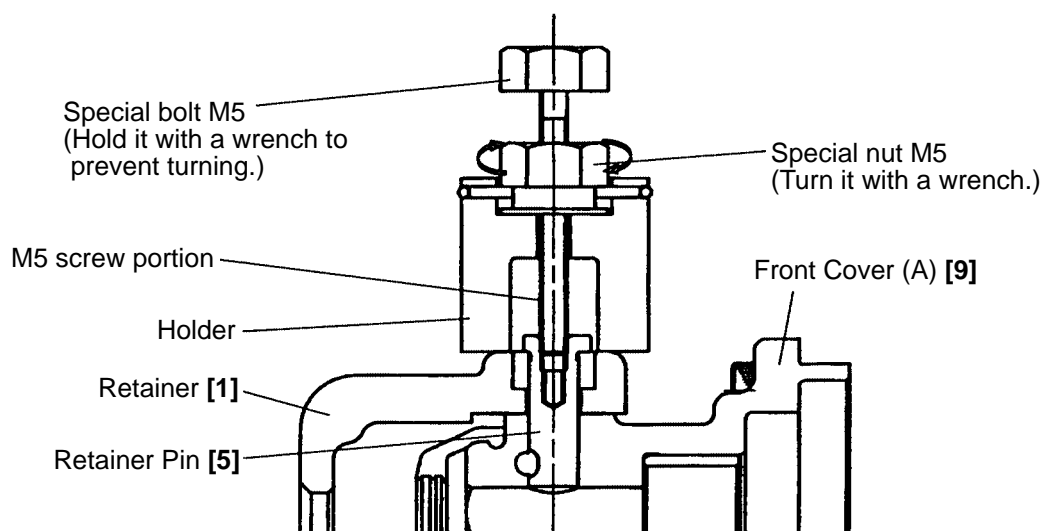


Fig. 10

(2) Disassembly of the piston and the striker

Remove the Seal Lock Hex. Socket Hd. Bolt M4 x 12 [44] from the Crank Cover [46] then remove the Crank Cover [46] from the Cylinder Crank Case [56]. Remove the Seal Lock Hex. Socket Hd. Bolt M6 x 45 [43] and Seal Lock Hex. Socket Hd. Bolt M6 x 22 [89]. Remove the Gear Cover [74] from the Cylinder Crank Case [56]. Remove the Bevel Pinion [57] (slip clutch) from the Cylinder Crank Case [56] (otherwise, Bevel Gear [42] cannot be removed later). Remove the Seal Lock Hex. Socket Hd. Bolt M6 x 25 [3] from Front Cover (A) [9]. Then the tool holder, Driver [13], Driver Holder [12], Damper (B) [11] can be removed from the Cylinder Crank Case [56]. Remove Oil Seal (B) [14] from the Cylinder Crank Case [56]. At this time, secure the Cylinder Crank Case [56] and pull out Oil Seal (B) [14] by holding the protrusion with pliers. Remove the Retaining Ring for D62 Shaft [15] using a retaining ring puller. Then the Hammer Sleeve [21], Cylinder [31], Second Hammer [23], Slide Sleeve (A) [33], Slide Sleeve (B) [32], Clutch [38], Spring (A) [34], etc. can be removed from the Cylinder Crank Case [56] in an assembled state. Remove the Bevel Gear [42] from the Cylinder Crank Case [56] by tapping Front Cover (A) [9] side with a plastic hammer. Remove the Striker [36] by tapping the Cylinder [31] with a plastic hammer. The Piston [39] remains in the Cylinder Crank Case [56]. Remove the Retaining Ring for D10 Shaft [49] using a retaining ring puller and remove the Connecting Rod [41] from the Crank Shaft [50] (Fig. 11).

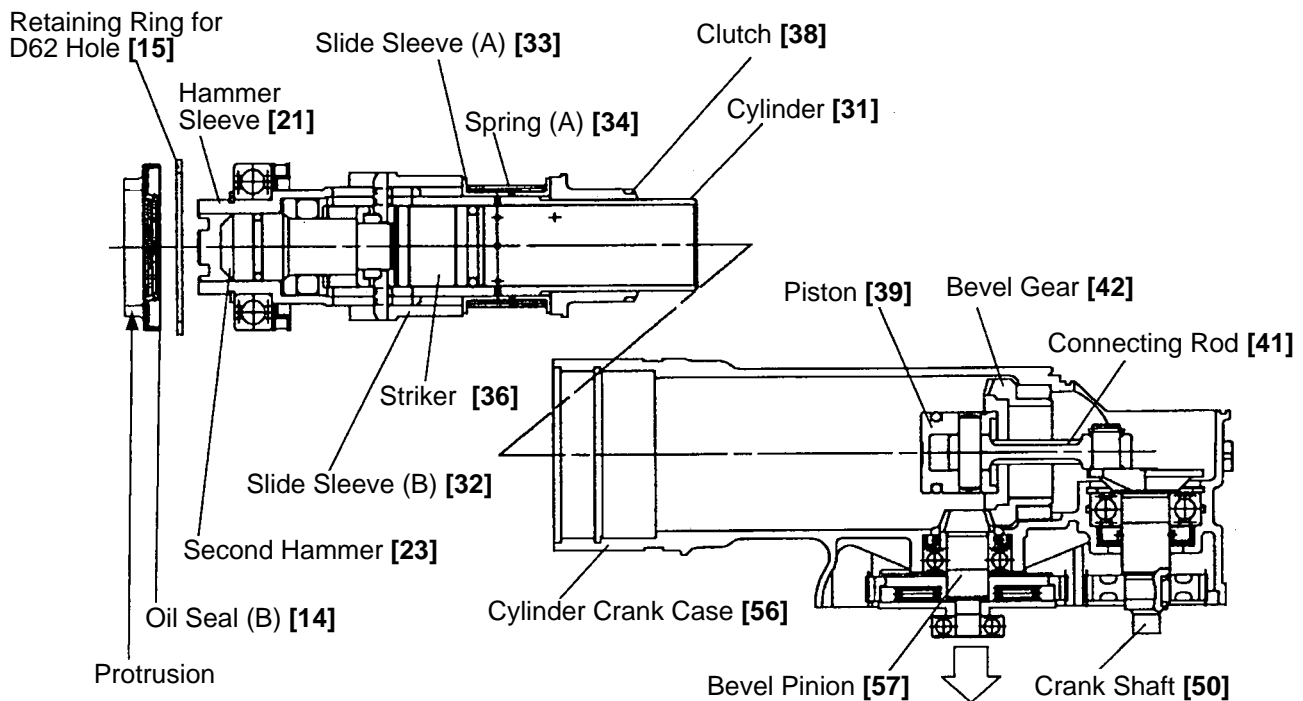


Fig. 11

(3) Disassembly of the cylinder and the hammer sleeve

Remove the Second Hammer [23] from the Hammer Sleeve [21] side. As shown in Fig. 12, tilt the assembly of the Slide Ring [29] and Damper (C) [28] slightly with respect to the shaft of the Cylinder [31] and turn it 90° on the protrusion of the Slide Ring [29] then remove it from the slot of the Cylinder [31] and the Hammer Sleeve [21]. Remove the four Needle Pins D6 x 6 [30] to separate the Cylinder [31] from the Hammer Sleeve [21].

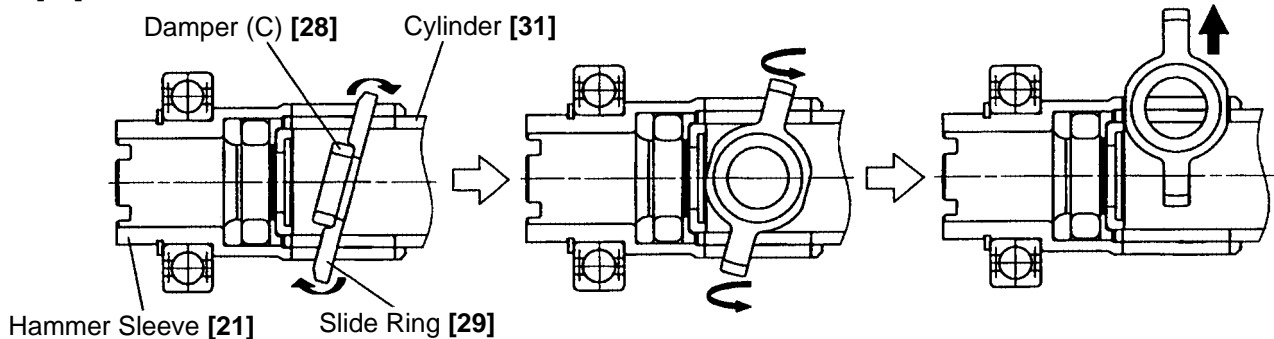


Fig. 12

(4) Disassembly of the first gear and the crank shaft

Remove grease from the Connecting Rod [41] side and the First Gear [72] side of the Cylinder Crank Case [56]. Remove the Retaining Ring for D40 Hole [52] from the Ball Bearing 6203DDCMPS2L [53] using a retaining ring puller. At this time, shift the position of the crank pin of the Crank Shaft [50] as shown in Fig. 13 so that the hole of the retaining ring can be seen before removal. Face the Connecting Rod [41] side of the Cylinder Crank Case [56] downward and place it on a support. Press the end surface of the Crank Shaft [50] with a hand press to remove the First Gear [72] and the Crank Shaft [50] (Fig. 14).

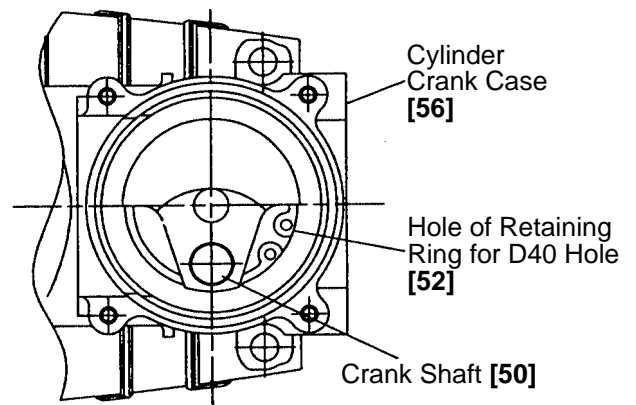


Fig. 13

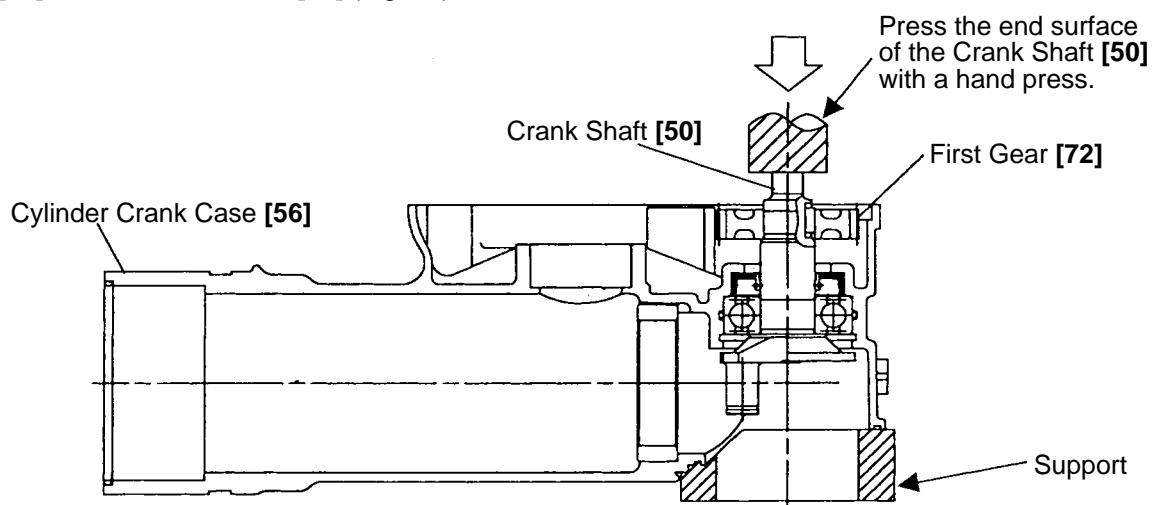


Fig. 14

(5) Disassembly of the slip clutch

Remove the Ball Bearing 629VVC2PS2L [69] with a bearing puller. Place the assembly on a sleeve-type support facing Washer (A) [63] downward as shown in Fig. 15. Push the Spacer [68] side of the Bevel Pinion [57] with a hand press to remove the Gear Holder [64] and the Spacer [68] from the Bevel Pinion [57]. Before removal of the Second Gear [67] from the Gear Holder [64], put the assembly in a poly bag and disassemble it inside the poly bag to prevent missing of Spring (C) [65] and the Needle [66].

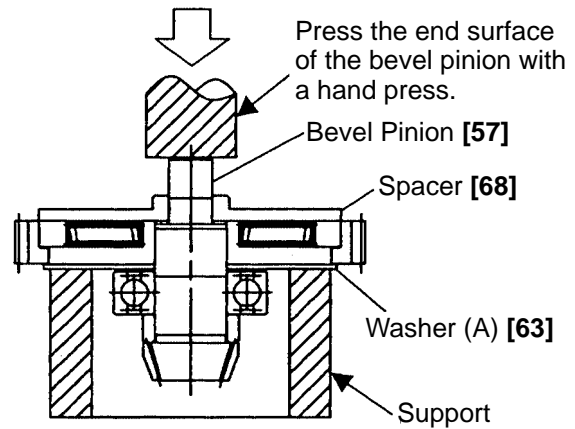


Fig. 15

9-2. Reassembly

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

(1) Reassembly of the first gear and the crank shaft

Press-fit Oil Seal (B) [55] into the Cylinder Crank Case [56] and mount O-ring (S-40) [54]. Press-fit the Ball Bearing 6203DDCMPS2L [53]. Mount the Retaining Ring for D40 Hole [52] using a retaining ring puller. Press-fit the Crank Shaft [50] into the Ball Bearing 6203DDCMPS2L [53]. Put the Feather Key 3 x 3 x 8 [51] in the groove of the Crank Shaft [50] and press-fit the First Gear [72] with a suitable tool while holding the flat portion of the Crank Shaft [50] with a steel bar. Before press-fitting, make sure that the Feather Key 3 x 3 x 8 [51] fits in the key groove of the First Gear [72] (Fig. 16).

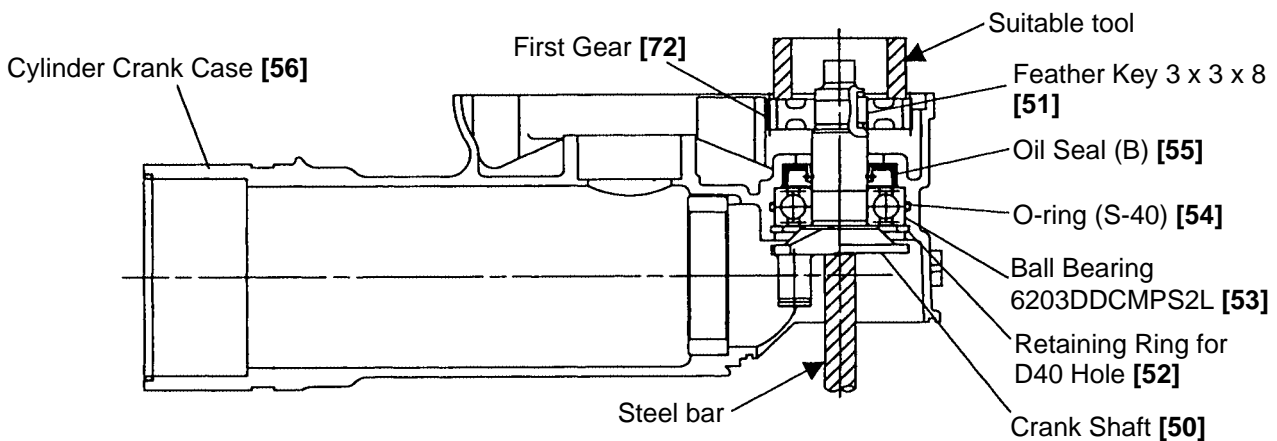


Fig. 16

(2) Reassembly of the piston

Insert the Piston Pin [40] into the 8-mm dia. hole (marked side) of the Piston [39] and the Connecting Rod [41] then press-fit it. Mount the O-ring [37] to the Piston [39]. Be careful not to protrude the Piston Pin [40] from the outside diameter of the Piston [39]. Move the crank pin of the Crank Shaft [50] to the bottom dead center and mount the piston assembly to the Crank Shaft [50] from the front cover side of the Cylinder Crank Case [56]. Mount the Retaining Ring for D10 Shaft [49] using a retaining ring puller (Fig. 17).

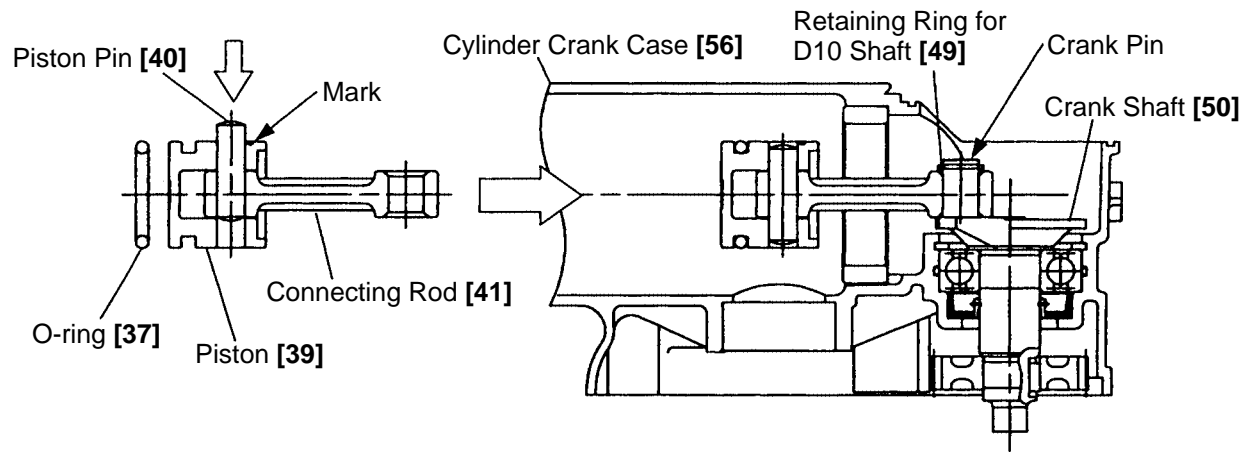


Fig. 17

(3) Reassembly of the cylinder and the hammer sleeve

Press-fit the Hammer Sleeve [21] into the Ball Bearing 6007DDUAV2S [17] and secure it with the Retaining Ring for D35 Shaft [16]. Mount the Damper Washer [24], Damper [25], Damper Holder [26] and Damper Holder (B) [27] to the Hammer Sleeve [21]. Mount the Damper Washer [24] aligning the radius of the inside diameter with the radius of the Second Hammer [23]. Mount the Damper Holder [26] so that its flat surface faces the Damper [25] side. Mount Damper Holder (B) [27] so that its flat surface faces the Damper Holder [26] side. Insert the Cylinder [31] into the Hammer Sleeve [21]. Secure the Cylinder [31] and the Hammer Sleeve [21] with the four Needle Pins D6 x 6 [30]. Insert the assembly of the Slide Ring [29] and Damper (C) [28] into the slot of the Hammer Sleeve [21] and the Cylinder [31]. Tilt the assembly of the Slide Ring [29] and Damper (C) [28] slightly with respect to the shaft of the Cylinder [31] and turn it 90° on the protrusion of the Slide Ring [29]. At this time, apply special grease (for hammer and hammer drill) to the Slide Ring [29] and Damper (C) [28] before assembling (Fig. 18).

Insert the Striker [36] into the Cylinder [31]. Mount the Bearing Washer [18], Urethane Ring [19], Ring Holder [20], Slide Sleeve (B) [32], Slide Sleeve (A) [33], Spring (A) [34], Sleeve (A) [35], Clutch [38] and Bevel Gear [42] to the Cylinder [31]. Move the crank pin of the Crank Shaft [50] then move the Piston [39] to the top dead center. Insert the hammer sleeve assembly into the Cylinder Crank Case [56]. If the Slip Clutch Ass'y [71] is mounted in the Cylinder Crank Case [56], it will be an obstacle for mounting the Bevel Gear [42]. Before mounting the Slip Clutch Ass'y [71], mount the hammer sleeve assembly to the Cylinder Crank Case [56]. When press-fitting Oil Seal (B) [14], cover the Hammer Sleeve [21] with the Driver [13] to protect the inside lip portion (Fig. 19).

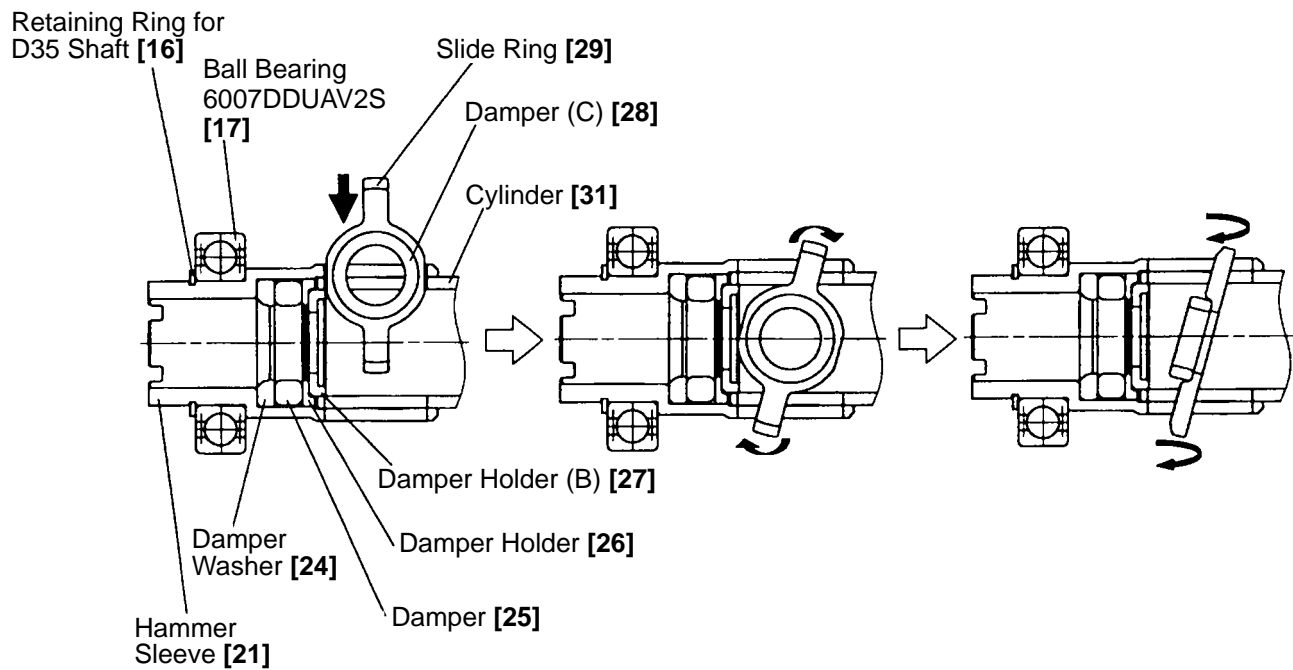


Fig. 18

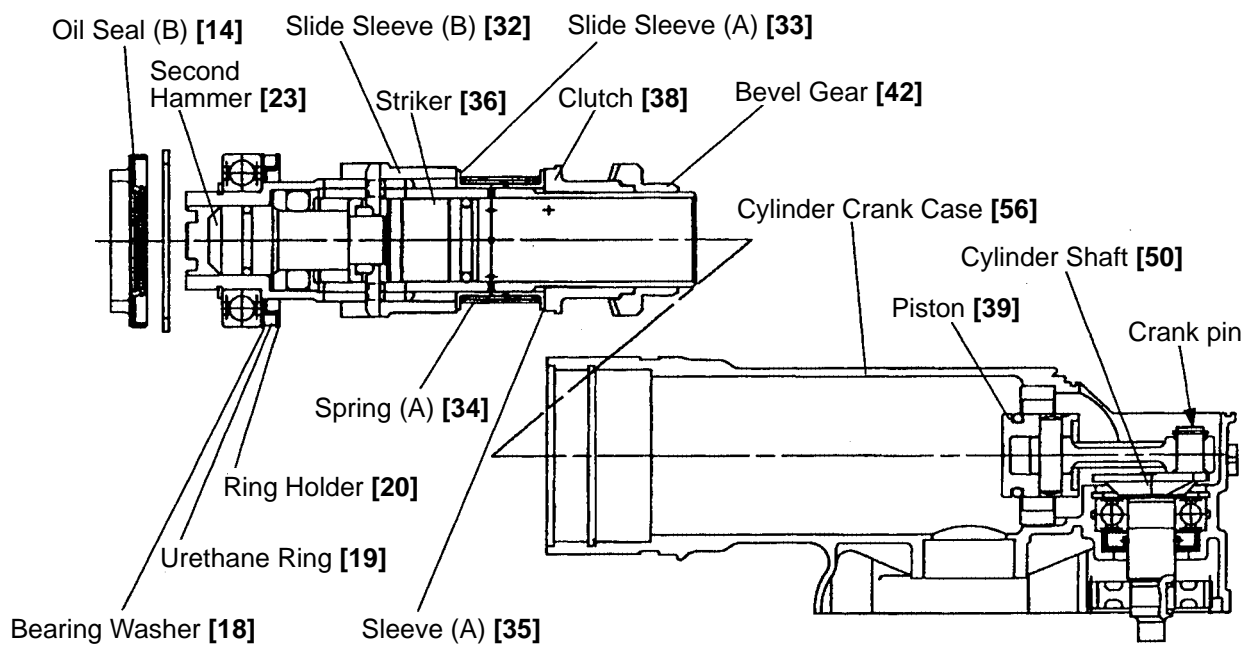


Fig. 19

(4) Reassembly of the slip clutch

Press-fit the Bevel Pinion [57] into the Collar [59] and the Ball Bearing 6002DDCMPS2L [61] then insert it into the Washer [62] and Washer (A) [63]. Mount the Feather Key 3 x 3 x 8 [58] to the Bevel Pinion [57] then press-fit into the Gear Holder [64]. Mount the Second Gear [67] around the outer circumference of the Gear Holder [64]. Before mounting, apply Hitachi Motor Grease No. 29 to the inner circumference of the Second Gear [67]. Insert the ten Needles [66] being careful not to incline them, then push in ten Springs (C) [65] as shown in Fig. 20. Fill the slots and the through holes of the Gear Holder [64] with Hitachi Motor Grease No. 29. Press-fit the Bevel Pinion [57] into the Spacer [68] and the Ball Bearing 629VVC2PS2L [69].

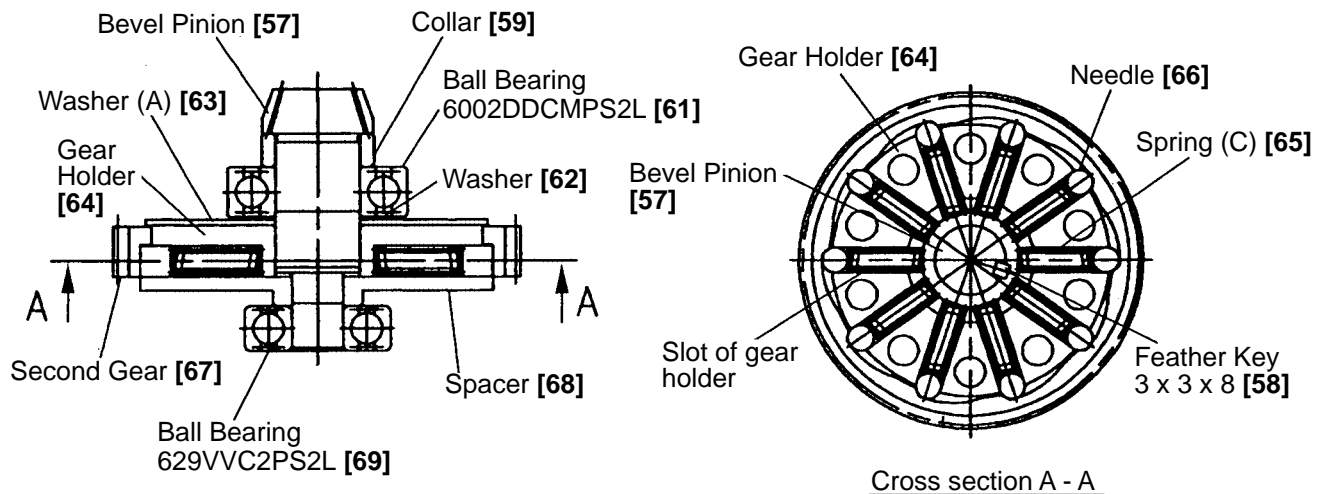


Fig. 20

(5) Reassembly of retainer

Mount the Retainer Pin [5] aligning the notch of the Retainer Pin [5] with the hole of the Roll Pin D4 x 20 [4]. Do not allow the Retainer Pin [5] to project into the hexagonal hole of front cover (A) (it is recommended to insert a hexagonal bull point into the hole). (Fig. 21)

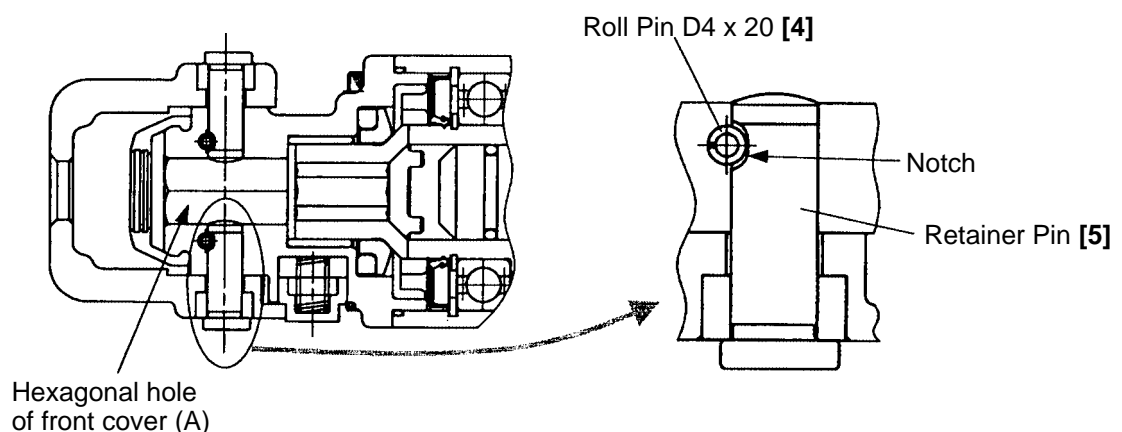


Fig. 21

(6) Carbon brush inspection

The motor employs Carbon Brushes **[91]** which are consumable parts. When they become worn to or near "wear limit" (7 mm), it could result in motor trouble. Replace the Carbon Brushes **[91]** with new ones which are numbered "73" as shown in Fig. 22. In addition, always keep Carbon Brushes **[91]** clean and ensure that they slide freely within the brush holders.

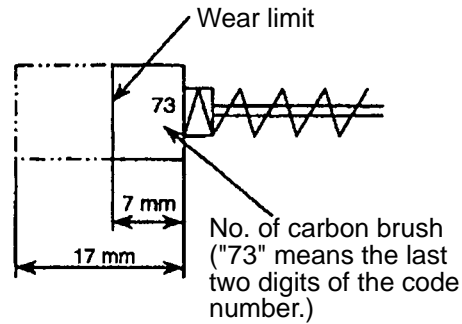


Fig. 22

(7) Application of lubricant

Apply special grease (for hammer and rotary hammer) to the inner circumference of the Connecting Rod **[41]**, the O-rings **[37]** of the Striker **[36]** and the Piston **[39]**, the sliding portion of the Second Hammer **[23]**, O-ring (C) **[22]** of the Second Hammer **[23]**, the Damper **[25]**, the inner and outer circumference of Bevel Gear **[42]**, inner circumference of Slide Sleeve (A) **[33]**, inner circumference of Slide Sleeve (B) **[32]**, inner circumference of Sleeve (A) **[35]**, the Slide Ring **[29]**, Damper (C) **[28]**, Damper Holder (B) **[27]**, Oil Seal (A) **[60]**, Oil Seal (B) **[14]** and Oil Seal (B) **[55]**. Fill 50 g of the special grease in the Cylinder Crank Case **[56]** on the Connecting Rod **[41]** side and 20 g in the Cylinder Crank Case **[56]** on the Clutch **[38]** side. Apply Hitachi Motor Grease No. 29 to the Needle Bearing (M661) **[73]** and the pinon portion of the Armature Ass'y **[82]**. Fill 30 g of the Hitachi Motor Grease No. 29 in the Cylinder Crank Case **[56]** on the First Gear **[72]** side and the Gear Cover **[74]** side. Apply Doubrex 251 grease to the outside diameter portion, hexagonal hole and claws of the Driver **[13]** and Damper (B) **[11]**. Fill 8 g of Doubrex 251 grease in Front Cover (A) **[9]**.

(8) Oil seal and others

Take care not to scratch or cut Oil Seal (A) **[60]**, Oil Seal (B) **[14]** and Oil Seal (B) **[55]** of Cylinder Crank Case **[56]**, O-ring (1AS-60) **[10]** of Front Cover (A) **[9]**, O-ring (C) **[22]** of Second Hammer **[23]**, Rubber Seal **[48]** of Crank Cover **[46]** and O-ring **[37]** of Piston **[39]** and Striker **[36]**.

9-3. Screw Locking Agent TB1401

Apply screw locking agent TB1401 to all hex. socket head bolts M4, M5 and M6.

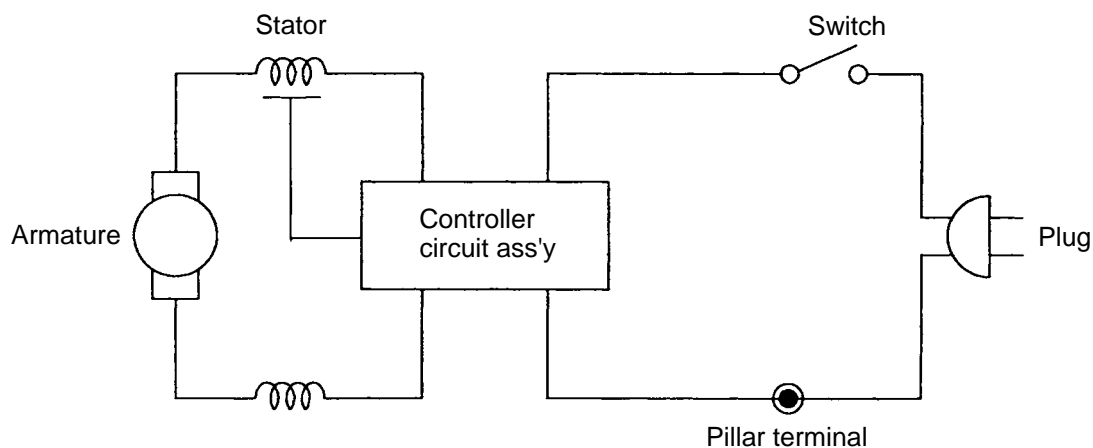
(Note) Be sure to apply screw locking agent ThreeBond TB1401 to the threads during reassembly, as the bolts loosened with vibration may cause damage to the tool body.

9-4. Tightening Torque

Front cover mounting bolts.....	$13.7^{+0.98}_0 \text{ N}\cdot\text{m}$ ($140^{+10}_0 \text{ kgf}\cdot\text{cm}$)
(Hex. socket head bolt M6 x 25)	
Tapping screw D5.....	$2.94 \pm 0.49 \text{ N}\cdot\text{m}$ ($30 \pm 5 \text{ kgf}\cdot\text{cm}$)
Hex. socket head bolt M6 x 45	$9.8^{+1.96}_0 \text{ N}\cdot\text{m}$ ($100^{+20}_0 \text{ kgf}\cdot\text{cm}$)
Hex. socket head bolt M6 x 22	
Tail cover mounting bolt	$4.41 \pm 0.49 \text{ N}\cdot\text{m}$ ($45 \pm 5 \text{ kgf}\cdot\text{cm}$)
(Hex. socket head bolt M5 x 10)	
Crank cover mounting bolt	$4.41 \pm 0.49 \text{ N}\cdot\text{m}$ ($45 \pm 5 \text{ kgf}\cdot\text{cm}$)
Lever shaft mounting bolt	
(Hex. socket head bolt M4 x 12)	
Tapping screw (W/Flange) D4	$1.96 \pm 0.49 \text{ N}\cdot\text{m}$ ($20 \pm 5 \text{ kgf}\cdot\text{cm}$)
Handle mounting bolt	$4.41 \pm 0.49 \text{ N}\cdot\text{m}$ ($45 \pm 5 \text{ kgf}\cdot\text{cm}$)
(Hex. socket head bolt (W/Flange) M5 x 14)	

9-5. Internal Wiring

- Wiring diagram



- Mounting diagram

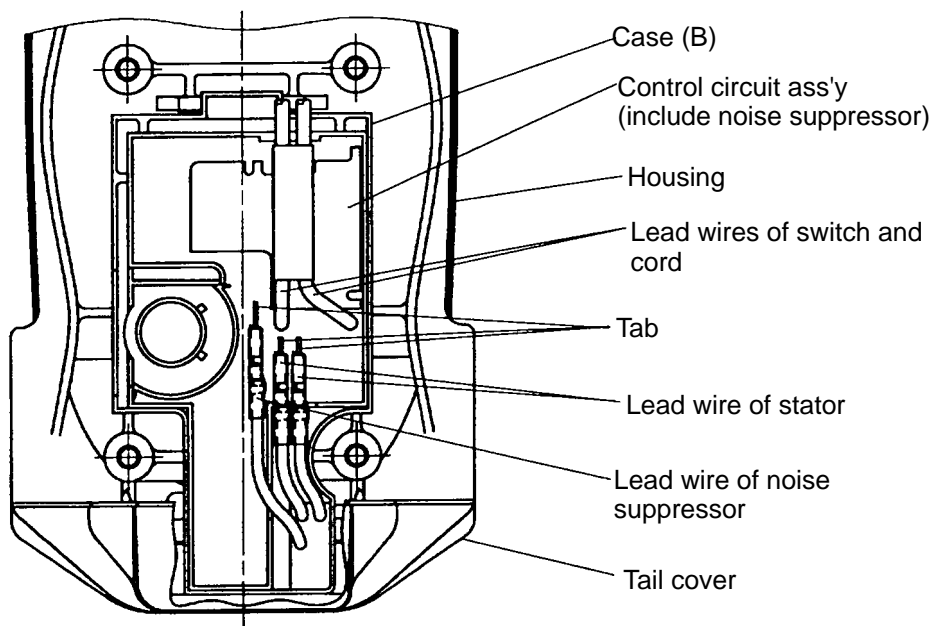


Fig. 23

9-6. 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 4,000 V/1 minute, with no abnormalities 230 V
 AC 2,500 V/1 minute, with no abnormalities 110 V

9-7. No-load Current Value

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

Voltage (V)	110	230
Current (A) (Max.)	6.4	3.1

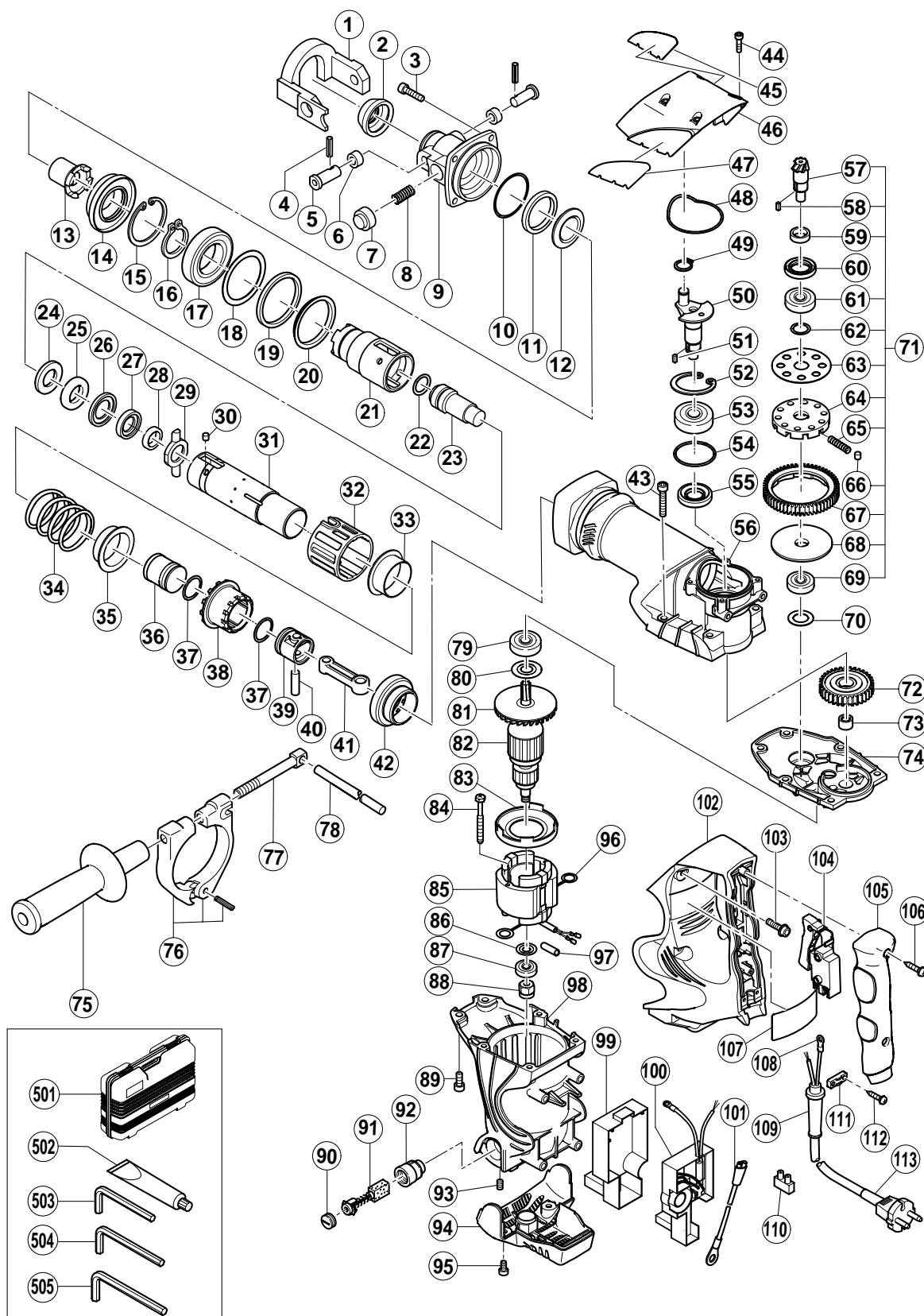
10. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
DH 40SR	General Assembly							
		Work Flow						Housing Ass'y Stator Ass'y
		Switch (C) Cord Cord Armor						Gear Cover Needle Bearing
		Tail Cover						Armature Ass'y Ball Bearing (6201DD) Dust Washer (B)
		Crank Cover						Ball Bearing (608VV) Magnet
					Controller Circuit Handle			Crank Shaft Ball Bearing (6203DD) O-ring Oil Seal (B) First Gear
		Retainer Retainer Pin Pushing Button		Front Cover (A) O-ring Damper (B) Driver Holder Driver Oil Seal (B) Ball Bearing (6007DD) Urethane Ring Hammer Sleeve O-ring (C) Second Hammer Damper Washer Damper Damper Holder Damper Holder (B) Damper (C) Slide Ring				Slip Clutch Ass'y Bevel Pinion Oil Seal (A) Ball Bearing (6002DD) Washer (A) Gear Holder Second Gear Ball Bearing (629VV)
					Striker O-ring Piston Connecting Rod			Cylinder Slide Sleeve (B) Slide Sleeve (A) Spring (A) Sleeve (A) Clutch Bevel Gear

ELECTRIC TOOL PARTS LIST

■ ROTARY HAMMER
Model DH 40SR

2003 • 4 • 25
(E1)



PARTS

DH 40SR

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	990-131	RETAINER	1		
2	322-078	DUST COVER	1		
3	981-942	SEAL LOCK HEX. SOCKET HD. BOLT M6X25	4		
4	991-697	ROLL PIN D4X20	2		
5	990-135	RETAINER PIN	2		
6	990-134	DAMPER (B)	2		
7	990-133	PUSHING BUTTON	1		
8	990-132	SET SPRING	1		
9	321-844	FRONT COVER (A)	1		
10	956-996	O-RING (1AS-60)	1		
11	321-843	DAMPER (B)	1		
12	321-842	DRIVER HOLDER	1		
13	321-841	DRIVER	1		
14	321-840	OIL SEAL (B)	1		
15	321-839	RETAINING RING FOR D62 HOLE	1		
16	948-131	RETAINING RING FOR D35 SHAFT	1		
17	600-7DD	BALL BEARING 6007DDUAV2S	1		
18	321-297	BEARING WASHER	1		
19	981-859	URETHANE RING	1		
20	321-838	RING HOLDER	1		
21	321-837	HAMMER SLEEVE	1		
22	313-396	O-RING (C)	1		
23	321-833	SECOND HAMMER	1		
24	321-836	DAMPER WASHER	1		
25	321-835	DAMPER	1		
26	321-834	DAMPER HOLDER	1		
27	321-856	DAMPER HOLDER (B)	1		
28	321-832	DAMPER (C)	1		
29	321-831	SLIDE RING	1		
30	313-057	NEEDLE PIN D6X6	4		
31	321-827	CYLINDER	1		
32	321-830	SLIDE SLEEVE (B)	1		
33	321-829	SLIDE SLEEVE (A)	1		
34	321-828	SPRING (A)	1		
35	321-977	SLEEVE (A)	1		
36	321-976	STRIKER	1		
37	986-104	O-RING	2		
38	321-975	CLUTCH	1		
39	321-284	PISTON	1		
40	980-708	PISTON PIN	1		
41	321-285	CONNECTING ROD	1		
42	321-296	BEVEL GEAR	1		
43	986-940	SEAL LOCK HEX. SOCKET HD. BOLT M6X45	4		
44	983-162	SEAL LOCK HEX. SOCKET HD. BOLT M4X12	4		
45		HITACHI LABEL	1		
46	321-315	CRANK COVER	1		
47		HITACHI LABEL	1		
48	321-314	RUBBER SEAL	1		
49	939-540	RETAINING RING FOR D10 SHAFT (10 PCS.)	1		
50	321-275	CRANK SHAFT	1		
51	944-109	FEATHER KEY 3X3X8	1		

PARTS

DH 40SR

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
52	948-391	RETAINING RING FOR D40 HOLE	1		
53	620-3DD	BALL BEARING 6203DDCMPS2L	1		
54	996-363	O-RING (S-40)	1		
55	321-274	OIL SEAL (B)	1		
56	321-826	CYLINDER CRANK CASE	1		
57	321-278	BEVEL PINION	1		
58	944-109	FEATHER KEY 3X3X8	1		
59	321-279	COLLAR	1		
60	313-050	OIL SEAL (A)	1		
61	600-2DD	BALL BEARING 6002DDCMPS2L	1		
62	313-058	WASHER	1		
63	313-053	WASHER (A)	1		
64	321-281	GEAR HOLDER	1		
65	321-282	SPRING (C)	10		
66	320-343	NEEDLE	10		
67	321-280	SECOND GEAR	1		
68	321-283	SPACER	1		
69	629-VVM	BALL BEARING 629VVC2PS2L	1		
70	944-525	BEARING WASHER (C)	1		
71	321-277	SLIP CLUTCH ASS'Y	1	INCLUD. 57-59, 61-69	
72	321-276	FIRST GEAR	1		
73	939-299	NEEDLE BEARING (M661)	1		
74	321-319	GEAR COVER	1		
75	313-078	SIDE HANDLE	1		
76	313-079	HANDLE HOLDER	1		
77	313-080	HANDLE BOLT	1		
78	971-786	STOPPER ROD	1		
79	620-1DD	BALL BEARING 6201DDCMPS2L	1		
80	302-429	DUST WASHER (B)	1		
81	321-640	FAN	1		
*	82	360-591U	ARMATURE ASS'Y 110V-120V	1	INCLUD. 79-81, 86, 87
*	82	360-591E	ARMATURE ASS'Y 220V-230V	1	INCLUD. 81
	83	321-320	FAN GUIDE	1	
	84	953-174	HEX. HD. TAPPING SCREW D5X55	2	
*	85	340-542C	STATOR ASS'Y 110V	1	INCLUD. 96
*	85	340-542E	STATOR ASS'Y 220V-230V	1	INCLUD. 96
	86	982-631	WASHER (A)	1	
	87	608-VVM	BALL BEARING 608VVC2PS2L	1	
	88	318-721	MAGNET	1	
	89	321-313	SEAL LOCK HEX. SOCKET HD. BOLT M6X22	2	
	90	935-829	BRUSH CAP	2	
	91	999-073	CARBON BRUSH (AUTO STOP TYPE) (1 PAIR)	2	
	92	971-001	BRUSH HOLDER	2	
	93	938-477	HEX. SOCKET SET SCREW M5X8	2	
	94	321-321	TAIL COVER	1	
	95	877-839	SEAL LOCK HEX. SOCKET HD. BOLT M5X10	2	
	96	930-703	BRUSH TERMINAL	2	
	97	321-322	VINYL TUBE	1	
	98	321-318	HOUSING ASS'Y	1	INCLUD. 92, 93
	99	321-858	CASE (B)	1	
*	100	321-861	CONTROLLER CIRCUIT 110V	1	

PARTS

DH 40SR

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
* 100	321-862	CONTROLLER CIRCUIT 230V	1	FOR EUROPE	
101	317-113	INTERNAL WIRE	1		
102	321-859	HANDLE	1		
103	998-485	HEX. SOCKET HD. BOLT (W/FLANGE) M5X14	6		
104	313-093	SWITCH (C) (2P SCREW TYPE W/O LOCK)	1		
105	321-324	HANDLE COVER	1		
106	301-653	TAPPING SCREW (W/FLANGE) D4X20 (BLACK)	2		
107		NAME PLATE	1		
* 108	980-063	TERMINAL	1	FOR CORD	
109	940-778	CORD ARMOR D10.7	1		
110	938-307	PILLAR TERMINAL	1		
111	960-266	CORD CLIP	1		
112	984-750	TAPPING SCREW (W/FLANGE) D4X16	2		
* 113	500-239Z	CORD	1	(CORD ARMOR D10.7)	
* 113	500-390Z	CORD	1	(CORD ARMOR D10.7) FOR EUROPE	

STANDARD ACCESSORIES

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
501	321-325	CASE	1		
502	981-840	GREASE (A) FOR HAMMER.HAMMER DRILL (30G)	1		
503	943-277	HEX. BAR WRENCH 3MM	1		
504	944-458	HEX. BAR WRENCH 4MM	1		
505	944-459	HEX. BAR WRENCH 5MM	1		

OPTIONAL ACCESSORIES

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
601	985-721	DRILL BIT D16.0 X 280 (HEX. SHANK TYPE)	1		
602	985-720	DRILL BIT D16.0 X 400 (HEX. SHANK TYPE)	1		
603	985-722	DRILL BIT D16.0 X 505 (HEX. SHANK TYPE)	1		
604	991-330	DRILL BIT D16.0 X 550 (HEX. SHANK TYPE)	1		
605	991-331	DRILL BIT D18.0 X 550 (HEX. SHANK TYPE)	1		
606	985-724	DRILL BIT D19.0 X 280 (HEX. SHANK TYPE)	1		
607	985-723	DRILL BIT D19.0 X 400 (HEX. SHANK TYPE)	1		
608	985-725	DRILL BIT D19.0 X 505 (HEX. SHANK TYPE)	1		
609	991-332	DRILL BIT D19.0 X 550 (HEX. SHANK TYPE)	1		
610	991-334	DRILL BIT D20.0 X 505 (HEX. SHANK TYPE)	1		
611	991-333	DRILL BIT D20.0 X 550 (HEX. SHANK TYPE)	1		
612	985-727	DRILL BIT D22.0 X 280 (HEX. SHANK TYPE)	1		
613	985-726	DRILL BIT D22.0 X 400 (HEX. SHANK TYPE)	1		
614	985-728	DRILL BIT D22.0 X 505 (HEX. SHANK TYPE)	1		
615	991-335	DRILL BIT D22.0 X 550 (HEX. SHANK TYPE)	1		

OPTIONAL ACCESSORIES

DH 40SR

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
616	985-730	DRILL BIT D25.0 X 280 (HEX. SHANK TYPE)	1		
617	985-729	DRILL BIT D25.0 X 400 (HEX. SHANK TYPE)	1		
618	985-731	DRILL BIT D25.0 X 505 (HEX. SHANK TYPE)	1		
619	991-336	DRILL BIT D25.0 X 550 (HEX. SHANK TYPE)	1		
620	985-733	DRILL BIT D28.0 X 280 (HEX. SHANK TYPE)	1		
621	985-732	DRILL BIT D28.0 X 400 (HEX. SHANK TYPE)	1		
622	985-734	DRILL BIT D28.0 X 505 (HEX. SHANK TYPE)	1		
623	991-337	DRILL BIT D28.0 X 550 (HEX. SHANK TYPE)	1		
624	991-338	DRILL BIT D30.0 X 550 (HEX. SHANK TYPE)	1		
625	985-736	DRILL BIT D32.0 X 280 (HEX. SHANK TYPE)	1		
626	985-735	DRILL BIT D32.0 X 400 (HEX. SHANK TYPE)	1		
627	985-737	DRILL BIT D32.0 X 505 (HEX. SHANK TYPE)	1		
628	991-339	DRILL BIT D32.0 X 550 (HEX. SHANK TYPE)	1		
629	991-340	DRILL BIT D35.0 X 550 (HEX. SHANK TYPE)	1		
630	985-739	DRILL BIT D38.0 X 280 (HEX. SHANK TYPE)	1		
631	985-738	DRILL BIT D38.0 X 400 (HEX. SHANK TYPE)	1		
632	985-740	DRILL BIT D38.0 X 505 (HEX. SHANK TYPE)	1		
633	991-341	DRILL BIT D38.0 X 550 (HEX. SHANK TYPE)	1		
634	944-460	TAPER SHANK DRILL BIT D11 X 100	1		
635	944-461	TAPER SHANK DRILL BIT D12.3 X 110	1		
636	993-038	TAPER SHANK DRILL BIT D12.7 X 110	1		
637	944-462	TAPER SHANK DRILL BIT D14.3 X 110	1		
638	944-500	TAPER SHANK DRILL BIT D14.5 X 110	1		
639	944-463	TAPER SHANK DRILL BIT D17.5 X 120	1		
640	944-464	TAPER SHANK DRILL BIT D21.5 X 140	1		
641	985-752	TAPER SHANK ADAPTER NO. 1	1	INCLUD. 643	
642	985-753	TAPER SHANK ADAPTER NO. 2	1	INCLUD. 643	
643	944-477	COTTER	1		
644	985-754	A-TAPER SHANK ADAPTER (D11.0-17.5)	1		
645	985-755	B-TAPER SHANK ADAPTER (D21.5)	1		
646	992-813	K-TAPER SHANK ADAPTER	1		
647	985-750	DRILL ADAPTER NO. 1 (D11.0-17.5)	1		
648	985-751	DRILL ADAPTER NO. 2 (D21.5)	1		
649	955-994	CORE BIT 25MM	1		
650	955-995	CORE BIT 29MM	1		
651	955-996	CORE BIT 32MM	1	INCLUD. 652	
652	955-997	GUIDE PLATE (FOR CORE BIT 32MM)	1		
653	955-998	CORE BIT 35MM	1	INCLUD. 654	
654	955-999	GUIDE PLATE (FOR CORE BIT 35MM)	1		
655	956-000	CORE BIT 38MM	1	INCLUD. 656	
656	956-001	GUIDE PLATE (FOR CORE BIT 38MM)	1		
657	955-154	CORE BIT 45MM	1	INCLUD. 658	
658	955-166	GUIDE PLATE (FOR CORE BIT 45MM)	1		
659	955-155	CORE BIT 54MM	1	INCLUD. 660	
660	955-167	GUIDE PLATE (FOR CORE BIT 54MM)	1		
661	956-002	CORE BIT 64MM	1	INCLUD. 662	
662	956-003	GUIDE PLATE (FOR CORE BIT 64MM)	1		
663	955-157	CORE BIT 79MM	1	INCLUD. 664	
664	955-168	GUIDE PLATE (FOR CORE BIT 79MM)	1		
665	956-004	CORE BIT 94MM	1	INCLUD. 666	
666	956-005	GUIDE PLATE (FOR CORE BIT 94MM)	1		

OPTIONAL ACCESSORIES

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