

MODEL

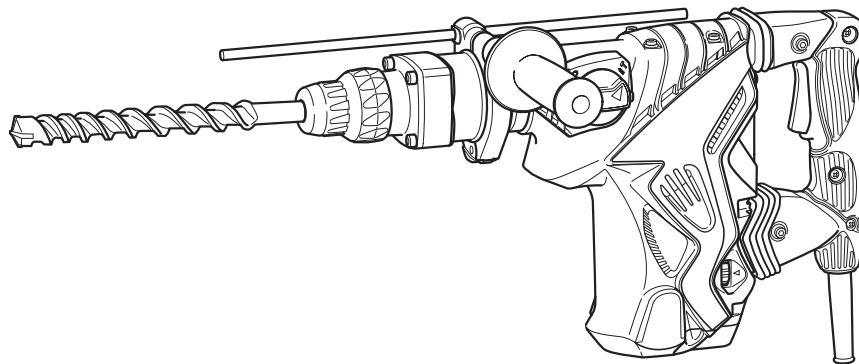
**DH 40MRY**

# Hitachi Power Tools

**ROTARY HAMMER  
DH 40MRY**

**TECHNICAL DATA  
AND  
SERVICE MANUAL**

**D**



LIST No. E493

Oct. 2006

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	HR4011C
B	BOSCH	GBH5-40DE



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## 1. PRODUCT NAME

Hitachi Rotary Hammer, Model DH 40MRY

## 2. MARKETING OBJECTIVE

The Model DH 40MRY is an upgraded version of the current Model DH 40MR that features the capability of drilling maximum 40-mm diameter holes into concrete and the use of SDS-max shank tools. The performance, durability and operability are greatly improved. In addition, the vibration level of the Model DH 40MRY is low enough to meet the requirements of the EU Physical Agents (Vibration) Directive that requires employers to take action to reduce exposure of workers to vibration below the exposure limit values (enforced in July 2005).

The main specifications are as follows:

- (1) Lowest vibration level in the class thanks to the dynamic damper with a leaf spring and the new vibration-absorbing handle
- (2) High drilling speed with low vibration and noise level
- (3) Self-drilling (Good feeling)
- (4) Constant speed with variable speed control
- (5) Soft-touch grip for easier handling
- (6) Variable lock mechanism for easy working-angle adjustment of chisels, etc.

## 3. APPLICATIONS

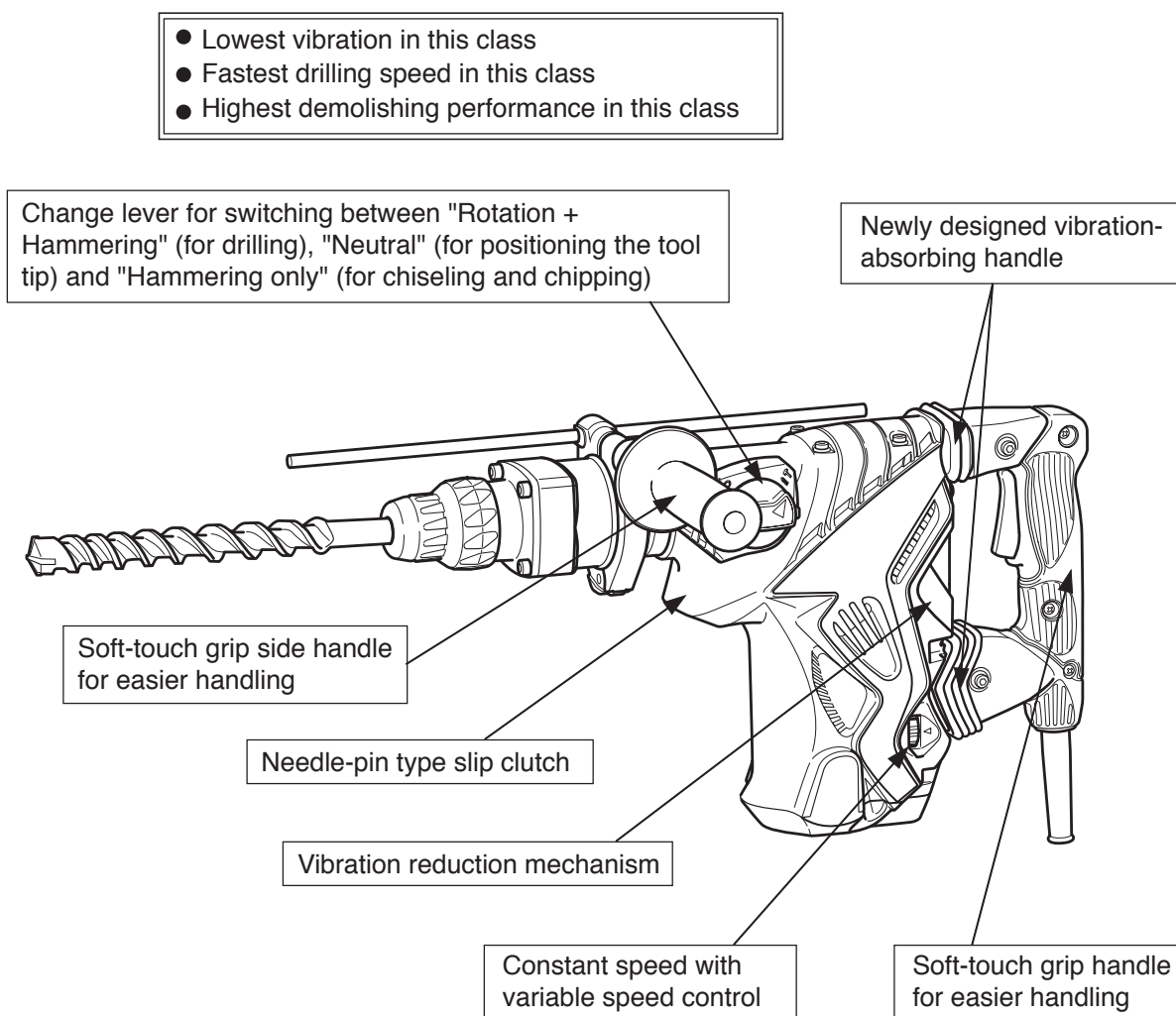
- Drilling holes in concrete and drilling anchor holes
- Demolishing and chiseling of concrete. Edging, gravel road digging, compacting and tamping, grooving, cutting, stripping and roughing, etc.

[Application examples]

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

## 4. SELLING POINTS

### 4-1. Selling Points



### 4-2. Selling Point Descriptions

#### 4-2-1. Lowest vibration, fastest drilling speed and highest demolishing performance in this class

The vibration level of the Model DH 40MRY is lowest in the class. Therefore, the vibration exposure limit time is longest in the class. Even so, the drilling speed and the demolishing performance are 10% higher than those of similar products.

Maker · Model		HITACHI DH 40MRY	HITACHI DH 40MR	C	B
Full-load vibration level (Tri-axial)	m/sec <sup>2</sup>	8.3	15.7	9.0	18.7
Vibration exposure limit	min.	158	49	148	34
Ratio of vibration exposure limit	%	107	32	100	23
Ratio of drilling speed	%	112	99	100	78
Ratio of demolishing performance	%	114	110	100	96
Full-load noise level	dB (A)	90.5	91.8	93.8	89.3
No-load noise level	dB (A)	82.5	82.6	84.0	86.0

\* Ratio of drilling speed: A 28-mm dia. drill bit is used.  
Full-load vibration and noise levels: A 25-mm dia. drill bit is used.

#### 4-2-2. Vibration reduction mechanism (Dynamic damper with leaf spring)

The Model DH 40MRY is equipped with Hitachi's own dynamic damper that absorbs vibration from the main body by means of resonance of the leaf spring and the spindle. As a result, the vibration level of the Model DH 40MRY is remarkably lower than the current Model DH 40MR.

#### 4-2-3. Newly designed vibration-absorbing handle

The Model DH 40MRY is equipped with the new vibration-absorbing mechanism based on the same Hitachi's own vibration-absorbing mechanism as the current Model DH 40MR that absorbs vibration by rolling and compressing the four cylindrical rubber cushions on the inclined surface. In the new vibration-absorbing mechanism, the shaft fixed to the handle is turned in conjunction with the handle movement and the four cylindrical rubber cushions are rolled and compressed to absorb vibration more efficiently. The cushion effect not only greatly reduces vibration but also maintains good operability.

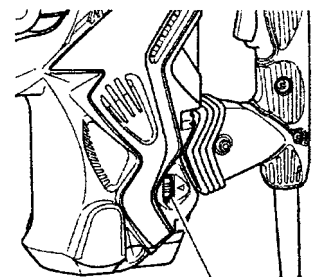
#### 4-2-4. Self-drilling (Good feeling)

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

Impact energy	About 5% up
Maximum compressed air force (piston force)	About 33% down
Quantity of body jumping	About 36% down

#### 4-2-5. Dial type, constant speed with variable speed control

The Model DH 40MRY is equipped with a built-in electronic control circuit that can adjust the number of hammering steplessly between 1320 and 2650 min<sup>-1</sup> with the dial. Even though the load varies, the Model DH 40MRY provides better operability and stable and efficient drilling performance because the constant speed control minimizes changes in number of rotation and hammering.



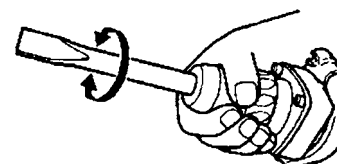
Speed-adjust dial

#### 4-2-6. 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.

#### 4-2-7. Change lever for switching between "Rotation and hammering," "Neutral" and "Hammering only"

The Model DH 40MRY provides three functions, "Rotation and hammering" function (for drilling), "Neutral" function (for positioning the tool tip) and "Hammering only" function (for chiseling and chipping.) These function modes can be easily switched by using the change lever. The tool angle can be easily changed in 12 steps by turning the grip with the change lever positioned at "Neutral."



#### 4-2-8. Needle-pin type slip clutch

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

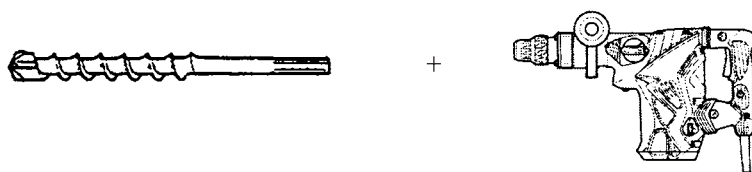
## 5. SPECIFICATIONS

### 5-1. Specifications

Capacity	Drill bit (Max. diameter): 40 mm (1-9/16") Core bit (Max. diameter): 105 mm (4-1/8")				
Power source	AC single phase 50 Hz or 60 Hz				
Voltage	110 V	120 V	220 V	230 V	240 V
Current	10 A	9.2 A	5 A	4.8 A	4.6 A
Power input	950 W				
Motor type	AC single-phase series commutator motor				
Insulation structure	Double insulation				
Enclosure	Materials: Aluminum alloy die casting (Cylinder crank case) Nylon resin (Handle (A).(B), tail cover, crank cover, back cover, hood) Polycarbonate resin (Housing) Paint: Green, black, gun metallic silver, silver				
Switch	Trigger switch				
Type of handles	D-shaped handle and side handle				
Rotation rate	No load and full load: 240 to 480 min <sup>-1</sup>				
Impact rate	No load and full load: 1,320 to 2,650 min <sup>-1</sup>				
Weight	Product: 6.8 kg (15.0 lbs.); Excluding cord and side handle Packed: 12.0 kg (26.5 lbs.)				
Packaging	Corrugated cardboard box with plastic tool case				
Standard accessories	<ul style="list-style-type: none"> <li>• Plastic case ..... 1</li> <li>• Side handle ..... 1</li> <li>• Stopper ..... 1</li> <li>• Grease (A) ..... 1</li> </ul>				

### 5-2. Optional Accessories

#### 1. Drilling work for through-holes (Rotation and hammering)

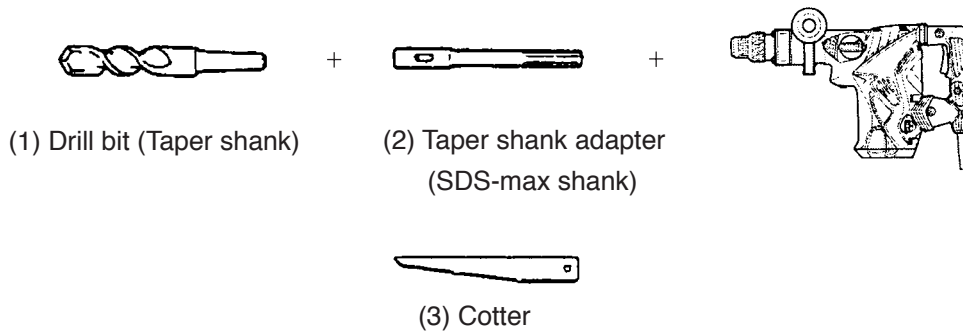


#### (1) Drill bit (SDS-max shank)

Outer diameter (mm)	Overall length (mm)	Code No.	Outer diameter (mm)	Overall length (mm)	Code No.
16 (5/8")	340 (13-3/8")	313448	16 (5/8")	540 (21-1/4")	313456
19 (3/4")	340 (13-3/8")	313449	19 (3/4")	540 (21-1/4")	313457
22 (7/8")	320 (12-5/8")	313450	22 (7/8")	520 (20-15/32")	313458
25 (1")	320 (12-5/8")	313451	25 (1")	520 (20-15/32")	313459
28 (1-1/8")	370 (14-9/16")	313452	28 (1-1/8")	570 (22-7/16")	313460
32 (1-1/4")	370 (14-9/16")	313453	32 (1-1/4")	570 (22-7/16")	313461
38 (1-1/2")	370 (14-9/16")	313454	38 (1-1/2")	570 (22-7/16")	313462
40 (1-9/16")	370 (14-9/16")	313455	40 (1-9/16")	570 (22-7/16")	313463

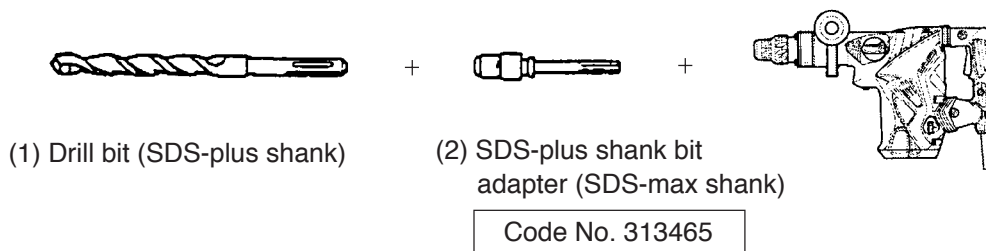
## 2. Drilling work for anchor holes (Rotation and hammering)

### ① Drill bit (Taper shank)

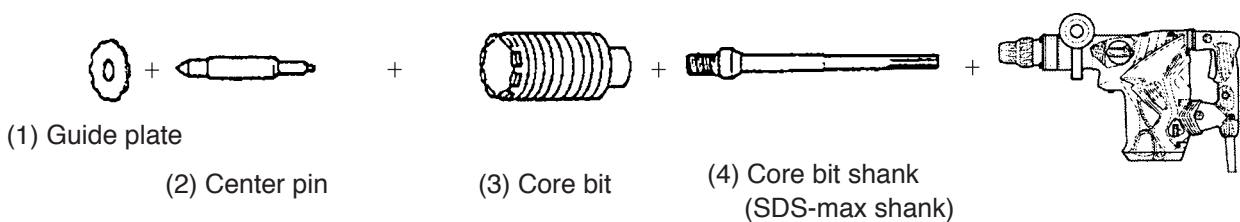


(1) Drill bit (Taper shank)		(2) Taper shank adapter		(3) Cotter
Outer dia. (mm)	Code No.	Taper dimension	Code No.	Code No.
11 (7/16")	944460	Morse taper No. 1	313464	944477
12.3 (15/32")	944461			
12.7 (1/2")	993038			
14.3 (9/16")	944462			
14.5 (9/16")	944500			
17.5 (11/16")	944463			

### ② SDS-plus shank bit adapter



## 3. Boring work for large-diameter holes (Rotation and hammering)



### (1) Guide plate

For core bits of outer diameter 32, 35, 38, 45, 50, 54, 60, 64, 70, 75, 79, 94, 100 and 105 mm (1-1/4", 1-3/8", 1-1/2", 1-3/4", 2", 2-1/8", 2-3/8", 2-1/2", 2-3/4", 2-15/16", 3-1/8", 3-1/16", 3-15/16" and 4-1/8")

[Do not use the core bit whose outer diameter is 25 mm (1") or 29 mm (1-1/8") with the guide plate.]

### (2) Center pin

- Code No. 956009 For core bits of outer diameter 32 and 35 mm (1-1/4" and 1-3/8")
- Code No. 955165 For core bits of outer diameter 38, 45, 50, 54, 60, 64, 70, 75, 79, 94, 100 and 105 mm (1-1/2", 1-3/4", 2", 2-1/8", 2-3/8", 2-1/2", 2-3/4", 2-15/16", 3-1/8", 3-11/16", 3-15/16" and 4-1/8")

[Do not use the core bit whose outer diameter is 25 mm (1") or 29 mm (1-1/8") with the center pin.]



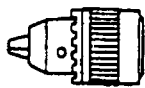
### (3) Core bit

Outer diameter (mm)	Code No.	Outer diameter (mm)	Code No.	Outer diameter (mm)	Code No.
25 (1")	955994	50 (2")	959706	79 (3-1/8")	955157
29 (1-1/8")	955995	54 (2-1/8")	955155	94 (3-11/16")	956004
32 (1-1/4")	955996	60 (2-3/8")	959707	100 (3-15/16")	959710
35 (1-3/8")	955998	64 (2-1/2")	956002	105 (4-1/8")	955159
38 (1-1/2")	956000	70 (2-3/4")	959708		
45 (1-3/4")	955154	75 (2-15/16")	959709		

### (4) Core bit shank (SDS-max shank)

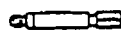
- Code No. 313466 For core bits of outer diameter 25, 29, 32 and 35 mm (1", 1-1/8", 1-1/4" and 1-3/8")
- Code No. 313467 For core bits of outer diameter 38, 45, 50, 54, 60, 64, 70, 75, 79, 94, 100 and 105 mm (1-1/2", 1-3/4", 2", 2-1/8", 2-3/8", 2-1/2", 2-3/4", 2-15/16", 3-1/8", 3-11/16", 3-15/16" and 4-1/8")

### 4. Hole drilling: For drilling steel and wood



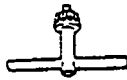
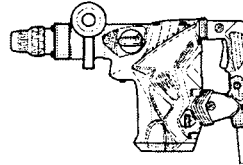
(1) 13 mm drill chuck  
(13VLD-D)

+



(2) Chuck adapter  
(SDS-max shank)

+



(3) Chuck wrench

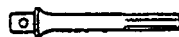
(1) 13 mm drill chuck (13VLD-D)	(2) Chuck adapter	(3) Chuck wrench
Code No. 321813	Code No. 313468	Code No. 930515

### 5. Chemical anchor holes drilling work (Rotation and hammering)



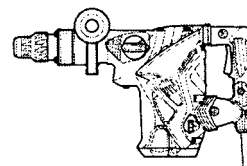
(Socket)

+



(1) Chemical anchor adapter  
(SDS-max shank)

+



Socket square size	Code No.
12.7 mm (1/2")	313469
19.0 mm (3/4")	313470

## 6. Demolition work (Hammering)



(1) Bull point (SDS-max shank)

Overall length	Code No.
280 mm (11")	313471
400 mm (15-3/4")	313472

## 7. Grooving and edging (Hammering)



(1) Cold chisel (SDS-max shank)

Overall length	Code No.
280 mm (11")	313473
400 mm (15-3/4")	313474

## 8. Cutting and stripping (Asphalt cutting etc.) (Hammering)



(1) Cutter (SDS-max shank)

Overall length	Width	Code No.
400 mm (15-3/4")	50 mm (2")	313475

## 9. Digging (Substitute pick-ax) (Hammering)



(1) Scoop (SDS-max shank)

Overall length	Code No.
400 mm (15-3/4")	313476

## 10. Surface roughing work (Hammering)



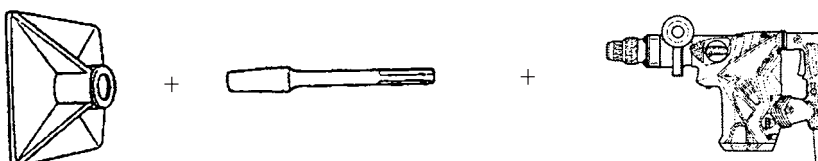
(1) Bushing tool

Code No.
313477

(2) Shank (SDS-max shank)

Overall length	Code No.
220 mm (8-21/32")	313479

## 11. Tamping work (Hammering)



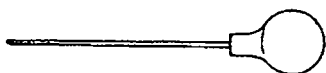
(1) Rammer

Code No.
313478

(2) Shank (SDS-max shank)

Overall length	Code No.
220 mm (8-21/32")	313479

## 12. Syringe (For chip removal)



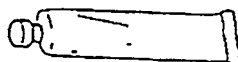
Syringe	Code No.
Bellows type	318085
Rubber ball type	320859

## 13. Impact drill grease



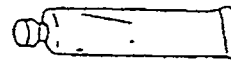
500 g (1.1 lbs.) Can

Code No. 980927
-----------------



70 g (2.5 oz.) Tube

Code No. 308471
-----------------



30 g (1 oz.) Tube

Code No. 981840
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### (Note)

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

## 6. COMPARISONS WITH SIMILAR PRODUCTS

### 6-1. Specification Comparisons

Item \ Maker · Model		HITACHI DH 40MRY	HITACHI DH 40MR	C	B
Capacity	Drill bit dia. (mm)	40 (1-9/16")	40 (1-9/16")	40 (1-9/16")	40 (1-9/16")
	Core bit dia. (mm)	105 (4-1/8")	105 (4-1/8")	105 (4-1/8")	105 (4-1/8")
Power input (W)		950	950	1,100	1,100
Impact energy per stroke (J)		10.5	10	10	8.5
Full-load rotation rate (min <sup>-1</sup> )		240 – 480	240 – 480	235 – 480	160 – 340
Full-load impact rate (min <sup>-1</sup> )		1,320 – 2,650	1,320 – 2,650	1,350 – 2,750	1,500 – 3,100
Full-load vibration level (Tri-axial) (m/sec <sup>2</sup> )		8.3	15.7	9.0	18.7
Full-load noise level (dB (A))		90.5	91.8	93.8	89.3
No-load noise level (dB (A))		82.5	82.6	84.0	86.1
Low vibration mechanism		○	×	○	×
Dimension	Length (mm)	480 (18-29/32")	435 (17-1/8")	468 (18-27/64")	460 (18-7/64")
	Height (mm)	260 (10-15/64")	255 (10-3/64")	261 (10-9/32")	265 (10-7/16")
	Width (mm)	104 (4-7/64")	104 (4-7/64")	116 (4-9/16")	102 (4-1/64")
Weight* (kg)		6.8 (15.0 lbs.)	6.5 (14.3 lbs.)	6.3 (13.9 lbs.)	6.1 (13.4 lbs.)

\* Weight does not include cord and side handle.

## 6-2. Drilling Speed Comparison

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

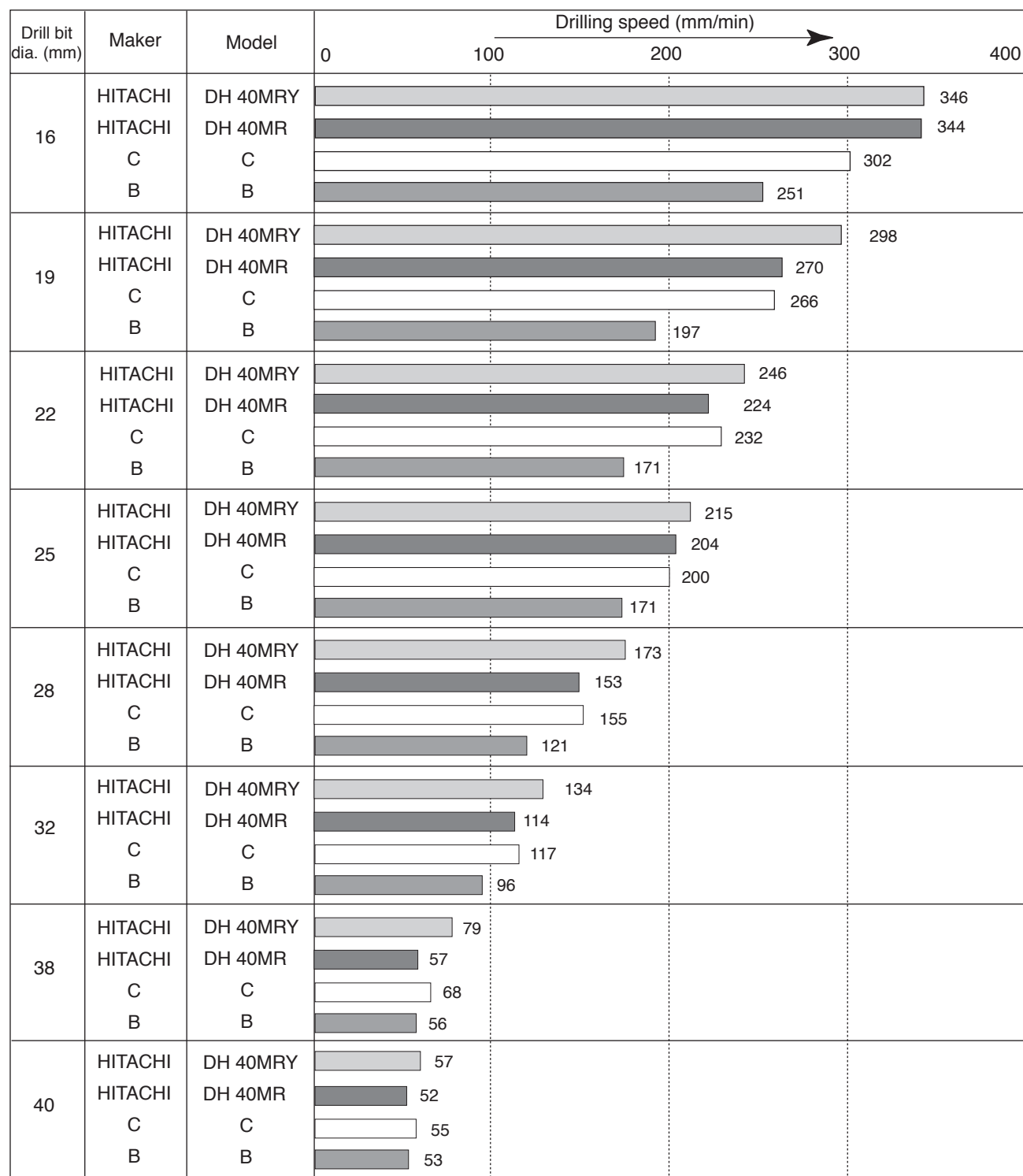


Fig. 1

[Test conditions]

Direction : Downward drilling

Pushing force : 98 N (10 kgf)

Test material : Concrete panel with a compression strength of 2,352 N/cm<sup>2</sup> (240 kgf/cm<sup>2</sup>)

### 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.

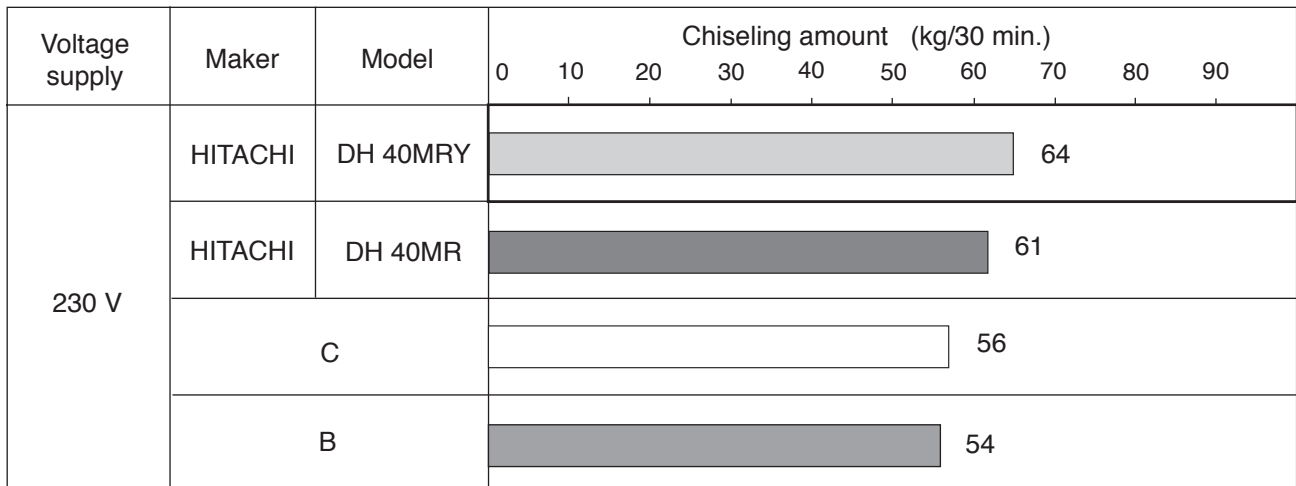


Fig. 2

## 7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Model DH 40MRY 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 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.

## 8. REFERENCE INFORMATION

### 8-1. Grease Replacement

The striking portion and the speed reduction portion of the Model DH 40MRY 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 special grease for the striking portion 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 full.

### 8-2. O-ring Replacement

The O-rings (mounted on the striker and the 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 40MRY Rotary Hammer

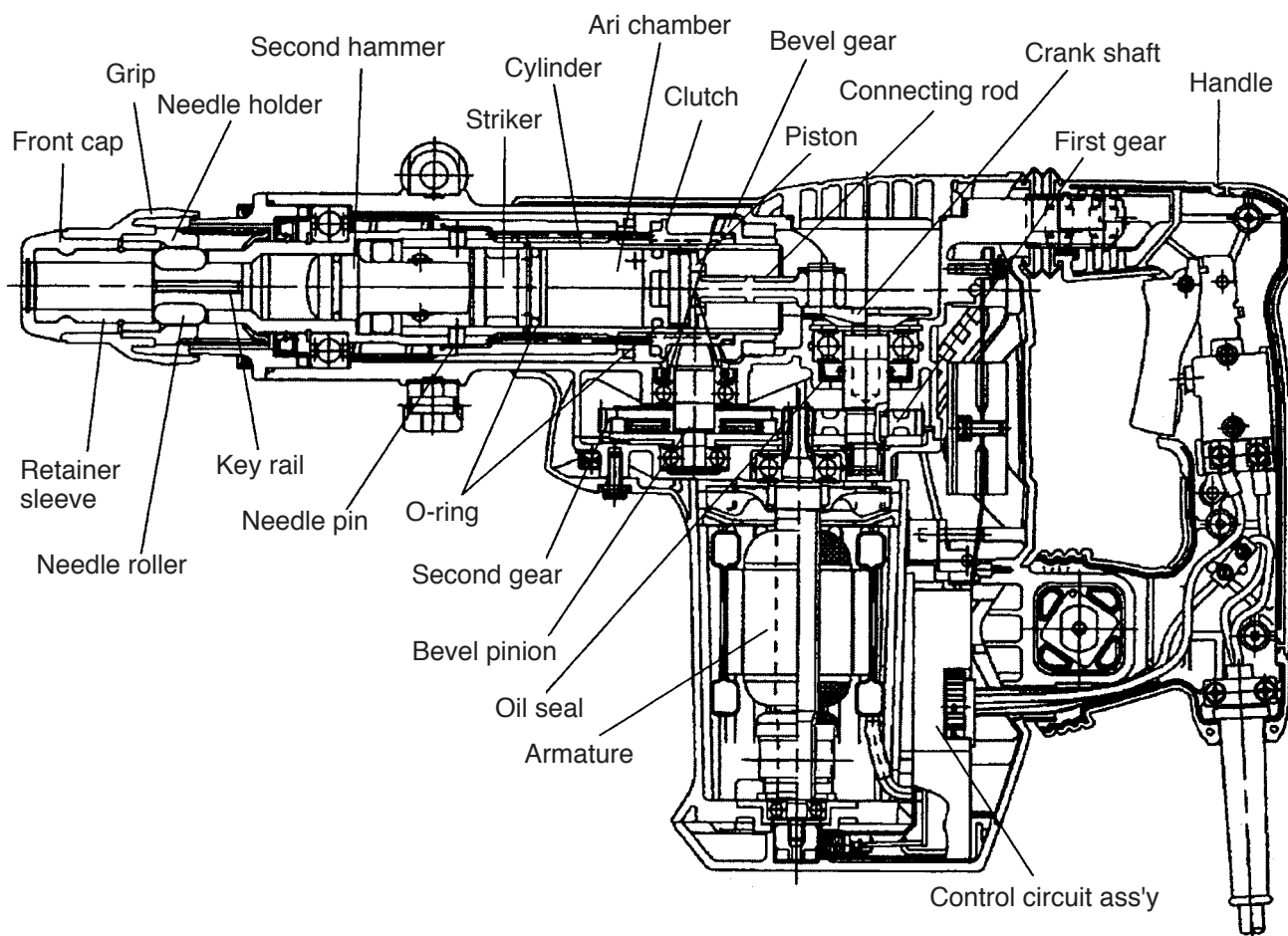


Fig. 3

### ○ Torque transmission

Armature revolution is transmitted to the second gear to rotate the bevel gear via the slip mechanism between the second gear and the bevel pinion axes. Rotation of the bevel gear is then transmitted to the cylinder keyed thereto through the clutch. Cylinder rotation is conveyed to the retainer sleeve coupled together by means of four needle pins and, then to the drill bit inserted into the retainer sleeve by way of three key rails and two needle rollers which couple them together.

### ○ Dynamic damper with leaf spring

The vibration caused by hammering operation of the Model DH 40MRY is transmitted to the cylinder crank case, back cover, housing and finally to the weight through the leaf spring supporting portion. Then the weight moves in the reverse direction of the transmitted vibration to negate the vibration of the main body (Fig. 4).

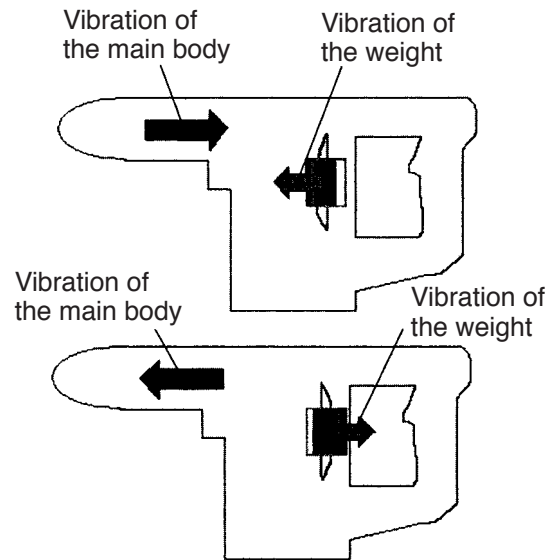


Fig. 4

### ○ Vibration-proof handle thanks to the transatory unit and the Neidhardt spring

The Model DH 40MRY has the vibration-proof handle equipped with the transatory unit and the Neidhardt spring.

#### • Structure of the transatory unit

The main body (cylinder crank case) is connected to the upper handle through four cylindrical rubbers (handle dampers). These rubbers are rolled and compressed on the inclined surface to absorb vibration. Since the transatory unit has nonlinear spring characteristics, the spring constant is lower than the conventional shearing type vibration-proofing structure. Thus the Model DH 40MRY can provide high vibration-proofing effect with good cushioning properties. The joint of the slotted groove and the cylindrical convex is provided at the center to prevent the handle from being pulled out by twisting or pulling operation in the hammer mode (Fig. 5).

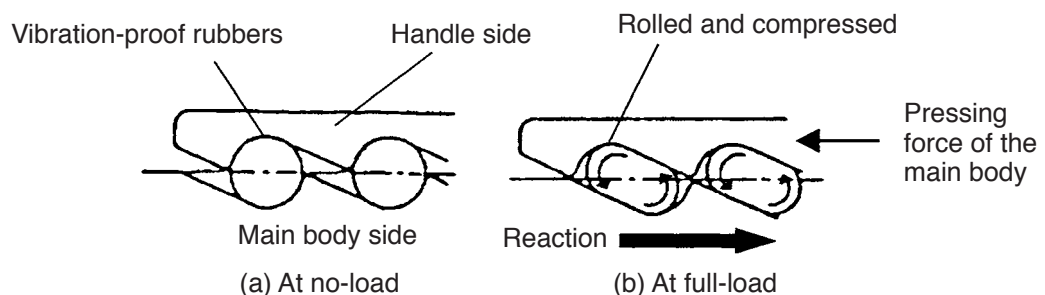
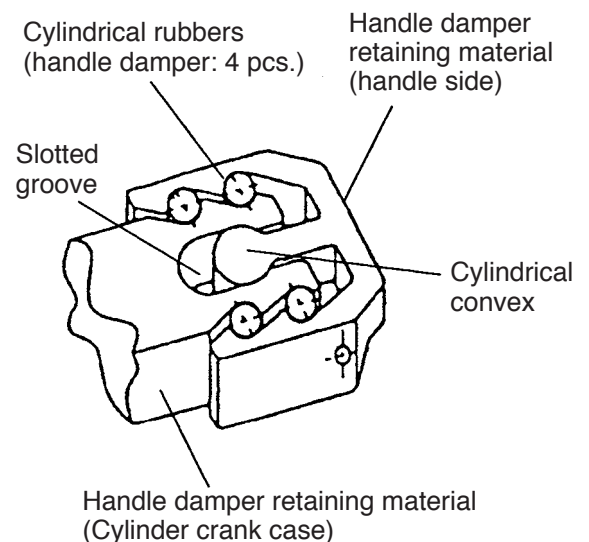


Fig. 5



### ○ Structure of the Neidhardt spring

The main body (back cover) is connected to the lower handle through four cylindrical rubbers (handle dampers). The shaft fixed to the handle is turned in conjunction with the handle movement and the rubbers are rolled and compressed to absorb vibration. The Neidhardt spring prevents the handle from moving horizontally. Thus the Model DH 40MRY can provide high vibration-proofing effect without hindering the operability by twisting. In addition, the handle is prevented from being pulled out (Fig. 6).

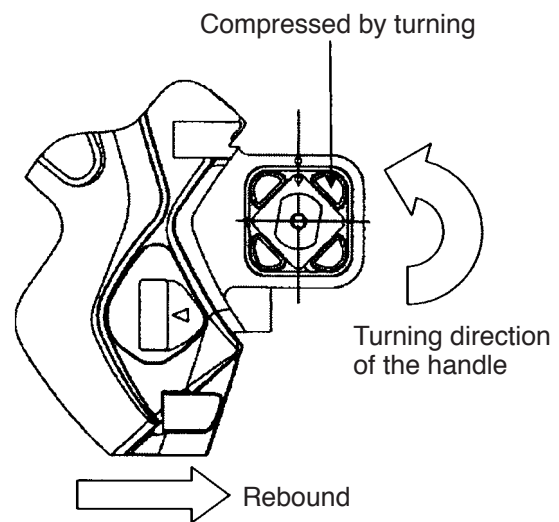


Fig. 6

### ○ 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 the piston play an extremely important role in sealing the air within the air chamber.

### ○ Mechanism to prevent idle hammering

The mechanism against idle hammering of the Model DH 40MRY is about the same as the Model DH 40MR in which, when the drill bit or the bull point is not pressed against a concrete or similar material, the second hammer moves to a position as shown in Fig. 7 so that the striker is displaced from its hammering position. Thus the air hole is opened and no change is caused in the air pressure chamber by the piston movement, then the hammering action is stopped.

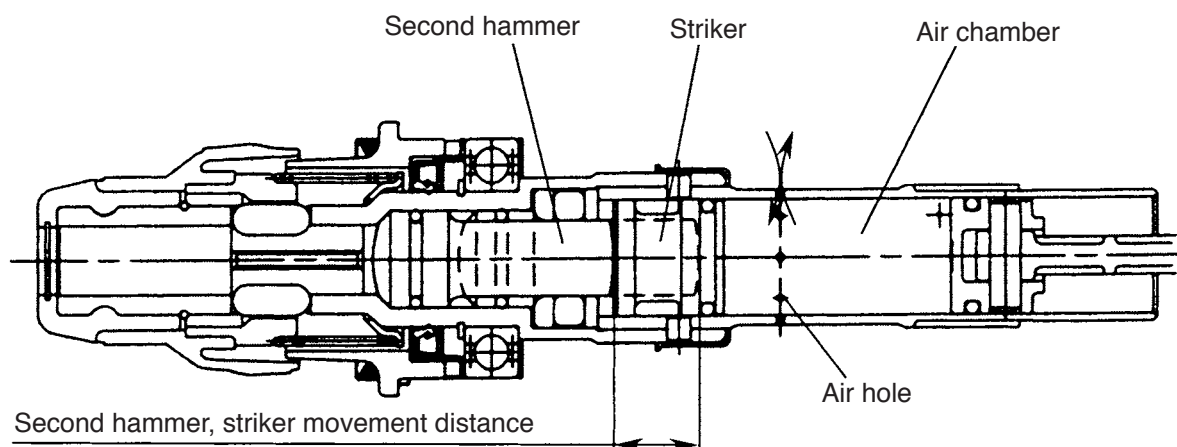


Fig. 7

### ○ Slip clutch mechanism

The slip clutch mechanism is described below with reference to Fig. 8. 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 the 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.

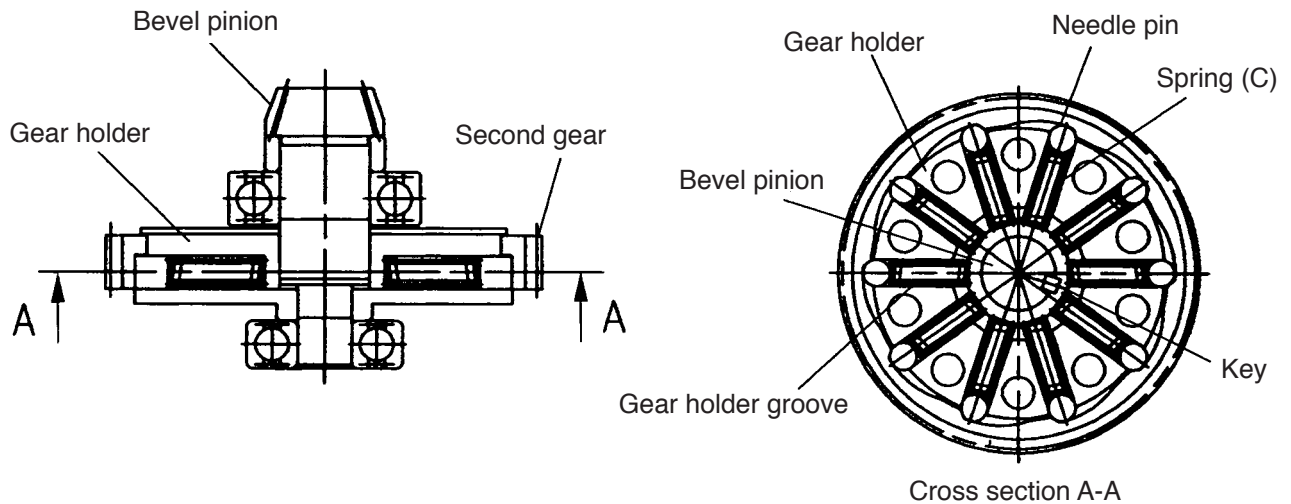


Fig. 8

### ○ Tool holder

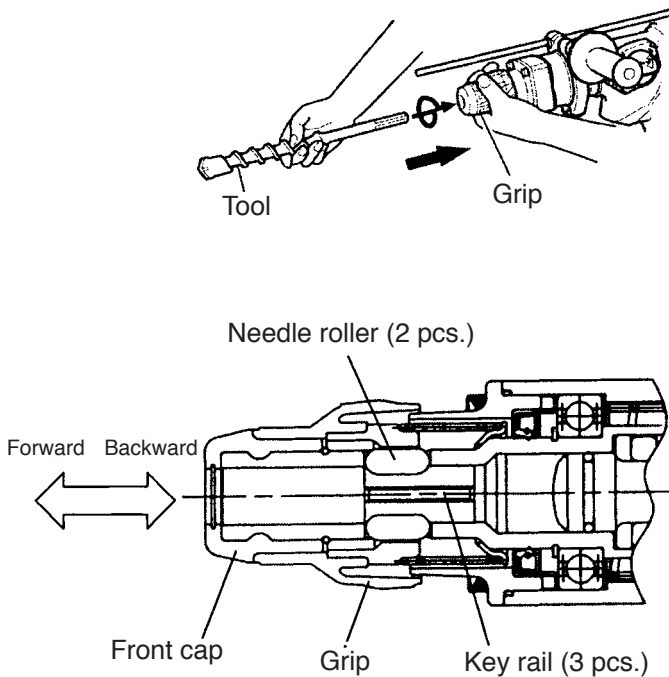


Fig. 9

The tool inlet is covered with the front cap (made of rubber) to prevent chips from entering inside. Two needle rollers fall into the round groove of the drill bit to retain the working tool, and three key rails transmit the rotation torque. To attach a working tool, align the groove positions turning the working tool, then insert the working tool into the hole until it contacts the innermost end of the hole. Releasing the grip reverts the grip and secures the tool in place. To remove the tool, fully pull the grip backward and pull out the tool. (Fig. 9)

○ 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 five O-rings and three oil seals as shown in Fig. 10. This prevents leakage of grease from the cases, while also protecting them against dust from outside. The tool holder is also protected from foreign matter by means of the rubber front cap.

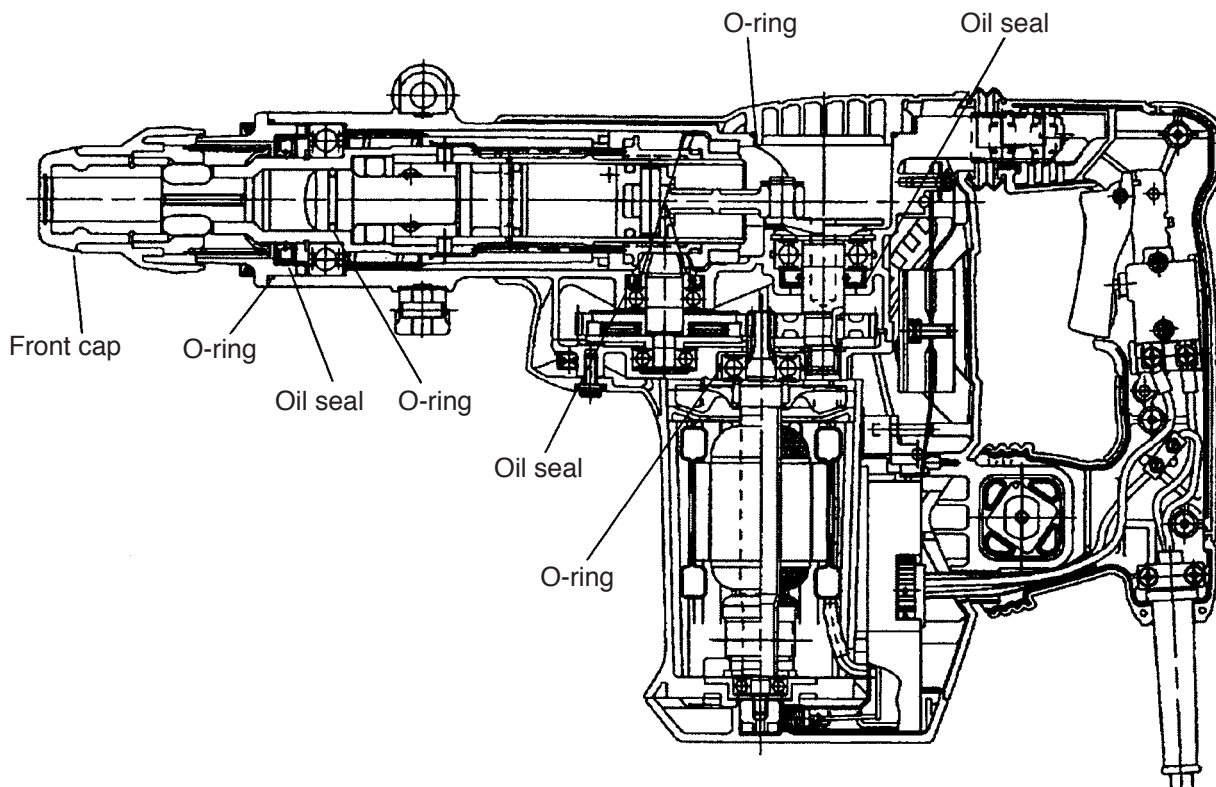
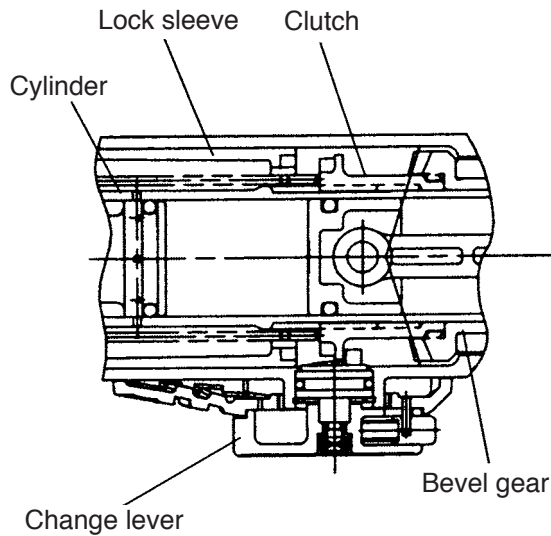
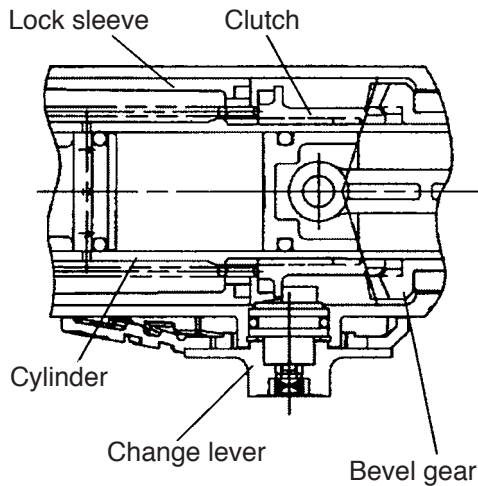


Fig. 10

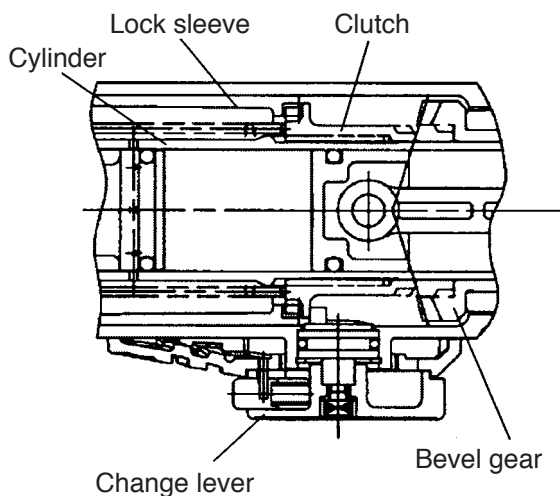
○ Switching between "Rotation + hammering", "Neutral" and "Hammering only"



**Fig. 11**



**Fig. 12**



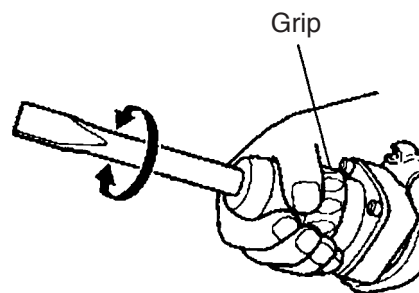
**Fig. 14**

All the shanks of the SDS-max type working tools such as drill bits (for drilling) and bull points (for chiseling) have the same shape. When chiseling or chipping with the Model DH 40MRY, it is necessary to stop the rotation and choose the "Hammering only" mode by means of the change lever to lock the working tool against rotation.

Figure 11 is a cross-sectional view showing the "Rotation + hammering" mode, in which the bevel gear claw meshes with the clutch claw to transmit rotation to the cylinder keyed to the clutch, so as to rotate the working tool.

Figure 12 is a cross-sectional view showing the "Neutral" mode, in which, with the change lever turned 90°, the bevel gear is brought out of engagement with the clutch to cut off transmission of rotation. In this position, the tool holder grip can be manually turned and the working tool (for chiseling or chipping) is adjustable to the desired position in 12 steps easily (Fig. 13).

Figure 14 is likewise a cross-sectional view showing the "Hammering only" mode. With the change lever turned another 90°, the splines on the inner circumference of the lock sleeve come into mesh with the splines on the outer circumference of the clutch, so that the cylinder is prevented from rotating as well as the working tool. Although the Model DH 40MRY has three selectable modes as mentioned above, use of a working tool for chipping or chiseling in the "Rotation + hammering" mode will result in an accident. Be sure to instruct the customers to select the "Hammering only" mode when doing chiseling or chipping work.



**Fig. 13**

## 9. REPAIR GUIDE

The numbers in **[Bold]** correspond to the item numbers in the Parts List and the exploded assembly diagram for the Model DH 40MRY.

### 9-1. Disassembly

#### (1) Disassembly of the tool holder

Pull the Grip **[2]** in the arrow direction fully as shown in Fig. 15.

Remove the Front Cap **[1]**. (The Front Cap **[1]** is made of rubber and fitted securely. Pull the Front Cap **[1]** forcefully to remove.)

Thus the Grip **[2]** can be removed from the Retainer Sleeve **[17]**.

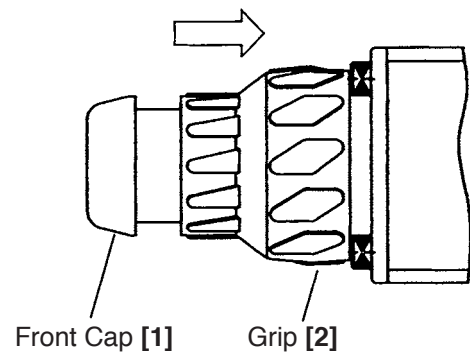


Fig. 15

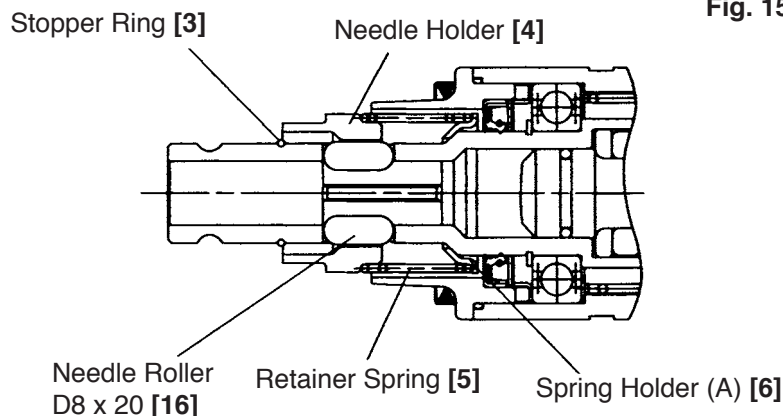


Fig. 16

Remove the Stopper Ring **[3]** using a retaining ring puller. Then the Needle Holder **[4]**, two Needle Rollers D8 x 20 **[16]**, Retainer Spring **[5]** and Spring Holder (A) **[6]** can be removed from the Retainer Sleeve **[17]** (Fig. 16).

#### (2) Removal of the piston and the striker

Remove the Hex. Socket Hd. Bolt (W/Flange) M5 x 16 **[38]** from the Crank Cover **[39]** then remove the Crank Cover **[39]** from the Cylinder Crank Case **[46]**. Remove the Hex. Socket Hd. Bolt (W/Flange) M5 x 12 **[122]** then remove the Hood **[106]** from the Cylinder Crank Case **[46]**. Remove the Seal Lock Hex. Socket Hd. Bolt M6 x 45 **[90]** and the Seal Lock Hex. Socket Hd. Bolt M6 x 22 **[65]**. Remove the Gear Cover **[63]** from the Cylinder Crank Case **[46]**. Remove the Bevel Pinion **[48]** (slip clutch) from the Cylinder Crank Case **[46]**. (Otherwise, the Bevel Gear **[32]** cannot be removed later.) Remove the Seal Lock Hex. Socket Hd. Bolt M4 x 12 **[69]** from the Change Lever **[85]** then remove the Change Lever **[85]**. Remove the Retaining Ring for D20 Hole **[87]** using a retaining ring puller and remove the Lever Shaft **[88]**. (Otherwise, the Bevel Gear **[32]** cannot be removed later.) Remove the Seal Lock Hex. Socket Hd. Bolt M6 x 25 **[7]** from the Front Cover **[8]**. Then the Retainer Sleeve **[17]**, Front Cover **[8]**, Lock Spring **[27]**, Second Hammer **[20]**, Clutch **[31]**, Clutch Spring **[30]**, Cylinder **[26]**, etc. can be removed from the Cylinder Crank Case **[46]** in an assembly state. Remove the Bevel Gear **[32]** from the Cylinder Crank Case **[46]** in an assembly state. Remove the Bevel Gear **[32]** from the Cylinder Crank Case **[46]** by tapping the Front Cover **[8]** side with a plastic hammer. Remove the Striker **[24]** from the Cylinder **[26]** by tapping with a plastic hammer. The Piston **[34]** remains in the Cylinder Crank Case **[46]**. Remove the Retaining Ring for D10 Shaft **[36]** using a retaining ring puller and remove the Connecting Rod **[35]** from the Crank Shaft **[41]** (Fig. 17).

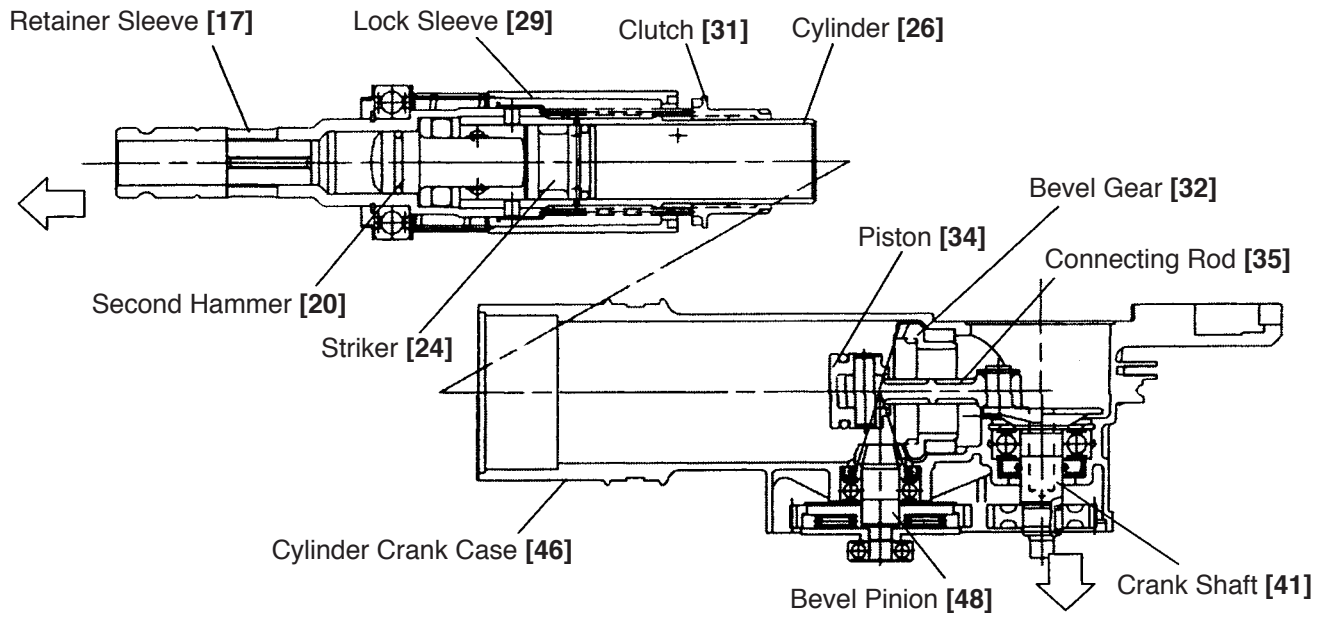


Fig. 17

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

Remove grease from the Connecting Rod [35] side and the First Gear [61] side of the Cylinder Crank Case [46]. Remove the Retaining Ring for D40 Hole [42] from the Ball Bearing 6203DDCMPS2L [43] using a retaining ring puller. At this time, shift the position of the crank pin of the Crank Shaft [41] as shown in Fig. 18 so that the hole of the retaining ring can be seen before removal. Face the Connecting Rod [35] side of the Cylinder Crank Case [46] downward and place it on a support. Press the end surface of the Crank Shaft [41] with a hand press to remove the First Gear [61] and the Crank Shaft [41] (Fig. 19).

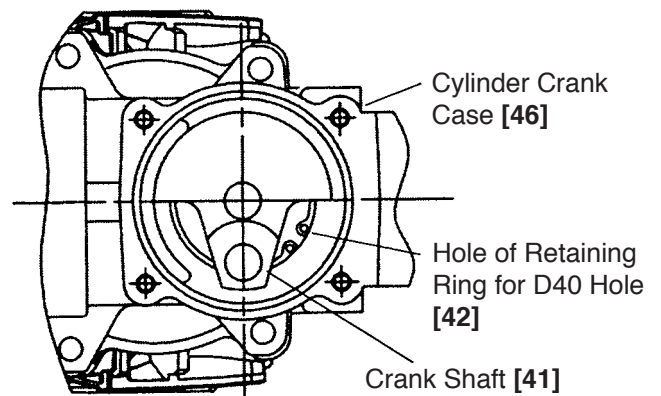


Fig. 18

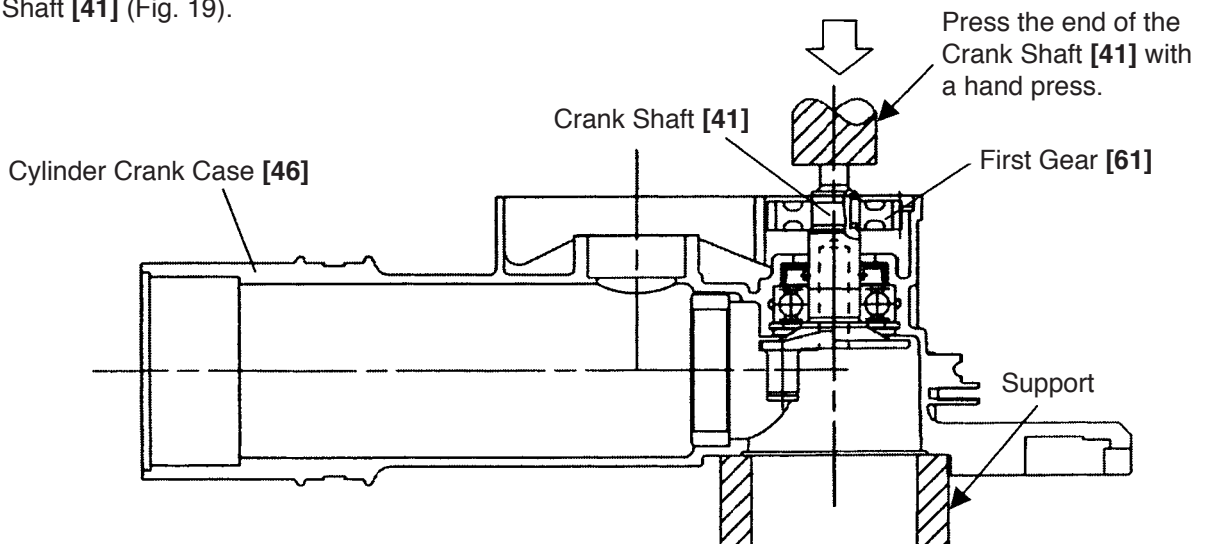


Fig. 19

#### (4) Disassembly of the slip clutch assembly

Remove the Ball Bearing 629VVC2PS2L [59] with a bearing puller. Place the assembly on a sleeve-type support facing Washer (A) [53] downward as shown in Fig. 20. Push the Spacer [58] side of the Bevel Pinion [48] with a hand press to remove the Gear Holder [54] and the Spacer [58] from the Bevel Pinion [48]. Before removal of the Second Gear [57] from the Gear Holder [54], put the assembly in a poly bag and disassemble it inside the poly bag to prevent missing of Spring (C) [55] and the Needle [56].

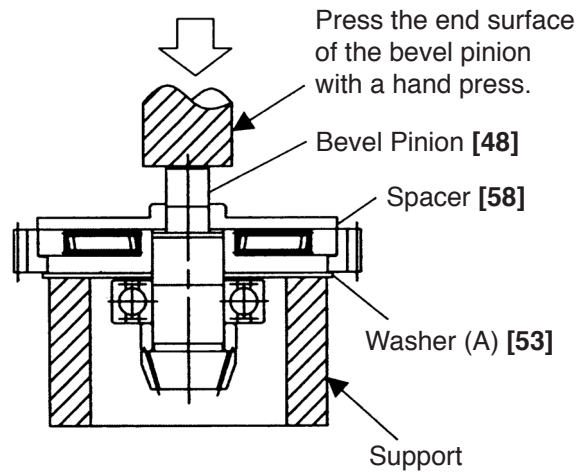


Fig. 20

### 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) Mounting the first gear and the crank shaft

Press-fit Oil Seal (B) [45] into the Cylinder Crank Case [46] and mount the O-ring (S-40) [44]. Press-fit the Ball Bearing 6203DDCMPS2L [43]. Mount the Retaining Ring for D40 Hole [42] using a retaining ring puller. Press-fit the Crank Shaft [41] into the Ball Bearing 6203DDCMPS2L [43]. Put the Feather Key 3 x 3 x 8 [37] in the groove of the Crank Shaft [41] and press-fit the First Gear [61] with a suitable tool while holding the flat portion of the Crank Shaft [41] with a steel bar. Before press-fitting, make sure that the Feather Key 3 x 3 x 8 [37] fits in the key groove of the First Gear [61] (Fig. 21).

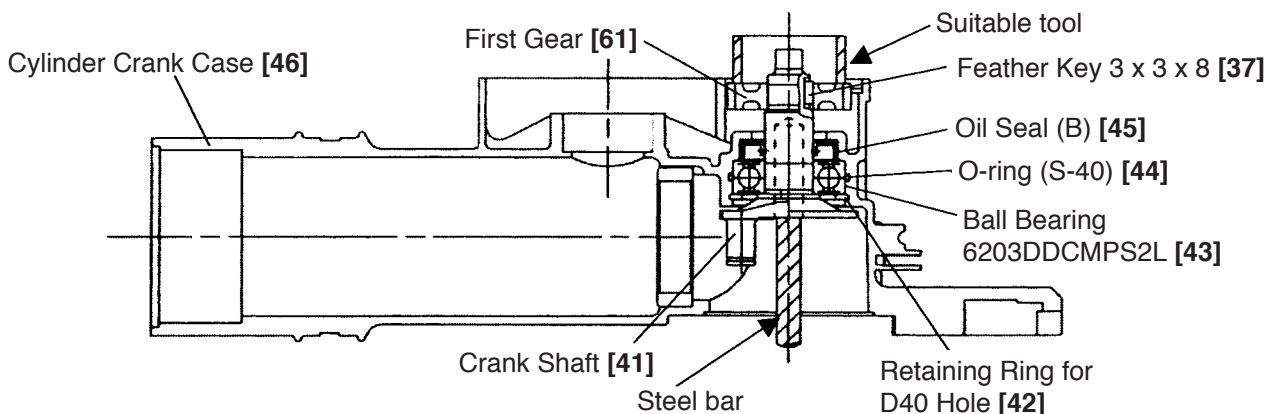


Fig. 21



## (2) Mounting the piston

Insert the Piston Pin [33] into the 8-mm dia. hole (marked side) of the Piston [34] and the Connecting Rod [35] then press-fit it. Mount the O-ring [25] to the Piston [34]. Be careful not to protrude the Piston Pin [33] from the outside diameter of the Piston [34]. Move the crank pin of the Crank Shaft [41] to the bottom dead center and mount the piston assembly to the Crank Shaft [41] from the front cover side of the Cylinder Crank Case [46]. Mount the Retaining Ring for D10 Shaft [36] using a retaining ring puller (Fig. 22).

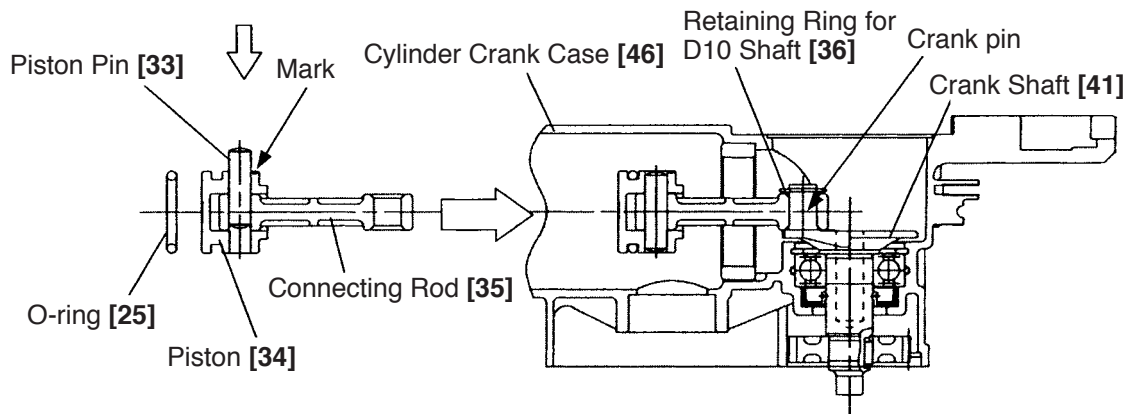
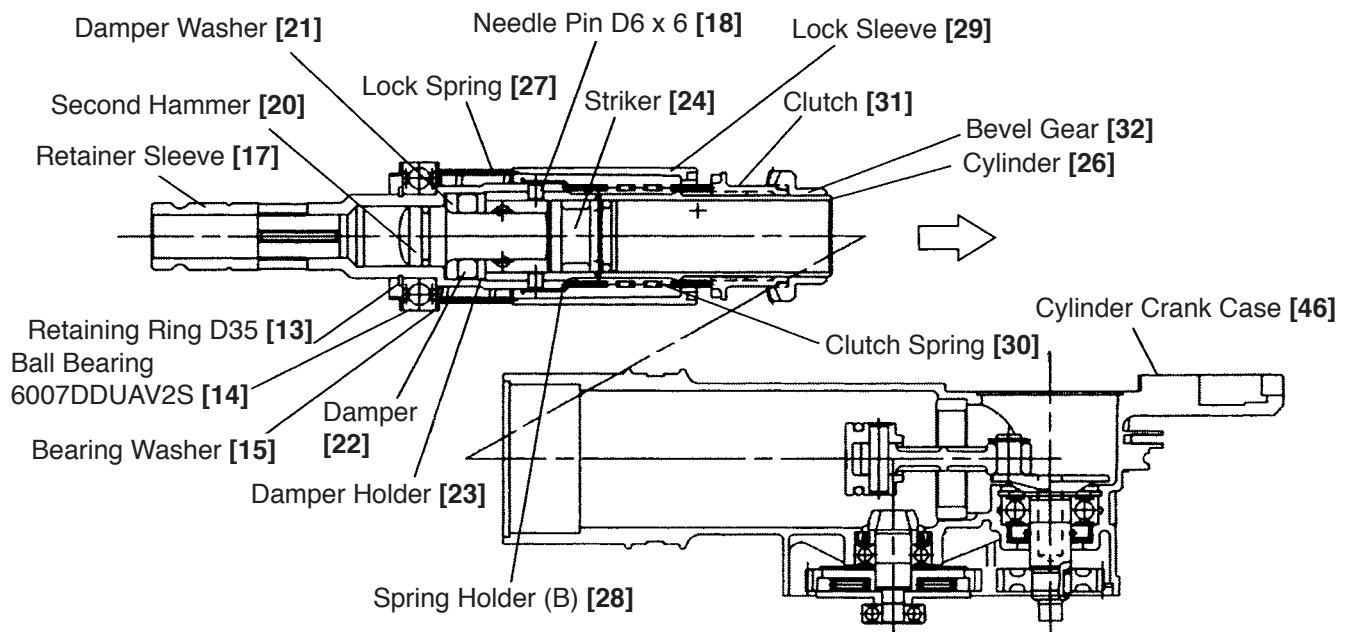


Fig. 22

## (3) Mounting the cylinder and the retainer sleeve

Press-fit the Retainer Sleeve [17] into the Ball Bearing 6007DDUAV2S [14]. Secure it with the Retaining Ring D35 [13]. Mount the Second Hammer [20], Damper Washer [21], Damper [22] and Damper Holder [23] to the Retainer Sleeve [17]. Mount the Damper Washer [21] aligning the R surface of the inside diameter with the R surface of the Second Hammer [20]. Insert the Striker [24] into the Cylinder [26] then insert the Cylinder [26] into the Retainer Sleeve [17]. Secure the Cylinder [26] and the Retainer Sleeve [17] with the four Needle Pins D6 x 6 [18] and cover it with Spring Holder (B) [28]. Mount the Bering Washer [15], Lock Spring [27], Lock Sleeve [29], Clutch [31] and Bevel Gear [32] to the Cylinder [26]. Mesh the claw of the Lock Sleeve [29] with the claw of the Clutch [31]. Insert the retainer sleeve assembly into the Cylinder Crank Case [46] aligning the spline of the Lock Sleeve [29] with the spline groove at the inner circumference of the Cylinder Crank Case [46]. If the slip clutch assembly and Lever Shaft [88] are mounted in the Cylinder Crank Case [46] first, the Bevel Gear [32] will be an obstacle to reassembly. Before mounting the slip clutch assembly and the Lever Shaft [88], mount the retainer sleeve assembly to the Cylinder Crank Case [46] (Fig. 23).

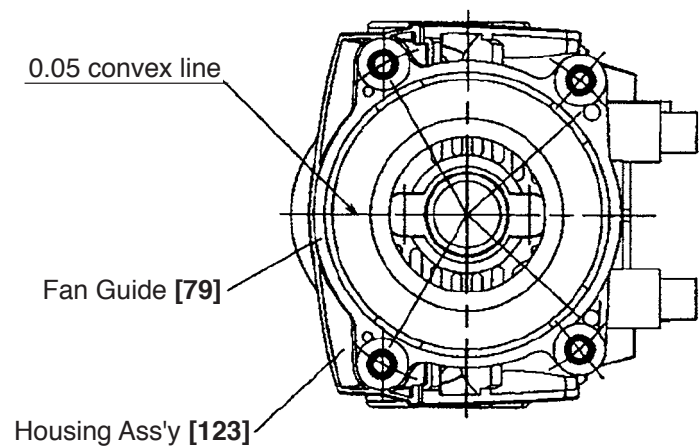




**Fig. 23**

**(4) Mounting the fan guide**

Mount the Fan Guide [79] to the Housing Ass'y [123] paying attention to the direction of the 0.05 convex line.



**Fig. 24**

(5) Reassembly of the slip clutch assembly

Press-fit the Bevel Pinion [48] into the Collar [49] and the Ball Bearing 6002DDCMPS2L [51] then insert it into the Washer [52] and Washer (A) [53]. Mount the Feather Key 3 x 3 x 8 [37] to the Bevel Pinion [48] then press-fit into the Gear Holder [54]. Mount the Second Gear [57] around the outer circumference of the Gear Holder [54]. Before mounting, apply Hitachi Motor Grease No. 29 to the inner circumference of the Second Gear [57]. Insert the ten Needles [56] being careful not to incline them, then push in ten Springs (C) [55] as shown in Fig. 25. Fill the slots and the through holes of the Gear Holder [54] with Hitachi Motor Grease No. 29. Press-fit the Bevel Pinion [48] into the Spacer [58] and the Ball Bearing 629VVC2PS2L [59].

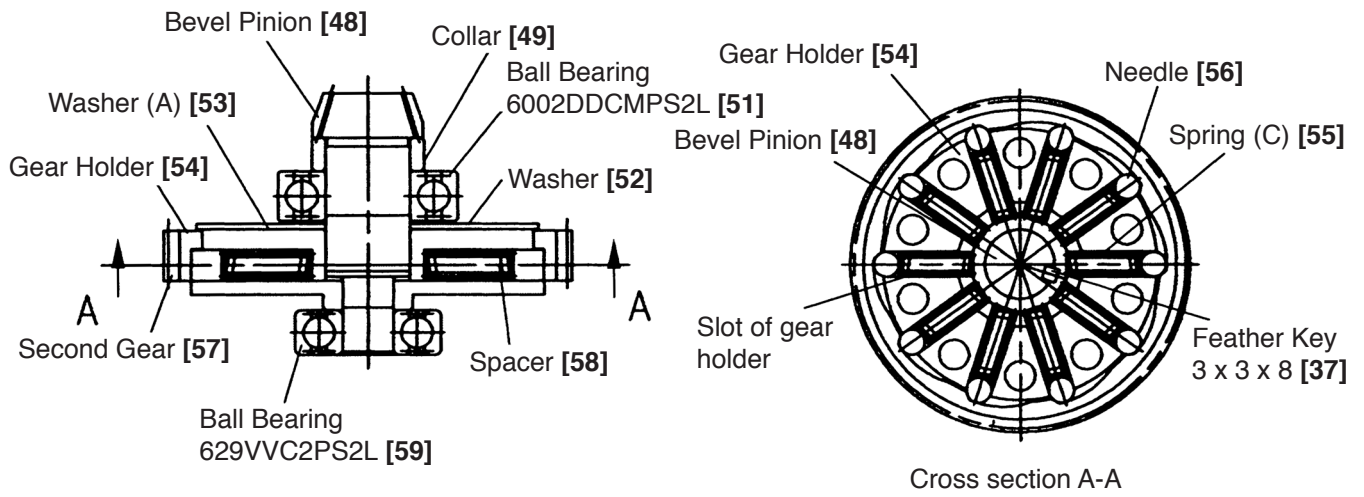


Fig. 25

(6) Mounting the handle shaft and handle (A)

Push the Holder [111] in the Back Cover [96] by hand.  
At this time, check that the clearance of the Holder [111] does not protrude from the main body and the Holder [111] does not protrude from the end surface of the Back Cover [96]. Check that the convex mark of the Back Cover [96] aligns with the convex mark of the Handle Shaft [110]. Then mount the Handle Shaft [110] and push the four Handle Dampers [109] in the clearances between the Holder [111] and the Handle Shaft [110] by hand being careful not to protrude the Handle Dampers [109] from the end surface of the Back Cover [96] (Fig. 26).

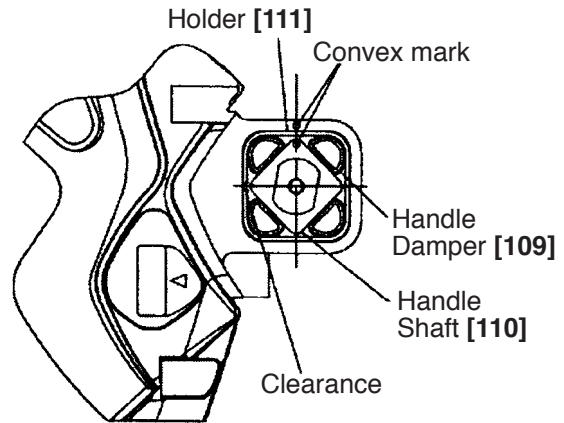


Fig. 26

To mount Handle (A).(B) Set [103], turn the Handle Shaft [110] by about 10° and fit the Transatory Unit [102] and the Handle Shaft [110] in Handle (A).(B) Set [103] together.

(7) Mounting the leaf spring

Sandwich the Leaf Spring [66] between Weight (A) [74] and Weight (B) [73] and fix it with the Seal Lock Hex. Socket Hd. Bolt M5 x 12 [71]. Sufficiently degrease the adhering surface of Weight (B) [73] and adhere Rubber Sheet (B) [72] securely. Be careful that the Leaf Spring [66] is curved to Weight (B) [73]. At this time, do not misalign Weight (A) [74] and Weight (B) [73], and do not turn the Leaf Spring [66] (Fig. 27).

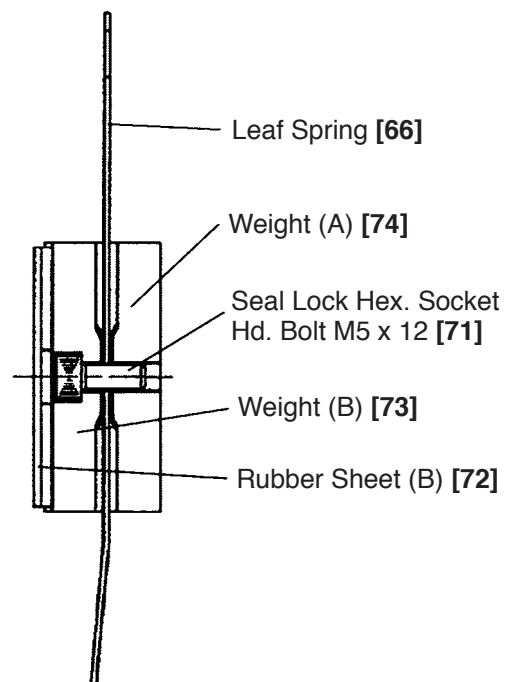


Fig. 27

Mount the Spring Base [134] to the Housing Ass'y [123] being careful of the mounting direction. Mount one Needle Roller [70] to the Cylinder Crank Case [46] and three Needle Rollers [70] to the Spring Base [134]. Before mounting, apply grease to the Needle Rollers [70] to avoid being removed (Fig. 28).

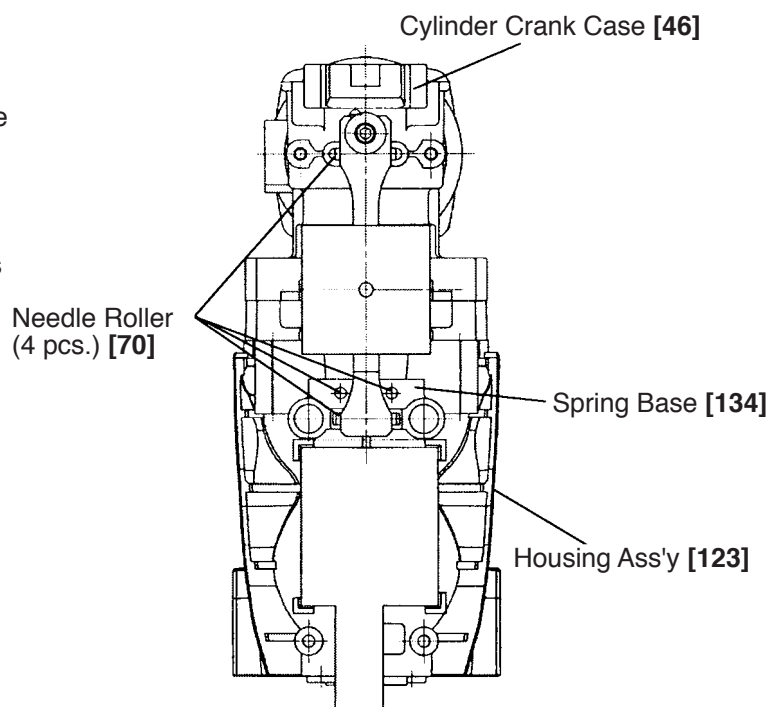


Fig. 28

Mount the assembly of the Leaf Spring [66], Weight (A) [74] and Weight (B) [73] to the Cylinder Crank Case [46]. Then mount Spring Bumper (A) [67] and Washer [68] to the Cylinder Crank Case [46] in this order and fix it with the Seal Lock Hex. Socket Hd. Bolt M4 x 12 [69]. At this time, check that the Leaf Spring [66] is fitted in the center of the Needle Rollers [70] and the Leaf Spring [66] is curved to the main body.

Apply grease to Spring Bumper (B) [95] and mount it to the Back Cover [96] being careful of the mounting direction. To replace Rubber Sheet (A) [94], sufficiently degrease the adhering surface of the Back Cover [96] and adhere Rubber Sheet (A) [94] to the Back Cover [96] securely.

Mount the Back Cover [96] to the Cylinder Crank Case [46] and the Housing Ass'y [123]. At this time, check that Spring Bumper (B) [95] and Rubber Sheet (A) [94] are adhered and the Needle Rollers [70] are mounted to the Cylinder Crank Case [46] and the Spring Base [134] (Fig. 29).

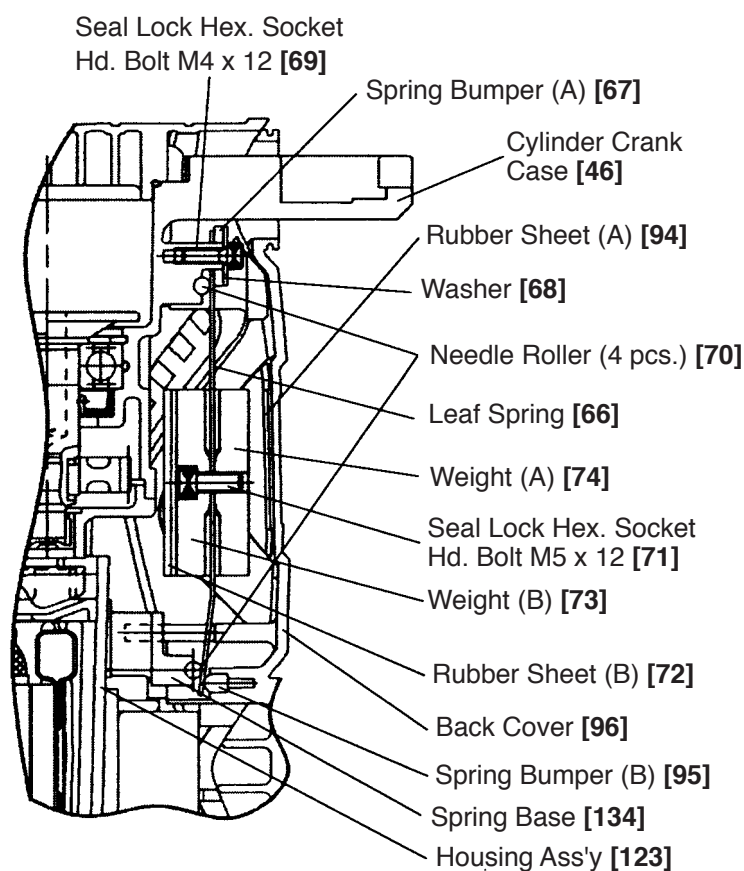


Fig. 29

#### (6) Inspection of the carbon brushes

The motor employs the Carbon Brushes (Auto Stop Type) (1 Pair) [120] 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 (Auto Stop Type) (1 Pair) [120] with new ones which are numbered "73" as shown in Fig. 30. In addition, always keep the Carbon Brushes (Auto Stop Type) (1 Pair) [120] clean and ensure that they slide freely within the brush holders.

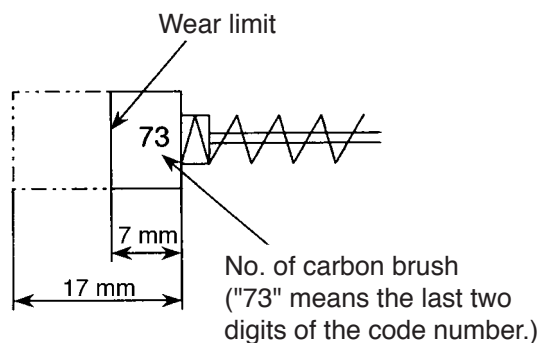


Fig. 30

#### (7) Application of lubricant

Apply special grease (for hammer and rotary hammer) to the inner circumference of the Connecting Rod [35], O-rings [25] of the Striker [24] and the Piston [34], sliding portion of the Second Hammer [20], Oil Seal [10], Oil Seal (A) [50], Oil Seal (B) [45], Damper [22] and the inner and outer circumference of the Bevel Gear [32]. Fill 50 g of the special grease in the Cylinder Crank Case [46] on the connecting rod side and 20 g in the Cylinder Crank Case [46] on the clutch side. Apply Hitachi Motor Grease No. 29 to the Needle Bearing (M661) [62], pinion portion of the Armature Ass'y [78] and Needle Roller D8 x 20 [16]. Fill 30 g of the Hitachi Motor Grease No. 29 in the Cylinder Crank Case [46] on the First Gear [61] side and the Gear Cover [63] side.

#### (8) Oil seal and others

Take care not to scratch or cut Oil Seal (A) [50] and Oil Seal (B) [45] of Cylinder Crank Case [46], Oil Seal [10] and O-ring (1AS-60) [9] of the Front Cover [8], O-ring (1AS-60) [9] of the Second Hammer [20], O-ring (S-56) [40] of the Crank Cover [39] and O-ring [25] of the Piston [34] and Striker [24], O-ring (S-32) [64] of the Gear Cover [63].

### 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 Three Bond TB1401 to the threads of the bolts during reassembly because the bolts loosened due to vibration may cause damage to the tool body.**

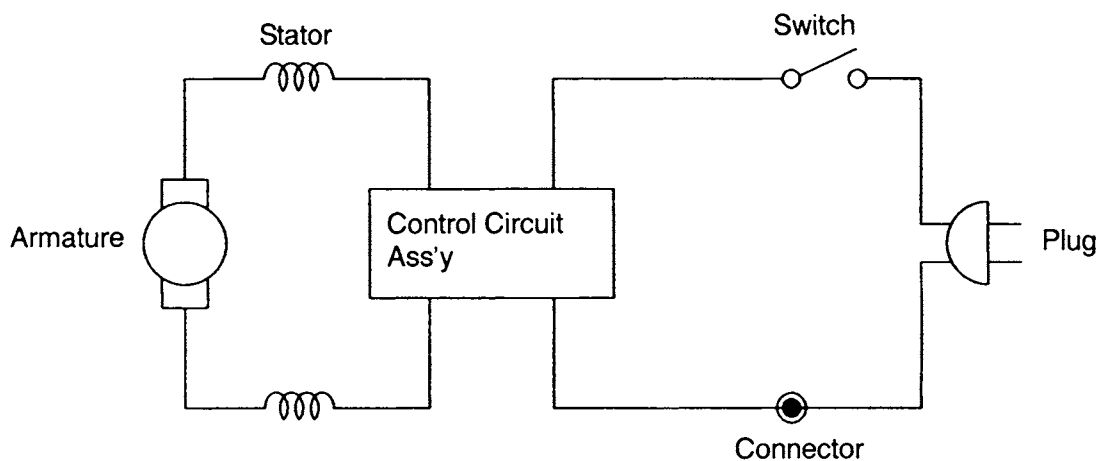
### 9-4. Tightening Torque

Front cover mounting bolt .....	13.7 ± 1.96 N·m (140 ± 20 kgf·cm)
(Hex. socket head bolt M6 x 25)	
Cylinder crank case mounting bolt .....	9.8 ± 0.98 N·m (100 <sup>+10</sup> <sub>0</sub> kgf·cm)
(Hex. socket head bolt M6 x 45)	
Gear cover mounting bolt .....	9.8 <sup>+1.96</sup> <sub>0</sub> N·m (100 <sup>+10</sup> <sub>0</sub> kgf·cm)
(Hex. socket head bolt M6 x 22)	
Back cover mounting bolt .....	3.92 ± 0.49 N·m (40 ± 5 kgf·cm)
(Hex. socket head bolt M5 x 35)	
Hood mounting bolt	
(Hex. socket head bolt M5 x 12)	

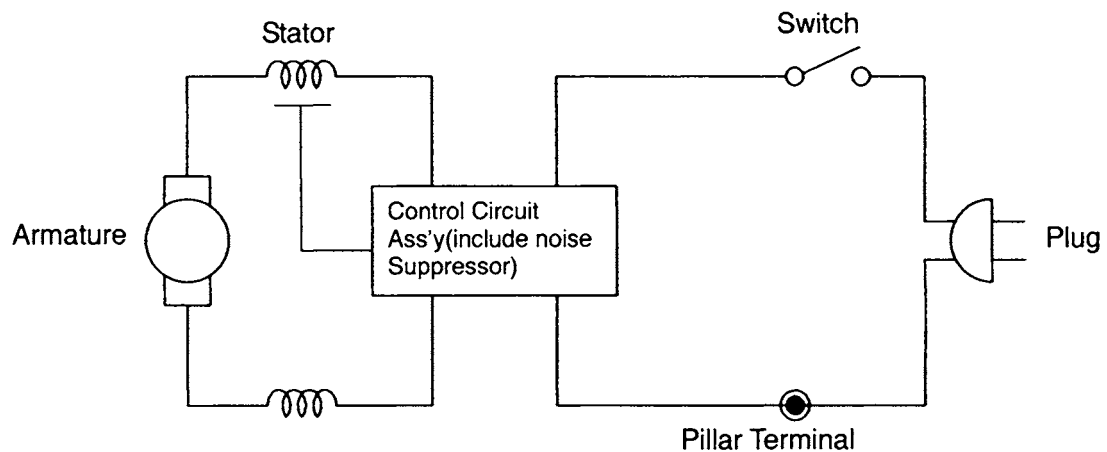
Crank cover mounting bolt .....	$7.84^{+1.96}_0 \text{ N}\cdot\text{m}$ ( $80^{+20}_0 \text{ kgf}\cdot\text{cm}$ )
(Hex. socket head bolt M5 x 16)	
Weight mounting bolt	
(Hex. socket head bolt M5 x 12)	
Handle mounting bolt .....	$4.9^{+1.96}_0 \text{ N}\cdot\text{m}$ ( $50^{+20}_0 \text{ kgf}\cdot\text{cm}$ )
(Hex. socket head bolt M5 x 12)	
Lever shaft mounting bolt .....	$4.41 \pm 0.49 \text{ N}\cdot\text{m}$ ( $45 \pm 5 \text{ kgf}\cdot\text{cm}$ )
Leaf spring mounting bolt	
(Hex. socket head bolt M4 x 12)	
Tapping screw D5 .....	$2.94 \pm 0.49 \text{ N}\cdot\text{m}$ ( $30 \pm 5 \text{ kgf}\cdot\text{cm}$ )
Tapping screw (W/Flange) D5 .....	$2.94 \pm 0.49 \text{ N}\cdot\text{m}$ ( $30 \pm 5 \text{ kgf}\cdot\text{cm}$ )
Tapping screw (W/Flange) D4 .....	$1.96 \pm 0.49 \text{ N}\cdot\text{m}$ ( $20 \pm 5 \text{ kgf}\cdot\text{cm}$ )

### 9-5. Internal Wiring

- Wiring diagram for products without noise suppressor



- Wiring diagram for products with noise suppressor



- Mounting diagram for products with noise suppressor

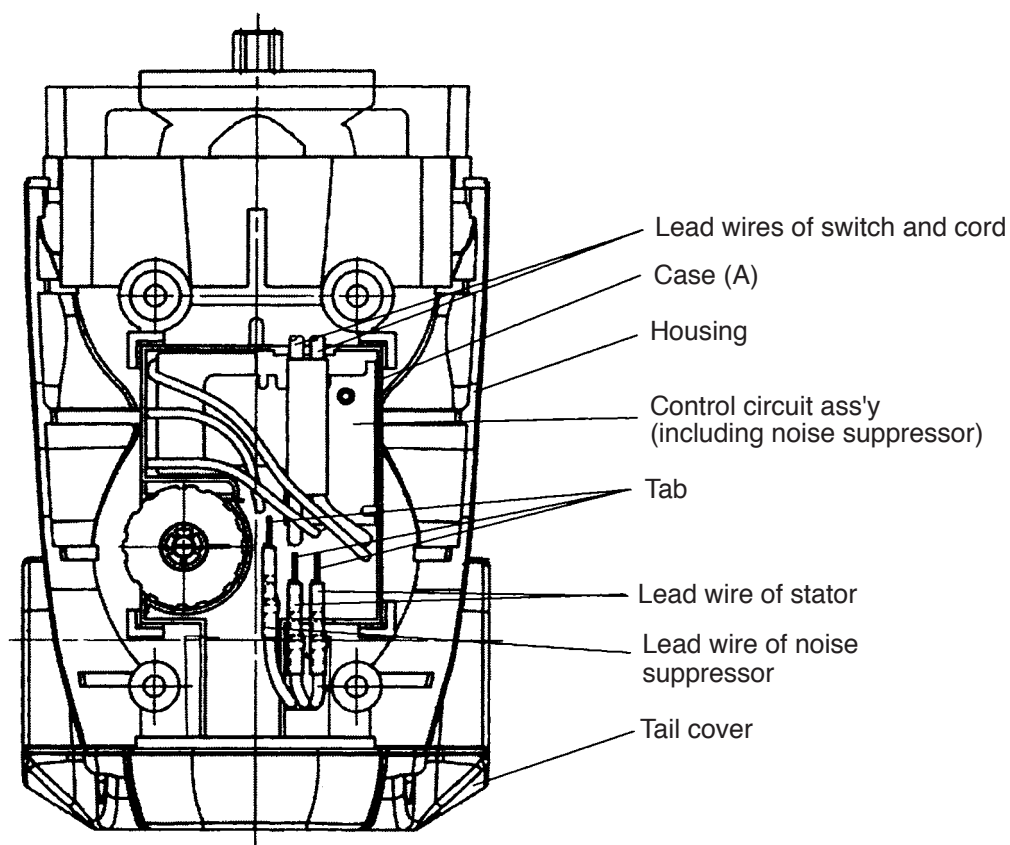


Fig. 31

### 9-6. Insulation Tests

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

Insulation resistance: 7 M  $\Omega$  or more with DC 500 V megohm tester

Dielectric strength: AC 4,000 V/1 minute, with no abnormalities 220 V — 240 V (and 110 V for U.K. products)

AC 2,500 V/1 minute, with no abnormalities 110 V — 127 V (except for U.K. products)

### 9-7. No-load Current Values

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

Voltage (V)	110	120	220	230	240
Current (A) (max.)	6.4	5.9	3.2	3.1	2.9

## 10. STANDARD REPAIR TIME (UNIT) SCHEDULES

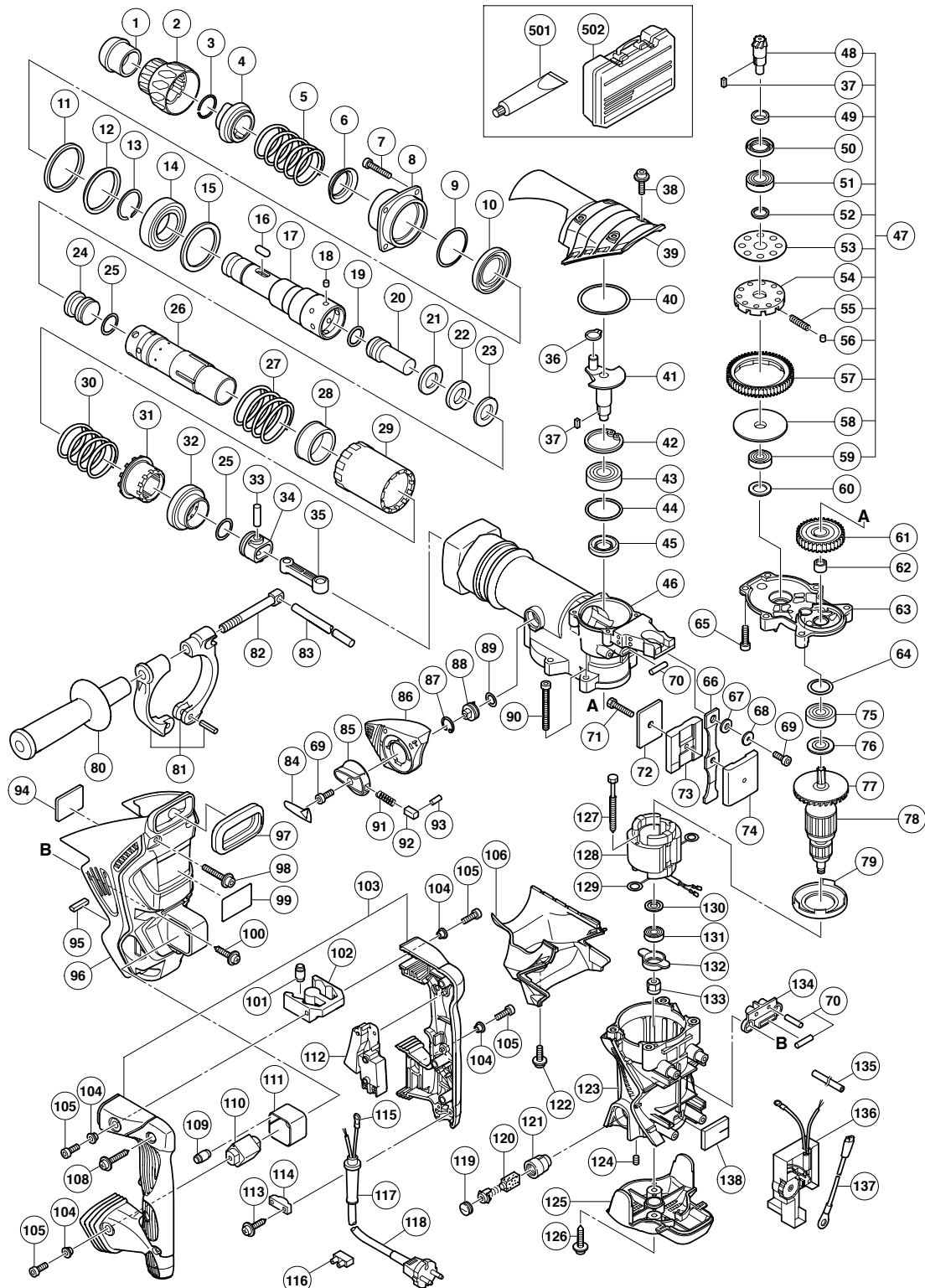
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## ELECTRIC TOOL PARTS LIST

### ■ ROTARY HAMMER Model DH 40MR

2006 · 7 · 3  
(E1)



# PARTS

DH 40MRY

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	321-306	FRONT CAP	1		
2	321-305	GRIP	1		
3	318-590	STOPPER RING	1		
4	321-304	NEEDLE HOLDER	1		
5	321-303	RETAINER SPRING	1		
6	321-302	SPRING HOLDER (A)	1		
7	981-942	SEAL LOCK HEX. SOCKET HD. BOLT M6X25	4		
8	321-300	FRONT COVER	1		
9	956-996	O-RING (1AS-60)	1		
10	321-301	OIL SEAL	1		
11	325-229	RUBBER RING	1		
12	315-868	URETHANE RING HOLDER	1		
13	320-850	RETAINING RING D35	1		
14	600-7DD	BALL BEARING 6007DDUAV2S	1		
15	321-297	BEARING WASHER	1		
16	313-421	NEEDLE ROLLER D8X20	2		
17	321-286	RETAINER SLEEVE	1		
18	313-057	NEEDLE PIN D6X6	4		
19	313-396	O-RING (C)	1		
20	326-371	SECOND HAMMER	1		
21	321-288	DAMPER WASHER	1		
22	321-289	DAMPER	1		
23	321-290	DAMPER HOLDER	1		
24	326-373	STRIKER	1		
25	986-104	O-RING	2		
26	326-372	CYLINDER	1		
27	326-470	LOCK SPRING	1		
28	321-293	SPRING HOLDER (B)	1		
29	321-299	LOCK SLEEVE	1		
30	326-469	CLUTCH SPRING	1		
31	321-295	CLUTCH	1		
32	321-296	BEVEL GEAR	1		
33	980-708	PISTON PIN	1		
34	326-369	PISTON	1		
35	326-370	CONNECTING ROD	1		
36	939-540	RETAINING RING FOR D10 SHAFT (10 PCS.)	1		
37	944-109	FEATHER KEY 3X3X8	2		
38	994-192	HEX. SOCKET HD. BOLT (W/FLANGE) M5X16	4		
39	326-473	CRANK COVER	1		
40	317-119	O-RING (S-56)	1		
41	326-468	CRANK SHAFT	1		
42	948-391	RETAINING RING FOR D40 HOLE	1		
43	620-3DD	BALL BEARING 6203DDCMPS2L	1		
44	996-363	O-RING (S-40)	1		
45	321-274	OIL SEAL (B)	1		
46	326-467	CYLINDER CRANK CASE	1		
47	321-277	SLIP CLUTCH ASS'Y	1	INCLUD. 37, 48, 49, 51-59	
48	321-278	BEVEL PINION	1		
49	321-279	COLLAR	1		
50	313-050	OIL SEAL (A)	1		
51	600-2DD	BALL BEARING 6002DDCMPS2L	1		

# PARTS

DH 40MRY

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
52	313-058	WASHER	1		
53	313-053	WASHER (A)	1		
54	321-281	GEAR HOLDER	1		
55	321-282	SPRING (C)	10		
56	320-343	NEEDLE	10		
57	321-280	SECOND GEAR	1		
58	321-283	SPACER	1		
59	629-VVM	BALL BEARING 629VVC2PS2L	1		
60	944-525	BEARING WASHER (C)	1		
61	321-276	FIRST GEAR	1		
62	939-299	NEEDLE BEARING (M661)	1		
63	326-482	GEAR COVER	1		
64	872-767	O-RING (S-32)	1		
65	321-313	SEAL LOCK HEX. SOCKET HD. BOLT M6X22	2		
66	326-374	LEAF SPRING	1		
67	326-375	SPRING BUMPER (A)	1		
68	326-477	WASHER	1		
69	983-162	SEAL LOCK HEX. SOCKET HD. BOLT M4X12	2		
70	878-418	NEEDLE ROLLER	4		
71	991-690	SEAL LOCK HEX. SOCKET HD. BOLT M5X12	1		
72	326-486	RUBBER SHEET (B)	1		
73	326-476	WEIGHT (B)	1		
74	326-475	WEIGHT (A)	1		
75	620-1DD	BALL BEARING 6201DDCMPS2L	1		
76	302-429	DUST WASHER (B)	1		
77	321-640	FAN	1		
* 78	360-591U	ARMATURE ASS'Y 110V-120V	1	INCLUD. 75-77, 130, 131	
* 78	360-591E	ARMATURE ASS'Y 220V-230V	1	INCLUD. 77	
79	321-320	FAN GUIDE	1		
80	313-078	SIDE HANDLE	1		
81	313-079	HANDLE HOLDER	1		
82	313-080	HANDLE BOLT	1		
83	971-786	STOPPER ROD	1		
84	321-867	LEVER LABEL	1		
85	321-309	CHANGE LEVER	1		
86	326-471	LEVER HOLDER	1		
87	311-229	RETAINING RING FOR D20 HOLE	1		
88	321-307	LEVER SHAFT	1		
89	873-095	O-RING (P-16)	1		
90	986-940	SEAL LOCK HEX. SOCKET HD. BOLT M6X45	4		
91	321-310	LEVER SPRING	1		
92	321-311	PUSHING BUTTON	1		
93	321-312	PIN D2X10	1		
94	326-487	RUBBER SHEET (A)	1		
95	326-376	SPRING BUMPER (B)	1		
96	326-478	BACK COVER	1		
97	326-378	BELLOWS	1		
98	319-589	HEX. SOCKET HD. BOLT (W/FLANGE) M5X35	2		
99		NAME PLATE	1		
100	302-089	TAPPING SCREW (W/FLANGE) D5X20 (BLACK)	4		
101	310-124	HANDLE DAMPER	4		

## PARTS

DH 40MRY

[illegible]

## STANDARD ACCESSORIES

DH 40MRY

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
501	981-840	GREASE (A) FOR HAMMER.HAMMER DRILL (30G)	1		
502	326-489	CASE (PLASTIC)	1		

## OPTIONAL ACCESSORIES

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
601	308-471	GREASE FOR HAMMER. HAMMER DRILL (70G)	1		
602	980-927	GREASE FOR HAMMER. HAMMER DRILL (500G)	1		
603	320-859	SYRINGE (BLOW-OUT BULB TYPE)	1		
604	313-448	DRILL BIT (SDS MAX) D16X340	1		
605	313-456	DRILL BIT (SDS MAX) D16X540	1		
606	313-449	DRILL BIT (SDS MAX) D19X340	1		
607	313-457	DRILL BIT (SDS MAX) D19X540	1		
608	313-450	DRILL BIT (SDS MAX) D22X320	1		
609	313-458	DRILL BIT (SDS MAX) D22X520	1		
610	313-451	DRILL BIT (SDS MAX) D25X320	1		
611	313-459	DRILL BIT (SDS MAX) D25X520	1		
612	313-452	DRILL BIT (SDS MAX) D28X370	1		
613	313-460	DRILL BIT (SDS MAX) D28X570	1		
614	313-453	DRILL BIT (SDS MAX) D32X370	1		
615	313-461	DRILL BIT (SDS MAX) D32X570	1		
616	313-454	DRILL BIT (SDS MAX) D38X370	1		
617	313-462	DRILL BIT (SDS MAX) D38X570	1		
618	313-455	DRILL BIT (SDS MAX) D40X370	1		
619	313-463	DRILL BIT (SDS MAX) D40X570	1		
620	318-085	SYRINGE (BELLOWS TYPE)	1		
621	944-460	TAPER SHANK DRILL BIT D11X100	1		
622	944-461	TAPER SHANK DRILL BIT D12.3X110	1		
623	993-038	TAPER SHANK DRILL BIT D12.7X110	1		
624	944-462	TAPER SHANK DRILL BIT D14.3X110	1		
625	944-500	TAPER SHANK DRILL BIT D14.5X110	1		
626	944-463	TAPER SHANK DRILL BIT D17.5X120	1		
627	313-464	TAPER SHANK ADAPTER ASS'Y (SDS MAX) NO. 1	1	INCLUD. 628	
628	944-477	COTTER	1		
629	313-465	ADAPTER (SDS MAX) FOR SDS PLUS SHANK BIT	1		
630	955-994	CORE BIT 25MM	1		
631	955-995	CORE BIT 29MM	1		
632	955-996	CORE BIT 32MM	1	INCLUD. 633	
633	955-997	GUIDE PLATE (FOR CORE BIT 32MM)	1		
634	955-998	CORE BIT 35MM	1	INCLUD. 635	
635	955-999	GUIDE PLATE (FOR CORE BIT 35MM)	1		
636	956-000	CORE BIT 38MM	1	INCLUD. 637	
637	956-001	GUIDE PLATE (FOR CORE BIT 38MM)	1		
638	955-154	CORE BIT 45MM	1	INCLUD. 639	
639	955-166	GUIDE PLATE (FOR CORE BIT 45MM)	1		
640	955-155	CORE BIT 54MM	1	INCLUD. 641	
641	955-167	GUIDE PLATE (FOR CORE BIT 54MM)	1		

## OPTIONAL ACCESSORIES

**DH 40MRY**

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