

Models No. ▶ HR4500C

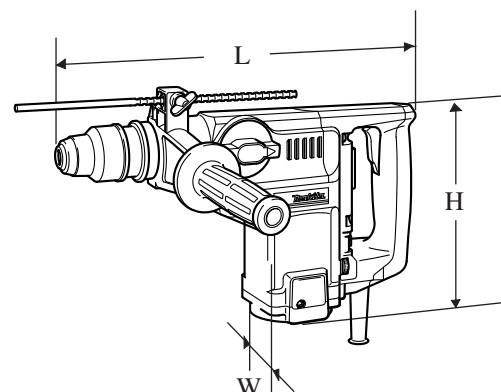
Description ▶ Rotary Hammer 45mm (1-3/4")

CONCEPTION AND MAIN APPLICATIONS

For matured line-up of SDS-Max Rotary Hammers, Model HR4500C has been developed as a sister model to HR4000C(40mm;1-3/4") and HR5001C(50mm;2") which are already popular to users around the world.

Performing excellent drilling in concrete within the diameter range from 25mm(1") to 45mm(1-3/4"), it also has the same features and benefits as HR4000C and HR5001C.

See next page for detailed information.



► Specifications

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output(W)
			Input	Output	
100	15	50/60	1,300	600	1,500
110	13	50/60	1,300	600	1,500
120	13	50/60	1,250	600	1,500
220	6.6	50/60	1,300	600	1,500
230	6.6	50/60	1,300	600	1,500
240	6.8	50/60	1,300	600	1,500

Dimensions : mm (")	
Length (L)	488mm (19-1/4")
Width (W)	118mm (4-5/8")
Height (H)	278mm (11")

No load speed	Rotations per minute : rpm=min ⁻¹	120 - 240
	Blows per minute : bpm=min ⁻¹	1,250 - 2,550
Bit type		SDS-Max shank bit
Diameter of shank : mm (")		18 (11/16")
Drilling capacities : mm (")	Tungsten-carbide tipped bit	45 (1-3/4")
	Core bit	125 (4-7/8")
Net weight : Kg (lbs)		7.8 (17.2)
Cord length : m (ft)		Standard spec. : 5 (16.4)
		European spec. : 4 (13.1)

► STANDARD EQUIPMENT

Depth Gauge ----- 1pc.
 Grease Vessel (Bit Grease) ----- 1pc.
 Plastic Carrying Case ----- 1pc.
 Side Handle Assembly
 (D-shaped side handle) ----- 1pc.
 Grip 36 Assembly
 (Bar style side handle) ----- 1pc.

The standard equipment for the machine may differ from country to country.

► OPTIONAL ACCESSORIES

Hammer Grease (30cc), Blow-out Bulb, Dust Cup 5, Dust Cup 9, Bull Point, Cold Chisel, Scaling Chisel, Clay Spade, Bushing Tool, Rammer, Safety Goggles, Core Bit Adapter,
 Core Bits; Hole diameter : 20mm(13/16"), 30mm(1-3/16"), 35mm(1-3/8"), 40mm(1-9/16"), 45mm(1-3/4"), 54mm(2-1/8"), 65mm(2-9/16"), 79mm(3-1/8"), 105mm(4-1/8"), 118mm(4-5/8")
 Tungsten-carbide Tipped Bits; Bit diameter : 10mm(3/8"), 10.5mm(7/16"), 11mm(7/16"), 12mm(15/32"), 12.5mm(1/2"), 12.7mm(1/2"), 13.5mm(1/2"), 14.3mm(9/16"), 14.5mm(9/16"), 16mm(5/8"), 17mm(11/16"), 17.5mm(11/16"), 18mm(11/16"), 19mm(3/4"), 20mm(13/16"), 21.5mm(7/8"), 22mm(7/8"), 24mm(15/16"), 25mm(1"), 25.4mm(1"), 26mm(1"), 28mm(1-1/8"), 30mm(1-3/16"), 32mm(1-1/4"), 35mm(1-3/8"), 38mm(1-1/2")

► Features and benefits

The Outstanding Chipping Power in This Class

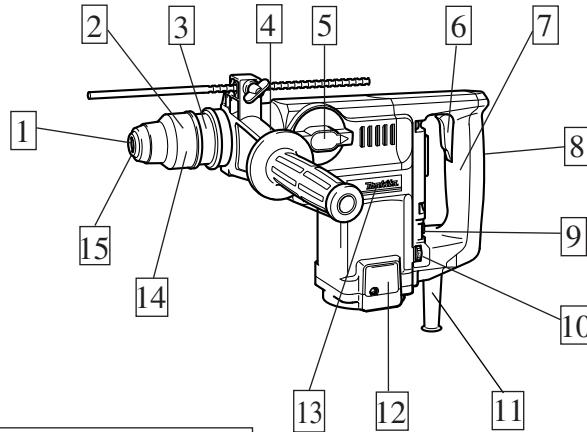
See next page for the excellent results of various chipping/drilling tests.

Body Wholly Covered with Resin

No electric shock to operator, even if bit accidentally hits against laid electric cables. Barrel is also covered with resin, and so, it is possible to do chipping operations while holding barrel with your hand.

Zig-Zag Varnish on Armature Coil

Protects Armature against dust, and disperses heat effectively.



1 Accepts SDS-Max Shank Bits

2 Bit can be Installed or Removed by Simply Sliding Chuck Cover.

3 No Hammering While Idling

Air in the cylinder is not compressed unless tool is pressed against ground. This function ensures machine's long life.

4 Bar Handle Plus D-Shape Handle As Standard Accessories

5 Large Change Lever

Easy to change action mode to "hammering only" or "Rotation with hammering".

6 Easy-to-Operate Large Trigger

Fingers are free from fatigue even in along continuous operation.

7 Large Rear Handle

Can be gripped with both hands. - convenient for downward chipping operations.

8 Accessible to Switch or Power Supply Cord Just by Removing Two Screws of Handle Cover

9 Service Reminder Lamps

Light up in **green** when the machine is switched on, and if any trouble, tell you its cause;

- Light up, but the machine does not start.
Cause : wear of carbon brushes or trouble(s) in electric circuit or motor
- Does not light up, and the machine does not start.
Cause : disconnection in mains switch or power supply cord

Light up in **red** nearly 8 hours before carbon brushes need servicing.

10 Electronic Speed Control Dial

Optimum hammering speed can be selected for a wide range of applications. Setting to low speed, ideal for such a light chipping works as scraping tiles, removing bricks joint.

11 Large and Tough Cord Guard

Also excellent in flexibility to protect cable from disconnection

12 Auto Shut-off Carbon Brushes

Protect commutator and tell the time for replacement.

13 Torque Limiter Actuated by Ball-Clutch

Assures steady torque control even after a long time operation.

14 Chisel can be Locked at 12 Positions Through 360°

By turning change ring while pushing it forward, the chisel angle can be adjusted without taking out the inserted chisel.

15 Further Improvement in Dust Proof Structure

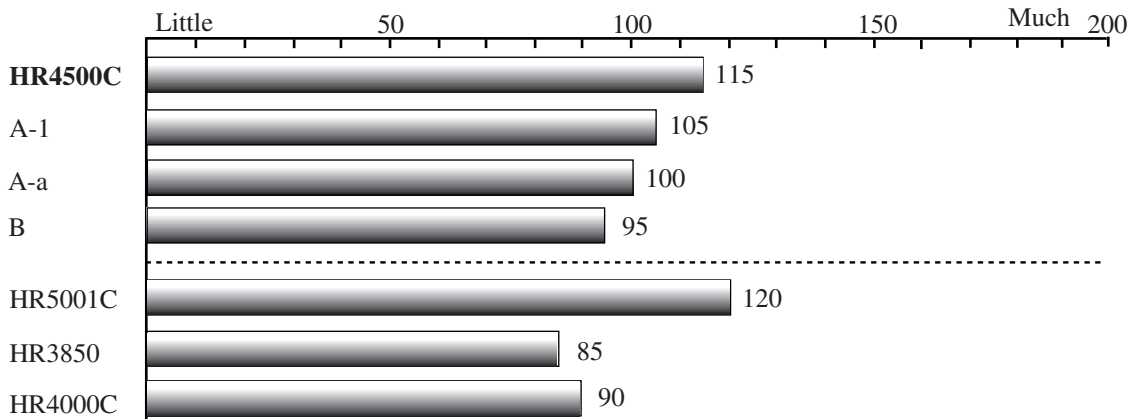
► Comparison chart

The four graphs drawn below show the results of our chipping or drilling tests under the following conditions;

- material : concrete whose compressive strength is 350 kgf/cm²
- in horizontal application

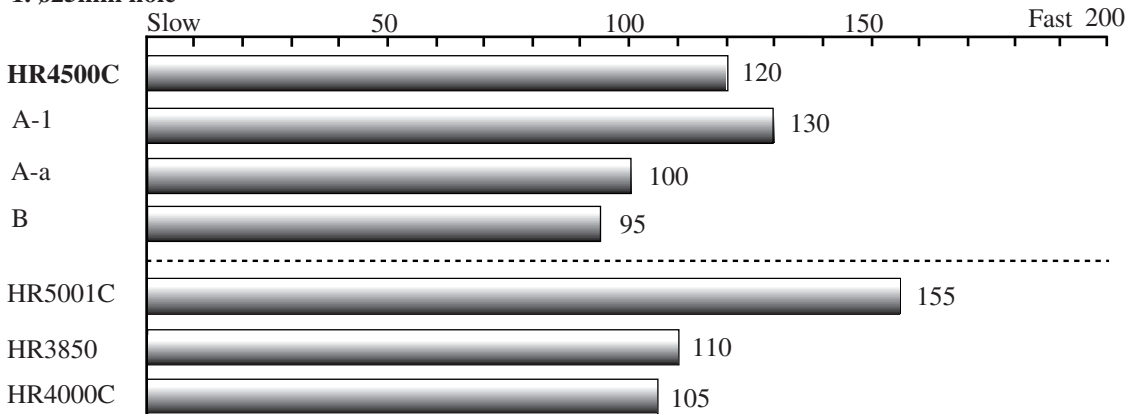
The results are shown in relative values when setting Model A-a of competitor A's data as 100.

● Chipping amount

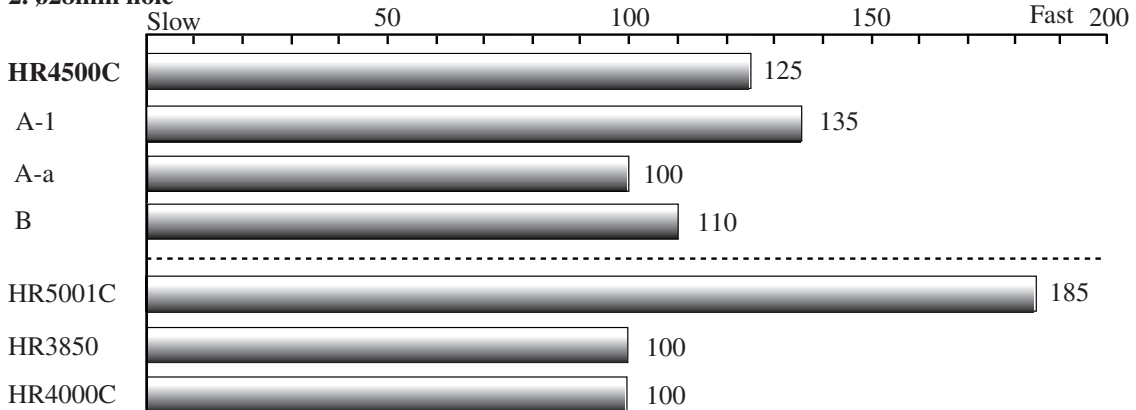


● Drilling speed

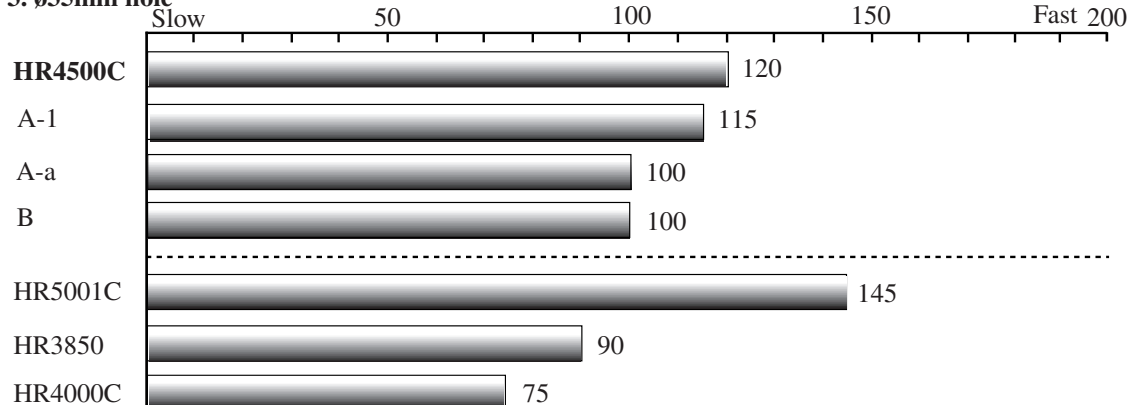
1. ø25mm hole



2. ø28mm hole



3. ø35mm hole



► Comparison of products

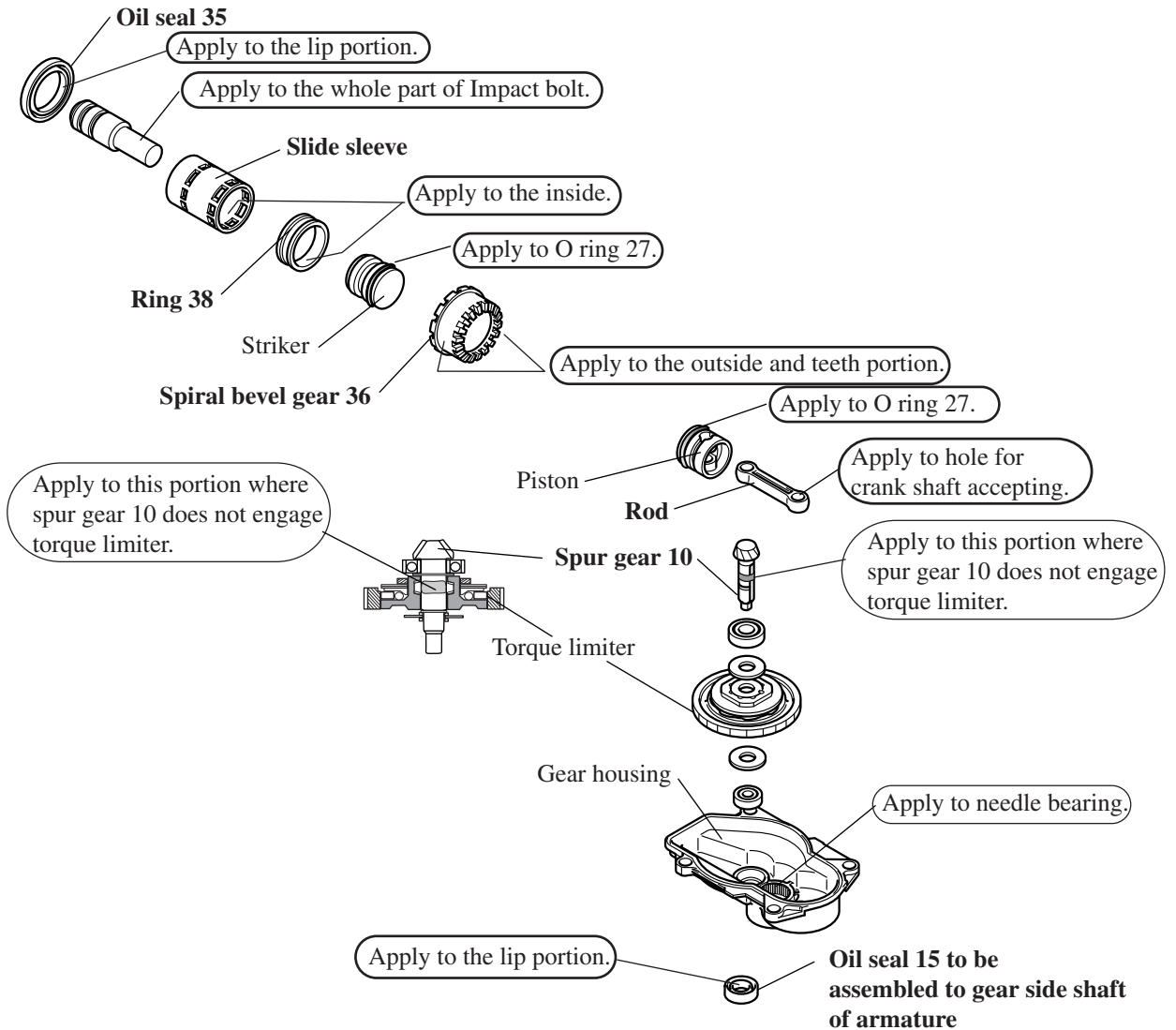
Model No.		Makita	Competitor A		Competitor B	Makita	
		HR4500C	(1) A-1 (2) A-1C	A-a	B	HR4000C	HR5001C
Continuous rating Input (W)		1,300	1,300	1,050	1,150	1,050	1,500
Continuous rating current (A) on 120V		13	—	—	11.7	9.6	15
No load speed : min-1=rpm		120-240	0 - 200 282	185 - 255	100 - 240	230 - 450	120 - 240
Blows per minute		1,250 - 2,550	0 - 2,750	0 - 2,700	1,200 - 2,800	1,250 - 2,500	1,100 - 2,150
Bit shank type		SDS-Max	SDS-Max	SDS-Max	SDS-Max	SDS-Max	SDS-Max
Max. drilling capacity : mm (")	T.C.T bit	45 (1-3/4)	45 (1-3/4)	37 (1-7/16)	45 (1-3/4)	40 (1-9/16)	50 (2)
	Core bit	125 (4-7/8)	150 (5-7/8)	160 (6-5/16)	125 (4-7/8)	105 (4-1/8)	160 (6-5/16)
Single-blow energy (Joule)		8.3	8.3	8.0	9.0 :rotary hammer 11.0 :hammer	6.7	17.5
2 action mode* settings		Yes	Yes	Yes	Yes	Yes	Yes
Slide lock by one action		Yes	Yes	No	Yes	Yes	Yes
Trigger switch with variable speed control		No	Yes	Yes	No	No	No
Electronic speed control dial		Yes	No	No	Yes	Yes	Yes
Service reminder lamp for carbon brushes		Yes	Yes	Yes	Yes	Yes	Yes
Service reminder lamp to notify troubles in switch and cord		Yes	No	No	No	Yes	Yes
Noise level (dB[A])		92	91	95	90	93	98
Vibration (m/s ²)		11	8 7	11	11.5	10	13
Double insulation		Yes	Yes	Yes	Yes	Yes	Yes
Cord length : mm (ft)		5 (16.4) **4 (13.1)	4 (13.1)	4 (13.1)	4 (13.1)	5 (16.4) **4 (13.1)	5 (16.4) **4 (13.1)
Dimensions : mm (")	Length	488 (19-1/4)	497 (19-1/2) 510 (20)	495 (19-1/4)	540 (21-1/4)	455 (17-7/8)	610 (24)
	Height	278 (11)	261 (10-1/4) 288 (11-3/8)	259 (11)	265 (10-3/8)	253 (10)	280 (11)
	Width	118 (4-5/8)	115 (4-1/2) 115 (4-1/2)	114 (4-5/8)	98 (3-7/8)	100 (3-15/16)	118 (4-5/8)
Net weight : Kg(lbs) (Not includes side handle and power supply cord)		7.8 (17.2)	7.0 (15.4) 7.9 (17.4)	7.9 (17.4)	7.5 (16.5)	6.2 (13.7)	10.0 (22.1)
Standard equipment	Bar style side handle	Yes	Yes	Yes	Yes	Yes	Yes
	D-shaped side handle	Yes	No	No	No	Yes	Yes
	Depth gauge	Yes	No	Yes	No	Yes	Yes
	Bit grease	Yes	Yes	Yes	Yes	Yes	Yes
	Plastic carrying case	Yes	Yes	Yes	Yes	Yes	Yes

*Rotation with Hammering mode / Hammering mode

**European spec.

< 1 > Lubrication

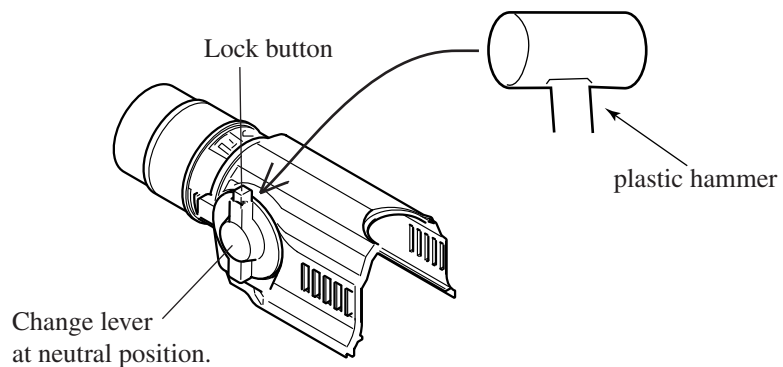
Apply MAKITA grease No.00 to the following parts in order to prevent unusual abrasion and overheating.



<2> Disassembling Change Lever Complete

Set Change Lever Complete at neutral position, and slightly hit the back side of lock button with a plastic hammer to remove it.
(See Fig.1.)

Fig. 1



<3> Assembling Change Lever

- 1) Change link is constructed to be slid up and down.
Slide the change link upward with your finger.
(See Fig.2)
- 2) Assemble change lever on crank housing
with setting crank pin 4 into the upper hole (elliptic hole)
of change link. See Fig. 3.
(The change lever has to be set at hammering position.)
(See Fig 3A)

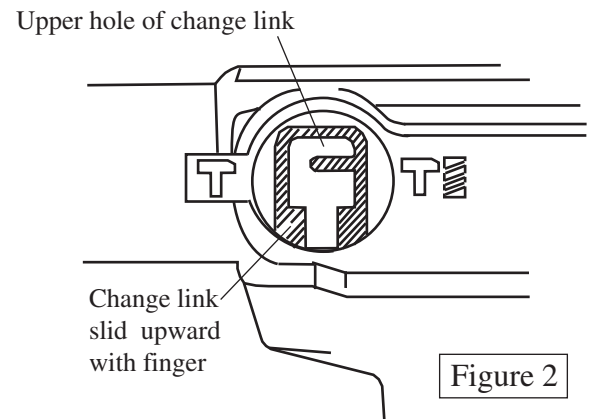


Figure 2

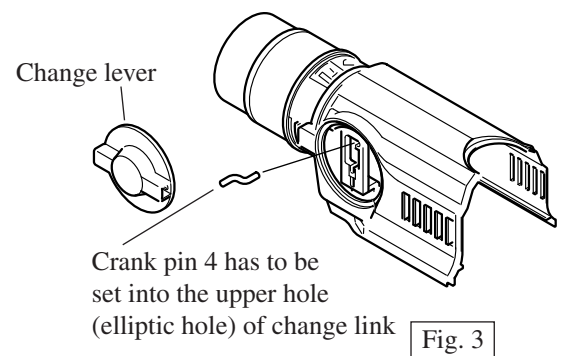
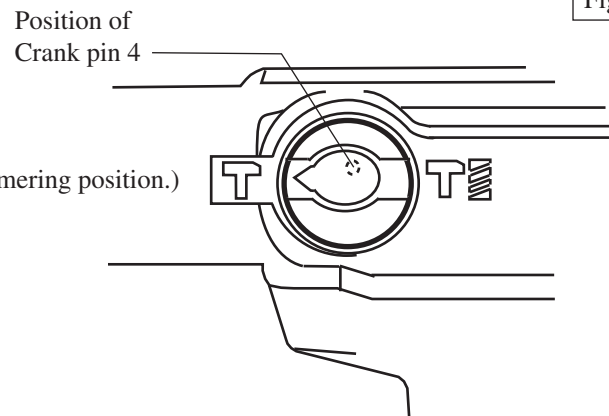


Fig. 3



(The change lever has to be set at hammering position.)

Remark

Do not operate the machine without change lever.
Otherwise it causes damage of the inner mechanism.

Fig. 3A

<3> Disassembling armature

- 1) Remove tool holder cap while pulling chuck cover down. See Fig. 4.
Then chuck cover can be removed from the machine.
- 2) Take off pan head screw M4x16 which is fixing crank housing cover on crank housing. See Fig. 4.

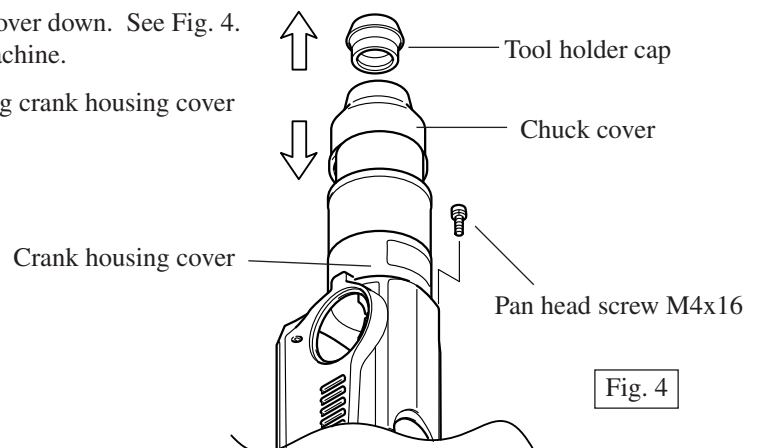


Fig. 4

- 3) Insert a stainless scale into the change lever assembling hole of crank housing, and put the another end of the same scale on side handle base as illustrated in Fig. 5.
- 4) Strike side grip with plastic hammer. So crank housing cover can be separated together with side grip from crank housing as illustrated in Fig. 5A.

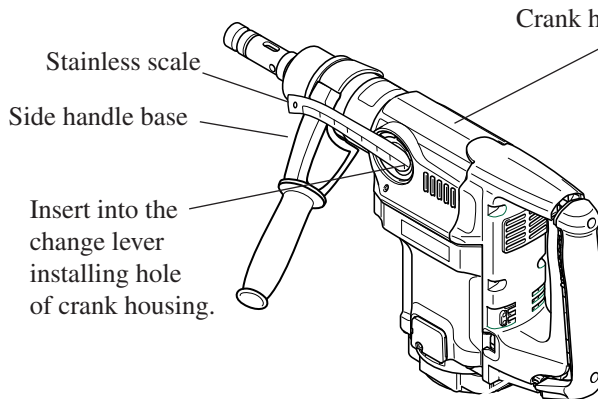


Fig. 5

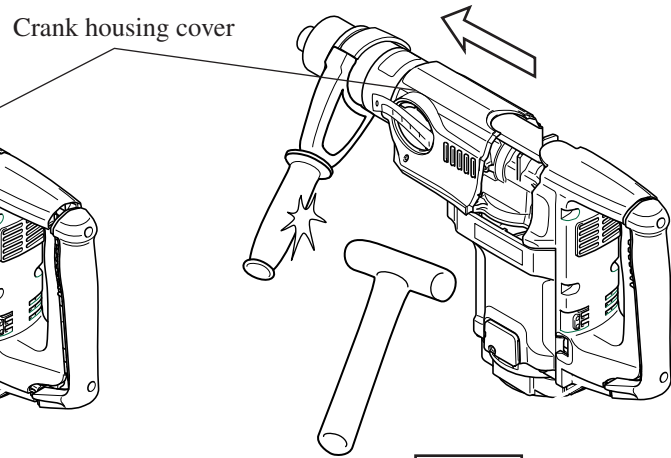


Fig. 5A

- 5) Disassemble handle by unscrewing pan head screws and tapping screws as illustrated in Fig. 6.
- 6) Disassemble connector and fix rod as illustrated in Fig. 6.
- 7) And then, remove pick-up coil as illustrated in Fig. 6.

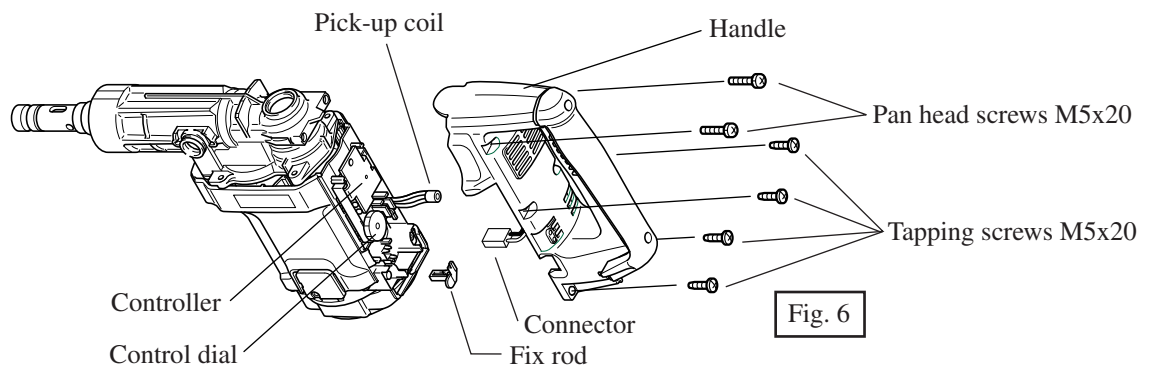


Fig. 6

- < Note > Keep the following matters in order to avoid the disconnection, when removing pick-up coil and connector.
1. After disassembling fix rod, remove pick-up coil.
 2. When separating connector from controller, hold controller with a hand, and pull connector itself, holding it with another hand. Do not remove pulling connector's lead wires.

- 8) Pull off 3 terminals (white, red and black) from controller as illustrated in Fig. 7. Then, controller can be removed from motor housing.

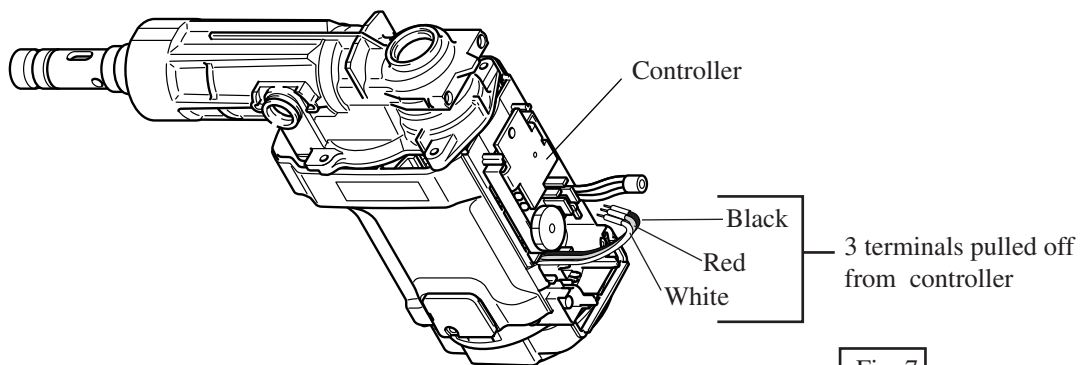
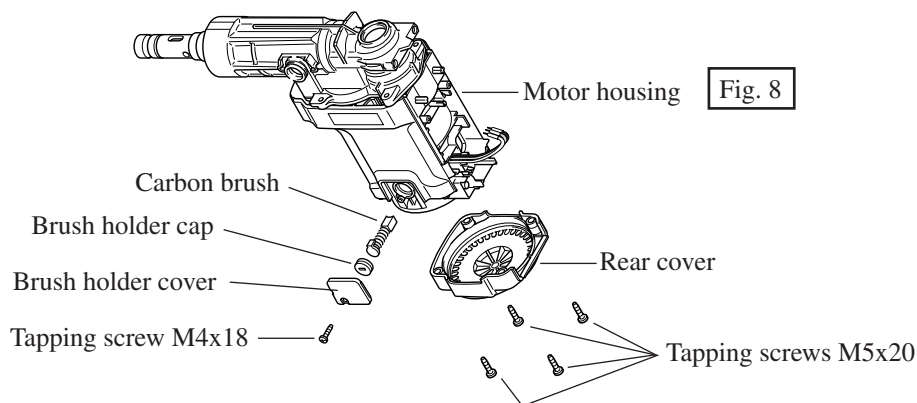
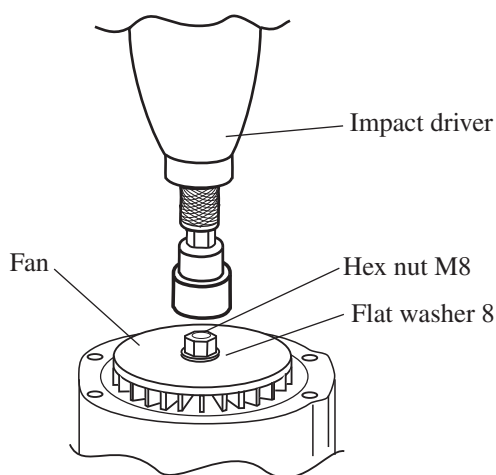


Fig. 7

- 9) Disassemble rear cover, brush holder cover, brush holder cap and carbon brush from motor housing as illustrated in Fig. 8.



- 10) Hold fan with your gloved hand. And disassemble fan by unscrewing hex nut M8 with impact driver as illustrated in Fig. 9. And then, separate crank housing from motor housing by unscrewing tapping screw M5x20, as illustrated in Fig. 9A.



Bottom view of motor housing and fan

Fig. 9

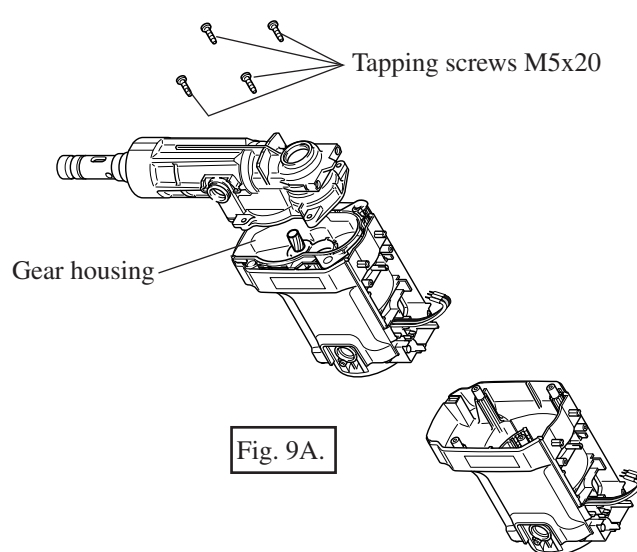


Fig. 9A.

- 11) Separate armature section from motor housing by striking the rear side of armature shaft as illustrated in Fig. 10. And then, disassemble armature with the repairing tool No.1R045 from gear housing as illustrated in Fig. 10A.

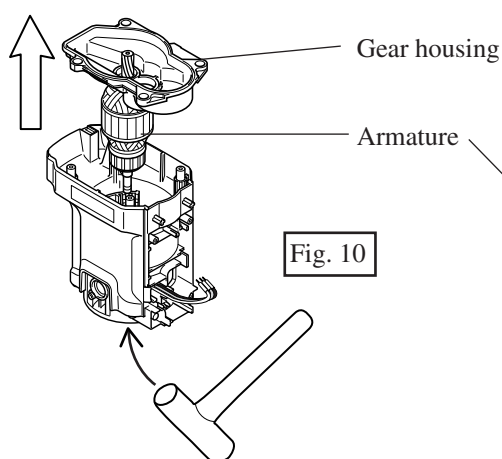


Fig. 10

Strike the rear side of armature shaft.

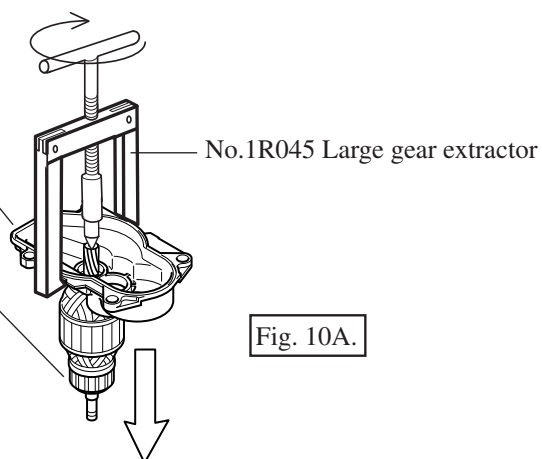
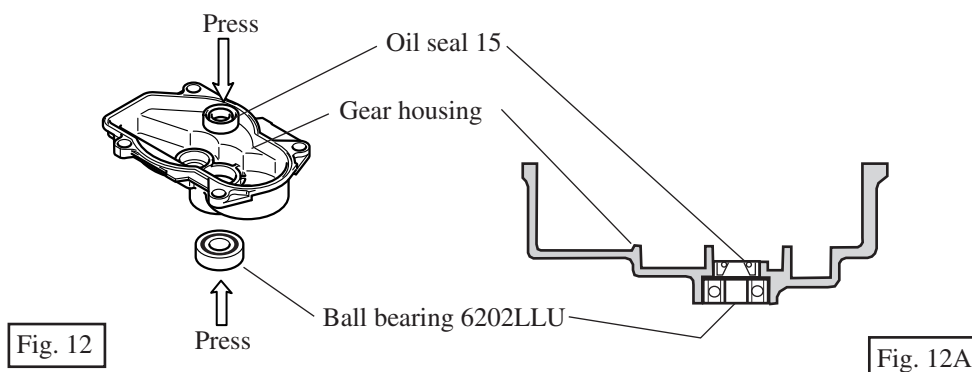


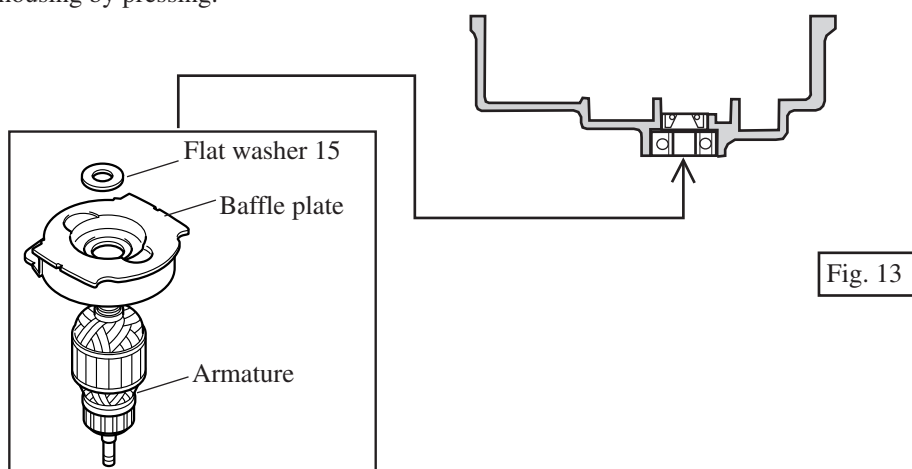
Fig. 10A.

<4> Assembling armature

1) Assemble oil seal 15 and ball bearing 6202LLU to gear housing as illustrated in Fig. 12.



2) Assemble baffle plate and flat washer 15 to armature as illustrated in Fig. 13. And then, assemble the armature to gear housing by pressing.

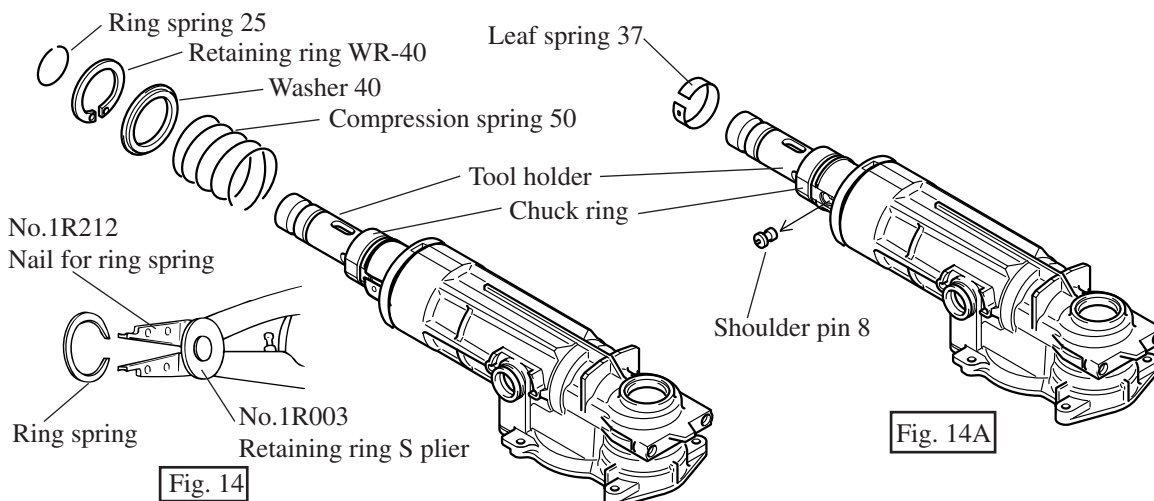


<5> Disassembling chuck section

1) Disassemble tool holder cap, chuck cover and crank housing cover as illustrated in Fig.4, Fig. 5 and Fig. 5A at page 6 and 7.

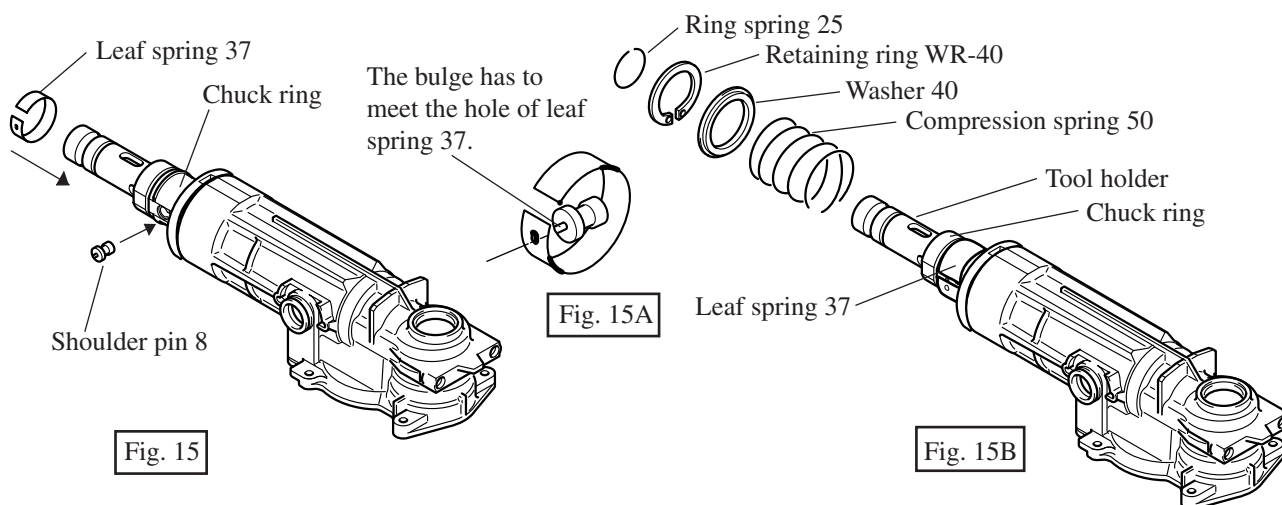
2) Disassemble ring spring 25 and retaining ring WR-40 with No.1R003 "retaining ring S plier" equipped with No.1R212 "nail for ring spring" as illustrated in Fig. 14. Then, washer 40 and compression spring 50 can be removed from tool holder.

3) Disassemble shoulder pin 8 after removing leaf spring 37 from chuck ring as illustrated in Fig. 14A.



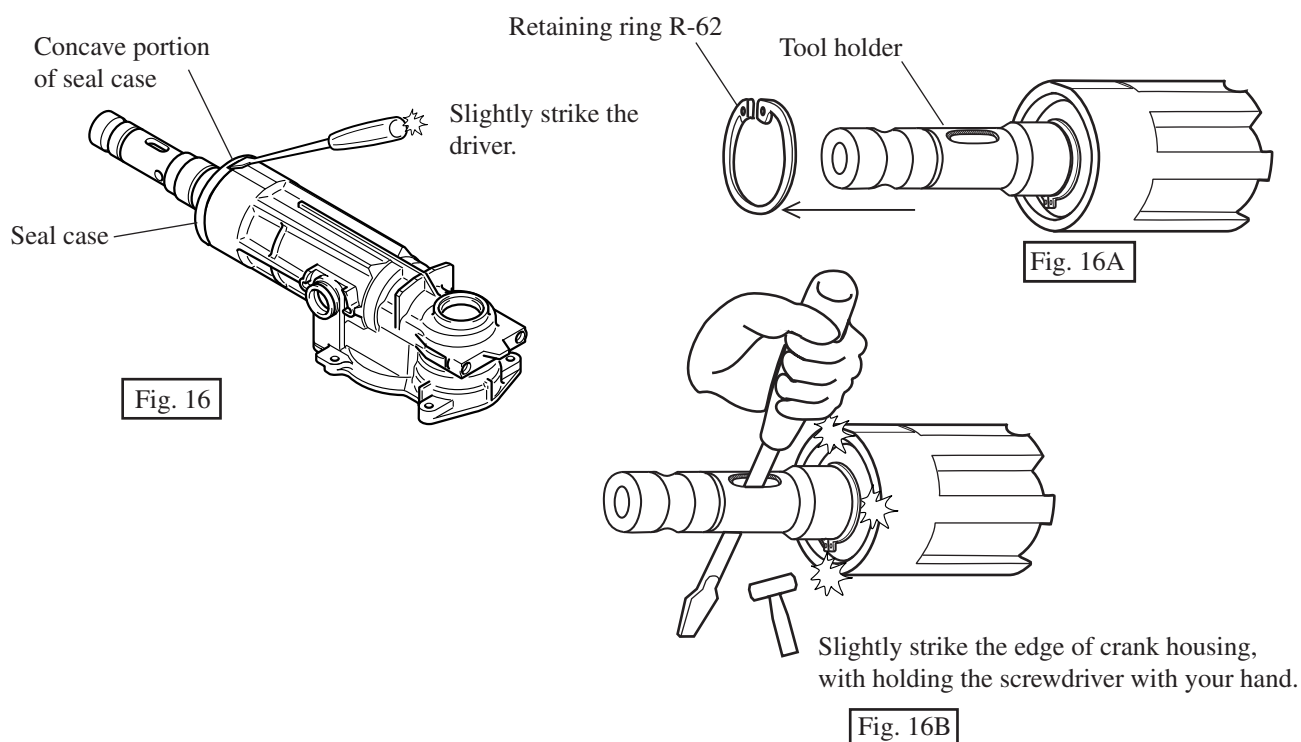
<6> Assembling chuck section

- 1) Assemble shoulder pin 8 to chuck ring. And then assemble leaf spring 37 to the chuck ring as illustrated in Fig. 15.
 <Note> The bulge of shoulder pin 8 has to meet the hole of leaf spring 37, when assembling leaf spring to chuck ring. See Fig. 15A.
- 2) Assemble compression spring 50 and washer 40. And then, fix them on tool holder with retaining ring WR-40 and ring spring 25. See Fig. 15B.



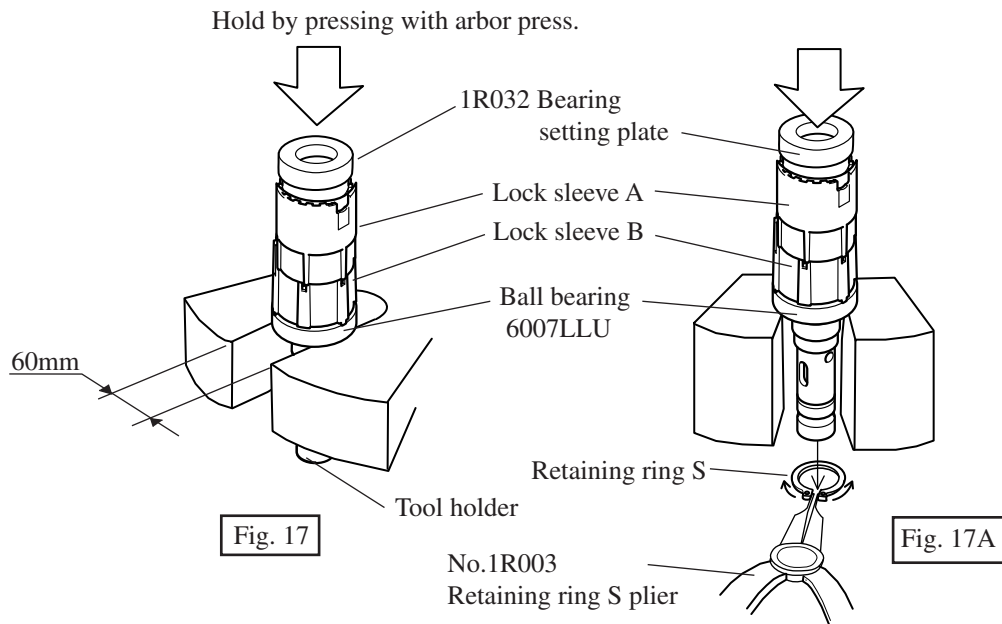
<7> Disassembling tool holder from crank housing

- 1) Put a driver with slotted bit into the concave portion of seal case and slightly strike the driver as illustrated in Fig. 16. Then, seal case can be removed from crank housing.
- 2) Remove retaining ring R-62 with No.1R005 "retaining ring plier for hole". And pull off tool holder as illustrated in Fig. 16A. If it is hard to remove by pulling off with your hand, you can remove tool holder as illustrated in Fig. 16B.

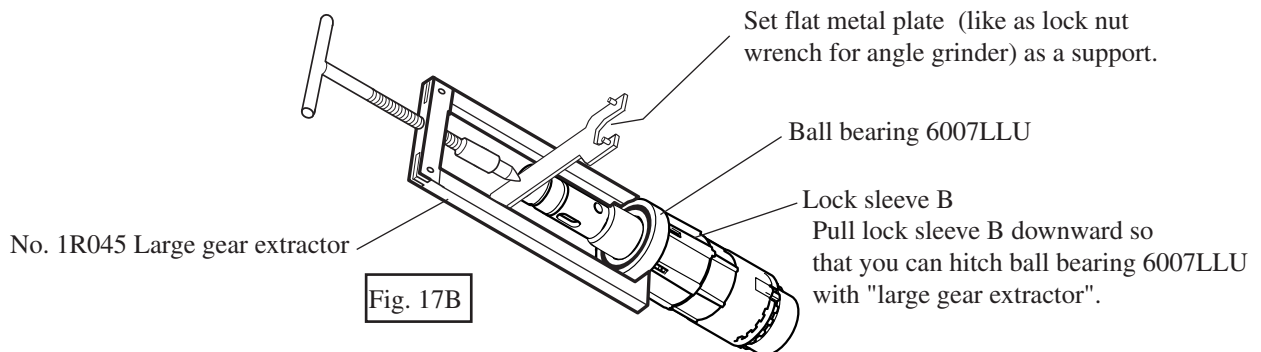


<8> Disassembling lock sleeve A and B from tool holder

- 1) Hold tool holder on which lock sleeve A and B are installed, by pressing with arbor press as illustrated in Fig. 17.
- 2) Disassemble retaining ring S-35 with No.1R003 "retaining ring S plier" as illustrated in Fig. 17A.

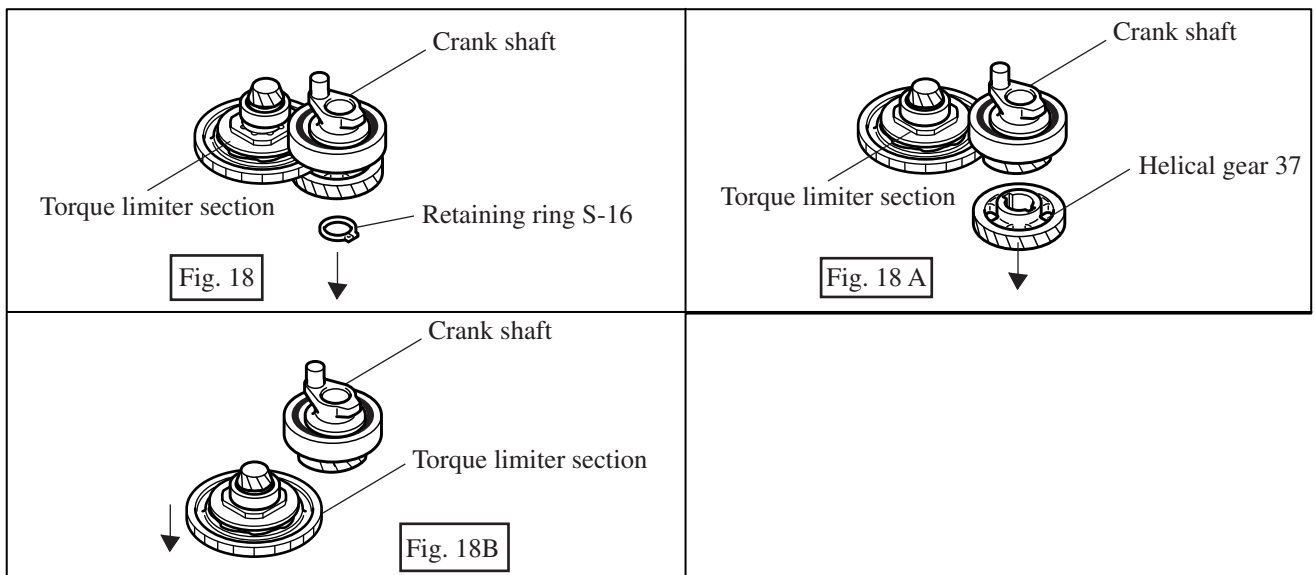


- 3) Disassemble ball bearing 6007LLU with No. 1R045 "large gear extractor" as illustrated in Fig. 17B. After removing the ball bearing, lock sleeve A and B can be disassembled from tool holder.



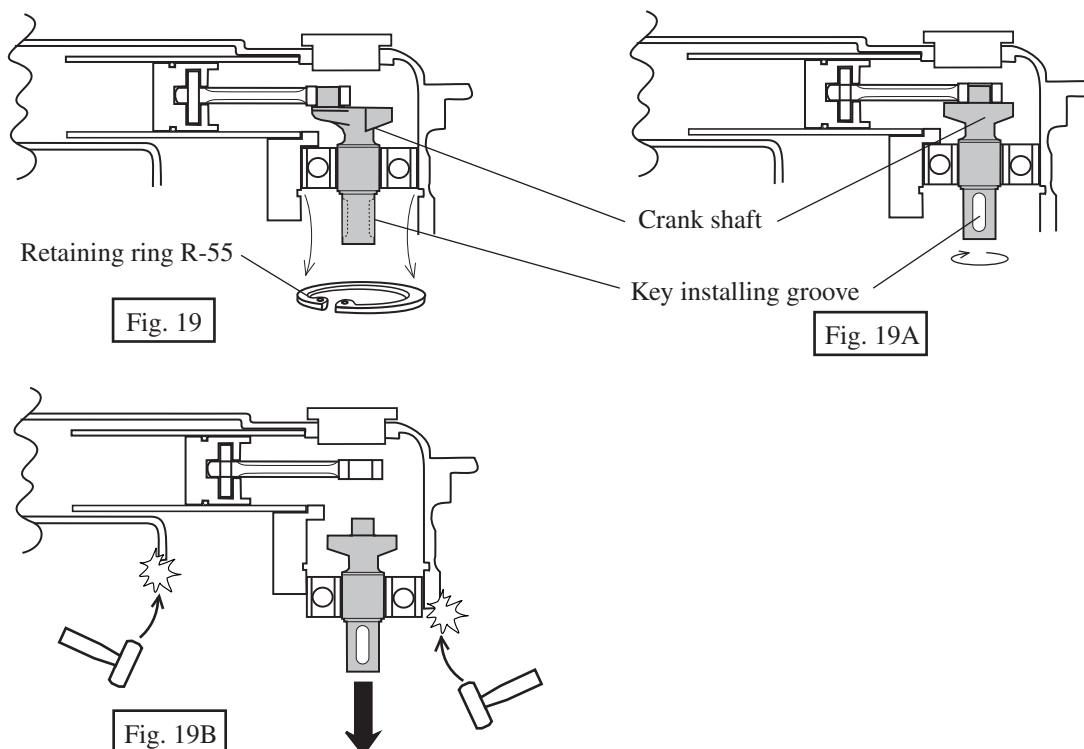
<9> Disassembling torque limiter section

- 1) Remove retaining ring S-16 from crank shaft as illustrated in Fig. 18.
- 2) Remove helical gear 37 from crank shaft. Then, torque limiter section can be disassembled from crank housing. See Fig. 18 A and Fig. 18B.



<10> Disassembling crank shaft

- 1) Remove retaining ring R-55 which is fixing crank shaft, from crank housing as illustrated in Fig. 19.
- 2) Face the key installing groove of crank shaft to the side of crank housing by turning crank shaft as illustrated in Fig. 19A.
- 3) Separate crank shaft from crank housing by slightly striking the edge of crank housing as illustrated in Fig. 19B.



<11> Disassembling cylinder 34

Pull out cylinder 34 with 1R213 "cylinder extractor:" as illustrated in Fig. 20.

No.1R213 : Cylinder Extractor

Pull out Cylinder of Rotary Hammer.
Pull out by hanging the Pin at the tip of Cylinder Puller on the side hole of Cylinder.

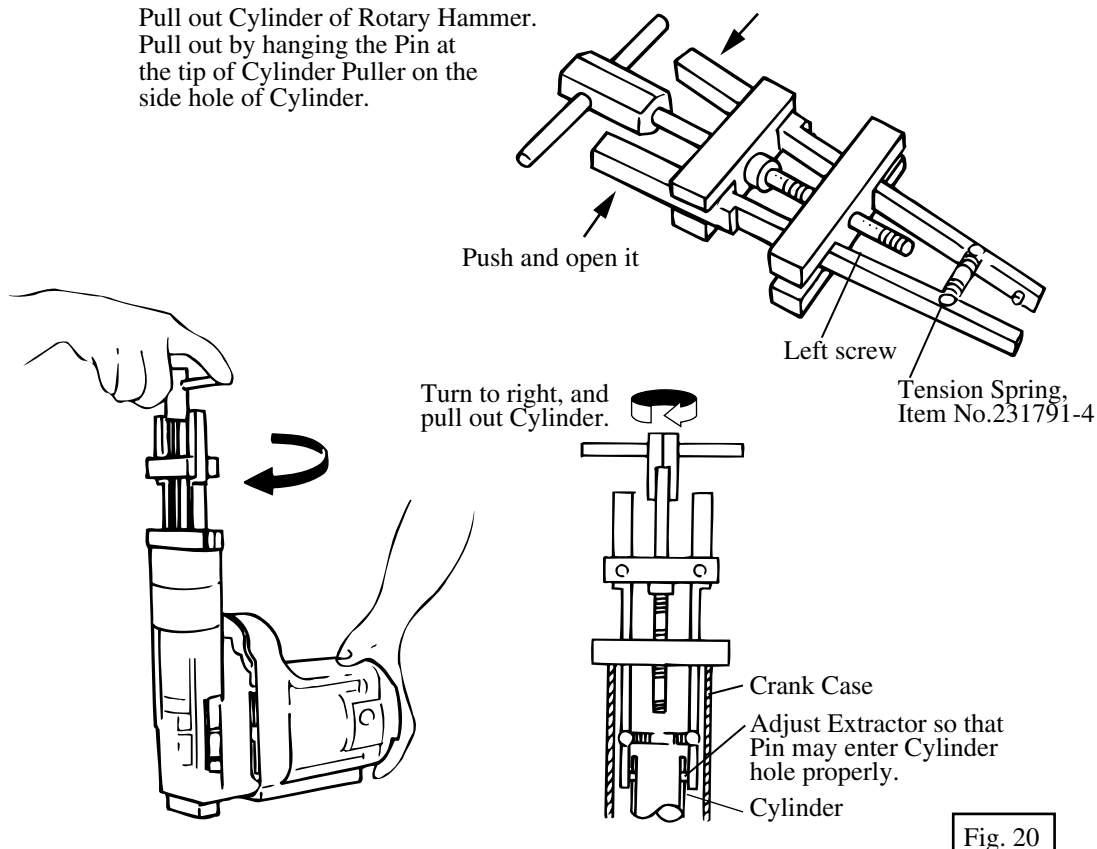
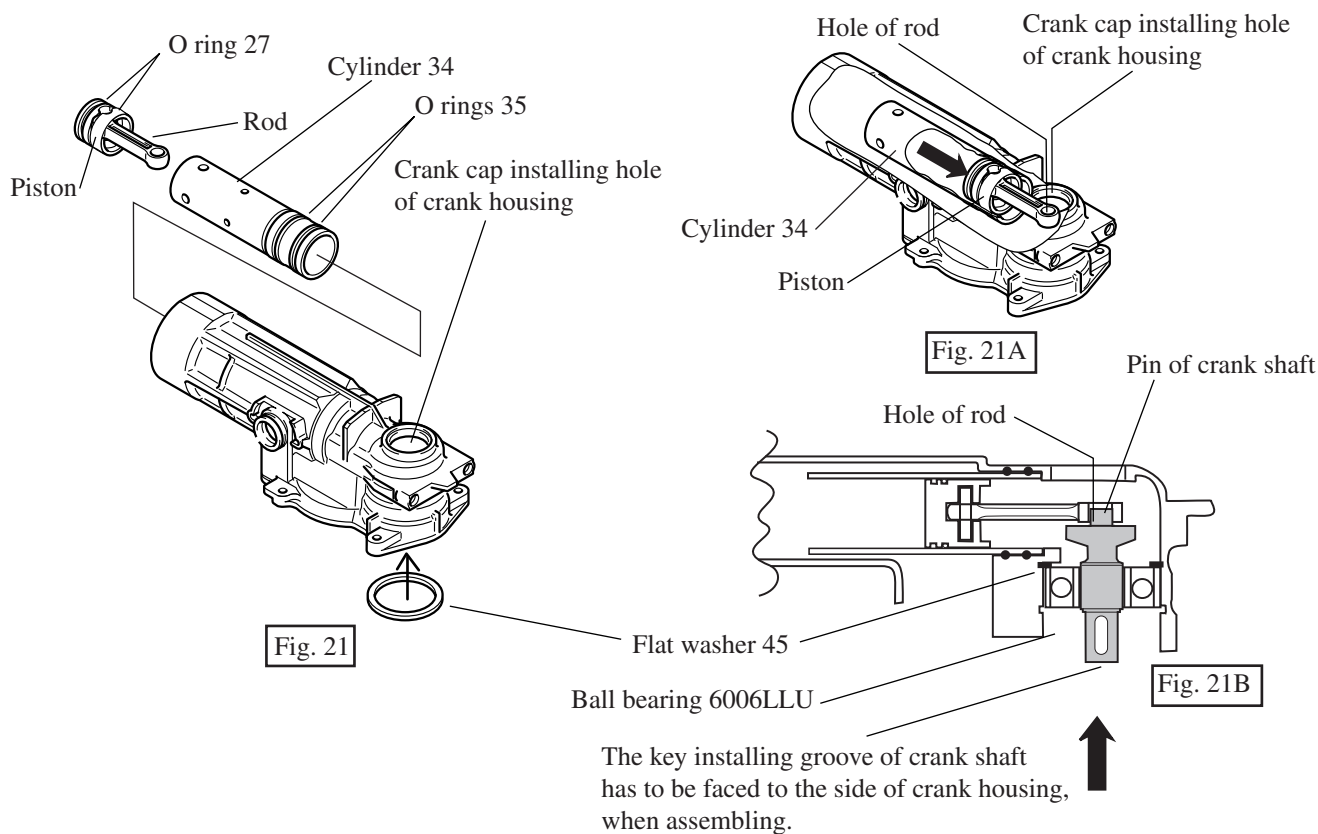


Fig. 20

<12> Assembling reciprocating section

- 1) Assemble 2 pcs of O rings 35 to cylinder 34, and insert piston to which 2 pcs. of O rings 27 and rod have to be assembled in advance, into the cylinder 34 as illustrated in Fig. 21. And then, assemble flat washer 45 to crank housing.
- 2) Further push the piston, until the hole of rod can be seen through the crank cap installing hole of crank housing. See Fig. 21A.
- 3) Press the crank shaft into crank housing with fitting the pin of crank shaft in the hole of rod. as illustrated in Fig. 21B.



<13> Assembling fluoride ring 25 to impact bolt

1. After installing fluoride ring 20 on impact bolt, the ring comes stretched and its edge come protruding from the groove. (see Fig. 22)
2. In order to correct the deformation, insert impact bolt with the fluoride ring 20 into the repairing tool, Taper sleeve (No.1R259) and leave it in the repairing tool about 10 seconds. (see Fig. 22A)
3. When inserting impact bolt into tool holder, be careful not to put the ring out of the groove of impact bolt.

Before Correction :
Rings' edges are protruding from grooves of Impact Bolt.

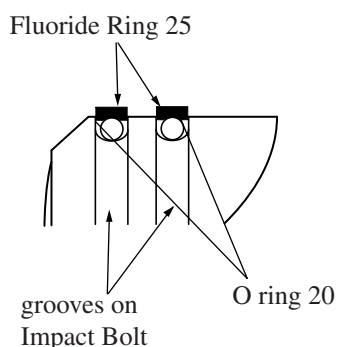


Fig. 22

Correction

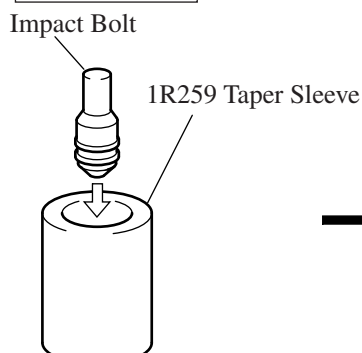


Fig. 22A

After Correction :
Rings' edges are placed under grooves of Impact Bolt.

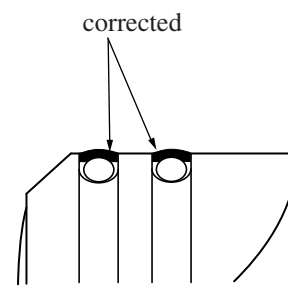
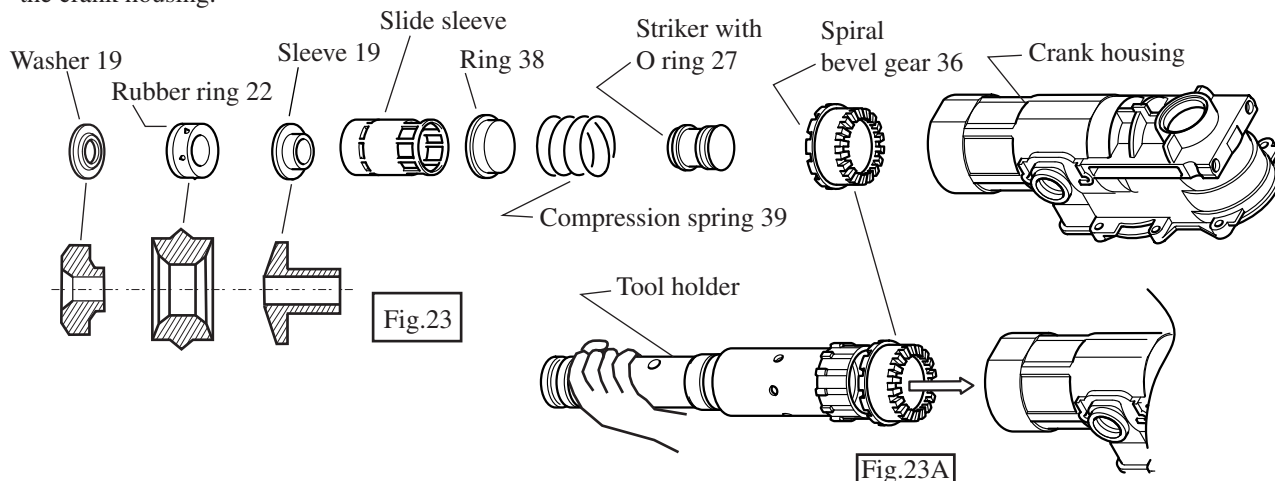


Fig. 22B

<13> Assembling crank housing section

1. Assemble the the spare parts of Fig.23 into the crank housing.

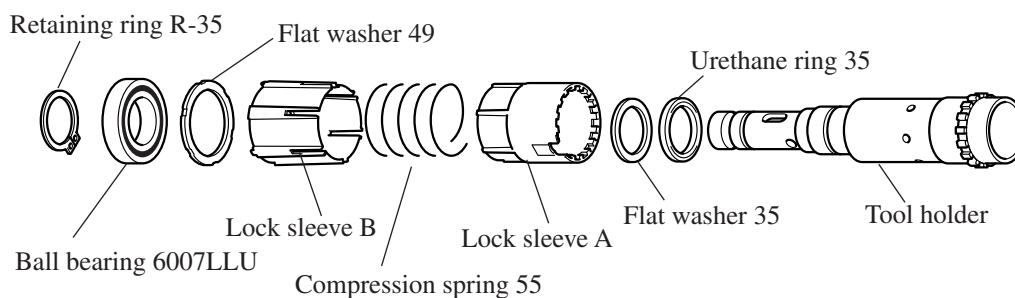


< Note >

Spiral bevel gear 36 can be smoothly installed into the crank housing by pushing it with tool holder. (see Fig.23A)

<14> Assembling tool holder section

1. Assemble the following parts to tool holder. (see Fig. 24)



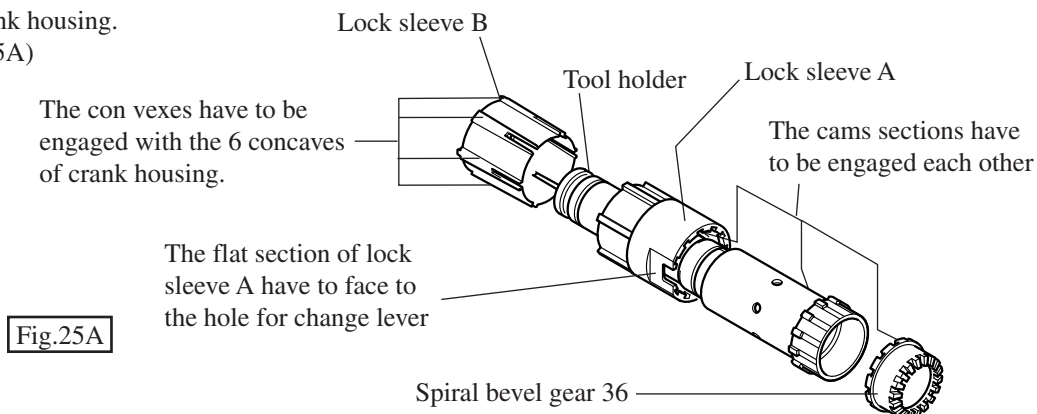
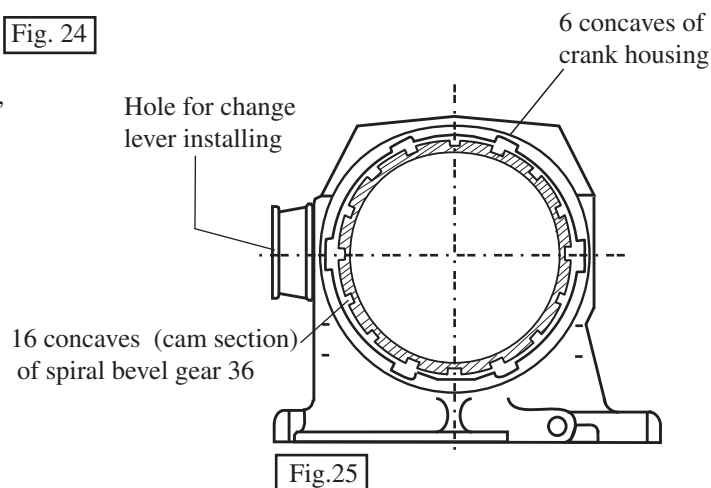
2. When pressing tool holder into spiral bevel gear 36, the cams on tool holder and the same of spiral bevel gear 36 have to engage each other. (see Fig. 25A)

* Adjust 16 concaves of spiral bevel gear 36 to 6 concaves of crank housing by turning spiral bevel gear 36. (see Fig.25)

* Adjust the cams of lock sleeve A to the same of tool holder. (see Fig.25A)

* Press tool holder into crank housing with adjusting as follow.

- Face the flat section of lock sleeve A to the hole for change lever installing.
- Engage 6 convexes of lock sleeve B with 6 concaves of crank housing. (see Fig.25 and 25A)



<15> Assembling torque limiter section

1. Assemble ball bearing 6001LLU, flat washer 12 (24mm in outer diameter) and torque limiter to spiral bevel gear 10. (see Fig. 26)

< Note >

Be careful not to lose pin 4 for lock of circular nut.

2. Assemble 2 pcs. of change keys into the groove of the shaft of spiral bevel gear 10.
Set flat washer 12 (24mm in outer diameter) and retaining ring S12 on the above assembled change keys.
And then assemble flat washer 12 (28mm in outer diameter) adjusting it in the concaves of change keys. (see Fig.26)

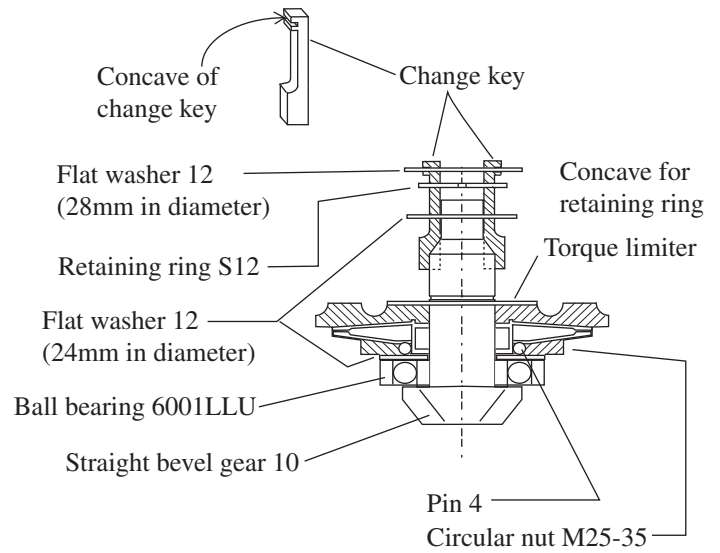


Fig. 26

3. Assemble retaining ring S12 into the groove of the shaft of spiral bevel gear 10 by sliding down 2 change keys. And make sure, whether the retaining ring S12 is assembled in the groove firmly. (see Fig.26 and 26A)

< Note >

Be careful not to expand the retaining ring 12 too wide.

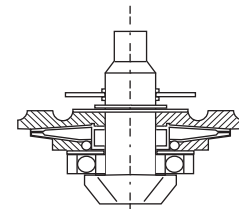


Fig. 26A

4. Assemble slide plate, compression spring 3 and guide pin 2 to change link. (see Fig.26)

5. Assemble flat washer 12 (28mm in outer diameter) into the groove of change link and install the assembled torque limiter section to the ball bearing 608LLU which is installed in the gear housing. (see Fig.27)

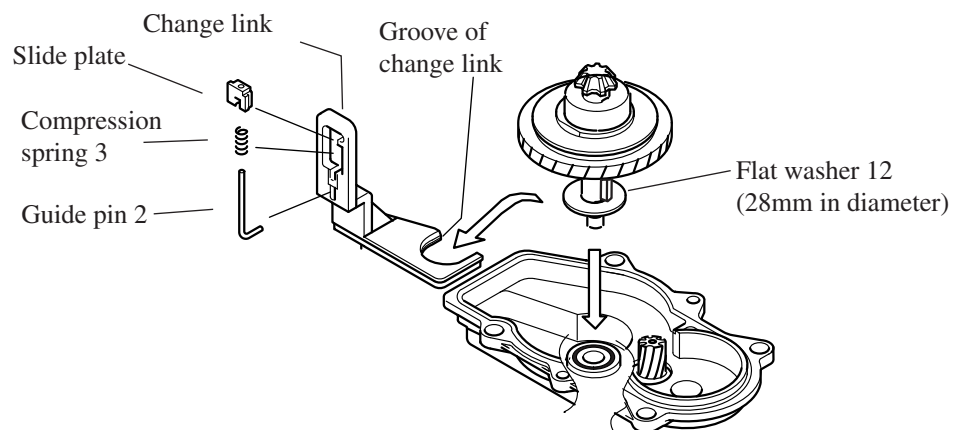
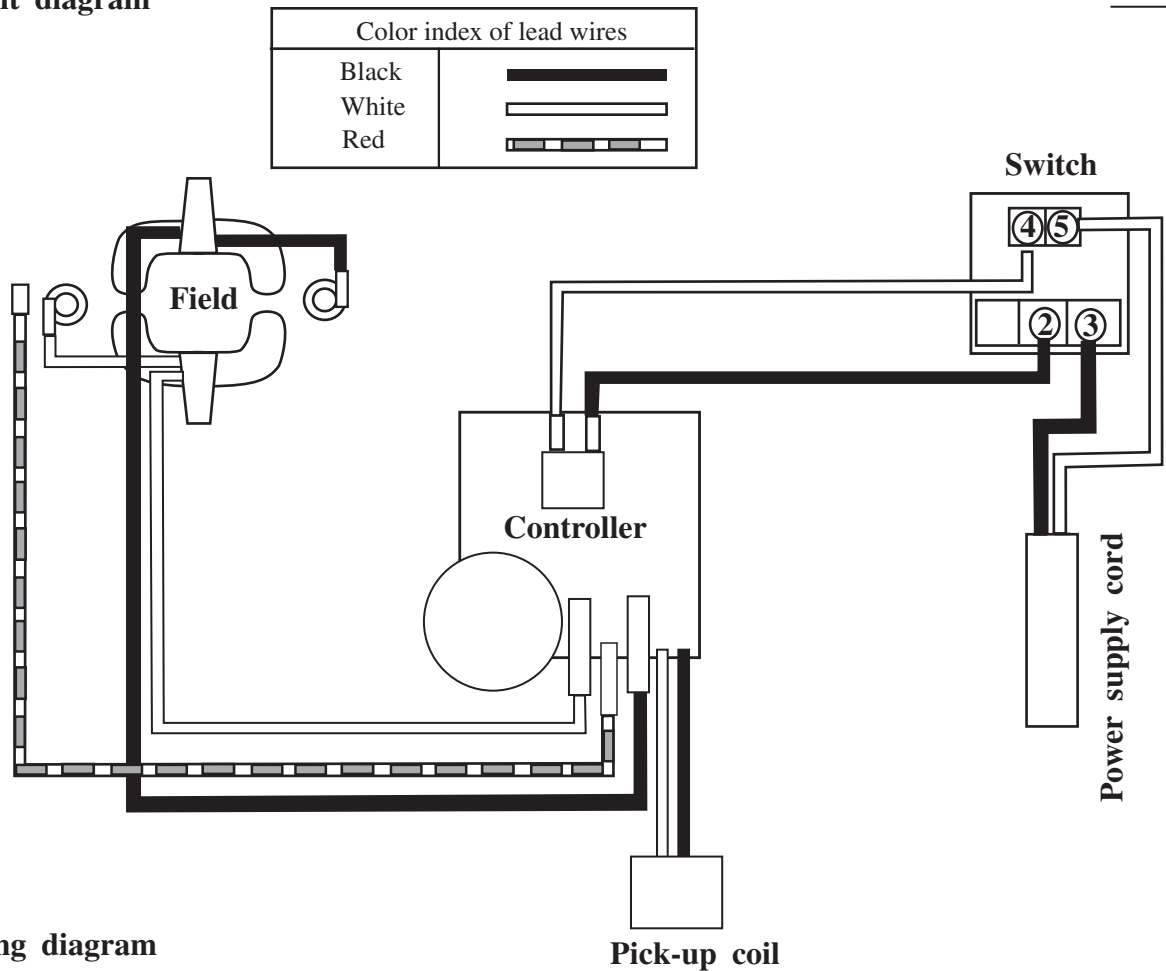
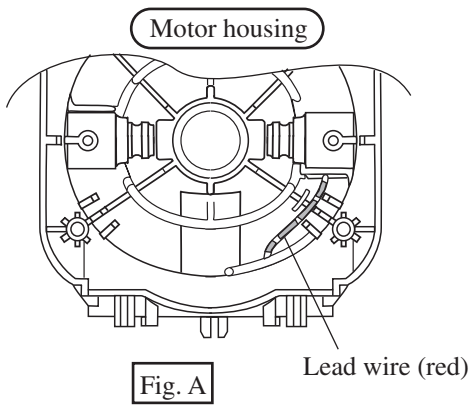


Fig.27



► **Wiring diagram**

Pass lead wire (red) as illustrated in Fig. A



Set the slack portions of the following lead wires in the place illustrated in Fig. B.

- * Lead wires of field (black and white)
- * Lead unit (red)

