

TECHNICAL INFORMATION



PRODUCT

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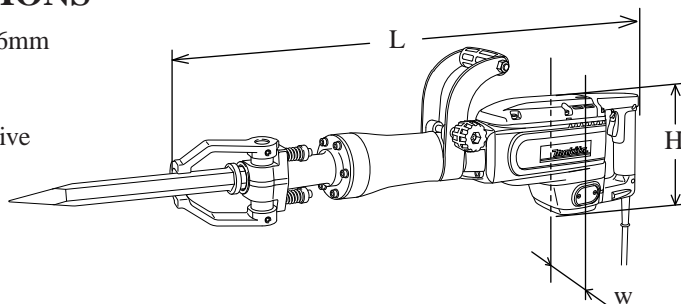
Models No. ▶ HM1304B

Description ▶ Demolition Hammer

CONCEPTION AND MAIN APPLICATIONS

HM1304B is the sister model of HM1304, and hex 28.6mm (1-1/8") bit can be used with HM1304B.

And this new product conforms to requirements of the new European noise regulation which will be effective from 2006.



Dimensions : mm (")	
Length (L)	831 (32-3/4)
Width (W)	115 (4-1/2)
Height (H)	219 (8-5/8)

► Specification

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output(W)
			Input	Output	
110	14.0	50 / 60	1,500	900	1,600
120	13.0	50 / 60	—	900	1,600
220	7.2	50 / 60	1,500	900	1,600
230	6.9	50 / 60	1,500	900	1,600
240	6.6	50 / 60	1,500	900	1,600

Blows per min, :(bpm=min ⁻¹)	1,450
Shank : mm (")	28.6 (1-1/8) hex
Single blow energy : J	27.5
Protection from electric shock	by double insulation
Cord length : m (ft)	5.0 (16.4)
Net weight :Kg (lbs)	17.0 (37.5)

► Standard equipment

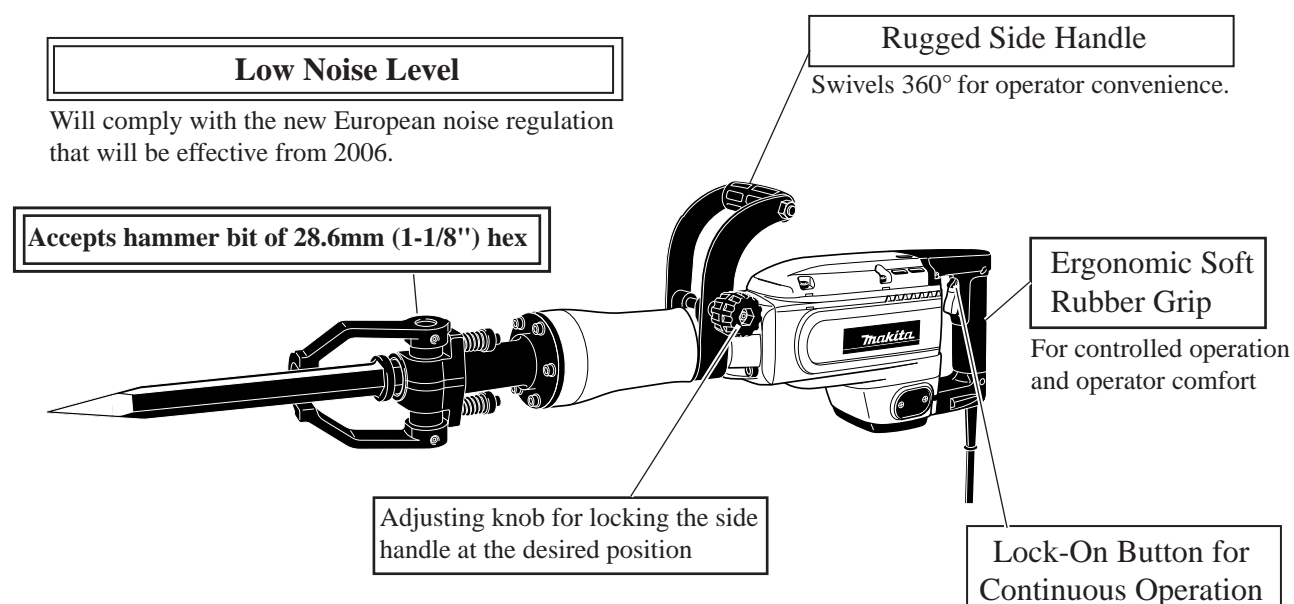
* Steel carrying case 1 pc.

< Note > The standard equipment for the tool shown may differ from country to country.

► Optional accessories

* Bull point * Scaling chisel * Rammer
* Cold chisel * Clay spade

► Features and benefits



► Comparison of products

Model No. Specifications		MAKITA		Competitor A
		HM1304B	HM1303B	Model A
Power input : W		1,500	1,300	1,240
Rated amperage with 120V : A		13.0	11.5	11.4
Blows per min. : min-1= bpm.		1,450	1,450	1,400
Shank : mm (")		28.6 (1-1/8) hex	28.6 (1-1/8) hex	28.6 (1-1/8) hex
Single blow energy : J		27.5	27.4	42.0
Double insulation		Yes	Yes	Yes
Vibration from front of tool : m/s ²		16	17	19
Noise level : dB(A)		103	107	—
Cord length : m (ft)		5.0 (16.4)	5.0 (16.4)	4.0 (13.1)
Dimensions	Length (L) : mm (")	831 (32-3/4)	823 (32-13/32)	823 (32-13/32)
	Width (W) : mm (")	115 (4-1/2)	116 (4-9/16)	118 (4-5/8)
	Height (H) : mm (")	219 (8-5/8)	216 (8-1/2)	240 (9-1/2)
Net weight : kg (lbs)		17.0 (37.5)	14.0 (30.9)	18.0 (39.7)

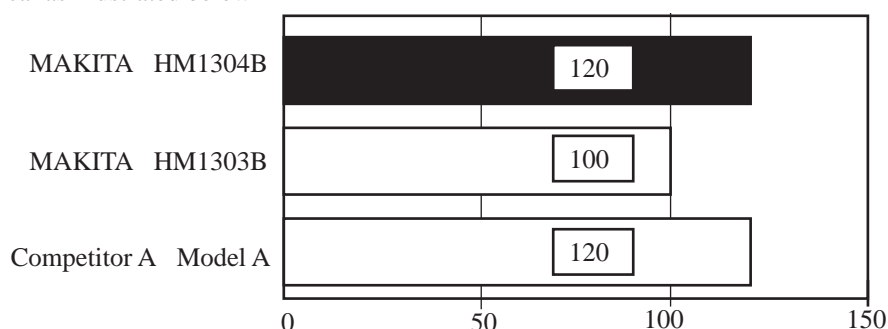
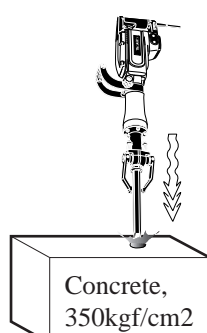
Comparison of chipping amount

Numbers in chart below are relative values when setting HM1303B 's capacity as 100.

Testing conditions

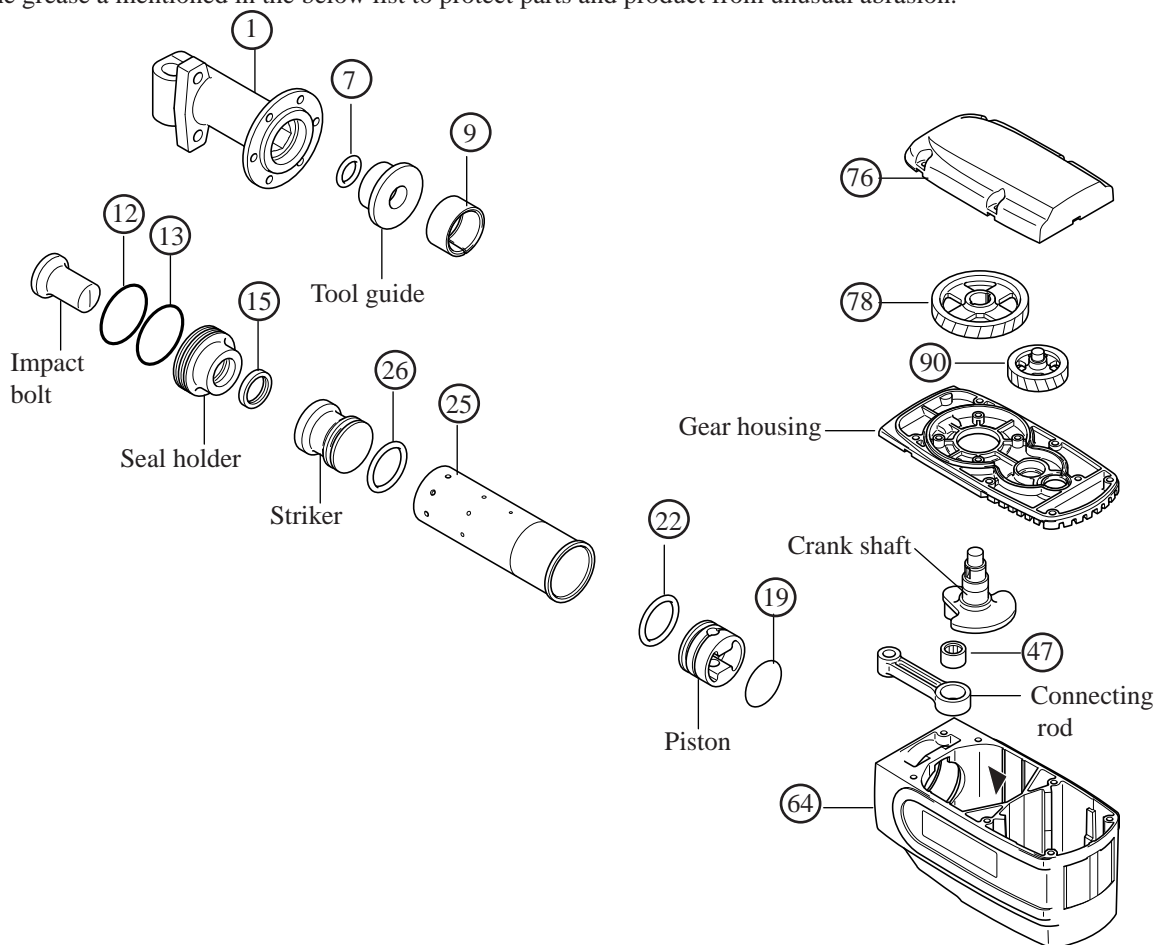
* Material : Concrete with pressure strength of 350Kgf/cm²

* Chipping direction : Vertical as illustrated below



< 1 > Lubrication

Apply the grease a mentioned in the below list to protect parts and product from unusual abrasion.



Item No.	Parts	The portion to be lubricated	The grease to be applied	The amount to be applied: g (oz.)
1	Tool holder	Inside where contacts hammer bit.	MAKITA grease R No.00	0.5 (0.02)
7	O Ring 24		MAKITA grease R No.00	0.5 (0.02)
9	Idler	Inside where contacts impact bolt.	MAKITA grease R No.00	0.5 (0.02)
12 / 13	O Rings 61		MAKITA grease R No.00	0.5 (0.02)
15	X Ring 30		MAKITA grease R No.00	0.5 (0.02)
19	O Ring 47		MAKITA grease R No.00	0.5 (0.02)
22	O Ring 44		MAKITA grease R No.00	0.5 (0.02)
25	Cylinder liner	Inside where piston and striker reciprocate	MAKITA grease R No.00	5.0 (0.18)
26	O Ring 44		MAKITA grease R No.00	1.0 (0.05)
47	Needle bearing 1715	Outside where contacts connecting rod's hole.	MAKITA grease R No.00	0.5 (0.02)
64	Crank housing	The portion where marked with black arrow.	MAKITA grease R No.00	60.0 (2.12)
76	Gear housing cover	The side where helical gear 57 and helical gear 34 are mounted.	MAKITA grease N No.1	30.0 (1.06)
78	Helical gear 57		MAKITA grease N No.1	30.0 (1.06)
90	Helical gear 34		MAKITA grease N No.1	30.0 (1.06)

< 2 > Disassembling motor section

- (1) Remove holder cap plate by unscrewing pan head screw M5x16. Remove rubber ring 6, brush holder cap and carbon brushes. See Fig. 2.
- (2) Remove handle set from crank housing by unscrewing hex socket head bolts M6x50 and M6x40. However, the handle set can not be separated completely from motor housing in this step, because it is still connected with lead wires. See Fig. 3.

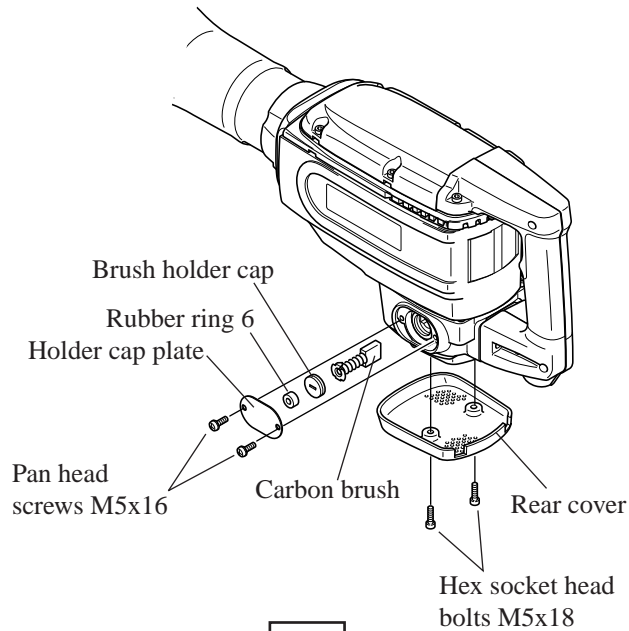


Fig. 2

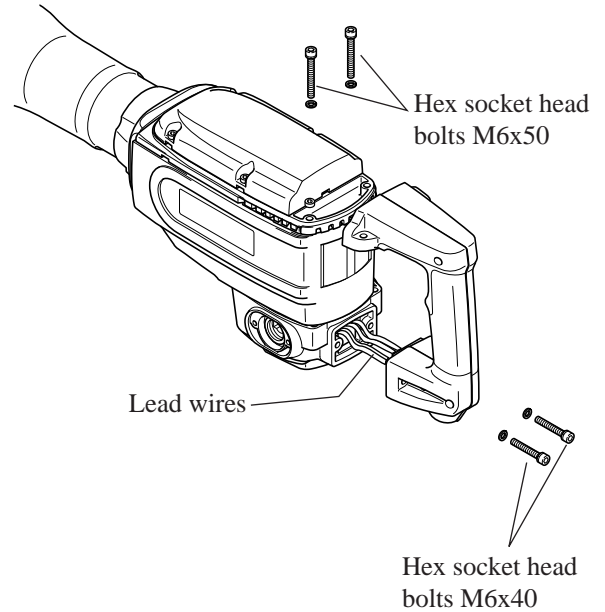


Fig. 3

- (3) Unscrew hex socket head bolt M6x50. See Fig. 4.
- (4) Strike crank housing as illustrated in Fig. 5. Then, motor housing can be separated from crank housing. See Fig. 5.
- (5) Strike crank housing as illustrated in Fig. 6. Then, Armature and baffle plate can be separated from crank housing. See Fig. 6.

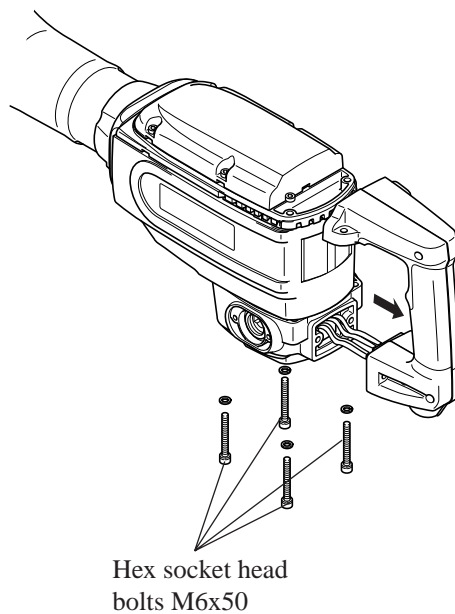


Fig. 4

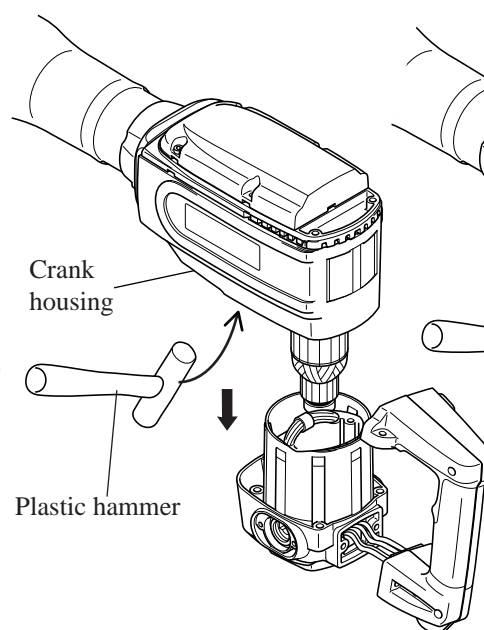


Fig. 5

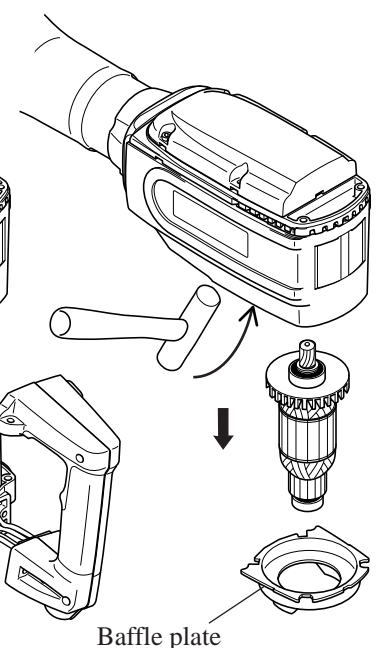
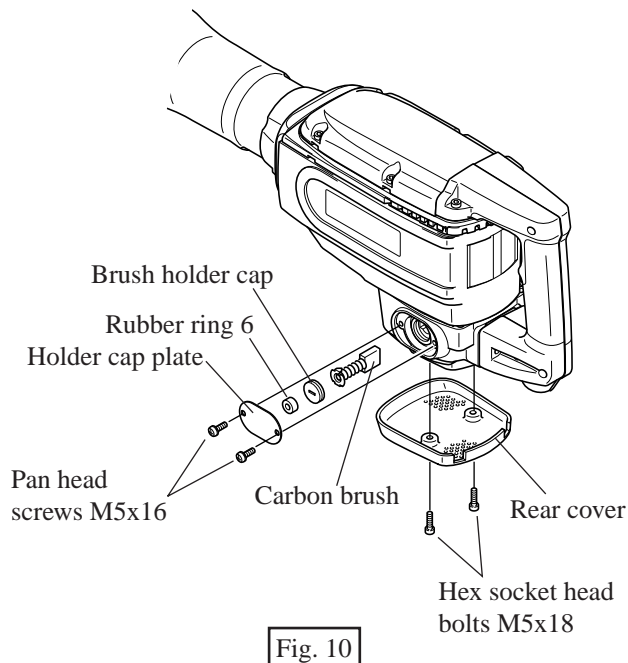
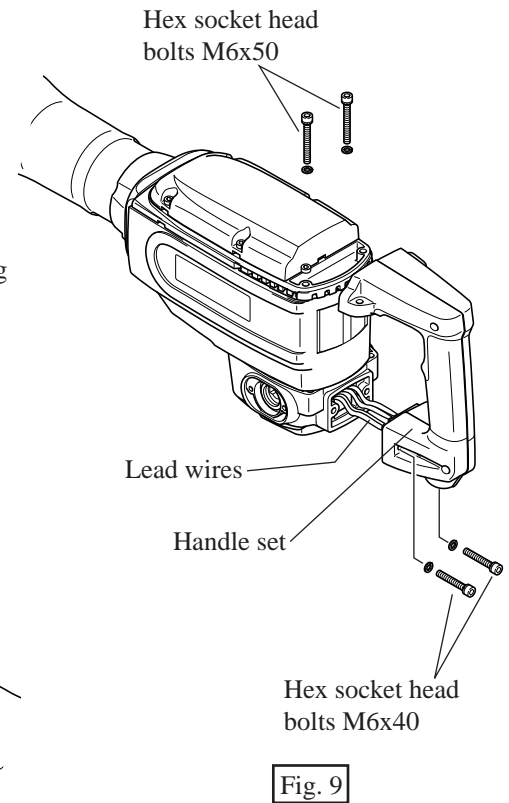
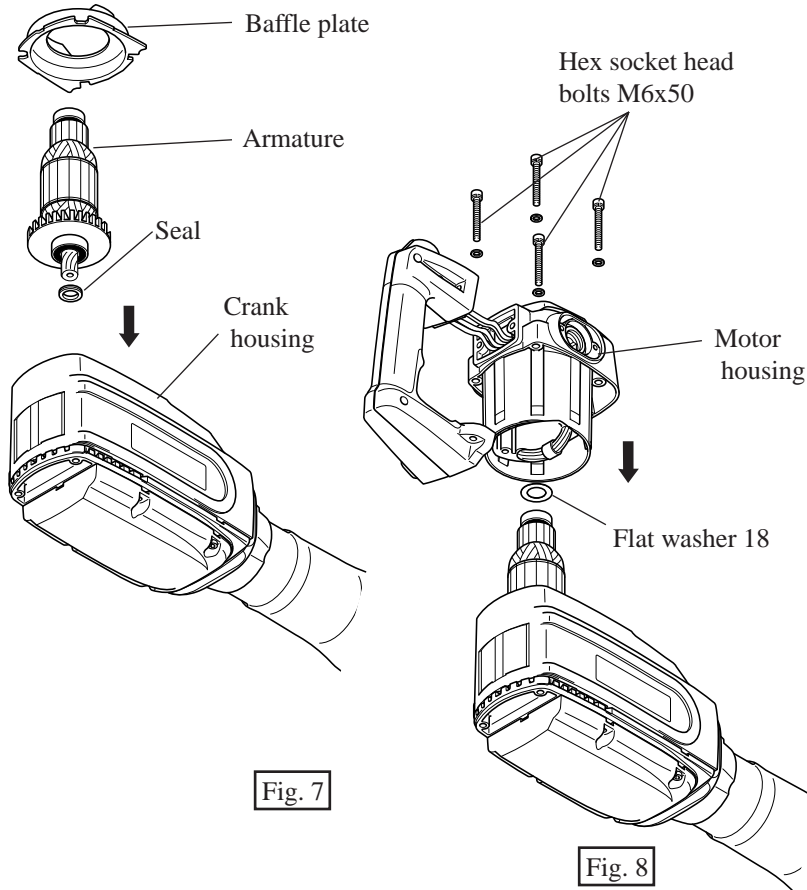


Fig. 6

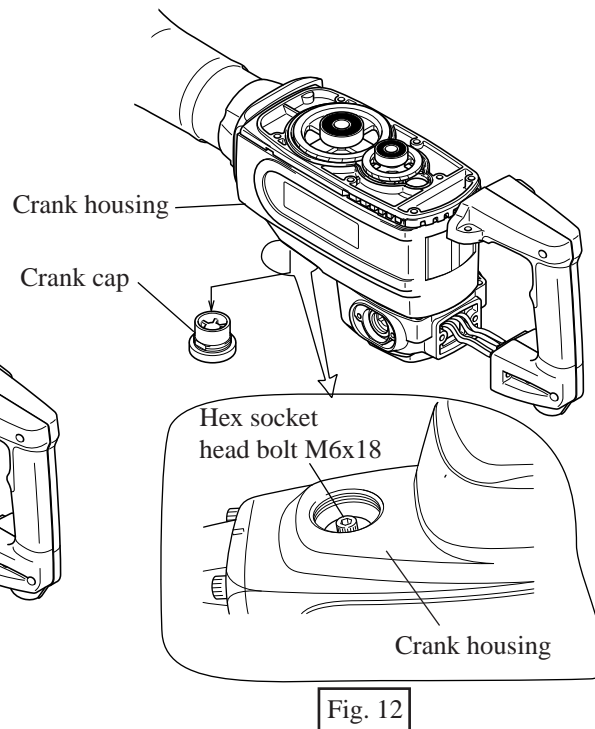
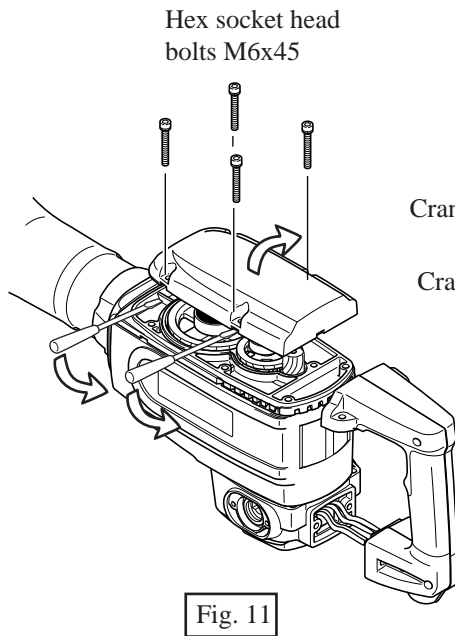
< 3 > Assembling motor section

- (1) Make sure that seal has been previously mounted to armature. Mount armature and then baffle plate to crank housing. See Fig. 7.
- (2) Make sure that flat washer 18 has been previously mounted in the bearing assembling hole of motor housing (rear cover side). Mount motor housing to crank housing by pressing. Fasten it with hex socket head bolts M6x50. See Fig. 8.
- (3) Mount handle set. Fasten it with hex socket head bolts M6x50 and hex socket head bolts M6x40. See Fig. 9. Be careful, not to pinch lead wires with handle set in this step.
- (4) Mount rear cover and fasten it with hex socket head bolts M5x18. Mount carbon brushes and fasten it with brush holder cap, rubber ring 6 and holder cap plate. See Fig. 10.



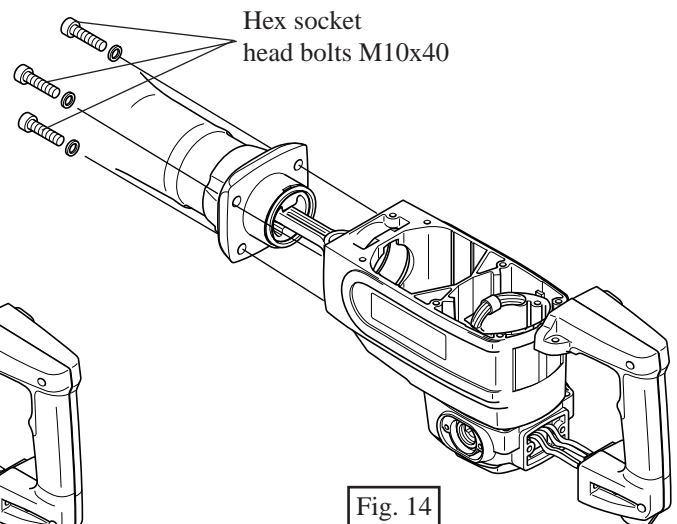
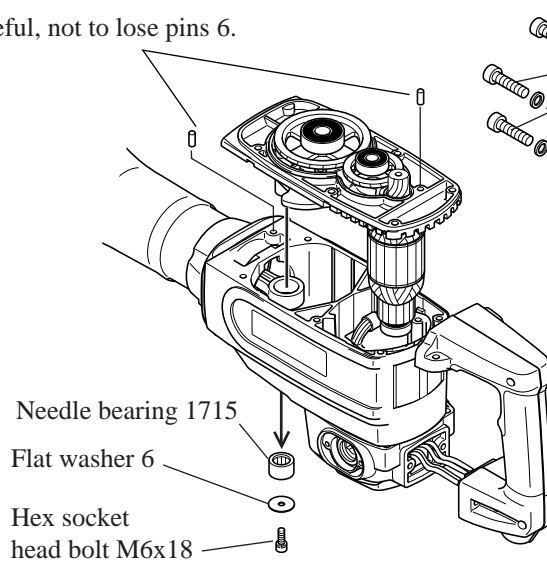
< 4 > Removing barrel section from crank housing

- (1) Take off hex socket head bolts M6x45 and insert slotted head screwdriver into the gap between gear housing cover and gear housing. Lever up gear housing cover with the inserted screwdriver. Then, gear housing cover can be separated from gear housing See Fig. 11.
- (2) Remove crank cap from crank housing. Then, you can see hex socket head bolt M6x18 with which connecting rod and crank shaft are connected. See Fig. 12.



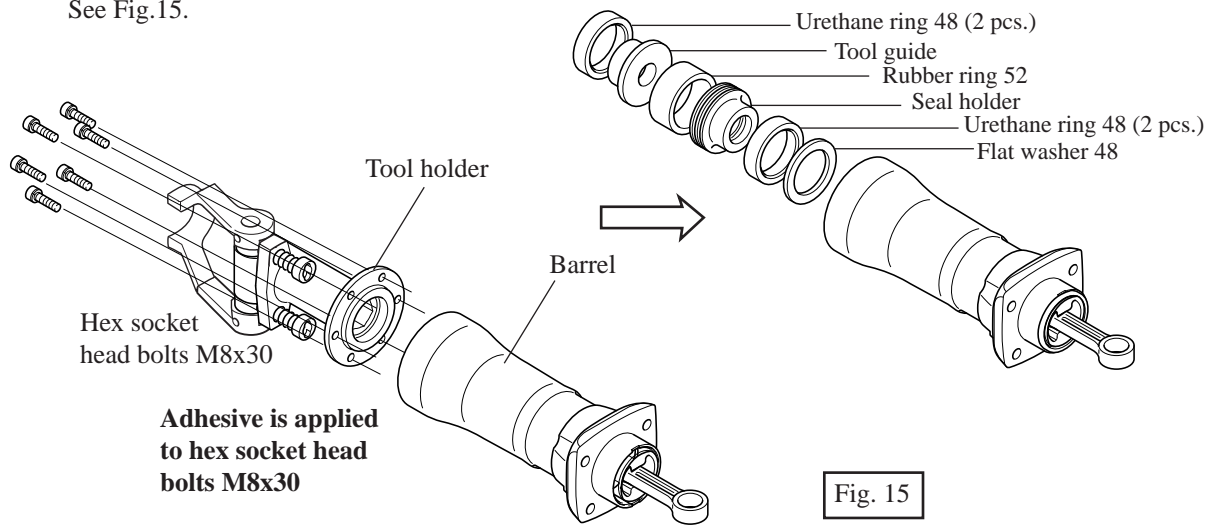
- (3) Take off hex socket head bolt M6x16, flat washer 6 and needle bearing 1715. Then, gear housing (including helical gear 57, helical gear 34, crank shaft armature etc.) can be separated from crank housing. See Fig. 13.
- (4) Take off hex socket head bolts M10x40. And then, separate barrel from crank housing. See Fig. 14.

Be careful, not to lose pins 6.

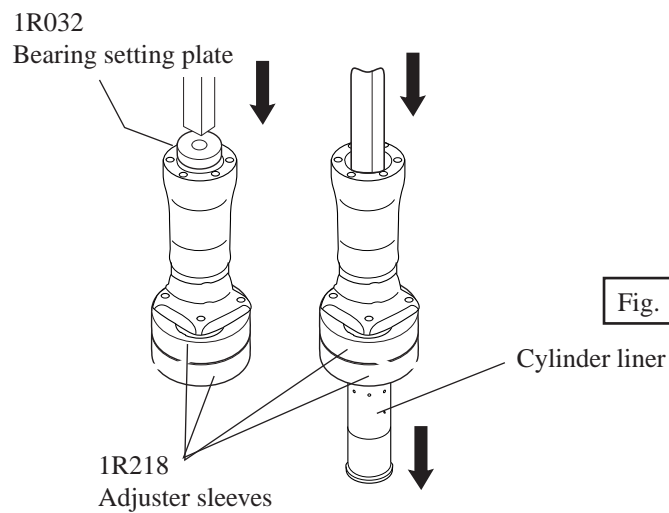


< 5 > Removing cylinder liner from barrel

- (1) Take off hex socket head bolts M8x30 and remove tool holder from barrel. And take off inner parts from barrel.
See Fig.15.

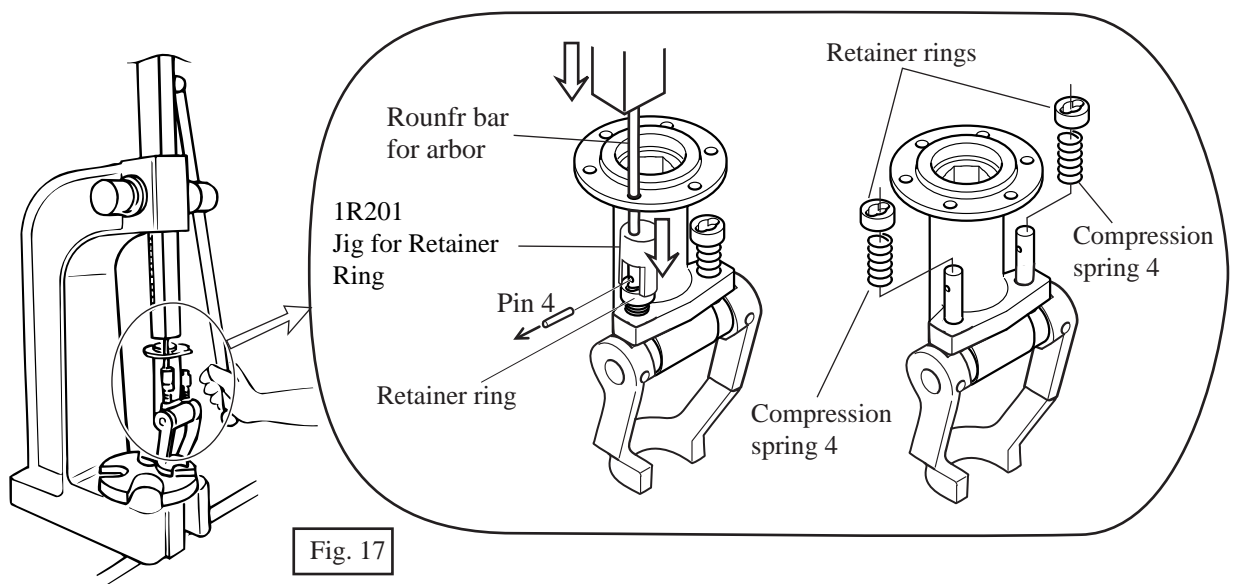


- (2) Put 1R032 "Bearing setting plate" into barrel. And remove cylinder liner from barrel by pressing the 1R032 put into barrel with arbor press. See Fig.16.



< 6 > Disassembling tool retainer section

- (1) Put No.1R201 "Jig for Retainer Ring" on retainer ring, and pass No.1R282 "Round Bar for Arbor" through the screw hole for hex socket head bolt M8x30. Press the round bar for arbor with arbor press, so retainer ring is pressed down. And pin 4 can be removed. See Fig. 17. Retainer rings and compression springs 4 can be removed.



- (2) Take off spring pins 8-40 by striking with hammer as illustrated in Fig. 18. Then, tool retainer section can be disassembled as illustrated in Fig. 18A.

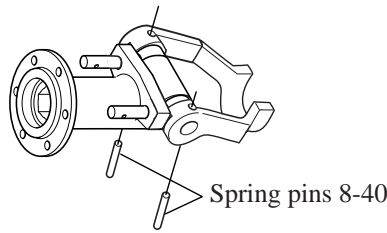
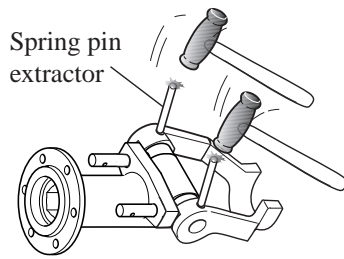


Fig. 18

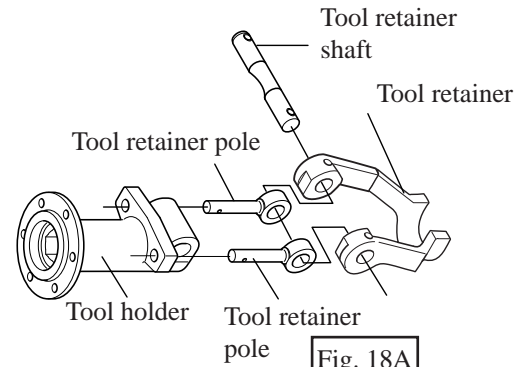


Fig. 18A

< 7 > Assembling tool retainer section

- (1) Mount tool retainer poles to tool holder. And mount tool retainer. Mount retainer shaft by passing through tool retainer and tool retainer poles. See Fig. 19.

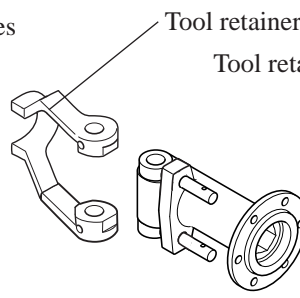
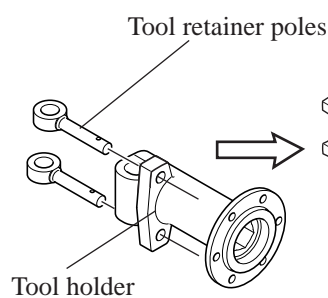
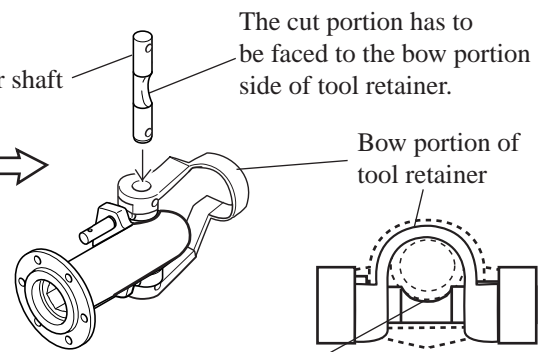


Fig. 19



Cut portion of tool retainer shaft

Front view of tool retainer section

- (2) Mount spring pin 8-40 as illustrated in Fig. 20. Mount compression springs 4 and retainer rings to tool retainer pole as illustrated in Fig. 21. Put the jig for retainer ring on retainer ring and pressing the jig with arbor press, mount pin 4. See Fig. 22.

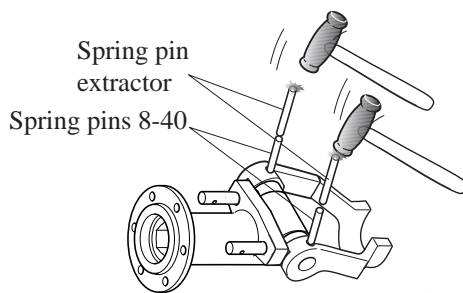


Fig. 20

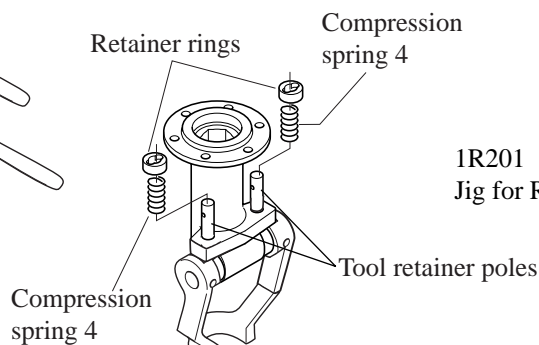


Fig. 21

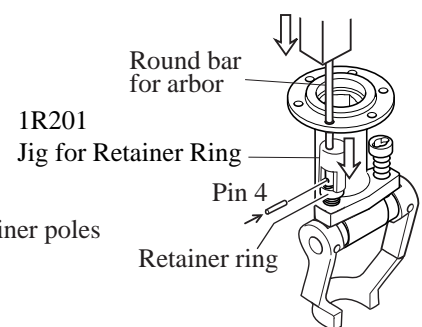


Fig. 22

- (3) Mount tool retainer section to barrel as illustrated in Fig. 23.

<Note> The adhesive has been applied to hex socket head bolt M8x30. They have to be always replaced with the fresh one.

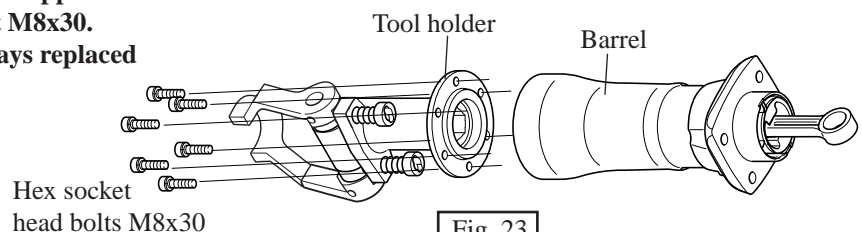
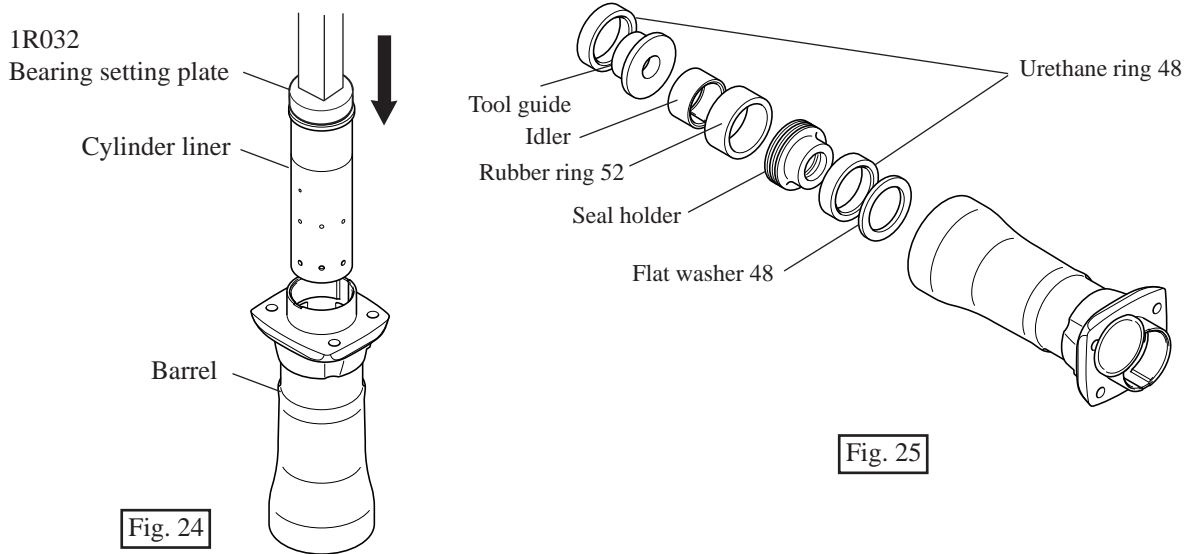


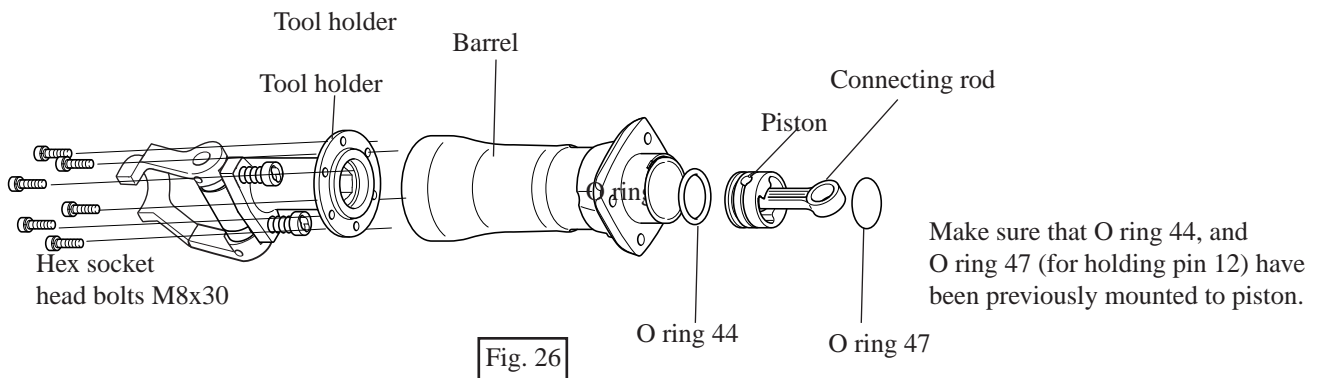
Fig. 23

< 8 > Assembling barrel section to crank housing

(1) Mount cylinder liner into barrel with arbor press. See Fig.24. And mount the parts to barrel as illustrated in Fig. 25.



(2) Mount tool holder and insert piston with connecting rod into barrel as illustrated in Fig 26.



(3) Mount barrel as illustrated in Fig. 27.

Joining connecting rod with crank shaft which functions also as a shaft of helical gear 57, mount gear housing section to crank housing. Mount needle bearing 1715 and flat washer 6, and fasten them with hex socket head bolt M6x18 for securing the joint of connecting rod and crank shaft. See Fig. 28.

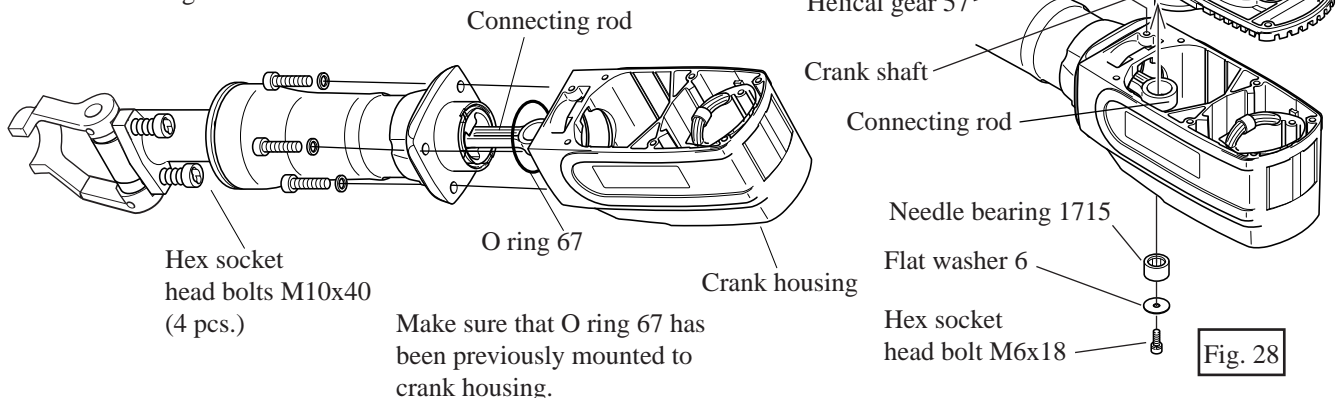
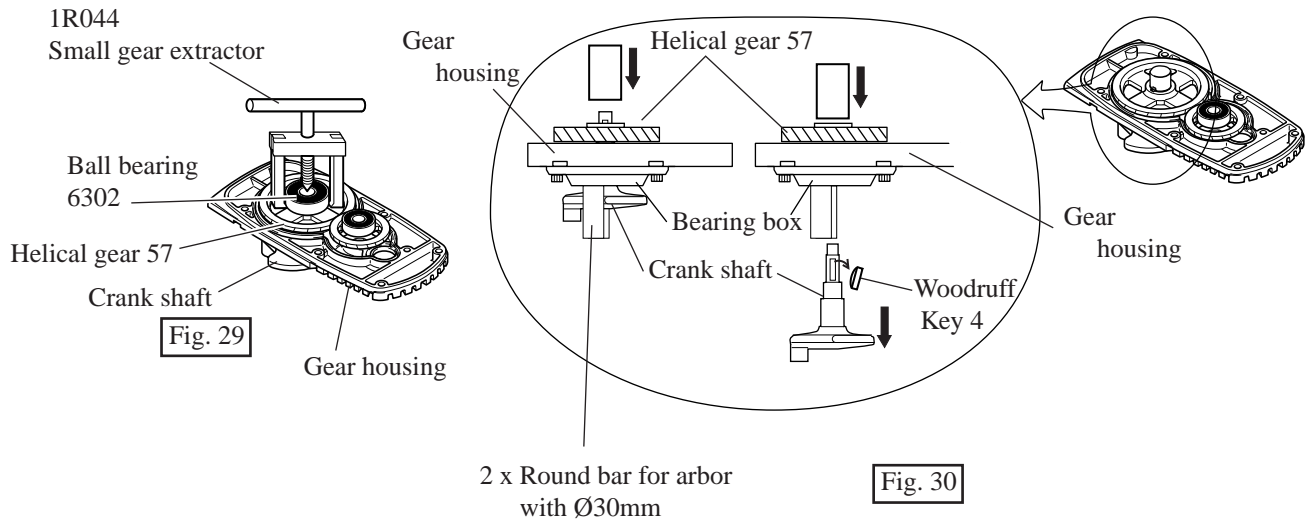


Fig. 27

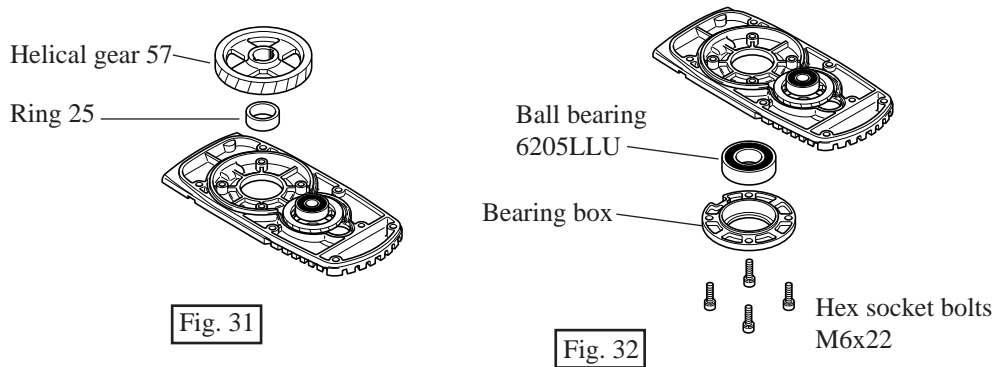
Fig. 28

< 9 > Disassembling gear housing section

- (1) Remove ball bearing 6302 from crank shaft with 1R044 "Small gear extractor". See Fig. 29.
- (2) Holding bearing box mounted to gear housing, with 2 pcs. of round bars for arbor (approx. Ø30mm) press the crank shaft and remove it from gear housing. See Fig. 30.
Be careful, not to lose woodruff key 4 in this step.

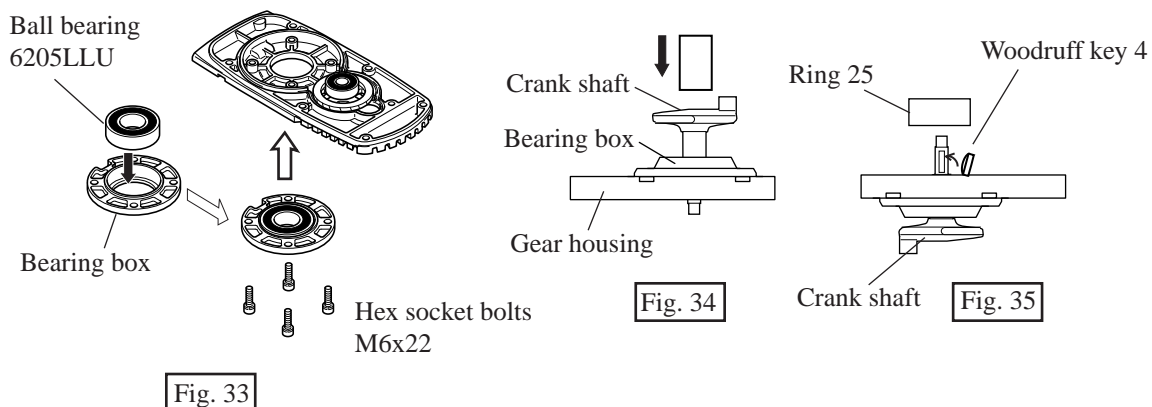


- (3) Then, helical gear 57 and ring 25 can be separated from gear housing. See Fig.31.
Remove bearing box by unscrewing hex socket head bolts M6x22. Then, ball bearing 6205LLU can be separated from gear housing. See Fig.32.

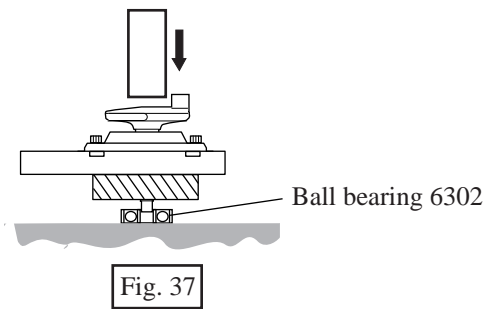
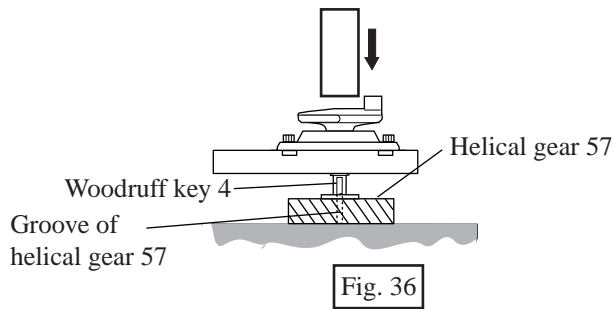


< 10 > Assembling gear housing section

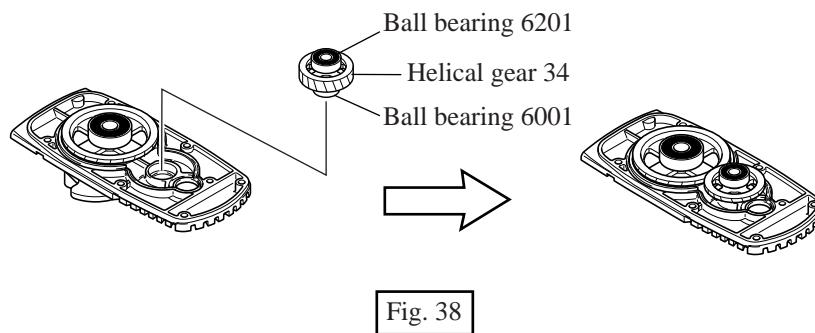
- (1) Mount ball bearing 6205LLU to bearing box. Fasten the bearing box with 4 pcs. of hex socket head bolts M6x22. See Fig. 33.
 - (2) Mount crank shaft by pressing through ball bearing 6205LLU with arbor press. See Fig. 34.
 - (3) Mount ring 25 through crank shaft and insert woodruff key 4 into the groove of crank shaft. See Fig. 35.
- < Note > It is recommended to put grease into the groove of crank shaft to prevent woodruff key 4 from falling off crank shaft at the mounting of helical gear 57.



- (4) Aligning the cut portion of helical gear 57 with the woodruff key 4, mount helical gear 57 to crank shaft by pressing crank shaft with arbor press. See Fig. 36.
- (5) Mount ball bearing 6302 to crank shaft by pressing crank shaft with arbor press. See Fig. 37.

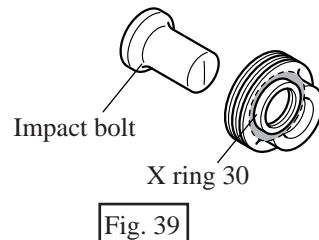


- (6) Assemble helical gear 34 to which ball bearings 6001 and 6201 have been previously mounted, to gear housing. See Fig. 38.



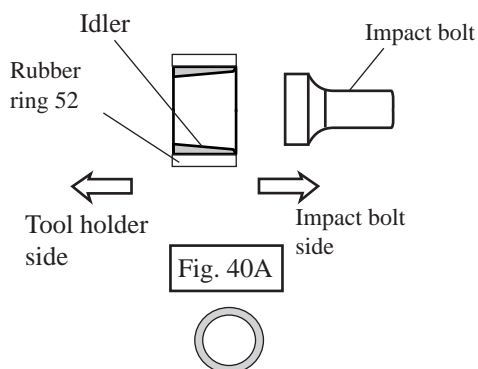
< 11 > O ring and X ring

- (1) Apply the grease to O rings and X ring for securing the function of grease pack system. The dust which can damage the O ring, X ring and cylinder, has to be taken off.
- (2) When inserting impact bolt into seal holder, be careful, not to damage the rip of X ring 30. See Fig. 39.

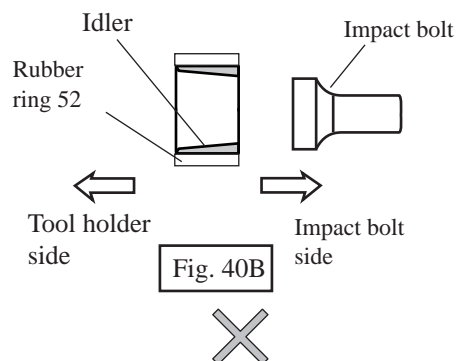


< 12 > Assembling idler

Mount idler facing its large hole side to impact bolt as illustrated in Fig. 40A instead of Fig. 40B.



The wrong installing of idler interferes with the blow action, which is the cause of the breakage of machine itself.



< 13 > Fastening torque for bolts and screws

When assembling, fasten the bolts and screws with the following fastening torque.

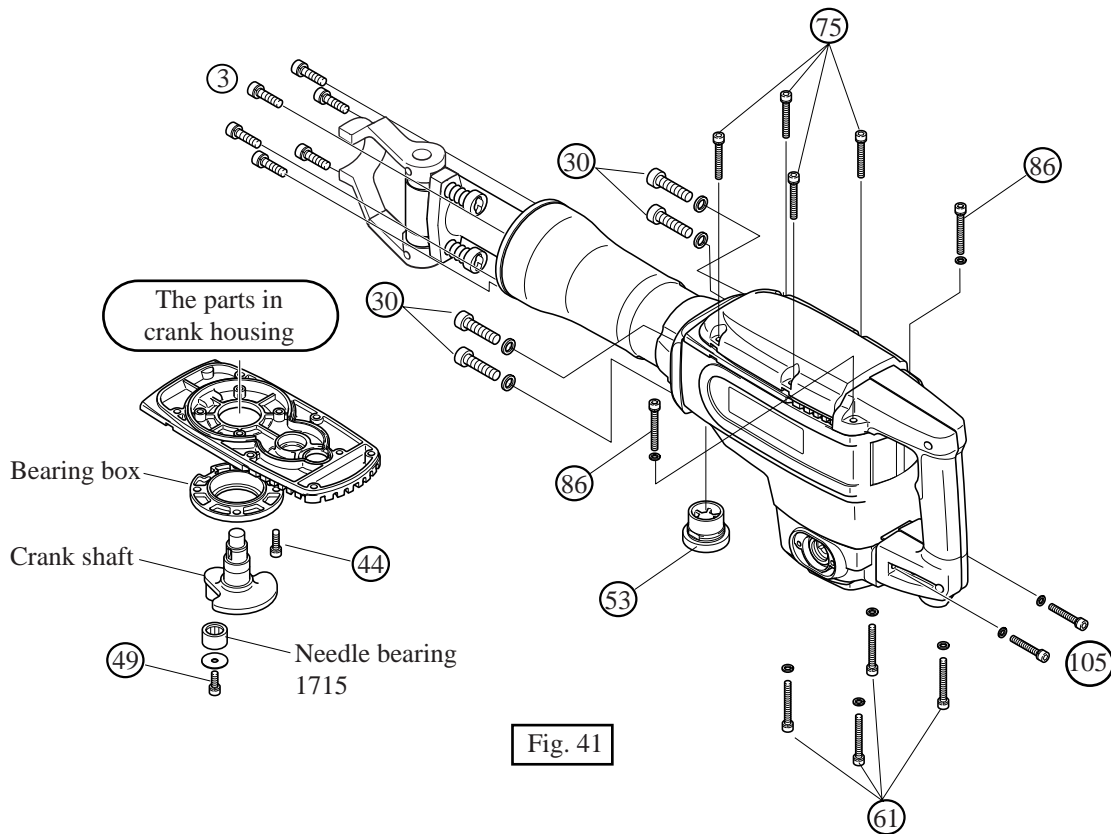


Fig. 41

③	Hex socket head bolt M8x30	6 pcs.	29 - 39 N.m (300 - 400kgf.cm)
③①	Hex socket head bolt M10x40	4 pcs.	49 - 59 N.m (500 - 600kgf.cm)
④④	Hex socket head bolt M6x22	4 pcs.	13 - 16 N.m (130 - 160kgf.cm)
④⑨	Hex socket head bolt M6x18	1 pc.	13 - 16 N.m (130 - 160kgf.cm)
⑤③	Crank cap	1 pc.	10 - 15 N.m (100 - 150kgf.cm)
⑥①	Hex socket head bolt M6x50	4 pcs.	3.9 - 5.9 N.m (40 - 60kgf.cm)
⑦⑤	Hex socket head bolt M6x45	4 pcs.	13 - 16 N.m (130 - 160kgf.cm)
⑧⑥	Hex socket head bolt M6x50	2 pcs.	3.9 - 5.9 N.m (40 - 60kgf.cm)
⑩⑤	Hex socket head bolt M6x40	2 pcs.	3.9 - 5.9 N.m (40 - 60kgf.cm)

< 14 > it is recommended to replace the following parts with the fresh ones, when you replace the carbon brushes normally worn out. See Fig. 42.

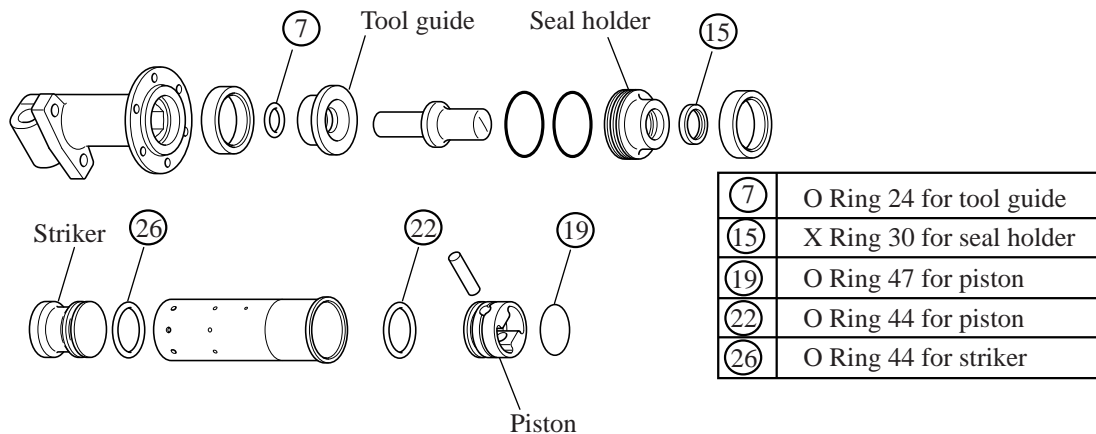
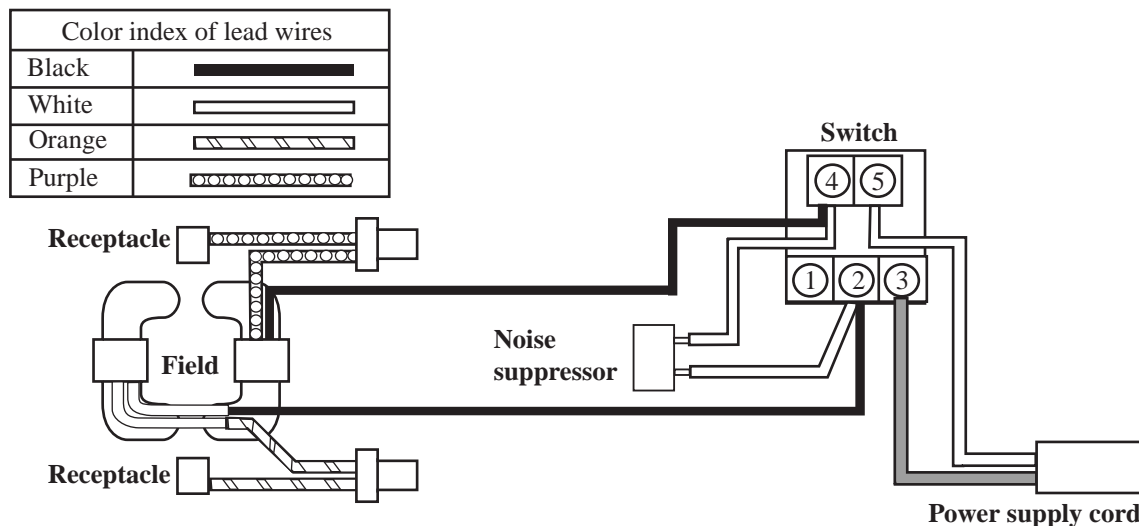


Fig. 42

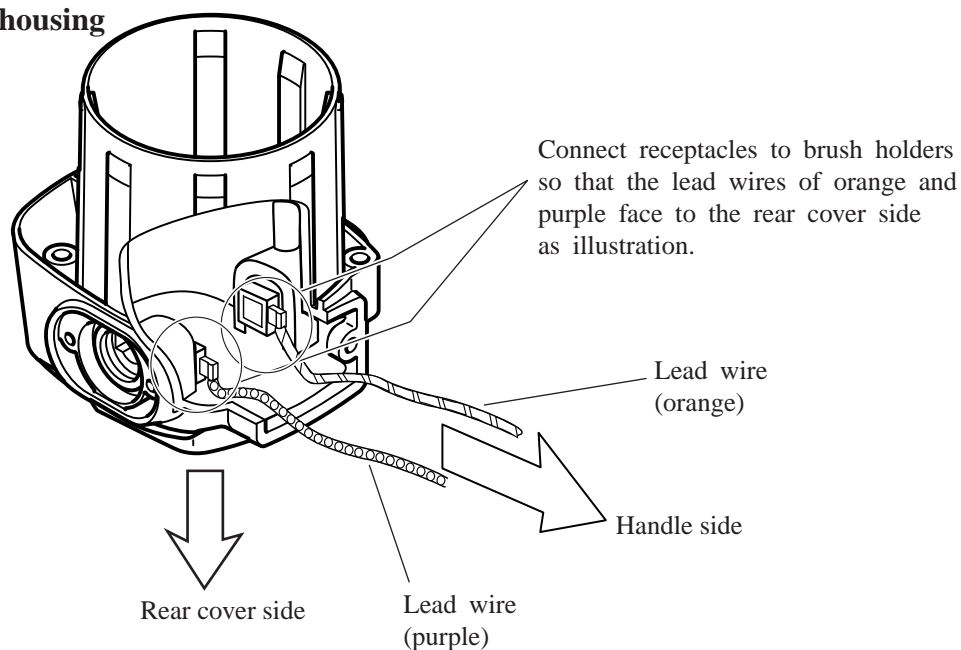
► Circuit diagram

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► Wiring diagram

Inside of motor housing



Handle section

