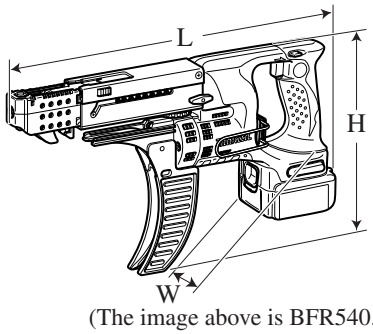
TECHNICAL INFORMATION

MAKSTAR Makita PRODUCT

Model No. ► BFR540, BFR550, BFR750

Description ► Cordless Auto Feed Screwdriver



(The image above is BFR540.)

Dimensions: mm (")		
	BFR540/BFR550	**BFR750**
Length (L)	424 (16-3/4)	464 (18-1/4)
Width (W)	80 (3-1/8)	
Height (H)	238 (9-3/8)	

CONCEPT AND MAIN APPLICATIONS

Models BFR540, BFR550 and BFR750 have been developed as the advanced models of Model BFR440, featuring higher durability. These models feature more reliable casing attachment with the following benefits:

- Rigid aluminum casing
- Stopper base with anti-tilt device for preventing screws from swaying
- Rubber cap securely fixed to stopper base
- Dust-proof construction for smooth sliding action

These products are available in the following variations.

BFR540

Model No.	Battery type	Battery quantity	Battery cover	Charger	Plastic carrying case	Offered to
BFR540	BL1430 (Li-ion 3.0Ah)	2	1	DC18RA	Yes	North America
BFR540RFE						All countries except North America
BFR540RFE3		3	2			
BFR540Z	No		No	No	No	All countries

BFR550

BFR550	BL1830 (Li-ion 3.0Ah)	2	1	DC18RA	Yes	North America
BFR550RFE						All countries except North America
BFR550RFE3		3	2			
BFR550Z	No		No	No	No	All countries

BFR750

BFR750	BL1830 (Li-ion 3.0Ah)	2	1	DC18RA	Yes	North America
BFR750RFE						All countries except North America
BFR750RFE3		3	2			
BFR750Z	No		No	No	No	All countries

All models also include the accessories listed in "Standard equipment".

► Specification

Specification \ Model		**BFR540**	**BFR550**	**BFR750**
Battery	Voltage: V	14.4	18	
	Capacity: Ah	3.0	3.0	
	Cell	Li-ion	Li-ion	
Max output: W		235	235	
No load speed: min.-1 = rpm		4,000		
Driver bit: mm (")	Shank	6.35 (1/4) Hex		
	Overall length*	162 (6-3/8) or 157 (6-3/16)		182 (7-1/8) or 177 (7)
Capacities: mm (") [collated drywall screw]	Diameter	4 (5/32)		
	Overall length	25 to 55 (1 to 2-3/16)		45 to 75 (1-3/4 to 2-15/16)
Reverse switch		Yes		
Net weight**: kg (lbs)		2.1 (4.6)	2.3 (5.0)	

*Overall length of driver bit may differ by country.

**BFR540: includes battery BL1430; BFR550/ BFR750: includes battery BL1830

See next page for "Standard equipment" and "Optional accessories".

► Standard equipment

BFR540/ BFR550

Phillips bit 2-162 or 2-157 3
Belt clip 1

BFR750

Phillips bit 2-182 or 2-177 3
Belt clip 1

Note: The standard equipment for the tool shown above may differ by country.

► Optional accessories

Phillips bit 2-162 or 2-157 (for **BFR540/ BFR550**)
Square bit 2-162 or 2-157 (for **BFR540/ BFR550**)
Phillips bit 2-182 or 2-177 (for **BFR750**)
Square bit 2-182 or 2-177 (for **BFR750**)
Extension handle
Casing attachment
Plastic carrying case
Battery BL1430 (for **BFR540**)
Battery BL1830 (for **BFR550/ BFR750**)
Fast charger DC18RA
Charger DC24SA (for North America only)
Charger DC24SC (for all countries except North America)

Repair

CAUTION: Remove the battery from the machine for safety before repair/ maintenance in accordance with the instruction manual!

[1] NECESSARY REPAIRING TOOLS

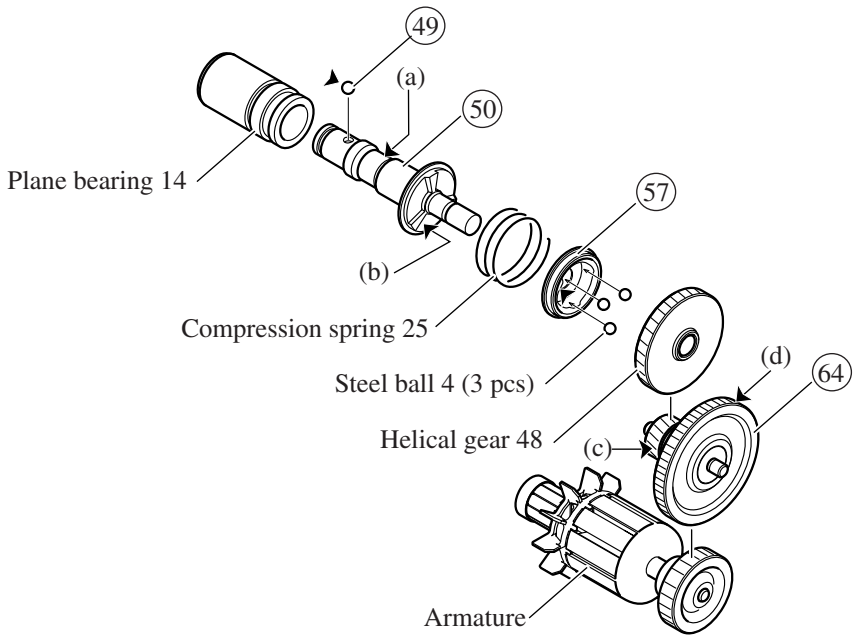
Code No.	Description	Use for
1R032	Bearing setting plate 8.2	Removing Pin 2 from Guide box complete
1R266	Spring pin extractor 2	
1R291	Retaining ring S and R pliers	Removing Casing cover and Insulation sleeve

[2] LUBRICATION

Apply Makita grease FA.No.2 to the following portions designated with the black triangle to protect parts and product from unusual abrasion.

Item No.	Description	Portion to lubricate	
㊾	Steel ball 3.5	Whole surface	
㊿	Spindle B	(a) The Drum portion that contacts Plane bearing 14	
		(b) The Cam portion that contacts ㊼ Clutch cam C	Apply approx. 1g.
㊼	Clutch cam C	Each depressed portion for Steel ball 4	
㊹	Gear complete 18-44	(c) Teeth of the small gear that engages Helical gear 48	Apply approx. 4g.
		(d) Teeth of the large Gear that engages Armature's gear	Apply approx. 4g.

Fig. 1



Repair

[3] DISASSEMBLY/ASSEMBLY

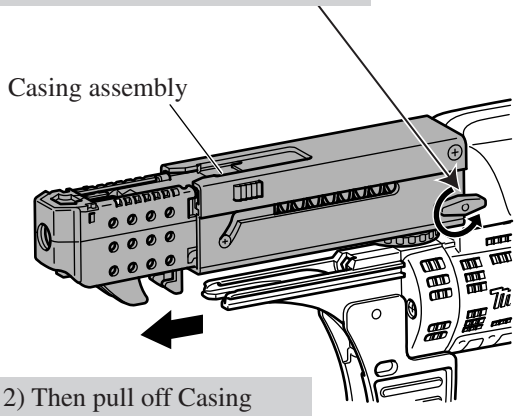
[3] -1. Casing Assembly and Feeder Box Assembly

DISASSEMBLING

Disassemble by taking the steps described in **Fig. 2** to **Fig 17**.

Fig. 2

1) Loosen Thumb screw M4x28 by turning counterclockwise.



2) Then pull off Casing assembly from Housing.

Fig. 3

3) While pressing Clamper, remove three M4x12 Countersunk head screws from Casing complete.

Countersunk head screw M4x12:
one on Thumb screw M4x28 side, two on the opposite side

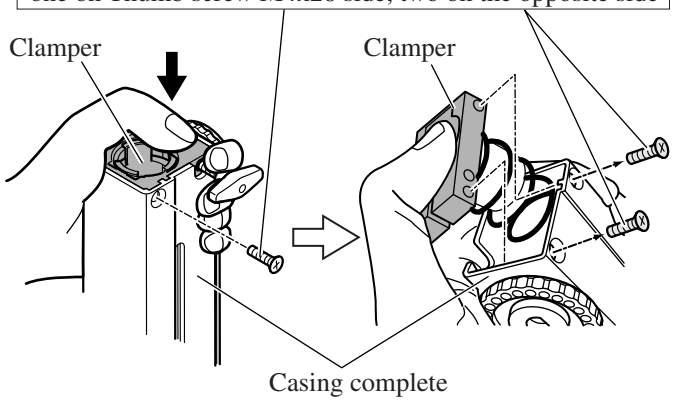
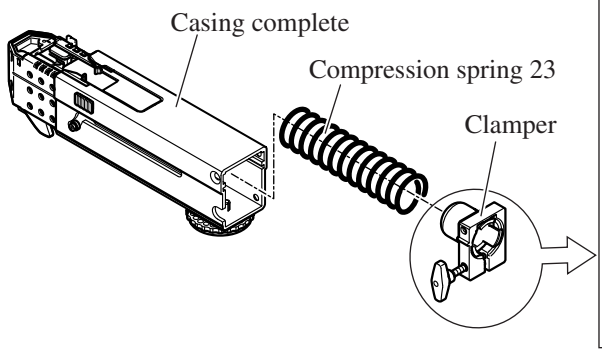


Fig. 4

4) Clamper and Compression spring 23 can now be removed from Casing complete.



Removing Insulation sleeve from Clamper
While pressing two of the three locking tabs of Insulation sleeve inward using 1R291, push it off from Clamper.

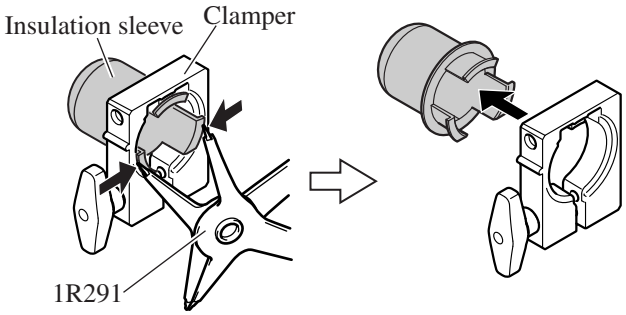


Fig. 5

5) Stopper on either side of Casing complete can be removed by sliding it in the direction of the gray arrow while lifting up its rear end with a slotted screwdriver.

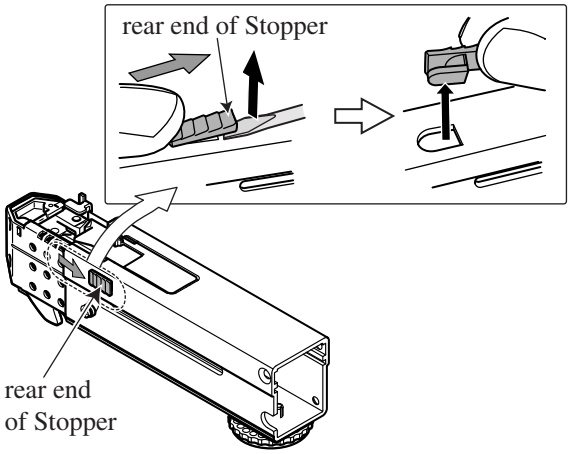
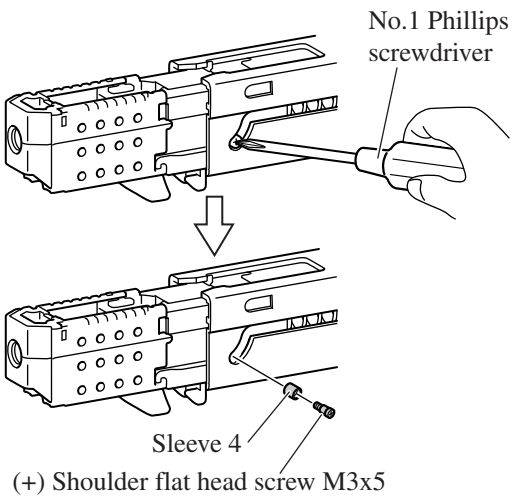


Fig. 6

6) Remove (+) Shoulder flat head screw M3x5 together with Sleeve 4 using No.1 Phillips screwdriver.



Repair

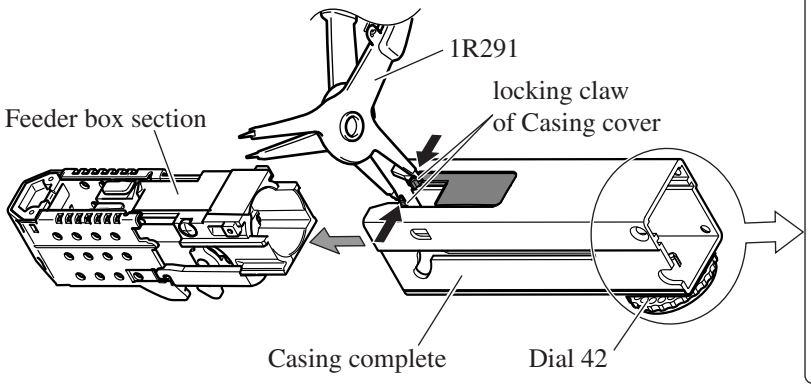
[3] DISASSEMBLY/ASSEMBLY

[3] -1. Casing Assembly and Feeder Box Assembly (cont.)

DISASSEMBLING

Fig. 7

7) While pressing the locking claws of Casing cover inward using 1R291, pull off Feeder box section from Casing cover.



Dial 42 can now be removed from Casing complete by unscrewing Countersunk head screw M4x12.

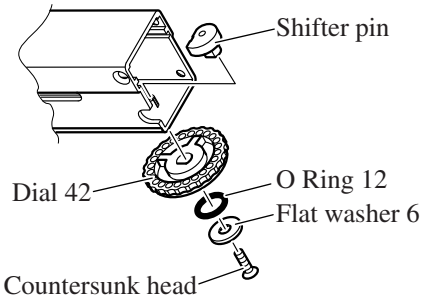


Fig. 8

8) Remove Plate from Stopper base as follows: while pressing down two Levers at the same time, push Stopper base towards Feeder box fully until it stops.

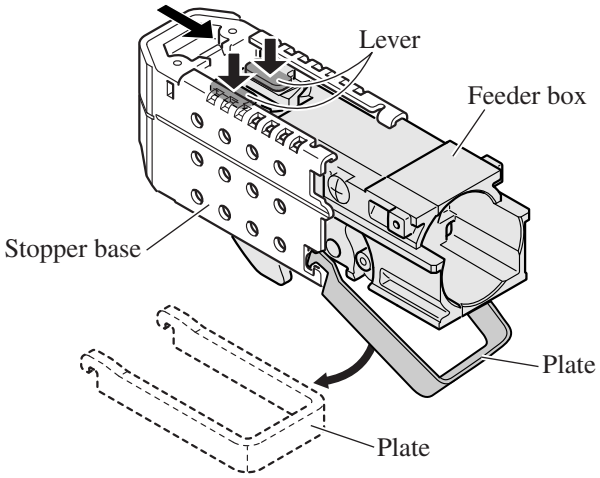


Fig. 9

9) While pressing down two Levers at the same time, separate Feeder box from Stopper base.

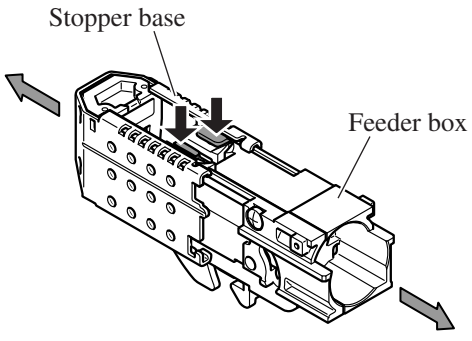
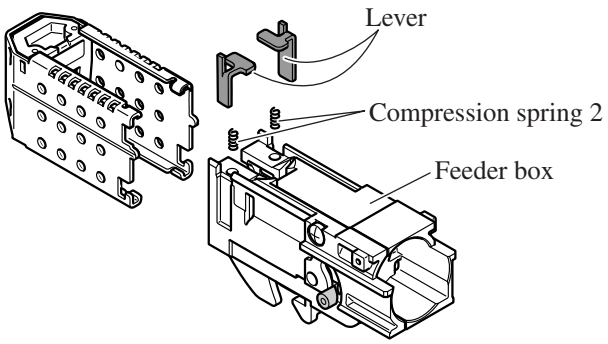


Fig. 10

10) Remove Lever and Compression Spring 2 (2 pcs each) from Feeder box.



Repair

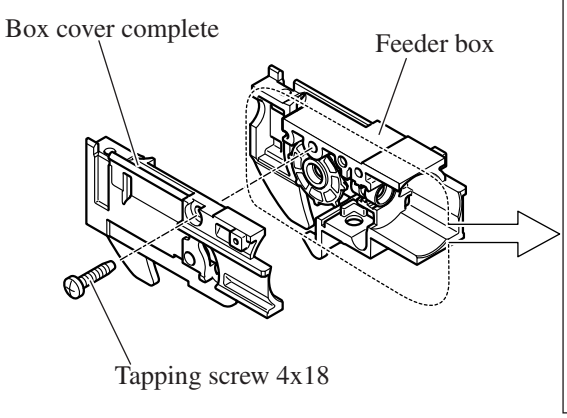
[3] DISASSEMBLY/ASSEMBLY

[3] -1. Casing Assembly and Feeder Box Assembly (cont.)

DISASSEMBLING

Fig. 11

11) Remove Box cover complete from Feeder box by unscrewing Tapping screw 4x18.



Side view of Feeder box after removing Box cover complete

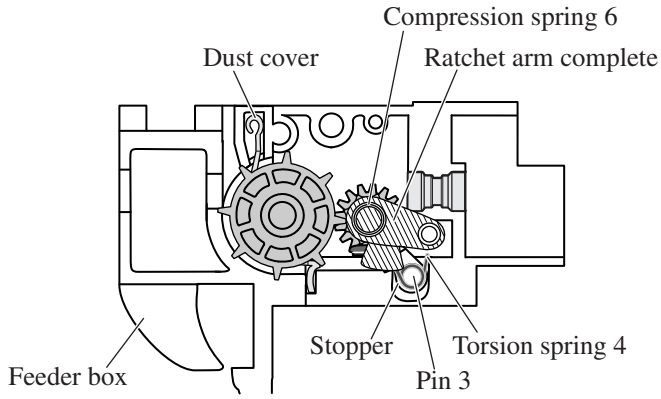


Fig. 12

12) Remove Ratchet arm complete and Compression spring 6 from Spur gear 16.

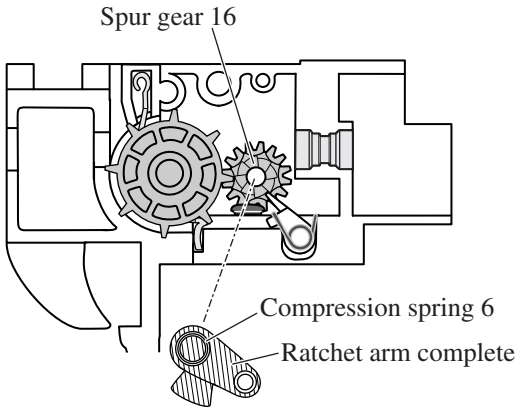


Fig. 13

13) Remove Stopper, Pin 3 and Torsion spring 4 from Feeder box.

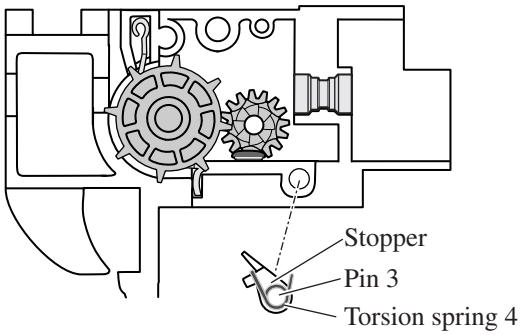
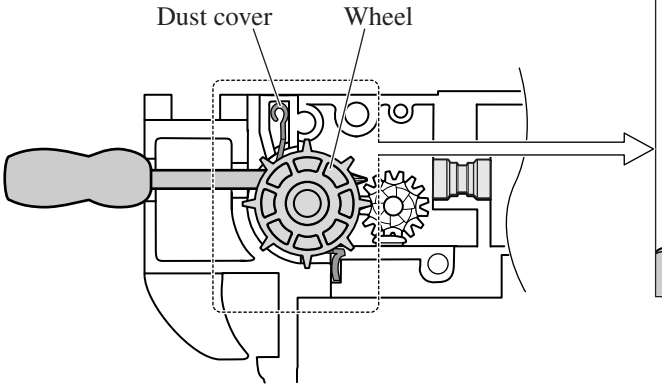
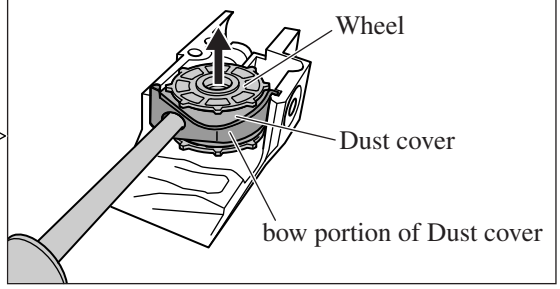


Fig. 14

14) Remove Dust cover from Feeder box.
Note: Because the bow portion of Dust cover is easily damaged, be sure to remove carefully together with Wheel as illustrated to right.



Insert a screwdriver through the hole of Dust cover into Wheel, then lever up Dust cover together with Wheel.



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Casing Assembly and Feeder Box Assembly (cont.)

DISASSEMBLING

Fig. 15

15) Remove Shoulder pin 6 from Feeder box.

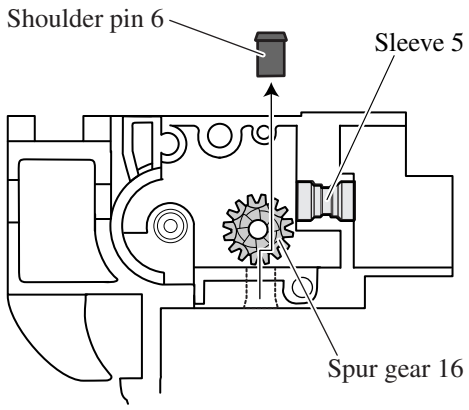


Fig. 16

16) Remove Spur gear 16 from Feeder box.

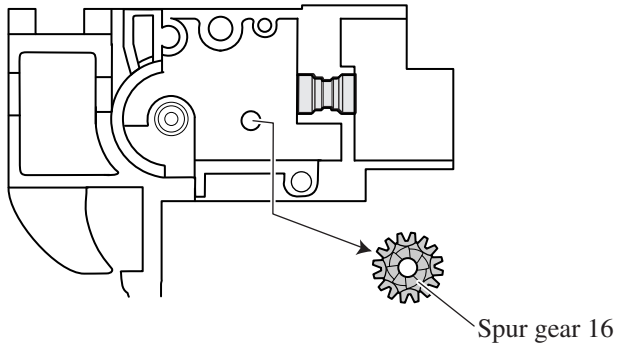
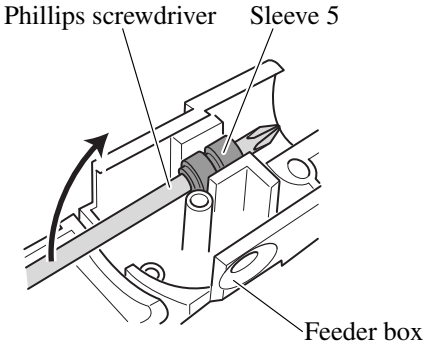


Fig. 17

17) Remove Sleeve 5 from Feeder box.
If cannot remove by hand, lever it off using Phillips screwdriver or the like as illustrated below.



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Casing Assembly and Feeder Box Assembly (cont.)

ASSEMBLING

1) Assemble Sleeve 5, Spur gear 16 and Shoulder pin 6 to Feeder box. (See **Fig. 17** to **Fig. 15** on page 7.)
2) Assemble Wheel together with Dust cover to Feeder box. (See **Fig. 14**.)
Important 1: Dust cover must be fixed securely to Feeder box as described in **Fig. 18**.
Important 2: Make sure that Wheel and Spur gear 16 are correctly engaged. (**Fig. 19**)
3) Assemble Pin 3 and Torsion spring 4 to Stopper (**Fig. 20**), then assemble them to Feeder box as described in **Fig. 21**.

Fig. 18

Push the metal plate of Dust cover in the three portions designated by gray star;
especially, be sure to push it securely into the hole designated by "A" until Dust cover stops.

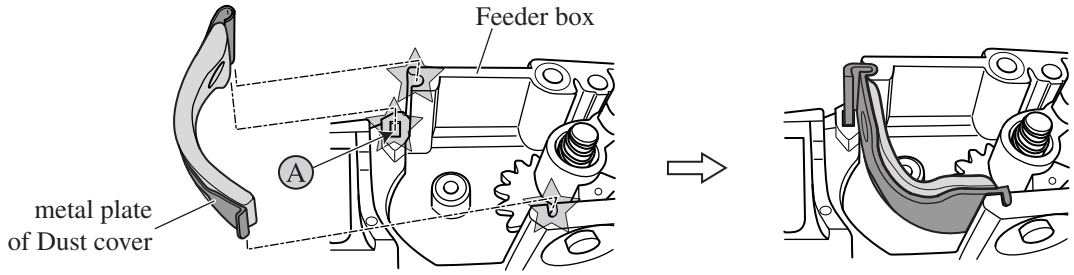


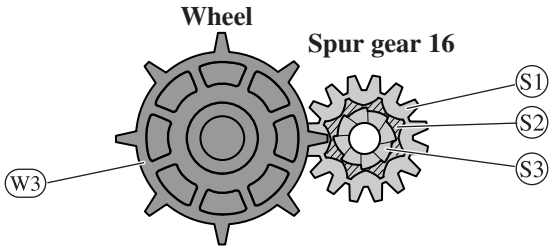
Fig. 19

Engaging Wheel with Spur gear 16
1) Engage (W2) with (S2) .
2) (W1) and (S1) can be engaged by doing 1).

Wheel	Spur gear 16
(W1) Gear portion	(S1) Inner gear
(W2) Inner sprocket	(S2) Outer gear
(W3) Outer sprocket	(S3) Stopper catching portion

Note: As illustrated to right:
(W1) must be engaged with (S1) .
(W2) must be engaged with (S2) .

View from Box cover complete side



Top view

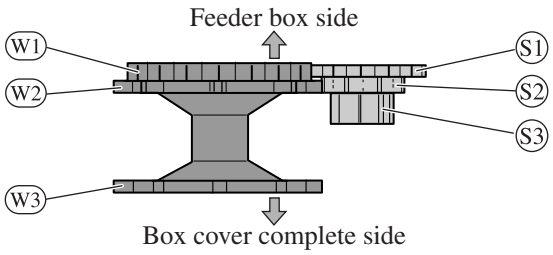


Fig. 20

Note: Be sure to assemble Torsion spring 4 and Pin 3 to Stopper as illustrated below before assembling them to Stopper.

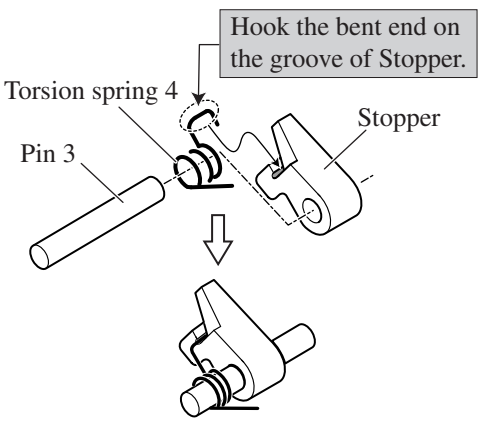
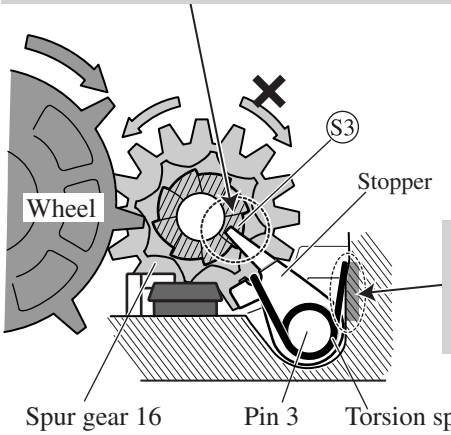
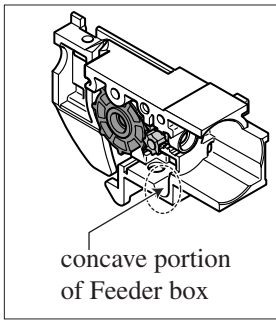


Fig. 21

Engage Stopper with (S3) so that the backward movement of Spur gear 16 can be prevented by Stopper.





The straight end of Torsion spring 4 must be placed on the rear wall of the concave portion.

Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Casing Assembly and Feeder Box Assembly (cont.)

ASSEMBLING

4) Assemble Ratchet arm complete and Compression spring 6 to Spur gear 16. (See **Fig. 12** on page 6.)
5) Assemble Box cover complete to Feeder box. (See **Fig. 11** on page 6.)
6) Make sure that Wheel moves correctly as described in **Fig. 22** by pushing Ratchet arm complete up and down .
7) Make sure that Wheel can be stopped by pushing in Shoulder pin 6. (**Fig. 23**)

Note:
Do not apply any lubricant oil/grease or anticorrosive oil to the parts illustrated in **Fig. 24**.
because smooth feeding can be prevented by dirt and dust sticking to such oily/greasy parts.

Fig. 22

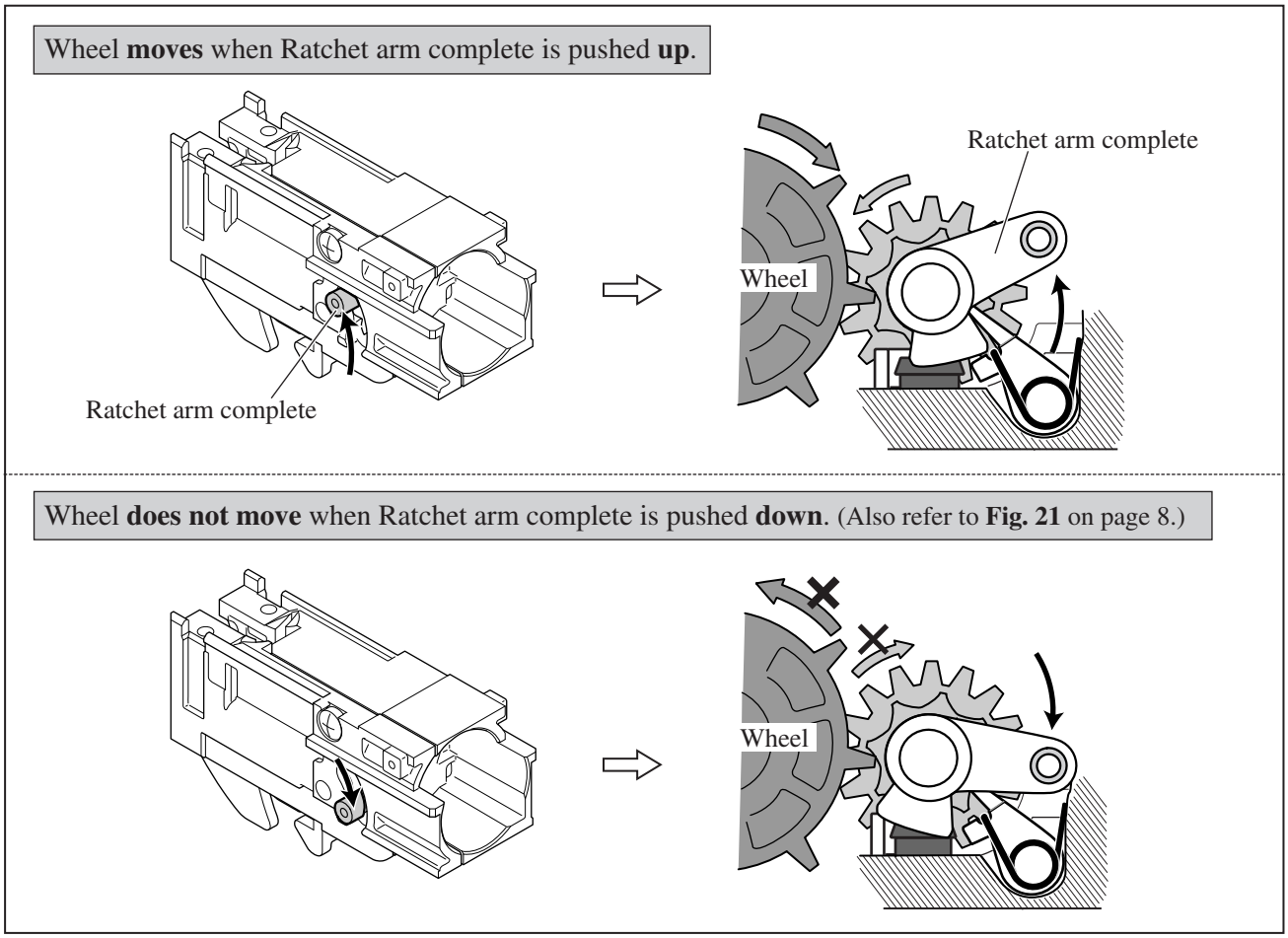


Fig. 23

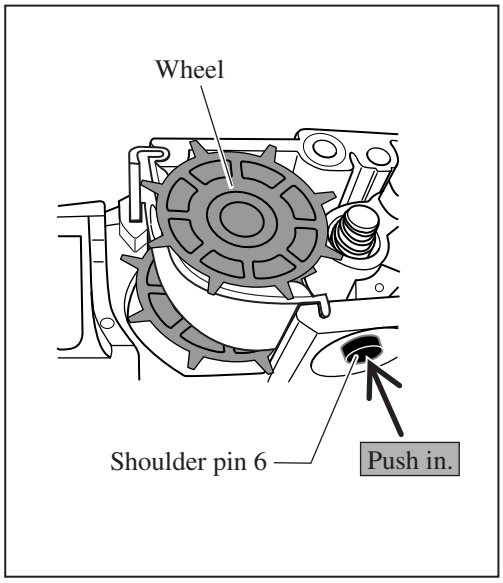
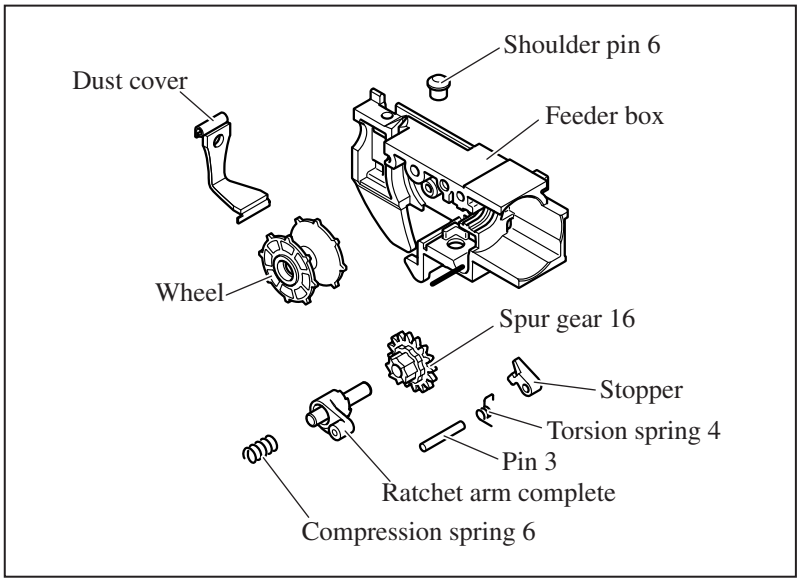


Fig. 24



Repair

[3] DISASSEMBLY/ASSEMBLY

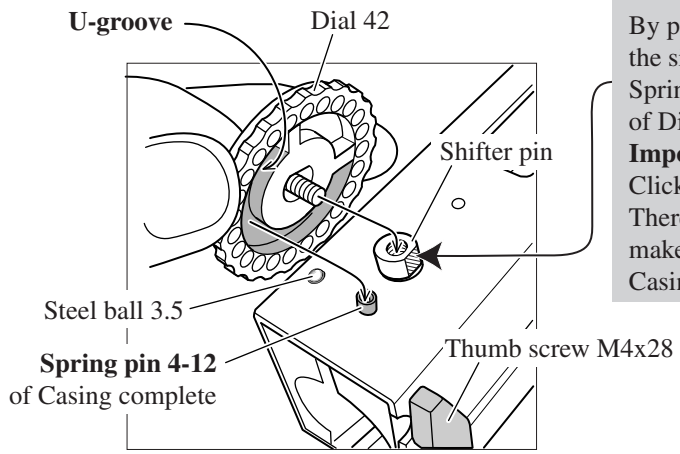
[3] -1. Casing Assembly and Feeder Box Assembly (cont.)

ASSEMBLING

8) Casing complete can be assembled by doing the reverse of the disassembling steps. (**Fig. 7** to **Fig. 2** on pages 5 to 4)
Note: Be sure to follow the instructions described in **Fig. 25** to **Fig. 27**.

Fig. 25

Assembling Dial 42 to Shifter pin



By placing Shifter pin so that the pin's flat faces towards the side where Thumb screw M4x28 is mounted, Spring pin 4-12 of Casing complete fits in the U-groove of Dial 42 when Dial 42 is assembled to Shifter pin.
Important:
Click stop of Dial 42 does not work without Steel ball 3.5. Therefore, before assembling Dial 42 to Shifter pin, make sure that Steel ball 3.5 is mounted in place on Casing complete.

Fig. 26

Assembling Plate to Stopper base

While pressing down two Levers at the same time, push Stopper base towards Feeder box until it stops, then hitch Plate to Stopper base.

While pressing down two Levers at the same time, pull Stopper base slowly back to the initial position. Plate is now assembled in place.

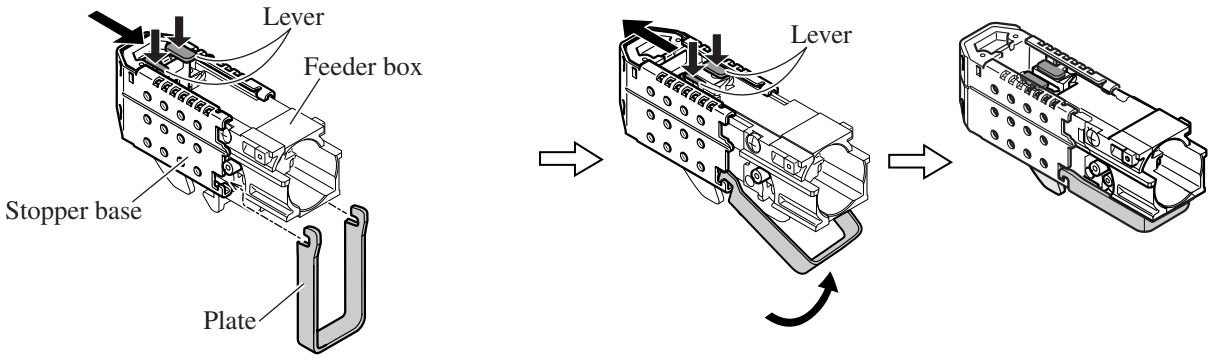
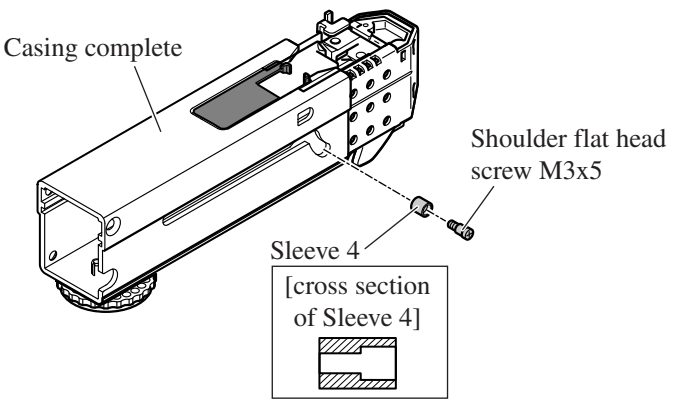


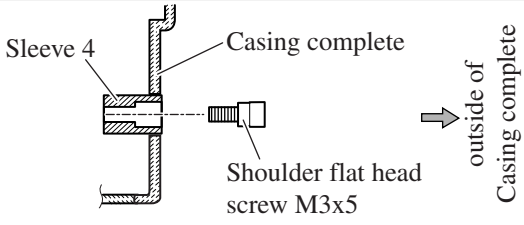
Fig. 27

Assembling Sleeve 4 to Casing complete

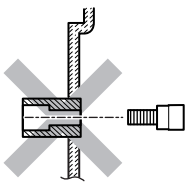
Sleeve 4 is not reversible when assembled to Casing complete. Be sure to do as illustrated in "**Correct**".



Correct



Wrong



Shoulder flat head screw M3x5 cannot be fastened in place.

Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -2. Stopper Base Section

DISASSEMBLING

Disassemble by taking the steps described in **Fig. 28** to **Fig. 31**.

Fig. 28

1) Remove Guide box complete from Stopper base together with Guard first by inserting slotted screwdriver into the rectangular hole of Stopper base, then by pushing Guide box complete with the screwdriver.

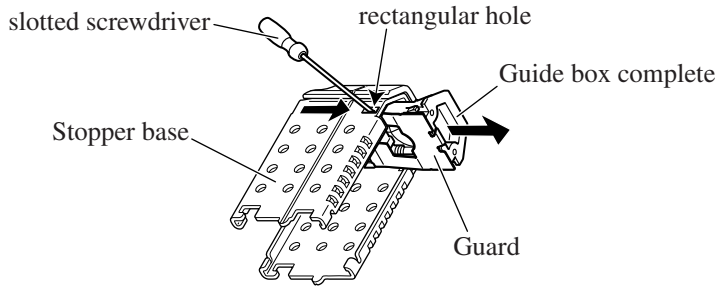


Fig. 29

2) Separate Guard from Guide box complete.

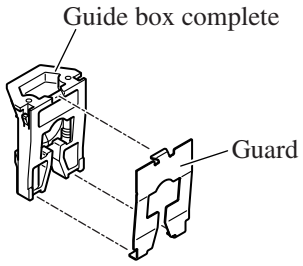


Fig. 30

3) Guide box complete can be disassembled as illustrated below using 1R032, 1R266 and arbor press.
(The parts with asterisk: one each on left and right side)

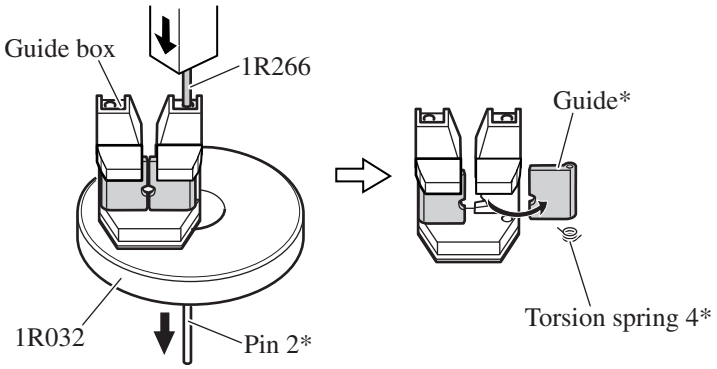
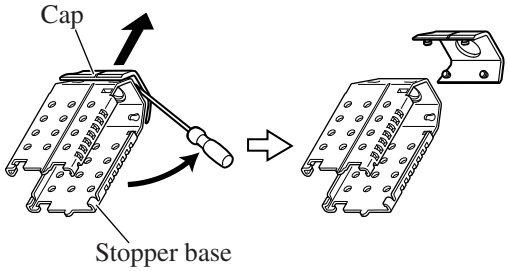


Fig. 31

4) Cap can be removed from Stopper base using slotted screwdriver.



[3] -3. Clutch Section

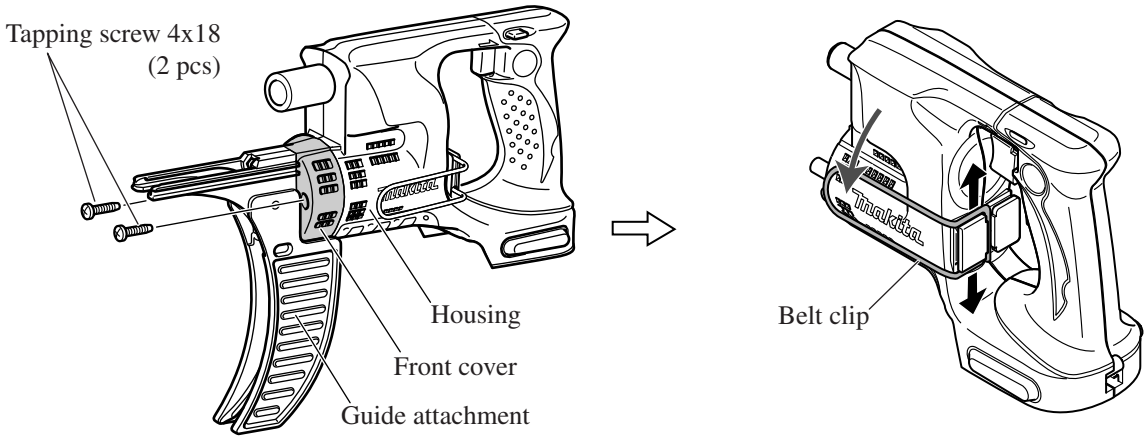
DISASSEMBLING

Disassemble by taking the steps described in **Fig. 32** to **Fig. 36**.

Fig. 32

1) After removing Casing assembly (**Fig. 2** on page 4), disassemble Front cover from Housing together with Guide attachment.

2) Remove Belt clip from Housing by pulling in the direction of the gray arrow while opening the ends in the directions of the black arrows.



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -3. Clutch Section

DISASSEMBLING

Disassemble by taking the steps described in **Fig. 32** to **Fig. 36**.

Fig. 33

3) Remove Housing (R) from Housing (L) by unscrewing nine 4x18 Tapping screws.

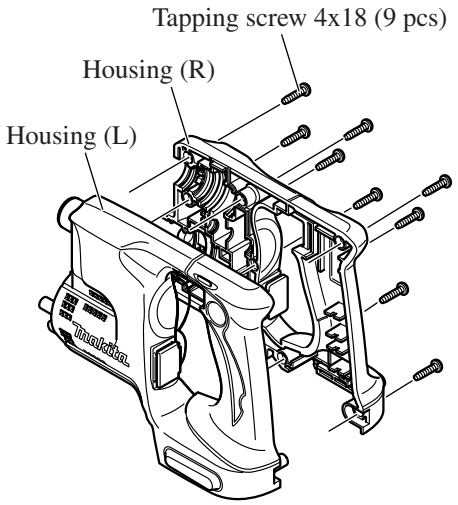
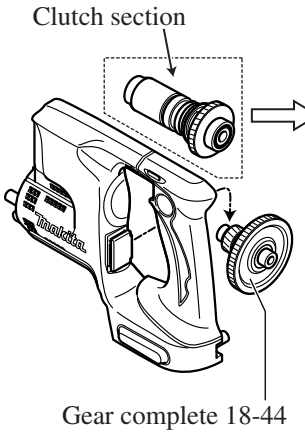


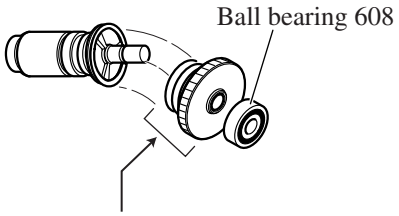
Fig. 34

4) Remove Clutch section from Housing (L).



Gear complete 18-44 can be also removed in this step.

From the removed Clutch section, Ball bearing 608 and Assembly of Helical gear 48 will be separated by the force of Compression spring 25.



Assembly of Helical gear 48 consisting of:
Helical gear 48, Clutch cam C
Steel ball 4 (3 pcs), Flat washer 26
Compression spring 25

Fig. 35

5) The rest of Clutch section can be disassembled by hand as illustrated below.

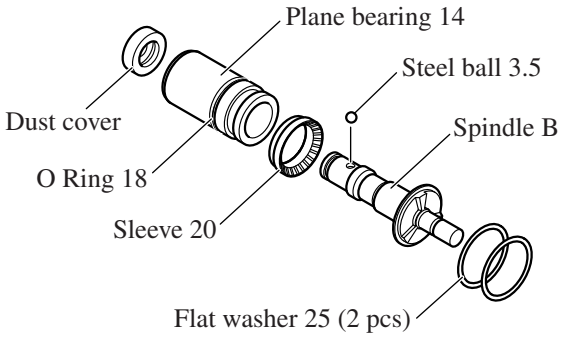
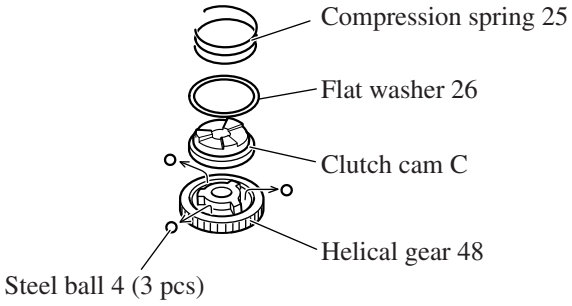


Fig. 36

6) Assembly of Helical gear 48 can be disassembled by hand as illustrated below.



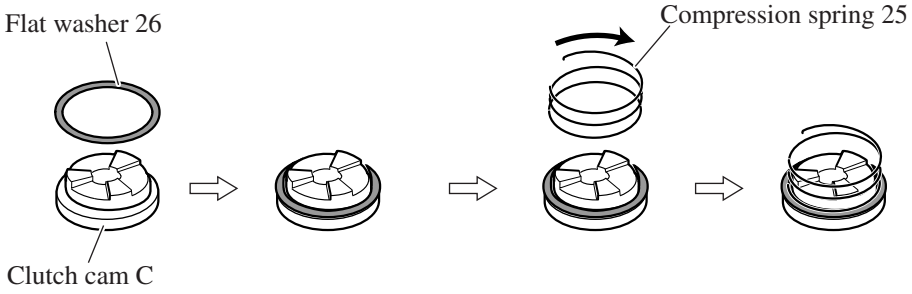
ASSEMBLING

Assemble by taking the steps described in **Fig. 37** to **Fig. 40**.

Fig. 37

1) Put Flat washer 26 on the flanged portion of Clutch cam C.
Note: Make sure that there is no space between Flat washer 26 and the flanged portion.

2) While turning Compression spring 25 in the direction of the arrow, push it down until it touches Flat washer 26.



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -3. Clutch Section (cont.)

ASSEMBLING

Fig. 38

3) Apply Makita grease FA.No.2 to the inside wall of Clutch cam C to prevent Steel balls from falling off from Clutch cam C.

4) Put each Steel ball 4 in the concave portion on the inside wall of Clutch cam C.
Then assemble Clutch cam C to Helical gear 48.

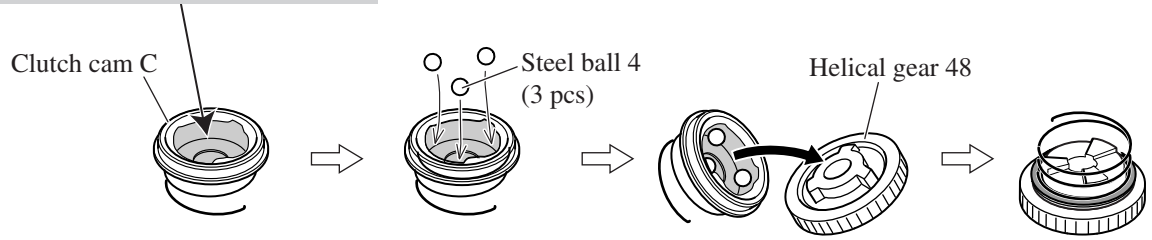


Fig. 39

5) Assemble the parts illustrated below into Clutch section.

Note:
Apply Makita grease FA.No.2 to the cam portion of Spindle B to prevent Flat washer 25 (2 pcs) from falling off from Spindle B.

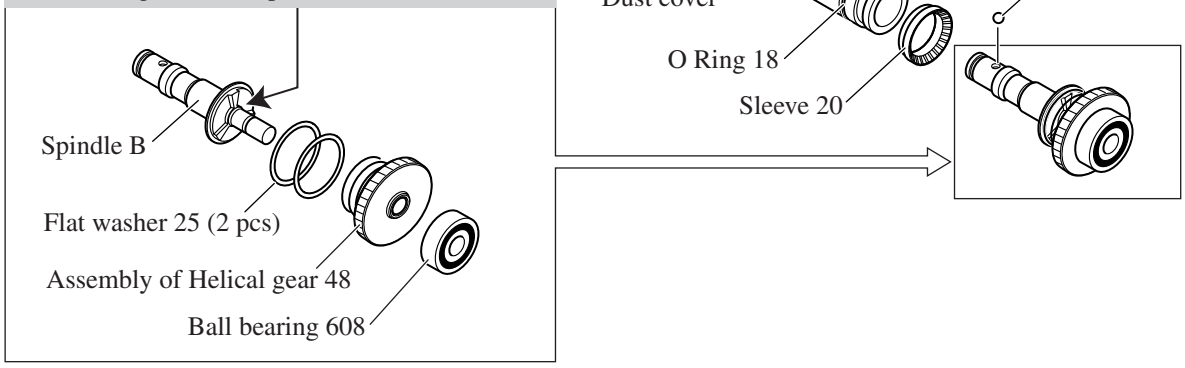
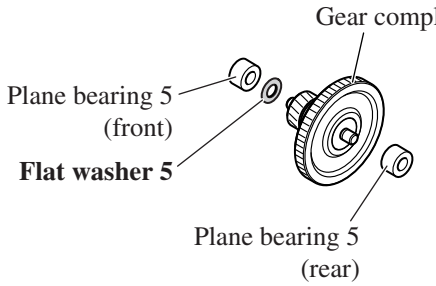


Fig. 40

6) Assemble Gear complete 18-44 to Housing (L).
Note: Do not forget to put Flat washer 5 between Gear complete 18-44 and Plane bearing 5 (front).



Repair

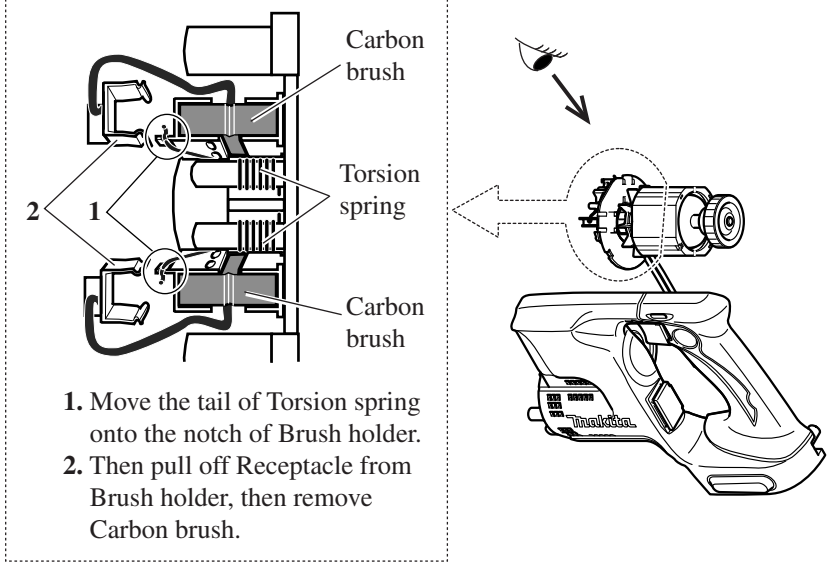
[3] DISASSEMBLY/ASSEMBLY

[3] -4. Motor Section

DISASSEMBLING

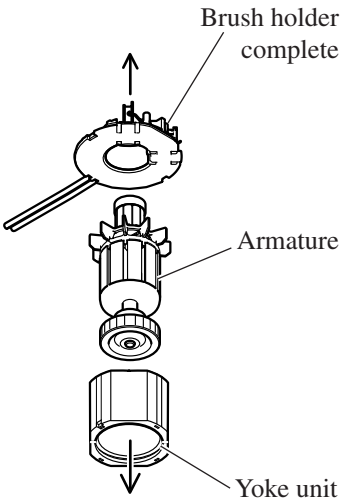
1) Remove Casing assembly. (**Fig. 2** on page 4)
   Then disassemble Front cover, Guide attachment and Belt clip. (**Fig. 32** on page 11)
2) Remove Housing (R) from Housing (L) by unscrewing nine 4x18 Tapping screws. (**Fig. 33** on page 12)
3) Disassemble Armature from the machine as illustrated in **Figs. 41, 42**.

Fig. 41



1. Move the tail of Torsion spring onto the notch of Brush holder.
2. Then pull off Receptacle from Brush holder, then remove Carbon brush.

Fig. 42



ASSEMBLING

1) Insert Armature into Yoke unit as described in **Figs. 43, 44**.
2) Assemble Brush holder complete to the commutator end of Armature. (**Fig. 41**)

Fig. 43

Yoke unit is not reversible when assembled to Armature.
Be sure to assemble so that the notch in Yoke unit is positioned on the drive-end of Armature.
If assembled wrong, the Motor section cannot be assembled to Housing (L).

[Correct] **[Wrong]**

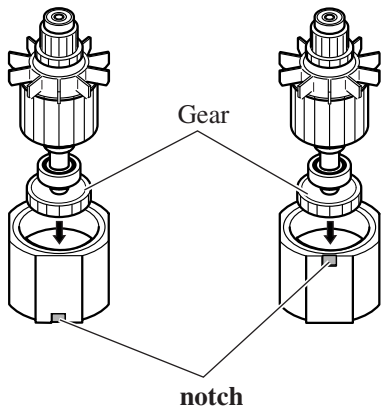
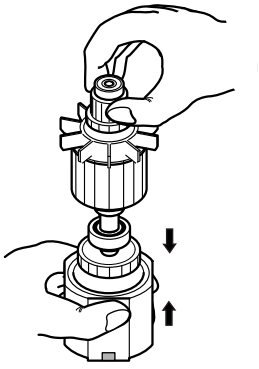
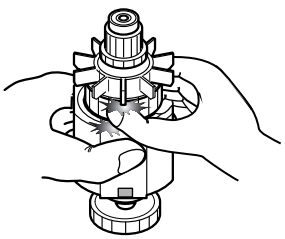


Fig. 44

Because Yoke unit is a strong magnet, when assembling Armature to Yoke unit, be sure to hold the commutator portion as illustrated to left. Do not hold the Armature core as illustrated to right or your fingers will be pinched between Yoke unit and the fan of Armature that is pulled strongly by the magnet force.

[Correct] **[Wrong]**





Your fingers can be pinched and injured.

Repair

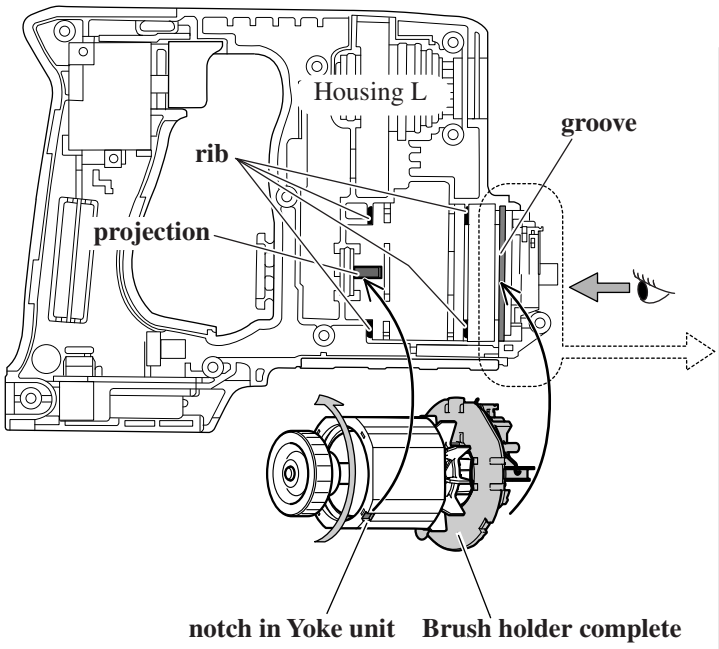
[3] DISASSEMBLY/ASSEMBLY

[3] -4. Motor Section (cont.)

ASSEMBLING

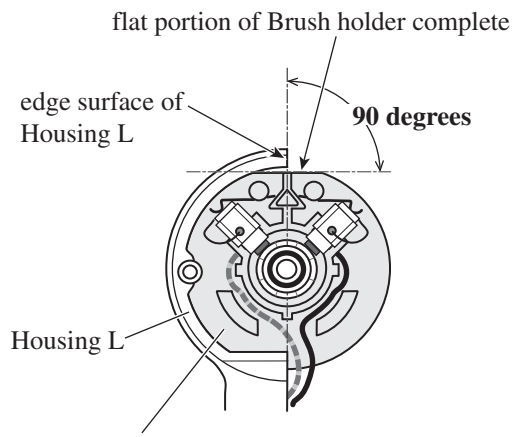
3) Assemble the Motor section to Housing (L) as illustrated in **Fig. 45**.

Fig. 45



Assembling Yoke Unit to Housing (L)
With the projection on Housing (L) fitting in the notch on Yoke, put Yoke unit inside the four ribs on Housing (L).

Assembling Brush Holder to Housing (L)
1) Fit Brush holder complete in the groove of Housing (L).
2) The flat portion of Brush holder complete must be at 90 degrees to the edge surface of Housing L.



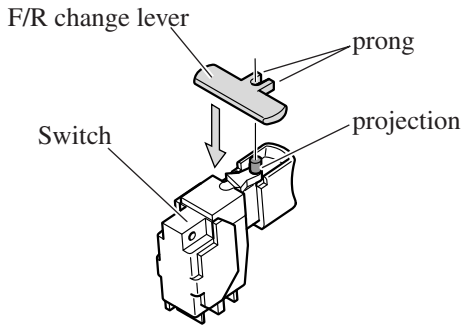
Brush holder complete, viewed from the Case assembly installation side.

[3] -5. Switch

ASSEMBLING

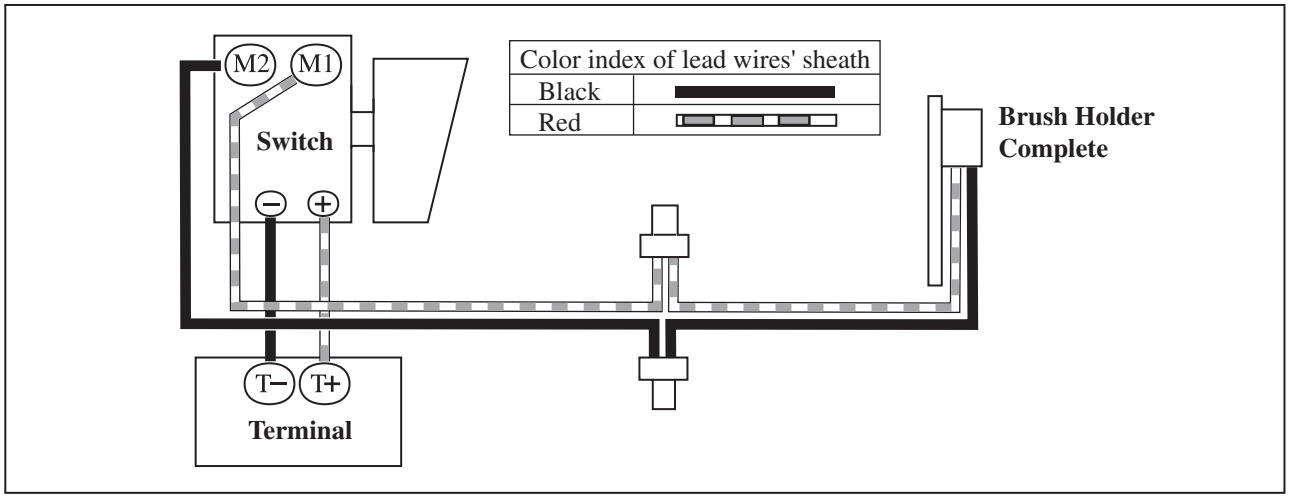
Put the projection on Switch between the prongs of F/R change lever, then assemble the Switch to Housing L. (**Fig. 46**)

Fig. 46



► Circuit diagram

Fig. D-1



► Wiring diagram

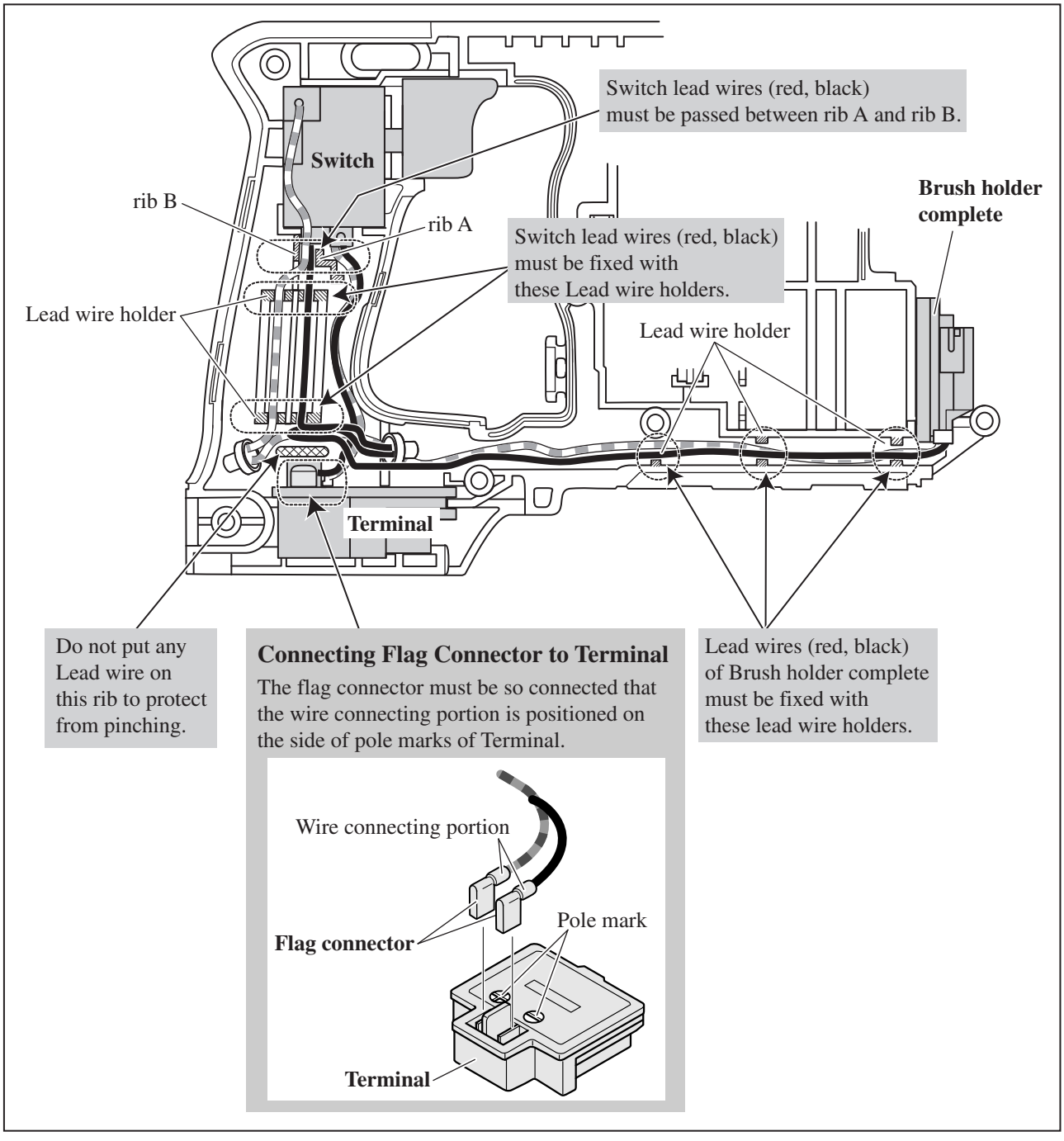



Fig. D-2