

TECHNICAL INFORMATION

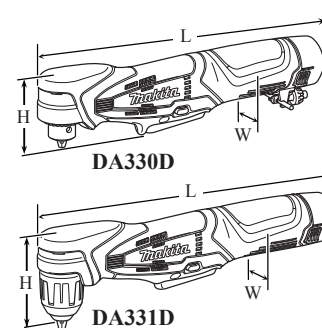


PRODUCT

P 1 / 10

Models No. ▶ DA330D/ DA331D

Description ▶ 10.8V Cordless Angle Drill 10mm (3/8")



CONCEPT AND MAIN APPLICATIONS

Models DA330D/ DA331D have been developed as the first 10.8V Li-ion cordless angle drills. The compact angle head and its small center height allow easy access to tight spaces where DC driver drills cannot do it. The difference between these models are as follows;
DA330D/ equipped with Keyed drill chuck
DA331D/ equipped with Keyless drill chuck

Dimensions: mm (")		
Model No.	DA330D	DA331D
Length (L)	298 (11-3/4)	310 (12-1/4)
Width (W)	52 (2-1/16)	52 (2-1/16)
Height (H)	77 (3)	88 (3-1/2)

► Specification

Specification		Model No.	DA330D	DA331D
Battery	Type of cell		Li-ion	
	Voltage: V		10.8*2, (10.8/12Vmax*3)	
	Capacity: Ah		1.3	
	Energy capacity: Wh		14	
	Charging time (approx.): min.		50 with DC10WA*2, (DW10WB*3)	
Max output: W			135	
No load speed: min. ⁻¹ =rpm			0 - 800	
Drill chuck type			Keyed	Keyless
Capacity of drill chuck: mm (")			1.5 (1/16) - 10 (3/8)	0.8 (1/32) - 10 (3/8)
Capacities: mm (")	Steel		10 (3/8)	
	Wood		12 (1/2)	
Electric brake			Yes	
Variable speed control by trigger			Yes	
Reverse switch			Yes	
LED job light			Yes (single LED)	
Weight according to EPTA-Procedure 01/2003*4: kg (lbs)			1.1 (2.4)	1.1 (2.5)

*2 For all countries except North, Central and South American countries; however, DC10WA is supplied to Argentina.

*3 For North, Central and South American countries except Argentina

*4 with battery

► Standard equipment

Battery BL1013*2
Battery BL1014*3
Charger DC10WA*2
Charger DC10WB*3
Battery cover
Chuck key S10 (for DA330D only)
+ Bit 2-50
Plastic carrying case

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

► Optional accessories

Driver bits
Socket bits
Drill bits for wood
Drill bits for steel
Battery BL1013*2
Battery BL1014*3
Charger DC10WA*2
Charger DC10WB*3

► Repair

CAUTION: Repair the machine in accordance with “Instruction manual” or “Safety instructions”.

[1] NECESSARY REPAIRING TOOLS

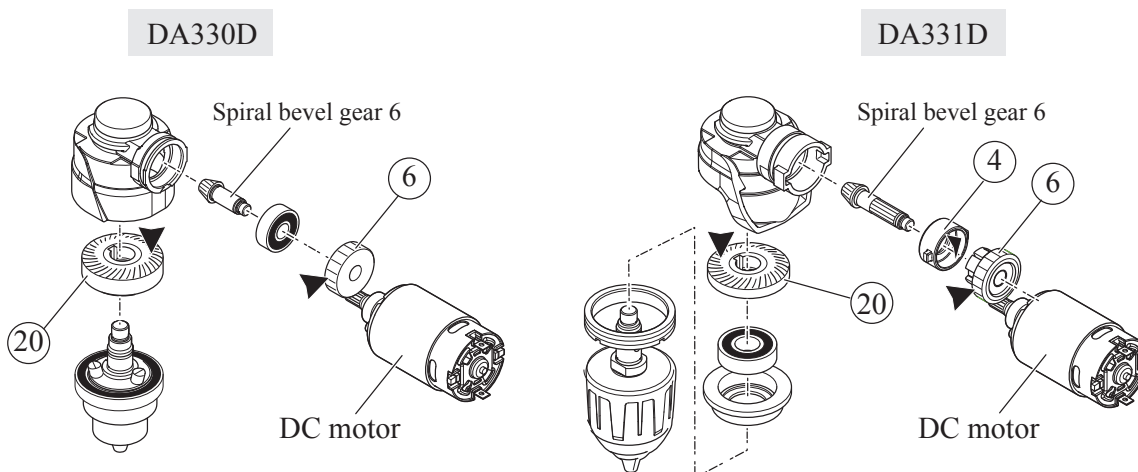
Code No.	Description	Use for
1R022	Bearing plate (for arbor press)	removing / assembling Spur gear 42 for DA330D
1R029	Bearing setting pipe 23-15.2	assembling Spur gear 42 for DA331D
1R045	Gear extractor (large)	removing Spur gear 42
1R223	Torque wrench shaft 20-90N·m	removing / assembling Keyless drill chuck for DA331D
1R224	Ratchet head 12.7 (for 1R223)	
1R231	1/4" Hex. shank bit for M8	
1R269	Bearing extractor	removing Ball Bearings
1R279	Round bar for Arbor 5-50	removing Gear shaft from Spur gear 42 for DA330D
1R291	Retaining ring S and R pliers	removing Retaining Ring S-12
1R398	Bearing retainer wrench	loosening / fastening Bearing retainer

[2] LUBRICATION

Apply **Makita grease N 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	Amount
④	Lock ring for DA331D	Inside where ⑥ Spur gear 42 contacts	a little
⑥	Spur gear 42	Teeth portion for smooth engaging with Motor's gear	2.5 g
②①	Spiral bevel gear 31	Teeth portion for smooth engaging with Spiral bevel gear 6	4 g

Fig. 1



► Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1A. Drill Chuck and Spiral bevel gear 31 for DA330D

DISASSEMBLING

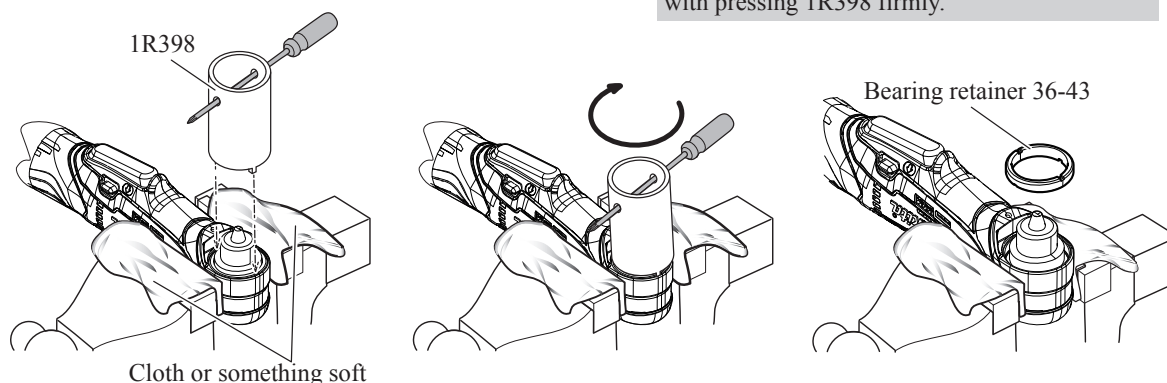
Drill chuck is factory assembled to Spindle to which Spiral bevel gear 31 is mounted. Consequently, it is impossible to replace Drill chuck singly without removing Spiral bevel gear 31 from the Spindle portion of Drill chuck. Disassemble Drill chuck section as drawn in **Fig. 2A**.

Fig. 2A

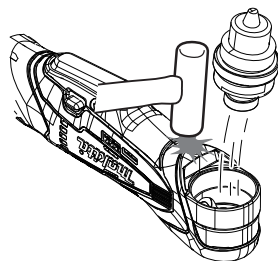
1. Set the machine to vise with a cloth or something soft to protect the machine, then remove Bearing retainer 36-43 by turning it clockwise with 1R398.

Note in Disassemble:

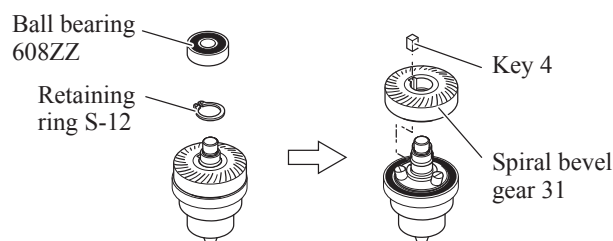
When removing Bearing retainer 36-43, turn 1R398 with a screwdriver or something like with pressing 1R398 firmly.



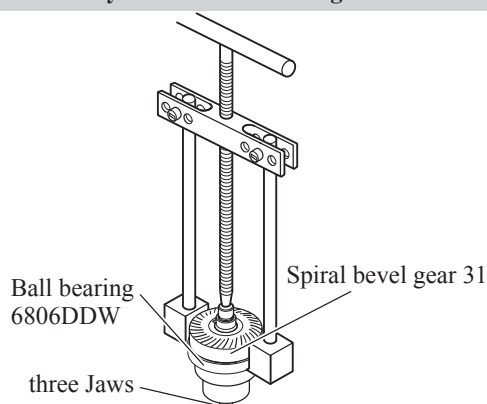
2. Disassemble Drill chuck section by tapping the edge of Gear housing with a plastic hammer.



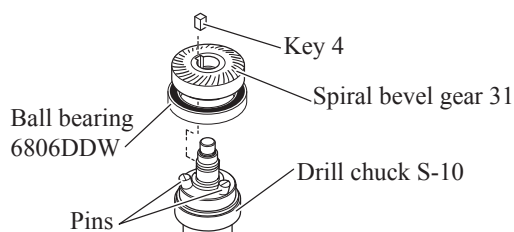
3. Remove Ball bearing 608ZZ with 1R269, and remove Retaining ring S-12 with 1R291. Then, Spiral bevel gear 31 is removed from Drill chuck. **Note:** Be careful not to lose Key 4.



- 3A. If it is difficult to remove Spiral bevel gear 31 by hand, remove the gear with 1R045. It is possible to remove the gear together with Spiral bevel gear 31 using with 1R045. In this case, **make sure that three Jaws are exactly closed before setting 1R045.**



4. Spiral bevel gear 31 and Ball bearing 6806DDW are removed from Drill chuck S-10. **Note:** Be careful not to lose Key 4.



Note in Disassemble:

In case three jaws of the drill chuck is not closed completely, Pins interfere with Ball bearing 6806DDW.

► Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1A. Drill Chuck and Spiral bevel gear 31 for DA330D (cont.)

ASSEMBLING

Assemble Drill chuck section by reversing the disassembly procedure. (Refer to the illustrations in **Fig. 2A**)

Note in Assembling 1:

Close the three Jaws for easy assembling Ball bearing 6806DDW.

Note in Assembling 2:

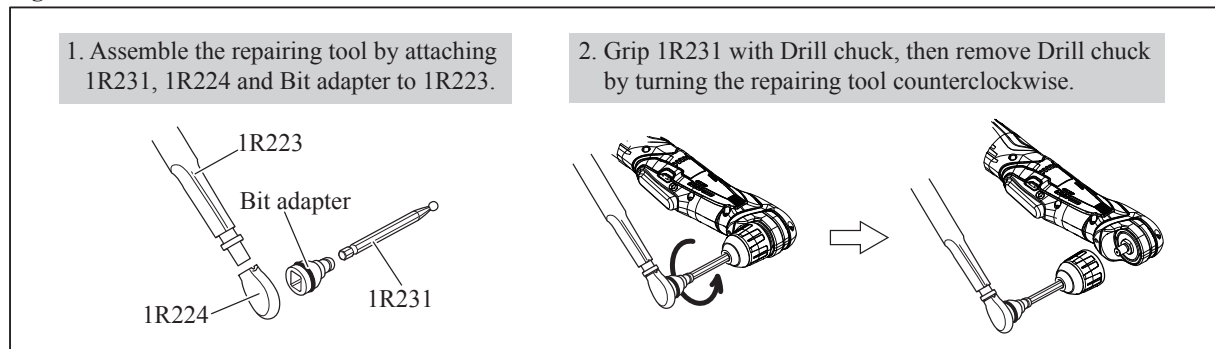
Do not forget to mount Key 4 to the groove on Spindle of Drill chuck, and mount Spiral bevel gear 31 to Spindle while aligning the notch of Spiral bevel gear 31 to Key 4.

[3] -1B. Drill Chuck for DA331D (equipped with Keyless Drill Chuck)

DISASSEMBLING

Disassemble Drill chuck section as drawn in **Fig. 2B**.

Fig. 2B



ASSEMBLING

(1) Preset the fastening torque of 1R223 to **40 - 45 N·m**.

(2) Assemble Drill chuck by reversing the disassembly procedure. (Refer to the illustrations in **Fig. 2B**)

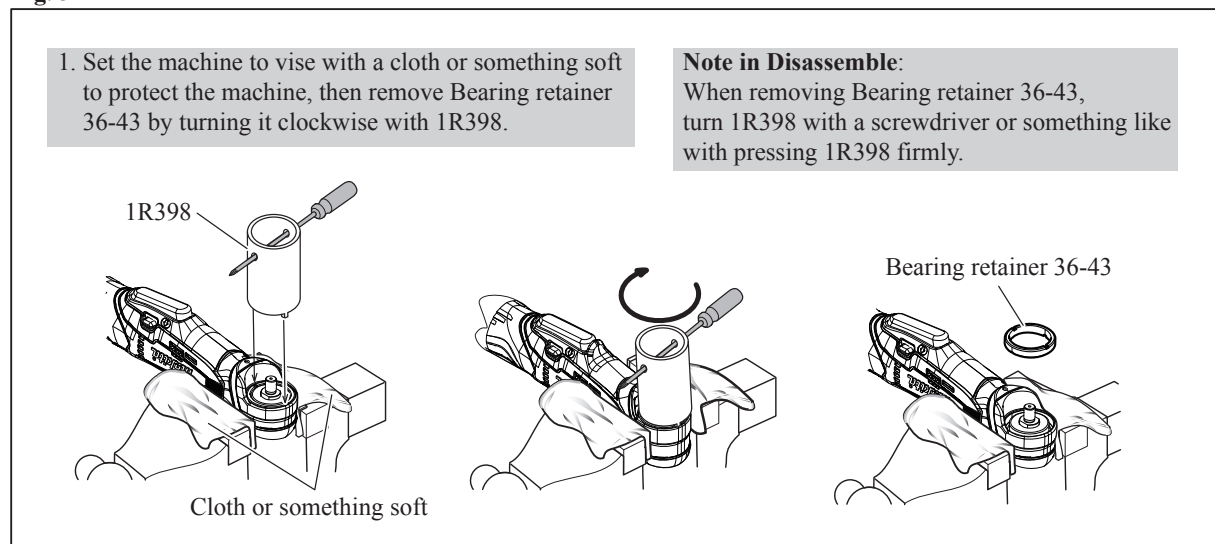
[3] -2. Spiral bevel gear 31 for DA331D

DISASSEMBLING

(1) Disassemble Keyless drill chuck as drawn in **Fig. 2B**.

(2) Disassemble Bearing retainer 36-43 as drawn in **Fig. 3**.

Fig. 3



► Repair

[3] DISASSEMBLY/ASSEMBLY

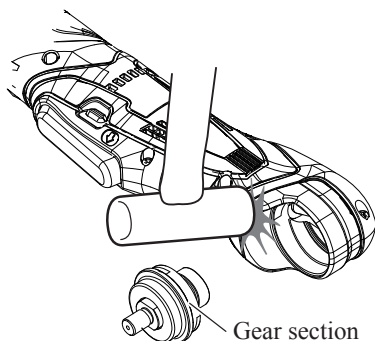
[3] -2. Spiral bevel gear 31 for DA331D (cont.)

DISASSEMBLING

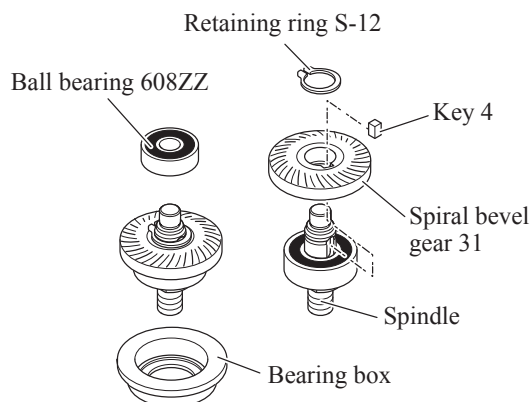
(3) Disassemble Gear section as drawn in **Fig. 4**.

Fig. 4

2. Disassemble the gear section by tapping the edge of Gear housing with a plastic hammer.



3. Bearing box can be removed by hand. Remove Ball bearing 608ZZ with 1R269, and remove Retaining ring S-12 with 1R291. Then, Spiral bevel gear 31 is removed by hand. If it is difficult to remove the gear by hand, remove it with 1R045.
Note: Be careful not to lose Key 4.



ASSEMBLING

Assemble Spiral bevel gear 31 by reversing the disassembly procedure. (Refer to **Figs. 4, 3 and 2B**)

► Repair

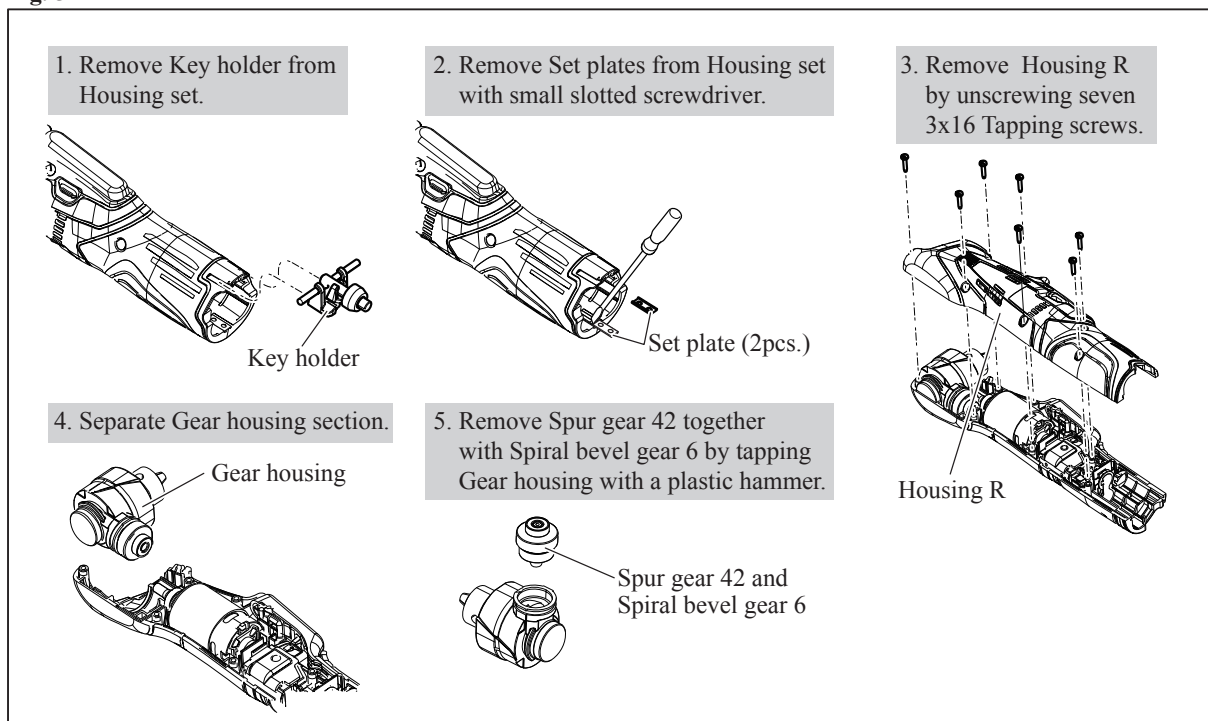
[3] DISASSEMBLY/ASSEMBLY

[3] -3A. Spiral bevel gear 6 and Spur gear 42 for DA330D

DISASSEMBLING

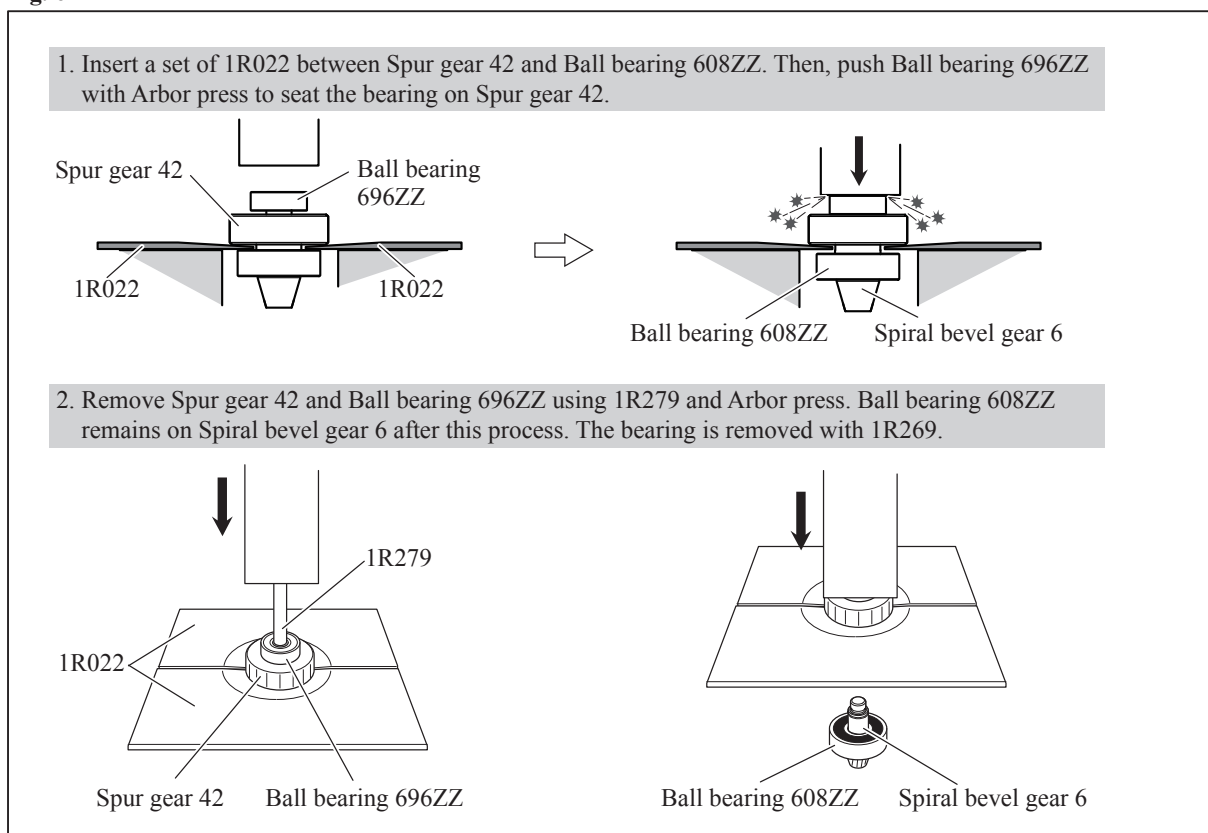
(1) Take out Spiral bevel gear 6 and Spur gear 42 as drawn in **Fig. 5**.

Fig. 5



(2) Remove spiral bevel gear 6 as drawn in **Fig. 6**.

Fig. 6



► Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -3A. Spiral bevel gear 6 and Spur gear 42 for DA330D (cont.)

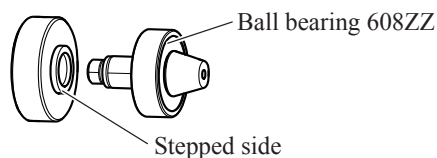
ASSEMBLING

Assemble the gear section by reversing the disassembly procedure. (Refer to **Figs. 6 and 5**)

Note: Spur gear 42 has to be assembled as drawn in **Fig. 7**.

Fig. 7

Assemble Spur gear 42 while facing its stepped side to Ball bearing 608ZZ.



[3] -3B Spiral bevel gear 6 and Spur gear 42 for DA331D

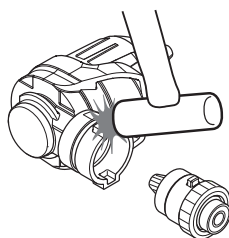
DISASSEMBLING

(1) Take out Gear housing in the same way as DA330D. (See **Fig. 5**)

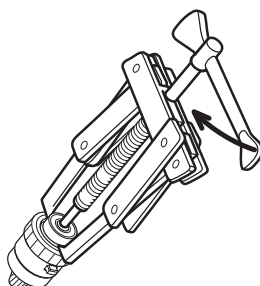
(2) Disassemble Spiral bevel gear 6 and Spur gear 42 as drawn in **Fig. 8**.

Fig. 8

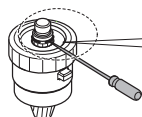
1. Tap the edge of Gear housing with a plastic hammer to remove Gear section from Gear housing.



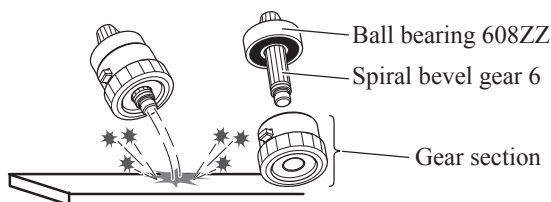
2. Remove Ball bearing 696ZZ with 1R269.



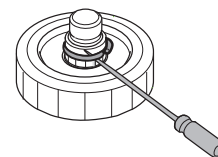
3. Remove Ring spring 6 with a pricker as drawn **right**.



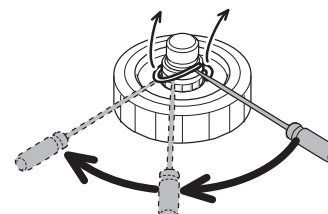
4. Strike Gear section to work bench to separate Spiral bevel gear 6 from Spur gear 42.



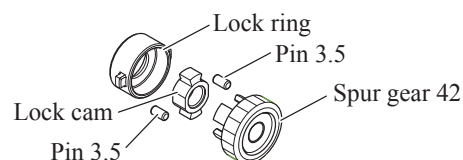
3-1. Find out Ring spring's cut portion at the grooved portion of Spline, insert a pricker under Ring spring at the near point of the cut portion.



3-2. Remove Ring spring with the pricker as drawn below.



5. Gear section can be disassembled as follows.



► Repair

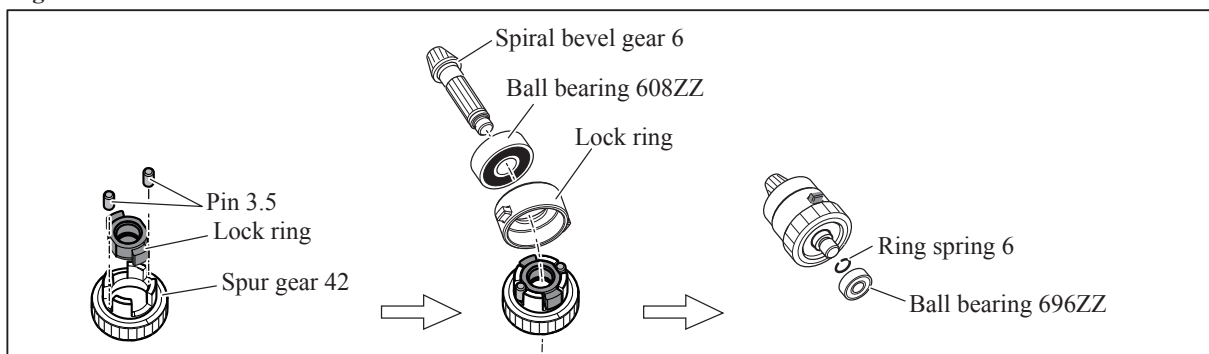
[3] DISASSEMBLY/ASSEMBLY

[3] -3B Spiral bevel gear 6 and Spur gear 42 for DA331D

ASSEMBLING

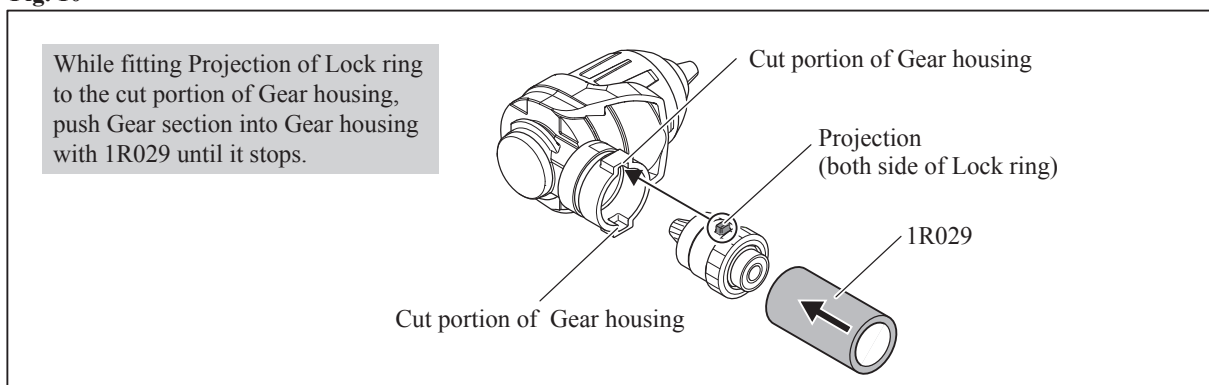
(1) Assemble Spiral bevel gear 6 to Spur gear 42 as drawn in **Fig. 9**.

Fig. 9



(2) Assemble Gear section to Gear housing as drawn in **Fig. 10**.

Fig. 10

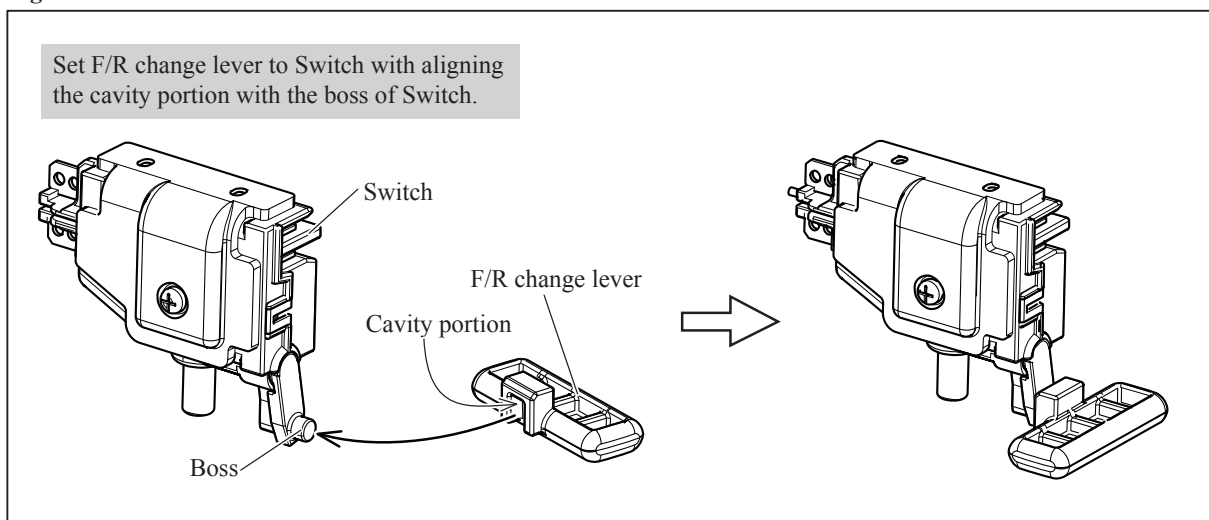


[3] -4 F/R Change Lever of Switch

ASSEMBLING

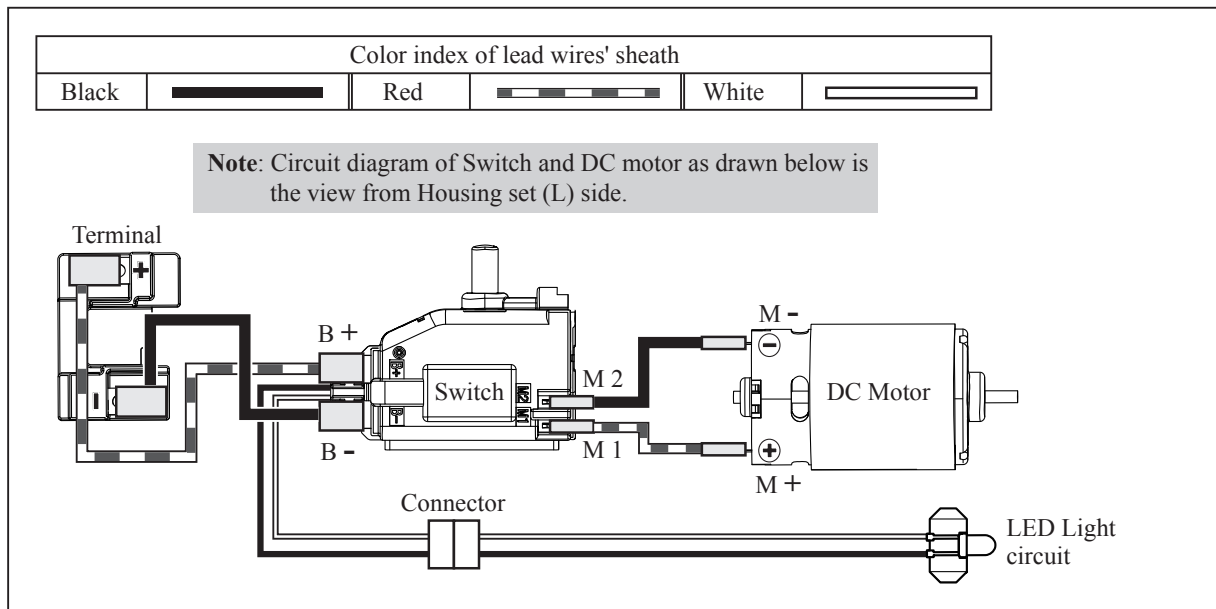
Mount F/R change lever to Switch as drawn in **Fig. 11**.

Fig. 11



► Circuit diagram

Fig. D-1



► Wiring diagram

Wiring to Electrical parts

Fig. D-2

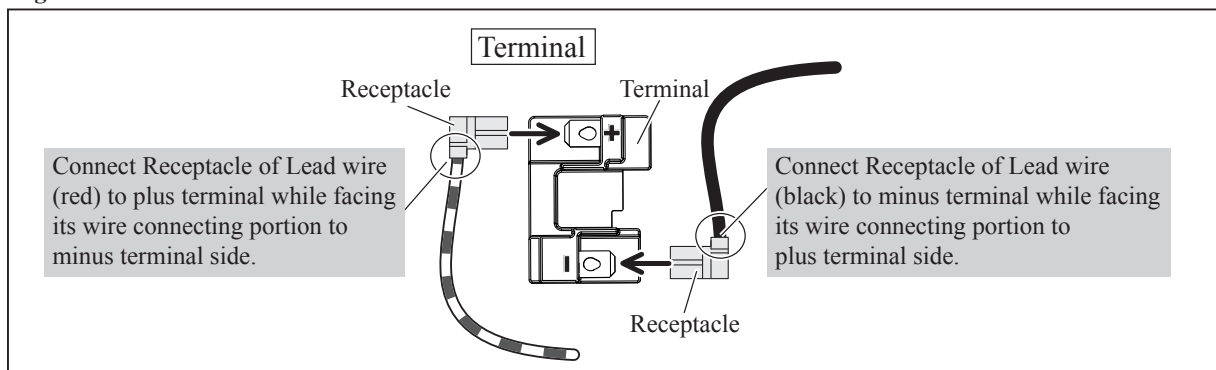


Fig. D-3

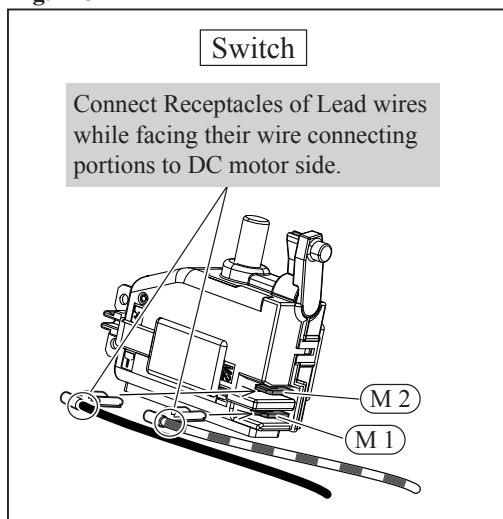
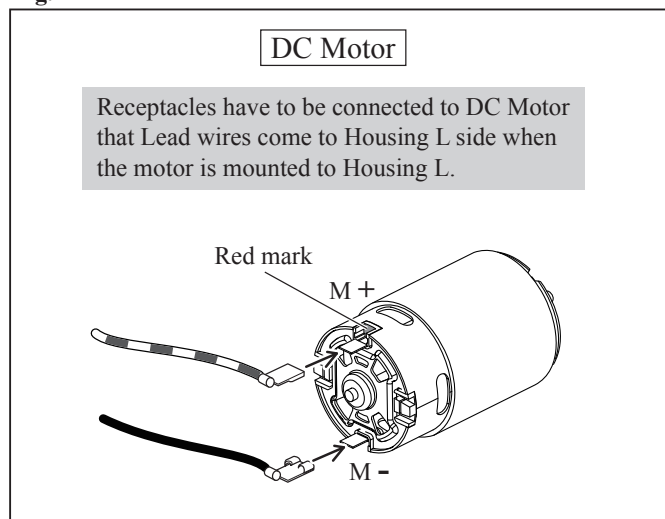


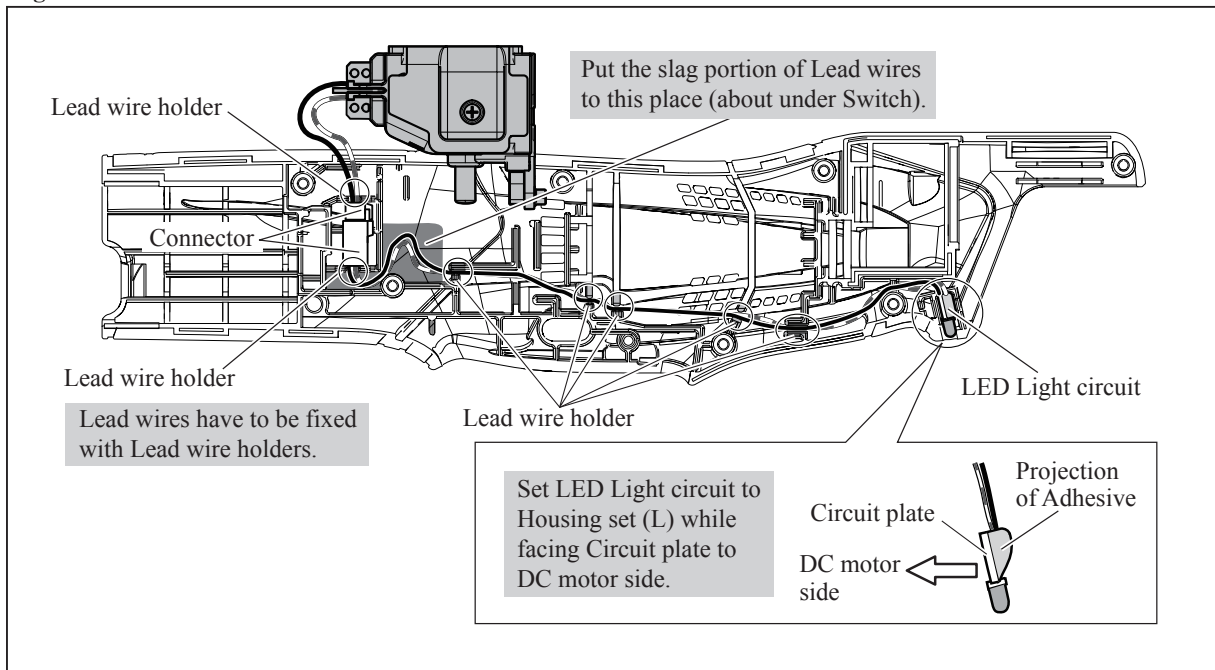
Fig. D-4



► Wiring diagram

Wiring of Lead wires of LED Light circuit (before setting Switch)

Fig. D-5



Wiring in Housing set (L) (After setting Switch and DC Motor)

Fig. D-6

