ECHNICAL INFORMATION

Models No. ▶ BJV140, BJV180

Description Cordless Jig Saw

# **C**ONCEPT AND MAIN APPLICATIONS

Models BJV140 and BJV180 are MAKSTAR cordless jig saws powered by 3.0Ah Li-ion battery, featuring;

• Compact and lightweight design

• The same mechanism as used for the popular AC jig saw Model 4340FCT

These products available in the following variations.

BJV1	40
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(Illustrated above is BJV180.)

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Model No.	Battery		Cl			Dimensions: mm (")	
	type	quantity	Charger	Ollered to		BJV140	BJV180
BJV140	BL1430	2		North America	Length (L)	255 (10)	257 (10-1/8)
BJV140RFE		(Li-ion 3 0Ah)	Z	DC18RA	All countries other than	Width (W)	73
BJV140RF		1		North America	Height (H)	208	(8-3/16)
BJV140Z	No		No	All countries			

#### **BJV180**

N. 1.1.N	Battery		CI	Offered to
Model No.	type	quantity	Charger	
BJV180	DI 1920	2		North America
BJV180RFE	(Li-ion 3.0Ah)		DC18RA	All countries other than
BJV180RF		1		North America
BJV180Z	No		No	All countries

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

# ► Specification

Specification		Model	BJV140	BJV180	
Voltage		: V	14.4	18	
Battery	Capacit	y: Ah	3.0		
	Cell		Li-ion		
Max output (W)			250	340	
No load speed: strokes per min.		kes per min.	0 - 2,600		
Length of stroke: mm (")		m (")	26 (1)		
Capacities: mm (") Steel		Wood*1	135 (5-5/16)		
		Steel	10 (3/8)		
		Aluminum	20 (25/32)		
Net weight*2: kg (lbs)		bs)	2.7 (5.9)	2.8 (6.1)	

\*1 when cutting with optional blade No.B-16L \*2 with battery

## Standard equipment

Jig saw blade assortment 1 set*3	Hex wrench 4	1 pc
Cover plate 1 pc	Dust nozzle	1 pc (for European countries only)
Anti-splintering device 1 pc	Plastic carrying case	1 pc
*3 includes each 2 pcs of B-10, BR-13, B	-22	

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

## ► Optional accessories

Jig saw blades	Hose complete 28-5	Fast charger DC18RA
Guide rule set	Dust nozzle	Charger DC18SC
Guide rail	Battery BL1430 (for BJV140 only)	Charger DC24SA (for North America only)
Guide rail adapter set	Battery BL1830 (for BJV180 only)	Charger DC24SC (for all countries except North America)
Anti-splintering device	-	-

# CAUTION: Remove the jig saw blade from the machine for safety before repair/ maintenance, in accordance with the instruction manual!

## [1] NECESSARY REPAIRING TOOLS

Code No.	Description	Use for
1R235	Round bar for arbor 6-100	Locking Crank complete when removing/fastening
		M4x12 Hex socket head bolt
12201	Retaining ring S and P pliers	Removing/installing Retaining ring S-8 from/on the shaft portion
1K291 Retaining ring 5 and K phers		of Gear housing Complete
1R311	Retaining ring pliers	Removing/installing Retaining ring R-18 from/on Blade holder
1R254	Torque wrench shaft 2-6N.m	
A-33750	Bit adaptor assembly	
1R222	Socket adaptor	Removing/fastening M4x12 Hex socket head bolt from/to Crank complete
1R220	Ratchet head 9.5	
1R228*	1/4 Hex shank bit M4	

\*1R014 (1/4 Hex shank bit M4) can also be used.

## [2] LUBRICATION and ADHESIVE APPLICATION

#### 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
(11)(12)	Linear guide	Groove portion where 28 Slider slides
28	Slider	Groove portion where Needle bearing 407 slides
32	Push pin	Whole surface
35	Rod	Surface that contacts Gear housing cover complete
	Balance plate	Inside surface of the large elliptic hole that contacts Gear complete
(48)		Each inside surface of the three small elliptic holes that contacts corresponding pin on Gear housing complete
50	) Push plate Surface that contacts Retainer	
	_	Surface that contacts Seal plate when Push plate moves downward
(59)	Gear housing complete	Upper, middle and lower portions of gear room
Fig. 1	Gear ho	using cover complete



#### ADHESIVE APPLICATION

Fig. 2

If you remove M4x12 Hex socket head bolt from Crank complete, be sure to apply Loctite 241/242 or Threebond 1321/1342 to the bolt when reinstalling. (**Fig. 2**)



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# ► Repair

# [3] DISASSEMBLY/ASSEMBLY[3] -1. Tool Opener

#### DISASSEMBLING

- 1) Remove Base from Gear housing cover complete by unscrewing M5x18 Hex socket head bolt. (Fig. 3)
- 2) By unscrewing M4 + Pan head screw, Tool opener can be disassembled from Gear housing cover complete together  $(D_{12}, A)$



#### ASSEMBLING

- 1) Put Torsion spring 6 in the through hole of Tool opener, then fasten Tool opener to Gear housing cover complete with M4 + Pan head screw. (Fig. 4)
- 2) Set the end of Torsion spring 6 in place by turning clockwise (viewed from the side of Base) with a small slotted screwdriver or the like. (**Fig. 5**)

#### Fig. 5



# [3] DISASSEMBLY/ASSEMBLY[3] -2. Gear Housing Cover Section

#### DISASSEMBLING

- 1) Remove seven Tapping screws that fasten Handle (R) to Handle (L). (Fig. 6)
- 2) Remove Handles (R) and (L) from Motor housings (R) and (L) as illustrated in Fig. 6A.
- 3) Separate Gear housing cover section from Gear housing complete by unscrewing four CT4x16 Tapping screws.
  - (Fig. 7)

Fig. 6



Fig. 7



# [3] DISASSEMBLY/ASSEMBLY

### [3] -2. Gear Housing Cover Section (cont.)

### DISASSEMBLING

5) Disassemble Gear housing cover section by following the steps 1 to 5 described below in Fig. 8 to Fig. 11.





Fig. 11



ASSEMBLING

1) Assemble Pin 4 (256117-9) and Plane bearing 4 to Leaf spring if they are removed.

- 2) Put Leaf spring in place into Gear hosing cover complete. (Fig. 12)
- 3) Assemble Blade holder section to Gear housing cover complete as illustrated in Fig. 13.



### [3] DISASSEMBLY/ASSEMBLY

## [3] -2. Gear Housing Cover Section (cont.)

## ASSEMBLING

4) Put Slider on Rod while aligning the two holes of Slider with the hole of Rod, and insert Pin 4 (268090-1) through the aligned through holes from left side as illustrated to right in **Fig. 14**.

5) Swivel Slider in the direction of the black arrow, and insert two Linear guides to each side of Slider. (Fig. 15)



- 6) Lay down Linear guides on Gear housing cover complete while lifting up Leaf spring, and place Leaf spring on Linear guides. (Fig. 16)
- 7) Push Slider to the center of Linear guides. Fasten Leaf spring through Linear guides to Gear housing cover complete with two M4x10 Pan head screws, then fasten Linear guides to Gear housing cover complete with the other two M4x10 Pan head screws. (**Fig. 17**)
- 8) Assemble Stop ring E-3 to Pin 4 (268090-1) as illustrated in Fig. 18.
   Note: Check whether Slider reciprocates smoothly on Linear guides. If not, Linear guide(s) can be tilted.
  - In this case, reassemble Linear guide(s) to Gear housing cover complete correctly.





#### Fig. 16

## [3] DISASSEMBLY/ASSEMBLY

#### [3] -2. Gear Housing Cover Section (cont.)

#### ASSEMBLING

- 9) Lubricate the parts assembled to Gear housing cover complete with reference to "Lubrication" in page 2.
- 10) While fitting Needle bearing 407 on Crank complete in the groove portion of Slider, assemble Gear housing cover section to Gear housing complete as illustrated in Fig. 19.
  - Note: Do not forget to put Packing between Gear housing cover complete and Gear housing. (Fig. 7 in page 4)

### Fig. 19



### [3] -3. Blade Holder

#### DISASSEMBLING

- 1) Take out Rod from Gear housing cover section. (Figs. 6, 7 in page 4; Figs. 8, 9, 10 in page 5)
- 2) Remove Dust cover and Retaining ring R-18 as illustrated in Fig. 20.
- 3) Blade holder and Torsion spring 15 can now be separated from Rod. (Fig. 21)
- Note: Be careful not to lose Push pin.

#### Fig. 20



ASSEMBLING

- 1) Apply Makita grease FA No.2 to Push pin. Put Push pin in the hole of Rod, and assemble Torsion spring 15 to Rod as illustrated in Fig. 22.
- 2) Put Rod on Blade holder while aligning Push pin with the mark on Blade holder. (Fig. 23)
- 3) Turn the outward bent end of Torsion spring in the direction of the arrow, and put in the protruding space of Blade holder. (Fig. 24)
- 3) Secure Blade holder with Retaining ring R-18 using 1R311, then assemble Dust cover to Rod. (Fig. 20)



# [3] DISASSEMBLY/ASSEMBLY[3] -4. Balance Plate, Crank Complete

### DISASSEMBLING

- 1) Separate Gear housing cover section from Gear housing complete. (Figs. 6, 7 in page 4)
- 2) Lock Crank complete using 1R235 or the like, and remove two M4x12 Hex socket head bolts. (Fig. 25)
- Note: It is recommended to use impact driver to remove the bolts because threadlocker is applied to them.
- 3) By removing Retaining ring S-8 using 1R291, Balance plate and Crank complete can be disassembled from Gear housing as illustrated in **Fig. 26**.



#### ASSEMBLING

- 1) Assemble Flat washer 8 to the shaft portion of Gear housing complete. (Fig. 27)
- 2) Assemble Seal plate on Push plate. Mount Push plate on Gear complete, then assemble Gear complete to the shaft portion of Gear housing complete. (Fig. 28)
- 3) Lubricate the parts with reference to "Lubrication" in page 2.
- 4) Assemble Balance plate to Gear complete while inserting the three pins of Gear housing complete through the corresponding small elliptic holes of Balance plate. (**Fig. 29**)



# [3] DISASSEMBLY/ASSEMBLY[3] -4. Balance Plate, Crank Complete (cont.)

#### ASSEMBLING

5) Mount Crank complete on the shaft portion of Gear housing complete.

While swiveling Crank complete, push it in the direction of Gear complete to put the raised portion of Crank complete in the hole of Gear complete. The groove for Retaining ring S-8 can now be seen on the end of the shaft portion of Gear housing complete. (**Fig. 30**)





6) Lock Crank complete using 1R235 or the like, and fasten Crank complete with two M4x12 Hex socket head bolts using 1R254, 1R220, 1R222, A-33750 and 1R228 or 1R014. (Fig. 31)

Note: 1. Do not forget to apply threadlocker to the two bolts.

- 2. The recommended fastening torque is 2.4-3.5 N.m.
- 7) Assemble Retaining ring S-18 to the shaft portion of Gear housing complete using 1R291. (Fig. 32)
- 8) Lubricate the parts with reference to "Lubrication" in page 2.



# [3] DISASSEMBLY/ASSEMBLY[3] -5. Armature

DISASSEMBLING

1) Remove Handles (R) and (L) and Gear housing cover section. (Figs. 6, 7 in page 4)

2) Remove Retaining ring S-8 from the shaft portion of Gear housing complete.

By tapping the end surface of Gear housing complete with plastic hammer, remove the assembly of reciprocating mechanism (including Crank complete, Balance plate, Gear complete) from Gear housing complete. (Fig. 33)

- 3) Remove Gear housing complete from Motor section by unscrewing four 4x30 Tapping screws. (Fig. 34)
- 4) Remove Brush holder caps and Carbon brushes from Motor housing.

5) By unscrewing four 4x18 Tapping screws, Motor section can be disassembled as illustrated in Fig. 35.

## Fig. 33 Fig. 34



#### Fig. 35



ASSEMBLING

Do the reverse of the disassembling steps.

**Important:** Yoke unit is not reversible when assembled to Armature. Be sure to assemble so that the red mark of Yoke unit is positioned on the drive-end side of Armature as illustrated to **left in Fig. 36**.

- Note 1: Because Armature is pulled strongly towards Yoke unit by the magnet force of Yoke unit;
  - 1) Be sure to hold the gear portion of Armature as illustrated to left in Fig. 37. Do not hold the Armature core as illustrated to right or your fingers will be pinched between Yoke unit and the fan of Armature.
  - 2) Be careful not to damage the copper wire of Armature.



## [3] DISASSEMBLY/ASSEMBLY

## [3] -5. Armature (cont.)

### ASSEMBLING

Note 2: Place the wire connecting portions upside when assembling Endbell complete to Motor housings (R) and (L) as illustrated in Fig. 38. And route Lead wires of Endbell complete through the space between the cut portions of Motor housings (R) and (L). (Fig. 39)





## [3] -6. Switch

## ASSEMBLING SWITCH LEVER TO SWITCH

Note: Be sure to place both of the two projections of Switch inside Switch lever as illustrated to left in Fig. 40 Fig. 40



# [3] -7. Lever 17

#### DISASSEMBLING

1) Remove Handles (R) and (L) and Gear housing cover section. (Figs. 6, 7 in page 4)

2) Disassemble Lever from Gear housing complete as illustrated in Fig. 41.





# ► Circuit diagram

Fig. 42



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# ► Wiring diagram

#### Wiring in Handle (L)

Route Lead wires as illustrated in Fig. 43.
① Lead wires of Endbell (black): Route between the rib and the boss, and connect to No.M1 terminal of Switch. Note: Be sure to fix with Lead wire holder A.
② Lead wires of Endbell (red): Route between the rib and the boss, and connect to No.M2 terminal of Switch. Note: Be sure to fix with Lead wire holders A and B.

- (3) Lead wire of Switch (black): Connect to minus pole of Terminal Note: Be sure to fix with Lead wire holder A.
- ④ Lead wire of Switch (orange): Connect this lead wire to plus pole of Terminal. Note: Be sure to fix with Lead wire holder A.
- (5) Lead wire of Light circuit:

Route between the pin and the inside wall of Handle (L).



