

# **HIOS®**

## **Brushless Driver BL Series**

### **Operation Manual**

(February 2014)

**BL-2000** (anti-static electricity  
is standard)

**BL-3000**

**BL-5000**

BL-5000-15

BL-5000-20

BL-5020

**BL-7000**

BL-7000HT

BL-7000-20

BL-OPC•BL-ESD•BLQ-CR  
BLQ-ESD•BLQ-CR-ESD  
Suction•BL-SS

## **Hios Inc.**

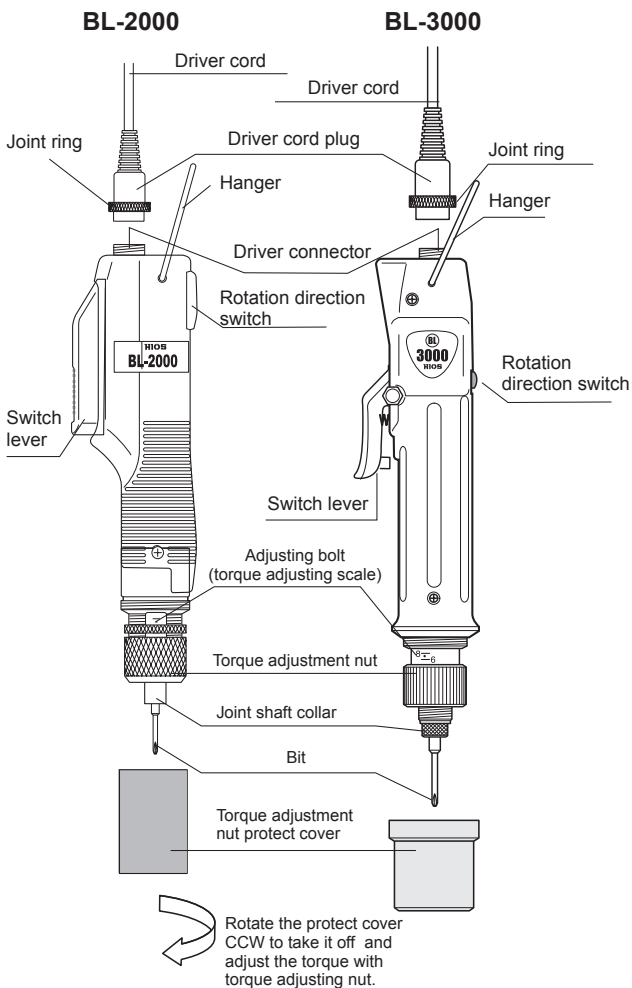
111-6 Akiyama, Matsudo City, Chiba Pref., Japan

TEL: +81 (JAPAN) 47-392-2001

FAX: +81 (JAPAN) 47-392-7773

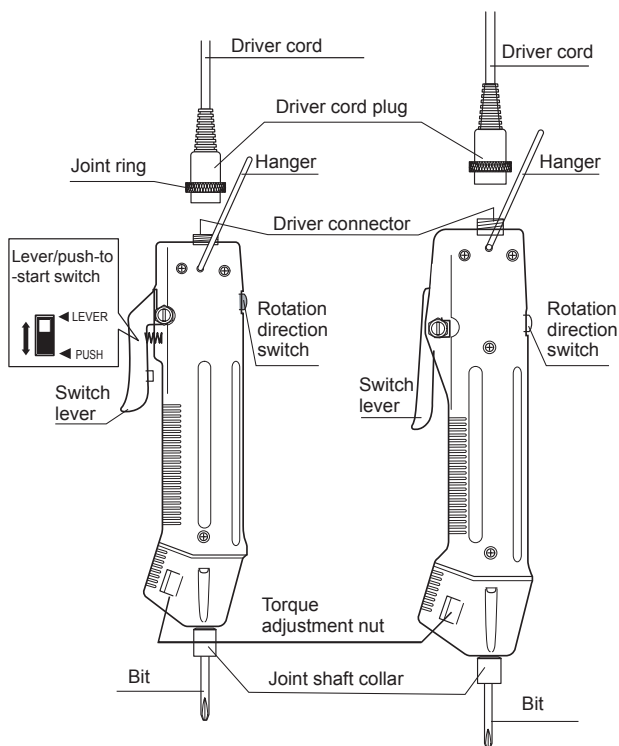
Thank you for your purchase of the BL-2000, BL-3000, BL-5000 or BL-7000 brushless driver.

## 1. Name of Parts



## BL-5000

## BL-7000



## 2. Accessories

- Bits
- Torque adjusting spring
- There are 2 torque adjusting springs for BL-2000. In the BL-2000, stronger spring(Black) is installed. If you want to use weaker spring then replace with accessory(Yellow) spring. Select the spring depends on your fastening torque.
- Hex nut L wenchers (for BL-5000, BL-7000)

## ■ Specifications

### BL-Series (BL-OPC•BL-ESD•BLQ-CR•BLQ-ESD•BLQ-CR-ESD•BL-SS)

Lever start type Model		BL-2000 BL-2000SS	BL-3000 BL-3000SS*	BL-5000 BL-5000SS	BL-5000-15	BL-5000-20
Push-to start type Model		—				
Output torque range	N•m	0.02 - 0.2	0.2 - 0.55 0.2 - 0.35*	0.2 - 1.2	0.2 - 1.2	0.2 - 1
	lbf•in	0.17 - 1.7	1.7 - 4.8 1.7 - 4.8*	1.7 - 10	1.7 - 10	1.7 - 8.7
	(kgf•cm)	(0.2 - 2)	(2 - 5.5) (2 - 3.5)*	(2 - 12)	(2 - 12)	(2 - 10)
Torque Switching		Stepless Adjustment				
Unloaded Rotation Speed(r.p.m)±10%	HI	990	980	900	1,500	2,200
	LOW	650	680	590	1,000	1,500
Screw size	Machine Screw	1.0 - 2.3	1.7 - 2.3	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
	Tapping screw	1.0 - 2.0	2.0 - 2.3	2.0 - 3.0	2.0 - 2.6	2.0 - 2.6
Weigh (g)		254	320	360	360	360
Bit type	HIOS Shank	H4	H4	H4	H4	H4
	HEX Shank	—	1/4 HEX	H5 & 5 HEX or 1/4 HEX	H5 & 5 HEX or 1/4 HEX	H5 & 5 HEX or 1/4 HEX
Cord Length (attached cord table according to the type)	Standard	A	B	B	B	B
	BL-OPC	D	E	E	E	E
	BL-ESD	A	A	A	A	A
	BLQ-CR	F	H	H	H	H
	BLQ-ESD	F	F	F	F	F
	BLQ-CR-ESD	F	F	F	F	F
	BL-SS	A	B	B	—	—

Lever start type Model		BL-5020	BL-7000	BL-7000HT	BL-7000-20
Push-to start type Model		—			
Output torque range	N•m	0.5 - 2	0.7 - 2.8	0.7 - 3.5	0.5 - 1.5
	lbf•in	4.3 - 17.4	6.1 - 24	6.1 - 30	4.3 - 13
	(kgf•cm)	(5 - 20)	(7 - 28)	(7 - 35)	(5 - 15)
Torque Switching		Stepless Adjustment			
Unloaded Rotation Speed (r.p.m)±10%	HI	750	960	700	2,200
	LOW	500	630	500	1,500
Screw size	Machine Screw	2.0 - 4.0	2.6 - 5.0	2.6 - 4.0	2.6 - 4.0
	Tapping screw	2.0 - 3.0	2.6 - 4.0	2.6 - 4.0	2.6 - 4.0
Weigh (g)		360	640	640	640
Bit type	HIOS Shank	H5 & 5 HEX	H5 & 5 HEX	H5 & 5 HEX	H5 & 5 HEX
	HEX Shank	1/4 HEX	1/4 HEX	1/4 HEX	1/4 HEX
Cord Length (attached cord table according to the type)	Standard	B	C	C	C
	BL-OPC	E	E	E	E
	BL-ESD	A	A	A	A
	BLQ-CR	H	I	I	I
	BLQ-ESD	F	F	F	F
	BLQ-CR-ESD	F	F	F	F
	BL-SS	—	—	—	—

- Output torque range and rotational speed in the above specifications is for Model BL-2000, BL-3000 driver, using the T-30BL power pack or driver Models BL-5000 and BL-7000, using the T-70BL power pack.

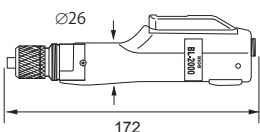
## ● Reference of attached cord for drivers

Type	Attached Cord	Type	Attached Cord
A	2m Cord ESD Type (5P)	F	2m Cord ESD Type (5P) & include ESD Vinyl tube
B	1.5m Cord Type (5P)	G	2m Cord ESD Type (5P) & include Vinyl tube
C	2m Cord Type (5P)	H	1.5m Cord Type (5P) & include Vinyl tube
D	2m Cord ESD Type (6P)	I	2m Cord Type (5P) & include Vinyl tube
E	2m Cord Type (6P)		

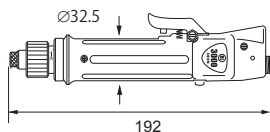
\* The applicable cord especially for OPC is 6PIN type. (\*Regular cord is 5PIN type) Combination type screw driver (ex. ESD+OPC) is attached applicable type cord (2m).

## ● External Dimensions

BL-2000

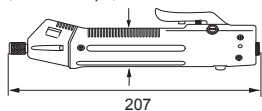


BL-3000



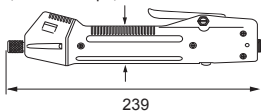
BL-5000

Max.Ø38 Min.Ø26  
(WD cut shape)



BL-7000

Max.Ø40 Min.Ø36  
(WD cut shape)



## ■ Power Supplies

The Brushless Driver must be operated together with a Power Pack.

Powering the Brushless Driver with the Hios T-30BL and the T-70BL Power Pack will insure operation of the driver at its full capacity.

## ● BL driver and Power Pack combinations

Power Pack Model		Max. number of drivers			
		BL-2000	BL-3000	BL-5000	BL-7000
Power Pack for Brushless Driver	T-30BL	1	1		
	T-70BL	1	1	1	1

## ■ Cautions to Observe When Using

1. In push-to-start mode, the driver will begin turning in response to only a slight pressure. Take care that it is under complete control when in push-to-start mode.
2. The driver can be damaged by accidental falls or impacts.
3. Take care to avoid exposing the driver to oil based

substances.

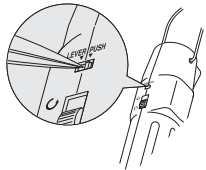
4. The driver does not require lubrication and should not be lubricated.

## ■ Pre-operating Preparations

1. Check that the proper Power Pack is being used with the driver.
2. Connect the Power Pack to plug AC100 to 240 V .
3. Turn the power switch on, check to see that the power switch light of the Power Pack goes on, then switch the power off. If the light didn't go on, replace the fuse with the spare provided with the pack, referring to the Power Pack specifications.
4. If you want to use as "Push start", follow the instructions "5" below.
5. To operate in Push-to-start Mode.

### BL-3000

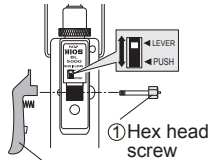
Use tweezers to switch lever start/ push start.



### BL-5000

Rotate ① the hex head screw to detach ② the switch lever and set the start switch to the "PUSH" position.

Use it without attaching the hex head screw and the switch lever.



### BL-7000

Rotate the hex head screw to detach the switch lever (Fig-1) and reattach the switch lever upsidedown. (Fig-2)

Fig-1

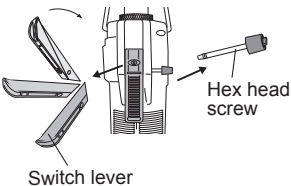
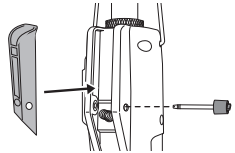


Fig-2



To convert the starting mechanism from lever-start to push-to-start, remove the hex head screw and switch lever, turn the switch lever upside-down and use the hex head screw to re-fasten the switch lever.

6. Connect the driver power cord to the Power Pack. (Both ends of this cord have the same type of connector. Be sure that the interlocking guide fits together properly and tighten the joint ring.)

## ■ Operating Procedure

1. Attach a bit to the driver. (See "Attaching a Bit" below)
  - If using model BL-3000, remove the torque adjustment nut cover before attaching a bit.
2. Set the driver to clockwise or counter-clockwise rotation as desired, then push the switch lever to check that the driver turns in the correct direction. After checking, be sure the switch is left on the clockwise setting.

**Caution: Always turn the power off before reversing the rotation direction setting.**

3. Make the desired torque adjustment setting. (See "Torque Adjustment" below.)
4. Begin fastening by fitting the end of the bit to the head of a screw to be tightened and pulling the switch lever.
  - In push-to-start mode, the driver automatically goes on when pressure is applied to the bit end.
5. The clutch will immediately stop rotation when the preset torque level is reached. At this point, raise the driver from the screw and release the switch lever. Repeat this cycle for each tightening operation.
  - In push-to-start mode, do not raise the driver from the screw head until rotation has stopped.
6. Set rotation direction to counterclockwise to loosen a screw. Very tightly fastened screws can be loosened by repeatedly applying the driver to the screw to obtain short bursts of rotation force.

## ■ Attaching a Bit

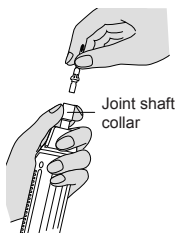


### Caution

Be sure to either turn the power switch off or disconnect the power cord before attempting to change bits. Failure to do so could be especially dangerous if the driver is set to push-to-start mode. In either case, unexpected start up of the driver could result in injury.

If using model BL-3000, BL-5000 or BL-7000, raise the joint shaft collar at the bottom of the tool, then insert the bit.

- As for BL-2000, press the Joint-shaft collar towards inside of the screwdriver and insert the bit.
- If using model BL-3000, push the joint shaft collar into the tool to attach the bit. Then pull on it to be sure it is properly attached.



## ■ Torque Adjustment

Torque is controlled by the tension on a spring inside the torque adjustment nut. If set the nut tighter, the output torque is higher.

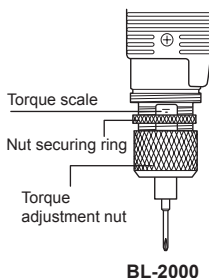
- The adjustment torque scale does not give the actual output torque. Please regard the output torque graph as an approximate guide.

## ■ Torque Adjustment Procedure

1. If you have a predetermined torque value, set that value on the scale using the torque adjustment nut.
- The BL-2000 Electric Screwdriver have 'Double nut system' (Nut fixing ring and Torque adjusting nut) to avoid loosening from shock or vibration to the Screwdriver.

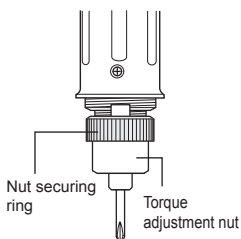
### ● BL-2000

- At first, keep the Nut fixing ring to fit the scale at which, if you want to adjust.
- Then turn the Torque adjusting nut toward the Nut fixing ring.
- Lastly, to avoid the loosening of the 'Torque adjusting nut fasten strongly the Nut fixing ring by holding the 'Torque adjusting nut'.



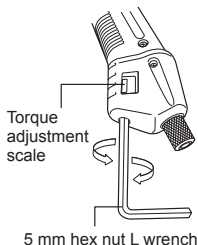
### ● BL-3000

If using model BL-3000, make the setting by pushing the nut collar upwards, removing the torque adjustment nut and turning it so the point over the nut aligns with the groove.



### ● BL-5000, BL-7000

If using model BL-5000 or 7000, set the torque adjustment nut using the hex wrench that is provided.





2. Turn the driver on and tighten a screw to check that the driver stops at a satisfactory level of tightness.
3. Readjust the torque setting, tighter or looser, as necessary. Repeat the procedure until you arrive at the desired torque setting.

It is recommended that a Hios torque meter be used to measure torque. Use the HP series for measurement of the driver's torque setting and the HDP series or the HDM series to measure loosening or tightening torque of screws.

## ■ If Repairs are Requested

Check the items listed in the table below, and if a malfunction is found, contact your store of purchase of our company.

Always include your warranty card when sending in the driver for repairs.

Symptoms	Cause and Treatment
The driver motor sometimes fails to operate	• Is the cord severed?
	Stop any work and request repairs.
The driver is weak and cannot tighten screws sufficiently	• Is the torque setting at the correct position?
	Refer to the output torque guidance

## ■ Approximate Guidance of Output Torque (during HI input)

