



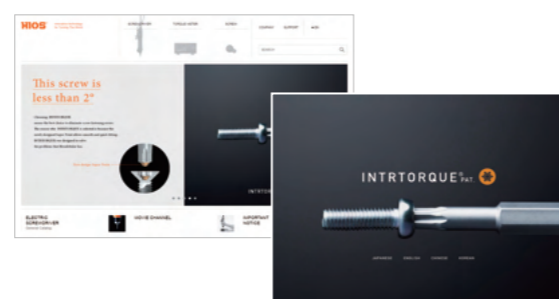
Brushless Screwdriver with built-in torque sensor

PGF Series

Introduction of the Series to Promote Automation

HIOS PAT. Screws Series

- Since these screws don't easily come out, they can be fastened with little thrust.
- Since their fitting is good and holding force is high, side fastening also can be done. The frequency of temporary stops will be reduced.
- Optimal for special screws in line with weight reduction and space saving of products.



INTRTORQUE INTRCAP INTRGRIP TOTSUPULA

<http://www.hios.com>

HIOS Inc.

Head Office: 1-35-1 Oshiage, Sumida-ku, Tokyo, 131-0045, Japan Phone: +81 (Japan)3-6661-8807 (Direct access to Fastener Section)
 Osaka Branch: 18F Naniwasuji SIA Building, 2-4-2 Shinmachi, Nishi-ku, Osaka City, 550-0013, Japan Phone: +81 (Japan)6-6533-0903
 Nagoya Branch: 8F Kirix Marunouchi Building, 1-17-19 Marunouchi, Naka-ku, Nagoya City, Aichi Prefecture, 460-0002, Japan Phone: +81 (Japan)52-219-5566
 Yamagata Factory: 5 Takagi, Yamagata City, Yamagata Prefecture, 990-2346, Japan Phone: +81 (Japan)23-645-8100
 Logistics Center: 1-16-5 Akiyama, Matsudo City, Chiba Prefecture, 270-2223, Japan Phone: +81 (Japan)47-330-8766
 HIOS (SHENZHEN) CO., LTD. 1302, Block B, Sunshine Science and Technology Innovation Center,
 Nanxin Rd, Nanshan District, Shenzhen China 518000 Phone: +86 (China) 755-26674278



ISO 9001:2015 Headquarters/Yamagata Factory ISO 14001:2015 Headquarters/Yamagata Factory

* Specifications and appearance of the products are subject to change without notice. * The contents in the catalog are based on information available as of May 2018. Catalog number: PGF_EN(18A)

Is that screw properly tightened?

Pass Guard tightens, judges and records.

Our brushless screwdrivers for automatic machines are highly durable and constantly demonstrate stable torque accuracy; they can be mounted on a robot, having a great effect on the automation and streamlining of the assembly line.

PGF Series

- The built-in torque sensor judges (OK/NG) for every screw fastening.
- The problems that are difficult to see such as insufficient torque, cross threaded and floating screw can be detected.
- The screw fastening operation data can be output to PLC or PC.
- The forward rotation, reverse rotation and rotation speed of the screwdriver can be externally controlled.

PGF-3000



PGF-5000



PGF-7000



Control Unit : PG-01

It reads the data from the torque sensor and judges OK/NG in real time.



External dimensions (W×D×H)	149×120×49mm
Weight	520g
AC adapter	Input : AC100V-AC240V (50-60 Hz), Output : DC12V

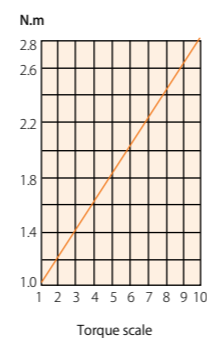
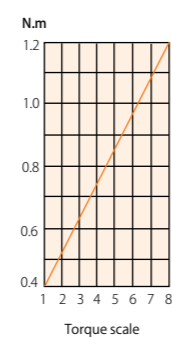
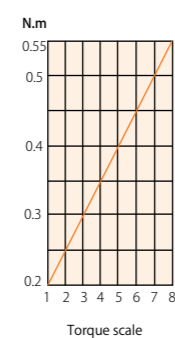
Specifications

Model Name		PGF-3000	PGF-5000	PGF-7000
Output Torque Range	N·m	0.2-0.55	0.4-1.2	1.0-2.8
	(kgf·cm)	(2-5.5)	(4-12)	(10-28)
Torque Switching		Stepless adjustment	Stepless adjustment	Stepless adjustment
Free run Rotation Speed (r.p.m)	HI (11 steps)	625-950	690-985	645-935
	LOW (11 steps)	115-325	115-320	210-595
Screw Size (mm)	Machine Screw	1.7-2.3	2.0-3.0	2.6-5.0
	Tapping Screw	2.0-2.3	2.0-2.3	2.6-4.0
Bit Drive	HIOS Shank	H4	H4	H5 and 5HEX
	HEX Shank	—	—	1/4HEX
Power Supply		BLT-AY-61	BLT-AY-61	BLT-AY-71
Dimensions	Grip(φ)	40	40	40
	Length(mm)	190	218	230
Weight		363g	494g	809g

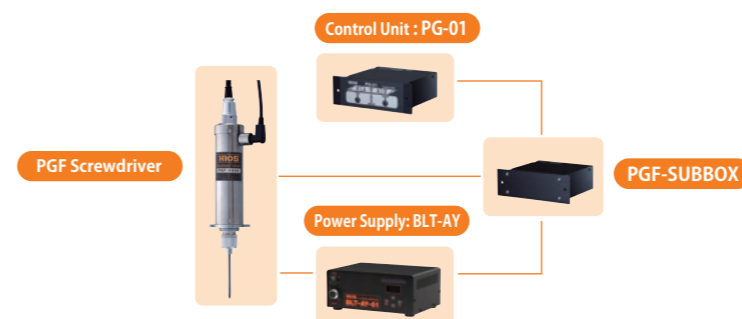
Accessories

Screwdriver Cord (3 m)/Sensor Cord (3 m)/CD-ROM×2/PGF-SUBBOX/Cord for PGF-SUBBOX (40 cm)/Start/Torque-up Cable (50 cm)/I/O Flat Cable (30 cm)/AC Adaptor (1.5 m)/RS-232C Cable (2 m)/Spare Fixing Inch Screws×4/USB→USB / RS-232C Converter (35 cm)

Output torque guide (HI input)



Configuration of PGF



PG-01 judges and outputs the result.

Setting the reference values for OK/NG criteria

Setting the reference values for OK/NG criteria

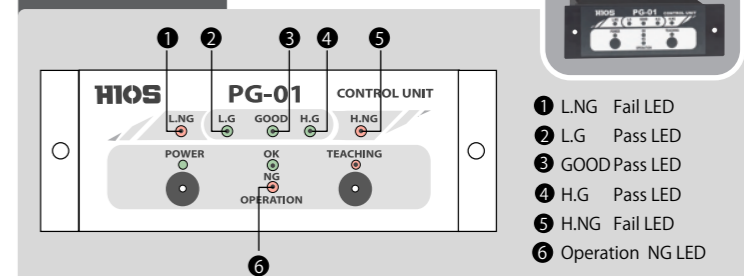
OK/NG criteria are determined by recording the maximum and minimum values of the torque and operation time in the memory.

Set the acceptable range

Select the acceptable percentage (0, 2, 5, 10, 15 or 20%) for the maximum and minimum values of the torque and operation time.



PG-01 / Front Panel



Real operation

Every screw fastening can be judged in real time.

Judgement

OK/NG results are confirmed with the LED light and buzzer of PG-01.

The torque data is output to PC/PLC.

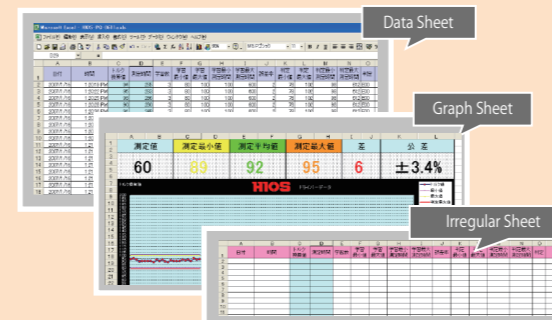
OK/NG Criteria

NG	LG	GOOD	H.G	H.NG
Lower than the L.G Min. value	Minus Tolerance	OK Criterion	Plus Tolerance	Higher than the H.G Max. value
← NG	OK			NG →

Record the data with software

By using the attached software, you can check OK/NG of screw fastening in real time and record measurement data.

Data Taking-in Sheet/EXCEL



Collection of Screwdriver Data / Application





Suction (Vacuum) Attachment PGFQ Type

Option

(A) Mouthpiece

F3 Standard 18 mm (total length)		Diagram of Mouthpiece				
PGFQ-3000 PGFQ-5000		<p>Table of Mouthpieces and Fasteners Standard parts are of BS only.</p>				
Order No.	Standard Mouthpiece Dimensions (mm)			Type of screw head configuration		
	D	d	d1	JIS Cross recess head (Small Screw)	JCIS Cross recess head	JIS Slotted head (Small Screw)
F3-00	7.5			User-finished part	User-finished part	User-finished part
F3-01	3.3	2.1	2.1		type 1 M1.4	
F3-02	3.6	2.6	2.6		type 1 M1.7/type 3 M1.4	
F3-03	4.1	3.1	3.1		type 1 M2.0/type 3 M1.7	
F3-04	4.6	3.6	3.6	Pan, Round M2.0	type 1 M2.3/type 3 M2.0	Pan, Round, Flat M2.0/Countersunk, Oval countersunk M1.7
F3-05	5.1	4.1	4.1	Pan, Round M2.3/Countersunk, Oval countersunk M2.0	type 1 M2.6/type 3 M2.3	Countersunk, Oval countersunk M2.0
F3-06	5.8	4.3	4.5	Pan, Round M2.6	type 3 M2.6	Binding M2.0
F3-07	7.0	4.3	5.5	Pan, Round M3.0/Binding M2.6		Pan, Round, Flat M3.0/Binding M2.6
F3-10	5.5	4.3	4.3	Binding M2.0		Pan, Round, Flat M2.3
F3-11	6.0	4.0	4.9	Binding M2.3		Binding M2.3
F3-15	3.8	2.8	2.8			Pan, Round, Flat M1.4
F3-16	3.5	2.5	2.5			Countersunk, Oval countersunk M1.2
F3-17	4.3	3.3	3.3			Pan, Round, Flat M1.7

● Consult us for special order products with other lengths or dimensions. ● Mouthpieces are supplied in packs of three.

F6 Standard 31 mm (total length)		Diagram of Mouthpiece						
PGFQ-7000		<p>Table of Mouthpieces and Fasteners Standard parts are of BS only.</p>						
Diagram	Order No.	Standard Mouthpiece Dimensions (mm)					Type of screw head configuration	
		D	D1	d	d1	d2	JIS Cross recess head (Small Screw)	IS Slotted head (Small Screw)
ⓑ	F6-00	8.0					User-finished part	User-finished part
Ⓐ	F6-01	4.6	7.0	3.5	3.6	5.5	Pan, Round M2.0	Pan, Round M2.0
	F6-02	5.1	7.0	3.5	4.1	5.5	Pan, Round M2.3/Countersunk, Oval countersunk M2.0	Pan, Round M2.3
	F6-03	5.8	7.0	3.5	4.5	5.5	Pan, Round M2.6/Binding, Truss M2.0	Binding, Truss M2.0
ⓑ	F6-04	7.0	-	5.5	5.5	-	Pan, Round M3.0/Binding M2.6	Pan, Round M3.0/Binding M2.6
	F6-05	7.5	-	5.5	6.0	-	Countersunk, Oval countersunk M3.0	Truss M2.6
	F6-06	8.5	-	5.5	7.0	-	Pan, Round M4.0/Truss M3.0	Pan, Round M4.0/Truss M3.0
Ⓐ	F6-09	6.5	7.0	3.5	5.2	5.5	Countersunk, Oval countersunk M2.6	Truss M2.3
ⓑ	F6-10	14.0					User-finished part	User-finished part
	F6-11	7.7	-	5.5	6.3	-	Binding M3.0	Binding M3.0
	F6-13	9.7	-	5.5	8.3	-	Binding M4.0	
	F6-16*	9.4	-	5.5	8.0	-	Countersunk, Oval countersunk M4.0	
	F6-22*	9.7	-	7.5	8.3	-		Binding M4.0

※special order ● Consult us for special order products with other lengths or dimensions. ● Mouthpieces are supplied in packs of three.

(B) Compatible Bits

H4(∅4) Total length 80mm		Diagram of Bit	
PGFQ-3000 PGFQ-5000			
Head recess	Screw size	Adaptive screwdriver bit	Order code
JIS Cross recess head	M2.0-M2.6	BP-H4- # 1-3.0-80	BP4130080
	M3.0	BP-H4- # 2-4.0-80	BP4240080
JCIS Cross recess head	M1.4種 1種M1.4-M1.7	BP-H4- # 0-1.8-80	BP4018080
	M2.0-M2.6	BP-H4- # 0-2.0-80	BP4020080
	M1.2	BP-H4- # 0-2.5-80	BP4025080
JIS Slotted head	M1.4	BS-H4-2.0-80	BS420080
	M1.7-M2.0	BS-H4-2.5-80	BS425080
	M2.3-M3.0	BS-H4-3.0-80	BS430080
		BS-H4-4.0-80	BS440080

● If you want to fit the screwdriver to the screws you are using, please contact us about the mouthpiece and the bit length.

H5(∅5) Total length 100mm		Diagram of Bit	
PGFQ-7000			
Head recess	Screw size	Adaptive screwdriver bit	Order code
JIS Cross recess head	M2.0-M2.6	BP-H5- # 1-3.0-100	BP5130100
	M3.0-M5.0	BP-H5- # 2-5.0-100	BP5250100
JCIS マイナスねじ	M3.0-M4.0	BS-H5-5.0-100	BS550100

● Truss: use + #1 for M3.0. ● If you want to fit the screwdriver to the screws you are using, please contact us about the mouthpiece and the bit length.

For deeply recessed screws

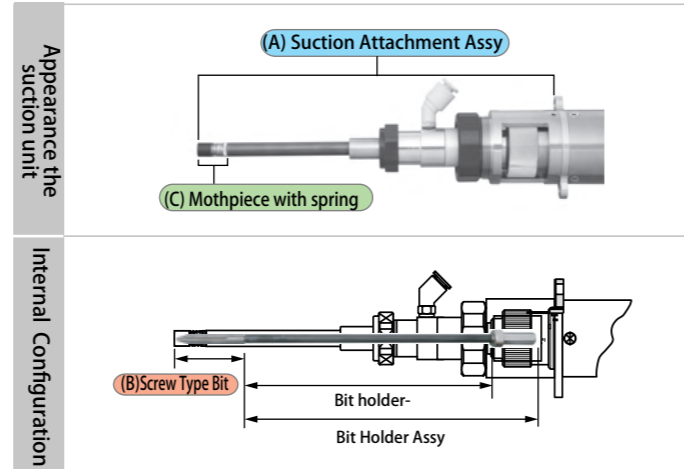
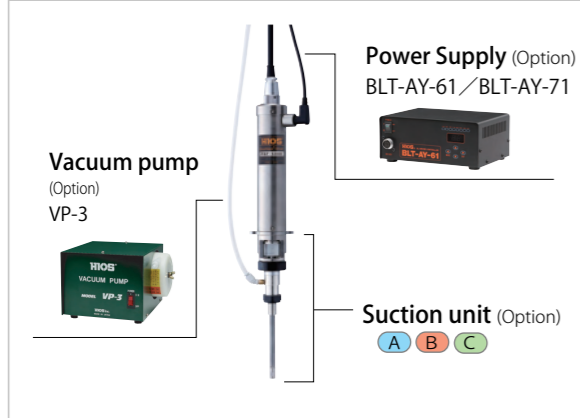
Special order PGFR Type

Option

Optimal for fastening deeply recessed screws. Torque adjustment can be performed without removing the suction attachment. There are 2 types of those. One is a self-adjustable inner mouthpiece type. The other one is a self-adjustable outer mouthpiece type. There is another special mouthpiece that does not touch work piece which prevents work piece from damaging. The long Bit Holder prevents cross threaded screws.

Compatible models PGF-5000 / PGF-7000

Construction of Suction (Vacuum pick up) Screwdrivers



List of Suction(Vacuum) attachment / Option

Mode	(A) Suction Attachment ASSY*	(B) Screw Type Bit			(C) Mouthpiece with spring
		Tip Shape	Tip Shape	Length	
PGFR-5000	PGFR5-SA	+	# 1 RBP4140S # 2 RBP4240S	40mm	See page 8
PGFR-7000	PGFR7-SA	+	# 1 RBP4140S # 2 RBP4240S	40mm	

* Vinyl tube is not included. Available as option: RM-0850, order by the meter) [Hose size] Inner diameter \varnothing 4.6 × Outer diameter \varnothing 6

Advantages of PGFR suction

	Prevent interference with the workpiece	Prevent slanted fastening	Highly versatile mouthpiece
PGFR (for deeply recessed screws)	<p>The mouthpiece reaches far into the hole without hitting the workpiece</p> <p>Even if the hole diameter is almost equal to the screw head diameter, you can fasten the screw.</p>	<p>Because the support point is high, the screw doesn't slant.</p> <p>Example: The hole is 1.5 mm out of the target position for a 4 mm screw.</p>	<p>Common mouthpiece</p>
Conventional model	<p>The mouthpiece hits the workpiece, you cannot fasten the screw.</p>	<p>Because the hole is out of the target position, the screw slants.</p> <p>Example: The hole is 1.5 mm out of the target position for a 4 mm screw.</p>	<p>Dedicated mouthpieces</p>

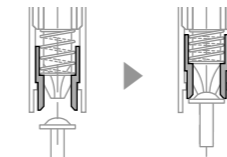
(C) Mouthpiece with spring

Variations of spring-type mouthpiece

The spring-type mouthpiece has two variations: with a movable inner sleeve and a movable outer sleeve. Select one according to your needs. How to Read the Part No.

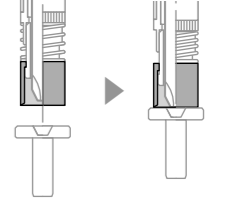
Movement of the Inner Sleeve Type

When a screw and the bit are fitted by vacuum pressure, the sliding mouthpiece moves horizontally to keep the screw vertical and supports the screw head.



Movement of the Outer Sleeve Type

When a screw and the bit are fitted by vacuum pressure, the sliding mouthpiece moves horizontally to keep the screw vertical and supports the screw head. Since the diameter of the mouthpiece is smaller than the outer diameter of a screw, it is good for screw tightening in a tight space.



P/N: FS61-68	P/N: FS61-74	P/N: FS61-68S

P/N: FS60-68J / FS60-68A	P/N: FS60-80J

Identification of the BLFR Mouthpiece Order Code

FS60-80J

1 2 3 4 5 6

1	Type: F3, F6
2	with spring
3	Classification of screwdriver torque range
4	Movable sleeve: outer (0), inner (1)
5	I/D (example: 80 stands for 8.0)
6	Material and shape: J: Duracon, A: aluminum, S: stepped

Adaptive screw size indications

Model	Size	M2.6			M3.0			M4.0		
	Screw type	Pan	Binding	Truss	Pan	Binding	Truss	Pan	Binding	Truss
PGFR-5000							FS60-68J FS60-68A	FS60-68J FS60-68A	-	-
PGFR-7000			FS61-68 FS61-68S		FS61-68 FS61-68S		FS61-68S FS61-74	FS61-68S FS61-74	FS60-80J	

Special products to be able to hold small screws (less than 2.6mm) are available. Contact us for details. It may take some time for the delivery of the products with special specifications depending on inventory. Contact us before placing an order.

For deeply recessed screws

Special order **PGFR Type**

Option

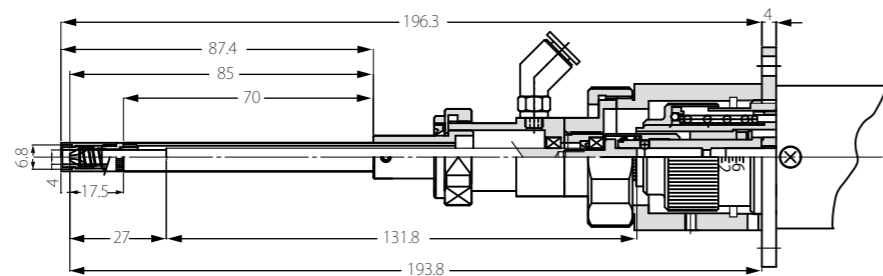
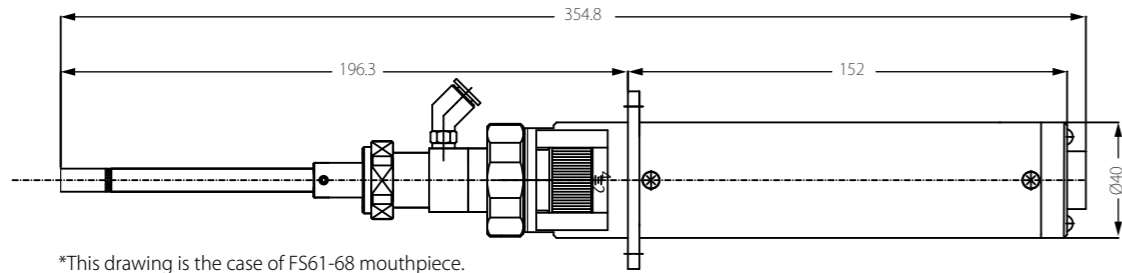
Dimensions of PGFR Type

DXF File

Details of the dimensions are available from HIOS web site as dxf format. www.hios.com

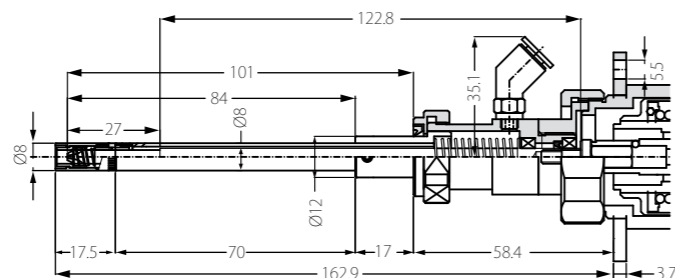
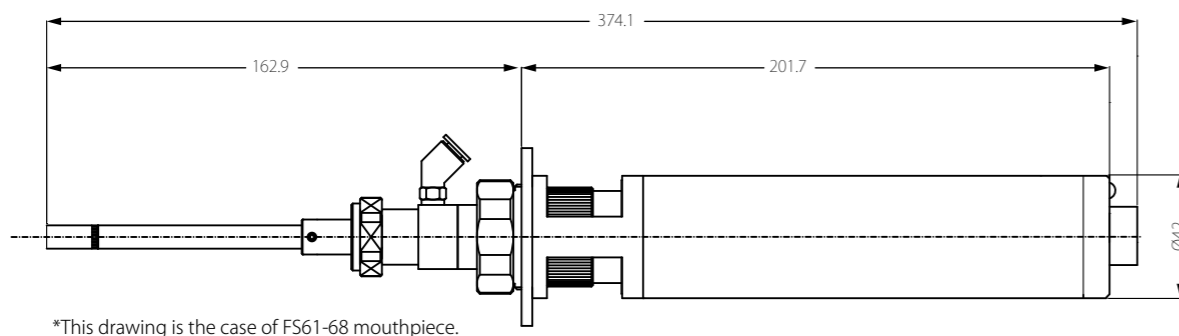
PGFR-5000

Unit : mm



PGFR-7000

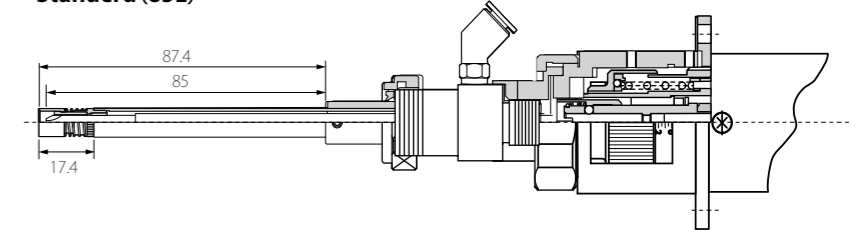
Unit : mm



Variations of PGFR

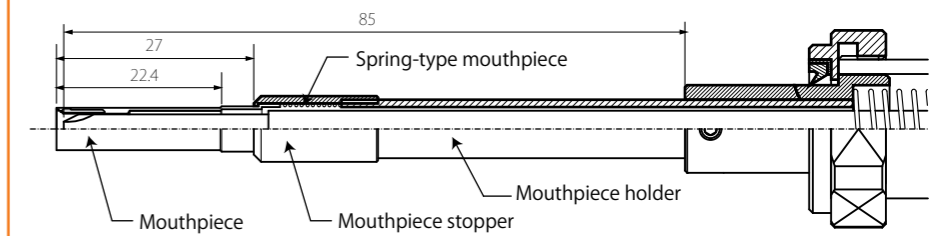
● The standard length of the mouthpiece and its holder is 85L. There are other special options including 32L, 56L, 60L, 95L, 100L and 125L.

Standard (85L)



● The mouthpiece with a deep hole comes in 41L and 61L in addition to the standard 27L.

● There is also a special option to fasten deeply recessed small screws (less than 2.6 mm).



*Please note that the vacuum pressure of the special variation tends to be weak because of its thinner mouthpiece tip.

* It may take some time for the delivery of the products with special specifications depending on inventory. Contact us before placing an order.



Accessories

BLF Damper Unit

BLF-DP

This unit absorbs the impact against the workpiece while the Z-axis is descending and reduces the load on screw and screwdriver.



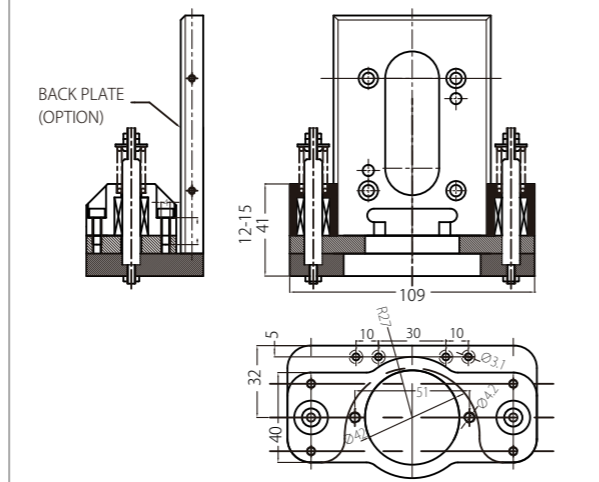
Thrust Load Specifications

Initial load 0mm	Approx. 0.12N · m (1.2kgf · cm or 1.0 lbf · n)
Stroke 7mm	Approx. 0.6N · m (1.2kgf · cm or 5.3 lbf · n)

DXF File

Details of the dimensions are available from HIOS web site as dxf format.
www.hios.com

Dimensions of Dumper unit



Power supply

The power supply unit enables you to control the forward or reverse rotation of the screwdriver via an external device such as PLC. Moreover, it enables you to switch the screwdriver's rotation speed to low or high.

Model: BLT-AY-61 (for one screwdriver)

Multiple input (AC100V-240V)
Applicable screwdrivers:
PGF-3000
PGF-5000



Primary input power source	AC100-240V, 47-63Hz
Secondary output voltage	LOW: 5V-15V, HI: 20V-30V (LOW and HI: switchable in 11 steps each)
External dimensions (mm)	202(W) × 143(D) × 87(H)mm
Weight (Kg)	1.75kg
Accessories	Power supply cord 1.8m with ground wire (1pc), Terminal block connector 1pc
Plug Type	A-1/A2/A3/C/BF/S

Model: BLT-AY-71 (for one screwdriver)

Multiple input (AC100V-240V)
Applicable screwdrivers:
PGF-7000



Primary input power source	AC100-240V, 47-63Hz
Secondary output voltage	LOW: 5V-15V, HI: 20V-30V (LOW and HI: switchable in 11 steps each)
External dimensions (mm)	202(W) × 143(D) × 87(H)mm
Weight (Kg)	1.75kg
Accessories	Power supply cord 1.8m with ground wire (1pc), Terminal block connector 1pc
Plug Type	A-1/A2/A3/C/BF/S

* For left hand screws, please contact HIOS distributors.

* The power supply should be compatible with your screwdriver. Please check the combination before purchase.

Driver Cord

BLF7-0612-VI (Standard)

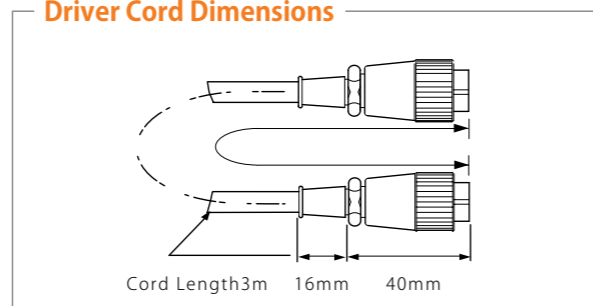
Flexible cord that endures kinking and bending.



Specifications

Cord length	3m(10P)
Weight	320g

Driver Cord Dimensions



Plug type

Type A-1 100V		Type C 220V-240V	
Type A-2 120V		Type BF 220V-240V	
Type A-3 220V-240V		Type S 220V-240V	

For Suction type screwdrivers Vacuum Pump

VP-3

A vacuum is generated to pick up and hold the screw on the bit tip.



Specifications

Primary input power	AC100V,120V,220-240V±5%
Maximum power consumption	39W±20%
Ultimate vacuum	-350mm Hg
Air capacity	25L/min
Dimensions(mm)	200×188×142(H)
Weight(kg)	3.8kg