



***DOGA BRUSHLESS ELECTRIC
SCREWDRIVERS GX 30 VOLTS***

A large, light gray, stylized 'D' shape that serves as a background for the title text. It has a subtle gradient and a slight shadow effect.

INSTRUCTIONS MANUAL

Warning	p 4
1. Scheme .	p 5
2. Optional products	p 5
3. Description .	p 5
4. Main features	p 5
5. Model composition	p 6
6. Models	p 6
6.1 Standard	p 6
6.2 Soft stop (Shockless	p 6
6.3 Timer & Auto reverse	p 6
7. Opération	p 7
7.1 Standard Driver	p 7
7.2 Option # Soft start + Double hit	p 8
7.3 Timer & Auto reverse	p 9
7.4 Torque curve	p 12
8. Exploded view	p 14
8.1 Drawing for GX080, GX120	p 14
8.2 Drawing for GX080P, GX120P	p 15
9. Spart List	p 16

WARNING

1. Keep the working area clean.
Avoid wearing the harmful clothes to the electric shock.
2. Don't touch the electrical parts after opening the cover. It may be dangerous for the electric shock.
3. Always keep the power off during contact the electrical parts.
4. Before the power on, always check the electric concerned.
5. Be sure that the any live parts should not be touched to the steel parts.
6. Use the rated power voltage for each models
7. Be careful the earth line not to touch the electric parts or lead on power.
8. Never use the non-specified parts.
9. Never lubricate aerosol oil the electrical part including the motor
10. The wires should not be damaged by sharp edge, soldering iron or any pulling force when close the cover.
11. All solder points should be protected by the shrink cable
12. Be aware that the motor can be damaged by the impact or hit.

1. Scheme

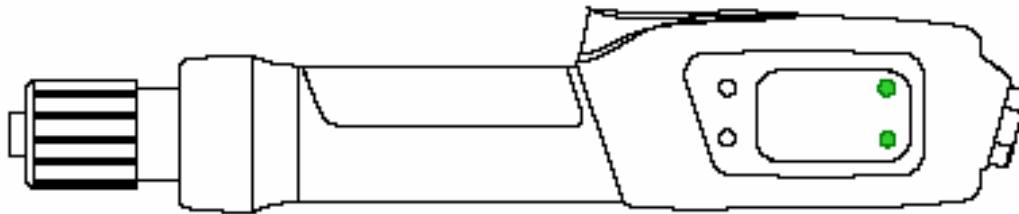
25W Brushless motor equipped screwdriver with the torque control system by the mechanical clutch working with the spring. the range of torque : 0.5 - 12 Kgf.cm

2. Optional products

- 1) Soft stop, ESD and Clean room operation
---> Semi conductor, optical, storage and LCD products industry
- 2) Automation market with the long lasting life time with less maintenance
---> Mobile phone, LCD products and automatic fastening system industry

3. Description

Grip : Dia 30 mm
Length : 220 mm
Weight : less 400 gr
Torque range : 0.5 - 12 Kgf.cm
Voltage : DC 30V

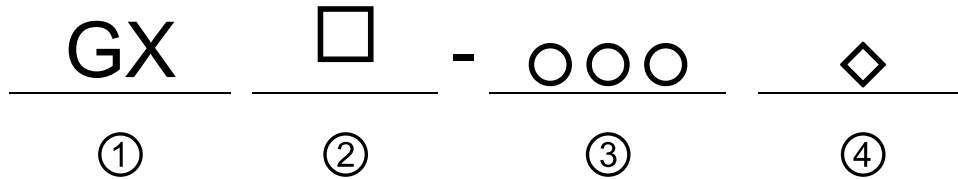


4. Main features

STANDARD

- Brushless DC motor equipped
- Built in BLDC drive circuit
- Sensor operated for Start, FOR/REV selecting, Torque limit
- Optional Soft start, Double hit
- Soft stop (shockless) models available
- Over Current, voltage and heat Protection
- Screw pick-up accessories by the vacuum
- LED display of alarm status

5. Model composition



① Series : GX

② Operation

- (Empty) : Standard screwdriver
- A : Automation - Direct signal start and clamping flange
- S : Soft Stop (Shockless) - lower shock when it stops
- T : Timer & Auto Reverse

③ Maxim torque value of the range (Kgf.cm)

080 = 8.0 Kgf.cm

120 = 12.0 Kgf.cm

④ Start type

- : Lever start
- P : Push start

6. Models

6.1 STANDARD

Model	Torque	No load speed		Start	Controller
		High	Low		
GX80	0.5 - 8.0 Kgf.cm	1,000	670	LEVER	XS -38D
GX120	0.8-12.0 Kgf.cm	700	460	LEVER	
GX80P	0.5 - 8.0 Kgf.cm	1,000	670	PUSH	
GX120P	0.8-12.0 Kgf.cm	700	460	PUSH	

Option 1) Soft Start & Double Hit Add suffix "+" / ex) GX80+

6.2 SOFT STOP (Shockless) Driver

Model	Torque	No load speed		Start	Controller
		High	Low		
GXS80	0.5 - 8.0 Kgf.cm	1,000	670	LEVER	XS -38D
GXS120	0.8-12.0 Kgf.cm	700	460	LEVER	

Option 1) Soft Start Add suffix "+" / ex) GXS80+

6.3 TIMER & AUTO REVERSE

Model	Torque	No load speed		Start	Controller
		High	Low		
GXT80	0.5 - 8.0 Kgf.cm	1,000	670	LEVER	XS -38D
GXT120	0.8-12.0 Kgf.cm	700	460	LEVER	

7. Operation

7.1 Standard Driver





1) Start, Stop and Direction

- Auto stop immediately at the target torque in both direction (FOR-REV)
- Free stop when release the lever or pressure (PTS)
- Sliding sensor switch for rotating FOR-REV

2) Front panel

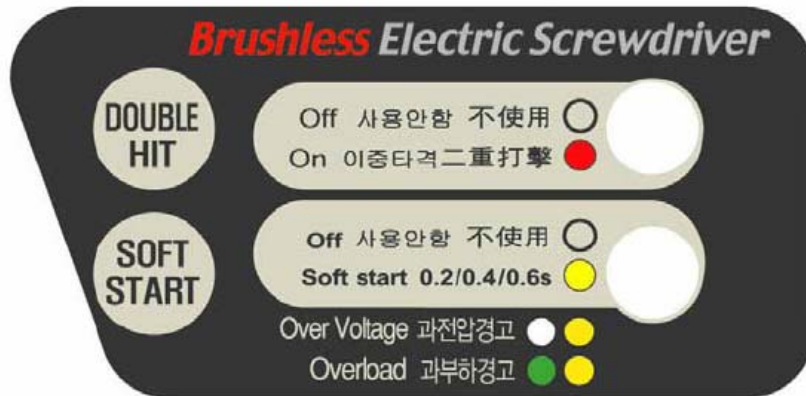


3) Alarm display by LED color

 Orange	Over Voltage	Blink Orange color stop the driver immediately over DC33V. Automatically reset below DC33V.
 Red	Over Heat	Blink Red color stop the driver immediately over 70°C. Automatically reset below 70°C.
 G+O	Over Load	Blink Green & Orange color stop the driver immediately over 2.5A. Automatically reset below 2.5A load.
 Green	Motor Drive	Motor drive lamp.

7.2 " + " Option - Soft start + Double hit

1) Front panel



- DOUBLE HIT

Press the DOUBLE HIT button. It repeat OFF and ON

Default : OFF

1st : ON (LED Orange)

* When the motor run, LED will be Green

- SOFT START

It repeats OFF- 0.2s - 0.4s - 0.6 by pressing the SOFT START button.








Default : OFF

1st : ON soft start for 0.2s / LED Orange

2nd : ON soft start for 0.4s / LED Orange blinking 1 time

3rd : ON soft start for 0.6s / LED Orange blinking 2 times

2) Alarm display by LED color by 2 LED lights

 Red	 Orange	Over Voltage	Blink Orange color stop the driver immediately over DC33V. Automatically reset below DC33V.
 Red	 Red	Over Heat	Blink Red color stop the driver immediately over 70°C. Automatically reset below 70°C.
 Red	 G+O	Over Load	Blink Green & Orange color stop the driver immediately over 2.5A. Automatically reset below 2.5A load.
 Green		Motor Drive	Motor drive lamp.

7.3 TIMER AND AUTO REVERSE SCREWDRIVER (GXT Driver)

1) Start, Stop and Direction

- One triggering by the lever makes 3 steps sequence in a cycle

Step	1	→	2	→	3
Sequence	first RUN		stop HOLD		reverse RUN
Rotating direction	Clockwise or Counterclockwise by F/R switch		-		Reverse
Activating	Run and stop for set time or stop at the target torque		Stop and hold for set time		Rotate to reverse untill releasing the lever or stop at the target torque Or set angle
Angle setting	0 - 15 sec / 24 steps		0 - 6 sec / 14 steps		0 - 5 sec / 24 steps

- Immediate stop whenever the start lever is released
- Sliding F/R switch works for ① rotating direction (FOR-REV) with the lever pressed and ② time up/down (Increase / Decrease) with two angle/time set buttons (first RUN TIME and stop HOLD TIME)
- To cancel the sequence, lease the lever in any process

2) Front panel



3) Operating

■ Angle setting for first RUN

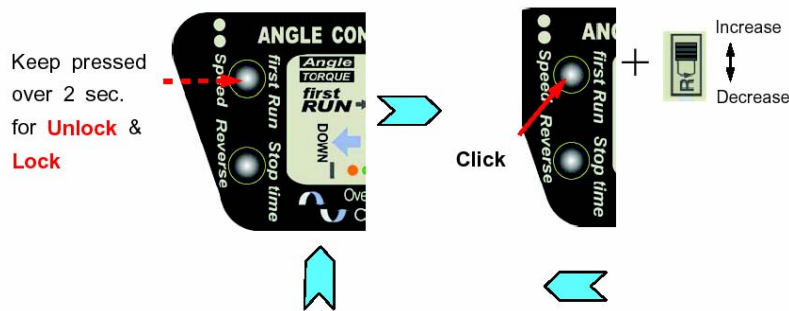
① Keep the *first Run* button pressed over 2 sec. For angle setting.

Then press one by one for the desired rotating angle.

② Select the R position of F/R switch for increasing set angle or F position for decreasing set angle.

③ Keep the *first Run* button pressed over 2 sec. For Lock & operating mode.

Click	0	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	1 2	1 3	1 4	1 5	1 6	1 7	1 8	1 9	2 0	2 1	2 2	2 3	2 4
Angle In turn	Off	1/4	2/4	3/4	1	5/4	6/4	7/4	2	9/4	10/4	11/4	3	4	5	6	7	8	9	1 0	1 1	1 2	1 3	1 4	1 5
LED	O	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	O



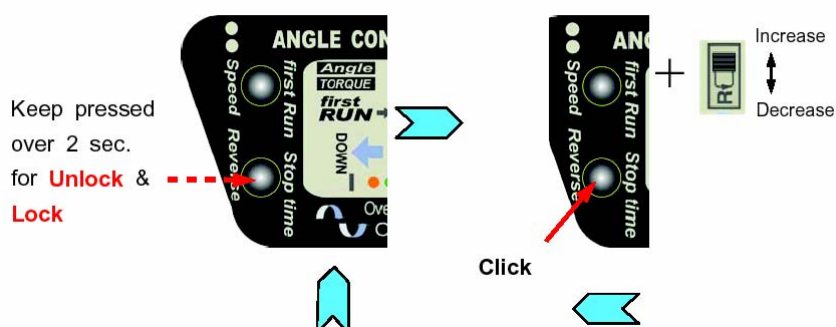
■ Time setting for stop HOLD

① Keep the stop time button pressed over 2 sec. Then click the stop time button one by one for desired stop holding time.

② Select the R position of F/R switch for increasing set time or F position for decreasing set time.

③ Keep the *stop time* button pressed over 2 sec. For Lock & operating mode.

Click	0	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th
Angle In turn	Off	0.1	0.3	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
LED	Orange	G	R	G	R	G	R	G	R	G	R	G	R	G	O



■ Rotating speed setting

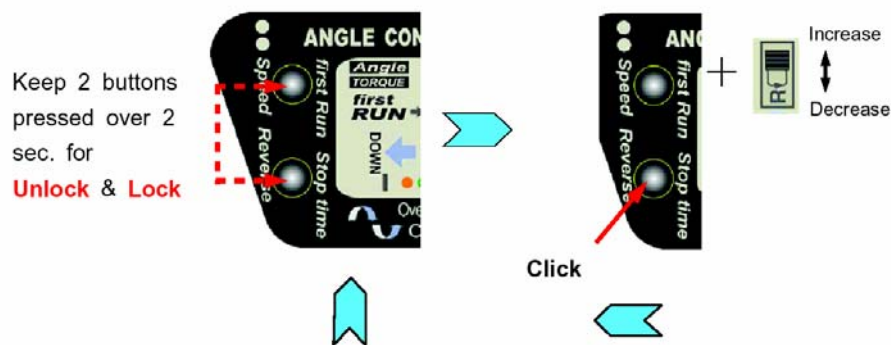
- ① Keep the both *first Run* & *stop time* buttons pressed over 2 sec. for unlock.
Then click one by one for the desired rotating speed.
- ② Select the R position of F/R switch for increasing speed or F position for decreasing speed.
- ③ Keep the *first Run* button pressed over 2 sec. For Lock & operating mode.

Click	0	1st	2nd	3rd	4th	5th	6th	7th	8th
Speed (rpm)	700	650	600	550	500	450	400	350	300
LED	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●

■ Angle setting for Reverse RUN

- ① Keep the both *first Run* & *stop time* buttons pressed over 2 sec. for unlock.
Then click *stop time* button one by one for the desired angle.
- ② Select the R position of F/R switch for increasing set angle or F position for decreasing set angle.
- ③ Keep the *stop time* button pressed over 2 sec. for Lock & operating mode.

Click	0	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12	13	14	15	16	17	18	19	20	21	22	23	24
Angle In turn	Off	1/4	2/4	3/4	1	5/4	6/4	7/4	2	9/4	10/4	11/4	3	4	5	6	7	8	9	10	11	12	13	14	15
LED	O	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	R	G	O



4) Applications

■ Time setting example

- Driver speed : 1,000 rpm (GXT80)
- Screw : 20 thread with 1mm pitch

Applications upon the different settings

	F/R switch	First RUN	Stop HOLD	Applications with different sequence in a cycle
Normal screwdriver	FOR	off	off	Normal screwdriver in Forward rotation Forward fastening and stop at the set torque
	REV	off	off	Normal screwdriver in Reverse rotation
Timer stop	FOR	0.5s	Max (4.7)	① fasten screw 8 turns (12mm height) ② Stop ③ Release the lever
	REV	0.3s	Max (4.7)	① Loosen screw 5 turns (5mm height) ② Stop ③ Release the lever
Tapper or Insert fastening	FOR	0.5s	off	① Start Forward rotating and make thread or fasten screw 8 turns ② Stop ③ Rotate reverse direction immediately till the lever released
Wire inserting on terminal block	REV	0.2s	1.0s	① Loosen screw 3 turns ② Stop for 1.0 seconds (wire inserting) ③ Fasten screw with the set torque

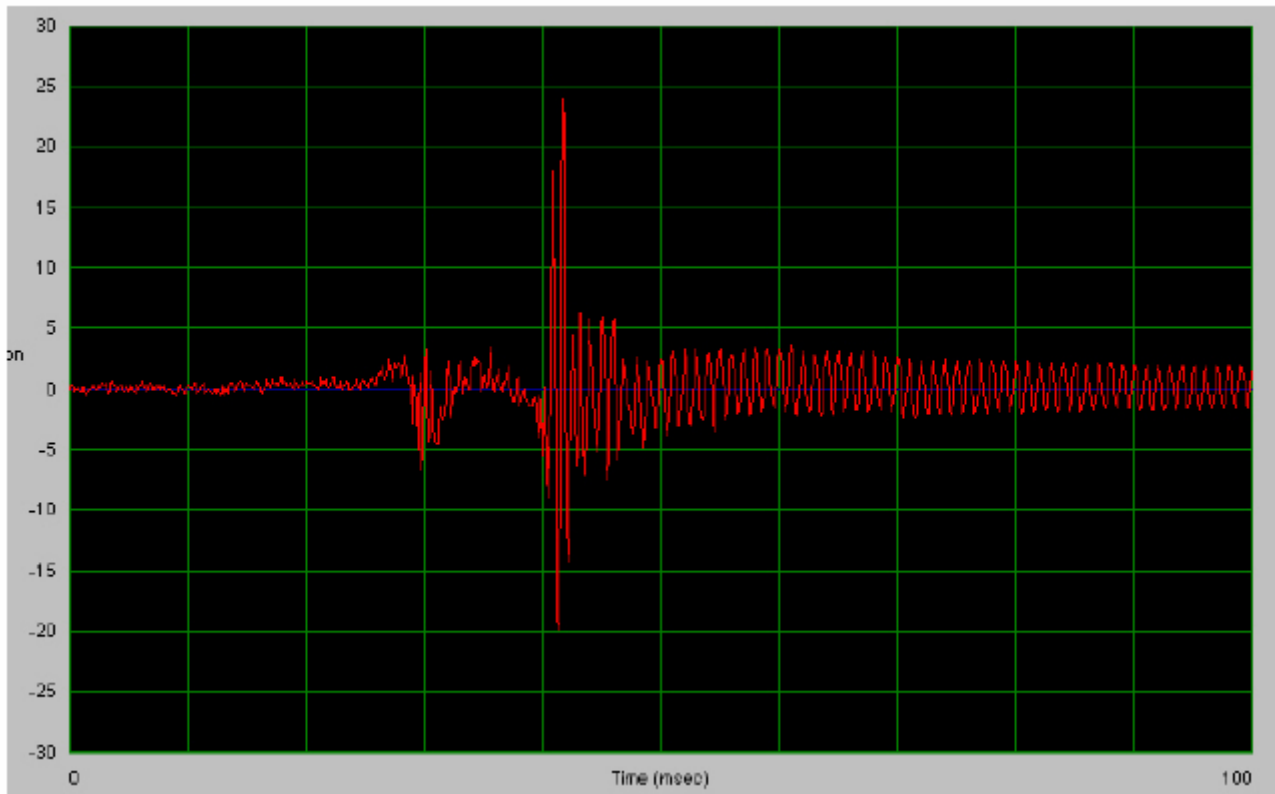
7.4 SOFT STOP SCREWDRIVER (GXS Driver)

Soft Stop screwdriver has special designed clutch with the bearing of one way direction rotating. This driver can control the torque for clockwise fastening. It will have the stall torque in counterclockwise (Reverse) rotation. Don't loosen the screw over 12 Kgf.cm of tightening torque. Be careful to loosen the screw which was fastened with the other tool.

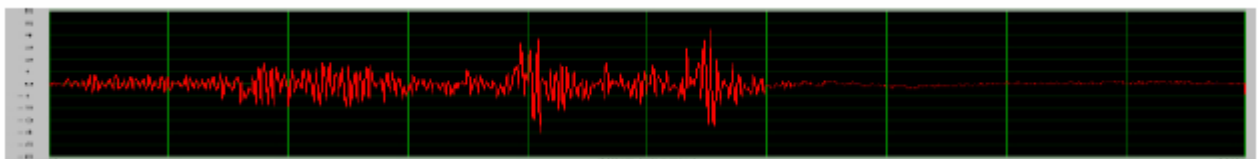
1) Main features of GXS

- High torque repeatability
- Low G-shock Less than 5G (Bronze spring), 10G (Silver spring)
- ESD Free option available (0 ohm by Chrome plate, Less than 10k ohm by conductive case)
- Accessories available (Vacuum screw pick-up)
- Available with automation system

2) Low G-shock



G-shock test GX80 29G in Hard joint



G-shock test GXS80 5G in Hard joint

- G-shock is very different according to the joint characteristic, set torque and rotating speed.
- Hard joint, higher torque and speed makes much G-shock than Soft joint, lower torque and speed
- **GXS screwdriver shows approx. 2.5 G to 10 G in different condition.**
- G-shock Test report (Hard joint M4 screw fastening)

Test condition		Reading (G)	Duration of shock (mS)	
Sensor direction	Screwdriver GXS80			
	Torque set at scale			Speed (rpm)
X	7	High (1,000)	4.09	0.3
	1	High (1,000)	4.49	0.4
	7	Low (700)	2.97	0.6
	1	Low (700)	3.44	0.4
Y	7	High (1,000)	5.28	0.5
	1	High (1,000)	2.59	0.2
	7	Low (700)	3.21	0.3
	1	Low (700)	2.26	0.4

3) Accurate torque control

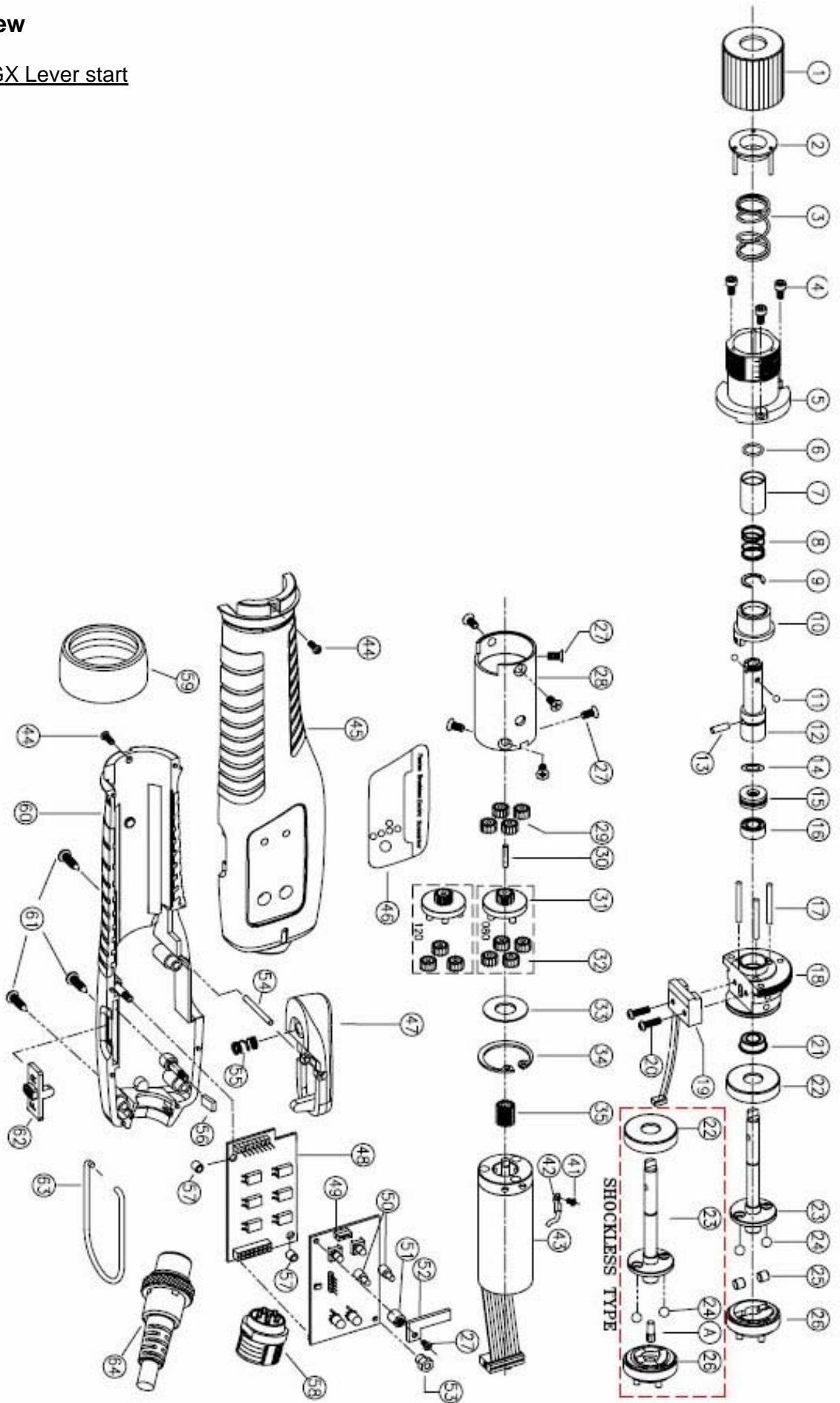
- Low (0.3 Kgf.cm) to High torque range (GXS120)

Torque spring	Torque range	Scale
① Bronze (dia 1.2)	0.3 - 1.2 Kgf.cm	0 - 7
② Silver (dia 1.8)	1.0 - 6.2 Kgf.cm	0 - 5
③ Black (dia 2.0)	2.0 - 10.5 Kgf.cm	0 - 7

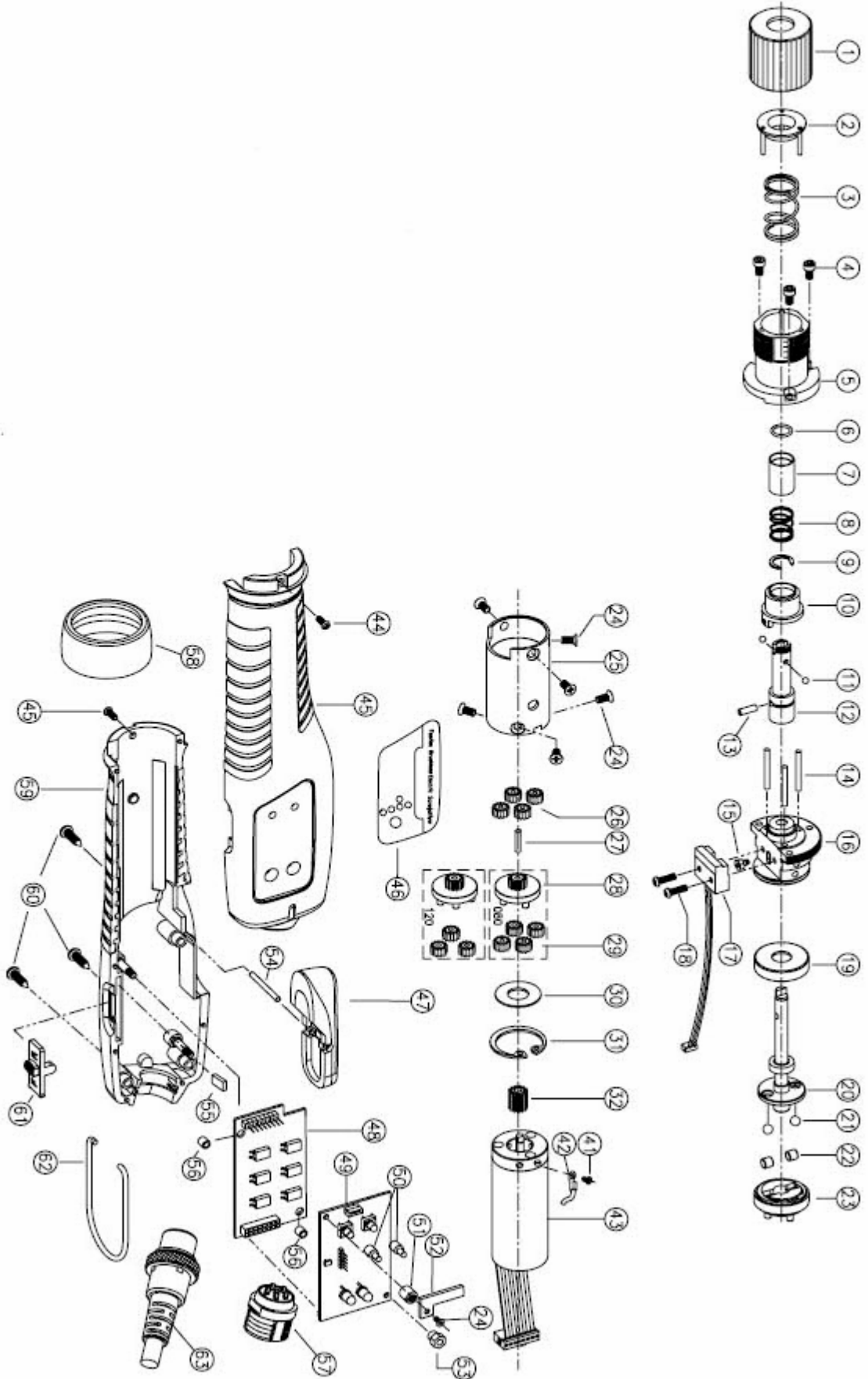
- Highest repeatability in clutch system screwdriver
(less than 3S average 3% between 1 to 10 Kgf.cm of torque range)

8. Exploded view

8.1 Drawing for GX Lever start



8.2 Drawing For GX Push to start



9. Parts List For GX Series

No-LEVER	No-PUSH	Code	Part Name	Réf.	GX80	GX120	GXT80	GXT120	GX80P	GX120P	GXS80	GXS120	
1	1	PFE1801	ADJUSTER		1	1	1	1	1	1	1	1	
2	2	PFE1132	TORQUE SPRING HOLDER ASSY		1	1	1	1	1	1	1	1	
3	3	PFE1815	TORQUE SPRING [SILVER]	80	1	1	1	1	1	1	1	1	
		PFE1816	TORQUE SPRING [BLACK]	120		1		1		1		1	
		PFE1817	TORQUE SPRING [BRONZE]		1	1	1	1	1	1	1	1	
		PFE1814	TORQUE SPRING [GOLD]		1	1	1	1	1	1	1	1	
4	4	PSW2201	WRENCH BOLT [M HEX M2.5x5L]		3	3	3	3	3	3	3	3	
5	5	PFE1131	TOP COVER ASSY		1	1	1	1	1	1	1	1	
6	6	PFE1973	BIT SOCKET RING	¼"	1	1	1	1	1	1	1	1	
		PFE1974	BIT SOCKET RING B	4mm									
7	7	PFE1410	BIT COLLAR	¼"	1	1	1	1	1	1	1	1	
		PFE1414	BIT COLLAR B	4mm									
8	8	PFE1964	COLLAR SPRING	¼"	1	1	1	1	1	1	1	1	
		PFE1965	COLLAR SPRING B	4mm									
9	9	PFE1955	C-RING [5103-31]		1	1	1	1	1	1	1	1	
10	10	PFF1123*	SLEEVE ASSY		1	1	1	1	1	1	1	1	
11	11	PAL1927	STEEL BALL [1.5]	¼"	2	2	2	2	2	2	2	2	
		PAL1928	STEEL BALL [2]	4mm									
12	12	PFE1412	BIT SOCKET A	¼"	1	1	1	1	1	1	1	1	
		PFE1403	BIT SOCKET E	4mm									
13	13	PFE1413	HOLDER PIN		1	1	1	1	1	1	1	1	
14	X	PFE1946	BEND WASHER		1	1	1	1			1	1	
15	X	PFE1920	THRUST BEARING [F5-11]		1	1	1	1					
16	X	PFE1907	BALL BEARING [MR105]		1	1	1	1			1	1	
17	14	PFE1327	NEEDLE PIN		3	3	3	3	3	3	3	3	
X	15	PFE1113	MAGNET HOLDER ASSY						1	1			
18	X	PFE1118	BEARING COVER ASSY [LEVER]		1	1	1	1			1	1	
X	16	PFE1119	BEARING COVER ASSY [PUSH]						1	1			
19	X	PFFZ511A*	SENSOR ASSY [LEVER]		1	1	1	1			1	1	
X	17	PFFZ512A*	SENSOR ASSY [PUSH]						1	1			
20	18	PSW2211	SCREW [M PHILIPS M2.3x8L]		2	2	2	2	2	2	2	2	
21	X	PFE1908	BALL BEARING [MF105]		1	1	1	1			1	1	
22	19	PFE1319	SLIDE RING		1	1	1	1	1	1			
	X	PFF1319	SLIDE RING								1	1	
X	20	PFE1114	PUSH SHAFT ASSY						1	1			
23	X	PFE1302	SHAFT		1	1	1	1	1	1			
		PFF1121	SHAFT ASSY	GXS							1	1	
24	21	PAL1932	STEEL BALL [4]		2	2	2	2	2	2	2	2	
25	22	PFE1910	ROLLER		2	2	2	2	2	2			
26	23	PFE1105	CLUTCH ASSY		1		1		1				
		PFE1106	CLUTCH ASSY B			1		1		1			
	X	PFF1105	CLUTCH ASSY	GXS80								1	
		PFF1106	CLUTCH ASSY B	GXS120									1
27	24	PSW2207	SCREW [M PHILIPS M2.6x6L FLAT HEAD]		6	6	6	6	6	6	6	6	
28	25	PFE1201A	GEAR CASE		1	1	1	1	1	1	1	1	
29	26	PFE1211	2ND IDLE GEAR	80	4		4		4		4		
		PFE1212	2ND IDLE GEAR	120		4		4		4		4	
30	27	PFE1915	CENTER PIN		1	1	1	1	1	1	1	1	
31	28	PFE1102	1ST GEAR HOLDER ASSY	80	1		1		1		1		
		PFE1103	1ST GEAR HOLDER ASSY B	120		1		1		1		1	
32	29	PFE1216	1ST IDLE GEAR	80	4		4		4		4		
		PFE1217	1ST IDLE GEAR B	120		3		3		3		3	
33	30	PFE1947	WASHER		1	1	1	1	1	1	1	1	
34	31	PFE1903	SNAP RING [R21]		1	1	1	1		1	1	1	
35	32	PFE1235	PINION GEAR		1		1		1		1		
		PFE1236	PINION GEAR B			1		1		1		1	
41	41	PSW2205	SCREW [M PHILIPS M2.3x5L]		1	1	1	1	1	1	1	1	
42	42	QFE0325A	EARTH WIRE		1	1	1	1	1	1	1	1	
43	43	PFF4005A	MOTOR SET		1	1	1	1	1	1	1	1	
44	44	PSW2202	SCREW [M PHILIPS M2.6x5L]		2	2	2	2	2	2	2	2	
45	45	PFF1120D	UPPER HOUSING ASSY		1	1	1	1	1	1	1	1	
46	46	QFF0406A	WINDOW LABEL	GX	1	1			1	1	1	1	
		QFF0408A	WINDOW LABEL	GXT			1	1					
		QFF0407A	WINDOW LABEL	GX+									
47	X	PFF1115	LEVER ASSY		1	1	1	1			1	1	
		PFF1115B	LEVER ASSY	ESD	1	1	1	1			1	1	
X	47	PFF1819	ATTACHMENT						1	1			
		PFF1819B	ATTACHMENT	ESD					1	1			
48	48	PFFZ537A**	AMP PCB SET FOR AS		1	1	1	1	1	1	1	1	
49	49	PFFZ538A**	CONTROL PCB SET FOR AS	GX, GXS	1	1			1	1	1	1	
		PFFZ539A**	CONTROL PCB SET FOR AS	GXT			1	1					



*If your tool serial number is < to 7117001, you must order sleeve assy (item 10) and sensor assy (item 19 for lever start or item 17 for push to start) by pair. They can not be replaced separately.

**Items 48 and 49 have to be ordered by pair. They can not be replaced separately.

50	50	PFF1723	BUTTON CAP		1	1	2	2	1	1	1	1
51	51	PFF1824C	NUT		1	1	1	1	1	1	1	1
52	52	PFF1719	CONNECTOR LOCK COVER		1	1	1	1	1	1	1	1
53	53	PFF1824	NUT		1	1	1	1	1	1	1	1
54	54	PAL1840	LEVER PIN		1	1	1	1				
55	X	PFE1841	LEVER SPRING		1	1	1	1			1	1
56	55	PFF1830	SWITCH LOCK		1	1	1	1	1	1	1	1
57	56	PFF1842A	STAND OFF		2	2	2	2	2	2	2	2
58	57	PELZ318	6PIN CONNECTOR N		1	1	1	1	1	1	1	1
59	58	PFF1802	HOUSING NUT		1	1	1	1	1	1	1	1
60	59	PFF1828B	LOWER HOUSING		1	1	1	1	1	1	1	1
61	60	PSW2602	SCREW [T TORX 2.6x10L]		3	3	3	3	3	3	3	3
62	61	PFF1130	SWITCH COVER ASSY		1	1	1	1	1	1	1	1
63	62	PAL1803	HOOK		1	1	1	1	1	1	1	1
64	63	PELZ932A	CABLE 6PIN [3M,STANDARD]		1	1	1	1	1	1	1	1
A	X	PFF1306	SHAFT [CAM CLUTCH TYPE]	GXS							1	1

PELZ318 6PIN CONNECTOR : For PELZ932A CABLE 6PIN only.(Applied from s/n.8077011)



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