DOGA®
Productive solutions

Electric Screwdrivers
GA Series

INSTRUCTIONS MANUAL

im Vertrieb von:

DOGATEC
Mit Sicherheit montiert

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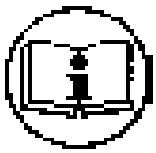
IMPORTANT

The tool delivered with this manual may been modified for specific needs.
In that case, please give us the tool code number written on our shipping note or the appoximate tool delivery date when you will place an order for a new similar tool or for spare parts.
In that way, you will be sure to get the required and/or spare part.

WARNING



This informations has to be kept in a location known all users.

Each operator has to read carrefully this manual before installing, using, and mending the product.

Be sure that the operator has understood using recommendations and the meaning of signs put on the product.

Most accidents could be avoided respecting this Manual Instructions. As a matter of fact, they were created according to European laws and norms regarding products.

In each case, please respect and follow safety national norms. Do not take off nor damage the stickers or advise put on the product and above all the details imposed by the law.

INDEX

1. Models and specifications

1.1 Matching driver with controller

SCREW DRIVER	GA150, GA150P, GA180, GA180P
CONTROLLER	XT-30D or XS-38D (30V selected)

1.2 Electrical specification

Specification	XT-30D (controller)	XS-38D (controller)
Rated Input voltage	110-230 VAC (Free volt)	110 / 230 VAC (Selectable)
Rated Output voltage	20 / 30 VDC (Low/High)	20/30, 30/38 VDC (Low/High)
Rated Output current- power	1.2A 36W	2.5A 95W
Maximum Output current	2 A	6 A
Intermittent operation	10s On / 30s Off	

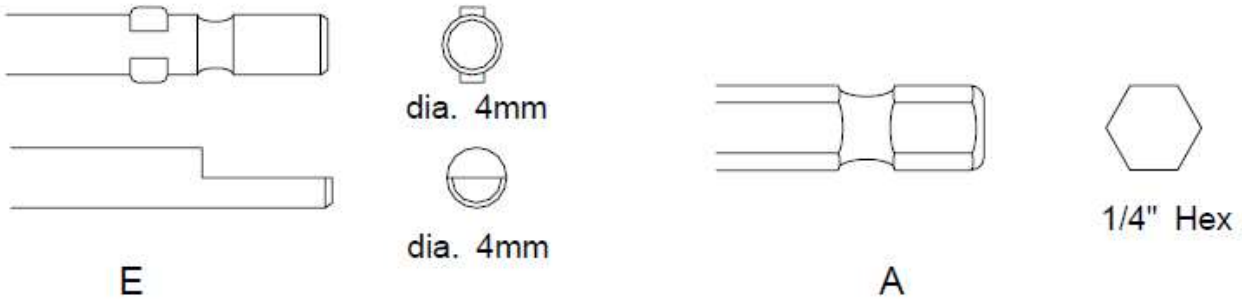
V (Voltage), DC (Direct Current), W (Watt), s (Seconds).

1.3 Mechanical specification

Model	Screw	Torque Kgf.cm	Speed (RPM)		Weight (Kg)	Bit socket
			LOW	HIGH		
GA150, GA150P	M1.3~M3	0.8~12.0	700	1000	0.31	E: Ø 4mm A: Hex 1/4"
GA180, GA180P	M2~M4	2~18.0	500	700		

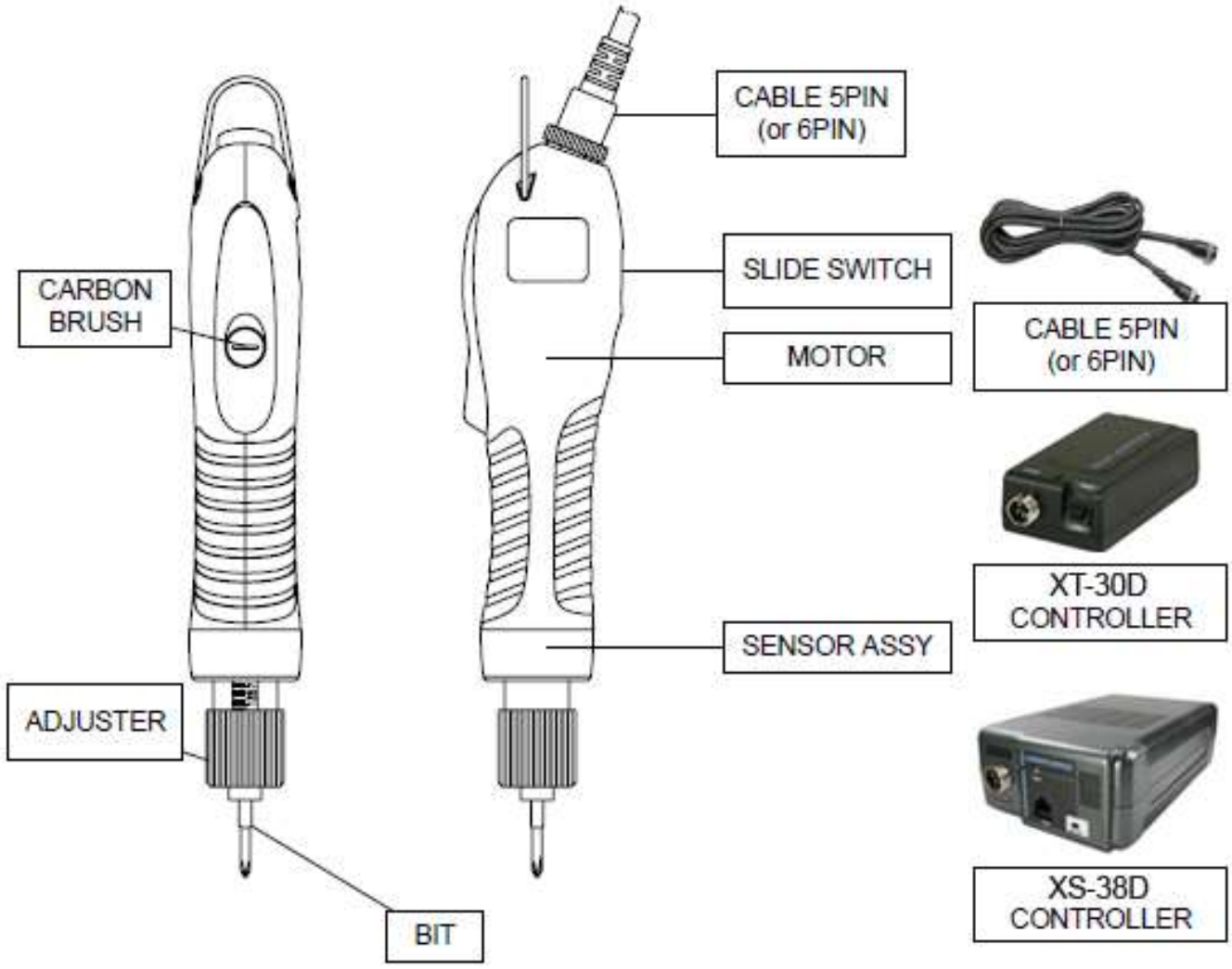
■ **The above data can be changed without notice for the quality improvement.**

1.4 Available type of bit

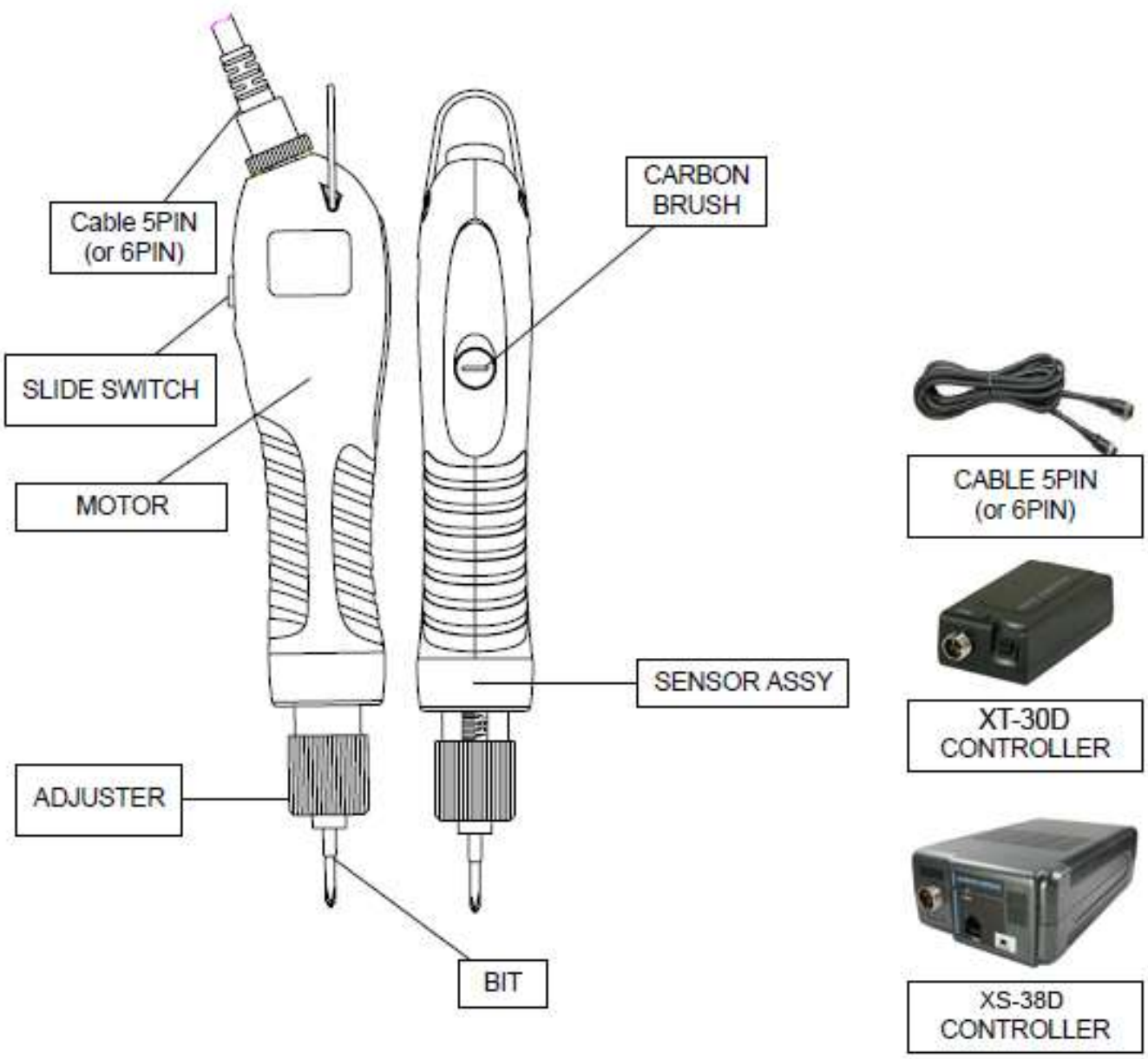


2. Layout

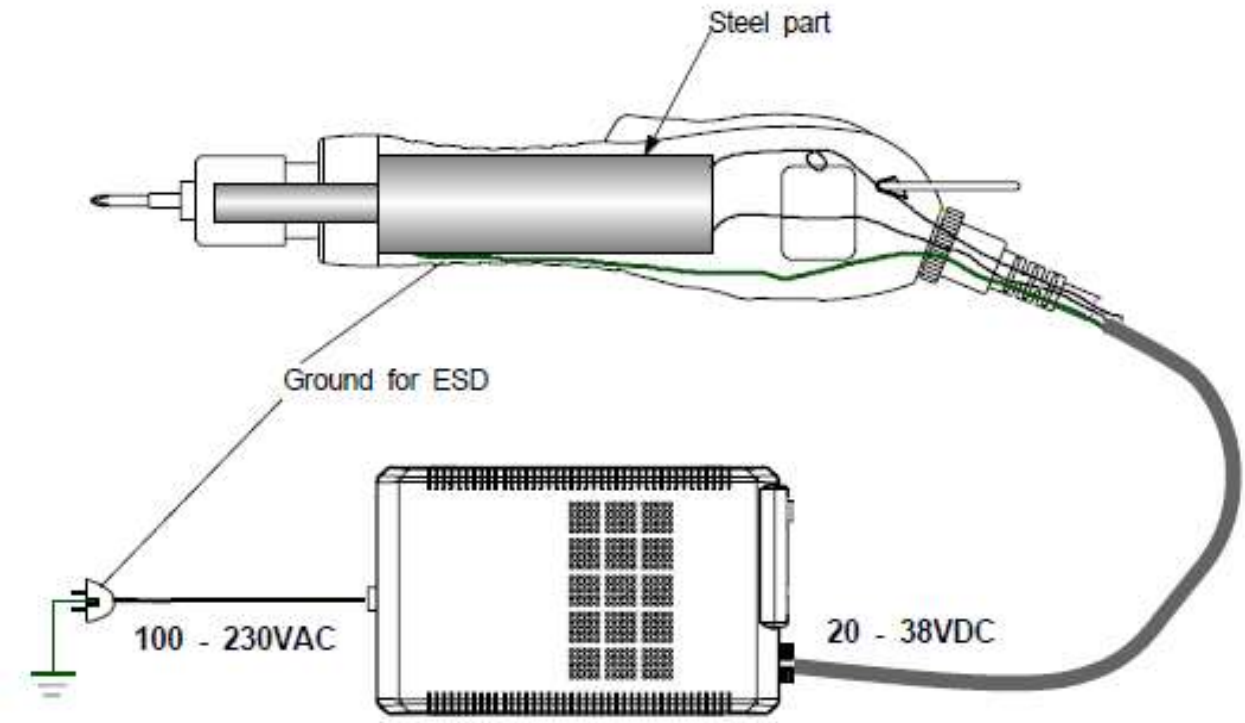
2.1 GA150, GA180



2.2 GA150P, GA180P



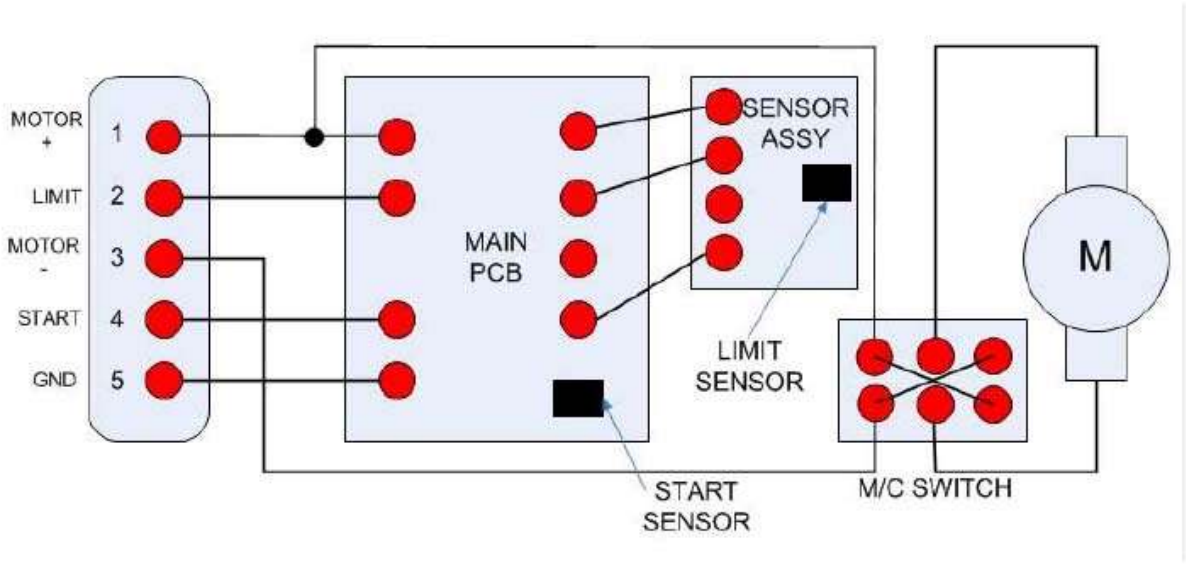
3. Electric safety system (CLASS III)



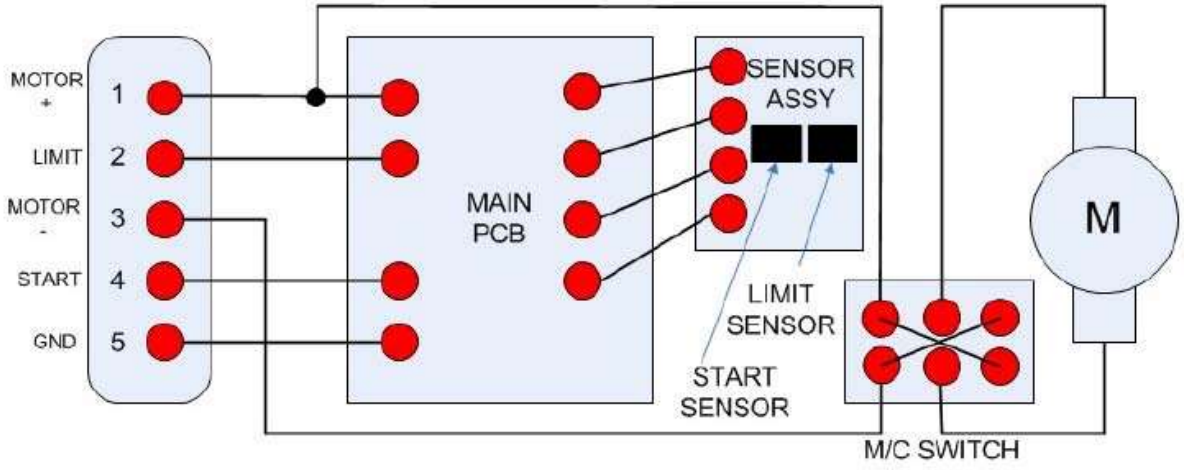
SAFETY EXTRA LOW VOLTAGE TRANSFORMER
(NRTL ,CE)

4. Electrical connection

4.1 Electrical connection of lever start driver

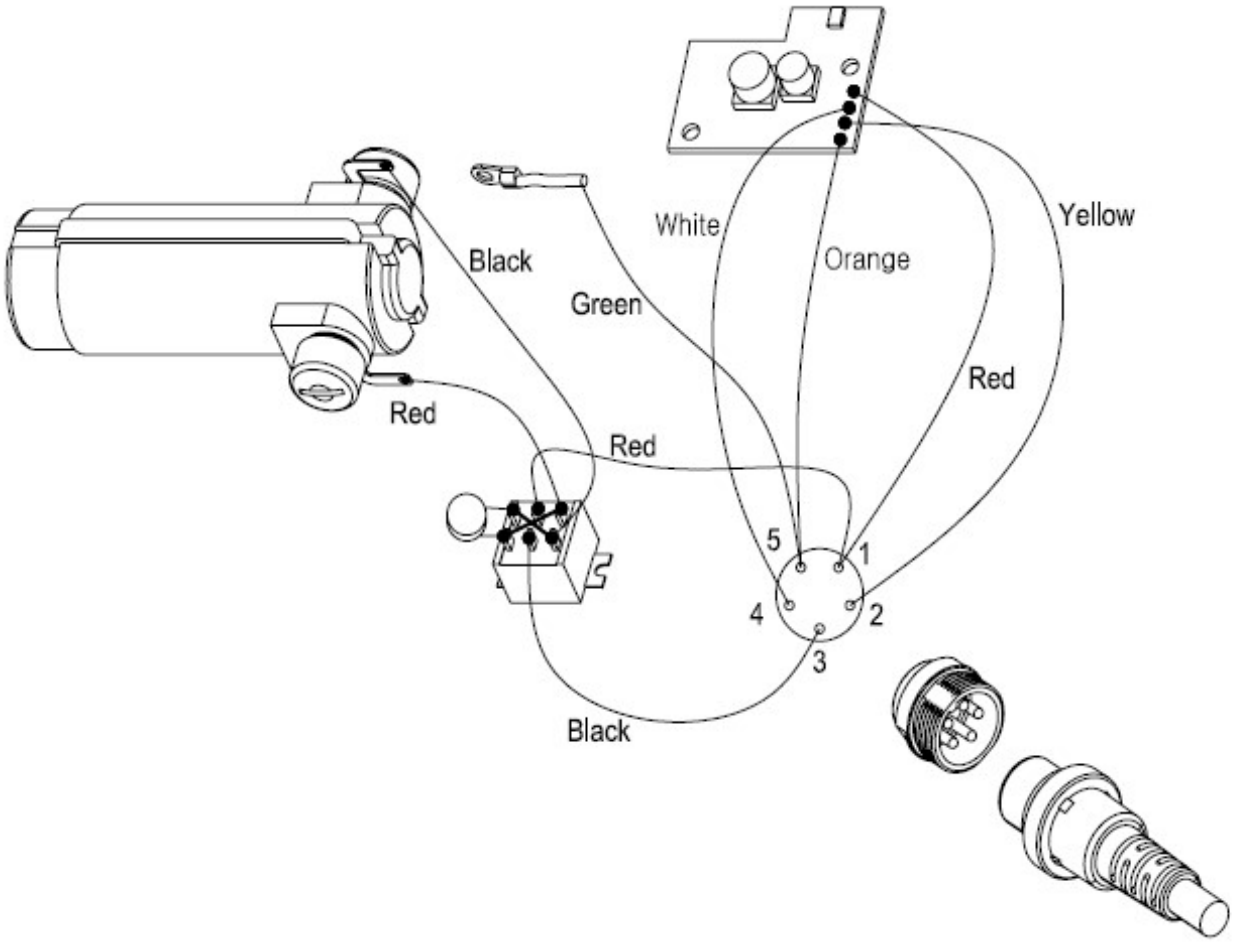


4.2 Electrical connection of GA push start drivers



5. Wiring

5.1 Wiring for GA150, GA150P, GA180, GA180P



6. Maintenance intervals

Maintenance intervals may be determined by the several approaches : number of cycles in use, number of hours in use, type of joint, torque and calendar time. All these factors should be considered for the most preventative maintenance.

7. Commonly replaced parts

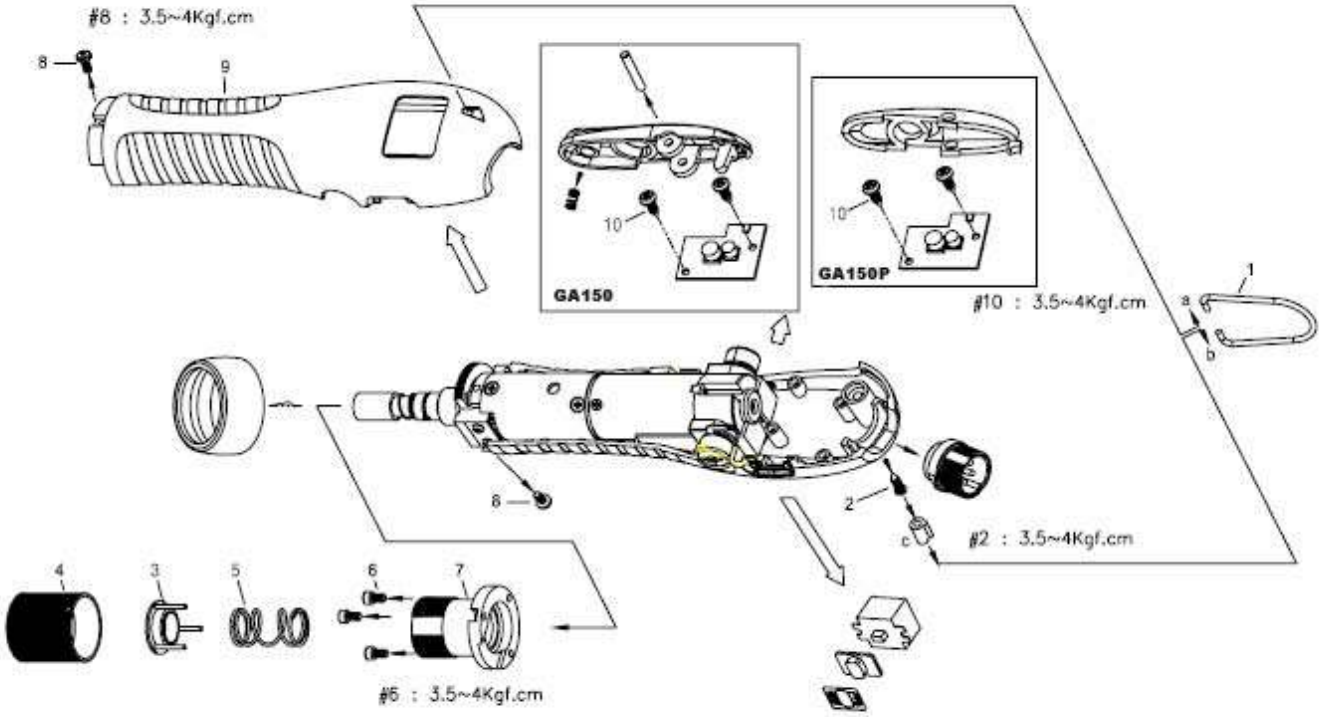
No	Parts Description	Quantity
1	CARBON BRUSH ASSY	2
2	CABLE 6PIN	1

8. Required tools for service

No	CODE	TOOL	RELATIVE PARTS
1		Hand wrench (HEX.2mm,1.5mm)	Adjuster, top cover
2		Snapring plier(R22) (S12)	Snap ring
3		Twizer	Idle gear, wiring
4		Long nose plier (modified)	Bit socket ring
5		Urethane hammer	Bit collar
6		Magnetic pin	Dia.2mm steel ball for bit socket
7		Wire stripper	Lead wire
8		Soldering iron	Soldering
9		Analog multi tester	Voltage, current, resistance
10		Heating gun	Shrink tube
11		Hand driver (NO.2)	Screw (M3x12) for housing
12		Hand driver (NO.1)	Screw (M2.0x16, M2.3x20) for micro switch
13		Handy load tester (A)	Function test
14		Handy load tester (A)	Function test
15		Handy load tester (PUSH B,C)	Function test
16		Handy load tester (E)	Function test
17		Hand driver (Slotted)	Carbon brush
18		Clamping tool	Earth wire clamping
19		Vise plier	Collar
20		Grease	Gear
21		Solder wire, solder paste	
22		Shrink tube	
23		Nipper	
24		Shirnk Tube D2.5	
25		Shirnk Tube D3.0	
26		Shirnk Tube D1.5	
27		Test cable 5pin(or 6pin)	Controller

9. Service

9.1 Disassembly of housing for GA150, GA150P, GA180, GA180P



Process

1. Pull the one end of hook to the "b" direction, and pull the part "c" out from the hole. Then leave the one end of on hook. Now pull the other end of hook out.

2. Follow the process number on the drawing.

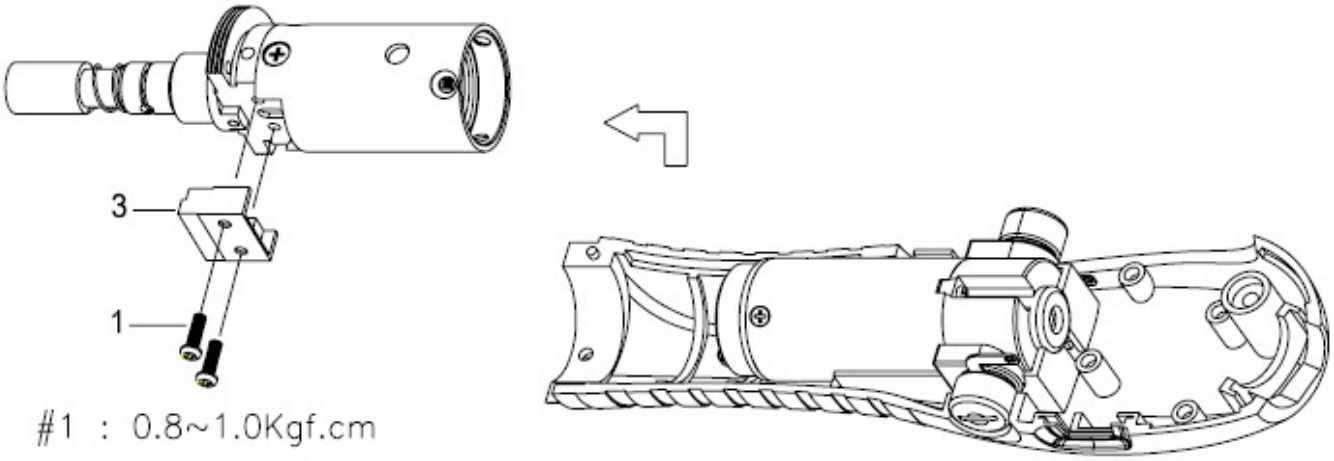
3. Apply the torque of 3.5~4 Kgf.cm for fastening screw "2".

   Apply the torque of 3.5~4 Kgf.cm for fastening screw "6"

   Apply the torque of 3.5~4 Kgf.cm for fastening screw "8"

   Apply the torque of 3.5~4 Kgf.cm for fastening screw "10"

9.2 Gear set removal from housing for GA150, GA150P, GA180, GA180P



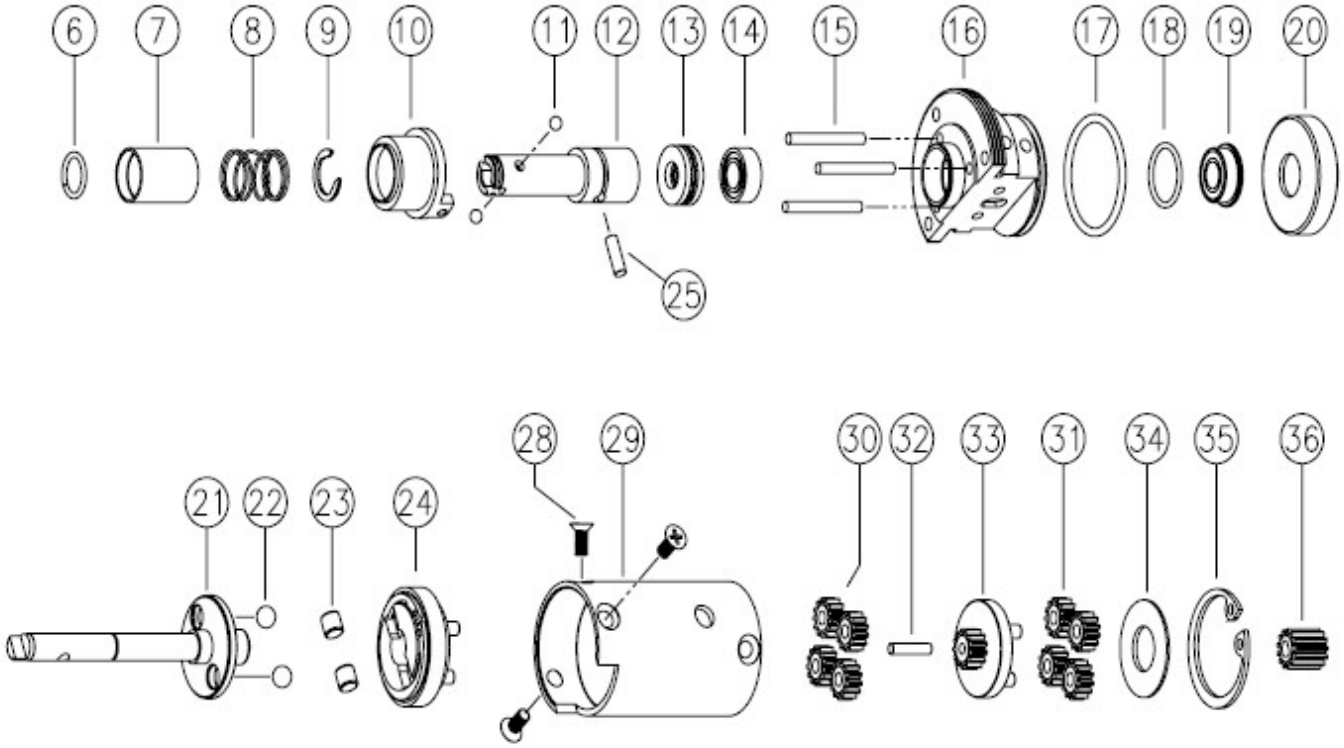
Process

1. Unfasten the screw "1" from gear set.

2. Apply the torque of 0.8~1.0 Kgf.cm for fastening screw "1".

(Strongly recommend to fasten the screw by No1 Phillips(+) hand screwdriver)

9.3 Disassembly of gear set for GA150, GA180



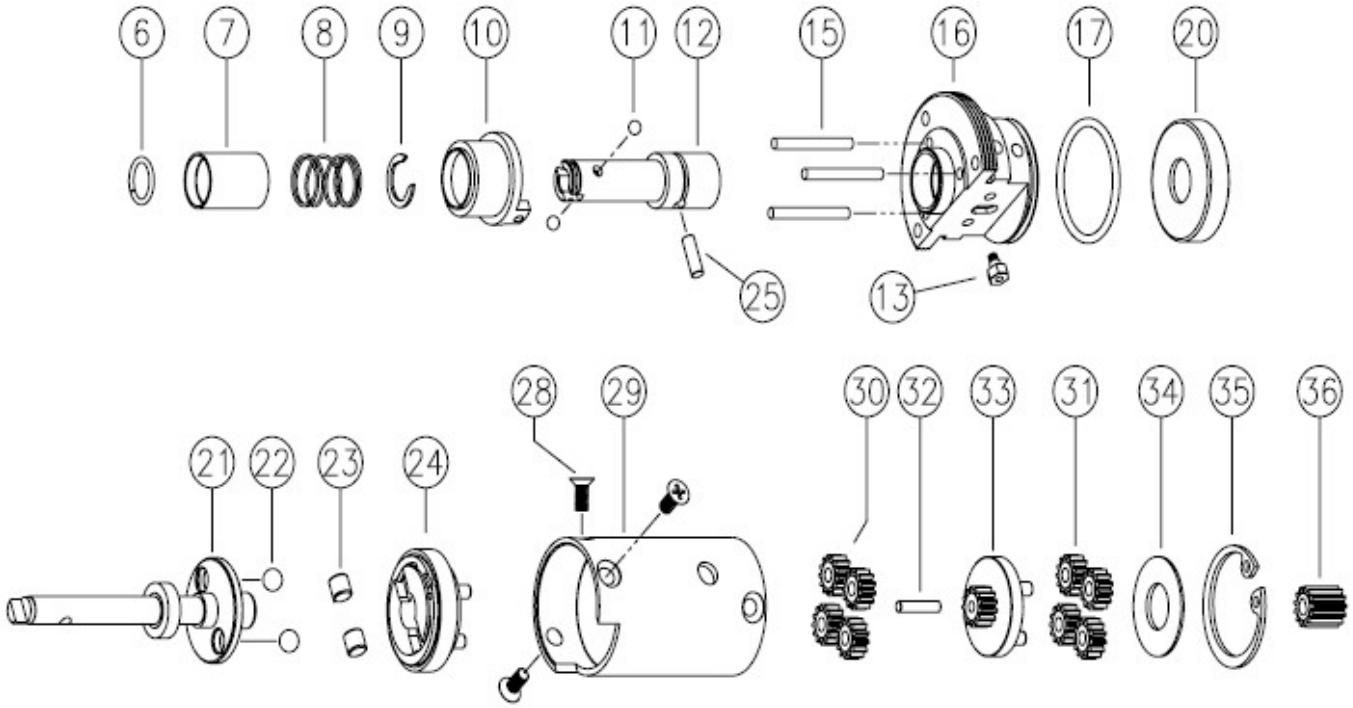
Process

1. Disassemble all parts according to the exploded drawing.

2. Apply the torque of 4.0~5.0 Kgf.cm for fastening screw "28".

3. Apply the grease " sapphire premier NLGI2 " of ROCOL or equivalent products on the gears (30, 31).

9.4 Disassembly of gear set for GA150P, GA180P



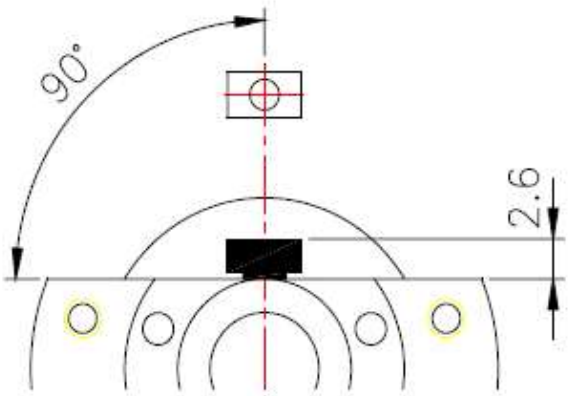
Process

1. Disassemble all parts according to the exploded drawing.

2. Apply torque of 4.0~5.0 Kgf.cm for fastening screw "28".

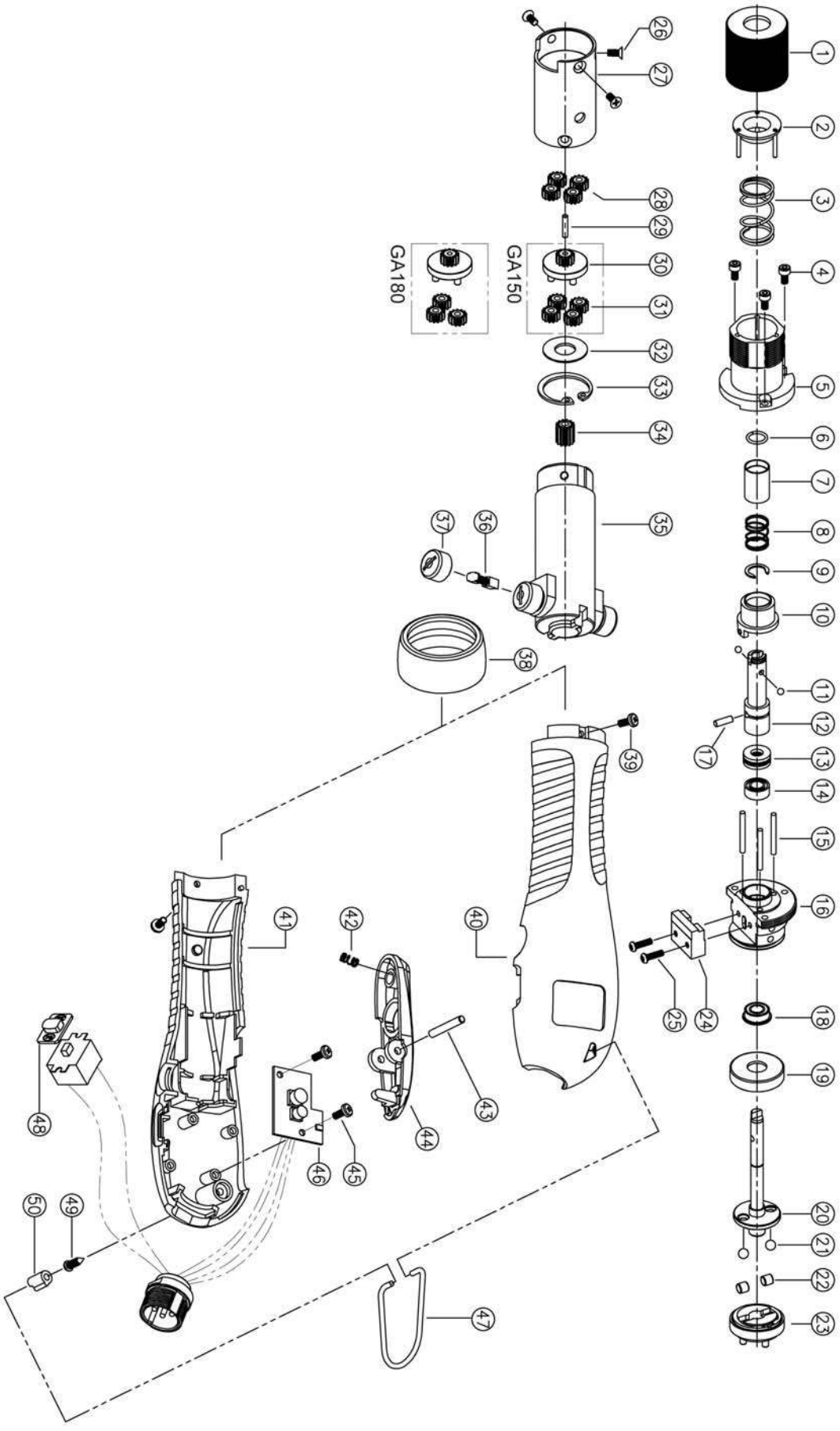
3. Apply the grease " sapphire premier NLGI2 " of ROCOL or equivalent products on the gears (30, 31).

4. Keep the right alignment of the magnet holder assy (13) on assembling.



10. Drawing and parts list

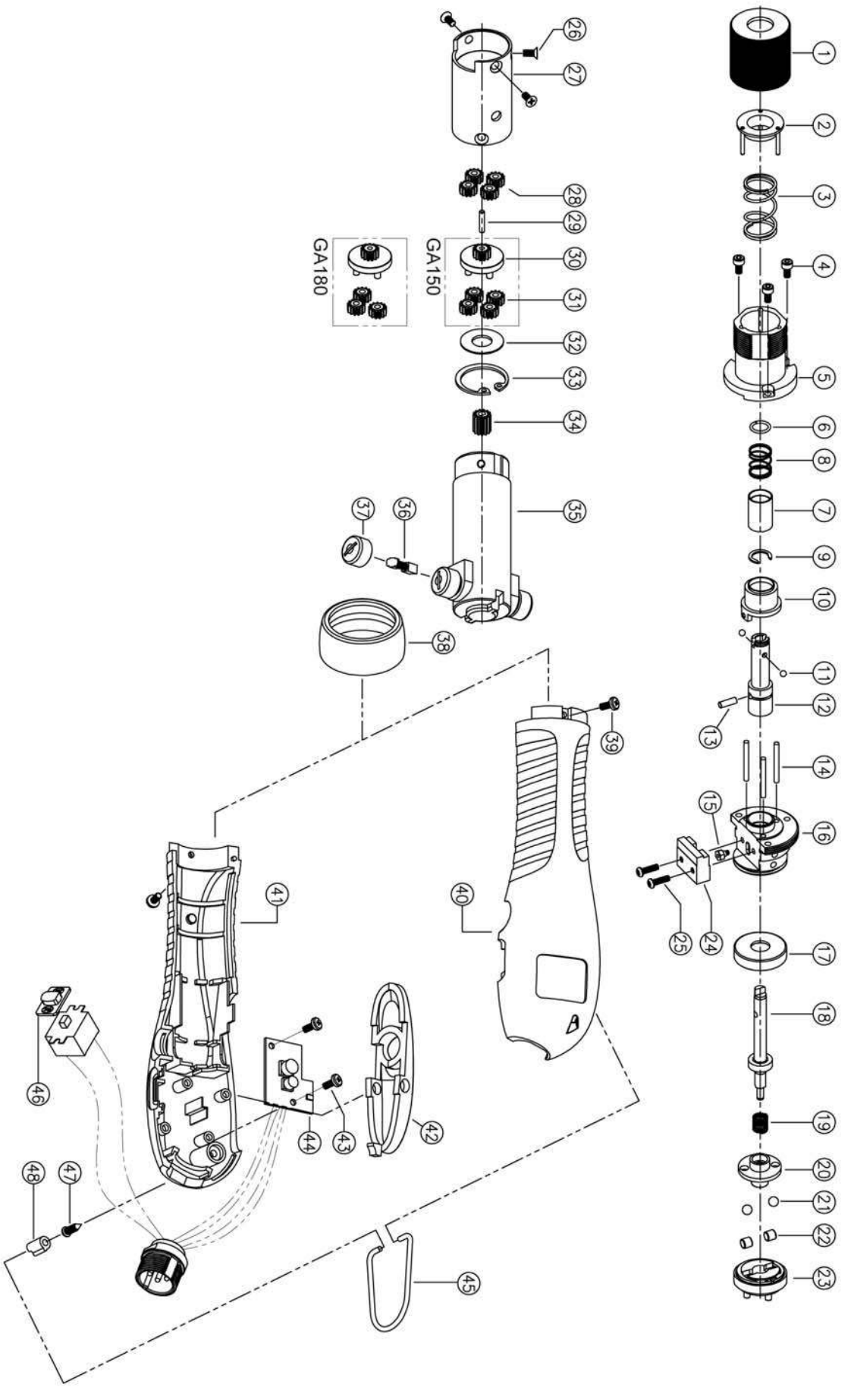
10.1 Drawing for GA Lever



10.2 Parts list for GA Lever

NO.	CODE	DESCRIPTION	GA150A	GA150E	GA180A	GA180E
1	PFE1801	ADJUSTER	1	1	1	1
2	PFE1132	TORQUE SPRING HOLDER ASSY	1	1	1	1
3	PFE1815	TORQUE SPRING [SILVER]	1	1	1	1
3	PFE1814	TORQUE SPRING [GOLD]	1	1		
3	PFE1816	TORQUE SPRING [BLACK]			1	1
4	PSW2201	WRENCH BOLT	3	3	3	3
5	PFE1131	TOP COVER ASSY	1	1	1	1
6	PFE1973	BIT SOCKET RING	1		1	
6	PFE1974	BIT SOCKET RING B		1		1
7	PFE1410	BIT COLLAR	1		1	
7	PFE1414	BIT COLLAR B		1		1
8	PFE1964	COLLAR SPRING	1		1	
8	PFE1965	COLLAR SPRING B		1		1
9	PFE1955	C-RING [5103-31]	1	1	1	1
10	3000030	SLEEVE ASSY, GA V3	1	1	1	1
11	PAL1927	STEEL BALL [¢ 1.5]	2		2	
11	PAL1928	STEEL BALL [¢ 2]		2		2
12	PFE1412	BIT SOCKET A	1		1	
12	PFE1403	BIT SOCKET E		1		1
13	PFE1920	THRUST BEARING [F5-11]	1	1	1	1
14	PFE1907	BALL BEARING [MR105]	1	1	1	1
15	PFE1327	NEEDLE PIN (¢ 2X19.55L)	3	3	3	3
16	PFE1118	BEARNG COVER ASSY [LEVER]	1	1	1	1
17	PFE1413	HOLDER PIN ¢ 2.5X7.5L	1	1	1	1
18	PFE1908	BALL BEARING [MF105]	1	1	1	1
19	PFE1319	SLIDE RING	1	1	1	1
20	PFE1302	SHAFT [LEVER]	1	1	1	1
21	PAL1932	STEEL BALL [¢ 4]	2	2	2	2
22	PFE1910	ROLLER(¢ 4X3.8L)	2	2	2	2
23	PFE1105	CLUTCH ASSY	1	1		
23	PFE1106	CLUTCH ASSY B			1	1
24	3000036	SENSOR ASSY, 3EF(L)	1	1	1	1
25	PSW2211	SCREW [M PHILIPS M2.3x8L]	2	2	2	2
26	PSW2207	SCREW [M PHILPS M2.6x6L]	3	3	3	3
27	PFE1201A	GEAR CASE	1	1	1	1
28	5000067	2ND IDLE GEAR (12T)	4	4		
28	PFE1212	2ND IDLE GEAR B (14T)			4	4
29	PFE1915	CENTER PIN	1	1	1	1
30	PFE1102	1ST GEAR HOLDER ASSY	1	1		
30	PFE1103	1ST GEAR HOLDER ASSY B			1	1
31	5000067	2ND IDLE GEAR (12T)	4	4		
31	5000134	1ST IDLE GEAR B (13T)			3	3
32	PFE1947	WASHER	1	1	1	1
33	PFE1903	SNAP RING [R21]	1	1	1	1
34	PFE1235	PINION GEAR	1	1		
34	PFE1236	PINION GEAR B			1	1
35	PEF4005	MOTOR ASSY	1	1	1	1
36	PEF4100	CARBON BRUSH ASSY	2	2	2	2
37	PEF4057	BRUSH CAP	2	2	2	2
38	PEF1802	HOUSING NUT	1	1	1	1
39	PSW2202	SCREW [M PHILPS M2.6x5L]	2	2	2	2
40	PEF1827B	UPPER HOUSING	1	1	1	1
40	5000013	UPPER HOUSING [ESD]	1	1	1	1
41	PEF1828	LOWER HOUSING	1	1	1	1
41	5000012	LOWER HOUSING [ESD]	1	1	1	1
42	PFE1841	LEVER SPRING	1	1	1	1
43	PEF1840	LEVER PIN	1	1	1	1
44	3000103	LEVER ASSY [ESD]	1	1	1	1
44	3000405	LEVER ASSY	1	1	1	1
45	PSW2702	SCREW	2	2	2	2
46	3000108	CONTROL SET [GA,LEVER]	1	1	1	1
47	PEK1803	HOOK	1	1	1	1
48	PAL1130	SWITCH COVER ASSY	1	1	1	1
49	PSW2701	SCREW [T TORX 3x12L]	1	1	1	1
50	PEF1836	INSERT	1	1	1	1
50	5000095	INSERT [ESD]	1	1	1	1

10.3 Drawing for GA Push



10.4 Parts list for GA Push

NO.	CODE	DESCRIPTION	GA150PA		GA180PA	GA180PE
1	PFE1801	ADJUSTER	1	1	1	1
2	PFE1132	TORQUE SPRING HOLDER ASSY	1	1	1	1
3	PFE1815	TORQUE SPRING [SILVER]	1	1	1	1
3	PFE1814	TORQUE SPRING [GOLD]	1	1		
3	PFE1816	TORQUE SPRING [BLACK]			1	1
4	PSW2201	WRENCH BOLT	3	3	3	3
5	PFE1131	TOP COVER ASSY	1	1	1	1
6	PFE1973	BIT SOCKET RING	1		1	
6	5000466	BIT SOCKET RING B		1		1
7	PFE1410	BIT COLLAR	1		1	
7	5000308	BIT COLLAR B		1		1
8	PFE1964	COLLAR SPRING	1		1	
8	5000304	COLLAR SPRING B		1		1
9	PFE1955	C-RING [5103-31]	1	1	1	1
10	3000030	SLEEVE ASSY, GA V3	1	1	1	1
11	PAL1927	STEEL BALL [¢ 1.5]	2		2	
11	PAL1928	STEEL BALL [¢ 2]		2		2
12	PFE1412	BIT SOCKET A	1		1	
12	5000307	BIT SOCKET E		1		1
13	PFE1413	HOLDER PIN ¢ 2.5X7.5L	1	1	1	1
14	PFE1327	NEEDLE PIN (¢ 2X19.55L)	3	3	3	3
15	3000043	MAGNET HOLDER ASSY	1	1	1	1
16	PFE1119	BEARNG COVER ASSY [PUSH]	1	1	1	1
17	PFE1319	SLIDE RING	1	1	1	1
18	3000456	PUSH SHAFT ASSY	1		1	
18	3000457	PUSH SHAFT ASSY		1		1
19	PFE1963	SPRING	1	1	1	1
20	5000292	SHAFT B	1	1	1	1
21	PAL1932	STEEL BALL [¢ 4]	2	2	2	2
22	PFE1910	ROLLER(¢ 4X3.8L)	2	2	2	2
23	PFE1105	CLUTCH ASSY	1	1		
23	PFE1106	CLUTCH ASSY B			1	1
24	3000037	SENSOR ASSY, 3EF(P)	1	1	1	1
25	PSW2211	SCREW [M PHILIPS M2.3x8L]	2	2	2	2
26	PSW2207	SCREW [M PHILPS M2.6x6L]	3	3	3	3
27	PFE1201A	GEAR CASE	1	1	1	1
28	5000067	2ND IDLE GEAR (12T)	4	4		
28	PFE1212	2ND IDLE GEAR B (14T)			4	4
29	PFE1915	CENTER PIN	1	1	1	1
30	PFE1102	1ST GEAR HOLDER ASSY	1	1		
30	PFE1103	1ST GEAR HOLDER ASSY B			1	1
31	5000067	2ND IDLE GEAR (12T)	4	4		
31	5000134	1ST IDLE GEAR B (13T)			3	3
32	PFE1947	WASHER	1	1	1	1
33	PFE1903	SNAP RING [R21]	1	1	1	1
34	PFE1235	PINION GEAR	1	1		
34	PFE1236	PINION GEAR B			1	1
35	PEF4005	MOTOR ASSY	1	1	1	1
36	PEF4100	CARBON BRUSH ASSY	2	2	2	2
37	PEF4057	BRUSH CAP	2	2	2	2
38	PEF1802	HOUSING NUT	1	1	1	1
39	PSW2202	SCREW [M PHILPS M2.6x5L]	2	2	2	2
40	PEF1827B	UPPER HOUSING	1	1	1	1
40	5000013	UPPER HOUSING [ESD]	1	1	1	1
41	PEF1828	LOWER HOUSING	1	1	1	1
41	5000012	LOWER HOUSING [ESD]	1	1	1	1
42	5000015	ATTACHMENT	1	1	1	1
43	PSW2702	SCREW	2	2	2	2
44	3000109	CONTROL SET [GA,PUSH]	1	1	1	1
45	PEK1803	HOOK	1	1	1	1
46	PAL1130	SWITCH COVER ASSY	1	1	1	1
47	PSW2701	SCREW [T TORX 3x12L]	1	1	1	1
48	PEF1836	INSERT	1	1	1	1
48	5000095	INSERT [ESD]	1	1	1	1

11. Partial check and repair

11.1 Controller check (XS series)

STEP 1. Select the range of analog multi tester on 'DC50V'.
*** We Strongly recommend Analog tester during service.

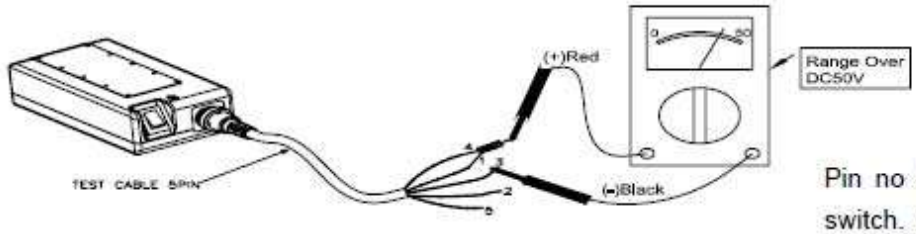
STEP 2. Select the controller mode on 'HIGH'.

STEP 3. Check the output voltage between pin #1 and #3 at 30V, 40V MODE. Pin #4 should be connected to pin #1 for this test.

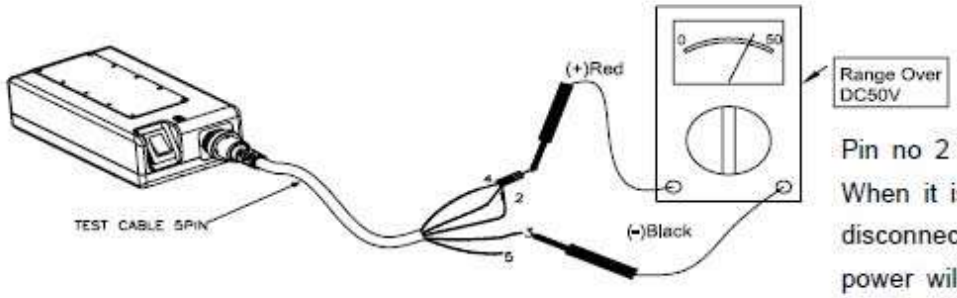
STEP 4. When the pin #2 is connected and disconnected to the pin #1, the shown output voltage should disappear (0V).

EVALUATION

CONTROLLER	OUTPUT VOLTAGE		EVALUATION	ACTION
	30V MODE	40V MODE		
XS-38D	0~27V	0~35V	NG	REPLACE
	28~32V	36~40V	OK	go to next process
XT-30D	0~27V		NG	REPLACE
	28~32V		OK	go to next process



Pin no 4 works for Power On switch. When it is connected to pin no.1, the power will be ON



Pin no 2 works for the limit switch. When it is connected and disconnected to pin no.1, the power will be OFF

11.2 Cable 5pin(or 6pin) check [1]

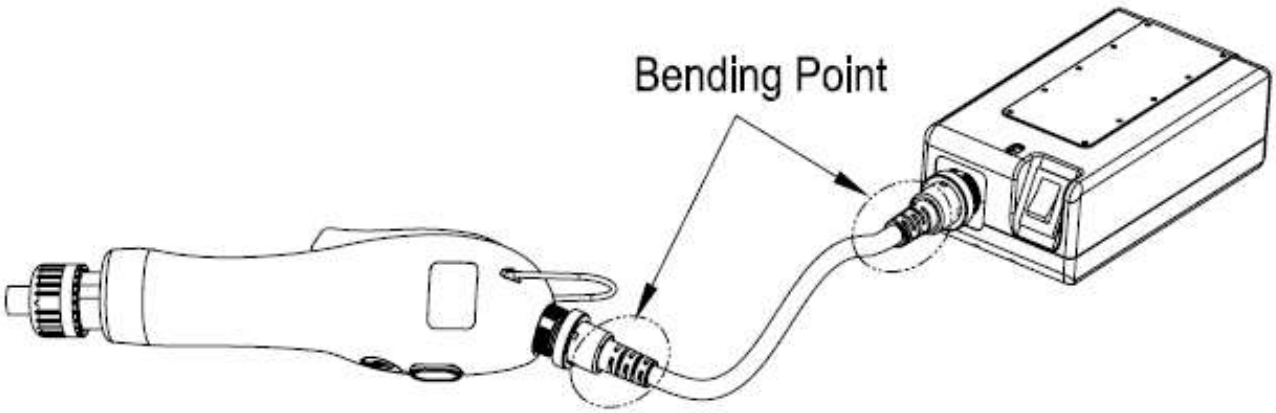
STEP 1. If the driver does not run, go to Chap. 11-3.

STEP 2. Keep the driver running, and bend the cord to the variable direction (PIC. 2-1).

EVALUATION

If you find any bad connection on cable 5pin(or 6pin), replace it PIC. 2-1.

PIC. 2-1



11.3 Cable 5pin(or 6pin) check [2]

STEP 1. Be sure that the cable is disconnected.

STEP 2. Select the range of analog multi tester on 'R x 1'.

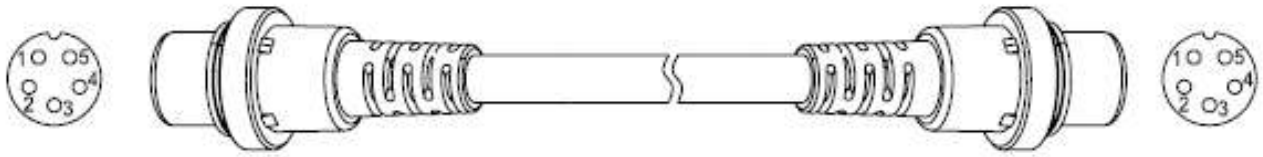
STEP 4. Test each resistance between terminals of cable 5pin(OR 6pin).

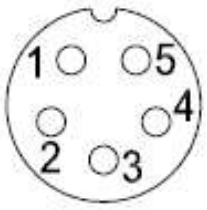
(PIC.3-1)

EVALUATION

RESULT	EVALUATION	ACTION
Resistance " Ω " (open)	NG	replace
Resistance "0" (closed)	OK	go to the next process

PIC 3-1





11.4 Motor set check

STEP 1. Check carbon brush assy (go to 11-6).

STEP 2. Be sure that the cable 5pin(or 6pin) is disconnected.

STEP 3. Be sure that the slide switch assy is on neutral position.

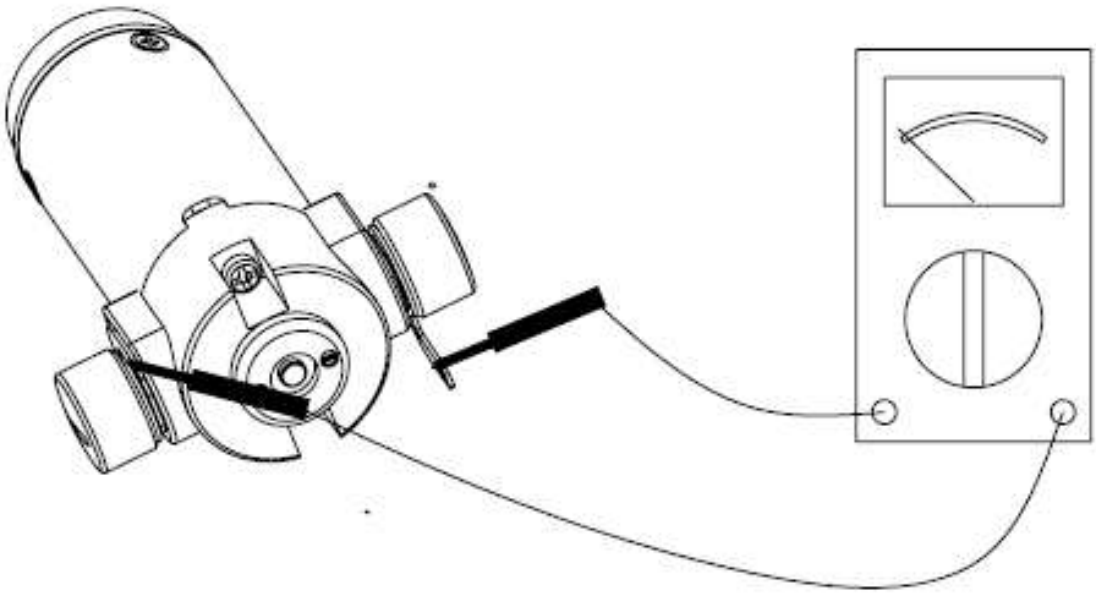
STEP 4. Select the range of analog multi tester on 'R x 1'.

STEP 5. Check the resistance between terminals (PIC 4-1).

EVALUATION

	RESULT	EVALUATION	ACTION
GA MOTOR	32~38 Ω	OK	go to the next process
GA MOTOR	0~31 Ω	NG	Replace

PIC 4-1



11.5 Slide switch assy check

STEP 1. Be sure that no power on.

STEP 2. Remove lead wires(red,black) between slide switch and motor set.

STEP 3. Select the range of analog multi tester on 'R x 1' or short circuit check mode.

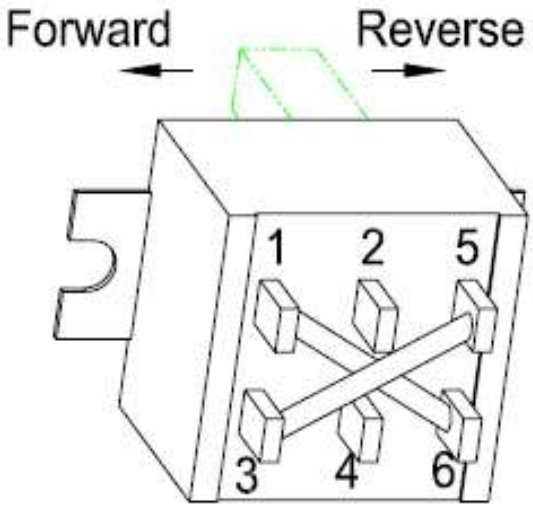
STEP 4. Check the short circuit between the leads shown on the table and
(PIC. 5-1)

SWITCH MODE	RESISTANCE CHECKING POINTS	EVALUATION	ACTION (IF NG)
FOR	1 AND 2	RESISTANCE "0" OR SHORT CIRCUIT (CLOSED) IS "OK" RESISTANCE "∞ "(OPEN) IS "NG"	REPLACE SLIDE SWITCH
	3 AND 4		
REV	2 AND 5		
	4 AND 6		

EVALUATION

If you find any failure of short circuit, repair(if possible) or replace it.

PIC 5-1



11.6 Carbon brush assy check

STEP 1. Disconnect the Cable 5pin(or 6pin).

STEP 2. Open both brush caps, and pull out the carbon brush assys.

STEP 3. Inspect whether carbon brush assys are right position and they should be authorized one by Doga.

STEP 4. Check each length of carbon brush is enough long.

STEP 5. Check the electric wire connection.

EVALUATION

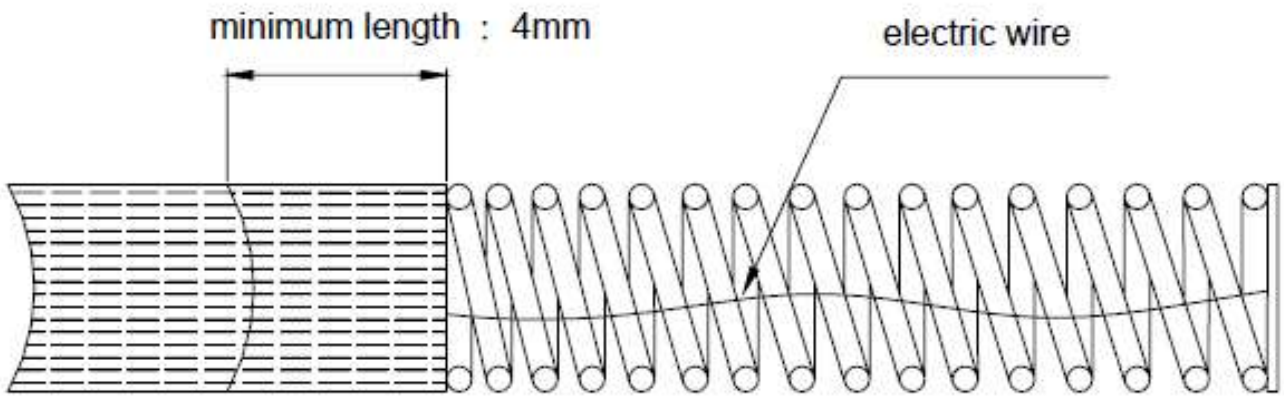
Replace both carbon brush assys, if :

- the length is shorter than 4mm

- electric wire is cut. or has bad connection

(When you need to replace carbon brush assy, you should replace both carbon brush assys at once, even if one is in good condition.)

PIC 6-1



11.7 Gear set check

STEP 1. Inspect idle gear's inside of gear case by visual (PIC 7-1).

STEP 2. Turn the bit in a direction, then the idle gears should run freely (PIC.7-2).

STEP 3. Check the sleeve assy and magnet holder assy (PIC 7-1).

STEP 4. Check the position of magnet holder assy (PIC 7-2).

EVALUATION

- Replace damaged part, if it is wear, tear, or broken (**see chapter 9**).

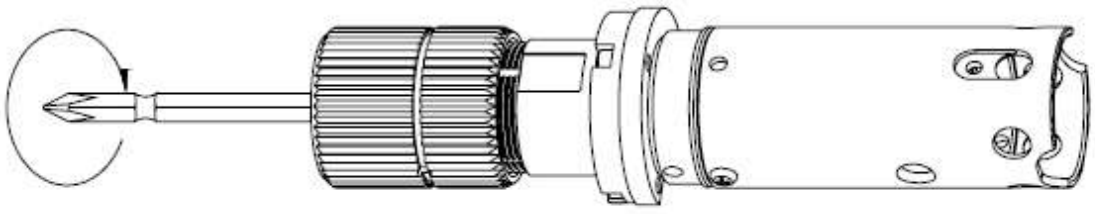
- Clean up, if it doesn't turn freely or you can see a mote, dust, other particle inside gear case.

- Replace sleeve assy, if it is wear, tear, or broken.

- Correct the position and adjust its alignment.

PIC 7-1

PIC 7-2

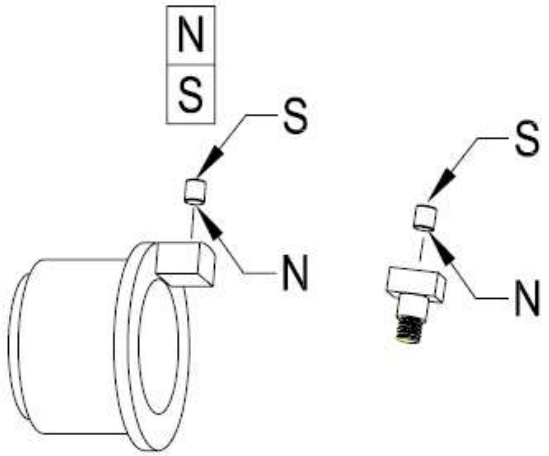


11.8 Sleeve assy, magnet holder assy check

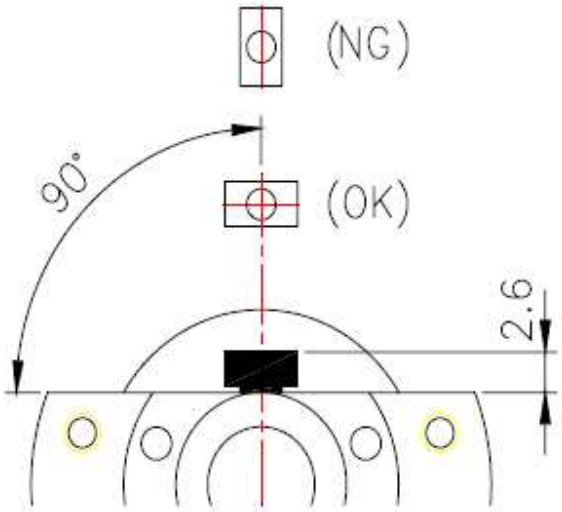
STEP 1. Magnet check
Any worn, broken and wrong positioned magnet should be replaced. PIC 9-1 is shown the right position of magnet on sleeve assy and magnet holder assy.
Be sure the right alignment on PIC 9-2 between gear case and magnet holder assy.

*** The position of magnet holder assy is very important on assembling of push start driver.

PIC 8-1



PIC 8-2 magnet holder assy alignment



11.9 Sensor assy function check

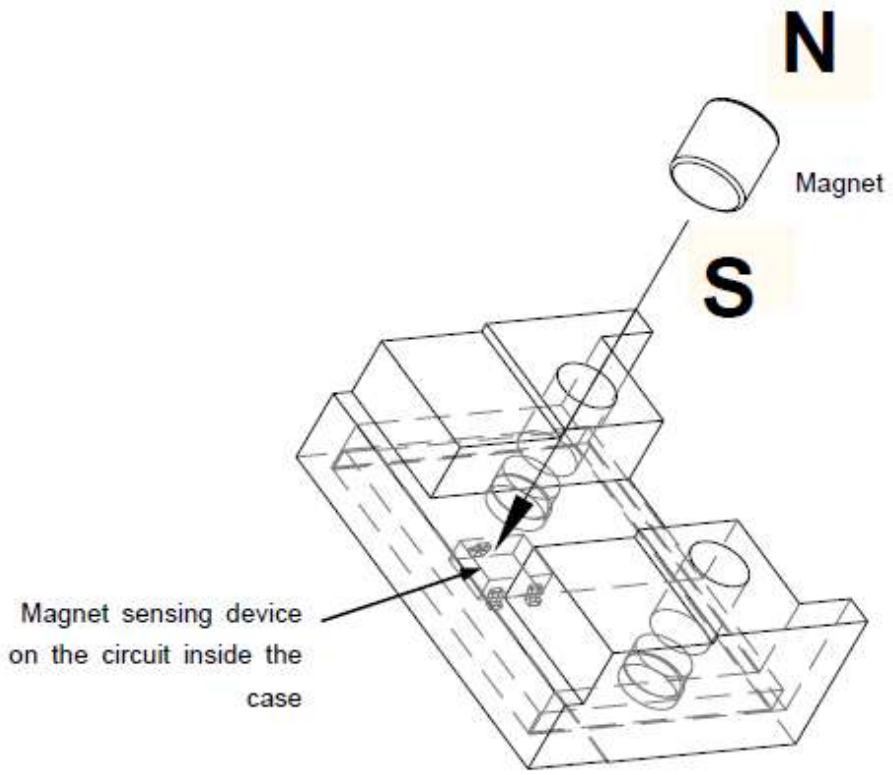
STEP 1. Open the housings and disassemble the sensor assy from gear set.

STEP 2. Keep the motor running by pressing the Lever and scan around the sensor case by moving the magnet on sleeve assy. The sensor device works with the North pole magnet.

STEP 3. The motor should stop when the north pole magnet appears and disappears around the sensing device.

STEP 4. For Push start driver, use one more magnet on magnet holder assy, for the motor running. The sensor assy has two sensing devices on the circuit board inside the case.

PIC 9-1 Sensor assy checking point



11.10 Wiring check

STEP 1. Open the upper housing.

STEP 2. Inspect all wiring connection is correct according to **chapter 5.**

STEP 3. Find out any wire cut, evidence of arc and poor condition of connection.

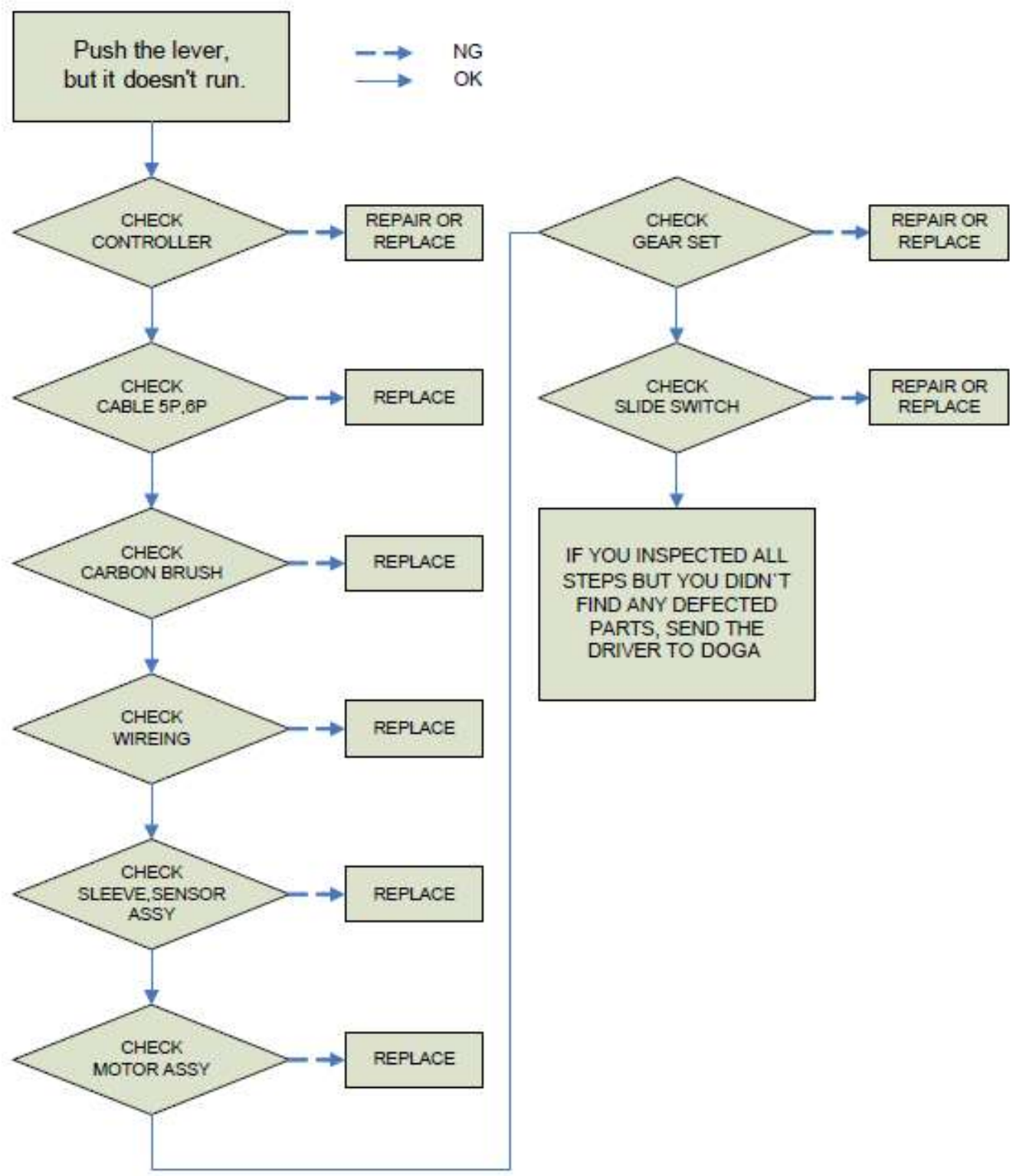
EVALUATION

- Replace if you find any damage, cut, or melted wire.

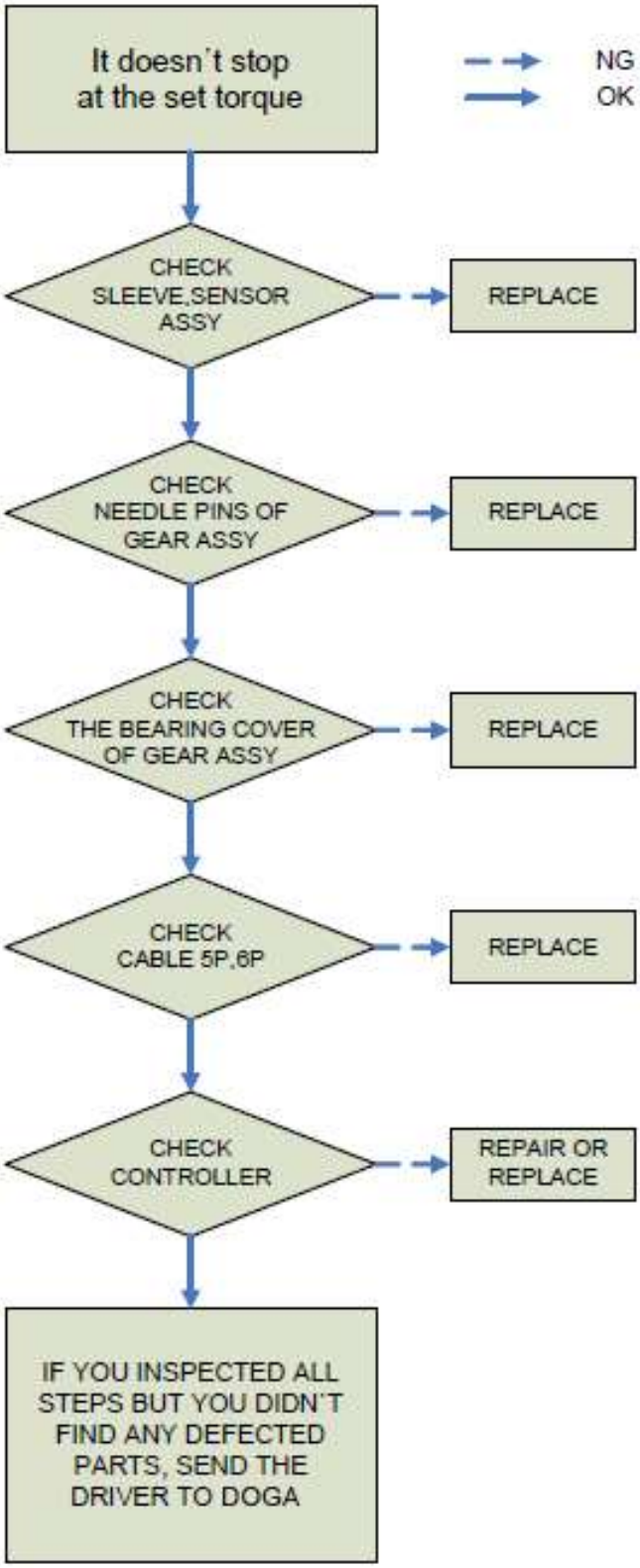
- Resolder if you find any poor condition of connections.

12. Trouble shooting

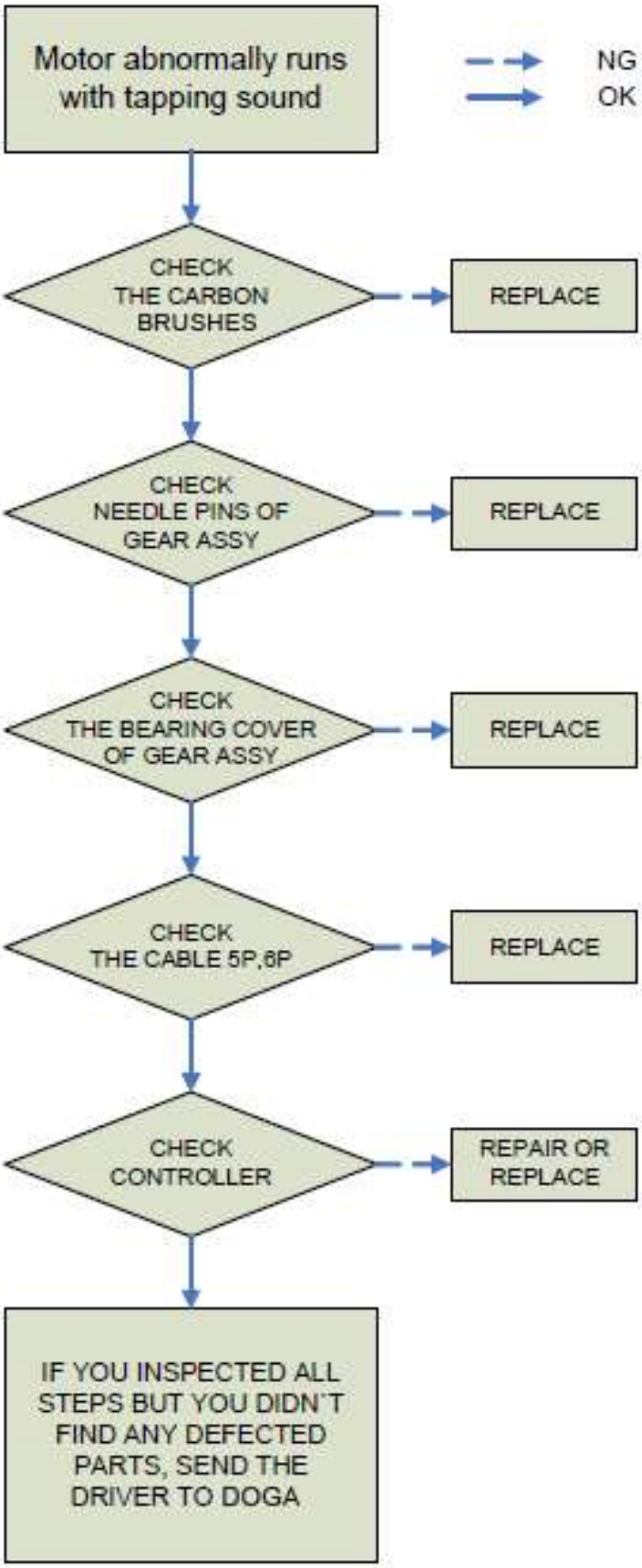
12.1 It doesn't work



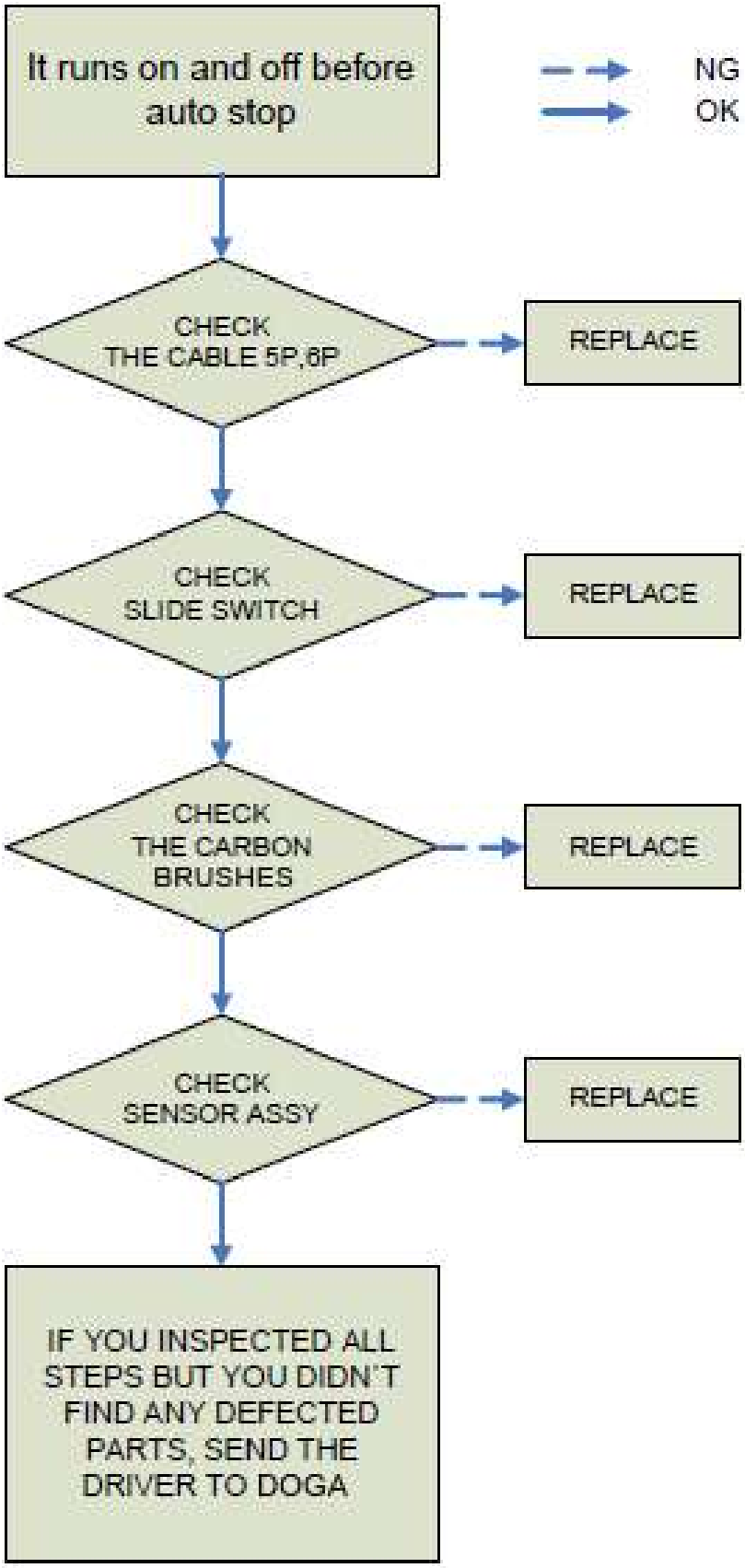
12.2 It doesn't stop at the set torque



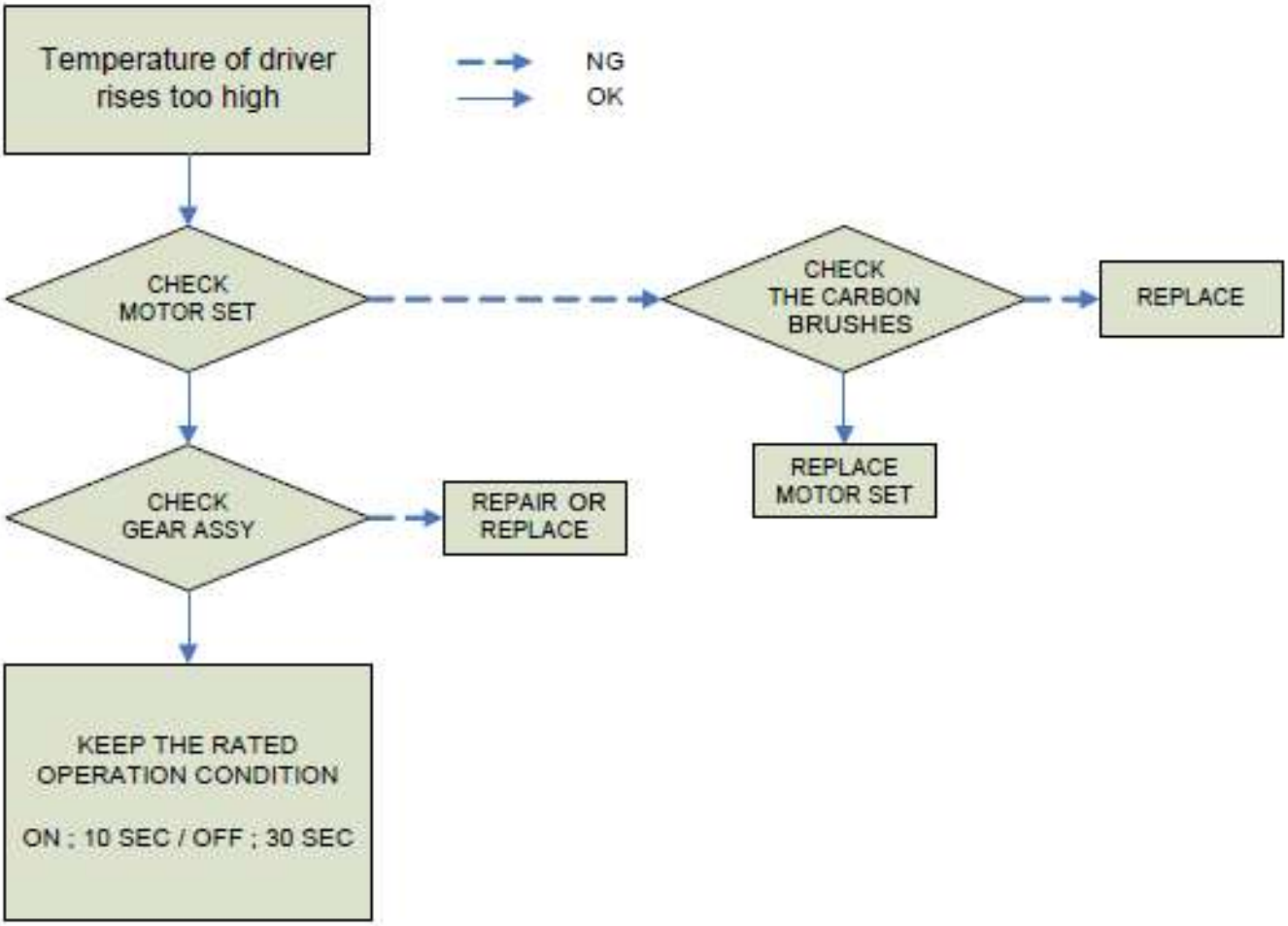
12.3 Motor abnormally runs with tapping sound



12.4 It runs on and off before auto stop



12.5 Temperature of driver rises too high



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