

Test Report

Report No.: GNBZ241004151EN

Issue Date: Nov. 22, 2024

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The following information was/were submitted and identified by/on behalf of the client:

Applicant : W&T Flüssigkeit Kontrolle GmbH
Applicant's Address : Hanauer Landstr. 204, 60314 Frankfurt am Main, Germany
Sample Name : Intelligent Valve Positioner
Tested Model : WTEP series
Sample Receive Date : Nov. 04, 2024
Sample Resubmission Date : Nov. 19, 2024
Sample Testing Period : Nov. 04, 2024 - Nov. 14, 2024

Test Result Summary:

As requested by the applicant, for details refer to attached page(s).

TEST ITEM(S)	TEST REQUESTED	CONCLUSION(S)
Lead, Cadmium, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers(PBDEs) and Phthalates(DBP, BBP, DEHP, DIBP)	As specified by client, to comply with the Limits for Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive (EU) 2015/863 amending Annex II of Directive 2011/65/EU) on the submitted sample(s)	PASS

Note: The test results are only related to the test item(s) and test part(s) appointed by client.

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Authorized signature:



Lab Manager: Gavin Zhou



Nov. 22, 2024

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Test Result(s):

Part 1. Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent chromium(Cr(VI)), Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers(PBDEs)

Test Method:

Screening Test by XRF spectrometry

With reference to IEC 62321-3-1:2013, Screening of Lead(Pb), Mercury(Hg), Cadmium(Cd), Total chromium(Cr) and Total bromine(Br) by X-ray fluorescence(XRF) spectrometry

Chemical Confirmation Test

Lead(Pb), Cadmium(Cd) – IEC 62321-5:2013, Acid digestion and determined by ICP-OES

Mercury(Hg) – IEC 62321-4:2013/AMD1:2017, Acid digestion and determined by ICP-OES

Cr(VI) – IEC 62321-7-1:2015, Boiling water extraction and determined colorimetrically by UV-vis

& IEC 62321-7-2:2017, Solution extraction and determined colorimetrically by UV-vis

PBBs, PBDEs – IEC 62321-6:2015, Solvent extraction and determined by GC-MS

Part No.	Description	XRF screening Results					Chemical Confirmation Results (mg/kg)	Conclusion(s)
		Pb	Cd	Hg	Total Cr	Total Br		
1-1	Grey coating	BL	BL	BL	BL	BL	---	PASS
1-2	Metal (substrate)	BL	BL	BL	BL	---	---	PASS
2-1	Grey coating	BL	BL	BL	BL	BL	---	PASS
2-2	Metal (substrate)	BL	BL	BL	BL	---	---	PASS
3	Label	BL	BL	BL	BL	BL	---	PASS
4	Orange rubber ring	BL	BL	BL	BL	BL	---	PASS
5	Glass	BL	BL	BL	BL	---	---	PASS
6	Label	BL	BL	BL	BL	BL	---	PASS
7	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
8	Metal (substrate)	BL	BL	BL	BL	---	---	PASS
9	Red rubber ring	BL	BL	BL	BL	BL	---	PASS
10	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
11	Transparent plastic	BL	BL	BL	BL	BL	---	PASS
12	Metal (dial plate)	BL	BL	BL	BL	---	---	PASS
13	Silvery metal	BL	BL	BL	BL	---	---	PASS
14	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
15	Metal (pointer)	BL	BL	BL	BL	---	---	PASS
16	Silvery metal	OL	BL	BL	BL	---	Pb: 21359 [▲] Cd: 12	PASS
17	Golden metal	OL	BL	BL	BL	---	Pb: 28466 [▲] Cd: 22	PASS
18	Golden metal	OL	BL	BL	BL	---	Pb: 25239 [▲] Cd: 24	PASS
19	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS

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Part No.	Description	XRF screening Results					Chemical Confirmation Results (mg/kg)	Conclusion(s)
		Pb	Cd	Hg	Total Cr	Total Br		
20	Golden metal	OL	BL	BL	BL	---	Pb: 21618 [▲] Cd: 44	PASS
21	Golden metal	OL	BL	BL	BL	---	Pb: 28851 [▲] Cd: 30	PASS
22	Golden metal	BL	BL	BL	BL	---	---	PASS
23	Golden metal	BL	BL	BL	BL	---	---	PASS
24	Coppery metal	BL	BL	BL	BL	---	---	PASS
25	Soldering tin	BL	BL	BL	BL	---	---	PASS
26	Grey plastic	BL	BL	BL	BL	BL	---	PASS
27	Black rubber ring	BL	BL	BL	BL	BL	---	PASS
28	Black plastic	BL	BL	BL	BL	BL	---	PASS
29	Black plastic	BL	BL	BL	BL	BL	---	PASS
30	Black plastic	BL	BL	BL	BL	BL	---	PASS
31	Transparent silica gel	BL	BL	BL	BL	BL	---	PASS
32	Black plastic	BL	BL	BL	BL	BL	---	PASS
33	Metal (shaft)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
34	Black rubber	BL	BL	BL	BL	BL	---	PASS
35	Transparent plastic	BL	BL	BL	BL	BL	---	PASS
36-1	Black rubber ring	BL	BL	BL	BL	BL	---	PASS
36-2	Metal (substrate)	BL	BL	BL	BL	---	---	PASS
37-1	Red rubber ring	BL	BL	BL	BL	BL	---	PASS
37-2	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
38	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
39	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
40	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
41	Black rubber ring	BL	BL	BL	BL	BL	---	PASS
42	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
43	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
44	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
45	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
46	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
47	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
48	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
49	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
50	Metal (spring washer)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
51	Metal (washer)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
52	Metal (nut)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
53	Metal (spring)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
54	Grey plastic	BL	BL	BL	BL	BL	---	PASS
55-1	Black rubber ring	BL	BL	BL	BL	BL	---	PASS

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Part No.	Description	XRF screening Results					Chemical Confirmation Results (mg/kg)	Conclusion(s)
		Pb	Cd	Hg	Total Cr	Total Br		
55-2	Silvery metal	BL	BL	BL	BL	---	---	PASS
56	Silvery metal	OL	BL	BL	BL	---	Pb: 16380 [▲] Cd: 24	PASS
57	Label	BL	BL	BL	BL	BL	---	PASS
58	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
59	Black plastic	BL	BL	BL	BL	BL	---	PASS
60-1	Heat shrink tubing	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D.	PASS
60-2	Soldering tin	BL	BL	BL	BL	---	---	PASS
61	Yellow wire sheath	BL	BL	BL	BL	BL	---	PASS
62	Blue wire sheath	BL	BL	BL	BL	BL	---	PASS
63	Purple wire sheath	BL	BL	BL	BL	BL	---	PASS
64	Black plastic	BL	BL	BL	BL	BL	---	PASS
65	Red wire sheath	BL	BL	BL	BL	BL	---	PASS
66	Black wire sheath	BL	BL	BL	BL	BL	---	PASS
67	Black plastic	BL	BL	BL	BL	BL	---	PASS
68	Blue rubber ring	BL	BL	BL	BL	BL	---	PASS
69	Soldering tin (THC)	BL	BL	BL	BL	---	---	PASS
70	Soldering tin (wiring)	BL	BL	BL	BL	---	---	PASS
71	Yellow wire sheath	BL	BL	BL	BL	BL	---	PASS
72	Purple wire sheath	BL	BL	BL	BL	BL	---	PASS
73	Green wire sheath	BL	BL	BL	BL	BL	---	PASS
74	Blue wire sheath	BL	BL	BL	BL	BL	---	PASS
75	Stabilivolt	BL	BL	BL	BL	---	---	PASS
76	Soldering tin (SMD)	BL	BL	BL	BL	---	---	PASS
77	Soldering tin (THC)	BL	BL	BL	BL	---	---	PASS
78	PCB	BL	BL	BL	BL	IN	PBBs: N.D. PBDEs: N.D.	PASS
79	Green plastic	BL	BL	BL	BL	BL	---	PASS
80	Silvery metal	OL	BL	BL	BL	---	Pb: 24760 [▲] Cd: 29	PASS
81	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
82	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
83	Silvery metal	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
84	Metal (substrate)	BL	BL	BL	BL	---	---	PASS
85	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS
86	Metal (screw)	BL	BL	BL	IN	---	Cr(VI): Negative	PASS

Remark:

(^1) Screening Test by XRF spectrometry

(a) XRF analysis of the result(s) may only related to the surface of the sample(s).

(b) The results of total Cr and total Br only represent the total content of the elements, do not represent Cr(VI),

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PBBs and PBDEs content correspondingly. As restricted by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU, The result(s) is expressed as total Cr while test items on restricted substances is Cr(VI). The result(s) is expressed as total Br while test items on restricted substances are PBBs and PBDEs.

- (c) The results are obtained by XRF screening for primary judgment, further chemical confirmation by ICP-OES (for Pb, Cd, Hg), UV-vis (for Cr(VI)) and GC-MSD (for PBBs, PBDEs) may be performed, if the XRF screening result(s) exceeds the below limits according to IEC 62321-3-1:2013 Table A.2 - Screening limits in mg/kg for regulated elements in various matrices.

Element	Polymers	Metals	Composite material
Cd	$BL \leq (70-3\sigma) < X$ $< (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X$ $< (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	Not applicable	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

BL = Below limit, OL = Over limit, IN = Inconclusive, 3σ = Repeability of the analyser at the action level, X = The region where further investigation is necessary, LOD = Limit of detection.

- (d) The XRF screening test of selected elements - The result(s) was/ were only given for reference, as the result(s) may be different to the actual content in the non-uniformity composition, and the results differ based on various factors, including but not limited to the tested part(s)/component(s) size, thickness, surface flatness, equipment parameters and matrix effect etc.

(^2) Chemical Confirmation Test

(a) 1000mg/kg = 0.1%; RL = Reporting Limit; N.D. = Not detected (< RL).

(b) RL and Limits of test items.

Test Item(s)	Reporting Limit (RL)	Limit
Lead(Pb)	10 mg/kg	1000 mg/kg (0.1%)
Cadmium(Cd)	10 mg/kg	100 mg/kg (0.01%)
Mercury(Hg)	10 mg/kg	1000 mg/kg (0.1%)
Chromium VI (Cr VI)	Polymer and composite material: 10 mg/kg, Metal: 0.10 ug/cm ²	1000 mg/kg (0.1%)
Group PBBs	Single compound of PBBs: 50 mg/kg	1000 mg/kg (0.1%)
Group PBDEs	Single compound of PBDEs: 50 mg/kg	1000 mg/kg (0.1%)

(c) According to IEC 62321-7-1:2015, result of Cr(VI) for metal sample is shown as below:

If Cr(VI) concentration > 0.13 ug/cm², the sample contains Cr(VI) which is positive for Cr(VI);

If Cr(VI) concentration < 0.10 ug/cm², the sample does not contain Cr(VI) which is negative for Cr(VI);

If Cr(VI) concentration ≥ 0.10 ug/cm² and ≤ 0.13 ug/cm², the result is considered to be inconclusive – Unavoidable coating variations may influence the determination.

(^3) ▲ = Exemption part(s) according to the declaration from the client.

Lead(Pb) in No.16, No.17, No.18, No.20, No.21, No.56, No.80 are exempted by RoHS Directive 2011/65/EU based on Annex III/6(c): Copper alloy containing up to 4% lead by weight.

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(^4) Other information.

No.23, No.25, No.60-2, No.70, No.76, No.77 were resubmitted on Nov. 19, 2024.

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Part 2. Phthalates - Dibutyl phthalate(DBP), Butyl benzyl phthalate(BBP), Bis(2-ethylhexyl) phthalate (DEHP), Diisobutyl phthalate(DIBP)**Test Method:** IEC 62321-8:2017, Solvent extraction and determined by GC-MS

Part No.	Test Results (mg/kg)				Conclusion(s)
	DBP	BBP	DEHP	DIBP	
	RL (mg/kg)				
	50	50	50	50	
	Limit (mg/kg)				
	1000	1000	1000	1000	
1-1 + 2-1	N.D.	N.D.	N.D.	N.D.	PASS
3 + 6 + 57	N.D.	N.D.	N.D.	N.D.	PASS
4	N.D.	N.D.	N.D.	N.D.	PASS
9 + 36-1 + 37-1	N.D.	N.D.	N.D.	N.D.	PASS
11 + 26 + 28	N.D.	N.D.	N.D.	N.D.	PASS
27 + 68	N.D.	N.D.	N.D.	N.D.	PASS
29 + 30 + 32	N.D.	N.D.	N.D.	N.D.	PASS
31	N.D.	N.D.	N.D.	N.D.	PASS
34	60	N.D.	200	N.D.	PASS
35 + 54 + 59	N.D.	N.D.	N.D.	N.D.	PASS
41 + 55-1	N.D.	N.D.	N.D.	N.D.	PASS
60-1	N.D.	N.D.	120	N.D.	PASS
61	N.D.	N.D.	N.D.	N.D.	PASS
62	N.D.	N.D.	N.D.	N.D.	PASS
63	N.D.	N.D.	N.D.	N.D.	PASS
64 + 67 + 79	N.D.	N.D.	N.D.	N.D.	PASS
65 + 66	N.D.	N.D.	N.D.	N.D.	PASS
71 + 72	60	N.D.	100	N.D.	PASS
73 + 74	320	N.D.	50	N.D.	PASS
78	N.D.	N.D.	N.D.	N.D.	PASS

- Note:**
1. 1000mg/kg = 0.1%;
 2. N.D. = Not detected (<RL);
 3. The test parts were analyzed on behalf of the applicant as mixing sample in one testing. The above results were only given as the informality value and only for reference.
 4. Other information.
No.61, No.62, No.63 were resubmitted on Nov. 19, 2024.

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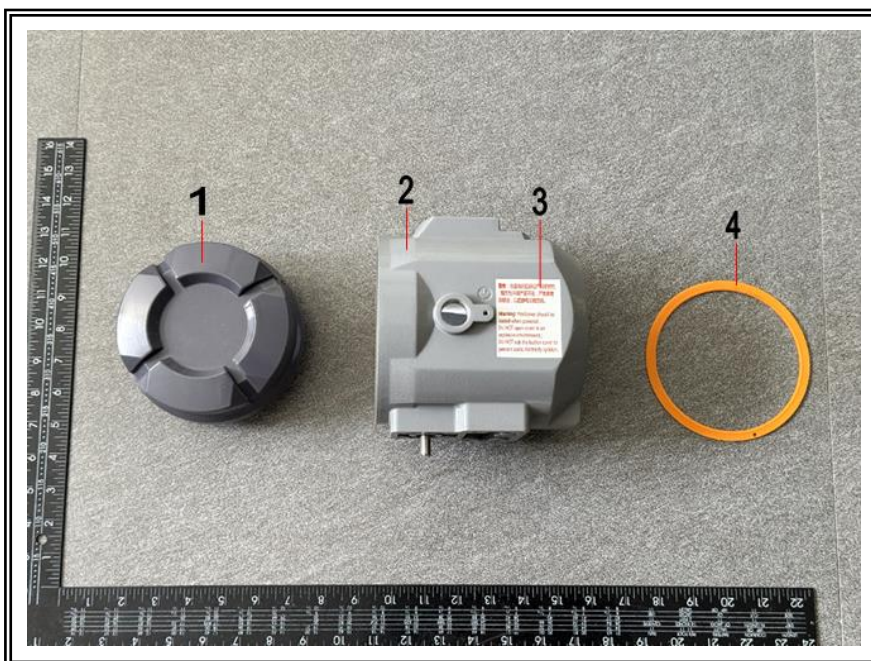
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Sample photo(s):



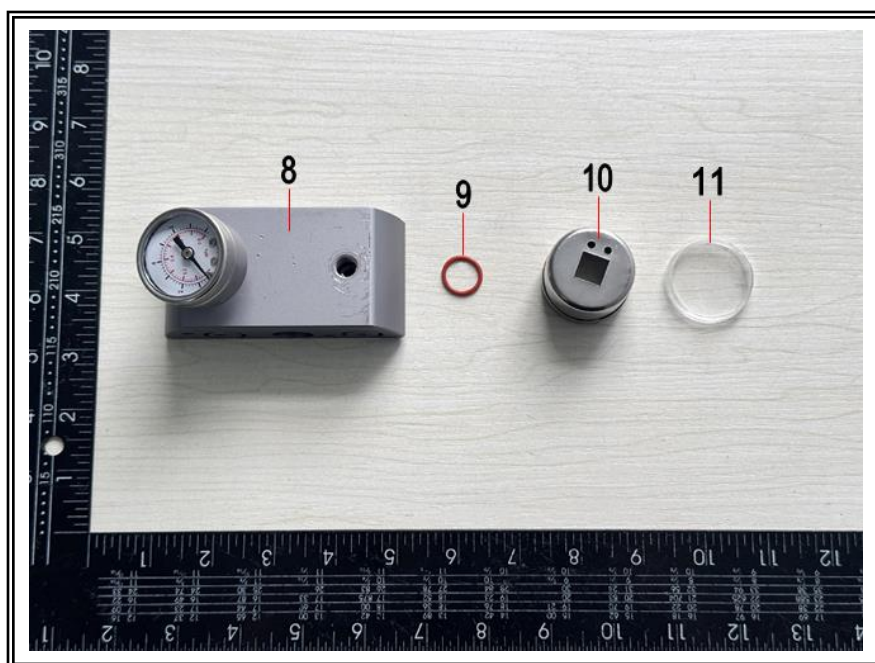
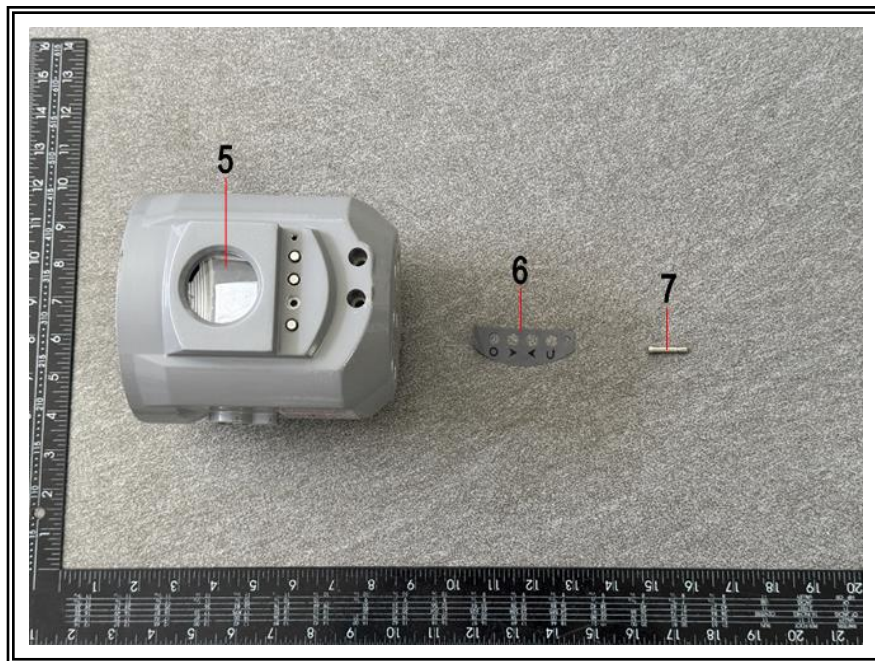
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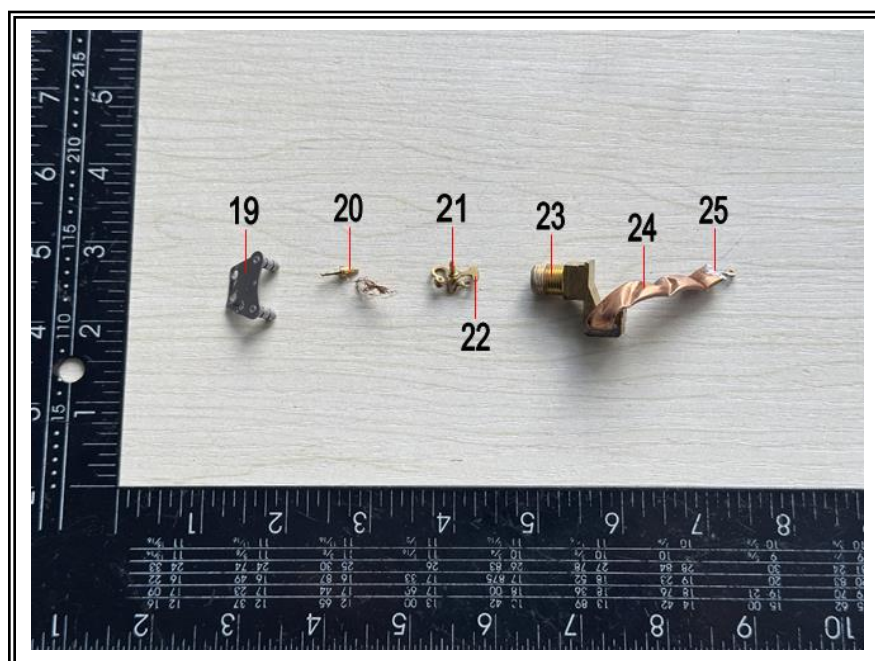
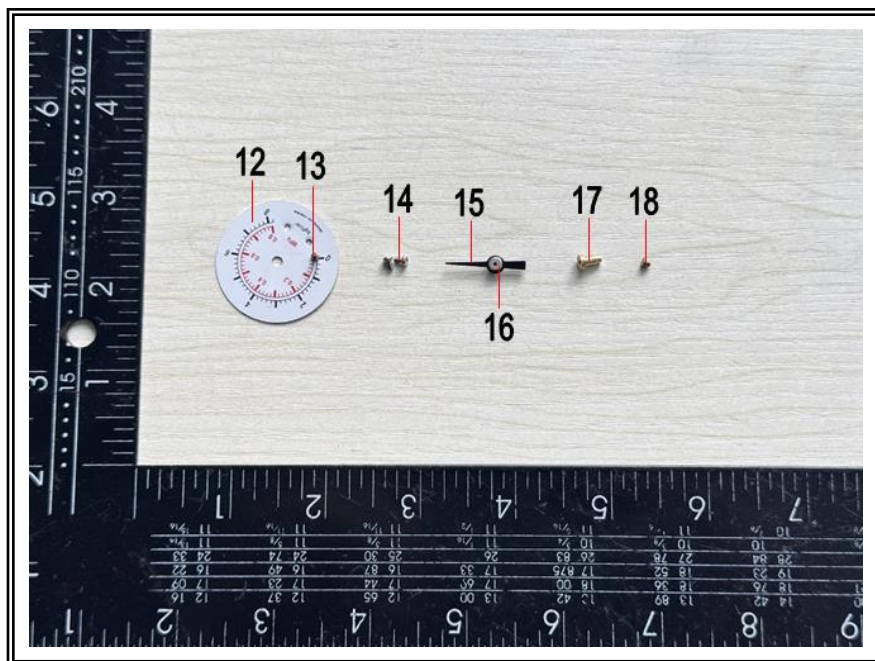
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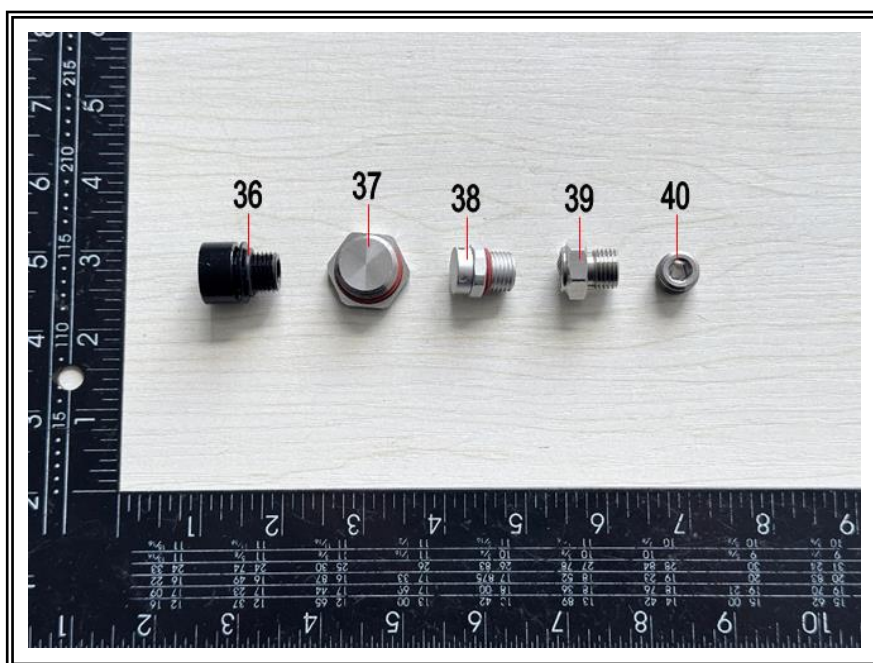
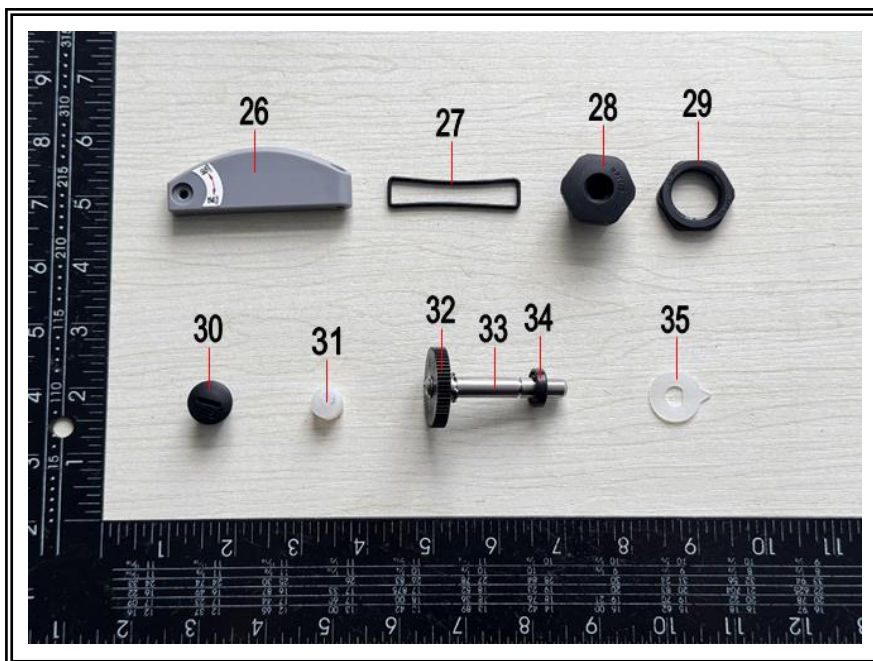
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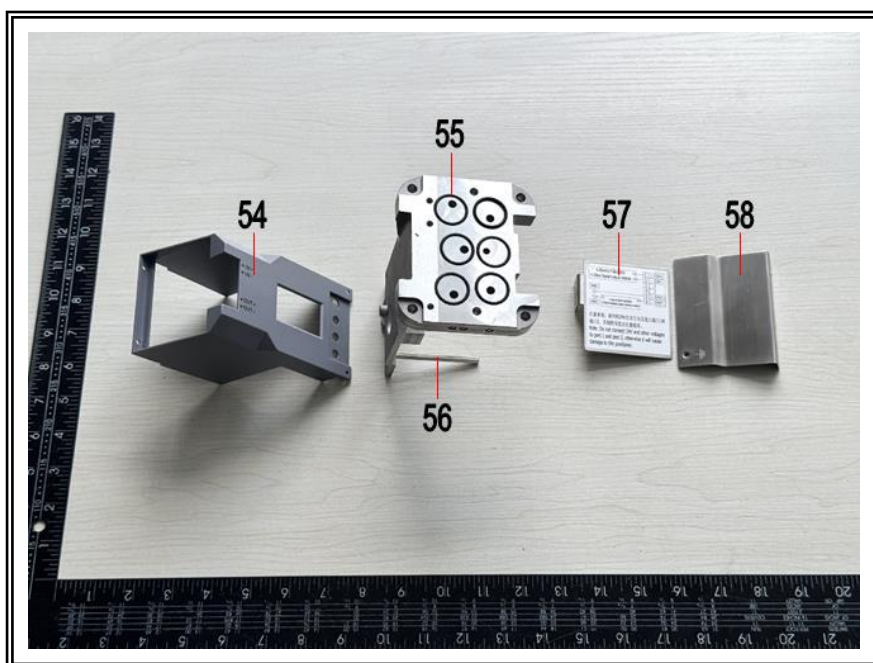
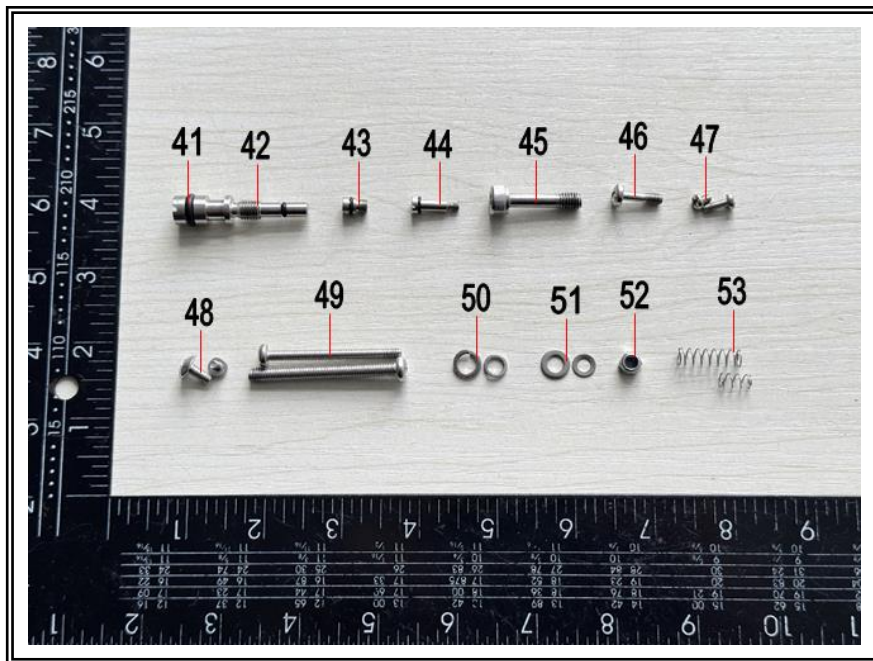
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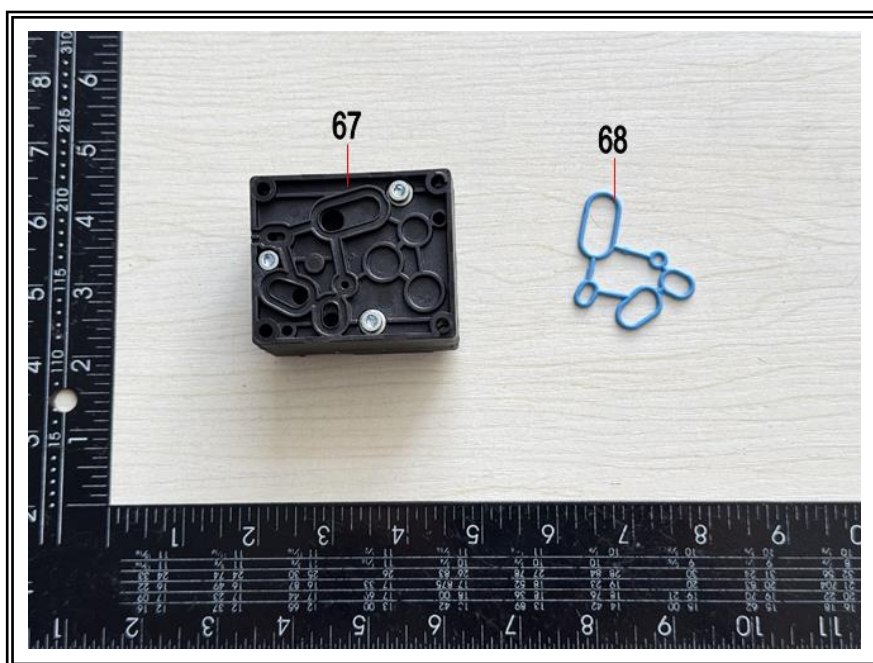
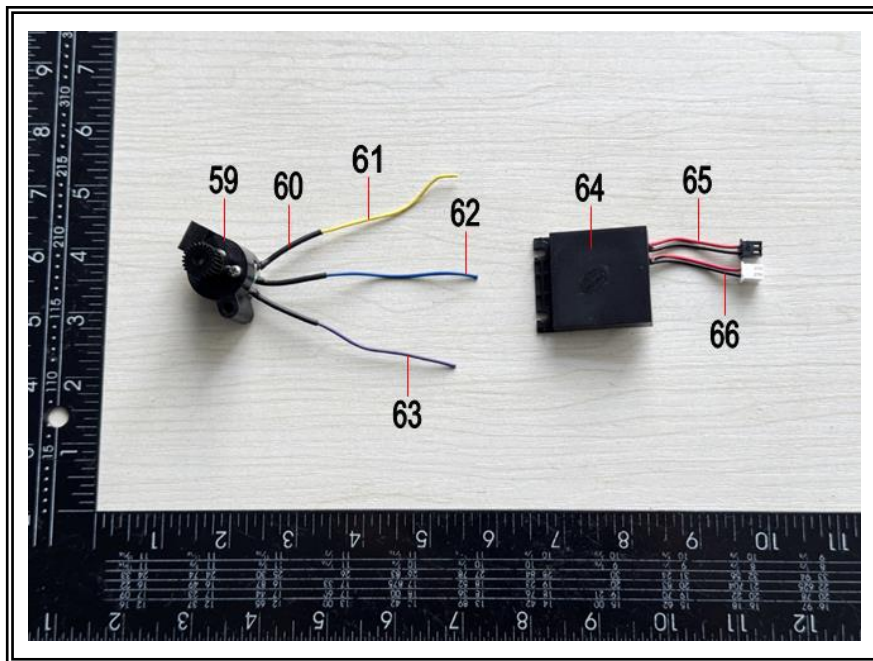
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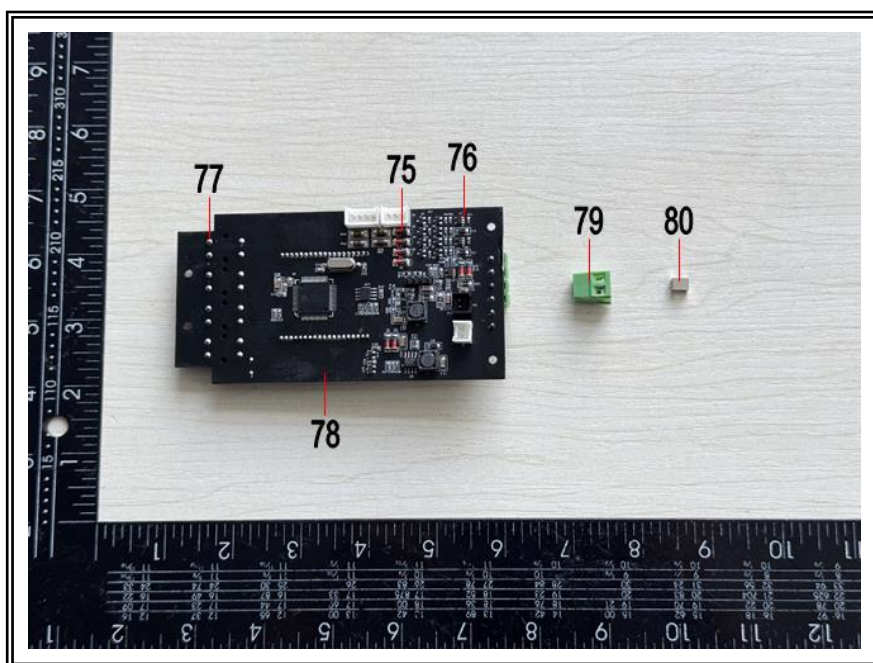
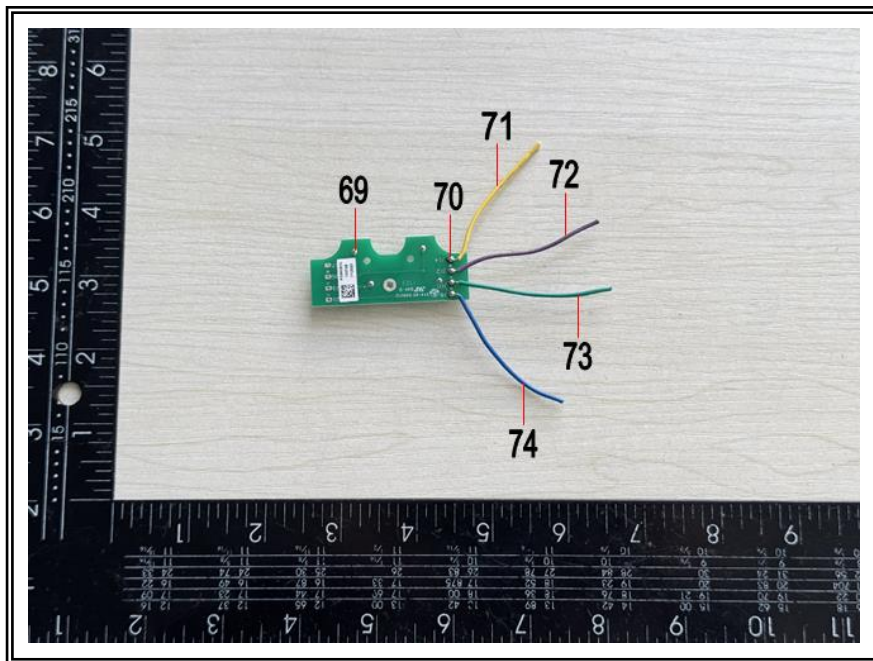
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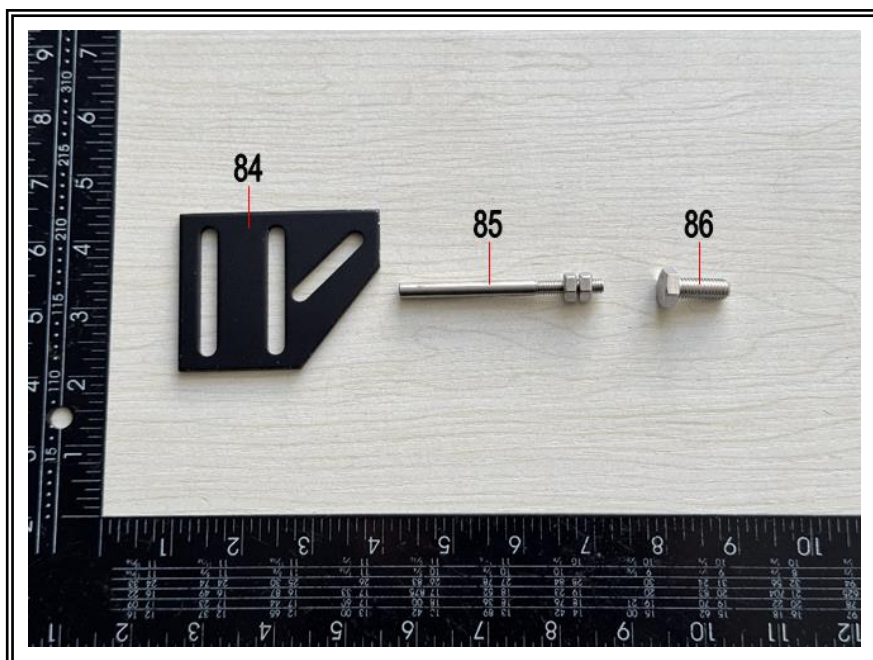
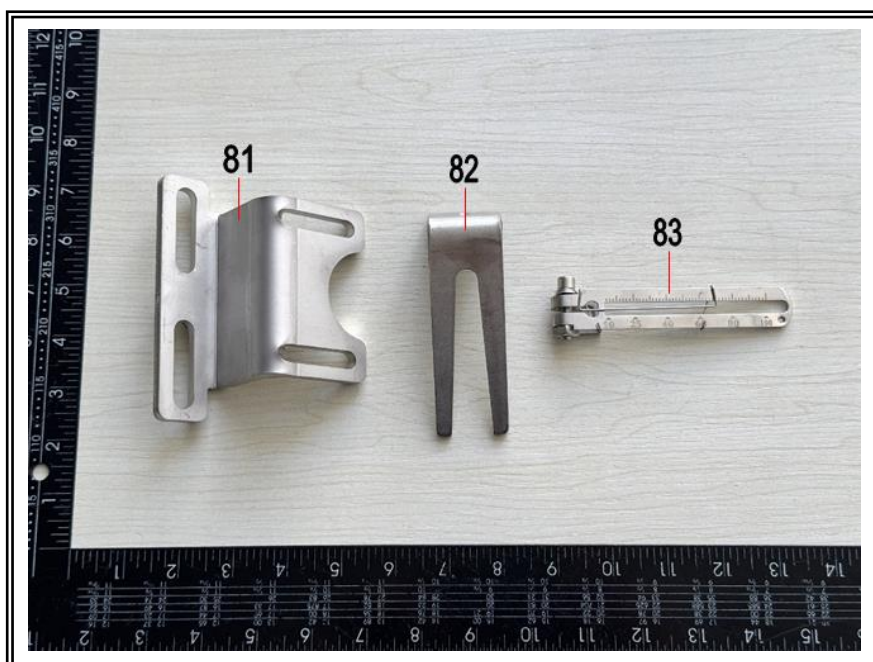
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