

Client Name: Jiangsu DINGS' Intelligent Control Technology Co., LTD
 Client Address: No. 2850 Luheng Road, Economic Development Zone, Changzhou, Jiangsu, 213025 China

Sample Name: Hybrid Hollow Shaft Stepper Motor, Hybrid Rotary Stepper Motor
 Tested Basic Model No.: 17HS2034-4D-100-100SZ
 Tested Extended Model No.: 17H2034-120-4AL-036SZ
 Client Ref. Information: HS/H/P/N/W

The above sample(s) and information were provided by the client.

SGS Job No.: SHP24-041543
 Sample Receiving Date: Dec 30, 2024
 Verification Period: Dec 30, 2024 ~ Jan 07, 2025
 Verification Requested: With reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.
 Verification Method(s): Please refer to next page(s).
 Verification Result(s): Please refer to next page(s).

Test Result Summary:

Test Items	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass

Signed for and on behalf of
 SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd.



Justin Zhang
 Approved Signatory

scan to see the report



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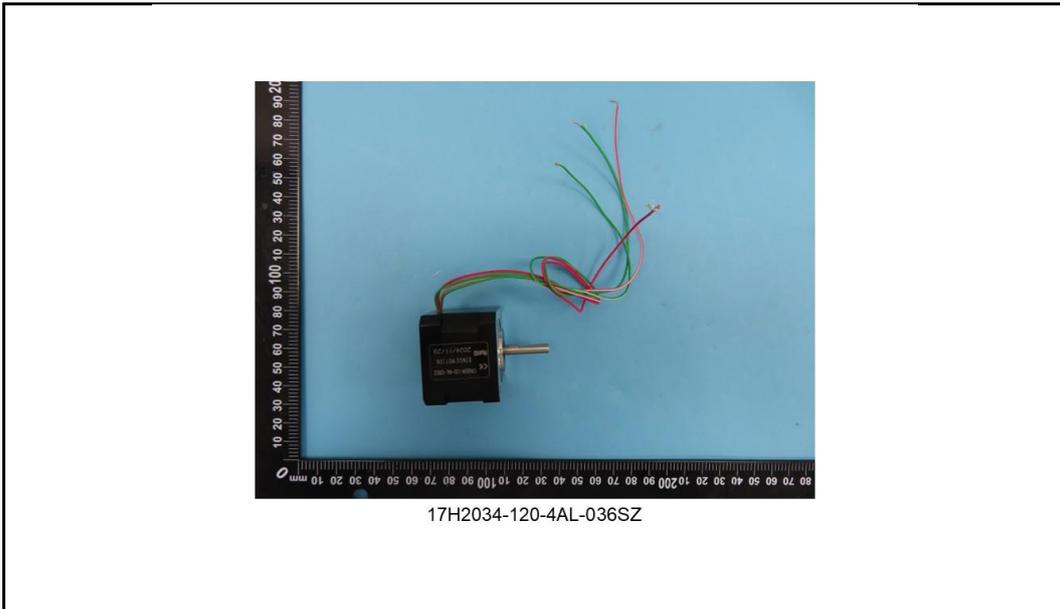
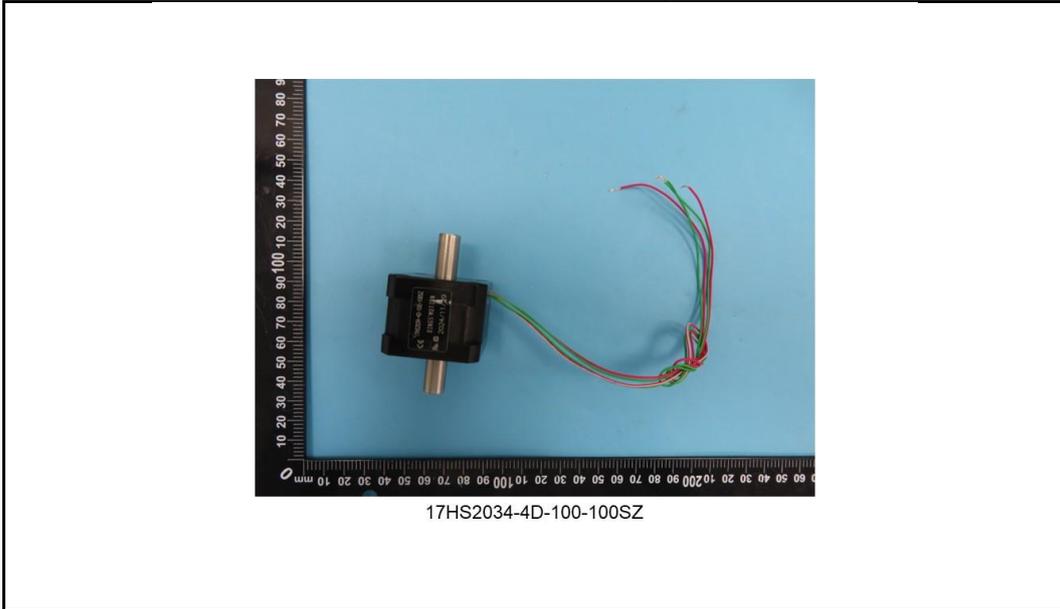
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Photo of Submitted Sample



Verification Method(s):

1. With reference to IEC 62321-2:2021, disassembly and disjointment were performed for the submitted samples.
2. With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report.
 - (1) With reference to IEC 62321-3-1:2013, screening by EDXRF spectroscopy.
 - (2) Wet chemical test method: With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC



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62321-7-1:2015, IEC 62321-7-2:2017, IEC 62321-12:2023, IEC 62321-6:2015 and IEC62321-8:2017 , analyzed by ICP-OES,UV-Vis and GC-MS.



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Verification Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	TAO24-0102922-0001.C001	Silvery metal
SN2	A2	TAO24-0102922-0001.C002	Black/white plastic(label)
SN3	A3	TAO24-0102922-0001.C003	Black metal
SN4	A4	TAO24-0102922-0001.C004	Black metal
SN5	A5	TAO24-0102922-0001.C005	Silvery metal(screw)
SN6	A6	TAO24-0102922-0001.C006	White plastic
SN7	A7	TAO24-0102922-0001.C007	Copper enamelled wire
SN8	A8	TAO24-0102922-0001.C008	Gray adhesive
SN9	A9	TAO24-0102922-0001.C009	Silvery metal
SN10	A10	TAO24-0102922-0001.C010	Silvery metal
SN11	A11	TAO24-0102922-0001.C011	White plastic
SN12	A12	TAO24-0102922-0001.C012	Silvery metal
SN13	A13	TAO24-0102922-0001.C013	Silvery metal
SN14	A14	TAO24-0102922-0001.C014	Silvery metal
SN15	A15	TAO24-0102922-0001.C015	Silvery metal(steel ball)
SN16	A16	TAO24-0102922-0001.C016	Red/white plastic(jacket)
SN17	A17	TAO24-0102922-0001.C017	Silvery metal(inner core)
SN18	A18	TAO24-0102922-0001.C018	Green plastic(jacket)
SN19	A19	TAO24-0102922-0001.C019	Red plastic(jacket)
SN20	A20	TAO24-0102922-0001.C020	Green/white plastic(jacket)
SN21	A21	TAO24-0102922-0001.C021	Silvery metal(soldering tin)
SN22	A22	TAO24-0102922-0001.C022	Green PCB
SN23	A23	TAO24-0102922-0001.C023	Silvery metal
SN24	B1	TAO24-0102922-0002.C001	Silvery metal
SN25	B2	TAO24-0102922-0002.C002	Silvery metal(screw)
SN26	B3	TAO24-0102922-0002.C003	Silvery metal
SN27	B4	TAO24-0102922-0002.C004	Green PCB
SN28	B5	TAO24-0102922-0002.C005	Silvery metal(soldering tin)
SN29	B6	TAO24-0102922-0002.C006	Black metal
SN30	B7	TAO24-0102922-0002.C007	Black metal
SN31	B8	TAO24-0102922-0002.C008	Silvery metal
SN32	B9	TAO24-0102922-0002.C009	Silvery metal
SN33	B10	TAO24-0102922-0002.C010	Brown plastic
SN34	B11	TAO24-0102922-0002.C011	Silvery metal(steel ball)



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Verification Result(s):

In accordance with the result of material risk assessment, the following disjointed parts in the submitted sample have been verified. (Unless otherwise specified, the unit is mg/kg).

Test Item(s)	A1	A2	A3	A4	A5	A6	A7	A8
Pb	BL							
Hg	BL							
Cd	BL							
Cr(VI)▼	ND	BL	ND	ND	ND	BL	BL	BL
PBBs	---	BL	---	---	---	BL	BL	BL
PBDEs	---	BL	---	---	---	BL	BL	BL
DEHP	---	BL	---	---	---	BL	BL	BL
BBP	---	BL	---	---	---	BL	BL	BL
DBP	---	BL	---	---	---	BL	BL	BL
DIBP	---	BL	---	---	---	BL	BL	BL
Conclusion	PASS							

Test Item(s)	A9	A10	A11	A12	A13	A14	A15	A16
Pb	BL							
Hg	BL							
Cd	BL							
Cr(VI)▼	BL	ND	BL	ND	BL	BL	ND	BL
PBBs	---	---	BL	---	---	---	---	BL
PBDEs	---	---	BL	---	---	---	---	BL
DEHP	---	---	BL	---	---	---	---	BL
BBP	---	---	BL	---	---	---	---	BL
DBP	---	---	BL	---	---	---	---	BL
DIBP	---	---	BL	---	---	---	---	BL
Conclusion	PASS							

Test Item(s)	A17	A18	A19	A20	A21	A22	A23	B1
Pb	BL							
Hg	BL							
Cd	BL	BL	BL	BL	ND	BL	BL	BL
Cr(VI)▼	BL	BL	BL	BL	BL	BL	ND	ND
PBBs	---	BL	BL	BL	---	ND	---	---
PBDEs	---	BL	BL	BL	---	ND	---	---
DEHP	---	BL	BL	BL	---	ND	---	---
BBP	---	BL	BL	BL	---	ND	---	---
DBP	---	BL	BL	BL	---	ND	---	---
DIBP	---	BL	BL	BL	---	ND	---	---
Conclusion	PASS							

Test Item(s)	B2	B3	B4	B5	B6	B7	B8	B9
Pb	BL							
Hg	BL							
Cd	BL							
Cr(VI)▼	ND	BL	BL	BL	ND	ND	ND	BL



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Test Item(s)	B2	B3	B4	B5	B6	B7	B8	B9
PBBs	---	---	ND	---	---	---	---	---
PBDEs	---	---	ND	---	---	---	---	---
DEHP	---	---	ND	---	---	---	---	---
BBP	---	---	ND	---	---	---	---	---
DBP	---	---	ND	---	---	---	---	---
DIBP	---	---	ND	---	---	---	---	---
Conclusion	PASS							

Test Item(s)	B10	B11
Pb	BL	BL
Hg	BL	BL
Cd	BL	BL
Cr(VI)▼	BL	ND
PBBs	BL	---
PBDEs	BL	---
DEHP	BL	---
BBP	BL	---
DBP	BL	---
DIBP	BL	---
Conclusion	PASS	PASS



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Notes:

- (1) Interpretation of screening results by X-ray fluorescence spectrometry (XRF):
 (a) Screening limits in mg/kg for regulated elements in various matrices according to IEC 62321-3-1:2013 Annex A as below table.

Element	Polymers	Metals	Composite Materials
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	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

- (b) If the maximum allowed level restricts PBB/PBDE and Cr(VI) rather than Br and Cr, the exceptions are the XRF determinations of Br and Cr. If the quantitative results for the elements Br and/or Cr are higher than the limit (for Br calculated based on the stoichiometry of Br in the most common congeners of PBB/PBDE), the sample is "inconclusive".
- (c) Results are obtained by EDXRF for primary screening, LOD = Limit of Detection, BL = Below Limit, OL= Over Limit, IN (The symbol X marks the region)=Inconclusive, where further investigation is necessary, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBB/PBDE) are recommended to be performed.
- (d) The EDXRF screening test for elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- (2) Screening results of Phthalates (PHTH) below the limits are shown as "BL". Further chemical testing by GC-MS is to be performed if the results exceed limits.

Test Items	CAS No.
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7
Butyl benzyl phthalate (BBP)	85-68-7
Dibutyl phthalate (DBP)	84-74-2
Diisobutyl phthalate (DIBP)	84-69-5

- (3) Interpretation of results by chemical tests:
 (a) mg/kg = 0.0001%, MDL=Method detection Limit, ND = Not Detected (<MDL), --- = Not Applicable.
 (b) Unit and MDL in wet chemical test

Test Items	Pb	Hg	Cd	DEHP	BBP	DBP	DIBP
Unit	mg/kg						
MDL	10	10	10	100	100	100	100

The MDL for single compound of PBB and PBDE is 100 mg/kg,
 MDL of Cr(VI) for polymer, composite and leather sample is 10 mg/kg.
 MDL of Cr(VI) for metal sample is 0.10 µg/cm².

- (c) ▼ =Metal sample
- The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm². The sample coating is considered to contain Cr(VI).
 - The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm²). The coating is considered a non-Cr(VI) based coating
 - The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive-unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus



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Cr(VI) results represent status of the sample at the time of testing.

- (4) Restricted substances and maximum concentration values tolerated by weight in homogeneous materials under RoHS Directive: Cd: 0.01%, Pb/Hg/Cr(VI)/PBB/PBDE/DEHP/BBP/DBP/DIBP: 0.1%. The limit is quoted from RoHS Directive (EU) 2015/863.
- (5) IEC 62321 series is equivalent to EN 62321 series.

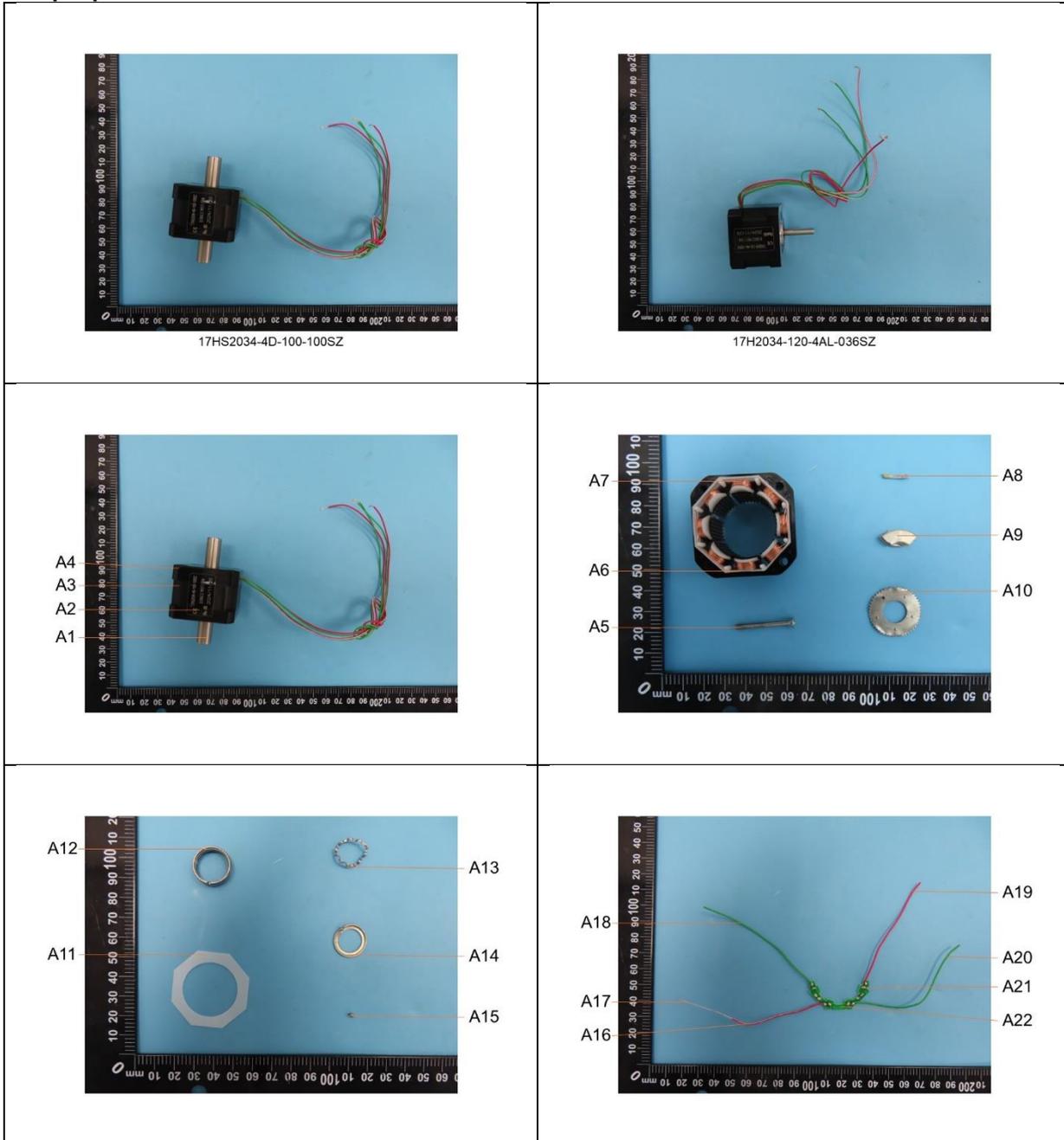
Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ($w=0$) stated in ILAC-G8:09/2019.



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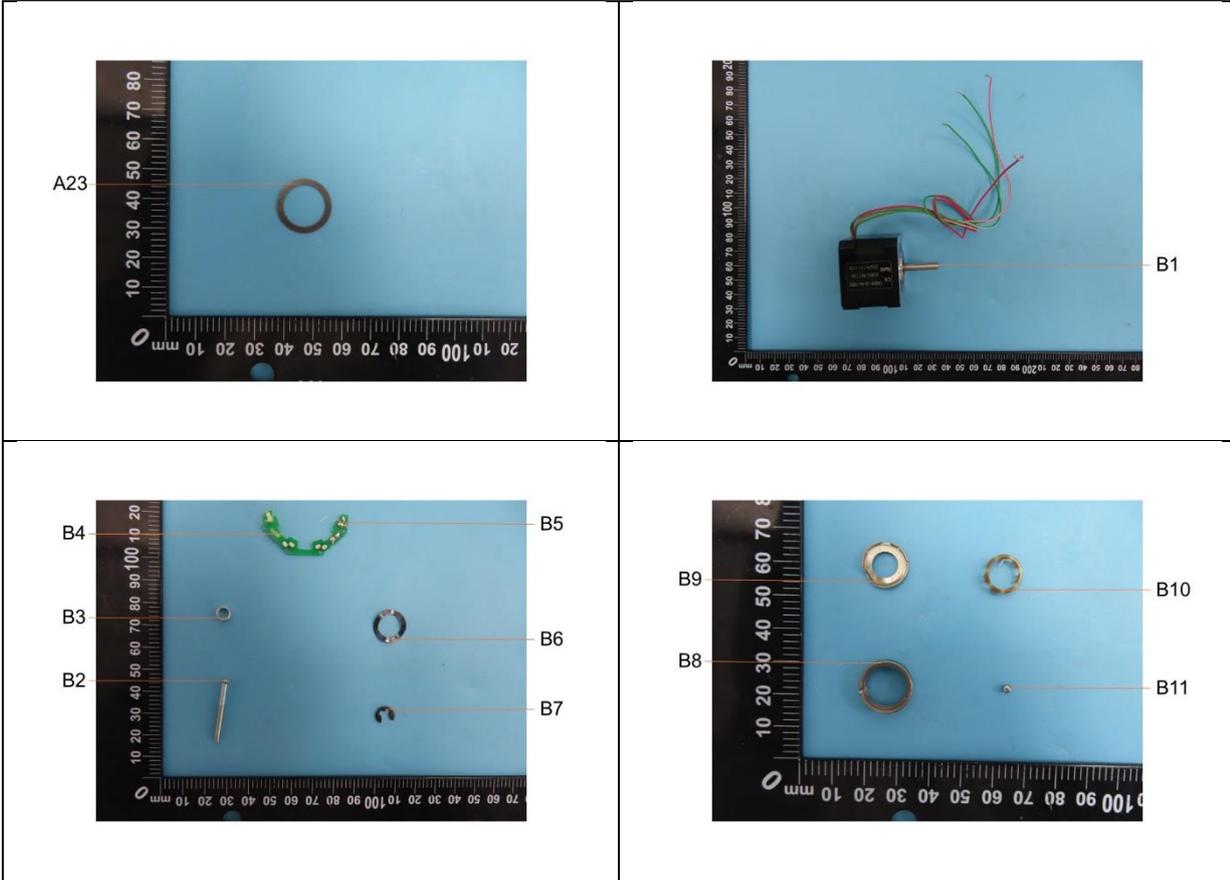
Sample photos:



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