TEST REPORT

REPORT NUMBER:160914002SHF-BP-2
ORIGINAL ISSUE DATE: January 19, 2017

EVALUATION CENTER

Intertek Testing Services Ltd., Shanghai
Plant 7, No. 6958 Daye Road, Fengxian District, Shanghai, China

RENDERED TO

Jincheng Hardware Industry Co., LTD
No.191 Wudong Industrial Development Zone, Lile Town, Jianghai District, Jiangmen City, Guangdong Province, China.

PRODUCT EVALUATED
Handle
Model: JLH041

EVALUATION PROPERTY
Fire Resistance

Report of Testing Handle, Model of JLH041 in Single Leaf Single Action Swing Steel Fire Door Assembly for compliance with the applicable requirements of the following criteria: EN 1634-1:2014, Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for doors and shutter assemblies and openable windows.

1 Table of Contents

2 Introduction

Intertek has conducted an evaluation for Jincheng Hardware Industry Co., LTD to determine the fire resistance characteristics of the Handle, Model of JLH041 in Single Leaf Single Action Swing Steel Fire Door Assembly. This test was designed to demonstrate evaluation on the Handles of eight models including Model JTH101, JTH102, JTH104, JLH004, JLH024, JLH041, JLH046 and JLH051. This evaluation began on September 14, 2016 and was completed on January 16, 2017. The test was conducted on January 13, 2017.

The test was conducted in accordance with EN 1634-1:2014, “Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows.”

3 Test Samples

3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client. Samples were not independently selected for testing. Samples were received at the Evaluation Center on October 8, 2016.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

One model JLH041 was tested. The specification of Model JLH041 was provided by the client.

Door	Type	Single Leaf Single Acting Swing Steel Fire Door
	Nominal Size	836 mm wide by 2040 mm high by 45 mm thick
	Main materials	Faces: 1.2 mm Q235A galvanized steel sheet Door core: Aluminum silicate fiber with the density of 120 kg/m^3 Steel stud: 44 mm x 22 mm x1.5 mm, Q235A, Spacing: 155 mm
Frame	Nominal Size	942 mm wide by 2117 mm high by 150 mm thick, Material: 1.40 mm Q235A Galvanized steel sheet
Hardware	Lock	Mortise Lock; Model: LZ-OT Lock case size: 85.5 x 166 x 14 mm Latch bolt: engaged; Dead bolt: disengaged Latch throw：12 mm Refer to the drawing in Appendix B for detailed information.
	Handle (specimen)	Model: JLH 041; Main material: SUS304 Provided by Jincheng Hardware Industry Co., LTD Refer to the drawing in Appendix A for detailed information.
	Hinge	Stainless steel ball bearing hinge Material: SUS304; Quantity: Four Size: 101.6 mm x 76.2 mm x 3.0 mm; Model: 4’’ x 3’’ x 3 mm Provided by Jincheng Hardware Industry Co., LTD Each fastened by eight SUS304 M6x15 machine screws.
	Door closer	Model: S068, fixed power size 3, surface standard mounted. Provided by Foshan Baysee Security Technology Co., Ltd.

The sample ID number is S160914002SHF-002.

Documents and samples of eight models of Handles including model JTH101, JTH102, JTH104, JLH004, JLH024, JLH041, JLH046 and JLH051 were checked, and found that these handles share the same material and cutout size. The main difference between these handles is the appearance. Model of JLH041 was selected to cover other models.

The drawing of the specimen, drawing of fire door assembly and hardware, and drawing of test wall construction can be found in Appendices A, B, and C respectively.

4 Testing and Evaluation Methods

The test was conducted in accordance with EN 1634-1:2014, “Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows”, and EN 1363-1: 2012 “Fire Resistance Tests – Part 1: General Requirements”.

The test assembly was installed in a steel restraint frame. The test sample was moved in front of the furnace for the fire exposure. The test door was oriented to open away from the furnace and was built into a concrete masonry unit partition, with fully mortared joints. The nominal dimensions of the test wall were 3 m high by 3 m wide. Prior to the commencement of the EN 1634-1 fire test, the specimen to be test was checked for operability in the fire test frame by operating from fully closed to fully open, for 25 cycles. The test measurement data was shown in Appendix D.

After positioning the assembly frame over the furnace opening, the burners were ignited and the timer was started. Temperatures within the furnace were monitored using thermocouples and the data was recorded. The burners were controlled to keep the furnace temperatures within the allowable limits specified in the test standards. After 5 minutes, the furnace pressure was adjusted so that the neutral plane was established at a maximum of 500 mm above notional floor level. Periodic observations were made of the surfaces of the test assembly during the fire resistance test.

Door deflection relative to the frame, where applicable, was monitored throughout the test. Position for measurement of deflection and unexposed temperature was presented in the drawing of Appendix D.

5 Testing and Evaluation Results

5.1. INTEGRITY

The assembly withstood the fire resistance test without passage of flame or gases hot enough to ignite cotton waste for 120 minutes. No through openings or penetrations were evident at this 120 minutes fire exposure portion of the test and the door latch remained engaged to the strike. During this 120 minutes fire exposure period no significant flaming was observed on the unexposed face of the assembly.

This assembly therefore met the criteria of the test standards for integrity performance of 120 minutes.

5.2. INSULATION

Transmission of heat through the assembly during the fire resistance test of 20 minutes did not raise the average temperature on the unexposed surface by more than 140°C above its initial value, and did not raise the maximum temperature on the unexposed surface by more than 180°C above the initial mean unexposed face temperature. In addition, the transmission of heat through the assembly did not raise the maximum temperature of the unexposed surface of the frame by more than 360°C for 20 minutes.

After exposed to the fire for a period of 20 minutes, the average temperature on unexposed surface increased by more than 140°C, insulation failure was deemed to occur.

The assembly passed the insulation portion of the test of 20 minutes.

A full set of test data is included in Appendix E, and photos have been presented in Appendix F.

6 Conclusion

The Handle - Model of JLH041 and Steel Fire Door Assembly identified in this report has been tested in accordance with EN 1634-1:2014, “Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows”. This test was designed to demonstrate evaluation on the Handles of eight models including Model JTH101, JTH102, JTH104, JLH004, JLH024, JLH041, JLH046 and JLH051.

The test assembly satisfied the performance requirements for the following periods:

Integrity	Sustained flaming	120 minutes
	Gap gauge	120 minutes
	Cotton pad	120 minutes
Insulation		20 minutes

The test was discontinued after a period of 120 minutes at the request of the sponsor.

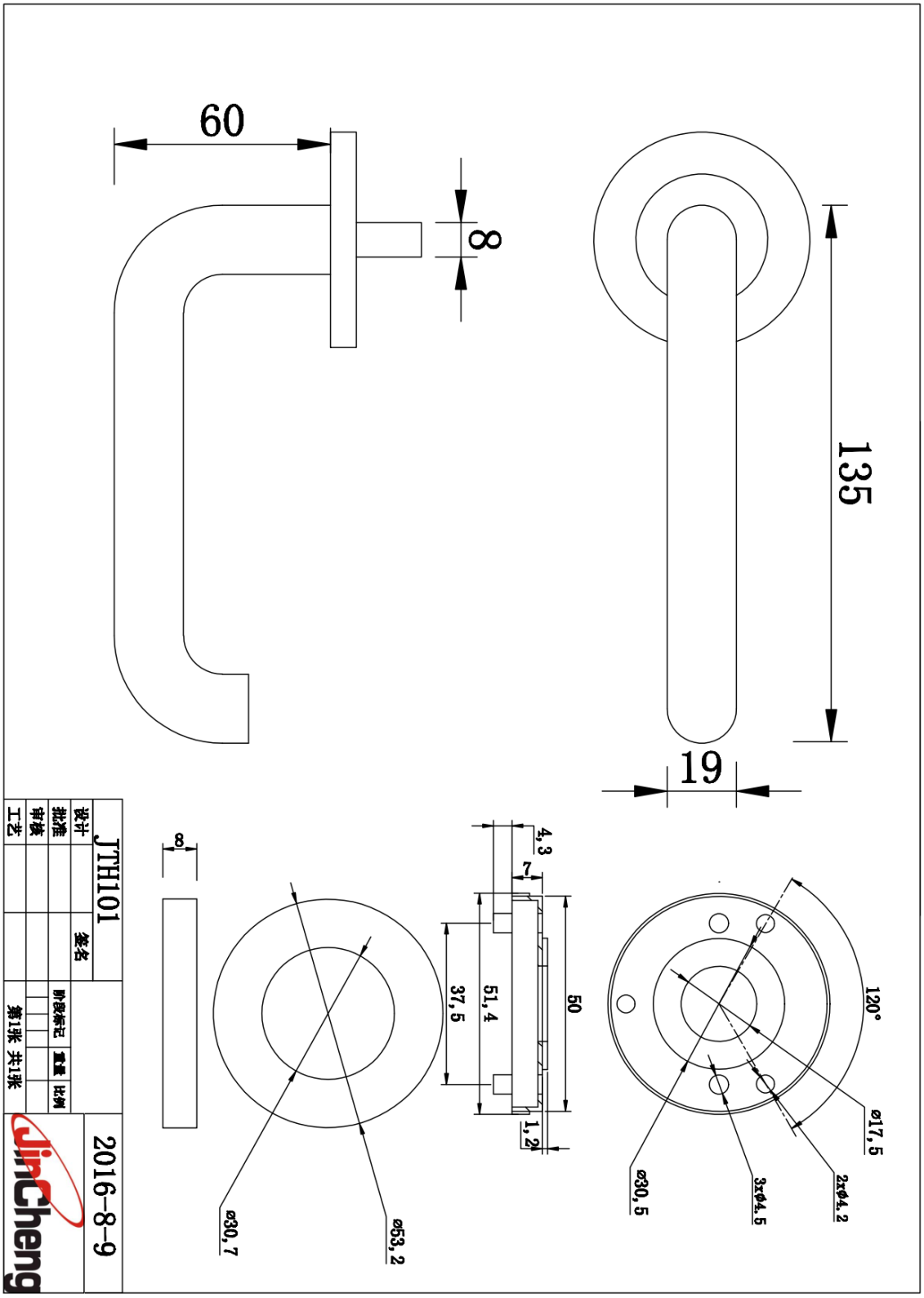
The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK

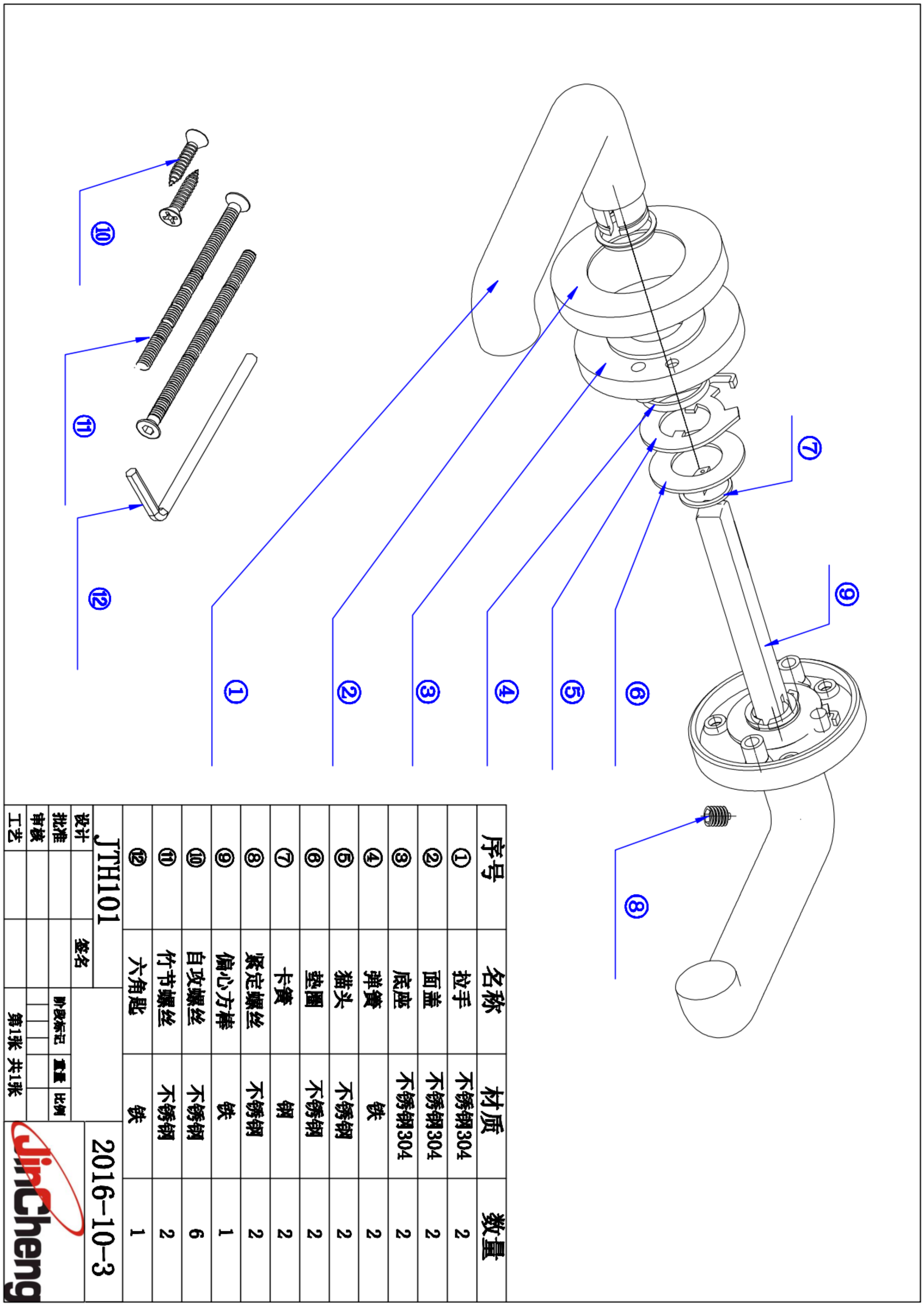
Reported by: Vincent Jin
Vincent Jin
Engineer, Building Products

Reviewed by:
Sun Sun
Operation Manager, Building Products

7 Appendix A: Drawing of the specimen



Dimension drawing of JTH101



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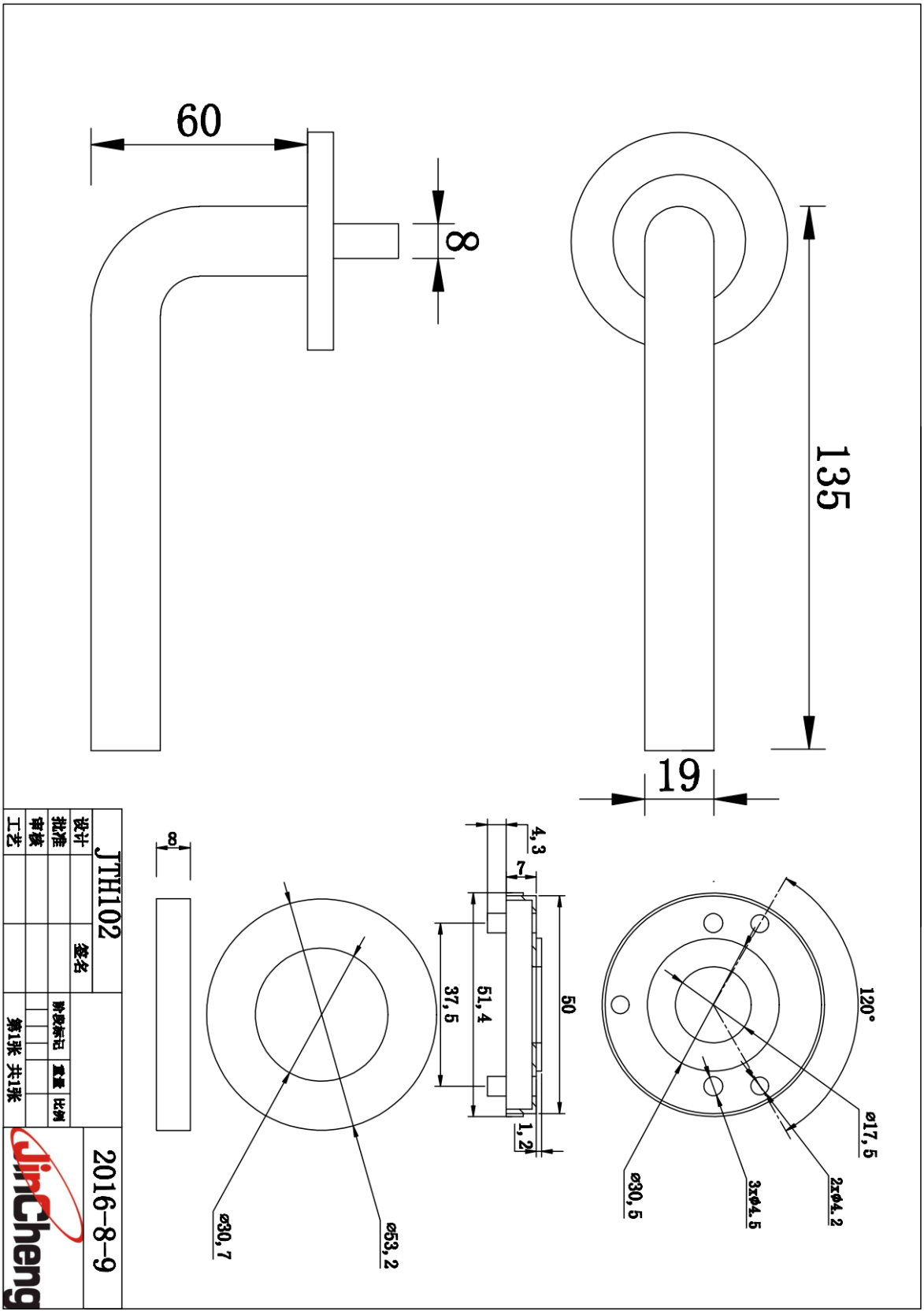
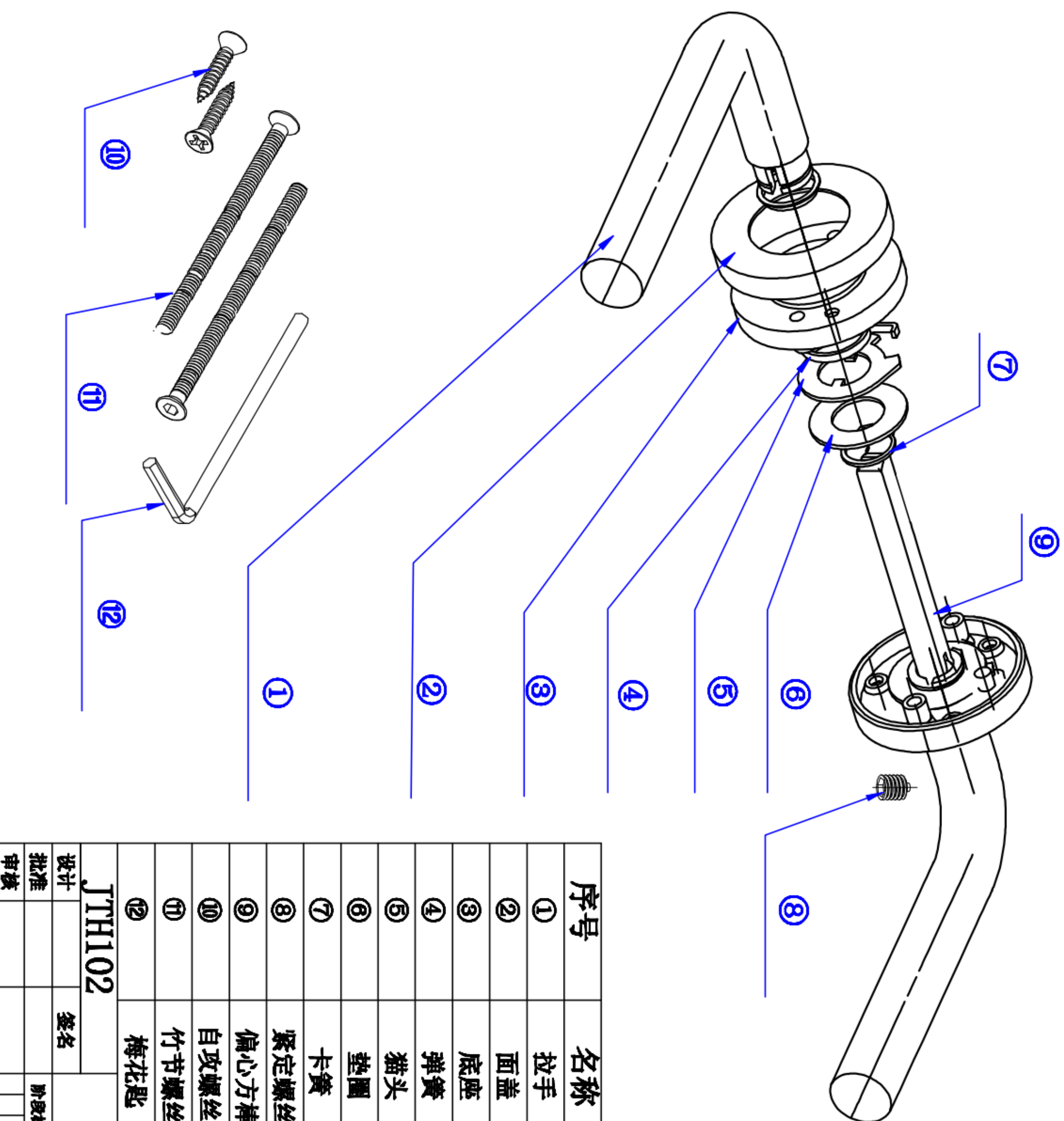
①	拉手	不锈钢304	2
②	面盖	不锈钢304	2
③	底座	不锈钢304	2
④	弹簧	铁	2
⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	六角匙	铁	1

Assembly drawing of JTH101



Dimension drawing of JTH102



序号	名称	材质	数量
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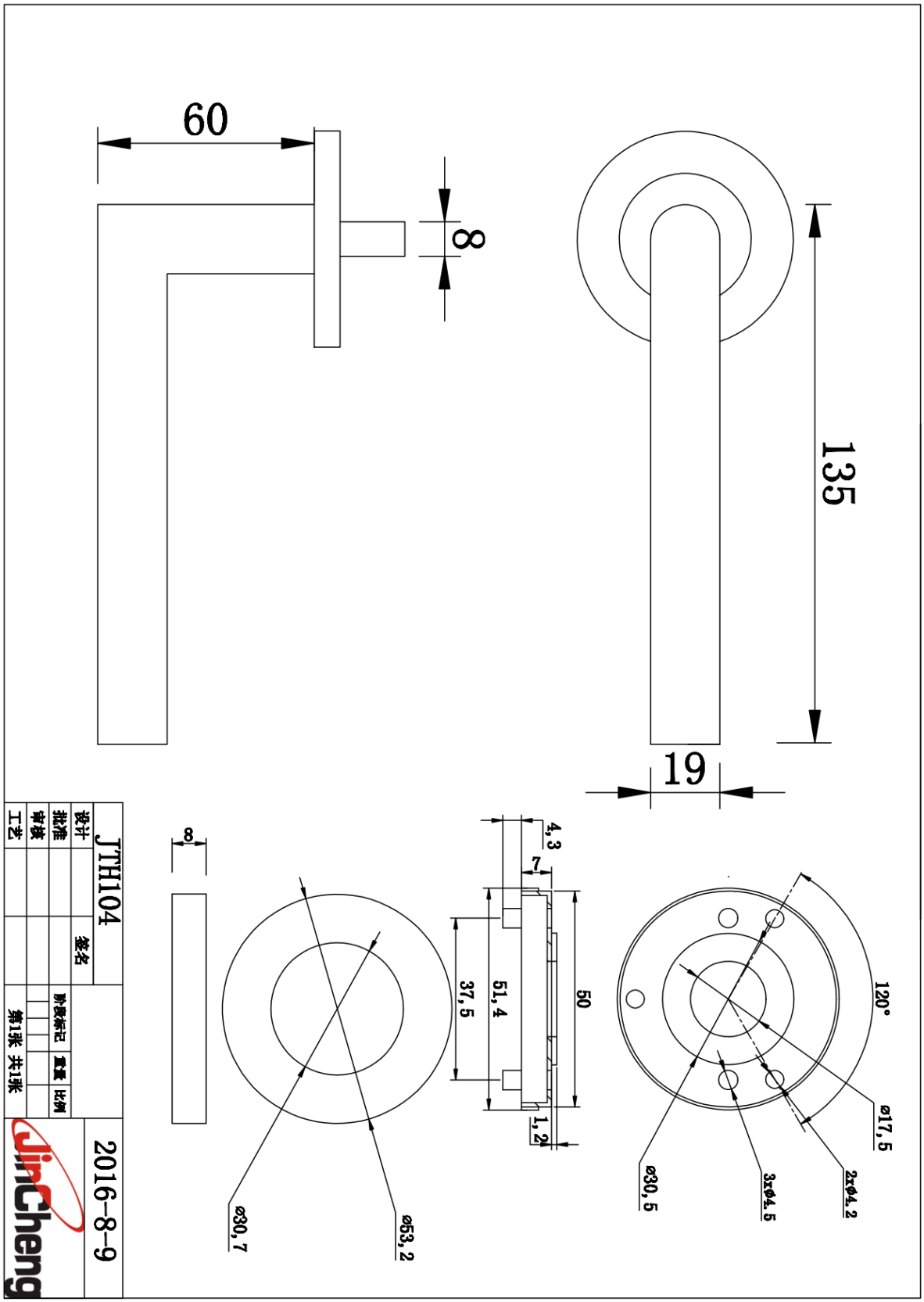
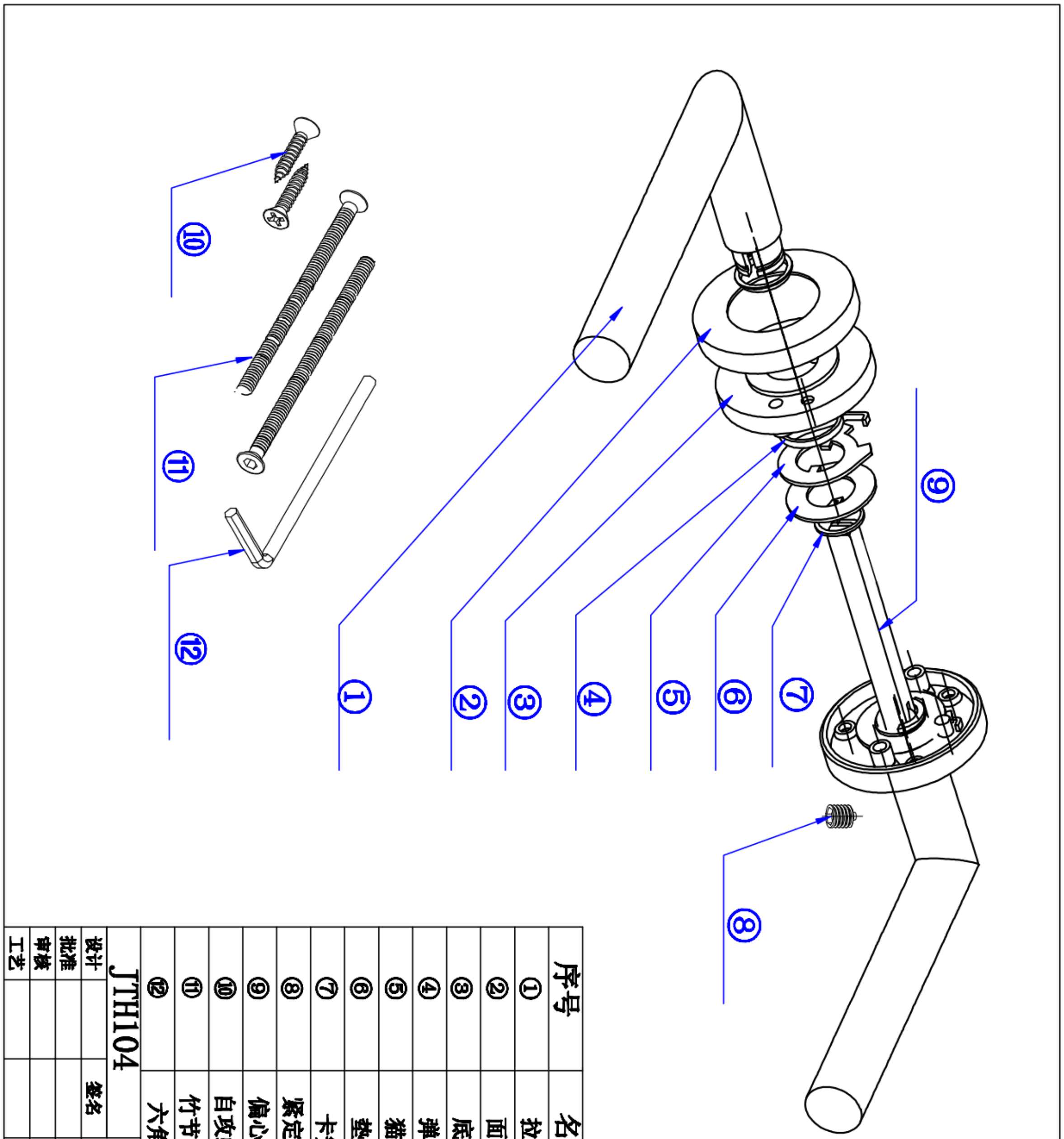
②	面盖	不锈钢304	2
③	底座	不锈钢304	2
④	弹簧	铁	2
⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	梅花匙	铁	1

JTH102			2016-10-3
设计	签名	阶段标记 重量 比例	
批准			
审核			
工艺		第1张 共1张	JinCheng

Assembly drawing of JTH102



Dimension drawing of JTH104



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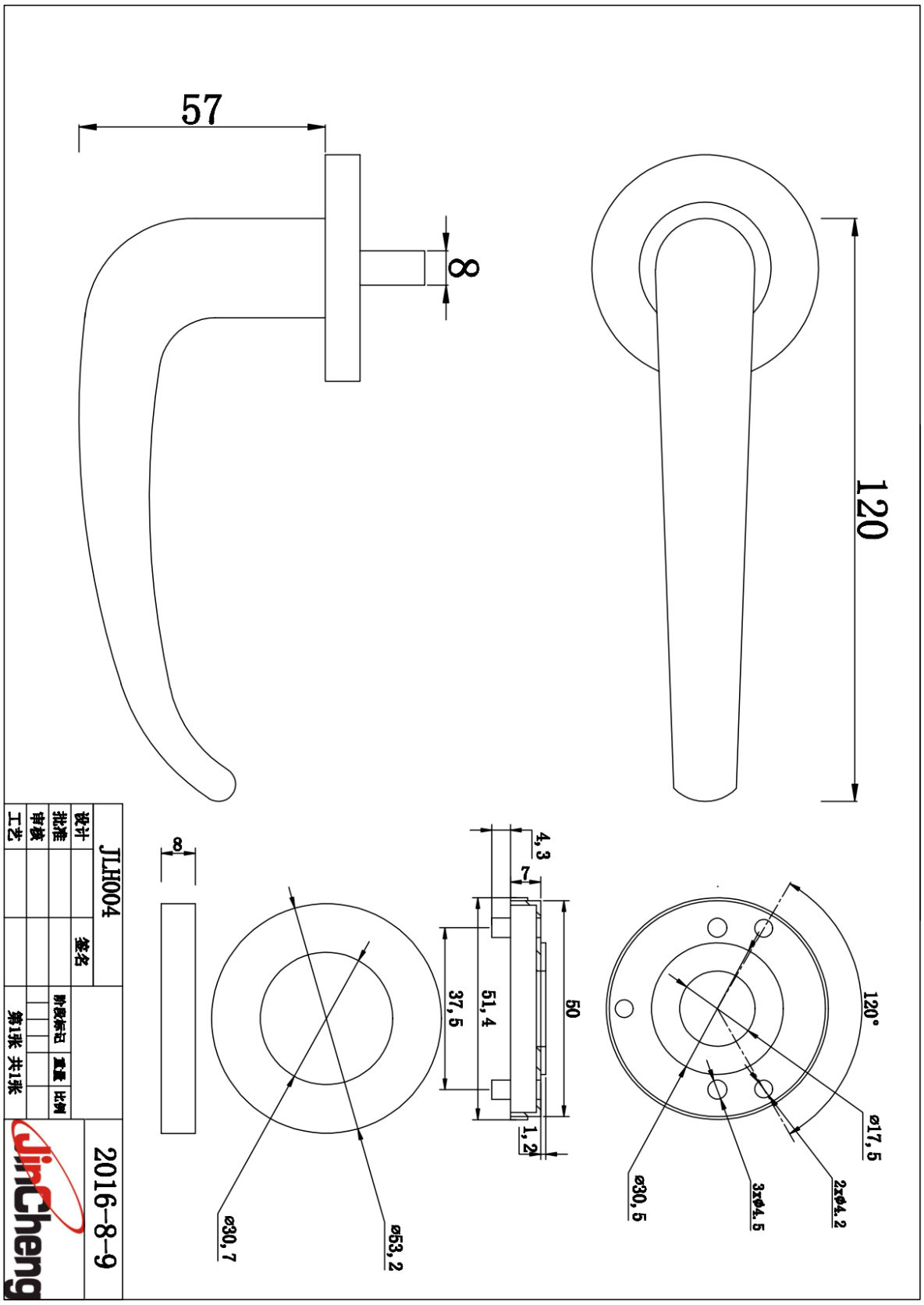
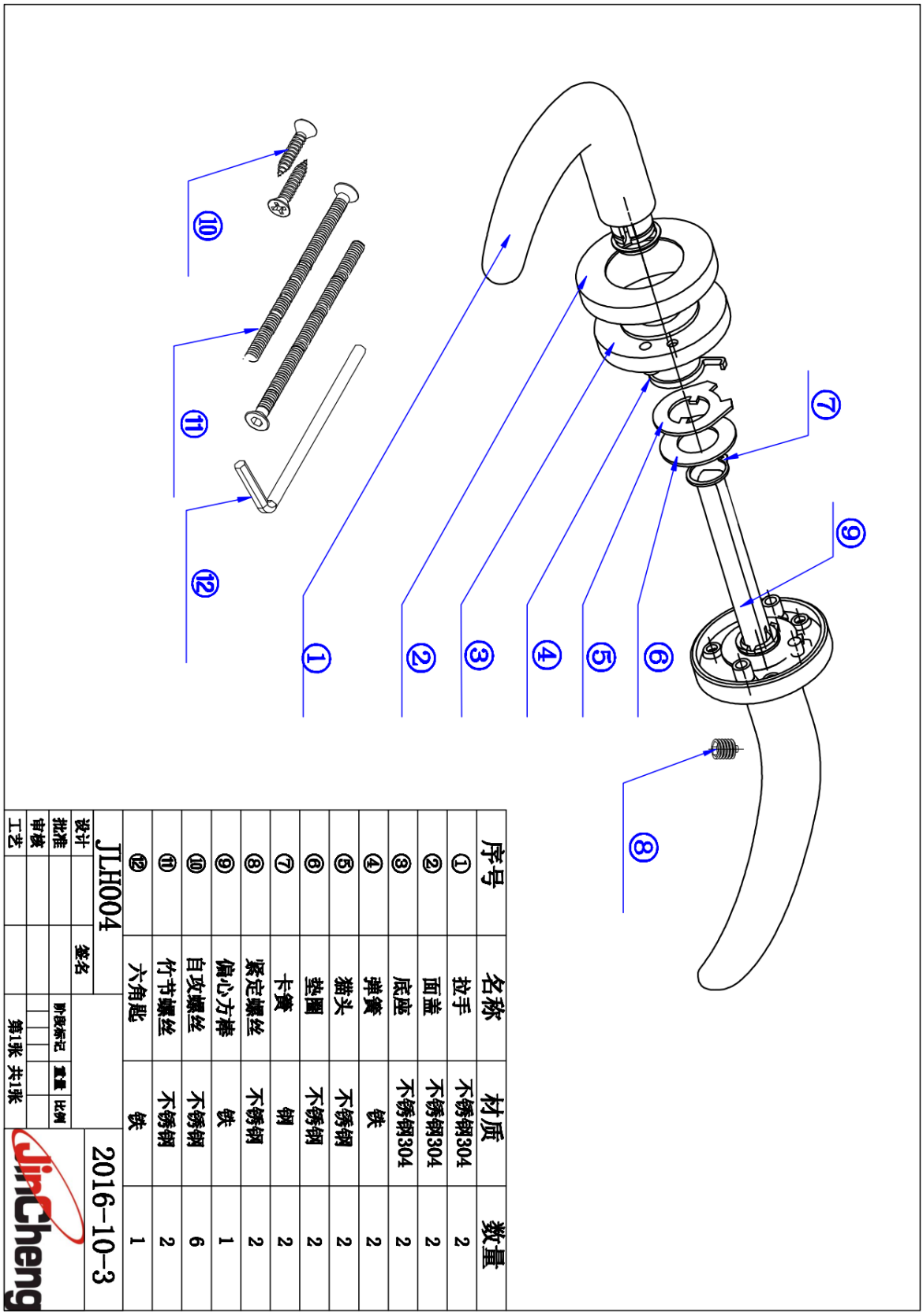
③	底座	不锈钢304	2
④	弹簧	铁	2
⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	六角匙	铁	1

JTH104			2016-10-3
设计		签名	
批准		阶段标记 重量 比例	
审核			
工艺		第1张 共1张	JinCheng

Assembly drawing of JTH104



Dimension drawing of JLH004



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⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	六角匙	铁	1

JLH004

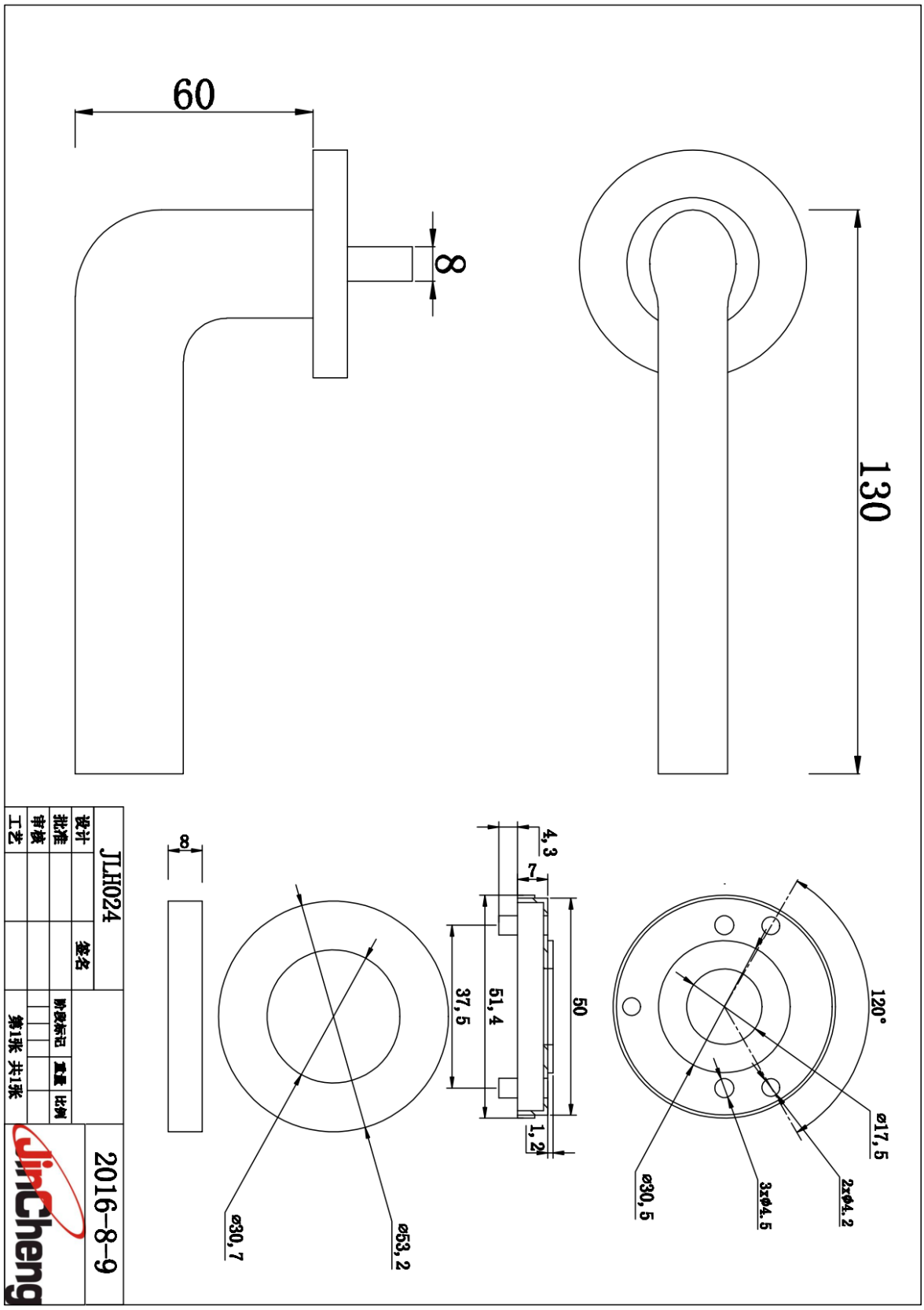
2016-10-3

JinCheng

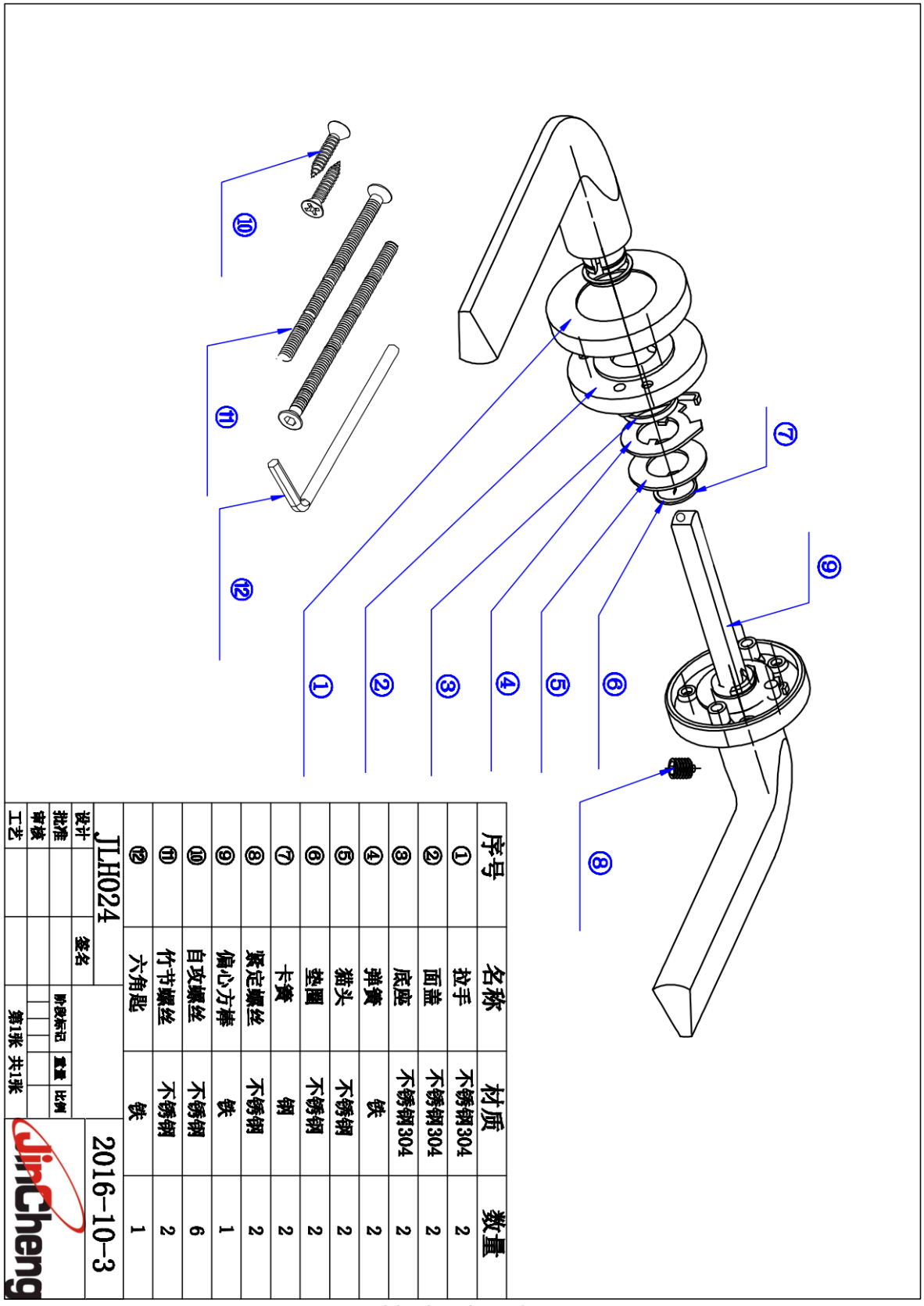
设计 签名
批准
审核
工艺

阶段标记 重量 比例
第1张 共1张

Assembly drawing of JLH004



Dimension drawing of JLH024



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④	弹簧	铁	2
⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	六角匙	铁	1

JLH024

2016-10-3

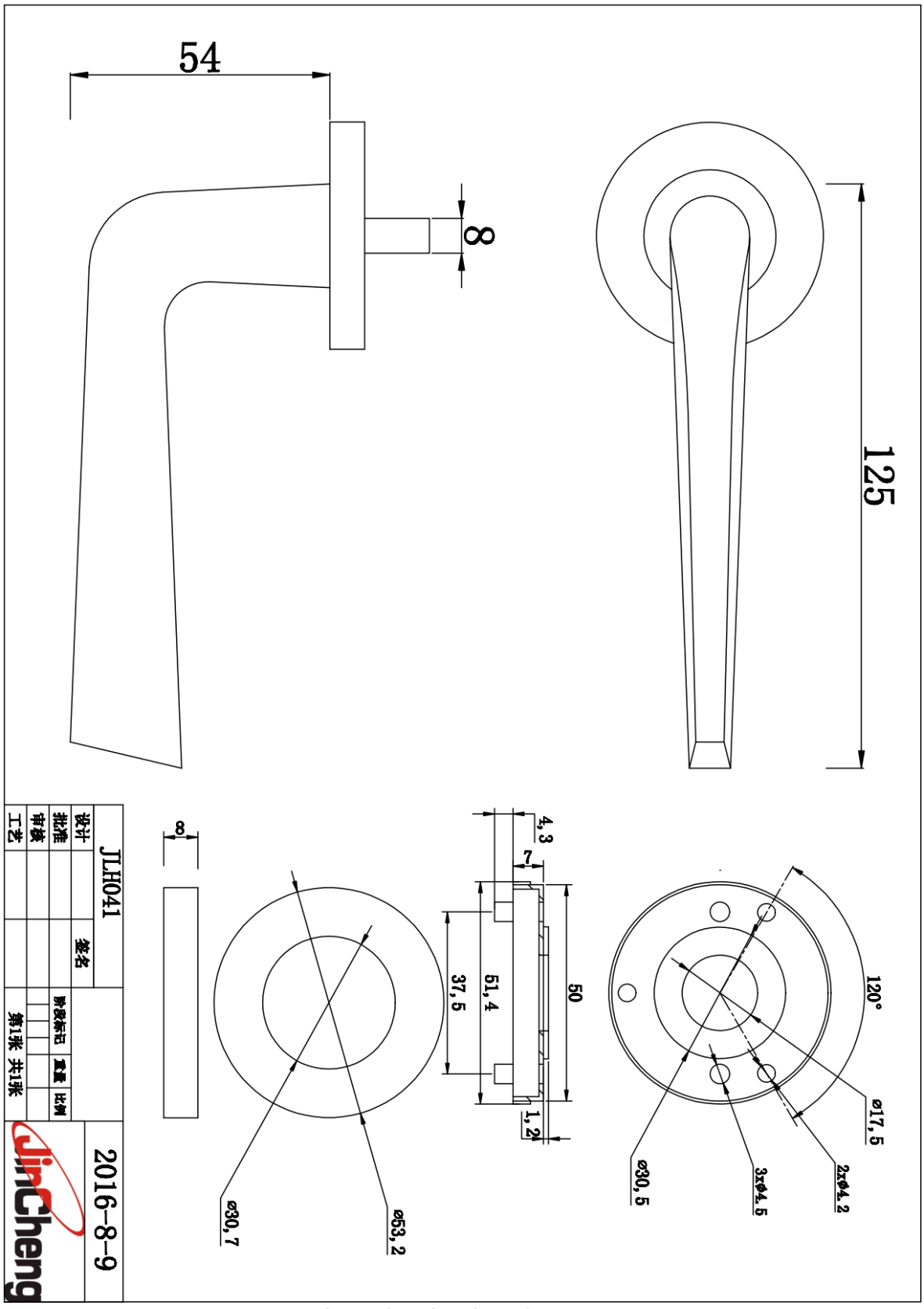
JinCheng

设计 签名
批准
审核
工艺

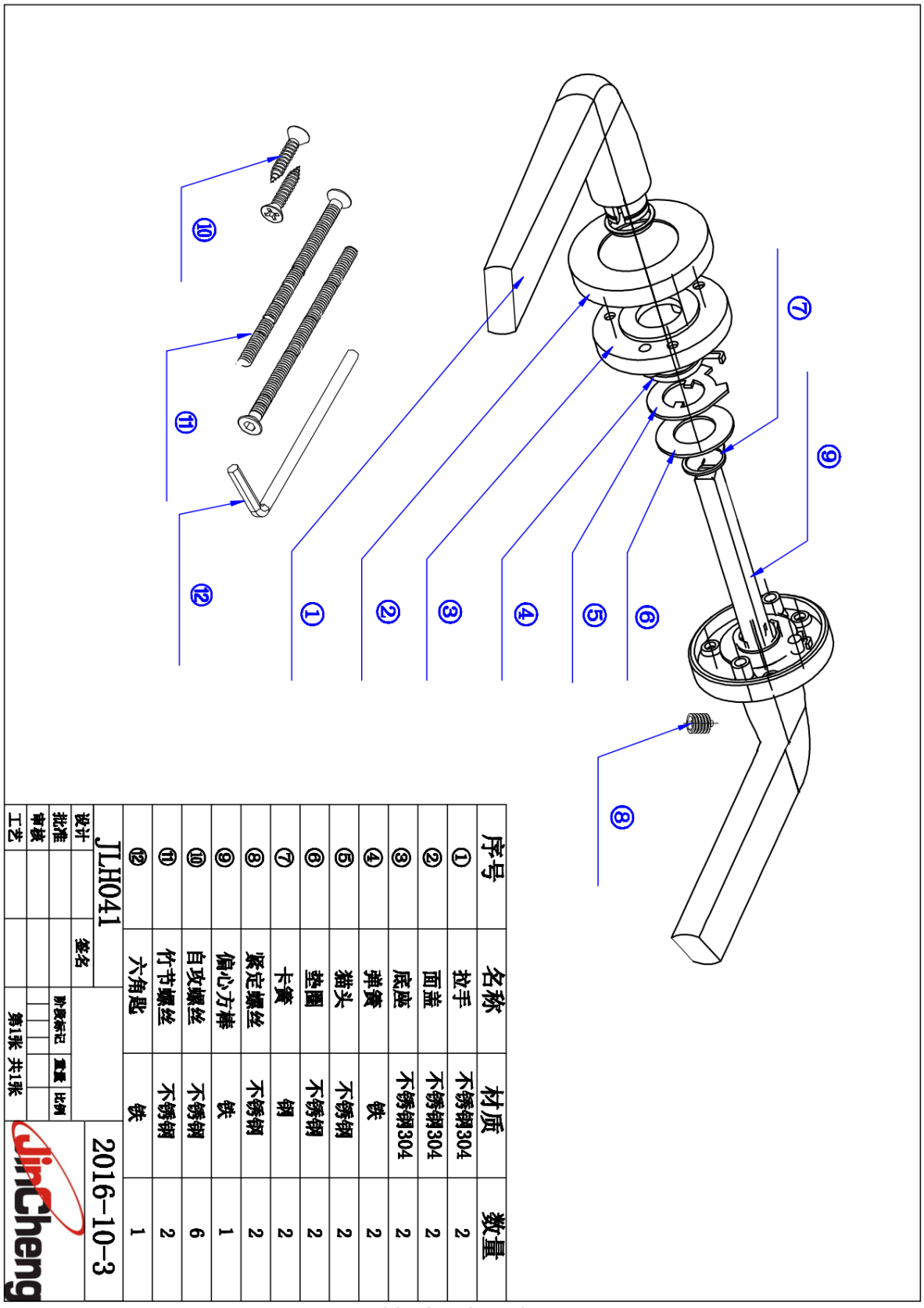
阶段标记 重量 比例

第1张 共1张

Assembly drawing of JLH024



Dimension drawing of JLH041



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③	底座	不锈钢304	2
④	弹簧	铁	2
⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	六角匙	铁	1

JLH041

2016-10-3

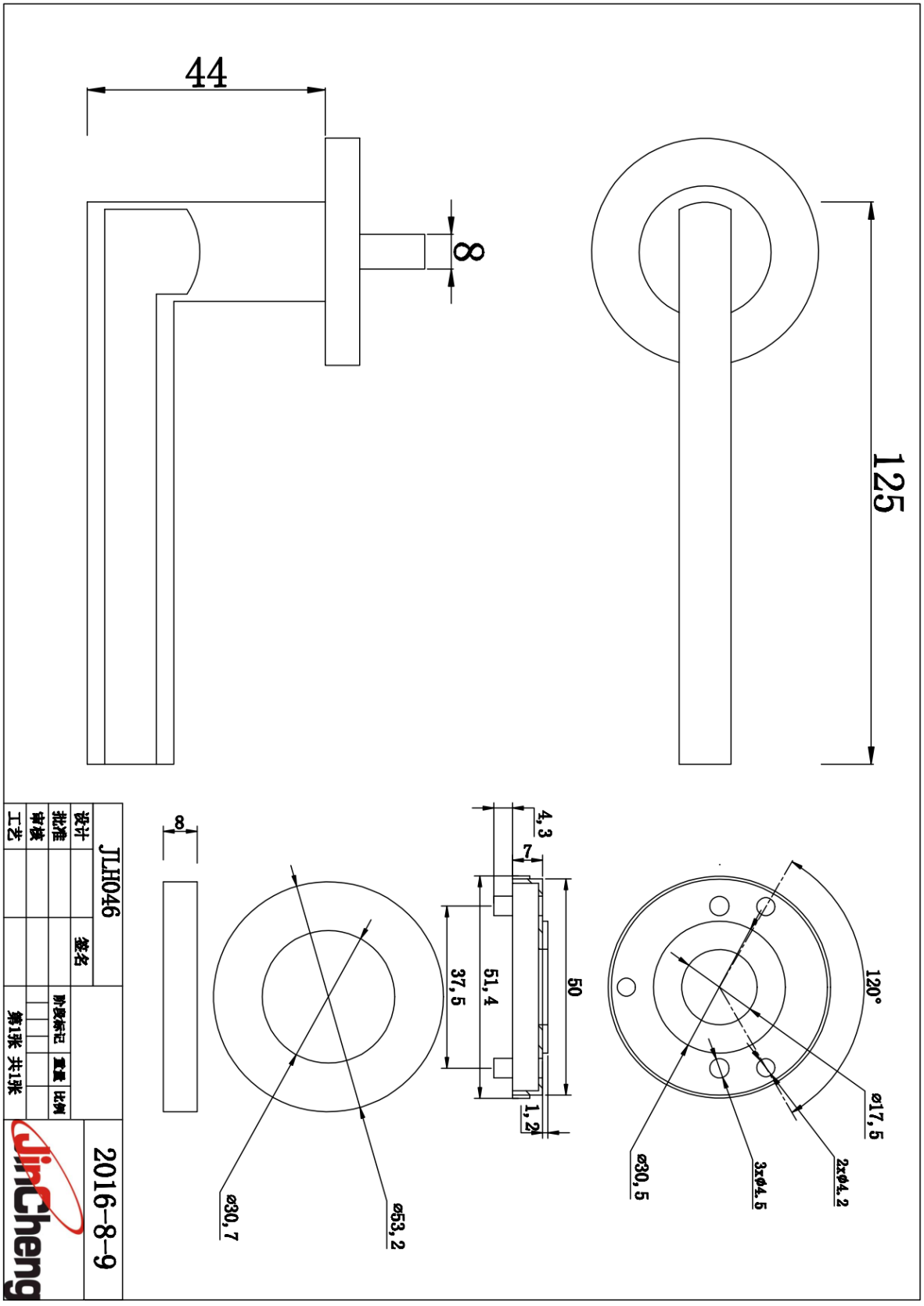
JinCheng

设计 签名
批准
审核
工艺

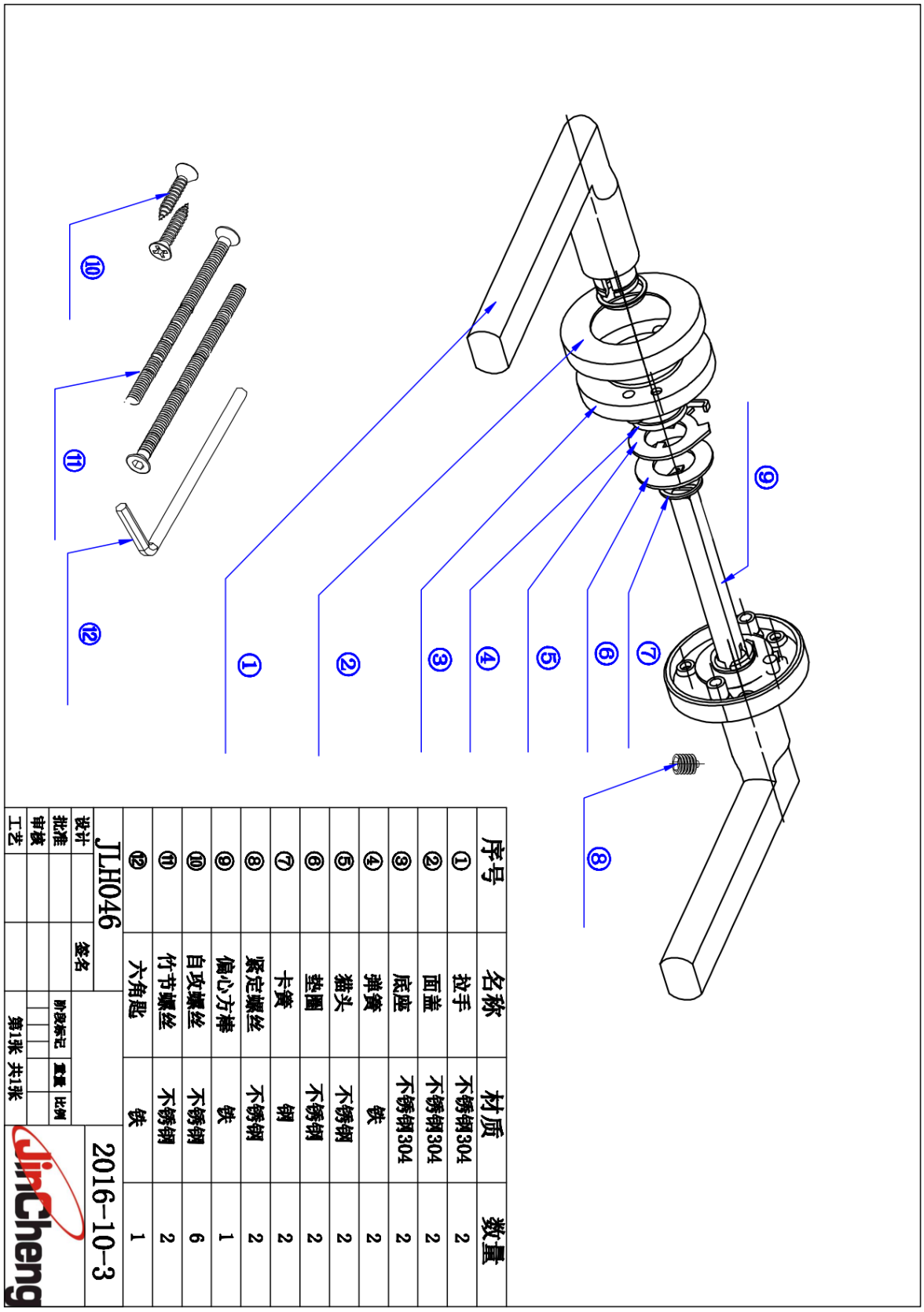
阶段标记 重量 比例

第1张 共1张

Assembly drawing of JLH041



Dimension drawing of JLH046



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④	弹簧	铁	2
⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	六角匙	铁	1

JLH046

2016-10-3

JinCheng

设计 | 签名 | 阶段标记 | 重量 | 比例

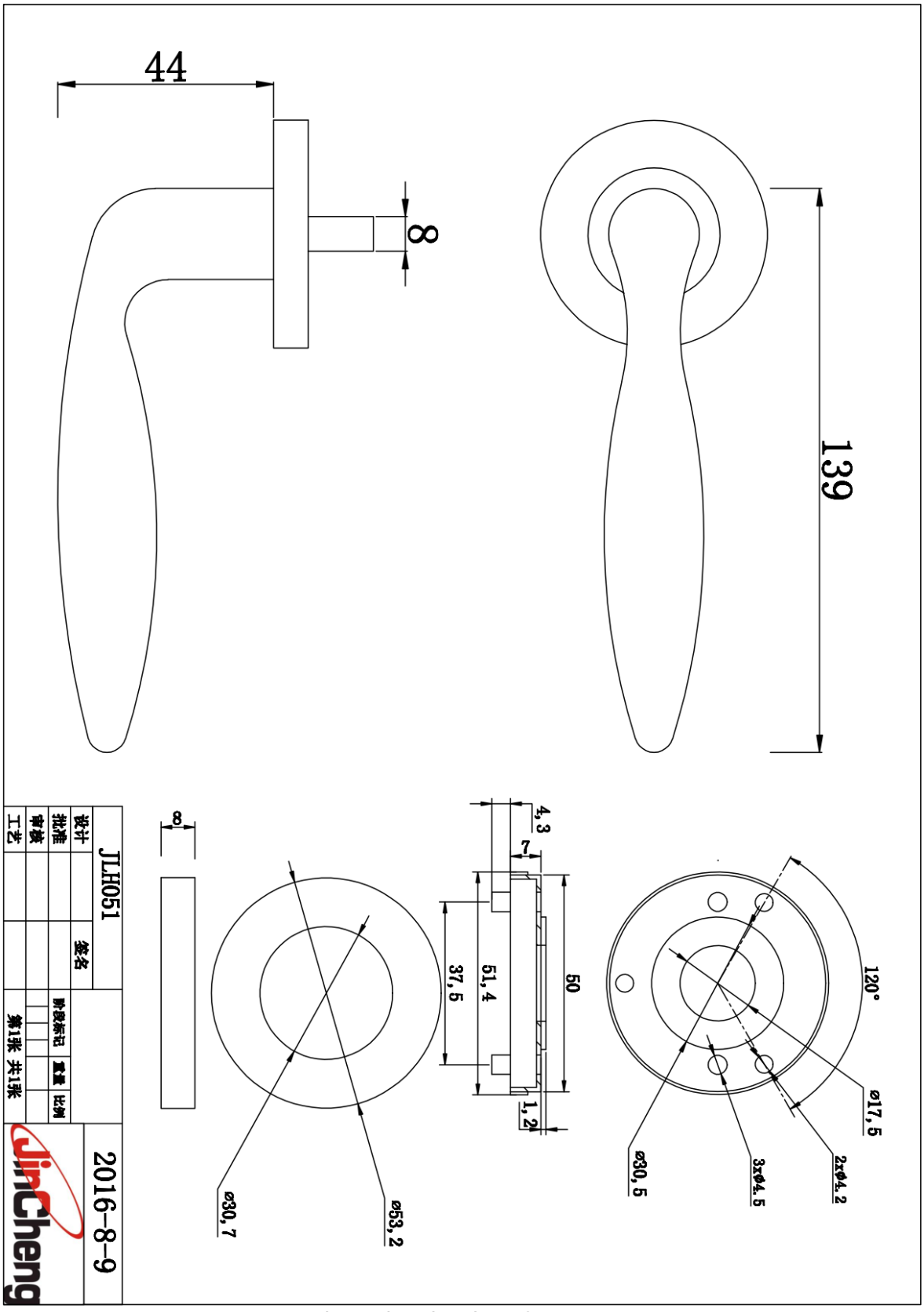
批准

审核

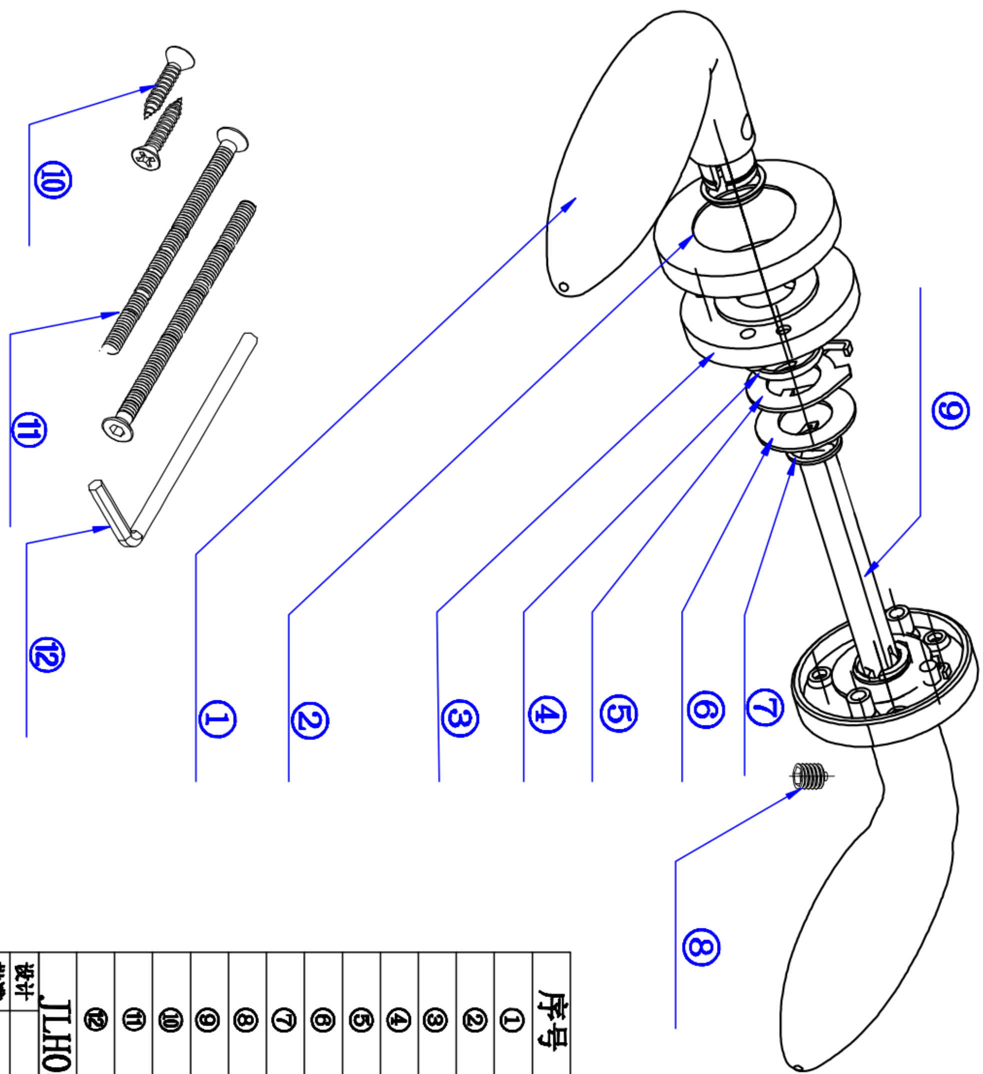
工艺

第1张 共1张

Assembly drawing of JLH046



Dimension drawing of JLH051



序号	名称	材质	数量
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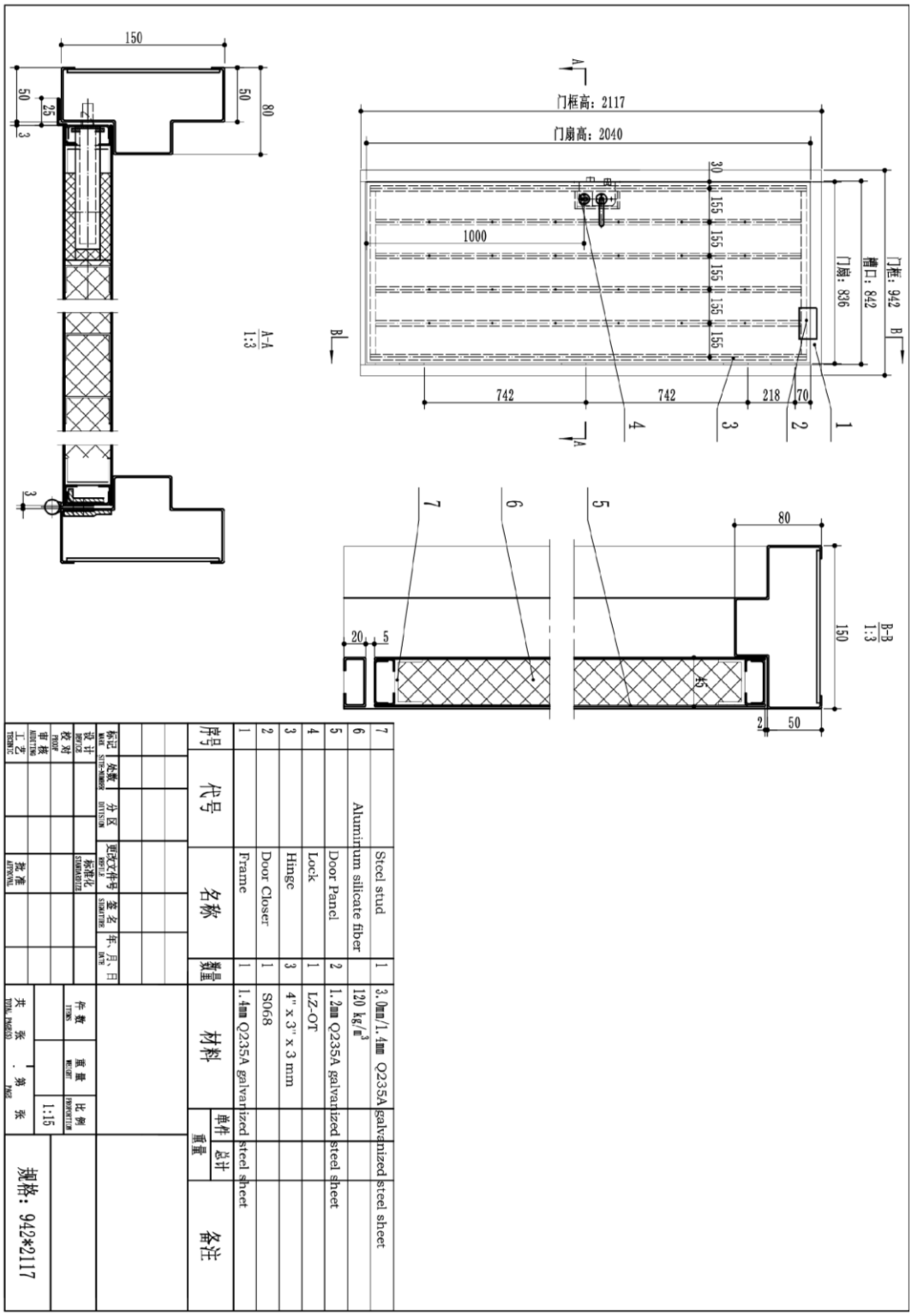
④	弹簧	铁	2
⑤	猫头	不锈钢	2
⑥	垫圈	不锈钢	2
⑦	卡簧	钢	2
⑧	紧定螺丝	不锈钢	2
⑨	偏心方棒	铁	1
⑩	自攻螺丝	不锈钢	6
⑪	竹节螺丝	不锈钢	2
⑫	六角匙	铁	1

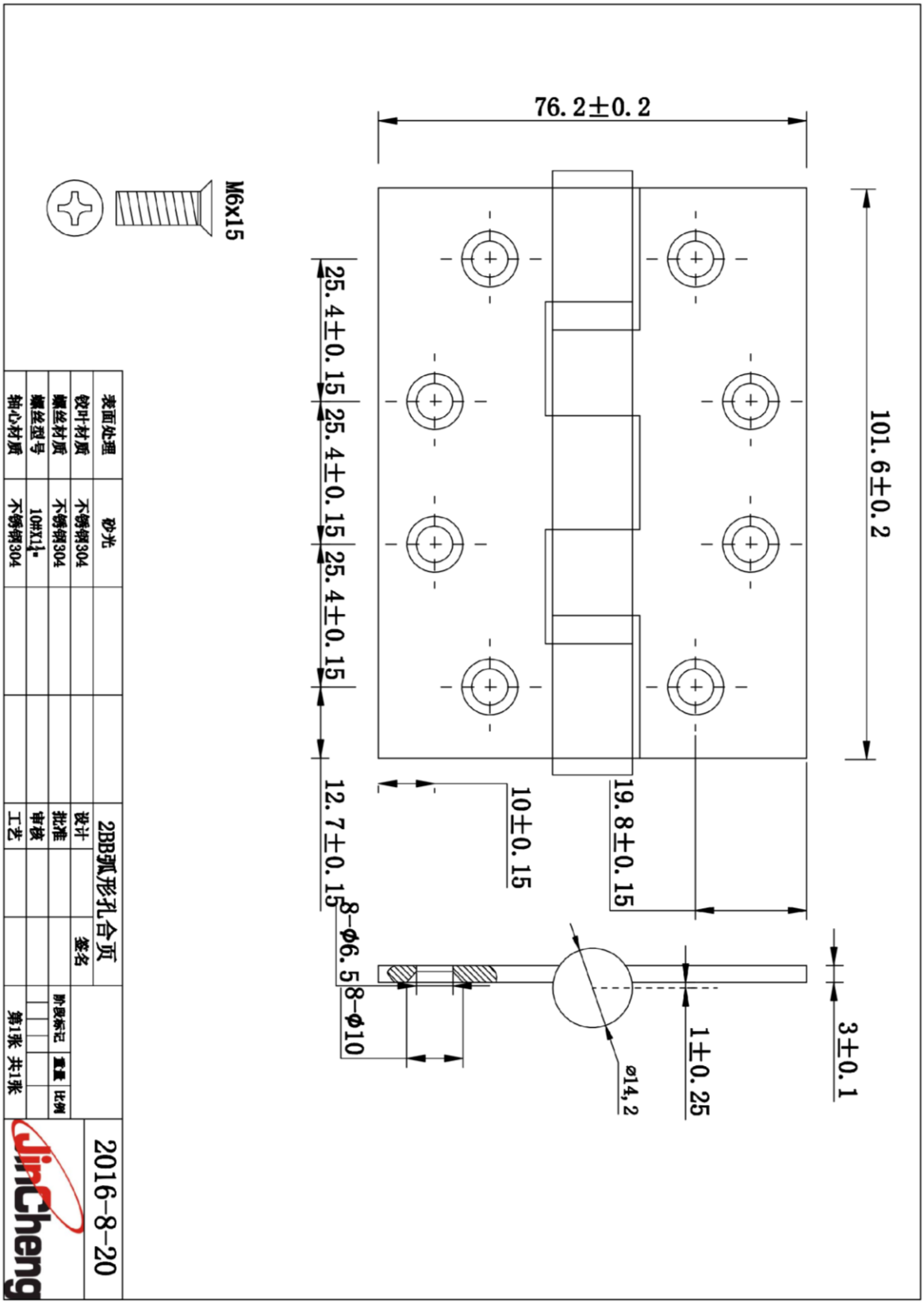
JLH051			2016-10-3
设计	签名	阶段标记 重量 比例	
批准			
审核			
工艺		第1张 共1张	JinCheng

Assembly drawing of JLH051

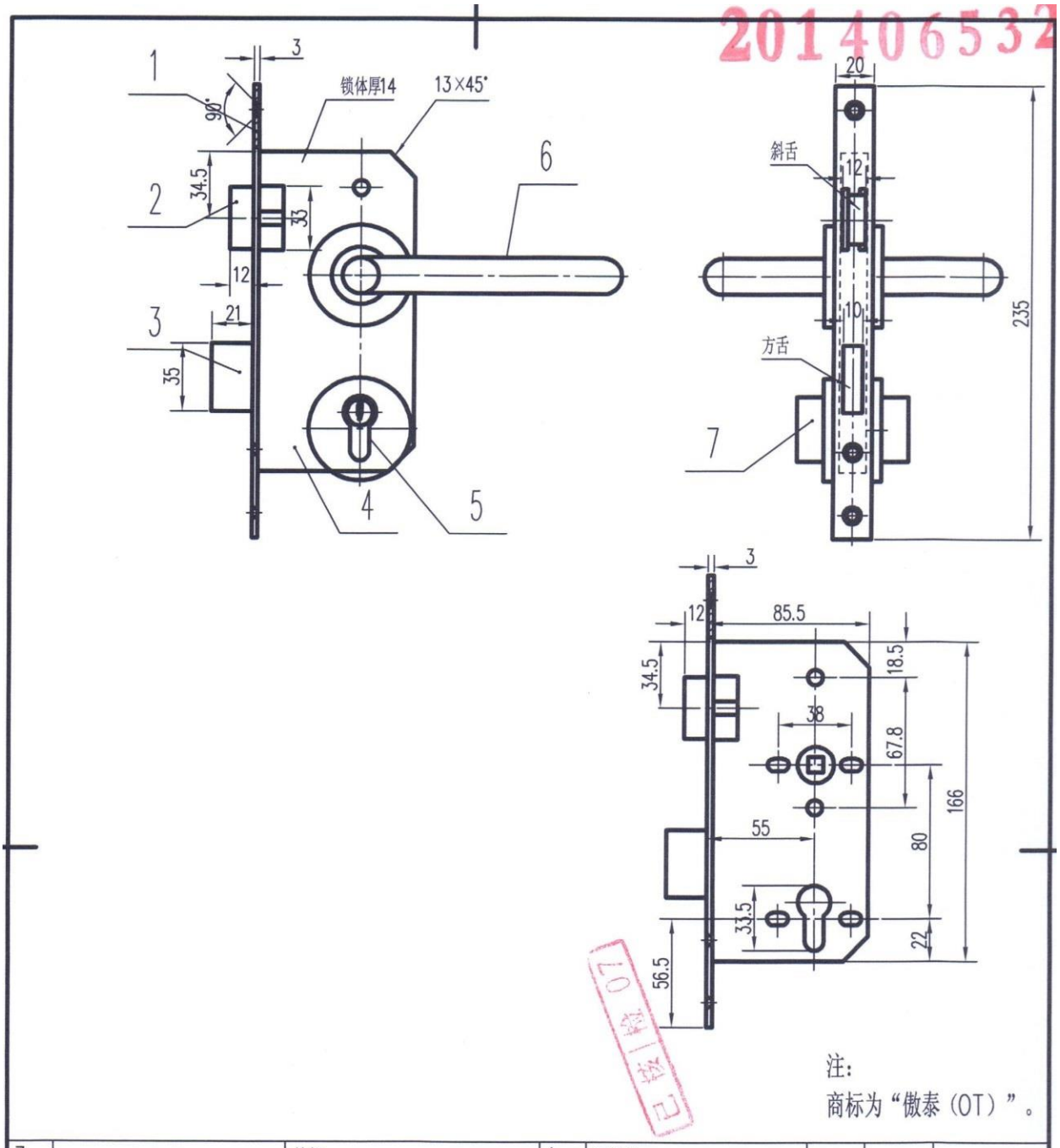
8 Appendix B: Fire Door Assembly and Hardware Drawings



Drawing of the Tested Fire Door Assembly



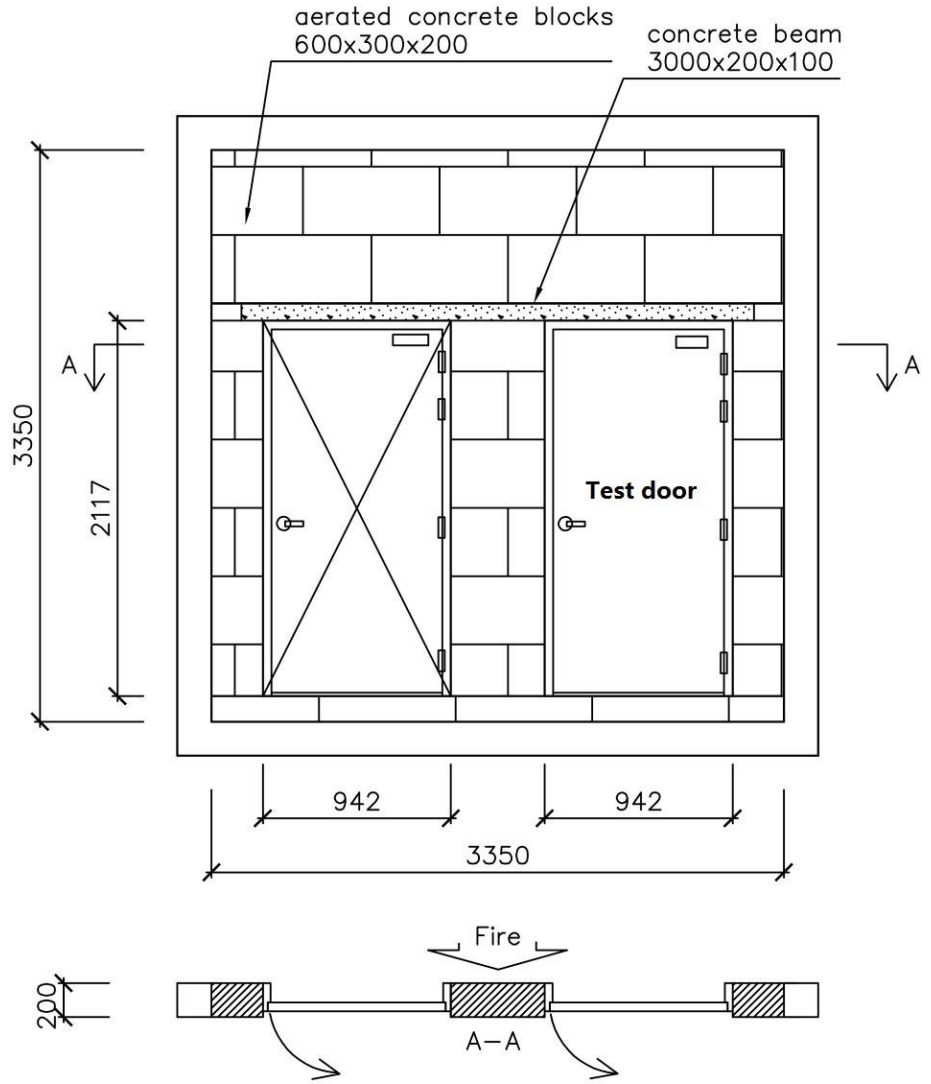
Drawing of Hinge



7		旋钮 Knob	1	不锈钢 Stainless steel			
6		执手 Handle	1	不锈钢 Stainless steel			
5		锁芯 Cylinder	1	不锈钢 Stainless steel			
4		锁体 Lock body	1	Q235钢 Q235 Steel			
3		方锁舌 Dead Bolt	1	不锈钢 Stainless steel			
2		斜舌 Latch bolt	1	不锈钢 Stainless steel			
1		锁体面板 Surface Panel	1	不锈钢 Stainless steel			

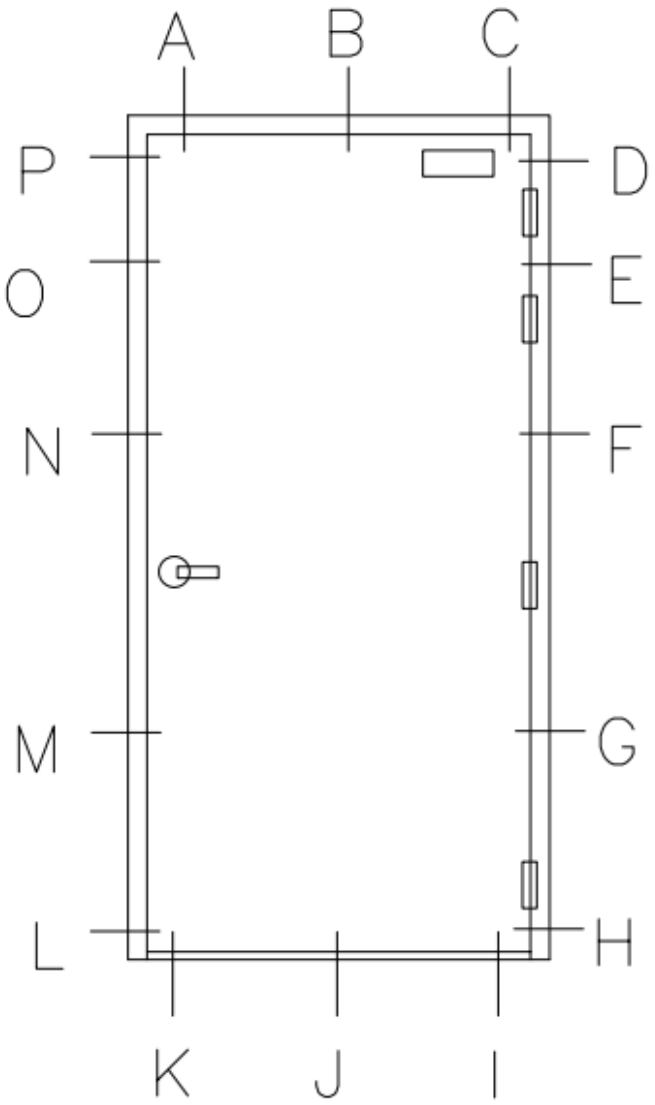
Drawing of Mortise Lock

9 Appendix C: Test Wall Construction Drawing



UNEXPOSED SIDE

10 Appendix D: Test Measurement Data

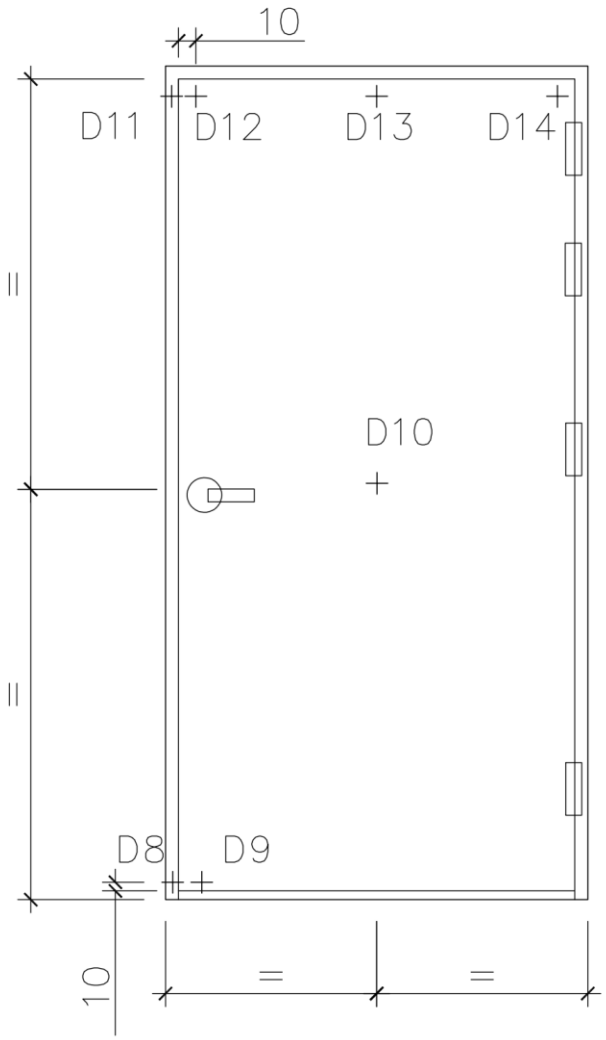


UNEXPOSED SIDE

Clearance dimension in mm at each position							
A	B	C	D	E	F	G	H
2.2	1.1	0.5	1.9	2.7	3.0	3.2	1.9
I	J	K	L	M	N	O	P
5.0	3.4	2.8	0.5	1.1	1.8	1.6	1.5

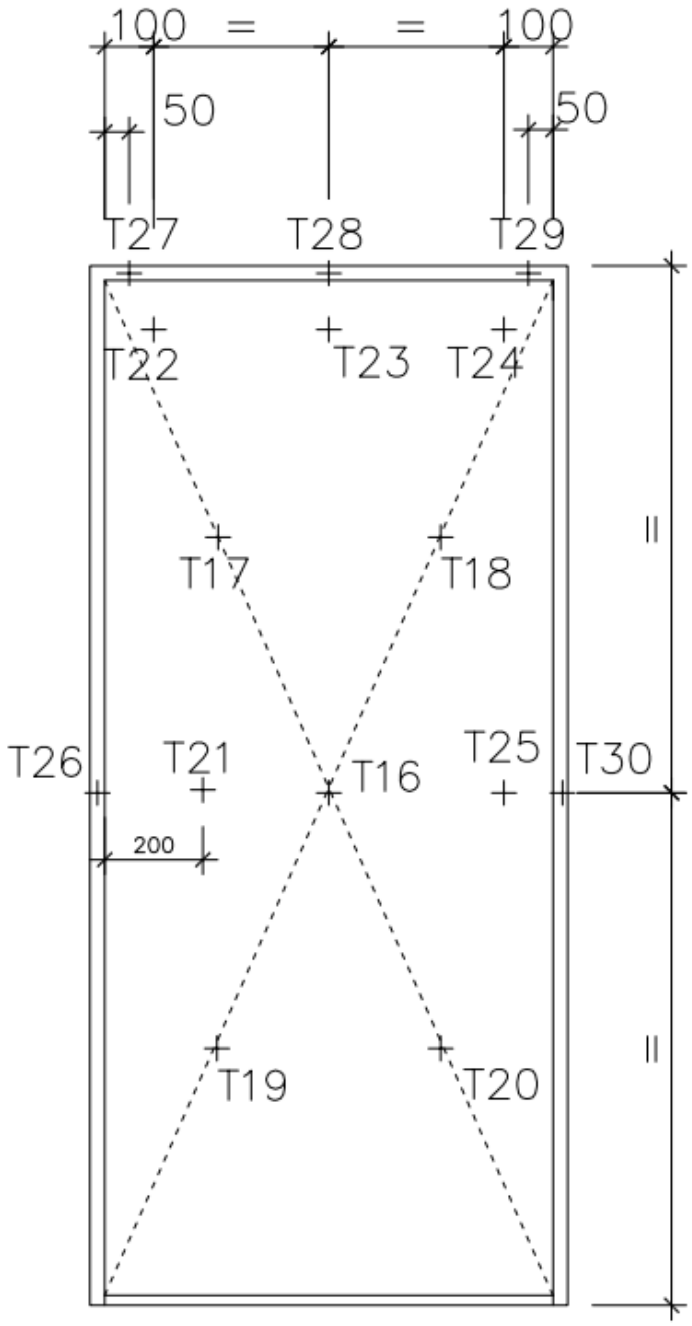
DO NOT SCALE

DOOR ASSEMBLY INITIAL CLEARANCES



UNEXPOSED SIDE

POSITIONS FOR MEASUREMENT OF HORIZONTAL DEFLECTION



POSITIONS FOR MEASUREMENT OF UNEXPOSED TEMPERATURE

11 Appendix E: Test Data

Standards: EN 1634-1:2014, Fire resistance and smoke control tests for door and shutter assemblies, openable window and elements of building hardware

Procedure: Part 1: Fire resistance tests for doors and shutter assemblies and openable windows

Conditioning: According to EN1363-1, Section 8

Equipment:

Item	*ID*
Vertical furnace	SH1097
Furnace pressure gauge	SH1097-15
Test Clock	SH1042
Furnace thermocouple	SH1097-4~6
Ambient temperature gauge	SH1097-11
Unexposed thermocouple	SH1097-12~14
Clearance Measurements	SH1061
Displacement Measurements	SH1034

Heating Conditions:	According to EN 1363-1, Section 5.1
Pressure Conditions:	According to EN1363-1, Section 5.2
Ambient Conditions:	10~40°C according to EN 1363-1, Section 5.6
Test Specimen:	According to EN 1634-1, Section 6
Installation of test specimen:	According to EN 1634-1, Section 7
Furnace Thermocouples:	According to EN 1634-1, Section 9.1.1
Unexposed Face Thermocouples:	According to EN 1634-1, Section 9.1.2
Thermocouple Pads:	Length and width 30 mm, thickness 2.0 ± 0.5 mm, dry density 900 ± 90 kg/m^2
Pressure Measurements:	According to EN 1634-1, Section 9.2
Deflection Measurements:	According to EN 1634-1, Section 9.3
Pre-test Examination:	According to EN 1634-1, Section 10.1
Test Procedure:	According to EN 1634-1, Section 10.2

Test Observations:

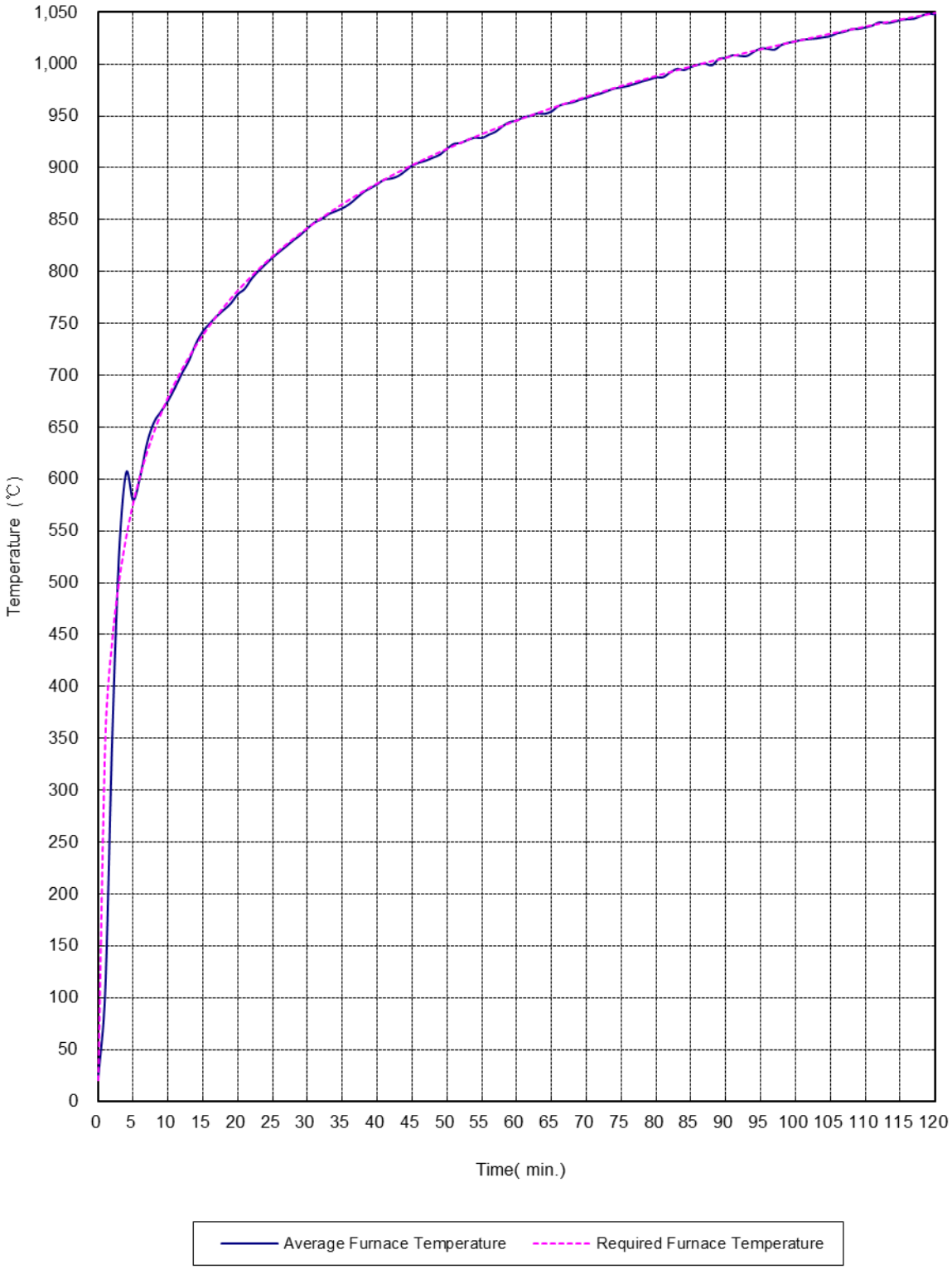
Time		All observations are from the unexposed face unless noted otherwise.
Mins	**Secs**	
00	00	Test started.
12	00	Light smoke emission was evident from the lock side of the leaf and slight deformation is observed at the top and bottom corner of the lock side of the leaf.
20	00	A deformation of about 35mm was observed at the corner of the leaf.
29	00	The rivet areas on the leaf turned dark and black.
31	10	The oil in the door closer emitted out and dropped out.
74	30	The area around the lock on the unexposed side turned dark and black.
116	15	Applied cotton pad to the lock position for a period 30 seconds and no ignition of cotton pad was evident.
120	00	Test is discontinued.

Temperature Data:

Mean furnace temperature together with temperature-time relationship specified in the standard.

Time Mins	Specified Furnace Temperature/ °C	Furnace mean Temperature/ °C
0	20	44
3	502	498
6	603	617
9	663	647
12	705	715
15	739	732
18	766	763
21	789	786
24	809	804
27	826	816
30	842	835
33	856	854
36	869	866
39	881	885
42	892	902
45	902	901
48	912	908
51	921	923
54	930	935
57	938	938
60	945	945
63	953	953
66	960	964
69	966	968
72	973	975
75	979	977
78	985	984
81	990	994
84	996	995
87	1001	1000
90	1006	1006
93	1011	1012
96	1016	1018
99	1020	1018
102	1025	1030
105	1029	1032
108	1033	1030
111	1037	1040
114	1041	1038
117	1045	1044
120	1049	1051

Graph for mean furnace temperature and temperature-time curve specified in the standard.



Unexposed surface temperatures

Time Mins	T16 (°C)	T17 (°C)	T18 (°C)	T19 (°C)	T20 (°C)	Mean temperature (°C)
0	9	10	10	9	9	9
1	10	10	11	10	10	10
2	10	11	11	10	10	10
3	10	12	13	11	11	11
4	11	14	15	14	13	14
5	14	18	20	17	17	17
6	17	22	25	21	21	21
7	21	27	31	26	26	26
8	27	34	38	31	33	32
9	33	40	46	38	40	39
10	40	47	54	44	47	46
11	47	55	64	52	55	54
12	54	63	74	60	64	63
13	62	73	86	70	77	74
14	72	82	100	82	87	84
15	82	90	113	95	96	95
16	93	98	126	103	106	105
17	104	108	140	106	115	115
18	115	118	153	113	124	125
19	126	129	165	120	135	135
20	138	139	173	128	151	146
21	149	149	182	134	179	158
22	159	161	191	140	204	171
23	171	175	201	144	219	182
24	181	190	211	150	231	193
25	191	203	220	157	243	203
26	200	218	229	165	253	213
27	209	239	238	173	263	224
28	219	261	247	180	271	236
29	228	275	256	188	279	245
30	236	288	264	195	286	254

Note: The thermocouples on the unexposed side were removed after 30 minutes.

Unexposed surface temperatures

Time Mins	T21 (°C)	T22 (°C)	T23 (°C)	T24 (°C)	T25 (°C)	Environment (°C)
0	9	11	10	10	9	7
1	9	11	10	11	10	7
2	9	12	11	12	11	7
3	10	16	12	14	11	7
4	13	21	14	17	13	7
5	16	27	16	21	16	7
6	20	33	20	26	20	7
7	25	39	24	31	25	7
8	31	46	28	37	30	7
9	37	52	33	43	36	7
10	44	58	39	51	42	7
11	51	65	45	58	48	7
12	59	71	52	67	55	7
13	68	77	59	76	62	7
14	79	84	68	86	70	7
15	90	91	79	96	80	7
16	102	98	91	106	90	7
17	111	106	103	116	100	7
18	120	114	116	126	110	7
19	128	122	128	135	120	7
20	137	130	140	143	130	7
21	151	141	158	155	140	7
22	162	149	165	163	150	7
23	172	157	181	171	160	7
24	182	165	190	177	170	7
25	194	173	200	184	179	7
26	206	182	209	191	188	7
27	219	189	217	197	197	7
28	233	196	225	203	205	7
29	249	202	233	209	212	7
30	263	207	241	215	219	7

Note: The thermocouples on the unexposed side were removed after 30 minutes.

Unexposed surface temperatures

Time Mins	T26 (°C)	T27 (°C)	T28 (°C)	T29 (°C)	T30 (°C)	Environment (°C)
0	9	10	9	9	7	7
1	13	15	12	11	9	7
2	14	20	12	13	10	7
3	14	27	13	17	12	7
4	14	31	14	21	14	7
5	14	36	16	26	15	7
6	15	41	18	31	17	7
7	16	45	20	37	19	7
8	17	51	23	50	21	7
9	18	56	25	50	23	7
10	20	61	27	52	26	7
11	22	67	30	54	28	7
12	25	78	34	57	30	7
13	29	93	37	60	33	7
14	34	99	40	63	36	7
15	40	100	43	67	39	7
16	46	101	47	70	43	7
17	52	103	50	74	47	7
18	58	104	54	79	51	7
19	63	104	57	85	55	7
20	71	104	62	92	59	7
21	82	105	67	97	64	7
22	91	106	76	98	68	7
23	92	106	87	99	72	7
24	94	107	96	100	76	7
25	96	109	100	100	80	7
26	97	110	100	101	83	7
27	97	111	101	103	86	7
28	98	112	103	104	91	7
29	98	113	105	105	93	7
30	99	114	109	107	94	7

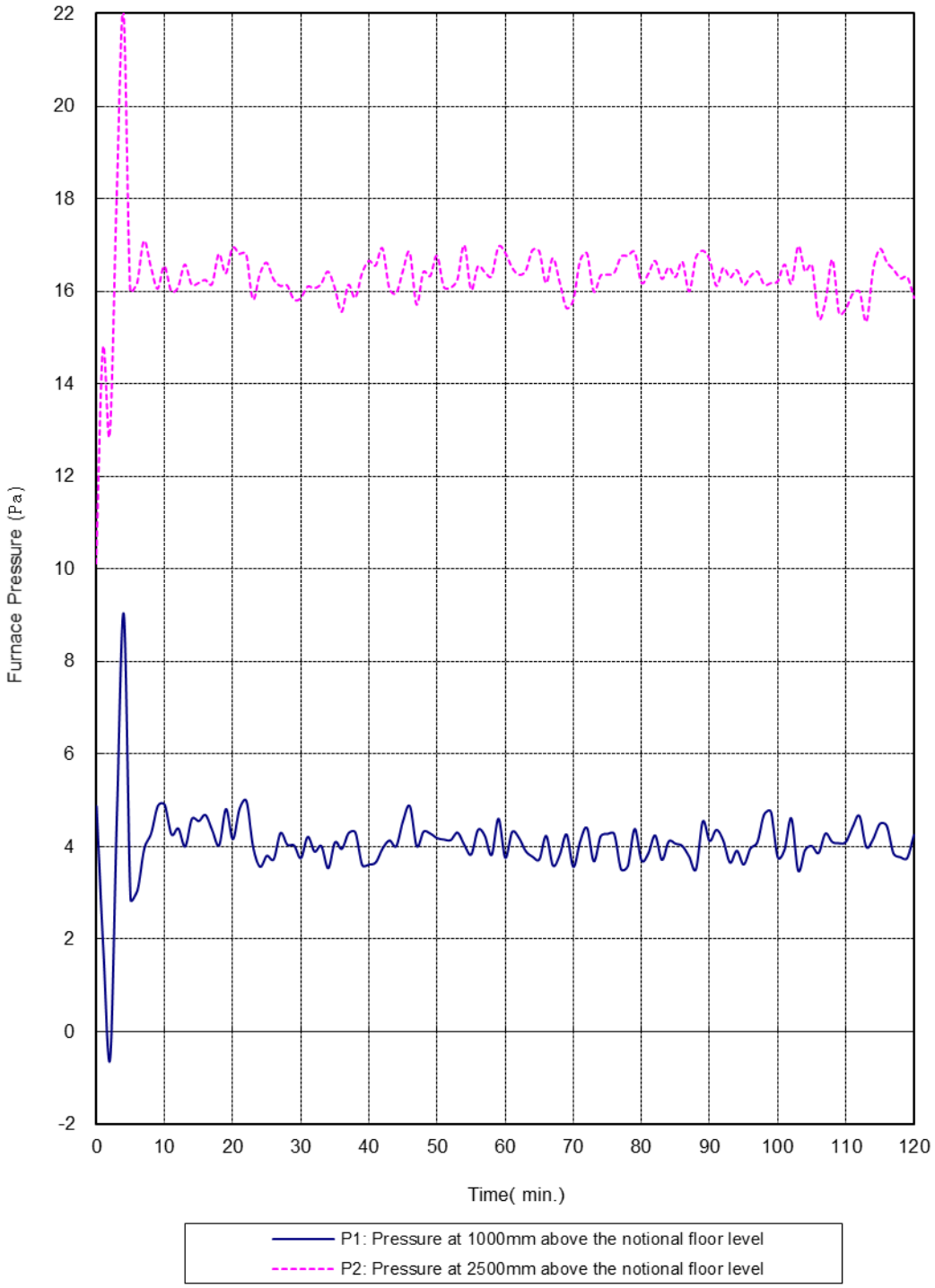
Note: The thermocouples on the unexposed side were removed after 30 minutes.

Horizontal Deflection (Positive values indicate movement into the furnace).

Time Mins	D8 (mm)	D9 (mm)	D10 (mm)	D11 (mm)	D12 (mm)	D13 (mm)	D14 (mm)
0	0	0	0	0	0	0	0
10	0	-9	24	0	-4	2	-2
20	0	-8	35	0	-1	5	0

Note: Deflection measurement is discontinued after 20 minutes due to high radiation.

Furance pressure during test.



12 Appendix F: Test Photographs

Fig. 1 – Exposed Side Prior to the Fire Test

Fig. 2 – Unexposed Side Prior to the Fire Test

Fig. 3 – Unexposed Side after 10 Minutes

Fig. 4 – Unexposed Side after 20 Minutes

Fig. 5 – Unexposed Side after 31 Minutes

Fig. 6 – Unexposed Side after 40 Minutes

Fig. 7 – Unexposed Side after 50 Minutes

Fig. 8 – Unexposed Side after 60 Minutes

Fig. 9 – Unexposed Side after 80 Minutes

Fig. 10 – Unexposed Side after 116 Minutes

Fig. 11 – Unexposed Side after 120 Minutes

Fig. 12 – Exposed Side after 120 Minutes

13 Revision Page

Revision No.	Date	Changes	Author	Reviewer
0	January 19, 2017	First issue	Vincent Jin	Sun Sun

END OF DOCUMENT