

Summary of Test Results

Reference no. : BC-SUMMARY-2019-41

Customer : Gate Way Valve & Fitting Ltd.

Address : Flat A2, 4/F., Galaxy Factory Building, 25-27 Luk Hop Street, San Po Kong, Kowloon, H. K.

Sample description : Cast Iron Swing Check Valve

Nominal pressure (PN) : 16

Manufacturer : Kitz Corporation

Brand name : Toyo

Body marking : (DN) PN16 CI TOYO ←

Model no. : 520SHHK

Origin : PRC

Sample submitted by : Gate Way Valve & Fitting Ltd.

Test standard : BS EN 12334 : 2001 / WIS 4-52-01 / BS EN 1561 : 2011 / BS EN 1982 : 2008 / BS EN 10088-1 : 2014

Test period : 21 February to 14 June 2019

A) Sample List

DN (mm)	Specimen no.
65	BC0190131-028-MISL
80	BC0190131-029-MISL
100	BC0190131-030-MISL
150	BC0190131-031-MISL
200	BC0190131-032-MISL
250	BC0190131-033-MISL
300	BC0190131-034-MISL

B) Test Item

1) Dimensions Check (BS EN 12334 : 2001 Clause 4.1.3)

DN (mm)	Test results	Castco LRN
65	Passed	BC0190131-027-MISL
80	Passed	
100	Passed	
150	Passed	
200	Passed	
250	Passed	
300	Passed	

2) Coating Thickness Test (WIS 4-52-01 Appendix B)

DN (mm)	Test results	Castco LRN
65	Passed	BC0190131-027-MISL
80	Passed	
100	Passed	
150	Passed	
200	Passed	
250	Passed	
300	Passed	

Summary of Test Results

Reference no. : BC-SUMMARY-2019-41

B) Test Item (con't)

3) Hydrostatic Strength Test (BS EN 12334 : 2001 Clause 5.1)

DN (mm)	Test results	Castco LRN
65	Passed	BC0190131-027-MISL
80	Passed	
100	Passed	
150	Passed	
200	Passed	
250	Passed	
300	Passed	

4) Tensile Properties (BS EN 1561 : 2011 Clause 7.2 and 9.1 Table 1 Grade EN-GJL-250)

DN (mm)	Test results	Castco LRN
65	Passed	BC0190131-027-MISL
100	Passed	
150	Passed	
200	Passed	
300	Passed	

5) Chemical Composition-Seat Ring (BS EN 1982 : 2008, Table 23b, Grade CC491K)

DN (mm)	Test results	Castco LRN
65	Passed	MS0190213-33
100	Passed	MS0190213-35
150	Passed	MS0190213-37
200	Passed	MS0190213-39
300	Passed	MS0190213-41


6) Chemical Composition-Seat Ring (BS EN 10088-1 : 2014, Table 2, Grade 1.4401 (316))

DN (mm)	Test results	Castco LRN
65	Passed	MS0190213-34
100	Passed	MS0190213-36
150	Passed	MS0190213-38
200	Passed	MS0190213-40
300	Passed	MS0190213-42

Prepare by :
Date : 27 June 2019


FU HO MAN
Assistant Technical Manager

Review by :
Date : 27 June 2019


WONG KA MAN
Senior Manager

Test Report
Dimensions Check of Check Valves
(BS EN 12334 : 2001 Clause 4.1.3)

Date of issue : 14 June 2019

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Castco LRN : BC0190131-027-MISL

Details as supplied by customer

Customer : Gate Way Valve & Fitting Ltd.

Customer's ref. no. : - -

Address : Flat A2, 4/F., Galaxy Factory Building, 25-27 Luk Hop Street, San Po Kong, Kowloon, H. K.

Contract no. : - -

Job title : Toyo Valve Testing for WSD Approval

Sample description : Cast Iron Swing Check Valve

Nominal pressure (PN) : 16

Manufacturer : Kitz Corporation

Brand name : Toyo

Body marking : (DN) PN16 CI TOYO ←

Model no. : 520SHHK

Origin : PRC

Sample submitted by : Gate Way Valve & Fitting Ltd.

Laboratory test results

Date of sample received : 21 May 2019

Date of test : 13 June 2019

Specimen no.	BC0190131-028-MISL	BC0190131-029-MISL	BC0190131-030-MISL	BC0190131-031-MISL	BC0190131-032-MISL	BC0190131-033-MISL	BC0190131-034-MISL	
DN (mm)	65	80	100	150	200	250	300	
Face-to-face (mm)	Measured mean value	217	242	294	356	495	622	700
	Requirement	214 to 218	239 to 243	289 to 295	353 to 359	492 to 498	618 to 626	694 to 702
Outside diameter of flange (mm)	Measured mean value	186	200	222	286	340	406	460
	Requirement	185	200	220	285	340	405	460
Diameter of bolt circle (mm)	Measured mean value	145	160	180	240	295	355	410
	Requirement	145	160	180	240	295	355	410
Diameter of bolt hole & Bolts number (mm & no.)	Measured mean value	19.22 - 4	19.63 - 8	19.68 - 8	23.38 - 8	23.36 - 12	28.51 - 12	28.59 - 12
	Requirement	19 to 20.5 - 4	19 to 20.5 - 8	19 to 20.5 - 8	23 to 24.5 - 8	23 to 24.5 - 12	28 to 29.5 - 12	28 to 29.5 - 12
Flange thickness (mm)	Measured mean value	19.15	21.17	23.56	25.63	28.75	30.78	30.15
	Requirement	17 to 24	19 to 26	21 to 28	23 to 30	27 to 34	29 to 36	29 to 36

Remark(s) :

1. Test results relate only to the specimen tested.
2. Test results of sample comply with the requirement of BS EN 12334 :2001 Clause 4.1.3. (Flange to BS EN 1092-2 PN16)

Checked by : **FU HO MAN**
Assistant Technical Manager

Certified by : **WONG KA MAN**
Senior Manager

Test Report
Coating Thickness Test of Check Valves
(WIS 4-52-01 Appendix B)

Date of issue : 14 June 2019

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Castco LRN : BC0190131-027-MISL

Details as supplied by customer

Customer : Gate Way Valve & Fitting Ltd.

Customer's ref. no. : - -

Address : Flat A2, 4/F., Galaxy Factory Building, 25-27 Luk Hop Street, San Po Kong, Kowloon, H. K.

Contract no. : - -

Job title : Toyo Valve Testing for WSD Approval

Sample description : Cast Iron Swing Check Valve

Nominal pressure (PN) : 16

Manufacturer : Kitz Corporation

Brand name : Toyo

Body marking : (DN) PN16 CI TOYO ←

Model no. : 520SHHK

Origin : PRC

Sample submitted by : Gate Way Valve & Fitting Ltd.

Laboratory test results

Date of sample received : 21 May 2019

Date of test : 13 June 2019

Specimen no.	BC0190131-028-MISL	BC0190131-029-MISL	BC0190131-030-MISL	BC0190131-031-MISL	BC0190131-032-MISL	BC0190131-033-MISL	BC0190131-034-MISL	
DN (mm)	65	80	100	150	200	250	300	
Measured value of coating thickness (µm)	1	666	259	472	491	263	266	670
	2	292	288	486	359	274	252	699
	3	411	419	381	459	317	310	630
	4	412	365	250	419	254	255	454
	5	383	359	332	699	292	281	622
	6	371	419	358	454	316	335	534
	7	408	373	632	470	309	339	707
	8	346	592	463	403	381	308	715
	9	380	273	490	405	348	254	585
	10	261	428	311	347	290	398	597
	11	327	445	387	411	340	460	547
	12	269	404	324	358	436	556	461
	13	476	438	503	369	498	576	644
	14	261	536	297	460	429	563	677
	15	396	376	342	430	499	465	489
	Mean	377.3	398.3	401.9	435.6	349.7	374.5	602.1

Remark(s) :

1. Test results relate only to the specimen tested.

Checked by :

 **FU HO MAN**
Assistant Technical Manager

Certified by :

 **WONG KA MAN**
Senior Manager



Test Report
Hydrostatic Strength Test of Check Valves
(BS EN 12334 : 2001 Clause 5.1)

Date of issue : 14 June 2019

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Castco LRN : BC0190131-027-MISL

Details as supplied by customer

Customer : Gate Way Valve & Fitting Ltd.

Customer's ref. no. : - -

Address : Flat A2, 4/F., Galaxy Factory Building, 25-27 Luk Hop Street, San Po Kong, Kowloon, H. K.

Contract no. : - -

Job title : Toyo Valve Testing for WSD Approval

Sample description : Cast Iron Swing Check Valve

Nominal pressure (PN) : 16

Manufacturer : Kitz Corporation

Brand name : Toyo

Body marking : (DN) PN16 CI TOYO ←

Model no. : 520SHHK

Origin : PRC

Sample submitted by : Gate Way Valve & Fitting Ltd.

Laboratory test results

Date of sample received : 21 May 2019

Date of test : 13 to 14 June 2019

A) Shell Tightness (BS EN 12266-1 : 2012 Annex A.3)

Specimen no.	BC0190131-028-MISL	BC0190131-029-MISL	BC0190131-030-MISL	BC0190131-031-MISL	BC0190131-032-MISL	BC0190131-033-MISL	BC0190131-034-MISL
DN (mm)	65	80	100	150	200	250	300
Apply pressure (bar)	24	24	24	24	24	24	24
Test duration (s)	60	60	60	60	120	120	120
Visually detectable leakage	No	No	No	No	No	No	No
Requirement	Visually detectable leakage is not permitted						
Test results	Passed	Passed	Passed	Passed	Passed	Passed	Passed

Test Report
Hydrostatic Strength Test of Check Valves
(BS EN 12334 : 2001 Clause 5.1)

Date of issue : 14 June 2019

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Castco LRN : BC0190131-027-MISL

Laboratory test results (con't)

B) Seat Tightness (BS EN 12266-1 : 2012 Annex A.4)

Specimen no.	BC0190131-028-MISL	BC0190131-029-MISL	BC0190131-030-MISL	BC0190131-031-MISL	BC0190131-032-MISL	BC0190131-033-MISL	BC0190131-034-MISL
DN (mm)	65	80	100	150	200	250	300
Apply pressure (bar)	17.6	17.6	17.6	17.6	17.6	17.6	17.6
Test duration (s)	60	60	60	60	120	120	120
Leakage rate (mm ³ /s)	0	0	0	0	0	0	0
Requirement	The leakage rate shall not exceed specified in BS EN 12266-1 : 2012 Annex A.4.3 Table A.5						
Test results	Passed	Passed	Passed	Passed	Passed	Passed	Passed

Remark(s) :

1. Test results relate only to the specimen tested.
2. Test results of sample comply with the requirement of BS EN 12266-1 : 2012 Clause 4 Annex A.

Checked by :

FU HO MAN
Assistant Technical Manager

Certified by :

WONG KA MAN
Senior Manager



Test Report

Spheroidal Graphite Cast Iron - Tensile Properties
(BS EN 1561 : 2011 Clause 7.2 and 9.1 Table 1)

Date of issue : 14 June 2019

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Castco LRN : BC0190131-027-MISL

Details as supplied by customer

Customer : Gate Way Valve & Fitting Ltd.

Customer's ref. no. : - -

Address : Flat A2, 4/F., Galaxy Factory Building, 25-27 Luk Hop Street, San Po Kong, Kowloon, H. K.

Contract no. : - -

Job title : Toyo Valve Testing for WSD Approval

Sample description : Cast Iron Swing Check Valve

Nominal pressure (PN) : 16

Manufacturer : Kitz Corporation

Brand name : Toyo

Body marking : (DN) PN16 CI TOYO ←

Model no. : 520SHHK

Origin : PRC

Sample submitted by : Gate Way Valve & Fitting Ltd.

Laboratory test results

Date of sample received : 31 January 2019

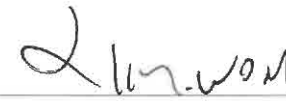
Date of test : 23 February 2019

Specimen no.	BC0190131-028-MISL	BC0190131-030-MISL	BC0190131-031-MISL	BC0190131-032-MISL	BC0190131-034-MISL	
DN (mm)	65	100	150	200	300	
Steel grade	EN-GJL-250					
Total specimen length (mm)	156	154	155	153	154	
Area (mm ²)	200.3	199.8	202.6	200.8	201.8	
Tensile (MPa)	Strength	277	326	314	299	297
	Requirement	250 to 350				
Test results	Passed	Passed	Passed	Passed	Passed	

Remark(s) :

1. Test results relate only to the specimen tested.
2. Test results of sample comply with the requirement of BS EN 1561 : 2011 Table 1.

Checked by:  **FU HO MAN**
Assistant Technical Manager

Certified by:  **WONG KA MAN**
Senior Manager

Test Report
Dimensions Check of Check Valves
(BS EN 12334 : 2001 Clause 4.1.3)

Date of issue : 14 June 2019

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Castco LRN : BC0190131-027-MISL

Appendix A



BC0190131-028-MISL



BC0190131-029-MISL

Test Report
Dimensions Check of Check Valves
(BS EN 12334 : 2001 Clause 4.1.3)

Date of issue : 14 June 2019
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Castco LRN : BC0190131-027-MISL

Appendix B



BC0190131-030-MISL



BC0190131-031-MISL

Test Report
Dimensions Check of Check Valves
(BS EN 12334 : 2001 Clause 4.1.3)

Appendix C



BC0190131-032-MISL



BC0190131-033-MISL

Test Report
Dimensions Check of Check Valves
(BS EN 12334 : 2001 Clause 4.1.3)

Date of issue : 14 June 2019

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Castco LRN : BC0190131-027-MISL

Appendix D



BC0190131-034-MISL

End of Report