CASTCO
佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED

Test Report
Dimensions Check of Settlement Joints
(In-house method)

Date of issue : 12 October 2016
 Castco LRN : BC0160824-015-MISL

Details as suppiled by customer

Customer : Tozen (HK) Limited
Customer's ref. no. : - -
Address : Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, Hong Kong
Contract no. : - -
Job title : - -
Sample description : Stainless Steel Settlement Joints
Nominal pressure (PN) : 16
Manufacturer : Tozen Corporation
Brand name : Tozen
Body marking : TOZEN JBU
Model no. : JBU-304P
Origin : PRC
Sample submitted by : Tozen (HK) Limited

Laboratory test results

Date of sample received : 24 August 2016
Date of test : 02 September 2016

Specimen no.		BC0160824-016-MISL	BC0160824-017-MISL	BC0160824-018-MISL	BC0160824-019-MISL	BC0160824-020-MISL
DN (mm)		20	25	32	40	50
Inch		3/4"	1"	1-1/4"	1-1/2"	2"
ØD1 (mm)	Measured mean value	29	35	45	48	61
	Manufacturer requirement	28	34	43	49	58
T (mm)	Measured mean value	16	16	17	16	18
	Manufacturer requirement	16	16	16	16	18
f (mm)	Measured mean value	2	2	2	3	3
	Manufacturer requirement	2	2	2	3	3
L (mm)	Measured mean value	800	800	800	800	800
	Manufacturer requirement	800	800	800	800	800
ØD2 (mm)	Measured mean value	153	165	188	201	214
	Manufacturer requirement	155	165	190	200	215
ØD (mm)	Measured mean value	105	115	140	150	165
	Manufacturer requirement	105	115	140	150	165
ØK (mm)	Measured mean value	75	85	101	111	126
	Manufacturer requirement	75	85	100	110	125
n - Ød (no. - mm)	Measured mean value	4 - 14	4 - 14	4 - 18	4 - 18.5	4 - 18.5
	Manufacturer requirement	4 - 14	4 - 14	4 - 18	4 - 18	4 - 18

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Test Report
Dimensions Check of Settlement Joints
(In-house method)

Date of issue : 12 October 2016
 Castco LRN : BC0160824-015-MISL

Laboratory test results (con't)

Specimen no.		BC0160824-021-MISL	BC0160824-022-MISL	BC0160824-023-MISL	BC0160824-024-MISL	BC0160824-025-MISL	BC0160824-026-MISL	BC0160824-027-MISL	BC0160824-028-MISL
DN (mm)		65	80	100	125	150	200	250	300
Inch		2-1/2"	3"	4"	5"	6"	8"	10"	12"
ØA (mm)	Measured mean value	75	89	116	131	165	212	272	309
	Manufacturer requirement	76	90	116	133	169	216	275	314
ØC (mm)	Measured mean value	185	200	158	189	213	267	321	378
	Manufacturer requirement	185	200	158	188	212	268	320	378
T (mm)	Measured mean value	19	20	20	22	22	24	26	28
	Manufacturer requirement	18	20	20	22	22	24	26	28
f (mm)	Measured mean value	3	3	3	3	3	3	3	4
	Manufacturer requirement	3	3	3	3	3	3	3	4
L (mm)	Measured mean value	751	751	800	901	900	900	901	1001
	Manufacturer requirement	750	750	800	900	900	900	900	1000
P.C.D (mm)	Measured mean value	146	161	181	211	241	296	357	410
	Manufacturer requirement	145	160	180	210	240	295	355	410
N - ØH (no. - mm)	Measured mean value	4 - 18	8 - 18	8 - 18	8 - 18	8 - 22	12 - 22.5	12 - 26	12 - 26
	Manufacturer requirement	4 - 18	8 - 18	8 - 18	8 - 18	8 - 22	12 - 22	12 - 26	12 - 26

Remark(s) :
1. Test results relate only to the specimen tested.

Checked by : FU HO MAN, Assistant Technical Officer

Certified by : WONG KA MAN, Laboratory Manager

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Test Report
Hydrostatic Strength Test of Settlement Joints
(BS EN 12266-1 : 2012 Clause 4 Annex A)

Date of issue : 12 October 2016

Castco LRN : BC0160824-015-MISL

Details as suppiled by customer

Customer : Tozen (HK) Limited
Customer's ref. no. : - -
Address : Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, Hong Kong
Contract no. : - -
Job title : - -
Sample description : Stainless Steel Settlement Joints
Nominal pressure (PN) : 16
Manufacturer : Tozen Corporation
Brand name : Tozen
Body marking : TOZEN JBU
Model no. : JBU-304P
Origin : PRC
Sample submitted by : Tozen (HK) Limited

Laboratory test results

Date of sample received : 24 August 2016
Date of test : 05 to 06 September 2016

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

Specimen no.	DN (mm)	Inch	Apply pressure (bar)	Test duration (s)	Visually detectable leakage	Requirement	Test results
BC0160824-016-MISL	20	3/4"	24	60	No	Visually detectable leakage is not permitted	Passed
BC0160824-017-MISL	25	1"	24	60	No		Passed
BC0160824-018-MISL	32	1-1/4"	24	60	No		Passed
BC0160824-019-MISL	40	1-1/2"	24	60	No		Passed
BC0160824-020-MISL	50	2"	24	60	No		Passed
BC0160824-021-MISL	65	2-1/2"	24	60	No		Passed
BC0160824-022-MISL	80	3"	24	60	No		Passed
BC0160824-023-MISL	100	4"	24	60	No		Passed
BC0160824-024-MISL	125	5"	24	60	No		Passed
BC0160824-025-MISL	150	6"	24	60	No		Passed
BC0160824-026-MISL	200	8"	24	120	No		Passed
BC0160824-027-MISL	250	10"	24	120	No		Passed
BC0160824-028-MISL	300	12"	24	120	No		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 Officer
Certified by : WONG KA MAN, Laboratory Manager

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Test Report
Burst Pressure Test of Settlement Joints
(In-house method)

Date of issue : 12 October 2016

Castco LRN : BC0160824-015-MISL

Details as suppiled by customer

Customer : Tozen (HK) Limited
Customer's ref. no. : - -
Address : Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, Hong Kong
Contract no. : - -
Job title : - -
Sample description : Stainless Steel Settlement Joints
Nominal pressure (PN) : 16
Manufacturer : Tozen Corporation
Brand name : Tozen
Body marking : TOZEN JBU
Model no. : JBU-304P
Origin : PRC
Sample submitted by : Tozen (HK) Limited

Laboratory test results

Date of sample received : 24 August 2016
Date of test : 05 to 06 September 2016

Specimen no.	DN (mm)	Inch	Apply pressure (bar)	Test duration (s)	Observation
BC0160824-016-MISL	20	3/4"	40	60	No leakage was observed
BC0160824-017-MISL	25	1"	40	60	No leakage was observed
BC0160824-018-MISL	32	1-1/4"	40	60	No leakage was observed
BC0160824-019-MISL	40	1-1/2"	40	60	No leakage was observed
BC0160824-020-MISL	50	2"	40	60	No leakage was observed
BC0160824-021-MISL	65	2-1/2"	40	60	No leakage was observed
BC0160824-022-MISL	80	3"	40	60	No leakage was observed
BC0160824-023-MISL	100	4"	40	60	No leakage was observed
BC0160824-024-MISL	125	5"	40	60	No leakage was observed
BC0160824-025-MISL	150	6"	40	60	No leakage was observed
BC0160824-026-MISL	200	8"	40	120	No leakage was observed
BC0160824-027-MISL	250	10"	40	120	No leakage was observed
BC0160824-028-MISL	300	12"	40	120	No leakage was observed

Remark(s) :
1. Test results relate only to the specimen tested.

Checked by : FU HO MAN, Assistant Technical Officer

Certified by : WONG KA MAN, Laboratory Manager

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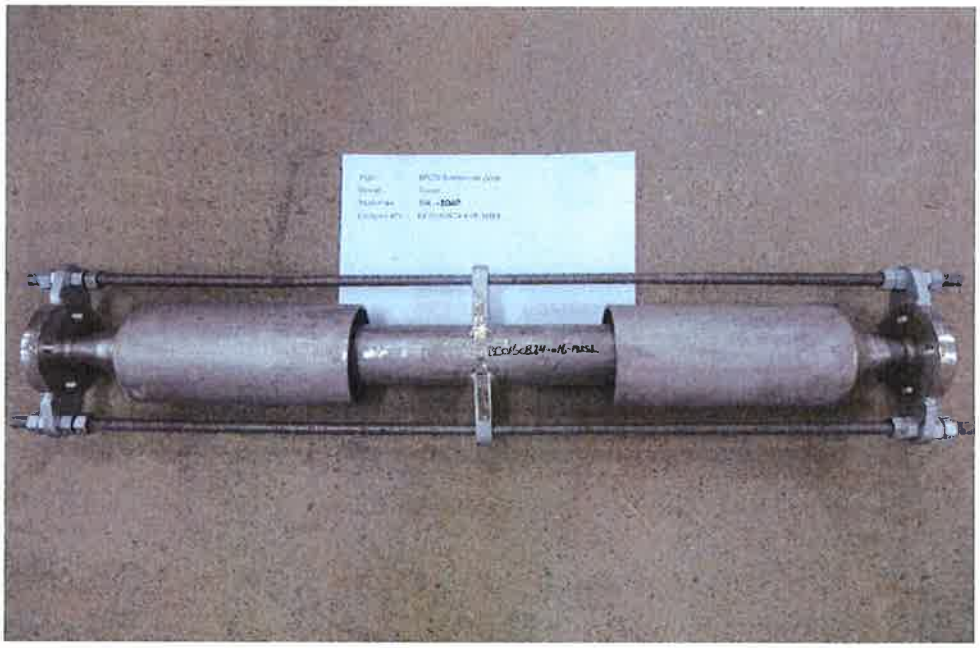
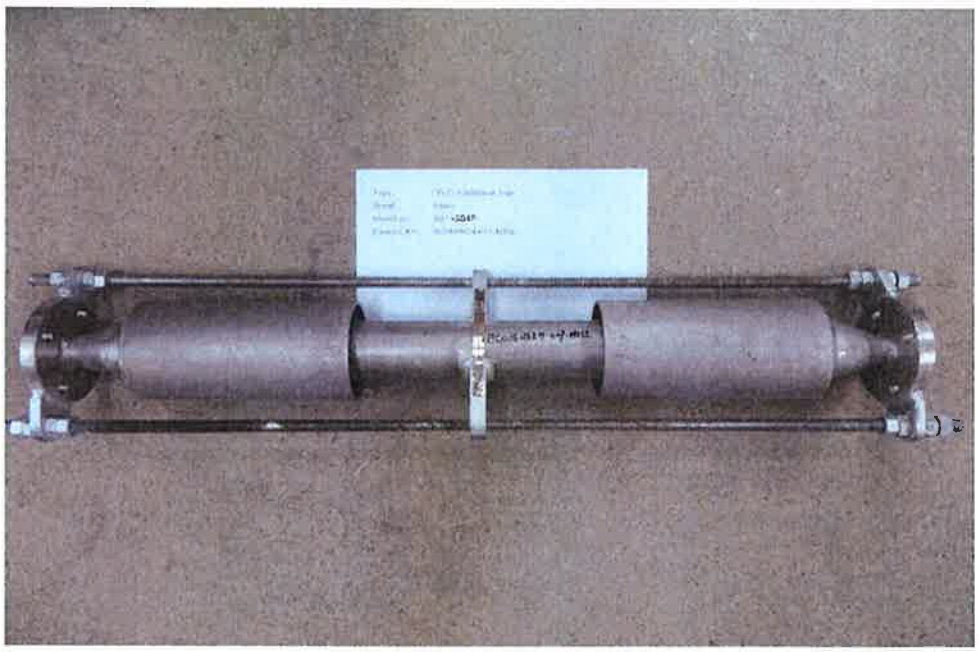
Test Report
Dimensions Check of Settlement Joints
(In-house method)

Appendix A



BC0160824-016-MISL



BC0160824-017-MISL

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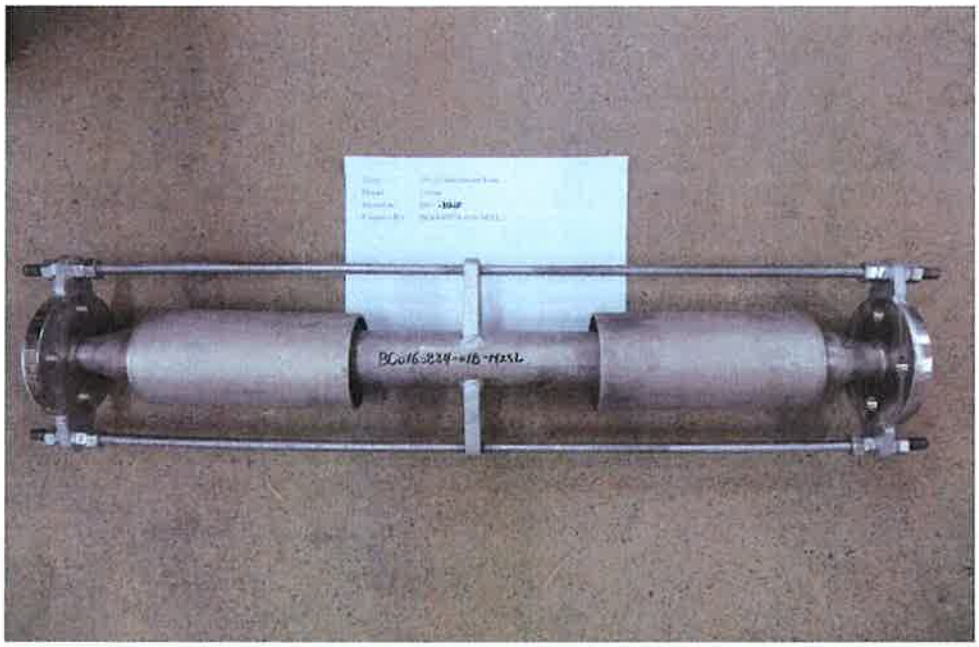
Test Report
Dimensions Check of Settlement Joints
(In-house method)

Appendix B



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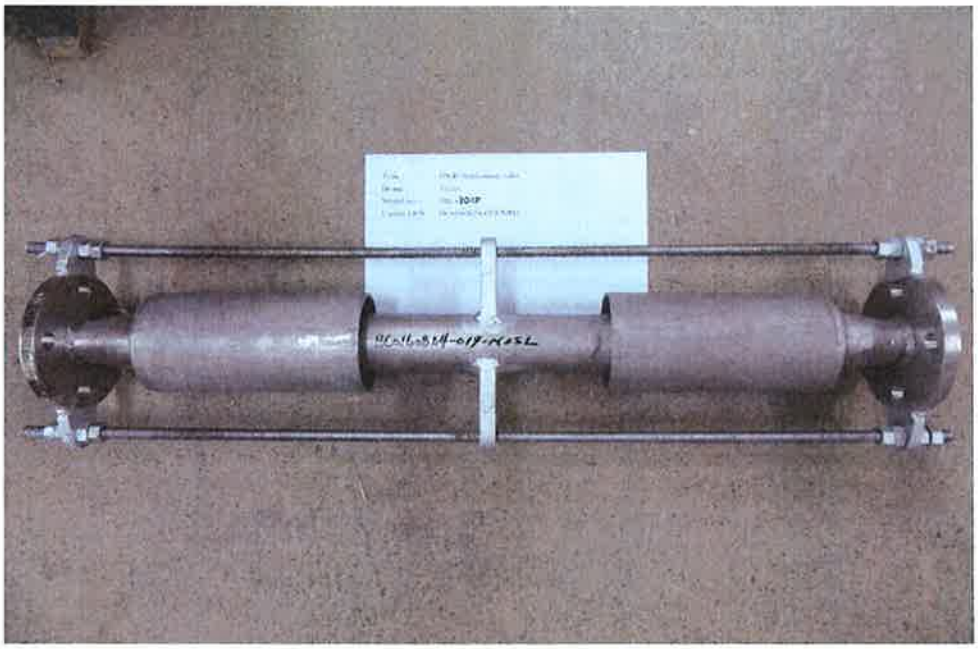

BC0160824-019-MISL

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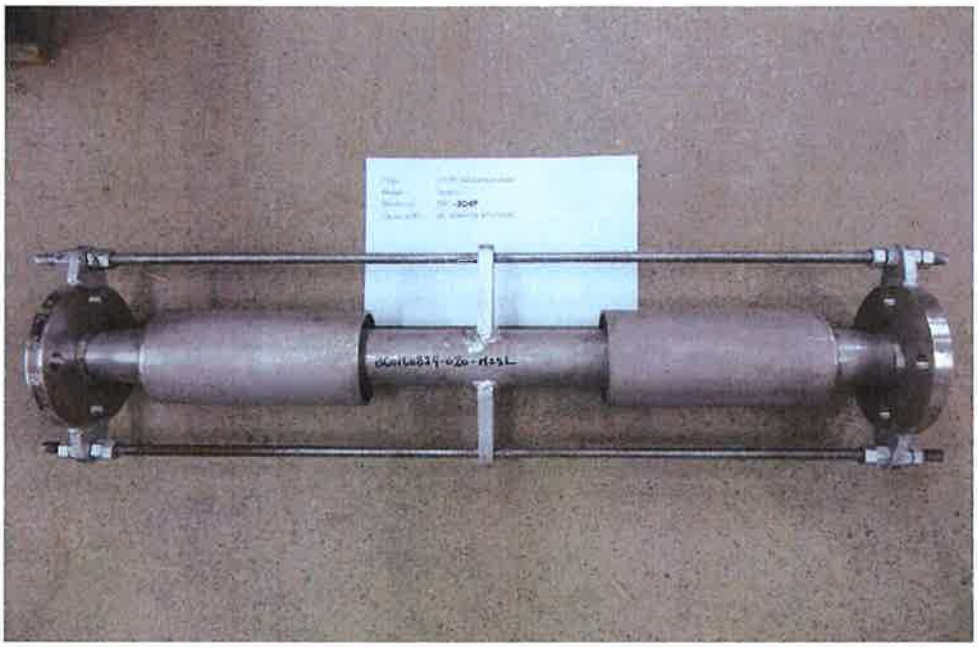
Test Report
Dimensions Check of Settlement Joints
(In-house method)

Date of issue : 12 October 2016

Castco LRN : BC0160824-015-MISL

Appendix C



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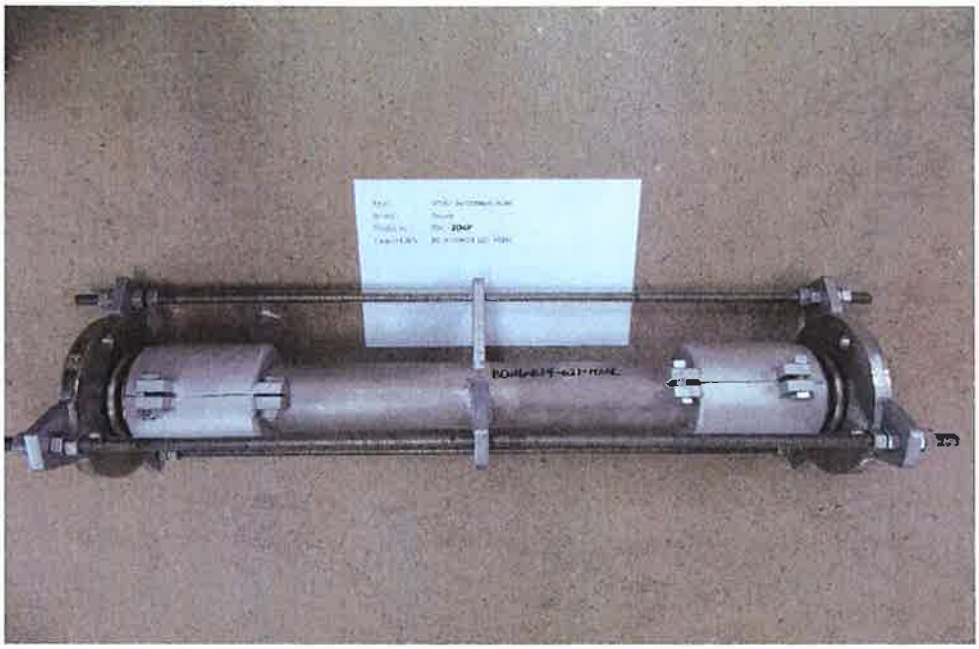

BC0160824-021-MISL

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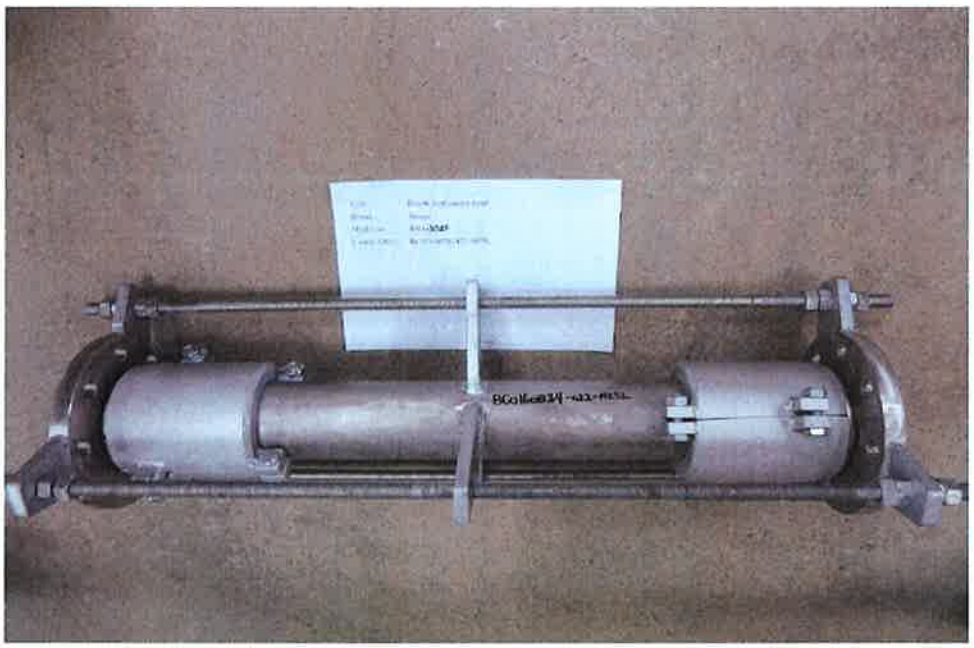
Test Report
Dimensions Check of Settlement Joints
(In-house method)

Appendix D



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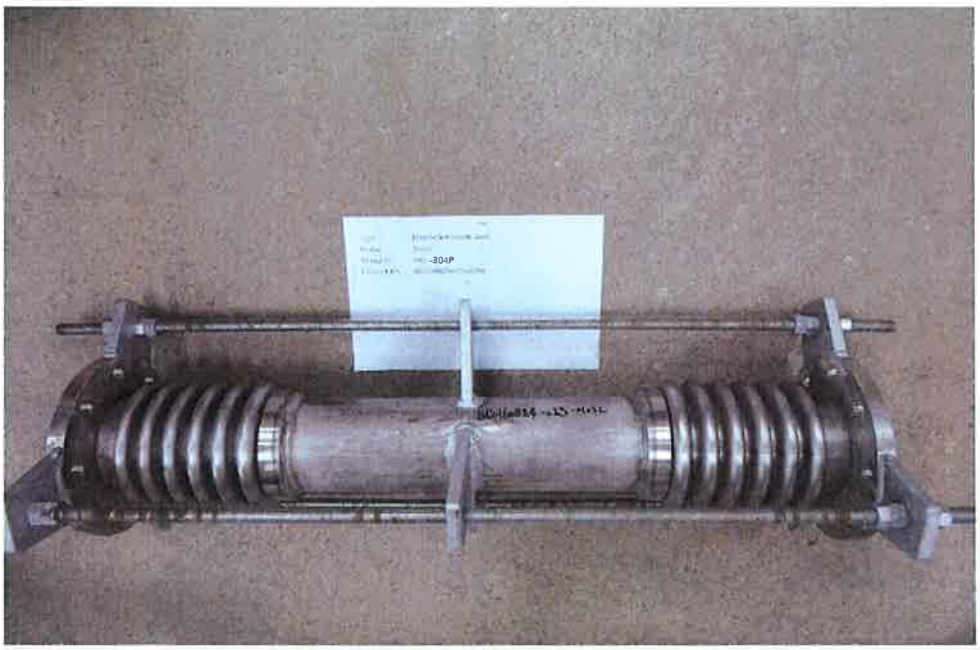

BC0160824-023-MISL

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Test Report
Dimensions Check of Settlement Joints
(In-house method)

Date of issue : 12 October 2016

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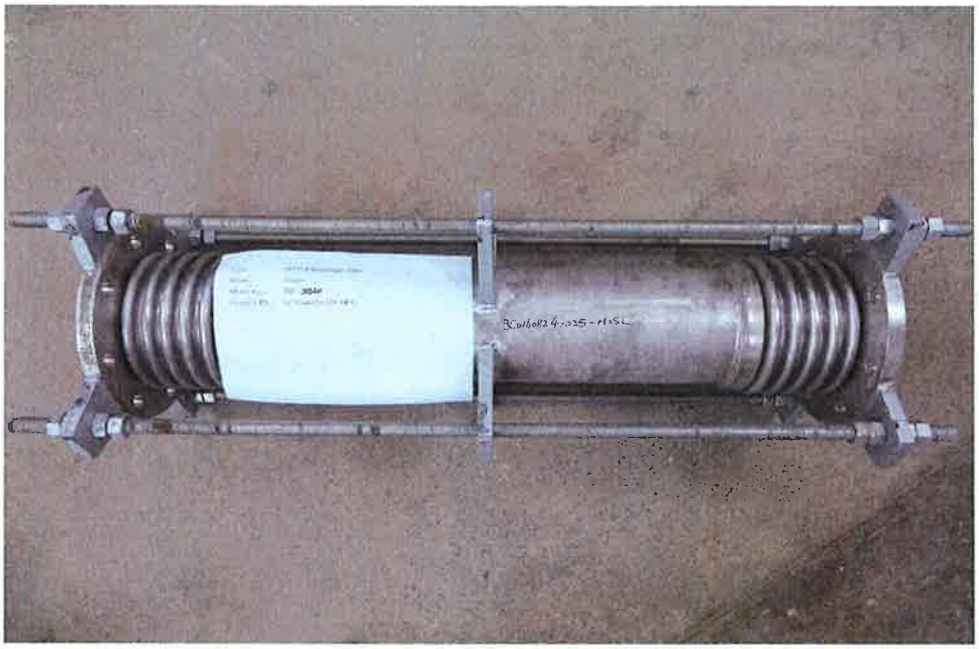
Appendix E

BC0160824-024-MISL



BC0160824-025-MISL

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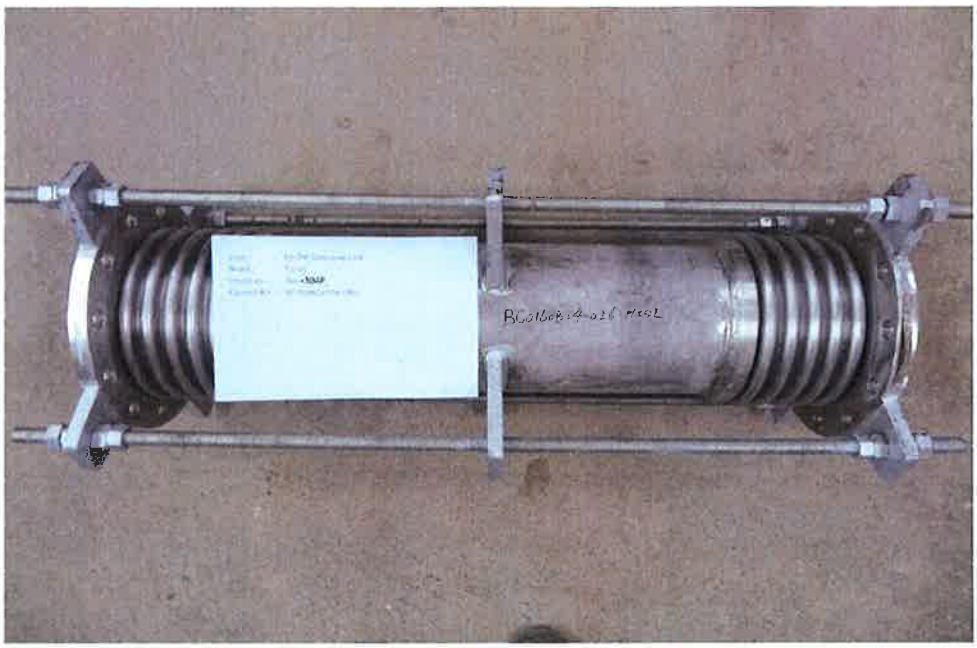
Test Report
Dimensions Check of Settlement Joints
(In-house method)

Date of issue : 12 October 2016

Castco LRN : BC0160824-015-MISL

Appendix F



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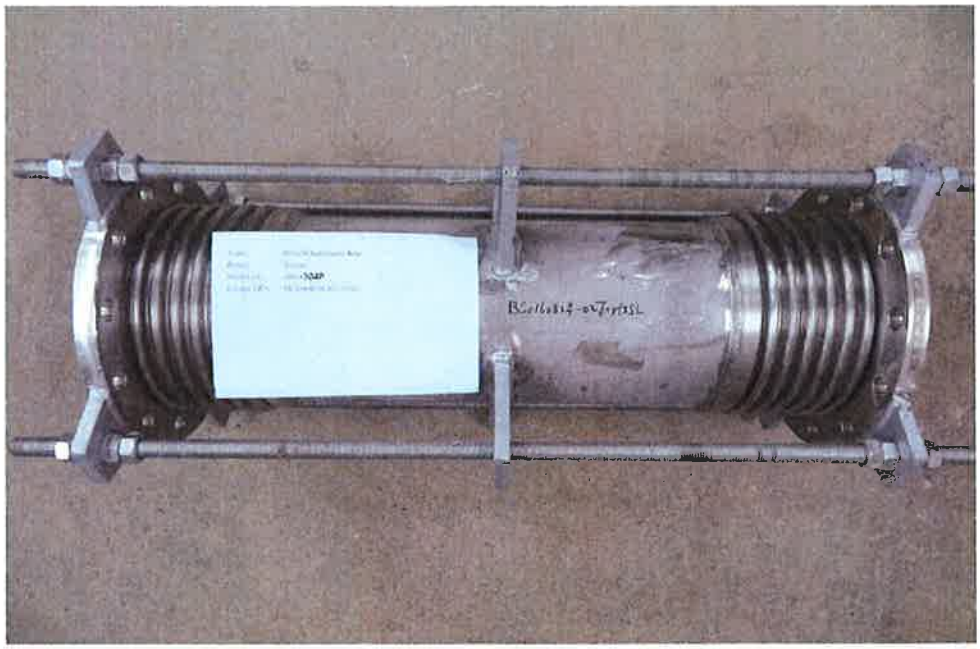

BC0160824-027-MISL

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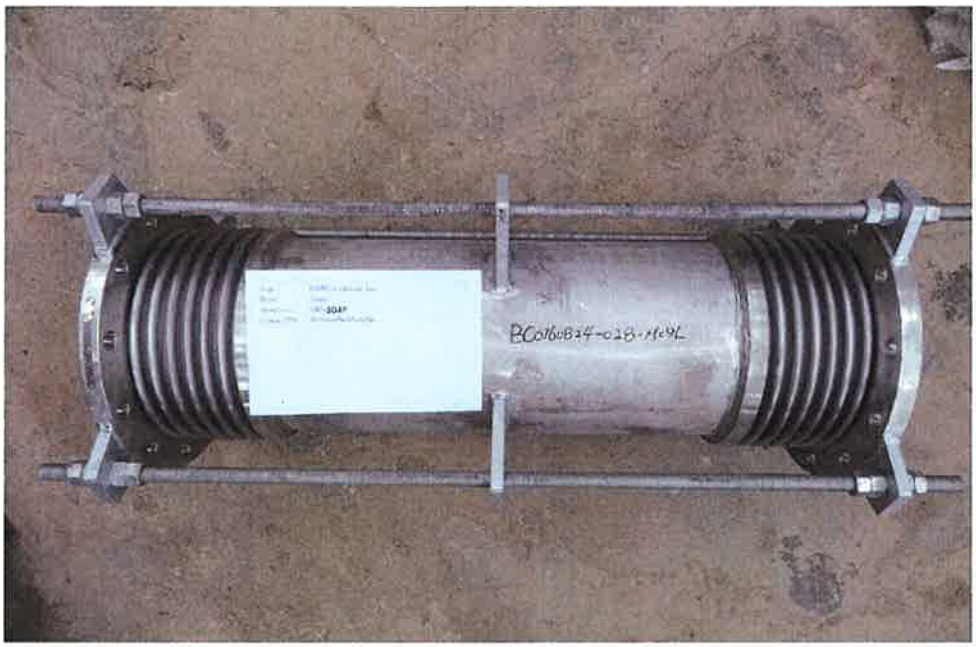
Test Report
Dimensions Check of Settlement Joints
(In-house method)

Appendix G



BC0160824-028-MISL

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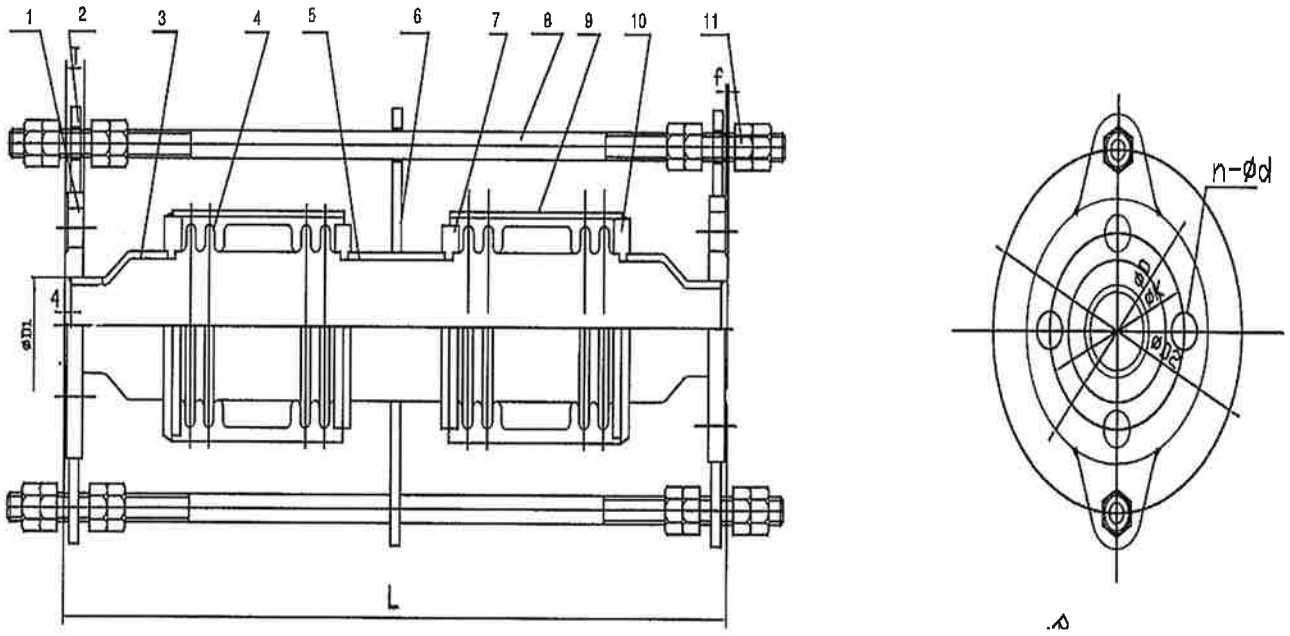
Test Report
Dimensions Check of Settlement Joints
(In-house method)

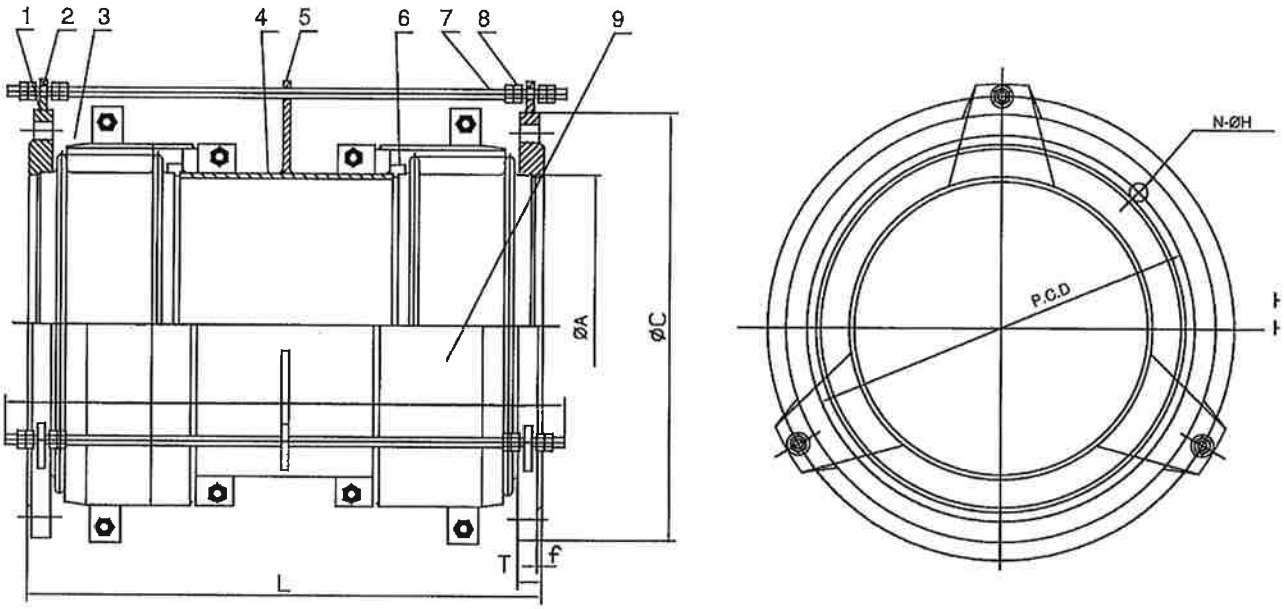
Date of issue : 12 October 2016

Castco LRN : BC0160824-015-MISL

Appendix H



Dimension Figure-1(DN20 to DN50)



Dimension Figure-2(DN65 to DN300)

End of Report

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HOKLAS 032
TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

Castco LRN: MS0160912-6

Details as supplied by customer

Name of Customer :	Tozen (H.K.) Limited
Address :	Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, N.T.
Job Title :	--
Contract No. :	--
Customer's Ref. No. :	--

Sample details as supplied by customer

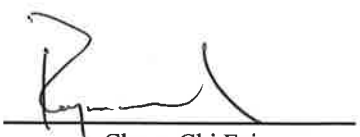
Date Sampled :	--
Date of Sample Received :	12-09-2016
Test Period :	22-09-2016 to 26-09-2016
Sample Description :	DN20 Stainless Steel Settlement Joint
Specification :	BS EN 10088-1:2014, Grade 1.4301 (304)
Specimen No. :	BC0160824-016-MISL
Location of Work :	-- / Brand Name: Tozen
Sample Identification No. :	-- / Model No.: JBU-304P / Origin: PRC

Test Method(s):-

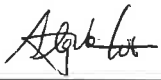
1) BS EN ISO 15350 : 2010
2) In House Method: ST-Multi-1(ICP-OES)
3) BS EN ISO 15351: 2010
4) In House Method: ST-Nb-1(ICP-OES)
5) In-house ST-CEV (By calculation)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : 

Cheng Chi Fai
Senior Manager

Approved Signatory : 

LEE Stephen Shu Hang
Ph.D.
Technical Director

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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

Castco LRN: MS0160912-6

Chemical Analysis		Result	Specification refer to BS EN 10088-1:2014, Table 2, Grade 1.4301
1) Total Carbon Content	C %	0.017	0.07 max.
1) Total Sulfur Content	S %	0.0016	0.015 max.
2) Chromium	Cr %	17.13	17.5 to 19.5
2) Copper	Cu %	--	--
2) Manganese	Mn %	0.817	2.00 max.
2) Molybdenum	Mo %	2.04	--
2) Nickel	Ni %	10.46	8.0 to 10.5
2) Phosphorus	P %	0.041	0.045 max.
2) Silicon	Si %	0.380	1.00 max.
2) Titanium	Ti %	--	--
2) Vanadium	V %	--	--
3) Nitrogen	N %	0.045	0.10 max.
4) Niobium	Nb %	--	--
5) Carbon Equivalent Value	$Ceq=C+\frac{Mn}{6}+\frac{Cr+Mo+V}{5}+\frac{Ni+Cu}{15}$ (%)	--	--

Executive Summary

The chemical composition of the tested specimen complies with Grade 1.4301 in Table 2 of BS EN 10088-1:2014 except for Chromium content, which is lower than the lower limit 17.5 of the specification.

End of Report

CASTCO
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E-mail: castco@netvigator.com Website: www.castco.com.hk

HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

 Castco LRN: MS0160912-7

Details as supplied by customer

Name of Customer :	Tozen (H.K.) Limited
Address :	Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, N.T.
Job Title :	--
Contract No. :	--
Customer's Ref. No. :	--

Sample details as supplied by customer

Date Sampled :	--
Date of Sample Received :	12-09-2016
Test Period :	22-09-2016 to 26-09-2016
Sample Description :	DN40 Stainless Steel Settlement Joint
Specification :	BS EN 10088-1:2014, Grade 1.4301 (304)
Specimen No. :	BC0160824-019-MISL
Location of Work :	-- / Brand Name: Tozen
Sample Identification No. :	-- / Model No.: JBU-304P / Origin: PRC

Test Method(s):-

1) BS EN ISO 15350 : 2010
2) In House Method: ST-Multi-1(ICP-OES)
3) BS EN ISO 15351: 2010
4) In House Method: ST-Nb-1(ICP-OES)
5) In-house ST-CEV (By calculation)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : Cheng Chi Fai
Senior Manager

Approved Signatory : LEE Stephen Shu Hang
Ph.D.
Technical Director

Form No.: CHM Steel-1 T dd 16/12/2015

CASTCO
佳力高試驗中心有限公司
CASTCO TESTING CENTRE LTD.
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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

Castco LRN: MS0160912-7

Chemical Analysis		Result	Specification refer to BS EN 10088-1:2014, Table 2, Grade 1.4301
1) Total Carbon Content	C %	0.051	0.07 max.
1) Total Sulfur Content	S %	0.0039	0.015 max.
2) Chromium	Cr %	18.37	17.5 to 19.5
2) Copper	Cu %	--	--
2) Manganese	Mn %	1.08	2.00 max.
2) Molybdenum	Mo %	--	--
2) Nickel	Ni %	8.18	8.0 to 10.5
2) Phosphorus	P %	0.027	0.045 max.
2) Silicon	Si %	0.610	1.00 max.
2) Titanium	Ti %	--	--
2) Vanadium	V %	--	--
3) Nitrogen	N %	0.042	0.10 max.
4) Niobium	Nb %	--	--
5) Carbon Equivalent Value $Ceq=C+\frac{Mn}{6}+\frac{Cr+Mo+V}{5}+\frac{Ni+Cu}{15}$	(%)	--	--

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 10088-1:2014, Table 5, Grade 1.4028.

End of Report

Form No.: CHM Steel-1 T dd 16/12/2015

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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 16-01-2017

Castco LRN: MS0161221-32

Details as supplied by customer

Name of Customer :	Tozen (H.K.) Limited
Address :	Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, N.T.
Job Title :	--
Contract No. :	--
Customer's Ref. No. :	--

Sample details as supplied by customer

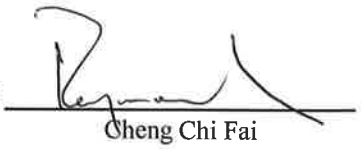
Date Sampled :	--
Date of Sample Received :	21-12-2016
Test Period :	04-01-2017 to 09-01-2017
Sample Description :	DN80 Stainless Steel Settlement Joint
Specification :	BS EN 10088-1:2014, Grade 1.4301 (304)
Specimen No. :	BC0160824-022-MISL
Location of Work :	-- / Brand Name: Tozen
Sample Identification No. :	-- / Model No.: JBU-304P / Origin: PRC
Manufacturer :	Tozen Corporation

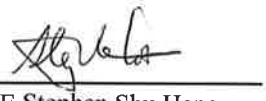
Test Method(s):-

1) BS EN ISO 15350 : 2010
2) In House Method: ST-Multi-1(ICP-OES)
3) BS EN ISO 15351: 2010
4) In House Method: ST-Nb-1(ICP-OES)
5) In-house ST-CEV (By calculation)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : 
Cheng Chi Fai
Senior Manager

Approved Signatory : 
LEE Stephen Shu Hang
Ph.D.
Technical Director

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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 16-01-2017

Castco LRN: MS0161221-32

Chemical Analysis		Result	Specification refer to BS EN 10088-1:2014, Table 2, Grade 1.4301
1) Total Carbon Content	C %	0.034	0.07 max.
1) Total Sulfur Content	S %	0.0014	0.015 max.
2) Chromium	Cr %	18.65	17.5 to 19.5
2) Copper	Cu %	--	--
2) Manganese	Mn %	0.604	2.00 max.
2) Molybdenum	Mo %	0.090	--
2) Nickel	Ni %	8.01	8.0 to 10.5
2) Phosphorus	P %	0.038	0.045 max.
2) Silicon	Si %	0.536	1.00 max.
2) Titanium	Ti %	--	--
2) Vanadium	V %	--	--
3) Nitrogen	N %	0.049	0.10 max.
4) Niobium	Nb %	--	--
5) Carbon Equivalent Value $Ceq=C+\frac{Mn}{6}+\frac{Cr+Mo+V}{5}+\frac{Ni+Cu}{15}$	(%)	--	--

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 10088-1:2014, Table 2, Grade 1.4301.

End of Report

Form No.: CHM Steel-1 T dd 16/12/2015

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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

Castco LRN: MS0160912-9

Details as supplied by customer

Name of Customer :	Tozen (H.K.) Limited
Address :	Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, N.T.
Job Title :	--
Contract No. :	--
Customer's Ref. No. :	--

Sample details as supplied by customer

Date Sampled :	--
Date of Sample Received :	12-09-2016
Test Period :	22-09-2016 to 26-09-2016
Sample Description :	DN150 Stainless Steel Settlement Joint
Specification :	BS EN 10088-1:2014, Grade 1.4301 (304)
Specimen No. :	BC0160824-025-MISL
Location of Work :	-- / Brand Name: Tozen
Sample Identification No. :	-- / Model No.: JBU-304P / Origin: PRC

Test Method(s):-

1) BS EN ISO 15350 : 2010
2) In House Method: ST-Multi-1(ICP-OES)
3) BS EN ISO 15351: 2010
4) In House Method: ST-Nb-1(ICP-OES)
5) In-house ST-CEV (By calculation)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : Cheng Chi Fai
Senior Manager

Approved Signatory : LEE Stephen Shu Hang
Ph.D.
Technical Director

Form No.: CHM Steel-1 T dd 16/12/2015

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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

Castco LRN: MS0160912-9

Chemical Analysis		Result	Specification refer to BS EN 10088-1:2014, Table 2, Grade 1.4301
1) Total Carbon Content	C %	0.051	0.07 max.
1) Total Sulfur Content	S %	0.0012	0.015 max.
2) Chromium	Cr %	19.21	17.5 to 19.5
2) Copper	Cu %	--	--
2) Manganese	Mn %	1.30	2.00 max.
2) Molybdenum	Mo %	--	--
2) Nickel	Ni %	8.39	8.0 to 10.5
2) Phosphorus	P %	0.033	0.045 max.
2) Silicon	Si %	0.491	1.00 max.
2) Titanium	Ti %	--	--
2) Vanadium	V %	--	--
3) Nitrogen	N %	0.041	0.10 max.
4) Niobium	Nb %	--	--
5) Carbon Equivalent Value	$Ceq=C+\frac{Mn}{6}+\frac{Cr+Mo+V}{5}+\frac{Ni+Cu}{15}$ (%)	--	--

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 10088-1:2014, Table 5, Grade 1.4028.

End of Report

Form No.: CHM Steel-1 T dd 16/12/2015

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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

Castco LRN: MS0160912-10

Details as supplied by customer

Name of Customer :	Tozen (H.K.) Limited
Address :	Unit 1607, 16/F., Ho Lik Centre, 66A Sha Tsui Road, Tsuen Wan, N.T.
Job Title :	--
Contract No. :	--
Customer's Ref. No. :	--

Sample details as supplied by customer

Date Sampled :	--
Date of Sample Received :	12-09-2016
Test Period :	22-09-2016 to 26-09-2016
Sample Description :	DN300 Stainless Steel Settlement Joint
Specification :	BS EN 10088-1:2014, Grade 1.4301 (304)
Specimen No. :	BC0160824-028-MISL
Location of Work :	-- / Brand Name: Tozen
Sample Identification No. :	-- / Model No.: JBU-304P / Origin: PRC

Test Method(s):-

1) BS EN ISO 15350 : 2010
2) In House Method: ST-Multi-1(ICP-OES)
3) BS EN ISO 15351: 2010
4) In House Method: ST-Nb-1(ICP-OES)
5) In-house ST-CEV (By calculation)

Remarks:

I. Test results only relate to the specimen tested.

Checked by : Cheng Chi Fai
Senior Manager

Approved Signatory : LEE Stephen Shu Hang
Ph.D.
Technical Director

Form No.: CHM Steel-1 T dd 16/12/2015

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HOKLAS 032 TEST

Test Report

Chemical Analysis of Steel

Date of issue: 30-09-2016

Castco LRN: MS0160912-10

Chemical Analysis		Result	Specification refer to BS EN 10088-1:2014, Table 2, Grade 1.4301
1) Total Carbon Content	C %	0.055	0.07 max.
1) Total Sulfur Content	S %	0.0021	0.015 max.
2) Chromium	Cr %	19.36	17.5 to 19.5
2) Copper	Cu %	--	--
2) Manganese	Mn %	1.13	2.00 max.
2) Molybdenum	Mo %	--	--
2) Nickel	Ni %	8.48	8.0 to 10.5
2) Phosphorus	P %	0.030	0.045 max.
2) Silicon	Si %	0.522	1.00 max.
2) Titanium	Ti %	--	--
2) Vanadium	V %	--	--
3) Nitrogen	N %	0.042	0.10 max.
4) Niobium	Nb %	--	--
5) Carbon Equivalent Value $Ceq=C+\frac{Mn}{6}+\frac{Cr+Mo+V}{5}+\frac{Ni+Cu}{15}$	(%)	--	--

Executive Summary

Test results of the specimen are compliance / ~~not compliance~~ with the chemical requirement of BS EN 10088-1:2014, Table 5, Grade 1.4028.

End of Report

Form No.: CHM Steel-1 T dd 16/12/2015