Enflow
INDUSTRIES INC

VALVE TEST CERTIFICATE / CERTIFICATE OF CONFORMANCE

EF

Certificate No. :	120332-1

VALVE INFORMATION

S.O.#/P.O.#	13317 / P424391	**S.O. ITEM #**	250
VALVE TYPE	TRUNNION BALL VALVE	**MODEL NUMBER**	EB10R033TA01E3TG
SIZE	10"×8"	**SERIAL NUMBER**	E12033201 01 TO 02
CLASS	300	**QUANTITY**	2

VALVE DETAIL

BODY/ADAPTER	ASTM A105N	**BALL**	ASTM A105N+ENP
STEM	ASTM A105N+ENP	**TRUNNION**	ASTM A105N+ENP
SEAT INSERT	RPTFE	**SEAT**	ASTM A105N+ENP
SEALS	GRAPHITE	**O-RINGS**	VITON B
BOLTS	A193 B7M	**NUTS**	A194 2HM

VALVE DESIGN CODE

DESIGN CODE:	**ASME B16.34**	YES	**DESIGN CODE:**	**ASME B16.5**	YES
	API 6D / ISO 14313	YES		**API 607 Rev 5**	YES
	ASME B16.10	YES		**CSA Z662 Region 3**	YES
	API 608	YES			
	CSA Z245.15	YES		**NACE MR0175/ISO 15156**	YES

VALVE TEST RESULTS

TEST PREFORMED	**CODE**	**HYDRO SHELL**	**HYDRO SEAT**	**AIR SEAT**	**BACK SEAT**	
PRESSURE- PSI/ MPA /BAR		MPA/PSI	MPA/PSI	MPA/PSI	MPA/PSI	-
TEST PRESSURE	API 6D	7.8/1125	5.7/825	0.55/80	-	-
DURATION (MINUTES MIN.)	API 6D	5	5	5	-	-
TEST RESULTS		PASS	PASS	PASS	-	-
DIMENSIONAL CHECK	B16.10	PASS	-	-	-	-
VISUAL	MSS-SP-55	PASS	-	-	-	-

We certify all valves indicated in this certificate are manufactured, inspected and tested in accordance with standards noted.

EF QC # 9

DATE: October 31, 2017 Ping Zhu

BAY K 1423-45 AVENUE NE CALGARY AB T2E 2P3

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TRACEABILITY SHEET

Certificate No. : 120332-1

	SERIAL NO.	BODY HEAT #	ADAPTER HEAT #	BALL HEAT #	STEM HEAT #	TRUNNION HEAT#	BOLTING HEAT#	NUT HEAT#
1	E12033201-01	K4733	K4733	SJ2099	K7626	K4763	15709805	G531103185
2	E12033201-02	K4733	K4733	SJ2099	K7626	K4763	15709805	G531103185
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DATE: 31/Oct/17

Enflow INDUSTRIES INC.

BAY K 1423-45 AVENUE NE CALGARY AB T2E 2P3

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MATERIAL TEST REPORT - EN10204 3.1

Certificate No. : 120332-1

CHEMICAL ANALYSIS

Component	Material	Heat-No.	C (%)	Mn (%)	Si (%)	Cr (%)	Ni (%)	Mo (%)	P (%)	S (%)	Cu (%)	V (%)	Nb (%)	Residual Elements	Carbon Equivalent
	A105N REV 11	Requirements	≤0.35	0.60-1.05	0.10-0.35	≤0.30	≤0.40	≤0.12	≤0.035	≤0.040	≤0.40	≤0.08	—	≤1.00	≤0.48
BODY	A105N	K4733	0.180	0.950	0.250	0.090	0.040	0.010	0.009	0.006	0.100	0.002	—	0.24	0.37
ADAPTER	A105N	K4733	0.180	0.950	0.250	0.090	0.040	0.010	0.009	0.006	0.100	0.002	—	0.24	0.37
BALL	A105N	SJ2099	0.200	0.950	0.260	0.010	0.030	0.015	0.010	0.007	0.040	0.004	—	0.10	0.37
STEM	A105N	K7626	0.210	0.940	0.260	0.050	0.010	0.001	0.027	0.006	0.010	0.001	—	0.07	0.38
TRUNNION	A105N	K4763	0.210	0.960	0.220	0.130	0.020	0.005	0.012	0.003	0.040	0.002	—	0.20	0.40

Component	Material	Heat-No.	C (%)	Mn (%)	Si (%)	Cr (%)	Ni (%)	Mo (%)	P (%)	S (%)	Cu (%)	V (%)	Nb (%)	Residual Elements	CE Equivalent
	#N/A #N/A	Requirements	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Component	Material	Heat-No.	C (%)	Mn (%)	Si (%)	Cr (%)	Ni (%)	Mo (%)	P (%)	S (%)	Cu (%)	V (%)	Nb (%)	Residual Elements	Carbon Equivalent
STUDS	A193 B7M REV 11	Requirements	.37-.49	.65-1.10	0.15-.035	0.75-1.20	—	0.15-0.25	≤0.035	≤0.040	—	—	—	—	—
NUTS	A194 2HM REV 10a	Requirements	>0.4	≤1.00	≤0.40	—	—	—	≤0.040	≤0.050	—	—	—	—	—
STUDS	B7M	15709805	0.380	0.830	0.230	0.950	—	0.190	0.014	0.008	—	—	—	—	—
NUTS	2HM	G531103185	0.450	0.640	0.230	—	—	—	0.010	0.003	—	—	—	—	—

We certify all materials are manufactured inspected and tested in accordance with material specification.

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MATERIAL TEST REPORT - EN10204 3.1

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MECHANICAL PROPERTIES

Component	Material	Heat-No.	Yield strength ksi (MPA)	Tensile strength ksi (MPA)	Elongation (%)	Reduction of area (%)	Impact Value (J) @ -46 deg C	Hardness BHN	
	A105N REV 11	Requirements	≥36 (≥250)	≥70 (≥485)	≥22	≥30	—	≤187	
BODY	A105N	K4733	297	516	31	59	—	156	
ADAPTER	A105N	K4733	297	516	31	59	—	156	
BALL	A105N	SJ2099	316	525	29	57	—	162	
STEM	A105N	K7626	321	500	35	74	—	149	
TRUNNION	A105N	K4763	306	520	33	72	—	152	

Component	Material	Heat-No.	Yield strength ksi (MPA)	Tensile strength ksi (MPA)	Elongation (%)	Reduction of area (%)	Impact Value (J) @20deg C	Hardness BHN	
	#N/A #N/A	Requirement	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
—	—	—	—	—	—	—	—	—	

Component	Material	Heat-No.	Yield strength ksi (MPA)	Tensile strength ksi (MPA)	Elongation (%)	Reduction of area (%)	Impact Value (J) @ -46 deg C	Hardness BHN	
STUDS	A193 B7M REV 11	Requirements	≥80 (≥550)	≥100 (≥690)	≥18	≥50	—	≤235	
NUTS	A194 2HM REV 10a	Requirements	—	—	—	—	—	159-235	
STUDS	B7M	15709805	661	735	25	66	—	230	
NUTS	2HM	G531103185	—	—	—	—	—	220	

HEAT TREATMENT STATUS (IF APPLICABLE)

A105N: Normalized to 930℃, 5 hours minimum, cooling in air.
(NACE MR 01-75 / ISO 15156)

#N/A

B7M: Quenched to 860℃, 1 hours minimum, cooling in oil, tempered to 720℃, 2 hours minimum, cooling in air .

2HM: Quenched to 860℃, 1 hours minimum, cooling in water, tempered to 650℃, 1.8 hours minimum, cooling in air .

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Ping Zhu
October 31, 2017

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