



## VALVE TEST CERTIFICATE / CERTIFICATE OF CONFORMANCE

EF

Certificate No. : 120309-9

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### VALVE INFORMATION

<b>S.O.#/P.O.#</b>	13327 / P424401	<b>S.O. ITEM #</b>	340
<b>VALVE TYPE</b>	TRUNNION BALL VALVE	<b>MODEL NUMBER</b>	EB14F013TA02E3BG31
<b>SIZE</b>	14"	<b>SERIAL NUMBER</b>	E12030909 01 TO 01
<b>CLASS</b>	150	<b>QUANTITY</b>	1

### VALVE DETAIL

<b>BODY/ADAPTER</b>	ASTM A350 LF2	<b>BALL</b>	ASTM A350 LF2+ENP
<b>STEM</b>	ASTM A350 LF2+ENP	<b>TRUNNION</b>	ASTM A350 LF2+ENP
<b>SEAT INSERT</b>	RPTFE	<b>SEAT</b>	ASTM A350 LF2+ENP
<b>SEALS</b>	GRAPHITE	<b>O-RINGS</b>	HNBR
<b>BOLTS</b>	A320 L7M	<b>NUTS</b>	A194 7M

### VALVE DESIGN CODE

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

### VALVE TEST RESULTS

TEST PERFORMED	CODE	HYDRO SHELL	HYDRO SEAT	AIR SEAT	BACK SEAT	
<b>PRESSURE- PSI/ MPA /BAR</b>		MPA/PSI	MPA/PSI	MPA/PSI	MPA/PSI	-
<b>TEST PRESSURE</b>	API 6D	3/450	2.2/325	0.55/80	-	-
<b>DURATION (MINUTES MIN.)</b>	API 6D	15	5	5	-	-
<b>TEST RESULTS</b>		PASS	PASS	PASS	-	-
<b>DIMENSIONAL CHECK</b>	B16.10	PASS	-	-	-	-
<b>VISUAL</b>	MSS-SP-55	PASS	-	-	-	-

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

DATE: August 19, 2017



Ping Zhu

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



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### TRACEABILITY SHEET

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SERIAL NO.	BODY HEAT #	ADAPTER HEAT #	BALL HEAT #	STEM HEAT #	TRUNNION HEAT#	BOLTING HEAT#	NUT HEAT#
1	E12030909-01	L2396	L2443	L4675	L2023	L3317	6102334V 5104839
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DATE: 19/Aug/17



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**MATERIAL TEST REPORT - EN10204 3.1**

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**CHEMICAL ANALYSIS**

Component	Material	Heat-No.	C (%)	Mn (%)	Si (%)	Cr (%)	Ni (%)	Mo (%)	P (%)	S (%)	Cu (%)	V (%)	Nb (%)	Residual Elements	Carbon Equivalent
	A 350 LF2 class I REV 11	Requirements	≤0.30	0.60-1.35	0.15-0.30	≤0.30	≤0.40	≤0.12	≤0.035	≤0.040	≤0.40	≤0.08	≤0.02	≤1.00	≤0.47
BODY	LF2	L2396	0.190	0.940	0.230	0.090	0.030	0.010	0.012	0.004	0.060	0.001	0.001	0.19	0.37
ADAPTER	LF2	L2443	0.180	1.020	0.230	0.040	0.010	0.003	0.009	0.005	0.011	0.004	0.002	0.07	0.36
BALL	LF2	L4675	0.190	0.930	0.240	0.048	0.012	0.002	0.013	0.003	0.026	0.004	0.003	0.09	0.36
STEM	LF2	L2023	0.180	0.910	0.230	0.050	0.010	0.001	0.011	0.004	0.010	0.001	0.001	0.07	0.34
TRUNNION	LF2	L3317	0.200	0.870	0.230	0.040	0.050	0.001	0.022	0.016	0.130	0.001	0.001	0.22	0.37
<b>Component</b>	<b>Material</b>	<b>Heat-No.</b>	<b>C (%)</b>	<b>Mn (%)</b>	<b>Si (%)</b>	<b>Cr (%)</b>	<b>Ni (%)</b>	<b>Mo (%)</b>	<b>P (%)</b>	<b>S (%)</b>	<b>Cu (%)</b>	<b>V (%)</b>	<b>Nb (%)</b>	<b>Residual Elements</b>	<b>Carbon Equivalent</b>
STUDS	A320 L7M REV 11	Requirements	0.38-0.48	0.75-1.00	0.15-0.35	0.80-1.10	—	0.15-0.25	≤0.035	≤0.040	—	—	—	—	—
NUTS	A194 7M REV 10a	Requirements	0.37-0.49	0.65-1.10	0.15-0.35	0.75-1.20	—	0.15-0.25	≤0.035	≤0.040	—	—	—	—	—
STUDS	L7M	6102334V	0.400	0.910	0.260	1.000	—	0.200	0.009	0.003	—	—	—	—	—
NUTS	7M	5104839	0.390	0.890	0.240	0.980	—	0.180	0.017	0.004	—	—	—	—	—

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



Ping Zhu  
August 19, 2017



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**MECHANICAL PROPERTIES**

Component	Material	Heat-No. Requirements	Yield strength ksi (MPA)	Tensile strength ksi (MPA)	Elongation (%)	Reduction of area (%)	Impact Value (J) @ -46 deg C	Hardness BHN
	A 350 LF2 class 1 REV 11	Requirements	≥36 (≥250)	70 to 95 (485 to 655)	≥22	≥30	≥20	≤197
BODY	LF2	L2396	335	523	32	73	89 88 95	156
ADAPTER	LF2	L2443	307	538	28	65	78 82 85	165
BALL	LF2	L4675	391	567	30	71	48 33 36	156
STEM	LF2	L2023	307	535	29	59	50 62 58	152
TRUNNION	LF2	L3317	365	540	33	70	54 35 40	167
Component	Material	Heat-No. Requirements	Yield strength ksi (MPA)	Tensile strength ksi (MPA)	Elongation (%)	Reduction of area (%)	Impact Value (J) @ -73 deg C	Hardness BHN
STUDS	A320 L7M REV 11	Requirements	≥80 (≥550)	≥100 (≥690)	≥18	≥50	≥27	≤235
NUTS	A194 7M REV 10a	Requirements	—	—	—	—	—	159-235
STUDS	L7M	6102334V	669	770	23	60	46 60 50	225
NUTS	7M	5104839	—	—	—	—	45 62 49	195

**HEAT TREATMENT STATUS (IF APPLICABLE)**

LF2: Quenched 900°C, 2 hours minimum, cooling in water, tempered to 620°C, 2 hours minimum, cooling in air.

#N/A

L7M: Quenched to 870°C, 1 hours minimum, cooling in oil, tempered to 730°C, 2 hours minimum, cooling in air.

7M: Quenched to 870°C, 1 hours minimum, cooling in oil, tempered to 750°C, 1.75 hours minimum, cooling in air.

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August 19, 2017

