Fire Test Report

API Standard 6FA, Third Edition, April 1999
"Specification for Fire Testing of Valves"

Performed for

Valvtechnologies

www.valv.com

8 inch Class 1500 Trunnion Ball Valve
Product Code: N8C1-JJ-XX-B080-005EM-P01

Project Number: 213051
Test Date: March 8, 2013

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

434 Walnut Hill Road
North Yarmouth, ME 04097 USA
(207) 829-5359
info@yarmouthresearch.com
www.yarmouthresearch.com

Yarmouth Research and Technology, LLC

Customer:	Valvtechnologies	**Date:**	3/8/2013
Specification:	API Standard 6FA, Third Edition, April 1999 (R2008)		
Product Description:	8 inch Class 1500 Trunnion Ball Valve		
Project Number:	PN213051		
Product Code:	N8C1-JJ-XX-B080-005EM-P01		
Yarmouth Engineer:	Matthew J. Wasielewski, P.E.		
Equipment Confirmed to be in Calibration to NIST Standards:	Yes		

Burn and Cool Down Test

Burn Start Time:	16:07:00	
Average Pressure During Burn:	2719	psig
Seat Leak Rate During Burn:	10	ml/min
Allowable Seat Leak Rate:	3200	ml/min
External Leak Rate During Burn/Cool Down:	0.0	ml/min
Allowable External Leak Rate:	800	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	24.5	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

Operational Test

Did Valve Unseat and Open Fully?:	Yes	
Average Pressure During Test:	2868	psig
External Leak Rate After Operating:	0.0	ml/min
Allowable External Leak Rate:	1600	ml/min
Was the Leakage Below the Allowable?	Yes	

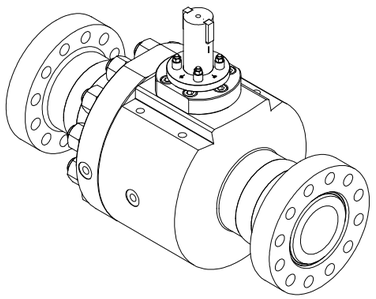
Does Valve Pass or Fail the Test Standard?	**PASS**

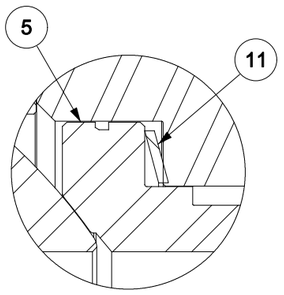
Witnesses

Fire Test Information Sheet

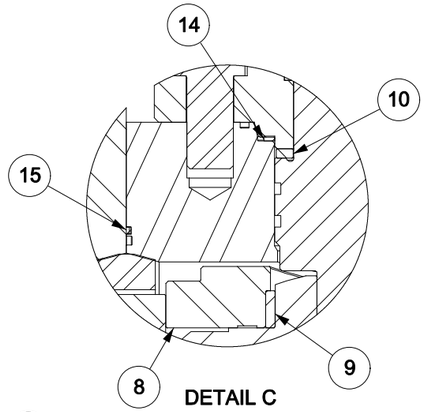
Valve Manufacturer's Name:	VALVTECHNOLOGIES
Valve Manufacturer's Address:	5904 Bingle Road Houston, Texas 77092
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Product Code:	N8C1-JJ-XX-B080-005EM-P01
Valve Description Size: Pressure Rating: Type: Weight: Reduced or Full Bore: Body/Bonnet Material: Trim Material: Seat Material: Stem / Body Seal Material: Bolting Material: Is valve considered "Soft-Seated"?	8" 1500 # TRUNION 3250 lbf FP BODY A105 BONNET 4130 F51 F51 with RAM 21 F51 with QPQ/Graphite B7 / 2H NO
Valve Markings Nameplate Information: Casting Markings:	8" N8C1-JJ-XX-B080-005EM-P01
Assembly Drawing Number / Revision / Date of Issue:	121564-001 rev. 1 10/1/12
Assembly Drawing sent to Yarmouth:	Yes
If valve is fitted with gearbox, state gearbox manufacturer, model number and mechanical advantage:	Exeeco IW-7
If valve is non-symmetric, state direction of flow for test:	No
For double-seated valves, state maximum allowable cavity pressure:	5625 psi
Manufacturer's Contact Name /Date:	Bill Manzon 3/8/13

N8C1-JJ-XX-B080-005EM-P01

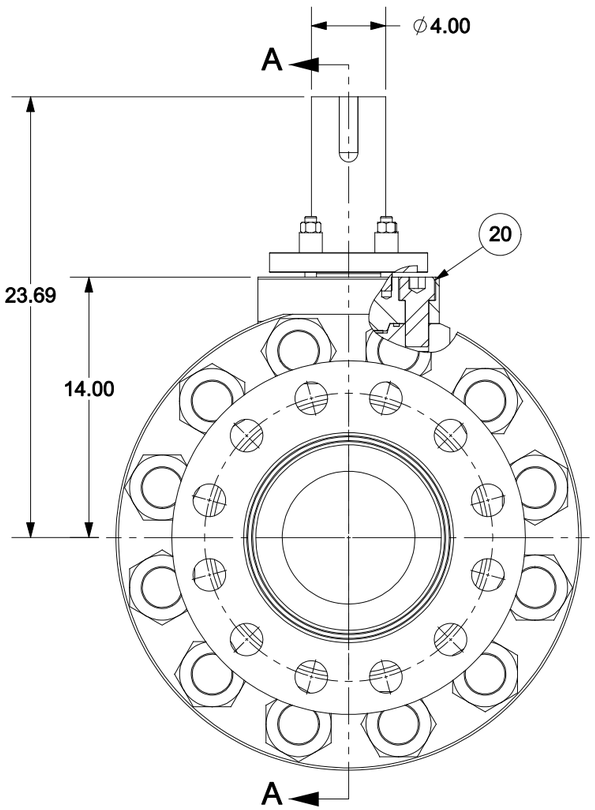


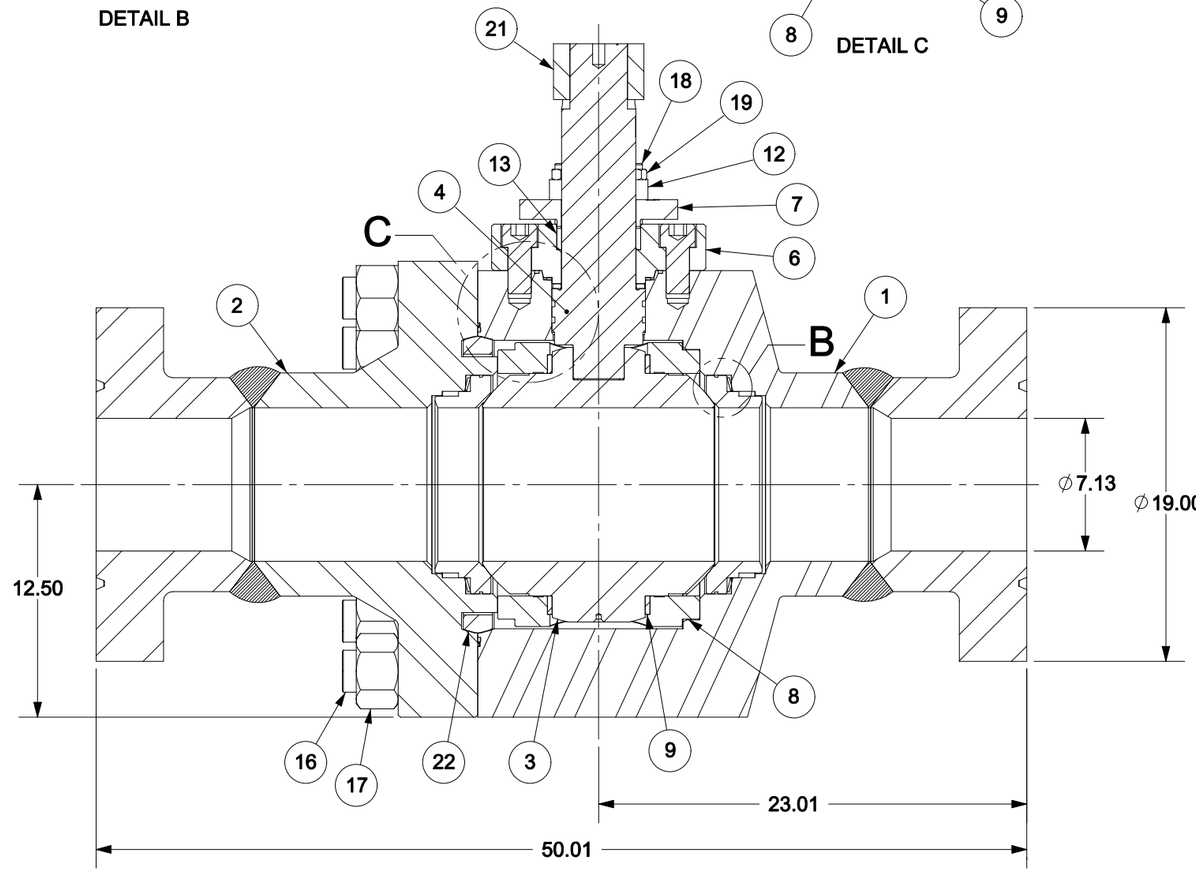


DETAIL B



DETAIL C





SECTION A-A

BILL OF MATERIAL		
ITEM NO.	DESCRIPTION	QTY.
1	BODY	1
2	END CAP	1
3	BALL	1
4	STEM	1
5	SEAT	2
6	BONNET	1
7	GLAND	1
8	STANDARD TRUNNION BEARING	2
9	STANDARD SLEEVE BEARING	2
10	STEM BEARING	1
11	BELLEVILLE SPRING	2
12	GLAND SPRING STACK	4
13	STEM PACKING	1
14	BONNET GASKET	1
15	BODY GASKET	1
16	BODY STUD	12
17	BODY NUT	12
18	GLAND STUD	4
19	GLAND NUT	4
20	BONNET CAP SCREW	6
21	KEY	2
22	BODY SEAL	1

NOTES:
1) TOTAL APPROX. WEIGHT: 3,248 LBS

THIRD ANGLE PROJECTION

REV	DATE	DESCRIPTION	ECN	BY	CHK	APR
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

DIMENSIONS ARE IN INCHES
REMOVE BURRS AND BREAK EDGES
UNLESS OTHERWISE SPECIFIED

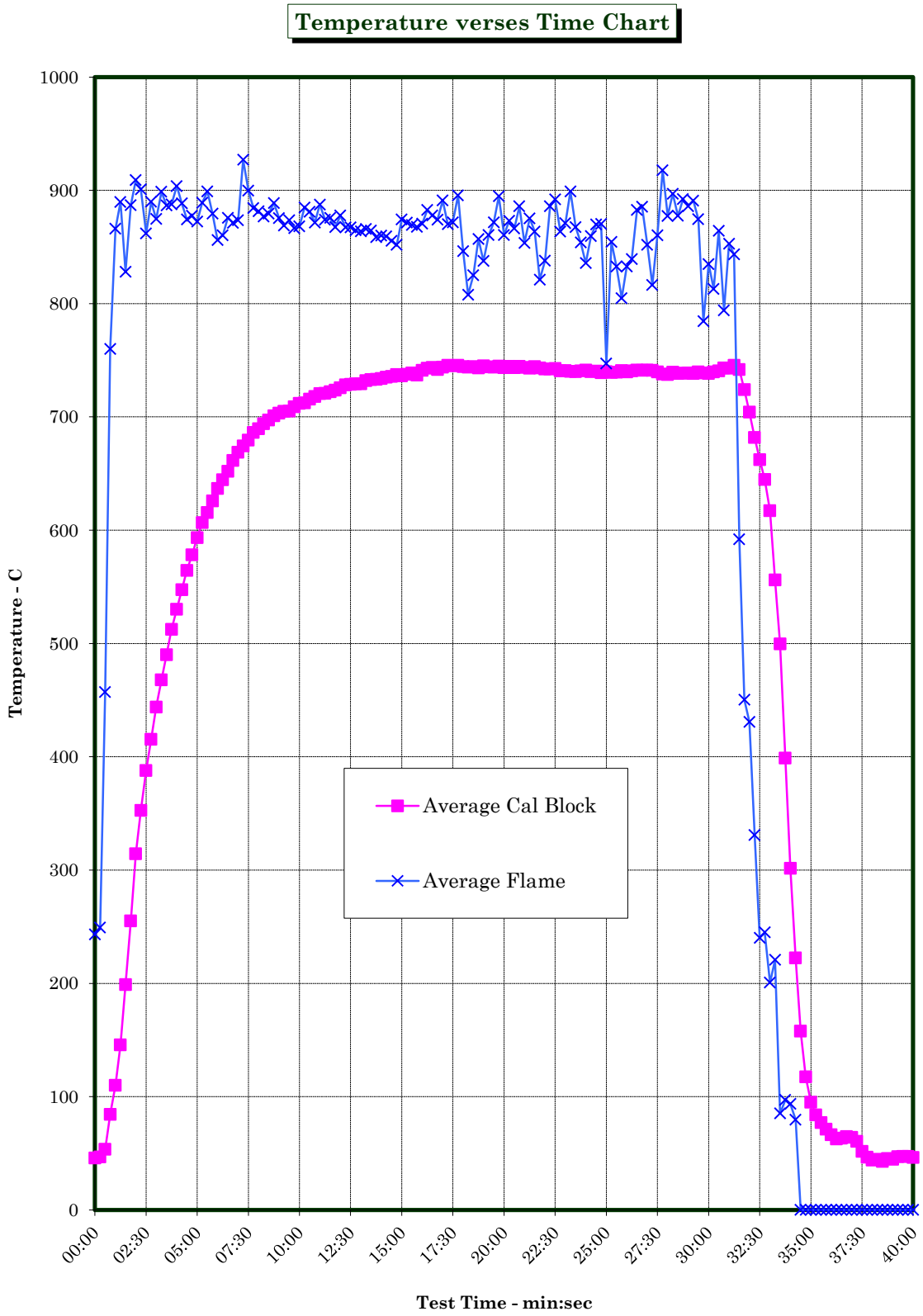
CORNER RADII	.03 MAX
.X=	± .030
.XX=	± .015
.XXX=	± .005
CONCENTRICITY	.010 T.I.R.
ANGULAR=	± 1/2˚
SURFACE TEXTURE	125 RMS
MIN. INTERNAL FILLETS	.015

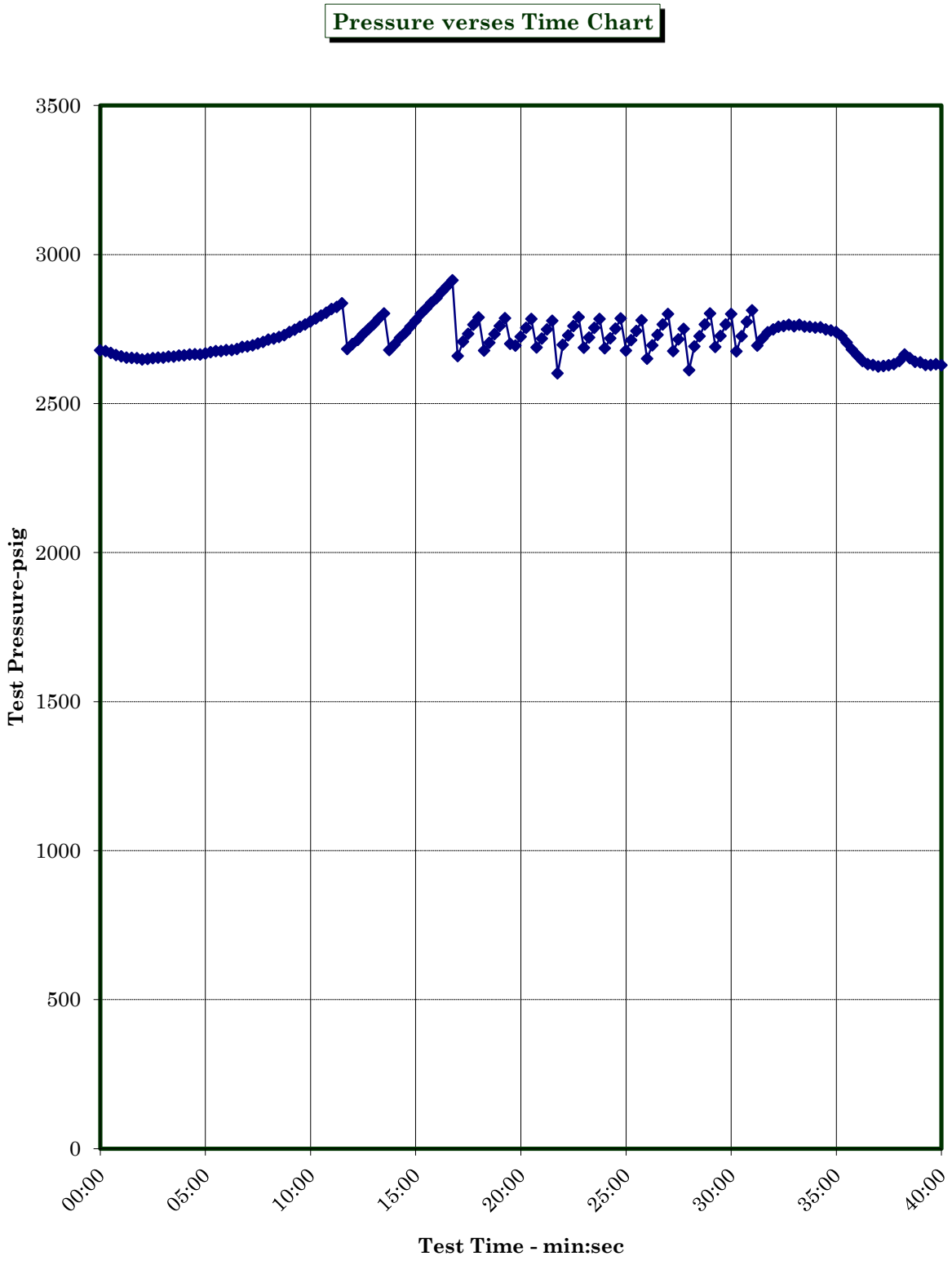
SCALE	1:8	MODEL FILE	121564-001
SIZE	B		
MATERIAL	-		
	-		
COATING	-		
	-		
DRAWN BY	MS	DATE	09/25/12
CHECKED BY	PH	DATE	10/1/12
ENGINEER	PH	DATE	10/1/12
APPROVED BY	-	DATE	-

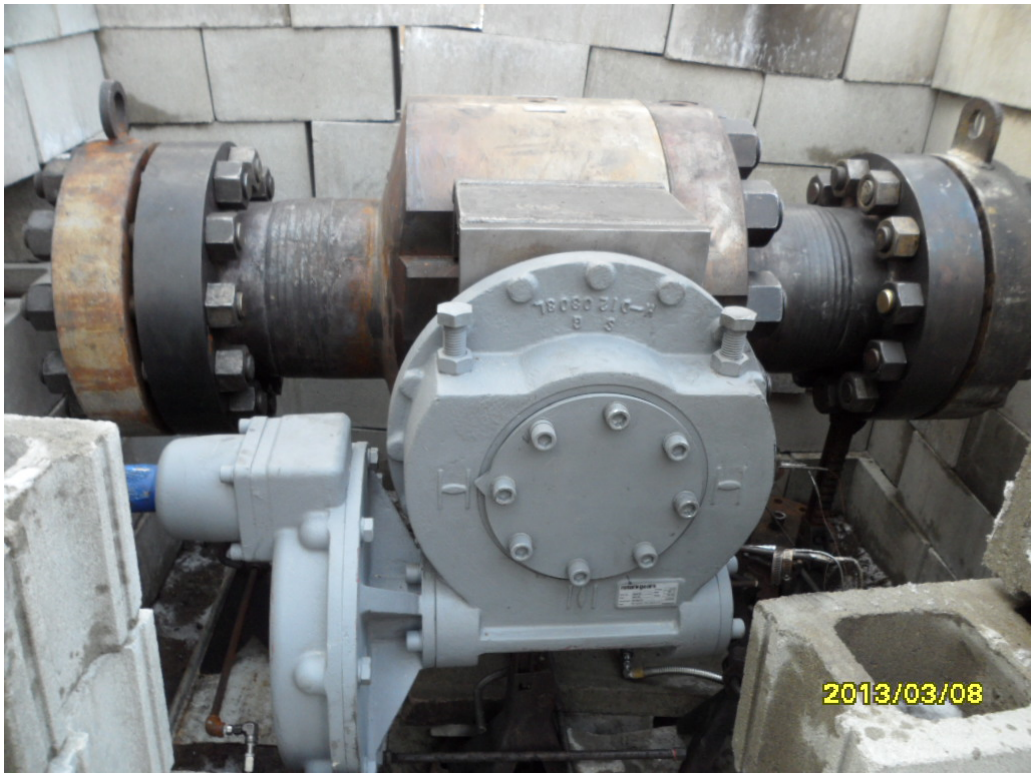
VALVTECHNOLOGIES
5904 BINGLE ROAD, HOUSTON TEXAS 77092
PH: (713) 860-0400 FAX: (713) 860-0499

TITLE
8.25" BORE, NEXTECH
8" W/ SPECIAL RTJ FLANGE
BARE STEM

121564-001 $H OF 1 REV. 1


Temperature verses Time Chart
Temperature - C
1000
900
800
700
600
500
400
300
200
100
0
00:00
02:30
05:00
07:30
10:00
12:30
15:00
17:30
20:00
22:30
25:00
27:30
30:00
32:30
35:00
37:30
40:00
Test Time - min:sec
Average Cal Block
Average Flame


Pressure verses Time Chart
3500
3000
2500
2000
1500
1000
500
0
Test Pressure-psig
00:00
05:00
10:00
15:00
20:00
25:00
30:00
35:00
40:00
Test Time - min:sec



Test Setup Prior to Burn

Test Valve During Burn

Fire Test Information

Customer: Valvtechnologies **Date:** 3/8/2013

Product Code: 8 inch Class 1500 Trunnion Ball Valve

Project Number: PN213051

Fire Test Raw Data

Time (EST)	Pressure (psig)	Water Volume (mls)	Cal. Block 1 Temp-C	Cal. Block 2 Temp-C	Avg. Cal Block Temp-C	Bonnet Flame Temp-C	Body Flame Temp-C	Average Flame Temp-C
16:07:00	2679	35309	32	60	46	216	270	243
16:07:15	2676	35301	33	61	47	213	285	249
16:07:30	2669	35301	37	70	53	434	480	457
16:07:45	2662	35320	72	97	84	742	778	760
16:08:00	2658	35300	102	118	110	852	880	866
16:08:15	2654	35316	121	170	146	878	901	890
16:08:30	2653	35284	165	233	199	876	781	828
16:08:45	2652	35291	221	289	255	875	899	887
16:09:00	2648	35339	283	345	314	872	946	909
16:09:15	2649	35309	326	379	353	901	900	901
16:09:30	2652	35324	365	411	388	863	861	862
16:09:45	2654	35285	395	435	415	879	901	890
16:10:00	2653	35321	428	460	444	872	878	875
16:10:15	2658	35286	459	476	468	884	914	899
16:10:30	2657	35291	485	495	490	872	902	887
16:10:45	2661	35301	512	513	512	876	900	888
16:11:00	2662	35274	534	527	530	897	910	904
16:11:15	2664	35303	555	540	548	882	895	889
16:11:30	2665	35317	575	554	565	875	874	874
16:11:45	2664	35351	592	564	578	885	870	877
16:12:00	2668	35305	607	580	593	885	860	872
16:12:15	2673	35314	621	592	607	889	889	889
16:12:30	2676	35283	634	597	616	881	917	899
16:12:45	2676	35322	646	606	626	870	888	879
16:13:00	2679	35291	658	615	637	857	855	856
16:13:15	2679	35311	668	621	644	854	867	860
16:13:30	2683	35347	677	627	652	866	886	876
16:13:45	2690	35296	688	635	662	866	877	871
16:14:00	2692	35281	695	642	669	865	883	874
16:14:15	2695	35303	702	646	674	878	975	927
16:14:30	2701	35299	708	651	679	881	919	900
16:14:45	2706	35296	714	659	686	875	894	884
16:15:00	2714	35281	719	660	690	874	888	881

Fire Test Data - continued

16:15:15	2718	35311	724	664	694	869	885	877
16:15:30	2723	35292	728	667	697	868	891	879
16:15:45	2729	35324	731	670	701	881	897	889
16:16:00	2740	35305	734	673	703	860	891	876
16:16:15	2748	35309	737	673	705	862	876	869
16:16:30	2758	35287	739	671	705	862	885	874
16:16:45	2765	35324	742	675	709	868	865	866
16:17:00	2775	35298	745	679	712	862	875	868
16:17:15	2786	35318	746	678	712	867	902	885
16:17:30	2795	35280	749	682	716	872	890	881
16:17:45	2805	35320	752	684	718	865	878	872
16:18:00	2816	35309	754	687	721	878	896	887
16:18:15	2824	35312	757	685	721	871	877	874
16:18:30	2836	35316	758	686	722	863	888	876
16:18:45	2683	35276	760	688	724	857	878	867
16:19:00	2700	35273	763	688	726	863	893	878
16:19:15	2714	35291	766	691	728	857	877	867
16:19:30	2733	35277	769	689	729	854	880	867
16:19:45	2750	35299	770	688	729	856	874	865
16:20:00	2766	35278	771	687	729	855	873	864
16:20:15	2785	35307	775	689	732	853	879	866
16:20:30	2802	35302	775	691	733	853	876	864
16:20:45	2679	35261	776	690	733	851	866	859
16:21:00	2698	35283	776	692	734	851	868	860
16:21:15	2721	35258	779	691	735	854	865	859
16:21:30	2738	35270	780	691	736	852	859	855
16:21:45	2758	35288	783	692	737	848	855	852
16:22:00	2778	35276	782	691	736	864	885	874
16:22:15	2801	35257	783	693	738	855	888	872
16:22:30	2819	35252	784	693	739	855	884	869
16:22:45	2838	35261	784	689	737	853	882	868
16:23:00	2854	35261	788	694	741	866	875	870
16:23:15	2876	35249	787	699	743	871	894	883
16:23:30	2894	35266	786	702	744	860	896	878
16:23:45	2914	35257	785	698	742	857	891	874
16:24:00	2659	35208	787	701	744	881	902	891
16:24:15	2707	35179	788	703	745	863	877	870
16:24:30	2734	35200	788	702	745	865	878	872
16:24:45	2764	35190	789	702	745	860	931	896
16:25:00	2788	35191	788	701	744	855	838	846
16:25:15	2677	35082	788	700	744	852	764	808
16:25:30	2704	35071	790	699	744	850	800	825
16:25:45	2732	35080	791	695	743	839	875	857

Fire Test Data - continued

16:26:00	2760	35077	792	699	745	845	830	838
16:26:15	2786	35111	792	696	744	846	875	860
16:26:30	2700	35075	793	695	744	852	892	872
16:26:45	2694	35064	795	695	745	841	949	895
16:27:00	2724	35065	793	694	743	858	863	861
16:27:15	2754	35066	792	697	745	871	875	873
16:27:30	2783	35078	786	700	743	854	878	866
16:27:45	2688	35031	784	705	745	851	920	886
16:28:00	2718	35052	785	703	744	847	860	854
16:28:15	2748	35021	785	700	743	860	890	875
16:28:30	2778	35042	785	704	744	835	892	864
16:28:45	2601	34993	784	703	743	840	802	821
16:29:00	2697	34962	784	701	742	848	828	838
16:29:15	2728	34975	785	699	742	860	911	886
16:29:30	2760	34989	783	702	743	847	937	892
16:29:45	2790	34956	781	700	741	871	856	863
16:30:00	2687	35014	776	705	741	873	869	871
16:30:15	2721	35008	774	706	740	854	944	899
16:30:30	2753	34978	777	703	740	849	886	867
16:30:45	2783	35012	779	702	741	867	841	854
16:31:00	2685	34958	777	705	741	851	820	836
16:31:15	2718	34957	776	704	740	845	874	860
16:31:30	2751	34970	777	704	740	850	890	870
16:31:45	2785	34956	778	700	739	847	894	870
16:32:00	2678	34930	779	701	740	855	639	747
16:32:15	2713	34948	780	698	739	840	869	854
16:32:30	2743	34932	781	698	739	847	819	833
16:32:45	2779	34922	781	700	741	837	773	805
16:33:00	2651	34909	783	697	740	829	837	833
16:33:15	2695	34916	782	699	741	832	847	839
16:33:30	2730	34939	783	699	741	828	937	883
16:33:45	2765	34887	784	698	741	849	922	885
16:34:00	2800	34912	784	698	741	831	873	852
16:34:15	2676	34884	780	702	741	863	770	816
16:34:30	2716	34896	774	705	740	860	860	860
16:34:45	2750	34883	769	707	738	866	969	918
16:35:00	2612	34896	770	705	737	857	897	877
16:35:15	2691	34863	772	707	739	856	938	897
16:35:30	2726	34899	773	704	738	849	906	877
16:35:45	2765	34862	774	703	738	862	922	892
16:36:00	2802	34846	775	703	739	854	918	886
16:36:15	2690	34852	775	702	738	868	913	891
16:36:30	2727	34838	771	708	740	863	886	874

Fire Test Data - continued

16:36:45	2765	34817	770	708	739	848	721	785
16:37:00	2801	34837	771	706	738	830	840	835
16:37:15	2675	34806	773	706	740	830	796	813
16:37:30	2726	34814	776	705	741	821	907	864
16:37:45	2774	34798	780	706	743	826	762	794
16:38:00	2812	34785	782	704	743	820	886	853
16:38:15	2695	34761	785	706	745	825	862	843
16:38:30	2719	34807	779	704	742	616	568	592
16:38:45	2739	34798	761	687	724	469	431	450
16:39:00	2749	34749	742	666	704	388	473	431
16:39:15	2757	34777	719	644	682	327	335	331
16:39:30	2760	34787	698	626	662	286	194	240
16:39:45	2764	34770	681	609	645	255	234	245
16:40:00	2759	34804	641	593	617	235	167	201
16:40:15	2765	34788	534	578	556	220	221	221
16:40:30	2758	34776	457	543	500	70	101	85
16:40:45	2757	34776	370	428	399	68	126	97
16:41:00	2755	34834	290	313	302	70	118	94
16:41:15	2756	34789	222	223	222	46	114	80
16:41:30	2748	34766	154	162	158	50	#REF!	#REF!
16:41:45	2745	34786	109	125	117	49	#REF!	#REF!
16:42:00	2740	34784	86	104	95	42	#REF!	#REF!
16:42:15	2726	34770	79	89	84	39	#REF!	#REF!
16:42:30	2704	34758	76	78	77	38	#REF!	#REF!
16:42:45	2681	34785	72	70	71	39	#REF!	#REF!
16:43:00	2661	34797	68	64	66	38	#REF!	#REF!
16:43:15	2643	34790	64	61	63	61	#REF!	#REF!
16:43:30	2632	34785	67	60	63	65	#REF!	#REF!
16:43:45	2629	34789	72	57	65	57	#REF!	#REF!
16:44:00	2624	34798	70	58	64	53	#REF!	#REF!
16:44:15	2625	34774	60	61	60	54	#REF!	#REF!
16:44:30	2629	34768	48	55	52	41	#REF!	#REF!
16:44:45	2632	34790	44	49	46	35	#REF!	#REF!
16:45:00	2643	34789	43	45	44	31	#REF!	#REF!
16:45:15	2665	34773	43	47	45	42	#REF!	#REF!
16:45:30	2652	34776	37	48	43	47	#REF!	#REF!
16:45:45	2640	34760	41	50	45	52	#REF!	#REF!
16:46:00	2638	34756	44	45	45	43	#REF!	#REF!
16:46:15	2630	34763	47	47	47	49	#REF!	#REF!
16:46:30	2629	34779	48	47	47	50	#REF!	#REF!
16:46:45	2632	34769	47	47	47	51	#REF!	#REF!
16:47:00	2629	34748	47	46	46	46	#REF!	#REF!

Leakage Summary for Burn and Cool Down Periods

All pressure transducers and thermocouples are in calibration per YRT's QA program.
Seat leakages were collected manually. External leakage was collected electronically.

Total Through Seat Leakage Collected Over 30 Minute Duration:	300	mls
Average Leak Rate Over 30 Minute Duration:	10	ml/min
Allowable Leak Rate:	3200	ml/min

Total Through Seat Leakage Collected Over 10 Minute Cool Down:	150	mls

Total Water Volume Lost Over 40 Minute Burn and Cool Down:	561	mls
Water Collected in System Relief Valve:	150	mls
Calculated External Leakage During 40 Minute Duration:	-39	mls
Average Leak Rate Over 40 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	800	ml/min

Were the Valve Leakages Below the Allowables?	**Yes**

Summary of Test Parameters During Burn and Cool Down Periods

Amount of Time Pressure Dropped Below 50%:	0.0	minutes
Maximum Allowable Low Pressure Time:	2.0	minutes
Maximum Pressure During Burn/Cool Down:	2914	psig
Average Pressure During Burn/Cool Down:	2719	psig
Minimum Pressure During Burn/Cool Down:	2601	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	24.5	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	745	deg. C
Average Cal Block Temperature:	569	deg. C
Lowest Avg Cal. Block Temperature:	43	deg. C
Maximum Body Flame Temperature During Burn:	975	deg. C
Average Body Flame Temperature During Burn:	868	deg. C
Maximum Bonnet Flame Temperature During Burn:	901	deg. C
Average Bonnet Flame Temperature During Burn:	850	deg. C
Average of Both Flame Temperatures During Burn:	859	deg. C

Note

Were Test Conditions Within Compliance?	**Yes**

Post-Burn Seat Test Information

Customer: ValvTechnologies	**Date:** 3/8/2013
Product Code: 8 inch Class 1500 Trunnion Ball Valve	
Project Number: PN213051	

This test not required for Pressure Class 1500.

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: Valvtechnologies **Date:** 3/8/2013

Product Code: 8 inch Class 1500 Trunnion Ball Valve

Project Number: PN213051

Valve operated closed to open prior to readings

Test Data

Time	Pressure (psig)	Cal Block Temp - C
17:13:13	2794	27
17:13:28	2810	27
17:13:43	2826	27
17:13:58	2831	27
17:14:13	2841	27
17:14:28	2853	26
17:14:43	2861	26
17:14:58	2868	26
17:15:13	2870	26
17:15:28	2879	26
17:15:43	2888	26
17:15:58	2882	26
17:16:13	2887	26
17:16:28	2887	26
17:16:43	2891	26
17:16:58	2893	26
17:17:13	2898	26
17:17:28	2887	26
17:17:43	2888	26
17:17:58	2892	26
17:18:13	2895	26

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	0.0	mls
Average Leak Rate Over 5 Minute Duration:	0.0	ml/min
Allowable Leak Rate:	1600	ml/min

Was the Valve Leakage Below the Allowable?	**Yes**