

Fire Test Report

ANSI/API Standard 607, 7th Edition, 2016

ISO 10497: 2010

Performed for

Guide Valve Limited

www.gvs-vci.com



**GVS® Trunnion Mounted Ball Valve
Model B two-piece body 2" ANSI 300
Valve Code: 2-300 B**

Project Number: 221231

Test Date: October 20, 2021

Performed by

YARMOUTH RESEARCH AND TECHNOLOGY, LLC

434 Walnut Hill Road
North Yarmouth, ME 04097 USA
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Yarmouth Research and Technology, LLC

Customer: Guide Valve Limited

Date: 10/20/2021

Specification: ANSI/API Standard 607, Seventh Edition, June 2016

ISO 10497: 2010

Product Description: GVS® Trunnion Mounted Ball Valve Model B two-piece body 2" ANSI 300

Valve Code: 2-300 B

Project Number: 221231

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:	10:54:00	
Average Pressure During Burn:	31	psig
Seat Leak Rate During Burn:	0	ml/min
Allowable Seat Leak Rate:	200	ml/min
External Leak Rate During Burn/Cool Down:	0	ml/min
Allowable External Leak Rate:	50	ml/min
Amount of Time of Avg. Cal. Blocks > 650 deg. C:	21.8	minutes
Were Test Conditions Within Compliance?	Yes	
Were the Valve Leakages Below the Allowables?	Yes	

Post-Burn Seat Test

Average Pressure During Test:	31	psig
Seat Leak Rate:	0	ml/min
Allowable Seat Leak Rate:	80	ml/min
Was the Leakage Below the Allowable?	Yes	

Operational Test

Average Pressure During Test:	543	psig
External Leak Rate After Operating:	22	ml/min
Allowable External Leak Rate:	50	ml/min
Was the Leakage Below the Allowable?	Yes	

Does Valve Pass or Fail the Test Standard?	PASS
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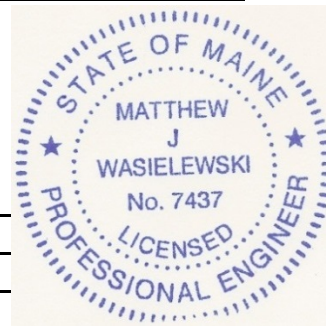
Certified by



Matthew J. Wasielewski, PE

President and Manager

Yarmouth Research & Technology, LLC

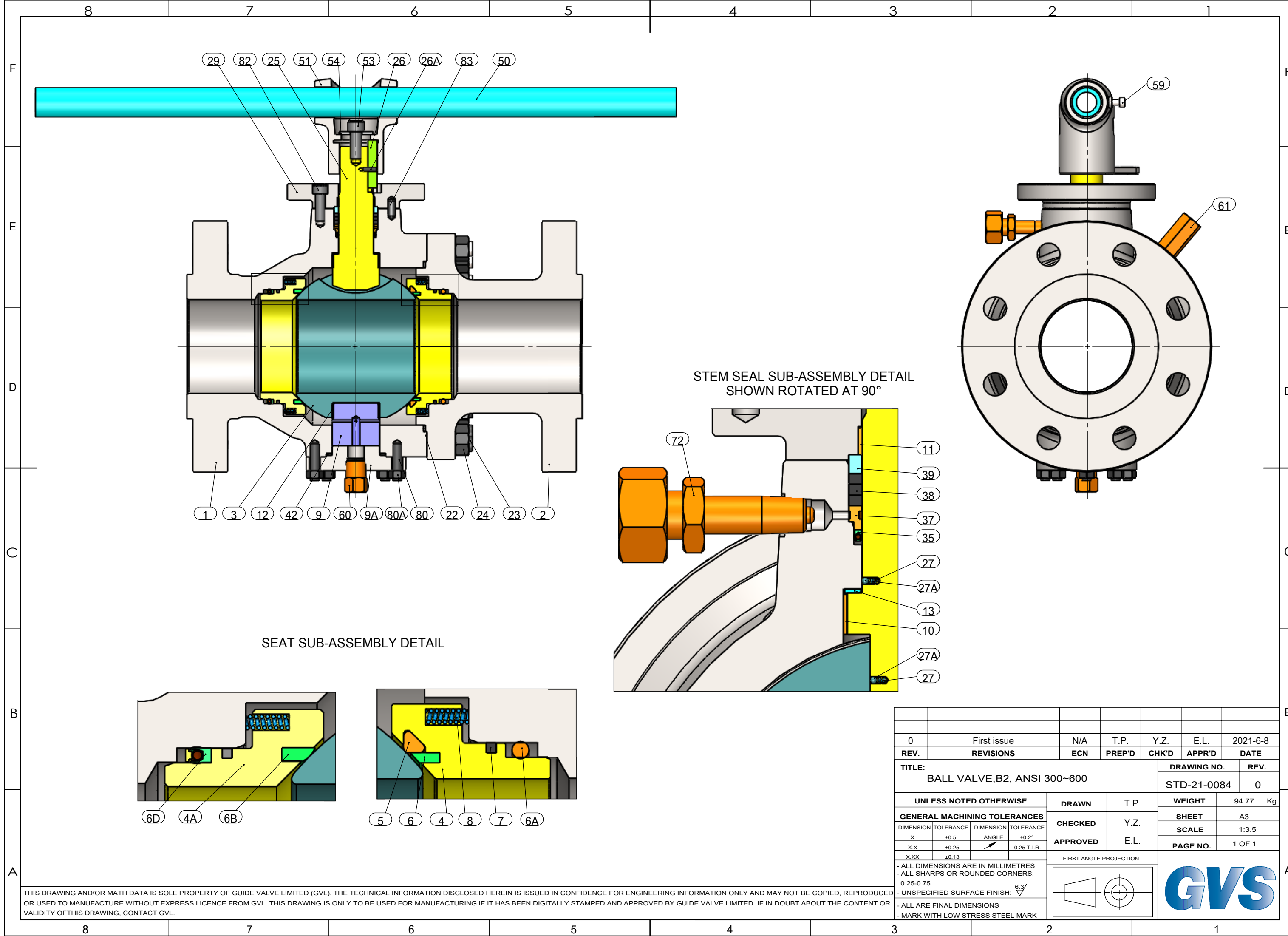


YARMOUTH RESEARCH AND TECHNOLOGY, LLC

Fire Test Information Sheet

Fire Test Specification and Revision: (ie. API 607 7th, API 6FA 5th, etc)	API 607
Yarmouth Proposal Number:	221231A
Customer Purchase Order Number:	9345
Customer's Contact Name:	-1-905-7617877
Customer's Name (used in test report as specified):	Guide Valve Limited
Company Web Address for Report Cover:	www.gvs-vci.com
Valve Manufacturer's Address:	51 Terecar Drive, Woodbridge, Ontario, Canada, L4L 0B5
Did valve meet all required hydrostatic, leakage and other production pressure tests?	Yes
Valve Description for Report Cover:	GVS® Trunnion Mounted Ball Valve Model B two-piece body 2" ANSI 300
Valve Product Code:	2-300 B
Valve Description	
Size:	2"
Pressure Rating/Class:	ANSI 300
Pressure Rating at 100F:	740 psi
Type:	trunnion mounted ball valve
Weight:	30 kg
Reduced or Full Bore:	full port
Body/Bonnet Material:	LF2 Cl.1
Trim Material:	LF2 + 3 Mil. ENP - Stem 4140 + 3 Mil. ENP
Seat Material:	FKM Delta + PEEK
Stem Seal Material:	Graphite + PTFE+Elgiloy + FKM
Body Seal Material:	Spiral Wound graphite gasket
Bolting Material:	L7M
Is valve considered "Soft-Seated"?	the valve is Soft seated
If valve is fitted with gearbox, state gearbox manufacturer, model # and mech. advantage:	NA
State if valve is symmetric or non-symmetric: If non, state direction of flow for test:	symetric
IMPORTANT - Cavity pressure tap is required for ALL dual-seated valves. Please refer to quote	
For double-seated valves, state maximum allowable cavity pressure:	2000 psi
Is there a reason that test should not measure and record through (seat) leakage?	No
Pre-Test Adjustments, if any:	None
Valve Markings	
Nameplate Information:	GVS Trunnion mounted ball valve
Casting Markings:	None
Assembly Drawing Number / Revision / Date:	STD-21-0084
Emailed (PDF) to Yarmouth: Date:	10/12/2021
Form Submission Date:	10/12/2021

PLEASE RETURN AS AN EXCEL DOCUMENT

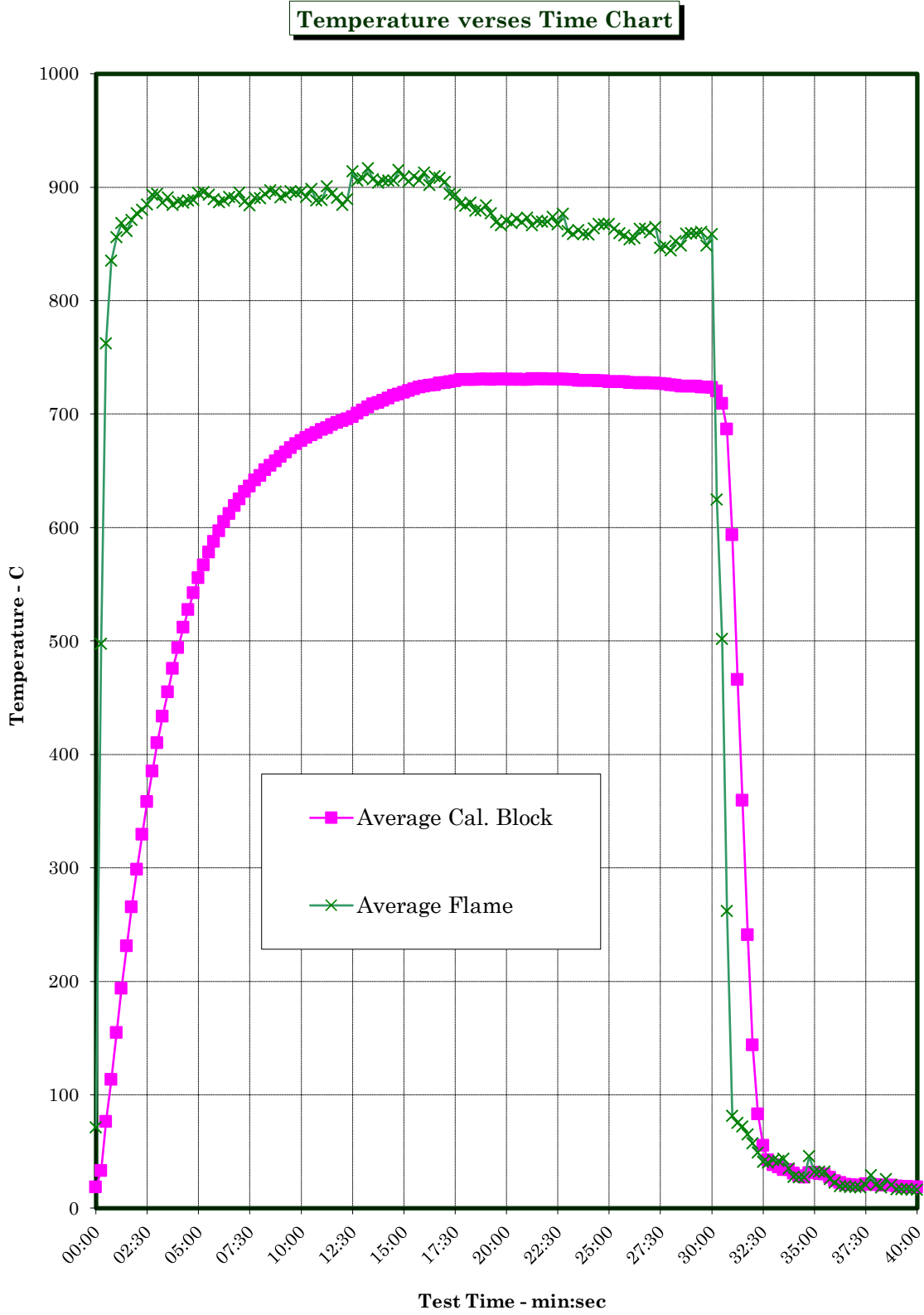


STEM SEAL SUB-ASSEMBLY DETAIL
SHOWN ROTATED AT 90°

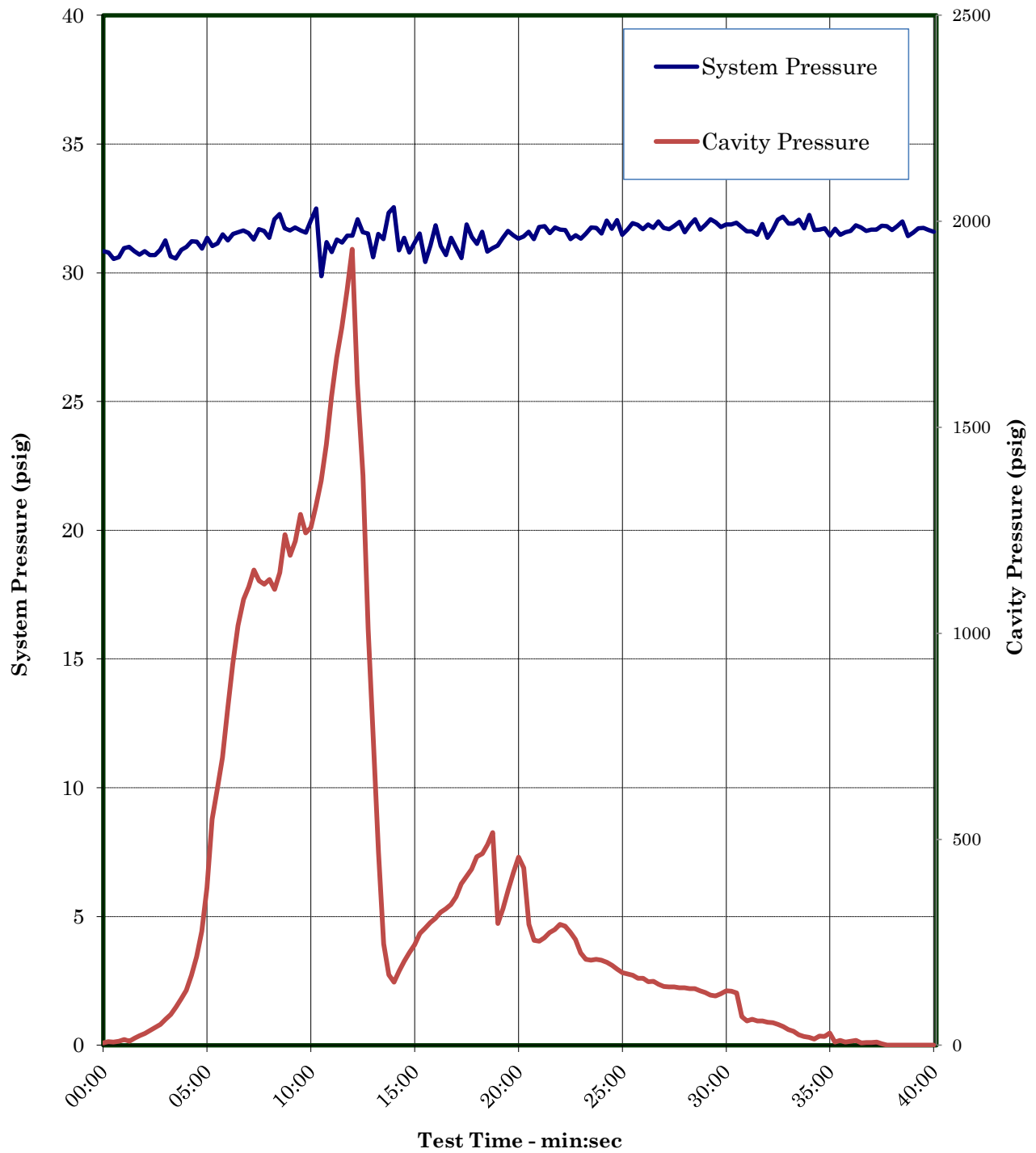
SEAT SUB-ASSEMBLY DETAIL

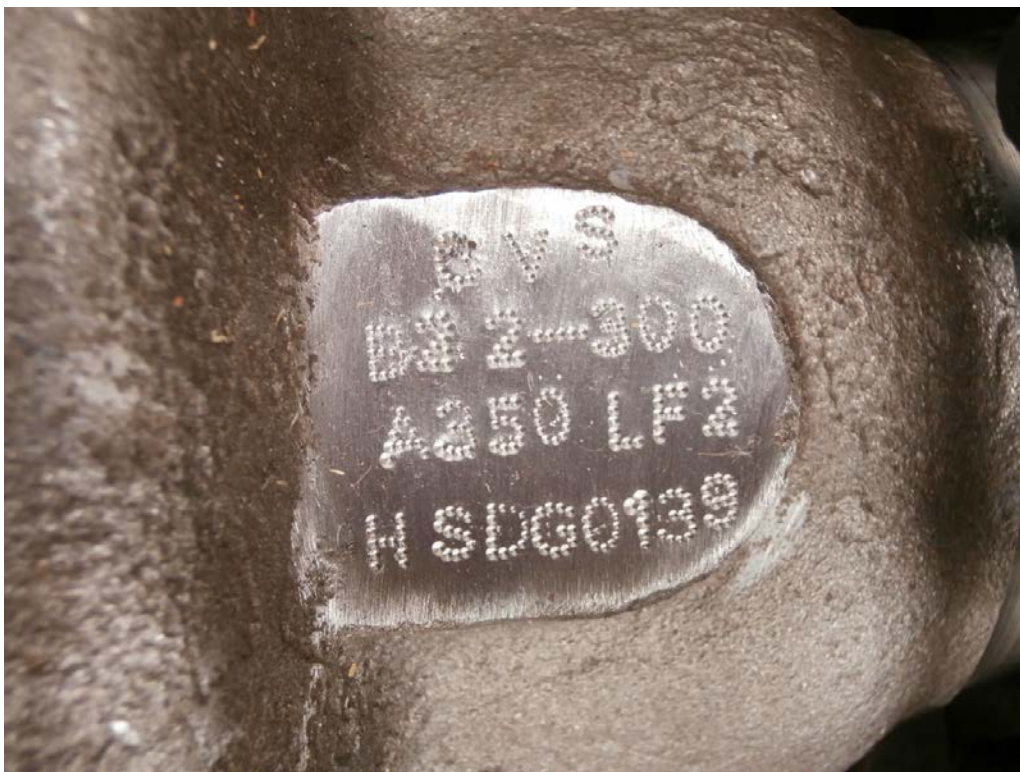
0	First issue	N/A	T.P.	Y.Z.	E.L.	2021-6-8
REV.	REVISIONS	ECN	PREP'D	CHK'D	APPR'D	DATE
TITLE: BALL VALVE,B2, ANSI 300~600				DRAWING NO.		REV.
				STD-21-0084		0
UNLESS NOTED OTHERWISE		DRAWN	T.P.	WEIGHT		94.77 Kg
				SHEET		A3
GENERAL MACHINING TOLERANCES		CHECKED	Y.Z.	SCALE		1:3.5
DIMENSION	TOLERANCE			DIMENSION	TOLERANCE	PAGE NO.
X	±0.5	ANGLE	±0.2°	FIRST ANGLE PROJECTION		
X.X	±0.25	0.25 T.I.R.				
X.XX	±0.13					
- ALL DIMENSIONS ARE IN MILLIMETRES						
- ALL SHARPS OR ROUNDED CORNERS: 0.25-0.75						
- UNSPECIFIED SURFACE FINISH: 6.3/						
- ALL ARE FINAL DIMENSIONS						
- MARK WITH LOW STRESS STEEL MARK						

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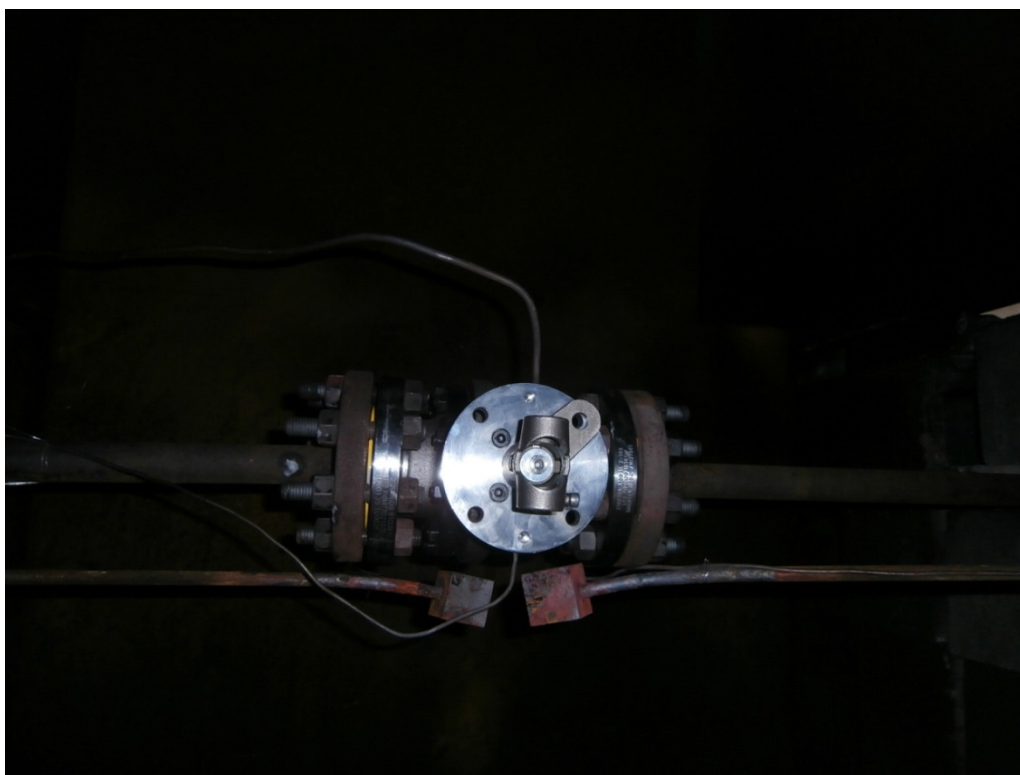


Pressure verses Time Chart





Valve Markings



Test Setup Prior to Burn

Yarmouth Research and Technology, LLC



Test Valve During Burn

Yarmouth Research and Technology, LLC

Fire Test Information

Customer: Guide Valve Limited

Date: 10/20/2021

Product Code: GVS Trunnion Mounted Ball Valve Model B

Project Number: 221231

Fire Test Raw Data

Time	Pressure (psig)	Cavity Pressure (psig)	Water Volume (mls)	Bonnet Temp-C	Body Temp-C	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
10:54:00	31	6	30042	25	21	18	19	18	71	71	71
10:54:15	31	9	30052	111	130	28	38	33	529	466	498
10:54:30	31	8	30053	228	234	70	82	76	817	707	762
10:54:45	31	10	30059	283	274	114	113	113	883	787	835
10:55:00	31	14	30042	317	293	154	155	154	894	818	856
10:55:15	31	10	30080	345	308	191	196	194	896	840	868
10:55:30	31	17	30026	371	318	227	235	231	900	822	861
10:55:45	31	23	30066	391	326	260	271	266	903	839	871
10:56:00	31	29	30049	410	336	292	305	299	904	850	877
10:56:15	31	36	30044	429	344	323	336	329	905	855	880
10:56:30	31	43	30059	445	349	352	364	358	905	864	884
10:56:45	31	51	30060	458	353	379	391	385	910	876	893
10:57:00	31	63	30082	470	361	405	415	410	909	879	894
10:57:15	31	75	30048	484	367	429	438	433	912	860	886
10:57:30	31	92	30017	496	374	450	460	455	913	869	891
10:57:45	31	112	30080	506	381	471	480	476	911	857	884
10:58:00	31	133	30093	518	382	490	498	494	912	863	888
10:58:15	31	170	30116	529	388	507	516	512	920	852	886
10:58:30	31	215	30086	535	393	523	532	528	922	854	888
10:58:45	31	277	30233	543	397	537	547	542	923	854	888
10:59:00	31	382	30205	550	401	550	561	556	922	867	895
10:59:15	31	549	30035	553	406	561	573	567	927	864	896
10:59:30	31	622	30534	556	409	571	585	578	923	864	893
10:59:45	31	698	30558	562	414	580	595	588	922	856	889
11:00:00	31	816	30351	562	417	589	605	597	920	853	886
11:00:15	32	927	30612	567	424	596	614	605	915	861	888
11:00:30	32	1019	30702	572	426	602	622	612	926	856	891
11:00:45	32	1082	30742	574	430	608	630	619	918	862	890
11:01:00	32	1113	30810	578	435	613	637	625	923	867	895
11:01:15	31	1154	30611	586	438	619	644	631	926	849	888
11:01:30	32	1127	30785	583	442	623	650	636	915	853	884
11:01:45	32	1119	30877	586	446	627	656	642	914	867	891
11:02:00	31	1131	30826	591	449	630	661	646	919	861	890

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Fire Test Data - continued

11:02:15	32	1106	30896	597	449	634	667	651	930	858	894
11:02:30	32	1147	31240	601	454	638	671	654	933	861	897
11:02:45	32	1239	30903	605	458	641	676	659	926	866	896
11:03:00	32	1189	30814	607	459	645	680	663	909	873	891
11:03:15	32	1224	30986	614	462	649	684	666	928	859	893
11:03:30	32	1289	30696	618	465	653	687	670	924	869	896
11:03:45	32	1244	30641	618	466	657	690	674	926	864	895
11:04:00	32	1256	31525	617	468	659	694	676	929	863	896
11:04:15	32	1309	30187	623	469	661	697	679	930	853	891
11:04:30	30	1370	30661	626	471	663	700	681	939	858	898
11:04:45	31	1458	30887	627	473	664	703	683	929	847	888
11:05:00	31	1574	30451	628	477	666	706	686	928	849	888
11:05:15	31	1669	30886	634	477	668	708	688	941	860	901
11:05:30	31	1743	31368	633	481	670	711	691	935	853	894
11:05:45	31	1832	30694	634	485	672	713	693	927	854	891
11:06:00	31	1932	29929	639	489	673	715	694	937	831	884
11:06:15	32	1606	31384	638	489	674	717	696	932	846	889
11:06:30	32	1383	30945	651	494	676	719	698	953	875	914
11:06:45	32	1010	31049	657	498	680	721	701	959	853	906
11:07:00	31	741	30260	663	499	684	723	703	957	858	908
11:07:15	32	468	30800	662	504	687	725	706	957	876	917
11:07:30	31	246	30735	667	507	691	726	709	955	859	907
11:07:45	32	171	31382	668	512	693	727	710	952	855	904
11:08:00	33	153	31656	671	515	696	728	712	953	859	906
11:08:15	31	180	30743	673	517	698	730	714	959	853	906
11:08:30	31	204	31294	678	521	701	731	716	960	851	906
11:08:45	31	225	30806	678	527	703	732	718	962	868	915
11:09:00	31	244	31178	678	531	705	733	719	958	860	909
11:09:15	32	271	31352	678	534	707	734	721	959	851	905
11:09:30	30	284	30807	681	536	708	736	722	960	859	909
11:09:45	31	298	31392	683	538	710	737	724	961	851	906
11:10:00	32	308	31190	683	544	711	738	724	961	864	913
11:10:15	31	323	30915	681	548	711	739	725	951	852	902
11:10:30	31	331	30415	685	551	711	740	726	960	859	909
11:10:45	31	341	31163	684	554	712	742	727	951	865	908
11:11:00	31	360	30848	687	554	712	743	728	956	853	904
11:11:15	31	392	30542	690	557	712	744	728	957	831	894
11:11:30	32	409	32011	691	559	712	746	729	957	829	893
11:11:45	31	427	31053	694	565	713	747	730	950	821	886
11:12:00	31	458	31256	689	568	712	748	730	941	826	884
11:12:15	32	465	31541	689	571	711	749	730	947	825	886
11:12:30	31	487	30742	688	575	710	750	730	942	816	879
11:12:45	31	516	30622	689	576	709	752	731	946	813	879

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Fire Test Data - continued

11:13:00	31	295	30791	690	577	709	752	731	945	823	884
11:13:15	31	332	31180	692	579	708	753	730	937	816	877
11:13:30	32	377	31158	688	583	707	754	731	927	811	869
11:13:45	31	419	31152	690	584	706	755	731	925	808	866
11:14:00	31	457	31110	694	584	705	756	731	937	804	871
11:14:15	31	430	31269	698	586	704	756	730	936	800	868
11:14:30	32	293	31253	698	588	704	757	731	941	803	872
11:14:45	31	255	31071	699	588	703	758	730	935	803	869
11:15:00	32	253	31295	700	591	703	758	730	949	797	873
11:15:15	32	261	31079	701	592	703	759	731	943	790	866
11:15:30	32	273	31125	701	594	702	759	731	938	803	870
11:15:45	32	281	31168	699	596	702	760	731	923	816	869
11:16:00	32	293	31168	701	598	701	760	731	938	801	869
11:16:15	32	289	31129	698	600	700	761	731	923	825	874
11:16:30	31	275	31172	704	605	699	762	731	927	807	867
11:16:45	31	257	31134	702	607	699	762	731	938	815	876
11:17:00	31	224	31159	698	611	698	763	730	916	806	861
11:17:15	32	209	31164	700	612	696	764	730	917	800	859
11:17:30	32	207	31155	698	615	695	764	729	916	808	862
11:17:45	32	209	31181	701	616	694	765	729	923	794	858
11:18:00	32	207	31147	703	618	694	765	729	915	801	858
11:18:15	32	201	31125	701	621	693	766	729	912	815	864
11:18:30	32	194	31146	703	622	691	767	729	916	819	868
11:18:45	32	184	31118	702	622	690	768	729	899	835	867
11:19:00	31	176	31109	704	625	689	768	728	919	816	868
11:19:15	32	173	31096	706	626	688	769	728	919	808	863
11:19:30	32	170	31069	706	627	688	769	728	911	808	859
11:19:45	32	163	31058	712	627	687	769	728	926	789	858
11:20:00	32	163	31103	710	629	686	769	728	914	794	854
11:20:15	32	154	31073	709	628	686	769	728	908	802	855
11:20:30	32	155	31077	707	630	685	769	727	914	813	863
11:20:45	32	148	31097	708	631	685	770	728	909	817	863
11:21:00	32	143	31079	707	634	684	770	727	909	811	860
11:21:15	32	142	31089	708	633	683	771	727	902	827	865
11:21:30	32	142	31103	709	636	682	771	727	900	793	846
11:21:45	32	140	31078	710	636	681	771	726	894	802	848
11:22:00	32	140	31058	712	637	679	772	726	900	788	844
11:22:15	32	137	31025	714	636	679	771	725	922	782	852
11:22:30	32	137	31034	712	639	678	771	724	899	798	848
11:22:45	32	132	31045	710	639	678	771	724	898	820	859
11:23:00	32	128	31003	709	641	677	771	724	892	826	859
11:23:15	32	122	31001	709	642	676	772	724	905	814	859
11:23:30	32	120	30941	713	641	675	772	724	906	815	861

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Fire Test Data - continued

11:23:45	32	125	31052	712	643	675	772	724	903	794	848
11:24:00	32	132	31050	712	645	674	772	723	897	820	859
11:24:15	32	131	31037	658	600	671	769	720	631	618	624
11:24:30	32	127	31041	622	571	661	757	709	496	507	502
11:24:45	32	69	30917	564	554	638	735	686	92	431	262
11:25:00	32	59	30890	465	539	503	684	593	80	82	81
11:25:15	32	63	30925	413	529	313	619	466	75	75	75
11:25:30	31	59	30956	373	518	182	536	359	65	79	72
11:25:45	32	59	30896	341	510	98	384	241	48	82	65
11:26:00	31	56	30403	321	491	60	227	144	40	74	57
11:26:15	32	55	30941	293	440	44	122	83	38	60	49
11:26:30	32	51	31088	263	419	36	74	55	31	50	41
11:26:45	32	45	31098	232	425	31	54	43	31	49	40
11:27:00	32	38	30752	99	410	29	47	38	24	61	43
11:27:15	32	34	31067	83	392	27	45	36	28	55	41
11:27:30	32	25	31143	69	398	28	40	34	27	60	44
11:27:45	32	21	30858	57	402	29	39	34	20	50	35
11:28:00	32	19	30853	47	398	26	35	31	19	36	28
11:28:15	32	15	30854	43	401	24	33	28	19	35	27
11:28:30	32	22	30574	40	395	23	31	27	18	36	27
11:28:45	32	21	30766	41	388	23	39	31	18	74	46
11:29:00	31	30	30650	42	383	23	40	31	20	44	32
11:29:15	32	8	30634	36	378	23	38	30	17	47	32
11:29:30	31	12	30644	32	361	22	38	30	17	47	32
11:29:45	32	8	30567	28	360	21	33	27	16	35	26
11:30:00	32	10	30584	26	292	20	28	24	16	29	23
11:30:15	32	12	30634	24	320	20	25	23	16	23	19
11:30:30	32	6	30658	22	282	19	23	21	16	22	19
11:30:45	32	7	30556	22	265	19	22	21	16	21	19
11:31:00	32	7	30532	21	250	19	21	20	16	21	19
11:31:15	32	8	30573	21	226	19	21	20	16	20	18
11:31:30	32	3	30570	21	101	19	24	21	15	26	21
11:31:45	32	0	30574	20	93	18	24	21	15	43	29
11:32:00	32	0	30532	19	91	18	23	20	15	26	21
11:32:15	32	0	30558	19	90	18	22	20	16	20	18
11:32:30	32	0	30522	18	66	18	22	20	15	36	26
11:32:45	31	0	30487	17	62	18	22	20	15	26	21
11:33:00	32	0	30391	17	66	18	21	19	15	18	16
11:33:15	32	0	30321	17	66	18	20	19	15	18	16
11:33:30	32	0	30235	17	65	18	20	19	16	18	17
11:33:45	32	0	30161	17	64	18	19	18	15	17	16
11:34:00	32	0	30084	16	63	18	19	18	15	17	16

Yarmouth Research and Technology, LLC

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:	0	mls
Average Leak Rate Over 30 Minute Duration:	0	ml/min
Allowable Leak Rate:	200	ml/min
Total Through Seat Leakage Collected Over 10 Minute Cool Down:	0	mls
Total Water Volume Lost Over 40 Minute Burn and Cool Down:	-42	mls
Water Collected in System Relief Valve:	0	mls
Calculated External Leakage During 40 Minute Duration:	-42	mls
Average Leak Rate Over 40 Minute Duration:	0	ml/min
Allowable Leak Rate:	50	ml/min
Were the Valve Leakages Below the Allowables?	Yes	

Yarmouth Research and Technology, LLC

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:	33	psig
Average Pressure During Burn/Cool Down:	31	psig
Minimum Pressure During Burn/Cool Down:	30	psig
Amount of Time of Avg. Cal Block > 650 deg.C:	21.8	minutes
Minimum Allowable Time at Temperature:	15.0	minutes
Maximum Avg Cal Block Temperature:	731	deg. C
Average Cal Block Temperature:	509	deg. C
Lowest Avg Cal. Block Temperature:	18.3	deg. C
Maximum Body Flame Temperature During Burn:	879	deg. C
Average Body Flame Temperature During Burn:	827	deg. C
Maximum Bonnet Flame Temperature During Burn:	962	deg. C
Average Bonnet Flame Temperature During Burn:	917	deg. C
Average of Both Flame Temperatures During Burn:	872	deg. C

Notes

Were Test Conditions Within Compliance?	Yes
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Yarmouth Research and Technology, LLC

Post-Burn Seat Test Information

Customer: Guide Valve Limited

Date: 10/20/2021

Product Code: GVS Trunnion Mounted Ball Valve Model B

Project Number: 221231

Test Data

Time	Pressure (psig)	Cal Block Temp - C
11:36:37	31	19
11:36:52	31	19
11:37:07	31	19
11:37:22	31	19
11:37:37	31	19
11:37:52	31	19
11:38:07	31	19
11:38:22	31	19
11:38:37	31	19
11:38:52	31	19
11:39:07	31	19
11:39:22	31	19
11:39:37	31	19
11:39:52	31	19
11:40:07	31	19
11:40:22	31	19
11:40:37	31	19
11:40:52	31	19
11:41:07	31	19
11:41:22	31	19
11:41:37	31	19

Leakages were collected manually.

Total Seat Leakage Collected Over 5 Minute Duration:	0	mls
Average Leak Rate Over 5 Minute Duration:	0	ml/min
Allowable Leak Rate:	80	ml/min
Was the Valve Leakage Below the Allowable?	Yes	

Yarmouth Research and Technology, LLC

Operational Test Information

Customer: Guide Valve Limited

Date: 10/20/2021

Product Code: GVS Trunnion Mounted Ball Valve Model B

Project Number: 221231

Test Data

Time	Pressure (psig)	Cal Block Temp - C
11:49:58	552	22
11:50:13	550	22
11:50:28	548	22
11:50:43	547	22
11:50:58	545	22
11:51:13	545	22
11:51:28	544	22
11:51:43	543	22
11:51:58	543	23
11:52:13	543	23
11:52:28	542	23
11:52:43	541	23
11:52:58	541	23
11:53:13	541	23
11:53:28	541	23
11:53:43	541	23
11:53:58	540	23
11:54:13	540	23
11:54:28	540	23
11:54:43	540	23
11:54:58	540	24

Leakages were collected manually.

Total External Leakage Collected Over 5 Minute Duration:	110	mls
Average Leak Rate Over 5 Minute Duration:	22	ml/min
Allowable Leak Rate:	50	ml/min

Was the Valve Leakage Below the Allowable?	Yes
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Yarmouth Research and Technology, LLC

ANSI/API Standard 607 Seventh Edition - 2016

ISO 10497:2010

Fire Test Certificate

Certificate Number: 221231A

Test Start Date: 10/20/2021

Customer Information

Customer: Guide Valve Limited

Web Address: www.gvs-vcj.com

Valve Information

Valve Description: GVS® Trunnion Mounted Ball Valve Model B two-piece body 2"

ANSI 300

Product Code: 2-300 B

Valve Size: 2 inch

Body/Bonnet Material: LF2 Cl. 1

ANSI Pressure Class: 300

Seat Material: FKM Delta + PEEK

Stem Seal Material: Graphite + PTFE+Elgiloy + FKM

Body Seal Material: Spiral Wound graphite gasket

The above valve was tested in accordance with the above stated fire test procedure in one flow direction. All of the applicable test parameters were met and external and through leakage measurements were below the allowable limits. Other valves of the same construction may also be qualified according to the requirements of Section 7 of the test specification.

Test Results

This certificate refers to the above mentioned product. This is to certify that the test specimen provided is in conformity with the standard mentioned above. This certificate does not imply assessment of the production of the product.

Certified By



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