

## FIRE SAFE TEST CERTIFICATE

This certificate is issued to

### **M/s. FLUID-O-MECH CONTROL'S INC.**

51, Ambica Industrial Estate, Nr Railway Bridge,  
Vatva GIDC, Ahmedabad: 382440, Gujarat, India.

to certify that at their request the undersigned surveyor to GLIS (I) Pvt. Ltd., attended their works at M/s. FLUID-O-MECH CONTROL 'S INC. 51, AMBICA IND. ESTATE, NEAR RAILWAY BRIDGE , GIDC, VATVA, AHMEDABAD - 382 440,GUJARAT,INDIA. on 20<sup>th</sup> January 2016, for the purpose of witness of safe test of Floating Ball Valve.

The scopes of Inspection & Approval are as below:

**STANDARD SPECIFICATION**

: API 607 6<sup>th</sup> Edition, 2010.

**TECHNICAL SPECIFICATION**

Design / Mfg. Standard

: API 6D.

Construction

: 2PC Design Full Port Ball Valve.

Size

: 2"(DN 50MM).

Class

: 150#.

Valve Serial No.

: FMCI A 633.

Valve Drg. No.

: FMCI / BLV/WCB-50150 REV.00.

**MATERIAL OF CONSTRUCTION**

Body & Sidepiece

: ASTM A216 GR. WCB.

Ball

: ASTM A182 F316.

Stem

: AISI316.

Gasket

: SS316 SPW With graphite Filler.

Seat

: PTFE.

Fasteners

: ASTM A193 GR. B7/ ASTM A194 GR. 2H.

Seal

: Grafoil.

**Conclusion:** Floating Ball Valve Sr. No.: **FMCI A633** punched on flange had successfully passed fire safe test as per procedure outlined in API 607 6<sup>th</sup> Edition, 2010 and witnessed by undersigned GLIS (I) Pvt. Ltd., Surveyor on 20<sup>th</sup> January 2016. Temperature report, Test report and other calculation sheets are enclosed herewith after endorsement by us. This test results conforming with the specification.

Note : i) GLIS (I) Pvt. Ltd., is to be notified that any changes to the design of this valve that may affect the Validity of this Certificate.

Other Sizes Qualified : 2" and below, 2 1/2" , 3" & 4".

Other Pressure Class Qualified :150# and 300#.

Date of Issue:20<sup>th</sup> January 2016.

Issued at:

Ahmedabad

20.01.2016

*Jay Kumar B.*  
20/01/16

**GLIS (I) PVT. LTD.**  
**JAYKUMAR B.**

Place

Date

Manager-Inspection

**H.O.(INDIA) : Gulf Lloyds Industrial Services (I) Pvt. Ltd.**

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DOC. NO.:GLIS / 009

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## FIRE SAFE TEST REPORT

Test Conducted at	M/s. FLUID-O-MECH CONTROL'S INC. 51, Ambica Industrial Estate, Nr.Railway Bridge, Vatva GIDC, Ahmedabad: 382440, Gujarat, India.	Material of Construction	
Design Standard	API 6D.	Body & Side Piece	ASTM A 216 GR. WCB
		Ball	ASTM A182 F316.
		Stem	AISI316.
Fire safe test STD.	API 607 6 <sup>th</sup> Edition, 2010.		
Test Valve	2" (DN 50 mm),150#, 2PC Design Full Port Ball Valve		
Range of Valve Covered	Size: 2" and below, 2 1/2", 3" & 4" Class: 150# and 300#.	Stud & Nut	ASTM A193 Gr. B7/ A194 Gr. 2H.
Test Valve Drawing No.	FMCI / BLV/WCB-50150 REV.00.	Seat Ring	PTFE.
Test Serial No. & Date	FMCI A 633.Dated : 20.01.2016	Stem Ring	Grafoil.

Time (Minutes)	Temperature °C							Upstream Pressure Set At Psi	Remarks
	Flame Thermocouple			Calorimeter Thermocouple					
	T1	T2	Average	T3	T4	T5	Average		
0.5	198	238	218	24	28	31	28	1100	
1.0	550	650	600	65	81	59	68	1100	Burn Period Start
1.5	880	920	900	94	127	81	101	1100	
2.0	923	944	934	113	139	95	116	1100	
2.5	927	945	936	131	148	109	129	1100	
3.0	930	947	939	142	161	118	140	1100	Ensure Avg T1 & T2 = 761°C
3.5	931	948	940	185	197	143	175	1100	
4.0	930	948	939	237	271	188	232	1100	
4.5	929	946	937	281	315	243	280	1100	
5.0	928	945	937	347	362	299	336	1100	
5.5	927	943	935	393	406	342	380	1100	
6.0	925	940	933	425	435	379	413	1100	
6.5	921	940	931	460	467	418	448	1100	
7.0	921	942	932	489	488	446	474	1100	
7.5	923	941	932	512	502	479	498	1100	
8.0	922	940	931	533	518	498	516	1100	
8.5	921	942	931	557	547	523	542	1100	
9.0	925	943	934	572	582	546	567	1100	
9.5	923	943	933	595	602	568	588	1100	
10.0	923	945	934	607	618	591	605	1100	
10.5	925	945	935	619	636	609	621	1100	
11.0	923	943	933	635	651	621	636	1100	
11.5	923	944	934	648	661	633	647	1100	
12.0	923	945	934	659	671	639	656	1100	
12.5	925	945	935	670	679	642	664	1100	
13.0	926	945	936	672	685	649	669	1100	
13.5	926	945	936	672	687	649	669	1100	
14.0	927	946	937	673	691	652	672	1100	

HOD – Design & Development	HOD – Q.A/QC	 <b>GLIS (I) PVT. LTD.</b> TPI – GLIS (I) Pvt. Ltd.	Page No 1 of 3
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# FIRE SAFE TEST REPORT

Time (Minutes)	Temperature °C							Upstream Pressure Set At Psi	Remarks
	Flame Thermocouple			Calorimeter Thermocouple					
	T1	T2	Average	T3	T4	T5	Average		
14.5	926	946	936	679	696	655	677	1100	
15.0	926	944	935	682	699	659	680	1100	
15.5	925	945	935	685	701	662	683	1100	
16.0	926	945	936	687	704	665	685	1100	Ensure Avg T3, T4 & T5 = 650°C
16.5	925	945	935	689	709	667	688	1100	
17.0	926	946	936	692	712	700	701	1100	
17.5	925	945	935	695	715	702	704	1100	
18.0	923	941	932	697	717	703	706	1100	
18.5	921	939	930	699	719	705	708	1100	
19.0	918	928	923	719	706	709	711	1100	
19.5	917	926	921	720	707	711	713	1100	
20.0	909	915	912	722	709	712	714	1100	
20.5	903	911	907	724	711	713	716	1100	
21.0	896	907	902	726	713	714	718	1100	
21.5	893	903	898	726	713	713	717	1100	
22.0	890	899	895	725	712	712	716	1100	
22.5	889	897	893	724	711	711	715	1100	
23.0	889	895	892	720	709	708	712	1100	
23.5	887	895	891	718	707	705	710	1100	
24.0	886	896	891	715	707	703	708	1100	
24.5	884	894	889	713	703	701	706	1100	
25.0	883	893	888	709	699	698	702	1100	
25.5	883	894	889	705	695	695	698	1100	
26.0	885	894	889	703	693	692	696	1100	
26.5	882	892	887	701	690	689	693	1100	
27.0	880	892	886	697	688	686	690	1100	
27.5	881	889	885	695	685	683	688	1100	
28.0	879	886	883	693	683	681	686	1100	
28.5	876	883	880	691	680	679	683	1100	
29.0	875	881	878	688	679	677	681	1100	
29.5	875	880	878	685	678	673	679	1100	
30.0	876	877	877	682	678	670	677	1100	
30.5	874	875	875	681	675	668	675	1100	
31.0	872	873	873	679	673	667	673	1100	Burn Period End
31.5	650	590	620	595	560	545	567	1100	Start cool down
32.0	432	411	421	318	331	311	320	1000	
32.5	313	297	305	129	117	121	122	800	
33.0	129	116	122	85	89	81	85	600	
33.5	85	87	86	42	47	45	45	500	
34.0	35	33	34	32	32	33	32	400	End Cool down
34.5	30	31	31	30	31	31	31	350	
35.0	30	30	30	30	30	30	30	300	
35.5	30	30	30	30	30	30	30	200	
36.0	29	30	30	30	30	30	30	105	Start low pressure test
36.5	30	29	30	30	30	30	30	105	
37.0	30	29	30	30	30	30	30	105	
37.5	30	30	30	30	30	30	30	105	
38.0	29	30	30	30	30	30	30	105	
38.5	30	30	30	30	30	30	30	105	
39.0	30	29	30	30	30	30	30	105	
39.5	30	30	30	30	30	30	30	105	
40.0	30	29	30	30	30	30	30	105	

  
 20/10/16  
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# FIRE SAFE TEST REPORT

40.5	30	30	30	30	30	30	30	105	
41.0	30	30	30	30	30	30	30	105	End low pressure test

## OBSERVATIONS

Sl.No	Description	Values	Units
01	Water level reading of water reservoir, before high pressure test (a)	1407	mm
02	Water level reading of water reservoir, end of cooling period (b)	1392	mm
03	Duration of total burning and cool down period (c)	41	Minutes
04	Water vessel constant (d)	114	ml / mm
05	Through seat leakage collected during burning period (e)	830	ml / min
06	Through seat leakage during low pressure test (f)	18	ml / min
07	External leakage during low pressure test (g)	0	ml / min
08	External leakage after operation, valve at open position (h)	0	ml / min

## PERFORMANCE OF VALVE / RESULTS

### Calculations

Sl.No	Description	Formula
01	Through seat leakage ( High Test Pressure) During burn period	= e / NPS
02	External Leakage (High Test Pressure) During burn & cool down period. Valve in closed position	= $\frac{\{[(d \times (a-b)) - e] / c\}}{NPS}$ ml / inch / min
03	Through seat leakage (Low Test Pressure) – After cool down	= f / NPS
04	External leakage (Low Test Pressure) – After cool down, Valve in closed position	= g / NPS
05	External leakage – Valve in Open position after operational test.	= h / NPS

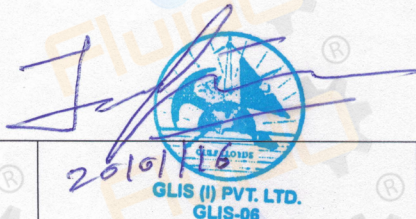
### Results

Sl.No	Description	As per standard	Actual	Units
01	Through seat leakage ( High Test Pressure) During burn period	400	207.5	ml /inch /min
02	External Leakage (High Test Pressure) During burn & cool down period. Valve in closed position	100	5.36	ml /inch /min
03	Through seat leakage (Low Test Pressure) – After cool down	40	4.5	ml /inch /min
04	External leakage (Low Test Pressure) – After cool down, Valve in closed position	20	0	ml /inch /min
04	External leakage – Valve in Open position after operational test.	200	0	ml /inch /min

SEAT & SEAL CONDITION AFTER TESTING  
SEATS BURNT COMPLETELY & SEALS INTACT

### CONCLUSION

Through seat leakage and external leakage are within allowable limits. Hence the test valve and the corresponding range of valves which are mentioned above are hereby qualified as Fire Safe Valves.

  
 20/01/16  
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 GLIS-06

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