

TUV INDIA PVT LTD.,  
2<sup>nd</sup> Floor, "Dhun Building",  
#827, Anna Salai, Chennai 600 002, India,  
Ph.: 044-2582 8875



### Fire Test Certificate: 8110859171-500-17

This is to certify that the undersigned surveyor did at the request attend

#### M/s. L&T Valves Limited

(Post Bag No. 976, Mount Poonamallee Road, Manapakkam,  
Chennai - 600089, India)

on the below mentioned date for the purpose of witnessing fire test on the valve detailed below

VALVE DESCRIPTION:	
Valve type	: Globe Valve
Size & Pressure	: NPS 3 (DN 80) & Class 300
Body Material/End	: ASTM A216 GR WCB / Flanged
Valve Serial No.	: 28045
Valve GA Drawing	: LTV-GL-LP-034
Fire test standard	: API 607 6 <sup>th</sup> Edition 2010 and ISO 10497 3 <sup>rd</sup> Edition 2010
Test Date	: 09/08/2014
Valve manufacturer	: M/s L&T Valves Limited, Kancheepuram
Test Location	: M/s L&T Valves Limited, Manapakkam

#### CONCLUSIONS / REMARKS:

As per the standard, the range of valves qualified is as under:

Size, NPS (DN)	: NPS 3; 4; 5; 6 (DN80; 100; 125; 150)
Pressure Rating	: Class 300; 400; 600 (PN 40; 63; 100)
Seat Material	: Any Trim
Body End Connection	: Flanged and Butt Weld

The test was witnessed in accordance with the Fire test standard(s) and the valve performance found to meet the standard requirements in all respects at the time of test.

This Certificate shall be valid in conjunction with Test report no GL/FT/0158 dated 09/08/2014

Date of Issue : 09/08/2014

P. Raghuraman  
(Surveyor)

Distribution list:  L&T Valves Limited

TUV Branch office (Chennai)



VALVE & TEST DETAILS:			
VALVE TYPE	: Globe Valve	TEST REPORT NO	: GL/FT/0158
SIZE, NPS (DN)	: NPS 3 (DN 80)	TEST DATE	: 09/08/2014
PRESSURE RATING	: Class 300	TEST VENUE	: L&T Valves Limited, Chennai
END CONNECTION	: Flanged	SEAT RING	: INSITU ON BODY + STELLITE#6
MATERIAL OF CONSTRUCTION	: ASTM A216 GR WCB	DISC	: ASTM A182 GR F6A + STELLITE#6
GLAND PACKING	: Graphite	GASKET MATERIAL	: SW SS316 WITH GRAPHITE FILLER
VALVE GA DRAWING	: LTV-GL-LP-034	VALVE SL.NO	: 28045
FIRE TEST STANDARD	: API 607 6 <sup>th</sup> Edition 2010 and ISO 10497 3 <sup>rd</sup> Edition 2010		

TEST RESULTS:				
Sight gauge readings during Burn and Cool down periods	Level reading	Unit	Volume	Unit (1 mm = 100 ml)
Initial reading before the burn period (X)	525	mm	52500	ml
Final reading at the end of cool down period (Y)	377	mm	37700	ml
<b>Total volume lost over 40 minute burn and cool down period (A); A = X - Y</b>	148	mm	14800	ml
Leakage readings	Test Pressure (bar)	Duration (minute)	Leakage	Units
<b>Total Through Seat Leakage during burn period (B)</b>	43	30	14200	ml
Total Through Seat Leakage during 10 minute cool down period (C)	43	10	600	ml
<b>Calculated External leakage during 40 minute burn and cool down period (E); E = A - (B+C)</b>	43	40	0	ml
<b>Total Through Seat Leakage after cool down period</b>	2	5	0	ml
<b>Operational Test</b>	43	Unseated from the closed position against the high test pressure and moved to the fully open position; Operation found to be smooth.		
<b>Total External Leakage after Operational test</b>	43	5	0	ml

\*Time required for valve to cool to below 100° C: 10 minutes

LEAKAGE SUMMARY FOR BURN AND COOL DOWN PERIODS:		
Details	Leakage rate (ml/minute)	
	Actual	Allowable
Average Through-seat leakage - During Burn Period at High Test Pressure	473.3	1280
Average External Leakage - During Burn and Cool-down Periods at High Test Pressure	0	320
Average Through-seat leakage - After Cool-down period at Low Test Pressure	0	128
Operational Test at High Test Pressure	Satisfactory	
Average External leakage - After Operational Test at High Test Pressure	0	80

All Thermocouples, Temperature recording instruments and Pressure monitoring devices were verified to be with valid calibration.

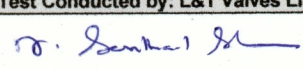
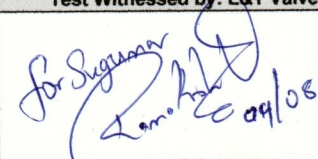

Temperature and Pressure readings taken during test are attached.

CONCLUSION :
The pressure-containing capability of the test valve under pressure during and after the fire test has been evaluated and is found to be meeting the standard requirements and the valve leakages are below the allowable.

QUALIFICATION :	
Size, NPS (DN)	NPS 3; 4; 5; 6 (DN80; 100; 125; 150)
Pressure Rating	Class 300; 400; 600 (PN 40; 63; 100)
Seat Material	Any trim
Body End Connection	Flanged and Butt Weld

Reviewed  
Witnessed



Test Conducted by: L&T Valves Limited	Test Witnessed by: L&T Valves Limited	Test Witnessed by: TUV
 <b>N.Senthamizh selvan</b>	 <b>S.Sugumar</b>	 <b>P.Raghuraman</b>

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Registered Office: L&T House, N. M. Marg, Ballard Estate, Mumbai - 400 001. INDIA

A wholly owned subsidiary of Larsen & Toubro Limited



## FIRE TEST TEMPERATURE LOG SHEET

SIZE, NPS (DN) : 3" (DN 80)

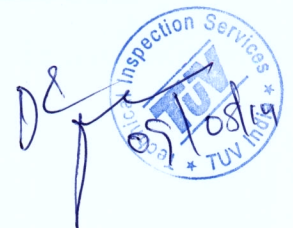
TEST REPORT NO : GL/FT/0158

CLASS : 300

DATE : 09/08/2014

Time (min)	Test Pressure (bar)	Channel Temperature in °C				
		Flame thermocouple	Stem thermocouple	Stem Calorimeter	Flame calorimeter	Additional calorimeter
0.0	43	31	30	32	38	31
0.5	43	390	325	190	169	189
1.0	43	680	585	272	303	312
1.5	43	890	690	368	403	365
2.0	43	939	782	410	384	426
2.5	43	937	789	532	446	468
3.0	43	932	803	583	500	494
3.5	43	924	789	616	545	520
4.0	43	931	780	644	665	640
4.5	43	923	786	666	680	655
5.0	43	936	774	672	685	685
5.5	43	927	766	672	655	655
6.0	43	937	764	678	672	672
6.5	43	940	770	684	684	684
7.0	43	969	764	687	696	696
7.5	43	953	763	692	703	703
8.0	43	959	762	697	717	717
8.5	43	954	748	699	722	722
9.0	43	939	741	702	726	726
9.5	43	927	739	706	728	728
10.0	43	932	743	708	732	732
10.5	43	931	740	708	738	738
11.0	43	938	740	712	740	740
11.5	43	830	750	692	741	741
12.0	43	830	750	692	742	742
12.5	43	838	750	693	744	744
13.0	43	849	750	694	744	744
13.5	43	856	751	694	7469	749
14.0	43	866	751	694	747	747
14.5	43	867	752	694	749	749
15.0	43	872	753	694	750	750
15.5	43	871	750	695	750	750
16.0	43	876	750	696	750	750
16.5	43	863	751	695	752	750
17.0	43	861	751	696	752	741
17.5	43	864	752	695	752	751
18.0	43	865	800	742	746	746

Reviewed  
Witnessed



## FIRE TEST TEMPERATURE LOG SHEET

SIZE, NPS (DN) : 3" (DN 80)

TEST REPORT NO : GL/FT/0158

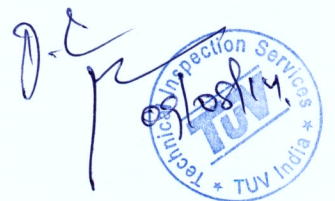
CLASS : 300

DATE : 09/08/2014

Time (min)	Test Pressure (bar)	Channel Temperature in °C				
		Flame thermocouple	Stem thermocouple	Stem Calorimeter	Flame calorimeter	Additional calorimeter
18.5	43	937	890	725	752	722
19.0	43	932	940	726	750	725
19.5	43	940	937	728	762	725
20.0	43	938	932	730	760	725
20.5	43	930	940	740	760	728
21.0	43	937	938	742	760	728
21.5	43	932	930	742	760	726
22.0	43	940	927	721	762	725
22.5	43	938	937	724	760	726
23.0	43	930	932	725	759	725
23.5	43	927	940	726	725	726
24.0	43	937	938	724	726	728
24.5	43	940	930	726	728	780
25.0	43	927	927	725	730	785
25.5	43	937	937	726	740	785
26.0	43	940	940	725	742	784
26.5	43	937	938	726	742	788
27.0	43	932	938	728	720	785
27.5	43	940	930	752	728	788
28.0	43	938	927	755	730	789
28.5	43	930	937	752	728	785
29.0	43	927	940	760	740	784
29.5	43	937	938	762	740	785
30.0	43	940	940	760	742	784

SL.NO	REQUIREMENTS	ACTUAL
1	Average of stem flame & body flame should reach 750° C with in 2 minutes & to be maintained.	Reached within 1.5 minutes maintained till the end
2	Average of stem calorimeter & body calorimeter should reach 650° C with in 15 minutes & to be maintained.	Reached within 4.5 minutes maintained till the end

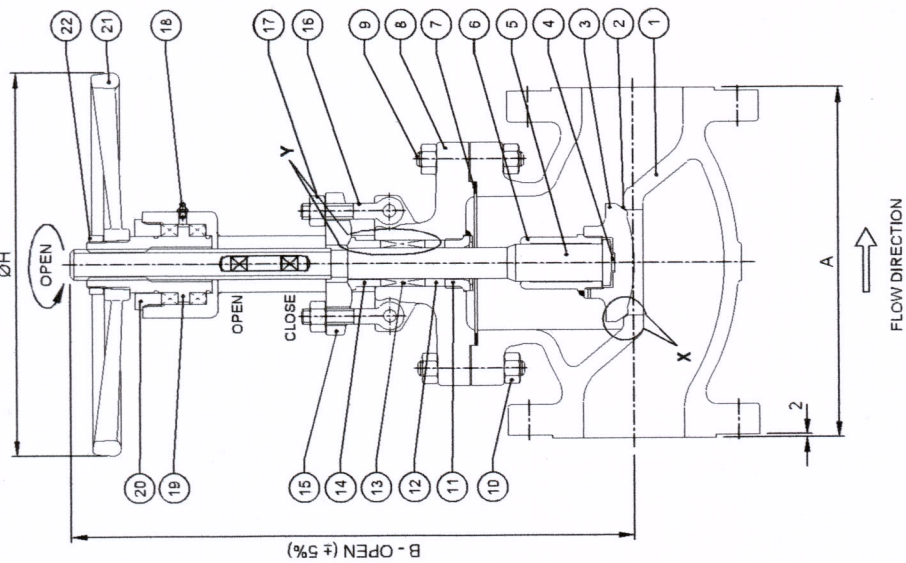
Reviewed  
Witnessed





REFERENCE STANDARD	
DESIGN	BS 1873/ASME B16.34
PRESSURE - TEMPERATURE RATING	ASME B16.34
FACE TO FACE	ASME B16.10
END FLANGE DIMENSIONS	ASME B16.5 RF
TEST METHOD	API 598

TEST PRESSURE	psig	bar
SHELL	1125	77
BACKSEAT	815	57
SEAT	815	57



SIZE (NPS)	A	B	H	WEIGHT kg (APPROX)	ITEM No	PURCHASER'S TAG No
3	317	515	254	58	-	-
4	356	605	356	97	-	-

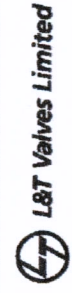
ITEM No	DESCRIPTION	MATERIAL
1	BODY	ASTM A216 GR WCB
2	SEAT	INSITU ON BODY + STELLITE #6
3	DISC	ASTM A182 GR F6a + STELLITE #6
4	DISC WASHER	SS 410
5	STEM	ASTM A182 GR F6a
6	DISC NUT	SS 316
7	GASKET	SPIRAL WOUND SS316 WITH GRAPHITE FILLER
8	BONNET	ASTM A216 GR WCB
9	STUD	ASTM A193 GR B7
10	HEX NUT	ASTM A194 GR 2H
11	BACKSEAT RING	ASTM A276 TYPE 410
12	SPACER RING	ASTM A276 TYPE 410
13	PACKING	GRAPHITE WITH BRAIDED END RINGS
14	GLAND	ASTM A276 TYPE 410
15	GLAND FLANGE	ASTM A105 / A216 GR WCB
16	EYE BOLT	ASTM A193 GR B7
17	HEX NUT	ASTM A194 GR 2H
18	GREASE FITTING	STEEL
19	STEM NUT	ASTM A439 TYPE D2
20	RETAINER NUT	S.G. IRON
21	HANDWHEEL	S.G. IRON
22	HANDWHEEL NUT	S.G. IRON
	IDENTIFICATION PLATE	SS 304

**Reviewed Witnessed**



- NOTE:**
1. END FLANGE RAISED FACE FINISH : 3.2 TO 6.3 µm (125 to 250 µin) Ra.
  2. VALVES ARE WITH INTEGRAL BODY SEAT.
  3. BACKSEAT RING IS THREADED-IN AND SECURED BY TAB TO THE BONNET.
  4. FLOW DIRECTION ARROW IS MARKED ON THE BODY.
  5. FOR DETAIL - X & DETAIL - Y, REFER DRG No : LTV - ANNEX - 001.

PROJECT NAME	-
PURCHASER'S NAME	-
PURCHASE ORDER No	-
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN mm. ALL PROJECTIONS ARE IN THIRD ANGLE.	
DRAWN	MSM
CHECKED	VRD
APPROVED	NRV
DATE	01.01.2014
PRD	SCALE
REV	ECM No DATE
	NTS
TITLE : CAST CARBON STEEL GLOBE VALVE GENERAL ASSEMBLY	
SIZE : REFER TABLE	CLASS : 300
TRIM : 5	CAT No : 433
DRG No :	REV SHEET
LTV-GL-LP-034	0 1 OF 1



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