



# Inspection Certificate

Project: ---

Client: **Klinger Fluid Control GmbH  
Gumpoldskirchen / Austria**

Office: **Dortmund**

Client's Order Number: ---

Date: **16 September 2009**

Order Status: **incomplete**

Inspection Dates

First: **20 August 2009**

Final: **20 August 2009**

This Certificate is issued to the above client to certify, that a surveyor to Lloyd's Register did, at their request, attend the testing laboratory of Dr.-Ing. T. Bäumer GmbH - Ingenieurbüro -, Herford / Germany for the purpose of inspecting the product listed below:

Description: **Flame resistant test of -1- Ball Valve**  
Type: **KHE - FS**  
Nominal bore: **DN 6"**  
Pressure rating: **Class 150**  
Manufacturer's drawing: **wH8380/1.0-0000**

Materials: **Body/flange end piece material: CF8M / WCB**  
**Operating stem material: 1.4104**  
**Ball material: 1.4401**  
**Sealing elements: KFC-25 - Graphite**  
**Stem seal material: Graphite / K - Flon**

Test requirements: **DIN EN ISO 10497, 2004 and API 607, 2005**  
Qualified pressure ratings: **Class 150, Class 300, PN10, PN16, PN25, PN40**

The flame resistance tests have been carried out at the independent laboratories of Dr.-Ing. T. Bäumer GmbH.

Conclusion: **All test results, witnessed by the Lloyd's Register Surveyor, were found to be satisfactory and fulfil the requirements of DIN EN ISO 10497, 2004 in every respect. For details please refer to the attached signed and stamped test reports (4 pages).**

Remarks: **Ball valve DN 6", pressure rating Class 150 also covers DN 150 and below, DN 200, DN 250 and DN 300.**

G. Milke  
Surveyor to Lloyd's Register EMEA

MA/Dwe

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## TEST Report

### Fire type test according to DIN EN ISO 10497 Report Hc-439

This report confirms the successful testing of a representative valve in compliance with the DIN EN ISO 10497, 2004.

**Manufacturer** Klinger Fluid Control GmbH  
Am Kanal 8 - 10  
A – 2352 Gumpoldskirchen

**Test Valve** Ball -Valve, KHE - FS,  
flange end connections, Lever opened  
Nominal bore: DN 6”  
Pressure rating: Class 150  
Weight: 69,4 kg  
Bore: Full bore  
Body/flanged end piece material: CF8M / WCB  
Operating stem material: 1.4104  
Ball material: 1.4401  
Sealing elements: KFC-25 - Graphite  
Stem seal material: Graphite / K - Flon  
Drawing number: wH8380/1.0-0000  
Operation device: Lever 652 mm length

**Date of Testing** 20 August 2009

**Test Report** 4 pages

**Qualified sizes** DN 150, DN 200, DN 250 and DN 300

**Qualified pressure ratings** Class 150, Class 300  
PN 10, PN16, PN 25, PN 40

**Testing location** Laboratory Dr.-Ing. T. Bäumer GmbH,  
Altensenner Weg 75, D - 32052 Herford

**Test requirements** The tests were carried out strictly in accordance with  
DIN EN ISO 10497, 2004, and API 607, 2005.

**Participants** Mr. G. Milke Lloyds Register, EMEA  
Mr. Dr. T. Bäumer Dr.-Ing. T. Bäumer GmbH

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09 13 196 / 1 ---

## Test examination

The water filled valve was subjected to fire for 30 minutes at a temperature between 750 °C and 1000 °C and a pressure of e.g. 14,5 barg. After the burn period the through-seat-leakage was determined and after a cool down period the external leakage was measured. Then the valve was opened, and the external leakage was determined.

## Instrumentation

Temperature: 4 Thermocouples, Ni Cr Ni, accuracy 1 K.

Pressure: Pressure transmitter, accuracy 0,5 %.

PC-system: AD converter board, software for measuring, Personal Computer

The measuring devices are controlled by an accredited calibration service.

Body cavity set relief pressure and setting: 30 barg

## Test results

Time of test start (ignition of burners): 9.55 a.m.

### Temperatures and pressure during burn period

Time	p	T <sub>Fire1</sub>	T <sub>Fire2</sub>	T <sub>Cal1</sub>	T <sub>Cal2</sub>
[s]	[barg]	[°C]	[°C]	[°C]	[°C]
.00	14.51	39.0	50.7	60.0	80.1
30.00	14.51	70.4	53.7	61.5	78.5
60.00	14.51	590.9	641.7	85.4	101.2
90.00	14.51	765.4	834.3	113.9	163.2
120.00	14.51	841.4	861.1	149.9	229.7
150.00	14.51	878.9	940.2	226.4	299.2
180.00	14.51	874.4	932.8	293.9	371.7
210.00	14.51	895.4	968.6	356.9	463.9
240.00	14.51	771.9	874.6	400.4	578.8
270.00	14.51	886.4	899.9	434.9	642.3
300.00	14.51	761.4	885.0	479.9	719.3
330.00	14.51	765.4	894.0	496.4	745.0
360.00	14.43	925.4	929.8	529.4	784.3
390.00	14.43	950.9	902.9	572.9	823.6
420.00	14.51	949.4	931.3	611.9	831.2
450.00	14.43	949.4	938.7	646.4	832.7
480.00	14.43	973.9	870.1	674.9	873.5
510.00	14.43	956.9	879.0	697.4	890.1
540.00	14.43	970.4	882.0	713.9	878.0
570.00	14.43	960.4	899.9	725.9	862.9
600.00	14.43	960.4	937.3	737.9	858.4

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09 13 196 / 1 ---



630.00	14.43	966.4	977.5	748.4	853.8
660.00	14.43	976.9	813.4	755.9	869.0
690.00	14.43	974.9	855.2	758.9	847.8
720.00	14.43	941.9	810.4	763.4	843.3
750.00	14.43	986.9	789.5	767.9	829.7
780.00	14.43	980.9	810.4	772.4	823.6
810.00	14.51	968.9	931.3	772.4	820.6
840.00	14.81	973.4	871.6	772.4	828.2
870.00	14.91	998.9	895.5	773.9	826.6
900.00	14.98	943.4	794.0	778.4	834.2
930.00	14.73	970.4	849.2	779.9	819.1
960.00	14.66	971.9	838.7	778.4	816.1
990.00	14.58	960.4	876.0	781.4	814.5
1020.00	14.58	977.4	902.9	787.4	816.1
1050.00	14.51	969.4	823.8	791.9	816.1
1080.00	14.51	962.9	886.5	788.9	811.5
1110.00	14.51	953.9	798.4	781.4	807.0
1140.00	14.43	913.4	772.8	776.9	805.5
1170.00	14.51	934.4	768.2	772.4	796.4
1200.00	14.51	965.9	853.7	767.9	787.3
1230.00	14.51	991.4	904.4	761.9	796.4
1260.00	14.43	946.4	902.9	760.4	808.5
1290.00	14.51	925.4	898.4	752.9	822.1
1320.00	14.43	931.4	949.2	748.4	820.6
1350.00	14.43	917.9	865.6	745.4	834.2
1380.00	14.51	956.9	885.0	742.4	834.2
1410.00	14.51	965.9	902.9	739.4	843.3
1440.00	14.43	914.9	959.6	736.4	840.2
1470.00	14.43	911.9	905.9	731.9	846.3
1500.00	14.51	899.9	973.1	727.4	846.3
1530.00	14.51	917.9	886.5	722.9	861.4
1560.00	14.43	964.4	919.3	719.9	861.4
1590.00	14.51	907.4	931.3	719.9	865.9
1620.00	14.51	899.9	997.0	718.4	859.9
1650.00	14.51	878.9	995.5	713.9	864.4
1680.00	14.43	907.4	947.7	709.4	875.0
1710.00	14.51	919.4	944.7	707.9	876.5
1740.00	14.43	914.9	834.3	710.9	882.5
1770.00	14.51	910.4	892.5	707.9	869.0
1800.00	14.51	910.4	892.5	707.9	869.0

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09 13 196 / 1 ---

**Time required for valve to cool down to 100 °C:** 9 min

**Test valve unseated:** Yes

**Test valve moved to the fully open position:** Yes

	Leakage [ml/DN/min]	Allowable leakage [ml/DN/min]
Through-seat-leakage in burning phase:	1,2	4,0
External leakage in burning and cooling phase:	0,1	1,0
Through-seat-leakage at low pressure:	0,0	1,6
External leakage in the open position:	0,0	1,0

### Comments on the results

The test valve is an asymmetric valve. Because it is intended for one-directional installation, the tests were carried out only for one flow direction.

### Conclusion

The test valve fulfilled the test requirements according to DIN EN ISO 10497, 2004. Only allowable through-seat-leakages and external leakages were observed during the test.

Herford, 20 August 2009

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