CEOC
CONFÉDÉRATION EUROPÉENNE D'ORGANISMES DE CONTROLE

TÜV NORD Systems

Dr.-Ing. T. Bäumer
Prüflabor - Ingenieurbüro - Prüfstände

Test Report

Prüf-Nr. - Inspection No- Certificat N° - N° di collaudo: 1081P0016/20/W0003

Inspection Certificate
Certificat de Réception
Certificato Collaudo Materiali

DIN EN 10204- 3.2

Teil - Part - Partie – Parte: 1
Blatt-Nr. - Sheet No - Page N° - Pag N°: 1 / 5

Besteller - Customer - Acheteur - Committente:

MHA Zentgraf GmbH
Ballerner Str. 8 – 66663 Merzig

Kundenbestell-Nr. – Purchase order No - Numero cdo client - N° dell'ordine:

Vom - dated - date – in data: 02.04.2020

Herstellerwerk – Manufacturer's work – Usine productrice - Produttore:

MHA Zentgraf GmbH
Ballerner Str. 8 – 66663 Merzig

Werks-Nr. - Works-No – N° usine – Commessa N°:

Prüfgrundlagen/Anforderungen - Technical requirements/Demands - Spécifications techniques/Exigences – Norma di controlla/Requisiti:
DIN EN ISO 10497, 2016, and API 607, 7th edition

Stempel des Sachverständigen – Inspector's stamp - Poinçon de l'expert – Punzone dell'ispettore:

Erzeugnis - Product - Produit - Prodotto

Pos Item-No Poste-N° N° pos.	Stückzahl Quantity Nombre Numero pezzi	Gegenstand - Article - Désignation du produit - Tipo di prodotto		
1	1	Ball Valve BKH-DN50 bi direct Pipe end connections, Gear operated Nominal bore: DN 50 Pressure rating: PN 260 Bore: 50 mm Body/flanged end piece material: Austenitic Operating stem material: Duplex Ball material: Austenitic Sealing elements: PEEK Drawing number: 99911-09-005-71009		

Zusätzliche Angaben - Additional remarks – Autres remarques – Osservazione:

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

Qualified pressure ratings:
Class 1500, Class 2500,
PN 260, 420

Qualified valve sizes:
2'' and below, 2 ½''
3'', 4''

Die gestellten Anforderungen sind laut Anlagen erfüllt - The requirements are fulfilled as per Annex.
Les conditions imposées sont satisfaites suivant annexes - I risultati sono conformi al requisiti richiesti come da allegati.

Herford
Ort - Location - Lieu – Localita

02.04.2020
Datum – Date – Data

Dr.-Ing. T. Bäumer

Beratender Ingenieur
Consultant Engineer

TÜV NORD
TÜV NORD Systems

Digital unterschrieben von Wilhelm Nelli
Datum: 2020.04.03 14:59:38 +02'00'

Dipl.-Ing. N. Wilhelm

Die Sachverständige / Abnahmebeauftragte
Expert / Inspection Representative

Anlagen – Annexes - Annexes :
1) Ergebnis der Prüfungen - Test results - Résultats des essais - Risultati delle prove

TÜV NORD GmbH & Co. KG
Benannte Stelle; Kenn-Nr.: 0045
Notified Body; reg no 0045

Test examination

The water filled test valve was subjected to fire for 30 minutes at a temperature between 750 °C and 1000 °C and a pressure of 195 barg. After the burning and a cooling phase the external leakage was measured. Then the valve was operated, and the external leakage was again 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: 390 barg

Test results

Time of test start (ignition of burners): 01.25 pm

Temperatures and pressure during burn period

Time [s]	p [barü]	T_{Fire1} [°C]	T_{Fire2} [°C]	T_{Cal1} [°C]	T_{Cal2} [°C]
.0	197	619.0	601.1	67.7	64.2
30.0	198	795.2	756.9	125.3	96.2
60.0	195	777.5	786.1	198.4	145.8
90.0	197	821.6	785.2	270.9	203.1
120.0	197	962.1	880.0	348.9	268.7
150.0	194	852.2	825.1	425.5	338.9
180.0	191	960.6	883.5	485.3	402.9
210.0	193	981.1	913.1	541.6	463.3
240.0	192	972.7	936.1	595.2	521.4
270.0	194	945.4	911.5	638.7	570.9
300.0	195	886.3	894.9	671.7	608.6
330.0	195	848.8	853.7	695.6	636.9
360.0	195	758.5	813.3	708.7	654.8
390.0	196	832.2	843.0	715.7	667.7
420.0	196	808.8	813.0	724.9	678.7

450.0	193	783.4	795.9	731.0	687.5
480.0	193	790.1	796.4	735.9	694.9
510.0	194	839.8	826.6	743.4	702.0
540.0	194	810.1	797.3	749.4	709.9
570.0	195	813.6	822.2	755.9	716.3
600.0	197	819.0	832.5	762.3	721.9
630.0	199	825.7	809.8	765.1	725.6
660.0	201	789.8	796.6	767.1	728.5
690.0	192	783.4	791.1	765.9	730.8
720.0	193	790.9	799.2	766.9	733.4
750.0	193	793.8	824.1	764.8	733.3
780.0	194	799.2	796.0	763.5	734.2
810.0	194	819.3	809.5	762.6	734.1
840.0	194	791.2	801.7	762.6	734.6
870.0	198	797.2	765.9	767.4	738.4
900.0	195	768.1	788.7	766.2	739.6
930.0	196	777.0	799.0	767.3	741.0
960.0	198	818.3	828.6	759.3	738.6
990.0	196	903.8	888.4	766.1	743.3
1020.0	197	770.2	810.7	778.9	752.9
1050.0	196	810.8	848.1	777.5	757.6
1080.0	199	900.0	881.7	782.5	762.1
1110.0	198	813.8	846.8	794.9	771.7
1140.0	195	829.1	867.9	794.6	774.8
1170.0	194	860.1	843.2	795.4	774.8
1200.0	195	789.2	949.3	797.4	775.3
1230.0	197	790.3	859.8	786.7	776.1
1260.0	194	764.3	833.3	780.3	774.0
1290.0	193	758.2	861.1	774.9	769.8
1320.0	193	762.3	887.7	778.4	770.9
1350.0	191	760.2	836.6	781.1	771.8
1380.0	190	750.3	886.4	781.4	769.4
1410.0	190	783.7	882.0	790.8	771.2
1440.0	191	822.9	910.5	793.1	769.2
1470.0	192	765.4	807.4	800.0	773.6
1500.0	190	785.6	892.8	796.2	771.2
1530.0	189	794.1	810.1	799.4	773.4
1560.0	190	826.8	857.9	802.2	774.6
1590.0	189	819.1	872.6	803.5	775.7
1620.0	190	807.9	870.5	812.4	781.4
1650.0	191	761.2	838.2	805.1	777.7
1680.0	191	819.5	855.2	803.2	775.4
1710.0	192	792.3	816.2	807.5	776.9
1740.0	192	793.1	821.6	806.3	776.5
1770.0	193	773.1	792.9	802.2	772.5
1800.0	194	760.7	801.3	800.8	769.4

Time required for valve to cool down to 100 ^{o}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:	0,2	16,0
External leakage in burning and cooling phase:	0,3	4,0
Through-seat-leakage after cool down phase:	0,0	1,6
External leakage after unseating the valve:	0,3	1,0

Comments on the results

The test valve is a symmetric Ball Valve. Because of the symmetry the tests were carried out only for one flow direction.

Test Report

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1	1	Ball Valve KH-DN50-SAE bi directional Flange end connections, Gear operated Nominal bore: DN 50 Pressure rating: PN 260 Bore: 50 mm Body/flanged end piece material: Austenitic Operating stem material: Duplex Ball material: Austenitic Sealing elements: PEEK Drawing number: 095411-19-005-71013		

Zusätzliche Angaben - Additional remarks – Autres remarques – Osservazione:

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TÜV NORD
TÜV NORD Systems

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Digital unterschrieben von Wilhelm Nelli
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Dr.-Ing. T. Bäumer

Dipl.-Ing. N. Wilhelm

Beratender Ingenieur
Consultant Engineer

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Expert / Inspection Representative

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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: 390 barg

Test results

Time of test start (ignition of burners): 11.40 am

Temperatures and pressure during burn period

Time [s]	p [bar	T_{Fire1} [°C]	T_{Fire2} [°C]	T_{Cal1} [°C]	T_{Cal2} [°C]
.0	194	699.8	681.7	38.9	32.1
30.0	201	836.6	785.9	99.5	66.2
60.0	197	778.5	765.0	181.6	122.3
90.0	198	797.5	869.5	263.4	188.1
120.0	195	868.5	888.7	346.2	262.7
150.0	194	930.1	954.4	426.5	340.2
180.0	194	958.4	884.2	503.1	417.4
210.0	196	937.3	839.8	562.8	485.2
240.0	197	847.8	830.9	604.3	537.7
270.0	198	956.8	866.0	635.9	579.7
300.0	196	802.3	795.6	660.7	613.9
330.0	191	782.0	824.8	675.3	636.9
360.0	194	899.8	829.7	692.8	657.8
390.0	193	913.7	893.7	716.6	682.7
420.0	194	874.7	894.1	732.8	702.2

450.0	195	872.9	851.3	747.0	718.5
480.0	196	927.3	849.8	756.8	729.8
510.0	197	887.9	843.8	766.1	739.6
540.0	200	903.3	855.7	772.8	746.3
570.0	198	870.8	857.2	783.0	758.3
600.0	195	925.8	865.0	783.5	760.6
630.0	193	841.7	815.7	789.1	768.4
660.0	197	888.1	857.2	793.2	771.9
690.0	198	955.2	924.5	796.5	776.7
720.0	199	904.1	872.7	799.6	783.7
750.0	199	829.5	837.2	802.7	789.7
780.0	201	790.0	806.9	799.2	789.1
810.0	191	812.3	834.5	795.3	784.9
840.0	193	796.9	817.1	794.6	785.0
870.0	195	882.8	855.1	792.8	782.8
900.0	197	889.3	868.7	795.6	784.6
930.0	195	891.7	831.0	790.8	782.7
960.0	197	849.8	848.3	787.1	780.8
990.0	190	859.7	848.5	784.7	777.9
1020.0	191	862.5	830.2	787.9	779.6
1050.0	192	902.3	862.2	784.5	775.9
1080.0	192	856.0	836.8	787.6	777.0
1110.0	193	836.5	886.0	791.3	779.3
1140.0	193	869.8	871.2	791.8	780.5
1170.0	194	879.9	903.6	790.8	780.7
1200.0	194	871.6	865.9	789.0	780.8
1230.0	194	869.3	883.7	788.0	781.1
1260.0	194	857.3	843.6	788.9	782.2
1290.0	195	879.6	893.1	786.4	780.4
1320.0	195	926.1	903.8	785.3	781.7
1350.0	195	880.5	874.5	787.9	784.9
1380.0	196	815.2	880.4	787.2	784.4
1410.0	196	846.8	863.1	786.2	783.7
1440.0	196	859.6	857.2	782.8	780.7
1470.0	197	874.2	871.1	780.1	778.5
1500.0	197	830.4	847.3	779.4	776.8
1530.0	197	852.0	829.5	776.4	774.2
1560.0	197	802.6	771.9	774.2	772.7
1590.0	198	749.9	774.7	772.6	770.3
1620.0	197	797.0	824.1	770.6	767.6
1650.0	197	864.5	856.2	768.2	764.4
1680.0	196	886.1	894.6	769.0	766.3
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1740.0	198	854.7	824.1	774.3	772.5
1770.0	199	828.2	814.4	772.2	771.6
1800.0	198	784.3	822.7	771.8	770.3

Time required for valve to cool down to 100 ^{o}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:	0,3	16,0
External leakage in burning and cooling phase:	0,0	4,0
Through-seat-leakage after cool down phase:	0,0	1,6
External leakage after unseating the valve:	0,0	1,0

Comments on the results

The test valve is a symmetric Ball Valve. Because of the symmetry the tests were carried out only for one flow direction.