



Project: **Fire type-test**
ISO 10497:2010 - API 607, Seventh Edition, June 2016

Client: **Metso Flow Control Oy**
Vantaa, Finland

Office: **Helsinki**

Client's Order Number: -

Date: **10 May 2017**

Order Status: **Complete**

Inspection Dates

First: **10 March 2017**

Final: **10 March 2017**

This certificate is issued to **Metso Flow Control Oy** to certify that undersigned surveyor attended their works in **Vantaa** on the above date for purpose of witnessing fire type-test of one (1) metal seated full bore ball valve designed for bi-directional installation manufactured by **Metso Flow Control Oy, Vantaa, Finland**.

Particulars of valve

Type: **XG04DWTAJ2SJHABT+D**
Rating: **ASME Class 300**
Size: **NPS 04"**

Materials (as stated by the Manufacturer): See Appendix No. 2 of the test report.

Testing

The test valve was presented by the manufacturer, without choice. The test was conducted in accordance with the standard ISO 10497:2010 - API 607, Seventh Edition, June 2016. Throughout the test the valve performed satisfactorily and met all the requirements of the above standard. Visual examination after testing confirmed that the design was in accordance with the manufacturer's drawing and parts list. A copy of the test report has been endorsed. Before commencing the tests the testing apparatus was examined and found to be in accordance with the above standard.

This fire test qualifies also the following valve types:
XG 04", 06" and 08" (Class 300)

And all other valves which fulfils coverage rules acc. to standard ISO 10497:2010 - API 607, Seventh Edition, June 2016.



Lasse Salminen for Carl-Eric Schalin
Surveyors to Lloyd's Register EMEA

a member of the Lloyd's Register group.

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FIRE TEST FOR BALL VALVE, TYPE XG04DWTAJ2SJHABT+D

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OBJECT: Fire test of ball valve XG04DWTAJ2SJHABT+D in accordance with standard ISO 10497: 2010 - identical with API 607, Seventh Edition, June 2016.

SPECIMEN: The test valve XG04DWTAJ2SJHABT+D is a metal seated full bore ball valve manufactured by METSO FLOW CONTROL OY Helsinki, Finland. The valve is designed for bi-directional installation. The size of the valve is NPS 4" and pressure class of the body is ASME 300. The manual actuator M10 was mounted on the test valve.

The assembly drawing, parts list, dimensional drawing of the valve and dimensional drawing of the manual actuator are enclosed in Appendices 1, 2, 3 and 4. Nameplate details and location of temperature measurement points are shown in Appendix 5.

TESTS: The valve had been tested before the fire test by the manufacturer according to normal factory procedure.

The valve was assembled between two end flanges equipped with a 25 mm water pipe.

The valve was filled with water for the fire test and the pressure of water against the closed ball was 39 bar during the test. The test was conducted at the Laboratory of METSO FLOW CONTROL OY Helsinki on March 10, 2017.

The temperatures and test pressures during the test were recorded with a data logger. The results are shown in Appendices 6. The temperature measurement points were located according to the test standard.

The flame temperature was raised to the required level in less than 2 minutes and after that the valve was heated with gas burners for 31 minutes and it was cooled with water-spray to less than 100 °C. The cooling time was 6 minutes.



FIRE TEST FOR BALL VALVE, TYPE XG04DWTAJ2SJHABT+D

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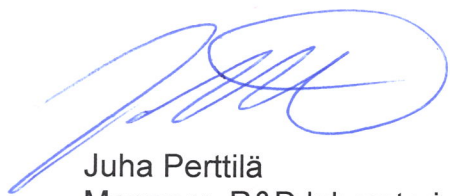
The through-seat leakages and external leakages of the test valve during the test are shown in Table 1.

TABLE 1.
March 10, 2017

TEST PHASE	TIME	LEAKAGE	
	min.	ml/min	
		measured	allowed
Start	0	0	
Required flame temperature	2	0	
Seat leakage during heating	32	28	1600
External leakage heating + cooling	38	3	400
Seat leakage after cooling	45	2	160
External leakage after operational test	54	1	100

In visual examinations after the test it was stated that the test valve was in full operating condition and complied with the supplied documents.

SUMMARY: On the basis of the results it can be stated that the tested ball valve XG04DWTAJ2SJHABT+D met the requirements presented in standards ISO 10497: 2010 and API 607, Seventh Edition, June 2016.


Juha Perttilä
Manager, R&D laboratories
Metso Flow Control Oy


10/05/2017
Lasse Salminen
Surveyor to
Lloyd's Register

FIRE TEST FOR BALL VALVE, TYPE XG04DWTAJ2SJHABT+D

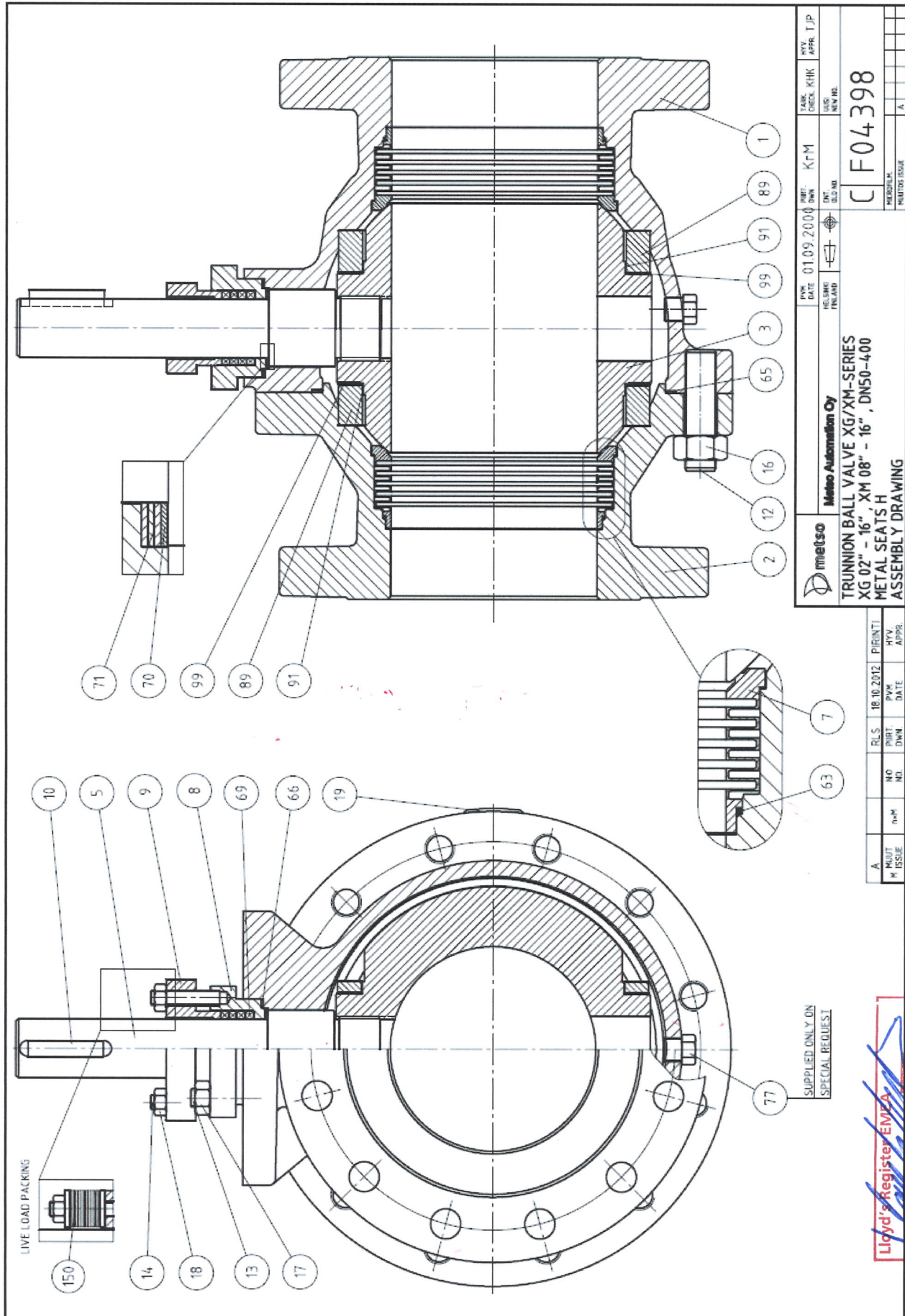
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APPENDICES:

1. Assembly drawing C F04398
2. Parts and material list H146030
3. Dimension drawing C F09108
4. Manual actuators dimension drawing
5. Nameplate details. Location of temperature measurement points
6. Temperatures and pressure measurement results during the test

(Flame 1 and 2 thermocouples,
Body and Bonnet,
Test pressure, Centre cavity)





Lloyd's Register EMFA
Lasse Salminen
Helsinki Office

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Helsinki Office



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09 MAR 2017

Engineering E-Bom
BALL VALVE
XG04DWTADSHABT-D

Ref: number:
Id-code: H146030 Ver 0

Approved By: Pirinen Timo, Helsinki
Approved Date: 27 AUG 2016
Status: Approved - Ready and approved by engineering

Level	Purmo	Id-code	Var	Pcs	Qty	Unit	Description	Description 2	Material	Dwg No	Dwg Rev
1	001	H118647	0	1	1	PCS	BODY	XG04D H-D	ASTM A216 # WCB	F36005	0
2	000	H084219	0	1	1	PCS	PREMACHINED BODY	XG04.100	ASTM A216 # WCB 1.0619	F29511 ECN40265 F03022 ECN42647 F28157	B 0 G 0 F
3	000	H013011	0	1	1	PCS	CAST BODY	XA04D	ASTM A216 # WCB	F03022	G
1	002	H090557	0	1	1	PCS	BODY CAP	NG04D H	ASTM A216 # WCB	F29521	A
2	000	H084220	0	1	1	PCS	PREMACHINING BODY CAP	XG04.100	ASTM A216 # WCB 1.0619	F03027 ECN42647	G 0
3	000	H013024	0	1	1	PCS	CASTING BODY CAP	XA04D	ASTM A216 # WCB	F28159	C
1	003	H001899	0	1	1	PCS	BALL	NG04 HCH	ASTM A351 # CF8M+HCY	F03027	G
2	000	455700	E	1	1	PCS	BLANK BALL	MA04	A351 # CF8M 1.4408	1216880 F70823 ECN44066	D 0 0
1	005	H014160	0	1	1	PCS	SHAFT	25 XG04	ASTM A479 # XM-19	455700	G.1
2	000	203616	0	1	242	m	ROUND BAR	45	ASTM A479 # XM-19 H	F37108 F03656	0 B
1	007	H001993	0	2	1	PCS	BELLOW SEAT	NG04 H	EN 10088-1.4418-ALL 50Nb	203616-KOMD	0
2	000	TA0103	0	1	1	PCS	ROUND BAR	150 L=120	EN 10088-1.4418	ECN40896 1216140	A A
2	000	201038	0	1	18	kg	WELDING POWDER	BALL SHAPE	ALLOY 50Nb		
1	008	H095050	0	1	1	PCS	BONNET	NG100	ASTM A105	F10164	0
Alt	008	H110578	0	1	1	PCS	BONNET	NG100	ASTM A216 # WCB 1.0619		
2	000	H018567	0	0	0	PCS	CASTING BONNET	NG04	ASTM A216 # WCB 1.0619	F04902	0
2	000	203993	0	1	037	m	ROUND BAR	170	ASTM A105		
1	009	47360	H	1	1	PCS	GLAND	30	A351 # CF8M 1.4408	47360 47360-COMD	H 0
Alt	009	47360=1.5	H	0	0	PCS	GLAND	30	A351 # CF8M 1.4408		
1	010	3097	A	1	1	PCS	KEY	1.4X40 BP S186	EN 10088-1.4460	S-192SE 3097-COMME	B 0
1	012	H073209	0	8	8	PCS	STUD	M20X75 ISO 4759-1 GR. A	ASTM A320 # L7M		

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Engineering E-Bom

BALL VALVE

XG04DWTAD2S/HABT-D

Ref.number:

Id-code: H146030 Ver. 0

Approved By: Pirinen Timo, Helsinki

Approved Date: 27 AUG 2016

Status: Approved - Ready and approved by engineering

Level	Purmo	Id-code	Var	Pcs	Qty	Unit	Description	Description 2	Material	Dwg.No	Dwg.Rev
1	013	H085008	0	4		pcs	STUD	M10X55 ISO 4759-1 GR. A	ASTM A320 gr. L7M	F35872	0
1	014	H090663	0	2		pcs	STUD	M10X85 ISO 4759-1 GR. A	ASTM A193 gr. B7		
1	016	H073251	0	8		pcs	HEXAGON NUT	M20 H=D DIN 934	ASTM A194 gr. 2HM	F35216	0
									S-212SE	A	
1	017	H084637	0	4		pcs	HEXAGON NUT	M10 H=D DIN934	ASTM A194 gr. 2HM		
1	018	H090666	0	2		pcs	HEXAGON NUT	M10 H=D DIN934	ASTM A194 gr. 2H		
1	019	H089330	0	1		pcs	IDENTIFICATION PLATE	9.5X167X0.5 BLANCO	AISI 316	F30795	0
									F35109	D	
Alt	019	6413845EW	B	0		pcs	IDENTIFICATION PLATE	FOR FLANGED TYPE BALL VALVES	STAINLESS STEEL		
1	063	236965	A	2		pcs	BACK SEAL	115/109.8X2.5 B	GRAPHITE	611100	1
2	000	200646	0	1	1.35	m	STRIP	13.0X0.4	GRAPHITE		
1	065	004 0630 36	D	1		pcs	BODY SEAL SPIRAL WOUND	7.221 IN OD X 6.657 IN ID X 0.13 IN THK	AISI 316L+GRAPHITE	004 0630 00	D
1	066	236995	0	1		pcs	SHEET RING	56.5/47.5X0.8	GRAPHITE+ AISI 316		
1	069	H080188	0	4		pcs	PACKING RING	30.42,7X6.4	GRAPHITE	F25100	0
1	070	H002072	0	1		pcs	THRUST BEARING	MG03	STELL 68	894980	D
2	000	201952	0	1	.002	m2	SHEET	0.8	ALLOY 6		
1	071	H002072	0	3		pcs	THRUST BEARING	MG03	STELL 68	894980	D
2	000	201952	0	1	.002	m2	SHEET	0.8	ALLOY 6		
1	077	3482	0	1		pcs	HEXAGON PLUG	1/2 NPTF	ASTM A105	S-453SE	F
2	000	201599	0	1	.032	m	HEXAGON BAR	22	DIN 1652-1.0050 K		
1	089	H014221	0	2		pcs	TRUNNION PLATE	XG04	ASTM A743 gr. CA15	F03674	D
2	000	H016222	0	1		pcs	CASTING TRUNNION PLATE	XG04	ASTM A743 gr. CA15	F01735	B
1	091	H002055	0	2		pcs	THRUST BEARING	59.44X0.8	ALLOY 6	1215860	0
2	000	201952	0	1	.003	m2	SHEET	0.8	ALLOY 6		
1	099	H134026	0	2		pcs	TRUNNION BEARING	45.5/43.5X13.5	PTFE+ AISI 316	F63620	A
2	000	H132876	0	1	.002	m2	PLATE	0.96	PTFE+ AISI 316		
1	150	979560	A	2		pcs	DISC SPRING SET	3/8, M10 A25	EN 10083-1.8159+ENP	F18671	0
										979560	C

Documents: F04398

TRUNNION BALL VALVE XG-XM-SERIES

XG03 - 16, DN50-400

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Engineering E-Bom
BALL VALVE
NG04DWTADSHABT-D

Ref.number:
Id-code: H146030 Ver: 0

Approved By: Pirinen Timo, Helsinki
Approved Date: 27 AUG 2016
Status: Approved - Ready and approved by engineering

Level	Parmo	Id-code	Var	Pcs	Qty	Unit	Description	Description 2	Material	Dwg No	Dwg Rev
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Attached Items:

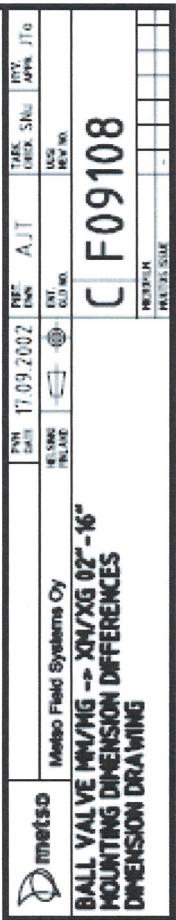
Notes: FIRE SAFE TEST VALVE
NO PAINTING



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TYPE	DN	ISO FLANGE	DIMENSIONS IN mm						
			A	A1	M	N	ØD	P	
MG02	50	F07,F10	216	90	4.763	35	20	22.2	
MG03	80	F10,F12	282	120	6.350	51	30	32.8	
MG04	100	F10,F12,F14	305	137	6.350	51	30	32.8	
MG06	150	F10,F12,F14,F16	403	179	9.525	68	40	44.2	
MG08	200	F12,F14,F16,F25	502	226	12.700	90	55	60.6	
MG10	250	F14,F16,F25,F30	548	285	12.700	90	55	60.6	
MG12	300	F14,F16,F25,F30	648	324	15.875	112	65	71.9	
MG14	350	F16,F25,F30,F35	762	337	19.050	134	75	83.1	
MG16	400	F16,F25,F30,F35	838	394	22.225	146	85	94.6	

TYPE	DN	ISO	DIMENSIONS IN mm					
			FLANGE	A	A1	M	N	P
MM06	150	F10,F12,F14,F16	394	184	9.575	68	40	44.7
MM08	200	F12,F14,F16,F25	457	239	12.700	90	55	60.6
MM10	250	F14,F16,F25,F30	533	267	12.700	90	55	60.6
MM12	300	F14,F16,F25,F30	610	305	15.875	112	65	71.9
MM14	350	F16,F25,F30,F35	686	337	19.050	134	75	83.1
MM16	400	F16,F25,F30,F35	762	376	22.225	146	85	94.6



NAMEPLATE DETAILS

TYPE : XG04DWT AJ2SJHABT+D

No. : H146030

BODY : _WCB_

Tmax : _+230 °C_

TRIM : _CF8M + HCr_

Tmin : _-30 °C_

SHAFT : _XM-19_

RATING : _ASME 300_

SEAT : _1.4418_

dPs : _51.1 BAR_

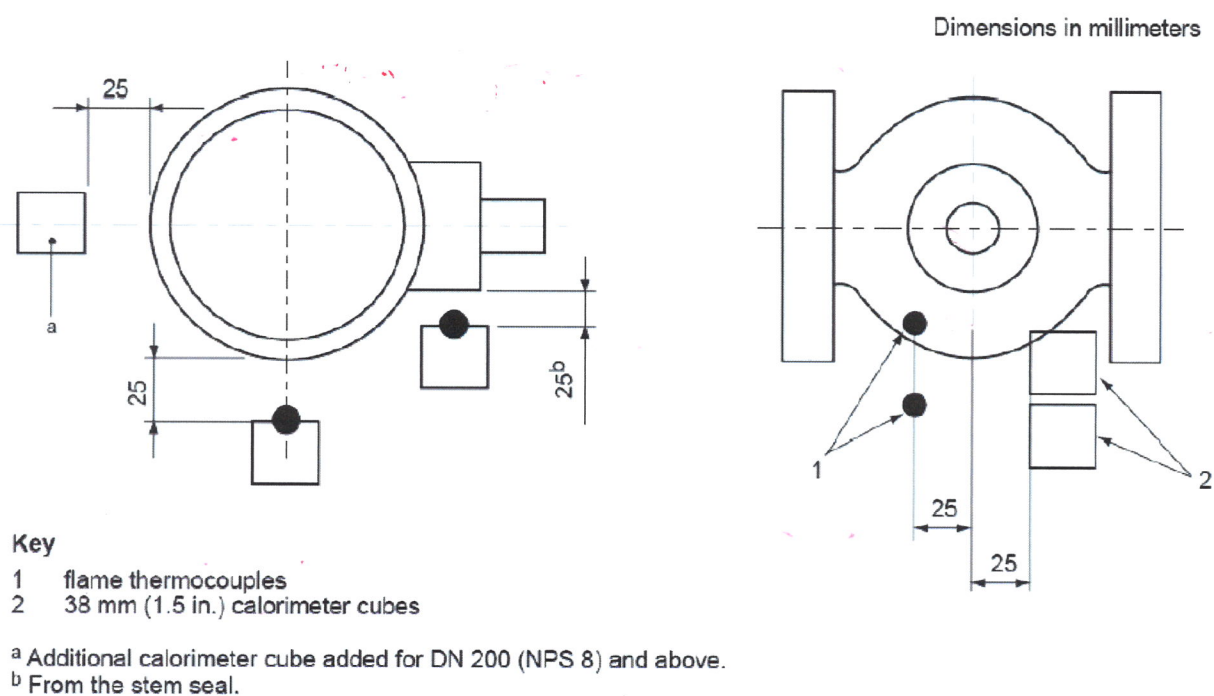


Figure 4—Location of Temperature Measurement Sensors for All Other Valves (Nonmetallic Seated Valves Larger Than DN 100, NPS 4, Class 150 and Class 300, and All Valve Sizes Class 300)

