

Project: Fire-safe testing

Client: Metso Automation Oy,
Helsinki, Finland

Office: HELSINKI

Clients Order Number: 7130019, 7130026, 7130027

Date: 01 December 2003

Order Status: Complete

Inspection Dates

First: 14 August 2003

Final: 21 November 2003

This certificate is issued to Metso Automation Oy to certify that the undersigned Surveyor attended their works in Helsinki on the above dates for the purpose of witnessing Fire Test of one (1) soft seated full bore ball valve designed for bi-directional installation.

Particulars of the valve

Type: XT08CWYYJ2SPYTBF+D
Rating: ASME Class 150
Size: NPS 8"
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 API 607, Fourth Edition, May 1993. 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. Copy of the Test Report is attached to this certificate.

Additional valve qualification

In accordance with, and subject to the limitations of the above standard valves sized 6" and larger, as well as valves with pressure rating ASME 300 are also qualified on the basis of the above test.



Päivi Björkestam
Surveyor to Lloyd's Register EMEA

A member of the Lloyd's Register Group

**FIRE TEST FOR BALL VALVE,
TYPE XT08CWYYJ2SPYTBF + D**

2 (4)

OBJECT: Fire test of ball valve XT08CWYYJ2SPYTBF + D in accordance with standard API 607, Fourth Edition, May 1993. (Fire Test for Soft-Seated Quarter-Turn Valves).

SPECIMEN: The test valve XT08CWYYJ2SPYTBF + D is a soft seated full bore ball valve manufactured by METSO AUTOMATION OY Helsinki, Finland. The valve is designed for bi-directional installation. The size of the valve is NPS 8" and pressure class of the body is ASME 150. The manual actuator M15 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 2 bar during the test. The test was conducted at the Laboratory of METSO AUTOMATION (FS RTD) OY Helsinki on November 21, 2003.

The temperatures and test pressures during the test were recorded with a datalogger. 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 30 minutes and it was cooled with water-spray to lesser than 100°C. The cooling time was 9 minutes.

**FIRE TEST FOR BALL VALVE,
TYPE XT08CWYYJ2SPYTBF + D**

3 (4)

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

TABLE 1.
November 21, 2003

TEST PHASE	TIME min.	LEAKAGE ml/in/min	
		measured	allowed
Start	0	0	
Required flame temperature	1	0	
Seat leakage during heating	32	5	100
External leakage heating + cooling	41	0	25
Operation of valve	42		
Stabilization period	47		
5 min seat leakage	52	18	20
5 min external leakage	52	0	25

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 XT08CWYYJ2SPYTBF + D met the requirements presented in standard API 607, Fourth Edition: 1993.



Otso Numento
Laboratory Engineer
METSO AUTOMATION OY
FS RTD



Päivi Brorkestam
Surveyor to Lloyd's
Register Helsinki Office



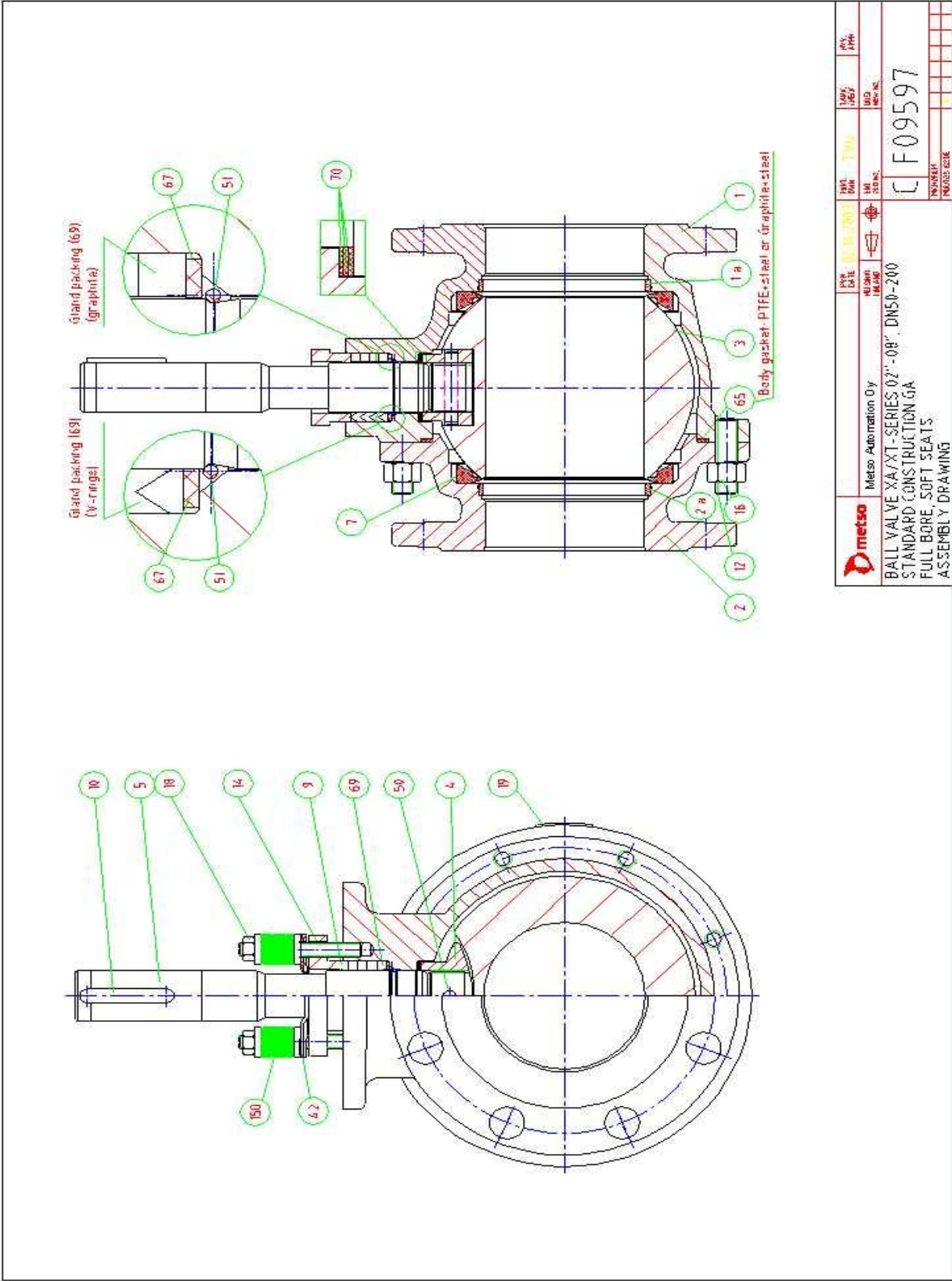
**FIRE TEST FOR BALL VALVE,
TYPE XT08CWYYJ2SPYTB + D**

4 (4)

APPENDICES:

1. Assembly drawing C F09597
2. Parts and material list H033750
3. Dimension drawing C F04219
4. Manual actuators dimension drawing.
5. Nameplate details. Location of temperature measurement points.
6. Temperatures and pressure measurement results during the test.

(T1 and T2= Flame thermoc,
T3= Bonnet, T4= Body.
P1= test pressure, p2= unused, p3= Center cavity.)



Customer C-Bom

XT08CWYYJ2SPYTB

BALL VALVE

Id-code: H033750

Rev: B

Page 1(2)

Part	Id-code	Description	Material	Qty
001	H033760	BODY	ASTM A216 gr. WCB	1
001a	H033734	RING	AISI 316	1
002	H033762	BODY CAP	ASTM A216 gr. WCB	1
002a	H033734	RING	AISI 316	1
003	H021418	BALL	A351 gr. CF8M/1.4408	1
004	1182900	SPLINE DRIVER	A351 gr. CF8M/1.4581	1
005	1160820	SHAFT	ASTM A479 gr. XM-19	1
007	002-1609-50	SEAT	PTFE	2
000	093-0453-50	BLANK SEAT	PTFE	1
009	46290	CASTING GLAND	A351 gr. CF8M/1.4408	1
010	3101	KEY	AISI 329	1
012	235035	STUD	ASTM A193 gr. B7	12
014	235033	STUD	ASTM A193 gr. B7	2
016	3345	HEXAGON NUT HEAVY	ASTM A194 gr. 2H	12
018	3343	HEXAGON NUT HEAVY	ASTM A194 gr. 2H	2
019	H028251	IDENTIFICATION PLATE	AISI 304	1
042	941260	RETAINER PLATE	316L/1.4435	2
050	H013709	LOCKING PIN	ASTM A479 gr. XM-19	1
051	1160923	LOCKING WIRE	UNS N06625	1
065	004-0590-36	BODY GASKET	GRAPHITE+AISI 316	1
067	1160903	SUPPORT RING	AISI 316	1
069	233399	PACKING RING	GRAPHITE+PTFE	4
070	236308	THRUST BEARING	PTFE+C+GF (MTFE)	3
077	3601	HEXAGON PLUG	DIN 1652-1.0050 K	1
150	979580	DISC SPRING SET	EN 10083-1.8159+ENP	2

Documents: F09597 BALL VALVE XA/XT-SERIES 02"-08", DN50-200 Spare part sets:

Notes: THIS IS A VALVE FOR TESTING FIRE-SAFE CONSTRUCTION FOR M2 AND X- SERIES FLEXIBLE LIP PTFE SEATED TYPE. YY1= FIRE SAFE INSERT ON BODY AND CAP, SHAFT AXIAL LOCKING FROM M2. Y2=M2 SOFT SEAT T.



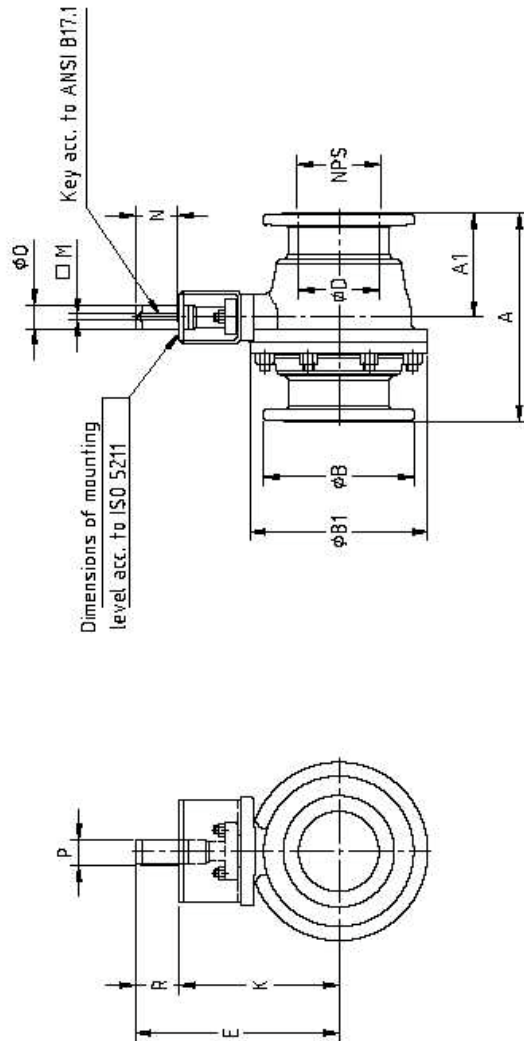
Customer C-Bom
XT08CWYYJ2SPYTBFB
BALL VALVE

Id-code: H033750
Rev: B

Page 2(2)

Part	Id-code	Description	Material	Qty
------	---------	-------------	----------	-----

STUD/NUTS B7/2H.

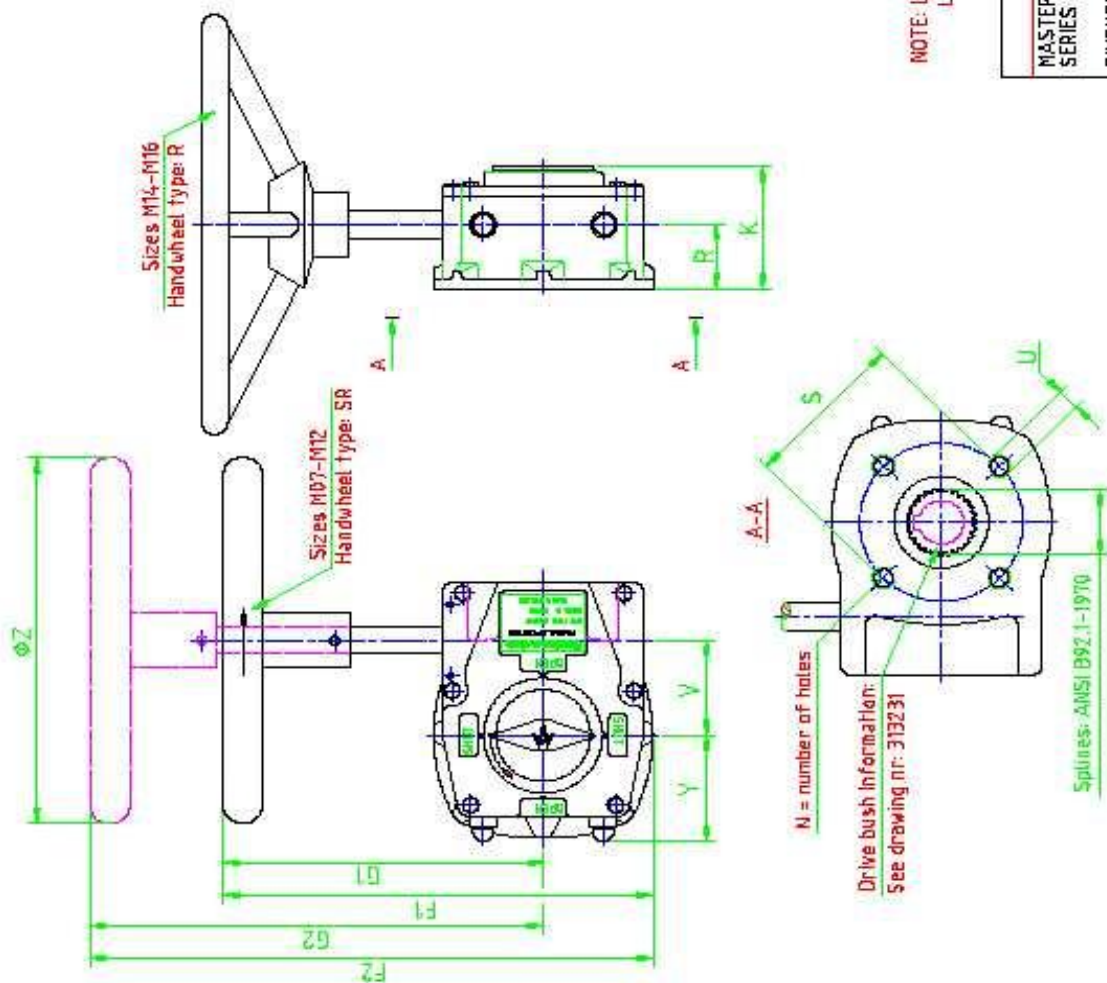


TYPE	SIZE	ISO FLANGE	DIMENSIONS mm (in)													kg (lbs)
			A	A1	ØB	ØBT	ØD	E	K	□ M	N	ØD	P	R		
XT_C	2	F07, F10	178 (7.01)	79 (3.11)	157.4 (6.1)	14.6 (0.575)	50.8 (2)	215 (8.46)	168 (6.6)	6.35 (0.25)	4.6 (0.18)	25 (0.98)	27.8 (1.09)	4.7 (1.85)	11 (25)	
	3	F07, F10, F12, F14	228 (9.09)	101.5 (4)	190.5 (7.5)	19.0 (0.748)	76.2 (3)	237 (9.33)	190 (7.48)	6.35 (0.25)	4.6 (0.18)	25 (0.98)	27.8 (1.09)	4.7 (1.85)	25 (56)	
	4	F10, F12, F14	228 (9.02)	110.5 (4.35)	228.6 (9)	24.1 (0.949)	101.6 (4)	309 (12.17)	256 (9.84)	9.52 (0.37)	5.8 (0.28)	35 (1.38)	39.1 (1.54)	5.9 (2.32)	38 (86)	
	6	F14, F16	394 (15.5)	197 (7.76)	279.5 (11)	34.2 (1.344)	306 (11.5)	386 (15.2)	305 (12)	12.70 (0.5)	8.0 (0.315)	4.5 (0.177)	50.4 (1.99)	8.1 (3.19)	93 (205)	
	8	F14, F16, F25	457 (17.99)	228.5 (9)	342.9 (13.5)	43.0 (1.693)	203.2 (8)	476 (18.74)	305 (11.6)	12.70 (0.5)	9.0 (0.354)	5.5 (0.216)	60.6 (2.38)	9.1 (3.58)	160 (359)	
XA_D	2	F07, F10	276 (10.5)	89 (3.5)	165.1 (6.5)	14.6 (0.575)	50.8 (2)	215 (8.46)	168 (6.6)	6.35 (0.25)	4.6 (0.18)	25 (0.98)	27.8 (1.09)	4.7 (1.85)	15 (33)	
	3	F07, F10, F12, F14	282 (11.1)	94 (3.555)	209.6 (8.25)	20.0 (0.87)	76.2 (3)	237 (9.33)	190 (7.48)	6.35 (0.25)	4.6 (0.18)	25 (0.98)	27.8 (1.09)	4.7 (1.85)	35 (75)	
	4	F10, F12, 14	305 (12.0)	152.6 (6)	254 (10)	25.4 (1)	101.6 (4)	309 (12.17)	256 (9.84)	9.52 (0.37)	5.8 (0.28)	35 (1.38)	39.1 (1.54)	5.9 (2.32)	59 (130)	
	6	F14, F16	407 (15.87)	201.5 (7.93)	317.5 (12.5)	35.3 (1.39)	152.4 (6)	306 (11.5)	305 (12)	12.70 (0.5)	8.0 (0.315)	4.5 (0.177)	50.4 (1.99)	8.1 (3.19)	129 (284)	
	R	F14, F16, F25	507 (19.75)	244.9 (9.69)	387.5 (15.25)	45.7 (1.8)	203.2 (8)	476 (18.74)	305 (11.6)	12.70 (0.5)	9.0 (0.354)	5.5 (0.216)	60.6 (2.38)	9.1 (3.58)	255 (567)	

FACE-TO-FACE DIMENSIONS ACC. TO ASME B16.10
PRESSURE RATINGS C=ASME 150, D=ASME 300
FLANGED, FULL BORE
Valve is shown in closed position

			FORM DATE 30.05.2000	PART: 004	RLS	TABLE HI	REV. APP. TJP
BALL VALVE XT/XA 2"-8"				REV. DATA		DATA REV. NO.	
DIMENSION DRAWING				C F 0 4 2 1 9			
Nales Field Controls Oy			HELSINKI FINLAND	MODIFIK.	MODIF. ISSUE	-	

Neles Field Controls Oy



UNIT SIZE	M107	M110	M112	M114	M115	M116
INPUT TORQUE, IN INCH	22.7	45.5	88.5	111	166	170
MAX OUTPUT TORQUE, IN INCH	258	500	1000	1600	3400	4504
TURNS TO CLOSE	10	10	10.5	15	17	22
HEX HEAD DIA. 2	105	240	254	457	450	600
FL WITH STANDARD INPUT SHAFT	162	163	200	278	330	391
FL WITH STANDARD INPUT SHAFT	196	227	265	370	457	549
FL WITH EXTENDED INPUT SHAFT	-	239	282	354	406	446
FL WITH EXTENDED INPUT SHAFT	-	297	360	453	532	624
V	30.5	52	66.7	89.5	123	154
W	4.5	5.8	7.5	8.6	11.7	15.4
K	5.8	4.7	8.1	93.5	105.5	134.5
R	24.5	35	42	50	54	54
MAX STEM HEIGHT	51	57	72	81	92	113
MAX VALVE SHAFT DIA.	25	25	30	45	55	70
SQUARES ANSI B92.1-7070	3MT 20/41	3MT 20/41	3MT 30/42	4MT 34/33	4MT 30/34	4MT 40/36
WEIGHT (Lb)	2.9	5	9.5	18	30.7	45.2
VALVE ADJUSTING FLANGE						
ISO 521 TYPE	P05/P07	P10	P12	P14	P14	P16/P25
\$	50	102	225	140	123	105
N	6	4	4	4	4	4
NUMBER OF HOLES	6	4	4	4	4	8
U.D.I.A.	P16	P16	P16	P16	P20	H20/P16
DEPTH	4.5	10	11	15	15	15

			PMT DATE	DATE REC'D	REV. DATE	TIME CHG.	WFLA APPR.
MASTERGEAR MANUAL OPERATOR SERIES MD7...M16							C 313229
DIMENSION DRAWING							
NEW-TEMPERARY							
RECORD NUMBER							
INSTRUMENT NO./TOL. S.E.S.							

TYPE : XT08CWYYJ2SPYTBF+D

No. : H033750

BODY : _WCB_ Tmax : _+200 °C_

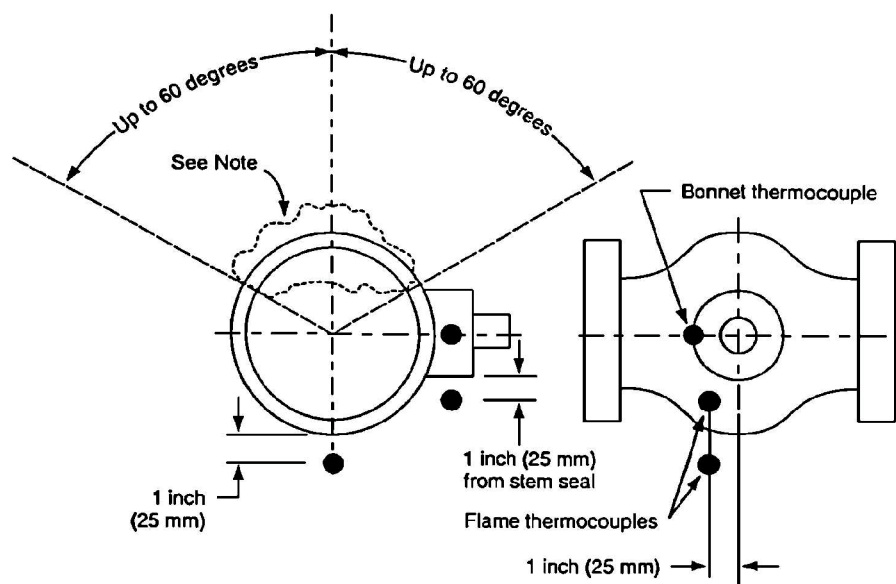
TRIM : _316_ Tmin : _-29 °C_

SHAFT : _XM - 19_ RATING: _ASME 150_

SEAT : _PTFE_ dPs : _19.6 BAR_

NAMEPLATE DETAILS

FIRE TEST FOR SOFT-SEATED QUARTER-TURN VALVES



Note: The body thermocouple shall be installed in this area. When installed externally, the body thermocouple shall be recessed into the valve body a distance of $\frac{1}{2}$ the thickness of the wall.

Figure 3—Installation of Temperature Measurement Sensors for Valves Rated Lower Than Class 900

