

Project: Fire-safe testing

Client: Metso Automation Oy,
Helsinki, Finland

Office: Helsinki

Clients Order Number: 7130023

Date: 13 November 2003

Order Status: Complete

Inspection Dates

First: 10 October 2003

Final: 17 October 2003

This certificate is issued to

Metso Automation Oy, Helsinki, Finland to certify that the undersigned Surveyor attended their works in Helsinki on the above date 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: XT04CWGAJ2SPTTBA+D
Rating: ASME Class 150
Size: NPS 4"
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.

Additional valve qualification

In accordance with, and subject to the limitations of the above standard valves sized 3" to 6", as well as valves with pressure rating ASME 300 are also qualified.



Mikael Vartio
Surveyor to Lloyd's Register EMEA

A member of the Lloyd's Register Group

**FIRE TEST FOR BALL VALVE,
TYPE XT04CWGAJ2SPTTBA + D**

2 (4)

OBJECT: Fire test of ball valve XT04CWGAJ2SPTTBA + D in accordance with standard API 607, Fourth Edition, May 1993. (Fire Test for Soft-Seated Quarter-Turn Valves).

SPECIMEN: The test valve XT04CWGAJ2SPTTBA + 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 4" and pressure class of the body is ASME 150. The manual actuator M14 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 October 17, 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 8 minutes.

**FIRE TEST FOR BALL VALVE,
TYPE XT04CWGAJ2SPTTBA + D**

3 (4)

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

TABLE 1.
October 17, 2003

TEST PHASE	TIME min.	LEAKAGE ml/in/min	
		measured	allowed
Start	0	0	
Required flame temperature	1	0	
Seat leakage during heating	32	6	100
External leakage heating + cooling	41	0	25
Operation of valve	42		
Stabilization period	47		
5 min seat leakage	52	1	20
5 min external leakage	52	12.5	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 XT04CWGAJ2SPTTBA met the requirements presented in standard API 607, Fourth Edition: 1993.


Otso Numento
Laboratory Engineer
METSO AUTOMATION OY
FS RTD


Mikael Vartio
Surveyor to Lloyd's
Register

Lloyd's Register EMEA Mikael Vartio Initials MV Helsinki Office	
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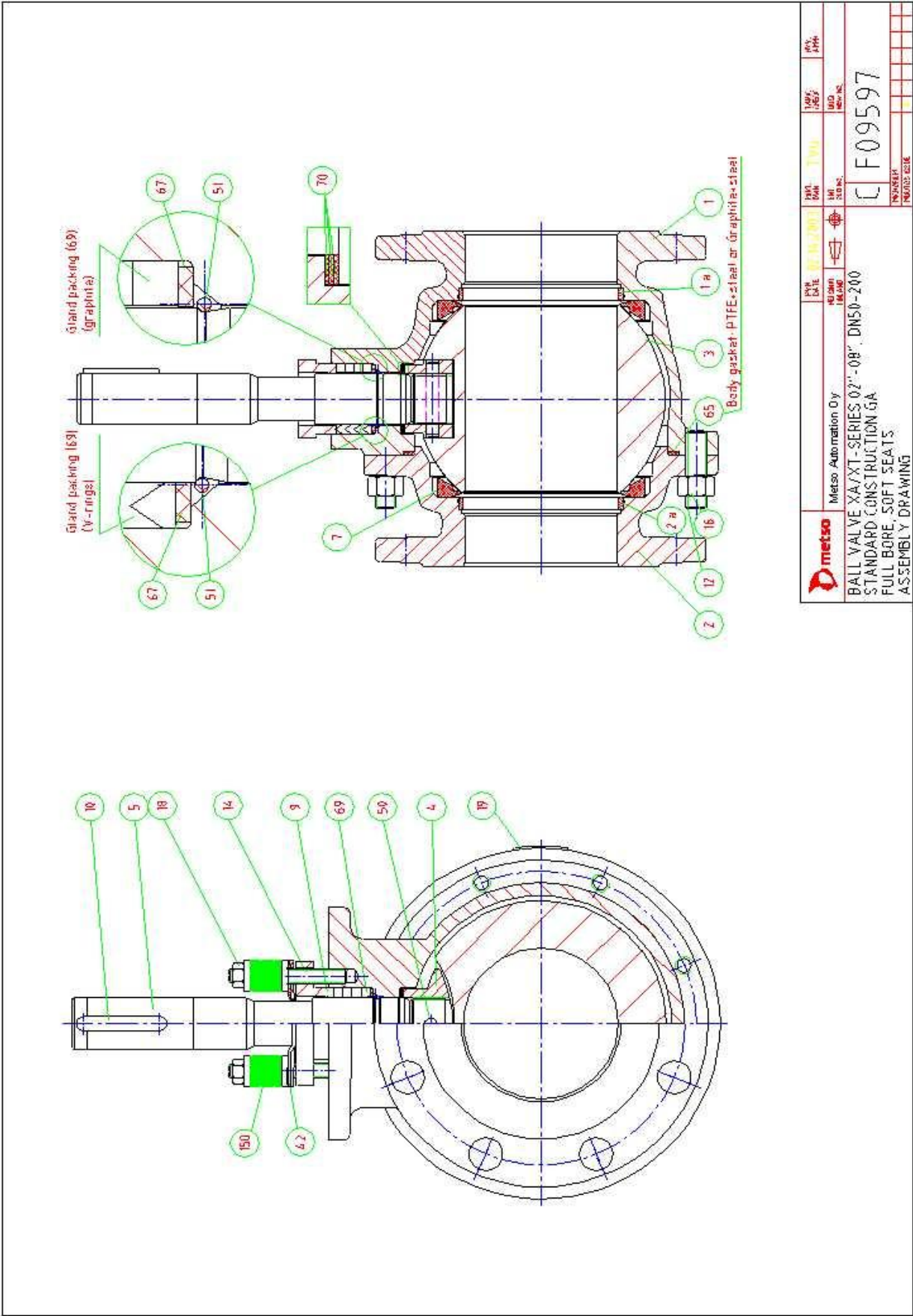
**FIRE TEST FOR BALL VALVE,
TYPE XT04CWGAJ2SPTTBA + D**

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APPENDICES:

1. Assembly drawing C FO9597
2. Parts and material list H037210
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
XT04CWGA2SPTTBA
BALL VALVE

Id-code: H037210 Rev: 0

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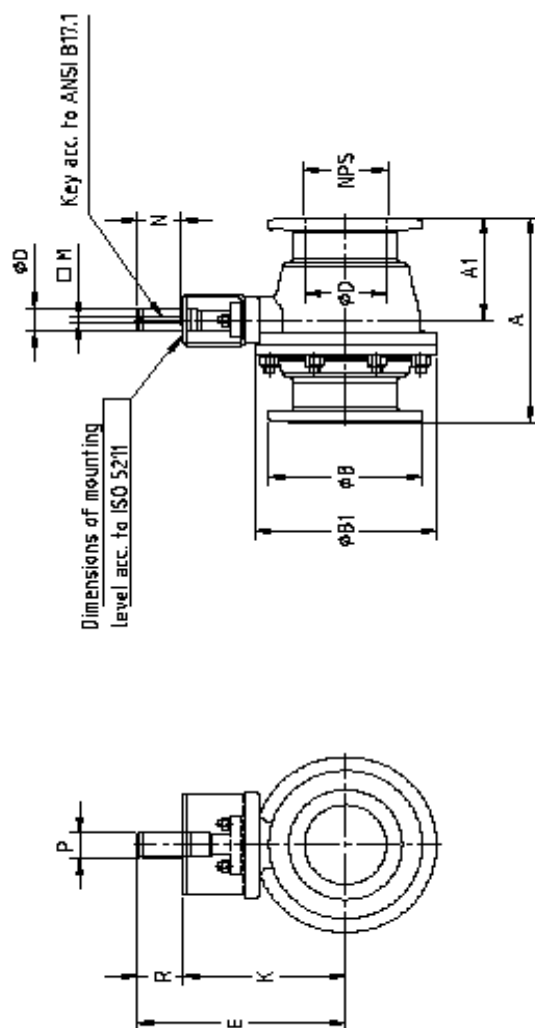
Part	Id-code	Description	Material	Qty
001	H033366	BODY	ASTM A216 gr. WCB	1
001a	H033732	RING	AISI 316	1
002	H033367	BODY CAP	ASTM A216 gr. WCB	1
002a	H033732	RING	AISI 316	1
003	H021415	BALL	A351 gr. CF8M1.4408	1
004	1182840	SPLINE DRIVER	A351 gr. CF8M1.4581	1
005	1172860	SHAFT	ASTM A479 gr. XM-19	1
007	002-1408-50	SEAT	PTFE	2
009	46270	CASTING GLAND	A351 gr. CF8M1.4408	1
010	3099	KEY	AISI 329	1
012	234938	STUD	ASTM A193 gr. B7	6
014	H016753	STUD	ASTM A193 gr. B7	2
016	3344	HEXAGON NUT HEAVY	ASTM A194 gr. 2H	6
018	3342	HEXAGON NUT HEAVY	ASTM A194 gr. 2H	2
019	H028251	IDENTIFICATION PLATE	AISI 304	1
042	932760	RETAINER PLATE	316L/1.4435	2
050	H013707	LOCKING PIN	ASTM A479 gr. XM-19	1
051	1160921	LOCKING WIRE	UNS N06625	1
065	004-0630-36	BODY GASKET	GRAPHITE-AISI 316	1
067	1160901	SUPPORT RING	AISI 316	1
069	233396	PACKING RING	GRAPHITE-PTFE	4
070	004-0701-49H	THRUST BEARING	PTFE-C-CF (MTFE)	3
077	3480	HEXAGON PLUG	DIN 1652-1.0050	1
150	979560	DISC SPRING SET	EN 10083-1.8159+ENP	2
000	234527	DISC SPRING	EN 10083-1.8159+ENP	12

Spare part sets:

Documents: P09597 BALL VALVE XA/XT-SERIES 02" 08" DN50-200

Notes: THIS IS A VALVE FOR TESTING FIRE-SAFE CONSTRUCTION
FOR X- SERIES FLEXIBLE LIP PTFE SEATED TYPE.

MATERIALS HAVE BEEN CHOSEN SO THAT THE TEST COVERS ALL MATERIALS USED IN STANDARD SERIES.

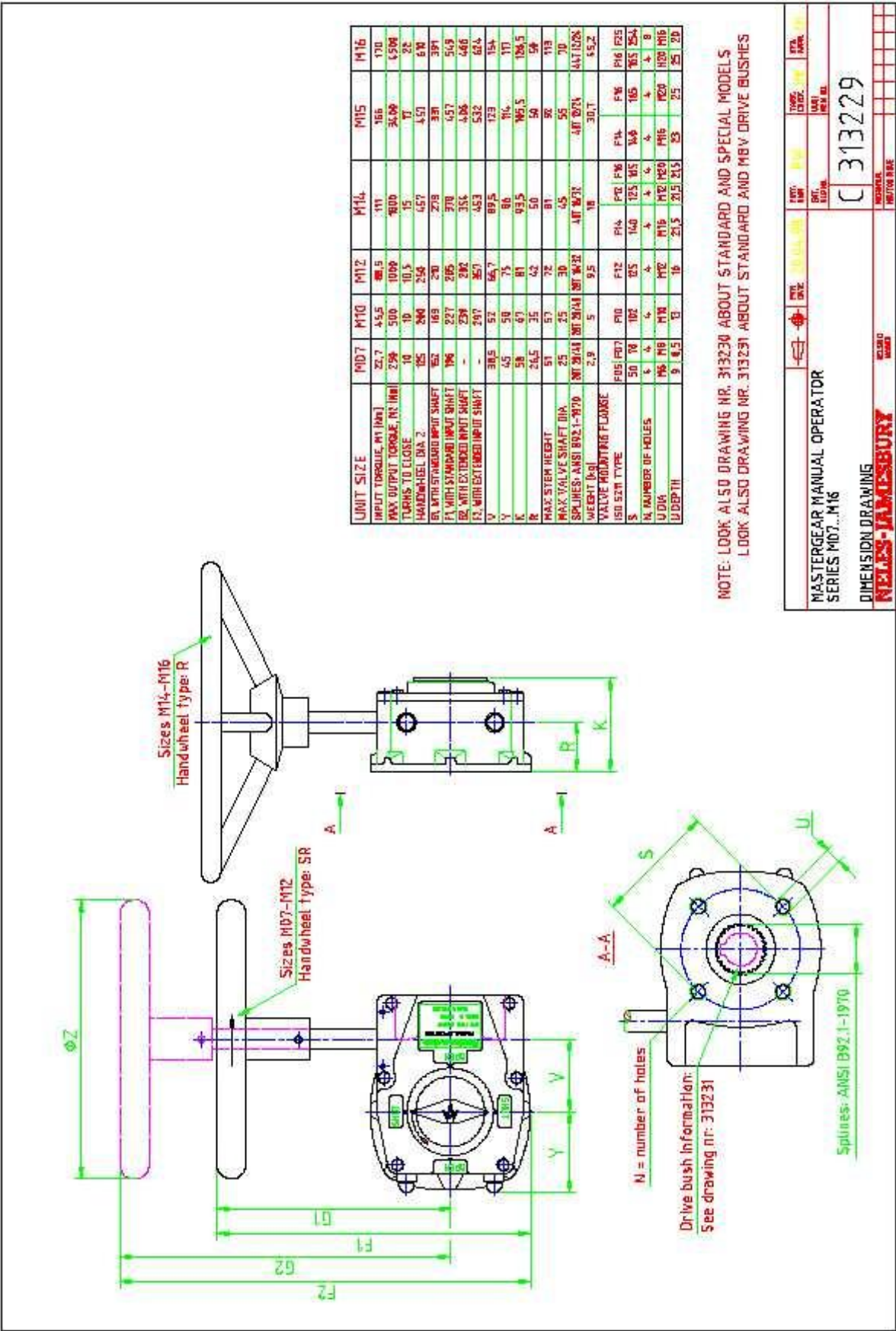


TYPE	SIZE	ISO FLANGE	DIMENSIONS mm (in)														R	K.G (lbs.)
			A	A1	ØB	ØB1	ØD	E	K	□ H	N	ØO	P	Q				
XT_C	2	F47, F18	178 (7.01)	79 (3.12)	652.4 (6)	146 (5.75)	50.8 (2)	215 (8.46)	168 (6.6)	6.35 (0.25)	46 (1.81)	25 (0.98)	27.8 (1.09)	4.7 (0.18)	11 (2)			
	3	F47, F18, F20, F16	203 (7.99)	115 (4)	700.5 (17.5)	190 (7.48)	76.2 (3)	237 (9.33)	190 (7.48)	6.35 (0.25)	46 (1.81)	25 (0.98)	27.8 (1.09)	4.7 (0.18)	35 (15)			
	4	F10, F12, F16	229 (9.02)	110.5 (4.35)	728.6 (19)	214 (8.43)	101.6 (4)	319 (12.52)	279 (10.95)	9.52 (0.37)	58 (2.28)	35 (1.38)	31.1 (1.22)	59 (2.32)	29 (10)			
	6	F14, F16	394 (15.51)	187 (7.36)	279.5 (11)	342 (13.46)	62.4 (6)	366 (14.4)	385 (15)	12.7 (0.5)	80 (3.15)	45 (1.77)	58.6 (11.98)	81 (3.18)	92 (26)			
	8	F14, F16, F25	457 (17.99)	278.5 (10.95)	342.1 (13.5)	431 (16.93)	203.2 (8)	476 (18.74)	385 (15.16)	12.7 (0.5)	90 (3.54)	55 (2.16)	60.6 (2.39)	91 (3.18)	100 (45)			
XA_D	2	F47, F18	216 (8.5)	89 (3.5)	651 (16.5)	146 (5.75)	50.8 (2)	215 (8.46)	168 (6.6)	6.35 (0.25)	46 (1.81)	25 (0.98)	27.8 (1.09)	4.7 (0.18)	15 (3)			
	3	F47, F18, F20, F16	282 (11)	141 (5.55)	209.8 (8.25)	200 (7.87)	76.2 (3)	237 (9.33)	190 (7.48)	6.35 (0.25)	46 (1.81)	25 (0.98)	27.8 (1.09)	4.7 (0.18)	35 (15)			
	4	F10, F12, F16	305 (12.01)	152.5 (6)	254 (10)	254 (10)	101.6 (4)	319 (12.52)	279 (10.95)	9.52 (0.37)	58 (2.28)	35 (1.38)	31.1 (1.22)	59 (2.32)	29 (10)			
	6	F14, F16	443 (17.43)	215 (8.48)	371.5 (12.5)	353 (13.9)	62.4 (6)	366 (14.4)	385 (15)	12.7 (0.5)	80 (3.15)	45 (1.77)	58.6 (11.98)	81 (3.18)	109 (28)			
	8	F14, F16, F25	509 (19.99)	294 (11.57)	443 (17.43)	443 (17.43)	203.2 (8)	476 (18.74)	385 (15.16)	12.7 (0.5)	90 (3.54)	55 (2.16)	60.6 (2.39)	91 (3.18)	105 (46)			

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

		PRTG DATE 30.05.2000	PRTG DATE RLS	TUBES CODE HI	PRT. MARK T.P
BALL VALVE XT XA 2"-8" DIMENSION DRAWING		ENCL. SUPPL.	ENCL. SUPPL.	TUBES CODE HI	PRT. MARK T.P
Nolas Field Controls Ov		C F04219	C F04219	TUBES CODE HI	PRT. MARK T.P

Neles Field Controls Ov



TYPE : XT04CWGAJ2SPTTBA+D

No. : H037210

BODY : _WCB_ Tmax : _+200 °C_

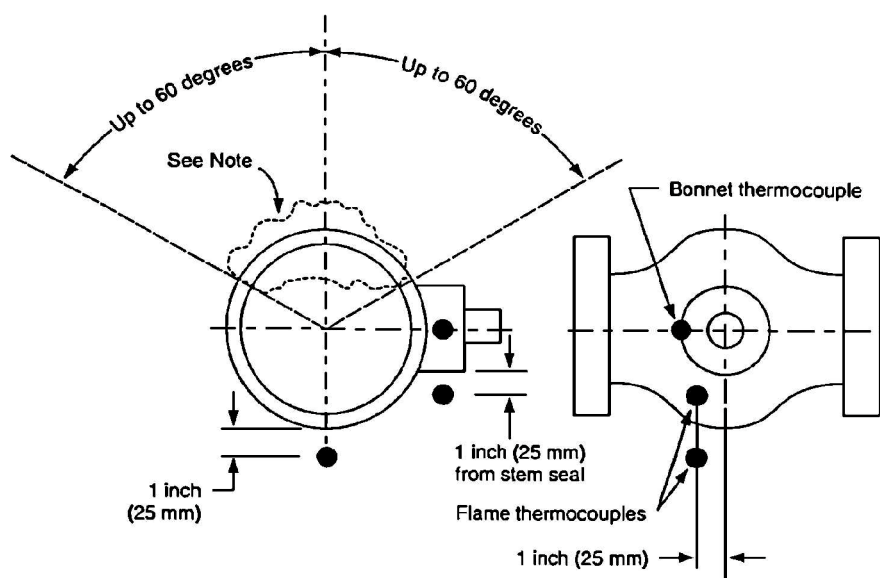
TRIM : _316_ Tmin : _-29 °C_

SHAFT : _XM - 19_ RATING: _ASME 150_

SEAT : _PTFE_ dPs : _19.6 BAR_

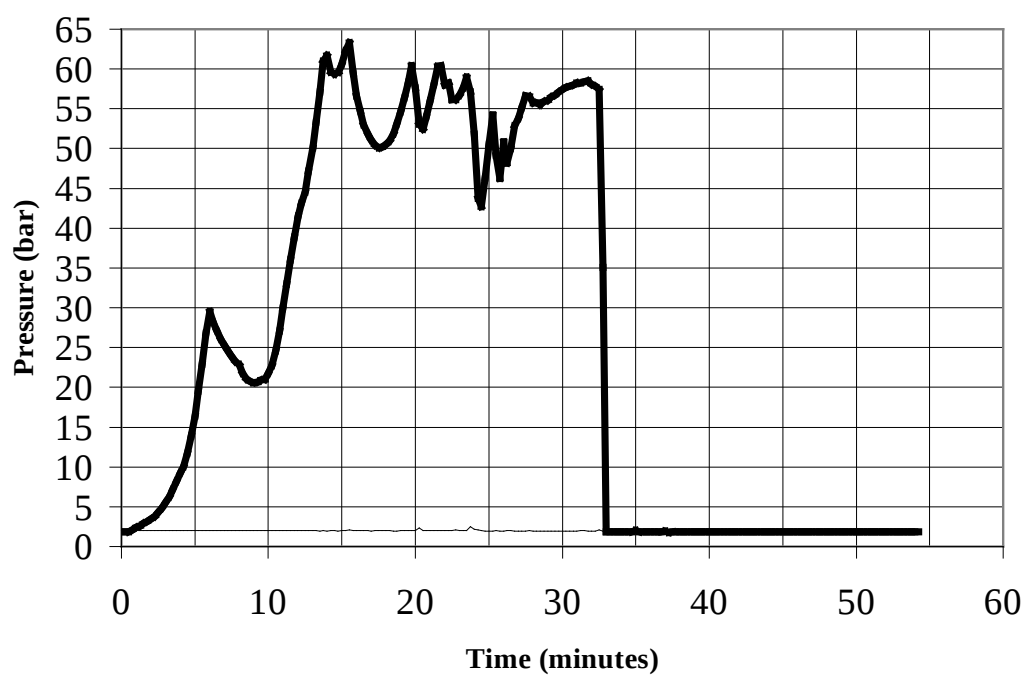
NAMEPLATE DETAILS

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

Time-Pressure-graph**Time-Temperature-graph**
Valve type : XT04CWGAJ2SPTTBA+D