



Project: Fire-Safe Testing

Certificate Number: HEL 0100647/1

Client: Metso Field Systems Oy,
Helsinki, Finland

Office: Helsinki

Client's Order Number: 7110025

Date: 23 November 2001

Order Status: Complete

Inspection Dates

First: 30 May 2001

Final: 30 May 2001

This certificate is issued to Metso Field Systems Oy to certify that the undersigned Surveyor attended their works in Helsinki on the above date for the purpose of witnessing fire tests of one (1) soft seated full bore ball valve designed for unidirectional installation and manufactured by Metso Field Systems Oy.

Particulars of Valve

Type: XT04CWTRJ2SPTTBA

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.

Before commencing the tests the testing apparatus was examined and found to be in accordance with the above standard.

Additional Valve Qualification

In accordance with, and subject to the limitations of, the above standard, valves 3, 4, 5 and 6 as well as valves with pressure ratings ASME 300 are also qualified.

Matti Niskala for Jan Bergmann
Surveyor to Lloyd's Register

**FIRE TEST FOR BALL VALVE,
TYPE XT04CWTRJ2SPTTBA**

2 (4)

OBJECT: Fire test of ball valve XT04CWTRJ2SPTTBA in accordance with standard API 607, Fourth Edition, May 1993. (Fire Test for Soft-Seated Quarter-Turn Valves).

SPECIMEN: The test valve XT04CWTRJ2SPTTBA is a soft seated full bore ball valve manufactured by METSO FIELD SYSTEMS OY Helsinki, Finland. The valve is designed for unidirectional 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 FIELD SYSTEMS OY Helsinki on May 30, 2001.

The temperatures and test pressures during the test were recorded with a datalogger. The results are shown in Appendix 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 100°C. The cooling time was 6 minutes.

**FIRE TEST FOR BALL VALVE,
TYPE XT04CWTRJ2SPTTBA**

3 (4)

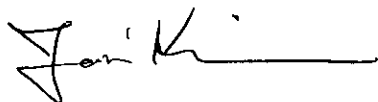
The through-seat leakages and external leakages of the test valve during the test are shown in Table 1 below.

TABLE 1.
May 30, 2001.

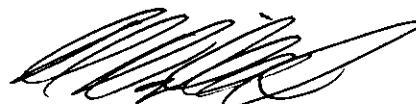
TEST PHASE	TIME min.	LEAKAGE ml/in/min	
		measured	allowed
Start	0	0	
Required flame temperature	0.5	0	
Seat leakage during heating	0.5-30.5	0	100
External leakage heating + cooling	30.5-40.5	0	25
Operation of valve	40.5-43		
Stabilization period	43-48		
5 min seat leakage	48-53	0.5	20
5 min external leakage	48-53	2.5	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 XT04CWTRJ2SPTTBA met the requirements presented in standard API 607, Fourth Edition: 1993.



Jari Kirmanen
Laboratory Engineer
METSO FIELD SYSTEMS OY



PP Jan Bergman
Surveyor to Lloyd's
Register

**FIRE TEST FOR BALL VALVE,
TYPE XT04CWTRJ2SPTTBA**

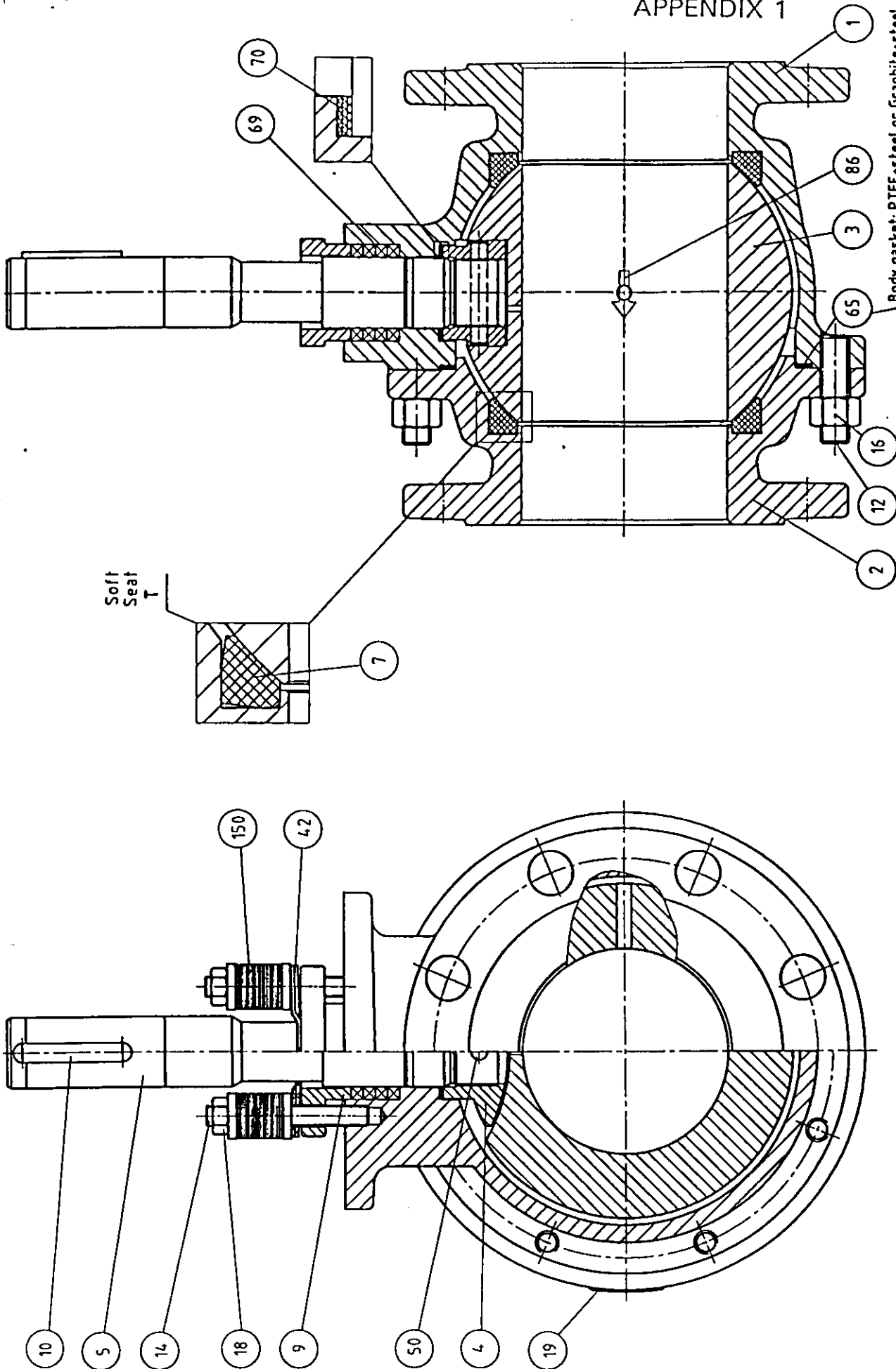
4 (4)

APPENDICES:

1. Assembly drawing C FO6458
2. Parts and material list H025379
3. Dimension drawing CF04219
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, T5= unused.
p1= Test pressure, p2= unused, p3= unused .)

APPENDIX 1



Body gasket: PTFE-steel or Graphite-steel

metso	Metso Field Systems Oy	PVM DATE	11.4.2001	REV.	1	DATE	11.4.2001	REV.	1
		DESIGN	KLA	DATE	11.4.2001	REV.	1	DATE	11.4.2001
BALL VALVE XA/XT-SERIES 02"-08", DN50-200		SOFT SEATS T, WITH PRESSURE EQUALISING HOLE		FULL BORE		ASSEMBLY DRAWING		C F06458	

A	11590	RLS	30.3.01	HYV.	APPR.
M	11590	RLS	30.3.01	HYV.	APPR.
M	11590	RLS	30.3.01	HYV.	APPR.

Customer C-BOM

XT04CWTRJ2SPTTBA

BALL VALVE

Id-code: H025379

Rev: 0

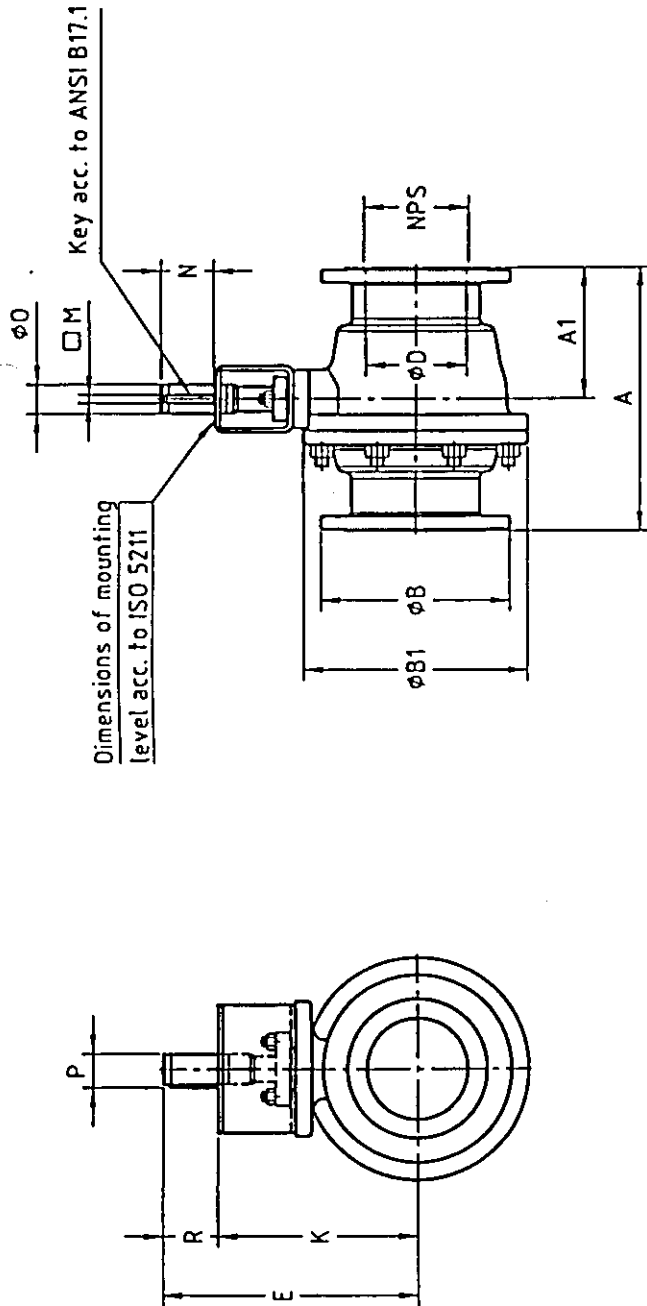
Page 1

Part	Id-code	Description	Material	Qty
001	H013556	BODY	ASTM A216 gr. WCB	1
002	H013588	BODY CAP	ASTM A216 gr. WCB	1
003	H023177	BALL	A351 gr. CF8M/1.4408	1
000	943120	BALL	A351 gr. CF8M/1.4408	1
004	1182840	SPLINE DRIVER	A351 gr. CF8M/1.4581	1
005	1172860	SHAFT	ASTM A479 gr. XM-19	1
007	H014604	BALL SEAT	PTFE	2
009	46270	CASTING GLAND	A351 gr. CF8M/1.4408	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
042	932760	RETAINER PLATE	316L/1.4435	2
050	H013707	LOCKING PIN	ASTM A479 gr. XM-19	1
065	004-0630-36	BODY GASKET	GRAPHITE+AISI 316	1
069	233396	PACKING RING	GRAPHITE+PTFE	4
070	004-0701-49/H	THRUST BEARING	PTFE+C+GF (MTFE)	3
086	617041	TIGHT DIRECTION ARROW	ALUMINIUM ALLOY	1
150	979560	DISC SPRING SET	EN 10083-1.8159+ENP	2
000	234527	DISC SPRING	EN 10083-1.8159+ENP	12

Documents: F06458 BALL VALVE XA/XT-SERIES 02"-08", DN50-200

Spare part sets:

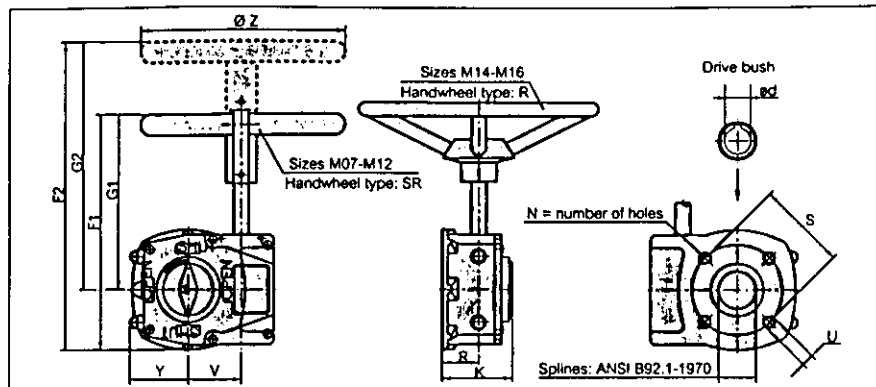
APPENDIX 3



TYPE	SIZE	ISO FLANGE	DIMENSIONS mm (in)														KG (lbs)
			A	A1	ØB	ØB1	ØD	E	K	ØM	N	ØD	P	R			
XT_C	2	F07, F10	178 (7.01)	79 (3.11)	152.4 (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 (1.85)			11 (25)
	3	F07, F10, F12, F14	203 (7.99)	101.5 (4)	190.5 (7.5)	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 (1.85)			25 (56)
	4	F10, F12, F14	229 (9.02)	110.5 (4.35)	228.6 (9)	241 (9.49)	101.6 (4)	309 (12.17)	250 (9.84)	9.52 (0.37)	58 (2.28)	35 (1.38)	39.1 (1.54)	5.9 (2.32)			39 (86)
	6	F14, F16	394 (15.51)	197 (7.76)	279.5 (11)	342 (13.46)	152.4 (6)	386 (15.2)	305 (12)	12.70 (0.5)	80 (3.15)	45 (1.77)	50.4 (1.98)	8.1 (3.19)			93 (205)
	8	F14, F16, F25	457 (17.99)	228.5 (9)	342.9 (13.5)	430 (16.93)	203.2 (8)	476 (18.74)	385 (15.16)	12.70 (0.5)	90 (3.54)	55 (2.16)	60.6 (2.39)	9.1 (3.58)			190 (419)
XA_D	2	F07, F10	216 (8.5)	89 (3.5)	165.1 (6.5)	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 (1.85)			15 (33)
	3	F07, F10, F12, F14	282 (11.1)	114 (4.55)	209.6 (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 (1.85)			35 (75)
	4	F10, F12, 14	305 (12.01)	152.5 (6)	254 (10)	254 (10)	101.6 (4)	309 (12.17)	250 (9.84)	9.52 (0.37)	58 (2.28)	35 (1.38)	39.1 (1.54)	5.9 (2.32)			59 (130)
	6	F14, F16	403 (15.87)	201.5 (7.93)	317.5 (12.5)	353 (13.9)	152.4 (6)	386 (15.2)	305 (12)	12.70 (0.5)	80 (3.15)	45 (1.77)	50.4 (1.98)	8.1 (3.19)			129 (284)
	8	F14, F16, F25	502 (19.75)	249 (9.81)	381 (15)	462 (18.19)	203.2 (8)	476 (18.74)	385 (15.16)	12.70 (0.5)	90 (3.54)	55 (2.16)	60.6 (2.39)	9.1 (3.58)			255 (562)

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

BALL VALVE XT/XA 2"-8" DIMENSION DRAWING		REV. 2008	REV. 2008	REV. 2008
R/S		REV. 2008	REV. 2008	REV. 2008
C/F04219		REV. 2008		
Neles Field Controls Oy		REV. 2008		



HOW TO ORDER

M07F05SR5, where

M07 = type of manual operator
 F05 = mounting flange for valve
 SR5 = type of handwheel

Dimensions in mm

Unit size	M07	M10	M12	M14	M15	M16
Input torque, M1 (Nm)	22.7	45.5	88.5	111	166	170
Max. output torque, M2 (Nm)	250	500	1000	1800	3400	4500
Turns to close	10	10	10.5	15	17	22
Handwheel diameter, ØZ / Type	125/SR5	200/SR8	250/SR10	457/R18	457/R18	610/R24
G1, with standard input shaft	152	169	210	279	331	391
F1, with standard input shaft	196	227	285	378	457	549
G2, with extended input shaft		239	282	354	406	466
F2, with extended input shaft		297	357	435	532	642
V	38.5	52	66.7	89.5	123	154
Y	45	58	75	86	114	117
K	58	67	81	93.5	105.5	126.5
	26.5	35	42	50	50	50
Max. stem height	51	57	72	81	92	113
Ød, max. valve shaft diameter	25	25	30	45	55	70
Splines: ANSI B92.1-1970	28T 20/40	28T 20/40	28T 16/32	40T 16/32	40T 12/24	44T 12/24
Weight (kg)	2.9	5	9.5	18	30.7	45.2
Valve mounting flange, ISO 5211 type	F05 F07	F10	F12	F12 F14 F16	F14 F16	F16 F25
S	50 70	102	125	125 140 165	140 165	165 254
N, number of holes	4 4	4	4	4 4 4	4 4	4 8
U, dia	M6 M8	M10	M12	M12 M16 M20	M16 M20	M20 M16
U, depth	9 8.5	13	16	21.5 21.5 21.5	23 25	25 20

Dimensions in inch

Unit size	M07	M10	M12	M14	M15	M16
Input torque, M1 (ft lbs)	17	34	66	82	123	126
Max. output torque, M2 (ft lbs)	185	370	741	1333	2519	3333
Turns to close	10	10	10.5	15	17	22
Handwheel diameter, ØZ / Type	5/SR5	8/SR8	10/SR10	18/R18	18/R18	24/R24
G1, with standard input shaft	5.98	6.65	8.27	10.98	13.03	15.39
F1, with standard input shaft	7.72	8.94	11.22	14.88	17.99	21.61
G2, with extended input shaft		9.41	11.10	13.94	15.98	18.35
F2, with extended input shaft		11.69	14.06	17.13	20.94	25.28
V	1.52	2.05	2.63	3.52	4.84	6.06
Y	1.77	2.28	2.95	3.39	4.49	4.61
K	2.28	2.64	3.19	3.68	4.15	4.98
R	1.04	1.38	1.65	1.97	1.97	1.97
Max. stem height	2.01	2.24	2.83	3.19	3.62	4.45
Ød, max. valve shaft diameter	1	1	1.2	1.8	2.2	2.8
Splines: ANSI B92.1-1970	28T 20/40	28T 20/40	28T 16/32	40T 16/32	40T 12/24	44T 12/24
Weight (lbs)	6.4	11	20.9	39.6	67.5	99.4
Valve mounting flange, ISO 5211 type	F05 F07	F10	F12	F12 F14 F16	F14 F16	F16 F25
S	1.97 2.76	4.02	4.92	4.92 5.51 6.50	5.51 6.50	6.50 10.00
N, number of holes	4 4	4	4	4 4 4	4 4	4 8
U, dia	M6 M8	M10	M12	M12 M16 M20	M16 M20	M20 M16
U, depth	0.35 0.33	0.51	0.63	0.85 0.85 0.85	0.91 0.98	0.98 0.79

Subject to change without prior notice.

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P.O. Box 310, 00811 Helsinki, Finland Tel. int. +358 20 483 150 Fax int. +358 20 483 151

P.O. Box 8004, Shrewsbury, MA 01545, USA Tel. int. +1 508 852 3567 Fax int. +1 508 852 8762

501 Orchard Road, #05-09 Wheelock Place, 238880 Singapore Tel. int. +65 735 5200 Fax int. +65 735 2955

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APPENDIX 5

TYPE : XT04CWTRJ2SPTTBA

No.: H025379

BODY : _ WCB _

Tmax : _ +240° C _

TRIM : _ 316 _

Tmin : _ -29° C _

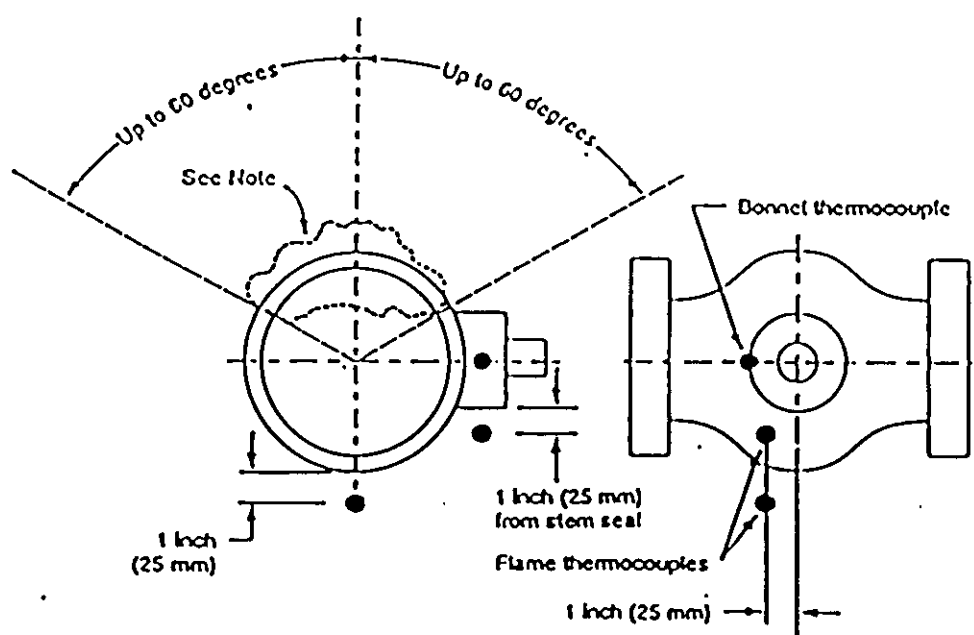
SHAFT : _ XM-19 _

RATING : _ ASME 150 _

SEAT : _ PTFE _

dPs : _ 19.6 BAR _

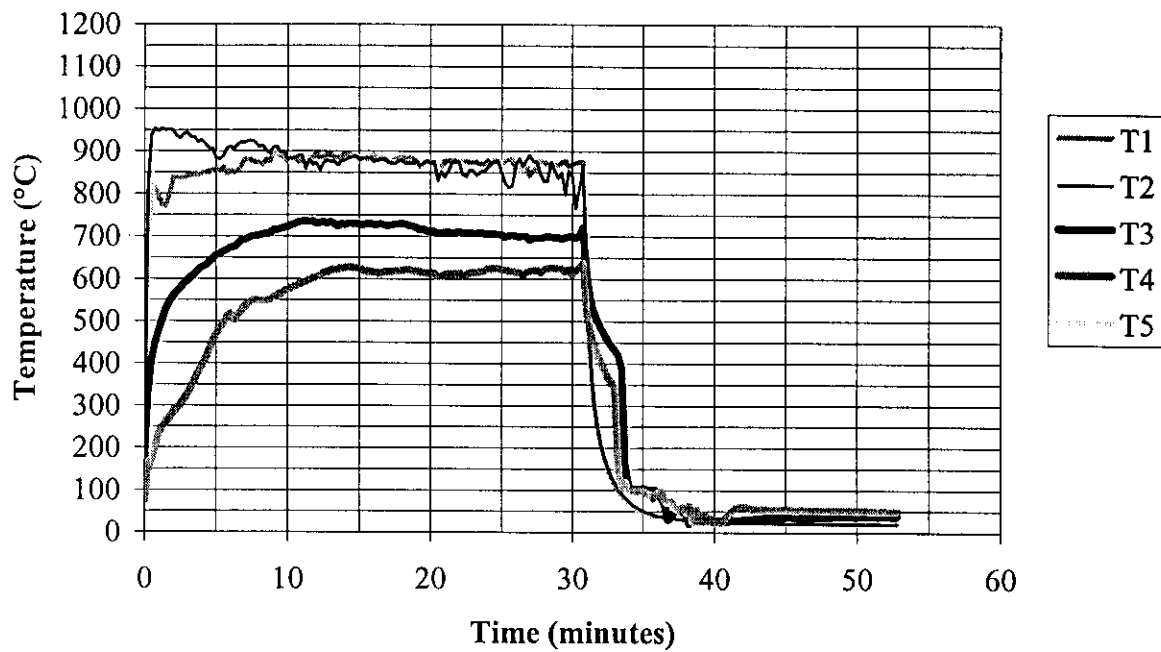
NAMEPLATE DETAILS



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.

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

Time-Temperature-graph
Valve type: XT04CWTRJ2SPTTBA



Test-Pressure-graph

