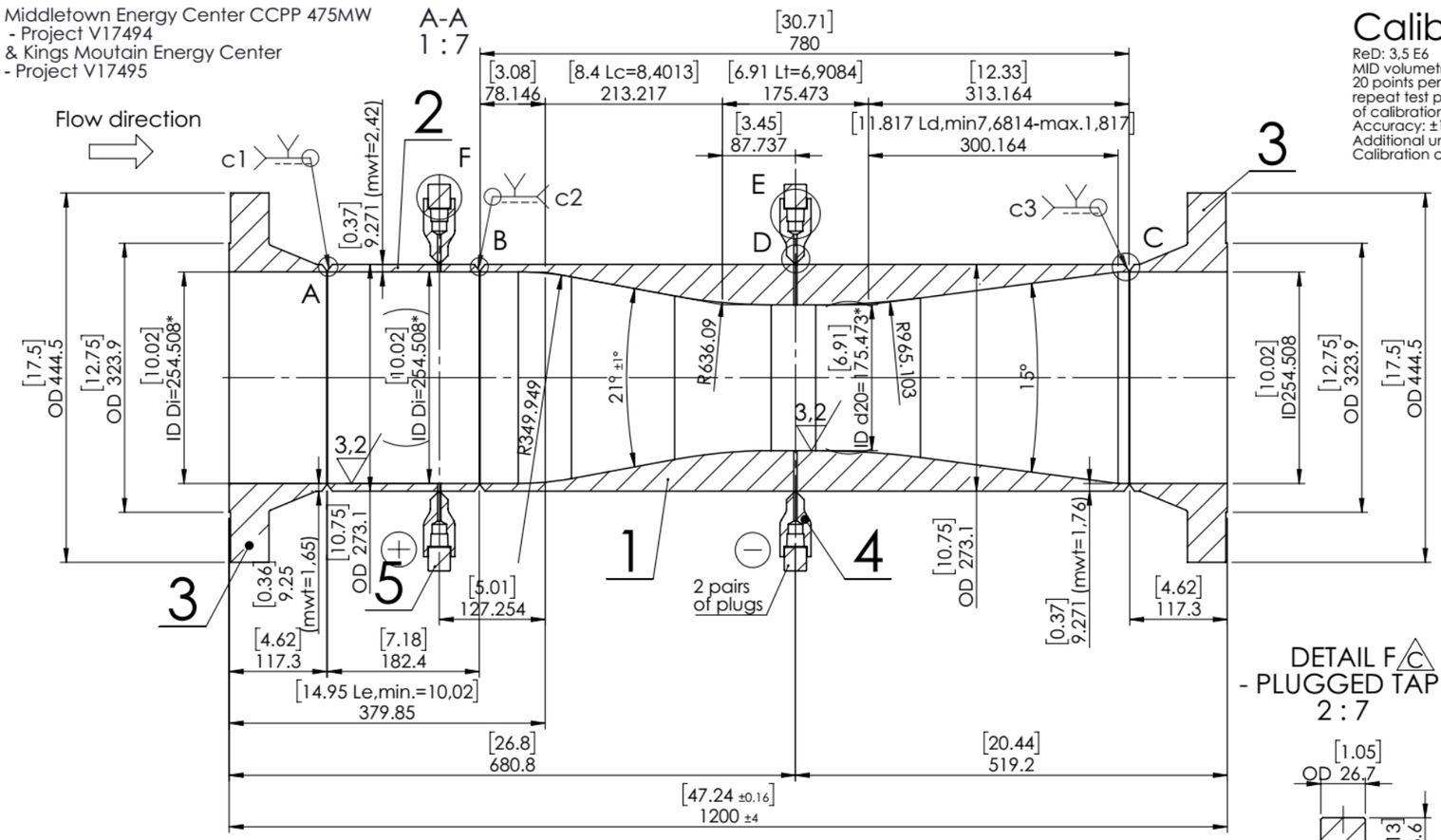
MEC/KMEC

10" Flow Element 1LP-FE3002 (LP Steam Outlet - Venturi)

Middletown Energy Center CCPP 475MW
- Project V17494
& Kings Moutain Energy Center
- Project V17495

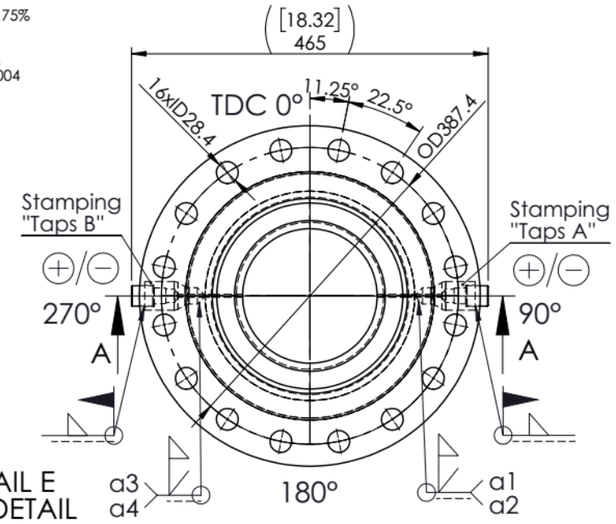
A-A
1 : 7



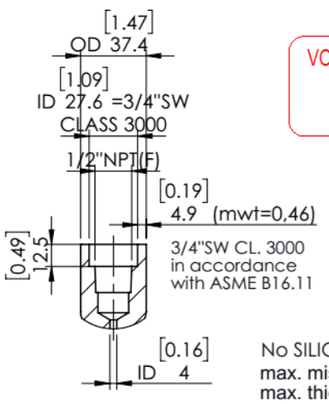
Calibration-VCS

ReD: 3,5 E6
MID volumetric procedure /
20 points per tap set, including
repeat test points at 25%, 50%, and 75%
of calibration range.
Accuracy: ±1/4%
Additional uncertainties: min. 0,50%
Calibration code: ASME PTC 19.5-2004

Ansicht in Durchflussrichtung!
View in flow-direction!



DETAIL E - TAP DETAIL
2 : 7

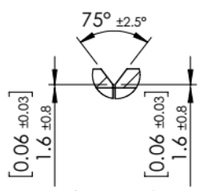


DETAIL F - PLUGGED TAP
2 : 7

VOGT POWER INTERNATIONAL
V17494-CIXD-6005-02
08-Apr-2016

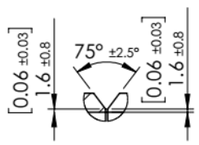
VOGT POWER INTERNATIONAL
Released, Work May Proceed
Bell, Milton | Apr-15-2016

DETAIL A - BW ENDING
1 : 3



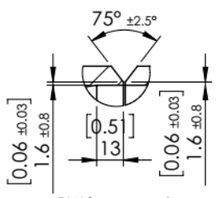
BW in accordance with ASME B16.25 Figure 2a, Sch. 40

DETAIL B - BW ENDING
1 : 3



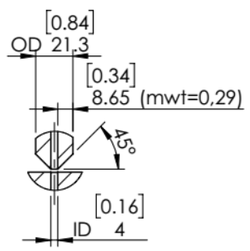
BW in accordance with ASME B16.25 Figure 2a, Sch. 40

DETAIL C - BW ENDING
1 : 3

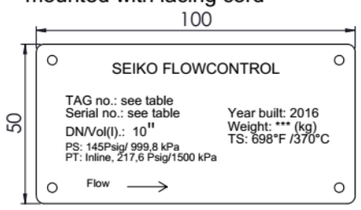


BW in accordance with ASME B16.25 Figure 2a, Sch. 40

DETAIL D - DETAIL OF IMPULSE CONNECTION
2 : 7



Pos. 6 TAG-Plate mounted with lacing cord



*Note: Dimosin will be changed

ASME PTC 19.5-2004						
Target	254.508	mm	±	1.018	mm	
ØD:	10.020	in	±	0.040	in	
Target	175.473	mm	±	0.175	mm	
Ød:	6.908	in	±	0.0069	in	

Untolerierte Maße nach/ Untolarate Dimensions acc. DIN 7168-mittel	
bis/to 6	±0,1
über/over 6 bis/to 30	±0,2
über/over 30 bis/to 100	±0,3
über/over 100 bis/to 300	±0,5
über/over 300 bis/to 1000	±0,8
über/over 1000 bis/to 2000	±1,2

Untolerierte Maße nach/ Untolarate Dimensions acc. EN ISO 13920- class/Klasse B	
über/over 2 bis/to 30	±1
über/over 30 bis/to 120	±2
über/over 120 bis/to 400	±2
über/over 400 bis/to 1000	±3
über/over 1000 bis/to 2000	±4
über/over 2000 bis/to 4000	±6
über/over 4000 bis/to 8000	±8
über/over 8000 bis/to 12000	±10
über/over 12000 bis/to 16000	±12
über/over 16000 bis/to 20000	±14
über/over 20000	±16

Pos. Part	Benennung/Denomination Abmessung/Dimension	MA/ pcs	Werkst. Nr./ Material	Zeugnis/ EN10204 certificate	Norm / Standard	Schmelze Nr. / Charge
6	TAG Plate 100x50x1,5 [3,94x1,97x0,06]	1	SS			
5	Plug OD 26,7x28,6 [OD1,05x1,13 in]	4	SA-105	3.1		
4	Pressure tap OD37,4x80 [OD1,47x3,15in]	4	SA-105	3.1		
3	WN Flange 10"300# RF ASME B16.5-2009, Sch. 40 (remachined WN 300 RF 10" sch. XS)	2	SA-105N	3.1		
2	Upstreampipe OD273,1x9,271x182,4 [OD10,75x3,42x7,18in]	1	SA-106 Gr. B	3.1		
1	Throat OD273,1x780 [OD10,75x30,71in]	1	SA-106 Gr. B	3.1		

Construction Code: ASME Section I, Ed. 2013	
Clasification: NBEP	
Supporting Code: ASME B31.1 Edition 2014 + 2012	
Stamping:	N.A. (not required by customer)
appl. Code cases:	None
Medium:	Superheated steam
PWHT:	NO
Baujahr/Year built:	2016
Gew./Weight: (kg)	~522,5 lb / 237 kg
Abmessungen./Dimensions: (mm) L: 1200 mm 47,24 in W: 465 mm 18,32 in H: 444,5 mm 17,5 in	
PS (max. Pressure):	145Psig/999,8kPa/10 bar(g)
TS (max. Temp.):	698°F / 370 °C
PT (Testpressure):	Inline, 217,6Psig/ 1500kPa/ 15 bar(g)
Isolierstärke/ Insulation thickness	--- mm
Corrosion allowance:	0 mm

No SILICA used on pressure parts.
max. misalignment acc. Fig. 127.3 max. 2 mm / 0,079 in
max. thickness of reinforcement acc.
Table 127.4. 4 mm / 0,158 in

Index rev.	Änderungshinweis / Details of revision	Datum Date	Name
C	Modification of detal F.	07.04.16	LB
B	Implementation of customer comments. Modification of design.	04.02.16	LB
A	Initial release	01.01.16	LB

Inspector:	SEIKO
Einbaulage/mounting pos.:	horizontal
Druckentnahmestutzen/taps:	2 pairs
Corrosion protection:	Remosil
Oberflächenbeh./Surface treatment:	SA2.5

KKS-Nr./TAG-No.:	Fabr. Nr./Serial No.:
1LP-FE3002	SEI15_2820

Kunde/Customer: Vogt Power International
Projekt/Project.: V17494 - Middletown Energy Center & V17495 -Kings Moutain Energy Center
PO: V0009647 Item#6
HO: A16020088-150712

Benennung/Title: 10"/Sch.40 300#
Venturi tube meterrun with single taps
LP Steam outlet flow element
Zeichnungs-Nr./Drawing-No.: Seiko: A16020088-150712/06
Type: HRKVRS_FL
Kunde: Vogt Power International (VPI) 1/2

EXCERPT FROM ASME PTC 19.5-2004, TABLE 7-1.2-2 REQUIRED STRAIGHT LENGTHS FOR CLASSICAL VENTURI TUBES

BETA RATIO	Single 90° short radius bend		Two or More 90° bends in the same plane		Two or More 90° bends in different planes		Reducer 3D to D over a length of 3.5 D		Expander 0.75D to D over a length of D		Globe Valve Fully Open		Required outlet section	
1	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B
0.689	40.19	20.10	45.22	25.12		276.33	105.51	25.12	55.27	35.17	55.27	35.17	27.63	27.63

GENERAL NOTES:

(a) All straight lengths are expressed as multiples of diameter D. The pipe roughness shall not exceed that of a smooth, commercially available pipe approximately k/d <10-3.

(b) Downstream fittings or other disturbances situated at least four throat diameters downstream of the throat pressure tapping do not affect the accuracy of the measurement.

(c) Required straight lengths to meet the discharge coefficient uncertainties delineated herein are represented by the values without parentheses. Straight lengths can be reduced down to the values in parentheses, but then an additional uncertainty of 0.5 percentage points must be addedto the uncertaintiesas delineated herein for each meter if made any shorter than the full required lengths shown without parentheses.

NOTES:

(1) The radius of curvature of the bend shall be equal to or greater than the pipe diameter.

(2) Since the effect of these fittings may still be present after 40D, no unbracketed values can be given in the Table.

(3) Since no fitting can be placed closer than D/2 to the upstream pressure tapping in the Venturi tube, the "zero additional uncertainy" value is the only one applicable in this distance.

Untolerierte Maße nach/ Untolarate Dimensions acc. DIN 7168-mittel	
bis/to 6	±0,1
über/over 6 bis/to 30	±0,2
über/over 30 bis/to 100	±0,3
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über/over 300 bis/to 1000	±0,8
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Untolerierte Maße nach/ Untolarate Dimensions acc. EN ISO 13920- class/Klasse B	
über/over 2 bis/to 30	±1
über/over 30 bis/to 120	±2
über/over 120 bis/to 400	±2
über/over 400 bis/to 1000	±3
über/over 1000 bis/to 2000	±4
über/over 2000 bis/to 4000	±6
über/over 4000 bis/to 8000	±8
über/over 8000 bis/to 12000	±10
über/over 12000 bis/to 16000	±12
über/over 16000 bis/to 20000	±14
über/over 20000	±16

Construction Code: ASME Section I, Ed. 2013
Clasification: NBEP
Supporting Code: ASME B31.1 Edition 2014 + 2012

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appl. Code cases:	None
Medium:	Superheated steam
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TS (max. Temp.):	698°F / 370 °C
PT (Testpressure):	Inline, 217,6Psig/ 1500kPa/ 15 bar(g)
Isolierstärke/ Insulation thickness	--- mm
Corrosion allowance:	0 mm

Index rev.	Änderungshinweis / Details of revision	Datum Date	Name
C	Modification of detail F.	07.04.16	LB
B	Implementation of customer comments. Modification of design.	05.02.16	LB
A	Initial release	01.01.16	LB

Inspector:	SEIKO
Einbaulage/mounting pos.:	horizontal
Druckentnahmestutzen/taps:	2 pairs
Corrosion protection:	Remosil
Oberflächenbeh./Surface treatment:	SA2.5

KKS-Nr./TAG-No.:	Fabr. Nr./Serial No.:
1LP-FE3002	SEI15_2820

Kunde/Customer: Vogt Power International

Projekt/Project.:
V17494 - Middletown Energy Center & V17495 -Kings Moutain Energy Center

SEIKO FLOWCONTROL

Benennung/Title:
Venturi tube meterrun with single taps
LP Steam outlet flow element
10"/Sch.40
300#

Zeichnungs-Nr./Drawing-No.: Seiko: A16020088-150712/06

Type: HRKVRS_FL

PO: V0009647 Item#6

HO: A16020088-150712

Kunde: Vogt Power International (VPI)

2/2