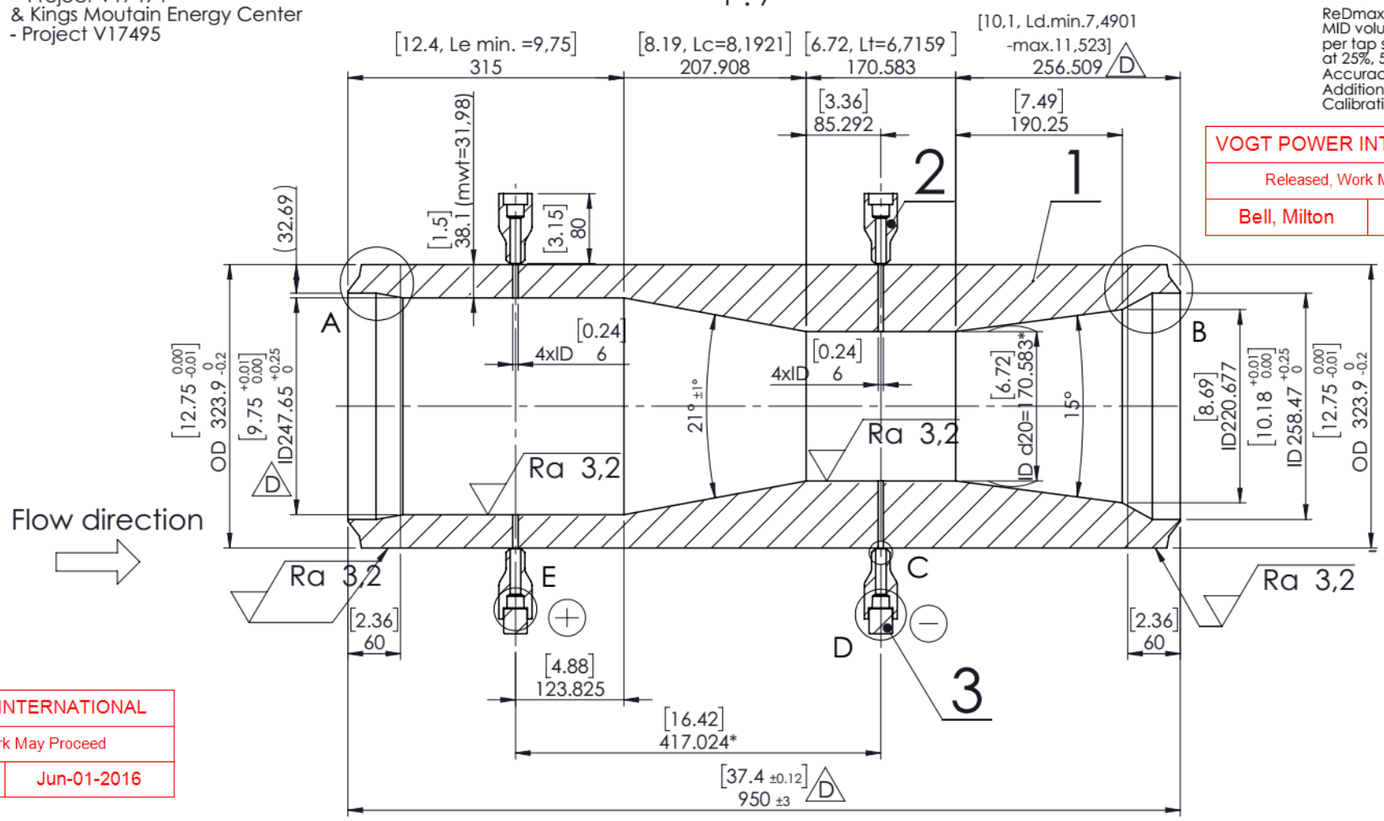
Middletown Energy Center CCPP 475MW
- Project V17494
& Kings Moutain Energy Center
- Project V17495

MEC/KMEC
12" Flow Element 1MS-FE3003 (HP Steam Outlet - Venturi)

AN-AN
1 : 7

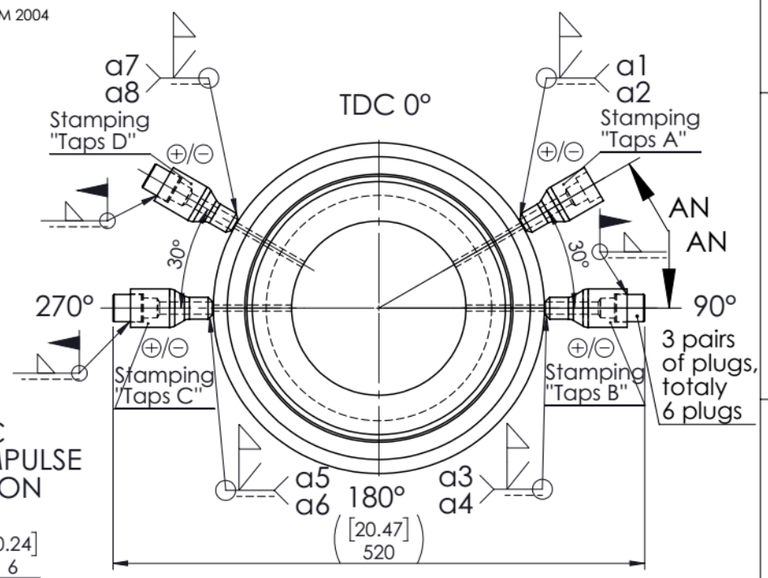


Calibration-VCS

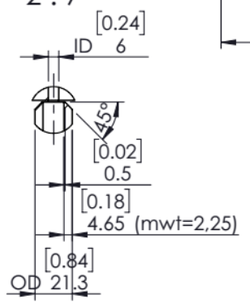
ReDmax: 6,5E6
MID volumetric procedure / 20 points per tap set, including repeat test points at 25%, 50%, and 75% of calibration range.
Accuracy: ±1/4%
Additional uncertainties: 0,50%
Calibration code: ASME MFC - 3M 2004

VOGT POWER INTERNATIONAL	
Released, Work May Proceed	
Bell, Milton	Jun-01-2016

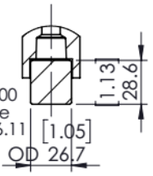
Ansicht in Durchflussrichtung!
View in flow-direction!



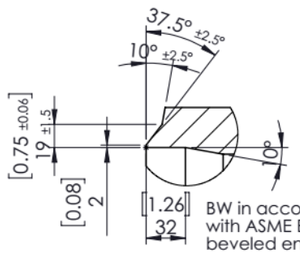
DETAIL C
DETAIL OF IMPULSE CONNECTION
2 : 7



DETAIL D
- PLUGGED TAP
1 : 4

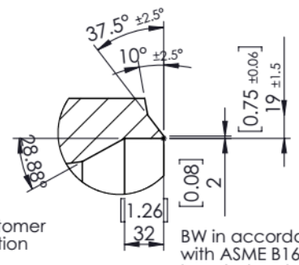


DETAIL A
- BW ENDING OF PIPE
1 : 5



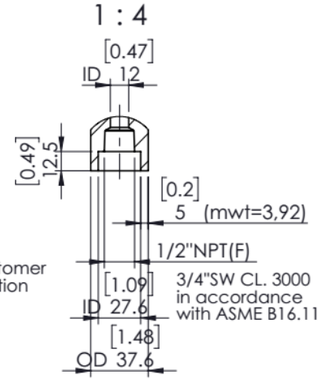
BW in accordance with ASME B16.25, customer beveled end preparation

DETAIL B
- BW ENDING OF PIPE
1 : 5

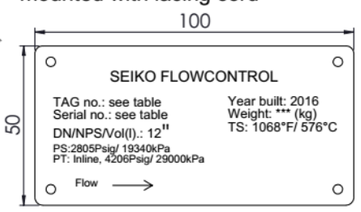


BW in accordance with ASME B16.25, customer beveled end preparation

DETAIL E
- TAP DETAIL
1 : 4



Pos. 4 TAG-Plate
mounted with lacing cord



*Note: Dimensions will be changed

ASME MFC - 3M 2004 addendum					
ØD:	247.650	mm ±	0.991	mm	
	9.750	in ±	0.039	in	
Ød:	170.583	mm ±	0.171	mm	
	6.716	in ±	0.007	in	

VOGT POWER INTERNATIONAL
V17494-CIXD-6002-03
23-May-2016

max. misalignment acc. Fig. 127.3 max. 2 mm / 0,079 in
max. thickness of reinforcement acc. Table 127.4. 3 mm / 0,118 in

Pos. Part	Benennung/Denomination Abmessung/Dimension	MA/ pcs	Werkst. Nr./ Material	Zeugnis/ EN10204 certificate	Norm / Standard	Schmelze Nr. / Charge
4	TAG plate 100x50xmin1,5	1	SA-240 304	--		
3	Plug OD26,7x28,6 [OD1,05x1,13]	6	SA-182 F91	3.1		
2	Pressure tap OD37,4x80 [OD1,47x3,15in]	8	SA-336 F91	3.1		
1	Venturitube OD323,9x950 [OD12,75x37,4in]	1	SA-336 F91	3.1		

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

No SILICA used on pressure parts.

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: N.A. (not required by customer)	
Medium:	Superheated steam
PWHT:	YES
Baujahr/Year built:	2016
Gew./Weight: (kg)	686 lb / ~311 kg
Abmessungen./Dimensions: (mm) L: 860 mm / 33,86 in W: 520 mm / 20,47 in H: 323,9 mm / 12,75 mm	
PS (max. Pressure):	2805Psig/19340kPa/193,4 bar(g)
TS (max. Temp.):	1068°F / 576 °C
PT (Testpressure):	Inline! 4206Psig/ 29000 kPa/290 bar(g)
Isolierstärke/ Insulation thickness	--- mm
Corrosion allowance:	0 mm

Index rev.	Änderungshinweis / Details of revision	Datum Date	Name
D	Modification of welding ends and lenght for pos. 1.	23.05.16	LB
C	Modification of pressure class.	07.04.16	LB
B	Implementation of customer comments. Modification of table for required straight lengths.	03.02.16	LB
A	Initial release	21.12.15	LB

Revisions

Inspector:	SEIKO
Einbaulage/mounting pos.:	horizontal
Druckentnahmestutzen/taps:	4 pair
Corrosion protection:	Thermodur
Oberflächenbeh./Surface treatment:	SA2.5
KKS-Nr./TAG-No.: 1MS-FE3003	Fabr. Nr./Serial No.: SEI15_2817

Kunde/Customer: Vogt Power International

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

SEIKO FLOWCONTROL

Benennung/Title:
Venturi tube with four tap sets
HP Steam Outlet Flow Element

12" Sch. 1,5
Cl. 2500 C

Zeichnungs-Nr./Drawing-No.: Seiko: A16020088-150712/03

Type: HVRS_EXT

PO: V0009647 Item #3 | HO: A16020088-150712 | Kunde: Vogt Power International (VPI) | 1/2

BETA RATIO	Single 90° bend or tee (NOTE 1)		Several 90° bends, same plane (NOTE 1)		Several 90° bends, different planes (NOTE 1)		Reducer 3D to D over length of 3.5D		Expander 0.75D to D over length of D		Gate Valve Fully Open		Required outlet section B	
1	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B
0.689	137.42	29.45	176.69	29.45	176.69	29.45	103.07	24.54	53.99	34.36	53.99	34.36	26.863	26.863

(a) Values are expressed in INCHES.
(b) Straight lengths shall be measured from the downstream end of the curved portion of the nearest (or only) bend or the downstream end of the curved or conical portion of the reducer or expander to the upstream pressure tapping plane of the classical Venturi tube.
(c) If temperature pockets or wells are installed upstream of the classical Venturi tube, they shall not exceed 0.13D in diameter and shall be located at least 4D upstream of the upstream tapping plane of the Venturi tube.
(d) For downstream straight lengths, fittings or other disturbances (as indicated in this Table) or densitometer pockets situated at least four throat diameters downstream of the throat pressure tapping plane do not affect the accuracy of the measurement.
(e) Column A for each fitting gives lengths corresponding to “zero additional uncertainty” values.
(f) Column B for each fitting gives lengths corresponding to “0.5% additional uncertainty” values.
ADDITIONAL NOTES:
(1) The radius of curvature of the bend shall be greater than or equal to the pipe diameter.
(2) The straight length in each Column A gives zero additional uncertainty, data are not available for shorter straight lengths that could be used to give the required straight lengths for each Column B.

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

Index rev.	Änderungshinweis / Details of revision	Datum Date	Name
	Revisions		
D	Modification of welding ends and lenght for pos. 1.	23.05.16	LB
C	Modification of pressure class.	07.04.16	LB
B	Implementation of customer comments. Modification of table for required straight lengths.	03.02.16	LB
A	Initial release	21.12.15	LB

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: N.A. (not required by customer)	
Medium:	Superheated steam
PWHT:	YES
Baujahr/Year built:	2016
Gew./Weight: (kg)	686 lb / ~311 kg
Abmessungen./Dimensions: (mm)	L: 860 mm (33,86 in) W: 520 mm (20,47 in) H: 324 mm (12,75 mm)
PS (max. Pressure):	2805Psig/19340kPa/193,4 bar(g)
TS (max. Temp.):	1068°F / 576 °C
PT (Testpressure):	Inline! 4206Psig/ 29000 kPa/290 bar(g)
Isolierstärke/ Insulation thickness	--- mm
Corrosion allowance:	0 mm

Inspector:	SEIKO
Einbaulage/mounting pos.:	horizontal
Druckentnahmestutzen/taps:	4 pair
Corrosion protection:	Thermodur
Oberflächenbeh./Surface treatment:	SA2.5

KKS-Nr./TAG-No.:	Fabr. Nr./Serial No.:
1MS-FE3003	SEI15_2817

Kunde/Customer: Vogt Power International

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

SEIKO FLOWCONTROL

Benennung/Title: Venturi tube with four tap sets HP Steam Outlet Flow Element — 12" Sch. 1,5 Cl. 2500 C

Zeichnungs-Nr./Drawing-No.:	Type:
Seiko: A16020088-150712/03	HVRS_EXT
PO: V0009647 Item #3	HO: A16020088-150712
Kunde: Vogt Power International (VPI)	2/2