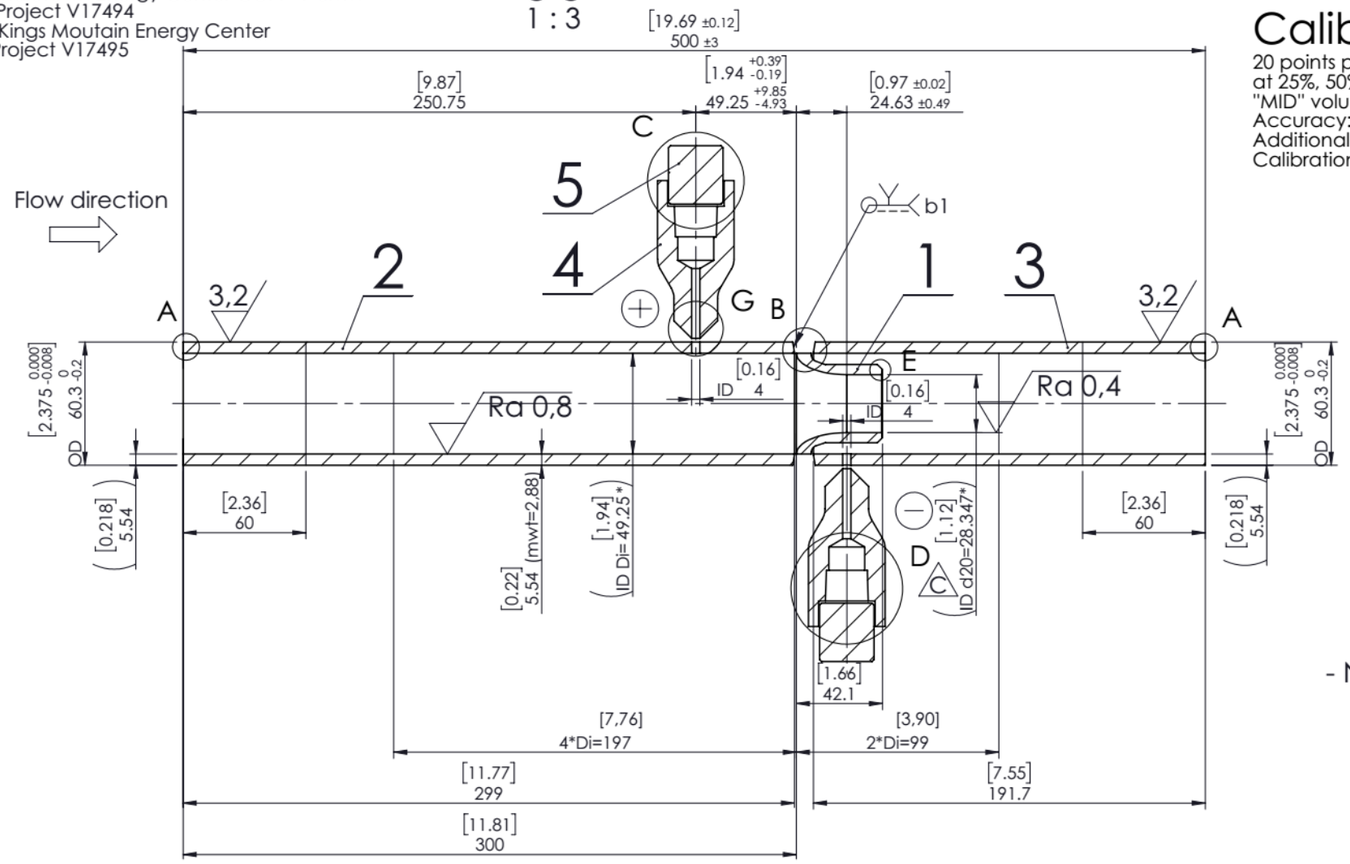
Middletown Energy Center CCPP 475MW
- Project V17494
& Kings Moutain Energy Center
- Project V17495

# Calibration-VCS

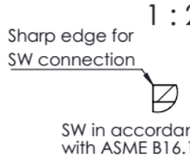
20 points per tap set / incl. repeat test points at 25%, 50% and 75% of calibrated range / "MID" volumetric procedure / ReDmax: 0,5 E6
Accuracy: ±1/4%
Additional uncertainties: min. 0,50%
Calibration code: ASME PTC-19.5-2004

VOGT POWER INTERNATIONAL
Released, Work May Proceed
Bell, Milton | Apr-26-2016

## G-G 1 : 3

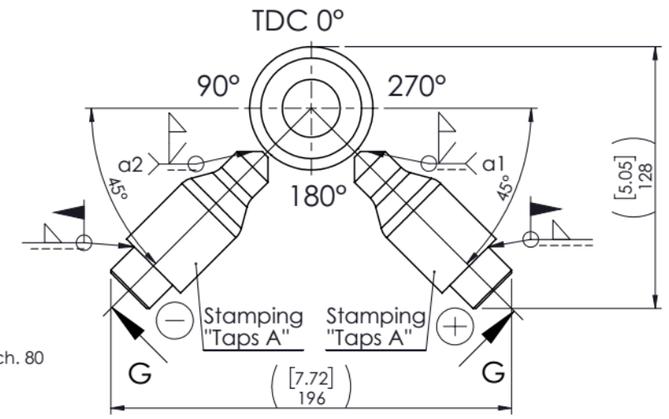



## DETAIL A 1 : 2

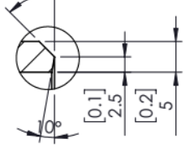



Ansicht in Durchflussrichtung!
View in flow-direction!

SCALE 1 : 3

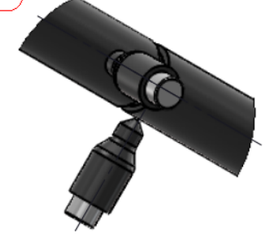



## DETAIL E - NOZZLE ENDING 1 : 1

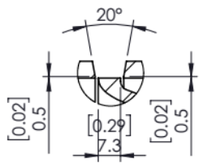



MEC/KMEC
2" Flow Element 1HR-FE3001 (HP Attemp - Flow Nozzle)

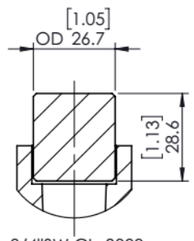
## DETAIL Y



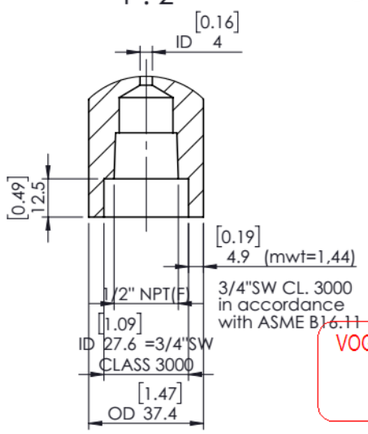
## DETAIL B - NOZZLE DETAIL 1 : 2



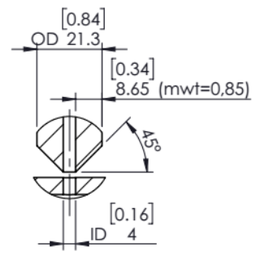

## DETAIL C - PLUGGED TAP 1 : 2




## DETAIL D - TAP DETAIL 1 : 2

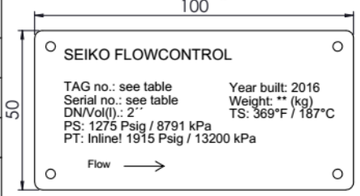



## DETAIL G - DETAIL OF IMPULSE CONNECTION 1 : 2




max. misalignment acc. Fig. 127.3 max. 2mm
max. thickness of reinforcement acc. Table 127.4. 4mm

Pos. 6 TAG-Plate
mounted with lacing cord




*dimension will be change

VOGT POWER INTERNATIONAL
V17494-CIXD-6008-03
12-Apr-2016

| 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 |

| ASME PTC 19.5-2004 | | | | |
|---|---|---|---|---|
| Target | 49.251 | mm ± | 0.148 | mm |
| ID Di: | 1.939 | in ± | 0.006 | in |
| Target | 28.347 | mm ± | 0.014 | mm |
| ID d20: | 1.116 | in ± | 0.0006 | in |

| Pos. Part | Benennung/Denomination Abmessung/Dimension | MA/ pcs | Werkst. Nr./ Material | Zeugnis/ EN10204 certificate | Norm / Standard | Schmelze Nr. / Charge |
|---|---|---|---|---|---|---|
| 6 | TAG plate 100 x 50 x min.1.5) [3,94x1,97xmin.0,06in] | 1 | SA-240 304 | - | | |
| 5 | Plug OD26,7x28,6 [OD1,05x1,13in] | 2 | SA-105 | 3.1 | | |
| 4 | Pressure tap OD37,4x80 [OD1,47x3,15in] | 4 | SA-105 | 3.1 | | |
| 3 | Downstream pipe OD60,3x5,54x191,7 [OD2,375x0,218x7,55in] | 1 | SA-106 Gr. B | 3.1 | | |
| 2 | Upstream pipe OD60,3x5,54x299 [OD2,375x0,218x11,77in] | 1 | SA-106 Gr. B | 3.1 | | |
| 1 | Nozzle OD49,3x42,1 [OD1,94x1,66in] | 1 | SA-105 | 3.1 | | |

| | |
|---|---|
| Construction Code: ASME Section I, Ed. 2013<br>Clasification: NBEP<br>Supporting Code: ASME B31.1 Edition 2014 + 2012 | |
| Stamping: | N.A. (not required by customer) |
| NB Registration: | N.A. (not required by customer) |
| appl. Code cases: | None |
| Medium: | water |
| PWHT: | NO |
| Baujahr/Year built: | 2016 |
| Gew./Weight: (kg) | ~10 lb / 4,5 kg |
| Abmessungen./Dimensions: (mm)<br>L: 500 mm 19,69 in W: 196 mm 7,72 in H: 128 mm 5,05 in | |
| PS (max. Pressure): | 1275Psig/ 8791kPa /88 bar(g) |
| TS (max. Temp.): | 369°F/ 187 °C |
| PT (Testpressure): | Inline!1915Psig/ 13200kPa/ 132 bar(g) |
| Isolierstärke/ Insulation thickness | 0 mm |
| Corrosion allowance: | 0 mm |

No SILICA used on pressure parts.

| Index rev. | Änderungshinweis / Details of revision | Datum Date | Name |
|---|---|---|---|
| C | Modification of diameter d20. | 13.04.16 | LB |
| B | Implementation of customer comments | 03.02.16 | LB |
| A | For release | 17.12.15 | LB |

Revisions

| | |
|---|---|
| Inspector: | SEIKO |
| Einbaulage/mounting pos.: | horizontal |
| Druckentnahmestutzen/taps: | 1 pair |
| Corrosion protection: | Remosil |
| Oberflächenbeh./Surface treatment: | SA2,5 |
| KKS-Nr./TAG-No.: 1HR-FE3001 | Fabr. Nr./Serial No.: SEI15_2823 |

Kunde/Customer: Vogt Power International

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

PO: V0009647 Item #9 | HO: A16020088-150712

Benennung/Title: 2" Sch. 80 Cl. 3000
Flow device with lolg radius nozzle
HR Attemperator Spraywater Flow Element

Zeichnungs-Nr./Drawing-No.: Seiko: A16020088-150712/09 | Type: HVLD

Kunde: Vogt Power International (VPI) | 1/2

EXCERPT FROM ASME PTC 19.5-2004, TABLE 7-1.2-1 REQUIRED STRAIGHT LENGTHS FOR ORIFICE PLATES AND NOZZLES

| BETA RATIO | Single 90° bend or tee | | Several 90° bends, same plane | | Several 90° bends, different planes | | Reducer 2D to D over length of 1.5D to 3 D | | Expander 0.5D to D over length of D to 2D | | Globe Valve Fully Open | | Gate Valve Fully Open | | Abrupt diameter reduction | | Thermometer-pocket, Ø ≤ 0,03 Di | | Thermometer-pocket, Ø > 0,03 Di | | Downstream (Outlet) section | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2A | 2B | 3A | 3B | 4A | 4B | 5A | 5B | 6A | 6B | 7A | 7B | 8A | 8B | 9A | 9B | 10A | 10B | 11A | 11B | 12A | 12B |
| 0.576 | 34.95 | 17.48 | 50.49 | 25.24 | 93.21 | 46.61 | 17.48 | 9.71 | 42.72 | 21.36 | 50.49 | 25.24 | 27.19 | 13.59 | 58.26 | 29.13 | 9.71 | 5.83 | 38.84 | 19.42 | 13.59 | 13.59 |

GENERAL NOTES:

(a) Values expressed are expressed in INCHES.

(b) The pipe roughness shall not exceed that of a smooth, commercially available pipe approximately k/D < 10-3.

(c) Column A for each fitting gives lengths corresponding to “zero additional uncertainty” values.

(d) Column B for each fitting gives lengths corresponding to “0.5% additional uncertainty” values.

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| über/over 2000 bis/to 4000 | ±6 |
| über/over 4000 bis/to 8000 | ±8 |
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| 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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| Oberflächenbeh./Surface treatment: | SA2,5 |

| KKS-Nr./TAG-No.: | Fabr. Nr./Serial No.: |
|---|---|
| 1HR-FE3001 | SEI15_2823 |

Kunde/Customer: Vogt Power International

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

SEIKO FLOWCONTROL

Benennung/Title:
Flow device with lolg radius nozzle
HR Attemperator Spraywater Flow Element

2" Sch. 80
Cl. 3000

| Zeichnungs-Nr./Drawing-No.: | Type: |
|---|---|
| Seiko: A16020088-150712/09 | HVLD |

PO: V0009647 Item #9 | HO: A16020088-150712 | Kunde: Vogt Power International (VPI) | 2/2