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|  | **Valve Sizing Calculation** |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Customer: | |  | | | | | |  | | | | | | |  |
| Fax: | |  | | | | | | Phone: | | |  | | | | |
| Contact: | |  | | | | | | Contact: | | |  | | | | |
| Item: | 1 | Qty: | | 1 | | | | PO Number: | | |  | | | | |
| Tags: | | PCV-2135 A,B,C | | | | | | Project: | | | PCV-2135A,B,C | | | | |
| Description: | |  | | | | | | P&ID Number: | | | BK-GCS-120-PR-PI-0011(1,2,3/3) | | | | |
| Service Description: | | AE-2102A/B/C | | | | | | Line Number: | | | GAS-111-0057A/B/C-FS00-4"NP | | | | |
| Sizing Type: Two Phase Gas | | | Flow is Turbulent | | | Solving for: Cv | | | Noise is None | | | | Flow is Mass | | |
| Variable Name | | | | | Units | | Minimum- 0 | | | Normal- 1 | | Maximum- 2 | |  | |
| Gas | | | | |  | |  | | |  | |  | |  | |
| Temperature (T1) | | | | | deg C | | 60.0000 | | | 60.0000 | | 60.0000 | |  | |
| Inlet Pressure (P1) | | | | | bar(g) | | 54.100 | | | 54.100 | | 54.100 | |  | |
| Pressure Change (dP) | | | | | bar | | 52.600 | | | 52.600 | | 52.600 | |  | |
| Mass flow rate (w) | | | | | kg/h | | 3019.207 | | | 8626.306 | | 10351.570 | |  | |
| Pressure Drop Ratio Factor (Xt) | | | | |  | | 0.650 | | | 0.650 | | 0.650 | |  | |
| Pressure Recovery Factor (Fl) | | | | |  | | 0.900 | | | 0.900 | | 0.900 | |  | |
| Atmospheric Pressure | | | | | bar | | 1.0128 | | | 1.0128 | | 1.0128 | |  | |
| Specific Gravity (SG) | | | | |  | | 0.981 | | | 0.981 | | 0.981 | |  | |
| Liquid Flow Rate (Ql) | | | | | m3/h | | 0.0380 | | | 0.0380 | | 0.0380 | |  | |
| Vapor Pressure (Pv) | | | | | bar(g) | | 37.9000 | | | 37.9000 | | 37.9000 | |  | |
| Specific heats ratio (gamma) | | | | |  | | 1.460 | | | 1.460 | | 1.460 | |  | |
| Molecular weight /Specific gravity | | | | | M | | 24.56152 | | | 24.56152 | | 24.56152 | |  | |
| PcAlt | | | | | bar(g) | | 220.00000 | | | 220.00000 | | 220.00000 | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
| Sizing Coefficient (Cv) | | | | |  | | 3.693 | | | 10.225 | | 12.234 | |  | |
| Actual Gas Phase Flow (Vg) | | | | | m3/h | | 50.61049 | | | 144.60139 | | 173.52172 | |  | |
| Mass flow rate incompressible (wl) | | | | | kg/h | | 37.2390 | | | 37.2390 | | 37.2390 | |  | |
| Inlet Compressibility Factor (Z1) | | | | |  | | 0.820 | | | 0.820 | | 0.820 | |  | |
| Cv Gas | | | | |  | | 3.517 | | | 10.049 | | 12.058 | |  | |
| Cv Liquid | | | | |  | | 0.010 | | | 0.010 | | 0.010 | |  | |
| dP/P1 Valve | | | | |  | | 0.954 | | | 0.954 | | 0.954 | |  | |
| dP Choked Gas | | | | | bar | | 37.35863 | | | 37.35863 | | 37.35863 | |  | |
| dP Choked Liquid | | | | | bar | | 18.08595 | | | 18.08595 | | 18.08595 | |  | |
| Two Phase Correction Factor (Fm) | | | | |  | | 0.047 | | | 0.016 | | 0.014 | |  | |
| Gas Volume ratio (Vr) | | | | |  | | 0.999 | | | 1.000 | | 1.000 | |  | |
| Quality lb Vapour/lb Mixture (X) | | | | |  | | 0.678 | | | 0.678 | | 0.678 | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
| Warnings | | | | |  | |  | | |  | |  | |  | |
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