|  |  |  |
| --- | --- | --- |
|  | **Valve Sizing Calculation** |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Customer: | |  | | | | | |  | | | | | | |  |
| Fax: | |  | | | | | | Phone: | | |  | | | | |
| Contact: | |  | | | | | | Contact: | | |  | | | | |
| Item: | 1 | Qty: | | 1 | | | | PO Number: | | |  | | | | |
| Tags: | | PCV-2211 | | | | | | Project: | | | PCV-2211 | | | | |
| Description: | |  | | | | | | P&ID Number: | | | BK-GCS-PEDCO-120-PR-PI-0016(1/1) | | | | |
| Service Description: | | NITROGEN PACKGE | | | | | | Line Number: | | | NIT-112-0021-AN01-2"-PT | | | | |
| Sizing Type: Real Gas | | | Flow is Turbulent | | | Solving for: Cv | | | Noise is IECAerodynamic | | | | Flow is Mass | | |
| Variable Name | | | | | Units | | Minimum- 0 | | | Normal- 1 | | Maximum- 2 | |  | |
| Gas | | | | |  | | ~NITROGEN | | | ~NITROGEN | | ~NITROGEN | |  | |
| Temperature (T1) | | | | | deg C | | 60.0000 | | | 60.0000 | | 60.0000 | |  | |
| Inlet Pressure (P1) | | | | | bar(g) | | 8.000 | | | 8.000 | | 8.000 | |  | |
| Pressure Change (dP) | | | | | bar | | 0.500 | | | 0.500 | | 0.500 | |  | |
| Gas Flow Rate (Qg) | | | | | Nm3/h | | 9.55420 | | | 31.86325 | | 35.04798 | |  | |
| Pressure Drop Ratio Factor (Xt) | | | | |  | | 0.650 | | | 0.650 | | 0.650 | |  | |
| Specific heats ratio (gamma) | | | | |  | | 1.400 | | | 1.400 | | 1.400 | |  | |
| Molecular weight /Specific gravity | | | | | M | | 28.130 | | | 28.130 | | 28.130 | |  | |
| Critical Pressure (Pc) | | | | | bar(g) | | 32.93832 | | | 32.93832 | | 32.93832 | |  | |
| Critical Temperature (Tc) | | | | | deg C | | -146.9000 | | | -146.9000 | | -146.9000 | |  | |
| Valve/Trim | | | | |  | |  | | |  | |  | |  | |
| Rn | | | | | m | | 1.10 | | | 1.10 | | 1.10 | |  | |
| Ao | | | | | in2 | |  | | |  | |  | |  | |
| Valve Style Modifier (Fd) | | | | |  | | 0.350 | | | 0.350 | | 0.350 | |  | |
| Pressure Recovery Factor (Fl) | | | | |  | | 0.900 | | | 0.900 | | 0.900 | |  | |
| Pipe Size Up | | | | | in | | 2 | | | 2 | | 2 | |  | |
| Pipe Schedule Up | | | | |  | | STD | | | STD | | STD | |  | |
| Pipe Size Down | | | | | in | | 2 | | | 2 | | 2 | |  | |
| Pipe Schedule Down | | | | |  | | STD | | | STD | | STD | |  | |
| Nominal Valve Diameter (dv) | | | | | in | | 0.500 | | | 0.500 | | 0.500 | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
| Sizing Coefficient (Cv) | | | | |  | | 0.210 | | | 0.702 | | 0.772 | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
| Mass flow rate (w) | | | | | kg/h | | 12.0000 | | | 40.0200 | | 44.0200 | |  | |
| Inlet Compressibility Factor (Z1) | | | | |  | | 0.990 | | | 0.990 | | 0.990 | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
| Whisper III Trim Level | | | | |  | |  | | |  | |  | |  | |
| LpAeTrim1m | | | | | dB(A) | |  | | |  | |  | |  | |
| LpAeOutlet1m | | | | | dB(A) | |  | | |  | |  | |  | |
| LpAeValve1m | | | | | dB(A) | |  | | |  | |  | |  | |
| LpAeValveRn | | | | | dB(A) | |  | | |  | |  | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
| Pipe Outside Diam. Up | | | | | in | | 2.375 | | | 2.375 | | 2.375 | |  | |
| Pipe Outside Diam. Down | | | | | in | | 2.375 | | | 2.375 | | 2.375 | |  | |
| Inlet fluid density (Rho1) | | | | | kg/m3 | |  | | |  | |  | |  | |
| M1 Pipe | | | | | Mach | |  | | |  | |  | |  | |
| Mo Valve | | | | | Mach | |  | | |  | |  | |  | |
| M2 Pipe | | | | | Mach | |  | | |  | |  | |  | |
|  | | | | |  | |  | | |  | |  | |  | |
| Warnings | | | | |  | |  | | |  | |  | |  | |
|  | | | | |  | | A value for variable 'Valve/Trim for aerodynamic noise' must be provided. | | | A value for variable 'Valve/Trim for aerodynamic noise' must be provided. | | A value for variable 'Valve/Trim for aerodynamic noise' must be provided. | |  | |
|  | | | | | | | | | | | | | | | |