

PSV Plus Calculation Report - Gas / Vapor Relief Sizing Case



Valve General Data

Item: 001 PSV 010 A

Service: Column Protection

<u>Fluid:</u> Hydrocarbon	<u>State:</u> Single	<u>FireCase:</u> No
<u>ValveType:</u> Conventional	<u>Phase:</u> Gas	<u>Emergency:</u> Control Valve Failure
<u>Discharge to:</u> LP Flare	<u>Rupt.Disk Upstr:</u> No	

Fluid Properties @ Relieving

<u>Spec. Heat Ratio (K):</u> 1.29	<u>Mol. Weight:</u> 78.5
<u>Gas Compressibility (Z):</u> 0.65	<u>Viscosity:</u> 0.013 cP

Process Data @ Relieving

<u>Atm. Pressure:</u> 1.013 bar A	<u>Superimposed Const. Back Press</u> 1.013 bar A	<u>C:</u> 346
<u>Relieving Flow:</u> 49101.47kg/h	<u>Var.</u> 0 bar	<u>Kd:</u> 0.975
<u>Relieving Temp:</u> 190 °C	<u>Builtup Back Press:</u> 0.5 bar	<u>Kb:</u> 1
<u>Set Press:</u> 18 bar G	<u>Over Press:</u> 10 %	<u>Kc:</u> 1

Valve Sizing Results

<u>Type of Flow:</u> Critical	<u>Calculated Orifice:</u> 2.795 in ²
<u>Selected Orifice:</u> 2.853 in ²	<u>Orifice Designation:</u> 3 " # 300 L 4 " # 150

Inlet / Outlet Lines Sizing Results

	N.D. (in)	Sch.	I.D. (in)	Rough. in	Eq. Length mt	Calc. Flow kg/h	Calc. DP bar	Max. DP bar	Avg. Vel. m/s	Out. Vel. m/s	Crit. Vel. m/s	Crit. Press. bar
IN	6	STD	6.065	0.0018	50	50120	.224	.54	12.3	-	-	-
OUT	10	STD	10.02	0.0018	50	50120	.392	1.8	106.4	130.	251.6	

Calculation Notes

