


PROJECT :			DATE :	3/4/2011
PROJ. NO.:			BY :	SR
CLIENT :			REV :	A
UNIT :			DOC NO.:	

PRESSURE SAFETY VALVE CALCULATION SHEET (LIQUID)

General Data		
PSV Tag No.	PSV-4101	
P&ID No.	20-DWG-FS-01	
Protected Equipment	20-P-801	
Cause of Overpressure	BLOCK OUTLET	
Flowing Specific Gravity	----	0.54
Flowing Viscosity	Cp	0.10
Effective Coefficient of Discharge	----	0.62

Sizing Method

With Capacity Certification

No Capacity Certification

Combination

Without Rupture Disk


With Rupture Disk

Operating Condition		
Maximum Operating Pressure	barg	40.9
Maximum Operating Temperature	°C	40.00
Max. Allowable Working Pressure	barg	75.00

Relieving Condition		
Required Relieving Capacity	Kg/hr	330.0
Set Pressure	barg	75.00
Allowable Overpressure	%	10.0
Superimposed Back Pressure (Constant)	barg	7.00
Superimposed Back Pressure (Variable)	bar	4.00
Built Up Back Pressure	bar	0.00
Relieving Temperature	°C	40.0

Calculation Results		
Recommended Type (Conv./Bellows/Pilot)	CONVENTIONAL	
Total Back Pressure	barg	11.00
Relieving Pressure	bara	83.50
Capacity Certification Factor (Kp)	----	1.00
Capacity Correction Factor (Kw)	----	1.00
Effective Coefficient of Discharge (Kd)	----	0.62
Viscosity Correction Factor (Kv)	----	1.00
Minimum Required Discharge Area	mm ²	1.68
Selected Discharge Area	mm ²	70.97
Orifice Designation	----	D
Inlet Size	in	1.0
Outlet Size	in	2.0
Actual Relieving Capacity	m ³ /hr	26.07
Actual Relieving Capacity	kg/hr	13971.3
No. of PSVs Required	----	1

General Notes

PROJECT :	0		DATE :	40606
PROJ. NO.:	0		BY :	SR
CLIENT :	0		REV :	A
UNIT :	0		DOC NO.:	

PSV SUCTION LINE SIZING CALCULATION FORM

PSV Tag No. :	PSV-4101	
P&ID No.	20-DWG-FS-01	
Cause of Overpressure	BLOCK OUTLET	
Fluid phase (Liquid/Vapor)	----	LIQUID
Actual Flow Rate	kg/hr	330.00
Set Pressure	barg	75.00
Flowing Density	kg/m ³	536.00
Flowing Viscosity	Cp	0.1040

Sizing Flow Rate

Required Flow Rate

Actual Flow Rate

Inlet Line Fitting Data		
Pipe Length	m	50
Nominal Pipe Size	inch	24
Pipe Schedule No.	----	40
Pipe Roughness (DEF.)	inch	0.00180

Fittings Quantity		
* tee flow thru	no.	0
* tee branch	no.	0
* elbow 90 deg LR	no.	0
* elbow 90 deg screwed	no.	0
* elbow 45 deg LR	no.	0
* elbow 45 deg screwed	no.	0
* close pattern return bend	no.	0
* gate valve	no.	0
* ball valve	no.	0
* globe valve	no.	0
* angle valve	no.	0
* butterfly valve (2" - 8")	no.	0
* butterfly valve (10" - 14")	no.	0
* butterfly valve (16" - 24")	no.	0
* check valve swing	no.	0
* check valve lift	no.	0
* check valve stop lift	no.	0
* check valve tilting disk	no.	0
* foot valve hinged disc	no.	0
* foot valve poppet disc	no.	0
* reducer / expander	no.	0
* entrance (projecting)	no.	0
* entrance (sharp-edged)	no.	0
* entrance (flush)	no.	0
* exit (projecting)	no.	0
* exit (sharp-edged)	no.	0
* exit (rounded)	no.	0

Calculation Results		
Pipe Internal Diameter	mm	574.65
Velocity	m/s	0.001
Reynolds No.	----	1953
Friction Factor	----	0.0328
Pipe Pressuer Loss	bar	0.000
Fitting Pressure Loss	bar	0.000
Calculated ΔP	bar	0.000
Allowable ΔP	bar	2.250
Statement	OK	

General Notes