

# PRV<sup>2</sup>SIZE

PRESSURE RELIEF VALVE AND VENT SIZING SOFTWARE

ANDERSON  
GREENWOOD

CROSBY

Varec



# Pressure Relief Valve and Vent Sizing Software

**TYCO PRV<sup>2</sup>SIZE is a comprehensive and easy-to-use program that offers a thorough and integrated approach for sizing all types of pressure relief devices, including low-pressure tank protection products in a single sizing-and-selection platform.**



The TYCO PRV<sup>2</sup>SIZE sizing-and-selection software incorporates over 135 years of engineering expertise and experience with a wide array of Anderson Greenwood, Crosby and Varec pressure relief devices into one software package. With the TYCO PRV<sup>2</sup>SIZE software, customers and engineers can address numerous applications in a single pressure relief device sizing-and-selection platform, without the need to use multiple sizing programs.

### Featuring:

- Integrated sizing-and-selection capabilities for various types of pressure relief devices
- Industry-standard sizing methodologies
- Fully configured product selection
- Detailed product specifications including cross-sectional drawings with dimensions and weights

Offering detailed pressure relief device specification information, the integrated capabilities of the TYCO PRV<sup>2</sup>SIZE software provide specifying engineers with valve sizing-and-selection data for a wide range of applications and process scenarios. A comprehensive and easy-to-use program that has been developed to present recommendations based on the combined experience of Anderson Greenwood, Crosby and Varec in sizing, selecting, testing and designing of pressure relief devices.

The many features, options and enhanced user-interface capabilities of this software program assist in the task of sizing and selecting pressure relief devices.

## Program Features:

### Sizing-and-Selection

- Pre-selection of units and sizing calculation methods
- Inlet pressure loss input
- Addition of 2:1 elliptical head tanks for fire sizing calculations
- Multiple valve sizing
- Tank blanketing regulator sizing and selection
- Immediate flagging of errors against design constraints

### Related Calculations

- Noise level calculations
- Reaction force calculations
- Combination device calculations

### Report Generation

- Improved tools to export and import device tag numbers, with the capability to mail files directly from the software program
- Ability to generate flow curves for Varec tank protection products
- Attractive reports and specification sheets

### Catalog Data

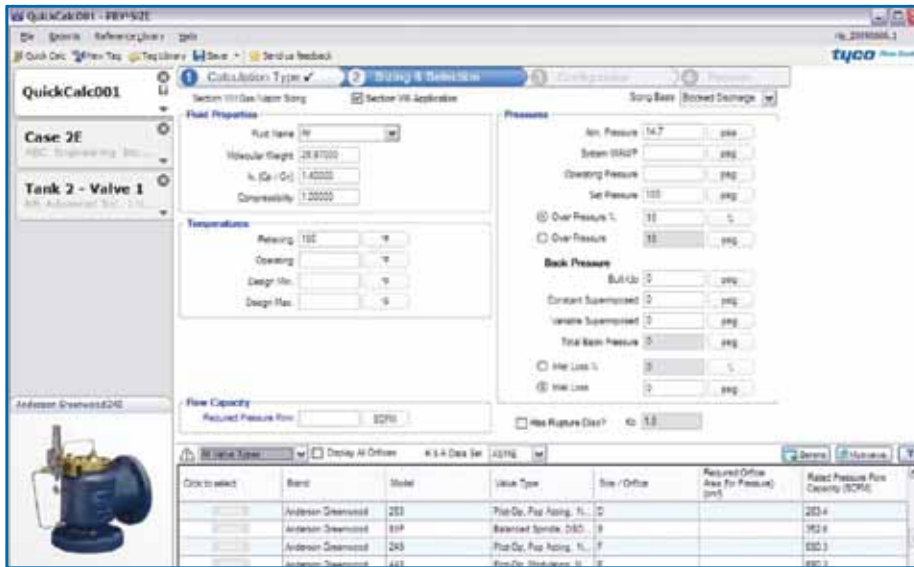
- Catalog information for Anderson Greenwood pilot-operated, direct spring-operated pressure relief valves and regulators, Crosby direct spring-operated pressure relief valves and Varec tank protection products
- Catalog integration from existing product literature PDFs



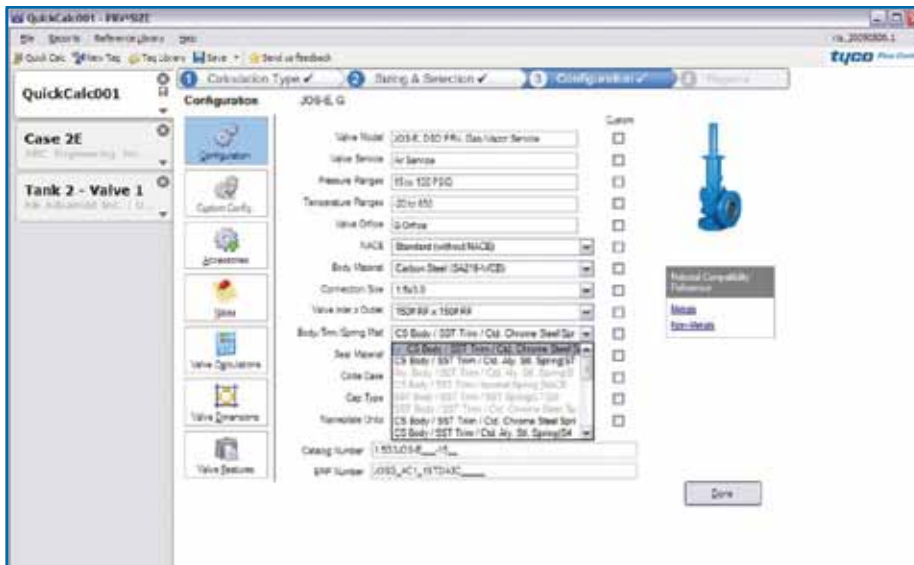
**TYCO PRV<sup>2</sup>SIZE Website**

<http://sizing.tycovalves.com>

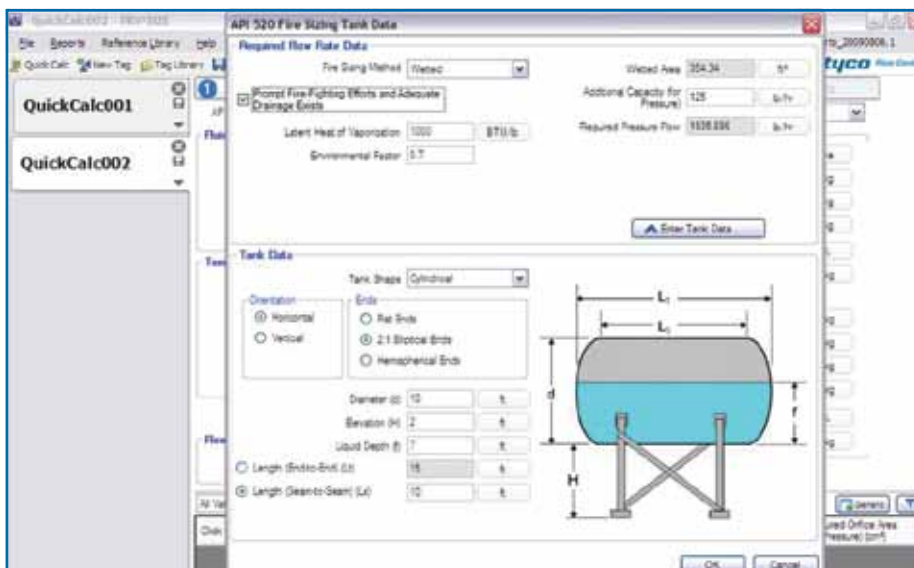
# Screenshots



Valve Selection Displays Available PRV Designs that Meet Process Parameters

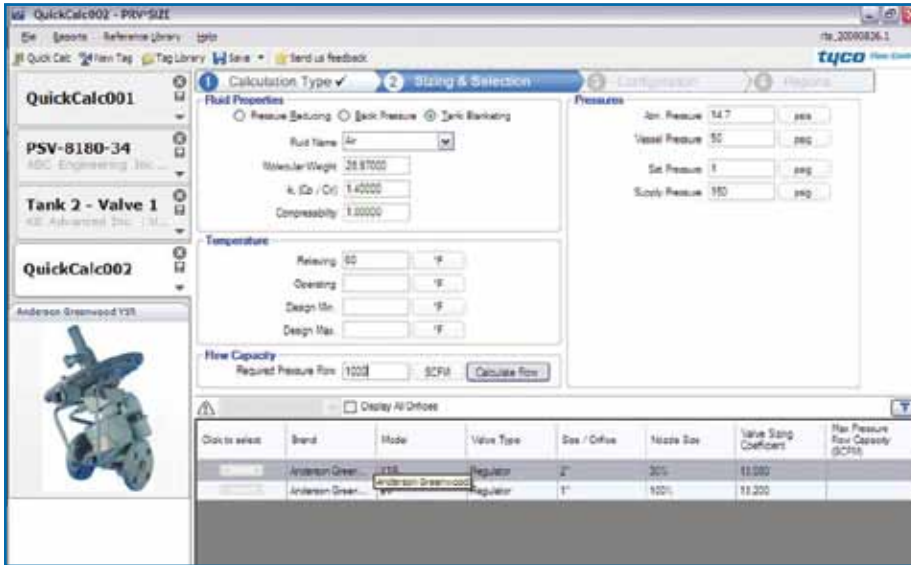


Valve Configuration Simplified by Drop-down Boxes

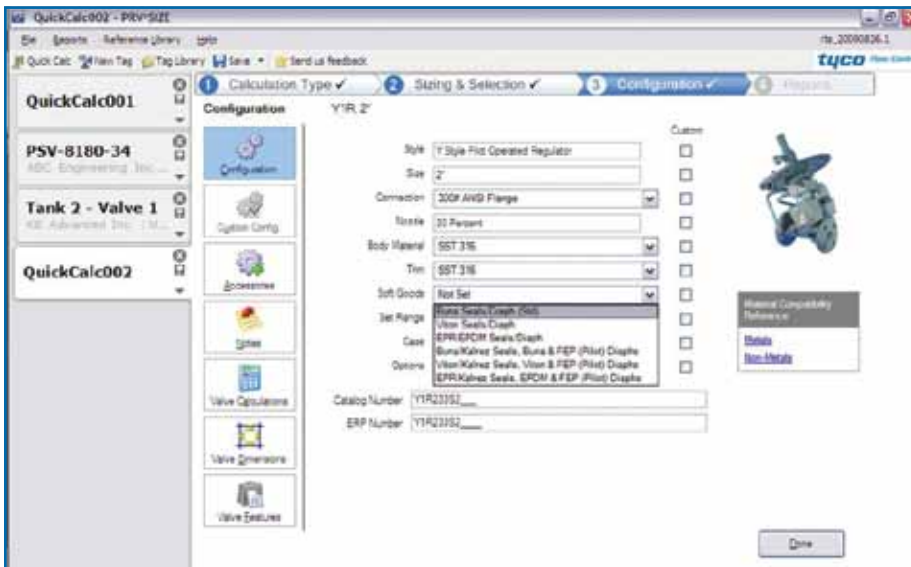


API RP 521 Fire Sizing

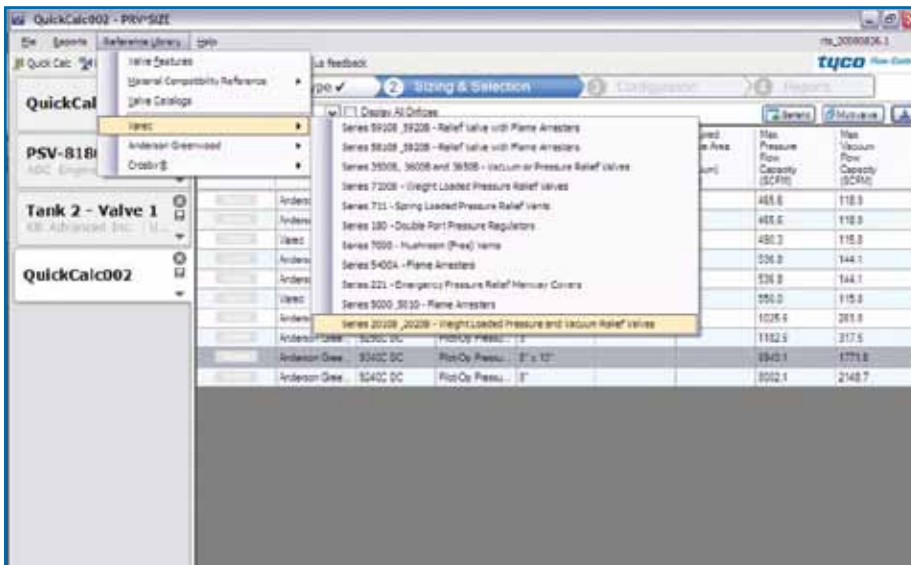
# Screenshots (cont'd)



Anderson Greenwood Tank Blanketing Regulator Sizing



Simplified Tank Blanketing Regulator Product Selection

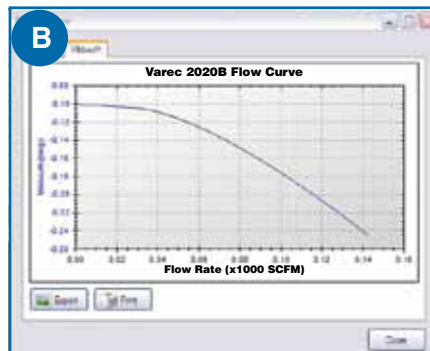
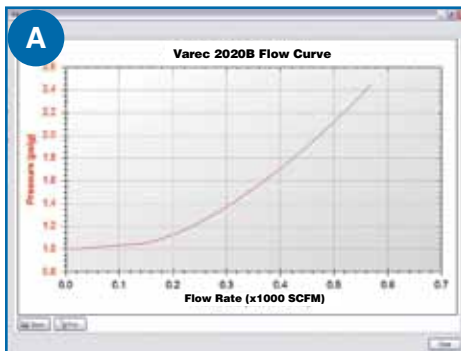


Varec Tank Protection Product Selection Simplified by Drop-down Boxes

# Screenshots (cont'd)

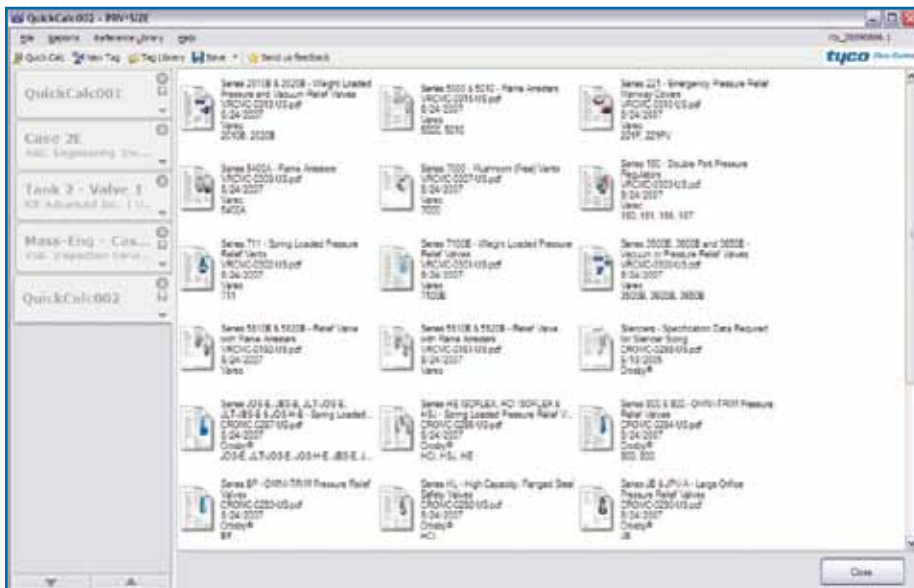


Configuration Screen Allows Quick Selection of Construction Materials and Connections



A Varec Pressure and Vacuum Relief Valve Flow Curves (Pressure)


B Pressure and Vacuum Relief Valve Flow Curves (Vacuum)



Catalog Data for Complete Product Range Integrated into Program


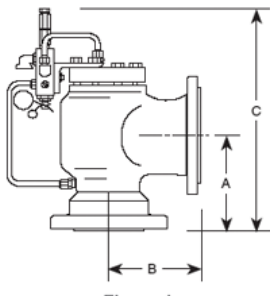
# Sample Reports

## Pressure Relief Valve Sizing-and-Selection


 <p>Tyco Valves &amp; Controls 3950 Greenbriar Staffor, TX, 77477, USA 281.274.4546 281.274.4529 rasmith@tycovalves.com</p>		<b>Pressure Relief Valve Sizing &amp; Selection Report</b>					
		1	TT	FR	RS	21-Aug-07	Change Order
		0	TT	FR	RS	15-Aug-07	Sent for Purchase
		C	TT	FR	RS	12-Aug-07	Revised Capacity
		B	TT	FR	RS	1-Aug-07	Revised Set Pressure
A	TT	FR	RS	4-May-07	Initial Inquiry		
Our Reference Number: PS07-107RAS.01		No	Prpd.	Chk.	Appr.	Date	Revision
Client: ABC Customer				End-User Ref. No.: S20.53			
Location: Anywhere, USA				Project Ref. No.: 126944			
Project: X							
1		VALVE ID			41		
2		Tag No. TZZ-PSV 100002			42		
3		Service TEST INLET CLR / HTR SHELL			43		
4		PID No. BLF-MUS-PRO-XB-TZZ-021-XXX-04018			44		
5		Line No. 6"-HM-81020-A1-A1.5"			45		
6		Equipment No. P1603-K07-HC			46		
7		GENERAL			47		
8		Valve Type Pilot Operated, Pop			48		
9		Safety / Relief Relief			49		
10		Nozzle Semi			50		
11		CONNECTIONS			51		
12		Inlet 1.5" Flg 150# RF Standard			52		
13		Outlet 3" Flg 150# RF ANSI B16.5			53		
14		MATERIALS OF CONSTRUCTION			54		
15		Body CS SA216-WCB/WCC			55		
16		Cap CS SA516-70			56		
17		Trim Stainless Steel			57		
18		Seat Buna-N			58		
19		Seals Buna-N			59		
20		Body SS A479-316			60		
21		Trim Spring SST 316 SST			61		
22		Seat Buna-N			62		
23		Seals Buna-N			63		
24		Diaphragm N/A			64		
25		Tubing Fittings 316 SST SS Swagelok			65		
26		Remote Sense NACE MR0175 (2002) No			66		
27		Pilot Discharge to MV Outlet			67		
28		Back Flow Preventer			68		
29		Field Test Connection			69		
30		Pilot Supply Filter			70		
31		SIZING / SELECTION SUMMARY			71		
32		Valve Model No. 44305H153/S			72		
33		Manufacturer Anderson Greenwood			73		
34		Area Calculated Selected 0.559 0.913			74		
35		Data Set Orifice ASME H			75		
36		Flow UNITS Required SCFM 1,000.0			76		
37		Rated Actual 1,633.7 1,815.3			77		
38		Nameplate 1,950 Air (60°F, 14.7 psia, 10%)			78		
39		Estimated Reaction Force 73.74 lbf			79		
40		Estimated Noise Level (db) 144.7 at 3-ft			80		
41		SIZING DATA			42		
42		Design Code ASME, Section VIII			Sizing Std. API 520		
43		Sizing Basis Blocked Discharge			44		
44		Fluid State at Inlet 2-Phase Flash & Noncond. Gas (7th, D.2.3)			45		
45		Relieving Case Pressure Relief			46		
46		Fluid Properties			47		
47		Fluid Name Crude Oil			48		
48		Specific Vol. Vapor 2.58456 ft <sup>3</sup> /lb			49		
49		@ Flowing Press. Liquid 0.016 ft <sup>3</sup> /lb			50		
50		Liquid Specific Heat (Cp) 1.014 BTU/lb*F			51		
51		Latent Heat of Vaporization 1000 BTU/lb*F			52		
52		Sat. Pressure (Vapor Phase) 150 psia			53		
53		Gas Partial Pressure 120 psia			54		
54		Ratio of Sp. Heat (Cp/Cv) 1.40			55		
55		Sp. Vol. @ 90% Flowing Press 1.25 ft <sup>3</sup> /lb			56		
56		Mixture contains less than 0.1% wt. Hydrogen? YES			57		
57		System far from thermodynamic critical point? YES			58		
58		Nominal boiling range less than 150°F? YES			59		
59		Sizing Coefficients			Unit -		
60		K, Gas Kd, Gas 0.878 0.975			61		
61		K, Liquid Kd, Liquid 0.656 0.729			62		
62		Kw Kb 1.000 1.000			63		
63		Kc 1.000			64		
64		Required Capacity			Unit lb/hr		
65		Gas Vapor 1,000.0 2,500.0			66		
66		Liquid Total 500.0 4,000.0			67		
67		Pressures			Unit psig		
68		MAWP Operating 100.00 75.00			69		
69		Set CDTP 100.00 -			70		
70		Over Pressure 10.00 10.00%			71		
71		Back Pressure			Unit		
72		Constant Superimposed 1.00			73		
73		Variable Superimposed 10.00			74		
74		Buil-Up 10.00			75		
75		Total 21.00			76		
76		Inlet Loss 0.00 0.00%			77		
77		Atmospheric (Barometric) 14.696 psia			78		
78		Relieving (Flowing) 124.696 psia			79		
79		Temperatures			Unit °F		
80		Operating Relieving 60 100			81		
81		Design Min Design Max -20 100			82		
82		Tag Notes			83		
83		1. This is a sample of how a datasheet will look.			84		
84		2. Final data sheet structure will vary from this slightly.			85		
85		Valve Dimensions			86		
86		in.			87		
87		A 7.25			88		
88		B 7.25			89		
89		C 30			90		
90		Weight 100			91		
91		Diagram			92		
92		Printed On: 09-Mar-2010			93		
93		TYCO PRV'SIZE Software Version 1.3.3525.22538			94		
94		Sheet 1 of 1			95		
95		Tyco Flow Control, Inc. and its parent, subsidiaries, and affiliates assume no liability in any way whatsoever for any direct or indirect loss or damage through the application of this software. See terms of license agreement. Not for resale. All rights reserved. All trademarks, trade names and/or registered trademarks referred to in this program are the property of their respective owners. Copyright © 2003 Tyco Flow Control, Inc.			96		

# Sample Reports (cont'd)


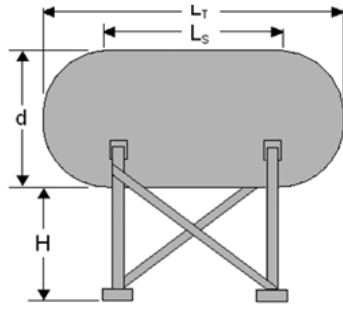
## Dimensional Drawing Based on Product Selection

		Tyco Valves & Controls 3950 Greenbriar Staffor, TX, 77477, USA 281.274.4546 281.274.4529 rasmith@tycovalves.com		Pressure Relief Valve Dimensional Drawing						
				1	TT	FR	RS	21-Aug-07	Change Order	
Our Reference Number: PS07-107RAS.01				No	Prpd.	Chk.	Appr.	Date	Revision	
Client: ABC Customer Location: Anywhere, USA Project: X				End-User Ref. No.: S20.53 Project Ref. No.: 126944						
1	VALVE ID			7	SELECTION SUMMARY					
2	Tag No.	TZZ-PSV 100002		8	Valve Model No.	24905H153/S				
3	Service	TEST INLET CLR / HTR SHELL		9	Manufacturer	Anderson Greenwood				
4	PID No.	BLF-MUS-PRO-XB-TZZ-021-XXX-04018		10	CONNECTIONS					
5	Line No.	6"-HM-81020-A1-A1.5"	Quantity	11	Inlet	1.5"	Flg	150#	RF	Standard
6	Equipment No.	P1603-K07-HC	1	12	Outlet	3"	Flg	150#	RF	ANSI B16.5
				Wt. = 38.0 lbm = 17.3 kg  A = 5.120 in. = 130.0 mm  B = 4.870 in. = 123.7 mm  C = 19.000 in. = 482.6 mm						
				Flanged						

## Project Summary Report

		Tyco Valves & Controls 3950 Greenbriar Staffor, TX, 77477, USA 281.274.4546 281.274.4529 rasmith@tycovalves.com		Project Summary Report			
				Client: ABC Customer Location: Anywhere, USA Project: X End-User Ref. No.: S20.53 Project Ref. No.: 126944			
Our Reference Number: PS07-107RAS.01							
Tag Number	Rev.	Model Number	Qty.	Valve Type	Fluid State	Pressure Set	Vacuum Set
20-PSV-5061	1	4M6 JBS-E-SPL-35-N2-J	1	Bellows	Gas/Vapor	50 psig	
20-PSV-5071	1	4M6 JBS-E-SPL-35-N2-J	1	Bellows	Gas/Vapor	50 psig	

## Fire Sizing Calculation with Product Selection

		Tyco Valves & Controls 3950 Greenbriar Staffor, TX, 77477, USA 281.274.4546 281.274.4529 rasmith@tycovalves.com		Fire Sizing Calculation					
				1	TT	FR	RS	21-Aug-07	Change Order
Our Reference Number: PS07-107RAS.01				No	Prpd.	Chk.	Appr.	Date	Revision
Client: ABC Customer Location: Anywhere, USA Project: X				End-User Ref. No.: S20.53 Project Ref. No.: 126944					
1	VALVE ID			41	SIZING DATA				
2	Tag No.	TZZ-PSV 100002		42	Design Code	ASME Section VIII		Sizing Std.	API 520
3	Service	TEST INLET CLR / HTR SHELL		43	Sizing Basis	Fire Sizing - API 521			
4	PID No.	BLF-MUS-PRO-XB-TZZ-021-XXX-04018		44	Method	Unnetted (Gas/Vapor Filled) Vessel			
5	Line No.	6"-HM-81020-A1-A1.5"	Quantity	45					
6	Equipment No.	P1603-K07-HC	1	46					
7	VESSEL SCHEMATIC			47	VESSEL DATA				
8					48	Surface Area Determination	Calculated		
9					49	Geometry	Cylinder		
10					50	Orientation	Horizontal		
11					51	End Types	Hemispherical		
12					52	Diameter	d	10 ft	
13					53	Height	h		
14					54	Elevation	H	10 ft	
15					55	Seam-to-Seam Length	L <sub>S</sub>	20 ft	
16					56	End-to-End Length	L <sub>T</sub>	30 ft	
17					57	Surface Area	A'	1256.6 ft <sup>2</sup>	
18	58	Fire Sizing Factor	Calculated						
19	59		F'	0.037					
20						$F' = \frac{0.1406 (T_w - T)^{1.25}}{CKT^{0.6506}}$			
21									
22									

# PRV<sup>2</sup>SIZE

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