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Pressure Relief Valve Sizing & Selection Report

No	Prpd.	Chk.	Appr.	Date	Revision
3	EVC			7-abr.-2022	New flow capacity.
2	EVC			1-feb.-2022	New process data.
1	EVC			30-ago.-2021	New process data.
0	EVC			27-jul.-2021	

Quote Number: 093-093

Client: *TECHNIP ENERGIES*
Location: *CARTAGENA, SPAIN*
End-User Ref. No.: *201754C001*
Project: *C43 "New Bios 2G Hydrotreatment Unit"*
Project Ref. No.: *U-608 Hydrogen Unit*

Valve ID

Tag No.	*608-PSV-1059*
Service	*CE-203 through T-501*
PID No.	*P-C43-A-110990 H51*
Line No.	*6"P-5109-C3*
Quantity	1

GENERAL

Valve Type	*Balanced Bellows, Direct Spring-Op*		
Safety / Relief	*Safety Relief*	Balanced	*Yes*
Nozzle	*Full*	Bonnet	*Vented*

CONNECTIONS

Inlet	*4"*	*Flngd.*	*300#*	*RF*	Standard
Outlet	*6"*	*Flngd.*	*150#*	*RF*	*ASME B16.5*

MATERIALS OF CONSTRUCTION

Body / Base	*CS SA216-WCB/WCC*
Bonnet / Cylinder	*CS SA216-WCB/WCC*
Nozzle	*316 SST*
Disc	*316 SST*
Seat	*Viton® (75)*
Spindle	*416 SST*
Guide	*SS A297 Gr. HE*
Spring	*Chrome Steel - Corr. Rest.*
Gaskets	*316 SST*
Bellows	*Inconel® 625*
Cap Type	*Bolted w/ Test Rod*
NACE MR0175/ISO 15156:2015	*No*

Accessories

SIZING / SELECTION SUMMARY

Valve Model No.		*4L6JLTJBS-EOR35M-P*		
Brand		*Crosby®*		
Area (cm²)	Calculated	Selected	*17.295*	*18.406*
	Data Set	Orifice	*API*	*L*
Flow	Unit	Required	kg/hr	20936
		Maximum		22280.962
Reaction Force, Open Discharge				
Noise Level (db), Open Discharge			*N/A*	

SIZING DATA

Design Code	*ASME VIII/XIII - UV*	Sizing Std.	*API 520*
Sizing Basis	*Tube Rupture*		
Fluid State at Inlet	*Two-Phase Flow (9th, C.2.2)*		
Relieving Case	*Pressure Relief*		

Fluid Properties

Fluid Name		*PROCESS GAS*
Specific Vol. @ Flowing Press.	Vapor	*0.00101 m³/kg*
	Liquid	*0.00101 m³/kg*
Sp. Vol. @ 90% Flowing Press.		*0.02169 m³/kg*
Ratio of Sp. Heats, k (Cp / Cv)		*1.376*

Sizing Coefficients		Unit	-
Effective K, Gas		*0.975*	
Effective K, Liquid		*0.65*	
Kw	Kb	*0.914*	*1*
Kc	Kv	*1*	*1.0*

Required Capacity		Unit	kg/hr
Vapor	Liquid	*13375*	*7561*
	Total		*20936*

Pressures		Unit	kg/cm² g
MAWP	Operating	*31*	*26.2*
Set	CDTP	*29*	*29.00*
Over Pressure		*2.9*	*10%*

Back Pressure		
Built-Up		*5.45*
Constant Superimposed		*0.3*
Variable Superimposed		*1.5*
Total		*7.25*

Inlet Loss	*0*	*0%*
Atmospheric (Barometric)	*1.033*	*kg/cm² a*

Temperatures		Unit	°C
	Normal System		
Operating	Relieving	*35*	*35*
Design Min	Design Max		*185*

Tag Notes

1. Maximum Carbon content % C Max 0.22 / %C Equivalent. Max. 0.43 (body and bonnet)
2. Maximum Content P(%) 0.020 - S(%) 0.015. (body and bonnet)
3. Standard C4M acc. ISO 12944
4. Opening Ad justment 5%
5. Magnetic Particle (Body and Bonnet)
6. Allowable Blowdown: 9.7%
7. ASME "UV" Stamp required.

Valve Dimensions

mm	
A	179.32
B	181.10
C	876.30
kg	
Weight	87.09