#### **EMERSON** Pressure Relief Valve Sizing & Selection Report edgardovicente.chiari@emerson.com 0 **EVC** 27-jul.-2021 Madrid, Spain EMERSON. +34 911 111 320 edgardovicente.chiari@emerson.com Quote Number: 093-093 No Prpd. Chk. Appr. Date Revision Client: TECHNIP ENERGIES Location: CARTAGENA, SPAIN End-User Ref. No.: 201754C001 Project Ref. No.: U-608 Hydrogen Unit Project: C43 "New Bios 2G Hydrotreatment Unit" 1 Valve ID SIZING DATA Tag No. 608-PSV-1003 2 42 Design Code ASME VIII/XIII - UV Sizing Std. API 520 3 43 Service Fuel Gas K.O. Drum C-114 PSV Sizing Basis Fire Case 44 4 PID No. P-C43-A-110990 H31 Fluid State at Inlet Gas / Vapor 5 Line No. 1"P-3105-D1-P Quantity 45 Relieving Case Pressure Relief 6 Fluid Properties 46 7 **GENERAL** 47 Fluid Name **HYDROCARBON** 8 Valve Type Balanced Bellows, Direct Spring-Op 48 Molecular Weight, M 19.45 9 Safety / Relief | Safety Relief Balanced Yes 49 Compressibility, Z 0.989 10 50 Nozzle Full Bonnet Vented Ratio of Sp. Heats, k (Cp / Cv) 1.174 11 CONNECTIONS 51 254 Gas Constant, C 52 12 Inlet 1" FIngd. 600# RF Standard 2" RF ASME B16.5 53 13 Outlet Fingd 150# 14 **MATERIALS OF CONSTRUCTION** 54 15 55 Body / Base CS SA216-WCB/WCC 16 Bonnet / Cylinder CS SA216-WCB/WCC 56 57 17 Nozzle 316 SST 18 316 SST 58 Disc 19 59 Sizing Coefficients Unit Seat Metal 20 416 SST 60 Spindle Effective K, Gas 0.975 21 Guide SS A297 Gr. HE 61 Kh Kc 1 1 22 Chr. Steel - Alum. Metallized 62 Spring 63 23 316 SST Gaskets 24 Bellows Required Capacity Inconel® 625 Unit kg/hr 25 Cap Type Bolted w/ Test Rod 65 Total 331.8 26 NACE MR0175/ISO 15156:2015 Yes 66 sei Bug Screen 27 67 **Pressures** Unit kg/cm² g 28 68 MAWP 49 39.5 Operating 29 69 Set **CDTP** 49 49.49

30 70 10.29 Over Pressure 31 SIZING / SELECTION SUMMARY 71 Built-Up 32 Valve Model No. 1D2JLTJBS-E45M-PN2 72 Constant Superimposed Back Pressure 33 Brand 73 Variable Superimposed Crosby® 34 Calculated Selected 0.114 0.710 74 Total Area 35 (cm<sup>2</sup>) Data Set Orifice API D 75 Inlet Loss 0 Unit 331.8 76 36 kg/hr Atmospheric (Barometric) 1.033 kg/cm<sup>2</sup> a Required 37 Maximum 2064.098 77 Flow **Temperatures** Unit 38 78 Normal System 39 Reaction Force, Open Discharge 300.3 N 79 Relieving 90 Operating 40 Noise Level (db), Open Discharge 133.7 at 1.0000-m 80 Design Min Design Max 1. Radiographic Test: Body and Bonnet

2. Maximum Carbon content % C Max 0.22 / %C Equivalent. Max. 0.43 (body and bonnet)

3. Max imum Content P(%) 0.020 - S(%) 0.015. (body and bonnet)

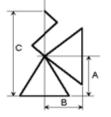
4. Stand ard C4M acc. ISO 12944

5. Opening Adjustment 5%

6. NACE 0103 ce rtificate required (disc & bellow).

7. ASME "UV" Stamp required.

		Α
ns		104.90
sio	ш	В
nen	mm	114.30
Valve Dimensions		С
Ne Ne		514.35
Va	۲g	Weight
	k	16.33



21%

12.25

0

0

12.25

0%

°C

225.8

105

## EMERSON.

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No Prpd. Chk. Appr. Date Revision

27-jul.-2021

Pressure Relief Valve Sizing & Selection Report 7-mar.-2022

New process data.

Client: TECHNIP ENERGIES Location: CARTAGENA, SPAIN

Quote Number: 093-093

End-User Ref. No.: 201754C001

EVC

EVC

0

	Project:	C43 "New	Bios 2G Hydrot	reatment	Unit"				Project Ref. No.:	U-608 Hydrogen U	nit	
1			Valve	ID			41			SIZING DATA	4	
2		Tag No.	608-PSV-1005				42		Design Code	ASME VIII/XIII - U	V Sizing Sto	d.   API 520
3		Service	Feed to pre-tre	atment			43		Sizing Basis	FV-	1004 fail open	
4		PID No.	201754C001-F	PID-0021-	-131		44	F	luid State at Inlet	C	Gas / Vapor	
5		Line No.	3"P-3306-C5-H	1		Quantity	45		Relieving Case	Pro	essure Relief	
6						1	46	FΙυ	id Properties			
7			GENER	RAL			47		Fluid	Name	PROCE	SS GAS
8	\	√alve Type	Balanced Bello	ws, Direc	ct Spring-	Ор	48		Molecular	Weight, M	17.	29
9	Saf	ety / Relief	Safety Relief	E	Balanced	Yes	49		Compres	sibility, Z	0.9	08
10		Nozzle	Full		Bonnet	Vented	50		Ratio of Sp. He	eats, k (Cp / Cv)	1.2	29
11			CONNECT	TIONS			51		Gas Cor	nstant, C	262	2.7
12	Inlet	1 1/2"	FIngd. 3	300#	RF	Standard	52					
13	Outlet	3"	Flngd. 1	150#	RF	ASME B16.5	53	1				
14		MAT	ERIALS OF CO	ONSTRU	CTION		54	Ì				
15		Body / Ba	se	CS	SA216-W	/CB/WCC	55	Ì				
16	Е	Bonnet / Cyl	inder	CS	SA216-W	/CB/WCC	56	Ì				
17		Nozzle			316 S	ST	57	Ì				
18		Disc			316 S	ST	58	ĺ				
19		Seat			Teflo	n	59	Siz	ing Coefficients		Unit	-
20		Spindle			416 S	ST	60			e K, Gas	0.9	75
21		Guide			SS A297	Gr. HE	61	ĺ	Kb	Kc	1	1
22		Spring		Chr. Si	teel - Alur	m. Metallized	62	Ì				
23		Gaskets 316 SST										
24		Bellows	,		Inconel®	0 625	64	Re	quired Capacity		Unit	kg/hr
25		Cap Typ	e	В	olted w/ T	est Rod	65			ıtal	60	
26	NACE M	R0175/ISO	15156:2015		Yes	;	66	ĺ				
27	စ္မ Bug So	reen					67	Pre	essures		Unit	kg/cm² g
28	Accessories and a graph of the second of the						68		MAWP	Operating	41	37.3
29	Ses						69	Ì	Set	CDTP	41	41.41
30	Acc						70	ĺ	Over P	ressure	4.1	10%
31		SIZI	NG / SELECTION	ON SUMI	MARY		71	İ		Built-U	lp	8.45
32	Valve	Model No.	1.5G	3JLTJBS	S-EX35M-	PN2SPL	72	Ì	Back	Constant Supe	erimposed	0.3
33	Е	Brand		Cr	rosby®		73	1	Pressure	Variable Supe	rimposed	1.5
34	Area	Calculate	ed Selected	1 2	2.086	3.245	74	Ì		Total		10.25
35	(cm²)	Data Se	t Orifice		API	G	75	Ì	Inlet	Loss	0	0%
36		Unit	Required	d k	kg/hr	6000	76		Atmospheric	(Barometric)	1.033	kg/cm² a
37	Flow		Maximun			9336.312	77	Te	mperatures	·	Unit	°C
38							78			Normal System		
39	Reaction	on Force, O	pen Discharge		1458	N	79		Operating	Relieving	90	35.7
40	Noise L	evel (db), C	Open Discharge		138.8 at	1.0000-m	80	Ì	Design Min	Design Max		250
Tag Notes	1. Radiographic Test: Body and Bonnet 2. Maximum Content P(%) 0. 020 - S(%) 0.015. (body and bonnet) 3. Standard C4M acc. ISO 129 44 4. Opening Adjustment 5% 5. NACE 0103 certificate required ( disc & bellow). 6. Magnetic Particle (Body and Bonnet) 7. Blowd own: 9% 8. ASME "UV" Stamp required.									A   123.95   B   152.40   C   603.25   Weight   22.68	c	A

				EME	RSON					Press	ure Rel	ief V	alve Sizin	g & Sele	ction Report	
	<u> </u>		edgardovi	cente.ch	iari@emers	on.com	0	E۱	/C			27	-jul2021			
		7														
E	MEÈ	RSOI	NI.	Madrid	l, Spain											
		(30)	ты	+34 911	111 320											
			edgardovi	cente,ch	iari@emers	on.com										
		Quote No	umber: 093-0				No	Pr	pd.	Chk.	Appr.		Date		Revisio	n
	Client:		ENERGIES													
			ENA, SPAIN						Е	End-Use	er Ref. N	No.:	201754C0	01		
			Bios 2G Hydro	treatme	ent Unit"					Proie	ct Ref N	No .	U-608 Hyd	Irogen Ui	nit	
1		0.0	Valve					41				10		IG DATA		
2		Tag No	608-PSV-103					42		Design	n Code		ASME VI			td. API 520
3			E-761 shell si					43			Basis		7.0 7		d outlet + hear	·
4			P-C43-A-1109		)			44	FI		te at Inl	et		Bioditot	Steam	. 017
5			1"SH-4206-T			Oua	intity	45	-		ng Case			Pre	essure Relief	
6		LINE INO.	1 311-4200-17	(DIO-L	ı		1	_		id Pro		·		7 70	essure relier	
7			GENE	DAI			1	47	i iu	iu Fiop		luid I	Name	T	C+.	eam
8		Valve Type	Conventional,		Snring-On			48					Weight, M	<u> </u>		.020
		• • •			Balanced	Ma		49					_			000
9	Sa	fety / Relief	i		Bonnet		,	50		Dot		•	sibility, Z ats, k (Cp /	C14)		.31
_		Nozzle	CONNEC	TIONS	Donnet	Closed		51								
11	11.4	4"				04	al a mal	52		•	Saturati	on i	emperatur	9	268.644	C
12	Inlet	1"	Fingd.	600#	RF		idard	_								
13	Outlet	2"		150#	RF	ASME	B16.5	53								
14			TERIALS OF C	ONSIR		05014		54								
15	_	Body / Ba			SS SA351			55								
16	E	Bonnet / Cy			SS SA351			56								
17		Nozzle			316 S			57								
18		Disc			17-4 PH			58								,
19		Seat			Meta			59	Siz	ing Co	efficien	ts			Unit	-
20		Spindle	•		316 S	ST		60			Effec	tive I	K, Steam		0.	975
21		Guide			SS A297	Gr. HE		61			Kb		Kc		1	1
22		Spring			Inconel®	X750		62			Kn		Ksh		1	0.985
23		Gasket	S		316 S	ST		63			Ksc					
24		Bellows	5		N/A	-		64	Red	quired	Capaci	ty			Unit	
25		Сар Тур	е	Pack	ed Lift Leve	r w/ Tes	st Rod	65				To	tal			
26	NACE N	IR0175/ISC	15156:2015		No			66								
27	<u>e</u> s							67	Pre	ssures	3				Unit	kg/cm² g
28	Accessories							68		N	1AWP		Opera	ting	49	34.5
29	Ces							69			Set		CDT	Р	49	49
30	Ac							70			Ove	er Pr	essure		4.9	10%
31		SIZ	ING / SELECT	ION SU	MMARY			71						Built-U	р	4.9
32	Valve	Model No.		1D2JC	)S-E45S6E-	-PS		72		ļ	Back		Const	ant Supe	rimposed	0
33	Е	Brand			Crosby®			73		Pr	essure		Varial	ole Supe	rimposed	0
34	Area	Calculate	ed Selecte	d		0.7	710	74				[		Total		4.9
35	(cm²)	Data Se	et Orifice		API	L	כ	75			li li	nlet	Loss		0	0%
36		Unit	Require	d	kg/hr			76		Α	tmosph	eric	(Barometri	c)	1.033	kg/cm² a
37	Flow	Saturate	ed Superhea	ted	1956.951	1928	3.244	77	Ter	nperat	ures				Unit	°C
38			·					78					Normal S	ystem		
39	Reaction	on Force, C	pen Discharge		257.1	N		79		Op	erating		Reliev		242	270
40			Dpen Discharge		136.5 at	1.0000-	m	80			sign Min	1	Design	-		270
Tag Notes	1. Radiogr 2. Liquid P 3. Opening	aphic Test	- Body and Bor est - Body/Mac nt 5%	net	urfaces			•			-		mm 1	A 04.90 B 14.30 C 08.00 Veight	c	Î

Printed On: 28-jun.-2022 PRV²SIZE Software Version pr7\_20220307.1 Page : 3

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# EMERSON.

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 1
 EVC
 20-abr.-2022
 New process data

 0
 EVC
 27-jul.-2021

Date

Revision

Pressure Relief Valve Sizing & Selection Report

Client: TECHNIP ENERGIES
Location: CARTAGENA, SPAIN

Quote Number: 093-093

End-User Ref. No.: 201754C001

Prpd. Chk. Appr.

	Project	CA3 "New	Bios 2G Hydrot	reatment   Init"				Project Ref. No :	U-608 Hydrogen U	nit	
1	F10ject.	C43 New	Valve			41		Froject Nei. No	SIZING DATA		
1		Tog No				42		Design Code	ASME VIII/XIII - U		td. API 520
2			608-PSV-1038			43		Design Code			id.   API 520
3			C-231 fuel gas P-C43-A-1109				-	Sizing Basis Fluid State at Inlet		Fire Case	
4					0 "	44				Gas / Vapor	
5		Line No.	1-1/2"-FG-451	2-B4-P	Quantity	45		Relieving Case	Pr	essure Relief	
6					1 1		FIL	uid Properties			
7			GENER			47		Fluid			CARBON
8				ows, Direct Spring	, ·	48			Weight, M		5.52
9	Saf	ety / Relief		Balance		49			sibility, Z	0.	912
10		Nozzle	Full	Bonne	t Vented	50		Ratio of Sp. He	ats, k (Cp / Cv)	1.	108
11			CONNECT	TIONS	_	51		Gas Cor	nstant, C	24	48.7
12	Inlet	1"	FIngd. 3	300# RF	Standard	52					
13	Outlet	2"	FIngd. 1	150# RF	ASME B16.5	53					
14		MAT	ERIALS OF CO	ONSTRUCTION		54					
15		Body / Ba	se	CS SA216-	WCB/WCC	55					
16	Е	Bonnet / Cyl	inder	CS SA216-	WCB/WCC	56	1				
17		Nozzle		316	SST	57					
18		Disc		316	SST	58					
19		Seat		Ме	tal	59	Siz	zing Coefficients		Unit	_
20		Spindle		416		60			e K, Gas		975
21		Guide		SS A297		61		Kb	Kc Kc	0.968	1
22		Spring		Chrome Stee		62		IND	110	0.000	,
23		Gaskets		316		63					
24		Bellows		Incone		64	Po	quired Capacity		Unit	kg/hr
25				Screwed w		$\vdash$	\r	· · ·	tal		<u> </u>
	NACEM	Cap Typ				65		10	tal	4	155
26	1		15156:2015	N	0	66	-			1114	1/
27	Accessories Bing	,, 6611				67	Pro	essures	0	Unit	kg/cm² g
28	SSC					68		MAWP	Operating	5.8	3.7
29	8					69	ļ	Set	CDTP	5.8	5.800
30	⋖					70		Over P	ressure	1.218	21%
31			NG / SELECTION	ON SUMMARY		71			Built-U	•	2.3
32		Model No.		1D2JBS-E35k	-P	72		Back	Constant Supe	•	0
33	Е	Brand		Crosby®		73		Pressure	Variable Supe		0
34	Area	Calculate			0.710	74			Total		2.3
35	(cm²)	Data Se		API	D	75			Loss	0	0%
36		Unit	Required	d kg/hr	455	76		Atmospheric	(Barometric)	1.033	kg/cm² a
37	Flow		Maximun	n	503.131	77	Te	mperatures		Unit	°C
38						78	4		Normal System		
39	Reaction	on Force, C	pen Discharge	3	7 N	79		Operating	Relieving	38	67.9
40		, ,.	Open Discharge	114.1 a	t 1.0000-m	80		Design Min	Design Max		150
Tag Notes	2. Opening	Adjustmer 0103 certific	ate required (di	isc & bellow ).					A 104.90 B 114.30 C 514.35 Weight 16.33	c	A

Printed On: 28-jun.-2022

PRV2SIZE Software Version pr7\_20220307.1

Page: 4

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						111 320			_									
				<u> </u>		ari@emers	on.com				-			_				
		Quote Nu			93			No	Prp	d. Cl	าk.	Appr.		Date			Revision	า
		TECHNIP																
		CARTAGE										er Ref. N						
_	Project:	C43 "New	Bios 2			nt Unit"				P	roje	ct Ref. N	No.:		Hydroger			
1				Valve					41						ZING DA			
2				PSV-1047					42			n Code		ASME	· VIII/XIII		Sizing Sto	· '
3				shell sic					43			Basis			В		l-in heat-on	
4				3-A-1109	90 H47				44			ite at Inl					/ Vapor	
5		Line No.	2"P-4	701-B4				intity	45			ng Case	,			Pressi	ure Relief	
6 7				OFNE	241			1	_	Fiula I	rop	perties		1				00.040
_	,	/alica Tima	Dalan	GENER		a at Ourwin a	0-		47					Name	N 4		PROCE	
8		/alve Type			ws, טור, 	<i>ect Spring-</i> Balanced			48					Neight,			28. 0.9	
9	Sai	ety / Relief		У				ı	-		Dat		•	sibility,				
10 11		Nozzle		ONNEC	TIONS	Bonnet	vented	1	50		ral	io of Sp		ats, κ (t stant, C		-	1.3 26	
12	Inlet	1 1/2"	FIng		300#	RF	Cton	dard	52			Gas	Con	siani, C	,		∠03	D. I
13	Outlet	2"	Fing	•	150#	RF		B16.5	-									
14	Outlet			LS OF C			ASIVIL	В10.5	54							-		
15		Body / Ba		L3 OF C		S SA216-W	ICB/MC	`C	55									
16	Р	Bonnet / Cyl			-	S SA216-VI			56							+		
17	L	Nozzle				316 S		,0	57									
18		Disc				316 S			58									
19		Seat				Meta			_	Sizina	Co	efficien	nts				Unit	_
20		Spindle	<b>.</b>			416 S			60	Jizing	00			K, Gas	<u> </u>		0.9	
21		Guide				SS A297			61			Kb	Cuvo	rt, Out	, Kc		0.936	1
22		Spring			Chr	ome Steel -		Rest	62			110			110		0.000	•
23		Gaskets	S			316 S			63									
24		Bellows				Inconel®			-	Reaui	red	Capaci	tv				Unit	kg/hr
25		Сар Тур	е		s	crewed w/	Test Ro	od	65	Ť			Tot	al			89	
26	NACE M	R0175/ISO		6:2015		No			66									
27	g Bug So	reen							67	Pressi	ures	s					Unit	kg/cm² g
27 28 29 30	Accessories Brigging Society								68			//AWP		Ор	erating		5.8	0.3
29	Ses								69			Set			DTP		5.8	5.800
30	Acc								70			Ove	er Pr	essure			0.58	10%
31		SIZI	ING / S	SELECTI	ON SU	MARY			71						Buil	t-Up		0.5
32	Valve	Model No.			1.5F2JE	BS-E35K-P	SPL		72		1	Back		Co	nstant Sเ	ıperim	posed	0.3
33	В	Brand			(	Crosby®			73		Pr	essure		Va	riable Su	perim	posed	1.5
34	Area	Calculate	ed	Selected	t	1.701		981	74						To	tal		2.3
35	(cm²)	Data Se	t	Orifice		API	ı	F	75			I	nlet l	oss			0	0%
36		Unit		Require		kg/hr		94	76			Atmosph	eric	(Barom	etric)	$\perp$	1.033	kg/cm² a
37	Flow			Maximur	n		1041	1.174	_	Tempe	erat	ures					Unit	°C
38	_								78						al System	1		
39		on Force, O	<u> </u>			101.3			79		•	erating			lieving		21	46.6
40		evel (db), C				116.7 at	1.0000-	m	80		Des	sign Min	1	Des	gn Max	$\perp$		220
Tag Notes	Standar     Standar     Standar     Standar     Standar     Standar     Standar		nt 5%											Valve Dimensions kg mm	A 123.95 B 152.40 C 603.25 Weight		c	A
															22.68	- 1		



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vicente contante en la contraction

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edgardovicente,chiari@emerson.com

2	EVC		1-feb2022	L
1	EVC		30-ago2021	
0	EVC		27-jul2021	
			, ,	

New flow capacity.
New process data.
New process data.

Revision

Quote Number: 093-093 No Prpd. Chk. Appr. Date
Client: TECHNIP ENERGIES

3

**EVC** 

Location: CARTAGENA, SPAIN

Project: C43 "New Bios 2G Hydrotreatment Unit"

End-User Ref. No.: 201754C001
Project Ref. No.: U-608 Hydrogen Unit

**Pressure Relief Valve Sizing & Selection Report** 

7-abr.-2022

	FTOJECL.	C43 NEW	BIOS 2G FIYUIO	ireaiment om				Floject Nel. No	U-006 Hydrogen C	) i ii l	
1			Valve	ID		41			SIZING DAT	Α	
2		Tag No.	608-PSV-1059	9		42		Design Code	ASME VIII/XIII - U	JV Sizing S	td.   API 520
3			CE-203 throug			43	İ	Sizing Basis	7	ube Rupture	'
4			P-C43-A-1109			44	F	Fluid State at Inlet		ase Flow (9th, (	C 2 2)
5			6"P-5109-C3		Quantity	45	-	Relieving Case		ressure Relief	··-·-/
6			0.0000		1	46	_	uid Properties			
7			GENER	<b>2</b> ΔΙ		47		Fluid	Name	PROCE	SS GAS
8		/alve Tyne		ows, Direct Sprir	ng-On	48	1	Specific Vol. @		0.00101	
9			Safety Relief		ed Yes	49	-	Flowing Press.		0.00101	
10	Jai	Nozzle			et Vented	50	-	Sp. Vol. @ 90%	=:9a::a	0.02169	
11		NOZZIC	CONNEC		ict venteu	51			ats, k (Cp / Cv)		376
12	Inlet	4"		300# RF	Standard	52	ł	Natio of Sp. 11e	als, k (Op / CV)	1	370
13	Outlet	6"		150# RF	ASME B16.5	-	-				
	Outlet			ONSTRUCTION	ASINE B10.5	-	-				
14				T	14/00/44/00	54	-				
15		Body / Ba		1	-WCB/WCC	55	-				
16	E	Bonnet / Cyl			-WCB/WCC	56	-				
17		Nozzle			SST	57	-				
18		Disc			SST	58	_				1
19		Seat			® (75)	59	Si	zing Coefficients		Unit	-
20		Spindle			SST	60	ł	Effective	·		975
21		Guide		İ	7 Gr. HE	61	-		K, Liquid		.65
22		Spring		1	el - Corr. Rest.	62	-	Kw	Kb	0.914	1
23		Gaskets			SST	63	-	Kc	Kv	1	1.0
24		Bellows	5		el® 625	64	-	equired Capacity		Unit	kg/hr
25		Cap Typ		Bolted w	/ Test Rod	65	-	Vapor	Liquid	13375	7561
26		R0175/ISO	15156:2015		Vo	66	_		Total		20936
27	Accessories					67	Pr	ressures		Unit	kg/cm² g
28	SSOI					68		MAWP	Operating	31	26.2
29	Š					69	-	Set	CDTP	29	29.00
30	ĕ					70		Over P	ressure	2.9	10%
31		SIZI	ING / SELECTI	ON SUMMARY		71			Built-l	Jp	5.45
32	Valve	Model No.		4L6JLTJBS-EOF	R35M-P	72		Back	Constant Sup	erimposed	0.3
33	E	Brand		Crosby®		73		Pressure	Variable Supe	erimposed	1.5
34	Area	Calculate	ed Selecte	d 17.295	18.406	74			Tota	ıl .	7.25
35	(cm²)	Data Se	et Orifice	API	L	75		Inlet	Loss	0	0%
36		Unit	Require	d kg/hr	20936	76		Atmospheric	(Barometric)	1.033	kg/cm² a
37	Flow		Maximuı	m	22280.962	77	Te	emperatures		Unit	°C
38						78			Normal System		
39	Reaction	on Force, O	pen Discharge			79		Operating	Relieving	35	35
40	Noise L	evel (db), C	Dpen Discharge	•	N/A	80		Design Min	Design Max		185
Note	<ol> <li>Maximu</li> <li>Standar</li> <li>Opening</li> <li>Magneti</li> <li>Allowab</li> </ol>	m Content l d C4M acc. j Ad justme	P(%) 0.020 - S( ISO 12944 nt 5% Body and Bonn vn: 9.7%	(%) 0.015. (bod	ivalent. Max. 0.4 y and bonnet)	3 (b	ood	y and bonnet)	A   179.32   B   181.10   C   876.30	c	× ×

Printed On: 28-jun.-2022

PRV2SIZE Software Version pr7\_20220307.1

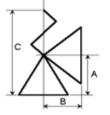
Page : 6

Weight 87.09

Convertions																	
Cucte Number											Press	ure Reli			g & Sel	ection Report	
August   A				edgardovi	cente.chi	ari@emers	on.com	0	E/	VC_			27	'-jul2021			
August   A				_	N 4 m almi al	C			$\vdash$								
Clean: TECHNIP ENERGIES   Coation: CARTAGENA, SPAIN   Prige: TECHNIP ENERGIES   Coation: CARTAGENA, SPAIN   Prige: CASTAGENA, SPAIN   Project: C43 "New Bios 26 Hydrotreatment Unit"   Project Ref. No.: 201754C001   P	E	MEF	<b>RSOI</b>	<b>V</b>		•			$\vdash$								
Cilent   TeCHNIP ENERGIES							on oom		$\vdash$								
Client: TECHNIP ENERGIES			Ouata Ni			anwemers	OH.COM		Dr	nd	Chk	Annr		Data		Povicio	_
Location: CARTAGENA, SPAIN		Client			193			NO	FI	pu.	Clik.	Appr.		Date		Revision	L
Project: C43 *New Bios 26 Hydrogreatment Unit*										_	End Lle	or Dof N	do ·	20175400	001		
1				*	treatmer	at I Init"										Init	
2	1	FTOJECI.	C43 New	-		it Offit			11		Fioje	ot ixei. i	NO				
Service   Hydrogen to battery limit   43   Sizing Basis   Blocked Outlet   Gas / Vapor			Tag No.						1		Design	n Code	П				d API 520
Filid State at Inlet   Fluid Properties						nit			-					AOME VI			u.   Ai 1 020
									-	F			et				
Section   Sect					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Опа	ntity	+							•	
			Lino 140.	0 11 0 102 02					1								
Solution   Solution	$\vdash$			GENE	RAL				-				uid l	Name		Hvdr	ogen
Safety   Relief   Safety   Balanced   Yes   49   Ratio of Sp. Heats, k (Cp / Cv)   1.4		,	Valve Type			ect Sprina-	 Ορ		•			Molecu	ular	Weight. M		-	-
Nozzle   Full   Bonnet   Vented   50   Gas Constant, C   270.3	$\vdash$		• • •		Ī				-					_		1.0	000
	10		•	-				1	50		Rat				Cv)	1.	.4
MATERIALS OF CONSTRUCTION   54	11			CONNEC	TIONS				51							27	0.3
MATERIALS OF CONSTRUCTION   54	12	Inlet	1 1/2"	Flngd.	300#	RF	Stan	dard	52								
Body   Base   CS SA216-WCB/WCC   55	13	Outlet	3"	FIngd.	150#	RF	ASME	B16.5	53								
Bonnet / Cylinder	14		MAT	TERIALS OF C	ONSTR	JCTION			54								
Nozzle	15		Body / Ba	ise	C	S SA216-W	CB/WC	C	55								
Seat	16	Е	Bonnet / Cy	linder	C	S SA216-W	CB/WC	C	56								
Seat   Metal   59   Sizing Coefficients   Unit	17		Nozzle			316 S	ST		57								
Spindle	18		Disc			316 S	ST		58								
Comparison	19		Seat			Meta	a/		59	Siz	ing Co	efficien	ts			Unit	-
Spring   Chrome Steel - Corr. Rest.   62   Gaskets   316 SST   63   Required Capacity   Unit   kg/hr	20		Spindle	•		416 S	ST		_			Effe	ctive	K, Gas		0.9	75
Gaskets   316 SST   63	21		Guide			SS A297	Gr. HE		<del></del>			Kb		Kc		1	1
Bellows   Incone\text{\text{\$\text{\$Bellows}\$}   Incone\text{\text{\$\text{\$\text{\$\text{\$Bellows}\$}}   Incone\text{\text{\$\}\$\$}\$}\$\text{\$\text{\$\text{\$\text{\$\text{\$\tex	22		Spring		Chro			Rest.	-								
Cap Type	23								-								
NACE MR0175/ISO 15156:2015   No   66	24				-				-	Re	quired	Capacit	•				
Bug Screen   67   Pressures   Unit   kg/cm² g	-							1					То	tal		18	96
Second   S	-	1		15156:2015	-	No			-	_							1 / 2
SIZING / SELECTION SUMMARY   71   32   Valve Model No.   1.5G3JBS-E35M-P   72   33   Brand   Crosby®   73   Valve Model No.   1.5G3JBS-E35M-P   72   Back   Constant Superimposed   0   0   0   0   0   0   0   0   0	2/	i Bug St	CC11						-	Pre				0	tina		
SIZING / SELECTION SUMMARY   71   32   Valve Model No.   1.5G3JBS-E35M-P   72   33   Brand   Crosby®   73   Valve Model No.   1.5G3JBS-E35M-P   72   Back   Constant Superimposed   0   0   0   0   0   0   0   0   0	20	SSS							_		į IV				-		
SIZING / SELECTION SUMMARY   71   32   Valve Model No.   1.5G3JBS-E35M-P   72   33   Brand   Crosby®   73   Valve Model No.   1.5G3JBS-E35M-P   72   Back   Constant Superimposed   0   0   0   0   0   0   0   0   0	30	) 							_				or D		Γ'		
Noise Level (db), Open Discharge   1.5G3JBS-E35M-P   72   Back Pressure   Total   To	-	<u> </u>	SIZ	ING / SELECT	ION SUI	IMARY			-			OVE	J1 [	i cooui e	Built I		
Salar   Selected   S		Valve					-P		_			Rack		Const			
Area   Calculated   Selected   2.860   3.245   74     Total   7	33						•										
Data Set   Orifice   API   G   75   Inlet Loss   0   0%	34		1	ed Selecte		-	3 2	245	+				ŀ	vand			
Unit   Required   kg/hr   1896   76   Atmospheric (Barometric)   1.033 kg/cm² a	35											Ir	nlet	Loss	. 5.0		
State	36	/							+		A				c)	-	
38         78         Normal System           39         Reaction Force, Open Discharge         819.1 N         79         Operating         Relieving         38         38           40         Noise Level (db), Open Discharge         142.0 at 1.0000-m         80         Design Min         Design Max         80           1. Hydrogen Service.         A	37	Flow				J			-	Tei				,	,		
Reaction Force, Open Discharge 819.1 N 79 Operating Relieving 38 38  Noise Level (db), Open Discharge 142.0 at 1.0000-m 80 Design Min Design Max 80  1. Hydrogen Service.	38								78					Normal S	system		
1. Hydrogen Service.	39	Reaction	on Force, C	pen Discharge		819.1	N		_		Ор	erating				38	38
	40			Open Discharg	e	142.0 at	1.0000-	m	80		Des	sign Min		Design	Max		80
				contant 0/ C M	nv () 22 /	%C Fault	alont M	lav 0 4	2 /4		and ha	nnot)			Α	I	

3. Maximum Carbon content % C Max 0.227 % C Equivalent. Max. 0
3. Maximum Content P(%) 0.020 - S(%) 0.015. (body and bonnet)
4. Standard C4M acc. IS O 12944
5. Opening Adjustment 5%
6. NACE 0103 certificate requi red (disc & bellow ).
7. Magnetic Particle (Body and Bonnet)
8. ASME "UV" Stamp required.

		Α
ns		123.95
sio	ш	В
Dimensions	mm	152.40
۵		С
Valve		603.25
Va	۲g	Weight
	ķ	22.68





#### **EMERSON** edgardovicente.chiari@emerson.com

Madrid, Spain +34 911 111 320

edgardovicente,chiari@emerson.com

	Prnd	Chk		Revision
0	EVC		7-mar2022	New valve on scope.

Pressure Relief Valve Sizing & Selection Report

New temperatures

7-abr.-2022

Client: TECHNIP ENERGIES Location: CARTAGENA, SPAIN

Quote Number: 093-093

End-User Ref. No.: 201754C001

EVC

	CARTAGE	,				_	na-oser ker. No			
Project	C43 "New E	Bios 2G Hydrot	treatment Unit"				Project Ref. No.:	U-608 Hydrogen l	Jnit	
1		Valve	ID		41			SIZING DAT	Ά	
2	Tag No.	608-PSV-1140	)		42		Design Code	ASME VIII/XIII - U	JV Sizing S	td.   API 520
3	Service	Nitrogen Comp	pressor Suction		43		Sizing Basis		Valve Open	
4	PID No.	P-C43-A-1109	90 H56		44	Flu	uid State at Inlet		Gas / Vapor	
5	Line No.	4"SH-5707-D3	:-H	Quantity	45	F	Relieving Case		ressure Relief	
3				1	46		d Properties			
7		GENER	RAL		47		Fluid I	Name	Nitr	ogen
	Valve Type		ows, Direct Spring	-Op	48	1	Molecular			8.0
_	fety / Relief		Balanced		49	1	Compres	-		000
0	Nozzle	•		t Vented	50	1	Ratio of Sp. He	•		400
1		CONNEC		1, 10,110	51	1	Gas Cor	`		70.3
2 Inlet	1"		300# RF	Standard	52	1	00 00.			0.0
3 Outlet	2"	<b>J</b>	150# RF	ASME B16.5	53					
4			ONSTRUCTION	AOME B10.0	54	1				
5	Body / Bas		CS SA216-1	A/CP/M/CC	55	1				
_	•		CS SA216-1		_	{    -				
_	Bonnet / Cylii	ider			56	-				
7	Nozzle		316 3		57	-				
8	Disc		316 8		58					
9	Seat		Me		59	Sizi	ng Coefficients		Unit	-
0	Spindle		416 3		60		Effective			975
1	Guide		SS A297		61		Kb	Kc	1	1
2	Spring		Ctd. Allo	•	62					
3	Gaskets		316 3	SST	63					
4	Bellows		Inconel	® 625	64	Req	uired Capacity		Unit	
5	Сар Туре		Bolted w/	Test Rod	65		То	tal		
6 NACE N	1R0175/ISO	15156:2015	No	)	66					
7 ဖ္မ Bug S	creen				67	Pres	ssures		Unit	kg/cm² g
7   Selection   8   8   9   9   0   9   9   9   9   9   9   9					68		MAWP	Operating	15	6
9 8 9					69		Set	CDTP	13.6	13.600
0 8 0					70	1	Over Pi	ressure	1.36	10%
1	SIZI	IG / SELECTION	ON SUMMARY		71	1		Built-l	Jp	1.6
2 Valve	Model No.		1D2JBS-E36M	-P	72	1	Back	Constant Sup	erimposed	0.3
	Brand		Crosby®		73	1	Pressure	Variable Supe		1.5
4 Area	Calculated	d Selected	<u> </u>	0.710	74			Tota		3.4
5 (cm²)	Data Set		API	D	75		Inlet		0	0%
6	Unit	Required		İ	76		Atmospheric			kg/cm² a
7 Flow	2	Maximur		884.335	77		peratures		Unit	°C
8					78		,	Normal System		
_	on Force Or	en Discharge	80.3	3 N	79	4	Operating	Relieving	35	35
		pen Discharge		1.0000-m	80	4	Design Min	Design Max		80
1. Maximu 2. Standa 3. Openin 4. Blowd		(%) 0.020 - S( ISO 12944 5%	%) 0.015. (body a				J	A 104.90 B 114.30 C 514.35 Weight	c	<u></u>

Printed On: 28-jun.-2022

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Page: 8

				E	EMERSON				Pres	sure Re	elief V	/alve Sizin	g & Selec	tion Repor	t
	<u> </u>		edgardo	/icen	te.chiari@emers	on.com					27	-jul2021		•	
		7													
F	MEĖ	2501	V	М	ladrid, Spain										
			The state of the s	+34	1 911 111 320										
					te,chiari@emers	on.com									
		Quote Nu	ımber: 093	-093			No	Pr	od. Chk	. Appr	:	Date		Revisi	on
			ENERGIES												
			NA, SPAIN									201754C0			
	Project:	C43 "New			atment Unit"				Pro	ect Ref.	No.:	U-608 Hyd			
1		Tan Na		ve ID				41	D	O			NG DATA		Std. API 520
3			608-TSV-10 E-741 CW s					42		gn Code ng Basis	i	ASME VI	II/XIII - U\ Thorn	/   Sizing S nal Expansio	
4			P-C43-A-11		) H43			44		tate at Ir	- 1		mem	Liquid	<i>/</i> 11
5			3/4"CWR-4			Qua	intity	45		ing Cas			Pre	ssure Relief	
6		Line ive.	0, 1 01111 1	,,		,	-	46	Fluid Pr						
7			GEN	ERA	L		•	47		-		Name		COOLIN	IG WATER
8	,	/alve Type	Convention	al, Dii	rect Spring-Op			48		S	p. Gra	avity, G		0	.980
9	Sat	ety / Relief	Safety Relie	f	Balanced	No		49			Visc	-		0.4382	4 cSt
10		Nozzle			Bonnet	Closed	1	50		R	eynol	ds No.			
11			CONNE	CTIC	ONS			51		Reyr	nolds	No. (max)		508	437.17
12	Inlet	3/4"	Thrd.		MNPT	Stan	dard	52							
13	Outlet	1"	Thrd.		FNPT	ASME I	B1.20.	53							
14				CON	ISTRUCTION			54							
15		Body Cylin	der		CS SA216	6-WCB		55							
16		Body Bas			316 S			56							
17		Connection	ns		N/A			57							
18		Disc			316 S			58							_
19		Seat		_	Meta			59 Sizing Coefficients 60 Effective K, Liquid						Unit	-
20		Seals		+	N/A			60			ective				0.65
21		Spindle		-	416 S 316 S			61		Kw		Kc		1.0	1
22 23		Guide Spring			17-7 PH			62 63		Kv		Kv (m	ax)		1.0
24		Spring			17-7 F11	331		-	Require	d Canad	ritv			Unit	
25		Cap Typ	e	+	Screwed &	Test Ro	d	65	Require	Jouput	To	tal		Oint	1
26	NACE M		15156:2015		No		_	66				····			
27				$\top$				67	Pressur	es				Unit	kg/cm² g
28	Accessories							68		MAWP		Opera	ting	6.5	4
29	Ses							69		Set		CDT	Р	6.5	6.500
30	Acc							70		0	ver Pi	ressure		0.65	10%
31		SIZI	NG / SELEC	TION	SUMMARY			71					Built-Up	)	0.65
32	Valve	Model No.			961101MFB-P	)		72		Back			ant Super	•	0
33		rand			Crosby®			73		Pressure	•	Varia	ble Super	mposed	0
34	Area	Calculate					710	74					Total		0.65
35	(cm²)	Data Se			API	(	5	75			Inlet		,	0	0%
36	<u>-</u> .	Unit	Requ		L/min	00	0.4.4	76			heric	(Barometri	c)		3 kg/cm² a
37	Flow		Maxin	ium		99.	844	77	Tempera	itures		Name al C		Unit	°C
38 39	Popotie	n Force O	pen Dischar	10	5.4	Λ/		78 79		perating	~	Normal S Reliev	-	39	65.6
40			pen Dischar			//A		80		esign M		Design	-	39	100
Tag Notes		d C4M acc. Adjustmer	ISO 12944 nt 5%							Ü		Valve Dimensions  mm  3	A 79.38 B 49.21 C 07.98 Veight 4.54	c	A

							,									
					EMERSON			T	$\overline{}$	Press	ure Reli			g & Sele	ection Repo	rt
			•	edgardovice	ente.chiari@emer	son.com	0	E/	/C			27-	jul2021			
								-	$\dashv$							
E	MEF	RSOI	V.		Madrid, Spain			-	_							
					34 911 111 320				_							
					ente,chiari@emer	son.com							_			
				er: 093-09	93		No	Pr	od.	Chk.	Appr.		Date		Revis	ion
	Client:	TECHNIP														
		CARTAGE							Е				201754C0			
	Project:	C43 "New	Bios		reatment Unit"					Proje	ct Ref. N	lo.:	U-608 Hyd			
1				<b>Valve</b> 1 3-TSV-1058				41						NG DATA		
2				42			n Code		ASME VI		, ,	'				
3								43			Basis			Ther	mal Expans	ion
4				:43-A-11099				44			te at Inle				Liquid	_
5		Line No.	3/4'	"-CWR-5112	2-C6	1	ntity	45			ng Case	<u> </u>		Pr	essure Relie	f
6							1		Flui	id Prop						
7			-	GENER				47				uid N				NG WATER
8					Direct Spring-Op			48					vity, G			0.989
9	Sat	ety / Relief		-	Balance			49				/isco	•			03 cSt
10		Nozzle	Full			t Closed	1	50				•	ds No.			649.39
11				CONNECT		1		51			Reyno	olds N	No. (max)		77	0823.29
12	Inlet	3/4"		hrd.	MNPT	-	ndard	52								
13	Outlet	1"		hrd.	FNPT	ASME	B1.20.									
14				ALS OF CO	ONSTRUCTION			54								
15		Body Cylin			CS SA21			55	-							
16		Body Bas			316			56								
17		Connection	ons		N/.			57								
18		Disc			316			58								
19		Seat			Ме			59 60	Sizi	ing Co	efficien				Unit	-
20		Seals				N/A						tive k	K, Liquid			0.65
21		Spindle	)			416 SST					Kw		Kc		1.0	1
22		Guide				316 SST					Kv		Kv (m	ax)	0.959	1.0
23		Spring			17-7 PI	1881		-	63 64 Required Capacity Unit							
24		· ·				<b>-</b> . 5	,	64 65	Rec	quirea	Capacii	_	•		Unit	kg/hr
25	NACEN	Cap Typ		50.0045			est Rod					Tot	aı		,	53.67
26		R0175/ISO	151	56:2015	N	)		66	_							
27	ries							-	Pre	ssures			0	<b>.</b> :	Unit	kg/cm² g
28	SSC							68		IV	IAWP		Opera	0	24	3.8
29	Accessories							69	-		Set	D-	CDT	P	24	24.00
30	٩	017	INC	/ SEL FOTIC	ON CHIMBAADY			70 71			OVE	51 PT	essure	Divite 1	2.4	10%
31 32	Value	Model No.	ING /	SELECTION	ON SUMMARY 961101MFB-	<b>-</b>		_			D = -1		Const	Built-U	rimposed	2.4
32 33		Brand			961101MFB-I Crosby®			72 73			Back essure				rimposed	0
34	Area	Calculate	24	Selected		0.	710	74			200010		vanal	ole Supe Total	•	2.4
35	(cm²)	Data Se		Orifice	API		6	75	-			nlet L	000	Total	0	0%
36	(GIII )	Unit	;L	Required			.67	76	-	Λ			Barometri	0)		33 kg/cm² a
37	Flow	Offic		Maximum		_	6.151	77	Ton	nperat		enc (	Daromeur	()	Unit	°C
38	FIOW			Maximum		1133	0.131	78	ren	iiperau	ures		Normal S	votom	Oilit	
39								79		On	erating		Reliev		39	50
40	· · · · · · · · · · · · · · · · · · ·							80			eraung sign Min		Design	•	39	100
40		d C4M acc.				<u>v</u> A		00		Des	sigii iviiii		Design	A		700
	2. Opening	ı Adjustmer 'UV" Stamp	nt 5%	, D									sions -	79.38 B	1	> .
Tag Notes													Mm 3	19.21	c <	
ag													٥	C		
													$\frac{2}{8}$	07.98		\\
													9/	Veight 4 54		_ B _

				E	MERSON				Press	ure Rel	ief Val	ve Sizin	g & Sele	ction Repo	ort	
			ed	dgardovicent	te.chiari@emers	on.com	0	EVC	:		27-ju	ıl2021				
	MEE	, RSOI		Ma	adrid, Spain											
	ME	(30)	ъ		911 111 320											
			ed	dgardovicent	te,chiari@emers	on.com										
		Quote No	ımber	r: 093-093			No	Prpd	. Chk.	Appr.	D	Date		Revi	sion	
	Client:	TECHNIP	ENER	GIES												
	Location:	CARTAGE	NA, S	PAIN					End-Use	er Ref. N	No.: 20	01754C0	01			
_	Project:	C43 "New	Bios 2	G Hydrotrea	atment Unit"				Projec	ct Ref. N	No.: <i>U</i> -	-608 Hyd	lrogen Ur	nit		
1					41					IG DATA						
2				TSV-1062				42		n Code	1	ASME VII	II/XIII - U\	0		API 520
3								43		Basis			Thern	nal Expan	sion	
4									Fluid Sta					Liquid		
5								45	Relievir		•		Pre	ssure Reli	et	
6				GENERAI			1		luid Prop		li ilal Nia			0001	ING WAT	
7		/alva Typa	Conv		ect Spring-Op			47			luid Na . Gravi			COOL	.ING WAT 0.980	ER
9		ety / Relief			Balanced	Ma		49			. Gravi Viscosi	,		0.429	0.960 324 cSt	
10	Sai	Nozzle		y Nellel	Balanced		l	50			viscosi ynolds	•		0.438	124 (3)	
11		INUZZIE		Ciosed		51			•	o. (max)		5/	08437.17			
12	Inlet	3/4"	Thi	CONNECTIC	MNPT	Stan	dard	52		rtcyric	JIGS INC	o. (IIIax)			70437.17	
13	Outlet	1"	Thi			ASME										
14		MAT	ERIAL	LS OF CON	STRUCTION			54								
15		Body Cylin			CS SA216	S-WCB		55								
16		Body Bas			316 S	ST		56								
17		Connection	ns		N/A			57								
18		Disc			316 S	ST		58								
19		Seat			Meta	al		59 <b>S</b>	izing Co	efficien	its			Unit		-
20		Seals			N/A			60		Effec	tive K,	Liquid			0.65	
21		Spindle	•		416 S	ST		61		Kw		Kc		1		1
22		Guide			316 S					Kv		Kv (m	ax)			1.0
23		Spring			17-7 PH	SST		63								
24								-	equired	Capaci	-			Unit		
25		Cap Typ			Screwed &		d	65			Total					
26		R0175/ISO	15156	6:2015	No			66							1.	
27	ije								ressures			0		Unit	Kg/	cm² g
28	0888							68		IAWP		Operat	-	6.5	6	.500
29 30	Accessories							70 70		Set	er Pres	CDT	<u> </u>	6.5 0.65		10%
31		SIZ	ING / S	SELECTION	SUMMARY			71			0, 1, 168	.5u10	Built-U			0.65
32	Valve	Model No.			961101MFB-P			72		Back		Const		rimposed		0
33		Brand			Crosby®			73		essure			ole Super			0
34	Area	Calculate	ed	Selected		0.7	710	74					Total	•	1	0.65
35	(cm²)	Data Se	et	Orifice	API		6	75		lı	nlet Lo	ss		0		0%
36		Unit		Required	kg/hr			76	А	tmosph	eric (B	arometri	c)	1.0	33 kg/cm	n² a
37	Flow			Maximum		5873	3.816	77 <b>T</b>	emperati	ures				Unit		°C
38								78			1	Normal S	ystem			
39	Reaction	on Force, C	pen D	ischarge	5.4	N		79	Op	erating		Reliev	ing	39	6	55.6
40		evel (db), C			N.	/A		80	Des	ign Min	1	Design	Max			100
Tag Notes	2. Opening	d C4M acc. g Adjustmer 'UV" Stamp	nt 5%								Valve Dimensions	3 <sub>D</sub> W	A 79.38 B 49.21 C 07.98 Veight 4.54	c <	B	A

					MERSON					Pressure Relie			g & Sele	ction Repor	t
			edgardo	/icente	e.chiari@emers	on.com	0	EV	С		+	27-jul2021			
	7									_	+				
Ε	MER	<b>2501</b>	N <sub>IM</sub>		drid, Spain						+				
			o da ordov		911 111 320					-	+				
		Ouote Ni	umber: 093		e,chiari@emers	on.com	No	Prp	d. Chk	App		Date		Revision	n n
	Client:		ENERGIES	030			110	1 10	u. Olik	- Abb	•	Date		IXCVISIO	211
			NA, SPAIN						Fnd-U	ser Ref	No	o.: 201754C0	01		
			Bios 2G Hyd	rotreat	tment Unit"							o.: <i>U-608 Hyd</i>		nit	
1				/e ID				41					NG DATA		
2		Tag No.	608-TSV-10	63				42	Desi	gn Cod	e	ASME VI	II/XIII - U'	V Sizing S	td. API 520
3		Service	G-761B CW	•				43	Sizii	ıg Basi	s		Therr	mal Expansio	n
4								44	Fluid S	ate at l	nlet	t		Liquid	
5							entity	45		ing Ca			Pre	essure Relief	
6							1		Fluid Pr	pertie					
7	,		~	ERAL				47				id Name			IG WATER
8				-	ect Spring-Op	١.,		48		8		Gravity, G			.980
9	Sat	Nozzle	Safety Relie	<i>t</i>	Balanced		ı	50		-		scosity nolds No.		0.4382	CSt
10 11		NOZZIE	CONNE	CTIO	Bonnet	Closed	<u>'</u>	51				ds No. (max)		508	483.58
12	Inlet	3/4"	Thrd.		MNPT	Stan	ndard	52		ПСУ	HOIC	as No. (Illax)		300	+03.50
13	Outlet	1"	Thrd.			ASME									
14		MAT	ERIALS OF	CONS				54							
15		Body Cylin	der	Т	CS SA216	6-WCB		55							
16		Body Bas	se		316 S	ST		56							
17		Connection	ns		N/A			57							
18		Disc			316 S	ST		58							
19		Seat			Meta				Sizing C					Unit	-
20		Seals		-	N/A			60			ectiv	ve K, Liquid			0.65
21		Spindle Guide		-	416 S 316 S			61		Kw Kv		Kc Kv (m		1.0	1.0
22 23		Spring		-	17-7 PH			63		ΓV		KV (III	ax)		1.0
24		Opinig				007			Require	d Capa	citv	,		Unit	
25		Сар Тур	e		Screwed &	Test Ro	d	65				Total			
26	NACE M	R0175/ISO	15156:2015		No			66							
27	es							67	Pressur	es				Unit	kg/cm² g
28	ssor							68		MAWP		Opera	-	6.5	4
27 28 29 30	Accessories			-				69		Set		CDT	P	6.5	6.500
	∢		NO / OF: TO	TICT	OURING TO			70		C	ver	Pressure		0.65	10%
31	\/ab/-		NG / SELEC			)		71				Comet	Built-U		0.65
32 33		Model No. Brand			961101MFB-P Crosby®			72 73		Back ressur	е		ant Super ble Super	rimposed	0
34	Area	Calculate	ed Selec	ted	Ciosby®	0.7	710	74			-	Valial	Total	iiiiposeu	0.65
35	(cm²)	Data Se			API		6	75			Inle	et Loss	Total	0	0%
36	(====)	Unit	Requi		kg/hr		<u>-                                      </u>	76		Atmos		ric (Barometri	c)		3 kg/cm² a
37	Flow		Maxim	um		5873	3.816	77	Tempera	tures		·		Unit	°C
38								78				Normal S	ystem		
39	Reaction	on Force, O	pen Dischar	je	5.4	Ν		79		peratin	g	Reliev	ring	39	65.6
40		, ,,	pen Dischar	ge	N	//A		80	D	esign M	lin	Design			100
Tag Notes	1. Standard 2. Opening 3. ASME "	, Adjustmer	ISO 12944 at 5% required.									Valve Dimension	A 79.38 B 49.21 C 07.98 Veight 4.54	c	A

				EMERSON										
				1		ure Rel			g & Sele	ection Report				
		4	edgardovic	ente.chiari@emers	on.com	0	EVC			27-	-jul2021			
					ļ									
E	MER	<b>102</b> 3	<b>V</b>	Madrid, Spain	,		-							
				34 911 111 320										
		0		ente,chiari@emers	on.com			011			5 /			
	0" 1		<mark>ımber: 093-09</mark> ENERGIES	93		No	Prpd	. Chk.	Appr.		Date		Revisio	n
									or Dof N	، ما	201754C0	01		
			NA, SPAIN Bios 2G Hydrot	trootmont   Init"									Init	
1	Project.	C43 New	Valve				41	Fioje	ci Kei. i	NO	U-608 Hyd	IG DAT		
2		Tan No	608-TSV-1076	-			42	Design	n Code		ASME VI			d. API 520
3			G-711A CW				43		Basis		7101112 711		rmal Expansion	'
4			P-C43-A-1109	90 H55			$\vdash$	Fluid Sta		et			Liquid	
5			3/4"CWR-5517		Qua	ntity	45		ng Case	-		Pr	essure Relief	
6					1	-	46 <b>F</b>	luid Prop						
7			GENER	RAL			47		FI	uid N	Name		COOLING	G WATER
8	\	/alve Type	Conventional,	Direct Spring-Op			48		Sp	Gra	vity, G		0.9	980
9	Saf	ety / Relief	Safety Relief	Balanced	No		49		•	Visco	sity		0.43824	cSt
10		Nozzle	Full	Bonnet	Closed	1	50		Re	ynol	ds No.			
11			CONNEC	TIONS			51		Reyno	olds I	No. (max)		5084	37.17
12	Inlet	3/4"	Thrd.	MNPT	Stan	dard	52							
13	Outlet	1"	Thrd.		ASME I	B1.20.								
14				ONSTRUCTION			54							
15		Body Cylin		CS SA210			55							
16		Body Bas		316 S			56							
17		Connectio	ins	N/A			57							
18 19		Disc		316 S			58 <b>S</b>	izina Co	officion	to			Unit	
19 20		Seat Seals		Meta N/A			60	izing Co			V Liquid		Unit	- 65
20 j 21		Spindle		416 S			61		Kw	live	K, Liquid Kc		1.0	1
22		Guide		316 S			62		Kv		Kv (m	ax)	7.0	1.0
23		Spring		17-7 PH			63				100 (111	un,		7.0
24								equired	Capaci	ty			Unit	
25		Сар Тур	е	Screwed &	Test Ro	d	65	ĺ		Tot	tal			
26	NACE M	R0175/ISO	15156:2015	No			66							
27	es						67 <b>P</b>	ressures	;				Unit	kg/cm² g
28	soci						68	N	1AWP		Opera	ting	6.5	4
27 28 29 30	Accessories						69		Set		CDT	P	6.5	6.500
30	ĕ۱						70		Ove	er Pr	essure		0.65	10%
31			NG / SELECTION	ON SUMMARY	<u> </u>		71			-		Built-U	•	0.65
32		Model No.		961101MFB-P	•		72		Back essure	-			erimposed	0
33		Brand	d Calaata	Crosby®	0.7	740	73	FI	essure	-	Variai	•	erimposed	0
34 35	Area (cm²)	Calculate Data Se		a     API	0.7	710 S	74 75		1	nlet I	000	Tota	0	0.65 0%
36	(CIII-)	Unit	Required			)	76				₋oss (Barometri	c)		kg/cm² a
30 37	Flow	Offic	Maximur		5873	8 816		emperat		CIIC	(Daioilletti	c)	Unit	°C
38	1 1000		Waxiiridi	11	3073	7.010	78	Inperat	ures		Normal S	vstem	Oilit	
39	Reaction	n Force. O	pen Discharge	5.4	N		79	Op	erating		Reliev	•	39	65.6
40			pen Discharge	N	//A		80		sign Min	1	Design	-		100
	1. Standard 2. Opening		ISO 12944 at 5%								mm 3	A 79.38 B I9.21 C 07.98 Veight	c	A

				EMERSON	}				ure Rel	$\overline{}$		g & Sele	ction Report	
			edgardovic	ente.chiari@emers	on.com	0	EVC			27-	jul2021			
			-	Madrid, Spain										
	MER	SOI	<b>V</b>	34 911 111 320	ŀ									
				ente,chiari@emers	son.com									
		Quote Nu	ımber: 093-0			No	Prpd	. Chk.	Appr.		Date		Revisio	n
	Client:	TECHNIP	ENERGIES											
	Location:	CARTAGE	NA, SPAIN					End-Use	er Ref. N	No.: 2	201754C0	01		
	Project:	C43 "New	Bios 2G Hydrot	reatment Unit"				Proje	ct Ref. I	No.:	U-608 Hyd	lrogen U	nit	
1			Valve			41				SIZIN	IG DATA	4		
2			608-TSV-1077				42		n Code		ASME VI			
3			G-711B CW				43		Basis			Ther	mal Expansion	า
4			P-C43-A-1109			4.4	-	Fluid Sta		-		D	Liquid	
5		Line No.	3/4"CWR-5519	<b>9-</b> B1	Qua	•	45 <b>5</b>	Relievir				Pre	essure Relief	
6 7			GENER	ΡΔΙ	1		46 <b>F</b>	luid Prop		luid N	lame		COOLIN	G WATER
8	\	/alve Tyne		Direct Spring-Op			48				vity, G			980
9		• • •	Safety Relief	Balanced	No		49			Visco	-		0.43282	
10	Jai	Nozzle			Closed	,	50				ds No.		J. 10202	
11			CONNEC				51			•	lo. (max)		5148	804.09
12	Inlet	3/4"	Thrd.	MNPT	Stan	dard	52		•		,	İ		
13	Outlet	1"	Thrd.	FNPT	ASME I	B1.20.	53							
14		MAT	ERIALS OF CO	ONSTRUCTION			54							
15		Body Cylin		CS SA21	6-WCB		55							
16		Body Bas		316 S			56							
17		Connection	ns	N/A			57							
18 19		Disc Seat		316 S Meta			58 <b>S</b>	izing Co	officion	ıtc.			Unit	
20		Seals		N/A			60	izirig Co			K, Liquid			65
21		Spindle		416 S			61		Kw		Kc		1.0	1
22		Guide		316 S	ST		62		Kv		Kv (m	ax)		1.0
23		Spring		17-7 PH	SST		63							
24							_	equired	Capaci	ty			Unit	
25		Cap Typ		Screwed &		d	65			Tot	al			
26		R0175/ISO	15156:2015	No			66 67 <b>P</b>	********					l lmi4	ladom² a
27 28	Accessories						68	ressures	1AWP		Operat	ina	<b>Unit</b> 6.5	kg/cm² g
29	ess.						69		Set		CDT	-	6.5	6.500
27 28 29 30	Acc						70			er Pre	essure		0.65	10%
31		SIZI	NG / SELECTION	ON SUMMARY			71					Built-U	р	0.65
32		Model No.		961101MFB-P	)		72		Back				rimposed	0
33		Brand	1 0 : :	Crosby®	_		73	Pr	essure	-	Variat		rimposed	0
34	Area	Calculate		d     API	0.7		74	-		nlot l		Total	0	0.65
35 36	(cm²)	Data Se Unit	Required			)	75 76	Δ		nlet L	Barometri	c)		0% kg/cm² a
37	Flow	Offic	Maximur		5873	816	-	emperat		ienc (	Darometri		Unit	°C
38			azamu			•	78	,00,00			Normal S	ystem		
39	Reaction	on Force, O	pen Discharge	5.4	N		79	Op	erating		Reliev		39	65.6
40		, ,,	pen Discharge	N	I/A		80	Des	sign Min	1	Design	Max		100
	1. Standard 2. Opening 3. ASME "	, Adjustmer	ISO 12944 at 5% required.								mm 3	A 79.38 B 49.21 C 07.98 /eight	c	A

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 Page : 14

				Е	MERSON				Press	ure Rel	ief Valv	e Sizin	g & Sele	& Selection Report		
			edgardo	vicent	te.chiari@emers	on.com	0	EVO			7-mar.	-2022	N	lew valve on	the scope.	
F	MEĖ	SOI	J	Ма	adrid, Spain											
			TM	+34	911 111 320											
					te,chiari@emers	on.com										
			ımber: 093	3-093			No	Prpo	d. Chk.	Appr.	Da	ite		Revis	ion	
			ENERGIES													
			NA, SPAIN						End-Use							
_	Project:	C43 "New			atment Unit"				Proje	ct Ref. N	No.: <i>U-6</i>		Irogen U			
1		<b>T</b> N	<b>Va</b> 608-TSV-1	ve ID				41		0 1	1		IG DATA		011 451500	
2				42		n Code	AS	SME VII	II/XIII - U	0						
3			E-121 CW P-C43-A-1		U42			43	Sizing Fluid Sta	Basis	ot		iner	mal Expans	ion	
5			3/4"CWR-3			Ous	ntity	45	Relievir				Dr	Liquid essure Relie	.f	
6		LINE INO.	3/4 CV/N-3	231-0	) <u> </u>		111111y 1		Fluid Prop		·			essure Nelle	-1	
7			GFI	IERAI	l			47	Tala 1 Top		luid Nam	ne		Coo	ling water	
8	,	/alve Type			ect Spring-Op			48			. Gravity				0.980	
9			Safety Reli		Balanced	No		49			Viscosity	•			25 cSt	
10		Nozzle	-	-	Bonnet		1	50			ynolds I			07.100.		
11			CONN	ECTIC				51			olds No.			50	8429.05	
12	Inlet	3/4"	Thrd.		MNPT	Star	ndard	52		,		,				
13	Outlet	1"	Thrd.		FNPT	ASME	B1.20.	53								
14		MAT	ERIALS OF	CON	STRUCTION			54								
15		Body Cylin	der		CS SA216	6-WCB		55								
16		Body Bas	se		316 S	ST		56								
17		Connection	ns		N/A			57								
18		Disc			316 S	ST		58								
19		Seat			Meta			59 <b>S</b>	Sizing Co					Unit	-	
20		Seals			N/A						tive K, L				0.65	
21		Spindle			416 SST 316 SST			61		Kw		Kc		1.0	1	
22		Guide					62		Kv		Kv (ma	ax)		1.0		
23 24		Spring			17-7 PH		_	Required	Canaci	tv			Unit			
25		Cap Typ	Δ		Screwed &	Test Ro	d	65	tequireu	Capaci	Total			Oilit		
26	NACE M		15156:201	;	No		u	66			Total					
		110110/100	10100.201		710			_	Pressures					Unit	kg/cm² g	
27 28	Accessories							68		1AWP		Operat	ting	6.5	4	
29	sess							69		Set		CDT	-	6.5	5.850	
30	Αα							70		Ove	er Press			0.65	10%	
31		SIZI	NG / SELE	CTION	SUMMARY			71					Built-U	Jp	0	
32	Valve	Model No.			961101MFB-P			72		Back				erimposed	0.65	
33		Brand			Crosby®			73	Pr	essure		Variat		rimposed	0	
34	Area	Calculate					710	74					Total		0.65	
35	(cm²)	Data Se			API		6	75			nlet Los		,	0	0%	
36	<b>-</b> .	Unit	Requ		kg/hr	507	2010	76			eric (Ba	rometri	c)		33 kg/cm² a	
37	Flow		Maxii	num		5873	3.816		Temperat	ures	N.		4	Unit	°C	
38 39	Ponetic	n Force O	non Disaha	·ac	5.4	Λ/		78 79	00	orotina		ormal S	•	20	65.6	
39 40			pen Discha Open Discha			/A		80		erating sign Min		Reliev Design	•	39	65.6 100	
Tag Notes	Standar     Opening	d C4M acc.	ISO 12944 nt 5%	· # ~	Į PV.			1901	Dec		Valve Dimensions	30 W	A 79.38 B 49.21 C 07.98 Veight 4.54	c <	A	

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