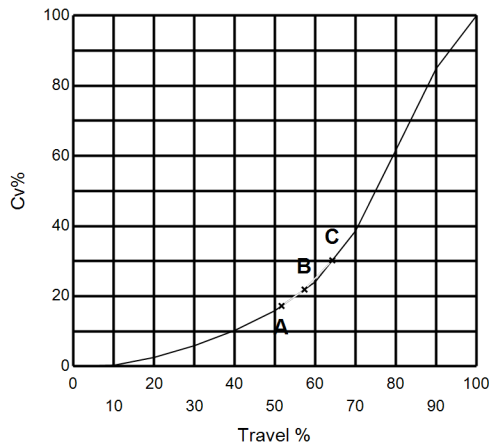


Customer		Tag #	FV 1002 1102 1202
Project	REDSEA PROJECT SWRO	Item #	#2-[0]
Enquiry Ref.		Application	SWRO
Quotation #		Function	Control

Item Description 5", CL 125/150, Lug

SERVICE AND SIZING	Cond1	Cond2	Cond3	Cond4
Process Fluid Name	Water			
Inlet Pressure (bar[g])	2.1	2	1.7	
Outlet Pressure (bar[g])	1	0.9	0.8	
Liquid Flow (m³/hr)	210	262.5	315	
Vapour Pressure (kg/cm²[g])	-0.98	-0.98	-0.98	
Specific Gravity	0.994	0.994	0.994	
Temperature (°C)	35	35	35	
Pressure Recovery Factor, FL	0.816	0.795	0.765	
Valve Style Modifier Factor, Fd	0.466	0.489	0.506	
Combined Recovery Factor, FLP	0.787	0.754	0.698	
Piping Correction Factor, Fp	0.971	0.955	0.919	
Critical Pressure Ratio Factor, Ff	0.956	0.956	0.956	
Valve Diameter, d (in)	5"	5"	5"	
Inlet Pipe Diameter , D1 (mm)	219.1	219.1	219.1	
Outlet Pipe Diameter, D2 (mm)	219.1	219.1	219.1	
Cavitation Index, Kc	0.359	0.371	0.338	
Dynamic Torque				
Sizing Coefficient, Cv	237	301	416	
Pressure Drop (bar)	1.1	1.1	0.9	
dP Choked (bar)	2.0017	1.8281	1.5043	
Noise Calculation				
Valve Type	Butterfly	Butterfly	Butterfly	
Downstream Pipe Size (mm)	200	200	200	
Downstream Pipe Schedule	STD	STD	STD	
Valve SPL (dBA)	77	78	79	
Velocity				
Inlet Velocity (m/s)	1.857	2.321	2.785	
Outlet Pipe Velocity (m/s)	1.857	2.321	2.785	
Valve Velocity (m/s)	4.753	5.942	7.13	

Inherent Flow Characteristic Curve



% Opening, Calculated Cv
A - (51.6,237)
B - (57.3,301)
C - (64.2,416)

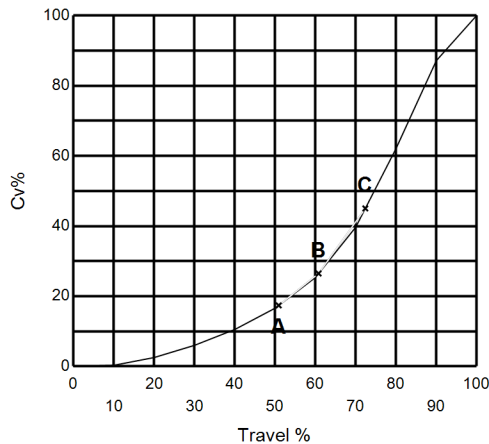
Valve Series :	
Valve Size:	5"
Rated Cv:	1376
Flow Char:	Equal Percentage

Travel (%)	10	20	30	40	50	60	70	80	90	100
Cv	4.5	35.4	81.5	141.2	219	332	532.1	849.2	1169	1376

Customer		Tag #	FV 0301 0401 0501 0601
Project	REDSEA PROJECT SWRO	Item #	#1-[0]
Enquiry Ref.		Application	SWRO
Quotation #		Function	Control

Item Description . 8", CL 125/150, Lug

SERVICE AND SIZING	Cond1	Cond2	Cond3	Cond4
Process Fluid Name	Water			
Inlet Pressure (bar[g])	2.3	2	1.7	
Outlet Pressure (bar[g])	1.7	1.6	1.5	
Liquid Flow (m³/hr)	380	460	510	
Vapour Pressure (kg/cm²[g])	-0.98	-0.98	-0.98	
Specific Gravity	0.994	0.994	0.994	
Temperature (°C)	35	35	35	
Pressure Recovery Factor, FL	0.818	0.78	0.72	
Valve Style Modifier Factor, Fd	0.464	0.501	0.519	
Combined Recovery Factor, FLP	0.794	0.734	0.626	
Piping Correction Factor, Fp	0.978	0.952	0.877	
Critical Pressure Ratio Factor, Ff	0.956	0.956	0.956	
Valve Diameter, d (in)	8"	8"	8"	
Inlet Pipe Diameter , D1 (mm)	323.8	323.8	323.8	
Outlet Pipe Diameter, D2 (mm)	323.8	323.8	323.8	
Cavitation Index, Kc	0.184	0.135	0.075	
Dynamic Torque				
Sizing Coefficient, Cv	578	877	1492	
Pressure Drop (bar)	0.6	0.4	0.2	
dP Choked (bar)	2.1395	1.7416	1.3176	
Noise Calculation				
Valve Type	Butterfly	Butterfly	Butterfly	
Downstream Pipe Size (mm)	300	300	300	
Downstream Pipe Schedule	STD	STD	STD	
Valve SPL (dBA)	< 70	< 70	< 70	
Velocity				
Inlet Velocity (m/s)	1.493	1.808	2.004	
Outlet Pipe Velocity (m/s)	1.493	1.808	2.004	
Valve Velocity (m/s)	3.36	4.067	4.509	

Inherent Flow Characteristic Curve

 % Opening,
Calculated Cv

A - (50.9,578)

B - (60.8,877)

C - (72.4,1492)

Valve Series :
Valve Size: 8"

Rated Cv: 3316

Flow Char: Equal Percentage

Travel (%)	10	20	30	40	50	60	70	80	90	100
Cv	10.8	84	199.3	349	550.5	840.4	1315.3	2058	2889.4	3316

Customer	REDSEA PROJECT SWRO	Tag #	FV 0301 0401 0501 0601
Project	REDSEA PROJECT SWRO	Item #	#1-[0]
Enquiry Ref.		Application	SWRO
Quotation #		Function	Control

1	Process Fluid	Liquid / Water	Phase	Single	Critical Press. Pc	224.5186	kg/cm²[g]	
2	Design Press. (Max.)	bar[g]	Cond1	Cond2	Cond3	Cond4	Shut-Off	
PROCESS DATA	Design Temp. (Min. / Max.)	°C	10				2.3	
	Flow Rate (Liquid)	m³/hr	380	460	510			
	Inlet Pressure	bar[g]	2.3	2	1.7			
	Outlet Pressure	bar[g]	1.7	1.6	1.5			
	Inlet Temperature	°C	35	35	35			
	Sp. Gravity		0.994	0.994	0.994			
	Viscosity	cP (CentiPoise)	0.723	0.723	0.723			
	Vapour Pressure	kg/cm²[g]	-0.98	-0.98	-0.98			
	Calculated Cv		578	877	1492			
	Travel	%	50.9	60.8	72.4			
CALC DATA	Pressure Drop	bar	0.6	0.4	0.2			
	Choke Drop	bar	2.14	1.742	1.318			
	Noise (Allow / Predict)	dBA	< 70	< 70	< 70			
	Outlet Pipe Velocity	m/s	1.493	1.808	2.004			
	Velocity Warning							
	Flow Warning							
	PIPE	In Pipe Size / Sch.	300 mm / STD	Actuator Type				44
		Out Pipe Size / Sch.	300 mm / STD	Mfr. / Model				
VALVE BODY/ENDS	Valve Type	Resilient	Size / No. of Spring				ACTUATOR	
	Size / Rating Standard	8" / ASME	Max. Allow. Pressure					47
	Rating	CL 125/150	Min. Req. Pressure					48
	Pressure Rating	Full Pressure rating	Min. Avl. Air Pressure					49
	Valve Series		Max. Avl. Air Pressure					50
	Body Material	Ductile Iron, ASTM A395 Gr 60-40-18	Fail Action					51
	Extension Bonnet	N/A	Act. Orientation					52
	End Connection	Lug	Manual Override					53
	Flg. Face Type / Finish	N/A	Pos. Mfr. / Model					54
	Flow Direction	Bi - directional	Pos. Type					55
INTERNALS	Body Bolting	B7 / 2H	Input Signal				ACCESSORIES	
	Disc	SS 316	Gauges					57
	Stem	SS 416	Signal Action					58
	Stem Packing	N/A	Certification					59
	Seat Type	Soft	Air. Mfr. / Model / Range					60
	Seat Material	EPDM(BUNA-N)	Pos. Indi. Mfr. / Model					61
	Body Seal	N/A	L. Sw. Type / Contacts					62
	Liner	N/A	L. Sw. Rating / Pos'n					63
	Rated Cv	3316	Solenoid Type / Vol.					64
	Flow Characteristics	Equal Percentage	Air Lock Valve					65
TESTS	Fire Safe Valve	N/A	Volume Tank				66	
	NACE Compliance	No	Volume Booster					67
	Leakage Class	Bubble Tight Shut Off						68

Notes		Revisions		
1		Rev.	By	Date
2		0	MASSIMILIANO CANGINI	09.12.19
3				
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Customer		Tag #	FV 1002 1102 1202
Project	REDSEA PROJECT SWRO	Item #	#2-[0]
Enquiry Ref.		Application	SWRO
Quotation #		Function	Control

1	Process Fluid	Liquid / Water	Phase	Single	Critical Press. Pc	224.5186	kg/cm²[g]	
2	Design Press. (Max.)	bar[g]	Cond1	Cond2	Cond3	Cond4	Shut-Off	
PROCESS DATA	Design Temp. (Min. / Max.)	°C	10				10	
	Flow Rate (Liquid)	m³/hr	210	262.5	315			
	Inlet Pressure	bar[g]	2.1	2	1.7			
	Outlet Pressure	bar[g]	1	0.9	0.8			
	Inlet Temperature	°C	35	35	35			
	Sp. Gravity		0.994	0.994	0.994			
	Viscosity	cP (CentiPoise)	0.723	0.723	0.723			
	Vapour Pressure	kg/cm²[g]	-0.98	-0.98	-0.98			
	Calculated Cv		237	301	416			
	Travel	%	51.6	57.3	64.2			
CALC DATA	Pressure Drop	bar	1.1	1.1	0.9			
	Choke Drop	bar	2.002	1.828	1.504			
	Noise (Allow / Predict)	dBA	77	78	79			
	Outlet Pipe Velocity	m/s	1.857	2.321	2.785			
	Velocity Warning							
	Flow Warning							
	PIPE	In Pipe Size / Sch.	200 mm / STD	Actuator Type				44
		Out Pipe Size / Sch.	200 mm / STD	Mfr. / Model				
VALVE BODY/ENDS	Valve Type	Resilient	Size / No. of Spring				ACTUATOR	
	Size / Rating Standard	5" / ASME	Max. Allow. Pressure					46
	Rating	CL 125/150	Min. Req. Pressure					47
	Pressure Rating	Reduced Pressure rating	Min. Avl. Air Pressure					48
	Valve Series		Max. Avl. Air Pressure					49
	Body Material	Ductile Iron, ASTM A395 Gr 60-40-18	Fail Action					50
	Extension Bonnet	N/A	Act. Orientation					51
	End Connection	Lug	Manual Override					52
	Flg. Face Type / Finish	N/A	Pos. Mfr. / Model					53
	Flow Direction	Bi - directional	Pos. Type					54
INTERNALS	Body Bolting	B7 / 2H	Input Signal				ACCESSORIES	
	Disc	HARAL	Gauges					55
	Stem	SS 416	Signal Action					56
	Stem Packing	N/A	Certification					57
	Seat Type	Soft	Air. Mfr. / Model / Range					58
	Seat Material	EPDM(BUNA-N)	Pos. Indi. Mfr. / Model					59
	Body Seal	N/A	L. Sw. Type / Contacts					60
	Liner	N/A	L. Sw. Rating / Pos'n					61
	Rated Cv	1376	Solenoid Type / Vol.					62
	Flow Characteristics	Equal Percentage	Air Lock Valve					63
TESTS	Fire Safe Valve	N/A	Volume Tank				64	
	NACE Compliance	No	Volume Booster					65
	Leakage Class	Bubble Tight Shut Off						66

Notes		Revisions		
1		Rev.	By	Date
2		0	MASSIMILIANO CANGINI	09.12.19
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