




 EPs Contractor: Petrochemical Industries Design and Engineering Company (PIDEC) Project No. : 1210	BUSHEHR METHANOL PLANT		 Owner: Bushehr Petrochemical Company (BUPC) Project No. : ME16
	Data Sheets & Calculation Sheets		
 Vendor: PARCOL Project No. :SJ1501487	Vendor Doc. No.: SJ1501487-DSH-001	Rev.: 05	MC: ThinkXpert




VENDOR : Parcol (Wuxi) Valve Co., Ltd.
REQ. NO. : 1210-00-IN-REQ-605
ITEM NO. : 100 set Valves
ITEM DESCRIPTION : Sliding Stem Control Valves for Methanol Plant
OWNER DOC. NO. : BU-30-VD-605-GEN-IN-DSH-001
PIDEC DOC. NO. : VD-1210-605-DSH-001
TOTAL PAGES : 223

<input type="checkbox"/> NO COMMENT: Documents/ Drawings Were Checked By PIDEC And Further Steps Can Be Followed.		
<input type="checkbox"/> COMMENTS AS MARKED: Documents/Drawings Were Checked By PIDEC And Marked Comments Must Be Considered By Vendor. Vendor Shall Revise Documents/ Drawings As Per Comments And The New Revision Of Documents/ Drawings Must Be Reissued Prior To Fabrication.		
<input type="checkbox"/> REJECTED: Documents/ Drawings Were Checked And It Is Not In Comply With Purchase Requisition Requirements.		
<input type="checkbox"/> ACCEPTABLE WITH COMMENTS: Documents/Drawings Were Checked By PIDEC And Comments Must Be Considered By Vendor. Fabrication Can Proceed Accordingly. Revised Document To Be Issued Either For Review Or As Final Certified. However PIDEC Will Check The Revised Document For Proper Incorporation Of Comments.		
<input type="checkbox"/> NOT RETURNED: Document Was Received For Information And Not Returned To The Vendor.		
Name :	Req. No.:	Seq. No.:
Signature :		
Date:		
PIDEC review & comments does not absolve the vendor of the responsibility for the correct design, manufacturing and operation of the equipment		




DE		EXT		IFA		
Eng. Phase		Purpose of Distribution (POD)		Purpose of Issue (POI)		
05	Apr. 6 th 2017	Sixth Issue	LH.WANG	SF.LI	ZJ.XUE	FF.CHEN
04	Mar. 6 th 2017	Fifth Issue	LH.WANG	SF.LI	ZJ.XUE	FF.CHEN
03	Dec. 27 th 2016	Fourth Issue	LH.WANG	SF.LI	ZJ.XUE	FF.CHEN
02	Apr. 11 th 2016	Third Issue	LH.WANG	SF.LI	ZJ.XUE	FF.CHEN
01	Mar. 21 th 2016	Second Issue	LH.WANG	SF.LI	ZJ.XUE	FF.CHEN
00	Feb. 29 th 2016	First Issue	LH.WANG	SF.LI	ZJ.XUE	FF.CHEN
Rev.	Date	Description	Prepared by	Checked by	Approved by	Authorized by

 EPs Contractor: Petrochemical Industries Design and Engineering Company (PIDE) Project No. : 1210	BUSHEHR METHANOL PLANT		 Owner: Bushehr Petrochemical Company (BUPC) Project No. : ME16
	Data Sheets & Calculation Sheets		
 Vendor: PARCOL Project No. :SJ1501487	Vendor Doc. No.: SJ1501487-DSH-001	Rev.: 05	MC: ThinkXpert




Sheet No.	Tag	Description	Change Index During Formal Issues						Reason of Latest Change
			First Issue	Second Issue	Third Issue	Fourth Issue	Fifth Issue	Sixth Issue	
			Rev.00	Rev.01	Rev.02	Rev.03	Rev.04	Rev.05	
7	30-FV-10014B	Data sheet	X						
8	30-FV-10014B	Sizing sheet	X						
9	30-FV-10019	Data sheet	X						
10	30-FV-10019	Sizing sheet	X						
11	30-FV-10032	Data sheet	X						
12	30-FV-10032	Sizing sheet	X						
13	30-FV-10036	Data sheet	X						
14	30-FV-10036	Sizing sheet	X						
15	30-FV-10036	Sizing sheet				X			
16	30-FV-10058	Data sheet	X						
17	30-FV-10058	Sizing sheet	X						
18	30-FV-10080A	Data sheet	X						
19	30-FV-10080A	Sizing sheet	X						
20	30-FV-10082	Data sheet	X			X			
21	30-FV-10082	Sizing sheet	X						
22	30-FV-10087	Data sheet	X						
23	30-FV-10087	Sizing sheet	X						
24	30-FV-10098	Data sheet	X						
25	30-FV-10098	Sizing sheet	X						
26	30-FV-10103B	Data sheet	X			X	X		
27	30-FV-10103B	Sizing sheet	X						
28	30-FV-10106	Data sheet	X						
29	30-FV-10106	Sizing sheet	X						
30	30-FV-20011	Data sheet	X						
31	30-FV-20011	Sizing sheet	X						
32	30-FV-20018A	Data sheet	X			X			
33	30-FV-20018A	Sizing sheet	X			X			
34	30-FV-20019	Data sheet	X	X					
35	30-FV-20019	Sizing sheet	X						
36	30-FV-20020	Data sheet	X	X		X			
37	30-FV-20020	Sizing sheet	X			X			
38	30-FV-20023	Data sheet	X						
39	30-FV-20023	Sizing sheet	X						
40	30-FV-20024	Data sheet	X				X		
41	30-FV-20024	Sizing sheet	X						
42	30-FV-20027	Data sheet	X						
43	30-FV-20027	Sizing sheet	X						
44	30-FV-20029	Data sheet	X						
45	30-FV-20029	Sizing sheet	X						
46	30-FV-20035	Data sheet	X	X					
47	30-FV-20035	Sizing sheet	X						
48	30-FV-30001	Data sheet	X						
49	30-FV-30001	Sizing sheet	X			X			
50	30-FV-30002	Data sheet	X						

 EPs Contractor: Petrochemical Industries Design and Engineering Company (PIDEIC) Project No. : 1210	BUSHEHR METHANOL PLANT				 Owner: Bushehr Petrochemical Company (BUPC) Project No. : ME16
	Data Sheets & Calculation Sheets				
 Vendor: PARCOL Project No. :SJ1501487	Vendor Doc. No.: SJ1501487-DSH-001		Rev.: 05	MC:	ThinkXpert

51	30-FV-30002	Sizing sheet	X					
52	30-FV-30007	Data sheet	X	X				
53	30-FV-30007	Sizing sheet	X					
54	30-FV-30011	Data sheet	X					
55	30-FV-30011	Sizing sheet	X					
56	30-FV-30015	Data sheet	X					
57	30-FV-30015	Sizing sheet	X					
58	30-FV-30019	Data sheet	X	X				
59	30-FV-30019	Sizing sheet	X					
60	30-FV-30023	Data sheet	X					
61	30-FV-30023	Sizing sheet	X					
62	30-FV-30027	Data sheet	X					
63	30-FV-30027	Sizing sheet	X					
64	30-FV-30028	Data sheet	X					
65	30-FV-30028	Sizing sheet	X					
66	30-FV-40001	Data sheet	X			X		
67	30-FV-40001	Sizing sheet	X			X		
68	30-FV-40002	Data sheet	X					
69	30-FV-40002	Sizing sheet	X					
70	30-FV-40003	Data sheet	X					
71	30-FV-40003	Sizing sheet	X					
72	30-FV-40028	Data sheet	X					
73	30-FV-40028	Sizing sheet	X					
74	30-FV-40030	Data sheet	X					
75	30-FV-40030	Sizing sheet	X					
76	30-FV-64005	Data sheet	X					
77	30-FV-64005	Sizing sheet	X					
78	30-HV-10004	Data sheet	X			X		
79	30-HV-10004	Sizing sheet	X			X		
80	30-HV-10004 disc	Sizing sheet	X			X		
81	30-HV-10007	Data sheet	X					
82	30-HV-10007	Sizing sheet	X			X		
83	30-HV-10007 disc	Sizing sheet	X			X		
84	30-HV-10047	Data sheet	X					
85	30-HV-10047	Sizing sheet	X					
86	30-HV-10061	Data sheet	X					
87	30-HV-10061	Sizing sheet	X					
88	30-HV-10062	Data sheet	X					
89	30-HV-10062	Sizing sheet	X					
90	30-HV-20010	Data sheet	X					
91	30-HV-20010	Sizing sheet	X			X		
92	30-HV-20010 disc	Sizing sheet	X			X		
93	30-HV-30001	Data sheet	X					
94	30-HV-30001	Sizing sheet	X					
95	30-HV-30011	Data sheet	X	X			X	
96	30-HV-30011	Sizing sheet-1	X	X			X	
97	30-HV-30011	Sizing sheet-2	X	X			X	
98	30-LV-10007	Data sheet	X					

 EPs Contractor: Petrochemical Industries Design and Engineering Company (PIDE)C Project No. : 1210	BUSHEHR METHANOL PLANT			 Owner: Bushehr Petrochemical Company (BUPC) Project No. : ME16
	Data Sheets & Calculation Sheets			
 Vendor: PARCOL Project No. :SJ1501487	Vendor Doc. No.: SJ1501487-DSH-001	Rev.: 05	MC:	ThinkXpert

99	30-LV-10007	Sizing sheet	X					
100	30-LV-10012A	Data sheet	X					
101	30-LV-10012A	Sizing sheet	X					
102	30-LV-10012B	Data sheet	X					
103	30-LV-10012B	Sizing sheet	X					
104	30-LV-10038	Data sheet	X					
105	30-LV-10038	Sizing sheet	X					
106	30-LV-10044	Data sheet	X					
107	30-LV-10044	Sizing sheet	X					
108	30-LV-10047	Data sheet	X					
109	30-LV-10047	Sizing sheet	X					
110	30-LV-20002A	Data sheet	X					
111	30-LV-20002A	Sizing sheet	X					
112	30-LV-20002B	Data sheet	X					
113	30-LV-20002B	Sizing sheet	X					
114	30-LV-20009	Data sheet	X					
115	30-LV-20009	Sizing sheet	X					
116	30-LV-20012A	Data sheet	X			X		
117	30-LV-20012A	Sizing sheet	X					
118	30-LV-20012B	Data sheet	X					
119	30-LV-20012B	Sizing sheet	X					
120	30-LV-30007	Data sheet	X					
121	30-LV-30007	Sizing sheet	X			X		
122	30-LV-30021	Data sheet	X				X	
123	30-LV-30021	Sizing sheet	X				X	
124	30-LV-30025	Data sheet	X					
125	30-LV-30025	Sizing sheet	X					
126	30-LV-30033	Data sheet	X					
127	30-LV-30033	Sizing sheet	X					
128	30-LV-40001	Data sheet	X					
129	30-LV-40001	Sizing sheet	X					
130	30-LV-40017A	Data sheet	X					
131	30-LV-40017A	Sizing sheet	X					
132	30-LV-40017B	Data sheet	X	X			X	
133	30-LV-40017B	Sizing sheet	X	X			X	
134	30-LV-40024	Data sheet	X				X	
135	30-LV-40024	Sizing sheet	X			X	X	
136	30-LV-40026	Data sheet	X					
137	30-LV-40026	Sizing sheet	X					
138	30-LV-40028	Data sheet	X					
139	30-LV-40028	Sizing sheet	X					
140	30-LV-64001	Data sheet	X					
141	30-LV-64001	Sizing sheet	X					
142	30-PV-10004	Data sheet	X					
143	30-PV-10004	Sizing sheet	X					
144	30-PV-10055	Data sheet	X					
145	30-PV-10055	Sizing sheet	X			X		
146	30-PV-10055 disc	Sizing sheet	X			X		

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147	30-PV-10132A	Data sheet	X					
148	30-PV-10132A	Sizing sheet	X					
149	30-PV-10132B	Data sheet	X		X			
150	30-PV-10132B	Sizing sheet	X		X			
151	30-PV-10135	Data sheet	X					
152	30-PV-10135	Sizing sheet	X					
153	30-PV-10203	Data sheet	X					
154	30-PV-10203	Sizing sheet-1	X					
155	30-PV-10203	Sizing sheet-2	X					
156	30-PV-10244	Data sheet	X	X		X	X	
157	30-PV-10244	Sizing sheet	X			X		
158	30-PV-10249	Data sheet	X					
159	30-PV-10249	Sizing sheet	X		X	X		
160	30-PV-10249 disc	Sizing sheet	X			X		
161	30-PV-10254	Data sheet	X					
162	30-PV-10254	Sizing sheet	X			X		
163	30-PV-10254 disc	Sizing sheet	X			X		
164	30-PV-20011	Data sheet	X			X		
165	30-PV-20011	Sizing sheet	X			X		
166	30-PV-20011 disc	Sizing sheet	X			X		
167	30-PV-20067A	Data sheet	X					
168	30-PV-20067A	Sizing sheet	X					
169	30-PV-20067B	Data sheet	X					
170	30-PV-20067B	Sizing sheet	X					
171	30-PV-2070B	Data sheet	X					
172	30-PV-2070B	Sizing sheet	X			X		
173	30-PV-2070B disc	Sizing sheet	X			X		
174	30-PV-20071	Data sheet	X					
175	30-PV-20071	Sizing sheet	X			X		
176	30-PV-20071 disc	Sizing sheet	X			X		
177	30-PV-20077	Data sheet	X	X		X		
178	30-PV-20077	Sizing sheet	X					
179	30-PV-20078	Data sheet	X			X		
180	30-PV-20078	Sizing sheet	X			X		
181	30-PV-20078 disc	Sizing sheet	X			X		
182	30-PV-30012A	Data sheet	X					
183	30-PV-30012A	Sizing sheet	X					
184	30-PV-30012B	Data sheet	X					
185	30-PV-30012B	Sizing sheet	X					
186	30-PV-30041A	Data sheet	X					
187	30-PV-30041A	Sizing sheet	X					
188	30-PV-30041B	Data sheet	X					
189	30-PV-30041B	Sizing sheet	X					
190	30-PV-30046A	Data sheet	X					
191	30-PV-30046A	Sizing sheet	X					
192	30-PV-30046B	Data sheet	X					
193	30-PV-30046B	Sizing sheet	X					
194	30-PV-40002A	Data sheet	X					



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-10014B
Service PURGE GAS FROM T-2001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/01/15
Quote Line 10000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 3"		ND 3"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	90		-	Fluid		Purge Gas
Maximum Temp.	100		-	State		Gas
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	1.1/2"	OUT	1.1/2"	Flow action		To Open
Port	3/4"			Characteristic		Equalpercentage
Valve Cv	9.4			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	17			Shut-off pressur		90 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	1.1/2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	1.1/2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D33	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	-			Spring range	20-29 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar		Throttling	- s	-	
Maximum Press.	9 bar		Quick Open	- s	-	
Design Press.	- bar		Quick Close	- s	-	
Fitting type	Double Ferrule		Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6943A04N040DF00G000		Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIIC T6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17029
 Quote Line 10000
 Date 15/01/15

Fluid State Gas
 Fluid Name Purge Gas
 Tag 30-FV-10014B
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 3" OUT ND 3"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 1.1/2" OUT 1.1/2" Port 3/4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	77.6	77.1	77
Outlet absolute pressure	bar	52.3	52.4	52.4
Flow Rate	kg/h	851	2,126	2,339
Inlet temperature	deg. C	49	49	49
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.43	1.43	1.43
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7646	0.7415	0.7376
Recovery factor (FL)		0.9349	0.9256	0.924
Valve style modifier (Fd)		0.6224	0.3877	0.3695
Number of cages (if any)				
Selected CV (VALVE)		9.4		
Calculated CV		1.3266	3.375	3.7254
Calculated / Sel.CV ratio		0.141	0.359	0.396
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	40.2	60.97	64.37
MACH n. at outlet connection		0.0171	0.0425	0.0468
Valve outlet velocity	m/s	10.42	25.98	28.59
Pipe outlet velocity	m/s	2.79	6.96	7.66
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	72.4	76.3	76.7

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-10019
Service NATURAL GAS TO T-1001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/02/25
Quote Line 20000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 16"		ND 16"	Minimum Temp.		- C
Thickness	SCH 60		SCH 60	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Natural Gas
Pressure	66	-			State	Gas
Maximum Temp.	280	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	LN-E	Sealing seat-plug		Metal to metal
DN IN	14"	OUT	14"	Flow action		To Open
Port	14"			Characteristic		Equalpercentage
Valve Cv	1410			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	150			Shut-off pressur		66 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	14"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	14"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-250	
Seat	A 479 316 Seat Joint Stellite			Size	D63	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	Carbon Graphite + back seal			Spring range	15-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6943A04C350AF20D000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17030
 Quote Line 20000
 Date 16/02/25

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-FV-10019
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 16" OUT ND 16"
 Thickness / schedule IN SCH 60 OUT SCH 60

Valve
 Nominal Size IN 14" OUT 14" Port 14"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	49.7	49.5	49.5
Outlet absolute pressure	bar	38.4	48.4	48.4
Flow Rate	kg/h	47,606	119,015	130,916
Inlet temperature	deg. C	243	243	243
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.24	1.24	1.24
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7754	0.7602	0.7584
Recovery factor (FL)		0.9392	0.9331	0.9324
Valve style modifier (Fd)		0.0798	0.0282	0.0267
Number of cages (if any)				
Selected CV (VALVE)		1410		
Calculated CV		135.6291	981.2177	1,079.7511
Calculated / Sel.CV ratio		0.096	0.696	0.766
Flow Regime		Normal	Normal	Normal
Valve Opening	%	33.23	81.16	86.24
MACH n. at outlet connection		0.0193	0.0382	0.0421
Valve outlet velocity	m/s	11.13	22.08	24.29
Pipe outlet velocity	m/s	8.47	16.8	18.48
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	76.6	60.6	61

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-FV-10032
 Service PROCESS GAS TO HE-1002

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/02/25
 Quote Line 30000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 18"		ND 18"	Minimum Temp.		- C	
Thickness	SCH XS		SCH XS	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area		Other	
Pressure	50	-		Fluid	Process Gas		
Maximum Temp.	525	-		State	Gas		
Minimum Temp.	-						
Valve				Guiding		Cage	
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal		
DN IN	12"	OUT	12"	Flow action	To Open		
Port	12"			Characteristic	Equalpercentage		
Valve Cv	1290			Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	120			Shut-off pressur	50 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Locked (Close)		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	A351 CF8C			Manufacturer	Parcol S.P.A.		
Bonnet	A351 CF8C			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	A182 F347H Seat joint Stellite			Size	D63		
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse		
Balancing	Carbon Graphite			Spring range	13-27 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	Side mounted		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/>	PED
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service		
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/>	External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-			<input type="checkbox"/>	Leak-off		
Valve Code	R6943V.02.D300AF20K000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM0-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:
- 4- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -

Comments

Note 1: Provide adjustable minimum stop. Preliminary minimum opening at 20%.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17031
 Quote Line 30000
 Date 15/09/29

Fluid State Gas
 Fluid Name Process Gas
 Tag 30-FV-10032
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 18" OUT ND 18"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 12" OUT 12" Port 12"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	38	45.7	46
Outlet absolute pressure	bar	37.5	42.7	44
Flow Rate	kg/h	52,418	131,044	144,149
Inlet temperature	deg. C	449	449	449
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.26	1.26	1.26
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7353	0.7372	0.7237
Recovery factor (FL)		0.923	0.9238	0.9183
Valve style modifier (Fd)		0.3175	0.3121	0.3565
Number of cages (if any)				
Selected CV (VALVE)		1290		
Calculated CV		835.707	798.4047	1,066.7359
Calculated / Sel.CV ratio		0.648	0.619	0.827
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	71.43	69.73	83.11
MACH n. at outlet connection		0.0289	0.0635	0.0678
Valve outlet velocity	m/s	19.4	42.59	45.47
Pipe outlet velocity	m/s	9.27	20.36	21.73
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	52.1	83	74.6

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-FV-10036
 Service MP STEAM TO HE-1001

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 15/03/11
 Quote Line 40000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 10"	ND 10"		Minimum Temp.	- C		
Thickness	SCH 80	SCH 80		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				Haz. Area		Other	
Pressure	57/FV	-	bar	Fluid	MP steam		
Maximum Temp.	425	-	C	State	Gas		
Minimum Temp.	-	-	C				
Valve				Guiding			
Model	1-6943	Trim	ST-E	Cage			
DN IN	6"	OUT	6"	Sealing seat-plug	Metal to metal		
Port	6"			Flow action	To Open		
Valve Cv	344			Characteristic	Equalpercentage		
Stroke	60			Leakage class	IV - FCI 70-2 & IEC 534.4		
Body Type	Globe - Straight			Shut-off pressur	57 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air failure	Valve open		
Trim Type	Cage			Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	A 182 F6NM Seat Joint Stellit			Size	D46		
Guide/Cage	A 487 CA6NM Nitrided			Action	Direct		
Balancing	Carbon Graphite			Spring range	7-28 psi		
Disk stack	-			Supply	60 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Double Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/>	PED
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service		
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/>	External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-			<input type="checkbox"/>	Leak-off		
Valve Code	R6943A02D150AF00J000			Pneumatic Diagram	-		

Accessories

- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -

Comments

- Note 1:** Provide adjustable minimum stop. Preliminary minimum opening at 20%.
Note 2: Provide maximum opening mechanical limit device.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17032
 Quote Line 40000
 Date 15/03/11

Fluid State Gas
 Fluid Name MP steam
 Tag 30-FV-10036
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 80 OUT SCH 80

Valve
 Nominal Size IN 6" OUT 6" Port 6"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	51	50.9	50.6
Outlet absolute pressure	bar	38	46	46.3
Flow Rate	kg/h	9,046	12,923	60,000
Inlet temperature	deg. C	398	398	398
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.39	1.39	1.39
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7712	0.7631	0.7056
Recovery factor (FL)		0.9375	0.9343	0.9107
Valve style modifier (Fd)		0.3137	0.28	0.2676
Number of cages (if any)				
Selected CV (VALVE)		344		
Calculated CV		24.5684	53.1616	269.3434
Calculated / Sel.CV ratio		0.071	0.155	0.783
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	26.2	39.44	82.5
MACH n. at outlet connection		0.0173	0.0204	0.0939
Valve outlet velocity	m/s	11.32	13.36	61.62
Pipe outlet velocity	m/s	4.11	4.85	22.39
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	78.7	72.9	80.2

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17032
 Quote Line 40000
 Date 26/04/16

Fluid State Gas
 Fluid Name MP steam
 Tag 30-FV-10036
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 80 OUT SCH 80

Valve
 Nominal Size IN 6" OUT 6" Port 6"

	Unit	Case 4 full open	Case 5 -	Case 6 -
Inlet absolute pressure	bar	50.6	-	-
Outlet absolute pressure	bar	46.3	-	-
Flow Rate	kg/h	75,500	-	-
Inlet temperature	deg. C	398	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.39	-	-
Density	kg/m3	17.5708	-	-
Press. differential ratio factor (X)		0.6877	-	-
Recovery factor (FL)		0.9032	-	-
Valve style modifier (Fd)		0.2773	-	-
Number of cages (if any)				
Selected CV (VALVE)		344		
Calculated CV		343.8142	-	-
Calculated / Sel.CV ratio		0.999	-	-
Flow Regime		Normal	-	-
Valve Opening	%	99.95	-	-
MACH n. at outlet connection		0.1182	-	-
Valve outlet velocity	m/s	77.53	-	-
Pipe outlet velocity	m/s	28.17	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	80.3	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-FV-10058
 Service LP STEAM TO E-1013

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/01/06
 Quote Line 60000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 4"		ND 4"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area		Other	
Pressure	8/FV		-	Fluid		LP steam	
Maximum Temp.	300		-	State		Gas	
Minimum Temp.	-		-				
Valve				Guiding		Cage	
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal	
DN IN	3"	OUT	3"	Flow action		To Open	
Port	3"			Characteristic		Equalpercentage	
Valve Cv	107			Leakage class		IV - FCI 70-2 & IEC 534.4	
Stroke	45			Shut-off pressur		8 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve close	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	3"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	3"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	AISI 410 35HRC			Size	D39		
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse		
Balancing	Carbon Graphite			Spring range	13-31 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/>	PED
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service		
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/>	External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-			<input type="checkbox"/>	Leak-off		
Valve Code	R6943A01D080AD00H2.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17034
 Quote Line 60000
 Date 16/01/04

Fluid State Gas
 Fluid Name LP steam
 Tag 30-FV-10058
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 3" OUT 3" Port 3"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	6.3	6.3	6.3
Outlet absolute pressure	bar	6	6	6
Flow Rate	kg/h	390	974	1,860
Inlet temperature	deg. C	241	241	241
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.34	1.34	1.34
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7679	0.7521	0.7281
Recovery factor (FL)		0.9362	0.9298	0.9201
Valve style modifier (Fd)		0.4389	0.2677	0.1893
Number of cages (if any)				
Selected CV (VALVE)		107		
Calculated CV		16.1176	40.363	77.6872
Calculated / Sel.CV ratio		0.151	0.377	0.726
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	35.04	56.14	79.09
MACH n. at outlet connection		0.0155	0.0386	0.0737
Valve outlet velocity	m/s	8.71	21.76	41.55
Pipe outlet velocity	m/s	5.05	12.62	24.11
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	50.3	54.9	58.5

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-10080A
Service MP STEAM TO R-1004

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/01/09
Quote Line 70000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 3"	ND 3"		Minimum Temp.	- C	
Thickness	SCH XS	SCH XS		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	57/FV	-	bar	Fluid	MP steam	
Maximum Temp.	425	-	C	State	Gas	
Minimum Temp.	-	-	C			
Valve				Guiding Top		
Model	1-6941	Trim	CP-E	Sealing seat-plug	Metal to metal	
DN IN	2"	OUT	2"	Flow action	To Open	
Port	1.1/4"			Characteristic	Equalpercentage	
Valve Cv	23.7			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	25			Shut-off pressur	57 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve open	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Contoured					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	A 182 F6NM Full Stellite			Size	D33	
Guide/Cage	-			Action	Direct	
Balancing	-			Spring range	7-26 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Double Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6941A03N050CF0G0000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

Note 1: Provide adjustable minimum stop. Preliminary minimum opening at 20%.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17035
 Quote Line 70000
 Date 15/01/09

Fluid State Gas
 Fluid Name MP steam
 Tag 30-FV-10080A
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 3" OUT ND 3"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 2" OUT 2" Port 1.1/4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	50.7	50.7	50.6
Outlet absolute pressure	bar	46.7	46.7	46.7
Flow Rate	kg/h	800	2,000	2,200
Inlet temperature	deg. C	398	398	398
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.38	1.38	1.38
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.8623	0.7971	0.7846
Recovery factor (FL)		0.9579	0.9369	0.9329
Valve style modifier (Fd)		0.1592	0.2643	0.2826
Number of cages (if any)				
Selected CV (VALVE)		23.7		
Calculated CV		3.5849	8.9969	10.0335
Calculated / Sel.CV ratio		0.151	0.38	0.423
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	56.86	76.63	79.12
MACH n. at outlet connection		0.0109	0.0272	0.03
Valve outlet velocity	m/s	7.12	17.81	19.59
Pipe outlet velocity	m/s	3.18	7.94	8.74
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	62.4	66.5	66.7

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-FV-10082
 Service OXYGEN TO E-1010

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/10/28
 Quote Line 80000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 12"	ND 12"		Minimum Temp.	- C		
Thickness	SCH 80S	SCH 80S		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				Haz. Area		Other	
Pressure	57	-	bar	Fluid	OXYGEN		
Maximum Temp.	100	-	C	State	Gas		
Minimum Temp.	-	-	C				
Valve				Guiding		Cage	
Model	1-6943	Trim	HHST-E	Sealing seat-plug	Metal to metal		
DN IN	8"	OUT	8"	Flow action	To Open		
Port	8"			Characteristic	Equalpercentage		
Valve Cv	781			Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	100			Shut-off pressur	57 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	With sealing bellows			Air failure	Valve close		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	8"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	8"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 351 CF8M			Manufacturer	Parcol S.P.A.		
Bonnet	SA 182 F316			Type	Pneumatic Diaphragm		
Plug	Monel K500			Model	1-X-290		
Seat	Monel K500			Size	D46		
Guide/Cage	Monel 400			Action	Reverse		
Balancing	PTFE			Spring range	13-27 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	Side mounted		
Bellows	Inconel 625			Yoke material	Carbon steel		
Packing	Pure PTFE						
Pneumatic Instrumentation				Time	Conn		
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off			
Adjustable limit stop	Opening - %	Closing - %					
Valve Heating	-						
Inlet Devices	-						
Outlet Devices	-						
Valve Code	R6943G04.S2000F00C2.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - TAG: FYA-10082 - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

Note 1: De-greasing required.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17036
 Quote Line 80000
 Date 15/01/15

Fluid State Gas
 Fluid Name Oxygen
 Tag 30-FV-10082
 Valve Model 1-6943 Trim HHST-E

Pipe
 Nominal Size IN ND 12" OUT ND 12"
 Thickness / schedule IN SCH 80S OUT SCH 80S

Valve
 Nominal Size IN 8" OUT 8" Port 8"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	50.7	50.6	50.5
Outlet absolute pressure	bar	43.8	48.2	49.1
Flow Rate	kg/h	43,257	108,142	118,956
Inlet temperature	deg. C	66	66	66
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.47	1.47	1.47
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7727	0.7543	0.7436
Recovery factor (FL)		0.9381	0.9307	0.9264
Valve style modifier (Fd)		0.3177	0.2606	0.2531
Number of cages (if any)				
Selected CV (VALVE)		781		
Calculated CV		83.4214	344.0673	497.1777
Calculated / Sel.CV ratio		0.107	0.441	0.637
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	24	54.04	66.31
MACH n. at outlet connection		0.0223	0.0507	0.0548
Valve outlet velocity	m/s	8.04	18.26	19.71
Pipe outlet velocity	m/s	3.39	7.69	8.31
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	77.4	68.5	59.5

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-10087
Service BOILER FEED WATER FROM D-4001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/05/08
Quote Line 90000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 3"		ND 6"	Minimum Temp.		- C
Thickness	SCH 160		SCH 120	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Boiler Feed water
Pressure	142/FV	-		bar	State	Liquid
Maximum Temp.	340	-		C		
Minimum Temp.	-			C		
Valve				Guiding Cage		
Model	1-4643	Trim	DC-E	Sealing seat-plug	Metal to metal	
DN IN	3"	OUT	6"	Flow action	To Open	
Port	1.1/2"			Characteristic	Equalpercentage	
Valve Cv	16.7			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	34			Shut-off pressur	142 bar	
Body Type	Globe - Angle			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Multicage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	3"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH				
OUT	6"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 105			Manufacturer	Parcol S.P.A.	
Bonnet	SA 105			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	Inconel			Spring range	25-45 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Double Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943. A. 04. R. 080DHO. 0H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17037
 Quote Line 90000
 Date 15/05/08

Fluid State Liquid
 Fluid Name Boiler Feed wat
 Tag 30-FV-10087
 Valve Model 1-4643 Trim DC-E

Pipe
 Nominal Size IN ND 3" OUT ND 6"
 Thickness / schedule IN SCH 160 OUT SCH 120

Valve
 Nominal Size IN 3" OUT 6" Port 1.1/2"

	Unit	Case 1 nor	Case 2 -	Case 3 max
Inlet absolute pressure	bar	125	-	125.2
Outlet absolute pressure	bar	6.5	-	6.5
Flow Rate	kg/h	9,334	-	20,000
Density	kg/m3	647	-	647
Inlet temperature	deg. C	327	-	327
Vapour pressure (abs)	bar	125	-	125
Critical pressure (abs)	bar	220.6	-	220.6
Viscosity	cP	0.075	-	0.075
Recovery factor (FL)		0.955	-	0.955
Valve style modifier (Fd)		0.2959	-	0.1962
Number of cages (if any)				
Selected CV (VALVE)		16.7		
Calculated CV		2.509	-	5.359
Calculated / Sel.CV ratio		0.15	-	0.321
Flow Regime		Flashing	-	Flashing
Valve Opening	%	37.5	-	51.2
Terminal differential pressure	bar	28.5869	-	28.7632
Valve outlet velocity	m/s	8.3	-	17.8
Pipe outlet velocity	m/s	0	-	0
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	-	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-10098
Service BOILER FEED WATER TO R-1004

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/03/10
Quote Line 100000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"	ND 4"		Minimum Temp.	- C	
Thickness	SCH XS	SCH XS		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
	IN	OUT		Fluid	Boiler Feed water	
Pressure	72.1	-	bar	State	Liquid	
Maximum Temp.	150	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal	
DN IN	3"	OUT	3"	Flow action	To Open	
Port	1.1/2"			Characteristic	Equalpercentage	
Valve Cv	38			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	34			Shut-off pressur	72.1 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Locked (Open)	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 487 CA6NM Nitrided			Action	Direct	
Balancing	PTFE			Spring range	8-19 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A02S080DF00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -

Comments

Note 1: Provide adjustable minimum stop 0-20%.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17038
 Quote Line 100000
 Date 15/03/10

Fluid State Liquid
 Fluid Name Boiler Feed wat
 Tag 30-FV-10098
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 3" OUT 3" Port 1.1/2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	54.4	54.4	54.4
Outlet absolute pressure	bar	44.4	44.4	49.4
Flow Rate	kg/h	15,000	38,130	42,000
Density	kg/m ³	941	941	941
Inlet temperature	deg. C	127	127	127
Vapour pressure (abs)	bar	2.4	2.4	2.4
Critical pressure (abs)	bar	220.6	220.6	220.6
Viscosity	cP	0.221	0.221	0.221
Recovery factor (FL)		0.9342	0.9246	0.9157
Valve style modifier (Fd)		0.4577	0.2838	0.2199
Number of cages (if any)		38		
Selected CV (VALVE)		5.6534	14.3764	22.409
Calculated CV		0.149	0.378	0.59
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening	%	46.71	66.64	79.7
Terminal differential pressure	bar	45.5161	44.5365	43.614
Valve outlet velocity	m/s	1.04	2.64	2.91
Pipe outlet velocity	m/s	0.6	1.52	1.67
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	54.1	63.2	58.4

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-10103B
Service HYDROGEN RECOVERED FROM PU-2001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/12/07
Quote Line 110000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 1.1/2"	ND 1.1/2"		Minimum Temp.	- C	
Thickness	SCH 160	SCH 160		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	90	-	bar	Fluid	Recycled H2	
Maximum Temp.	120	-	C	State	Gas	
Minimum Temp.	-	-	C			
Valve				Guiding Top		
Model	1-6941	Trim	CP-E	Sealing seat-plug	Metal to metal	
DN IN	1"	OUT	1"	Flow action	To Open	
Port	12mm			Characteristic	Equalpercentage	
Valve Cv	4			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	17			Shut-off pressur	90 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	With sealing bellows			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Contoured					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	1"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	1"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 105			Manufacturer	Parcol S.P.A.	
Bonnet	SA 105			Type	Pneumatic Diaphragm	
Plug	INCONEL 718			Model	1-X-290	
Seat	A 479 316L Full Stellite gr.6			Size	D25	
Guide/Cage	-			Action	Reverse	
Balancing	-			Spring range	17-43 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	Inconel 625			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6941A.15.N025EF0F2.000	Pneumatic Diagram		-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -

Comments

- Note 1:** Grease free.
- Note 2:** Valve inside flow path cleaned to avoid oxidizes/particles.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17039
 Quote Line 110000
 Date 16/01/06

Fluid State Gas
 Fluid Name Recycled H2
 Tag 30-FV-10103B
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 1.1/2" OUT ND 1.1/2"
 Thickness / schedule IN SCH 160 OUT SCH 160

Valve
 Nominal Size IN 1" OUT 1" Port 12mm

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	42.2	42.2	42.2
Outlet absolute pressure	bar	41.5	41.5	41.5
Flow Rate	kg/h	25	63	69
Inlet temperature	deg. C	90	90	90
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.4	1.4	1.4
Density	kg/m3	7.9157	7.9157	7.9157
Press. differential ratio factor (X)		0.8805	0.833	0.8263
Recovery factor (FL)		0.9703	0.9552	0.9531
Valve style modifier (Fd)		0.1216	0.1979	0.2077
Number of cages (if any)		4		
Selected CV (VALVE)				
Calculated CV		0.3915	0.9876	1.0819
Calculated / Sel.CV ratio		0.098	0.247	0.27
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	49.82	71.49	73.46
MACH n. at outlet connection		0.0031	0.0078	0.0085
Valve outlet velocity	m/s	2.65	6.68	7.32
Pipe outlet velocity	m/s	0.98	2.48	2.71
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	34.5	38.1	38.2

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-10106
Service CARBON DIOXIDE FROM E-1061

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/01/15
Quote Line 120000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"		ND 8"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	C02 Stream
Pressure	45	-			State	Gas
Maximum Temp.	180	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	4"	OUT	4"	Flow action		To Open
Port	4"			Characteristic		Equalpercentage
Valve Cv	158			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		45 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D46	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	13-32 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S100AF00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17040
 Quote Line 120000
 Date 15/01/15

Fluid State Gas
 Fluid Name CO2 Stream
 Tag 30-FV-10106
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	38.1	38.1	38.1
Outlet absolute pressure	bar	36.9	36.9	36.9
Flow Rate	kg/h	8,072	20,179	22,197
Inlet temperature	deg. C	150	150	150
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.34	1.34	1.34
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7511	0.7083	0.701
Recovery factor (FL)		0.9294	0.9118	0.9088
Valve style modifier (Fd)		0.3479	0.2141	0.2028
Number of cages (if any)				
Selected CV (VALVE)		158		
Calculated CV		39.092	99.5888	110.0695
Calculated / Sel.CV ratio		0.247	0.63	0.697
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	47.46	74.09	78.53
MACH n. at outlet connection		0.0191	0.0476	0.0524
Valve outlet velocity	m/s	6.32	15.79	17.37
Pipe outlet velocity	m/s	1.59	3.97	4.37
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	52.3	56.9	57.5

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-20011
Service SYNTHESIS GAS TO C-2002

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/03/09
Quote Line 130000

Piping IN OUT Diameter ND 2" ND 2" Thickness SCH XS SCH XS Insulation Not Known			Ambient Pressure 1 bar Minimum Temp. - C Maximum Temp. - C Installation Not Known		
Design Conditions IN OUT Pressure 44 - bar Maximum Temp. 100 - C Minimum Temp. - - C			Haz. Area Other Fluid Synthesis Gas State Gas		
Valve Model 1-6943 Trim XLN-E DN IN 2" OUT 2" Port 1" Valve Cv 17.3 Stroke 34 Body Type Globe - Straight Bonnet Type Universal Seat Type Single Trim Type Low noise cage S			Guiding Cage Sealing seat-plug Metal to metal Flow action To Open Characteristic Equalpercentage Leakage class IV - FCI 70-2 & IEC 534.4 Shut-off pressur 44 bar Live Loading Not provided Air failure Valve close Control signal failure Fail Safe		
Connections DN Type / Rating / Sealing-Finish IN 2" Flanged/ANSI B16.5/300#/RF - 125-250 AARH OUT 2" Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials Body SA 216 WCC Bonnet SA 216 WCC Plug A 479 316 Full Stellite Seat A 479 316 Seat Joint Stellite Guide/Cage A 479 316 Cr plated Balancing - Disk stack - Plug/seat insert - Bellows - Packing Reinforced teflon			Actuator Manufacturer Parcol S.P.A. Type Pneumatic Diaphragm Model 1-X-290 Size D39 Action Reverse Spring range 25-45 psi Supply 60 psi Handwheel No Yoke material Carbon steel		
Pneumatic Instrumentation Minimum Press. 5 bar Maximum Press. 9 bar Design Press. - bar Fitting type Double Ferrule			Time Conn Throttling - s - Quick Open - s - Quick Close - s - Tubing Material Stainless steel		
Miscellaneous Adjustable limit stop Opening - % Closing - % Valve Heating - Inlet Devices - Outlet Devices -			<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code R6943A04N05ODD00H000			Pneumatic Diagram -		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17041
 Quote Line 130000
 Date 15/03/09

Fluid State Gas
 Fluid Name Synthesis Gas
 Tag 30-FV-20011
 Valve Model 1-6943 Trim XLN-E

Pipe
 Nominal Size IN ND 2" OUT ND 2"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 2" OUT 2" Port 1"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	36.4	35.1	33.3
Outlet absolute pressure	bar	9	9.15	10.72
Flow Rate	kg/h	850	2,100	3,000
Inlet temperature	deg. C	65	65	65
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.42	1.42	1.42
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7748	0.7699	0.7657
Recovery factor (FL)		0.9389	0.937	0.9353
Valve style modifier (Fd)		0.2514	0.1533	0.1234
Number of cages (if any)				
Selected CV (VALVE)		17.3		
Calculated CV		2.3259	5.9806	9.0776
Calculated / Sel.CV ratio		0.134	0.346	0.525
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	38.1	59.03	71.7
MACH n. at outlet connection		0.0591	0.1435	0.175
Valve outlet velocity	m/s	35.56	86.41	105.37
Pipe outlet velocity	m/s	35.59	86.48	105.45
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	76.1	80	79.6

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-20018A
Service BOILER FEED WATER TO E-2004

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/10/20
Quote Line 140000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 1.1/2"	ND 1.1/2"		Minimum Temp.	- C		
Thickness	SCH 160	SCH 160		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	191	-	bar	Fluid	Boiler Feed water		
Maximum Temp.	150	-	C	State	Liquid		
Minimum Temp.	-	-	C				
Valve				Model	1-6941	Trim CP-E	
DN	IN 1"	OUT	1"	Guiding	Top		
Port	9mm			Sealing seat-plug	Metal to metal		
Valve Cv	1.67			Flow action	To Open		
Stroke	17			Characteristic	Equalpercentage		
Body Type	Globe - Straight			Leakage class	IV - FCI 70-2 & IEC 534.4		
Bonnet Type	Universal			Shut-off pressur	191 bar		
Seat Type	Single			Live Loading	Not provided		
Trim Type	Contoured			Air failure	Valve open		
				Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	1"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
OUT	1"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
Materials				Actuator			
Body	SA 105			Manufacturer	Parcol S.P.A.		
Bonnet	SA 105			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	A 182 F6NM Full Stellite			Size	D33		
Guide/Cage	-			Action	Direct		
Balancing	-			Spring range	9-18 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6941A.15.N.025GH0G0000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17042
 Quote Line 140000
 Date 16/10/20

Fluid State Liquid
 Fluid Name Boiler Feed wat
 Tag 30-FV-20018A
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 1. 1/2" OUT ND 1. 1/2"
 Thickness / schedule IN SCH 160 OUT SCH 160

Valve
 Nominal Size IN 1" OUT 1" Port 9mm

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	151	151	151
Outlet absolute pressure	bar	81	81	92.7
Flow Rate	kg/h	1,600	4,000	4,400
Density	kg/m3	945	945	945
Inlet temperature	deg. C	127	127	127
Vapour pressure (abs)	bar	2.5	2.5	2.5
Critical pressure (abs)	bar	220.6	220.6	220.6
Viscosity	cP	0.221	0.221	0.221
Recovery factor (FL)		0.9661	0.9471	0.9418
Valve style modifier (Fd)		0.1231	0.1991	0.2206
Number of cages (if any)				
Selected CV (VALVE)		1.67		
Calculated CV		0.2274	0.5687	0.6856
Calculated / Sel.CV ratio		0.136	0.341	0.411
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	49.24	72.29	77.02
Terminal differential pressure	bar	138.7558	133.3346	131.8176
Valve outlet velocity	m/s	1.4	3.49	3.84
Pipe outlet velocity	m/s	0.52	1.3	1.42
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	58.5	66.8	66.2

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 01
 TAG 30-FV-20019
 Service SYNTHESIS GAS TO T-2001

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/03/21
 Quote Line 150000

Piping			IN	OUT	Ambient			Pressure 1 bar
Diameter	ND 10"		ND 10"		Minimum Temp.		- C	
Thickness	SCH 80		SCH 80		Maximum Temp.		- C	
Insulation	Not Known				Installation		Not Known	
Design Conditions					IN	OUT	Haz. Area Other	
Pressure	100		-	bar			Fluid Synthesis Gas	
Maximum Temp.	100		-	C			State Gas	
Minimum Temp.	-		-	C				
Valve					Model 1-6943	Trim ST-E	Guiding Cage	
DN	IN 8"		OUT 8"		Sealing seat-plug		Metal to metal	
Port	8"				Flow action		To Open	
Valve Cv	555				Characteristic		Equalpercentage	
Stroke	76				Leakage class		IV - FCI 70-2 & IEC 534.4	
Body Type	Globe - Straight				Shut-off pressur		100 bar	
Bonnet Type	Universal				Live Loading		Not provided	
Seat Type	Single				Air failure		Valve close	
Trim Type	Cage				Control signal failure		Fail Safe	
Connections					DN	Type / Rating / Sealing-Finish		
	IN	8"			Flanged/ANSI B16.5/900#/RJ - 63 AARH			
	OUT	8"			Flanged/ANSI B16.5/900#/RJ - 63 AARH			
Materials					Actuator			
Body	SA 216 WCC				Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC				Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite				Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite				Size	D63		
Guide/Cage	A 479 316 Cr plated				Action	Reverse		
Balancing	PTFE				Spring range	10-28 psi		
Disk stack	-				Supply	40 psi		
Plug/seat insert	-				Handwheel	No		
Bellows	-				Yoke material	Carbon steel		
Packing	Graphite							
Pneumatic Instrumentation					Time	Conn		
Minimum Press.	5 bar				Throttling	- s	-	
Maximum Press.	9 bar				Quick Open	- s	-	
Design Press.	- bar				Quick Close	- s	-	
Fitting type	Double Ferrule				Tubing Material	Stainless steel		
Miscellaneous					<input type="checkbox"/>	PED		
Adjustable limit stop	Opening - %		Closing - %		<input type="checkbox"/>	Vacuum Service		
Valve Heating	-				<input type="checkbox"/>	NACE	<input type="checkbox"/> External	
Inlet Devices	-				<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-				<input type="checkbox"/>	Leak-off		
Valve Code	R6943A04S200AG00K000				Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in. -El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17043
 Quote Line 150000
 Date 14/11/03

Fluid State Gas
 Fluid Name Synthesis Gas
 Tag 30-FV-20019
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 80 OUT SCH 80

Valve
 Nominal Size IN 8" OUT 8" Port 8"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	85.7	85.7	78.5
Outlet absolute pressure	bar	78	78	78
Flow Rate	kg/h	14,356	35,890	39,479
Inlet temperature	deg. C	45	45	45
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.44	1.44	1.44
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7725	0.7637	0.7174
Recovery factor (FL)		0.938	0.9345	0.9157
Valve style modifier (Fd)		0.3057	0.2641	0.2534
Number of cages (if any)				
Selected CV (VALVE)		555		
Calculated CV		34.096	85.2956	372.6991
Calculated / Sel.CV ratio		0.061	0.154	0.672
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	25.21	40.68	75.69
MACH n. at outlet connection		0.0074	0.0184	0.0203
Valve outlet velocity	m/s	4.46	11.14	12.26
Pipe outlet velocity	m/s	2.84	7.09	7.8
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	71.5	77	35.2

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 01
TAG 30-FV-20020
Service WASTE WATER TO D-2002

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/03/21
Quote Line 160000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 1.1/2"		ND 1.1/2"	Minimum Temp.	- C	
Thickness	SCH XS		SCH XS	Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid Waste Water	
Pressure	75.2	-	bar	State	Liquid	
Maximum Temp.	155	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-9111	Trim	LIM-L	Sealing seat-plug	Metal to metal	
DN IN	1"	OUT	1"	Flow action	To Open	
Port	5.05mm			Characteristic	Linear	
Valve Cv	0.47			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	25			Shut-off pressur	75.2 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Multistep-Limiphon					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	1"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	1"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	A 105			Manufacturer	Parcol S.P.A.	
Bonnet	A 105			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D33	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	-			Spring range	15-29 psi	
Disk stack	A479 316			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %		Closing - %			
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R9000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0- MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17044
 Quote Line 160000
 Date 16/01/14

Fluid State Liquid
 Fluid Name Waste Water
 Tag 30-FV-20020
 Valve Model 1-9111 Trim LIM-L

Pipe
 Nominal Size IN ND 1. 1/2" OUT ND 1. 1/2"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 1" OUT 1" Port 5. 05mm

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	57. 2	57	56. 9
Outlet absolute pressure	bar	8. 3	8. 3	10. 3
Flow Rate	kg/h	680	1, 700	1, 870
Density	kg/m3	932	932	932
Inlet temperature	deg. C	121	121	121
Vapour pressure (abs)	bar	2. 1	2. 1	2. 1
Critical pressure (abs)	bar	220	220	220
Viscosity	cP	0. 201	0. 201	0. 201
Recovery factor (FL)		0. 97	0. 9961	0. 9961
Valve style modifier (Fd)		0. 03	0. 0773	0. 0626
Number of cages (if any)				
Selected CV (VALVE)		0. 47		
Calculated CV		0. 1164	0. 2917	0. 3281
Calculated / Sel. CV ratio		0. 248	0. 621	0. 698
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	24. 8	62. 1	69. 8
Terminal differential pressure	bar	51. 9763	54. 6115	54. 5115
Valve outlet velocity	m/s	0. 44	1. 09	1. 2
Pipe outlet velocity	m/s	0. 18	0. 44	0. 49
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75. 1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-20023
Service PURGE GAS FROM T-2001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/14
Quote Line 170000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 6"		ND 6"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	90		-	Fluid		Purge Gas
Maximum Temp.	100		-	State		Gas
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	6"	OUT	6"	Flow action		To Open
Port	6"			Characteristic		Equalpercentage
Valve Cv	259			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		90 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Locked (Open)
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D46	
Guide/Cage	A 479 316 Cr plated			Action	Direct	
Balancing	PTFE			Spring range	7-28 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S150AF00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17045
 Quote Line 170000
 Date 16/01/14

Fluid State Gas
 Fluid Name Purge Gas
 Tag 30-FV-20023
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 6" OUT 6" Port 6"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	77.7	77.7	77.7
Outlet absolute pressure	bar	75	75	75
Flow Rate	kg/h	4,277	10,691	53,500
Inlet temperature	deg. C	49	49	49
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.42	1.42	1.42
Density	kg/m3	21.9853	21.9853	21.9853
Press. differential ratio factor (X)		0.7697	0.7558	0.6748
Recovery factor (FL)		0.9369	0.9313	0.8963
Valve style modifier (Fd)		0.4934	0.3506	0.1538
Number of cages (if any)				
Selected CV (VALVE)		259		
Calculated CV		20.6405	51.6083	258.735
Calculated / Sel.CV ratio		0.08	0.199	0.999
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	26.21	41.87	99.95
MACH n. at outlet connection		0.0047	0.0119	0.0593
Valve outlet velocity	m/s	3.33	8.32	41.62
Pipe outlet velocity	m/s	3.33	8.31	41.6
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	56.4	59.9	68.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer Bushehr Petrochemical
DSH SQ1401768 **Rev.** 0
TAG 30-FV-20024
Service HYDROGEN TO E-1006

Page 1 **of** 2
Qty 1
User wang.lihua
Date 14/11/03
Quote Line 180000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"		ND 8"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Recycled H2
Pressure	90	-			State	Gas
Maximum Temp.	120	-				
Minimum Temp.	-	-				
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	4"	OUT	4"	Flow action		To Open
Port	3"			Characteristic		Equalpercentage
Valve Cv	123			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	45			Shut-off pressur		90 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	With sealing bellows			Air failure		Locked (Close)
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	13-31 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	Inconel 625			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S100BF00H2.00			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -

Comments

- Note 1:** Grease free.
- Note 2:** Valve inside flow path cleaned to avoid oxidizes/particles.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17046
 Quote Line 180000
 Date 14/11/03

Fluid State Gas
 Fluid Name Recycled H2
 Tag 30-FV-20024
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 4" OUT 4" Port 3"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	42.2	42.2	42.2
Outlet absolute pressure	bar	36.9	36.9	36.9
Flow Rate	kg/h	4,757	11,892	13,081
Inlet temperature	deg. C	90	90	90
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.41	1.41	1.41
Density	kg/m3	7.9157	7.9157	7.9157
Press. differential ratio factor (X)		0.7529	0.714	0.7075
Recovery factor (FL)		0.9302	0.9142	0.9115
Valve style modifier (Fd)		0.3215	0.1988	0.1875
Number of cages (if any)				
Selected CV (VALVE)		123		
Calculated CV		28.5252	72.2246	79.6841
Calculated / Sel.CV ratio		0.232	0.587	0.648
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	46.27	75.96	79.72
MACH n. at outlet connection		0.0298	0.0746	0.082
Valve outlet velocity	m/s	25.74	64.34	70.78
Pipe outlet velocity	m/s	6.48	16.2	17.81
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	74.8	78.8	79.2

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-20027
Service BOILER FEED WATER TO D-2003

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/05/11
Quote Line 190000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 4"		ND 4"	Minimum Temp.		- C	
Thickness	SCH XS		SCH XS	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Boiler Feed water	
Pressure	72.1	-			State	Liquid	
Maximum Temp.	150	-					
Minimum Temp.	-						
Valve				Guiding Cage			
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal	
DN IN	3"	OUT	3"	Flow action		To Open	
Port	2"			Characteristic		Equalpercentage	
Valve Cv	69.5			Leakage class		IV - FCI 70-2 & IEC 534.4	
Stroke	34			Shut-off pressur		72.1 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve close	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite			Size	D39		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	17-30 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	Side mounted		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A04S080CF00H000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17047
 Quote Line 190000
 Date 15/05/11

Fluid State Liquid
 Fluid Name Boiler Feed wat
 Tag 30-FV-20027
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 3" OUT 3" Port 2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	51.3	50.7	50.5
Outlet absolute pressure	bar	35.1	35.1	48.1
Flow Rate	kg/h	20,000	50,000	55,000
Density	kg/m3	941	941	941
Inlet temperature	deg. C	126	126	126
Vapour pressure (abs)	bar	2.4	2.4	2.4
Critical pressure (abs)	bar	220.6	220.6	220.6
Viscosity	cP	0.221	0.221	0.221
Recovery factor (FL)		0.9368	0.9306	0.9121
Valve style modifier (Fd)		0.5512	0.3449	0.2045
Number of cages (if any)				
Selected CV (VALVE)		69.5		
Calculated CV		5.9224	15.0942	42.4734
Calculated / Sel.CV ratio		0.085	0.217	0.611
Flow Regime		Normal	Normal	Normal
Valve Opening	%	29.85	50.8	79.52
Terminal differential pressure	bar	43.0517	41.915	39.7497
Valve outlet velocity	m/s	1.39	3.46	3.81
Pipe outlet velocity	m/s	0.8	1.99	2.19
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	59.5	65.7	51.4

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-20029
Service BOILER FEED WATER FROM D-2003

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/01/14
Quote Line 200000

Piping			IN	OUT	Ambient		
Diameter	ND 1.1/2"		ND 4"		Pressure	1 bar	
Thickness	SCH XS		SCH XS		Minimum Temp.	- C	
Insulation	Not Known				Maximum Temp.	- C	
					Installation	Not Known	
Design Conditions					Haz. Area Other		
			IN	OUT			
Pressure	48/FV		-		Fluid	Boiler Feed water	
Maximum Temp.	260		-		State	Liquid	
Minimum Temp.	-						
Valve					Guiding Top		
Model	1-4641		Trim	CP-E	Sealing seat-plug	Metal to metal	
DN IN	1"		OUT	1"	Flow action	To Open	
Port	9mm				Characteristic	Equalpercentage	
Valve Cv	1.67				Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	17				Shut-off pressur	48 bar	
Body Type	Globe - Angle				Live Loading	Not provided	
Bonnet Type	Universal				Air failure	Valve close	
Seat Type	Single				Control signal failure	Fail Safe	
Trim Type	Contoured						
Connections							
		DN	Type / Rating / Sealing-Finish				
IN	1"		Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	1"		Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials					Actuator		
Body	SA 105				Manufacturer	Parcol S.P.A.	
Bonnet	SA 105				Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided				Model	1-X-290	
Seat	A 182 F6NM Full Stellite				Size	D33	
Guide/Cage	-				Action	Reverse	
Balancing	-				Spring range	20-29 psi	
Disk stack	-				Supply	40 psi	
Plug/seat insert	-				Handwheel	Side mounted	
Bellows	-				Yoke material	Carbon steel	
Packing	Graphite						
Pneumatic Instrumentation					Time	Conn	
Minimum Press.	5 bar				Throttling	- s	-
Maximum Press.	9 bar				Quick Open	- s	-
Design Press.	- bar				Quick Close	- s	-
Fitting type	Double Ferrule				Tubing Material	Stainless steel	
Miscellaneous					<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-				<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-				<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-				<input type="checkbox"/>	Leak-off	
Valve Code	R6941.A.15.N.025GFOG0000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17048
 Quote Line 200000
 Date 16/01/14

Fluid State Liquid
 Fluid Name Boiler Feed water
 Tag 30-FV-20029
 Valve Model 1-4641 Trim CP-E

Pipe
 Nominal Size IN ND 1.1/2" OUT ND 4"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 1" OUT 1" Port 9mm

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	32	32	32
Outlet absolute pressure	bar	6.9	6.9	9.4
Flow Rate	kg/h	400	1,000	1,500
Density	kg/m3	817	817	817
Inlet temperature	deg. C	237	237	237
Vapour pressure (abs)	bar	31.7209	31.7209	31.7209
Critical pressure (abs)	bar	220.6	220.6	220.6
Viscosity	cP	0.112	0.112	0.112
Recovery factor (FL)		0.9654	0.9452	0.933
Valve style modifier (Fd)		0.1263	0.2068	0.2618
Number of cages (if any)				
Selected CV (VALVE)		1.67		
Calculated CV		0.239	0.6104	0.928
Calculated / Sel.CV ratio		0.143	0.366	0.556
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	50.52	73.98	84.62
Terminal differential pressure	bar	4.5811	4.3919	4.2788
Valve outlet velocity	m/s	9.4	23.6	22.5
Pipe outlet velocity	m/s	0	0	0
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 01
TAG 30-FV-20035
Service PROCESS CONDENSATE FROM P-2003A/B

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/03/17
Quote Line 210000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 28"		ND 28"	Minimum Temp.		- C
Thickness	31 mm		31 mm	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	69		-	Fluid		Process Condensate
Maximum Temp.	260		-	State		Liquid
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	LN-E	Sealing seat-plug		Metal to metal
DN IN	24"	OUT	24"	Flow action		To Open
Port	24"			Characteristic		Equalpercentage
Valve Cv	5220			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	300			Shut-off pressur		69 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve open
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	24"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	24"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Piston	
Plug	A 479 316L Full Stell.			Model	1-X-400	
Seat	A 479 316L Seat joint Stell.			Size	C600	
Guide/Cage	A 479 316L Cr plated			Action	Direct	
Balancing	PTFE			Spring range	15-36 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H.05.S.600AG0.09000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM01-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: Ex iaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:
- 4- TYPE: Position Transmitter - QTY: 1 - PROD: SIEMENS - MODEL: 6DR4004-6J - MATERIAL: Alum. - IP: IP65 - ATEX: Ex iaIICT4 - CONN: El.M20X1.5 - Input: 12-30 Vdc - Output: 4-20mA - Protocol:

Comments

- Note 1:** Provide adjustable minimum stop. Preliminary minimum opening at 20%.
- Note 2:** output signal to be 4-20 mA .



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17049
 Quote Line 210000
 Date 15/01/09

Fluid State Liquid
 Fluid Name Process Condens
 Tag 30-FV-20035
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 28" OUT ND 28"
 Thickness / schedule IN 31 mm OUT 31 mm

Valve
 Nominal Size IN 24" OUT 24" Port 24"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	53.3	53.3	59.1
Outlet absolute pressure	bar	51.8	51.8	57.6
Flow Rate	kg/h	1,040,000	2,600,000	2,860,000
Density	kg/m3	859	859	859
Inlet temperature	deg. C	198	198	198
Vapour pressure (abs)	bar	48.6	48.6	48.6
Critical pressure (abs)	bar	220.6	220.6	220.6
Viscosity	cP	0.135	0.135	0.135
Recovery factor (FL)		0.9384	0.9359	0.9354
Valve style modifier (Fd)		0.0393	0.0247	0.0234
Number of cages (if any)		5220		
Selected CV (VALVE)		1,059.4946	2,652.6935	2,919.05
Calculated CV		0.203	0.508	0.559
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening	%	43.07	66.21	69.39
Terminal differential pressure	bar	11.4542	11.2876	16.2598
Valve outlet velocity	m/s	1.38	3.45	3.8
Pipe outlet velocity	m/s	1.02	2.54	2.8
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	62.3	71.2	68.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-30001
Service CRUDE METHANOL FROM D-2002

Page 1 **of** 2
Qty 1
User wang.lihua
Date 19/04/16
Quote Line 220000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"		ND 12"	Minimum Temp.		- C
Thickness	SCH 20		SCH 20	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	7		-	Fluid		Crude Methanol
Maximum Temp.	100		-	State		Liquid
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	HLN-E	Sealing seat-plug		Metal to metal
DN IN	10"	OUT	10"	Flow action		To Open
Port	10"			Characteristic		Equalpercentage
Valve Cv	957			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	150			Shut-off pressur		7 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-250	
Seat	A 479 316 Seat Joint Stellite			Size	D63	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	15-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6943A04S2500D00D000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17050
 Quote Line 220000
 Date 19/04/16

Fluid State Liquid
 Fluid Name Crude Methanol
 Tag 30-FV-30001
 Valve Model 1-6943 Trim HLN-E

Pipe
 Nominal Size IN ND 10" OUT ND 12"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 10" OUT 10" Port 10"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	6.3	6.3	6.3
Outlet absolute pressure	bar	4.3	4.3	4.3
Flow Rate	kg/h	112,026	280,066	308,073
Density	kg/m ³	797	797	797
Inlet temperature	deg. C	48	48	48
Vapour pressure (abs)	bar	6.2	6.2	6.2
Critical pressure (abs)	bar	112.7	112.7	112.7
Viscosity	cP	0.433	0.433	0.433
Recovery factor (FL)		0.9389	0.9371	0.9368
Valve style modifier (Fd)		0.0605	0.0387	0.0368
Number of cages (if any)		957		
Selected CV (VALVE)		177.8011	445.373	490.0696
Calculated CV		0.186	0.465	0.512
Calculated / Sel.CV ratio				
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	40.01	64.07	67.27
Terminal differential pressure	bar	0.6648	0.6575	0.6559
Valve outlet velocity	m/s	13.4	33.4	36.7
Pipe outlet velocity	m/s	0	0	0
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-30002
Service CRUDE METHANOL TO E-3012

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 230000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 10"	ND 10"		Minimum Temp.	- C		
Thickness	SCH STD	SCH STD		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	23.7	-	bar	Fluid	Crude Methanol		
Maximum Temp.	155	-	C	State	Liquid		
Minimum Temp.	-	-	C				
Valve				Model	1-6943	Trim ST-E	
DN IN	10"	OUT	10"	Guiding	Cage		
Port	8"			Sealing seat-plug	Metal to metal		
Valve Cv	583			Flow action	To Open		
Stroke	76			Characteristic	Equalpercentage		
Body Type	Globe - Straight			Leakage class	IV - FCI 70-2 & IEC 534.4		
Bonnet Type	Universal			Shut-off pressur	23.7 bar		
Seat Type	Single			Live Loading	Not provided		
Trim Type	Cage			Air failure	Valve close		
				Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite			Size	D63		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	10-28 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A04S250CD00K000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17051
 Quote Line 230000
 Date 16/01/06

Fluid State Liquid
 Fluid Name Crude Methanol
 Tag 30-FV-30002
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 10" OUT 10" Port 8"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	15.3	15.3	15.3
Outlet absolute pressure	bar	12.3	12.3	14.1
Flow Rate	kg/h	109,559	273,897	301,287
Density	kg/m ³	747	747	747
Inlet temperature	deg. C	94	94	94
Vapour pressure (abs)	bar	2.5	2.5	2.5
Critical pressure (abs)	bar	113.3	113.3	113.3
Viscosity	cP	0.255	0.255	0.255
Recovery factor (FL)		0.9315	0.9181	0.9014
Valve style modifier (Fd)		0.2636	0.2453	0.253
Number of cages (if any)		583		
Selected CV (VALVE)		84.6079	211.5194	367.8861
Calculated CV		0.145	0.363	0.631
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	41.08	60.25	75.44
Terminal differential pressure	bar	11.2846	10.96	10.5666
Valve outlet velocity	m/s	0.8	2	2.2
Pipe outlet velocity	m/s	0.8	2	2.2
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	57.2	67.6	62.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 01
TAG 30-FV-30007
Service CRUDE METHANOL FROM P-3001A/B

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/03/21
Quote Line 240000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"		ND 8"	Minimum Temp.		- C
Thickness	SCH 20		SCH 20	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Crude Methanol
Pressure	13.7	-	bar	State		Liquid
Maximum Temp.	120	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Top		
Model	1-6941	Trim	CP-E	Sealing seat-plug		Metal to metal
DN IN	6"	OUT	6"	Flow action		To Open
Port	4"			Characteristic		Equalpercentage
Valve Cv	232			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		13.7 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve open
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Contoured					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Seat Joint Stellite			Model	1-X-290	
Seat	A 479 316 Full Stellite			Size	D46	
Guide/Cage	-			Action	Direct	
Balancing	-			Spring range	5-19 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6941A04N150CDOJ0000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0- MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

Note 1: Provide adjustable minimum stop.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17052
 Quote Line 240000
 Date 14/12/29

Fluid State Liquid
 Fluid Name Crude Methanol
 Tag 30-FV-30007
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 6" OUT 6" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	7.8	7.8	10.2
Outlet absolute pressure	bar	6.5	6.5	8.9
Flow Rate	kg/h	46,151	115,378	138,453
Density	kg/m3	744	744	744
Inlet temperature	deg. C	65	65	65
Vapour pressure (abs)	bar	1.9	1.9	1.9
Critical pressure (abs)	bar	73.9	73.9	73.9
Viscosity	cP	0.326	0.326	0.326
Recovery factor (FL)		0.9547	0.9296	0.9212
Valve style modifier (Fd)		0.2059	0.354	0.4002
Number of cages (if any)				
Selected CV (VALVE)		232		
Calculated CV		54.2658	135.8602	163.1541
Calculated / Sel.CV ratio		0.234	0.586	0.703
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	48.42	78.16	84.63
Terminal differential pressure	bar	5.5191	5.2108	7.1289
Valve outlet velocity	m/s	0.87	2.18	2.62
Pipe outlet velocity	m/s	0.51	1.29	1.54
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	52.4	65	66.4

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-FV-30011
 Service LP STEAM TO E-3004

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/01/04
 Quote Line 250000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 24"		ND 24"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area		Other	
Pressure	8/FV	-		bar	Fluid	LP steam	
Maximum Temp.	300	-		C	State	Gas	
Minimum Temp.	-	-		C			
Valve				Guiding		Cage	
Model	1-6943	Trim	ST-L	Sealing seat-plug	Metal to metal		
DN IN	20"	OUT	20"	Flow action	To Open		
Port	20"			Characteristic	Linear		
Valve Cv	4530			Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	250			Shut-off pressur	8 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Valve close		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	20"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	20"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Piston		
Plug	A 182 F6NM Nitrided			Model	1-X-400		
Seat	AISI 410 35HRC			Size	C450		
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse		
Balancing	Carbon Graphite			Spring range	29-51 psi		
Disk stack	-			Supply	60 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/>	PED
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service		
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External	
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-			<input type="checkbox"/>	Leak-off		
Valve Code	R6943A01D500AD1062.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17053
 Quote Line 250000
 Date 15/01/15

Fluid State Gas
 Fluid Name LP steam
 Tag 30-FV-30011
 Valve Model 1-6943 Trim ST-L

Pipe
 Nominal Size IN ND 24" OUT ND 24"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 20" OUT 20" Port 20"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	6.5	6.3	6.3
Outlet absolute pressure	bar	6	6	6
Flow Rate	kg/h	35,000	87,000	97,000
Inlet temperature	deg. C	241	241	241
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.34	1.34	1.34
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7636	0.7321	0.7269
Recovery factor (FL)		0.9345	0.9217	0.9196
Valve style modifier (Fd)		0.2492	0.245	0.2411
Number of cages (if any)				
Selected CV (VALVE)		4530		
Calculated CV		1,121.7108	3,635.549	4,061.8099
Calculated / Sel.CV ratio		0.248	0.803	0.897
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	29.77	65.54	77.28
MACH n. at outlet connection		0.0354	0.088	0.0981
Valve outlet velocity	m/s	19.96	49.62	55.32
Pipe outlet velocity	m/s	13.67	33.97	37.87
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	81	72.6	72.9

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-30015
Service PRODUCT METHANOL FROM P-3003A/B

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/02/25
Quote Line 260000

Piping			IN	OUT	Ambient			Pressure 1 bar
Diameter	ND 12"		ND 12"		Minimum Temp.	- C		
Thickness	SCH STD		SCH STD		Maximum Temp.	- C		
Insulation	Not Known				Installation	Not Known		
Design Conditions					Haz. Area Other			
	IN		OUT		Fluid	Refined Methanol		
Pressure	23.2		-	bar	State	Liquid		
Maximum Temp.	150		-	C				
Minimum Temp.	-		-	C				
Valve					Guiding Cage			
Model	1-6943		Trim	ST-E	Sealing seat-plug	Metal to metal		
DN IN	10"		OUT	10"	Flow action	To Open		
Port	10"				Characteristic	Equalpercentage		
Valve Cv	1050				Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	100				Shut-off pressur	23.2 bar		
Body Type	Globe - Straight				Live Loading	Not provided		
Bonnet Type	Universal				Air failure	Valve open		
Seat Type	Single				Control signal failure	Fail Safe		
Trim Type	Cage							
Connections								
		DN	Type / Rating / Sealing-Finish					
IN		10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT		10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials					Actuator			
Body	SA 216 WCC				Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC				Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite				Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite				Size	D63		
Guide/Cage	A 479 316 Cr plated				Action	Direct		
Balancing	PTFE				Spring range	4-20 psi		
Disk stack	-				Supply	40 psi		
Plug/seat insert	-				Handwheel	No		
Bellows	-				Yoke material	Carbon steel		
Packing	Reinforced teflon							
Pneumatic Instrumentation					Time	Conn		
Minimum Press.	5 bar				Throttling	- s	-	
Maximum Press.	9 bar				Quick Open	- s	-	
Design Press.	- bar				Quick Close	- s	-	
Fitting type	Double Ferrule				Tubing Material	Stainless steel		
Miscellaneous					<input type="checkbox"/>	PED		
Adjustable limit stop	Opening - %		Closing - %		<input type="checkbox"/>	Vacuum Service		
Valve Heating	-				<input type="checkbox"/>	NACE	<input type="checkbox"/> External	
Inlet Devices	-				<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-				<input type="checkbox"/>	Leak-off		
Valve Code	R6943A04S250AD00K000			Pneumatic Diagram	-			

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

Note 1: Provide low minimum stop (adjustable). Preliminary minimum stop set at 20%.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17054
 Quote Line 260000
 Date 15/03/10

Fluid State Liquid
 Fluid Name Refined Methano
 Tag 30-FV-30015
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 12" OUT ND 12"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 10" OUT 10" Port 10"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	15.3	15.3	17.8
Outlet absolute pressure	bar	13.7	13.7	16.2
Flow Rate	kg/h	171,048	427,619	513,143
Density	kg/m ³	644	664	664
Inlet temperature	deg. C	129	129	129
Vapour pressure (abs)	bar	8.2	8.2	8.2
Critical pressure (abs)	bar	73.8	73.8	73.8
Viscosity	cP	0.165	0.165	0.165
Recovery factor (FL)		0.9354	0.9286	0.9263
Valve style modifier (Fd)		0.2578	0.2416	0.2456
Number of cages (if any)				
Selected CV (VALVE)		1050		
Calculated CV		194.8611	480.4632	577.0009
Calculated / Sel.CV ratio		0.186	0.458	0.55
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	42.71	61.11	65.83
Terminal differential pressure	bar	7.1589	7.0035	9.0621
Valve outlet velocity	m/s	1.45	3.52	4.22
Pipe outlet velocity	m/s	1.01	2.45	2.94
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	60.9	73.2	72.1

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 01
TAG 30-FV-30019
Service PRODUCT METHANOL FROM P-3004A/B

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/03/21
Quote Line 270000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 12"	ND 12"		Minimum Temp.	- C		
Thickness	SCH 20	SCH 20		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	18.2	-	bar			Fluid Refined Methanol	
Maximum Temp.	120	-	C			State Liquid	
Minimum Temp.	-	-	C				
Valve				Model	1-6943	Trim ST-L	
DN	IN 8"	OUT 8"		Guiding	Cage		
Port	8"			Sealing seat-plug	Metal to metal		
Valve Cv	636			Flow action	To Open		
Stroke	76			Characteristic	Linear		
Body Type	Globe - Straight			Leakage class	IV - FCI 70-2 & IEC 534.4		
Bonnet Type	Universal			Shut-off pressur	18.2 bar		
Seat Type	Single			Live Loading	Not provided		
Trim Type	Cage			Air failure	Valve open		
				Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite			Size	D63		
Guide/Cage	A 479 316 Cr plated			Action	Direct		
Balancing	PTFE			Spring range	4-17 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A04S200AD00K000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0- MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

Note 1: Provide adjustable minimum stop.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17055
 Quote Line 270000
 Date 14/11/03

Fluid State Liquid
 Fluid Name Refined Methano
 Tag 30-FV-30019
 Valve Model 1-6943 Trim ST-L

Pipe
 Nominal Size IN ND 12" OUT ND 12"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 8" OUT 8" Port 8"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	9.8	9.8	12.8
Outlet absolute pressure	bar	8.1	8.1	11.1
Flow Rate	kg/h	159,312	398,279	477,935
Density	kg/m ³	736	736	736
Inlet temperature	deg. C	72	72	72
Vapour pressure (abs)	bar	1.3	1.3	1.3
Critical pressure (abs)	bar	73.8	73.8	73.8
Viscosity	cP	0.303	0.303	0.303
Recovery factor (FL)		0.9342	0.9253	0.9225
Valve style modifier (Fd)		0.2978	0.3191	0.3215
Number of cages (if any)		636		
Selected CV (VALVE)		164.9227	415.9164	501.4109
Calculated CV		0.259	0.654	0.788
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	34.2	60.63	72.53
Terminal differential pressure	bar	7.4857	7.2521	9.6602
Valve outlet velocity	m/s	1.8	4.49	5.39
Pipe outlet velocity	m/s	0.79	1.98	2.37
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	64.3	75.4	76.5

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-FV-30023
 Service FUSEL OIL TO D-3005

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/01/05
 Quote Line 280000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 2"		ND 2"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area		Other	
Pressure	7/FV	-		Fluid	Fusel Oil		
Maximum Temp.	155	-		State	Liquid		
Minimum Temp.	-	-					
Valve				Guiding			
Model	1-6941	Trim	CP-E	Top	Top		
DN IN	1"	OUT	1"	Sealing seat-plug	Metal to metal		
Port	1"			Flow action	To Open		
Valve Cv	12.9			Characteristic	Equalpercentage		
Stroke	17			Leakage class	IV - FCI 70-2 & IEC 534.4		
Body Type	Globe - Straight			Shut-off pressur	7 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air failure	Valve open		
Trim Type	Contoured			Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	1"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	1"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Seat Joint Stellite			Model	1-X-290		
Seat	A 479 316 Full Stellite			Size	D25		
Guide/Cage	-			Action	Direct		
Balancing	-			Spring range	4-18 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off			
Adjustable limit stop	Opening - %		Closing - %				
Valve Heating	-						
Inlet Devices	-						
Outlet Devices	-						
Valve Code	R6941A04N025AD0F2000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17056
 Quote Line 280000
 Date 14/11/03

Fluid State Liquid
 Fluid Name Fusel Oil
 Tag 30-FV-30023
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 2" OUT ND 2"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 1" OUT 1" Port 1"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	2.86	2.78	2.74
Outlet absolute pressure	bar	2.5	2.5	2.5
Flow Rate	kg/h	880	2,200	2,640
Density	kg/m3	661	661	661
Inlet temperature	deg. C	89	89	89
Vapour pressure (abs)	bar	1.9	1.9	1.9
Critical pressure (abs)	bar	131.8	131.8	131.8
Viscosity	cP	0.163	0.163	0.163
Recovery factor (FL)		0.9602	0.9384	0.9281
Valve style modifier (Fd)		0.1436	0.252	0.2945
Number of cages (if any)				
Selected CV (VALVE)		12.9		
Calculated CV		2.089	5.9927	7.841
Calculated / Sel.CV ratio		0.162	0.465	0.608
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	53.9	77.73	83.85
Terminal differential pressure	bar	1.0128	0.8912	0.8343
Valve outlet velocity	m/s	0.66	1.66	1.99
Pipe outlet velocity	m/s	0.17	0.43	0.51
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	26	34.6	36.1

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-30027
Service PRODUCT METHANOL TO DAILY TANK

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/01/15
Quote Line 290000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"		ND 8"	Minimum Temp.		- C
Thickness	SCH 20		SCH 20	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	15		-	Fluid		Refined Methanol
Maximum Temp.	100		-	State		Liquid
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	DC-E	Sealing seat-plug		Metal to metal
DN IN	8"	OUT	8"	Flow action		To Open
Port	4"			Characteristic		Equalpercentage
Valve Cv	88.6			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		15 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Multicage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D46	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	13-32 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A04S200ED00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17057
 Quote Line 290000
 Date 15/01/15

Fluid State Liquid
 Fluid Name Refined Methano
 Tag 30-FV-30027
 Valve Model 1-6943 Trim DC-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 8" OUT 8" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	10.3	10.1	9.9
Outlet absolute pressure	bar	3	3.2	3.4
Flow Rate	kg/h	43,271	108,177	118,994
Density	kg/m3	765	765	765
Inlet temperature	deg. C	45	45	45
Vapour pressure (abs)	bar	0.5	0.5	0.5
Critical pressure (abs)	bar	73.8	73.8	73.8
Viscosity	cP	0.417	0.417	0.417
Recovery factor (FL)		0.955	0.955	0.955
Valve style modifier (Fd)		0.1678	0.1026	0.0961
Number of cages (if any)				
Selected CV (VALVE)		88.6		
Calculated CV		21.1684	54.4332	61.691
Calculated / Sel.CV ratio		0.239	0.614	0.696
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	45.24	73.13	77.56
Terminal differential pressure	bar	8.9666	8.7842	8.6018
Valve outlet velocity	m/s	0.47	1.17	1.29
Pipe outlet velocity	m/s	0.47	1.17	1.29
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-30028
Service PRODUCT METHANOL TO DAILY TANK

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/09/29
Quote Line 300000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"	ND 8"		Minimum Temp.	- C	
Thickness	SCH 20	SCH 20		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	15	-	bar	Fluid	Refined Methanol	
Maximum Temp.	100	-	C	State	Liquid	
Minimum Temp.	-	-	C			
Valve				Guiding Top		
Model	1-6941	Trim	CP-E	Sealing seat-plug	Metal to metal	
DN IN	6"	OUT	6"	Flow action	To Open	
Port	4"			Characteristic	Equalpercentage	
Valve Cv	232			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	60			Shut-off pressur	15 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Contoured					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Seat Joint Stellite			Model	1-X-290	
Seat	A 479 316 Full Stellite			Size	D46	
Guide/Cage	-			Action	Reverse	
Balancing	-			Spring range	19-48 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6941A04N150CDOJ0000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17058
 Quote Line 300000
 Date 15/01/15

Fluid State Liquid
 Fluid Name Refined Methano
 Tag 30-FV-30028
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 6" OUT 6" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	5.7	5.5	5.3
Outlet absolute pressure	bar	3	3.2	3.4
Flow Rate	kg/h	46,858	117,146	128,861
Density	kg/m3	765	765	765
Inlet temperature	deg. C	45	45	45
Vapour pressure (abs)	bar	0.5	0.5	0.5
Critical pressure (abs)	bar	73.8	73.8	73.8
Viscosity	cP	0.417	0.417	0.417
Recovery factor (FL)		0.9597	0.9399	0.9333
Valve style modifier (Fd)		0.1693	0.2962	0.3334
Number of cages (if any)				
Selected CV (VALVE)		232		
Calculated CV		37.6975	102.197	123.7414
Calculated / Sel.CV ratio		0.162	0.441	0.533
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	40.1	67.12	74.26
Terminal differential pressure	bar	4.8167	4.4317	4.1903
Valve outlet velocity	m/s	0.86	2.15	2.37
Pipe outlet velocity	m/s	0.51	1.27	1.4
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	69.3	82.3	80.8

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-40001
Service BOILER FEED WATER TO DA-4001

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/01/05
Quote Line 310000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 6"		ND 6"	Minimum Temp.		- C	
Thickness	SCH 120		SCH 120	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Boiler Feed water	
Pressure	191/FV	-		bar	State	Liquid	
Maximum Temp.	150	-		C			
Minimum Temp.	-			C			
Valve				Guiding Cage			
Model	1-9111		Trim LIM-L	Sealing seat-plug	Metal to metal		
DN	IN 4"		OUT 4"	Flow action	To Open		
Port	1.1/2"			Characteristic	Linear		
Valve Cv	13.6			Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	34			Shut-off pressur	191 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Valve open		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Multistep-Limiphon						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	4"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
OUT	4"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite			Size	D39		
Guide/Cage	A 479 316 Cr plated			Action	Direct		
Balancing	PTFE + back-up			Spring range	12-28 psi		
Disk stack	A 479 316			Supply	60 psi		
Plug/seat insert	-			Handwheel	Side mounted		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R9000A04B100DH00H000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17077
 Quote Line 310000
 Date 16/01/05

Fluid State Liquid
 Fluid Name Boiler Feed water
 Tag 30-FV-40001
 Valve Model 1-9111 Trim LIM-L

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH 120 OUT SCH 120

Valve
 Nominal Size IN 4" OUT 4" Port 1.1/2"

	Unit	Case 1	Case 2	Case 3
		-	max	-
Inlet absolute pressure	bar	-	151.1	-
Outlet absolute pressure	bar	-	5.8	-
Flow Rate	kg/h	-	107,000	-
Density	kg/m ³	-	945	-
Inlet temperature	deg. C	-	127	-
Vapour pressure (abs)	bar	-	2.5	-
Critical pressure (abs)	bar	-	220.6	-
Viscosity	cP	-	0.221	-
Recovery factor (FL)		-	0.9957	-
Valve style modifier (Fd)		-	0.0419	-
Number of cages (if any)				
Selected CV (VALVE)		13.6		
Calculated CV		-	10.5583	-
Calculated / Sel.CV ratio		-	0.744	-
Flow Regime		-	Normal	-
Valve Opening	%	-	77.63	-
Terminal differential pressure	bar	-	147.4546	-
Valve outlet velocity	m/s	-	4.73	-
Pipe outlet velocity	m/s	-	2.05	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	-	<85	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-40002
Service BOILER FEED WATER FROM P-4001A/B/C

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/01/05
Quote Line 320000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 12"		ND 12"	Minimum Temp.		- C
Thickness	SCH XXS		SCH XXS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Boiler Feed water
Pressure	191	-			State	Liquid
Maximum Temp.	150	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	10"	OUT	10"	Flow action		To Open
Port	10"			Characteristic		Equalpercentage
Valve Cv	1050			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	100			Shut-off pressur		191 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	10"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH				
OUT	10"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D63	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE + back-up			Spring range	19-40 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04B250AH00K000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17078
 Quote Line 320000
 Date 15/05/08

Fluid State Liquid
 Fluid Name Boiler Feed wat
 Tag 30-FV-40002
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 12" OUT ND 12"
 Thickness / schedule IN SCH XXS OUT SCH XXS

Valve
 Nominal Size IN 10" OUT 10" Port 10"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	150.5	150.5	150.5
Outlet absolute pressure	bar	129.8	129.8	150
Flow Rate	kg/h	180,960	452,400	497,640
Density	kg/m ³	945	945	945
Inlet temperature	deg. C	127	127	127
Vapour pressure (abs)	bar	2.5	2.5	2.5
Critical pressure (abs)	bar	220.6	220.6	220.6
Viscosity	cP	0.221	0.221	0.221
Recovery factor (FL)		0.939	0.9373	0.9201
Valve style modifier (Fd)		0.3157	0.2732	0.2685
Number of cages (if any)				
Selected CV (VALVE)		1050		
Calculated CV		47.3022	118.2782	846.7139
Calculated / Sel.CV ratio		0.045	0.113	0.806
Flow Regime		Normal	Normal	Normal
Valve Opening	%	21.59	34.33	81.3
Terminal differential pressure	bar	130.6403	130.0461	119.789
Valve outlet velocity	m/s	1.37	3.43	3.77
Pipe outlet velocity	m/s	0.91	2.27	2.5
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	62.1	72.1	46.6

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-40003
Service BOILER FEED WATER TO DA-4001

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/01/05
Quote Line 330000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 3"	ND 3"		Minimum Temp.	- C	
Thickness	SCH XS	SCH XS		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
	IN	OUT		Fluid	Boiler Feed water	
Pressure	72.1/FV	-	bar	State	Liquid	
Maximum Temp.	150	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	EDC-L	Sealing seat-plug	Metal to metal	
DN IN	1.1/2"	OUT	1.1/2"	Flow action	To Open	
Port	3/4"			Characteristic	Linear	
Valve Cv	6.87			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	17			Shut-off pressur	72.1 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve open	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Multicage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	1.1/2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	1.1/2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D25	
Guide/Cage	A 479 316 Cr plated			Action	Direct	
Balancing	-			Spring range	4-18 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04N040DF00F000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17079
 Quote Line 330000
 Date 16/01/05

Fluid State Liquid
 Fluid Name Boiler Feed water
 Tag 30-FV-40003
 Valve Model 1-6943 Trim EDC-L

Pipe
 Nominal Size IN ND 3" OUT ND 3"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 1.1/2" OUT 1.1/2" Port 3/4"

	Unit	Case 1	Case 2	Case 3
		-	max	-
Inlet absolute pressure	bar	-	54.7	-
Outlet absolute pressure	bar	-	5.8	-
Flow Rate	kg/h	-	30,000	-
Density	kg/m ³	-	941	-
Inlet temperature	deg. C	-	126	-
Vapour pressure (abs)	bar	-	2.4	-
Critical pressure (abs)	bar	-	220.6	-
Viscosity	cP	-	0.221	-
Recovery factor (FL)		-	0.9819	-
Valve style modifier (Fd)		-	0.2221	-
Number of cages (if any)				
Selected CV (VALVE)		6.87		
Calculated CV		-	5.1246	-
Calculated / Sel.CV ratio		-	0.746	-
Flow Regime		-	Normal	-
Valve Opening	%	-	75.12	-
Terminal differential pressure	bar	-	50.4786	-
Valve outlet velocity	m/s	-	7.75	-
Pipe outlet velocity	m/s	-	2.08	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	-	<85	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-40028
Service MP STEAM TO T-4001

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/01/09
Quote Line 340000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"	ND 8"		Minimum Temp.	- C	
Thickness	SCH XS	SCH XS		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	57/FV	-	bar	Fluid	MP steam	
Maximum Temp.	425	-	C	State	Gas	
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal	
DN IN	6"	OUT	6"	Flow action	To Open	
Port	4"			Characteristic	Equalpercentage	
Valve Cv	209			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	60			Shut-off pressur	57 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Locked (Close)	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	A 182 F6NM Seat Joint Stellit			Size	D46	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	Carbon Graphite			Spring range	13-32 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Double Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A02D150CF00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17080
 Quote Line 340000
 Date 15/01/09

Fluid State Gas
 Fluid Name MP steam
 Tag 30-FV-40028
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 6" OUT 6" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	51	50.4	50.4
Outlet absolute pressure	bar	48.2	48.2	48.2
Flow Rate	kg/h	8,400	21,000	23,100
Inlet temperature	deg. C	398	398	398
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.39	1.39	1.39
Density	kg/m3	17.7097	17.5014	17.5014
Press. differential ratio factor (X)		0.7547	0.7114	0.7048
Recovery factor (FL)		0.9309	0.9132	0.9104
Valve style modifier (Fd)		0.3239	0.1887	0.1778
Number of cages (if any)				
Selected CV (VALVE)		209		
Calculated CV		44.8015	126.86	139.6393
Calculated / Sel.CV ratio		0.214	0.607	0.668
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	43.88	75.81	79.86
MACH n. at outlet connection		0.0126	0.0316	0.0347
Valve outlet velocity	m/s	8.29	20.72	22.79
Pipe outlet velocity	m/s	4.73	11.83	13.01
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	67	68.4	69

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-40030
Service MP STEAM TO HE-1004B

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/20
Quote Line 350000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"	ND 8"		Minimum Temp.	- C	
Thickness	SCH XS	SCH XS		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	57/FV	-	bar	Fluid	MP steam	
Maximum Temp.	425	-	C	State	Gas	
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal	
DN IN	6"	OUT	6"	Flow action	To Open	
Port	4"			Characteristic	Equalpercentage	
Valve Cv	209			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	60			Shut-off pressur	57 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Locked (Open)	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	A 182 F6NM Seat Joint Stellit			Size	D46	
Guide/Cage	A 487 CA6NM Nitrided			Action	Direct	
Balancing	Carbon Graphite			Spring range	5-19 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Double Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6943A02D150CF00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -

Comments

Note 1: Provide maximum opening mechanical limit device.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17081
 Quote Line 350000
 Date 16/01/20

Fluid State Gas
 Fluid Name MP steam
 Tag 30-FV-40030
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 6" OUT 6" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	51	50.7	50.7
Outlet absolute pressure	bar	47.8	47.8	47.8
Flow Rate	kg/h	4,400	11,000	36,900
Inlet temperature	deg. C	398	397	397
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.39	1.39	1.39
Density	kg/m3	17.7097	17.6318	17.6318
Press. differential ratio factor (X)		0.767	0.7477	0.6806
Recovery factor (FL)		0.9358	0.9281	0.8996
Valve style modifier (Fd)		0.4622	0.2808	0.1504
Number of cages (if any)				
Selected CV (VALVE)		209		
Calculated CV		22.0157	57.8611	195.5429
Calculated / Sel.CV ratio		0.105	0.277	0.936
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	30.9	50.47	96.09
MACH n. at outlet connection		0.0067	0.0167	0.0559
Valve outlet velocity	m/s	4.38	10.93	36.65
Pipe outlet velocity	m/s	2.5	6.24	20.92
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	65.5	68.6	74.2

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-FV-64005
Service DEMIN WATER TO OSBL

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/10/08
Quote Line 360000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 6"		ND 6"	Minimum Temp.		- C	
Thickness	SCH 10S		SCH 10S	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Polished water	
Pressure	13.55	-			State	Liquid	
Maximum Temp.	85	-					
Minimum Temp.	-	-					
Valve				Guiding Cage			
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal	
DN IN	4"	OUT	4"	Flow action		To Open	
Port	3"			Characteristic		Equalpercentage	
Valve Cv	91.6			Leakage class		IV - FCI 70-2 & IEC 534.4	
Stroke	45			Shut-off pressur		13.55 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve close	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 351 CF8M			Manufacturer	Parcol S.P.A.		
Bonnet	SA 351 CF8M			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite			Size	D39		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	13-31 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943G04S100BD00H000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
Reference SQ1401768
Configuration 17082
Quote Line 360000
Date 15/10/08

Fluid State Liquid
Fluid Name Polished water
Tag 30-FV-64005
Valve Model 1-6943 **Trim** ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH 10S OUT SCH 10S

Valve
 Nominal Size IN 4" OUT 4" Port 3"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	9.5	9.5	9.5
Outlet absolute pressure	bar	5.5	5.5	5.5
Flow Rate	kg/h	11,800	29,500	120,000
Density	kg/m ³	990	990	990
Inlet temperature	deg. C	45	45	45
Vapour pressure (abs)	bar	0.0958	0.0958	0.0958
Critical pressure (abs)	bar	221.2	221.2	221.2
Viscosity	cP	0.596	0.596	0.596
Recovery factor (FL)		0.937	0.9311	0.9009
Valve style modifier (Fd)		0.6311	0.4171	0.2018
Number of cages (if any)				
Selected CV (VALVE)		91.6		
Calculated CV		6.8554	17.1418	69.9763
Calculated / Sel.CV ratio		0.075	0.187	0.764
Flow Regime		Normal	Normal	Normal
Valve Opening	%	27.6	42.54	86.61
Terminal differential pressure	bar	8.2596	8.1538	7.5971
Valve outlet velocity	m/s	0.36	0.9	3.66
Pipe outlet velocity	m/s	0.16	0.4	1.64
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	61.2	69.5	81.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-HV-10004
 Service PROCESS GAS TO FLARE HEADER

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/01/05
 Quote Line 370000

Piping			IN	OUT	Ambient			Pressure 1 bar
Diameter	ND 10"		ND 20"		Minimum Temp.	- C		
Thickness	SCH 40S		SCH 40		Maximum Temp.	- C		
Insulation	Insulated				Installation	Not Known		
Design Conditions					IN	OUT	Haz. Area Other	
Pressure	52		-	bar	Fluid	Process Gas		
Maximum Temp.	260		-	C	State	Gas		
Minimum Temp.	-		-	C				
Valve					Model 1-6943	Trim LN-E	Guiding Cage	
DN	IN 10"		OUT 10"		Sealing seat-plug	Metal to metal		
Port	10"				Flow action	To Open		
Valve Cv	580				Characteristic	Equalpercentage		
Stroke	100				Leakage class	VHS - FCI 70-2 & IEC 534.4		
Body Type	Globe - Straight				Shut-off pressur	52 bar		
Bonnet Type	Universal				Live Loading	Not provided		
Seat Type	Single				Air failure	Valve close		
Trim Type	Low Noise Cage				Control signal failure	Fail Safe		
Connections					DN	Type / Rating / Sealing-Finish		
	IN	10"			Flanged/ANSI B16.5/600#/RF - 125-250 AARH			
	OUT	10"			Flanged/ANSI B16.5/600#/RF - 125-250 AARH			
Materials					Actuator			
Body	SA 351 CF8C				Manufacturer	Parcol S.P.A.		
Bonnet	SA 351 CF8C				Type	Pneumatic Diaphragm		
Plug	A 182 F347 Full Stellite gr.6				Model	1-X-250		
Seat	A 182 F347 Seat joint Stellite				Size	D63		
Guide/Cage	A 182 F347 Cr plated				Action	Reverse		
Balancing	PTFE				Spring range	15-34 psi		
Disk stack	-				Supply	40 psi		
Plug/seat insert	-				Handwheel	Side mounted		
Bellows	-				Yoke material	Carbon steel		
Packing	Graphite							
Pneumatic Instrumentation					Time	Conn		
Minimum Press.	5 bar				Throttling	- s	-	
Maximum Press.	9 bar				Quick Open	- s	-	
Design Press.	- bar				Quick Close	- s	-	
Fitting type	Double Ferrule				Tubing Material	Stainless steel		
Miscellaneous					<input type="checkbox"/>	PED		
Adjustable limit stop	Opening - %		Closing - %		<input type="checkbox"/>	Vacuum Service		
Valve Heating	-				<input type="checkbox"/>	NACE	<input type="checkbox"/>	External
Inlet Devices	-				<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-				<input type="checkbox"/>	Leak-off		
Valve Code	R6943G.04.S250AF00C000				Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

Note 1: Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-HV-10004	Date	26-10-2016		
Service	PROCESS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Process Gas	Fluid State	GAS	Trim	LN-E

		In	Out	Port
Pipe	Nominal Size	10"	20"	
Pipe	Thickness/Schedule	SCH 40S	SCH 40	
Valve	Nominal Size	10"	10"	10"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	185000.00		
Inlet Pressure	bar a	46.6		
Outlet Pressure	bar a	20		
Inlet Temperature	°C	229		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		17.23		
Compressibility Factor (Z)		0.92		
Specific Heat Ratio (Cp/Cv)		1.27		
Density	kg/m ³	20.90		
Press. Differential Ratio Factor (XT)		0.76		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.04		
Number of Cages (If Any)				
Selected CV (VALVE)		580		
Calculated CV		396.89		
Calculated / Sel. CV Ratio		0.68		
Flow Regime		Normal		
Valve Opening	%	79.47		
MACH N. at Outlet Connection		0.20		
Valve Outlet Velocity	m/s	110.61		
Pipe Outlet Velocity	m/s	31.94		
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	81.23		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-HV-10004 Disc	Date	27-10-2016		
Service	PROCESS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Process Gas	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	10"	20"	
Pipe	Thickness/Schedule	SCH 40S	SCH 40	
Valve	Nominal Size	10"	20"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	185000.00		
Inlet Pressure	bar a	20		
Outlet Pressure	bar a	2.59		
Inlet Temperature	°C	229		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		17.23		
Compressibility Factor (Z)		0.92		
Specific Heat Ratio (Cp/Cv)		1.27		
Density	kg/m ³	8.97		
Press. Differential Ratio Factor (XT)		0.80		
Recovery Factor (FL)		0.98		
Valve Style Modifier (Fd)		0.01		
Number of Cages (If Any)				
Selected CV (VALVE)		890		
Calculated CV		889.76		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.98		
MACH N. at Outlet Connection		0.44		
Valve Outlet Velocity	m/s	246.67		
Pipe Outlet Velocity	m/s	246.67		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	80.19		

Notes

3 stage low noise disc, indicated Cv is combined, 1st stage Cv=980, 2nd stage Cv=2401, 3rd stage Cv=4801.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-HV-10007
Service PROCESS GAS TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/20
Quote Line 380000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 12"	Minimum Temp.		- C
Thickness	SCH 40S		SCH 80S	Maximum Temp.		- C
Insulation	Insulated			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Process Gas
Pressure	52	-		bar	State	Gas
Maximum Temp.	525	-		C		
Minimum Temp.	-	-		C		
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	4"	OUT	4"	Flow action		To Open
Port	3"			Characteristic		Equalpercentage
Valve Cv	70.2			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	45			Shut-off pressur		52 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	4"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 351 CF8C			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF8C			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	A 182 F347H Seat joint Stellite			Size	D39	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	Inconel			Spring range	19-47 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943D.02.R100BG00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-HV-10007	Date	27-10-2016		
Service	PROCESS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Process Gas	Fluid State	GAS	Trim	XLN-E

		In	Out	Port
Pipe	Nominal Size	4"	12"	
Pipe	Thickness/Schedule	SCH 40S	SCH 80S	
Valve	Nominal Size	4"	4"	3"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	25000		
Inlet Pressure	bar a	45.9		
Outlet Pressure	bar a	17		
Inlet Temperature	°C	449		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		16.84		
Compressibility Factor (Z)		0.98		
Specific Heat Ratio (Cp/Cv)		1.26		
Density	kg/m ³	13.14		
Press. Differential Ratio Factor (XT)		0.74		
Recovery Factor (FL)		0.92		
Valve Style Modifier (Fd)		0.05		
Number of Cages (If Any)				
Selected CV (VALVE)		70.2		
Calculated CV		68.58		
Calculated / Sel. CV Ratio		0.98		
Flow Regime		Normal		
Valve Opening	%	98.95		
MACH N. at Outlet Connection		0.29		
Valve Outlet Velocity	m/s	192.43		
Pipe Outlet Velocity	m/s	20.41		
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	81.95		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-HV-10007 Disc	Date	27-10-2016		
Service	PROCESS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Process Gas	Fluid State	GAS	Trim	MH

		In	Out	Port
Pipe	Nominal Size	4"	12"	
Pipe	Thickness/Schedule	SCH 40S	SCH 80S	
Valve	Nominal Size	4"	12"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	25000		
Inlet Pressure	bar a	17		
Outlet Pressure	bar a	2		
Inlet Temperature	°C	449		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		16.84		
Compressibility Factor (Z)		0.98		
Specific Heat Ratio (Cp/Cv)		1.26		
Density	kg/m ³	4.87		
Press. Differential Ratio Factor (XT)		0.78		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.07		
Number of Cages (If Any)				
Selected CV (VALVE)		181		
Calculated CV		180.23		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.75		
MACH N. at Outlet Connection		0.26		
Valve Outlet Velocity	m/s	173.48		
Pipe Outlet Velocity	m/s	173.48		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	83.03		

Notes

- 2 stage low noise disc, indicated Cv is combined, 1st stage Cv=188, 2nd stage Cv=694.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-HV-10047
Service LP STEAM TO E-1008

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/05
Quote Line 400000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 6"		ND 6"	Minimum Temp.		- C	
Thickness	SCH XS		SCH XS	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	LP steam	
Pressure	44/FV	-		bar	State	Gas	
Maximum Temp.	260	-		C			
Minimum Temp.	-	-		C			
Valve				Guiding Cage			
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal		
DN IN	4"	OUT	4"	Flow action	To Open		
Port	4"			Characteristic	Equalpercentage		
Valve Cv	178			Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	60			Shut-off pressur	44 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Valve close		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	AISI 410 35HRC			Size	D46		
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse		
Balancing	PTFE			Spring range	13-32 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A01S100AF00J2.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17087
 Quote Line 400000
 Date 15/09/29

Fluid State Gas
 Fluid Name LP steam
 Tag 30-HV-10047
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	6.5	-	-
Outlet absolute pressure	bar	6	-	-
Flow Rate	kg/h	4,000	-	-
Inlet temperature	deg. C	241	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.339	-	-
Density	kg/m3	2.8104	-	-
Press. differential ratio factor (X)		0.7299	-	-
Recovery factor (FL)		0.9208	-	-
Valve style modifier (Fd)		0.184	-	-
Number of cages (if any)				
Selected CV (VALVE)		178		
Calculated CV		130.9918	-	-
Calculated / Sel.CV ratio		0.736	-	-
Flow Regime		Normal	-	-
Valve Opening	%	77.56	-	-
MACH n. at outlet connection		0.1025	-	-
Valve outlet velocity	m/s	57.74	-	-
Pipe outlet velocity	m/s	25.44	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	67.3	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-HV-10061
Service NATURAL GAS TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/01/15
Quote Line 410000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 2"		ND 4"	Minimum Temp.		- C
Thickness	SCH STD		SCH STD	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Natural Gas
Pressure	34	-			State	Gas
Maximum Temp.	100	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	LN-E	Sealing seat-plug		Metal to metal
DN IN	1"	OUT	1"	Flow action		To Open
Port	3/8"			Characteristic		Equalpercentage
Valve Cv	1.81			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	17			Shut-off pressur		34 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve open
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	1"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	1"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D25	
Guide/Cage	A 479 316 Cr plated			Action	Direct	
Balancing	-			Spring range	4-18 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A04N025DD00F000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17090
 Quote Line 410000
 Date 15/01/15

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-HV-10061
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 2" OUT ND 4"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 1" OUT 1" Port 3/8"

	Unit	Case 1 nor	Case 2 -	Case 3 -
Inlet absolute pressure	bar	27.3	-	-
Outlet absolute pressure	bar	2	-	-
Flow Rate	kg/h	400	-	-
Inlet temperature	deg. C	35	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.377	-	-
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7626	-	-
Recovery factor (FL)		0.9341	-	-
Valve style modifier (Fd)		0.33	-	-
Number of cages (if any)				
Selected CV (VALVE)		1.81		
Calculated CV		1.1397	-	-
Calculated / Sel.CV ratio		0.63	-	-
Flow Regime		Limit	-	-
Valve Opening	%	77.95	-	-
MACH n. at outlet connection		0.321	-	-
Valve outlet velocity	m/s	149.84	-	-
Pipe outlet velocity	m/s	10.16	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	78	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-HV-10062
Service NATURAL GAS FROM BATTERY LIMITS

Page 1 **of** 2
Qty 1
User xue.zhijun
Date 15/07/17
Quote Line 420000

Piping			IN	OUT	Ambient			
Diameter	ND 4"		ND 4"		Pressure	1 bar		
Thickness	SCH STD		SCH STD		Minimum Temp.	- C		
Insulation	Not Insulated				Maximum Temp.	- C		
					Installation	Not Known		
Design Conditions					Haz. Area Other			
			IN	OUT				
Pressure	34		-		Fluid	Natural Gas		
Maximum Temp.	100		-		State	Gas		
Minimum Temp.	-							
Valve					Guiding Cage			
Model	1-6943		Trim	HXLN-E		Sealing seat-plug	Metal to metal	
DN IN	4"		OUT	4"		Flow action	To Open	
Port	4"				Characteristic	Equalpercentage		
Valve Cv	177				Leakage class	VHS - FCI 70-2 & IEC 534.4		
Stroke	100				Shut-off pressur	34 bar		
Body Type	Globe - Straight				Live Loading	Not provided		
Bonnet Type	Universal				Air failure	Valve close		
Seat Type	Single				Control signal failure	Fail Safe		
Trim Type	Low noise cage S							
Connections								
		DN	Type / Rating / Sealing-Finish					
IN	4"		Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	4"		Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials					Actuator			
Body	SA 216 WCC				Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC				Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite				Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite				Size	D46		
Guide/Cage	A 479 316 Cr plated				Action	Reverse		
Balancing	PTFE				Spring range	13-27 psi		
Disk stack	-				Supply	40 psi		
Plug/seat insert	-				Handwheel	No		
Bellows	-				Yoke material	Carbon steel		
Packing	Reinforced teflon							
Pneumatic Instrumentation					Time	Conn		
Minimum Press.	5 bar				Throttling	- s	-	
Maximum Press.	9 bar				Quick Open	- s	-	
Design Press.	- bar				Quick Close	- s	-	
Fitting type	Double Ferrule				Tubing Material	Stainless steel		
Miscellaneous					<input type="checkbox"/>	PED		
Adjustable limit stop	Opening - %		Closing - %		<input type="checkbox"/>	Vacuum Service		
Valve Heating	-				<input type="checkbox"/>	NACE	<input type="checkbox"/> External	
Inlet Devices	-				<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-				<input type="checkbox"/>	Leak-off		
Valve Code	R6943A04S1000D00J000				Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17091
 Quote Line 420000
 Date 15/07/17

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-HV-10062
 Valve Model 1-6943 Trim HXLN-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 nor	Case 2 -	Case 3 -
Inlet absolute pressure	bar	26.1	-	-
Outlet absolute pressure	bar	15.5	-	-
Flow Rate	kg/h	38.500	-	-
Inlet temperature	deg. C	36	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.382	-	-
Density	kg/m3	17.3603	-	-
Press. differential ratio factor (X)		0.7754	-	-
Recovery factor (FL)		0.9391	-	-
Valve style modifier (Fd)		0.043	-	-
Number of cages (if any)				
Selected CV (VALVE)		177		
Calculated CV		126.2985	-	-
Calculated / Sel.CV ratio		0.714	-	-
Flow Regime		Normal	-	-
Valve Opening	%	73.34	-	-
MACH n. at outlet connection		0.2696	-	-
Valve outlet velocity	m/s	126.3	-	-
Pipe outlet velocity	m/s	126.2	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	81.1	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-HV-20010
Service SYNTHESIS GAS TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/20
Quote Line 430000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 6"		ND 20"	Minimum Temp.		- C
Thickness	SCH 80 - XS		SCH 80	Maximum Temp.		- C
Insulation	Insulated			Installation		Not Known
Design Conditions				Haz. Area	Other	
Pressure	100		-	Fluid	Synthesis Gas	
Maximum Temp.	100		-	State	Gas	
Minimum Temp.	-		-			
Valve				Guiding	Cage	
Model	1-6943	Trim	LN-E	Sealing seat-plug	Metal to metal	
DN IN	6"	OUT	6"	Flow action	To Open	
Port	4"			Characteristic	Equalpercentage	
Valve Cv	199			Leakage class	VHS - FCI 70-2 & IEC 534.4	
Stroke	60			Shut-off pressur	100 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	6"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D46	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	19-48 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S150CG00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Limit Switch - QTY: 2 - PROD: P+F - MODEL: NJ2-12GK-SN - TAG: HZSO-20010/HZSC-200 - MATERI AL: Aluminum - IP: IP67 - ATEX: ExiaIICT4 - CONN: El. M20X1,5 - Type: Induction Mounting: Iopening+Iclosing -

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-HV-20010	Date	27-10-2016		
Service	SYNTHESIS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Synthesis Gas	Fluid State	GAS	Trim	LN-E

		In	Out	Port
Pipe	Nominal Size	6"	20"	
Pipe	Thickness/Schedule	SCH 80S	SCH 80	
Valve	Nominal Size	6"	6"	4"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	119618		
Inlet Pressure	bar a	84		
Outlet Pressure	bar a	33		
Inlet Temperature	°C	45		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		8.01		
Compressibility Factor (Z)		1.02		
Specific Heat Ratio (Cp/Cv)		1.43		
Density	kg/m ³	24.94		
Press. Differential Ratio Factor (XT)		0.76		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.05		
Number of Cages (If Any)				
Selected CV (VALVE)		199		
Calculated CV		166.28		
Calculated / Sel. CV Ratio		0.84		
Flow Regime		Normal		
Valve Opening	%	91.16		
MACH N. at Outlet Connection		0.28		
Valve Outlet Velocity	m/s	189.52		
Pipe Outlet Velocity	m/s	20.8		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	76.23		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-HV-20010 Dsic	Date	27-10-2016		
Service	SYNTHESIS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Synthesis Gas	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	6"	20"	
Pipe	Thickness/Schedule	SCH 80S	SCH 80	
Valve	Nominal Size	6"	20"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	119618		
Inlet Pressure	bar a	33		
Outlet Pressure	bar a	2		
Inlet Temperature	°C	45		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		8.01		
Compressibility Factor (Z)		1.02		
Specific Heat Ratio (Cp/Cv)		1.43		
Density	kg/m ³	9.80		
Press. Differential Ratio Factor (XT)		0.78		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.07		
Number of Cages (If Any)				
Selected CV (VALVE)		412		
Calculated CV		409.31		
Calculated / Sel. CV Ratio		0.99		
Flow Regime		Limit		
Valve Opening	%	99.71		
MACH N. at Outlet Connection		0.50		
Valve Outlet Velocity	m/s	343.23		
Pipe Outlet Velocity	m/s	343.23		
Noise Red. Due To Pipe Insulation	dB(A)	5		
Result SPL	dB(A)	<85		

Notes

- 3 stage low noise disc, indicated Cv is combined, 1st stage Cv=447, 2nd stage Cv=1110, 3rd stage Cv=4462.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-HV-30001
Service LP STEAM TO E-3013

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/05
Quote Line 440000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 16"	ND 16"		Minimum Temp.	- C	
Thickness	SCH 20	SCH 20		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
	IN	OUT		Fluid	LP steam	
Pressure	8/FV	-	bar	State	Gas	
Maximum Temp.	300	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal	
DN IN	16"	OUT	16"	Flow action	To Open	
Port	16"			Characteristic	Equalpercentage	
Valve Cv	2360			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	200			Shut-off pressur	8 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	16"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	16"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-250	
Seat	AISI 410 35HRC			Size	D63	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	Carbon Graphite			Spring range	10-29 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A01D400AD10D2.00	Pneumatic Diagram		-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIIC T6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - TAG: HYA-30001 - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17093
 Quote Line 440000
 Date 15/05/13

Fluid State Gas
 Fluid Name LP steam
 Tag 30-HV-30001
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 16" OUT ND 16"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 16" OUT 16" Port 16"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	6.3	-	-
Outlet absolute pressure	bar	6.15	-	-
Flow Rate	kg/h	32,500	-	-
Inlet temperature	deg. C	239	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.336	-	-
Density	kg/m3	2.7289	-	-
Press. differential ratio factor (X)		0.7344	-	-
Recovery factor (FL)		0.9227	-	-
Valve style modifier (Fd)		0.3011	-	-
Number of cages (if any)				
Selected CV (VALVE)		2360		
Calculated CV		1,882.0221	-	-
Calculated / Sel.CV ratio		0.797	-	-
Flow Regime		Normal	-	-
Valve Opening	%	79.4	-	-
MACH n. at outlet connection		0.0503	-	-
Valve outlet velocity	m/s	28.29	-	-
Pipe outlet velocity	m/s	28.28	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	56.6	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-HV-30011			Date	08-02-2017		
Service	PROCESS GAS FROM E-3010A/B			Item Code	R6943	Valve No.	1
Design Conditions	In	Out		Ambient			
Pressure	43 bar g/FV			Pressure			
Minimum Temperature				Min. Temp.		Max Temp.	
Maximum Temperature	215 °C			Installation		Haz. Area	
Piping	In	Out		Connections DN		Type/Rating	
Outside Diameter	20"	20"		In	20"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Thickness	SCH 40	SCH 40		Out	20"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Insulation							
Valve Characteristics							
Model	1-6943			Guiding	Cage		
DN In	20"	DN Out	20"	Sealing Seat-Plug	Metal to Metal		
Trim Code	ST-E			Flow Action	To Open		
Port	20"			Characteristic	Equal Percentage		
Valve Cv	4070	Stroke	250 mm	Leakage Class	IV ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	43 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Cage			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-351 CF3M			Manufacturer	Parcol S.p.A.		
BONNET	SA-351 CF3M			Type	Pneumatic Piston		
PLUG	SA-479 316L Full CoCr-A Hard Facing			Model	1-X-432		
SEAT	SA-479 316L Seat Joint CoCr-A Hard Facing			Size	C450		
CAGE	SA-479 316L Chrome plated			Action	Reverse		
				Spring Range	2-3.52 bar		
				Supply	4.14 bar		
Balancing	Graphite Loaded Pressure Energized PTFE Ring			Handweel	Side Mounted		
Packing	TFK			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimimum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. - Filter Mat: Aluminum -							
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -							
Pneumatic Booster - Model: YT-300 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. -							
Limit Switch - Model: NJ2-12GK-SN - Manufacturer: P+F -				Quantity	2	Tag	HZSO/HZSC-30011
IP: IP67 - ATEX: ExiaIICT4 - Connections: El. M20X1,5 - Mounting: 1opening+1closing - Type: Induction - MATERIAL: Aluminum -							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-HV-30011	Date	08-02-2017		
Service	PROCESS GAS FROM E-3010A/B	User	Wang Lihua		
Fluid Name	Process Gas	Fluid State	GAS	Trim	ST-E

		In	Out	Port
Pipe	Nominal Size	20"	20"	
Pipe	Thickness/Schedule	SCH 40	SCH 40	
Valve	Nominal Size	20"	20"	20"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	179480		
Inlet Pressure	bar a	38.9		
Outlet Pressure	bar a	38.5		
Inlet Temperature	°C	181		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)				
		13		
Compressibility Factor (Z)				
		0.98		
Specific Heat Ratio (Cp/Cv)				
		1.38		
Density				
	kg/m ³	13.67		
Press. Differential Ratio Factor (XT)				
		0.74		
Recovery Factor (FL)				
		0.92		
Valve Style Modifier (Fd)				
		0.19		
Number of Cages (If Any)				
Selected CV (VALVE)				
		4070		
Calculated CV				
		2825.16		
Calculated / Sel. CV Ratio				
		0.69		
Flow Regime				
		Normal		
Valve Opening				
	%	72.61		
MACH N. at Outlet Connection				
		0.03		
Valve Outlet Velocity				
	m/s	20.56		
Pipe Outlet Velocity				
	m/s	20.56		
Noise Red. Due To Pipe Insulation				
	dB(A)			
Result SPL				
	dB(A)	< 70		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer				
Project		Valve Model	1-6943	Reference	1	
Tag	30-HV-30011	Date	08-02-2017			
Service	PROCESS GAS FROM E-3010A/B	User	Wang Lihua			
Fluid Name	Process Gas	Fluid State	LIQUID	Trim	ST-E	

		In	Out	Port	
Pipe	Nominal Size	20"	20"		
Pipe	Thickness/Schedule	SCH 40	SCH 40		
Valve	Nominal Size	20"	20"	20"	
Operating Conditions		Unit	Case 4 max	Case 5 New Valve Case	Case 6 New Valve Case
Flow Rate		kg/h	14994		
Inlet Pressure		bar a	38.9		
Outlet Pressure		bar a	38.5		
Density		kg/m ³	874.6		
Inlet Temperature		°C	181		
Vapour Pressure		bar a	34.5		
Critical Pressure		bar a	87.67		
Viscosity		cP	0.15		
Recovery Factor (FL)			0.94		
Valve Style Modifier (Fd)			0.12		
Number of Cages (If Any)					
Selected CV (VALVE)			4070		
Calculated CV			29.31		
Calculated / Sel. CV Ratio			0.01		
Flow Regime					
Valve Opening		%	7.74		
Terminal Differential Pressure		bar a	10.46		
Valve Outlet Velocity		m/s	0.03		
Pipe Outlet Velocity		m/s	0.03		
Noise Red. Due To Pipe Insulation		dB(A)			
Result SPL		dB(A)	< 70		

Notes



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-10007
Service PROCESS CONDENSATE FROM P-1001A/B

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/01/08
Quote Line 460000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"		ND 8"	Minimum Temp.		- C
Thickness	SCH 80S		SCH 80S	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	74.3		-	Fluid		Process Condensate
Maximum Temp.	160		-	State		Liquid
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	LN-E	Sealing seat-plug		Metal to metal
DN IN	6"	OUT	6"	Flow action		To Open
Port	4"			Characteristic		Equalpercentage
Valve Cv	199			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		74.3 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve open
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	6"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L Seat joint Stell.			Size	D46	
Guide/Cage	A 479 316L Cr plated			Action	Direct	
Balancing	PTFE			Spring range	5-19 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar		Throttling	- s	-	
Maximum Press.	9 bar		Quick Open	- s	-	
Design Press.	- bar		Quick Close	- s	-	
Fitting type	Double Ferrule		Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-		<input type="checkbox"/>	NACE	<input type="checkbox"/> External	
Inlet Devices	-		<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-		<input type="checkbox"/>	Leak-off		
Valve Code	R6943H04.S150CG00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17095
 Quote Line 460000
 Date 15/01/08

Fluid State Liquid
 Fluid Name Process Condens
 Tag 30-LV-10007
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH 80S OUT SCH 80S

Valve
 Nominal Size IN 6" OUT 6" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	60.4	60.2	60.1
Outlet absolute pressure	bar	51.4	51.4	57.2
Flow Rate	kg/h	69,876	174,689	192,158
Density	kg/m ³	921	921	921
Inlet temperature	deg. C	134	134	134
Vapour pressure (abs)	bar	39	39	39
Critical pressure (abs)	bar	221.2	221.2	221.2
Viscosity	cP	0.204	0.204	0.204
Recovery factor (FL)		0.9387	0.9365	0.9331
Valve style modifier (Fd)		0.1218	0.0744	0.0526
Number of cages (if any)		199		
Selected CV (VALVE)		28.0614	70.9881	136.2821
Calculated CV		0.141	0.357	0.685
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	36.48	57.81	80.87
Terminal differential pressure	bar	24.2638	23.9334	23.5504
Valve outlet velocity	m/s	1.25	3.13	3.44
Pipe outlet velocity	m/s	0.72	1.79	1.97
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	65.8	69.7	61.5

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-10012A
Service PROCESS CONDENSATE FROM E-1015

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/05/11
Quote Line 470000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 1.1/2"		ND 1.1/2"	Minimum Temp.	- C	
Thickness	SCH 40S		SCH 40S	Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	53	-	bar	Fluid	Process Condensate	
Maximum Temp.	260	-	C	State	Liquid	
Minimum Temp.	-		C			
Valve				Guiding Cage		
Model	1-6943	Trim	EDC-E	Sealing seat-plug	Metal to metal	
DN IN	1"	OUT	1"	Flow action	To Open	
Port	3/8"			Characteristic	Equalpercentage	
Valve Cv	2			Leakage class	V - FCI 70-2 & IEC 534.4	
Stroke	17			Shut-off pressur	53 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Multicage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	1"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	1"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 182 F316L			Manufacturer	Parcol S.P.A.	
Bonnet	SA 182 F316L			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L Seat joint Stell.			Size	D25	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	-			Spring range	11-29 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6943H.04.N025DG00X000	Pneumatic Diagram -				

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - TAG: LY-10012A - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17096
 Quote Line 470000
 Date 15/05/11

Fluid State Liquid
 Fluid Name Process Condens
 Tag 30-LV-10012A
 Valve Model 1-6943 Trim EDC-E

Pipe
 Nominal Size IN ND 1.1/2" OUT ND 1.1/2"
 Thickness / schedule IN SCH 40S OUT SCH 40S

Valve
 Nominal Size IN 1" OUT 1" Port 3/8"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	46.9	46.9	51.7
Outlet absolute pressure	bar	6.5	6.5	6.5
Flow Rate	kg/h	1,499	3,748	4,123
Density	kg/m3	981	981	981
Inlet temperature	deg. C	60	60	60
Vapour pressure (abs)	bar	0.2	0.2	0.2
Critical pressure (abs)	bar	221.1	221.1	221.1
Viscosity	cP	0.46	0.46	0.46
Recovery factor (FL)		0.9819	0.9819	0.9819
Valve style modifier (Fd)		0.3162	0.3162	0.3162
Number of cages (if any)		2		
Selected CV (VALVE)				
Calculated CV		0.2753	0.6883	0.7159
Calculated / Sel.CV ratio		0.138	0.344	0.358
Flow Regime		Normal	Normal	Normal
Valve Opening	%	35.24	56.96	58.15
Terminal differential pressure	bar	45.029	45.0214	49.6471
Valve outlet velocity	m/s	0.76	1.9	2.09
Pipe outlet velocity	m/s	0.32	0.81	0.89
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-10012B
Service PROCESS CONDENSATE FROM T-1001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/27
Quote Line 480000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 4"	Minimum Temp.		- C
Thickness	SCH 40S		SCH 40S	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Process Condensate
Pressure	56	-			State	Liquid
Maximum Temp.	260	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	4"	OUT	4"	Flow action		To Open
Port	2"			Characteristic		Equalpercentage
Valve Cv	37			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	34			Shut-off pressur		56 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	4"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L Seat joint Stell.			Size	D39	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	17-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H04.S100DG00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

Control valve to be placed at grade. Piping between control valve and downstream injection point to be minimized.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17097
 Quote Line 480000
 Date 16/01/27

Fluid State Liquid
 Fluid Name Process Condens
 Tag 30-LV-10012B
 Valve Model 1-6943 Trim XLN-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH 40S OUT SCH 40S

Valve
 Nominal Size IN 4" OUT 4" Port 2"

	Unit	Case 1 nor	Case 2 max	Case 3 -
Inlet absolute pressure	bar	49.3	49.3	-
Outlet absolute pressure	bar	49.1	49.1	-
Flow Rate	kg/h	4,249	13,200	-
Density	kg/m3	854	854	-
Inlet temperature	deg. C	203	203	-
Vapour pressure (abs)	bar	47.6	47.6	-
Critical pressure (abs)	bar	221.1	221.1	-
Viscosity	cP	0.132	0.132	-
Recovery factor (FL)		0.9352	0.9249	-
Valve style modifier (Fd)		0.1193	0.0688	-
Number of cages (if any)		37		
Selected CV (VALVE)		11.8858	36.9244	-
Calculated CV		0.321	0.998	-
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	-
Valve Opening	%	59.2	99.91	-
Terminal differential pressure	bar	8.5614	8.3724	-
Valve outlet velocity	m/s	0.17	0.52	-
Pipe outlet velocity	m/s	0.17	0.52	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	19.8	30.9	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-10038
Service PROCESS CONDENSATE FROM P-1001A/B

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/01/15
Quote Line 490000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"	ND 4"		Minimum Temp.	- C	
Thickness	SCH 40S	SCH 40S		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	74.3	-	bar	Fluid	Process Condensate	
Maximum Temp.	160	-	C	State	Liquid	
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal	
DN IN	3"	OUT	3"	Flow action	To Open	
Port	2"			Characteristic	Equalpercentage	
Valve Cv	69.5			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	34			Shut-off pressur	74.3 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	3"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	3"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L Seat joint Stell.			Size	D39	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	17-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H04.S080CG00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
Reference SQ1401768
Configuration 17098
Quote Line 490000
Date 15/01/15

Fluid State Liquid
Fluid Name Process Condens
Tag 30-LV-10038
Valve Model 1-6943 **Trim** ST-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH 40S OUT SCH 40S

Valve
 Nominal Size IN 3" OUT 3" Port 2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	62.1	62	62
Outlet absolute pressure	bar	51	51	60.8
Flow Rate	kg/h	15,070	37,675	41,443
Density	kg/m3	921	921	921
Inlet temperature	deg. C	134	134	134
Vapour pressure (abs)	bar	39	39	39
Critical pressure (abs)	bar	221.1	221.1	221.1
Viscosity	cP	0.204	0.204	0.204
Recovery factor (FL)		0.9371	0.9316	0.9099
Valve style modifier (Fd)		0.5552	0.3646	0.1968
Number of cages (if any)				
Selected CV (VALVE)		69.5		
Calculated CV		5.4491	13.6882	45.7321
Calculated / Sel.CV ratio		0.078	0.197	0.658
Flow Regime		Normal	Normal	Normal
Valve Opening	%	28.37	48.24	82.47
Terminal differential pressure	bar	25.6807	25.2702	23.9073
Valve outlet velocity	m/s	0.95	2.38	2.62
Pipe outlet velocity	m/s	0.55	1.38	1.52
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	72.4	80.2	48.5

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-10044
Service PROCESS CONDENSATE TO D-2002

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/05/11
Quote Line 500000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 1.1/2"	ND 1.1/2"		Minimum Temp.	- C		
Thickness	SCH 40S	SCH 40S		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	44	-	bar	Fluid	Process Condensate		
Maximum Temp.	100	-	C	State	Liquid		
Minimum Temp.	-	-	C				
Valve				Model	1-6943	Trim LN-E	
DN	IN 1"	OUT	1"	Guiding	Cage		
Port	3/8"			Sealing seat-plug	Metal to metal		
Valve Cv	1.81			Flow action	To Open		
Stroke	17			Characteristic	Equalpercentage		
Body Type	Globe - Straight			Leakage class	IV - FCI 70-2 & IEC 534.4		
Bonnet Type	Universal			Shut-off pressur	44 bar		
Seat Type	Single			Live Loading	Not provided		
Trim Type	Low Noise Cage			Air failure	Valve close		
				Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	1"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	1"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 182 F316L			Manufacturer	Parcol S.P.A.		
Bonnet	SA 182 F316L			Type	Pneumatic Diaphragm		
Plug	A 479 316L Full Stell.			Model	1-X-290		
Seat	A 479 316L Seat joint Stell.			Size	D25		
Guide/Cage	A 479 316L Cr plated			Action	Reverse		
Balancing	-			Spring range	11-29 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/>	PED		
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service		
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External	
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-			<input type="checkbox"/>	Leak-off		
Valve Code	R6943H.04.N025DF00F000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17099
 Quote Line 500000
 Date 15/05/11

Fluid State Liquid
 Fluid Name Process Condens
 Tag 30-LV-10044
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 1. 1/2" OUT ND 1. 1/2"
 Thickness / schedule IN SCH 40S OUT SCH 40S

Valve
 Nominal Size IN 1" OUT 1" Port 3/8"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	36.6	36.6	36.6
Outlet absolute pressure	bar	7.5	7.5	7.5
Flow Rate	kg/h	890	2,225	2,447
Density	kg/m3	994	994	994
Inlet temperature	deg. C	45	45	45
Vapour pressure (abs)	bar	35.6	35.6	35.6
Critical pressure (abs)	bar	221	221	221
Viscosity	cP	0.633	0.633	0.633
Recovery factor (FL)		0.9379	0.9343	0.9337
Valve style modifier (Fd)		0.5492	0.3392	0.3191
Number of cages (if any)				
Selected CV (VALVE)		1.81		
Calculated CV		0.4341	1.0899	1.1996
Calculated / Sel.CV ratio		0.24	0.602	0.663
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	45.37	76.17	80.11
Terminal differential pressure	bar	5.6517	5.6063	5.5987
Valve outlet velocity	m/s	0.41	1.02	1.13
Pipe outlet velocity	m/s	0	0	0
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-10047
Service MP CONDENSATE FROM E-1062

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/05/11
Quote Line 510000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 1.1/2"	ND 1.1/2"		Minimum Temp.	- C		
Thickness	SCH 160	SCH 160		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	140/FV	-	bar	Fluid	MP Steam Condensate		
Maximum Temp.	340	-	C	State	Liquid		
Minimum Temp.	-	-	C				
Valve		Model 1-6941	Trim MF-L	Guiding	Top		
DN IN	1"	OUT	1"	Sealing seat-plug	Metal to metal		
Port	6mm			Flow action	To Open		
Valve Cv	0.4			Characteristic	Linear		
Stroke	17			Leakage class	IV - FCI 70-2 & IEC 534.4		
Body Type	Globe - Straight			Shut-off pressur	142 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air failure	Valve close		
Trim Type	Microflow			Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	1"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
OUT	1"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
Materials				Actuator			
Body	SA 105			Manufacturer	Parcol S.P.A.		
Bonnet	SA 105			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	A 182 F6NM Full Stellite			Size	D33		
Guide/Cage	-			Action	Reverse		
Balancing	-			Spring range	20-29 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Double Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6941A.15.N.025KHOG0000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17100
 Quote Line 510000
 Date 15/05/11

Fluid State Liquid
 Fluid Name MP Steam Condens
 Tag 30-LV-10047
 Valve Model 1-6941 Trim MF-L

Pipe
 Nominal Size IN ND 1.1/2" OUT ND 1.1/2"
 Thickness / schedule IN SCH 160 OUT SCH 160

Valve
 Nominal Size IN 1" OUT 1" Port 6mm

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	124.4	124.4	124.4
Outlet absolute pressure	bar	7.3	7.3	9.5
Flow Rate	kg/h	308	769	846
Density	kg/m3	648	648	648
Inlet temperature	deg. C	327	327	327
Vapour pressure (abs)	bar	124.3	124.3	124.3
Critical pressure (abs)	bar	220.6	220.6	220.6
Viscosity	cP	0.076	0.076	0.076
Recovery factor (FL)		0.9692	0.9517	0.9487
Valve style modifier (Fd)		0.3646	0.3696	0.3705
Number of cages (if any)				
Selected CV (VALVE)		0.4		
Calculated CV		0.0817	0.2078	0.2293
Calculated / Sel.CV ratio		0.204	0.52	0.573
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	20.81	52.17	57.53
Terminal differential pressure	bar	29.3048	28.2522	28.0743
Valve outlet velocity	m/s	8.7	21.7	18.4
Pipe outlet velocity	m/s	0	0	0
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-20002A
Service CRUDE METHANOL FROM FT-2001A

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/01/06
Quote Line 520000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 10"	ND 10"		Minimum Temp.	- C		
Thickness	SCH 80	SCH 80		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	100	-	bar			Fluid Crude Methanol	
Maximum Temp.	100	-	C			State Liquid	
Minimum Temp.	-	-	C				
Valve				Model	1-6943	Trim DC-L	
DN	IN 10"	OUT	10"	Guiding	Cage		
Port	6"			Sealing seat-plug	Metal to metal		
Valve Cv	156			Flow action	To Open		
Stroke	60			Characteristic	Linear		
Body Type	Globe - Straight			Leakage class	VHS - FCI 70-2 & IEC 534.4		
Bonnet Type	Universal			Shut-off pressur	100 bar		
Seat Type	Single			Live Loading	Not provided		
Trim Type	Multicage			Air failure	Valve close		
				Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	10"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
OUT	10"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH					
Materials				Actuator			
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.		
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm		
Plug	A 479 316L Full Stell.			Model	1-X-290		
Seat	A 479 316L Seat joint Stell.			Size	D46		
Guide/Cage	A 479 316L Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	19-48 psi		
Disk stack	-			Supply	60 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943H.04.S.250EH0.0J000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - TAG: LY-20002A - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17101
 Quote Line 520000
 Date 15/05/08

Fluid State Liquid
 Fluid Name Crude Methanol
 Tag 30-LV-20002A
 Valve Model 1-6943 Trim DC-L

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 120 OUT SCH 120

Valve
 Nominal Size IN 10" OUT 10" Port 6"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	82	81.9	81.9
Outlet absolute pressure	bar	7	7	8.8
Flow Rate	kg/h	110, 303	275, 757	303, 332
Density	kg/m3	797	797	797
Inlet temperature	deg. C	45	45	45
Vapour pressure (abs)	bar	82	81.9	81.9
Critical pressure (abs)	bar	106.8	106.8	106.8
Viscosity	cP	0.432	0.432	0.432
Recovery factor (FL)		0.955	0.955	0.955
Valve style modifier (Fd)		0.167	0.1026	0.098
Number of cages (if any)		156		
Selected CV (VALVE)		30.9204	77.3684	85.1051
Calculated CV		0.198	0.496	0.546
Calculated / Sel.CV ratio				
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	23.79	51.15	55.26
Terminal differential pressure	bar	21.3399	21.3027	21.3027
Valve outlet velocity	m/s	14.7	36.8	32.6
Pipe outlet velocity	m/s	0	0	0
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-20002B
Service CRUDE METHANOL FROM FT-2001B

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 530000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"		ND 10"	Minimum Temp.		- C
Thickness	SCH 80		SCH 80	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	100		-	Fluid		Crude Methanol
Maximum Temp.	100		-	State		Liquid
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	DC-L	Sealing seat-plug		Metal to metal
DN IN	10"	OUT	10"	Flow action		To Open
Port	6"			Characteristic		Linear
Valve Cv	156			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		100 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Multicage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	10"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH				
OUT	10"	Flanged/ANSI B16.5/1500#/RJ - 63 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L Seat joint Stell.			Size	D46	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	19-48 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar		Throttling	- s	-	
Maximum Press.	9 bar		Quick Open	- s	-	
Design Press.	- bar		Quick Close	- s	-	
Fitting type	Double Ferrule		Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H.04.S.250EH0.0J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIIC T6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - TAG: LY-20002B - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17102
 Quote Line 530000
 Date 15/03/09

Fluid State Liquid
 Fluid Name Crude Methanol
 Tag 30-LV-20002B
 Valve Model 1-6943 Trim DC-L

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 120 OUT SCH 120

Valve
 Nominal Size IN 10" OUT 10" Port 6"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	82	81.9	81.9
Outlet absolute pressure	bar	7	7	8.8
Flow Rate	kg/h	110, 303	275, 757	303, 332
Density	kg/m3	797	797	797
Inlet temperature	deg. C	45	45	45
Vapour pressure (abs)	bar	82	81.9	81.9
Critical pressure (abs)	bar	106.8	106.8	106.8
Viscosity	cP	0.432	0.432	0.432
Recovery factor (FL)		0.955	0.955	0.955
Valve style modifier (Fd)		0.167	0.1026	0.098
Number of cages (if any)		156		
Selected CV (VALVE)		30.9204	77.3684	85.1051
Calculated CV		0.198	0.496	0.546
Calculated / Sel.CV ratio				
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	23.79	51.15	55.26
Terminal differential pressure	bar	21.3399	21.3027	21.3027
Valve outlet velocity	m/s	14.7	36.8	32.6
Pipe outlet velocity	m/s	-	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-20009
Service WASHED MeOH FROM T-2001

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/05/11
Quote Line 540000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 1.1/2"	ND 1.1/2"		Minimum Temp.	- C	
Thickness	SCH 40S	SCH 40S		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				IN	OUT	Haz. Area Other
Pressure	90	-	bar	Fluid	Crude Methanol	
Maximum Temp.	100	-	C	State	Liquid	
Minimum Temp.	-	-	C			
Valve		Model 1-6943	Trim DC-E	Guiding	Cage	
DN IN	1.1/2"	OUT	1.1/2"	Sealing seat-plug	Metal to metal	
Port	1/2"			Flow action	To Open	
Valve Cv	3.29			Characteristic	Equalpercentage	
Stroke	17			Leakage class	IV - FCI 70-2 & IEC 534.4	
Body Type	Globe - Straight			Shut-off pressur	90 bar	
Bonnet Type	Universal			Live Loading	Not provided	
Seat Type	Single			Air failure	Valve close	
Trim Type	Multicage			Control signal failure	Fail Safe	
Connections		DN	Type / Rating / Sealing-Finish			
IN	1.1/2"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
OUT	1.1/2"	Flanged/ANSI B16.5/900#/RJ - 63 AARH				
Materials		Body SA 182 F316L		Actuator		
Bonnet	SA 182 F316L			Manufacturer	Parcol S.P.A.	
Plug	A 479 316L Full Stell.			Type	Pneumatic Diaphragm	
Seat	A 479 316L Seat joint Stell.			Model	1-X-290	
Guide/Cage	A 479 316L Cr plated			Size	D25	
Balancing	-			Action	Reverse	
Disk stack	-			Spring range	17-43 psi	
Plug/seat insert	-			Supply	60 psi	
Bellows	-			Handwheel	No	
Packing	Graphite			Yoke material	Carbon steel	
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H.04.N040EG00F000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - TAG: LY-20009 - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17103
 Quote Line 540000
 Date 15/05/11

Fluid State Liquid
 Fluid Name Crude Methanol
 Tag 30-LV-20009
 Valve Model 1-6943 Trim DC-E

Pipe
 Nominal Size IN ND 1.1/2" OUT ND 1.1/2"
 Thickness / schedule IN SCH 40S OUT SCH 40S

Valve
 Nominal Size IN 1.1/2" OUT 1.1/2" Port 1/2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	77.8	77.8	77.8
Outlet absolute pressure	bar	7.2	7.2	9
Flow Rate	kg/h	1,781	4,452	4,897
Density	kg/m3	961	961	961
Inlet temperature	deg. C	49	49	49
Vapour pressure (abs)	bar	76.5	76.5	76.5
Critical pressure (abs)	bar	210.5	210.5	210.5
Viscosity	cP	0.571	0.571	0.571
Recovery factor (FL)		0.955	0.955	0.955
Valve style modifier (Fd)		0.5393	0.3367	0.3141
Number of cages (if any)				
Selected CV (VALVE)		3.29		
Calculated CV		0.5292	1.3228	1.455
Calculated / Sel.CV ratio		0.161	0.402	0.442
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	37.24	64.59	68.67
Terminal differential pressure	bar	15.7533	15.7533	15.7533
Valve outlet velocity	m/s	8.6	21.4	19.1
Pipe outlet velocity	m/s	0	0	0
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-20012A
Service CRUDE METHANOL FROM BATTERY LIMIT

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/05
Quote Line 550000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 8"		ND 8"	Minimum Temp.		- C	
Thickness	SCH 10S		SCH 10S	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Crude Methanol	
Pressure	15.3	-			State	Liquid	
Maximum Temp.	100	-					
Minimum Temp.	-	-					
Valve				Guiding Cage			
Model	1-6943	Trim	HLN-E	Sealing seat-plug		Soft Seat	
DN IN	6"	OUT	6"	Flow action		To Open	
Port	6"			Characteristic		Equalpercentage	
Valve Cv	372			Leakage class		VI - FCI 70-2 & IEC 534.4	
Stroke	100			Shut-off pressur		15.3 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve close	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Low Noise Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 351 CF8M			Manufacturer	Parcol S.P.A.		
Bonnet	SA 182 F316			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316			Size	D46		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	13-27 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	PTFE			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	8 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943G07U1500D00C000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
Reference SQ1401768
Configuration 17104
Quote Line 550000
Date 15/01/15

Fluid State Liquid
Fluid Name Crude Methanol
Tag 30-LV-20012A
Valve Model 1-6943 **Trim** HLN-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH 10S OUT SCH 10S

Valve
 Nominal Size IN 6" OUT 6" Port 6"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	8	-	-
Outlet absolute pressure	bar	7.1	-	-
Flow Rate	kg/h	224,053	-	-
Density	kg/m3	837	-	-
Inlet temperature	deg. C	20	-	-
Vapour pressure (abs)	bar	6.4	-	-
Critical pressure (abs)	bar	112.6	-	-
Viscosity	cP	0.433	-	-
Recovery factor (FL)		0.9371	-	-
Valve style modifier (Fd)		0.0354	-	-
Number of cages (if any)				
Selected CV (VALVE)		372		
Calculated CV		300.8127	-	-
Calculated / Sel.CV ratio		0.809	-	-
Flow Regime		Normal	-	-
Valve Opening	%	84.57	-	-
Terminal differential pressure	bar	1.9586	-	-
Valve outlet velocity	m/s	3.63	-	-
Pipe outlet velocity	m/s	2.11	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	75.2	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT

DSH SQ1401768 Rev. 0

TAG 30-LV-20012B

Service CRUDE METHANOL TO BATTERY LIMITS

Page 1 of 2

Qty 1

User wang.lihua

Date 15/01/15

Quote Line 560000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 8"	ND 8"		Minimum Temp.		- C	
Thickness	SCH 20	SCH 20		Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area		Other	
Pressure	7	-	bar	Fluid	Crude Methanol		
Maximum Temp.	100	-	C	State	Liquid		
Minimum Temp.	-	-	C				
Valve				Guiding		Cage	
Model	1-6943	Trim	HLN-E	Sealing seat-plug	Metal to metal		
DN IN	8"	OUT	8"	Flow action	To Open		
Port	8"			Characteristic	Equalpercentage		
Valve Cv	593			Leakage class	VHS - FCI 70-2 & IEC 534.4		
Stroke	120			Shut-off pressur	7 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Valve close		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Low Noise Cage						
Connections				DN		Type / Rating / Sealing-Finish	
	IN	8"		Flanged/ANSI B16.5/300#/RF - 125-250 AARH			
	OUT	8"		Flanged/ANSI B16.5/300#/RF - 125-250 AARH			
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-250		
Seat	A 479 316 Seat Joint Stellite			Size	D63		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	15-38 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation				Time	Conn		
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/>	PED		
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service		
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External	
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.		
Outlet Devices	-			<input type="checkbox"/>	Leak-off		
Valve Code	R6943A04S2000D00C000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
Reference SQ1401768
Configuration 17105
Quote Line 560000
Date 15/01/15

Fluid State Liquid
Fluid Name Crude Methanol
Tag 30-LV-20012B
Valve Model 1-6943 **Trim** HLN-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 8" OUT 8" Port 8"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	6.3	-	-
Outlet absolute pressure	bar	5	-	-
Flow Rate	kg/h	224,053	-	-
Density	kg/m3	797	-	-
Inlet temperature	deg. C	48	-	-
Vapour pressure (abs)	bar	6.2	-	-
Critical pressure (abs)	bar	112.6	-	-
Viscosity	cP	0.433	-	-
Recovery factor (FL)		0.9371	-	-
Valve style modifier (Fd)		0.0377	-	-
Number of cages (if any)		593		
Selected CV (VALVE)		356.2273	-	-
Calculated CV		0.601	-	-
Calculated / Sel.CV ratio				
Flow Regime		Flashing	-	-
Valve Opening	%	71.56	-	-
Terminal differential pressure	bar	0.6634	-	-
Valve outlet velocity	m/s	2.22	-	-
Pipe outlet velocity	m/s	0	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85		

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-30007
Service 2nd CONDENSATE SPARATOR

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/03/10
Quote Line 570000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"	ND 8"		Minimum Temp.	- C	
Thickness	SCH 40S	SCH 40S		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	41	-	bar	Fluid	Process Condensate	
Maximum Temp.	155	-	C	State	Liquid	
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug	Metal to metal	
DN IN	8"	OUT	8"	Flow action	To Open	
Port	8"			Characteristic	Equalpercentage	
Valve Cv	555			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	76			Shut-off pressur	41 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	8"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	8"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L Seat joint Stell.			Size	D63	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	10-28 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H04.S200AF00K000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer				
Project		Valve Model	1-6943	Reference	1	
Tag	30-LV-30007	Date	17-05-2016			
Service	2nd CONDENSATE SPARATOR	User	Wang Lihua			
Fluid Name	Process Condensate	Fluid State	LIQUID	Trim	ST-E	

		In	Out	Port	
Pipe	Nominal Size	8"	8"		
Pipe	Thickness/Schedule	SCH 40S	SCH 40S		
Valve	Nominal Size	8"	8"	8"	
Operating Conditions		Unit	Case 1	Case 2	Case 3
			New Valve Case	New Valve Case	New Valve Case
Flow Rate	kg/h		26956	67391	74130.00
Inlet Pressure	bar a		37.890	37.886	37.885
Outlet Pressure	bar a		37.780	37.793	37.796
Density	kg/m ³		947	947	947
Inlet Temperature	°C		103	103	103
Vapour Pressure	bar a		37.2	37.2	37.2
Critical Pressure	bar a		221.2	221.2	221.2
Viscosity	cP		0.27	0.27	0.27
Recovery Factor (FL)			0.93	0.92	0.92
Valve Style Modifier (Fd)			0.26	0.24	0.24
Number of Cages (If Any)					
Selected CV (VALVE)			555	555	555
Calculated CV			96.55	262.52	295.19
Calculated / Sel. CV Ratio			0.17	0.47	0.53
Flow Regime					
Flow Regime			Normal	Normal	Normal
Valve Opening	%		43.43	66.24	69.76
Terminal Differential Pressure	bar a		5.62	5.48	5.45
Valve Outlet Velocity	m/s		0.24	0.61	0.67
Pipe Outlet Velocity	m/s		0.24	0.61	0.67
Noise Red. Due To Pipe Insulation	dB(A)				
Result SPL	dB(A)		< 70	< 70	< 70

Notes

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-LV-30021			Date	08-02-2017		
Service	CRUDE METHANOL TO T-3003			Item Code	R6943A04S250ED.00J0000		Valve No. 1
Design Conditions		In	Out	Ambient			
Pressure	11 bar g/FV			Pressure			
Minimum Temperature				Min. Temp.		Max Temp.	
Maximum Temperature	190 °C			Installation		Haz. Area	
Piping		In	Out	Connections DN		Type/Rating	
Outside Diameter	10"		18"	In	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH	
Thickness	SCH 20		SCH 10	Out	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH	
Insulation							
Valve Characteristics							
Model	1-6943			Guiding	Cage		
DN In	10"	DN Out	10"	Sealing Seat-Plug	Metal to Metal		
Trim Code	LN-E			Flow Action	To Open		
Port	6"			Characteristic	Equal Percentage		
Valve Cv	253	Stroke	60 mm	Leakage Class	IV ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	11 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Low noise cage			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-216 WCC			Manufacturer	Parcol S.p.A.		
BONNET	SA-216 WCC			Type	Pneumatic Diaphragm		
PLUG	SA-479 316 Full CoCr-A Hard Facing			Model	1-X-292		
SEAT	SA-479 316 Seat Joint CoCr-A Hard Facing			Size	D46		
CAGE	SA-479 316 Chrome plated			Action	Reverse		
				Spring Range	0.9-2.21 bar		
				Supply	2.76 bar		
Balancing	Graphite Loaded Pressure Energized PTFE Ring			Handweel	None		
Packing	TFK			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimimum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. - Filter Mat.: Aluminum -							
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -							
Solenoid Valve - Model: YX13AA1H1BS - Manufacturer: NORGREN -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT4 - Connections: Pn. 1/4in.-El. M20X1.5 - Coil Class: H - Internal Mat.: Inox - Power Suplly: 24 Vdc - Power: Reduced Power -							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer				
Project		Valve Model	1-6943	Reference	1	
Tag	30-LV-30021	Date	08-02-2017			
Service	CRUDE METHANOL TO T-3003	User	Wang Lihua			
Fluid Name	Crude Methanol	Fluid State	LIQUID	Trim	LN-E	

		In	Out	Port	
Pipe	Nominal Size	10"	18"		
Pipe	Thickness/Schedule	SCH 20	SCH 10		
Valve	Nominal Size	10"	10"	6"	
Operating Conditions		Unit	Case 1	Case 2	Case 3
			New Valve Case	New Valve Case	New Valve Case
Flow Rate	kg/h		66288	165720	182292
Inlet Pressure	bar a		9	9	9
Outlet Pressure	bar a		3	3	3
Density	kg/m ³		716	716	716
Inlet Temperature	°C		141	141	141
Vapour Pressure	bar a		7.3	7.3	7.3
Critical Pressure	bar a		134.5	134.5	134.5
Viscosity	cP		0.16	0.16	0.16
Recovery Factor (FL)			0.94	0.93	0.93
Valve Style Modifier (Fd)			0.08	0.05	0.05
Number of Cages (If Any)					
Selected CV (VALVE)			253	253	253
Calculated CV			61.33	154.96	170.46
Calculated / Sel. CV Ratio			0.24	0.61	0.67
Flow Regime					
Flow Regime			Flashing	Flashing	Flashing
Valve Opening	%		49.30	76.09	80.05
Terminal Differential Pressure	bar a		2.18	2.13	2.13
Valve Outlet Velocity	m/s		20.7	51.7	56.8
Pipe Outlet Velocity	m/s				
Noise Red. Due To Pipe Insulation	dB(A)				
Result SPL	dB(A)		< 70	< 70	< 70

Notes



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-30025
Service PROCESS CONDENSATE FROM D-3006

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/01/15
Quote Line 590000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"	ND 10"		Minimum Temp.	- C	
Thickness	SCH 40S	SCH 40S		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
Pressure	42/FV	-	bar	Fluid	Process Condensate	
Maximum Temp.	185	-	C	State	Liquid	
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	LN-E	Sealing seat-plug	Metal to metal	
DN IN	10"	OUT	10"	Flow action	To Open	
Port	8"			Characteristic	Equalpercentage	
Valve Cv	425			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	76			Shut-off pressur	42 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	10"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	10"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L Seat joint Stell.			Size	D63	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	10-28 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H04.S250CF00K000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17108
 Quote Line 590000
 Date 15/01/15

Fluid State Liquid
 Fluid Name Process Condens
 Tag 30-LV-30025
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 40S OUT SCH 40S

Valve
 Nominal Size IN 10" OUT 10" Port 8"

	Unit	Case 1 max	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	38.7	38.7	38.7
Outlet absolute pressure	bar	37.7	37.8	37.9
Flow Rate	kg/h	53,001	132,504	145,754
Density	kg/m3	900	900	900
Inlet temperature	deg. C	155	155	155
Vapour pressure (abs)	bar	38.4	38.4	38.4
Critical pressure (abs)	bar	221.1	221.1	221.1
Viscosity	cP	0.175	0.175	0.175
Recovery factor (FL)		0.9384	0.9356	0.9349
Valve style modifier (Fd)		0.0908	0.0544	0.0508
Number of cages (if any)		425		
Selected CV (VALVE)		64.5872	170.2042	198.5812
Calculated CV		0.152	0.4	0.467
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	37.6	60.24	64.69
Terminal differential pressure	bar	5.563	5.5299	5.521
Valve outlet velocity	m/s	0.32	0.8	0.88
Pipe outlet velocity	m/s	0.32	0.8	0.88
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-30033
Service WASTE WATER FROM P-3006A/B

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/09/29
Quote Line 600000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 4"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Waste Water
Pressure	75.2	-		bar	State	Liquid
Maximum Temp.	155	-		C		
Minimum Temp.	-	-		C		
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	3"	OUT	3"	Flow action		To Open
Port	2"			Characteristic		Equalpercentage
Valve Cv	69.5			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	34			Shut-off pressur		75.2 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	17-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A04S080CF00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17109
 Quote Line 600000
 Date 15/03/10

Fluid State Liquid
 Fluid Name Waste Water
 Tag 30-LV-30033
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 3" OUT 3" Port 2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	57.7	57.7	57.7
Outlet absolute pressure	bar	50.5	50.8	55.8
Flow Rate	kg/h	17,823	44,559	49,015
Density	kg/m3	932	932	932
Inlet temperature	deg. C	121	121	121
Vapour pressure (abs)	bar	2.1	2.1	2.1
Critical pressure (abs)	bar	221	221	221
Viscosity	cP	0.201	0.201	0.201
Recovery factor (FL)		0.9354	0.9271	0.9119
Valve style modifier (Fd)		0.4852	0.2969	0.2037
Number of cages (if any)				
Selected CV (VALVE)		69.5		
Calculated CV		7.9552	20.3317	42.7485
Calculated / Sel.CV ratio		0.114	0.293	0.615
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	35.66	59.01	79.74
Terminal differential pressure	bar	48.7568	47.7882	45.8816
Valve outlet velocity	m/s	1.25	3.12	3.43
Pipe outlet velocity	m/s	0.72	1.79	1.97
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	49	57.5	48

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-40001
Service POLISHED WATER TO DA-4001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/03/10
Quote Line 610000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 12"	ND 12"		Minimum Temp.	- C		
Thickness	SCH 10S	SCH 10S		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	13.55/FV	-	bar	Fluid	Polished Demi Water		
Maximum Temp.	150	-	C	State	Liquid		
Minimum Temp.	-	-	C				
Valve		Model 1-6943	Trim LN-E	Guiding	Cage		
DN	IN 10"	OUT 10"		Sealing seat-plug	Metal to metal		
Port	10"			Flow action	To Open		
Valve Cv	729			Characteristic	Equalpercentage		
Stroke	100			Leakage class	IV - FCI 70-2 & IEC 534.4		
Body Type	Globe - Straight			Shut-off pressur	13.55 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air failure	Valve close		
Trim Type	Low Noise Cage			Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.		
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm		
Plug	A 479 316L Full Stell.			Model	1-X-250		
Seat	A 479 316L Seat joint Stell.			Size	D63		
Guide/Cage	A 479 316L Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	15-34 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943H04.S250AD00C000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -
- 4- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17110
 Quote Line 610000
 Date 15/03/10

Fluid State Liquid
 Fluid Name Polished Demi W
 Tag 30-LV-40001
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 12" OUT ND 12"
 Thickness / schedule IN SCH 10S OUT SCH 10S

Valve
 Nominal Size IN 10" OUT 10" Port 10"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	7.5	6.4	6.2
Outlet absolute pressure	bar	3.8	3.8	4.9
Flow Rate	kg/h	187,600	469,000	515,900
Density	kg/m ³	946	946	946
Inlet temperature	deg. C	116	116	116
Vapour pressure (abs)	bar	1.8	1.8	1.8
Critical pressure (abs)	bar	221.2	221.2	221.2
Viscosity	cP	0.241	0.241	0.241
Recovery factor (FL)		0.9385	0.9351	0.9323
Valve style modifier (Fd)		0.075	0.0434	0.0342
Number of cages (if any)		729		
Selected CV (VALVE)		115.9327	345.9734	538.7674
Calculated CV		0.159	0.475	0.739
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening	%	39.38	65.39	83.59
Terminal differential pressure	bar	5.1212	4.1089	3.8899
Valve outlet velocity	m/s	1	2.5	2.75
Pipe outlet velocity	m/s	0.71	1.77	1.95
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	81.7	83.8	65.6

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-40017A
Service PROCESS CONDENSATE FROM E-4001B

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/01/15
Quote Line 620000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 4"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Process Condensate
Pressure	58	-			State	Liquid
Maximum Temp.	180	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	EDC-E	Sealing seat-plug		Metal to metal
DN IN	3"	OUT	3"	Flow action		To Open
Port	1.1/2"			Characteristic		Equalpercentage
Valve Cv	13.5			Leakage class		V - FCI 70-2 & IEC 534.4
Stroke	34			Shut-off pressur		58 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Multicage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	-			Spring range	25-45 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A04N080DF00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20x1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Solenoid Valve - QTY: 1 - PROD: NORGREN - MODEL: YX13AA1H1BS - MATERIAL: Stainless steel - IP: IP65 - ATEX: Ex ia IIC T4 - CONN: Pn. 1/4in.-El. M20x1.5 - Power Supply: 24 Vdc - Coil Class: H - Internal Material: Inox - Power: Reduced Power -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
Reference SQ1401768
Configuration 17111
Quote Line 620000
Date 15/01/15

Fluid State Liquid
Fluid Name Process Condens
Tag 30-LV-40017A
Valve Model 1-6943 **Trim** EDC-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 3" OUT 3" Port 1.1/2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	47.8	47.5	47.5
Outlet absolute pressure	bar	7.5	8	8.2
Flow Rate	kg/h	15,534	38,835	42,719
Density	kg/m3	917	917	917
Inlet temperature	deg. C	152	152	152
Vapour pressure (abs)	bar	4.8	4.8	4.8
Critical pressure (abs)	bar	221.2	221.2	221.2
Viscosity	cP	0.181	0.181	0.181
Recovery factor (FL)		0.9819	0.9819	0.9819
Valve style modifier (Fd)		0.2041	0.1939	0.1848
Number of cages (if any)				
Selected CV (VALVE)		13.5		
Calculated CV		2.9542	7.4606	8.2279
Calculated / Sel.CV ratio		0.219	0.553	0.609
Flow Regime		Normal	Normal	Normal
Valve Opening	%	43.67	72.3	74.8
Terminal differential pressure	bar	41.8274	41.5239	41.5203
Valve outlet velocity	m/s	1.1	2.76	3.04
Pipe outlet velocity	m/s	0.63	1.59	1.74
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-LV-40017B			Date	08-02-2017		
Service	PROCESS CONDENSATE FROM D-1002			Item Code	R6943		Valve No. 1
Design Conditions	In	Out		Ambient			
Pressure	40 bar g			Pressure			
Minimum Temperature				Min. Temp.			Max Temp.
Maximum Temperature	160 °C			Installation			Haz. Area
Piping	In	Out		Connections DN		Type/Rating	
Outside Diameter	6"		6"	In	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Thickness	SCH 40S		SCH 40S	Out	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Insulation							
Valve Characteristics							
Model	1-6943			Guiding	Cage		
DN In	6"	DN Out	6"	Sealing Seat-Plug	Metal to Metal		
Trim Code	LN-E			Flow Action	To Open		
Port	3"			Characteristic	Equal Percentage		
Valve Cv	79.8	Stroke	45 mm	Leakage Class	V ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	40 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Low noise cage			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-351 CF3M			Manufacturer	Parcol S.p.A.		
BONNET	SA-351 CF3M			Type	Pneumatic Diaphragm		
PLUG	SA-479 316L Full CoCr-A Hard Facing			Model	1-X-292		
SEAT	SA-479 316L Seat Joint CoCr-A Hard Facing			Size	D39		
CAGE	SA-479 316L Chrome plated			Action	Reverse		
				Spring Range	0.9-2.14 bar		
				Supply	2.76 bar		
Balancing	Graphite Loaded Pressure Energized PTFE Ring			Handweel	None		
Packing	TFK			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimimum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. - Filter Mat.: Aluminum -							
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -							
Solenoid Valve - Model: YX13AA1H1BS - Manufacturer: NORGREN -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT4 - Connections: Pn. 1/4in.-El. M20X1.5 - Coil Class: H - Internal Mat.: Inox - Power Suplly: 24 Vdc - Power: Reduced Power -							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer				
Project		Valve Model	1-6943	Reference	1	
Tag	30-LV-40017B	Date	08-02-2017			
Service	PROCESS CONDENSATE FROM D-1002	User	Wang Lihua			
Fluid Name	Process Condens	Fluid State	LIQUID	Trim	LN-E	

		In	Out	Port	
Pipe	Nominal Size	6"	6"		
Pipe	Thickness/Schedule	SCH 40S	SCH 40S		
Valve	Nominal Size	6"	6"	3"	
Operating Conditions		Unit	Case 1 MAX	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate		kg/h	74300		
Inlet Pressure		bar a	37.2		
Outlet Pressure		bar a	5.5		
Density		kg/m ³	919		
Inlet Temperature		°C	133		
Vapour Pressure		bar a	36.9		
Critical Pressure		bar a	221.1		
Viscosity		cP	0.20		
Recovery Factor (FL)			0.93		
Valve Style Modifier (Fd)			0.09		
Number of Cages (If Any)					
Selected CV (VALVE)			79.8		
Calculated CV			39.34		
Calculated / Sel. CV Ratio			0.49		
Flow Regime					
Valve Opening		%	72.97		
Terminal Differential Pressure		bar a	5.19		
Valve Outlet Velocity		m/s	50.2		
Pipe Outlet Velocity		m/s			
Noise Red. Due To Pipe Insulation		dB(A)			
Result SPL		dB(A)	< 70		

Notes

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-LV-40024			Date	08-02-2017		
Service	MP CONDENSATE FROM DRUM D-4004			Item Code	R6943		Valve No. 1
Design Conditions		In	Out	Ambient			
Pressure	8 bar g/FV			Pressure			
Minimum Temperature				Min. Temp.		Max Temp.	
Maximum Temperature	300 °C			Installation		Haz. Area	
Piping		In	Out	Connections DN		Type/Rating	
Outside Diameter	6"		6"	In	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH	
Thickness	SCH STD		SCH STD	Out	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH	
Insulation							
Valve Characteristics							
Model	1-6943			Guiding	Cage		
DN In	6"	DN Out	6"	Sealing Seat-Plug	Metal to Metal		
Trim Code	LN-E			Flow Action	To Open		
Port	3"			Characteristic	Equal Percentage		
Valve Cv	112	Stroke	45 mm	Leakage Class	IV ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	8 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Low noise cage			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-216 WCC			Manufacturer	Parcol S.p.A.		
BONNET	SA-216 WCC			Type	Pneumatic Diaphragm		
PLUG	SA-479 316 Full CoCr-A Hard Facing			Model	1-X-292		
SEAT	SA-479 316 Seat Joint CoCr-A Hard Facing			Size	D39		
CAGE	SA-479 316 Chrome plated			Action	Reverse		
				Spring Range	0.9-2.14 bar		
				Supply	2.76 bar		
Balancing	Energized Carbon Graphite Rings			Handweel	None		
Packing	GRF			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimimum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. - Filter Mat: Aluminum -							
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-LV-40024	Date	08-02-2017		
Service	MP CONDENSATE FROM DRUM D-4004	User	Wang Lihua		
Fluid Name	MP Steam Conden	Fluid State	LIQUID	Trim	LN-E

		In	Out	Port	
Pipe	Nominal Size	6"	6"		
Pipe	Thickness/Schedule	SCH STD	SCH STD		
Valve	Nominal Size	6"	6"	3"	
Operating Conditions		Unit	Case 1	Case 2	Case 3
			New Valve Case	New Valve Case	New Valve Case
Flow Rate	kg/h		16714	41785	45963
Inlet Pressure	bar a		6.9	6.9	6.9
Outlet Pressure	bar a		2.8	3.7	5.4
Density	kg/m ³		904	904	904
Inlet Temperature	°C		164	164	164
Vapour Pressure	bar a		6.8	6.8	6.8
Critical Pressure	bar a		221.2	221.2	221.2
Viscosity	cP		0.17	0.17	0.17
Recovery Factor (FL)			0.94	0.93	0.93
Valve Style Modifier (Fd)			0.11	0.07	0.06
Number of Cages (If Any)					
Selected CV (VALVE)			112	112	112
Calculated CV			25.73	65.03	71.53
Calculated / Sel. CV Ratio			0.23	0.58	0.64
Flow Regime					
Flow Regime			Flashing	Flashing	Flashing
Valve Opening	%		50.41	77.07	80.58
Terminal Differential Pressure	bar a		0.62	0.61	0.61
Valve Outlet Velocity	m/s		25.1	47.7	36.2
Pipe Outlet Velocity	m/s				
Noise Red. Due To Pipe Insulation	dB(A)				
Result SPL	dB(A)		< 70	< 70	< 70

Notes



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer Bushehr Petrochemical
DSH SQ1401768 **Rev.** 0
TAG 30-LV-40026
Service BOILER BLOW DOWN FROM D-4002

Page 1 **of** 2
Qty 1
User wang.lihua
Date 14/11/03
Quote Line 650000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 4"	Minimum Temp.		- C
Thickness	SCH STD		SCH STD	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Blow Down
Pressure	9/FV	-		bar	State	Liquid
Maximum Temp.	300	-		C		
Minimum Temp.	-	-		C		
Valve				Guiding Cage		
Model	1-6943	Trim	EDC-E	Sealing seat-plug		Metal to metal
DN IN	4"	OUT	4"	Flow action		To Open
Port	2"			Characteristic		Equalpercentage
Valve Cv	25.2			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	34			Shut-off pressur		9 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Multicage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	Carbon Graphite			Spring range	17-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S100DD00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17114
 Quote Line 650000
 Date 14/11/03

Fluid State Liquid
 Fluid Name Blow Down
 Tag 30-LV-40026
 Valve Model 1-6943 Trim EDC-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 4" OUT 4" Port 2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	6.6	6.6	6.6
Outlet absolute pressure	bar	4.5	4.5	4.5
Flow Rate	kg/h	2,582	6,455	7,100
Density	kg/m3	905	905	905
Inlet temperature	deg. C	162	162	162
Vapour pressure (abs)	bar	6.5	6.5	6.5
Critical pressure (abs)	bar	221.2	221.2	221.2
Viscosity	cP	0.166	0.166	0.166
Recovery factor (FL)		0.9805	0.9805	0.9805
Valve style modifier (Fd)		0.1826	0.179	0.175
Number of cages (if any)				
Selected CV (VALVE)		25.2		
Calculated CV		3.9038	9.7595	10.7347
Calculated / Sel.CV ratio		0.155	0.387	0.426
Flow Regime		Flashing	Flashing	Flashing
Valve Opening -	%	35.82	61.83	63.84
Terminal differential pressure	bar	0.646	0.646	0.646
Valve outlet velocity	m/s	0.09	0.22	0.24
Pipe outlet velocity	m/s	-	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	<85	<85

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer Bushehr Petrochemical
DSH SQ1401768 **Rev.** 0
TAG 30-LV-40028
Service LP CONDENSATE FROM P-4003A/B

Page 1 **of** 2

Qty 1
User wang.lihua
Date 14/12/29

Quote Line 660000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 6"		ND 6"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	12.77		-		bar		
Maximum Temp.	155		-		C	Fluid LP Steam Condensate	
Minimum Temp.	-		-		C	State Liquid	
Valve				Model	1-6943	Trim ST-E	
DN	IN 4"		OUT 4"	Guiding		Cage	
Port	4"			Sealing seat-plug		Metal to metal	
Valve Cv	158			Flow action		To Open	
Stroke	60			Characteristic		Equalpercentage	
Body Type	Globe - Straight			Leakage class		IV - FCI 70-2 & IEC 534.4	
Bonnet Type	Universal			Shut-off pressur		12.77 bar	
Seat Type	Single			Live Loading		Not provided	
Trim Type	Cage			Air failure		Valve close	
				Control signal failure		Fail Safe	
Connections							
		DN	Type / Rating / Sealing-Finish				
	IN	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
	OUT	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite			Size	D46		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	13-32 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A04S100AD00J000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17115
 Quote Line 660000
 Date 14/12/29

Fluid State Liquid
 Fluid Name LP Steam Condens
 Tag 30-LV-40028
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	8.4	8.4	8.4
Outlet absolute pressure	bar	7.8	7.9	7.9
Flow Rate	kg/h	23,961	59,901	65,891
Density	kg/m3	938	938	938
Inlet temperature	deg. C	126	126	126
Vapour pressure (abs)	bar	2.4	2.4	2.4
Critical pressure (abs)	bar	221.2	221.2	221.2
Viscosity	cP	0.219	0.219	0.219
Recovery factor (FL)		0.9301	0.9111	0.908
Valve style modifier (Fd)		0.3596	0.2113	0.2001
Number of cages (if any)		158		
Selected CV (VALVE)		36.9748	102.1724	112.6372
Calculated CV		0.234	0.647	0.713
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening	%	46.26	75.19	79.61
Terminal differential pressure	bar	5.3223	5.0458	4.9986
Valve outlet velocity	m/s	0.86	2.16	2.38
Pipe outlet velocity	m/s	0.38	0.95	1.05
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	38.3	45.8	46.8

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-LV-64001
Service DEMIN WATER FROM OSBL

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/01/08
Quote Line 690000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"		ND 10"	Minimum Temp.		- C
Thickness	SCH 10S		SCH 10S	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Demineralized Water
Pressure	12	-			State	Liquid
Maximum Temp.	85	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	LN-E	Sealing seat-plug		Metal to metal
DN IN	8"	OUT	8"	Flow action		To Open
Port	8"			Characteristic		Equalpercentage
Valve Cv	421			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	76			Shut-off pressur		12 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 351 CF8M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF8M			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D63	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	10-28 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943G04S200AD00K000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17118
 Quote Line 690000
 Date 15/01/08

Fluid State Liquid
 Fluid Name Demineralized W
 Tag 30-LV-64001
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 10S OUT SCH 10S

Valve
 Nominal Size IN 8" OUT 8" Port 8"

	Unit	Case 1 nor	Case 2 -	Case 3 max
Inlet absolute pressure	bar	5.5	-	5.5
Outlet absolute pressure	bar	3.25	-	3.5
Flow Rate	kg/h	79,300	-	326,700
Density	kg/m3	990	-	990
Inlet temperature	deg. C	57	-	57
Vapour pressure (abs)	bar	0.173	-	0.173
Critical pressure (abs)	bar	221.2	-	221.2
Viscosity	cP	0.489	-	0.489
Recovery factor (FL)		0.9386	-	0.9334
Valve style modifier (Fd)		0.0937	-	0.0433
Number of cages (if any)				
Selected CV (VALVE)		421		
Calculated CV		61.4307	-	268.8505
Calculated / Sel.CV ratio		0.146	-	0.639
Flow Regime		Normal	-	Normal
Valve Opening	%	36.64	-	76
Terminal differential pressure	bar	4.6988	-	4.6196
Valve outlet velocity	m/s	0.63	-	2.61
Pipe outlet velocity	m/s	0.4	-	1.67
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	53.4	-	66.2

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer Bushehr Petrochemical
DSH SQ1401768 **Rev.** 0
TAG 30-PV-10004
Service NATURAL GAS FROM BATTERY LIMIT

Page 1 **of** 2

Qty 1
User wang.lihua
Date 14/11/03
Quote Line 700000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 16"		ND 16"	Minimum Temp.		- C
Thickness	SCH 60		SCH 60	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	67		-	Fluid		Natural Gas
Maximum Temp.	100		-	State		Gas
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	14"	OUT	14"	Flow action		To Open
Port	14"			Characteristic		Equalpercentage
Valve Cv	1820			Leakage class		V - FCI 70-2 & IEC 534.4
Stroke	150			Shut-off pressur		67 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	14"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	14"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-250	
Seat	A 479 316 Seat Joint Stellite			Size	D63	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	15-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar		Throttling	- s	-	
Maximum Press.	9 bar		Quick Open	- s	-	
Design Press.	- bar		Quick Close	- s	-	
Fitting type	Double Ferrule		Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S350AF00D000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17119
 Quote Line 700000
 Date 14/11/03

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-PV-10004
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 16" OUT ND 16"
 Thickness / schedule IN SCH 60 OUT SCH 60

Valve
 Nominal Size IN 14" OUT 14" Port 14"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	54	54	54
Outlet absolute pressure	bar	52.6	53.4	53.6
Flow Rate	kg/h	54,993	137,483	151,231
Inlet temperature	deg. C	40	40	40
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.45	1.45	1.45
Density	kg/m3	41.0443	41.0443	41.0443
Press. differential ratio factor (X)		0.7689	0.7437	0.732
Recovery factor (FL)		0.9366	0.9265	0.9217
Valve style modifier (Fd)		0.3117	0.2748	0.2965
Number of cages (if any)				
Selected CV (VALVE)		1820		
Calculated CV		268.6886	1,021.6073	1,376.2435
Calculated / Sel.CV ratio		0.148	0.561	0.756
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	39.89	66.79	77.78
MACH n. at outlet connection		0.01	0.0246	0.0269
Valve outlet velocity	m/s	4.59	11.31	12.4
Pipe outlet velocity	m/s	3.49	8.61	9.43
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	56.2	42.7	34.9

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-10055
Service NATURAL GAS TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/02/25
Quote Line 710000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"		ND 18"	Minimum Temp.		- C
Thickness	SCH XS		SCH 60	Maximum Temp.		- C
Insulation	Insulated			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Natural Gas
Pressure	66	-			State	Gas
Maximum Temp.	280	-				
Minimum Temp.	-	-				
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	10"	OUT	10"	Flow action		To Open
Port	10"			Characteristic		Equalpercentage
Valve Cv	468			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	100			Shut-off pressur		66 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	10"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	10"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D63	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE + back-up			Spring range	13-27 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04B250AF20K000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-PV-10055	Date	27-10-2016		
Service	NATURAL GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Natural Gas	Fluid State	GAS	Trim	XLN-E

		In	Out	Port
Pipe	Nominal Size	10"	18"	
Pipe	Thickness/Schedule	SCH XS	SCH 60	
Valve	Nominal Size	10"	10"	10"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	140000		
Inlet Pressure	bar a	48.5		
Outlet Pressure	bar a	10		
Inlet Temperature	°C	243		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		17.6		
Compressibility Factor (Z)		1		
Specific Heat Ratio (Cp/Cv)		1.24		
Density	kg/m ³	19.89		
Press. Differential Ratio Factor (XT)		0.75		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.04		
Number of Cages (If Any)				
Selected CV (VALVE)		468		
Calculated CV		304.32		
Calculated / Sel. CV Ratio		0.65		
Flow Regime		Limit		
Valve Opening	%	79.03		
MACH N. at Outlet Connection		0.35		
Valve Outlet Velocity	m/s	192.80		
Pipe Outlet Velocity	m/s	68.8		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	79.25		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-10055 Dsic	Date	28-10-2016		
Service	NATURAL GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Natural Gas	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	10"	18"	
Pipe	Thickness/Schedule	SCH XS	SCH 60	
Valve	Nominal Size	10"	18"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	140000.00		
Inlet Pressure	bar a	10		
Outlet Pressure	bar a	3.4		
Inlet Temperature	°C	243		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		17.6		
Compressibility Factor (Z)		1		
Specific Heat Ratio (Cp/Cv)		1.24		
Density	kg/m ³	4.10		
Press. Differential Ratio Factor (XT)		0.82		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.03		
Number of Cages (If Any)				
Selected CV (VALVE)		1415		
Calculated CV		1413.98		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Normal		
Valve Opening	%	99.95		
MACH N. at Outlet Connection		0.37		
Valve Outlet Velocity	m/s	202.36		
Pipe Outlet Velocity	m/s	202.36		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	84.27		

Notes

- 2 stage low noise disc, indicated Cv is combined, 1st stage Cv=1572, 2nd stage Cv=3280.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-10132A
Service NATURAL GAS FROM D-1001

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/03/09
Quote Line 720000

Piping			IN	OUT	Ambient			Pressure 1 bar	
Diameter	ND 8"			ND 14"	Minimum Temp.			- C	
Thickness	SCH STD			SCH STD	Maximum Temp.			- C	
Insulation	Not Known				Installation			Not Known	
Design Conditions					IN	OUT	Haz. Area	Other	
Pressure	34		-				Fluid	Natural Gas	
Maximum Temp.	100		-				State	Gas	
Minimum Temp.	-								
Valve					Model	1-6943	Trim	XLN-E	
DN	IN	6"		OUT	6"	Guiding	Cage		
Port	4"					Sealing seat-plug	Metal to metal		
Valve Cv	125					Flow action	To Open		
Stroke	60					Characteristic	Equalpercentage		
Body Type	Globe - Straight					Leakage class	IV - FCI 70-2 & IEC 534.4		
Bonnet Type	Universal					Shut-off pressur	34 bar		
Seat Type	Single					Live Loading	Not provided		
Trim Type	Low noise cage S					Air failure	Valve close		
						Control signal failure	Fail Safe		
Connections									
		DN	Type / Rating / Sealing-Finish						
	IN	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH						
	OUT	6"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH						
Materials					Actuator				
Body	SA 216 WCC				Manufacturer	Parcol S.P.A.			
Bonnet	SA 216 WCC				Type	Pneumatic Diaphragm			
Plug	A 479 316 Full Stellite				Model	1-X-290			
Seat	A 479 316 Seat Joint Stellite				Size	D46			
Guide/Cage	A 479 316 Cr plated				Action	Reverse			
Balancing	PTFE				Spring range	13-32 psi			
Disk stack	-				Supply	40 psi			
Plug/seat insert	-				Handwheel	No			
Bellows	-				Yoke material	Carbon steel			
Packing	Reinforced teflon								
Pneumatic Instrumentation								Time	Conn
Minimum Press.	5 bar				Throttling	- s		-	
Maximum Press.	9 bar				Quick Open	- s		-	
Design Press.	- bar				Quick Close	- s		-	
Fitting type	Double Ferrule				Tubing Material	Stainless steel			
Miscellaneous					<input type="checkbox"/>	PED			
Adjustable limit stop	Opening - %		Closing - %		<input type="checkbox"/>	Vacuum Service			
Valve Heating	-				<input type="checkbox"/>	NACE	<input type="checkbox"/>	External	
Inlet Devices	-				<input type="checkbox"/>	Hydraulic speed ctrl.			
Outlet Devices	-				<input type="checkbox"/>	Leak-off			
Valve Code	R6943A04S150CF00J000				Pneumatic Diagram	-			

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17122
 Quote Line 720000
 Date 15/03/09

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-PV-10132A
 Valve Model 1-6943 Trim XLN-E

Pipe
 Nominal Size IN ND 8" OUT ND 14"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 6" OUT 6" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	27.3	27.3	27.3
Outlet absolute pressure	bar	5.8	5.8	6.3
Flow Rate	kg/h	4,320	10,799	22,176
Inlet temperature	deg. C	35	35	35
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.38	1.38	1.38
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7746	0.7689	0.7588
Recovery factor (FL)		0.9388	0.9366	0.9325
Valve style modifier (Fd)		0.1406	0.0877	0.0603
Number of cages (if any)				
Selected CV (VALVE)		125		
Calculated CV		12.1941	30.6012	63.2988
Calculated / Sel.CV ratio		0.098	0.245	0.506
Flow Regime		Limit	Limit	Limit
Valve Opening -	%	30.78	48.37	70
MACH n. at outlet connection		0.0357	0.0892	0.1687
Valve outlet velocity	m/s	16.68	41.7	78.83
Pipe outlet velocity	m/s	3.5	8.74	16.53
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	75.5	79.4	81.9

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 02
TAG 30-PV-10132B
Service NATURAL GAS FROM FT-1001

Page 1 **of** 2

Qty 1
User wang.lihua
Date 11/04/16
Quote Line 730000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 8"		ND 14"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Natural Gas	
Pressure	67	-			State	Gas	
Maximum Temp.	100	-					
Minimum Temp.	-						
Valve				Guiding Cage			
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal	
DN IN	6"	OUT	6"	Flow action		To Open	
Port	3"			Characteristic		Equalpercentage	
Valve Cv	48.4			Leakage class		IV - FCI 70-2 & IEC 534.4	
Stroke	45			Shut-off pressur		67 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve close	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Low noise cage S						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Full Stellite			Model	1-X-290		
Seat	A 479 316 Seat Joint Stellite			Size	D39		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	13-31 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A04S150DF00H000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17123
 Quote Line 730000
 Date 11/04/16

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-PV-10132B
 Valve Model 1-6943 Trim XLN-E

Pipe
 Nominal Size IN ND 8" OUT ND 14"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 6" OUT 6" Port 3"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	52.9	52.9	52.9
Outlet absolute pressure	bar	5.8	5.8	6.3
Flow Rate	kg/h	5,028	12,570	23,977
Inlet temperature	deg. C	40	40	40
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.45	1.45	1.45
Density	kg/m3	40.2082	40.2082	40.2082
Press. differential ratio factor (X)		0.7731	0.7645	0.7512
Recovery factor (FL)		0.9383	0.9348	0.9295
Valve style modifier (Fd)		0.1617	0.1004	0.0722
Number of cages (if any)				
Selected CV (VALVE)		48.4		
Calculated CV		6.6908	16.8226	32.3751
Calculated / Sel.CV ratio		0.138	0.348	0.669
Flow Regime		Limit	Limit	Limit
Valve Opening -	%	38.8	61.52	84.27
MACH n. at outlet connection		0.0369	0.0923	0.162
Valve outlet velocity	m/s	16.99	42.48	74.6
Pipe outlet velocity	m/s	3.56	8.91	15.64
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	78.4	82.3	84.7

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-PV-10135
 Service FUEL GAS TO FLARE HEADER

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 16/01/08
 Quote Line 740000

Piping			IN	OUT	Ambient			Pressure	1 bar		
Diameter	ND 10"		ND 12"		Minimum Temp.		- C				
Thickness	SCH 20		SCH 20		Maximum Temp.		- C				
Insulation	Insulated				Installation		Not Known				
Design Conditions					IN	OUT	Haz. Area	Other			
Pressure	7		-		bar			Fluid	Fuel Gas		
Maximum Temp.	120		-		C			State	Gas		
Minimum Temp.	-		-		C						
Valve					Model	1-6943	Trim	HLN-E	Guiding	Cage	
DN	IN 10"		OUT	10"	Sealing seat-plug			Soft Seat			
Port	10"				Flow action			To Open			
Valve Cv	957				Characteristic			Equalpercentage			
Stroke	150				Leakage class			VI - FCI 70-2 & IEC 534.4			
Body Type	Globe - Straight				Shut-off pressur			7 bar			
Bonnet Type	Universal				Live Loading			Not provided			
Seat Type	Single				Air failure			Valve close			
Trim Type	Low Noise Cage				Control signal failure			Fail Safe			
Connections					DN	Type / Rating / Sealing-Finish					
	IN	10"			Flanged/ANSI B16.5/300#/RF - 125-250 AARH						
	OUT	10"			Flanged/ANSI B16.5/300#/RF - 125-250 AARH						
Materials					Body	SA 216 WCC	Actuator			Manufacturer	Parcol S.P.A.
	Bonnet	SA 216 WCC			Plug	A 479 316			Type	Pneumatic Diaphragm	
	Seat	A 479 316			Guide/Cage	A 479 316 Cr plated			Model	1-X-250	
	Balancing	PTFE			Disk stack	-			Size	D63	
	Disk stack	-			Plug/seat insert	PTFE			Action	Reverse	
	Bellows	-			Packing	Reinforced teflon			Spring range	15-30 psi	
	Packing	Reinforced teflon							Supply	40 psi	
									Handwheel	Side mounted	
									Yoke material	Carbon steel	
Pneumatic Instrumentation					Minimum Press.	5 bar	Throttling	- s	Time	-	
	Maximum Press.	9 bar			Design Press.	- bar	Quick Open	- s	Conn	-	
	Fitting type	Double Ferrule					Quick Close	- s		-	
							Tubing Material	Stainless steel			
Miscellaneous					Adjustable limit stop	Opening - %	Closing - %	<input type="checkbox"/>	PED		
	Valve Heating	-					<input type="checkbox"/>	Vacuum Service			
	Inlet Devices	-					<input type="checkbox"/>	NACE	<input type="checkbox"/>	External	
	Outlet Devices	-					<input type="checkbox"/>	Hydraulic speed ctrl.			
							<input type="checkbox"/>	Leak-off			
Valve Code	R6943A03U2500D00D000				Pneumatic Diagram	-					

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

Note 1: Provide maximum opening mechanical limit device.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17124
 Quote Line 740000
 Date 15/05/11

Fluid State Gas
 Fluid Name Fuel Gas
 Tag 30-PV-10135
 Valve Model 1-6943 Trim HLN-E

Pipe
 Nominal Size IN ND 10" OUT ND 12"
 Thickness / schedule IN SCH 20 OUT SCH 20

Valve
 Nominal Size IN 10" OUT 10" Port 10"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	3.8	-	-
Outlet absolute pressure	bar	2	-	-
Flow Rate	kg/h	38,000	-	-
Inlet temperature	deg. C	60	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.34	-	-
Density	kg/m3	3.1028	-	-
Press. differential ratio factor (X)		0.765	-	-
Recovery factor (FL)		0.935	-	-
Valve style modifier (Fd)		0.029	-	-
Number of cages (if any)				
Selected CV (VALVE)		957		
Calculated CV		750.9297	-	-
Calculated / Sel.CV ratio		0.785	-	-
Flow Regime		Normal	-	-
Valve Opening	%	85.5	-	-
MACH n. at outlet connection		0.298	-	-
Valve outlet velocity	m/s	121.46	-	-
Pipe outlet velocity	m/s	85.03	-	-
Noise red. due to pipe insulati	dB (A)	10	-	-
Resulting SPL	dB (A)	77.4	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-10203
Service Natural GAS FROM C-1001

Page 1 **of** 3
Qty 1
User wang.lihua
Date 16/01/05
Quote Line 1030000

Piping			IN	OUT	Ambient		
Diameter	ND 16"		ND 16"		Pressure	1 bar	
Thickness	SCH 60		SCH 60		Minimum Temp.	- C	
Insulation	Insulated				Maximum Temp.	- C	
					Installation	Not Known	
Design Conditions					Haz. Area Other		
			IN	OUT			
Pressure	66		-		Fluid	Natural Gas	
Maximum Temp.	150		-		State	Gas	
Minimum Temp.	-						
Valve					Guiding Cage		
Model	1-6943		Trim	ST-L	Sealing seat-plug	Metal to metal	
DN IN	12"		OUT	12"	Flow action	To Open	
Port	10"				Characteristic	Linear	
Valve Cv	1240				Leakage class	V - FCI 70-2 & IEC 534.4	
Stroke	100				Shut-off pressur	66 bar	
Body Type	Globe - Straight				Live Loading	Not provided	
Bonnet Type	Universal				Air failure	Valve close	
Seat Type	Single				Control signal failure	Fail Safe	
Trim Type	Cage						
Connections							
		DN	Type / Rating / Sealing-Finish				
IN		12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT		12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials					Actuator		
Body	SA 216 WCC				Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC				Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite				Model	1-X-250	
Seat	A 479 316 Seat Joint Stellite				Size	D63	
Guide/Cage	A 479 316 Cr plated				Action	Reverse	
Balancing	PTFE				Spring range	15-34 psi	
Disk stack	-				Supply	40 psi	
Plug/seat insert	-				Handwheel	No	
Bellows	-				Yoke material	Carbon steel	
Packing	Reinforced teflon						
Pneumatic Instrumentation					Time	Conn	
Minimum Press.	5 bar				Throttling	- s	-
Maximum Press.	9 bar				Quick Open	- s	-
Design Press.	- bar				Quick Close	- s	-
Fitting type	Double Ferrule				Tubing Material	Stainless steel	
Miscellaneous					<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-				<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-				<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-				<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S300BF00C000				Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 18366
 Quote Line 1030000
 Date 16/01/05

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-PV-10203
 Valve Model 1-6943 Trim ST-L

Pipe
 Nominal Size IN ND 16" OUT ND 16"
 Thickness / schedule IN SCH 60 OUT SCH 60

Valve
 Nominal Size IN 12" OUT 12" Port 10"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	61	60.94	60.92
Outlet absolute pressure	bar	52.22	53.47	53.77
Flow Rate	kg/h	47,606	119,015	130,916
Inlet temperature	deg. C	110	110	110
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.35	1.35	1.35
Density	kg/m3	32.3618	32.3299	32.3193
Press. differential ratio factor (X)		0.7726	0.7635	0.7618
Recovery factor (FL)		0.938	0.9344	0.9337
Valve style modifier (Fd)		0.2632	0.2866	0.2885
Number of cages (if any)				
Selected CV (VALVE)		1240		
Calculated CV		110.5805	297.181	333.447
Calculated / Sel.CV ratio		0.089	0.24	0.269
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	21.59	33.46	35.43
MACH n. at outlet connection		0.0135	0.033	0.0361
Valve outlet velocity	m/s	6.97	17.02	18.62
Pipe outlet velocity	m/s	4.37	10.66	11.66
Noise red. due to pipe insulati	dB (A)	2	2	2
Resulting SPL	dB (A)	78.9	83.5	83.8

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 18366
 Quote Line 1030000
 Date 16/01/05

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-PV-10203
 Valve Model 1-6943 Trim ST-L

Pipe
 Nominal Size IN ND 16" OUT ND 16"
 Thickness / schedule IN SCH 60 OUT SCH 60

Valve
 Nominal Size IN 12" OUT 12" Port 10"

	Unit	Case 4 min	Case 5 nor	Case 6 max
Inlet absolute pressure	bar	54.52	54.42	54.4
Outlet absolute pressure	bar	52.22	53.47	53.77
Flow Rate	kg/h	47,606	119,015	130,916
Inlet temperature	deg. C	110	110	110
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.35	1.35	1.35
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7674	0.7374	0.7234
Recovery factor (FL)		0.936	0.9239	0.9181
Valve style modifier (Fd)		0.2807	0.3163	0.3219
Number of cages (if any)				
Selected CV (VALVE)		1240		
Calculated CV		218.0075	843.0963	1,140.1647
Calculated / Sel.CV ratio		0.176	0.68	0.919
Flow Regime		Normal	Normal	Normal
Valve Opening	%	28.94	63.05	87.77
MACH n. at outlet connection		0.0135	0.033	0.0361
Valve outlet velocity	m/s	6.97	17.02	18.62
Pipe outlet velocity	m/s	4.37	10.66	11.66
Noise red. due to pipe insulati	dB (A)	2	2	2
Resulting SPL	dB (A)	66.6	50.7	43.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 01
TAG 30-PV-10244
Service HYDROGEN TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 28/10/16
Quote Line 750000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 6"		ND 6"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	H2 Stream
Pressure	48	-			State	Gas
Maximum Temp.	200	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-9111	Trim	LIM-L	Sealing seat-plug		Metal to metal
DN IN	6"	OUT	6"	Flow action		To Open
Port	1.1/2"			Characteristic		Linear
Valve Cv	21			Leakage class		VHS -FCI70-2 & IEC 534.4
Stroke	45			Shut-off pressur		48 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	With sealing bellows			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Multistep-Limiphon					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 105			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	17-47 psi	
Disk stack	A 479 316			Supply	60 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	Inconel 625			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R9000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

- Note 1:** Grease free.
- Note 2:** Valve inside flow path cleaned to avoid oxidizes/particles.
- Note 3:** Provide maximum opening mechanical limit device.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17125
 Quote Line 750000
 Date 16/10/28

Fluid State Gas
 Fluid Name H2 Stream
 Tag 30-PV-10244
 Valve Model 1-9111 Trim LIM-L

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 6" OUT 6" Port 1.1/2"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	43.5	-	-
Outlet absolute pressure	bar	2	-	-
Flow Rate	kg/h	4,600	-	-
Inlet temperature	deg. C	118	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.39	-	-
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.983	-	-
Recovery factor (FL)		0.9957	-	-
Valve style modifier (Fd)		0.0415	-	-
Number of cages (if any)				
Selected CV (VALVE)		21		
Calculated CV		16.8684	-	-
Calculated / Sel.CV ratio		0.803	-	-
Flow Regime		Normal	-	-
Valve Opening Preliminary	%	82.05	-	-
MACH n. at outlet connection		0.2713	-	-
Valve outlet velocity	m/s	0	-	-
Pipe outlet velocity	m/s	0	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	<85	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-10249
Service PROCESS GAS TO FLARE HEADER

Page 1 of 2
Qty 1
User wang.lihua
Date 15/05/12
Quote Line 760000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 12"		ND 20"	Minimum Temp.		- C
Thickness	SCH 80S		SCH 40	Maximum Temp.		- C
Insulation	Insulated			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Process Gas
Pressure	40	-			State	Gas
Maximum Temp.	120	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	HXLN-E	Sealing seat-plug		Metal to metal
DN IN	12"	OUT	12"	Flow action		To Open
Port	12"			Characteristic		Equalpercentage
Valve Cv	1010			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	200			Shut-off pressur		40 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Special Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-250	
Seat	A 479 316L Seat joint Stell.			Size	D63	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	10-29 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H04.S3000F00D000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-PV-10249	Date	27-10-2016		
Service	PROCESS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Process Gas	Fluid State	GAS	Trim	HXLN-E

		In	Out	Port
Pipe	Nominal Size	12"	20"	
Pipe	Thickness/Schedule	SCH 80S	SCH 40	
Valve	Nominal Size	12"	12"	12"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	310200		
Inlet Pressure	bar a	36.9		
Outlet Pressure	bar a	18.5		
Inlet Temperature	°C	65		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		11.39		
Compressibility Factor (Z)		1.01		
Specific Heat Ratio (Cp/Cv)		1.42		
Density	kg/m ³	14.80		
Press. Differential Ratio Factor (XT)		0.76		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.02		
Number of Cages (If Any)				
Selected CV (VALVE)		1010		
Calculated CV		878.66		
Calculated / Sel. CV Ratio		0.87		
Flow Regime		Normal		
Valve Opening	%	91.82		
MACH N. at Outlet Connection		0.27		
Valve Outlet Velocity	m/s	160.84		
Pipe Outlet Velocity	m/s	64.76		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	77.75		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-10249 Dsic	Date	28-10-2016		
Service	PROCESS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Process Gas	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	12"	20"	
Pipe	Thickness/Schedule	SCH 80S	SCH 40	
Valve	Nominal Size	12"	20"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	310200.00		
Inlet Pressure	bar a	18.5		
Outlet Pressure	bar a	5.6		
Inlet Temperature	°C	65		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		11.39		
Compressibility Factor (Z)		1.01		
Specific Heat Ratio (Cp/Cv)		1.42		
Density	kg/m ³	7.42		
Press. Differential Ratio Factor (XT)		0.87		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.03		
Number of Cages (If Any)				
Selected CV (VALVE)		1580		
Calculated CV		1576.62		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Normal		
Valve Opening	%	99.84		
MACH N. at Outlet Connection		0.36		
Valve Outlet Velocity	m/s	213.93		
Pipe Outlet Velocity	m/s	213.93		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	<85		

Notes

- 3 stage low noise disc, indicated Cv is combined, 1st stage Cv=2020, 2nd stage Cv=2819, 3rd stage Cv=5945.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-10254
Service SYNTHESIS GAS TO FLARE HEADER

Page 1 **of** 2

Qty 1
User wang.lihua
Date 15/05/12
Quote Line 770000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 8"	Minimum Temp.		- C
Thickness	SCH STD		SCH 30	Maximum Temp.		- C
Insulation	Insulated			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Synthesis Gas
Pressure	45.8	-			State	Gas
Maximum Temp.	100	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	4"	OUT	4"	Flow action		To Open
Port	3"			Characteristic		Equalpercentage
Valve Cv	48.4			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	45			Shut-off pressur		45.8 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	13-31 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S100BD00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-PV-10254	Date	27-10-2016		
Service	SYNTHESIS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Synthesis Gas	Fluid State	GAS	Trim	XLN-E

		In	Out	Port
Pipe	Nominal Size	4"	8"	
Pipe	Thickness/Schedule	SCH STD	SCH 30	
Valve	Nominal Size	4"	4"	3"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	16000		
Inlet Pressure	bar a	36.4		
Outlet Pressure	bar a	15		
Inlet Temperature	°C	45		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		11.47		
Compressibility Factor (Z)		1		
Specific Heat Ratio (Cp/Cv)		1.42		
Density	kg/m ³	15.78		
Press. Differential Ratio Factor (XT)		0.74		
Recovery Factor (FL)		0.92		
Valve Style Modifier (Fd)		0.06		
Number of Cages (If Any)				
Selected CV (VALVE)		48.4		
Calculated CV		43.06		
Calculated / Sel. CV Ratio		0.89		
Flow Regime		Normal		
Valve Opening	%	95.32		
MACH N. at Outlet Connection		0.14		
Valve Outlet Velocity	m/s	79.31		
Pipe Outlet Velocity	m/s	20.7		
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	78.09		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-10254 Dsic	Date	28-10-2016		
Service	SYNTHESIS GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Synthesis Gas	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	4"	8"	
Pipe	Thickness/Schedule	SCH STD	SCH 30	
Valve	Nominal Size	4"	8"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	16000.00		
Inlet Pressure	bar a	15		
Outlet Pressure	bar a	2		
Inlet Temperature	°C	45		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		11.47		
Compressibility Factor (Z)		1		
Specific Heat Ratio (Cp/Cv)		1.42		
Density	kg/m ³	6.50		
Press. Differential Ratio Factor (XT)		0.78		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.30		
Number of Cages (If Any)				
Selected CV (VALVE)		100		
Calculated CV		99.69		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.81		
MACH N. at Outlet Connection		0.27		
Valve Outlet Velocity	m/s	155.24		
Pipe Outlet Velocity	m/s	155.24		
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	<85		

Notes

- 3 stage low noise disc, indicated Cv is combined, 1st stage Cv=108, 2nd stage Cv=275, 3rd stage Cv=615.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-20011
Service HP STEAM TO SIL-4002

Page 1 of 2
Qty 1
User wang.lihua
Date 16/11/08
Quote Line 780000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"		ND 20"	Minimum Temp.		- C
Thickness	SCH 100		SCH STD	Maximum Temp.		- C
Insulation	Insulated			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	W-OtherLiquid
Pressure	140/FV		- bar		State	Gas
Maximum Temp.	540		- C			
Minimum Temp.	-		- C			
Valve				Guiding Cage		
Model	1-6948	Trim	PXLN-E	Sealing seat-plug		Metal to metal
DN IN	6"	OUT	6"	Flow action		To Close
Port	6"			Characteristic		Equalpercentage
Valve Cv	149			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		140 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage - pilot operated					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Welding/BW - ANSI B16.25/2500#				
OUT	6"	Welding/BW - ANSI B16.25/2500#				
Materials				Actuator		
Body	A351 CF8C			Manufacturer	Parcol S.P.A.	
Bonnet	A351 CF8C			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	A 182 F347H Seat joint Stellite			Size	D63	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	-			Spring range	21-42 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Double Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6948D.02..150AS0.0K000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.
- Note 3:** Inlet cone 10"x6" provided, welded to valve body.
- Note 4:** Outlet reduction: DN 6" ANSI 2500 BW x DN 20" ANSI 150 BW.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6948	Reference	1
Tag	30-PV-20011	Date	31-10-2016		
Service	HP STEAM TO SIL-4002	User	Wang Lihua		
Fluid Name	HP Steam	Fluid State	GAS	Trim	PXLN-E

		In	Out	Port
Pipe	Nominal Size	10"	20"	
Pipe	Thickness/Schedule	SCH 100	SCH STD	
Valve	Nominal Size	6"	6"	6"

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	111000.00		
Inlet Pressure	bar a	121		
Outlet Pressure	bar a	40		
Inlet Temperature	°C	520		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.91		
Specific Heat Ratio (Cp/Cv)		1.41		
Density	kg/m ³	36.34		
Press. Differential Ratio Factor (XT)		0.75		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.05		
Number of Cages (If Any)				
Selected CV (VALVE)		149		
Calculated CV		106.37		
Calculated / Sel. CV Ratio		0.71		
Flow Regime		Normal		
Valve Opening	%	81.74		
MACH N. at Outlet Connection		0.19		
Valve Outlet Velocity	m/s	137.67		
Pipe Outlet Velocity	m/s	13.67		
Noise Red. Due To Pipe Insulation	dB(A)	15		
Result SPL	dB(A)	80.01		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-20011 Disc	Date	31-10-2016		
Service	HP STEAM TO SIL-4002	User	Wang Lihua		
Fluid Name	HP Steam	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	10"	20"	
Pipe	Thickness/Schedule	SCH 100	SCH STD	
Valve	Nominal Size	6"	20"	

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	111000.00		
Inlet Pressure	bar a	40		
Outlet Pressure	bar a	1.5		
Inlet Temperature	°C	520		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.91		
Specific Heat Ratio (Cp/Cv)		1.41		
Density	kg/m ³	12.01		
Press. Differential Ratio Factor (XT)		0.67		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.07		
Number of Cages (If Any)				
Selected CV (VALVE)		340		
Calculated CV		338.55		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.83		
MACH N. at Outlet Connection		0.51		
Valve Outlet Velocity	m/s	364.58		
Pipe Outlet Velocity	m/s	364.58		
Noise Red. Due To Pipe Insulation	dB(A)	15		
Result SPL	dB(A)	<85		

Notes

- 3 stage low noise disc, indicated Cv is combined, 1st stage Cv=358, 2nd stage Cv=1150, 3rd stage Cv=3579.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer Bushehr Petrochemical
DSH SQ1401768 **Rev.** 0
TAG 30-PV-20067A
Service WASTE GAS TO E-1007

Page 1 **of** 2
Qty 1
User wang.lihua
Date 14/11/03
Quote Line 790000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 6"		ND 6"	Minimum Temp.		- C	
Thickness	SCH 10S		SCH 10S	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
Pressure	7		-	Fluid		Waste Gas	
Maximum Temp.	100		-	State		Gas	
Minimum Temp.	-		-				
Valve		Model 1-6943	Trim ST-E	Guiding		Cage	
DN IN	4"	OUT	4"	Sealing seat-plug		Metal to metal	
Port	4"			Flow action		To Open	
Valve Cv	178			Characteristic		Equalpercentage	
Stroke	60			Leakage class		IV - FCI 70-2 & IEC 534.4	
Body Type	Globe - Straight			Shut-off pressur		7 bar	
Bonnet Type	Universal			Live Loading		Not provided	
Seat Type	Single			Air failure		Valve close	
Trim Type	Cage			Control signal failure		Fail Safe	
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.		
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm		
Plug	A 479 316L Full Stell.			Model	1-X-290		
Seat	A 479 316L Seat joint Stell.			Size	D46		
Guide/Cage	A 479 316L Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	13-32 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off			
Adjustable limit stop	Opening - %		Closing - %				
Valve Heating	-						
Inlet Devices	-						
Outlet Devices	-						
Valve Code	R6943H04.S100AD00J000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-OEM00-OAA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17129
 Quote Line 790000
 Date 14/11/03

Fluid State Gas
 Fluid Name Waste Gas
 Tag 30-PV-20067A
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH 10S OUT SCH 10S

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	6	6	6
Outlet absolute pressure	bar	5.5	5.5	5.5
Flow Rate	kg/h	2,339	5,848	6,433
Inlet temperature	deg. C	72	72	72
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.32	1.32	1.32
Density	kg/m3	6.0362	6.0362	6.0362
Press. differential ratio factor (X)		0.7592	0.7302	0.7253
Recovery factor (FL)		0.9327	0.9209	0.9189
Valve style modifier (Fd)		0.3012	0.1847	0.1726
Number of cages (if any)				
Selected CV (VALVE)		178		
Calculated CV		51.4135	130.1681	143.628
Calculated / Sel.CV ratio		0.289	0.731	0.807
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	47.27	77.29	82.41
MACH n. at outlet connection		0.0351	0.0877	0.0965
Valve outlet velocity	m/s	12.77	31.93	35.12
Pipe outlet velocity	m/s	5.73	14.33	15.77
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	70.3	74.6	75

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-20067B
Service WASTE GAS TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/08
Quote Line 800000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 6"		ND 6"	Minimum Temp.		- C
Thickness	SCH 10S		SCH 10S	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Waste Gas
Pressure	7	-			State	Gas
Maximum Temp.	100	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Soft Seat
DN IN	4"	OUT	4"	Flow action		To Open
Port	4"			Characteristic		Equalpercentage
Valve Cv	125			Leakage class		VI - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		7 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 351 CF3M			Manufacturer	Parcol S.P.A.	
Bonnet	SA 351 CF3M			Type	Pneumatic Diaphragm	
Plug	A 479 316L Full Stell.			Model	1-X-290	
Seat	A 479 316L			Size	D46	
Guide/Cage	A 479 316L Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	13-32 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	PTFE			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943H08.U100AD00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

Note 1: Provide maximum opening mechanical limit device.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
Reference SQ1401768
Configuration 17130
Quote Line 800000
Date 15/03/11

Fluid State Gas
Fluid Name Waste Gas
Tag 30-PV-20067B
Valve Model 1-6943 **Trim** XLN-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH 10S OUT SCH 10S

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	6	-	-
Outlet absolute pressure	bar	2	-	-
Flow Rate	kg/h	6,500	-	-
Inlet temperature	deg. C	72	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.32	-	-
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7575	-	-
Recovery factor (FL)		0.932	-	-
Valve style modifier (Fd)		0.0574	-	-
Number of cages (if any)				
Selected CV (VALVE)		125		
Calculated CV		70.613	-	-
Calculated / Sel.CV ratio		0.565	-	-
Flow Regime		Normal	-	-
Valve Opening	%	73.76	-	-
MACH n. at outlet connection		0.2681	-	-
Valve outlet velocity	m/s	97.59	-	-
Pipe outlet velocity	m/s	43.81	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	80.5	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-20070B
Service PURGE GAS FROM T-2001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/05/12
Quote Line 810000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 10"	Minimum Temp.		- C
Thickness	SCH XS		SCH 80	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Purge Gas
Pressure	90	-			State	Gas
Maximum Temp.	100	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	4"	OUT	4"	Flow action		To Open
Port	3"			Characteristic		Equalpercentage
Valve Cv	48.4			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	45			Shut-off pressur		90 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	19-47 psi	
Disk stack	-			Supply	60 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S100BF00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-PV-20070B	Date	27-10-2016		
Service	PURGE GAS FROM T-2001	User	Wang Lihua		
Fluid Name	Purge Gas	Fluid State	GAS	Trim	XLN-E

		In	Out	Port
Pipe	Nominal Size	4"	10"	
Pipe	Thickness/Schedule	SCH XS	SCH 80	
Valve	Nominal Size	4"	4"	3"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	39000		
Inlet Pressure	bar a	75.5		
Outlet Pressure	bar a	16		
Inlet Temperature	°C	49		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		29.43		
Compressibility Factor (Z)		1.01		
Specific Heat Ratio (Cp/Cv)		1.43		
Density	kg/m ³	82.14		
Press. Differential Ratio Factor (XT)		0.75		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.07		
Number of Cages (If Any)				
Selected CV (VALVE)		48.4		
Calculated CV		31.10		
Calculated / Sel. CV Ratio		0.64		
Flow Regime		Limit		
Valve Opening	%	82.68		
MACH N. at Outlet Connection		0.21		
Valve Outlet Velocity	m/s	76.67		
Pipe Outlet Velocity	m/s	13.44		
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	78.09		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-20070B Dsic	Date	28-10-2016		
Service	PURGE GAS FROM T-2001	User	Wang Lihua		
Fluid Name	Purge Gas	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	4"	10"	
Pipe	Thickness/Schedule	SCH XS	SCH 80	
Valve	Nominal Size	4"	10"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	39000.00		
Inlet Pressure	bar a	16		
Outlet Pressure	bar a	2		
Inlet Temperature	°C	49		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		29.43		
Compressibility Factor (Z)		1.01		
Specific Heat Ratio (Cp/Cv)		1.43		
Density	kg/m ³	17.41		
Press. Differential Ratio Factor (XT)		0.78		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.31		
Number of Cages (If Any)				
Selected CV (VALVE)		144		
Calculated CV		143.78		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.91		
MACH N. at Outlet Connection		0.30		
Valve Outlet Velocity	m/s	107.52		
Pipe Outlet Velocity	m/s	107.52		
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	<85		

Notes

- 2 stage low noise disc, indicated Cv is combined, 1st stage Cv=151, 2nd stage Cv=504.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-20071
Service WASTE GAS TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/07
Quote Line 820000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 3"		ND 10"	Minimum Temp.		- C
Thickness	SCH XS		SCH 80	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Waste Gas
Pressure	90	-			State	Gas
Maximum Temp.	120	-				
Minimum Temp.	-	-				
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	3"	OUT	3"	Flow action		To Open
Port	2"			Characteristic		Equalpercentage
Valve Cv	37			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	34			Shut-off pressur		90 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	17-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S080CF00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-PV-20071	Date	27-10-2016		
Service	WASTE GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Waste Gas	Fluid State	GAS	Trim	XLN-E

		In	Out	Port
Pipe	Nominal Size	3"	10"	
Pipe	Thickness/Schedule	SCH XS	SCH 80	
Valve	Nominal Size	3"	3"	2"

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	23500		
Inlet Pressure	bar a	75		
Outlet Pressure	bar a	10		
Inlet Temperature	°C	73		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.62		
Compressibility Factor (Z)		1		
Specific Heat Ratio (Cp/Cv)		1.42		
Density	kg/m ³	48.53		
Press. Differential Ratio Factor (XT)		0.75		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.08		
Number of Cages (If Any)				
Selected CV (VALVE)		37		
Calculated CV		24.55		
Calculated / Sel. CV Ratio		0.66		
Flow Regime		Limit		
Valve Opening	%	83.90		
MACH N. at Outlet Connection		0.44		
Valve Outlet Velocity	m/s	205.46		
Pipe Outlet Velocity	m/s	21.79		
Noise Red. Due To Pipe Insulation	dB(A)	5		
Result SPL	dB(A)	83.20		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-20071 Dsic	Date	28-10-2016		
Service	WASTE GAS TO FLARE HEADER	User	Wang Lihua		
Fluid Name	Waste Gas	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	3"	10"	
Pipe	Thickness/Schedule	SCH XS	SCH 80	
Valve	Nominal Size	3"	10"	

Operating Conditions	Unit	Case 1 max	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	23500.00		
Inlet Pressure	bar a	10		
Outlet Pressure	bar a	2		
Inlet Temperature	°C	73		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.62		
Compressibility Factor (Z)		1		
Specific Heat Ratio (Cp/Cv)		1.42		
Density	kg/m ³	6.47		
Press. Differential Ratio Factor (XT)		0.75		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.30		
Number of Cages (If Any)				
Selected CV (VALVE)		184		
Calculated CV		183.96		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.99		
MACH N. at Outlet Connection		0.23		
Valve Outlet Velocity	m/s	108.94		
Pipe Outlet Velocity	m/s	108.94		
Noise Red. Due To Pipe Insulation	dB(A)	5		
Result SPL	dB(A)	<85		

Notes

- 2 stage low noise disc, indicated Cv is combined, 1st stage Cv=190, 2nd stage Cv=738.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 01
TAG 30-PV-20077
Service MP STEAM TO E-1011

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/03/21
Quote Line 830000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"	ND 10"		Minimum Temp.	- C	
Thickness	SCH 80	SCH 80		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
	IN	OUT		Fluid	MP steam	
Pressure	44/FV	-	bar	State	Gas	
Maximum Temp.	260	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	HHST-E	Sealing seat-plug	Metal to metal	
DN	8"	OUT	8"	Flow action	To Open	
Port	8"			Characteristic	Equalpercentage	
Valve Cv	781			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	100			Shut-off pressur	44 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	8"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	8"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 105			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-250	
Seat	AISI 410 35HRC			Size	D63	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	PTFE			Spring range	15-34 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6943A01S2000F00C2.00	Pneumatic Diagram -				

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0- MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17133
 Quote Line 830000
 Date 15/01/08

Fluid State Gas
 Fluid Name MP steam
 Tag 30-PV-20077
 Valve Model 1-6943 Trim HHST-E

Pipe
 Nominal Size IN ND 10" OUT ND 10"
 Thickness / schedule IN SCH 80 OUT SCH 80

Valve
 Nominal Size IN 8" OUT 8" Port 8"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	31.8	31.8	31.8
Outlet absolute pressure	bar	31.5	31.5	31.5
Flow Rate	kg/h	11,323	28,308	31,139
Inlet temperature	deg. C	238	238	238
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.58	1.58	1.58
Density	kg/m3	15.8637	15.8637	15.8637
Press. differential ratio factor (X)		0.765	0.7448	0.7414
Recovery factor (FL)		0.935	0.9269	0.9255
Valve style modifier (Fd)		0.2798	0.2534	0.2525
Number of cages (if any)				
Selected CV (VALVE)		781		
Calculated CV		191.047	480.6625	529.5602
Calculated / Sel.CV ratio		0.245	0.615	0.678
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	39.81	65	68.87
MACH n. at outlet connection		0.0111	0.0278	0.0306
Valve outlet velocity	m/s	6.79	16.98	18.68
Pipe outlet velocity	m/s	4.32	10.81	11.89
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	32.9	34.7	34.9

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-PV-20078			Date	09-10-2016		
Service	MP STEAM TO SIL-2001			Item Code	R6943	Valve No.	2
Design Conditions	In	Out		Ambient			
Pressure	44 bar g/FV			Pressure			
Minimum Temperature				Min. Temp.		Max Temp.	
Maximum Temperature	261 °C			Installation		Haz. Area	
Piping	In	Out		Connections DN		Type/Rating	
Outside Diameter	10"	28"		In	10"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Thickness	SCH 80	33 mm		Out	10"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Insulation	Insulated						
Valve Characteristics							
Model	1-6948			Guiding	Cage		
DN In	10"	DN Out	10"	Sealing Seat-Plug	Metal to Metal		
Trim Code	PLN-E			Flow Action	To Close		
Port	10"			Characteristic	Equal Percentage		
Valve Cv	906	Stroke	150 mm	Leakage Class	VHS ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	44 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Cage - Pilot operated			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-216 WCC			Manufacturer	Parcol S.p.A.		
BONNET	SA 105			Type	Pneumatic Diaphragm		
PLUG	SA-182 F6NM Nitrided			Model	1-X-252		
SEAT	AISI 410 35HRC			Size	D63		
CAGE	SA-487 CA6NM Nitrided			Action	Reverse		
				Spring Range	0.97-1.93 bar		
				Supply	4.14 bar		
Balancing				Handweel	Side Mounted		
Packing	Double Graphite			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimumum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. - Filter Mat: Aluminum -							
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -							
Pneumatic Booster - Model: YT-300 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. -							
Notes							
-Provide maximum opening mechanical limit device.-Low noise disc installed outlet of the valve.							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6948	Reference	1
Tag	30-PV-20078	Date	27-10-2016		
Service	MP STEAM TO SIL-2001	User	Wang Lihua		
Fluid Name	MP Steam	Fluid State	GAS	Trim	PLN-E

		In	Out	Port
Pipe	Nominal Size	10"	28"	
Pipe	Thickness/Schedule	SCH 80	33 mm	
Valve	Nominal Size	10"	10"	10"

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	235000.00		
Inlet Pressure	bar a	30.6		
Outlet Pressure	bar a	17.6		
Inlet Temperature	°C	250		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.87		
Specific Heat Ratio (Cp/Cv)		1.53		
Density	kg/m ³	14.57		
Press. Differential Ratio Factor (XT)		0.76		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.03		
Number of Cages (If Any)				
Selected CV (VALVE)		906		
Calculated CV		753.97		
Calculated / Sel. CV Ratio		0.83		
Flow Regime		Normal		
Valve Opening	%	87.96		
MACH N. at Outlet Connection		0.25		
Valve Outlet Velocity	m/s	153.16		
Pipe Outlet Velocity	m/s	23.84		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	74.04		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-20078 Disc	Date	28-10-2016		
Service	MP STEAM TO SIL-2001	User	Wang Lihua		
Fluid Name	MP Steam	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	10"	28"	
Pipe	Thickness/Schedule	SCH 80	33 mm	
Valve	Nominal Size	10"	28"	

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	235000.00		
Inlet Pressure	bar a	17.6		
Outlet Pressure	bar a	1.5		
Inlet Temperature	°C	250		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.87		
Specific Heat Ratio (Cp/Cv)		1.53		
Density	kg/m ³	8.38		
Press. Differential Ratio Factor (XT)		0.64		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.03		
Number of Cages (If Any)				
Selected CV (VALVE)		1300		
Calculated CV		1298.56		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.92		
MACH N. at Outlet Connection		0.52		
Valve Outlet Velocity	m/s	314.44		
Pipe Outlet Velocity	m/s	279.69		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	84.00		

Notes

- 2 stage low noise disc, indicated Cv is combined, 1st stage Cv=1326, 2nd stage Cv=6483.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-30012A
Service CRUDE METHANOL TO FLARE

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 850000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 6"	ND 8"		Minimum Temp.	- C		
Thickness	SCH STD	SCH 20		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				IN	OUT	Haz. Area Other	
Pressure	3.5/FV	-	bar			Fluid Crude Methanol	
Maximum Temp.	120	-	C			State Gas	
Minimum Temp.	-	-	C				
Valve				Model	1-6943	Trim ST-E	
DN	IN 8"	OUT 8"		Guiding	Cage		
Port	8"			Sealing seat-plug	Soft Seat		
Valve Cv	555			Flow action	To Open		
Stroke	76			Characteristic	Equalpercentage		
Body Type	Globe - Straight			Leakage class	VI - FCI 70-2 & IEC 534.4		
Bonnet Type	Universal			Shut-off pressur	3.5 bar		
Seat Type	Single			Live Loading	Not provided		
Trim Type	Cage			Air failure	Valve close		
				Control signal failure	Fail Safe		
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	8"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316			Model	1-X-290		
Seat	A 479 316			Size	D63		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	10-28 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	PTFE			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %	Closing - %		<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A03U200AD00K2.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17136
 Quote Line 850000
 Date 15/01/16

Fluid State Gas
 Fluid Name Crude Methanol
 Tag 30-PV-30012A
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 8"
 Thickness / schedule IN SCH STD OUT SCH 20

Valve
 Nominal Size IN 8" OUT 8" Port 8"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	1.6	-	-
Outlet absolute pressure	bar	1.4	-	-
Flow Rate	kg/h	8,000	-	-
Inlet temperature	deg. C	45	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.26	-	-
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7063	-	-
Recovery factor (FL)		0.911	-	-
Valve style modifier (Fd)		0.2646	-	-
Number of cages (if any)				
Selected CV (VALVE)		555		
Calculated CV		446.5369	-	-
Calculated / Sel.CV ratio		0.805	-	-
Flow Regime		Normal	-	-
Valve Opening	%	84.1	-	-
MACH n. at outlet connection		0.1071	-	-
Valve outlet velocity	m/s	30.78	-	-
Pipe outlet velocity	m/s	30.78	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	73.8	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer Bushehr Petrochemical
DSH SQ1401768 **Rev.** 0
TAG 30-PV-30012B
Service BYPASS LINE FOR 30-J-1001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 14/12/29
Quote Line 860000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 8"		ND 14"	Minimum Temp.		- C
Thickness	SCH XS		SCH 80	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
Pressure	90		-	Fluid		Waste Gas
Maximum Temp.	120		-	State		Gas
Minimum Temp.	-		-			
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	6"	OUT	6"	Flow action		To Open
Port	3"			Characteristic		Equalpercentage
Valve Cv	48.4			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	45			Shut-off pressur		90 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Locked (Open)
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Direct	
Balancing	PTFE			Spring range	5-19 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A04S150DF00H000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT4 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer Bushehr Petrochemical
 Reference SQ1401768
 Configuration 17137
 Quote Line 860000
 Date 14/12/29

Fluid State Gas
 Fluid Name Waste Gas
 Tag 30-PV-30012B
 Valve Model 1-6943 Trim XLN-E

Pipe
 Nominal Size IN ND 8" OUT ND 14"
 Thickness / schedule IN SCH XS OUT SCH 80

Valve
 Nominal Size IN 6" OUT 6" Port 3"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	74.5	74.5	74.5
Outlet absolute pressure	bar	5	5	5
Flow Rate	kg/h	8,489	21,222	23,344
Inlet temperature	deg. C	90	90	90
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.42	1.42	1.42
Density	kg/m3	45.9452	45.9452	45.9452
Press. differential ratio factor (X)		0.7712	0.7594	0.7575
Recovery factor (FL)		0.9375	0.9328	0.932
Valve style modifier (Fd)		0.1399	0.0861	0.0824
Number of cages (if any)				
Selected CV (VALVE)		48.4		
Calculated CV		9.0101	22.7004	25.0032
Calculated / Sel.CV ratio		0.186	0.469	0.517
Flow Regime		Limit	Limit	Limit
Valve Opening -	%	45.04	71.13	74.4
MACH n. at outlet connection		0.0947	0.2368	0.2605
Valve outlet velocity	m/s	45.45	113.63	124.99
Pipe outlet velocity	m/s	9.66	24.15	26.56
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	77.9	81.9	82.4

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-30041A
Service FLARE GAS TO FLARE HEADER

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/08
Quote Line 870000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 6"	Minimum Temp.		- C
Thickness	SCH STD		SCH STD	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	Flare Gas
Pressure	10/FV		-		State	Gas
Maximum Temp.	150		-			
Minimum Temp.	-		-			
Valve		Model 1-6943	Trim LN-E	Guiding	Cage	
DN	IN 4"		OUT 4"	Sealing seat-plug	Metal to metal	
	Port 3"			Flow action	To Open	
Valve Cv	112			Characteristic	Equalpercentage	
Stroke	45			Leakage class	VHS - FCI 70-2 & IEC 534.4	
Body Type	Globe - Straight			Shut-off pressur	10 bar	
Bonnet Type	Universal			Live Loading	Not provided	
Seat Type	Single			Air failure	Locked (Close)	
Trim Type	Low Noise Cage			Control signal failure	Fail Safe	
Connections						
		DN	Type / Rating / Sealing-Finish			
	IN	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH			
	OUT	4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH			
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 479 316 Full Stellite			Model	1-X-290	
Seat	A 479 316 Seat Joint Stellite			Size	D39	
Guide/Cage	A 479 316 Cr plated			Action	Reverse	
Balancing	PTFE			Spring range	13-31 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	Side mounted	
Bellows	-			Yoke material	Carbon steel	
Packing	Reinforced teflon					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A04S100BD00H2.00			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -

Comments

Note 1: Provide maximum opening mechanical limit device.



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17138
 Quote Line 870000
 Date 15/05/13

Fluid State Gas
 Fluid Name Flare Gas
 Tag 30-PV-30041A
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 4" OUT ND 6"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 4" OUT 4" Port 3"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	7.9	-	-
Outlet absolute pressure	bar	2	-	-
Flow Rate	kg/h	6,860	-	-
Inlet temperature	deg. C	129	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.25	-	-
Density	kg/m3	8.2287	-	-
Press. differential ratio factor (X)		0.7642	-	-
Recovery factor (FL)		0.9347	-	-
Valve style modifier (Fd)		0.0711	-	-
Number of cages (if any)				
Selected CV (VALVE)		112		
Calculated CV		56.7567	-	-
Calculated / Sel.CV ratio		0.507	-	-
Flow Regime		Limit	-	-
Valve Opening	%	72.62	-	-
MACH n. at outlet connection		0.3084	-	-
Valve outlet velocity	m/s	111.37	-	-
Pipe outlet velocity	m/s	49.04	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	82.9	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-30041B
Service PRODUCT METHANOL TO D-3003

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/01/06
Quote Line 880000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 6"		ND 6"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Refined Methanol	
Pressure	10/FV	-		bar	State	Gas	
Maximum Temp.	190	-		C			
Minimum Temp.	-			C			
Valve				Guiding Cage			
Model	1-6943		Trim ST-E	Sealing seat-plug		Soft Seat	
DN IN	4"		OUT 4"	Flow action		To Open	
Port	4"			Characteristic		Equalpercentage	
Valve Cv	178			Leakage class		VI - FCI 70-2 & IEC 534.4	
Stroke	60			Shut-off pressur		10 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Locked (Close)	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Cage						
Connections							
		DN	Type / Rating / Sealing-Finish				
IN		4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT		4"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316			Model	1-X-290		
Seat	A 479 316			Size	D46		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	13-32 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	PTFE			Handwheel	Side mounted		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A03U100AD00J2.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Lock-up - QTY: 1 - PROD: YTC - MODEL: YT-400 - MATERIAL: Aluminum - ATEX: None - CONN: Pn. 1/4in. -



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17139
 Quote Line 880000
 Date 15/01/16

Fluid State Gas
 Fluid Name Refined Methano
 Tag 30-PV-30041B
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	8.5	-	-
Outlet absolute pressure	bar	8.1	-	-
Flow Rate	kg/h	6,860	-	-
Inlet temperature	deg. C	130	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.25	-	-
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7267	-	-
Recovery factor (FL)		0.9195	-	-
Valve style modifier (Fd)		0.1763	-	-
Number of cages (if any)				
Selected CV (VALVE)		178		
Calculated CV		139.6579	-	-
Calculated / Sel.CV ratio		0.785	-	-
Flow Regime		Normal	-	-
Valve Opening	%	80.59	-	-
MACH n. at outlet connection		0.0762	-	-
Valve outlet velocity	m/s	27.57	-	-
Pipe outlet velocity	m/s	12.14	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	62.5	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-30046A
Service NITROGEN TO D-3004

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/08
Quote Line 890000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 2"		ND 2"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	NITROGEN	
Pressure	10.5/FV	-			State	Gas	
Maximum Temp.	85	-					
Minimum Temp.	-						
Valve				Guiding Cage			
Model	1-6943	Trim	LN-E	Sealing seat-plug		Soft Seat	
DN IN	2"	OUT	2"	Flow action		To Open	
Port	1"			Characteristic		Equalpercentage	
Valve Cv	15.8			Leakage class		VI - FCI 70-2 & IEC 534.4	
Stroke	34			Shut-off pressur		10.5 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve close	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Low Noise Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316			Model	1-X-290		
Seat	A 479 316			Size	D39		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	-			Spring range	17-30 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	PTFE			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A03P050DD00H000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17140
 Quote Line 890000
 Date 15/01/16

Fluid State Gas
 Fluid Name Nitrogen
 Tag 30-PV-30046A
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 2" OUT ND 2"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 2" OUT 2" Port 1"

	Unit	Case 1 nor	Case 2 -	Case 3 max
Inlet absolute pressure	bar	7.5	-	7.5
Outlet absolute pressure	bar	1.5	-	1.6
Flow Rate	kg/h	810	-	975
Inlet temperature	deg. C	40	-	40
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.41	-	1.41
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7678	-	0.7658
Recovery factor (FL)		0.9362	-	0.9353
Valve style modifier (Fd)		0.1888	-	0.1722
Number of cages (if any)				
Selected CV (VALVE)		15.8		
Calculated CV		6.5025	-	7.8377
Calculated / Sel.CV ratio		0.412	-	0.496
Flow Regime		Limit	-	Limit
Valve Opening	%	61.27	-	66.86
MACH n. at outlet connection		0.178	-	0.2009
Valve outlet velocity	m/s	64.46	-	72.74
Pipe outlet velocity	m/s	64.41	-	72.68
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	82.2	-	82.8

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-30046B
Service PRODUCT METHANOL FROM D-3004

Page 1 **of** 2

Qty 1
User wang.lihua
Date 16/01/08
Quote Line 900000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 4"		ND 4"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Refined Methanol	
Pressure	3.5/FV	-			State	Gas	
Maximum Temp.	120	-					
Minimum Temp.	-						
Valve				Guiding Cage			
Model	1-6943		Trim ST-L	Sealing seat-plug		Soft Seat	
DN IN	3"		OUT 3"	Flow action		To Open	
Port	3"			Characteristic		Linear	
Valve Cv	130			Leakage class		VI - FCI 70-2 & IEC 534.4	
Stroke	45			Shut-off pressur		3.5 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve close	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	3"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	3"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316			Model	1-X-290		
Seat	A 479 316			Size	D39		
Guide/Cage	A 479 316 Cr plated			Action	Reverse		
Balancing	PTFE			Spring range	13-31 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	PTFE			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A03U080AD00H2.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17141
 Quote Line 900000
 Date 16/01/08

Fluid State Gas
 Fluid Name Refined Methano
 Tag 30-PV-30046B
 Valve Model 1-6943 Trim ST-L

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 3" OUT 3" Port 3"

	Unit	Case 1 nor	Case 2 -	Case 3 max
Inlet absolute pressure	bar	1.5	-	1.5
Outlet absolute pressure	bar	1.4	-	1.4
Flow Rate	kg/h	927	-	1,112
Inlet temperature	deg. C	75	-	75
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.23	-	1.23
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7424	-	0.7352
Recovery factor (FL)		0.9259	-	0.923
Valve style modifier (Fd)		0.177	-	0.1467
Number of cages (if any)				
Selected CV (VALVE)		130		
Calculated CV		86.4674	-	104.3349
Calculated / Sel.CV ratio		0.665	-	0.803
Flow Regime		Normal	-	Normal
Valve Opening	%	54.7	-	73.28
MACH n. at outlet connection		0.1024	-	0.1229
Valve outlet velocity	m/s	34.15	-	40.96
Pipe outlet velocity	m/s	19.81	-	23.77
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	56.4	-	58

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-40002A
Service LP STEAM TO DA-4001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 1020000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"	ND 4"		Minimum Temp.	- C	
Thickness	SCH STD	SCH STD		Maximum Temp.	- C	
Insulation	Not Known			Installation	Not Known	
Design Conditions				Haz. Area Other		
	IN	OUT		Fluid	LP steam	
Pressure	8/FV	-	bar	State	Gas	
Maximum Temp.	300	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	LN-E	Sealing seat-plug	Metal to metal	
DN IN	2"	OUT	2"	Flow action	To Open	
Port	1.1/2"			Characteristic	Equalpercentage	
Valve Cv	38			Leakage class	IV - FCI 70-2 & IEC 534.4	
Stroke	34			Shut-off pressur	8 bar	
Body Type	Globe - Straight			Live Loading	Not provided	
Bonnet Type	Universal			Air failure	Valve close	
Seat Type	Single			Control signal failure	Fail Safe	
Trim Type	Low Noise Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	AISI 410 35HRC			Size	D39	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	-			Spring range	17-30 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A01N050BD00H2.00			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

Note 1:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17614
 Quote Line 1020000
 Date 15/07/15

Fluid State Gas
 Fluid Name LP steam
 Tag 30-PV-40002A
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 2" OUT 2" Port 1.1/2"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	6.5	6.5	6.5
Outlet absolute pressure	bar	2.8	2.8	2.8
Flow Rate	kg/h	482	1,206	1,600
Inlet temperature	deg. C	241	241	241
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.34	1.34	1.34
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7762	0.7741	0.7729
Recovery factor (FL)		0.9395	0.9386	0.9382
Valve style modifier (Fd)		0.2014	0.1228	0.1041
Number of cages (if any)				
Selected CV (VALVE)		38		
Calculated CV		7.3441	18.5231	24.7537
Calculated / Sel.CV ratio		0.193	0.487	0.651
Flow Regime		Normal	Normal	Normal
Valve Opening	%	44.12	67.74	78.57
MACH n. at outlet connection		0.0902	0.2257	0.2995
Valve outlet velocity	m/s	50.87	127.27	168.85
Pipe outlet velocity	m/s	13.39	33.49	44.44
Noise red. due to pipe insulati	dB (A)	0	0	0
Resulting SPL	dB (A)	70.5	74.6	76.1

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-40002B
Service LP STEAM TO DA-4001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 910000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 10"		ND 14"	Minimum Temp.		- C
Thickness	SCH 20		SCH 10	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	LP steam
Pressure	8/FV	-	bar	State		Gas
Maximum Temp.	300	-	C			
Minimum Temp.	-	-	C			
Valve				Guiding Cage		
Model	1-6943	Trim	XLN-E	Sealing seat-plug		Metal to metal
DN IN	10"	OUT	10"	Flow action		To Open
Port	10"			Characteristic		Equalpercentage
Valve Cv	468			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	100			Shut-off pressur		8 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Low noise cage S					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	10"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-250	
Seat	AISI 410 35HRC			Size	D63	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	Carbon Graphite			Spring range	15-34 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/>	PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/>	Vacuum Service	
Valve Heating	-			<input type="checkbox"/>	NACE	<input type="checkbox"/> External
Inlet Devices	-			<input type="checkbox"/>	Hydraulic speed ctrl.	
Outlet Devices	-			<input type="checkbox"/>	Leak-off	
Valve Code	R6943A01D250AD00C2.00			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:
- 3- TYPE: Pneumatic Booster - QTY: 1 - PROD: YTC - MODEL: YT-300 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv:

Comments

Note 1:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17142
 Quote Line 910000
 Date 16/01/06

Fluid State Gas
 Fluid Name LP steam
 Tag 30-PV-40002B
 Valve Model 1-6943 Trim XLN-E

Pipe
 Nominal Size IN ND 10" OUT ND 14"
 Thickness / schedule IN SCH 20 OUT SCH 10

Valve
 Nominal Size IN 10" OUT 10" Port 10"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	3.5	6.5	6.3
Outlet absolute pressure	bar	2.8	3.5	2.8
Flow Rate	kg/h	4,800	11,988	22,752
Inlet temperature	deg. C	241	241	241
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.34	1.34	1.34
Density	kg/m3	1.5211	2.8249	2.7379
Press. differential ratio factor (X)		0.7622	0.7618	0.7471
Recovery factor (FL)		0.9339	0.9338	0.9278
Valve style modifier (Fd)		0.0457	0.0453	0.0326
Number of cages (if any)				
Selected CV (VALVE)		468		
Calculated CV		187.5321	191.1785	363.3044
Calculated / Sel.CV ratio		0.401	0.409	0.776
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	61.56	62.08	87.82
MACH n. at outlet connection		0.0357	0.0713	0.1692
Valve outlet velocity	m/s	20.13	40.22	95.42
Pipe outlet velocity	m/s	11.87	23.71	56.24
Noise red. due to pipe insulati	dB (A)	0	0	0
Resulting SPL	dB (A)	62.8	76.6	81.6

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-PV-40048			Date	24-10-2016		
Service	MP STEAM TO SIL-4003			Item Code	R6948	Valve No.	1
Design Conditions	In	Out		Ambient			
Pressure	57 bar g/FV			Pressure			
Minimum Temperature				Min. Temp.		Max Temp.	
Maximum Temperature	425 °C			Installation		Haz. Area	
Piping	In	Out		Connections DN		Type/Rating	
Outside Diameter	16"	32"		In	12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Thickness	SCH 80	37 mm		Out	12"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Insulation	Insulated						
Valve Characteristics							
Model	1-6948			Guiding	Cage		
DN In	12"	DN Out	12"	Sealing Seat-Plug	Metal to Metal		
Trim Code	PLN-E			Flow Action	To Close		
Port	12"			Characteristic	Equal Percentage		
Valve Cv	908	Stroke	120 mm	Leakage Class	VHS ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	57 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Cage - Pilot operated			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-216 WCC			Manufacturer	Parcol S.p.A.		
BONNET	SA-216 WCC			Type	Pneumatic Diaphragm		
PLUG	SA-182 F6NM Nitrided			Model	1-X-292		
SEAT	SA-182 F6NM Seat joint Stellit			Size	D63		
CAGE	SA-487 CA6NM Nitrided			Action	Reverse		
				Spring Range	1.31-2.76 bar		
				Supply	4.14 bar		
Balancing				Handweel	Side Mounted		
Packing	Double Graphite			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimimum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. - Filter Mat: Aluminum -							
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -							
Pneumatic Booster - Model: YT-300 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. -							
Notes							
-Provide maximum opening mechanical limit device.-Low noise disc installed outlet of the valve.							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6948	Reference	1
Tag	30-PV-40048	Date	27-10-2016		
Service	MP STEAM TO SIL-4003	User	Wang Lihua		
Fluid Name	MP Steam	Fluid State	GAS	Trim	PLN-E

		In	Out	Port
Pipe	Nominal Size	16"	32"	
Pipe	Thickness/Schedule	SCH 80	37 mm	
Valve	Nominal Size	12"	12"	12"

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	290000.00		
Inlet Pressure	bar a	51		
Outlet Pressure	bar a	22		
Inlet Temperature	°C	410		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.93		
Specific Heat Ratio (Cp/Cv)		1.38		
Density	kg/m ³	17.40		
Press. Differential Ratio Factor (XT)		0.76		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.04		
Number of Cages (If Any)				
Selected CV (VALVE)		908		
Calculated CV		636.51		
Calculated / Sel. CV Ratio		0.70		
Flow Regime		Normal		
Valve Opening	%	78.84		
MACH N. at Outlet Connection		0.24		
Valve Outlet Velocity	m/s	157.76		
Pipe Outlet Velocity	m/s	25.02		
Noise Red. Due To Pipe Insulation	dB(A)	15		
Result SPL	dB(A)	76.18		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-40048 Dsic	Date	28-10-2016		
Service	MP STEAM TO SIL-4003	User	Wang Lihua		
Fluid Name	MP Steam	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	16"	32"	
Pipe	Thickness/Schedule	SCH 80	37 mm	
Valve	Nominal Size	12"	32"	

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	290000.00		
Inlet Pressure	bar a	22		
Outlet Pressure	bar a	1.5		
Inlet Temperature	°C	410		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.93		
Specific Heat Ratio (Cp/Cv)		1.38		
Density	kg/m ³	7.51		
Press. Differential Ratio Factor (XT)		0.74		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.03		
Number of Cages (If Any)				
Selected CV (VALVE)		1500		
Calculated CV		1498.35		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Limit		
Valve Opening	%	99.93		
MACH N. at Outlet Connection		0.48		
Valve Outlet Velocity	m/s	317.98		
Pipe Outlet Velocity	m/s	367.02		
Noise Red. Due To Pipe Insulation	dB(A)	15		
Result SPL	dB(A)	84.55		

Notes

- 3 stage low noise disc, indicated Cv is combined, 1st stage Cv=1545, 2nd stage Cv=7317, 3rd stage Cv=13454.

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-PV-40053			Date	13-10-2016		
Service	LP STEAM TO SIL-4004			Item Code	R6948	Valve No.	1
Design Conditions	In	Out		Ambient			
Pressure	8 bar g/FV			Pressure			
Minimum Temperature				Min. Temp.		Max Temp.	
Maximum Temperature	300 °C			Installation		Haz. Area	
Piping	In	Out		Connections DN		Type/Rating	
Outside Diameter	18"		28"	In	16"	Flanged / ANSI B16.5 / 300# / RF - 125-250 AARH	
Thickness	SCH 20		SCH XS	Out	16"	Flanged / ANSI B16.5 / 300# / RF - 125-250 AARH	
Insulation	Insulated						
Valve Characteristics							
Model	1-6948			Guiding	Cage		
DN In	16"	DN Out	16"	Sealing Seat-Plug	Metal to Metal		
Trim Code	PLN-E			Flow Action	To Close		
Port	16"			Characteristic	Equal Percentage		
Valve Cv	1920	Stroke	200 mm	Leakage Class	VHS ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	8 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Cage - Pilot operated			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-216 WCC			Manufacturer	Parcol S.p.A.		
BONNET	SA-216 WCC			Type	Pneumatic Diaphragm		
PLUG	SA-182 F6NM Nitrided			Model	1-X-252		
SEAT	AISI 410 35HRC			Size	D63		
CAGE	SA-487 CA6NM Nitrided			Action	Reverse		
				Spring Range	10-29 psi		
				Supply	60 psi		
Balancing				Handweel	Side Mounted		
Packing	Double Graphite			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimumum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC - IP: IP65 - Connections: Pn. 1/4in. - Filter Mat.: Aluminum -				Quantity	1	Tag	
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS - IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -				Quantity	1	Tag	
Pneumatic Booster - Model: YT-300 - Manufacturer: YTC - IP: IP65 - Connections: Pn. 1/4in. -				Quantity	1	Tag	
Notes							
-Provide maximum opening mechanical limit device.-Low noise disc installed outlet of the valve.							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6948	Reference	1
Tag	30-PV-40053	Date	27-10-2016		
Service	LP STEAM TO SIL-4004	User	Wang Lihua		
Fluid Name	LP Steam	Fluid State	GAS	Trim	PLN-E

		In	Out	Port
Pipe	Nominal Size	18"	28"	
Pipe	Thickness/Schedule	SCH 20	SCH XS	
Valve	Nominal Size	16"	16"	16"

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	88000.00		
Inlet Pressure	bar a	6.5		
Outlet Pressure	bar a	2.6		
Inlet Temperature	°C	280		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.98		
Specific Heat Ratio (Cp/Cv)		1.33		
Density	kg/m ³	2.60		
Press. Differential Ratio Factor (XT)		0.76		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.03		
Number of Cages (If Any)				
Selected CV (VALVE)		1920		
Calculated CV		1400.42		
Calculated / Sel. CV Ratio		0.73		
Flow Regime		Normal		
Valve Opening	%	82.98		
MACH N. at Outlet Connection		0.33		
Valve Outlet Velocity	m/s	193.16		
Pipe Outlet Velocity	m/s	63.7		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	84.53		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-40053 Dsic	Date	28-10-2016		
Service	LP STEAM TO SIL-4004	User	Wang Lihua		
Fluid Name	LP Steam	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	18"	28"	
Pipe	Thickness/Schedule	SCH 20	SCH XS	
Valve	Nominal Size	16"	28"	

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	88000.00		
Inlet Pressure	bar a	2.6		
Outlet Pressure	bar a	1.5		
Inlet Temperature	°C	280		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.98		
Specific Heat Ratio (Cp/Cv)		1.33		
Density	kg/m ³	1.04		
Press. Differential Ratio Factor (XT)		0.87		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.02		
Number of Cages (If Any)				
Selected CV (VALVE)		3850		
Calculated CV		3849.03		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Normal		
Valve Opening	%	99.98		
MACH N. at Outlet Connection		0.19		
Valve Outlet Velocity	m/s	110.41		
Pipe Outlet Velocity	m/s	110.41		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	74.95		

Notes

- 1 stage low noise disc.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-40058
Service MP STEAM TO SIL-4001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/05
Quote Line 940000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 3"		ND 6"	Minimum Temp.		- C
Thickness	SCH 10S		SCH 40S	Maximum Temp.		- C
Insulation	Insulated			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	MP steam
Pressure	57/FV	-		bar	State	Gas
Maximum Temp.	425	-		C		
Minimum Temp.	-	-		C		
Valve				Guiding Cage		
Model	1-6948	Trim	PXLN-E	Sealing seat-plug		Metal to metal
DN IN	2"	OUT	2"	Flow action		To Close
Port	2"			Characteristic		Equalpercentage
Valve Cv	38			Leakage class		VHS - FCI 70-2 & IEC 534.4
Stroke	34			Shut-off pressur		57 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage - pilot operated					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	A351 CF8C			Manufacturer		Parcol S.P.A.
Bonnet	A351 CF8C			Type		Pneumatic Diaphragm
Plug	A 182 F347 Full Stellite gr.6			Model		1-X-290
Seat	A 182 F347 Seat joint Stellite			Size		D46
Guide/Cage	A 182 F347 Cr plated			Action		Reverse
Balancing	-			Spring range		24-44 psi
Disk stack	-			Supply		60 psi
Plug/seat insert	-			Handwheel		Side mounted
Bellows	-			Yoke material		Carbon steel
Packing	Double Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %		Closing - %			
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6948D.02.050A.F00J000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:

Comments

- Note 1:** Provide maximum opening mechanical limit device.
- Note 2:** Low noise disc installed outlet of the valve.

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6948	Reference	1
Tag	30-PV-40058	Date	27-10-2016		
Service	MP STEAM TO SIL-4001	User	Wang Lihua		
Fluid Name	MP Steam	Fluid State	GAS	Trim	PXLN-E

		In	Out	Port
Pipe	Nominal Size	3"	6"	
Pipe	Thickness/Schedule	SCH 10S	SCH 40S	
Valve	Nominal Size	2"	2"	2"

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	6000		
Inlet Pressure	bar a	47.8		
Outlet Pressure	bar a	5		
Inlet Temperature	°C	275		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.84		
Specific Heat Ratio (Cp/Cv)		1.32		
Density	kg/m ³	22.50		
Press. Differential Ratio Factor (XT)		0.77		
Recovery Factor (FL)		0.94		
Valve Style Modifier (Fd)		0.12		
Number of Cages (If Any)				
Selected CV (VALVE)		38.0		
Calculated CV		11.82		
Calculated / Sel. CV Ratio		0.31		
Flow Regime		Limit		
Valve Opening	%	56.83		
MACH N. at Outlet Connection		0.38		
Valve Outlet Velocity	m/s	179.38		
Pipe Outlet Velocity	m/s	37.98		
Noise Red. Due To Pipe Insulation	dB(A)	8		
Result SPL	dB(A)	82.1		

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	Plate	Reference	1
Tag	30-PV-40058 Dsic	Date	28-10-2016		
Service	MP STEAM TO SIL-4001	User	Wang Lihua		
Fluid Name	MP Steam	Fluid State	GAS	Trim	LN-MH

		In	Out	Port
Pipe	Nominal Size	3"	6"	
Pipe	Thickness/Schedule	SCH 10S	SCH 40S	
Valve	Nominal Size	2"	6"	

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	6000.00		
Inlet Pressure	bar a	5		
Outlet Pressure	bar a	1.5		
Inlet Temperature	°C	275		
Saturation Temp. at Inlet	°C			
Molecular Mass (M)		18.02		
Compressibility Factor (Z)		0.84		
Specific Heat Ratio (Cp/Cv)		1.32		
Density	kg/m ³	2.35		
Press. Differential Ratio Factor (XT)		0.78		
Recovery Factor (FL)		0.93		
Valve Style Modifier (Fd)		0.28		
Number of Cages (If Any)				
Selected CV (VALVE)		112		
Calculated CV		111.83		
Calculated / Sel. CV Ratio		1.00		
Flow Regime		Normal		
Valve Opening	%	99.89		
MACH N. at Outlet Connection		0.22		
Valve Outlet Velocity	m/s	126.60		
Pipe Outlet Velocity	m/s	126.6		
Noise Red. Due To Pipe Insulation	dB(A)	10		
Result SPL	dB(A)	83.52		

Notes

- 2 stage low noise disc, indicated Cv is combined, 1st stage Cv=119, 2nd stage Cv=334.



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-PV-83002
Service BACK-UP NATURAL GAS LINE

Page 1 **of** 2
Qty 1
User wang.lihua
Date 30/06/16
Quote Line 950000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 2"		ND 2"	Minimum Temp.		- C	
Thickness	SCH XS		SCH XS	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	Natural Gas	
Pressure	7	-			State	Gas	
Maximum Temp.	100	-					
Minimum Temp.	-						
Valve				Guiding Top			
Model	1-6941	Trim	CP-E	Sealing seat-plug		Metal to metal	
DN IN	1"	OUT	1"	Flow action		To Open	
Port	12mm			Characteristic		Equalpercentage	
Valve Cv	4			Leakage class		IV - FCI 70-2 & IEC 534.4	
Stroke	17			Shut-off pressur		7 bar	
Body Type	Globe - Straight			Live Loading		Not provided	
Bonnet Type	Universal			Air failure		Valve open	
Seat Type	Single			Control signal failure		Fail Safe	
Trim Type	Contoured						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	1"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	1"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	A 182 F6NM Full Stellite			Size	D25		
Guide/Cage	-			Action	Direct		
Balancing	-			Spring range	4-18 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off			
Adjustable limit stop	Opening - %		Closing - %				
Valve Heating	-						
Inlet Devices	-						
Outlet Devices	-						
Valve Code	R6941A15N025ED0F0000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17146
 Quote Line 950000
 Date 15/01/12

Fluid State Gas
 Fluid Name Natural Gas
 Tag 30-PV-83002
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 2" OUT ND 2"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 1" OUT 1" Port 12mm

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	5.5	5.5	5.5
Outlet absolute pressure	bar	1	1	1
Flow Rate	kg/h	33	75	82.5
Inlet temperature	deg. C	36	36	36
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.38	1.38	1.38
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.8766	0.8304	0.8227
Recovery factor (FL)		0.969	0.9544	0.9521
Valve style modifier (Fd)		0.1285	0.2016	0.2128
Number of cages (if any)				
Selected CV (VALVE)		4		
Calculated CV		0.4387	1.0238	1.1311
Calculated / Sel.CV ratio		0.11	0.256	0.283
Flow Regime		Normal	Normal	Limit
Valve Opening -	%	52.15	72.24	74.49
MACH n. at outlet connection		0.0641	0.1456	0.1602
Valve outlet velocity	m/s	30.16	68.56	75.41
Pipe outlet velocity	m/s	7.36	16.72	18.4
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	73.6	80.8	81.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-TV-10016
Service LP STEAM TO E-1016

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 960000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 2"		ND 2"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	LP steam
Pressure	8/FV	-		bar	State	Gas
Maximum Temp.	300	-		C		
Minimum Temp.	-			C		
Valve				Guiding Top		
Model	1-6941	Trim	CP-E	Sealing seat-plug		Metal to metal
DN IN	1.1/2"	OUT	1.1/2"	Flow action		To Open
Port	1.1/4"			Characteristic		Equalpercentage
Valve Cv	22			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	25			Shut-off pressur		8 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Contoured					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	1.1/2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
OUT	1.1/2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	AISI 410 35HRC			Size	D33	
Guide/Cage	-			Action	Reverse	
Balancing	-			Spring range	15-29 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %		Closing - %			
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6941A02N040BD0G2000			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17147
 Quote Line 960000
 Date 15/01/12

Fluid State Gas
 Fluid Name LP steam
 Tag 30-TV-10016
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 2" OUT ND 2"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 1.1/2" OUT 1.1/2" Port 1.1/4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	6.5	6.5	6.5
Outlet absolute pressure	bar	6	6	6
Flow Rate	kg/h	70	213	235
Inlet temperature	deg. C	241	241	241
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.34	1.34	1.34
Density	kg/m3	2.8249	2.8249	2.8249
Press. differential ratio factor (X)		0.877	0.8177	0.8085
Recovery factor (FL)		0.9634	0.9465	0.9439
Valve style modifier (Fd)		0.1239	0.2251	0.2376
Number of cages (if any)		22		
Selected CV (VALVE)		2.2258	6.7956	7.5024
Calculated CV		0.101	0.309	0.341
Calculated / Sel.CV ratio				
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	46.1	71.66	73.4
MACH n. at outlet connection		0.0116	0.0352	0.0389
Valve outlet velocity	m/s	6.53	19.86	21.91
Pipe outlet velocity	m/s	3.92	11.94	13.17
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	50	55.8	56.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
 DSH SQ1401768 Rev. 0
 TAG 30-TV-10038
 Service MP STEAM TO E-1011

Page 1 of 2
 Qty 1
 User wang.lihua
 Date 15/01/12
 Quote Line 970000

Piping		IN	OUT	Ambient		Pressure	1 bar
Diameter	ND 8"	ND 8"		Minimum Temp.	- C		
Thickness	SCH XS	SCH XS		Maximum Temp.	- C		
Insulation	Not Known			Installation	Not Known		
Design Conditions				Haz. Area		Other	
Pressure	57/FV	-	bar	Fluid	MP steam		
Maximum Temp.	425	-	C	State	Gas		
Minimum Temp.	-	-	C				
Valve				Guiding		Cage	
Model	1-6943	Trim	LN-E	Sealing seat-plug	Metal to metal		
DN IN	4"	OUT	4"	Flow action	To Open		
Port	3"			Characteristic	Equalpercentage		
Valve Cv	112			Leakage class	V - FCI 70-2 & IEC 534.4		
Stroke	45			Shut-off pressur	57 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Valve close		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Low Noise Cage						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
OUT	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	AISI 410 35HRC			Size	D39		
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse		
Balancing	Inconel			Spring range	19-47 psi		
Disk stack	-			Supply	60 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Double Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off			
Adjustable limit stop	Opening - %	Closing - %					
Valve Heating	-						
Inlet Devices	-						
Outlet Devices	-						
Valve Code	R6943A01R100BF00H000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17148
 Quote Line 970000
 Date 15/01/12

Fluid State Gas
 Fluid Name MP steam
 Tag 30-TV-10038
 Valve Model 1-6943 Trim LN-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 4" OUT 4" Port 3"

	Unit	Case 1 max	Case 2 -	Case 3 -
Inlet absolute pressure	bar	51	-	-
Outlet absolute pressure	bar	32	-	-
Flow Rate	kg/h	24,400	-	-
Inlet temperature	deg. C	398	-	-
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.39	-	-
Density	kg/m3	17.7097	-	-
Press. differential ratio factor (X)		0.7638	-	-
Recovery factor (FL)		0.9345	-	-
Valve style modifier (Fd)		0.07	-	-
Number of cages (if any)				
Selected CV (VALVE)		112		
Calculated CV		58.6994	-	-
Calculated / Sel.CV ratio		0.524	-	-
Flow Regime		Normal	-	-
Valve Opening	%	73.66	-	-
MACH n. at outlet connection		0.1253	-	-
Valve outlet velocity	m/s	82.23	-	-
Pipe outlet velocity	m/s	20.7	-	-
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	77.4	-	-

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-TV-10047
Service MP STEAM TO E-1001

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 980000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 8"		ND 8"	Minimum Temp.		- C	
Thickness	SCH XS		SCH XS	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	MP steam	
Pressure	44/FV	-		bar	State	Gas	
Maximum Temp.	260	-		C			
Minimum Temp.	-	-		C			
Valve				Guiding Cage			
Model	1-6943		Trim ST-E	Sealing seat-plug	Metal to metal		
DN	IN 6"		OUT 6"	Flow action	To Open		
Port	6"			Characteristic	Equalpercentage		
Valve Cv	344			Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	60			Shut-off pressur	44 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Valve close		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Cage						
Connections							
		DN	Type / Rating / Sealing-Finish				
	IN	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
	OUT	6"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 182 F6NM Nitrided			Model	1-X-290		
Seat	AISI 410 35HRC			Size	D46		
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse		
Balancing	PTFE			Spring range	13-32 psi		
Disk stack	-			Supply	40 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Graphite						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6943A01S150AF00J2.00			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17149
 Quote Line 980000
 Date 15/01/12

Fluid State Gas
 Fluid Name MP steam
 Tag 30-TV-10047
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 8" OUT ND 8"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 6" OUT 6" Port 6"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	31.8	31.8	31.8
Outlet absolute pressure	bar	31.5	31.5	31.5
Flow Rate	kg/h	3,800	11,640	12,804
Inlet temperature	deg. C	238	238	238
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.58	1.58	1.58
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.76	0.724	0.7188
Recovery factor (FL)		0.933	0.9184	0.9162
Valve style modifier (Fd)		0.2743	0.2502	0.2549
Number of cages (if any)				
Selected CV (VALVE)		344		
Calculated CV		64.0772	197.2605	217.2365
Calculated / Sel.CV ratio		0.186	0.573	0.632
Flow Regime		Normal	Normal	Normal
Valve Opening	%	42.77	69.72	73.12
MACH n. at outlet connection		0.0065	0.02	0.022
Valve outlet velocity	m/s	3.99	12.23	13.45
Pipe outlet velocity	m/s	2.28	6.98	7.68
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	31.7	33.9	34

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-TV-10139
Service MP STEAM TO E-1009

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 990000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 4"		ND 4"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	MP steam
Pressure	44/FV	-			State	Gas
Maximum Temp.	260	-				
Minimum Temp.	-					
Valve				Guiding Cage		
Model	1-6943	Trim	ST-E	Sealing seat-plug		Metal to metal
DN IN	3"	OUT	3"	Flow action		To Open
Port	3"			Characteristic		Equalpercentage
Valve Cv	90.4			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	45			Shut-off pressur		44 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	3"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	AISI 410 35HRC			Size	D39	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	PTFE			Spring range	13-31 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Adjustable limit stop	Opening - %	Closing - %				
Valve Heating	-					
Inlet Devices	-					
Outlet Devices	-					
Valve Code	R6943A01S080AF00H2.00			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17150
 Quote Line 990000
 Date 15/01/12

Fluid State Gas
 Fluid Name MP steam
 Tag 30-TV-10139
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 3" OUT 3" Port 3"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	31.8	31.8	31.8
Outlet absolute pressure	bar	31.5	31.5	31.5
Flow Rate	kg/h	1,000	3,100	3,410
Inlet temperature	deg. C	238	238	238
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.58	1.58	1.58
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7564	0.7084	0.7014
Recovery factor (FL)		0.9316	0.9119	0.909
Valve style modifier (Fd)		0.42	0.2339	0.2221
Number of cages (if any)				
Selected CV (VALVE)		90.4		
Calculated CV		16.8633	52.5644	57.8938
Calculated / Sel.CV ratio		0.187	0.581	0.64
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	42.26	74.45	78.27
MACH n. at outlet connection		0.0068	0.0211	0.0232
Valve outlet velocity	m/s	4.15	12.86	14.15
Pipe outlet velocity	m/s	2.38	7.38	8.12
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	24	29.8	30.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-TV-10153
Service MP STEAM TO E-1008

Page 1 **of** 2
Qty 1
User wang.lihua
Date 16/01/06
Quote Line 1000000

Piping		IN	OUT	Ambient		Pressure 1 bar
Diameter	ND 6"		ND 6"	Minimum Temp.		- C
Thickness	SCH XS		SCH XS	Maximum Temp.		- C
Insulation	Not Known			Installation		Not Known
Design Conditions				Haz. Area Other		
	IN		OUT		Fluid	MP steam
Pressure	44/FV	-		bar	State	Gas
Maximum Temp.	260	-		C		
Minimum Temp.	-	-		C		
Valve				Guiding Cage		
Model	1-6943		Trim ST-E	Sealing seat-plug		Metal to metal
DN IN	4"		OUT 4"	Flow action		To Open
Port	4"			Characteristic		Equalpercentage
Valve Cv	178			Leakage class		IV - FCI 70-2 & IEC 534.4
Stroke	60			Shut-off pressur		44 bar
Body Type	Globe - Straight			Live Loading		Not provided
Bonnet Type	Universal			Air failure		Valve close
Seat Type	Single			Control signal failure		Fail Safe
Trim Type	Cage					
Connections						
	DN	Type / Rating / Sealing-Finish				
IN	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
OUT	4"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH				
Materials				Actuator		
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.	
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm	
Plug	A 182 F6NM Nitrided			Model	1-X-290	
Seat	AISI 410 35HRC			Size	D46	
Guide/Cage	A 487 CA6NM Nitrided			Action	Reverse	
Balancing	PTFE			Spring range	13-32 psi	
Disk stack	-			Supply	40 psi	
Plug/seat insert	-			Handwheel	No	
Bellows	-			Yoke material	Carbon steel	
Packing	Graphite					
Pneumatic Instrumentation				Time	Conn	
Minimum Press.	5 bar			Throttling	- s	-
Maximum Press.	9 bar			Quick Open	- s	-
Design Press.	- bar			Quick Close	- s	-
Fitting type	Double Ferrule			Tubing Material	Stainless steel	
Miscellaneous				<input type="checkbox"/> PED <input type="checkbox"/> Vacuum Service <input type="checkbox"/> NACE <input type="checkbox"/> External <input type="checkbox"/> Hydraulic speed ctrl. <input type="checkbox"/> Leak-off		
Valve Code	R6943A01S100AF00J2.00			Pneumatic Diagram	-	

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17151
 Quote Line 1000000
 Date 15/01/12

Fluid State Gas
 Fluid Name MP steam
 Tag 30-TV-10153
 Valve Model 1-6943 Trim ST-E

Pipe
 Nominal Size IN ND 6" OUT ND 6"
 Thickness / schedule IN SCH XS OUT SCH XS

Valve
 Nominal Size IN 4" OUT 4" Port 4"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	31.7	31.7	31.7
Outlet absolute pressure	bar	31.5	31.5	31.5
Flow Rate	kg/h	2,500	6,524	7,176
Inlet temperature	deg. C	238	238	238
Saturation temp. at inlet	deg. C	-	-	-
Specific heat ratio (Cp/Cv)	bar	1.58	1.58	1.58
Density	kg/m3	-	-	-
Press. differential ratio factor (X)		0.7591	0.7274	0.7222
Recovery factor (FL)		0.9327	0.9198	0.9176
Valve style modifier (Fd)		0.2999	0.178	0.1645
Number of cages (if any)				
Selected CV (VALVE)		178		
Calculated CV		51.7881	137.8247	152.3452
Calculated / Sel.CV ratio		0.291	0.774	0.856
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	47.46	79.82	86.42
MACH n. at outlet connection		0.0098	0.0255	0.028
Valve outlet velocity	m/s	5.96	15.55	17.1
Pipe outlet velocity	m/s	2.63	6.85	7.54
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	22.1	27.2	28

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-3

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose



PARCOL

CONTROL VALVES - SAFETY VALVES

Customer BUSHEHR METHANOL PLANT
DSH SQ1401768 **Rev.** 0
TAG 30-TV-10154
Service LP CONDENSATE TO E-1010

Page 1 **of** 2
Qty 1
User wang.lihua
Date 15/01/12
Quote Line 1010000

Piping		IN	OUT	Ambient		Pressure 1 bar	
Diameter	ND 4"		ND 4"	Minimum Temp.		- C	
Thickness	SCH STD		SCH STD	Maximum Temp.		- C	
Insulation	Not Known			Installation		Not Known	
Design Conditions				Haz. Area Other			
	IN		OUT		Fluid	LP Steam Condensate	
Pressure	12.77	-			State	Liquid	
Maximum Temp.	155	-					
Minimum Temp.	-						
Valve				Guiding Top			
Model	1-6941	Trim	CP-E	Sealing seat-plug	Metal to metal		
DN IN	2"	OUT	2"	Flow action	To Open		
Port	1"			Characteristic	Equalpercentage		
Valve Cv	15.1			Leakage class	IV - FCI 70-2 & IEC 534.4		
Stroke	25			Shut-off pressur	12.77 bar		
Body Type	Globe - Straight			Live Loading	Not provided		
Bonnet Type	Universal			Air failure	Valve close		
Seat Type	Single			Control signal failure	Fail Safe		
Trim Type	Contoured						
Connections							
	DN	Type / Rating / Sealing-Finish					
IN	2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
OUT	2"	Flanged/ANSI B16.5/300#/RF - 125-250 AARH					
Materials				Actuator			
Body	SA 216 WCC			Manufacturer	Parcol S.P.A.		
Bonnet	SA 216 WCC			Type	Pneumatic Diaphragm		
Plug	A 479 316 Seat Joint Stellite			Model	1-X-290		
Seat	A 479 316 Full Stellite			Size	D33		
Guide/Cage	-			Action	Reverse		
Balancing	-			Spring range	15-29 psi		
Disk stack	-			Supply	60 psi		
Plug/seat insert	-			Handwheel	No		
Bellows	-			Yoke material	Carbon steel		
Packing	Reinforced teflon						
Pneumatic Instrumentation						Time	Conn
Minimum Press.	5 bar			Throttling	- s	-	
Maximum Press.	9 bar			Quick Open	- s	-	
Design Press.	- bar			Quick Close	- s	-	
Fitting type	Double Ferrule			Tubing Material	Stainless steel		
Miscellaneous						<input type="checkbox"/> PED	
Adjustable limit stop	Opening - %		Closing - %	<input type="checkbox"/> Vacuum Service			
Valve Heating	-			<input type="checkbox"/> NACE	<input type="checkbox"/> External		
Inlet Devices	-			<input type="checkbox"/> Hydraulic speed ctrl.			
Outlet Devices	-			<input type="checkbox"/> Leak-off			
Valve Code	R6941A04N050DD0G0000			Pneumatic Diagram	-		

Accessories

- 1- TYPE: Filter Regulator - QTY: 1 - PROD: YTC - MODEL: YT-200BN21 - MATERIAL: Aluminum - IP: IP65 - ATEX: None - CONN: Pn. 1/4in. - Cv: Filter material: Internal Material:
- 2- TYPE: Electro-Pneumatic Positioner - QTY: 1 - PROD: SIEMENS - MODEL: 6DR5611-0EM00-0AA0 - MATERIAL: Aluminum - IP: IP65 - ATEX: ExiaIICT6 - CONN: Pn. 1/4in.-El. M20X1.5 - Input: On bus - Position Transmitter: On bus - Protocol: Fieldbus Foundation - Type:



PARCOL

CONTROL VALVES - SAFETY VALVES

S. P. A.

CALCULATION SHEET FOR CONTROL VALVES

Customer BUSHEHR METHANOL PLANT
 Reference SQ1401768
 Configuration 17152
 Quote Line 1010000
 Date 15/01/12

Fluid State Liquid
 Fluid Name LP Steam Condens
 Tag 30-TV-10154
 Valve Model 1-6941 Trim CP-E

Pipe
 Nominal Size IN ND 4" OUT ND 4"
 Thickness / schedule IN SCH STD OUT SCH STD

Valve
 Nominal Size IN 2" OUT 2" Port 1"

	Unit	Case 1 min	Case 2 nor	Case 3 max
Inlet absolute pressure	bar	7.5	7.5	7.5
Outlet absolute pressure	bar	6.5	6.5	6.5
Flow Rate	kg/h	2,000	5,237	5,761
Density	kg/m3	938	938	938
Inlet temperature	deg. C	126	126	126
Vapour pressure (abs)	bar	2.43	2.43	2.43
Critical pressure (abs)	bar	221.2	221.2	221.2
Viscosity	cP	0.219	0.219	0.219
Recovery factor (FL)		0.9589	0.9379	0.9345
Valve style modifier (Fd)		0.1577	0.2691	0.285
Number of cages (if any)				
Selected CV (VALVE)		15.1		
Calculated CV		2.3877	6.2573	6.8849
Calculated / Sel.CV ratio		0.158	0.414	0.456
Flow Regime		Normal	Normal	Normal
Valve Opening -	%	55.22	78.27	80.66
Terminal differential pressure	bar	4.8158	4.6055	4.5717
Valve outlet velocity	m/s	0.27	0.72	0.79
Pipe outlet velocity	m/s	0.07	0.19	0.21
Noise red. due to pipe insulati	dB (A)	-	-	-
Resulting SPL	dB (A)	30.3	41.1	42.3

CV sizing according to IEC 60534-2-1 and ISA 75.1

SPL according to IEC 60534-8-4

When marked CE this valve is guaranteed within limitations covered on:

NTG 76/550 (GLOBE), 76/551 (ROTARY), 76/552 desuperheating systems

Said valve cannot be used without notice for safety purpose

DATA SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0			Customer			
Project				User	Wang Lihua		
Tag	30-FV-10092			Date	20-02-2017		
Service	HYDROGEN TO DESULFURIZATION			Item Code	R6943G04N040AF.0H0000		Valve No. 1
Design Conditions		In	Out	Ambient			
Pressure	40 bar g			Pressure			
Minimum Temperature				Min. Temp.		Max Temp.	
Maximum Temperature	120 °C			Installation		Haz. Area	
Piping		In	Out	Connections DN		Type/Rating	
Outside Diameter	3"		3"	In	1.1/2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Thickness	SCH 10S		SCH 10S	Out	1.1/2"	Flanged/ANSI B16.5/600#/RF - 125-250 AARH	
Insulation							
Valve Characteristics							
Model	1-6943			Guiding	Cage		
DN In	1.1/2"	DN Out	1.1/2"	Sealing Seat-Plug	Metal to Metal		
Trim Code	ST-E			Flow Action	To Open		
Port	1 1/2"			Characteristic	Equal Percentage		
Valve Cv	30.7	Stroke	34 mm	Leakage Class	V ANSI/FCI70-2		
Body Type	Globe - Straight			Shut-Off Pressure	40 bar		
Bonnet Type	Universal			Live Loading	Not provided		
Seat Type	Single			Air Failure	Valve close		
Trim Type	Cage			Control Signal Failure	Not Defined		
Materials				Actuator			
BODY	SA-351 CF8M			Manufacturer	Parcol S.p.A.		
BONNET	SA-351 CF8M			Type	Pneumatic Diaphragm		
PLUG	SA-479 316 Full CoCr-A Hard Facing			Model	1-X-292		
SEAT	SA-479 316 Seat Joint CoCr-A Hard Facing			Size	D39		
CAGE	SA-479 316 Chrome plated			Action	Reverse		
				Spring Range	1.72-3.1 bar		
				Supply	4.14 bar		
Balancing	Not Balanced			Handweel	Side Mounted		
Packing	TFK			Yoke Material	Carbon steel		
Pneumatic Instrumentation							
Mimimum Press.	5.00bar	Throttling		Fitting Type	Double Ferrule		
Maximum Press.	9.00bar	Quick Open		Tubing Material	AISI 316		
Design Press		Quick Close					
Accessories							
Filter Regulator - Model: YT-200BN21 - Manufacturer: YTC -				Quantity	1	Tag	
IP: IP65 - Connections: Pn. 1/4in. - Filter Mat.: Aluminum -							
Electro-Pneumatic Positioner - Model: 6DR5611-0EM00-0AA0 - Manufacturer: SIEMENS -				Quantity	1	Tag	
IP: IP65 - ATEX: ExiaIICT6 - Connections: Pn. 1/4in.-El. M20X1.5 - INPUT: On bus - Position Trasmitter: On bus - Protocol: Fieldbus Foundation -							
Notes							

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-FV-10092	Date	20-02-2017		
Service	HYDROGEN TO DESULFURIZATION	User	Wang Lihua		
Fluid Name	Synthesis Gas	Fluid State	GAS	Trim	ST-E

		In	Out	Port
Pipe	Nominal Size	3"	3"	
Pipe	Thickness/Schedule	SCH 10S	SCH 10S	
Valve	Nominal Size	1.1/2"	1.1/2"	1 1/2"

Operating Conditions	Unit	Case 1 New Valve Case	Case 2 New Valve Case	Case 3 New Valve Case
Flow Rate	kg/h	1600.00	1400.00	300.00
Inlet Pressure	bar a	30.1	30.1	30.1
Outlet Pressure	bar a	29.1	29.1	29.1
Inlet Temperature	°C	65	65	65
Saturation Temp. at Inlet	°C			

Molecular Mass (M)		11.28	11.28	11.28
Compressibility Factor (Z)		1	1	1
Specific Heat Ratio (Cp/Cv)		1.41	1.41	1.41
Density	kg/m ³	12.08	12.08	12.08
Press. Differential Ratio Factor (XT)		0.75	0.75	0.77
Recovery Factor (FL)		0.93	0.93	0.94
Valve Style Modifier (Fd)		0.25	0.28	0.62

Number of Cages (If Any)				
Selected CV (VALVE)		30.7	30.7	30.7
Calculated CV		17.41	15.17	3.21
Calculated / Sel. CV Ratio		0.57	0.49	0.10

Flow Regime		Normal	Normal	Normal
Valve Opening	%	71.92	68.08	36.02
MACH N. at Outlet Connection		0.04	0.04	0.01
Valve Outlet Velocity	m/s	26.51	23.19	4.97
Pipe Outlet Velocity	m/s	7.07	6.19	1.33
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	< 70	< 70	< 70

Notes

CALCULATION SHEET FOR CONTROL VALVES

Offer No.	SQ1600852 Rev.0	Customer			
Project		Valve Model	1-6943	Reference	1
Tag	30-FV-10092	Date	20-02-2017		
Service	HYDROGEN TO DESULFURIZATION	User	Wang Lihua		
Fluid Name	Synthesis Gas	Fluid State	GAS	Trim	ST-E

		In	Out	Port
Pipe	Nominal Size	3"	3"	
Pipe	Thickness/Schedule	SCH 10S	SCH 10S	
Valve	Nominal Size	1.1/2"	1.1/2"	1 1/2"

Operating Conditions	Unit	Case 4 New Valve Case	Case 5 New Valve Case	Case 6 New Valve Case
Flow Rate	kg/h	1600.00	1400	300
Inlet Pressure	bar a	36.9	36.9	36.9
Outlet Pressure	bar a	27.3	27.3	27.3
Inlet Temperature	°C	65	65	65
Saturation Temp. at Inlet	°C			

Molecular Mass (M)		11.28	11.28	11.28
Compressibility Factor (Z)		1	1	1
Specific Heat Ratio (Cp/Cv)		1.41	1.41	1.41
Density	kg/m ³	14.81	14.81	14.81
Press. Differential Ratio Factor (XT)		0.77	0.77	0.78
Recovery Factor (FL)		0.94	0.94	0.94
Valve Style Modifier (Fd)		0.46	0.50	0.96

Number of Cages (If Any)				
Selected CV (VALVE)		30.7	30.7	30.7
Calculated CV		5.54	4.85	1.04
Calculated / Sel. CV Ratio		0.18	0.16	0.03

Flow Regime		Normal	Normal	Normal
Valve Opening	%	46.28	43.53	21.51
MACH N. at Outlet Connection		0.05	0.04	0.01
Valve Outlet Velocity	m/s	28.26	24.72	5.30
Pipe Outlet Velocity	m/s	7.54	6.59	1.41
Noise Red. Due To Pipe Insulation	dB(A)			
Result SPL	dB(A)	82.73	82.14	74.72

Notes